PRELIMINARY

Bothhand USA

Isolated DC-DC Converters
BYB100-48S5

Features

- Wide 2 : 1 Input Voltage Range
- High Power Density
- High Efficiency
- Operating Temperature Range: -40°C to +85°C (with derating)
- Output Short Circuit Protection: Hiccup, continuous & Auto Recovery
- Output Over Voltage Protection
- Over Temperature Protection
- Fixed Switching Frequency
- Input/ Output Isolation 1500VDC
- Lead Free Design, RoHS Compliant
- Industry Standard Pinout
- Adjustable Output Voltage

Applications

- Distributed power system
- Telecommunication application
- Battery powered equipment
- Industrial application
- Process control equipment
- Transportation equipment

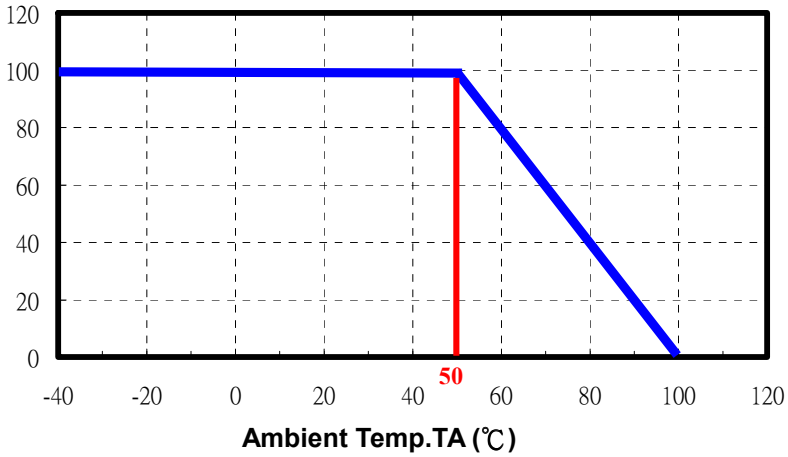
Input Specifications		
Input voltage range		36~75V
Under voltage shutdown	Full Load	33V (typical)
Input current	Vin=48V and no Load	90mA (typical)
Input current	Vin=48V and full Load	2367mA (typical)
Input current	Vin=48V and output shorted	10mA (typical)
Remote ON/OFF	Converter: ON Converter: OFF	Open or 3.5V＜Vr＜12V Short(2) or 0V＜Vr＜1.2V
Sourcing current of remote control pin	Nominal Vin	＜0.2mA
Idle input current (at Remote OFF state)	Nominal Vin	＜20mA
Output Specifications		
Output voltage		24V
Output voltage accuracy	Vout=23.76 ~ 24.24V	±1%
Maximum Load		4.2A
Minimum Load		0A
Maximum capacitive load		1750uF (maximum)
Efficiency	Vin=48V and full load	92% (typical)
Ripple / Noise	20MHz bandwidth.	200mVp-p (maximum)
Temperature coefficient		±0.02%/℃ (maximum)
Output short circuit protection	Automatic recovery	Hiccup, Continuous
Output over voltage protection		27V (typical)

Line regulation	LL to HL at full load	±0.5% (maximum)
Load regulation	25% load to full load	±0.5% (maximum)
Dynamic Characteristics		
Transient response over shoot	di/dt=0.8A/μs	≤ ±5% of Vo
Transient response settling time	50% load step change	240μs (typical)
Start-up time	Nominal Vin and full load	70msec (typical)
Switching frequency		300kHz (typical).
General Specifications		
Reliability, calculated MTBF		≧8.8×10^4 hours
Operating ambient temperature	With derating	-40℃~+85℃
Maximum case surface temperature		105℃
Thermal shutdown		110°C typ.
Storage temperature range		-55℃~+125 ℃
Relative humidity		95% RH (maximum)
Isolation voltage	Input to output	15000VDC
Isolation capacitance	Input to output	1200pF (typical)
Isolation resistance	Input to output (500VDC)	$10^9\Omega$ (minimum)
Cooling	Natural convection	
Physical Specifications		
Case material		Aluminum
Potting material		Silicon rubber (UL94V-0)
Dimensions		2.40 × 2.28 × 0.5 Inch (61.0 × 57.9 × 12.7 mm)
Weight		97g (3.42oz) (typical)
Soldering temperature	Lead-free wave soldering	260℃/10Sec (maximum)

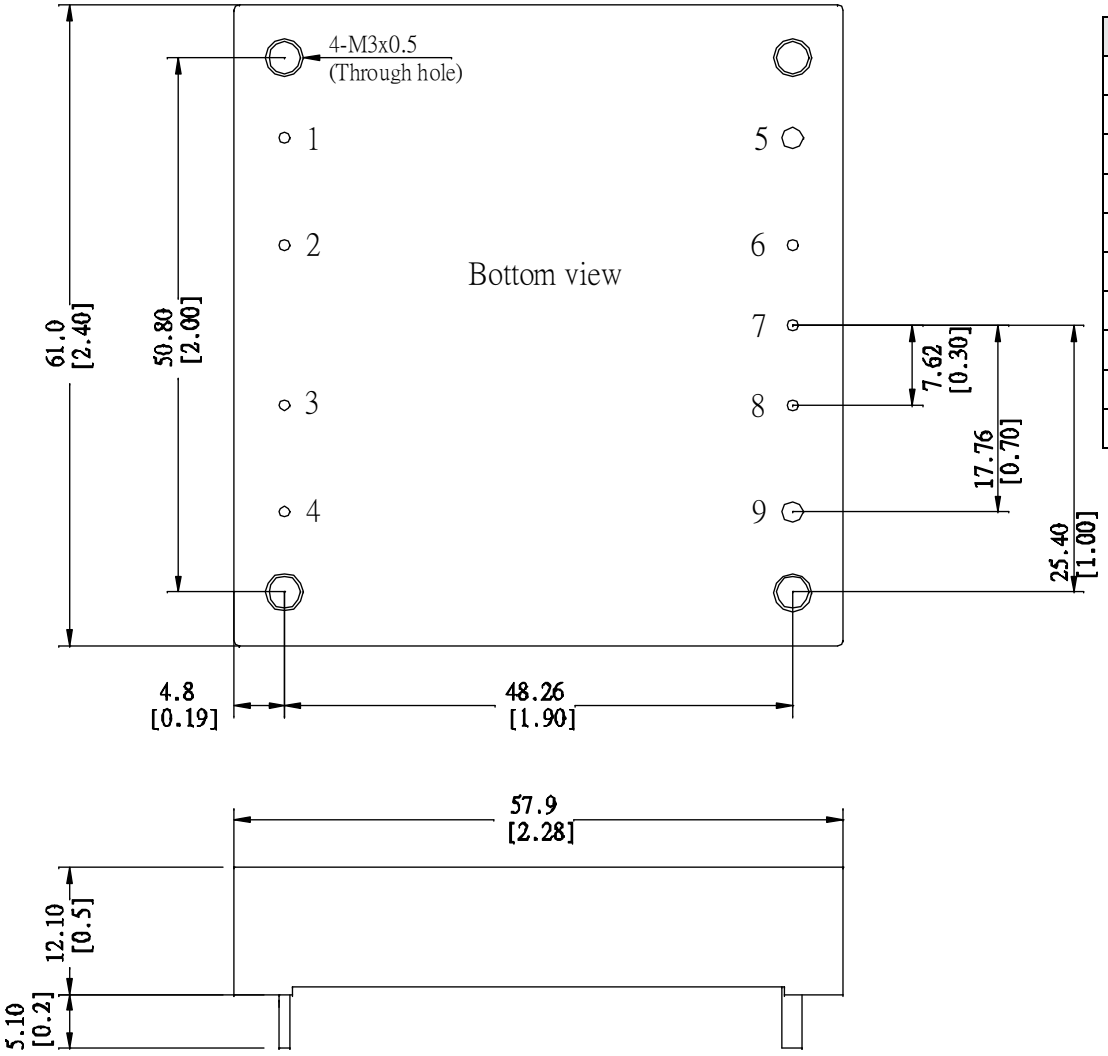
Note

1. Typical value, tested at nominal input and full load.
2. Short to -Vin (Pin 2).

Power Derating Curve



Mechanical Dimensions



Pin Assignment	
Pin	Single
1	-Vin
2	Case
3	Remote On/Off
4	+Vin
5	-Vout
6	-Sense
7	Trim
8	+Sense
9	+Vout

Pin 5&9 diameter: 2.0 [0.08]
Other pins diameter: 1.0 [0.04]

Unit: mm [inch]
Tolerance: ±0.5 [0.02]

Remote Sense Application circuit

The Remote Sense function is used to compensate for the voltage drop incurred when the load is located physically far away from the DC/DC converter providing its power. The Remote Sense pins are connected as close to the load as possible. The DC/DC converter's regulation specification is maintained across the points where the Remote Sense wires are connected at the load. This will remove the effect of the voltage drop caused by the resistance of the wires used to conduct the power from the DC/DC converter to the load. This is represented by R_{CL1} and R_{CL2}. With the use of Remote Sense, the effects of R_{CL1} and R_{CL2} are eliminated.

If the Remote Sense function is not used, the **+Sense** has to be connected to **+Vout** and the **–Sense** has to be connected to **–Vout** as close to the DC/DC converter as possible.