

## 3 WATTS UNREGULATED DC/DC CONVERTERS

### PWR12XX



#### DESCRIPTION

The PWR12XX Series offers a broad line of low-cost, high-performance, unregulated, single and dual output DC/DC converters in a 24-pin DIP package. These miniature converters offer better performance and lower cost in industry-standard packages and pinouts. The PWR12XX Series is internally filtered. No external parts are necessary.

Surface mounted components and a low thermal resistance encapsulant allow for superior reliability, excellent thermal dissipation, and an extended temperature range of  $-25^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  at no extra cost.

The PWR12XX Series is ideal for use on high-density PC boards where isolated, unregulated, power is needed. Standoffs allow for PC board cleaning, helping preserve isolation. They also allow for visual inspection of solder joints.

#### FEATURES

- LOW COST
- INDUSTRY-STANDARD PACKAGE
- SINGLE AND DUAL OUTPUTS
- 24-PIN DIP PACKAGE
- BUILT-IN STANDOFFS
- INTERNAL INPUT AND OUTPUT FILTERING

#### MECHANICAL

**TOP VIEW**

**SIDE VIEW**

NC = Do Not Connect  
Duplicate pin functions are internally connected.  
All dimensions are in inches (millimeters).  
GRID: 0.100 inches (2.54 millimeters)  
PIN PLACEMENT TOLERANCE:  $\pm 0.015''$

**MATERIAL:** Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance, wide operating temperature range, and good electrical properties under high humidity environments. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is brass with a solder plated surface to allow ease of solderability.

**BOTTOM VIEW**

PIN #	SINGLES	DUALS
1	+VIN	+VIN
2	NC	-VOUT
3	NC	Common
10	-VOUT	Common
11	+VOUT	+VOUT
12	-VIN	-VIN
13	-VIN	-VIN
14	+VOUT	+VOUT
15	-VOUT	Common
22	NC	Common
23	NC	-VOUT
24	+VIN	+VIN

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# ELECTRICAL SPECIFICATIONS

Specifications typical at  $T_A = +25^\circ\text{C}$ , nominal input voltage, rated output current unless otherwise noted.

MODEL	NOMINAL INPUT VOLTAGE (Vdc)	RATED OUTPUT VOLTAGE (Vdc)	RATED OUTPUT CURRENT (mA)	INPUT CURRENT		REFLECTED RIPPLE CURRENT (mApp)
				NO LOAD (mA)	RATED LOAD (mA)	
PWR1200	5	5	600	30	800	45
PWR1201	5	12	250	30	800	45
PWR1202	5	15	200	30	800	45
PWR1203	5	$\pm 5$	$\pm 300$	30	800	45
PWR1204	5	$\pm 12$	$\pm 125$	30	800	45
PWR1205	5	$\pm 15$	$\pm 100$	30	800	45
PWR1206	12	5	600	30	330	25
PWR1207	12	12	250	30	330	25
PWR1208	12	15	200	30	330	25
PWR1209	12	$\pm 5$	$\pm 300$	30	330	25
PWR1210	12	$\pm 12$	$\pm 125$	30	330	25
PWR1211	12	$\pm 15$	$\pm 100$	30	330	25
PWR1212	15	5	600	30	265	20
PWR1213	15	12	250	30	265	20
PWR1214	15	15	200	30	265	20
PWR1215	15	$\pm 5$	$\pm 300$	30	265	20
PWR1216	15	$\pm 12$	$\pm 125$	30	265	20
PWR1217	15	$\pm 15$	$\pm 100$	30	265	20
PWR1218	24	5	600	30	165	20
PWR1219	24	12	250	30	165	20
PWR1220	24	15	200	30	165	20
PWR1221	24	$\pm 5$	$\pm 300$	30	165	20
PWR1222	24	$\pm 12$	$\pm 125$	30	165	20
PWR1223	24	$\pm 15$	$\pm 100$	30	165	20
PWR1240	5	9	333	30	800	45
PWR1241	12	9	333	30	330	25
PWR1242	15	9	333	30	265	20
PWR1243	24	9	333	30	165	20

# COMMON SPECIFICATIONS

Specifications typical at  $T_A = +25^\circ\text{C}$ , rated input voltage, rated output current unless otherwise noted.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b> Voltage Range		4.5 10.8 13.5 21.6	5 12 15 24	5.5 13.2 16.5 26.4	V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub>
<b>ISOLATION</b> Rated Voltage Test Voltage Resistance Capacitance Leakage Current	60 Hz, 10 Seconds    V <sub>ISO</sub> = 240V <sub>AC</sub> , 60HZ	500 500	10 90 10		V <sub>DC</sub> V <sub>pk</sub> G <sub>N</sub> pF $\mu\text{Arms}$
<b>OUTPUT</b> Rated Power Voltage Setpoint Accuracy Temperature Coefficient Ripple and Noise (BW = DC to 20MHz)  Voltage  Line Regulation Load	Rated Load, Nominal V <sub>IN</sub>  No External Components 10 $\mu\text{F}$ Across Each Output 10 $\mu\text{F}$ Across Each Output No Load, V <sub>OUT</sub> = +5V No Load, V <sub>OUT</sub> = $\pm 12\text{V}$ No Load, V <sub>OUT</sub> = $\pm 15\text{V}$  No Load To Rated Load		3 $\pm 3$ $\pm 0.02$  150 10 30  1.2 6	       7 $\pm 15$ $\pm 18$	W % %/°C mVp-p mVrms mVp-p V <sub>DC</sub> V <sub>DC</sub> V <sub>DC</sub> %/V <sub>IN</sub> %
<b>GENERAL</b> Package Weight Switching Frequency MTTF per MIL-HDBK-217, Rev E* Efficiency	Circuit Stress Method		12 150 700 75		g kHz kHr %
<b>TEMPERATURE</b> Specification Operation Storage		-25 -40 -40	+25	+85 +125 +125	°C °C °C

\* For demonstrated MTTF results reference Power Convertible's Reliability Report PWR1205

# ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration .....	Momentary
Internal Power Dissipation .....	1.3W
Lead Temperature (soldering, 10 seconds max) .....	+300°C

# APPLICATION NOTES

## UNBALANCED LOADS

Unbalanced loads may be used on dual output models with either side providing up to its rated current. Output voltages, by design, will track each other in an unbalanced state within ±10% of one another.

## OUTPUT NOISE

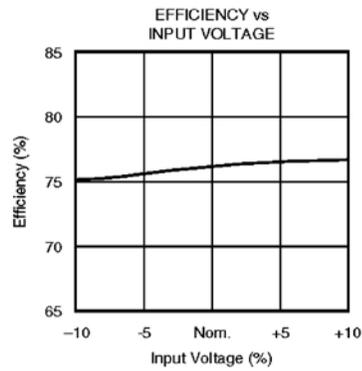
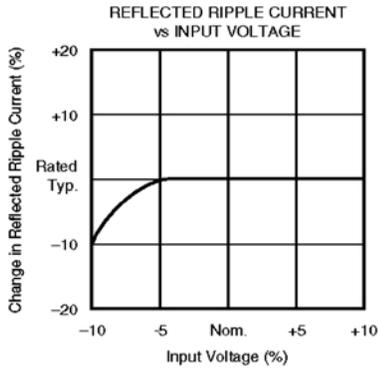
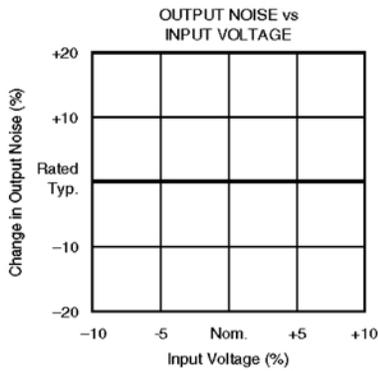
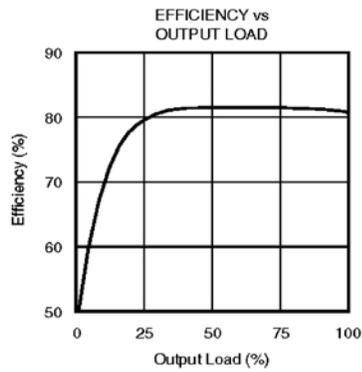
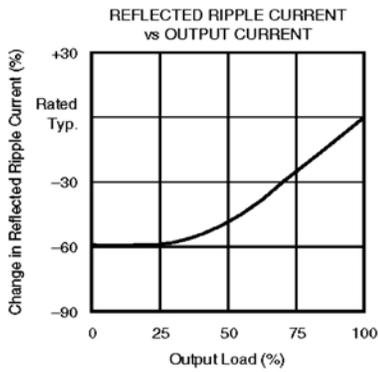
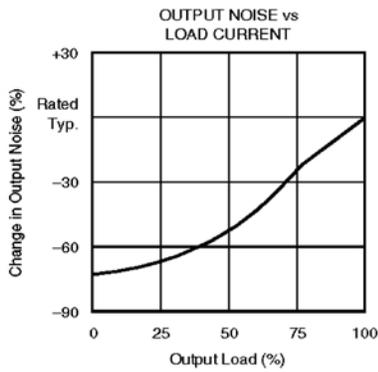
Output noise can be reduced to 30mVp-p, typically, by adding a 10µF tantalum capacitor with an equivalent series resistance (ESR) of less than 150mΩ at 10kHz across each output.

# ORDERING INFORMATION

Device Family _____	<b>PWR</b>	<b>12XX</b>
PWR indicates DC/DC converter		
Model Number _____		
Selected from Table of Electrical Characteristics		

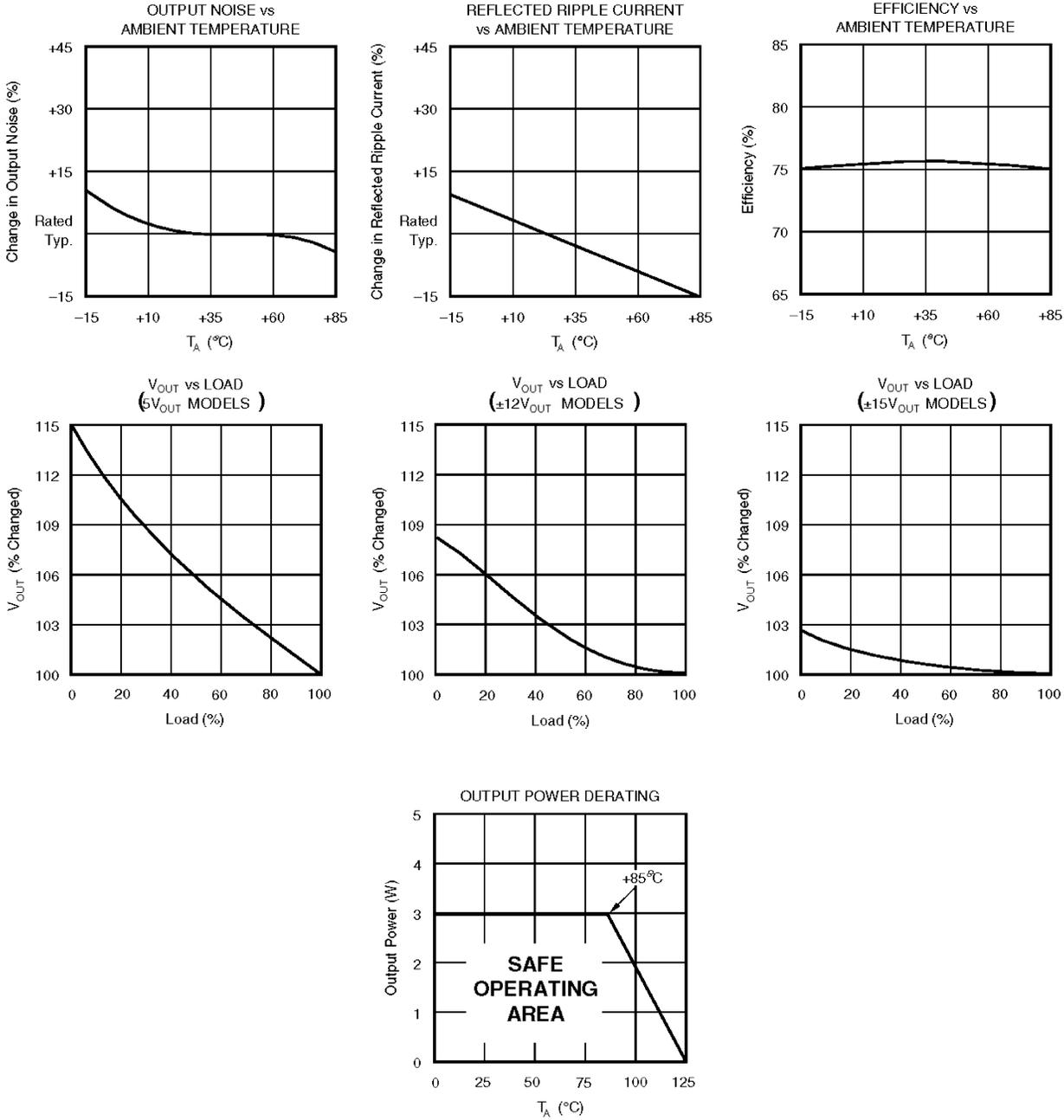
# TYPICAL PERFORMANCE CURVES

T<sub>A</sub> = +25°C, Rated Input Voltage, Rated Output Current unless otherwise noted.



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