V·INFINITY

VHB150 Half Brick DC-DC Converter

Rev. 09-2007

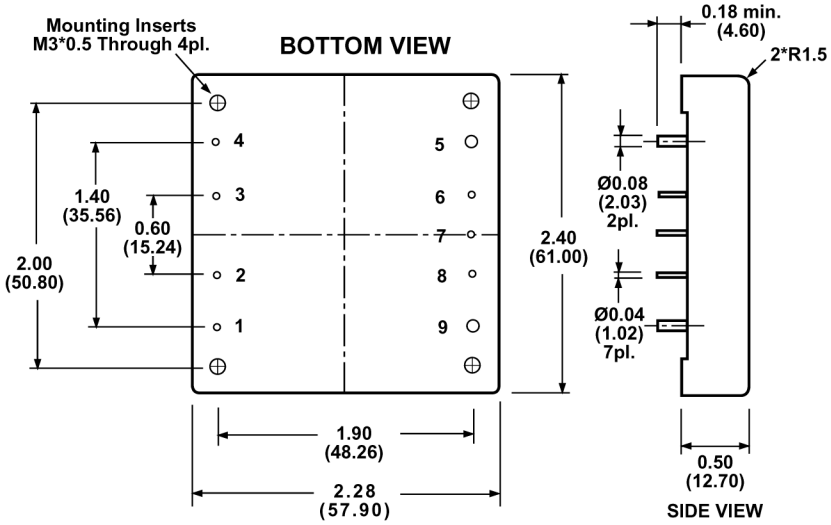
E222736

Features

- 75-150W isolated output
- Efficiency to 85%
- 500KHz switching frequency
- 2:1 input range
- Regulated outputs
- Continuous short circuit protection
- Five-sided metal case
- Industry standard half-brick package

RoHS

Model Number	Input Voltage	Output Voltage	Output Current	Input Current No Load	Input Current Full Load	Efficiency
VHB150-D48-S2R5	36-75VDC	2.5VDC	30A	25mA	2.6A	74%
VHB150-D48-S3R3	36-75VDC	3.3VDC	30A	25mA	2.6A	79%
VHB150-D48-S5	36-75VDC	5VDC	30A	25mA	3.7A	83%
VHB150-D48-S12	36-75VDC	12VDC	12.5A	25mA	3.6A	85%
VHB150-D48-S15	36-75VDC	15VDC	10A	25mA	3.6A	85%
VHB150-D48-S24	36-75VDC	24VDC	6.25A	25mA	3.6A	85%



Pin Connection

Pin	Function
1.	Vin
2.	ON/OFF
3.	-Vin
4.	-Vout
5.	-Vout
6.	-Sense
7.	Trim
8.	+Sense
9.	+Vout

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Input

Input Voltage Range	48V	36-75V
Under Voltage Lockout	48Vin power up	34V
	48Vin power down	32.5V
Positive Logic Remote ON/OFF[3,4]		
Input Filter		PI Type

Output

Voltage Accuracy		±1% max.
Transient Response:	25% Step Load Change	<500µ sec.
External Trim Adj. Range		±10%
Ripple & Noise	20MHz BW, 2.5V, 3.3V, 5V	40mV RMS., max
		100mV pk-pk, max
	12V& 15V	60mV RMS., max
		150mV pk-pk, max
	24V	100mV RMS., max
		240mV pk-pk, max.
Temperature Coefficient		±0.03%/°C
Short Circuit Protection		Continuous
Line Regulation[1]		±0.2% max
Load Regulation[2]		±0.2% max
Over Voltage Protection trip Range, % Vo nom.		115-140%
Current Limit		110-140%
Nominal Output		

General Specifications

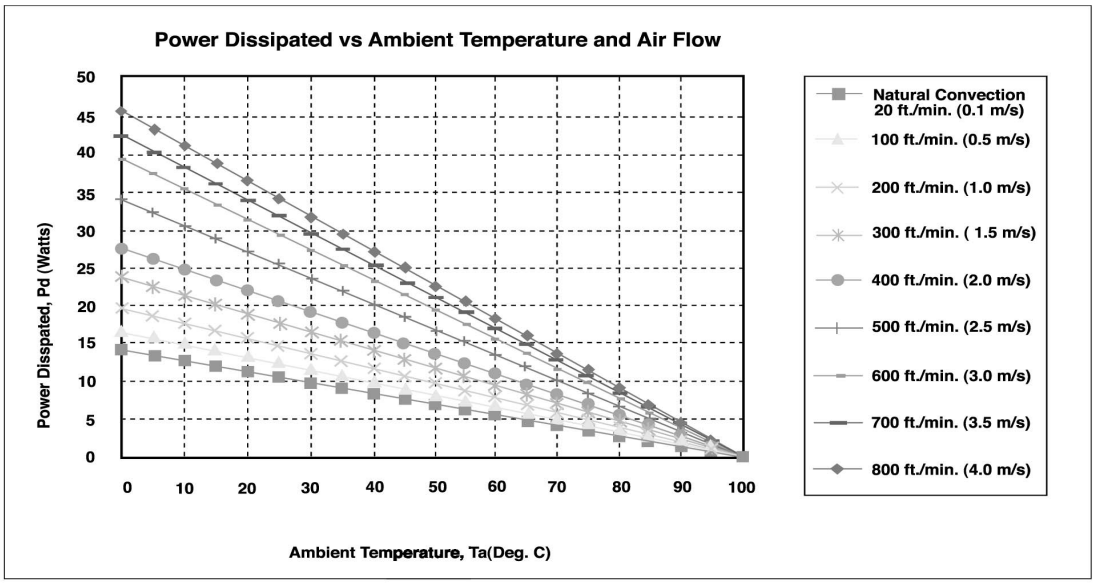
Efficiency		see table
Isolation Voltage	Input/Output	1500VDC min.
	Input/Case	1500VDC min.
	Output/Case	1500VDC min.
Isolation Resistance		10^7 Ohm min.
Switching Frequency		500KHz, Typ.
Operating Case Temperature		-40°C to 100°C
Storage Temperature		-40°C to 105°C
Thermal Shutdown, Case Temp.		100°C Typ.
Dimensions		2.28x2.40x0.50 inches
		57.9x61.0x12.7mm
Case Material		aluminum

NOTES:
1. Measured from High Line to Low Line
2. Measured from Full Load to Zero Load
3. Logic Compatibility: Open Collector ref to -Input
   Module ON: Open Circuit
   Module OFF: < 0.8VDC
4. Suffix “N” to the Model Number with Negative Logic Remote ON/OFF

Application Notes

Derating:

The operating case temperature range of the VHB150 series is -40°C to +100°C. When operating the VHB150, proper derating or cooling is needed. Following is the derating curve of VHB150 without heat sink.



Forced Convection Power Derating without Heat Sink

Where:

The power dissipation (Pd):

$$Pd = Pi - Po = Po (1-\eta) / \eta$$

The thermal resistance are list below:

Chart of Thermal Resistance vs Air Flow:

AIR FLOW RATE	TYPICAL Rca
Natural Convection 20ft./min. (0.1m/s)	3.82 °C/W
100 ft./min. (0.5m/s)	3.23 °C/W
200 ft./min. (1.0m/s)	2.71 °C/W
300 ft./min. (1.5m/s)	2.28 °C/W
400 ft./min. (2.0m/s)	1.92 °C/W
500 ft./min. (2.5m/s)	1.68 °C/W
600 ft./min. (3.0m/s)	1.50 °C/W
700 ft./min. (3.5m/s)	1.35 °C/W
800 ft./min. (4.0m/s)	1.23 °C/W

The temperature rise ($\triangle T$):

$$\triangle T = Pd * Rca$$

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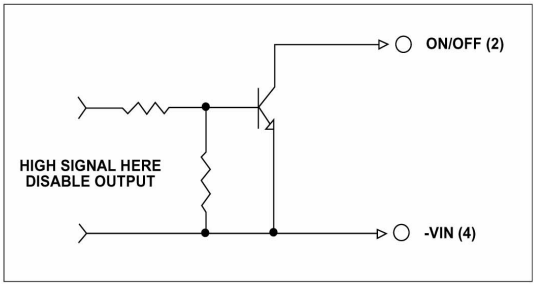
Remote ON/OFF Control

The VHB150 series allows the user to switch the module on and off electronically with the remote on/off feature. The VHB150 series is available with “positive logic” or “negative logic” options.

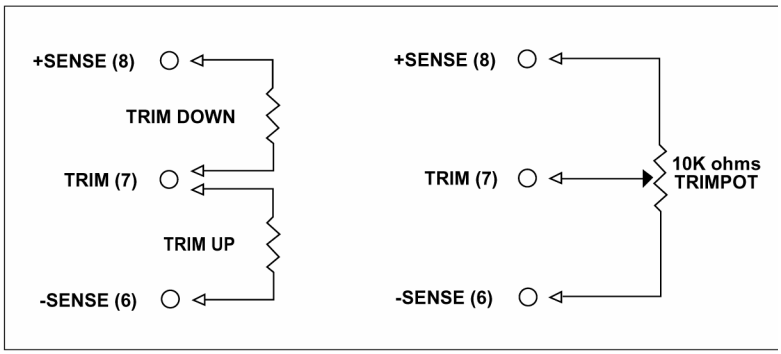


Logic Table

Logic State (Pin 2)	Negative Logic	Positive Logic
Logic Low - Switch Closed	Module on	Module off
Logic High - Switch Open	Module off	Module on

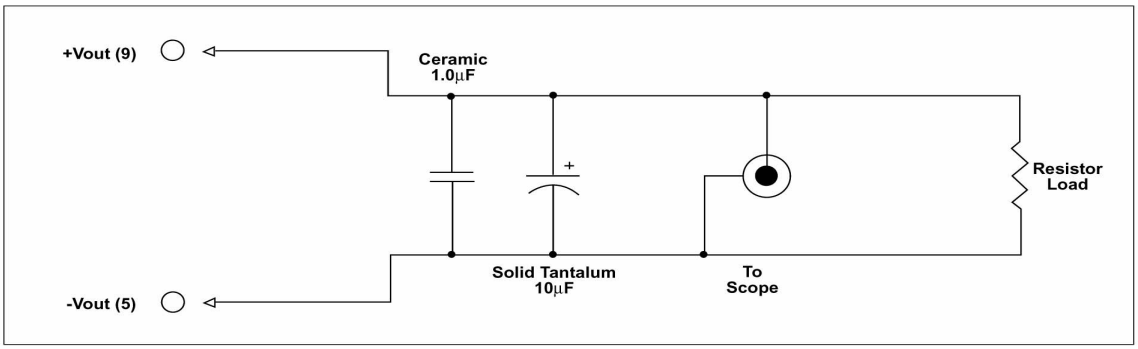
External Output Trimming

Output may optionally be externally trimmed (±10%) with a fixed resistor or an external trimpot as shown.



Output Noise

The output noise is measured with a 10µF tantalum capacitor and a 1.0µF ceramic capacitor across the output.



Output Noise Test Circuit schematic