High Density DC-DC Modules

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PS150 Series
75 to 150 Watt Wide Input
DC-DC Converters
Single Output

Features

- 75W/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

MODEL	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	%EFF
PS150-48S25		2.5 VDC	30 A		2.6 A	74
PS150-48S33		3.3 VDC	30 A		2.6 A	79
PS150-48S05	36-75VDC	5 VDC	30 A	25 mA	3.7 A	83
PS150-48S12		12 VDC	12.5 A		3.6 A	85
PS150-48S15		15 VDC	10 A		3.6 A	85
PS150-48S24		24 VDC	6.25 A		3.6 A	85

NOTE: 1. Nominal Input Voltage 48 VDC

Powersolve Electronics Ltd. Units 8A, Arnhem Road, Newbury, RG14 5RU. England
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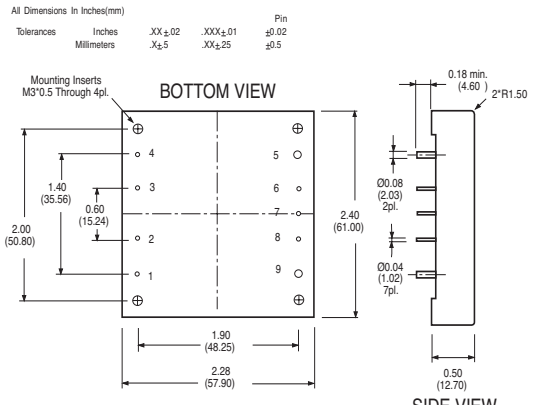
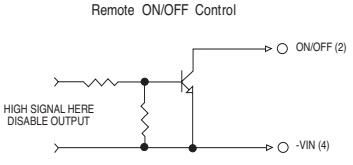
Electrical Specification

INPUT		
Input Voltage Range	48V	36-75V
Undervoltage 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		<500µsec.
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.
ENVIRONMENTAL		
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		
Efficiency		See Table
Isolation Voltage	Input/Output	1500VDC min.
	Input/Case	1500VDC min.
	Output/Case	1500VDC min.
Isolation Resistance		10^7ohm 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
		(57.9x61.0x12.7 mm)
Case Material		Aluminium

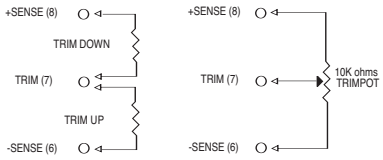
NOTE:

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.





External Output Trim



Pin Connection

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

All Specifications Typical At Nominal Line, Full Load and 25°C Unless Otherwise Noted.

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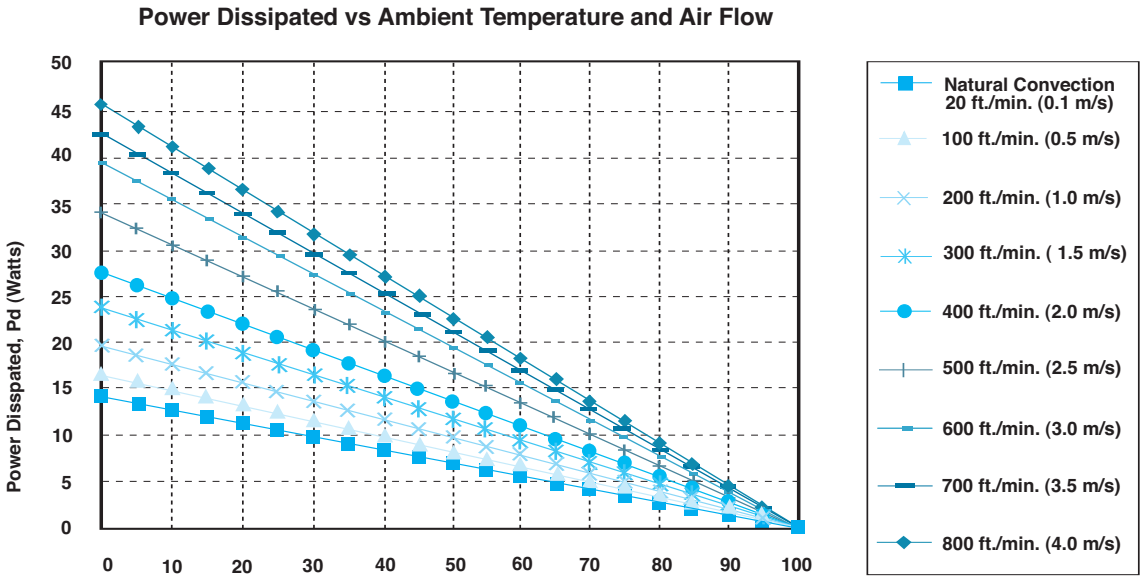
Application Note

Derating:
The operating case temperature range of the PS150 series is -40°C to +100°C. When operating the PS150 series, proper derating or cooling is needed.

The following curve is the derating curve of a PS150 without heat sink.



Forced Convection Power Derating without Heat Sink

Where:

The power dissipation (Pd):
Pd = Pi - Po = Po (1-n) /n

The thermal resistance 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 (△T):

△T = Pd * Rca

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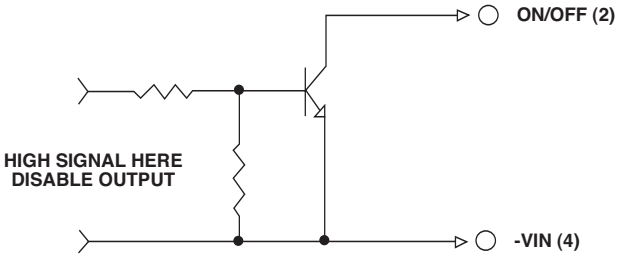
Remote ON/OFF Control

The PS150 series allows the user to switch the module on and off electronically with remote on/off feature. The PS150 series are available with "positive logic" or "negative logic" (option).

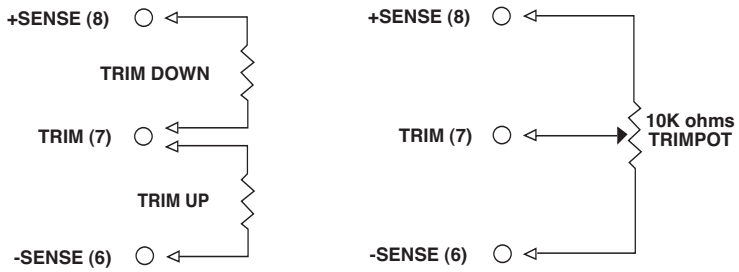


Logic Table

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

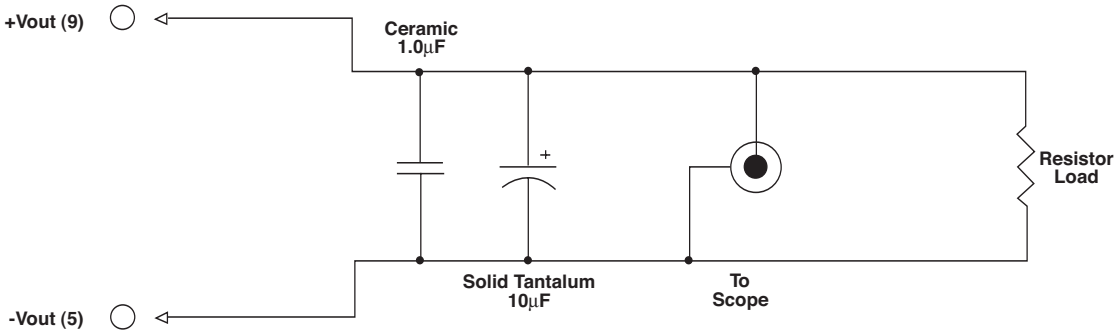
Output may optionally be externally trimmed (±10%) with a fixed resistor or an external trimpot as shown.



External Output

Output Noise

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



Output Noise Test Circuit schematic

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