

1W, Fixed input voltage , isolated & unregulated single output



RoHS

FEATURES

- Operating temperature range: -40°C to +85°C
- Isolation voltage: 1K VDC
- Miniature SMD package
- Internal surface mounted design
- International standard pin-out
- The production process meet TS16949 system requirements

CB0505XT-1W is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is suitable for

1. Where the voltage of the input power supply is stable (voltage variation: $\pm 10\%V_{in}$);
2. Where isolation is necessary between input and output (isolation voltage $\leq 1000VDC$);
3. Where do not has high requirement of line regulation, load regulation and the ripple & noise of the output voltage:
Such as: pure digital circuits, low frequency analog circuits and IGBT power device driving circuits.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Efficiency (%Min./Typ.) @ Full Load	Max. Capacitive Load (μF)
	Nominal (Range)	Output Voltage (VDC)	Output Current (mA)(Max./Min.)		
CB0505XT-1W	5 (4.5-5.5)	5	200/20	72/76	33

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5VDC input	--	267/24	--	mA
Surge Voltage (1sec. max.)	5VDC input	-0.7	--	9	VDC
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		See tolerance envelope graph (Fig. 1)			
Line Regulation	Input voltage change: $\pm 1\%$ 5VDC output	--	--	± 1.2	--
Load Regulation	10%-100% load 5VDC output	--	12.8	15	%
Ripple *	20MHz bandwidth	--	40	75	mVp-p
Noise*		--	60	100	
Temperature Drift Coefficient	100% load	--	--	± 0.03	%/°C
Output Short Circuit Protection**		--	--	1	s

Note: * Ripple and noise tested with "parallel cable" method, please see *DC-DC Converter Application Notes* for specific operation methods.

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

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1000	--	--	VDC
Isolation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-output, 100KHz/0.1V	--	30	--	pF
Operating Temperature	Derating if the temperature $\geq 85^\circ C$, (see Fig. 2)	-40	--	85	°C
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta=25°C	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	°C

Reflow Soldering Temperature		Peak temp. ≤225°C, maximum duration time ≤60s at 200°C. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Storage Humidity	Non-condensing	--	--	95	%
Switching Frequency	100% load, nominal input voltage	--	125	--	KHz
MTBF	MIL-HDFK-217F@25°C	3500	--	--	K hours

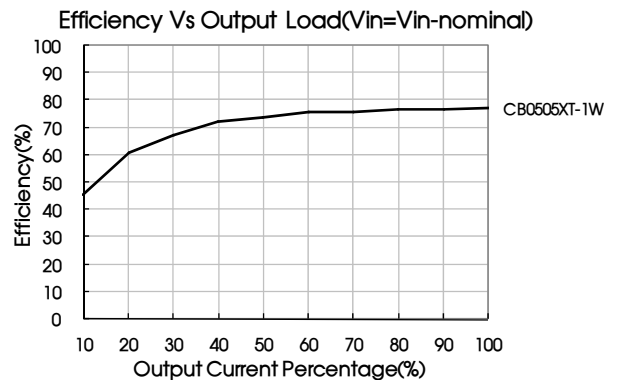
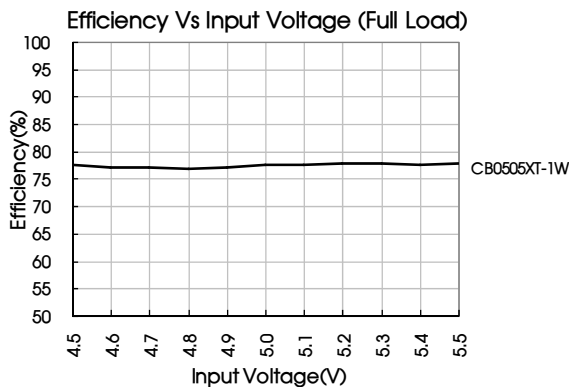
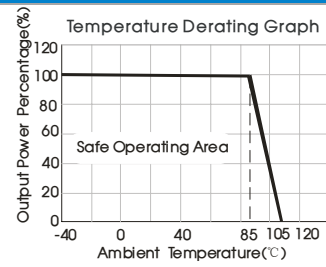
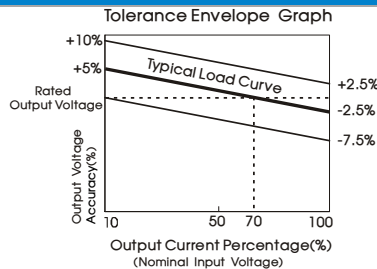
Physical Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin (UL94-V0)
Package Dimensions	12.70*11.20*6.25mm
Weight	1.4 g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	Conducted disturbance	CISPR25/EN55025 CLASS 1 (see Fig. 5 for recommended circuit)
EMS	Electrostatic discharge	ISO10605 Contact ±6KV perf. Criteria B

Product Characteristic Curve



Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.3. Moreover, choosing suitable filter capacitor is very important, start-up problems may be caused by too large capacitance. To ensure the modules running well, the recommended capacitive load values as shown in Table 1.

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear regulator with overheat protection which is connected to the input or output in series (Fig. 4)



Fig.3

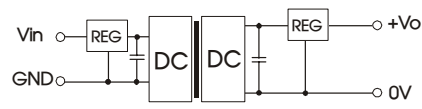


Fig.4

Recommended capacitive load value table (Table 1)

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
5	4.7	5	10

It is not recommended to connect any external capacitor when output power is less than 0.5W.

2. EMC typical recommended circuit

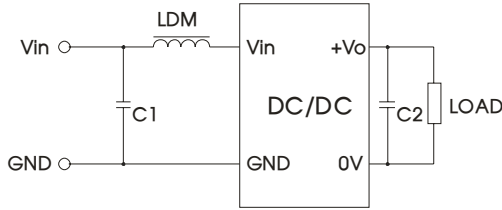


Fig. 5

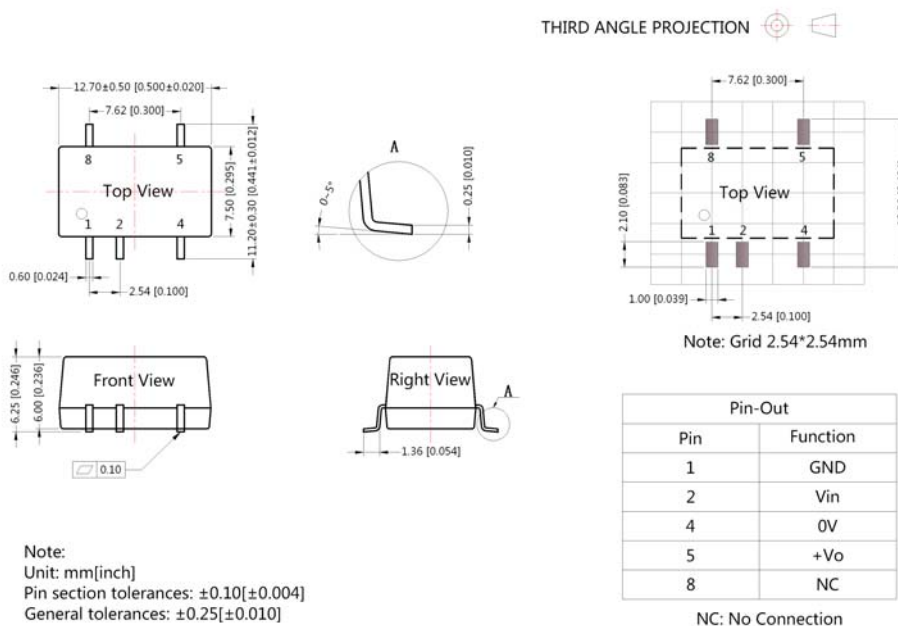
Input voltage (V)		5
EMI	C1	4.7μF /50V
	LDM	6.8μH
	C2	Refer to the Cout in Fig.3

3. Output load requirements

To ensure the module work efficiently and reliably, during the operation, the min. output load should be no less than 10% of the full load. If the actual output power is low, please connect a resistor to the output terminal in parallel, with a recommended resistance which is 10% of the rated power, and derating is required during operation.

4. For more information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout



Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58200021;
2. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
3. The max. capacitive load should be tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25° C, humidity<75% when inputting nominal voltage and outputting rated load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
7. We can provide product customization service;
8. Specifications of this product are subject to changes without prior notice.

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