

## KEY FEATURES

- Input under Voltage Protection
- Over Current Protection (Hiccup Mode)
- Short Circuit Protection (Hiccup Mode)
- Over Voltage Protection (Hiccup Mode)
- Over Temperature Protection (Self-recovery)
- Remote ON/OFF Control
- Activates Hardware and Software \*
- Digitally Adjusts the Voltage \*
- PMBus Revision 1.1 compliant \*
- Secondary ON/OFF Control \*
- Pre-Bias Function \*
- UL60950-1 and CSA C22.2 No. 60950-1-07
- Meet UL94V-0 Flammability Requirements
- Rohs6 Compliant
- Size: 2.3 x 0.9 x 0.5 Inches
- 3-Years Product Warranty

\*BR240-12S without this function

## DESCRIPTION

The BR240 series DC-DC converter are high-efficiency and power density 1/8 brick isolation modules, rating output voltage 12V, output power 240W. This series provide the standard 1/8 brick version and the PMBus compatible version. The latter is compatible with the PMBus1.1 communication protocol, backward compatible with the I<sup>2</sup>C/SMBus protocol, and providing Pre-bias, output monitoring and current sharing functions. The BR240 series conform to the RoHS6 requirement.



## ELECTRICAL SPECIFICATIONS



Conditions: TA = 25°C (77°F), Airflow = 1 m/s (200 LFM), Vin = 48 V, unless otherwise notes.

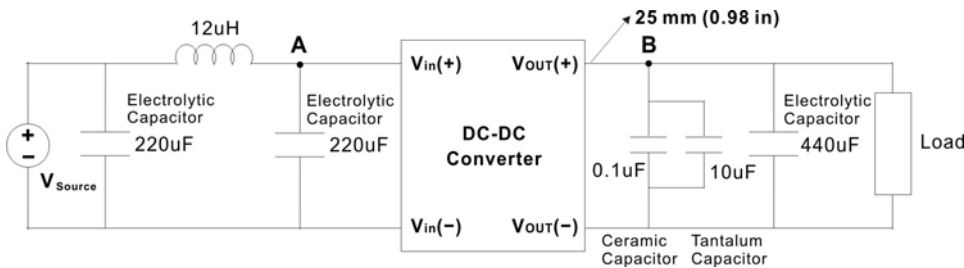
Model No.	BR240-12S	BR240-12S-P	
Max Output Wattage (W)	240W		
Input	Voltage (V.DC.)	48V (36~75V)	
	Current (A) (max)	10A (Vin= 36 - 75 V; Iout = 20 A)	
	No-Load Loss (W) (typ.)	9.6W (Vin= 36 - 75 V; Iout = 0 A)	
Output	Voltage (V.DC.)	12V (Vin= 48 V; Iout = 10 A)	
	Voltage Range (V.DC.)	11.64~12.36V (Vin= 40 - 75 V)	11.64~12.36V (Vin= 40 - 75 V; Adjust the voltage by PMBus)
		10.8~12.36V (Vin= 36 - 40 V)	10.8~12.36V (Vin= 36 - 40 V; Adjust the voltage by PMBus)
	Current (A) (max.)	20A	
	Line Regulation (LL-HL) (typ.)	±0.2% (Vin= 40 - 75 V; Iout = 20 A) / ±10% (Vin= 36 - 40 V; Iout = 20 A)	
	Load Regulation (0-100%) (typ.)	±3% (Vin = 48 V; Iout = 0 - 20 A)	
	Ripple & Noise (peak to peak) (typ.)	200 mV (Oscilloscope Bandwidth:20 MHz)	
	Efficiency (Vin = 48 V; TA=25°C (77°F)) (typ.)	100% Load:95% (Iout = 20 A) 50% Load:94.5% (Iout = 10 A) 30% Load:92.0% (Iout = 6 A)	
Protection	Over Power Protection	Hiccup mode	
	Over Current Protection	Hiccup mode	
	Over Voltage Protection	15V (14~16V) (Hiccup mode)	
	Short Circuit Protection (max.)	5 Arms (Hiccup mode)	
	Over Temperature Protection	Threshold:130°C (typ.) / Hysteresis:15°C (typ.) Self-recovery (The values are obtained by measuring the temperature of the hottest power component on the top surface of the converter.)	
Isolation	Voltage (V.DC.)	1500 VDC (Functional Isolation)	
Environment	Operating Temperature	-40°C...+85°C	
	Storage Temperature	-55°C...+125°C	
	Temperature Coefficient	±0.02 % Vout / °C (TA = -40°C to +85°C (-40°F to +185°F))	
	Humidity	95% RH	
	MTBF	1.5 Million Hours (Telcordia SR332; 80% load; TA = 40°C (104°F))	
Safety	Agency Approvals	CE, UL, TÜV	
EMC	EMI (Conducted & Radiated Emission)	UL60950-1 and CSA C22.2 No. 60950-1-07	
Physical	Dimension (L x W x H)	2.3 x 0.9 x 0.5 Inches ( 58.4 x 22.8 x 12.7 mm ) Tolerance ±0.5 mm	
	Weight	40 g	

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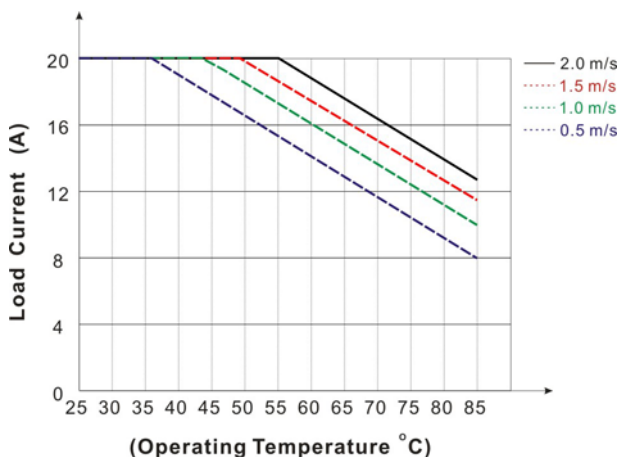
Model No.		BR240-12S	BR240-12S-P
Other			
On/Off Voltage	Low level (V.DC.)	-0.7~1.2V (The primary low electric level is effective)	
	High level (V.DC.)	2.8~8V (The primary low electric level is effective)	
On/Off Current	Low level (mA) (max.)	1mA	
Primary On/Off Voltage	Low level (V.DC.)	—	0.7~1.2V (The low electric level is effective)
	High level (V.DC.)	—	2.8~8V (The low electric level is effective)
Primary On/Off Current	Low level (mA) (max.)	—	1mA
Secondary CTL Voltage	Low level (V.DC.)	—	0~0.8V (The High Electric Level is Effective)
	High level (V.DC.) (max.)	—	3.3~3.6V (The High Electric Level is Effective)
Logic Input and Output Pins in the Communications Port			
	Logic Input Low level (V.DC.) (max.)	—	1.1V
	Logic Input High Level (V.DC.) (max.)	—	3.6V
	Logic Output Low Level (V.DC.) (max.)	—	0.25V
	Logic Output High Level (V.DC.) (max.)	—	3.6V
	PMBus Setting-up Time (ns.) (min.)	—	100
	PMBus Holding Time (ns.) (min.)	—	0
PMBus Detected Precision (Vin=36 - 75 V; Iout=0 - 20 A; TA = -40°C to +85°C (-40°F to +185°F))			
	Input Voltage Detected Precision (V.DC.)	—	±1V
	Output Voltage Detected Precision (V.DC.)	—	±0.2V
	Output Current Detected Precision (A)	—	±1A
	Temperature Detected Precision (°C)	—	±5°C

## NOTE



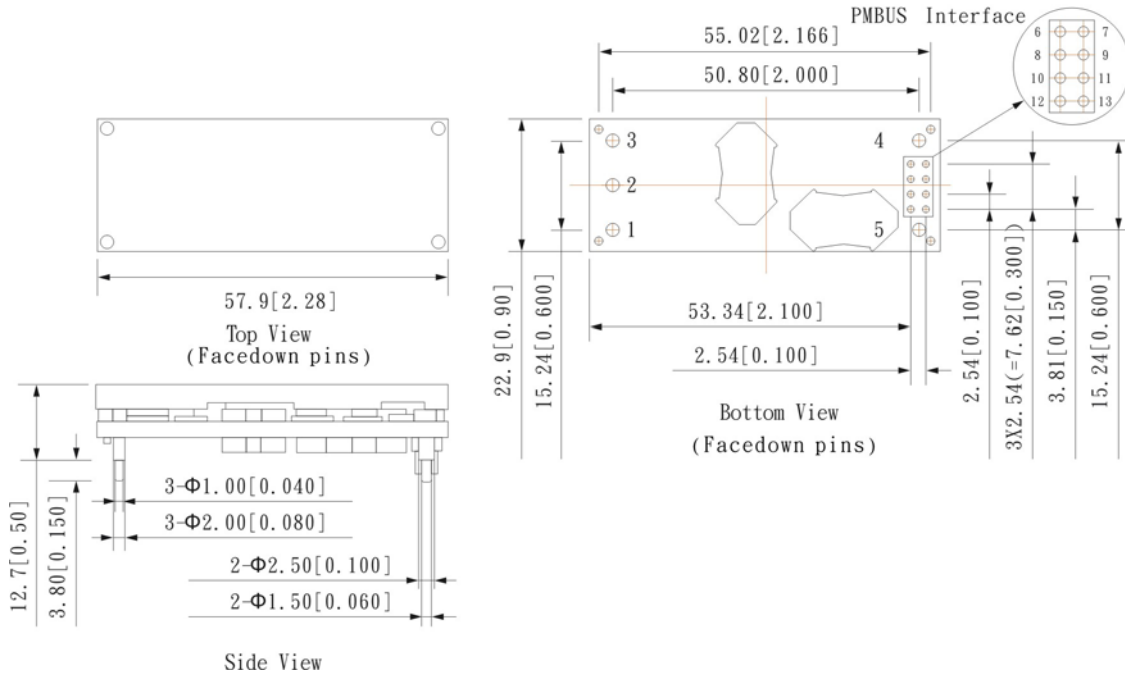
1. During the test of input reflected ripple current, the input terminal must be connected to a 12 uH inductor and a 220 uF electrolytic capacitor.
2. Point B, which is for testing the output voltage ripple, is 25 mm (0.98 in.) away from the Vout(+) pin.

## DERATING



## MECHANICAL DIMENSION

Unit: mm [in.]



PIN#	Single
1	+DC IN
2	ON / OFF CTL
3	-DC IN
4	-DC OUT
5	+DC OUT
6	SGND
7	SA0
8	PMBus_ALT
9	SA1
10	PMBus_CTL
11	ISHARE
12	PMBus_SCL
13	PMBus_SDA

### Note

- All dimensions in mm [in.]  
Tolerances: x.x ± 0.5 mm [x.xx ± 0.02 in.]  
x.xx ± 0.25 mm [x.xxx ± 0.010 in.]
- Pin 1-3 are 1.00 ± 0.05 mm [0.040 ± 0.002 in.] diameter with 2.00 ± 0.10 mm [0.080 ± 0.004 in.] diameter standoff shoulders.  
Pin 4 and pin 5 are 1.50 ± 0.05 mm [0.060 ± 0.002 in.] diameter with 2.50 ± 0.10 mm [0.098 ± 0.004 in.] diameter standoff shoulders.