



A_XD-1W & B_XD-1W Series

1W, FIXED INPUT, 1000V ISOLATED & UNREGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER

multi-country patent protection



FEATURES

- High Efficiency up to 80%
- Dual /Single Output Models
- DIP Package
- 1KVDC Isolation
- Temperature Range: -40°C~+85°C
- No Heatsink Required
- Internal SMD Construction
- RoHS Compliance

APPLICATIONS

The A_XD-1W & B_XD-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.

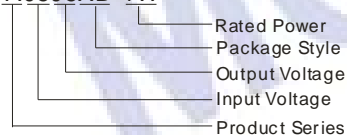
These products apply to:

- Where the voltage of the input power supply is fixed (voltage variation $\leq \pm 10\%$);
- Where isolation is necessary between input and output (isolation voltage $\leq 1000\text{VDC}$);
- 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

A0505XD-1W



PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% Typ)	Certificate		
	Voltage (VDC)		Voltage (VDC)	Current (mA)					
	Nominal	Range		Max	Min				
B0505XD-1W	5	4.5~5.5	5	200	20	70	UL、CE		
B0509XD-1W			9	111	12	78	UL、CE		
B0512XD-1W			12	83	9	78	UL、CE		
B0515XD-1W			15	67	7	80	UL、CE		
A0505XD-1W			± 5	± 100	± 10	72	UL		
A0509XD-1W			± 9	± 56	± 6	77	UL		
A0512XD-1W			± 12	± 42	± 5	79	UL		
A0515XD-1W			± 15	± 33	± 4	80	UL		
B1205XD-1W			12	10.8~13.2	5	200	20	71	UL、CE
B1209XD-1W					9	111	12	76	UL、CE
B1212XD-1W	12	83			9	78	UL、CE		
B1215XD-1W	15	67			7	79	UL、CE		
A1205XD-1W	± 5	± 100			± 10	72	UL		
A1209XD-1W	± 9	± 56			± 6	78	UL		
A1212XD-1W	± 12	± 42			± 5	79	UL		
A1215XD-1W	± 15	± 33			± 4	78	UL		
B2405XD-1W	24	21.6~26.4			5	200	20	73	UL、CE
B2409XD-1W					9	111	12	78	UL、CE
B2412XD-1W			12	83	9	78	UL、CE		
B2415XD-1W			15	67	7	79	UL、CE		
A2405XD-1W			± 5	± 100	± 10	73	UL		
A2409XD-1W			± 9	± 56	± 6	79	UL		
A2412XD-1W			± 12	± 42	± 5	80	UL		
A2415XD-1W			± 15	± 33	± 4	80	UL		

Note: The A/B_XD-W25 series also are available in our company.

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	
Cooling	Free air convection				
Isolation voltage	Tested for 1 minute and 1mA max	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Short circuit protection*	input voltage			1	second
Case material	Plastic(UL94-V0)				
MTBF		3500			K Hours
Weigh			2.4		g

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

OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power		0.1		1	W
Line regulation	For Vin change of 1%			±1.2	%
Load regulation	10% to 100% load	(5V output)	12.8	15	%
		(9V output)	8.3	15	
		(12V output)	6.8	15	
		(15V output)	6.3	15	
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			0.03	%/°C
Ripple & Noise*	20MHz Bandwidth	A_XD-1W	50	75	mVp-p
		B_XD-1W	75	100	
Switching frequency	Full load, nominal input		100		KHz

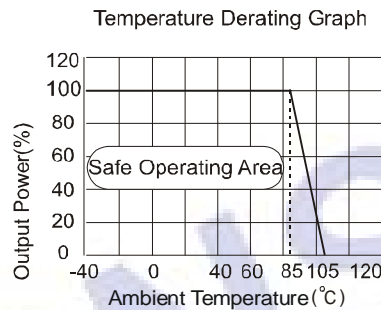
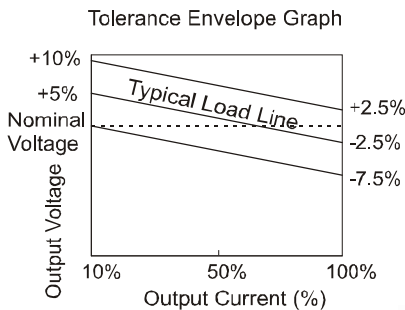
*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:

1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.

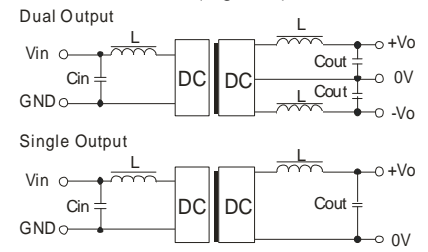
2. Dual output models unbalanced load: ±5%.

TYPICAL CHARACTERISTICS



Recommended testing and application 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).



(Figure 1)

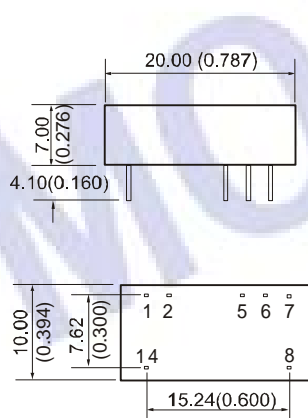
It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (uF)	Single Vout (VDC)	Cout (uF)	Dual Vout (VDC)	Cou (uF)
5	4.7	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 recommend to connect any external capacitor in the application field with less than 0.5 watt output.

OUTLINE DIMENSIONS & PIN CONNECTIONS



Note:

Unit:mm(inch)

Pin section:0.50*0.30mm(0.020*0.012inch)

Pin tolerances:±0.10mm(±0.004inch)

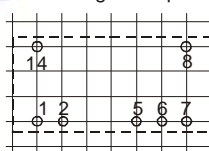
General tolerances:±0.25mm(±0.010inch)

First Angle Projection

RECOMMENDED FOOTPRINT

Top view, grid:2.54mm(0.1inch), diameter:1.00mm

Dual/Single Output



FOOTPRINT DETAILS

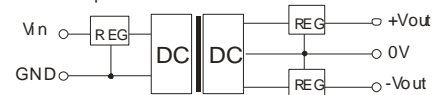
Pin	Singles	Duals
1	Vin	Vin
2	GND	GND
5	0V	0V
6	+Vo	+Vo
7	NC	-Vo
Others	NC	NC

NC: no connection.

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).

Dual Output



Single Output



(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.

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(A/B_XD-W25 Series).