

# Power Management **IC**

Includes LAPIS Technology products

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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  BA3662CP-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  BDxxIC0*1/2/4 ▶P.35, 36	BDxxHC5*2/4 ▶P.34				
6 to 7V		BHxxNB1WHFV BHxxRB1WGUT BHxxPB1WHFV ▶P.40	BUxxTD2WNVX*1 BUxxTD3WG*1 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							
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 <sub>o</sub> =1A)	75 (f=120Hz, V <sub>i</sub> -V <sub>o</sub> =3V, V <sub>ripple</sub> =1V <sub>pp</sub> )	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 <sub>s</sub> =-40 to +125°C)	0.5	—	30	T <sub>s</sub> =-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 <sub>o</sub> =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 <sub>o</sub> =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 <sub>s</sub> =-40 to +125°C)	0.5	0.4 (I <sub>o</sub> =200mA)	6	T <sub>s</sub> =-40 to +125	—	Over-Current/ Temperature	TO252-3	FSS	YES
BD750L5FP-C	5.6 to 45.0	5.0			0.25 (I <sub>o</sub> =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
<b>New</b> BD733U2EFJ-C	4.37 to 45.0	3.3	±2 (T <sub>s</sub> =-40 to +125°C)	0.2	0.6 (I <sub>o</sub> =200mA)	6	T <sub>s</sub> =-40 to +125	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
BD733L2FP-C					TO252-3					FSS	YES	
BD733L2FP3-C					SOT223-4					FSS	YES	
<b>New</b> BD750U2EFJ-C	5.8 to 45.0	5.0			0.4 (I <sub>o</sub> =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 <sub>s</sub> =-40 to +150°C)	0.5	0.25 (I <sub>o</sub> =300mA)	38	T <sub>s</sub> =-40 to +150	—	Over-Current/ Temperature	BD433M5FP-C	BD433M5FP2-C	FSS	YES
BD450M5	5.5 to 42.0	5.0			0.2 (I <sub>o</sub> =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
<b>New</b> BD433U2EFJ-C	3.9 to 42.0	3.3	±2 (T <sub>s</sub> =-40 to +150°C)	0.2	0.2 (I <sub>o</sub> =100mA)	40	T <sub>s</sub> =-40 to +150	—	Over-Current/ Temperature	HTSOP-J8	FSS	YES
BD433M2FP3-C					SOT223-4					FSS	YES	
<b>New</b> BD450U2EFJ-C	5.5 to 42.0	5.0			0.16 (I <sub>o</sub> =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.

Power Management

**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		
<b>New</b> BD900N1	3 to 42	Variable	±2.0	0.15	0.5 (I <sub>o</sub> =100mA)	28	T <sub>J</sub> =−40 to +150	—	Over-Current/ Temperature	BD900N1EFJ-C	BD900N1G-C	FSS	YES
<b>New</b> BD933N1		3.3								BD933N1EFJ-C	BD933N1G-C	FSS	YES
<b>New</b> 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
<b>New</b> BD725L05G-C	3.5 to 42.0	2.5	±2	0.05	—	6	−40 to +125	—	Over-Current/ Temperature	SSOP5	FSS	YES
<b>New</b> BD730L05G-C	3.5 to 42.0	3.0			0.3 (I <sub>o</sub> =50mA)					SSOP5	FSS	YES
<b>New</b> BD733L05G-C	3.8 to 42.0	3.3			SSOP5					FSS	YES	
<b>New</b> BD750L05G-C	5.6 to 42.0	5.0			0.35 (I <sub>o</sub> =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 <sub>J</sub> =−40 to +150°C)	0.7	0.6 (I <sub>o</sub> =700mA)	17	T <sub>J</sub> =−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 <sub>J</sub> =−40 to +150°C)	0.5	0.25 (I <sub>o</sub> =300mA)	38	T <sub>J</sub> =−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 <sub>o</sub> =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 <sub>o</sub> =500mA)	17	T <sub>J</sub> =−40 to +150	✓	Over-Current/ Temperature	—	BD800M5WFPJ-C	—	BD800M5WHFP-C	FSS	YES
BD00EA5W			±1 (T <sub>J</sub> =25°C)		0.45 (I <sub>o</sub> =500mA)					—	BD00EA5WFP	—	BD00EA5WHFP	—	—
			±1.5 (T <sub>J</sub> =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
<b>New</b> BD433U2WEFJ-C	3.9 to 42.0	3.3	±2 (T <sub>J</sub> =−40 to +150°C)	0.2	0.2 (I <sub>o</sub> =100mA)	40	T <sub>J</sub> =−40 to +150	✓	Over-Current/ Temperature	HTSOP-J8	FSS	YES
<b>New</b> BD433M2WFP3-C										SOT223-4	FSS	YES
<b>New</b> BD450U2WEFJ-C	5.5 to 42.0	5.0			0.16 (I <sub>o</sub> =100mA)					HTSOP-J8	FSS	YES
<b>New</b> 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		
<b>New</b> BD900N1W	3 to 42	Variable	±2.0	0.15	0.5 (I <sub>o</sub> =100mA)	28	T <sub>J</sub> =−40 to +150	✓	Over-Current/ Temperature	BD900N1WEFJ-C	BD900N1WG-C	FSS	YES
<b>New</b> BD933N1W		3.3								BD933N1WEFJ-C	BD933N1WG-C	FSS	YES
<b>New</b> 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 <sub>J</sub> =−40 to +125°C)	0.3	0.2 (I <sub>o</sub> =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 <sub>o</sub> =2A)	55	50 (I <sub>o</sub> =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 <sub>o</sub> =2A)	55	50 (I <sub>o</sub> =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 <sub>o</sub> =1A)	55	V <sub>o</sub> <sup>1,2</sup> ×0.7% (I <sub>o</sub> =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
<b>BD00FDAWHFP</b>	4 to 32	Variable 1.5 to 30.0	±1 (T <sub>s</sub> =25°C)	2.0	0.5	0.4 (I <sub>o</sub> =1A)	55	V <sub>o</sub> <sup>1,2</sup> ×0.7% (I <sub>o</sub> =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 <sub>o</sub> =0.5A)	55	50 (I <sub>o</sub> =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 <sub>o</sub> <sup>1,2</sup> ×0.01 (I <sub>o</sub> =5mA to 1A)	Over-Current/ Temperature	TO252-3
BD50FC0FP	6.0 to 26.5	5.0								0.30 (I <sub>o</sub> =0.5A)

#### 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 <sub>s</sub> =-40 to +125°C)	1.0	0.5	0.3 (I <sub>o</sub> =500mA)	55	V <sub>o</sub> <sup>1,2</sup> ×0.01 (I <sub>o</sub> =5mA to 1A)	Over-Current/ Temperature	BD33C0AFP-C	BD33C0AHFP-C	BD33C0AFP2-C	FSs	YES
BD50C0A	6.0 to 26.5	5.0								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 <sub>o</sub> =500mA)	55	V <sub>o</sub> <sup>1,2</sup> ×0.01 (I <sub>o</sub> =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 <sub>o</sub> =0.5A)	55	50 (I <sub>o</sub> =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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\*2 V<sub>o</sub> is Output voltage/Unit: V

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 <sub>o</sub> =500mA)	55	V <sub>o</sub> *2×0.01 (I <sub>o</sub> =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 <sub>o</sub> =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 <sub>j</sub> =−40 to +125°C)	1.0	0.5	0.3 (I <sub>o</sub> =500mA)	55	V <sub>o</sub> *2×0.01 (I <sub>o</sub> =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				0.3 (I <sub>o</sub> =500mA)				BD50C0AWFP-C	BD50C0AWHFP-C	BD50C0AWFP2-C	FSs	YES
BD80C0AW	9.0 to 26.5	8.0				0.3 (I <sub>o</sub> =500mA)				BD80C0AWFP-C	BD80C0AWHFP-C	BD80C0AWFP2-C	FSs	YES
BD90C0AW	10.0 to 26.5	9.0				0.3 (I <sub>o</sub> =500mA)				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 <sub>o</sub> =0.2A)	55	40mV (I <sub>o</sub> =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 <sub>o</sub> +3 to 25	3.3	±1	0.1	0.3	1 (I <sub>o</sub> =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									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 <sub>o</sub> +3 to 25	5	±1	0.1	0.5	2 (I <sub>o</sub> =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 <sub>o</sub> +3 to 25	Variable 3.0 to 12.0	±1	0.1	0.3	2 (I <sub>o</sub> =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 <sub>o</sub> =500mA)	55	5 (I <sub>o</sub> =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 <sub>o</sub> =500mA)	55	5 (I <sub>o</sub> =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 <sub>o</sub> =200mA)	55	35 (I <sub>o</sub> =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<sub>o</sub> 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 <sub>o</sub> ≤6.0)	0.3 (I <sub>o</sub> =200mA)	55	35 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	1.0	0.6	0.6 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	1.0	0.6	0.6 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	0.5	0.6	0.6 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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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\*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.

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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.5	0.6	0.6 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>o</sub> =300mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.3	0.6	0.6 (I <sub>o</sub> =300mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.3	0.6	0.6 (I <sub>o</sub> =300mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	1.5	0.6	0.6 (I <sub>o</sub> =1.5A)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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
BD00HC5MEFJ-LB	4.5 to 8.0	Variable 1.5 to 7.0	±1 (T <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	1.5	0.6	0.6 (I <sub>o</sub> =1.5A)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =0 to 1.5A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HC5MEFJ-LB		1.5											HTSOP-J8
BD18HC5MEFJ-LB		1.8											HTSOP-J8
BD25HC5MEFJ-LB		2.5											HTSOP-J8
BD30HC5MEFJ-LB		3.0											HTSOP-J8
BD33HC5MEFJ-LB		3.3											HTSOP-J8
BD50HC5MEFJ-LB		5.0											HTSOP-J8
BD60HC5MEFJ-LB		6.0											HTSOP-J8
BD70HC5MEFJ-LB		7.0											HTSOP-J8

#### 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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	1.0	0.6	0.6 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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
BD00HC0MEFJ-LB	4.5 to 8.0	Variable 0.8 to 7.0 (Variable 1.5 to 7.0)	±1 (T <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	1.0	0.6	0.6 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8
BD15HC0MEFJ-LB		1.5											HTSOP-J8
BD18HC0MEFJ-LB		1.8											HTSOP-J8
BD25HC0MEFJ-LB		2.5											HTSOP-J8
BD30HC0MEFJ-LB		3.0											HTSOP-J8
BD33HC0MEFJ-LB		3.3											HTSOP-J8
BD50HC0MEFJ-LB		5.0											HTSOP-J8
BD60HC0MEFJ-LB		6.0											HTSOP-J8
BD70HC0MEFJ-LB		7.0											HTSOP-J8

#### 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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	0.5	0.6	0.6 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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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\*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.

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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.5	0.6	0.6 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>rpp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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		Variable 1.5 to 7.0	±1 (T <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C) <Automotive Grade>	0.3	0.6	0.6 (I <sub>o</sub> =300mA)	60 (f=100Hz, 50mV <sub>rpp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =0 to 300mA)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	-/FSs	-/YES
BD00HA3WEFJ/BD00HA3MEFJ-M	1.5												HTSOP-J8	-/FSs	-/YES
BD15HA3WEFJ/BD15HA3MEFJ-M	1.8												HTSOP-J8	-/FSs	-/YES
BD18HA3WEFJ/BD18HA3MEFJ-M	2.5												HTSOP-J8	-/FSs	-/YES
BD25HA3WEFJ/BD25HA3MEFJ-M	3.0												HTSOP-J8	-/FSs	-/YES
BD30HA3WEFJ/BD30HA3MEFJ-M	3.3												HTSOP-J8	-/FSs	-/YES
BD33HA3WEFJ/BD33HA3MEFJ-M	5.0												HTSOP-J8	-/FSs	-/YES
BD50HA3WEFJ/BD50HA3MEFJ-M	6.0												HTSOP-J8	-/FSs	-/YES
BD60HA3WEFJ/BD60HA3MEFJ-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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.3	0.6	0.6 (I <sub>o</sub> =300mA)	60 (f=100Hz, 50mV <sub>rpp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>rpp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	1.0	0.3	0.4 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>rpp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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
BD00IC0MEFJ-LB	2.3 to 5.5	Variable 0.8 to 4.5	±1 (T <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	1.0	0.3	0.4 (I <sub>o</sub> =1A)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =0 to 1A)	1.0	1.0	✓	Over-Current/ Temperature	HTSOP-J8	—	—
BD10IC0MEFJ-LB	2.4 to 5.5	1.0											HTSOP-J8	—	—
BD12IC0MEFJ-LB		1.2											HTSOP-J8	—	—
BD15IC0MEFJ-LB		1.5											HTSOP-J8	—	—
BD18IC0MEFJ-LB		1.8											HTSOP-J8	—	—
BD25IC0MEFJ-LB		2.5											HTSOP-J8	—	—
BD30IC0MEFJ-LB		3.0											HTSOP-J8	—	—
BD33IC0MEFJ-LB/BD33IC0MEFJ-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 <sub>o</sub> =200mA)	50	25 (I <sub>o</sub> =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 <sub>o</sub> =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 <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.5	0.25	0.4 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>pp</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>a</sub> =+25°C), ±3 (T <sub>a</sub> =-40 to +105°C)	0.5	0.25	0.4 (I <sub>o</sub> =500mA)	60 (f=100Hz, 50mV <sub>PP</sub> , I <sub>o</sub> =0A)	25 (I <sub>o</sub> =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 <sub>o</sub> =100mA)	68	0.5	Over Current/ Temperature	SSOP5
BU33SD5WG		3.3				85 (I <sub>o</sub> =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 <sub>o</sub> =100mA)	70dB (f=1kHz)	6 (I <sub>OUT</sub> =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 <sub>sat</sub> (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 <sub>o</sub> =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 <sub>o</sub> =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

### 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 <sub>o</sub> =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 <sub>o</sub> =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 <sub>o</sub> =200mA)		BU28TD2WNVX											BU28TD3WG	
BU2JTD2/BU2JTD3WG	2.85	BU2JTD2WNVX	BU2JTD3WG														
BU29TD2/BU29TD3	2.9	BU29TD2WNVX	BU29TD3WG														
BU30TD2/BU30TD3	3.0	240 (I <sub>o</sub> =200mA)	BU30TD2WNVX	BU30TD3WG													
BU31TD2/BU31TD3	3.1	BU31TD2WNVX	BU31TD3WG														
BU32TD2/BU32TD3	3.2	BU32TD2WNVX	BU32TD3WG														
BU33TD2/BU33TD3	3.3	220 (I <sub>o</sub> =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
<b>New</b> BU12JA3DG-C	1.7 to 6.0	1.2	±2 (T <sub>i</sub> = -40 to +150°C)	0.3	500 (I <sub>o</sub> =300mA)	60	15	37	0.1	1.0	✓	✓	✓	✓	SSOP5	FSs	YES
<b>New</b> BU15JA3DG-C		1.5			365 (I <sub>o</sub> =300mA)		15	37							SSOP5	FSs	YES
<b>New</b> BU18JA3DG-C		1.8			330 (I <sub>o</sub> =300mA)		15	37							SSOP5	FSs	YES
<b>New</b> BU25JA3DG-C		2.5			240 (I <sub>o</sub> =300mA)		15	37							SSOP5	FSs	YES
<b>New</b> BU30JA3DG-C		3.0			220 (I <sub>o</sub> =300mA)		15	37							SSOP5	FSs	YES
<b>New</b> BU33JA3DG-C		3.3			200 (I <sub>o</sub> =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 <sub>o</sub> =0.01 to 100mA)	40	70	1.0	1.0	✓	✓	✓	✓	BU15TA2WNVX	BU15TA2WHFV
BU18TA2W		1.8														BU18TA2WNVX	BU18TA2WHFV
BU25TA2W		2.5														BU25TA2WNVX	BU25TA2WHFV
BU26TA2W		2.6														400 (I <sub>o</sub> =200mA)	BU26TA2WNVX
BU27TA2W		2.7	BU27TA2WNVX		BU27TA2WHFV												
BU28TA2W		2.8	360 (I <sub>o</sub> =200mA)		BU28TA2WNVX	BU28TA2WHFV											
BU2JTA2W		2.85	BU2JTA2WNVX		BU2JTA2WHFV												
BU29TA2W		2.9	±1		BU29TA2WNVX	BU29TA2WHFV											
BU30TA2W		3.0	330 (I <sub>o</sub> =200mA)		BU30TA2WNVX	BU30TA2WHFV											
BU31TA2W		3.1	BU31TA2WNVX		BU31TA2WHFV												
BU32TA2W		3.2	BU32TA2WNVX		BU32TA2WHFV												
BU33TA2W		3.3	300 (I <sub>o</sub> =200mA)		BU33TA2WNVX	BU33TA2WHFV											
BU34TA2W		3.4	BU34TA2WNVX		BU34TA2WHFV												

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

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 ( $\mu$ A)	Output Short Current (mA)	Input Capacitor ( $\mu$ F)	Output Capacitor ( $\mu$ 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	$\pm 2$ ( $T_s=-40$ to $+105^\circ\text{C}$ )	0.2	400 ( $I_o=100\text{mA}$ )	68	1 ( $I_o=1$ to $200\text{mA}$ )	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 ( $\mu$ A)	Output Short Current (mA)	Input Capacitor ( $\mu$ F)	Output Capacitor ( $\mu$ 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														600	SSON004R1010	FSs	YES											
BU15JA2MNVX-C		1.5														440	SSON004R1010	FSs	YES											
BU18JA2MNVX-C		1.8														380	SSON004R1010	FSs	YES											
BU25JA2MNVX-C		2.5														280	SSON004R1010	FSs	YES											
BU28JA2MNVX-C		2.8														260	SSON004R1010	FSs	YES											
BU2JJA2MNVX-C		2.85														240	SSON004R1010	FSs	YES											
BU29JA2MNVX-C		2.9														220	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														$\pm 2$	0.2	-	68	0.5	33	100	1.0	1.0	✓	✓	✓	-	SSOP5	FSs
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	160	SSOP5	FSs	YES																									
BU25JA2VG-C	2.5	100	SSOP5	FSs	YES																									
BU28JA2VG-C	2.8	85	SSOP5	FSs	YES																									
BU2JJA2VG-C	2.85	85	SSOP5	FSs	YES																									
BU30JA2VG-C	3.0	SSOP5	FSs	YES																										
BU33JA2VG-C	3.3	SSOP5	FSs	YES																										
BU10JA2DG-C	1.0	✓	85	-	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														160	SSOP5	FSs	YES												
BU25JA2DG-C	2.5														100	SSOP5	FSs	YES												
BU28JA2DG-C	2.8														85	SSOP5	FSs	YES												
BU2JJA2DG-C	2.85														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 ( $\mu$ A)	Output Short Current (mA)	Input Capacitor ( $\mu$ F)	Output Capacitor ( $\mu$ 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	$\pm 2$	0.2	100 ( $I_o=150\text{mA}$ )	70	2 ( $I_o=1$ to $100\text{mA}$ )	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 <sub>o</sub> =100mA)	80	6 (I <sub>o</sub> =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 <sub>o</sub> =100mA)	63	2 (I <sub>o</sub> =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 <sub>cc</sub> Mode					High Speed Mode	Low I <sub>cc</sub> Mode								
BH12PB1WHFV	1.7 to 5.5	1.2	±1	-3.3 to +4.3	0.15	210 (I <sub>o</sub> =100mA)	60 (High speed mode)	10 (I <sub>o</sub> =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 <sub>CC</sub>	V <sub>IN</sub>								
<b>New</b> BD00JC0MNUX-M	1	3.0 to 5.5	0.95 to V <sub>CC</sub> -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 <sub>CC</sub>	V <sub>IN</sub>															
BD3550HFN	0.5	4.3 to 5.5	0.95 to (V <sub>CC</sub> -1)	0.65 to 2.70	±1	-	✓	✓	Recovery	Recovery	HSON8							
BD3551HFN	1.0		0.95 to (V <sub>CC</sub> -1)								HSON8							
BD3552HFN	2.0		0.95 to (V <sub>CC</sub> -1)								HSON8							
BD3508MUV	3.0		0.75 to (V <sub>CC</sub> -1)	0.65 to 2.70							VQFN020V4040							
BD3540NUV	0.5		3.0 to 5.5	0.95 to (V <sub>CC</sub> -1)							0.65 to 2.70	±1	✓	✓	✓	Recovery	Recovery	VSON010V3030
BD3541NUV	1.0			VSON010V3030														
BD3509MUV	4.0			0.7 to (V <sub>CC</sub> -1)														0.65 to 2.70

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 <sub>at</sub> (mV) (I <sub>o</sub> =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 <sub>OUT</sub>	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 <sub>at</sub> (mV) (I <sub>o</sub> =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 <sub>o</sub> =1 to 100mA)	1	120	70	2.2	1.0	✓	✓	✓	✓	VSON008X2030	
		2.8	±1%		360	65		2										
		1.8	±25mV		—	70		3										
BU6651NUX		2.8	±1%		360	65		1										VSON008X2030
		1.8	±25mV		—	70		2										
		1.5	±25mV		—	70		3										
BU6652NUX		2.8	±1%		360	65		1									VSON008X2030	
		2.8	±1%		360	65		2										
		1.5	±25mV		—	70		3										
BU6653NUX		2.8	±1%		360	65		1										VSON008X2030
		1.8	±25mV		—	70		2										
		1.8	±25mV		—	70		3										
BU6654NUX	3.3	±1%	300	65	1	VSON008X2030												
	1.8	±25mV	—	70	2													
	1.5	±25mV	—	70	3													
BU6655NUX	3.3	±1%	300	65	1		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 <sub>J</sub> =-40 to +150°C)	0.55	0.2 (I <sub>o</sub> =300mA)	4.65	±2.6	4.65V Voltage Detector+WDT	75	T <sub>J</sub> =-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 <sub>a</sub> =-40 to +125°C)	0.5	0.3 (I <sub>o</sub> =200mA)	4.5	±2	4.5V Voltage Detector+WDT (Active switch) Adjustable Voltage Detector+WDT	80	T <sub>a</sub> =-40 to +125	HRP7	FSs	YES
BD3020HFP						Variable (at V <sub>s</sub> 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					
<b>New</b> BD820F5UEFJ-C	5.9 to 42.0	5	±2 (T <sub>J</sub> =-40 to +150°C)	0.2	0.4 (I <sub>o</sub> =200mA)	4.2	±2.62	4.2V Voltage Detector+WDT	5	T <sub>J</sub> =-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 <sub>J</sub> =-40 to +150°C, V <sub>CC</sub> =6.0 to 28V, I <sub>O</sub> =5 to 400mA)	0.5	0.25 (I <sub>O</sub> =300mA)	4.62	±2.8	-	75	T <sub>J</sub> =-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 <sub>J</sub> =-40 to +150°C, V <sub>CC</sub> =6.0 to 16V, I <sub>O</sub> =1 to 100mA)	0.2	0.25 (I <sub>O</sub> =100mA)	Variable (with RADJ not used: 4.62V)	±2.6	-	70	T <sub>J</sub> =-40 to +150	SOP-J8	FSs	YES
<b>New</b> 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 <sub>a</sub> =-40 to +125°C, V <sub>CC</sub> =6 to 36V, I <sub>O</sub> =5 to 200mA)	0.25 (I <sub>O</sub> =200mA)	45	T <sub>a</sub> =-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	
<b>New</b> BD42530UEFJ-C	5.6*2 to 42.0	0.25	±10 (T <sub>J</sub> =-40 to +150°C, V <sub>CC</sub> =6 to 32V, I <sub>O</sub> =0.1 to 250mA)	0.28 (I <sub>O</sub> =200mA)	40	T <sub>J</sub> =-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 <sub>J</sub> =-40 to +150°C, V <sub>CC</sub> =6 to 40V, I <sub>O</sub> =1 to 50mA)	0.12 (I <sub>O</sub> =50mA)	40	T <sub>J</sub> =-40 to +150	SSOP5	FSs	YES	
BD42540FJ-C	5.4*2 to 42.0	0.07	±10 (T <sub>J</sub> =-40 to +150°C, V <sub>CC</sub> =5.5 to 26V, I <sub>O</sub> =0.1 to 60mA)	0.2 (I <sub>O</sub> =70mA)	40	T <sub>J</sub> =-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 <sub>CC</sub> Input Voltage (V)	V <sub>TT,N</sub> Termination Input Voltage (V)	V <sub>DDO</sub> Reference Input Voltage (V)	V <sub>TT</sub> Output Voltage (V)	V <sub>TT</sub> Voltage Precision (mV)	V <sub>TT</sub> Output Current (A)	V <sub>REF</sub> 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 <sub>CC</sub> Input Voltage (V)	V <sub>TT,N</sub> Termination Input Voltage (V)	V <sub>DDO</sub> Reference Input Voltage (V)	V <sub>TT</sub> Output Voltage (V)	V <sub>TT</sub> Voltage Precision (mV)	V <sub>TT</sub> Output Current (A)	V <sub>REF</sub> 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
<b>Nano</b> 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 <sub>IN</sub> ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9A101MUV-LB	7	1	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9B100MUV	7	1	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×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 1.3×0.9, H=0.4
BU90003GWZ	7	1	2.3 to 5.5	1.2	4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90007GWZ	7	1	2.3 to 5.5	1.25	4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90009GWZ	7	1	2.3 to 5.5	1.3	4.2	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90004GWZ	7	1	2.3 to 5.5	1.8	5.4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90104GWZ	7	1	2.3 to 5.5	1.8	5.4	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90005GWZ	7	1	2.3 to 5.5	2.5	6	45	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90006GWZ	7	1	2.3 to 5.5	3	6	55	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, H=0.4
BU90002GWZ	7	1	4.0 to 5.5	3.3	6	55	On-time	–	–	✓	✓	Recovery	Recovery	UCSP35L1 1.3×0.9, 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 <sub>IN</sub> ×0.8)	2/1	40	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9A201FP4-LBZ	7	2	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9A301MUV-LB	7	3	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030
BD9B305QUZ	7	3	2.7 to 5.5	0.6 to (V <sub>IN</sub> ×0.8)	1	15	On-time	✓	✓	✓	✓	Recovery	Recovery	VMM08LZ2020 2.0×2.0, H=0.4
BD9B333GWZ	7	3	2.7 to 5.5	0.6 to (V <sub>IN</sub> ×0.8)	1.3	50	On-time	✓	✓	✓	Deep	Recovery	Recovery	UCSP35L1 1.98×1.8, H=0.4
BD9B300MUV	7	3	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	2/1	35	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9B301MUV-LB	7	3	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	2/1	45	On-time	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9B304QWZ	7	3	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	2/1	40	On-time	–	–	✓	Deep	Recovery	Recovery	UMMP08AZ2020 2.0×2.0, 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 <sub>IN</sub> ×0.7)	1	350	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030	
BD9B400MUV	7	4	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	2/1	45	On-time	✓	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD91364BMUU	7	5	2.9 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	1.7	150	On-time	✓	✓	✓	✓	Latch	Recovery	VQFN20U4040M	
BD9B500MUV	7	5	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.8)	2/1	45	On-time	✓	✓	✓	✓	Deep	Recovery	Recovery	VQFN016V3030
BD9A600MUV	7	6	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×0.7)	1	400	Current	✓	✓	✓	✓	Recovery	Recovery	VQFN016V3030	
BD9B600MUV	7	6	2.7 to 5.5	0.8 to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.5) (V <sub>IN</sub> ×0.5)≤5.5	0.5 to 0.8	1,200	H <sup>2</sup> Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9325FJ	20	2	4.75 to 18.0	0.9 to (V <sub>IN</sub> ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	SOP-J8
BD9325FJ-LB	20	2	4.75 to 18.0	0.9 to (V <sub>IN</sub> ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	SOP-J8
BD9859EFJ	15	3	5 to 14	1.0 to (V <sub>IN</sub> ×0.7)	0.75	2,800	Current	-	-	-	-	Recovery	Recovery	-	HTSOP-J8
BD95831MUV	15.2	3	7.5 to 15.0	0.8 to (V <sub>IN</sub> ×0.5) (V <sub>IN</sub> ×0.5)≤5.5	0.5 to 0.8	1,200	H <sup>2</sup> Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9D320EFJ	20	3	4.5 to 18.0	0.765 to 7.0 (V <sub>IN</sub> ×0.07) to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.125) to (V <sub>IN</sub> ×0.7)	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	SOP-J8
BD9C301FJ-LB	20	3	4.5 to 18.0	(V <sub>IN</sub> ×0.125) to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.07) to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.07) to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.07) to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9326EFJ-LB	20	3	4.75 to 18.0	0.9 to (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.5) (V <sub>IN</sub> ×0.5)≤5.5	0.5 to 0.8	1,200	H <sup>2</sup> Reg	✓	-	✓	-	Latch	Recovery	✓	VQFN016V3030
BD9C401EFJ	20	4	4.5 to 18.0	(V <sub>IN</sub> ×0.125) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9327EFJ-LB	20	4	4.75 to 18.0	0.9 to (V <sub>IN</sub> ×0.9)	0.38	2,100	Current	-	✓	-	-	Recovery	Recovery	-	HTSOP-J8
BD9C501EFJ	20	5	4.5 to 18.0	(V <sub>IN</sub> ×0.075) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×0.075)≥0.8	0.5	1,500	Current	-	-	✓	-	Latch	Recovery	-	HTSOP-J8
BD9C601EFJ	20	6	4.5 to 18.0	(V <sub>IN</sub> ×0.075) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×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 <sub>IN</sub> ×0.5) (V <sub>IN</sub> ×0.5)≤5.5	0.35 to 0.80	1,200	H <sup>2</sup> 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 <sub>IN</sub> ×0.08) to (V <sub>IN</sub> ×0.8) (V <sub>IN</sub> ×0.08)≥0.75	1	500	Current	-	-	-	-	Recovery	Recovery	✓	SSOP6
BD9G101G	45	0.5	6 to 42	(V <sub>IN</sub> ×0.15) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×0.15)≥1.0	1.5	700	Current	-	-	-	-	Recovery	Recovery	-	SSOP6
BD9227F	22	1	6 to 20	(V <sub>IN</sub> ×0.252) to V <sub>IN</sub> (V <sub>IN</sub> ×0.252)≥1.0	1	400	Current	-	-	-	-	Recovery	Recovery	-	SOP8
New BD9E105FP4-Z	30	1	4.5 to 28	V <sub>IN</sub> ×0.1V or 0.7V to V <sub>IN</sub> ×0.8V	0.5	55	Current	-	-	✓	✓	Recovery	Recovery	✓	TSOT23-6L
BD9E104FJ	30	1	7 to 26	(V <sub>IN</sub> ×0.143) to (V <sub>IN</sub> ×0.5) (V <sub>IN</sub> ×0.143)≥1.0	0.57	250	Current	-	-	✓	✓	Recovery	Recovery	✓	SOP-J8
BD9E101FJ-LB	40	1	7 to 36	(V <sub>IN</sub> ×0.0855) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×0.0855)≥1.0	0.57	1,500	Current	-	-	✓	-	Recovery	Recovery	✓	SOP-J8
BD9E100FJ-LB	40	1	7 to 36	(V <sub>IN</sub> ×0.15) to (V <sub>IN</sub> ×0.7) (V <sub>IN</sub> ×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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**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
<b>BD9S000NUX-C</b>	Pch (270mΩ)	Nch (180mΩ)	7	0.6	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	350	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
<b>BD9SD11NUX-C</b>	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
<b>BD9S012NUX-C</b>	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
<b>BD9S100NUX-C</b>	Pch (270mΩ)	Nch (180mΩ)	7	1	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	350	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
<b>BD9S110NUX-C</b>	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
<b>BD9S111NUX-C</b>	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
<b>New</b> <b>BD9S109NUX-C</b>	Pch (150mΩ)	Nch (95mΩ)	7	1	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
<b>New</b> <b>BD9S209NUX-C</b>	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
<b>BD9S201NUX-C</b>	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	✓	-40 to +125	VSON008X2020	FSs	YES
<b>BD9S231NUX-C</b>	Pch (150mΩ)	Nch (95mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> )	±1.5	400	2.2	Current	-	✓	-	✓	✓	-	✓	-	-40 to +125	VSON008X2020	FSs	YES
<b>BD9S200MUF-C</b>	Nch (35mΩ)	Nch (35mΩ)	7	2	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
<b>BD9S300MUF-C</b>	Nch (35mΩ)	Nch (35mΩ)	7	3	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
<b>BD9S400MUF-C</b>	Nch (35mΩ)	Nch (35mΩ)	7	4	2.7 to 5.5	Adj. (0.8 to V <sub>IN</sub> ×0.8)	±1.5	650	2.2	Current	-	✓	✓	✓	✓	✓	✓	-	-40 to +125	VQFN16FV3030	FSs	YES
<b>Nano</b> <b>BD9S402MUF-C</b>	Pch (60mΩ)	Nch (35mΩ)	7	4	2.7 to 5.5	Adj. (0.6 to V <sub>IN</sub> ×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	
<b>BD8P250MUF-C + BD90302NUF-C</b>	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
<b>BD9015KV-M</b>	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	✓	✓	✓	✓	-	✓ <sup>*2</sup>	-	-40 to +105	VQFP48C	YES
<b>BD9016KV-M</b>	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	✓	✓	✓	✓	-	✓ <sup>*3</sup>	-	-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
<b>BD9035AEFV-C</b>	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
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# 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 Medium-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 <sub>DD</sub> -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								
<b>BD8149MUV</b>	10 to 18	2.1 to 3.6	-25 to +85	0.4	10	I <sup>2</sup> 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										
<b>BD81849MUV-C</b>	10 to 18	2.1 to 3.6	-40 to +105	0.4	10	I <sup>2</sup> 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)				
<b>BD9355MWW</b>	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)
<b>BD9866GUL</b>	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 <sub>CC</sub> ) (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 <sub>sp</sub> =1A (V)	IGBTOUTN (mA)	IGBTOUTP (mA)	Package
<b>BD4233NUX</b>	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
<b>BD4234NUX</b>	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 <sub>OUT</sub> /Max I <sub>OUT</sub>	Over Current Protection	TSD	Under/Over Voltage Detection	Reset	WDT			
<b>BD39012EFV-C</b>	4 to 36 (Rating 45V)	200 to 600	-40 to +125	External Control EN1: DC-DC EN2: LDO	±2	1ch (DC-DC) 2ch (LDO)	Synchronous Buck DC-DC Converter (V <sub>OUT</sub> variable, 1A) LDO (5V, 0.4A)	✓	✓	✓	— ✓	WINDOW WDT	HTSSOP-B24	FSs	YES

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
<b>BD86852MUF-C</b>	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			
<b>BD39031MUF-C</b>	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						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	LDO	DC (SW)								
<b>BD9573MUF-M</b>	3 to 3.6	2.25	±1.8	Output Voltage (V) Output Current (A)	0.5 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	
<b>BD9576MUF-C</b>	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					
<b>BD868A0MUF-C</b>	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						
<b>BD868B0MUF-C</b>			Output Voltage (V)	3.7V	1.1V	1.8V	3.3V		VQFN20FV3535	FSp	YES	
<b>BD868C0MUF-C</b>			Output Current (A)	2.0A	1.2A	0.4A	0.3A		VQFN20FV3535	FSp	YES	
<b>BD868C1MUF-C</b>			Output Voltage (V)	3.3V	1.2V	1.8V	2.8V		VQFN20FV3535	FSp	YES	
<b>BD868D0MUF-C</b>			Output Current (A)	2.0A	1.2A	1.0A	0.3A		VQFN20FV3535	FSp	YES	

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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			
<b>BD9596BMWV</b>	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	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 <sup>2</sup> C I/F	Package		
			BUCK1	BUCK2	BUCK3	BUCK4	BUCK5	BUCK6	BUCK7	BUCK8	LDO1	LDO2	LDO3	LDO4	LDO5	LDO6	LDO7	LDO8								LDO9	LDO10
<b>BD71815AGW</b>	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	✓	✓	✓	✓	1	✓	UCSP55M4C	
<b>BD71837AMWV</b>	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	0.7 to 1.35 3,000	1.6 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	1.6 to 1.9 10	0.9, 0.8 300	1.8 to 3.3 250	0.9 to 1.8 300	0.8 to 1.8 300	1.8 to 3.3 150	-	-	-	-	-	-	-	-	✓	UQFN68CV8080
<b>BD71847AMWV</b>	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	1.6 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	1.6 to 1.9 10	0.9, 0.8 300	1.8 to 3.3 250	0.9 to 1.8 300	0.8 to 1.8 300	-	-	-	-	-	-	-	-	-	✓	UQFN56BV7070
<b>BD71850MWV</b>	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	1.6 to 1.95 1,500	0.8 to 1.4 3,000	3.0 to 3.3 10	1.6 to 1.9 10	0.9, 0.8 300	1.8 to 3.3 250	0.9 to 1.8 300	0.8 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 <sub>DS</sub> (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
<b>BM2P109TF</b>	10.0	650	PWM	100	✓	75	9.5	0.45	1.4	3	SOP8
<b>BM2P104QF</b>					-		4.0	0.80	1.6		SOP8
<b>BM2P129TF</b>					✓		9.5	0.45	1.4		SOP8
<b>BM2P139TF</b>	✓				4.5		0.45	1.4	SOP8		
<b>BM2P135TF</b>	✓				4.0		0.80	1.6	SOP8		
<b>BM2P134QF</b>	-				0.30		0.95	1.6	SOP8		
<b>BM2P159PF</b>	14.2				0.30		0.95	1.6	SOP8		
<b>BM2P159T1F</b>	15.0				0.30		0.95	1.6	SOP8		
<b>BM2P189TF</b>	18.0				0.30		0.95	1.6	SOP8		
<b>BM2P209TF</b>	20.0				0.30		0.95	1.6	SOP8		
<b>BM2P249TF</b>	24.8				0.30		0.95	1.4	SOP8		

Surface Mount SOP Packages Built-in 800V FET												
Part No.	Output Voltage (V)	MOSFET V <sub>DS</sub> (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 <sub>DS</sub> (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	
<b>New</b> BM2PAA1Y-Z	2.0	650	PWM	65	✓	40	1.5	1.76	1.76	3	DIP7K	
<b>New</b> BM2PAB1Y-Z				25	—			1.76	1.76		DIP7K	
<b>New</b> BM2PDA1Y-Z				65	✓			0.88	0.93		DIP7K	
<b>New</b> 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 <sub>DS</sub> (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 <sub>DS</sub> (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 <sub>CC</sub> 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			
<b>New</b> BM2P060LF-Z	11 to 60	730	PWM	65	✓	75	3.0	21.0	—	—	Extrenal	15	✓	—	—	SOP20A				
<b>New</b> 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 <sub>DS</sub> (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 <sub>CC</sub> 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 <sub>DS</sub> (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 <sub>CC</sub> 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 <sub>DS</sub> (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 <sub>CC</sub> 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	—	Auto Restart					DIP7AK				
BM2P0151-Z	8.9 to 26.0						1.0	—	Latch					DIP7K				
BM2P0161-Z							4.0	—	DIP7K									
BM2P0361-Z							3.0	4.0	—					DIP7K				
BM2P064E-Z							0.955	12.0	1.0					0.3		DIP7AK		
BM2P101E-Z	10.9 to 30.0						1.0	4.0	Auto Restart					Auto Restart		DIP7AK		
BM2P101H-Z							3.0	4.0								DIP7AK		
<b>New</b> BM2P10A1J-Z							1.0	4.0								DIP7K		
<b>New</b> BM2P10A3J-Z							1.0	12.0								DIP7K		
<b>New</b> BM2P10B1J-Z							3.0	4.0								DIP7K		
<b>New</b> BM2P10B3J-Z							3.0	4.0								DIP7K		
BM2P104E-Z							0.955	12.0								1.0	0.3	DIP7AK
BM2P131E-Z							10.9 to 30.0	—								—	DIP7AK	
BM2P131H-Z							10.9 to 30.0	Auto Restart								—	DIP7AK	
BM2P134E-Z							8.9 to 26.0	3.0								4.0	—	DIP7AK

High Heat Dissipation DIP Packages Built-in 800V FET																						
Part No.	Output Voltage (V)	MOSFET V <sub>DS</sub> (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 <sub>CC</sub> 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	✓ (adjustable)	—	DIP7AK		
BM2P061FK-LBZ							3.5	4.8								1.05V	✓	—	DIP7AK			
BM2P061HK-LBZ							20.0	✓ (adjustable)								—	DIP7AK					
BM2P063EK-LBZ							1.6	9.0								1V	0.3V	✓ (adjustable)	Auto Restart	DIP7AK		
BM2P101EK-LBZ							3.5	4.8								1.05V	0.4V	✓	—	DIP7AK		
BM2P101FK-LBZ							1.6	9.0								1V	0.3V	✓ (adjustable)	Auto Restart	DIP7AK		
BM2P101HK-LBZ							3.5	4.8								1.05V	0.4V	✓	—	DIP7AK		
BM2P103EK-LBZ							10.9 to 26.0	1.6								9.0	1V	0.3V	✓ (adjustable)	Auto Restart	DIP7AK	
BM2P131FK-LBZ							10.9 to 30.0	3.5								4.8	1.05V	0.4V	✓	—	DIP7AK	
BM2P131HK-LBZ							10.9 to 30.0	6.0								3.0	Current Limiterx2A	0.13A	Built-in	✓ (fixed)	—	Latch
BM2P133EK-LBZ	10.9 to 26.0						—	—								—	—	—	—	—	—	—
BM2P26CK-Z	11.9 to 25.5						100	—								—	—	—	—	—	—	—

High Power TO220 Package Built-in 650V FET																
Part No.	Output Voltage (V)	MOSFET V <sub>DS</sub> (Max) (V)	Control Method	Switching Frequency (kHz)	Frequency Reduction Mode	Max Duty (%)	ON Resistance (Ω)	Peak Current (A)	Dynamic Over Current Protection (A)	OCP Current (V)	Current Sense Resistor	Start-up Current (mA)	Brown Out	Brown Out OVP Protection	V <sub>CC</sub> 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 <sub>DS</sub> (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 <sub>CC</sub> 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															Latch	—	SOP8		
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 <sub>DS</sub> (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 <sub>CC</sub> 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	Latch	—	DIP7K
BM2P052															Auto Restart	—	DIP7K		
BM2P053															Latch	—	DIP7K		
BM2P054															Auto Restart	—	DIP7K		
BM2P091															✓ (adjustable)	Auto Restart	Latch	—	DIP7K
BM2P092															Auto Restart	—	DIP7K		
BM2P093															Latch	—	DIP7K		
BM2P094															Auto Restart	—	DIP7K		

**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 <sub>OS</sub> (Max) (V)	Control Method	Maximum Frequency (kHz)	ON Resistance (Ω)	Dynamic Over Current Protection (A)	OC Exchange Function	V <sub>CC</sub> 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 <sub>OS</sub> (Max) (V)	Control Method	Maximum Frequency (kHz)	ON Resistance (Ω)	Dynamic Over Current Protection (A)	OC Exchange Function	V <sub>CC</sub> 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 <sub>CC</sub> Recharge	Start-up Current (mA)	BR UVLO	V <sub>CC</sub> 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												Auto Restart	
BM1P102FJ												Latch	
BM1P105FJ												Auto Restart	
BM1P107FJ												Latch	
BM1P10CFJ	9.3 to 55.0						✓	5.5	✓	-	Latch	SOP-J7S	
BD7672BG	8.5 to 25.0		65	-	-		-	-	-	-	Latch	Auto Restart	SSOP6
BD7673AG											Latch	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 <sub>CC</sub> OVP	ZT OVP	Package
BM1Q002FJ	8.9 to 26.0	QR	✓	3.0	120	✓	✓	Auto Restart	Latch	Latch	SOP-J8
BM1Q011FJ									Auto Restart	-	SOP-J7S
BM1Q021FJ									Auto Restart	Auto Restart	SOP-J8
BM1Q104FJ									14.0 to 30.0	-	Latch

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 <sub>CC</sub> OVP	ZT OVP	Package
BD7682FJ-LB	15.0 to 27.5	QR	-	-	120	✓	✓	Auto Restart	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 <sub>CC</sub> 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 <sub>CC</sub> Discharge	Package		
BD7690FJ	10.0 to 26.0	BCM PFC	-	Auxiliary Winding	Single	220	-	-	-	SOP-J8		
BD7691FJ				Resistance	Double							
BD7692FJ				Resistance	Double							
BD7693FJ				10.0 to 38.0	Auxiliary Winding	Single	-	✓	✓	✓	✓	SOP-J8
BD7694FJ					Auxiliary Winding	Single	-	-				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 <sub>CC</sub> 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					-				SOP-J8
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 <sub>IN</sub> 5.0V	60	1.25	3.0 to 40.0	400	Adaptive on-time	✓	✓	✓	✓	Recovery	Recovery	HTSOP-J8
BD7F100HFN-LB	5W at V <sub>IN</sub> 24V												HSOP8
BD7F200EFJ-LB	5W at V <sub>IN</sub> 12V	60	2.75	8.0 to 40.0									HTSOP-J8
BD7F200HFN-LB	10W at V <sub>IN</sub> 24V												HSOP8
BD7J101EFJ-LB	2.5W at V <sub>IN</sub> 24V	120	0.9	8.0 to 80.0									HTSOP-J8
BD7J101HFN-LB	5W at V <sub>IN</sub> 48V												HSOP8
BD7J201EFJ-LB	5W at V <sub>IN</sub> 24V	120	1.8	8.0 to 80.0									HTSOP-J8
BD7J201HFN-LB	10W at V <sub>IN</sub> 48V				HSOP8								
BD7J200EFJ-LB	5W at V <sub>IN</sub> 24V	120	1.75	8.0 to 80.0	HTSOP-J8								
BD7J200HFN-LB	10W at V <sub>IN</sub> 48V				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 <sub>IN</sub> 12V	62	2.6	3.4 to 42.0	363	Adaptive on-time	✓	✓	✓	✓	Recovery	Recovery	HTSOP-J8	YES
BD7F205EFJ-C	6W at V <sub>IN</sub> 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



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 <sub>DD</sub> =2.7 to 4.5/ V <sub>IN</sub> =0 to 2.7	20	110	1	H Active	0.5	—	0.5	—	70	HVSO6
BD6529GUL	V <sub>DD</sub> =2.7 to 4.5/ V <sub>IN</sub> =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 <sub>IN1</sub> =2.7 to 4.5/ V <sub>IN2</sub> =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 <sub>CC</sub> =3.3V	V <sub>CC</sub> =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 <sub>CC</sub> =3.3V	V <sub>CC</sub> =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 <sup>2</sup> C slave x1ch	Consumer	-40 to +85	S-UFLGA34-2.59x2.59-0.40-W (WCSP34)	✓
ML7631	Power Transmitter			• Transmission Power Adjust Control	• Communication Speed: 212kbps	4.5 to 5.5	27.12MHz (Crystal)	496	—	I <sup>2</sup> 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 <sup>2</sup> C slave x1ch	Consumer/Industrial	-40 to +85	S-UFLGA30-2.28x2.61-0.40-W (WCSP30)	✓
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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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 <sup>2</sup> 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
<b>BD71631QWZ</b>	(2.9V: 30mA, 4.0V: 300mA) to 5.5	—	2.0 to 4.7 (±2%)	±10 (ICHG=100mA to 300mA)	—	-30 to +105	UMMP10LZ1824
<b>BD8664GW</b>	4.1 to 5.5	70	8.3±0.5%	±2	1,000	-30 to +85	UCSP75M2
<b>BD8665GW</b>	4.1 to 5.5	70	8.4±0.5%	±3	1,000	-30 to +85	UCSP75M2
<b>BD99950MUV</b>	6.0 to 24.0	—	8.4/12.6±0.5%	±3	600 to 1,200	-10 to +85	VQFN20PV3535
<b>BD99954GW</b>	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
<b>BD99954MWV</b>	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	
<b>BD6040GUL</b>	+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
<b>BD6041GUL</b>	+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	
<b>BD6046GUL</b>	±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
<b>BD6047AGUL</b>	±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		
<b>BD14000EFV-C</b>	+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
<b>BD7220FV-C</b>	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										
<b>ML5241</b>	5-cells, 2nd protection	+5 to +25	±25	—	—	1	0.1	Overvoltage detection	—	—	—	—	Mask option	-20 to +85	P-WSON10 -0303-0.50-63	✓	
<b>ML5205</b>	5-cells/2nd protection, number of connected battery cells detection					3	—								P-VSSOP8 -0150-0.65-TK6		
<b>ML5206</b>	5-cells, 2nd protection with Autonomous Cell Balancing					1	—								P-VSSOP8 -0150-0.65-TK6		
<b>ML5243</b>	5-cells, cell voltage/current/temperature protection	+5 to +60	±15	Low-side	—	6.5	0.1	✓	✓	✓	✓	—	Mask option	-40 to +85	P-TSSOP20 -0225-0.65-TK6	✓	
<b>ML5233</b>	10-cells, cell voltage/current/temperature protection, cascade connection					25									0.1		P-LQFP32 -0707-0.80-TK6
<b>ML5245</b>	13-cells, cell voltage/current/temperature protection, cell voltage monitoring					25									0.1		P-SSOP30 -56-0.65-ZK6
<b>ML5232</b>	14-cells, 2nd protection	+7 to +80	±20	—	—	2.5	—	Overvoltage detection	—	—	—	—	Mask option	-40 to +105	P-TSSOP20 -0225-0.65-TK6	—	

### MCU Control type

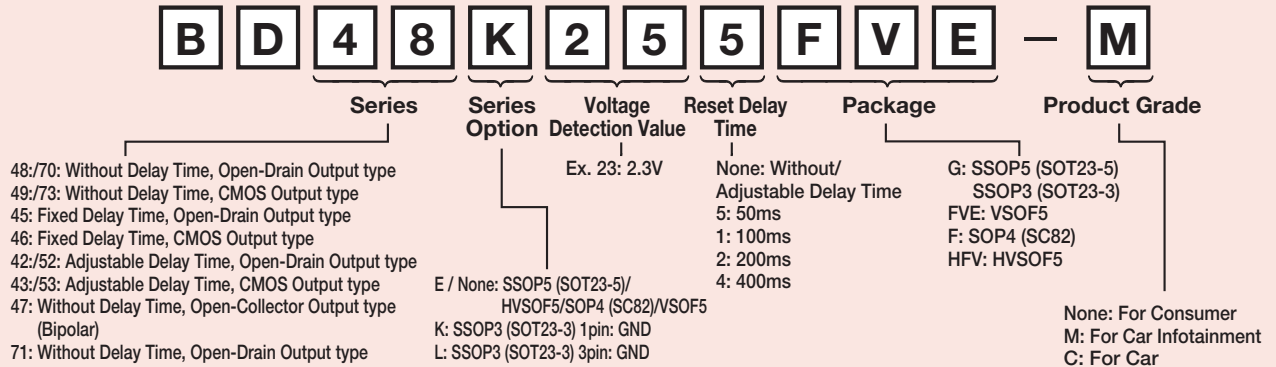
Part No.	Description	Supply Voltage (V)	Cell Voltage Measurement Error (Typ) (mV)	Monitoring Output	Charge/Discharge Control FET driver	Cell Balancing Switch	Current Consumption (Typ) (μA)		Overvoltage/Undervoltage Detection	Charge and Discharge Over-Current Detection	Short Circuit Detection	Parameter Change	Operation Temperature (°C)	Package	Halogen Free Support*1
							Operating	Power-down							
<b>ML5204</b>	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	✓	
<b>ML5248</b>	7-cells, analog monitoring output	+5.0 to +31.5	±20	High-side	32		—	—	—	—			—		P-SSOP30 -56-0.65-ZK6
<b>ML5236</b>	14-cells, ADC built-in, digital monitoring output	+8 to +64	±15	cell voltage/ current/temperature	330		0.1	Overvoltage detection	—	—			—		P-TQFP44 -1010-0.80-ZK6
<b>ML5238</b>	16-cells, analog monitoring output	+7 to +80	±20	cell voltage/ current	50		—	—	—	—			—		P-QFP44 -910-0.80-ZK
<b>ML5239</b>	16-cells, ADC built-in, cascade connection, digital monitoring output	+10 to +72	±10	cell voltage/ temperature	—		external	1200	—	—			—		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 <sub>DD</sub> =1.2V	V <sub>DD</sub> =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 <sub>S</sub> =4.8V)	0.85 (V <sub>S</sub> =4.8V)	V <sub>S</sub> ×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 <sub>S</sub> =4.8V)	0.85 (V <sub>S</sub> =4.8V)	V <sub>S</sub> ×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 <sub>a</sub> =+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 <sub>DD</sub> =1.2V	V <sub>DD</sub> =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 <sub>DET</sub> =4.8V)	0.55 (V <sub>DET</sub> =4.8V)	V <sub>DET</sub> ×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 <sub>DET</sub> =4.8V)	0.55 (V <sub>DET</sub> =4.8V)	V <sub>DET</sub> ×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 <sub>a</sub> =+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 <sub>OCL</sub>	I <sub>OCH</sub>			
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 ( $\mu\text{A}$ )		Hysteresis Voltage (mV)	"L" Output Current (mA)	Package	
						$I_{\text{OCL}}$	$I_{\text{OCH}}$				
BD71L4LG-1	$\pm 0.8$	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	$\pm 0.8$	4.05	1.2 to 7.0	—						4 ( $V_{\text{DD}}=4.25\text{V}$ )	HVSOF5
BD71L3SHFV	$\pm 1.0$	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 ( $\mu\text{A}$ )		Hysteresis Voltage (V)	"L" Output Current (mA)		Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100
							ON	OFF		$V_{\text{DD}}=1.2\text{V}$	$V_{\text{DD}}=2.4\text{V}$			
<b>Nano</b> BD70HxxG-2C series	0.1V step 4 types	$\pm 1.4$	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	
<b>Nano</b> BD73HxxG-2C series	0.1V step 4 types													3.46 to 3.76

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 \*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.  
 Detection voltage is applied in the xx of part No. Please see the Data sheet specifications.

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**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.

## 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 ( $\mu\text{A}$ )		Hysteresis Voltage (V)	"L" Output Current (mA)		RESET Active Timeout Period (ms)	Delay Circuit Resistance (M $\Omega$ )	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	$\pm 1$	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	$\pm 1$	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	$\pm 1$	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	$\pm 1$	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 ( $\mu\text{A}$ )		Hysteresis Voltage (V)	"L" Output Current (mA)		RESET Active Timeout Period (ms)	Delay Circuit Resistance (M $\Omega$ )	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	$\pm 1$	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	$\pm 1$	0.9 to 4.8	0.7 to 7.0	0.1								10	VSO5	—
BU42xxF series	0.1V step 40 types	$\pm 1$	0.9 to 4.8	0.7 to 7.0	0.1								10	SOP4	—
BU43xxG series	0.1V step 40 types	$\pm 1$	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	$\pm 1$	0.9 to 4.8	0.7 to 7.0	0.1								10	VSO5	—
BU43xxF series	0.1V step 40 types	$\pm 1$	0.9 to 4.8	0.7 to 7.0	0.1								10	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 ( $\mu\text{A}$ )	Hysteresis Voltage (V)	Output ON Resistance ( $\Omega$ )	RESET Active Timeout Period (ms)	Package
BD4142HFV	$\pm 1.8$	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 ( $\mu\text{A}$ )		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	$\pm 1$	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	$\pm 1$	2.3 to 4.8	0.95 to 10.00	0.1							100	YES	SSOP5
BD45xx2G series	0.1V step 26 types	$\pm 1$	2.3 to 4.8	0.95 to 10.00	0.1							200	YES	SSOP5
BU45Kxx2G series	0.1V step 26 types	$\pm 1$	2.3 to 4.8	0.6 to 10.0	0.1		200	NO				SSOP3 (GND 1pin)		
BU45Lxx2G series	0.1V step 26 types	$\pm 1$	2.3 to 4.8	0.6 to 10.0	0.1		200	NO				SSOP3 (GND 3pin)		
BU45Kxx4G series	0.1V step 26 types	$\pm 1$	2.3 to 4.8	0.6 to 10.0	0.1		400	NO				SSOP3 (GND 1pin)		
BU45Lxx4G series	0.1V step 26 types	$\pm 1$	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 ( $\mu\text{A}$ )		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	$\pm 1$	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	$\pm 1$	2.3 to 4.8	0.95 to 10.00	0.1							100	YES	SSOP5
BD46xx2G series	0.1V step 26 types	$\pm 1$	2.3 to 4.8	0.95 to 10.00	0.1		200	YES				SSOP5		
BU46Kxx2G series	0.1V step 26 types	$\pm 1$	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 <sub>j</sub> +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 <sub>DD</sub> =1.2V V <sub>OS</sub> =0.5V	V <sub>DD</sub> =2.4V V <sub>OS</sub> =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 <sub>DET</sub> =4.8V)	0.85 (V <sub>DET</sub> =4.8V)	V <sub>DET</sub> ×0.05	0.4 or more (V <sub>DD</sub> =1.5V V <sub>OS</sub> =0.5V)	2 or more (V <sub>DD</sub> =2.4V V <sub>OS</sub> =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 <sub>DET</sub> =4.8V)	0.85 (V <sub>DET</sub> =4.8V)	V <sub>DET</sub> ×0.05	0.45 or more (V <sub>DD</sub> =1.2V V <sub>OS</sub> =0.3V)	1.3 or more (V <sub>DD</sub> =2.4V V <sub>OS</sub> =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	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 <sub>DET</sub> ×0.05	1.0 or more (V <sub>DD</sub> =1.2V V <sub>OS</sub> =0.4V)	2.0 or more (V <sub>DD</sub> =2.4V V <sub>OS</sub> =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 <sub>DS</sub> =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 <sub>DD</sub> =1.2V V <sub>OS</sub> =0.4V	V <sub>DD</sub> =2.4V V <sub>OS</sub> =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 <sub>DET</sub> ×0.05	1.0 or more (V <sub>DD</sub> =1.2V)	2.0 or more (V <sub>DD</sub> =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 <sub>DD</sub> =1.2V)	2.0 or more (V <sub>DD</sub> =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 <sub>DD</sub> =1.2V)	2.0 or more (V <sub>DD</sub> =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 <sub>DS</sub> =0.4V)		RESET Active Timeout Period (ms)	Delay Time Precision (%)	Package	ComfySIL™ Functional Safety*1	Automotive Grade AEC-Q100		
						ON	OFF		V <sub>DD</sub> =1.6V V <sub>OS</sub> =0.4V	V <sub>DD</sub> =2.4V V <sub>OS</sub> =0.4V							
Nano BD48HW0G-C	1.8 to 4.0	±5	±0.75	1.277	1.277	0.5	V <sub>DET</sub> ×0.01	—	1 or more (V <sub>DD</sub> =1.6V)	2 or more (V <sub>DD</sub> =2.4V)	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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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 <sub>DD</sub> =1.2V	V <sub>OS</sub> =0.5V						
BD37A19FVM	±1.5	1.9	1.0 to 10.0	Open Drain	5	V <sub>DET</sub> ×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 <sub>SB</sub> =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