

## FEATURES

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

## MODEL SELECTION

**D<sup>①</sup>05<sup>②</sup>05<sup>③</sup>05<sup>④</sup>X<sup>⑤</sup>M<sup>⑥</sup>**

- ① Product Series
- ② Input Voltage
- ③ The 1st Output Voltage
- ④ The 2nd Output Voltage
- ⑤ Fixed Input
- ⑥ Mini SIP Package Style

## APPLICATIONS

The D-XM 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.

## SELECTION GUIDE

Order code	Input Voltage (V)	Output Voltage1 (V)	Output Voltage2 (V)	Output Current1 (mA)	Output Current2 (mA)	Efficiency (%)	MTTF <sup>1</sup> (KHRS)
D050503XM	5	5	3.3	100	152	70	1615
RD050505XM	5	5	5	50	50	70	146
D050505XM	5	5	5	100	100	70	1615
D050509XM	5	5	9	100	56	80	669
D050512XM	5	5	12	100	42	80	339
D050515XM	5	5	15	100	34	80	187
RD120505XM	12	5	5	50	50	84	135
D120505XM	12	5	5	100	100	70	489
D120509XM	12	5	9	100	56	80	343
D120512XM	12	5	12	100	42	80	229
D120515XM	12	5	15	100	34	80	148
RD240505XM	24	5	5	50	50	84	130
D240505XM	24	5	5	100	100	81	395
D240509XM	24	5	9	100	56	82	289
D240512XM	24	5	12	100	42	84	186
D240515XM	24	5	15	100	34	84	150

## COMMON SPECIFICATIONS

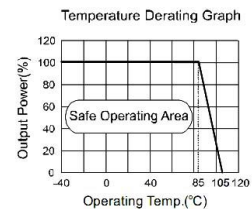
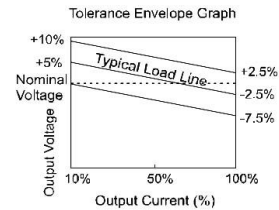
Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Temp. rise at full load			15	25	
Short circuit protection*				1	S
Cooling		Free air convection			
Case material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

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

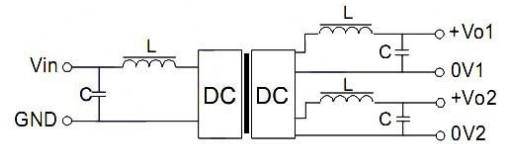


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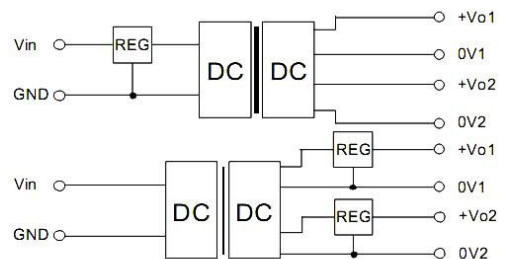
### TYPICAL CHARACTERISTICS



### RECOMMENDED CIRCUIT



(Figure 1)



(Figure 2)

EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin(VDC)	Cin(μF)	Coit(μF)	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.

### 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			VDC
Isolation resistance (Vin/Vout)	Test at 500VDC	1000			MΩ
Isolation resistance (Vo1/Vo2)	Test at 500VDC	1000			MΩ
Isolation capacitance(Vin/Vout)			30		pF
Isolation capacitance(Vo1/Vo2)			30		pF

### 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	%
Load regulation	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.

### APPLICATION NOTE

#### Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load could not be less than 10% of the full 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 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).

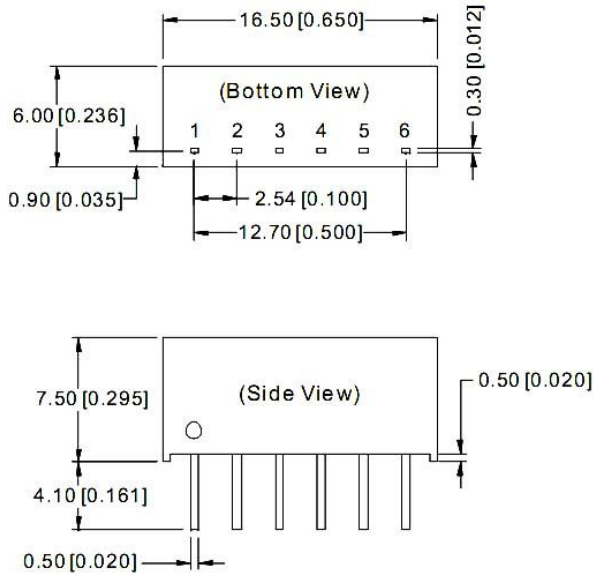
#### Overload Protection

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

**OUTLINE DIMENSIONS & FOOTPRINT DETAILS**

**MECHANICAL DIMENSIONS**



Note:

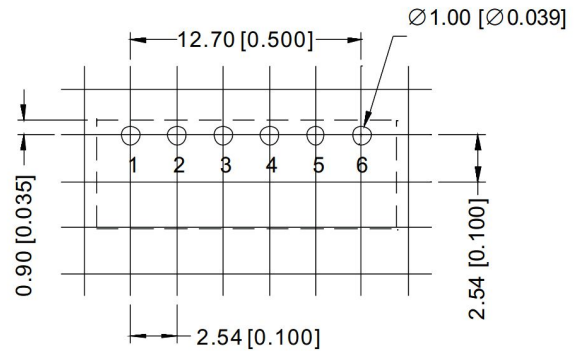
Unit:mm[ inch]

Pin section tolerances:±0.10mm[±0.004inch]

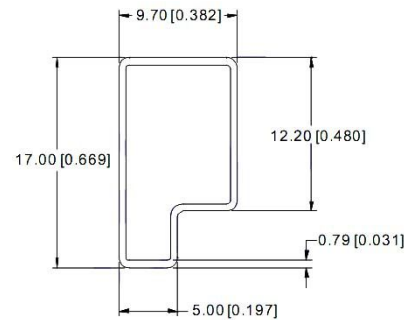
General tolerances:±0.25mm[±0.010inch]

FOOTPRINT DETAILS	
Pin	Function
1	Vin
2	GND
3	Vo1
4	0V1
5	Vo2
6	0V2

**RECOMMENDED FOOTPRINT**



**TUBE OUTLINE DIMENSIONS**



Note:

Unit :mm[inch]

General tolerances:±0.50mm[±0.020inch]

L=530mm[20.866inch] Tube Quantity: 30pcs

L=220mm[8.661inch] Tube Quantity: 11pcs