



ROHM GROUP Short Form Catalog



About ROHM Functional Safety Brand ComfySIL™



Please visit the website.

ROHM launched the ComfySIL™ brand for customers involved in the design of functional safety to use products that support SIL (Safety Integrity Level) in a 'Comfy' (comfortable) manner, and for social systems' greater safety, security, and convenience to which ROHM can contribute through its products. ComfySIL™ is awarded to products that conform to the ComfySIL™ concept for functional safety in the industrial equipment and automotive markets.

Functional Safety Product Categories and Documents

ROHM has identified three functional safety product categories.
(Currently, only the automotive field is supported.)

- FS process compliant (FSp)**
 A product that has been developed based on an ISO 26262 design process compliant to the ASIL level.
- FS mechanism implemented (FSm)**
 A product that has implemented safety mechanism to meet ASIL level requirements.
- FS supportive (FSs)**
 A product that has been developed for automotive use and is capable of supporting safety analysis with regard to the functional safety.

List of Materials Provided

	FS process compliant (FSp)	FS mechanism implemented (FSm)	FS supportive (FSs)
IATF16949 Process Compliant	✓	✓	✓
ISO 26262 Process Compliant	✓	—	—
FMEA	✓	✓	✓
FIT	✓	✓	✓
FMEDA	✓	✓	✓ *
Safety manual	✓	✓	—

*FS supportive FMEDA does not include analysis such as hardware architecture metrics.

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Viewing the catalog

About "ComfySIL™" compatible products

This catalog contains products that are compatible with "ComfySIL™".
ComfySIL™-compliant products are indicated in the "ComfySIL™ Functional Safety Category" column with the abbreviations "FSp", "FSm", and "FSs".



FSp: FS process compliant
FSm: FS mechanism implemented
FSs: FS supportive

- New** indicates new product.
- Nano** indicates the products of ROHM's innovative power supply technology.
- MUS-IC** indicates the products of ROHM's highest peak audio IC "MUS-IC series".
- ☆ indicates product under development.
- Classification by the color**
 - ROHM Display with this color
 - LAPIS Technology The text displays LAPIS Technology Product
 - Kionix The text displays Kionix, Inc. Product



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Ultra-high-speed pulse control technology Nano Pulse Control™
Ultra-low-current technology Nano Energy™
Extremely stable control technology Nano Cap™

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"EMARMOUR™" is a product that combines ROHM's analog "circuit design technology" "layout technology" and "process technology" to achieve the Industry-leading of noise immunity in international noise evaluation tests.

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Memory

Serial EEPROM

P.9

Memory

Serial EEPROM

Standard EEPROM

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- Microwire BUS EEPROM (3-Wire) P.10
- WL-CSP EEPROM P.10
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Automotive EEPROM

- I²C BUS EEPROM (2-Wire) P.11
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- SPI BUS EEPROM P.12

Serial EEPROM

Standard EEPROM

I ² C BUS EEPROM (2-Wire) BR24Gxxx-3 series (SCL Frequency=400kHz)																	
Part No.	Package and Suffix							Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	SCL Frequency (Hz)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating (mA)	Standby (µA)					
BR24G01	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	1K	128×8	1.6 to 5.5	2	2	5	-40 to +85	10 ⁶	40	
BR24G02	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	2K	256×8	1.6 to 5.5	2	2	5				
BR24G04	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	4K	512×8	1.6 to 5.5	2	2	5				
BR24G08	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	8K	1K×8	1.6 to 5.5	2	2	5				
BR24G16	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	16K	2K×8	1.6 to 5.5	2	2	5				
BR24G32	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	32K	4K×8	1.6 to 5.5	2	2	5				
BR24G64	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	64K	8K×8	1.6 to 5.5	2	2	5				
BR24G128	F-3	FJ-3	FV-3	FVT-3	FVM-3	FVJ-3	NUX-3	128K	16K×8	1.6 to 5.5	2.5	2	5				
BR24G256	F-3	FJ-3	FV-3	FVT-3	—	—	—	256K	32K×8	1.6 to 5.5	2.5	2	5				
I ² C BUS EEPROM (2-Wire) BR24Gxxx-3A series (SCL Frequency=1MHz)																	
Part No.	Package and Suffix							Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	SCL Frequency (Hz)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating (mA)	Standby (µA)					
BR24G01	F-3A	FJ-3A	—	FVT-3A	FVM-3A	—	NUX-3A	1K	128×8	1.7 to 5.5	2	2	5	-40 to +85	10 ⁶	40	
BR24G02	F-3A	FJ-3A	—	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	2K	256×8	1.7 to 5.5	2	2	5				
BR24G04	F-3A	FJ-3A	—	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	4K	512×8	1.7 to 5.5	2	2	5				
BR24G08	F-3A	FJ-3A	—	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	8K	1K×8	1.7 to 5.5	2	2	5				
BR24G16	F-3A	FJ-3A	—	FVT-3A	FVM-3A	FVJ-3A	NUX-3A	16K	2K×8	1.7 to 5.5	2	2	5				
BR24G512	F-3A	FJ-3A	—	FVT-3A	—	—	—	512K	64K×8	1.7 to 5.5	4.5	3	5				
I ² C BUS EEPROM (2-Wire) BR24Gxxx-5 series (SCL Frequency=1MHz/Endurance=4million times)																	
Part No.	Package and Suffix							Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	SCL Frequency (Hz)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating (mA)	Standby (µA)					
BR24G32	F-5	FJ-5	—	FVT-5	FVM-5	—	NUX-5	32K	4K×8	1.6 to 5.5	2	2.5	5	-40 to +85	4×10 ⁶	200	
BR24G64	F-5	FJ-5	—	FVT-5	FVM-5	—	NUX-5	64K	8K×8	1.6 to 5.5	2	2.5	5				
BR24G128	F-5	FJ-5	—	FVT-5	FVM-5	—	NUX-5	128K	16K×8	1.6 to 5.5	2	2.5	5				
BR24G256	F-5	FJ-5	—	FVT-5	FVM-5	—	NUX-5	256K	32K×8	1.6 to 5.5	2	2.5	5				
I ² C BUS EEPROM (2-Wire) BR24Gxxx-5A series (SCL Frequency=1MHz/Endurance=4million times)																	
Part No.	Package and Suffix							Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	SCL Frequency (Hz)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	SSOP-B8	TSSOP-B8	MSOP8	TSSOP-B8J	VSON008X2030				Operating (mA)	Standby (µA)					
BR24G512	F-5A	FJ-5A	—	FVT-5A	FVM-5A	—	—	512K	64K×8	1.6 to 5.5	3	5	3.5	-40 to +85	4×10 ⁶	200	
BR24G1M	F-5A	FJ-5A	—	FVT-5A	—	—	—	1M	128K×8	1.7 to 5.5	3	5	3.5				

Standard EEPROM

SPI BUS EEPROM BR25Gxxx-3 series

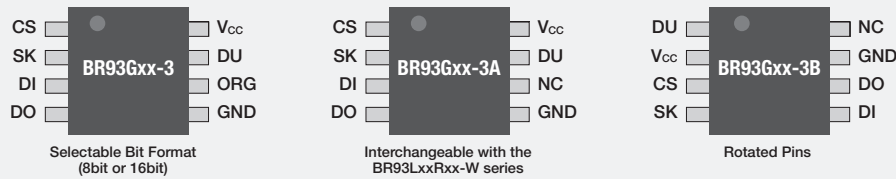
Part No.	Package and Suffix					Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSON008X2030				Operating (mA)	Standby (μA)				
BR25G320	F-3	FJ-3	FVT-3	FVM-3	NUX-3	32K	4K×8	1.6 to 5.5	8	2	5	-40 to +85	10 ⁶	100
BR25G640	F-3	FJ-3	FVT-3	FVM-3	NUX-3	64K	8K×8	1.6 to 5.5	8	2	5			
BR25G128	F-3	FJ-3	FVT-3	FVM-3	NUX-3	128K	16K×8	1.6 to 5.5	8	2	5			
BR25G256	F-3	FJ-3	FVT-3	—	—	256K	32K×8	1.6 to 5.5	8	2	5			
BR25G512	F-3	FJ-3	FVT-3	—	—	512K	64K×8	1.8 to 5.5	4	1	5			
BR25G1M	F-3	FJ-3	—	—	—	1M	128K×8	1.8 to 5.5	4	1	5			

Microwire BUS EEPROM (3-Wire) BR93Gxx-3/3A/3B series

Part No.	Package and Suffix					Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)
	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSON008X2030				Operating (mA)	Standby (μA)				
BR93G46	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2	1K	64×16 (128×8)	1.7 to 5.5	3	2	5	-40 to +85	10 ⁶	40
BR93G56	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	2K	128×16 (256×8)	1.7 to 5.5	3	2	5			
BR93G66	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2/ FVT-3B*3	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	4K	256×16 (512×8)	1.7 to 5.5	3	2	5			
BR93G76	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2	FVT-3*1/ FVT-3A*2	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	8K	512×16 (1K×8)	1.7 to 5.5	3	2	5			
BR93G86	F-3*1/ F-3A*2/ F-3B*3	FJ-3*1/ FJ-3A*2/ FJ-3B*3	FVT-3*1/ FVT-3A*2	FVM-3*1/ FVM-3A*2/ FVM-3B*3	NUX-3*1/ NUX-3A*2/ NUX-3B*3	16K	1K×16 (2K×8)	1.7 to 5.5	3	2	5			

Microwire BUS EEPROM (3-Wire) BR93Gxx-3/3A/3B series: *1 They are dual organization (by 16bit or 8bit) and it is selected the input of ORG PIN. *2 1PIN: CS PIN *3 3PIN: CS PIN

Microwire BUS Pin Assignment



WL-CSP EEPROM

Part No.	I/F	Density (bit)	Package					Pull-up Resistor	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Data Retention (years)
			Package Name	Size (mm)	Thickness (mm) (Max)	Ball Pitch (mm)	RESIN COATING				Operating (mA)	Standby (μA)			
BU9833GUL-W	I ² C	2K	VCSP50L1	x: 1.27 y: 1.50	0.55	0.5	✓	—	256×8	1.7 to 5.5	2	2	5	-40 to +85	40
BU9847GUL-W		4K	VCSP50L1	x: 1.95 y: 1.06	0.55	0.5	✓	—	512×8	1.7 to 5.5	2	2	5	-40 to +85	40
BU9889GUL-W		8K	VCSP50L1	x: 1.60 y: 1.00	0.55	0.5	✓	—	1K×8	1.7 to 5.5	2	2	5	-40 to +85	40
BRCB008GWZ-3		8K	UCSP30L1	x: 0.94 y: 0.94	0.33	0.4	—	—	1K×8	1.7 to 3.6	2	2	5	-40 to +85	40
BRCB016GWL-3U		16K	UCSP50L1	x: 1.10 y: 1.15	0.55	0.4	✓	—	2K×8	1.7 to 3.6	2	2	5	-40 to +85	40
BRCD016GWZ-3		16K	UCSP35L1	x: 1.30 y: 0.77	0.40	0.4	✓	—	2K×8	1.7 to 3.6	2	2	5	-40 to +85	40
BRCG016GWZ-3		16K	UCSP30L1A	x: 0.82 y: 0.82	0.33	0.4	✓	—	2K×8	1.7 to 5.5	2	2	5	-40 to +85	40
BRCF016GWZ-3		16K	UCSP30L1	x: 0.86 y: 0.84	0.35	0.4	—	—	2K×8	1.7 to 5.5	2	2	5	-40 to +85	40
BRCA016GWZ-W		16K	UCSP30L1	x: 1.30 y: 0.77	0.35	0.4	—	—	2K×8	1.7 to 3.6	2	2	5	-40 to +85	40
BRCB032GWZ-3		32K	UCSP30L1	x: 1.45 y: 0.77	0.33	0.4	—	—	4K×8	1.6 to 5.5	2	2	5	-40 to +85	40
BRCH064GWZ-3		64K	UCSP30L1A	x: 1.50 y: 1.00	0.33	0.4	✓	—	8K×8	1.6 to 5.5	2	2	5	-40 to +85	40
BRCB064GWZ-3		64K	UCSP30L1	x: 1.50 y: 1.00	0.35	0.4	—	WP	8K×8	1.6 to 5.5	3.9	2	5	-40 to +85	40
BRCE064GWZ-3		64K	UCSP25L1	x: 1.50 y: 1.00	0.30	0.4	—	—	8K×8	1.6 to 5.5	2	2	5	-40 to +85	40
BU9897GUL-W		128K	VCSP50L2	x: 2.44 y: 1.99	0.55	0.5	✓	—	16K×8	1.7 to 5.5	2.5	2	5	-40 to +85	40
BU9832GUL-W		8K	VCSP50L2	x: 2.09 y: 1.85	0.55	0.5	✓	—	1K×8	1.8 to 5.5	3	2	5	-40 to +85	40
BU9829GUL-W		16K	VCSP50L1	x: 1.74 y: 1.65	0.55	0.5	✓	—	2K×8	1.6 to 3.6	2	1	5	-30 to +85	10
BR25S128GUZ-W	128K	VCSP35L2	x: 2.00 y: 2.63	0.40	0.5	✓	—	16K×8	1.7 to 5.5	2*	2	5	-40 to +85	40	
BU9891GUL-W	MW	4K	VCSP50L1	x: 1.60 y: 1.00	0.55	0.5	✓	—	256×16	1.7 to 5.5	3	2	5	-40 to +85	40

WL-CSP EEPROM: *V_{CC}=2.5V

Plug & Play EEPROM For Memory Modules

Part No.	Package and Suffix		Bit Format (word×bit)	Supply Voltage (V)	Clock Frequency (kHz)	Write Cycle Time (ms)	Endurance (times)	Data Retention (years)	Write Protect
	TSSOP-B8	VSON008X2030							
BR34L02	FVT-W	—	256×8	1.7 to 5.5	100*/400*2	5	10 ⁶	40	Onetime ROM write protect
BR34E02	FVT-3/FVT-W	NUX-3/NUX-W	256×8	1.7 to 5.5/ 1.7 to 3.6	400	5	10 ⁶	40	Settable write protect Onetime ROM write protect

Plug & Play EEPROM For Memory Modules: *1 V_{CC}=1.7 to 5.5V *2 V_{CC}=2.5 to 5.5V

Plug & Play EEPROM For Display

Part No.	Package and Suffix							Function Descriptions	Bit Format (word×bit)	Supply Voltage (V)	Clock Frequency (MHz)	Write Cycle Time (ms)
	SOP8	SOP-J8	SSOP-B8	SOP14	SSOP-B14	SSOP-B16	VSON008X2030					
BR24C21	F	FJ	FV	—	—	—	—	Supports DDC1/DDC2 for displays	128×8	2.5 to 5.5	100/400	10
BU9882	—	—	—	F-W	FV-W	—	—	Dual-port type compatible with DDC2 for displays	128×8×2ch	2.5 to 5.5	100/400	10
BU9883	—	—	—	—	—	FV-W	—	2Kbit×3ch EEPROM for HDMI ports	256×8×3ch	3.0 to 5.5	400	5
BU99022	—	—	—	—	—	—	NUX-3	2Kbit×2ch type	256×8×2ch	1.7 to 5.5	400	5

Automotive EEPROM

125°C Operation I²C BUS EEPROM (2-Wire) BR24Hxxx-5AC series

Part No.	Package and Suffix						Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSON008X2030	VSON08AAX2030				Operating (mA)	Standby (µA)						
BR24H01	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	1K	128×8	1.7 to 5.5	1.7	10	3.5	-40 to +125	4×10 ⁶	100	FSs	YES
BR24H02	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	2K	256×8	1.7 to 5.5	1.7	10	3.5					
BR24H04	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	4K	512×8	1.7 to 5.5	1.7	10	3.5					
BR24H08	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	8K	1K×8	1.7 to 5.5	1.7	10	3.5					
BR24H16	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	16K	2K×8	1.7 to 5.5	1.7	10	3.5					
BR24H32	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	32K	4K×8	1.7 to 5.5	1.7	10	3.5					
BR24H64	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	64K	8K×8	1.7 to 5.5	1.7	10	3.5					
BR24H128	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	128K	16K×8	1.7 to 5.5	1.7	10	3.5					
BR24H256	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	256K	32K×8	1.7 to 5.5	1.7	10	3.5					
New BR24H512	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	512K	64K×8	1.7 to 5.5	3	20	3.5					
BR24H1M	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	1M	128K×8	2.5 to 5.5	3	20	3.5					

105°C Operation I²C BUS EEPROM (2-Wire) BR24Axx-WM series

Part No.	Package and Suffix			Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	MSOP8				Operating (mA)	Standby (µA)						
BR24A01A	F-WM	FJ-WM	—	1K	128×8	2.5 to 5.5	2	2	5	-40 to +105	10 ⁶	40	FSs	YES
BR24A02	F-WM	FJ-WM	FVM-WM	2K	256×8	2.5 to 5.5	2	2	5					
BR24A04	F-WM	FJ-WM	—	4K	512×8	2.5 to 5.5	2	2	5					
BR24A08	F-WM	FJ-WM	—	8K	1K×8	2.5 to 5.5	2	2	5					
BR24A16	F-WM	FJ-WM	—	16K	2K×8	2.5 to 5.5	2	2	5					
BR24A32	F-WM	—	—	32K	4K×8	2.5 to 5.5	3	2	5					
BR24A64	F-WM	—	—	64K	8K×8	2.5 to 5.5	3	2	5					

85°C Operation I²C BUS EEPROM (2-Wire) BR24Txx-3AM series

Part No.	Package and Suffix			Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8				Operating (mA)	Standby (µA)						
BR24T512	F-3AM	FJ-3AM	FVT-3AM	512K	64K×8	1.7 to 5.5	4.5	3	5	-40 to +85	10 ⁶	40	FSs	YES
BR24T1M	F-3AM	FJ-3AM	—	1M	128K×8	1.7 to 5.5	4.5	3	5					

125°C Operation Microwire BUS EEPROM (3-Wire) BR93Hxx-2C series

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating (mA)	Standby (µA)						
BR93H46	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	1K	64×16	2.5 to 5.5	3	10	4	-40 to +125	10 ⁵	100	FSs	YES
BR93H56	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	2K	128×16	2.5 to 5.5	3	10	4					
BR93H66	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	4K	256×16	2.5 to 5.5	3	10	4					
BR93H76	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	8K	512×16	2.5 to 5.5	3	10	4					
BR93H86	RF-2C	RFJ-2C	RFVT-2C	RFVM-2C	16K	1K×16	2.5 to 5.5	3	10	4					

105°C Operation Microwire BUS EEPROM (3-Wire) BR93Axx-WM series

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating (mA)	Standby (µA)						
BR93A46	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	1K	64×16	2.5 to 5.5	3	2	5	-40 to +105	10 ⁵	40	FSs	YES
BR93A56	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	2K	128×16	2.5 to 5.5	3	2	5					
BR93A66	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	4K	256×16	2.5 to 5.5	3	2	5					
BR93A76	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	8K	512×16	2.5 to 5.5	3	2	5					
BR93A86	RF-WM	RFJ-WM	RFVT-WM	RFVM-WM	16K	1K×16	2.5 to 5.5	3	2	5					

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Automotive EEPROM

125°C Operation Built-in ECC Function SPI BUS EEPROM BR25Hxxx-5AC series

Part No.	Package and Suffix						Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8	VSOP08R2030	VSOP08A2030				Operating (mA)	Standby (µA)						
New BR25H010	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	1K	128×8	1.7 to 5.5	8	10	3.5	-40 to +125	4×10 ⁶	100	FSs	YES
New BR25H020	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	2K	256×8	1.7 to 5.5	8	10	3.5					
New BR25H040	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	4K	512×8	1.7 to 5.5	8	10	3.5					
New BR25H080	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	8K	1K×8	1.7 to 5.5	8	10	3.5					
New BR25H160	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	ANUX-5AC	16K	2K×8	1.7 to 5.5	8	10	3.5					
New BR25H320	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	NUX-5AC	—	32K	4K×8	1.7 to 5.5	8	10	3.5					
BR25H640	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	NUX-5AC	—	64K	8K×8	1.7 to 5.5	8	10	3.5					
BR25H128	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	NUX-5AC	—	128K	16K×8	1.7 to 5.5	8	10	3.5					
BR25H256	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	NUX-5AC	—	256K	32K×8	1.7 to 5.5	8	10	3.5					
New BR25H512	F-5AC	FJ-5AC	FVT-5AC	FVM-5AC	—	—	512K	64K×8	1.7 to 5.5	8	20	3.5					
BR25H1M	F-5AC	FJ-5AC	FVT-5AC	—	—	—	1024K	128K×8	1.7 to 5.5	8	20	3.5					

125°C Operation SPI BUS EEPROM with ECC Function BR25Hxxx-2AC series

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating (mA)	Standby (µA)						
BR25H640	F-2AC	FJ-2AC	FVT-2AC	FVM-2AC	64K	8K×8	2.5 to 5.5	5.5	10	4	-40 to +125	10 ⁶	100	FSs	YES
BR25H128	F-2AC	FJ-2AC	FVT-2AC	—	128K	16K×8	2.5 to 5.5	5.5	10	4					
BR25H256	F-2AC	FJ-2AC	—	—	256K	32K×8	2.5 to 5.5	5.5	10	4					

125°C Operation SPI BUS EEPROM BR25Hxxx-2C series

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating (mA)	Standby (µA)						
BR25H010	F-2C	FJ-2C	FVT-2C	FVM-2C	1K	128×8	2.5 to 5.5	4	10	4	-40 to +125	10 ⁶	100	FSs	YES
BR25H020	F-2C	FJ-2C	FVT-2C	FVM-2C	2K	256×8	2.5 to 5.5	4	10	4					
BR25H040	F-2C	FJ-2C	FVT-2C	FVM-2C	4K	512×8	2.5 to 5.5	4	10	4					
BR25H080	F-2C	FJ-2C	FVT-2C	FVM-2C	8K	1K×8	2.5 to 5.5	4	10	4					
BR25H160	F-2C	FJ-2C	FVT-2C	FVM-2C	16K	2K×8	2.5 to 5.5	4	10	4					
BR25H320	F-2C	FJ-2C	FVT-2C	FVM-2C	32K	4K×8	2.5 to 5.5	4	10	4					
BR25H640	F-2C	FJ-2C	FVT-2C	—	64K	8K×8	2.5 to 5.5	5.5	10	4					
BR25H128	F-2C	FJ-2C	—	—	128K	16K×8	2.5 to 5.5	5.5	10	4					

105°C Operation SPI BUS EEPROM BR25Axxx-3M series

Part No.	Package and Suffix				Density (bit)	Bit Format (word×bit)	Supply Voltage (V)	Current Consumption (Max)		Write Cycle Time (Max) (ms)	Operating Temperature (°C)	Endurance (times)	Data Retention (years)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	SOP8	SOP-J8	TSSOP-B8	MSOP8				Operating (mA)	Standby (µA)						
BR25A256	F-3M	FJ-3M	FVT-3M	—	256K	32K×8	2.5 to 5.5	4	10	5	-40 to +105	10 ⁶	100	FSs	YES
BR25A512	F-3M	FJ-3M	FVT-3M	—	512K	64K×8	2.5 to 5.5	4	10	5					
BR25A1M	F-3M	FJ-3M	—	—	1M	128K×8	2.5 to 5.5	4	10	5					

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Operational Amplifiers & Comparators

Operational Amplifiers	P.13	Comparators	P.18
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Operational Amplifiers			
Standard	P.13	High Speed	P.14
Low Power Consumption	P.15	Low Noise	P.17
Low Offset Voltage	P.17	High Performance	P.17
Comparators			
Standard	P.18	High Speed	P.19
Low Power Consumption	P.19		

Operational Amplifiers

Standard

Ground Sense Operational Amplifiers																
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix
BA2904/ BA2904S	2	3 to 36	0.5	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125/ -40 to +105	SOP8	F
															SSOP-B8	FV
															MSOP8	FVM
BA2904Y	2	3 to 36	0.5	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP8	F-LB
BA2902/ BA2902S	4	3 to 36	0.7	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125/ -40 to +105	SOP14	F
															SSOP-B14	FV
BA2902Y	4	3 to 36	0.7	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP14	F-LB
BA3404	2	4 to 36	2.0	2.0	70	30	V_{EE} to $V_{CC}-2.0$	V_{EE} to $V_{CC}-2.0$	100	90	94	1.2	1.2	-40 to +85	SOP8	F
															MSOP8	FVM
LM2902	4	3 to 32	1.0	1.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.3	0.8	-40 to +125	SOP14	F
															SOP-J14	FJ
															SSOP-B14	FV
															TSSOP-B14J	FVJ
LM2904	2	3 to 32	0.6	1.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.3	0.8	-40 to +125	SOP8	F
															SOP-J8	FJ
															SSOP-B8	FV
															TSSOP-B8J	FVJ
															MSOP8	FVM
TSSOP-B8	FVT															
LM324	4	3 to 32	1.0	1.0	20	30	V_{EE} to $V_{CC}-1.5$	$V_{EE}+0.01$ to $V_{CC}-1.5$	100	80	100	0.3	0.8	-40 to +85	SOP14	F
															SOP-J14	FJ
															SSOP-B14	FV
LM358	2	3 to 32	0.6	1.0	20	30	V_{EE} to $V_{CC}-1.5$	$V_{EE}+0.01$ to $V_{CC}-1.5$	100	80	100	0.3	0.8	-40 to +85	SOP8	F
															SOP-J8	FJ
															SSOP-B8	FV
															TSSOP-B8J	FVJ
															MSOP8	FVM
TSSOP-B8	FVT															

Automotive Ground Sense Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BA2904Y	2	3 to 36	0.5	2.0 (Max: 3.5)	20 (Max: 60)	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP8	F-C	FSs	YES
															SSOP-B8	FV-C	FSs	YES
															MSOP8	FVM-C	FSs	YES
BA2902Y	4	3 to 36	0.7	2.0 (Max: 3.8)	20 (Max: 60)	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP14	F-C	FSs	YES
															SSOP-B14	FV-C	FSs	YES
BA2904Y	2	3 to 36	0.5	2.0 (Max: 7.0)	20 (Max: 250)	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP8	F-M	FSs	YES
															SSOP-B8	FV-M	FSs	YES
															MSOP8	FVM-M	FSs	YES
BA2902Y	4	3 to 36	0.7	2.0 (Max: 7.0)	20 (Max: 250)	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP14	F-M	FSs	YES
														SSOP-B14	FV-M	FSs	YES	

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Standard

Automotive Excellent EMI Immunity Ground Sense Operational Amplifiers (EMARMOUR™ series)																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
LM2904EY	2	3 to 36	0.6	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +150	SOP8	F-C	FSs	YES
															SOP-J8	FJ-C	FSs	YES
															MSOP8	FVM-C	FSs	YES
BA82904Y	2	3 to 36	0.5	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP8	F-C	FSs	YES
															MSOP8	FVM-C	FSs	YES
BA82902Y	4	3 to 36	0.7	2.0	20	30	V_{EE} to $V_{CC}-1.5$	V_{EE} to $V_{CC}-1.5$	100	80	100	0.2	0.5	-40 to +125	SOP14	F-C	FSs	YES
															SOP-J14	FJ-C	FSs	YES
															SSOP-B14	FV-C	FSs	YES
															TSSOP-B14J	FVJ-C	FSs	YES

Automotive Excellent EMI Immunity Input-Output Rail-to-Rail Operational Amplifiers (EMARMOUR™ series)																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD87581Y	1	4 to 14	2.3	1	0.001	3.5	V_{SS} to V_{DD}	$V_{SS}+0.03$ to $V_{DD}-0.05$	110	60	80	3.5	4	-40 to +125	SSOP5	G-C	FSs	YES
BD87582Y	2	4 to 14	5	1	0.001	3.5	V_{SS} to V_{DD}	$V_{SS}+0.03$ to $V_{DD}-0.05$	110	60	80	3.5	4	-40 to +125	MSOP8	FVM-C	FSs	YES
BD87584Y	4	4 to 14	10	1	0.001	3.5	V_{SS} to V_{DD}	$V_{SS}+0.03$ to $V_{DD}-0.05$	110	60	80	3.5	4	-40 to +125	SSOP-B14	FV-C	FSs	YES
New BD87554Y	4	4 to 15	7.9	1	0.001	9.3	V_{SS} to V_{DD}	$V_{SS}+0.03$ to $V_{DD}-0.05$	110	80	90	2.4	2	-40 to +125	SSOP-B14	FV-C	FSs	YES

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High Speed

Input-Output Rail-to-Rail Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix		
BU7261/ BU7261S	1	1.8 to 5.5	250	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.1	2.0	-40 to +85/ -40 to +105	SSOP5	G		
BU7262/ BU7262S	2	1.8 to 5.5	550	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.1	2.0	-40 to +85/ -40 to +105	SOP8	F		
															MSOP8	FVM		
															VSON008X2030	NUX		
BU7264/ BU7264S	4	1.8 to 5.5	1,100	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.1	2.0	-40 to +85/ -40 to +105	SOP14	F		
BU7291/ BU7291S	1	2.4 to 5.5	470	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	3.0	2.8	-40 to +85/ -40 to +105	SSOP5	G		
BU7294/ BU7294S	4	2.4 to 5.5	2,000	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	3.0	2.8	-40 to +85/ -40 to +105	SOP14	F		
														-40 to +85/ -40 to +105	SSOP-B14	FV		
BU7295/ BU7295S	1	1.8 to 5.5	150	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.0	1.0	-40 to +85/ -40 to +105	HVSOF5	HFV		
BU7255/ BU7255S	1	2.4 to 5.5	540	1.0	0.001	4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	3.4	4.0	-40 to +85/ -40 to +105	HVSOF5	HFV		
BD7561/ BD7561S	1	5.0 to 14.5	440	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.9	1.0	-40 to +85/ -40 to +105	SSOP5	G		
BD7562/ BD7562S	2	5.0 to 14.5	900	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.9	1.0	-40 to +85/ -40 to +105	SOP8	F		
															MSOP8	FVM		

Automotive Input-Output Rail-to-Rail Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix		
BU7264Y	4	1.8 to 5.5	1,100	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.1	2.0	-40 to +125	SSOP-B14	FV-C		

Ground Sense Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix		
BA3472	2	3 to 36	4.0	1.0	100	30	V_{EE} to $V_{CC}-2.0$	$V_{EE}+0.3$ to $V_{CC}-1.0$	100	97	97	10.0	4.0	-40 to +85	SOP8	F		
															SSOP-B8	FV		
															SOP-J8	FJ		
BA3472R														-40 to +105	MSOP8	FVM		
BA3472Y														-40 to +125	MSOP8	FVM		
BA3474	4	3 to 36	8.0	1.0	100	30	V_{EE} to $V_{CC}-2.0$	$V_{EE}+0.3$ to $V_{CC}-1.0$	100	97	97	10.0	4.0	-40 to +85	SOP8	F-LB		
															SOP14	F		
															SSOP-B14	FV		
															TSSOP-B14J	FVJ		
BA3474R														-40 to +105	SSOP-B14	FV		
BU7461/ BU7461S	1	1.7 to 5.5	0.15	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.0	1.0	-40 to +85/ -40 to +105	SSOP5	G		
BU7462/ BU7462S	2	1.7 to 5.5	0.3	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.0	1.0	-40 to +85/ -40 to +105	SOP8	F		
															MSOP8	FVM		
															VSON008X2030	NUX		
BU7464/ BU7464S	4	1.7 to 5.5	0.6	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	1.0	1.0	-40 to +85/ -40 to +105	SOP14	F		
BU7465/ BU7465S	1	1.7 to 5.5	0.12	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	1.0	1.2	-40 to +85/ -40 to +105	HVSOF5	HFV		
BU7481/ BU7481S	1	1.8 to 5.5	0.42	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	3.2	2.8	-40 to +85/ -40 to +105	SSOP5	G		
BU7485/ BU7485S	1	3.0 to 5.5	1.5	1.0	0.001	8	V_{SS} to $V_{DD}-1.4$	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	10.0	10.0	-40 to +85/ -40 to +105	SSOP5	G		
BU7486/ BU7486S	2	3.0 to 5.5	3.0	1.0	0.001	8	V_{SS} to $V_{DD}-1.4$	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	10.0	10.0	-40 to +85/ -40 to +105	SOP8	F		
															SSOP-B8	FV		
															MSOP8	FVM		
BU7487/ BU7487S	4	3.0 to 5.5	6.0	1.0	0.001	8	V_{SS} to $V_{DD}-1.4$	$V_{SS}+0.1$ to $V_{DD}-0.1$	105	60	80	10.0	10.0	-40 to +85/ -40 to +105	SOP14	F		
														-40 to +85/ -40 to +105	SSOP-B14	FV		
BU7495/ BU7495S	1	1.8 to 5.5	0.65	1.0	0.001	7	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	5.0	4.0	-40 to +85/ -40 to +105	HVSOF5	HFV		

Automotive Ground Sense Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BA3472Y/ BA3472W	2	3 to 36	4.0	1.0 (Max: 10.0)/ 1.0 (Max: 7.5)	100	30	V_{EE} to $V_{CC}-2.0$	$V_{EE}+0.3$ to $V_{CC}-1.0$	100	97	97	10	4.0	-40 to +125	SOP8/-	F-C	FSs	YES
															SSOP-B8	FV-C		YES
															MSOP8/-	FVM-C		YES
BA3474Y/ BA3474W	4	3 to 36	8.0	1.0 (Max: 10.0)/ 1.0 (Max: 7.5)	100	30	V_{EE} to $V_{CC}-2.0$	$V_{EE}+0.3$ to $V_{CC}-1.0$	100	97	97	10	4.0	-40 to +125	SSOP-B14	FV-C	-/FSs	YES
															SSOP-B14			YES

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Low Power Consumption

Input-Output Rail-to-Rail Operational Amplifiers																															
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix															
BU7205/ BU7205S	1	1.8 to 5.5	0.4	1.0	0.001	1.2	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.0025	0.0025	-40 to +85/ -40 to +105	HVSOF5	HFV															
BU7241/ BU7241S	1	1.8 to 5.5	70	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.4	0.9	-40 to +85/ -40 to +105	SSOP5	G															
BU7242/ BU7242S	2	1.8 to 5.5	180	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.4	0.9	-40 to +85/ -40 to +105	SOP8	F															
															MSOP8	FVM															
															VSON008X2030	NUX															
BU7244/ BU7244S	4	1.8 to 5.5	360	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.4	0.9	-40 to +85/ -40 to +105	SOP14	F															
															SSOP-B14	FV															
BU7245/ BU7245S	1	1.8 to 5.5	5	1.0	0.001	4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.035	0.09	-40 to +85/ -40 to +105	HVSOF5	HFV															
BU7265/ BU7265S	1	1.8 to 5.5	0.35	1.0	0.001	2.4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.0024	0.004	-40 to +85/ -40 to +105	SSOP5	G															
BU7266/ BU7266S	2	1.8 to 5.5	0.7	1.0	0.001	2.4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.0024	0.004	-40 to +85/ -40 to +105	SOP8	F															
															SSOP-B8	FV															
															MSOP8	FVM															
BU7271/ BU7271S	1	1.8 to 5.5	8.6	1.0	0.001	4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	0.05	0.09	-40 to +85/ -40 to +105	SSOP5	G															
BU7275/ BU7275S	1	1.8 to 5.5	40	1.0	0.001	8	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.3	0.6	-40 to +85/ -40 to +105	HVSOF5	HFV															
BD12730	1	1.8 to 5.5	320	1.0	50	5	GND to V_{+}	0.1 to $V_{+}-0.1$	85	70	85	0.4	1.0	-40 to +85	SSOP5	G															
BD12732	2	1.8 to 5.5	580	1.0	50	5	GND to V_{+}	0.1 to $V_{+}-0.1$	85	70	85	0.4	1.0	-40 to +85	SOP8	F															
															SOP-J8	FJ															
															SSOP-B8	FV															
															TSSOP-B8J	FVJ															
															MSOP8	FVM															
															TSSOP-B8	FVT															
BD12734	4	1.8 to 5.5	1,200	1.0	50	5	GND to V_{+}	0.1 to $V_{+}-0.1$	85	70	85	0.4	1.0	-40 to +85	SOP14	F															
															SOP-J14	FJ															
															SSOP-B14	FV															
															TSSOP-B14J	FVJ															
															BD7541/ BD7541S	1	5.0 to 14.5	180	1.0	0.001	4	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.3	0.6	-40 to +85/ -40 to +105	SSOP5	G
																														BD7542/ BD7542S	2
MSOP8	FVM																														
LMR931	1	1.8 to 5.0	80	1.0	5	28	V_{SS} to V_{DD}	$V_{SS}+0.04$ to $V_{DD}-0.05$	100	94	85	0.4	1.4	-40 to +85	SSOP5	G															
LMR932	2	1.8 to 5.0	135	1.0	5	28	V_{SS} to V_{DD}	$V_{SS}+0.04$ to $V_{DD}-0.05$	100	94	85	0.4	1.4	-40 to +85	SOP8	F															
															SOP-J8	FJ															
															SSOP-B8	FV															
															TSSOP-B8J	FVJ															
															MSOP8	FVM															
															TSSOP-B8	FVT															
LMR934	4	1.8 to 5.0	250	1.0	5	28	V_{SS} to V_{DD}	$V_{SS}+0.04$ to $V_{DD}-0.05$	100	94	85	0.4	1.4	-40 to +85	SOP14	F															
															SOP-J14	FJ															
															SSOP-B14	FV															
															TSSOP-B14J	FVJ															
LMR981	1	1.8 to 5.0	80	1.0	5	28	V_{SS} to V_{DD}	$V_{SS}+0.04$ to $V_{DD}-0.05$	100	94	85	0.4	1.4	-40 to +85	SSOP6	G															
LMR982	2	1.8 to 5.0	135	1.0	5	28	V_{SS} to V_{DD}	$V_{SS}+0.04$ to $V_{DD}-0.05$	100	94	85	0.4	1.4	-40 to +85	MSOP10	FVM															

Low Power Consumption

Ground Sense Operational Amplifiers																
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix
BU7411/ BU7411S	1	1.6 to 5.5	0.35	1.0	0.001	2.4	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.0024	0.004	-40 to +85/ -40 to +105	SSOP5	G
BU7421/ BU7421S	1	1.7 to 5.5	8.5	1.0	0.001	4	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	0.05	0.09	-40 to +85/ -40 to +105	SSOP5	G
BU7441/ BU7441S	1	1.7 to 5.5	50	1.0	0.001	6	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.3	0.6	-40 to +85/ -40 to +105	SSOP5	G
BU7442/ BU7442S	2	1.7 to 5.5	100	1.0	0.001	6	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.3	0.6	-40 to +85/ -40 to +105	SOP8	F
															MSOP8	FVM
															VSON008X2030	NUX
BU7444S	4	1.7 to 5.5	200	1.0	0.001	6	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	95	60	80	0.3	0.6	-40 to +85/ -40 to +105	SOP14	F
BU7445/ BU7445S	1	1.7 to 5.5	40	1.0	0.001	8	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	0.25	0.4	-40 to +85/ -40 to +105	HVSOF5	HFV
BU7475/ BU7475S	1	1.7 to 5.5	9	1.0	0.001	7	V_{SS} to $V_{DD}-1.2$	$V_{SS}+0.1$ to $V_{DD}-0.1$	100	60	80	0.05	0.1	-40 to +85/ -40 to +105	HVSOF5	HFV
BD1321	1	2.7 to 5.5	130	0.1	15	70	V_{EE} to $V_{CC}-0.8$	$V_{EE}+0.08$ to $V_{CC}-0.04$	110	90	90	1.0	3.0	-40 to +85	SSOP5	G
LMR321	1	2.7 to 5.5	130	0.1	15	70	V_{EE} to $V_{CC}-0.8$	$V_{EE}+0.08$ to $V_{CC}-0.04$	110	90	90	1.0	3.0	-40 to +85	SSOP5	G
LMR324	4	2.7 to 5.5	410	1.0	15	70	V_{EE} to $V_{CC}-0.8$	$V_{EE}+0.08$ to $V_{CC}-0.04$	110	90	90	1.0	3.0	-40 to +85	SOP14	F
															SOP-J14	FJ
															SSOP-B14	FV
															TSSOP-B14J	FWJ
LMR341	1	2.7 to 5.5	100	0.25	0.001	24	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.06$ to $V_{DD}-0.06$	103	80	85	1.0	2.0	-40 to +85	SSOP6	G
LMR342	2	2.7 to 5.5	200	0.25	0.001	24	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.06$ to $V_{DD}-0.06$	103	80	85	1.0	2.0	-40 to +85	SOP8	F
															SOP-J8	FJ
															SSOP-B8	FV
															TSSOP-B8J	FWJ
															MSOP8	FVM
TSSOP-B8	FVT															
LMR344	4	2.7 to 5.5	400	0.25	0.001	24	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.06$ to $V_{DD}-0.06$	103	80	85	1.0	2.0	-40 to +85	SOP14	F
															SOP-J14	FJ
															TSSOP-B14J	FWJ
LMR358	2	2.7 to 5.5	210	0.1	15	70	V_{EE} to $V_{CC}-0.8$	$V_{EE}+0.08$ to $V_{CC}-0.04$	110	90	90	1.0	3.0	-40 to +85	SOP8	F
															SOP-J8	FJ
															SSOP-B8	FV
															TSSOP-B8J	FWJ
															MSOP8	FVM
TSSOP-B8	FVT															
LMR821	1	2.5 to 5.5	280	1.0	30	16	V_{SS} to $V_{DD}-0.9$	$V_{SS}+0.12$ to $V_{DD}-0.1$	100	85	85	2.0	5.0	-40 to +85	SSOP5	G
LMR822	2	2.5 to 5.5	560	1.0	30	16	V_{SS} to $V_{DD}-0.9$	$V_{SS}+0.12$ to $V_{DD}-0.1$	100	85	85	2.0	5.0	-40 to +85	SOP8	F
															SOP-J8	FJ
															SSOP-B8	FV
															TSSOP-B8J	FWJ
															MSOP8	FVM
TSSOP-B8	FVT															
LMR824	4	2.5 to 5.5	1,120	1.0	30	16	V_{SS} to $V_{DD}-0.9$	$V_{SS}+0.12$ to $V_{DD}-0.1$	100	85	85	2.0	5.0	-40 to +85	SOP14	F
TSSOP-B14J	FWJ															
TSSOP-B14J	FWJ															
TLR341	1	1.8 to 5.5	70	0.3	0.001	8	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.055$ to $V_{DD}-0.05$	100	90	95	1.2	2.2	-40 to +85	SSOP6	G
TLR342	2	1.8 to 5.5	150	0.3	0.001	8	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.055$ to $V_{DD}-0.05$	100	85	95	1.0	1.2	-40 to +85	SOP8	F
															SOP-J8	FJ
															TSSOP-B8J	FWJ
															TSSOP-B8	FVT
TLR344	4	1.8 to 5.5	300	0.3	0.001	8	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.055$ to $V_{DD}-0.05$	100	90	95	1.2	2.2	-40 to +85	SOP14	F
															SOP-J14	FJ
															TSSOP-B14J	FWJ

Automotive Input-Output Rail-to-Rail Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BU7241Y	1	1.8 to 5.5	70	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.05$ to $V_{DD}-0.05$	100	70	80	0.4	1.0	-40 to +125	SSOP5	G-C	FSs	YES
BU7242Y	2	1.8 to 5.5	180	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.05$ to $V_{DD}-0.05$	100	70	80	0.4	1.0	-40 to +125	MSOP8	FVM-C	FSs	YES
BU7244Y	4	1.8 to 5.5	360	1.0	0.001	10	V_{SS} to V_{DD}	$V_{SS}+0.05$ to $V_{DD}-0.05$	100	70	80	0.4	1.0	-40 to +125	SSOP-B14	FV-C	FSs	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Low Noise

Output Rail-to-Rail Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Input Referred Noise Voltage (μ Vrms)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix		
BA4510	2	± 1 to ± 3.5	5.0	1.0	80	0.7	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+0.1$ to $V_{CC}-0.1$	90	80	80	5.0	10.0	-20 to +75	SOP8	F		
														-40 to +75	SSOP-B8	FV		
BA2107	1	± 1 to ± 7	1.8	1.0	150	0.9	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+0.1$ to $V_{CC}-0.1$	80	74	80	4.0	12.0	-40 to +85	MSOP8	FVM		
BA2115	2	± 1 to ± 7	3.5	1.0	150	0.9	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+0.1$ to $V_{CC}-0.1$	80	74	80	4.0	12.0	-40 to +85	SSOP5	G		
														-40 to +85	SOP8	F		
														-40 to +85	MSOP8	FVM		
Automotive Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Input Referred Noise Voltage (μ Vrms)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BA4558Y	2	± 4 to ± 15	3.0	0.5	60	1.8	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	1.0	2.0	-40 to +105	SOP8	F-M	FSs	YES
															SSOP-B8	FV-M	FSs	YES
															MSOP8	FVM-M	FSs	YES
BA4560Y	2	± 4 to ± 15	3.0	0.5	50	1.0	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	4.0	4.0	-40 to +105	SOP8	F-M	FSs	YES
															SSOP-B8	FV-M	FSs	YES
															MSOP8	FVM-M	FSs	YES
BA4580Y	2	± 2 to ± 16	6.0	0.3	100	0.8	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	110	110	5.0	10.0	-40 to +105	SOP8	F-M	FSs	YES
BA4584Y	4	± 2 to ± 16	11.0	0.3	100	0.8	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	110	110	5.0	10.0	-40 to +105	MSOP8	FVM-M	FSs	YES
														-40 to +105	SSOP-B14	FV-M	FSs	YES
Dual Supply Voltage Operational Amplifiers																		
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Input Referred Noise Voltage (μ Vrms)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix		
BA4558/ BA4558R	2	± 4 to ± 15	3.0	0.5	60	1.8	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	1.0	2.0	-40 to +85/ -40 to +105	SOP8	F		
															SOP-J8	FJ		
															SSOP-B8	FV		
															MSOP8	FVM		
BA4560/ BA4560R	2	± 4 to ± 15	4.0	0.5	50	1.0	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	4.0	10.0	-40 to +85/ -40 to +105	TSSOP-B8	FVT		
															SOP8	F		
															SOP-J8	FJ		
															SSOP-B8	FV		
BA4564R	4	± 4 to ± 15	6.0	0.5	50	1.0	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	4.0	4.0	-40 to +105	MSOP8	FVM		
BA15218	2	± 2 to ± 16	5.0	0.5	50	1.0	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+2.0$ to $V_{CC}-2.0$	110	90	90	3.0	10.0	-40 to +85	SSOP-B14	FV		
BA14741	4	± 2 to ± 18	3.0	1.0	60	2.0	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+2.5$ to $V_{CC}-2.5$	100	100	100	1.0	2.0	-40 to +85	SOP8	F		
BA4580R	2	± 2 to ± 16	6.0	0.3	100	0.8	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	110	110	5.0	5.0	-40 to +105	SOP14	F		
BA4584	4	± 2 to ± 16	12.0	0.3	100	0.8	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	110	110	5.0	5.0	-40 to +85	SOP8	F		
															SOP-J8	FJ		
															SSOP-B8	FV		
BA4584R	4	± 2 to ± 9.5	11.0	0.3	100	0.8	$V_{EE}+1.5$ to $V_{CC}-1.5$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	110	110	5.0	5.0	-40 to +105	TSSOP-B8	FVT		
LM4559	2	± 4 to ± 18	3.3	0.5	40	0.7	$V_{EE}+2.0$ to $V_{CC}-2.0$	$V_{EE}+1.5$ to $V_{CC}-1.5$	110	100	100	3.5	4.0	-40 to +85	SOP14	F		
															SSOP-B14	FV		
															SOP8	F		
															SOP-J8	FJ		
LM4565	2	± 4 to ± 18	4.5	0.5	70	0.6	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	100	100	5.0	10.0	-40 to +85	SSOP-B8	FV		
															TSSOP-B8	FVT		
															MSOP8	FVM		
															TSSOP-B8J	FVJ		

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Low Offset Voltage

Dual Supply Voltage Operational Amplifier																
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix
BA4564W	4	± 4 to ± 15	6.0	0.5	50	25	$V_{EE}+1.0$ to $V_{CC}-1.0$	$V_{EE}+1.0$ to $V_{CC}-1.0$	100	90	90	4.0	4.0	-40 to +105	SSOP-B14	FV
Input-Output Rail-to-Rail Operational Amplifier																
BD5291	1	1.7 to 5.5	0.65	0.1	0.001	6	V_{SS} to V_{DD}	$V_{SS}+0.1$ to $V_{DD}-0.1$	110	90	90	2.5	3.2	-40 to +85	SSOP5	G
														-40 to +85	VSOF5	FVE

High Performance

Ultra Low Noise Ground Sense Operational Amplifiers																	
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (μ V)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Input Referred Noise Voltage (nV/ \sqrt Hz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix
LMR1801	1	2.2 to 5.5	0.95	5 (Max: 900)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.05$ to $V_{DD}-0.05$	140	100	125	2.5	6.0	5.0	-40 to +125	SSOP5	G-LB
LMR1802	1	2.5 to 5.5	1.1	5 (Max: 450)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.05$ to $V_{DD}-0.05$	140	105	125	1.1	3.0	2.9	-40 to +125	HVSOF5	HFV-LB
LMR1803	1	2.2 to 5.5	1.0	5 (Max: 150)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.05$ to $V_{DD}-0.05$	140	100	110	2.5	6.0	5.0	-40 to +125	SSOP5	G-LB
High Precision and Input/Output Rail-to-Rail CMOS Operational Amplifier																	
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (μ V)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/ μ s)	Gain Bandwidth Product (MHz)	Operating Temperature ($^{\circ}$ C)	Package	Part No. Suffix	
New TLR377	1	2.5 to 5.5	0.585	1.7 (Max: 1500)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	HVSOF5	HFV-LB	

High Performance

High Speed Ground Sense Operational Amplifier

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix
LMR1701	1	2.7 to 5.5	9.6	1	0.0026	200	V_{SS} to $V_{DD}-0.9$	$V_{SS}+0.1$ to $V_{DD}-0.1$	120	80	86	80	150	-40 to +125	SSOP6	G-LB

Excellent EMI Immunity High Speed Ground Sense Operational Amplifiers (EMARMOUR™ series)

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix
Nano BD77501	1	7 to 15	1.3	4	0.001	7.5	V_{SS} to $V_{DD}-2.0$	$V_{SS}+0.25$ to $V_{DD}-0.25$	75	70	70	10	8	-40 to +85	SSOP5	G
Nano BD77502	2	7 to 15	2.6	4	0.001	7.5	V_{SS} to $V_{DD}-2.0$	$V_{SS}+0.25$ to $V_{DD}-0.25$	75	70	70	10	8	-40 to +85	MSOP8	FVM
Nano BD77504	4	7 to 15	5.2	4	0.001	7.5	V_{SS} to $V_{DD}-2.0$	$V_{SS}+0.25$ to $V_{DD}-0.25$	75	70	70	10	8	-40 to +85	SSOP-B14	FV

Automotive Ultra Low Noise Ground Sense Operational Amplifiers

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (μV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Input Referred Noise Voltage (nV/√Hz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
LMR1801Y	1	2.2 to 5.5	0.95	5 (Max: 950)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.05$ to $V_{DD}-0.05$	140	100	110	2.5	6.0	5	-40 to +125	SSOP5	G-C	FSs	YES
LMR1802Y	1	2.5 to 5.5	1.1	5 (Max: 450)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.05$ to $V_{DD}-0.05$	140	105	125	1.1	4.4	2.9	-40 to +125	SSOP5	G-C	FSs	YES
New LMR1803Y	1	2.2 to 5.5	1	5 (Max: 150)	0.0005	3.5	V_{SS} to $V_{DD}-1.0$	$V_{SS}+0.003$ to $V_{DD}-0.007$	140	100	110	2.5	6	5	-40 to +125	SSOP5	G-C	FSs	YES

Automotive Low Noise Input/Output Rail-to-Rail High Speed Operational Amplifier

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Input Referred Noise Voltage (nV/√Hz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
Nano BD7281Y	1	2.2 to 5.5	1.7	0.01 (Max: 2)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.010$ to $V_{DD}-0.010$	115	100	100	10	7	12	-40 to +125	SSOP5	G-C	FSs	YES

Automotive High Precision & Input/Output Rail-to-Rail CMOS Operational Amplifiers

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (μV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
TLR376Y	1	2.5 to 5.5	0.645	1.7 (Max: 550)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	SSOP5	G-C	FSs	YES
TLR377Y	1	2.5 to 5.5	0.645	1.7 (Max: 1300)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	SSOP5	G-C	FSs	YES
TLR2376Y	2	2.5 to 5.5	1.245	1.7 (Max: 550)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	MSOP8	FVM-C	FSs	YES
TLR2377Y	2	2.5 to 5.5	1.245	1.7 (Max: 1300)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	SOP-J8	FJ-C	FSs	YES
New TLR4376Y	4	2.5 to 5.5	2.49	1.7 (Max: 550)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	MSOP8	FVM-C	FSs	YES
New TLR4377Y	4	2.5 to 5.5	2.49	1.7 (Max: 1300)	0.0005	50	V_{SS} to V_{DD}	$V_{SS}+0.015$ to $V_{DD}-0.025$	137	100	95	2	4	-40 to +125	SOP-J8	FJ-C	FSs	YES

Automotive High Speed Ground Sense Operational Amplifier

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Output Voltage (V)	Voltage Gain (dB)	CMRR (dB)	PSRR (dB)	Slew Rate (V/μs)	Gain Bandwidth Product (MHz)	Operating Temperature (°C)	Package	Part No. Suffix	Automotive Grade AEC-Q100
LMR1701Y	1	2.7 to 5.5	9.6	1	0.0026	200	V_{SS} to $V_{DD}-0.9$	$V_{SS}+0.1$ to $V_{DD}-0.1$	120	80	86	80	150	-40 to +125	SSOP6	G-C	YES

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Comparators

Standard

Open-Collector Comparators

Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix
BA2901/BA2901S	4	2 to 36	0.8	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125/ -40 to +105	SOP14 SSOP-B14	F FV
BA2901Y	4	2 to 36	0.8	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SOP14	F-LB
BA2903/BA2903S	2	2 to 36	0.6	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125/ -40 to +105	SOP8 SSOP-B8 MSOP8	F FV FVM
BA2903Y	2	2 to 36	0.6	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SOP8	F-LB
BA8391	1	2 to 36	0.3	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +85	SSOP5	G
LM2901	4	3 to 32	1.2	1	50	16	V_{EE} to $V_{CC}-1.5$	120	1.0	-40 to +125	SOP14	F
											SOP-J14	FJ
											SSOP-B14	FV
											TSSOP-B14J	FVJ
LM2903	2	3 to 32	0.6	1	50	16	V_{EE} to $V_{CC}-1.5$	120	1.0	-40 to +125	SOP8	F
											SOP-J8	FJ
											SSOP-B8	FV
											TSSOP-B8J	FVJ
											MSOP8	FVM
TSSOP-B8	FVT											
LM339	4	3 to 32	1.2	1	50	16	V_{EE} to $V_{CC}-1.5$	120	1.0	-40 to +85	SOP14	F
											SOP-J14	FJ
											SSOP-B14	FV
											TSSOP-B14J	FVJ
LM393	2	3 to 32	0.6	1	50	16	V_{EE} to $V_{CC}-1.5$	120	1.0	-40 to +85	SOP8	F
											SOP-J8	FJ
											SSOP-B8	FV
											TSSOP-B8J	FVJ
											MSOP8	FVM
TSSOP-B8	FVT											

Automotive Open-Collector Comparators														
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BA2903Y	2	2 to 36	0.6	2 (Max: 4)	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SOP8	F-C	FSs	YES
											SSOP-B8	FV-C	FSs	YES
BA2901Y	4	2 to 36	0.8	2 (Max: 4)	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	MSOP8	FVM-C	FSs	YES
											SOP14	F-C	FSs	YES
BA2903Y	2	2 to 36	0.6	2 (Max: 7)	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SSOP-B14	FV-C	FSs	YES
											SOP8	F-M	FSs	YES
BA2901Y	4	2 to 36	0.8	2 (Max: 7)	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	MSOP8	FVM-M	FSs	YES
											SOP14	F-M	FSs	YES
											SSOP-B14	FV-M	FSs	YES

Automotive Excellent EMI Immunity Open-Collector Comparators (EMARMOUR™ series)														
Part No.	ch	Supply Voltage (V)	Circuit Current (mA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BA82903Y	2	2 to 36	0.6	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SOP8	F-C	FSs	YES
											MSOP8	FVM-C	FSs	YES
BA82901Y	4	2 to 36	0.8	2	50	16	V_{EE} to $V_{CC}-1.5$	100	1.3	-40 to +125	SOP14	F-C	FSs	YES
											SSOP-B14	FV-C	FSs	YES
LM2901EY	4	3 to 32	1.2	2	50	16	V_{EE} to $V_{CC}-1.5$	120	1.3	-40 to +150	SSOP-B14	FV-C	FSs	YES
LM2903EY	2	3 to 32	0.6	2	50	16	V_{EE} to $V_{CC}-1.5$	120	1.3	-40 to +150	SOP-J8	FJ-C	FSs	YES

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High Speed

Push-Pull Comparators												
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix
BU7251/ BU7251S	1	1.8 to 5.5	15	1	0.001	6	V_{SS} to V_{DD}	90	0.55	-40 to +85/ -40 to +105	SSOP5	G
BU7252/ BU7252S	2	1.8 to 5.5	35	1	0.001	6	V_{SS} to V_{DD}	90	0.55	-40 to +85/ -40 to +105	SOP8	F
											MSOP8	FVM
BU5265/ BU5265S	1	1.8 to 5.5	22	1	0.001	3.5	V_{SS} to V_{DD}	90	0.5	-40 to +85/ -40 to +105	HVSOF5	HFV

Open-Drain Comparators												
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix
BU7250/ BU7250S	1	1.8 to 5.5	15	1	0.001	6	V_{SS} to V_{DD}	90	0.75	-40 to +85/ -40 to +105	SSOP5	G
BU7253/ BU7253S	2	1.8 to 5.5	35	1	0.001	6	V_{SS} to V_{DD}	90	0.75	-40 to +85/ -40 to +105	SOP8	F

Low Power Consumption

Push-Pull Comparators												
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix
BU7231/ BU7231S	1	1.8 to 5.5	5	1	0.001	6	V_{SS} to V_{DD}	90	1.7	-40 to +85/ -40 to +105	SSOP5	G
BU7232/ BU7232S	2	1.8 to 5.5	10	1	0.001	6	V_{SS} to V_{DD}	90	1.7	-40 to +85/ -40 to +105	SOP8	F
											MSOP8	FVM
BU5255/ BU5255S	1	1.8 to 5.5	6.5	1	0.001	3.5	V_{SS} to V_{DD}	90	1.6	-40 to +85/ -40 to +105	HVSOF5	HFV

Automotive Push-Pull Comparator														
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BU7232Y	2	1.8 to 5.5	10	1	0.001	7	V_{SS} to V_{DD}	100	1.7	-40 to +125	MSOP8	FVM-C	FSs	YES

Open-Drain Comparators												
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix
BU7230/ BU7230S	1	1.8 to 5.5	5	1	0.001	6	V_{SS} to V_{DD}	90	1.8	-40 to +85/ -40 to +105	SSOP5	G
BU7233/ BU7233S	2	1.8 to 5.5	10	1	0.001	6	V_{SS} to V_{DD}	90	1.8	-40 to +85/ -40 to +105	SOP8	F

Automotive Open-Drain Comparator														
Part No.	ch	Supply Voltage (V)	Circuit Current (μA)	Input Offset Voltage (mV)	Input Bias Current (nA)	Output Current (mA)	Input Voltage (V)	Voltage Gain (dB)	Response Time (μs)	Operating Temperature (°C)	Package	Part No. Suffix	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BU7233Y	2	1.8 to 5.5	10	1	0.001	7	V_{SS} to V_{DD}	100	1.8	-40 to +125	SOP8	F-C	FSs	YES

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Clocks & Timers

High-performance Clock Generator ICs

P.20

CR Control Timer IC

P.20

High-performance Clock Generator ICs

Clock Generators for Digital Cameras

Part No.	Supply Voltage (V)	Reference Frequency (MHz)	Video Clock (The output which can be selected) (MHz)	CCD Clock (The output which can be selected) (MHz)	USB Clock (MHz)	Jitter 1 σ Typ (ps)	Package
BU2394KN	3.0 to 3.6	14.318182/ 28.636363	14.318182/ 17.734450	135.000000/ 108.000000/ 98.181818/ 110.000000	48.008022	30	VQFN20
BU2396KN	3.0 to 3.6	12.000000	27.000000	24.000000/ 30.000000/ 36.000000	12.000000	50	VQFN20

DVD-Video Reference Clock Generators for A/V Equipments

Part No.	Supply Voltage (V)	Reference Frequency (MHz)	Output Frequency (MHz)										Jitter 1 σ Typ (ps)	Long-term Jitter P-P Typ (ns)	Package
			DVD-Video Clock			DVD, Audio, CD Clock (The output which can be switched)				System Clock					
			Video1	Video2	Video3	768fs	512fs	384fs	Other	768fs	384fs	Other			
BU2360FV	2.7 to 3.6	27.0000	27.0000	—	—	—	24.5760/ 22.5792	—	—	33.8688	—	—	70	2.5 (Audio)	SSOP-B16
BU2362FV	2.7 to 3.6	27.0000	27.0000	—	—	—	24.5760/ 22.5792	—	36.8640/ 16.9344	33.8688	16.9344	36.864	70	12 (Audio)	SSOP-B16

Clock Generator with Built-in VCXO for A/V Equipments

Part No.	Supply Voltage (V)	VCXO (Reference Clock)	Clock Buffer	PLL Output Frequency (MHz)										Jitter 1 σ Typ (ps)	C/N Typ (dB)	Package
				DVD-Video Clock			DVD, Audio, CD Clock (The output which can be switched)				System Clock					
				Video1	Video2	Video3	768fs				768fs	512fs	384fs			
BU3087FV	3.135 to 3.465	Tuning range 27MHz \pm 105ppm Typ	—	27.000000	—	74.250000 Modulation/ \pm 0.25% \pm 0.50% \pm 0.75% \pm 1.00%	—	—	—	—	—	—	—	30	HD-Video -70	SSOP-B16

Clock Generators for Digital Cameras: Three types of clocks generated-CCD, USB, and a Video
 DVD-Video Reference Clock Generators for A/V Equipments: DVD/CD-Audio, DVD-Video clock generation using the DVD-Video reference clock
 Clock Generator with Built-in VCXO for A/V Equipments: VCXO is Built-in with high-precision external synchronization

CR Control Timer IC

CR Control Timer IC

Part No.	Supply Voltage (V)	PWM Frequency (Hz)	Duty (%)	Circuit Current (mA)	Function	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD9555FVM-C	4.5 to 42.0	1 to 10k	1 to 99	1	PWM/Duty 100% Switching terminal	-40 to +125	MSOP8	FSs	YES

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Switch & IPD & Multiplexer & Logic			
Automotive Standard Logic ICs	P.21	Standard Logic ICs	P.21
Serial-in/Parallel-out Drivers	P.22	USB Switch ICs	P.22
IPD (Intelligent Power Device)	P.22		

Automotive Standard Logic ICs

Logic Gate (Single type)									
Type	Package/Part No.		Function	Supply Voltage (V)	H Input Voltage (Min) (V)	L Input Voltage (Min) (V)	Operating Temperature (°C)	Output Delay Time $V_{CC}=4.5V$ to $5.5V$ (Max) (ns)	Automotive Grade AEC-Q100
	SSOP5	SSOP6							
BD7LS00	BD7LS00G-C	—	Single 2-input NAND gate	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS02	BD7LS02G-C	—	Single 2-input NOR gate	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS04	BD7LS04G-C	—	Single Inverter	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS08	BD7LS08G-C	—	Single 2-input AND gate	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS07	BD7LS07G-C	—	Single Buffer with Open-drain	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	9.0	YES
BD7LS14	BD7LS14G-C	—	Single Schmitt Trigger Inverter	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	11.0	YES
BD7LS17	BD7LS17G-C	—	Single Schmitt Trigger Buffer	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	11.0	YES
BD7LS32	BD7LS32G-C	—	Single 2-input OR gate	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS34	BD7LS34G-C	—	Single Buffer	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS125	BD7LS125G-C	—	Single 3-state Buffer	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	10.0	YES
BD7LS97	—	BD7LS97G-C	Configurable Function gate	1.65 to 5.5	$V_{CC} \times 0.7$	$V_{CC} \times 0.3$	-40 to +125	13.0	YES

Standard Logic ICs

Analog Switch/Analog Switch (Single type)											
Type	Function	Supply Voltage (V)	Input Voltage (V)		ON Resistance (Max) (Ω)	Control-Output Propagation Delay Time (Typ) (ns)	IN-Out Propagation Delay Time (Typ) (ns)	Max Propagation Frequency (Typ) (MHz)	Package/Part No.		
			H Level (Min)	L Level (Max)					SOP14	SSOP-B14	SSOP5
BU4066BC	Quad Analog Switch	3 to 18	3.5	1.5	950	60	20	—	BU4066BCF	BU4066BCFV	—
BU4S66	Single Analog Switch	3 to 16	3.5	1.5	950	80	15	—	—	—	BU4S66G2

Multiplexer										
Type	Function	Supply Voltage (V)	Input Voltage (V)		ON Resistance (Max) (Ω)	Control-Output Propagation Delay Time (Typ) (ns)	IN-Out Propagation Delay Time (Typ) (ns)	Max Propagation Frequency (Typ) (MHz)	Package/Part No.	
			H Level (Min)	L Level (Max)					SOP16	SSOP-B16
BU4051BC	Analog Multiplexer/Demultiplexer (8 \leftrightarrow 1)	3 to 18	3.5	1.5	950	170	15	20	BU4051BCF	BU4051BCFV
BU4052BC	Dual Analog Multiplexer/Demultiplexer (4 \leftrightarrow 1)	3 to 18	3.5	1.5	950	170	15	20	BU4052BCF	BU4052BCFV
BU4551B	Quad Analog Multiplexer/Demultiplexer (2 \leftrightarrow 1)	3 to 16	3.5	1.5	1,100	360	35	15	BU4551BF	BU4551BFV

Logic Gates									
Type	Function	Supply Voltage (V)	Input Voltage (V)		Hysteresis Voltage (V)	Output Voltage $I_{OUT}=1\mu A$ (V)		Propagation Delay Time (Typ) (ns)	Package/Part No.
			H Level (Min)	L Level (Max)		H Level (Min)	L Level (Max)		
BU4030B	Quad Exclusive OR Gate	3 to 16	3.5	1.5	—	4.95	0.05	90	BU4030BF

Logic Gates (Single type)									
Type	Function	Supply Voltage (V)	Input Voltage (V)		Hysteresis Voltage (V)	Output Voltage $I_{OUT}=1\mu A$ (V)		Propagation Delay Time (Typ) (ns)	Package/Part No.
			H Level (Min)	L Level (Max)		H Level (Min)	L Level (Max)		
BU4S01	Single NOR Gate	3 to 16	3.5	1.5	—	4.95	0.05	85	BU4S01G2
BU4S11	Single NAND Gate	3 to 16	3.5	1.5	—	4.95	0.05	85	BU4S11G2
BU4SU69	Single Unbuffer Inverter	3 to 16	4.0	1.0	—	4.95	0.05	55	BU4SU69G2
BU4S71	Single OR Gate	3 to 16	3.5	1.5	—	4.95	0.05	90	BU4S71G2
BU4S81	Single AND Gate	3 to 16	3.5	1.5	—	4.95	0.05	90	BU4S81G2
BU4S584	Single Schmitt Trigger	3 to 16	3.5	1.5	0.15 to 0.60	4.95	0.05	125	BU4S584G2

Function Logic												
Type	Function	Supply Voltage (V)	Input Voltage (V)		Output Voltage $I_{OUT}=1\mu A$ (V)		Propagation Delay Time (Typ) (ns)	Max Clock Frequency (Typ) (MHz)	Set up Time (Typ) (ns)	Hold Time (Typ) (ns)	Package/Part No.	
			H Level (Min)	L Level (Max)	H Level (Min)	L Level (Max)					SOP16	SSOP-B16
BU4094BC	8-Stage Shift/Store Register (3-State)	3 to 18	3.5	1.5	4.95	0.05	420	2.5	20	10	BU4094BCF	BU4094BCFV

Serial-in/Parallel-out Drivers

Serial/Parallel 2-input Drivers							
Part No.	Serial Number of Input	Parallel Number of Output	Supply Voltage (V)	Max Output Current (mA)	Max Output Voltage (V)	Output type	Package
BU2098F	2	8	2.7 to 5.5	25	15	Open drain	SOP16
BU2090F		12	2.7 to 5.5	25	25	Open drain	SOP16
BU2090FS		12	2.7 to 5.5	25	25	Open drain	SSOP-A16
Serial/Parallel 4-input Drivers							
Part No.	Serial Number of Input	Parallel Number of Output	Supply Voltage (V)	Max Output Current (mA)	Max Output Voltage (V)	Output type	Package
BU2050F	4	8	4.5 to 5.5	25	5.5	CMOS	SOP14
BU2092F		12	2.7 to 5.5	25	25	Open drain	SOP18
BU2092FV		12	2.7 to 5.5	25	25	Open drain	SSOP-B20
BU2099FV		12	2.7 to 5.5	25	25	Open drain	SSOP-B20
BU2152FS		24	2.7 to 5.5	25	5.5	CMOS	SSOP-A32

Serial/Parallel 2-input Drivers: 2-wires Interface CLOCK, DATA
 Serial/Parallel 4-input Drivers: 4-wires Interface CLOCK, DATA, LATCH, ENABLE

USB Switch ICs

DP type (Double POLE)													
Part No.	Supply Voltage (V)		USB Switch (ch)	UART Switch (ch)	Circuit Current (μA)	USB Switch ON Resistance (Ω)	USB Switch ON Capacitance (pF)	Package					
	USB	UART											
BD11600NUX	2.5 to 5.5	—	1	—	18	3	6	VSON010X3020					
BD11603MWX	2.5 to 5.5	—	2	—	18	3	7	USON016X3315					
BD11601NUX	2.5 to 5.5	—	1	—	18	2.5	6	VSON008X2020					
BD11670GWL	3.8 to 28.0	—	1	—	26	5	6	UCSP50L1C					
Built-in OVP Micro USB Switch with USB2.0, MHL™ and Audio													
Part No.	Supply Voltage (V)			USB/MHL Switch (ch)	MIC Switch (ch)	HP Switch (ch)	VBUS Signal Path (ch)	ID-CBUS Path (ch)	OTG-VBUS Voltage Path (ch)	Stand by Current (μA)	USB/MHL Switch ON Resistance (Ω)	USB/MHL Switch ON Capacitance (pF)	Package
	VBUS	VBAT	VDDIO										
BD91411GW	3.8 to 28.0	2.9 to 4.6	1.7 to 3.0	2	1 (mono)	1	1	1	1	6	5	6	UCSP75M3

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IPD (Intelligent Power Device)

High Side Switch

L-shaped Protection Smart High Side Switch											
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100		
BV1HD045EFJ-C	6.0 to 28.0	41.0	1	21	45	Self-restart	HTSOP-J8	FSs	YES		
BV2HC045EFU-C	6.0 to 19.0	41.0		21	45	Off-latch	HSSOP-C16	FSs	YES		
BV2HD045EFU-C	6.0 to 28.0	41.0		21	45	Self-restart	HSSOP-C16	FSs	YES		
BV2HD070EFU-C	6.0 to 28.0	41.0	2	10	70	Self-restart	HSSOP-C16	FSs	YES		
Smart High Side Switch											
Part No.	Voltage Range (V)	V _{DS} (Max) (V)		ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
New BV1HJC45EFJ-C	6.0 to 28.0	45.0	1	5.0	45	Self-restart	HTSOP-J8	FSs	YES		
New BV1HLC45EFJ-C	6.0 to 28.0	45.0		2.5	45	Self-restart	HTSOP-J8	FSs	YES		
BV1HD090FJ-C	4.5 to 36.0	45.0		2.7	90	Self-restart	SOP-J8	FSs	YES		
New BV1HJ180EFJ-C	4.0 to 28.0	45.0		2.0	180	Self-restart	HTSOP-J8	FSs	YES		
New BD1HCU50EFJ-C	4.0 to 18.0	44.5		0.8	500	Off-latch	HTSOP-J8	FSs	YES		
BD1HC500FVM-C	4.0 to 18.0	44.5		0.8	500	Off-latch	MSOP8	FSs	YES		
BD1HC500HFN-C	4.0 to 18.0	44.5		0.8	500	Off-latch	HSON8	FSs	YES		
New BD1HCU50EFJ-C	4.0 to 18.0	44.5		0.8	500	Self-restart	HTSOP-J8	FSs	YES		
BD1HD500FVM-C	4.0 to 18.0	44.5		0.8	500	Self-restart	MSOP8	FSs	YES		
BD1HD500HFN-C	4.0 to 18.0	44.5		0.8	500	Self-restart	HSON8	FSs	YES		
New BV2HM050EFV-C	6.0 to 28.0	45.0	2	5	50	Self-restart	HTSSOP-B20	FSs	YES		
Built-in current sensing function High Side Switch											
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100		
New BV1HB045EFJ-C	6.0 to 28.0	45	1	21	45	Self-restart	HTSOP-J8	FSs	YES		

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Low Side Switch

Smart Low Side Switch									
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BV1LA025EFJ-C	3.5 to 5.5	42	1	9.0	25	Self-restart	HTSOP-J8	FSs	YES
BV1LB025EFJ-C				35.0	25		HTSOP-J8	FSs	YES
BV1LB028FPJ-C	3.0 to 5.5			30.0	28		TO252-J3	FSs	YES
BV1LB045FPJ-C				18.0	45		TO252-J3	FSs	YES
BV1LB085FJ-C				13.0	85		SOP-J8	FSs	YES
BV1LB150FJ-C	6.5			150	SOP-J8		FSs	YES	
BV1LB300FJ-C	1.7			300	SOP-J8		FSs	YES	
BM2LB150FJ-C	2		6.5	150	SOP-J8		FSs	YES	
BM2LB300FJ-C			1.7	300	SOP-J8		FSs	YES	

Smart Low Side Switch with Error Flag									
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BV1LE040EFJ-C	3.0 to 5.5	40	1	17.5	40	Self-restart	HTSOP-J8	FSs	YES
New BV1LE080EFJ-C				9.0	80		HTSOP-J8	FSs	YES
BV1LC085EFJ-C		42		4.0	85		HTSOP-J8	FSs	YES
BV1LC105FJ-C				3.0	105		SOP-J8	FSs	YES
BV1LC150EFJ-C				3.5	150		HTSOP-J8	FSs	YES
New BV1LE160EFJ-C		5.0		160	HTSOP-J8		FSs	YES	
New BV1LE250EFJ-C		3.0		250	HTSOP-J8		FSs	YES	
BV1LC300EFJ-C		42		1.7	350		HTSOP-J8	FSs	YES
BV1LC300FJ-C				1.7	350		SOP-J8	FSs	YES
BD1LB500EFJ-C				3.5 to 5.5	0.8		350	HTSOP-J8	FSs
BD1LB500FVM-C	0.8	350	MSOP8		FSs	YES			
New BM2LE040FJ-C	3.0 to 5.5	40	2	17.5	40	Self-restart	SOP-J8	FSs	YES
New BM2LE080FJ-C				9.0	80		SOP-J8	FSs	YES
BM2LC105FJ-C		42		3.0	105		SOP-J8	FSs	YES
BM2LC120FJ-C				3.0	120		SOP-J8	FSs	YES
New BM2LE160FJ-C				5.0	160		SOP-J8	FSs	YES
New BM2LE250FJ-C		40		250	SOP-J8		FSs	YES	
BM2LC300FJ-C		42		1.7	350		SOP-J8	FSs	YES

Smart Low Side Switch Variable Slew Rate									
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BV1LF080EFJ-C	3.5 to 6.5	42	1	5.0	80	Self-restart	HTSOP-J8	FSs	YES

Multi Channel Smart Low Side Switch									
Part No.	Voltage Range (V)	V _{DS} (Max) (V)	ch	I _{ocp} (Min) (A)	ON Resistance (Typ) (mΩ)	Thermal Shut Down	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD8LB600FS-C	3.0 to 5.5 (Digital)/ 4.0 to 5.5 (Analog)	45	8	1.0	600	Self-restart	SSOP-A24	FSs	YES
BD8LA700EFV-C				0.5	700	Off-latch	HTSSOP-B24	FSs	YES

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Data Converter

D/A Converters

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A/D Converter

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D/A Converters

8bit

Standard 8bit Resolution

The converter allows the output voltage to be set with 8-bit precision (256 steps). These popular converters offer feature-rich, highly integrated capabilities.

Part No.	Supply Voltage (V)	ch	Current Consumption (mA)	DNL (LSB)	INL (LSB)	Load Current (mA)	Data Transfer Clock Frequency (MHz)	Input type	Data Latch Method	Package
BH2219FVM	2.7 to 5.5	2	0.4	±1.0	±1.5	±1.0	10	CMOS	LD	MSOP8
BH2227FV	2.7 to 5.5	4	0.8	±1.0	±1.5	±1.0	10	CMOS	CSB	SSOP-B14
BH2228FV	2.7 to 5.5	6	0.8	±1.0	±1.5	±1.0	10	CMOS	CSB	SSOP-B14
BH2226FV	2.7 to 5.5	8	1.1	±1.0	±1.5	±1.0	10	CMOS	CSB	SSOP-B16
BH2223FV	2.7 to 5.5	10	1.6	±1.0	±1.5	±1.0	10	CMOS	LD	SSOP-B16
BH2221FV	2.7 to 5.5	12	1.6	±1.0	±1.5	±1.0	10	CMOS	LD	SSOP-B20

10bit

10bit Resolution

Part No.	Supply Voltage (V)	ch	Current Consumption (mA)	DNL (LSB)	INL (LSB)	Load Current (mA)	Data Transfer Clock Frequency (MHz)	Input type	Data Latch Method	Package
BU2508FV	4.5 to 5.5	4	4.5	±1.0	±3.5	±2.0	10	TTL	LD	SSOP-B14
BU2507FV	4.5 to 5.5	6	4.5	±1.0	±3.5	±2.0	10	TTL	LD	SSOP-B14
BU2506FV	4.5 to 5.5	8	4.5	±1.0	±3.5	±2.0	10	TTL	LD	SSOP-B20
BU2505FV	4.5 to 5.5	10	4.5	±1.0	±3.5	±2.0	10	TTL	LD	SSOP-B20
BU22210MUV	2.7 to 5.5	10	1.2	±0.5	±2.0	±1.0	10	TTL	CSB	VQFN016V3030

A/D Converter

High Accuracy 12bit A/D Converter (Industrial Equipment Support)

Part No.	Supply Voltage (V)	ch	Current Consumption (mA)	DNL (LSB)	INL (LSB)	Sampling Rate (MSPS)	I/F	Architecture	Package
BU79100G-LA	2.7 to 5.25	1	1.6	-1.0 to +1.0	-1.1 to +1.0	1.0	SPI	SAR	SSOP6

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LVDS Interface ICs

27bit LVDS Transmitter 27 : 4 Serializer									
Part No.	Type	bits (bit)	Color Depth	Input Specification	Output Specification	Clock Frequency (MHz)	Supply Voltage (V)	Operating Temperature (°C)	Package
BU90T81	Serializer	27	8	LVC MOS	LVDS Single Link	20 to 112	1.65 to 1.95	-20 to +85	VBGA048W040
27bit LVDS Transmitter 27 : 8 Serializer									
BU90T82	Serializer	27	8	LVC MOS	LVDS Dual Link	10 to 174	1.62 to 1.98/ 1.62 to 3.60	-40 to +85	SBGA072T070A
35bit LVDS Transmitters 35 : 5 Serializer									
BU8254KVT	Serializer	35	10	LVC MOS	LVDS Single Link	8 to 112	3.0 to 3.6	-40 to +85	TQFP64V
BU8254GUW	Serializer	35	10	LVC MOS	LVDS Single Link	8 to 112	3.0 to 3.6	-20 to +85	VBGA099W060
56bit LVDS Transmitter 56 : 8 Serializer									
BU7988KVT	Serializer	56	8	LVC MOS	LVDS Dual Link	8 to 112	3.0 to 3.6	-20 to +85	TQFP100V
35bit LVDS Receiver 5 : 35 Deserializer									
BU90R104	Deserializer	35	10	LVDS Single Link	LVC MOS	8 to 112	2.3 to 3.6	-40 to +85	TQFP64V
56bit LVDS Receiver 8 : 56 Deserializer									
BU7985KVT	Deserializer	56	8	LVDS Dual Link	LVC MOS	20 to 112	3.0 to 3.6	-20 to +85	TQFP100V
70bit LVDS Distributor									
BU90RT102	Serializer/ Deserializer	70	10	LVDS	LVDS	20 to 135	3.0 to 3.6	-20 to +85	HTSSOP-C64
4bit LVDS Driver									
BU90LV047A	Driver	4	-	LVC MOS	LVDS	250	3.0 to 3.6	-40 to +85	SSOP-B16
4bit LVDS Receiver									
BU90LV048	Receiver	4	-	LVDS	LVC MOS	250	3.0 to 3.6	-40 to +85	SSOP-B16
4bit LVDS Transceiver									
BU90LV049A	Transceiver	4	-	LVC MOS/LVDS	LVC MOS/LVDS	250	3.0 to 3.6	-40 to +85	SSOP-B16

Multiple Input Switch Monitor LSIs

22ch Models											
Part No.	Supply Voltage (V)	Switch Input Number	Switch Input Voltage Range (V)	Wetting Current (mA)	Operating Current Intermittent Monitoring 50ms (Max) (µA)	Control I/F	Clock Frequency (MHz)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD3378MUV-M	6.0 to 28.0 (VPUB/VPUB) 3.1 to 5.25 (VDDI)	22	-14 to +40	1/3/5/10/15 (Pull up/Pull down)	100	SPI	up to 4.4	-40 to +125	VQFN48MVCV070	FSs	YES
33ch Models											
BD3381EKV-C	6.0 to 28.0 (VPUB/VPUB) 3.1 to 5.25 (VDDI)	33	-14 to +40	1/3/5/10/15 (Pull up/Pull down)	110	SPI	up to 4.4	-40 to +125	HTQFP64BV	FSs	YES
10ch Models											
BD3376EFV-C	8.0 to 26.0 (VPUB/VPUB) 3.1 to 5.25 (VDDI)	10	-14 to +40	1/3/5/10/15 (Pull up/Pull down)	100	SPI	up to 4.4	-40 to +125	HTSSOP-B30	FSs	YES

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LIN Transceivers

LIN Transceivers									
Part No.	Supported Standards	Supply Voltage (V)	Operating Temperature (°C)	Absolute Maximum Rating of LIN pin (V)	Transmission Rate (Max) (kbps)	Supply Current at Sleep Mode (Typ) (µA)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD41030FJ-C	LIN2.0, LIN2.1, LIN2.2, LIN2.2A	5 to 27	-40 to +125	-27 to +40	20	3	SOP-J8	FSs	YES
BD41030HFN-C	LIN2.0, LIN2.1, LIN2.2, LIN2.2A	5 to 27	-40 to +125	-27 to +40	20	3	HSO8	FSs	YES

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CAN Transceivers

CAN Transceivers									
Part No.	Supported Standards	Supply Voltage (V)	Operating Temperature (°C)	Absolute Maximum Rating of CAN pin (V)	Transmission Rate (Max) (Mbps)	Supply Current at Standby Mode (Typ) (µA)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD41041FJ-C	ISO 11898-2: 2016	4.75 to 5.25	-40 to +125	-27 to +40	1	10	SOP-J8	FSs	YES
BD41044FJ-C	ISO 11898-2: 2016	4.75 to 5.25	-40 to +125	-27 to +40	5	10	SOP-J8	FSs	YES

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CXPI Transceivers

CXPI Transceivers									
Part No.	Supported Standards	Supply Voltage (V)	Operating Temperature (°C)	Absolute Maximum Rating of BUS (V)	Transmission Rate (kbps)	Supply Current at Sleep Mode (Typ) (µA)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD41003FJ-C	JASO_D015_3	7 to 18	-40 to +125	-27 to +40	18.8 to 20.0	3	SOPJ-8	FSs	YES

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USB Type-C Power Delivery

For POWER SOURCE (POWER Role: Source, DATA Role: DFP, Internal Shunt Reg., Variable OCP, Variable OVP, Internal Vconn SW)

Part No.	Supply Voltage (V)	IO Supply Voltage (V)	Type-C/PD Support	Initial Supply Capable Voltage/Current (V/A)	Tolerant Voltage at CC Pins (V)	Gate Drivers for Nch FET	After OCP Behavior After OVP Behavior	DP Alternate Mode	Operating Temperature (°C)	Package
BD93F50MWV	3.1 to 22.0	1.7 to 5.5	R1.3/R3.0	5V to 20V Selectable	28	For Source: 1pair (For Sink: 1pair)	OCP: Selectable OVP: Selectable	DP_SINK with Ext-MCU	-30 to +85	UQFN040V5050

For POWER SOURCE & SINK (POWER Role: Source/Sink/DRP, DATA Role: DFP/UFP/Dual Role Data)

Part No.	Supply Voltage (V)	IO Supply Voltage (V)	Type-C/PD Support	Connected The Required Initial Voltage (V)		CC terminal voltage (V)	Gate Drivers for Nch FET	DP Alternate Mode	Operating Temperature (°C)	Package
				Dead Battery	Non Dead Battery					
New BD93E30GWL	3.1 to 22.0	1.7 to 5.5	R1.3/R3.0	5V to 20V Selectable (Sink) / 5V (Source)		6.0	For Sink: 1pair For Source: 1pair	DP_SOURCE	-30 to +85	UCSP50L2C
New BD93E70GWL				5V (Sink) / 5V to 20V Selectable (Source)						

For POWER SINK (POWER Role: Sink, DATA Role: UFP)

Part No.	Supply Voltage (V)	IO Supply Voltage (V)	Type-C/PD Support	Connected The Required Initial Voltage (V) Without Ext-MCU	Start of Automatic Power Receiving Without Ext-MCU	CC terminal voltage (V)	Gate Drivers for Nch FET	DP Alternate Mode	Operating Temperature (°C)	Package
New BD93E11GWL	3.1 to 22.0	1.7 to 5.5	R1.3/R3.0	5V to 20V Selectable	Selectable	6.0	For Sink: 1pair For Source: 1pair	-	-30 to +85	UCSP50L2C
BD93F10MWV										28
BD91N01NUX	4.0 to 5.5		R1.3/-	Type-C 5V	✓	28	For Sink: 1path			VSON010X3020

For Gas Water Heaters Interface IC

For Gas Water Heaters Interface IC

Part No.	Supply Voltage (V)	Circuit Current (mA)	Oscillation Frequency (MHz)	Detection Frequency (kHz)	Pseudo-sine Wave Output Circuit	External Analog Signal Detection Circuit	Analog Switch (ch)	Operating Temperature (°C)	Package
New BD88030FV	4.5 to 5.5	2.5	4	250	✓	✓	2	-20 to +80	SSOP-B16

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Regulator Product Table

Max. Rating Input Voltage	Output Current											
	up to 0.1A	0.15A	0.2A	0.3A	0.5A	0.7A	1.0A	1.5A	2.0A	3.0A	4.0A	
42 to 50V	BD42500G-C*2/3 BD42540FJ-C*2/3 ▶P.42 BD7xxL05G-C ▶P.29	BD9xxN1*2 BD9xxN1W*2 ▶P.29	BD7xxU2EFJ-C*2 BD4xxU2EFJ-C*2 BD7xxL2FP-C*2 BD7xxL2FP3-C*2 BD4xxU2EFJ-C*2 BD4xxM2FP3-C*2 ▶P.28 BD4xxM2WFP3-C*2 BD4xxU2WEFJ-C*2 ▶P.29 BD4269FJ-C*2/3 BD42530UEFJ-C*2 BD42530FP2-C*2 BD42530FPJ-C*2 ▶P.42 BD820F5UEFJ-C*2 ▶P.41	BD4269UEFJ-C*2 ▶P.42	BD357xYFP-M BD7xxL5FP-C*2 BD4xxM5*1/2 ▶P.28 BDxxxM5W*1/2 BD00EA5W*1/2 ▶P.29 BD4271EFJ-C*2/3 BD4271HFP-C*2/3 BD4271FP2-C*2/3 ▶P.41 BD42754FPJ-C*2/3 BD42754FP2-C*2/3 ▶P.42	BD800M7WFP2-C*2 ▶P.29						
30 to 36V	BDxxFA1FP3 BD50FA1MG-M*2 BD00FA1WEFJ ▶P.31			BD3650FP-M*2 ▶P.29 BA3662OP-V5 ▶P.31	BA178Mxx*1 ▶P.28 BD3021HFP*2/3 BD3020HFP*2/3 ▶P.41 BD3925FP-C*2 BD3925HFP-C*2 ▶P.42		BA178xx*1 ▶P.28 BAxxxCC0*1 BDxxFC0FP BDxxC0A*1/2 BDxxFC0W*1 BAxxCC0W*1 ▶P.30 BDxxC0AW*1/2 ▶P.31		BAxxDD0T BAxxDD0W*1 ▶P.29 BDxxFD0W BD00FDAWHFP ▶P.30			
18V							BAxxBC0*1 ▶P.31 BAxxBC0W*1 ▶P.32	BAxxJC5T BA00JC5WT ▶P.31				
15V				BDxxGA3*1/2/4 ▶P.33	BDxxGA5*2/4 ▶P.32, 33		BA1117FP ▶P.28 BDxxGC0*2/4 ▶P.32					
10V				BDxxHA3*2/4 ▶P.35	BDxxHA5*2/4 ▶P.34, 35		BDxxHC0*2/4 ▶P.34 BDxxHC5*2/4 ▶P.34					
6 to 7V		BHxxNB1WHFV BHxxRB1WGUT BHxxPB1WHFV ▶P.40	BUxxTD2WNVX*1 ▶P.37 BUxxTA2W*1 ▶P.38 BUxxSD2MG-M*2 BUxxJA2MNVX-C*2 BUxxJA2VG-C*2 BUxxJA2DG-C*2 BUxxSA4WGWL ▶P.39	BHxxM0AWHFV ▶P.37 BUxxJA3DG-C*2 ▶P.38	BDxxKA5*1 BDxxIA5*2 ▶P.36 BUxxSD5WG BUxxSA5WGWL ▶P.37		BDxxC0*1/2/4 ▶P.35, 36					
less than 6V	BD7602GUL (1ch) ▶P.41	BD7062GUL (2ch) ▶P.41	BD820F5UEFJ-C BU66xxNUX ▶P.41		BD3550HFN BD3540NUV ▶P.40 BD37201NUX ▶P.42		BD00JC0MNUX-M BD3551HFN BD3541NUV ▶P.40		BD3552HFN ▶P.40	BD3508MUV ▶P.40	BD3509MUV ▶P.40	

*1 Package Lineup *2 Automotive Grade *3 Multi Function Regulator (Ex. Voltage Detection) *4 Industrial Grade

Linear Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

78 series Regulators/Standard Regulator

35V Resistance 1A Output 78 series Regulators

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Circuit Current (mA)	Thermal Shutdown Circuit	Area of Safety Operation Circuit	Over Current Protection Circuit	Package/Part No.	
									TO220CP-3	TO252-3
BA17805 (BA7805)	7.5 to 25.0	5	±4	1.0	4.5	✓	✓	✓	BA17805CP	BA17805FP
BA17806 (BA7806)	8.5 to 21.0	6							BA17806CP	BA17806FP
BA17807 (BA7807)	9.5 to 22.0	7							BA17807CP	BA17807FP
BA17808 (BA7808)	10.5 to 23.0	8							BA17808CP	BA17808FP
BA17809 (BA7809)	11.5 to 26.0	9							BA17809CP	BA17809FP
BA17810 (BA7810)	12.5 to 25.0	10							BA17810CP	BA17810FP
BA17812 (BA7812)	14.5 to 27.0	12							BA17812CP	BA17812FP
BA17815 (BA7815)	17.5 to 30.0	15							BA17815CP	BA17815FP
BA17818 (BA7818)	21.0 to 33.0	18							BA17818CP	BA17818FP
BA17820 (BA7820)	23.0 to 33.0	20							BA17820CP	BA17820FP
BA17824 (BA7824)	27.0 to 33.0	24							BA17824CP	BA17824FP

35V Resistance 500mA Output 78 series Regulators

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Circuit Current (mA)	Thermal Shutdown Circuit	Area of Safety Operation Circuit	Over Current Protection Circuit	Package/Part No.	
									TO220CP-3	TO252-3
BA178M05 (BA78M05)	7.5 to 25.0	5	±4	0.5	4.5	✓	✓	✓	BA178M05CP	BA178M05FP
BA178M06 (BA78M06)	8.5 to 21.0	6							BA178M06CP	BA178M06FP
BA178M07 (BA78M07)	9.5 to 22.0	7							BA178M07CP	BA178M07FP
BA178M08 (BA78M08)	10.5 to 23.0	8							BA178M08CP	BA178M08FP
BA178M09 (BA78M09)	11.5 to 26.0	9							BA178M09CP	BA178M09FP
BA178M10 (BA78M10)	12.5 to 25.0	10							BA178M10CP	BA178M10FP
BA178M12 (BA78M12)	15.0 to 27.0	12							BA178M12CP	BA178M12FP
BA178M15 (BA78M15)	17.5 to 30.0	15							BA178M15CP	BA178M15FP
BA178M18 (BA78M18)	21.0 to 33.0	18							BA178M18CP	BA178M18FP
BA178M20 (BA78M20)	23.0 to 33.0	20							BA178M20CP	BA178M20FP
BA178M24 (BA78M24)	27.0 to 33.0	24							BA178M24CP	BA178M24FP

15V Resistance 1A Output Variable Output LDO Regulator

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Adjustment Pin Current (μA)	Reference Voltage (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package
BA1117FP	10	Variable	±1	1.0	60	1.2 (I _o =1A)	75 (f=120Hz, V _i -V _o =3V, V _{ripple} =1V _{pp})	10	Over-Current/ Temperature	TO252-3

LDO Regulators

50V Resistance 500mA Output Variable/Fixed Output LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Saturation Voltage (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD3570YFP-M	4.5 to 36.0	3.3	±2 (T _a =-40 to +125°C)	0.5	—	30	T _a =-40 to +125	—	Over-Current/ Temperature	TO252-3	FSS	YES
BD3570YHFP-M		HRP5			FSS					YES		
BD3571YFP-M	5.5 to 36.0	5.0			0.25 (I _o =200mA)					TO252-3	FSS	YES
BD3571YHFP-M		HRP5			FSS					YES		
BD3572YFP-M	4.5 to 36.0	Variable 2.8 to 12.0			—					TO252-5	FSS	YES
BD3572YHFP-M		HRP5			FSS					YES		
BD3573YFP-M	4.5 to 36.0	3.3			—					TO252-5	FSS	YES
BD3573YHFP-M		HRP5			FSS					YES		
BD3574YFP-M	5.5 to 36.0	5.0			0.25 (I _o =200mA)					TO252-5	FSS	YES
BD3574YHFP-M		HRP5			FSS					YES		
BD3575YFP-M	4.5 to 36.0	Variable 2.8 to 12.0			—					TO252-5	FSS	YES
BD3575YHFP-M		HRP5			FSS					YES		

50V Resistance 500mA Output Ultra Low Quiescent Current LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Saturation Voltage (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD733L5FP-C	4.17 to 45.0	3.3	±2 (T _a =-40 to +125°C)	0.5	0.4 (I _o =200mA)	6	T _a =-40 to +125	—	Over-Current/ Temperature	TO252-3	FSS	YES
BD750L5FP-C	5.6 to 45.0	5.0			0.25 (I _o =200mA)					TO252-3	FSS	YES

50V Resistance 200mA Output Ultra Low Quiescent Current LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Saturation Voltage (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD733U2EFJ-C	4.37 to 45.0	3.3	±2 (T _a =-40 to +125°C)	0.2	0.6 (I _o =200mA)	6	T _a =-40 to +125	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
BD733L2FP-C					TO252-3					FSS	YES	
BD733L2FP3-C					SOT223-4					FSS	YES	
New BD750U2EFJ-C	5.8 to 45.0	5.0			0.4 (I _o =200mA)					HTSOP-J8	FSS	YES
BD750L2FP-C					TO252-3					FSS	YES	
BD750L2FP3-C					SOT223-4					FSS	YES	

45V Resistance 500mA Output Low Quiescent Current LDO Regulators

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package/Part No.		ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										TO252-3	TO263-3		
BD433M5	4.0 to 42.0	3.3	±2 (T _a =-40 to +150°C)	0.5	0.25 (I _o =300mA)	38	T _a =-40 to +150	—	Over-Current/ Temperature	BD433M5FP-C	BD433M5FP2-C	FSS	YES
BD450M5	5.5 to 42.0	5.0			0.2 (I _o =300mA)					BD450M5FP-C	BD450M5FP2-C	FSS	YES

45V Resistance 200mA Output Low Quiescent Current LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD433U2EFJ-C	3.9 to 42.0	3.3	±2 (T _a =-40 to +150°C)	0.2	0.2 (I _o =100mA)	40	T _a =-40 to +150	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
BD433M2FP3-C					SOT223-4					FSS	YES	
New BD450U2EFJ-C	5.5 to 42.0	5.0			0.16 (I _o =100mA)					HTSOP-J8	FSS	YES
BD450M2FP3-C					SOT223-4					FSS	YES	

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

45V Resistance 150mA Output Low Quiescent Current Variable/Fixed Output LDO Regulators

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package/Part No.		ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										HTSOP-J8	SSOP5		
New BD900N1	3 to 42	Variable	±2.0	0.15	0.5 (I _o =100mA)	28	T _j =−40 to +150	—	Over-Current/ Temperature	BD900N1EFJ-C	BD900N1G-C	FSS	YES
New BD933N1		3.3								BD933N1EFJ-C	BD933N1G-C	FSS	YES
New BD950N1		5.0								BD950N1EFJ-C	BD950N1G-C	FSS	YES

45V Resistance 50mA Output Low Quiescent Current LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD725L05G-C	3.5 to 42.0	2.5	±2	0.05	—	6	−40 to +125	—	Over-Current/ Temperature	SSOP5	FSS	YES
New BD730L05G-C	3.5 to 42.0	3.0			0.3 (I _o =50mA)					SSOP5	FSS	YES
New BD733L05G-C	3.8 to 42.0	3.3			SSOP5					FSS	YES	
New BD750L05G-C	5.6 to 42.0	5.0			0.35 (I _o =50mA)					SSOP5	FSS	YES

45V Resistance 700mA Output Low Quiescent Current Variable Output LDO Regulator with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD800M7WFP2-C	3.0 to 42.0	Variable 1.2 to 16.0	±2.6 (T _j =−40 to +150°C)	0.7	0.6 (I _o =700mA)	17	T _j =−40 to +150	✓	Over-Current/ Temperature	TO263-5	FSS	YES

45V Resistance 500mA Output Low Quiescent Current LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package/Part No.				ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										TO252-5	TO252-J5	TO263-5	HRP5		
BD433M5W	4.0 to 42.0	3.3	±2 (T _j =−40 to +150°C)	0.5	0.25 (I _o =300mA)	38	T _j =−40 to +150	—	Over-Current/ Temperature	—	BD433M5WFPJ-C	BD433M5WFP2-C	—	FSS	YES
BD450M5W	5.5 to 42.0	5.0	±2.6		0.2 (I _o =300mA)					—	BD450M5WFPJ-C	BD450M5WFP2-C	—	FSS	YES
BD800M5W	3.0 to 42.0	Variable 1.2 to 16.0	±2.0	0.5	0.5 (I _o =500mA)	17	T _j =−40 to +150	✓	Over-Current/ Temperature	—	BD800M5WFPJ-C	—	BD800M5WHFP-C	FSS	YES
BD00EA5W			±1 (T _j =25°C)		0.45 (I _o =500mA)					—	BD00EA5WFP	—	BD00EA5WHFP	—	—
			±1.5 (T _j =25°C)							—	BD00EA5WFP2	—	—	—	—

45V Resistance 200mA Output Low Quiescent Current LDO Regulators with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD433U2WEFJ-C	3.9 to 42.0	3.3	±2 (T _j =−40 to +150°C)	0.2	0.2 (I _o =100mA)	40	T _j =−40 to +150	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
New BD433M2WFP3-C										SOT223-4	FSS	YES
New BD450U2WEFJ-C	5.5 to 42.0	5.0	±2 (T _j =−40 to +150°C)	0.2	0.16 (I _o =100mA)	40	T _j =−40 to +150	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
New BD450M2WFP3-C										SOT223-4	FSS	YES

45V Resistance 150mA Output Low Quiescent Current Variable/Fixed Output LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Shutdown Switch	Protection Circuit	Package/Part No.		ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										HTSOP-J8	SSOP5		
New BD900N1W	3 to 42	Variable	±2.0	0.15	0.5 (I _o =100mA)	28	T _j =−40 to +150	✓	Over-Current/ Temperature	BD900N1WEFJ-C	BD900N1WG-C	FSS	YES
New BD933N1W		3.3								BD933N1WEFJ-C	BD933N1WG-C	FSS	YES
New BD950N1W		5.0								BD950N1WEFJ-C	BD950N1WG-C	FSS	YES

36V Resistance 300mA Output LDO Regulator

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Circuit Current (mA)	Operating Temperature (°C)	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD3650FP-M	5.6 to 30.0	5.0	±2 (T _j =−40 to +125°C)	0.3	0.2 (I _o =200mA)	0.5	−40 to +125	Over-Current/ Temperature	TO252-3	FSS	YES

35V Resistance 2A LDO Regulators

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package
BA15DD0T	3 to 25	1.5	±1	2.0	0.9	0.45 (I _o =2A)	55	50 (I _o =0 to 2A)	Over-Voltage/ Over-Current/ Temperature	TO220FP-3
BA18DD0T		1.8								TO220FP-3
BA25DD0T		2.5								TO220FP-3
BA30DD0T		3.0								TO220FP-3
BA33DD0T		3.3								TO220FP-3
BA50DD0T		5.0								TO220FP-3
BA90DD0T		9.0								TO220FP-3
BAJ2DD0T		12.0								TO220FP-3
BAJ6DD0T		16.0								TO220FP-3

35V Resistance 2A Variable/Fixed Output LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.	
										TO220FP-5	HRP5
BA00DD0W	3 to 25	Variable 1.5 to 16.0	±1	2.0	0.9	0.45 (I _o =2A)	55	50 (I _o =0 to 2A)	Over-Voltage/ Over-Current/ Temperature	BA00DD0WCP-V5 (TO220CP-V5)	BA00DD0WHFP
BA15DD0W		1.5								BA15DD0WHFP	
BA18DD0W		1.8								BA18DD0WHFP	
BA25DD0W		2.5								BA25DD0WHFP	
BA30DD0W		3.0								BA30DD0WHFP	
BA33DD0W		3.3								BA33DD0WHFP	
BA50DD0W		5.0								BA50DD0WHFP	
BA90DD0W		9.0								BA90DD0WHFP	
BAJ2DD0W		12.0								BAJ2DD0WHFP	
BAJ6DD0W		16.0								BAJ6DD0WHFP	

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LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

35V Resistance 2A Variable/Fixed Output LDO Regulators Supporting Low Output Capacitance with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.	
										HRP5	TO263-5
BD00FD0W	4 to 32	Variable 1.5 to 16.0	±1	2.0	0.5	0.4 (I _o =1A)	55	V _o ¹² ×0.7% (I _o =5mA to 1A)	Over-Current/ Temperature	BD00FD0WHFP	BD00FD0WFP2
BD15FD0W		1.5	±1.5			BD15FD0WHFP		BD15FD0WFP2			
BD18FD0W		1.8				BD18FD0WHFP		BD18FD0WFP2			
BD25FD0W		2.5				BD25FD0WHFP		BD25FD0WFP2			
BD30FD0W		3.0				BD30FD0WHFP		BD30FD0WFP2			
BD33FD0W		3.3				BD33FD0WHFP		BD33FD0WFP2			
BD50FD0W		5.0				±1		BD50FD0WHFP		BD50FD0WFP2	
BD80FD0W		8.0	BD80FD0WHFP					BD80FD0WFP2			
BD90FD0W		9.0	BD90FD0WHFP					BD90FD0WFP2			
BDJ2FD0W		12.0	BDJ2FD0WHFP					BDJ2FD0WFP2			
BDJ5FD0W		15.0	BDJ5FD0WHFP					BDJ5FD0WFP2			
BDJ6FD0W		16.0	BDJ6FD0WHFP					BDJ6FD0WFP2			

35V Resistance 2A Variable Output LDO Regulator Supporting Wide Voltage Setting with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package
BD00FDAWHFP	4 to 32	Variable 1.5 to 30.0	±1 (T _s =25°C)	2.0	0.5	0.4 (I _o =1A)	55	V _o ¹² ×0.7% (I _o =5mA to 1A)	Over-Current/ Temperature	HRP5

35V Resistance 1A LDO Regulators

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.	
										TO220FP-3	TO252-3
BA03CC0	4 to 25	3.0	±2	1.0	2.5	0.30 (I _o =0.5A)	55	50 (I _o =5mA to 1A)	Over-Voltage/ Over-Current/ Temperature	BA03CC0T	BA03CC0FP
BA033CC0		3.3								BA033CC0T	BA033CC0FP
BA05CC0		5.0								BA05CC0T	BA05CC0FP
BA06CC0		6.0								—	BA06CC0FP
BA07CC0		7.0								BA07CC0T	BA07CC0FP
BA08CC0		8.0								BA08CC0T	BA08CC0FP
BA09CC0		9.0								BA09CC0T	BA09CC0FP
BAJ0CC0		10.0								BAJ0CC0T	BAJ0CC0FP
BAJ2CC0		12.0								BAJ2CC0T	BAJ2CC0FP
BAJ5CC0		15.0								BAJ5CC0T	BAJ5CC0FP

35V Resistance 1A LDO Regulators Supporting Low Output Capacitance

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package
BD33FC0FP	4.3 to 26.5	3.3	±1	1.0	0.6	—	55	V _o ¹² ×0.01 (I _o =5mA to 1A)	Over-Current/ Temperature	TO252-3
BD50FC0FP	6.0 to 26.5	5.0				0.30 (I _o =0.5A)				TO252-3

Automotive 35V Resistance 1A LDO Regulators Supporting Low Output Capacitance

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.			ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										TO252-3	HRP5	TO263-3		
BD33C0A	4.3 to 26.5	3.3	±3 (T _s =-40 to +125°C)	1.0	0.5	—	55	V _o ¹² ×0.01 (I _o =5mA to 1A)	Over-Current/ Temperature	BD33C0AFP-C	BD33C0AHFP-C	BD33C0AFP2-C	FSs	YES
BD50C0A	6.0 to 26.5	5.0				0.3 (I _o =500mA)				BD50C0AFP-C	BD50C0AHFP-C	BD50C0AFP2-C	FSs	YES
BD80C0A	9.0 to 26.5	8.0				BD80C0AFP-C				BD80C0AHFP-C	BD80C0AFP2-C	FSs	YES	
BD90C0A	10.0 to 26.5	9.0				BD90C0AFP-C				BD90C0AHFP-C	BD90C0AFP2-C	FSs	YES	

35V Resistance 1A Variable/Fixed Output LDO Regulators Supporting Low Output Capacitance with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.	
										TO252-5	HTSOP-J8
BD00FC0W	4.0 to 26.5	Variable 1.0 to 15.0	±1	1.0	0.5	0.3 (I _o =500mA)	55	V _o ¹² ×0.01 (I _o =5mA to 1A)	Over-Current/ Temperature	BD00FC0WFP	BD00FC0WEFJ
BD30FC0W		3.0				BD30FC0WFP				BD30FC0WEFJ	
BD33FC0W		3.3				BD33FC0WFP				BD33FC0WEFJ	
BD50FC0W		5.0				BD50FC0WFP				BD50FC0WEFJ	
BD60FC0W		6.0				BD60FC0WFP				BD60FC0WEFJ	
BD70FC0W		7.0				BD70FC0WFP				BD70FC0WEFJ	
BD80FC0W		8.0				BD80FC0WFP				BD80FC0WEFJ	
BD90FC0W		9.0				BD90FC0WFP				BD90FC0WEFJ	
BDJ0FC0W		11.0 to 26.5				BDJ0FC0WFP				BDJ0FC0WEFJ	
BDJ2FC0W		13.0 to 26.5				BDJ2FC0WFP				BDJ2FC0WEFJ	
BDJ5FC0W		16.0 to 26.5				BDJ5FC0WFP				BDJ5FC0WEFJ	

35V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package/Part No.	
										TO220FP-5	TO252-5
BA00CC0W	4 to 25	Variable 3.0 to 15.0	±2	1.0	2.5	0.3 (I _o =0.5A)	55	50 (I _o =5mA to 1A)	Over-Voltage/ Over-Current/ Temperature	BA00CC0WT/ BA00CC0WCP-V5 (TO220CP-V5)	BA00CC0WFP
BA03CC0W		3.0								BA03CC0WT	—
BA033CC0W		3.3								BA033CC0WT	BA033CC0WFP
BA05CC0W		5.0								BA05CC0WT	BA05CC0WFP
BA06CC0W		6.0								—	BA06CC0WFP
BA07CC0W		7.0								BA07CC0WT	BA07CC0WFP
BA08CC0W		8.0								BA08CC0WT	BA08CC0WFP
BA09CC0W		9.0								BA09CC0WT	BA09CC0WFP
BAJ0CC0W		10.0								BAJ0CC0WT	—
BAJ2CC0W		12.0								BAJ2CC0WT	BAJ2CC0WFP

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

*2 V_o is Output voltage/Unit: V

Power Management

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

35V Resistance 1A Variable/Fixed Output LDO Regulators Supporting Wide Temperature Range and Low Output Capacitance with Shutdown Switch														
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (V)	Protection Circuit	Package/Part No.				
										TO252-5	TO220CP-V5			
BD00C0AW	4.0 to 26.5	Variable 3.0 to 15.0	±1	1.0	0.5	0.3 (I _o =500mA)	55	V _o *2×0.01 (I _o =5mA to 1A)	Over-Current/ Temperature	BD00C0AWFP	BD00C0AWCP-V5			
BD33C0AW	4.3 to 26.5	3.3				—				BD33C0AWFP	—			
BD50C0AW	6.0 to 26.5	5.0				0.3 (I _o =500mA)				BD50C0AWFP	—			
Automotive 35V Resistance 1A Variable/Fixed Output LDO Regulators Supporting Low Output Capacitance with Shutdown Switch														
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (V)	Protection Circuit	Package/Part No.			ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
										TO252-5	HRP5	TO263-5		
BD00C0AW	4.0 to 26.5	Variable 1.0 to 15.0	±3 (T _{stg} =-40 to +125°C)	1.0	0.5	0.3 (I _o =500mA)	55	V _o *2×0.01 (I _o =5mA to 1A)	Over-Current/ Temperature	BD00C0AWFP-C	BD00C0AWHFP-C	BD00C0AWFP2-C	FSs	YES
BD33C0AW	4.3 to 26.5	3.3				—				BD33C0AWFP-C	BD33C0AWHFP-C	BD33C0AWFP2-C	FSs	YES
BD50C0AW	6.0 to 26.5	5.0				—				BD50C0AWFP-C	BD50C0AWHFP-C	BD50C0AWFP2-C	FSs	YES
BD80C0AW	9.0 to 26.5	8.0				—				BD80C0AWFP-C	BD80C0AWHFP-C	BD80C0AWFP2-C	FSs	YES
BD90C0AW	10.0 to 26.5	9.0				—				BD90C0AWFP-C	BD90C0AWHFP-C	BD90C0AWFP2-C	FSs	YES
35V Resistance 300mA Variable Output LDO Regulator with Shutdown Switch														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation	Protection Circuit	Package				
BA3662CP-V5	4 to 25	Variable 3.0 to 15.0	±2	0.3	2.5	0.3 (I _o =0.2A)	55	40mV (I _o =5to 200mA)	Over-Voltage/ Over-Current/ Temperature	TO220CP-V5				
30V Resistance 100mA Small Package LDO Regulators														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Load Regulation (%)	Protection Circuit	Input Capacitor (μF)	Output Capacitor (μF)	Package			
BD33FA1FP3	V _o +3 to 25	3.3	±1	0.1	0.3	1 (I _o =100mA)	±1.5	Over-Current/ Temperature	1.0	1.0	SOT89-3K			
BD50FA1FP3		5.0									SOT89-3K			
BD54FA1FP3		5.4									SOT89-3K			
BDJ2FA1FP3		12.0									0.4	SOT89-3K		
Automotive 30V Resistance 100mA LDO Regulators with Shutdown Switch														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Load Regulation (%)	Protection Circuit	Input Capacitor (μF)	Output Capacitor (μF)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
BD50FA1MG-M	V _o +3 to 25	5	±1	0.1	0.5	2 (I _o =100mA)	±1.5	Over-Current/ Temperature	1.0	1.0	SSOP5	FSs	YES	
30V Resistance 100mA LDO Regulators with Shutdown Switch														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Load Regulation (%)	Protection Circuit	Input Capacitor (μF)	Output Capacitor (μF)	Package			
BD00FA1WEFJ	V _o +3 to 25	Variable 3.0 to 12.0	±1	0.1	0.3	2 (I _o =100mA)	±1.5	Over-Current/ Temperature	2.2	2.2	HTSOP-J8			
18V Resistance 1.5A LDO Regulators														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Protection Circuit	Package		
BA15JC5T	3 to 16	1.5	±1	1.5	0.5	0.3 (I _o =500mA)	55	5 (I _o =5mA to 1.5A)	0.33	22.0	Over-Current/ Temperature	TO220FP-3		
BA18JC5T		1.8										TO220FP-3		
BA25JC5T		2.5										TO220FP-3		
BA30JC5T		3.0										TO220FP-3		
BA33JC5T		3.3										TO220FP-3		
BA50JC5T		5.0										TO220FP-3		
BA60JC5T		6.0										TO220FP-3		
BA80JC5T		8.0										TO220FP-3		
BA90JC5T	9.0	TO220FP-3												
18V Resistance 1.5A Variable Output LDO Regulator with Shutdown Switch														
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	
BA00JC5WT	3 to 16	Variable 1.5 to 12.0	±1	1.5	0.5	0.3 (I _o =500mA)	55	5 (I _o =5mA to 1.5A)	0.33	22.0	✓	Over-Current/ Temperature	TO220FP-5	
18V Resistance 1A LDO Regulators														
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Protection Circuit	Package/Part No.		
												TO252-3	TO220FP-3	
BA15BC0	3 to 16	1.5	±2	1.0	0.5	0.3 (I _o =200mA)	55	35 (I _o =0 to 1A)	0.33	22.0	Over-Current/ Temperature	BA15BC0FP	BA15BC0T	
BA18BC0		1.8										BA18BC0FP	BA18BC0T	
BA25BC0		2.5										BA25BC0FP	BA25BC0T	
BA30BC0		3.0										BA30BC0FP	BA30BC0T	
BA33BC0		3.3										BA33BC0FP	BA33BC0T	
BA50BC0		5.0			BA50BC0FP							BA50BC0T		
BA60BC0		6.0			BA60BC0FP							BA60BC0T		
BA70BC0		7.0			BA70BC0FP							BA70BC0T		
BA80BC0		8.0			BA80BC0FP							BA80BC0T		
BA90BC0		9.0			BA90BC0FP							BA90BC0T		
BAJ0BC0	10.0	BAJ0BC0FP	BAJ0BC0T											

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 *2 V_o is Output voltage/Unit: V

LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

18V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package/Part No.	
													TO252-5	TO220FP-5
BA00BC0W	3 to 16	Variable 1.5 to 12.0	±2	1.0	0.5 (V _o ≤6.0)	0.3 (I _o =200mA)	55	35 (I _o =0 to 1A)	0.33	22.0	✓	Over-Current/ Temperature	BA00BC0WFP/ BA00BC0WCP-V5 (TO220CP-V5)	BA00BC0WT
BA15BC0W		1.5			BA15BC0WFP								BA15BC0WT	
BA18BC0W		1.8			BA18BC0WFP								BA18BC0WT	
BA25BC0W		2.5			BA25BC0WFP								BA25BC0WT	
BA30BC0W		3.0			BA30BC0WFP								BA30BC0WT	
BA33BC0W		3.3			BA33BC0WFP								BA33BC0WT	
BA50BC0W		5.0			BA50BC0WFP								BA50BC0WT	
BA60BC0W		6.0			BA60BC0WFP								BA60BC0WT	
BA70BC0W		7.0			BA70BC0WFP								BA70BC0WT	
BA80BC0W		8.0			BA80BC0WFP								BA80BC0WT	
BA90BC0W		9.0			BA90BC0WFP								BA90BC0WT	
BAJ0BC0W		10.0			BAJ0BC0WFP								BAJ0BC0WT	

15V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00GC0WEFJ/BD00GC0MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	1.0	0.6	0.6 (I _o =1A)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15GC0WEFJ/BD15GC0MEFJ-M		1.5											HTSOP-J8	-/FSs	-/YES
BD18GC0WEFJ/BD18GC0MEFJ-M		1.8											HTSOP-J8	-/FSs	-/YES
BD25GC0WEFJ/BD25GC0MEFJ-M		2.5											HTSOP-J8	-/FSs	-/YES
BD30GC0WEFJ/BD30GC0MEFJ-M		3.0											HTSOP-J8	-/FSs	-/YES
BD33GC0WEFJ/BD33GC0MEFJ-M		3.3											HTSOP-J8	-/FSs	-/YES
BD50GC0WEFJ/BD50GC0MEFJ-M		5.0											HTSOP-J8	-/FSs	-/YES
BD60GC0WEFJ/BD60GC0MEFJ-M		6.0											HTSOP-J8	-/FSs	-/YES
BD70GC0WEFJ/BD70GC0MEFJ-M		7.0											HTSOP-J8	-/FSs	-/YES
BD80GC0WEFJ/BD80GC0MEFJ-M		8.0											HTSOP-J8	-/FSs	-/YES
BD90GC0WEFJ/BD90GC0MEFJ-M		9.0											HTSOP-J8	-/FSs	-/YES
BDJ0GC0WEFJ/BDJ0GC0MEFJ-M		10.0											HTSOP-J8	-/FSs	-/YES
BDJ2GC0WEFJ/BDJ2GC0MEFJ-M	12.0	HTSOP-J8	-/FSs	-/YES											

15V Resistance 1A Variable/Fixed Output LDO Regulators (Industrial Equipment)

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00GC0MEFJ-LB	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	1.0	0.6	0.6 (I _o =1A)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GC0MEFJ-LB		1.5											HTSOP-J8
BD18GC0MEFJ-LB		1.8											HTSOP-J8
BD25GC0MEFJ-LB		2.5											HTSOP-J8
BD30GC0MEFJ-LB		3.0											HTSOP-J8
BD33GC0MEFJ-LB		3.3											HTSOP-J8
BD50GC0MEFJ-LB		5.0											HTSOP-J8
BD60GC0MEFJ-LB		6.0											HTSOP-J8
BD70GC0MEFJ-LB		7.0											HTSOP-J8
BD80GC0MEFJ-LB		8.0											HTSOP-J8
BD90GC0MEFJ-LB		9.0											HTSOP-J8
BDJ0GC0MEFJ-LB		10.0											HTSOP-J8
BDJ2GC0MEFJ-LB	12.0	HTSOP-J8											

15V Resistance 500mA Variable/Fixed Output LDO Regulators with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output voltage precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00GA5WEFJ/BD00GA5MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	0.5	0.6	0.6 (I _o =500mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15GA5WEFJ/BD15GA5MEFJ-M		1.5											HTSOP-J8	-/FSs	-/YES
BD18GA5WEFJ/BD18GA5MEFJ-M		1.8											HTSOP-J8	-/FSs	-/YES
BD25GA5WEFJ/BD25GA5MEFJ-M		2.5											HTSOP-J8	-/FSs	-/YES
BD30GA5WEFJ/BD30GA5MEFJ-M		3.0											HTSOP-J8	-/FSs	-/YES
BD33GA5WEFJ/BD33GA5MEFJ-M		3.3											HTSOP-J8	-/FSs	-/YES
BD50GA5WEFJ/BD50GA5MEFJ-M		5.0											HTSOP-J8	-/FSs	-/YES
BD60GA5WEFJ/BD60GA5MEFJ-M		6.0											HTSOP-J8	-/FSs	-/YES
BD70GA5WEFJ/BD70GA5MEFJ-M		7.0											HTSOP-J8	-/FSs	-/YES
BD80GA5WEFJ/BD80GA5MEFJ-M		8.0											HTSOP-J8	-/FSs	-/YES
BD90GA5WEFJ/BD90GA5MEFJ-M		9.0											HTSOP-J8	-/FSs	-/YES
BDJ0GA5WEFJ/BDJ0GA5MEFJ-M		10.0											HTSOP-J8	-/FSs	-/YES
BDJ2GA5WEFJ/BDJ2GA5MEFJ-M	12.0	HTSOP-J8	-/FSs	-/YES											

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15V Resistance 500mA Variable/Fixed Output LDO Regulators (Industrial Equipment)													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00GA5MEFJ-LB	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.5	0.6	0.6 (I _o =500mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GA5MEFJ-LB		1.5											HTSOP-J8
BD18GA5MEFJ-LB		1.8											HTSOP-J8
BD25GA5MEFJ-LB		2.5											HTSOP-J8
BD30GA5MEFJ-LB		3.0											HTSOP-J8
BD33GA5MEFJ-LB		3.3											HTSOP-J8
BD50GA5MEFJ-LB		5.0											HTSOP-J8
BD60GA5MEFJ-LB		6.0											HTSOP-J8
BD70GA5MEFJ-LB		7.0											HTSOP-J8
BD80GA5MEFJ-LB		8.0											HTSOP-J8
BD90GA5MEFJ-LB		9.0											HTSOP-J8
BDJ0GA5MEFJ-LB		10.0											HTSOP-J8
BDJ2GA5MEFJ-LB		12.0											HTSOP-J8

15V Resistance 300mA Variable/Fixed Output LDO Regulators with Shutdown Switch														
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package/Part No.	
													HTSOP-J8	VSON008X2030
BD00GA3W	4.5 to 14.0	Variable 1.5 to 13.0	±1	0.3	0.6	0.6 (I _o =300mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	BD00GA3WEFJ	BD00GA3WNUX
BD15GA3W		1.5											BD15GA3WEFJ	☆BD15GA3WNUX
BD18GA3W		1.8											BD18GA3WEFJ	☆BD18GA3WNUX
BD25GA3W		2.5											BD25GA3WEFJ	☆BD25GA3WNUX
BD30GA3W		3.0											BD30GA3WEFJ	BD30GA3WNUX
BD33GA3W		3.3											BD33GA3WEFJ	☆BD33GA3WNUX
BD50GA3W		5.0											BD50GA3WEFJ	BD50GA3WNUX
BD60GA3W		6.0											BD60GA3WEFJ	BD60GA3WNUX
BD70GA3W		7.0											BD70GA3WEFJ	☆BD70GA3WNUX
BD80GA3W		8.0											BD80GA3WEFJ	☆BD80GA3WNUX
BD90GA3W		9.0											BD90GA3WEFJ	☆BD90GA3WNUX
BDJ0GA3W		10.0											BDJ0GA3WEFJ	☆BDJ0GA3WNUX
BDJ2GA3W		12.0											BDJ2GA3WEFJ	☆BDJ2GA3WNUX

Automotive 15V Resistance 300mA Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™	Automotive
														Functional Safety*1	Grade AEC-Q100
BD00GA3MEFJ-M	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.3	0.6	0.6 (I _o =300mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	FSs	YES
BD15GA3MEFJ-M		1.5											HTSOP-J8	FSs	YES
BD18GA3MEFJ-M		1.8											HTSOP-J8	FSs	YES
BD25GA3MEFJ-M		2.5											HTSOP-J8	FSs	YES
BD30GA3MEFJ-M		3.0											HTSOP-J8	FSs	YES
BD33GA3MEFJ-M		3.3											HTSOP-J8	FSs	YES
BD50GA3MEFJ-M		5.0											HTSOP-J8	FSs	YES
BD60GA3MEFJ-M		6.0											HTSOP-J8	FSs	YES
BD70GA3MEFJ-M		7.0											HTSOP-J8	FSs	YES
BD80GA3MEFJ-M		8.0											HTSOP-J8	FSs	YES
BD90GA3MEFJ-M		9.0											HTSOP-J8	FSs	YES
BDJ0GA3MEFJ-M		10.0											HTSOP-J8	FSs	YES
BDJ2GA3MEFJ-M		12.0											HTSOP-J8	FSs	YES

15V Resistance 300mA Variable/Fixed Output LDO Regulators (Industrial Equipment)													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00GA3MEFJ-LB	4.5 to 14.0	Variable 1.5 to 13.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.3	0.6	0.6 (I _o =300mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15GA3MEFJ-LB		1.5											HTSOP-J8
BD18GA3MEFJ-LB		1.8											HTSOP-J8
BD25GA3MEFJ-LB		2.5											HTSOP-J8
BD30GA3MEFJ-LB		3.0											HTSOP-J8
BD33GA3MEFJ-LB		3.3											HTSOP-J8
BD50GA3MEFJ-LB		5.0											HTSOP-J8
BD60GA3MEFJ-LB		6.0											HTSOP-J8
BD70GA3MEFJ-LB		7.0											HTSOP-J8
BD80GA3MEFJ-LB		8.0											HTSOP-J8
BD90GA3MEFJ-LB		9.0											HTSOP-J8
BDJ0GA3MEFJ-LB		10.0											HTSOP-J8
BDJ2GA3MEFJ-LB		12.0											HTSOP-J8

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

☆: Under Development

LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

10V Resistance 1.5A Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00HC5WEFJ/BD00HC5MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	1.5	0.6	0.6 (I _o =1.5A)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 1.5A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15HC5WEFJ/BD15HC5MEFJ-M		1.5											HTSOP-J8	-/FSs	-/YES
BD18HC5WEFJ/BD18HC5MEFJ-M		1.8											HTSOP-J8	-/FSs	-/YES
BD25HC5WEFJ/BD25HC5MEFJ-M		2.5											HTSOP-J8	-/FSs	-/YES
BD30HC5WEFJ/BD30HC5MEFJ-M		3.0											HTSOP-J8	-/FSs	-/YES
BD33HC5WEFJ/BD33HC5MEFJ-M		3.3											HTSOP-J8	-/FSs	-/YES
BD50HC5WEFJ/BD50HC5MEFJ-M		5.0											HTSOP-J8	-/FSs	-/YES
BD60HC5WEFJ/BD60HC5MEFJ-M		6.0											HTSOP-J8	-/FSs	-/YES
BD70HC5WEFJ/BD70HC5MEFJ-M		7.0											HTSOP-J8	-/FSs	-/YES

10V Resistance 1.5A Variable/Fixed Output LDO Regulators (Industrial Equipment)															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00HC5MEFJ-LB	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	1.5	0.6	0.6 (I _o =1.5A)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 1.5A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15HC5MEFJ-LB		1.5											HTSOP-J8	-/FSs	-/YES
BD18HC5MEFJ-LB		1.8											HTSOP-J8	-/FSs	-/YES
BD25HC5MEFJ-LB		2.5											HTSOP-J8	-/FSs	-/YES
BD30HC5MEFJ-LB		3.0											HTSOP-J8	-/FSs	-/YES
BD33HC5MEFJ-LB		3.3											HTSOP-J8	-/FSs	-/YES
BD50HC5MEFJ-LB		5.0											HTSOP-J8	-/FSs	-/YES
BD60HC5MEFJ-LB		6.0											HTSOP-J8	-/FSs	-/YES
BD70HC5MEFJ-LB		7.0											HTSOP-J8	-/FSs	-/YES

10V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00HC0WEFJ/BD00HC0MEFJ-M	4.5 to 8.0	Variable 0.8 to 7.0 (Automotive Grade Variable 1.5 to 7.0)	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	1.0	0.6	0.6 (I _o =1A)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15HC0WEFJ/BD15HC0MEFJ-M		1.5											HTSOP-J8	-/FSs	-/YES
BD18HC0WEFJ/BD18HC0MEFJ-M		1.8											HTSOP-J8	-/FSs	-/YES
BD25HC0WEFJ/BD25HC0MEFJ-M		2.5											HTSOP-J8	-/FSs	-/YES
BD30HC0WEFJ/BD30HC0MEFJ-M		3.0											HTSOP-J8	-/FSs	-/YES
BD33HC0WEFJ/BD33HC0MEFJ-M		3.3											HTSOP-J8	-/FSs	-/YES
BD50HC0WEFJ/BD50HC0MEFJ-M		5.0											HTSOP-J8	-/FSs	-/YES
BD60HC0WEFJ/BD60HC0MEFJ-M		6.0											HTSOP-J8	-/FSs	-/YES
BD70HC0WEFJ/BD70HC0MEFJ-M		7.0											HTSOP-J8	-/FSs	-/YES

10V Resistance 1A Variable/Fixed Output LDO Regulators (Industrial Equipment)															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00HC0MEFJ-LB	4.5 to 8.0	Variable 0.8 to 7.0 (Variable 1.5 to 7.0)	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	1.0	0.6	0.6 (I _o =1A)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15HC0MEFJ-LB		1.5											HTSOP-J8	-/FSs	-/YES
BD18HC0MEFJ-LB		1.8											HTSOP-J8	-/FSs	-/YES
BD25HC0MEFJ-LB		2.5											HTSOP-J8	-/FSs	-/YES
BD30HC0MEFJ-LB		3.0											HTSOP-J8	-/FSs	-/YES
BD33HC0MEFJ-LB		3.3											HTSOP-J8	-/FSs	-/YES
BD50HC0MEFJ-LB		5.0											HTSOP-J8	-/FSs	-/YES
BD60HC0MEFJ-LB		6.0											HTSOP-J8	-/FSs	-/YES
BD70HC0MEFJ-LB		7.0											HTSOP-J8	-/FSs	-/YES

10V Resistance 500mA Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00HA5WEFJ/BD00HA5MEFJ-M	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	0.5	0.6	0.6 (I _o =500mA)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD15HA5WEFJ/BD15HA5MEFJ-M		1.5											HTSOP-J8	-/FSs	-/YES
BD18HA5WEFJ/BD18HA5MEFJ-M		1.8											HTSOP-J8	-/FSs	-/YES
BD25HA5WEFJ/BD25HA5MEFJ-M		2.5											HTSOP-J8	-/FSs	-/YES
BD30HA5WEFJ/BD30HA5MEFJ-M		3.0											HTSOP-J8	-/FSs	-/YES
BD33HA5WEFJ/BD33HA5MEFJ-M		3.3											HTSOP-J8	-/FSs	-/YES
BD50HA5WEFJ/BD50HA5MEFJ-M		5.0											HTSOP-J8	-/FSs	-/YES
BD60HA5WEFJ/BD60HA5MEFJ-M		6.0											HTSOP-J8	-/FSs	-/YES
BD70HA5WEFJ/BD70HA5MEFJ-M		7.0											HTSOP-J8	-/FSs	-/YES

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Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

10V Resistance 500mA Variable/Fixed Output LDO Regulators (Industrial Equipment)													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00HA5MEFJ-LB	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.5	0.6	0.6 (I _o =500mA)	60 (f=100Hz, 50mV _{rps} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HA5MEFJ-LB		1.5											HTSOP-J8
BD18HA5MEFJ-LB		1.8											HTSOP-J8
BD25HA5MEFJ-LB		2.5											HTSOP-J8
BD30HA5MEFJ-LB		3.0											HTSOP-J8
BD33HA5MEFJ-LB		3.3											HTSOP-J8
BD50HA5MEFJ-LB		5.0											HTSOP-J8
BD60HA5MEFJ-LB		6.0											HTSOP-J8
BD70HA5MEFJ-LB		7.0											HTSOP-J8

10V Resistance 300mA Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
Consumer/Automotive Grade		4.5 to 8.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C) <Automotive Grade>	0.3	0.6	0.6 (I _o =300mA)	60 (f=100Hz, 50mV _{rps} , I _o =0A)	25 (I _o =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD00HA3WEFJ/BD00HA3MEFJ-M	Variable 1.5 to 7.0												HTSOP-J8	-/FSs	-/YES
BD15HA3WEFJ/BD15HA3MEFJ-M	1.5												HTSOP-J8	-/FSs	-/YES
BD18HA3WEFJ/BD18HA3MEFJ-M	1.8												HTSOP-J8	-/FSs	-/YES
BD25HA3WEFJ/BD25HA3MEFJ-M	2.5												HTSOP-J8	-/FSs	-/YES
BD30HA3WEFJ/BD30HA3MEFJ-M	3.0												HTSOP-J8	-/FSs	-/YES
BD33HA3WEFJ/BD33HA3MEFJ-M	3.3												HTSOP-J8	-/FSs	-/YES
BD50HA3WEFJ/BD50HA3MEFJ-M	5.0												HTSOP-J8	-/FSs	-/YES
BD60HA3WEFJ/BD60HA3MEFJ-M	6.0												HTSOP-J8	-/FSs	-/YES
BD70HA3WEFJ/BD70HA3MEFJ-M	7.0	HTSOP-J8	-/FSs	-/YES											

10V Resistance 300mA Variable/Fixed Output Industrial LDO Regulators													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00HA3MEFJ-LB	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.3	0.6	0.6 (I _o =300mA)	60 (f=100Hz, 50mV _{rps} , I _o =0A)	25 (I _o =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HA3MEFJ-LB		1.5											HTSOP-J8
BD18HA3MEFJ-LB		1.8											HTSOP-J8
BD25HA3MEFJ-LB		2.5											HTSOP-J8
BD30HA3MEFJ-LB		3.0											HTSOP-J8
BD33HA3MEFJ-LB		3.3											HTSOP-J8
BD50HA3MEFJ-LB		5.0											HTSOP-J8
BD60HA3MEFJ-LB		6.0											HTSOP-J8
BD70HA3MEFJ-LB		7.0											HTSOP-J8

7V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch														
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package/Part No.	
													HTSOP-J8	HVSOF6
BD00IC0W	2.4 to 5.5	Variable 0.8 to 4.5	±1	1.0	0.3	0.4 (I _o =1A)	60 (f=100Hz, 50mV _{rps} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	BD00IC0WEFJ	BD00IC0WHFV
BD10IC0W		1.0											BD10IC0WEFJ	BD10IC0WHFV
BD12IC0W		1.2											BD12IC0WEFJ	BD12IC0WHFV
BD1CIC0W		1.25											—	BD1CIC0WHFV
BD15IC0W		1.5											BD15IC0WEFJ	BD15IC0WHFV
BD18IC0W		1.8											BD18IC0WEFJ	BD18IC0WHFV
BD25IC0W		2.5											BD25IC0WEFJ	BD25IC0WHFV
BD26IC0W		2.6											—	BD26IC0WHFV
BD30IC0W		3.0											BD30IC0WEFJ	BD30IC0WHFV
BD33IC0W		3.3											BD33IC0WEFJ	BD33IC0WHFV

Automotive 7V Resistance 1A Variable/Fixed Output LDO Regulators with Shutdown Switch															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00IC0MEFJ-M	2.4 to 5.5	Variable 0.8 to 4.5	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	1.0	0.3	0.4 (I _o =1A)	60 (f=100Hz, 50mV _{rps} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	FSs	YES
BD10IC0MEFJ-M		1.0											HTSOP-J8	FSs	YES
BD12IC0MEFJ-M		1.2											HTSOP-J8	FSs	YES
BD15IC0MEFJ-M		1.5											HTSOP-J8	FSs	YES
BD18IC0MEFJ-M		1.8											HTSOP-J8	FSs	YES
BD25IC0MEFJ-M		2.5											HTSOP-J8	FSs	YES
BD30IC0MEFJ-M		3.0											HTSOP-J8	FSs	YES
BD33IC0MEFJ-M		3.3											HTSOP-J8	FSs	YES

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LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

7V Resistance 1A Variable/Fixed Output LDO Regulators															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD001C0MEFJ-LB	2.3 to 5.5	Variable 0.8 to 4.5	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	1.0	0.3	0.4 (I _o =1A)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	—	—
BD101C0MEFJ-LB	2.4 to 5.5	1.0											HTSOP-J8	—	—
BD121C0MEFJ-LB		1.2											HTSOP-J8	—	—
BD151C0MEFJ-LB		1.5											HTSOP-J8	—	—
BD181C0MEFJ-LB		1.8											HTSOP-J8	—	—
BD251C0MEFJ-LB		2.5											HTSOP-J8	—	—
BD301C0MEFJ-LB		3.0											HTSOP-J8	—	—
BD331C0MEFJ-LB/BD331C0MEFJ-C		3.3											HTSOP-J8	—/FSs	—/YES

7V Resistance 500mA LDO Regulators													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Protection Circuit	Package	
BD10KA5FP	2.3 to 5.5	1.0	±1	0.5	0.35	0.12 (I _o =200mA)	50	25 (I _o =0 to 500mA)	1.0	1.0	Over-Current/ Temperature	TO252-3	
BD12KA5FP		1.2										TO252-3	
BD15KA5FP		1.5										TO252-3	
BD18KA5FP		1.8										TO252-3	
BD25KA5FP		2.5										TO252-3	
BD30KA5FP		3.0										TO252-3	
BD33KA5FP		3.3										TO252-3	

7V Resistance 500mA Variable/Fixed Output LDO Regulators with Shutdown Switch															
Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package/Part No.		
													TO252-5	SOP8	
BD00KA5W	2.3 to 5.5	Variable 1.0 to 4.0	±1	0.5	0.35	0.12 (I _o =200mA)	50	25 (0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	BD00KA5WFP	BD00KA5WF	
BD10KA5W		1.0											BD10KA5WFP	BD10KA5WF	
BD12KA5W		1.2											BD12KA5WFP	BD12KA5WF	
BD15KA5W		1.5											BD15KA5WFP	BD15KA5WF	
BD18KA5W		1.8											BD18KA5WFP	BD18KA5WF	
BD25KA5W		2.5											BD25KA5WFP	BD25KA5WF	
BD30KA5W		3.0											BD30KA5WFP	BD30KA5WF	
BD33KA5W		3.3											BD33KA5WFP	BD33KA5WF	

7V Resistance 500mA Variable/Fixed Output LDO Regulators with Shutdown Switch (BDxxIA series)															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package		
BD00IA5WEFJ	2.4 to 5.5	Variable 0.8 to 4.5	±1	0.5	0.25	0.4 (I _o =500mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8		
BD10IA5WEFJ		1.0											HTSOP-J8		
BD12IA5WEFJ		1.2											HTSOP-J8		
BD15IA5WEFJ		1.5											HTSOP-J8		
BD18IA5WEFJ		1.8											HTSOP-J8		
BD25IA5WEFJ		2.5											HTSOP-J8		
BD30IA5WEFJ		3.0											HTSOP-J8		
BD33IA5WEFJ		3.3											HTSOP-J8		

Automotive 7V Resistance 500mA Variable/Fixed Output LDO Regulators with Shutdown Switch (BDxxIA series)															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD00IA5MEFJ-M/BD00IA5MHFV-M	2.4 to 5.5	Variable 0.8 to 4.5	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.5	0.25	0.4 (I _o =500mA)	60 (f=100Hz, 50mV _{pp} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8/HVSOF6	FSs	YES
BD10IA5MEFJ-M		1.0											HTSOP-J8	FSs	YES
BD12IA5MEFJ-M		1.2											HTSOP-J8	FSs	YES
BD15IA5MEFJ-M		1.5											HTSOP-J8	FSs	YES
BD18IA5MEFJ-M		1.8											HTSOP-J8	FSs	YES
BD25IA5MEFJ-M		2.5											HTSOP-J8	FSs	YES
BD30IA5MEFJ-M		3.0											HTSOP-J8	FSs	YES
BD33IA5MEFJ-M		3.3											HTSOP-J8	FSs	YES

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7V Resistance 500mA Variable/Fixed Output LDO Regulators(Industrial Equipment)													
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Protection Circuit	Package
BD00IA5MEFJ-LB	2.4 to 5.5	Variable 0.8 to 4.5	±1 (T _a =+25°C), ±3 (T _a =-40 to +105°C)	0.5	0.25	0.4 (I _o =500mA)	60 (f=100Hz, 50mV _{PP} , I _o =0A)	25 (I _o =0 to 500mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD10IA5MEFJ-LB		1.0											HTSOP-J8
BD12IA5MEFJ-LB		1.2											HTSOP-J8
BD15IA5MEFJ-LB		1.5											HTSOP-J8
BD18IA5MEFJ-LB		1.8											HTSOP-J8
BD25IA5MEFJ-LB		2.5											HTSOP-J8
BD30IA5MEFJ-LB		3.0											HTSOP-J8
BD33IA5MEFJ-LB		3.3											HTSOP-J8

6.5V Resistance 500mA Full CMOS LDO Regulators											
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (μA)	I/O Voltage Difference (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package	
BU18SD5WG	1.7 to 6.0	1.8	±1	0.5	33.0	150 (I _o =100mA)	68	0.5	Over Current/ Temperature	SSOP5	
BU33SD5WG		3.3				85 (I _o =100mA)				SSOP5	

6.5V Resistance 500mA Full CMOS LDO Regulators with Shutdown Switch WL-CSP type											
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Bias Current (mA)	I/O Voltage Difference (V)	Ripple Rejection (dB)	Load Regulation (mV)	Protection Circuit	Package	
BU30SA5GWZ	1.8 to 5.0	3	±1	0.5	0.033	0.08 (I _o =100mA)	70dB (f=1kHz)	6 (I _{OUT} =0.01mA to 300mA)	Over Current/ Temperature	UCSP30L1	
BU33SA5GWZ		3.3								UCSP30L1	

6.5V Resistance 300mA CMOS LDO Regulators with Shutdown Switch																		
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	V _{sat} (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Soft Start Function	Package	
BH15M0AWHFV	2.5 to 5.5	1.5	±25mV	0.3	-	60	6 (I _o =1 to 100mA)	65	100	1.0	1.0	✓	✓	✓	-	-	HVSOF6	
BH18M0AWHFV		1.8															HVSOF6	
BH20M0AWHFV		2.0															HVSOF6	
BH21M0AWHFV		2.1															HVSOF6	
BH25M0AWHFV		2.5															HVSOF6	
BH26M0AWHFV		2.6	HVSOF6															
BH27M0AWHFV		2.7	±1														60 (I _o =100mA)	HVSOF6
BH28M0AWHFV		2.8																HVSOF6
BH29M0AWHFV		2.9																HVSOF6
BH30M0AWHFV		3.0																HVSOF6
BH31M0AWHFV		3.1																HVSOF6
BH32M0AWHFV		3.2	HVSOF6															
BH33M0AWHFV		3.3	HVSOF6															
BH34M0AWHFV		3.4	HVSOF6															

Power Management

LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

6.5V Resistance 200mA CMOS LDO Regulators supporting low output capacitance with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Over Current Protection	Temperature Protection	Discharge Function	Package/Part No.	
																SSON004X1010	SSOP5
BU10TD2/BU10TD3	1.7 to 5.5	1.0	±25mV	0.2	-	70	10 (I _o =1 to 100mA)	35	70	0.47	0.47	✓	✓	✓	✓	BU10TD2WNVX	BU10TD3WG
BU1ATD2/-		1.05														BU1ATD2WNVX	-
BU11TD2/BU11TD3		1.1														BU11TD2WNVX	BU11TD3WG
BU1BDT2/-		1.15														BU1BDT2WNVX	-
BU12TD2/BU12TD3		1.2														BU12TD2WNVX	BU12TD3WG
BU1CTD2/BU1CTD3		1.25														BU1CTD2WNVX	BU1CTD3WG
BU13TD2/BU13TD3		1.3														BU13TD2WNVX	BU13TD3WG
BU15TD2/BU15TD3		1.5														BU15TD2WNVX	BU15TD3WG
BU18TD2/BU18TD3		1.8														BU18TD2WNVX	BU18TD3WG
BU1JTD2/BU1JTD3		1.85														BU1JTD2WNVX	BU1JTD3WG
BU19TD2/BU19TD3		1.9	BU19TD2WNVX		BU19TD3WG												
BU20TD2/BU20TD3		2.0	BU20TD2WNVX		BU20TD3WG												
BU2ATD2/-		2.05	BU2ATD2WNVX		-												
BU21TD2/BU21TD3		2.1	BU21TD2WNVX		BU21TD3WG												
BU23TD2/-		2.3	BU23TD2WNVX		-												
BU25TD2/BU25TD3		2.5	280 (I _o =200mA)		BU25TD2WNVX											BU25TD3WG	
BU26TD2/BU26TD3		2.6	BU26TD2WNVX		BU26TD3WG												
BU27TD2/BU27TD3		2.7	BU27TD2WNVX		BU27TD3WG												
BU2HTD2/-		2.75	BU2HTD2WNVX		-												
BU28TD2/BU28TD3		2.8	260 (I _o =200mA)		BU28TD2WNVX											BU28TD3WG	
BU2JTD2/BU2JTD3WG	2.85	BU2JTD2WNVX	BU2JTD3WG														
BU29TD2/BU29TD3	2.9	BU29TD2WNVX	BU29TD3WG														
BU30TD2/BU30TD3	3.0	240 (I _o =200mA)	BU30TD2WNVX	BU30TD3WG													
BU31TD2/BU31TD3	3.1	BU31TD2WNVX	BU31TD3WG														
BU32TD2/BU32TD3	3.2	BU32TD2WNVX	BU32TD3WG														
BU33TD2/BU33TD3	3.3	220 (I _o =200mA)	BU33TD2WNVX	BU33TD3WG													
BU34TD2/BU34TD3	3.4	BU34TD2WNVX	BU34TD3WG														

Automotive 6.5V Resistance 300mA CMOS LDO Regulators with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (Max) (mV)	Ripple Rejection (dB)	Load Regulation (Max) (mV)	Circuit Current (μA)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Over Current Protection	Temperature Protection	Discharge Function	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BU12JA3DG-C	1.7 to 6.0	1.2	±2 (T _i = -40 to +150°C)	0.3	500 (I _o =300mA)	60	15	37	0.1	1.0	✓	✓	✓	✓	SSOP5	FSs	YES
New BU15JA3DG-C		1.5			365 (I _o =300mA)		15	37							SSOP5	FSs	YES
New BU18JA3DG-C		1.8			330 (I _o =300mA)		15	37							SSOP5	FSs	YES
New BU25JA3DG-C		2.5			240 (I _o =300mA)		15	37							SSOP5	FSs	YES
New BU30JA3DG-C		3.0			220 (I _o =300mA)		15	37							SSOP5	FSs	YES
New BU33JA3DG-C		3.3			200 (I _o =300mA)		15	37							SSOP5	FSs	YES

Automotive 6.5V Resistance 200mA CMOS LDO Regulators with Shutdown Switch

Type	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shutdown Switch	Over Current Protection	Temperature Protection	Discharge Function	Package/Part No.		
																SSON004X1216	HVSOF5	
BU15TA2W	2.5 to 5.5	1.5	±25mV	0.2	-	70	10 (I _o =0.01 to 100mA)	40	70	1.0	1.0	✓	✓	✓	✓	BU15TA2WNVX	BU15TA2WHFV	
BU18TA2W		1.8														BU18TA2WNVX	BU18TA2WHFV	
BU25TA2W		2.5														400 (I _o =200mA)	BU25TA2WNVX	BU25TA2WHFV
BU26TA2W		2.6														BU26TA2WNVX	BU26TA2WHFV	
BU27TA2W		2.7	BU27TA2WNVX		BU27TA2WHFV													
BU28TA2W		2.8	360 (I _o =200mA)		BU28TA2WNVX	BU28TA2WHFV												
BU2JTA2W		2.85	BU2JTA2WNVX		BU2JTA2WHFV													
BU29TA2W		2.9	330 (I _o =200mA)		BU29TA2WNVX	BU29TA2WHFV												
BU30TA2W		3.0	BU30TA2WNVX		BU30TA2WHFV													
BU31TA2W		3.1	BU31TA2WNVX		BU31TA2WHFV													
BU32TA2W		3.2	BU32TA2WNVX		BU32TA2WHFV													
BU33TA2W		3.3	300 (I _o =200mA)		BU33TA2WNVX	BU33TA2WHFV												
BU34TA2W		3.4	BU34TA2WNVX		BU34TA2WHFV													

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Automotive 6.5V Resistance 200mA CMOS LDO Regulators with Shutdown Switch (BUxxSD series $V_{IN}=1.7$ to 6.0V)																		
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μ A)	Output Short Current (mA)	Input Capacitor (μ F)	Output Capacitor (μ F)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BU12SD2MG-M	1.7 to 6.0	1.2	± 2 ($T_s=-40$ to $+105^\circ\text{C}$)	0.2	400 ($I_o=100\text{mA}$)	68	1 ($I_o=1$ to 200mA)	33	100	1.0	1.0	✓	✓	✓	-	SSOP5	FSs	YES
BU15SD2MG-M		1.5			280 ($I_o=100\text{mA}$)											SSOP5	FSs	YES
BU18SD2MG-M		1.8			150 ($I_o=100\text{mA}$)											SSOP5	FSs	YES
BU25SD2MG-M		2.5			100 ($I_o=100\text{mA}$)											SSOP5	FSs	YES
BU28SD2MG-M		2.8			85 ($I_o=100\text{mA}$)											SSOP5	FSs	YES
BU30SD2MG-M		3.0														SSOP5	FSs	YES
BU33SD2MG-M		3.3														SSOP5	FSs	YES

6.5V Resistance 200mA CMOS LDO Regulators with Shutdown Switch																															
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μ A)	Output Short Current (mA)	Input Capacitor (μ F)	Output Capacitor (μ F)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100													
BU10JA2MNVX-C	1.7 to 6.0	1.0	$\pm 36\text{mV}$	0.2	800	70	10	35	70	0.47	0.47	✓	✓	✓	✓	SSON004R1010	FSs	YES													
BU11JA2MNVX-C		1.1														SSON004R1010	FSs	YES													
BU12JA2MNVX-C		1.2														SSON004R1010	FSs	YES													
BU1CJA2MNVX-C		1.25														SSON004R1010	FSs	YES													
BU15JA2MNVX-C		1.5														SSON004R1010	FSs	YES													
BU18JA2MNVX-C		1.8														SSON004R1010	FSs	YES													
BU25JA2MNVX-C		2.5														SSON004R1010	FSs	YES													
BU28JA2MNVX-C		2.8														SSON004R1010	FSs	YES													
BU2JJA2MNVX-C		2.85														SSON004R1010	FSs	YES													
BU29JA2MNVX-C		2.9														SSON004R1010	FSs	YES													
BU30JA2MNVX-C		3.0														SSON004R1010	FSs	YES													
BU33JA2MNVX-C		3.3														SSON004R1010	FSs	YES													
BU34JA2MNVX-C		3.4														SSON004R1010	FSs	YES													
BU10JA2VG-C		1.0														± 2	0.2	-	68	0.5	33	100	1.0	1.0	✓	✓	✓	-	SSOP5	FSs	YES
BU12JA2VG-C		1.2																											SSOP5	FSs	YES
BU1CJA2VG-C		1.25																											SSOP5	FSs	YES
BU15JA2VG-C	1.5	SSOP5	FSs	YES																											
BU18JA2VG-C	1.8	SSOP5	FSs	YES																											
BU25JA2VG-C	2.5	SSOP5	FSs	YES																											
BU28JA2VG-C	2.8	SSOP5	FSs	YES																											
BU2JJA2VG-C	2.85	SSOP5	FSs	YES																											
BU30JA2VG-C	3.0	SSOP5	FSs	YES																											
BU33JA2VG-C	3.3	SSOP5	FSs	YES																											
BU10JA2DG-C	1.0	85	0.2	-	68	0.5	33	100	1.0	1.0	✓	✓	✓	✓	SSOP5														FSs	YES	
BU12JA2DG-C	1.2														SSOP5														FSs	YES	
BU1CJA2DG-C	1.25														SSOP5														FSs	YES	
BU15JA2DG-C	1.5														SSOP5														FSs	YES	
BU18JA2DG-C	1.8														SSOP5														FSs	YES	
BU25JA2DG-C	2.5														SSOP5														FSs	YES	
BU28JA2DG-C	2.8														SSOP5	FSs	YES														
BU2JJA2DG-C	2.85														SSOP5	FSs	YES														
BU30JA2DG-C	3.0														SSOP5	FSs	YES														
BU33JA2DG-C	3.3														SSOP5	FSs	YES														

6.5V Resistance 200mA CMOS LDO Regulators with Shutdown Switch WL-CSP type																		
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μ A)	Output Short Current (mA)	Input Capacitor (μ F)	Output Capacitor (μ F)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package (mm)	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BU18SA4WGWL	1.7 to 5.5	1.8	± 2	0.2	100 ($I_o=150\text{mA}$)	70	2 ($I_o=1$ to 100mA)	40	100	0.47	0.47	✓	✓	✓	-	UCSP50L1 0.8x0.8, H=Max 0.55mm	-	-
BU25SA4WGWL		2.5														UCSP50L1 0.8x0.8, H=Max 0.55mm		
BU2FSA4WGWL		2.55														UCSP50L1 0.8x0.8, H=Max 0.55mm		
BU28SA4WGWL		2.8														UCSP50L1 0.8x0.8, H=Max 0.55mm		
BU30SA4WGWL		3.0														UCSP50L1 0.8x0.8, H=Max 0.55mm		
BU33SA4WGWL		3.3														UCSP50L1 0.8x0.8, H=Max 0.55mm		

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LDO Regulators

Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

6.5V Resistance 150mA CMOS LDO Regulators with Shutdown Switch

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Package
BH25NB1WHFV	2.5 to 5.5	2.5	±1	0.15	250 (I _o =100mA)	80	6 (I _o =1 to 100mA)	60	50	0.1	2.2	✓	✓	✓	HVSOF5
BH28NB1WHFV		2.8													HVSOF5
BH2JNB1WHFV		2.85													HVSOF5
BH29NB1WHFV		2.9													HVSOF5
BH30NB1WHFV		3.0													HVSOF5
BH31NB1WHFV		3.1													HVSOF5
BH33NB1WHFV		3.3													HVSOF5

6.5V Resistance 150mA CMOS LDO Regulators WL-CSP type

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Package (mm)
BH15RB1WGUT	2.5 to 5.5	1.5	±1	0.15	100 (I _o =100mA)	63	2 (I _o =1 to 100mA)	34	40	1.0	1.0	✓	✓	✓	VCSP60N1 1.04x1.0, H=Max 0.675
BH18RB1WGUT		1.8													VCSP60N1 1.04x1.0, H=Max 0.675
BH25RB1WGUT		2.5													VCSP60N1 1.04x1.0, H=Max 0.675
BH28RB1WGUT		2.8													VCSP60N1 1.04x1.0, H=Max 0.675
BH29RB1WGUT		2.9													VCSP60N1 1.04x1.0, H=Max 0.675
BH30RB1WGUT		3.0													VCSP60N1 1.04x1.0, H=Max 0.675
BH31RB1WGUT		3.1													VCSP60N1 1.04x1.0, H=Max 0.675
BH33RB1WGUT		3.3													VCSP60N1 1.04x1.0, H=Max 0.675

6.5V Resistance 150mA CMOS LDO Regulators with Mode Switching Function

Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision (%)		Output Current (A)	Vsat (mV)	Ripple Rejection (dB)	Load Regulation (mV)	Circuit Current (μA)		Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package
			High Speed Mode	Low I _{cc} Mode					High Speed Mode	Low I _{cc} Mode								
BH12PB1WHFV	1.7 to 5.5	1.2	±1	-3.3 to +4.3	0.15	-	60 (High speed mode)	10 (I _o =10 to 100mA)	20	2	50	0.47	0.47	✓	✓	✓	✓	HVSOF5
BH15PB1WHFV		1.5																HVSOF5
BH18PB1WHFV		1.8																HVSOF5
BH25PB1WHFV		2.5																HVSOF5
BH28PB1WHFV		2.8																HVSOF5
BH29PB1WHFV		2.9																HVSOF5
BH30PB1WHFV		3.0																HVSOF5
BH31PB1WHFV		3.1																HVSOF5
BH33PB1WHFV		3.3																HVSOF5

6V Resistance Ultra Low Voltage Output LDO Regulator

Part No.	Output Current (A)	Input Voltage (V)		Output Voltage (V)	Voltage Accuracy (%)	Power Good	Adjustable Soft Start	UVLO	OCP	TSD	Package
		V _{CC}	V _{IN}								
New BD00JC0MNUX-M	1	3.0 to 5.5	0.95 to V _{CC} -1	0.65 to 2.7	±2	✓	✓	✓	Recovery	Recovery	VSON010X3030

UVLO: Under Voltage Lock Out, OCP: Over Current Protection, TSD: Thermal Shut Down

Ultra Low Dropout LDO Regulators

Ultra LDO type, Fast Transient Response LDO Regulators

Part No.	Output Current (A)	Input Voltage (V)		Output Voltage (V)	Voltage Accuracy (%)	Power Good	Adjustable Soft Start	UVLO	OCP	TSD	Package
		V _{CC}	V _{IN}								
BD3550HFN	0.5	4.3 to 5.5	0.95 to (V _{CC} -1)	0.65 to 2.70	±1	-	✓	✓	Recovery	Recovery	HSON8
BD3551HFN	1.0		0.95 to (V _{CC} -1)								HSON8
BD3552HFN	2.0		0.95 to (V _{CC} -1)								HSON8
BD3508MUV	3.0		0.75 to (V _{CC} -1)	0.65 to 2.70							VQFN020V4040
BD3540NUV	0.5		0.95 to (V _{CC} -1)								VSON010V3030
BD3541NUV	1.0		0.95 to (V _{CC} -1)								VSON010V3030
BD3509MUV	4.0		0.7 to (V _{CC} -1)								VQFN020V4040

UVLO: Under Voltage Lock Out, OCP: Over Current Protection, TSD: Thermal Shut Down

Multi-Output LDO Regulators

Please ensure that minimum input voltage always exceeds the sum of output voltage and drop out voltage for the device.

2ch Variable Step CMOS LDO Regulator																								
Part No.	Input Voltage (V)	Selectable Output Voltage (V)								Output Voltage Precision (%)	Output Current (A)	Vs _{at} (mV) (I _o =100mA)	Ripple Rejection (dB)	Load Regulation (%)	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Low Voltage Protection	Package (mm)	
		V _{OUT}	2ch	2.8	2.9	2.95	3.0	3.05	3.1															3.2
BD7602GUL	2.7 to 5.5	1ch	3.0								2	0.1	—	45	0.7	10	—	1.0	4.7	✓	✓	✓	✓	VCSP50L1C 1.6x1.6, H=Max 0.57
		2ch	2.8	2.9	2.95	3.0	3.05	3.1	3.2	3.3	—	0.15												

3ch CMOS LDO Regulators																	
Part No.	Input Voltage (V)	Output Voltage (V)	Output Voltage Precision	Output Current (A)	Vs _{at} (mV) (I _o =200mA)	Ripple Rejection (dB)	Load Regulation (%)	ch	Circuit Current (μA)	Output Short Current (mA)	Input Capacitor (μF)	Output Capacitor (μF)	Shut Down Switch	Over Current Protection	Temperature Protection	Discharge Function	Package
BU6650NUX	2.5 to 5.5	2.8	±1%	0.2	360	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		2.8	±1%		360	65		2									
		1.8	±25mV		—	70		3									
BU6651NUX	2.5 to 5.5	2.8	±1%	0.2	360	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		1.8	±25mV		—	70		2									
		1.5	±25mV		—	70		3									
BU6652NUX	2.5 to 5.5	2.8	±1%	0.2	360	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		2.8	±1%		360	65		2									
		1.5	±25mV		—	70		3									
BU6653NUX	2.5 to 5.5	2.8	±1%	0.2	360	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		1.8	±25mV		—	70		2									
		1.8	±25mV		—	70		3									
BU6654NUX	2.5 to 5.5	3.3	±1%	0.2	300	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		1.8	±25mV		—	70		2									
		1.5	±25mV		—	70		3									
BU6655NUX	2.5 to 5.5	3.3	±1%	0.2	300	65	10 (I _o =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030
		2.8	±1%		360	65		2									
		1.8	±25mV		—	70		3									

LDO Regulators with Voltage Detector and Watchdog Timer

550mA Output LDO Regulators with Voltage Detector and Watchdog Timer													
Part No.	Input Voltage (V)	LDO				Voltage Detector			Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Function					
BD4271EFJ-C	5.5 to 45.0	5	±2 (T _J =-40 to +150°C)	0.55	0.2 (I _o =300mA)	4.65	±2.6	4.65V Voltage Detector+WDT	75	T _J =-40 to +150	HTSOP-J8	FSs	YES
BD4271HFP-C											HRP7	FSs	YES
BD4271FP2-C											TO263-7	FSs	YES

500mA Output LDO Regulators with Voltage Detector and Watchdog Timer													
Part No.	Input Voltage (V)	LDO				Voltage Detector			Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Function					
BD3021HFP	5.6 to 36.0	5	±2 (T _a =-40 to +125°C)	0.5	0.3 (I _o =200mA)	4.5	±2	4.5V Voltage Detector+WDT (Active switch) Adjustable Voltage Detector+WDT	80	T _a =-40 to +125	HRP7	FSs	YES
BD3020HFP						Variable (at V _s open: 4.1V)					HRP7	FSs	YES

200mA Output LDO Regulator with Voltage Detector and Watchdog Timer													
Part No.	Input Voltage (V)	LDO				Voltage Detector			Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)	Function					
New BD820F5UEFJ-C	5.9 to 42.0	5	±2 (T _J =-40 to +150°C)	0.2	0.4 (I _o =200mA)	4.2	±2.62	4.2V Voltage Detector+WDT	5	T _J =-40 to +150	HTSOP-J8	FSs	YES

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LDO Regulators with Voltage Detector Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

500mA Output LDO Regulators with Reset

Part No.	Input Voltage (V)	LDO				Voltage Detector		Shutdown Switch	Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)						
BD42754FPJ-C	5.5 to 45.0	5	±2 (T _i =-40 to +150°C, V _{CC} =6.0 to 28V, I _o =5 to 400mA)	0.5	0.25 (I _o =300mA)	4.62	±2.8	-	75	T _i =-40 to +150	TO252-J5	FSs	YES
BD42754FP2-C											TO263-5	FSs	YES

200mA/300mA Output LDO Regulators with Reset

Part No.	Input Voltage (V)	LDO				Voltage Detector		Shutdown Switch	Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		Output Voltage (V)	Output Voltage Precision (%)	Output Current (A)	I/O Voltage Difference (V)	Detection Voltage (V)	Voltage Detection Precision (%)						
BD4269FJ-C	5.5 to 45.0	5	±2 (T _i =-40 to +150°C, V _{CC} =6.0 to 16V, I _o =1 to 100mA)	0.2	0.25 (I _o =100mA)	Variable (with RADJ not used: 4.62V)	±2.6	-	70	T _i =-40 to +150	SOP-J8	FSs	YES
New BD4269UEFJ-C				0.3							HTSOP-J8	FSs	YES

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Voltage Tracker

500mA Voltage Tracker

Part No.	Input Voltage (V)	Output Current (A)	Offset Voltage (mV)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD3925FP-C	4.5 to 36.0	0.5	±10 (T _a =-40 to +125°C, V _{CC} =6 to 36V, I _o =5 to 200mA)	0.25 (I _o =200mA)	45	T _a =-40 to +125	TO252-5	FSs	YES
BD3925HFP-C							HRP5	FSs	YES

250mA Voltage Tracker

Part No.	Input Voltage (V)	Output Current (A)	Offset Voltage (mV)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD42530UEFJ-C	5.6*2 to 42.0	0.25	±10 (T _i =-40 to +150°C, V _{CC} =6 to 32V, I _o =0.1 to 250mA)	0.28 (I _o =200mA)	40	T _i =-40 to +150	HTSOP-J8	FSs	YES
BD42530FP2-C							TO263-5	FSs	YES
BD42530FPJ-C							TO252-J5	FSs	YES

50mA/70mA Voltage Tracker

Part No.	Input Voltage (V)	Output Current (A)	Offset Voltage (mV)	I/O Voltage Difference (V)	Circuit Current (μA)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD42500G-C	5.3*2 to 42.0	0.05	±15 (T _i =-40 to +150°C, V _{CC} =6 to 40V, I _o =1 to 50mA)	0.12 (I _o =50mA)	40	T _i =-40 to +150	SSOP5	FSs	YES
BD42540FJ-C	5.4*2 to 42.0	0.07	±10 (T _i =-40 to +150°C, V _{CC} =5.5 to 26V, I _o =0.1 to 60mA)	0.2 (I _o =70mA)	40	T _i =-40 to +150	SOP-J8	FSs	YES

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*2 5V setting

Power Supply IC for High Fidelity Audio

Power Supply IC for High Fidelity Audio

Part No.	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Reference Voltage Accuracy (%)	Dropout Voltage (mV)	Noise Level (μVrms)	PSRR (dB)	Over Current Protection	Thermal Protection	Package
BD37201NUX	0.5	2.7 to 5.5	Variable 1.0 to 4.5	±1	200	3.3	90 (f=1kHz) 55 (f=1MHz)	✓	✓	VSON008X2030

Linear Regulators for DDR SDRAM

Termination Regulators for DDR SDRAM

Part No.	V _{CC} Input Voltage (V)	V _{TT,N} Termination Input Voltage (V)	V _{DDO} Reference Input Voltage (V)	V _{TT} Output Voltage (V)	V _{TT} Voltage Precision (mV)	V _{TT} Output Current (A)	V _{REF} Output Current (mA)	Features												Package		
								Enable	Soft Start	Power Good	UVLO	Output Ceramic Capacitors	Thermal Protection	DDR (VDDQ)								
														DDR1 (2.5V/2.6V)	DDR2 (1.8V)	DDR2L (1.5V)	LPDDR2 (1.2V)	DDR3 (1.5V)	DDR3L (1.35V)		DDR3U (1.25V)	LPDDR3 (1.2V)
BD3533F	2.7 to 5.5	1.0 to 5.5	1.00 to 2.75	0.75 to 1.25	±30	±1.0	±20	✓	✓	-	✓	-	Recovery	✓	✓	-	-	-	-	-	-	SOP8
BD3533FVM								MSOP8														
BD3533HFN								HSOP8														
BD3539FVM	2.7 to 5.5	1.0 to 5.5	1.00 to 2.75	0.75 to 1.25	±15	±1.0	±25	✓	✓	-	✓	✓	Recovery	✓	✓	-	✓	-	-	-	-	MSOP8
BD3539NUX								VSON008X2030														
BD35390FJ	2.7 to 5.5	1.0 to 5.5	1.00 to 2.75	0.75 to 1.25	±15	±1.0	-	✓	✓	✓	✓	✓	Recovery	✓	✓	-	✓	-	-	-	-	SOP-J8

Automotive Termination Regulators for DDR SDRAM

Part No.	V _{CC} Input Voltage (V)	V _{TT,N} Termination Input Voltage (V)	V _{DDO} Reference Input Voltage (V)	V _{TT} Output Voltage (V)	V _{TT} Voltage Precision (mV)	V _{TT} Output Current (A)	V _{REF} Output Current (mA)	Features												Package	Automotive Grade AEC-Q100			
								Enable	Soft Start	Power Good	UVLO	Output Ceramic Capacitors	Thermal Protection	DDR (VDDQ)										
														DDR1 (2.5V/2.6V)	DDR2 (1.8V)	DDR2L (1.5V)	LPDDR2 (1.2V)	DDR3 (1.5V)	DDR3L (1.35V)			DDR3U (1.25V)	LPDDR3 (1.2V)	DDR4 (1.2V)
BD35395FJ-M	2.7 to 5.5	1.0 to 5.5	1.00 to 2.75	0.500 to 1.375	±13.5	±1.0	-	✓	✓	✓	✓	✓	Recovery	✓	✓	✓	-	✓	✓	-	-	-	SOP-J8	YES

Power Management

Switching Regulators

Integrated MOSFET Switching Regulators (Buck Converters) P.43	Integrated MOSFET Switching Regulators (Boost and Buck-Boost Converters) P.45
External Switch Switching Regulators (Buck Controllers) P.45	External Switch Switching Regulators (Boost and Buck-Boost Controllers) P.46
For Automotive Switching Regulators P.46	

Switching Regulators

Integrated MOSFET Switching Regulators (Buck Converters)

Resistance 7V or less 1A or less Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (µA)	Control Mode	Features						Package (mm)
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection	
BD9122GUL	7	0.3	2.5 to 5.5	1 to 2	1	200	Current	–	–	✓	✓	Latch	Latch	VCSP50L2 2.5x1.1, H=0.55
Nano BD70522GUL*1	6	0.5	2.5 to 5.5	1.2 to 3.3*2	1	0.18	On-time	✓	–	✓	✓	Recovery	Recovery	VCSP50L1C 1.76x1.56, H=0.57
BD9161FVM	7	0.6	2.5 to 4.5	1.0 to 3.3	1	200	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9161FVM-LB	7	0.6	2.5 to 4.5	1.0 to 3.3	1	200	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9120HFN	7	0.8	2.7 to 4.5	1.0 to 1.5	1	200	Current	–	–	✓	✓	Latch	Latch	HSO8
BD9102FVM	7	0.8	4.0 to 5.5	1.24	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD8966FVM	7	0.8	4.0 to 5.5	1.0 to 2.5	1	–	Current	–	–	✓	–	Latch	Latch	MSOP8
BD9106FVM	7	0.8	4.0 to 5.5	1.0 to 2.5	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9106FVM-LB	7	0.8	4.0 to 5.5	1.0 to 2.5	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9109FVM	7	0.8	4.5 to 5.5	3.3	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9109FVM-LB	7	0.8	4.5 to 5.5	3.3	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD8967FVM	7	0.8	4.5 to 5.5	3.3	1	–	Current	–	–	✓	–	Latch	Latch	MSOP8
BD9104FVM	7	0.8	4.5 to 5.5	3.3	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BD9A100MUV	7	1	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9A101MUV-LB	7	1	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9B100MUV	7	1	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	35	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BU90008GWZ	7	1	2.3 to 5.5	1	3.6	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90003GWZ	7	1	2.3 to 5.5	1.2	4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90007GWZ	7	1	2.3 to 5.5	1.25	4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90009GWZ	7	1	2.3 to 5.5	1.3	4.2	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90004GWZ	7	1	2.3 to 5.5	1.8	5.4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90104GWZ	7	1	2.3 to 5.5	1.8	5.4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90005GWZ	7	1	2.3 to 5.5	2.5	6	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90006GWZ	7	1	2.3 to 5.5	3	6	55	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4
BU90002GWZ	7	1	4.0 to 5.5	3.3	6	55	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3x0.9, H=0.4

Resistance 7V or less 1.2 to 3A Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (µA)	Control Mode	Features						Package (mm)
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection	
BD8964FVM	7	1.2	4.0 to 5.5	1.0 to 1.8	1	–	Current	–	–	✓	–	Latch	Latch	MSOP8
BD9107FVM	7	1.2	4.0 to 5.5	1.0 to 1.8	1	250	Current	–	–	✓	✓	Latch	Latch	MSOP8
BU90028NUX	7	1.5	2.3 to 5.5	1.18	1	53	On-time	–	–	✓	✓	Recovery	Recovery	VSON008X2030
BU90023NUX	7	1.5	2.3 to 5.5	1.23	1	53	On-time	–	–	✓	✓	Recovery	Recovery	VSON008X2030
BD9B200MUV	7	2	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	40	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9A201FP4-LBZ	7	2	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	–	✓	–	Recovery	Recovery	TSOT23-8L
BD9110NV	7	2	4.5 to 5.5	1.0 to 2.5	1	250	Current	–	–	✓	✓	Latch	Latch	SON008V5060
BD8960NV	7	2	2.7 to 5.5	1.0 to 2.5*2	1	–	Current	–	–	✓	–	Latch	Latch	SON008V5060
BD9130NV	7	2	2.7 to 5.5	1.0 to 2.5*2	1	250	Current	–	–	✓	✓	Latch	Latch	SON008V5060
BD8961NV	7	2	4.5 to 5.5	3.3	1	–	Current	–	–	✓	–	Latch	Latch	SON008V5060
BD9111NV	7	2	4.5 to 5.5	3.3	1	250	Current	–	–	✓	✓	Latch	Latch	SON008V5060
BD8962MUV	7	3	2.7 to 5.5	0.8 to 2.5*2	1	–	Current	–	–	✓	–	Latch	Latch	VQFN020V4040
BD8963EFJ	7	3	2.7 to 5.5	1.0 to 2.5*2	1	–	Current	–	–	✓	–	Latch	Latch	HTSOP-J8
BD9139MUV	7	3	2.7 to 5.5	0.8 to 3.3*2	1	200	Current	–	–	✓	–	Latch	Latch	VQFN016V3030
BD9A300MUV	7	3	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9A301MUV-LB	7	3	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9B305QUZ	7	3	2.7 to 5.5	0.6 to (V _{IN} ×0.8)	1	15	On-time	✓	✓	✓	✓	Recovery	Recovery	VMM08LZ2020 2.0x2.0, H=0.4
BD9B333GWZ	7	3	2.7 to 5.5	0.6 to (V _{IN} ×0.8)	1.3	50	On-time	✓	✓	✓	Deep	Recovery	Recovery	UCSP35L1 1.98x1.8, H=0.4
BD9B300MUV	7	3	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	35	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9B301MUV-LB	7	3	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	45	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9B304QWZ	7	3	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	40	On-time	–	–	✓	Deep	Recovery	Recovery	UMMP08AZ2020 2.0x2.0, H=0.4

*1 BD70522GUL has an ultra-high efficiency battery management solution evaluation board "REFLV BMS001-EVK-001". This board is equipped with NGK Insulators, Ltd.'s new thin, large-capacity lithium-ion secondary battery "EnerCera™". For details, please refer to the web.
 *2 Restrictions depend on input/output voltage conditions.

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Integrated MOSFET Switching Regulators (Buck Converters)

Resistance 7V or less 4A or more Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package	
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		
BD9137MUV	7	4	2.7 to 5.5	0.8 to 3.3*	1	250	Current	-	-	✓	✓	Recovery	Recovery	VQFN020V4040	
BD91361MUV	7	4	2.7 to 5.5	0.8 to 3.3*	1	250	Current	-	-	✓	✓	Latch	Latch	VQFN020V4040	
BD9A400MUV	7	4	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030	
BD9B400MUV	7	4	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	45	On-time	✓	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD91364BMUU	7	5	2.9 to 5.5	0.8 to (V _{IN} ×0.8)	1.7	150	On-time	✓	✓	✓	✓	Latch	Recovery	VQFN20U4040M	
BD9B500MUV	7	5	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	45	On-time	✓	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9A600MUV	7	6	2.7 to 5.5	0.8 to (V _{IN} ×0.7)	1	400	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030	
BD9B600MUV	7	6	2.7 to 5.5	0.8 to (V _{IN} ×0.8)	2/1	45	On-time	✓	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030

Resistance 20V or less 1A or less Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package	
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection
BD8312HFN	15	0.8	3.5 to 14.0	1.2 to 12.0*	1.5	600	Voltage	-	-	✓	-	-	Recovery	-	HSO8
BD8313HFN	15	1	3.5 to 14.0	1.2 to 12.0*	1	600	Voltage	-	-	✓	-	-	Recovery	-	HSO8

Resistance 20V or less 2A to 3A Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package (mm)	
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection
BD9141MUV	15	2	4.5 to 13.2	2.5 to 6.0*	0.5	300	Current	-	-	✓	✓	Latch	Latch	-	VQFN020V4040
BD95821MUV	15.2	2	7.5 to 15.0	0.8 to (V _{IN} ×0.5) (V _{IN} ×0.5)≤5.5	0.5 to 0.8	1,200	H ² Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9325FJ	20	2	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	SOP-J8
BD9325FJ-LB	20	2	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	SOP-J8
BD9859EFJ	15	3	5 to 14	1.0 to (V _{IN} ×0.7)	0.75	2,800	Current	-	-	-	-	Recovery	Recovery	-	HTSOP-J8
BD95831MUV	15.2	3	7.5 to 15.0	0.8 to (V _{IN} ×0.5) (V _{IN} ×0.5)≤5.5	0.5 to 0.8	1,200	H ² Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9D320EFJ	20	3	4.5 to 18.0	0.765 to 7.0 (V _{IN} ×0.07) to (V _{IN} ×0.65)	0.7	1,000	On-time	-	✓	✓	-	Recovery	Recovery	-	HTSOP-J8
BD9D300MUV	20	3	4.0 to 17.0	0.9 to 5.25	1.25	20	On-time	✓	✓	✓	✓	Recovery	Recovery	✓	VQFN016V3030
BD9C301FJ	20	3	4.5 to 18.0	(V _{IN} ×0.125) to (V _{IN} ×0.7)	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	SOP-J8
BD9C301FJ-LB	20	3	4.5 to 18.0	(V _{IN} ×0.125) to (V _{IN} ×0.7)	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	SOP-J8
BD9D321EFJ	20	3	4.5 to 18.0	0.765 to 7.0 (V _{IN} ×0.07) to (V _{IN} ×0.65)	0.7	700	On-time	-	✓	✓	✓	Recovery	Recovery	-	HTSOP-J8
BD9D322QWZ	20	3	4.5 to 18.0	0.765 to 7.0 (V _{IN} ×0.07) to (V _{IN} ×0.65)	0.7	700	On-time	-	✓	✓	✓	Recovery	Recovery	-	UMMP008Z2020 2.0×2.0, H=0.4
BD9D323QWZ	20	3	4.5 to 18.0	0.765 to 7.0 (V _{IN} ×0.07) to (V _{IN} ×0.65)	0.7	1,000	On-time	-	✓	✓	-	Recovery	Recovery	-	UMMP008Z2020 2.0×2.0, H=0.4
BD9326EFJ	20	3	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9326EFJ-LB	20	3	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8

Resistance 20V or less 4A or more Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package	
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection
BD95841MUV	15.2	4	7.5 to 15.0	0.8 to (V _{IN} ×0.5) (V _{IN} ×0.5)≤5.5	0.5 to 0.8	1,200	H ² Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9C401EFJ	20	4	4.5 to 18.0	(V _{IN} ×0.125) to (V _{IN} ×0.7) (V _{IN} ×0.125)≥0.8	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	HTSOP-J8
BD9327EFJ	20	4	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9327EFJ-LB	20	4	4.75 to 18.0	0.9 to (V _{IN} ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9C501EFJ	20	5	4.5 to 18.0	(V _{IN} ×0.075) to (V _{IN} ×0.7) (V _{IN} ×0.075)≥0.8	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	HTSOP-J8
BD9C601EFJ	20	6	4.5 to 18.0	(V _{IN} ×0.075) to (V _{IN} ×0.7) (V _{IN} ×0.075)≥0.8	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	HTSOP-J8
BD95861MUV	20	6	7.5 to 18.0	0.8 to (V _{IN} ×0.5) (V _{IN} ×0.5)≤5.5	0.35 to 0.80	1,200	H ² Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN024V4040

Resistance 22V or more 1A or less Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package	
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection
BD9G102G-LB	45	0.5	6 to 42	(V _{IN} ×0.08) to (V _{IN} ×0.8) (V _{IN} ×0.08)≥0.75	1	500	Current	-	-	-	-	Recovery	Recovery	✓	SSOP6
BD9G101G	45	0.5	6 to 42	(V _{IN} ×0.15) to (V _{IN} ×0.7) (V _{IN} ×0.15)≥1.0	1.5	700	Current	-	-	-	-	Recovery	Recovery	-	SSOP6
BD9227F	22	1	6 to 20	(V _{IN} ×0.252) to V _{IN} (V _{IN} ×0.252)≥1.0	1	400	Current	-	-	-	-	Recovery	Recovery	-	SOP8
New BD9E105FP4-Z	30	1	4.5 to 28	V _{IN} ×0.1V or 0.7V to V _{IN} ×0.8V	0.5	55	Current	-	-	✓	✓	Recovery	Recovery	✓	TSOT23-6L
BD9E104FJ	30	1	7 to 26	(V _{IN} ×0.143) to (V _{IN} ×0.5) (V _{IN} ×0.143)≥1.0	0.57	250	Current	-	-	✓	✓	Recovery	Recovery	✓	SOP-J8
BD9E101FJ-LB	40	1	7 to 36	(V _{IN} ×0.0855) to (V _{IN} ×0.7) (V _{IN} ×0.0855)≥1.0	0.57	1,500	Current	-	-	✓	-	Recovery	Recovery	✓	SOP-J8
BD9E100FJ-LB	40	1	7 to 36	(V _{IN} ×0.15) to (V _{IN} ×0.7) (V _{IN} ×0.15)≥1.0	1	1,500	Current	-	-	✓	-	Recovery	Recovery	✓	SOP-J8
Nano BD9V101MUF-LB	70	1	16 to 60	0.8 to 5.5	1.9 to 2.3	2,500	Current	✓	-	✓	-	Recovery	Recovery	✓	VQFN24FV4040

*Restrictions depend on input/output voltage conditions.

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Resistance 22V or more 1.2A to 3A Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package		
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection	
BD9E151ANUX	30	1.2	6 to 28	1.0 to (V _{IN} ×0.7) or (V _{IN} ×5.0) ^{*2}	0.6	800	Current	—	✓	—	—	—	Recovery	Recovery	✓	VSON008X2030
BD9701CP-V5	36	1.5	8 to 35	1.0 to (V _{IN} ×3.0)	0.1	4,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO220CP-V5
BD9701FP	36	1.5	8 to 35	1.0 to (V _{IN} ×3.0)	0.1	4,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO252-5
BD9703CP-V5	36	1.5	8 to 35	1.0 to (V _{IN} ×3.0)	0.3	5,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO220CP-V5
BD9703FP	36	1.5	8 to 35	1.0 to (V _{IN} ×3.0)	0.3	5,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO252-5
BD9870FPS	36	1.5	8 to 35	1.0 to (0.8×(V _{IN} ×RON))	0.9	5,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO252S-5
BD9873CP-V5	36	1.5	8 to 35	1.0 to (0.8×(V _{IN} ×RON))	0.11	5,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO220CP-V5
New BD9G201UEFJ-LB	45	1.5	4.5 to 42.0	0.8 to V _{IN} ^{*1}	0.3	1,200	Current	—	—	—	—	—	Recovery	Recovery	—	HTSOP-J8ES
New BD9E200FP4-Z	30	2	4.5 to 26.0	V _{IN} ×0.1 or 0.7V to V _{IN} ×0.8V	0.5	95	Current	—	—	✓	✓	—	Recovery	Recovery	✓	TSOT23-6L
New BD9E201FP4-Z	30	2	4.5 to 28.0	V _{IN} ×0.1 or 0.7V to V _{IN} ×0.8V	0.35	510	Current	—	—	✓	—	—	Recovery	Recovery	✓	TSOT23-6L
BD9778HFP	36	2	7 to 35	(V _{IN} ×0.06) to V _{IN} (V _{IN} ×0.06)≥1.0	0.05 to 0.50	3,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	HRP7
BD9E301EFJ-LB	40	2.5	7 to 36	(V _{IN} ×0.0855) to (V _{IN} ×0.7) (V _{IN} ×0.0855)≥1.0	0.57	1,500	Current	—	—	✓	—	—	Recovery	Recovery	✓	HTSOP-J8
BD9E300EFJ-LB	40	2.5	7 to 36	(V _{IN} ×0.15) to (V _{IN} ×0.7) (V _{IN} ×0.15)≥1.0	1	1,500	Current	—	—	✓	—	—	Recovery	Recovery	✓	HTSOP-J8
BD9E302EFJ	30	3	7 to 28	(V _{IN} ×0.11) to (V _{IN} ×0.7) (V _{IN} ×0.11)≥1.0	0.55	290	Current	—	—	✓	✓	—	Recovery	Recovery	✓	HTSOP-J8
BD9702CP-V5	36	3	8 to 35	1.0 to (V _{IN} ×3.0)	0.11	4,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO220CP-V5
BD9874CP-V5	36	3	8 to 35	1.0 to (0.8×(V _{IN} ×RON))	0.11	5,000	Voltage	—	—	—	—	—	Recovery	Recovery	—	TO220CP-V5
New BD9E304FP4-LBZ	39	3	4.5 to 36	V _{IN} ×0.1V or 0.7V to V _{IN} ×0.8V (V _{IN} ×0.06) to (V _{IN} ×0.8) (V _{IN} ×0.06)≥1.0	0.3	45	Current	—	✓	✓	✓	✓	Recovery	Recovery	✓	TSOT23-8L
BD9E303EFJ-LB	40	3	7 to 36	(V _{IN} ×0.06) to (V _{IN} ×0.8) (V _{IN} ×0.06)≥1.0	0.3	2,200	Current	—	—	✓	—	—	Recovery	Recovery	✓	HTSOP-J8
BD9G341AEFJ	80	3	12 to 76	1.0 to (V _{IN} ×0.9) ^{*1}	0.05 to 0.75	1,500	Current	—	—	—	—	—	Recovery	Recovery	✓	HTSOP-J8
BD9G341AEFJ-LB	80	3	12 to 76	1.0 to (V _{IN} ×0.9) ^{*1}	0.05 to 0.75	1,500	Current	—	—	—	—	—	Recovery	Recovery	✓	HTSOP-J8


Resistance 22V or more 4A or more Single Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package		
								Power Good	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		Over-Voltage Protection	
BD95514MUV	30	4	4.5 to 28.0	0.7 to 5.0	0.2 to 1.0	1,300	H ² Reg	✓	✓	✓	✓	—	Latch	Recovery	✓	VQFN032V5050
Nano BD9F500QUZ	39	3 or 5	4.5 to 36.0	0.6 to 14.0	0.6, 1.0, 2.2	20	On-time	✓	✓	✓	✓	—	Recovery	Recovery	✓	VMMP16LZ3030
New BD9G500UEFJ-LA	80	5	7 to 76	1.0 to (0.97×V _{IN}) ^{*1}	0.1 to 0.65	750	Current	—	—	—	—	—	Recovery	Recovery	✓	HTSOP-J8
BD95500MUV	24	6	3 to 20	0.7 to 5.0	0.2 to 1.0	1,200	H ² Reg	✓	✓	✓	✓	—	Latch	Recovery	✓	VQFN040V6060
BD9F800MUV	30	8	4.5 to 28.0	0.765 to 13.5 ^{*1}	0.3, 0.6	850	On-time	✓	—	✓	—	—	Recovery	Recovery	—	VQFN11X3535A

Dual Output Buck Converters

Part No.	Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features						Package	
								Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection	Over-Voltage Protection			
BD9151MUV	7	I _{O1} : 0.4 I _{O2} : 0.8	2.8 to 5.5	V _{O1} : 1.8 V _{O2} : 1.2	1	400	Current	✓	✓	—	—	Latch	Latch	—	VQFN020V4040
BD9152MUV	7	I _{O1} : 1.5 I _{O2} : 1.5	4.5 to 5.5	V _{O1} : 3.3 V _{O2} : 0.8 to 2.5	1	500	Current	✓	✓	—	—	Latch	Latch	—	VQFN020V4040
BD93291EFJ	30	I _{O1} : 2.5 I _{O2} : 1.5	8 to 26	V _{O1} : 5.0 V _{O2} : 0.8 to 4.0	1.5 to 2.5	600	H ² Reg	✓	✓	—	—	Recovery	Recovery	—	HTSOP-J8

*1 Restrictions depend on input/output voltage conditions.
*2 The lower voltage is output.

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Integrated MOSFET Switching Regulators (Boost and Buck-Boost Converters)

Single Output Boost and Buck-Boost Converters

Part No.	Input Voltage Maximum Rating (V)	Switch Current Limit (mA)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package	
								Boost	Buck-Boost	SEPIC	Inverting	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection		Thermal Protection
BU33DV5G	6	10	1.75 to 4.50	3.3	0.1	250	Current	✓	—	—	—	✓	—	Recovery	✓	SSOP5
BU33DV7NUX	7	300	1.8 to 5.5	3.3	0.6	25	Current	✓	—	—	—	✓	—	Recovery	✓	VSON010V3030
BU34DV7NUX	7	300	1.8 to 5.5	3.4	0.6	25	Current	✓	—	—	—	✓	—	Recovery	✓	VSON010V3030
BU33UV7NUX	6.5	500	0.6 to 4.5	3.3	0.8	7	Current	✓	—	—	—	✓	—	Recovery	✓	VSON010X3020
BD8152FVM	7	1,400	2.5 to 5.5	V _{IN} to 14	0.6/1.2	1,200	Current	✓	✓	—	—	—	—	Recovery	✓	MSOP8
BD8158FVM	7	1,400	2.1 to 4.0	V _{IN} to 14	0.6/1.2	1,200	Current	✓	✓	—	—	—	—	Recovery	✓	MSOP8
BD83070GWL	6	2,000	2.0 to 5.5	2.5 or 3.3	1.5	2.8	Current	—	✓	—	—	✓	✓	Recovery	✓	UCSP50L1C
BD8306MUV	7	2,000	1.8 to 5.5	1.8 to 5.2	0.3 to 2.0	500	Voltage	✓	✓	—	—	—	—	Latch	✓	VQFN016V3030
BD8311NUV	14	2,500	3.5 to 11.0	4 to 11	1.2	600	Voltage	✓	—	—	—	—	—	Latch	✓	VSON010V3030
BD8314NUV	14	2,500	3 to 12	4 to 12	1.2	600	Voltage	✓	—	—	—	—	—	Latch	✓	VSON010V3030

Dual Output Boost and Buck-Boost Converters

Part No.	Input Voltage Maximum Rating (V)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package		
							Boost	Buck-Boost	SEPIC	Inverting	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection		Thermal Protection	
BD8317GWL	7	2.5 to 5.5	V _{O1} : -9.0 to -1.0 V _{O2} : V _{IN} to 18	0.8	500	Current	✓	—	—	—	✓	—	—	Latch	✓	UCSP50L1
BD8316GWL	7	2.5 to 5.5	V _{O1} : -9.0 to -1.0 V _{O2} : V _{IN} to 18	1.6	500	Current	✓	—	—	—	✓	—	—	Latch	✓	UCSP50L1
BD83854GWL	7	2.5 to 4.5	±5.4	1.0/0.5	2,500	Current	✓	—	—	—	✓	—	—	Latch	✓	UCSP50L1C
BD83854MUV	7	2.5 to 4.5	±5.4	1.0/0.5	2,500	Current	✓	—	—	—	✓	—	—	Latch	✓	VQFN20PV3535

External Switch Switching Regulators (Buck Controllers)

Single Output Buck Controllers

Part No.	Input Voltage Maximum Rating (V)	Input Voltage (V)	Supply Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package	
								Power Good	Externally Synchronizable	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		
BD9305AFVM	20	4.2 to 18.0	—	1.25 to V _{IN} [*]	0.1 to 0.8	1,500	Voltage	—	—	—	—	—	—	SCP Latch	Recovery	MSOP8
BD63536FJ	32	3 to 30	—	1.25 to V _{IN} [*]	0.01 to 0.3	2,000	Voltage	—	—	—	—	—	—	Recovery	Recovery	SOP-J8
BD9845FV	36	3.6 to 35.0	—	1.0 to V _{IN} [*]	0.1 to 1.5	2,400	Voltage	—	—	—	—	—	—	Recovery	Recovery	SSOP-B14
BD9611MUV	60	10 to 56	—	(V _{IN} ×0.02) to (V _{IN} ×0.97) (V _{IN} ×0.02)≥0.8 [*]	0.05 to 0.50	2,000	Voltage	—	—	✓	—	—	—	Recovery	Recovery	VQFN020V4040

*Restrictions depend on input/output voltage conditions.

External Switch Switching Regulators (Buck Controllers)

Dual Output Buck Controllers																
Part No.	Input Voltage Maximum Rating (V)	Input Voltage (V)	Supply Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package	
								Power Good	Externally Synchronizable	Adjustable Soft Start	Synchronous Rectifier	Light-Load Efficiency	Over-Current Protection	Thermal Protection		
BD95602MUV-LB	30	5.5 to 28.0	—	1.0 to 5.5	0.15 to 0.50	250	H ³ Reg	✓	—	✓	✓	✓	—	Latch	Recovery	VQFN032V5050
BD9848FV	36	3.6 to 35.0	—	1.0 to V _{IN} *	0.1 to 1.5	3,000	Voltage	—	—	✓	—	—	—	Recovery	Recovery	SSOP-B20

*Restrictions depend on input/output voltage conditions.

External Switch Switching Regulators (Boost and Buck-Boost Controllers)

Single Output Boost and Buck-Boost Controllers																
Part No.	Input Voltage Maximum Rating (V)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package		
							Boost	Buck-Boost	Inverting	Buck	Externally Synchronizable	Adjustable Soft Start	Synchronous Rectifier		Over-Current Protection	Thermal Protection
BD8303MUV	15	2.7 to 14.0	1 to 12	0.2 to 1.0	650	Voltage	—	✓	—	—	—	—	✓	Latch	Recovery	VQFN016V3030
BD9306AFVM	20	4.2 to 18.0	V _{IN} to (V _{IN} /0.3)	0.1 to 0.8	1,500	Voltage	✓	—	—	—	—	—	—	Latch	Recovery	MSOP8
BD9615MUV-LB	62	3.5 to 60.0	V _{IN} to (V _{IN} /0.2)	0.1 to 2.5	2,000	Voltage	✓	—	—	—	✓	—	—	Recovery	Recovery	VQFN16KV3030

Dual Output Boost and Buck-Boost Controllers																
Part No.	Input Voltage Maximum Rating (V)	Input Voltage (V)	Output Voltage (V)	Switching Frequency (MHz)	Circuit Current (μA)	Control Mode	Features							Package		
							Boost	Buck-Boost	Inverting	Buck	Externally Synchronizable	Adjustable Soft Start	Synchronous Rectifier		Over-Current Protection	Thermal Protection
BD9851EFV	20	4 to 18	1 or more	0.01 to 0.3	2,500	Voltage	✓	—	✓	✓	—	—	—	Latch	Recovery	HTSSOP-B20
BA9743AFV	36	3.6 to 35.0	2.505 or more	0.01 to 0.8	1,600	Voltage	✓	—	✓	✓	—	—	—	Latch	Recovery	SSOP-B16
BA9744FV	36	2.5 to 35.0	1.222 or more	0.01 to 0.8	3,900	Voltage	✓	—	✓	✓	—	—	—	Latch	Recovery	SSOP-B16
BA9741F	36	3.6 to 35.0	2.5 or more	0.01 to 0.8	1,600	Voltage	✓	—	✓	✓	—	—	—	Latch	Recovery	SOP16
BA9741FS	36	3.6 to 35.0	2.5 or more	0.01 to 0.8	1,600	Voltage	✓	—	✓	✓	—	—	—	Latch	Recovery	SSOP-A16

For Automotive Switching Regulators

Single Output Primary Integrated Switch Buck Converters																					
Part No.	Output FET		Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Circuit Current (μA)	Switching Frequency (MHz)	Control Mode	Features							Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	Upper (Typ)	Bottom (Typ)									Power Good	Sync	Adjustable Soft Start	Synchronous Rectification	Light-Load Efficiency	Over-Voltage Protection	Spread Spectrum				
Nano BD9V100MUF-C	Nch (600mΩ)	Nch (400mΩ)	70	1	16 to 60	Adj. (0.8 to 5.5)	±2.0	2,500	1.9 to 2.3	Current	✓	—	—	✓	—	✓	—	—40 to +125	VQFN24FV4040	FSs	YES
Nano BD9P105EFV-C	210mΩ	140mΩ	42	1	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P105MUF-C	200mΩ	130mΩ	42	1	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
Nano BD9P108MUF-C	200mΩ	130mΩ	42	1	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN24FV4040	FSs	YES
Nano BD9P135EFV-C	210mΩ	140mΩ	42	1	3.5 to 40.0	3.3	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P135MUF-C	200mΩ	130mΩ	42	1	3.5 to 40.0	3.3	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
Nano BD9P155EFV-C	210mΩ	140mΩ	42	1	3.5 to 40.0	5	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P155MUF-C	200mΩ	130mΩ	42	1	3.5 to 40.0	5	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
New BD90610UEFJ-C	Pch (160mΩ)	—	42	1.25	3.5 to 36.0	Adj. (0.8 to V _{IN})	±2.0	2,200	0.05 to 0.6	Current	—	✓	—	—	—	—	—	—40 to +125	HTSOP-J8	FSs	YES
New BD9G201EFJ-M	Nch (140mΩ)	—	45	1.5	4.5 to 42.0	0.8 to V _{IN} *2	±2.0	1,200	0.3	Current	—	✓	—	—	—	—	—	—40 to +105	HTSOP-J8ES	FSs	YES
Nano BD8P250MUF-C	Nch (110mΩ)	Nch (110mΩ)	42	2	3.5 to 36.0	5.0	±2.0	8	2.2	Current	✓	—	—	✓	✓	✓	✓	—40 to +125	VQFN24FV4040	FSs	YES
Nano BD9P205EFV-C	150mΩ	100mΩ	42	2	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P205MUF-C	140mΩ	90mΩ	42	2	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
Nano BD9P208MUF-C	140mΩ	90mΩ	42	2	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN24FV4040	FSs	YES
Nano BD9P235EFV-C	150mΩ	100mΩ	42	2	3.5 to 40.0	3.3	±1.75	10	2.2	Current	✓	—	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P235MUF-C	140mΩ	90mΩ	42	2	3.5 to 40.0	3.3	±1.75	10	2.2	Current	✓	—	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
Nano BD9P255EFV-C	150mΩ	100mΩ	42	2	3.5 to 40.0	5	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P255MUF-C	140mΩ	90mΩ	42	2	3.5 to 40.0	5	±1.75	10	2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN20FV4040	FSs	YES
Nano BD9P233MUF-C	Pch (190mΩ)	Nch (120mΩ)	42	2	3 to 36	3.3	±2.0	26	0.2 to 2.4	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN32FAV050	FSs	YES
Nano BD99010EFV-M	Pch (170mΩ)	Nch (130mΩ)	42	2	3.5 to 36.0	3.3	±2.0	22	0.2 to 0.5	Current	—	—	—	✓	✓	✓	—	—40 to +105	HTSSOP-B24	FSs	YES
Nano BD99011EFV-M	Pch (170mΩ)	Nch (130mΩ)	42	2	3.5 to 36.0	5.0	±2.0	22	0.2 to 0.5	Current	—	—	—	✓	✓	✓	—	—40 to +105	HTSSOP-B24	FSs	YES
Nano BD9060F-C	Pch (300mΩ)	—	42	2	5 to 35	Adj. (0.8 to V _{IN})	±2.0	3,700	0.05 to 0.5	Voltage	—	✓	—	—	—	—	—	—40 to +125	SOP8	FSs	YES
Nano BD9060HFP-C	Pch (300mΩ)	—	42	2	5 to 35	Adj. (0.8 to V _{IN})	±2.0	3,700	0.05 to 0.5	Voltage	—	✓	—	—	—	—	—	—40 to +125	HRP7	FSs	YES
New BD90620UEFJ-C	Pch (160mΩ)	—	42	2.5	3.5 to 36.0	Adj. (0.8 to V _{IN})	±2.0	2,200	0.05 to 0.6	Current	—	✓	—	—	—	—	—	—40 to +125	HTSOP-J8	FSs	YES
New BD90620HFP-C	Pch (160mΩ)	—	42	2.5	3.5 to 36.0	Adj. (0.8 to V _{IN})	±2.0	2,200	0.05 to 0.6	Current	—	✓	—	—	—	—	—	—40 to +125	HRP7	FSs	YES
Nano BD9P305EFV-C	135mΩ	90mΩ	42	3	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	0.44/2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	HTSSOP-B20	FSs	YES
Nano BD9P308MUF-C	125mΩ	80mΩ	42	3	3.5 to 40.0	Adj. (0.8 to 8.5)	±1.75	10	0.44/2.2	Current	✓	✓	—	✓	✓	✓	✓	—40 to +125	VQFN24FV4040	FSs	YES
New BD9G401UEFJ-M	Nch (140mΩ)	—	45	3.5	4.5 to 42.0	0.8 to V _{IN} *2	±2.0	1,200	0.3	Current	—	✓	—	—	—	—	—	—40 to +105	HTSOP-J8ES	FSs	YES
New BD90640UEFJ-C	Pch (160mΩ)	—	42	4	3.5 to 36.0	Adj. (0.8 to V _{IN})	±2.0	2,200	0.05 to 0.6	Current	—	✓	—	—	—	—	—	—40 to +125	HTSOP-J8	FSs	YES
New BD90640HFP-C	Pch (160mΩ)	—	42	4	3.5 to 36.0	Adj. (0.8 to V _{IN})	±2.0	2,200	0.05 to 0.6	Current	—	✓	—	—	—	—	—	—40 to +125	HRP7	FSs	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

*2 Restrictions depend on input/output voltage conditions.

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Single Output Secondary Integrated FET Switch Buck Converters

Part No.	Output FET		Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Circuit Current (μA)	Switching Frequency (MHz)	Control Mode	QuiCur™ technology	Features						Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
	Upper (Typ)	Bottom (Typ)										Power Good	Sync	Adjustable Soft Start	Synchronous Rectification	Light-Load Efficiency	Over-Voltage Protection					Output Discharge
BD9S000NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	0.6	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	350	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9SD11NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	0.6	2.7 to 5.5	1.15	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	-	-40 to +125	VSON008X2020	-	YES
BD9S012NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	0.6	2.7 to 5.5	1.1	±1.5	350	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9S100NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	1	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	350	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9S110NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	1	2.7 to 5.5	1.2	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9S111NUX-C	Pch (270mΩ)	Nch (180mΩ)	7	1	2.7 to 5.5	1.8	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
New BD9S109NUX-C	Pch (150mΩ)	Nch (95mΩ)	7	1	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
New BD9S209NUX-C	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9S201NUX-C	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
BD9S231NUX-C	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V _{IN})	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	-	-40 to +125	VSON008X2020	FSs	YES
BD9S200MUF-C	Nch (35mΩ)	Nch (35mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V _{IN} ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
BD9S300MUF-C	Nch (35mΩ)	Nch (35mΩ)	7	3	2.7 to 5.5	Adj. (0.8 to V _{IN} ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
BD9S400MUF-C	Nch (35mΩ)	Nch (35mΩ)	7	4	2.7 to 5.5	Adj. (0.8 to V _{IN} ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
Nano BD9S402MUF-C	Pch (60mΩ)	Nch (35mΩ)	7	4	2.7 to 5.5	Adj. (0.6 to V _{IN} ×0.75)	±1.0	1,800	2.2	Current	✓	-	✓	✓	✓	-	✓	✓	-40 to +125	VQFN16FV3030	FSs	YES

Single Output Secondary Integrated FET Switch Buck-Boost Converters (Quick Buck Booster™)

Part No.	Output FET		Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Circuit Current (μA)	Switching Frequency (MHz)	Control Mode	Features						Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100		
	Upper (Typ)	Bottom (Typ)									Power Good	Sync	Adjustable Soft Start	Synchronous Rectification	Light-Load Efficiency	Over-Voltage Protection					Spread Spectrum	
BD8P250MUF-C + BD90302NUF-C	Nch (110mΩ)	Nch (110mΩ)	42	0.8	2.7 to 36	5.0	±2.0	8	2.2	Current	✓	-	-	✓	✓	✓	✓	-	-40 to +125	VQFN24FV4040	--FSs	YES
	Pch (55mΩ)	Nch (65mΩ)						7												65		VSON10FV3030

Dual Output Primary External FET Switch Buck Controllers

Part No.	Output FET		Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Circuit Current (μA)	Switching Frequency (MHz)	Control Mode	Features						Operating Temperature (°C)	Package	Automotive Grade AEC-Q100	
	Upper (Typ)	Bottom (Typ)									Power Good	Sync	Adjustable Soft Start	Synchronous Rectification	Light-Load Efficiency	Over-Voltage Protection				Spread Spectrum
BD9015KV-M	Ext. Nch	Ext. Nch	35	-	3.9 to 30.0	Adj. (0.8 to 10)	±1.5	4,000	0.25 to 0.55	Current	✓	✓	✓	✓	-	✓ ^{*2}	-	-40 to +105	VQFP48C	YES
BD9016KV-M	Ext. Nch	Ext. Nch	35	-	3.9 to 30.0	Adj. (0.8 to 10)	±1.5	4,000	0.25 to 0.55	Current	✓	✓	✓	✓	-	✓ ^{*3}	-	-40 to +105	VQFP48C	YES

Single Output Primary External FET Switch Buck-Boost Controller

Part No.	Output FET		Input Voltage Maximum Rating (V)	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Output Voltage Accuracy (%)	Circuit Current (μA)	Switching Frequency (MHz)	Control Mode	Features						Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
	Upper (Typ)	Bottom (Typ)									Power Good	Sync	Adjustable Soft Start	Synchronous Rectification	Light-Load Efficiency	Over-Voltage Protection					Spread Spectrum
BD9035AEFV-C	Ext. Pch	Ext. Nch	40	-	3.8 to 30.0	Adj.	±1.5	7,000	0.1 to 0.6	Voltage	✓	✓	✓	-	-	✓	-	-40 to +125	HTSSOP-B24	FSs	YES

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 When over voltage is detected, Bottom FET is OFF
 *3 When over voltage is detected, Bottom FET is ON

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Power Management ICs for System (PMICs)

System Power Supply ICs for Car Audio	P.48	System Power Supply ICs for LCD Panels	P.48
Programmable Gamma-Voltage Generator/Gamma Buffer Amplifiers	P.49	System Power Supply ICs for DSC/DVCs	P.49
System Power Supply ICs for Automotive	P.49	System Power Supply ICs for Industrial/Consumer Applications	P.50

Power Management ICs for System (PMICs)

System Power Supply ICs for Car Audio

System Power Supply ICs for Car Audio Systems

Part No.	Supply Voltage (V)	Function				Protection Circuit	Input I/F	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
				Reference Voltage (V)	Output Current (A)					
BD49101AEFS-M*2/ BD49101ARFS-M*3	5.5 to 25.0	Buck DC-DC1	Controller	0.8	—	Current Limit with Short Current Protection Circuit	✓	HTSSOP-A44 (EXP-PAD down HTSSOP-A44 package) HTSSOP-A44R (EXP-PAD up HTSSOP-A44R package)	FSs/FSs	YES
		Buck DC-DC2	Low Power Standby REG	0.8	1.0					
		REG1	Secondly	0.6	0.5					
		REG2	—	0.8	0.1					
		REG3	Secondly	0.8	0.3					
		REG4	Secondly, Voltage Calibration	0.8	1.5 (Variable)					
		REG5	—	0.8	0.1					
		High Side Switch	—	—	0.5					
+B Detection Circuit	Over/Under Current Detection	—	—	—						

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

*2 BD49101AEFS-M: EXP-PAD down HTSSOP-A44 package

*3 BD49101ARFS-M: EXP-PAD up HTSSOP-A44R package

System Power Supply ICs for LCD Panels

Multi-Channel System Power Supply ICs for Small- to Midium-Sized Panels

Part No.	Supply Voltage (V)	Operating Temperature (°C)	Operating Frequency (MHz)	Output for Source Voltage (V)	Output for Logic Voltage (V)	Output for Gate Voltage (V)	Start up Sequence Circuit	V COM (ch)	Package
BD8163EFV	2.1 to 6.0	-40 to +125	1.1	up to 18.0	2.5	Variable	✓	—	HTSSOP-B24
BD9862MUV	1.8 to 5.5	-40 to +85	0.7 to 1.4	up to 15.0	—	Variable	✓	—	VQFN024V4040

Multi-Channel System Power Supply ICs for Large Panels

Part No.	Supply Voltage (V)	Operating Temperature (°C)	Operating Frequency (MHz)	Output for Source Voltage (V)	Output for Logic Voltage 1	Output for Logic Voltage 2	Output for Gate Voltage	Start up Sequence Circuit	V COM (ch)	Package
BD8166EFV	6.0 to 18.0	-40 to +85	0.5	up to 18.0	Variable	—	Variable	✓	1	HTSSOP-B40
BD8165MUV	4.2 to 14.0	-40 to +105	0.65	up to 18.0	Variable	Variable	Variable	✓	1	VQFN048V7070
BM81110MUW	8.6 to 14.7	-40 to +85	0.75/1.0	up to 19.8	Variable	Variable	Variable	✓	—	VQFN40W6060A

Automotive Panel Power Management ICs

Part No.	Supply Voltage (V)	Operating Temperature (°C)	Operating Frequency (MHz)	Output for Source Voltage1 (V)	Output for Source Voltage2 (V)	Output for Logic Voltage (V)	Output for Gate Voltage (V)	Start up Sequence Circuit	V COM (ch)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD81842MUV-M	2.0 to 5.5	-40 to +105	2.1	up to 18.0	—	—	Variable	✓	1	VQFN24SV4040	FSs	YES
BM81810MUV-M	2.6 to 5.5	-40 to +105	0.525/1.05/2.1	5.0 to 17.0 0.1V step	—	0.9 to 3.4 50mV step	8.0 to 35.0 0.2V step/ -14.0 to -4.0 0.1V step	✓	1	VQFN32SV5050	FSs	YES
BM81810MUF-M*2										VQFN32FBV050		
BD81870EFV-M	2.5 to 5.5	-40 to +105	2.1	up to 18.0	V _{DD} -13.0 to -1.0	—	—	✓	—	HTSSOP-B20	FSs	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

*2 Differences between BM81810MUF-M and BM81810MUV-M: BM81810MUF-M is a Wettable flank package.

Programmable Gamma-Voltage Generator/Gamma Buffer Amplifiers

High-precision Gamma Correction ICs with Built-in DAC										
Part No.	Supply Voltage (V)		Operating Temperature (°C)	Clock Frequency (MHz)	DAC (bit)	Serial I/F	Auto Data Read	V COM (ch)	Buffer for Gamma (ch)	Package
	Gamma Collection Input	Logic								
BD8149MUV	10 to 18	2.1 to 3.6	-25 to +85	0.4	10	I ² C BUS	Built-in	—	12	VQFN032V5050

High-precision Gamma Correction IC with Built-in DAC for Automotive Panels												
Part No.	Supply Voltage (V)		Operating Temperature (°C)	Clock Frequency (MHz)	DAC (bit)	Serial I/F	Auto Data Read	V COM (ch)	Buffer for Gamma (ch)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
	Gamma Collection Input	Logic										
BD81849MUV-C	10 to 18	2.1 to 3.6	-40 to +105	0.4	10	I ² C BUS	Built-in	—	12	VQFN32SV5050	FSs	YES

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System Power Supply ICs for DSC/DVCs

System Switching Regulator ICs with Built-in FET (5V)														
Part No.	ch	Operating Frequency (MHz)	Supply Voltage (V)	Reference Voltage (V)	Reference Voltage Precision (%)	Topology					Built-in FET (ch)	Synchronous Rectifier (ch)	Load Switch (ch)	Package
						Step up (ch)	Step Down (ch)	Step up/down (ch)	Inverting (ch)	Buck-Boost (ch)				
BD9355MWW	7	2.0/1.0	1.5 to 5.5	0.8 1.0	±1.25 ±1.0	3	2	—	1	1	7	3	1	UQFN036V5050

System Switching Regulator ICs for Digital Video Cameras/for DSLRs													
Part No.	ch	Operating Frequency (MHz)	Supply Voltage (V)	Reference Voltage (V)	Reference Voltage Precision (%)	Step up (ch)	Step Down (ch)	Buck-Boost (ch)	Inverting/Stepdown (ch)	Built-in FET (ch)	Synchronous Rectifier (ch)	Load Switch (ch)	Package (mm)
BD9866GUL	4	0.6 to 1.5	4 to 14	0.6 0.8	±1.66 ±1.25	—	3	1	—	4	4	—	VCSP50L3 3.75×3.75, H=Max 0.55

Strobe Charge Control ICs									
Part No.	Supply Voltage (V _{CC}) (V)	Peak Current (A)	Full Charge Detection Voltage (V)	100nsec pulse AC Full Charge Detection Voltage (V)	Full Terminal Output	Power Transistor Saturation Voltage I _{sp} =1A (V)	IGBTOUTN (mA)	IGBTOUTP (mA)	Package
BD4233NUX	2.5 to 5.5	0.5 to 2.0	1±1.1%	1.0-1.1% to ±1.6%	Nch Open drain	0.4	60	140	VSON010X3020
BD4234NUX	2.5 to 5.5	0.5 to 2.0	1±1.1%	1.0-1.1% to ±1.6%	Nch Open drain	0.4	30	140	VSON010X3020

System Power Supply ICs for Automotive

2ch System Power Supply IC for Automotive															
Part No.	Supply Voltage (V)	Operating Frequency (kHz)	Operating Temperature (°C)	Sequence	Output Voltage Precision (%)	Output		Function					Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
						ch	V _{OUT} /Max I _{OUT}	Over Current Protection	TSD	Under/Over Voltage Detection	Reset	WDT			
BD39012EFV-C	4 to 36 (Rating 45V)	200 to 600	-40 to +125	External Control EN1: DC-DC EN2: LDO	±2	1ch (DC-DC) Synchronous Buck DC-DC Converter (V _{OUT} variable, 1A)	✓	✓	✓	—	WINDOW WDT	HTSSOP-B24	FSs	YES	
						2ch (LDO) LDO (5V, 0.4A)				✓					

3ch System Power Supply IC for Automotive (ADAS)															
Part No.	Supply Voltage (V)	Switching Frequency (MHz)	Operating Temperature (°C)	Output Voltage Precision (%)	DC-DC Output			Function			Protection Circuit	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
					Item	DC-DC1 Buck	DC-DC2 Buck	DC-DC3 Buck	Reset	Power Good					External LDO CTRL
BD86852MUF-C	4 to 18	2.2	-40 to +125	2	Output Voltage (V) Output Current (A)	3.3 or 3.9 2	1.1 or 1.2 1	1.8 1	✓	✓	✓	OVP OCP UVLO TSD	VQFN24FV4040	FSs	YES

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Power Management

System Power Supply ICs for Automotive

4ch System Power Supply IC for Automotive (ADAS)														
Part No.	Supply Voltage (V)	Switching Frequency (MHz)	Operating Temperature (°C)	Output Voltage Precision (%)	DC-DC Output							Protection Circuit	Package	Automotive Grade AEC-Q100
					Item	DC-DC1 Buck	DC-DC2 Buck	DC-DC3 Buck	DC-DC4 Boost	Reset	WDT			
BD39031MUF-C	4 to 28	2.2	-40 to +125	±1.5 (DC-DC4 ±2.0)	Output Voltage (V) Output Current (A)	3.3 Ext.FET	1.2 2.5	0.8 to 2.5 2.5	5 0.5	✓	WINDOW WDT	OVP, OCP, SCP, TSD, T-Warning	VQFN40FV6060	YES

Automotive System Power Supply (Renesas [R-Car] SoC series)																		
Part No.	Supply Voltage (V)	Switching Frequency (MHz)	Output Voltage Precision (%)	Item	DC-DC Output				LDO	DC (SW)	Reset	WDT	Monitoring Function	Protection Circuit	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
					DC-DC1 Boost	DC-DC2 Buck	DC-DC3 Buck	DC-DC4 Buck										
BD9573MUF-M	3 to 3.6	2.25	±1.8	Output Voltage (V) Output Current (A)	5 0.2	1.8 1	1.35 or 1.5 2	1.03 5.2	2.5 0.15	VIN7 0.3	✓	WINDOW WDT	UVLO, SCP, OCP, OVP, UVP, TSD	-40 to +105	VQFN56FV8080	FSs	YES	
BD9576MUF-C	3 to 3.6	2.25	±1.8	Output Voltage (V) Output Current (A)	5 0.2	1.8 1	1.35 or 1.5 2	1.03 5.2	2.5 0.15	VIN7 0.3	✓	WINDOW WDT	OVD/UVD TW UVLO, SCP, OCP, OVP, UVP, TSD	-40 to +125	VQFN56FV8080	FSm	YES	

PMICs for Automotive Cameras												
Part No.	Supply Voltage (V)	Switching Frequency (MHz)	Item	DC-DC Output				LDO	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
				CH1	CH2	CH3	CH4					
BD868A0MUF-C	4 to 18	2.25	Output Voltage (V)	3.7V	1.1V	1.8V	3.3V	-40 to +125	VQFN20FV3535	FSp	YES	
Output Current (A)			2.0A	1.2A	1.0A	0.3A						
Output Voltage (V)			3.7V	1.1V	1.8V	3.3V						
Output Current (A)			2.0A	1.2A	0.4A	0.3A						
Output Voltage (V)			3.3V	1.2V	1.8V	2.8V						
Output Current (A)			2.0A	1.2A	1.0A	0.3A						
Output Voltage (V)			3.8V	1.1V	1.8V	3.3V						
Output Current (A)			2.0A	1.2A	1.0A	0.3A						
BD868D0MUF-C			Output Voltage (V)	3.3V	1.2V	1.8V	2.8V		VQFN20FV3535	FSp	YES	
			Output Current (A)	2.0A	1.2A	1.0A	0.3A					

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System Power Supply ICs for Industrial/Consumer Applications

Power Management IC (PMIC) for Intel® Atom™ E3800 series Platform																					
Part No.	Supply Voltage (V)	Item	DC-DC Output							SW	LDO output								I/F	Protection Circuit	Package (mm)
			DC-DC1 V1P0A	DC-DC2 V1P0S	DC-DC3 V1P8A	DC-DC4 VDDQ	DC-DC5 V1P0S5	DC-DC6 VCC	DC-DC7 VNN		V1P8S	LDO1 VRTC	LDO2 V3P3A	LDO3 V3P3S	LDO4 V1P24A	LDO5 VSDIO	LDO6 V1P24S	LDO7 VTT			
BD9596BMWV	3.5 to 5.5	Output Voltage (V) Output Current (mA)	1.0 700	1.0 2,600	1.8 1,800	1.2 to 1.6 4,500	1.05 1,300	0.5 to 1.2 13,000	0.5 to 1.2 13,000	1.8 800	3.3 120	3.3 100	3.3 500	1.24 50	1.8 or 3.3 20	1.24 50	VDDQ/2 530	1.35 500	IMVP7	UVLO, TSD, SCP, OVP	UQFN88MV0100 10x10x1.0

Power Management ICs for NXP i.MX series Applications Processors																											
Part No.	Correspondance	Item	DC-DC Output								LDO Output							White LED Driver	Lithium Charging Control	Coulomb Counter	RTC	GPO (ch)	I ² C I/F	Package			
			BUCK1	BUCK2	BUCK3	BUCK4	BUCK5	BUCK6	BUCK7	BUCK8	LDO1	LDO2	LDO3	LDO4	LDO5	LDO6	LDO7								LDO8	LDO9	LDO10
BD71815AGW	i.MX 7Solo i.MX 7Dual	Output Voltage (V) Output Current (mA)	0.8 to 2.0 800	0.8 to 2.0 1,000	1.2 to 2.7 500	1.1 to 1.85 1,000	1.8 to 3.3 1,000	-	-	0.8 to 3.3 100	0.8 to 3.3 100	0.8 to 3.3 50	0.8 to 3.3 400	0.8 to 3.3 250	-	-	3 25	1.8 100	0.5x DVREFIN 10	✓	✓	✓	✓	1	✓	UCSP55M4C	
BD71837AMWV	System PMIC for i.MX 8M Family	Output Voltage (V) Output Current (mA)	0.7 to 1.3 3,600	0.7 to 1.3 4,000	0.7 to 1.3 2,100	0.7 to 1.35 1,000	0.7 to 1.35 2,500	3.0 to 3.3 3,000	1.65 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	0.9 to 1.9 10	0.9 to 1.8 300	0.8 to 1.8 250	0.8 to 1.8 300	0.9 to 1.8 150	-	-	-	-	-	-	-	-	-	✓	UQFN68CV8080
BD71847AMWV	System PMIC for i.MX 8M Mini Family	Output Voltage (V) Output Current (mA)	0.7 to 1.3 3,000	0.7 to 1.3 3,000	-	-	0.7 to 1.35 3,000	2.6 to 3.3 3,000	1.65 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	0.9 to 1.9 10	0.8 to 1.8 300	0.8 to 1.8 250	0.8 to 1.8 300	0.9 to 1.8 300	-	-	-	-	-	-	-	-	-	✓	UQFN56BV7070
BD71850MWV	System PMIC for i.MX 8M Nano Family	Output Voltage (V) Output Current (mA)	0.7 to 1.3 3,000	0.7 to 1.3 3,000	-	-	0.7 to 1.35 3,000	2.6 to 3.3 3,000	1.65 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	0.9 to 1.9 10	0.8 to 1.8 300	0.8 to 1.8 250	0.8 to 1.8 300	0.9 to 1.8 300	-	-	-	-	-	-	-	-	-	✓	UQFN56BV7070

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Non-isolated type AC-DC Converters

Surface Mount SOP Packages Built-in 650V FET											
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency reduction function	Max Duty (%)	ON Resistance (Ω)	OCP Current (A)	Dynamic Over Current Protection (A)	Start-up Current (mA)	Package
BM2P109TF	10.0	650	PWM	100	✓	75	9.5	0.45	1.4	3	SOP8
BM2P104QF					-		4.0	0.80	1.6		SOP8
BM2P129TF					✓		9.5	0.45	1.4		SOP8
BM2P139TF	✓				4.5		0.45	1.4	SOP8		
BM2P135TF	✓				4.0		0.80	1.6	SOP8		
BM2P134QF	✓				0.30		0.95	1.4	SOP8		
BM2P159PF	14.2				0.30		0.95	1.4	SOP8		
BM2P159T1F	15.0				0.30		0.95	1.4	SOP8		
BM2P189TF	18.0				0.30		0.95	1.4	SOP8		
BM2P209TF	20.0				0.30		0.95	1.4	SOP8		
BM2P249TF	24.8				0.30		0.95	1.4	SOP8		

Surface Mount SOP Packages Built-in 800V FET												
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency reduction function	Max Duty (%)	ON Resistance (Ω)	OCP Current (A)	Dynamic Over Current Protection (A)	Start-up Current (mA)	Package	
BM2P107QKF	10.0	800	PWM	100	—	75	7.5	0.80	1.6	3	SOP8	
BM2P137TKF	13.0				✓			0.45	1.4		SOP8	
BM2P137QKF	—				—			0.80	1.6		SOP8	
High Heat Dissipation DIP Packages Built-in 650V FET												
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	OCP Current (A)	Dynamic Over Current Protection (A)	Start-up Current (mA)	Package	
New BM2PAA1Y-Z	2.0	650	PWM	65	✓	40	1.5	1.76	1.76	3	DIP7K	
New BM2PAB1Y-Z				25	—			1.76	1.76		DIP7K	
New BM2PDA1Y-Z				65	✓			0.88	0.93		DIP7K	
New BM2PDB1Y-Z				25	—			0.88	0.93		DIP7K	
BM2P101W-Z	10.0	650	PWM	65	✓	75	4.0	1.46	2.55	3	DIP7K	
BM2P101X-Z								2.00	3.5		DIP7K	
BM2P104Q-Z	12.0	650	PWM	100	—	40	1.5	0.80	1.6	3	DIP7K	
BM2P121W-Z								1.46	2.55		DIP7K	
BM2P121X-Z	12.0	650	PWM	65	✓	75	4.0	2.00	3.5	3	DIP7K	
BM2P121XH-Z*								2.00	3.5		DIP7K	
BM2P131W-Z	13.0	650	PWM	100	—	40	1.5	1.46	2.55	3	DIP7K	
BM2P131X-Z								2.00	3.5		DIP7K	
BM2P134Q-Z	14.0	650	PWM	65	✓	75	4.0	0.80	1.6	3	DIP7K	
BM2P141W-Z								1.46	2.55		DIP7K	
BM2P141X-Z	14.0	650	PWM	100	—	40	1.5	2.00	3.5	3	DIP7K	
BM2P151W-Z								1.46	2.55		DIP7K	
BM2P151X-Z	15.0	650	PWM	65	✓	75	4.0	2.00	3.5	3	DIP7K	
BM2P151S-Z								2.30	4.025		DIP7K	
BM2P161W-Z	16.8	650	PWM	65	✓	75	4.0	1.9	1.46	4.015	3	DIP7K
BM2P161X-Z								2.00	3.5	DIP7K		
BM2P181W-Z	18.0	650	PWM	100	—	40	1.5	1.46	2.55	3	DIP7K	
BM2P181X-Z								2.00	3.5		DIP7K	
BM2P201W-Z	20.0	650	PWM	65	✓	75	4.0	1.46	2.55	3	DIP7K	
BM2P201X-Z								2.00	3.5		DIP7K	
BM2P241W-Z	24.8	650	PWM	100	—	40	1.5	1.46	2.55	3	DIP7K	
BM2P241X-Z								2.00	3.5		DIP7K	
BM2P249Q-Z	24.8	650	PWM	100	—	40	9.5	0.80	2.2	3	DIP7K	
High Heat Dissipation DIP Packages Built-in 800V FET												
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	OCP Current (A)	Dynamic Over Current Protection (A)	Start-up Current (mA)	Package	
BM2P107QK-Z	10.0	800	PWM	100	—	75	7.5	0.80	1.6	3	DIP7K	
BM2P137QK-Z	13.0										DIP7K	

*TSD temperature change

Isolated and Non-isolated Type AC-DC Converter

Surface Mount SOP Packages Built-in 730V FET																				
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (V)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package				
BM2P0363F	8.9 to 26.0	730	PWM	25	—	75	3.0	4.0	1.05	0.7	0.4	3.0	—	—	Auto Restart	SOP8				
BM2P064EF				65	—											0.3	SOP8			
BM2P104EF				100	—											0.3	SOP8			
BM2P134EF				130	—											0.3	SOP8			
New BM2P060LF-Z	11 to 60	730	PWM	65	✓	75	3.0	21.0	—	—	Extrenal	15	✓	—	—	SOP20A				
New BM2P061LF-Z																1.0	12.0	—	SOP20A	
BM2P060MF-Z																0.7	21.0	✓	✓	SOP20A
BM2P061MF-Z																1.0	12.0	—	SOP20A	
BM2P063MF-Z																3.0	4.0	—	SOP20A	
Surface Mount SOP Packages Built-in 800V FET																				
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (V)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package				
BM2P0363KF	8.9 to 26.0	800	PWM	25	—	75	3.0	—	0.7	0.4	Extrenal	3.0	—	—	Auto Restart	SOP8				
BM2P074KF	10.2 to 26.0			65	✓		6.7	2.0	—							SOP8				
High Heat Dissipation DIP Package Built-in 650V FET																				
Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (V)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package				
BM2P0391	8.9 to 26.0	650	PWM	100	✓	75	2.4	5.2	—	0.4	Extrenal	6	✓ (adjustable)	—	Auto Restart	DIP7K				

Isolated and Non-isolated Type AC-DC Converter

Power Management

High Heat Dissipation DIP Packages Built-in 730V FET

Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (V)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package
BM2P061E-Z	8.9 to 26.0	730	PWM	65	✓	75	0.955	12.0	1.0	0.4	Extrenal	5.5	✓ (adjustable)	-	Auto Restart	DIP7AK
BM2P061H-Z	10.9 to 30.0						12.0	DIP7AK								
BM2P0151-Z	8.9 to 26.0						1.0	Latch								DIP7K
BM2P0161-Z							4.0	DIP7K								
BM2P0361-Z							3.0	-								DIP7K
BM2P064E-Z							4.0	DIP7AK								
BM2P101E-Z	10.9 to 30.0					0.955	Auto Restart	Auto Restart	DIP7AK							
BM2P101H-Z						12.0			DIP7AK							
New BM2P10A1J-Z						1.0			DIP7K							
New BM2P10A3J-Z						3.0			DIP7K							
New BM2P10B1J-Z	8.9 to 26.0					1.0	Auto Restart	Auto Restart	DIP7K							
New BM2P10B3J-Z						3.0			DIP7K							
BM2P104E-Z						4.0			DIP7AK							
BM2P131E-Z	10.9 to 30.0					75	-	-	DIP7AK							
BM2P131H-Z									0.955	12.0		1.0	0.3	5.5	Auto Restart	DIP7AK
BM2P134E-Z									3.0	4.0		1.0	0.3	5.5	-	DIP7AK

High Heat Dissipation DIP Packages Built-in 800V FET

Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (V)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package		
BM2P0161K-Z	8.9 to 26.0	800	PWM	65	✓	75	1.6	9.0	1V	0.4V	Extrenal	3.0	-	-	Auto Restart	DIP7K		
BM2P0361K-Z							3.5	4.8								20.0	DIP7K	
BM2P061EK-LBZ	10.9 to 30.0						1.6	9.0				1V	0.4V	5.5		✓ (adjustable)	-	DIP7AK
BM2P061FK-LBZ							9.0	1V				0.3V	5.5	✓ (adjustable)		-	DIP7AK	
BM2P061HK-LBZ							3.5	4.8				1.05V	0.4V	5.5		✓ (adjustable)	-	DIP7AK
BM2P063EK-LBZ							20.0	0.3V				5.5	✓ (adjustable)	-		DIP7AK		
BM2P101EK-LBZ	10.9 to 26.0					1.6	9.0	1V	0.3V	5.5		✓ (adjustable)	-	DIP7AK				
BM2P101FK-LBZ						9.0	1V	0.3V	5.5	✓ (adjustable)		-	DIP7AK					
BM2P101HK-LBZ						3.5	4.8	1.05V	0.4V	5.5		✓ (adjustable)	-	DIP7AK				
BM2P103EK-LBZ						20.0	0.4V	5.5	✓ (adjustable)	-		DIP7AK						
BM2P131FK-LBZ	10.9 to 26.0					1.6	9.0	1V	0.3V	5.5		✓ (adjustable)	-	DIP7AK				
BM2P131HK-LBZ	10.9 to 30.0					3.5	4.8	1.05V	0.4V	5.5		✓ (adjustable)	-	DIP7AK				
BM2P133EK-LBZ	10.9 to 26.0					6.0	3.0	Current Limiterx2A	0.13A	Built-in		✓ (fixed)	-	Latch		DIP7K		

High Power TO220 Package Built-in 650V FET

Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (A)	Overcurrent Limiter (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package
BM2P0163T-Z	8.9 to 26.0	650	PWM	65	✓	75	1.4	10.4	-	0.4	Extrenal	5.0	-	-	Auto Restart	TO220-7M

Isolated Type AC-DC Converter ICs

Built-in FET AC-DC Converter ICs

Surface Mount SOP Packages Built-in 650V FET

Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (A)	Overcurrent Limiter (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Burst Frequency Adjustment	Package												
BM2P051F	8.9 to 26.0	650	PWM	65	✓	75	4.0	2.6	-	0.4	Extrenal	3.0	✓ (adjustable)	Auto Restart	Latch	-	SOP8												
BM2P052F															Auto Restart	-	SOP8												
BM2P053F															Latch	-	SOP8												
BM2P054F															Auto Restart	-	SOP8												
BM2P091F															✓ (adjustable)	Auto Restart	Latch	-	SOP8										
BM2P092F															Auto Restart	-	SOP8												
BM2P093F							-	-				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
BM2P094F																											Auto Restart	-	SOP8
BM2P095F																											Latch	✓	SOP8
BM2PA96F																											Auto Restart	✓	SOP8

High Heat Dissipation DIP Packages Built-in 650V FET

Part No.	Output Voltage (V)	MOSFET V _{DS} (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (A)	Overcurrent Limiter (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V _{CC} OVP	Package											
BM2P011	8.9 to 26.0	650	PWM	65	✓	75	1.4	10.4	-	0.4	Extrenal	3	✓ (adjustable)	Auto Restart	Latch	DIP7K											
BM2P012															Auto Restart	DIP7K											
BM2P013															Latch	DIP7K											
BM2P014															Auto Restart	DIP7K											
BM2P031															✓ (adjustable)	Auto Restart	Latch	DIP7K									
BM2P032															Auto Restart	DIP7K											
BM2P033							Latch	DIP7K																			
BM2P034							Auto Restart	DIP7K																			
BM2P051							✓ (adjustable)	Auto Restart							Auto Restart	Latch	DIP7K										
BM2P052																		Auto Restart	DIP7K								
BM2P053																		Latch	DIP7K								
BM2P054																		Auto Restart	DIP7K								
BM2P091																		✓ (adjustable)	Auto Restart	Latch	DIP7K						
BM2P092																		Auto Restart	DIP7K								
BM2P093							-	-							-	-	-	-	-	-	-	-	-	-	-	-	-
BM2P094																											

Built-in SiC MOSFET AC-DC Converter ICs

High Power TO220 Packages Built-in 1,700V SiC MOSFET												
Part No.	Output Voltage (V)	SiC MOSFET V _{OS} (Max) (V)	Control Method	Maximum Frequency (kHz)	ON Resistance (Ω)	Dynamic Over Current Protection (A)	OCP Exchange Function	V _{CC} OVP	BR UVLO	FB OLP Protection	ZT OVP Protection	Package
BM2SCQ121T-LBZ	15 to 27.5	1,700	QR	120	1.12	-	✓	Latch	-	Auto Restart	Latch	TO220-6M
BM2SCQ122T-LBZ										Latch		TO220-6M
BM2SCQ123T-LBZ										Auto Restart		TO220-6M
BM2SCQ124T-LBZ										Latch		TO220-6M
High Power TO263 Packages Built-in 1,700V SiC MOSFET												
Part No.	Output Voltage (V)	SiC MOSFET V _{OS} (Max) (V)	Control Method	Maximum Frequency (kHz)	ON Resistance (Ω)	Dynamic Over Current Protection (A)	OCP Exchange Function	V _{CC} OVP	BR UVLO	FB OLP Protection	ZT OVP Protection	Package
BM2SC121FP2-LBZ	15 to 27.5	1,700	QR	120	1.12	-	✓	Latch	-	Auto Restart	Latch	TO263-7L
BM2SC122FP2-LBZ										Latch		TO263-7L
BM2SC123FP2-LBZ										Auto Restart		TO263-7L
BM2SC124FP2-LBZ										Latch		TO263-7L

Isolated Type FET external AC-DC Controller ICs

PWM Control Types														
Part No.	Output Voltage (V)	Control Method	Switching Frequency (kHz)	START-UP Circuit	Frequency Reduction Mode	Max Duty (%)	AC Voltage Correction	V _{CC} Recharge	Start-up Current (mA)	BR UVLO	V _{CC} OVP	FBOLP	Package	
BM1P061FJ	8.9 to 26.0	PWM	65	✓	✓	75	✓	-	3.0	-	-	Auto Restart	Auto Restart	
BM1P062FJ												Latch		
BM1P065FJ												Auto Restart		
BM1P066FJ												Latch		
BM1P067FJ												Auto Restart		
BM1P068FJ			Latch											
BM1P101FJ			100	-	-	-	-	-	-	-	-	-	Auto Restart	Auto Restart
BM1P102FJ													Latch	
BM1P105FJ													Auto Restart	
BM1P107FJ													Latch	
BM1P10CFJ	5.5	✓											-	
BD7672BG	8.5 to 25.0	-	65	-	-	-	-	-	-	-	-	Auto Restart	SSOP6	
BD7673AG												Latch	SSOP6	
BD7679G												Auto Restart	Auto Restart	SSOP6
QR Control Types														
Part No.	Output Voltage (V)	Control Method	START-UP Circuit	Start-up Current (mA)	Maximum Frequency (kHz)	Frequency Reduction Mode	AC Voltage Correction	FB OLP Protection	V _{CC} OVP	ZT OVP	Package			
BM1Q002FJ	8.9 to 26.0	QR	✓	3.0	120	✓	✓	Auto Restart	Latch	Latch	-	SOP-J8		
BM1Q011FJ												Auto Restart	Auto Restart	SOP-J7S
BM1Q021FJ												Auto Restart	Auto Restart	SOP-J8
BM1Q104FJ												14.0 to 30.0	-	-
QR Control Types For SiC Drive (Industrial Equipment)														
Part No.	Output Voltage (V)	Control Method	START-UP Circuit	Start-up Current (mA)	Maximum Frequency (kHz)	Frequency Reduction Mode	AC Voltage Correction	FB OLP Protection	V _{CC} OVP	ZT OVP	Package			
BD7682FJ-LB	15.0 to 27.5	QR	-	-	120	✓	✓	Auto Restart	Latch	Latch	Latch	SOP-J8		
BD7683FJ-LB								Latch				SOP-J8		
BD7684FJ-LB								Auto Restart				SOP-J8		
BD7685FJ-LB								Latch				SOP-J8		
QR Control Types+PFC Built-in Types														
Part No.	Output Voltage (V)	Control Method	START-UP Circuit	Start-up Current (mA)	QR Maximum Frequency (kHz)	PFC Maximum Frequency (kHz)	QR Frequency Reduction	PFC Frequency Reduction	PFC Output Voltage Switching	BR UVLO	V _{CC} OVP	ZT OVP	Package	
BM1C101F	8.9 to 26.0	PFC+QR	✓	6.5	120	400	✓	✓	✓	✓	Auto Restart	Latch	SOP18	
BM1C102F									-				SOP18	

BCM Type PFC Controller ICs

Singles PFC													
Part No.	Output Voltage (V)	Control Method	START-UP Circuit	Zero Detection Method	OVP Detection	PFC Maximum Frequency (kHz)	Over Shoot Reduction Function	Brown Out	V _{CC} Discharge	Package			
BD7690FJ	10.0 to 26.0	BCM PFC	-	Auxiliary Winding	Single	220	-	-	-	SOP-J8			
BD7691FJ				Resistance	Double						SOP-J8		
BD7692FJ				Resistance	Double						SOP-J8		
BD7693FJ				10.0 to 38.0	-	-	Auxiliary Winding	Single	-	✓	-	-	SOP-J8
BD7694FJ							✓	✓					SOP-J8

AC Voltage Zero Cross Detection ICs

AC Voltage Zero Cross Detection ICs											
Part No.	Output Voltage (V)	Maximum AC Input Voltage (V)	DC Voltage Monitor Function	Zero Cross Delay Time (μs)	Output Waveform	Stand by Current (μA)	Quiescent Current (μ)	Output Type	Protection Circuit	Operating Temperature (°C)	Package
BM1Z012FJ	10 to 28	600	-	Variable	Pulse	50	160	Nch Open Drain	TSD/UVLO	-40 to +105	SOP-J7S
BM1Z001FJ				300 to 500							SOP-J7S
BM1Z002FJ				Variable							SOP-J7S
BM1Z003FJ											Edge
BM1Z101FJ			✓	300 to 500	Pulse						SOP-J11
BM1Z102FJ				Variable	Edge						SOP-J11
BM1Z103FJ					Edge						SOP-J11

Secondary Side Synchronous Rectification ICs

Secondary Side Synchronous Rectification ICs									
Part No.	Output Voltage (V)	Control Method	Shunt Regulator Accuracy (%)	Drain Terminal Maximum Voltage (V)	Compulsion OFF Time (μs)	V _{CC} OVP	Auto Sleep Function	CCM Mode	Package
BM1R00146F	2.7 to 32.0	SR	±0.5	120	1.3	Auto Restart	✓	✓	SOP8
BM1R00147F					2.0				SOP8
BM1R00148F					3.0				SOP8
BM1R00149F					3.6				SOP8
BM1R00150F					4.6				SOP8
BM1R00178F					3.0				SOP8
BD87007FJ					3.85				-
BD85506F	5.0 to 32.0	SR for LLC	±1.0	-	-	✓	-	SOP14	

Isolated DC-DC Converter ICs

Isolated DC-DC Converter ICs (Optocoupler-less) (Industrial Equipment)													
Part No.	Output Power	SW Terminal Withstand Voltage (V)	Over-Current Detection Current (A)	Input Voltage (V)	Switching Frequency (kHz)	Control Method	Features						Package
							Enable	Soft Start	Light-Load Efficiency	UVLO	Over-Current Protection	Thermal Protection	
BD7F100EFJ-LB	1W at V _{IN} 5.0V 5W at V _{IN} 24V	60	1.25	3.0 to 40.0	400	Adaptive on-time	✓	✓	✓	✓	Recovery	Recovery	HTSOP-J8
BD7F100HFN-LB													HSOP8
BD7F200EFJ-LB	5W at V _{IN} 12V 10W at V _{IN} 24V	60	2.75	8.0 to 40.0									HTSOP-J8
BD7F200HFN-LB													HSOP8
BD7J101EFJ-LB	2.5W at V _{IN} 24V 5W at V _{IN} 48V	120	0.9	8.0 to 80.0									HTSOP-J8
BD7J101HFN-LB													HSOP8
BD7J201EFJ-LB	5W at V _{IN} 24V 10W at V _{IN} 48V	120	1.8	8.0 to 80.0									HTSOP-J8
BD7J201HFN-LB					HSOP8								
BD7J200EFJ-LB	5W at V _{IN} 24V 10W at V _{IN} 48V	120	1.75	8.0 to 80.0	HTSOP-J8								
BD7J200HFN-LB					HSOP8								

☆: Under Development

For Automotive Isolated DC-DC Converter ICs

For Automotive Isolated DC-DC Converter ICs (Optocoupler-less)														
Part No.	Output Power	SW Terminal Withstand Voltage (V)	Over-Current Detection Current (A)	Input Voltage (V)	Switching Frequency (kHz)	Control Method	Features						Package	Automotive Grade AEC-Q100
							Enable	Soft Start	Light-Load Efficiency	UVLO	Over-Current Protection	Thermal Protection		
BD7F105EFJ-C	4W at V _{IN} 12V	62	2.6	3.4 to 42.0	363	Adaptive on-time	✓	✓	✓	✓	Recovery	Recovery	HTSOP-J8	YES
BD7F205EFJ-C	6W at V _{IN} 12V		3.8										HTSOP-J8	YES

Gate Drivers

Isolated Gate Drivers

For Automotive Isolated Gate Drivers													
Part No.	Input-side Supply Voltage (V)	Output-side Positive Supply Voltage (V)	Output-side Negative Supply Voltage (V)	Isolation Voltage (Vrms)	I/O Delay Time (ns)	Minimum Input Pulse Width (ns)	Output Current (A)	Operating Temperature (°C)	Function			Package	Automotive Grade AEC-Q100
BM6101FV-C	4.5 to 5.5	14 to 24	-12 to 0	2,500	350	180	±3	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/DESAT/Soft turn-off function for SCP			SSOP-B20W	YES
BM6102FV-C	4.5 to 5.5	14 to 20	-	2,500	200	100	±3	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/DESAT/Soft turn-off function for SCP			SSOP-B20W	YES
BM6104FV-C	4.5 to 5.5	10 to 24	-12 to 0	2,500	150	90	±3	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/DESAT/Soft turn-off function for SCP			SSOP-B20W	YES
BM6109FV-C	4.5 to 5.5	14 to 18	-	2,500	700	600	±4.5	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/Soft turn-off function for SCP			SSOP-B28W	YES
BM6112FV-C	4.5 to 5.5	14 to 20	-12 to 0	3,750	150	90	±20	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/DESAT/Soft turn-off function for SCP			SSOP-B28W	YES
BM61M22BFJ-C	4.5 to 5.5	9 to 24	-	2,500	60	60	±2	-40 to +125	UVLO			SOP-JW8	YES
BM61M41RFV-C	4.5 to 5.5	9 to 24	-	3,750	65	60	±4	-40 to +125	Active miller clamping/UVLO			SSOP-B10W	YES
BM61S40RFV-C	4.5 to 5.5	16 to 20	-	3,750	65	60	±4	-40 to +125	Active miller clamping/UVLO/OVP			SSOP-B10W	YES
BM61S41RFV-C	4.5 to 5.5	16 to 24	-	3,750	65	60	±4	-40 to +125	Active miller clamping/UVLO			SSOP-B10W	YES

Isolated Gate Driver (For Industrial Equipment)												
Part No.	Input-side Supply Voltage (V)	Output-side Positive Supply Voltage (V)	Output-side Negative Supply Voltage (V)	Isolation Voltage (Vrms)	I/O Delay Time (ns)	Minimum Input Pulse Width (ns)	Output Current (A)	Operating Temperature (°C)	Function			Package
BM6108FV-LB	4.5 to 5.5	10 to 24	-12 to 0	2,500	150	90	±3	-40 to +105	Active miller clamping/Fault signal output/UVLO/SCP/DESAT/Soft turn-off function for SCP			SSOP-B20W

Isolated Gate Drivers with Flyback Controller											
Part No.	Input-side Supply Voltage (V)	Output-side Positive Supply Voltage (V)	Output-side Negative Supply Voltage (V)	Isolation Voltage (Vrms)	I/O Delay Time (ns)	Minimum Input Pulse Width (ns)	Output Current (A)	Operating Temperature (°C)	Function	Package	Automotive Grade AEC-Q100
BM60052AFV-C	4 to 32	10 to 20	-12 to 0	2,500	120	90	±3	-40 to +125	Active miller clamping/Fault signal output/UVLO/DESAT/Ready output/Soft turn-off function for DESAT	SSOP-B28W	YES
BM60054AFV-C	4 to 32	10 to 20	-12 to 0	2,500	120	90	±3	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/Ready output/Soft turn-off function for SCP	SSOP-B28W	YES
BM60055FV-C	4.5 to 30.0	9 to 24	-	2,500	250	170	±5	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/Soft turn-off function for SCP/SCP/2 level turn off	SSOP-B28W	YES
BM60060FV-C	8 to 24	13.5 to 24.0	-	2,500	210	90	±9	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/Soft turn-off function for SCP/Gate Resistance Selecting	SSOP-B28W	YES
BM60059FV-C	4.5 to 24	14 to 24	-	2,500	450	400	External Settings /-10	-40 to +125	Active miller clamping/Fault signal output/UVLO/SCP/Soft turn-off function for SCP/Gate Resistance Selecting	SSOP-B28W	YES

Others

IGBT/MOSFET Low-side Gate Driver									
Part No	Input-side Supply Voltage (V)	I/O Delay Time (ns)	Output Current (A)	ch	Operating Temperature (°C)	Package	Automotive Grade AEC-Q100		
BD2310G	4.5 to 18	15	4/-4	1	-40 to +125	SSOP5	-		

IGBT/MOSFET High-side Low-side Gate Drivers									
Part No	Input-side Supply Voltage (V)	High-side Floating Supply Voltage (V)	I/O Delay Time (ns)	minimum Output Current (A)	ch	Miller Clamping Function	Operating Temperature (°C)	Package	Automotive Grade AEC-Q100
BD2320UEFJ-LA	7.5 to 14.5	100	27/29	3.5/-4.5*	2	-	-40 to +125	HTSOP-J8	-
BM60212FV-C	10 to 24	1,200	75	3/-3		✓	-40 to +125	SSOP-B20W	YES
BM60213FV-C	10 to 24	1,200	75	3/-3		-	-40 to +125	SSOP-B20W	YES

*BD2320EFJ is a standard value.

(LAPIS Technology products)

Non-insulated Gate Driver for Battery Management System (BMS)								
Part No.	Supply Voltage (V)	Gate Driving Voltage (V) Min	Turn on Time (µs) Max	Turn off Time (µs) Max	Operating temperature (°C)	Package	Halogen Free Support	Automotive Grade Available AEC-Q100
☆ML5810	+6.5 to +64.0	10	350	70	-40 to +105	P-TSSOP20-0225-0.65-TK6	✓	YES
ML5810A						P-TSSOP20-0225-0.65-TK6		-

☆: Under Development

Power Management Switch

1 Channel Compact High Side Switch ICs											
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package
BD2220G	2.7 to 5.5	160	H Active	0.5	0.5/-/1.0	1.0	Latch	Recovery	15	-	SSOP5
BD2221G	2.7 to 5.5	160	L Active	0.5	0.5/-/1.0	1.0	Latch	Recovery		-	SSOP5
BD6538G	2.7 to 5.5	150	H Active	0.5	0.5/-/1.0	1.0	Latch	Recovery		-	SSOP5
BD2224G	2.7 to 5.5	150	H Active	0.5	0.55/0.78/1.0	1.0	Recovery	Recovery		-	SSOP5
BD2225G	2.7 to 5.5	150	L Active	0.5	0.55/0.78/1.0	1.0	Recovery	Recovery		-	SSOP5
BD2226G	2.7 to 5.5	150	H Active	0.65	0.75/1.0/1.35	1.0	Recovery	Recovery		-	SSOP5
BD2227G	2.7 to 5.5	150	L Active	0.65	0.75/1.0/1.35	1.0	Recovery	Recovery		-	SSOP5
BD2232G	2.7 to 5.5	100	H Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery		60	SSOP5
BD2233G	2.7 to 5.5	100	L Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery		60	SSOP5
BD2240G	2.7 to 5.5	110	H Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery		60	SSOP5
BD2241G	2.7 to 5.5	110	L Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery		60	SSOP5
BD2246G	2.7 to 5.5	110	H Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery		60	SSOP5
BD2247G	2.7 to 5.5	110	L Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery		60	SSOP5
BD2248G	2.7 to 5.5	110	H Active	0.2	0.2/0.3/0.4	1.0	Recovery	Recovery		60	SSOP5
BD2222G*	2.8 to 5.5	90	H Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery	7	-	SSOP6
BD2242G*	2.8 to 5.5	90	H Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery		60	SSOP6
BD2243G*	2.8 to 5.5	90	L Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery		60	SSOP6

*UL approved File No. E243261

Power Management Switch

Power Management

Automotive 1 Channel Compact High Side Switch ICs														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
BD22621G-M	2.7 to 5.5	120	H Active	0.15	0.18/0.30/0.42	1.0	Recovery	Recovery	15	60	SSOP5	FSs	YES	
BD22622G-M	2.7 to 5.5	120	H Active	0.2	0.2/0.3/0.4	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22641G-M	2.7 to 5.5	120	H Active	0.5	0.57/0.76/0.96	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22642G-M	2.7 to 5.5	120	H Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22655G-M	2.7 to 5.5	120	L Active	0.5	0.63/0.765/0.9	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22666G-M	2.7 to 5.5	120	H Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22677G-M	2.7 to 5.5	120	L Active	0.75	0.82/0.97/1.12	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22688G-M	2.7 to 5.5	110	H Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD22699G-M	2.7 to 5.5	110	L Active	1.0	1.15/1.275/1.4	1.0	Recovery	Recovery		60	SSOP5	FSs	YES	
BD2244G-M*2	2.8 to 5.5	100	H Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery		7	60	SSOP6	FSs	YES
BD2245G-M*2	2.8 to 5.5	100	L Active	1.5	0.2 to 1.7 (adjustable)	0.6	Recovery	Recovery	60		SSOP6	FSs	YES	

1 Channel Compact High Side Switch ICs (Industrial Equipment)														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package			
BD2220G-LB	2.7 to 5.5	160	H Active	0.5	0.5/-/1.0	1.0	Latch	Recovery	15	—	SSOP5			
BD2221G-LB	2.7 to 5.5	160	L Active	0.5	0.5/-/1.0	1.0	Latch	Recovery		—	SSOP5			
BD6538G-LB	2.7 to 5.5	150	H Active	0.5	0.5/-/1.0	1.0	Latch	Recovery		—	SSOP5			
BD2224G-LB	2.7 to 5.5	150	H Active	0.5	0.55/0.78/1.0	1.0	Recovery	Recovery		—	SSOP5			
BD2225G-LB	2.7 to 5.5	150	L Active	0.5	0.55/0.78/1.0	1.0	Recovery	Recovery		—	SSOP5			
BD2226G-LB	2.7 to 5.5	150	H Active	0.65	0.75/1.0/1.35	1.0	Recovery	Recovery		—	SSOP5			
BD2227G-LB	2.7 to 5.5	150	L Active	0.65	0.75/1.0/1.35	1.0	Recovery	Recovery		—	SSOP5			

1 Channel High Side Switch ICs														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package			
BD82020FVJ*2	2.8 to 5.5	90	H Active	1.1	1.1/1.5/2.0	0.4	Recovery	Recovery	12	75	TSSOP-B8J			
BD82021FVJ*2	2.8 to 5.5	90	L Active	1.1	1.1/1.5/2.0	0.4	Recovery	Recovery		75	TSSOP-B8J			
BD82022FVJ*2	2.8 to 5.5	90	H Active	1.5	1.5/2.0/2.6	0.4	Recovery	Recovery		75	TSSOP-B8J			
BD82023FVJ*2	2.8 to 5.5	90	L Active	1.5	1.5/2.0/2.6	0.4	Recovery	Recovery		75	TSSOP-B8J			
BD82024FVJ*2	2.8 to 5.5	90	H Active	2.1	2.1/2.5/3.3	0.4	Recovery	Recovery		75	TSSOP-B8J			
BD82025FVJ*2	2.8 to 5.5	90	L Active	2.1	2.1/2.5/3.3	0.4	Recovery	Recovery		75	TSSOP-B8J			
BD2051AFJ	2.7 to 5.5	80	H Active	0.5	0.7/1.0/1.6	1.2	Recovery	Recovery		1.3	—	SOP-J8		
BD2065AFJ	2.7 to 5.5	80	H Active	1.0	1.1/1.5/2.3	1.2	Recovery	Recovery		2.5	—	SOP-J8		
BD82028FVJ*2	4.5 to 5.5	72	H Active	0.5	0.6/1.0/1.2	0.3	Recovery	Recovery		75	TSSOP-B8J			
BD82029FVJ*2	4.5 to 5.5	72	L Active	0.5	0.6/1.0/1.2	0.3	Recovery	Recovery		55	TSSOP-B8J			
BD82030FVJ*2	4.5 to 5.5	72	H Active	1.0	1.05/1.5/1.8	0.3	Recovery	Recovery	55	TSSOP-B8J				
BD82031FVJ*2	4.5 to 5.5	72	L Active	1.0	1.05/1.5/1.8	0.3	Recovery	Recovery	55	TSSOP-B8J				
BD82032FVJ*2	4.5 to 5.5	72	H Active	1.5	1.55/2.0/2.3	0.3	Recovery	Recovery	13	55	TSSOP-B8J			
BD82033FVJ*2	4.5 to 5.5	72	L Active	1.5	1.55/2.0/2.3	0.3	Recovery	Recovery		55	TSSOP-B8J			
BD82034FVJ*2	4.5 to 5.5	72	H Active	2.0	2.05/2.5/2.8	0.3	Recovery	Recovery		55	TSSOP-B8J			
BD82035FVJ*2	4.5 to 5.5	72	L Active	2.0	2.05/2.5/2.8	0.3	Recovery	Recovery		55	TSSOP-B8J			
BD82038FVJ*2	2.7 to 5.5	72	H Active	0.5	0.60/1.00/1.20	0.5	Recovery	Recovery		55	TSSOP-B8J			
BD82039FVJ*2	2.7 to 5.5	72	L Active	0.5	0.60/1.00/1.20	0.5	Recovery	Recovery		55	TSSOP-B8J			
BD82040FVJ*2	2.7 to 5.5	72	H Active	1.0	1.05/1.50/1.80	0.5	Recovery	Recovery		55	TSSOP-B8J			
BD82041FVJ*2	2.7 to 5.5	72	L Active	1.0	1.05/1.50/1.80	0.5	Recovery	Recovery		55	TSSOP-B8J			
BD82042FVJ*2	2.7 to 5.5	72	H Active	1.5	1.55/2.00/2.30	0.5	Recovery	Recovery		7	55	TSSOP-B8J		
BD82043FVJ*2	2.7 to 5.5	72	L Active	1.5	1.55/2.00/2.30	0.5	Recovery	Recovery			55	TSSOP-B8J		
BD82044FVJ*2	2.7 to 5.5	72	H Active	2.0	2.05/2.50/2.80	0.5	Recovery	Recovery	55		TSSOP-B8J			
BD82045FVJ*2	2.7 to 5.5	72	L Active	2.0	2.05/2.50/2.80	0.5	Recovery	Recovery	55		TSSOP-B8J			
BD82046FVJ*2	2.7 to 5.5	72	H Active	2.5	2.70/3.20/3.80	0.5	Recovery	Recovery	55		TSSOP-B8J			
BD82047FVJ*2	2.7 to 5.5	72	L Active	2.5	2.70/3.20/3.80	0.5	Recovery	Recovery	55		TSSOP-B8J			
BD82001FVJ	2.7 to 5.5	70	H Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery	15		—	TSSOP-B8J		
BD82000FVJ	2.7 to 5.5	70	L Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery			—	TSSOP-B8J		
BD82065FVJ	2.7 to 5.5	70	H Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery			—	TSSOP-B8J		
BD82061FVJ	2.7 to 5.5	70	L Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery			—	TSSOP-B8J		

Automotive 1 Channel High Side Switch ICs														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
BD82004FVJ-M	2.7 to 5.5	70	H Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J	FSs	YES	
BD82005FVJ-M	2.7 to 5.5	70	L Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery		—	TSSOP-B8J	FSs	YES	
BD82006FVJ-M	2.7 to 5.5	70	H Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery		—	TSSOP-B8J	FSs	YES	
BD82007FVJ-M	2.7 to 5.5	70	L Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery		—	TSSOP-B8J	FSs	YES	

1 Channel High Side Switch ICs (Industrial Equipment)														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package			
BD82001FVJ-LB	2.7 to 5.5	70	H Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery	15	—	TSSOP-B8J			
BD82000FVJ-LB	2.7 to 5.5	70	L Active	0.9	1.0/1.5/2.0	0.8	Recovery	Recovery		—	TSSOP-B8J			
BD82065FVJ-LB	2.7 to 5.5	70	H Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery		—	TSSOP-B8J			
BD82061FVJ-LB	2.7 to 5.5	70	L Active	1.1	1.5/2.4/3.0	0.8	Recovery	Recovery		—	TSSOP-B8J			

2 Channel High Side Switch ICs														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package			
BD6516F*2	3.0 to 5.5	110	H Active	1.1	1.2/1.65/2.5	1.3	Recovery	Recovery	1	—	SOP8			
BD2066FJ*2	2.7 to 5.5	80	H Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	SOP-J8			
BD2062FJ*2	2.7 to 5.5	80	L Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery		—	SOP-J8			

Automotive 2 Channel High Side Switch ICs														
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCP	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100	
BD2068FJ-M	2.7 to 5.5	80	H Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	SOP-J8	FSs	YES	
BD2069FJ-M	2.7 to 5.5	80	L Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery		—	SOP-J8	FSs	YES	

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 UL approved File No. E243261

2 Channel High Side Switch ICs (Industrial Equipment)											
Part No.	Input Voltage (V)	ON Resistance (mΩ)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	OCF	Thermal Shut Down	Flag Output Delay/ at Over Current (ms)	Discharge Resistance (Ω)	Package
BD2066FJ-LB*	2.7 to 5.5	80	H Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery	15	—	SOP-J8
BD2062FJ-LB*	2.7 to 5.5	80	L Active	1.0	1.5/2.4/3.0	0.8	Recovery	Recovery		—	SOP-J8

*UL approved File No. E243261

Load Switch ICs											
Part No.	Input Voltage (V)	Current Consumption (μA)	ON Resistance (mΩ)	Number of Output channel (ch)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	Thermal Shut Down	Discharge Resistance (Ω)	Package (mm)
BD6528HFV	V _{DD} =2.7 to 4.5/ V _{IN} =0 to 2.7	20	110	1	H Active	0.5	—	0.5	—	70	HVSO6
BD6529GUL	V _{DD} =2.7 to 4.5/ V _{IN} =0 to 2.7	20	100		H Active	0.5	—	0.5	—	70	VCSP50L1 1.0x1.5, H=0.55
BD2200GUL	2.7 to 5.5	20	100		H Active	0.5	—	1.0	—	70	VCSP50L1 1.0x1.5, H=0.55
BD2201GUL	2.7 to 5.5	20	100		H Active	1.0	—	1.0	—	70	VCSP50L1 1.0x1.5, H=0.55
BD2204GUL	V _{IN1} =2.7 to 4.5/ V _{IN2} =1.2 to 2.4	30	120		H Active	0.5	—	0.06	Recovery	80	VCSP50L1 1.0x1.5, H=0.55
BD2202G	2.7 to 3.6	70	150		H Active	0.2	0.25/—/1.0	1.2	Recovery	—	SSOP5
BD2206G	2.7 to 3.6	70	150		H Active	0.5	0.8/—/1.6	1.2	Recovery	—	SSOP5
BD6520F	3.0 to 5.5	110	50		H Active	2.0	—	2.0	Latch	350	SOP8
BD6522F	3.0 to 5.5	110	50		H Active	2.0	—	1.0	Latch	350	SOP8

Load Switch ICs (Industrial Equipment)											
Part No.	Input Voltage (V)	Current Consumption (μA)	ON Resistance (mΩ)	Number of Output channel (ch)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	Thermal Shut Down	Discharge Resistance (Ω)	Package
BD2202G-LB	2.7 to 3.6	70	150	1	H Active	0.2	0.25/—/1.0	1.2	Recovery	—	SSOP5
BD2206G-LB	2.7 to 3.6	70	150		H Active	0.5	0.8/—/1.6	1.2	Recovery	—	SSOP5

Compact High Side Load Switch ICs											
Part No.	Input Voltage (V)	Current Consumption (μA)	ON Resistance (mΩ)	Number of Output channel (ch)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	Thermal Shut Down	Discharge Resistance (Ω)	Package (mm)
BUS1DJC0GWZ	1.1 to 5.0	0.35	63	1	H Active	2.0	—	0.012	—	80	UCSP30L1 0.8x0.8, H=0.35
BUS1DJC3GWZ	1.1 to 5.0	0.35	63		H Active	2.0	—	0.19	—	80	UCSP30L1 0.8x0.8, H=0.35
BDS2EJAAGUL	3.0 to 3.6	0.2	45	2	H Active	1.0	1.0	— (Soft Start)	Recovery	30	VCSP50L1 1.95x1.0, H=0.55

34V Pressure 1ch Compact High Side Load Switch ICs											
Part No.	Input Voltage (V)	Current Consumption (μA)	ON Resistance (mΩ)	Number of Output channel (ch)	Control Input Logic	Output Current (A)	Over Current Detection (A) Min/Typ/Max	Output Turn on Time (ms)	Thermal Shut Down	Discharge Resistance (Ω)	Package
BV1HAL45EFJ	8 to 32	0.5	45	1	H Active	3.4 to 9.9 Adjustable	17.4 to 34.6	11.79 to 64.05 Adjustable	Recovery	—	HTSOP-J8
BV1HAL85EFJ	8 to 32	0.5	85		H Active	2.5 to 6.5 Adjustable	8.7 to 17.3	5.45 to 29.60 Adjustable	Recovery	—	HTSOP-J8
BV1HALA5EFJ	8 to 32	0.5	150		H Active	0.75 to 2.1 Adjustable	5.7 to 11.3	5.45 to 29.60 Adjustable	Recovery	—	HTSOP-J8

Controller IC for High Side NMOSFET											
Part No.	Input Voltage (V)	Current Consumption (μA)	Output Voltage (V)		Number of Output channel (ch)	Control Input Logic	Output Turn on Time (ms)	Discharge Resistance (Ω)	Package		
			V _{CC} =3.3V	V _{CC} =5.0V							
BD2270HFV	2.7 to 5.5	50	9.5	13.5	1	H Active	0.13	200	HVSO5		

Controller IC for High Side NMOSFET (Industrial Equipment)											
Part No.	Input Voltage (V)	Current Consumption (μA)	Output Voltage (V)		Number of Output channel (ch)	Control Input Logic	Output Turn on Time (ms)	Discharge Resistance (Ω)	Package		
			V _{CC} =3.3V	V _{CC} =5.0V							
BD2270HFV-LB	2.7 to 5.5	50	9.5	13.5	1	H Active	0.13	200	HVSO5		

Wireless Power

(LAPIS Technology products)

13.56MHz Wireless Charge (for Industrial/Consumer)														
Part No.	Function Overview	Charging Power (max)	NFC Forum Compliant	Charging Control	NFC Communication Control	Supply Voltage (V)	Clock Source	Data Flash (Byte)	ADC	Host I/F	Quality Grade	Operating Temperature (°C)*1	Package	Halogen Free Support*2
ML7630	Power Receiving	200mW	✓	• 200mW Output • Current, Voltage, Temperature Monitoring	• Communication Speed: 212kbps	Generated from magnetic field	Generated from magnetic field	496	10bit (SA type) x1ch	I ² C slave x1ch	Consumer	-40 to +85	S-UFLGA32-2.59x2.59-0.40-W (WCSP34)	✓
ML7631	Power Transmitter			• Transmission Power Adjust Control	• Communication Speed: 212kbps	4.5 to 5.5	27.12MHz (Crystal)	496	—	I ² C slave x1ch	Consumer	-40 to +85	P-WQFN32-0505-0.50-A63	✓
ML7660	Power Receiving	1W	✓	• Current, Voltage, Temperature Monitoring	• Communication Speed: 212kbps, 424kbps	Generated from magnetic field	Generated from magnetic field	496	10bit (SA type) x4ch	SPI slave x1ch I ² C slave x1ch	Consumer/Industrial	-40 to +85	S-UFLGA30-2.28x2.61-0.40-W (WCSP30) P-WQFN32-0505-0.50-A63	✓
ML7661	Power Transmitter			• Transmission Power Adjust Control	• Communication Speed: 212kbps, 424kbps	4.5 to 5.5	27.12MHz (Crystal)	496	10bit (SA type) x6ch	SPI slave x1ch I ² C slave x1ch	Consumer/Industrial	-40 to +85	P-WQFN40-0606-0.50-63	✓
☆ML7670	Power Receiving	250mW	✓	• 250mW Output • Current, Voltage, Temperature Monitoring	• NFC Forum Type3 Tag • Communication Speed: 212kbps, 424kbps	Generated from magnetic field	Generated from magnetic field	496	10bit (SA type) x3ch	I ² C slave x1ch	Consumer	-40 to +85	S-UFLGA30-2.28x2.56-0.40-W (WCSP30)	✓
☆ML7671	Power Transmitter			• Transmission Power Adjust Control	• Communication Speed: 212kbps, 424kbps	4.5 to 5.5	27.12MHz (Crystal)	496	10bit (SA type) x6ch	I ² C slave x1ch	Consumer	-40 to +85	P-WQFN40-0606-0.50-63	✓

13.56MHz Wireless Charge (for Automotive)														
Part No.	Function Overview	Charging Power (max)	NFC Forum Compliant	Charging Control	NFC Communication Control	Supply Voltage (V)	Clock Source	Data Flash (Byte)	ADC	Host I/F	Automotive Grade AEC-Q100	Operating Temperature (°C)*1	Package	Halogen Free Support*2
☆ML7800	Power Receiving	1W	✓	• Current, Voltage, Temperature Monitoring	• NFC Forum Type3 Tag • Communication Speed: 212kbps, 424kbps	Generated from magnetic field	Generated from magnetic field	496	10bit (SA type) x4ch	SPI slave x1ch I ² C slave x1ch	✓	-40 to +85	WQFN (TBD)	✓
☆ML7801	Power Transmitter			• Transmission Power Adjust Control	• Communication Speed: 212kbps, 424kbps	4.5 to 5.5	27.12MHz (Crystal)	496	10bit (SA type) x6ch	SPI slave x1ch I ² C slave x1ch	✓	-40 to +85	WQFN (TBD)	✓

*1 Communication period

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

☆: Under Development

*3 Type-F only

Battery Management

Battery Charger ICs

Part No.	Supply Voltage (V)	ON Resistance (mΩ)	Charge Voltage (V)	Charge Current Accuracy (%)	Switching Frequency (kHz)	Operating Temperature (°C)	Package
BD71631QWZ	(2.9V: 30mA, 4.0V: 300mA) to 5.5	—	2.0 to 4.7 (±2%)	±10 (ICHG=100mA to 300mA)	—	-30 to +105	UMMP10LZ1824
BD8664GW	4.1 to 5.5	70	8.3±0.5%	±2	1,000	-30 to +85	UCSP75M2
BD8665GW	4.1 to 5.5	70	8.4±0.5%	±3	1,000	-30 to +85	UCSP75M2
BD99950MUV	6.0 to 24.0	—	8.4/12.6±0.5%	±3	600 to 1,200	-10 to +85	VQFN20PV3535
BD99954GW	3.8 to 25.0	—	4.192/8.4/ 12.592/16.8±0.5%	±2 to ±40	600 to 1,200	-30 to +85	UCSP55M3C
BD99954MWV	3.8 to 25.0	—	4.192/8.4/ 12.592/16.8±0.5%	±2 to ±40	600 to 1,200	-30 to +85	UQFN040V5050

Charge Protection ICs

Standard Protection type

Part No.	Absolute Maximum Ratings (V)	Over Voltage Detection Level (V)	Under Voltage Detection Level (V)	Over Current Detection Level (A)	Ron (mΩ)	OK/FLGB PIN Logic			Package (mm)
						<UVLO	Normal	>OVLO	
BD6040GUL	+30	6.4±0.2	2.65±0.12	Min 1.2	125 (Typ)	H	L	H	VCSP50L1 1.6×1.6, H=Max 0.55
BD6041GUL	+30	5.85±0.15	2.65±0.12	Min 1.2	125 (Typ)	H	L	H	VCSP50L1 1.6×1.6, H=Max 0.55

Negative Voltage Protection type

Part No.	Absolute Maximum Ratings (V)	Over Voltage Detection Level (V)	Under Voltage Detection Level (V)	Over Current Detection Level (A)	Ron (mΩ)	OK/FLGB PIN Logic			Package (mm)
						<UVLO	Normal	>OVLO	
BD6046GUL	±30	6.7±0.2	3.6±0.18	Min 1.2	250 (Typ)	H	H	L	VCSP50L2 2.5×2.5, H=Max 0.55
BD6047AGUL	±30	5.85±0.15	3.6±0.18	Min 1.7	125 (Typ)	H	H	L	VCSP50L1 1.95×1.95, H=Max 0.55

Standard Protection type: Charger protection IC provides over voltage protection for charger IC. Built-in circuits include overvoltage lockout, overcurrent limit, undervoltage protection, internal start up delay, and status flag.

Negative Voltage Protection type: Addition to the conventional standard charge protection IC, it prevents the negative voltage happened by the USB reverse insertion without any additional components.

Cell Balance IC of Power Storage Element Cells

EDLC Cell Balance IC (4 to 6 series)

Part No.	Absolute Maximum Ratings (V)	Cell Voltage Detection Range VCB (V)	Over-voltage Detection Voltage 1 (V)	Over-voltage Detection Voltage 2 (V)	Shunt SW Ron (Ω)	Function			Package (mm)	ComfySIL™ Functional Safety*1
						EN	OVLO	Stack IC		
BD14000EFV-C	+28	2.4 to 3.1V± (1%) (0.1V/step usable)	VCB+0.15 or 0.25 (OVLOSEL=L or H)	VCB+0.3 or 0.5 (OVLOSEL=L or H)	1 (Typ)	✓	✓	✓	HTSSOP-B30 10.0×7.6, H=Max 1.0	FSs

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Coulomb Counter IC

Coulomb Counter IC

Part No.	Supply Voltage (V)	Gain (V/V)	Resolution (bit)	I/F	Operating Temperature (°C)	Package	Automotive Grade AEC-Q100
BD7220FV-C	4.5 to 5.5	5/25/51	16	SPI	-40 to +125	SSOP-B20 6.5×6.4 (t=1.45)	YES

Li-ion Battery Monitoring LSI

(LAPIS Technology products)

Stand-alone type

Part No.	Description	Supply Voltage (V)	Overvoltage Accuracy (Typ) (mV)	Charge/Discharge Control FET driver	Cell Balancing Switch	Current Consumption (Typ) (μA)		Overvoltage/Undervoltage Detection	Charge and Discharge Over-Current Detection	Temperature	Short Circuit Detection	Open Wire Detection	Parameter Change	Operation Temperature (°C)	Package	Halogen Free Support*1
						Operating	Power-down									
ML5241	5-cells, 2nd protection	+5 to +25	±25	—	—	1	0.1	Overvoltage detection	—	—	—	—	Mask option	-20 to +85	P-WSON10 -0303-0.50-63	✓
ML5205	5-cells/2nd protection, number of connected battery cells detection					3	—								P-VSSOP8 -0150-0.65-TK6	
ML5206	5-cells, 2nd protection with Autonomous Cell Balancing					1	—								P-VSSOP8 -0150-0.65-TK6	
ML5243	5-cells, cell voltage/current/temperature protection	+5 to +60	±15	Low-side	—	6.5	0.1	✓	✓	✓	✓	—	-40 to +85	P-TSSOP20 -0225-0.65-TK6	✓	
ML5233	10-cells, cell voltage/current/temperature protection, cascade connection					25								P-LQFP32 -0707-0.80-TK6		
ML5245	13-cells, cell voltage/current/temperature protection, cell voltage monitoring	+7 to +80	±20	—	—	2.5	—	Overvoltage detection	—	—	—	—	-40 to +105	P-SSOP30 -56-0.65-ZK6	✓	
ML5232	14-cells, 2nd protection													P-TSSOP20 -0225-0.65-TK6		

MCU Control type

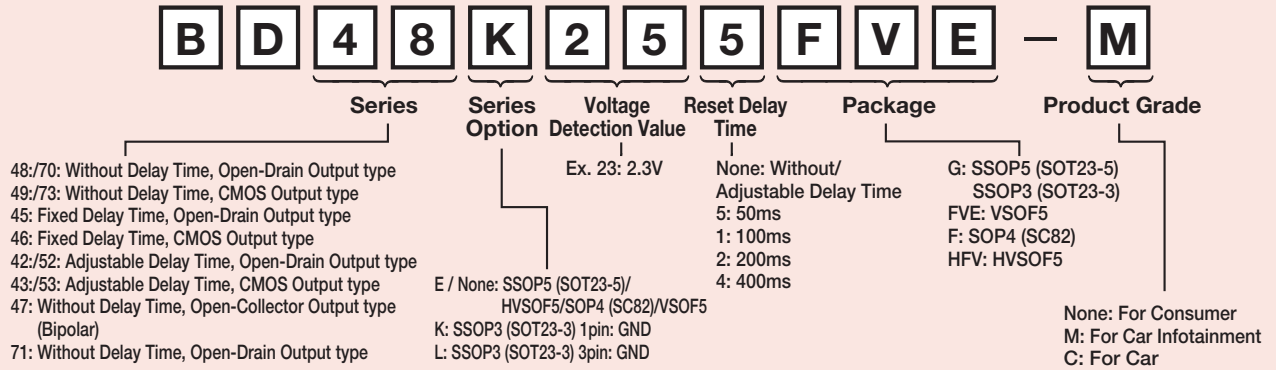
Part No.	Description	Supply Voltage (V)	Cell Voltage Measurement Error (Typ) (mV)	Monitoring Output	Charge/Discharge Control FET driver	Cell Balancing Switch	Current Consumption (Typ) (μA)		Overvoltage/Undervoltage Detection	Charge and Discharge Over-Current Detection	Short Circuit Detection	Parameter Change	Operation Temperature (°C)	Package	Halogen Free Support*1
							Operating	Power-down							
ML5204	5-cells, analog monitoring output	+3.3 to +42.0	±25	cell voltage/ current	—	internal	14	—	✓	✓	Mask option	-40 to +85	P-TSSOP20 -0225-0.65-TK6	✓	
ML5248	7-cells, analog monitoring output	+5.0 to +31.5	±20	High-side	32		—	—	—	—			—		
ML5236	14-cells, ADC built-in, digital monitoring output	+8 to +64	±15	cell voltage/ current/temperature	—	Low-side	330	0.1	Overvoltage detection	—	MCU control	-40 to +85	P-TQFP44 -1010-0.80-ZK6	✓	
ML5238	16-cells, analog monitoring output	+7 to +80	±20	cell voltage/ current	50		—						—		—
ML5239	16-cells, ADC built-in, cascade connection, digital monitoring output	+10 to +72	±10	cell voltage/ temperature	—	external	1200	—	—	—	—	-40 to +85	P-TQFP64 -1010-0.50-ZK6	✓	

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

Voltage Detectors (Reset ICs)

Voltage Detectors (Reset ICs)	P.59	Over Voltage Detectors (Reset ICs)	P.60
Voltage Detectors with Adjustable Delay Time	P.60	Voltage Detectors with Built-in Delay Time	P.60
Voltage Detectors for Automotive	P.61	Power Supply Monitoring IC for Automotive	P.61
Voltage Detectors with Watchdog Timer	P.61	Composite type Voltage Detector (2ch+Comparator)	P.61

Voltage Detectors How to find part number



Voltage Detectors (Reset ICs)

Voltage Detectors (Reset ICs)

Standard CMOS Voltage Detector ICs

Part No.	Types	Voltage Detection Precision (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	“L” Output Current (mA)		Package
							ON	OFF		V _{DD} =1.2V	V _{DD} =2.4V	
BD48ExxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1	Open Drain	0.60 (V _S =4.8V)	0.85 (V _S =4.8V)	V _S ×0.05	1	4	SSOP5
BD48xxFVE series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							VSOF5
BD48KxxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							SSOP3 (GND 1pin)
BD48LxxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							SSOP3 (GND 3pin)
BD49ExxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1	CMOS	0.60 (V _S =4.8V)	0.85 (V _S =4.8V)	V _S ×0.05	1	4	SSOP5
BD49xxFVE series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							VSOF5
BD49KxxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							SSOP3 (GND 1pin)
BD49LxxG series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.0	0.1							SSOP3 (GND 3pin)

Detection voltage (from 2.3V to 6.0V as 0.1V step) is applied in the xx of part No. Ex: In case of 2.3V detection voltage in BD48ExxG series, part No. is BD48E23G.

Voltage Detector ICs (Low Voltage Detection type)

Part No.	Types	Voltage detection Precision at T _a =+25°C (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	“L” Output Current (mA)		Package
							ON	OFF		V _{DD} =1.2V	V _{DD} =2.4V	
BU48xxG series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1	Open Drain	0.40 (V _{DET} =4.8V)	0.55 (V _{DET} =4.8V)	V _{DET} ×0.05	3.3	6.5	SSOP5
BU48xxFVE series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1							VSOF5
BU48xxF series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1							SOP4
BU49xxG series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1	CMOS	0.40 (V _{DET} =4.8V)	0.55 (V _{DET} =4.8V)	V _{DET} ×0.05	3.3	6.5	SSOP5
BU49xxFVE series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1							VSOF5
BU49xxF series	0.1V step 40 types	±1	0.9 to 4.8	0.7 to 7.0	0.1							SOP4

Bipolar Voltage Detector IC

Part No.	Types	Voltage detection Precision at T _a =+25°C (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (mV)	“L” Output Current (mA)	Package
							I _{OCL}	I _{OCH}			
BD47xxG series	0.1V step 28 types	±1	1.9 to 4.6	0.85 to 10.00	0.1	Open Collector	1.5	1.6	50	15	SSOP5

Voltage Detector ICs (Low Voltage Detection Type): *Detection voltage (from 0.9V to 4.8V as 0.1V step) is applied in the xx of part No.. Ex: In case of 2.3V detection voltage in BU48xxG series, part No. is BU4823G.
 Bipolar Voltage Detector ICs: *Detection voltage (from 1.9V to 4.6V as 0.1V step) is applied in the xx of part No. Ex: In case of 2.3V detection voltage in BD47xxG series, part No. is BD4723G.

Over Voltage Detectors (Reset ICs)

Over Voltage Detector ICs											
Part No.	Voltage Detection Precision at $T_a=+25^{\circ}\text{C}$ (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (mV)	"L" Output Current (mA)	Package	
						I_{OCL}	I_{OCH}				
BD71L4LG-1	± 0.8	4.05	1.2 to 7.0	—	Open Drain	0.6	0.7	30	4 ($V_{\text{DD}}=4.25\text{V}$)	SSOP5	
BD71L4LHFV-1	± 0.8	4.05	1.2 to 7.0	—						4 ($V_{\text{DD}}=4.25\text{V}$)	HVSOF5
BD71L3SHFV	± 1.0	3.83	1.2 to 7.0	—						4 ($V_{\text{DD}}=4.03\text{V}$)	HVSOF5

Over Voltage Detector ICs (125°C Automotive Grade AEC-Q100 Corresponding)														
Part No.	Types	Voltage Detection Precision Within The All Temperature (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	"L" Output Current (mA)		Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$			
Nano BD70HxxG-2C series	0.1V step 4 types	± 1.4	3.46 to 3.76	0.8 to 6.0	0.1	Open Drain	0.27	0.3	—	1.0mA or more	SSOP5	FSs	YES	
Nano BD73HxxG-2C series	0.1V step 4 types					CMOS								

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 Detection voltage is applied in the xx of part No. Please see the Data sheet specifications.

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Voltage Detectors with Adjustable Delay Time

Voltage Detectors with Externally-Adjustable Delay Time (SENSE type)															
Part No.	Types	Voltage detection Precision at $T_a=+25^{\circ}\text{C}$ (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	"L" Output Current (mA)		RESET Active Timeout Period (ms)	Delay Circuit Resistance (M Ω)	Package	ComfySIL™ Functional Safety*1
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$				
BD52ExxG series	0.1V step 38 types	± 1	2.3 to 6.0	0.95 to 10.00	0.1	Open Drain	0.90 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	Variable	9	SSOP5	FSs
BD52xxFVE series	0.1V step 38 types	± 1	2.3 to 6.0	0.95 to 10.00	0.1		0.90 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	Variable	9	VSO5	—
BD53ExxG series	0.1V step 38 types	± 1	2.3 to 6.0	0.95 to 10.00	0.1	CMOS	0.90 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	Variable	9	SSOP5	FSs
BD53xxFVE series	0.1V step 38 types	± 1	2.3 to 6.0	0.95 to 10.00	0.1		0.90 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	Variable	9	VSO5	—

Voltage Detectors with Externally-Adjustable Delay Time (Low Voltage Detection type)															
Part No.	Types	Voltage detection Precision at $T_a=+25^{\circ}\text{C}$ (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	"L" Output Current (mA)		RESET Active Timeout Period (ms)	Delay Circuit Resistance (M Ω)	Package	ComfySIL™ Functional Safety*1
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$				
BU42xxG series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1	Open Drain	0.40 ($V_{\text{DET}}=4.8\text{V}$)	0.55 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	3.3	6.5	Variable	10	SSOP5	
BU42xxFVE series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1									VSO5	
BU42xxF series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1									SOP4	
BU43xxG series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1	CMOS	0.40 ($V_{\text{DET}}=4.8\text{V}$)	0.55 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	3.3	6.5	Variable	10	SSOP5	
BU43xxFVE series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1									VSO5	
BU43xxF series	0.1V step 40 types	± 1	0.9 to 4.8	0.7 to 7.0	0.1									SOP4	

Voltage Detector with Externally-Adjustable Delay Time (SENSE type)									
Part No.	Voltage Detection Precision at $T_a=+25^{\circ}\text{C}$ (%)	Voltage Detection (V)	Power Supply Voltage (V)	Output type	Circuit Current (μA)	Hysteresis Voltage (V)	Output ON Resistance (Ω)	RESET Active Timeout Period (ms)	Package
BD4142HFV	± 1.8	0.5	3.0 to 5.5	Open Drain	7.5	0.01	100	Variable	HVSOF5

Voltage Detectors with Externally-Adjustable Delay Time: Detection voltage (from 2.3V to 6.0V as 0.1V step) is applied in the xx of part No. Ex: In case of 2.3V detection voltage in BD52ExxG series, part No. is BD52E23G.
 Voltage Detectors with Externally-Adjustable Delay Time (Low Voltage Detection type): Detection voltage (from 0.9V to 4.8V as 0.1V step) is applied in the xx of part No. Ex: In case of 2.3V detection voltage in BU42xxG series, part No. is BU4223G.
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Voltage Detectors with Built-in Delay Time

Voltage Detectors with Built-in Delay Time (Open Drain Output type)														
Part No.	Types	Voltage Detection Precision (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	"L" Output current (mA)		RESET Active Timeout Period (ms)	Manual Reset PIN	Package
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$			
BD45xx5G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1	Open Drain	0.80 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	50	YES	SSOP5
BD45xx1G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1							100	YES	SSOP5
BD45xx2G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1							200	YES	SSOP5
BU45Kxx2G series	0.1V step 26 types	± 1	2.3 to 4.8	0.6 to 10.0	0.1		200	NO				SSOP3 (GND 1pin)		
BU45Lxx2G series	0.1V step 26 types	± 1	2.3 to 4.8	0.6 to 10.0	0.1		200	NO				SSOP3 (GND 3pin)		
BU45Kxx4G series	0.1V step 26 types	± 1	2.3 to 4.8	0.6 to 10.0	0.1		400	NO				SSOP3 (GND 1pin)		
BU45Lxx4G series	0.1V step 26 types	± 1	2.3 to 4.8	0.6 to 10.0	0.1		400	NO				SSOP3 (GND 3pin)		

Detection voltage (from 2.3V to 4.8V as 0.1V step) is applied in the xx of part No.. Ex: In case of 2.3V detection voltage in BD45xx5G series, part No. is BD45235G.

Voltage Detectors with Built-in Delay Time (CMOS Output type)														
Part No.	Types	Voltage Detection Precision (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	"L" Output current (mA)		RESET Active Timeout Period (ms)	Manual Reset PIN	Package
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$			
BD46xx5G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1	CMOS	0.80 ($V_{\text{DET}}=4.8\text{V}$)	0.85 ($V_{\text{DET}}=4.8\text{V}$)	$V_{\text{DET}} \times 0.05$	1.2	5.0	50	YES	SSOP5
BD46xx1G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1							100	YES	SSOP5
BD46xx2G series	0.1V step 26 types	± 1	2.3 to 4.8	0.95 to 10.00	0.1							200	YES	SSOP5
BU46Kxx2G series	0.1V step 26 types	± 1	2.3 to 4.8	0.6 to 10.0	0.1							200	NO	SSOP3 (GND 1pin)

Detection voltage (from 2.3V to 4.8V as 0.1V step) is applied in the xx of part No.. Ex: In case of 2.3V detection voltage in BD46xx5G series, part No. is BD46235G.

Voltage Detectors for Automotive

Voltage Detectors (105°C Corresponding)																	
Part No.	Types	Voltage Detection Precision at T _j +25°C (%)	Voltage Detection (V)	RESET Active Voltage (V)	Detection Step (V)	Output type	Circuit Current (μA)		Hysteresis Voltage (V)	“L” Output Current (mA)		RESET Active Timeout Period (ms)	Delay Time Precision (%)	Manual Reset PIN	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							ON	OFF		V _{DD} =1.2V V _{DS} =0.4V	V _{DD} =2.4V V _{DS} =0.5V						
BD48ExxG-M series	0.1V step 38 types	±1	2.3 to 6.0	0.95 to 10.00	0.1	Open Drain	0.60 (V _{DET} =4.8V)	0.85 (V _{DET} =4.8V)	V _{DET} ×0.05	0.4 or more (V _{DD} =1.5V V _{DS} =0.5V)	2 or more (V _{DD} =2.4V V _{DS} =0.5V)	—	—	NO	SSOP5	FSs	YES
BD49ExxG-M series	0.1V step 38 types		2.3 to 6.0	0.95 to 10.00	0.1	CMOS	0.80 (V _{DET} =4.8V)	0.85 (V _{DET} =4.8V)	V _{DET} ×0.05	0.45 or more (V _{DD} =1.2V V _{DS} =0.3V)	1.3 or more (V _{DD} =2.4V V _{DS} =0.3V)	—	—	NO	SSOP5	FSs	YES
BD45Exx5G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1	Open Drain						50	—	YES	SSOP5	FSs	YES
BD45Exx1G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1							100	—	YES	SSOP5	FSs	YES
BD45Exx2G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1	CMOS						200	—	YES	SSOP5	FSs	YES
BD46Exx5G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1							50	—	YES	SSOP5	FSs	YES
BD46Exx1G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1	CMOS						100	—	YES	SSOP5	FSs	YES
BD46Exx2G-M series	0.1V step 26 types		2.3 to 4.8	0.95 to 10.00	0.1							200	—	YES	SSOP5	FSs	YES
Nano BD52xxG-2M series	0.1V step 42 types	±2.5 (All Temperature)	0.9 to 5.0	0.8 to 6.0	0.1	Open Drain						0.23	0.27	V _{DET} ×0.05	1.0 or more (V _{DD} =1.2V V _{DS} =0.4V)	2.0 or more (V _{DD} =2.4V V _{DS} =0.4V)	Variable
Nano BD53xxG-2M series	0.1V step 42 types		0.9 to 5.0	0.8 to 6.0	0.1	CMOS	Variable	NO	SSOP5	FSs	YES						

Voltage Detectors (125°C Corresponding)																	
Part No.	Types	Voltage Detection Precision Within The All Temperature (%)	Voltage Detection (V)	RESET Active Voltage Range (V)	Detection step (V)	Output type	Circuit current (μA)		Hysteresis Voltage (V)	“L” Output current (mA) (V _{DS} =0.4V)		RESET Active Timeout Period (ms)	Delay Time Precision (%)	Manual Reset PIN	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							ON	OFF		V _{DD} =1.2V V _{DS} =0.4V	V _{DD} =2.4V V _{DS} =0.4V						
Nano BD52xxG-2C series	0.1V step 42 types	±3	0.9 to 5.0	0.8 to 6.0	0.1	Open Drain	0.23	0.27	V _{DET} ×0.05	1.0 or more (V _{DD} =1.2V)	2.0 or more (V _{DD} =2.4V)	Variable	±50 (All Temperature)	NO	SSOP5	FSs	YES
Nano BD53xxG-2C series	0.1V step 42 types		0.9 to 5.0	0.8 to 6.0	0.1	CMOS						Variable		NO	SSOP5	FSs	YES
Nano BD5320NVX-2C	1	±2.5	2.0	0.8 to 6.0	—	Open Drain	0.27	0.3	—	1.0 or more (V _{DD} =1.2V)	2.0 or more (V _{DD} =2.4V)	Variable	±50 (All Temperature)	NO	SSON004R1010	FSs	YES
Nano BD52xxNVX-2C series	8 types		1.4 to 3.1	0.8 to 6.0	—							Variable		NO	SSON004R1010	FSs	YES
Nano BD70HxxG-2C/ BD70HxxG-C series	0.1V step 5 types	±1.4	3.46 to 3.76/ 3.06	0.8 to 6.0	0.1	Open Drain	0.27	0.3	—	1.0 or more (V _{DD} =1.2V)	2.0 or more (V _{DD} =2.4V)	—	±50 (All Temperature)	NO	SSOP5	FSs/FSs	YES
Nano BD73HxxG-2C series	0.1V step 4 types		3.46 to 3.76	0.8 to 6.0	0.1	CMOS						—		NO	SSOP5	FSs	YES

Window Voltage Detectors (125°C Corresponding)																	
Part No.	Operating Supply Voltage (V)	Voltage Detection Precision Within The All Temperature (%)	Over Voltage Detection (V)	Low Voltage Detection (V)	Output type	Circuit current (μA)		Hysteresis Voltage (V)	“L” Output Current (mA) (V _{DS} =0.4V)		RESET Active Timeout Period (ms)	Delay Time Precision (%)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100		
						ON	OFF		V _{DD} =1.2V V _{DS} =0.4V	V _{DD} =2.4V V _{DS} =0.4V							
Nano BD48HW0G-C	1.8 to 4.0	±5	±0.75	1.277	1.277	0.5	V _{DET} ×0.01	—	1 or more (V _{DD} =1.6V)	2 or more (V _{DD} =1.8V)	Variable	±50 (All Temperature)	SSOP6	FSs	YES		
BD48W00G-C	1.6 to 6.0		±2.5	1.2	1.2	3							SSOP6	FSs	YES		
Nano BD52W01G-C			1.32	1.08	Open Drain	0.3							Variable	±50 (All Temperature)	SSOP6	FSs	YES
Nano BD52W02G-C			1.65	1.35											SSOP6	FSs	YES
Nano BD52W03G-C			1.98	1.62											SSOP6	FSs	YES
Nano BD52W04G-C			2.75	2.25											SSOP6	FSs	YES
Nano BD52W05G-C			3.63	2.97											SSOP6	FSs	YES
Nano BD52W06G-C			5.5	4.5											SSOP6	FSs	YES

Detection voltage is applied in the “xx” of part No. Ex.: In case of 2.3V detection voltage in BD48ExxG-M series, Part No. is BD48E23G-M.

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*1 For more information about “ComfySIL™ Functional Safety”, please refer to the reverse side of the cover.

 Nano Mark is a product using Nano Pulse Control™ technology, Nano Energy™ technology or Nano Cap™ technology. ROHM's innovative "Nano" power supply technologies achieve breakthrough energy savings and miniaturization. Nano Mark is a product equipped with Nano Energy™ ultra-low-current technology, Nano Energy™, Nano Pulse Control™ and Nano Cap™ is a trademark or a registered trademark of ROHM Co., Ltd.

Power Supply Monitoring IC for Automotive

4ch System Power Good (Watchdog Timer+Reset)																
Part No.	Supply Voltage (V)	RESET Detection Voltage (V)	Power good Detection Voltage (V)	Detection level (%)	Detection Precision (%)	Power good ch	Output type	WDT type	RESET Active Timeout Period	Self-diagnosis function	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100			
BD39040MUF-C	2.7 to 5.5	Variable	Variable	±10	±3	4	Open Drain	Window Type	10ms	YES	VQFN16FV3030	FSs	YES			
BD39042MUF-C	2.7 to 5.5			±6	±1.4				10ms					VQFN16FV3030	FSs	YES

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Others

Voltage Detectors with Watchdog Timer														
Part No.	Voltage Detection Precision (%)	Voltage Detection (V)	RESET Active Voltage (V)	Output type	Circuit Current (μA)	Hysteresis Voltage (V)	“L” Output Current (mA)		RESET Active Timeout Period	Delay Circuit Resistance (MΩ)	WDT Active Voltage (V)	INH Mode (Active)	Package	
							V _{DD} =1.2V	V _{DS} =0.5V						
BD37A19FVM	±1.5	1.9	1.0 to 10.0	Open Drain	5	V _{DET} ×0.13	0.7	Variable	10	2.5 to 10.0			H	MSOP8
BD37A41FVM	±1.5	4.1	1.0 to 10.0										H	MSOP8
BD87A28FVM	±1.5	2.8	1.0 to 10.0										L	MSOP8
BD87A29FVM	±1.5	2.9	1.0 to 10.0										L	MSOP8
BD87A34FVM	±1.5	3.4	1.0 to 10.0										L	MSOP8
BD87A41FVM	±1.5	4.1	1.0 to 10.0										L	MSOP8
BD99A41F	±1.5	4.1	1.0 to 10.0										H	SOP8

Composite type Voltage Detector (2ch+Comparator)								
Part No.	Voltage Detection Precision (%)	Voltage Detection (V)	Output type	Circuit Current (μA) V _{SB} =5V	Hysteresis Voltage (mV)	RESET Active Timeout Period	Input Voltage (V)	Package
BD3775AF	±1.5	1.23	Open Collector+Constant Current Pull Up	350	28	Variable	3.5 to 18.0	SOP8

Motor/Actuator Drivers			
DC Brush Motor Drivers	P.63	Stepper Motor Drivers	P.65
3-Phase Brushless Motor Drivers	P.68	Fan Motor Drivers	P.69
Drivers for Printer	P.72	Drivers for Camera	P.72
Mobile Phone Module Drivers	P.74		

DC Brush Motor Drivers

7V Max H-Bridge Drivers									
Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package	
				H Level	L Level				
BD6210F	1	3.0 to 5.5	0.5	2.0 or more	0.8 or less	1.0	Forward/Reverse/Standby (Idle)/Brake	SOP8	
BD6210HFP									HRP7
BD6211F			1.0			1.0		SOP8	
BD6211HFP								HRP7	
BD6212FP			2.0			0.5		HSOP25	
BD6212HFP				HRP7					

18V Max H-Bridge Drivers								
Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package
				H Level	L Level			
BD6220F	1	6.0 to 15.0	0.5	2.0 or more	0.8 or less	1.5	Forward/Reverse/Standby (Idle)/Brake	SOP8
BD6221F			1.0			1.5		SOP8
BD6222FP			2.0			1.0		HSOP25
BD6222HFP								HRP7
BD6225FP			0.5			1.5		HSOP25
BD6226FP	2		1.0		1.5		HSOP25	

36V Max H-Bridge Drivers								
Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package
				H Level	L Level			
BD6230F	1	6.0 to 32.0	0.5	2.0 or more	0.8 or less	1.5	Forward/Reverse/Standby (Idle)/Brake	SOP8
BD6231F			1.0			1.5		SOP8
BD6231HFP								HRP7
BD6232FP			2.0			1.0		HSOP25
BD6232HFP								HRP7
BD6236FP	2		1.0			1.5		HSOP25
BD6236FM			2.0	1.0	HSOP-M28			
BD6237FM			2.0			1.0		HSOP-M28
BD62105AFVM	1	8.0 to 28.0	0.5			1.8		MSOP8
BD62110AEFJ			1.0			0.65		HTSOP-J8
BD62120AEFJ			2.0			0.35		HTSOP-J8
BD62130AEFJ			3.0			1.9		HTSSOP-B28
BD62210AEFV			1.0			0.65		HTSSOP-B24
BD60203EFV	2		1.7			0.65		HTSSOP-B28
BD62220AEFV			2.0			0.55		HTSSOP-B28
BD62221MUV			2.0					VQFN032V5050

40V Max H-Bridge Drivers									
Part No.	ch	Supply Voltage (V)	Output Current (A)	Output Modes	Output ON Resistance (Upper + Lower) (Typ) (Ω)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD16950EFV-C	1	5.5 to 40.0	—	Available to select High, Low or Hi-Z Output by each Output terminal.	—	-40 to +125	HTSSOP-B24	FSs	YES
BD16939AEFV-C	3 (Half 6ch)	6.3 to 32.0	1.0	Available to select High, Low or Hi-Z Output by each Output terminal.	1.35	-40 to +125	HTSSOP-B28	FSs	YES
BD16938AEFV-C	4 (Half 8ch)	6.3 to 32.0	1.0	Available to select High, Low or Hi-Z Output by each Output terminal.	1.4	-40 to +125	HTSSOP-B28	—	YES
BD16912EFV-C	1	6.0 to 18.0	3.0	Forward/Reverse/Standby/Brake	0.36	-40 to +125	HTSSOP-B20	FSs	YES

50V Max H-Bridge Drivers								
Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package
				H Level	L Level			
BD63130AFM	1	8.0 to 46.2	3.0	2.0 or more	0.8 or less	0.55	Forward/Reverse/Standby (Idle)/Brake	HSOP-M36
BD63150AFM			5.0			0.3		HSOP-M36
BD64220EFV			2			2.0		0.65

H-Bridge Driver High-Current								
Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package
				H Level	L Level			
BD62321HFP	1	6.0 to 32.0	3.0	2.0 or more	0.8 or less	1.0	Forward/Reverse/Standby (Idle)/Brake	HRP7

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DC Brush Motor Drivers

H-Bridge Drivers High-Speed series

Part No.	ch	Supply Voltage (V)	Output Current (A)	Input Threshold Voltage (V)		Output ON Resistance (Typ) (Ω)	Output Modes	Package
				H Level	L Level			
BD6736FV	1	2.0 to 9.0	1.0 peak 3.2	2.0 or more	0.7 or less	0.35	Forward/Reverse/ Standby (Idle)/ Brake	SSOP-B20
BD6376GUL	1	2.0 to 9.0	1.0	2.0 or more	0.7 or less	0.45		VCSP50L1
BD65494MUV	1	2.0 to 9.0	1.0 peak 2.5	2.0 or more	0.7 or less	0.55		VQFN016V3030
BD63576NUX	1	2.0 to 10.0	1.2 peak 3.2	V _{CC} ×0.7 or more	V _{CC} ×0.3 or less	0.55		VSON008X2020
BD65491FV	1	1.8 to 16.0	1.2 Peak 4	1.45 or more	0.5 or less	0.35		SSOP-B16
BD65496MUV	1	1.8 to 16.0	1.2 peak 5	1.45 or more	0.5 or less	0.35		VQFN024V4040
BD63573NUV	1	2.0 to 16.0	1.2 peak 3.2	1.45 or more	0.5 or less	0.38		VSON010V3030
BD6735FV	2	2.0 to 8.0	1.0	2.0 or more	0.7 or less	1.0		SSOP-B20
BD63572MUV	2	2.0 to 9.0	1.0 peak 2.5	1.85 or more	0.9 or less	0.4		VQFN20PV3535
BD63565EFV	2	1.8 to 16.0	1.0	1.45 or more	0.5 or less	0.9		HTSSOP-B20
BD65492MUV	2	1.8 to 16.0	1.0	1.45 or more	0.5 or less	0.9		VQFN024V4040

Stepper Motor Drivers

High Performance, High Reliability 36V Stepper Motor Drivers For PCs, MFPs, Industrial equipments etc.

BD63740FM	CLK MIN	4.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63731EFV	CLK MIN	3.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63730EFV	CLK MIN	3.0A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63725BEFV	CLK MIN	2.5A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63720AEFV	CLK MIN	2.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63715AEFV	CLK MIN	1.5A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63710AEFV	CLK MIN	1.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63920MUV	CLK MIN	2.0A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63910MUV	CLK MIN	1.0A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD63716AMWV	CLK MIN	1.5A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD68720EFV	PARA MIN	2.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD68715EFV	PARA MIN	1.5A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD68710EFV	PARA MIN	1.0A IOMAX	UNSTEP	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD6389FM	CLK MIN	2.2A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD6387EFV	CLK MIN	2.0A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD6385EFV	CLK MIN	1.5A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection
BD6383EFV	CLK MIN	1.0A IOMAX	PARA MIN	Current Pulse	FWRW	DECAY SW	Thin PKG	SMALL SIZE POWER PKG	FUNCTION COMPATIBLE	EPIN	ONE POWER	T.S.D.	O.C.P.	UV LO	O.VLO	Short Protection

*1 BD6387EFV, BD6385EFV, BD6383EFV and BD6389FM are function-compatible.
 *2 BD6387EFV, BD6385EFV and BD6383EFV are all pin-compatible.
 *3 BD68720EFV, BD68715EFV and BD68710EFV are function-compatible.
 *4 BD68720EFV, BD68715EFV and BD68710EFV are all pin-compatible.
 *5 BD63731EFV, BD63725BEFV, BD63720AEFV, BD63715AEFV and BD63710AEFV are function-compatible.
 *6 BD63731EFV, BD63725BEFV, BD63720AEFV, BD63715AEFV and BD63710AEFV are all pin-compatible.

Part No.	Supply Voltage (V)	Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}			High Level	Low Level		
BD63740FM	8 to 28	4.0	2.0	2.0	0.8	0.28	HSOP-M36
BD63731EFV	8 to 28	3.0	2.0	2.0	0.8	0.28	HTSSOP-B28
BD63730EFV	19 to 28	3.0	2.0	2.0	0.8	0.4	HTSSOP-B54
BD63725BEFV	8 to 28	2.5	2.0	2.0	0.8	0.35	HTSSOP-B28
BD63720AEFV	19 to 28	2.0	2.0	2.0	0.8	0.65	HTSSOP-B28
BD63715AEFV	19 to 28	1.5	2.0	2.0	0.8	0.95	HTSSOP-B28
BD63710AEFV	19 to 28	1.0	2.0	2.0	0.8	1.2	HTSSOP-B28
BD63920MUV	8 to 28	2.0	2.5	2.0	0.8	0.49	VQFN028V5050
BD63910MUV	8 to 28	1.0	2.5	2.0	0.8	1.3	VQFN028V5050
BD63716AMWV	8 to 28	1.5	2.0	2.0	0.8	0.85	UQFN040V5050
BD68720EFV	19 to 28	2.0	2.0	2.0	0.8	0.65	HTSSOP-B28
BD68715EFV	19 to 28	1.5	2.0	2.0	0.8	0.95	HTSSOP-B28
BD68710EFV	19 to 28	1.0	2.0	2.0	0.8	1.2	HTSSOP-B28
BD6389FM	10 to 28	2.2	4.5	2.0	0.8	0.7	HSOP-M36
BD6387EFV	10 to 28	2.0	4.5	2.0	0.8	0.8	HTSSOP-B40
BD6385EFV	10 to 28	1.5	4.5	2.0	0.8	1.0	HTSSOP-B40
BD6383EFV	10 to 28	1.0	4.5	2.0	0.8	1.5	HTSSOP-B40

Symbol Key

- CLK MIN**: Control signal input CLK-IN type
- PARA MIN**: Control signal input PARALLEL-IN type
- IOMAX 1.0A, 1.5A, 2.0A, 2.2A, 2.5A, 3.0A, 4.0A**: Maximum output current
- UNSTEP**: Number of step
- Constant-current PWM**: Constant-current PWM
- FWRW**: Switch able between forward and reverse
- DECAY SW**: SLOW/FAST/MIX DECAY switching function
- Thin PKG**: Thin package
- SMALL SIZE POWER PKG**: Small power package
- High power package**: High power package
- FUNCTION COMPATIBLE**: Function-compatible
- EPIN**: Easy replacement pin compatible with competitor's
- ONE POWER**: 1 power supply system due to built-in regulator
- T.S.D.**: Built-in thermal shut-down circuit
- O.C.P.**: Built-in over current protection circuit
- UV LO**: Built-in under voltage lock out circuit
- O.VLO**: Built-in over voltage lock out circuit
- 4kV, 6kV**: ESD resistance
- Short Protection**: Adjacent pin short protection
- Inverse mounting Protection**: Inverse mounting protection
















































































































Standard 36V Stepping Motor Drivers

BD6395FP											
BD6393FP											
BD68620EFV											
BD68610EFV											
BD6290EFV											
BD63960EFV											
BD63940EFV											
BD63621MUV											
BD63620AEFV											
BD63610AEFV											
BD63801EFV											
BD60223FP											
BD63888AEKV											
BD68888AEKV											
BD63888MUV											
BD68888MUV											

*1 The BD6395FP, BD6393FP, and BD6290EFV are all function-compatible.
 *2 The BD6395FP and BD6393FP are all pin-compatible.
 *3 The BD63620AEFV, BD63610AEFV, and BD63801EFV are all function-compatible.
 *4 The BD63960EFV and BD63940EFV are all pin-compatible.
 *5 The BD68620EFV and BD68610EFV are all function-compatible.
 *6 The BD63960EFV and BD63940EFV are all function-compatible.

Part No.	Supply Voltage (V)	Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}			High Level	Low Level		
BD6395FP	16 to 28	1.5	3.0	2.0	0.8	1.2	HSOP25
BD6393FP	16 to 28	1.2	3.0	2.0	0.8	1.5	HSOP25
BD68620EFV	19 to 28	2.0	1.3	2.0	0.8	0.95	HTSSOP-B24
BD68610EFV	19 to 28	1.0	1.3	2.0	0.8	1.8	HTSSOP-B20
BD6290EFV	19 to 28	0.8	3.0	2.0	0.8	2.8	HTSSOP-B24
BD63960EFV	19 to 28	1.5	2.7	2.0	0.8	1.1	HTSSOP-B24
BD63940EFV	19 to 28	1.2	2.7	2.0	0.8	1.4	HTSSOP-B24
BD63621MUV	8 to 28	2.0	2.5	2.0	0.8	0.49	VQFN028V5050
BD63620AEFV	19 to 28	2.0	1.3	2.0	0.8	0.95	HTSSOP-B24
BD63610AEFV	19 to 28	0.8	1.3	2.0	0.8	1.8	HTSSOP-B20
BD63801EFV	19 to 28	0.8	2.7	2.0	0.8	2.8	HTSSOP-B24
BD60223FP	8 to 28	1.5	2.5	2.0	0.8	0.55	HSOP25
BD63888AEKV	8 to 28	1.5	5.0	2.0	0.8	1.0	HTQFP48V
BD68888AEKV	8 to 28	1.5	5.0	2.0	0.8	1.0	HTQFP48V
BD63888MUV	8 to 28	1.2	5.0	2.0	0.8	1.0	VQFN036V6060
BD68888MUV	8 to 28	1.65	5.0	2.0	0.8	1.0	VQFN036V6060

















































μ-step 36V Stepping Motor Drivers

BD63860EFV														
BD63510AEFV														
BD63511EFV														
BD63520AEFV														
BD63521EFV														
BD63524AEFV														
BD63525AEFV														
BD63740FM														

*1 The BD63510AEFV, BD63520AEFV and BD63525AEFV are all function-compatible.
 *2 The BD63511AEFV and BD63521AEFV are all function-compatible.











Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BD63860EFV	16 to 28		2.5	4.0	2.0	0.8	0.8	HTSSOP-B28
BD63510AEFV	8 to 28		1.0	2.5	2.0	0.8	1.75	HTSSOP-B28
BD63511EFV	8 to 28		1.0	2.5	2.0	0.8	1.75	HTSSOP-B28
BD63520AEFV	8 to 28		2.0	2.5	2.0	0.8	0.65	HTSSOP-B28
BD63521EFV	8 to 28		2.0	2.5	2.0	0.8	0.65	HTSSOP-B28
BD63524AEFV	8 to 28		2.5	2.5	2.0	0.8	0.35	HTSSOP-B28
BD63525AEFV	8 to 28		2.5	2.5	2.0	0.8	0.35	HTSSOP-B28
BD63740FM	8 to 28		4.0	2.0	2.0	0.8	0.28	HSOP-M36

Low Voltage Stepping Motor Drivers For Mini and Handheld Printers

BD6382EFV																
BD6381EFV																
BD6380EFV																














































Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BD6382EFV	3.0 to 5.5	5.5 to 13.5	0.8	1.6	2.0	0.8	1.2	HTSSOP-B24
BD6381EFV	2.5 to 5.5	6.0 to 13.5	1.2	1.6	2.0	0.8	1.0	HTSSOP-B24
BD6380EFV	2.5 to 5.5	4.0 to 13.5	0.8	1.6	2.0	0.8	1.2	HTSSOP-B24

40V Stepping Motor Driver

BD63401EFV												
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Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BD63401EFV	8 to 33		1.35	2.0	2.0	0.8	1.0	HTSSOP-B20

45V Stepping Motor Drivers

BD6425EFV															
BD6423EFV															
BD6422EFV															

Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BD6425EFV	19 to 42		1.5	2.0	2.0	0.8	1.1	HTSSOP-B28
BD6423EFV	19 to 42		1.0	2.0	2.0	0.8	2.0	HTSSOP-B24
BD6422EFV	19 to 42		1.0	2.0	2.0	0.8	2.0	HTSSOP-B24

50V Stepping Motor Driver

BD64220EFV													
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Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BD64220EFV	8 to 46.2		2.0	2.0	2.0	0.8	0.65	HTSSOP-B28

36V Unipolar Stepper Motor Driver

BM6343FS-Z												
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Part No.	Supply Voltage (V)		Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
	V _{CC}	V _M			High Level	Low Level		
BM6343FS-Z	8 to 28		3.0	5.0	2.0	0.8	0.10	SSOP-A54_36

 Built-in over current protection circuit	 Built-in under voltage lock out circuit	 Built-in over voltage lock out circuit	 ESD resistance	 Adjacent pin short protection	 1 power supply system due to built-in regulator	 Built-in thermal shut-down circuit
 Function-compatible	 Standby current 0μA					

Automotive 40V Stepping Motor Driver

BD63800MUF-C



Part No.	Supply Voltage (V)	Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package	Automotive Grade AEC-Q100
	V _{CC}			High Level	Low Level			
BD63800MUF-C	6 to 28	1.21	3.5mA	2.0	0.8	0.75	VQFN32FBV050	YES

3-Phase Brushless Motor Drivers

3-Phase Brushless Motor Pre-Drivers with Speed Control

BD6762FV



BD63030EKV-C



Part No.	Max Voltage (V)	Supply Voltage (V)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage (V)		External FET Drive Voltage (V)		PWM Frequency (kHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
					H Level	L Level	Upper (V)	Lower (V)				
BD6762FV	36	16 to 28	-25 to +75	17	2.2	0.8	V _{CC} +6.8	10.8	16	HTSSOP-B24		
Part No.	Max Voltage (V)	Supply Voltage (V)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage (V)		External FET Drive Voltage (V)		PWM Frequency (kHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
					H Level	L Level	Upper (V)	Lower (V)				
BD63030EKV-C	50	6.5 to 18.0	-40 to +125	18	3.8	1.9	2xV _{CC} -1.0	5.5	20	HTQFP64AV	FSs	YES

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

3-Phase Brushless Motor Pre-Drivers

BD6761FS



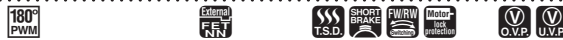
BD63001AMUV



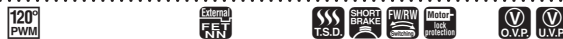
BD63002AMUV



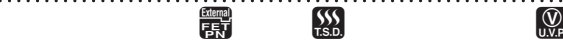
BM62300MUV



BD63003MUV



BD67891MUV



BD16805FV-M



BM64070MUV



BM64300MUV


























































Part No.	Max Voltage (V)	Supply Voltage (V)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage (V)		External FET Drive Voltage (V)		PWM Frequency (kHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
					H Level	L Level	Upper	Lower				
BD6761FS	36	16 to 28	-35 to +75	15.0	2.2	0.8	V _{CC} +6	10.5	15	SSOP-A32	-	-
BD63001AMUV	33	4.5 to 5.5/6 to 28	-40 to +85	2.5	2.0	0.8	V _{CC} -0.2	9.5	20	VQFN024V4040	-	-
BD63002AMUV	33	8.0 to 26.4	-40 to +85	2.5	2.0	0.8	V _{CC} +7	5.0	External IN	VQFN028V5050	-	-
BM62300MUV	33	8 to 28	-40 to +105	14	V _{VREG50} -1.2	0.8	V _G -0.1	0.1	40	VQFN032V5050	-	-
BD63003MUV	40	10.8 to 26.4	-40 to +85	4.5	2.0	0.8	V _{CC} +10*2	10*2	External IN	VQFN032V5050	-	-
BD67891MUV	45	20 to 40	-25 to +85	2.5	2.0	0.8	V _{MM} -7.8	7.8	External IN	VQFN032V5050	-	-
BD16805FV-M	60	8 to 18	-40 to +110	15.2	3.0	1.0	2xV _{CC} -0.5	8.0	25	SSOP-B40	FSs	YES
BM64070MUV	100	28 to 77	-40 to +105	6.4	2.8	0.8	V _G -0.1	0.1	90	VQFN040V6060	-	-
BM64300MUV	100	28 to 63	-40 to +105	13	V _{VREG50} -1.2	0.8	V _G -0.1	0.1	40	VQFN040V6060	-	-

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 Constant current drive type

Symbol Key	CLK IN Control signal input CLK-IN type	SERVO Built-in servo circuit	SPI SPI BUS interface	I2max 1.2A Maximum output current	36V MAX Voltage resistance	40V MAX Voltage resistance	60V MAX Voltage resistance	100V MAX Voltage resistance	120° SLOW FREQ PWM Output power system	120° PWM Output power system	180° PWM Output power system	1/32 STEP Number of step
	Constant-current PWM Constant-current PWM	FWRW Switchable between forward and reverse	External FET External output FET H-side: Nch/L-side: Nch	External FET External output FET H-side: Pch/L-side: Nch	DMOS DMOS output	FG AMP Built-in FG Amplifier	HYS AMP Built-in hysteresis Amplifier					
	ONE POWER 1 power supply system due to built-in regulator	T.S.D Built-in thermal shut-down circuit	SHORT BRAKE Built-in short brake	Motor lock protection Built-in motor lock-up protection circuit	O.C.P Built-in over current protection circuit	O.V.P Built-in over voltage protection circuit	U.V.P Built-in under voltage protection circuit					

3-Phase Brushless Motor Drivers

























BD63005AMUV										
BD63006MUV										
BD63007MUV										
BD63015EFV										
BD63035EFV-M										
BD16852EFV-C										

Part No.	Max Voltage (V)	Supply Voltage (V)	Output Current (A)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	PWM Frequency (kHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
						H Level	L Level					
BD63005AMUV	33	10 to 28	2	-25 to +85	4.4	2.0	0.8	0.17	External IN	VQFN040V6060	—	—
BD63006MUV	33	8 to 28	1.5	-40 to +85	4.4	2.0	0.8	0.8	External IN	VQFN024V4040	—	—
BD63007MUV	33	8 to 28	3	-25 to +85	4.4	2.0	0.8	0.17	External IN	VQFN040V6060	—	—
BD63015EFV	36	8 to 28	1.5	-40 to +105	8	2.0	0.8	0.6	External IN	HTSSOP-B20	—	—
BD63035EFV-M	36	8 to 28	1.5	-40 to +105	8	2.0	0.8	0.6	22.7	HTSSOP-B20	FSs	YES
BD16852EFV-C	40	5.5 to 18.0	3.2	-40 to +125	5	—	—	0.4	20	HTSSOP-B28	FSs	YES

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
































































Fan Motor Drivers

5V Single-Phase Full-wave Fan Motor Drivers




















BH6766FVM						
BD6965NUX						
BU6909AGFT						
BU69090NUX						

Part No.	Supply Voltage (V)	I _o Max (mA)	Power Transistor	Output Saturation Voltage (V)	Speed Control	Hall Bias Voltage (V)	Lock Time Ratio	Package
BH6766FVM	2.0 to 6.0	630	CMOS	Upper and Lower 0.6 (I _o =250mA)	—	1.3	—	MSOP8
BD6965NUX	2.0 to 5.5	800	CMOS	Upper and Lower 0.4 (I _o =250mA)	Direct PWM	—	1 : 10	VSON008X2030
BU6909AGFT	1.8 to 5.5	800	CMOS	Upper and Lower 0.16 (I _o =200mA)	Direct PWM	Include Hall sensor	1 : 10	TSSOF6
BU69090NUX	1.8 to 5.5	800	CMOS	Upper and Lower 0.16 (I _o =200mA)	Direct PWM	Include Hall sensor	1 : 10	VSON008X2030

Standard Single-Phase Full-wave Fan Motor Drivers

BD6981FVM							
BD6982FVM							
BD6967FVM							
BD6968FVM							
BD6962FVM							
BD6964FVM							
BD6961F							
BD6964F							
BD69830FV							

Part No.	Supply Voltage (V)	I _o Max (mA)	Power Transistor	Output Saturation Voltage (V)	Speed Control	Hall Bias Voltage (V)	Lock Time Ratio	Package
BD6981FVM	2.8 to 16.0	800	DMOS	Upper and Lower 0.45 (I _o =200mA)	—	1.2	1 : 6	MSOP8
BD6982FVM	2.8 to 16.0	800	DMOS	Upper and Lower 0.45 (I _o =200mA)	—	1.2	1 : 6	MSOP8
BD6967FVM	3.3 to 14.0	800	DMOS	Upper and Lower 0.45 (I _o =200mA)	DC/Direct PWM	1.2	1 : 10	MSOP10
BD6968FVM	3.3 to 14.0	800	DMOS	Upper and Lower 0.45 (I _o =200mA)	DC/Direct PWM	1.2	1 : 10	MSOP10
BD6962FVM	3.3 to 14.0	800	DMOS	Upper and Lower 0.4 (I _o =300mA)	Direct PWM	—	1 : 10	MSOP8
BD6964FVM	3.3 to 14.0	800	DMOS	Upper and Lower 0.4 (I _o =300mA)	Direct PWM	—	1 : 10	MSOP8
BD6961F	3.3 to 14.0	1,000	DMOS	Upper and Lower 0.4 (I _o =300mA)	Direct PWM	—	1 : 10	SOP8
BD6964F	3.3 to 14.0	1,000	DMOS	Upper and Lower 0.4 (I _o =300mA)	Direct PWM	—	1 : 10	SOP8
BD69830FV	6.0 to 28.0	900	DMOS	Upper and Lower 0.6 (I _o =200mA)	Direct PWM	1.2	1 : 30	SSOP-B14

 Built-in under voltage lock out circuit	 Built-in over voltage lock out circuit	 Adjacent pin short protection	 Power supply compatible						This is an indication for the amount of current that can flow into a motor running at fixed speed.
 Include Hall sensor	 RPM pulse signal output	 Built-in hall element power supply voltage	 Rotational speed control possible	 External capacitor for detecting motor lock not necessary	 Motor lock detection function	 Lock alarm signal output			
 Motor startup possible low-duty	 Drive method with hall sensor for detecting the rotor position	 Soft switching							

Multifunction Single-Phase Full-wave Fan Motor Drivers

BD6971FV		
BD6994FV		
BD6995FV		
BD61243FV		
BD61245EFV		
BD61248NUX		
BD69730FV		
BD69740FV		
BD61250MUV		
BD61251FV		

Part No.	Supply Voltage (V)	I _o Max (mA)	Power Transistor	Output Saturation Voltage (V)	Speed Control	Hall Bias Voltage (V)	Lock Time Ratio	Package
BD6971FV	3.5 to 17.0	1,000	DMOS	Upper and Lower 0.6 (I _o =200mA)	DC/PWM	1.3	1 : 10	SSOP-B14
BD6994FV	4.5 to 17.0	1,200	DMOS	Upper and Lower 0.6 (I _o =400mA)	DC/PWM	1.25	1 : 10	SSOP-B16
BD6995FV	4.3 to 17.0	1,200	DMOS	Upper and Lower 0.6 (I _o =400mA)	DC	1.25	1 : 10	SSOP-B16
BD61243FV	5.5 to 16.0	1,200	DMOS	Upper and Lower 0.4 (I _o =400mA)	DC/PWM	1.25	1 : 10	SSOP-B14
BD61245EFV	4.0 to 16.0	1,800	DMOS	Upper and Lower 0.2 (I _o =400mA)	DC/PWM	—	1 : 10	HTSSOP-B16
BD61248NUX	4.5 to 16.0	1,200	DMOS	Upper and Lower 0.2 (I _o =200mA)	PWM	—	1 : 10	VSON010X3030
BD69730FV	4.3 to 17.0	10	Pre-Driver	—	DC/PWM	1.26	1 : 20	SSOP-B16
BD69740FV	4.3 to 17.0	10	Pre-Driver	—	DC/PWM	1.26	1 : 20	SSOP-B16
BD61250MUV	4.5 to 36.0	10	Pre-Driver	—	DC/PWM	—	1 : 20	VQFN024V4040
BD61251FV	4.5 to 16.0	10	Pre-Driver	—	PWM	—	1 : 20	SSOP-B16

2-Phase Half-wave Fan Motor Driver

BA6406F		
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Part No.	Supply Voltage (V)	I _o Max (mA)	Power Transistor	Output Saturation Voltage (V)	Speed Control	Hall Bias Voltage (V)	Zener Diode Clamp Voltage (V)	Output Clamp Voltage (V)	Lock Time Ratio	Package
BA6406F	4.0 to 28.0	70	Pre-Driver	—	—	—	—	—	1 : 4.5	SOP8

































































3-Phase Full-wave Fan Motor Drivers

BD67173NUX		
BD6326ANUX		
BD63282EFV		
BD63242EFV		
BD63242FV		
BD63241FV		
BD63251MUV		

Part No.	Supply Voltage (V)	I _o Max (mA)	Power Transistor	Output Saturation Voltage (V)	Speed Control	Hall Bias Voltage (V)	Lock Time Ratio	Package
BD67173NUX	2.2 to 5.5	700	CMOS	Upper and Lower 0.25 (I _o =250mA)	PWM	—	1 : 5	VSON010X3030
BD6326ANUX	2.2 to 5.5	700	CMOS	Upper and Lower 0.25 (I _o =250mA)	PWM	—	1 : 5	VSON010X3030
BD63282EFV	5.0 to 16.0	1,000	DMOS	Upper and Lower 0.3 (I _o =300mA)	DC/PWM	—	1 : 2, 1 : 5, 1 : 10	HTSSOP-B20
BD63242EFV	5.0 to 16.0	1,000	DMOS	Upper and Lower 0.3 (I _o =300mA)	DC/PWM	—	Setting of SOS-C-pin	HTSSOP-B16
BD63242FV	5.0 to 16.0	1,000	DMOS	Upper and Lower 0.3 (I _o =300mA)	DC/PWM	—	Setting of SOS-C-pin	SSOP-B16
BD63241FV	5.0 to 16.0	1,000	DMOS	Upper and Lower 0.24 (I _o =300mA)	PWM	1.25	1 : 5	SSOP-B16
BD63251MUV	5.5 to 15.0	10	Pre-Driver	—	PWM	1.25	1 : 10	VQFN024V4040

Symbol Key		Power supply compatible		PRE DRIVER	This is an indication for the amount of current that can flow into a motor running at fixed speed.		Small mount type		RPM pulse signal output
		Drive method with hall sensor for detecting the rotor position			One hall sensor drive		Three hall sensor drive		Soft switching
									Output power system
									Built-in hall element power supply voltage
									Rotational speed control possible

3-Phase Brushless Fan Motor Drivers For Household Appliances

BM6241FS	 	  
BM6242FS	 	  
BM6243FS	 	  
BM6244FS	 	    
BM6245FS	 	    
BM6246FS	 	    
BM6247FS	 	    
BM6248FS	 	    
BM6249FS	 	    
BM6258FS	 	    

















Part No.	Control	Output Device	Rated Voltage (V)	Output Current (A)	Output ON Resistance (Ω)	Diode Forward Voltage (V)	FG Conversion Ratio	Package
BM6241FS	6 inputs	MOSFET	250	2.0	0.9	0.9	12:12	SSOP-A54_23
BM6242FS	6 inputs	MOSFET	600	1.5	2.7	1.1	12:12	SSOP-A54_23
BM6243FS	6 inputs	MOSFET	600	2.5	1.7	1.1	12:12	SSOP-A54_23
BM6244FS	120°	MOSFET	250	2.0	0.9	0.9	12:12	SSOP-A54_36A
BM6245FS	120°	MOSFET	600	1.5	2.7	1.1	12:12	SSOP-A54_36A
BM6246FS	120°	MOSFET	600	2.5	1.7	1.1	12:12	SSOP-A54_36A
BM6247FS	180° (Sinusoidal)	MOSFET	250	2.0	0.9	0.9	12:12	SSOP-A54_36A
BM6248FS	180° (Sinusoidal)	MOSFET	600	1.5	2.7	1.1	12:12	SSOP-A54_36A
BM6249FS	180° (Sinusoidal)	MOSFET	600	2.5	1.7	1.1	12:12	SSOP-A54_36A
BM6258FS	180° (Sinusoidal)	MOSFET	600	1.5	2.7	1.1	15:12	SSOP-A54_36A

3-Phase Brushless Fan Motor Controllers For Household Appliances

Part No.	Supply Voltage (V)	Commutation Logic	Control Voltage Input (V)	Phase Control (deg)	FG Conversion Ratio	Package
New BD62012BFS	10.0 to 18.0	150°	2.1 to 5.4	0 to +30	12 : 12	SSOP-A24
New BD62017BFS	10.0 to 18.0	180° (Sinusoidal)	2.1 to 5.4	0 to +40	15 : 12	SSOP-A24
New BD62018BFS	10.0 to 18.0	180° (Sinusoidal)	2.1 to 5.4	0 to +40	12 : 12	SSOP-A24

Fractional Pulse Rate Converters

Part No.	Supply Voltage (V)	Circuit Current (mA)	Input Frequency (kHz)	Conversion Ratio	Package
BU6821G	4.5 to 5.5	0.5	0.005 to 5	15 : 12	SSOP5
BU6823G	4.5 to 5.5	0.5	0.005 to 5	21 : 12	SSOP5

 External capacitor for detecting motor lock not necessary	 Motor lock detection function	 Lock alarm signal output	 Minimum rotational speed setting	 Motor startup possible low-duty	 Built-in thermal shut-down circuit	 Output current limit can be set
 Soft start	 Built-in diode for preventing damage due to backward connection	  Rated Voltage	   Maximum output current	 Built-in under voltage lock out circuit	 Built-in over current protection circuit	

Drivers for Printer

Motor Drivers with Brush for Printers

Part No.	Supply Voltage (V)	Output Current (A)	Output Current Peak (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
					H Level	L Level		
BD62210AEFV	8.0 to 28.0	1.0	1.5	2.5	2.0	0.8	1.9	HTSSOP-B28
BD62220AEFV	8.0 to 28.0	2.0	2.8	2.5	2.0	0.8	0.65	HTSSOP-B28
BD63130AFM	8.0 to 46.2	3.0	5.0	2.5	2.0	0.8	0.55	HSOP-M36
BD63150AFM	8.0 to 46.2	5.0	6.0	2.5	2.0	0.8	0.3	HSOP-M36

Bipolar Stepper Motor Drivers for Paper Feed/Carriage

There are other stepper motor drivers that can be used in industrial equipment and printers.

Part No.	Power Supply (V)	Output Current (A)	Circuit Current (mA)	Input Threshold Voltage (V)		Output ON Resistance (Ω)	Package
				High Level	Low Level		
BD63801EFV	19.0 to 28.0	0.8	2.7	2.0	0.8	2.8	HTSSOP-B24
BD68715EFV	19.0 to 28.0	1.5	2.0	2.0	0.8	0.95	HTSSOP-B28
BD63715AEFV	19.0 to 28.0	1.5	2.0	2.0	0.8	0.95	HTSSOP-B28

3-Phase Brushless Motor Pre-Drivers for Paper Feed For LBP, PPC

Part No.	V _{CC} (V)	Power Supply (V)	Operating Temperature (°C)	Circuit Current (mA)	Input Threshold Voltage (V)		External Threshold Voltage (V)		PWM Frequency (kHz)	Package
					H Level	L Level	Upper	Lower		
BD6761FS	36	16.0 to 28.0	-35 to +75	15.0	2.2	0.8	V _{CC} +6	10.5	15	SSOP-A32
BD6762FV	36	16.0 to 28.0	-25 to +75	17.0	2.2	0.8	V _{CC} +6.8	10.8	16	SSOP-B40

System Motor Driver with Built-in Switching Regulators (H Bridge + SWREG 2ch)

Part No.	V _{CC} (V)	Motor Rated Output Current	H Bridge ch	SW REG1 Output Current Range (A)	SW REG2 Output Current Range (A)	Standby Current (μA) (Max)	Package
BD64547MUV	50	2.0 A/Phase	2	0 to 2.0	0 to 1.4	100	VQFN048V7070
BD64008MUV	50	2.0 A/Phase	1 (2ch parallel use)	0 to 2.0	0 to 1.4	100	VQFN048V7070

3-Phase Brushless Motor Driver for Polygonal Mirrors For LBP, PPC: Current limit value is calculated by dividing current limit voltage by RNF resistance which is to detect the output current.
 Motor Drivers with Brush for Printers: The BD62210AEFV and BD62220AEFV are all pin-compatible.

Drivers for Camera

5ch System Lens Driver for Cameras

Part No.	Supply Voltage (V)	Driver Output Max Current (A)	Drive Method Examples of Actuator (Driven Motor, Driving System, and Output ON Resistance (Ω))				Input I/F	Reference Voltage Output for Output Setting Current (V)	Package (mm)
			AF	Zoom	Iris	Shutter			
BD6758KN	2.5 to 5.5	0.8	e.g. STM (1, 2ch) FULL ON 1.2	DCM (3ch) FULL ON 1.2	DCM or VCM (4ch) FULL ON 1.2	VCM (5ch) Constant current 1.0	Parallel	1.2 (±3%)	VQFN36 6.2×6.2, H=Max 0.95

6ch System Lens Drivers for Cameras

Part No.	Supply Voltage (V)	Driver Output Max Current (A)	Drive Method Examples of Actuator (Driven Motor, Driving System, and Output ON Resistance (Ω))					Input I/F	Reference Voltage Output For Output Setting Current (V)	Package (mm)
			AF	Zoom	Iris	Shutter	Barrier			
BD6373GW	2.5 to 5.5	0.8	e.g. STM (1, 2ch) FULL ON 1.2	STM (3, 4ch) FULL ON 1.2	DCM or VCM (5ch) FULL ON 1.2	VCM (6ch) FULL ON 1.2	Parallel	—	UCSP75M2 2.6×2.6, H=Max 0.85	
BD6753KV	4.5 to 10.5 (1, 2ch) 2.0 to 10.5 (3 to 6ch)	0.8	e.g. STM (1, 2ch) FULL ON 1.2	STM (3, 4ch) FULL ON 1.2	DCM or VCM (5ch) PWM (±3%) 1.2	VCM (6ch) PWM (±3%) 1.2	Parallel + Serial	0.9 (±10%)	VQFP48C 9.0×9.0, H=Max 1.60	

Single and Dual-Channel Lens Drivers for SLRs (Single Lens Reflex)												
Part No.	ch	Supply Voltage (V)	Driver Output Max Current (A)	Drive Method Examples of Actuator (Driven Motor, Driving System, and Output ON Resistance (Ω))					Turn on Time	Turn off Time (ms)	Control Frequency (kHz) (Max)	Package (mm)
				Cleaner	AF	Zoom	Iris	Shutter				
BD65492MUV	2	1.8 to 16.0	1.0	e.g. —	STM (2ch) FULL ON 0.9	—	—	—	200ns (Including 80ns to Prevent from overlap current.)	80	500	VQFN024V4040 4.0x4.0, H=Max 1.0
BD6735FV	2	2.0 to 8.0	1.0	e.g. —	—	—	STM (2ch) FULL ON 1.0	—	300ns (Including 90ns to Prevent from overlap current.)	100	100	SSOP-B20 6.5x6.4, H=Max 1.25
BD6376GUL	1	2.0 to 9.0	1.0	e.g. —	—	DCM (1ch) FULL ON 0.45	—	—	200ns (Including 80ns to Prevent from overlap current.)	60	200	VCSP50L1 1.6x1.6, H=Max 0.55
BD65491FV	1	1.8 to 16.0	1.2 Peak 4.0	e.g. —	—	—	—	Plunger (1ch) FULL ON 0.35	150ns (Including 80ns to Prevent from overlap current.)	50	500	SSOP-B16 6.5x5.0, H=Max 1.25
BD6736FV	1	2.0 to 9.0	1.0 Peak 3.2	e.g. —	—	—	—	Plunger (1ch) FULL ON 0.35	1000ns (Including 800ns to Prevent from overlap current.)	100	100	SSOP-B20 6.5x6.4, H=Max 1.25
BD65499MUV	1	4.0 to 27.0	0.5 Peak 2.0	e.g. Piezo (1ch) FULL ON 0.6	—	—	—	—	150ns (Including 80ns to Prevent from overlap current.)	50	300	VQFN028V5050 5.0x5.0, H=Max 1.0
BD65494MUV	1	2.0 to 9.0	1.0 Peak 2.5	e.g. —	—	—	—	Plunger (1ch) FULL ON 0.55	200ns (Including 80ns to Prevent from overlap current.)	60	200	VQFN016V3030 3.0x3.0, H=Max 1.0
BD65496MUV	1	1.8 to 16.0	1.2 Peak 5.0	e.g. —	—	—	—	Plunger (1ch) FULL ON 0.35	150ns (Including 80ns to Prevent from overlap current.)	50	500	VQFN024V4040 4.0x4.0, H=Max 1.0

STM: Stepping motor, DCM: DC motor, VCM: Voice coil motor ("Drive method examples of actuator" are the recommendations. Other types may be evaluated.)

μ-step System Lens Drivers for Cameras											
Part No.	Supply Voltage (V)	Driver Output Max Current (A)	Drive Method Examples of Actuator (Driven Motor, Driving System, and Output ON Resistance (Ω))					Input I/F	μ-step Resolution	Package (mm)	
			AF	Zoom	Iris	Shutter	Others				
BU24020GU	2.7 to 3.6 (Logic) 2.7 to 5.5 (Driver)	0.5	e.g. 1	STM (1, 2ch) μ-step (class-D) 1.5	STM (3, 4ch) μ-step (class-D) 1.5	—	—	—	3-wire serial	1024	VCSP85H2 2.6x2.6, H=Max 1.0
			e.g. 2	—	DCM (3ch) FULL ON (PWM) 1.5	VCM (4ch) FULL ON (PWM) 1.5	—				
BU24033GW	1.62 to 3.6 (Io) 2.7 to 3.6 (Logic) 2.7 to 5.5 (Driver)	0.5/0.6	e.g. 1	STM (1, 2ch) μ-step (class-D) 1.5	STM (3, 4ch) μ-step (class-D) 1.5	VCM (5ch) FULL ON (PWM) 1.0	VCM (6ch) constant current 1.0	—	3-wire serial	1024	UCSP75M3 3.0x3.0, H=Max 0.85
			e.g. 2	—	DCM (5ch) FULL ON (PWM+Speed control) 1.0	VCM (3ch) FULL ON (PWM) 1.5		DCM (4ch) FULL ON (PWM) 1.5			
BU24035GW	2.7 to 3.6 (Logic) 2.7 to 5.5 (Driver)	0.5/0.6	e.g. 1	STM (1, 2ch) μ-step (class-D) 1.5	DCM (5ch) FULL ON (PWM+Speed control) 1.0	STM (3, 4ch) μ-step (class-D) 1.5	VCM (6ch) constant current 1.0	—	3-wire serial	1024	UCSP75M3 3.1x3.1, H=Max 0.85
			e.g. 2	—	DCM (3ch) FULL ON (PWM+Speed control) 1.5	VCM (5ch) FULL ON (PWM)/constant current 1.0		VCM (4ch) FULL ON (PWM) 1.5			
BU24036MWV	2.7 to 3.6 (Logic) 2.7 to 5.5 (Driver)	0.5/0.6	e.g. 1	STM (1, 2ch) μ-step (class-D) 2.0	DCM (5ch) FULL ON (PWM+Speed control) 1.0	STM (3, 4ch) μ-step (class-D) 1.5	VCM (6ch) constant current 1.0	—	3-wire serial	1024	UQFN040V5050 5.0x5.0, H=Max 1.0
			e.g. 2	—	DCM (3ch) FULL ON (PWM+Speed control) 1.5	VCM (5ch) FULL ON (PWM)/constant current 1.0		VCM (4ch) FULL ON (PWM) 1.5			

STM: Stepping motor, DCM: DC motor, VCM: Voice Coil Motor ("Drive method examples of actuator" are the recommendations. Other types may be evaluated.)

Mobile Phone Module Drivers

2-wire Serial (I²C-compatible) Interface Lens Drivers for Uni-directional Voice Coil Motors

Part No.	Supply Voltage (V)	Applications	ch	Drive System	Driver Output Max Current (mA)	Driver Output Low Voltage (V)	Input I/F	Ring Compensation	Temperature Protection	Back side coating	Package (mm)
BU64243GWZ	2.3 to 4.8	Drive AF using voice coil motor	0.25	Constant current (±10%)	130	0.15 (V _{CC} =3V, I _O =100mA)	I ² C Fm compatible	ISRC	✓	with	UCSP35L1 0.77x1.3, H=Max 0.40
BU64244GWZ	2.3 to 4.8	Drive AF using voice coil motor	0.25	Constant current (±10%)	130	0.15 (V _{CC} =3V, I _O =100mA)	I ² C Fm compatible	ISRC	✓	with	UCSP35L1 0.77x1.3, H=Max 0.36
BU64291GWZ	2.3 to 4.8	Drive AF using voice coil motor	0.5	Constant current (±5%)	100	0.25 (V _{CC} =3V, I _O =100mA)	I ² C Fm compatible	ISRC	✓	without	UCSP30L1 0.77x1.37, H=Max 0.33
BU64292GWZ	2.5 to 3.6	Drive AF using voice coil motor	0.25	Constant current (±5%)	125	0.28 (V _{DD} =3V, I _O =100mA)	I ² C Fm+ compatible	ISRC	✓	without	UCSP25L1 0.68x1.08, H=Max 0.30
BU64982GWZ	2.5 to 3.6	Drive AF using voice coil motor	0.25	Constant current (±5%)	125	0.28 (V _{DD} =3V, I _O =100mA)	I ² C Fm+ compatible	ISRC	✓	with	UCSP30L1A 0.68x1.08, H=Max 0.33

2-wire Serial (I²C-compatible) Interface Lens Drivers for Bi-directional Voice Coil Motors

Part No.	Supply Voltage (V)	Applications	ch	Drive System	Driver Output Max Current (A)	Driver Output ON Resistance (Ω)	Input I/F	Ring Compensation	Temperature Protection	Back side coating	Package (mm)
BU64295GWZ	2.3 to 4.8	Drive AF using voice coil motor	1	Constant current (±5%)	±100	2.0 (V _{DD} =3V)	I ² C Fm compatible	ISRC	✓	without	UCSP30L1 0.77x1.2, H=Max 0.33
BU64296GWX	2.3 to 4.8	Drive AF using voice coil motor	1	Constant current (±5%)	±100	2.0 (V _{DD} =3V)	I ² C Fm compatible	ISRC	✓	without	UCSP16X1 0.77x1.2, H=Max 0.20
BU64297GWZ	2.3 to 4.8	Drive AF using voice coil motor	1	Constant current (±5%)	±100	2.0 (V _{DD} =3V)	I ² C Fm compatible	ISRC	✓	with	UCSP35L1 0.77x1.2, H=Max 0.36
BU64253GWZ	2.5 to 4.5	Drive AF using voice coil motor	1	Constant current (±5%)	±100	3.2 (V _{DD} =3V)	I ² C Fm+ compatible	ISRC	✓	with	UCSP30L1A 0.72x1.13, H=Max 0.33
BU64985GWZ	1.6 to 1.98	Drive AF using voice coil motor	1	Constant current (±5%)	±60	1.3 (V _{DD} =1.8V)	I ² C Fm+ compatible	ISRC	✓	with	UCSP35L1 0.77x1.2, H=Max 0.36
BU64987GWZ	1.6 to 1.98	Drive AF using voice coil motor	1	Constant current (±5%)	±100	1.3 (V _{DD} =1.8V)	I ² C Fm+ compatible	ISRC	✓	with	UCSP35L1 0.77x1.2, H=Max 0.36

2-wire Serial (I²C-compatible) Interface Lens Driver for Piezo Actuators

Part No.	Supply Voltage (V)	Applications	ch	Drive System	Driver Output Max Current (mA)	Driver Output ON Resistance (Ω)	Input I/F	Base Clock	Temperature Protection	Power Save Function	Back side coating	Package (mm)
	V _{CC}											
BU64562GWZ	2.3 to 4.8	e.g. 1	1	FULL ON	500	1.4 (V _{CC} =3V)	I ² C Fm compatible	Built-in 15MHz	✓	✓	without	UCSP30L1 1.90x0.77, H=Max 0.33
		e.g. 2										

Parallel Interface Lens Driver for Stepping Motors

Part No.	Supply Voltage (V)	Applications	ch	Drive System	Driver Output Max Current (mA)	Driver Output ON Resistance (Ω)	Input I/F	Input Mode Selection Terminal	Built-In Wave Sloping Comparator	Temperature Protection	Power Save Function	Back side coating	Package (mm)
BD6360GUL	2.3 to 5.5	e.g. 1	2	FULL ON	500	1.0 (V _{CC} =3V, I _O =0.4A)	Parallel	✓	✓	✓	✓	with	VCSP50L2 2.1x2.1, H=Max 0.55
		e.g. 2											

LED Drivers

LED Drivers P.75

LED Drivers

Boost Converter LED Drivers

White LED Drivers with External FET							
Part No.	Supply Voltage (V)	Number of LEDs	Output Voltage (V)	Switching Frequency (MHz)	Primary Brightness Control Method	Control Interface	Package (mm)
BD6583MUV-A	2.7 to 22.0	Max 72 12seriesx6strings in parallel (V _r restrictions exist)	Max 43.0	1	PWM signal from the PWMPW/PWMDRV terminal Resistance switching at the ISET terminal	Pin logic setting	VQFN024V4040
BD9486F	9 to 18	Max About 120 120seriesx1string in parallel	Max About 400	0.05 to 0.80	PWM signal Analog signal	Pin logic setting	SOP16
BD9411F	9 to 35	Max About 120 120seriesx1string in parallel	Max About 400	0.05 to 1.00	PWM signal Analog signal	Pin logic setting	SOP18
BD9413F	9 to 35	Max About 120 120seriesx1string in parallel	Max About 400	0.05 to 1.00	PWM signal Analog signal	Pin logic setting	SOP18
BD9483F	11 to 35	Max About 240 120seriesx2strings in parallel	Max About 400	0.05 to 0.80	PWM signal Analog signal	Pin logic setting	SOP24
BD9483FV	11 to 35	Max About 240 120seriesx2strings in parallel	Max About 400	0.05 to 0.80	PWM signal Analog signal	Pin logic setting	SSOP-B24
BD9416F	9 to 35	Max About 240 120seriesx2strings in parallel	Max About 400	0.05 to 1.00	PWM signal Analog signal	Pin logic setting	SOP24
BD9416FS	9 to 35	Max About 240 120seriesx2strings in parallel	Max About 400	0.05 to 1.00	PWM signal Analog signal	Pin logic setting	SSOP-A24
BD9479FV	9 to 35	Max About 96 12seriesx8strings in parallel	Max About 40	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	SSOP-B40
BD9408FV	9 to 35	Max About 120 120seriesx1string in parallel	Max About 400	0.05 to 2.00	PWM signal Analog signal	Pin logic setting	SSOP-B14
BD9409F	11.5 to 35.0	Max About 120 120seriesx1string in parallel	Max About 400	0.05 to 1.00	PWM signal Analog signal	Pin logic setting	SOP16
BD9420F	9 to 35	Max 72 12seriesx6strings in parallel (V _r restrictions exist)	Max About 40	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	SOP28
BD9421F	9 to 35	Max 72 12seriesx6strings in parallel (V _r restrictions exist)	Max About 40	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	SOP24


White LED Drivers with Integrated FET							
Part No.	Supply Voltage (V)	Number of LEDs	Output Voltage (V)	Switching Frequency (MHz)	Primary Brightness Control Method	Control Interface	Package (mm)
BD60A00NUX	2.7 to 5.5	Max 10 10seriesx1string in parallel	Max 40.0	0.6	PWM signal Resistance switching at the ISET terminal	Pin logic setting	VSON008X2030
BD60A60NUX	2.7 to 5.5	Max 6 6seriesx1string in parallel	Max 26.0	0.6	PWM signal Resistance switching at the ISET terminal	Pin logic setting	VSON008X2030
BD65B60GWL	2.7 to 5.5	Max 16 8seriesx2strings in parallel	Max 28.5	1.1/0.6	I ² C BUS PWM signal Resistance switching at the ISET terminal	I ² C BUS + PWM	UCSP50L1 1.4x1.8, H=Max 0.55
BD6586MUV	2.7 to 5.5	Max 24 6seriesx4strings in parallel	Max 24.0	1	PWM signal Resistance switching at the ISET terminal	Pin logic setting	VQFN024V4040
BD65D00MUV	6 to 27	Max 40 10seriesx4strings in parallel	Internal FET Max 40.0 External FET Max 80.0	0.6 to 1.6	PWM signal Resistance switching at the ISET terminal Analog voltage control	Pin logic setting	VQFN028V5050
BD6142AMUV	4.2 to 27	Max 80 10seriesx8strings in parallel	Max 41.0	0.6 to 1.6	PWM signal Resistance switching at the ISET terminal Analog voltage control	Pin logic setting	VQFN024V4040
BD9394EFV	9 to 35	Max 72 18seriesx4strings in parallel	Max 60.0	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	HTSSOP-B24
BD9394FP	9 to 35	Max 72 18seriesx4strings in parallel	Max 60.0	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	HSOP20
BD93942F	9 to 35	Max 72 18seriesx4strings in parallel	Max 60.0	0.1 to 0.8	PWM signal Analog signal	Pin logic setting	SOP16
BD9470AEFV	9 to 35	Max 72 18seriesx4strings in parallel	Max 40.0	0.1 to 0.5	PWM signal	Pin logic setting	HTSSOP-B28
BD9470AFM	9 to 35	Max 72 18seriesx4strings in parallel	Max 40.0	0.1 to 0.5	PWM signal	Pin logic setting	HSOP-M28
BD9397EFV	9 to 35	Max 84 14seriesx6strings in parallel	Max 50.0	0.10 to 1.25	PWM signal Analog signal	Pin logic setting	HTSSOP-B40
BD9422EFV	9 to 35	Max 84 14seriesx6strings in parallel	Max 60.0	0.10 to 1.25	PWM signal Analog signal	Pin logic setting I ² C	HTSSOP-B40

Synchronous White LED Driver with Integrated FET							
Part No.	Supply Voltage (V)	Number of LEDs	Output Voltage (V)	Switching Frequency (MHz)	Primary Brightness Control Method	Control Interface	Package (mm)
BD6071HFN	2.7 to 5.5	Max 3 3seriesx1string in parallel	Max 14.0	1	PWM signal from EN terminal	—	HS0N8

LED Camera Flash Drivers							
Part No.	Supply Voltage (V)	Number of LED	Output Voltage (V)	Output Current	Switching Frequency (MHz)	Control Interface	Package (mm)
BD6164GUT	2.7 to 4.5	1 (Large current LED)	Max 4.7	52, 72mA (Torch mode) 260, 280, 300, 320mA (Flash mode)	4	I ² C BUS	VCSP60N1 1.5x1.1, H=Max 0.675
BD7757MWX	2.7 to 5.0	Max 2 1 to 2seriesx1string in parallel (V _r restrictions exist) (large current LED)	Max 5.1	0 to 1.5A	2	UPIC*2	USON014X3020

LED Driver for LCD Backlight											
Part No.	Power Supply (V)	Boost FET	ch	Output Voltage (V)	Output Current (mA)	Switching Frequency (MHz)	PWM Dimming Ratio	Operating Temperature (C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD83A04EFV-M	4.5 to 48.0	Internal	4	Max 50	Max 120/ch	0.2 to 2.4	20,000 : 1@100Hz	-40 to +125	HTSSOP-B24	FSs	YES
Nano BD82A26MUF-M	3.0 to 48.0	External	6	Max 50	Max 150/ch	0.2 to 2.4	20,000 : 1@100Hz	-40 to +125	VQFN32FBV050	FSs	YES

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 UPIC: Uni-Port Interface Control

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LED Drivers

Boost Converter LED Drivers

White LED Driver for Head Light

Part No.	Supply Voltage (V)	Application	ch	Maximum Input Voltage (V)	Output Current	Dimmer Mode	DC-DC	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD18351EFV-M	4.5 to 65.0	High/Low Beam, DRL/Position, Turn, Fog	1	65	Depend on Extra parts	PWM/Analog	Boost	-40 to +125	HTSSOP-B24	FSs	YES
BD18353EFV-M	5 to 65					PWM/Analog			HTSSOP-B20	FSs	YES
BD18353MUF-M	5 to 65					PWM/Analog 1, 2			VQFN20FV3535	FSs	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Buck Converter LED Drivers

Buck Converter LED Lighting Drivers for DC-DC Converter type

Part No.	Supply Voltage (V)	Switching Terminal Voltage (V)	Ron (Ω)	Operating Frequency (kHz)	Over Current Protection	Package
BM531Q11	9.0 to 35.0	250	0.93 (Typ)	Max 440	✓	DIP7AK
BD94062F	10.5 to 35.0	—	—	Max 800	✓	SOP16

White LED Drivers for PFC Direct Connection Current Resonance type

Part No.	Supply Voltage (V)	Drive Method	Oscillation Frequency Variable (kHz)	Primary Brightness Control Method	Control Interface	Package
BD92111F	8.0 to 18.0	Half Bridge	30 to 200	PWM signal	Pin logic setting	SOP18

White LED Driver for Head Light

Part No.	Supply Voltage (V)	Application	ch	Maximum Input Voltage (V)	Output Current	Dimmer Mode	DC-DC	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD18395EFV-M	4.5 to 70.0	High/Low Beam, DRL/Position, Turn, Fog	1	70	2A	PWM/Analog	Buck	-40 to +125	HTSSOP-B20	FSs	YES

2ch/3ch Current LED Driver with SPI for Automotives

Part No.	Supply Voltage (V)	Application	ch	Maximum Input Voltage (V)	Output Current (mA)	DC-DC	Control Method	Oscillation Frequency (MHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD18397RUV-M	5.0 to 65.0	High/Low Beam, DRL/Position, Turn, Fog	2	60	3,200	Buck	SPI	programmable 0.2 to 2.25	HTSSOP-C48R	FSp	YES
New BD18398RUV-M	5.0 to 65.0	High/Low Beam, DRL/Position, Turn, Fog	3	60	4,800	Buck	SPI	programmable 0.2 to 2.25	HTSSOP-C48R	FSp	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Buck-Boost LED Drivers

LED Driver for LCD Backlight

Part No.	Power Supply (V)	Boost FET	ch	Output Voltage (V)	Output Current (mA)	Switching Frequency (MHz)	PWM Dimming Ratio	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD81A24EFV-M	4.5 to 35.0	Internal	4	Max 40	Max 120/ch	0.2 to 2.2	10,000 : 1@100Hz	-40 to +125	HTSSOP-B28	FSs	YES
BD81A24MUV-M								-40 to +125	VQFN28SV5050	FSs	YES
BD81A24MUF-M								-40 to +125	VQFN28FV5050	FSs	YES
BD81A44EFV-M								-40 to +125	HTSSOP-B28	FSs	YES
BD81A44MUV-M		-40 to +125	VQFN28SV5050	FSs	YES						
BD81A74EFV-M		-40 to +125	HTSSOP-B28	FSs	YES						
BD81A74MUV-M		-40 to +125	VQFN28SV5050	FSs	YES						
BD81A76EFV-M		-40 to +125	HTSSOP-B30	FSs	YES						

White LED Driver for Head Light

Part No.	Power Supply (V)	Application	ch	Rated Voltage (V)	Output Current	Dimmer Mode	DC-DC	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD8381AEFV-M	5 to 30	Head Lamp/DRL	1	50	Depend on extraparts	PWM/DC	Buck-Boost, Boost, Buck	-40 to +125	HTSSOP-B28	FSs	YES

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LED Drivers for Lighting

AC-DC Controller ICs for LED Lighting Included 650V

Part No.	Supply Voltage (V)	Input AC Voltage (Vac)	Built-in PFC Function	Built-in MOSFET	LED Average Current (mA)	Switching Frequency (kHz)	Package
BM520Q15F	8.9 to 26.0	80 to 275	—	✓	up to 200	20 to 200	SOP8
BM521Q25F	8.9 to 25.0	80 to 275	✓	✓	up to 200	20 to 300	SOP8
BD521GOFJ	8.9 to 25.0	80 to 275	✓	—	—	20 to 300	SOP-J8

Inductorless (Charge Pump) LED Drivers

White LED Drivers

Part No.	Supply Voltage (V)	No. of LEDs	Charge Pump Step-up Circuit			Primary Brightness Control Method	Control Interface	Package
			Output Voltage (V)	Output Current (mA)	Pump Frequency			
BD1604MUV	2.7 to 5.5	1 to 4	Max 4.5	120	1MHz	PWM control via EN terminal Resistance switching at ISET terminal	Pin logic setting	VQFN016V3030
BD2606MUV		1 to 6	Max 4.7	120	250kHz/1kHz			

Dynamic Indicator LED Bypass Switch (Matrix LED Controller)

Sequential lighting controller

Part No.	Supply Voltage (V)	ch	Bypass Switch ON Resistance (mΩ)	Max Current (A)	Maximum Channel Voltage	Maximum LED String Voltage (V)	Maximum Number of IC Serial Connections	Lighting Mode	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD18362EFV-M	5.5 to 60.0	8	230	1	9	48	2	Sequential/Hazard	-40 to +125	HTSSOP-B28	FSs	YES
New BD18364EFV-M	5.5 to 45.0	8	300	0.8	13.5	depend on VIN voltage	1	Sequential/Hazard/Animation	-40 to +125	HTSSOP-B30	FSs	YES

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Constant Current/Serial-in Parallel-out LED Drivers

Parallel-out LED Drivers								
Part No.	Supply Voltage (V)	Number of LEDs	Constant Current Driver				Control Interface	Package
			Max Current Setting Method	Max Current	Channel-to-Channel Matching	Brightness Control		
BD1754HFN	2.7 to 5.5	1 to 4 (Parallel Connection)	Resistance change at ISET terminal	32mA (at an ISET resistance of 120kΩ)	Max 3% (at 1V LED pin voltage)	Built-in 64-step current DAC	UPIC*2	HS0N8
BD2802GU		6 (RGB 2ch)	Resistance change at ISET terminal	30.48mA (at an ISET resistance of 120kΩ)	Max 10% (at 1V LED pin voltage)	Built-in 128-step current DAC	I ² C BUS	VCSP85H2
BD2812GU		6 (RGB 2ch)	Resistance change at ISET terminal	30.48mA (at an ISET resistance of 120kΩ)	Max 10% (at 1V LED pin voltage)	Built-in 128-step current DAC/ Inductorless (Charge Pump)	I ² C BUS	VCSP85H3

Parallel Output LED Drivers for Automotive												
Part No.	Supply Voltage (V)	Output Voltage (V)	Number of Output (ch)	Output Method	Max LED Current	Each Output Format	Other	Control Method	Max Clock Frequency (MHz)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
New BD12801MUF-M	3.0 to 5.5	20	16	Constant Current	130mA/ch	Built-in 256-step current DAC	Built-in 8192-step PWM control for all channels	SPI	5.0	VQFN48FAV070	FSs	YES
BD2808MUV-M		20	RGBx8 (24ch)	Constant Current	50mA/ch	Built-in 64-step current DAC for RGB	Built-in 256-step PWM control for all channels	2-Wire Serial	1.0	VQFN48MUV070	FSs	YES
New BD83812EFV-M		35	12	Open Drain	50mA/ch	ON/OFF	—	SPI	1.25	HTSSOP-B20	FSs	YES
New BD83816EFV-M		35	16	Open Drain	50mA/ch	ON/OFF	—	SPI	1.25	HTSSOP-B24	FSs	YES
BD8388FV-M		40	8	Open Drain	50mA/ch	ON/OFF	—	SPI	1.25	SSOP-B16	FSs	YES
BD8389FV-M		40	12	Open Drain	50mA/ch	ON/OFF	—	SPI	1.25	SSOP-B20	FSs	YES

Dot Matrix LED Drivers												
Part No.	Supply Voltage (V)	LED Matrix	Max LED Current	Built-in Pattern		Matrix Data RAM	Mobile Light	PWM Dimming (step)	Current Setting (step)	Interface	Max Clock Frequency	Package (mm)
				Scroll	Slope							
BD26503GUL	2.7 to 5.5	7x17 119dots	30mA/Line	✓	✓	2pages	—	64	16	I ² C BUS/SPI (2 address/—)	400kHz/13MHz	VCSP50L3 3.6x3.6, H=Max 0.55
BD26503KS2		7x17 119dots	30mA/Line	✓	✓	2pages	—	64	16	I ² C BUS/SPI (2 address/—)	400kHz/13MHz	SQFP-T52
BU16501KS2		8x16 128dots	42.5mA/Line	—	—	1page	—	64	16	I ² C BUS/SPI (2 address/—)	400kHz/13MHz	SQFP-T52

LED Source Drivers for Automotive															
Part No.	Supply Voltage (V)	Application	ch	Driver	Maximum Input Voltage (V)	Maximum Output Current (mA)	Dimmer Mode	Accuracy of Current (%)	ISINK Terminal LED Open Detection Voltage (V)	Disable LED Open Detection Voltage (V)	Energy Sharing Control Voltage (V) (Typ)	Operating Temperature (°C)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
BD18340FV-M	4.5 to 19.0	DRL/Position/FOG/Turn/Rear	1 to 10	Controller (External PNP)	70	Total 1,000	PWM/DC (±5%)	±3 (T _a =25 to 125°C)	—	variable	—	-40 to +125	SSOP-B16	FSs	YES
BD18341FV-M	4.5 to 19.0	DRL/Position/FOG/Turn/Rear	1 to 10	Controller (External PNP)	70	Total 1,000	PWM/DC (±12%)	±3 (T _a =25 to 125°C)	—	variable	—	-40 to +125	SSOP-B16	FSs	YES
BD18342FV-M	4.5 to 19.0	DRL/Position/FOG/Turn/Rear	1 to 10	Controller (External PNP)	70	Total 1,000	PWM	±3 (T _a =25 to 125°C)	—	variable	—	-40 to +125	SSOP-B16	FSs	YES
BD18343FV-M	4.5 to 19.0	DRL/Position/FOG/Turn/Rear	1 to 10	Controller (External PNP)	70	Total 1,000	External PWM signal	±3 (T _a =25 to 125°C)	—	variable	—	-40 to +125	SSOP-B16	FSs	YES
BD18345EFV-M	4.5 to 19.0	DRL/Position/FOG/Turn/Rear	1 to 10	Controller (External PNP)	70	Total 1,000	PWM/DC	±3 (T _a =25 to 125°C)	—	variable	—	-40 to +125	HTSSOP-B20	FSs	YES
BD18326NUF-M	5.5 to 20.0	DRL/Position/FOG/Turn/Rear	1	Internal	40	400mA (DC) 600mA (ON Duty: 50%)	PWM/DC	±10 (Output current: 100 to 240mA) (T _a =-40 to +150°C) ±5 (Output current: 240 to 600mA) (T _a =-40 to +150°C)	5.8	11.0	—	-40 to +150	VSON10FV3030	FSs	YES
BD18336NUF-M	5.5 to 20.0	DRL/Position/FOG/Turn/Rear	1	Internal	40	400mA (DC) 600mA (ON Duty: 50%)	PWM/DC	±10 (Output current: 100 to 240mA) (T _a =-40 to +150°C) ±5 (Output current: 240 to 600mA) (T _a =-40 to +150°C)	4.1	11.0	—	-40 to +150	VSON10FV3030	FSs	YES
BD18337EFV-M	5.5 to 20.0	DRL/Position/FOG/Turn/Rear	4	Internal	40	150mA/ch	PWM	±10 (Output current: 50 to 100mA) (T _a =-40 to +125°C) ±5 (Output current: 100 to 150mA) (T _a =-40 to +125°C)	—	11.0	2.0	-40 to +125	HTSSOP-B16	FSs	YES
BD18347AEFV-M	5.5 to 20.0	DRL/Position/FOG/Turn/Rear	4	Internal	40	150mA/ch	PWM	±10 (Output current: 50 to 100mA) (T _a =-40 to +125°C) ±5 (Output current: 100 to 150mA) (T _a =-40 to +125°C)	—	7.65	1.5	-40 to +125	HTSSOP-B16	FSs	YES
BD18347EFV-M	5.5 to 20.0	DRL/Position/FOG/Turn/Rear	4	Internal	40	150mA/ch	PWM	±10 (Output current: 50 to 100mA) (T _a =-40 to +125°C) ±5 (Output current: 100 to 150mA) (T _a =-40 to +125°C)	—	7.65	2.0	-40 to +125	HTSSOP-B16	FSs	YES
BD18327EFV-M	6.0 to 18.0	2 wheeler Turn Indicator	1	Internal	50	1.5A	PWM	Load Switch Controller	—	—	—	-40 to +125	HTSSOP-B20	FSs	YES
BD8372EFJ-M	5.5 to 40.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	200	High Current/ Low Current	±3 (T _a =25°C)	—	—	—	-40 to +125	HTSOP-J8	FSs	YES
BD8372HFP-M	5.5 to 40.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	200	High Current/ Low Current	±3 (T _a =25°C)	—	—	—	-40 to +125	HRP7	FSs	YES
BD8374EFJ-M	4.5 to 42.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	500	PWM	±3 (T _a =25°C)	—	—	—	-40 to +125	HTSOP-J8	FSs	YES
BD8374HFP-M	4.5 to 42.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	500	PWM	±3 (T _a =25°C)	—	—	—	-40 to +125	HRP7	FSs	YES
BD83732HFP-M	4.5 to 42.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	500	PWM/DC	±3 (T _a =25°C)	—	7.65	—	-40 to +125	HRP7	FSs	YES
BD83733HFP-M	4.5 to 42.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	500	PWM/DC	±3 (T _a =25°C)	—	11.0	—	-40 to +125	HRP7	FSs	YES
BD83740HFP-M	4.5 to 42.0	DRL/Position/FOG/Turn/Rear	1	Internal	50	500	PWM	±3 (T _a =25°C)	—	—	—	-40 to +125	HRP7	FSs	YES

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 *2 UPIC: Uni-Port Interface Control

Display Drivers

TN/STN LCD Driver series

P.78

TN/STN LCD Driver series

LCD Segment Drivers

Low Duty LCD Segment Drivers

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	I/F	EVR	GPO	Independent Blink	LED Driver (port)	PWM Gen.	Keyscan	Package
		seg.	com.	I/F Power Supply (V _{DD})	LCD Power Supply (VLCD)											
BU9796AMUV	48	12	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	2wire	-	-	-	-	-	-	VQFN024V4040
BU9796AFS	80	20	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	2wire	-	-	-	-	-	-	SSOP-A32
BU97941FV	104	26	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4, 1/3, Static	1/3	3wire	-	-	-	4	-	-	SSOP-B40
BU9795AFV	108	27	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	3wire	-	-	-	-	-	-	SSOP-B40
BU97930MUV	108	27	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4, 1/3, Static	1/3	3wire	-	4port	✓	1	1ch 8bit	-	VQFN040V6060
BU97931FV	112	28	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4, 1/3, Static	1/3	3wire	-	5port	✓	1	1ch 8bit	-	SSOP-B40
BU97960MUV	120	15	8	2.5 to 6.0	2.5 to 6.0	-40 to +85	1/8, 1/4	1/4, 1/3	2wire	✓	-	-	-	-	-	VQFN028V5050
BU9795BKV	140	35	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	3wire	-	-	-	-	-	-	VQFP48C
BU9795ZKS2	140	35	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	3wire	-	-	-	-	-	-	SQFP-T52
BU9797AFUV	144	36	4	2.5 to 5.5		-40 to +85	1/4	1/3	2wire	-	-	-	-	-	-	TSSOP-C48V
BU97981MUV	168	42	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4, 1/3, Static	1/3	3wire	-	27port	✓	3	2ch 12bit	-	VQFN56AV8080
BU97981KV	196	49	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4, 1/3, Static	1/3	3wire	-	31port	✓	3	2ch 12bit	-	VQFP64
BU97981GU	196	49	4	1.8 to 3.6	3.3 to 5.5	-30 to +75	1/4, 1/3, Static	1/3	3wire	-	31port	✓	3	2ch 12bit	-	VBGA064T050A
BU9794AKV	200	50	4	2.5 to 5.5	2.5 to 5.5	-40 to +85	1/4	1/3, 1/2	3wire	-	-	-	-	-	-	VQFP64
BU9799KV	200	50	4	2.5 to 5.5	2.5 to 5.5	-40 to +85	1/4	1/3, 1/2	2wire	✓	-	-	-	-	-	VQFP64
BU97501KV	204	51	4	2.7 to 6.0	4.5 to 6.0	-40 to +85	1/4, 1/3	1/3, 1/2	3wire+KEYOUT	-	4port	-	-	-	5×6 Max 30Key	VQFP64
BU97950AFUV	280	35	8	2.5 to 6.0	2.5 to 6.0	-40 to +85	1/8, 1/4	1/4, 1/3	2wire	✓	-	-	-	-	-	TSSOP-C48V
BU97530KVT	445	89	5	2.7 to 6.0		-40 to +85	1/5, 1/4, 1/3, Static	1/3, 1/2	3wire+KEYOUT	✓	9port (9ch PWM)	-	-	9ch 8bit	5×6 Max 30Key	TQFP100V

Low Duty LCD Segment Drivers for Automotive Application

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	I/F	EVR	GPO	Independent Blink	LED Driver	PWM Gen.	Keyscan	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
		seg.	com.	I/F Power Supply (V _{oe})	LCD Power Supply (VLCD)													
BU97601FV-M	116	29	4	2.7 to 6.0		-40 to +85	1/4, 1/3, 1/2, Static	1/3, 1/2	3wire +KEYOUT	✓	16port (16ch PWM)	-	-	6ch 9bit	4x5 Max 20Key	SSOP-B40	FSs	YES
BU9797FUV-M	144	36	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	2wire	-	-	-	-	-	-	TSSOP-C48V	FSs	YES
BU97510CKV-M	216	54	4	2.7 to 6.0		-40 to +85	1/4, 1/3	1/3, 1/2	3wire	-	6port (6ch PWM)	-	-	6ch 6bit	-	VQFP64	FSs	YES
BU97520AKV-M	276	69	4	2.7 to 6.0		-40 to +85	1/4, 1/3	1/3, 1/2	3wire +KEYOUT	-	6port (6ch PWM)	-	-	6ch 8bit	5x6 Max 30Key	VQFP80	FSs	YES
BU97540KV-M	335	67	5	2.7 to 6.0		-40 to +85	1/5, 1/4, 1/3, Static	1/3, 1/2	3wire +KEYOUT	✓	9port (9ch PWM)	-	-	9ch 9bit	5x6 Max 30Key	VQFP80	FSs	YES
BU97530KVT-M	445	89	5	2.7 to 6.0		-40 to +85	1/5, 1/4, 1/3, Static	1/3, 1/2	3wire +KEYOUT	✓	9port (9ch PWM)	-	-	9ch 8bit	5x6 Max 30Key	TQFP100V	FSs	YES
BU97550KV-M	528	66	8	2.7 to 6.0		-40 to +85	1/8, 1/7, 1/5, 1/4, 1/3, Static	1/4, 1/3, 1/2	3wire +KEYOUT	✓	9port (9ch PWM)	-	-	9ch 9bit	5x6 Max 30Key	VQFP80	FSs	YES
BU91795MUF-M	48	12	4	2.5 to 6.0		-40 to +105	1/4	1/3	2wire	-	-	-	-	-	-	VQFN24FV4040	FSs	YES
BU91796BMUF-M	80	20	4	2.5 to 6.0		-40 to +105	1/4	1/3	2wire	-	-	-	-	-	-	VQFN32FBV050	FSs	YES
BU91796FS-M	80	20	4	2.5 to 6.0		-40 to +105	1/4	1/3	2wire	-	-	-	-	-	-	SSOP-A32	FSs	YES
BU91600FV-M	116	29	4	2.7 to 6.0		-40 to +105	1/4, 1/3, 1/2, Static	1/3, 1/2	3wire +KEYOUT	✓	16port (16ch PWM)	-	-	6ch 9bit	4x5 Max 20Key	SSOP-B40	FSs	YES
BU91797MUF-M	144	36	4	2.5 to 6.0		-40 to +105	1/4	1/3	2wire	-	-	-	-	-	-	VQFN48FV7070	FSs	YES
BU91797FUV-M	144	36	4	2.5 to 6.0		-40 to +105	1/4	1/3	2wire	-	-	-	-	-	-	TSSOP-C48V	FSs	YES
BU91600FUV-M	148	37	4	2.7 to 6.0		-40 to +105	1/4, 1/3, 1/2, Static	1/3, 1/2	3wire +KEYOUT	✓	16port (16ch PWM)	-	-	6ch 9bit	4x5 Max 20Key	TSSOP-C48V	FSs	YES
BU91799KV-M	200	50	4	2.5 to 6.0	2.5 to 6.0	-40 to +105	1/4	1/3	2wire	✓	-	-	-	-	-	VQFP64	FSs	YES
BU91501KV-M	204	51	4	2.7 to 6.0	4.5 to 6.0	-40 to +105	1/4, 1/3	1/3, 1/2	3wire +KEYOUT	-	4port	-	-	-	5x6 Max 30Key	VQFP64	FSs	YES
BU91510KV-M	216	54	4	2.7 to 6.0		-40 to +105	1/4, 1/3	1/3, 1/2	3wire	-	6port (6ch PWM)	-	-	6ch 6bit	-	VQFP64	FSs	YES
BU91520KV-M	276	69	4	2.7 to 6.0		-40 to +105	1/4, 1/3	1/3, 1/2	3wire +KEYOUT	-	6port (6ch PWM)	-	-	6ch 8bit	5x6 Max 30Key	VQFP80	FSs	YES
BU91530KVT-M	445	89	5	2.7 to 6.0		-40 to +105	1/5, 1/4, 1/3, Static	1/3, 1/2	3wire +KEYOUT	✓	9port (9ch PWM)	-	-	9ch 8bit	5x6 Max 30Key	TQFP100V	FSs	YES
BU91R63CH-M	176	44	4	2.7 to 6.0	2.7 to 6.0	-40 to +105	1/4, 1/3, 1/2, Static	1/3, 1/2	2wire	✓	-	-	-	-	-	Au Bump Chip	FSs	YES
BU91R64CH-M	320	80	4	2.7 to 6.0	2.7 to 6.0	-40 to +105	1/4, 1/3, 1/2, Static	1/3, 1/2	2wire/3wire	✓	-	✓	-	-	-	Au Bump Chip	FSs	YES
BU91R65CH-M	640	160	4	2.7 to 6.0	2.7 to 6.0	-40 to +105	1/4, 1/3, 1/2, Static	1/3, 1/2	2wire/3wire	✓	-	✓	-	-	-	Au Bump Chip	FSs	YES

Low Duty LCD Segment Drivers for Industrial Application

Part No.	Display (dots)	Outputs		Operating Voltage (V)		Operating Temperature (°C)	Duty	Bias	Interface	EVR	GPO	Independent Blink	LED Driver (port)	PWM Gen.	Keyscan	Package
		seg.	com.	I/F Power Supply (V _{oe})	LCD Power Supply (VLCD)											
BU97941FV-LB	104	26	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4, 1/3, Static	1/3	3wire	-	-	-	-	4	-	SSOP-B40
BU9795AFV-LB	108	27	4	2.5 to 5.5		-40 to +85	1/4	1/3, 1/2	3wire	-	-	-	-	-	-	SSOP-B40
BU97931FV-LB	112	28	4	1.8 to 3.6	2.7 to 5.5	-40 to +85	1/4, 1/3, Static	1/3	3wire	-	5port	✓	1	1ch 8bit	-	SSOP-B40

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 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Controller Drivers for Graphic LCD

(LAPIS Technology products)

LCD Controller Drivers

Part No.	Max Number of Segment Outputs	Max Driving Display Size	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	Package	Halogen Free Support*1	Automotive Grade*2
ML9058E	132	132x65 dots	3.7 to 5.5	6 to 18	-40 to +85	Integrated RAM/Boost circuit	Au bump chip	✓	YES
ML9445A	180	180x65 dots	2.7 to 5.5	6 to 18.5	-40 to +105	Integrated RAM/Boost circuit/PWM	Au bump chip	✓	YES
ML9092-01	56	56x10 dots	4.5 to 5.5	4.5 to 16.5	-40 to +85	Integrated RAM/Boost circuit	P-TQFP100 -1414-0.50-2K6	✓	YES
ML9092-02	60	60x10 dots			-40 to +85	Integrated RAM/Boost circuit	P-TQFP100 -1414-0.50-2K6	✓	YES
ML9092-03					-40 to +85	Integrated RAM	P-TQFP100 -1414-0.50-2K6		
ML9092-04					-40 to +85	Integrated RAM/PWM	P-TQFP100 -1414-0.50-2K6		

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.
 *2 Please inquire to the sales for AEC-Q100.

Controller Drivers for Low Duty LCD

(LAPIS Technology products)

LCD Controller Drivers (Package Product)														
Part No.	Max No. of Segment Outputs	Max No. of Driving Segments					Internal Oscillation Frame Frequency (Hz)	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	Package	Halogen Free Support*1	Automotive Grade*2
		static	1/2	1/3	1/4	1/5								
ML9470-12	80	80	160	—	—	—	—	3.0 to 5.5 (single)	-40 to +105	Supports external clock input	P-QFP100-1420-0.65-BK6	✓	YES	
ML9471		—	—	240	320	400					—	P-TQFP100-1414-0.50-ZK6	✓	YES
ML9473		60	—	—	180	240					300	—	P-TQFP80-1212-0.50-ZK6	✓
ML9484	50	50	100	150	200	—	—	2.7 to 5.5	4.5 to 5.5	Supports external clock input/ Bias generator built in	P-TQFP64-1010-0.50-ZK6	✓	YES	
LCD Controller Drivers (Gold Bump Product)														
Part No.	Max No. of Segment Outputs	Max No. of Driving Segments					Internal Oscillation Frame Frequency (Hz)	Logic Supply Voltage (V)	Driver Supply Voltage (V)	Operating Temperature (°C)	Feature	Package	Halogen Free Support*1	Automotive Grade*2
		static	1/2	1/3	1/4	1/5								
ML9480	40	40	80	120	160	—	65/75/85/95/ 130/150/170/190 command switching	2.7 to 5.5	4.5 to 5.5	-40 to +105	Supports external clock input/ Bias generator built in/ EMS countermeasure built in/ No external parts	Au bump chip	✓	YES
ML9478C	80	80	160	240	320	—	65/75/85/95 command switching					Au bump chip	✓	YES
ML9479E	160	160	320	480	640	—	Au bump chip					✓	YES	

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*2 Please inquire to the sales for AEC-Q100.

Sensors & MEMS			
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Hall ICs

Omnipolar Detection Hall IC Detects S- or N-pole Magnetic Fields and Turns the Output ON (active Low)

Part No.	Supply Voltage (V)	Operate Point (mT)		Pulse Drive Period (ms)	Supply Current (Avg.) (μA)	Output	Operating Temperature (°C)	Package (mm)
		S-pole	N-pole					
BD7411G	4.5 to 5.5	+3.4	-3.4	—	2.0 (mA)	CMOS	-40 to +85	SSOP5

Omnipolar Detection Hall ICs with Polarity Discrimination (Polarity Detection for Both S and N Features Dual Outputs) Features 2 Outputs to Discriminate Between N- and S-pole Detection

Part No.	Supply Voltage (V)	Operate Point (mT)		Pulse Drive Period (ms)	Supply Current (Avg.) (μA)	Output	Operating Temperature (°C)	Package (mm)
		S-pole	N-pole					
BU52272NUZ	1.65 to 3.60	+2.4	-2.4	50	4.4	CMOS (2 Outputs: S, N pole)	-40 to +85	VSON04Z1114A 1.1x1.4, H=Max 0.4
BU52072GWZ	1.65 to 3.60	+2.4	-2.4	50	4.4	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
BU52073GWZ	1.65 to 3.60	+4.1	-4.1	50	4.4	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
BU52074GWZ	1.65 to 3.60	+6.3	-6.3	50	4.4	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
BU52075GWZ	1.65 to 3.60	+9.5	-9.5	50	5.0	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
New BU52737GWZ	2.5 to 4.5	+15.0	+15.0	50	0.8	CMOS	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
BU52077GWZ	1.65 to 3.60	+15.0	-15.0	50	5.0	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4
BU52078GWZ	1.65 to 3.60	+24.0	-24.0	50	5.0	CMOS (2 Outputs: S, N pole)	-40 to +85	UCSP35L1 0.8x0.8, H=Max 0.4

Automotive Unipolar Hall ICs

Part No.	Supply Voltage (V)	Operate Point (mT)		Magnetic Signal Input Frequency (Hz)	Supply Current (μA)	Output	Operating Temperature (°C)	Package (mm)
		S-pole	N-pole					
New BD53103G-CZ	2.7 to 38	3.5	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD53104G-CZ	2.7 to 38	7.5	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD53105G-CZ	2.7 to 38	10.0	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD53106G-CZ	2.7 to 38	12.5	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD53107G-CZ	2.7 to 38	18.0	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD53108G-CZ	2.7 to 38	28.0	—	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12

Automotive Latch Type Hall ICs

Part No.	Supply Voltage (V)	Operate/Release Point (mT)		Magnetic Signal Input Frequency (Hz)	Supply Current (μA)	Output	Operating Temperature (°C)	Package (mm)
		Bop	Brp					
New BD54102G-CZ	2.7 to 38	2.0	-2.0	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD54103G-CZ	2.7 to 38	5.0	-5.0	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD54104G-CZ	2.7 to 38	7.5	-7.5	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD54105G-CZ	2.7 to 38	10.0	-10.0	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12
New BD54107G-CZ	2.7 to 38	15.0	-15.0	10k	1.3	Nch Open Drain	-40 to +150	SSOP3A 2.92x2.4, H=Max 1.12

Geomagnetic Sensor IC

3-Axis Digital Magnetometer IC							
Part No.	Supply Voltage (V)	Magnetic Measurement (μ T)	Magnetic Sensitivity (μ T/LSB)	Current Consumption (μ A)	I/F	Operating Temperature ($^{\circ}$ C)	Package (mm)
BM1422AGMV	1.7 to 3.6	\pm 1,200	0.042	150	I ² C	-40 to +85	MLGA010V020A 2.0x2.0, H=Max 1.0

Current Sensor ICs

Contactless Current Sensor IC							
Part No.	Supply Voltage (V)	Magnetic Measurement (μ T)	Magnetic Sensitivity (μ T/LSB)	Current Consumption (μ A)	I/F	Operating Temperature ($^{\circ}$ C)	Package (mm)
BM14270AMUV-LB	2.7 to 5.5	\pm 280	0.045	70	I ² C	-40 to +125	VQFN20QV3535 3.5x3.5, H=Max 1.0

Current Sense Amplifier IC								
Part No.	Ch	Supply Voltage (V)	Quiescent Current (μ A)	Common Mode Voltage (V)	Gain (V/V)	Gain Accuracy (%)	Operating Temperature ($^{\circ}$ C)	Package (mm)
New BD14210G-LA	1	2.7 to 5.5	170	-0.2 to +26	20	\pm 1 (Max)	-40 to +125	SSOP6 2.9x2.8, H=Max 1.25
☆BD14215FVJ-LA	2	2.7 to 5.5	310	-0.2 to +26	20	\pm 1 (Max)	-40 to +125	TSSOP-B8J 3.0x4.9, H=Max 1.10

☆: Under Development

Ambient Light Sensor ICs

Analog Current Output type Ambient Light Sensor ICs								
Part No.	Supply Voltage (V)	Sensitivity Variations (%)	Detection Range (lx)	Sensitivity (μ A/lx)	IR Cut	I/F	Operating Temperature ($^{\circ}$ C)	Package
BH1603FVC	2.4 to 5.5	\pm 15	0 to 100,000	0.6	–	Linear Current Output (Source)	-40 to +85	WSOF6
BH1620FVC	2.4 to 5.5	\pm 15	0 to 100,000	0.6	–	Linear Current Output (Source)	-40 to +85	WSOF5
BH1680FVC	2.4 to 5.5	\pm 15	0 to 50,000	6	✓	Linear Current Output (Source)	-40 to +85	WSOF5
BH1682FVC	2.3 to 5.5	\pm 3 μ A	1 to 55,000	–	✓	Logarithmic Current Output (Source)	-40 to +85	WSOF5

Digital 16bit Serial Output type Ambient Light Sensor ICs								
Part No.	Supply Voltage (V)	Sensitivity Variations (%)	Detection Range (lx)	Sensitivity (at 100ms) (lx/count)	IR Cut	I/F	Operating Temperature ($^{\circ}$ C)	Package
BH1721FVC	2.4 to 3.6	\pm 15	0 to 65,000	1	–	I ² C	-40 to +85	WSOF5
BH1730FVC	2.4 to 3.6	\pm 15	0 to 65,000	0.007	–	I ² C	-40 to +85	WSOF6
New BU27034NUC	1.7 to 2.0	\pm 15	0 to 20,000	0.000016	✓	I ² C	-40 to +85	WSON008X2120

Color Sensor ICs

Digital 16bit Serial Output type Color Sensor ICs												
Part No.	Supply Voltage (V)	λ_p (nm)				Illuminance Measurement (lx)	High Sensitivity	IR Cut	Flicker detection	I/F	Operating Temperature ($^{\circ}$ C)	Package (mm)
		Red	Green	Blue	IR							
BH1749NUC	2.3 to 3.6	630	540	460	825	0 to 80,000	✓	✓	–	I ² C	-40 to +85	WSON008X2120 2.1x2.0, H=Max 0.6
BU27006MUC-Z	1.7 to 3.6	630	540	460	825	0 to 50,000	✓	✓	✓	I ² C	-40 to +85	WQFN12X2520A 2.5x2.0, H=Max 0.55

Optical Sensor for Heart Rate Monitor ICs

Optical Sensor for Heart Rate Monitor ICs							
Part No.	Analog Supply Voltage (V)	IO Supply Voltage (V)	Sampling Frequency (Hz)	Red Light, IR Cut	I/F	Operating Temperature ($^{\circ}$ C)	Package (mm)
BH1790GLC	2.5 to 3.6	1.7 to 3.6	32/64	✓	I ² C	-20 to +85	WLGA010V28 2.8x2.8, H=Max 1.0
BH1792GLC	2.5 to 3.6	1.7 to 3.6	32/64/128/256/1,024	✓	I ² C	-20 to +85	WLGA010V28 2.8x2.8, H=Max 1.0

Pressure Sensor IC

Digital Pressure Sensor ICs with Built-in Temperature Compensation Function

Part No.	Supply Voltage (V)	Pressure Range (hPa)	Relative Pressure Accuracy (hPa)	Absolute Pressure Accuracy (hPa)	I/F	Operating Temperature (°C)	Waterproof	Package (mm)
BM1390GLV-Z	1.7 to 3.6	300 to 1,300	±0.06	±1	I ² C	-40 to +85	✓	RLGA10VG020T 2.0×2.0, H=Max 1.0

Temperature Sensor ICs

Analog Output Temperature Sensor IC

Part No.	Supply Voltage (V)	Temperature Accuracy (°C)		Temperature Sensitivity (mV/°C)	Output Voltage (V) (T _s =+30°C, V _{DD} =3V)	Supply Current (μA)	Operating Temperature (°C)	Package
		T _s =+30°C	T _s =-30, +100°C					
BD1020HFV	2.4 to 5.5	±1.5	±2.5	-8.2	1.3	4.0	-30 to +100	HVSOF5

Digital Output Temperature Sensor IC

Part No.	Supply Voltage (V)	Temperature Accuracy (°C) T _s =-20 to +85°C	Current Consumption (μA)	I/F	Operating Temperature (°C)	Package
BH1900NUX	2.7 to 3.6	±3	75	I ² C	-30 to +95	VSON008X2030

Shock Sensor Amplifier

Shock Sensor Amplifier

Part No.	Supply Voltage (V)	Current Consumption (mA)	Notch Frequency (kHz)	Notch Attenuation Rate (dB)	Operating Temperature (°C)	Package
BD3852MUZ-Z	1.6 to 2.3	1.6 to 4.5	31.0	-23.0	-40 to +85	VQFN16Z3030A

Accelerometers

(Kionix products)

3-Axis Accelerometers

Part No.	G range (±g)	Mechanical Signal Bandwidth (Hz)	Current Consumption* (μA)	I/F	Size, No. of Pins, Package	Features
KXTJ3-1057	2, 4, 8, 16	800	1.5 to 155	I ² C	2×2×0.9mm, 12pin, LGA	Wake-Up Function
KX132-1211	2, 4, 8, 16	4200 (XY) 2900 (Z)	0.53 to 148	I ² C/SPI	2×2×0.9mm, 12pin, LGA	Wake-Up and Back-To-Sleep Function, 512Byte Buffer, Wide Output Data Rate (0.781Hz to 25.6kHz)
KX134-1211	8, 16, 32, 64	8200 (X) 8500 (Y) 5600 (Z)	0.53 to 148	I ² C/SPI	2×2×0.9mm, 12pin, LGA	Wake-Up and Back-To-Sleep Function, 512Byte Buffer, Wide Output Data Rate (0.781Hz to 25.6kHz), Wide Mechanical Signal Bandwidth

*Current consumption can be adjusted by setting

Wireless LSI

Industrial Wireless Communication LSIs

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Car Communication LSIs

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Industrial Wireless Communication LSIs

Specified Low Power Radio (Sub-GHz Band)

(LAPIS Technology products)

UHF Transmitter LSIs

Part No.	Support Standard	Frequency Band	Supply Voltage (V)	Modulation Method	FEC Mode	Control I/F	Transmission Rate	Transmission Output (dBm)	Reception Sensitivity	Operating Temperature (°C)	Input Clock	Package	Halogen Free Support*2
ML7386	ARIB STD-T67 RCR STD-30	426MHz band	1.8 to 3.6	2-FSK MSK	-	Synchronous serial (Control) DIO (DATA)	2.4kbps	10mW	-	-25 to +85	-	P-WQFN28 -0404-0.40-63	✓
ML7386B							4.8kbps 7.2kbps	1mW/ 10mW				P-WQFN28 -0404-0.40-63	✓

UHF Transceiver LSIs

Part No.	Support Standard	Frequency Band	Supply Voltage (V)	Modulation Method	FEC Mode	Control I/F	Transmission Rate	Transmission Output (dBm)	Reception Sensitivity	Operating Temperature (°C)	Input Clock	Package	Halogen Free Support*2
ML7396D	ARIB STD-T108 EN300-220 IEEE802.15.4g	900 to 960MHz	1.8 to 3.6	2-(G) FSK (G) MSK	IEEE 802.15.4g compliant	Synchronous serial (Control) DIO (DATA)	to 50kbps	1mW/ 10mW/ 20mW	-107dBm [100kbps BER=0.1%]*1	-40 to +85	-	P-WQFN40 -0606-0.50-63	✓
ML7396E	EN300-220 EN1357-4:2011	750 to 900MHz					150kbps 200kbps 400kbps	20mW	P-WQFN40 -0606-0.50-63			✓	
ML7344Jy	ARIB STD-T67 RCR STD-30	160 to 510MHz	1.8 to 3.6	2-(G) FSK (G) MSK	-	Synchronous serial (Control) DIO (DATA)	to 15kbps	1mW/ 10mW/ 20mW	-117dBm [4.8kbps BER=0.1%]*1	-40 to +85	y= (C) rystal input y= (S) PXO input y= (T) CXO input	P-WQFN32 -0505-0.50-A63	✓
ML7344Cy	Q/GDW374.3		3.3 to 3.6 (100mW)					20mW/ 100mW	P-WQFN32 -0505-0.50-A63			✓	
ML7406y	EN300-220 EN1357-4: 2011 IEEE802.15.4g	750 to 960MHz	1.8 to 3.6	2-(G) FSK (G) MSK	-	Synchronous serial (Control) DIO (DATA)	to 500kbps	1mW/ 10mW/ 20mW	-106dBm [100kbps BER=0.1%]*1	-40 to +85	-	P-WQFN32 -0505-0.50-A63	✓
ML7345	ARIB STD-T67 ARIB STD-T108 RCR STD-30	160 to 960MHz					to 100kbps		-123dBm [2.4kbps BER=1%]*1			P-WQFN32 -0505-0.50-A63	✓
ML7345D	EN300-220 EN13757-4: 2013 IEEE802.15.4g	315 to 960MHz	3.3 to 3.6 (100mW)	2-(G) FSK (G) MSK 4-(G) FSK	-	Synchronous serial (Control) DIO (DATA)	to 100kbps	1mW/ 10mW/ 20mW	-119.5dBm [2.4kbps BER=1%]*1	-40 to +85	-	P-WQFN32 -0505-0.50-A63	✓
ML7345C	Q/GDW374.3	470 to 510MHz							20mW/ 100mW			-123dBm [2.4kbps BER=1%]*1	P-WQFN32 -0505-0.50-A63

*1 BER means Bit Error Rate.

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

LPWA (Sub-GHz Band)

(LAPIS Technology products)

UHF Transceiver LSIs

Part No.	Supported Standard	Frequency Band	Supply Voltage (V)	Modulation Method	FEC Mode	Control Interface	CPU core	Memory resources	Transmission Rate	Transmission Output (dBm)	Reception Sensitivity	Operating Temperature (°C)	Package	Halogen Free Support*2
ML7404	ARIB STD-T67 ARIB STD-T108 RCR STD-30 EN300-220 EN13757-4: 2013 Sigfox IEEE802.15.4k IEEE802.15.4g	315 to 960MHz	1.8 to 3.6	2-(G) FSK (G) MSK 4-(G) FSK (G) MSK (G) MSK BPSK (DSSS)	IEEE 802.15.4k compliant	Synchronous serial (Control) DIO (DATA)	-	-	to 100kbps (xFSK) 80k to 200kcpk (DSSS)	1mW/ 10mW/ 20mW	-119.5dBm [2.4kbps BER=1%]*1	-40 to +85	P-WQFN32 -0505-0.50-A63	✓
ML7446N	ARIB STD-T67 ARIB STD-T108 Sigfox RCR STD-30 EN300-220 EN13757-4: 2013 IEEE802.15.4g		2.6 to 3.6	2-(G) FSK (G) MSK 4-(G) FSK (G) MSK BPSK (TX only)	IEEE 802.15.4g compliant		Cortex®-M3 (to 81MHz)	FLASH1024KB, RAM256KB	to 100kbps		-106dBm [100kbps BER=1%]*1		P-TFPGA81 -6.5x6.5-0.65-9-MC	✓
New ML7456N	EN13757-4: 2013 IEEE802.15.4g		nX-U16 (to 24MHz)	FLASH64KB, RAM8KB				P-WQFN48 -0606-0.40-T63-MC	✓					

*1 BER means Bit Error Rate.

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

MCU Included Specified Low Power Radio (Sub-GHz Band & 2.4GHz Band)

(LAPIS Technology products)

UHF Transceiver LSI												
Part No.	Support Standard	Frequency Band	Supply Voltage (V)	Modulation Method	CPU core	Memory resources	Transmission Rate	Transmission Output (dBm)	Reception Sensitivity	Operating Temperature (°C)	Package	Halogen Free Support*2
ML7436N	ARIB STD-T66 ARIB STD-T67 ARIB STD-T108 EN300-220 FCC part15 IEEE802.15.4g	400 to 960MHz 2.4GHz	2.6 to 3.6	2- (G) FSK (G) MSK 4- (G) FSK	Cortex®-M3 (to 81MHz)	FLASH1024KB, RAM256KB	1.2k to 300kbps	1mW/ 10mW/ 20mW	-107dBm [100kbps BER=1%]*1	-40 to +85	P-TQFP48 -0707-0.50-29K6-MC	✓

Cortex® is a registered trademark of Arm Limited (or one of its subsidiaries) in the EU and other countries.

*1 BER means Bit Error Rate.

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

Car Communication LSIs

FM Data Broadcast Reception LSIs

(LAPIS Technology products)

FM Data Reception Tuner							
Part No.	Feature	Supply Voltage (V)	Supply Current (Max) (mA)	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
ML7174 [J]	FM VICS® tuner, FM multiplexing demodulate LSI for VICS®, Built-in BPF, frame memory, and VICS® descrambler, Frames A,B,C, SPI slave	3.0 to 3.6	85	-40 to +85	P-WQFN64 -0909-0.50-63	✓	YES
ML7183 [J]	FM VICS® tuner & Filter LSI, BPF, I²C slave		75				YES
FM Multiplexing Demodulate for VICS®							
ML7154 [J]	VICS® compliant FM multiplexing demodulate LSI for VICS®, Built-in BPF, frame memory, and VICS® descrambler, Frames A,B,C, SPI slave	3.0 to 3.6	28	-40 to +85	P-WQFN64 -0909-0.50-63	✓	YES

[J] This LSI is limited to the market in Japan.

VICS® is a registered trademark of Vehicle Information and Communication System Center.

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*2 Please inquire to the sales for AEC-Q100.

Audio & Video			
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Audio Amplifiers

Automotive Speaker amplifiers

1.2W Monaural Class-AB Speaker Amplifiers													
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (W)	Input Impedance Z_{in} (kΩ)	Built-in Amplifier Resistance		Distortion (%)	Output Noise Voltage (μVrms)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							Ri (kΩ)	Rf (kΩ)					
BD78306EFJ-M	4.0 to 5.5	2.5	0.1	6.0 (Po=0.5W)	1.2 (THD+N=1%)	45	90	90	0.05 (Po=1W)	15	HTSOP-J8	FSs	YES
☆BD78308EFJ-M				8.0 (Po=0.5W)		40	80	80	0.05 (Po=1W)	16	HTSOP-J8	FSs	YES
BD78310EFJ-M				10.0 (Po=0.5W)		35	70	110	0.06 (Po=1W)	17	HTSOP-J8	FSs	YES
☆BD78312EFJ-M				12.0 (Po=0.5W)		30	60	120	0.06 (Po=1W)	19	HTSOP-J8	FSs	YES
☆BD78314EFJ-M				14.0 (Po=0.5W)		25	50	130	0.07 (Po=1W)	22	HTSOP-J8	FSs	YES
☆BD78316EFJ-M				16.0 (Po=0.5W)		20	40	140	0.09 (Po=1W)	24	HTSOP-J8	FSs	YES
☆BD78318EFJ-M				18.0 (Po=0.5W)		18	36	144	0.10 (Po=1W)	26	HTSOP-J8	FSs	YES
☆BD78320EFJ-M				20.0 (Po=0.5W)		15	30	150	0.12 (Po=1W)	31	HTSOP-J8	FSs	YES
☆BD78322EFJ-M				22.0 (Po=0.5W)		12	24	156	0.15 (Po=1W)	35	HTSOP-J8	FSs	YES
☆BD78324EFJ-M				24.0 (Po=0.5W)		10	20	160	0.17 (Po=1W)	43	HTSOP-J8	FSs	YES
BD78326EFJ-M				26.0 (Po=0.5W)		8	16	164	0.20 (Po=1W)	50	HTSOP-J8	FSs	YES

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

☆: Under Development

Speaker Amplifiers

Portable Amplifier 1.9W+1.9W Stereo Speaker Amplifier										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (W)	Distortion (%)	Output Noise Voltage (μVrms)	Package	
BD7836EFV	4.5 to 5.5	1.0	5	0.1	6/10/15.6/21.6	1.9 (VDD=5V, 4Ω, THD+N=1%)	0.1	16	HTSSOP-B20	
Portable Amplifier 1.1W to 1.5W Monaural Speaker Amplifier										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Standby Current (μA)	Voltage Gain (dB)	Output Power (RL=8Ω, THD=10%)		Distortion (%)	Output Noise Voltage (dBV)	Package
						VCC=3.6V	VCC=5.0V			
BD7830NUV	2.4 to 5.5	0.53	3.2	0	0 to 20	0.77W	1.5W	0.1	-100	VSON008V2030
Portable Amplifiers Analog Input Monaural Class-D Speaker Amplifiers										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage (μVrms)	ALC Circuit	Package (mm)
BD5460GUL	2.5 to 5.5	0.69	2.0 (VDD=3.6V)	6	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)	0.3 (VDD=3.6V)	30	—	VCSP50L1 1.6x1.6, H=0.55Max
BD5461GUL		0.69	2.0 (VDD=3.6V)	12	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)		40	—	VCSP50L1 1.6x1.6, H=0.55Max
BD27400GUL		0.69	2.9 (VDD=3.6V)	External Variable	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)		40	—	VCSP50L1 1.5x1.5, H=0.55Max
BD5632NUX		0.52	2.7 (VDD=3.6V)	6	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)		40	—	VSON008X2030
BD5634NUX		0.52	2.7 (VDD=3.6V)	12	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)		40	—	VSON008X2030
BD5638NUX		0.52	2.7 (VDD=3.6V)	18	2.5 (VDD=5V, RL=4Ω, THD+N=10%)	0.85 (VDD=3.6V, RL=8Ω, THD+N=10%)		40	—	VSON008X2030
BD5465GUL		0.69	3.3 (VDD=3.6V)	12	0.6 (VDD=3.4 to 5.5V, RL=8Ω, THD+N≤1%)			40	✓	VCSP50L1 1.8x1.8, H=0.55Max
BD5466GUL		0.69	3.0 (VDD=3.6V)	18	1.5 (VDD=5V, RL=4Ω, THD+N≤1%)	0.5 (VDD=3.6V, RL=8Ω, THD+N≤1%)		40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5467GUL		0.69	3.0 (VDD=3.6V)	13	1.5 (VDD=5V, RL=4Ω, THD+N≤1%)	0.5 (VDD=3.6V, RL=8Ω, THD+N≤1%)		40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5468GUL		0.69	3.0 (VDD=3.6V)	13	1.5 (VDD=5V, RL=4Ω, THD+N≤1%)	0.5 (VDD=3.6V, RL=8Ω, THD+N≤1%)		40	✓	VCSP50L1 1.7x1.7, H=0.55Max
BD5469GUL		0.69	3.0 (VDD=3.6V)	13	0.88 (VDD=4.2V, RL=8Ω, THD+N≤1%)	0.64 (VDD=3.6V, RL=8Ω, THD+N≤1%)		40	✓	VCSP50L1 1.7x1.7, H=0.55Max

Portable Amplifier Analog Input Stereo Class-D Speaker Amplifier										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage (μ Vrms)	Max LDO Current (mA)	Package
BD28412MUV	4.5 to 13.0	3.20	16 ($V_{CC}=11V$)	20/26/ 32/36	$\begin{matrix} 18 \\ (V_{CC}=12V, R_L=4\Omega) \\ (THD+N=10\%, PBTl) \end{matrix}$	$\begin{matrix} 9 \\ (V_{CC}=12V, R_L=8\Omega) \\ (THD+N=10\%) \end{matrix}$	0.03 ($V_{CC}=11V$)	100	—	VQFN032V5050

Mid./High-Power Amplifier Class-D Speaker Amplifier for Digital Input with Built-in DSP													
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Output Power (W)		Distortion (%)	Output Noise Voltage (μ Vrms)	DSP					Package
				$\begin{matrix} 10 \\ (V_{CC}=13V \\ R_L=8\Omega) \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=18V \\ R_L=8\Omega) \end{matrix}$			Volume	DC Cut HPF	Hard Clipper	Parametric EQ	DRC	
BM28723AMUV	10 to 24	4.56 (4-Layer Board)	45 ($V_{CC}=18V$)	$\begin{matrix} 10 \\ (V_{CC}=13V \\ R_L=8\Omega) \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=18V \\ R_L=8\Omega) \end{matrix}$	0.08	150	✓	✓	✓	✓ (12 Band)	✓ (3 Band)	VQFN032V5050

Mid./High-Power Amplifier Class-D Speaker Amplifier for Digital Input									
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Output Power (W)		Distortion (%)	Output Noise Voltage (μ Vrms)	Power Limiter Function	Package
BD28623MUV	8.5 to 24.0	$\begin{matrix} 3.56 \\ (4\text{-Layer Board}) \\ 2.21 \\ (2\text{-Layer Board}) \end{matrix}$	40 ($V_{CC}=18V$)	—	$\begin{matrix} 15 \\ (V_{CC}=16V, R_L=8\Omega) \end{matrix}$	0.08	150	✓ (GAIN)	VQFN024V4040

Mid./High-Power Amplifiers Analog Input/BTL Output Class-D Speaker Amplifiers										
Part No.	Supply Voltage (V)	Power Dissipation (W)	Quiescent Current (mA)	Voltage Gain (dB)	Output Power (W)		Distortion (%)	Output Noise Voltage (μ Vrms)	Power Limiter Function	Package
BD5424EFS	10.0 to 18.0	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	30 ($V_{CC}=12V$)	28	$\begin{matrix} 10 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 20 \\ (V_{CC}=17V, R_L=8\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
BD5423AEFS	10.0 to 16.5	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	25 ($V_{CC}=12V$)	28	$\begin{matrix} 10 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 17 \\ (V_{CC}=12V, R_L=4\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
BD5426EFS	10.0 to 16.5	$\begin{matrix} 4.5 \\ (4\text{-Layer Board}) \\ 2.0 \\ (2\text{-Layer Board}) \end{matrix}$	25 ($V_{CC}=12V$)	28	$\begin{matrix} 9 \\ (V_{CC}=12V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 10 \\ (V_{CC}=13V, R_L=8\Omega) \end{matrix}$	0.1	80	✓ (Power Limiter)	HTSSOP-A44
BD5413EFV	6.0 to 10.5	$\begin{matrix} 2.8 \\ (4\text{-Layer Board}) \\ 1.1 \\ (2\text{-Layer Board}) \end{matrix}$	12 ($V_{CC}=9V$)	30	$\begin{matrix} 4 \\ (V_{CC}=9V, R_L=8\Omega) \end{matrix}$	$\begin{matrix} 5 \\ (V_{CC}=9V, R_L=6\Omega) \end{matrix}$	0.2	90	—	HTSSOP-B24

Headphone Amplifiers

Ultra-Compact Coupling Capacitorless Headphone Amplifiers									
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Gain (V/V)	Maximum Output Power (mW)	Distortion (%)	Output Noise Voltage (μ Vrms)	Ripple Rejection (dB)	Note	Package (mm)
BD88200GUL	2.4 to 5.5	2	Variable Gain with external resistor	$\begin{matrix} 80 \\ (V_{DD}=3.3V, R_L=16\Omega) \end{matrix}$	0.006 ($V_{DD}=3.3V, R_L=16\Omega$)	10	-80 ($f=217Hz$)	Virtual ground based	VCSP50L2 2.1x2.1
BD88210GUL			-1.0					Virtual ground based	VCSP50L2 2.1x2.1
BD88215GUL			-1.5					Virtual ground based	VCSP50L2 2.1x2.1
BD88220GUL			-2.0					Virtual ground based	VCSP50L2 2.1x2.1
BD88400GUL			Variable Gain with external resistor					Ground based	VCSP50L2 2.1x2.1
BD88400FJ			Variable Gain with external resistor					Ground based	SOP-J14
BD88410GUL			-1.0					Ground based	VCSP50L2 2.1x2.1
BD88415GUL			-1.5					Ground based	VCSP50L2 2.1x2.1
BD88420GUL			-2.0					Ground based	VCSP50L2 2.1x2.1

Headphone Amplifier Designed for 0.93V Low Voltage Operation								
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Maximum Output Power (mW)		Distortion (%)		Output Noise Voltage (μ Vrms)	Package
			Single-ended (16 Ω)	BTL (8 Ω)	Single-ended (16 Ω)	BTL (8 Ω)		
BU7150NUV	0.93 to 3.50 ($T_a=0^\circ C$ or more)	1	$\begin{matrix} 14 \\ (V_{DD}=1.5V) \end{matrix}$	$\begin{matrix} 85 \\ (V_{DD}=1.5V) \end{matrix}$	0.1 ($P_O=5mW$)	0.2 ($P_O=25mW$)	10	VSON010V3030

Standard Headphone Amplifiers							
Part No.	Supply Voltage (V)	Quiescent Current (mA)	Voltage Gain (dB)	Maximum Output Power (mW) $R_L=16\Omega$	Distortion (%)	Ripple Rejection (dB)	Package
BH3544F	2.8 to 6.5	7.0	6	62	0.02	57	SOP8
BH3547F	4.5 to 6.5	3.7	6	77	0.05	57	SOP8
BH3548F	4.0 to 5.5	6.5	6	$\begin{matrix} 62 \\ (120@R_L=8\Omega) \end{matrix}$	0.02	57	SOP8

Others

Line Amplifiers (Output Coupling Capacitor-less)											
Part No.	Supply Voltage (V)	Circuit Current (mA)	ch	Voltage Gain (dB)	Maximum Output Voltage (Vrms)	Distortion (%)	Output Noise Voltage (μ Vrms)	Channel Separation (dB)	Ripple Rejection (dB)	Charge Pump	Package
BD8876FV	3.0 to 5.5	3.2	2	6 or 9	3.5	0.003	8	80	65	✓	SSOP-B14
BD8878FV	3.0 to 5.5	3.2	2	6.7	3.0	0.003	10	65	65	✓	SSOP-B14

Isolation Amplifiers													
Part No.	Supply Voltage (V)	Operating Temperature (°C)	Circuit	Circuit Current (mA)	Voltage Gain (dB)	CMRR (dB)	Common-mode Input Voltage Range (V) $V_{CC}=8V$	THD (%)	Output Noise Voltage (μ Vrms)	Channel Separation (dB)	Slew Rate (V/ μ s)	Input Resistance (k Ω)	Package
BA3121F	4.0 to 18.0	-30 to +85	2	9.0	-0.04	57	3.75	0.002	3.5	82	2.0	55	SOP8
BA3123F	4.0 to 18.0	-40 to +85	2	9.0	-0.04	57	3.75	0.002	3.5	82	2.0	55	SOP8

Power Supply ICs for Audio

Power Supply ICs for High Fidelity Audio

*The following products are belonging to ICs. (Refer P.42) Please ensure that minimum Input Voltage always exceeds the sum of Output Voltage and drop out voltage for the device.

Power Supply ICs for High Fidelity Audio											
Part No.	Output Current (A)	Input Voltage (V)	Output Voltage (V)	Reference Voltage Accuracy (%)	Dropout Voltage (mV)	Noise Level (μ Vrms)	PSRR (dB)	Over Current Protection	Thermal Protection	Package	
MUS-IC BD37201NUX	0.5	2.7 to 5.5	Variable 1.0 to 4.5	± 1	200	3.3	90 (f=1kHz) 55 (f=1MHz)	✓	✓	VSON008X2030	

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It is the masterpiece of ROHM audio IC which pursues both the numerical values and sound quality performance required in an audio device.

Audio Processors

Analog Audio Processors

6ch/8ch Sound Processors with Built-in Micro-step Volume												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Output Noise Voltage (μ Vrms)	Distortion (%)	Selector	Main Volume (dB)		Zone Volume (dB)		Tone Control	Serial Control	Package
						ch	ch	ch	ch			
MUS-IC BD34704KS2	± 6.5 to ± 7.5	± 32	1.2	0.0004	18	+32 to -95 0.5/Step	8	+7.5 to -91.5 0.5/Step	2	—	2Wire	SQFP-T80C
MUS-IC BD34705KS2	± 6.5 to ± 7.5	± 32	1.2	0.0004	12	+32 to -95 0.5/Step	8	+6 to -16 1/Step, -16 to -56 2/Step	2	—	2Wire	SQFP-T64
BD34701KS2	± 6.5 to ± 7.5	± 22	1.5	0.0004	8	+32 to -95 0.5/Step	8	—	—	—	2Wire	SQFP-T52
BD3474KS2	± 6.5 to ± 7.5	± 30	1.5	0.0004	12	+32 to -95 0.5/Step	6	—	—	Bass, Treble	2Wire	SQFP-T80C

2ch/4ch/6ch Sound Processors												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Output Noise Voltage (μ Vrms)	Distortion (%)	Selector	Main Volume (dB)		Zone Volume (dB)		Tone Control	Serial Control	Package
						ch	ch	ch	ch			
BD3814FV	± 5.0 to ± 7.3	± 7	1.0	0.001	—	0 to -95 1/Step	6	—	—	Bass, Treble	2Wire	SSOP-B40
BD34700FV	± 6.5 to ± 7.5	± 22	1.5	0.0004	—	+32 to -95 0.5/Step	4	—	—	—	2Wire	SSOP-B40
BD3812F	± 5.0 to ± 7.3	± 2	1.2	0.0050	—	0,6 to 18 2/Step, 0 to -103 1/Step	2	—	—	—	2Wire	SOP14

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6ch/9ch Stereo Input Selector ICs Maximum Input Voltage: 4.2V

Part No.	Supply Voltage (V)	Current Consumption (mA)	Output Noise Voltage (μ Vrms)	Distortion (%)	Selector	Serial Control	Package
BD3843FS	± 4.0 to ± 7.3	± 3	1.0	0.004	6	2Wire	SSOP-A24
BD3841FS	± 5.0 to ± 7.3	± 3	1.0	0.004	9	2Wire	SSOP-A32

Sound Processors with Built-in 2-band Equalizer

Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Volume (dB)	Fader		Parametric EQ	Loudness	LPF for Sub Woofer	Option	Serial Control	Output Noise Voltage (μ Vrms)	Distortion (%)	Package
			Single	Diff.			(dB)	Output								
BD37503FV	7.0 to 9.5	20	3	1	0 to +20	0 to -36, - ∞	0 to -63, - ∞	4	-	✓*	-	Anti-aliasing Filter*	I ² C BUS	5.8	0.001	SSOP-B20
BD37511FS	7.0 to 9.5	15	3	-	0 to +20	0 to -40	0 to -62, - ∞	4	-	-	-	-	I ² C BUS	6.0	0.005	SSOP-A20
BD37512FS	7.0 to 9.5	15	3	1	0 to +20	0 to -40	0 to -62, - ∞	4	-	-	-	-	I ² C BUS	6.0	0.005	SSOP-A20
BD37513FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - ∞	0 to -79, - ∞	4	-	✓	-	-	I ² C BUS	3.8	0.001	SSOP-A20
BD37514FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - ∞	0 to -79, - ∞	5	✓	✓	-	-	I ² C BUS	3.8	0.001	SSOP-A20
BD37515FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - ∞	+15 to -79, - ∞	5	✓	✓	✓	-	I ² C BUS	3.8	0.001	SSOP-A20
BD37521FS	7.0 to 9.5	38	3	1	0 to +20	+15 to -79, - ∞	0 to -79, - ∞	4	-	EXT	-	-	I ² C BUS	3.8	0.001	SSOP-A24
BD37522FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, - ∞	0 to -79, - ∞	4	✓	✓	-	-	I ² C BUS	3.8	0.001	SSOP-A24
BD37523FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, - ∞	+15 to -79, - ∞	5	✓	✓	✓	-	I ² C BUS	3.8	0.001	SSOP-A24
BD3870FS	4.5 to 9.5	8	3	-	0/6/12/18	0 to -87, - ∞	-	2	EXT	-	-	Surround	2Wire	4.5	0.01	SSOP-A24
BD3871FS	4.5 to 9.5	8	3	-	24/26/28	0 to -87, - ∞	-	2	EXT	-	-	Surround	2Wire	40 (Gv=24dB)	0.01	SSOP-A24
BD3490FV	4.75 to 9.50	7	4	-	0/2/4/6/8/12/16/20	0 to -87 (2ch Independent control), - ∞	-	2	EXT	-	-	Bass Boost, Surround	I ² C BUS	5.0	0.002	SSOP-B28
BD3491FS	4.75 to 9.50	7	6	-	0/2/4/6/8/12/16/20	0 to -87 (2ch Independent control), - ∞	-	2	EXT	-	-	Bass Boost, Surround	I ² C BUS	5.0	0.002	SSOP-A32

Sound Processors with Built-in 2-band Equalizer: Built-in Bass and Treble control *Loudness and Anti-aliasing Filter can be used exclusively. EXT: Set by external components
 BD37511FS and BD37512FS are pin-compatible. BD37513FS, BD37514FS and BD37515FS are pin-compatible. BD37522FS and BD37523FS are pin-compatible.

Analog Audio Processors

Sound Processors with Built-in 3-band Equalizer																				
Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Volume (dB)	Fader		Parametric EQ	Loudness	LPF/HPF for Sub Woofer	Mixing		Level Meter	Option	Serial Control	Output Noise Voltage (μ Vrms)	Distortion (%)	Package	ComfySIL™ Functional Safety*1
			Single	Diff.			(dB)	Outputs				ATT	ATT							
BD37524FS	7.0 to 9.5	38	4	1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	-	-	✓	-	I ² C BUS	3.8	0.001	SSOP-A24	-
BD37531FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	-	-	-	-	-	I ² C BUS	3.8	0.001	SSOP-B28	-
BD37532FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	-	-	-	-	I ² C BUS	3.8	0.001	SSOP-B28	-
BD37533FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	-	-	I ² C BUS	3.8	0.001	SSOP-B28	-
BD37534FV	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	✓	-	I ² C BUS	3.8	0.001	SSOP-B28	-
BD37541FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	0 to -79, -∞	6	✓	EXT	-	✓	-	-	-	I ² C BUS	3.8	0.001	SSOP-B28	-
BD37542FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	EXT	LPF	✓	✓	-	-	I ² C BUS	3.8	0.001	SSOP-A32	-
BD37543FS	7.0 to 9.5	38	2/3/5	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	EXT	LPF+HPF	✓	✓	✓	-	I ² C BUS	3.8	0.001	SSOP-A32	-
BD37544FS	7.0 to 9.5	38	1/3/4	3/2/1	0 to +20	+15 to -79, -∞	+15 to -79, -∞	6	✓	-	LPF+HPF	✓	✓	-	Super Bass	I ² C BUS	3.8	0.001	SSOP-A32	-
BD37033FV-M	7.0 to 9.5	31	3/5	2/1	0 to +16	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF	✓	✓	✓	-	I ² C BUS	5.5	0.002	SSOP-B28	FSs
BD37034FV-M	7.0 to 9.5 V _{ccL} to 13	36	3/5	2/1	0 to +16	+15 to -79, -∞	+15 to -79, -∞	6	✓	✓	LPF+HPF	✓	✓	✓	High Voltage Output	I ² C BUS	6.0	0.002	SSOP-B28	FSs
BD3883FS	6.5 to 9.5	8	5	-	0/6/12/16/20/23/26/29	0 to -87, -∞	0/-10	2	EXT	-	-	-	-	-	Surround	2Wire	4.0	0.01	SSOP-A32	-
BD3403FV	6.5 to 9.5	16	5	-	0 to +26 (2/Step)	0 to -30 (2/Step)	0 to -59, -∞	2	EXT	-	-	-	-	-	Surround	2Wire	8.0	0.02	SSOP-B40	-

General-Purpose Electronic Volume with Built-in Advanced Switch																		
Part No.	Supply Voltage (V)	Current Consumption (mA)	Selector		Input Gain (dB)	Fader Volume (dB)	Outputs	Mixing		Post Filter	High-Voltage Output (dB)	Serial Control	Output Noise Voltage (μ Vrms)	Distortion (%)	Package	ComfySIL™ Functional Safety*1		
			Single	Diff.				ch	ATT (dB)									
BD3464FV	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	4	-	-	-	-	I ² C BUS	1.9	0.0004	SSOP-B20	-		
BD3465FV	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	4	3	+0 to -64, -∞ (8/Step)	-	-	I ² C BUS	1.9	0.0004	SSOP-B20	-		
BD3460FS	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	6	-	-	-	-	I ² C BUS	1.9	0.0004	SSOP-A24	-		
BD3461FS	7.0 to 9.5	25	-	-	-	+23 to -79, -∞ (1/Step)	6	3	+0 to -64, -∞ (8/Step)	-	-	I ² C BUS	1.9	0.0004	SSOP-A24	-		
MUS-IC BD34602FS-M	7.0 to 9.5	35	-	-	-	+23 to -79, -∞ (1/Step)	6	3	+0 to -79, -∞ (1/Step)	-	-	I ² C BUS	1.3	0.0004	SSOP-A24	FSs		
BD37067FV-M	7.0 to 9.5	37	2/3/4/5	4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	-	I ² C BUS	8	0.003	SSOP-B40	FSs		
BD37068FV-M	7.0 to 9.5 V _{ccL} to 17.8	30/7	1/2/3/4/5	5/4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	0/8.3	I ² C BUS	23 (High-Voltage Mode)	0.003	SSOP-B40	FSs		
BD37069FV-M	7.0 to 9.5 V _{ccL} to 17.8	30/7	2/3/4/5	4/3/2/1	+23 to -15 (1/Step)	+23 to -79, -∞ (1/Step)	6	1	-	✓	2/4.6/8.3	I ² C BUS	23 (High-Voltage Mode)	0.003	SSOP-B40	FSs		

Sound Processors with Built-in 3-band Equalizer: EXT: Set by external components

BD37531FV, BD37532FV, BD37533FV and BD37534FV are pin-compatible.

BD37541FS, BD37542FS and BD37543FS are pin-compatible. BD37033FV-M and BD37034FV-M are pin-compatible.

General-Purpose Electronic Volume with Built-in Advanced Switch: BD3464FS and BD3465FS are pin-compatible. BD3461FS and BD34602FS-M are pin-compatible. BD37067FV-M and BD37068FV-M are pin-compatible.

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It is the masterpiece of ROHM audio IC which pursues both the numerical values and sound quality performance required in an audio device.

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*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Media Decoders

AAC/WMA/MP3/WAV+SD Memory Card+CD-ROM																
Part No.	Supply Voltage (V)	USB	SD	iPod	Serial I/F	Display Information	MP3	WMA	AAC	CD-ROM Mode	CD-ROM File System	MP3 Recording Format	File Search	Audio Output		Package
														Analog	Digital	
BU94605AKV	3.0 to 3.6	USB2.0 Full Speed	MMC SD, miniSD, microSD, SDHC	—	I ² C BUS	Folder number, File number, Play time, Folder name, File name, TAG (Artist, Album, Title)	MPEG1, 2, 2.5 LAYER1, 2, 3	WMA9 Standard	MPEG4 AAC-LC	Mode1, Mode2, form1/2, Romeo, Joliet	ISO 9660 Level1, 2	—	Search during the playback	Line	I ² S SPDIF	VQFP80

AAC/WMA/MP3/WAV+SD Memory Card+CD-ROM+MP3 Record																
Part No.	Supply Voltage (V)	USB	SD	iPod	Serial I/F	Display Information	MP3	WMA	AAC	CD-ROM Mode	CD-ROM File System	MP3 Recording Format	File Search	Audio Output		Package
														Analog	Digital	
BU94702AKV	3.0 to 3.6	USB2.0 Full Speed	MMC SD, miniSD, microSD, SDHC	—	I ² C BUS	Folder number, File number, Play time, Folder name, File name, TAG (Artist, Album, Title)	MPEG1, 2, 2.5 LAYER1, 2, 3	WMA9 Standard	MPEG4 AAC-LC	Mode1, Mode2, form1/2, Romeo, Joliet	ISO 9660 Level1, 2	MPEG1 Layer3 Sample Rate: 32, 44.1, 48kHz Bit Rate: 32, 64, 128, 192, 256, 320kHz	Search during the playback	Line	I ² S SPDIF	VQFP80

Audio Converters

Audio Codec

Audio Codec											
Part No.	Supply Voltage (V)	ADC	DAC	Microphone Input	Speaker Output		Headphone Output	Filter		ALC	Package
		ch/bit	ch/bit		Type	Monaural/ Stereo		EQ	Notch		
BU26154MUV	HV _{DD} 2.7 to 5.5 LV _{DD} 2.7 to 3.6	1ch/24bit	2ch/24bit	1	AB/D	Monaural	Stereo	✓	✓	✓	VQFN040V6060
BU26156RFS	HV _{DD} 2.7 to 5.5 LV _{DD} 2.7 to 3.6	2ch/24bit	2ch/24bit	2	AB/D	Stereo	Stereo	✓	✓	✓	HTSSOP-A44R

Audio DAC

PCM 768kHz/32bit, DSD 22.4MHz Stereo Audio D/A Converters												
Part No.	Supply Voltage			Output Channels	Peak Output Current (mApp)	Resolution (Bit)	SNR (dB)	THD+N (dB)	Dynamic Range (dB)	Sampling Frequency (kHz)	DSD Clock (MHz)	Package
	AVCC (V)	DVDD (V)	DVDDIO (V)									
MUS-IC BD34301EKV	4.5 to 5.5	1.4 to 1.6	3.0 to 3.6	2	9.8	32	130	-115	130	32 to 768	2.8, 5.6, 11.2, 22.4	HTQFP64BV
BD34352EKV	4.5 to 5.5	1.4 to 1.6	3.0 to 3.6	2	6.25	32	126	-112	126	32 to 768	2.8, 5.6, 11.2, 22.4	HTQFP64BV

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Video Amplifiers

Composite Video Amplifiers

Ultra-compact (WL-CSP) Output Capacitor-less 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V _{p-p})	Video Out→In Change Mode	Package (mm)
BH76906GU	2.5 to 3.45	15	6	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max
BH76912GU		15	12	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max
BH76916GU		15	16.5	-0.2 (4.5MHz)	-26 (18MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	—	VCSP85H 1.6×1.6, H=1.0 Max

Output Capacitor-less 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V _{p-p})	Package	
BH76806FVM	2.5 to 3.45	16	6	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76809FVM		16	9	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76812FVM		15	12	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	
BH76816FVM		15	16.5	-0.45 (4.5MHz)	-51 (23.5MHz)	Bias (150kΩ)	8th order 4.5MHz	0	✓	5.2	MSOP8	

Compact Low Current 1ch Video Drivers												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara.1 (dB)	Freq. Chara.2 (dB)	Input type	LPF	Mute (Standby) (μA)	Output Capa-less	Max Output Level (V _{p-p})	Video Out→In Change Mode	Package
BH76106HFV	2.6 to 5.5	7	6	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76109HFV		7	9	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76112HFV		7	12	0.1 (4.5MHz)	-45 (19MHz)	Clamp	8th order 4.5MHz	0	✓	2.6	—	HVSOF6
BH76206HFV		8	6	-0.3 (6MHz)	-40 (27MHz)	Clamp	8th order 6MHz	0	✓	2.6	—	HVSOF6

1ch Video Drivers Built-in Video Switch												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	Switchers	Input type	Video Driver	Mute	Output Capa-less	Max Output Level (V _{p-p})		Package
										V _{CC} =3V	V _{CC} =5V	
BH76330FVM	2.8 to 5.5	10	6	0 (10MHz)	3 input-1 output	Clamp	✓	✓ (Standby)	✓	2.7	4.6	MSOP8
BH76331FVM		10	6	0 (10MHz)	3 input-1 output	Bias	✓	✓ (Standby)	—	2.8	4.6	MSOP8
BH76360FV		12	6	0 (10MHz)	6 input-1 output	Clamp	✓	✓ (Standby)	✓	2.7	4.6	SSOP-B16
BH76361FV		12	6	0 (10MHz)	6 input-1 output	Bias	✓	✓ (Standby)	—	2.8	4.6	SSOP-B16

Video Switches

1ch Video Switches (Wide Band-width)												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	Switchers	Input type	Video Driver	Mute	Crosstalk (dB)	Max Output Level (V _{p-p})		Package
										V _{CC} =3V	V _{CC} =5V	
BH76332FVM	2.8 to 5.5	9	0	0 (30MHz)	3 input-1 output	Clamp	—	✓ (Standby)	-65 (4.43MHz)	1.8	3.8	MSOP8
BH76333FVM		8	0	0 (30MHz)	3 input-1 output	Bias	—	✓ (Standby)	-65 (4.43MHz)	1.9	3.4	MSOP8
BH76362FV		11	0	0 (30MHz)	6 input-1 output	Clamp	—	✓ (Standby)	-65 (4.43MHz)	1.8	3.8	SSOP-B16
BH76363FV		11	0	0 (30MHz)	6 input-1 output	Bias	—	✓ (Standby)	-65 (4.43MHz)	1.9	3.4	SSOP-B16

Video and Audio Signal Switch												
Part No.	Supply Voltage (V)	Video Circuit Current (mA)	Audio Circuit Current (mA)	Video Freq. Chara.1 (dB)	Video Freq. Chara.2 (dB)	Video Amplifier Gain (dB)	Audio Freq. Chara.1 (dB)	Audio Freq. Chara.2 (dB)	Audio Amplifier Gain (dB)	Residual Noise (μV _{rms})	Package	
BH7649KS2	7.5 to 9.5	34	23	0 (6.75MHz)	-30 (27MHz)	-3/-6/0/+3/+6	-0.5 (24kHz)	-26 (96kHz)	-6/0	20	SQFP-T52	

Others

Isolation Amplifier												
Part No.	Supply Voltage (V)	Circuit Current (mA)	Amplifier Gain (dB)	Freq. Chara. (dB)	ch	Input type	Video Driver	Input Impedance (kΩ)	CMRR (dB)	Max Output Level (V _{p-p})	Package	
BH7673G	4.5 to 5.5	4.8	0	0 (10MHz)	1	Bias	—	150	60	3.8	SSOP5	

Image Correction

Image Correction IC for Panel											
Part No.	Supply Voltage (V)			Image Data Size	Control I/F	Input/Output Digital I/F	Image Adjustment	PWM Output	LVDS Transmitter	Package	Automotive Grade AEC-Q100
	V _{DD} Core	V _{DD} I/O	V _{DD} LVDS								
BU1523KV	1.65 to 1.95	3.0 to 3.6	3.0 to 3.6	Supports up to WVGA+ (864x480)	I ² C BUS	24bit RGB Interface 8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	–	✓	VQFP100	Preparing

Video Encoders Built-in Image Correction										
Part No.	Supply Voltage (V)			Image Data Size	Control I/F	Input/Output Digital I/F	Fog Reduction	Video Encoder	Package	Automotive Grade AEC-Q100
	V _{DD} Core	V _{DD} I/O	AV _{DD}							
BU6521KV	1.4 to 1.6	2.7 to 3.6	2.7 to 3.6	ITU-R BT.656	I ² C BUS Serial EEPROM Interface	8bit YUV=4 : 2 : 2 ITU-R BT.656	✓	✓	VQFP48C	YES

Video LSIs

Video Decoder

(LAPIS Technology products)

CVBS/S-video									
Part No.	Supply Voltage (V)	Input (Analog)		Output (Digital)	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type						
ML86101A	3.3/1.5	CVBSx4 or CVBSx2+S-videox1 or S-videox2	NTSC PAL SECAM	ITU-R BT.656 YUV 8bit	Simple, small	-40 to +85	P-TQFP48 -0707-0.50-ZK6	✓	YES
New ML86112	3.3/1.2	CVBSx4 or differentialx2	NTSC PAL	MIPI CSI-2 (YUV422-8bit) ITU-R BT.656	Simple, small MIPI output I/P conversion	-40 to +105	P-WQFN32 -0505-0.50-W66	✓	YES
ML86V7668A	3.3/2.5	CVBSx4 or CVBSx1+S-videox3	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16bit RGB 18bit	RGB output	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES
☆ ML86160	3.3/1.2	CVBSx4 or differentialx2	NTSC PAL High Definition Analog	ITU-R BT.656 MIPI CSI-2	High Definition Analog Decoder HD-ACT*3	-40 to +105 (T.B.D)	P-WQFN36 -0606-0.50 (T.B.D)	✓	YES

CVBS/S-video/Component/RGB									
Part No.	Supply Voltage (V)	Input (Analog)		Output (Digital)	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type						
ML86V7675	3.3/1.5	CVBSx4 +(Comp or S-video)x1 +Compx1	NTSC PAL SECAM	ITU-R BT.656 YUV 8bit	WVGA, EGA analog RGB supported	-40 to +85	P-TQFP64 -1010-0.50-ZK6	✓	YES

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales. ☆: Under Development
 *2 Please inquire to the sales for AEC-Q100.
 *3 HD-ACT (High Definition-Analog Composite Transport) Analog video is displayed clearly by original high definition technology.

Video Encoder

(LAPIS Technology products)

CVBS									
Part No.	Supply Voltage (V)	Input (Digital)	Output (Analog)		Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
			Terminal	Type					
ML86V76580	3.3/1.8	ITU-R BT.656 YUV 8bit	CVBS	NTSC PAL	75Ω drive	-40 to +85	P-TQFP48 -0707-0.50-ZK6	✓	YES
ML86640	3.3	ITU-R BT.656 YUV 8/16/24bit RGB 24bit	CVBS	NTSC PAL	75Ω drive P/I conversion	-40 to +105	P-TQFP48 -0707-0.50-ZK6	✓	YES
☆ ML86660	3.3	ITU-R BT.656 MIPI CSI-2	CVBS	NTSC PAL High Definition Analog	High Definition Analog Encoder HD-ACT*3	-40 to +105 (T.B.D)	WQFN36 -0505-0.50 (T.B.D)	✓	YES

CVBS/S-video/Component/RGB									
Part No.	Supply Voltage (V)	Input (Digital)	Output (Analog)		Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
			Terminal	Type					
ML86V7655	3.3/2.5	ITU-R BT.656 YUV 8/16/24bit RGB 24bit	CVBS S-video Component	NTSC PAL	I/P, P/I conversion	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales. ☆: Under Development
 *2 Please inquire to the sales for AEC-Q100.
 *3 HD-ACT (High Definition-Analog Composite Transport) Analog video is displayed clearly by original high definition technology.

Video Interface

(LAPIS Technology products)

LVTTTL/LVDS/MIPI Video Interface								
Part No.	Supply Voltage (V)	Input	Output	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
ML86795	3.3 (1.8)/1.5	ITU-R BT.656 YUV 8bit Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/888, YUV422-8bit)	ITU-R BT.656 YUV 8/16bit Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/888, YUV422-8bit)	LVTTTL/LVDS/MIPI CSI-2 to LVTTTL/ LVDS/MIPI CSI-2, MIPI Virtual Channel output	-40 to +105	P-WQFN64 -0909-0.50-63	✓	YES
☆ ML86781	3.3/1.5	RGB 24bit MIPI CSI-2 (RGB565/888, YUV422-8bit) MIPI DSI (RGB565/888, YUV422-8bit)	Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/888, YUV422-8bit)	LVTTTL/MIPI DSI/CSI-2 to LVDS/ MIPI CSI-2 Separate one image into two	-40 to +85	P-TQFP128 -1414-0.40-Z6K6- MC	✓	YES
☆ ML86796	3.3/1.2	MIPI CSI-2 (RGB565/666/888, YUV422-8/10bit, RAW8/10/12/14/16/20/24)×4	MIPI CSI-2 (RGB565/666/888, YUV422-8/10bit, RAW8/10/12/14/16/20/24)×2	MIPI CSI-2 to MIPI CSI-2 Supports 4Virtual Channel inputs/ outputs	-40 to +105 (T.B.D)	P-TQFP100 -1414-0.50-ZK6 (T.B.D)	✓	YES
☆ ML86797	3.3/1.2	Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/666/888 YUV422-8bit) MIPI DSI (RGB565/888 YUV422-8bit)	Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/666/888 YUV422-8bit) MIPI DSI (RGB565/888 YUV422-8bit)	LVDS to MIPI CSI-2/DSI MIPI CSI-2/DSI to LVDS MIPI CSI-2/DSI to MIPI DSI/CSI-2	-40 to +105 (T.B.D)	P-WQFN64 -0909-0.50-63 (T.B.D)	✓	YES
☆ ML86799	3.3/1.2	Single/Dual LVDS (RGB666/888) MIPI CSI-2 (RGB565/666/888 YUV422-8bit) MIPI DSI (RGB565/666/888 YUV422-8bit)	eDP (RGB565/666/888)	LVDS/MIPI CSI-2/DSI to eDP	-40 to +105 (T.B.D)	P-WQFN64 -0909-0.50-63 (T.B.D)	✓	YES

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.
*2 Please inquire to the sales for AEC-Q100.

☆: Under Development

Display Controller Series for Small to TFT LCD

(LAPIS Technology products)

Video Decoder, Scaler Included																
Part No.	Supply Voltage (V)	Input (Analog)		Input (Digital)	Output	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2			
		Terminal	Type													
ML86V8201	3.3/1.5	CVBS×2 or S-video×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 YUV 8bit RGB 18/24bit	QVGA to WVGA	Line	—	Rear camera function Image quality adjustment	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES			
ML86203		CVBS×1		ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 YUV 8bit Single LVDS (RGB666/888)		—	—	Rear camera function WXGA panel support Image quality adjustment		P-TQFP80 -1010-0.40-ZK6	✓	YES			
ML86207		CVBS×2			ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit + Single LVDS (RGB666/888)	ITU-R BT.656 YUV 8bit RGB 18/24bit Single LVDS (RGB666/888)	VGA to WXGA	Text Line BMP (ML 86287 Only)	—		LVTTTL/LVDS I/F Digital video input x2 WXGA panel support Rear camera function Picture in Picture (ML86287 Only) Image quality adjustment OSD ROM-OSD function (ML86287 Only)	P-TQFP100 -1414-0.50-ZK6	✓	YES		
ML86287														P-TQFP128 -1414-0.40-ZK6-MC	✓	YES
ML86209		CVBS single×2 or differential×1		NTSC PAL	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like Single/Dual LVDS (RGB666/888)	ITU-R BT.656 or MIPI CSI-2 (RGB565/888, YUV422-8bit) + Single/Dual LVDS (RGB666/888)	VGA to Full HD	Text Line BMP	—		LVTTTL/LVDS/MIPI CSI-2 I/F Digital video input x4 Full HD panel support Rear camera function Picture in Picture (ML86289 Only) Image quality adjustment OSD, ROM-OSD function	P-TQFP128 -1414-0.40-Z6K6	✓	YES		
ML86289																P-TQFP128 -1414-0.40-Z6K6-MC
New ML86290		CVBS single×3 or differential×1			ITU-R BT.656 YUV 8/16bit ITU-R BT.1120-like MIPI DSI (RGB565/888 YUV422-8bit ARGB8565 (ML86290)) MIPI CSI-2 (RGB565/888, YUV422-8bit)	Dual/Single LVDS (RGB666/888)	VGA to Full HD	BMP	—		Multi Input support LVTTTL/MIPI-DSI/MIPI CSI-2/CVBS I/F Rear camera function Picture in Picture ROM-OSD function (10windows, 2layers (ML86291 Only))	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES		
New ML86291																P-TQFP128 -1414-0.40-Z6K6-MC
ML86V8202C		3.3/1.8	CVBS×2 or (Comp or S-video)×1 +Comp×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 style YUV 8/16/24bit RGB 18/24bit	QVGA to WXGA	Text Line BMP	—		Component video support Image quality adjustment	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES	
ML86240		3.3/1.5	CVBS×4 or CVBS×2 or (Comp or S-video)×1 +Comp×1		ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit 2ch	ITU-R BT.656 YUV 8bit RGB 18/24bit									Component video support Digital video input x2 Rear camera function Image quality adjustment OSD function	P-TFBGA144 -1111-0.80-1
ML86241	3.3 (1.8)/1.5	CVBS×4 or CVBS×2 or (Comp or S-video)×1 +Comp×1	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit + Single LVDS (RGB 18/24bit)		ITU-R BT.656 YUV 8/16bit + RGB 18/24bit YUV 16bit Single LVDS (RGB 18/24bit)								Component video support LVTTTL/LVDS I/F Digital video input x2 WXGA panel support Rear camera function Image quality adjustment OSD, ROM-OSD function	P-TFBGA144 -1111-0.80-1	✓	YES
New ML86242	3.3/1.5	CVBS single×2 or differential×1 Component (ML86242 Only)	NTSC PAL	*3 ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like Single/Dual LVDS (RGB666/888, YUV422-8/16bit, YUV444-24bit)	*3 ITU-R BT.656 YUV 8/16bit RGB 24bit Single/Dual LVDS (RGB666/888) MIPI-CSI2 (RGB565/888 YUV422-16bit)	QVGA to WXGA	Text Line BMP	—	*3 Multi Input/Output support LVTTTL/LVDS/MIPI CSI-2/ CVBS/Comp I/F Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function State monitor function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES				
ML86243														P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES
New ML86244														P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES
ML86245	3.3/1.5	—	—	*3 ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like Single/Dual LVDS (RGB666/888 YUV422-8/16bit)	*3 ITU-R BT.656 YUV 8/16bit RGB 24bit Single/Dual LVDS (RGB666/888)		Text Line BMP	—	Multi Input/Output support LVTTTL/LVDS/MIPI CSI-2 I/F Rear camera function Picture in Picture Image quality adjustment OSD, ROM-OSD function State monitor function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES				
ML86321		CVBS single×2 or differential×1	NTSC PAL	ITU-R BT.656 YUV 8/16bit ITU-R BT.1120 like MIPI CSI-2 (RGB565/888, YUV422-8bit)	YUV 8/16bit Single LVDS (RGB666/888)		Text Line BMP	—	Electronic rear-view mirror support 3-screen synthesis Image correction function (Angle/Aspherical/Keystone/Lens distortion correction) OSD, ROM-OSD function (15windows, 1layer) State monitor function	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES				

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.
 *2 Please inquire to the sales for AEC-Q100.
 *3 Please inquire to the sales for input/output specification and feature.

Display Controller Series for Small to TFT LCD

(LAPIS Technology products)

Image Adjustment Functions Included

Part No.	Supply Voltage (V)	Input (Analog)		Input (Digital)	Output	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type										
ML86V8101	3.3			RGB 18bit	RGB 18bit	QVGA to QHD	-		Image quality adjustment function	-40 to +85	P-TQFP64 -1010-0.50-ZK6	✓	YES
ML86V8102				RGB 18/24bit	RGB 18/24bit				RGB 24bits supported image quality adjustment function		P-TQFP80 -1010-0.40-ZK6	✓	YES
New ML86172	3.3/1.5			ITU-R BT.656 YUV 8/10bit RGB 18/24bit Single/Dual LVDS (RGB666/888)	RGB 18/24bit (ML86172 Only) Single/ Dual LVDS (RGB666/888bit)	WVGA to H 2880 (Max) V 1080 (Max) (Pixel rate 160MHz Max)			Image quality adjustment OSD, ROM OSD function (30windows, 2layers) Error Detection (Input data/Input sync/ Output data/Pattern check (ML86172 Only)) Frequency conversion function State monitor function	-40 to +85	P-TQFP100 -1414-0.50-Z6K6	✓	YES
ML86173											P-TQFP100 -1414-0.50-Z6K6	✓	YES
☆ ML86174	3.3/1.2		-	Single/Dual LVDS (RGB565/888) MIPI CSI-2, MIPI DSI (RGB565/888, YUV422-8bit)	Single/ Dual LVDS (RGB666/888)	H 2880 (Max) V 1080 (Max) (Pixel rate 160MHz Max)	Text BMP		Image quality adjustment OSD, ROM OSD function (50windows, 2layers) Error Detection (Input data/Input sync/ Output data/Pattern check) Frequency conversion function State monitor function	-40 to +85	P-TQFP100 -1414-0.50-Z6K6	✓	YES
ML86175	3.3/1.5			ITU-R BT.656 YUV 8/16bit RGB 18/24bit Single/Dual LVDS (RGB666/888)		H 2048 (Max) V 2048 (Max) (Pixel rate 160MHz Max)			Image quality adjustment 90 degree rotation function OSD, ROM OSD function (15windows, 1layer) Frequency conversion function State monitor function	-40 to +85	TQFP128 -1414-0.40-Z6K6-MC	✓	YES
New ML86177											P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES
				RGB 24bit Single LVDS (RGB888)	RGB 24bit Single LVDS (RGB888)	QVGA to WXGA	BMP		Warping and rotation for HUD ROM OSD function (10windows, 2layers) Status output Fail detection function	-40 to +85	P-TQFP128 -1414-0.40-Z6K6-MC	✓	YES

Video decoder, 8051MCU Included

Part No.	Supply Voltage (V)	Input (Analog)		Input (Digital)	Output	Resolution	OSD	MCU	Feature	Operating Temperature (°C)	Package	Halogen Free Support*1	Automotive Grade*2
		Terminal	Type										
ML86V8401	3.3/1.8	CVBS×3 or CVBS×2 +S-video×1	NTSC PAL SECAM	ITU-R BT.656 YUV 8/16/24bit RGB 18/24bit	ITU-R BT.656 RGB 18/24bit	QVGA to WVGA	Text	8051 (8bit)	System control MCU installed	-40 to +85	P-TQFP100 -1414-0.50-ZK6	✓	YES

*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.
 *2 Please inquire to the sales for AEC-Q100.

☆: Under Development

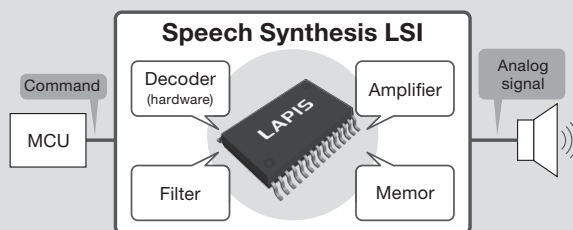
Speech Synthesis LSI

Speech Synthesis LSI with Automotive grade	P.98	Speech Synthesis LSI with Long-time Playback	P.99
Speech Synthesis LSI with Short-time Playback	P.99	Speech Synthesis LSI with External Memory	P.99

For over 40 years, LAPIS Technology has provided Speech Synthesis LSIs that enable immediate high-quality sound playback in everything from home appliances to automotive systems. These sound playback LSIs feature an all-in-one configuration that integrates all necessary functions into a single chip, enabling high-fidelity sound playback by simply connecting a speaker and sending simple commands. Our focus on 'enhanced sound quality' has been well-received by customers for many years. We provide added value by delivering support and solutions keyed to customer demands.

Key Features

- Easy** Playback sounds by directly connecting to a speaker and sending commands from an MCU.
- High fidelity** Established sound technology centered on ADPCM.
- Multifunction** Equipped with a variety of functions including simultaneous sound generation and fault detection.
- Fewer external parts** ... Integrates a speaker amp, memory, oscillator circuit, and other necessary components.
- Sound production support** ... Sound production support - Provides total support from arranging a studio and narrator to analyzing and editing recorded sound sources and creating sound code data.



Speech Synthesis LSI with Automotive grade (LAPIS Technology products)

Internal Flash Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	AEC-Q100 standard
ML22Q532	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +105	Flash 2M	4,096	99sec*1	I ² C/ Clock synchronous serial	1.0/ AB-class	4	Rewrite Flash from MCU*/Serial Audio Interface/ Failure detection	P-TQFP48 -0707-0.50-Z6K6-MC	YES	✓
ML22Q533							202sec*1					P-TQFP48 -0707-0.50-Z6K6-MC		
ML22Q274	2.0 to 5.5	4.096	Built-in	-40 to +105	Flash 692K*5	30	28sec*2	Clock synchronous serial	1.0/ D-class	1	Disconnection and short circuit detection function	P-TSSOP20 -0225-0.65-TK6	YES	✓
ML22Q284								Stand-alone				P-TSSOP20 -0225-0.65-TK6		
ML22Q294								I ² C				P-TSSOP20 -0225-0.65-TK6		
External Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	AEC-Q100 standard
ML22530	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +105	External maximum 128M	4,096	109min*3	I ² C/ Clock synchronous serial	1.0/ AB-class	4	Rewrite Flash from MCU*/Serial Audio Interface/Failure detection	P-TQFP48 -0707-0.50-Z6K6	YES	✓

© Ky's Technology HQ-ADPCM: A high quality sound compression technology developed by Ky's. Ky's is a registered trademark of Kyushu Institute of Technology.

*1 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

*2 Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.

*3 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.


*4 While using it clock synchronization serial.

*5 When 30 phrases are selected. When 62 phrases are selected, 688 Kbit.

Speech Synthesis LSI with Long-time Playback (LAPIS Technology products)


Internal Flash Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22Q623	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +70	Flash 4M	4,096	202sec*3	Clock synchronous serial	1.0/ AB-class, D-class	4	Rewrite Flash from MCU/ Failure detection	P-TQFP32 -0707-0.80-Z6K6-MC	-	✓
ML22Q624					Flash 8M		406sec*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q625					Flash 16M		14min*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q626					Flash 32M		27min*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q663					Flash 4M		202sec*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q664					Flash 8M		406sec*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q665					Flash 16M		14min*3					P-TQFP32 -0707-0.80-Z6K6-MC		
ML22Q666					Flash 32M		27min*3					P-TQFP32 -0707-0.80-Z6K6-MC		

Internal P2ROM™ Memory Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22724	2.7 to 3.6 or 4.5 to 5.5	4.096	External	-40 to +85	P2ROM™ 8M	4,096*2	325sec*1	Clock synchronous serial	0.7/ AB-class	1	Speech-speed and pitch conversion	P-SSOP30 -56-0.65-ZK6-MC	-	✓
ML22725					P2ROM™ 16M		11min*1					P-SSOP30 -56-0.65-ZK6-MC		
ML22764					P2ROM™ 8M		325sec*1	P-SSOP30 -56-0.65-ZK6-MC						
ML22765					P2ROM™ 16M		11min*1	P-SSOP30 -56-0.65-ZK6-MC						
								I ² C						

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 ©P2ROM™ is a trademark or a registered trademark of LAPIS Technology Co., Ltd.
 *1 Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.
 *2 1024 phrases (1 bank)×4 banks.
 *3 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

Speech Synthesis LSI with Short-time Playback (LAPIS Technology products)


Internal D-class Speaker Amplifier Type															
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrases	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade	
ML22Q234	2.0 to 5.5	8.192	Built-in	-40 to +85	Flash 676K*2	30/62	34sec*1	Clock synchronous serial	1.0/ D-class	1	Disconnection and short circuit detection function	P-TSSOP20 -0225-0.65-TK6	-	✓	
ML22Q244					Flash 692K*3							Stand-alone			P-TSSOP20 -0225-0.65-TK6
ML22Q254					Flash 676K*2							I ² C			P-TSSOP20 -0225-0.65-TK6

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 *1 Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.
 *2 When 30 phrases are selected. When 62 phrases are selected, 676 Kbit
 *3 When 30 phrases are selected. When 62 phrases are selected, 688 Kbit

Speech Synthesis LSI with External Memory (LAPIS Technology products)

Internal AB-class/D-class Speaker Amplifier Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrase	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22620	2.7 to 3.6 or 3.3 to 5.5	4.096 or 4.000	Built-in External	-40 to +85	External maximum 128M	4,096	109min*2	Clock synchronous serial	1.0/ AB-class, D-class	4	Rewrite Flash from MCU/ Failure detection	P-TQFP32 -0707-0.80-Z6K6	-	✓
ML22660												I ² C		
												P-WQFN32 -0505-0.50-A63		

Internal AB-class Speaker Amplifier Type														
Part No.	Operating Voltage (V)	Operating Frequency (MHz)	Oscillator	Operating Temperature (°C)	ROM Capacity (bit)	Number of Phrase	Maximum Playback Time	CPU I/F	SP Amplifier Output (W)/ Class	Number of Mixing (Internal) (ch)	Others	Package	Automotive Grade	Industrial Grade
ML22420	2.7 to 5.5	4.096	External	-40 to +85	External maximum 128M	1,024	87min*1	Clock synchronous serial	0.7/ AB-class	4	-	P-SSOP30 -56-0.65-ZK6	-	✓
ML22460												I ² C		

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 *1 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in ADPCM2.
 *2 With an external memory module (Max 128Mbit). Maximum playback time when the sampling frequency is 6.4kHz in HQ-ADPCM.

Microcontroller (MCU)

General-Purpose MCU (16bit) ML62Q1000 series	Multiple Built-In Safety Functions	P.100
General-Purpose MCU (16bit) ML62Q2000 series/ML62Q2500 group	Class-Leading*1 Low Power Consumption (0.6µA current in HALT)	P.106
General-Purpose MCU (16bit) ML62Q2000 series/ML62Q2700 group	Built-In Speech Playback Hardware Engine and LCD Driver	P.106
Speech Playback MCU (8bit) ML610Q300	Built-In Original High Fidelity High Compression HQ-ADPCM Algorithm	P.108
USB/Security MCU (32bit) ML630Q400	Ideal for USB Data Loggers	P.108
Automotive MCU (32bit) ML63Q8000 series	Built-In HLC*3 enables coordinated operation of peripherals without software control	P.110

LAPIS Technology's MCU controllers utilize original low power technology cultivated over many years to achieve class-leading*1 low-power consumption.

As such they have been widely adopted in a variety of applications, from compact battery-driven devices such as high-performance digital watches to consumer appliances, industrial equipment, and social infrastructure. In addition, we have added MCUs to the lineup suitable for automotive applications. And going forward, LAPIS Technology will continue to provide MCUs that meet market needs for low power consumption by leveraging the latest technologies.

*1 LAPIS Technology study

*2 **Ky's Technology** HQ-ADPCM: A high quality sound compression technology developed by Ky's. Ky's is a registered trademark of Kyushu Institute of Technology.

*3 HLC: Short for Hardware Linkage Controller, HLC is a function that enables interoperation between peripherals without using LAPIS Technology's proprietary CPU.

Multiple Built-In Safety Functions

General-purpose MCU (16bit) ML62Q1000 series (U16 Core*1)

Normal type ML62Q1300 group ROM Capacity: 16KB to 64KB Pin number: 16pin to 32pin (Industrial Grade)

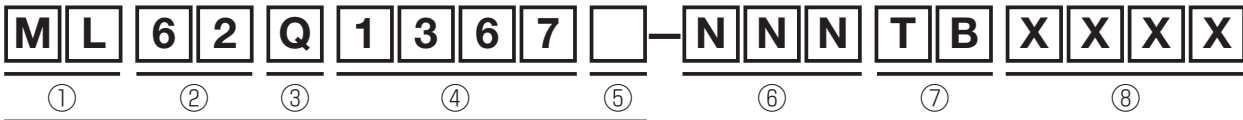
Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
ML62Q1323	1.6 to 5.5	Flash	16K	2K	2K	-	-	12	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation)	41ns/30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1324			24K										
ML62Q1325			32K										
ML62Q1333	1.6 to 5.5	Flash	16K	2K	2K	-	-	16	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation)	41ns/30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1334			24K										
ML62Q1335			32K										
ML62Q1345	1.6 to 5.5	Flash	32K	2K	4K	-	-	20	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation)	41ns/30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1346			48K										
ML62Q1347			64K										
ML62Q1365	1.6 to 5.5	Flash	32K	2K	4K	-	-	28	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation)	41ns/30.5µs	4.3µA (Internal RC oscillation)	-40 to +105
ML62Q1366			48K										
ML62Q1367			64K										

*1 U16 Core: LAPIS Technology's original 16bit RISC CPU nX-U16/100 Core

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*3 For use of industrial equipment, please inquire to the sales.

ML62Q1000 series Part Number Explanation



Part Number

- ① Device type
ML: Bipolar Logic
- ② CPU Core type
62: 16bit CPU nX-U16/100
- ③ ROM type
Q: Flash ROM
- ④ Part Code
- ⑤ Option Code
None to x: Set for product
- ⑥ ROM Code
NNN : Blank
001 to xxx: Custom Code Number
- ⑦ Package Code
GD: WQFN
MB: SSOP
TD: TSSOP
TB: TQFP
GA: QFP
- ⑧ Company's Code in LAPIS Technology

- 13xx: ML62Q1300 Group
2x: 16pin
3x: 20pin
4x: 24pin
6x: 32pin

x3: ROM 16KB
x4: ROM 24KB
x5: ROM 32KB
x6: ROM 48KB
x7: ROM 64KB
- 15xx: ML62Q1500 Group
3x: 48pin
4x: 52pin
5x: 64pin
6x: 80pin
7x: 100pin

x0: ROM 32KB
x1: ROM 48KB
x2: ROM 64KB
x3: ROM 96KB
x4: ROM 128KB
x5: ROM 160KB
x6: ROM 192KB
x7: ROM 256KB
- 17xx: ML62Q1700 Group
(Built-in LCD Driver)
0x: 48pin
1x: 52pin
2x: 64pin
3x: 80pin
4x: 100pin

x0: ROM 32KB
x1: ROM 48KB
x2: ROM 64KB
x3: ROM 96KB
x4: ROM 128KB
x5: ROM 160KB
x6: ROM 192KB
x7: ROM 256KB
x8: ROM 384KB
x9: ROM 512KB
- 18xx: ML62Q1800 Group
5x: 64pin
6x: 80pin
7x: 100pin

x8: ROM 384KB
x9: ROM 512KB

(LAPIS Technology products)

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*2	Industrial Grade*3
						PC	SSIO	UART									
	4 (8bitx8)	4 (TMR, PWM, IGBT, Capture)	1	10bitx6 (SA type)	-	Master/Slavex1, Masterx1	UART Full Duplex/SSIOx2		VLSx1	-	8	Safety function, Multiplier/Divider, Comparatorx1, DMA	-	P-SSOP16-0225-0.65-TK6	-	✓	✓
P-WQFN16-0404-0.50-63														-	✓	✓	
P-SSOP16-0225-0.65-TK6														-	✓	✓	
	4 (8bitx8)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	-	Master/Slavex1, Masterx1	UART Full Duplex/SSIOx2		VLSx1	-	8	Safety function, Multiplier/Divider, Comparatorx1, DMA	-	P-TSSOP20-0225-0.65-TK6	-	✓	✓
P-SSOP20-44-0.65-TK6														-	✓	✓	
P-TSSOP20-0225-0.65-TK6														-	✓	✓	
	6 (8bitx12)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	8bitx1	Master/Slavex1, Masterx1	UART Full Duplex/SSIOx2		VLSx1	-	8	Safety function, Multiplier/Divider, Comparatorx1, DMA	-	P-WQFN24-0404-0.50-A63	-	✓	✓
P-WQFN24-0404-0.50-A63														-	✓	✓	
P-WQFN24-0404-0.50-A63														-	✓	✓	
	6 (8bitx12)	4 (TMR, PWM, IGBT, Capture)	1	10bitx8 (SA type)	8bitx1	Master/Slavex1, Masterx1	UART Full Duplex/SSIOx2		VLSx1	-	8	Safety function, Multiplier/Divider, Comparatorx1, DMA	-	P-WQFN32-0505-0.50-A63	-	✓	✓
P-TQFP32-0707-0.80-ZK6														-	✓	✓	
P-WQFN32-0505-0.50-A63														-	✓	✓	
													P-TQFP32-0707-0.80-ZK6	-	✓	✓	



Multiple Built-In Safety Functions

General-purpose MCU (16bit) ML62Q1000 series (U16 Core*1)

Normal type ML62Q1500 group ROM Capacity: 32KB to 256KB Pin number: 48pin to 100pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
ML62Q1530	1.6 to 5.5	Flash	32K	4K	8K	2	-	42	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1531			48K										
ML62Q1532			64K										
ML62Q1533			96K										
ML62Q1534			128K										
ML62Q1540	1.6 to 5.5	Flash	32K	4K	8K	2	-	46	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1541			48K										
ML62Q1542			64K										
ML62Q1543			96K										
ML62Q1544			128K										
ML62Q1550	1.6 to 5.5	Flash	32K	4K	8K	2	-	58	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.7/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1551			48K										
ML62Q1552			64K										
ML62Q1553			96K										
ML62Q1554			128K	16K	2								
ML62Q1555			160K										
ML62Q1556			192K										
ML62Q1557			256K										
ML62Q1563	1.6 to 5.5	Flash	96K	4K	16K	2	-	72	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	5.5/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1564			128K										
ML62Q1565			160K										
ML62Q1566			192K										
ML62Q1567			256K										
ML62Q1573	1.6 to 5.5	Flash	96K	4K	16K	2	-	92	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	5.5/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1574			128K										
ML62Q1575			160K										
ML62Q1576			192K										
ML62Q1577			256K										
ML62Q1543C	1.6 to 5.5	Flash	96K	4K	8K	2	-	46	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1544C			128K										
ML62Q1553C	1.6 to 5.5	Flash	96K	4K	8K	2	-	58	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1554C			128K										
ML62Q1563C	1.6 to 5.5	Flash	96K	4K	8K	2	-	74	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1564C			128K										

Normal type ML62Q1800 group ROM Capacity: 384KB to 512KB Pin number: 64pin to 100pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
ML62Q1858	1.6 to 5.5	Flash	384K	8K	32K	2	-	58	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1859			512K										
ML62Q1868	1.6 to 5.5	Flash	384K	8K	32K	2	-	72	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1869			512K										
ML62Q1878	1.6 to 5.5	Flash	384K	8K	32K	2	-	92	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5µs	6.0/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1879			512K										

*1 U16 Core: LAPIS Technology's original 16bit RISC CPU nX-U16/100 Core

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*3 For use of industrial equipment, please inquire to the sales.

(LAPIS Technology products)

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*2	Industrial Grade*3
						I ² C	SSIO	UART									
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP48-0707-0.50-ZK6	-	✓	✓	
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP52-1010-0.65-ZK6	-	✓	✓	
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP64-1010-0.50-ZK6	-	✓	✓	
P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6													-	✓	✓		
P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6													-	✓	✓		
P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6													-	✓	✓		
P-QFP64-1414-0.80-ZK6													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-QFP80-1414-0.65-ZK6	-	✓	✓	
P-QFP80-1414-0.65-ZK6													-	✓	✓		
P-QFP80-1414-0.65-ZK6													-	✓	✓		
P-QFP80-1414-0.65-ZK6													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP100-1414-0.50-ZK6	-	✓	✓	
P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6													-	✓	✓		
P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx3	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP52-1010-0.65-ZK6	-	✓	✓	
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx4	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP64-1010-0.50-ZK6	-	✓	✓	
P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx4	VLSx1	-	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-QFP80-1414-0.65-ZK6	-	✓	✓	
P-QFP80-1414-0.65-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx2	VLSx1	-	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP64-1010-0.50-ZK6	-	✓	✓	
P-QFP64-1414-0.80-ZK6													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-QFP80-1414-0.65-ZK6	-	✓	✓	
P-QFP80-1414-0.65-ZK6													-	✓	✓		
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master/ Slavex1, Masterx2	UART Full Duplex/ SSIOx6	VLSx1	-	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP100-1414-0.50-ZK6	-	✓	✓	
P-QFP100-1420-0.65-BK6													-	✓	✓		

Microcontroller



Multiple Built-In Safety Functions

General-purpose MCU (16bit) ML62Q1000 series (U16 Core*1)

Built-In LCD Driver type ML62Q1700 group ROM Capacity: 32KB to 512KB Pin number: 48pin to 100pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
ML62Q1700	1.6 to 5.5	Flash	32K	4K	8K	2	-	37	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1701			48K										
ML62Q1702			64K										
ML62Q1703			96K										
ML62Q1704			128K										
ML62Q1710	1.6 to 5.5	Flash	32K	4K	8K	2	-	41	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1711			48K										
ML62Q1712			64K										
ML62Q1713			96K										
ML62Q1714			128K										
ML62Q1720	1.6 to 5.5	Flash	32K	4K	8K	2	-	53	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.9/3.3µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1721			48K										
ML62Q1722			64K										
ML62Q1723			96K										
ML62Q1724			128K										
ML62Q1725			160K										
ML62Q1726			192K										
ML62Q1727			256K										
ML62Q1728			384K										
ML62Q1729			512K										
ML62Q1733	1.6 to 5.5	Flash	96K	4K	16K	2	-	67	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	5.7/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1734			128K										
ML62Q1735			160K										
ML62Q1736			192K										
ML62Q1737			256K										
ML62Q1738			384K										
ML62Q1739			512K										
ML62Q1743	1.6 to 5.5	Flash	96K	4K	16K	2	-	87	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	5.7/4.5µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1744			128K										
ML62Q1745			160K										
ML62Q1746			192K										
ML62Q1747			256K										
ML62Q1748			384K										
ML62Q1749			512K										
ML62Q1713C	1.6 to 5.5	Flash	96K	4K	8K	2	-	41	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1714C			128K										
ML62Q1723C	1.6 to 5.5	Flash	96K	4K	8K	2	-	53	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1724C			128K										
ML62Q1733C	1.6 to 5.5	Flash	96K	4K	8K	2	-	69	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/ 30.5µs	4.3/3.0µA (Internal RC oscillation/ Crystal oscillation)	-40 to +105
ML62Q1734C			128K										

*1 U16 Core: LAPIS Technology's original 16bit RISC CPU nX-U16/100 Core

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*3 For use of industrial equipment, please inquire to the sales.

(LAPIS Technology products)

	16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support ²	Industrial Grade ³
						I ² C	SSIO	UART									
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx2	VLSx1	Max 192dot 24segx 8com	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP48-0707-0.50-ZK6	-	✓	✓	
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
P-TQFP48-0707-0.50-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx2	VLSx1	Max 216dot 27segx 8com	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP52-1010-0.65-ZK6	-	✓	✓	
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx2	VLSx1	Max 280dot 35segx 8com	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6	-	✓	✓	
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
													8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2
P-QFP80-1414-0.65-ZK6	-	✓	✓														
P-QFP80-1414-0.65-ZK6	-	✓	✓														
P-QFP80-1414-0.65-ZK6	-	✓	✓														
P-QFP80-1414-0.65-ZK6	-	✓	✓														
P-QFP80-1414-0.65-ZK6	-	✓	✓														
P-QFP80-1414-0.65-ZK6	-	✓	✓														
	8 (8bitx16)	8 (TMR, PWM, IGBT, Capture)	1	10bitx16 (SA type)	8bitx2	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx6	VLSx1	Max 480dot 60segx 8com	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6	-	✓	✓	
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
P-TQFP100-1414-0.50-ZK6 P-QFP100-1420-0.65-BK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx3	VLSx1	Max 216dot 27segx 8com	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP52-1010-0.65-ZK6	-	✓	✓	
P-TQFP52-1010-0.65-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx4	VLSx1	Max 280dot 35segx 8com	10	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6	-	✓	✓	
P-TQFP64-1010-0.50-ZK6 P-QFP64-1414-0.80-ZK6													-	✓	✓		
	6 (8bitx12)	6 (TMR, PWM, IGBT, Capture)	1	10bitx12 (SA type)	8bitx1	Master/ Slave ^x 1, Master ^x 2	UART Full Duplex/ SSIOx4	VLSx1	Max 360dot 45segx 8com	12	Safety function, Multiplier/Divider, Comparatorx2, DMA	-	P-QFP80-1414-0.65-ZK6	-	✓	✓	
P-QFP80-1414-0.65-ZK6													-	✓	✓		

Microcontroller

Class-Leading Low Power Consumption (0.6μA current in HALT)

General-Purpose MCU (16bit) ML62Q2000 series/

Normal type ML62Q2500 group ROM Capacity: 64KB to 128KB Pin number: 32pin to 48pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT*)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
New ML62Q2502	1.8 to 5.5	Flash	64K	4K	8K	3	-	24	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ External oscillation)	41ns/30.5μs	0.6μA (Internal RC oscillation)	-40 to +105
New ML62Q2504			128K										
New ML62Q2522	1.8 to 5.5	Flash	64K	4K	8K	3	-	32	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ External oscillation)	41ns/30.5μs	0.6μA (Internal RC oscillation)	-40 to +105
New ML62Q2524			128K										
New ML62Q2532	1.8 to 5.5	Flash	64K	4K	8K	3	-	40	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ External oscillation)	41ns/30.5μs	0.6μA (Internal RC oscillation)	-40 to +105
New ML62Q2534			128K										

*1 U16 Core: LAPIS Technology's original 16bit RISC CPU nX-U16/100 Core

*2 HALT-D mode.

*3 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*4 For use of industrial equipment, please inquire to the sales.

Built-In Speech Playback Hardware Engine and LCD Driver

General-Purpose MCU (16bit) ML62Q2000 series/

Built-In LCD Driver type ML62Q2700 group ROM Capacity: 64KB to 256KB Pin number: 48pin to 100pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT*)	Operating Temperature (°C)
						Input	Output	Input/Output	High Speed	Low Speed			
New ML62Q2725	1.8 to 5.5	Flash	160K	4K	16K	3	-	51	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	0.9μA (Internal RC oscillation)	-40 to +105
New ML62Q2726			192K										
New ML62Q2727			256K										
New ML62Q2735	1.8 to 5.5	Flash	160K	4K	16K	3	-	65	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	0.9μA (Internal RC oscillation)	-40 to +105
New ML62Q2736			192K										
New ML62Q2737			256K										
New ML62Q2745	1.8 to 5.5	Flash	160K	4K	16K	3	-	85	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	0.9μA (Internal RC oscillation)	-40 to +105
New ML62Q2746			192K										
New ML62Q2747			256K										
☆ ML62Q2702	1.8 to 5.5	Flash	64K	4K	8K	3	-	35	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	(TBD)	-40 to +105
☆ ML62Q2703			96K										
☆ ML62Q2712	1.8 to 5.5	Flash	64K	4K	8K	3	-	39	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	(TBD)	-40 to +105
☆ ML62Q2713			96K										
☆ ML62Q2722	1.8 to 5.5	Flash	64K	4K	8K	3	-	51	24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41ns/30.5μs	(TBD)	-40 to +105
☆ ML62Q2723			96K										

*1 U16 Core: LAPIS Technology's original 16bit RISC CPU nX-U16/100 Core

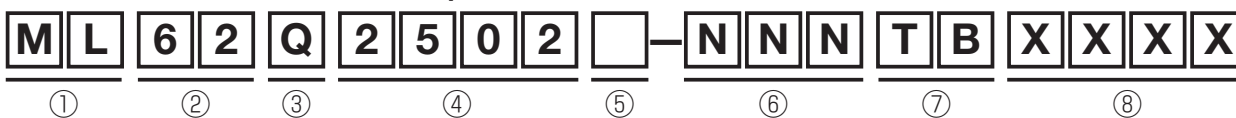
*2 HALT-D mode.

*3 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*4 For use of industrial equipment, please inquire to the sales.

☆: Under Development. The contents are subject to change without notice for improvement.

ML62Q2000 series Part Number Explanation



Part Number

- ① Device type
ML: Bipolar Logic
- ② CPU Core type
62: 16bit CPU nX-U16/100
- ③ ROM type
Q: Flash ROM
- ④ Part Code
25xx: ML62Q2500 Group
0x: 32pin
2x: 40pin
3x: 48pin

x2: ROM 64KB
x4: ROM 128KB
- ⑤ Option Code
None to x: Set for product
- ⑥ ROM Code
NNN : Blank
001 to xxx: Custom Code Number
- ⑦ Package Code
GD: WQFN
TB: TQFP
GA: QFP
- ⑧ Company's Code in LAPIS Technology

- 27xx: ML62Q2700 Group (Built-in LCD Driver)
0x: 48pin
1x: 52pin
2x: 64pin
3x: 80pin
4x: 100pin

x2: ROM 64KB
x3: ROM 96KB
x5: ROM 160KB
x6: ROM 192KB
x7: ROM 256KB

ML62Q2500 group (U16 Core*1)

(LAPIS Technology products)

16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*2	Industrial Grade*4
					I ² C	SSIO	UART									
6	2 (TMR, PWM, IGBT, Capture)	1	12bit×14 (SA type)	-	Master/Slave×1, Master×1	2	Full Duplex ×3	VLS×1	-	8	Safety function, Multiplier/Divider	-	P-TQFP32-0707-0.80-ZK6	-	✓	✓
													P-WQFN32-0505-0.50-A63	-	✓	✓
													P-WQFN32-0707-0.80-ZK6	-	✓	✓
6	2 (TMR, PWM, IGBT, Capture)	1	12bit×14 (SA type)	-	Master/Slave×1, Master×1	2	Full Duplex ×3	VLS×1	-	8	Safety function, Multiplier/Divider	-	P-WQFN40-0606-0.50-63	-	✓	✓
													P-WQFN40-0606-0.50-63	-	✓	✓
													P-TQFP48-0707-0.50-ZK6	-	✓	✓
6	2 (TMR, PWM, IGBT, Capture)	1	12bit×14 (SA type)	-	Master/Slave×1, Master×1	2	Full Duplex ×3	VLS×1	-	8	Safety function, Multiplier/Divider	-	P-TQFP48-0707-0.50-ZK6	-	✓	✓
													P-WQFN48-0707-0.50-63	-	✓	✓
													P-WQFN48-0707-0.50-63	-	✓	✓

ML62Q2700 group (U16 Core*1)

(LAPIS Technology products)

16bit Timer	16bit Multi Functions Timer	WDT	ADC (method)	DAC	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*2	Industrial Grade*4
					I ² C	SSIO	UART									
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×16 (SA type)	-	Master/Slave×1, Master×2	7	Full Duplex ×6	VLS×1	Max 280dot 35seg× 8com	9	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-QFP64-1414-0.80-ZK6	-	✓	✓
													P-TQFP64-1010-0.50-ZK6	-	✓	✓
													P-TQFP64-1010-0.50-ZK6	-	✓	✓
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×16 (SA type)	-	Master/Slave×1, Master×2	7	Full Duplex ×6	VLS×1	Max 360dot 45seg× 8com	9	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-QFP80-1414-0.65-ZK6	-	✓	✓
													P-QFP80-1414-0.65-ZK6	-	✓	✓
													P-QFP80-1414-0.65-ZK6	-	✓	✓
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×16 (SA type)	-	Master/Slave×1, Master×2	7	Full Duplex ×6	VLS×1	Max 480dot 60seg× 8com	9	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-QFP100-1420-0.65-BK6	-	✓	✓
													P-TQFP100-1414-0.50-ZK6	-	✓	✓
													P-TQFP100-1414-0.50-ZK6	-	✓	✓
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×12 (SA type)	-	Master/Slave×1, Master×2	2	Full Duplex ×2	VLS×1	Max 192dot 24seg× 8com	TBD	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-TQFP100-1420-0.65-BK6	-	✓	✓
													P-WQFN48-0707-0.50-63	-	✓	✓
													P-TQFP100-1414-0.50-ZK6	-	✓	✓
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×12 (SA type)	-	Master/Slave×1, Master×2	2	Full Duplex ×2	VLS×1	Max 216dot 27seg× 8com	TBD	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-TQFP52-1010-0.65-ZK6	-	✓	✓
													P-TQFP52-1010-0.65-ZK6	-	✓	✓
													P-TQFP52-1010-0.65-ZK6	-	✓	✓
8	8 (TMR, PWM, IGBT, Capture)	1	12bit×12 (SA type)	-	Master/Slave×1, Master×2	2	Full Duplex ×2	VLS×1	Max 280dot 35seg× 8com	TBD	Safety function, Multiplier/Divider, Speech playback function/ADPCM2 decoder	-	P-QFP64-1414-0.80-ZK6	-	✓	✓
													P-TQFP64-1010-0.50-ZK6	-	✓	✓
													P-TQFP64-1010-0.50-ZK6	-	✓	✓

Microcontroller

Built-In Original High Fidelity High Compression HQ-ADPCM Algorithm

Speech Playback MCU (8bit) ML610Q300 (U8 Core*1)

Normal type ROM Capacity: 96KB to 256KB Pin number: 32pin to 64pin (Industrial Grade)

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	Memory for Sound	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)
							Input	Output	Input/Output	High Speed	Low Speed			
ML610Q305	2.0 to 5.5	Flash	96K	2K	Flash ROM	1K	1	3	12	8.192MHz	32.768kHz (Internal RC oscillation)	0.122µs/30.5µs	2.0µA	-40 to +85
ML610Q306									15					
New ML610Q327	2.0 to 5.5	Flash	192K	2K	Flash ROM	4K	—	6	26	8.192MHz	32.768kHz (Internal RC oscillation)	0.122µs/30.5µs	2.0µA	-40 to +85
New ML610Q338	2.0 to 5.5	Flash	256K	2K	Flash ROM	4K	—	6	30	8.192MHz	32.768kHz (Internal RC oscillation)	0.122µs/30.5µs	2.0µA	-40 to +85
New ML610Q339									42					

© Ky's Technology HQ-ADPCM: A high quality sound compression technology developed by Ky's. Ky's is a registered trademark of Kyushu Institute of Technology.

*1 U8 Core: LAPIS Technology's original 8bit RISC CPU nX-U8/100 Core

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*3 For use of industrial equipment, please inquire to the sales.

Ideal for USB Data Loggers

USB/Security MCU (32bit) ML630Q400 (Arm® Cortex®-M0+)

Built-In LCD Driver type ROM Capacity: 64KB to 128KB Pin number: 100pin (Industrial Grade)

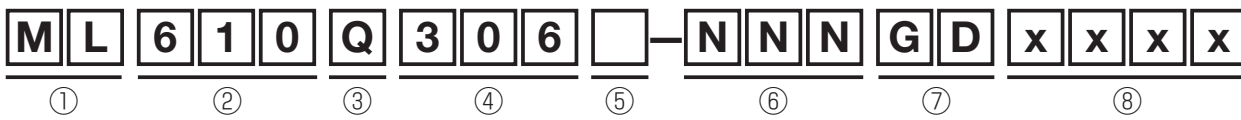
Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port			Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	Co-processor for Multiplication and Division	8bit Timer	16bit Multi Functions Timer
						Input	Output	Input/Output	High Speed	Low Speed						
ML630Q464	1.8 to 3.6	Flash	64K	2K	8K	—	—	38	16MHz (Internal RC oscillation) 24MHz (PLL oscillation)	32.768kHz (Internal RC oscillation/ Crystal oscillation)	41.7ns/30.5µs	0.8µA (Crystal oscillation)	-40 to +85	32bit multiplier	8 (16bitx4)	4
ML630Q466			128K		16K											

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*1 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*2 For use of industrial equipment, please inquire to the sales.

ML610Q/ML630Q Part Number Explanation



Part Name

① Device type
ML: Bipolar Logic

② CPU Core type
610: 8bit CPU nX-U8/100
630: 32bit CPU Arm® Cortex®-M0+

③ ROM type
Q: Flash ROM

④ Part Code
3xx: Built-in Speech Playback function
4xx: Low Power

⑤ Option Code
None to x: Set for product

⑥ ROM Code
NNN: Blank
001 to xxx: Custom Code Number

⑦ Package Code
GD: WQFN
TB: TQFP

⑧ Company's Code in LAPIS Technology

(LAPIS Technology products)

	8bit Timer	PWM	WDT	ADC (method)	Serial Port			Supply Voltage Detection	LCD Driver	External Interrupt Sources	SP Amp Output (W)/ Class	Others	Notes	Package	Chip Support	Halogen Free Support*2	Industrial Grade*3
					I ² C	SSIO	UART										
	4 (16bit×2)	—	1	10bit×3 (SA type)	Master/ Slave x1	2	Half Duplex x1	LLDx1	—	9	1.0 (@5V)/ D class	Speech playback function/ ADPCM2 HQ-ADPCM decoder/ Built-in speaker Amplifier	—	P-WQFN32-0505-0.50-A63	—	✓	✓
				P-TQFP32-0707-0.80-ZK6													
				10bit×4 (SA type)										P-WQFN36-0606-0.50-A63			
	4 (16bit×2)	3	1	10bit×8 (SA type)	Master/ Slave x1	2	Half Duplex x2	LLDx1	—	8	1.0 (@5V)/ D class	Speech playback function/ ADPCM2 HQ-ADPCM decoder/ Built-in speaker Amplifier	—	P-TQFP48-0707-0.50-ZK6	—	✓	✓
	4 (16bit×2)	3	1	10bit×8 (SA type)	Master/ Slave x1	2	Half Duplex x2	LLDx1	—	8	1.0 (@5V)/ D class	Speech playback function/ ADPCM2 HQ-ADPCM decoder/ Built-in speaker Amplifier	—	P-TQFP52-1010-0.65-ZK6	—	✓	✓
													—	P-TQFP64-1010-0.50-ZK6	—	✓	✓

(LAPIS Technology products)

	PWM	Capture	WDT	ADC (method)	Serial Port				Supply Voltage Detection	LCD Driver	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*1	Industrial Grade*2
					I ² C	SSIO (SPI)	UART	USB									
	16bit×4 (use 16bit Timer)	16bit×4 (use 16bit Timer)	1	24bit×2 (RC type)	Master/ Slave x2	2	Full Duplex x2	1	VLSx1, LLDx1	Max 400dot 50seg× 8com	8	AES 128bit HW accelerator (CBC, CTR, CTR), Random generator, DMA, RTC, Analog comparator×2, 1kHz Timer	—	P-TQFP100-1414-0.50-ZK6	—	✓	✓
				P-TQFP100-1414-0.50-ZK6													
				12bit×12 (SA type)													

Microcontroller

Built-In HLC*1 enables coordinated operation of peripherals without software control

Automotive MCU (32bit) ML63Q8000 series (Arm® Core)

Sensor/Actuator type ML63Q8000 group (Cortex®-M0+) 128KB to 480KB Pin number: 48pin to 64pin

Part No.	Operating Voltage (V)	ROM type	ROM Capacity (Byte)	Data Flash Capacity (Byte)	RAM Capacity (Byte)	Port (Max)	Operating Frequency (Max)		Minimum Instruction Execution Time	Current Consumption (Typ@HALT)	Operating Temperature (°C)	16bit Timer	32bit Timer
							High Speed	Low Speed					
New ML63Q8034	2.7 to 5.5	Flash	128K	8K	16K	37	48MHz	256kHz	20.8ns	(TBD)	-40 to +125	17 (TMR, PWM, Capture)	4
New ML63Q8036			256K	16K	32K								
New ML63Q8037			480K										
New ML63Q8054	2.7 to 5.5	Flash	128K	8K	16K	53	48MHz	256kHz	20.8ns	(TBD)	-40 to +125	17 (TMR, PWM, Capture)	4
New ML63Q8056			256K	16K	32K								
New ML63Q8057			480K										

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*1 HLC: Short for Hardware Linkage Controller, HLC is a function that enables interoperation between peripherals without using LAPIS Technology's proprietary CPU.

*2 A check mark of halogen free support means that we will be able to ship out the halogen free products. For details, please inquire to the sales.

*3 Please inquire to the sales for AEC-Q100.

(LAPIS Technology products)

	ADC (method)	DAC	Analog Comparator	Serial Port				CAN	LIN	Supply Voltage Detection	External Interrupt Sources	Others	Notes	Package	Chip Support	Halogen Free Support*2	Automotive Grade*3	Functional safety Support
				IC	SSIO (SPI)	UART	FS											
	12bit×16 (SA type)	12bit×1	1ch×5	Master/ Slavex2	4	Full Duplex x2	Masterx1	1	Master/ Slavex2	LVDx1	8	HLC*1, WDT, RTC, DMA, CRC, Clock Monitor	-	P-TQFP48-0707-0.50-ZK6	-	✓	YES	✓
P-TQFP48-0707-0.50-ZK6														-	✓	YES	✓	
P-TQFP48-0707-0.50-ZK6														-	✓	YES	✓	
	12bit×16 (SA type)	12bit×1	1ch×5	Master/ Slavex2	4	Full Duplex x2	Masterx1	1	Master/ Slavex2	LVDx1	8	HLC*1, WDT, RTC, DMA, CRC, Clock Monitor	-	P-TQFP64-1010-0.50-ZK6	-	✓	YES	✓
P-TQFP64-1010-0.50-ZK6														-	✓	YES	✓	
P-TQFP64-1010-0.50-ZK6														-	✓	YES	✓	

ROHM Packages

Small Packages	P.112
SOP Packages	P.113
HSOP Packages	P.113
HTSOP Packages	P.113
SOP Special Packages	P.114
Non-lead Packages	P.115
Optical Non-lead Packages	P.116
MMP Packages	P.116

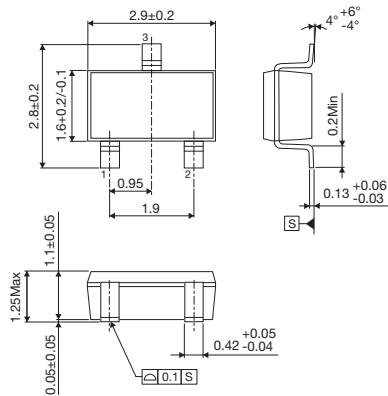
SON Packages	P.117
SON Special Packages	P.117
QFP Packages	P.117
QFN Packages	P.118
BGA Packages	P.119
Special Packages	P.119
WL-CSP Packages	P.120
Power Packages	P.121

Small Packages

(Unit: mm)

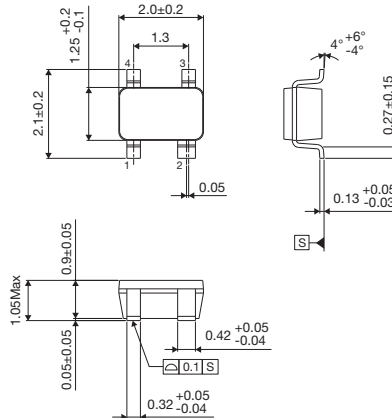
SOP Packages

SSOP3



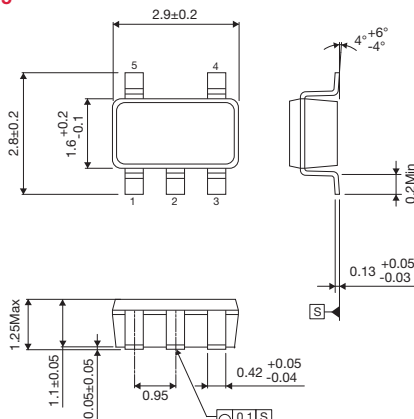
Taping: 3,000pcs

SOP4



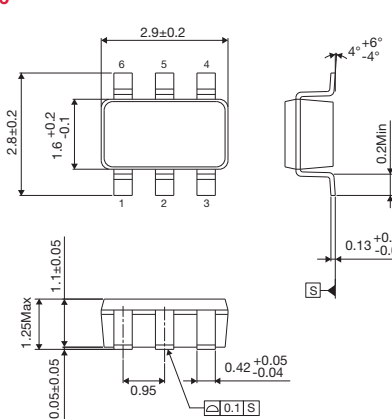
Taping: 3,000pcs

SSOP5



Taping: 3,000pcs

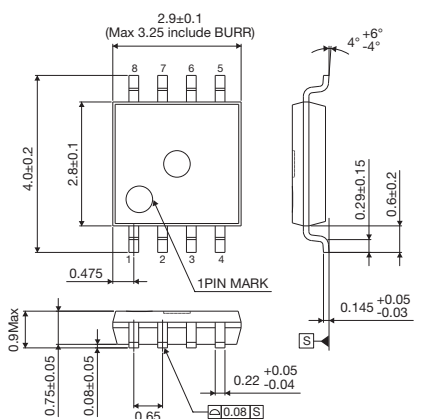
SSOP6



Taping: 3,000pcs

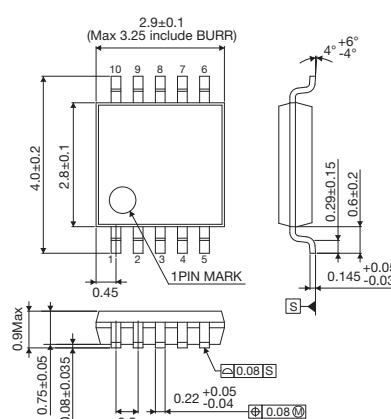
MSOP Packages

MSOP8



Taping: 3,000pcs

MSOP10



Taping: 3,000pcs

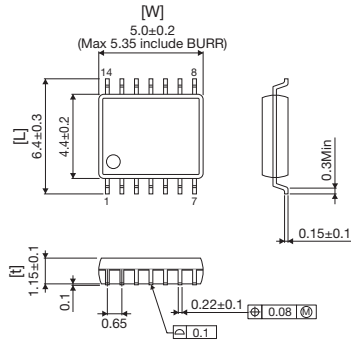
Note: Please refer package from "LAPIS Technology Packages".

IC Packages

SOP Packages

(Unit: mm)

SSOP Package (for SSOP-B14)



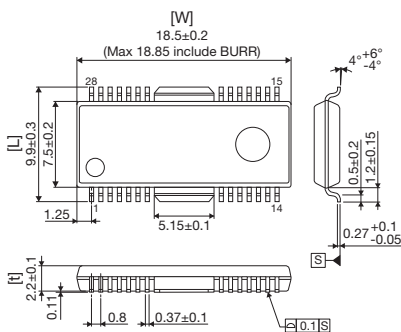
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	Package (pcs) taping
SOP Package Pin Pitch: 1.27mm	SOP8	8	6.2	5.0	1.61	2,500
	SOP-JW8	8	6.0	4.9	1.65	2,500
	SOP14	14	6.2	8.7	1.61	2,500
	SOP-J14	14	6.0	8.65	1.65	2,500
	SOP16	16	6.2	10.0	1.61	2,500
	SOP-J16A	16	6.0	9.9	1.55	2,500
	SOP18	18	7.8	11.2	1.91	2,000
	SOP20A	20	10.3	12.8	2.5	1,500
	SOP24	24	7.8	15.0	1.91	2,000
SSOP-A Package Pin Pitch: 0.8mm	SSOP-A16	16	6.2	6.6	1.61	2,500
	SSOP-A20	20	7.8	8.7	1.91	2,000
	SSOP-A24	24	7.8	10.0	1.9	2,000
	SSOP-A32	32	7.8	13.6	1.91	2,000
SSOP-B Package Pin Pitch: 0.65mm	SSOP-B8	8	6.4	3.0	1.25	2,500
	SSOP-B10W	10	10.2	3.5	1.9	1,500
	SSOP-B14	14	6.4	5.0	1.25	2,500
	SSOP-B16	16	6.4	5.0		2,500
	SSOP-B20	20	6.4	6.5	2,500	
	SSOP-B20W		8.1	6.5	1.81	2,000
	SSOP-B24	24	7.6	7.8	1.25	2,000
	SSOP-B28	28	7.6	10.0	2,000	
	SSOP-B28W		10.4	9.2	2.4	1,500
	SSOP-B40	40	7.8	13.6	1.9	2,000
TSSOP-B Package Pin Pitch: 0.65mm	TSSOP-B8	8	6.4	3.0	1.2	3,000
	TSSOP-B8J		4.9	3.0	1.1	2,500
	TSSOP-B14J	14	6.4	5.0	1.2	2,500
TSSOP-C Package Pin Pitch: 0.5mm	TSSOP-C48V	48	8.1	12.5	1.0	2,000

Note: Please check the ROHM website for detailed dimensions.

HSOP Packages (Heat sink on both side)

(Unit: mm)

HSOP Package (for HSOP-M28)



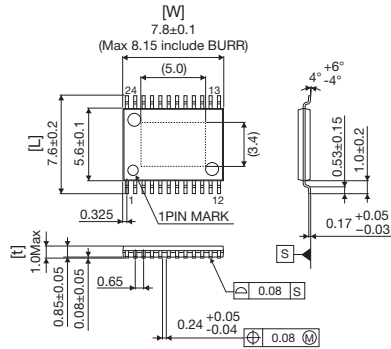
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	Package (pcs) taping
HSOP Package Pin Pitch: 1.27mm	HSOP20	20	7.8	14.9	2.1	2,000
HSOP Package Pin Pitch: 0.8mm	HSOP25	25	7.8	13.6	2.01	2,000
HSOP-M Package Pin Pitch: 0.8mm	HSOP-M28	28	9.9	18.5	2.31	1,500
	HSOP-M36	36	9.9	18.5	2.4	1,500

Note: Please check the ROHM website for detailed dimensions.

HTSOP Packages (With back heat sink)

(Unit: mm)

HTSSOP Package (for HTSSOP-B24)



	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	back heat sink (mm)	Package (pcs) taping
HTSOP Package Pin Pitch: 1.27mm	HTSOP-J8	8	6.0	4.9	1.0	2.4x3.2	2,500
	HTSOP-J8ES	8	6.0	4.9		1.8x2.2	2,500
HTSSOP-A Package Pin Pitch: 0.8mm	HTSSOP-A44	44	9.5	18.5	1.0	5.0x6.0	1,500
	HTSSOP-A44R		9.5	18.5		5.0x6.0 (surface)	1,500
HTSSOP-B Package Pin Pitch: 0.65mm	HTSSOP-B16	16	6.4	5.0	1.0	2.4x3.0	2,500
	HTSSOP-B20	20	6.4	6.5		2.4x4.0	2,500
	HTSSOP-B24	24	7.6	7.8		3.4x5.0	2,000
	HTSSOP-B28	28	6.4	9.7		2.9x5.5	2,500
	HTSSOP-B30	30	7.6	10.0		3.7x5.8	2,000
	HTSSOP-B40	40	7.8	13.6		3.4x8.4	2,000
HTSSOP-C Package Pin Pitch: 0.5mm	HTSSOP-B54	54	9.5	18.5	1.0	5.0x6.0	1,500
	HTSSOP-C48	48	8.1	12.5		4.2x5.0	2,000
	HTSSOP-C48R	48	8.1	12.5		4.2x5.0 (surface)	2,000
HSSOP-C Package Pin Pitch: 0.5mm	HTSSOP-C64	64	8.1	17.2	1.1	3.05x4.45	2,000
	HSSOP-C16	16	6.0	4.9	1.7	about 2.5x4.12	2,500

Note: Please check the ROHM website for detailed dimensions.

Note: Please refer package from "LAPIS Technology Packages".

SOP Special Packages

(Unit: mm)

SOP-J7S

Taping: 2,500pcs

SOP-J11

Taping: 2,500pcs

SSOP-A54_23

Taping: 1,000pcs

SSOP-A54_36

Taping: 1,000pcs

SSOP-A54_36A

Taping: 1,000pcs

IC Packages

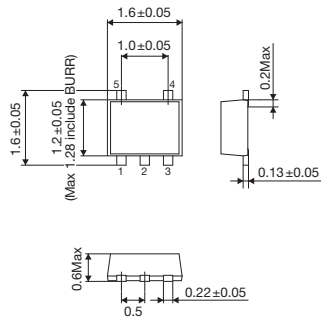
Note: Please refer package from "LAPIS Technology Packages".

Non-lead Packages

(Unit: mm)

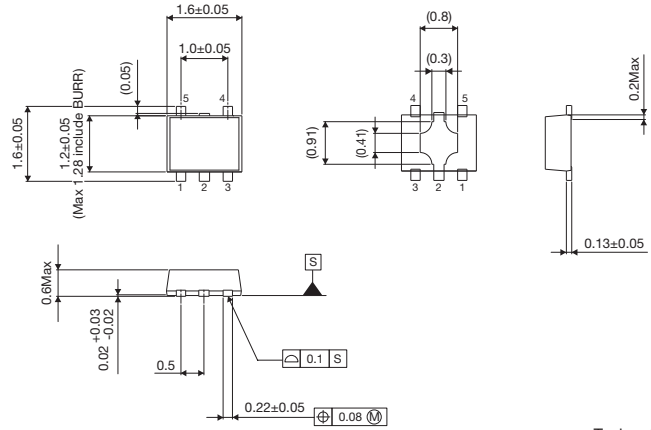
VSOE Packages

VSOE5



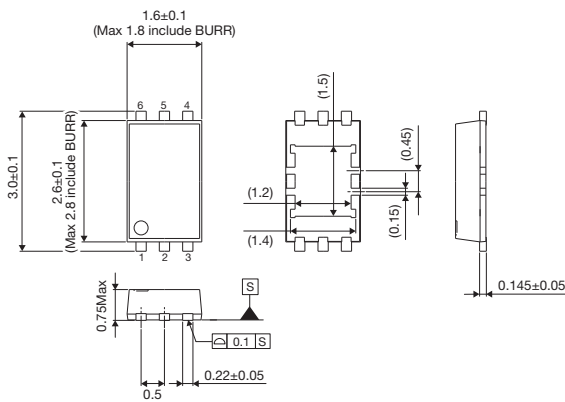
Taping: 3,000pcs

HVSOE5 (With back heat sink)



Taping: 3,000pcs

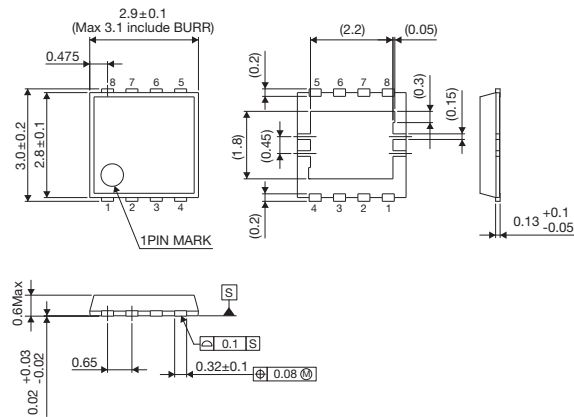
HVSOE6 (With back heat sink)



Taping: 3,000pcs

HSOE Package (With back heat sink)

HSOE8



Taping: 3,000pcs

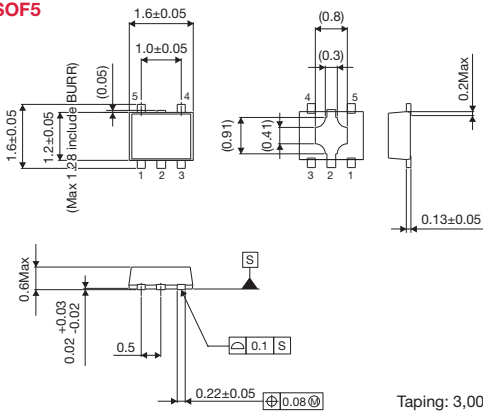
Note: Please refer package from "LAPIS Technology Packages".

Optical Non-lead Packages (With back heat sink)

(Unit: mm)

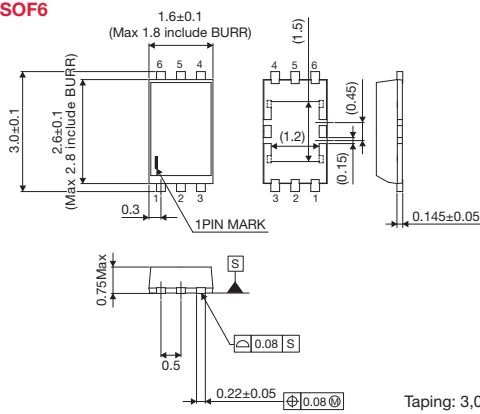
WSOF Packages

WSOF5



Taping: 3,000pcs

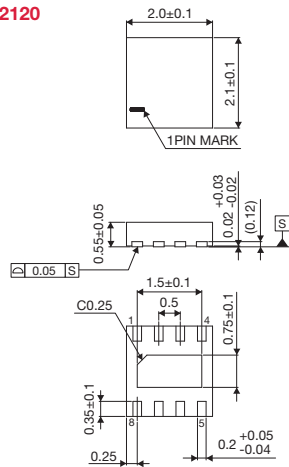
WSOF6



Taping: 3,000pcs

WSON Package

WSON008X2120



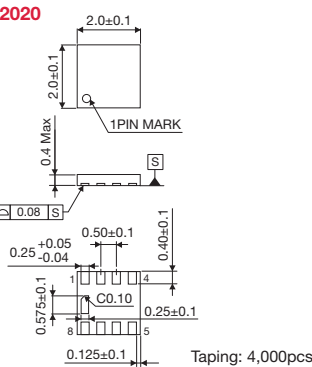
Taping: 4,000pcs

MMP Packages

(Unit: mm)

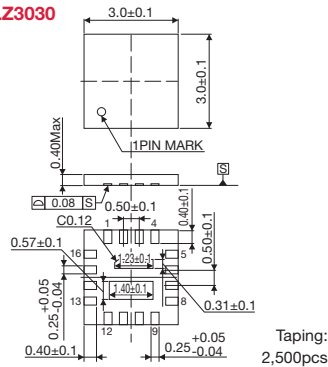
VMMP Packages

VMMP08LZ2020



Taping: 4,000pcs

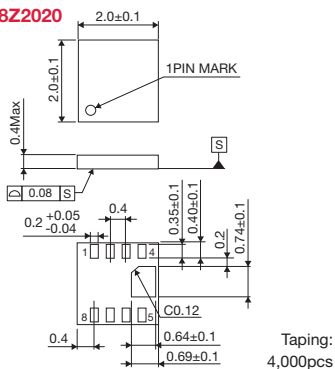
VMMP16LZ3030



Taping: 2,500pcs

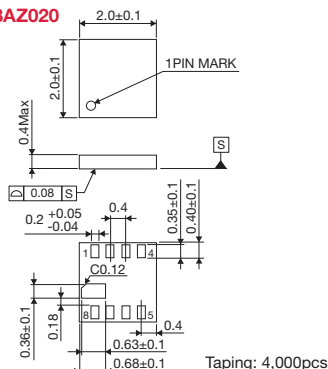
UMMP Packages

UMMP008Z2020



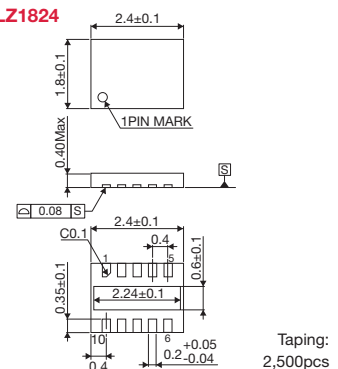
Taping: 4,000pcs

UMMP008AZ2020



Taping: 4,000pcs

UMMP10LZ1824



Taping: 2,500pcs

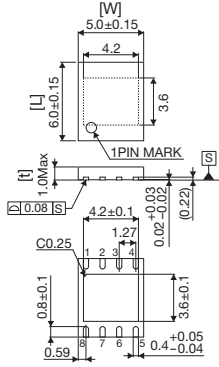
Note: Please refer package from "LAPIS Technology Packages".

IC Packages

SON Packages (With back heat sink)

(Unit: mm)

SON Package (for SON008V5060)



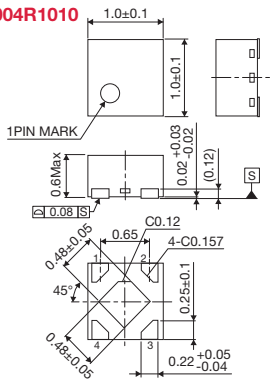
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	back heat sink (mm)	Package (pcs) taping
SON Package Pin Pitch: 1.27mm	SON008V5060	8	6.0	5.0	1.0	3.6×4.2	2,000
SSON Package Pin Pitch: 0.65mm	SSON004X1010	4	1.0	1.0	0.6	0.48×0.48	5,000
	SSON004X1216		1.6	1.2		0.8×0.75	5,000
USON Package Pin Pitch: 0.4mm	USON014X3020	14	2.0	3.0	0.6	0.8×2.5	4,000
	USON016X3315	16	1.5	3.3		0.6×2.9	4,000
VSON Package Pin Pitch: 0.5mm	VSON008V2030	8	3.0	2.0	1.0	1.4×1.5	3,000
	VSON008X2020		2.0	2.0		0.8×1.5	4,000
	VSON008X2030		3.0	2.0		1.4×1.5	4,000
	VSON010V3030	10	3.0	3.0	1.0	1.2×2.0	3,000
	VSON010X3020		2.0	3.0		0.64×2.0	4,000
	VSON010X3030		3.0	3.0		1.2×2.0	4,000
VSON10FV3030			3.0	3.0	1.0	1.2×2.0	3,000

Note: Please check the ROHM website for detailed dimensions.

SON Special Packages (With back heat sink)

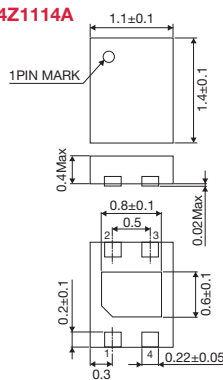
(Unit: mm)

SSON004R1010



Taping: 5,000pcs

VSON04Z1114A

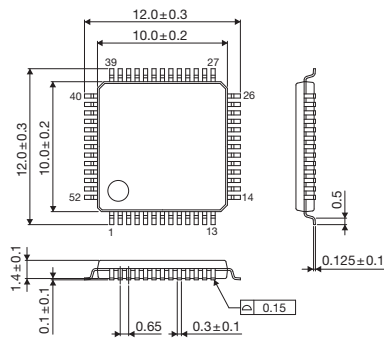


Taping: 5,000pcs

QFP Packages

(Unit: mm)

SQFP Package (for SQFP-T52)



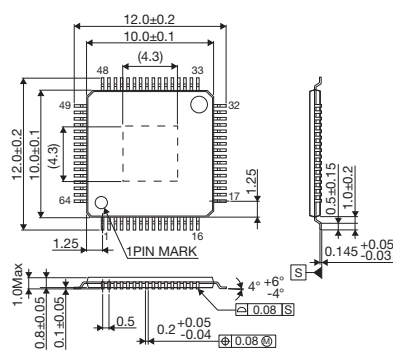
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	Package (pcs)	
						Tray	Taping
SQFP-T Package Pin Pitch: 0.65mm	SQFP-T52	52	12.0	12.0	1.5	1,000	1,000
	SQFP-T64	64	14.0	14.0		1,000	—
	SQFP-T80C	80	16.0	16.0		500	—
TQFP Package Pin Pitch: 0.5mm	TQFP48V	48	9.0	9.0	1.2	1,000	1,500
	TQFP64V	64	12.0	12.0	1.1	1,000	1,000
	TQFP100V	100	16.0	16.0	1.2	500	500
VQFP Package Pin Pitch: 0.5mm	VQFP48C	48	9.0	9.0	1.6	1,000	1,500
	VQFP64	64	12.0	12.0		1,000	1,000
	VQFP80	80	14.0	14.0		1,000	1,000
	VQFP100	100	16.0	16.0		500	500

Note: Please check the ROHM website for detailed dimensions.

QFP Packages (With back heat sink)

(Unit: mm)

HTQFP Package (for HTQFP64AV)



	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	back heat sink (mm)	Package (pcs)	
							Tray	Taping
HTQFP Package Pin Pitch: 0.5mm	HTQFP48V	48	9.0	9.0	1.0	4.4×4.4	—	1,500
	HTQFP64AV	64	12.0	12.0		4.3×4.3	—	1,000
	HTQFP64BV		12.0	12.0		6.5×6.5	—	1,000
HTQFP Package Pin Pitch: 0.4mm	HTQFP128UA	128	16.0	16.0	1.2	6.6×6.6	—	900
HQFP Package Pin Pitch: 0.5mm	HQFP144VM	144	22.0	22.0	1.6	6.0×6.0	—	60

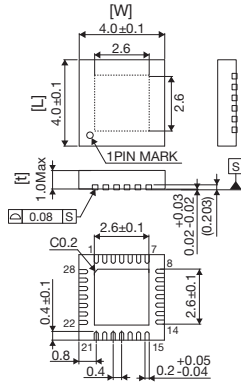
Note: Please check the ROHM website for detailed dimensions.

Note: Please refer package from "LAPIS Technology Packages".

QFN Packages (With back heat sink)

(Unit: mm)

UQFN Package (for UQFN28V4040A)



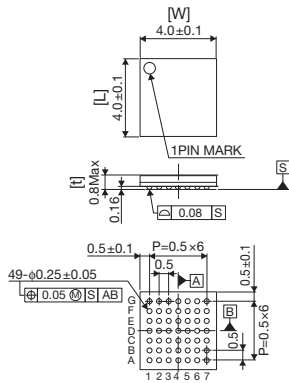
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	back heat sink (mm)	Package (pcs) taping	
SQFN Package Pin Pitch: 0.65mm	SQFN016V4040	16	4.0	4.0	1.0	2.1×2.1	2,500	
UQFN Package Pin Pitch: 0.4mm	UQFN28V4040A	28	4.0	4.0	1.0	2.6×2.6	2,500	
	UQFN036V5050	36	5.0	5.0		2.7×2.7	2,500	
	UQFN040V5050	40	5.0	5.0		3.3×3.3	2,500	
	UQFN056V7070	56	7.0	7.0		4.7×4.7	1,500	
	UQFN56BV7070		7.0	7.0		4.0×4.0	1,500	
	UQFN68CV8080	68	8.0	8.0		4.3×4.3	1,000	
UQFN88MV0100	88	10.0	10.0	7.8×7.8	1,000			
VQFN Package Pin Pitch: 0.5mm	VQFN11X3535A	11	3.5	3.5	0.6	—	2,500	
	VQFN016V3030	16	3.0	3.0	1.0	1.4×1.4	3,000	
	VQFN16FV3030		3.0	3.0		1.4×1.4	3,000	
	VQFN16KV3030		3.0	3.0		1.4×1.4	3,000	
	VQFN16Z3030A		3.0	3.0		0.4	1.8×1.8	4,000
	VQFN20	20	4.2	4.2	0.95	—	2,500	
	VQFN20FV3535		3.5	3.5	1.0	2.05×2.05	2,500	
	VQFN20FV4040		4.0	4.0		2.1×2.1	2,500	
	VQFN20PV3535		3.5	3.5		2.05×2.05	2,500	
	VQFN20QV3535		3.5	3.5		2.05×2.05	2,500	
	VQFN020V4040		4.0	4.0		2.1×2.1	2,500	
	VQFN24FV4040	24	4.0	4.0		1.0	2.4×2.4	2,500
	VQFN24SV4040		4.0	4.0	2.4×2.4		2,500	
	VQFN024V4040		4.0	4.0	2.4×2.4		2,500	
	VQFN28FV5050		5.0	5.0	2.7×2.7		2,500	
	VQFN28SV5050	28	5.0	5.0	1.0	2.7×2.7	2,500	
	VQFN028V5050		5.0	5.0		2.7×2.7	2,500	
	VQFN32FBV050		32	5.0		5.0	3.4×3.4	2,500
	VQFN32FAV050			5.0		5.0	3.4×3.4	2,500
	VQFN32SV5050	5.0		5.0	3.4×3.4	2,500		
	VQFN032V5050	5.0		5.0	3.4×3.4	2,500		
	VQFN36	36	6.2	6.2	0.95	—	2,500	
	VQFN036V6060		6.0	6.0	1.0	3.6×3.6	2,000	
	VQFN40W6060A	40	6.0	6.0	0.8	4.5×4.5	2,000	
	VQFN040V6060		6.0	6.0	1.0	3.7×3.7	2,000	
	VQFN40FV6060		6.0	6.0		4.4×4.4	2,000	
	VQFN48V7070A		48	7.0		7.0	0.9	5.3×5.3
	VQFN48MCV070	7.0		7.0		1.0	5.6×5.6	1,500
	VQFN48FV7070	7.0		7.0	3.2×3.2		1,500	
	VQFN048V7070	7.0		7.0	4.7×4.7		1,500	
VQFN56AV8080	56	8.0	8.0	1.0	3.4×3.4		1,000	
VQFN56FV8080		8.0	8.0		5.5×5.5	1,000		
WQFN Package Pin Pitch: 0.5mm	WQFN12X2520A	12	2.5	2.0	0.5	—	4,000	

Note: Please check the ROHM website for detailed dimensions.

BGA Packages

(Unit: mm)

VBGA Package (for VBGA049W040A)



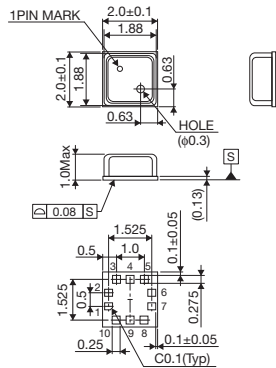
	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	Package (pcs) taping
SBGA Package Pin Pitch: 0.65mm	SBGA072T070A	72	7.0	7.0	1.2	1,500
VBGA Package Pin Pitch: 0.5mm	VBGA048W040	48	4.0	4.0	0.9	2,500
	VBGA049W040A	49	4.0	4.0	0.8	2,500
	VBGA064T050A	64	5.0	5.0	1.2	2,500
	VBGA099W060	99	6.0	6.0	0.9	2,000

Note: Please check the ROHM website for detailed dimensions.

Special Packages

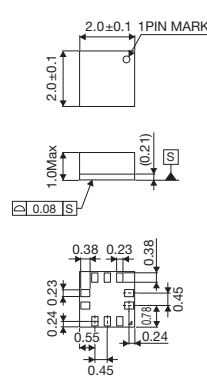
(Unit: mm)

CLGA10V020A



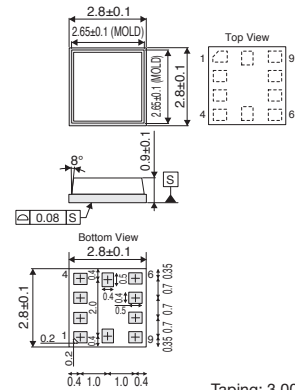
Taping: 3,000pcs

MLGA010V020A



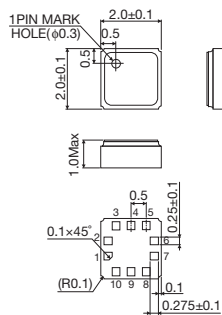
Taping: 2,500pcs

WLGA010V28



Taping: 3,000pcs

RLGA10V020T/ RLGA10VG020T



WL-CSP Packages

(Unit: mm)

VCSP <Pin Pitch: 0.5mm>

VCSP85H	VCSP60N	VCSP50L	VCSP35L
<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs Embossed carrier tape: 3,000pcs</p>

UCSP <Pin Pitch: 0.4mm>

UCSP75M	UCSP55M	UCSP50L	UCSP35L
<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs</p>	<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs Embossed carrier tape: 3,000pcs</p>
UCSP30L	UCSP25L	UCSP16X	
<p>2.8mm square size less than: 3,000pcs 2.81mm square size or more: 2,500pcs Embossed carrier tape: 3,000pcs</p>	<p>Embossed carrier tape: 3,000pcs</p>	<p>Embossed carrier tape: 3,000pcs</p>	

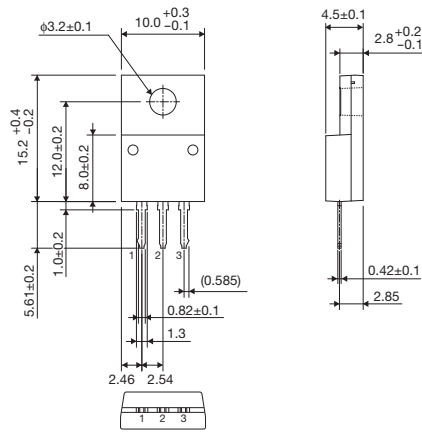
Note: Please refer package from "LAPIS Technology Packages".

Power Packages

(Unit: mm)

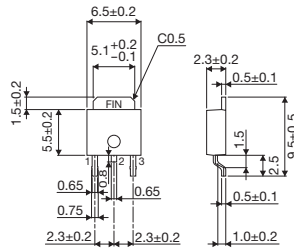
Power-3pin

TO220CP-3



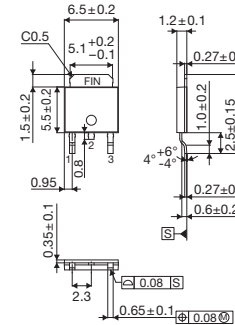
Taping: 500pcs

TO252-3



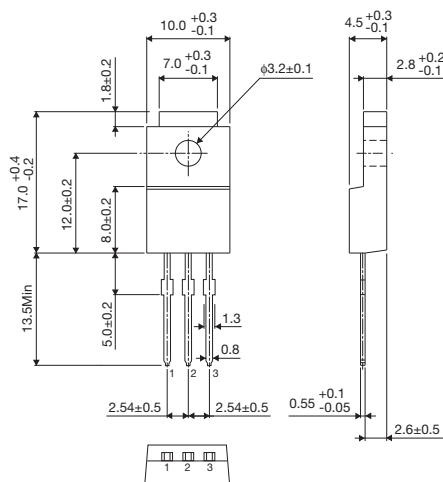
Taping: 2,000pcs

TO252S-3



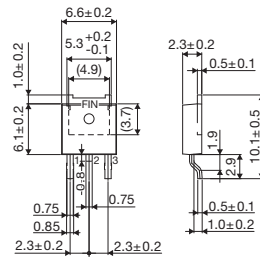
Taping: 2,000pcs

TO220FP-3



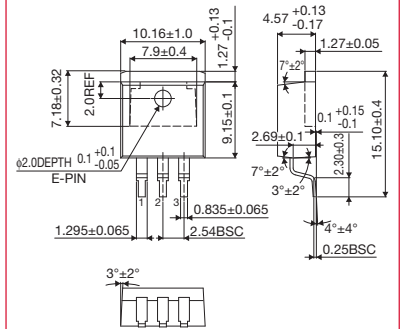
Container tube: 500pcs

TO252-J3



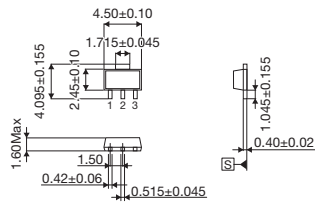
Taping: 2,000pcs

TO263-3



Taping: 500pcs

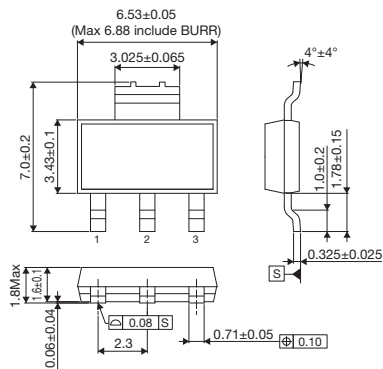
SOT89-3K



Taping: 1,000pcs

Power-4pin

SOT223-4



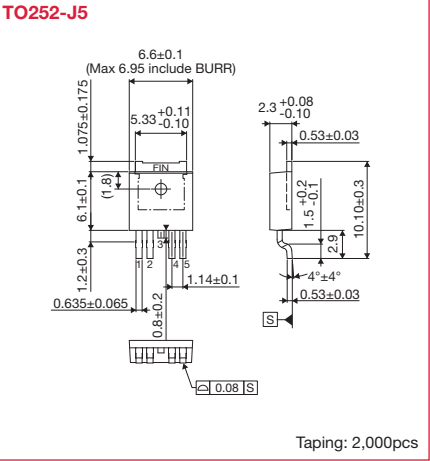
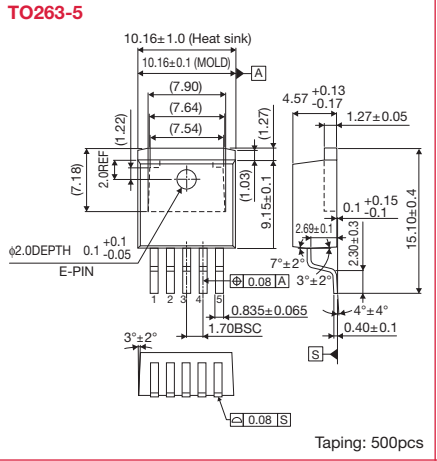
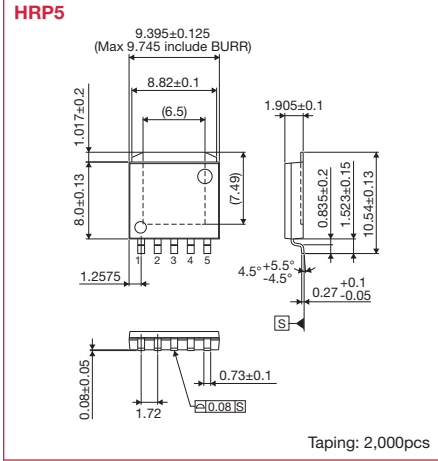
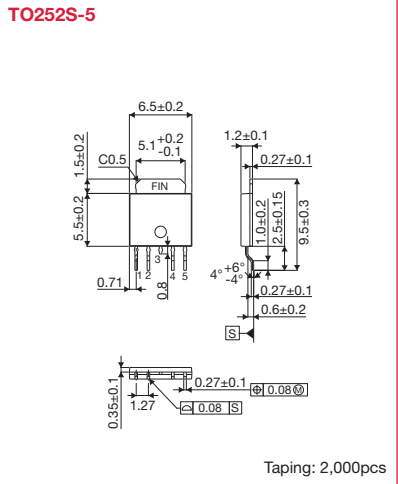
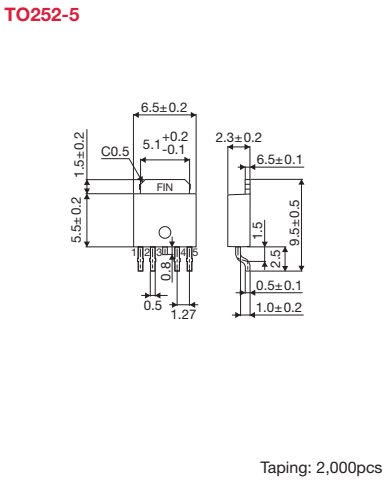
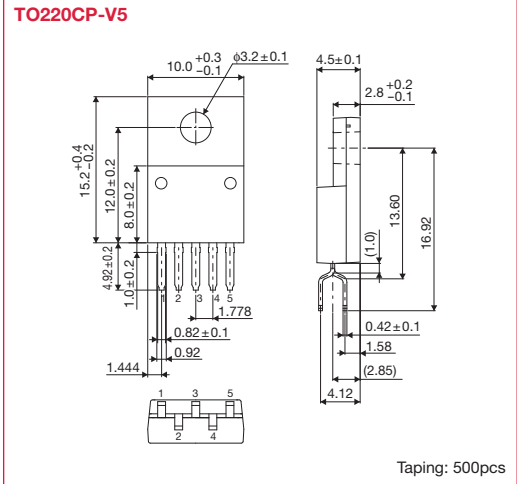
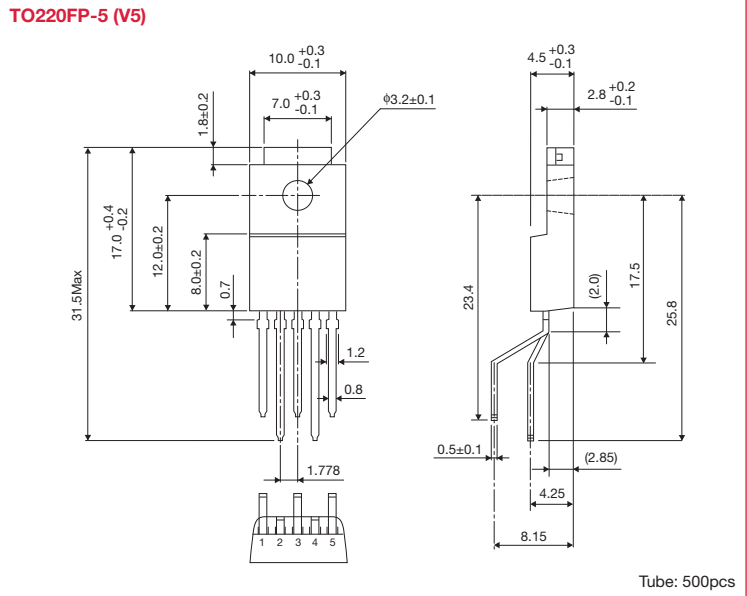
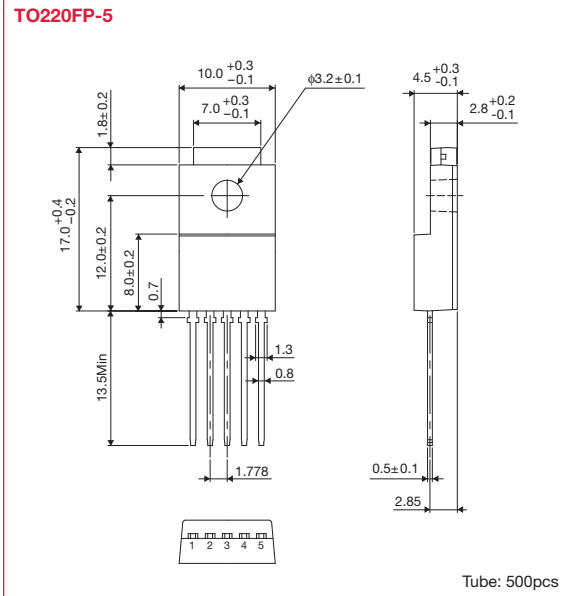
Taping: 2,000pcs

Note: Please refer package from "LAPIS Technology Packages".

Power Packages

(Unit: mm)

Power-5pin



Note: Please refer package from "LAPIS Technology Packages".

IC Packages

LAPIS Technology Packages

Part No. Explanation P.124
SOP Packages P.124
QFP Packages P.125
QFN Packages P.126

WSON Packages P.128
BGA Packages P.128
WL-CSP Packages P.129

These package size are an example. For details, please inquire to the sales.

LAPIS Technology LSI Part No. Explanation

Product names are assigned to our semiconductor devices using the following convention, starting with the character "M".



Device Function
The device functions are classified as follows:

MD	DRAM
MR	P2ROM™, OTPROM
MS	Video Memory
ML	Logic
MK	Module, chip set
MT	Driver

Device Code
The device code expresses a function specific to a device using a combination of numbers and alphanumeric characters.

Character Symbol
The character symbol is added to indicate the modification of an existing product, to emphasize a specification that differs from the standard specification of an existing product, or to indicate a design standard.

Package Symbol
The package symbol expresses the type and lead bending profile of a package in two digits.

Option Classification Symbol
The option classification symbol is used to distinguish between the option code and the package symbol.

Derived Code

The derived code indicates the speed ranking for DRAM products and is used as a derived code for logic products.

Option Code

The option code indicates a symbol that identifies the specification of a product with an option.

The following shows the convention of item name assignment for conventional products.

· The actual package profile is not shown here.



Process Classification

A	Analog
C	Bi-CMOS, multi-chip product

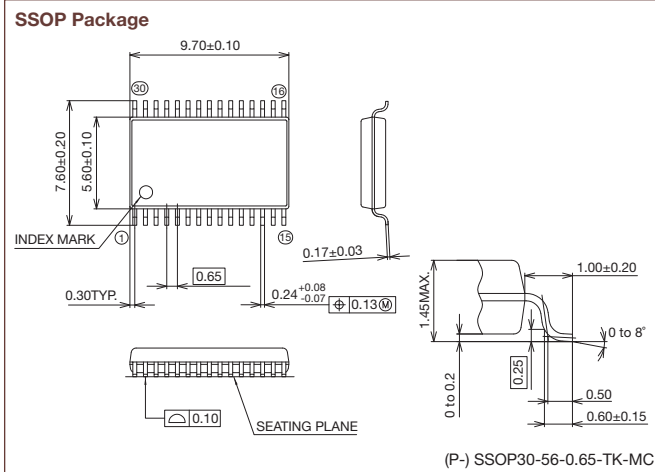
Circuit Category

L	Bipolar logic
M	MOS

Package Profile

SOP Packages

(Unit: mm)



	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	TRAY (pcs)	T&R (pcs)
SSOP Package Pin Pitch: 1mm	SSOP32-430-1.00-XXX	32	12.0	15.95	2.50	1,280	1,000
SSOP Package Pin Pitch: 0.65mm	(P-) SSOP16-0225-0.65-XXX	16	6.4	5.0	1.15	4,760	2,500
	(P-) SSOP30-56-0.65-XXX	30	7.6	9.7	1.45	2,000	2,000
		30	7.6	9.7	1.85	2,000	2,000
TSSOP Package Pin Pitch: 0.65mm	(P-) TSSOP20-0225-0.65-XXX	20	6.4	6.5	1.10	4,160	2,000
VSSOP Package Pin Pitch: 0.65mm	P-VSSOP8-0150-0.65-XXX	8	4.0	2.9	0.90	—	3,000

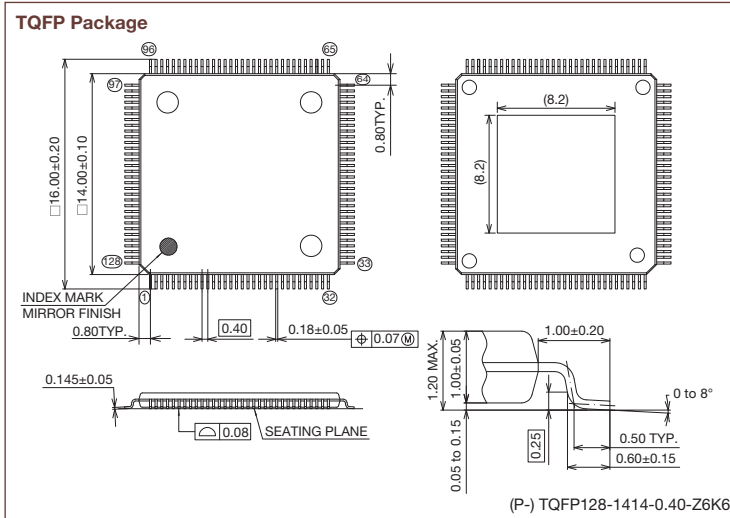
Note1: Please check the LAPIS Technology website for detailed dimensions.

Note2: For suffix shown as "-XXX" in every package profile, suitable optional code should be filled in with, for example on the grounds of the difference of production hub and the difference of internal structure, etc. Please inquire to the sales for details.

These package size are an example. For details, please inquire to the sales.

QFP Packages

(Unit: mm)



QFP

	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	TRAY (pcs)	T&R (pcs)
QFP Package Pin Pitch: 0.8mm	QFP44-P-910-0.80-XXX	44	13.5	14.5	2.25	1,440	1,000
	(P-) QFP64-1414-0.80-XXX	64	17.2	17.2	2.80	840	—
	(P-) QFP80-1420-0.80-XXX	80	19.0	25.0	2.50	600	—
QFP Package Pin Pitch: 0.65mm	(P-) QFP56-910-0.65-XXX	56	13.5	14.5	2.25	1,400	1,000
	(P-) QFP80-1414-0.65-XXX	80	17.2	17.2	3.05	840	—
	(P-) QFP100-1420-0.65-XXX	100	19.0	25.0	2.50	600	—

Note1: Please check the LAPIS Technology website for detailed dimensions.

Note2: For suffix shown as “-XXX” in every package profile, suitable optional code should be filled in with, for example on the grounds of the difference of production hub and the difference of internal structure, etc. Please inquire to the sales for details.

LQFP

	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	TRAY (pcs)	T&R (pcs)
LQFP Package Pin Pitch: 0.8mm	(P-) LQFP32-0707-0.80-XXX	80	9.0	9.0	1.600	2,500	1,000
LQFP Package Pin Pitch: 0.50mm	(P-) LQFP144-2020-0.50-XXX	50	22.0	22.0	1.600	600	—

Note1: Please check the LAPIS Technology website for detailed dimensions.

Note2: For suffix shown as “-XXX” in every package profile, suitable optional code should be filled in with, for example on the grounds of the difference of production hub and the difference of internal structure, etc. Please inquire to the sales for details.

TQFP

	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	TRAY (pcs)	T&R (pcs)
TQFP Package Pin Pitch: 0.80mm	(P-) TQFP32-0707-0.80-XXX	32	9.0	9.0	1.20	2,500	1,000
	(P-) TQFP44-1010-0.80-XXX	44	12.0	12.0	1.20	1,600	1,000
TQFP Package Pin Pitch: 0.65mm	(P-) TQFP52-1010-0.65-XXX	52	12.0	12.0	1.20	1,600	1,000
TQFP Package Pin Pitch: 0.5mm	(P-) TQFP48-0707-0.50-XXX	48	9.0	9.0	1.20	2,500	1,000
	(P-) TQFP64-1010-0.50-XXX	64	12.0	12.0	1.20	1,600	1,000

Note1: Please check the LAPIS Technology website for detailed dimensions.

Note2: For suffix shown as “-XXX” in every package profile, suitable optional code should be filled in with, for example on the grounds of the difference of production hub and the difference of internal structure, etc. Please inquire to the sales for details.

IC Packages

These package size are an example. For details, please inquire to the sales.

QFP Packages

(Unit: mm)

TQFP

	Package	Pin Number (pin)	Length [L] (mm)	Width [W] (mm)	Thickness [t] (mm)	TRAY (pcs)	T&R (pcs)
TQFP Package Pin Pitch: 0.5mm	(P-) TQFP80-1212-0.50-XXX	80	14.0	14.0	1.20	1,190	—
	(P-) TQFP100-1414-0.50-XXX	100	16.0	16.0	1.20	900	—
TQFP Package Pin Pitch: 0.40mm	(P-) TQFP80-1010-0.40-XXX	80	12.0	12.0	1.20	1,600	—
	(P-) TQFP120-1414-0.40-XXX	120	16.0	16.0	1.20	900	—
	(P-) TQFP128-1414-0.40-XXX	128	16.0	16.0	1.20	900	—

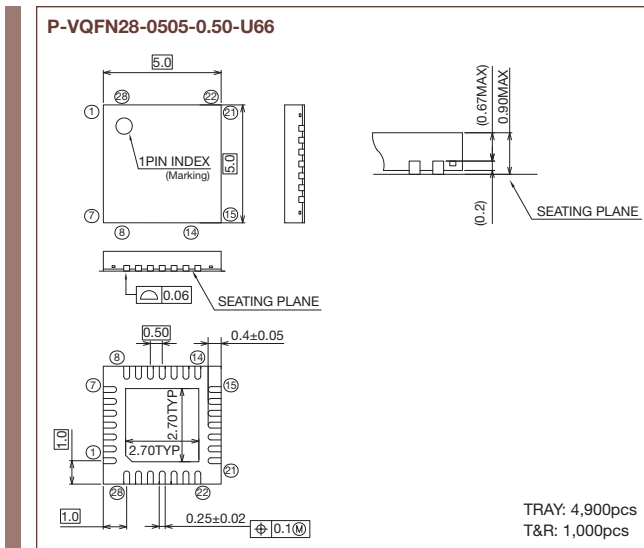
Note1: Please check the LAPIS Technology website for detailed dimensions.

Note2: For suffix shown as "-XXX" in every package profile, suitable optional code should be filled in with, for example on the grounds of the difference of production hub and the difference of internal structure, etc. Please inquire to the sales for details.

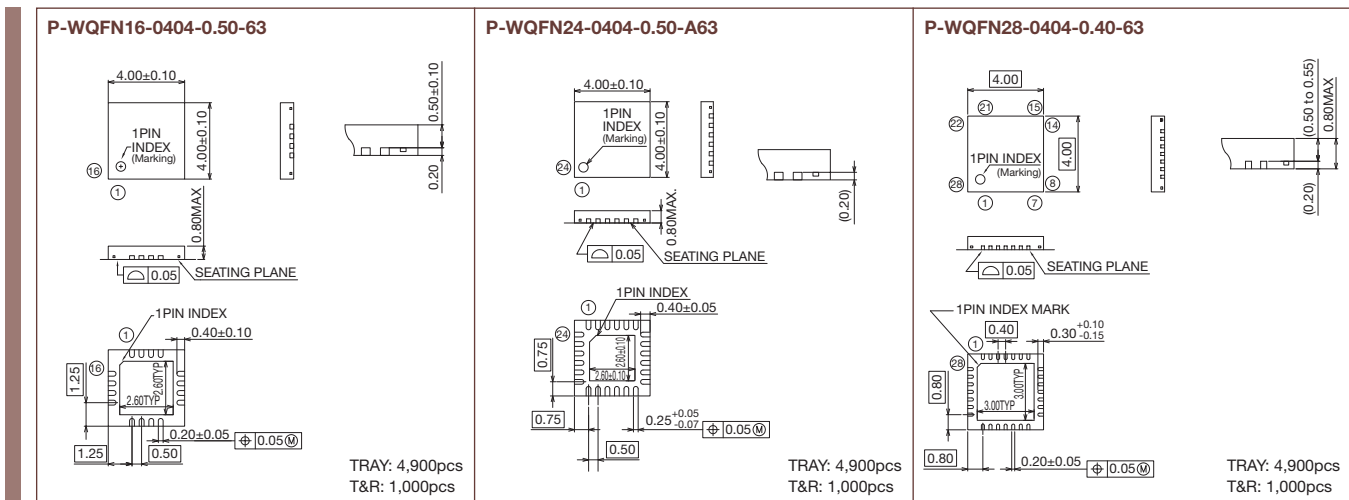
QFN Packages

(Unit: mm)

VQFN



WQFN



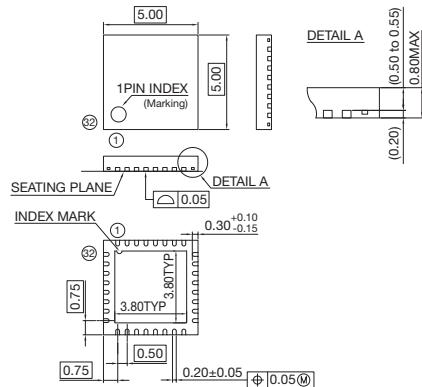
These package size are an example. For details, please inquire to the sales.

QFN Packages

(Unit: mm)

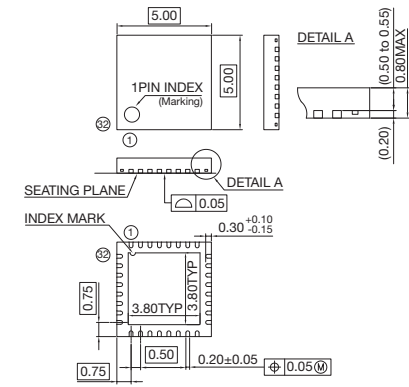
WQFN

P-WQFN32-0505-0.50-A63



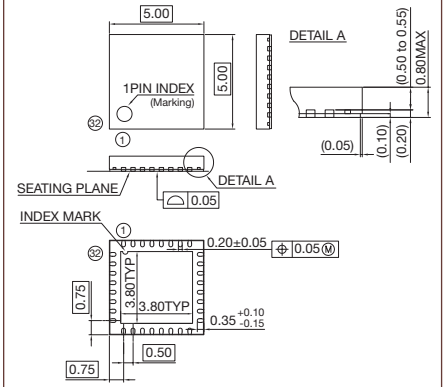
TRAY: 4,030pcs
T&R: 1,000pcs

P-WQFN32-0505-0.50-A63-MC



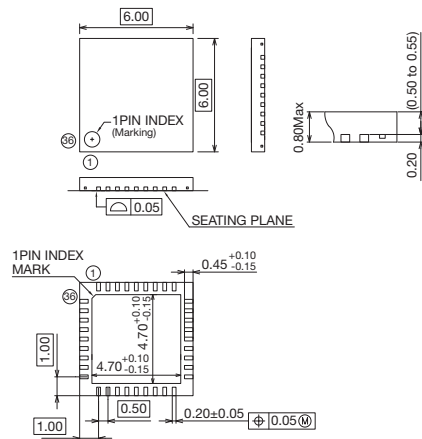
TRAY: 403pcs
T&R: 1,000pcs

P-WQFN32-0505-0.50-W66



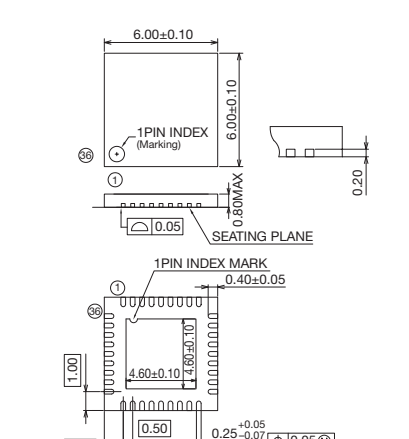
TRAY: 4,030pcs
T&R: 1,000pcs

WQFN36-0606-0.50-A63



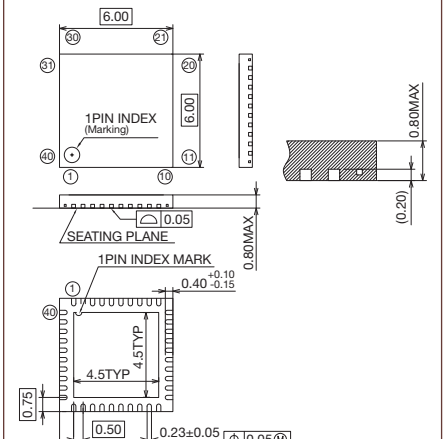
TRAY: 4,900pcs
T&R: 2,000pcs

P-WQFN36-0606-0.50-T63



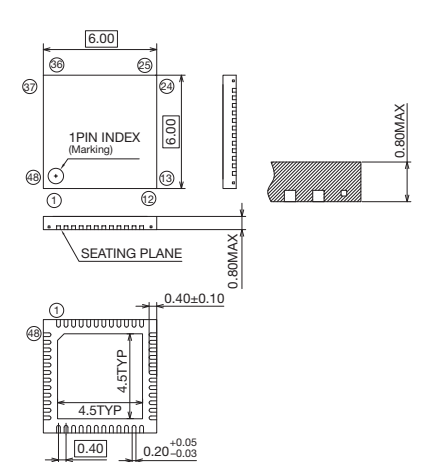
TRAY: 490pcs
T&R: 2,000pcs

P-WQFN40-0606-0.50-63



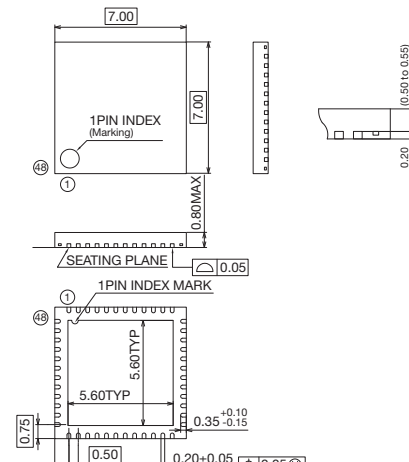
TRAY: 4,900pcs
T&R: 2,500pcs

P-WQFN48-0606-0.40-T63-MC



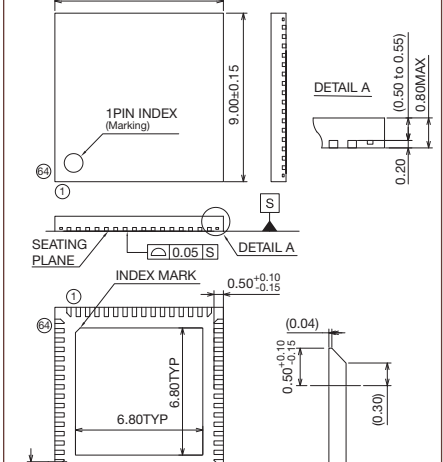
TRAY: —
T&R: 3,000pcs

P-WQFN48-0707-0.50-63



TRAY: 2,500pcs
T&R: 2,000pcs

P-WQFN64-0909-0.50-63



TRAY: 2,600pcs
T&R: 3,000pcs

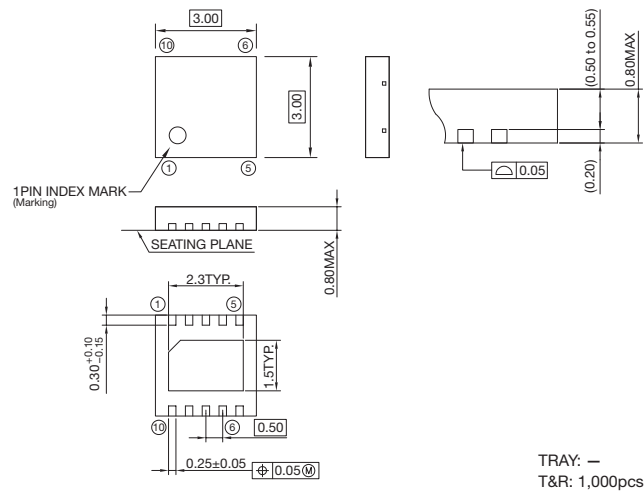
These package size are an example. For details, please inquire to the sales.

WSON Packages

(Unit: mm)

WSON

P-WSON10-0303-0.50-63

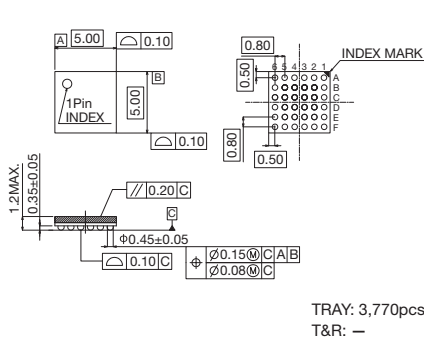


BGA Packages

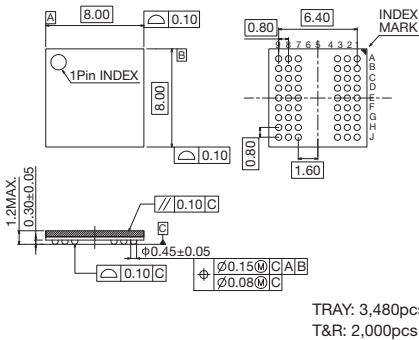
(Unit: mm)

TFBGA

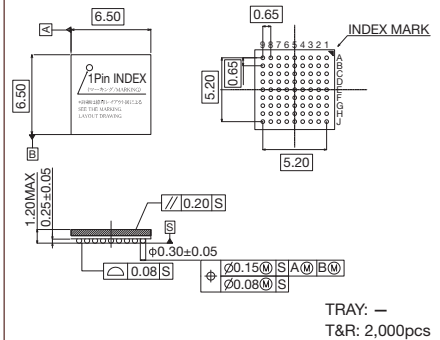
P-TFBGA36-0505-0.80-9



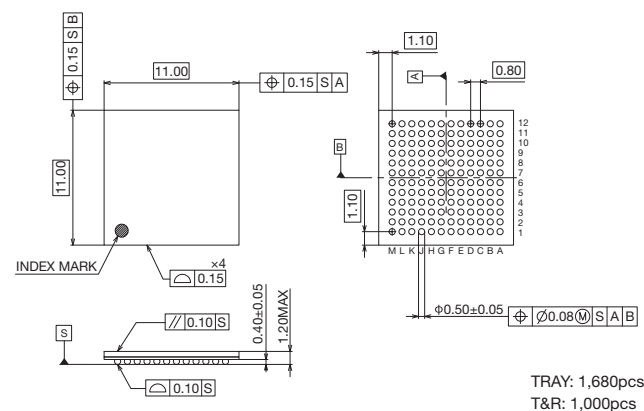
P-TFBGA54-0808-0.80-9



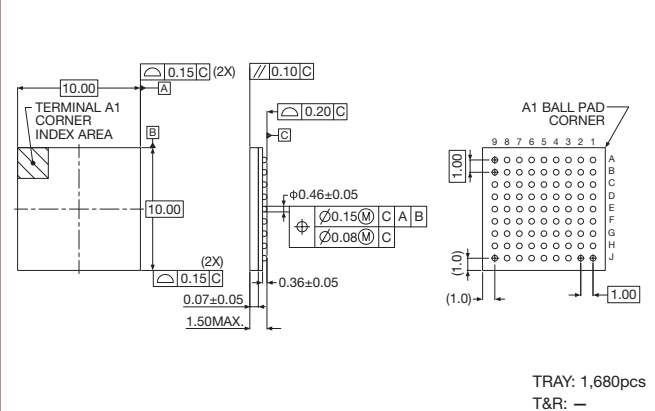
P-TFBGA81-6.5×6.5-0.65-9-MC



P-TFBGA144-1111-0.80-1



P-LBGA81-1010-1.00-1-MC



IC Packages

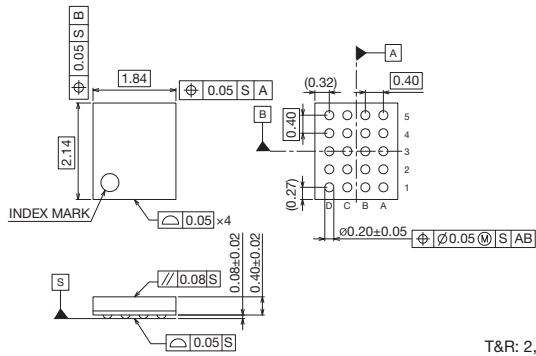
These package size are an example. For details, please inquire to the sales.

WL-CSP Packages

(Unit: mm)

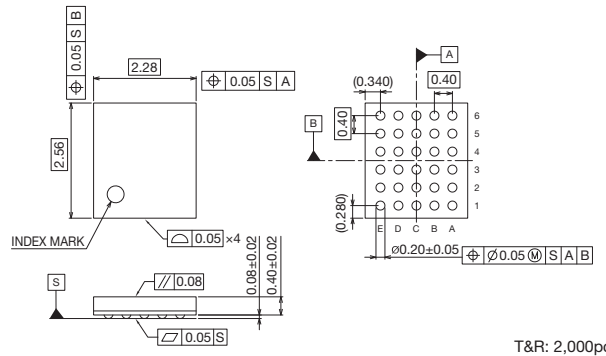
WCSP

S-UFLGA20-1.84×2.14-0.40-W



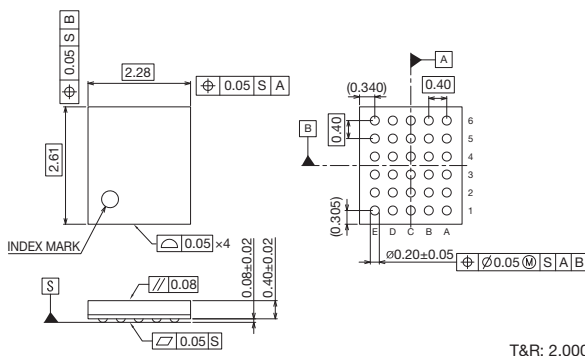
T&R: 2,000pcs

S-UFLGA30-2.28×2.56-0.40-W



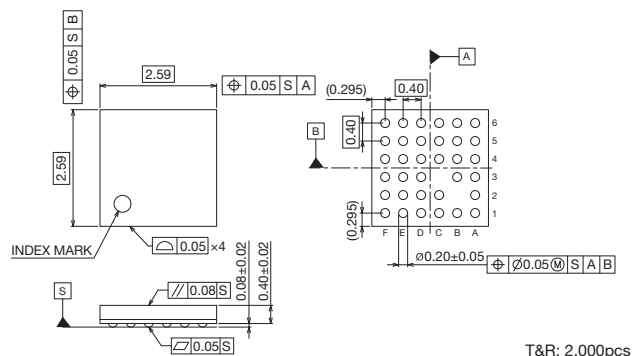
T&R: 2,000pcs

S-UFLGA30-2.28×2.61-0.40-W



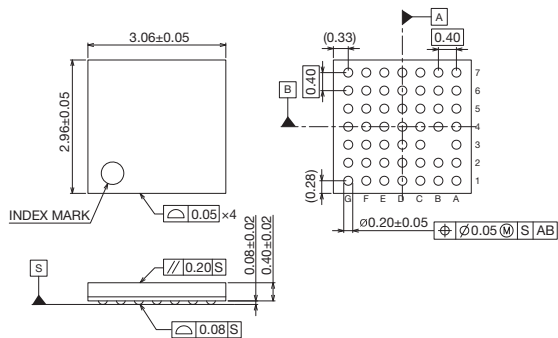
T&R: 2,000pcs

S-UFLGA34-2.59×2.59-0.40-W



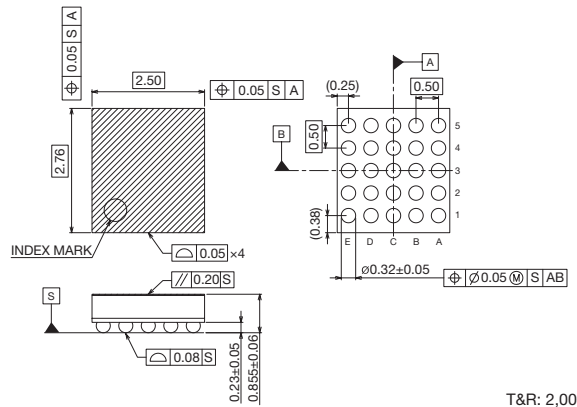
T&R: 2,000pcs

S-UFLGA48-3.06×2.96-0.40-W



T&R: 2,000pcs

S-VFBGA25-2.76×2.50-0.50-W



T&R: 2,000pcs

IC Packages


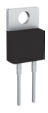
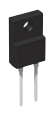
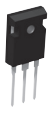

SiC Schottky Barrier Diodes

SiC Schottky Barrier Diodes

P.130


SiC Schottky Barrier Diodes

● Quick Reference for SiC Schottky Barrier Diodes

V _{RM} (V)	I _F (A)	Leaded type				Surface Mounted type					
											
		TO-220AC (TO-220ACP)	TO-220ACG	TO-220FM	TO-247 (TO-247N)	TO-263AB (LPTL)					
650	2	SCS302AH	21				SCS302AJ	13			
	4	SCS304AH	22		SCS304AM	29	SCS304AJ	14			
	6	SCS306AH	23	SCS206AG	42	SCS306AM	30	SCS206AJ SCS206AJHR SCS306AJ	1 7 15		
	8	SCS308AH	24	SCS208AG	43	SCS308AM	31	SCS208AJ SCS208AJHR SCS308AJ	2 8 16		
	10	SCS310AH	25	SCS210AG	44	SCS310AM	32	SCS210AJ SCS210AJHR SCS310AJ	3 9 17		
	12	SCS312AH	26	SCS212AG	45	SCS312AM	33	SCS212AJ SCS212AJHR SCS312AJ	4 10 18		
	15	SCS315AH	27	SCS215AG	46	SCS315AM	34	SCS215AJ SCS215AJHR SCS315AJ	5 11 19		
	20	SCS320AH	28	SCS220AG	47	SCS320AM	35	SCS220AE2 SCS220AE2HR	36 39	SCS220AJ SCS220AJHR SCS320AJ	6 12 20
	30							SCS230AE2 SCS230AE2HR	37 40		
	40							SCS240AE2 SCS240AE2HR	38 41		
1,200	5			SCS205KG	56						
	10			SCS210KG	57		SCS210KE2 SCS210KE2HR	48 52			
	15			SCS215KG	58						
	20			SCS220KG	59		SCS220KE2 SCS220KE2HR	49 53			
	30						SCS230KE2 SCS230KE2HR	50 54			
	40						SCS240KE2 SCS240KE2HR	51 55			

Note: Package is JEDEC code. (): ROHM Packages.

SiC Schottky Barrier Diodes

SiC Schottky Barrier Diodes												
No.	Part No.	Absolute Maximum Ratings (T _J =25°C)				Electrical Characteristics (T _J =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
		V _{RRM} (V)	V _R (V)	I _F (A)	I _{FSM} (A) 10ms	V _F (V) Typ	I _F (A)	I _R (μA) Max	V _R (V)			
1	SCS206AJ	650	650	6	23	1.35	6	120	600	TO-263AB (LPTL)		—
2	SCS208AJ	650	650	8	30	1.35	8	160	600			—
3	SCS210AJ	650	650	10	38	1.35	10	200	600			—
4	SCS212AJ	650	650	12	43	1.35	12	240	600			—
5	SCS215AJ	650	650	15	52	1.35	15	300	600			—
6	SCS220AJ	650	650	20	68	1.35	20	400	600			—
7	SCS206AJHR	650	650	6	23	1.35	6	120	600			YES
8	SCS208AJHR	650	650	8	30	1.35	8	160	600			YES
9	SCS210AJHR	650	650	10	38	1.35	10	200	600			YES
10	SCS212AJHR	650	650	12	43	1.35	12	240	600			YES
11	SCS215AJHR	650	650	15	52	1.35	15	300	600			YES
12	SCS220AJHR	650	650	20	68	1.35	20	400	600			YES
13	SCS302AJ	650	650	2.15	19	1.35	2.15	10.8	650			—
14	SCS304AJ	650	650	4	27	1.35	4	20	650			—
15	SCS306AJ	650	650	6	47	1.35	6	30	650			—
16	SCS308AJ	650	650	8	67	1.35	8	40	650			—
17	SCS310AJ	650	650	10	82	1.35	10	50	650			—
18	SCS312AJ	650	650	12	96	1.35	12	60	650			—
19	SCS315AJ	650	650	15	112	1.35	15	75	650			—
20	SCS320AJ	650	650	20	123	1.35	20	100	650			—
21	SCS302AH	650	650	2.15	19	1.35	2	10.8	650			—
22	SCS304AH	650	650	4	27	1.35	4	20	650	—		
23	SCS306AH	650	650	6	47	1.35	6	30	650	—		
24	SCS308AH	650	650	8	67	1.35	8	40	650	—		
25	SCS310AH	650	650	10	82	1.35	10	50	650	—		
26	SCS312AH	650	650	12	96	1.35	12	60	650	—		
27	SCS315AH	650	650	15	112	1.35	15	75	650	—		
28	SCS320AH	650	650	20	123	1.35	20	100	650	—		
29	SCS304AM	650	650	4	27	1.35	4	20	650	—		
30	SCS306AM	650	650	6	47	1.35	6	30	650	—		
31	SCS308AM	650	650	8	67	1.35	8	40	650	—		
32	SCS310AM	650	650	10	82	1.35	10	50	650	—		
33	SCS312AM	650	650	12	96	1.35	12	60	650	—		
34	SCS315AM	650	650	15	112	1.35	15	75	650	—		
35	SCS320AM	650	650	20	123	1.35	20	100	650	—		
36	SCS220AE2	650	650	10/20*1	38/76*1	1.35	10	200	600	—		
37	SCS230AE2	650	650	15/30*1	52/104*1	1.35	15	300	600	—		
38	SCS240AE2	650	650	20/40*1	67/130*1	1.35	20	400	600	—		
39	SCS220AE2HR	650	650	10/20*1	38/76*1	1.35	10	200	600	YES		
40	SCS230AE2HR	650	650	15/30*1	52/100*1	1.35	15	300	600	YES		
41	SCS240AE2HR	650	650	20/40*1	67/130*1	1.35	20	400	600	YES		
42	SCS206AG	650	650	6	23	1.35	6	120	600	—		
43	SCS208AG	650	650	8	30	1.35	8	160	600	—		
44	SCS210AG	650	650	10	38	1.35	10	200	600	—		
45	SCS212AG	650	650	12	43	1.35	12	240	600	—		
46	SCS215AG	650	650	15	52	1.35	15	300	600	—		
47	SCS220AG	650	650	20	68	1.35	20	400	600	—		
48	SCS210KE2	1,200	1,200	5/10*1	22/45*1	1.4	5	100	1,200	—		
49	SCS220KE2	1,200	1,200	10/20*1	42/84*1	1.4	10	200	1,200	—		
50	SCS230KE2	1,200	1,200	15/30*1	62/120*1	1.4	15	300	1,200	—		
51	SCS240KE2	1,200	1,200	20/40*1	78/150*1	1.4	20	400	1,200	—		
52	SCS210KE2HR	1,200	1,200	5/10*1	22/45*1	1.4	5	100	1,200	YES		
53	SCS220KE2HR	1,200	1,200	10/20*1	42/84*1	1.4	10	200	1,200	YES		
54	SCS230KE2HR	1,200	1,200	15/30*1	62/120*1	1.4	15	300	1,200	YES		
55	SCS240KE2HR	1,200	1,200	20/40*1	78/150*1	1.4	20	400	1,200	YES		
56	SCS205KG	1,200	1,200	5	23	1.4	5	100	1,200	—		
57	SCS210KG	1,200	1,200	10	42	1.4	10	200	1,200	—		
58	SCS215KG	1,200	1,200	15	62	1.4	15	300	1,200	—		
59	SCS220KG	1,200	1,200	20	79	1.4	20	400	1,200	—		

Note: Package is JEDEC code. (): ROHM Packages.

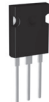
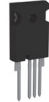
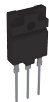

*1 (Per Leg/Device)

SiC MOSFETs

SiC MOSFETs P.133

SiC MOSFETs

● Quick Reference for SiC MOSFETs

V _{DSS} (V)	R _{DS(on)} (mΩ)	Leaded type			Surface Mounted type		
		 TO-247 (TO-247N)	 TO-247-4L <C15>	 TO-3PFM	 TO-263-7L		
650	17	SCT3017AL SCT3017ALHR	10 11				
	22	SCT3022AL SCT3022ALHR	12 13				
	30	SCT3030AL SCT3030ALHR	14 15	SCT3030AR <i>New</i> SCT3030ARHR	32 33		SCT3030AW7 44
	60	SCT3060AL SCT3060ALHR	16 17	SCT3060AR <i>New</i> SCT3060ARHR	34 35		SCT3060AW7 45
	80	SCT3080AL SCT3080ALHR	18 19	SCT3080AR <i>New</i> SCT3080ARHR	36 37		SCT3080AW7 46
	120	SCT3120AL	20				SCT3120AW7 47
750	13	<i>New</i> SCT4013DE	52	<i>New</i> SCT4013DR	58		<i>New</i> SCT4013DW7 64
	26	<i>New</i> SCT4026DE <i>New</i> SCT4026DEHR	53 70	<i>New</i> SCT4026DR <i>New</i> SCT4026DRHR	59 74		<i>New</i> SCT4026DW7 <i>New</i> SCT4026DW7HR 65 78
	45	<i>New</i> SCT4045DE <i>New</i> SCT4045DEHR	54 71	<i>New</i> SCT4045DR <i>New</i> SCT4045DRHR	60 75		<i>New</i> SCT4045DW7 <i>New</i> SCT4045DW7HR 66 79
1,200	18	<i>New</i> SCT4018KE	55	<i>New</i> SCT4018KR	61		<i>New</i> SCT4018KW7 67
	22	SCT3022KL SCT3022KLHR	21 22				
	30	SCT3030KL SCT3030KLHR	23 24				
	36	<i>New</i> SCT4036KE <i>New</i> SCT4036KEHR	56 72	<i>New</i> SCT4036KR <i>New</i> SCT4036KRHR	62 76		<i>New</i> SCT4036KW7 68
	40	SCT3040KL SCT3040KLHR	25 26	SCT3040KR <i>New</i> SCT3040KRHR	38 39		SCT3040KW7 48
	62	<i>New</i> SCT4062KE <i>New</i> SCT4062KEHR	57 73	<i>New</i> SCT4062KR <i>New</i> SCT4062KRHR	63 77		<i>New</i> SCT4062KW7 <i>New</i> SCT4062KW7HR 69 80
	80	SCT2080KE SCT2080KEHR SCT3080KL SCT3080KLHR	1 2 27 28	SCT3080KR <i>New</i> SCT3080KRHR	40 41		SCT3080KW7 49
	105	SCT3105KL SCT3105KLHR	29 30	SCT3015KR <i>New</i> SCT3015KRHR	42 43		SCT3105KW7 50
	160	SCT2160KE SCT2160KEHR SCT3160KL	3 4 31				SCT3160KW7 51
	280 450	SCT2280KE SCT2280KEHR SCT2450KE SCT2450KEHR	5 6 7 8				
1,700	1,150 750			SCT2H12NZ	9		

Note: Package is JEDEC code. (): ROHM Package. < > is Packing code.

SiC MOSFETs

SiC MOSFETs

2nd Generation (Planar type)												
No.	Part No.	Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _C =25°C)	R _{DS(on)} Typ (mΩ)	Q _g Typ (nC)		Package	Automotive Grade AEC-Q101		
						V _{GS} =18V	V _{GS} =18V	Drive Voltage (V)				
1	SCT2080KE	N	1,200	40	262	80	106	18	TO-247 (TO-247N)	—		
2	SCT2080KEHR	N		40	262	80	106	18		YES		
3	SCT2160KE	N		22	165	160	62	18		—		
4	SCT2160KEHR	N		22	165	160	62	18		YES		
5	SCT2280KE	N		14	108	280	36	18		—		
6	SCT2280KEHR	N		14	108	280	36	18		YES		
7	SCT2450KE	N		10	85	450	27	18		—		
8	SCT2450KEHR	N		10	85	450	27	18		YES		
9	SCT2H12NZ	N	1,700	3.7	35	1,150	14	18	TO-3PFM	—		
3rd Generation (Trench type)												
10	SCT3017AL	N	650	118	427	17	172	18	TO-247 (TO-247N)	—		
11	SCT3017ALHR	N		118	427	17	172	18		YES		
12	SCT3022AL	N		93	339	22	133	18		—		
13	SCT3022ALHR	N		93	339	22	133	18		YES		
14	SCT3030AL	N		70	262	30	104	18		—		
15	SCT3030ALHR	N		70	262	30	104	18		YES		
16	SCT3060AL	N		39	165	60	58	18		—		
17	SCT3060ALHR	N		39	165	60	58	18		YES		
18	SCT3080AL	N		30	134	80	48	18		—		
19	SCT3080ALHR	N		30	134	80	48	18		YES		
20	SCT3120AL	N		21	103	120	38	18		—		
21	SCT3022KL	N		1,200	95	427	22	178		18	TO-247-4L <C15>	—
22	SCT3022KLHR	N			95	427	22	178		18		YES
23	SCT3030KL	N			72	339	30	131		18		—
24	SCT3030KLHR	N			72	339	30	131		18		YES
25	SCT3040KL	N			55	262	40	107		18		—
26	SCT3040KLHR	N			55	262	40	107		18		YES
27	SCT3080KL	N			31	165	80	60		18		—
28	SCT3080KLHR	N	31		165	80	60	18	YES			
29	SCT3105KL	N	24		134	105	51	18	—			
30	SCT3105KLHR	N	24		134	105	51	18	YES			
31	SCT3160KL	N	17		103	160	42	18	—			
32	SCT3030AR	N	650		70	262	30	104	18	TO-247-4L <C15>		—
33	New SCT3030ARHR	N		70	262	30	104	18	YES			
34	SCT3060AR	N		39	165	60	58	18	—			
35	New SCT3060ARHR	N		39	165	60	58	18	YES			
36	SCT3080AR	N		30	134	80	48	18	—			
37	New SCT3080ARHR	N		30	134	80	48	18	YES			
38	SCT3040KR	N	1,200	55	262	40	107	18	TO-263-7L	—		
39	New SCT3040KRHR	N		55	262	40	107	18		YES		
40	SCT3080KR	N		31	165	80	60	18		—		
41	New SCT3080KRHR	N		31	165	80	60	18		YES		
42	SCT3105KR	N		24	134	105	51	18		—		
43	New SCT3105KRHR	N	24	134	105	51	18	YES				
44	SCT3030AW7	N	650	70	267	30	104	18	TO-263-7L	—		
45	SCT3060AW7	N		38	159	60	58	18		—		
46	SCT3080AW7	N		29	125	80	48	18		—		
47	SCT3120AW7	N	21	100	120	38	18	—				
48	SCT3040KW7	N	1,200	56	267	40	107	18	TO-263-7L	—		
49	SCT3080KW7	N		30	159	80	60	18		—		
50	SCT3105KW7	N		23	125	105	51	18		—		
51	SCT3160KW7	N		17	100	160	42	18		—		

Note: Package is JEDEC code. (): ROHM Package. < > is Packing code.

4th Generation (Trench type)										
No.	Part No.	Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _C =25°C)	R _{DS(on)} Typ (mΩ)	Qg Typ (nC)		Package	Automotive Grade AEC-Q101
						V _{GS} =18V	V _{GS} =18V	Drive Voltage (V)		
52	<i>New</i> SCT4013DE	N	750	105	312	13	170	15 to 18	TO-247 (TO-247N)	—
53	<i>New</i> SCT4026DE	N		56	176	26	94	15 to 18		—
54	<i>New</i> SCT4045DE	N		34	115	45	63	15 to 18		—
55	<i>New</i> SCT4018KE	N	1,200	81	312	18	170	15 to 18		—
56	<i>New</i> SCT4036KE	N		43	176	36	91	15 to 18		—
57	<i>New</i> SCT4062KE	N		26	115	62	64	15 to 18		—
58	<i>New</i> SCT4013DR	N	750	105	312	13	170	15 to 18	TO-247-4L <C15>	—
59	<i>New</i> SCT4026DR	N		56	176	26	94	15 to 18		—
60	<i>New</i> SCT4045DR	N		34	115	45	63	15 to 18		—
61	<i>New</i> SCT4018KR	N	1,200	81	312	18	170	15 to 18		—
62	<i>New</i> SCT4036KR	N		43	176	36	91	15 to 18		—
63	<i>New</i> SCT4062KR	N		26	115	62	64	15 to 18		—
64	<i>New</i> SCT4013DW7	N	750	98	267	13	170	15 to 18	TO-263-7L	—
65	<i>New</i> SCT4026DW7	N		51	150	26	94	15 to 18		—
66	<i>New</i> SCT4045DW7	N		31	93	45	63	15 to 18		—
67	<i>New</i> SCT4018KW7	N	1,200	75	267	18	170	15 to 18		—
68	<i>New</i> SCT4036KW7	N		40	150	36	91	15 to 18		—
69	<i>New</i> SCT4062KW7	N		24	93	62	64	15 to 18		—
70	<i>New</i> SCT4026DEHR	N	750	56	176	26	94	15 to 18	TO-247 (TO-247N)	YES
71	<i>New</i> SCT4045DEHR	N		34	115	45	63	15 to 18		YES
72	<i>New</i> SCT4036KEHR	N		1,200	43	176	36	91		15 to 18
73	<i>New</i> SCT4062KEHR	N	26		115	62	64	15 to 18		YES
74	<i>New</i> SCT4026DRHR	N	750		56	176	26	94		15 to 18
75	<i>New</i> SCT4045DRHR	N		34	115	45	63	15 to 18		YES
76	<i>New</i> SCT4036KRHR	N		1,200	43	176	36	91	15 to 18	YES
77	<i>New</i> SCT4062KRHR	N	26		115	62	64	15 to 18	YES	
78	<i>New</i> SCT4026DW7HR	N	750		51	150	26	94	15 to 18	TO-247-4L <C15>
79	<i>New</i> SCT4045DW7HR	N		31	93	45	63	15 to 18	YES	
80	<i>New</i> SCT4062KW7HR	N		24	93	62	64	15 to 18	YES	

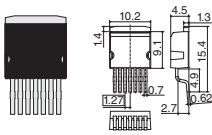
Note: Package is JEDEC code. (): ROHM Package. < > is Packing code.

SiC MOSFETs

●Dimensions (Unit: mm)

Surface Mounted type

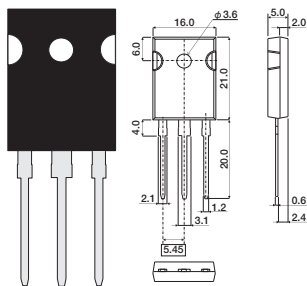
TO-263-7L



Each lead has same dimensions

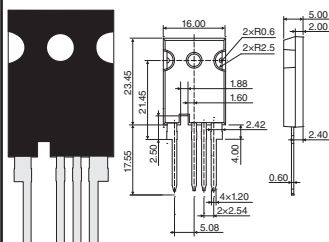
Leaded type

TO-247 (TO-247N)



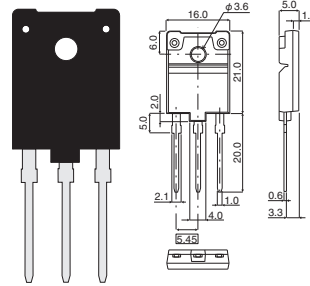
Each lead has same dimensions

TO-247-4L <C15>



Each lead has same dimensions

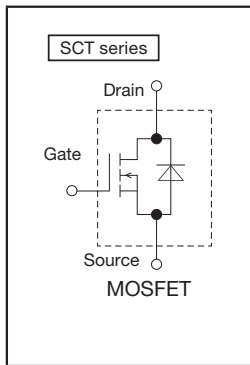
TO-3PFM



Each lead has same dimensions

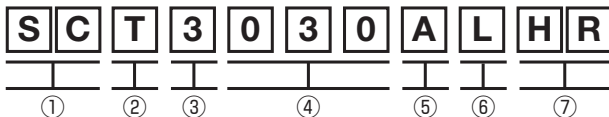
Note: Package is JEDEC code. (): ROHM Package. < > is Packing code.

●Internal Circuit



●Part No. Explanation

●MOSFET Part No. Explanation



- ① SiC Discrete Device
- ② T → MOSFET
- ③ Generation
- ④ ON-resistance[mΩ]
080=80mΩ
H12=1.2Ω
- ⑤ Rated Voltage A → 650V
D → 750V
K → 1,200V
N → 1,700V
- ⑥ Package E, L → TO-247 (TO-247N)
Z → TO-3PFM
R → TO-247-4L
W7 → TO-263-7L
- ⑦ Automotive Grade

●Packing Specifications

Package	Code	Packaging Style	Basic Ordering Unit (pcs)
TO-263-7L	TL	Embossed Tape	1,000
TO-247 (TO-247N)	C11	Tube	30
TO-247-4L	C15	Tube	30
TO-3PFM	C11	Tube	30

Note: Package is JEDEC code. (): ROHM Package.

Full SiC Power Modules

Full SiC Power Modules

P.137

Full SiC Power Modules

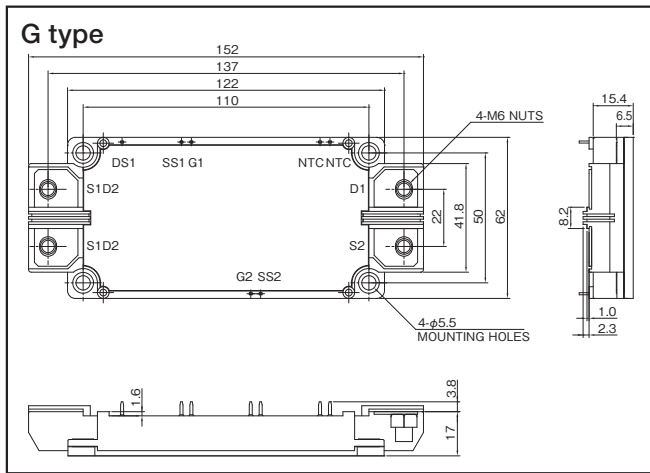
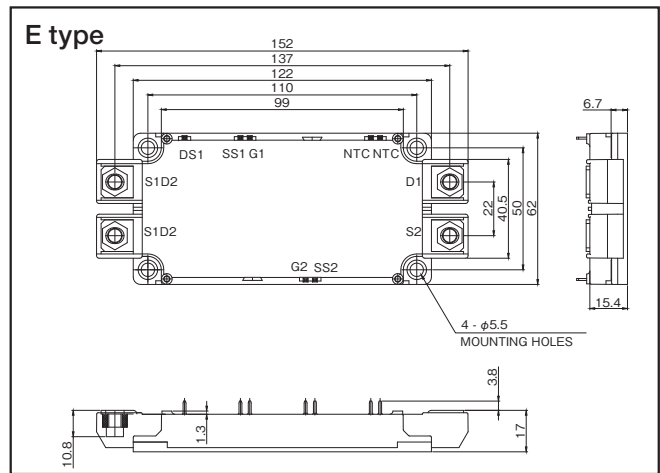
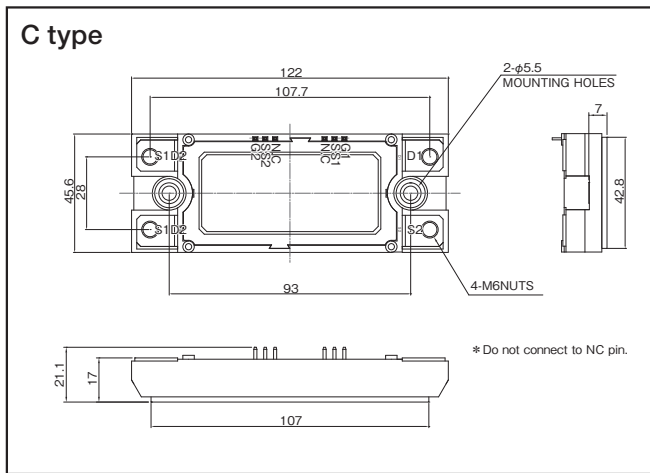
● Quick Reference for Full SiC Power Modules

V _{DSS} (V)	R _{DS(on)} (mΩ)	Case type		
		C type	E type	G type
1,200	34	BSM080D12P2C008	9	
	20	BSM120D12P2C005 BSM120C12P2C201	10 1	
	12.8	BSM180D12P2C101	8	
	12.2			BSM180C12P2E202 BSM180D12P2E002
	10	BSM180D12P3C007 BSM180C12P3C202	11 2	
	7.3			BSM300D12P2E001
	6.3			BSM300C12P3E201 BSM300C12P3E301
	5.75			
	5.55			BSM300D12P3E005
	4.5			
	4			
	3.3			
	3			
	2.7			
1,700	8			BSM250D17P2E004

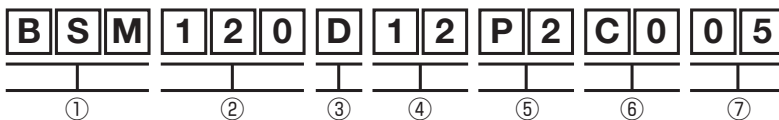
Full SiC Power Modules									
No.	Part No.	Absolute Maximum Ratings (T _J =25°C)						Package	Internal Circuit
		V _{DSS} (V)	R _{DS(on)} (mΩ)	I _D (A)	T _J (°C)	T _{stg} (°C)	Visol (V) AC 1min		
Boost chopper/Step down chopper type									
1	BSM120C12P2C201	1,200	20	120	-40 to +175	-40 to +125	2,500	C type	
2	BSM180C12P3C202		10	180	-40 to +175	-40 to +125	2,500		
3	BSM180C12P2E202		12.2	180	-40 to +175	-40 to +125	2,500	E type	
4	BSM300C12P3E201		6.3	300	-40 to +175	-40 to +125	2,500		
5	BSM400C12P3G202		4.5	400	-40 to +175	-40 to +125	2,500	G type	
6	BSM600C12P3G201		3	600	-40 to +175	-40 to +125	2,500		
7	BSM300C12P3E301		6.3	300	-40 to +175	-40 to +125	2,500	E type	
Half bridge type									
8	BSM180D12P2C101	1,200	12.8	180	-40 to +175	-40 to +125	2,500	C type	
9	BSM080D12P2C008		34	80	-40 to +175	-40 to +125	2,500		
10	BSM120D12P2C005		20	120	-40 to +175	-40 to +125	2,500	E type	
11	BSM180D12P3C007		10	180	-40 to +175	-40 to +125	2,500		
12	New BSM300D12P4G101		4	300	-40 to +175	-40 to +125	2,500	G type	
13	New BSM450D12P4G102		3.3	450	-40 to +175	-40 to +125	2,500		
14	New BSM600D12P4G103		2.7	600	-40 to +175	-40 to +125	2,500	E type	
15	BSM180D12P2E002		12.2	180	-40 to +175	-40 to +125	2,500		
16	BSM300D12P2E001		7.3	300	-40 to +175	-40 to +125	2,500	G type	
17	BSM300D12P3E005		5.55	300	-40 to +175	-40 to +125	2,500		
18	BSM400D12P2G003		5.75	400	-40 to +175	-40 to +125	2,500	E type	
19	BSM400D12P3G002		4.5	400	-40 to +175	-40 to +125	2,500		
20	BSM600D12P3G001		3	600	-40 to +175	-40 to +125	2,500	G type	
21	BSM250D17P2E004		1,700	8	250	-40 to +175	-40 to +125		3,400

Full SiC Power Modules

●Dimensions (Unit: mm)



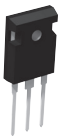
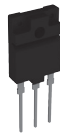
●Part No. Explanation



- ① SiC Power Module
- ② Rated Current
- ③ C → Entering 1 circuit
D → Entering 2 circuit
- ④ Breakdown Voltage
Example 12 → 1,200V
- ⑤ Device type
P2 2nd generation SiC MOSFET
P3 3rd generation SiC MOSFET
- ⑥ Case type
- ⑦ Additional Number

Field Stop Trench IGBT

● Quick Reference for Field Stop Trench IGBT Standard type


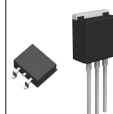




Series	V _{GES} (V)	I _C (A)	Package							
			 TO-247N/TO-247GE				 TO-3PFM			
			IGBT Single		Built-in Diode*		IGBT Single		Built-in FRD	
RGTH series (High speed switching)	650	20	RGTH40TS65	13	RGTH40TS65D	46	RGTH40TK65	22	RGTH40TK65D	63
		25	RGTH50TS65	14	RGTH50TS65D	47	RGTH50TK65	23	RGTH50TK65D	64
		30	RGTH60TS65	15	RGTH60TS65D	48	RGTH60TK65	24	RGTH60TK65D	65
		40	RGTH80TS65	16	RGTH80TS65D	49	RGTH80TK65	25	RGTH80TK65D	66
		50	RGTH00TS65	17	RGTH00TS65D	50	RGTH00TK65	26	RGTH00TK65D	67
RGWS series (High speed SW, cost effective)	650	30	New RGWS60TS65	18	New RGWS60TS65D	51				
		40	New RGWS80TS65	19	New RGWS80TS65D	52				
		50	New RGWS00TS65	20	New RGWS00TS65D	53				
		60	New RGWSX2TS65	21	New RGWSX2TS65D	54				
RGW series (High speed fast switching)	650	20	RGW40TS65	5	RGW40TS65D	55	RGW40TK65	27	RGW40TK65D	68
		25	RGW50TS65	6	RGW50TS65D	56	RGW50TK65	28	RGW50TK65D	69
		30	RGW60TS65HR RGW60TS65	1 7	RGW60TS65CHR RGW60TS65DHR RGW60TS65EHR RGW60TS65D	34 37 38 57	RGW60TK65	29	RGW60TK65D	70
		40	RGW80TS65HR RGW80TS65	2 8	RGW80TS65CHR RGW80TS65DHR RGW80TS65EHR RGW80TS65D	35 39 40 58	RGW80TK65	30	RGW80TK65D RGW80TK65E	71 72
		50	RGW00TS65HR RGW00TS65	3 9	RGW00TS65CHR RGW00TS65DHR RGW00TS65EHR RGW00TS65D	36 41 42 59	RGW00TK65	31	RGW00TK65D	73
		75	RGWX5TS65HR RGWX5TS65	4 10	RGWX5TS65DHR RGWX5TS65EHR RGWX5TS65D	43 44 60				
RGCL series (Low V _{CE(sat)})	600	30	RGCL60TS60	11	RGCL60TS60D	61	RGCL60TK60	32	RGCL60TK60D	74
		40	RGCL80TS60	12	RGCL80TS60D	62	RGCL80TK60	33	RGCL80TK60D	75
RGC series (RC-IGBT)	1,800	40			RGC80TSX8R	45				

Note1: Package is JEDEC code.

Note2: *RGW60TS65CHR, RGW80TS65CHR and RGW00TS65CHR are Built-in SiC Schottky Barrier Diode. The other products are Built-in Fast Recovery Diode.

Field Stop Trench IGBT

● Quick Reference for Field Stop Trench IGBT
SCSOA Guaranteed type

Series	V _{CES} (V)	I _C (A)	Package													
																
			TO-252	TO-263S (LPDS)/ TO-262	TO-263L (LPDL)		TO-220NFM	TO-247N/TO-247GE		TO-3PFM						
			Built-in FRD	Built-in FRD	IGBT Single	Built-in FRD	Built-in FRD	IGBT Single	Built-in FRD	IGBT Single	Built-in FRD					
RGTV series (tsc 2μsec Min)	650	30							RGTV60TS65	87	RGTV60TS65D	128	RGTV60TK65	92	RGTV60TK65D	138
		40							RGTV80TS65	88	RGTV80TS65D	129	RGTV80TK65	93	RGTV80TK65D	139
		50							RGTV00TS65	89	RGTV00TS65D	130	RGTV00TK65	94	RGTV00TK65D	140
		60							RGTVX2TS65	90	RGTVX2TS65D	131				
		80							RGTVX6TS65	91	RGTVX6TS65D	132				
RGT series (tsc 5μsec Min)	650	4	RGT8BM65D	95	RGT8NS65D	97		RGT8NL65D	103	RGT8TM65D	109					
		8	RGT16BM65D	96	RGT16NS65D	98		RGT16NL65D	104	RGT16TM65D	110					
		10			RGT20NS65D	99	RGT20NL65	76	RGT20NL65D	105	RGT20TM65D	111				
		15			RGT30NS65D	100		RGT30NL65D	106	RGT30TM65D	112					
		20			RGT40NS65D	101		RGT40NL65D	107	RGT40TM65D	113		RGT40TS65D	133		
		25			RGT50NS65D	102		RGT50NL65D	108	RGT50TM65D	114		RGT50TS65D	134		
		30											RGT60TS65D	135		
		40											RGT80TS65D	136		
		50											RGT00TS65D	137		
RGS series (tsc 8μsec Min)	650	30									RGS60TS65HR	77	RGS60TS65DHR	115		
		40									RGS80TS65HR	78	RGS80TS65DHR	116		
		50									RGS00TS65HR	79	RGS00TS65DHR	117		
		75									RGSX5TS65HR	80	RGSX5TS65DHR	119	RGSX5TS65EHR	120
RGS series (tsc 10μsec Min)	1,200	15									RGS30TSX2HR	81	RGS30TSX2DHR	122		
											RGS30TSX2	82	RGS30TSX2D	123		
		25									RGS50TSX2HR	83	RGS50TSX2DHR	124		
										RGS50TSX2	84	RGS50TSX2D	125			
										RGS80TSX2HR	85	RGS80TSX2DHR	126			
										RGS80TSX2	86	RGS80TSX2D	127			

Note: Package is JEDEC code. (): ROHM Packages.

Field Stop Trench IGBT

Standard type

Field Stop Trench IGBT															
IGBT Single type															
No.	Part No.	V _{CE(S)} (V)	I _C (A)		P _D (W)	V _{CE(sat)}		t _{sc} Min (μsec)	I _{F(Diode)} (A)		V _{F(Diode)}		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
			Tc=25°C	Tc=100°C		Typ (V)	I _C (A)		Tc=25°C	Tc=100°C	Typ (V)	I _F (A)			
1	RGW60TS65HR	650	60	30	178	1.5	30	—	—	—	—	—	TO-247N		YES
2	RGW80TS65HR	650	78	40	214	1.5	40	—	—	—	—	—			YES
3	RGW00TS65HR	650	96	50	254	1.5	50	—	—	—	—	—			YES
4	RGWX5TS65HR	650	132	75	348	1.5	75	—	—	—	—	—			YES
5	RGW40TS65	650	40	20	136	1.5	20	—	—	—	—	—			—
6	RGW50TS65	650	50	25	156	1.5	25	—	—	—	—	—			—
7	RGW60TS65	650	60	30	178	1.5	30	—	—	—	—	—			—
8	RGW80TS65	650	78	40	214	1.5	40	—	—	—	—	—			—
9	RGW00TS65	650	96	50	254	1.5	50	—	—	—	—	—			—
10	RGWX5TS65	650	132	75	348	1.5	75	—	—	—	—	—			—
11	RGCL60TS60	600	48	30	111	1.4	30	—	—	—	—	—	TO-247GE		—
12	RGCL80TS60	600	65	40	148	1.4	40	—	—	—	—	—			—
13	RGTH40TS65	650	40	20	144	1.6	20	—	—	—	—	—			—
14	RGTH50TS65	650	50	25	174	1.6	25	—	—	—	—	—			—
15	RGTH60TS65	650	58	30	194	1.6	30	—	—	—	—	—			—
16	RGTH80TS65	650	70	40	234	1.6	40	—	—	—	—	—			—
17	RGTH00TS65	650	85	50	277	1.6	50	—	—	—	—	—			—
18	New RGWS60TS65	650	51	32	156	1.6	30	—	—	—	—	—			—
19	New RGWS80TS65	650	71	43	202	1.6	40	—	—	—	—	—			—
20	New RGWS00TS65	650	88	54	245	1.6	50	—	—	—	—	—			—
21	New RGWSX2TS65	650	104	64	288	1.6	60	—	—	—	—	—	—		
22	RGTH40TK65	650	23	14	56	1.6	20	—	—	—	—	—	TO-3PFM		—
23	RGTH50TK65	650	26	16	59	1.6	25	—	—	—	—	—			—
24	RGTH60TK65	650	28	17	61	1.6	30	—	—	—	—	—			—
25	RGTH80TK65	650	31	19	66	1.6	40	—	—	—	—	—			—
26	RGTH00TK65	650	35	21	72	1.6	50	—	—	—	—	—			—
27	RGW40TK65	650	27	16	61	1.5	20	—	—	—	—	—			—
28	RGW50TK65	650	30	18	67	1.5	25	—	—	—	—	—			—
29	RGW60TK65	650	33	20	72	1.5	30	—	—	—	—	—			—
30	RGW80TK65	650	39	23	81	1.5	40	—	—	—	—	—			—
31	RGW00TK65	650	45	26	89	1.5	50	—	—	—	—	—			—
32	RGCL60TK60	600	30	18	54	1.4	30	—	—	—	—	—	—		
33	RGCL80TK60	600	35	21	57	1.4	40	—	—	—	—	—	—		
Built-in SiC Schottky Barrier Diode type															
No.	Part No.	V _{CE(S)} (V)	I _C (A)		P _D (W)	V _{CE(sat)}		t _{sc} Min (μsec)	I _{F(Diode)} (A)		V _{F(Diode)}		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
			Tc=25°C	Tc=100°C		Typ (V)	I _C (A)		Tc=25°C	Tc=100°C	Typ (V)	I _F (A)			
34	RGW60TS65CHR	650	64	39	178	1.5	30	—	39	25	1.35	20	TO-247N		YES
35	RGW80TS65CHR	650	81	48	214	1.5	40	—	39	25	1.35	20			YES
36	RGW00TS65CHR	650	96	58	254	1.5	50	—	39	25	1.35	20			YES
Built-in Fast Recovery Diode type															
No.	Part No.	V _{CE(S)} (V)	I _C (A)		P _D (W)	V _{CE(sat)}		t _{sc} Min (μsec)	I _{F(Diode)} (A)		V _{F(Diode)}		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
			Tc=25°C	Tc=100°C		Typ (V)	I _C (A)		Tc=25°C	Tc=100°C	Typ (V)	I _F (A)			
37	RGW60TS65DHR	650	60	30	178	1.5	30	—	40	20	1.45	20	TO-247N		YES
38	RGW60TS65EHR	650	60	30	178	1.5	30	—	56	33	1.45	30			YES
39	RGW80TS65DHR	650	78	40	214	1.5	40	—	40	20	1.45	20			YES
40	RGW80TS65EHR	650	78	40	214	1.5	40	—	73	43	1.45	40			YES
41	RGW00TS65DHR	650	96	50	254	1.5	50	—	56	30	1.45	30			YES
42	RGW00TS65EHR	650	96	50	254	1.5	50	—	84	50	1.45	50			YES
43	RGWX5TS65DHR	650	132	75	348	1.5	75	—	73	43	1.45	40			YES
44	RGWX5TS65EHR	650	132	75	348	1.5	75	—	127	80	1.45	75			YES
45	RGCL80TSX8R	1,800	80	40	535	2.2	40	—	80	40	1.80	40			—
46	RGTH40TS65D	650	40	20	144	1.6	20	—	35	20	1.45	20			—
47	RGTH50TS65D	650	50	25	174	1.6	25	—	35	20	1.45	20	—		
48	RGTH60TS65D	650	58	30	194	1.6	30	—	40	20	1.35	20	—		
49	RGTH80TS65D	650	70	40	234	1.6	40	—	40	20	1.35	20	—		
50	RGTH00TS65D	650	85	50	277	1.6	50	—	50	30	1.45	30	—		
51	New RGWS60TS65D	650	51	32	156	1.6	30	—	23	13	1.45	10	—		
52	New RGWS80TS65D	650	71	43	202	1.6	40	—	23	13	1.45	10	—		
53	New RGWS00TS65D	650	88	54	245	1.6	50	—	23	13	1.45	10	—		
54	New RGWSX2TS65D	650	104	64	288	1.6	60	—	23	13	1.45	10	—		
55	RGW40TS65D	650	40	20	136	1.5	20	—	40	20	1.45	20	TO-247GE		—
56	RGW50TS65D	650	50	25	156	1.5	25	—	40	20	1.45	20			—
57	RGW60TS65D	650	60	30	178	1.5	30	—	40	20	1.45	20			—
58	RGW80TS65D	650	78	40	214	1.5	40	—	40	20	1.45	20			—
59	RGW00TS65D	650	96	50	254	1.5	50	—	56	30	1.45	30			—
60	RGWX5TS65D	650	132	75	348	1.5	75	—	73	40	1.45	40			—
61	RGCL60TS60D	600	48	30	111	1.4	30	—	35	20	1.45	20			—
62	RGCL80TS60D	600	65	40	148	1.4	40	—	35	20	1.45	20			—
63	RGTH40TK65D	650	23	14	56	1.6	20	—	26	15	1.45	20			—
64	RGTH50TK65D	650	26	16	59	1.6	25	—	26	15	1.45	20			—
65	RGTH60TK65D	650	28	17	61	1.6	30	—	28	16	1.35	20	—		
66	RGTH80TK65D	650	31	19	66	1.6	40	—	28	16	1.35	20	—		
67	RGTH00TK65D	650	35	21	72	1.6	50	—	34	19	1.45	30	—		
68	RGW40TK65D	650	27	16	61	1.5	20	—	27	16	1.45	20	TO-3PFM		—
69	RGW50TK65D	650	30	18	67	1.5	25	—	27	16	1.45	20			—
70	RGW60TK65D	650	33	20	72	1.5	30	—	27	16	1.45	20			—
71	RGW80TK65D	650	39	23	81	1.5	40	—	27	16	1.45	20			—
72	RGW80TK65E	650	39	23	81	1.5	40	—	46	26	1.45	50			—
73	RGW00TK65D	650	45	26	89	1.5	50	—	34	19	1.45	30			—
74	RGCL60TK60D	600	30	18	54	1.4	30	—	26	15	1.45	20			—
75	RGCL80TK60D	600	35	21	57	1.4	40	—	26	15	1.45	20			—

Note: Package is JEDEC code.

*1 Built-in Fast Recovery Diode.
*2 Built-in SiC Schottky Barrier Diode.

Field Stop Trench IGBT

SCSOA Guaranteed type

Field Stop Trench IGBT

IGBT Single type

No.	Part No.	V _{CE(S)} (V)	I _C (A)		P _D (W)	V _{CE(sat)}		t _{sc} Min (μsec)	I _{F(Diode)} (A)		V _{F(Diode)}		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
			Tc=25°C	Tc=100°C		Typ (V)	I _C (A)		Tc=25°C	Tc=100°C	Typ (V)	I _F (A)			
76	RGT20NL65	650	20	10	106	1.65	10	5	—	—	—	—	TO-263L (LPDL)		—
77	RGS60TS65HR	1,200	56	30	223	1.65	30	8	—	—	—	—	TO-247N		YES
78	RGS80TS65HR		73	40	272	1.65	40	8	—	—	—	—			YES
79	RGS00TS65HR		88	50	326	1.65	50	8	—	—	—	—			YES
80	RGSX5TS65HR		114	75	404	1.70	75	8	—	—	—	—			YES
81	RGS30TSX2HR		30	15	267	1.70	15	10	—	—	—	—			—
82	RGS30TSX2		30	15	267	1.70	15	10	—	—	—	—			—
83	RGS50TSX2HR		50	25	395	1.70	25	10	—	—	—	—			YES
84	RGS50TSX2		50	25	395	1.70	25	10	—	—	—	—			—
85	RGS80TSX2HR		80	40	555	1.70	40	10	—	—	—	—			YES
86	RGS80TSX2		80	40	555	1.70	40	10	—	—	—	—			—
87	RGTV60TS65	650	60	30	194	1.50	30	2	—	—	—	—	TO-247GE		—
88	RGTV80TS65		78	40	234	1.50	40	2	—	—	—	—			—
89	RGTV00TS65		95	50	276	1.50	50	2	—	—	—	—			—
90	RGTVX2TS65		111	60	319	1.50	60	2	—	—	—	—			—
91	RGTVX6TS65		144	80	404	1.50	80	2	—	—	—	—			—
92	RGTV60TK65	650	33	20	76	1.50	30	2	—	—	—	—	TO-3PFM		—
93	RGTV80TK65		39	23	85	1.50	40	2	—	—	—	—			—
94	RGTV00TK65		45	26	94	1.50	50	2	—	—	—	—			—

Built-in Fast Recovery Diode type

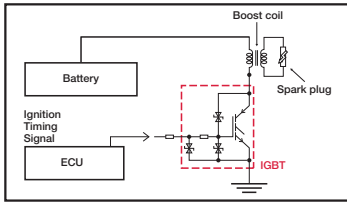
No.	Part No.	V _{CE(S)} (V)	I _C (A)		P _D (W)	V _{CE(sat)}		t _{sc} Min (μsec)	I _{F(Diode)} (A)		V _{F(Diode)}		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
			Tc=25°C	Tc=100°C		Typ (V)	I _C (A)		Tc=25°C	Tc=100°C	Typ (V)	I _F (A)			
95	RGT8BM65D	650	8	4	62	1.65	4	5	7	4	1.45	4	TO-252		—
96	RGT16BM65D		16	8	94	1.65	8	5	16	8	1.40	8			—
97	RGT8NS65D	650	8	4	65	1.65	4	5	7	4	1.45	4	TO-263S (LPDS)/ TO-262		—
98	RGT16NS65D		16	8	94	1.65	8	5	16	8	1.40	8			—
99	RGT20NS65D		20	10	106	1.65	10	5	16	8	1.40	8			—
100	RGT30NS65D		30	15	133	1.65	15	5	26	15	1.50	15			—
101	RGT40NS65D		40	20	161	1.65	20	5	35	20	1.45	20			—
102	RGT50NS65D		48	25	194	1.65	25	5	35	20	1.45	20			—
103	RGT8NL65D		8	4	65	1.65	4	5	7	4	1.45	4			—
104	RGT16NL65D		16	8	94	1.65	8	5	16	8	1.40	8			—
105	RGT20NL65D		20	10	106	1.65	10	5	16	8	1.40	8			—
106	RGT30NL65D		30	15	133	1.65	15	5	26	15	1.50	15			—
107	RGT40NL65D	40	20	161	1.65	20	5	35	20	1.45	20	—			
108	RGT50NL65D	48	25	194	1.65	25	5	35	20	1.45	20	—			
109	RGT8TM65D	650	5	3	16	1.65	4	5	5	3	1.45	4	TO-220NFM		—
110	RGT16TM65D		9	5	22	1.65	8	5	13	7	1.40	8			—
111	RGT20TM65D		10	6	25	1.65	10	5	13	7	1.40	8			—
112	RGT30TM65D		14	8	32	1.65	15	5	17	9	1.50	15			—
113	RGT40TM65D		17	10	39	1.65	20	5	22	13	1.45	20			—
114	RGT50TM65D	21	13	47	1.65	25	5	22	13	1.45	20	—			
115	RGS60TS65DHR	650	56	30	223	1.65	30	8	56	30	1.45	30	TO-247N		YES
116	RGS80TS65DHR		73	40	272	1.65	40	8	56	30	1.45	30			YES
117	RGS00TS65DHR		88	50	326	1.65	50	8	56	30	1.45	30			YES
118	RGS00TS65EHR		88	50	326	1.65	50	8	84	50	1.45	50			YES
119	RGSX5TS65DHR		114	75	404	1.70	75	8	84	50	1.45	50			YES
120	RGSX5TS65EHR		114	75	404	1.70	75	8	127	75	1.45	75			YES
121	RGSX5TS65E		114	75	404	1.70	75	8	127	75	1.45	75			—
122	RGS30TSX2DHR		30	15	267	1.70	15	10	30	15	1.65	15			YES
123	RGS30TSX2D		30	15	267	1.70	15	10	30	15	1.65	15			—
124	RGS50TSX2DHR		50	25	395	1.70	25	10	50	25	1.65	25			YES
125	RGS50TSX2D	50	25	395	1.70	25	10	50	25	1.65	25	—			
126	RGS80TSX2DHR	80	40	555	1.70	40	10	80	40	1.65	40	YES			
127	RGS80TSX2D	80	40	555	1.70	40	10	80	40	1.65	40	—			
128	RGTV60TS65D	650	60	30	194	1.50	30	2	56	30	1.45	30	TO-247GE		—
129	RGTV80TS65D		78	40	234	1.50	40	2	73	40	1.45	40			—
130	RGTV00TS65D		95	50	276	1.50	50	2	84	50	1.45	50			—
131	RGTVX2TS65D		111	60	319	1.50	60	2	98	60	1.45	60			—
132	RGTVX6TS65D		144	80	404	1.50	80	2	127	80	1.45	80			—
133	RGTV40TS65D		40	20	144	1.65	20	5	35	20	1.45	20			—
134	RGTV50TS65D		48	25	174	1.65	25	5	35	20	1.45	20			—
135	RGTV60TS65D		55	30	194	1.65	30	5	40	20	1.35	20			—
136	RGTV80TS65D		70	40	234	1.65	40	5	40	20	1.35	20			—
137	RGTV00TS65D		85	50	277	1.65	50	5	50	30	1.45	30			—
138	RGTV60TK65D	650	33	20	76	1.50	30	2	34	19	1.45	30	TO-3PFM		—
139	RGTV80TK65D		39	23	85	1.50	40	2	40	23	1.45	40			—
140	RGTV00TK65D		45	26	94	1.50	50	2	46	26	1.45	50			—

Note: Package is JEDEC code. (): ROHM Packages.

*Built-in Fast Recovery Diodes

Ignition IGBT

●Circuit Example for Ignition IGBT



Ignition IGBT									
Part No.	V _{CEs} (V)	V _{GES} (V)	I _c (A)	P _D (W)	E _{as} (mJ)	V _{CE(sat)} Typ (V)	Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
RGPZ10BM40FH	430±30	±10	20	107	250	1.6	TO-252		YES
☆RGPZ30BM56HR	560±30	±10	30	166	300	1.4	TO-252		YES
RGPR10BM40FH	430±30	±10	20	107	250	1.6	TO-252		YES
☆RGPR20BM36HR	360±30	±10	20	107	250	1.6	TO-252		YES
RGPR20NS43HR	430±30	±10	20	107	250	1.6	TO-263S (LPDS)		YES
RGPR20NL43HR	430±30	±10	20	107	250	1.6	TO-263L (LPDL)		YES
☆RGPR30BM56HR	560±30	±10	30	166	300	1.4	TO-252		YES
RGPR30BM40HR	400±30	±10	30	125	300	1.6	TO-252		YES
RGPR30NS40HR	400±30	±10	30	125	300	1.6	TO-263S (LPDS)		YES
RGPR50NL45HRB	450±30	±10	45	187	500	1.6	TO-263L (LPDL)		YES

Note: Package is JEDEC code. (): ROHM Packages.

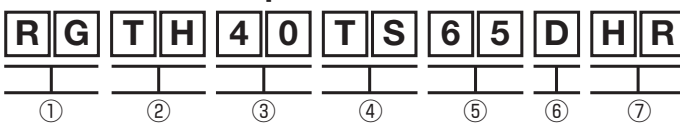
☆: Under Development

●Dimensions (Unit: mm)

<p>TO-252</p> <p>Each lead has same dimensions</p>	<p>TO-263S (LPDS)</p> <p>Each lead has same dimensions</p>	<p>TO-263L (LPDL)</p> <p>Each lead has same dimensions</p>	<p>TO-262</p> <p>Each lead has same dimensions</p>
<p>TO-220NFM</p> <p>Each lead has same dimensions</p>	<p>TO-247N</p> <p>Each lead has same dimensions</p>	<p>TO-247GE</p> <p>Each lead has same dimensions</p>	<p>TO-3PFM</p> <p>Each lead has same dimensions</p>

Note: Package is JEDEC code. (): ROHM Packages.

●Product No. Explanation



- ① IGBT
- ② Series Name
- ③ I_c<T_c=100°C>
ex. 8 → 4A
16 → 8A
30 → 15A
00 → 50A
X2 → 60A
X6 → 80A
- ④ Package
ex. BM → TO-252
NS → TO-263S (LPDS)/
TO-262
NL → TO263L (LPDL)
TM → TO-220NFM
TS → TO-247N/TO-247GE
TK → TO-3PFM
- ⑤ V_{CEs}
ex. 65 → 650V
- ⑥ Built-in Diode
C → Built-in SiC Schottky Barrier Diode
D/E → Built-in Fast Recovery Diode
R → Built-in Diode (RC-IGBT)
- ⑦ Automotive Grade

●Packaging type

Package	Code	Packaging Style	Basic Ordering Unit (pcs)
TO-252	TL	Embossed tape	2,500
TO-263S (LPDS)	TL	Embossed tape	1,000
TO-263L (LPDL)	TL	Embossed tape	1,000
TO-262	C9	Tube	50
TO-220NFM	C9	Tube	50
TO-247N	C11	Tube	30
TO-247GE	C13	Tube	30
TO-3PFM	C11	Tube	30

Note: Package is JEDEC code. (): ROHM Packages

Intelligent Power Modules

IGBT-IPM

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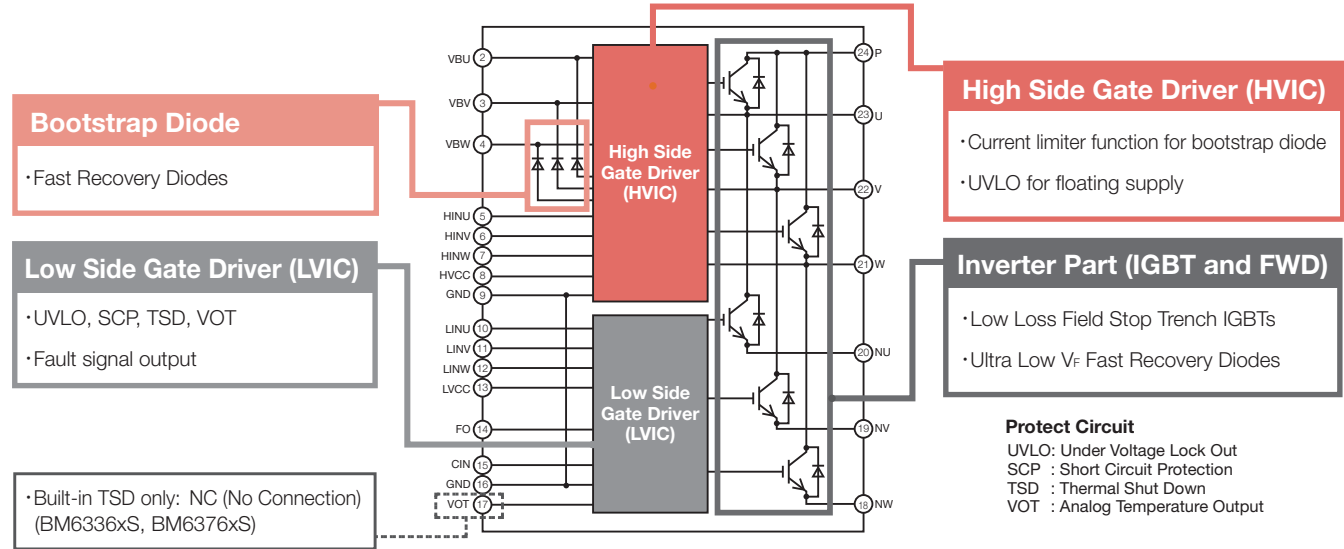
MOS-IPM

P.144

Intelligent Power Modules

●Block Diagram

IGBT-IPM



●Quick Reference for Intelligent Power Modules

V_{DS}/V_{CES} (V)	I_B/I_C (A)	IGBT-IPM				MOS-IPM	
		Gen.2		Gen.3		Gen.1	
		Thermal Protective Function*		Thermal Protective Function*		Thermal Protective Function*	
		TSD	VOT	TSD & VOT	VOT	TSD	
600	10	BM63363S-VA BM63363S-VC BM63763S-VA BM63763S-VC	BM63563S-VA BM63563S-VC BM63963S-VA BM63963S-VC	BM63373S-VA BM63373S-VC	BM63573S-VA BM63573S-VC		
	15	BM63364S-VA BM63364S-VC BM63764S-VA BM63764S-VC	BM63564S-VA BM63564S-VC BM63964S-VA BM63964S-VC	BM63374S-VA BM63374S-VC BM64374S-VA	BM63574S-VA BM63574S-VC	BM65364S-VA BM65364S-VC	
	20			BM63375S-VA BM63375S-VC BM64375S-VA	BM63575S-VA BM63575S-VC		
	30	BM63767S-VA BM63767S-VC	BM63967S-VA BM63967S-VC	BM63377S-VA BM63377S-VC BM64377S-VA	BM63577S-VA BM63577S-VC		
	35			BM64378S-VA			

*TSD: Thermal Shut Down, VOT: Analog Temperature Output

Transistors

MOSFETs	P.146	Bipolar Transistors	P.163
Digital Transistors	P.174	Packages	P.190
Product No. Explanation	P.193		

Small Signal MOSFET

Small Signal MOSFET series																						
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (Ω)															
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V		V _{GS} =2.5V		V _{GS} =1.8V		V _{GS} =1.5V		V _{GS} =1.2V		V _{GS} =0.9V	
							Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max
DFN0604-3 (VML0604) ◆ 0604 size	RV3C002UN	T2CL	N	20	0.15	0.10	—	—	1.40	2.00	—	—	1.70	2.60	—	—	2.70	5.40	—	—	—	—
	RV3CA01ZP*1	T2CL	P	-20	-0.10	0.10	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	—	—	—	—
DFN0806-3 (VML0806) ◆ 0806 size	RV1C002UN	T2CL	N	20	0.15	0.10	—	—	1.40	2.00	—	—	1.70	2.60	—	—	2.70	5.40	3.80	11.40	—	—
	RV1C001ZP	T2CL	P	-20	-0.10	0.10	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	10.00	40.00	—	—
DFN1006-3 (VML1006) ◆ [SC-101] 1006 size	RV2C010UN	T2L	N	20	1.00	0.40	—	—	0.34	0.47	—	—	0.40	0.56	—	—	0.54	0.81	0.70	1.05	—	—
	RV2C002UN	T2L		20	0.18	0.10	—	—	1.40	2.00	—	—	1.70	2.60	—	—	2.70	5.40	3.80	11.40	—	—
	RV2E014AJ	T2CL		30	1.40*2	0.6*2	—	—	0.17	0.29	—	—	0.225	0.38	—	—	—	—	—	—	—	—
	☆RV2L009GN	T2CL	60	0.90*2	0.60*2	0.48	0.72	0.66	1.06	—	—	—	—	—	—	—	—	—	—	—	—	
	RV2C014BC	T2CL	P	-20	-1.40*2	0.60*2	—	—	0.22	0.30	—	—	0.28	0.39	0.37	0.70	—	—	—	—	—	—
	RV2C001ZP	T2L		-20	-0.10	0.10	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	10.00	40.00	—	—
RV2E012AT	T2CL	-30	-1.20*2	0.60*2	0.27	0.41	0.39	0.57	—	—	—	—	—	—	—	—	—	—	—	—		
DSN1006-3 (SMM1006) 1006 size	New RA1C030LD	T5CL	N	20	3.0	1.0	—	—	0.08	0.14	—	—	0.13	0.19	0.20	—	—	—	—	—	—	—
DFN1010-3 1010 size	☆RV9C010UN	G2CR	N	20	1.0	1.0	—	—	0.34	0.47	—	—	0.4	0.56	—	—	0.54	0.81	0.70	1.05	—	—
	☆RV9E020AJ	G2CR		30	2.0	1.0	—	—	0.17	0.29	—	—	0.225	0.38	—	—	—	—	—	—	—	—
	☆RV9C020BC	G2CR	P	-20	-2.0	1.0	—	—	0.21	0.28	—	—	0.27	0.37	0.39	0.60	—	—	—	—	—	—
	☆RV9E017AT	G2CR		-30	-1.7	1.0	0.26	0.34	0.40	0.52	—	—	—	—	—	—	—	—	—	—	—	—
DFN1212-3 1212 size	☆RV7E040AJ	TCR1	N	30	4.0	1.1	—	—	41	55	—	—	54	73	—	—	—	—	—	—	—	—
	☆RV7L020GN	TCR1		60	2.0	1.1	123	164	172	281	—	—	—	—	—	—	—	—	—	—	—	—
	☆RV7C040BC	TCR1	P	-20	-4.0	1.1	—	—	53	63	—	—	65	79	89	106	—	—	—	—	—	—
	☆RV7E035AT	TCR1		-30	-3.5	1.1	65	80	91	113	—	—	—	—	—	—	—	—	—	—	—	—
SOT-723 (VMT3) [SC-105AA] 1212 size	RUM002N02	T2L	N	20	0.20	0.15	—	—	—	—	—	—	0.80	1.20	—	—	1.20	2.40	1.60	4.80	—	—
	RUM001L02	T2CL		20	0.10	0.15	—	—	2.50	3.50	—	—	3.00	4.20	—	—	4.50	9.00	6.00	18.00	—	—
	RYM002N05	T2CL		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00
	RUM002N05	T2L	P	50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	4.00	2.40	7.20	—	—
	RSM002N06	T2L		60	0.25	0.15	1.70	2.40	2.10	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—
	RZM002P02	T2L		-20	-0.20	0.15	—	—	0.80	1.20	—	—	1.00	1.50	—	—	1.60	3.50	2.40	9.60	—	—
	RZM001P02	T2L		-20	-0.10	0.15	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	10.00	40.00	—	—
RSM002P03	T2L	-30	-0.20	0.15	0.90	1.40	1.40	2.10	1.60	2.40	—	—	—	—	—	—	—	—	—	—		
DFN1616-6 1616 size	☆RV5L030GN	TCR1	N	60	3.0	1.5	0.104	0.148	0.131	0.223	—	—	—	—	—	—	—	—	—	—	—	—
	RV5A040AP	TCR1	P	-12	-4.00	1.50	—	—	0.044	0.062	—	—	0.055	0.077	0.075	0.110	0.090	0.180	—	—	—	—
	RV5C040AP	TCR1		-20	-4.00	1.50	—	—	0.060	0.085	—	—	0.065	0.095	0.095	0.155	0.130	0.260	—	—	—	—
SOT-416FL (EMT3F) [SC-89] 1616 size	RE1C002UN	TCL	N	20	0.20	0.15	—	—	—	—	—	—	0.80	1.20	—	—	1.20	2.40	1.60	4.80	—	—
	RE1C001UN	TCL		20	0.10	0.15	—	—	2.50	3.50	—	—	3.00	4.20	—	—	4.50	9.00	6.00	18.00	—	—
	RE1J002YN	TCL		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00
	RE1L002SN	TL	P	60	0.25	0.15	1.70	2.40	2.10	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—
	RE1C002ZP	TL		-20	-0.20	0.15	—	—	0.80	1.20	—	—	1.00	1.50	—	—	1.60	3.50	2.40	9.60	—	—
	RE1C001ZP	TL		-20	-0.10	0.15	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	10.00	40.00	—	—
RE1E002SP	TCL	-30	-0.25	0.15	0.90	1.40	1.40	2.10	1.60	2.40	—	—	—	—	—	—	—	—	—	—		
SOT-323 (UMT3) 2021 size	New BSS138BKW	T106	N	60	0.38	0.30	0.50	0.70	0.60	0.84	—	—	1.00	4.00	—	—	—	—	—	—	—	—
	New BSS138W	T106		60	0.31	0.30	1.70	2.40	2.10	3.00	—	—	3.00	12.00	—	—	—	—	—	—	—	—
	New BSS84W	T106	P	-60	-0.21	0.30	2.80	5.30	3.50	6.40	—	—	—	—	—	—	—	—	—	—	—	—
SOT-323FL (UMT3F) [SC-85] 2021 size	RU1C002UN	TCL	N	20	0.20	0.15	—	—	—	—	—	—	0.80	1.20	—	—	1.20	2.40	1.60	4.80	—	—
	RU1C001UN	TCL		20	0.10	0.15	—	—	2.50	3.50	—	—	3.00	4.20	—	—	4.50	9.00	6.00	18.00	—	—
	RU1J002YN	TCL		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00
	RU1L002SN	TL	P	60	0.25	0.15	1.70	2.40	2.00	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—
	RU1C002ZP	TCL		-20	-0.20	0.15	—	—	0.80	1.20	—	—	1.00	1.50	—	—	1.60	3.50	2.40	9.60	—	—
	RU1C001ZP	TL		-20	-0.10	0.15	—	—	2.50	3.80	—	—	3.40	5.10	—	—	6.00	13.20	10.00	40.00	—	—
RU1E002SP	TCL	-30	-0.25	0.15	0.90	1.40	1.40	2.10	1.60	2.40	—	—	—	—	—	—	—	—	—	—		

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.
 Note2: *1 For overvoltage protection *2 Pw≤5s

☆: Under Development

Small Signal MOSFET series																							
Package	Product No.		Polarity (ch)	V _{BSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (Ω)																
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V		V _{GS} =2.5V		V _{GS} =1.8V		V _{GS} =1.5V		V _{GS} =1.2V		V _{GS} =0.9V		
							Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	
SOT-23 (SST3) 2924 size	RUC002N05	T316	N	50	0.20	0.20	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00	
	RUC002N05	T116		50	0.20	0.20	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	4.00	2.40	7.20	—	—	
	BSS670	T116		60	0.60	0.35	0.50	0.65	0.60	0.82	—	—	1.00	4.00	—	—	—	—	—	—	—	—	—
	BSS138BK	T116		60	0.40	0.35	0.50	0.70	0.60	0.84	—	—	1.00	4.00	—	—	—	—	—	—	—	—	—
	RK7002BM	T116		60	0.25	0.20	1.70	2.40	2.10	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—	—
	RSC002P03	T316		P	-30	-0.25	0.20	0.90	1.40	1.40	2.10	1.60	2.40	—	—	—	—	—	—	—	—	—	—
BSS84	T116	-60	-0.23		0.35	3.60	5.30	4.30	6.40	—	—	—	—	—	—	—	—	—	—	—	—	—	
SOT-563 (EMT6) [SC-107C] 1616 size	EM6K6	T2R	N+N	20	0.30	0.15	—	—	—	—	0.70	1.00	0.80	1.20	1.00	1.40	—	—	—	—	—	—	—
	EM6K7	T2CR		20	0.20	0.15	—	—	—	—	—	—	—	0.80	1.20	—	—	1.20	2.40	1.60	4.80	—	—
	EM6K33	T2R		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	4.00	2.40	7.20	—	—	
	EM6K34	T2CR		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00	
	EM6K31	T2R		60	0.25	0.15	1.70	2.40	2.10	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—	—
	EM6J1	T2R		P+P	-20	-0.20	0.15	—	—	0.80	1.20	—	—	1.00	1.50	—	—	1.60	3.50	2.40	9.60	—	—
SOT-363 (UMT6) [SC-88] 2021 size	EM6M2	T2R	N+P	-20	-0.20	0.15	0.80	1.20	—	—	1.00	1.50	1.30	2.20	1.60	3.50	2.40	9.60	—	—	—	—	
	UM6K34N	TCN	N+N	50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	2.80	2.20	3.30	3.00	9.00	
	UM6K33N	TN		50	0.20	0.15	—	—	1.60	2.20	—	—	1.70	2.40	—	—	2.00	4.00	2.40	7.20	—	—	
	UM6K31N	TN		60	0.25	0.15	1.70	2.40	2.10	3.00	2.30	3.20	3.00	12.00	—	—	—	—	—	—	—	—	
UM6J1N	TN	P+P	-30	-0.20	0.15	0.90	1.40	1.40	2.10	1.60	2.40	—	—	—	—	—	—	—	—	—	—	—	

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.




Power MOSFETs

Power MOSFET series																					
Package	Product No.		Polarity (ch)	V _{BSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)										Q _g (nC) (V _{GS} =4.5)				
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V		V _{GS} =2.5V		V _{GS} =1.5V						
							Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max					
SOT-323T (TUMT3) [SC-113A] 2021 size	RUF025N02	TL	N	20	2.5	0.8	—	—	39	54	—	—	49	68	80	160	5				
	RUF020N02	TL		20	2	0.8	—	—	75	105	—	—	95	135	170	240	2				
	RUF015N02	TL		20	1.5	0.8	—	—	130	180	—	—	170	240	220*1	310*1	1.8				
	RTF025N03	TL		30	2.5	0.8	—	—	48	67	50	70	70	98	—	—	3.7				
	RSF014N03	TL		30	1.4	0.8	170	240	250	350	270	380	—	—	—	—	1.4*2				
	RTF016N05	TL		45	1.6	0.8	—	—	140	190	150	210	200	280	—	—	2.3				
	RSF015N06	TL	60	1.5	0.8	210	290	240	330	255	350	—	—	—	—	2*2					
	RAF040P01	TCL	P	-12	-4	0.8	—	—	22	30	—	—	27	38	40	68	37				
	RZF030P01	TL		-12	-3	0.8	—	—	28	39	—	—	39	54	72	144	18				
	RZF020P01	TL		-12	-2	0.8	—	—	75	105	—	—	105	145	200	400	6.5				
	RZF013P01	TL		-12	-1.3	0.8	—	—	190	260	—	—	280	390	530	1,060	2.4				
RRF015P03	TL	-30		-1.5	0.8	115	160	170	240	190	270	—	—	—	—	3.2*2					
RSF010P05	TL	-45	-1	0.8	330	460	450	630	490	690	—	—	—	—	2.3*2						
SOT-363T (TUMT6) [SC-113DA] 2021 size	RUL035N02	TR	N	20	3.5	1	—	—	31	43	—	—	38	53	66	93	5.7				
	RF6E065BN	TCR		30	6.5	1	12.9	15.3	18.5	22.7	—	—	—	—	—	—	8.3				
	RF6E045AJ	TCR		30	4.5	1	—	—	16.9	23.7	—	—	23.9	33.5	—	—	8.1				
	RTL035N03	TR		30	3.5	1	—	—	40	56	42	59	56	79	—	—	4.6				
	RXL035N03	TCR		30	3.5	1	35	50	45	65	50	70	—	—	—	—	3.3*2				
	New RF6G035BG	TCR		40	3.5	1	37	46	59	80	—	—	—	—	—	—	1.8				
	New RF6L025BG	TCR		60	2.5	1	70	91	100	140	—	—	—	—	—	—	1.7				
	RAL035P01	TR	P	-12	-3.5	1	—	—	30	42	—	—	40	56	75	150	22				
	RAL025P01	TR		-12	-2.5	1	—	—	44	62	—	—	55	77	90	180	16				
	RF6C055BC	TCR		-20	-5.5	1	—	—	19.5	25.7	—	—	24.7	33.1	33.7	63.6	15.2				
	RRL035P03	TR		-30	-3.5	1	36	50	52	72	58	81	—	—	—	—	8*2				
	RRL025P03	TR		-30	-2.5	1	55	75	85	115	95	125	—	—	—	—	5.2*2				
	US6K4	TR	N+N	20	1.5	1	—	—	130	180	—	—	170	240	220*1	310*1	1.8				
	US6K1	TR		30	1.5	1	—	—	170	240	180	250	240	340	—	—	1.6				
	US6K2	TR		30	1.4	1	170	240	250	350	270	380	—	—	—	—	1.4*2				
	US6J12	TCR	P+P	-12	-2	1	—	—	75	105	—	—	105	145	200	400	7.6				
	US6J11	TR		-12	-1.3	1	—	—	190	260	—	—	280	390	530	1,060	2.4				
US6M11	TR	N+P	20	1.5	1	—	—	130	180	—	—	170	240	300	600	1.8					
US6M2	TR		-12	-1.3	1	—	—	190	260	—	—	280	390	530	1,060	2.4					
US6M1	TR		30	1.5	1	—	—	170	240	180	250	240	340	—	—	1.6					
US6M1	TR		-20	-1	1	—	—	280	390	310	430	570	800	—	—	2.1					
US6M1	TR		30	1.4	1	170	240	250	350	270	380	—	—	—	—	1.4*2					
US6M1	TR	-20	-1	1	—	—	280	390	310	430	570	800	—	—	2.1						

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Note2: *1 V_{GS}=1.8V *2 V_{GS}=5V

Power MOSFETs





Power MOSFET series																					
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)										Q _g (nC) (V _{GS} =4.5V)				
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =2.5V		V _{GS} =1.8V		V _{GS} =1.5V						
							Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max					
SOT-346T (TSMT3) [SC-96] 2928 size 	RUR040N02	TL	N	20	4	1	—	—	25	35	—	—	33	46	42	59	55	110	8		
	RUR020N02	TL		20	2	1	—	—	75	105	—	—	95	135	130	185	170	240	2		
	RQ5E070BN	TCL		30	7	1	12.4	16.1	16.5	20.4	—	—	—	—	—	—	—	—	—	11.7	
	RQ5E065AJ	TCL		30	6.5	1	—	—	13.7	18.1	—	—	17.9	23.7	—	—	—	—	—	—	12.2
	RQ5E040TN	TL		30	4	1	—	—	34	48	36	50	47	66	—	—	—	—	—	—	5.9
	RQ5E040AJ	TCL		30	4	1	—	—	27	37	—	—	39	54	—	—	—	—	—	—	4.3
	RQ5E035XN	TCL		30	3.5	1	35	50	45	65	50	70	—	—	—	—	—	—	—	—	3.3 ^{*1}
	RQ5E035BN	TCL		30	3.5	1	28	37	43	56	—	—	—	—	—	—	—	—	—	—	3.1
	RQ5E030AJ	TCL		30	3	1	—	—	57	75	—	—	81	109	—	—	—	—	—	—	2.1
	RQ5E025SN	TL		30	2.5	1	50	70	74	105	83	118	—	—	—	—	—	—	—	—	2.9 ^{*1}
	RQ5E025TN	TL		30	2.5	1	—	—	66	92	70	98	95	133	—	—	—	—	—	—	3.3
	RQ5H030TN	TL		45	3	1	—	—	48	67	53	74	68	95	—	—	—	—	—	—	6.2
	RQ5H025TN	TL		45	2.5	1	—	—	95	130	100	140	125	175	—	—	—	—	—	—	3.2
	RQ5H020TN	TL		45	2	1	—	—	130	180	135	190	180	250	—	—	—	—	—	—	2.9
	RQ5L030SN	TL		60	3	1	60	85	70	100	75	105	—	—	—	—	—	—	—	—	5 ^{*1}
	RQ5L020SN	TL		60	2	1	120	170	140	195	150	210	—	—	—	—	—	—	—	—	2.7 ^{*1}
	RQ5P010SN	TL		100	1	1	370	520	400	560	410	580	—	—	—	—	—	—	—	—	3.5 ^{*1}
	RQ5A040ZP	TL		—	-4	1	—	—	22	30	—	—	30	42	40	60	55	110	30	—	30
	RQ5A030AP	TL		—	-3	1	—	—	44	62	—	—	55	77	75	110	90	180	16	—	16
	RQ5A025ZP	TL		—	-2.5	1	—	—	44	61	—	—	60	84	81	121	110	220	13	—	13
	RQ5A020ZP	TL		—	-2	1	—	—	75	105	—	—	105	145	150	225	200	400	6.5	—	6.5
	RQ5C060BC	TCL		-20	-6	1	—	—	16.1	21.1	—	—	20.3	26.9	27.4	51.0	—	—	—	—	19.2
	RQ5C035BC	TCL		-20	-3.5	1	—	—	42	59	—	—	54	76	84	135	—	—	—	—	6.5
	RQ5C030TP	TL		-20	-3	1	—	—	55	75	60	85	90	125	—	—	—	—	—	—	9.3
	RQ5C025TP	TL		-20	-2.5	1	—	—	70	95	75	105	115	160	—	—	—	—	—	—	7
	RQ5C020TP	TL		-20	-2	1	—	—	100	135	110	150	180	250	—	—	—	—	—	—	4.9
	RQ5E050AT	TCL		-30	-5	1	21	26	30	37	—	—	—	—	—	—	—	—	—	—	9.7
	RQ5E040RP	TL		-30	-4	1	32	45	45	63	52	72	—	—	—	—	—	—	—	—	10.5 ^{*1}
	RQ5E035AT	TCL		-30	-3.5	1	38	50	54	70	—	—	—	—	—	—	—	—	—	—	5.2
	RQ5E030RP	TL		-30	-3	1	55	75	85	115	95	125	—	—	—	—	—	—	—	—	5.2 ^{*1}
RQ5E025SP	TL	-30	-2.5	1	70	98	100	140	115	160	—	—	—	—	—	—	—	—	5.4 ^{*1}		
RQ5E025AT	TCL	-30	-2.5	1	70	91	104	135	—	—	—	—	—	—	—	—	—	—	2.7		
RQ5E020SP	TL	-30	-2	1	85	120	135	190	150	210	—	—	—	—	—	—	—	—	4.3 ^{*1}		
RQ5E015RP	TL	-30	-1.5	1	115	160	170	240	190	270	—	—	—	—	—	—	—	—	3.2 ^{*1}		
RQ5H020SP	TL	-45	-2	1	130	190	180	260	200	280	—	—	—	—	—	—	—	—	9.5 ^{*2}		
RQ5L015SP	TL	-60	-1.5	1	200	280	240	340	255	360	—	—	—	—	—	—	—	—	10 ^{*2}		
SOT-25T (TSMT5) 2928 size 	QS5K2	TR	N+N	30	2	1.25	—	—	71	100	76	107	110	154	—	—	—	—	—	2.8	
SOT-457T (TSMT6) [SC-95] 2928 size 	RQ6C050UN	TR	N	20	5	1.25	—	—	22	30	—	—	27	38	32	45	40	80	12		
	RQ6E085BN	TCR		30	8.5	1.25	11.1	14.4	13.9	17.3	—	—	—	—	—	—	—	—	—	16.6	
	RQ6E080AJ	TCR		30	8	1.25	—	—	12.5	16.5	—	—	15.7	19.5	—	—	—	—	—	—	16.2
	RQ6E055BN	TR		30	5.5	1.25	19	25	30	39	—	—	—	—	—	—	—	—	—	—	4.4
	RQ6E050AJ	TCR		30	5	1.25	—	—	26	35	—	—	38	50	—	—	—	—	—	—	4.7
	RQ6E045BN	TCR		30	4.5	1.25	21	30	35	49	—	—	—	—	—	—	—	—	—	—	4.7
	RQ6E045TN	TR		30	4.5	1.25	—	—	30	43	32	45	42	60	—	—	—	—	—	—	7.6
	RQ6E045SN	TR		30	4.5	1.25	27	38	36	51	40	56	—	—	—	—	—	—	—	—	6.8 ^{*1}
	RQ6E040XN	TCR		30	4	1.25	35	50	45	65	50	70	—	—	—	—	—	—	—	—	33 ^{*1}
	RQ6E035TN	TR		30	3.5	1.25	—	—	38	54	40	56	55	77	—	—	—	—	—	—	4.6
	RSQ020N03	TR		30	2	1.25	96	134	148	207	168	235	—	—	—	—	—	—	—	—	2.2 ^{*1}
	RTQ020N03	TR		30	2	1.25	—	—	89	125	94	132	138	194	—	—	—	—	—	—	2.4
	RVQ040N05	TR		45	4	1.25	38	53	47	66	53	74	—	—	—	—	—	—	—	—	6.3 ^{*1}
	RTQ020N05	TR		45	2	1.25	—	—	140	190	150	210	200	280	—	—	—	—	—	—	2.3
	RSQ015N06	TR		60	1.5	1.25	210	290	240	330	255	350	—	—	—	—	—	—	—	—	2 ^{*1}
	QS6K1	TR		30	1	1.25	—	—	170	238	180	252	260	364	—	—	—	—	—	—	1.7
	QS6K21	TR		45	1	1.25	—	—	300	420	310	435	415	585	—	—	—	—	—	—	1.5
	RQ6A050ZP	TR		-12	-5	1.25	—	—	19	26	—	—	26	36	33	49	44	88	35	—	35
	RQ6A045AP	TCR		-12	-4.5	1.25	—	—	22	30	—	—	28	39	38	57	50	100	40	—	40
	RAQ045P01	TCR		-12	-4.5	1.25	—	—	22	30	—	—	28	39	38	57	50	100	40	—	40
	RQ6A045ZP	TR		-12	-4.5	1.25	—	—	25	35	—	—	31	43	39	58	50	100	31	—	31
	RQ6C065BC	TCR		-20	-6.5	1.25	—	—	14.9	21	—	—	18.6	26	25	50	—	—	—	—	22
	RQ6C050BC	TCR		-20	-5	1.25	—	—	27	36	—	—	35	47	48	77	—	—	—	—	10.4
	RQ6E060AT	TCR		-30	-6	1.25	20.3	26.4	26.8	34.6	—	—	—	—	—	—	—	—	—	—	12.9
	RQ6E050AT	TCR		-30	-5	1.25	21	27	29	38	—	—	—	—	—	—	—	—	—	—	10.4
	RQ6E045RP	TR		-30	-4.5	1.25	25	35	34	48	38	53	—	—	—	—	—	—	—	—	14 ^{*1}
	RRQ045P03	TR		-30	-4.5	1.25	25	35	34	48	38	53	—	—	—	—	—	—	—	—	14 ^{*1}
	RQ6E035AT	TCR		-30	-3.5	1.25	38	50	54	70	—	—	—	—	—	—	—	—	—	—	5.2
	RQ6E035SP	TR		-30	-3.5	1.25	45	65	65	90	70	95	—	—	—	—	—	—	—	—	9.2 ^{*1}
	RQ6E030AT	TCR		-30	-3	1.25	70	91	104	135	—	—	—	—	—	—	—	—	—	—	2.7
	RQ6E030SP	TR		-30	-3	1.25	60	80	90	125	100	140	—	—	—	—	—	—	—	—	6 ^{*1}
	RRQ020P03	TR		-30	-2	1.25	115	160	170	240	190	270	—	—	—	—	—	—	—	—	3.2 ^{*1}
	RQ6G050AT	TCR		-40																	

Power MOSFETs

Multiple Schottky Barrier Diodes Power MOSFET series (TUMT • TSMT Package)



Power MOSFETs <MPT3·HEML1616L7·HUML2020L8·HSMT8·HSM13030L10 Package>																								
Package	Application	Product No.		Polarity (ch)	V _{DS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)												Q _g (nC) (V _{GS} =4.5V)				
		Part No.	Packing code					V _{GS} =10V		V _{GS} =6V		V _{GS} =4.5V		V _{GS} =4.0V		V _{GS} =2.5V		V _{GS} =1.8V			V _{GS} =1.5V			
								Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max		Typ	Max		
	DC-DC Converter Motor Drive	RHP030N03	T100	N	30	3	2	90	120	-	-	-	-	160	210	-	-	-	-	-	6.5*1			
		RHP020N06	T100		60	2	2	150	200	-	-	200	280	240	340	-	-	-	-	-	-	7*1		
		RJP020N06	T100		60	2	2	-	-	-	-	165	240	170	250	210	300	-	-	-	-	-	5*2	
	Load Switch Switching	RW4E075AJ	TCL1	N	30	7.5	1.5	-	-	-	-	18.5	26	-	-	26.6	38	-	-	-	-	6.3		
		RW4E065GN	TCL1		40	6.5	1.5	18.2	22.5	-	-	25.1	31.6	-	-	-	-	-	-	-	-	-	2.1	
		RW4E045AJ	TCL1		30	4.5	1.5	-	-	-	-	28	40	-	-	41	58	-	-	-	-	-	-	4
		RW4E045AT	TCL1		-30	-4.5	1.5	34	48	-	-	50	70	-	-	-	-	-	-	-	-	-	-	5.3
		RW4C045BC	TCL1		-20	-4.5	1.5	-	-	-	-	39	56	-	-	52	74	73	117	-	-	-	-	6.5
	DC-DC Converter Motor Drive	RF4E110GN	TR	N	30	11	2	8.7	11.3	-	-	11.7	16.5	-	-	-	-	-	-	-	-	3.5		
		RF4E080GN	TR		30	8	2	13.5	17.6	-	-	17.6	31.2	-	-	-	-	-	-	-	-	-	2.8	
		RF4E070GN	TR		30	7	2	16.4	21.4	-	-	23	33	-	-	-	-	-	-	-	-	-	2.2	
		RF4G100BG	TCR		40	10	2	10.9	14.2	-	-	13.7	23.0	-	-	-	-	-	-	-	-	-	-	5.0
		RF4L070BG	TCR		60	7	2	21	27	-	-	29	40	-	-	-	-	-	-	-	-	-	-	3.9
		RF4E110BN	TR		30	11	2	8.5	11.1	-	-	11.8	15.4	-	-	-	-	-	-	-	-	-	-	12
	Load Switch Switching	RF4E100AJ	TCR		30	10	2	-	-	-	-	9.4	12.4	-	-	13.3	17.9	-	-	-	-	-	-	13
		RF4E080BN	TR1		30	8	2	13.5	17.6	-	-	18.9	24.6	-	-	-	-	-	-	-	-	-	-	7.2
		RF4E070BN	TR		30	7	2	22	28.6	-	-	30.8	40	-	-	-	-	-	-	-	-	-	-	4.6
		RF4E060AJ	TCR		30	6	2	-	-	-	-	28	37	-	-	41	55	-	-	-	-	-	-	4
		New RF4P060BG	TCR		100	6	2	41	53	-	-	52	78	-	-	-	-	-	-	-	-	-	-	3.7
		RF4C050AP	TR		-20	-10	2	-	-	-	-	18	26	-	-	22	31	27	45	32	65	55	-	-
		RF4C100BC	TCR		-20	-10	2	-	-	-	-	12	15.6	-	-	15.4	20	23.5	37.6	-	-	-	-	23.5
		RF4E075AT	TCR		-30	-7.5	2	16.7	21.7	-	-	24.4	31.7	-	-	-	-	-	-	-	-	-	-	11
		RF4G060AT	TCR		-40	-6	2	32	40	-	-	40	51	-	-	-	-	-	-	-	-	-	-	8.5
RF4L040AT	TCR	-60	-4	2	70	89	-	-	78	100	-	-	-	-	-	-	-	-	-	-	8.5			
New RF4P025AT	TCR	-100	-2.5	2	200	260	-	-	220	280	-	-	-	-	-	-	-	-	-	-	10.2			
	Load Switch Switching	UT6K3	TCR	N+N	30	5.5	2	-	-	-	-	30	42	-	-	45	63	-	-	-	-	4		
		UT6KB5	TCR		40	5	2	37	48	-	-	48	80	-	-	-	-	-	-	-	-	-	1.8	
		UT6KC5	TCR		60	3.5	2	73	95	-	-	104	145	-	-	-	-	-	-	-	-	-	1.7	
		New UT6KE5	TCR		100	2	2	152	197	-	-	195	292	-	-	-	-	-	-	-	-	-	1.6	
		UT6JA3	TCR	P+P	-20	-5	2	-	-	-	-	42	59	-	-	54	76	76	118	-	-	-	-	6.5
		UT6J3	TCR		-20	-3	2	-	-	-	-	60	85	-	-	65	95	95	155	130	260	85	-	
		UT6JA2	TCR		-30	-4	2	55	70	-	-	80	103	-	-	-	-	-	-	-	-	-	3.4	
		UT6JB5	TCR		-40	-3.5	2	95	122	-	-	121	155	-	-	-	-	-	-	-	-	-	3.3	
	UT6JC5	TCR	-60		-2.5	2	220	280	-	-	250	320	-	-	-	-	-	-	-	-	-	3.2		
	New UT6JE5	TCR	-100		-1	2	650	840	-	-	690	900	-	-	-	-	-	-	-	-	-	3.7		
	Motor	UT6MA3	TBR	N+P	20	5.5	2	-	-	-	-	30	42	-	-	45	63	-	-	-	-	-	4	
		UT6MA2	TCR		-20	-5	2	-	-	-	-	42	59	-	-	54	76	-	-	-	-	-	6.5	
					30	4	2	37	46	-	-	59	80	-	-	-	-	-	-	-	-	2.2		
		New UT6ME5	TCR		-30	-4	2	55	70	-	-	80	103	-	-	-	-	-	-	-	-	-	3.3	
100					2	2	159	207	-	-	230	345	-	-	-	-	-	-	-	-	-	1.6		
-100		-1	2		650	840	-	-	690	900	-	-	-	-	-	-	-	-	-	-	-	3.7		

Note1: Package is JEDEC code. (): ROHM Packages, []: JEITA code, (): GENERAL code.
 Note2: *1 V_{GS}=10V *2 V_{GS}=4V

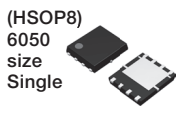
Power MOSFETs <MPT3·HEML1616L7·HJML2020L8·HSMT8·HSML3030L10 Package>																								
Package	Application	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)												Q _g (nC) (V _{GS} =4.5V)				
		Part No.	Packing code					V _{GS} =10V		V _{GS} =6V		V _{GS} =4.5V		V _{GS} =4.0V		V _{GS} =2.5V		V _{GS} =1.8V			V _{GS} =1.5V			
								Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max		Typ	Max		
 (HSMT8) 3333 size Single	DC-DC Converter Switching	RQ3E180GN	TB	N	30	39*1	20*1	3.3	4.3	-	-	4.3	6.1	-	-	-	-	-	-	-	11			
		RQ3E150GN	TB		30	39*1	17*1	4.7	6.1	-	-	6.2	8.8	-	-	-	-	-	-	-	-	7.4		
		RQ3E120GN	TB		30	27*1	15*1	6.7	8.8	-	-	9.1	13.8	-	-	-	-	-	-	-	-	-	4.8	
		RQ3E100GN	TB		30	21*1	15*1	8.9	11.7	-	-	12	20	-	-	-	-	-	-	-	-	-	3.9	
		RQ3E080GN	TB		30	18*1	14*1	12.9	16.7	-	-	17.5	31.2	-	-	-	-	-	-	-	-	-	-	2.8
		New RH6G040BG	TB1		40	40*1	59*1	2.8	3.6	-	-	4.7	6.5	-	-	-	-	-	-	-	-	-	-	12.4
		New RH6L040BG	TB1		60	40*1	59*1	5.5	7.1	-	-	8	11.2	-	-	-	-	-	-	-	-	-	-	9.2
		New RH6P040BH	TB1		100	40	59	12	15.6	15.6	23.3	-	-	-	-	-	-	-	-	-	-	-	-	8.8*2
		RQ3P300BH	TB1		100	39*1	32*1	11.9	15.5	15.6	24.0	-	-	-	-	-	-	-	-	-	-	-	-	18*2
		New RH6R025BH	TB1		150	25*1	59*1	46	60	49	73	-	-	-	-	-	-	-	-	-	-	-	-	8.7*2
	Load Switch Switching	RQ3E180BN	TB		30	39*1	20*1	2.8	3.9	-	-	3.7	5.2	-	-	-	-	-	-	-	-	-	37	
		RQ3E150BN	TB		30	39*1	17*1	3.8	5.3	-	-	5.3	7.4	-	-	-	-	-	-	-	-	-	23	
		RQ3E130BN	TB		30	39*1	16*1	4.4	6	-	-	6.7	9.4	-	-	-	-	-	-	-	-	-	16	
		RQ3E180AJ	TB1		30	30*1	30*1	-	-	-	-	3.5	4.5	-	-	4.5	5.8	-	-	-	-	-	-	39
		RQ3E110AJ	TB		30	24*1	15*1	-	-	-	-	8.8	11.7	-	-	12.6	16.5	-	-	-	-	-	-	13.5
		RQ3E120BN	TB		30	21*1	16*1	6.6	9.3	-	-	8.6	11.9	-	-	-	-	-	-	-	-	-	-	14
		RQ3E100BN	TB		30	21*1	15*1	7.7	10.4	-	-	11	15.3	-	-	-	-	-	-	-	-	-	-	10.5
		RQ3E160AD	TB		30	16	2	3.5	4.5	-	-	5	7	-	-	-	-	-	-	-	-	-	-	25
		RQ3E080BN	TB		30	15*1	14*1	11	15.2	-	-	16	22	-	-	-	-	-	-	-	-	-	-	7.2
		RQ3E070BN	TB1		30	15*1	13*1	20	27	-	-	29	39	-	-	-	-	-	-	-	-	-	-	4.6
		RQ3C150BC	TB		-20	-30*1	20*1	-	-	-	-	4.8	6.7	-	-	6.1	8.5	8.8	14	-	-	-	-	60
		RQ3E120AT	TB		-30	-39*1	20*1	6.1	8	-	-	8.7	11.3	-	-	-	-	-	-	-	-	-	-	33
RQ3E100AT	TB	-30	-31*1	17*1	9	11.4	-	-	13.1	16.7	-	-	-	-	-	-	-	-	-	-	21			
RQ3E075AT	TB	-30	-18*1	15*1	17.4	23	-	-	26	33	-	-	-	-	-	-	-	-	-	-	10.4			
RQ3G110AT	TB	-40	-35*1	20	9.8	12.4	-	-	12.3	15.7	-	-	-	-	-	-	-	-	-	-	20			
RQ3L070AT	TB	-60	-25*1	20	22	28	-	-	25	32	-	-	-	-	-	-	-	-	-	-	21			
New RQ3P045AT	TB1	-100	-14.5*1	20*1	67	86	-	-	71	92	-	-	-	-	-	-	-	-	-	-	25			
 (HSMT8) 3333 size Dual	Moter	New HT8KB6	TB1	N+N	40	15*1	14*1	13.3	17.2	-	-	19.3	27	-	-	-	-	-	-	-	-	5		
		New HT8KB5	TB1		40	12*1	13*1	36	47	-	-	58	81	-	-	-	-	-	-	-	-	-	1.8	
		New HT8KC6	TB1		60	15*1	14*1	23	29	-	-	31	43	-	-	-	-	-	-	-	-	-	3.9	
		New HT8KC5	TB1		60	10*1	13*1	69	90	-	-	99	139	-	-	-	-	-	-	-	-	-	1.7	
		New HT8KE6	TB1		100	13*1	14*1	44	57	-	-	56	83	-	-	-	-	-	-	-	-	-	3.7	
		New HT8KE5	TB1		100	7*1	13*1	148	193	-	-	200	300	-	-	-	-	-	-	-	-	-	-	1.7
 (HSML3030L10) 3030 size	DC-DC Converter	HS8K1	TB	N+N	30	10	2	11.2	14.6	-	-	14.7	20	-	-	-	-	-	-	-	-	2.7		
			30		11	2	9.1	11.8	-	-	11.9	16.5	-	-	-	-	-	-	-	-	-	-	3.3	
		HS8K11	TB		30	7	2	12.8	17.9	-	-	20.8	29.1	-	-	-	-	-	-	-	-	-	-	5.7
			30		11	2	10.2	13.3	-	-	11.8	15.4	-	-	-	-	-	-	-	-	-	-	-	9
 (HSML3333L9) 3333 size (DFN3333-9DC)	Moter	HS8MA2	TCR1	N+P	30	7.0	2	25	35	-	-	40	56	-	-	-	-	-	-	-	-	4.7		
					-30	-5.5	2	55	80	-	-	80	115	-	-	-	-	-	-	-	-	-	-	4.3

Note1: Package is JEDEC code. (): ROHM Packages, []: JEITA code, (): GENERAL code.
 Note2: *1 T_c=25°C *2 V_{GS}=10V

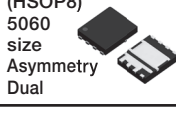
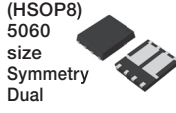
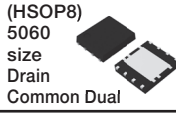
Power MOSFETs

<SOP8 Package> (Single type)													
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)						Q _g (nC) (V _{GS} =5V)
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V		
							Typ	Max	Typ	Max	Typ	Max	
	RS3E135BN	TB	N	30	13.5	2	5.7	7.4	8.5	10.9	—	—	16.6*1
	RXH125N03	TB		30	12.5	2	7.5	12	9.5	13.3	10	14	12.7
	RXH100N03	TB1		30	10	2	9.5	13	12	17	13	18	11
	RS3E095BN	TB		30	9.5	2	11.9	14.6	17.5	21.9	—	—	8.3*1
	RXH090N03	TB1		30	9	2	12	17	17	24	19	27	6.8
	RXH070N03	TB1		30	7	2	20	28	25	35	28	39	5.8
	RSH070N05	TB1		45	7	2	18	25	23	32	25	35	12
	RSH065N06	TB1		60	6.5	2	24	37	28	44	31	48	11
	RS3E180AT	TB1	P	-30	-18	2	4.1	5.4	5	6.1	—	—	80*1
	RRH140P03	TB		-30	-14	2	5	7	6.7	9.4	7.3	10.2	80
	RS3E130AT	TB1		-30	-13	2	6.5	8.5	8.6	11.2	—	—	83*2
	RRH100P03	TB1		-30	-10	2	9	12.6	12.5	17.5	14	19.6	39
	RRH090P03	TB1		-30	-9	2	11	15.4	15	21	17	24	30
	RS3E075AT	TB1		-30	-7.5	2	18	23.5	24	31	—	—	12.8*1
	RRH050P03	TB1		-30	-5	2	36	50	52	72	58	80	9.2
	RRH040P03	TB1		-30	-4	2	55	75	85	115	95	125	5.2
	RS3G160AT	TB1		-40	-16	2	5	6.2	6.1	7.6	—	—	55*1
	RSH070P05	TB1		-45	-7	2	19	27	25	35	28	39	34
	RS3L110AT	TB1		-60	-11	2	10.1	12.8	11.2	14.3	—	—	55*1
	New RS3P070AT	TB1		-100	-7	2	28	36	30	38	—	—	57*1
<SOP8 Package> (Dual type)													
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)						Q _g (nC) (V _{GS} =5V)
	Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V		
							Typ	Max	Typ	Max	Typ	Max	
	SH8KA7	TB	N+N	30	15*3	4.6*3	7.1	9.1	8.3	10.7	—	—	41*1
	SH8KA4	TB		30	9*3	3*3	16.5	21.4	22.2	28.9	—	—	7.9*1
	SH8KA2	TB		30	8*3	2.8*3	23	28	34	43	—	—	4.1*1
	SH8K12	TB		30	6*3	2	30	42	40	56	45	63	4
	SH8KA1	TB		30	4.5*3	2.7*3	54	69	84	109	—	—	1.6*1
	SH8K11	TB		30	3.5	2	70	98	90	126	100	140	1.9
	SH8KB6	TB1		40	8.5	2	14.9	19.4	18.2	26	—	—	5.0*1
	SH8KB7	TB1		40	13.5	2	6.5	8.4	7.5	10.5	—	—	13*1
	SH8KC6	TB1		60	6.5	2	25	32	33	46	—	—	3.9*1
	SH8KC7	TB1		60	10.5	2	9.5	12.4	12.3	17.2	—	—	10.8*1
	SH8KE7	TB1		100	8	2	16.1	20.9	19.7	29.6	—	—	9.1*1
	SH8KE6	TB1		100	4.5	2	45	58	56	84	—	—	3.3*1
	SH8J66	TB1		-30	-9	2	13.5	18.5	17.5	23.6	19	24.7	35
	SH8J65	TB1		-30	-7	2	21.5	29	29	39	31	40.8	18
	SH8J62	TB1		-30	-4.5	2	40	56	55	77	60	84	8
	SH8JB5	TB1		-40	-8.5	2	12.4	15.3	15	18.7	—	—	25*1
	SH8JC5	TB1	-60	-7.5	2	25	32	28	35	—	—	23*1	
	SH8J31	TB	-60	-4.5	2	50	70	55	80	60	85	40*2	
	New SH8JE5	TB1	-100	-4.5	2	70	91	74	96	—	—	25*1	
	SH8MA4	TB1	N+P	30	9*3	3.0*3	16.5	21.4	22.2	32.5	—	—	7.9*1
	SH8MA4	TB1		-30	-8.5*3		23	29.6	32	41.3	—	—	9.8*1
	SH8MA3	TB1		30	7*3	2.8*3	23	28	42	57	—	—	3.7*1
	SH8MA3	TB1		-30	-6*3		40	50	60	73	—	—	5.2*1
	SH8MA2	TB		30	4.5*3	2.7*3	57	80	88	125	—	—	1.5*1
	SH8MA2	TB		-30	-4.5*3		63	82	89	115	—	—	3.4*1
	SH8MB5	TB1		40	8.5	2	14.9	19.4	18.2	26	—	—	5*1
	SH8MB5	TB1		-40	-8.5		13.9	16.8	16.5	21	—	—	25*1
	New SH8MB4	TB1		40	5	2	42	55	65	91	—	—	1.8*1
	SH8MB4	TB1		-40	-6		36	46	44	56	—	—	9.0*1
	New SH8MC4	TB1		60	4	2	73	95	106	148	—	—	1.7*1
	SH8MC4	TB1		-60	-4.5		75	96	84	107	—	—	8.5*1
	SH8M24	TB		45	4.5	2	33	46	41	57	46	64	6.8
	SH8M24	TB		-45	-3.5		45	63	60	84	66	92	13
	SH8MC5	TB1		60	6.5	2	25	32	33	46	—	—	3.9*1
	SH8MC5	TB1		-60	-7		27	33	29	37	—	—	23*1
	SH8M31	TB	60	4.5	2	46	65	52	73	55	77	7*1	
	SH8M31	TB	-60	-4.5		50	70	55	80	60	85	20*1	
	New SH8ME5	TB1	100	4.5	2	45	58	56	84	—	—	3.3*1	
	SH8ME5	TB1	-100	-4.5		70	91	74	96	—	—	25*1	
	SH8M41	TB	80	3.4	2	90	130	110	150	120	160	6.6	
SH8M41	TB	-80	-2.6	165		240	220	300	230	310	8.2		
SH8M41	TB	100	3	120		170	130	180	135	190	8.5		
SH8M51	TB	-100	-2.5	2	210	290	230	320	240	340	12.5		

Note1: (): ROHM Packages at package site.
 Note2: *1 V_{GS}=4.5V *2 V_{GS}=10V *3 P_{WS}1s





<HSOP8 Package> (Single type)																
Package	Application	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A) (T _c =25°C)	P _D (W) (T _c =25°C)	R _{DS(on)} (mΩ)						Q _g (nC) (V _{GS} =4.5V)	Drive Voltage (V)	
		Part No.	Packing code					V _{GS} =10V		V _{GS} =6V		V _{GS} =4.5V				
								Typ	Max	Typ	Max	Typ	Max			
	Load Switch	RS1E350BN	TB	N	30	80	35	1.2	1.7	—	—	1.8	2.5	95	4.5	
		RS1E281BN	TB1		30	80	30	1.7	2.3	—	—	2.3	3.2	50		
		RS1E200BN	TB		30	68	25	2.8	3.9	—	—	3.8	5.3	29		
		RS1E180BN	TB		30	60	25	3.5	4.9	—	—	4.9	6.9	23		
		RS1E240BN	TB		30	40	30	2.3	3.2	—	—	3.3	4.6	35		
		RS1E260AT	TB1		P	-30	-80	40	2.5	3.1	—	—	3.5	4.3		87
		RS1E220AT	TB1			-30	-76	34	3.3	4.1	—	—	4.6	5.8		65
		RS1G201AT	TB1			-40	-78	40	4.2	5.2	—	—	5.2	6.5		62
		RS1L151AT	TB1			-60	-56	40	8.9	11.3	—	—	9.9	12.6		59
	New RS1P090AT	TB1	-100	-33		40	26	34	—	—	28	36	62			
	RS1E350GN	TB	N	30		80	39	1.48	1.76	—	—	1.92	2.40	32.7		
	RS1E321GN	TB1		30		80	34	1.4	1.9	—	—	1.8	2.9	19.6		
	RS1E301GN	TB1		30		80	33	1.7	2.2	—	—	2.2	3.3	18.5		
	RS1E280GN	TB		30		80	31	2.0	2.6	—	—	2.6	3.8	17.1		
	RS1E240GN	TB		30	72	27	2.6	3.3	—	—	3.3	5.2	11.2			
	RS1E200GN	TB		30	57	25	3.6	4.6	—	—	4.7	7.5	7.8			
	RS1E170GN	TB		30	40	23	5.1	6.7	—	—	6.7	10.3	5.9			
	RS1E150GN	TB		30	40	22	6.7	8.8	—	—	8.8	13.3	4.8			
	RS1E130GN	TB		30	35	22	8.9	11.7	—	—	11.7	17.7	3.9			
	New RS6G120BG	TB1		40	120	104	1.03	1.34	—	—	1.74	2.43	34			
	New RS6G100BG	TB1		40	100	59	2.6	3.4	—	—	4.6	6.5	11.8			
	New RS6L120BG	TB1		60	120	104	2.1	2.7	—	—	3	4.2	25			
	New RS6L090BG	TB1		60	90	73	3.6	4.7	—	—	5.3	7.4	13.6			
	New RS6N120BH	TB1		80	120	104	2.8	3.3	3.5	4.9	—	—	53*			
	New RS6P100BH	TB1		100	100	104	4.5	5.9	5.8	8.7	—	—	45*			
	New RS6P060BH	TB1		100	60	73	8.2	10.6	10.7	16	—	—	25*			
	New RS1P600BH	TB1		100	60	35	6.7	8.8	8.6	12.9	—	—	32*			
	New RS6R060BH	TB1		150	60	104	16.7	21.8	17.9	26.8	—	—	46*			
New RS6R035BH	TB1	150		35	73	32	41	34	59	—	—	25*				

Note1: () : ROHM Packages.
 Note2: *V_{GS}=10V


<HSOP8 Package> (Dual type)														
Package	Application	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A) (T _a =25°C)	P _D (W) (T _a =25°C)	R _{DS(on)} (mΩ)				Q _g (nC) (V _{GS} =4.5V)	Drive Voltage (V)	
		Part No.	Packing code					V _{GS} =10V		V _{GS} =4.5V				
								Typ	Max	Typ	Max			
	Switching	HP8K24	TB	N+N	30	80 ^{*1}	31 ^{*1}	2.3	3	3.2	4.2	17.2	4.5	
		HP8K22	TB		30	27 ^{*1}	22 ^{*1}	6.7	8.8	9.1	13.3	4.8		
		HP8K22	TB		30	57 ^{*1}	25 ^{*1}	3.6	4.6	4.7	7.5	7.8		
	Motor	New HP8KB7	TB1	N+N	40	24 ^{*1}	26 ^{*1}	6.2	8	8	11.1	13	4.5	
		New HP8KB6	TB1		40	24 ^{*1}	21 ^{*1}	12.1	15.7	17.8	25	5		
		New HP8KC7	TB1		60	24 ^{*1}	26 ^{*1}	8.8	11.5	11.2	15.7	10.8		
		New HP8KC6	TB1		60	23 ^{*1}	21 ^{*1}	21	27	29	43	3.9		
		New HP8KE7	TB1		100	24 ^{*1}	26 ^{*1}	15.1	19.6	18.6	27.8	10.5		
		New HP8KE6	TB1		100	17 ^{*1}	21 ^{*1}	41	54	53	73	3.7		
		HP8MA2	TB1	N+P	30	18 ^{*2}	7 ^{*2}	7.5	9.6	11.7	16.5	10.5		
		New HP8MB5	TB1		-30	-15 ^{*2}	7 ^{*2}	13.2	17.9	21	29	12.8		
		HP8MC5	TB1		40	16.5 ^{*1}	20 ^{*1}	35	46	57	80	1.8		
		New HP8MC5	TB1		-40	-18.0 ^{*1}	20 ^{*1}	34	44	42	55	9		
		HP8M31	TB1		60	12 ^{*1}	20 ^{*1}	69	99	99	139	1.7		
		New HP8ME5	TB1		-60	-12 ^{*1}	20 ^{*1}	74	96	83	107	8.5		
		HP8M51	TB1		60	8.5 ^{*2}	7 ^{*2}	46	65	52	73	6.2		
		New HP8ME5	TB1		-60	-8.5 ^{*2}	7 ^{*2}	50	70	55	80	15.7		
		New HP8ME5	TB1		100	8.5 ^{*1}	20 ^{*1}	148	193	200	300	1.7		
HP8KA1	TB	100	-8.0 ^{*1}	20 ^{*1}	210	273	233	303	10.2					
HP8KA1	TB	100	4.5 ^{*2}	7 ^{*2}	120	170	130	180	8.5					
HP8KA1	TB	-100	-4.5 ^{*2}	7 ^{*2}	210	290	230	320	12.5					
	Load Switch	HP8KA1	TB	N+N	30	14 ^{*1}	3 ^{*1}	3.5	5	5	7	24	4.5	

Note1: () : ROHM Packages.
 Note2: *1 T_c=25°C *2 P_{WS}1s

Power MOSFETs

Power MOSFET series																
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A) (T _c =25°C)	P _D (W) (T _c =25°C)	R _{DS(on)} (mΩ)								Q _g (nC) (V _{GS} =10V)	
	Part No.	Packing code					V _{GS} =10V		V _{GS} =6.0V		V _{GS} =4.5V		V _{GS} =4.0V			
							Typ	Max	Typ	Max	Typ	Max	Typ	Max		
TO-252 (DPAK) 	<i>New</i> RD3G07BBG	TL1	N	40	70	89	1.75	2.27	—	—	2.6	3.7	—	—	28*2	
	<i>New</i> RD3G03BBG	TL1		40	35	50	5	6.5	—	—	7.6	10.6	—	—	9.2*2	
	RD3H200SN	TL1		45	20	20	20	28	—	—	25	35	28	40	12*1	
	<i>New</i> RD3L07BBG	TL1		60	70	89	3	3.9	—	—	4.1	5.7	—	—	23*2	
	<i>New</i> RD3L03BBG	TL1		60	35	50	8.7	11.3	—	—	12.1	16.9	—	—	6.8*2	
	RD3L220SN	TL1		60	22	20	18	26	—	—	21	30	23	33	30	
	RD3L150SN	TL1		60	15	20	28	40	—	—	33	47	36	51	18	
	RD3L080SN	TL1		60	8	15	57	80	—	—	70	98	78	109	9.4	
	RD3L050SN	TL1		60	5	15	78	109	—	—	94	131	100	140	8	
	<i>New</i> RD3P07BBH	TL1		100	70	89	5.9	7.7	7.5	11.2	—	—	—	—	—	38
	<i>New</i> RD3P03BBH	TL1		100	35	50	18	23	23	34	—	—	—	—	—	12.4
	RD3P200SN	TL1		100	20	20	33	46	—	—	—	—	36	50	55	
	RD3P175SN	TL1		100	17.5	20	75	105	—	—	80	112	85	119	24	
	RD3P100SN	TL1		100	10	20	95	133	—	—	100	140	105	147	18	
	RD3P050SN	TL1		100	5	15	135	190	—	—	142	200	145	205	14	
	RD3S100CN	TL1		190	10	85	130	182	—	—	—	—	136	190	52	
	RD3S075CN	TL1		190	7.5	52	240	336	—	—	—	—	248	347	30	
	RD3T100CN	TL1		200	10	85	140	182	—	—	—	—	—	—	25	
	RD3T075CN	TL1		200	7.5	52	250	325	—	—	—	—	—	—	15	
	RD3T050CN	TL1		200	5	29	540	760	—	—	—	—	—	—	8.3	
	RD3U080CN	TL1		250	8	85	225	300	—	—	—	—	—	—	25	
	RD3U060CN	TL1		250	6	52	410	530	—	—	—	—	—	—	15	
	RD3U040CN	TL1		250	4	29	930	1,300	—	—	—	—	—	—	8.5	
	RD3G07BAT	TL1		—	-40	-70	101	5.7	7.1	—	—	6.9	8.7	—	—	105
	RD3G03BAT	TL1		—	-40	-35	56	15	19.1	—	—	18.5	24	—	—	38
	RD3G01BAT	TL1		—	-40	-15	25	31	39	—	—	38	49	—	—	19.3
	RD3H160SP	TL1		—	-45	16	20	35	50	—	—	45	63	50	70	16*1
	RD3H080SP	TL1		—	-45	-8	15	65	91	—	—	95	133	105	147	9*1
	RD3H045SP	TL1		—	-45	-4.5	15	112	157	—	—	160	224	185	259	5.6*1
	RD3L07BAT	TL1		—	-60	-70	101	10.1	12.7	—	—	11.1	14.1	—	—	105
	RD3L03BAT	TL1		—	-60	-35	56	32	41	—	—	36	46	—	—	37
	RD3L140SP	TL1		—	-60	-14	20	60	84	—	—	73	103	77	108	27
RD3L01BAT	TL1	—	-60	-10	26	65	84	—	—	73	93	—	—	15.2		
<i>New</i> RD3P05BAT	TL1	—	-100	-50	101	32	41	35	46	—	—	—	—	110		
<i>New</i> RD3P02BAT	TL1	—	-100	-20	56	89	116	100	130	—	—	—	—	39		
<i>New</i> RD3P01BAT	TL1	—	-100	-10	25	181	240	210	270	—	—	—	—	19.4		
RD3P130SP	TL1	—	-100	-13	20	135	200	—	—	150	220	155	230	40		
(TO-220FM) (TO-220FP) 	RXC700N20	—	N	200	70	83	30.5	42.7	—	—	—	—	—	125		
	RXC450N20	—		200	45	69	42	55	—	—	—	—	—	—	80	
	RXC300N20	—		200	30	61	60	80	—	—	—	—	—	—	60	
	RXC200N20	—		200	20	48	100	130	—	—	—	—	—	—	40	
	RCX160N20	—		200	16	43	135	180	—	—	—	—	—	—	26	
	RCX120N20	—		200	12	40	250	325	—	—	—	—	—	—	15	
	RXC081N20	—		200	8	40	470	770	—	—	—	—	—	—	9	
	RXC511N25	—		250	51	84	48	65	—	—	—	—	—	—	120	
	RXC330N25	—		250	33	69	77	105	—	—	—	—	—	—	80	
	RXC220N25	—		250	22	61	105	140	—	—	—	—	—	—	60	
	RCX120N25	—		250	12	48	180	235	—	—	—	—	—	—	35	
	RCX100N25	—		250	10	43	245	320	—	—	—	—	—	—	26.5	
	RXC080N25	—		250	8	35	460	600	—	—	—	—	—	—	15	
	RXC051N25	—		250	5	30	970	1,360	—	—	—	—	—	—	9	
	TO-220AB 	<i>New</i> RX3G18BBG		C16	N	40	180	178	1.13	1.47	—	—	1.43	2	—	—
<i>New</i> RX3G07BBG		C16	40	70		89	2.3	3	—	—	3.2	4.4	—	—	28*2	
<i>New</i> RX3L18BBG		C16	60	180		178	1.54	2	—	—	1.9	2.66	—	—	77*2	
<i>New</i> RX3L07BBG		C16	60	70		89	3.5	4.6	—	—	4.7	6.5	—	—	23*2	
<i>New</i> RX3P10BBH		C16	100	105		178	2.8	3.7	3.2	4.8	—	—	—	—	135	
<i>New</i> RX3P07CBH		C16	100	70		125	4	5.2	4.8	7.2	—	—	—	—	73	
<i>New</i> RX3P07BBH		C16	100	70		89	6.5	8.4	8	12	—	—	—	—	38	
TO-263AB (TO-263AB-3LSHYAD) 	<i>New</i> RJ1P10BBH	TL1	N	100	105	189	2.3	3.0	2.8	4.2	—	—	—	—	135	
	<i>New</i> RJ1P07CBH	TL1		100	70	135	3.9	5.1	4.7	7.1	—	—	—	—	73	
	<i>New</i> RJ1P04BBH	TL1		100	40	89	6.3	8.2	7.8	11.7	—	—	—	—	38	
	<i>New</i> RJ1R10BBH	TL1		150	105	189	6.3	8.2	6.7	10	—	—	—	—	130	
	<i>New</i> RJ1R04BBH	TL1		150	40	89	20	26	22	32	—	—	—	—	37	

Note1: Package is JEDEC code. (): ROHM Packages, (<): GENERAL code.
 Note2: *1 V_{GS}=5V *2 V_{GS}=4.5V

Power MOSFET series															
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A) (T _c =25°C)	P _D (W) (T _c =25°C)	R _{DS(on)} (mΩ)								Q _g (nC) (V _{GS} =10V)
	Part No.	Packing code					V _{GS} =10V		V _{GS} =6.0V		V _{GS} =4.5V		V _{GS} =4.0V		
							Typ	Max	Typ	Max	Typ	Max	Typ	Max	
TO-263S (LPTS) [SC-83] (D2PAK) 	RSJ650N10	TL	N	100	65	100	6.5	9.1	–	–	–	–	7	9.8	260
	RSJ550N10	TL		100	55	100	12	16.8	–	–	–	–	13.5	18.9	143
	RSJ400N10	TL		100	40	50	19	27	–	–	–	–	21	30	90
	RSJ301N10	TL		100	30	50	33	46	–	–	–	–	36	50	60
	RCJ700N20	TL		200	70	297	30.5	42.7	–	–	–	–	–	–	125
	RCJ451N20	TL		200	45	211	42	55	–	–	–	–	–	–	80
	RCJ300N20	TL		200	30	166	60	80	–	–	–	–	–	–	60
	RCJ200N20	TL		200	20	106	100	130	–	–	–	–	–	–	40
	RCJ160N20	TL		200	16	85	135	180	–	–	–	–	–	–	26
	RCJ120N20	TL		200	12	52	250	325	–	–	–	–	–	–	15
	RCJ081N20	TL		200	8	40	550	770	–	–	–	–	–	–	9
	RCJ510N25	TL		250	51	304	48	65	–	–	–	–	–	–	120
	RCJ331N25	TL		250	33	211	77	105	–	–	–	–	–	–	80
	RCJ220N25	TL		250	22	166	105	140	–	–	–	–	–	–	60
	RCJ120N25	TL		250	12	107	180	235	–	–	–	–	–	–	35
	RCJ100N25	TL		250	10	85	245	320	–	–	–	–	–	–	26.5
	RCJ050N25	TL		250	5	30	970	1,360	–	–	–	–	–	–	9
	RSJ250P10	TL	P	–100	–25	50	45	63	–	–	48	67	50	70	60 ^{*1}
RSJ151P10	TL	–100		–15	50	85	120	–	–	95	135	100	140	64	





Note1: Package is JEDEC code. (): ROHM Packages, []: JEITA code, (): GENERAL code.
 Note2: *1 V_{GS}=5V

Power MOSFETs

Low Noise type									
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _c =25°C)	R _{DS(on)} (Ω)		Q _g (nC) V _{GS} =10V
	Part No.	Packing code					V _{GS} =10V		
							Typ	Max	
(SOP8)	R6000ENH	TB1	N	600	0.5	2.0	7.300	8.800	4.3
	R6002ENH	TB1		600	1.7	2.0	2.800	3.400	6.5
(SOT-223)	☆R6004END4	TL1	N	600	4	9.1	0.9	0.98	15
TO-252 (DPAK)	R6011END3	TL1	N	600	11	124	0.340	0.390	32
	R6009END3	TL1		600	9	94	0.500	0.535	23
	R6007END3	TL1		600	7	78	0.570	0.620	20
	R6004END3	TL1		600	4	59	0.900	0.980	15
	R6002END3	TL1		600	1.7	26	2.800	3.400	6.5
	R6511END3	TL1		650	11	124	0.360	0.400	32
	R6509END3	TL1		650	9	94	0.530	0.585	24
	R6507END3	TL1		650	7	78	0.605	0.665	20
	R6504END3	TL1		650	4	58	0.955	1.050	15
	R6502END3	TL1		650	1.7	26	3.050	4.000	6.5
TO-263S (LPTS) [SC-83] (D2PAK)	R6024ENJ	TL	N	600	24	245	0.150	0.165	70
	R6020ENJ	TL		600	20	231	0.170	0.196	60
	R6015ENJ	TL		600	15	184	0.260	0.290	40
	R6011ENJ	TL		600	11	124	0.340	0.390	32
	R6009ENJ	TL		600	9	94	0.500	0.535	23
	R6007ENJ	TL		600	7	78	0.570	0.620	20
	R6004ENJ	TL		600	4	58	0.900	0.980	15
	R6524ENJ	TL		650	24	245	0.160	0.185	70
	R6520ENJ	TL		650	20	231	0.185	0.205	61
	R6515ENJ	TL		650	15	184	0.280	0.315	40
	R6511ENJ	TL		650	11	124	0.360	0.400	32
	R6509ENJ	TL		650	9	94	0.530	0.585	24
	R6507ENJ	TL		650	7	78	0.605	0.665	20
	R6504ENJ	TL		650	4	58	0.955	1.050	15
(TO-220FM) (TO-220FP)	R6030ENX	C7 G	N	600	30	86	0.115	0.130	85
	R6024ENX	C7 G		600	24	74	0.150	0.165	70
	R6020ENX	C7 G		600	20	68	0.170	0.196	60
	R6015ENX	C7 G		600	15	60	0.260	0.290	40
	R6011ENX	C7 G		600	11	53	0.340	0.390	32
	R6009ENX	C7 G		600	9	48	0.500	0.535	23
	R6007ENX	C7 G		600	7	46	0.570	0.620	20
	R6004ENX	C7 G		600	4	35	0.900	0.980	15
	R6530ENX	C7 G		650	30	86	0.125	0.140	90
	R6524ENX	C7 G		650	24	74	0.160	0.185	70
	R6520ENX	C7 G		650	20	68	0.185	0.205	61
	R6515ENX	C7 G		650	15	60	0.280	0.315	40
	R6511ENX	C7 G		650	11	53	0.360	0.400	32
	R6509ENX	C7 G		650	9	48	0.530	0.585	24
	R6507ENX	C7 G		650	7	46	0.605	0.665	20
	R6504ENX	C7 G		650	4	35	0.955	1.050	15
TO-247AD (TO-247)	R6076ENZ4	C13	N	600	76	735	0.038	0.042	260
	R6047ENZ4	C13		600	47	481	0.066	0.072	145
	R6035ENZ4	C13		600	35	379	0.092	0.102	110
	R6030ENZ4	C13		600	30	305	0.115	0.130	85
	R6024ENZ4	C13		600	24	245	0.150	0.165	70
	R6020ENZ4	C13		600	20	231	0.170	0.196	60
	R6576ENZ4	C13		650	76	735	0.040	0.046	260
	R6547ENZ4	C13		650	47	480	0.070	0.080	150
	R6535ENZ4	C13		650	35	379	0.098	0.115	110
	R6530ENZ4	C13		650	30	305	0.125	0.140	90
	R6524ENZ4	C13		650	24	245	0.160	0.185	70
	R6520ENZ4	C13		650	20	231	0.185	0.205	61
(TO-3PF)	R6035ENZ	C17	N	600	35	120	0.092	0.102	110
	R6030ENZ	C17		600	30	120	0.115	0.130	85
	R6024ENZ	C17		600	24	120	0.150	0.165	70
	R6020ENZ	C17		600	20	120	0.170	0.196	60
	R6015ENZ	C17		600	15	120	0.260	0.290	40
	R6535ENZ	C17		650	35	102	0.098	0.115	110
	R6530ENZ	C17		650	30	86	0.125	0.140	90
	R6524ENZ	C17		650	24	74	0.165	0.185	70
	R6520ENZ	C17		650	20	68	0.185	0.205	61

Note: Package is JEDEC code. () : ROHM Packages, [] : JEITA code, () : GENERAL code.

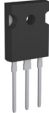

☆: Under Development

Fast Switching type											
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _C =25°C)	R _{DS(on)} (Ω)		Q _g (nC) V _{GS} =10V		
	Part No.	Packing code					V _{GS} =10V				
							Typ	Max			
TO-252 (DPAK) 	R6011KND3	TL1	N	600	11	124	0.340	0.390	22		
	R6009KND3	TL1		600	9	94	0.500	0.535	16.5		
	R6007KND3	TL1		600	7	78	0.570	0.620	15		
	R6006KND3	TL1		600	6	70	0.720	0.830	12		
	R6003KND3	TL1		600	3	44	1.300	1.500	8		
	<i>New</i> R6014YND3	TL1		600	14	132	0.215*	0.260*	20		
	<i>New</i> R6010YND3	TL1		600	10	92	0.324*	0.390*	15		
	R6511KND3	TL1		650	11	124	0.360	0.400	22		
	R6509KND3	TL1		650	9	94	0.530	0.585	16.5		
	R6507KND3	TL1		650	7	78	0.605	0.665	15		
	R6504KND3	TL1		650	4	58	0.955	1.050	10		
	R8006KND3	TL1		800	6	83	0.750	0.900	22		
	R8003KND3	TL1		800	3	48	1.500	1.800	11.5		
	R8002KND3	TL1		800	1.6	30	3.500	4.200	7.5		
	TO-263S (LPTS) [SC-83] (D2PAK) 	R6024KNJ		TL	N	600	24	245	0.150	0.165	46
R6020KNJ		TL	600	20		231	0.170	0.196	40		
R6015KNJ		TL	600	15		184	0.260	0.290	30		
R6011KNJ		TL	600	11		124	0.340	0.390	22		
R6009KNJ		TL	600	9		94	0.500	0.535	16.5		
R6007KNJ		TL	600	7		78	0.570	0.620	15		
R6004KNJ		TL	600	4		58	0.900	0.980	10		
R6524KNJ		TL	650	24		245	0.160	0.185	46		
R6520KNJ		TL	650	20		231	0.185	0.205	40		
R6515KNJ		TL	650	15		184	0.280	0.315	30		
R6511KNJ		TL	650	11		124	0.360	0.400	22		
R6509KNJ		TL	650	9		94	0.530	0.585	16.5		
R6507KNJ		TL	650	7		78	0.605	0.665	15		
R6504KNJ		TL	650	4		58	0.955	1.050	10		
TO-220AB 		☆R6061YNX3	C16	N		600	61	568	0.050*	0.060*	76
	<i>New</i> R6049YNX3	C16	600		49	448	0.068*	0.082*	65		
	<i>New</i> R6038YNX3	C16	600		38	348	0.080*	0.096*	50		
	<i>New</i> R6027YNX3	C16	600		27	245	0.112*	0.135*	40		
	<i>New</i> R6022YNX3	C16	600		22	205	0.137*	0.165*	33		
	<i>New</i> R6020YNX3	C16	600		20	182	0.154*	0.185*	28		
	<i>New</i> R6014YNX3	C16	600		14	132	0.215*	0.260*	20		
	<i>New</i> R6010YNX3	C16	600		10	92	0.324*	0.390*	15		
	R6535KNX3	C16	650		35	370	0.098	0.115	72		
	R6530KNX3	C16	650		30	307	0.125	0.140	56		
	R6524KNX3	C16	650		24	253	0.160	0.185	45		
	R6520KNX3	C16	650		20	220	0.185	0.205	40		
	R6515KNX3	C16	650		15	161	0.280	0.315	27.5		
	(TO-220FM) (TO-220FP) 	R6030KNX	C7 G		N	600	30	86	0.115	0.130	56
		R6024KNX	C7 G			600	24	74	0.150	0.165	46
R6020KNX		C7 G	600	20		68	0.170	0.196	40		
R6015KNX		C7 G	600	15		60	0.260	0.290	30		
R6011KNX		C7 G	600	11		53	0.340	0.390	22		
R6009KNX		C7 G	600	9		48	0.500	0.535	16.5		
R6007KNX		C7 G	600	7		46	0.570	0.620	15		
R6006KNX		C7 G	600	6		40	0.720	0.830	12		
R6004KNX		C7 G	600	4		35	0.900	0.980	10		
<i>New</i> R6061YNX		C7 G	600	26		100	0.050*	0.060*	80		
<i>New</i> R6049YNX		C7 G	600	22		90	0.068*	0.082*	20		
<i>New</i> R6038YNX		C7 G	600	18		81	0.080*	0.096*	50		
<i>New</i> R6027YNX		C7 G	600	14		70	0.112*	0.135*	40		
<i>New</i> R6022YNX		C7 G	600	13		65	0.137*	0.165*	35		
<i>New</i> R6020YNX		C7 G	600	12		62	0.154*	0.185*	30		
<i>New</i> R6014YNX		C7 G	600	9		54	0.215*	0.260*	20		
<i>New</i> R6010YNX		C7 G	600	7		47	0.324*	0.390*	15		
R6530KNX		C7 G	650	30		86	0.125	0.140	56		
R6524KNX		C7 G	650	24		74	0.160	0.185	46		
R6520KNX		C7 G	650	20		68	0.185	0.205	40		
R6515KNX		C7 G	650	15		60	0.280	0.315	30		
R6511KNX		C7 G	650	11		53	0.360	0.400	22		
R6509KNX		C7 G	650	9		48	0.530	0.585	16.5		
R6507KNX		C7 G	650	7		46	0.605	0.665	14.5		
R6504KNX		C7 G	650	4		35	0.955	1.050	10		
R8019KNX		C7 G	800	19		83	0.200	0.240	65		
R8011KNX		C7 G	800	11		65	0.370	0.450	37		
R8009KNX		C7 G	800	9		59	0.500	0.600	27		
R8006KNX		C7 G	800	6		52	0.750	0.900	22		
R8003KNX		C7 G	800	3		48	1.500	1.800	11.5		
R8002KNX		C7 G	800	1.6		28	3.500	4.200	7.5		

Note: Package is JEDEC code. () : ROHM Packages, [] : JEITA code, < > : GENERAL code.
*V_{GS}=12V






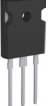

☆: Under Development

Power MOSFETs

Fast Switching type									
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _c =25°C)	R _{DS(on)} (Ω)		Q _g (nC) V _{GS} =10V
	Part No.	Packing code					V _{GS} =10V		
							Typ	Max	
TO-247AD (TO-247) 	☆ R60A4YNZ4	C13	N	600	140	1,250	0.021*	0.025*	180
	New R6086YNZ4	C13		600	86	781	0.036*	0.044*	110
	New R6061YNZ4	C13		600	61	568	0.050*	0.060*	76
	New R6049YNZ4	C13		600	49	448	0.068*	0.082*	65
	New R6038YNZ4	C13		600	38	348	0.080*	0.096*	50
	New R6027YNZ4	C13		600	27	245	0.112*	0.135*	40
	New R6022YNZ4	C13		600	22	205	0.137*	0.165*	33
	New R6020YNZ4	C13		600	20	182	0.154*	0.185*	28
	R6076KNZ4	C13		600	76	735	0.038	0.042	165
	R6047KNZ4	C13		600	47	481	0.066	0.072	100
	R6035KNZ4	C13		600	35	379	0.095	0.102	72
	R6030KNZ4	C13		600	30	305	0.115	0.130	56
	R6024KNZ4	C13		600	24	245	0.150	0.165	46
	R6020KNZ4	C13		600	20	231	0.170	0.196	40
	R6576KNZ4	C13		650	76	735	0.040	0.046	165
	R6547KNZ4	C13		650	47	481	0.070	0.080	100
	R6535KNZ4	C13		650	35	379	0.098	0.115	72
	R6530KNZ4	C13		650	30	305	0.125	0.140	56
	R6524KNZ4	C13		650	24	245	0.160	0.185	45
	R6520KNZ4	C13		650	20	231	0.185	0.205	40
(TO-3PF) 	New R6086YNZ	C17	N	600	33	781	0.036*	0.044*	110
	R6035KNZ	C17		600	35	102	0.092	0.102	72
	R6030KNZ	C17		600	30	86	0.115	0.130	56
	R6024KNZ	C17		600	24	74	0.150	0.165	45
	R6020KNZ	C17		600	20	68	0.170	0.196	40
	R6015KNZ	C17		600	15	60	0.260	0.290	27.5
	R6535KNZ	C17		650	35	102	0.098	0.115	72
	R6530KNZ	C17		650	30	86	0.125	0.140	56
	R6524KNZ	C17		650	24	74	0.160	0.185	45
	R6520KNZ	C17		650	20	68	0.185	0.205	40
	R6515KNZ	C17		650	15	60	0.280	0.315	27.5

Note: Package is JEDEC code. (): ROHM Packages.
*V_{GS}=12V

☆: Under Development

Fast Recovery Body Diode type <PrestoMOS™>											
Package	Product No.		Polarity (ch)	V _{DSS} (V)	I _D (A)	P _D (W) (T _C =25°C)	R _{DS(on)} (Ω)		Q _g Typ (nC) V _{GS} =15V	trr Typ (ns)	
	Part No.	Packing code					V _{GS} =15V				
							Typ	Max			
(SOT-223) 	New R6002JND4	TL1	N	600	2	6.6	2.5	3.25	7	40	
	New R6003JND4	TL1		600	3	7.8	1.65	2.15	8	42	
TO-252 (DPAK) 	R6009JND3	TL1	N	600	9	125	0.450	0.585	22	65	
	R6007JND3	TL1		600	7	96	0.600	0.780	17.5	60	
	R6006JND3	TL1		600	6	86	0.720	0.936	15.5	58	
	R6004JND3	TL1		600	4	60	1.100	1.430	10.5	45	
	New R6013VND3	TL1		600	13	131	0.250	0.300	21*	65	
TO-263S (LPTS) [SC-83] (D2PAK) 	R6020JNJ	TL	N	600	20	252	0.180	0.234	45	85	
	R6018JNJ	TL		600	18	220	0.220	0.286	42	80	
	R6012JNJ	TL		600	12	160	0.300	0.390	28	70	
	R6009JNJ	TL		600	9	125	0.450	0.585	22	65	
	R6007JNJ	TL		600	7	96	0.600	0.780	17.5	60	
	R6006JNJ	TL		600	6	86	0.720	0.936	15.5	58	
	R6004JNJ	TL		600	4	60	1.100	1.430	10.5	45	
TO-220AB 	☆R6055VNX3	C16	N	600	55	543	0.059	0.071	80*	112	
	New R6035VNX3	C16		600	35	348	0.095	0.114	50*	92	
	New R6024VNX3	C16		600	24	245	0.127	0.153	38*	80	
(TO-220FM) (TO-220FP) 	R6030JNX	C7 G	N	600	30	95	0.110	0.143	74	100	
	R6025JNX	C7 G		600	25	85	0.140	0.182	57	90	
	R6020JNX	C7 G		600	20	76	0.180	0.234	45	85	
	R6018JNX	C7 G		600	18	72	0.220	0.286	42	80	
	R6012JNX	C7 G		600	12	60	0.300	0.390	28	70	
	R6009JNX	C7 G		600	9	53	0.450	0.585	22	65	
	R6007JNX	C7 G		600	7	46	0.600	0.780	17.5	60	
	R6006JNX	C7 G		600	6	43	0.720	0.936	15.5	58	
	R6004JNX	C7 G		600	4	35	1.100	1.430	10.5	45	
	☆R6055VNX	C7 G		600	23	99	0.059	0.071	80*	112	
	New R6035VNX	C7 G		600	17	81	0.095	0.114	50*	92	
	New R6024VNX	C7 G		600	13	70	0.127	0.153	38*	80	
	New R6018VNX	C7 G		600	10	61	0.170	0.204	27*	68	
	New R6013VNX	C7 G		600	8	54	0.250	0.300	21*	65	
	TO-247AD (TO-247) 	R6070JNZ4		C13	N	600	70	770	0.045	0.058	165
R6050JNZ4		C13	600	50		615	0.064	0.083	120	120	
R6042JNZ4		C13	600	42		495	0.080	0.104	100	110	
R6030JNZ4		C13	600	30		370	0.110	0.143	74	100	
R6025JNZ4		C13	600	25		306	0.140	0.182	57	90	
R6020JNZ4		C13	600	20		252	0.180	0.234	45	85	
☆R60A4VNZ4		C13	600	140		1,388	0.022	0.027	195*	167	
New R6077VNZ4		C13	600	77		781	0.042	0.051	108*	125	
New R6055VNZ4		C13	600	55		543	0.059	0.071	80*	112	
(TO-3PF) 	R6050JNZ	C17	N	600	50	120	0.064	0.083	120	120	
	R6030JNZ	C17		600	30	93	0.110	0.143	74	100	
	R6025JNZ	C17		600	25	85	0.140	0.182	57	90	
	R6020JNZ	C17		600	20	76	0.180	0.234	45	85	
	New R6077VNZ	C17		600	29	113	0.042	0.051	108*	125	
	New R6055VNZ	C17		600	23	99	0.059	0.071	80*	112	


Note: Package is JEDEC code. (): ROHM Packages, []: JEITA code, (): GENERAL code.
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 *V_{GS}=10V

☆: Under Development

Selector Guide for Automotive MOSFETs


Automotive MOSFETs																							
Package	Product No.			Polarity (ch)	V _{DSS} (V)	I _b (A)	V _{GS} (V)	R _{DS(on)} (mΩ)										Q _g Typ (nC)	C _{iss} Typ (pF)	Automotive Grade AEC-Q101			
	Part No.	Grade Code	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =2.5V		V _{GS} =1.8V		V _{GS} =1.5V					V _{GS} =5V	V _{GS} =10V	
								Typ	Max	Typ	Max	Typ	Max	Typ	Max	Typ	Max						
	RV8C010UN	HZG	G2CR	N	20	1	±8	—	—	340	470	400	560	470	650	540	810	—	40	YES			
	RV8L002SN	HZG	G2CR		60	0.25	±20	1,700	2,400	2,100	3,000	3,000	12,000	—	—	—	—	—	15	YES			
	BSS84X	HZG	G2CR	P	-60	-0.23	±20	2,800	5,300	3,500	6,400	—	—	—	—	—	—	—	35	YES			
	☆RV4E034UN	HZG	TCR1	N	30	3.4	±12	—	—	72	97	100	140	—	—	—	—	3.2*2	170	YES			
	☆RV4L016SN	HZG	TCR1		60	1.6	±20	237	305	290	374	—	—	—	—	—	—	2.0*1	110	YES			
	RV4C020ZP	HZG	TCR1	P	-20	-2	±8	—	—	180	260	240	340	320	450	400	560	2	80	YES			
	RV4E031RP	HZG	TCR1		-30	-3.1	±20	75	105	108	152	—	—	—	—	—	—	4.8	460	YES			
	BSS138BWA	HZG	T106	N	60	0.38	±20	500	700	600	840	1,000	4,000	—	—	—	—	—	—	YES			
	☆BSS138WA	HZG	T106		60	0.31	±20	1,700	2,400	2,100	3,000	3,000	12,000	—	—	—	—	—	—	YES			
	BSS84WA	HZG	T106	P	-60	-0.21	±20	3,600	5,300	4,300	6,400	—	—	—	—	—	—	—	—	YES			
	UM6K31N	FHA	TCN	N+N	60	0.25	±20	1,700	2,400	2,100	3,000	3,000	12,000	—	—	—	—	—	15*4	YES			
	RUF025N02	FRA	TL	N	20	2.5	±10	—	—	39	54	49	68	65	91	80	160	5*2	370	YES			
	RTF025N03	FRA	TL		30	2.5	±12	—	—	48	67	70	98	—	—	—	—	3.7*2	270	YES			
	RTF016N05	FRA	TL		45	1.6	±12	—	—	140	190	200	280	—	—	—	—	2.3*2	150	YES			
	RSF015N06	FRA	TL		60	1.5	±20	210	290	240	330	—	—	—	—	—	—	2	110	YES			
	RUL035N02	FRA	TR	N	20	3.5	±10	—	—	31	43	38	53	50	70	66	93	5.7*2	460	YES			
	RTL035N03	FRA	TR		30	3.5	±12	—	—	40	56	56	79	—	—	—	—	4.6*2	350	YES			
	RTL020P02	FRA	TR		-20	-2	±12	—	—	100	135	180	250	—	—	—	—	4.9*2	430	YES			
	RRL035P03	FRA	TR	P	-30	-3.5	±20	36	50	52	72	—	—	—	—	—	—	8	800	YES			
	RRL025P03	FRA	TR		-30	-2.5	±20	55	75	85	115	—	—	—	—	—	—	5.2	480	YES			
	RSL020P03	FRA	TR		-30	-2	±20	80	120	125	190	—	—	—	—	—	—	3.9	350	YES			
	RUC002N05	HZG	T116	N	50	0.2	±8	—	—	1,600	2,200	1,700	2,400	—	—	2,000	4,000	—	25	YES			
	☆BSS670A	HZG	T116		60	0.6	±20	500	650	600	820	—	—	—	—	—	—	—	—	YES			
	BSS138BKA	HZG	T116		60	0.4	±20	500	700	600	840	1,000	4,000	—	—	—	—	—	—	YES			
	RK7002BM	HZG	T116		60	0.25	±20	1,700	2,400	2,100	3,000	3,000	12,000	—	—	—	—	—	—	15	YES		
	BSS84A	HZG	T116	P	-60	-0.23	±20	2,800	5,300	3,500	6,400	—	—	—	—	—	—	—	—	YES			
	RUR040N02	HZG	TL	N	20	4	±10	—	—	25	35	33	46	—	—	55	110	8*2	680	YES			
	RTR040N03	HZG	TL		30	4	±12	—	—	34	48	47	66	—	—	—	—	—	5.9*2	475	YES		
	RTR025N03	HZG	TL		30	2.5	±12	—	—	66	92	95	133	—	—	—	—	—	3.3*2	220	YES		
	RSR025N03	HZG	TL		30	2.5	±20	50	70	74	105	—	—	—	—	—	—	—	2.9	165	YES		
	RTR030N05	HZG	TL		45	3	±12	—	—	48	67	68	95	—	—	—	—	—	6.2*2	510	YES		
	RSR025N05	HZG	TL		45	2.5	±20	70	100	95	150	—	—	—	—	—	—	—	3.6	260	YES		
	RTR025N05	HZG	TL		45	2.5	±12	—	—	95	130	125	175	—	—	—	—	—	3.2*2	250	YES		
	RTR020N05	HZG	TL		45	2	±12	—	—	130	180	180	250	—	—	—	—	—	2.9*2	200	YES		
	RSR030N06	HZG	TL		60	3	±20	60	85	70	100	—	—	—	—	—	—	—	5	380	YES		
	RSR020N06	HZG	TL		60	2	±20	120	170	140	195	—	—	—	—	—	—	—	2.7	180	YES		
	RSR010N10	HZG	TL	100	1	±20	370	520	400	560	—	—	—	—	—	—	—	3.5	140*4	YES			
	RTR030P02	HZG	TL	P	-20	-3	±12	—	—	55	75	90	125	—	—	—	—	—	—	9.3*2	840	YES	
	RTR025P02	HZG	TL		-20	-2.5	±12	—	—	70	95	115	160	—	—	—	—	—	—	7*2	630	YES	
	RTR020P02	HZG	TL		-20	-2	±12	—	—	100	135	180	250	—	—	—	—	—	—	4.9*2	430	YES	
	RRR040P03	HZG	TL		-30	-4	±20	32	45	45	63	—	—	—	—	—	—	—	—	10.5	1,000	YES	
	RRR030P03	HZG	TL		-30	-3	±20	55	75	85	115	—	—	—	—	—	—	—	—	5.2	480	YES	
	RSR025P03	HZG	TL		-30	-2.5	±20	70	98	100	140	—	—	—	—	—	—	—	—	5.4	460	YES	
	RSR020P05	HZG	TL		-45	-2	±20	130	190	180	260	—	—	—	—	—	—	—	—	4.5*2	500	YES	
	RSR015P06	HZG	TL		-60	-1.5	±20	200	280	240	340	—	—	—	—	—	—	—	—	10*1	500	YES	
		RUQ050N02	HZG		TR	N	20	5	±10	—	—	22	30	27	38	—	—	40	80	12*2	900	YES	
RTQ045N03		HZG	TR		30		4.5	±12	—	—	30	43	42	60	—	—	—	—	—	7.6*2	540	YES	
RSQ045N03		HZG	TR	30	4.5		±20	27	38	36	51	—	—	—	—	—	—	—	6.8	520	YES		
RSQ035N03		HZG	TR	30	3.5		±20	44	62	60	84	—	—	—	—	—	—	—	—	5.3	290	YES	
RTQ035N03		HZG	TR	30	3.5		±12	—	—	38	54	55	77	—	—	—	—	—	—	4.6*2	285	YES	
RSQ020N03		HZG	TR	30	2		±20	96	134	148	207	—	—	—	—	—	—	—	—	2.2	110	YES	
RVQ040N05		HZG	TR	45	4		±21	38	53	47	66	—	—	—	—	—	—	—	—	6.3	530	YES	
RTQ020N05		HZG	TR	45	2		±12	—	—	140	190	200	280	—	—	—	—	—	—	2.3*2	150	YES	
RSQ035N06		HZG	TR	60	3.5		±20	50	70	58	82	—	—	—	—	—	—	—	—	6.5	430	YES	
RSQ015N06		HZG	TR	60	1.5		±20	210	290	240	330	—	—	—	—	—	—	—	—	2	110	YES	
RSQ030N08		HZG	TR	80	3.0	±20	93	131	100	140	—	—	—	—	—	—	—	—	6.5*1	550	YES		
QS6K1		FRA	TR	N+N	30	1	±12	—	—	170	238	260	364	—	—	—	—	—	—	1.7*2	77	YES	
QS6K21		FRA	TR		45	1	±12	—	—	300	420	415	585	—	—	—	—	—	—	1.5*2	95	YES	
RTQ035P02		HZG	TR	P	-20	-3.5	±12	—	—	50	65	80	100	—	—	—	—	—	—	—	10.5*2	1,200	YES
RTQ025P02		HZG	TR		-20	-2.5	±12	—	—	72	100	140	190	—	—	—	—	—	—	—	6.4*2	580	YES
RRQ045P03		HZG	TR		-30	-4.5	±20	25	35	34	48	—	—	—	—	—	—	—	—	14	1,350	YES	
RSQ035P03		HZG	TR		-30	-3.5	±20	45	65	65	90	—	—	—	—	—	—	—	—	—	9.2	780	YES
RRQ030P03		HZG	TR		-30	-3	±20	55	75	85	115	—	—	—	—	—	—	—	—	—	5.2	480	YES
RSQ025P03		HZG	TR		-30	-2.5	±20	80	110	120	165	—	—	—	—	—	—	—	—	—	4.4	320	YES
RSQ015P10		HZG	TR		-100	-1.5	±20	350	470	380	510	—	—	—	—	—	—	—	—	—	17	950*4	YES

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.
 Note2: *1 V_{GS}=10V *2 V_{GS}=4.5V *

Automotive MOSFETs																					
Package	Product No.			Polarity (ch)	V _{DSS} (V)	I _D (A)	V _{GS} (V)	R _{DS(on)} (mΩ)								Q _g Typ (nC)	C _{iss} Typ (pF)	Automotive Grade AEC-Q101			
	Part No.	Grade Code	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =2.5V		V _{GS} =1.8V					V _{GS} =1.5V		
								Typ	Max	Typ	Max	Typ	Max	Typ	Max				Typ	Max	
 (TSMT8) 3028 size	RQ1C075UN	FRA	TR	N	20	7.5	±10	—	—	11	16	14	20	—	—	20	40	18**	1,400	YES	
	QS8K2	FRA	TR	N+N	30	3.5	±12	—	—	38	54	55	77	—	—	—	—	4.6**	285	YES	
	RQ1A070ZP	FRA	TR	P	-12	-7	±10	—	—	8	12	11	16	—	—	19	38	58**	7,400**	YES	
	RQ1E070RP	FRA	TR		-30	-7	±20	12	17	17	24	—	—	—	—	—	—	26	2,700	YES	
	RQ1E050RP	FRA	TR	P+P	-30	-5	±20	22	31	32	45	—	—	—	—	—	—	—	13	1,300	YES
	QS8J4	FRA	TR		-30	-4	±20	40	56	55	77	—	—	—	—	—	—	—	8.4	800	YES
	QS8M51	FRA	TR	N+P	100	2	±20	240	325	250	340	—	—	—	—	—	—	—	—	4.7	290**
					-100	-1.5	±20	350	470	380	510	—	—	—	—	—	—	—	17	950**	YES




Note1: (): ROHM Packages.
 Note2: *1 V_{GS}=4.5V *2 V_{DSS}=25V *3 V_{GS}=6V

Selector Guide for Automotive Power MOSFETs

Automotive Power MOSFETs																	
Package	Product No.			Polarity (ch)	V _{DSS} (V)	I _D (A)	V _{GS} (V)	R _{DS(on)} (mΩ)						Q _g Typ (nC)	C _{iss} Typ (pF)	Automotive Grade AEC-Q101	
	Part No.	Grade Code	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =4.0V					
								Typ	Max	Typ	Max	Typ	Max				
 (SOP8) 5060 size	RSS130N03	HZG	TB	N	30	13	±20	5.9	8.3	7.4	10.4	—	—	25	2,000	YES	
	RSS100N03	HZG	TB		30	10	±20	9.5	13.3	12.5	17.5	—	—	14	1,070	YES	
	RSS095N05	HZG	TB		45	9.5	±20	11	16	14	20	—	—	18.9	1,830	YES	
	RSS070N05	HZG	TB		45	7	±20	18	25	23	32	—	—	12	1,000	YES	
	RSS065N06	HZG	TB		60	6.5	±20	24	37	28	44	—	—	11	900	YES	
	SP8K3	HZG	TB	N+N	30	7	±20	17	24	23	33	—	—	8.4	600	YES	
	SP8K2	HZG	TB		30	6	±20	21	30	30	42	—	—	7.2	520	YES	
	SP8K24	HZG	TB		45	6	±20	18	25	24	34	—	—	15.4	1,400	YES	
	SP8K22	HZG	TB		45	4.5	±20	33	46	41	57	—	—	6.8	550	YES	
	SP8K33	HZG	TB		60	5	±20	34	48	38	54	—	—	8	620	YES	
	SP8K32	HZG	TB		60	4.5	±20	46	65	52	73	—	—	7	500	YES	
	SP8K31	HZG	TB		60	3.5	±20	85	120	100	140	—	—	3.7	250	YES	
	SP8K41	HZG	TB		80	3.4	±20	90	130	110	150	120	160	6.6	600	YES	
	SP8K52	HZG	TB		100	3	±20	120	170	130	180	—	—	8.5	610**	YES	
	RRS140P03	HZG	TB		P	-30	-14	±20	5	7	6.7	9.4	—	—	80	8,000	YES
	RRS100P03	HZG	TB			-30	-10	±20	9	12.6	12.5	17.5	—	—	39	3,600	YES
	RRS090P03	HZG	TB			-30	-9	±20	11	15.4	15	21	—	—	30	3,000	YES
	RRS050P03	HZG	TB	-30		-5	±20	36	50	52	72	—	—	9.2	850	YES	
	RSS070P05	HZG	TB	-45		-7	±20	19	27	25	35	—	—	34	4,100	YES	
	RSS060P05	HZG	TB	P+P	-45	-6	±20	26	36	35	49	—	—	23	2,700	YES	
	SP8J66	HZG	TB		-30	-9	±20	13.5	18.5	17.5	23.6	—	—	35	3,000	YES	
	SP8M4	HZG	TB		30	9	±20	12	18	16	24	—	—	15	1,190	YES	
	SP8M5	HZG	TB		-30	-7	±20	20	28	25	35	—	—	25	2,600	YES	
					30	6	±20	21	30	30	42	—	—	7.2	520	YES	
	SP8M3	HZG	TB		-30	-7	±20	20	28	25	35	—	—	25	2,600	YES	
					30	5	±20	36	51	52	73	—	—	3.9	230	YES	
	SP8M6	HZG	TB		-30	-4.5	±20	40	56	57	80	—	—	8.5	850	YES	
					30	5	±20	36	51	52	73	—	—	3.9	230	YES	
	SP8M21	HZG	TB		-30	-3.5	±20	65	90	100	140	—	—	5.5	490	YES	
					45	6	±20	18	25	24	34	—	—	15.4	1,400	YES	
	SP8M24	HZG	TB		-45	-4	±20	33	46	43	60	—	—	20	2,400	YES	
					45	4.5	±20	33	46	41	57	—	—	6.8	550	YES	
SP8M31	HZG	TB	-45		-3.5	±20	45	63	60	84	—	—	13	1,700	YES		
			60		4.5	±20	46	65	52	73	55	77	7	500	YES		
SP8M41	HZG	TB	-60	-4.5	±20	50	70	55	80	60	85	40	2,500	YES			
			80	3.4	±20	90	130	110	150	—	—	6.6	600	YES			
SP8M51	HZG	TB	-80	-2.6	±20	165	240	220	300	—	—	8.2	1,000	YES			
			100	3	±20	120	170	130	180	—	—	8.5	610**	YES			
			-100	-2.5	±20	210	290	230	320	—	—	12.5	1,550**	YES			

Note1: (): ROHM Packages.
 Note2: *1 V_{GS}=10V *2 V_{DSS}=4V *3 V_{GS}=25V

Selector Guide for Automotive Power MOSFETs

Automotive Power MOSFETs																
Package	Product No.			Polarity (ch)	V _{DSS} (V)	I _D (A)	V _{GS} (V)	R _{DS(on)} (mΩ)				Qg Typ (nC)	Ciss Typ (pF)	Automotive Grade AEC-Q101		
	Part No.	Grade Code	Packing code					V _{GS} =10V		V _{GS} =4.5V		V _{GS} =10V	V _{GS} =10V			
								Typ	Max	Typ	Max					
 <p>TO-252 (DPAK)</p>	RD3H200SN	FRA	TL	N	45	20	±20	20	28	25	35	12*3	950	YES		
	RD3L220SN	FRA	TL		60	22	±20	18	26	21	30	30	1,500	YES		
	RD3L150SN	FRA	TL		60	15	±20	28	40	33	47	18	930	YES		
	RD3L080SN	FRA	TL		60	8	±20	57	80	70	98	9.4	380	YES		
	RD3L050SN	FRA	TL		60	5	±20	78	109	94	131	8	290	YES		
	RD3P200SN	FRA	TL		100	20	±20	33	46	36*2	50*2	55	2,100*1	YES		
	RD3P175SN	FRA	TL		100	17.5	±20	75	105	80	112	24	950*1	YES		
	RD3P100SN	FRA	TL		100	10	±20	95	133	100	140	18	700*1	YES		
	RD3P050SN	FRA	TL		100	5	±20	135	190	142	200	14	530*1	YES		
	RD3S100AA	FRA	TL		190	10	±20	130	182	136*2	190*2	52	2,000	YES		
	RD3U080AA	FRA	TL		250	8	±30	225	300	—	—	25	1,440*1	YES		
	RD3U041AA	FRA	TL		250	4	±30	930	1,300	—	—	8.5	350*1	YES		
	R5205PND3	FRA	TL		525	5	±25	1,300	1,600	—	—	10.8	320*1	YES		
	R6006PND3	FRA	TL		600	6	±30	900	1,200	—	—	15	460*1	YES		
	R6004PND3	FRA	TL		600	4	±25	1,400	1,800	—	—	11	280*1	YES		
	R8007AND3	FRA	TL		800	7	±30	1,200	1,600	—	—	28	850	YES		
	R8002CND3	FRA	TL		800	2	±30	3,300	4,300	—	—	12.1	240*1	YES		
	R8001CND3	FRA	TL		800	1	±30	6,700	8,700	—	—	7.2	60*1	YES		
	 <p>TO-263S (LPTS) [SC-83] (D2PAK)</p>	RD3H160SP	FRA		TL	P	-45	-16	±20	35	50	45	63	16*3	2,000	YES
		RD3H080SP	FRA		TL		-45	-8	±20	65	91	95	133	9*3	1,000	YES
RD3H045SP		FRA	TL	-45	-4.5		±20	110	155	160	225	12*3	550	YES		
RD3L140SP		FRA	TL	-60	-14		±20	60	84	73	103	27	1,900	YES		
RD3P130SP		FRA	TL	-100	-13		±20	135	200	150	220	40	2,400*1	YES		
 <p>TO-263S (LPTS) [SC-83] (D2PAK)</p>	RSJ451N04	FRG	TL	N	40	45	±20	9.5	13.5	—	—	43	2,400*1	YES		
	RSJ400N06	FRG	TL		60	40	±20	11	16	—	—	52	2,400	YES		
	RSJ400N10	FRG	TL		100	40	±20	19	27	21*2	30*2	90	3,600*1	YES		
	RSJ301N10	FRG	TL		100	30	±20	33	46	36*2	50*2	60	2,100*1	YES		
	RJ1U330AA	FRG	TL		250	33	±30	77	105	—	—	80	4,500*1	YES		
	R6020PNJ	FRA	TL		600	20	±30	190	250	—	—	65	2,040*1	YES		
	R8008ANJ	FRG	TL		800	8	±30	790	1,030	—	—	38	1,100*1	YES		
	R8005ANJ	FRG	TL		800	5	±30	1,600	2,100	—	—	20	500*1	YES		
	R8002ANJ	FRG	TL		800	2	±30	3,300	4,300	—	—	13	250*1	YES		
	RSJ250P10	FRG	TL		P	-100	-25	±20	45	63	48	67	60*3	8,000*1	YES	

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA Code, () : GENERAL Code.
 Note2: *1 V_{DS}=25V *2 V_{GS}=4V *3 V_{GS}=5V

Bipolar Transistors

Quick Reference for General Purpose Amplification Bipolar Transistors (Flat type)									
Package	SOT-723 (VMT3) [SC-105AA] 1212 size		SOT-416FL (EMT3F) [SC-89] 1616 size		SOT-323FL (UMT3F) [SC-85] 2021 size		V _{CEO} (V)	I _c (A)	h _{FE} *2
	Polarity	P _D =0.15W		P _D =0.15W		P _D =0.2W			
Application	PNP	NPN	PNP	NPN	PNP	NPN			
General Purpose Amplification	2SAR522M	2SCR522M	2SAR522EB	2SCR522EB	2SAR522UB	2SCR522UB	20	0.2	120 to 560
	2SAR523M	2SCR523M	2SAR523EB	2SCR523EB	2SAR523UB	2SCR523UB	50	0.1	120 to 560
Low V _{CE(sat)}	2SA2029	2SC5658	2SA1774EB	2SC4617EB	2SA1576UB	2SC4081UB	50	0.15	120 to 390
	2SA2030	2SC5663					12	0.5	270 to 680
Driver		2SD2696					30	0.4	270 to 680
			2SAR502EB	2SCR502EB	2SAR502UB	2SCR502UB	30	0.5	200 to 500

Note1: *1 With reference land installed.
 Note2: *2 For h_{FE}, please see the technical specifications.
 Note3: PNP (-) symbol omitted.
 Note4: Package is JEDEC code. (): ROHM Packages, []: JEITA code.

General Purpose Amplification Bipolar Transistors (Flat type)													
Package	Application	Part No.	Product No.				Polarity (ch)	P _D *1 (W)	V _{CEO} (V)	I _c (A)	h _{FE} *2	Automotive Grade AEC-Q101	
			General	Automotive	Packing code	h _{FE} *2 Code							
SOT-723 (VMT3) [SC-105AA] 1212 size	General Purpose Amplification	2SAR522M	-	-	T2L		PNP	0.15	-20	-0.2	120 to 560	-	
		2SAR523M	-	-	T2L			0.15	-50	-0.1	120 to 560	-	
		2SA2029	FHA	T2L	Q	R		0.15	-50	-0.15	120 to 390	YES	
	Low V _{CE(sat)}	2SA2030	-	-	T2L			0.15	-12	-0.5	270 to 680	-	
		2SCR522M	-	-	T2L			0.15	20	0.2	120 to 560	-	
		2SCR523M	-	-	T2L			0.15	50	0.1	120 to 560	-	
	General Purpose Amplification	2SC5658	FHA	T2L	Q	R		0.15	50	0.15	120 to 390	YES	
		2SC5663	-	-	T2L			0.15	12	0.5	270 to 680	-	
		2SD2696	-	-	T2L			0.15	30	0.4	270 to 680	-	
SOT-416FL (EMT3F) [SC-89] 1616 size	General Purpose Amplification	2SAR522EB	-	-	TL		PNP	0.15	-20	-0.2	120 to 560	-	
		2SAR523EB	-	-	TL			0.15	-50	-0.1	120 to 560	-	
		2SA1774EB	-	-	TL	Q		R	0.15	-50	-0.15	120 to 390	-
	Driver	2SAR502EB	-	-	TL			0.15	-30	-0.5	200 to 500	-	
		2SCR522EB	-	-	TL			0.15	20	0.2	120 to 560	-	
		2SCR523EB	-	-	TL			0.15	50	0.1	120 to 560	-	
	General Purpose Amplification	2SC4617EB	-	-	TL	Q		R	0.15	50	0.15	120 to 390	-
		2SCR502EB	-	-	TL			0.15	30	0.5	200 to 500	-	
SOT-323FL (UMT3F) [SC-85] 2021 size	General Purpose Amplification	2SAR522UB	-	-	TL		PNP	0.2	-20	-0.2	120 to 560	-	
		2SAR523UB	-	-	TL			0.2	-50	-0.1	120 to 560	-	
		2SA1576UB	-	-	TL	Q		R	0.2	-50	-0.15	120 to 390	-
	Driver	2SAR502UB	-	-	TL			0.2	-30	-0.5	200 to 500	-	
		2SCR522UB	-	-	TL			0.2	20	0.2	120 to 560	-	
		2SCR523UB	-	-	TL			0.2	50	0.1	120 to 560	-	
	General Purpose Amplification	2SC4081UB	-	-	TL	Q		R	0.2	50	0.15	120 to 390	-
		2SCR502UB	-	-	TL			0.2	30	0.5	200 to 500	-	

Note1: *General part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 For h_{FE}, N: 56 to 120, P: 82 to 180, Q: 120 to 270, R: 180 to 390, S: 270 to 560. Please see the technical specifications.
 Note4: Package is JEDEC code. (): ROHM Packages, []: JEITA code.



Quick Reference for General Purpose Amplification Bipolar Transistors (Gull type)											
Package	SOT-416 (EMT3) [SC-75A] 1616 size		SOT-323 (UMT3) [SC-70] 2021 size		SOT-346 (SMT3) [SC-59] 2928 size		SOT-23 (SST3) [SC-59] 2924 size		V _{CEO} (V)	I _c (A)	h _{FE} *2
	Polarity	P _D =0.15W		P _D =0.2W		P _D =0.2W		P _D =0.2W			
Application	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN			
General Purpose Amplification	New 2SA1774E3	New 2SC4617E3	2SA1576U3	2SC4081U3	2SA1037AK	2SC2412K			50	0.15	120 to 390
	New 2SA2018E3	New 2SC5585E3			2SA2119K				12	0.5	270 to 680
Low V _{CE(sat)}			2SB1689	2SD2652					12	1.5	270 to 680
					2SB1690K	2SD2653K			12	2	270 to 680
						2SD1757K			15	0.5	120 to 560
					2SB1590K				15	1	120 to 390
						2SD2444K			15	1	180 to 390
			2SB1694	2SD2656					30	1	270 to 680
					2SB1695K	2SD2657K			30	1.5	270 to 680
									30	0.5	200 to 500
Driver	New 2SAR502E3	New 2SCR502E3	2SAR502U3	2SCR502U3					32	0.5	120 to 390
			2SA1577	2SC4097	2SA1036K	2SC2411K			32	0.8	120 to 390
					2SB1197K	2SD1781K			50	0.5	120 to 390
				2SD1949		2SD1484K			80	0.5	120 to 390
					2SB1198K	2SD1782K			60	0.5	120 to 270 120 to 390
High Speed Switching			2SA2088U3	2SC5876U3							
High Voltage			2SA1579U3	2SC4102U3	2SA1514K	2SC3906K	2SARA41C	2SCRC41C	120	0.05	180 to 560
						2SC4061K			300	0.1	56 to 120

Note1: *1 With reference land installed.
 Note2: *2 For h_{FE}, please see the technical specifications.
 Note3: PNP (-) symbol omitted.
 Note4: Package is JEDEC code. (): ROHM Packages, []: JEITA code.


Bipolar Transistors

General Purpose Amplification Bipolar Transistors (Gull type)														
Package	Application	Product No.							Polarity (ch)	P _D *1 (W)	V _{CE0} (V)	I _c (A)	h _{FE} *2	Automotive Grade AEC-Q101
		Part No.	Grade Code		Packing code	h _{FE} *2 Code								
			General	Automotive										
	General Purpose Amplification	New 2SA1774E3	*	HZG	TL	Q	R	PNP	0.15	-50	-0.15	120 to 390	YES	
	Low V _{CE(sat)}	New 2SA2018E3		HZG	TL					0.15	-12	-0.5	270 to 680	YES
	Driver	New 2SAR502E3		HZG	TL					0.15	-30	-0.5	200 to 500	YES
	General Purpose Amplification	New 2SC4617E3		HZG	TL	Q	R			0.15	50	0.15	120 to 390	YES
	Low V _{CE(sat)}	New 2SC5585E3		-	TL					0.15	12	0.5	270 to 680	-
	Driver	New 2SCR502E3		HZG	TL					0.15	30	0.5	200 to 500	YES
	General Purpose Amplification	2SA1576U3	*	HZG	T106	Q	R	PNP	0.2	-50	-0.15	120 to 390	YES	
	Low V _{CE(sat)}	2SB1689		-	T106					0.2	-12	-1.5	270 to 680	-
		2SB1694		-	T106					0.2	-30	-1	270 to 680	-
	Driver	2SAR502U3		HZG	T106					0.2	-30	-0.5	200 to 500	YES
		2SA1577		-	T106	Q	R			0.2	-32	-0.5	120 to 390	-
	High Speed Switching	2SA2088U3		HZG	T106	Q				0.2	-60	-0.5	120 to 270	YES
	High Voltage	2SA1579U3		HZG	T106	R	S		0.2	-120	-0.05	180 to 560	YES	
	General Purpose Amplification	2SC4081U3		HZG	T106	Q	R		NPN	0.2	50	0.15	120 to 390	YES
	Low V _{CE(sat)}	2SD2652		-	T106					0.2	12	1.5	270 to 680	-
		2SD2656		-	T106					0.2	30	1	270 to 680	-
	Driver	2SCR502U3		HZG	T106					0.2	30	0.5	200 to 500	YES
		2SC4097		-	T106	Q	R			0.2	32	0.5	120 to 390	-
		2SD1949		-	T106	Q	R			0.2	50	0.5	120 to 390	-
	High speed Switching	2SC5876U3		HZG	T106	Q	R			0.2	60	0.5	120 to 390	YES
High Voltage	2SC4102U3	HZG	T106	R	S		0.2	120		0.05	180 to 560	YES		
	General Purpose Amplification	2SA1037AK	*	-	T146	Q	R	PNP	0.2	-50	-0.15	120 to 390	-	
	Low V _{CE(sat)}	2SA2119K		-	T146					0.2	-12	-0.5	270 to 680	-
		2SB1690K		-	T146					0.2	-12	-2	270 to 680	-
		2SB1590K		-	T146	Q				0.2	-15	-1	120 to 390	-
		2SB1695K		-	T146					0.2	-30	-1.5	270 to 680	-
	Driver	2SA1036K		-	T146	Q	R			0.2	-32	-0.5	120 to 390	-
		2SB1197K		-	T146	Q	R			0.2	-32	-0.8	120 to 390	-
		2SB1198K		-	T146	Q	R			0.2	-80	-0.5	120 to 390	-
	High Voltage	2SA1514K		-	T146	R	S			0.2	-120	-0.05	180 to 560	-
	General Purpose Amplification	2SC2412K		-	T146	Q	R		NPN	0.2	50	0.15	120 to 390	-
	Low V _{CE(sat)}	2SD2653K		-	T146					0.2	12	2	270 to 680	-
		2SD1757K		-	T146	Q	R	S		0.2	15	0.5	120 to 560	-
		2SD2444K		-	T146	R				0.2	15	1	180 to 390	-
		2SD2657K		-	T146					0.2	30	1.5	270 to 680	-
	Driver	2SC2411K		-	T146	Q	R			0.2	32	0.5	120 to 390	-
		2SD1781K		-	T146	Q	R			0.2	32	0.8	120 to 390	-
		2SD1484K		-	T146	Q	R			0.2	50	0.5	120 to 390	-
		2SD1782K		-	T146	Q	R			0.2	80	0.5	120 to 390	-
High Voltage	2SC3906K	-	T146	R	S		0.2	120	0.05	180 to 560	-			
	2SC4061K	-	T146	N			0.2	300	0.1	56 to 120	-			
	High Voltage	2SARA41C	*	HZG	T116	R	S	PNP	0.2	-120	-0.05	180 to 560	YES	
		2SCRC41C		HZG	T116	R	S	NPN	0.2	120	0.05	180 to 560	YES	

Note1: *General Part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 For h_{FE}, N: 56 to 120, P: 82 to 180, Q: 120 to 270, R: 180 to 390, S: 270 to 560. Please see the technical specifications.
 Note4: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Quick Reference for Bipolar Transistors (For Oversea Customer)							
Package	SOT-323 (UMT3) [SC-70] 2021 size		SOT-23 (SST3) 2924 size		V _{CEO} (V)	I _c (A)	h _{FE} *2
	 P _D =0.15W		 P _D =0.2W				
Application	PNP	NPN	PNP	NPN			
General Purpose Amplification	BC858BW	BC848BW	BC858B	BC848B	30	0.1	200 to 450
	New BC857BU3	New BC847BU3		BC847B	45	0.1	200 to 450
			BC857B		45	0.1	210 to 480
			New BC857C	New BC847C	45	0.1	420 to 800
				New BC846B	65	0.12	200 to 450
Driver			BC856B		65	0.1	220 to 475
			BSS63A	BSS64A	100	0.1	30 or more
			BSS5130A	BSS4130A	30	1	270 to 680
			BC807-16	BC817-16	45	0.8	100 to 250
			BC807-25	BC817-25	45	0.8	160 to 400
			BC807-40	BC817-40	45	0.8	250 to 600
Switching			BCX17	BCX19	45	0.5	100 to 600
			SSTA56	SSTA06	80	0.5	100 or more
	UMT3906	UMT3904	SST3906	SST3904	40	0.2	100 to 300
	UMT4403U3	UMT4401U3	SST4403	SST4401	40	0.6	100 to 300
				40	0.6	100 to 300	
	UMT2907A		SST2907A		60	0.6	100 to 300
Darlington*3				SSTA28	80 (V _{CEs})	0.3	10,000 or more

Note1: *1 With reference land installed.
 Note2: *2 For h_{FE}, please see the technical specifications.
 Note3: *3 For internal circuit, please see the technical specifications.
 Note4: PNP (—) symbol omitted.
 Note5: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Bipolar Transistors (For Oversea Customer)											
Package	Application	Product No.			Polarity (ch)	P _D *1 (W)	V _{CEO} (V)	I _c (A)	h _{FE} *2	Automotive Grade AEC-Q101	
		Part No.	General	Automotive							Packing code
	General Purpose Amplification	BC858BW	*	—	T106	PNP	0.2	-30	-0.1	200 to 450	—
		New BC857BU3		HZG	T106		0.2	-45	-0.1	210 to 480	YES
	Switching	UMT3906		—	T106		0.2	-40	-0.6	100 to 300	—
		UMT4403U3		HZG	T106		0.2	-40	-0.6	100 to 300	YES
		UMT2907A		—	T106		0.2	-60	-0.6	100 to 300	—
		BC848BW		—	T106		0.2	30	0.1	200 to 450	—
	General Purpose Amplification	New BC847BU3		HZG	T106		0.2	45	0.1	200 to 450	YES
		UMT3904		—	T106		0.2	40	0.2	100 to 300	—
	Switching	UMT4401U3		HZG	T106		0.2	40	0.6	100 to 300	YES
		UM2222AU3		HZG	T106		0.2	40	0.6	100 to 300	YES
General Purpose Amplification		BC858B	*	HZG	T116	PNP	0.2	-30	-0.1	200 to 450	YES
		BC857B		HZG	T116		0.2	-45	-0.1	200 to 480	YES
	New BC857C	HZG		T116	0.2		-45	-0.15	420 to 800	YES	
	BC856B	HZG		T116	0.2		-65	-0.1	220 to 475	YES	
	BSS63A	HZG		T116	0.2		-100	-0.1	30 or more	YES	
	BSS5130A	HZG		T116	0.2		-30	-1	270 to 680	YES	
	Driver	BCX17		HZG	T116		0.2	-45	-0.5	100 to 600	YES
		BC807-16		HZG	T116		0.2	-45	-0.8	100 to 250	YES
		BC807-25		HZG	T116		0.2	-45	-0.8	160 to 400	YES
		BC807-40		HZG	T116		0.2	-45	-0.8	250 to 600	YES
Switching	SSTA56	HZG	T116	0.2	-80	-0.5	100 or more	YES			
	SST4403	HZG	T116	0.2	-40	-0.6	100 to 300	YES			
	SST2907A	HZG	T116	0.2	-60	-0.6	100 to 300	YES			
	SST3906	HZG	T116	0.2	-40	-0.2	100 to 300	YES			
General Purpose Amplification	BC848B	*	HZG	T116	NPN	0.2	30	0.1	200 to 450	YES	
	BC847B		HZG	T116		0.2	45	0.1	200 to 450	YES	
	New BC847C		HZG	T116		0.2	45	0.1	420 to 800	YES	
	New BC846B		HZG	T116		0.2	45	0.12	200 to 450	YES	
	BSS64A		HZG	T116		0.2	100	0.1	30 or more	YES	
	BSS4130A		HZG	T116		0.2	30	1	270 to 680	YES	
	Driver		BCX19	HZG		T116	0.2	45	0.5	100 to 600	YES
			BC817-16	HZG		T116	0.2	45	0.8	100 to 250	YES
			BC817-25	HZG		T116	0.2	45	0.8	160 to 400	YES
			BC817-40	HZG		T116	0.2	45	0.8	250 to 600	YES
Switching	SSTA06	HZG	T116	0.2	80	0.5	100 or more	YES			
	SST3904	HZG	T116	0.2	40	0.2	100 to 300	YES			
	SST4401	HZG	T116	0.2	40	0.6	100 to 300	YES			
	SST2222A	HZG	T116	0.2	40	0.6	100 to 300	YES			
Darlington*3	SSTA28	—	T116	0.2	80 (V _{CEs})	0.3	10,000 or more	—			

Note1: *General Part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 For h_{FE}, please see the technical specifications.
 Note4: *3 For internal circuit, please see the technical specifications.
 Note5: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.



Bipolar Transistors

Quick Reference for High h_{FE} · Muting/Darlington Bipolar Transistors											
Package	SOT-723 (VMT3) [SC-105AA] 1212 size		SOT-416 (EMT3) [SC-75A] 1616 size		SOT-323 (UMT3) [SC-70] 2021 size		SOT-346 (SMT3) [SC-59] 2928 size		V_{CE0} (V)	I_C (A)	h_{FE}^{*2}
	Polarity	$P_D=0.15W$ *1		$P_D=0.15W$ *1		$P_D=0.2W$ *1		$P_D=0.2W$ *1			
Application	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN			
High h_{FE} · Muting									25 (V_{EBO})	0.3	820 to 2,700
									20	0.5	820 to 2,700
		2SD2707		2SD2654		2SD2351		2SD2226K	50	0.15	820 to 2,700
Darlington*3									30	0.3	5,000 or more
							2SB852K	2SD1383K	32 (V_{CES})	0.3	5,000 or more

Note1: *1 With reference land installed.
 Note2: *2 For h_{FE} , please see the technical specifications.
 Note3: *3 For internal circuit, please see the technical specifications.
 Note4: PNP (-) symbol omitted.
 Note5: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

High h_{FE} · Muting/Darlington Bipolar Transistors													
Package	Application	Product No.					Polarity (ch)	P_D^{*1} (W)	V_{CE0} (V)	I_C (A)	h_{FE}^{*2}		
		Part No.	Grade Code		Packing code	h_{FE}^{*2} Code							
			General	Automotive		V							W
 SOT-723 (VMT3) [SC-105AA] 1212 size	High h_{FE} · Muting	2SD2707	*	-	T2L	V	W	NPN	0.15	50	0.15	820 to 2,700	W: Not Recommended
 SOT-416 (EMT3) [SC-75A] 1616 size	High h_{FE} · Muting	2SD2654	*	-	TL	V	W	NPN	0.15	50	0.15	820 to 2,700	
 SOT-323 (UMT3) [SC-70] 2021 size	High h_{FE} · Muting	2SD2351	*	-	T106	V	W	NPN	0.2	50	0.15	820 to 2700	
 SOT-346 (SMT3) [SC-59] 2928 size	Darlington*3	2SB852K		-	T146	B	W	PNP	0.2	-32 (V_{CES})	-0.3	5,000 or more	
	High h_{FE} · Muting	2SD2704K		-	T146	W	W		0.2	25 (V_{EBO})	0.3	820 to 2,700	
		2SD2114K		-	T146	V	W		0.2	20	0.5	820 to 2,700	
		2SD2226K		-	T146	V	W		0.2	50	0.15	820 to 2,700	
		2SD2142K		-	T146	W	W		0.2	30	0.3	5,000 or more	
	Darlington*3	2SD1383K		-	T146	B	W		0.2	32 (V_{CES})	0.3	5,000 or more	

Note1: *General Part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 For h_{FE} , B: 5,000 or more, V: 820 to 1,800, W: 1,200 to 2,700. Please see the technical specifications.
 Note4: *3 For internal circuit, please see the technical specifications.
 Note5: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Quick Reference for Low Saturation/Driver Bipolar Transistors								
Package	SOT-323T/SOT-363T (TUMT3/TUMT6) [SC-113A/SC-113DA] 2021 size		SOT-346T/SOT-457T (TSMT3/TSMT6) [SC-96/SC-95] 2928 size		V _{CEO} (V)	I _c (A)	h _{FE} *2	
	Application	PNP	NPN	PNP				NPN
	 P _D =0.4W *1		 P _D =0.5W *1					
Low V _{CE(sat)}		2SB1732	2SD2702	2SB1709	2SD2674	12	1.5	270 to 680
		2SB1730	2SD2700	2SB1690	2SD2653	12	2	270 to 680
				2SB1705	2SD2670	12	3	270 to 680
				2SB1707	2SD2672	12	4	270 to 680
				QST2*3	QSX1*3	12	6	270 to 680
		2SB1733	2SD2703	2SB1710	2SD2675	30	1	270 to 680
		2SB1731	2SD2701	2SB1695	2SD2657	30	1.5	270 to 680
				2SB1706	2SD2671	30	2	270 to 680
				2SB1708	2SD2673	30	3	270 to 680
				QST3*3	QSX2*3	30	5	270 to 680
Driver				2SAR512R	2SCR512R	30	2	200 to 500
				2SAR513R	2SCR513R	50	1	180 to 450
				2SAR553R	2SCR553R	50	2	180 to 450
				2SAR543R	2SCR543R	50	3	180 to 450
				2SAR514R	2SCR514R	80	0.7	120 to 390
				2SAR554R	2SCR554R	80	1.5	120 to 390
				2SAR544R	2SCR544R	80	2.5	120 to 390
High Speed Switching			2SA2094	2SC5866	60	2	120 to 270 120 to 390	
High Voltage			2SAR340Q*3	2SCR341Q*3	400	0.1	82 to 270	

Note1: *1 With reference land installed.
 Note2: *2 For h_{FE}, please see the technical specifications.
 Note3: *3 6pin package (TSMT6/TUMT6) For internal circuit, please see the technical specifications.
 Note4: PNP (–) symbol omitted.
 Note5: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Bipolar Transistors

Low Saturation/Driver Bipolar Transistors													
Package	Application	Product No.						Polarity (ch)	P _D *1 (W)	V _{CEO} (V)	I _C (A)	h _{FE} *2	Automotive Grade AEC-Q101
		Part No.	Grade Code		Packing code	h _{FE} *2 Code							
			General	Automotive									
	Low V _{CE} (sat)	2SB1732	*	—	TL			PNP	0.4	-12	-1.5	270 to 680	—
		2SB1730		—	TL				0.4	-12	-2	270 to 680	—
		2SB1733		—	TL				0.4	-30	-1	270 to 680	—
		2SB1731		—	TL				0.4	-30	-1.5	270 to 680	—
		2SD2702		NPN	—	TL			0.4	12	1.5	270 to 680	—
		2SD2700			—	TL			0.4	12	2	270 to 680	—
		2SD2703			—	TL			0.4	30	1	270 to 680	—
		2SD2701			—	TL			0.4	30	1.5	270 to 680	—
	Low V _{CE} (sat)	2SB1709	*	—	TL			PNP	0.5	-12	-1.5	270 to 680	—
		2SB1690		—	TL				0.5	-12	-2	270 to 680	—
		2SB1705		—	TL				0.5	-12	-3	270 to 680	—
		2SB1707		—	TL				0.5	-12	-4	270 to 680	—
		2SB1710		—	TL				0.5	-30	-1	270 to 680	—
		2SB1695		—	TL				0.5	-30	-1.5	270 to 680	—
		2SB1706		—	TL				0.5	-30	-2	270 to 680	—
		2SB1708		—	TL				0.5	-30	-3	270 to 680	—
	Driver	2SAR512R		HZG	TL				0.5	-30	-2	200 to 500	YES
		2SAR513R		HZG	TL				0.5	-50	-1	180 to 450	YES
		2SAR553R		HZG	TL				0.5	-50	-2	180 to 450	YES
		2SAR543R		—	TL				0.5	-50	-3	180 to 450	—
		2SAR514R		HZG	TL				0.5	-80	-0.7	120 to 390	YES
		2SAR554R		—	TL				0.5	-80	-1.5	120 to 390	—
		2SAR544R		—	TL				0.5	-80	-2.5	120 to 390	—
	High Speed Switching	2SA2094		—	TL	Q			0.5	-60	-2	120 to 270	—
	Low V _{CE} (sat)	2SD2674		NPN	—	TL			0.5	12	1.5	270 to 680	—
		2SD2653			—	TL			0.5	12	2	270 to 680	—
		2SD2670			—	TL			0.5	12	3	270 to 680	—
		2SD2672			—	TL			0.5	12	4	270 to 680	—
		2SD2675			—	TL			0.5	30	1	270 to 680	—
		2SD2657			—	TL			0.5	30	1.5	270 to 680	—
		2SD2671			—	TL			0.5	30	2	270 to 680	—
		2SD2673			—	TL			0.5	30	3	270 to 680	—
	Driver	2SCR512R			HZG	TL			0.5	30	2	200 to 500	YES
		2SCR513R			HZG	TL			0.5	50	1	180 to 450	YES
		2SCR553R			HZG	TL			0.5	50	2	180 to 450	YES
		2SCR543R			—	TL			0.5	50	3	180 to 450	—
2SCR514R		HZG	TL				0.5	80	0.7	120 to 390	YES		
2SCR554R		—	TL				0.5	80	1.5	120 to 390	—		
2SCR544R		—	TL				0.5	80	2.5	120 to 390	—		
High Speed Switching	2SC5866	—	TL		Q	R	0.5	60	2	120 to 390	—		
	Low V _{CE} (sat)	QST2*3	*	—	TR			PNP	0.5	-12	-6	270 to 680	—
	High Voltage	QST3*3		—	TR				0.5	-30	-5	270 to 680	—
	High Voltage	2SAR340Q*3		—	TR	P	Q		0.5	-400	-0.1	82 to 270	—
	Low V _{CE} (sat)	QSX1*3		—	TR			NPN	0.5	12	6	270 to 680	—
	High Voltage	QSX2*3		—	TR				0.5	30	5	270 to 680	—
	High Voltage	2SCR341Q*3		—	TR	P	Q		0.5	400	0.1	82 to 270	—

Note1: *General Part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 For h_{FE}, P: 82 to 180, Q: 120 to 270, R: 180 to 390. Please see the technical specifications.
 Note4: *3 6pin package (TSMT6) For internal circuit, please see the technical specifications.
 Note5: Package is JEDEC code. (): ROHM Packages, []: JEITA code.



Quick Reference for Power Bipolar Transistors											
Package	(DFN2020-3S) (HUML2020L3) 2020 size		SOT-89 (MPT3) [SC-62] 4540 size		TO-252 (DPAK)		TO-263AB (LPTL)		V _{CE0} (V)	I _c (A)	h _{FE} *3
	Polarity										
Application	PNP	NPN	PNP	NPN	PNP	NPN	PNP	NPN			
Gate Driver			2SAR642P	2SCR642P					30	10*5	200 to 500
			2SB1697	2SD2661					12	2	270 to 680
			2SAR293P 2SAR293P5	2SCR293P 2SCR293P5					30	1	270 to 680
			2SAR512P 2SAR512P5	2SCR512P 2SCR512P5					30	2	200 to 500
			2SAR552P 2SAR552P5	2SCR552P 2SCR552P5					30	3	200 to 500
	2SAR542F3	2SCR542F3							30	3	200 to 500
			2SAR542P	2SCR542P	2SAR572D3	2SCR572D3			30	5	200 to 500
	2SAR562F3	2SCR562F3							30	6	200 to 500
					2SAR582D3	2SCR582D3			30	10	200 to 500
			2SAR513P 2SAR513P5	2SCR513P 2SCR513P5					50	1	180 to 450
			2SAR553P 2SAR553P5	2SCR553P 2SCR553P5					50	2	180 to 450
			2SAR533P 2SAR533P5	2SCR533P 2SCR533P5					50	3	180 to 450
Driver					2SAR573D3	2SCR573D3			50	3	180 to 450
	2SAR563F3	2SCR563F3							50	6	180 to 450
					2SAR583D3	2SCR583D3			50	7	180 to 450
			2SAR514P 2SAR514P5	2SCR514P 2SCR514P5					80	0.7	120 to 390
			2SAR554P 2SAR554P5	2SCR554P 2SCR554P5					80	1.5	120 to 390
					2SAR574D3	2SCR574D3			80	2	120 to 390
			2SAR544P 2SAR544P5	2SCR544P 2SCR544P5					80	2.5	120 to 390
	2SAR564F3	2SCR564F3							80	4	120 to 390
					2SAR586D3	2SCR586D3	2SAR586J	2SCR586J	80	5	120 to 390
			New 2SAR372P 2SAR372P5	2SCR372P 2SCR372P5					120	0.7	120 to 390
			New 2SAR375P 2SAR375P5	2SCR375P 2SCR375P5					120	1.5	120 to 390
	2SAR567F3	2SCR567F3							120	2.5	120 to 390
					2SAR587D3	2SCR587D3			120	3	120 to 390
High Voltage			2SAR340P	2SCR346P					400	0.1	82 to 270
High Speed Switching			2SA2071P5	2SC5824					60	3	120 to 270 120 to 390
				2SD2537					25	1.2	820 to 1,800
High h _{FE}			2SB1427						20	2	390 to 820
				2SD2153					25	2	560 to 2,700
Darlington*4				2SD1834					60 (V _{CEs})	1	2k or more

Note1: *1 With reference land installed.
 Note2: *2 T_c=25°C
 Note3: *3 For h_{FE}, please see the technical specifications.
 Note4: *4 For internal circuit, please see the technical specifications.
 Note5: Pw=1ms, Single pulse
 Note6: PNP (—) symbol omitted.
 Note7: Package is JEDEC code. (): ROHM Packages, []: JEITA code, (): GENERAL code.

Bipolar Transistors




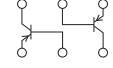
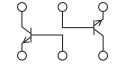
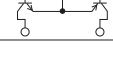
Power Bipolar Transistors															
Package	Application	Product No.						Polarity (ch)	P _D *1 (W)	V _{CEO} (V)	I _C (A)	h _{FE} *3	Automotive Grade AEC-Q101		
		Part No.	Grade Code		Packing code	h _{FE} *3 Code									
			General	Automotive											
	Driver	2SAR542F3	*	—	TR				PNP	0.5	-30	-3	200 to 500	—	
		2SAR562F3	*	—	TR				PNP	0.5	-30	-6	200 to 500	—	
		2SAR563F3	*	—	TR				PNP	0.5	-50	-6	180 to 450	—	
		2SAR564F3	*	—	TR				PNP	0.5	-80	-4	120 to 390	—	
		2SAR567F3	*	—	TR				PNP	0.5	-120	-2.5	120 to 390	—	
		2SCR542F3	*	—	TR				NPN	0.5	30	3	200 to 500	—	
		2SCR562F3	*	—	TR				NPN	0.5	30	6	200 to 500	—	
		2SCR563F3	*	—	TR				NPN	0.5	50	6	180 to 450	—	
		2SCR564F3	*	—	TR				NPN	0.5	80	4	120 to 390	—	
		2SCR567F3	*	—	TR				NPN	0.5	120	2.5	120 to 390	—	
	Driver	2SAR642P	—	HZG	T100				PNP	0.5	-30	-10*5	200 to 500	YES	
		2SB1697	*	—	T100				PNP	0.5	-12	-2	270 to 680	—	
		2SAR293P	—	HZG	T100				PNP	0.5	-30	-1	270 to 680	YES	
		2SAR293P5	*	—	T100				PNP	0.5	-30	-1	270 to 680	—	
		2SAR512P	—	HZG	T100				PNP	0.5	-30	-2	200 to 500	YES	
		2SAR512P5	*	—	T100				PNP	0.5	-30	-2	200 to 500	—	
		2SAR552P	—	HZG	T100				PNP	0.5	-30	-3	200 to 500	YES	
		2SAR552P5	*	—	T100				PNP	0.5	-30	-3	200 to 500	—	
		2SAR542P	*	FRA	T100				PNP	0.5	-30	-5	200 to 500	YES	
		2SAR513P	—	HZG	T100				PNP	0.5	-50	-1	180 to 450	YES	
		2SAR513P5	*	—	T100				PNP	0.5	-50	-1	180 to 450	—	
		2SAR553P	—	HZG	T100				PNP	0.5	-50	-2	180 to 450	YES	
		2SAR553P5	*	—	T100				PNP	0.5	-50	-2	180 to 450	—	
		2SAR533P	—	HZG	T100				PNP	0.5	-50	-3	180 to 450	YES	
		2SAR533P5	*	—	T100				PNP	0.5	-50	-3	180 to 450	—	
		2SAR514P	—	HZG	T100				PNP	0.5	-80	-0.7	120 to 390	YES	
		2SAR514P5	*	—	T100				PNP	0.5	-80	-0.7	120 to 390	—	
		2SAR554P	—	HZG	T100				PNP	0.5	-80	-1.5	120 to 390	YES	
		2SAR554P5	*	—	T100				PNP	0.5	-80	-1.5	120 to 390	—	
		2SAR544P	—	HZG	T100				PNP	0.5	-80	-2.5	120 to 390	YES	
		2SAR544P5	*	—	T100				PNP	0.5	-80	-2.5	120 to 390	—	
		New 2SAR372P	—	HZG	T100		Q	R		PNP	0.5	-120	-0.7	120 to 390	YES
		2SAR372P5	*	—	T100		Q	R		PNP	0.5	-120	-0.7	120 to 390	—
		New 2SAR375P	—	HZG	T100		Q	R		PNP	0.5	-120	-1.5	120 to 390	YES
		2SAR375P5	*	—	T100		Q	R		PNP	0.5	-120	-1.5	120 to 390	—
		High Voltage	2SAR340P	*	—	T100	P	Q		PNP	0.5	-400	-0.1	82 to 270	—
		High Speed Switching	2SA2071P5	*	—	T100	Q			PNP	0.5	-60	-3	120 to 270	—
		High h _{FE}	2SB1427	*	—	T100	E			PNP	0.5	-20	-2	390 to 820	—
		Gate Driver	2SCR642P	—	HZG	T100				NPN	0.5	30	10*5	200 to 500	YES
		Driver	2SD2661	*	—	T100				NPN	0.5	12	2	270 to 680	—
			2SCR293P	—	HZG	T100				NPN	0.5	30	1	270 to 680	YES
			2SCR293P5	*	—	T100				NPN	0.5	30	1	270 to 680	—
			2SCR512P	—	HZG	T100				NPN	0.5	30	2	200 to 500	YES
			2SCR512P5	*	—	T100				NPN	0.5	30	2	200 to 500	—
			2SCR552P	—	HZG	T100				NPN	0.5	30	3	200 to 500	YES
2SCR552P5	*		—	T100				NPN	0.5	30	3	200 to 500	—		
2SCR542P	*		FRA	T100				NPN	0.5	30	5	200 to 500	YES		
2SCR513P	—		HZG	T100				NPN	0.5	50	1	180 to 450	YES		
2SCR513P5	*		—	T100				NPN	0.5	50	1	180 to 450	—		
2SCR553P	—		HZG	T100				NPN	0.5	50	2	180 to 450	YES		
2SCR553P5	*		—	T100				NPN	0.5	50	2	180 to 450	—		
2SCR533P	—		HZG	T100				NPN	0.5	50	3	180 to 450	YES		
2SCR533P5	*		—	T100				NPN	0.5	50	3	180 to 450	—		
2SCR514P	—		HZG	T100				NPN	0.5	80	0.7	120 to 390	YES		
2SCR514P5	*		—	T100				NPN	0.5	80	0.7	120 to 390	—		
2SCR554P	—		HZG	T100				NPN	0.5	80	1.5	120 to 390	YES		
2SCR554P5	*		—	T100				NPN	0.5	80	1.5	120 to 390	—		
2SCR544P	—		HZG	T100				NPN	0.5	80	2.5	120 to 390	YES		
2SCR544P5	*		—	T100				NPN	0.5	80	2.5	120 to 390	—		
2SCR372P	—		HZG	T100		Q	R		NPN	0.5	120	0.7	120 to 390	YES	
2SCR372P5	*		—	T100		Q	R		NPN	0.5	120	0.7	120 to 390	—	
2SCR375P	—		HZG	T100		Q	R		NPN	0.5	120	1.5	120 to 390	YES	
2SCR375P5	*		—	T100		Q	R		NPN	0.5	120	1.5	120 to 390	—	
High Voltage	2SCR346P		*	—	T100	P	Q		NPN	0.5	400	0.1	82 to 270	—	
High Speed Switching	2SC5824		*	—	T100	Q	R		NPN	0.5	60	3	120 to 390	—	
High h _{FE}	2SD2537		*	—	T100	V			NPN	0.5	25	1.2	820 to 1,800	—	
	2SD2153		*	—	T100	U	V	W	NPN	0.5	25	2	560 to 2,700	—	
Darlington*4	2SD1834		*	—	T100				NPN	0.5	60 (V _{CEs})	1	2k or more	—	

Note1: *General Part No. have no grade code.
 Note2: *1 With reference land installed.
 Note3: *2 T_C=25°C
 Note4: *3 h_{FE} P: 82 to 180, Q: 120 to 270, R: 180 to 390, U: 560 to 1,200, V: 820 to 1,800, W: 1,200 to 2,700. Please see the technical specifications.
 Note5: Pw=1ms, Single pulse
 Note6: *4 For internal circuit, please see the technical specifications.
 Note7: Package is JEDEC code. () : ROHM Packages, [] : JEITA code, () : GENERAL code.

Power Bipolar Transistors												
Package	Application	Product No.				Polarity (ch)	P _D ^{*1} (W)	V _{CEO} (V)	I _C (A)	h _{FE}	Automotive Grade AEC-Q101	
		Part No.	Grade Code		Packing code							
			General	Automotive								
	Driver	2SAR572D3	*	—	TL1	PNP	10	-30	-5	200 to 500	—	
			—	FRA	TL		10	-30	-5	200 to 500	YES	
		2SAR582D3	*	—	TL1		10	-30	-10	200 to 500	—	
			—	FRA	TL		10	-30	-10	200 to 500	YES	
		2SAR573D3	*	—	TL1		10	-50	-3	180 to 450	—	
			—	FRA	TL		10	-50	-3	180 to 450	YES	
		2SAR583D3	*	—	TL1		10	-50	-7	180 to 450	—	
			—	FRA	TL		10	-50	-7	180 to 450	YES	
		2SAR574D3	*	—	TL1		10	-80	-2	120 to 390	—	
			—	FRA	TL		10	-80	-2	120 to 390	YES	
		2SAR586D3	*	—	TL1		10	-80	-5	120 to 390	—	
			—	FRA	TL		10	-80	-5	120 to 390	YES	
		2SAR587D3	*	—	TL1		10	-120	-3	120 to 390	—	
			—	FRA	TL		10	-120	-3	120 to 390	YES	
		2SCR572D3	*	—	TL1		10	30	5	200 to 500	—	
			—	FRA	TL		10	30	5	200 to 500	YES	
		2SCR582D3	*	—	TL1		10	30	10	200 to 500	—	
			—	FRA	TL		10	30	10	200 to 500	YES	
		2SCR573D3	*	—	TL1		10	50	3	180 to 450	—	
			—	FRA	TL		10	50	3	180 to 450	YES	
		2SCR583D3	*	—	TL1		10	50	7	180 to 450	—	
			—	FRA	TL		10	50	7	180 to 450	YES	
		2SCR574D3	*	—	TL1		10	80	2	120 to 390	—	
			—	FRA	TL		10	80	2	120 to 390	YES	
2SCR586D3	*	—	TL1	10	80	5	120 to 390	—				
	—	FRA	TL	10	80	5	120 to 390	YES				
2SCR587D3	*	—	TL1	10	120	3	120 to 390	—				
	—	FRA	TL	10	120	3	120 to 390	YES				
	Driver	2SAR586J	G	—	TLL	PNP	40	-80	-5	120 to 390	—	
			—	FRG	TLL		40	-80	-5	120 to 390	YES	
		2SCR586J	G	—	TLL		NPN	40	80	5	120 to 390	—
			—	FRG	TLL			40	80	5	120 to 390	YES

Note1: *General Part No. have no grade code.
 Note2: *1 T_C=25°C
 Note3: Package is JEDEC code. () : ROHM Packages, (<) : GENERAL code.

Complex Bipolar Transistors

Quick Reference for General Purpose Amplification Complex Bipolar Transistors									
Configuration	Package	Item	SOT-553/SOT-563 (EMT5/EMT6) [SC-107BB/SC-107C] 1616 size	SOT-353/SOT-363 (UMT5/UMT6) [SC-88A/SC-88] 2021 size	SOT-25/SOT-457 (SMT5/SMT6) [SC-74A/SC-74] 2928 size	Equivalent Element Transistors	V _{CEO} (V)	I _C (A)	h _{FE}
									
Application	Equivalent Circuit Diagram (TOP View)		Part No.						
PNP×2	Pre Amplifier		EMT51			2SAR522EB×2	-20	-0.2	120 to 560
			EMT52			2SAR523EB×2	-50	-0.1	120 to 560
			EMT1	UMT1N	IMT1A	2SA1037AK×2	-50	-0.15	120 to 560
			EMT18	UMT18N	IMT18	2SA2018×2	-12	-0.5	270 to 680
NPN×2	Pre Amplifier		EMX51			2SCR522EB×2	20	0.2	120 to 560
			EMX52			2SCR523EB×2	50	0.1	120 to 560
			EMX1	UMX1N	IMX1	2SC2412K×2	50	0.15	120 to 560
			EMX26			2SD2654×2	50	0.15	820 to 2,700
			EMX18	UMX18N		2SC5585×2	12	0.5	270 to 680
					IMX25	2SD2704K×2	20	0.3	820 to 2,700
PNP + NPN	Pre Amplifier		EMY1	UMY1N	FMY1A	2SA1037AK	-50	-0.15	120 to 560
						2SC2412K	50	0.15	120 to 560
			EMZ51			2SAR522EB	-20	-0.2	120 to 560
			EMZ52			SCR522EB	20	0.2	120 to 560
						2SAR523EB	-50	-0.1	120 to 560
						2SCR523EB	50	0.1	120 to 560
			EMZ1	UMZ1N	IMZ1A	2SA1037AK	-50	-0.15	120 to 560
						2SC2412K	50	0.15	120 to 560
			2SA2018	-12	-0.5	270 to 680			
			2SC5585	12	0.5	270 to 680			
			2SA2018	-12	-0.5	270 to 680			
			2SC2412K	50	0.15	120 to 560			

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.






Complex Bipolar Transistors

General Purpose Amplification Complex Bipolar Transistors											
Package	Configuration	Application	Product No.				Equivalent Element Transistors	V _{CEO} (V)	I _C (A)	h _{FE}	Automotive Grade AEC-Q101
			Part No.	Grade Code		Packing code					
				General	Automotive						
	PNP+NPN	Pre Amplifier	EMY1	*	—	T2R	2SA1037AK	-50	-0.15	120 to 560	—
					—	T2R	2SC2412K	50	0.15	120 to 560	
	PNP×2	Pre Amplifier	EMT51	*	—	T2R	2SAR522EB×2	-20	-0.2	120 to 560	—
			EMT52		—	T2R	2SAR523EB×2	-50	-0.1	120 to 560	—
			EMT1		—	T2R	2SA1037AK×2	-50	-0.15	120 to 560	—
			EMT18		—	T2R	2SA2018×2	-12	-0.5	270 to 680	—
	NPN×2		EMX51		—	T2R	2SCR522EB×2	20	0.2	120 to 560	—
			EMX52		—	T2R	2SCR523EB×2	50	0.1	120 to 560	—
			EMX1		—	T2R	2SC2412K×2	50	0.15	120 to 560	—
			EMX26		—	T2R	2SD2654×2	50	0.15	820 to 2,700	—
	PNP+NPN		EMX18		—	T2R	2SC5585×2	12	0.5	270 to 680	—
			EMZ51		—	T2R	2SAR522EB	-20	-0.2	120 to 560	—
			EMZ52		—	T2R	2SAR523EB	-50	-0.1	120 to 560	—
					—	T2R	2SCR523EB	50	0.1	120 to 560	—
			EMZ1		—	T2R	2SA1037AK	-50	-0.15	120 to 560	—
					—	T2R	2SC2412K	50	0.15	120 to 560	—
			EMZ7		—	T2R	2SA2018	-12	-0.5	270 to 680	—
					—	T2R	2SC5585×2	12	0.5	270 to 680	—
EMZ8	—	T2R	2SA2018	-12	-0.5	270 to 680	—				
—	—	T2R	2SC2412K	50	0.15	120 to 560	—				
	PNP+NPN	Pre Amplifier	UMY1N	*	—	TR	2SA1037AK	-50	-0.15	120 to 560	—
—	—	—	—	—	—	TR	2SC2412K	50	0.15	120 to 560	
	PNP×2	Pre Amplifier	UMT18N	*	—	TR	2SA2018×2	-12	-0.5	270 to 680	—
	NPN×2		UMT1N		FHA	TN	2SA1037AK×2	-50	-0.15	120 to 560	YES
			UMX18N		—	TN	2SC5585×2	12	0.5	270 to 680	—
	PNP+NPN		UMX1N		FHA	TN	2SC2412K×2	50	0.15	120 to 560	YES
			UMZ1N		FHA	TR	2SA1037AK	-50	-0.15	120 to 560	YES
—	—	—	—	—	—	TR	2SC2412K	50	0.15	120 to 560	—
	PNP+NPN	Pre Amplifier	FMY1A	*	—	T148	2SA1037AK	-50	-0.15	120 to 560	YES
—	—	—	—	—	—	T148	2SC2412K	50	0.15	120 to 560	
	PNP×2	Pre Amplifier	IMT1A	*	—	T110	2SA1037AK×2	-50	-0.15	120 to 560	—
	NPN×2		IMT18		—	T110	2SA2018×2	-12	-0.5	270 to 680	—
			IMX1		—	T110	2SC2412K×2	50	0.15	120 to 560	—
	PNP+NPN		IMX25		—	T110	2SD2704K×2	20	0.3	820 to 2,700	—
			IMZ1A		—	—	T108	2SA1037AK	-50	-0.15	120 to 560
	—				—	—	—	—	T108	2SC2412K	50




Note1: *General Part No. have no grade code.

Note2: For Pin location, please see the technical specifications.

Note3: Package is JEDEC code. (): ROHM packages, []: JEITA code.

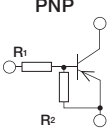
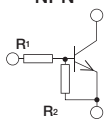
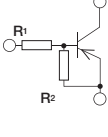
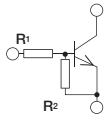
Quick Reference for Complex Bipolar Transistors for Driver								
Configuration	Package	Item	SOT-363T (TUMT6) [SC-113DA] 2021 size	SOT-25T/SOT-457T (TSMT5/TSMT6) [-/SC-95] 2928 size	Equivalent Element Transistors	V _{CEO} (V)	I _C (A)	h _{FE}
	Application		Equivalent Circuit Diagram (TOP View)	Part No.				
	PNP×2	Driver		US6T8	QST8	2SB1709×2	-12	-1.5
US6T9				QST9	2SB1710×2	-30	-1	270 to 680
NPN×2	Driver		US6X7	QSX7	2SD2674×2	12	1.5	270 to 680
			US6X8	QSX8	2SD2675×2	30	1	270 to 680
	DC-DC Converter			QS5W1	Exclusive Chip	30	3	200 to 500
				QS5W2	2SCR533P×2	50	3	180 to 450
PNP + NPN	Pre Amplifier			QS6Z5	2SAR513P 2SCR513P	-50 50	-1 1	180 to 450 180 to 450
	DC-DC Converter			QSZ2	2SB1695 2SD2657	-30 30	-1.5 1.5	270 to 680 270 to 680
				QSZ4	2SB1706 2SD2671	-30 30	-2 2	270 to 680 270 to 680
				QS5Y1	Exclusive Chip	-30 30	-3 3	200 to 500 200 to 500
				QS5Y2	2SAR533P 2SCR533P	-50 50	-3 3	180 to 450 180 to 450

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. (): ROHM packages, []: JEITA code.

Bipolar Transistors for Driver										
Package	Configuration	Application	Product No.				Equivalent Element Transistors	V _{CEO} (V)	I _C (A)	h _{FE}
			Part No.	Grade Code		Packing code				
				General	Automotive					
	PNP×2	Driver	US6T8	*	-	TR	2SB1709×2	-12	-1.5	270 to 680
			US6T9	*	-	TR	2SB1710×2	-30	-1	270 to 680
	NPN×2		US6X7	*	-	TR	2SD2674×2	12	1.5	270 to 680
			US6X8	*	-	TR	2SD2675×2	30	1	270 to 680
	NPN×2	DC-DC Converter	QS5W1	*	-	TR	Exclusive Chip	30	3	200 to 500
			QS5W2	*	-	TR	2SCR533P×2	50	3	180 to 450
	PNP+NPN		QSZ2	*	-	TR	2SB1695 2SD2657	-30 30	-1.5 1.5	270 to 680 270 to 680
			QSZ4	*	-	TR	2SB1706 2SD2671	-30 30	-2 2	270 to 680 270 to 680
			QS5Y1	*	-	TR	Exclusive Chip	-30 30	-3 3	200 to 500 200 to 500
			QS5Y2	*	-	TR	2SAR533P 2SCR533P	-50 50	-3 3	180 to 450 180 to 450
	PNP×2	Driver	QST8	*	-	TR	2SB1709×2	-12	-1.5	270 to 680
			QST9	*	-	TR	2SB1710×2	-30	-1	270 to 680
	NPN×2		QSX7	*	-	TR	2SD2674×2	12	1.5	270 to 680
			QSX8	*	-	TR	2SD2675×2	30	1	270 to 680
	PNP+NPN		Pre Amplifier	QS6Z5	*	-	TR	2SAR513P 2SCR513P	-50 50	-1 1


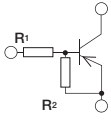

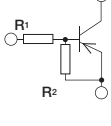
Note1: *General Part No. have no grade code.
 Note2: For Pin location, please see the technical specifications.
 Note3: Package is JEDEC code. (): ROHM packages, []: JEITA code.

Digital Transistors

100mA Digital Transistors (Including Automotive use)														
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CEO}) (V)	I _O (I _C) (A)	G _i (h _{FE})	Automotive Grade AEC-Q101			
			General	Automotive										
SOT-723 (VMT3) [SC-105AA] 1212 size P _D =150mW*	PNP 	R ₁ =R ₂	DTA123EM	DTA123EMFHA	T2L	2.2	2.2	-50	-0.1	20 or more	YES			
			DTA143EM	DTA143EMFHA	T2L	4.7	4.7	-50	-0.1	30 or more	YES			
			DTA114EM	DTA114EMFHA	T2L	10	10	-50	-0.05	30 or more	YES			
			DTA124EM	DTA124EMFHA	T2L	22	22	-50	-0.03	56 or more	YES			
			DTA144EM	DTA144EMFHA	T2L	47	47	-50	-0.03	68 or more	YES			
			DTA115EM	DTA115EMFHA	T2L	100	100	-50	-0.02	82 or more	YES			
		R ₁ ≠R ₂	DTA113ZM	DTA113ZMFHA	T2L	1	10	-50	-0.1	33 or more	YES			
			DTA123YM	DTA123YMFHA	T2L	2.2	10	-50	-0.1	33 or more	YES			
			DTA123JM	DTA123JMFHA	T2L	2.2	47	-50	-0.1	80 or more	YES			
			DTA143XM	DTA143XMFHA	T2L	4.7	10	-50	-0.1	30 or more	YES			
			DTA143ZM	DTA143ZMFHA	T2L	4.7	47	-50	-0.1	80 or more	YES			
			DTA114WM	DTA114WMFHA	T2L	10	4.7	-50	-0.1	24 or more	YES			
			DTA114YM	DTA114YMFHA	T2L	10	47	-50	-0.07	68 or more	YES			
			DTA124XM	DTA124XMFHA	T2L	22	47	-50	-0.05	68 or more	YES			
			DTA144VM	DTA144VMFHA	T2L	47	10	-50	-0.03	33 or more	YES			
			DTA144WM	DTA144WMFHA	T2L	47	22	-50	-0.03	56 or more	YES			
			R ₁ Alone	DTA123TM	DTA123TMFHA	T2L	2.2	—	-50	-0.1	100 to 600	YES		
				DTA143TM	DTA143TMFHA	T2L	4.7	—	-50	-0.1	100 to 600	YES		
	DTA114TM	DTA114TMFHA		T2L	10	—	-50	-0.1	100 to 600	YES				
	NPN 	R ₁ =R ₂		DTC123EM	DTC123EMFHA	T2L	2.2	2.2	50	0.1	20 or more	YES		
				DTC143EM	DTC143EMFHA	T2L	4.7	4.7	50	0.1	30 or more	YES		
				DTC114EM	DTC114EMFHA	T2L	10	10	50	0.05	30 or more	YES		
			DTC124EM	DTC124EMFHA	T2L	22	22	50	0.03	56 or more	YES			
			DTC144EM	DTC144EMFHA	T2L	47	47	50	0.03	68 or more	YES			
			DTC115EM	DTC115EMFHA	T2L	100	100	50	0.02	82 or more	YES			
		R ₁ ≠R ₂	DTC113ZM	DTC113ZMFHA	T2L	1	10	50	0.1	33 or more	YES			
			DTC123YM	DTC123YMFHA	T2L	2.2	10	50	0.1	33 or more	YES			
			DTC123JM	DTC123JMFHA	T2L	2.2	47	50	0.1	80 or more	YES			
			DTC143XM	DTC143XMFHA	T2L	4.7	10	50	0.1	30 or more	YES			
			DTC143ZM	DTC143ZMFHA	T2L	4.7	47	50	0.1	80 or more	YES			
			DTC114WM	DTC114WMFHA	T2L	10	4.7	50	0.1	24 or more	YES			
			DTC114YM	DTC114YMFHA	T2L	10	47	50	0.07	68 or more	YES			
			DTC124XM	DTC124XMFHA	T2L	22	47	50	0.05	68 or more	YES			
			DTC144VM	DTC144VMFHA	T2L	47	10	50	0.03	33 or more	YES			
			DTC144WM	DTC144WMFHA	T2L	47	22	50	0.03	56 or more	YES			
			R ₁ Alone	DTC123TM	DTC123TMFHA	T2L	2.2	—	50	0.1	100 to 600	YES		
DTC143TM				DTC143TMFHA	T2L	4.7	—	50	0.1	100 to 600	YES			
DTC114TM	DTC114TMFHA	T2L		10	—	50	0.1	100 to 600	YES					
DTC144TM	DTC144TMFHA	T2L		47	—	50	0.1	100 to 600	YES					
SOT-416FL (EMT3F) [SC-89] 1616 size P _D =150mW*	PNP 	R ₁ =R ₂		DTA123EEB	—	TL	2.2	2.2	-50	-0.1	20 or more	—		
				DTA143EEB	—	TL	4.7	4.7	-50	-0.1	30 or more	—		
			DTA114EEB	—	TL	10	10	-50	-0.05	30 or more	—			
			DTA124EEB	—	TL	22	22	-50	-0.03	56 or more	—			
			DTA144EEB	—	TL	47	47	-50	-0.03	68 or more	—			
			DTA115EEB	—	TL	100	100	-50	-0.02	82 or more	—			
		R ₁ ≠R ₂	DTA113ZEB	—	TL	1	10	-50	-0.1	33 or more	—			
			DTA123YEB	—	TL	2.2	10	-50	-0.1	33 or more	—			
			DTA123JEB	—	TL	2.2	47	-50	-0.1	80 or more	—			
			DTA143XEB	—	TL	4.7	10	-50	-0.1	30 or more	—			
			DTA143ZEB	—	TL	4.7	47	-50	-0.1	80 or more	—			
			DTA114YEB	—	TL	10	47	-50	-0.07	68 or more	—			
			DTA124XEB	—	TL	22	47	-50	-0.05	68 or more	—			
			R ₁ Alone	DTA143TEB	—	TL	4.7	—	-50	-0.1	100 to 600	—		
				DTA114TEB	—	TL	10	—	-50	-0.1	100 to 600	—		
				NPN 	R ₁ =R ₂	DTC123EEB	—	TL	2.2	2.2	50	0.1	20 or more	—
						DTC143EEB	—	TL	4.7	4.7	50	0.1	30 or more	—
						DTC114EEB	—	TL	10	10	50	0.05	30 or more	—
	DTC124EEB	—				TL	22	22	50	0.03	56 or more	—		
	DTC144EEB	—	TL			47	47	50	0.03	68 or more	—			
	DTC115EEB	—	TL			100	100	50	0.02	82 or more	—			
	R ₁ ≠R ₂	DTC113ZEB	—		TL	1	10	50	0.1	33 or more	—			
		DTC123YEB	—		TL	2.2	10	50	0.1	33 or more	—			
		DTC123JEB	—		TL	2.2	47	50	0.1	80 or more	—			
		DTC143XEB	—		TL	4.7	10	50	0.1	30 or more	—			
		DTC143ZEB	—		TL	4.7	47	50	0.1	80 or more	—			
		DTC114YEB	—		TL	10	47	50	0.07	68 or more	—			
		DTC124XEB	—		TL	22	47	50	0.05	68 or more	—			
		R ₁ Alone	DTC143TEB		—	TL	4.7	—	50	0.1	100 to 600	—		
			DTC114TEB		—	TL	10	—	50	0.1	100 to 600	—		

Note1: *With reference land installed.
 Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.

100mA Digital Transistors (Including Automotive use)

Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I ₀ (I _C) (A)	G ₁ (h _{FE})	Automotive Grade AEC-Q101	
			General	Automotive								
 P _D =150mW*	PNP 	R ₁ =R ₂	<i>New</i> DTA123EE3	<i>New</i> DTA123EE3HZG	TL	2.2	2.2	-50	-0.1	20 or more	YES	
			<i>New</i> DTA143EE3	<i>New</i> DTA143EE3HZG	TL	4.7	4.7	-50	-0.1	30 or more	YES	
			<i>New</i> DTA114EE3	<i>New</i> DTA114EE3HZG	TL	10	10	-50	-0.05	30 or more	YES	
			<i>New</i> DTA124EE3	<i>New</i> DTA124EE3HZG	TL	22	22	-50	-0.03	56 or more	YES	
			<i>New</i> DTA144EE3	<i>New</i> DTA144EE3HZG	TL	47	47	-50	-0.03	68 or more	YES	
			<i>New</i> DTA115EE3	<i>New</i> DTA115EE3HZG	TL	100	100	-50	-0.02	82 or more	YES	
		R ₁ ≠R ₂	<i>New</i> DTA113ZE3	<i>New</i> DTA113ZE3HZG	TL	1	10	-50	-0.1	33 or more	YES	
			<i>New</i> DTA123YE3	<i>New</i> DTA123YE3HZG	TL	2.2	10	-50	-0.1	33 or more	YES	
			<i>New</i> DTA123JE3	<i>New</i> DTA123JE3HZG	TL	2.2	47	-50	-0.1	80 or more	YES	
			<i>New</i> DTA143XE3	<i>New</i> DTA143XE3HZG	TL	4.7	10	-50	-0.1	30 or more	YES	
			<i>New</i> DTA143ZE3	<i>New</i> DTA143ZE3HZG	TL	4.7	47	-50	-0.1	80 or more	YES	
			<i>New</i> DTA114YE3	<i>New</i> DTA114YE3HZG	TL	10	47	-50	-0.07	68 or more	YES	
		R ₁ Alone	<i>New</i> DTA124XE3	<i>New</i> DTA124XE3HZG	TL	22	47	-50	-0.05	68 or more	YES	
			<i>New</i> DTA143TE3	<i>New</i> DTA143TE3HZG	TL	4.7	—	-50	-0.1	100 to 600	YES	
			<i>New</i> DTA114TE3	<i>New</i> DTA114TE3HZG	TL	10	—	-50	-0.1	100 to 600	YES	
			R ₁ =R ₂	<i>New</i> DTC123EE3	<i>New</i> DTC123EE3HZG	TL	2.2	2.2	50	0.1	20 or more	YES
				<i>New</i> DTC143EE3	<i>New</i> DTC143EE3HZG	TL	4.7	4.7	50	0.1	30 or more	YES
				<i>New</i> DTC114EE3	<i>New</i> DTC114EE3HZG	TL	10	10	50	0.05	30 or more	YES
	<i>New</i> DTC124EE3	<i>New</i> DTC124EE3HZG		TL	22	22	50	0.03	56 or more	YES		
	<i>New</i> DTC144EE3	<i>New</i> DTC144EE3HZG		TL	47	47	50	0.03	68 or more	YES		
	<i>New</i> DTC115EE3	<i>New</i> DTC115EE3HZG		TL	100	100	50	0.02	82 or more	YES		
	R ₁ ≠R ₂	<i>New</i> DTC113ZE3	<i>New</i> DTC113ZE3HZG	TL	1	10	50	0.1	33 or more	YES		
		<i>New</i> DTC123YE3	<i>New</i> DTC123YE3HZG	TL	2.2	10	50	0.1	33 or more	YES		
		<i>New</i> DTC123JE3	<i>New</i> DTC123JE3HZG	TL	2.2	47	50	0.1	80 or more	YES		
		<i>New</i> DTC143XE3	<i>New</i> DTC143XE3HZG	TL	4.7	10	50	0.1	30 or more	YES		
		<i>New</i> DTC143ZE3	<i>New</i> DTC143ZE3HZG	TL	4.7	47	50	0.1	80 or more	YES		
		<i>New</i> DTC114YE3	<i>New</i> DTC114YE3HZG	TL	10	47	50	0.07	68 or more	YES		
	R ₁ Alone	<i>New</i> DTC124XE3	<i>New</i> DTC124XE3HZG	TL	22	47	50	0.05	68 or more	YES		
		<i>New</i> DTC143TE3	<i>New</i> DTC143TE3HZG	TL	4.7	—	50	0.1	100 to 600	YES		
				<i>New</i> DTC114TE3	<i>New</i> DTC114TE3HZG	TL	10	—	50	0.1	100 to 600	YES
	 P _D =200mW*	PNP 	R ₁ =R ₂	DTA123EUB	—	TL	2.2	2.2	-50	-0.1	20 or more	—
				DTA143EUB	—	TL	4.7	4.7	-50	-0.1	30 or more	—
				DTA114EUB	—	TL	10	10	-50	-0.05	30 or more	—
				DTA124EUB	—	TL	22	22	-50	-0.03	56 or more	—
				DTA144EUB	—	TL	47	47	-50	-0.03	68 or more	—
				DTA115EUB	—	TL	100	100	-50	-0.02	82 or more	—
R ₁ ≠R ₂			DTA113ZUB	—	TL	1	10	-50	-0.1	33 or more	—	
			DTA123YUB	—	TL	2.2	10	-50	-0.1	33 or more	—	
			DTA123JUB	—	TL	2.2	47	-50	-0.1	80 or more	—	
			DTA143XUB	—	TL	4.7	10	-50	-0.1	30 or more	—	
			DTA143ZUB	—	TL	4.7	47	-50	-0.1	80 or more	—	
			DTA114YUB	—	TL	10	47	-50	-0.07	68 or more	—	
R ₁ Alone			DTA124XUB	—	TL	22	47	-50	-0.05	68 or more	—	
			DTA143TUB	—	TL	4.7	—	-50	-0.1	100 to 600	—	
			DTA114TUB	—	TL	10	—	-50	-0.1	100 to 600	—	
			R ₁ =R ₂	DTC123EUB	—	TL	2.2	2.2	50	0.1	20 or more	—
				DTC143EUB	—	TL	4.7	4.7	50	0.1	30 or more	—
				DTC114EUB	—	TL	10	10	50	0.05	30 or more	—
DTC124EUB		—		TL	22	22	50	0.03	56 or more	—		
DTC144EUB		—		TL	47	47	50	0.03	68 or more	—		
DTC115EUB		—		TL	100	100	50	0.02	82 or more	—		
R ₁ ≠R ₂		DTC113ZUB	—	TL	1	10	50	0.1	33 or more	—		
		DTC123YUB	—	TL	2.2	10	50	0.1	33 or more	—		
		DTC123JUB	—	TL	2.2	47	50	0.1	80 or more	—		
		DTC143XUB	—	TL	4.7	10	50	0.1	30 or more	—		
		DTC143ZUB	—	TL	4.7	47	50	0.1	80 or more	—		
		DTC114YUB	—	TL	10	47	50	0.07	68 or more	—		
R ₁ Alone		DTC124XUB	—	TL	22	47	50	0.05	68 or more	—		
		DTC143TUB	—	TL	4.7	—	50	0.1	100 to 600	—		
				DTC114TUB	—	TL	10	—	50	0.1	100 to 600	—

Note1: *With reference land installed.
 Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.


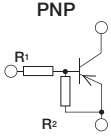
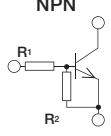
Digital Transistors

100mA Digital Transistors (Including Automotive use)												
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _O (I _C) (A)	G _i (h _{FE})	Automotive Grade AEC-Q101	
			General	Automotive								
 SOT-323 (UMT3) [SC-70] 2021 size P _D =200mW*	 PNP	R ₁ ≠R ₂	DTA114WUA	—	T106	10	4.7	-50	-0.1	24 or more	—	
			DTA144WUA	—	T106	47	22	-50	-0.03	56 or more	—	
		R ₁ Alone	DTA123TUA	—	T106	2.2	—	-50	-0.1	100 to 600	—	
			DTA124TUA	—	T106	22	—	-50	-0.1	100 to 600	—	
			DTA144TUA	—	T106	47	—	-50	-0.1	100 to 600	—	
		R ₂ Alone	DTA115TUA	—	T106	100	—	-50	-0.1	100 to 600	—	
			DTA114GUA	—	T106	—	10	-50	-0.1	30 or more	—	
			DTA144GUA	—	T106	—	47	-50	-0.1	68 or more	—	
		 NPN	R ₁ ≠R ₂	DTC114WUA	—	T106	10	4.7	50	0.1	24 or more	—
				DTC144WUA	—	T106	47	22	50	0.03	56 or more	—
			R ₁ Alone	DTC124TUA	—	T106	22	—	50	0.1	100 to 600	—
				DTC144TUA	—	T106	47	—	50	0.1	100 to 600	—
	DTC115TUA			—	T106	100	—	50	0.1	100 to 600	—	
	R ₂ Alone		DTC124GUA	—	T106	—	22	50	0.1	56 or more	—	
		DTC144GUA	—	T106	—	47	50	0.1	68 or more	—		
	 PNP	R ₁ =R ₂	DTA123EU3	DTA123EU3HZG	T106	2.2	2.2	-50	-0.1	20 or more	YES	
			DTA143EU3	DTA143EU3HZG	T106	4.7	4.7	-50	-0.1	30 or more	YES	
			DTA114EU3	DTA114EU3HZG	T106	10	10	-50	-0.05	30 or more	YES	
			DTA124EU3	DTA124EU3HZG	T106	22	22	-50	-0.03	56 or more	YES	
			DTA144EU3	DTA144EU3HZG	T106	47	47	-50	-0.03	68 or more	YES	
			DTA115EU3	—	T106	100	100	-50	-0.02	82 or more	—	
		R ₁ ≠R ₂	DTA113ZU3	DTA113ZU3HZG	T106	1	10	-50	-0.1	33 or more	YES	
			DTA123YU3	DTA123YU3HZG	T106	2.2	10	-50	-0.1	33 or more	YES	
			DTA123JU3	DTA123JU3HZG	T106	2.2	47	-50	-0.1	80 or more	YES	
			DTA143XU3	DTA143XU3HZG	T106	4.7	10	-50	-0.1	30 or more	YES	
			DTA143ZU3	DTA143ZU3HZG	T106	4.7	47	-50	-0.1	80 or more	YES	
			DTA114YU3	DTA114YU3HZG	T106	10	47	-50	-0.07	68 or more	YES	
			DTA124XU3	DTA124XU3HZG	T106	22	47	-50	-0.05	68 or more	YES	
			DTA143TU3	DTA143TU3HZG	T106	4.7	—	-50	-0.1	100 to 600	YES	
		R ₁ Alone	DTA114TU3	DTA114TU3HZG	T106	10	—	-50	-0.1	100 to 600	YES	
			DTC123EU3	DTC123EU3HZG	T106	2.2	2.2	50	0.1	20 or more	YES	
		R ₁ =R ₂	DTC143EU3	DTC143EU3HZG	T106	4.7	4.7	50	0.1	30 or more	YES	
			DTC114EU3	DTC114EU3HZG	T106	10	10	50	0.05	30 or more	YES	
			DTC124EU3	DTC124EU3HZG	T106	22	22	50	0.03	56 or more	YES	
			DTC144EU3	DTC144EU3HZG	T106	47	47	50	0.03	68 or more	YES	
			DTC115EU3	—	T106	100	100	50	0.02	82 or more	—	
			DTC113ZU3	DTC113ZU3HZG	T106	1	10	50	0.1	33 or more	YES	
		R ₁ ≠R ₂	DTC123YU3	DTC123YU3HZG	T106	2.2	10	50	0.1	33 or more	YES	
			DTC123JU3	DTC123JU3HZG	T106	2.2	47	50	0.1	80 or more	YES	
	DTC143XU3		DTC143XU3HZG	T106	4.7	10	50	0.1	30 or more	YES		
	DTC143ZU3		DTC143ZU3HZG	T106	4.7	47	50	0.1	80 or more	YES		
	DTC114YU3		DTC114YU3HZG	T106	10	47	50	0.07	68 or more	YES		
DTC124XU3	DTC124XU3HZG		T106	22	47	50	0.05	68 or more	YES			
R ₁ Alone	DTC143TU3	DTC143TU3HZG	T106	4.7	—	50	0.1	100 to 600	YES			
	DTC114TU3	DTC114TU3HZG	T106	10	—	50	0.1	100 to 600	YES			
R ₂ Alone	DTC114GU3	—	T106	—	10	50	0.1	30 or more	—			
	DTC115GU3	—	T106	—	100	50	0.1	82 or more	—			

Note1: *With reference land installed.


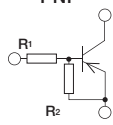
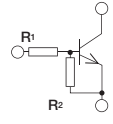
Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.

100mA Digital Transistors (Including Automotive use)


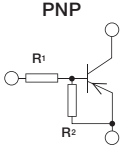

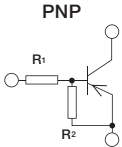

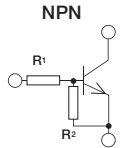
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I ₀ (I _C) (A)	G ₁ (h _{FE})	Automotive Grade AEC-Q101
			General	Automotive							
 SOT-23 (SST3) 2924 size P _D =200mW*	PNP 	R ₁ =R ₂	DTA123ECA	DTA123ECAHZG	T116	2.2	2.2	-50	-0.1	20 or more	YES
			DTA143ECA	DTA143ECAHZG	T116	4.7	4.7	-50	-0.1	30 or more	YES
			DTA114ECA	DTA114ECAHZG	T116	10	10	-50	-0.05	30 or more	YES
			DTA124ECA	DTA124ECAHZG	T116	22	22	-50	-0.03	56 or more	YES
			DTA144ECA	DTA144ECAHZG	T116	47	47	-50	-0.03	68 or more	YES
			DTA115ECA	—	T116	100	100	-50	-0.02	82 or more	—
		R ₁ ≠R ₂	DTA113ZCA	DTA113ZCAHZG	T116	1	10	-50	-0.1	33 or more	YES
			DTA123YCA	DTA123YCAHZG	T116	2.2	10	-50	-0.1	33 or more	YES
			DTA123JCA	DTA123JCAHZG	T116	2.2	47	-50	-0.1	80 or more	YES
			DTA143XCA	DTA143XCAHZG	T116	4.7	10	-50	-0.1	30 or more	YES
			DTA143ZCA	DTA143ZCAHZG	T116	4.7	47	-50	-0.1	80 or more	YES
			DTA114YCA	DTA114YCAHZG	T116	10	47	-50	-0.07	68 or more	YES
			DTA124XCA	DTA124XCAHZG	T116	22	47	-50	-0.05	68 or more	YES
			DTA144VCA	DTA144VCAHZG	T116	47	10	-50	-0.03	33 or more	YES
		DTA144WCA	DTA144WCAHZG	T116	47	22	-50	-0.03	56 or more	YES	
		R ₁ Alone	DTA123TCA	DTA123TCAHZG	T116	2.2	—	-50	-0.1	100 to 600	YES
			DTA143TCA	DTA143TCAHZG	T116	4.7	—	-50	-0.1	100 to 600	YES
			DTA114TCA	DTA114TCAHZG	T116	10	—	-50	-0.1	100 to 600	YES
	DTA124TCA		DTA124TCAHZG	T116	22	—	-50	-0.1	100 to 600	YES	
	DTA144TCA		DTA144TCAHZG	T116	47	—	-50	-0.1	100 to 600	YES	
	DTA115TCA		DTA115TCAHZG	T116	100	—	-50	-0.1	100 to 600	YES	
	NPN 	R ₁ =R ₂	DTC123ECA	DTC123ECAHZG	T116	2.2	2.2	50	0.1	20 or more	YES
			DTC143ECA	DTC143ECAHZG	T116	4.7	4.7	50	0.1	30 or more	YES
			DTC114ECA	DTC114ECAHZG	T116	10	10	50	0.05	30 or more	YES
			DTC124ECA	DTC124ECAHZG	T116	22	22	50	0.03	56 or more	YES
			DTC144ECA	DTC144ECAHZG	T116	47	47	50	0.03	68 or more	YES
			DTC115ECA	—	T116	100	100	50	0.02	82 or more	—
		R ₁ ≠R ₂	DTC113ZCA	DTC113ZCAHZG	T116	1	10	50	0.1	33 or more	YES
			DTC123YCA	DTC123YCAHZG	T116	2.2	10	50	0.1	33 or more	YES
			DTC123JCA	DTC123JCAHZG	T116	2.2	47	50	0.1	80 or more	YES
			DTC143XCA	DTC143XCAHZG	T116	4.7	10	50	0.1	30 or more	YES
			DTC143ZCA	DTC143ZCAHZG	T116	4.7	47	50	0.1	80 or more	YES
			DTC114YCA	DTC114YCAHZG	T116	10	47	50	0.07	68 or more	YES
			DTC124XCA	DTC124XCAHZG	T116	22	47	50	0.05	68 or more	YES
			DTC144VCA	DTC144VCAHZG	T116	47	10	50	0.03	33 or more	YES
		DTC144WCA	DTC144WCAHZG	T116	47	22	50	0.03	56 or more	YES	
R ₁ Alone		DTC123TCA	DTC123TCAHZG	T116	2.2	—	50	0.1	100 to 600	YES	
		DTC143TCA	DTC143TCAHZG	T116	4.7	—	50	0.1	100 to 600	YES	
		DTC114TCA	DTC114TCAHZG	T116	10	—	50	0.1	100 to 600	YES	
	DTC124TCA	DTC124TCAHZG	T116	22	—	50	0.1	100 to 600	YES		
	DTC144TCA	DTC144TCAHZG	T116	47	—	50	0.1	100 to 600	YES		
	DTC115TCA	DTC115TCAHZG	T116	100	—	50	0.1	100 to 600	YES		

Note1: *With reference land installed.
 Note2: Package is JEDEC code. (): ROHM packages.

Digital Transistors

100mA Digital Transistors (Including Automotive use)											
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _O (I _C) (A)	G _I (h _{FE})	Automotive Grade AEC-Q101
			General	Automotive							
 SOT-346 (SMT3) [SC-59] 2928 size P _D =200mW*	PNP 	R ₁ =R ₂	DTA123EKA	DTA123EKAFRA	T146	2.2	2.2	-50	-0.1	20 or more	YES
			DTA143EKA	DTA143EKAFRA	T146	4.7	4.7	-50	-0.1	30 or more	YES
			DTA114EKA	DTA114EKAFRA	T146	10	10	-50	-0.05	30 or more	YES
			DTA124EKA	DTA124EKAFRA	T146	22	22	-50	-0.03	56 or more	YES
			DTA144EKA	DTA144EKAFRA	T146	47	47	-50	-0.03	68 or more	YES
			DTA115EKA	DTA115EKAFRA	T146	100	100	-50	-0.02	82 or more	YES
		R ₁ ≠R ₂	DTA113ZKA	DTA113ZKAFRA	T146	1	10	-50	-0.1	33 or more	YES
			DTA123YKA	DTA123YKAFRA	T146	2.2	10	-50	-0.1	33 or more	YES
			DTA123JKA	DTA123JKAFRA	T146	2.2	47	-50	-0.1	80 or more	YES
			DTA143XKA	DTA143XKAFRA	T146	4.7	10	-50	-0.1	30 or more	YES
			DTA143ZKA	DTA143ZKAFRA	T146	4.7	47	-50	-0.1	80 or more	YES
			DTA114YKA	DTA114YKAFRA	T146	10	47	-50	-0.07	68 or more	YES
		R ₁ Alone	DTA124XKA	DTA124XKAFRA	T146	22	47	-50	-0.05	68 or more	YES
			DTA143TKA	DTA143TKAFRA	T146	4.7	—	-50	-0.1	100 to 600	YES
	NPN 	R ₁ =R ₂	DTC123EKA	DTC123EKAFRA	T146	2.2	2.2	50	0.1	20 or more	YES
			DTC143EKA	DTC143EKAFRA	T146	4.7	4.7	50	0.1	30 or more	YES
			DTC114EKA	DTC114EKAFRA	T146	10	10	50	0.05	30 or more	YES
			DTC124EKA	DTC124EKAFRA	T146	22	22	50	0.03	56 or more	YES
			DTC144EKA	DTC144EKAFRA	T146	47	47	50	0.03	68 or more	YES
			DTC115EKA	DTC115EKAFRA	T146	100	100	50	0.02	82 or more	YES
		R ₁ ≠R ₂	DTC113ZKA	DTC113ZKAFRA	T146	1	10	50	0.1	33 or more	YES
			DTC123YKA	DTC123YKAFRA	T146	2.2	10	50	0.1	33 or more	YES
			DTC123JKA	DTC123JKAFRA	T146	2.2	47	50	0.1	80 or more	YES
			DTC143XKA	DTC143XKAFRA	T146	4.7	10	50	0.1	30 or more	YES
			DTC143ZKA	DTC143ZKAFRA	T146	4.7	47	50	0.1	80 or more	YES
			DTC114YKA	DTC114YKAFRA	T146	10	47	50	0.07	68 or more	YES
		R ₁ Alone	DTC124XKA	DTC124XKAFRA	T146	22	47	50	0.05	68 or more	YES
			DTC143TKA	DTC143TKAFRA	T146	4.7	—	50	0.1	100 to 600	YES
DTC114TKA	DTC114TKAFRA	T146	10	—	50	0.1	100 to 600	YES			

Note1: *With reference land installed.
 Note2: Package is JEDEC code. (): ROHM packages, []: JEITA code.


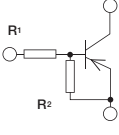
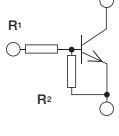

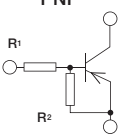
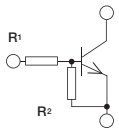
100mA Digital Transistors (For Consumer only)										
Package	Polarity	Specifications	Part No.	Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I ₀ (I _c) (A)	G _i (hFE)	
 SOT-723 (VMT3) [SC-105AA] 1212 size P _D =150mW*	PNP 	R ₁ =R ₂	DTA023EM	T2L	2.2	2.2	-50	-0.1	20 or more	
			DTA043EM	T2L	4.7	4.7	-50	-0.1	20 or more	
			DTA014EM	T2L	10	10	-50	-0.05	35 or more	
			DTA024EM	T2L	22	22	-50	-0.03	60 or more	
			DTA044EM	T2L	47	47	-50	-0.03	80 or more	
		DTA015EM	T2L	100	100	-50	-0.02	80 or more		
		DTA023YM	T2L	2.2	10	-50	-0.1	35 or more		
		DTA023JM	T2L	2.2	47	-50	-0.1	80 or more		
		DTA043XM	T2L	4.7	10	-50	-0.1	35 or more		
		DTA043ZM	T2L	4.7	47	-50	-0.1	80 or more		
		DTA014YM	T2L	10	47	-50	-0.07	80 or more		
		DTA024XM	T2L	22	47	-50	-0.05	80 or more		
		DTA014TM	T2L	10	—	-50	-0.1	100 to 600		
		DTA044TM	T2L	47	—	-50	-0.06	100 to 600		
		DTA015TM	T2L	100	—	-50	-0.1	100 to 600		
	 SOT-416FL (EMT3F) [SC-89] 1616 size P _D =150mW*	PNP 	R ₁ =R ₂	DTA023EEB	TL	2.2	2.2	-50	-0.1	20 or more
				DTA043EEB	TL	4.7	4.7	-50	-0.1	20 or more
				DTA014EEB	TL	10	10	-50	-0.05	35 or more
				DTA024EEB	TL	22	22	-50	-0.03	60 or more
				DTA044EEB	TL	47	47	-50	-0.03	80 or more
			DTA015EEB	TL	100	100	-50	-0.02	80 or more	
			DTA023YEB	TL	2.2	10	-50	-0.1	35 or more	
			DTA023JEB	TL	2.2	47	-50	-0.1	80 or more	
			DTA043XEB	TL	4.7	10	-50	-0.1	35 or more	
			DTA043ZEB	TL	4.7	47	-50	-0.1	80 or more	
			DTA014YEB	TL	10	47	-50	-0.07	80 or more	
			DTA024XEB	TL	22	47	-50	-0.05	80 or more	
			DTA014TEB	TL	10	—	-50	-0.1	100 to 600	
			DTA044TEB	TL	47	—	-50	-0.06	100 to 600	
DTA015TEB			TL	100	—	-50	-0.1	100 to 600		
 SOT-416FL (EMT3F) [SC-89] 1616 size P _D =150mW*		NPN 	R ₁ =R ₂	DTC023EEB	TL	2.2	2.2	50	0.1	20 or more
				DTC043EEB	TL	4.7	4.7	50	0.1	20 or more
				DTC014EEB	TL	10	10	50	0.05	35 or more
				DTC024EEB	TL	22	22	50	0.03	60 or more
				DTC044EEB	TL	47	47	50	0.03	80 or more
			DTC015EEB	TL	100	100	50	0.02	80 or more	
			DTC023YEB	TL	2.2	10	50	0.1	35 or more	
			DTC023JEB	TL	2.2	47	50	0.1	80 or more	
			DTC043XEB	TL	4.7	10	50	0.1	35 or more	
			DTC043ZEB	TL	4.7	47	50	0.1	80 or more	
			DTC014YEB	TL	10	47	50	0.07	80 or more	
			DTC024XEB	TL	22	47	50	0.05	80 or more	
			DTC014TEB	TL	10	—	50	0.1	100 to 600	
			DTC044TEB	TL	47	—	50	0.06	100 to 600	
	DTC015TEB		TL	100	—	50	0.1	100 to 600		

Note1: *With reference land installed.
 Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.

Digital Transistors

100mA Digital Transistors (For Consumer only)									
Package	Polarity	Specifications	Part No.	Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	G _i (h _{FE})
 SOT-323FL (UMT3F) [SC-85] 2021 size P _D =200mW*	PNP	R ₁ =R ₂	DTA023EUB	TL	2.2	2.2	-50	-0.1	20 or more
			DTA043EUB	TL	4.7	4.7	-50	-0.1	20 or more
			DTA014EUB	TL	10	10	-50	-0.05	35 or more
			DTA024EUB	TL	22	22	-50	-0.03	60 or more
			DTA044EUB	TL	47	47	-50	-0.03	80 or more
			DTA015EUB	TL	100	100	-50	-0.02	80 or more
		R ₁ ≠R ₂	DTA013ZUB	TL	1	10	-50	-0.1	30 or more
			DTA023YUB	TL	2.2	10	-50	-0.1	35 or more
			DTA023JUB	TL	2.2	47	-50	-0.1	80 or more
			DTA043XUB	TL	4.7	10	-50	-0.1	35 or more
			DTA043ZUB	TL	4.7	47	-50	-0.1	80 or more
			DTA014YUB	TL	10	47	-50	-0.07	80 or more
		R ₁ Alone	DTA024XUB	TL	22	47	-50	-0.05	80 or more
			DTA043TUB	TL	4.7	—	-50	-0.1	100 to 600
			DTA014TUB	TL	10	—	-50	-0.1	100 to 600
			DTA044TUB	TL	47	—	-50	-0.06	100 to 600
			DTA015TUB	TL	100	—	-50	-0.1	100 to 600
			NPN	R ₁ =R ₂	DTC023EUB	TL	2.2	2.2	50
	DTC043EUB	TL			4.7	4.7	50	0.1	20 or more
	DTC014EUB	TL			10	10	50	0.05	35 or more
	DTC024EUB	TL			22	22	50	0.03	60 or more
	DTC044EUB	TL			47	47	50	0.03	80 or more
	DTC015EUB	TL			100	100	50	0.02	80 or more
	R ₁ ≠R ₂	DTC013ZUB		TL	1	10	50	0.1	30 or more
		DTC023YUB		TL	2.2	10	50	0.1	35 or more
		DTC023JUB		TL	2.2	47	50	0.1	80 or more
		DTC043XUB		TL	4.7	10	50	0.1	35 or more
		DTC043ZUB		TL	4.7	47	50	0.1	80 or more
		DTC014YUB		TL	10	47	50	0.07	80 or more
	R ₁ Alone	DTC024XUB		TL	22	47	50	0.05	80 or more
		DTC043TUB		TL	4.7	—	50	0.1	100 to 600
		DTC014TUB		TL	10	—	50	0.1	100 to 600
		DTC044TUB		TL	47	—	50	0.06	100 to 600
		DTC015TUB		TL	100	—	50	0.1	100 to 600

Note1: *With reference land installed.
 Note2: Package is JEDEC code. (): ROHM packages, []: JEITA code.

500mA Digital Transistors (Including Automotive use)												
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I ₀ (I _c) (A)	G ₁ (h _{FE})	Automotive Grade AEC-Q101	
			General	Automotive								
 <p>SOT-23 (SST3) 2924 size P_D=200mW*</p>	 <p>PNP</p>	R ₁ =R ₂	DTB113EC	DTB113ECHZG	T116	1	1	-50	-0.5	33 or more	YES	
			DTB123EC	DTB123ECHZG	T116	2.2	2.2	-50	-0.5	39 or more	YES	
			DTB143EC	DTB143ECHZG	T116	4.7	4.7	-50	-0.5	47 or more	YES	
			DTB114EC	DTB114ECHZG	T116	10	10	-50	-0.5	56 or more	YES	
		R ₁ ≠R ₂	DTB113ZC	DTB113ZCHZG	T116	1	10	-50	-0.5	56 or more	YES	
			DTB123YC	DTB123YCHZG	T116	2.2	10	-50	-0.5	56 or more	YES	
			R ₂ Alone	DTB114GC	DTB114GCHZG	T116	—	10	-50	-0.5	56 or more	YES
			R ₁ Alone	DTB123TC	DTB123TCHZG	T116	2.2	—	-40	-0.5	100 to 600	YES
	 <p>NPN</p>	R ₁ =R ₂	DTD113EC	DTD113ECHZG	T116	1	1	50	0.5	33 or more	YES	
			DTD123EC	DTD123ECHZG	T116	2.2	2.2	50	0.5	39 or more	YES	
			DTD143EC	DTD143ECHZG	T116	4.7	4.7	50	0.5	47 or more	YES	
			DTD114EC	DTD114ECHZG	T116	10	10	50	0.5	56 or more	YES	
		R ₁ ≠R ₂	DTD113ZC	DTD113ZCHZG	T116	1	10	50	0.5	56 or more	YES	
			DTD123YC	DTD123YCHZG	T116	2.2	10	50	0.5	56 or more	YES	
			R ₂ Alone	DTD114GC	DTD114GCHZG	T116	—	10	50	0.5	56 or more	YES
			R ₁ Alone	DTD123TC	DTD123TCHZG	T116	2.2	—	40	0.5	100 to 600	YES
 <p>SOT-346 (SMT3) [SC-59] 2928 size P_D=200mW*</p>	 <p>PNP</p>	R ₁ =R ₂	DTB113EK	—	T146	1	1	-50	-0.5	33 or more	—	
			DTB123EK	—	T146	2.2	2.2	-50	-0.5	39 or more	—	
			DTB143EK	—	T146	4.7	4.7	-50	-0.5	47 or more	—	
			DTB114EK	—	T146	10	10	-50	-0.5	56 or more	—	
		R ₁ ≠R ₂	DTB113ZK	—	T146	1	10	-50	-0.5	56 or more	—	
			DTB123YK	—	T146	2.2	10	-50	-0.5	56 or more	—	
			R ₂ Alone	DTB114GK	—	T146	—	10	-50	-0.5	56 or more	—
			R ₁ Alone	DTB123TK	—	T146	2.2	—	-40	-0.5	100 to 600	—
	 <p>NPN</p>	R ₁ =R ₂	DTD113EK	—	T146	1	1	50	0.5	33 or more	—	
			DTD123EK	—	T146	2.2	2.2	50	0.5	39 or more	—	
			DTD143EK	—	T146	4.7	4.7	50	0.5	47 or more	—	
			DTD114EK	—	T146	10	10	50	0.5	56 or more	—	
		R ₁ ≠R ₂	DTD113ZK	—	T146	1	10	50	0.5	56 or more	—	
			DTD123YK	—	T146	2.2	10	50	0.5	56 or more	—	
			R ₂ Alone	DTD114GK	—	T146	—	10	50	0.5	56 or more	—
			R ₁ Alone	DTD123TK	—	T146	2.2	—	40	0.5	100 to 600	—

Note1: *With reference land installed.
 Note2: Package is JEDEC code. (): ROHM packages, []: JEITA code.

Digital Transistors


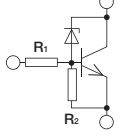
12V/500mA Digital Transistors									
Package	Polarity	Specifications	Part No.	Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	G _i (h _{FE})
 P _D =150mW*	PNP 	R ₁ =R ₂	DTB543EM	T2L	4.7	4.7	-12	-0.5	115 or more
			DTB513ZM	T2L	1	10	-12	-0.5	140 or more
		R ₁ ≠R ₂	DTB523YM	T2L	2.2	10	-12	-0.5	140 or more
			DTB543XM	T2L	4.7	10	-12	-0.5	140 or more
			DTB543ZM	T2L	4.7	47	-12	-0.5	140 or more
	NPN 	R ₁ =R ₂	DTD543EM	T2L	4.7	4.7	12	0.5	115 or more
			DTD513ZM	T2L	1	10	12	0.5	140 or more
		R ₁ ≠R ₂	DTD523YM	T2L	2.2	10	12	0.5	140 or more
			DTD543XM	T2L	4.7	10	12	0.5	140 or more
			DTD543ZM	T2L	4.7	47	12	0.5	140 or more
 P _D =150mW*	PNP 	R ₁ =R ₂	DTB543EE	TL	4.7	4.7	-12	-0.5	115 or more
			DTB513ZE	TL	1	10	-12	-0.5	140 or more
		R ₁ ≠R ₂	DTB523YE	TL	2.2	10	-12	-0.5	140 or more
			DTB543ZE	TL	4.7	47	-12	-0.5	140 or more
			DTD543EE	TL	4.7	4.7	12	0.5	115 or more
	NPN 	R ₁ =R ₂	DTD513ZE	TL	1	10	12	0.5	140 or more
			DTD523YE	TL	2.2	10	12	0.5	140 or more
		R ₁ ≠R ₂	DTD543XE	TL	4.7	10	12	0.5	140 or more
			DTD543ZE	TL	4.7	47	12	0.5	140 or more

Note1: *With reference land installed.
 Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.

Muting Digital Transistors									
Package	Polarity	Specifications	Part No.	Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	G _i (h _{FE})
 P _D =200mW*	NPN 	R ₁ Alone	DTC923TUB	TL	2.2	—	40 (V _{EB0})	0.4	820 to 2,700
			DTC943TUB	TL	4.7	—	40 (V _{EB0})	0.4	820 to 2,700
			DTC914TUB	TL	10	—	40 (V _{EB0})	0.4	820 to 2,700
 P _D =200mW*	NPN 	R ₁ Alone	DTC623TU	T106	2.2	—	20	0.6	820 to 2,700
			DTC643TU	T106	4.7	—	20	0.6	820 to 2,700
			DTC614TU	T106	10	—	20	0.6	820 to 2,700
 P _D =200mW*	NPN 	R ₁ Alone	DTC623TK	T146	2.2	—	20	0.6	820 to 2,700
			DTC643TK	T146	4.7	—	20	0.6	820 to 2,700
			DTC614TK	T146	10	—	20	0.6	820 to 2,700

Note1: *With reference land installed.
 Note2: Package is JEDEC code. () : ROHM packages, [] : JEITA code.

Transistors

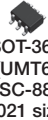
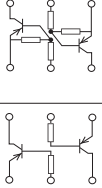
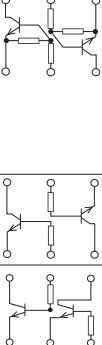
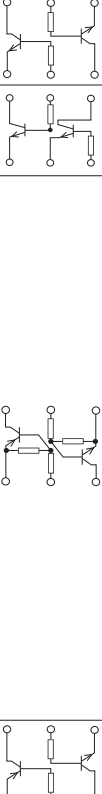
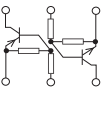
Power Digital Transistors (Including Automotive use)											
Package	Polarity	Specifications	Part No.		Packing code	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	G ₁ (h _{FE})	Automotive Grade AEC-Q101
			General	Automotive							
 SOT-89 (MPT3) [SC-62] 4540 size P _D =0.5W*	NPN 	Driver	DTDG23YP	DTDG23YPHZG	T100	2.2	10	60±10	1	300 or more	YES
			DTDG14GP	DTDG14GPHZG	T100	—	10	60±10	1	300 or more	YES

Note1: *With reference land installed.
 Note2: For internal circuit, please see the technical specifications.
 Note3: Package is JEDEC code. (): ROHM packages, []: JEITA code.

Complex Digital Transistors


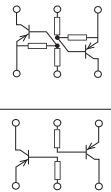
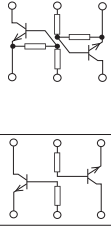
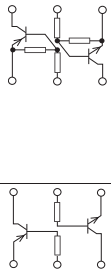
100mA Complex Digital Transistors									
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.	Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _C) (A)
<p>SOT-563 (EMT6) [SC-107C] 1616 size</p>	PNP×2		EMB10	T2R	DTA123J×2	2.2	47	-50	-0.1
			EMB11	T2R	DTA114E×2	10	10		-0.05
			EMB2	T2R	DTA144E×2	47	47		-0.03
			EMB3	T2R	DTA143T×2	4.7	—		-0.1
			EMB4	T2R	DTA114T×2	10	—		-0.1
	NPN×2		EMH10	T2R	DTC123J×2	2.2	47	50	0.1
			EMH25	T2R	DTC143Z×2	4.7	47		0.1
			EMH11	T2R	DTC114E×2	10	10		0.05
			EMH9	T2R	DTC114Y×2	10	47		0.07
			EMH1	T2R	DTC124E×2	22	22		0.03
			EMH2	T2R	DTC144E×2	47	47		0.03
			EMH3	T2R	DTC143T×2	4.7	—		0.1
			EMH4	T2R	DTC114T×2	10	—		0.1
	PNP+NPN Complimentary		EMD22	T2R	DTA143Z	4.7	47	-50	-0.1
					DTC143Z	4.7	47	50	0.1
			EMD3	T2R	DTA114E	10	10	-50	-0.05
					DTC114E	10	10	50	0.05
			EMD9	T2R	DTA114Y	10	47	-50	-0.07
					DTC114Y	10	47	50	0.07
			EMD2	T2R	DTA124E	22	22	-50	-0.03
					DTC124E	22	22	50	0.03
			EMD12	T2R	DTA144E	47	47	-50	-0.03
					DTC144E	47	47	50	0.03
	EMD6	T2R	DTA143T	4.7	—	-50	-0.1		
DTC143T			4.7	—	50	0.1			
PNP+NPN Different type		EMD5	T2R	DTA143X	4.7	10	-50	-0.1	
				DTC144E	47	47	50	0.03	
		EMD4	T2R	DTA114Y	10	47	-50	-0.1	
				DTC144E	7	47	50	0.03	

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.


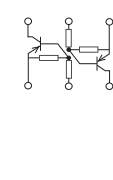
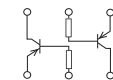

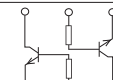
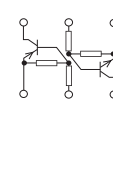
100mA Complex Digital Transistors (Including Automotive use)											
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.		Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CEO}) (V)	I _o (I _c) (A)	Automotive Grade AEC-Q101
			General	Automotive							
 SOT-363 (UMT6) [SC-88] 2021 size	PNP×2		UMB10N	UMB10NFHA	TN	DTA123J×2	2.2	47	-50	-0.1	YES
			UMB11N	UMB11NFHA	TN	DTA114E×2	10	10		-0.05	YES
			UMB2N	UMB2NFHA	TN	DTA144E×2	47	47		-0.03	YES
			UMB3N	UMB3NFHA	TN	DTA143T×2	4.7	—		-0.1	YES
			UMB4N	UMB4NFHA	TN	DTA114T×2	10	—		-0.1	YES
	NPN×2		UMH10N	UMH10NFHA	TN	DTC123J×2	2.2	47	50	0.1	YES
			UMH25N	UMH25NFHA	TN	DTC143Z×2	4.7	47		0.1	YES
			UMH11N	UMH11NFHA	TN	DTC114E×2	10	10		0.05	YES
			UMH9N	UMH9NFHA	TN	DTC114Y×2	10	47		0.07	YES
			UMH1N	UMH1NFHA	TN	DTC124E×2	22	22		0.03	YES
			UMH2N	UMH2NFHA	TN	DTC144E×2	47	47		0.03	YES
			UMH3N	UMH3NFHA	TN	DTC143T×2	4.7	—		0.1	YES
			UMH4N	UMH4NFHA	TN	DTC114T×2	10	—		0.1	YES
	PNP+NPN Complimentary		UMD25N	—	TR	DTA123J	2.2	47	-50	-0.1	—
						DTC123J	2.2	47	50	0.1	—
			UMD22N	UMD22NFHA	TR	DTA143Z	4.7	47	-50	-0.1	YES
						DTC143Z	4.7	47	50	0.1	—
			UMD3N	UMD3NFHA	TR	DTA114E	10	10	-50	-0.05	YES
						DTC114E	10	10	50	0.05	—
			UMD9N	UMD9NFHA	TR	DTA114Y	10	47	-50	-0.07	YES
						DTC114Y	10	47	50	0.07	—
			UMD2N	UMD2NFHA	TR	DTA124E	22	22	-50	-0.03	YES
						DTC124E	22	22	50	0.03	—
	UMD12N	UMD12NFHA	TR	DTA144E	47	47	-50	-0.03	YES		
				DTC144E	47	47	50	0.03	—		
	UMD6N	UMD6NFHA	TR	DTA143T	4.7	—	-50	-0.1	YES		
				DTC143T	4.7	—	50	0.1	—		
PNP+NPN Different type		UMD5N	—	TR	DTA143X	4.7	10	-50	-0.1	—	
					DTC144E	47	47	50	0.03	—	
		UMD4N	—	TR	DTA114Y	10	47	-50	-0.1	—	
					DTC144E	47	47	50	0.03	—	

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. (): ROHM Packages, []: JEITA code.

Complex Digital Transistors

100mA Complex Digital Transistors (Including Automotive use)											
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.		Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	Automotive Grade AEC-Q101
			General	Automotive							
 SOT-457 (SMT6) [SC-74] 2928 size	PNP×2		IMB10A	—	T110	DTA123J×2	2.2	47	-50	-0.1	—
			IMB11A	—	T110	DTA114E×2	10	10		-0.05	—
			IMB2A	—	T110	DTA144E×2	47	47		-0.03	—
		IMB3A	—	T110	DTA143T×2	4.7	—	-0.1		—	
	NPN×2		IMH11A	IMH11AFRA	T110	DTC114E×2	10	10	50	0.05	YES
			IMH9A	IMH9AFRA	T110	DTC114Y×2	10	47		0.07	YES
			IMH1A	—	T110	DTC124E×2	22	22		0.03	—
			IMH2A	—	T110	DTC144E×2	47	47		0.03	—
			IMH3A	—	T110	DTC143T×2	4.7	—		0.1	—
			IMH4A	—	T110	DTC114T×2	10	—		0.1	—
	PNP+NPN Complimentary		IMD3A	IMD3AFRA	T108	DTA114E	10	10	-50	-0.05	YES
						DTC114E	10	10	50	0.05	
			IMD9A	IMD9AFRA	T108	DTA114Y	10	47	-50	-0.07	YES
						DTC114Y	10	47	50	0.07	
			IMD2A	—	T108	DTA124E	22	22	-50	-0.03	—
DTC124E						22	22	50	0.03		
IMD6A	—	T108	DTA143T	4.7	—	-50	-0.1	—			
			DTC143T	4.7	—	50	0.1				

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. (): ROHM Packages, []: JEITA code.


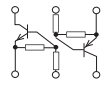

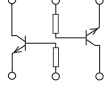

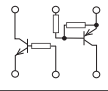
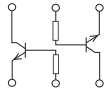

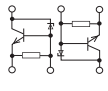
100mA Complex Digital Transistors (For Consumer only)									
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.	Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)
	PNP×2		EMB60	T2R	DTA023J×2	2.2	47	-50	-0.1
			EMB75	T2R	DTA043Z×2	4.7	47		-0.1
			EMB59	T2R	DTA014Y×2	10	47		-0.07
			EMB61	T2R	DTA014E×2	10	10		-0.05
			EMB51	T2R	DTA024E×2	22	22		-0.03
			EMB52	T2R	DTA044E×2	47	47		-0.03
			EMB53	T2R	DTA043T×2	4.7	—		-0.1
	NPN×2		EMH60	T2R	DTC023J×2	2.2	47	50	0.1
			EMH75	T2R	DTC043Z×2	4.7	47		0.1
			EMH61	T2R	DTC014E×2	10	10		0.05
			EMH59	T2R	DTC014Y×2	10	47		0.07
			EMH51	T2R	DTC024E×2	22	22		0.03
			EMH52	T2R	DTC044E×2	47	47		0.03
			EMH53	T2R	DTC043T×2	4.7	—		0.1
	PNP+NPN Complimentary		EMD72	T2R	DTA043Z	4.7	47	-50	-0.1
					DTC043Z	4.7	47	50	0.1
			EMD59	T2R	DTA014Y	10	47	-50	-0.07
					DTC014Y	10	47	50	0.07
			EMD53	T2R	DTA014E	10	10	-50	-0.05
					DTC014E	10	10	50	0.05
			EMD52	T2R	DTA024E	22	22	-50	-0.03
DTC024E					22	22	50	0.03	
EMD62			T2R	DTA044E	47	47	-50	-0.03	
				DTC044E	47	47	50	0.03	

Note1: For Pin location, please see the technical specifications.
 Note2: Package is JEDEC code. (): ROHM Packages, []: JEITA code.

Complex Digital Transistors

100mA Complex Digital Transistors (For Consumer only)										
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.	Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)	
<p>SOT-553 (EMT5) [SC-107BB] 1616 size</p>	PNP×2		EMA5	T2R	DTA123J×2	2.2	47	-50	-0.1	
			EMA3	T2R	DTA143T×2	4.7	-	-50	-0.1	
			EMA4	T2R	DTA114T×2	10	-	-50	-0.1	
	NPN×2		EMG11	T2R	DTC123J×2	2.2	47	50	0.1	
			EMG8	T2R	DTC143Z×2	4.7	47	50	0.1	
			EMG9	T2R	DTC114E×2	10	10	50	0.05	
			EMG5	T2R	DTC114Y×2	10	47	50	0.07	
			EMG1	T2R	DTC124E×2	22	22	50	0.03	
			EMG2	T2R	DTC144E×2	47	47	50	0.03	
			EMG3	T2R	DTC143T×2	4.7	-	50	0.1	
			EMG4	T2R	DTC114T×2	10	-	50	0.1	
	<p>SOT-353 (UMT5) [SC-88A] 2021 size</p>	PNP×2		UMA5N	TR	DTA123J×2	2.2	47	-50	-0.1
				UMA9N	TR	DTA114E×2	10	10	-50	-0.05
				UMA1N	TR	DTA124E×2	22	22	-50	-0.03
UMA2N				TR	DTA144E×2	47	47	-50	-0.03	
UMA3N				TR	DTA143T×2	4.7	-	-50	-0.1	
NPN×2			UMG11N	TR	DTC123J×2	2.2	47	50	0.1	
			UMG8N	TR	DTC143Z×2	4.7	47	50	0.1	
			UMG9N	TR	DTC114E×2	10	10	50	0.05	
			UMG5N	TR	DTC114Y×2	10	47	50	0.07	
			UMG1N	TR	DTC124E×2	22	22	50	0.03	
			UMG2N	TR	DTC144E×2	47	47	50	0.03	
			UMG3N	TR	DTC143T×2	4.7	-	50	0.1	
			UMG4N	TR	DTC114T×2	10	-	50	0.1	
			UMG6N	TR	DTC144T×2	47	-	50	0.1	
<p>SOT-25 (SMT5) [SC-74A] 2928 size</p>	PNP×2		FMA5A	T148	DTA123J×2	2.2	47	-50	-0.1	
			FMA9A	T148	DTA114E×2	10	10	-50	-0.05	
			FMA1A	T148	DTA124E×2	22	22	-50	-0.03	
			FMA2A	T148	DTA144E×2	47	47	-50	-0.03	
			FMA3A	T148	DTA143T×2	4.7	-	-50	-0.1	
			FMA4A	T148	DTA114T×2	10	-	-50	-0.1	
	NPN×2		FMG9A	T148	DTC114E×2	10	10	50	0.05	
			FMG1A	T148	DTC124E×2	22	22	50	0.03	
			FMG2A	T148	DTC144E×2	47	47	50	0.03	
			FMG3A	T148	DTC143T×2	4.7	-	50	0.1	
			FMG4A	T148	DTC114T×2	10	-	50	0.1	
			FMG6A	T148	DTC144T×2	47	-	50	0.1	

Note1: For No.1 Pin location, please see the technical specifications.
 Note2: Package is JEDEC Code. () : ROHM Packages, [] : JEITA code.

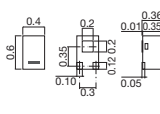
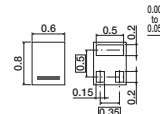
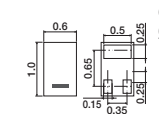
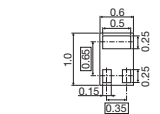
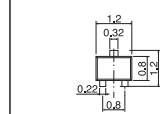
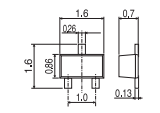
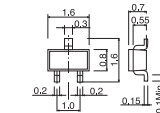
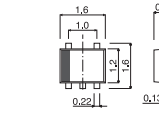
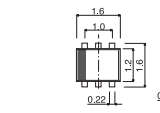
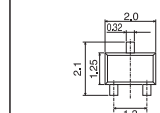
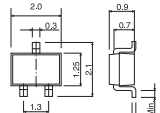
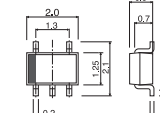
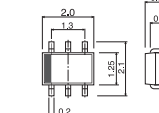
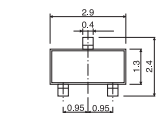
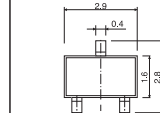
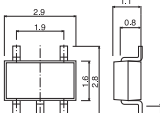
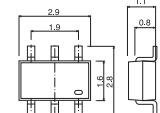
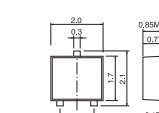
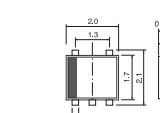
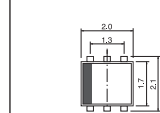
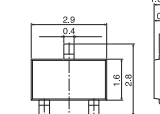
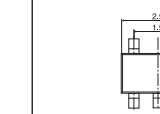
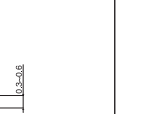
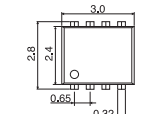
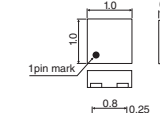

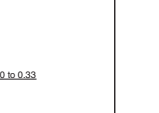
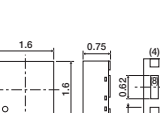
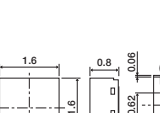
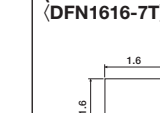
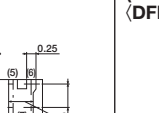
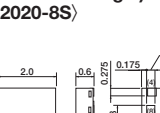
Complex Digital Transistors (For Power Management, Muting and Driver)									
Package	Configuration	Equivalent Circuit Diagram (TOP View)	Part No.	Packing code	Equivalent Element Transistors	R ₁ (kΩ)	R ₂ (kΩ)	V _{CC} (V _{CE0}) (V)	I _o (I _c) (A)
 SOT-563 (EMT6) [SC-107C] 1616 size	PNP+NPN Power Management		EMD29	T2R	DTB513Z DTC114E	1 10	10 10	-12 50	-0.5 0.1
 SOT-363 (UMT6) [SC-88] 2021 size	NPN×2 Muting		UMH33N	TN	DTC923TUB×2	2.2	—	40 (V _{EB0})	0.4
			UMH37N	TN	DTC914TUB×2	10	—	40 (V _{EB0})	0.4
 SOT-457 (SMT6) [SC-74] 2928 size	PNP+NPN Power Management		IMD10A	T108	Exclusive Chip DTC114T	0.1 10	10 —	-50 50	-0.5 0.1
			IMD16A	T108	Exclusive Chip DTC115T	2.2 100	22 —	-50 50	-0.5 0.1
	NPN×2 Muting		IMH23	T110	DTC643T×2	4.7	—	20	0.6
			IMH21	T110	DTC614T×2	10	—	20	0.6
 SOT-457T (TSMT6) [SC-95] 2928 size	NPN×2 Driver		QSH29	TR	Exclusive Chip×2	—	10	60±10	0.5

Note1: No.1 pin is located on the upper right of equivalent circuit diagram for SOT-563 (EMT6) and SOT-363 (UMT6) packages. No.1 pin is located on the lower right of equivalent circuit diagram for SOT-457 (SMT6) packages.

Note2: Package is JEDEC code. () : ROHM Packages, [] : JEITA code.

Packages

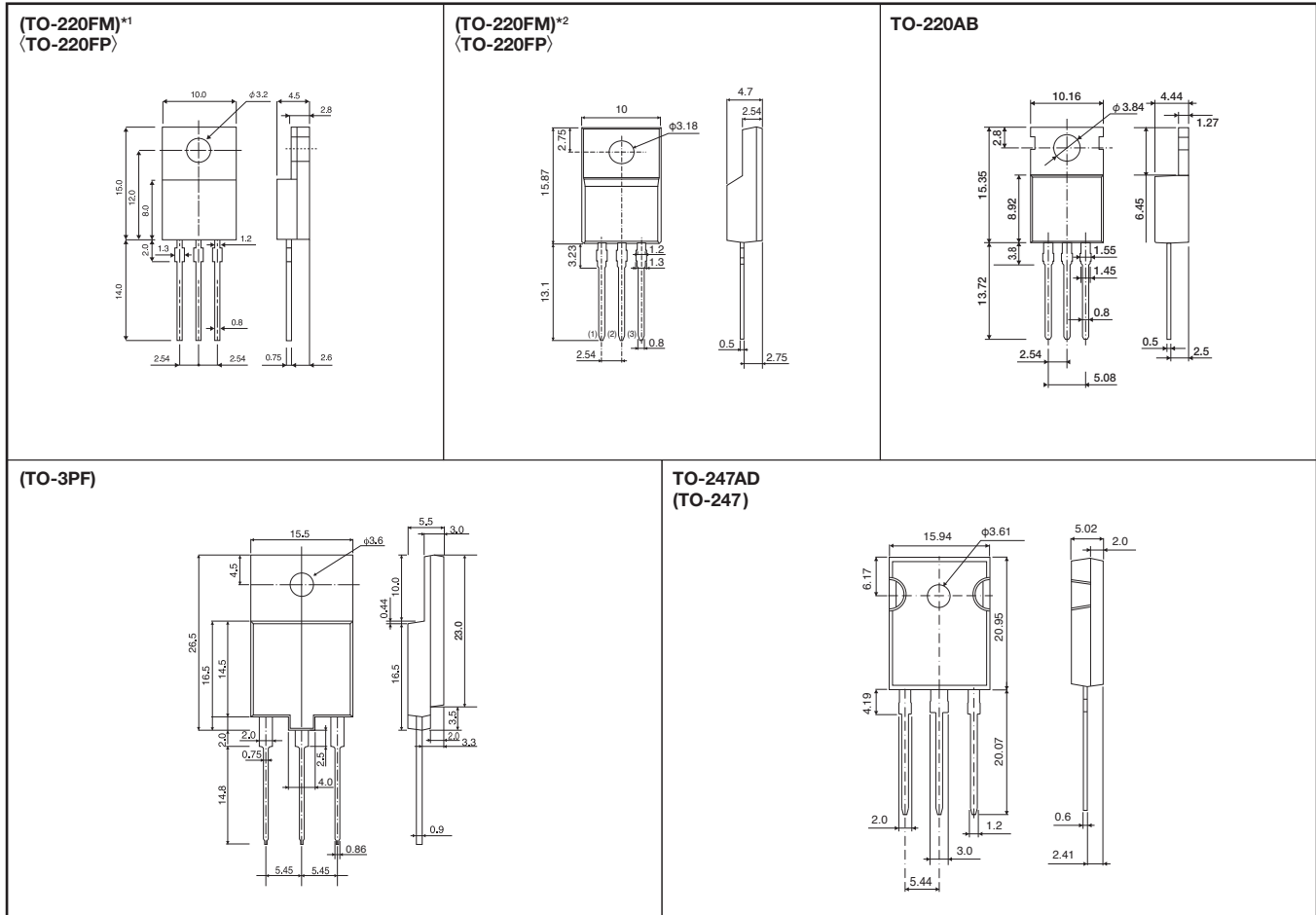
● Dimensions (Unit: mm)

DFN0604-3 (VML0604) 	DFN0806-3 (VML0806) 	DFN1006-3 (VML1006) (SC-101) 	DSN1006-3 (SMM1006) 	SOT-723 (VMT3) (SC-105AA) 
SOT-416FL (EMT3F) (SC-89) 	SOT-416 (EMT3) (SC-75A) 	SOT-553 (EMT5) (SC-107B) 	SOT-563 (EMT6) (SC-107C) 	SOT-323FL (UMT3F) (SC-85) 
SOT-323 (UMT3) (SC-70) 	SOT-353 (UMT5) (SC-88A) 	SOT-363 (UMT6) (SC-88) 	SOT-23 (SST3) 	SOT-346 (SMT3) (SC-59) 
SOT-25 (SMT5) (SC-74A) 	SOT-457 (SMT6) (SC-74) 	SOT-323T (TUMT3) (SC-113A) 	SOT-353T (TUMT5) (SC-113CA) 	SOT-363T (TUMT6) (SC-113DA) 
SOT-346T (TSMT3) (SC-96) 	SOT-25T (TSMT5) 	SOT-457T (TSMT6) (SC-95) 	(TSMT8) 	
DFN1010-3 	DFN1010-3W 	DFN1212-3 	DFN1616-6 	
DFN1616-6W 	(HEML1616L7 Single) (DFN1616-7T) 	(HUML2020L3) (DFN2020-3S) 	(HUML2020L8 Single) (DFN2020-8S) 	

Note1: Package is JEDEC code. () : ROHM Packages, [] : JEITA code, < > : GENERAL code.
 Note2: For details of dimensions, please refer to the technical specifications.

Packages

●Dimensions (Unit: mm)



Note1: *1 Packing code: —, *2 Packing code: C7 G
 Note2: Package is JEDEC code. () : ROHM Packages, < > : GENERAL code
 Note3: For details of dimensions, please refer to the technical specifications.

Product No. Explanation

• MOSFET Part No. Explanation

<Single-Chip type>

Example: **R T Q 0 3 5 P 0 2 T R**

ROHM

Drive Voltage

Type of MOSFET	Drive Voltage (V)			
	0.9/1.2/1.5/1.8	2.5	4	10
Low I _{gss} type	—	—	—	C
General use type	Z, U, Y	T	R, S, X, V	—
High ESD Resistance type	—	J	H	—
Stripe	A	—	—	—

I_D (Unit: 100mA)
ex.)
035=3,500mA (3.5A)

Polarity

N	Nch
P	Pch

Packing code

Package

Symbol	Package
M	SOT-723
F	SOT-323T
L	SOT-363T
C	SOT-23
R	SOT-346T
Q	SOT-457T
P	SOT-89
H	(SOP8)
S	(SOP8)
J	TO-263AB
X	TO-220FM

V_{DSS}

Symbol	V _{DSS} (V)
01	12
02	20
03	30
05	45
06	60
10	100
20	200
25	250

<Single-Chip type>

Example: **R T 1 A 0 4 0 Z P T L**

ROHM

Package

Symbol	Package
V3	DFN0604-3
V1	DFN0806-3
V2	DFN1006-3
A1	DSN1006-3
V4	DFN1616-6W
V8	DFN1010-3W
V9	DFN1010-3
V7	DFN1212-3
V5	DFN1616-6
E1	SOT-416FL
U1	SOT-323FL
F5	SOT-323T
F6	SOT-363T
Q5	SOT-346T
Q6	SOT-457T
Q1	(TSMT8)
Q7	(TSMT8)
W4	DFN1616-7T
F4	DFN2020-8S
Q3	(HSMT8)
H6	(HSMT8)
S3	(SOP8)
S1	(HSOP8)
S6	(HSOP8)
D3	TO-252
X3	TO-220AB
J1	TO-263AB

V_{DSS}

Symbol	V _{DSS} (V)
A	12
C	20
E	30
G	40
H	45
J	50
L	60
P	100
R	150
S	190
T	200
U	250

I_D (A)
ex.)
040=4A
013=1.3A

Drive Voltage

Symbol	Process	Pol.	Drive Voltage	Comment
SN	Gen.1	Nch	2.5V/4.0V	—
UN	Gen.1	Nch	1.2V/1.5V	—
YN	Gen.1	Nch	0.9V	—
MN	Gen.3	Nch	4.5V	High Performance
BN	Gen.4	Nch	4.5V	—
AD	Gen.4	Nch	4.5V	Built-in ESD Protection
GN	Gen.4	Nch	4.5V	High Performance
AJ	Gen.5	Nch	2.5V	—
SP	Gen.1	Pch	2.5V/4.0V	—
RP	Gen.2	Pch	4.0V	—
ZP	Gen.2	Pch	1.2V/1.5V	—
AP	Gen.4	Pch	1.5V	—
BC	Gen.5	Pch	1.8V	—
AT	Gen.5	Pch	4.5V	—
AA	Gen.1	Nch	10V	For Automotive
BD	Gen.3	Nch	6.0V	—
BE	Gen.3	Nch	10V	—
CN	Gen.1	Nch	10V	—
BG	Gen.6	Nch	4.5V	—
BH	Gen.6	Nch	6V/10V	—
LD	CSP	Nch	2.5V	—

Packing code

<Dual-Chip type>

Example: **S H 8 M 3** () **T B** ()

Package

Symbol	Package
EM6	SOT-563
UM6	SOT-363
US5	SOT-353T
US6	SOT-363T
QS5	SOT-25T
QS6	SOT-457T
QH6	SOT-457T
QS8	(TSMT8)
QH8	(TSMT8)
UT6	DFN2020-8D
HS8	(HSML)
HT	(HSMT8)
SH8	(SOP8)
SP8	(SOP8)
HP8	(HSOP8)

Polarity

K	Nch+Nch
J	Pch+Pch
M	Nch+Pch
U	MOS+SBD
S	Nch+Nch+SBD

Serial No. (include alphabets)
Note) "N" is put to UMT5 & UMT6 packages

<Single-Chip type>

Example: **R 6 0 2 0 E N Z** (4) **C 1 3**

ROHM

V_{DSS} (V)
60=600V

I_D (A)*
20=20A

Polarity
N=Nch

Package

Symbol	Package
H	(SOP8)
TL1	(SOT-223)
D4	(SOT-223)
D3	TO-252
J	TO-263
X	TO-220FM
X3	TO-220AB
Z	(TO-3PF)
Z4	TO-247AD

E=3rd Generation (Low Noise type)
K=3rd Generation (High-speed Switching type)
J=3rd Generation (high-speed trr type)
Y=4th Generation
V=4th Generation (High-speed trr type)

*In the case of insulated package, value may be different.

Note: Package is JEDEC code. (): ROHM Packages.

Diodes			
Schottky Barrier Diodes	P.195	Fast Recovery Diodes	P.208
Rectifier Diodes	P.212	Zener Diodes	P.213
Protection Devices	P.215	Bi-Directional Zener Diodes	P.215
TVS	P.216	Switching Diodes	P.220
High Frequency Diodes	P.222	Packages	P.223
Product No. Explanation	P.225		

Schottky Barrier Diodes

● Quick Reference for Small Signal Type Schottky Barrier Diodes







V _R (V)	I _o (mA)	Surface Mount type											
		0402 size		0603 size				1006 size					
		DSN0402-2 (SMD0402)		DSN0603-2 (SMD0603)		DSN0603-2 (SMD0603B)		DSN1006-2 (SMD1006)		SOD-923 (VMN2M)		DFN1006-2W	
20	500											☆RB551ASA-30	19
	2,000						RAS MID™ RB061QS-20	5					
30	30									RB751CM-40	8	New RB751ASA-40	20
	100									RB520CM-30	9		
			RAS MID™ RB522FS-30	1	RAS MID™ RB522ES-30	2				RB521CM-30	10		
							RAS MID™ RB520HS-30	3		RB530CM-30	11		
							RAS MID™ RB532HS-30	4		RB531CM-30	12		
200											New RB520ASA-30 New RB521ASA-30	21 22	
500											☆RB550ASA-30	23	
40	100									RB530CM-40	13		
									RB531CM-40	14			
									RB520CM-40	15			
									RB521CM-40	16			
200											New RB520ASA-40	24	
1,000							RAS MID™ RB161QS-40	6					
1,500							RAS MID™ RB160QS-40	7					
60	100									RB530CM-60	17		
										RB520CM-60	18		

©RAS MID™: ROHM's proprietary new method that enables superior dimensional precision, making it possible to develop the ultra-compact products.
 RAS MID™ is a trademark or a registered trademark of ROHM Co., Ltd.
 Note: Package is JEDEC code. (): ROHM Packages.

☆: Under Development

Schottky Barrier Diodes

● Quick Reference for Small Signal Type Schottky Barrier Diodes

V _R (V)	I _o (mA)	Surface Mount type											
		1608 size		2512 size		2514 size		1616 size		2120 size		2924 size	
													
SOD-523 (EMD2) [SC-79]		SOD-323FL (UMD2) [SC-90A]		SOD-323HE (TUMD2M) [SC-108B]		SOT-416FL (EMD3F) [SC-89]		SOT-323FL (UMD3F) [SC-85]		SOT-323 (UMD3) [SC-70]		SOT-23 (SSD3)	
20	500		RB551VM-30	43	RB411VAM-50	68							
	700									RB461FM	123		
	1,000				RB162VAM-20	69							
	2,000				RB161VAM-20	70							
30	30	RB751SM-40	25	RB751VM-40	44								
	100	RB510SM-30	26	RB510VM-30	45			RB548WM	114				
		RB511SM-30	27	RB530VM-30	46			RB557WM	108				
		RB500SM-30	28	RB511VM-30	47			RB558WM	115				
		RB501SM-30	29	RB531VM-30	48								
	200	RB520SM-30	30	RB520VM-30	49							BAT54CHY	106
		RB521SM-30	31	RB521VM-30	50							BAT54AHY	112
		RB530SM-30	32	RB540VM-30	51							BAT54SHY	119
		RB531SM-30	33	RB541VM-30	52							BAT54HY	125
	500			RB550VM-30	53	RSX051VAM30	73						
						RSX051VYM30	74						
						RSX071VAM30	75						
					RSX071VYM30	76							
					RB168VAM-30	77							
1,000					RB168VYM-30	78							
					RB550VAM-30	79							
					RB550VYM-30	80							
1,500					RSX101VAM30	81							
					RSX101VYM30	82							
40	30						RB715WM	102	RB715UM	103	RB706FM-40	111	
							RB706WM-40	116	RB717UM	109	RB715FM-40	105	
	80										RB508FM-40	124	
											RB508FM-40S	118	
	100										RB508FM-40A	110	
											RB508FM-40C	104	
		RB510SM-40	34	RB510VM-40	54								
		RB511SM-40	35	RB511VM-40	55					RB451UM	121		
		RB530SM-40	36	RB530VM-40	56					RB450UM	122		
	120												
200													
500													
1,000													
200	RB521SM-60	42											
1,000													
90													
100													
150													

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Schottky Barrier Diodes

Schottky Barrier Diodes

Example: **R B 7 5 1 S M - 4 0 F H T 2 R**
Part No. Grade Code Taping Code

Small Signal Type Schottky Barrier Diodes 1																	
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)*2				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101		
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O *1 (mA)	I _{FSM} (A)*2 60Hz.1~	V _F (V) Max	I _F (mA)	I _R (μA) Max	V _R (V)					
		General	Automotive														
1	RASMID™ RB522FS-30	-		T27R	30	30	100	0.5	0.37	10	7	10	DSN0402-2 (SMD0402)		-		
2	RASMID™ RB522ES-30	-		T15R	30	30	100	0.5	0.37	10	7	10	DSN0603-2 (SMD0603)		-		
3	RASMID™ RB520HS-30	-		T15R	30	30	200	1.5	0.43	10	0.3	10	DSN0603-2 (SMD0603B)		-		
4	RASMID™ RB532HS-30	-		T15R	30	30	200	1.5	0.3	10	15	10			-		
5	RASMID™ RB061QS-20	-		T18R	20	20	2,000	15	0.47	2,000	200	10	DSN1006-2 (SMD1006)		-		
6	RASMID™ RB161QS-40	-		T18R	40	40	1,000	7	0.6	1,000	100	10			-		
7	RASMID™ RB160QS-40	-		T18R	40	40	1,500	10	0.65	1,500	1	10		-			
8	RB751CM-40	-	*	T2R	40	30	30	0.2	0.37	1	0.5	30	SOD-923 (VMN2M)		-		
9	RB520CM-30	-	*	T2R	-	30	100	0.5	0.45	10	0.5	10			-		
10	RB521CM-30	-	*	T2R	-	30	100	0.5	0.35	10	10	10			-		
11	RB530CM-30	-	*	T2R	30	30	100	0.5	0.46	10	0.3	10			-		
12	RB531CM-30	-	*	T2R	30	30	100	0.5	0.37	10	7	10			-		
13	RB530CM-40	-	*	T2R	40	40	100	0.5	0.48	10	2	40			-		
14	RB531CM-40	-	*	T2R	40	40	100	0.5	0.41	10	25	40			-		
15	RB520CM-40	-	*	T2R	40	40	100	1	0.71	100	15	40			-		
16	RB521CM-40	-	*	T2R	40	40	100	1	0.61	100	100	40			-		
17	RB530CM-60	-	*	T2R	60	60	100	0.2	0.54	10	1	60			-		
18	RB520CM-60	-	*	T2R	60	60	100	0.5	0.44	10	3	60			-		
19	☆RB551ASA-30	-		FH	T2RB	30	20	500	1	0.47	500	100		DFN1006-2W		YES	
20	New RB751ASA-40	-		FH	T2RB	40	30	30	0.2	0.37	1	0.5				30	YES
21	New RB520ASA-30	-		FH	T2RB	30	30	200	1	0.58	200	1				10	YES
22	New RB521ASA-30	-		FH	T2RB	30	30	200	1	0.47	200	30				10	YES
23	☆RB550ASA-30	-		FH	T2RB	30	30	500	1	0.59	500	35				30	YES
24	New RB520ASA-40	-		FH	T2RB	40	40	200	1	0.55	100	10				40	YES
25	RB751SM-40	-	*	FH	T2R	40	30	30	0.2	0.37	1	0.5		30	SOD-523 (EMD2) [SC-79]	YES	
26	RB510SM-30	-	*	T2R	30	30	100	0.5	0.46	10	0.3	10		-			
27	RB511SM-30	-	*	T2R	30	30	100	0.5	0.37	10	7	10		-			
28	RB500SM-30	-	*	FH	T2R	30	30	100	1	0.45	10	0.5	10	YES			
29	RB501SM-30	-	*	FH	T2R	30	30	100	1	0.35	10	10	10	YES			
30	RB520SM-30	-	*	FH	T2R	-	30	200	1	0.58	200	1	10	YES			
31	RB521SM-30	-	*	FH	T2R	-	30	200	1	0.47	200	30	10	YES			
32	RB530SM-30	-	*	FH	T2R	-	30	200	1	0.45	10	0.5	10	YES			
33	RB531SM-30	-	*	FH	T2R	-	30	200	1	0.35	10	10	10	YES			
34	RB510SM-40	-	*	FH	T2R	40	40	100	0.5	0.48	10	2	40	YES			
35	RB511SM-40	-	*	T2R	40	40	100	0.5	0.41	10	25	40		-			
36	RB530SM-40	-	*	FH	T2R	40	40	100	1	0.71	100	15	40	YES			
37	RB531SM-40	-	*	T2R	40	40	100	1	0.61	100	100	40		-			
38	RB540SM-40	-	*	T2R	40	40	200	1	0.71	100	15	40		-			
39	RB541SM-40	-	*	T2R	40	40	200	1	0.61	100	100	40		-			
40	RB520SM-40	-	*	FH	T2R	45	40	200	1	0.55	100	10	40	YES			
41	RB521SM-40	-	*	FH	T2R	45	40	200	1	0.54	200	90	40	YES			
42	RB521SM-60	-	*	FH	T2R	60	60	200	1	0.6	200	100	60	YES			

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☆: Under Development

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*General Part No. have no grade code.

*1 I_O: Average output current per chip. In case of 1, 2 or 3 chip diodes. I_O indicates average output current of 1, 2 or 3 chips.

*2 Value/Chip

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Schottky Barrier Diodes

Small Signal type Schottky Barrier Diodes 2															
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)*2				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O *1 (mA)	I _{FSM} (A)*2 60Hz.1~	V _F (V) Max	I _F (mA)	I _R (μA) Max	V _R (V)			
		General	Automotive												
43	RB551VM-30		—	TE-17	30	20	500	2	0.47	500	100	20	SOD-323FL (UMD2) [SC-90A]		—
44	RB751VM-40		FH	TE-17	40	30	30	0.2	0.37	1	0.5	30			YES
45	RB510VM-30		FH	TE-17	30	30	100	0.5	0.46	10	0.3	10			YES
46	RB530VM-30		FH	TE-17	30	30	100	0.5	0.45	10	0.5	10			YES
47	RB511VM-30		—	TE-17	30	30	100	0.5	0.37	10	7	10			—
48	RB531VM-30		—	TE-17	30	30	100	1	0.49	100	10	10			—
49	RB520VM-30		FH	TE-17	30	30	200	1	0.58	200	1	10			YES
50	RB521VM-30		FH	TE-17	30	30	200	1	0.47	200	30	10			YES
51	RB540VM-30		—	TE-17	30	30	200	1	0.45	10	0.5	10			—
52	RB541VM-30		—	TE-17	30	30	200	1	0.64	200	10	10			—
53	RB550VM-30		—	TE-17	30	30	500	1	0.59	500	35	30			—
54	RB510VM-40		—	TE-17	40	40	100	0.5	0.48	10	2	40			—
55	RB511VM-40		—	TE-17	40	40	100	0.5	0.41	10	25	40			—
56	RB530VM-40		FH	TE-17	40	40	100	1	0.69	100	15	40			YES
57	RB531VM-40		—	TE-17	40	40	100	1	0.61	100	100	40			—
58	RB500VM-40	*	FH	TE-17	45	40	100	1	0.45	10	1	10			YES
59	RB501VM-40		FH	TE-17	45	40	100	1	0.55	100	30	10			YES
60	RB540VM-40		—	TE-17	40	40	200	1	0.71	100	15	40			—
61	RB541VM-40		—	TE-17	40	40	200	1	0.61	100	100	40			—
62	RB520VM-40		FH	TE-17	40	40	200	1	0.55	100	10	40			YES
63	RB521VM-40		FH	TE-17	40	40	200	1	0.54	200	90	40			YES
64	RB550VM-40		—	TE-17	40	40	200	1	0.51	200	40	40			—
65	RB551VM-40		FH	TE-17	40	40	200	1	0.43	200	300	40			YES
66	RB560VM-40		FH	TE-17	40	40	500	2	0.64	500	40	40			YES
67	RB561VM-40		—	TE-17	40	40	500	2	0.56	500	300	40			—
68	RB411VAM-50		—	TR	50	20	500	3	0.5	500	30	10			—
69	RB162VAM-20		—	TR	25	20	1,000	5	0.4	1,000	1,200	20			—
70	RB161VAM-20		—	TR	30	20	1,000	5	0.42	1,000	1,000	20			—
71	RBE1VAM20A		—	TR	30	20	1,000	3	0.53	1,000	200	20			—
72	RBE2VAM20A		—	TR	30	20	2,000	5	0.46	2,000	700	20			—
73	RSX051VAM30		—	TR	30	30	500	5	0.39	500	200	30			—
74	RSX051VYM30	—	FH	TR	30	30	500	5	0.39	500	200	30			YES
75	RSX071VAM30	*	—	TR	30	30	700	5	0.42	700	200	30			—
76	RSX071VYM30	—	FH	TR	30	30	700	5	0.42	700	200	30	YES		
77	RB168VAM-30	*	—	TR	30	30	1,000	5	0.73	1,000	0.3	30	—		
78	RB168VYM-30	—	FH	TR	30	30	1,000	5	0.73	1,000	0.3	30	YES		
79	RB550VAM-30	*	—	TR	30	30	1,000	5	0.52	1,000	30	10	—		
80	RB550VYM-30	—	FH	TR	30	30	1,000	3	0.52	1,000	30	10	YES		
81	RSX101VAM30	*	—	TR	30	30	1,000	5	0.47	1,000	200	30	—		
82	RSX101VYM30	—	FH	TR	30	30	1,000	5	0.47	1,000	200	30	YES		
83	RSX201VAM30	*	—	TR	30	30	1,500	8	0.46	1,500	300	30	—		
84	RSX201VYM30	—	FH	TR	30	30	1,500	8	0.46	1,500	300	30	YES		
85	RB400VAM-50	*	—	TR	50	40	500	3	0.55	500	50	30	—		
86	RB400VYM-50	—	FH	TR	50	40	500	3	0.55	500	50	30	YES		

*General Part No. have no grade code.



*1 I_O: Average output current per chip. In case of 1, 2 or 3 chip diodes. I_O indicates average output current of 1, 2 or 3 chips.

*2 Value/Chip

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Schottky Barrier Diodes

Example: **R B 1 6 8 V Y M - 6 0 F H T R**
Part No. Grade Code Taping Code

Small Signal type Schottky Barrier Diodes 3																
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)*2				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O *1 (mA)	I _{FSM} (A)*2 60Hz.1~	V _F (V) Max	I _F (mA)	I _R (μA) Max	V _R (V)				
		General	Automotive													
87	RB160VAM-40	*	—	TR	40	40	1,000	10	0.55	700	50	40	SOD-323HE (TUMD2M) [SC-108B]		—	
88	RB160VYM-40	—	FH	TR	40	40	1,000	10	0.55	700	50	40			YES	
89	RB168VAM-40	*	—	TR	40	40	1,000	5	0.79	1,000	0.5	40			—	
90	RB168VYM-40	—	FH	TR	40	40	1,000	5	0.79	1,000	0.5	40			YES	
91	RB160VAM-60	*	—	TR	60	60	1,000	5	0.67	1,000	40	60			—	
92	RB168VAM-60	*	—	TR	60	60	1,000	5	0.82	1,000	1	60			—	
93	RB168VYM-60	—	FH	TR	60	60	1,000	5	0.82	1,000	1	60			YES	
94	RB021VAM90	*	—	TR	90	90	200	5	0.49	200	900	90			—	
95	RB578VAM100	*	—	TR	100	100	700	5	0.85	700	0.2	100			—	
96	RB578VYM100	—	FH	TR	100	100	700	5	0.85	700	0.2	100			YES	
97	RB168VAM100	*	—	TR	100	100	1,000	5	0.84	1,000	0.3	100			—	
98	RB168VYM100	—	FH	TR	100	100	1,000	5	0.84	1,000	0.3	100			YES	
99	RB558VAM150	*	—	TR	150	150	500	3	0.95	500	0.5	150			—	
100	RB168VAM150	*	—	TR	150	150	1,000	5	0.89	1,000	1	150			—	
101	RB168VYM150	—	FH	TR	150	150	1,000	5	0.89	1,000	1	150			YES	
102	RB715WM	*	FH	TL	40	40	30*2	0.2	0.37	1	1	10			SOT-416FL (EMD3F) [SC-89]	
103	RB715UM	*	—	TL	40	40	30	0.2	0.37	1	1	10	SOT-323FL (UMD3F) [SC-85]	—		
104	RB508FM-40C	—	FH	T106	40	40	80	1	0.48	1	0.035	30	SOT-323 (UMD3) [SC-70]	YES		
105	RB715FM-40	*	FH	T106	40	40	30	0.2	0.37	1	1	10	SOT-23 (SSD3)	YES		
106	BAT54CHY		FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	YES		
107	BAS40-05HY		FH	T116	40	40	120*2	0.6	0.5	10	1	30	SOT-23 (SSD3)	YES		
108	RB557WM		—	TL	—	30	100*2	0.5	0.49	100	10	10	SOT-416FL (EMD3F) [SC-89]	—		
109	RB717UM		—	TL	45	40	30*2	0.2	0.37	1	1	30	SOT-323FL (UMD3F) [SC-85]	—		
110	RB508FM-40A		—	FH	T106	40	40	80	1	0.48	1	0.035	30	SOT-323 (UMD3) [SC-70]	YES	
111	RB706FM-40		*	FH	T106	45	40	30	0.2	0.37	1	1	30	SOT-23 (SSD3)	YES	
112	BAT54AHY	FH		T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	YES		
113	BAS40-06HY	FH		T116	40	40	120*2	0.6	0.5	10	1	30	SOT-23 (SSD3)	YES		
114	RB548WM	—		TL	—	30	100*2	0.5	0.45	10	0.5	10	SOT-416FL (EMD3F) [SC-89]	—		
115	RB558WM	—		TL	—	30	100*2	0.5	0.49	100	10	10	SOT-416FL (EMD3F) [SC-89]	—		
116	RB706WM-40	—		TL	45	40	30*2	0.2	0.37	1	0.5	30	SOT-323FL (UMD3F) [SC-85]	—		
117	RB706UM-40	—		TL	45	40	30*2	0.2	0.37	1	1	30	SOT-323FL (UMD3F) [SC-85]	—		
118	RB508FM-40S	—	FH	T106	40	40	80	1	0.48	1	0.035	30	SOT-323 (UMD3) [SC-70]	YES		
119	BAT54SHY	*	FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	YES		
120	BAS40-04HY		FH	T116	40	40	120*2	0.6	0.5	10	1	30	SOT-23 (SSD3)	YES		
121	RB451UM		—	TL	40	40	100	1	0.45	100	90	40	SOT-323FL (UMD3F) [SC-85]	—		
122	RB450UM	—	TL	45	40	100	1	0.55	100	10	40	SOT-323FL (UMD3F) [SC-85]	—			
123	RB461FM	*	FH	T106	25	20	700	3	0.49	700	200	20	SOT-323 (UMD3) [SC-70]	YES		
124	RB508FM-40		—	FH	T106	40	40	80	1	0.48	1	0.035	30	SOT-323 (UMD3) [SC-70]	YES	
125	BAT54HY		FH	T116	30	30	200*2	0.6	0.8	100	2	25	SOT-23 (SSD3)	YES		
126	BAS40HY		FH	T116	40	40	120	0.6	0.5	10	1	30	SOT-23 (SSD3)	YES		

*General Part No. have no grade code.
 *1 I_O: Average output current per chip. In case of 1, 2 or 3 chip diodes. I_O indicates average output current of 1, 2 or 3 chips.
 *2 Value/Chip
 Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Schottky Barrier Diodes

● Quick Reference for Middle Power Schottky Barrier Diodes (High Efficient type)

V _R (V)	I _O (A)	Surface Mount type											
		2513 size		3516 size				4725 size			5026 size		
		(PMDE)		(PMDU) (SOD-123FL) [SC-109B]		(PMDUP) (SOD-123FL)	(PMDTP) (SOD-128)	(PMDTM) (SOD-128)		DO-214AC (PMDS) (SMA)			
Low I _R type		Low V _F /Low I _R type	Low I _R type	Ultra Low I _R type	Ultra Low I _R type	Low V _F /Low I _R type	Low I _R type		Low V _F /Low I _R type				
20	5							RSX501LAM20	2				
30	1		RSX101MM-30	1									
	2							RSX201LAM30	3			RSX201L-30	6
	3							RSX205LAM30	4			RSX205L-30	7
100	2	RBLQ2VWM10	9		RBLQ2MM10	10							
	3										RBLQ3LAM10	11	
200	2												
	3												
	5												

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

● Quick Reference for Middle Power Schottky Barrier Diodes (Standard type)

V _R (V)	I _O (A)	Surface Mount type																		
		2513 size		3516 size				4725 size			5026 size									
		(PMDE)		(PMDU) (SOD-123FL) [SC-109B]		(PMDUP) (SOD-123FL)	(PMDTP) (SOD-128)	(PMDTM) (SOD-128)		DO-214AC (PMDS) (SMA)										
Low V _F type		Ultra Low I _R type	Ultra Low V _F type	Low V _F type	Ultra Low I _R type	Ultra Low V _F type	Low V _F type	Ultra Low I _R type		Low V _F type	Ultra Low I _R type									
20	1				RBS1MM40A	16				RBS1LAM40A	22									
	2				RBS2MM40A	17				RBS2LAM40A	23									
					RBS2MM40B	18				RBS2LAM40B	24									
					RBS2MM40C	19				RBS2LAM40C	25									
	3				RBS3MM40A	20				RBS3LAM40A	26									
30	1	RBR1VWM30A	30	RB168VWM-30	91		RBR1MM30A	36	RB168MM-30	101		RBR1LAM30A	52	RB168LAM-30	111	RBR1L30A	70	RB168L-30	131	
	2	RBR2VWM30A	31	RB068VWM-30	92		RBR2MM30A	37	RB068MM-30	102		RBR2LAM30A	53	RB068LAM-30	112	RBR2L30A	71	RB068L-30	132	
							RBR2MM30B	38				RBR3LAM30A	54	RB058LAM-30	113	RBR3L30A	72	RB058L-30	133	
							RBR2MM30B	38				RBR3LAM30B	55			RBR3L30B	73			
	3						RBR3MM30A	39				RBR5LAM30A	56	RB088LAM-30	114	RBR5L30A	74			
												RBR5LAM30B	57			RBR5L30B	75			
	5											RBS5LAM40A	29							
	40	1	RBR1VWM40A	32	RB168VWM-40	93		RBR1MM40A	40	RB168MM-40	103		RBR1LAM40A	58	RB168LAM-40	115	RBR1L40A	76	RB168L-40	134
		2	RBR2VWM40A	33	RB068VWM-40	94		RBR2MM40A	41				RBR2LAM40A	59	RB068LAM-40	116	RBR2L40A	77	RB068L-40	135
								RBR2MM40B	42	RB068MM-40	104		RBR3LAM40A	60			RBR3L40A	78		
							RBR2MM40C	43				RBR3LAM40B	61	RB058LAM-40	117	RBR3L40B	79	RB058L-40	136	
3							RBR3MM40A	44				RBR3LAM40C	62			RBR3L40C	80			
60	1	RBR1VWM60A	34	RB168VWM-60	95		RBR1MM60A	46	RB168MM-60	105		RBR1LAM60A	64	RB168LAM-60	119	RBR1L60A	82	RB168L-60	137	
	2	RBR2VWM60A	35	RB068VWM-60	96		RBR2MM60A	47				RBR2LAM60A	65	RB068LAM-60	120	RBR2L60A	83	RB068L-60	138	
							RBR2MM60B	48	RB068MM-60	106		RBR2LAM60B	66			RBR2L60B	84			
							RBR2MM60C	49				RBR3LAM60A	67	RB058LAM-60	121	RBR3L60A	85	RB058L-60	139	
	3						RBR3MM60A	50				RBR3LAM60B	68			RBR3L60B	86			
90	1						RBR3MM60B	51			RBR5LAM60A	69	RB088LAM-60	122	RBR5L60A	87				
100	1						RB160MM-90	89			RB160LAM-90	90			RB160L-90	88				
	2																			
	3																			
	5																			
	1																			
150	1																			
	2																			
	3																			
200	1																			

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

Schottky Barrier Diodes

Schottky Barrier Diodes

Example: **RSX101MM-30** **TF** **TR**
Part No. Grade Code Taping Code

Middle Power Schottky Barrier Diodes (High Efficient type)															
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O (A)	I _{FSM} (A) 60Hz.1~	V _F (V) Max	I _F (A)	I _R (mA) Max	V _R (V)			
Low V_F/Low I_R type															
1	RSX101MM-30	*	TF	TR	30	30	1	45	0.39	1	0.2	30	(PMDU) (SOD-123FL) [SC-109B]		YES
2	RSX501LAM20	*	—	TR	20	20	5	100	0.39	3	0.5	20	(PMDTM) (SOD-128)		—
3	RSX201LAM30		TF	TR	30	30	2	60	0.44	2	0.15	30			YES
4	RSX205LAM30		TF	TR	30	30	2	60	0.49	2	0.2	30			YES
5	RSX301LAM30		TF	TR	30	30	3	100	0.42	3	0.2	15			YES
6	RSX201L-30	—	DD	TE25	30	30	2	60	0.44	2	0.15	30	DO-214AC (PMDS) (SMA)		YES
7	RSX205L-30		TF	TE25	30	30	2	60	0.49	2	0.2	30			YES
8	RSX301L-30		DD	TE25	30	30	3	70	0.42	3	0.2	30			YES
Low I_R type															
9	RBLQ2VWM10	*	TF	TR	100	100	2	30	0.77	2	0.01	100	(PMDE)		YES
10	RBLQ2MM10	*	TF	TR	100	100	2	30	0.77	2	0.01	100	(PMDU) (SOD-123FL) [SC-109B]		YES
11	RBLQ3LAM10	*	TF	TR	100	100	3	80	0.64	3	0.03	100	(PMDTM) (SOD-128)		YES
Ultra Low I_R type															
12	New RSX068MP2S	*	—	TR	200	200	2	50	0.89	2	0.0001	200	(PMDUP) (SOD-123FL)		—
13	New RSX048LAP2S	*	—	TR	200	200	3	75	0.87	3	0.0002	200	(PMDTP) (SOD-128)		—
14	New RSX058LAP2S		—	TR	200	200	3	50	0.92	3	0.0001	200			—
15	New RSX088LAP2S		—	TR	200	200	5	75	0.92	5	0.0002	200			—
Middle Power Schottky Barrier Diodes (Standard type) 1															
Ultra Low V_F type															
16	RBS1MM40A	*	—	TR	40	20	1	25	0.38	1	0.4	20	(PMDU) (SOD-123FL) [SC-109B]		—
17	RBS2MM40A		—	TR	40	20	2	25	0.48	2	0.4	20			—
18	RBS2MM40B		—	TR	40	20	2	35	0.41	2	0.5	20			—
19	RBS2MM40C		—	TR	40	20	2	45	0.39	2	0.6	20			—
20	RBS3MM40A		—	TR	40	20	3	35	0.49	3	0.5	20			—
21	RBS3MM40B	—	TR	40	20	3	45	0.45	3	0.6	20	—			
22	RBS1LAM40A	*	—	TR	40	20	1	40	0.38	1	0.4	20	(PMDTM) (SOD-128)		—
23	RBS2LAM40A		—	TR	40	20	2	40	0.48	2	0.4	20			—
24	RBS2LAM40B		—	TR	40	20	2	50	0.41	2	0.5	20			—
25	RBS2LAM40C		—	TR	40	20	2	80	0.37	2	0.8	20			—
26	RBS3LAM40A		—	TR	40	20	3	50	0.49	3	0.5	20			—
27	RBS3LAM40B		—	TR	40	20	3	60	0.45	3	0.6	20			—
28	RBS3LAM40C		—	TR	40	20	3	80	0.4	3	0.8	20			—
29	RBS5LAM40A		—	TR	40	20	5	80	0.49	5	0.8	20			—
Low V_F type															
30	RBR1VWM30A	*	TF	TR	30	30	1	30	0.48	1	0.05	30	(PMDE)		YES
31	RBR2VWM30A		TF	TR	30	30	2	30	0.53	2	0.05	30			YES
32	RBR1VWM40A		TF	TR	40	40	1	20	0.52	1	0.05	40			YES
33	RBR2VWM40A		TF	TR	40	40	2	20	0.62	2	0.05	40			YES
34	RBR1VWM60A		TF	TR	60	60	1	20	0.53	1	0.075	60			YES
35	RBR2VWM60A	TF	TR	60	60	2	20	0.65	2	0.075	60	YES			
36	RBR1MM30A	*	TF	TR	30	30	1	30	0.48	1	0.05	30	(PMDU) (SOD-123FL) [SC-109B]		YES
37	RBR2MM30A		TF	TR	30	30	2	30	0.53	2	0.05	30			YES
38	RBR2MM30B		TF	TR	30	30	2	30	0.49	2	0.08	30			YES
39	RBR3MM30A		TF	TR	30	30	3	30	0.51	3	0.1	30			YES
40	RBR1MM40A		TF	TR	40	40	1	20	0.52	1	0.05	40			YES
41	RBR2MM40A		TF	TR	40	40	2	20	0.62	2	0.05	40			YES
42	RBR2MM40B		TF	TR	40	40	2	30	0.55	2	0.08	40			YES
43	RBR2MM40C		TF	TR	40	40	2	30	0.52	2	0.1	40			YES
44	RBR3MM40A		TF	TR	40	40	3	30	0.62	3	0.08	40			YES
45	RBR3MM40B		TF	TR	40	40	3	30	0.58	3	0.1	40			YES
46	RBR1MM60A		TF	TR	60	60	1	20	0.53	1	0.075	60			YES
47	RBR2MM60A		TF	TR	60	60	2	20	0.65	2	0.075	60			YES
48	RBR2MM60B		TF	TR	60	60	2	30	0.58	2	0.1	60			YES
49	RBR2MM60C		TF	TR	60	60	2	30	0.55	2	0.12	60			YES
50	RBR3MM60A		TF	TR	60	60	3	30	0.66	3	0.1	60			YES
51	RBR3MM60B	TF	TR	60	60	3	30	0.61	3	0.12	60	YES			
52	RBR1LAM30A	*	TF	TR	30	30	1	40	0.48	1	0.05	30	(PMDTM) (SOD-128)		YES
53	RBR2LAM30A		TF	TR	30	30	2	45	0.49	2	0.08	30			YES
54	RBR3LAM30A		TF	TR	30	30	3	40	0.58	3	0.05	30			YES
55	RBR3LAM30B		TF	TR	30	30	3	45	0.53	3	0.08	30			YES
56	RBR5LAM30A		TF	TR	30	30	5	75	0.54	5	0.1	30			YES
57	RBR5LAM30B		TF	TR	30	30	5	100	0.49	5	0.15	30			YES
58	RBR1LAM40A		TF	TR	40	40	1	40	0.52	1	0.05	40			YES
59	RBR2LAM40A		TF	TR	40	40	2	45	0.55	2	0.08	40			YES
60	RBR3LAM40A		TF	TR	40	40	3	40	0.69	3	0.05	40			YES
61	RBR3LAM40B		TF	TR	40	40	3	45	0.62	3	0.08	40			YES
62	RBR3LAM40C		TF	TR	40	40	3	75	0.55	3	0.1	40			YES
63	RBR5LAM40A		TF	TR	40	40	5	100	0.53	5	0.2	40			YES
64	RBR1LAM60A		TF	TR	60	60	1	40	0.53	1	0.075	60			YES
65	RBR2LAM60A		TF	TR	60	60	2	40	0.65	2	0.075	60			YES
66	RBR2LAM60B		TF	TR	60	60	2	75	0.52	2	0.15	60			YES
67	RBR3LAM60A		TF	TR	60	60	3	45	0.66	3	0.1	60			YES
68	RBR3LAM60B		TF	TR	60	60	3	75	0.56	3	0.15	60			YES
69	RBR5LAM60A		TF	TR	60	60	5	100	0.55	5	0.25	60			YES

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. [] : JEITA code.

Schottky Barrier Diodes

Schottky Barrier Diodes





Example: **RBR1L30A** **DD** **TE25**
Part No. Grade Code Taping Code

Middle Power Schottky Barrier Diodes (Standard type) 2															
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _c =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _o (A)	I _{FSM} (A) 60Hz, 1~	V _F (V) Max	I _F (A)	I _R (mA) Max	V _R (V)			
Low V_F type															
70	RBR1L30A	-	DD	TE25	30	30	1	30	0.48	1	0.05	30	DO-214AC (PMDS) (SMA)		YES
71	RBR2L30A		DD	TE25	30	30	2	40	0.49	2	0.08	30			YES
72	RBR3L30A		DD	TE25	30	30	3	30	0.58	3	0.05	30			YES
73	RBR3L30B		DD	TE25	30	30	3	40	0.53	3	0.08	30			YES
74	RBR5L30A		DD	TE25	30	30	5	50	0.54	5	0.1	30			YES
75	RBR5L30B		DD	TE25	30	30	5	50	0.49	5	0.15	30			YES
76	RBR1L40A		DD	TE25	40	40	1	30	0.52	1	0.05	40			YES
77	RBR2L40A		DD	TE25	40	40	2	40	0.55	2	0.08	40			YES
78	RBR3L40A		DD	TE25	40	40	3	30	0.69	3	0.05	40			YES
79	RBR3L40B		DD	TE25	40	40	3	40	0.62	3	0.08	40			YES
80	RBR3L40C		DD	TE25	40	40	3	50	0.55	3	0.1	40			YES
81	RBR5L40A		DD	TE25	40	40	5	50	0.53	5	0.2	40			YES
82	RBR1L60A		DD	TE25	60	60	1	30	0.53	1	0.075	60			YES
83	RBR2L60A		DD	TE25	60	60	2	30	0.65	2	0.075	60			YES
84	RBR2L60B		DD	TE25	60	60	2	50	0.52	2	0.15	60			YES
85	RBR3L60A		DD	TE25	60	60	3	40	0.66	3	0.1	60			YES
86	RBR3L60B		DD	TE25	60	60	3	50	0.56	3	0.15	60			YES
87	RBR5L60A		DD	TE25	60	60	5	50	0.55	5	0.25	60			YES
88	RB160L-90		-	TF	TE25	95	90	1	30	0.73	1	0.1			90
89	RB160MM-90	*	TF	TR	90	90	1	30	0.73	1	0.1	90	(PMDU) (SOD-123FL)		YES
90	RB160LAM-90	*	TF	TR	95	90	1	50	0.73	1	0.1	90	(PMDTM) (SOD-128)		YES
Ultra Low I_R type															
91	RB168VWM-30	*	TF	TR	30	30	1	30	0.69	1	0.0006	30	(PMDE)		YES
92	RB068VWM-30		TF	TR	30	30	2	30	0.75	2	0.0006	30			YES
93	RB168VWM-40		TF	TR	40	40	1	30	0.69	1	0.0005	40			YES
94	RB068VWM-40		TF	TR	40	40	2	30	0.79	2	0.0005	40			YES
95	RB168VWM-60		TF	TR	60	60	1	30	0.76	1	0.0005	60			YES
96	RB068VWM-60		TF	TR	60	60	2	30	0.84	2	0.0005	60			YES
97	RB168VWM100		TF	TR	100	100	1	25	0.84	1	0.0003	100			YES
98	RB068VWM100		TF	TR	100	100	2	25	0.94	2	0.0003	100			YES
99	RB168VWM150		TF	TR	150	150	1	25	0.89	1	0.001	150			YES
100	RB068VWM150		TF	TR	150	150	2	25	0.96	2	0.001	150			YES
101	RB168MM-30	*	TF	TR	30	30	1	30	0.69	1	0.0006	30	(PMDU) (SOD-123FL) [SC-109B]		YES
102	RB068MM-30		TF	TR	30	30	2	50	0.7	2	0.0008	30			YES
103	RB168MM-40		TF	TR	40	40	1	40	0.65	1	0.00055	40			YES
104	RB068MM-40		TF	TR	40	40	2	40	0.725	2	0.00055	40			YES
105	RB168MM-60		TF	TR	60	60	1	40	0.68	1	0.0015	60			YES
106	RB068MM-60		TF	TR	60	60	2	40	0.765	2	0.0015	60			YES
107	RB168MM100		TF	TR	100	100	1	40	0.81	1	0.0004	100			YES
108	RB068MM100		TF	TR	100	100	2	40	0.87	2	0.0004	100			YES
109	RB168MM150		TF	TR	150	150	1	35	0.84	1	0.004	150			YES
110	New RB168MM200		TF	TR	200	200	1	35	0.89	1	0.00085	200			YES
111	RB168LAM-30	*	TF	TR	30	30	1	40	0.69	1	0.0006	30	(PMDTM) (SOD-128)		YES
112	RB068LAM-30		TF	TR	30	30	2	50	0.7	2	0.0008	30			YES
113	RB058LAM-30		TF	TR	30	30	3	80	0.68	3	0.0025	30			YES
114	RB088LAM-30		TF	TR	30	30	5	80	0.69	5	0.0025	30			YES
115	RB168LAM-40		TF	TR	40	40	1	40	0.69	1	0.0005	40			YES
116	RB068LAM-40		TF	TR	40	40	2	50	0.69	2	0.001	40			YES
117	RB058LAM-40		TF	TR	40	40	3	90	0.69	3	0.0025	40			YES
118	RB088LAM-40		TF	TR	40	40	5	90	0.71	5	0.0036	40			YES
119	RB168LAM-60		TF	TR	60	60	1	40	0.68	1	0.0015	60			YES
120	RB068LAM-60		TF	TR	60	60	2	70	0.68	2	0.002	60			YES
121	RB058LAM-60		TF	TR	60	60	3	90	0.64	3	0.004	60			YES
122	RB088LAM-60		TF	TR	60	60	5	90	0.71	5	0.004	60			YES
123	RB168LAM100		TF	TR	100	100	1	40	0.81	1	0.0004	100			YES
124	RB068LAM100		TF	TR	100	100	2	70	0.81	2	0.0015	100			YES
125	RB058LAM100		TF	TR	100	100	3	80	0.81	3	0.003	100			YES
126	RB088LAM100		TF	TR	100	100	5	80	0.87	5	0.003	100			YES
127	RB168LAM150		TF	TR	150	150	1	50	0.84	1	0.0025	150			YES
128	RB068LAM150		TF	TR	150	150	2	70	0.81	2	0.003	150			YES
129	RB058LAM150		TF	TR	150	150	3	80	0.84	3	0.003	150			YES
130	RB088LAM150		TF	TR	150	150	5	80	0.9	5	0.003	150			YES
131	RB168L-30	-	TF	TE25	30	30	1	30	0.69	1	0.0006	30	DO-214AC (PMDS) (SMA)		YES
132	RB068L-30		DD	TE25	30	30	2	60	0.7	2	0.0008	30			YES
133	RB058L-30		DD	TE25	30	30	3	90	0.68	3	0.0025	30			YES
134	RB168L-40		TF	TE25	40	40	1	50	0.65	1	0.00055	40			YES
135	RB068L-40		DD	TE25	40	40	2	50	0.69	2	0.001	40			YES
136	RB058L-40		DD	TE25	40	40	3	100	0.7	3	0.005	40			YES
137	RB168L-60		TF	TE25	60	60	1	50	0.68	1	0.0015	60			YES
138	RB068L-60		DD	TE25	60	60	2	90	0.68	2	0.002	60			YES
139	RB058L-60		DD	TE25	60	60	3	120	0.64	3	0.004	60			YES
140	RB168L100		DD	TE25	100	100	1	50	0.81	1	0.0004	100			YES
141	RB068L100		DD	TE25	100	100	2	110	0.79	2	0.003	100			YES
142	RB168L150		DD	TE25	150	150	1	50	0.84	1	0.004	150			YES
143	RB068L150		DD	TE25	150	150	2	90	0.81	2	0.003	150			YES
144	RB058L150		DD	TE25	150	150	3	90	0.85	3	0.003	150			YES

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.




Schottky Barrier Diodes

● Quick Reference for Power Schottky Barrier Diodes (High Efficient type)

V _R (V)	I _O (A)	Surface Mount type							
									
		TO-277A (TO-277GE)		(TO-252GE) (DPAK) [SC-63]		TO-252 (DPAK) [SC-63]		TO-263L (LPDL) (D2PAK) [SC-83]	
Low I _R type		Low I _R type		Low I _R type		Low I _R type			
100	10	RBLQ10RSM10	1						
	20			RBLQ20BGE10	2	RBLQ20BM10	3	New RBLQ20NL10S New RBLQ20NL10C	4 6
	30							New RBLQ30NL10S	5

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.



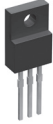

● Quick Reference for Power Schottky Barrier Diodes (Standard type) 1

V _R (V)	I _O (A)	Surface Mount type												
														
		TO-277A (TO-277GE)			(TO-252GE) (DPAK) [SC-63]			TO-252 (DPAK) [SC-63]						
Low V _F type		Low I _R type		Ultra Low I _R type		Low V _F type		Low I _R type		Ultra Low I _R type				
30	5							RB078BGE30S	99			RB078BM30S	114	
	6							RB098BGE-30	102			RB098BM-30	115	
	10				RBR10BGE30A	10		RB088BGE-30	103	RBR10BM30A	19		RB088BM-30	116
	15				RBR15BGE30A	11				RBR15BM30A	20			
	20				RBR20BGE30A	12				RBR20BM30A	21			
40	3	New RBR3RSM40B	7											
	5	New RBR5RSM40B	8											
	6							RB098BGE-40	104			RB098BM-40	117	
	10	New RBR10RSM40B	9		RBR10BGE40A	13		RB088BGE-40	105	RBR10BM40A	22		RB088BM-40	118
	15				RBR15BGE40A	14				RBR15BM40A	23			
45	10													
	15							RBQ10BGE45A	55			RBQ10BM45A	63	
	20							RBQ15BGE45A	56			RBQ15BM45A	64	
60	6													
	10							RB098BGE-60	106			RB098BM-60	119	
	15				RBR10BGE60A	16		RB088BGE-60	107	RBR10BM60A	25		RB088BM-60	120
	20				RBR15BGE60A	17				RBR15BM60A	26			
					RBR20BGE60A	18				RBR20BM60A	27			
65	3	New RBQ3RSM65B	49											
	5	New RBQ5RSM65B	50											
	10	New RBQ10RSM65B	51											
	15							RBQ10BGE65A	58			RBQ10BM65A	66	
	20							RBQ15BGE65A	59			RBQ15BM65A	67	
100	3	New RBQ3RSM10B	52	New RB058RSM10S	91									
	5	New RBQ5RSM10B	53	New RB078RSM10S	92									
	6									RB098BGE100	108		RB098BM100	121
	8													
	10	New RBQ10RSM10B	54	New RB088RSM10S	94									
	15							RBQ10BGE10A	61	RB088BGE100	109		RBQ10BM100A	69
	20							RBQ15BGE10A	62				RBQ15BM100A	70
150	3													
	5													
	6									RB098BGE150	110		RB098BM150	123
	8													
	10									RB088BGE150	111		RB088BM150	124
200	3									New RSX058BGE2S	112		New RSX058BM2S	100
	5									New RSX078BGE2S	113		New RSX078BM2S	101
	10												RB088BM200	125
	20												RB218BM200	126

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

Schottky Barrier Diodes

● Quick Reference for Power Schottky Barrier Diodes (Standard type) 2

V _R (V)	I _o (A)	Surface Mount type				Through Hole type				
										
		(TO-263S) (D2PAK)		TO-263L (LPDL) (D2PAK) [SC-83]		(TO-220FN) <3pin>		(TO-220FN) <2pin>		
		Low V _F type	Low I _R type	Ultra Low I _R type	Low I _R type	Low V _F type	Low I _R type	Ultra Low I _R type	Low I _R type	
30	10	RBR10NS30A	28	RB088NS-30	127	RBR10T30A	40	RB088T-30	150	
	20	RBR20NS30A	29	RB218NS-30	128	RBR20T30A	41	RB218T-30	151	
	30	RBR30NS30A	30	RB228NS-30	129	RBR30T30A	42	RB228T-30	152	
	40	RBR40NS30A	31	RB238NS-30	130			RB238T-30	153	
40	10	RBR10NS40A	32	RB088NS-40	131	RBR10T40A	43	RB088T-40	154	
	20	RBR20NS40A	33	RB218NS-40	132	RBR20T40A	44	RB218T-40	155	
	30	RBR30NS40A	34	RB228NS-40	133	RBR30T40A	45	RB228T-40	156	
	40	RBR40NS40A	35	RB238NS-40	134			RB238T-40	157	
45	10		RBQ10NS45A	72	☆RBQ10NL45B	82	RBQ10T45A	84		
	16				☆RBQ16NL45B	83				
	20		RBQ20NS45A	73			RBQ20T45A	85		
	30		RBQ30NS45A RBQ30NS45B	74 81			RBQ30T45A	86	RBQ30TB45B	90
60	10	RBR10NS60A	36	RB088NS-60 RB218NS-60	135 136	RBR10T60A	46	RB088T-60 RB218T-60	158 159	
	20	RBR20NS60A	37	RB228NS-60	137	RBR20T60A	47	RB228T-60	160	
	30	RBR30NS60A	38	RB238NS-60	138	RBR30T60A	48	RB238T-60	161	
	40	RBR40NS60A	39							
65	10		RBQ10NS65A	75			RBQ10T65A	87		
	20		RBQ20NS65A	76			RBQ20T65A	88		
	30		RBQ30NS65A	77			RBQ30T65A	89		
100	10		RBQ10NS100A	78	RB088NS100	139			RB088T100	162
	20		RBQ20NS100A	79	RB218NS100	140			RB218T100	163
	30		RBQ30NS100A	80	RB228NS100 RB298NS100	141 142			RB228T100 RB298T100	164 165
	40				RB238NS100	143			RB238T100	166
150	10				RB088NS150	144			RB088T150	167
	20				RB218NS150	145			RB218T150	168
	30				RB228NS150	146			RB228T150	169
	40				RB238NS150	147			RB238T150	170
200	10				RB088NS200	148				
	20				RB218NS200	149				

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

☆: Under Development

Schottky Barrier Diodes

Schottky Barrier Diodes

Example: **RBLQ20BM10FHTL**
Part No. Grade Code Taping Code

Power Schottky Barrier Diodes (High Efficient type)															
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _o *1 (A)	I _{FSM} (A)*2 60Hz, 1~	V _F (V) Max	I _F (A)	I _R (mA) Max	V _R (V)			
		General	Automotive												
Low I_R type															
1	RBLQ10RSM10	*	TF	TL	100	100	10	200	0.67	10	0.08	100	TO-277A (TO-277GE)		YES
2	RBLQ20BGE10	*	-	TL	100	100	20	150	0.86	20	0.08	100	(TO-252GE) (DPAK) [SC-63]		-
3	RBLQ20BM10	-	FH	TL	100	100	20	150	0.86	20	0.08	100	TO-252 (DPAK) [SC-63]		YES
4	New RBLQ20NL10S	*	FH	TL	100	100	20	200	0.86	20	0.08	100	TO-263L (LPDL) (D2PAK) [SC-83]		YES
5	New RBLQ30NL10S		FH	TL	100	100	30	200	0.86	30	0.15	100			YES
6	New RBLQ20NL10C		FH	TL	100	100	20	150	0.71	10	0.07	100			YES
Power Schottky Barrier Diodes (Standard type) 1															
Low V_F type															
7	New RBR3RSM40B	*	TF	TL1	40	40	3	150	0.47	3	0.12	40	TO-277A (TO-277GE)		YES
8	New RBR5RSM40B		TF	TL1	40	40	5	100	0.53	5	0.12	40			YES
9	New RBR10RSM40B		TF	TL1	40	40	10	150	0.54	5	0.3	45			YES
10	RBR10BGE30A	*	-	TL	30	30	10	50	0.55	5	0.1	30	(TO-252GE) (DPAK) [SC-63]		-
11	RBR15BGE30A		-	TL	30	30	15	100	0.51	7.5	0.2	30			-
12	RBR20BGE30A		-	TL	30	30	20	100	0.51	10	0.3	30			-
13	RBR10BGE40A		-	TL	40	40	10	50	0.62	5	0.12	40			-
14	RBR15BGE40A		-	TL	40	40	15	100	0.55	7.5	0.24	40			-
15	RBR20BGE40A		-	TL	40	40	20	100	0.55	10	0.36	40			-
16	RBR10BGE60A		-	TL	60	60	10	50	0.65	5	0.2	60			-
17	RBR15BGE60A		-	TL	60	60	15	100	0.58	7.5	0.4	60			-
18	RBR20BGE60A		-	TL	60	60	20	100	0.59	10	0.6	60			-
19	RBR10BM30A	-	FH	TL	30	30	10	50	0.55	5	0.1	30	TO-252 (DPAK) [SC-63]		YES
20	RBR15BM30A		FH	TL	30	30	15	100	0.51	7.5	0.2	30			YES
21	RBR20BM30A		FH	TL	30	30	20	100	0.51	10	0.3	30			YES
22	RBR10BM40A		FH	TL	40	40	10	50	0.62	5	0.12	40			YES
23	RBR15BM40A		FH	TL	40	40	15	100	0.55	7.5	0.24	40			YES
24	RBR20BM40A		FH	TL	40	40	20	100	0.55	10	0.36	40			YES
25	RBR10BM60A		FH	TL	60	60	10	50	0.65	5	0.2	60			YES
26	RBR15BM60A		FH	TL	60	60	15	100	0.58	7.5	0.4	60			YES
27	RBR20BM60A		FH	TL	60	60	20	100	0.59	10	0.6	60			YES
28	RBR10NS30A	*	FH	TL	30	30	10	50	0.55	5	0.1	30	(TO-263S) (D2PAK)		YES
29	RBR20NS30A		FH	TL	30	30	20	100	0.55	10	0.2	30			YES
30	RBR30NS30A		FH	TL	30	30	30	100	0.55	15	0.3	30			YES
31	RBR40NS30A		FH	TL	30	30	40	100	0.52	20	0.6	30			YES
32	RBR10NS40A		FH	TL	40	40	10	50	0.62	5	0.12	40			YES
33	RBR20NS40A		FH	TL	40	40	20	100	0.62	10	0.24	40			YES
34	RBR30NS40A		FH	TL	40	40	30	100	0.62	15	0.36	40			YES
35	RBR40NS40A		FH	TL	40	40	40	100	0.55	20	0.43	40			YES
36	RBR10NS60A		FH	TL	60	60	10	50	0.65	5	0.2	60			YES
37	RBR20NS60A		FH	TL	60	60	20	100	0.64	10	0.4	60			YES
38	RBR30NS60A		FH	TL	60	60	30	100	0.67	15	0.6	60			YES
39	RBR40NS60A		FH	TL	60	60	40	100	0.6	20	0.8	60			YES
40	RBR10T30A	NZ	-	C9	30	30	10	50	0.55	5	0.1	30	(TO-220FN) <3pin>		-
41	RBR20T30A	NZ	-	C9	30	30	20	100	0.55	10	0.2	30			-
42	RBR30T30A	NZ	-	C9	30	30	30	100	0.55	15	0.3	30			-
43	RBR10T40A	NZ	-	C9	40	45	10	50	0.62	5	0.12	40			-
44	RBR20T40A	NZ	-	C9	40	45	20	100	0.62	10	0.24	40			-
45	RBR30T40A	NZ	-	C9	40	45	30	100	0.62	15	0.36	40			-
46	RBR10T60A	NZ	-	C9	60	60	10	50	0.65	5	0.2	60			-
47	RBR20T60A	NZ	-	C9	60	60	20	100	0.64	10	0.4	60			-
48	RBR30T60A	NZ	-	C9	60	60	30	100	0.67	15	0.6	60			-

*General Part No. have no grade code.
 *1 I_o: Average rectified output current per die. In case of 2 dies, I_o indicates average output current of 2 dies.
 *2 Value/Die
 Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. []: JEITA code.

Schottky Barrier Diodes

Schottky Barrier Diodes

Example: **R B Q 1 0 B M 4 5 A F H T L**
 Part No. Grade Code Taping Code

Power Schottky Barrier Diodes (Standard type) 2															
Quick Reference No.	Product No.			Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _o *1 (A)	I _{FSM} (A)*2 60Hz.1~	V _F (V) Max	I _F (A)	I _R (mA) Max				V _{RI} (V)
		General	Automotive												
Low I_R type															
49	New RBQ3RSM65B	*	TF	TL1	65	65	3	100	0.57	3	0.09	65	TO-277A (TO-277GE)		YES
50	New RBQ5RSM65B		TF	TL1	65	65	5	100	0.66	5	0.09	65			YES
51	New RBQ10RSM65B		TF	TL1	65	65	10	150	0.67	10	0.15	65			YES
52	New RBQ3RSM10B		—	TL1	100	100	3	100	0.70	3	0.08	100			—
53	New RBQ5RSM10B		—	TL1	100	100	5	150	0.70	5	0.14	100			—
54	New RBQ10RSM10B		—	TL1	100	100	10	200	0.70	10	0.25	100			—
55	RBQ10BGE45A	*	—	TL	45	45	10	50	0.65	5	0.07	45	(TO-252GE) (DPAK) [SC-63]		—
56	RBQ15BGE45A		—	TL	45	45	15	100	0.59	7.5	0.14	45			—
57	RBQ20BGE45A		—	TL	45	45	20	100	0.59	10	0.2	45			—
58	RBQ10BGE65A		—	TL	65	65	10	50	0.69	5	0.07	65			—
59	RBQ15BGE65A		—	TL	65	65	15	100	0.63	7.5	0.14	65			—
60	RBQ20BGE65A		—	TL	65	65	20	100	0.63	10	0.2	65			—
61	RBQ10BGE10A		—	TL	100	100	10	100	0.77	5	0.08	100	—		
62	RBQ15BGE10A		—	TL	100	100	15	100	0.71	7.5	0.14	100	—		
63	RBQ10BM45A	—	FH	TL	45	45	10	50	0.65	5	0.07	45	TO-252 (DPAK) [SC-63]		YES
64	RBQ15BM45A		FH	TL	45	45	15	100	0.59	7.5	0.14	45			YES
65	RBQ20BM45A		FH	TL	45	45	20	100	0.59	10	0.2	45			YES
66	RBQ10BM65A		FH	TL	65	65	10	50	0.69	5	0.07	65			YES
67	RBQ15BM65A		FH	TL	65	65	15	100	0.63	7.5	0.14	65			YES
68	RBQ20BM65A		FH	TL	65	65	20	100	0.63	10	0.2	65			YES
69	RBQ10BM100A		FH	TL	100	100	10	100	0.77	5	0.08	100	YES		
70	RBQ15BM100A		FH	TL	100	100	15	100	0.71	7.5	0.14	100	YES		
71	RBQ20BM100A		FH	TL	100	100	20	100	0.69	10	0.2	100	YES		
72	RBQ10NS45A	*	FH	TL	45	45	10	100	0.65	5	0.07	45	(TO-263S) (D2PAK)		YES
73	RBQ20NS45A		FH	TL	45	45	20	100	0.65	10	0.14	45			YES
74	RBQ30NS45A		FH	TL	45	45	30	100	0.65	15	0.2	45			YES
75	RBQ10NS65A		FH	TL	65	65	10	100	0.69	5	0.07	65			YES
76	RBQ20NS65A		FH	TL	65	65	20	100	0.69	10	0.14	65			YES
77	RBQ30NS65A		FH	TL	65	65	30	100	0.69	15	0.2	65			YES
78	RBQ10NS100A		FH	TL	100	100	10	100	0.77	5	0.08	100	YES		
79	RBQ20NS100A		FH	TL	100	100	20	100	0.77	10	0.14	100	YES		
80	RBQ30NS100A		FH	TL	100	100	30	100	0.77	15	0.2	100	YES		
81	RBQ30NS45B		FH	TL	45	45	30	100	0.59	30	0.7	45		YES	
82	☆RBQ10NL45B		FHH	TL	45	45	10	150	0.62	10	0.1	45	TO-263L (LPDL) (D2PAK) [SC-83]		YES
83	☆RBQ16NL45B		FHH	TL	45	45	16	150	0.61	16	0.1	45			YES
84	RBQ10T45A	NZ	—	C9	45	45	10	100	0.65	5	0.07	45	(TO-220FN) <3pin>		—
85	RBQ20T45A	NZ	—	C9	45	45	20	100	0.65	10	0.14	45			—
86	RBQ30T45A	NZ	—	C9	45	45	30	100	0.65	15	0.2	45			—
87	RBQ10T65A	NZ	—	C9	65	65	10	100	0.69	5	0.07	65			—
88	RBQ20T65A	NZ	—	C9	65	65	20	100	0.69	10	0.14	65			—
89	RBQ30T65A	NZ	—	C9	65	65	30	100	0.69	15	0.2	65			—
90	RBQ30TB45B	NZ	—	C9	45	45	30	100	0.59	30	0.7	45	(TO-220FN) <2pin>		—
Ultra Low I_R type															
91	New RB058RSM10S	*	TF	TL1	100	100	3	120	0.81	3	0.0013	100	TO-277A (TO-277GE)		YES
92	New RB078RSM10S		TF	TL1	100	100	5	120	0.84	5	0.0013	100			YES
93	New RB048RSM10S		TF	TL1	100	100	8	160	0.84	8	0.0034	100			YES
94	New RB088RSM10S		TF	TL1	100	100	10	220	0.84	10	0.0037	100			YES
95	New RB058RSM15S		TF	TL1	150	150	3	120	0.83	3	0.0021	150			YES
96	New RB078RSM15S		TF	TL1	150	150	5	120	0.87	5	0.0021	150			YES
97	New RB048RSM15S		TF	TL1	150	150	8	160	0.88	8	0.0037	150			YES
98	New RB088RSM15S		TF	TL1	150	150	10	220	0.88	10	0.0045	150			YES

*General Part No. have no grade code.

*1 I_o: Average rectified output current per die. In case of 2 dies, I_o indicates average output current of 2 dies.

*2 Value/Die

Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. [] : JEITA code.

☆: Under Development

Diodes

Schottky Barrier Diodes

Example: **R B 0 7 8 B M 3 0 S F H T L**
Part No. Grade Code Taping Code

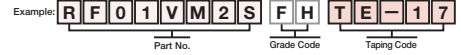
Power Schottky Barrier Diodes (Standard type) 3																
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C)				Electrical Characteristics (T _j =25°C)				Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _S (V)	I _o *1 (A)	I _{FSM} (A)*2 60Hz.1~	V _F (V) Max	I _F (A)	I _R (mA) Max	V _R (V)				
		General	Automotive													
Ultra Low I_R type																
99	RB078BGE30S			TL	35	30	5	50	0.72	5	0.005	30	(TO-252GE) (DPAK) [SC-63]		—	
100	<i>New</i> RSX058BM2S			FH	200	200	3	50	0.87	3	0.0002	200	TO-252 (DPAK) [SC-63]		YES	
101	<i>New</i> RSX078BM2S			FH	200	200	5	50	0.92	5	0.0002	200			YES	
102	RB098BGE-30			TL	35	30	6	50	0.72	3	0.0015	30	(TO-252GE) (DPAK) [SC-63]		—	
103	RB088BGE-30			TL	35	30	10	50	0.72	5	0.003	30			—	
104	RB098BGE-40			TL	45	40	6	50	0.77	3	0.0015	40			—	
105	RB088BGE-40			TL	45	40	10	50	0.77	5	0.003	40			—	
106	RB098BGE-60			TL	60	60	6	50	0.83	3	0.0015	60			—	
107	RB088BGE-60			TL	60	60	10	50	0.83	5	0.003	60			—	
108	RB098BGE100			TL	110	100	6	100	0.77	3	0.003	100			—	
109	RB088BGE100			TL	100	100	10	50	0.87	5	0.005	100			—	
110	RB098BGE150			TL	150	150	6	100	0.83	3	0.007	150			—	
111	RB088BGE150			TL	150	150	10	50	0.88	5	0.015	150			—	
112	<i>New</i> RSX058BGE2S			TL	200	200	3	50	0.87	3	0.0002	200			—	
113	<i>New</i> RSX078BGE2S			TL	200	200	5	50	0.92	5	0.0002	200			—	
114	RB078BM30S			TL	35	30	5	50	0.72	5	0.005	30			TO-252 (DPAK) [SC-63]	
115	RB098BM-30			TL	35	30	6	50	0.72	3	0.0015	30	YES			
116	RB088BM-30			TL	35	30	10	50	0.72	5	0.003	30	YES			
117	RB098BM-40			TL	45	40	6	50	0.77	3	0.0015	40	YES			
118	RB088BM-40			TL	45	40	10	50	0.77	5	0.003	40	YES			
119	RB098BM-60			TL	60	60	6	50	0.83	3	0.0015	60	YES			
120	RB088BM-60			TL	60	60	10	50	0.83	5	0.003	60	YES			
121	RB098BM100			TL	110	100	6	100	0.77	3	0.003	100	YES			
122	RB088BM100			TL	100	100	10	100	0.87	5	0.005	100	YES			
123	RB098BM150			TL	150	150	6	100	0.83	3	0.007	150	YES			
124	RB088BM150			TL	150	150	10	100	0.88	5	0.015	150	YES			
125	RB088BM200			TL	200	200	10	100	0.88	5	0.007	200	YES			
126	RB218BM200			TL	200	200	20	100	0.88	10	0.01	200	YES			
127	RB088NS-30			TL	35	30	10	50	0.72	5	0.003	30	(TO-263S) (D2PAK)		YES	
128	RB218NS-30			TL	35	30	20	100	0.72	10	0.005	30			YES	
129	RB228NS-30			TL	35	30	30	100	0.72	15	0.01	30			YES	
130	RB238NS-30			TL	35	30	40	100	0.75	20	0.012	30			YES	
131	RB088NS-40			TL	45	40	10	50	0.77	5	0.003	40			YES	
132	RB218NS-40			TL	45	40	20	100	0.77	10	0.005	40			YES	
133	RB228NS-40			TL	45	40	30	100	0.77	15	0.01	40			YES	
134	RB238NS-40			TL	45	40	40	100	0.8	20	0.012	40			YES	
135	RB088NS-60			TL	60	60	10	50	0.83	5	0.003	60			YES	
136	RB218NS-60			TL	60	60	20	100	0.83	10	0.005	60			YES	
137	RB228NS-60			TL	60	60	30	100	0.83	15	0.01	60			YES	
138	RB238NS-60			TL	60	60	40	100	0.86	20	0.012	60			YES	
139	RB088NS100			TL	110	100	10	100	0.87	5	0.005	100			YES	
140	RB218NS100			TL	110	100	20	100	0.87	10	0.007	100			YES	
141	RB228NS100			TL	110	100	30	100	0.87	15	0.005	100			YES	
142	RB298NS100			TL	110	100	30	100	0.87	15	0.01	100			YES	
143	RB238NS100			TL	110	100	40	100	0.86	20	0.02	100			YES	
144	RB088NS150			TL	150	150	10	50	0.88	5	0.015	150			YES	
145	RB218NS150			TL	150	150	20	100	0.88	10	0.02	150			YES	
146	RB228NS150			TL	150	150	30	100	0.88	15	0.025	150	YES			
147	RB238NS150			TL	150	150	40	100	0.87	20	0.03	150	YES			
148	RB088NS200			TL	200	200	10	100	0.88	5	0.007	200	YES			
149	RB218NS200			TL	200	200	20	100	0.88	10	0.01	200	YES			
150	RB088T-30	NZ		C9	35	30	10	50	0.72	5	0.003	30	(TO-220FN) <3pin>		—	
151	RB218T-30	NZ		C9	35	30	20	100	0.72	10	0.005	30			—	
152	RB228T-30	NZ		C9	35	30	30	100	0.72	15	0.01	30			—	
153	RB238T-30	NZ		C9	35	30	40	100	0.75	20	0.012	30			—	
154	RB088T-40	NZ		C9	45	40	10	50	0.77	5	0.003	40			—	
155	RB218T-40	NZ		C9	45	40	20	100	0.77	10	0.005	40			—	
156	RB228T-40	NZ		C9	45	40	30	100	0.77	15	0.01	40			—	
157	RB238T-40	NZ		C9	45	40	40	100	0.8	20	0.012	40			—	
158	RB088T-60	NZ		C9	60	60	10	50	0.83	5	0.003	60			—	
159	RB218T-60	NZ		C9	60	60	20	100	0.83	10	0.005	60			—	
160	RB228T-60	NZ		C9	60	60	30	100	0.83	15	0.01	60			—	
161	RB238T-60	NZ		C9	60	60	40	100	0.86	20	0.012	60			—	
162	RB088T100	NZ		C9	110	100	10	100	0.87	5	0.005	100			—	
163	RB218T100	NZ		C9	110	100	20	100	0.87	10	0.007	100			—	
164	RB228T100	NZ		C9	110	100	30	100	0.87	15	0.005	100			—	
165	RB298T100	NZ		C9	110	100	30	100	0.87	15	0.01	100			—	
166	RB238T100	NZ		C9	110	100	40	100	0.86	20	0.02	100			—	
167	RB088T150	NZ		C9	150	150	10	50	0.88	5	0.015	150			—	
168	RB218T150	NZ		C9	150	150	20	100	0.88	10	0.02	150			—	
169	RB228T150	NZ		C9	150	150	30	100	0.88	15	0.025	150			—	
170	RB238T150	NZ		C9	150	150	40	100	0.87	20	0.03	150			—	

*General Part No. have no grade code.
 *1 I_o: Average rectified output current per die. In case of 2 dies, I_o indicates average output current of 2 dies.
 *2 Value/Die
 Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. []: JEITA code.

Fast Recovery Diodes

● Quick Reference for Small Signal/Middle Power Fast Recovery Diodes

Fast Recovery Diodes



V _R (V)	I _O (A)	Surface Mount type																			
		1608 Size	2512 Size	2514 Size		2513 size	3516 Size	4725 Size	5026 size	2928 Size											
		SOD-523 (EMD2) [SC-79]	SOD-323FL (UMD2) [SC-90A]	SOD-323HE (TUMD2M) [SC-108B]	SOD-323HE (TUMD2SM)	(PMDE)	(PMDU) (SOD-123FL) [SC-109B]	(PMDTM) (SOD-128)	DO-214AC (PMD5) (SMA)	SOT-457T (TSM6)											
100	0.5			RF05VAM1S RF05VYM1S	3 4																
	0.4																			RF04UA2D	36
	0.5					RF05VAM2S RF05VYM2S	5 6				RFC02MM2S	11									
	0.7										RF071MM2S	12									
	0.8										RF081MM2S	13									
	1									<i>New</i> RFN1VWM2S	9		RF101LAM2S	14	RF101L2S	26					
	1.1												RF081LAM2S	15	RF081L2S	27					
	2									<i>New</i> RFN2VWM2S	10		RF201LAM2S RF202LAM2S	16 17	RF201L2S	28					
	3												RF302LAM2S	18							
250	0.1			RF01VM2S	2																
	1												RF071LAM4S RF101LAM4S	19 20	RF071L4S RF101L4S	29 30					
400	1.5												RF201LAM4S RFN2LAM4S	21 22	RF201L4S RFN2L4S	31 32					
450	0.1	RFU01SM4S	1																		
	0.2							RFU02VSM6S	7												
	0.8												RFN1LAM6S	23	RFN1L6S	33					
	1.5												RFN2LAM6S	24	RFN2L6S	34					
700	0.8												RFN1LAM7S	25	RFN1L7S	35					
800	0.2							RFU02VSM8S	8												

Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. []: JEITA code.

Small Signal/Middle Power Fast Recovery Diodes																		
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _C =25°C or T _L =25°C)				Electrical Characteristics (T _J =25°C)*1							Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O (A)	I _{FSM} (A) 60Hz.1~	V _F (V) Max	I _F (A)	I _R (μA) Max	V _R (V)	trr (ns) Max	I _F (A)	I _R (A)			
		General	Automotive															
1	RFU01SM4S	*	—	T2R	450	450	0.1	1	1.8	0.1	10	450	35	0.1	0.1	SOD-523 (EMD2) [SC-79]		—
2	RF01VM2S	*	FH	TE-17	250	250	0.1	1	1.2	0.1	10	250	50	*	*	SOD-323FL (UMD2) [SC-90A]		YES
3	RF05VAM1S	—	—	TR	100	100	0.5	6	0.98	0.5	10	100	25	0.5	1	SOD-323HE (TUMD2M) [SC-108B]		—
4	RF05VYM1S	—	FH	TR	100	100	0.5	6	0.98	0.5	10	100	25	0.5	1			YES
5	RF05VAM2S	*	—	TR	200	200	0.5	6	0.98	0.5	10	200	25	0.5	1	SOD-323HE (TUMD2SM)		—
6	RF05VYM2S	—	FH	TR	200	200	0.5	6	0.98	0.5	10	200	25	0.5	1			YES
7	RFU02VSM6S	—	—	TR	600	600	0.2	1	2.2	0.2	10	600	35	0.1	0.1	(PMDE)		—
8	RFU02VSM8S	—	—	TR	800	800	0.2	1	3	0.2	10	800	35	0.1	0.1			—
9	<i>New</i> RFN1VWM2S	—	—	TF	200	200	1	20	0.93	1	1	200	25	0.5	1	(PMDU) (SOD-123FL) [SC-109B]		YES
10	<i>New</i> RFN2VWM2S	—	—	TF	200	200	2	20	0.99	2	1	200	25	0.5	1			YES
11	RFC02MM2S	—	—	TF	200	200	0.5	10	0.95	0.5	1	200	35	0.1	0.2	(PMDTM) (SOD-128)		YES
12	RF071MM2S	—	—	TF	200	200	0.7	15	0.85	0.7	10	200	25	0.5	1			YES
13	RF081MM2S	—	—	TF	200	200	0.8	20	0.95	0.8	10	200	25	0.5	1	(PMDTM) (SOD-128)		YES
14	RF101LAM2S	—	—	TF	200	200	1	20	0.87	1	10	200	25	0.5	1			YES
15	RF081LAM2S	—	—	TF	200	200	1.1	25	0.98	1	10	200	25	0.5	1	(PMDTM) (SOD-128)		YES
16	RF201LAM2S	*	—	TF	200	200	2	20	0.87	2	10	200	25	0.5	1			YES
17	RF202LAM2S	—	—	TF	200	200	2	20	0.93	2	10	200	25	0.5	1	(PMDTM) (SOD-128)		YES
18	RF302LAM2S	—	—	TF	200	200	3	20	0.92	3	10	200	25	0.5	1			YES
19	RF071LAM4S	—	—	TF	400	400	1	15	1.25	0.7	10	400	25	0.5	1	(PMDTM) (SOD-128)		YES
20	RF101LAM4S	—	—	TF	400	400	1	25	1.25	1	10	400	25	0.5	1			YES
21	RF201LAM4S	—	—	TF	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1	(PMDTM) (SOD-128)		YES
22	RFN2LAM4S	—	—	TF	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1			YES
23	RFN1LAM6S	—	—	TF	600	600	0.8	15	1.45	0.8	1	600	35	0.5	1	(PMDTM) (SOD-128)		YES
24	RFN2LAM6S	—	—	TF	600	600	1.5	40	1.55	1.5	1	600	35	0.5	1			YES
25	RFN1LAM7S	—	—	TF	700	700	0.8	15	1.5	0.8	1	700	80	0.5	1	(PMDTM) (SOD-128)		YES
26	RF101L2S	—	—	DD	200	200	1	20	0.87	1	10	200	25	0.5	1		DO-214AC (PMD5) (SMA)	
27	RF081L2S	—	—	TF	200	200	1.1	25	0.98	1	10	200	25	0.5	1			YES
28	RF201L2S	—	—	DD	200	200	2	20	0.87	2	10	200	25	0.5	1	DO-214AC (PMD5) (SMA)		YES
29	RF071L4S	—	—	TF	400	400	1	15	1.25	0.7	10	400	25	0.5	1			YES
30	RF101L4S	—	—	TF	400	400	1	25	1.25	1	10	400	25	0.5	1	DO-214AC (PMD5) (SMA)		YES
31	RF201L4S	—	—	DD	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1			YES
32	RFN2L4S	—	—	DD	400	400	1.5	50	1.2	1.5	1	400	30	0.5	1	DO-214AC (PMD5) (SMA)		YES
33	RFN1L6S	—	—	DD	600	600	0.8	15	1.45	0.8	1	600	35	0.5	1			YES
34	RFN2L6S	—	—	DD	600	600	1.5	40	1.55	1.5	1	600	35	0.5	1	DO-214AC (PMD5) (SMA)		YES
35	RFN1L7S	—	—	DD	700	700	0.8	15	1.5	0.8	1	700	80	0.5	1			YES
36	RF04UA2D	*	FH	TR	200	200	0.4	1	0.98	0.2	10	200	25	0.5	1	SOT-457T (TSM6)		YES

*General Part No. have no grade code.

*1 Value/Chip *2 V_R=6V, I_R=10mA, I_{rr}=0.1xI_O

Note: Package is JEDEC code. (): ROHM Packages. (<): GENERAL code. []: JEITA code.

Fast Recovery Diodes

● Quick Reference for Power Fast Recovery Diodes

V _R (V)	I _o (A)	Surface Mount type						Through Hole type												
200	3	RF301BGE2S RFN3BGE2S	23 RF301BM2S 24 RFN3BM2S	38 39																
	5	RF501BGE2S RFN5BGE2S	25 RF501BM2S 26 RFN5BM2S	40 41																
	6	RF601BGE2D RFN6BGE2D	1 RF601BM2D 2 RFN6BM2D	3 4			RF601T2D RFN6T2D	10 11												
	10				RF1001NS2D	5	RF1001T2D RFN10T2D	12 13												
	16				RF1601NS2D	6	RF1601T2D RFN16T2D	14 15												
	20				RF2001NS2D	7	RF2001T2D RFN20T2D	16 17												
300	20				RF2001NS3D	8	RF2001T3D	18	RF1501TF3S	71										
350	5	RFN5BGE3S	27 RFN5BM3S	42																
	10	RFN10BGE3S	36 RFN10BM3S	51	RFN10NS3S	53														
	20				RFN20NS3S RFUH25NS3S RFUH20NS3S	54 55 56	RFUH25TB3S RFUH20TB3S	65 66												
430	10				RFN10NS4S RFUH10NS4S	57 58	RFN10TB4S RFUH10TB4S	67 68												
	20				RFN20NS4S RFUH20NS4S	59 60	RFN20TB4S RFUH20TB4S	69 70												
600	3	RFN3BGE6S RF305BGE6S	28 RFN3BM6S 29 RF305BM6S	43 44																
	5	RFN5BGE6S RF505BGE6S RFV5BGE6S	30 RFN5BM6S 31 RFN5BM6S 32 RF505BM6S 33 RFV5BM6S	45 46 47 48			RFN5TF6S RF505TF6S RFUH5TF6S	72 73 74		RFN5TJ6S	86									
	8	RFV8BGE6S	34 RFV8BM6S	49					RFV8TG6S RFV8TJ6S	81 82	RFV8TJ6S RFV8TJ6S	87 88								
	10	RFN10BGE6S RFN10BGE6S	35 RFN10BM6S 37 RFN10BM6S	50 52	RFN10NS6S RFUH10NS6S	61 62		RFN10TF6S RF1005TF6S RFUH10TF6S	75 76 77		RFN10TJ6S	89								
	12								RFV12TG6S	83	RFV12TJ6S	90								
	15								RFV15TG6S	84	RFN15TJ6S RFV15TJ6S	91 92								
	20				RFN20NS6S RFUH20NS6S	63 64		RFN20TF6S RFUH20TF6S	78 79		RFN20TJ6S RFN20TJ6S RFUH20TJ6S	93 94 95								
	30								RFV30TG6S	85										
650	30																			
	60																			
	60																			
800	5							RFN5TF8S	80											
	10				RFN10NS8D	9														

Note: Package is JEDEC code. () : ROHM Packages. () : GENERAL code. [] : JEITA code.

☆: Under Development

Fast Recovery Diodes

Fast Recovery Diodes
 Example: **R F 6 0 1 B M 2 D F H T L**
 Part No. Grade Code Taping Code

Power Fast Recovery Diodes 1																	
Quick Reference No.	Product No.			Absolute Maximum Ratings (T _C =25°C)				Electrical Characteristics (T _J =25°C)*2						Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code General	Automotive	Taping Code	V _{RM} (V)	V _R (V)	I _o *1 (A)	I _{FSM} (A)*2	V _F (V) Max	I _F (A)	I _R (μA) Max	V _R (V)	t _{rr} (ns) Max				I _F (A)
1	RF601BGE2D	*	-	TL	200	200	6	60	0.93	3	10	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
2	RFN6BGE2D	*	-	TL	200	200	6	40	0.98	3	10	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
3	RF601BM2D	-	FH	TL	200	200	6	60	0.93	3	10	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
4	RFN6BM2D	-	FH	TL	200	200	6	40	0.98	3	10	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
5	RF1001NS2D	-	FH	TL	200	200	10	80	0.93	5	10	200	25	0.5	1	(TO-263S) (D2PAK)	YES
6	RF1601NS2D	-	FH	TL	200	200	16	100	0.93	8	10	200	30	0.5	1	(TO-263S) (D2PAK)	YES
7	RF2001NS2D	*	FH	TL	200	200	20	100	0.93	10	10	200	30	0.5	1	(TO-263S) (D2PAK)	YES
8	RF2001NS3D	-	FH	TL	350	300	20	100	1.3	10	10	300	25	0.5	1	(TO-263S) (D2PAK)	YES
9	RFN10NS8D	-	FH	TL	800	800	10	60	2.1	5	10	800	40	0.5	1	(TO-263S) (D2PAK)	YES
10	RF601T2D	NZ	-	C9	200	200	6	60	0.93	3	10	200	25	0.5	1	(TO-220FN) <3pin>	-
11	RFN6T2D	NZ	-	C9	200	200	6	40	0.98	3	10	200	25	0.5	1	(TO-220FN) <3pin>	-
12	RF1001T2D	NZ	-	C9	200	200	10	80	0.93	5	10	200	30	0.5	1	(TO-220FN) <3pin>	-
13	RFN10T2D	NZ	-	C9	200	200	10	80	0.98	5	10	200	25	0.5	1	(TO-220FN) <3pin>	-
14	RF1601T2D	NZ	-	C9	200	200	16	100	0.93	8	10	200	30	0.5	1	(TO-220FN) <3pin>	-
15	RFN16T2D	NZ	-	C9	200	200	16	100	0.98	8	10	200	30	0.5	1	(TO-220FN) <3pin>	-
16	RF2001T2D	NZ	-	C9	200	200	20	100	0.93	10	10	200	30	0.5	1	(TO-220FN) <3pin>	-
17	RFN20T2D	NZ	-	C9	200	200	20	100	0.98	10	10	200	30	0.5	1	(TO-220FN) <3pin>	-
18	RF2001T3D	NZ	-	C9	350	300	20	100	1.3	10	10	300	25	0.5	1	(TO-220FN) <3pin>	-
19	☆RFL30TS6D	G	-	C13	650	650	30	100	1.5	15	5	650	45	0.5	1	(TO-247-3L) (TO-247GE-3L)	-
20	☆RFS30TS6D	G	-	C13	650	650	30	80	2.3	15	5	650	30	0.5	1	(TO-247-3L) (TO-247GE-3L)	-
21	☆RFL60TS6D	G	-	C13	650	650	60	180	1.5	30	5	650	55	0.5	1	(TO-247-3L) (TO-247GE-3L)	-
22	☆RFS60TS6D	G	-	C13	650	650	60	150	2.3	30	5	650	35	0.5	1	(TO-247-3L) (TO-247GE-3L)	-
23	RF301BGE2S	-	-	TL	200	200	3	40	0.93	3	10	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
24	RFN3BGE2S	-	-	TL	200	200	3	40	0.98	3	10	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
25	RF501BGE2S	-	-	TL	200	200	5	40	0.92	5	1	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
26	RFN5BGE2S	-	-	TL	200	200	5	40	0.98	5	10	200	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
27	RFN5BGE3S	-	-	TL	350	350	5	50	1.5	5	10	350	30	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
28	RFN3BGE6S	-	-	TL	600	600	3	20	1.55	3	10	600	30	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
29	RF305BGE6S	*	-	TL	600	600	3	50	1.7	3	10	600	30	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
30	RFN15BGE6S	-	-	TL	600	600	5	50	1.3	5	10	600	60	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
31	RFN5BGE6S	-	-	TL	600	600	5	30	1.55	5	10	600	50	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
32	RF505BGE6S	-	-	TL	600	600	5	50	1.7	5	10	600	30	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
33	RFV5BGE6S	-	-	TL	600	600	5	60	2.8	5	10	600	20	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
34	RFV8BGE6S	-	-	TL	600	600	8	100	2.8	8	10	600	25	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
35	RFN10BGE6S	-	-	TL	600	600	10	100	1.25	8	10	600	65	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
36	RFN10BGE3S	*	-	TL	350	350	10	80	1.5	10	10	350	30	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
37	RFN10BGE6S	-	-	TL	600	600	10	100	1.55	10	10	600	50	0.5	1	(TO-252GE) (DPAK) [SC-63]	-
38	RF301BM2S	-	FH	TL	200	200	3	40	0.93	3	10	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
39	RFN3BM2S	-	FH	TL	200	200	3	40	0.98	3	10	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
40	RF501BM2S	-	FH	TL	200	200	5	40	0.92	5	1	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
41	RFN5BM2S	-	FH	TL	200	200	5	40	0.98	5	10	200	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
42	RFN5BM3S	-	FH	TL	350	350	5	50	1.5	5	10	350	30	0.5	1	(TO-252) (DPAK) [SC-63]	YES
43	RFN3BM6S	-	FH	TL	600	600	3	20	1.55	3	10	600	30	0.5	1	(TO-252) (DPAK) [SC-63]	YES
44	RF305BM6S	-	FH	TL	600	600	3	50	1.7	3	10	600	30	0.5	1	(TO-252) (DPAK) [SC-63]	YES
45	RFN15BM6S	-	FH	TL	600	600	5	50	1.3	5	10	600	60	0.5	1	(TO-252) (DPAK) [SC-63]	YES
46	RFN5BM6S	-	FH	TL	600	600	5	30	1.55	5	10	600	50	0.5	1	(TO-252) (DPAK) [SC-63]	YES
47	RF505BM6S	-	FH	TL	600	600	5	50	1.7	5	10	600	30	0.5	1	(TO-252) (DPAK) [SC-63]	YES
48	RFV5BM6S	-	FH	TL	600	600	5	60	2.8	5	10	600	20	0.5	1	(TO-252) (DPAK) [SC-63]	YES
49	RFV8BM6S	-	FH	TL	600	600	8	100	2.8	8	10	600	25	0.5	1	(TO-252) (DPAK) [SC-63]	YES
50	RFN10BM6S	-	FH	TL	600	600	10	100	1.25	8	10	600	65	0.5	1	(TO-252) (DPAK) [SC-63]	YES
51	RFN10BM3S	-	FH	TL	350	350	10	80	1.5	10	10	350	30	0.5	1	(TO-252) (DPAK) [SC-63]	YES
52	RFN10BM6S	-	FH	TL	600	600	10	100	1.55	10	10	600	50	0.5	1	(TO-252) (DPAK) [SC-63]	YES
53	RFN10NS3S	-	FH	TL	350	350	10	100	1.5	10	10	350	30	0.5	1	(TO-263S) (D2PAK)	YES
54	RFN20NS3S	-	FH	TL	350	350	20	100	1.35	20	10	350	35	0.5	1	(TO-263S) (D2PAK)	YES
55	RFUH25NS3S	-	FH	TL	350	350	20	100	1.45	20	10	350	30	0.5	1	(TO-263S) (D2PAK)	YES
56	RFUH20NS3S	-	FH	TL	350	350	20	100	1.5	20	10	350	25	0.5	1	(TO-263S) (D2PAK)	YES
57	RFN10NS4S	-	FH	TL	430	430	10	80	1.55	10	10	430	30	0.5	1	(TO-263S) (D2PAK)	YES
58	RFUH10NS4S	-	FH	TL	430	430	10	80	1.7	10	10	430	25	0.5	1	(TO-263S) (D2PAK)	YES
59	RFN20NS4S	*	FH	TL	430	430	20	100	1.55	20	10	430	30	0.5	1	(TO-263S) (D2PAK)	YES
60	RFUH20NS4S	-	FH	TL	430	430	20	100	1.7	20	10	430	25	0.5	1	(TO-263S) (D2PAK)	YES
61	RFN10NS6S	-	FH	TL	600	600	10	100	1.55	10	10	600	50	0.5	1	(TO-263S) (D2PAK)	YES
62	RFUH10NS6S	-	FH	TL	600	600	10	60	2.8	10	10	600	25	0.5	1	(TO-263S) (D2PAK)	YES
63	RFN20NS6S	-	FH	TL	600	600	20	100	1.55	20	10	600	60	0.5	1	(TO-263S) (D2PAK)	YES
64	RFUH20NS6S	-	FH	TL	600	600	20	100	2.8	20	10	600	35	0.5	1	(TO-263S) (D2PAK)	YES



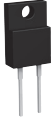
*General Part No. have no grade code.
 *1 I_o: Average rectified output current die. In case of 2 dies, I_o indicates average output current of 2 chips. *2 Value/Chip
 Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code. ☆: Under Development

Rectifier Diodes




Rectifier Diodes

Example: **R R E 0 7 V T M 4 S F H T R**
Part No. Grade Code Taping Code

● Quick Reference for Rectifier Diodes

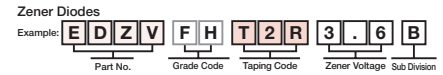
	V _R (V)	I _O (A)	Surface Mount type		Through Hole type
					
			2514 size SOD-323HE (TUMD2SM)	TO-252 (DPAK) [SC-63]	(TO-220ACFP)
General Purpose Rectifier Diodes	400	0.2	RRE02VSM4S RRE02VTM4S	1 2	
		0.7	RRE07VSM4S RRE07VTM4S	3 4	
	600	0.2	RRE02VSM6S RRE02VTM6S	5 6	
		0.7	RRE07VSM6S RRE07VTM6S	7 8	
Power Rectifier Diodes	400	6		RR601BM4S	9
	1,000	20			RRD20TJ10S
					10

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

General Purpose Rectifier Diodes																		
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C or T _i =25°C)				Electrical Characteristics (T _j =25°C)						Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O (A)	I _{FSM} (A) 60Hz.1 ^②	V _F (V) Max	I _F (A)	I _R (μA) Max	V _R (V)	trr (ns) Max	I _F (mA)				I _R (mA)
1	RRE02VSM4S	*	—	TR	400	400	0.2	1	1.1	0.2	1	400	—	—	—	SOD-323HE (TUMD2SM)		—
2	RRE02VTM4S	—	FH	TR	400	400	0.2	1	1.1	0.2	1	400	—	—	—			YES
3	RRE07VSM4S	*	—	TR	400	400	0.7	2	1.1	0.7	1	400	—	—	—			—
4	RRE07VTM4S	—	FH	TR	400	400	0.7	2	1.1	0.7	1	400	—	—	—			YES
5	RRE02VSM6S	*	—	TR	600	600	0.2	1	1.1	0.2	1	600	—	—	—			—
6	RRE02VTM6S	—	FH	TR	600	600	0.2	1	1.1	0.2	1	600	—	—	—			YES
7	RRE07VSM6S	*	—	TR	600	600	0.7	2	1.1	0.7	1	600	—	—	—			—
8	RRE07VTM6S	—	FH	TR	600	600	0.7	2	1.1	0.7	1	600	—	—	—			YES
Power Rectifier Diodes																		
Quick Reference No.	Product No.				Absolute Maximum Ratings (T _c =25°C or T _i =25°C)				Electrical Characteristics (T _j =25°C)						Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _O (A)	I _{FSM} (A) 60Hz.1 ^②	V _F (V) Max	I _F (A)	I _R (μA) Max	V _R (V)	trr (ns) Max	I _F (mA)				I _R (mA)
9	RR601BM4S	—	FH	TL	400	400	6	40	1.1	6	10	400	—	—	—	TO-252 (DPAK) [SC-63]		YES
10	RRD20TJ10S	G	—	C9	1,000	1,000	20	200	1.05	20	10	1,000	—	—	—	(TO-220ACFP)		—

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

Zener Diodes



Zener Diodes 1																
Package	Surface Mount type															
	0603 size DSN0603-2 (SMD0603)				1006 size SOD-923 (VMN2M)				1608 size SOD-523 (EMD2) [SC-79]				2512 size SOD-323FL (UMD2) [SC-90A]			
Equivalent Circuit Diagram																
Series Name	RASMD™ ADZ series				CDZV series				EDZV series				UFZV series			
Automotive Grade Code	-				-				FH				FH			
Power (mW)	100				100				150				500			
Taping Code	T15R				T2R				T2R				TE-17			
Electrical Characteristics (T _a =25°C)	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	
Voltage	-	-	-	2.0B	2.02 to 2.20	5	-	2.0B	2.02 to 2.20	5	-	-	-	-	-	
	-	-	-	2.2B	2.22 to 2.41	5	-	2.2B	2.22 to 2.41	5	-	-	-	-	-	
	-	-	-	2.4B	2.43 to 2.63	5	-	2.4B	2.43 to 2.63	5	-	-	-	-	-	
	-	-	-	2.7B	2.69 to 2.91	5	-	2.7B	2.69 to 2.91	5	-	-	-	-	-	
	-	-	-	3.0B	3.01 to 3.22	5	-	3.0B	3.01 to 3.22	5	-	-	-	-	-	
	-	-	-	3.3B	3.32 to 3.53	5	-	3.3B	3.32 to 3.53	5	-	-	-	-	-	
	-	-	-	3.6B	3.600 to 3.845	5	-	3.6B	3.600 to 3.845	5	YES	3.6B	3.580 to 3.836	20	-	
	-	-	-	3.9B	3.89 to 4.16	5	-	3.9B	3.89 to 4.16	5	YES	3.9B	3.870 to 4.151	20	-	
	-	-	-	4.3B	4.17 to 4.43	5	-	4.3B	4.17 to 4.43	5	YES	4.3B	4.151 to 4.423	20	-	
	-	-	-	4.7B	4.55 to 4.75	5	-	4.7B	4.55 to 4.75	5	YES	4.7B	4.534 to 4.795	20	YES	
	5.1B	4.975 to 5.230	5	-	5.1B	4.98 to 5.20	5	-	5.1B	4.98 to 5.20	5	YES	5.1B	4.940 to 5.200	20	YES
	5.6B	5.510 to 5.800	5	-	5.6B	5.49 to 5.73	5	-	5.6B	5.49 to 5.73	5	YES	5.6B	5.450 to 5.730	20	YES
	6.2B	6.020 to 6.335	5	-	6.2B	6.06 to 6.33	5	-	6.2B	6.06 to 6.33	5	YES	6.2B	5.976 to 6.307	20	YES
	6.8B	6.670 to 7.015	5	-	6.8B	6.65 to 6.93	5	-	6.8B	6.65 to 6.93	5	YES	6.8B	6.525 to 6.865	20	YES
	7.5B	7.330 to 7.710	5	-	7.5B	7.28 to 7.60	5	-	7.5B	7.28 to 7.60	5	YES	7.5B	7.104 to 7.509	20	YES
	8.2B	8.000 to 8.400	5	-	8.2B	8.02 to 8.36	5	-	8.2B	8.02 to 8.36	5	YES	8.2B	7.827 to 8.265	20	YES
	☆9.1B	8.750 to 9.190	5	-	9.1B	8.85 to 9.23	5	-	9.1B	8.85 to 9.23	5	YES	9.1B	8.635 to 9.106	20	YES
	☆10B	9.560 to 10.04	5	-	10B	9.77 to 10.21	5	-	10B	9.77 to 10.21	5	YES	10B	9.497 to 10.050	20	YES
	☆11B	10.54 to 11.08	5	-	11B	10.76 to 11.22	5	-	11B	10.76 to 11.22	5	YES	11B	10.550 to 11.160	10	YES
	☆12B	11.63 to 12.21	5	-	12B	11.74 to 12.24	5	-	12B	11.74 to 12.24	5	YES	12B	11.510 to 12.160	10	YES
	☆13B	12.85 to 13.49	5	-	13B	12.91 to 13.49	5	-	13B	12.91 to 13.49	5	YES	13B	12.640 to 13.340	10	YES
	☆15B	14.30 to 15.02	5	-	15B	14.34 to 14.98	5	-	15B	14.34 to 14.98	5	YES	15B	14.000 to 14.790	10	YES
	☆16B	15.96 to 16.76	5	-	16B	15.85 to 16.51	5	-	16B	15.85 to 16.51	5	YES	16B	15.390 to 16.240	10	YES
	☆18B	17.52 to 18.41	2	-	18B	17.56 to 18.35	2	-	18B	17.56 to 18.35	5	YES	18B	17.000 to 17.950	10	YES
	-	-	-	-	20B	19.52 to 20.39	2	-	20B	19.52 to 20.39	5	YES	20B	18.870 to 19.890	10	YES
	-	-	-	-	22B	21.54 to 22.47	2	-	22B	21.54 to 22.47	5	YES	22B	20.770 to 21.920	5	YES
	-	-	-	-	24B	23.72 to 24.78	2	-	24B	23.72 to 24.78	5	YES	24B	22.780 to 24.020	5	YES
	-	-	-	-	27B	26.19 to 27.53	2	-	27B	26.19 to 27.53	2	YES	27B	25.190 to 26.560	5	YES
	-	-	-	-	30B	29.19 to 30.69	2	-	30B	29.19 to 30.69	2	YES	30B	27.980 to 29.500	5	YES
	-	-	-	-	33B	32.15 to 33.79	2	-	33B	32.15 to 33.79	2	YES	33B	30.660 to 32.320	5	YES
	-	-	-	-	36B	35.07 to 36.87	2	-	36B	35.07 to 36.87	2	YES	36B	33.230 to 35.010	5	YES
	-	-	-	-	-	-	-	-	-	-	-	-	39B	35.880 to 37.790	5	YES

Zener Diodes 2																
Package	Surface Mount type															
	2512 size SOD-323FL (UMD2) [SC-90A]				2512 size SOD-323FL (UMD2) [SC-90A]				2514 size SOD-323HE (TUMD2M) [SC-108B]				2514 size SOD-323HE (TUMD2M) [SC-108B]			
Equivalent Circuit Diagram																
Series Name	UDZV series				UDZLV series				TFZV series				YFZV series			
Automotive Grade Code	FH				FH				-				FH			
Power (mW)	200				200				500				500			
Taping Code	TE-17				TE-17				TR				TR			
Electrical Characteristics (T _a =25°C)	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	
Voltage	2.0B	2.02 to 2.20	5	YES	51	48 to 54	2	YES	2.0B	2.02 to 2.20	20	-	-	-	-	
	2.2B	2.22 to 2.41	5	YES	56	53 to 60	2	YES	2.2B	2.22 to 2.41	20	-	-	-	-	
	2.4B	2.43 to 2.63	5	YES	62	58 to 66	2	YES	2.4B	2.43 to 2.63	20	-	-	-	-	
	2.7B	2.69 to 2.91	5	YES	68	64 to 72	2	YES	2.7B	2.69 to 2.91	20	-	-	-	-	
	3.0B	3.01 to 3.22	5	YES	75	70 to 79	2	YES	3.0B	3.01 to 3.22	20	-	3.0B	3.01 to 3.22	20	YES
	3.3B	3.32 to 3.53	5	YES	82	77 to 87	2	YES	3.3B	3.32 to 3.53	20	-	3.3B	3.32 to 3.53	20	YES
	3.6B	3.600 to 3.845	5	YES	91	85 to 96	1	YES	3.6B	3.600 to 3.845	20	-	3.6B	3.600 to 3.845	20	YES
	3.9B	3.89 to 4.16	5	YES	100	94 to 106	1	YES	3.9B	3.89 to 4.16	20	-	3.9B	3.89 to 4.16	20	YES
	4.3B	4.17 to 4.43	5	YES	110	104 to 116	1	YES	4.3B	4.17 to 4.43	20	-	4.3B	4.17 to 4.43	20	YES
	4.7B	4.55 to 4.75	5	YES	120	114 to 126	1	YES	4.7B	4.55 to 4.80	20	-	4.7B	4.55 to 4.80	20	YES
	5.1B	4.98 to 5.20	5	YES	130	122 to 138	1	-	5.1B	4.94 to 5.20	20	-	5.1B	4.94 to 5.20	20	YES
	5.6B	5.49 to 5.73	5	YES	150	140 to 160	1	-	5.6B	5.45 to 5.73	20	-	5.6B	5.45 to 5.73	20	YES
	6.2B	6.06 to 6.33	5	YES	-	-	-	-	6.2B	5.96 to 6.27	20	-	6.2B	5.96 to 6.27	20	YES
	6.8B	6.65 to 6.93	5	YES	-	-	-	-	6.8B	6.49 to 6.83	20	-	6.8B	6.49 to 6.83	20	YES
	7.5B	7.28 to 7.60	5	YES	-	-	-	-	7.5B	7.07 to 7.45	20	-	7.5B	7.07 to 7.45	20	YES
	8.2B	8.02 to 8.36	5	YES	-	-	-	-	8.2B	7.78 to 8.19	20	-	8.2B	7.78 to 8.19	20	YES
	9.1B	8.85 to 9.23	5	YES	-	-	-	-	9.1B	8.57 to 9.01	20	-	9.1B	8.57 to 9.01	20	YES
	10B	9.77 to 10.21	5	YES	-	-	-	-	10B	9.41 to 9.90	20	-	10B	9.41 to 9.90	20	YES
	11B	10.76 to 11.22	5	YES	-	-	-	-	11B	10.50 to 11.05	10	-	11B	10.50 to 11.05	10	YES
	12B	11.74 to 12.24	5	YES	-	-	-	-	12B	11.44 to 12.03	10	-	12B	11.44 to 12.03	10	YES
	13B	12.91 to 13.49	5	YES	-	-	-	-	13B	12.55 to 13.21	10	-	13B	12.55 to 13.21	10	YES
	15B	14.34 to 14.98	5	YES	-	-	-	-	15B	13.89 to 14.62	10	-	15B	13.89 to 14.62	10	YES
	16B	15.85 to 16.51	5	YES	-	-	-	-	16B	15.25 to 16.04	10	-	16B	15.25 to 16.04	10	YES
	18B	17.56 to 18.35	5	YES	-	-	-	-	18B	16.82 to 17.70	10	-	18B	16.82 to 17.70	10	YES
	20B	19.52 to 20.39	5	YES	-	-	-	-	20B	18.63 to 19.59	10	-	20B	18.63 to 19.59	10	YES
	22B	21.54 to 22.47	5	YES	-	-	-	-	22B	20.64 to 21.71	5	-	22B	20.64 to 21.71	5	YES
	24B	23.72 to 24.78	5	YES	-	-	-	-	24B	22.61 to 23.77	5	-	24B	22.61 to 23.77	5	YES
	27B	26.19 to 27.53	5	YES	-	-	-	-	27B	24.97 to 26.26	5	-	27B	24.97 to 26.26	5	YES
	30B	29.19 to 30.69	5	YES	-	-	-	-	30B	27.70 to 29.13	5	-	30B	27.70 to 29.13	5	YES
	33B	32.15 to 33.79	5	YES	-	-	-	-	33B	30.32 to 31.88	5	-	-	-	-	-
	36B	35.07 to 36.87	5	YES	-	-	-	-	36B	32.79 to 34.49	5	-	-	-	-	-
	39B	38.02 to 39.98	2	YES	-	-	-	-	39B	35.36 to 37.19	5	-	-	-	-	-
	43	40.00 to 45.00	2	YES	-	-	-	-	-	-	-	-	-	-	-	-
	47	44.00 to 49.00	2	YES	-	-	-	-	-	-	-	-	-	-	-	-

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 Note1: This table shows available voltages.
 Note2: Package is JEDEC code. () : ROHM Packages. [] : JEITA code.

☆: Under Development

Zener Diodes

Zener Diodes
 Example: **Y D Z V F H T R 1 3**
 Part No. Grade Code Taping Code Zener Voltage

Zener Diodes 2																
Surface Mount type																
Package																
Equivalent Circuit Diagram																
Series Name	TDZV series			YDZV series			BZX84BxxLY series			BZX84CxxLY series						
Automotive Grade Code	-			FH			FH			FH						
Power (mW)	500			500			250			250						
Taping Code	TR			TR			T116			T116						
Electrical Characteristics (T _v =25°C)	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101				
Voltage	-	-	-	-	-	-	-	-	-	2V4	2.20 to 2.60	5	YES			
	-	-	-	-	-	-	-	-	-	2V7	2.50 to 2.90	5	YES			
	-	-	-	-	-	-	-	-	-	3V0	2.80 to 3.20	5	YES			
	-	-	-	-	-	-	-	-	-	3V3	3.10 to 3.50	5	YES			
	-	-	-	-	-	-	-	-	-	3V6	3.40 to 3.80	5	YES			
	-	-	-	-	-	-	-	-	-	3V9	3.70 to 4.10	5	YES			
	-	-	-	-	-	-	-	-	-	4V3	4.00 to 4.60	5	YES			
	-	-	-	-	-	-	-	-	-	4V7	4.40 to 5.00	5	YES			
	5.1	4.60 to 5.60	10	-	-	-	-	5V1	5.00 to 5.20	5	YES	5V1	4.80 to 5.40	5	YES	
	5.6	5.10 to 6.10	10	-	-	-	-	5V6	5.49 to 5.71	5	YES	5V6	5.20 to 6.00	5	YES	
	6.2	5.60 to 6.80	10	-	-	-	-	6V2	6.08 to 6.32	5	YES	6V2	5.80 to 6.60	5	YES	
	6.8	6.20 to 7.40	10	-	-	-	-	6V8	6.66 to 6.94	5	YES	6V8	6.40 to 7.20	5	YES	
	7.5	6.80 to 8.30	10	-	-	-	-	7V5	7.35 to 7.65	5	YES	7V5	7.00 to 7.90	5	YES	
	8.2	7.40 to 9.00	10	-	-	-	-	8V2	8.04 to 8.36	5	YES	8V2	7.70 to 8.70	5	YES	
	9.1	8.20 to 10.00	10	-	-	-	-	9V1	8.92 to 9.28	5	YES	9V1	8.50 to 9.60	5	YES	
	10	9.00 to 11.00	10	-	-	-	-	10V	9.80 to 10.20	5	YES	10V	9.40 to 10.60	5	YES	
	11	9.90 to 12.10	10	-	-	-	-	11V	10.80 to 11.20	5	YES	11V	10.40 to 11.60	5	YES	
	12	10.80 to 13.20	10	-	-	-	-	12V	11.80 to 12.20	5	YES	12V	11.40 to 12.70	5	YES	
	13	11.70 to 14.30	10	-	13	11.70 to 14.30	10	YES	13V	12.70 to 13.30	5	YES	13V	12.40 to 14.10	5	YES
	15	13.50 to 16.50	10	-	15	13.50 to 16.50	10	YES	15V	14.70 to 15.30	5	YES	15V	13.80 to 15.60	5	YES
	16	14.40 to 17.60	10	-	16	14.40 to 17.60	10	YES	16V	15.70 to 16.30	5	YES	16V	15.30 to 17.10	5	YES
	18	16.20 to 19.80	10	-	18	16.20 to 19.80	10	YES	18V	17.60 to 18.40	5	YES	18V	16.80 to 19.10	5	YES
	20	18.00 to 22.00	10	-	20	18.00 to 22.00	10	YES	20V	19.60 to 20.40	5	YES	20V	18.80 to 21.20	5	YES
	22	19.80 to 24.20	10	-	22	19.80 to 24.20	10	YES	22V	21.60 to 22.40	5	YES	22V	20.80 to 23.30	5	YES
	24	21.60 to 26.40	10	-	24	21.60 to 26.40	10	YES	24V	23.50 to 24.50	5	YES	24V	22.80 to 25.60	5	YES
	27	24.30 to 29.70	10	-	27	24.30 to 29.70	10	YES	27V	26.50 to 27.50	2	YES	27V	25.10 to 28.90	2	YES
	30	27.00 to 33.00	10	-	-	-	-	-	30V	29.40 to 30.60	2	YES	30V	28.00 to 32.00	2	YES
	-	-	-	-	-	-	-	-	33V	32.30 to 33.70	2	YES	33V	31.00 to 35.00	2	YES
	-	-	-	-	-	-	-	-	36V	35.30 to 36.70	2	YES	36V	34.00 to 38.00	2	YES
	Surface Mount type															
Package																
Equivalent Circuit Diagram																
Series Name	KDZV series			KDZLV series			PDZV series			PTZ series*						
Automotive Grade Code	TF			TF			TF			TF						
Power (mW)	1,000			1,000			1,000			1,000						
Taping Code	TR			TR			TR			TE25						
Electrical Characteristics (T _v =25°C)	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101	V _Z (V)	I _Z (mA)	Automotive Grade AEC-Q101				
Voltage	2.0B	2.00 to 2.24	40	YES	51	48 to 54	2	YES	2.0B	2.00 to 2.24	40	YES	2.0B	2.00 to 2.24	40	YES
	2.2B	2.20 to 2.45	40	YES	56	53 to 60	2	YES	2.2B	2.20 to 2.45	40	YES	2.2B	2.20 to 2.45	40	YES
	2.4B	2.40 to 2.70	40	YES	62	58 to 66	2	YES	2.4B	2.40 to 2.70	40	YES	2.4B	2.40 to 2.70	40	YES
	2.7B	2.70 to 3.10	40	YES	68	64 to 72	2	YES	2.7B	2.70 to 3.10	40	YES	2.7B	2.70 to 3.10	40	YES
	3.0B	3.00 to 3.40	40	YES	75	70 to 79	2	YES	3.0B	3.00 to 3.40	40	YES	3.0B	3.00 to 3.40	40	YES
	3.3B	3.30 to 3.70	40	YES	82	77 to 87	2	YES	3.3B	3.30 to 3.70	40	YES	3.3B	3.30 to 3.70	40	YES
	3.6B	3.60 to 4.00	40	YES	91	85 to 96	2	YES	3.6B	3.60 to 4.00	40	YES	3.6B	3.60 to 4.00	40	YES
	3.9B	3.90 to 4.40	40	YES	100	94 to 106	2	YES	3.9B	3.90 to 4.40	40	YES	3.9B	3.90 to 4.40	40	YES
	4.3B	4.30 to 4.80	40	YES	110	104 to 116	2	YES	4.3B	4.30 to 4.80	40	YES	4.3B	4.30 to 4.80	40	YES
	4.7B	4.70 to 5.20	40	YES	120	114 to 126	2	YES	4.7B	4.70 to 5.20	40	YES	4.7B	4.70 to 5.20	40	YES
	5.1B	5.10 to 5.70	40	YES	130	122 to 138	2	YES	5.1B	5.10 to 5.70	40	YES	5.1B	5.10 to 5.70	40	YES
	5.6B	5.60 to 6.30	40	YES	150	140 to 160	2	YES	5.6B	5.60 to 6.30	40	YES	5.6B	5.60 to 6.30	40	YES
	6.2B	6.20 to 7.00	40	YES	-	-	-	-	6.2B	6.20 to 7.00	40	YES	6.2B	6.20 to 7.00	40	YES
	6.8B	6.80 to 7.70	40	YES	-	-	-	-	6.8B	6.80 to 7.70	40	YES	6.8B	6.80 to 7.70	40	YES
	7.5B	7.50 to 8.40	40	YES	-	-	-	-	7.5B	7.50 to 8.40	40	YES	7.5B	7.50 to 8.40	40	YES
	8.2B	8.20 to 9.30	40	YES	-	-	-	-	8.2B	8.20 to 9.30	40	YES	8.2B	8.20 to 9.30	40	YES
	9.1B	9.10 to 10.20	40	YES	-	-	-	-	9.1B	9.10 to 10.20	40	YES	9.1B	9.10 to 10.20	40	YES
	10B	10.00 to 11.20	40	YES	-	-	-	-	10B	10.00 to 11.20	40	YES	10B	10.00 to 11.20	40	YES
	11B	11.00 to 12.30	20	YES	-	-	-	-	11B	11.00 to 12.30	20	YES	11B	11.00 to 12.30	20	YES
	12B	12.00 to 13.50	20	YES	-	-	-	-	12B	12.00 to 13.50	20	YES	12B	12.00 to 13.50	20	YES
	13B	13.30 to 15.00	20	YES	-	-	-	-	13B	13.30 to 15.00	20	YES	13B	13.30 to 15.00	20	YES
	15B	14.70 to 16.50	20	YES	-	-	-	-	15B	14.70 to 16.50	20	YES	15B	14.70 to 16.50	20	YES
	16B	16.20 to 18.30	20	YES	-	-	-	-	16B	16.20 to 18.30	20	YES	16B	16.20 to 18.30	20	YES
	18B	18.00 to 20.30	20	YES	-	-	-	-	18B	18.00 to 20.30	20	YES	18B	18.00 to 20.30	20	YES
	20B	20.00 to 22.40	20	YES	-	-	-	-	20B	20.00 to 22.40	20	YES	20B	20.00 to 22.40	20	YES
	22B	22.00 to 24.50	10	YES	-	-	-	-	22B	22.00 to 24.50	10	YES	22B	22.00 to 24.50	10	YES
	24B	24.00 to 27.60	10	YES	-	-	-	-	24B	24.00 to 27.60	10	YES	24B	24.00 to 27.60	10	YES
	27B	27.00 to 30.80	10	YES	-	-	-	-	27B	27.00 to 30.80	10	YES	27B	27.00 to 30.80	10	YES
	30B	30.00 to 34.00	10	YES	-	-	-	-	30B	30.00 to 34.00	10	YES	30B	30.00 to 34.00	10	YES
	33B	33.00 to 37.00	10	YES	-	-	-	-	33B	33.00 to 37.00	10	YES	33B	33.00 to 37.00	10	YES
36B	36.00 to 40.00	10	YES	-	-	-	-	36B	36.00 to 40.00	10	YES	36B	36.00 to 40.00	10	YES	
39A	37.00 to 44.00	10	YES	-	-	-	-	-	-	-	-	-	-	-	-	
43A	40.00 to 46.00	10	YES	-	-	-	-	-	-	-	-	-	-	-	-	
47A	44.00 to 50.00	2	YES	-	-	-	-	-	-	-	-	-	-	-	-	

*Only Automotive Grade
 Note1: This table shows available voltages.
 Note2: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA code.

Zener Diodes

Protection Device
 Example: **UMZ6.8NFMFH T106**
Part No. Grade Code Taping Code

Quick Reference for Protection Devices [2 Elements]

Product No.				Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)		Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	P _D (mW)	V _Z (V)	I _Z (mA)			
	General	Automotive							
UMZ6.8NFM	*	FH	T106	200	6.65 to 6.93	5	SOT-323 (UMD3) [SC-70]		YES
UMZ12NFM		FH	T106	200	11.74 to 12.24	5			YES
UMZ16NFM		FH	T106	200	12.91 to 13.49	5			YES
UMZ18NFM		FH	T106	200	15.85 to 16.51	5			YES
UMZ27NFM		FH	T106	200	23.72 to 24.78	5			YES
UMZ30NFM		FH	T106	200	26.19 to 27.53	5			YES
UMZ36NFM		FH	T106	200	32.15 to 33.79	5			YES

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Low Capacitance Protection Devices

Product No.				Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)					Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	P _D (mW)	V _Z (V)	I _Z (mA)	C _t (pF) Typ	f (MHz)	V _R (V)			
	General	Automotive										
CDZCV5.1B	*	—	T2R	100	4.98 to 5.20	5	5.5	1	0	SOD-923 (VMN2M)		—
CDZCV6.8B		—	T2R	100	6.65 to 6.93	5	3	1	0			—
EDZCV6.8B		—	T2R	150	6.65 to 6.93	5	3	1	0			SOD-523 (EMD2) [SC-79]
RSAC6.8CM		—	T2R	100	6.70 to 7.33	5	0.3	1	0	SOD-923 (VMN2M)		—
RSAC16CM		—	T2R	100	16.49 to 17.51	5	0.3	1	0			—
UMZC6.8NFM		FH	T106	200	6.47 to 7.14	5	3	1	0	SOT-323 (UMD3) [SC-70]		YES
UMZU6.2NFM		FH	T106	200	5.90 to 6.50	5	8	1	0			YES

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Ultra Low Capacitance Bi-Directional Zener Diode

Product No.				Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)					Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	P _D (mW)	V _Z (V)	I _Z (mA)	C _t (pF) Typ	f (MHz)	V _R (V)			
	General	Automotive										
RSBC6.8CM	*	—	T2N	100	6.62 to 7.24	5	1	1	0	SOD-923 (VMN2M)		—

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages.

TVS

● Quick Reference TVS (ESD Protection Devices)

V _{RWM} (V)	Surface Mount type									
	0603 size	1006 size	2924 size	2513 size	3516 size	4725 size	6546 size			
	DSN0603-2 (SMD0603B)	DSN1006-2 (SMD1006)	SOT-23 (SSD3)	(PMDE)	(PMDU) (SOD-123FL) [SC-109B]	(PMDTM) (SOD-128)	TO-277A (TO-277GE)	TO-252 (DPAK) [SC-63]	(TO-263S) (D2PAK)	
3.0			MMBZ5V6ALY 6							
			MMBZ6V2ALY 7							
			MMBZ6V8ALY 8							
4.5										
5.0				VS5V0UA1VWM 22	SMF5V0 54	VS5V0UA1LAM 77				
6.0			MMBZ9V1ALY 9	New VS6V0UA1VWM 23	SMF6V0 55	VS6V0UA1LAM 78				
6.3		VS6V3UC1QS 5								
6.5			MMBZ10VALY 10	New VS6V5UA1VWM 24	SMF6V5 56					
7.0	VS7V0UD1HS 1				SMF7V0 57	VS7V0UA1LAM 79				
7.5				New VS7V5UA1VWM 25	SMF7V5 58					
8.0					SMF8V0 59	VS8V0UA1LAM 80				
8.5			MMBZ12VALY 11							
9.0	VS9V0UD1HS 2			New VS9V0UA1VWM 26	SMF9V0 60	VS9V0UA1LAM 81				
10.0					SMF10V 61	VS10VUA1LAM 82				
11.0				New VS11VUA1VWM 27	SMF11V 62	VS11VUA1LAM 83				
12.0	VS12V0UD1HS 3		MMBZ15VALY 12	New VS12VUA1VWM 28	SMF12V 63	VS12VUA1LAM 84				
13.0			MMBZ16VALY 13	New VS13VUA1VWM 29	SMF13V 64	VS13VUA1LAM 85				
14.0					SMF14V 65	VS14VUA1LAM 86				
14.5			MMBZ18VALY 14							
15.0	VS15V0UD1HS 4			New VS15VUA1VWM 30	SMF15V 66	VS15VUA1LAM 87				
16.0				New VS16VUA1VWM 31	SMF16V 67	VS16VUA1LAM 88				
17.0			MMBZ20VALY 15	New VS17VUA1VWM 32	SMF17V 68	VS17VUA1LAM 89				
18.0				New VS18VUA1VWM 33	SMF18V 69	VS18VUA1LAM 90				
20.0			MMBZ24VALY 16	New VS20VUA1VWM 34	SMF20V 70	VS20VUA1LAM 91				
22.0			MMBZ27VALY 17	New VS22VUA1VWM 35	SMF22V 71	VS22VUA1LAM 92	New RSDT27RSM 97	RSDT27BM 99	RSDT27NS 101	
			MMBZ27VCLY 21							
24.0			MMBZ30VALY 18	New VS24VUA1VWM 36	SMF24V 72	VS24VUA1LAM 93	New RSDT30RSM 98	RSDT30BM 100	RSDT30NS 102	
26.0			MMBZ33VALY 19	New VS26VUA1VWM 37	SMF26V 73	VS26VUA1LAM 94				
28.0			MMBZ36VALY 20		SMF28V 74	VS28VUA1LAM 95				
30.0				New VS30VUA1VWM 38	SMF30V 75	VS30VUA1LAM 96				
33.0				New VS33VUA1VWM 39	SMF33V 76					
36.0				New VS36VUA1VWM 40						
40.0				New VS40VUA1VWM 41						
43.0				New VS43VLNVWM 42						
48.0				New VS48VLNVWM 43						
54.0				New VS54VLNVWM 44						
58.0				New VS58VLNVWM 45						
64.0				New VS64VLNVWM 46						
70.0				New VS70VLNVWM 47						
78.0				New VS78VLNVWM 48						
85.0				New VS85VLNVWM 49						
90.0				New VS90VLNVWM 50						
100				New VS100VLNVWM 51						
110				New VS110VLNVWM 52						
130				New VS130VLNVWM 53						

Note: Package is JEDEC code. (): ROHM Packages. < > : GENERAL code. [] : JEITA code.

● Quick Reference Bi-Directional TVS

V _{RWM} (V)	Surface Mount type											
	0402 size		0603 size				1006 size		2012 size		2924 size	
	DSN0402-2 (SMD0402)		DSN0603-2 (SMD0603)		DSN0603-2 (SMD0603B)		DSN1006-2 (SMD1006)		DSN2012-2 (SMD2012)		SOT-23 (SSD3)	
3.3	RAS MID™ VS3V3BA1FS 103	RAS MID™ VS3V3BA1ES 109	RAS MID™ VS3V3BC1HS 108									
	RAS MID™ VS3V3BB1FS 104	RAS MID™ VS3V3BB1ES 110	RAS MID™ VS3V3BL1HS 121									
	RAS MID™ VS3V3BT1FS 105		RAS MID™ VS3V3BN1HS 122									
4.5						RAS MID™ VS4V5BU1QS 115						
4.8								RAS MID™ VS4V8BU1AR 116				
5.0	RAS MID™ VS5V0BA1FS 106	RAS MID™ VS5V0BA1ES 111	RAS MID™ VS5V0BL1HS 123			RAS MID™ VS5V0BL1QS 125						
	RAS MID™ VS5V0BB1FS 107	RAS MID™ VS5V0BB1ES 112	RAS MID™ VS5V0BN1HS 124									
		RAS MID™ VS5V0BC1ES 113										
12.0					RAS MID™ VS12VBA1HS 114						ESD16VHY 117	
16.0											ESD18VHY 118	
24.0											ESD27VHY 119	
											RESD1CANY 120	

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Note: Package is JEDEC code. (): ROHM Packages.

TVS

TVS
 Example: **V S 5 V 0 U A 1 V W M T F T R**
Part No. Grade Code Taping Code

TVS														
Quick Reference No.	Product No.			V _{RWM} (V)	Absolute Maximum Ratings (T _a =25°C)		Electrical Characteristics (T _a =25°C)		Peak Pulse Power (W) (tp=10x1,000µs)	Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101		
	Part No.	Grade Code			P _D (mW)	V _Z (V) or V _{BR} (V)	I _Z (mA)							
		General	Automotive	Taping Code										
1	VS7V0UD1HS	—	—	T15R	7.0	100	7.20 to 9.00	1	126 (8/20µs)	DSN0603-2 (SMD0603B)		—		
2	VS9V0UD1HS	—	—	T15R	9.0	100	9.60 to 11.80	1	128 (8/20µs)			—		
3	VS12V0UD1HS	—	—	T15R	12.0	100	12.20 to 13.80	1	129 (8/20µs)			—		
4	VS15V0UD1HS	—	—	T15R	15.0	100	15.30 to 16.90	1	135 (8/20µs)			—		
5	VS6V3UC1QS	—	—	T18R	6.3	200	6.70 to 7.70	1	660 (8/20µs)			DSN1006-2 (SMD1006)	—	
6	MMBZ5V6ALY	FH	—	T116	3.0	225	5.32 to 5.88	20	24	SOT-23 (SSD3)		YES		
7	MMBZ6V2ALY	FH	—	T116	3.0	225	5.89 to 6.51	1	24			YES		
8	MMBZ6V8ALY	FH	—	T116	4.5	225	6.46 to 7.14	1	24			YES		
9	MMBZ9V1ALY	FH	—	T116	6.0	225	8.65 to 9.56	1	24			YES		
10	MMBZ10VALY	FH	—	T116	6.5	225	9.50 to 10.50	1	24			YES		
11	MMBZ12VALY	FH	—	T116	8.5	225	11.40 to 12.60	1	40			YES		
12	MMBZ15VALY	FH	—	T116	12.0	225	14.25 to 15.75	1	40			YES		
13	MMBZ16VALY	FH	—	T116	13.0	225	15.20 to 16.80	1	40			YES		
14	MMBZ18VALY	FH	—	T116	14.5	225	17.10 to 18.90	1	40			YES		
15	MMBZ20VALY	FH	—	T116	17.0	225	19.00 to 21.00	1	40			YES		
16	MMBZ24VALY	FH	—	T116	20.0	225	22.80 to 25.20	1	40			YES		
17	MMBZ27VALY	FH	—	T116	22.0	225	25.65 to 28.35	1	40			YES		
18	MMBZ30VALY	FH	—	T116	24.0	225	28.50 to 31.50	1	40			YES		
19	MMBZ33VALY	FH	—	T116	26.0	225	31.35 to 34.65	1	40			YES		
20	MMBZ36VALY	FH	—	T116	28.0	225	34.20 to 37.80	1	40			YES		
21	MMBZ27VCLY	FH	—	T116	22.0	225	25.65 to 28.35	1	40				YES	
22	VS5V0UA1VWM	TF	—	TR	5.0	1,000	6.40 to 7.20	40	200			(PMDE)		YES
23	New VS6V0UA1VWM	TF	—	TR	6.0	1,000	6.80 to 7.70	40	200					YES
24	New VS6V5UA1VWM	TF	—	TR	6.5	1,000	7.50 to 8.40	40	200					YES
25	New VS7V5UA1VWM	TF	—	TR	7.5	1,000	8.20 to 9.30	40	200					YES
26	New VS9V0UA1VWM	TF	—	TR	9.0	1,000	10.0 to 11.2	40	200	YES				
27	New VS11VUA1VWM	TF	—	TR	11.0	1,000	12.0 to 12.2	20	200	YES				
28	New VS12VUA1VWM	TF	—	TR	12.0	1,000	13.3 to 15.0	20	200	YES				
29	New VS13VUA1VWM	TF	—	TR	13.0	1,000	14.7 to 16.5	20	200	YES				
30	New VS15VUA1VWM	TF	—	TR	15.0	1,000	16.2 to 18.3	20	200	YES				
31	New VS16VUA1VWM	TF	—	TR	16.0	1,000	18.0 to 20.3	20	200	YES				
32	New VS17VUA1VWM	TF	—	TR	17.0	1,000	18.8 to 21.2	20	200	YES				
33	New VS18VUA1VWM	TF	—	TR	18.0	1,000	20.0 to 22.4	20	200	YES				
34	New VS20VUA1VWM	TF	—	TR	20.0	1,000	22.0 to 24.5	10	200	YES				
35	New VS22VUA1VWM	TF	—	TR	22.0	1,000	24.0 to 27.6	10	200	YES				
36	New VS24VUA1VWM	TF	—	TR	24.0	1,000	27.0 to 30.8	10	200	YES				
37	New VS26VUA1VWM	TF	—	TR	26.0	1,000	28.6 to 32.1	10	200	YES				
38	New VS30VUA1VWM	TF	—	TR	30.0	1,000	33.0 to 37.0	10	200	YES				
39	New VS33VUA1VWM	TF	—	TR	33.0	1,000	36.0 to 40.0	10	200	YES				
40	New VS36VUA1VWM	TF	—	TR	36.0	1,000	40.0 to 46.0	10	200	YES				
41	New VS40VUA1VWM	TF	—	TR	40.0	1,000	44.0 to 50.0	10	200	YES				
42	New VS43VLNVWM	TF	—	TR	43.0	1,000	48.0 to 54.0	2	200	YES				
43	New VS48VLNVWM	TF	—	TR	48.0	1,000	53.0 to 60.0	2	200	YES				
44	New VS54VLNVWM	TF	—	TR	54.0	1,000	58.0 to 66.0	2	200	YES				
45	New VS58VLNVWM	TF	—	TR	58.0	1,000	64.0 to 72.0	2	200	YES				
46	New VS64VLNVWM	TF	—	TR	64.0	1,000	70.0 to 79.0	2	200	YES				
47	New VS70VLNVWM	TF	—	TR	70.0	1,000	77.0 to 87.0	2	200	YES				
48	New VS78VLNVWM	TF	—	TR	78.0	1,000	85.0 to 96.0	2	200	YES				
49	New VS85VLNVWM	TF	—	TR	85.0	1,000	94.0 to 106	2	200	YES				
50	New VS90VLNVWM	TF	—	TR	90.0	1,000	104 to 116	2	200	YES				
51	New VS100VLNVWM	TF	—	TR	100	1,000	114 to 126	2	200	YES				
52	New VS110VLNVWM	TF	—	TR	110	1,000	122 to 138	2	200	YES				
53	New VS130VLNVWM	TF	—	TR	130	1,000	140 to 160	2	200	YES				

*General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages.

TVS

TVS Example: **V S 5 V 0 U A 1 V W M T F T R**
Part No. Grade Code Taping Code

TVS												
Quick Reference No.	Product No.			V _{RWM} (V)	Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)		Peak Pulse Power (W) (tp=10×1,000µs)	Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code				Taping Code	P _D (mW)					V _Z (V) or V _{BR} (V)
		General	Automotive									
54	SMF5V0		TF	TR	5.0	1,000	6.40 or more	40	200	(PMDU) (SOD-123FL) [SC-109B]	YES	
55	SMF6V0		TF	TR	6.0	1,000	6.67 or more	40	200		YES	
56	SMF6V5		TF	TR	6.5	1,000	7.22 or more	40	200		YES	
57	SMF7V0		TF	TR	7.0	1,000	7.78 or more	40	200		YES	
58	SMF7V5		TF	TR	7.5	1,000	8.33 or more	40	200		YES	
59	SMF8V0		TF	TR	8.0	1,000	8.89 or more	40	200		YES	
60	SMF9V0		TF	TR	9.0	1,000	10.0 or more	40	200		YES	
61	SMF10V		TF	TR	10.0	1,000	11.1 or more	20	200		YES	
62	SMF11V		TF	TR	11.0	1,000	12.2 or more	20	200		YES	
63	SMF12V		TF	TR	12.0	1,000	13.3 or more	20	200		YES	
64	SMF13V		TF	TR	13.0	1,000	14.4 or more	20	200		YES	
65	SMF14V		TF	TR	14.0	1,000	15.6 or more	20	200		YES	
66	SMF15V		TF	TR	15.0	1,000	16.7 or more	20	200		YES	
67	SMF16V		TF	TR	16.0	1,000	17.2 or more	20	200		YES	
68	SMF17V		TF	TR	17.0	1,000	18.9 or more	20	200		YES	
69	SMF18V		TF	TR	18.0	1,000	20.0 or more	20	200		YES	
70	SMF20V		TF	TR	20.0	1,000	22.2 or more	10	200		YES	
71	SMF22V		TF	TR	22.0	1,000	24.4 or more	10	200		YES	
72	SMF24V		TF	TR	24.0	1,000	26.7 or more	10	200		YES	
73	SMF26V		TF	TR	26.0	1,000	28.9 or more	10	200		YES	
74	SMF28V		TF	TR	28.0	1,000	31.1 or more	10	200		YES	
75	SMF30V	*	TF	TR	30.0	1,000	33.3 or more	10	200			YES
76	SMF33V		TF	TR	33.0	1,000	36.7 or more	10	200		YES	
77	VS5V0UA1LAM		TF	TR	5.0	—	6.45 to 7.14	10	600		(PMDTM) (SOD-128)	YES
78	VS6V0UA1LAM		TF	TR	6.0	—	6.67 to 7.37	10	600			YES
79	VS7V0UA1LAM		TF	TR	7.0	—	7.78 to 8.60	10	600			YES
80	VS8V0UA1LAM		TF	TR	8.0	—	8.89 to 9.83	1	600	YES		
81	VS9V0UA1LAM		TF	TR	9.0	—	10.0 to 11.1	1	600	YES		
82	VS10VUA1LAM		TF	TR	10.0	—	11.1 to 12.3	1	600	YES		
83	VS11VUA1LAM		TF	TR	11.0	—	12.2 to 13.5	1	600	YES		
84	VS12VUA1LAM		TF	TR	12.0	—	13.3 to 14.7	1	600	YES		
85	VS13VUA1LAM		TF	TR	13.0	—	14.4 to 15.9	1	600	YES		
86	VS14VUA1LAM		TF	TR	14.0	—	15.6 to 17.2	1	600	YES		
87	VS15VUA1LAM		TF	TR	15.0	—	16.7 to 18.5	1	600	YES		
88	VS16VUA1LAM		TF	TR	16.0	—	17.8 to 19.7	1	600	YES		
89	VS17VUA1LAM		TF	TR	17.0	—	18.9 to 20.9	1	600	YES		
90	VS18VUA1LAM		TF	TR	18.0	—	20.0 to 22.1	1	600	YES		
91	VS20VUA1LAM		TF	TR	20.0	—	22.2 to 24.5	1	600	YES		
92	VS22VUA1LAM		TF	TR	22.0	—	24.4 to 26.9	1	600	YES		
93	VS24VUA1LAM		TF	TR	24.0	—	26.7 to 29.5	1	600	YES		
94	VS26VUA1LAM		TF	TR	26.0	—	28.9 to 31.9	1	600	YES		
95	VS28VUA1LAM		TF	TR	28.0	—	31.1 to 34.4	1	600	YES		
96	VS30VUA1LAM		TF	TR	30.0	—	33.3 to 36.8	1	600	YES		
97	New RSDT27RSM	*	TF	TL1	22.0	1,500	24.0 to 30.0	10	1,500	TO-277A (TO-277GE)	YES	
98	New RSDT30RSM		TF	TL1	24.0	1,500	27.0 to 33.0	10	1,500	YES		
99	RSDT27BM	—	FH	TL	22.0	2,500	24.0 to 30.0	10	2,500	TO-252 (DPAK) [SC-63]	YES	
100	RSDT30BM		FH	TL	24.0	2,500	27.0 to 33.0	10	2,500	YES		
101	RSDT27NS	*	FH	TL	22.0	5,000	24.0 to 30.0	10	3,600	(TO-263S) (D2PAK)	YES	
102	RSDT30NS	—	FH	TL	24.0	5,000	27.0 to 33.0	10	3,600	YES		

*General Part No. have no grade code.
 Note: Package is JEDEC code. () : ROHM Packages. (<) : GENERAL code. [] : JEITA code.

TVS
 Example: **V S 3 V 3 B C 1 H S T 1 5 R**
 Part No. Taping Code

Bi-Directional TVS															
Quick Reference No.	Product No.			Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)			Peak Pulse Power (W) (tp=8/20µs)	Ct (pF) (Typ)			Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
	Part No.	Grade Code			P _D (mW)	V _{BR} (V)	I _Z (mA)		f (MHz)	V _R (V)					
		General	Automotive								Taping Code				
103	RASMID™ VS3V3BA1FS	—	T27N	100	4.0 or more	1	26.5	6	1	0	DSN0402-2 (SMD0402)		—		
104	RASMID™ VS3V3BB1FS	—	T27N	100	4.0 or more	1	38	10	1	0			—		
105	RASMID™ VS3V3BT1FS	—	T27N	100	4.0 or more	1	21	4.7	1	0			—		
106	RASMID™ VS5V0BA1FS	—	T27N	100	5.3 or more	1	26.5	6	1	0			—		
107	RASMID™ VS5V0BB1FS	—	T27N	100	5.3 or more	1	45	10	1	0			—		
108	RASMID™ VS3V3BC1HS	—	T15R	100	4.0 or more	1	70	18	1	0			DSN0603-2 (SMD0603B)	—	
109	RASMID™ VS3V3BA1ES	—	T15R	100	4.0 or more	1	28	6	1	0			DSN0603-2 (SMD0603)		—
110	RASMID™ VS3V3BB1ES	—	T15R	100	4.0 or more	1	45	10	1	0					—
111	RASMID™ VS5V0BA1ES	—	T15R	100	6.0 to 8.0	1	10	5	1	0					—
112	RASMID™ VS5V0BB1ES	—	T15R	100	6.0 to 9.0	1	25	7	1	0					—
113	RASMID™ VS5V0BC1ES	—	T15R	100	6.0 to 9.0	1	60	15	1	0					—
114	RASMID™ VS12VBA1HS	—	T15R	100	12.5 to 15.0	1	70	7	1	0			DSN0603-2 (SMD0603B)	—	
115	RASMID™ VS4V5BU1QS	—	T18R	200	5.3 to 6.5	1	600	100	1	0	DSN01006-2 (SMD1006)	—			
116	RASMID™ VS4V8BU1AR	—	T7R	—	4.85 to 6.00	1	1,100	480 (Max)	1	0	DSN2012-2 (SMD2012)	—			
117	ESD16VHY	FH	T116	225	15.96 to 17.64	1	100	13	1	0	SOT-23 (SSD3)		YES		
118	ESD18VHY	FH	T116	225	17.86 to 19.74	1	100	12	1	0			YES		
119	ESD27VHY	FH	T116	225	26.41 to 29.19	1	100	8	1	0			YES		
120	RESD1CANY	FH	T116	225	26.20 to 32.00	1	350	30 (Max)	1	0			YES		

Low Capacitance Bi-Directional TVS														
Quick Reference No.	Product No.			Absolute Maximum Ratings (T _a =25°C)	Electrical Characteristics (T _a =25°C)			Remarks	Ct (pF) (Typ)			Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
	Part No.	Grade Code			P _D (mW)	V _{BR} (V)	I _Z (mA)		f (MHz)	V _R (V)				
		General	Automotive								Taping Code			
121	RASMID™ VS3V3BL1HS	—	T15R	100	6.00 to 10.00	1	IEC61000-4-2, 150pF, 330Ω, Contact 20kV, Air 20kV	0.34	1	0	DSN0603-2 (SMD0603B)		—	
122	RASMID™ VS3V3BN1HS	—	T15R	100	6.00 to 10.00	1		0.5	1	0			—	
123	RASMID™ VS5V0BL1HS	—	T15R	100	6.00 to 10.00	1		0.34	1	0			—	
124	RASMID™ VS5V0BN1HS	—	T15R	100	6.00 to 10.00	1		0.5	1	0			—	
125	RASMID™ VS5V0BL1QS	—	T18R	200	7.00 or more	1	IEC61000-4-2, 150pF, 330Ω, Contact 15kV, Air 15kV	0.8	1	0	DSN01006-2 (SMD1006)	—		

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 *General Part No. have no grade code.
 Note: Package is JEDEC code. (): ROHM Packages.

Switching Diodes

● Quick Reference for Switching Diodes

V _R (V)	Surface Mount type							
	1006 size	1212 size	1608 size	1616 size	2120 size	2512 size	2924 size	
20		DA221ZM		DA221WM				
80	1SS400CM	DAN222ZM DAP222ZM	1SS400SM	DAN222WM DAP222WM DAN217WM DA228WM	DAN202UM DAP202UM DAN217UM DA204UM DA228UM BAW156UM BAV199UM	DAN202FM DAP202FM BAV99FM BAV199FM	1SS355VM 1SS380VM	BAS16HY BAV70HY BAW56HY BAV99HY BAW156HY BAV199HY BAS116HY BAV170HY
200							BAS21VM	BAS21HY

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Switching Diodes









High-speed type																	
Product No.			Absolute Maximum Ratings (T _a =25°C)*1						Electrical Characteristics (T _a =25°C)*1						Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _{FM} (mA)	I _o (mA)	I _{surge} (mA)	V _f (V) Max	I _F (mA)	I _r (μA) Max	V _R (V)	trr (ns) Max	V _R (V)			
	General	Automotive															
1SS400CM	—	T2R	90	80	225	100	500 (1s)	1.2	100	0.1	80	4	6	10	SOD-923 (VMN2M)		—
1SS400SM	FH	T2R	90	80	225	100	500 (1s)	1.2	100	0.1	80	4	6	10	SOD-523 (EMD2) [SC-79]		YES
1SS355VM	FH	TE-17	90	80	225	100	500 (1s)	1.2	100	0.1	80	4	6	10	SOD-323FL (UMD2) [SC-90A]		YES
BAS16HY	FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.1	80	4	10*2	10	SOT-23 (SSD3)		YES
DAN222ZM	—	T2L	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-723 (VMD3) [SC-105AA]		—
DAN222WM	—	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F) [SC-89]		—
DAN202UM	—	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-323FL (UMD3F) [SC-85]		—
DAN202FM	FH	T106	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-323 (UMD3) [SC-70]		YES
BAV70HY	FH	T116	90	80	450	215*3	4,000 (1μs)	1.25	150	0.5	80	4	10*2	10	SOT-23 (SSD3)		YES
DAP222ZM	—	T2L	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-723 (VMD3) [SC-105AA]		—
DAP222WM	—	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F) [SC-89]		—
DAP202UM	—	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-323FL (UMD3F) [SC-85]		—
DAP202FM	FH	T106	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-323 (UMD3) [SC-70]		YES
BAW56HY	FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.1	80	4	10*2	10	SOT-23 (SSD3)		YES
DAN217WM	FH	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.1	70	4	6	5	SOT-416FL (EMD3F) [SC-89]		YES
DAN217UM	—	TL	80	80	300	100	4,000 (1μs)	1.2	100	0.2	70	4	6	5	SOT-323FL (UMD3F) [SC-85]		—
BAV99HY	FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.1	80	4	10*2	10	SOT-23 (SSD3)		YES
BAV99FM	FH	T106	100	80	500	215*3	4,000 (1μs)	1.25	150	0.1	80	4	10*2	10	SOT-323 (UMD3) [SC-70]		YES
BAS21HY	FH	T116	250	200	—	200*3	10,000 (1μs)	1	100	0.1	200	50	30*2	30	SOT-23 (SSD3)		YES
BAS21VM	FH	TE-17	250	200	—	200*3	10,000 (1μs)	1	100	0.1	200	50	30*2	30	SOD-323FL (UMD2) [SC-90A]		YES

*General Part No. have no grade code.
 *1 Value/Chip *2 Not V_R (V) but I_r (mA) Value *3 I_r Value
 Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Switching Diodes



Low Leak type																			
Product No.			Absolute Maximum Ratings (T _a =25°C)*1						Electrical Characteristics (T _a =25°C)*1						Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101		
Part No.	Grade Code		Taping Code	V _{RM} (V)	V _R (V)	I _{FM} (mA)	I _o (mA)	I _{surge} (mA)	V _F (V) Max	I _F (mA)	I _R (μA) Max	V _R (V)	t _{rr} (ns) Max	V _R (V)				I _F (mA)	
	General	Automotive																	
1SS380VM		FH	TE-17	80	80	225	100	400 (1s)	1.2	100	0.01	80	—	—	—	SOD-323FL (UMD2) [SC-90A]		YES	
BAW156HY		FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10	SOT-23 (SSD3)		YES	
BAW156UM		FH	TL	100	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10	SOT-323FL (UMD3F) [SC-85]		YES	
BAV199HY		FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10	SOT-23 (SSD3)		YES	
BAV199FM		FH	T106	100	80	500	215*3	4,000 (1μs)	1.25	150	0.01	75	3,000	10*2	10	SOT-323 (UMD3) [SC-70]		YES	
BAV199UM		FH	TL	100	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10	SOT-323FL (UMD3F) [SC-85]		YES	
DA204UM	*	—	TL	20	20	200	100	300 (1μs)	1.0	10	0.1	15	—	—	—			—	—
DA228UM		—	TL	80	80	200	100	300 (1μs)	1.2	100	0.01	80	—	—	—	SOT-723 (VMD3) [SC-105AA]		—	
DA221ZM		—	T2L	20	20	200	100	300 (1μs)	1	10	0.1	15	—	—	—			—	—
DA221WM		—	TL	20	20	200	100	300 (1μs)	1	10	0.1	15	—	—	—	SOT-416FL (EMD3F) [SC-89]		—	
DA228WM		—	TL	80	80	200	100	4,000 (1μs)	1.2	100	0.1	80	—	—	—			—	—
BAV170HY		FH	T116	90	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10	SOT-23 (SSD3)			YES
BAS116HY		FH	T116	100	80	500	215*3	4,000 (1μs)	1.25	150	0.005	75	3,000	10*2	10				YES

*General Part No. have no grade code.
 *1 Value/Chip *2 Not V_R (V) but I_R (mA) Value *3 I_F Value
 Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

High Frequency Diodes

● Quick Reference for High Frequency Diodes

	V _R (V)	Surface Mount type				
		1006 size		1608 size	2120 size	2512 size
Band Switching Diode	35	DFN1006-2W	SOD-923 (VMN2M)	SOD-523 (EMD2) [SC-79]	SOT-323 (UMD3) [SC-70]	SOD-323FL (UMD2) [SC-90A]
PIN Diode	50		RN141CM			
	60			RN142SM		RN142VM
Detection Schottky Diode	5	New RB886ASA	RB886CM			

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

High Frequency Diodes

High Frequency Diodes

Example:

1	S	S	3	9	0	S	M	F	H	T	2	R
Part No.				Grade Code				Taping Code				

Band Switching Diode															
Product No.				Absolute Maximum Ratings (T _a =25°C)				Electrical Characteristics (T _a =25°C)					Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	V _R (V)	T _J (°C)	Tstg (°C)	Ct (pF) Max	f (MHz)		rF (Ω) Max	f (MHz)				
	General	Automotive						V _R (V)	f (MHz)		I _F (mA)	f (MHz)			
1SS390SM	*	FH	T2R	35	150	-55 to +150	1.2	6	1	0.9	2	100	SOD-523 (EMD2) [SC-79]		YES
DAN235FM	*	FH	T106	35	150	-55 to +150	1.2	6	1	0.9	2	100	SOT-323 (UMD3) [SC-70]		YES

PIN Diodes																
Product No.				Absolute Maximum Ratings (T _a =25°C)				Electrical Characteristics (T _a =25°C)					Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101	
Part No.	Grade Code		Taping Code	V _R (V)	I _F (mA)	T _J (°C)	Tstg (°C)	Ct (pF) Max	f (MHz)		rF (Ω) Max	f (MHz)				
	General	Automotive							V _R (V)	f (MHz)		I _F (mA)				f (MHz)
RN141CM	*	-	T2R	50	100	150	-55 to +150	0.8	1	1	2	3	100	SOD-923 (VMN2M)		-
RN142SM	*	-	T2R	60	100	150	-55 to +150	0.45	1	1	3	3	100	SOD-523 (EMD2) [SC-79]		-
RN142VM	*	-	TE-17	60	100	150	-55 to +150	0.45	1	1	3	3	100	SOD-323FL (UMD2) [SC-90A]		-

Detection Schottky Diode															
Product No.				Absolute Maximum Ratings (T _a =25°C)				Electrical Characteristics (T _a =25°C)					Package	Equivalent Circuit Diagram	Automotive Grade AEC-Q101
Part No.	Grade Code		Taping Code	V _R (V)	I _F (mA)	T _J (°C)	Tstg (°C)	V _F (V) Max	I _F (mA)	Ct (pF) Max	f (MHz)				
	General	Automotive									V _F (V) Max	I _F (mA)			
RB886CM	*	-	T2R	5	10	125	-40 to +125	0.35	1	0.80	1	1	SOD-923 (VMN2M)		-
New RB886ASA	-	FH	T2RB	5	10	150	-55 to +150	0.35	1	0.8	1	1	DFN1006-2W		YES

*General Part No. have no grade code.

Note: Package is JEDEC code. (): ROHM Packages. []: JEITA code.

Packages

■ Dimensions (Unit: mm)

Surface Mount Type

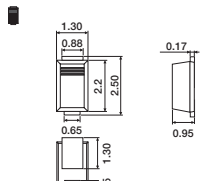
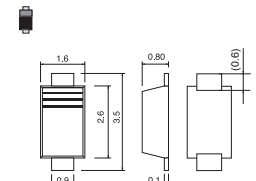
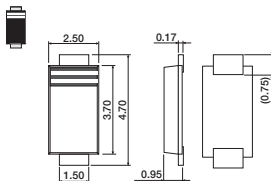
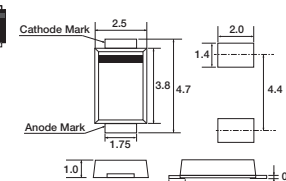
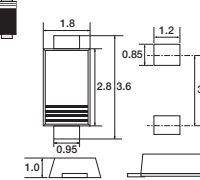
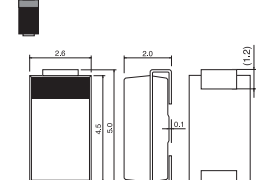
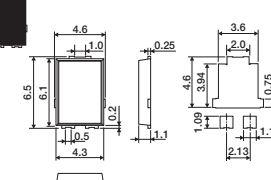
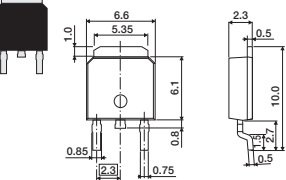
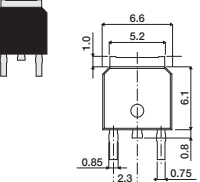
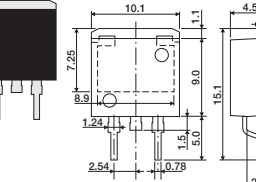
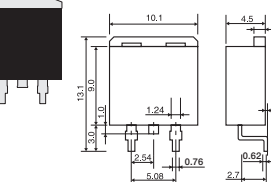
<p>DSN0402-2 (SMD0402)</p>	<p>DSN0603-2 (SMD0603) (SMD0603B)</p>	<p>DSN1006-2 (SMD1006)</p>	<p>DSN2012-2 (SMD2012)</p>
<p>DFN1006-2W</p>	<p>SOD-923 (VMN2M)</p>	<p>SOT-723 (VMD3) [SC-105AA]</p>	<p>SOD-523 (EMD2) [SC-79]</p>
<p>SOT-416FL (EMD3F) [SC-89]</p>	<p>SOD-323FL (UMD2) [SC-90A]</p>	<p>SOT-323FL (UMD3F) [SC-85]</p>	<p>SOT-323 (UMD3) [SC-70]</p>
<p>SOT-23 (SSD3)</p>	<p>SOD-323HE (TUMD2M) [SC-108B]</p>	<p>SOD-323HE (TUMD2SM)</p>	<p>SOT-457T (TSMD6)</p>

Note: Package is JEDEC code. (): ROHM Packages, []: JEITA Code.

Power Packages

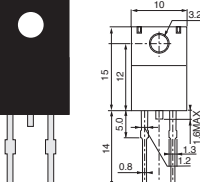
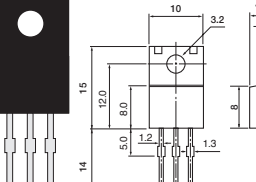
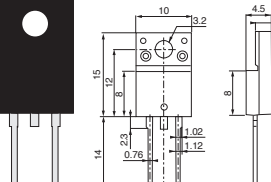
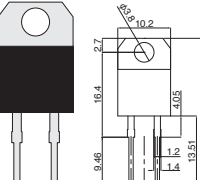
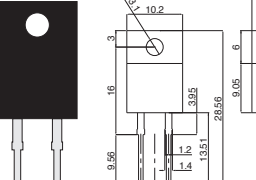
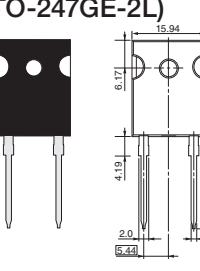
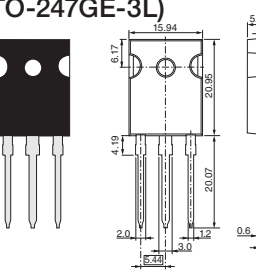
● Dimensions (Unit: mm)

Surface Mount type

<p>(PMDE)</p> 	<p>(PMDU) (SOD-123FL) [SC-109B]</p> 	<p>(PMDTM) (SOD-128)</p> 	<p>(PMDTP) (SOD-128)</p> 
<p>(PMDUP) (SOD-123FL)</p> 	<p>DO-214AC (PMDS) (SMA)</p> 	<p>TO-277A (TO-277GE)</p> 	<p>(TO-252GE) (DPAK)</p>  <p>Each lead has same dimensions</p>
<p>TO-252 (DPAK)</p>  <p>Each lead has same dimensions</p>	<p>TO-263L (LPDL) (D2PAK) [SC-83]</p>  <p>Each lead has same dimensions</p>	<p>(TO-263S) (LPDS) (D2PAK) [SC-83]</p>  <p>Each lead has same dimensions</p>	

Note: Package is JEDEC code. (): ROHM Packages. (): GENERAL code. []: JEITA Code.

Through Hole type

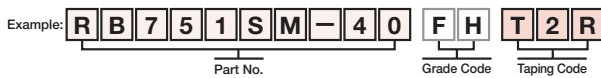
<p>(TO-220FN) <2pin></p>  <p>Each lead has same dimensions</p>	<p>(TO-220FN) <3pin></p>  <p>Each lead has same dimensions</p>	<p>(TO-220NFM) <2pin></p>  <p>Each lead has same dimensions</p>
<p>(TO-220AC)</p>  <p>Each lead has same dimensions</p>	<p>(TO-220ACFP)</p>  <p>Each lead has same dimensions</p>	
<p>TO-247-2L (TO-247GE-2L)</p>  <p>Each lead has same dimensions</p>	<p>TO-247-3L (TO-247GE-3L)</p>  <p>Each lead has same dimensions</p>	

Note: Package is JEDEC code. (): ROHM Packages.

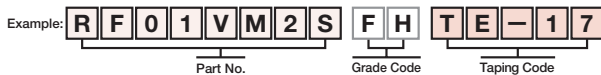
Product No. Explanation

- When ordering, specify the part number.
- Check each code against the tables shown below.
- Fill in from the left, leaving any extra boxes empty on the right.

• Schottky Barrier Diodes



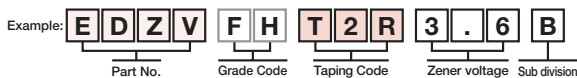
• Fast Recovery Diodes



• Rectifier Diodes



• Zener Diodes



• Protection Device



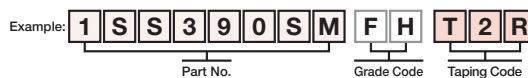
• TVS



• Switching Diodes



• High Frequency Diodes



• Packaging type

Package	Code	ROHM Package	JEITA code	Size	Height	Package Style	Direction	Basic Ordering Unit (pcs)										
Surface Mount type	DSN0402-2	T27R	SMD0402	—	0402	0.18	Embossed tape	Cathode on sprocket hole side	27,000									
		T27N					Embossed tape	Non-direction	27,000									
	DSN0603-2	T15R	SMD0603	—	0603	0.28	Embossed tape	Cathode on sprocket hole side	15,000									
			SMD0603B															
	DSN1006-2	T18R	SMD1006	—	1006	0.22	Embossed tape	Cathode on sprocket hole side	18,000									
	DFN1006-2W	T2RB	—	—	1006	0.4	Embossed tape	Cathode on sprocket hole side	8,000									
	SOT-723	T2L	VMD3	SC-105AA	1212	0.5	Embossed tape	One terminal on sprocket hole side	8,000									
	SOD-923	T2R	VMN2M	—	1006	0.37	Embossed tape	Cathode on sprocket hole side	8,000									
										SOD-523	T2R	EMD2	SC-79	1608	0.6	Embossed tape	Cathode on sprocket hole side	8,000
											T2N							
	SOT-416FL	TL	EMD3F	SC-89	1616	0.7	Embossed tape	One terminal on sprocket hole side	3,000									
	DSN2012-2	T7R	SMD2012	—	2012	0.3	Embossed tape	Cathode on sprocket hole side	7,000									
	SOD-323FL	TE-17	UMD2	SC-90A	25125	0.7	Embossed tape	Cathode on sprocket hole side	3,000									
	SOT-323	T106	UMD3	SC-70	2120	0.9	Embossed tape	One terminal on sprocket hole side	3,000									
	SOT-323FL	TL	UMD3F	SC-85	2120	0.9	Embossed tape	One terminal on sprocket hole side	3,000									
	SOT-23	T116	SSD3	—	2429	0.95	Embossed tape	One terminal on sprocket hole side	3,000									
	SOD-323HE	TR	TUMD2M	SC-108B	2514	0.6	Embossed tape	Cathode on sprocket hole side	3,000									
			TUMD2SM	—	2514	0.6	Embossed tape	Cathode on sprocket hole side	3,000									
	(PMDE)	TR	PMDE	—	2513	0.95	Embossed tape	Cathode on sprocket hole side	3,000									
	(SOD-123FL)	TR	PMDU	SC-109B	3516	0.8	Embossed tape	Cathode on sprocket hole side	3,000									
(SOD-128)	TR	PMDTM	—	4725	0.95	Embossed tape	Cathode on sprocket hole side	3,000										
DO-214AC (SMA)	TE25	PMDS	—	5026	2	Embossed tape	Cathode on sprocket hole side	1,500										
(TO-252GE) (DPAK)	TL	TO-252GE	SC-63	9866	2.3	Embossed tape	Fin on sprocket hole side	2,500										
(TO-252) (DPAK)	TL	—	SC-63	10066	2.2	Embossed tape	Fin on sprocket hole side	2,500										
(TO-263S) (D2PAK)	TL	LPDS	SC-83	131101	4.5	Embossed tape	Fin on sprocket hole side	1,000										
(TO-263L) (D2PAK)	TL	LPDL	SC-83	151101	4.5	Embossed tape	Fin on sprocket hole side	1,000										
Through Hole type	(TO-220FN)	C9	TO-220FN	—	29×10	4.5	Stick	box	1,000									
	(TO-220NFM)	C9	TO-220NFM	—	29×10	4.5	Stick	box	1,000									
	(TO-220AC)	C9	TO-220AC	—	28.56×10.2	4.5	Stick	box	1,000									
	(TO-220ACFP)	C9	TO-220ACFP	—	28.56×10.2	4.5	Stick	box	1,000									
	TO-247-2L	C13	TO-247GE-2L	—	41.0×15.9	5.0	Stick	box	600									
	TO-247-3L	C13	TO-247GE-3L	—	41.0×15.9	5.0	Stick	box	600									

Note: Package is JEDEC code. () : ROHM Packages, () : GENERAL code.

Resistors

Resistors Quick Reference of Package Size (Shunt Resistors) P.226	Resistors Quick Reference of Package Size (Thick Film Chip Resistors) P.227
Shunt Resistors P.228	High Reliability P.236
General Purpose Chip Resistors P.241	Standard Nominal Resistance Values etc. P.246

Resistors Quick Reference of Package Size

Shunt Resistors

High Power Metal Plate Shunt Resistors lineup

Size mm (inch)	Part No.	Terminal type Wide Terminal	Attached type Reverse Attached	Specification General-purpose Ultra-low resistance High Power	Resistance Range (mΩ)	Rated Power (W) Rated Terminal Temperature	Printing Page
5025 (2010)	GMR50			✓	5 to 220	4 (90°C), 3 (110°C) ☆0.2 12 (120°C)	P.230
6432 (2512)	PSR100			✓	0.3, 0.5, 1	8 (75°C), 4 (140°C)	P.228
				✓	2	6 (75°C), 4 (140°C)	
				✓	3	4 (75°C), 3 (140°C)	
	New GMR100			✓	5 to 220	7 (70°C), 5 (110°C) 0.1 15 (120°C)	P.230
6464 (2525)	☆PSR330			✓	0.5	8 (100°C)	P.228
7142 (2817)	GMR320			✓	1	6 (100°C)	P.230
7.9x5.6 (3222)	New PSR350			✓	0.27	12 (120°C)	P.229
10x5.2 (3921)	PSR400			✓	0.2	12 (75°C), 5 (130°C)	P.228
				✓	0.3, 0.5	10 (75°C), 5 (130°C)	
				✓	1	8 (75°C), 5 (130°C)	
				✓	2	6 (75°C), 4 (115°C)	
15x7.75 (5931)	PSR500			✓	3	5 (70°C), 3 (115°C)	P.228
				✓	0.1, 0.2	15 (75°C), 10 (120°C)	
				✓	0.3, 0.4, 0.5	10 (75°C), 7 (120°C)	
				✓	1	10 (75°C), 6 (120°C)	
				✓	2	7 (70°C), 4 (115°C)	

☆: Under Development

Metal Plate Shunt Resistors lineup

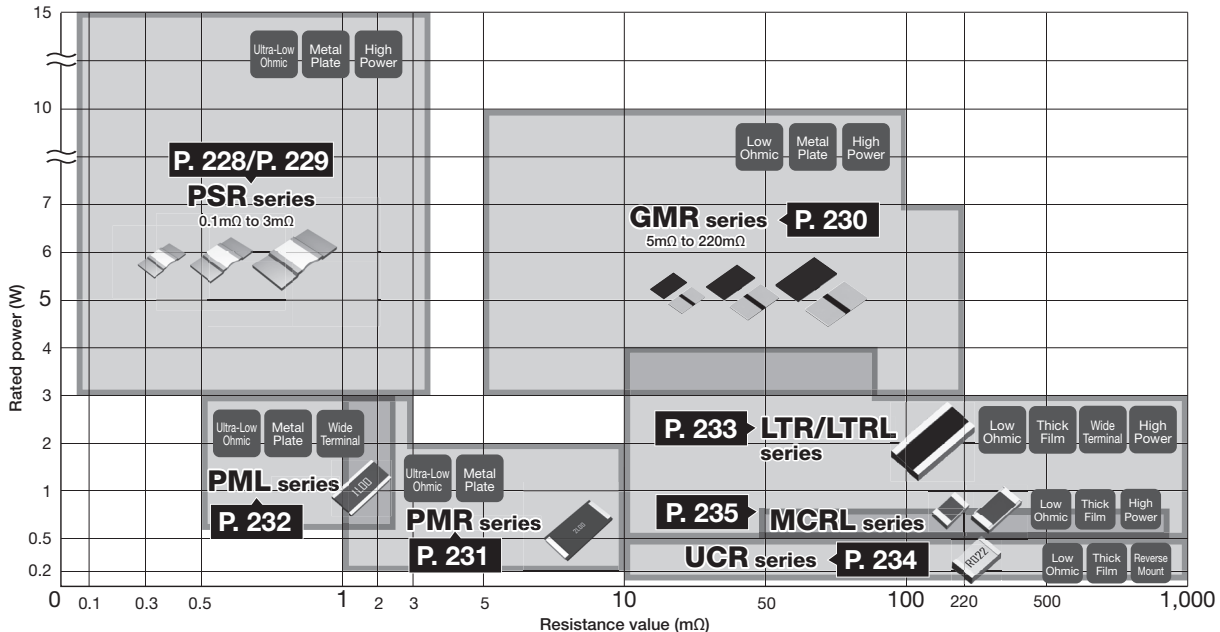
Size mm (inch)	Part No.	Terminal type Wide Terminal	Attached type Reverse Attached	Specification General-purpose Ultra-low resistance High Power	Resistance Range (mΩ)	Rated Power (W)	Printing Page
1005 (0402)	PMR01			✓	10	0.2	P.231
1608 (0603)	PMR03			✓	10	0.25	P.231
2012 (0805)	PMR10			✓	2	1	P.231
					3 to 10	0.5	
1220 (0508)	PML10	✓		✓	1 to 2.5	0.66	P.232
3216 (1206)	PMR18			✓	1, 2	1.5	P.231
					3 to 10	1	
1632 (0612)	PML18	✓		✓	0.5 to 2.5	1	P.232
3225 (1210)	PMR25			✓	1	2	P.231
					2 to 5	1	
5025 (2010)	PMR50			✓	1, 2	2	P.231
					3 to 10	1	
2550 (1020)	PML50	✓		✓	0.5, 2.2	2	P.232
6432 (2512)	PMR100			✓	1, 2	3	P.231
				✓	3 to 10	2	
				✓	0.5	2	
3264 (1225)	PML100	✓		✓	1 to 2.2	3 (25°C), 2 (70°C)	P.232

Thick Film Shunt Resistors lineup

Size mm (inch)	Part No.	Terminal type Wide Terminal	Attached type Reverse Attached	Specification General-purpose Ultra-low resistance High Power	Resistance Range (mΩ)	Rated Power (W)	Printing Page
0603 (0201)	UCR006		✓		100 to 910	0.1	P.234
1005 (0402)	UCR01		✓		68 to 910	0.125	P.234
1608 (0603)	UCR03		✓		20 to 200	0.25	P.234
			✓		220 to 910	0.2	
2012 (0805)	New MCR10L		✓		11 to 100	0.33	P.234
			✓	✓	47 to 910	0.5	P.235
1220 (0508)	New LTR10L	✓		✓	33 to 910	1	P.233
3216 (1206)	UCR18		✓		11 to 39	1	P.234
			✓		43 to 100	0.5	
	New MCR18L		✓	✓	47 to 910	0.75	P.235
1632 (0612)	LTR18	✓		✓	10 to 1000	New 1.5	P.233
2550 (1020)	LTR50	✓		✓	10 to 910	2	P.233
3264 (1225)	LTR100L		✓	✓	10 to 91	4	P.233
			✓	✓	100 to 910	2/☆3	

☆: Under Development

Shunt Resistors Table



Resistors Quick Reference of Package Size

Thick Film Chip Resistors (Standard series/High Reliability series)

Thick Film Chip Resistors (Standard series/High Reliability series) lineup

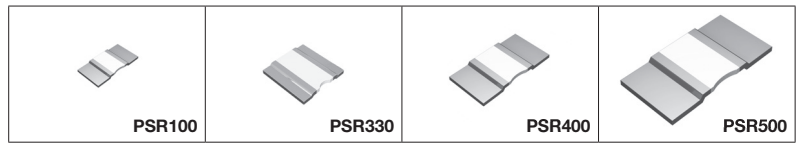
Size mm (inch)	Part No.	RAS MID™ package	Terminal type Wide Terminal	Specification						Resistance Range (Ω)	Rated Power (W)	Printing Page
				General-purpose	Tolerance for Sulfurization	Anti-surge	High Anti-surge	High Power	High Voltage Resistance			
03015 (009005)	SMR003	✓								10 to 1M	0.02	P.245
0402 (01005)	MCR004			✓						1 to 3M	0.031 (1/32)	P.242
0603 (0201)	MCR006			✓						1 to 10M	0.05	P.242
1005 (0402)	ESR01					✓				1 to 10M	0.2	P.236
	SFR01				✓					1 to 10M	0.063 (1/16)	P.240
	MCR01S			✓				✓		1 to 10M	0.1	P.241
	MCR01			✓						1 to 10M	0.063 (1/16)	P.242
1608 (0603)	SDR03						✓			1 to 10M	0.3/ New 0.33 (1/3)/☆0.4	P.236
	ESR03					✓				1 to 10M	0.25/☆0.33 (1/3)	P.236
	KTR03							✓		1 to 10M	0.1	P.239
	SFR03				✓					1 to 10M	0.1	P.240
	MCR03S			✓				✓		1 to 10M	0.125	P.241
	MCR03			✓						1 to 10M	0.1	P.242
2012 (0805)	SDR10						✓			1 to 10M	0.5/☆0.66 (2/3)	P.236
	ESR10					✓				1 to 10M	0.4/☆0.5	P.236
	KTR10							✓		1 to 30M	0.125	P.239
	SFR10				✓					1 to 10M	0.125	P.240
	MCR10S			✓				✓		1 to 10M	0.25	P.241
	MCR10			✓						10 to 2.2M 1 to 10M	0.125 0.1	P.242
1220 (0508)	LTR10		✓			✓		✓		1 to 976	New 1	P.238
										1k to 1M	0.25	
3216 (1206)	ESR18					✓				1 to 10M	0.5/☆0.66 (2/3)	P.236
	KTR18							✓		1 to 10M	0.25	P.239
	SFR18				✓					1 to 10M	0.25	P.240
	MCR18S			✓				✓		1 to 10M	0.4	P.241
	MCR18			✓						10 to 2.2M 1 to 10M	0.25 0.125	P.242
1632 (0612)	LTR18		✓			✓		✓		1 to 976	New 1.5	P.238
										1k to 1M	0.75	
3225 (1210)	ESR25					✓				1 to 10M	0.66 (2/3)/☆0.75	P.236
	KTR25							✓		1 to 10M	0.33 (1/3)	P.239
	SFR25				✓					1 to 1M	0.5	P.240
5025 (2010)	☆MCR50S			✓				✓		1 to 10M	1.5	P.241
2550 (1020)	LTR50		✓			✓		✓		1 to 1M	1/☆2	P.238
3264 (1225)	LTR100		✓			✓		✓		1 to 1M	2/☆3	P.238

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RAS MID™ is a trademark or a registered trademark of ROHM Co., Ltd.

☆: Under Development

For Current Detection High Power Metal Plate Shunt Resistors <Ultra Low ohmic> (PSR series)

- High power 3W to 15W
- Ultra low resistance range (0.1mΩ or more).
- Excellent TCR characteristics
- Convex structure



Rated power up PSR series								
Part No.	Size Code mm (inch)	Rated Power (W) (Rated Terminal Temperature)		Tolerance	Temperature* Coefficient (ppm/°C)	Resistance Value (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
		Low temperature side	High temperature side					
PSR100	6432 (2512)	12 (120°C)		F (±1%)	150±50	☆0.2	-65 to +175	YES
		8 (75°C)	4 (140°C)			0 to +150		
		6 (75°C)	4 (140°C)			0 to +100		
		4 (75°C)	3 (140°C)			0 to +100		
						0 to +50		
☆PSR330	6464 (2525)	15 (120°C)		F (±1%)	100±50	0.1	-65 to +175	YES
		8 (100°C)				0 to +100		
		6 (100°C)				0 to +50		
PSR400	10×5.2 (3921)	12 (75°C)	5 (130°C)	F (±1%)	125±50	0.2	-65 to +175	YES
		10 (75°C)	5 (130°C)			0 to +100		
		10 (75°C)	5 (130°C)			0 to +100		
		8 (75°C)	5 (130°C)			0 to +75		
		6 (75°C)	4 (115°C)			0 to +75		
		5 (70°C)	3 (115°C)			0 to +75		
						0 to +75		
PSR500	15×7.75 (5931)	15 (75°C)	10 (120°C)	F (±1%)	200±50	0.1	-65 to +175	YES
		15 (75°C)	10 (120°C)			0 to +150		
		10 (75°C)	7 (120°C)			0 to +150		
		10 (75°C)	7 (120°C)			0 to +150		
		10 (75°C)	7 (120°C)			0 to +150		
		10 (75°C)	6 (120°C)			0 to +75		
						0 to +75		
						0 to +75		

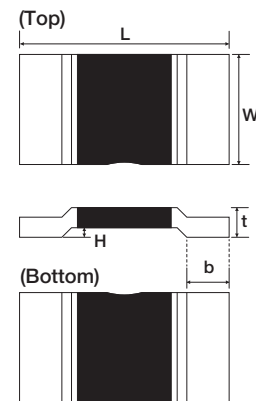
*(+20°C to +175°C)

☆: Under Development

■ Dimensions (Unit: mm)

Part No.	Resistance (mΩ)	L	W	t	H	b
PSR100	0.2	6.35±0.15	3.05±0.25	1.80±0.15	0.35±0.15	1.12±0.3
	0.3			1.45±0.15		
	0.5			1.15±0.15		
	1.0			0.75±0.15		
	2.0			1.00±0.15		
	3.0			0.75±0.15		
PSR330	0.1	6.35±0.15	6.35±0.25	1.81±0.15	0.35±0.15	1.12±0.3
	0.5			0.75±0.15		
	1.0			1.00±0.15		
PSR400	0.2	10±0.3	5.2±0.3	1.9±0.15	0.5±0.15	2.0±0.6
	0.3			1.85±0.15		
	0.5			1.3±0.15		
	1.0			0.9±0.15		
	2.0			1.1±0.15		
	3.0			0.9±0.15		
PSR500	0.1	15±0.3	7.75±0.3	1.96±0.15	0.5±0.15	4.6±0.6
	0.2			1.85±0.15		4.0±0.6
	0.3			1.4±0.15		
	0.4			1.15±0.15		
	0.5			1.05±0.15		
	1.0			1.35±0.15		
	2.0			0.9±0.15		

● PSR100/330/400/500



■ Part No. Explanation



Part No.

Tolerance

Special Part Code

Nominal Resistance

F ±1%

B	0.1mΩ	F	0.5mΩ
C	0.2mΩ	H	1.0mΩ
D	0.3mΩ	J	2.0mΩ
E	0.4mΩ	L	3.0mΩ

Resistance code, 4 digits.	
Tolerance	Resistance code
F	: 4 digits

Packaging Specifications Code

Part No.	Code	Tolerance F (±1%)	Packaging Specifications	Reel	Basic Ordering Unit (pcs)
PSR100	KTQ	○	Embossed tape (8mm Pitch)	φ330mm (13inch)	5,000
PSR330	ITQ	○	Embossed tape (8mm Pitch)	φ330mm (13inch)	3,000
PSR400	ITQ	○	Embossed tape (8mm Pitch)	φ330mm (13inch)	3,000
PSR500	HTQ	○	Embossed tape (12mm Pitch)	φ330mm (13inch)	2,000

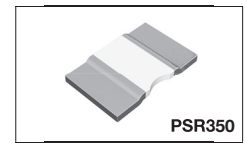
○: Standard product Reel (φ330mm): Compatible with JEITA standard "EIAJ ET-7200B"

Resistance	F
0.1mΩ	0L10
0.2mΩ	0L20
0.3mΩ	0L30
0.4mΩ	0L40
0.5mΩ	0L50
1.0mΩ	1L00
2.0mΩ	2L00
3.0mΩ	3L00

For Current Detection

High Power Metal Plate Shunt Resistors <Ultra Low ohmic> <Low profile> (PSR350)

- Perfect for use embedded power module by low height structure.
- Circuit space can be saved by guaranteed the same rated power as one size larger product.
- Limiting current 210A.

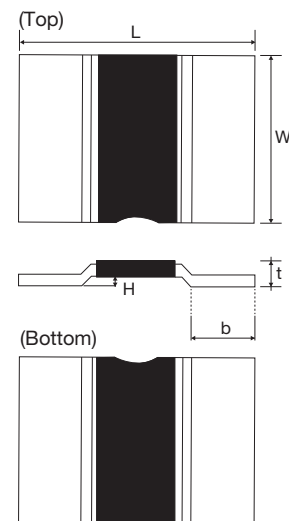


PSR350								
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Terminal Temperature (°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Value (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
New PSR350	7.9x5.6 (3222)	12	120	F (±1%)	0 to +250	0.27	-65 to +175	YES

■ Dimensions (Unit: mm)

Part No.	Resistance (mΩ)	L	W	t	H	b
PSR350	0.27	7.9±0.1	5.6±0.3	0.85±0.15	0.35±0.15	2.1±0.20

● PSR350



■ Part No. Explanation



Part No.

Tolerance

F ±1%

Special Part Code

CW 0.27mΩ

Nominal Resistance

Resistance code, 4 digits.	
Tolerance	Resistance code
F	: 4 digits
Resistance	F
0.27mΩ	0L27

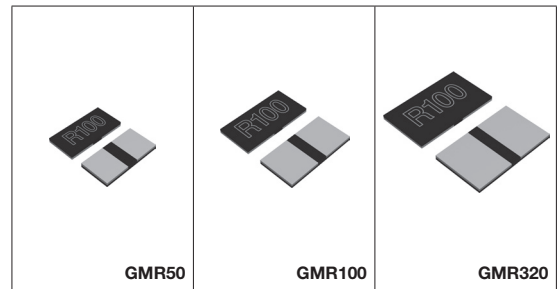
Packaging Specifications Code

Part No.	Code	Tolerance F (±1%)	Packaging Specifications	Reel	Basic Ordering Unit (pcs)
PSR350	KTQ	⊙	Embossed tape (8mm Pitch)	φ330mm (13inch)	5,000

©: Standard product Reel (φ330mm): Compatible with JEITA standard "EIAJ ET-7200B"

For Current Detection High Power Metal Plate Shunt Resistors (GMR series)

- High power (3W to 10W)
- High heat dissipation
- Excellent TCR characteristics
- Low ohmic (5mΩ to 220mΩ)



GMR series								
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Terminal Temperature (°C)	Tolerance	Temperature ^{*1} Coefficient (ppm/°C)	Resistance Range (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
GMR50	5025 (2010)	4	90	F (±1%)	0 to +25	5	-65 to +170	YES
		3	110	F (±1%)	±25	10 to 220 (E24 series) ^{*2}		
New GMR100	6432 (2512)	7	70	F (±1%)	0 to +50	5		
		5	110	F (±1%)	±20	10 to 220 (E24 series) ^{*2}		
GMR320	7142 (2817)	10	70	F (±1%)	0 to +50	5		
		7	110	F (±1%)	±25	10 to 100 (E24 series) ^{*2}		

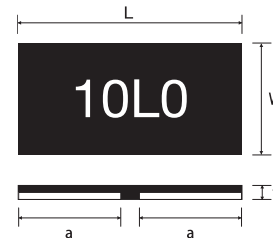
*1 (+20°C to +60°C)

*2 Development schedule will vary depending on resistance value. Please contact us for resistance values.

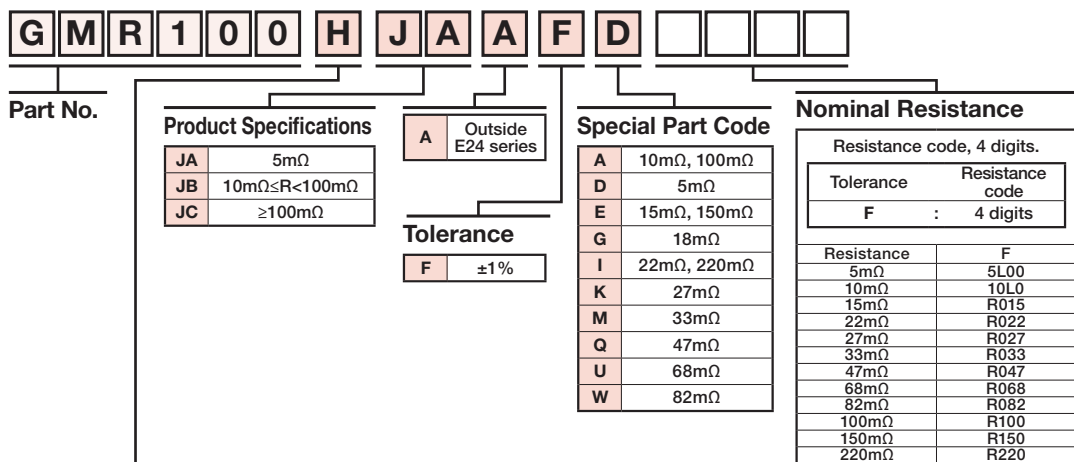
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a
GMR50	5025 (2010)	5.00±0.25	2.50±0.25	0.40±0.15	2.05±0.25
GMR100	6432 (2512)	6.40±0.25	3.20±0.25	0.40±0.15	2.75±0.25
GMR320	7142 (2817)	7.10±0.25	4.20±0.25	0.40±0.15	3.10±0.25

● GMR50/100/320



Part No. Explanation



Packaging Specifications Code

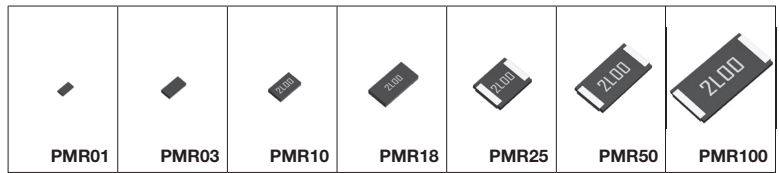
Part No.	Code	Tolerance F (±1%)	Packaging Specifications	Reel	Basic Ordering Unit (pcs)
GMR50	H	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000
GMR100	H	○	Embossed tape (8mm Pitch)	φ180mm (7inch)	2,000
GMR320	H	○	Embossed tape (8mm Pitch)	φ180mm (7inch)	2,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

For Current Detection

Metal Plate Shunt Resistors <Ultra Low ohmic> (PMR series)

- Ultra low-ohmic resistance range (1mΩ or more)
- Improved current detection accuracy by trimming-less structure.
Highly recommended for large current/
High speed switching circuit.
- Special low resistance temperature coefficient (TCR) alloy utilized for the resistive element.



Rated power up PMR series									
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Value (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
PMR10	2012 (0805)	1	—	130	F (±1%) J (±5%)	±100	2	-65 to +155	YES
PMR18	3216 (1206)	1.5	—	130	F (±1%) J (±5%)	±100	1, 2		YES
PMR25	3225 (1210)	2	—	130	F (±1%) J (±5%)	±75	1	-65 to +175	YES
PMR50	5025 (2010)	2	—	130	F (±1%) J (±5%)	±75	1, 2		YES
PMR100	6432 (2512)	3	—	130	F (±1%) J (±5%)	±75 ±150	1, 2		YES

PMR series									
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Value (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
PMR01	1005 (0402)	0.2	70	—	J (±5%)	0 to 200	10	-55 to +155	YES
PMR03	1608 (0603)	0.25	70	—	F (±1%) J (±5%)	0 to 150	10		YES
PMR10	2012 (0805)	0.5	70	—	F (±1%) J (±5%)	±150	3, 4, 5, 6, 7, 8, 9, 10		YES
PMR18	3216 (1206)	1	70	—	F (±1%) J (±5%)	±100	3, 4, 5, 6, 7, 8, 9, 10		YES
PMR25	3225 (1210)	1	70	—	F (±1%) J (±5%)	±100	2, 3, 4, 5		YES
PMR50	5025 (2010)	1	70	—	F (±1%) J (±5%)	±100	3, 4, 5, 6, 7, 8, 9, 10		YES
PMR100	6432 (2512)	2	70	—	F (±1%) J (±5%)	±100	3, 4, 5, 6, 7, 8, 9, 10		YES

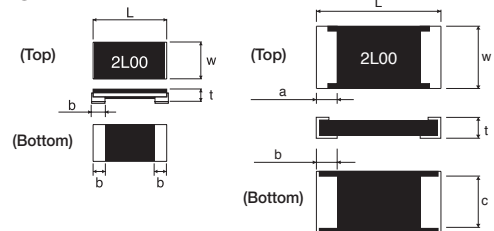
Large Current Jumper type					
Part No.	Size Code mm (inch)	Rated Current (A)	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
PMR01	1005 (0402)	20.0	0.5mΩ Max	-55 to +155	YES
PMR03	1608 (0603)	22.4			YES
PMR10	2012 (0805)	31.6			YES
PMR18	3216 (1206)	38.7			YES
PMR25	3225 (1210)	44.7			YES
PMR50	5025 (2010)	50.0			YES
PMR100	6432 (2512)	63.2			YES

Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b	c
PMR01	1005 (0402)	1.0±0.05	0.5±0.05	0.25±0.1	—	0.25±0.10	—
PMR03	1608 (0603)	1.6±0.15	0.8±0.15	0.25±0.1	—	0.35±0.15	—
PMR10	2012 (0805)	2.0±0.15	1.2±0.15	0.42 to 0.28*±0.15	—	0.75 to 0.35*±0.25	—
PMR18	3216 (1206)	3.2±0.15	1.6±0.15	0.44 to 0.28*±0.15	—	1.20 to 0.5 *±0.25	—
PMR25	3225 (1210)	3.2±0.2	2.5±0.2	0.52 to 0.32*±0.15	0.5±0.2	1.00 to 0.8 *±0.2	1.95±0.2
PMR50	5025 (2010)	5.0±0.2	2.5±0.2	0.52 to 0.32*±0.15	0.5±0.2	1.85 to 0.9 *±0.2	1.95±0.2
PMR100	6432 (2512)	6.4±0.25	3.2±0.25	0.52 to 0.32*±0.15	0.5±0.25	2.3 to 1.1 *±0.25	2.65±0.25

*Each value range varies with the resistance. Please contact a ROHM sales representative for further details.

- PMR01/03 (No marking)
- PMR25/50/100
- PMR10/18



Part No. Explanation



Part No.

Tolerance

Special Part Code

Nominal Resistance

F	±1%
J	±5%
J is also used for jumper	

V	1mΩ to 4mΩ
U	5mΩ to 10mΩ

Jumper type doesn't have a special part code

Resistance code, 3 or 4 digits. 000 denotes jumper type.		
Tolerance	Resistance code	
F	:	4 digits
J	:	3 digits

Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
PMR01	ZZP	○	—	Embossed tape (2mm Pitch)	φ180mm (7inch)	10,000
PMR03	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
PMR10	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
PMR18	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
PMR25	HZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000
PMR50	HZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000
PMR100	HZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000

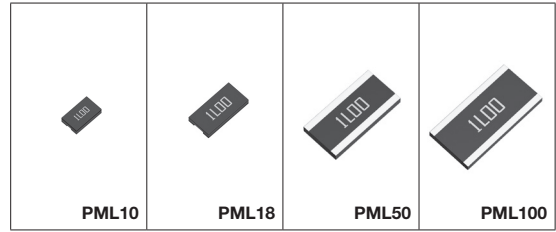
Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
○: Standard product

Resistance Value (Ω)	Tolerance	
	J	F
Jumper	000	—
1mΩ	1L	1L00
2mΩ	2L	2L00
3mΩ	3L	3L00
4mΩ	4L	4L00
5mΩ	5L	5L00
6mΩ	6L	6L00
7mΩ	7L	7L00
8mΩ	8L	8L00
9mΩ	9L	9L00
10mΩ	10L	10L00

For Current Detection

Metal Plate Shunt Resistors <Ultra Low ohmic> <Wide Terminal type> (PML series)

- Ultra-low resistance range (0.5mΩ or more).
- Wide terminal configuration for high joint reliability.
- Avoiding heat concentration by trimming-less structure and it reduce temperature rise.



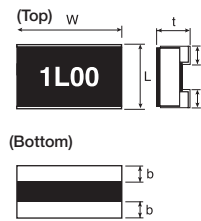
PML series								
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Value (mΩ)	Operating Temperature (°C)	Automotive Grade AEC-Q200
PML10	1220 (0508)	0.66 (2/3)	70	G (±2%) J (±5%)	±200	1.0, 1.5, 2.0, 2.5	-55 to +155	YES
PML18	1632 (0612)	1	70	G (±2%) J (±5%)	±150	0.5, 1.0, 1.5, 2.0, 2.5		YES
PML50	2550 (1020)	2	70	J (±5%)	±150 ±100	0.5 2.2		YES
PML100	3264 (1225)	2 2 3	70 70 25	J (±5%)	±150 ±100	0.5 1.0, 1.5, 2.0, 2.2		YES

Dimensions (Unit: mm)

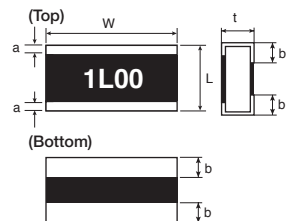
Part No.	Size Code mm (inch)	L	W	t	a	b
PML10	1220 (0508)	1.2±0.15	2.0±0.15	0.42 to 0.28* ±0.15	—	0.45 to 0.35* ±0.25
PML18	1632 (0612)	1.6±0.15	3.2±0.15	0.42 to 0.28* ±0.15	—	0.55 to 0.35* ±0.25
PML50	2550 (1020)	2.6±0.20	5.0±0.2	0.5 to 0.36* ±0.15	0.4±0.2	0.75 to 0.7* ±0.2
PML100	3264 (1225)	3.2±0.25	6.4±0.25	0.5 to 0.36* ±0.15	0.45±0.25	0.9 to 0.7* ±0.25

*Each value range varies with the resistance. Please contact a ROHM sales representative for further details.

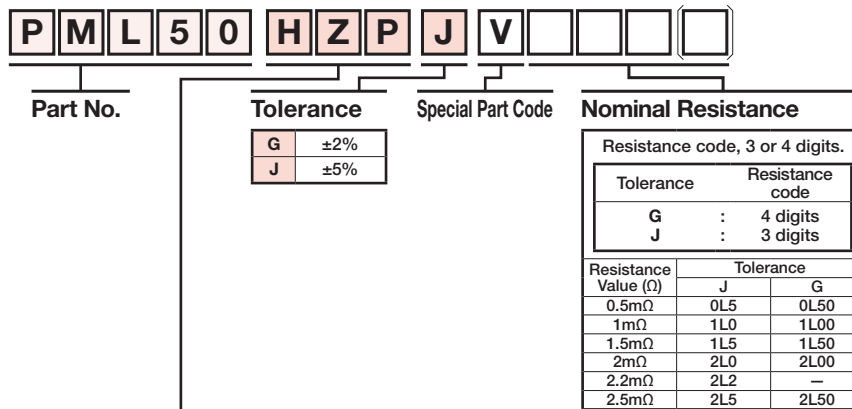
● PML10/18



● PML50/100



Part No. Explanation



Packaging Specifications Code

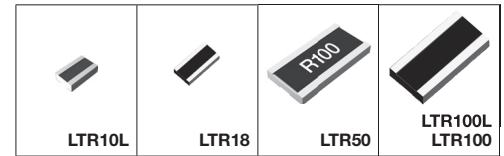
Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	G (±2%)			
PML10	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
PML18	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
PML50	HZP	○	—	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000
PML100	HZP	○	—	Embossed tape (4mm Pitch)	φ180mm (7inch)	2,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

For Current Detection

High Power Thick Film Shunt Resistors <Wide Terminal type> (LTR/LTRL series)

- Chip resistors for current detection. (10mΩ or more)
- High joint reliability with long side terminations.
- Improvement of rated power enables to displace smaller size of resistors, and it contributes space savings in your set.



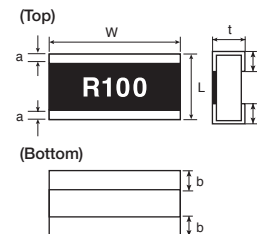
LTR/LTRL series									
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
New LTR10L	1220 (0508)	1	70	125	D (±0.5%)	0 to 150 0 to 100	100mΩ to 180mΩ (E24 series) 200mΩ to 910mΩ (E24 series)	-55 to +155	YES
					F (±1%) J (±5%)	0 to 150 0 to 100	33mΩ to 180mΩ (E24 series) 200mΩ to 910mΩ (E24 series)		
LTR18	1632 (0612)	New 1.5	70	95	F (±1%) J (±5%)	0 to 300 0 to 200 0 to 150 ±100	10mΩ to 18mΩ (E24 series) 20mΩ to 47mΩ (E24 series) 51mΩ to 470mΩ (E24 series) 510mΩ to 1Ω (E24 series)	-55 to +155	YES
LTR50	2550 (1020)	2	70	—	F (±1%) J (±5%)	0 to 300 0 to 200 0 to 150 ±100	10mΩ to 18mΩ (E24 series) 20mΩ to 47mΩ (E24 series) 51mΩ to 91mΩ (E24 series) 100mΩ to 910mΩ (E24 series)		YES
LTR100L	3264 (1225)	4	70	110	F (±1%) J (±5%)	0 to 300 0 to 200 0 to 150	10mΩ to 18mΩ (E24 series) 20mΩ to 47mΩ (E24 series) 51mΩ to 91mΩ (E24 series)	-65 to +155	YES
LTR100		2	70	—	F (±1%) J (±5%)	0 to 150 0 to 100	100mΩ to 180mΩ (E24 series) 200mΩ to 910mΩ (E24 series)	-55 to +155	YES
		☆3	70	☆110	F (±1%) J (±5%)	0 to 150 0 to 100	100mΩ to 180mΩ (E24 series) 200mΩ to 910mΩ (E24 series)		YES

☆: Under Development

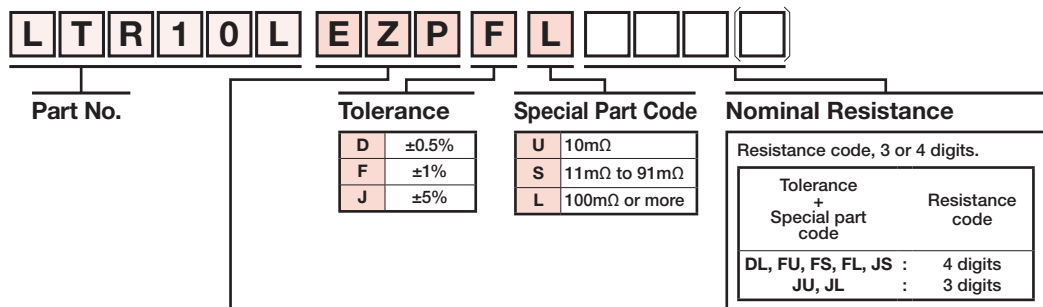
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
LTR10L	1220 (0508)	1.25±0.15	2.0±0.15	0.55±0.1	0.28±0.15	0.35±0.2
LTR18	1632 (0612)	1.6±0.1	3.2±0.1	0.58±0.1	0.5±0.2	0.5±0.2
LTR50	2550 (1020)	2.5±0.15	5.0±0.15	0.58±0.15	0.38±0.2	0.9±0.2
LTR100L	3264 (1225)	3.1±0.15	6.4±0.15	0.58±0.15	0.5±0.25	1.0±0.25
LTR100		3.2±0.15	6.4±0.15	0.55±0.15	0.4±0.25	1.13±0.25

- LTR10L/LTR18/LTR100L/LTR100 (No marking)
- LTR50 (Marking)



Part No. Explanation



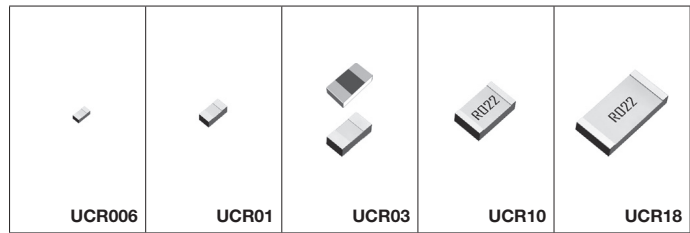
Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
LTR10L*	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR18	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR50	UZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR100L	JZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000
LTR100	JZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

©: Standard product
*LTR10L D class (±0.5%) is available for 100mΩ to 910mΩ only

For Current Detection Thick Film Shunt Resistors <Reverse Attached type> (UCR series)

- Chip resistors for current detection. (11mΩ or more)
- Resistive element is located at bottom side, which reduces the resistance shift during mounting process.
- ROHM's unique structure achieved improvement of heat.

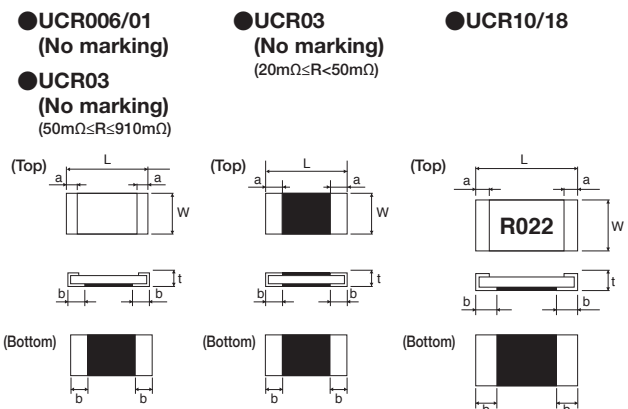


UCR series							
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
UCR006	0603 (0201)	0.1	F (±1%) J (±5%)	0 to 300	100mΩ to 910mΩ (E24 series)	-55 to +155	YES
UCR01	1005 (0402)	0.125	F (±1%) J (±5%)	0 to 300 0 to 250 0 to 200	68mΩ to 91mΩ (E24 series) 100mΩ to 200mΩ (E24 series) 220mΩ to 910mΩ (E24 series)		YES
UCR03	1608 (0603)	0.25	F (±1%) J (±5%)	0 to 250 0 to 200 0 to 150	20mΩ to 47mΩ (E24 series) 50mΩ to 91mΩ (E24 series) 100mΩ to 200mΩ (E24 series)		YES*
		0.2	F (±1%) J (±5%)	0 to 150	220mΩ to 910mΩ (E24 series)		YES
UCR10	2012 (0805)	0.33 (1/3)	F (±1%) J (±5%)	250±200 0 to 250 0 to 150	11mΩ to 18mΩ (E24 series) 20mΩ to 47mΩ (E24 series) 51mΩ to 100mΩ (E24 series)		YES
UCR18	3216 (1206)	1	F (±1%) J (±5%)	0 to 350 0 to 200	11mΩ to 18mΩ (E24 series) 20mΩ to 39mΩ (E24 series)	YES	
		0.5	F (±1%) J (±5%)	0 to 150	43mΩ to 100mΩ (E24 series)	YES	

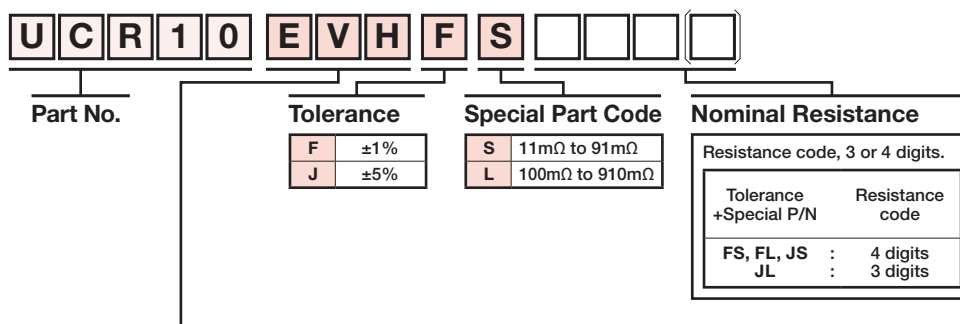
*Limited to 100mΩ and higher

Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
UCR006	0603 (0201)	0.62±0.05	0.32±0.05	0.24±0.05	0.18±0.1	0.22±0.1
UCR01	1005 (0402)	1.0±0.1	0.55±0.1	0.37±0.05	0.28±0.1	0.34±0.1
UCR03	1608 (0603)	1.6±0.1	0.87±0.1	0.5±0.1	0.45±0.2	0.45±0.2
UCR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.24±0.2	0.5±0.2
UCR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.2	0.9±0.25



Part No. Explanation



Packaging Specifications Code

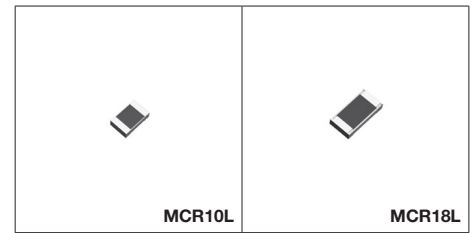
Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)	Remarks
		J (±5%)	F (±1%)				
UCR006	YVP	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	15,000	—
UCR01	MVP	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000	—
UCR03	EWP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000	20mΩ to 47mΩ
	EVP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000	51mΩ to 910mΩ
UCR10	EVH	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000	—
UCR18	EVH	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000	—

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
○: Standard product

For Current Detection

General Purpose Chip Resistors: <Low ohmic> <High Power> (MCR L series)

- Guaranteed the same rated power as one size larger product by changing the design of the resistive element.
- Very-low ohmic resistance from 47m Ohm is in lineup by thick-film resistive element.
- High-reliability chip resistor employing metal glaze as resistive element.



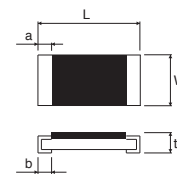
MCR L series							
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
New MCR10L	2012 (0805)	0.5	F (±1%) J (±5%)	0 to 250	47mΩ to 110mΩ (E24 series)	-55 to 155	YES
				0 to 150	120mΩ to 910mΩ (E24 series)		
New MCR18L	3216 (1206)	0.75	F (±1%) J (±5%)	0 to 250	47mΩ to 91mΩ (E24 series)		YES
				0 to 150	100mΩ to 910mΩ (E24 series)		

■ Dimensions (Unit: mm)

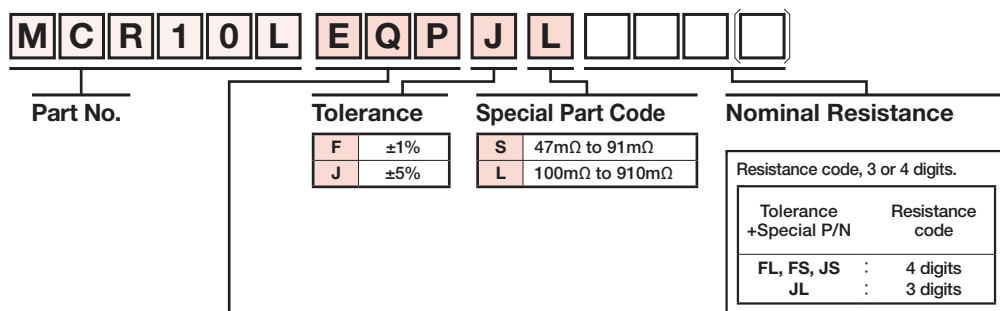
Part No.	Size Code mm (inch)	L	W	t	a	b
MCR10L	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.60±0.20 ^{*1}	0.40±0.20
					0.45±0.20 ^{*2}	
MCR18L	3216 (1206)	3.20+0.15 -0.20	1.6±0.15	0.55±0.1	0.90±0.20 ^{*1}	0.50±0.25
					0.75±0.20 ^{*2}	

*1 Resistance range: 47mΩ to 110mΩ
*2 Resistance range: 120mΩ to 910mΩ

● MCR10L/18L (No marking)



■ Part No. Explanation



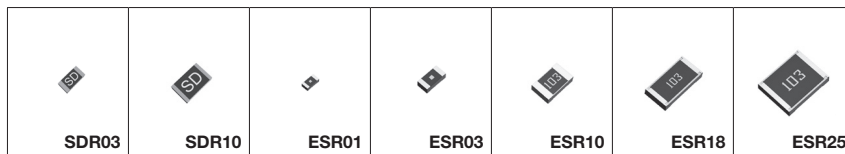
Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J(±5%)	F(±1%)			
MCR10L	EQP	⊙	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR18L	EQP	⊙	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
⊙: Standard product

High Reliability High Anti-surge Chip Resistors (SDR series) Anti-surge Chip Resistors (ESR series)

- Exclusive resistive element pattern and laser trimming technology results in significantly improved surge resistance characteristics.
- Superior power ratings.



SDR series										
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
SDR03	1608 (0603)	0.3	70	—	150	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)		
						J (±5%)	±100	10Ω to 10MΩ (E24, E96 series)		
	New 0.33 (1/3)	70	125	150	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)			
					J (±5%)	±100	10Ω to 10MΩ (E24, E96 series)			
	☆0.4	70	105	150	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)			
					J (±5%)	±100	10Ω to 10MΩ (E24, E96 series)			
SDR10	2012 (0805)	0.5	70	New 115	400	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)		
						J (±5%)	±200	1Ω to 10MΩ (E24 series)		
	☆0.66 (2/3)	70	105	400	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)			
					J (±5%)	±200	1Ω to 10MΩ (E24 series)			
ESR series										
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
ESR01	1005 (0402)	0.2	70	—	75	F (±1%)	±200	10Ω to 976kΩ (E24, E96 series) 1MΩ to 2.2MΩ (E24 series)	-55 to +155	YES
						J (±5%)	+500/-200	1Ω to 9.1Ω (E24 series)		
ESR03	1608 (0603)	0.25	70	—	150	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)		
						J (±5%)	±100	10Ω to 10MΩ (E24, E96 series)		
	☆0.33 (1/3)	70	130	150	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)			
ESR10	2012 (0805)	0.4	70	—	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)		
						J (±5%)	±200	1Ω to 10MΩ (E24 series)		
	☆0.5	70	115	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)			
					J (±5%)	±200	1Ω to 10MΩ (E24 series)			
ESR18	3216 (1206)	0.5	70	—	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)		
						J (±5%)	±200	1Ω to 10MΩ (E24 series)		
	☆0.66 (2/3)	70	105	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)			
ESR25	3225 (1210)	0.66 (2/3)	70	—	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)	-55 to +155	YES
						F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)		
						J (±5%)	±200	1Ω to 10MΩ (E24 series)		
	☆0.75	70	95	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
					F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)			

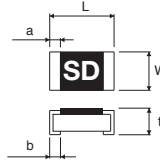
*E24: Standard products E96: Custom products

☆: Under Development

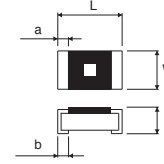
■ Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
SDR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.25±0.1	0.25±0.1
SDR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.25±0.1	0.4±0.2
ESR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.1}
ESR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
ESR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2
ESR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.25	0.5±0.25
ESR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.1	0.3±0.25	0.5±0.25

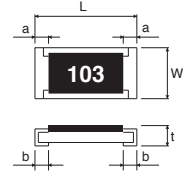
●SDR03/10
(Marked as "SD")



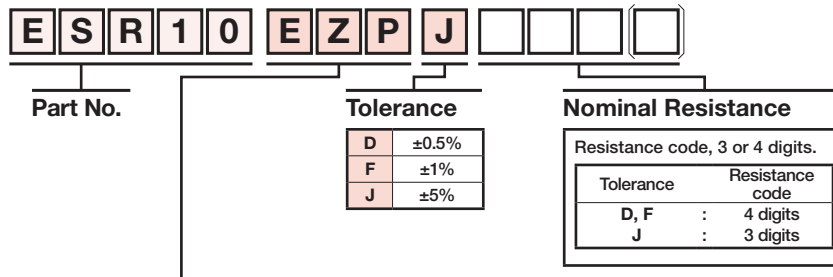
●ESR01/03
(Marked as "■")



●ESR10/18/25



■ Part No. Explanation



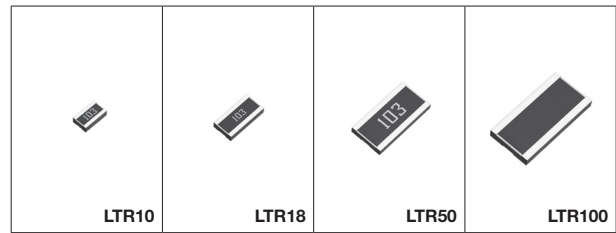
Packaging Specifications Code

Part No.	Code	Tolerance			Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)	D (±0.5%)			
SDR03	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
SDR10	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
ESR01	MZP	○	○	—	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
ESR03	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
ESR10	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
ESR18	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
ESR25	JZP	○	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

High Reliability High Power Chip Resistors <Wide Terminal type> <Anti-surge> (LTR series)

- High joint reliability with long side terminations.
- Highest power ratings in their class.
- Guaranteed anti-surge characteristic in all series.



LTR series											
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200	
LTR10	1220 (0508)	New 1	70	125	150	D (±0.5%)	±100	10Ω to 976Ω (E24, E96 series)	-55 to +155	YES	
						F (±1%)	±100	1Ω to 976Ω (E24, E96 series)			
						J (±5%)	±200	1Ω to 976Ω (E24 series)			
		0.25	70	-		D (±0.5%)	±100	1kΩ to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1kΩ to 1MΩ (E24, E96 series)			
LTR18	1632 (0612)	New 1.5	70	95	200	D (±0.5%)	±100	10Ω to 976Ω (E24, E96 series)			
						F (±1%)	±100	1Ω to 976Ω (E24, E96 series)			
						J (±5%)	±200	1Ω to 976Ω (E24 series)			
		0.75	70	-		D (±0.5%)	±100	1kΩ to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1kΩ to 1MΩ (E24, E96 series)			
LTR50	2550 (1020)	1	70	-	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1Ω to 1MΩ (E24, E96 series)			
						J (±5%)	±200	1Ω to 1MΩ (E24 series)			
		☆2	70	95		D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1Ω to 1MΩ (E24, E96 series)			
LTR100	3264 (1225)	2	70	-	200	D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1Ω to 1MΩ (E24, E96 series)			
						J (±5%)	±200	1Ω to 1MΩ (E24 series)			
		☆3	70	110		D (±0.5%)	±100	10Ω to 1MΩ (E24, E96 series)			
						F (±1%)	±100	1Ω to 1MΩ (E24, E96 series)			
J (±5%)	±200	1Ω to 1MΩ (E24 series)									

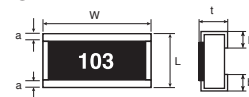
*E24: Standard products E96: Custom products

☆: Under Development

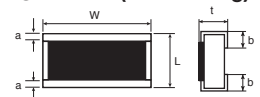
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
LTR10	1220 (0508)	1.2±0.1	2.0±0.1	0.55±0.1	0.25±0.1	0.35±0.2
LTR18	1632 (0612)	1.6±0.15	3.2±0.15	0.55±0.1	0.3±0.2	0.5±0.2
LTR50	2550 (1020)	2.5±0.15	5.0±0.15	0.55±0.1	0.38±0.2	0.9±0.2
LTR100	3264 (1225)	3.2±0.15	6.4±0.15	0.55±0.15	0.4±0.25	1.13±0.25

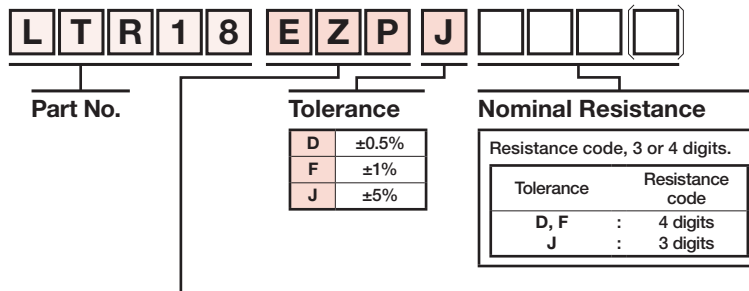
● LTR10/18/50



● LTR100 (No marking)



Part No. Explanation



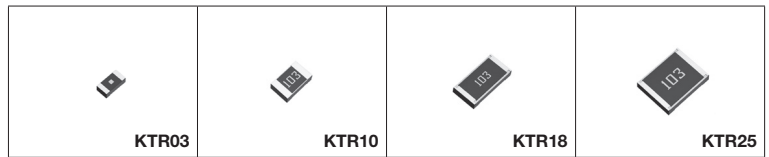
Packaging Specifications Code

Part No.	Code	Tolerance			Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)	D (±0.5%)			
LTR10	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR18	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR50	UZP	○	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	5,000
LTR100	JZP	○	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
○: Standard product

High Reliability High Voltage Resistance Chip Resistors (KTR series)

- Twice the rated voltage of conventional products.
- Perfect for use in Camera Flash circuit, etc.



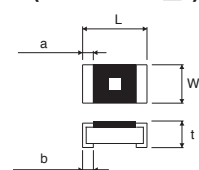
KTR series											
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200			
KTR03	1608 (0603)	0.1	350	F (±1%)	±200	1Ω to 9.76Ω (E24, E96 series)	-55 to +155	YES			
				J (±5%)	±100	10Ω to 10MΩ (E24, E96 series)					
KTR10	2012 (0805)	0.125	400	F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)		-55 to +155	YES		
				J (±5%)	±200	1Ω to 30MΩ (E24 series)					
KTR18	3216 (1206)	0.25	500	F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)			-55 to +155	YES	
				J (±5%)	±200	1Ω to 10MΩ (E24 series)					
KTR25	3225 (1210)	0.33 (1/3)	600	F (±1%)	±100	1Ω to 10MΩ (E24, E96 series)				-55 to +155	YES
				J (±5%)	±200	1Ω to 10MΩ (E24 series)					

*E24: Standard products E96: Custom products

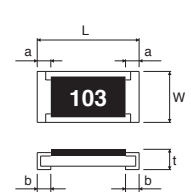
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
KTR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
KTR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.3±0.2	0.4±0.2
KTR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.3±0.25	0.5±0.25
KTR25	3225 (1210)	3.2±0.15	2.5±0.15	0.55±0.1	0.3±0.25	0.5±0.25

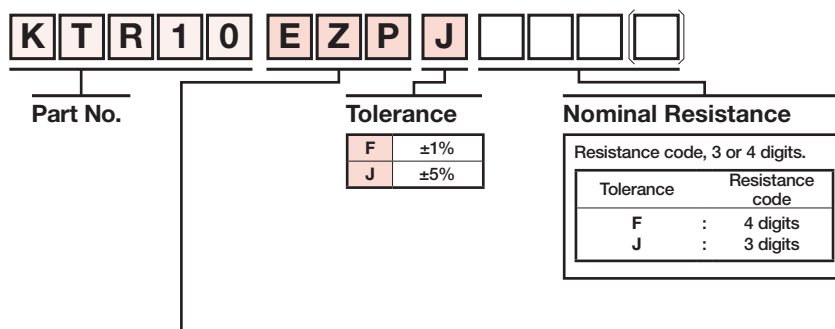
●KTR03 (Marked as "■")



●KTR10/18/25



Part No. Explanation



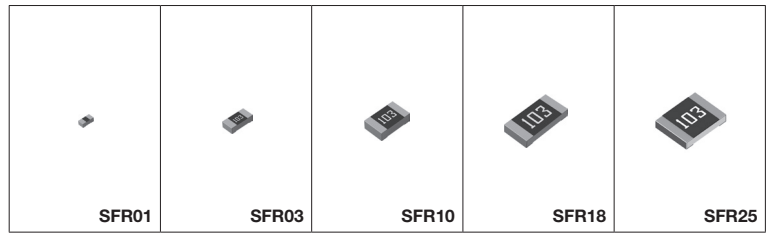
Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
KTR03	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
KTR10	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
KTR18	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
KTR25	JZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
○: Standard product

High Reliability Tolerance for Sulfurization Chip Resistor (SFR series)

- Improved Anti-sulfur reliability by ROHM original structure.



SFR series								
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
SFR01	1005 (0402)	0.063 (1/16)	50	F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)	-55 to +155	YES
				J (±5%)	+500/-250 ±200	1Ω to 9.1Ω (E24 series) 10Ω to 10MΩ (E24 series)		
SFR03	1608 (0603)	0.1	50	F (±1%)	±100	10Ω to 10MΩ (E24, E96 series)		YES
				J (±5%)	±400 ±200	1Ω to 9.1Ω (E24 series) 10Ω to 10MΩ (E24 series)		
SFR10	2012 (0805)	0.125	150	F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)		YES
				J (±5%)	±400 ±200	1Ω to 9.1Ω (E24 series) 10Ω to 10MΩ (E24 series)		
SFR18	3216 (1206)	0.25	200	F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)		YES
				J (±5%)	±400 ±200	1Ω to 9.1Ω (E24 series) 10Ω to 10MΩ (E24 series)		
SFR25	3225 (1210)	0.5	200	F (±1%)	±100	10Ω to 1MΩ (E24, E96 series)		YES
				J (±5%)	±200	1Ω to 1MΩ (E24 series)		

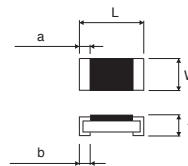
*E24: Standard products E96: Custom products

Jumper type					
Part No.	Size Code mm (inch)	Rated Current (A)	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
SFR01	1005 (0402)	1	50mΩ Max	-55 to +155°C	YES
SFR03	1608 (0603)	1			YES
SFR10	2012 (0805)	2			YES
SFR18	3216 (1206)	2			YES
SFR25	3225 (1210)	2			YES

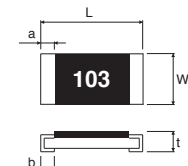
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
SFR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.33±0.08	0.25 ^{+0.05} _{-0.10}
SFR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.4±0.2	0.3±0.2
SFR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2
SFR18	3216 (1206)	3.2 ^{+0.15} _{-0.20}	1.6±0.15	0.55±0.1	0.55±0.25	0.5±0.25
SFR25	3225 (1210)	3.2 ^{+0.15} _{-0.20}	2.5±0.15	0.55±0.1	0.55±0.25	0.5±0.25

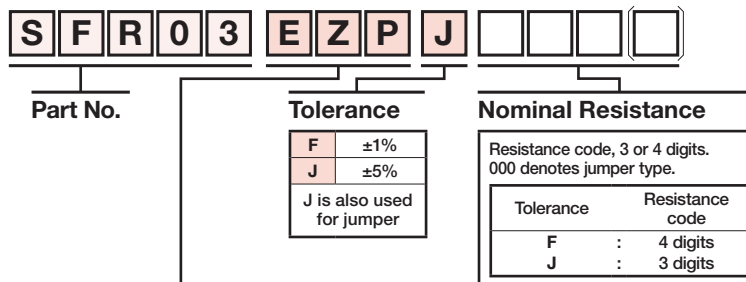
●SFR01 (No marking)



●SFR03/10/18/25



Part No. Explanation



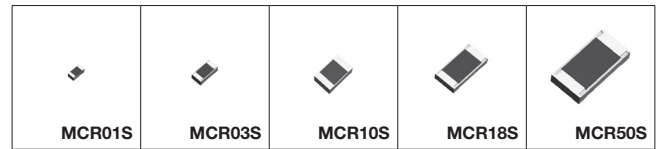
Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
SFR01	MZP	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
SFR03	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
SFR10	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
SFR18	EZP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
SFR25	JZP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

General Purpose Chip Resistors <High Power> (MCRS series)

- In MCRS series, the same rated power is guaranteed as that of one-size larger products than conventional MCR series by changing the design of the resistive element.
- Circuit space can be saved (reducing the area by about 60% by replacing 0603 size with 0402 size)



MCRS series										
Part No.	Size Code mm (inch)	Rated Power (W)	Rated Ambient Temperature (°C)	Rated Terminal Temperature (°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
MCR01S	1005 (0402)	0.1	70	—	75	F (±1%)	±100	10Ω to 10MΩ (E24, E96 series)	-55 to +155	YES
						J (±5%)	±400	1Ω to 9.1Ω (E24 series)		
MCR03S	1608 (0603)	0.125	70	—	150	F (±1%)	±100	10Ω to 10MΩ (E24, E96 series)		YES
						J (±5%)	±400	1Ω to 9.1Ω (E24 series)		
						±200	10Ω to 10MΩ (E24 series)			
MCR10S	2012 (0805)	0.25	70	—	200	F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)		YES
						J (±5%)	±400	1Ω to 9.1Ω (E24 series)		
						±200	10Ω to 10MΩ (E24 series)			
MCR18S	3216 (1206)	0.4	70	—	200	F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)		YES
						J (±5%)	±400	1Ω to 9.1Ω (E24 series)		
						±200	10Ω to 10MΩ (E24 series)			
☆MCR50S	5025 (2010)	1.5	70	110	200	F (±1%)	±200	1Ω to 9.1Ω (E24 series)	YES	
						±100	10Ω to 2.2MΩ (E24, E96 series)			
						±400	1Ω to 9.1Ω (E24 series)			
						±200	10Ω to 10MΩ (E24 series)			

*E24: Standard products E96: Custom products

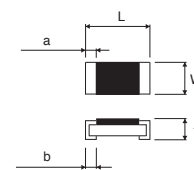
☆: Under Development

Jumper type					
Part No.	Size Code mm (inch)	Rated Current (A)	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
MCR01S	1005 (0402)	1.5	50mΩ Max	-55 to +155	YES
MCR03S	1608 (0603)	2			YES
MCR10S	2012 (0805)	2.5			YES
MCR18S	3216 (1206)	2.5			YES
MCR50S	5025 (2010)	4			YES

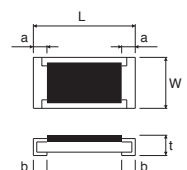
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
MCR01S	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.10}
MCR03S	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2
MCR10S	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2
MCR18S	3216 (1206)	3.2 ^{+0.15} _{-0.20}	1.6±0.15	0.55±0.1	0.5±0.25	0.5±0.25
MCR50S	5025 (2012)	5.0±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25

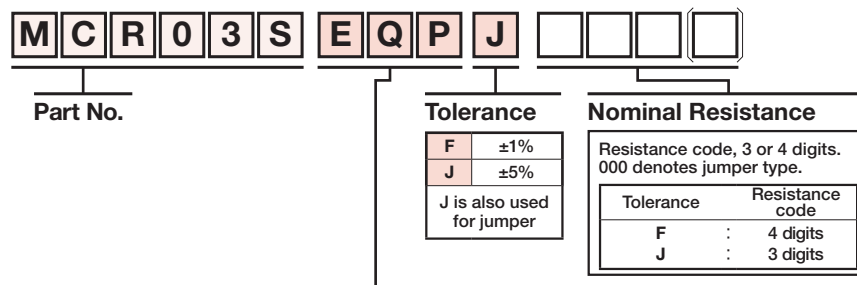
● MCR01S/03S (No marking)



● MCR10S/18S/50S (No marking)



Part No. Explanation



Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
MCR01S	MQP	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
MCR03S	EQP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR10S	EQP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR18S	EQP	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR50S	JQP	○	○	Embossed tape (4mm Pitch)	φ180mm (7inch)	4,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

General Purpose Chip Resistors (MCR series)

- High reliability chip resistors optimized for a variety of applications.
- Six package sizes, ranging from 01005 to 1205.
- Market-proven reliability.



MCR series								
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
MCR004	0402 (01005)	0.031 (1/32)	15	F (±1%)	±300	10Ω to 97.6Ω (E24, E96 series)	-55 to +125	-
					±250	100Ω to 3MΩ (E24, E96 series)		
				J (±5%)	+600/-100	1Ω to 9.1Ω (E24 series)		
					±300	10Ω to 91Ω (E24 series)		
MCR006	0603 (0201)	0.05	25	D (±0.5%)	±200	10Ω to 97.6Ω (E24, E96 series)		
					±100	1kΩ to 1MΩ (E24, E96 series)		
				F (±1%)	+600/-200	1Ω to 9.1Ω (E24 series)		
					±100	10Ω to 10MΩ (E24, E96 series)		
MCR01	1005 (0402)	0.063 (1/16)	50	J (±5%)	+600/-200	1Ω to 9.1Ω (E24 series)		
					±200	10Ω to 10MΩ (E24 series)		
				D (±0.5%)	±100	10Ω to 97.6Ω (E24, E96 series)		
					±50	100Ω to 1MΩ (E24, E96 series)		
MCR03	1608 (0603)	0.1	50	F (±1%)	±400	1Ω to 9.1Ω (E24 series)		
					±100	10Ω to 10MΩ (E24, E96 series)		
				J (±5%)	+500/-250	1Ω to 9.1Ω (E24 series)		
					±200	10Ω to 10MΩ (E24 series)		
MCR10	2012 (0805)	0.125	150	D (±0.5%)	±100	10Ω to 97.6Ω (E24, E96 series)		
					±50	100Ω to 1MΩ (E24, E96 series)		
		F (±1%)		±100	10Ω to 2.2MΩ (E24, E96 series)			
				±400	1Ω to 9.1Ω (E24 series)			
MCR18	3216 (1206)	0.25	200	J (±5%)	+500/-250	1Ω to 9.1Ω (E24 series)		
					±200	10Ω to 10MΩ (E24 series)		
		D (±0.5%)		±100	10Ω to 97.6Ω (E24, E96 series)			
				±50	100Ω to 1MΩ (E24, E96 series)			
F (±1%)	±100	10Ω to 2.2MΩ (E24, E96 series)						
	±400	1Ω to 9.1Ω (E24 series)						

*E24: Standard products E96: Custom products

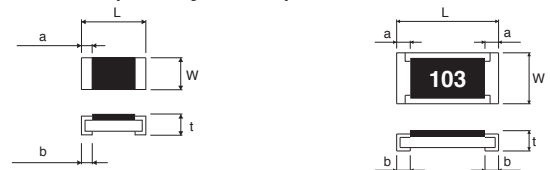
Jumper type					
Part No.	Size Code mm (inch)	Rated Current (A)	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
MCR004	0402 (01005)	0.5	50mΩ Max	-55 to +125	-
MCR006	0603 (0201)	0.5			YES
MCR01	1005 (0402)	1			YES
MCR03	1608 (0603)	1		-55 to +155	YES
MCR10	2012 (0805)	2			YES
MCR18	3216 (1206)	2			YES

Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
MCR004	0402 (01005)	0.4±0.02	0.2±0.02	0.13±0.02	0.1±0.03	0.1 ±0.03
MCR006	0603 (0201)	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05
MCR01	1005 (0402)	1.0±0.05	0.5±0.05	0.35±0.05	0.2±0.1	0.25 ^{+0.05} _{-0.10}
MCR03	1608 (0603)	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3 ±0.2
MCR10	2012 (0805)	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4 ±0.2
MCR18	3216 (1206)	3.2±0.15	1.6±0.15	0.55±0.1	0.5±0.25	0.5 ±0.25

- MCR004/006/01 (No marking)
- MCR03 (Partially marked)

- MCR10/18



Part No. Explanation



Part No.

Tolerance

Special Part Code

Nominal Resistance

D	±0.5%
F	±1%
J	±5%
J is also used for jumper	

L	1Ω to 9.1Ω (MCR006/01/03 F Class only)
X*	±100ppm/°C
*MCR03 F Class only	

Resistance code, 3 or 4 digits. 000 denotes jumper type.	
Tolerance	Resistance code
D, F	: 4 digits
J	: 3 digits

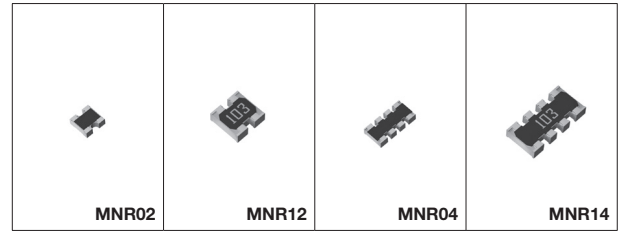
Packaging Specifications Code

Part No.	Code	Tolerance			Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)	D (±0.5%)			
MCR004	QLP	○	○	—	Paper tape (2mm Pitch)	φ180mm (7inch)	20,000
MCR006	YLP	○	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	15,000
MCR01	MZP	○	○	○	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
MCR03	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR10	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MCR18	EZP	○	○	○	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ○: Standard product

Chip resistor networks (MNR series <0402x2 to 0603x4>)

- Reduces cost
Use of chip networks reduces the number of components and saves mounting space.
- Easy fillet inspection
Convex type electrodes facilitate visual inspection of fillets. Inspection can be performed with automatic inspection equipment.



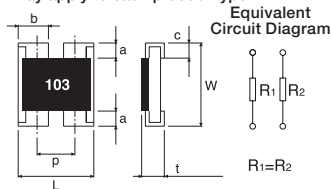
MNR series <0402x2 to 0603x4>										
Part No.	Size Code mm (inch)	No. of Terminals	No. of Elements	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
MNR02	1005 (0402)x2	4	2	0.063/Element	25	J (±5%)	±200	10Ω to 1MΩ (E24 series)	-55 to +155	YES
MNR04	1005 (0402)x4	8	4	0.063/Element	25	J (±5%)	+500/-250 ±200	1Ω to 9.1Ω (E24 series) 10Ω to 1MΩ (E24 series)		YES
MNR12	1608 (0603)x2	4	2	0.063/Element	50	J (±5%)	±200	10Ω to 1MΩ (E24 series)		YES
MNR14	1608 (0603)x4	8	4	0.063/Element	50	J (±5%)	±500 ±200	2.2Ω to 6.8Ω (E6 series) 10Ω to 1MΩ (E24 series)		YES

Jumper type					
Part No.	Size Code mm (inch)	Rated Current	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
MNR02	1005 (0402)x2	1A/Element	50mΩ Max	-55 to +155	YES
MNR04	1005 (0402)x4	1A/Element			YES
MNR12	1608 (0603)x2	1A/Element			YES
MNR14	1608 (0603)x4	1A/Element			YES

Dimensions (Unit: mm)

● MNR02/MNR12 (Marked except MNR02)

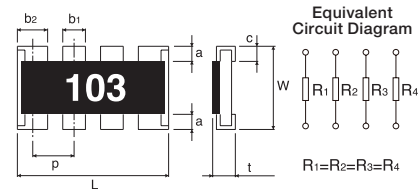
Different marking system may apply to each product type.



Part No.	L	W	t	a	b	c	p
MNR02	1.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	0.33 ^{+0.1} _{-0.05}	0.25±0.1	0.68
MNR12	1.6±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.6±0.15	0.25±0.15	0.8

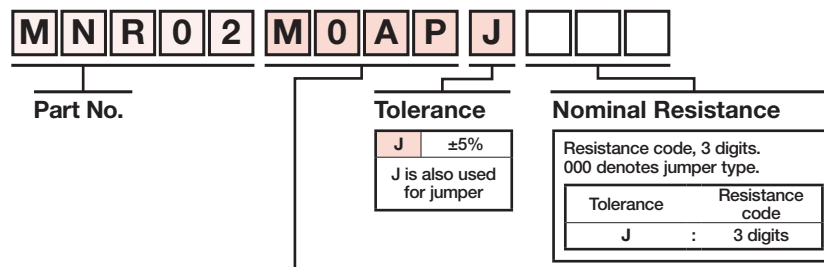
● MNR04/MNR14 (Marked except MNR04)

Different marking system may apply to each product type.



Part No.	L	W	t	a	b ₁	b ₂	c	p
MNR04	2.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	0.3±0.1	0.4±0.1	0.25±0.1	0.5
MNR14	3.2±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.4±0.15	0.6±0.15	0.25±0.15	0.8

Part No. Explanation



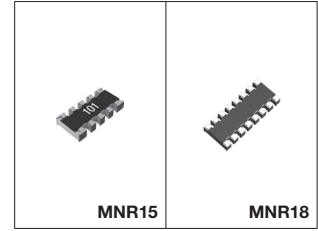
Packaging Specifications Code

Part No.	Code	Tolerance J (±5%)	Packaging Specifications	Reel	Basic Ordering Unit (pcs)
MNR02	M0AP	⊙	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
MNR04	M0AP	⊙	Paper tape (2mm Pitch)	φ180mm (7inch)	10,000
MNR12	E0AP	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MNR14	E0AP	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
⊙: Standard product

8-element Chip Resistor Networks (MNR series <0603x5 to 0602x8>)

- One package built in 8-element chip contributes to space-saving
- 8 resistor elements reduce mounting cost
- Convex type electrodes facilitate visual inspection of fillets.
Inspection can be performed with automatic inspection equipment.
- Suitable for pull-up resistor, damping resistor
- No direction to be mounted



MNR series <0603x5 to 0602x8>										
Part No.	Size Code mm (inch)	No. of Terminals	No. of Elements	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
MNR15	1608 (0603)x5	10	8	0.031/Element	12.5	J (±5%)	±200	56Ω to 100kΩ (E24 series)	-55 to +125	YES
MNR18	1605 (0602)x8	16	8	0.063/Element*	25	J (±5%)	±200	10Ω to 1MΩ (E24 series)		YES

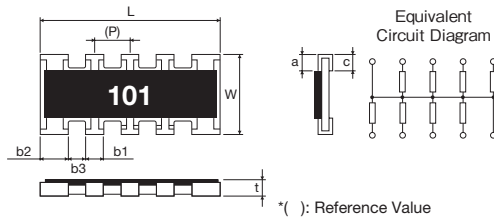
*Power for a packing Max 0.25W in all elements

Jumper type					
Part No.	Size Code mm (inch)	Rated Current	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
MNR18	1605 (0602)x8	1A/Element*	50mΩ Max	-55 to +125	YES

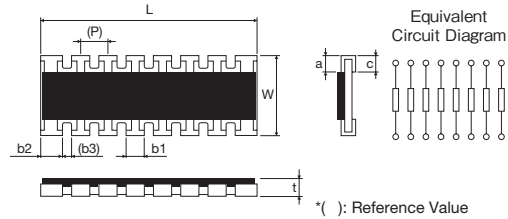
*Power for a packing Max 4A in all elements

Dimensions (Unit: mm)

● MNR15



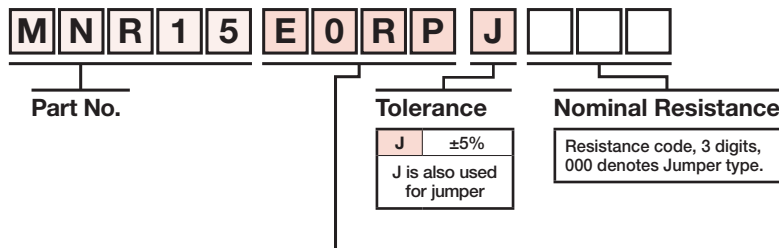
● MNR18 (No marking)



Part No.	L	W	t	a	b1	b2	b3	c	(P)
MNR15	3.2±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.32±0.15	0.48±0.15	0.32±0.15	0.3±0.2	(0.64)

Part No.	L	W	t	a	b1	b2	(b3)	c	(P)
MNR18	3.8±0.1	1.6±0.1	0.45±0.1	0.3±0.2	0.3±0.1	0.3±0.1	(0.2)	0.3±0.2	(0.5)

Part No. Explanation



Packaging Specifications Code

Part No.	Code	Tolerance	Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)			
MNR15	E0RP	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000
MNR18	E0AP	⊙	Paper tape (4mm Pitch)	φ180mm (7inch)	5,000

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"
 ⊙: Standard product

Class-leading Compact Size Chip Resistors (RAS MID™ series) Ultra-Compact Chip Resistors (SMR003)

- Original process technology ensures greater accuracy
- Chip dimensional precision improved from ±20µm to ±10µm
- Gold electrodes utilized for superior solderability and reliability



*Minimum order quantity is further discussion is needed

SMR003 <009005>								
Part No.	Size Code mm (inch)	Rated Power (W) (70°C)	Limiting Element Voltage (V)	Tolerance	Temperature Coefficient (ppm/°C)	Resistance Range	Operating Temperature (°C)	Automotive Grade AEC-Q200
SMR003	03015 (009005)	0.02	10	F (±1%)	±200	10 to 1MΩ (E24, E96 series)	-55 to +125	-
				J (±5%)		10 to 1MΩ (E24 series)		

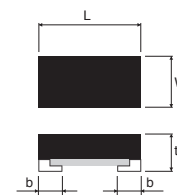
*E24: Standard products E96: Custom products

Jumper type					
Part No.	Size Code mm (inch)	Rated Current (A)	Resistance	Operating Temperature (°C)	Automotive Grade AEC-Q200
SMR003	03015 (009005)	0.5	50mΩ Max	-55 to +125	-

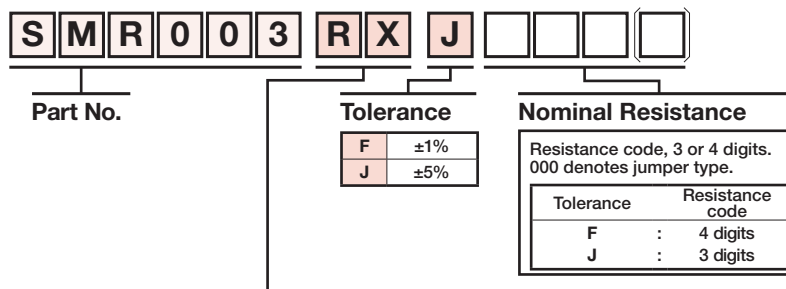
Dimensions (Unit: mm)

Part No.	Size Code mm (inch)	L	W	t	a	b
SMR003	03015 (009005)	0.30±0.01	0.15±0.01	0.11±0.01	-	0.07±0.01

SMR003



Part No. Explanation



Packaging Specifications Code

Part No.	Code	Tolerance		Packaging Specifications	Reel	Basic Ordering Unit (pcs)
		J (±5%)	F (±1%)			
SMR003	RX	⊙	⊙	Embossed tape (1mm Pitch)	φ180mm (7inch)	40,000*

Reel (φ180mm): Compatible with JEITA standard "EIAJ ET-7200B"

⊙: Standard product

*Minimum order quantity is further discussion is needed

"RAS MID™" is a trademark or a registered trademark of ROHM Co., Ltd.

RAS MID™: ROHM's proprietary new method that enables superior dimensional precision, making it possible to develop the ultra-compact products.

Standard Nominal Resistance Values etc.

E3	10				22				47			
E6	10		15		22		33		47		68	
E12	10	12	15	18	22	27	33	39	47	56	68	82
E24	10	11	12	13	15	16	18	20	22	24	27	30
	33	36	39	43	47	51	56	62	68	75	82	91
E96	100	102	105	107	110	113	115	118	121	124	127	130
	133	137	140	143	147	150	154	158	162	165	169	174
	178	182	187	191	196	200	205	210	215	221	226	232
	237	243	249	255	261	267	274	280	287	294	301	309
	316	324	332	340	348	357	365	374	383	392	402	412
	422	432	442	453	464	475	487	499	511	523	536	549
	562	576	590	604	619	634	649	665	681	698	715	732
750	768	787	806	825	845	866	887	909	931	953	976	

■Nominal Resistance

Resistors of a series fall into one of nominal resistance ranges shown in the table above. Nominal resistance is determined by the common ratio shown right.

■Resistance Coding

Nominal resistance is expressed in 3 digits when the resistance tolerance is $\pm 5\%$ and in 4 digits when $\pm 0.5\%$, $\pm 1\%$, $\pm 2\%$.

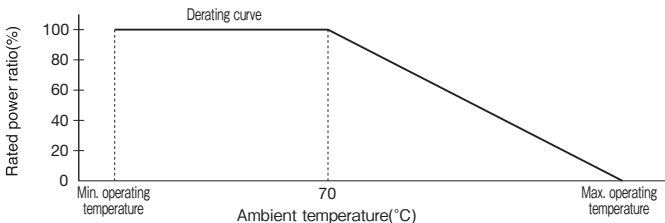
The leading 2 or 3 digits indicate significant figure while the last digit indicates the number of zeros. The letter R or L denotes the decimal point if necessary.

- Ex.1 $22\Omega \rightarrow 22 \times 10^0\Omega \rightarrow 220$ (the last digit indicates the number "0" of a multiplier)
- Ex.2 $47k\Omega \rightarrow 47 \times 10^3\Omega \rightarrow 473$ (the last digit indicates the number "3" of a multiplier)
- Ex.3 $1.2M\Omega \rightarrow 12 \times 10^5\Omega \rightarrow 125$ (the last digit indicates the number "5" of a multiplier)
- Ex.4 $2.7\Omega \rightarrow 2R7$ (the decimal point indicate the letter R/the letter R apply to the low Resistance less than 10Ω)
- Ex.5 $1130\Omega \rightarrow 113 \times 10^1\Omega \rightarrow 1131$ (the last digit indicates the number "1" of a multiplier/Resistance Tolerance 1% (F) products)
- Ex.6 $0.10\Omega \rightarrow R10$
- Ex.7 $1m\Omega \rightarrow 1L0$

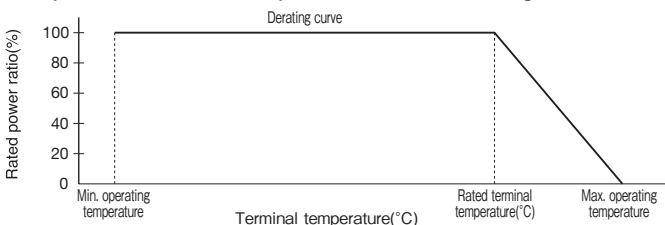
Series	Common ratio	Remarks
E6	$\sqrt[6]{10} \approx 1.46$	Rounded off to a 2-digit figure.
E12	$\sqrt[12]{10} \approx 1.21$	
E24	$\sqrt[24]{10} \approx 1.10$	
E96	$\sqrt[96]{10} \approx 1.02$	Rounded off to a 3-digit figure.

■Supplement of Rated Power

- Derating curves based on ambient temperature.
When the ambient temperature exceeds the rated ambient temperature, derate the load power based on the derating curve.



- Derating curves based on the terminal temperature.
When the terminal temperature with load exceeds the rated terminal temperature, derate the load power based on the derating curve.



■ For basic guidelines on using resistors, see the technical reports issued by Japan Electronics and Information Technology Industries Association. JEITA RCR-2121A. "Guideline of notabilia for fixed resistors for use in electronic equipment (Safety Application Guide for fixed resistors for use in electronic equipment)"

■Supplementary to Notes

*1 When resistor is to be exposed to a transient load (excessive large load, such as pulse), mount the resistor on your product and check the condition and evaluate the result. Constant application of a voltage above the rated voltage will degrade the performance and reliability of the resistor.

Do not apply a voltage exceeding the rated voltage across any ROHM resistors.

*2 Rated voltage (V) = $\sqrt{\text{rated power (W)} \times \text{nominal resistance } (\Omega)}$ or the limiting element voltage, whichever smaller, is the rated voltage.

SMD LEDs

ROHM's chip LEDs are designed for automatic surface mount processes and are available in a wide variety of package sizes (from 1.0x0.6mm)

Red (V, U) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	Luminous Intensity (cd)																											
				1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2500	2500 to 3120										
Mini-mold	1006	0.2	1	SML-P11VT (R)			SML-P11UT (R)			SML-P12VT (R)			SML-P12UT (R)			SML-P12U2T (R)			SML-E12V8W			SML-E12U8W			SML-E12UW*1						
			20	SML-P12VT (R)			SML-P12UT (R)			SML-P12U2T (R)			SML-E12V8W			SML-E12U8W			SML-E12UW*1												
	1608	0.36	20	CSL1901VW			CSL1901UW			SML-D12L8W			SML-D15VW			SML-D14VW (A)*			SML-D13VW (A)*			SML-D12V1W			SML-D12V8W						
			2	CSL1901VW			CSL1901UW			SML-D12L8W			SML-D15VW			SML-D14VW (A)*			SML-D13VW (A)*			SML-D12V1W			SML-D12V8W						
	20125	0.55	20	SML-D13UW (A)*			SML-D13U8W			SML-D12U1W			SML-D12U8W			SML-D15UW			SML-D15U2W			SML-D14U2W (A)*			SML-D13UW (A)*			SML-D13U8W			
			2	SML-D13UW (A)*			SML-D13U8W			SML-D12U1W			SML-D12U8W			SML-D15UW			SML-D15U2W			SML-D14U2W (A)*			SML-D13UW (A)*			SML-D13U8W			
	20125	0.8	20	20	SML-H12V8T			SML-H12U8T			SML-M13VT			SML-M13UT			SML-D13UW (A)*			SML-D13U8W			SML-D12U1W			SML-D12U8W					
				2	SML-H12V8T			SML-H12U8T			SML-M13VT			SML-M13UT			SML-D13UW (A)*			SML-D13U8W			SML-D12U1W			SML-D12U8W					
	Reflector	3020	1.3	20	SML-010VT			SML-011UT			SML-012VT (A)*			SML-012V8T			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*		
				10	SML-010VT			SML-011UT			SML-012VT (A)*			SML-012V8T			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*		
PLCC2	3528	1.9	50	SML-A12V8T			SML-A12U8T			SML-A12UT (J)*1			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*						
			20	SML-A12V8T			SML-A12U8T			SML-A12UT (J)*1			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*						
Side View (mold)	16115	0.55	20	SML-A12V8T			SML-A12U8T			SML-A12UT (J)*1			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*						
Reverse Mount	34125	1.1	10	SML-811VT (A)*			SML-811UT (A)*			SML-012U8T			SML-012UT			SML-013UT			SML-Z14V4T*			SML-Z14U4T*									
Lens	1608	1.24	20	CSL0901VT			CSL0901UT			CSL0902VT			CSL0902UT			CSL0903VT			CSL0903UT			SML-S13VT			SML-S13UT						
			2	CSL0901VT			CSL0901UT			CSL0902VT			CSL0902UT			CSL0903VT			CSL0903UT			SML-S13VT			SML-S13UT						
Lens	3216	1.85	20	CSL0901VT			CSL0901UT			CSL0902VT			CSL0902UT			CSL0903VT			CSL0903UT			SML-S13VT			SML-S13UT						
			2	CSL0901VT			CSL0901UT			CSL0902VT			CSL0902UT			CSL0903VT			CSL0903UT			SML-S13VT			SML-S13UT						
Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (cd)	4.5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 12	12 to 14	14 to 16	16 to 18	18 to 20	20 to 22	22 to 25	CSL0701UT															

Orange (D) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	Luminous Intensity (cd)																														
				1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800														
Mini-mold	1006	0.2	1	SML-P11DT (R)			SML-P12DT (R)			SML-E12DW*1			SML-E12D8W			SML-D15DW			SML-D14DW (A)*			SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			
			20	SML-P11DT (R)			SML-P12DT (R)			SML-E12DW*1			SML-E12D8W			SML-D15DW			SML-D14DW (A)*			SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			
	1608	0.36	20	CSL1901DW			SML-D14DW (A)*			SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			SML-M13DT			SML-010DT			SML-011DT						
			2	CSL1901DW			SML-D14DW (A)*			SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			SML-M13DT			SML-010DT			SML-011DT						
	20125	0.55	20	SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			SML-M13DT			SML-010DT			SML-011DT			SML-011DT (A)*			SML-012DT (A)*			SML-012D8T			
			2	SML-D13DW (A)*			SML-D12D8W			SML-D12D1W			SML-H12D8T			SML-M13DT			SML-010DT			SML-011DT			SML-011DT (A)*			SML-012DT (A)*			SML-012D8T			
	Reflector	3020	1.3	20	SML-010DT			SML-011DT			SML-012DT (A)*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-A12D8T			SML-A12DT (J)*1			SML-811DT (A)*			CSL0901DT		
				10	SML-010DT			SML-011DT			SML-012DT (A)*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-A12D8T			SML-A12DT (J)*1			SML-811DT (A)*			CSL0901DT		
	PLCC2	3528	1.9	50	SML-A12D8T			SML-A12DT (J)*1			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-811DT (A)*			CSL0901DT		
				20	SML-A12D8T			SML-A12DT (J)*1			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-811DT (A)*			CSL0901DT		
Side View (mold)	16115	0.55	20	SML-A12D8T			SML-A12DT (J)*1			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-811DT (A)*			CSL0901DT			
Reverse Mount	34125	1.1	10	SML-811DT (A)*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-012D8T			SML-012DT			SML-Z14D4T*			SML-811DT (A)*			CSL0901DT						
Lens	1608	1.24	20	CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			SML-S13DT						
			2	CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			SML-S13DT						
Lens	3216	1.85	20	CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			SML-S13DT						
			2	CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			CSL0901DT			CSL0902DT			CSL0903DT			SML-S13DT			SML-S13DT						
Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (cd)	6 to 7	7 to 8	8 to 9	9 to 10	10 to 12	12 to 14	14 to 16	16 to 18	18 to 20	20 to 22	22 to 24	24 to 27	27 to 30	30 to 33	33 to 36	36 to 40	40 to 45	45 to 56	CSL0701DT												

*Please note that the luminous intensity of some products may fall between ranks (half rank).
 *1 Luminous intensity on specification sheet include tolerance of within ±10%. Note: Please be sure to refer the specifications about the rank.

SMD LEDs

Yellow (Y, W) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I_f (mA)	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800			
Mini-mold	1006	0.2	1					SML-P11YT (R)									SML-P12YT (R)							
			20															SML-P12Y3T (R)						
	1608	0.36	20																					
			2																					
	1608	0.55	20	2																				
				2																				
			20																					
			20																					
			20																					
			20																					
20125	0.8	20																						
20125	0.8	20																						
Reflector	3020	1.3	20																					
			10																					
	3020	1.3	20																					
			10																					
	3020	1.3	20																					
			10																					
PLCC2	3528	1.9	50																					
PLCC2	3528	1.9	20																					
Side View (mold)	16115	0.55	20																					
Reverse Mount	34125	1.1	10																					
Lens	1608	1.24	20																					
			20																					
	3216	1.85	20																					

Yellow Green (M), Green (P, F) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I_f (mA)	0.63 to 1.0	1.0 to 1.6	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1800	1800 to 2500		
Mini-mold	1006	0.2	1																					
			20																					
	1608	0.36	20																					
			2																					
	1608	0.55	20	2																				
				2																				
			20																					
			20																					
			20																					
			20																					
20125	0.8	20																						
Reflector	20125	0.8	20																					
			20																					
	3020	1.3	20																					
			20																					
	3020	1.3	20																					
			20																					
PLCC2	3528	1.9	50																					
PLCC2	3528	1.9	20																					
Side View (mold)	16115	0.55	20																					
Reverse Mount	34125	1.1	20																					
Lens	1608	1.24	20																					
			20																					
Lens	3216	1.85	20																					

*Please note that the luminous intensity of some products may fall between ranks (half rank).

*1 Luminous intensity on specification sheet include tolerance of within ±10%. Note: Please be sure to refer the specifications about the rank.

Green (E)/Blue Green (E2, E3) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd) I _f (mA)	9.0 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 2200	2200 to 3600	3600 to 5600
Mini-mold	1006	0.2	5							SMLP14ECNW							
		0.36	5							SMLN3EC8T							
	1608	0.55	5							SMLD12EN1W							
		1.06	5							SMLD12E2N1W							
Reflector	20125	0.8	5							CSL1001ET							
	3020	1.3	20							SMLMN2ECT (C)							
PLCC2	3528	1.9	20								SML012ENT						
		20												SMLZ24E2N3T			
Side View (mold)	16115	0.55	5							SMLA12ENT							
Lens	3216	1.85	20														SMLS14ENT
	1608	1.24	20								CSL0901ET						
														CSL0902ET			

Blue (B) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd) I _f (mA)	0.9 to 1.4	1.4 to 2.2	2.2 to 3.6	3.6 to 5.6	5.6 to 9.0	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	
Mini-mold	1006	0.2	5																	
		0.36	5																	
	1608	0.55	5																	
		1.06	1																	
Reflector	20125	0.8	5																	
	3020	1.3	20																	
PLCC2	3528	1.9	20																	
		20																		
Side View (mold)	16115	0.55	5																	
Reverse Mount	34125	1.1	20																	
Lens	1608	1.24	5																	
	3216	1.85	20																	

White (WB) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd) I _f (mA)	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1100	1100 to 1400	1400 to 1800	1800 to 2200	2200 to 2600	2600 to 3600	3600 to 7000	7000 to 8500	
Mini-mold	1006	0.2	5																			
		0.36	5																			
	1608	0.55	5																			
Side View (Reflector)	16115	0.55	5																			
Reverse Mount	2812	0.8	20																			
	34125	1.1	2																			
Reflector	1608	0.55	20																			
		5																				
	20125	0.8	5																			
		5																				
PLCC2	3528	1.9	20																			

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (cd) I _f (mA)	2.2 to 2.8	2.8 to 3.3	3.3 to 4.0	4.0 to 4.8	4.8 to 5.8	5.8 to 7.0	7.0 to 8.5	8.5 to 10.2	10.2 to 12.3	12.3 to 14.8	14.8 to 19	19 to 21.8	21.8 to 24.5	24.5 to 27.2	27.2 to 29.3	29.3 to 32.6	32.6 to 35.4	
Reflector	4520	0.6	90																		

*Please note that the luminous intensity of some products may fall between ranks (half rank).
 *1 Luminous intensity on specification sheet include tolerance of within ±10%. Note: Please be sure to refer the specifications about the rank.

SMD LEDs

2 Colors Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd) Emitting Color	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160			
					Mini-mold	1010	0.2	20	Red							
Yellow Green																
SML-P24MUW-(R)																
1315	0.6	5	Red													
			Blue													
			SML522BUNW													
		20	Red													
			Yellow Green													
			SML-522MUW													
			Red													
			Yellow Green													
			SML-522MU8W													
1608	0.55	5	Orange													
			Yellow Green													
			SML-522MD8W													
Reflector	3025	1.3	20	Yellow Green												
				SML-D22MUW												
				Red												
				SML-D22YVW												
				Orange												
				SML-020MDT												
				Yellow Green												
				Red												
				SML-020MVT												
				Yellow Green												
				SML-020MYT												
				Reverse Mount	34125	1.1	20	Yellow Green								
SML-822MV8W																
Red																
SML-825MVW																

3 Colors Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd) Emitting Color	5.6 to 9.0	9.0 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 1800			
					Mini-mold	1010	0.2	5	Red											
SMLP34RGBN1W																				
1510	0.2	5	Green																	
			SMLP36RGBNW																	
Reflector	1816	0.5	20	Blue																
				SML0402RGBU																
				Red																
				Green																
				SMLV6RGB1W																
				Blue																
	3528	0.6	20	Red																
				Green																
				SMLV6RGB1U																
				Blue																
				Red																
				SMLV6RGB7W																
Side View (Reflector)	29135	1.0	20	Blue																
				Red																
				Green																
				MSL0601RGBU																
	6922	2.15	20	Blue																
				Red																
				Green																
				MSL0104RGBW																
6922	2.15	20	Blue																	
			Red																	
			Green																	
			MSL0104RGBU																	

*1 Luminous intensity on specification sheet include tolerance of within ±10%. Note: Please be sure to refer the specifications about the rank.

SMD LEDs (Automotive Grade)

Red (V, U) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I _F (mA)	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2500	2500 to 3120					
Mini-mold	1608	0.55	20									SML-D15VW (C)											
											SML-D13VW (C)												
											SML-D12V8W (C)												
	20125	0.8	20										SML-D15UW (C)										
													SML-D15U2W (C)										
													SML-D13UW (C)										
								SML-D12U8W (C)															
PLCC	3528	1.9	20							SML-Z14VT (C)													
Reverse Mount	34125	1.1	10										SML-Z14UT (C)										
													SML-811VT (C)										
													SML-811UT (C)										
Lens	1608	1.24	20																				

Orange (D) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I _F (mA)	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800
Mini-mold	1608	0.55	20													
	20125	0.8	20													
PLCC	3528	1.9	20													
Lens	1608	1.24	20													
Reverse Mount	34125	1.1	10													

Yellow (Y, W) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I _F (mA)	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000	1000 to 1600	1600 to 2800		
Mini-mold	1608	0.55	20	2																	
	20125	0.8	20																		
PLCC	3528	1.9	20																		
Reverse Mount	34125	1.1	10																		
Lens	1608	1.24	20																		

Yellow Green (M), Green (P, F) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	Luminous Intensity (mcd)	I _F (mA)	1.6 to 2.5	2.5 to 4.0	4.0 to 6.3	6.3 to 10	10 to 16	16 to 25	25 to 40	40 to 63	63 to 100	100 to 160	160 to 250	250 to 400	400 to 630	630 to 1000		
Mini-mold	1608	0.55	20																	
	20125	0.8	20																	
PLCC	3528	1.9	20																	
Lens	1608	1.24	20																	

SMD LEDs (Automotive Grade)

Green (E)/Blue Green (E2, E3) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd)	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1400	1400 to 2200	2200 to 3600	3600 to 5600
Mini-mold	1608	1.06	5				CSL1001ET (C)								
Reflector	20125	0.8	5		SMLMN2ECT (C)										
PLCC	3528	1.9	20									SMLZ24E2N3T (C)			
Lens	1608	1.24	5						CSL0901ET (C)						
			20								CSL0902ET (C)				

Blue (B) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd)	2.2 to 3.6	3.6 to 5.6	5.6 to 9.0	9 to 14	14 to 22	22 to 36	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900
Mini-mold	1608	0.55	5						SMLD12BN1W (C)								
		1.06	1		CSL1001BT (C)												
Reflector	20125	0.8	5		SMLMN2BCT (C)												
PLCC	3528	1.9	20										SMLZ24BN3T (C)				
Lens	1608	1.24	5							CSL0901BT (C)							
			20									CSL0902BT (C)					

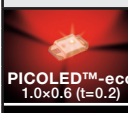
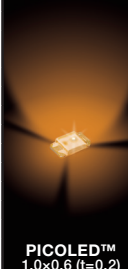
White (WB) Quick Reference of Luminous intensity

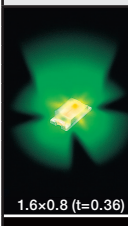

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd)	36 to 56	56 to 90	90 to 140	140 to 220	220 to 360	360 to 560	560 to 900	900 to 1100	1000 to 1400	1400 to 1800	
Mini-mold	1608	0.55	5		SMLD12WBN1W (C)										
Reflector	1608	0.55	5		CSL1101WBAW (C)										
					CSL1101WBBW (C)										
					CSL1101WBCW (C)										
					CSL1101WBDW (C)										
			20		CSL1102WBAW (C)										
					CSL1102WBBW (C)										
	CSL1102WBCW (C)														
	CSL1102WBDW (C)														
	20125	0.8	5		SMLMN2WB1CW (C)										

3 Colors (RGB) Quick Reference of Luminous intensity

Package Structure	Package Size (mm)	Height (mm)	I _F (mA)	Luminous Intensity (mcd)	Emitting Color	220 to 280	280 to 360	360 to 450	450 to 560	560 to 710	710 to 900	900 to 1100	1100 to 1400	1400 to 1800	1800 to 2200
Reflector	3528	0.6	20		Red										
					Green					SMLVN6RGBFU1 (C)					
					Blue										

SMD LEDs

PICOLED™ Mold type 0402 (1006M)																		
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _p / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _r		Power Dissipation P _b (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _r (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _r (mA)	Typ (V)	I _r (mA)	Max (μA)	V _R (V)						
	Red	SML-P11VT (R)	626	1	2	4	6	1	1.8	1	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P11UT (R)	621	1	1	3	6	1	1.8	1	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Orange	SML-P11DT (R)	605	1	4	7	16	1	1.9	1	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Yellow	SML-P11YT (R)	586	1	4	8	16	1	1.9	1	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Yellow Green	SML-P11MT (R)	569	1	1	2	4	1	1.9	1	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Red	SML-P12VT (R)	630	20	25	60	100	20	2.0	20	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12UT (R)	620	20	40	85	160	20	2.0	20	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12U2T (R)	615	20	25	70	160	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Orange	SML-P12DT (R)	605	20	63	100	250	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12Y3T (R)	596	20	40	90	250	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12YT (R)	590	20	40	100	160	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Yellow	SML-P12WT (R)	585	20	25	70	160	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12Y2T (R)	580	20	16	50	100	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P12M2T (R)	576	20	10	25	63	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Yellow Green	SML-P12MT (R)	572	20	10	25	63	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100
		SML-P13FT (R)	566	20	6	18	40	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
	Green	SML-P13PT (R)	560	20	4	10	16	20	2.1	20	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100
		New SMLP14ECNW	527	5	56	110	220	5	3.0	5	100	5	34	10	50 ^{*2}	5	-40 to +85	-40 to +100
	Blue	New SMLP14BCNW	470	5	9	25	56	5	2.9	5	100	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100
		SMLP14WBCN1W	(x, y) (0.30, 0.30)	5	90	180	360	5	2.9	5	100	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100

Mold type 0603 (1608M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)						
			Dominant Wavelength λ _p / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _r		Power Dissipation P _b (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)	
			Typ* (nm)	I _r (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _r (mA)	Typ (V)	I _r (mA)	Max (μA)	V _R (V)							
	Red	SML-E12V8W	630	20	16	40	100	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
		SML-E12UW	624	20	36	85	280	20	2.0	20	10	5	62	25	60 ^{*1}	5	-30 to +85	-40 to +85	
		SML-E12U8W	620	20	25	63	160	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Orange	SML-E12DW	607	20	56	150	450	20	2.0	20	10	5	62	25	60 ^{*1}	5	-30 to +85	-40 to +85	
		SML-E12D8W	605	20	40	100	250	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
		SML-E12Y8W	590	20	25	63	160	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow Green	SML-E12M8W	572	20	10	25	63	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
		SML-E12P8W	560	20	3	6	16	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Green	New SMLN3EC8T	527	5	56	120	360	5	3.0	5	10	5	68	20	100 ^{*2}	5	-40 to +85	-40 to +100	
		SMLN3BC8T	470	5	14	40	90	5	2.9	5	10	5	66	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Blue	New SMLN3WBC8W	(x, y) (0.30, 0.30)	5	56	120	220	5	2.9	5	10	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100	
		SMLN3WBC8W	(x, y) (0.30, 0.30)	5	56	120	220	5	2.9	5	10	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100	
	Red	SML-D12L8W	635	20	10	16	40	20	2.0	20	10	5	50	20	100 ^{*5}	5	-40 to +85	-40 to +100	
		SML-D14VW (A)				71	100	180					72	30					
		Single rank SML-D15VW				90	112	112		2.0				84	35			-40 to +100	
		SML-D13VW (A)				36	55	90	20		20			72	30	100 ^{*2}	5		-40 to +100
		SML-D12V8W				16	48	100											
		SML-D12V1W				25	48	63		2.2				54	20			-40 to +85	
		New CSL1901VW				2	1.6	4.8	6.3	2	1.8	2		44					
		Single rank SML-D15UW				90	112	140						84	35				
		SML-D13UW (A)				56	85			2.0				72	30			-40 to +100	
	Orange	SML-D13U8W				40	70	160	20	2.1	20	10	5	52	20	100 ^{*2}	5		-40 to +100
		SML-D12U8W				25		63		2.2				54	20			-40 to +85	
		SML-D12U1W				40		100											
		New CSL1901UW				2	2.5	6	10	2	1.8	2		44					
		SML-D14U2W (A)				90	160	224						72	30			-40 to +100	
		Single rank SML-D15U2W				112	140	180		2.0	20	10	5	84	35	100 ^{*2}	5	-40 to +100	-40 to +100
Yellow	Single rank SML-D15DW				180	224	280						84	35					
	SML-D14DW (A)				112	200			2.0								-40 to +100		
	SML-D13DW (A)				71	120	180	20		20	10	5	72	30	100 ^{*2}	5		-40 to +100	
	SML-D12D8W				40		250		2.2				54	20			-40 to +85		
	SML-D12D1W				63		160												
	New CSL1901DW				2	6.3	9.4	25	2	1.8	2		44						
Green	Single rank SML-D15YW				180	224	280						87	35					
	SML-D14YW (A)				112	200			2.1				75	30			-40 to +100		
	SML-D12Y1W				63	100	160	20		20	10	5	54	20	100 ^{*2}	5		-40 to +100	
	SML-D13Y8W				25	63			2.2								-40 to +85		
	SML-D12Y8W				25	63													
	New CSL1901YW				2	6.3	9.4	25	2	1.8	2		44						
Yellow Green	SML-D12W8W (A)				5	7	9	2	2.0	2	10	12	52	20	100 ^{*2}	12	-40 to +100	-40 to +100	
	SML-D11YW				2	4	6		1.9			5	67	25		5	-40 to +85		
	SML-D14WW (A)				112	180	280												
	SML-D13WW (A)				71	110	180	20	2.1	20	10	5	75	30	100 ^{*2}	5		-40 to +100	
	SML-D13Y2W				40	80	160		2.1				78	30			-40 to +100		
	SML-D12Y3W				16	40	100	20	2.2	20	10	5	54	20	100 ^{*2}	5		-40 to +85	
Blue Green	SML-D12M1W				16	30	63	20	2.2	20	10	5	54	20	100 ^{*2}	5		-40 to +85	
	SML-D13M8W				10	25													
	SML-D12M8W				56	71							87	35					
	Single rank SML-D15MW				56	71	90												
	SML-D14MW (A)				36	60			2.1	20	10	5	75	30	100 ^{*2}	5		-40 to +100	
	SML-D13MW (A)				28	45	71												
Blue	New CSL1901MW				2	1	3	4	2	1.8	2	10	5	44	20	100 ^{*2}	5		-40 to +85
	SML-D13FW				18	22	36	20		2.1	20	10	5	81	30	100 ^{*2}	5		-40 to +85
	SML-D12FW				14	18	28	20		2.2			67	25			-40 to +85		
	SML-D12P8W				20	3	6	16	20	2.2									

SMD LEDs

Mold type 0603 (1608M)

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
1.6x0.8 (t=1.06)	Green	CSL1001ET (C)	527	5	90	140	224	5	3.0	5	10	5	35	10	50*2	5	-40 to +100	-40 to +100
	Blue	CSL1001BT (C)	470	1	4	6	9	1	2.8	1	10	5	33	10	50*2	5	-40 to +100	-40 to +100

Mold type 0805 (20125M)

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
2.0x1.25 (t=0.8)	Red	SML-H12V8T	630	20	16	25	63	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
		SML-H12U8T	620	20	25	40	100	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Orange	SML-H12D8T	605	20	40	63	160	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Yellow	SML-H12Y8T	590	20	40	63	160	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-H12M8T	572	20	10	25	40	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Green	SML-H12P8T	560	20	3	4	10	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100

Reflector type 0603 (1608M)

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
1.6x0.8 (t=0.55)	White	<i>New</i> CSL1101WBAW	(x, y) (0.282, 0.249)	5	90	140	220	5	2.9	5	10	5	68	20	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1101WBBW	(x, y) (0.261, 0.261)	5	90	140	220	5	2.9	5	10	5	68	20	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1101WBCW	(x, y) (0.303, 0.294)	5	90	140	220	5	2.9	5	10	5	68	20	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1101WBDW	(x, y) (0.284, 0.303)	5	90	140	220	5	2.9	5	10	5	68	20	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1102WBAW	(x, y) (0.282, 0.249)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1102WBBW	(x, y) (0.261, 0.261)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1102WBCW	(x, y) (0.303, 0.294)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1102WBDW	(x, y) (0.284, 0.303)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100*2	12	-40 to +110	-40 to +110
		<i>New</i> CSL1103WBAW	(x, y) (0.282, 0.249)	20	900	1,500	2,200	20	3.2	20	10	5	152	40	100*2	5	-40 to +110	-40 to +110
		<i>New</i> CSL1103WBBW	(x, y) (0.261, 0.261)	20	900	1,500	2,200	20	3.2	20	10	5	152	40	100*2	5	-40 to +110	-40 to +110
		<i>New</i> CSL1103WBCW	(x, y) (0.303, 0.294)	20	900	1,500	2,200	20	3.2	20	10	5	152	40	100*2	5	-40 to +110	-40 to +110
		<i>New</i> CSL1103WBDW	(x, y) (0.284, 0.303)	20	900	1,500	2,200	20	3.2	20	10	5	152	40	100*2	5	-40 to +110	-40 to +110
		<i>New</i> CSL1104WBAW	(x, y) (0.282, 0.249)	20	1,400	2,000	2,800	20	2.9	20	10	5	144	40	100*2	5	-40 to +110	-40 to +110
		<i>New</i> CSL1104WBBW	(x, y) (0.261, 0.261)	20	1,400	2,000	2,800	20	2.9	20	10	5	144	40	100*2	5	-40 to +110	-40 to +110
<i>New</i> CSL1104WBCW	(x, y) (0.303, 0.294)	20	1,400	2,000	2,800	20	2.9	20	10	5	144	40	100*2	5	-40 to +110	-40 to +110		
<i>New</i> CSL1104WBDW	(x, y) (0.284, 0.303)	20	1,400	2,000	2,800	20	2.9	20	10	5	144	40	100*2	5	-40 to +110	-40 to +110		

Reflector type 0805 (20125M)

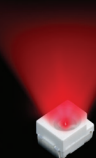
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
2.0x1.25 (t=0.8)	Red	SML-M13VT	630	20	40	75	100	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
		SML-M13UT	620	20	63	120	160	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
	Orange	SML-M13DT	605	20	100	160	250	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
		SML-M13YT	590	20	100	160	250	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-M13MT	572	20	25	45	100	20	2.2	20	10	5	81	30	100*2	5	-40 to +85	-40 to +100
		SML-M13PT	560	20	6	16	25	20	2.2	20	10	5	81	30	100*2	5	-40 to +85	-40 to +100
	Green	SMLMN2ECT (C)	527	5	56	140	360	5	3.0	5	10	12	70	20	100*2	12	-40 to +100	-40 to +100
		SMLMN2BCT (C)	470	5	14	36	90	5	2.9	5	10	12	68	20	100*2	12	-40 to +100	-40 to +100
	White	SMLMN2WB1CW (C)	(x, y) (0.30, 0.28)	5	56	140	220	5	2.9	5	10	12	68	20	100*2	12	-40 to +100	-40 to +100

Reflector type (3020M)


Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
3.0x2.0 (t=1.3)	Red	SML-010VT	650*6	20	2	6	18	20	2.0	20	10	4	70	25	60*1	4	-30 to +85	-40 to +85
		SML-011VT (A)	639*6	10	14	28	56	10	2.0	10	5	75	30	100*2	5	-40 to +100	-40 to +100	
		SML-011UT	630*6	20	22	63	180	20	2.0	20	10	5	75	30	100*2	5	-40 to +100	-40 to +100
		SML-012VT (A)	630*6	20	36	71	140	20	2.0	20	10	5	75	30	100*2	5	-40 to +100	-40 to +100
		SML-012V8T																
		SML-013UT																
		SML-012UT																
		SML-012U8T																
		SML-011DT																
		SML-011DT (A)																
	Orange	SML-010DT																
		SML-012DT																
		SML-012D8T																
		SML-012DT (A)																
		SML-011YT																
		SML-011YT (A)																
	Yellow	SML-012WT (A)																
		SML-013YT																
		SML-012YT																
		SML-012Y8T																
		SML-012YT (A)																
		SML-010YT																
	Yellow Green	SML-012M8T																
		SML-010MT																
	Green	SML-012PT (A)																
		SML-012P8T																
		SML-010PT																
		SML-010PT																
	Blue	<i>New</i> SML012ENT																
		<i>New</i> SML013BNT																

*1 Duty:1/5, 200Hz *2 Duty:1/10, 1kHz *3 Duty:1/20, 1ms *4 Duty:1/5, 1kHz *5 Duty:1/10, pulse width 10ms Max *6 Peak wavelength
 *Luminous intensity for white color is noted with chromaticity coordinate (x, y).
 Note: AutomotiveGrade products are indicated by a 'C' at the end of the part number. For details, please contact a sales representative.



Reflector type PLCC (3528M)

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)				
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
	Red	SML-Z14V4T	630	50	140	280	560	50	2.0	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14VT (A)		20	56	112	180	20	1.9	20	168							
		SML-Z14U4T	620	50	280	560	1,120	50	2.0	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14UT (A)		20	112	224	355	20	1.9	20	168							
	Orange	SML-Z14D4T	605	50	355	710	1,400	50	2.0	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14DT (A)		20	140	280	450	20	1.9	20	168							
	Yellow	SML-Z14Y4T	590	50	355	710	1,400	50	2.1	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14YT (A)		20	140	280	450	20	2.0	20	10	12	175					
	Yellow Green	SML-Z14M4T	572	50	112	224	450	50	2.1	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14MT (A)		20	45	90	140	20	2.0	20	10	12	175					
	Green	SML-Z14F4T	565	50	56	120	180	50	2.1	50	10	12	189	70	200*2	12	-40 to 100	-40 to 100
		SML-Z14FT (A)		20	22	45	71	20	2.0	20	10	12	175					
SML-Z14P4T		50		22	56	90	50	2.1	50	10	12	189						
SML-Z14PT (A)		20		11	22	36	20	2.0	20	10	12	175						
New SMLZN4EGT (A)		20		900	1,500	2,200	20	3.4	20	10	5	120	30					
Blue Green	SMLZ24E2N3T (C)	505	20	900	1,140	1,800	20	3.2	20	—	—	152	40	100*2	—	-40 to 100	-40 to 100	
Blue	SMLZ24BN3T (C)	470	20	220	300	450	20	3.3	20	—	—	114	30	100*2	0.9	-40 to 100	-40 to 100	
	SMLZN4BGT (A)		140															
White	SMLZN4WBGUW (A)	(x, y) (0.30, 0.28)	20	1,800	2,400	3,600	20	3.3	20	—	—	114	30	100*2	0.9	-40 to 85	-40 to 100	



Reflector type (4520M)

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)						
			Chromaticity Coordinates* (x, y)		Luminous Intensity I _v				Luminous Flux Φ _v		Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (lm)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	White	New SMLK18WBNCW	(0.30, 0.28)	90	4,800	5,900	8,500	90	21	90	3.9	90	10	5	675	150	230*6	5	-40 to +100	-40 to +100

Side View type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)				
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
	Red	SML-A12V8T	630	20	16	40	100	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
		SML-A12UT (J)	624	20	36	100	280	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
		SML-A12U8T	620	20	25	63	160	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Orange	SML-A12DT (J)	606	20	36	100	280	20	2.0	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100
		SML-A12D8T	605	20	40	100	250	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Yellow	SML-A12WT (J)	590	36	180	2.0	75	30	100*2	5	-40 to +85	-40 to +100						
		SML-A12Y8T		20	25	63	160	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
		SML-A15YT		180	—	280	2.1	87	35	100*2	5	-40 to +100						
	Yellow Green	SML-A12M8T	572	20	10	25	63	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
		SML-A12MT (J)	570	20	14	40	110	20	2.1	20	100	5	65	25	100*2	5	-40 to +85	-40 to +85
	Green	SML-A12P8T	560	20	3	6	16	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
		New SMLA12ENT	527	5	56	140	220	5	3.0	5	100	5	68	20	100*2	5	-40 to +85	-40 to +100
Blue	New SMLA12BN8T	470	5	9	36	56	5	2.9	5	10	5	66	20	100*2	5	-40 to +85	-40 to +100	
White	New SMLA12WBN7W	(x, y) (0.30, 0.30)	5	22	56	140	5	2.9	5	10	5	33	10	50*2	5	-40 to +85	-40 to +100	
	White	New CSL0416WBCW	(x, y) (0.30, 0.28)	20	1,400	2,200	3,600	20	3.2	20	50	5	117	30	100*2	5	-40 to +85	-40 to +100

Reverse Mount type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)				
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
	Red	SML-811VT (A)	630	10	11	22	45	10	2.0	10	100	5	62	25	100*2	5	-40 to +85	-40 to +100
		SML-811UT (A)	620	10	11	22	45	10	2.0	10	100	5	62	25	100*2	5	-40 to +85	-40 to +100
	Orange	SML-811DT (A)	605	10	11	22	45	10	2.0	10	100	5	62	25	100*2	5	-40 to +85	-40 to +100
	Yellow	SML-811WT (A)	590	10	14	28	56	10	2.0	10	100	5	62	25	100*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-812MT	571	20	14	40	110	20	2.1	20	100	4	65	25	60*1	4	-30 to +85	-40 to +85
Blue	New SML813BNT	470	20	90	185	360	20	3.2	20	100	5	76	20	100*2	5	-40 to +85	-40 to +85	
White	New SML811WBCN1W	(x, y) (0.272, 0.279)	2	9	22	45	2	2.8	2	10	5	35	10	50*2	5	-40 to +85	-40 to +100	
	Yellow Green	SML-822MV8W	572	20	16	25	40	20	2.2	20	100	5	54	20	100*2	5	-40 to +85	-40 to +100
	Red	SML-825MVV	630	20	16	30	63	20	2.2	20	100	5	54	20	100*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-825MVV	572	20	40	63	100	20	2.1	20	100	5	80	30	100*2	5	-40 to +85	-40 to +100
Red	SML-825MVV	630	20	40	63	100	20	2.0	20	100	5	80	30	100*2	5	-40 to +85	-40 to +100	

*1 Duty≤1/5, 200Hz *2 Duty≤1/10, 1kHz *3 Duty≤1/20, 1ms *4 Duty≤1/5, 1kHz *5 Duty≤1/10, pulse width 10ms Max
 *Luminous intensity for white color is noted with chromaticity coordinate (x, y).

SMD LEDs

Surface Mount Circular type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)										
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)					
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)											
	Red	CSL0903VT	630	20	560	800	1,400	20	2.1	20	10	12	87	35	100*2	12	-40 to +100	-40 to +100					
		CSL0902VT			180	280	450																
		CSL0901VT			112	180	355																
		CSL0903UT			710	1,200	1,800																
	Orange	CSL0902UT	620	20	224	355	560	20	2.1	20	10	12	87	35	100*2	12	-40 to +100	-40 to +100					
		CSL0901UT			140	280	450																
		CSL0903DT			900	1,400	2,240																
		CSL0902DT			355	560	900																
	Yellow	CSL0901DT	605	20	224	400	710	20	2.1	20	10	12	87	35	100*2	12	-40 to +100	-40 to +100					
		CSL0903YT			560	800	1,400																
		CSL0902YT			355	560	900																
		CSL0901YT			180	320	560																
Yellow Green	CSL0901WT	587	20	180	280	560	20	2.1	20	10	12	62.5	25	100*2	12	-40 to +100	-40 to +100						
	CSL0902MT			112	180	280																	
	CSL0901MT			56	100	180																	
	CSL0901PT			560	20	14												30	45	20	2.1	20	10
Green	CSL0902ET	527	20	710	1,100	1,800	20	3.4	20	10	5	95	25	100*2	5	-40 to +100	-40 to +100						
	CSL0901ET			5	220	360												560	5	3.0	5	70	20
	CSL0902BT			20	220	360												560	20	3.3	20	95	25
	CSL0901BT			5	36	56												90	5	2.9	5	68	20
Reverse Mount Available 3.2x1.6 (t=1.85) 2.9x2.4 (t=3.1)	Red	SML-S13VT	630	20	160	450	630	20	1.9	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100					
		SML-S13UT	620	20	400	700	1,600	20	1.9	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100					
		SML-S13DT	605	20	630	1,400	2,500	20	1.9	20	10	5	75	30	100*2	5	-40 to +85	-40 to +100					
	Orange	SML-S13YT	590	20	630	1,400	2,500	20	2.0	20	10	5	78	30	100*2	5	-40 to +85	-40 to +100					
		SML-S13MT	572	20	160	400	630	20	2.0	20	10	5	78	30	100*2	5	-40 to +85	-40 to +100					
	Yellow Green	SML-S13PT	560	20	63	160	400	20	2.0	20	10	5	78	30	100*2	5	-40 to +85	-40 to +100					
		SMLS14ENT	527	20	1,800	3,000	4,500	20	3.3	20	10	5	117	30	100*2	5	-40 to +85	-40 to +100					
Blue	SMLS14BNT	470	20	450	800	1,400	20	3.2	20	10	5	117	30	100*2	5	-40 to +85	-40 to +100						
Red	CSL0701UT	624	20	9,000	18,000	25,000	20	2.1	20	10	5	120	50	150*2	5	-40 to +85	-40 to +100						
Orange	CSL0701DT	605	20	20,000	35,000	50,000	20	2.1	20	10	5	120	50	150*2	5	-40 to +85	-40 to +100						

2 Colors type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
	Yellow Green	SML-P24MUW (R)	572	20	10	21	40	20	2.2	20	10	5	54	20	100*2	5	-40 to +85	-40 to +100
	Red		620	20	25	52	100	20	2.1	20	10	5	52	20	100*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-D22MUW	570	5	6	10	16	5	2.0	5	10	5	67	25	100*2	5	-40 to +105	-40 to +110
	Red	SML-D22YVW	588	5	16	25	40	5	2.0	5	10	5	67	25	100*2	5	-40 to +105	-40 to +110
	Yellow	SML-D22YVW	588	5	16	25	40	5	2.0	5	10	5	67	25	100*2	5	-40 to +105	-40 to +110
	Red	SML-D22YVW	629	5	10	16	25	5	1.9	5	10	5	65	25	100*2	5	-40 to +105	-40 to +110
	Blue	SML522BUNW	470	5	9	22	36	5	2.9	5	10	5	66	20	100*2	5	-40 to +85	-40 to +100
	Red	SML522BUNW	624	5	10	21	40	5	1.9	5	10	5	50	20	60*2	5	-40 to +85	-40 to +100
	Yellow Green	SML-522MUW	570	20	14	40	71	20	2.1	20	100	4	52	20	60*2	4	-30 to +85	-40 to +85
	Red	SML-522MUW	630	20	22	63	110	20	1.9	20	100	4	50	20	60*2	4	-30 to +85	-40 to +85
	Yellow Green	SML-522MU8W	572	20	16	40	63	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Red	SML-522MU8W	620	20	25	63	100	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Yellow Green	SML-522MD8W	572	20	10	25	40	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Orange	SML-522MD8W	605	20	40	100	160	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Yellow Green	SML-522MY8W	572	20	16	40	63	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Yellow	SML-522MY8W	590	20	40	63	160	20	2.2	20	100	4	54	20	100*2	4	-40 to +85	-40 to +100
	Yellow Green	SML-020MDT	570*10	20	9	20	45	20	2.2	20	100	4	60	25	60*1	4	-30 to +85	-40 to +85
	Orange		610*10	20	6	10	18	20	2.0	20	100	4	60	25	60*1	4	-30 to +85	-40 to +85
	Yellow Green	SML-020MVT	570*10	20	9	20	45	20	2.2	20	100	4	60	25	60*1	4	-30 to +85	-40 to +85
	Red		650*10	20	4	6	11	20	2.0	20	100	4	60	25	60*1	4	-30 to +85	-40 to +85
	Yellow Green	SML-020MYT	570*10	20	9	21	45	20	2.2	20	100	4	60	25	60*1	4	-30 to +85	-40 to +85
			Yellow	585*10	20	6	10	18	20	2.1	20	100	4	60	25	60*1	4	-30 to +85

3 Colors type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)						
	Red	SMLP34RGBN1W	624	5	36	80	140	5	2.1	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Green		527	5	140	220	360	5	3.1	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Blue		470	5	36	60	140	5	3.0	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Red	SMLP36RGBNW	624	5	36	80	140	5	1.9	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Green		527	5	140	220	360	5	2.9	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Blue	MSL0402RGBU*9	470	5	36	60	140	5	2.95	5	10	5	35	10	50*3	5	-40 to +85	-40 to +100
	Red		624	20	220	400	560	20	2.1	20	10	5	180*5	30	100	5	-40 to +85	-40 to +100
	Green	527	20	360	550	900	20	3.5	20	100	5	180*5	30	100	5	-40 to +85	-40 to +100	
	Blue	470	20	90	180	360	20	3.3	20	100	5	180*5	30	100	5	-40 to +85	-40 to +100	
	Red	SMLVN6R6B1U*9	624	20	450	700	1,100	20	2.1	20	10	5	400*5	50	100	5	-40 to +85	-40 to +100
	Green		527	20	710	1,200	1,800	20	3.3	20	—	—	400*5	40	100	—	-40 to +85	-40 to +100
	Blue	470	20	220	400	560	20	3.3	20	—	—	400*5	40	100	—	-40 to +85	-40 to +100	
	Red	SMLVN6R6B1W*8	624	20	450	700	1,100	20	2.1	20	10	5	400*5	50	100	5	-40 to +85	-40 to +100
	Green		527	20	710	1,200	1,800	20	3.3	20	—	—	400*5	40	100	—	-40 to +85	-40 to +100
	Blue	470	20	220	400	560	20	3.3	20	—	—	400*5	40	100	—	-40 to +85	-40 to +100	
	Red	SMLVN6R6B7W	624	20	280	500	900	20	2.1	20	10	5	180*5	30	100	5	-40 to +85	-40 to +100
	Green		527	20	560	1,000	1,800	20	3.5	20	—	—	180*5	30	100	—	-40 to +85	-40 to +100
Blue	470	20	140	300	560	20	3.3	20	—	—	180*5	30	100	—	-40 to +85	-40 to +100		

*1 Duty:1/5, 200Hz *2 Duty:1/10, 1kHz *3 Duty:1/20, 1ms *4 Duty:1/5, 1kHz *5 Duty:1/10, pulse width 10ms Max
 *6 Total power dissipation in case of lighting three colors. (when lighting three colors, it will be reduced down to 30% of it.)
 *7 50mmx50mm, Substrate: FR4; t=1.6mm Cu foil: t=0.07

3 Colors Side View type

Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R			Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ (nm)	I _r (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _r (mA)	Typ (V)	I _r (mA)	Max (μA)	V _R (V)							
	Red	MSL0104RGBU*9	624	20	450	700	1,100	20	2.1	20	10	5	400 ^{*6} ₂₇	50	100	5	-40 to +85	-40 to +100	
	Green		527	20	710	1,200	1,800	20	3.3	20	—	—	400 ^{*6} ₂₇	40	100	—	-40 to +85	-40 to +100	
	Blue		470	20	220	400	560	20	3.2	20	—	—	400 ^{*6} ₂₇	40	100	—	-40 to +85	-40 to +100	
	Red	MSL0104RGBW*8	624	20	450	700	1,100	20	2.1	20	10	5	400 ^{*6} ₂₇	50	100	5	-40 to +85	-40 to +100	
Green	527		20	710	1,200	1,800	20	3.3	20	—	—	400 ^{*6} ₂₇	40	100	—	-40 to +85	-40 to +100		
Blue	470		20	220	400	560	20	3.2	20	—	—	400 ^{*6} ₂₇	40	100	—	-40 to +85	-40 to +100		
	Red	MSL0601RGBU	624	20	600	700	830	20	2.1	20	10	5	300 ^{*6} ₂₇	40	100	5	-40 to +85	-40 to +100	
	Green		527	20	1,100	1,250	1,500	20	3.3	20	10	5	300 ^{*6} ₂₇	30	100	5	-40 to +85	-40 to +100	
	Blue		470	20	290	360	500	20	3.2	20	10	5	300 ^{*6} ₂₇	30	100	5	-40 to +85	-40 to +100	

*1 Duty:1/5, 200Hz *2 Duty:1/10, 1kHz *3 Duty:1/20, 1ms *4 Duty:1/5, 1kHz *5 Duty:1/10, pulse width 10ms Max
 *6 Total power dissipation in case of lighting three colors. (when lighting three colors, it will be reduced down to 30% of it.)
 *7 50mmx50mm, Substrate: FR4; t=1.6mm Cu foil: t=0.07mm
 *8 Epoxy resin *9 Silicon resin *10 Peak wavelength

Surface Mount type Infrared LEDs

Package (mm)	Part No.	LED Chip	Emitting Color	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Rating (T _a =25°C)					
				Light Wavelength λ _P		Radiant Intensity				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
				Typ (nm)	I _r (mA)	Min (mW/sr)	Typ (mW/sr)	Max (mW/sr)	I _r (mA)	Typ (V)	I _r (mA)	Typ (μA)	V _R (V)						
	SML-M13RT	AlGaAs	Infrared	870	20	0.5	1.7	3.5	20	1.4	20	10	5	60	30	100 ^{*1}	5	-40 to +85	-40 to +100
	SML-S13RT	AlGaAs	Infrared	850	20	1.5	2.5	3.6	20	1.4	20	10	5	60	30	300 ^{*1}	5	-40 to +85	-40 to +100
	SML-S15R2T	AlGaAs	Infrared	870	20	5.6	12	22	20	1.4	20	10	5	100	50	300 ^{*1}	5	-40 to +85	-40 to +100
	SCM-013RT	AlGaAs	Infrared	850	20	0.5	2.0	5.0	20	1.4	20	10	5	57	30	300 ^{*1}	5	-40 to +85	-40 to +100
	New CSL1501RW	AlGaAs	Infrared	(860)	30	(1.2)	(1.6)	(2.2)	20	(1.4)	20	10	5	100	50	200 ^{*1}	5	-40 to +85	-40 to +100

Surface Mount photo transistor

Package (mm)	Part No.	LED Chip	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)					
			Light Current			Dark Current		Sensitivity λ _p Typ (nm)	Collector-Emitter Saturation Voltage			Collector-Emitter Voltage (V)	Emitter-Collector Voltage (V)	Collector Current (mA)	Collector Power Dissipation (mW)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	
			Min (mA)	Max (mA)	V _{CE} (V) / I _E (Lx)	Max (μA)	V _{CE} (V)		Min (V)	Typ (V)	Max (V)							I _C (mA) / I _E (Lx)
	SML-H10TB	Si	2.0	4.0	5/500	0.5	10	800	—	—	0.4	0.1/500	32	5	30	80	-30 to +85	-30 to +100
	SCM-014TB	Si	0.3	3.8	5/500	0.5	10	800	—	—	0.4	0.1/500	32	5	30	100	-30 to +85	-30 to +100
	SML-810TB	Si	2.3	3.8	5/500	0.5	10	800	—	—	0.4	0.1/500	32	5	30	80	-30 to +85	-30 to +100

*1 Duty:1/10, 1kHz



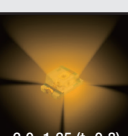
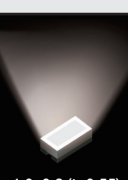
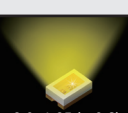
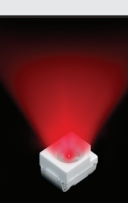
(): Reference

Low Current Type

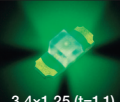
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)					
			Dominant Wavelength λ _D / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R			Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ* (nm)	I _r (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _r (mA)	Typ (V)	I _r (mA)	Max (μA)	V _R (V)							
	Red	SML-P11VT (R)	626	1	2	4	6	1	1.8	1	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Orange	SML-P11UT (R)	621	1	1	3	6	1	1.8	1	10	5	50	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow	SML-P11DT (R)	605	1	4	7	16	1	1.9	1	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow Green	SML-P11YT (R)	586	1	4	8	16	1	1.9	1	10	5	52	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow Green	SML-P11MT (R)	569	1	1	2	4	1	1.9	1	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Green	New SMLP14ECNW	527	5	56	110	220	5	3.0	5	100	5	34	10	50 ^{*2}	5	-40 to +85	-40 to +100	
	Blue	New SMLP14BCNW	470	5	9	25	56	5	2.9	5	100	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100	
	White	SMLP14WBCN1W	(x, y) (0.30, 0.30)	5	90	180	360	5	2.9	5	100	5	33	10	50 ^{*2}	5	-40 to +85	-40 to +100	
	Red	New CSL1901VW	630	2	1.6	4.8	6.3	2	1.8	2	10	5	44	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Orange	New CSL1901UW	620	2	2.5	6	10	2	1.8	2	10	5	44	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Orange	New CSL1901DW	605	2	6.3	9.4	25	2	1.8	2	10	5	44	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow	New CSL1901YW	590	2	6.3	9.4	25	2	1.8	2	10	5	44	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Yellow Green	New CSL1901MW	570	2	1	3	4	2	1.8	2	10	5	44	20	100 ^{*2}	5	-40 to +85	-40 to +100	
	Green	SMLD12EN1W	527	5	56	140	220	5	3.0	5	10	5	70	20	100 ^{*2}	5	-40 to +100	-40 to +100	
	Blue Green	SMLD12E2N1W	505	5	56	120	140	5	2.9	5	10	5	66	20	100 ^{*2}	5	-40 to +100	-40 to +100	
	Blue	SMLD12E3N1W	496	5	56	85	140	5	2.9	5	10	5	66	20	100 ^{*2}	5	-40 to +100	-40 to +100	
	Blue	SMLD12BN1W	470	5	14	40	56	5	2.9	5	10	5	66	20	100 ^{*2}	5	-40 to +100	-40 to +100	
	White	SMLD12WBN1W	(x, y) (0.295, 0.280)	5	56	120	220	5	2.9	5	10	5	66	20	100 ^{*2}	5	-40 to +100	-40 to +100	
	Yellow Green	SML-D22MUW	570	5	6	10	16	5	2.0	5	10	5	67	25	100 ^{*2}	5	-40 to +105	-40 to +110	
	Red	SML-D22YVW	620	5	10	16	25	5	1.9	5	10	5	65	25	100 ^{*2}	5	-40 to +105	-40 to +110	
Yellow	SML-D22YVW	588	5	16	25	40	5	2.0	5	10	5	67	25	100 ^{*2}	5	-40 to +105	-40 to +110		
Red	SML-D22YVW	629	5	10	16	25	5	1.9	5	10	5	65	25	100 ^{*2}	5	-40 to +105	-40 to +110		
	Blue	New SML522BUNW	470	5	9	22	36	5	2.9	5	10	5	66	20	60 ^{*2}	5	-40 to +85	-40 to +100	
	Red	New SML522BUNW	624	5	10	21	40	5	1.9	5	10	5	50	20	60 ^{*2}	5	-40 to +85	-40 to +100	

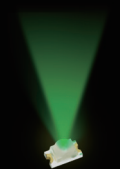
*1 Duty:1/5, 200Hz *2 Duty:1/10, 1kHz *3 Duty:1/20, 1ms *4 Duty:1/5, 1kHz *5 Duty:1/10, pulse width 10ms Max
 *Luminous intensity for white color is noted with chromaticity coordinate (x, y).
 Note: PICOLED™ is a trademark or a registered trademark of ROHM Co., Ltd.


SMD LEDs (Automotive Grade)

Automotive mold type 0603 (1608M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)				Automotive Grade AEC-Q101/AEC-Q102		
			Dominant Wavelength λ _d /Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)		Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Red	SML-D15VW (C)	630	20	71	90	112	20	2.0	20	10	12	84	35	100 ^{*1}	12	-40 to +100	-40 to +100	YES
		SML-D13VW (C)			35.5	55	90												
		SML-D12V8W (C)			16	40	100												
		SML-D15UW (C)	620	20	90	112	140	20	2.0	20	10	12	84	35	100 ^{*1}	12	-40 to +100	-40 to +100	YES
		SML-D13UW (C)			56	85	140												
		SML-D12U8W (C)			25	63	160												
	SML-D15U2W (C)	615	20	112	140	180	20	2.0	20	10	12	84	35	100 ^{*1}	12	-40 to +100	-40 to +100	YES	
	SML-D15DW (C)			180	224	280													
	SML-D13DW (C)			71	120	180													
	SML-D12D8W (C)	605	20	40	100	250	20	2.2	20	10	5	54	20	100 ^{*1}	5	-40 to +100	-40 to +100	YES	
	SML-D15YW (C)			180	224	280													
	SML-D12Y8W (C)			25	63	160													
SML-D12W8W (C)	587.5	2	4.5	7.1	11.2	2	2.0	2	10	12	52	20	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
SML-D13WV (C)	587	20	71	110	180	20	2.1	20	10	12	75	30	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
SML-D12M8W (C)	572	20	10	25	63	20	2.2	20	10	5	54	20	100 ^{*1}	5	-40 to +100	-40 to +100	YES		
SML-D15MW (C)	571	20	56	71	90	20	2.1	20	10	12	75	30	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
SML-D13MW (C)			28	45	71														
SML-D13FW (C)	564	20	14	22	35.5	20	2.1	20	10	12	75	30	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
SML-D12P8W (C)	560	20	2.5	6.3	16	20	2.2	20	10	5	54	20	100 ^{*1}	5	-40 to +100	-40 to +100	YES		
SMLD12BN1W (C)	470	5	14	40	56	5	2.9	5	10	12	66	20	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
SMLD12WB1W (C)	(x, y) (0.295, 0.28)	5	56	120	220	5	2.9	5	10	12	66	20	100 ^{*1}	12	-40 to +100	-40 to +100	YES		
	Green	CSL1001ET (C)	527	5	90	140	224	5	3.0	5	10	5	35	10	50 ^{*1}	5	-40 to +100	-40 to +100	YES
	Blue	CSL1001BT (C)	470	1	4	6	8	1	2.8	1	10	5	33	10	50 ^{*1}	5	-40 to +100	-40 to +100	YES
Automotive Mold type 0805 (20125M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)				Automotive Grade AEC-Q101/AEC-Q102		
			Dominant Wavelength λ _d /Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)		Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Red	SML-H12V8T (C)	630	20	16	25	63	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
		SML-H12U8T (C)	620	20	25	40	100	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
	Orange	SML-H12D8T (C)	605	20	40	63	160	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
		SML-H12Y8T (C)	590	20	40	63	160	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
	Yellow Green	SML-H12M8T (C)	572	20	10	25	40	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
	Green	SML-H12P8T (C)	560	20	2.5	4	10	20	2.2	20	10	5	54	20	100 ^{*2}	5	-40 to +85	-40 to +100	YES
Automotive reflector type 0603 (1608M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)				Automotive Grade AEC-Q101/AEC-Q102		
			Dominant Wavelength λ _d /Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)		Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	White	CSL1101WBAW (C)	(x, y) (0.282, 0.249)	5	90	140	220	5	2.9	5	10	5	68	20	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1101WBBW (C)	(x, y) (0.261, 0.261)	5	90	140	220	5	2.9	5	10	5	68	20	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1101WBCW (C)	(x, y) (0.303, 0.294)	5	90	140	220	5	2.9	5	10	5	68	20	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1101WBWD (C)	(x, y) (0.284, 0.303)	5	90	140	220	5	2.9	5	10	5	68	20	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1102WBAW (C)	(x, y) (0.282, 0.249)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1102WBBW (C)	(x, y) (0.261, 0.261)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1102WBCW (C)	(x, y) (0.303, 0.294)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100 ^{*1}	12	-40 to +110	-40 to +110	YES
		CSL1102WBWD (C)	(x, y) (0.284, 0.303)	20	710	1,000	1,400	20	3.2	20	10	5	152	40	100 ^{*1}	12	-40 to +110	-40 to +110	YES
Automotive reflector type 0805 (201258M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)				Automotive Grade AEC-Q101/AEC-Q102		
			Dominant Wavelength λ _d /Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)		Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Green	SMLMN2ECT (C)	527	5	56	140	360	5	3.0	5	10	12	70	20	100 ^{*2}	12	-40 to +100	-40 to +100	YES
	Blue	SMLMN2BCT (C)	470	5	14	36	90	5	2.9	5	10	12	68	20	100 ^{*2}	12	-40 to +100	-40 to +100	YES
	White	SMLMN2WB1CW (C)	(x, y) (0.30, 0.28)	5	56	140	220	5	2.9	5	10	12	68	20	100 ^{*2}	12	-40 to +100	-40 to +100	YES
Automotive reflector type PLCC (3528M)																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)				Automotive Grade AEC-Q101/AEC-Q102		
			Dominant Wavelength λ _d		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)		Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Red	SML-Z14VT (C)	630	20	56	112	180	20	1.9	20	10	12	168	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
		SML-Z14UT (C)	620	20	112	224	355	20	1.9	20	10	12	168	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
	Orange	SML-Z14DT (C)	605	20	140	280	450	20	1.9	20	10	12	168	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
		SML-Z14YT (C)	589	20	140	280	450	20	2.0	20	10	12	175	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
	Yellow Green	SML-Z14MT (C)	571	20	45	90	140	20	2.0	20	10	12	175	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
		SML-Z14FT (C)	564	20	22.4	45	71	20	2.0	20	10	12	175	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
	Green	SML-Z14PT (C)	560	20	11.2	22.4	35.5	20	2.0	20	10	12	175	70	200 ^{*2}	12	-40 to +100	-40 to +100	YES
		SMLZ24E2N3T (C)	505	20	900	1,140	1,800	20	3.2	20	—	—	152	40	100 ^{*2}	—	-40 to +100	-40 to +100	YES
Blue	SMLZ24BN3T (C)	470	20	220	300	450	20	3.3	20	—	—	114	30	100 ^{*2}	—	-40 to +100	-40 to +100	YES	

*1 Duty:1/10, 1kHz *2 Duty:1/10, 1kHz
*Luminous intensity for white color is noted with chromaticity coordinate (x, y).

Automotive Reverse Mount type																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)					Automotive Grade AEC-Q101/AEC-Q102
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Red	SML-811VT (C)	630	10	11.2	22.4	45	10	1.95	10	100	5	62	25	100 ^{*2}	5	-40 to +85	-40 to +100	YES
		SML-811UT (C)	620	10	11.2	22.4	45	10	1.95	10	100	5	62	25	100 ^{*2}	5	-40 to +85	-40 to +100	YES
	Orange	SML-811DT (C)	605	10	11	22	45	10	2.0	10	100	5	62	25	100 ^{*2}	5	-40 to +85	-40 to +100	YES
	Yellow	SML-811WT (C)	590	10	14	28	56	10	1.95	10	100	5	62	25	100 ^{*2}	5	-40 to +85	-40 to +100	YES

Automotive Reverse Surface Mount Circular type																													
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)					Automotive Grade AEC-Q101/AEC-Q102										
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)											
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)																	
	Red	New CSL0903VT (C)	630	20	560	800	1,120	20	2.1	20	10	12	87	35	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0902VT (C)			180	280	355												YES										
		New CSL0901VT (C)			140	180	280												YES										
	Orange	New CSL0903UT (C)	620	20	900	1,200	1,800	20	2.1	20	10	12	87	35	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0902UT (C)			280	450	560												YES										
		New CSL0901UT (C)			180	280	355												YES										
	Yellow	New CSL0903DT (C)	605	20	900	1,400	1,800	20	2.1	20	10	12	87	35	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0902DT (C)			450	710	900												YES										
		New CSL0901DT (C)			280	400	560												YES										
	Yellow Green	New CSL0903YT (C)	590	20	355	560	710	20	2.1	20	10	12	87	35	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0902YT (C)			224	320	450												YES										
		New CSL0901YT (C)			224	320	450												YES										
	Green	New CSL0901WT (C)	587	20	180	280	355	20	2.1	20	10	12	75	30	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0901MT (C)			90	120	180												YES										
		New CSL0902MT (C)			112	150	224												YES										
	Blue	New CSL0901PT (C)	560	20	14	25	35.5	20	2.1	20	10	12	75	30	100 ^{*1}	12	-40 to +110	-40 to +110	YES										
		New CSL0902ET (C)			20	900	1,200												1,800	20	3.4	20	114	30	100 ^{*1}	5	-40 to +110	-40 to +110	YES
		New CSL0901ET (C)			5	220	360												450	5	3.0	5	70	20	100 ^{*1}	5	-40 to +110	-40 to +110	YES
Blue	New CSL0902BT (C)	470	20	220	360	450	20	3.3	20	10	5	114	30	100 ^{*1}	5	-40 to +110	-40 to +110	YES											
	New CSL0901BT (C)			5	45	56												90	5	2.9	5	68	20	100 ^{*1}	5	-40 to +110	-40 to +110	YES	

Automotive 3color type																			
Package (mm)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)											Absolute Maximum Ratings (T _a =25°C)					Automotive Grade AEC-Q101/AEC-Q102
			Dominant Wavelength λ _D		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature Topr (°C)	Storage Temperature Tstg (°C)	
			Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)							
	Red		621	20	600	750	900	20	2.1	20	10	5	400	50	100	5	-40 to +100	-40 to +100	
	Green	New SMLVN6RGBFU1 (C)	525	20	1,440	1,800	2,160	20	3.3	20	—	—	400	40	100	—	-40 to +100	-40 to +100	YES
	Blue		470	20	320	430	540	20	3.3	20	—	—	400	40	100	—	-40 to +100	-40 to +100	

*1 Duty:1/10, 1kHz *2 Duty:1/10, 1kHz

SMD LEDs

● Product No. Configuration (Chip LEDs)

[SML series/SCM series]

■ Exclude Mono-color (Blue (B), Green (E), White (WB), RGB, 2 Colors Blue/Red)

Series name		Package shape	Type of Element	Color	Chip control symbol	Remarks	Resin color	Packaging type	Luminous intensity rank	Special control symbol
SML		D	1	V	8		W	T	8	6
[SML] chip LED series		P1 1.0x0.6 t=0.2mm E1 1.6x0.8 t=0.36mm D1/D2 1.6x0.8 t=0.55mm H1 2.0x1.25 t=0.8mm M1 2.0x1.25 t=0.8mm 01/02 3.0x2.0 t=1.3mm Z1/Y1 3.5x2.8 t=1.9mm A1 1.6x1.15 t=0.55mm 81/82 3.4x1.25 t=1.1mm S1 3.2x1.6 t=1.85mm P2 1.0x1.0 t=0.2mm 52 1.5x1.3 t=0.6mm	0 Low current type 1 High luminous intensity type 2 High luminous intensity type 3 Ultra high luminous intensity type 4 Ultra high luminous intensity type 5 Ultra high luminous intensity type 8 Ultra high luminous intensity type	L Red V Red U Red D Orange Y3 Yellow Y Yellow W Yellow Y2 Yellow M2 Yellow green	M Yellow green F Green P Green MV Yellow green/Red MU Yellow green/Red MD Yellow green/Orange MY Yellow green/Yellow YV Yellow/Red R Infrared T Phototransistor	T Transparent colorless W Milky white B Black	T86 Cathode at sprocket hole side (the top) (in case of S1 series) T86 Cathode at sprocket hole side (the back) T68 Cathode at sprocket hole side (the top)			
[SCM] chip LED series		01 3.0x1.5 t=2.2mm								

[SML series/SCM series]

■ Mono-color (Blue (B), Green (E), White (WB), RGB, 2 Colors Blue/Red)

Series name		Package shape	Type of Element	Color	Chip control symbol	Remarks	Resin color	Packaging type	Luminous intensity rank	Special control symbol
SML		E	N	3	W	B	C	8	W	1
[SML] chip LED series		P1 1.0x0.6 t=0.2mm EN 1.6x0.8 t=0.36mm D1 1.6x0.8 t=0.55mm MNM2 2.0x1.25 t=0.8mm Z2/ZN 3.5x2.8 t=1.9mm A1 1.6x1.15 t=0.55mm 81 3.4x1.25 t=1.1mm S1 3.2x1.6 t=1.85mm 52 1.5x1.3 t=0.6mm P34 1.0x1.0 t=0.2mm P36 1.5x1.0 t=0.2mm VN 3.5x2.8 t=0.6mm 01 3.0x2.0 t=1.3mm K1/K2 4.5x2.0 t=0.6mm	2 High luminous intensity type 3 High luminous intensity type 4 Ultra high luminous intensity type 8 Ultra high luminous intensity type	E Green E2/E3 Blue Green B Blue PB Green SB Sapphire blue WB White BU Blue/Red RGB Red/Green/Blue	E Green F Green P Green MV Yellow green/Red MU Yellow green/Red MD Yellow green/Orange MY Yellow green/Yellow YV Yellow/Red R Infrared T Phototransistor	T Transparent Colorless W Milky white	T86 Cathode at sprocket hole side (the top) (in case of white, RGB) 1 Cathode at sprocket hole side (the top) 3 Cathode at sprocket hole side (the top 2mm pitch) (in case of S1 and 81 series) T86 Cathode at sprocket hole side (the back) T68 Cathode at sprocket hole side (the top) *81 series is nothing "T68".			
[SCM] chip LED series							Resin (in case of VN6 series) U Silicone W Epoxy			

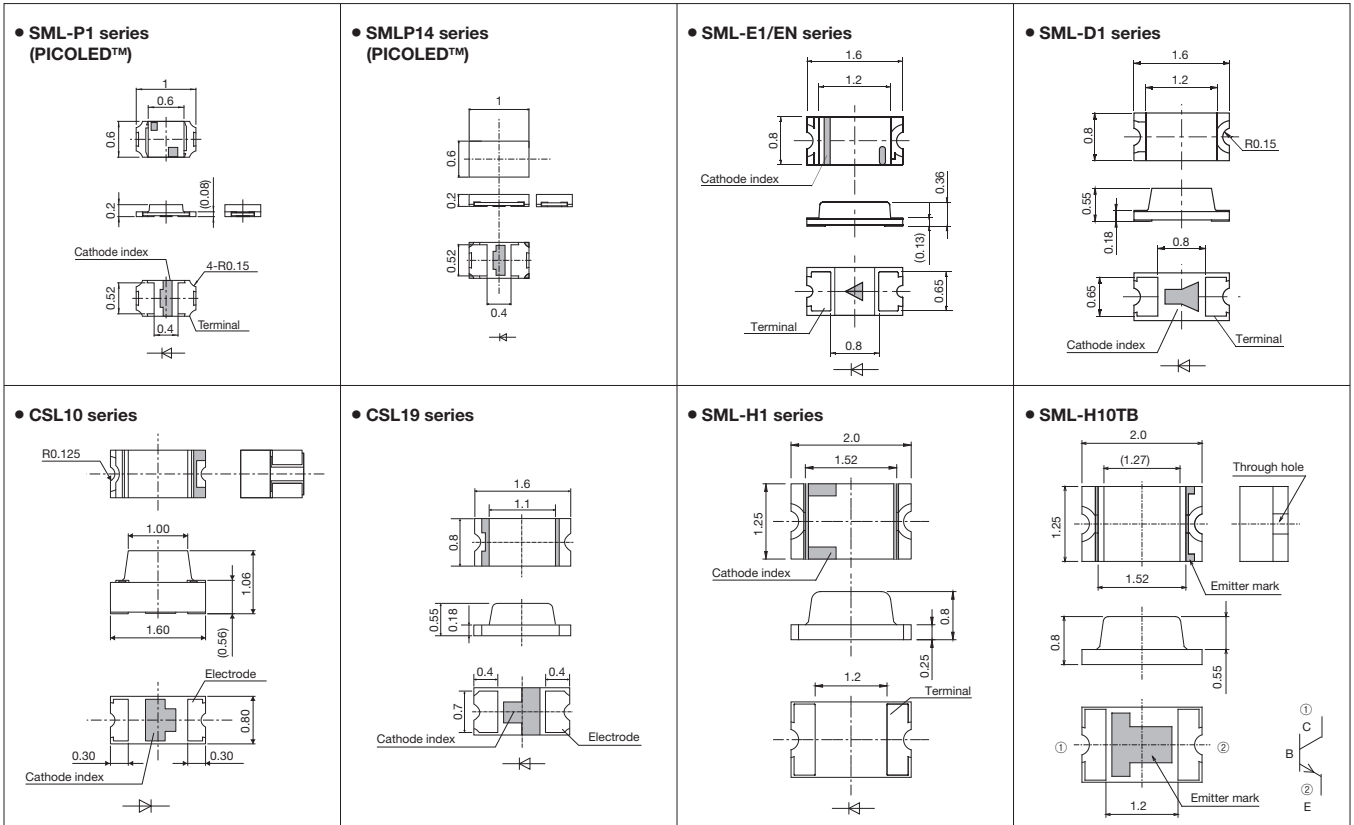
[CSL series]

Series name		Package shape	Color	Chip control symbol	Remarks	Resin color	Packaging type	Luminous intensity rank	Special control symbol
CSL		0	7	0	1	D	T	5	
[CSL] chip LED series		04 2.8x1.15 t=0.8mm 07 2.9x2.4 t=3.1mm 09 1.6x0.8 t=1.24mm 10 1.6x0.8 t=1.06mm 11 1.6x0.8 t=0.55mm 19 1.6x0.8 t=0.55mm	V Red U Red D Orange Y Yellow W Yellow	M Yellow green P Green E Green B Blue WB White SB Sapphire blue	T Transparent Colorless W Milky white	1 Cathode at sprocket hole side (the top) 5 Cathode at sprocket hole side (big reel)			

[MSL series]

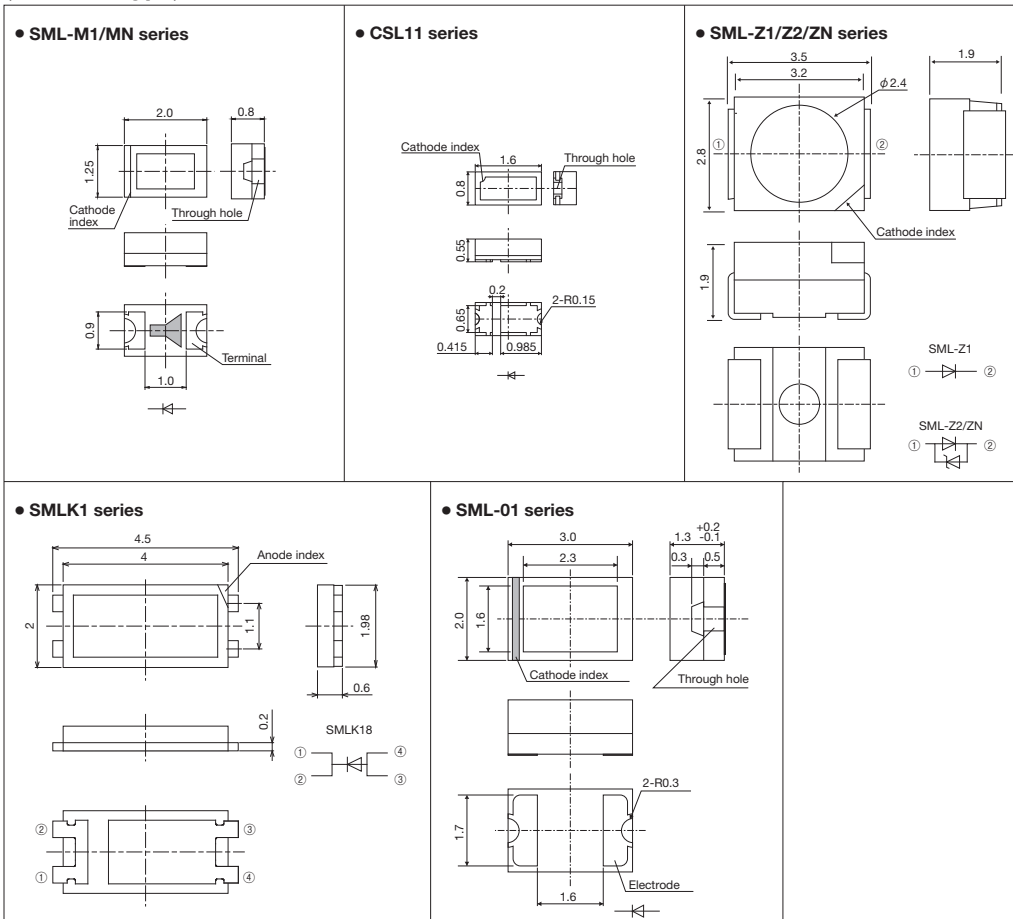
Series name		Package shape	Color	Chip control symbol	Remarks	Resin color	Packaging type	Luminous intensity rank	Special control symbol	
MSL		0	1	0	4	R	G	B	U	1
[MSL] Multi color series		01 6.9x2.2 t=2.15mm 04 1.8x1.6 t=0.5mm 06 2.9x1.35 t=1.0mm	RGB Red/Green/Blue			U Silicone W Epoxy	1 Cathode at sprocket hole side (the top)			

Dimensions (Unit: mm)
<Mold type>



Note: PICOLED™ is a trademark or a registered trademark of ROHM Co., Ltd.

<Reflector type>

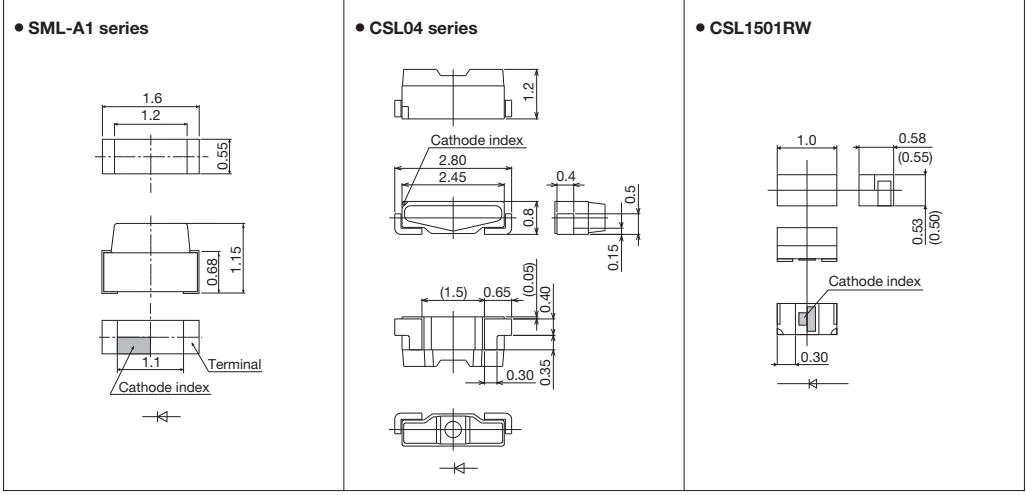


*For further information, please refer to the data sheets.

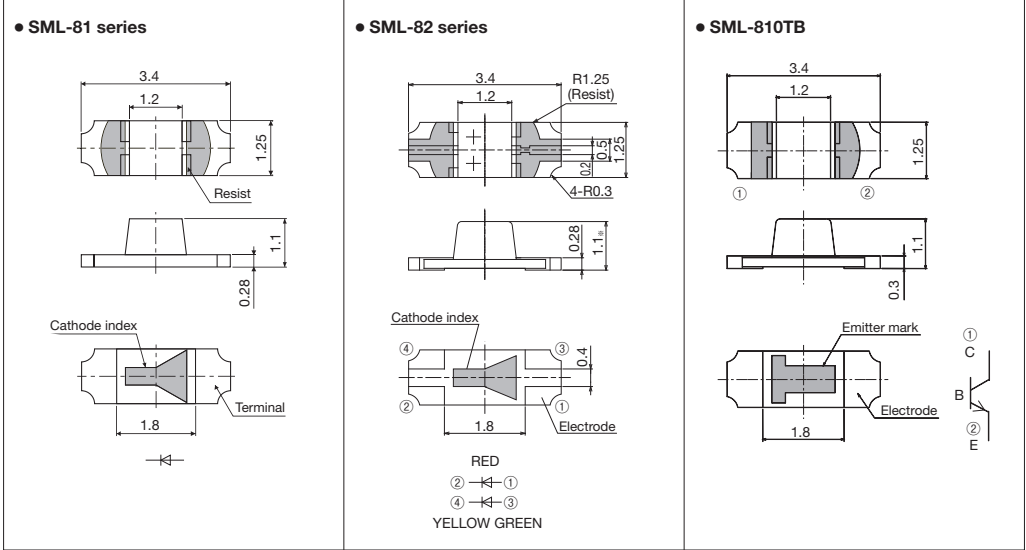
SMD LEDs

● Dimensions (Unit: mm)

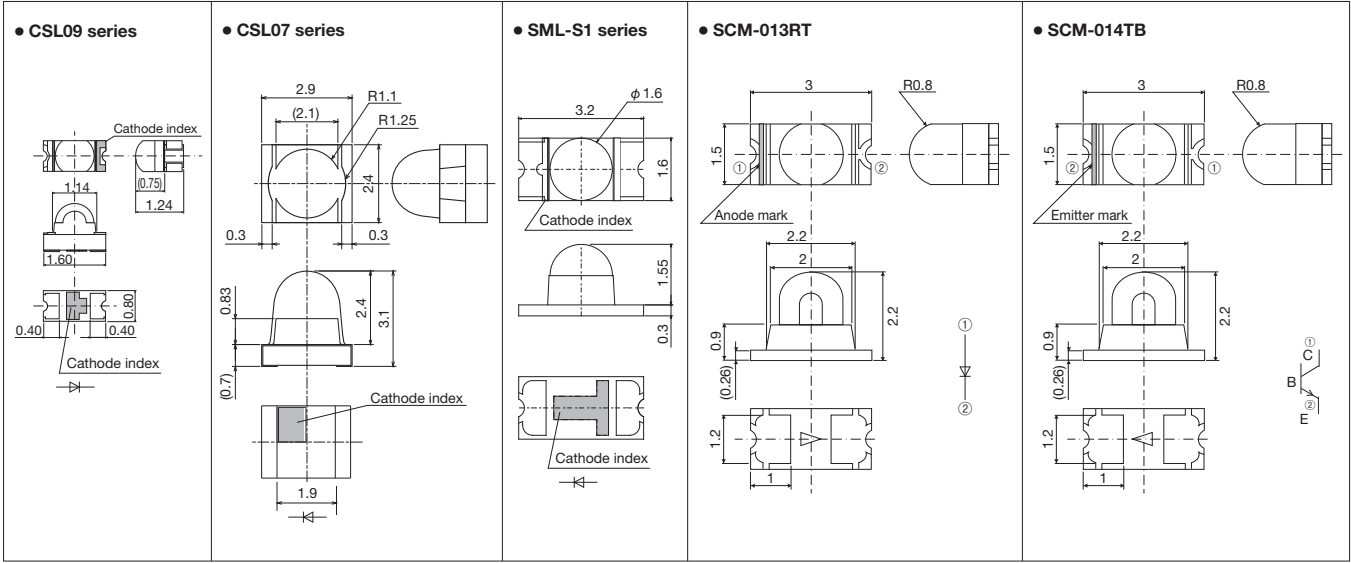
〈Side View type〉



〈Reverse Mount type〉



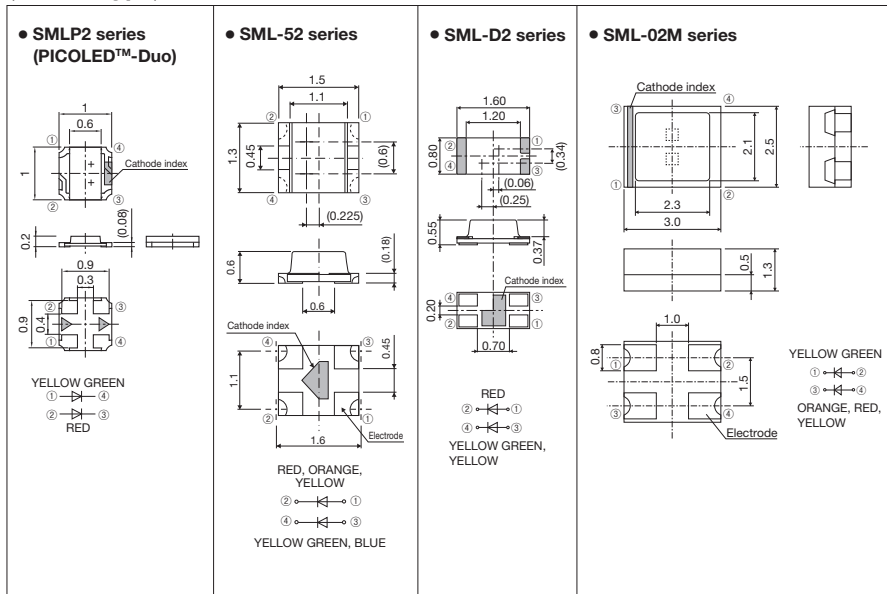
〈Surface Mount Lens type〉



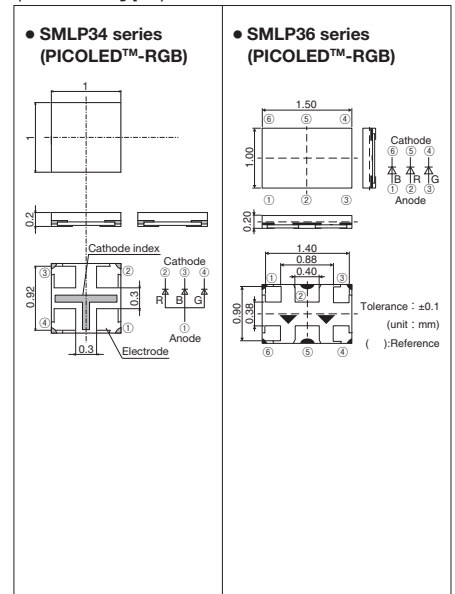
*For further information, please refer to the data sheets.

● **Dimensions** (Unit: mm)

⟨ 2 Color type ⟩

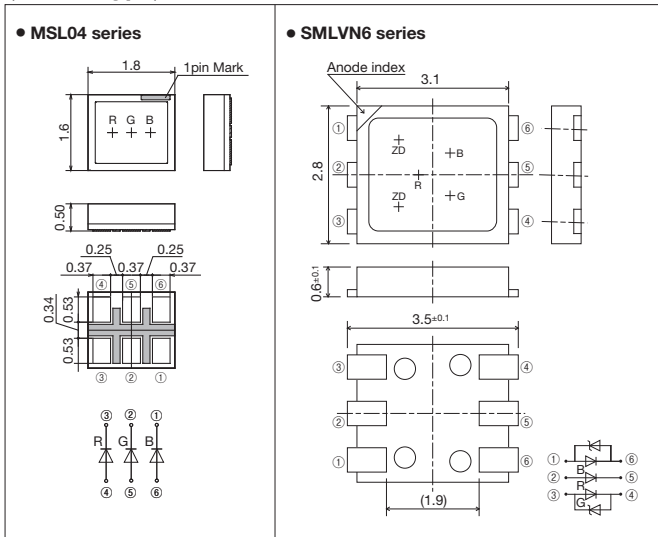


⟨ 3 Color type ⟩

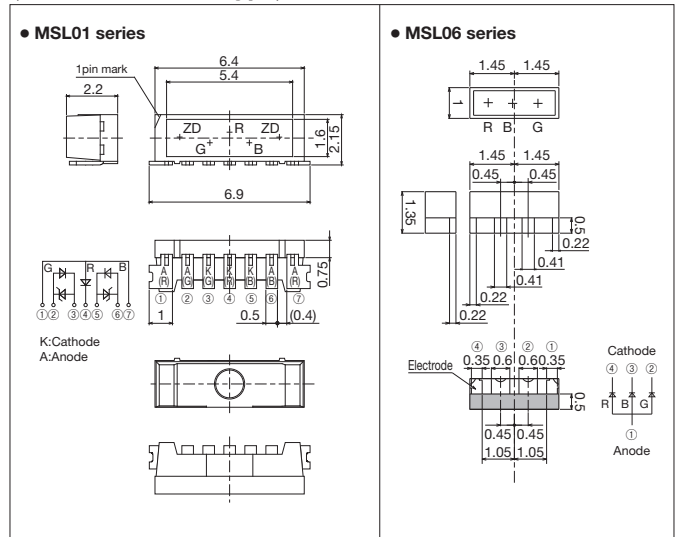


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⟨ 3 Color type ⟩



⟨ 3 Color Side View type ⟩



*For further information, please refer to the data sheets.

Through-hole LEDs

ROHM offers a wide variety of through-hole LEDs, including lamps that can be automatically mounted onto the PCB as well as high luminous intensity units suitable for public outdoor displays.

<High Luminous intensity Rank Table1>

XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
47 to 68	68 to 100	100 to 150	150 to 220	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000

Red (V, U) Quick Reference of Luminous intensity

<High Luminous intensity Rank Table2>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
9.0 to 16.5	13.5 to 24	20 to 36	30 to 52	42 to 75	61 to 110	90 to 165	135 to 240	200 to 360	300 to 520	420 to 750	600 to 1100	900 to 1650	1350 to 2400	2000 to 3600	3000 to 5200	4200 to 7500	6100 to 11000	9000 to 16500

Viewing angle (2θ1/2)	Resin Color	Luminous Intensity Rank Luminous intensity (mcd)	If (mA)	K	L	M	N	P	Q	R	S	T	U	V	
				3.6 to 7.1	5.6 to 11	9 to 18	14 to 28	22 to 45	36 to 71	56 to 110	90 to 180	140 to 280	220 to 450	360 to 710	
φ3 Circular type	Transparent Colored	20	10											SLI-343URC*	
															SLI-343V8RC* ^{†1}
															SLI-343URC (W)*
	Diffused Colored	20	10												SLR-343VC*
															SLR-343VR*
85°	Transparent Colored	20	10											SLR-332VC*	
	Diffused Colored	20	10											SLR-332VR*	
φ3 Circular type (Direct mount 5mm pitch type)	40°	Transparent Colored	20												SLI-325URC (W)*
	Diffused Colored	20	10												SLI-325UR (W)*
10		10												SLR-325VR*	
φ3 Flat disc type	35°	Transparent Colored	20												SLR-322VC*
	50°	Diffused Colored	20												SLR-322VR*
φ4 Oval type	140°	Diffused Colored	20												SLI-430U2R* ^{†1}
	10°	Transparent Colorless	20												SLI-580UT* ^{†2}
φ5 Circular type	20°	Transparent Colorless	20												SLI-570UT* ^{†2}
															SLI-560UT* ^{†2}
	40°	Transparent Colored	20											SLR-56VC*	
	Diffused Colored	10												SLR-56VR*	

<High Luminous intensity Rank Table1>

XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
47 to 68	68 to 100	100 to 150	150 to 220	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000

Orange (D) Quick Reference of Luminous intensity

<High Luminous intensity Rank Table2>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
9.0 to 16.5	13.5 to 24	20 to 36	30 to 52	42 to 75	61 to 110	90 to 165	135 to 240	200 to 360	300 to 520	420 to 750	600 to 1100	900 to 1650	1350 to 2400	2000 to 3600	3000 to 5200	4200 to 7500	6100 to 11000	9000 to 16500

Viewing angle (2θ1/2)	Resin Color	Luminous Intensity Rank Luminous intensity (mcd)	If (mA)	J	K	L	M	N	P	Q	R	S	T	U	V	
				2.2 to 4.5	3.6 to 7.1	5.6 to 11	9 to 18	14 to 28	22 to 45	36 to 71	56 to 110	90 to 180	140 to 280	220 to 450	360 to 710	
φ3 Circular type	Transparent Colored	20	10												SLI-343DC*	
																SLI-343D8C* ^{†1}
																SLR-343DC*
	Diffused Colored	20	10													SLI-343DU*
																SLR-343DU*
85°	Transparent Colored	20	10												SLR-332DC*	
	Diffused Colored	20	10												SLR-332DU*	
φ3 Circular type (Direct mount 5mm pitch type)	40°	Transparent Colored	20													SLI-325DC (W)*
	Diffused Colored	20	10													SLI-325DU (W)*
10		10													SLR-325DU*	
φ3 Flat disc type	35°	Transparent Colored	20												SLR-322DC*	
	50°	Diffused Colored	20												SLR-322DU*	
φ4 Oval type	140°	Diffused Colored	20												SLI-430DU* ^{†1}	
	10°	Transparent Colorless	20												SLI-580DT* ^{†2}	
φ5 Circular type	20°	Transparent Colorless	20												SLI-570DT* ^{†2}	
															SLI-560DT* ^{†2}	
	40°	Transparent Colored	20												SLR-56DC*	
	Diffused Colored	10													SLR-56DU*	

<High Luminous intensity Rank Table1>

XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
47 to 68	68 to 100	100 to 150	150 to 220	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000

Yellow (Y) Quick Reference of Luminous intensity

<High Luminous intensity Rank Table2>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
9.0 to 16.5	13.5 to 24	20 to 36	30 to 52	42 to 75	61 to 110	90 to 165	135 to 240	200 to 360	300 to 520	420 to 750	600 to 1100	900 to 1650	1350 to 2400	2000 to 3600	3000 to 5200	4200 to 7500	6100 to 11000	9000 to 16500

Viewing angle (2θ1/2)	Resin Color	Luminous Intensity Rank Luminous intensity (mcd)	If (mA)	J	K	L	M	N	P	Q	R	S	T	U	V	
				2.2 to 4.5	3.6 to 7.1	5.6 to 11	9 to 18	14 to 28	22 to 45	36 to 71	56 to 110	90 to 180	140 to 280	220 to 450	360 to 710	
φ3 Circular type	Transparent Colored	20	10												SLI-343YC*	
																SLR-343YC*
	Diffused Colored	20	10													SLI-343YY*
																SLR-343YY*
85°	Transparent Colored	20	10												SLR-332YY*	
	Diffused Colored	20	10												SLR-332YC*	
φ3 Circular type (Direct mount 5mm pitch type)	40°	Transparent Colored	20													SLI-325YC (W)*
	Diffused Colored	20	10													SLI-325YU (W)*
10		10													SLR-325YY*	
φ3 Flat disc type	35°	Transparent Colored	20												SLR-322YC*	
	50°	Diffused Colored	20												SLR-322YY*	
φ4 Oval type	140°	Diffused Colored	20												SLI-430Y2U* ^{†1}	
	10°	Transparent Colorless	20												SLI-580YT* ^{†2}	
φ5 Circular type	20°	Transparent Colorless	20												SLI-570YT* ^{†2}	
															SLI-560YT* ^{†2}	
	40°	Transparent Colored	20												SLR-56YC*	
	Diffused Colored	10													SLR-56YY*	

*Luminous intensity on specification sheet include tolerance of within ±10%. *1 This product refer to high luminous intensity rank table1. *2 This product refer to high luminous intensity rank table2.

Green (M, P, E) Quick Reference of Luminous intensity

<High Luminous intensity Rank Table1>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
10 to 15	15 to 22	22 to 33	33 to 47	47 to 68	68 to 100	100 to 150	150 to 220	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000

<High Luminous intensity Rank Table2>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU	XV	XW
9.0 to 16.5	13.5 to 24	20 to 36	30 to 52	42 to 75	61 to 110	90 to 165	135 to 240	200 to 360	300 to 520	420 to 750	600 to 1100	900 to 1650	1350 to 2400	2000 to 3600	3000 to 5200	4200 to 7500	6100 to 11000	9000 to 16500	13500 to 24000	20000 to 36000

	Viewing angle (2θ1/2)	Resin Color	Luminous intensity Rank		J	K	L	M	N	P	Q	R	S	T	U	V						
			Luminous intensity (mcd)	I _F (mA)	2.2 to 4.5	3.6 to 7.1	5.6 to 11	9 to 18	14 to 28	22 to 45	36 to 71	56 to 110	90 to 180	140 to 280	220 to 450	360 to 710						
φ5 Circular type	40°	Transparent Colored	20											SLI-343MC*								
															SLI-343M8C* ^{†1}							
		10													SLR-343PC*							
																SLR-343MC*						
	85°	Diffused Colored	20																			
		Transparent Colorless	20																			SLR343EN4T ^{*/#2}
			10																			
φ3 Circular type (Direct mount 5mm pitch type)	40°	Transparent Colored	10																			
		Diffused Colored																				
φ3 Flat disc type	35°	Transparent Colored	10																			
	50°	Diffused Colored																				
φ4 Oval type	140°	Diffused Colored	20																			
	10°	Transparent Colorless	20																			
φ5 Circular type	40°	Transparent Colored																				
	10°	Transparent Colorless																				
40°	Transparent Colorless																					

Blue (B) Quick Reference of Luminous intensity

<High Luminous intensity Rank Table2>

XA	XB	XC	XD	XE	XF	XG	XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU
9.0 to 16.5	13.5 to 24	20 to 36	30 to 52	42 to 75	61 to 110	90 to 165	135 to 240	200 to 360	300 to 520	420 to 750	600 to 1100	900 to 1650	1350 to 2400	2000 to 3600	3000 to 5200	4200 to 7500	6100 to 11000	9000 to 16500

	Viewing angle (2θ1/2)	Resin Color	Luminous intensity Rank		XH	XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU						
			Luminous intensity (mcd)	I _F (mA)	150 to 220	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000						
φ3 Circular type	40°	Transparent Colorless	20																			
φ5 Circular type	10°	Transparent Colorless	20																			
	40°																					

White (WB) Quick Reference of Luminous intensity

	Viewing angle (2θ1/2)	Resin Color	Luminous intensity Rank		XJ	XK	XL	XM	XN	XP	XQ	XR	XS	XT	XU							
			Luminous intensity (mcd)	I _F (mA)	220 to 330	330 to 470	470 to 680	680 to 1000	1000 to 1500	1500 to 2200	2200 to 3300	3300 to 4700	4700 to 6800	6800 to 10000	10000 to 15000							
φ3 Circular type	40°	Transparent Colorless	20																			
φ5 Circular type	40°	Transparent Colorless	20																			

*Luminous intensity on specification sheet include tolerance of within ±10%. ^{†1} This product refer to high luminous intensity rank table1. ^{†2} This product refer to high luminous intensity rank table2.

Through-hole LEDs

φ3 type																						
Shape	Package Image	Viewing Angle 2θ1/2 (Element type)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)							
					Dominant Wavelength λ _d / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)		
					Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)								
φ3 Circular type		40° Standard	Red	SLI-343V8RC	639	20	150	330	(680)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100		
				SLI-343V8R	100	220	(470)															
				SLI-343U8RC	630	20	150	330	(680)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100		
			SLI-343U8R			100	220	(470)														
			SLI-343D8C	611	20	330	680	(1,500)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100			
			SLI-343D8U			220	470	(1,000)														
			SLI-343Y8C	593	20	330	680	(1,500)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100			
			SLI-343Y8Y			220	470	(1,000)														
			SLI-343M8C	572	20	68	150	(330)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100			
		SLI-343M8G																				
		SLI-343P8C	560	20	10	22	(47)	20	2.2	20	10	9	54	20	100*2	9	-30 to +85	-40 to +100				
		SLI-343P8G																				
		40° High Luminous intensity	Red	SLI-343URC	630	20	90	450	(710)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100		
				SLI-343UR			100	350														
				SLI-343DC	611	20	90	500	(710)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100		
	SLI-343DU					350																
	SLI-343YC		591	20	90	350	(710)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100				
	SLI-343YY					300																
	SLI-343MC		572	20	56	200	(180)	20	2.1	20	100	9	62	25	100*2	9	-25 to +80	-30 to +100				
	SLI-343MG					180																
	SLR343BN2T		470	20	470	1,000	2,200	20	3.2	20	10	5	126	30	100*2	5	-20 to +80	-30 to +100				
	SLR343WBN2PT	(x, y) (0.31, 0.31)	20	1,500	3,300	—	20	3.2	20	10	5	126	30	100*2	5	-20 to +80	-30 to +100					
	40° Standard	Red	SLR-343VC	650	10	9	25	(71)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100			
			SLR-343VR			6	16	(45)														
			SLR-343DC	610	10	9	25	(71)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100			
		SLR-343DU			6	16	(45)															
		SLR-343YC	585	10	6	16	(45)	10	2.1	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100				
		SLR-343YY			4	10	(28)															
		SLR-343MC	563	10	9	25	(71)	10	2.1	10	10	3	75	25	60*1	3	-25 to +85	-30 to +100				
		SLR-343MG			6	16	(45)															
SLR-343PC		555	10	2	6	(18)	10	2.1	10	10	3	75	25	60*1	3	-25 to +85	-30 to +100					
SLR-343PG																						
SLR343EN4T		523	20	900	2,200	—	20	3.2	20	100	5	120	30	100*2	5	-20 to +80	-30 to +100					
SLR343BN4T		468	20	300	680	—	20	3.2	20	100	5	120	30	100*2	5	-20 to +80	-30 to +100					
40° Low Current	Red	SLI-343URC (W)	630	20	36	200	(280)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100				
		SLI-343UR (W)				160																
		SLI-343DC (W)	611	20	56	300	(450)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100				
	SLI-343DU (W)				250																	
	SLI-343YC (W)	591	20	36	200	(280)	20	1.9	20	100	9	125	50	200*2	9	-25 to +85	-30 to +100					
SLI-343YY (W)				160																		
85° Standard	Red	SLR-332VC	650	10	4	10	(28)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100				
		SLR-332VR																				
		SLR-332DC	610	10	6	16	(45)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100				
	SLR-332DU			4	10	(28)																
	SLR-332YC	585	10	4	10	(28)	10	2.1	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100					
	SLR-332YY			2	6	(18)																
	SLR-332MC	563	10	6	16	(45)	10	2.1	10	10	3	75	25	60*1	3	-25 to +85	-30 to +100					
	SLR-332MG																					
φ5 type																						
Shape	Package Image	Viewing Angle 2θ1/2 (Element type)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)										Absolute Maximum Ratings (T _a =25°C)							
					Dominant Wavelength λ _d / Chromaticity Coordinates (x, y)		Luminous Intensity I _v				Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FM} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)		
					Typ* (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)	V _R (V)								
φ5 Circular type		10° High Luminous intensity	Red	SLI-580UT	630	20	2,000	5,000	(11,000)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
				SLI-580DT	611	20	1,350	5,000	(7,500)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
				SLI-580YT	591	20	1,350	5,000	(7,500)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
			SLA-580MT	563	20	200	470	(1,100)	20	2.3	20	10	4	75	25	60*1	4	-25 to +85	-30 to +100			
			SLA580ENT	523	20	6,100	27,000	—	20	3.2	20	100	5	120	30	100*2	5	-20 to +80	-30 to +100			
			SLA580BNT	468	20	1,350	4,000	—	20	3.3	20	100	5	120	30	100*2	5	-20 to +80	-30 to +100			
		20° High Luminous intensity	Red	SLI-570UT	630	20	900	3,000	(5,200)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
				SLI-570U2T			2,200	4,000	(10,000)													
				SLI-570DT	611	20	900	3,000	(5,200)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
			SLI-570YT	591	20	610	2,500	(3,600)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100			
			SLI-570Y2T			2,200	5,200	(10,000)														
			SLA-570MT	563	20	200	470	(1,100)	20	2.3	20	10	4	75	25	60*1	4	-25 to +85	-30 to +100			
		40° High Luminous intensity	Red	SLI-560UT	630	20	300	1,000	(1,650)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
				SLI-560DT	611	20	300	1,000	(1,650)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
				SLI-560YT	591	20	300	1,000	(1,650)	20	1.9	20	100	9	125	50	200*2	9	-30 to +85	-40 to +100		
	SLA-560MT		563	20	42	100	(240)	20	2.3	20	10	4	75	25	60*1	4	-25 to +85	-30 to +100				
	SLA560BN2T		470*3	20	1,000	2,200	4,700	20	3.2	20	10	5	126	30	100*2	5	-20 to +80	-30 to +100				
	SLA560WBN2PT		(x, y) (0.31, 0.31)	20	1,500	3,300	(6,800)	20	3.2	20	10	5	126	30	100*2	5	-20 to +80	-30 to +100				
	40° Standard		Red	SLR-56VC	650	10	9	25	(71)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100		
				SLR-56VR			4	10	(28)													
				SLR-56DC	610	10	9	25	(71)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100		
		SLR-56DU			4	10	(28)															
		SLR-56YC	585	10	9	25	(71)	10	2.1	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100				
		SLR-56YY			6	16	(45)															
		SLR-56MC	563	10	14	40	(110)	10	2.1	10	10	3	75	25	60*1	3	-25 to +85	-30 to +100				
		SLR-56MG																				

Oval type																					
Shape	Package Image	Viewing Angle 2θ/2 (Element type)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)								Absolute Maximum Ratings (T _a =25°C)								
					Dominant Wavelength λ _D		Luminous Intensity I _v			Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)		
					Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)							V _R (V)	
Oval type φ4		140°	Standard	Red	SLI-430U2R	620*3	20	220	400 (680)	20	2.0	20	10	9	75	30	100*2	9	-40 to +85	-40 to +100	
				Orange	SLI-430DU	605*3	20	220	470 (680)	20	2.1	20	10	9	75	30	100*2	9	-40 to +85	-40 to +100	
				Yellow	SLI-430Y2U	590*3	20	330	500 (900)	20	2.1	20	10	9	75	30	100*2	9	-40 to +85	-40 to +100	
				Yellow Green	SLI-430MG	570*3	20	68	120 (220)	20	2.1	20	10	9	75	30	100*2	9	-40 to +85	-40 to +100	
Other																					
Shape	Package Image	Viewing Angle 2θ/2 (Element type)	Emitting Color	Part No.	Electrical and Optical Characteristics (T _a =25°C)								Absolute Maximum Ratings (T _a =25°C)								
					Dominant Wavelength λ _D		Luminous Intensity I _v			Forward Voltage V _F		Reverse Current I _R		Power Dissipation P _D (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)		
					Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	Max (mcd)	I _F (mA)	Typ (V)	I _F (mA)	Max (μA)							V _R (V)	
φ3.2 Circular type Direct Mount 5mm Pitch type		40°	Low Current	Red	SLI-325URC (W)*1	630	20	36	160	(280)	20	1.9	20	100	4	48	20	60*1	4	-25 to +85	-30 to +100
				SLI-325UR (W)*1	100																
				Orange	SLI-325DC (W)*1				160												
			SLI-325DU (W)*1	100																	
			Yellow	SLI-325YC (W)*1	160																
			SLI-325YY (W)*1	100																	
		SLR-325VR*1	4	10	(28)																
		Orange	SLR-325DC*1	6	16	(45)															
		SLR-325DU*1	4	10	(28)																
		Yellow	SLR-325YC*1	6	16	(45)															
		SLR-325YY*1	2	6	(18)																
		Yellow Green	SLR-325MC*1	9	25	(71)	10	2.1	10	10	3	75	25	60*1	3	-25 to +85	-30 to +100				
SLR-325MG*1	6	16	(45)																		
φ3 Flat Disc type		35°	Standard	Red	SLR-322VC	6	16	(45)	10	2.0	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100		
				Orange	SLR-322DC	6	16	(45)													
				Yellow	SLR-322YC	4	10	(28)													
				Yellow Green	SLR-322MC	9	25	(71)													
				Red	SLR-322VR	4	10	(45)													
				Orange	SLR-322DU	2	6	(18)													
		Yellow	SLR-322YY	4	10	(28)	10	2.1	10	10	3	60	20	60*1	3	-25 to +85	-30 to +100				
		Yellow Green	SLR-322MG	6	16	(45)															

*SLI-325/SLR-325 series: straight taping only.
 *1 Duty:1/5, 200Hz *2 Duty:1/10, 1kHz *3 Dominant Wavelength () : Reference

● Product No. Configuration (Through-hole LEDs)

■ Exclude Mono-color (Blue (B), Green (E), White (WB))

Chip control symbol Remarks Special control symbol

S **L** **I** - **3** **4** **3** **V** **8** **R** **C** **3** **F**

Series name Package shape Color Resin color Packaging type Luminous intensity rank

SLA 1-Die Circular type High Luminous intensity LED Lamps	343 φ3 Circular type	V Red	R <Red>Diffused colored	3F 1-Die straight bulk	Refer to specification
SLI 1-Die Circular type Low Current High Luminous intensity LED Lamps	332 φ3 Circular type	U Red	U <Orange>Diffused colored	T31 Refer to taping specification	
SLR 1-Die Circular type LED Lamp	56 φ5 Circular type	U2 Red	Y <Yellow>Diffused colored	T32	
	560 φ5 Circular type	D Orange	G <Yellowish green> Diffused colored		
	570 φ5 Circular type	Y Yellow	C Transparent colored		
	580 φ5 Circular type	Y2 Yellow	T Transparent colorless		
	430 Oval type φ4	M Yellowish green			
	325 φ3.2 Circular type	P Green			
	322 φ3 Flat disc type				

■ Mono-color (Blue (B), Green (E), White (WB))

Chip control symbol Remarks Chromaticity rank (for white LED) *SLA560WBD2PT is not applied. Special control symbol

S **L** **R** **3** **4** **3** **W** **B** **N** **2** **P** **T** **2**

Series name Package shape Color Resin color Packaging type Luminous intensity rank

SLA 1-Die Circular type High Luminous intensity LED Lamps	343 φ3 Circular type	BN Blue	T Transparent colorless	3F 1-Die straight bulk	Refer to specification
SLR 1-Die Circular type LED Lamps	560 φ5 Circular type	EN Green	W Milky white	T31 Refer to specification	
	580 φ5 Circular type	WBN White		T32	

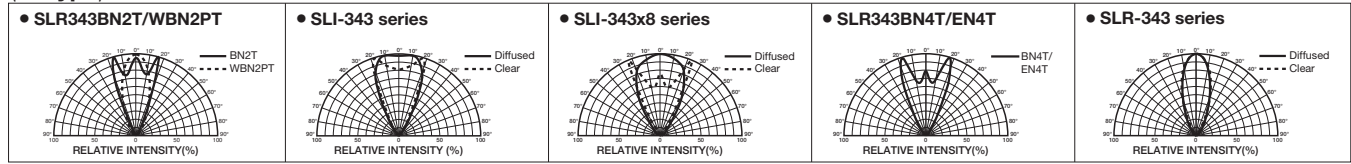
(in case of white)

3 1-Die straight bulk
1 Refer to specification (same as T31)
2 Refer to specification (same as T32)

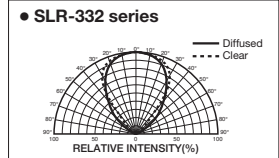
Through-hole LEDs

Viewing Angle (Unit: deg)

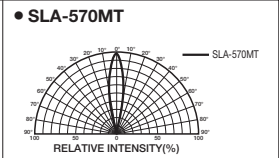
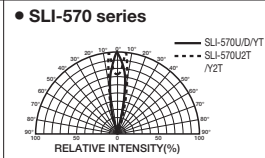
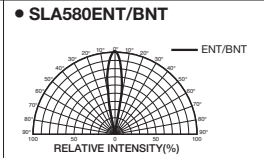
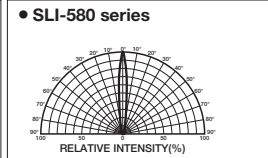
⟨ $\phi 3$ type⟩



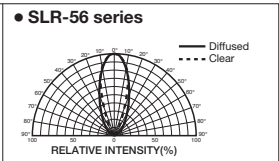
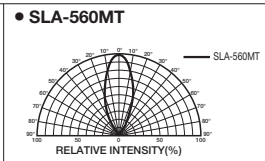
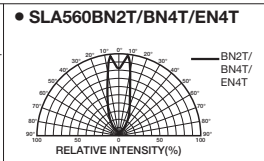
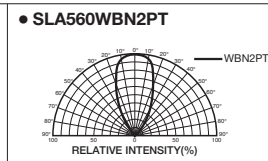
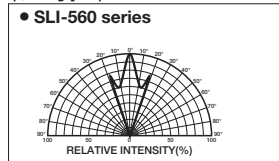
⟨ $\phi 3$ type⟩



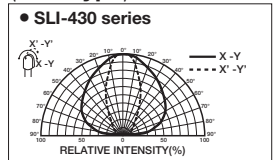
⟨ $\phi 5$ type⟩



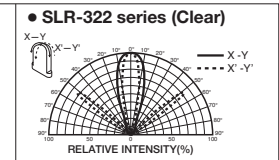
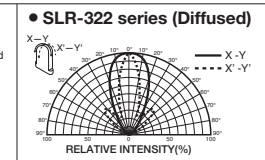
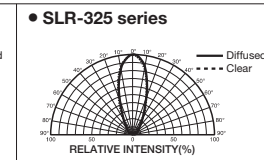
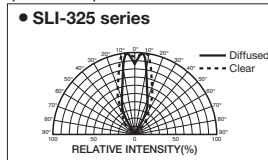
⟨ $\phi 5$ type⟩



⟨Oval type⟩



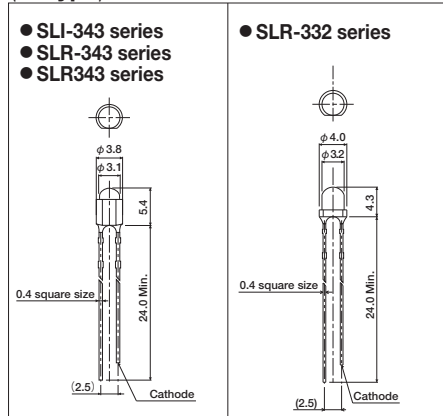
⟨Others⟩



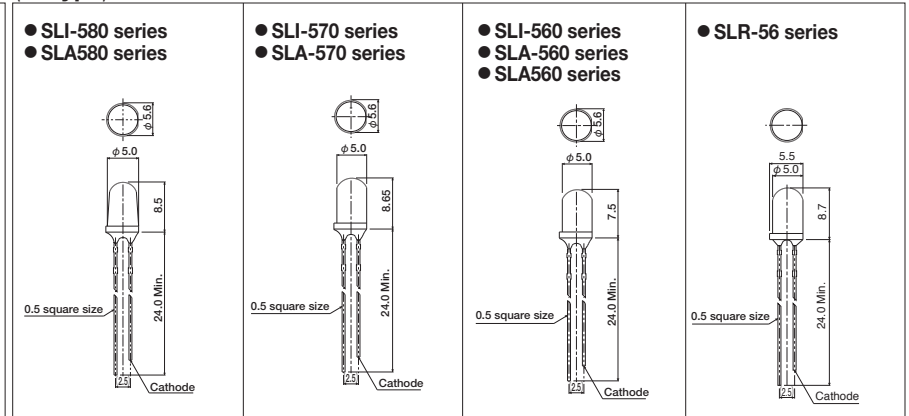
Note: Viewing Angle shown above are the reference data from standard product. For the part numbers other than the above, please contact us.

Dimensions (Unit: mm)

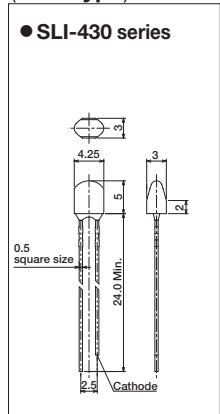
⟨ $\phi 3$ type⟩



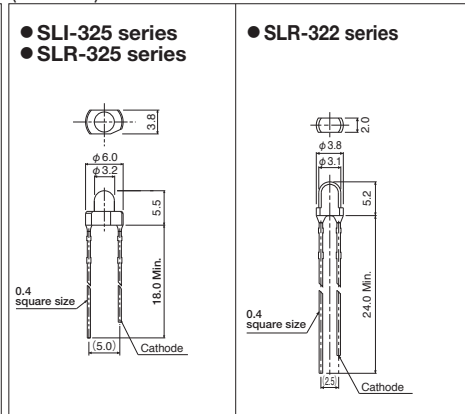
⟨ $\phi 5$ type⟩



⟨Oval type⟩



⟨Others⟩



*For further information, please refer to specification.

LED Displays

High luminous intensity LED Numeric Displays	P.269
Surface Mount LED Numeric Displays	P.270

LED Numeric Displays P.270

Good point of High luminous intensity LED Numeric Displays series

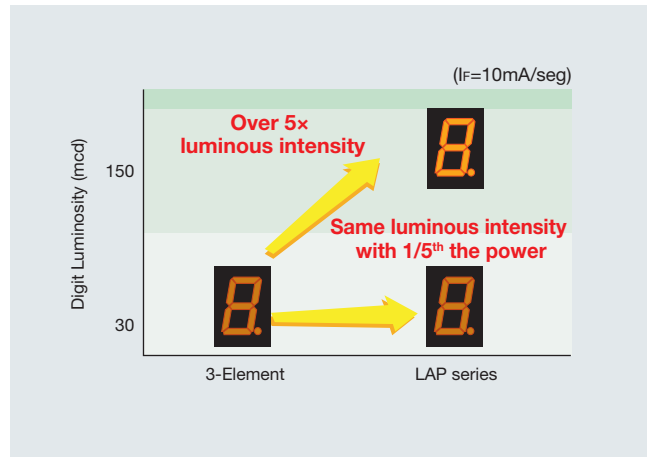
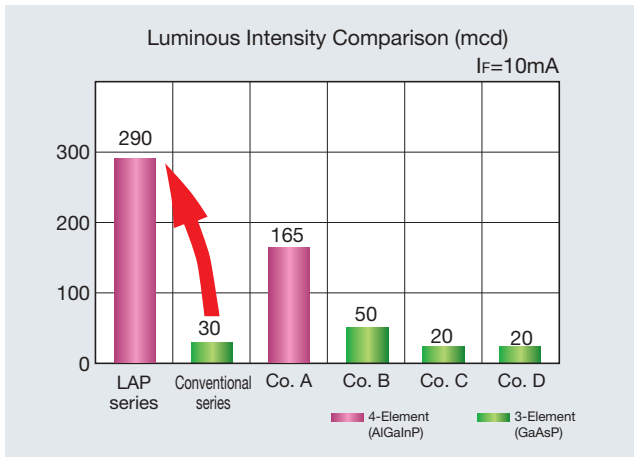
All-around type that High luminous intensity, Low Power Consumption and High Reliability

High luminous intensity

The brighter 4-element construction significantly increases luminosity compared with conventional numeric displays (orange emission ratio).

Low Power

Achieves equivalent luminous intensity with 5x less current, contributing to greater energy savings.



High luminous intensity LED Numeric Displays

High luminous intensity, low power consumption, and high reliability.

Single Digit LED Numeric Displays

Shape	Part No.	Emitting Color	Absolute Maximum Ratings ($T_s=25^\circ\text{C}$)					Absolute Maximum Ratings		Electrical and Optical Characteristics ($T_s=25^\circ\text{C}$)									
			Power Dissipation P_D (mW)	Forward Current I_F (mA)	Peak Forward Current I_{FP} (mA)	Reverse Voltage V_R (V)	Operating Temperature T_{opr} ($^\circ\text{C}$)	Storage Temperature T_{stg} ($^\circ\text{C}$)	Forward Voltage V_F		Reverse Current I_R		Light Wavelength Peak Half-wave		Luminous Intensity/Digit I_v				
									Typ (V)	I_F (mA)	Max (μA)	V_R (V)	λ_{TP} (nm)	$\Delta\lambda_{TP}$ (nm)	I_F (mA)	Min (mcd)	Typ (mcd)	I_F (mA)	
	LAP-301VB/VL	Red	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	650	20	10	14	36	10	
	LAP-301MB/ML	Green	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	572	20	10	36	100	10	
	LAP-301DB/DL	Orange	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	605	20	10	56	250	10	
	LAP-401VD/VN	Red	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	650	20	10	14	36	10	
	LAP-401MD/MN	Green	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	572	20	10	36	100	10	
	LAP-401DD/DN	Orange	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	605	20	10	56	250	10	
	LAP-601VB/VL	Red	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	650	20	10	14	36	10	
	LAP-601MB/ML	Green	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	572	20	10	36	100	10	
	LAP-601DB/DL	Orange	448	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	605	20	10	56	250	10	

Note: * I_{FP} measured under duty $\leq 1/5$, Pulse width $\leq 1\text{ms}$





Two Digit LED Numeric Displays

Shape	Part No.	Emitting Color	Absolute Maximum Ratings ($T_s=25^\circ\text{C}$)					Absolute Maximum Ratings		Electrical and Optical Characteristics ($T_s=25^\circ\text{C}$)									
			Power Dissipation P_D (mW)	Forward Current I_F (mA)	Peak Forward Current I_{FP} (mA)	Reverse Voltage V_R (V)	Operating Temperature T_{opr} ($^\circ\text{C}$)	Storage Temperature T_{stg} ($^\circ\text{C}$)	Forward Voltage V_F		Reverse Current I_R		Light Wavelength Peak Half-wave		Luminous Intensity/Digit I_v				
									Typ (V)	I_F (mA)	Max (μA)	V_R (V)	λ_{TP} (nm)	$\Delta\lambda_{TP}$ (nm)	I_F (mA)	Min (mcd)	Typ (mcd)	I_F (mA)	
	LBP-602VA2/VK2	Red	896	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	650	20	10	14	36	10	
	LBP-602MA2/MK2	Green	896	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	572	20	10	36	100	10	
	LBP-602DA2/DK2	Orange	896	20	60	5	-25 to +75	-30 to +85	1.9	10	100	3	605	20	10	56	250	10	

Note: * I_{FP} measured under duty $\leq 1/5$, Pulse width $\leq 1\text{ms}$




LED Numeric Displays

These single digit numeric displays are 8 to 14.6mm in height and available in a range of colors.


Single Digit LED Numeric Displays																		
Shape	Part No.	Emitting Color	Absolute Maximum Ratings (T _a =25°C)				Absolute Maximum Ratings		Electrical and Optical Characteristics (T _a =25°C)									
			Power Dissipation P ₀ (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} * (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)	Forward Voltage V _F		Reverse Current I _R		Light Wavelength			Luminous Intensity/Digit I _v		
									Typ (V)	I _F (mA)	Max (μA)	V _R (V)	λ _p Typ (nm)	Δλ Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	I _F (mA)
 Character Height: 8mm External Dimensions: (7x11)	LA-301VB/VL	Red	320	15	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	3.6	10	10
	LA-301MB/ML	Green	480	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	3.6	10	10
	LA-301AB/AL	High luminous intensity Red	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	626	18	20	36	90	10
	LA-301EB/EL	High luminous intensity Orange	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	610	17	20	36	90	10
 Character Height: 10.16mm External Dimensions: (9.6x13)	LA-401VD/VN	Red	320	15	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10
	LA-401MD/MN	Green	480	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	5.6	16	10
	LA-401AD/AN	High luminous intensity Red	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	626	18	20	36	90	10
	LA-401ED/EN	High luminous intensity Orange	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	610	17	20	36	90	10
 Character Height: 13mm External Dimensions: (12.5x17.5)	LA-501VD/VN	Red	480	20	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10
	LA-501MD/MN	Green	480	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	5.6	16	10
 Character Height: 14.6mm External Dimensions: (12.5x19)	LA-601VB/VL	Red	480	20	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	14	10
	LA-601MB/ML	Green	480	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	9.0	22	10
	LA-601AB/AL	High luminous intensity Red	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	626	18	20	36	90	10
	LA-601EB/EL	High luminous intensity Orange	520	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	610	17	20	36	90	10

Note1: *I_{FP} measured under duty≤1/5, Pulse width≤1ms, High luminous intensity under duty≤1/10, Pulse width≤0.1 ms

These two digit numeric displays are 10.16 to 14.3mm in height and available in a range of colors.

Two Digit LED Numeric Displays																		
Shape	Part No.	Emitting Color	Absolute Maximum Ratings (T _a =25°C)				Absolute Maximum Ratings		Electrical and Optical Characteristics (T _a =25°C)									
			Power Dissipation P ₀ (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} * (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)	Forward Voltage V _F		Reverse Current I _R		Light Wavelength			Luminous Intensity/Digit I _v		
									Typ (V)	I _F (mA)	Max (μA)	V _R (V)	λ _p Typ (nm)	Δλ Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	I _F (mA)
 Character Height: 10.16mm External Dimensions: (24x18)	LB-402VD/VN	Red	640	15	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10
	LB-402MD/MN	Green	960	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	9.0	25	10
 Character Height: 13mm External Dimensions: (25x17.5)	LB-502VD/VN	Red	960	20	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10
	LB-502MD/MN	Green	960	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	9.0	25	10
 Character Height: 14.3mm External Dimensions: (25x19)	LB-602VA2/VK2	Red	960	20	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10
	LB-602MA2/MK2	Green	960	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	9.0	25	10
	LB-602AA2/AK2	High luminous intensity Red	1,040	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	626	18	20	36	90	10
	LB-602EA2/EK2	High luminous intensity Orange	1,040	25	50	5	-25 to +75	-30 to +85	2.05	20	100	3	610	17	20	36	90	10


Note: *I_{FP} measured under duty≤1/5, Pulse width≤1ms, High luminous intensity under duty≤1/10, Pulse width≤0.1 ms

Three Digit LED Numeric Display																		
Shape	Part No.	Emitting Color	Absolute Maximum Ratings (T _a =25°C)				Absolute Maximum Ratings		Electrical and Optical Characteristics (T _a =25°C)									
			Power Dissipation P ₀ (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} * (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)	Forward Voltage V _F		Reverse Current I _R		Light Wavelength			Luminous Intensity/Digit I _v		
									Typ (V)	I _F (mA)	Max (μA)	V _R (V)	λ _p Typ (nm)	Δλ Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	I _F (mA)
 Character Height: 14.3mm External Dimensions: (37.5x18)	LB-603VF/VP	Red	960	15	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	5.6	16	10

Note: *I_{FP} measured under duty≤1/5, Pulse width≤1ms

Surface Mount LED Numeric Displays


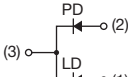

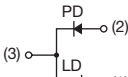








ROHM's LED numeric displays are compatible with automatic reflow processes.

Single Digit LED Numeric Displays																		
Shape	Part No.	Emitting Color	Absolute Maximum Ratings (T _a =25°C)				Absolute Maximum Ratings		Electrical and Optical Characteristics (T _a =25°C)									
			Power Dissipation P ₀ (mW)	Forward Current I _F (mA)	Peak Forward Current I _{FP} * (mA)	Reverse Voltage V _R (V)	Operating Temperature T _{opr} (°C)	Storage Temperature T _{stg} (°C)	Forward Voltage V _F		Reverse Current I _R		Light Wavelength			Luminous Intensity/Digit I _v		
									Typ (V)	I _F (mA)	Max (μA)	V _R (V)	λ _p Typ (nm)	Δλ Typ (nm)	I _F (mA)	Min (mcd)	Typ (mcd)	I _F (mA)
 Character Height: 8mm External Dimensions: (6.8x11)	LF-3011VA/VK	Red	320	15	60	5	-25 to +75	-30 to +85	2.0	10	100	3	650	40	10	3.6	10	10
	LF-3011MA/MK	Green	480	20	60	5	-25 to +75	-30 to +85	2.1	10	100	3	563	40	10	3.6	10	10

Note: *I_{FP} measured under duty≤1/5, Pulse width≤1ms

Laser Diodes			
Red Lasers	P.271	Infrared Lasers	P.272
High Power Infrared Lasers	P.273	Infrared VCSEL	P.273
Part Numbers, Symbols and Definitions	P.274	Packaging Specifications	P.275

Laser Diodes


Red Lasers															
Part No.	Wavelength λ_P (nm)	Absolute Maximum Ratings ($T_C=25^\circ\text{C}$)			Electrical and Optical Characteristics ($T_C=25^\circ\text{C}$)								P_o (mW)	Package	Equivalent Circuit
		P_o (mW)	V_R (V)	T_{opr} Max ($^\circ\text{C}$)	I_{TH} (mA)	I_{op} (mA)	η (W/A)	V_{op} (V)	I_m (mA)	θ_{\perp} (deg)	θ_{\parallel} (deg)				
RLD65MZT7	655	7	2	70	20	30	0.70	2.3	0.24	27.0	8.0	5			
RLD63NPC5 (Pure red)	635	6	2	40	24	33	0.55	2.2	0.18	32.0	8.0	5			
RLD63NPC6 (Pure red)	638	12	2	50	28	43	0.70	2.3	0.15	32.0	8.0	10			
RLD63NPC7 (Pure red)	638	17	2	50	32	57	0.60	2.2	0.16	30.0	8.0	15			
RLD63NPC8 (Pure red)	638	24	2	50	32	65	0.60	2.25	0.20	30.0	8.0	20			
RLD65NZX1 (Higher temp.)	663	10	2	80	15	24	0.85	2.3	0.30	27.0	9.0	7			
RLD65NZX2 (Higher ESD)	658	7	2	70	25	33	0.60	2.3	0.20	28.0	8.5	5			
RLD63PZCA (Pure red)	638	7	2	50	28	33	0.80	2.2	0.08	32.0	8.0	5			
RLD65PZX2 (Higher ESD)	658	7	2	70	25	33	0.60	2.3	0.20	28.0	8.5	5			
RLD65PZX3 (Higher ESD)	658	12	2	70	25	42	0.60	2.3	0.30	28.0	8.5	10			

Note: Unless otherwise specified, the Electrical and Optical Characteristics are typical values.

●About open package products

With the open package product (Package mark is P), the external environment could deteriorate the characteristics and reliability of Laser Diodes. Please be careful to foreign matter including toner, human substance and smoke, corrosion due to ion, the volatilization component from the glue and flux, condensation, optical tweezers effect and etc. Do not touch the components including the laser chip emission point.

DANGER



VISIBLE LASER
RADIATION-AVOID
DIRECT EXPOSURE TO BEAM

MAXIMUM OUTPUT 500 mW
WAVELENGTH 600 to 700nm
CLASS IIIb LASER PRODUCT

VISIBLE SEMICONDUCTOR LASER
AVOID EXPOSURE-visible
Laser radiation is emitted
from this aperture

ROHM Laser Diode
This product complies with 21
CFR Part 1040.10 and 1040.11

ROHM Co., LTD.
21, Saini Masasahi-cho, Ukyo-ku Kyoto
615,8585, Japan

Laser Diodes

Infrared Lasers														
Part No.	Wavelength λ_p (nm)	Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)			Electrical and Optical Characteristics ($T_c=25^\circ\text{C}$)							P_o (mW)	Package	Equivalent Circuit
		P_o (mW)	V_R (V)	T_{opr} Max ($^\circ\text{C}$)	I_{TH} (mA)	I_{op} (mA)	η (W/A)	V_{op} (V)	I_m (mA)	θ_{\perp} (deg)	$\theta_{//}$ (deg)			
RLD78MZA6	790	4.5	2	70	25	35	0.35	1.9	0.15	37.0	11.0	3		
RLD78MZM7	792	20	2	60	11	33	0.65	1.8	0.50	24.0	8.5	15		
RLD78NZM5	793	10	2	60	10	20	0.55	1.8	1.15	28.0	9.0	6		
RLD78NZM7	792	20	2	60	11	33	0.65	1.8	0.90	24.0	8.5	15		
RLD82NZJ1	822	220	2	60	50	255	0.95	2.4	0.30	17.0	9.5	200		
RLD84NZJ2	842	220	2	60	40	250	0.95	2.4	0.40	19.0	9.5	200		
RLD85NZJ4	852	220	2	60	40	250	0.95	2.4	0.40	19.0	9.5	200		
RLD94NZJ7	942	220	2	60	40	300	0.75	2.4	1.00	17.0	9.5	200		
RLD78PZM7	792	20	2	60	11	33	0.65	1.8	0.65	24.0	8.5	15		
RLD82PZJ1	822	220	2	60	50	255	0.95	2.4	0.30	17.0	9.5	200		
RLD84PZJ2	842	220	2	60	40	250	0.95	2.4	0.40	19.0	9.5	200		
RLD85PZJ4	852	220	2	60	40	250	0.95	2.4	0.40	19.0	9.5	200		
RLD94PZJ5	942	285	2	65	55	325	0.75	2.2	0.90	30.0	35.0	200		

Note: Unless otherwise specified, the Electrical and Optical Characteristics are typical values.

DANGER

INVISIBLE LASER
RADIATION-AVOID
DIRECT EXPOSURE TO BEAM

MAXIMUM OUTPUT 500 mW
WAVELENGTH 760 to 990nm
CLASS IIIb LASER PRODUCT


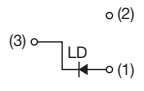







INVISIBLE
SEMICONDUCTOR LASER

AVOID EXPOSURE-invisible
Laser radiation is emitted
from this aperture

ROHM Laser Diode


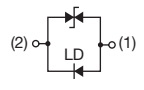

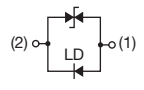

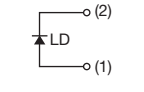

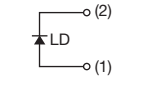
This product complies with 21
CFR Part 1040.10 and 1040.11

ROHM Co.,LTD.
21.Sain Mizosaki-cho,Ukyo-ku Kyoto
615,8585, Japan

High Power Infrared Lasers														
Part No.	Wavelength λ_p (nm)	Absolute Maximum Ratings ($T_c=25^\circ\text{C}$)			Electrical and Optical Characteristics ($T_c=25^\circ\text{C}$)							Measurement pulse condition	Package	Equivalent Circuit
		P_o (W)	I_F (A)	T_{opr} Max ($^\circ\text{C}$)	P_o (W)	I_{TH} (A)	I_{op} (A)	V_{op} (V)	θ_{\perp} (deg)	$\theta_{//}$ (deg)	Emission area ($\mu\text{m}\times\mu\text{m}$)			
☆RLD90QZWA	905	17	6	85	15	0.3	5	13	20	14	35×10	Pulse width 50ns duty 0.05%		
RLD90QZWJ		25	9		25	0.4	9	15	20	14	50×10			
☆RLD90QZWB		30	11		25	0.4	9	13	25	14	50×10			
RLD90QZW5		25	9		25	0.4	9	14	25	12	70×10			
☆RLD90QZWC		30	11		25	0.4	9	12	25	13	70×10			
RLD90QZWD		40	13		35	0.4	12	11	25	13	100×10			
RLD90QZW3		90	30		75	0.9	27	16	25	10	225×10			
☆RLD90QZW8		145	50		120	1	40	16	25	10	270×10			

Note: Unless otherwise specified, the Electrical and Optical Characteristics are typical values.

☆: Under Development

Infrared VCSEL*													
Part No.	Wavelength λ_p (nm)	Electrical and Optical Characteristics ($T_c=25^\circ\text{C}$)							Emission area (mm×mm)	Measurement pulse condition	Package	Equivalent Circuit	
		P_o (mW)	I_F (mA)	V_F (V)	I_{TH} (mA)	PCE (%)	θ [FWHM] (deg)	η (W/A)					
☆RLD94SEQF	940	6	9	1.9	2	33	13	0.85	—	Pulse width 800 μs 1shot			
☆RLD94SEQP	940	7	9	1.9	2	40	20	1	—	Pulse width 800 μs 1shot			
☆RLD94SAQ6	940	200	300	2	70	33	13	0.85	0.41×0.23	Pulse width 800 μs 1shot			
☆RLD94SAQ8	940	2,000	3,000	2	750	40	-00x: 20 -10x: 60×45 -20x: 72×55 -30x: 90×69 -40x: 110×85	1	1.10×0.82	Pulse width 400 μs 1shot			

Note: Unless otherwise specified, the Electrical and Optical Characteristics are typical values.
*Bare chip sales are going to support, too. Please contact to ROHM's sales department.

☆: Under Development

● Safety

The light emitted from laser diodes, can cause retinal damage if viewed directly. Never look directly into the laser beam or through any lenses or fibers when the system is operating. For optical axis alignment or other operations, we recommend the use of an infrared-sensitive camera (ITV) or wearing protective goggles.

DANGER

INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

MAXIMUM OUTPUT 200 W
WAVELENGTH 760~990nm
CLASS IV LASER PRODUCT

ROHM Co.,LTD.
21.Saini Mizosaki-cho,Ukyo-ku Kyoto
615.8585, Japan

INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

Laser Diode
This product
complies with 21
CFR Part 1040.10
and 1040.11

ROHM Co.,LTD.
21.Saini Mizosaki-cho,Ukyo-ku Kyoto
615.8585, Japan

DANGER

INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

MAXIMUM OUTPUT 10W
WAVELENGTH 760~990nm
CLASS IV LASER PRODUCT

ROHM Co.,LTD.
21.Saini Mizosaki-cho,Ukyo-ku Kyoto
615.8585, Japan

INVISIBLE LASER RADIATION
AVOID EYE OR SKIN EXPOSURE TO
DIRECT OR SCATTERED RADIATION

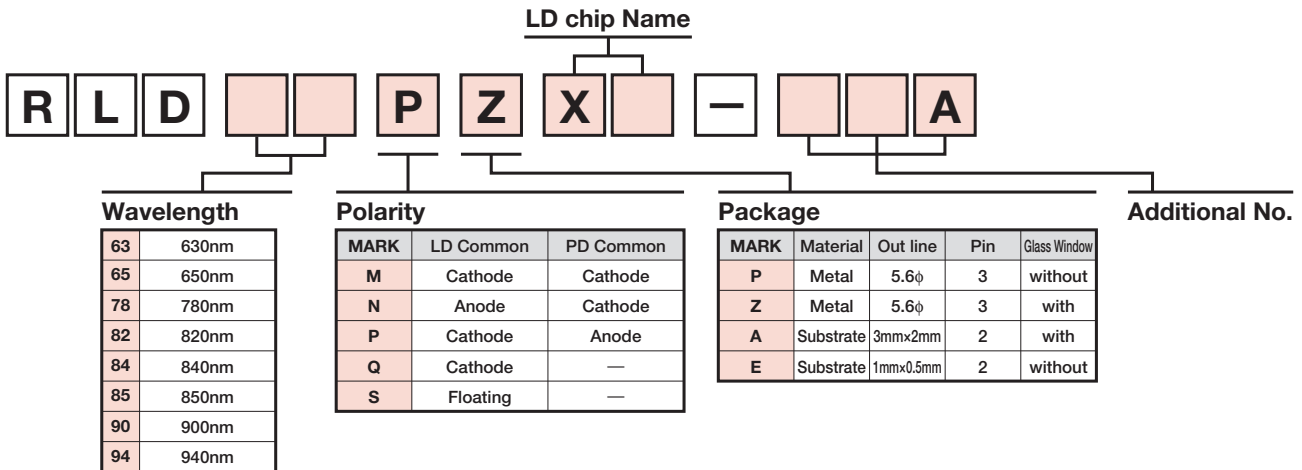
Laser Diode
This product
complies with 21
CFR Part 1040.10
and 1040.11

ROHM Co.,LTD.
21.Saini Mizosaki-cho,Ukyo-ku Kyoto
615.8585, Japan

The products described in this specification are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communication device, electrical appliances, and electronic toys). If you intend to use these products or devices which require an extremely high level of reliability and malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

Laser Diodes

● Part Numbers



● Symbols and Definitions

■ Absolute Maximum Ratings

Absolute maximum ratings are values which must not be exceeded even momentarily regardless of external conditions.

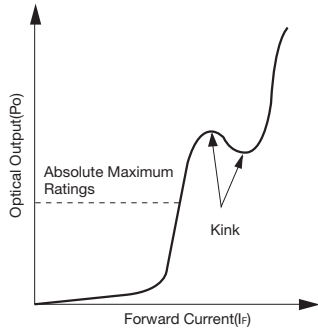
These values are specified for a case temperature T_c of 25°C.

Parameter	Symbol	Definition
Optical Output	P_o	Maximum allowable optical output during continuous or pulse operation. No kinks will appear in the output vs. forward current curve up to this output value. (Fig.1)
Reverse Voltage	V_R	The maximum allowable voltage when a reverse bias is applied to the device. Lasers and photo diodes are rated separately.
Operating Temperature	T_{opr}	Allowed ambient temperature range when the device is in operation. Defined to be the case temperature of the device.
Storage Temperature	T_{stg}	Allowed temperature range when the device is being stored.

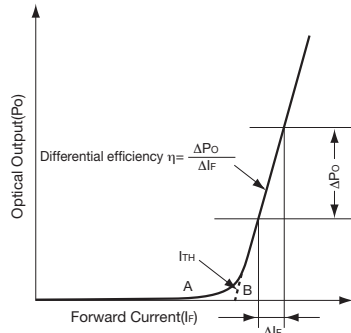
■ Electrical and Optical Characteristics

Item	Symbol	Definition
Threshold Current	I_{TH}	In Fig.2, A is the spontaneous emission range and B is the stimulated emission range. The threshold current is the current at which laser emission begins.
Operating Current	I_{OP}	The forward current required to generate the specified optical output.
Operating Voltage	V_{OP}	The forward voltage required to generate the specified optical output.
Differential Efficiency	η	The average increase in the output per unit of drive current. In the laser emission range, this is the slope of the linear optical output vs. forward current curve. (Fig.2)
Monitor Current	I_m	When the specified optical output is generated, this is the output current of the photodiode when a specified reverse voltage is applied to the monitor photodiode.
Parallel Divergence Angle Perpendicular Divergence Angle	$\theta_{//}$ θ_{\perp}	Light emitted from the laser spreads as shown in Fig.3. The result of measurements of this spread in the parallel (x) and perpendicular (y) directions with respect to the junction surface is shown in Fig.3. The widths of the spread at the points where the strength drops to 1/2 the peak strength (half value full angles) are defined as angles and called $\theta_{//}$ and θ_{\perp} . (Fig.4)
Parallel Deviation Angle Perpendicular Deviation Angle	$\Delta\phi_{//}$ $\Delta\phi_{\perp}$	These values express the deviation of the optical axis with respect to the reference plane, and are defined for the parallel and perpendicular spread angles (Fig.4) to be (a - b)/2 (Fig.5).
Emission Point Accuracy	$\Delta X, \Delta Y, \Delta Z$	This indicates the amount of deviation of the emission point. ΔX and ΔY indicate deviation from the center of the package, and ΔZ indicates deviation from the reference plane. (Fig.6)
Peak Emission Wavelength	λ	Peak emission wavelength when generating the specified output. As shown in Fig.7, the emission spectrum has both a single mode and a multimode. In the multimode, the wavelength is defined as the wavelength with the highest intensity.
Power Conversion Efficiency	PCE	This indicates the ratio of optical output to input electric power.

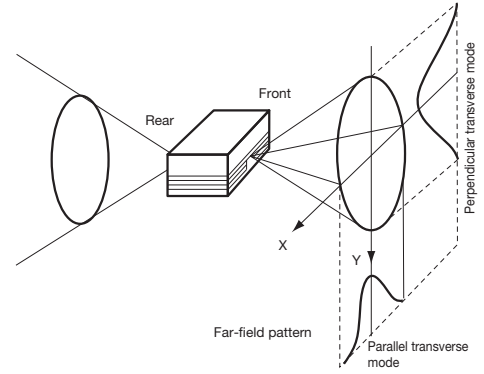
■Fig.1 Optical Output vs. Forward Current



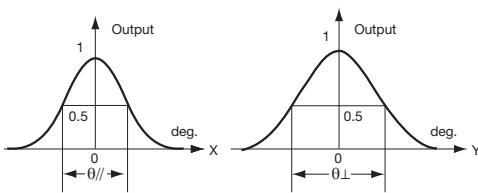
■Fig.2 Optical Output vs. Forward Current



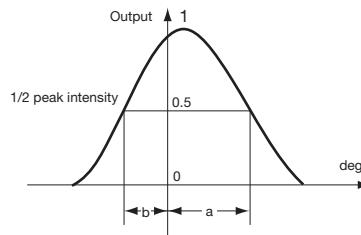
■Fig.3 Radiation Characteristics



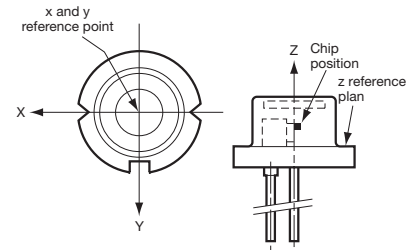
■Fig.4 Radiation Characteristics



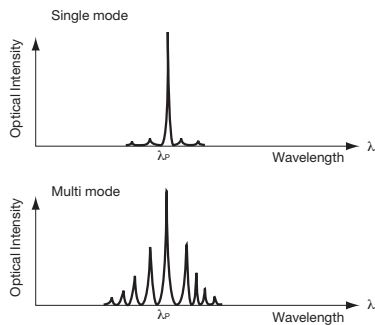
■Fig.5 Deviation Angle



■Fig.6 Deviation Angle

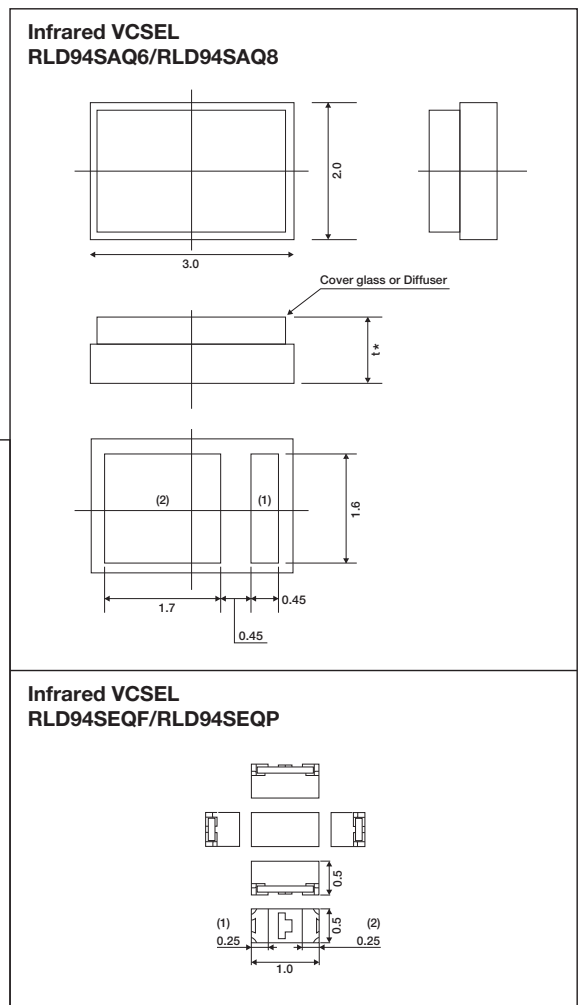
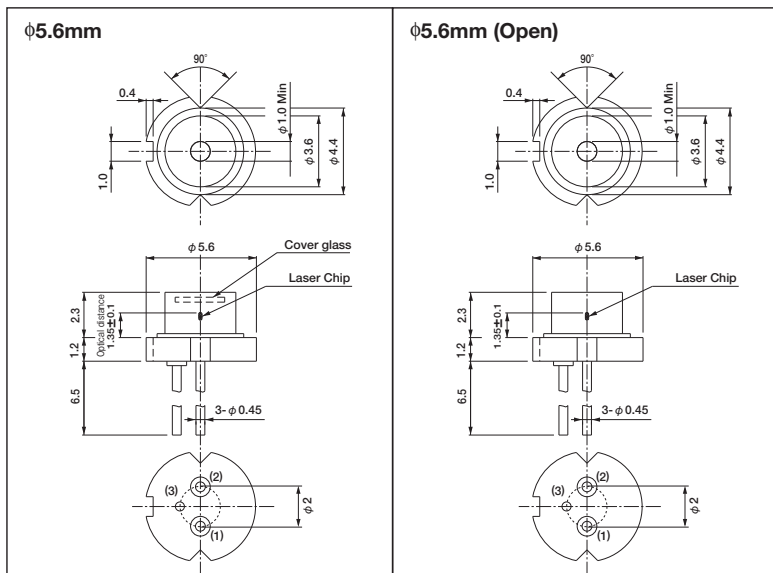


■Fig.7 Emission Spectrum



Packaging Specifications

●Dimensions (Unit: mm)



















*Please note that differences may exist depending on the part number. Therefore, it is strongly recommended that the customer verify the actual specifications before usage.



Optical Sensors

Transmission type Photointerrupters	P.276	Reflective type Photosensors (Photoreflectors)	P.277
Infrared Light Emitting Diodes	P.278	Phototransistors	P.278
Ambient Light and Proximity Sensor	P.278	Packages	P.278

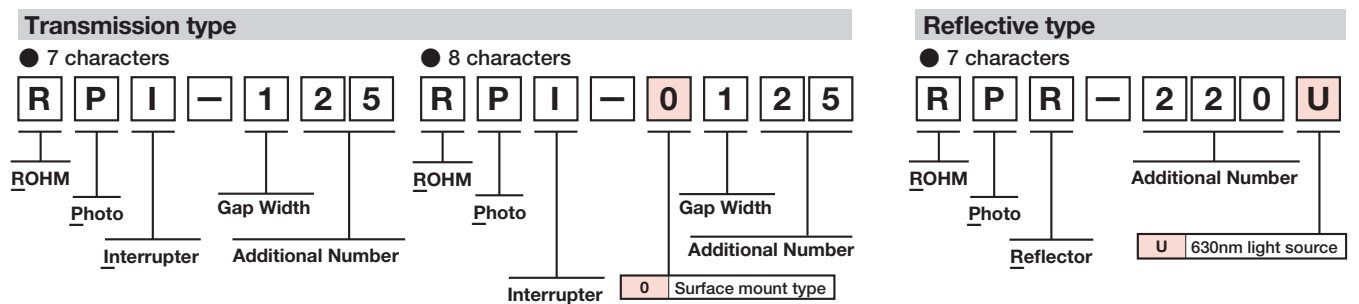
Transmission type Photointerrupters

Linear Phototransistor Output													
Package	Exterior	Part No.	Output type	Standard Characteristics							Packing Specifications	Positioning	Remarks
				Detection Groove Width (mm)	Slit Width (mm)	I _c (mA)	V _{CE} (V)	I _F (mA)	tr, tf (μs)				
Surface Mount type		New RPI-0128	Phototransistor	1.2	0.2	1.0 Min 5.0 Max	5	5	10	Taping		Ultra-Compact	
		RPI-0125		1.2	0.3	0.45 Min 4.95 Max	5	20	10			Ultra-Compact	
		RPI-0226		2.0	0.3	0.1 Min	5	5	50		✓	Compact	
		RPI-0352E		3.0	0.4	0.18 Min	5	10	10		✓	Wide Gap, Energy Saving, High Efficiency	
		RPI-0451E		4.5	0.5	0.16 Min	5	10	10		✓	Wide Gap, Energy Saving, High Efficiency	
Lead type		RPI-122		0.8	0.25	0.18 Min 1.08 Max	0.7	3	10	Bulk		Ultra-Compact	
		RPI-121		0.8	0.4	0.7 Min	5	20	10			Ultra-Compact	
		RPI-125		1.2	0.3	0.45 Min 4.95 Max	5	20	10			Ultra-Compact	
		RPI-221		2.3	0.4	0.2 Min	5	20	10				
		RPI-222		2.0	0.2	0.18 Min 0.95 Max	5	10	10				
		New RPI-222G	2.0	0.2	0.18 Min 0.95 Max	5	10	10			Halogen free		
		RPI-243	2.0	0.4	0.5 Min	5	20	10					
		RPI-246	2.0	0.2	0.35 Min 1.2 Max	5	20	10					
		RPI-352	3.0	0.4	0.2 Min	5	20	10	✓		Wide Gap		
		RPI-441C1	4.0	0.5	0.2 Min	5	20	10	✓		Wide Gap		
	RPI-441C1E	4.0	0.5	0.2 Min	5	10	10	✓	Wide Gap, Energy Saving, High Efficiency				

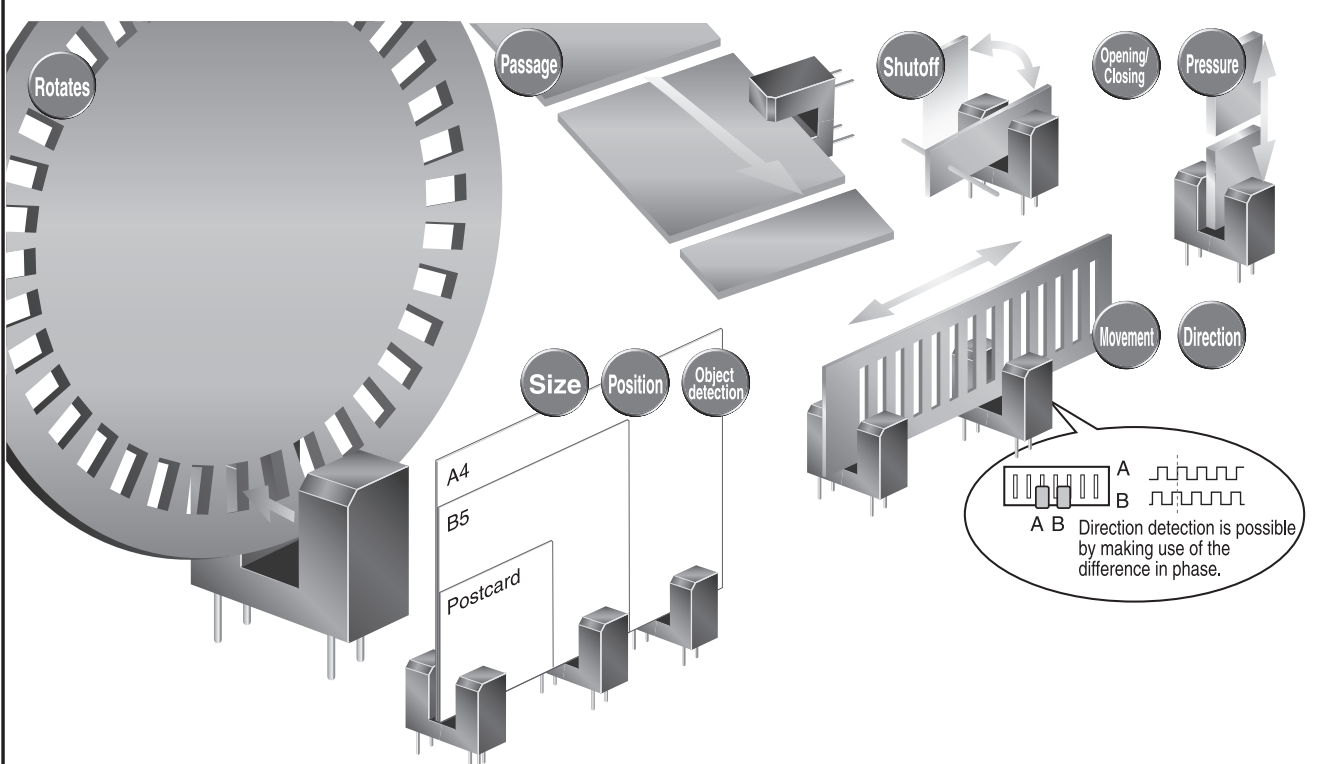
Reflective type Photosensors

Photoreflectors type												
Package	Exterior	Part No.	Output type	Standard Characteristics								
				Focal Length (mm)	LED λ_P (nm)	Ptr λ_P (nm)	I _c (mA)	V _{CE} (V)	I _F (mA)	tr, tf (μs)	Packing Specifications	Remarks
Lead type		RPR-220	Phototransistor	6.0	940	800	0.08 Min 0.8 Max	2	10	10	Bulk	
		RPR-220UC30N		6.0	630	800	0.08 Min 0.8 Max	5	10	10	Stick	Emitting Color: Red

● Product No. Explanation



Detection of all movements



Rotates

Passage

Shutoff

Opening/Closing

Pressure

Size **Position** **Object detection**



A4
B5
Postcard

Movement **Direction**

A B Direction detection is possible by making use of the difference in phase.


Infrared Light Emitting Diodes

These Ir-LEDs can be used for various remote control applications.

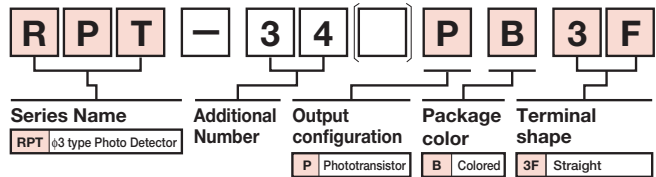
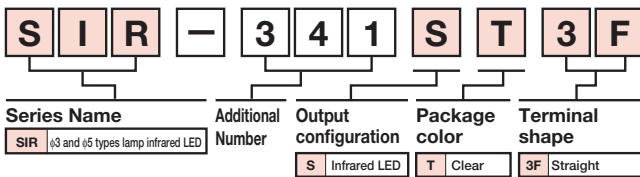
Infrared Light Emitting Diodes											
Package	Exterior	Part No.	Features	Absolute Maximum Rating	Standard Characteristics						
				I _F (mA)	I _E (mW/sr)	I _F (mA)	V _F (V)	I _F (mA)	λ _P (nm)	tr, tf (μs)	θ1/2 (deg)
φ3 resin		SIR-34ST3F	Optimized for remote controls	100	10.5	50	1.3	100	950	1	27
		SIR-341ST3F	Compact, high power	75	18.1	50	1.3	50	940	1	16
φ5 resin		SIR-56ST3F	Optimized for remote controls	100	15	50	1.3	100	950	1	15
		SIR-563ST3F	High output, Optimized for remote controls	100	21	50	1.34	50	940	1	15

Phototransistors


ROHM phototransistors have high reliability and large collector currents, φ3 mm lamp packages are available.

Phototransistors												
Package	Exterior	Part No.	Feature	Visible Light Filter	Visible Light Filter		Standard Characteristics					
					V _{CE0} (V)	P _C Max (mW)	I _{CE0} Max (μA)	V _{CE} (V)	I _C (mA)	λ _P (nm)	tr, tf (μs)	θ1/2 (deg)
φ3 resin		RPT-34PB3F	Visible light filter	✓	32	150	0.5	10	2.0 Min	800	10	36
		RPT-37PB3F	Visible light filter, Polarity discrimination	✓	32	150	0.5	10	2.0 Min	800	10	36
		RPT-38PB3F	Visible light filter	✓	32	150	0.5	10	2.0 Min	800	10	36

Product No. Explanation



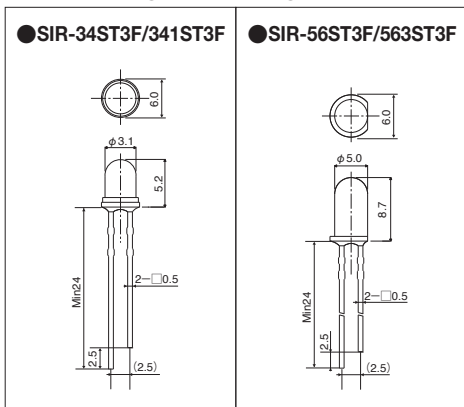
Ambient Light and Proximity Sensor

Ambient Light and Proximity Sensor									
Package	Exterior	Part No.	Features	Visible Light Filter	Interface	Absolute Maximum Rating		Standard Characteristics	
						V _{DD} Max (V)	V _{LED} Max (V)	PS Sensor Out (Count)	λ _P (nm)
Surface Mount type		RPR-0521RS	Proximity Sensor and Ambient Light Sensor	Built-in Noise Cancellation Function	I ² C	4.5	7	80	940

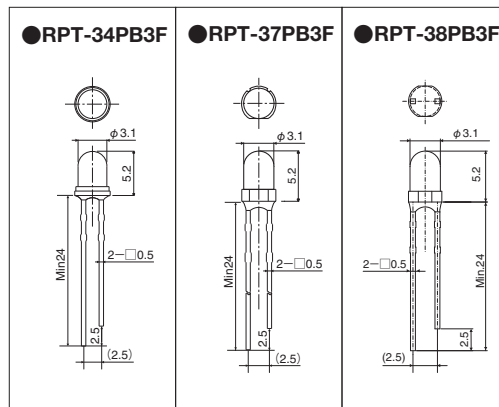
Packages

Dimensions (Unit: mm)

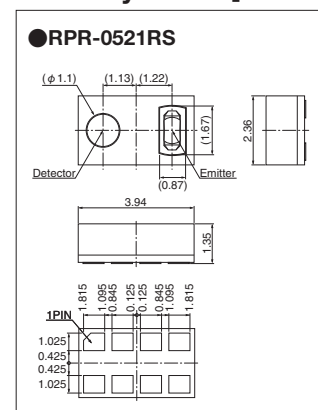
[Infrared Light Emitting Diodes]



[Phototransistors]

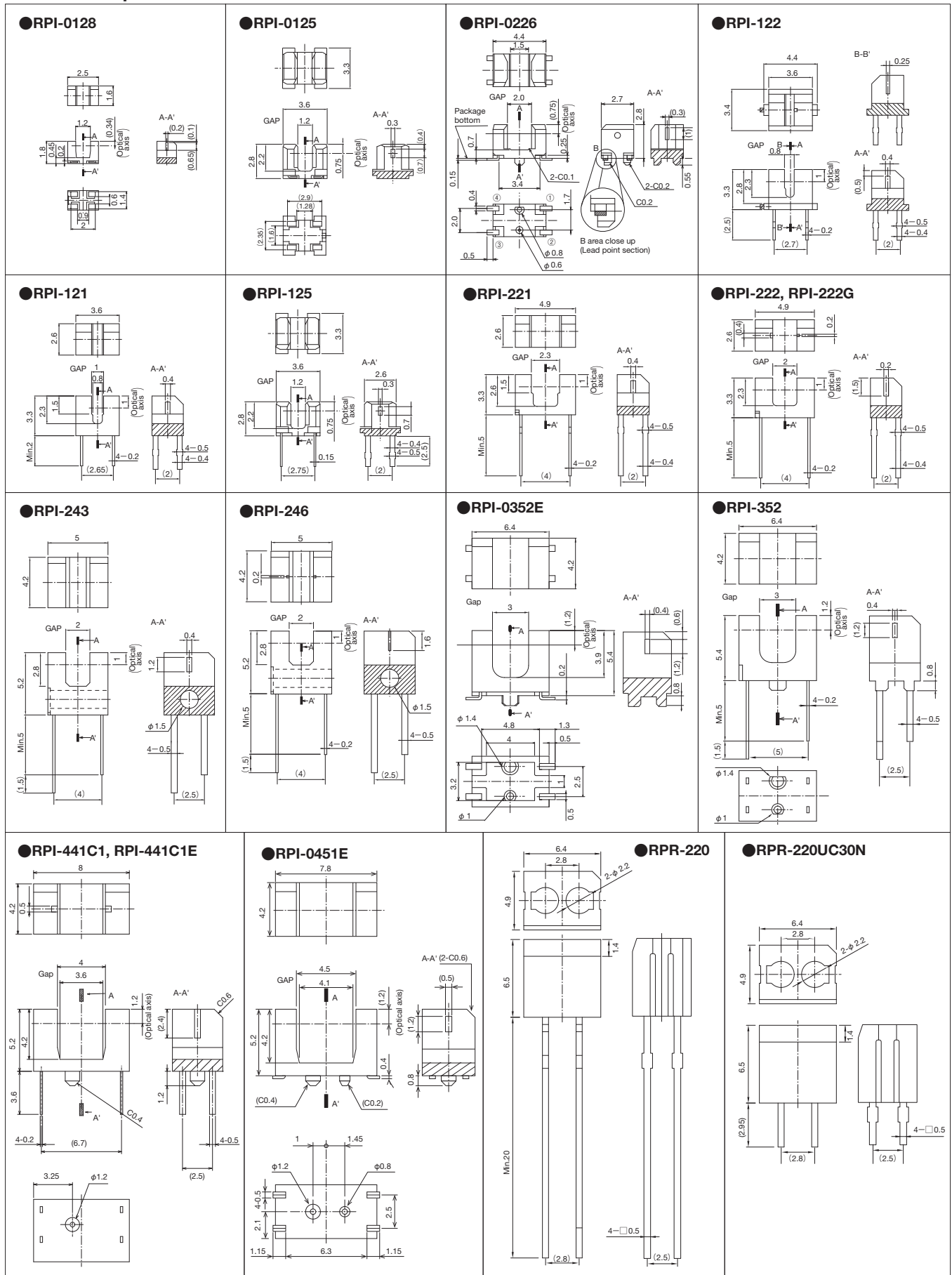


[Ambient Light and Proximity Sensor]



● Dimensions (Unit: mm)

[Photointerrupter]

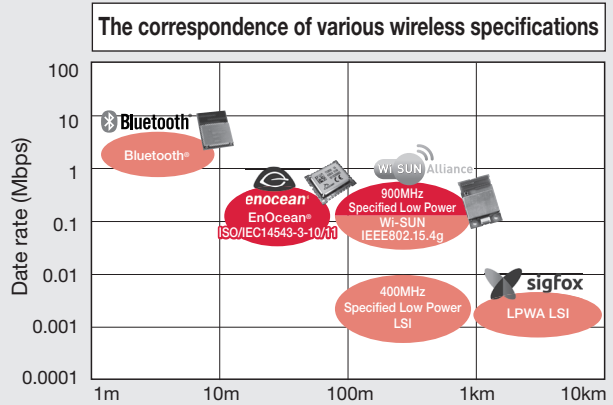


Wireless Modules

ROHM Wireless Module Technologies	P.280	Wi-SUN Communication Modules (Specified Low Power Radio Modules)	P.280
Bluetooth® Modules	P.281	EnOcean® Communication Modules	P.281
13.56MHz (NFC) Wireless Charger Modules	P.281		

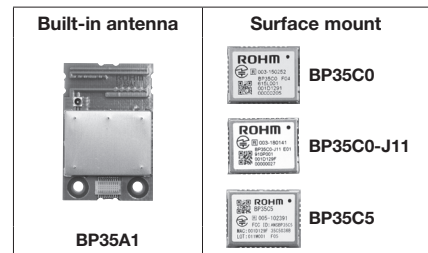
ROHM Wireless Module Technologies

ROHM group is developing Wireless Communication devices in a broad range of fields.



Wi-SUN Communication Modules (Specified Low Power Radio Modules)

- 920MHz specified low-power wireless module
- Excellent receiver sensitivity
- Built-in antenna eliminates the need for high-frequency designs
- Transmitting power pre-adjusted
- MAC address included
- Japan radio law certified
- Built-in system LSI that made in LAPIS Technology



Wi-SUN Communication Modules (Specified Low Power Radio Modules)							
Part No.	Supply Voltage (V)	Operating Temperature (°C)	Host I/F	Compatible Standards	Radio law Certification	Dimensions (mm)	Package
BP35A1	2.7 to 3.6 (Single power)	-20 to +80	UART	Wi-SUN Route-B	TELEC	22.0×33.5×3.9	Connector joint type 0.5mm pitch, 20pin
BP35C0	2.6 to 3.6 (Single power)	-30 to +85	UART	Wi-SUN Route-B/HAN	TELEC	15.0×19.0×2.6	SMD 1.27mm pitch, 28pin
BP35C0-J11	2.6 to 3.6 (Single power)	-30 to +85	UART	Wi-SUN Route-B/HAN/Enhanced HAN	TELEC	15.0×19.0×2.6	SMD 1.27mm pitch, 28pin
BP35C5	2.6 to 3.6 (Single power)	-30 to +85	UART	Wi-SUN FAN	TELEC/FCC	15.0×19.0×2.6	SMD 1.27mm pitch, 30pin

Bluetooth® Modules Bluetooth®

- Low power consumption and the best solution for the instruments required a long-life of coin type/button battery
- Bluetooth® low energy single mode module
- Built-in pattern antenna and RF characteristic adjusted before shipment
- Certified radio regulation: TELEC, FCC, ISED (IC), CE



Bluetooth® low energy Modules (LAPIS Technology products)											
Part No.	Supply Voltage (V)	Operating Temperature (°C)	Host I/F	Bluetooth Certification	Radio law Certification	Module Specification	Include Flash/RAM	Include Crystal Oscillator	Include Antenna	Dimension (mm)	Package
MK71511-NNN	1.7 to 3.6	-40 to +85	UART SPI	Ver5.2 (Single mode) QDID: 146733 (RF-PHY Component)	TELEC/FCC/ISED/CE	Role: Master/Slave Application: Blank	Flash: 192KB RAM: 24KB	32MHz 32.768kHz	Pattern	9.7x13.4x2.0	M-FLGA54-9.7X13.4-0.80-9Y
MK71511A-NNN								32MHz			M-FLGA54-9.7X13.4-0.80-9Y
MK71521-NNN							Flash: 512KB RAM: 64KB	32MHz 32.768kHz			M-FLGA54-9.7X13.4-0.80-9Y
MK71521A-NNN							32MHz	M-FLGA54-9.7X13.4-0.80-9Y			
































Bluetooth® is a registered trademark of Bluetooth® SIG.

EnOcean® Communication Modules

EnOcean® products are based on energy harvesting battery-less/wireless telecommunication technology.

- Feature**
- EnOcean® Wireless Standard (ISO/IEC 14543-3-10/11)
 - Built-in antenna eliminates the need for high-frequency designs
 - Japan radio law certified

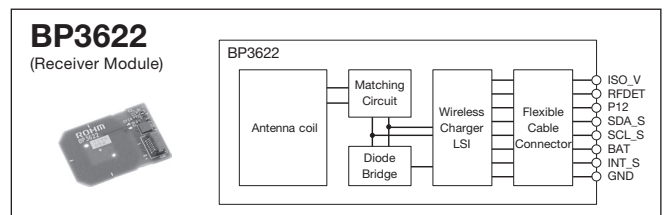
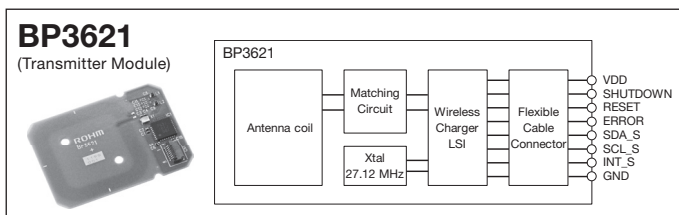
*This product (928MHz frequency band) is permitted as "specified low-power radio station" in Japanese radio law.

EnOcean® Communication Modules/Devices										
Frequency Band	Use Target Area	Products								
		Energy converter for motion energy harvesting (for the switch module)	Transmitter module (for switch module)	Push button multi-channel switch module	Energy harvesting wireless transceiver module	Programmable transceiver module	Energy harvesting magnet contact module	Energy harvesting temperature sensor module	Humidity sensor module	Receiver USB module
928MHz	Japan	 ECO 200/ ECO 260	 PTM 535J	 PTM 215J	 STM 400J	 TCM 410J/ TCM 515J	 STM 429J	 STM 431J	 HSM 100	 USB 400J/ USB 500J
868MHz	Europe/China	 ECO 200/ ECO 260	 PTM 535	 PTM 210/ PTM 215	 STM 300	 TCM 310	 STM 329	 STM 331	 HSM 100	 USB 300
902MHz	North America	 ECO 200/ ECO 260	 PTM 535U	 PTM 215U	 STM 300U	 TCM 310U	 STM 320U	 STM 331U	 HSM 100	 USB 500U
921MHz	Asia	 ECO 200/ ECO 260	—	—	—	—	—	 STM 431T	 HSM 100	 USB 500T

*EnOcean® is a registered trademark of EnOcean GmbH.

13.56MHz (NFC) Wireless Charger Modules

ROHM's 13.56MHz wireless charger module is a board-integrated module with an antenna. Since the development man-hours for antenna design and matching adjustment can be significantly reduced, the wireless charging function can be easily realized. It contributes to the compact, connectorless, waterproof and dustproof housing design required for wearable devices and IoT devices.

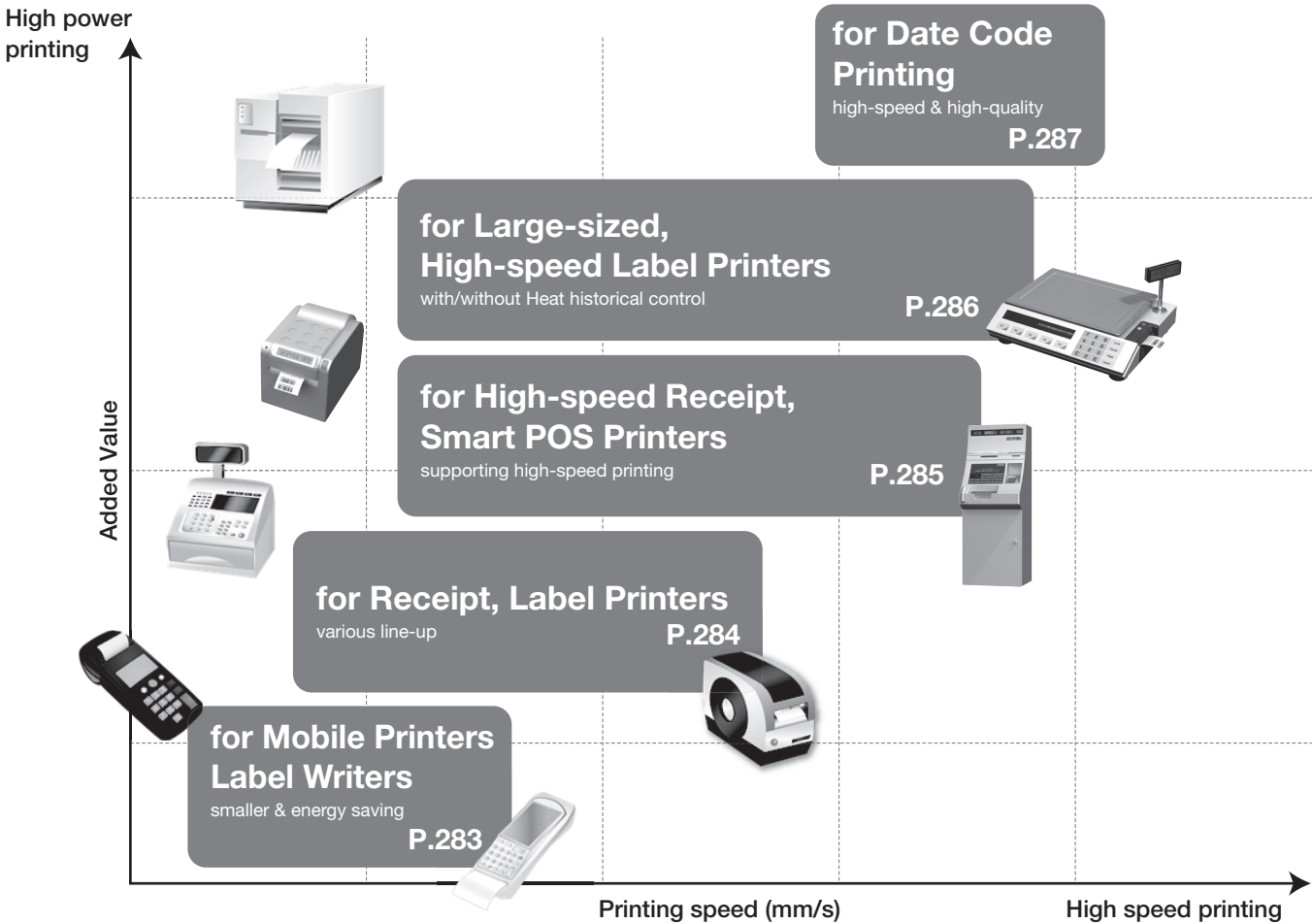


Extensive feeding type 13.56MHz Power Transmitter Wireless Charger Modules									
Part No.	Transmitter/Receiver	Module type	Module size (mm)	Weight (g)	Supply Voltage (V)	Output Power (Max) (mW)	Feeding Distance (d) (mm)	Operating Temperature (°C)	Interface
BP3621	Power Transmitter	Wide Range type	35.0x26.0x1.5	0.80	4.5 to 5.5	—	10	-10 to +50	8pin, 0.5mm pitch, FPC connector
Extensive feeding type 13.56MHz Power Receiver Wireless Charger Modules									
BP3622	Power Receiver	Wide Range type	24.0x17.0x1.5	0.38	—	200	10	-10 to +50	8pin, 0.5mm pitch, FPC connector



Thermal Printheads			
Selection guide	P.282	Part No. Configuration	P.282
For Mobile Printers series	P.283	For Label writers series	P.283
For Receipt, Label Printers series	P.284	For High-speed Receipt, Smart POS Printers series	P.285
For Large-sized, High-speed Label Printers series	P.286	For Large-sized, High-speed Label Printers with The Heat historical control	P.286
For Date Code Printing	P.287		

Selection guide



We have various line-up to response the customer requests. Please feel free to contact ROHM sales representative for further details if the product you are looking for is not listed.

Part No. Configuration

Totally 13 digit

K D 2 0 0 4 - D 1 F W 0 0 A

Structure of TPH Ex.)	Resolution Ex.)	Print Width Ex.)	Option Ex.)	Discrimination Number
KA/ KR Flat structure, Full glaze	10 100dpi 15 150dpi 18 180dpi	01 1inch 02 2inch 03 3inch 04 4inch 05 5inch 06 6inch 08 8inch 10 10inch	DA Both side type connectors with Heatsink D1 Both side type connectors without Heatsink etc.	
KD Flat structure, Partial glaze	20 203dpi 30 300dpi 36 360dpi 60 600dpi etc.			
SH Near-edge structure, Partial glaze				

Totally 11 digit

K D 2 0 0 4 - D F 1 0 A

Structure of TPH Ex.)	Resolution Ex.)	Print Width Ex.)	Option Ex.)	Discrimination Number
KA/ KR Flat structure, Full glaze	10 100dpi 15 150dpi 18 180dpi	01 1inch 02 2inch 03 3inch 04 4inch 05 5inch 06 6inch 08 8inch 10 10inch	DF Both side type connectors with Heatsink DG Center type connector with Heatsink etc.	
KD Flat structure, Partial glaze	20 203dpi 30 300dpi 36 360dpi 60 600dpi etc.			
SH Near-edge structure, Partial glaze				

For Mobile Printers series



■ Features

In addition to the 7.2V drive industry standard type that matches Li-ion battery drive, the lineup includes a 4.2V drive energy saving type and a 12V drive high-speed printing type. A thermal print head that supports a variety of sets.

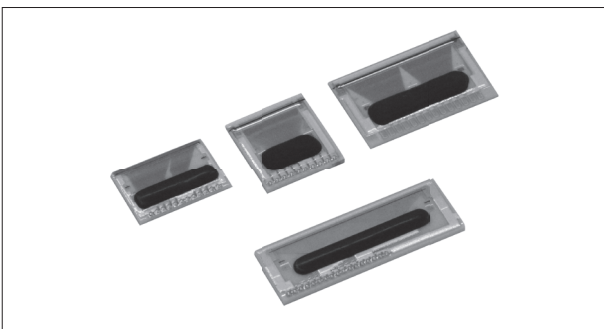
■ Applications

It is ideal for mobile printers with low voltage and strict current capacity restrictions, EFT-POS terminals with high demands for small size and energy savings, receipt printers, and small label printers.

For Mobile Printers series											
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (V _{cc})	Connector type	Abrasion life (km)	Pulse life (million pulses)
KR2002-D06B71A	203	48	384	80	8	100	4.2	2.70 to 5.25	-	50	100
KR3002-B06N1BA	300	48.787	576			50					
KA2002-B05B70A	203	48	384	176	14	100	7.2	2.70 to 5.25	Flat Cable	50	100
KA2002-H05N00A									-		
KA2002-B35N00A		-									
KA2003-B35N00A		72	576						Flat Cable		
KA2003-H05N20A		104	832			-					
KA2004-D35N90A		8	8			14					
KA2004-H05N20A		14									
New KA3002-B05N00A		300	48.787			576			210		
KA3003-H05N20A	73.181		864								
New KA3004-303N00A	108.416		1280								
KD2002-G0JB10A	203	48	384	395	14	150	12	2.70 to 5.25	-	50	
KA3008-C03N10A	300	219.542	2592			100	14	100			

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For Label writers series



■ Features

ROHM's unique structure contributes to making printers smaller and lighter. A thick film structure with high contactability to the label, high corrosion resistance and excellent reliability, and a heat generating structure with excellent energy efficiency.

■ Applications

Ideal for label writers that issue labels for organizing and wrapping.

For Label writers series											
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (V _{cc})	Connector type	Abrasion life (km)	Pulse life (million pulses)
KL0643-BB11A	180	9.024	64	281	14	50	7.2	3.00 to 5.25	-	30	100
KL2000-E0KN60A	203	12	96	142	17			2.70 to 5.25		50	
KL1801-DB92A	180	18.048	128	400	14			4.75 to 5.25		30	
KA2001-B05N30	203	24	192	123	14			2.70 to 5.25		50	

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For Receipt, Label Printers series



■ Features

Adopting a heating element structure optimal for various printing speeds and media achieves both printing quality and energy saving. A thermal print head that supports high-level control by supporting a high-frequency clock.

■ Applications

It is ideal for POS terminals used in a wide range of fields, receipt printing for ATMs, label printers, slot machines and lottery printers.



For Receipt, Label Printers series

Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (V _{cc})	Connector type	Heat sink	Abrasion life (km)	Pulse life (million pulses)
KD2002-CAFW00A	203	54	432	800	14	150	24	3.13 to 5.25	Wire Cable	YES	150	100
KD2003-CAFW00A		72	576							NO		
New KD2004-C1GW00A		108	864									
KD2002-LEFW00A		54	432		Flat Cable				YES			
KD2003-CG11A		72	576									
KD2004-CG11A		108	864									
KD2008-CF10A	300	219.542	2592	1000	20	100	24	3.13 to 5.25		Wire Cable	50	
KD2008-CF16A				800	125							
KD3008-CF10A				1000	100							
KD2008-CG50A				800	150	4.75 to 5.25			Flat Cable	50		
KD2003-L0GBA0A	203	72	576	800	12	200	3.13 to 5.25	—	NO		50	

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For High-speed Receipt, Smart POS Printers series



■Features

By adopting a unique heating element structure that supports high-speed printing, clear print quality can be obtained even at high-speed printing. This series achieves high-quality printing on various media.



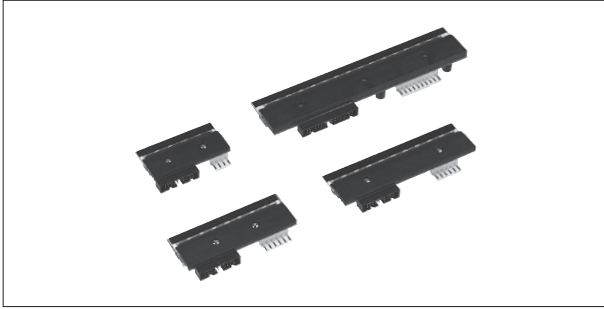
■Applications

Ideal for Smart POS printers that support high-speed printing, ECR printers, and small label printers such as cardboard labels.

For High-speed Receipt, Smart POS Printers series												
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (Vcc)	Connector type	Heat sink	Abrasion life (km)	Pulse life (million pulses)
New KD2002-D5FW00A	203	56	448	650	20	250	24	3.13 to 5.25	Wire Cable	NO	150	100
New KD2003-F0GB00A		80	640		14				—		50	50
New KD2003-F0FW00A		104	832		20				—		150	100
New KD2004-D0GW00A		144	1152	800	20	125		4.75 to 5.25	Wire Cable	—	50	50
KD2005-UAGX00A		54.208	640	1000	18	200		3.13 to 5.25	YES	Flat Cable	150	100
New KD3002-KAFW00A	300	81.312	960	14	250	NO						
New KD3002-GEFW00A				20	200		YES					
KD3003-K5FW00A				18		100						
KD3003-KAFW00A				25	4.75 to 5.25		Wire Cable					
KD3004-KAGW00A	108.416	1280	660	25	100	4.75 to 5.25	Wire Cable	YES				
KD3008-DF54A	216.832	2560										

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For Large-sized, High-speed Label Printers series



■Features

This series responds to the high reliability required for industrial equipment by applying a heating element structure that supports high-speed printing, a highly durable protective film, and a structure that supports large currents.

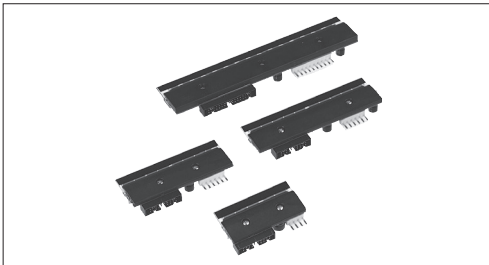
■Applications

It is ideal for ticket machines, label printers, and food measuring instruments that are used outdoors or issue tickets continuously.

For Large-sized, High-speed Label Printers series												
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (V _{cc})	Connector type	Heat sink	Abrasion life (km)	Pulse life (million pulses)
KD2002-TQFW00A	203	56	448	550	20	250	24	3.13 to 5.25	Wire Cable	YES	150	100
KD2003-TQFW00A		80	640									
KD2004-TQFW00A		104	832									
KD2006-TQFW00A		168	1344									
KD3002-TQFW00A	300	54.208	640	850								
KD3003-TQFW00A		81.312	960									
KD3004-TQFW00A		108.416	1280									
KD3006-TQFW00A		162.624	1920									
TE3004-TP1W00A		105.706	1248		570	400						

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For Large-sized, High-speed Label Printers with The Heat historical control



■Features

These thermal printheads are ideal for barcode label printers for industrial equipment that require high print quality. This series can control the heat generation time of each heating element from the heat generation history.

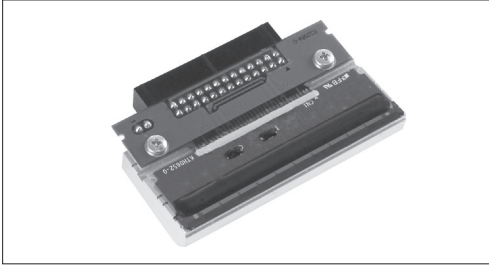
■Applications

Ideal for barcode label printers used in assembly lines and distribution centers in factories that require 24-hour operation and continuous printing for a long time.

For Large-sized, High-speed Label Printers with The Heat historical control												
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (V _{cc})	Connector type	Heat sink	Abrasion life (km)	Pulse life (million pulses)
KD2002-RQFW00A	203	56	448	550	20	300	24	3.13 to 5.25	Wire Cable	YES	150	100
KD2003-RQFW00A		80	640									
KD2004-RQFW00A		104	832									
KD2006-RQFW00A		168	1344									
KD3002-RQFW00A	300	54.208	640	850								
KD3003-RQFW00A		81.312	960									
KD3004-RQFW00A		108.416	1280									
KD3006-RQFW00A		162.624	1920									

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.

For Date Code Printing



■Features

This thermal printhead is capable of high-speed printing and high-quality image quality even using a resin-based ink ribbon with excellent scratch resistance, which is considered difficult for high-speed printing.

■Applications

It contributes to improving productivity at food processing sites and logistics sites, including electronic tags used in logistics management and unmanned cash registers, environmentally friendly packaging materials and date code information required for complex logistics management.

For Date Code Printing												
Part No.	Resolutions (dpi)	Print Width (mm)	Number of dot (dots)	Resistance variation (Ω)	Platen diameter (Max) (mm)	Print Speed (mm/s)	Print voltage (VH)	Logic Voltage (Vcc)	Connector type	Heat sink	Abrasion life (km)	Pulse life (million pulses)
TH3001-2P1W00A	305	31.987	384	570	50	1000	24	3.13 to 5.25	Wire Cable	YES	150	100
TH3002-2P1W00A		53.312	640									

We can also develop a thermal printhead per customized specifications. Please contact a ROHM sales representative for further details.



Part No. List

Part No. List

Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page	Part No.	Page
1SS355VM	220	2SB1689	164	2SCR573D3	171	BA178M05 (BA78M05)	28	BA83472Y	15
1SS380VM	221	2SB1690	168	2SCR574D3	171	BA178M06 (BA78M06)	28	BA83474Y	15
1SS390SM	222	2SB1690K	164	2SCR582D3	171	BA178M07 (BA78M07)	28	BA8391	18
1SS400CM	220	2SB1694	164	2SCR583D3	171	BA178M08 (BA78M08)	28	BA90BC0	31
1SS400SM	220	2SB1695	168	2SCR586D3	171	BA178M09 (BA78M09)	28	BA90BC0W	32
2SA1036K	164	2SB1695K	164	2SCR586J	171	BA178M10 (BA78M10)	28	BA90DD0T	29
2SA1037AK	164	2SB1697	170	2SCR587D3	171	BA178M12 (BA78M12)	28	BA90DD0W	29
2SA1514K	164	2SB1705	168	2SCR642P	170	BA178M15 (BA78M15)	28	BA90JC5T	31
2SA1576U3	164	2SB1706	168	2SCRC41C	164	BA178M18 (BA78M18)	28	BA9741F	46
2SA1576UB	163	2SB1707	168	2SD1383K	166	BA178M20 (BA78M20)	28	BA9741FS	46
2SA1577	164	2SB1708	168	2SD1484K	164	BA178M24 (BA78M24)	28	BA9743AFV	46
2SA1579U3	164	2SB1709	168	2SD1757K	164	BA18BC0	31	BA9744FV	46
2SA1774E3	164	2SB1710	168	2SD1781K	164	BA18BC0W	32	BAJ0BC0	31
2SA1774EB	163	2SB1730	168	2SD1782K	164	BA18DD0T	29	BAJ0BC0W	32
2SA2018E3	164	2SB1731	168	2SD1834	170	BA18DD0W	29	BAJ0CC0	30
2SA2029	163	2SB1732	168	2SD1949	164	BA18JC5T	31	BAJ0CC0W	30
2SA2030	163	2SB1733	168	2SD2114K	166	BA2107	17	BAJ2CC0	30
2SA2071P5	170	2SB852K	166	2SD2142K	166	BA2115	17	BAJ2CC0W	30
2SA2088U3	164	2SC2411K	164	2SD2153	170	BA25BC0	31	BAJ2DD0T	29
2SA2094	168	2SC2421K	164	2SD2226K	166	BA25BC0W	32	BAJ2DD0W	29
2SA2119K	164	2SC3906K	164	2SD2351	166	BA25DD0T	29	BAJ5CC0	30
2SAR293P	170	2SC4061K	164	2SD2444K	164	BA25DD0W	29	BAJ6DD0T	29
2SAR293P5	170	2SC4081U3	164	2SD2537	170	BA25JC5T	31	BAJ6DD0W	29
2SAR340P	170	2SC4081UB	163	2SD2652	164	BA2901/BA2901S	18	BAS116HY	221
2SAR340Q	168	2SC4097	164	2SD2653	168	BA2901Y	18, 19	BAS16HY	220
2SAR372P	170	2SC4102U3	164	2SD2653K	164	BA2902/BA2902S	13	BAS21HY	220
2SAR372P5	170	2SC4617E3	164	2SD2654	166	BA2902Y	13	BAS21VM	220
2SAR375P	170	2SC4617EB	163	2SD2656	164	BA2903/BA2903S	18	BAS40-04HY	199
2SAR375P5	170	2SC5585E3	164	2SD2657	168	BA2903Y	18, 19	BAS40-05HY	199
2SAR502E3	164	2SC5658	163	2SD2657K	164	BA2904/BA2904S	13	BAS40-06HY	199
2SAR502EB	163	2SC5663	163	2SD2661	170	BA2904Y	13	BAS40HY	199
2SAR502U3	164	2SC5824	170	2SD2670	168	BA30BC0	31	BAT54AHY	199
2SAR502UB	163	2SC5866	168	2SD2671	168	BA30BC0W	32	BAT54CHY	199
2SAR512P	170	2SC5876U3	164	2SD2672	168	BA30DD0T	29	BAT54HY	199
2SAR512P5	170	2SCR293P	170	2SD2673	168	BA30DD0W	29	BAT54SHY	199
2SAR512R	168	2SCR293P5	170	2SD2674	168	BA30JC5T	31	BAV170HY	221
2SAR513P	170	2SCR341Q	168	2SD2675	168	BA3121F	88	BAV199FM	221
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SML-P11MT (R)	253, 257	SMLZ4EGT (A)	255	UMB4N	185	UT6ME5	150		
SML-P11UT (R)	253, 257	SMLZ4WBGUW (A)	255	UMD12N	185	VS100VLNVWM	217		
SML-P11VT (R)	253, 257	SMR003	245	UMD22N	185	VS10VUA1LAM	218		
SML-P11YT (R)	253, 257	SP8J66	161	UMD25N	185	VS110VLNVWM	217		
SML-P12DT (R)	253	SP8K2	161	UMD2N	185	VS11VUA1LAM	218		
SML-P12M2T (R)	253	SP8K22	161	UMD3N	185	VS11VUA1VWM	217		
SML-P12MT (R)	253	SP8K24	161	UMD4N	185	VS12V0UD1HS	217		
SML-P12U2T (R)	253	SP8K3	161	UMD5N	185	VS12VBA1HS	219		
SML-P12UT (R)	253	SP8K31	161	UMD6N	185	VS12VUA1LAM	218		
SML-P12VT (R)	253	SP8K32	161	UMD9N	185	VS12VUA1VWM	217		
SML-P12WT (R)	253	SP8K33	161	UMG11N	188	VS130VLNVWM	217		
SML-P12Y2T (R)	253	SP8K41	161	UMG1N	188	VS13VUA1LAM	218		
SML-P12Y3T (R)	253	SP8K52	161	UMG2N	188	VS13VUA1VWM	217		
SML-P12YT (R)	253	SP8M21	161	UMG3N	188	VS14VUA1LAM	218		
SML-P13FT (R)	253	SP8M24	161	UMG4N	188	VS15V0UD1HS	217		
SML-P13PT (R)	253	SP8M3	161	UMG5N	188	VS15VUA1LAM	218		
SML-P24MUW (R)	256	SP8M31	161	UMG6N	188	VS15VUA1VWM	217		
SML-S13DT	256	SP8M4	161	UMG8N	188	VS16VUA1LAM	218		
SML-S13MT	256	SP8M41	161	UMG9N	188	VS16VUA1VWM	217		
SML-S13PT	256	SP8M5	161	UMH10N	185	VS17VUA1LAM	218		
SML-S13RT	257	SP8M51	161	UMH11N	185	VS17VUA1VWM	217		
SML-S13UT	256	SP8M6	161	UMH1N	185	VS18VUA1LAM	218		
SML-S13VT	256	SST2222A	165	UMH25N	185	VS18VUA1VWM	217		
SML-S13YT	256	SST2907A	165	UMH2N	185	VS20VUA1LAM	218		
SML-S15R2T	257	SST3904	165	UMH33N	189	VS20VUA1VWM	217		
SML-Z14D4T	255	SST3906	165	UMH37N	189	VS22VUA1LAM	218		
SML-Z14DT (A)	255	SST4401	165	UMH3N	185	VS22VUA1VWM	217		
SML-Z14DT (C)	258	SST4403	165	UMH4N	185	VS24VUA1LAM	218		
SML-Z14F4T	255	SSTA06	165	UMH8N	185	VS24VUA1VWM	217		
SML-Z14FT (A)	255	SSTA28	165	UMH9N	185	VS26VUA1LAM	218		
SML-Z14FT (C)	258	SSTA56	165	UMT18N	172	VS26VUA1VWM	217		
SML-Z14M4T	255	STM 300	281	UMT1N	172	VS28VUA1LAM	218		
SML-Z14MT (A)	255	STM 300U	281	UMT2907A	165	VS30VUA1LAM	218		
SML-Z14MT (C)	258	STM 320U	281	UMT3904	165	VS30VUA1VWM	217		
SML-Z14P4T	255	STM 329	281	UMT3906	165	VS33VUA1VWM	217		
SML-Z14PT (A)	255	STM 331	281	UMT4401U3	165	VS36VUA1VWM	217		
SML-Z14PT (C)	258	STM 331U	281	UMT4403U3	165	VS3V3BA1ES	219		
SML-Z14U4T	255	STM 400J	281	UMX18N	172	VS3V3BA1FS	219		
SML-Z14UT (A)	255	STM 429J	281	UMX1N	172	VS3V3BB1ES	219		
SML-Z14UT (C)	258	STM 431J	281	UMY1N	172	VS3V3BB1FS	219		
SML-Z14V4T	255	STM 431T	281	UMZ12NFM	215	VS3V3BC1HS	219		
SML-Z14VT (A)	255	TCM 310	281	UMZ16NFM	215	VS3V3BL1HS	219		
SML-Z14VT (C)	258	TCM 310U	281	UMZ18NFM	215	VS3V3BN1HS	219		

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