

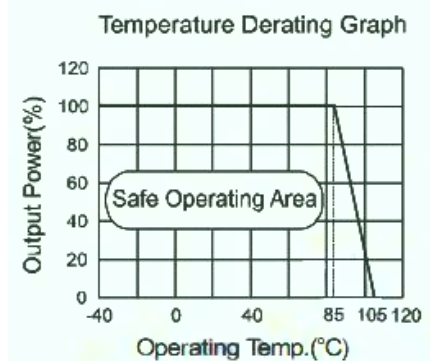
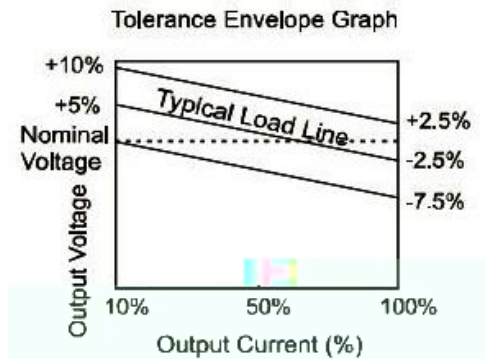
PRODUCT PROGRAM

Part Number	Input		Voltage (VDC)	Output		Efficiency (% Typ.)	Certificate
	Voltage (VDC)			Current (mA)			
	Nominal	Range	Max.	Min.			
2E0505XD			±5	±200	±20	82	UL C2E
2E0509XD			±9	±111	±12	83	UL C2E
2E0512XD			±12	±84	±9	84	UL C2E
2E0515XD			±15	±67	±7	82	UL CE
2F0503XD	5	4.5-5.5	3.3	400	40	74	--
2F0505XD			5	400	40	81	UL CE
2F0509XD			9	222	23	83	UL CE
2F0512XD			12	167	17	83	UL CE
2F0515XD			15	133	14	83	

ISOLATION SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1 mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

TYPICAL CHARACTERISTICS



OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units	
Output power		0.2		2	W	
Line regulation	For Vin change of ±1%	(3.3V output)		±1.5	%	
		(Others output)		±1.2	%	
Load regulation	10% to 100% load	(3.3V output)		12	20	%
		(5V output)		10	15	%
		(9V output)		8.3	10	%
		(12V output)		6.8	10	%
		(15V output)		6.3	10	%
Output voltage accuracy		See tolerance envelope graph				
Temperature drift	100% full load			±0.03	%/°C	
Ripple & Noise*	20MHz Bandwidth		75	150	mVp-p	
Switching frequency	Full load, nominal input		70		KHz	

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

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 (E_XD-1W/F_XD-1W Series).

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).

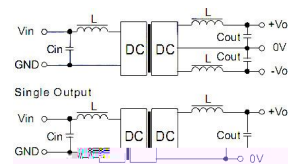
Overload Protection

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.

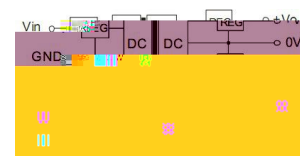
RECOMMENDED CIRCUIT

Dual Output



(Figure 1)

Dual Output



(Figure 2)

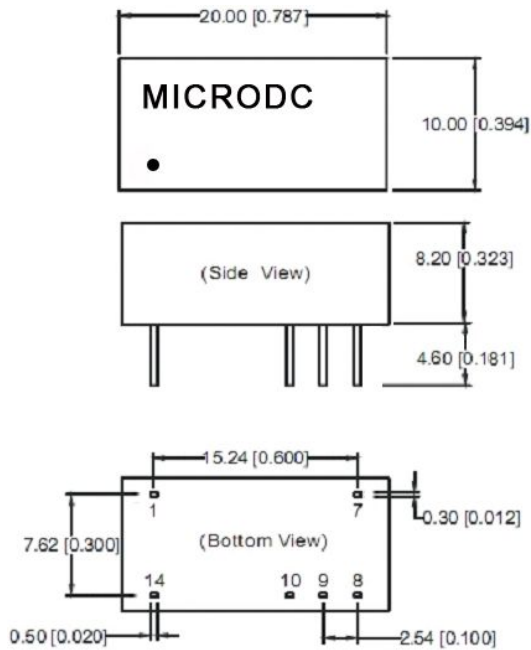
EXTERNAL CAPACITOR TABLE (TABLE 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
5	4.7	3.3/5	10	±5	4.7
12	2.2	9	4.7	±9	2.2
24	1	12	2.2	±12	1
-	-	15	1	±15	1

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 2



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

FOOTPRINT DETAILS

SERIES	F-XD
--------	------