



# A\_LT-2W Series

**FIXED INPUT ISOLATED & UNREGULATED  
2W DUAL OUTPUT  
ULTRAMINIATURE SMD PACKAGE**

Multi-country patent protection **RoHS**

## FEATURES

- High Efficiency up to 85%
- High Power Density
- SMD Package Styles
- Small Footprint
- 1kVDC Isolation
- Temperature Range: -40°C ~+85°C
- Industry Standard Pinout
- No Heatsink Required
- No External Component Required
- RoHS Compliance

## APPLICATIONS

The A\_LT-2W 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.

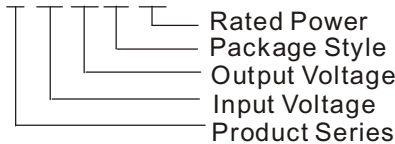
These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation  $\pm 10\%$ );
- 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

A0505LT-2W



PRODUCT PROGRAM							
Part Number	Input		Output			Efficiency (% Typ)	Package Style
	Voltage (VDC)		Voltage (VDC)	Current (mA)			
	Nominal	Range		Max	Min		
A0505LT-2W	5	4.5~5.5	±5	±200	±20	82	SMD
A0509LT-2W			±9	±111	±11	83	SMD
A0512LT-2W			±12	±83	±8	84	SMD
A1205LT-2W	12	10.8~13.2	±5	±200	±20	83	SMD
A1209LT-2W			±9	±111	±11	84	SMD
A1212LT-2W			±12	±83	±8	84	SMD
A1215LT-2W			±15	±67	±7	85	SMD

Note: The A\_T-1W series also are available in our company.

## 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

## 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

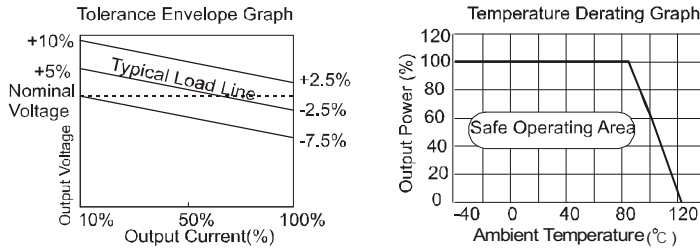
## OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power		0.2		2	W
Line regulation	For Vin change of 1%			1.2	%
Load regulation	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		75	150	mVp-p
Noise	20MHz Bandwidth		150	250	
Switching frequency	Full load, nominal input		70		kHz

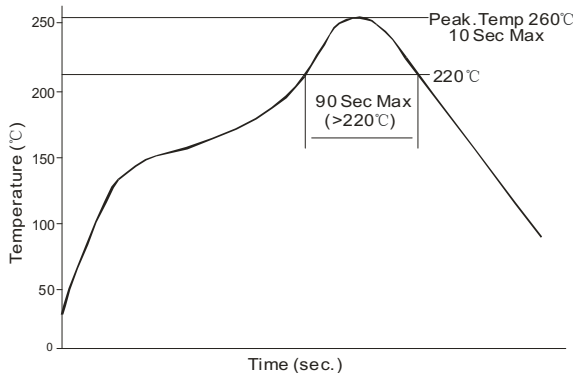
Note:

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



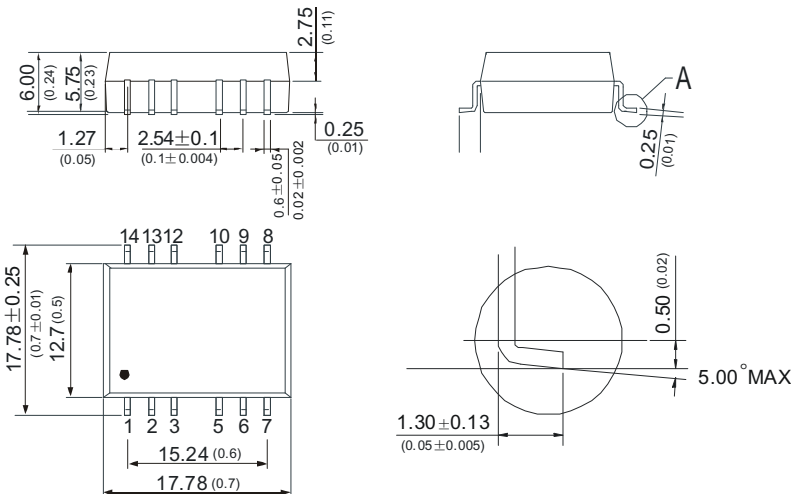
## RECOMMENDED REFLOW SOLDERING PROFILE



## PIN CONNECTIONS

Pin	1	2	3	5	6	7	8	9	10	12	13	14
Function	GND	V <sub>in</sub>	NC	-V <sub>o</sub>	0V	+V <sub>o</sub>	NC	NC	-V <sub>o</sub>	NC	NC	NC

## OUTLINE DIMENSIONS & RECOMMENDED 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)

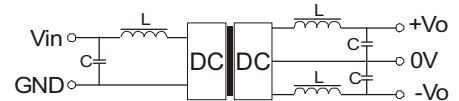
## APPLICATION NOTE

### 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, or use our company's products with a lower rated output power (A\_T-1W series).

## Filtering

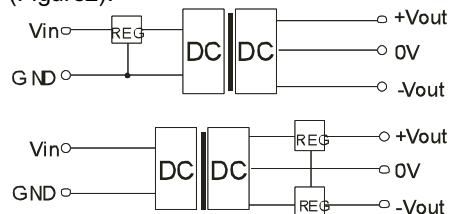
In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For 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 that is connected to the input or output end in series (Figure 2).



(Figure 2)

## 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

V <sub>in</sub>	External capacitor	V <sub>out</sub>	External capacitor
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.**