MORNSUN

A_(X)T-W2 Series

0.25W,FIXED INPUT, ISOLATED & UNREGULATED DUAL OUTPUT, SMD DC-DC CONVERTER

multi-country patent protection **RoHS**

FEATURES

Small footprint
SMD Package Style
No Heat sink Required
1KVDC Isolation
Temperature Range: -40°C to +85°C
Internal SMD construction
No External Component Required
Industry Standard Pinout
RoHS Compliance

APPLICATIONS

The A_(X)T-W2 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 ≤ ±10%);
2) Where isolation is necessary between input and output (isolation voltage ≤1000VDC);
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

A0505(X)T-W2

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (%, Typ.)
	Voltage (VDC)		Voltage (VDC)	Current (mA)		
	Nominal	Range		Max	Min	
A0503(X)T-W2	5	4.5-5.5	±3.3	±38	±4	62
A0505(X)T-W2			±5	±25	±3	64
A0509(X)T-W2			±9	±14	±2	65
A0512(X)T-W2			±12	±11	±2	67
A0515(X)T-W2			±15	±9	±1	66
A1205(X)T-W2	12	10.8-13.2	±5	±25	±3	65
A1209(X)T-W2			±9	±14	±2	64
A1212(X)T-W2			±12	±11	±2	63
A1215(X)T-W2			±15	±9	±1	64
A2405(X)T-W2	24	21.6-26.4	±5	±25	±3	61
A2409(X)T-W2			±9	±14	±2	62
A2412(X)T-W2			±12	±11	±2	63
A2415(X)T-W2			±15	±9	±1	65

Note: The A_XT-W2 series have no 3,6,8,9 pin. For example A0505XT-W2.

ISOLATION SPECIFICATIONS

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

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ.	Max	Units
Output power				0.25	W
Line regulation	For Vin change of 1%(3.3V output)			±1.5	%
	For Vin change of 1%(Others output)			±1.2	
Load regulation	10% to 100% load (3.3V output)		15	20	
	10% to 100% load (5V output)		12.8	15	
	10% to 100% load (9V output)		8.3	15	
	10% to 100% load (12V output)		6.8	15	
	10% to 100% load (15V output)		6.3	15	
Output voltage accuracy		See tolerance envelope graph			
Temperature drift	100% full load			0.03	%/°C
Output ripple &Noise*	20MHz Bandwidth		50	100	mVp-p
Switching frequency	Full load, nominal input(24V input)		500		KHz
	Full load, nominal input (others input)		110		

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

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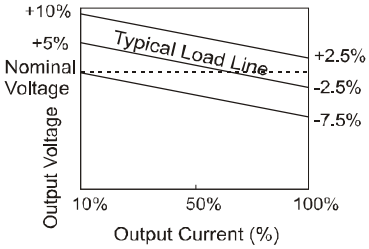
COMMON SPECIFICATION

Item	Test Conditions	Min	Typ.	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			260	
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
Short circuit protection*				1	s
MTBF		3500			K hours
Weight			1.70		g

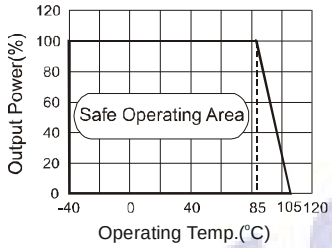
*Supply voltage must be discontinued at the end of short circuit duration.

TYPICAL CHARACTERISTICS

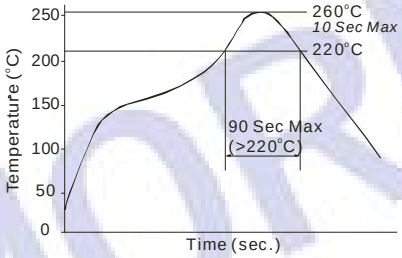
Tolerance Envelope Graph



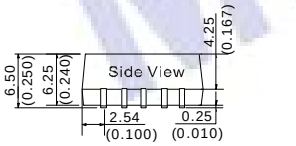
Temperature Derating Graph

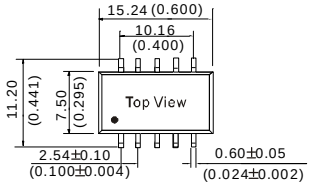


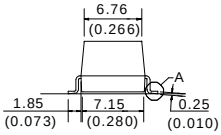
RECOMMENDED REFLOW SOLDERING PROFILE

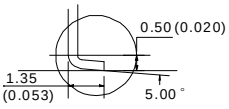


OUTLINE DIMENSIONS & FOOTPRINT DETAILS



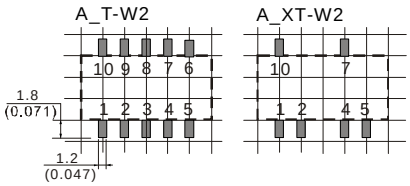






First Angle Projection

RECOMMENDED FOOTPRINT
Top view,grid:2.54mm(0.1inch)



FOOTPRINT DETAILS

Pin	Function(T)	Function(XT)
1	GND	GND
2	Vin	Vin
4	0V	0V
5	-Vo	-Vo
7	+Vo	+Vo
10	NC	NC
3, 6, 8, 9	NC	NO PIN

NC:No Connection

Note:
Unit:mm(inch)
Pin section:0.60*0.25mm(0.024*0.010inch)
Pin section tolerances:±0.10mm(±0.004inch)
General tolerances:±0.15mm(±0.006inch)

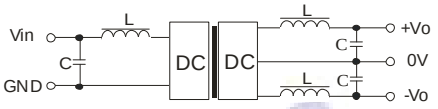
APPLICATION NOTE

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.

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).

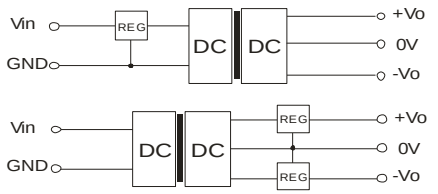


(Figure 1)

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. It's not recommended to connect any external capacitor in the application field.

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 (Figure2).



(Figure2)

Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. 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.

Note:
1. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. Only typical models listed, specifications of custom product may be different. Please contact our service people directly for certain conditions.
3. Operation under minimum load will not damage the converter; However, they may not meet all specification listed.