

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



Patent Protection RoHS

FEATURES

- Short circuit protection (self-recovery)
- Operating temperature range: -50°C to +125°C
- Isolation voltage: 3.5K VDC
- Compact SMD package
- Internal surface mounted design
- International standard pin-out
- Components meet AEC-Q100 standards
- The production process meet IATF16949 system requirements

The CF0505XT-1WR2 is designed for application where isolated output is required from a distributed power system. It can be used in automobile motor control and drive system. Such as motor vehicle communication system controller, engine control system, the ignition system, the motor voltage monitoring, the electronic accelerator pedal, automobile tire pressure detection system, doors and tail lights controller, air conditioning control and battery management system (BMS), etc.

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.)		
CF0505XT-1WR2	5 (4.5-5.5)	5	200/20	71/75	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)		--	267/20	--	mA
Surge Voltage (1sec. max.)		-0.7	--	9	VDC
Reflected Ripple Current		--	15	--	mA
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: ±1%	--	--	±1.2	--
Load Regulation	10%-100% load	--	12	--	%
Ripple & Noise*	20MHz bandwidth	--	60	120	mVp-p
Temperature Drift Coefficient	100% load	--	--	±0.03	%/°C
Output Short Circuit Protection		Continuous, self-recovery			

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

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	3500	--	--	VDC
Isolation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	Derating if the temperature ≥ 105°C, (see Fig. 2)	-50	--	125	°C
Storage Temperature		-55	--	135	
Casing Temperature Rise	Ta=25°C	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	

Reflow Soldering Temperature		Peak temp. $\leq 245^{\circ}\text{C}$, maximum duration time $\leq 60\text{s}$ at 217°C . For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Storage Humidity	Non-condensing	--	--	95	%RH
Vibration		10-1000Hz, 10G, 300 Min. along X, Y and Z			
Switching Frequency	100% load, nominal input voltage	--	100	300	KHz
MTBF	MIL-HDBK-217F@ 25°C	3500	--	--	K hours

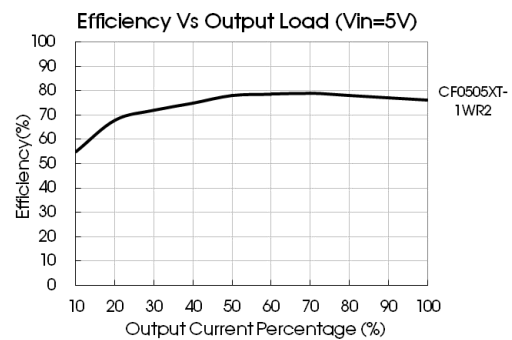
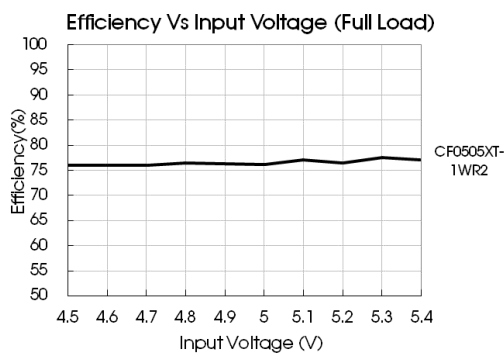
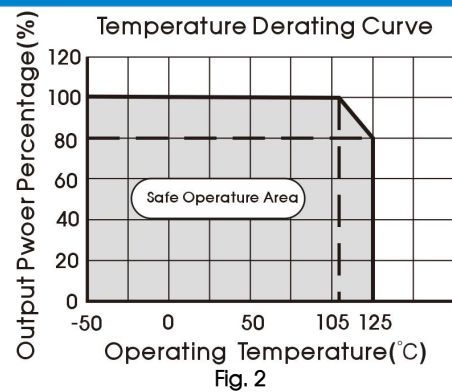
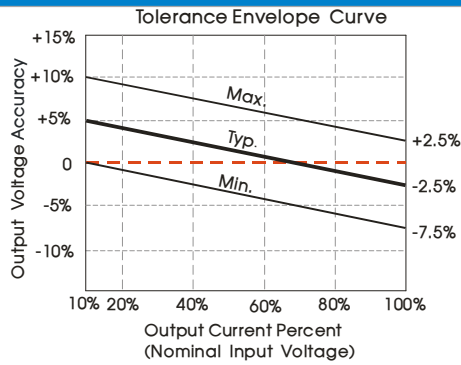
Physical Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin (UL94 V-0)
Package Dimensions	12.70*11.20*7.25mm
Weight	1.5g (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 $\pm 6\text{kV}$ perf. Criteria B

Product Characteristic Curve

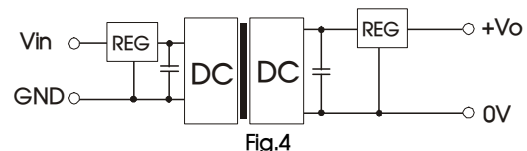
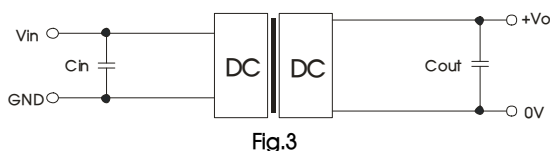


Design Reference

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)



Recommended capacitive load value table (Table 1)

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

2. EMC typical recommended circuit

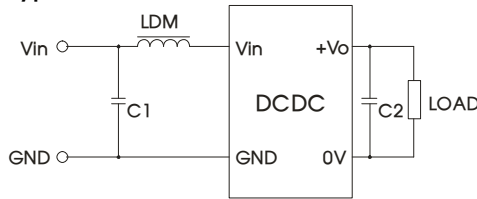


Fig. 5

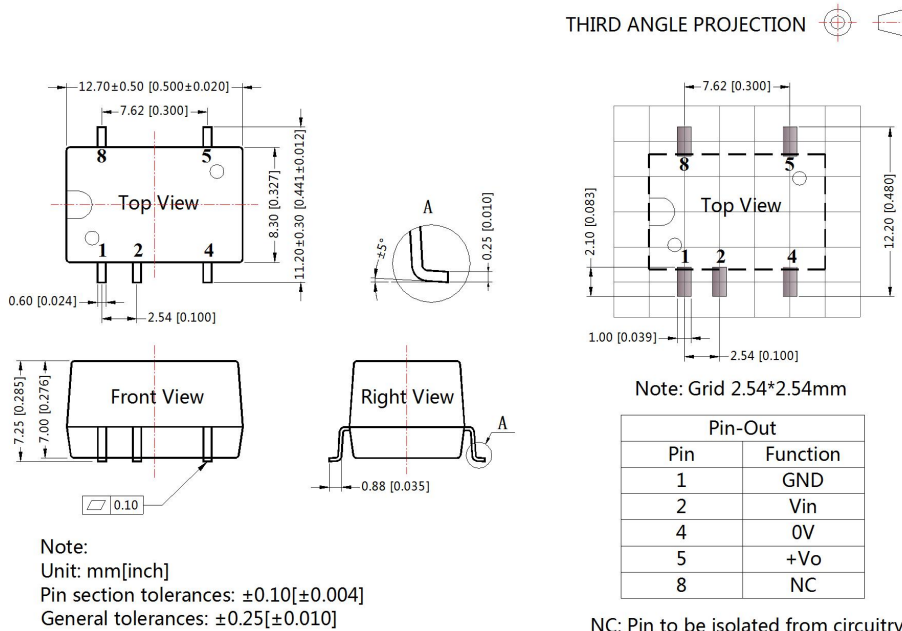
Input voltage (VDC)	5	
EMI	C1	10μF
	C2	Refer to the Cout in Fig.3
	LDM	12μH

3. Output load requirements

In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

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 which can be downloaded from www.mornsun-power.com. Tube Packing bag number: 58210024, Roll Packing bag number: 58200054;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. The maximum capacitive load offered were tested at input voltage range and full load;
4. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75%RH with nominal input voltage and rated output load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. We can provide product customization service, please contact our technicians directly for specific information;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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