

HPR1XX

0.75 Watt Single Output DC/DC Converter



• Internal Input and Output

• Multiple Package Styles

Filtering

• Low Cost

• Non-Conductive Case

- High Output Power Density: 10 Watts/Inch³
- Extended Temperature Range: -25°C to +85°C
- Efficiency to 79%

The HPR1XX Series uses advanced circuit design and packaging technology to deliver superior reliability and performance. A 170kHz push-pull oscillator is used in the input stage. Beat-frequency oscillation problems are reduced when using the HPR1XX Series with high frequency isolation amplifiers.

Reduced parts count and high efficiency add to the reliability of the

HPR1XX Series. The high efficiency of the HPR1XX Series means less internal power dissipation, as low as 190mW. With reduced heat dissipation the HPR1XX Series can operate at higher temperatures with no degradation. In addition, the high efficiency of the HPR1XX Series means the series is able to offer greater than 10 W/inch³ of output power density. Operation down

to no load will not impact the reliability of the series, although $a \ge 1 \text{ mA}$ minimum load is needed to realize published specifications.

The HPR1XX Series provides the user a low cost converter without sacrificing reliability. The use of surface mounted devices and advanced manufacturing technologies make it possible to offer premium performance and low cost.

SPECIFICATIONS All specifications are typical at $T_A = +25^{\circ}$ C nominal input voltage unless otherwise specified.

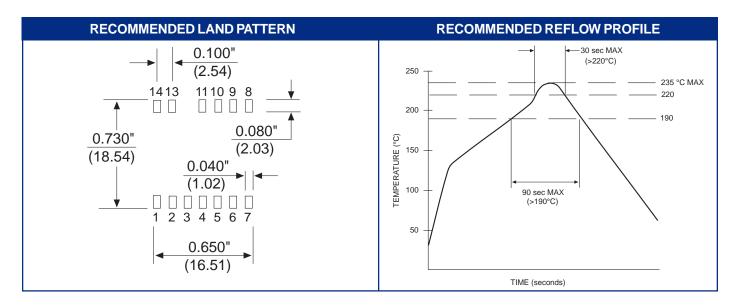
PRODUCT SELECTION CHART											
	NOMINAL INPUT	RATED OUTPUT	RATED OUTPUT	INPUT CURRENT		REFLECTED RIPPLE					
MODEL	VOLTAGE (VDC)	VOLTAGE (VDC)	CURRENT (mA)	NO LOAD (mA)	RATED LOAD (mA)	CURRENT (mAp-p)	EFFICIENCY (%)				
HPR100	5	5	150	20	216	10	69				
HPR101	5	12	62	20	212	5	70				
HPR102	5	15	50	20	212	5	71				
HPR103	5	±5	±75	20	218	5	68				
HPR104	5	±12	±30	20	212	5	68				
HPR105	5	±15	±25	20	200	5	75				
HPR106	12	5	150	10	90	5	69				
HPR107	12	12	62	10	81	5	77				
HPR108	12	15	50	10	81	5	77				
HPR109	12	±5	±75	10	88	5	71				
HPR110	12	±12	±30	10	81	5	74				
HPR111	12	±15	±25	10	81	5	77				
HPR112	15	5	150	8	72	5	69				
HPR113	15	12	62	8	72	5	69				
HPR114	15	15	50	8	72	5	69				
HPR115	15	±5	±75	8	72	5	69				
HPR116	15	±12	±30	8	63	5	76				
HPR117	15	±15	±25	8	63	5	79				
HPR118	24	5	150	8	48	15	65				
HPR119	24	12	62	8	48	15	65				
HPR120	24	15	50	8	45	15	76				
HPR121	24	±5	±75	8	45	15	69				
HPR122	24	±12	±30	8	45	15	67				
HPR123	24	±15	±25	8	45	15	69				

 $Note: Other input to output voltages \, may \, be \, available. \, Please \, contact factory. \, and \, contact factory. \, and \, contact factory \, and \, co$

 $\begin{tabular}{ll} SPECIFICATIONS, ALL MODELS \\ Specifications are at $T_A=+25^{\circ}$C nominal input voltage unless otherwise specified. \\ \end{tabular}$

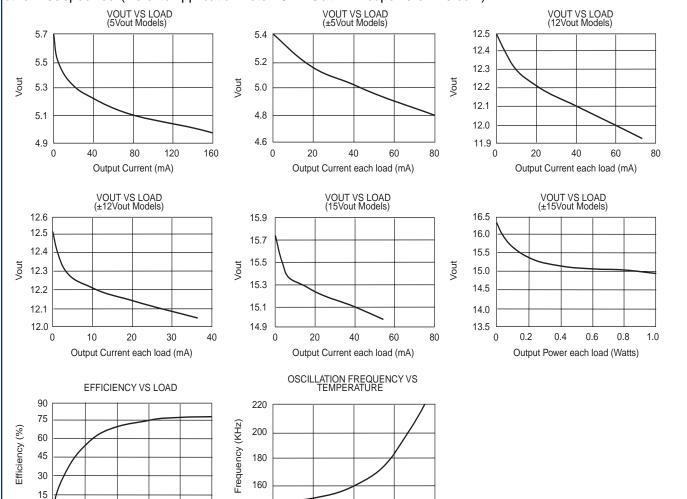
	PARAMETER	COMPITIONS	NULL	T)/D	BEAV	LINUTO
	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
	INPUT					
	Voltage Range		4.5	5	5.5	VDC
5			10.8	12	13.2	VDC
INPUT			13.5	15	16.5	VDC
=			21.6	24	26.4	VDC
	Voltage Rise Time See Typical Perf	ormance Curves & Application	Notes: "Capacitive	Loading Effects or	Start-Up of D0	C/DC Converters"
оитрит	OUTPUT					
	Rated Power			750		mW
	Voltage Setpoint Accuracy	Rated Load, Nominal V _{IN}			±5	%
	Ripple & Noise	BW = DC to 10MHz		45		mVp-p
		BW =10Hz to 2MHz		30		mVrms
	HPR103	BW = DC to 10MHz		90		mVp-p
	Voltage (Over Input Voltage Range)	1mA Load, V _{OUT} = 5V			7	VDC
		1mA Load, V _{OUT} = 12V			15	VDC
		1mA Load, V _{OUT} = 15V			18	VDC
	Temperature Coefficent			.01		%/°C
	REGULATION					
	Line Regulation	High Line to Low Line		1		%/%Vin
GENERAL	GENERAL					
	ISOLATION					
	Rated Voltage		750			VDC
	Test Voltage	60 Hz, 10 Seconds	750			Vrms (1060pk)
	Resistance			10		$G\Omega$
	Capacitance			25	100	pF
	Leakage Current	V _{ISO} = 240VAC, 60Hz		2	8.5	μArms
	Switching Frequency			170		kHz
	Frequency Change	Over Line and Load		24		%
	Package Weight			2		g
മ	MTTF per MIL-HDBK-217, Rev. E*	Circuit Stress Method				
	Ground Benign	T _A =+25°C		7.9		MHr
	Fixed Ground	T _A =+35°C		1.9		MHr
	Naval Sheltered	$T_A = +35^{\circ}C$		1.2		MHr
	Airborne Uninhabited Fighter	T _A =+35°C		300		kHr
	TEMPERATURE					
	Specification		-25	+25	+85	°C
	Operation		-40		+100	℃
	Storage		-40		+110	∞
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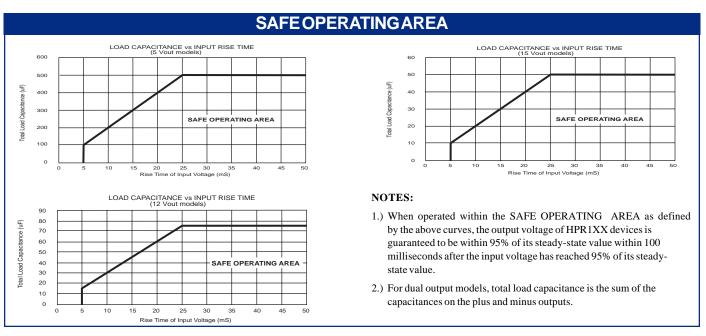
^{*} For demonstrated MTTF results reference: Power Convertibles Reliability Report HPR105.



TYPICAL PERFORMANCE CURVES

Specifications are at $T_A = +25$ °C nominal input voltage, nominal load, recommended external components applied, unless otherwise specified. (Refer to Application Note DCAN-9 at www.cdpoweronline.com)





Temperature (°C)

60

140

-30

0

0

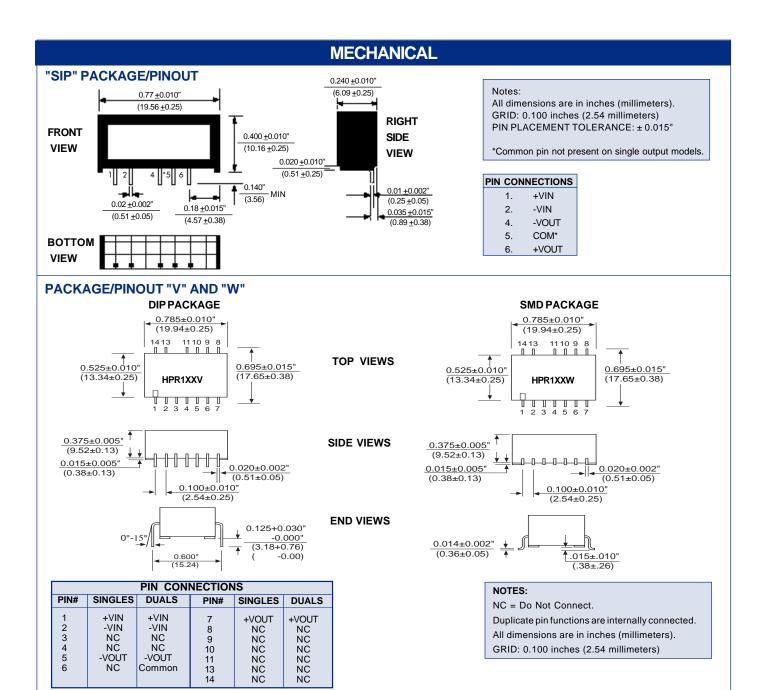
40

% of Rated Load (%)

60

80

100



ABSOLUTE MAXIMUM RATINGS

* NOTE: Refer to Reflow Profile for SMD Models.

ORDERING INFORMATION HPR 1XX V/W Device Family HPR Indicates DC/DC Converter Model Number Selected from Table of Electrical Characteristics Package Option There is "no" package designator for the SIP package V = DIP Package W = SMD Package

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