MORNSUN

PWA_MD-6W & PWB_MD-6W Series

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

RoHS

FEATURES

- High efficiency up to 85%
- Operating temperature: -40°C to +85°C
- 1500VDC isolation
- Metal shielding package
- No heat sink required
- Internal SMD construction
- Industry standard pinout
- MTBF>1,000,000 hours
- Continuous short circuit protection
- RoHS Compliance

APPLICATIONS

The PWA_MD-6W & PWB_MD-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

PWA2405MD-6W

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

PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max.*		Max.	Min.	
PWA2405MD-6W	24	9-36	40	±5	±600	±60	80
PWA 2412MD-6W				±12	±250	±25	83
PWA 2415MD-6W				±15	±200	±20	85
PWB2403MD-6W				3.3	1500	150	78
PWB2405MD-6W				5	1200	120	80
PWB2412MD-6W				12	500	50	83
PWB2415MD-6W				15	400	40	85
PWA4805MD-6W	48	18-72	80	±5	±600	±60	80
PWA4812MD-6W				±12	±250	±25	83
PWA4815MD-6W				±15	±200	±20	85
PWB4803MD-6W				3.3	1500	150	78
PWB4805MD-6W				5	1200	120	80
PWB4812MD-6W				12	500	50	84
PWB4815MD-6W				15	400	40	85

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

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

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			
Case material		Copper, nickel plated			
Short circuit protection		Continuous, automatic recovery			
MTBF		1000			K hours
Weight			17		g

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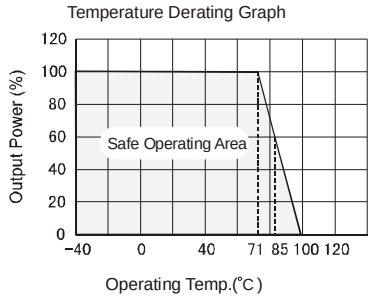
OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Output power	See above products program	0.6		6	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	±2*	
Line regulation(at full load)	Input voltage from low to high		±0.2	±0.5	
Temperature Drift(Vout)	Refer to recommended circuit		±0.02		%/°C
Ripple**	20MHz Bandwidth		20	50	mVp-p
Noise**	20MHz Bandwidth		50	100	
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 CHARECTERISTICS



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_MD-6W & PWB_MD-6W series have been tested according to the following recommended testing circuit before leaving factory (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 of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

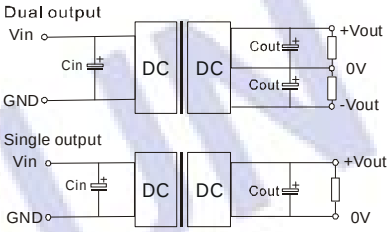
General: Cin: 24V&48V 10μF~47μF
Cout: 10μF/100mA

3) Input Current

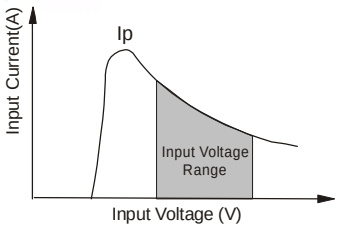
When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (See figure 2), General: Ip ≤1.6*Iin-max

4) No parallel connection or plug and play

RECOMMENDE D CIRCUIT



(Figure 1)



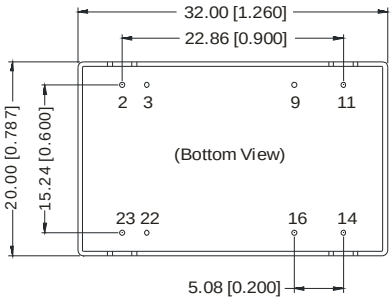
(Figure 2)

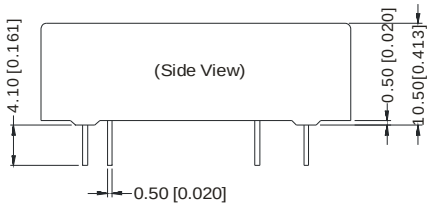
Output External Capacitor Table (Table 1)

Single Vout (VDC)	Cout (uF)	Daul Vout (VDC)	Cout (uF)
3.3	2200	±5	680
5	1000	±12	330
12	470	±15	220
15	330	-	-

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS





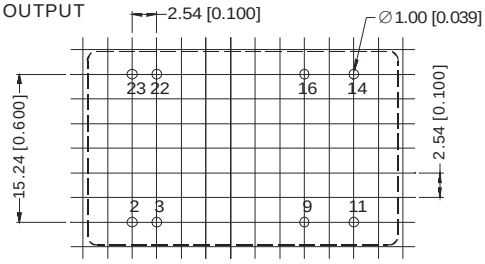
Note:
Unit:mm[inch]
Pin diameter tolerances:± 0.10mm[± 0.004inch]
General tolerances:± 0.25mm[± 0.010inch]

FOOTPRINT DETAILS		
Pin	Single	Dual
2,3	GND	GND
9	No Pin	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22,23	Vin	Vin

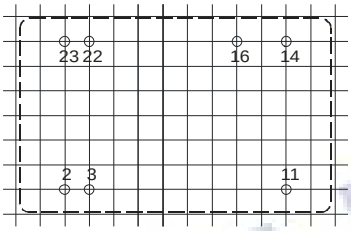
NC:No connection

RECOMMENDED FOOTPRINT

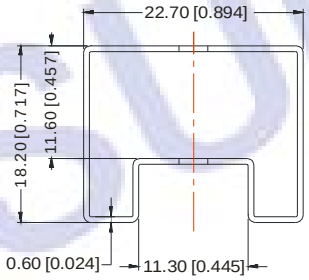
DUAL OUTPUT



SINGLE OUTPUT



TUBE OUTLINE DIMENSIONS



Note:
Unit :mm[inch]
General tolerances: ± 0.50mm[± 0.020inch]
L=530mm[20.866inch] Tube Quantity: 15pcs
L=220mm[8.661inch] Tube Quantity: 6pcs

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. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.