

High Density DC-DC Modules

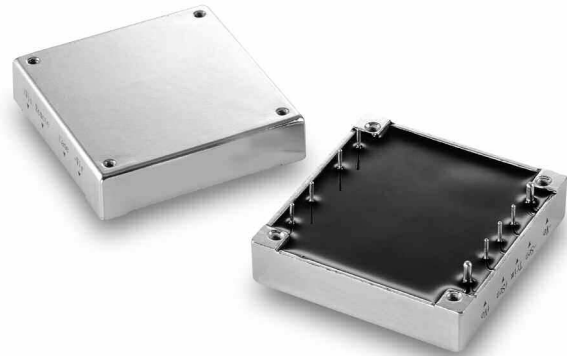


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PS50W Series
25 - 50 Watt 4:1 Input
DC-DC Converters
Single Output

Features

- 25W-50W Isolated Output
- Efficiency to 84%
- 300KHz Switching Frequency
- 4 : 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		%EFF
				NO LOAD	FULL LOAD	
PS50W-24S33		3.3VDC	10A		1785mA	77
PS50W-24S05		5VDC	10A		2570mA	81
PS50W-24S12	9-36 VDC	12VDC	4.16A	50 mA	2510mA	83
PS50W-24S15		15VDC	3.33A		2510mA	83
PS50W-24S24		24VDC	2.08A		2510mA	83
PS50W-48S33		3.3VDC	10A		880mA	78
PS50W-48S05		5VDC	10A		1270mA	82
PS50W-48S12	18-75 VDC	12VDC	4.16A	50 mA	1240mA	84
PS50W-48S15		15VDC	3.33A		1240mA	84
PS50W-48S24		24VDC	2.08A		1240mA	84

NOTE: 1. Nominal Input Voltage 24, 48VDC

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Electrical Specification

INPUT		
Input Voltage Range	24V	9-36V
	48V	18-75V
Undervoltage lockout	24Vin power up	8.8V
	power down	8V
	48Vin power up	17V
	power down	16V
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	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% ~160% Nominal Output
GENERAL		
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		300KHz, Typ.
Operating case Temperature		-40°C to 100°C
Storage Temperature		-55°C to +105°C
Thermal Shutdown, Case Temp.		100°C Typ.
Dimensions		2.82x2.40x0.50 inches (57.9x61.0x12.7 mm)
Case Material		Aluminium

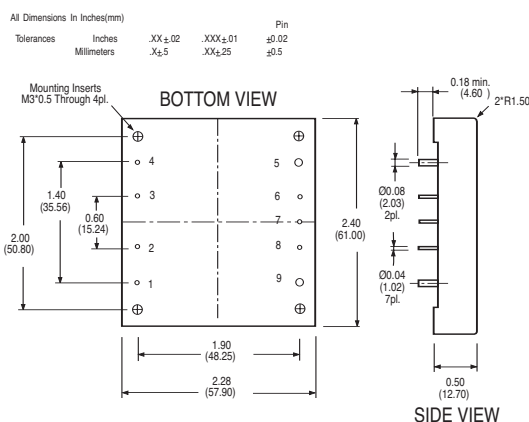
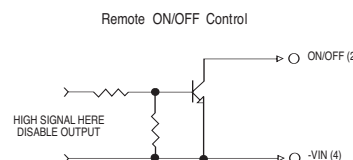
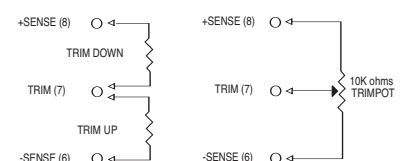
NOTE:

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.

Pin Connection

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

External Output Trim



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

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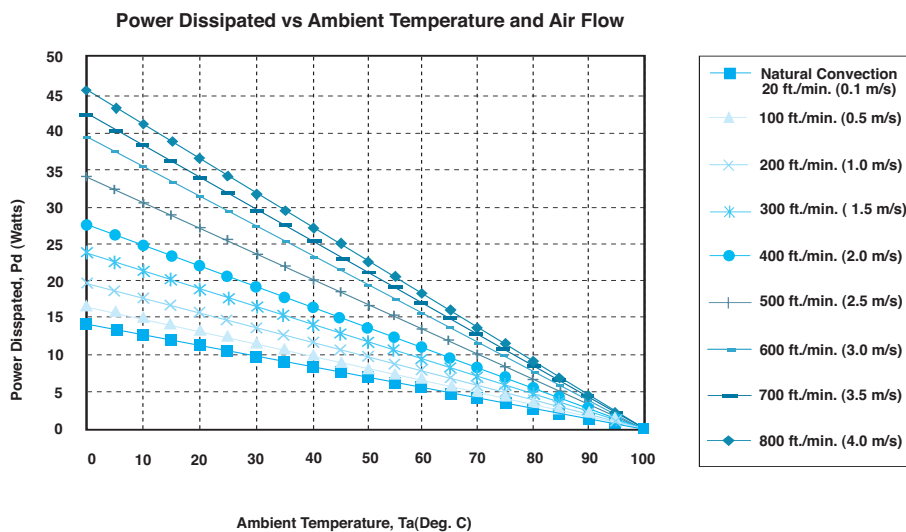
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Application Note

Derating:

The operating case temperature range of the PS50W series is -40°C to +100°C. When operating the PS50W series, proper derating or cooling is needed.

Following is the derating curve of PS50W 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

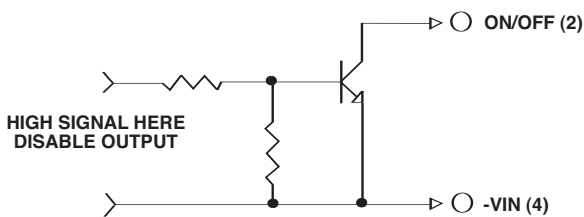
The temperature rise (ΔT):

$$\Delta T = Pd * Rca$$

Remote ON/OFF Control

The PS50W Series allows the user to switch the module on and off electronically with remote on/off feature. The PS50W Series are available in "positive logic" or "negative logic" (option).

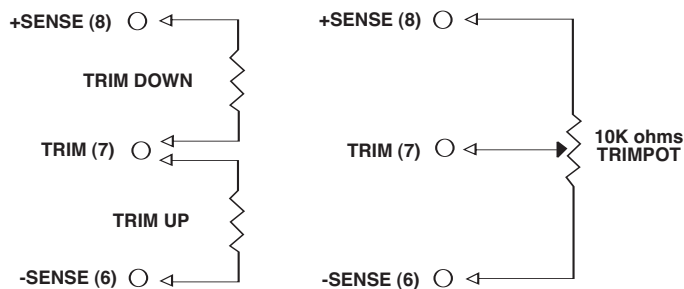
Logic Table



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

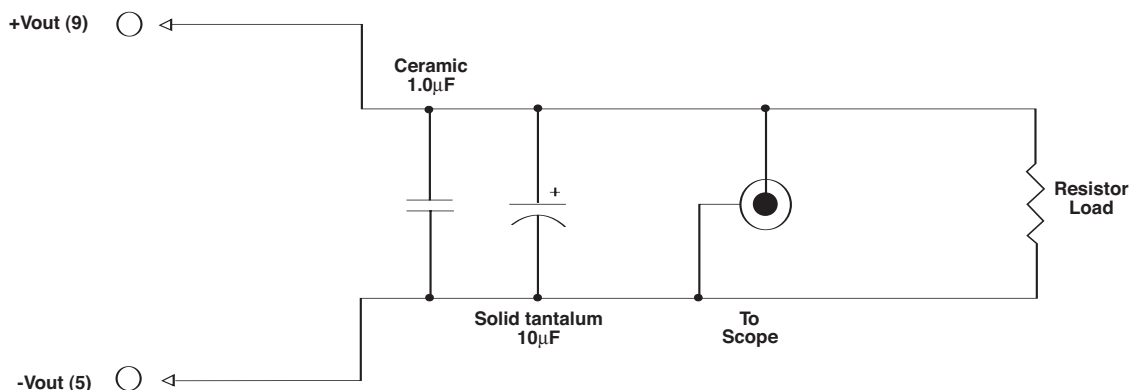
Output may optionally be externally trimmed ($\pm 10\%$) with a fixed resistor or an external trimpot as shown.



External Output

Output Noise

The output noise is measured with $10\mu\text{F}$ tantalum capacitor and $1.0\mu\text{F}$ ceramic capacitor across output.



Output Noise Test Circuit schematic

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