

## 2:1 WIDE INPUT RANGE DC/DC CONVERTER

### WPC10R



#### FEATURES

- SAFETY APPROVALS (cULus, CE)
- MEETS EN55022 LEVEL A & B FOR CONDUCTED EMISSIONS WITH A 10 MICROFARAD EXTERNAL CAPACITOR
- SPECIFICATION TEMPERATURE RANGE: -40°C TO +100°C
- INDUSTRY STANDARD PINOUTS
- INDUSTRY STANDARD PACKAGE
- LOW PROFILE 0.4 INCH (10MM)
- SHORT CIRCUIT PROTECTION
- TEMPERATURE SHUTDOWN
- REMOTE ON/OFF (OPTIONAL)
- LOW RADIATED EMISSIONS

#### APPLICATIONS

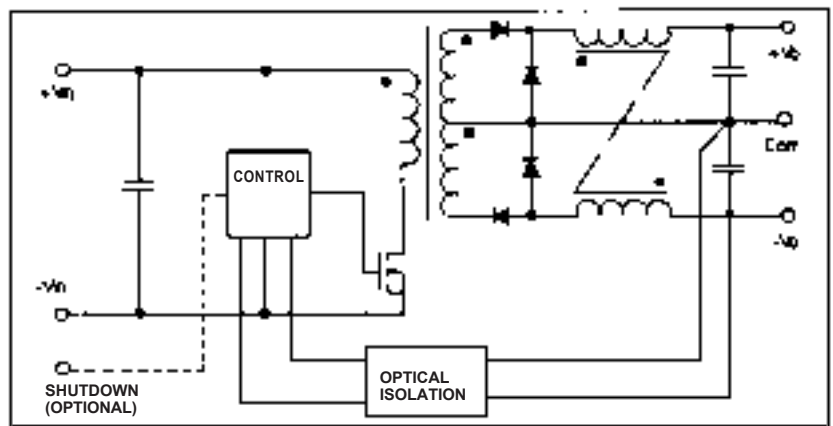
- TELECOMMUNICATION APPLICATIONS
- BATTERY POWERED SYSTEMS
- PORTABLE INSTRUMENTS
- PROCESS CONTROL EQUIPMENT
- TRANSPORTATION EQUIPMENT
- DISTRIBUTED POWER SYSTEMS

#### DESCRIPTION

The WPC10R is a family of high performance DC/DC converters that offer regulated outputs over two input voltage ranges of 18 - 36 and 28 - 75V and over a wide specification temperature range of -40°C to +100°C.

The 350kHz switching frequency and forward converter topology provide optimum performance in a space-saving package. The design uses all surface mounted components, including magnetics, to provide enhanced reliability. All models will operate even under no-load conditions, although a minimum load is specified for load regulation measurement purposes. A metal package is utilized for decreased radiated noise and an optional remote enable feature allows low power standby operation.

#### SIMPLIFIED CIRCUIT DIAGRAM



#### AGENCY APPROVALS



# ELECTRICAL SPECIFICATIONS

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

MODEL	NOMINAL INPUT VOLTAGE (VDC)	RATED OUTPUT VOLTAGE (VDC)	OUTPUT CURRENT		VOLTAGE REGULATION		NOISE (mVpp)	EFFICIENCY (%)
			MIN LOAD (mA)	RATED LOAD (mA)	LINE ( $\pm$ )	LOAD ( $\pm$ )		
WPC10R24S03	24	3.3	300	3000	0.5%	1%	75	75
WPC10R24S05	24	5	200	2000	0.5%	1%	75	77
WPC10R24S12	24	12	83	833	0.5%	1%	75	78
WPC10R24S15	24	15	67	666	0.5%	1%	75	79
WPC10R24D05	24	$\pm 5$	$\pm 100$	$\pm 1000$	0.5%	2%	75	74
WPC10R24D12	24	$\pm 12$	$\pm 42$	$\pm 417$	0.5%	2%	75	78
WPC10R24D15	24	$\pm 15$	$\pm 33$	$\pm 333$	0.5%	2%	75	79
WPC10R48S03	48	3.3	300	3000	0.5%	1%	75	77
WPC10R48S05	48	5	200	2000	0.5%	1%	75	79
WPC10R48S12	48	12	83	833	0.5%	1%	75	80
WPC10R48S15	48	15	67	666	0.5%	1%	75	81
WPC10R48D05	48	$\pm 5$	$\pm 100$	$\pm 1000$	0.5%	2%	75	79
WPC10R48D12	48	$\pm 12$	$\pm 42$	$\pm 417$	0.5%	2%	75	80
WPC10R48D15	48	$\pm 15$	$\pm 33$	$\pm 333$	0.5%	2%	75	81

# COMMON SPECIFICATIONS

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

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>INPUT</b>					
Voltage Range	$V_{IN}=34-75$ for $3.3V_{out}$	18	24	36	VDC
Reflected Ripple Current		28	48	75	VDC
			20	50	mAp-p
<b>ISOLATION</b>					
Test Voltage	60 Hz, 10 Seconds	1500			Vpk
Resistance			10		$G\Omega$
Capacitance			1500		pF
Leakage Current	$V_{ISO} = 240\text{VAC}, 60\text{Hz}$		100		mArms
<b>OUTPUT</b>					
Rated Power				10	Watts
Voltage Setpoint Accuracy			$\pm 1$		%
Temperature Coefficient			$\pm 0.02$		$\%/^\circ\text{C}$
Line Regulation	Low Line to High Line				
Singles			$\pm 0.2$		%
Duals			$\pm 0.2$		%
Load Regulation	Min Load to Rated Load				
Singles			$\pm 0.2$		%
Duals			$\pm 0.5$		%
Ripple & Noise	BW = 5 Hz to 20 MHz			75	mVp-p
<b>GENERAL</b>					
Switching Frequency			350		kHz
MTTF per MIL-HDBK-217, Rev F	Circuit Stress Method,				
Ground Benign	$T_A = +25^\circ\text{C}$		933		hr
Package Weight			35		g
<b>TEMPERATURE</b>					
Specification (ambient)		-40		+71	$^\circ\text{C}$
Specification (case)		-40		+100	$^\circ\text{C}$
Storage		-55		+125	$^\circ\text{C}$

## ABSOLUTE MAXIMUM RATINGS

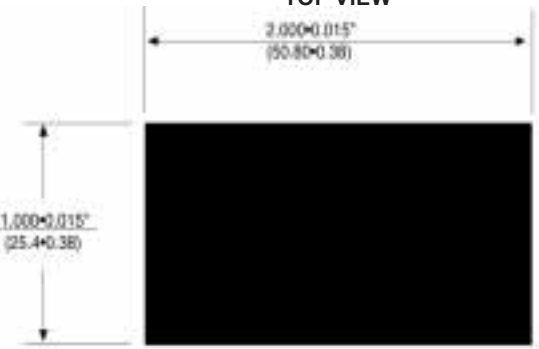
Output Short Circuit Protection  
 (at  $T_A = 25^\circ\text{C}$ , nominal input voltage) .....Continuous  
 Internal Power Dissipation..... 2.5W  
 Lead Temperature (soldering 10seconds, max) .....+300°C  
 Maximum Case Temperature .....+110°C

## ORDERING INFORMATION

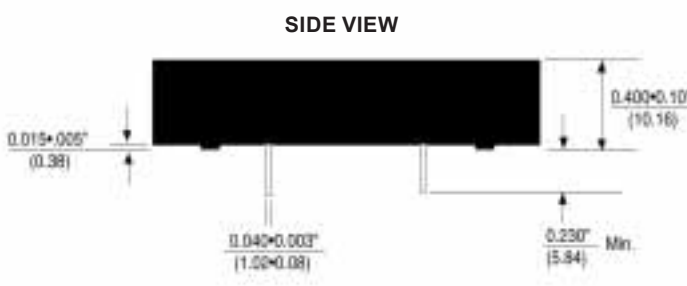
	<b>WPC10R</b>	<b>xyzz</b>	<b>N/P/F</b>	<b>R</b>
Device Family	Indicates Wide Input Voltage 10 Watt Regulated Unit			
Model Number	Selected from Table of Electrical Characteristics			
	xx = Input Voltage			
	y = Number of Outputs (Single "S", Dual "D")			
	zz = Output Voltage			
Case Ground Option	"P" = Positive Input Connection			
	"N" = Negative Input Connection			
	"F" = Floating Input Connection			
	Remote ON/OFF (optional)			

## MECHANICAL

**TOP VIEW**



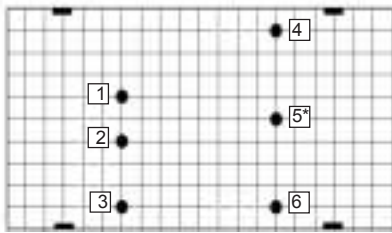
**SIDE VIEW**



**Pin Connections**

1	+Vin
2	-Vin
3	Remote On/Off
4	+Vout
5	Common
6	-Vout

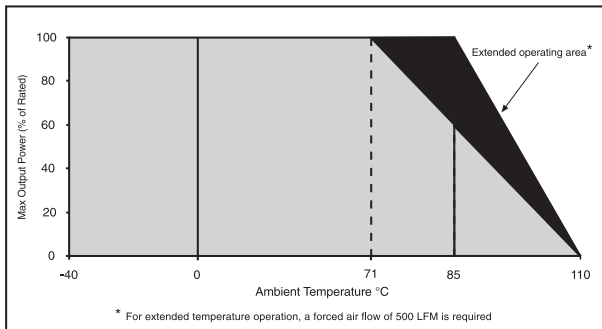
**BOTTOM VIEW**



NOTES: All dimensions are in inches (millimeters).  
 GRID: 0.100 inches (2.54 millimeters)  
 Pin Placement Tolerance: ±0.015  
 \* Common pins are not present on single output models  
 Marked with: specific model ordered, date code, job code.

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.

## THERMAL DERATING CURVE



Testing for UL approval was obtained without an input fuse. All UL criteria were met. Although it is good engineering practice to use an input fuse, one is not required for safety reasons.

## REMOTE ON/OFF CONTROL

Logic Compatibility	CMOS or Open Collector TTL
EC On	Open Circuit or > 2VDC
EC Off	< 1.3VDC
Shutdown Idle Current	<10mA
Control Common	-Vin

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