

High Density DC-DC Modules



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PS200 Series 200 Watt Wide Input DC-DC Converters Single Output

Features

- 100W - 200W Isolated Output
- Efficiency to 85%
- 300KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Industry Standard Full-Brick Package



Electrical Specification

INPUT

| | |
|------------------------------|--|
| Input Voltage Range | 36-75V (48V nominal) |
| Undervoltage Lockout | 34V power up 32.5V power down |
| Positive Logic Remote ON/OFF | Open collector ref. to -Input. Module ON: open circuit, Module OFF: <0.8VDC Add suffix N to model number for Negative Logic Remote ON/OFF control |
| 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 | 40mV RMS max, 100mV pk-pk max (2.5V, 3.3V & 5V outputs) 60mV RMS max, 150mV pk-pk max (12V & 15V outputs) 100/150/200mV RMS max, 240/280/480mV pk-pk max (24V/28V/48V outputs) |

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, % Vo nom. | 115-140% |
| Current Limit | 110%-140% Nominal Output |

GENERAL

| | |
|------------------------------|--|
| Efficiency | See table |
| Isolation Voltage | I/P-O/P, I/P-FG, O/P-FG: 1500VDC min |
| Isolation Resistance | 10 ⁷ 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 | 116.8 x 61.0 x 13.5 mm (4.60 x 2.40 x 0.53 inches) |
| Case Material | Aluminium Baseplate with Plastic Case |

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Output Voltage and Current Ratings

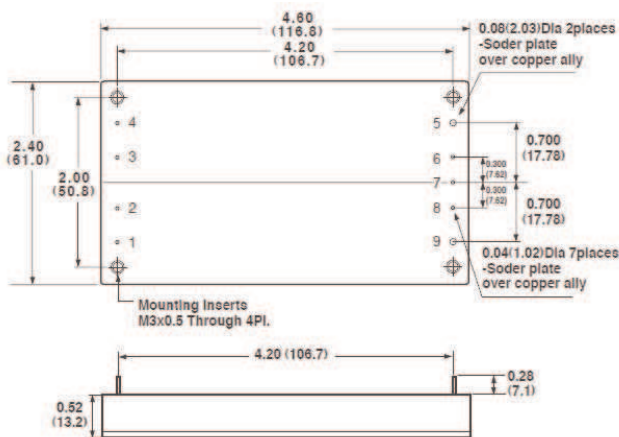
| MODEL | INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT | | % EFF. |
|-------------|---------------|----------------|----------------|---------------|-----------|--------|
| | | | | NO LOAD | FULL LOAD | |
| PS200-48S25 | 36-75 VDC | 2.5 VDC | 40A | 25mA | 2.8A | 74 |
| PS200-48S33 | 36-75 VDC | 3.3 VDC | 40A | 25mA | 3.5A | 79 |
| PS200-48S05 | 36-75 VDC | 5 VDC | 40A | 25mA | 5A | 83 |
| PS200-48S12 | 36-75 VDC | 12 VDC | 17A | 25mA | 5A | 85 |
| PS200-48S15 | 36-75 VDC | 15 VDC | 13.3A | 25mA | 5A | 85 |
| PS200-48S24 | 36-75 VDC | 24 VDC | 8.33A | 25mA | 5A | 85 |
| PS200-48S28 | 36-75 VDC | 28 VDC | 7.14A | 25mA | 5A | 85 |
| PS200-48S48 | 36-75 VDC | 48 VDC | 4.2A | 25mA | 5A | 85 |

NOTE: Nominal Input Voltage 48VDC

Mechanical and Connection Details

All dimensions in inches (mm)

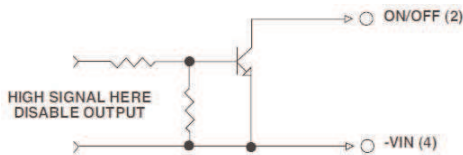
Tolerances Inches x.xx ±0.02 x.xxx ±0.010 Pin ±0.02
 Millimeters x.x ±0.5 x.xx ±0.25 Pin ±0.5



| 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 PS200 Series allows the user to switch the module on and off electronically with the remote on/off feature. The PS200 Series are available with "positive logic" or "negative logic" (option).

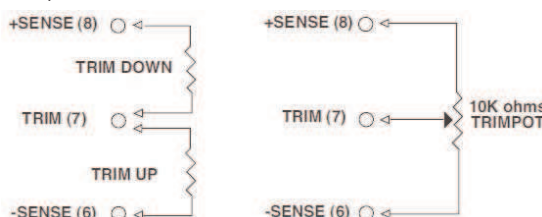


Logic Table

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

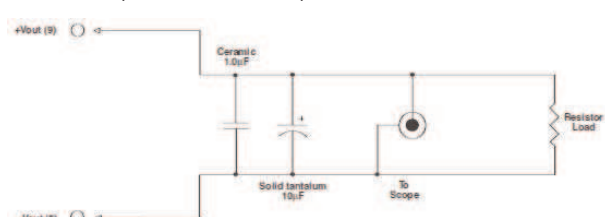
External Output Trim

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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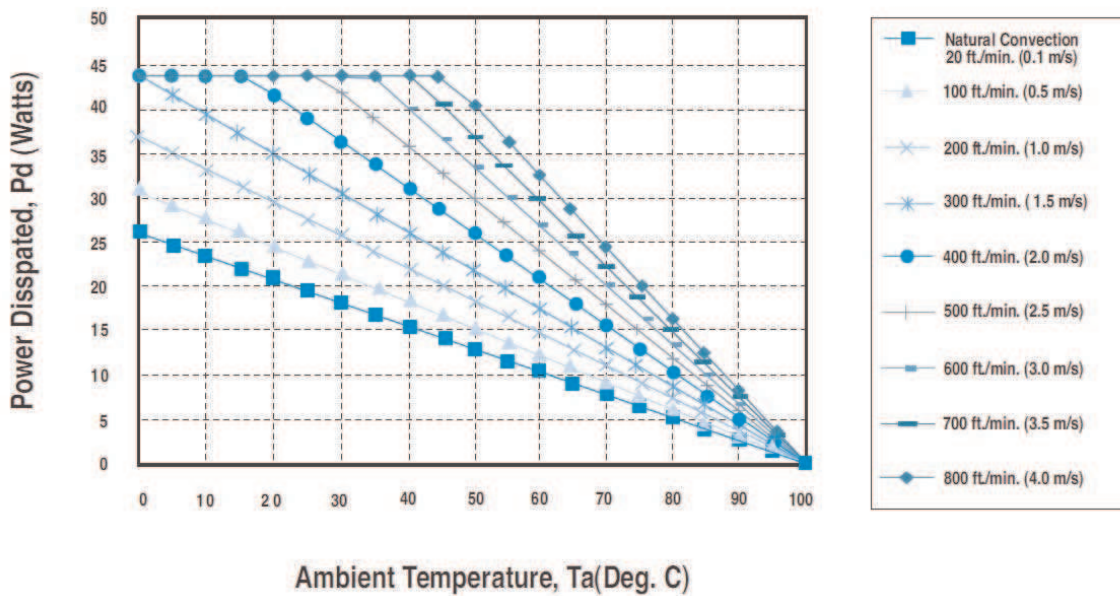
Application Note

Derating:

The case operating temperature range of the PS200 series is -40°C to +100°C. When operating the PS200 series, proper derating or cooling is required.

Following is the derating curve for the PS200 without a heatsink; airflow along width (transverse).

Power Dissipated vs Ambient Temperature and Air Flow



Forced Convection Power Derating without Heat Sink; 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) | 3.82°C/W |
| 100ft./min. (0.5m/s) | 3.23°C/W |
| 200ft./min. (1.0m/s) | 2.71°C/W |
| 300ft./min. (1.5m/s) | 2.28°C/W |
| 400ft./min. (2.0m/s) | 1.92°C/W |
| 500ft./min. (2.5m/s) | 1.68°C/W |
| 600ft./min. (3.0m/s) | 1.50°C/W |
| 700ft./min. (3.5m/s) | 1.35°C/W |
| 800ft./min. (4.0m/s) | 1.23°C/W |

The temperature rise (ΔT):

$$\Delta T = Pd * Rca$$