



## PWA\_(M)D-3W&PWB\_(M)D-3W Series

### 3W, WIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

multi-country patent protection **RoHS**

#### FEATURES

- Wide (4:1) Input Range
- Operating Temperature: -40°C to +85°C
- 1500VDC isolation
- Short circuit protection(automatic recovery)
- Internal SMD construction
- UL94-V0 package
- No external component required
- Industry Standard Pinout
- Five sided metal shielding (PWA/B\_MD)
- MTBF>1,000,000 hours
- RoHS compliance

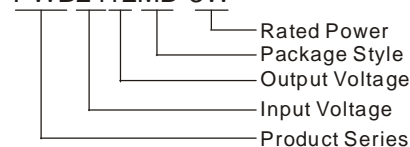
#### APPLICATIONS

The PWA\_(M)D-3W & PWB\_(M)D-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 ranges  $\leq 4:1$ );
- 2) Where isolation is necessary between input and output (isolation  $\leq 1500VDC$ );
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

#### MODEL SELECTION

PWB2412MD-3W



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#### PRODUCT PROGRAM

Part Number	Input			No-load (mA)(typ)	Output			Efficiency (% , Typ)
	Voltage (VDC)				Voltage (VDC)	Current (mA)		
	Nominal	Range	Max*			Max	Min	
PWA2405(M)D-3W					±5	±300	±30	76
PWA2412(M)D-3W					±12	±125	±12	80
PWA2415(M)D-3W					±15	±100	±10	80
PWB2403(M)D-3W	24	9.0-36	40	16	3.3	909	90	74
PWB2405(M)D-3W					5	600	60	76
PWB2412(M)D-3W					12	250	25	80
PWB2415(M)D-3W					15	200	20	80
PWA4805(M)D-3W					±5	±300	±30	76
PWA4812(M)D-3W					±12	±125	±12	80
PWA4815(M)D-3W					±15	±100	±10	80
PWB4803(M)D-3W	48	18-72	80	8	3.3	909	90	74
PWB4805(M)D-3W					5	600	60	78
PWB4812(M)D-3W					12	250	25	80
PWB4815(M)D-3W					15	200	20	80

\* Input voltage over it may cause permanent damage to the device.  
 Note: The load shouldn't be less than 10%, otherwise ripple will increase dramatically.  
 Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

#### OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power	See below products program	0.3		3	W
Positive voltage accuracy	Refer to recommended circuit		±1	±3	%
Negative voltage accuracy	Refer to recommended circuit		±3	±5	
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)	Refer to recommended circuit			±0.03	%/°C
Ripple & Noise**	20MHz bandwidth		75	150	mVp-p
Switching frequency	100% load, nominal input voltage		300		KHz
Isolation capacitance			100		pF

\* Dual output models unbalanced load:  $\pm 5\%$ .

\*\* Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

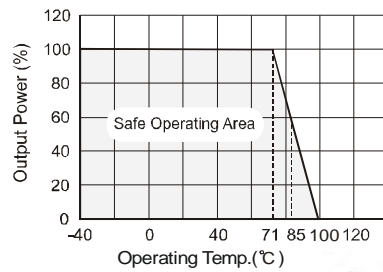
Note:

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

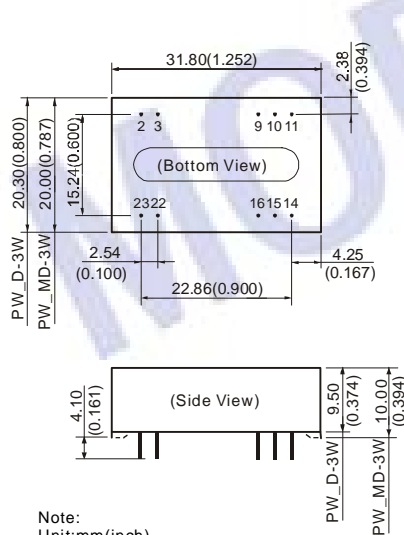
## COMMON SPECIFICATION

Item	Test conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage Temperature		-55		125	
Temp. rise at full load			15		
Lead Temperature	1.5mm from case for 10 seconds			300	
Isolation resistance	Tested for 1 minute and 1 mA max	1500			VDC
Isolation Capacitance	Test at 500VDC	1000			MΩ
Cooling	Free Air Convection				
Short circuit protection	D: Plastic (UL94-V0); MD: Steel, nickel plated				
Case material	Continuous , Automatic Recovery				
MTBF		1000			K hours
Weight			15		g

## TYPICAL CHARACTERISTICS



## OUTLINE DIMENSIONS & FOOTPRINT DETAILS

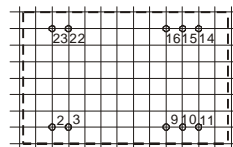


Note:  
 Unit:mm(inch)  
 Pin diameter:0.50mm(0.020inch)  
 Pin diameter tolerances:±0.05mm(±0.002inch)  
 General tolerances:±0.25mm(±0.010inch)

First Angle Projection

RECOMMENDED FOOTPRINT  
 Top view, grid:2.54mm(0.1inch),  
 diameter:1.00mm(0.039inch)

Single/Dual Output



FOOTPRINT DETAILS

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

NC:No Connection

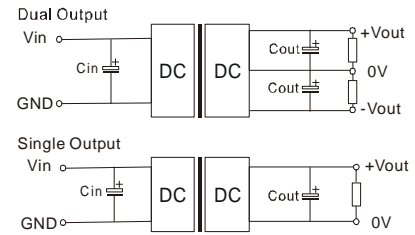
## APPLICATION NOTE

### Requirement on output load

In order to ensure the product operate efficiently and reliably, in addition to a max load (namely full load), a minimum load is specified for this kind of DC/DC converter. Make sure the specified range of input voltage is not exceeded, the minimum output load no less than 10% load. If the actual load is less than the specified minimum load, the output ripple may increase sharply while its efficiency and reliability will reduce greatly. If the actual output power is very small, please add an appropriate resistor as extra loading, or contact our company for other lower output power products.

## Recommended Circuit

All the PWA\_(M)D-3W & PWB\_(M)D-3W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load (see Figure 1).



(Figure 1)

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, or may cause start-up problem. If you want to use the products in high EMI, please choose our metal packaged products (PWA\_MD-3W&PWB\_MD-3W).

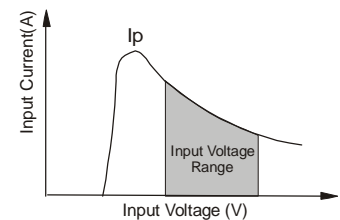
Generally: Cin: 24V&48V 10μF~47μF  
 Cout: 10μF/100mA

Output External Capacitor Table (Table 1)

Single Vout (VDC)	Cout (uF)	Dual Vout (VDC)	Cout (uF)
3.3	2200	±5	680
5	1000	±12	330
12	470	±15	220
15	330	±24	100

## Input current

While using unstable power source, please ensure the output voltage and ripple voltage do not exceed indexes of the converter. The preceding power source must be able to provide for converter sufficient starting current Ip (Figure 2). General: Ip ≤ 1.4\*In-max



(Figure 2)

No parallel connection or plug and play.