

By Category PDF

Category LED Drivers

ICs

LED Drivers

LED Drivers	75
Boost Converter LED Drivers	75
Buck Converter LED Drivers	76
Buck-Boost LED Drivers	76
LED Drivers for Lighting	76
Inductorless (Charge Pump) LED Drivers	76
Dynamic Indicator LED Bypass Switch (Matrix LED Controller)	76
Constant Current/Serial-in Parallel-out LED Drivers	77

LED Drivers
LED Drivers P.75

LED Drivers

Boost Converter LED Drivers


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

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

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

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

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 UPIC: Uni-Port Interface Control
 Nano Mark is a product using Nano Pulse Control™ technology, Nano Energy™ technology or Nano Cap™ technology. ROHM's innovative "Nano" power supply technologies achieve breakthrough energy savings and miniaturization.
 Nano Mark is a product equipped with Nano Cap™ extremely stable control technology, Nano Energy™, Nano Pulse Control™ and Nano Cap™ is a trademark or a registered trademark of ROHM Co., Ltd.

LED Drivers

Boost Converter LED Drivers

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Buck Converter LED Drivers

Buck Converter LED Lighting Drivers for DC-DC Converter type						
Part No.	Supply Voltage (V)	Switching Terminal Voltage (V)	Ron (Ω)	Operating Frequency (kHz)	Over Current Protection	Package
BM531Q11	9.0 to 35.0	250	0.93 (Typ)	Max 440	✓	DIP7AK
BD94062F	10.5 to 35.0	—	—	Max 800	✓	SOP16

White LED Drivers for PFC Direct Connection Current Resonance type						
Part No.	Supply Voltage (V)	Drive Method	Oscillation Frequency Variable (kHz)	Primary Brightness Control Method	Control Interface	Package
BD92111F	8.0 to 18.0	Half Bridge	30 to 200	PWM signal	Pin logic setting	SOP18

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

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Buck-Boost LED Drivers

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

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

LED Drivers for Lighting

AC-DC Controller ICs for LED Lighting Included 650V							
Part No.	Supply Voltage (V)	Input AC Voltage (Vac)	Built-in PFC Function	Built-in MOSFET	LED Average Current (mA)	Switching Frequency (kHz)	Package
BM520Q15F	8.9 to 26.0	80 to 275	—	✓	up to 200	20 to 200	SOP8
BM521Q25F	8.9 to 25.0	80 to 275	✓	✓	up to 200	20 to 300	SOP8
BD521GOFJ	8.9 to 25.0	80 to 275	✓	—	—	20 to 300	SOP-J8

Inductorless (Charge Pump) LED Drivers

White LED Drivers									
Part No.	Supply Voltage (V)	No. of LEDs	Charge Pump Step-up Circuit			Primary Brightness Control Method	Control Interface	Package	
			Output Voltage (V)	Output Current (mA)	Pump Frequency				
BD1604MUV	2.7 to 5.5	1 to 4	Max 4.5	120	1MHz	PWM control via EN terminal Resistance switching at ISET terminal	Pin logic setting	VQFN016V3030	
BD2606MUV		1 to 6	Max 4.7	120	250kHz/1kHz				Built-in 64-step current DAC (0.5 to 32.0mA)

Dynamic Indicator LED Bypass Switch (Matrix LED Controller)

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
*1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.

Constant Current/Serial-in Parallel-out LED Drivers

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

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

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

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

©ComfySIL™ is a trademark or a registered trademark of ROHM Co., Ltd.
 *1 For more information about "ComfySIL™ Functional Safety", please refer to the reverse side of the cover.
 *2 UPIC: Uni-Port Interface Control