MORNSUN
mini power professional

PMA_MD-1W Series

ULTRA WIDE INPUT ISOLATED & REGULATED 1W OUTPUT DUAL OUTPUT DIP PACKAGE

RoHS

multi-country patent protection

FEATURES

- Wide (4:1) Input Range
- Continous short circuit protection
- Efficiency Up To 82%
- Soft start function
- Operating Temperature: -40°C~+85°C
- 1.5KVDC Isolation
- Dual Output
- Metal casing
- No Heat Sink Required
- Industry Standard Pin out
- MTBF>1,000,000 hours
- RoHS Compliance

APPLICATIONS

The PMA_MD-1W 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.

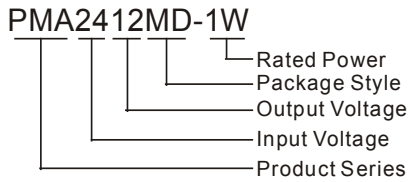
These products apply to:

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.

These products don't apply to:

1) Where the input voltage t is required to be more than 4:1;
2) Where the isolation voltage between input and output is required to be >1500VDC;

MODEL SELECTION



PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ)	Package Style
	Voltage (VDC)			Voltage (VDC)	Current (mA)			
	Nominal	Range	Max*		Max	Min		
PMA2405MD-1W	24	9~36VDC	40	±5	±100	±10	78	DIP
PMA2409MD-1W	24	9~36VDC	40	±9	±56	±6	80	DIP
PMA2412MD-1W	24	9~36VDC	40	±12	±42	±5	81	DIP
PMA2415MD-1W	24	9~36VDC	40	±15	±33	±4	82	DIP
PMA4805MD-1W	48	18~72VDC	80	±5	±100	±10	76	DIP
PMA4809MD-1W	48	18~72VD	80	±9	±56	±6	80	DIP
PMA4812MD-1W	48	18~72VD	80	±12	±42	±5	81	DIP
PMA4815MD-1W	48	18~72VD	80	±15	±33	±4	82	DIP

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
1W output power	See below products program	0.1		1	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	DC-20MHz bandwidth		50		mVP-p
Switching frequency	100% load, nominal input voltage	100		400	KHz
	10% load, nominal input voltage	450		800	

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

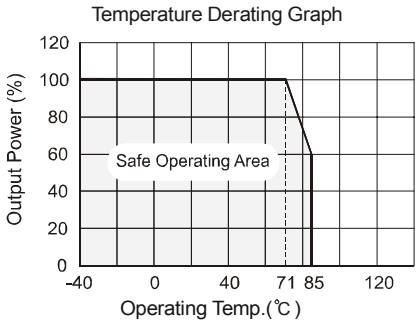
MORNSUN Science& Technology Ltd.

Address: 8th floor 8th building, Huangzhou Industrial District, Guangzhou, China
Tel: 86-20-38601850
Fax: 86-20-38601272
Http://www.mornsun-power.com

COMMON SPECIFICATION

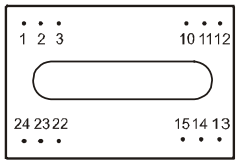
Output Short Circuit Protection	Continuous
Temperature Rise at Full Load	30°C (TYP)
Cooling	Free Air Convection
No-load Power Consumption	100mW (typical)
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-55°C ~+125°C
Lead Temperature***	300°C (1.5mm from case for 10 seconds)
Storage Humidity Range	≤ 95%
Case Material	Metal
MTBF	>1,000,000 hours
***Lead Temperature 1.5mm from case for 10 seconds.	

TYPICAL CHARECTERISTICS



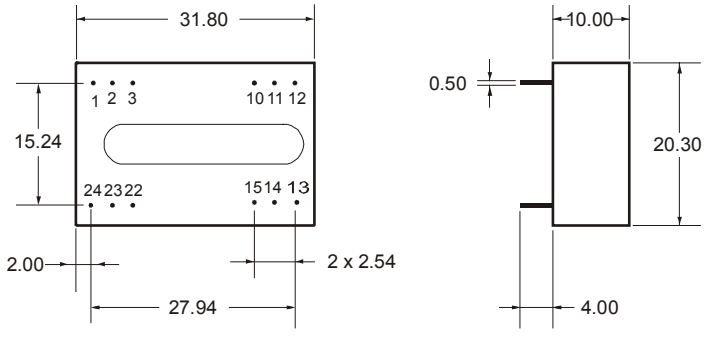
FOOTPRINT DETAILS

Bottom View



Pin	Function
1,24	+Vin
12,13	-Vin
2,23	-Vo
11,14	+Vo
3,10,15,22	Common

OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



(Bottom View) (Side View)

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

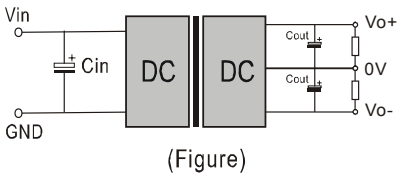
APPLICATION NOTE

Recommended Circuit

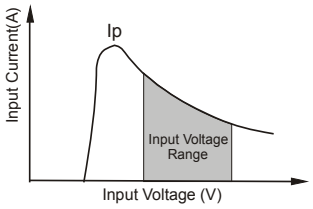
All the PMA_MD-1W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (See Figure 1 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly 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 our metal packaged products.

Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power



(Figure)



(Figure 2)

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)

External Capacitor

Although this series of DC/DC converter can work without external capacitor, in order to keep an optimum performance, however, it needs external capacitor. (See Table 1)

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 out put 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(Table 1)

Vin	C_{in}	C_{out} (0+70°C)	C_{out} (-40+85°C)
5V & 12V	100uF	100uF (electrolytic capacitor)	47uF (tantalum capacitor)
24V & 48V	10uF		

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