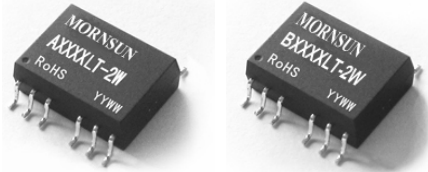


MORNSUN®

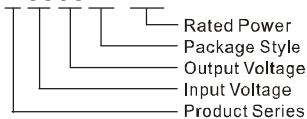
A_LT-2W & B_LT-2W Series 2W, FIXED INPUT, ISOLATED & UNREGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER



Patent Protection RoHS

PART NUMBER SYSTEM

A0505LT-1W



FEATURES

- Efficiency up to 85%
- Low Temperature rise
- 1KVDC Isolation
- SMD Package
- Operating Temperature Range:
-40°C ~ +85°C
- No External Component Required
- Industry Standard Pinout

APPLICATIONS

The A_LT-2W&B_LT-2W Series are designed for application where isolated output is required from a distributed power system.

These products apply to where:

- 1) Input voltage variation $\leq \pm 10\%$;
- 2) 1KVDC input and output isolation;
- 3) Regulated and low ripple noise is not required.

Such as: digital circuits, low frequency analog circuits, and IGBT power device driving circuits.

SELECTION GUIDE

Model Number	Input Voltage(VDC) Nominal (Range)	Output Voltage (VDC)	Output Current (mA)		Input Current (mA)(typ.)		Reflected Ripple Current (mA,typ.)	Max. Capacitive Load [#] (μF)	Efficiency (%, typ.) @Max. Load	Approval
			Max.	Min.	@Max. Load	@No Load				
A0505LT-2W	5 (4.5-5.5)	±5	±200	±20	484	33	37	100	82	
A0509LT-2W		±9	±111	±11	472	38	36		83	
A0512LT-2W		±12	±83	±8	461	33	25		84	
A0515LT-2W		±15	±67	±7	473	48	45		82	
B0505LT-2W	5 (4.5-5.5)	5	400	40	494	40	54	220	80	
B0509LT-2W		9	222	23	468	36	40		82	
B0512LT-2W		12	167	17	468	36	50		84	
B0515LT-2W		15	133	14	476	35	42		84	
A1205LT-2W	12 (10.8-13.2)	±5	±200	±20	193	16	45	100	83	
A1209LT-2W		±9	±111	±11	191	15	41		84	
A1212LT-2W		±12	±83	±8	186	18	46		84	
A1215LT-2W		±15	±67	±7	193	20	46		85	
B1205LT-2W		5	400	40	205	20	49	220	82	
B1209LT-2W		9	222	23	196	22	49		83	
B1212LT-2W		12	167	17	189	19	53		85	
B1215LT-2W		15	133	14	202	21	48		85	

Note: [#] For each output.

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (1sec. max.)	5VDC input	-0.7	--	9	VDC
	12VDC input	-0.7	--	18	
Input Filter		Capacitance Filter			

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Output Power		0.2	--	2	W
Output Voltage Accuracy		See tolerance envelope curve			

Output Voltage Balance	Dual Output, Balanced Loads	--	±0.4	--	%
Line Regulation	For Vin change of ±1%	--	--	±1.2	
Load Regulation	10% to 100% load	5VDC output	--	12.8	
		9VDC output	--	8.3	
		12VDC output	--	6.8	
		15VDC output	--	6.3	
Temperature Drift	100% load	--	--	±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth	--	75	150	mVp-p
Short Circuit Protection**		--	--	1	s

Note: 1.Dual output models unbalanced load: ±5%.
2.*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.
3.**Supply voltage must be discontinued at the end of short circuit duration.

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Tested for 1 minute and leakage current less than 1 mA	1000	--	--	VDC
Isolation Resistance	Test at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input/Output, 100KHz/0.1V	--	30	--	pF
Switching Frequency	Full load, nominal input	--	70	--	KHz
MTBF	MIL-HDBK-217F @25°C	3500	--	--	K hours
Case Material		Epoxy Resin (UL94-V0)			
Weight		--	2.1	--	g

ENVIRONMENTAL SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (above 85°C)	-40	--	85	°C
Storage Temperature		-55	--	125	
Temp. rise at full load		--	25	--	
Lead Temperature	1.5mm from case for 10 seconds	--	--	300	
Cooling		Free air convection			

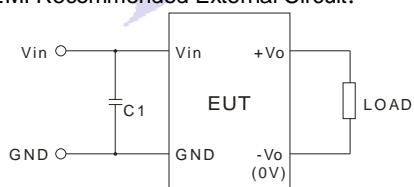
EMC SPECIFICATIONS

EMI	CE	CISPR22/EN55022	CLASS A (External Circuit Refer to Figure1)
EMS	ESD	IEC/EN61000-4-2	Contact ±8KV perf. Criteria B

EMC RECOMMENDED CIRCUIT

A05XXLT-2W already meet CLASS A, for other models following Figure 1.

EMI Recommended External Circuit:



(Figure 1)

A_LT-2W Series

Recommended external circuit parameters:

Vin: 12V

C1: 2.2μF/50V

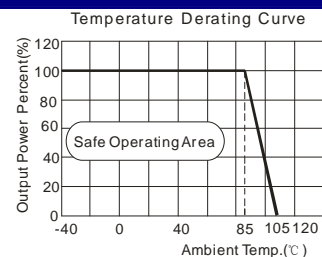
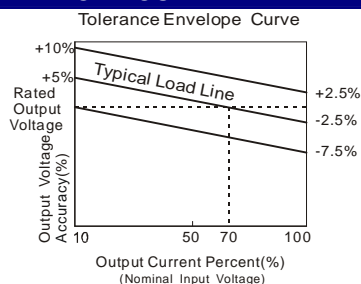
B_LT-2W Series

Recommended external circuit parameters:

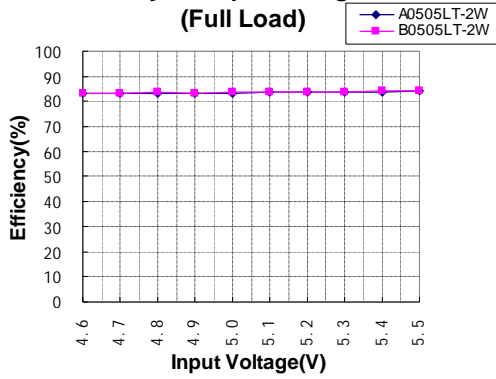
Vin: 5V/12V

C1: 2.2μF/50V

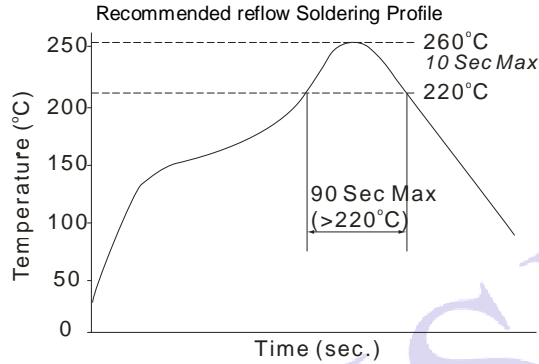
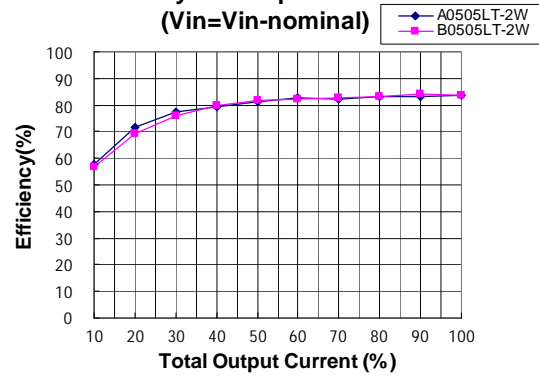
PRODUCT TYPICAL CURVE



**Efficiency VS Input Voltage curve
(Full Load)**



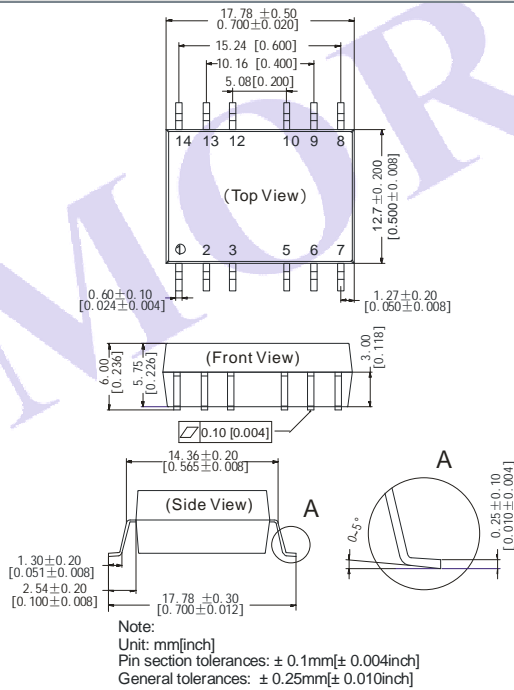
**Efficiency VS Output Load curve
(Vin=Vin-nominal)**



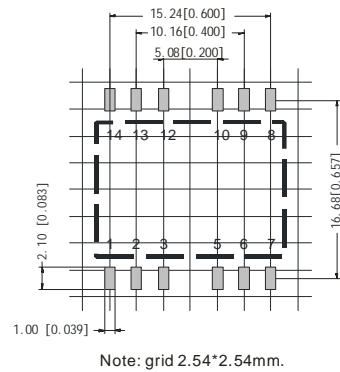
Remark: The curve applies only to the hot air reflow soldering

OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

MECHANICAL DIMENSIONS

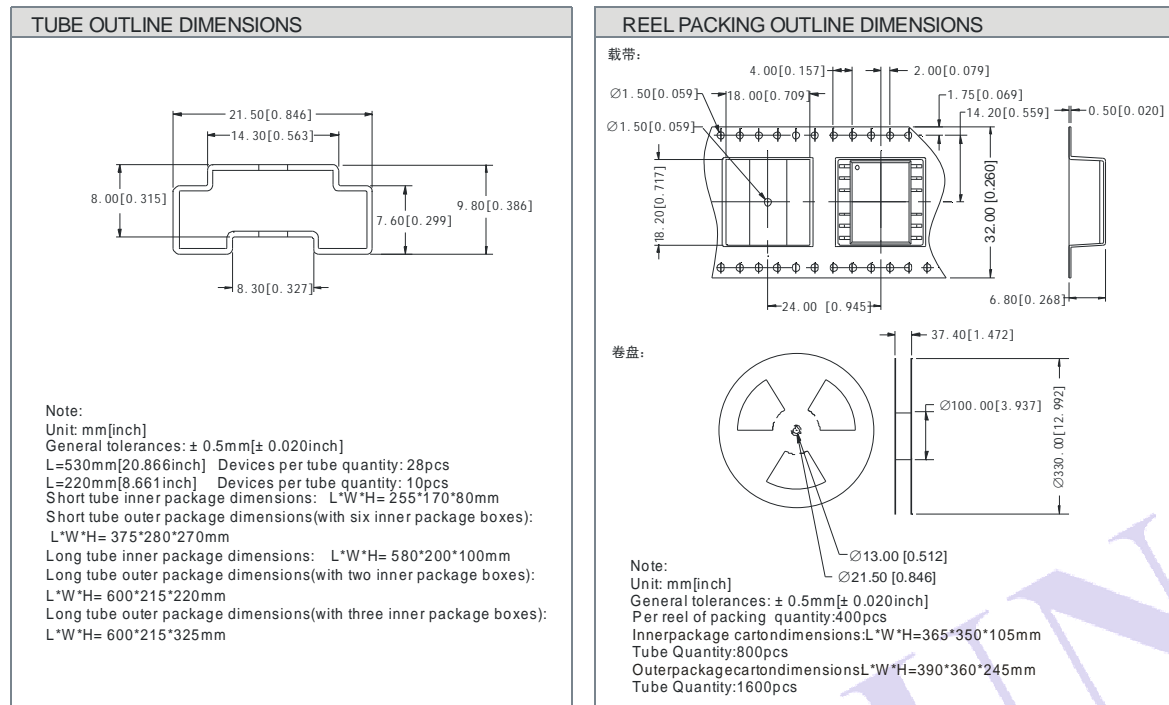


RECOMMENDED FOOTPRINT



FOOTPRINT DETAILS		
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
5	NC	-Vo
6	0V	0V
7	+Vo	+Vo
10	NC	-Vo
Others	NC	NC

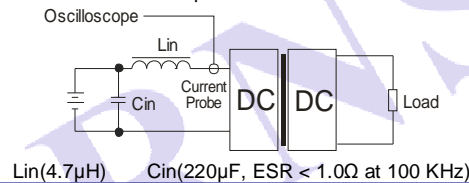
NC: No Connection



TEST CONFIGURATIONS

Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor L_{in} and Capacitor C_{in} to simulate source impedance.



DESIGN CONSIDERATIONS

1) Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load **could not be less than 10% of the full 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 & B_T-1W series).

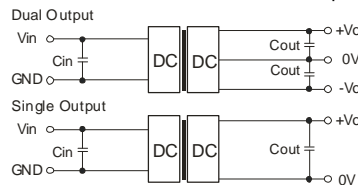
2) Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is add a circuit breaker to the circuit.

3) Recommended circuit

If you want to further decrease the input/output ripple, a capacitor filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 2).

It should also be noted that the capacitance of 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).



(Figure 2)

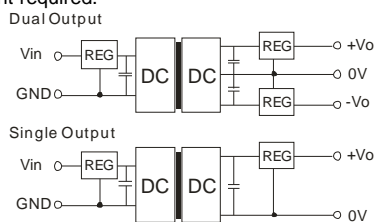
EXTERNAL CAPACITOR TABLE (TABLE 1)

V_{in} (VDC)	C_{in} (μF)	Single V_{out} (VDC)	C_{out} (μF)	Dual V_{out} (VDC)	$C_{out}^{\#}$ (μF)
5	4.7	5	10	± 5	4.7
12	2.2	9	4.7	± 9	2.2
-	-	12	2.2	± 12	1
-	-	15	1	± 15	0.47

Note: $^{\#}$ For each output. It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

4) Output voltage regulation and over-voltage protection circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear regulator and an capacitor filtering network with overheat protection that is connected to the input or output end in series (Figure 3), the recommended capacitance of its filter capacitor sees (Table 1), linear regulator based on the actual voltage and current required.



(Figure 3)

5) Cannot use in parallel and hot swap

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specification listed.
2. Max. Capacitive Load tested at input voltage range and full load.
3. All data in the datasheet are measured according to nominal input voltage, rated output load, $T_A=25^{\circ}\text{C}$, humidity<75%, unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on our corporate standards.
5. The performance in the datasheet is just fit for the part number in the selection guide, and may be different from the customer-designed product, you can get more details from MORNSUN FAE.
6. Contact us for your specific requirement.
7. Specifications subject to change without prior notice.

MORNSUN Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui development center, Science Ave., Guangzhou Science City, Luogang district, Guangzhou, P.R.China.

Tel: 86-20-38601850

Fax: 86-20-38601272

[Http://www.mornsun-power.com](http://www.mornsun-power.com)