

## 5 WATT UNREGULATED SIP DC/DC CONVERTER



### HPR7XX

#### FEATURES

- EFFICIENCY >80%
- SIP PACKAGE
- HIGH POWER DENSITY: > 16 WATTS/INCH<sup>3</sup>
- LOW COST
- SINGLE AND DUAL OUTPUTS
- INTERNAL INPUT AND OUTPUT FILTERING
- SIX-SIDED SHIELDING

#### DESCRIPTION

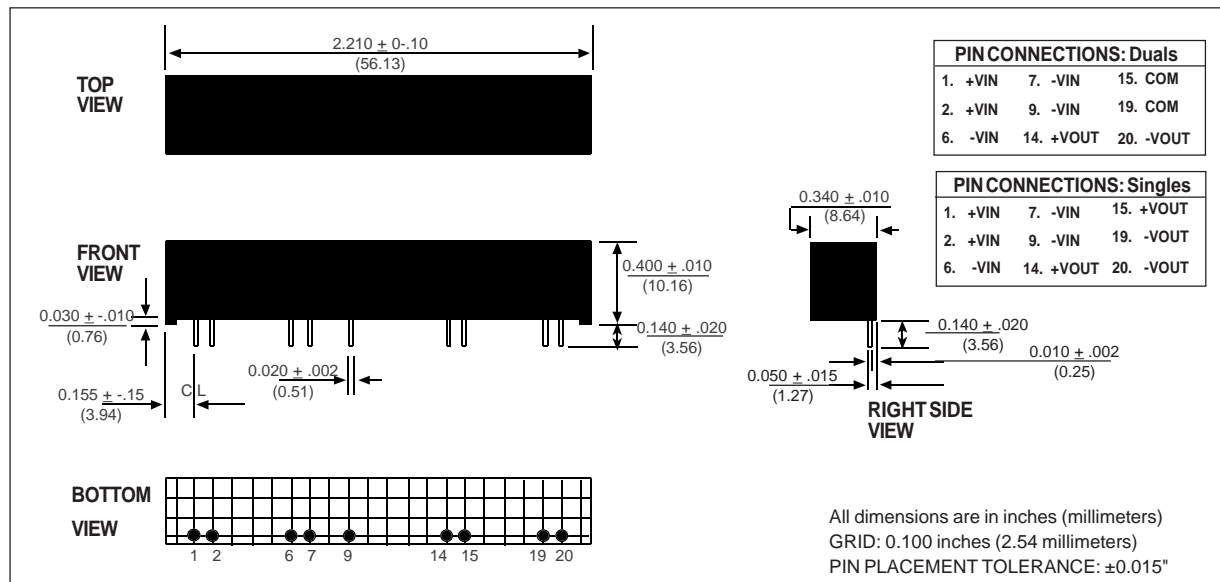
The HPR7XX Series provides high power densities where space is critical. The small SIP package measures only 2.2" x .3" x .4" (56 x 9 x 10 mm). Designed for high density boards, the package is non-conductive, which presents advantages over painted metal enclosures.

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 <sub>p-p</sub> )	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
<b>INPUT</b>					
Voltage Range		4.75 11.4 14.2	5 12 15	5.25 12.6 15.8	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
Voltage Rise Time	See Application Note: "Capacitive Loading Effects on Start-Up of DC/DC Converters"				
<b>ISOLATION</b>					
Rated Voltage		500			V <sub>DC</sub>
Test Voltage	60 Hz, 10 seconds	500			V <sub>pk</sub>
Resistance			1		GW
Capacitance			55		pF
Leakage Current	$V_{ISO} = 240\text{VAC}, 60\text{Hz}$		5		μArms
<b>OUTPUT</b>					
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 <sub>p-p</sub> mV <sub>rms</sub>
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 <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
<b>REGULATION</b>					
Line Regulation	High Line to Low Line		1.2		%/V <sub>in</sub>
Load Regulation (5V out only)	Rated Load to No Load		15		%
Load Regulation (All other Models)	Rated Load to No Load		10		%
<b>GENERAL</b>					
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
<b>TEMPERATURE</b>					
Specification		-25	+25	+70	°C
Operation		-40		+85	°C
Storage		-40		+110	°C

## ABSOLUTE MAXIMUM RATINGS

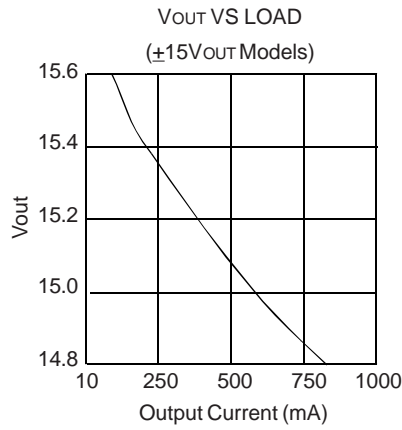
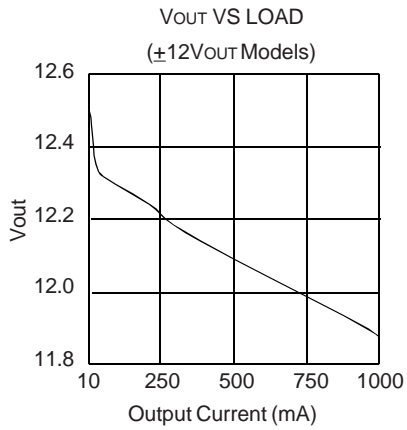
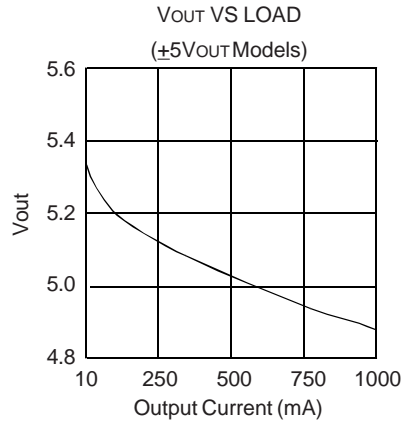
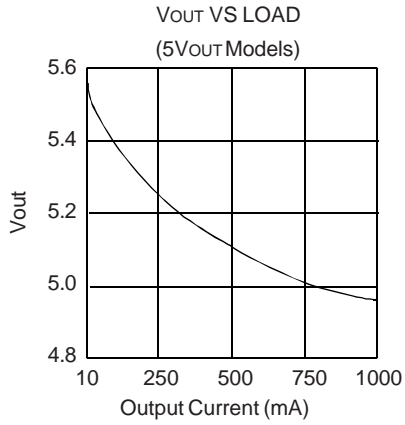
Internal Power Dissipation..... 1.7W  
 Short Circuit Protection..... Momentary  
 Lead Temperature (soldering, 10 seconds max)..... +300°C

## 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.



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