VFB200 Full Brick DC-DC Converter

Features

- 100-200W isolated output
- Efficiency to 85%
- 300KHz switching frequency
- 2:1 input range
- Regulated outputs
- Continuous short circuit protection
- Industry standard half-brick package

Input

Input Voltage Range		48V 36-75V
Under Voltage Lockout		48 Vin power up 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 & 48V	100mV/200mV RMS., max 240mV/480mV 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		115-140% Nominal Output

General Specifications

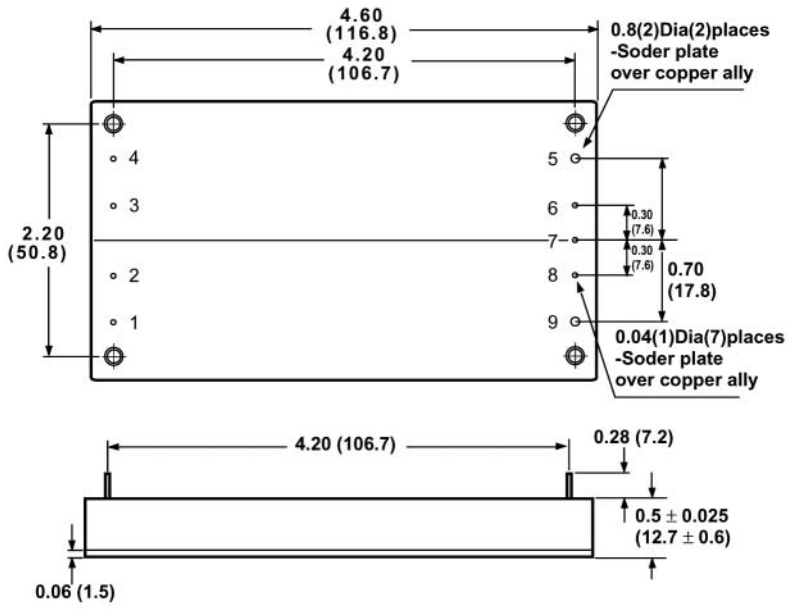
Efficiency		see table
Isolation Voltage	Input/Output	1500VDC min.
	Input/Case	1500VDC min.
	Output/Case	1500VDC min.
Isolation Resistance		Ohm min.
Switching Frequency		300KHz, Typ.
Operating Case Temperature		40°C to 100°C
Storage Temperature		40°C to 105°C
Thermal Shutdown, Case Temp.		100°C Typ.
Dimensions		4.60x2.40x0.50 inches (116.8x61.0x12.7mm)
Case Material		aluminum base with plasitc case

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

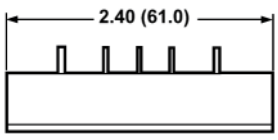
Model Number	Input Voltage	Output Voltage	Output Current	Input Current No Load	Input Current Full Load	Effic.	Case
VFB200-D48-S2R5		2.5VDC	40A		2.8A	74%	
VFB200-D48-S3R3		3.3VDC	40A		3.5A	79 %	
VFB200-D48-S5		5VDC	40A		5A	83%	
VFB200-D48-S12	36-75VDC	12VDC	17A	25mA	5A	85%	FB
VFB200-D48-S15		15VDC	13.3A		5A	85%	
VFB200-S48-S24		24VDC	8.4A		5A	85%	
VFB200-D48-S48		48VDC	4.2A		5A	85%	

Case FB



Pin Connection

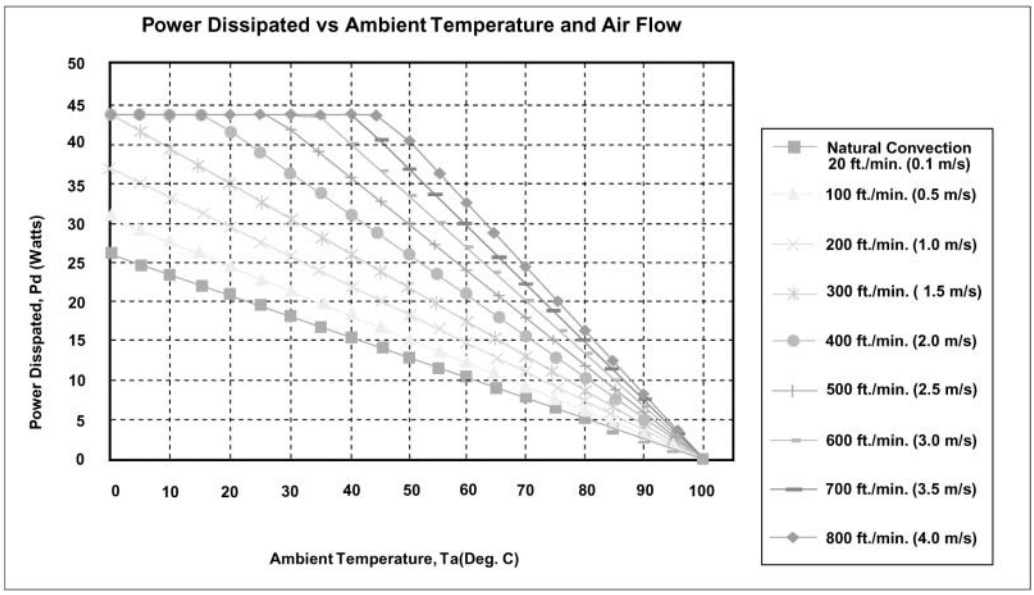
Pin	Function
1.	+ Vin
2.	ON/OFF
3.	NC
4.	-Vin
5.	-Vout
6.	-Sense
7.	Trim
8.	+ Sense
9.	+ Vout



Application Notes

Derating:

The operating case temperature range of the VFB200 series is -40°C to +100°C. When operating the VFB200, proper derating or cooling is needed. Following is the derating curve of VFB200 without heat sink.



Forced Convection Power Derating with No Heat Sink; Airflow Along Width (Transverse)

Where:

The power dissapation (Pd) is

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

The thermal resistances are listed below.

Chart of Thermal Resistance vs Air Flow:

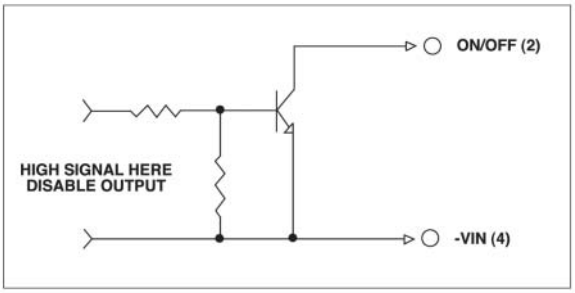
AIR FLOW RATE	TYPICAL Rca
Natural Convection 20ft./min. (0.1m/s)	7.12 °C/W
100 ft./min. (0.5m/s)	6.21 °C/W
200 ft./min. (1.0m/s)	5.17 °C/W
300 ft./min. (1.5m/s)	4.29 °C/W
400 ft./min. (2.0m/s)	3.64 °C/W
500 ft./min. (2.5m/s)	2.96 °C/W
600 ft./min. (3.0m/s)	2.53 °C/W
700 ft./min. (3.5m/s)	2.37 °C/W
800 ft./min. (4.0m/s)	2.19 °C/W

The temperature rise (ΔT):

$$\Delta T = Pd * Rca$$

Remote ON/ OFF Control

The VFB200 series allows the user to switch the module on and off electronically with the remote on/off feature. The VFB200 series is available with " positive logic" or " negative logic" options.

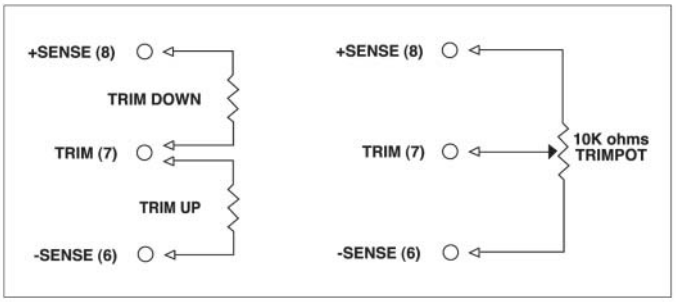


Logic Table

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

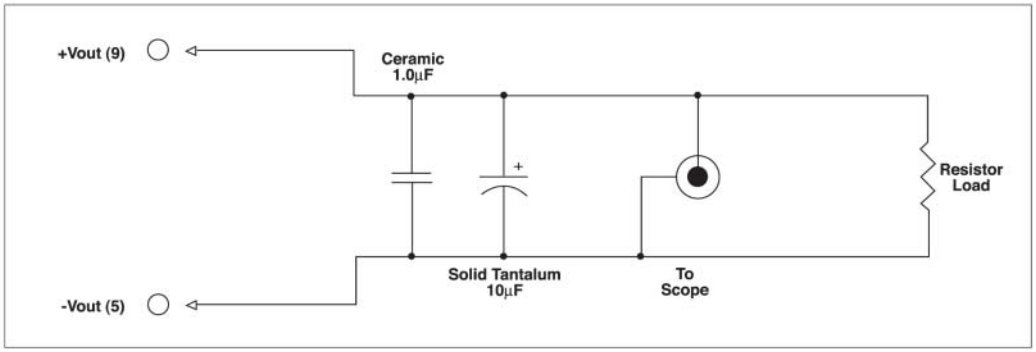
External Output Trimming

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