POWER CONVERTIBLES™

WP15R SERIES

15 WATTS
REGULATED
(10W ON 3.3V OUTPUT)

DC/DC CONVERTERS

WIDE INPUT VOLTAGE RANGE, SINGEL, DUAL & TRIPLE OUTPUTS

FEATURES

- WIDE TEMPERATURE RANGE: -40° TO +85°
- HIGH EFFICIENCY: to 83%
- SHORT-CIRCUIT PROTECTION
- SIX-SIDED SHIELDING
- REMOTE ON/OFF
- OVERVOLTAGE PROTECTION
- <1mA SHUTDOWN IDLE CURRENT

APPLICATIONS

- TELECOMMUNICATIONS EQUIPMENT
- BATTERY POWERED SYSTEMS
- PORTABLE INSTRUMENTS
- PROCESS CONTROL EQUIPMENT
- TRANSPORTATION EQUIPMENT
- DISTRIBUTED POWER SYSTEMS
- CELLULAR TELEPHONE EQUIPMENT

DESCRIPTION

The WP15R Series is designed specifically for battery powered, telecommunications, and other applications where wide input voltage range, high efficiency, high power density, and output voltage regulation are critical features. Three voltage input ranges are available: 9-18V, 18-36V, and 36-72V.

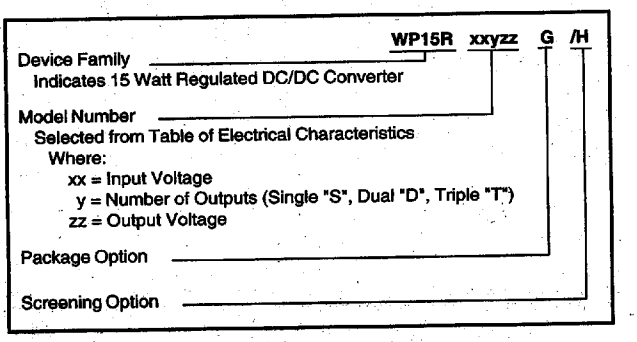
Advanced circuit design utilizing surface mount components results in minimal parts count, a low profile, and high reliability. The package of the WP15R is six-sided shielded to reduce system noise problems. This shield is connected to input ground.

The controller used in the input stage of the WP15R Series has been designed to provide current limiting for short-circuit protection. In addition, the Series features overvoltage protection, six-sided shielding to reduce EMI which can interfere with sensitive analog measurements or system timing signals, and remote on-off control. All WP15R models will operate safely even under no load conditions (although there is a minimum load specified for regulation measurement purposes.)

The high efficiency of the WP15R Series means less internal power dissipation and lower thermal stress. This permits the WP15R to operate at higher temperatures with no degradation in performance.

As with all Burr-Brown Power Convertibles, the emphasis is on reliability and quality. Conservative design rules and rigorous qualification procedures make it possible to offer the user low cost without sacrificing reliability or performance.

ORDERING INFORMATION



ELECTRICAL CHARACTERISTICS

Specifications typical at T_A = +25°C, nominal input voltage, rated output current unless otherwise specified.

MODEL	NOMINAL INPUT VOLTAGE (VDC)	RATED OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT		INPUT CURRENT		EFFICIENCY (%)
			MIN LOAD (A)	RATED LOAD (A)	MIN LOAD (mA)	RATED LOAD (mA)	
WP15R12S03	12	3.3	0.75	3	308	1200	72
WP15R12S05	12	5	0.75	3	750	1650	76
WP15R24S03	24	3.3	0.75	3	154	570	75
WP15R24S05	24	5	0.75	3	375	750	83
WP15R24S15	24	15	0.25	1	375	750	83
WP15R48S03	48	3.3	0.75	3	85	280	75
WP15R48S05	48	5	0.75	3	185	375	83
WP15R12D12	12	±12	±0.156	±0.625	750	1650	76
WP15R12D15	12	±15	±0.125	±0.5	750	1650	76
WP15R24D12	24	±12	±0.156	±0.625	375	750	83
WP15R24D15	24	±15	±0.125	±0.5	375	750	83
WP15R48D12	48	±12	±0.156	±0.625	185	375	83
WP15R48D15	48	±15	±0.125	±0.5	185	380	83
WP15R12T12	12	5,±12	0.375,±0.077	1.5,±0.31	750	1650	75
WP15R12T15	12	5,±15	0.375,±0.063	1.5,±0.25	750	1650	76
WP15R24T12	24	5,±12	0.375,±0.077	1.5,±0.31	375	780	80
WP15R24T15	24	5,±15	0.375,±0.063	1.5,±0.25	375	780	80
WP15R48T12	48	5,±12	0.375,±0.077	1.5,±0.31	185	380	82
WP15R48T15	48	5,±15	0.375,±0.063	1.5,±0.25	185	380	82

NOTE: Other input to output voltages may be available. Please consult factory.

COMMON SPECIFICATIONS

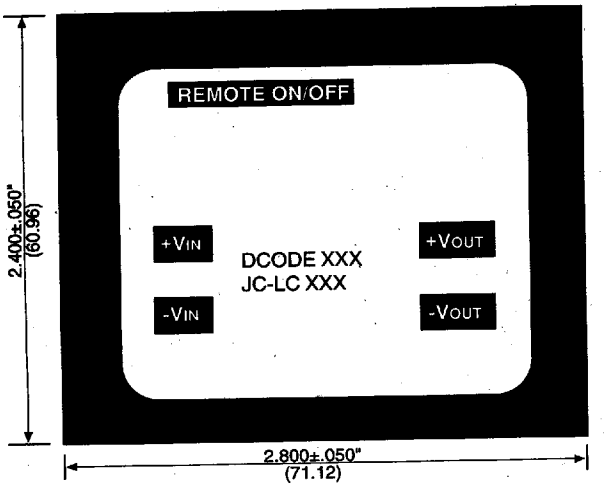
Specifications typical at T_A = +25°C, nominal input voltage, rated output current unless otherwise specified.

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
INPUT					
Voltage Range		9	12	18	VDC
		18	24	36	VDC
		36	48	72	VDC
Reflected Ripple Current			140	200	mAp-p
Reflected Ripple Current	With Recommended Cap Across Input*		30		mAp-p
ISOLATION					
Rated Voltage		500			VDC
Test Voltage	60 Hz, 10 Seconds	500			Vpk
Resistance					GΩ
Capacitance			10		pF
Leakage Current	V_{ISO} = 240VAC, 60Hz		1400 130		pF µArms
OUTPUT					
Rated Power			15		W
Voltage Setpoint Accuracy					
+5V (and All Singles)				±1	%
All Other Outputs				±5	%
Temperature Coefficient			±0.02		%/°C
Ripple and Noise	BW = 5Hz to 10MHz		135	200	mVp-p
	BW = 5Hz to 10MHz		20	30	mVrms
Transient Response	Step Rated Load to Min Load on Indicated Output, Remaining Outputs at Rated Load				
Peak Overshoot	Rated Load to Min Load Step		600	700	µS
+5V (and All Singles)					
Line Regulation	High Line to Low Line		350	400	mV
+3.3V				±0.5	%
+5V				±0.3	%
All Other Outputs			±0.5	±2	%
Load Regulation	Min. Load to Rated Load				
+5V (and All Singles)	With a 60% Load			±1	%
All Other Outputs	On All Other Outputs			±7	%
GENERAL					
Switching Frequency			200		kHz
Phase Margin			55		Degrees
Package Weight			175		g
MTTF per MIL-HDBK-217, Rev. E	Circuit Stress Method				
Ground Benign			300		kHr
Fixed Ground			140		kHr
TEMPERATURE					
Specification					
Operation		-25		+70	°C
Storage		-40		+100	°C
		-55		+110	°C

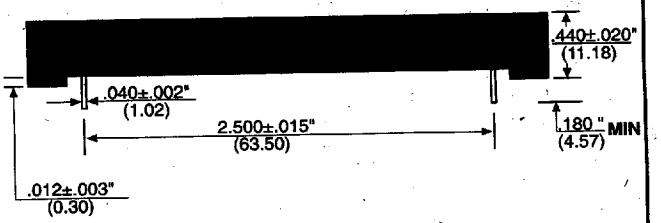
* Recommended Capacitor is: 12 and 24VIN Models: Sprague 678D227M050DM3D, 220µF, 50V
48VIN Models: Sprague 511D127M100DK4D, 120µF, 100V

MECHANICAL Package/Pinout "G"

TOP VIEW



SIDE VIEW

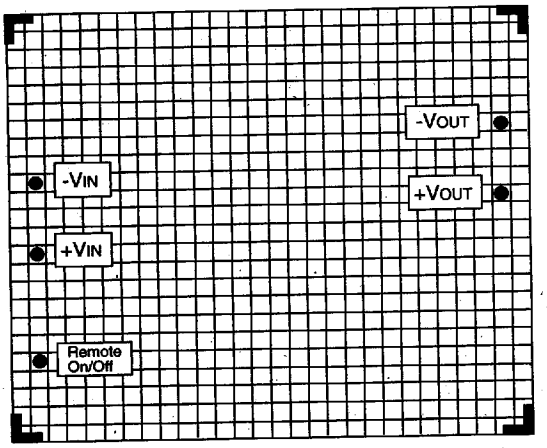


NOTES: All dimensions are in inches (millimeters).
Label for representation purposes only.
Product marked with specific model ordered.
* On Dual Output Models, this pin is not present.

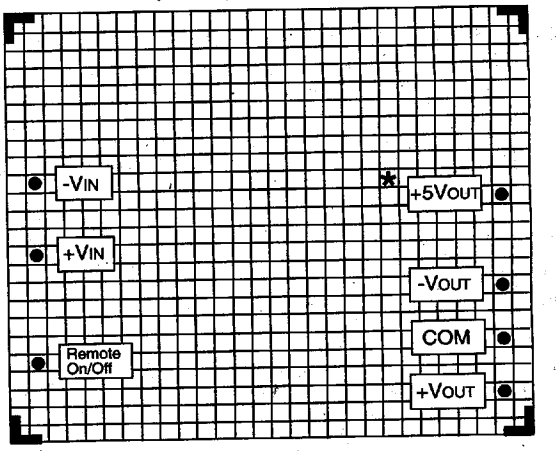
GRID: 0.100 inches (2.54 millimeters)

PIN PLACEMENT TOLERANCE: ± 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. Lead material is brass with a solder plated surface to allow ease of solderabilitry.



BOTTOM VIEW - SINGLE OUTPUT MODELS



BOTTON VIEW - DUAL AND TRIPLE OUTPUT MODELS

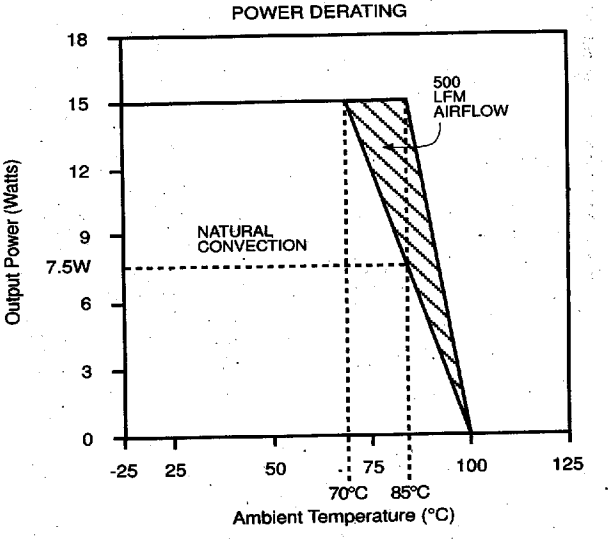
ABSOLUTE MAXIMUM RATINGS

Output Short-Circuit Duration	Continuous
Internal Power Dissipation	5.8W
Lead Temperature (Soldering, 10s)	+300°C
Case Temperature	95°C

REMOTE ON/OFF

Logic Compatibility	CMOS or Open Collector TTL
E_c On	+5VDC or Open Circuit
E_c Off	1.7VDC
Shutdown Idle Current	1mA
Input Resistance To Remote On/Off	100kΩ
Control Common	Referenced to Input Minus

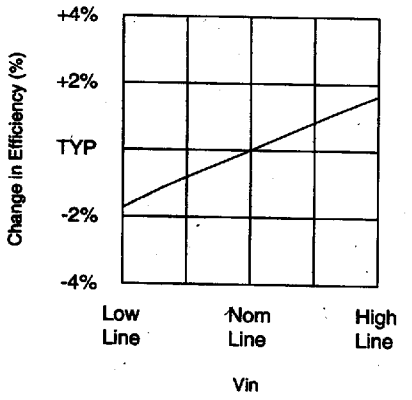
POWER DERATING



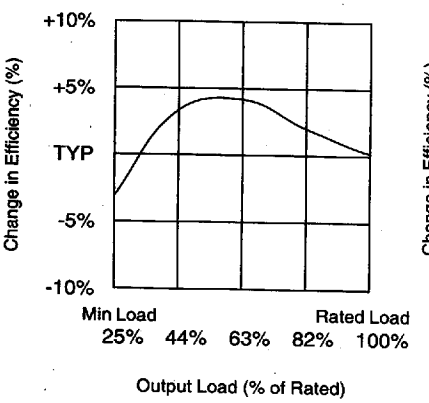
TYPICAL PERFORMANCE CURVES

T_A = +25°C, nominal input voltage, rated load, recommended external components applied, unless otherwise specified.

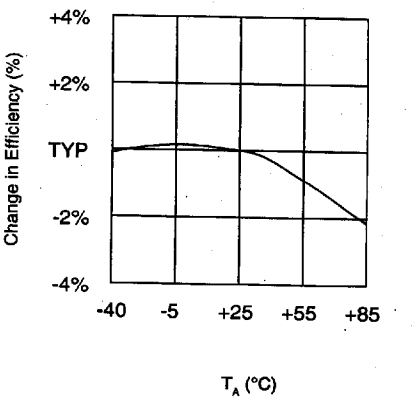
EFFICIENCY vs INPUT VOLTAGE



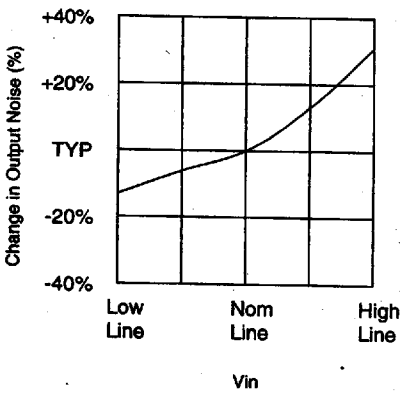
EFFICIENCY vs OUTPUT LOAD



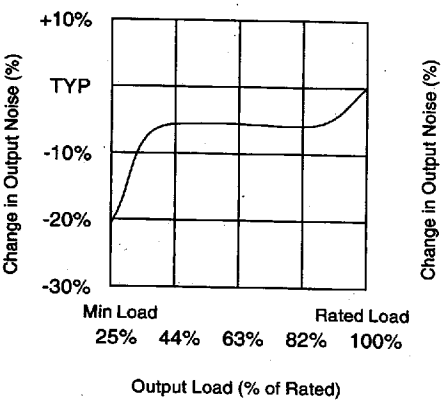
EFFICIENCY vs TEMPERATURE



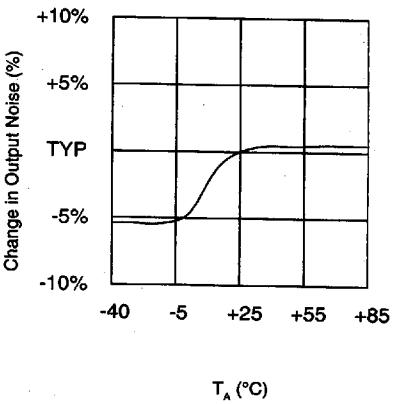
OUTPUT NOISE vs INPUT VOLTAGE



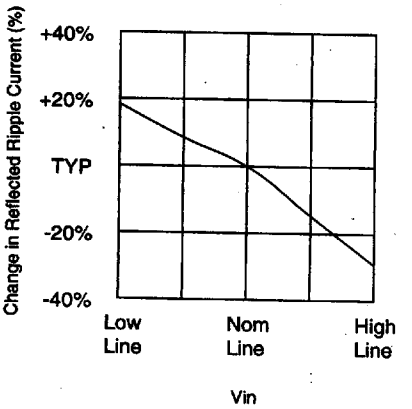
OUTPUT NOISE vs OUTPUT LOAD



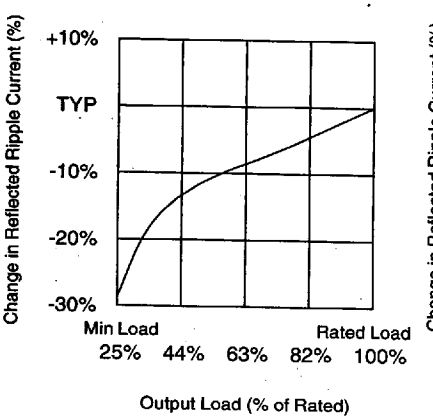
OUTPUT NOISE vs TEMPERATURE



REFLECTED RIPPLE CURRENT vs INPUT VOLTAGE



REFLECTED RIPPLE CURRENT vs OUTPUT LOAD



REFLECTED RIPPLE CURRENT vs TEMPERATURE