

## 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 MFD EXTERNAL CAPACITOR
- OPERATING 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

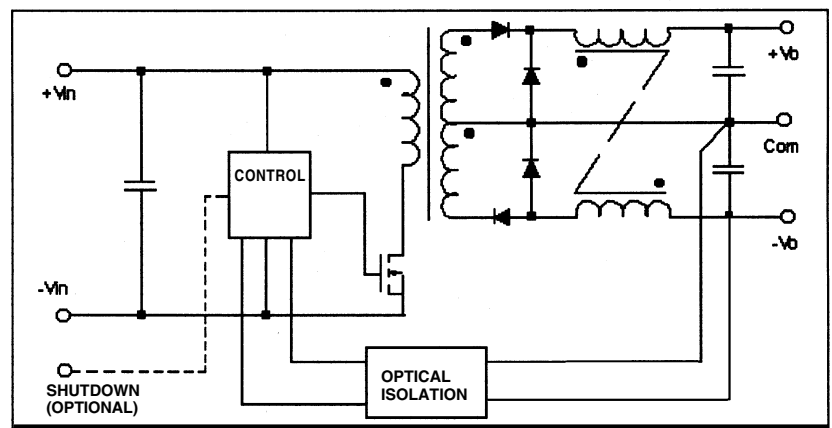
- TELECOMMUNICATION APPLICATIONS
- BATTERY POWERED SYSTEMS
- PORTABLE INSTRUMENTS
- PROCESS CONTROL EQUIPMENT
- TRANSPORTATION EQUIPMENT
- DISTRIBUTED POWER SYSTEMS

#### 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 operating temperature range of -40°C to +100°C without derating.

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



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# 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	77
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	mA <sub>p-p</sub>
<b>ISOLATION</b>					
Test Voltage	60 Hz, 10 Seconds	1500			V <sub>pk</sub>
Resistance			10		G $\Omega$
Capacitance	$V_{ISO}=240\text{VAC}$ , 60Hz		1500		pF
Leakage Current			100		mArms
<b>OUTPUT</b>					
Rated Power	Low Line to High Line			10	Watts
Voltage Setpoint Accuracy				$\pm 1$	
Temperature Coefficient	Min Load to Rated Load			$\pm 0.02$	%/ $^\circ\text{C}$
Line Regulation				$\pm 0.2$	
Singles	BW = 5 Hz to 20 MHz			$\pm 0.2$	%
Duals				$\pm 0.2$	
Load Regulation				$\pm 0.2$	%
Singles				$\pm 0.2$	
Duals				$\pm 0.5$	%
Ripple & Noise				75	mV <sub>p-p</sub>
<b>GENERAL</b>					
Switching Frequency	Circuit Stress Method, $T_A = +25^\circ\text{C}$		350		kHz
MTTF per MIL-HDBK-217, Rev F Ground Benign			933		hr
Package Weight			35		g
<b>TEMPERATURE</b>					
Specification (ambient)		-25		+71	$^\circ\text{C}$
Specification (case)		-25		+100	$^\circ\text{C}$
Operation (case)		-40		+100	$^\circ\text{C}$
Storage		-55		+125	$^\circ\text{C}$

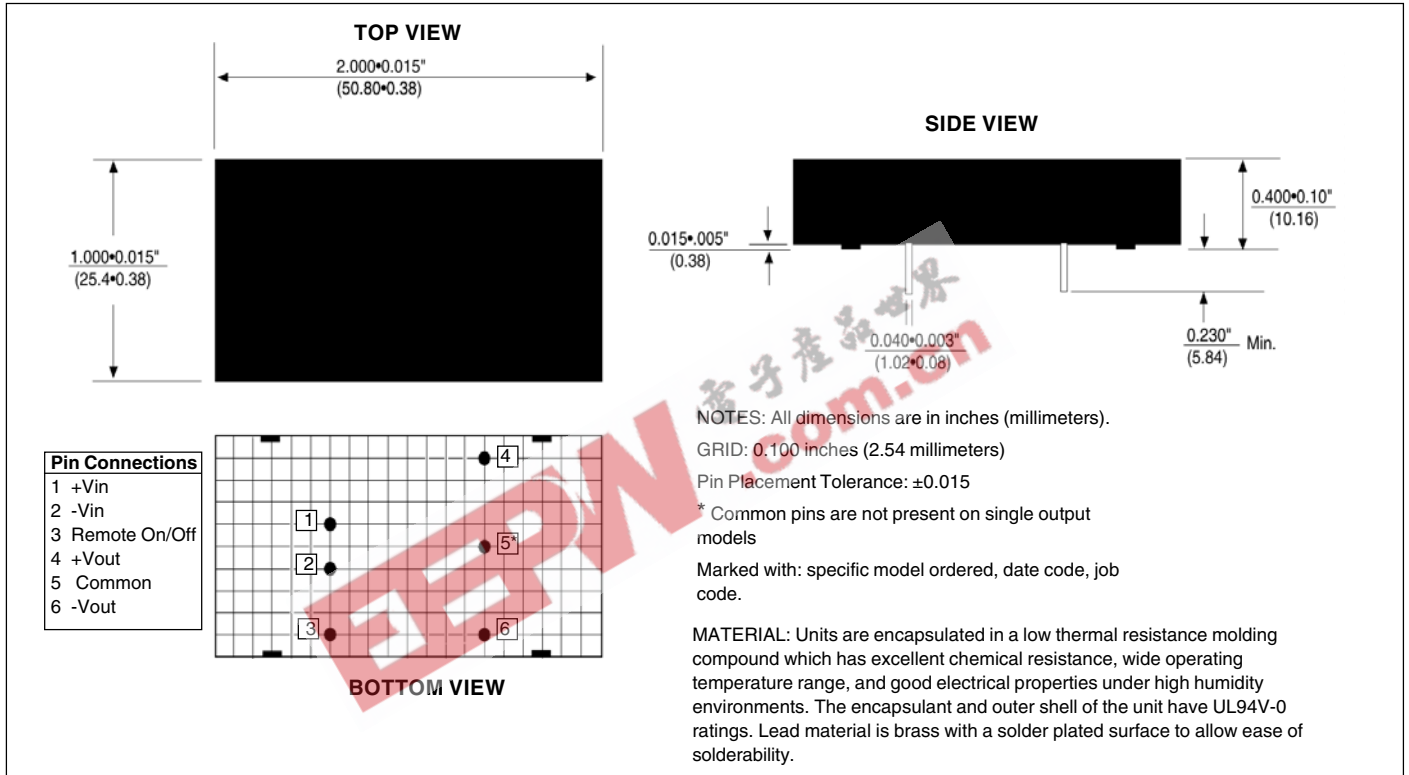
## ABSOLUTE MAXIMUM RATINGS

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

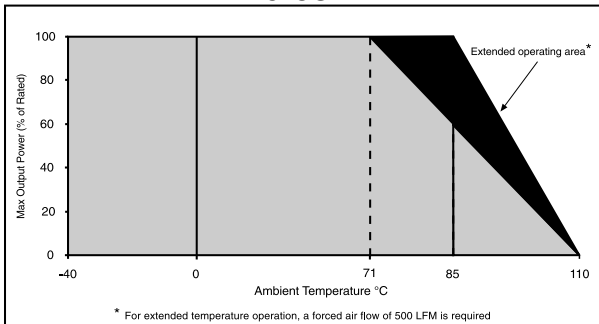
## ORDERING INFORMATION

	WPC10R	xyzz	N/P/F	R
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



## THERMAL DERATING CURVE



## Hiweise:

- Gerät wird mit einer 2A Sicherung abgesichert
- Eingangsspannung muss SELV oder TNV nach EN60950, IEC60950 entsprechen
- Ein- und Ausgang des Converters müssen mit dem Schutzleiter verbunden werden
- Power supply must be fused with a 2A fuse or current limited to 2A max
- Input must be SELV or TNV according to EN60950/ IEC950
- One input and output pin must be tied to safety earth ground

## 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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