

High Density DC-DC Modules



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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 ⁷ ohms 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

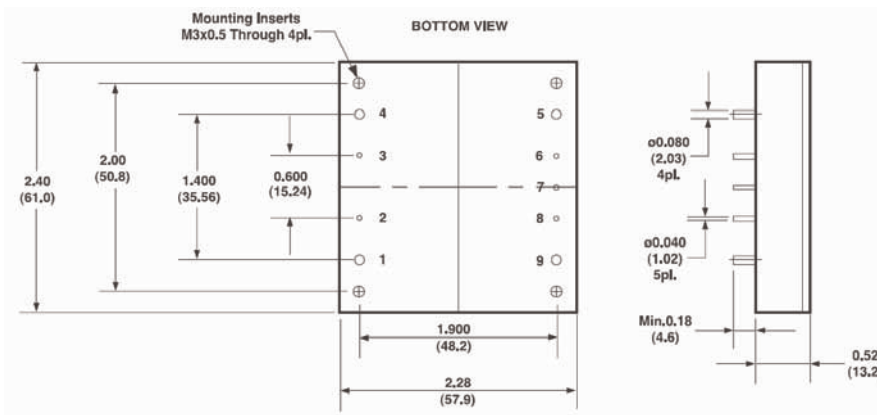
| MODEL | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT | | % EFF. |
|---------------|---------------|----------------|----------------|---------------|-----------|--------|
| | | | | NO LOAD | FULL LOAD | |
| PS150W-24S3V3 | 9-36 VDC | 3.3 VDC | 30A | 200mA | 4741mA | 85 |
| PS150W-24S05 | 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)

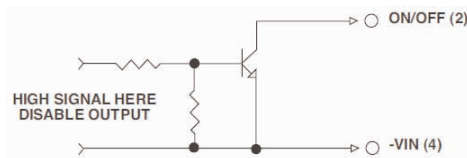
Tolerances Inches x.xx ±0.02 x.xxx ±0.010
Millimeters x.x ±0.5 x.xx ±0.25



| 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).

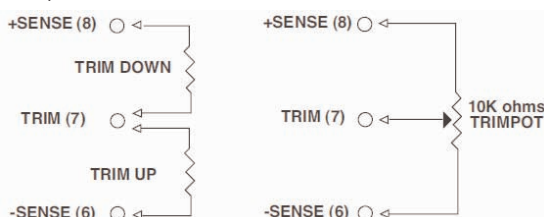


Logic Table

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

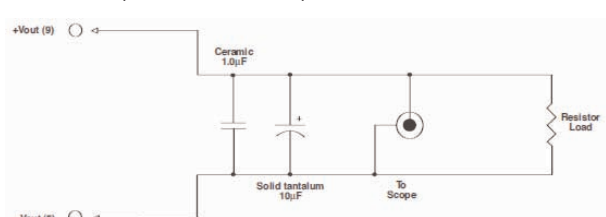
External Output Trim

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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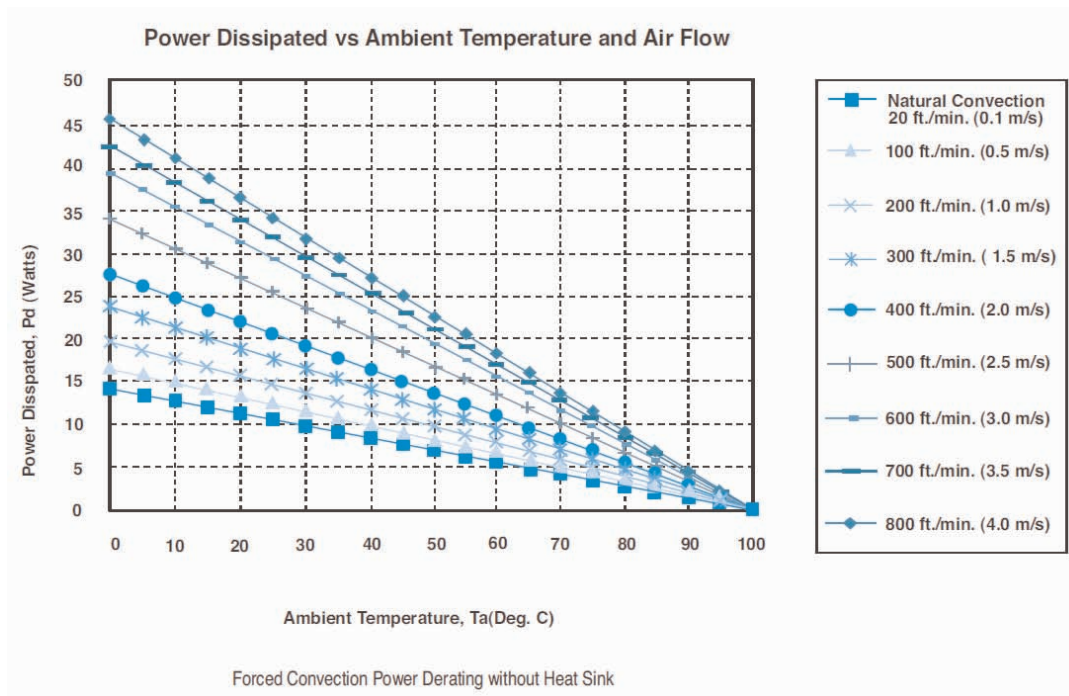
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Application Note

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).



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):

$$\Delta T = Pd * Rca$$