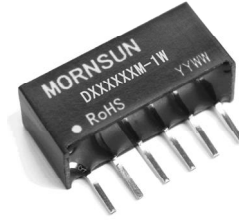


MORNSUN



D_M-1W Series

**1W, FIXED INPUT, 1000V ISOLATED & UNREGULATED
TWIN OUTPUT DC-DC CONVERTER**

multi-country patent protection **RoHS**

FEATURES

- Small footprint
- SIP package
- Temperature range: -40°C~+85°C
- 1KVDC isolation
- No Heat sink required
- No external component required
- Internal SMD Construction
- Industry standard pinout
- RoHS Compliance

APPLICATIONS

The D_M-1W Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

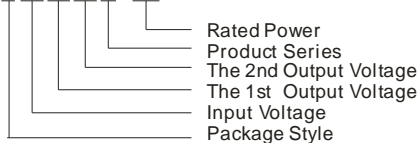
These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$);
- 2) Where isolation is necessary between input and output (isolation voltage $\leq 1000\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

MODEL SELECTION

D050505M-1W



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PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% , Typ)
	Voltage (VDC)		Voltage (VDC)	Current (mA)		
	Nominal	Range		Max.	Min.	
D030505M-1W	3.3	2.97-3.63	5	100	10	70
D050303M-1W	5	4.5-5.5	3.3	100	10	62
D050505M-1W			5	100	10	71

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Temp. rise at full load			15	25	
Short circuit protection*				1	S
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
MTBF			1.4		g
Weight		3500			K hours

*Supply voltage must be discontinued at the end of short circuit duration.

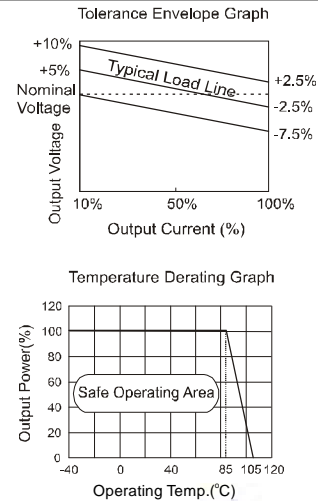
ISOLATION SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation voltage (Vin/Vout)	Tested for 1 minute and 1mA max	1000			VDC
Isolation voltage (Vo1/Vo2)	Tested for 1 minute and 1mA max	1000			
Isolation resistance (Vin/Vout)	Test at 500VDC	1000			MΩ
Isolation resistance (Vo1/Vo2)	Test at 500VDC	1000			
Isolation capacitance(Vin/Vout)			30		pF
Isolation capacitance(Vo1/Vo2)			30		

OUTPUT SPECIFICATIONS					
Item	Test Conditions	Min.	Typ.	Max.	Units
Output power		0.1		1	W
Line regulation	For Vin change of 1%			±1.5	%
Load regulation	10% to 100% load (3.3V output)		15	20	
	10% to 100% load(5V output)		12.8	15	
Output voltage accuracy		See tolerance envelope graph			
Temperature drift	100% full load			±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth		75	100	mVp-p
Switching frequency	Full load, nominal input		130		KHz

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

TYPICAL CHARACTERISTICS



APPLICATION NOTE

Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, 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 output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power.

Recommended circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. 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 recommended capacitance of its filter capacitor sees (Table 1).

Output Voltage Regulation and Over-voltage Protection Circuit

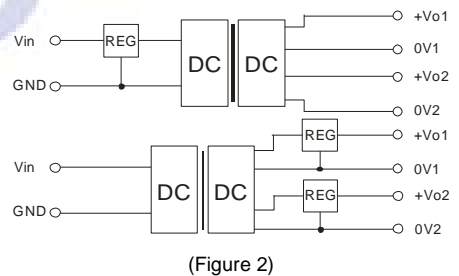
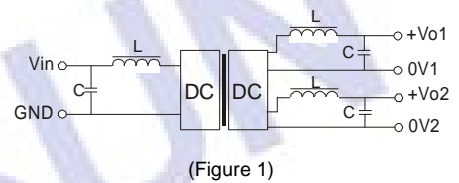
The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure 2).

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

No parallel connection or plug and play

RECOMMENDED CIRCUIT



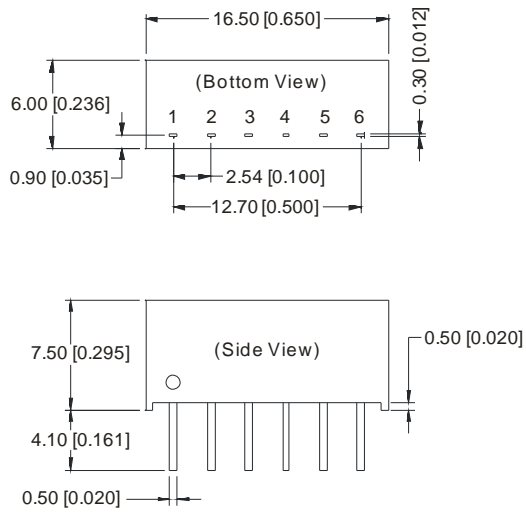
EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin(VDC)	Cin(uF)	Cout(uF)	Vout(VDC)
3.3/5	4.7	3.3/5	4.7

It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

OUTLINE DIMENSIONS & PIN CONNECTIONS

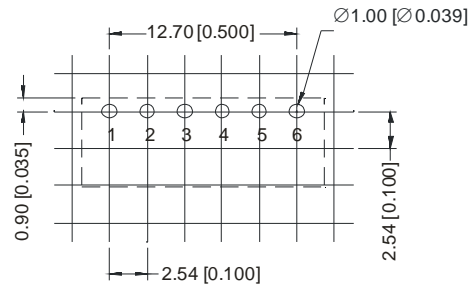
MECHANICAL DIMENSIONS



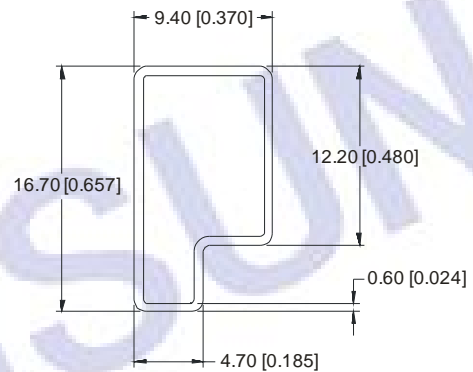
Note:
 Unit:mm[inch]
 Pin section tolerances: $\pm 0.10\text{mm}$ [0.004inch]
 General tolerances: $\pm 0.25\text{mm}$ [$\pm 0.010\text{inch}$]

FOOTPRINT DETAILS	
Pin	Function
1	Vin
2	GND
3	OV1
4	Vo1
5	OV2
6	Vo2

RECOMMENDED FOOTPRINT



TUBE OUTLINE DIMENSIONS



Note:
 Unit :mm[inch]
 General tolerances: $\pm 0.50\text{mm}$ [$\pm 0.020\text{inch}$]
 L=530mm[20.866inch] Tube Quantity: 30pcs
 L=220mm[8.661inch] Tube Quantity: 11pcs

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed.
2. All specifications measured at $T_a=25^\circ\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on corporate standards.
4. Only typical models listed, other models may be different, please contact our technical person for more details.