BR400 SERIES 400 Watts

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)
- Activates Hardware and Software *
- Digitally Adjusts the Voltage *
- PMBus Revision 1.1 compliant *
- Secondary ON/OFF Control *
- Pre-Bias Function *
- Peak Efficiency:96%(12V,16.5A)
- UL60950-1 and CSA C22.2 No. 60950-1-07
- Meet UL94V-0 Flammability Requirements
- Rohs6 Compliant
- Size: 2.28 x 1.45 x 0.5 Inches
- 3-Years Product Warranty

*BR400-12S without this function

DESCRIPTION

The BR400 is an isolated DC-DC converter that uses an industry nonstandard quarter-brick structure and features high efficiency and power density.

It provides 12 V outputs and supports the maximum output current of 33 A.

Two BR400s can be connected in parallel to provide the maximum output current of 54 A.

The BR400 communicates over PMBus 1.1 to support monitoring and alarm reporting functions, such as monitoring the output voltage and current, input voltage, digitally adjusting the voltage, and activating software.

ELECTRICAL SPECIFICATIONS

Conditions: TA = 25°C (77°F), Airflow = 1.5 m/s (300 LFM), Vin = 48 V, unless otherwise notes.

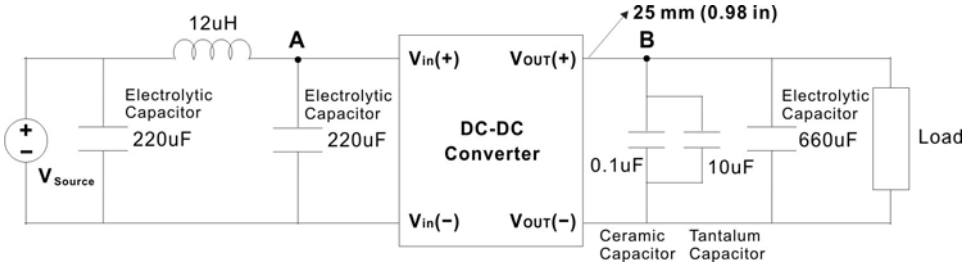
Model No.		BR400-12S	BR400-12S-P
Max Output Wattage (W)		396W	
Input	Voltage (V.DC.)	48V (36~72V)	
	Current (A) (max)	14A (Vin= 36 - 72 V; Iout = 33 A)	
	No-Load Loss (W) (typ.)	3W (Vin= 48 V; Iout = 0 A)	
	Reflected Ripple Current (peak to peak) (typ.)	200 mA (Oscilloscope Bandwidth:20 MHz)	
Output	Voltage (V.DC.)	12V	
	Voltage Range (V.DC.)	11.64~12.36V (Vin= 40 - 72 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)
	Voltage Trim Range (V.DC.)	8.4~12V	
	Current (A) (max.)	33A	
	Line Regulation (LL-HL) (typ.)	±0.2% (Vin= 40 - 72 V; Iout = 33 A) / ±10% (Vin= 36 - 40 V; Iout = 33 A)	
	Load Regulation (0-100%) (typ.)	±3% (Vin = 48 V; Iout = 0 - 33 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 = 33 A)	
		50% Load:96% (Iout = 16.4 A)	
		100% Load:94% (Iout = 6.6 A)	
Protection	Over Power Protection	Hiccup mode	
	Over Current Protection	Hiccup mode	
	Over Voltage Protection	14~16V (Hiccup mode)	
	Short Circuit Protection (max.)	Hiccup mode	
	Over Temperature Protection	Threshold:115~135°C / Hysteresis:10~20°C 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 (max.)	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; Airflow = 1.5m/s (300 LFM); TA = 40°C (104°F)	
Safety	Agency Approvals	CE, UL, TUV	
EMC	EMI (Conducted & Radiated Emission)	UL60950-1 and CSA C22.2 No. 60950-1-07	
Physical	Dimension (L x W x H)	2.28 x 1.45 x 0.5 Inches (57.9 x 36.8 x 12.7 mm) Tolerance ±0.5 mm	
	Weight	66 g	

ELECTRICAL SPECIFICATIONS

Conditions: TA = 25°C (77°F), Airflow = 1.5 m/s (300 LFM), Vin = 48 V, unless otherwise notes.

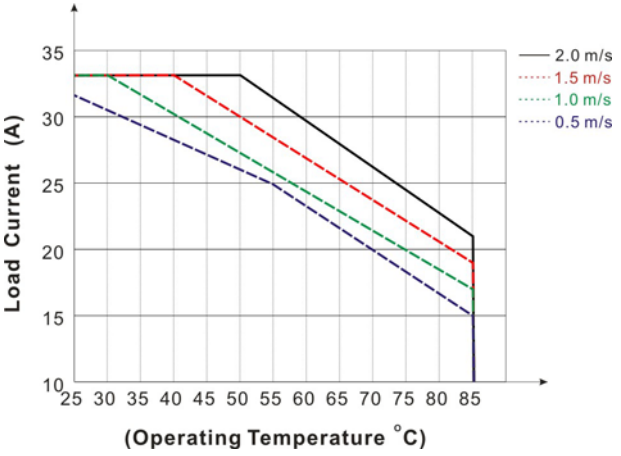
Model No.		BR400-12S	BR400-12S-P
Other			
Primary On/Off Voltage	Low level (V.DC.)	-0.7~1.2V	-0.7~1.2V (The Low Electric Level is Effective)
	High level (V.DC.)	2.8~8V	2.8~8V (The Low Electric Level is Effective)
Primary On/Off Current	Low level (mA) (max.)	1mA	
Secondary CTL Voltage	Low level (V.DC.)	—	0~0.8V (The High Electric Level is Effective)
	High level (V.DC.)	—	2.1~3.3V (The High Electric Level is Effective)
Secondary CTL Current	Low level (mA) (max.)	—	1mA
Logic Input and Output Pins in the Communications Port			
	Logic Input Low level (V.DC.) (max.)	—	0.8V
	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 - 72 V; Iout=0 - 33 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
	Output Power Detected Precision (W)	—	±12.56W
	Temperature Detected Precision (°C)	—	±5°C

NOTE



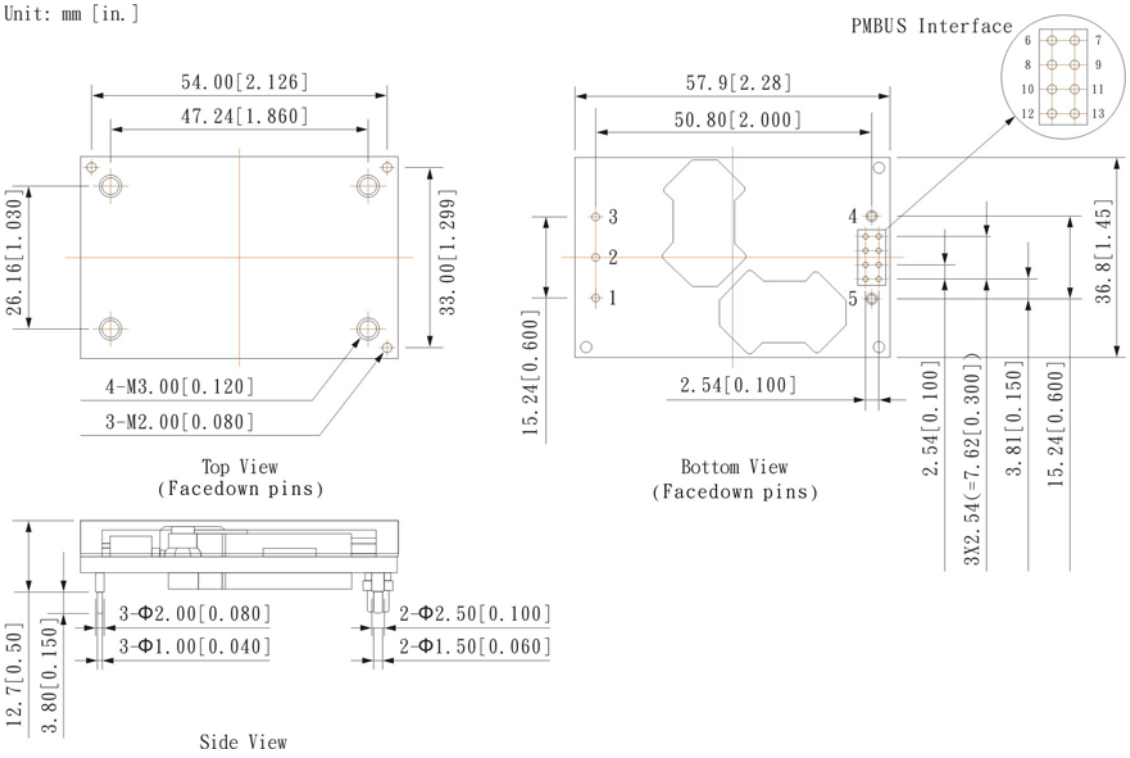
1. During the test of input reflected ripple current, the input terminal must be connected to a 12 uH inductor and a 220 uF electrolytic capacitor.
2. Point B, which is for testing the output voltage ripple, is 25 mm (0.98 in.) away from the Vout(+) pin.

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

1. 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.]
2. 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.
   Pin4 and pin5 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.
   Pin6 and pin13 are 0.64 ± 0.05 mm [0.025 ± 0.002 in.] diameter.
3. M3 Screw used to bolt unit's baseplate to other surfaces (such as heatsink) must
   not exceed 3.00 mm [0.120 in.] depth below the surface of baseplate.