

### FEATURES

- Low Cost
- Multiple Package Styles
- Internal Input and Output
- Filtering
- Non-Conductive Case
- High Output Power Density:  
10 Watts/Inch<sup>3</sup>
- Extended Temperature Range:  
-25°C to +85°C
- Efficiency to 79%
- RoHS Compliant



The HPR1XXC 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 HPR1XXC Series with high frequency isolation amplifiers.

Reduced parts count and high efficiency add to the reliability of the HPR1XXC Series. The high efficiency of the HPR1XXC Series means less internal power dissipation, as low as 190mW.

With reduced heat dissipation the HPR1XXC Series can operate at higher temperatures with no degradation. In addition, the high efficiency of the HPR1XXC Series means the series is able to offer greater than 10 W/inch<sup>3</sup> of output power density. Operation down to no load will not impact the reliability of the series, although a  $\geq 1$ mA minimum load is needed to realize published specifications.

The HPR1XXC 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  $T_A = +25^\circ\text{C}$  nominal input voltage unless otherwise specified.

### PRODUCT SELECTION CHART

MODEL	NOMINAL INPUT VOLTAGE (VDC)	RATED OUTPUT VOLTAGE (VDC)	RATED OUTPUT CURRENT (mA)	INPUT CURRENT		REFLECTED RIPPLE CURRENT (mAp-p)	EFFICIENCY (%)
				NO LOAD (mA)	RATED LOAD (mA)		
HPR100C	5	5	150	20	216	10	69
HPR101C	5	12	62	20	212	5	70
HPR102C	5	15	50	20	212	5	71
HPR103C	5	$\pm 5$	$\pm 75$	20	218	5	68
HPR104C	5	$\pm 12$	$\pm 30$	20	212	5	68
HPR105C	5	$\pm 15$	$\pm 25$	20	200	5	75
HPR106C	12	5	150	10	90	5	69
HPR107C	12	12	62	10	81	5	77
<del>HPR108C</del>	<del>12</del>	<del>15</del>	<del>50</del>	<del>10</del>	<del>81</del>	<del>5</del>	<del>77</del>
<del>HPR109C</del>	<del>12</del>	<del><math>\pm 5</math></del>	<del><math>\pm 75</math></del>	<del>10</del>	<del>88</del>	<del>5</del>	<del>71</del>
HPR110C	12	$\pm 12$	$\pm 30$	10	81	5	74
HPR111C	12	$\pm 15$	$\pm 25$	10	81	5	77
HPR112C	15	5	150	8	72	5	69
HPR113C	15	12	62	8	72	5	69
<del>HPR114C</del>	<del>15</del>	<del>15</del>	<del>50</del>	<del>8</del>	<del>72</del>	<del>5</del>	<del>69</del>
<del>HPR115C</del>	<del>15</del>	<del><math>\pm 5</math></del>	<del><math>\pm 75</math></del>	<del>8</del>	<del>72</del>	<del>5</del>	<del>69</del>
HPR116C	15	$\pm 12$	$\pm 30$	8	63	5	76
HPR117C	15	$\pm 15$	$\pm 25$	8	63	5	79
HPR118C	24	5	150	8	48	15	65
<del>HPR119C</del>	<del>24</del>	<del>12</del>	<del>62</del>	<del>8</del>	<del>48</del>	<del>15</del>	<del>65</del>
HPR120C	24	15	50	8	45	15	76
<del>HPR121C</del>	<del>24</del>	<del><math>\pm 5</math></del>	<del><math>\pm 75</math></del>	<del>8</del>	<del>45</del>	<del>15</del>	<del>69</del>
HPR122C	24	$\pm 12$	$\pm 30$	8	45	15	67
HPR123C	24	$\pm 15$	$\pm 25$	8	45	15	69

Note: Other input to output voltages may be available. Please contact Murata Power Solutions.



For full details go to  
[www.murata-ps.com/rohs](http://www.murata-ps.com/rohs)

### SPECIFICATIONS, ALL MODELS

Specifications are at  $T_A = +25^\circ\text{C}$  nominal input voltage unless otherwise specified.

	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	
INPUT	<b>INPUT</b>						
	Voltage Range		4.5	5	5.5	VDC	
			10.8	12	13.2	VDC	
			13.5	15	16.5	VDC	
			21.6	24	26.4	VDC	
OUTPUT	Voltage Rise Time	See Typical Performance Curves & Application Notes: "Capacitive Loading Effects on Start-Up of DC/DC Converters"					
	<b>OUTPUT</b>						
	Rated Power				750	mW	
	Voltage Setpoint Accuracy	Rated Load, Nominal $V_{IN}$			$\pm 5$	%	
	Ripple & Noise	BW = DC to 10MHz		150	200	mVp-p	
		BW = 10Hz to 2MHz		30	40	mVrms	
	Voltage (Over Input Voltage Range)	1mA to Rated Current, $V_{OUT} = 5V$		4.75		7	VDC
		1mA to Rated Current, $V_{OUT} = 12V$		11.40		15	VDC
		1mA to Rated Current, $V_{OUT} = 15V$		14.25		18	VDC
	Temperature Coefficient			.01	.05	%/°C	
<b>REGULATION</b>							
Load Regulation (All other modes)	Rated Load to 1mA Load			3	%		
GENERAL	<b>GENERAL</b>						
	<b>ISOLATION</b>						
	Rated Voltage		750			VDC	
	Test Voltage	60 Hz, 10 Seconds	750			Vrms	
	Resistance		10			GΩ	
	Capacitance			25	100	pF	
	Leakage Current	$V_{ISO} = 240\text{VAC}, 60\text{Hz}$		2	8.5	μArms	
	Switching Frequency			170		kHz	
	Frequency Change	Over Line and Load		24		%	
	Package Weight				3	g	
	MTTF per MIL-HDBK-217, Rev. F*	Circuit Stress Method					
	Ground Benign	$T_A = +25^\circ\text{C}$	7.9			MHr	
	Fixed Ground	$T_A = +35^\circ\text{C}$	1.9			MHr	
	Naval Sheltered	$T_A = +35^\circ\text{C}$	1.2			MHr	
	Airborne Uninhabited Fighter	$T_A = +35^\circ\text{C}$	300			kHr	
	<b>TEMPERATURE</b>						
	Specification		-25	+25	+85	°C	
Operation		-40		+100	°C		
Storage		-40		+110	°C		

### SOLDERING INFORMATION

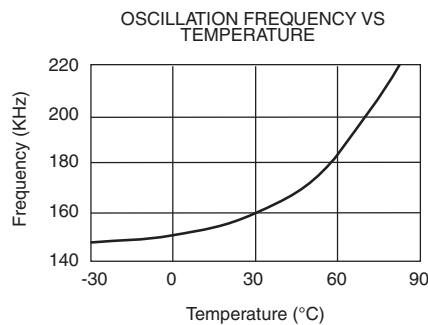
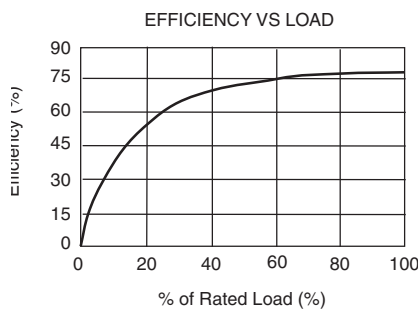
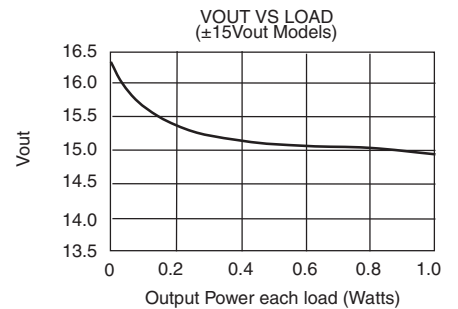
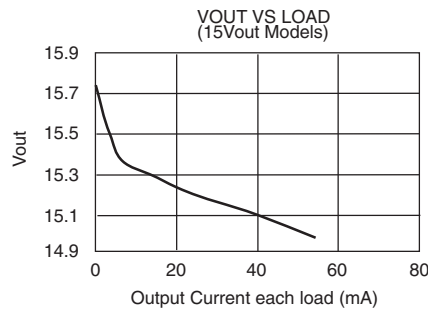
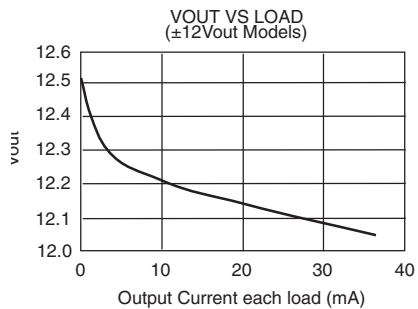
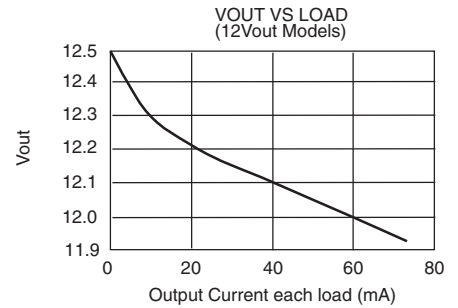
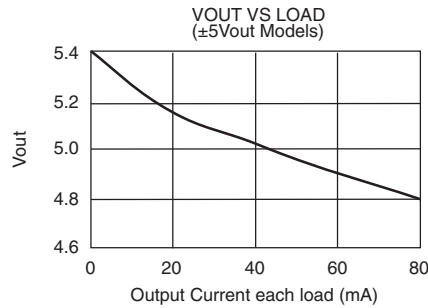
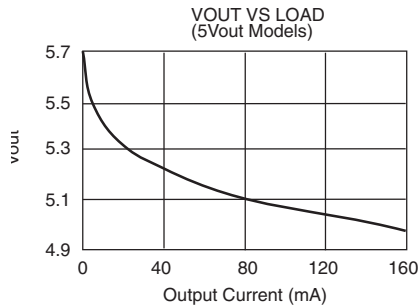
The HPR1XXC devices are intended for wave soldering or manual soldering.

**They are not intended to be subject to surface mount processes under any circumstances.**

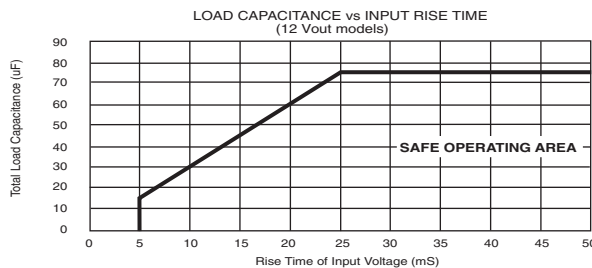
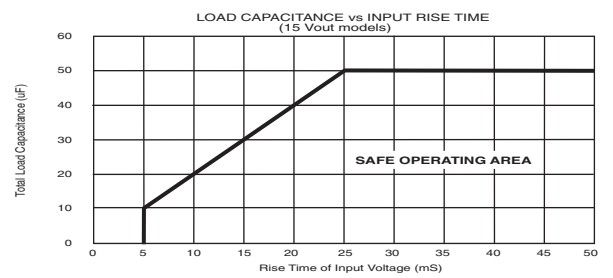
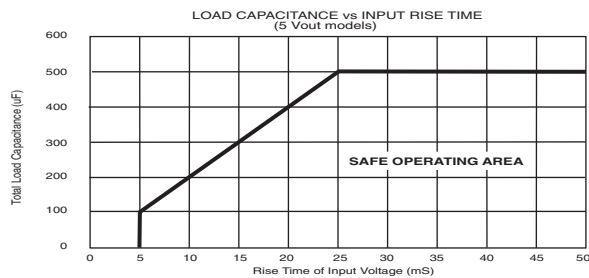
The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of  $260^\circ\text{C}$  for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and internal temperatures within the converter will not exceed  $175^\circ\text{C}$ . Care should be taken to control manual soldering limits identical to that of wave soldering.

**TYPICAL PERFORMANCE CURVES**

Specifications are at  $T_A = +25^\circ\text{C}$  nominal input voltage and nominal load.



**SAFE OPERATING AREA**

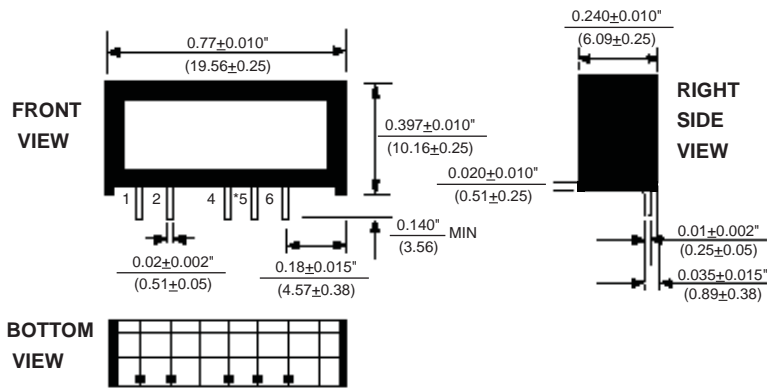


**NOTES:**

- 1.) When operated within the SAFE OPERATING AREA as defined by the above curves, the output voltage of HPR1XXC devices is guaranteed to be within 95% of its steady-state value within 100 milliseconds after the input voltage has reached 95% of its steady-state value.
- 2.) For dual output models, total load capacitance is the sum of the capacitances on the plus and minus outputs.

**MECHANICAL**

**“SIP” PACKAGE/PINOUT**



**Notes:**  
 All dimensions are in inches (millimeters).  
 GRID: 0.100 inches (2.54 millimeters)  
 PIN PLACEMENT TOLERANCE:  $\pm 0.015"$   
 MATERIAL: Lead material is phosphor bronze; lead finish is 100-300 microinches of matte tin over a nickel barrier layer of 5-40 microinches.  
 \*Common pin not present on single output models.

**PIN CONNECTIONS**

1.	+VIN
2.	-VIN
4.	-VOUT
5.	COM*
6.	+VOUT

**ABSOLUTE MAXIMUM RATINGS**

Internal Power Dissipation ..... 450mW  
 Short Circuit Duration..... Momentary

**ORDERING INFORMATION**

