



# THE DATASHEET OF HPR117VC





**Discontinued**

The HPR1XXVC 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 HPR1XXVC Series with high frequency isolation amplifiers.

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

HPR1XXVC Series. The high efficiency of the HPR1XXVC Series means less internal power dissipation, as low as 190mW. With reduced heat dissipation the HPR1XXVC Series can operate at higher temperatures with no degradation. In addition, the high efficiency of the HPR1XXVC 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 HPR1XXVC 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.

Model		Nominal Input Voltage $V_{DC}$	Rated Output Voltage $V_{OC}$	Rated Output Current mA	Input Current		Reflected Ripple Current mAp-p	Efficiency %	Recommended Alternatives
					No Load	Rated Load Typ.			
Discontinued	HPR117VC	15	$\pm 15$	$\pm 25$	8	63	5	79	MEA1D1515DC
Discontinued	HPR100VC	5	5	150	20	216	10	69	NKE0505DC / NME0505DC
Discontinued	HPR105VC	5	$\pm 15$	$\pm 25$	20	200	5	75	NMA0515DC / MEA1D0515DC
Discontinued	HPR101VC	5	12	62	20	212	5	70	NKE0512DC / NME0512DC
Discontinued	HPR102VC	5	15	50	20	212	5	71	NKE0515DC / NME0515DC
Discontinued	HPR103VC	5	$\pm 5$	$\pm 72$	20	218	5	68	NMA0505DC / MEA1D0505DC
Discontinued	HPR104VC	5	$\pm 12$	$\pm 30$	20	212	5	68	NMA0512DC / MEA1D0512DC
Discontinued	HPR106VC	12	5	150	10	90	5	69	NKE1205DC / NME1205DC
Discontinued	HPR107VC	12	12	62	10	81	5	77	NKE1212DC / NME1212DC
Discontinued	HPR108VC	12	15	50	10	81	5	77	NKE1215DC / NME1215DC
Discontinued	HPR109VC	12	$\pm 5$	$\pm 72$	10	88	5	71	NMA1205DC / MEA1D1205DC
Discontinued	HPR110VC	12	$\pm 12$	$\pm 30$	10	81	5	74	NMA1212DC / MEA1D1212DC
Discontinued	HPR111VC	12	$\pm 15$	$\pm 25$	10	81	5	77	NMA1215DC / MEA1D1215DC
Discontinued	HPR112VC	15	5	150	8	72	5	69	MEV1S1505DC
Discontinued	HPR113VC	15	12	62	8	72	5	69	MEV1S1512DC
Discontinued	HPR114VC	15	15	50	8	72	5	69	MEV1S1515DC
Discontinued	HPR115VC	15	$\pm 5$	$\pm 72$	8	72	5	69	MEA1D1505DC
Discontinued	HPR116VC	15	$\pm 12$	$\pm 30$	8	63	5	76	MEA1D1512DC
Discontinued	HPR118VC	24	5	150	8	48	15	65	NME2405DC / MEV1S2405DC
Discontinued	HPR119VC	24	12	62	8	48	15	65	NME2412DC / MEV1S2412DC
Discontinued	HPR120VC	24	15	50	8	45	15	76	NME2412DC / MEV1S2415DC
Discontinued	HPR121VC	24	$\pm 5$	$\pm 72$	8	45	15	69	MEA1D2405DC
Discontinued	HPR122VC	24	$\pm 12$	$\pm 30$	8	45	15	67	MEA1D2412DC
Discontinued	HPR123VC	24	$\pm 15$	$\pm 25$	8	45	15	69	MEA1D2415DC



### 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	
	Voltage Rise Time See Typical Performance Curves & Application Notes: "Capacitive Loading Effects on Start-Up of DC/DC Converters"						
OUTPUT	<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	
	REGULATION	<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			$\text{G}\Omega$	
	Capacitance			25	100	pF	
	Leakage Current	$V_{ISO} = 240\text{VAC}, 60\text{Hz}$		2	8.5	$\mu\text{Arms}$	
	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		

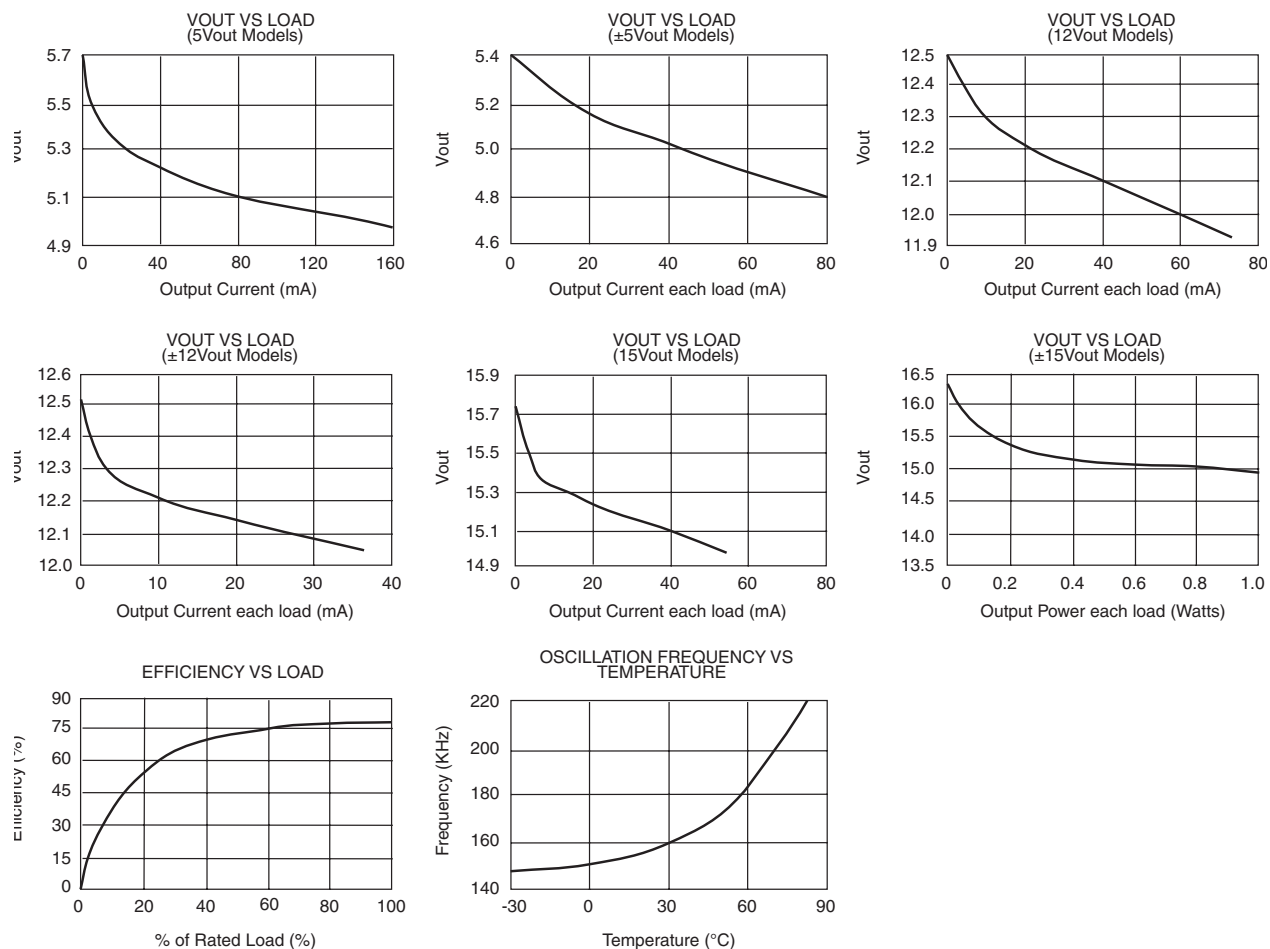
### SOLDERING INFORMATION

The HPR1XXVC devices are intended for wave soldering or manual soldering.  
**They are not intended to be subject to surface mount processes under any circumstances.**

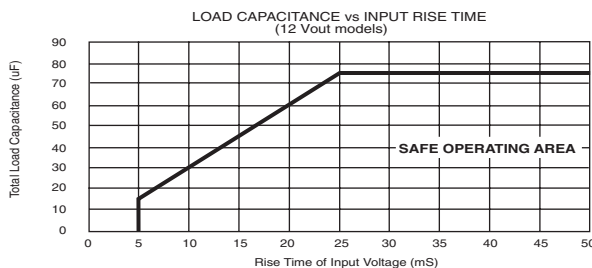
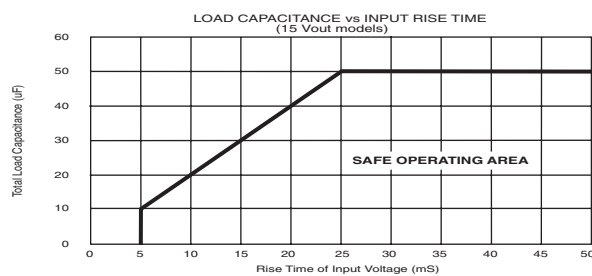
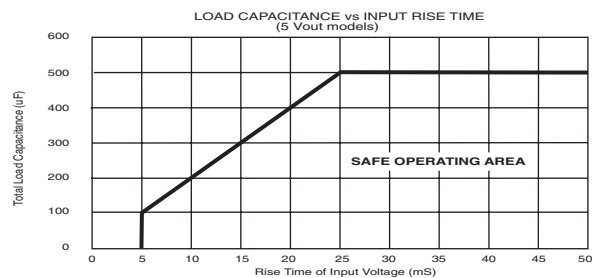
The normal wave soldering process can be used with these devices where the device is subjected to a maximum wave temperature of  $260^\circ\text{C}$  for a period of no more than 10 seconds. Within this time and temperature range, the integrity of the device's plastic body will not be compromised and 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**

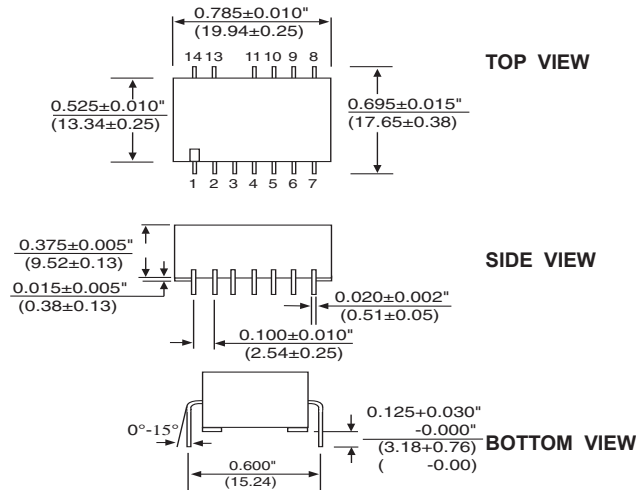


**NOTES:**

- 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**

**PACKAGE/PINOUT "V"**  
**DIP PACKAGE**



PIN CONNECTIONS					
PIN#	SINGLES	DUALS	PIN#	SINGLES	DUALS
1	+VIN	+VIN	7	+VOUT	+VOUT
2	-VIN	-VIN	8	NC	NC
3	NC	NC	9	NC	NC
4	NC	NC	10	NC	NC
5	-VOUT	-VOUT	11	NC	NC
6	NC	Common	13	NC	NC
			14	NC	NC

**NOTES:**

NC = Do Not Connect.

Duplicate pin functions are internally connected.

All dimensions are in inches (millimeters).

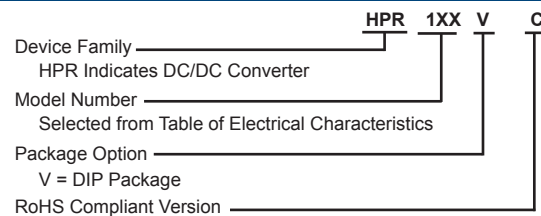
GRID: 0.100 inches (2.54 millimeters)

MATERIAL: Lead material is phosphor bronze; lead finish is 100-300 microinches of matte tin over a nickel barrier layer of 5-40 microinches.

**ABSOLUTE MAXIMUM RATINGS**

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

**ORDERING INFORMATION**



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 ISO 9001 and 14001 REGISTERED



**This product is subject to the following operating requirements and the Life and Safety Critical Application Sales Policy:**

Refer to: <http://www.murata-ps.com/requirements/>

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