MORNSUN®

PWA_YMD-6W & PWB_YMD-6W Series

6W, 4:1 WIDE INPUT, ISOLATED & REGULATED DUAL & SINGLE OUTPUT DC-DC CONVERTER

Patent Protection   RoHS

FEATURES
- DIP package
- 1500VDC isolation
- Short circuit protection (automatic recovery)
- Operating temperature: -40℃ to +85℃
- Internal SMD construction
- Metal shielding package
- Industry standard pinout
- No heat sink required
- MTBF>1,000,000 hours
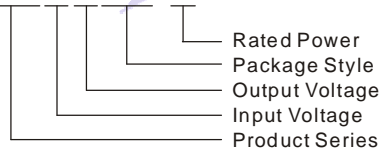- RoHS Compliance

APPLICATIONS

The PWA_YMD-6W & PWB_YMD-6W 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≤ 4:1);
2) Where isolation is necessary between input and output(isolation voltage≤1500VDC);
3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION

PWA2405YMD-6W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

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PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max**		Max.	Min.	
PWA2405YMD-6W	24	9.0-36	40	±5	±600	±60	80
PWA2412YMD-6W				±12	±250	±25	82
PWA2415YMD-6W				±15	±200	±20	84
PWA2424YMD-6W				±24	±125	±13	82
PWB2405YMD-6W				5	1200	120	80
PWB2412YMD-6W				12	500	50	82
PWB2415YMD-6W				15	400	40	84
PWB2424YMD-6W				24	250	25	82
*PWA4805YMD-6W	48	18-72	80	±5	±600	±60	80
PWA4812YMD-6W				±12	±250	±25	82
PWA4815YMD-6W				±15	±200	±20	84
PWB4805YMD-6W				5	1200	120	80
PWB4812YMD-6W				12	500	50	82
PWB4815YMD-6W				15	400	40	84

*Designing.
* *Input voltage can't exceed this value, or will cause the permanent damage.

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			40		
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Short circuit protection		Continuous, automatic recovery			
Case material		Aluminum			
MTBF		1000			K hours
Weight			15		g

ISOLATION SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1 mA max	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/1V			100	pF

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Output power	See above products program	0.6		6	W
Line regulation (at full load)	Input voltage from low to high		±0.2	±0.5	
Load regulation	Form 10% to 100%load		±0.5	±2*	%
Positive output voltage accuracy	Refer to recommended circuit		±1	±3	
Negative output voltage accuracy	Refer to recommended circuit		±3	±5	
Temperature Drift (Vout)	Refer to recommended circuit		±0.02		%/°C
Ripple**	20MHz Bandwidth		30	50	mVp-p
Noise**	20MHz Bandwidth		75	150	
Switching frequency	100% load, input voltage range		300		KHz

 * Dual output models unbalanced load: ±5%.
 **Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

TYPICAL TEMPERATURE CURVE
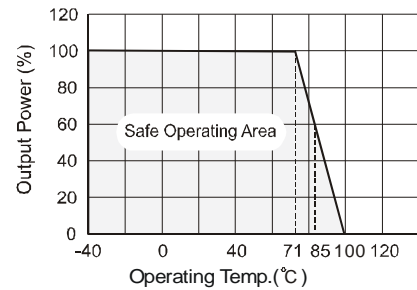
APPLICATION NOTE

1) 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.

2) Recommended Circuit

All the PWA_YMD-6W & PWB_YMD-6W series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load (see 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. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1). General:

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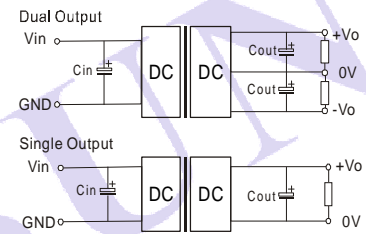Cout: 10μF/100mA

3) 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).
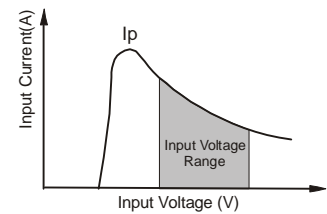
General: Ip ≤1.4*Iin-max

4) No parallel connection or plug and play
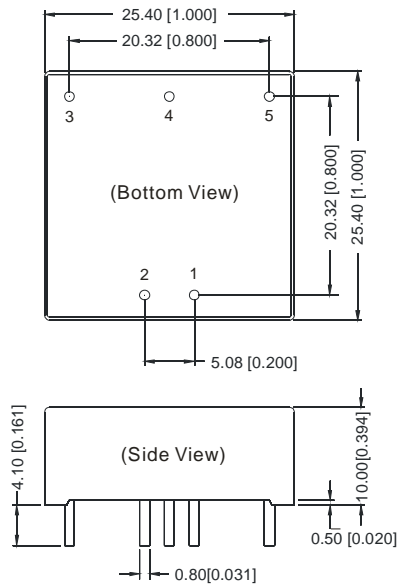
RECOMMENDED CIRCUIT

(Figure 1)

(Figure 2)

External Capacitor Table (Table 1)

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

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS

25.40 [1.000]

20.32 [0.800]

3 4 5

(Bottom View)

20.32 [0.800]

25.40 [1.000]

2 1

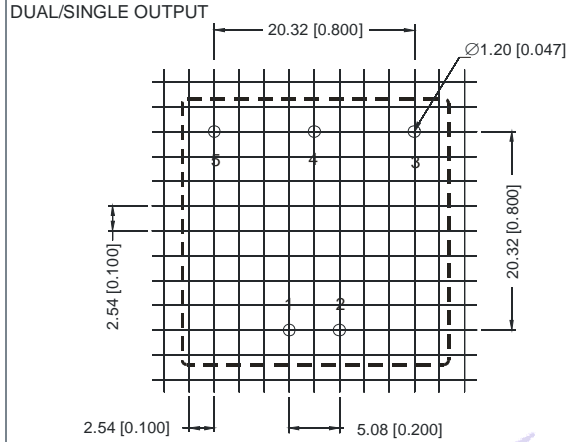5.08 [0.200]

4.10 [0.161]

(Side View)

10.00 [0.394]

0.50 [0.020]

0.80 [0.031]

Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

FOOTPRINT DETAILS		
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	No Pin	0V
5	0V	-Vo

NC:No connection

RECOMMENDED FOOTPRINT(TOP VIEW)

DUAL/SINGLE OUTPUT

20.32 [0.800]

∅1.20 [0.047]

20.32 [0.800]

2.54 [0.100]

2.54 [0.100]

5.08 [0.200]

TUBE OUTLINE DIMENSIONS

30.20 [1.189]

13.40 [0.528]

21.00 [0.827]

12.80 [0.504]
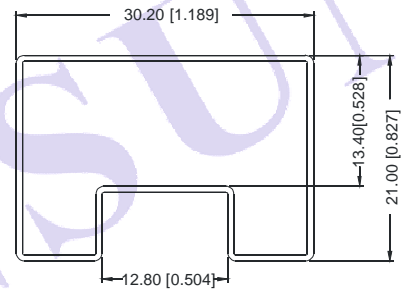
Note:
Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]

L=530mm[20.866inch]   Tube Quantity: 19pcs
L=220mm[8.661inch]   Tube Quantity: 7pcs

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.

2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

3. Capacitor MAX load tested at input voltage range and full load.

4. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.

5. In this datasheet, all the test methods of indications are based on corporate standards.

6. Only typical models listed, other models may be different, please contact our technical person for more details.