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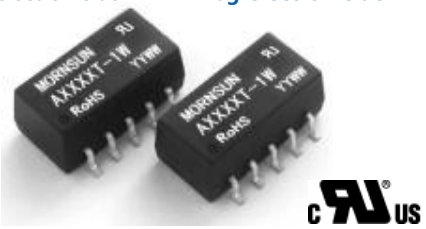


multi-country patent protection **RoHS**

A_T-1W Series

FIXED INPUT ISOLATED & UNREGULATED 1W DUAL OUTPUT UTRALMINIATURE SMD PACKAGE

FEATURES

- Positive& Negative Voltage Output
- Small Footprint
- SMD Package Styles
- 1KVDC Isolation
- Industry Standard Pinout
- No Heatsink Required
- Temperature Range: -40°C -+85°C
- No External Component Required
- RoHS Compliance

APPLICATIONS

The A_T-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 ≤±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

A05 15T-1W

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

PRODUCT PROGRAM

Part Number	Input Voltage (VDC)		Output Voltage (VDC)	Output Current (mA)		Efficiency (%, Typ)	Package Style
	Nominal	Range		Max	Min		
A0303T-1W**	3.3	3.0~3.6	±3.3	±152	±15	67	SMD
A0305T-1W**			±5	±100	±10	70	SMD
A0309T-1W**			±9	±56	±6	74	SMD
A0312T-1W**			±12	±42	±5	77	SMD
A0503T-1W**	5	4.5~5.5	±3.3	±152	±15	67	SMD
A0505T-1W			±5	±100	±10	71	SMD
A0509T-1W			±9	±56	±6	77	SMD
A0512T-1W			±12	±42	±5	78	SMD
A0515T-1W			±15	±33	±4	78	SMD
A1203T-1W**	12	10.8~13.2	±3.3	±152	±15	67	SMD
A1205T-1W			±5	±100	±10	71	SMD
A1209T-1W			±9	±56	±6	73	SMD
A1212T-1W			±12	±42	±5	74	SMD
A1215T-1W			±15	±33	±4	74	SMD

** No **UL**

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

COMMON SPECIFICATIONS

Short circuit protection	1 second
Temperature rise at full load	25°C Max, 15°C Typ
Cooling	Free air convection
Operating temperature range	-40°C~+85°C
Storage temperature range	-55°C ~+125°C
Lead temperature	260°C (1.5mm from case for 10 seconds)
Storage humidity range	≤ 95%
Case material	Plastic (UL94-V0)
MTBF	>3,500,000 hours

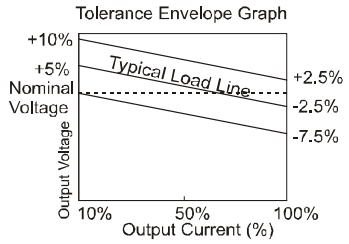
OUTPUT SPECIFICATIONS

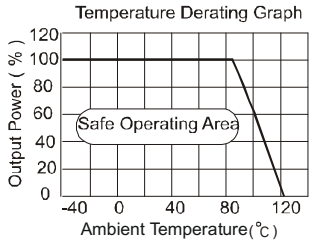
Item	Test conditions	Min	Typ	Max	Units
Output power		0.1		1	W
Line regulation	For Vin change of 1%(3.3V input)			1.5	%
	For Vin change of 1%(Others)			1.2	
Load regulation	10% to 100% load (3.3V output)		15	20	%
	10% to 100% load (5V output)		10	15	
	10% to 100% load (9V output)		6.5	15	
	10% to 100% load (12V output)		6.0	15	
	10% to 100% load (15V output)		6.0	15	
Output voltage accuracy	See tolerance envelope graph				
Temperature drift	100% full load			0.03	%/°C
Output ripple	20MHz Bandwidth		50	75	mVp-p
Noise	20MHz Bandwidth		75	150	
Switching frequency	Full load, nominal input		100		kHz

Note:

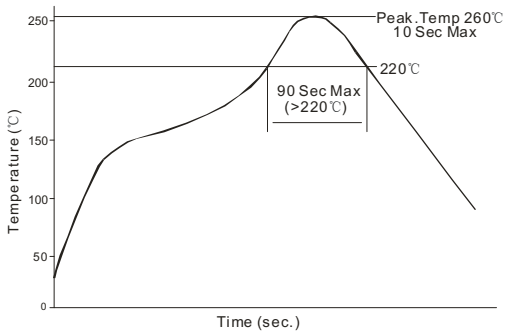
1. All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

TYPICAL CHARACTERISTICS

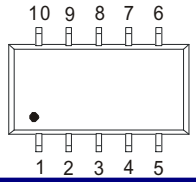




RECOMMENDED REFLOW SOLDERING PROFILE

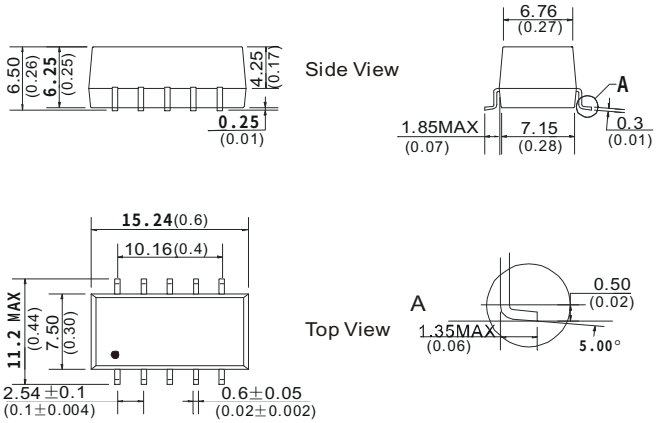


PIN CONNECTIONS



Pin	1	2	4	5	7	Other
Function	GND	Vin	0V	-Vo	+Vo	NC

OUTLINE DIMENSIONS& RECONMENDED FOOTPRINT DETAILS



Note: All Pins on a 2.54mm(0.1) pitch; All Pin Widths are 0.60 mm(0.02);
Tolerances:±0.15mm(0.006); Unit: mm(inch)。

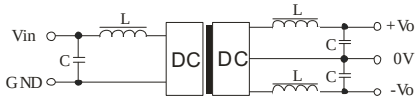
APPLICATION NOTE

Requirement on output load

To ensure this module can operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, 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.

Filtering

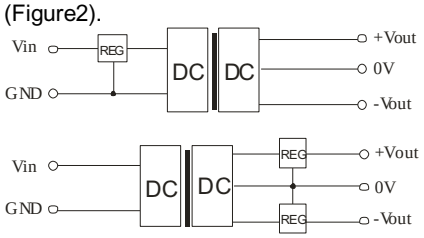
In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees the **EXTERNAL CAPACITOR TABLE.** To get an extremely low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. 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 (Figure 1).



（Figure 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 (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.

EXTERNAL CAPACITOR TABLE

Vin	External capacitor	Vout	External capacitor
3.3VDC	4.7uF	3.3VDC	4.7uF
5VDC	4.7uF	5VDC	4.7uF
12VDC	2.2uF	9VDC	2.2uF
		12VDC	1uF
		15VDC	0.47uF

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

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