

5 WATT UNREGULATED SIP DC/DC CONVERTER



HPR7XX

FEATURES

- EFFICIENCY >80%
- SIP PACKAGE
- HIGH POWER DENSITY: > 16 WATTS/INCH³
- LOW COST
- SINGLE AND DUAL OUTPUTS
- INTERNAL INPUT AND OUTPUT FILTERING
- SIX-SIDED SHIELDING

DESCRIPTION

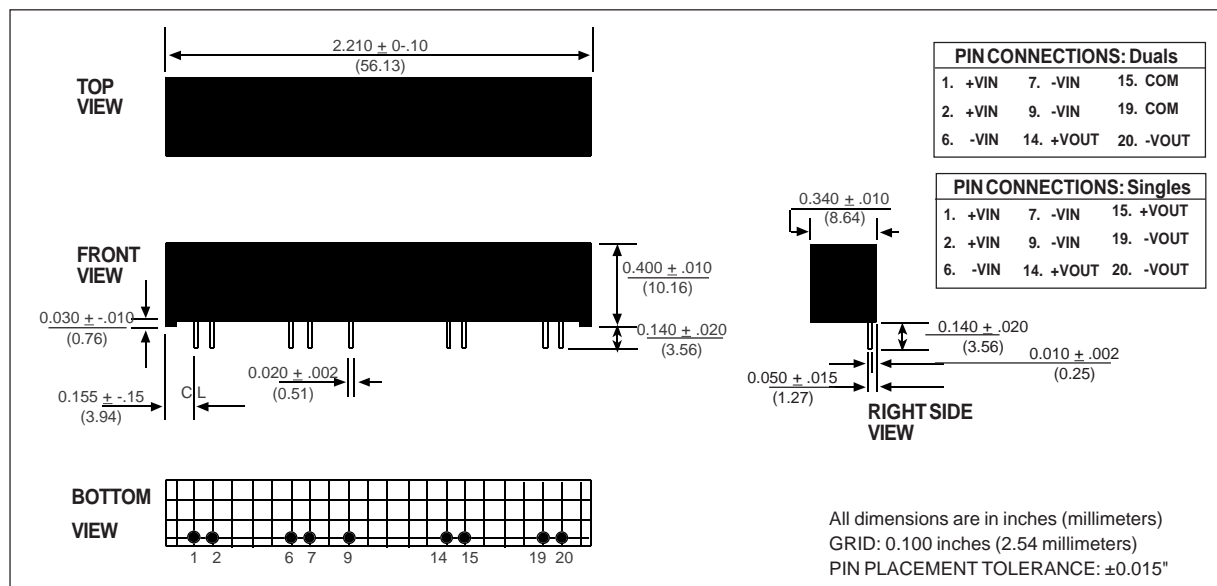
The HPR7XX Series provides high power densities where space is critical. The small SIP package measures only 2.2" x .3" x .4" (56 x 9 x 10 mm). Designed for high density boards, the package is non-conductive, which presents advantages over painted metal enclosures.

The series includes many different voltage models (other input and output voltages are available upon request), all set in a low thermal resistance molding compound, called Iso-ThermoFlex™, which provides excellent heat dissipation of internal components. The use of surface mount devices and manufacturing processes, combined with the encapsulation process, assure the user that the product is more environmentally rugged than any other DC/DC converter of its type.

Operation down to no load will not impact the reliability of the series, although this product has a 10mA minimum load for specification purposes. It is recommended that all pins be used for current carrying capacity even though duplicate pin-outs are internally connected.

The HPR7XX has 500VDC isolation barrier between input and output, offering the designer maximum flexibility in grounding options and polarity configurations. The outstanding MTTF, superior reliability, and low cost make it an excellent choice for any high power- density applications.

MECHANICAL



ELECTRICAL CHARACTERISTICS

Specifications typical at $T_A = +25^\circ\text{C}$, nominal input voltage, rated output current unless otherwise specified.

| MODEL | NOMINAL INPUT VOLTAGE (VDC) | RATED OUTPUT VOLTAGE (VDC) | RATED OUTPUT CURRENT (mA) | INPUT CURRENT | | REFLECTED RIPPLE CURRENT (mA _{p-p}) | EFFICIENCY (%) |
|--------|-----------------------------|----------------------------|---------------------------|---------------|-----------------|---|----------------|
| | | | | NO LOAD (mA) | RATED LOAD (mA) | | |
| HPR700 | 5 | 5 | 1000 | 70 | 1250 | 15 | 80 |
| HPR703 | 5 | ±5 | ±500 | 70 | 1250 | 15 | 80 |
| HPR704 | 5 | ±12 | ±208 | 70 | 1190 | 15 | 84 |
| HPR705 | 5 | ±15 | ±167 | 70 | 1190 | 15 | 84 |
| HPR706 | 12 | 5 | 1000 | 25 | 490 | 15 | 80 |
| HPR710 | 12 | ±12 | ±208 | 25 | 490 | 15 | 85 |
| HPR711 | 12 | ±15 | ±167 | 25 | 490 | 15 | 85 |
| HPR712 | 15 | 5 | 1000 | 20 | 407 | 15 | 82 |
| HPR717 | 15 | ±15 | ±167 | 20 | 392 | 15 | 85 |

Note: Other input to output voltage options may be available. Please consult factory.

COMMON SPECIFICATIONS

Specifications typical at $T_A = +25^\circ\text{C}$, nominal input voltage, rated output current unless otherwise specified.

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|--|--|----------------------|---------------|------------------------|---|
| INPUT | | | | | |
| Voltage Range | | 4.75 11.4 14.2 | 5 12 15 | 5.25 12.6 15.8 | V _{DC} V _{DC} V _{DC} |
| Voltage Rise Time | See Application Note: "Capacitive Loading Effects on Start-Up of DC/DC Converters" | | | | |
| ISOLATION | | | | | |
| Rated Voltage | | 500 | | | V _{DC} |
| Test Voltage | 60 Hz, 10 seconds | 500 | | | V _{pk} |
| Resistance | | | 1 | | GW |
| Capacitance | | | 55 | | pF |
| Leakage Current | $V_{ISO} = 240\text{VAC}, 60\text{Hz}$ | | 5 | | μArms |
| OUTPUT | | | | | |
| Rated Power | | | 5 | | W |
| Voltage Setpoint Accuracy | Rated Load, Nominal V_{IN} | | ±3 | | % |
| Temperature Coefficient | | | ±0.05 | | %/Deg C |
| Ripple & Noise | BW = DC to 10MHz BW = 10Hz to 2MHz | | 50 5 | | mV _{p-p} mV _{rms} |
| Voltage | $I_L = 10\text{mA}, V_{OUT} = 5\text{V}$ $I_L = 10\text{mA}, V_{OUT} = \pm 12\text{V}$ $I_L = 10\text{mA}, V_{OUT} = \pm 15\text{V}$ | | | 5.75 13.10 16.25 | V _{DC} V _{DC} V _{DC} |
| REGULATION | | | | | |
| Line Regulation | High Line to Low Line | | 1.2 | | %/V _{in} |
| Load Regulation (5V out only) | Rated Load to No Load | | 15 | | % |
| Load Regulation (All other Models) | Rated Load to No Load | | 10 | | % |
| GENERAL | | | | | |
| Switching Frequency | | | 170 | | kHz |
| Package Weight | | | 7 | | g |
| MTTF per MIL-HDBK-217, Rev. E Ground Benign | Circuit Stress Method $T_A = +25^\circ\text{C}$ | | 2000 | | kHr |
| TEMPERATURE | | | | | |
| Specification | | -25 | +25 | +70 | °C |
| Operation | | -40 | | +85 | °C |
| Storage | | -40 | | +110 | °C |

ABSOLUTE MAXIMUM RATINGS

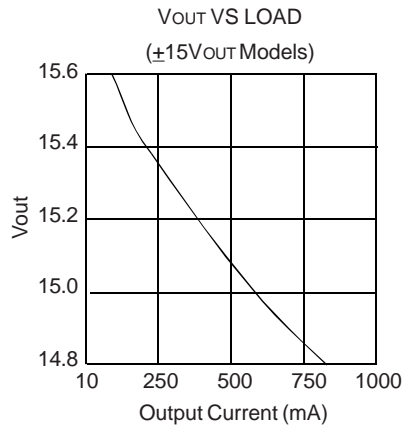
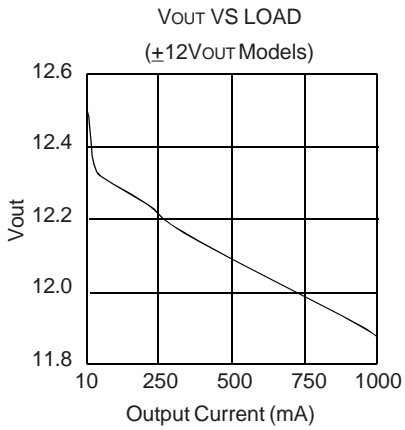
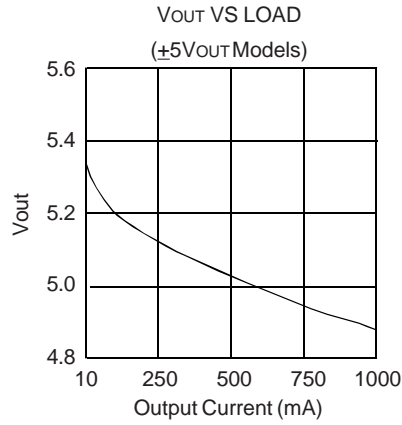
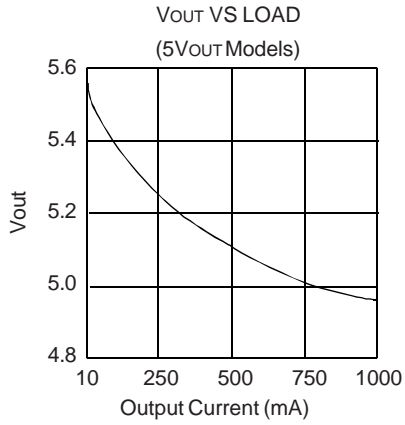
Internal Power Dissipation..... 1.7W
 Short Circuit Protection..... Momentary
 Lead Temperature (soldering, 10 seconds max)..... +300°C

ORDERING INFORMATION

Device Family _____ **HPR** **7XX** **/H**
 HPR indicates DC/DC converter
 Model Number _____
 Screening Option _____

TYPICAL PERFORMANCE CURVES

Specifications typical at $T_A = +25^\circ\text{C}$, rated input voltage, rated output current unless otherwise specified.



The information provided herein is believed to be reliable; however, C&D TECHNOLOGIES assumes no responsibility for inaccuracies or omissions. C&D TECHNOLOGIES assumes no responsibility for the use of this information, and all use of such information shall be entirely at the user's own risk. Prices and specifications are subject to change without notice. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. C&D TECHNOLOGIES does not authorize or warrant any C&D TECHNOLOGIES product for use in life support devices/systems or in aircraft control applications.

