



## WRA\_(M)P-3W Series

*WIDE INPUT ISOLATED & REGULATED  
3W OUTPUT DUAL OUTPUT  
24 DIP PACKAGE*

**RoHS**

multi-country patent protection

### FEATURES

- Wide (2:1) Input Range
- Efficiency Up To 82%
- Operating Temperature: -40°C~+85°C
- 1.5KVDC Isolation
- Dual Output
- UL94-V0 Package
- No Heat Sink Required
- Pinout compatible with ERICSSON PKV
- MTBF>1,000,000 hours
- Continuous Short Circuit Protection
- RoHS Compliance

### APPLICATIONS

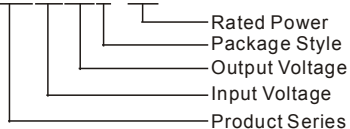
The WRA\_(M)P-3W Series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

- 1) Where the voltage of the input power supply is wide range (voltage range: 2:1);
- 2) Where isolation is necessary between input and output (isolation =1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

### MODEL SELECTION

WRA0505P-3W



PRODUCT PROGRAM								
Part Number	Input			No-load Current (mA, Typ)	Output		Efficiency (% Typ)	
	Voltage (VDC)				Voltage (VDC)	Current		
	Nominal	Range	Max*			Max		Min
WRA0505(M)P-3W	5	4.5 - 9.0	11	50	±5	300	30	72
WRA0509(M)P-3W					±9	165	16	73
WRA0512(M)P-3W					±12	125	12	77
WRA0515(M)P-3W					±15	100	10	79
WRA1205(M)P-3W	12	9.0 - 18	22	28	±5	300	30	75
WRA1209(M)P-3W					±9	165	16	79
WRA1212(M)P-3W					±12	125	12	80
WRA1215(M)P-3W					±15	100	10	81
WRA2405(M)P-3W	24	18 - 36	40	18	±5	300	30	78
WRA2409(M)P-3W					±9	165	16	80
WRA2412(M)P-3W					±12	125	12	81
WRA2415(M)P-3W					±15	100	10	82
WRA4805(M)P-3W	48	36 - 72	80	8	±5	300	30	76
WRA4809(M)P-3W					±9	165	16	81
WRA4812(M)P-3W					±12	125	12	81
WRA4815(M)P-3W					±15	100	10	82

OUTPUT SPECIFICATIONS						
Item	Test Conditions	Min	Typ	Max	Units	
Output Voltage Accuracy(Vo1)	5,9V		±1	±3	%	
	12,15,24V		±1	±2		
Output Voltage Accuracy(Vo2)	5,9V			±5		
	12,15,24V		±2	±3		
Load Regulation	From 10% To 100% Load		±0.5	±1		
Line Regulation	Input Voltage From Low To High		±0.2	±0.5		
Temperature Drift(Vout)				0.03	%/°C	
Ripple	20Hz-400KHz Bandwidth			50	mVp-p	
Noise	DC-20MHz Bandwidth		100	150	p	
Switching Frequency			100-650PFM		KHz	
Isolation Capacitance			100		PF	

Note:

- 1.All specifications measured at T<sub>a</sub>=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- 2.See below recommended circuits for more details.



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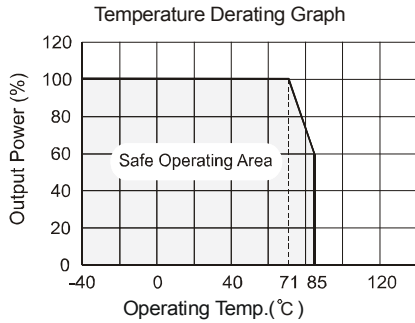
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## COMMON SPECIFICATION

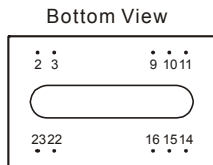
Output Short Circuit Protection	Continuous, Auto Recovery
Temperature Rise at Full Load	15°C (TYP) ,25°C (MAX)
Cooling	Free Air Convection
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-55°C ~+125°C
Storage Humidity Range	≤ 95%
Case Material	P: Plastic (UL94-V0) MP: Metal
MTBF	>1,000,000 hours
Isolation voltage	1500VDC
Isolation resistance	>1000MΩ
Weigh	15G

\*\*\*Lead Temperature 1.5mm from case for 10 seconds.

## TYPICAL CHARECTERISTICS

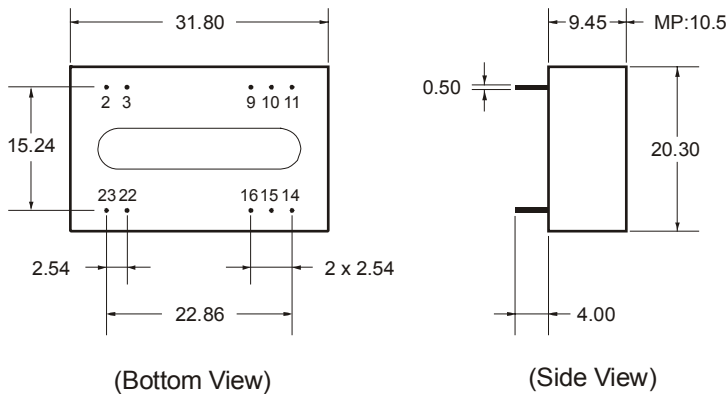


## FOOTPRINT DETAILS



Pin	Function
2,3	-Vin
10,15	NC
14	+Vo
11	-Vo
9,16	0V
22,23	Vin

## OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.50 mm(Tolerance:±0.10);

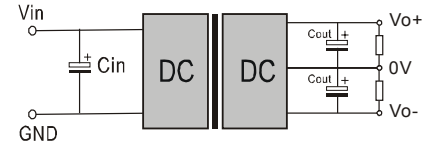
## APPLICATION NOTE

### Recommended Circuit

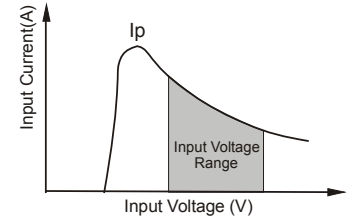
All the WRA\_(MP)-3W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (See Figure 1 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high.(See table 1).If you want to use the products in high EMI, please choose MP packaged products.

### Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (See figure 2) General:  $I_p \leq 1.3 \cdot I_{in-max}$



(Figure)



(Figure 2)

General: Cin: 5V,12V 100uF  
24V,48V 47uF 22uF

Cout:100uF

### Requirement on Output Load

To ensure this module operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum output load is not less than **10%** Of the full load, and that this product **should never be operated under no load!!!** If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply .If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

The products cannot be used in parallel and in plug and play.

### External Capacitor Table(See Table 1)

Vout	Cout (Max)
5	500uF
9	240uF
12	150uF
15	120uF
24	100uF



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