



# OBSOLETE PRODUCT

Contact Factory for Replacement Model

### 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 HPR1XXWC 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 HPR1XXWC Series with high frequency isolation amplifiers.

Reduced parts count and high efficiency add to the reliability of the HPR1XXWC Series. The high efficiency of the HPR1XXWC Series means less internal power dissipation, as low as 190mW.

With reduced heat dissipation the HPR1XXWC Series can operate at higher temperatures with no degradation. In addition, the high efficiency of the HPR1XXWC 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 >1mA minimum load is needed to realize published specifications.

The HPR1XXWC 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.

All specifications are typical at TA = +25°C nominal input voltage unless otherwise specified.

### PRODUCT SELECTION CHART

| Model    |          | Nominal Input Voltage | Rated Output Voltage | Rated Output Current | Input Current |                 | Reflected Ripple Current | Efficiency | Recommended Alternatives |
|----------|----------|-----------------------|----------------------|----------------------|---------------|-----------------|--------------------------|------------|--------------------------|
|          |          |                       |                      |                      | No Load       | Rated Load Typ. |                          |            |                          |
|          |          | V <sub>dc</sub>       | V <sub>dc</sub>      | mA                   | mA            |                 | mAp-p                    | %          |                          |
| NRND*    | HPR100WC | 5                     | 5                    | 150                  | 20            | 216             | 10                       | 69         | NTE0505MC                |
| OBSOLETE | HPR105WC | 5                     | ±15                  | ±25                  | 20            | 200             | 5                        | 75         | NTA0515MC                |
| NRND*    | HPR109WC | 12                    | ±5                   | ±75                  | 10            | 88              | 5                        | 71         | NTA1205MC                |
| OBSOLETE | HPR101WC | 5                     | 12                   | 62                   | 20            | 212             | 5                        | 70         | NTE0512MC                |
| OBSOLETE | HPR102WC | 5                     | 15                   | 50                   | 20            | 212             | 5                        | 71         | NTE0515MC                |
| OBSOLETE | HPR103WC | 5                     | ±5                   | ±75                  | 20            | 218             | 5                        | 68         | NTA0505MC                |
| OBSOLETE | HPR104WC | 5                     | ±12                  | ±30                  | 20            | 212             | 5                        | 68         | NTA0512MC                |
| OBSOLETE | HPR106WC | 12                    | 5                    | 150                  | 10            | 90              | 5                        | 69         | NTE1205MC                |
| OBSOLETE | HPR107WC | 12                    | 12                   | 62                   | 10            | 81              | 5                        | 77         | NTE1212MC                |
| OBSOLETE | HPR108WC | 12                    | 15                   | 50                   | 10            | 81              | 5                        | 77         | NTE1215MC                |
| OBSOLETE | HPR110WC | 12                    | ±12                  | ±30                  | 10            | 81              | 5                        | 74         | NTA1212MC                |
| OBSOLETE | HPR111WC | 12                    | ±15                  | ±25                  | 10            | 81              | 5                        | 77         | NTA1215MC                |
| OBSOLETE | HPR112WC | 15                    | 5                    | 150                  | 8             | 72              | 5                        | 69         | -                        |
| OBSOLETE | HPR113WC | 15                    | 12                   | 62                   | 8             | 72              | 5                        | 69         | -                        |
| OBSOLETE | HPR114WC | 15                    | 15                   | 50                   | 8             | 72              | 5                        | 69         | -                        |
| OBSOLETE | HPR115WC | 15                    | ±5                   | ±75                  | 8             | 72              | 5                        | 69         | -                        |
| OBSOLETE | HPR116WC | 15                    | ±12                  | ±30                  | 8             | 63              | 5                        | 76         | -                        |
| OBSOLETE | HPR117WC | 15                    | ±15                  | ±25                  | 8             | 63              | 5                        | 79         | -                        |
| OBSOLETE | HPR118WC | 24                    | 5                    | 150                  | 8             | 48              | 15                       | 65         | -                        |
| OBSOLETE | HPR119WC | 24                    | 12                   | 62                   | 8             | 48              | 15                       | 65         | -                        |
| OBSOLETE | HPR120WC | 24                    | 15                   | 50                   | 8             | 45              | 15                       | 76         | -                        |
| OBSOLETE | HPR121WC | 24                    | ±5                   | ±75                  | 8             | 45              | 15                       | 69         | -                        |
| OBSOLETE | HPR122WC | 24                    | ±12                  | ±30                  | 8             | 45              | 15                       | 67         | -                        |
| OBSOLETE | HPR123WC | 24                    | ±15                  | ±25                  | 8             | 45              | 15                       | 69         | -                        |



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

\*Not Recommended for New Designs

### SPECIFICATIONS, ALL MODELS

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

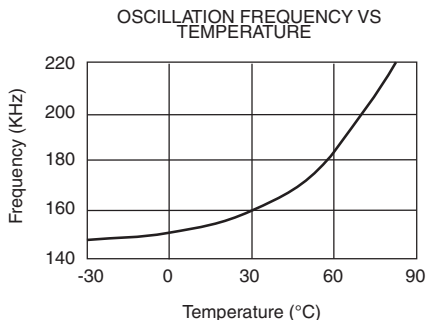
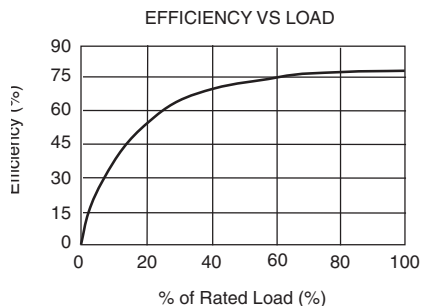
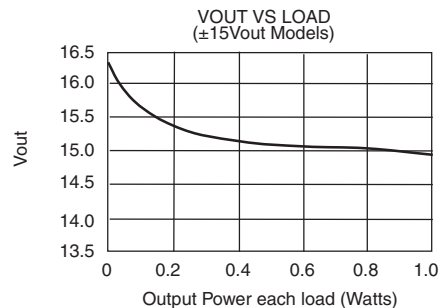
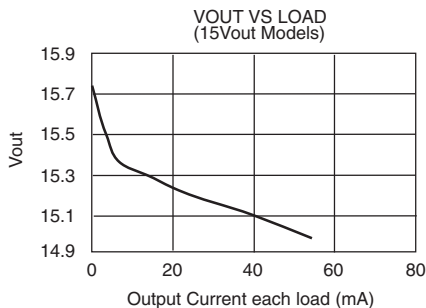
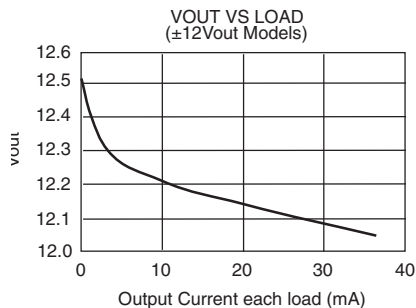
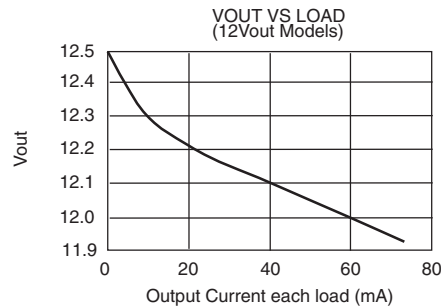
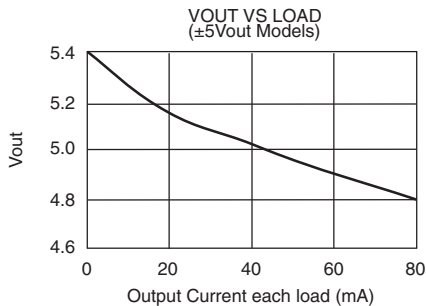
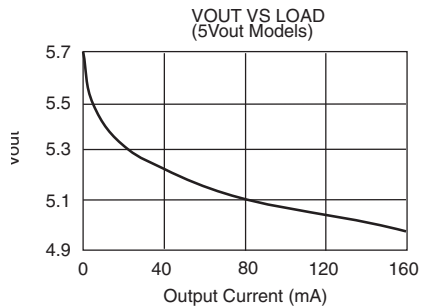
|                                   | PARAMETER  | CONDITIONS                             | MIN  | TYP   | MAX     | UNITS |       |
|-----------------------------------|--|--|------|-------|---------|-------|-------|
| INPUT                             | <b>INPUT</b>   |  |      |       |         |       |       |
|                                   | 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  |       |
|                                   | <b>REGULATION</b>  |  |      |       |         |       |       |
| Load Regulation (All other modes) | Rated Load to 1mA Load   |  |      | 3     |         | %     |       |
| GENERAL                           | <b>GENERAL 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

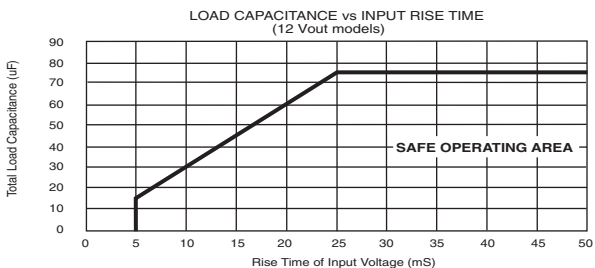
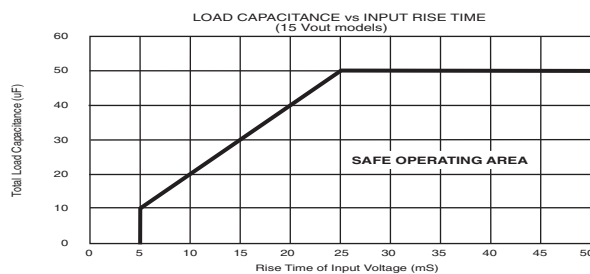
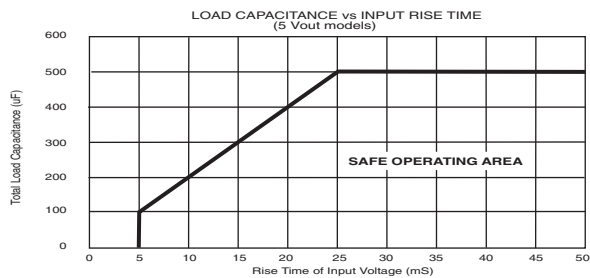
The surface mount versions of the HPR1XXWC series are designed for SMT reflow soldering. During this standard process devices should be heated at a rate not to exceed 3 degrees C per second. The peak reflow temperature is 260 degrees C. The device should not be exposed to the peak temperature  $\pm 10$  degrees C for more than 12 seconds. The cool down rate for this device should not exceed 3 degrees C per second.

**TYPICAL PERFORMANCE CURVES**

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



**SAFE OPERATING AREA**



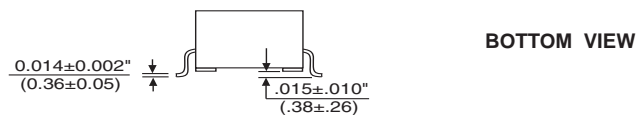
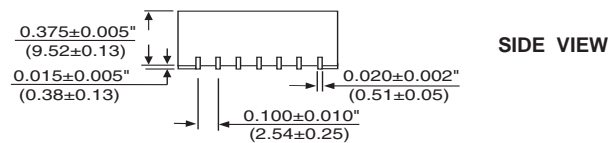
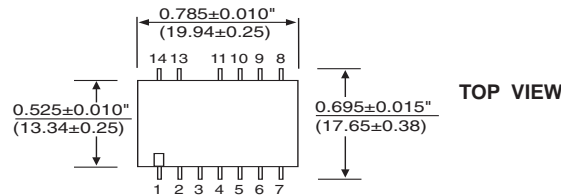
**NOTES:**

- 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 "W"

SMD 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

