High Density DC-DC Modules

www.powersolve.co.uk

PS150W Series
99-150 Watt
DC-DC Converters
Single Output

Features

- Ultra wide 4:1 Input Range
- Half brick package
- Efficiency to 90%
- Regulated Outputs
- Continuous Short Circuit Protection
- Overvoltage, Overload & Over temperature Protections
- Remote On/Off control

Electrical Specification

INPUT	
Input Voltage Range	9 ~ 36V (24V input version) 18 ~ 75V (48V input version)
Undervoltage Lockout	8.8V (24Vin power up) 8.0V (24Vin power down) 17V (48Vin power up) 16V (48Vin power down)
Positive Logic Remote ON/OFF	Open collector ref. to -Input Module ON: >3.5VDC or open circuit, Module OFF: <1.8VDC Add suffix N to the Model Number for Negative Logic Remote ON/OFF control
Input Filter	PI Type
OUTPUT	
Voltage Accuracy	±1.5% max.
Transient Response	<500µsec for a 25% step load change
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	40mV RMS max, 100mV pk-pk max. (3.3V & 5V output versions) 60mV RMS max, 150mV pk-pk max. (12V & 15V output versions) 100mV RMS max, 240mV pk-pk max. (24V output versions) measured with a 10µF tantalum & 1.0µF ceramic capacitor across the output
ENVIRONMENTAL	
Temperature coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation	±0.2% max. measured over full input range
Load Regulation	±0.2% max. measured from 0-100% load
Over Voltage Protection trip range	115% ~ 140% of Vout nominal
Current Limit	110% ~ 140% Nominal Output
GENERAL	
Efficiency	See table
Isolation Voltage	IP/OP, IP/Case, OP/Case: 1500VDC min
Isolation Resistance	10^7ohms min.
Switching Frequency	250KHz Typ.
Operating case Temperature	-40°C to +100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	+110°C Typ.
Dimensions	2.28 x 2.40 x 0.52 inches 57.9 x 61.0 x 13.2 mm
Case Material	Aluminium baseplate with plastic case

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Output Voltage and Current Ratings

MODEL	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.
PS150W-24S3V3	9-36 VDC	3.3 VDC	30A	200mA	4741mA	85
PS150W-24S05	9-36 VDC	5 VDC	30A	200mA	7022mA	87
PS150W-24S12	9-36 VDC	12 VDC	12.5A	100mA	6944mA	88
PS150W-24S15	9-36 VDC	15 VDC	10A	100mA	6944mA	88
PS150W-24S24	9-36 VDC	24 VDC	6.5A	100mA	7022mA	88
PS150W-48S3V3	18-75VDC	3.3VDC	30A	100mA	2371mA	87
PS150W-48S05	18-75VDC	5VDC	30A	100mA	3511mA	89
PS150W-48S12	18-75VDC	12VDC	12.5A	50mA	3472mA	90
PS150W-48S15	18-75VDC	15VDC	10A	50mA	3472mA	90
PS150W-48S24	18-75VDC	24VDC	6.5A	50mA	3511mA	89

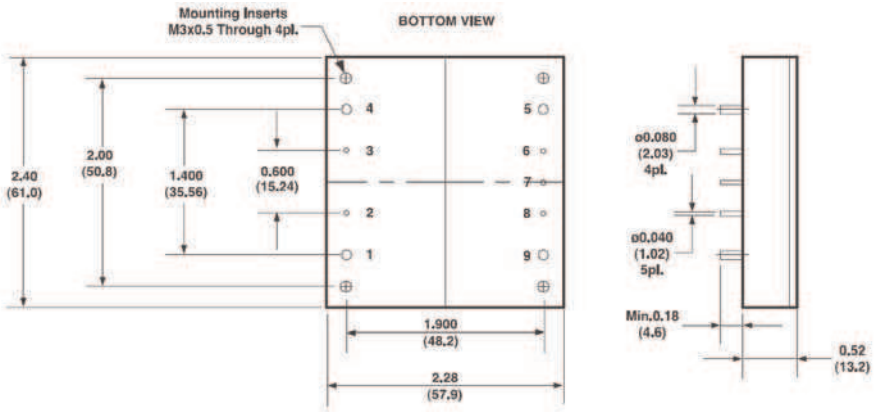
NOTE: Nominal Input Voltage 24 or 48VDC

Mechanical and Connection Details

All dimensions in inches (mm)

Tolerances Inches x.xx ±0.02 x.xxx ±0.010

Millimeters x.x ±0.5 x.xx ±0.25

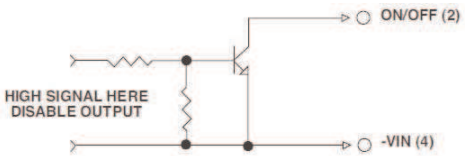


Pin Connection

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

Remote ON/OFF Control

The PS150W Series allows the user to switch the module on and off electronically with the remote on/off feature.
The PS150W Series are available with “positive logic” or “negative logic” (option).

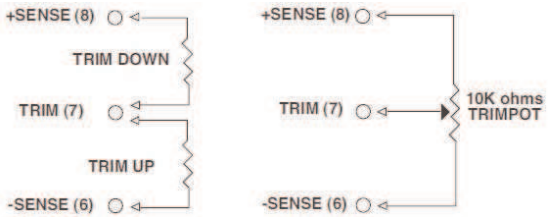


Logic Table

Logic State (Pin 2)	Negative Logic	Positive Logic
Logic low- Switch closed	Module on	Module off
Logic high- Switch open	Module off	Module on

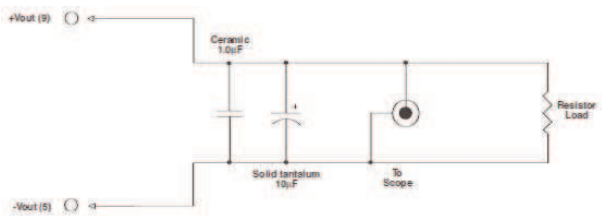
External Output Trim

The output can be trimmed externally (±10%) using a fixed resistor or a trimpot as shown.



Output Noise

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



All specifications typical at nominal line, full load and 25°C unless otherwise stated.

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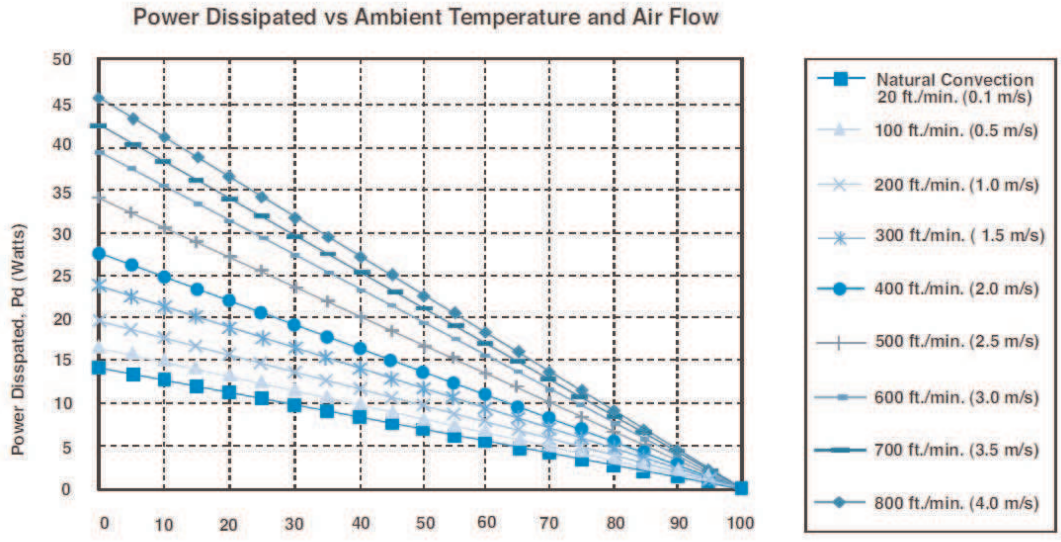
Application Note

Derating:
The case operating temperature range of the PS150W series is -40°C to +100°C. When operating the PS150W series, proper derating or cooling is required.

Following is the derating curve for the PS150W without a heatsink; airflow along width (transverse).



Forced Convection Power Derating without Heat Sink

Where:

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

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
100ft./min. (0.5m/s)	6.21°C/W
200ft./min. (1.0m/s)	5.17°C/W
300ft./min. (1.5m/s)	4.29°C/W
400ft./min. (2.0m/s)	3.64°C/W
500ft./min. (2.5m/s)	2.96°C/W
600ft./min. (3.0m/s)	2.53°C/W
700ft./min. (3.5m/s)	2.37°C/W
800ft./min. (4.0m/s)	2.19°C/W

The temperature rise (ΔT):

$\Delta T = Pd * Rca$