DC/DC CONVERTER —— SE_XT-1WR4

Product Feature

- Package Type：SMD
- Operating temperature range：-40℃ - +105℃
- Isolation voltage：3000VDC
- High efficiency up to：85%（Type）
- No-load input current as low as 8mA
- Fields of application：Power, Industrial control, Communications,Internet of Things, Automotive

Selection Guide

Part No.	Input Voltage (VDC)	Output			Full Load Efficiency %（Typ.）	Capacitive Load(μF) Max.
	Nominal (Range)	Voltage (VDC)	Current Min.(mA)	Current Max.(mA)		
SE-0503XT-1WR4	5 (4.5-5.5)	±3.3	±15	±152	78	#1200
SE-0505XT-1WR4	5 (4.5-5.5)	±5	±10	±100	82	#1200
SE-0509XT-1WR4	5 (4.5-5.5)	±9	±6	±56	83	#470
SE-0512XT-1WR4	5 (4.5-5.5)	±12	±4	±42	83	#220
SE-0515XT-1WR4	5 (4.5-5.5)	±15	±4	±34	83	#220
SE-0524XT-1WR4	5 (4.5-5.5)	±24	±3	±21	83	#100
SE-1205XT-1WR4	12 (10.8-13.2)	±5	±10	±100	82	#1200
SE-1212XT-1WR4	12 (10.8-13.2)	±12	±4	±42	83	#220
SE-1215XT-1WR4	12 (10.8-13.2)	±15	±4	±34	83	#220
SE-1224XT-1WR4	12 (10.8-13.2)	±24	±3	±21	85	#100
SE-2405XT-1WR4	24 (21.6-26.4)	±5	±10	±100	82	#1200
SE-2412XT-1WR4	24 (21.6-26.4)	±12	±4	±42	83	#220
SE-2415XT-1WR4	24 (21.6-26.4)	±15	±4	±34	83	#220
SE-2424XT-1WR4	24 (21.6-26.4)	±24	±3	±21	85	#100

#Each output

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current(full load/no load)	5VDC Input	3.3VDC Output	--	270/8	286/--	mA
		5VDC Output	--	244/8	257/--	
		9VDC/12VDC Output	--	241/12	254/--	
		15VDC/24VDC Output	--	241/18	254/--	
	12VDC Input	5VDC Output	--	102/8	107/--	
		9VDC/12VDC/15VDC Output	--	101/8	106/--	
		24VDC Output	--	99/8	103/--	
	24VDC Input	Others Output	--	51/8	55/--	
		24VDC Output	--	50/8	53/--	
Reflected Ripple Current			--	15	--	mA
Impulse Voltage	5VDC Input		-0.7	--	9	VDC
	12VDC Input		-0.7	--	18	
	24VDC Input		-0.7	--	30	
Input Filter			Capacitance Filter			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See Fig.1			
Linear Regulation	Input Voltage Variation ±1%	3.3VDC Output	--	±1.5	--	%
		Others Output	--	±1.2	--	
Load Regulation	10% - 100% Load	3.3VDC output	--	15	20	%
		5VDC output	--	10	15	
		9VDC output	--	8	10	
		12VDC output	--	7	10	
		15VDC output	--	6	10	
		24VDC output	--	5	10	
Ripple & Noise	20MHz Bandwidth(peak-peak)		--	60	150	mV
Temperature Coefficient	Full Load		--	--	±0.03	%/℃
Short-circuit Protection			Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	3000	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	See Fig.2	-40	--	105	℃
Storage Temperature		-55	--	125	℃
Case Temperature Rise	Ta=25℃, nominal input, output load	--	25	--	℃
Storage Humidity	Non-condensing	--	--	95	%RH
Reflow Soldering Temperature	Peak temp.≤240℃, maximum duration time ≤60s over 217℃				
Switching Frequency	Full Load, Nominal Input Voltage	--	220	--	KHz
MTBF	MIL-HDBK-217F@25℃	>3500Kh			

Mechanical Specification

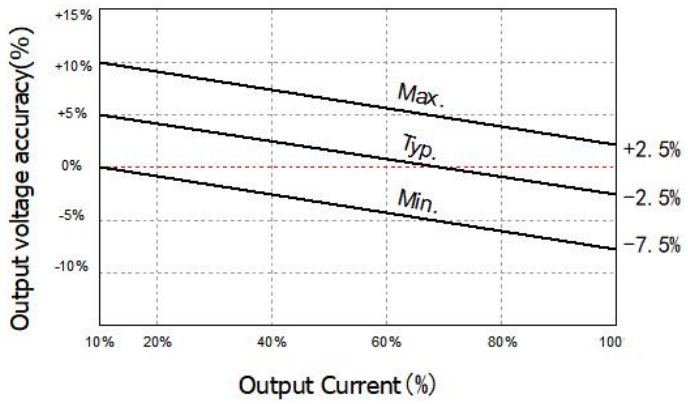
Case Material	Black plastic; flame-retardant and heat-resistant（UL94V-0 rated）
Package Dimensions	15.24 x 11.40 x 7.25 mm
Weight	1.4g (Typ.)
Cooling Method	Free air convection

EMC Specifications

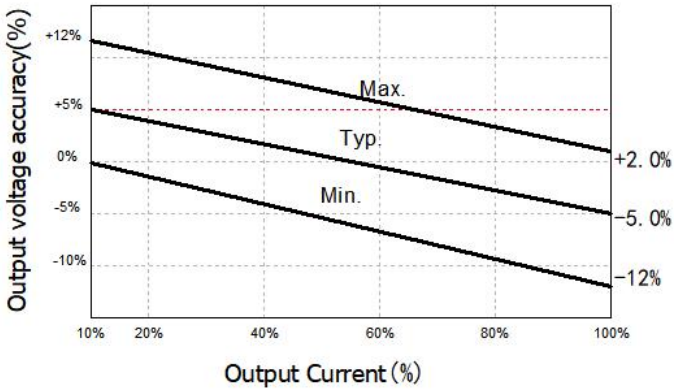
EMI	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
EMS	ESD	IEC/EN61000-4-2 Air±8KV,Contact ±4KV	perf. Criteria B

Typical Characteristic Curves

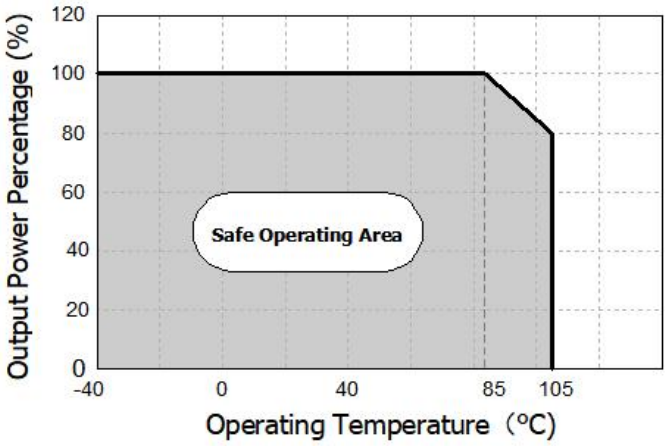
Output Regulation Curve（Fig.1-1）



Output Regulation Curve（3.3VDC Output）Fig.1-2

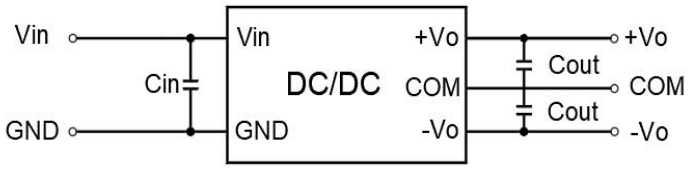


Temperature Derating Curve（Fig.2）



Typical Circuit Design and Application

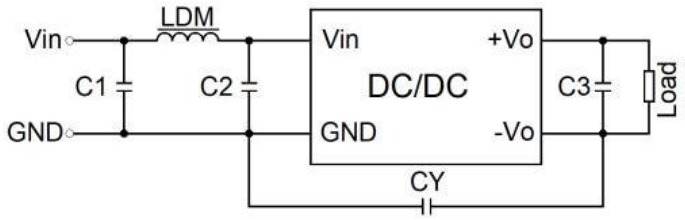
Application circuit（Fig.3）



Recommended Capacitive Load Value Table

Vin(VDC)	Cin(μF)	Vo(VDC)	Cout(μF)
5VDC	4.7uF/16V	3.3/5VDC	10μF
12VDC	2.2uF/25V	9/12VDC	1uF
24VDC	1.0uF/50V	15/24VDC	0.47μF

Application circuit（Fig.4）



EMI Recommended Parameter Table

EMI	Vin(VDC)	5VDC	12/24VDC
	C1/C2	4.7μF /25V	4.7μF /50V
	CY	1nF/4KV	
	C3	Refer to the Cout in Fig.3	
	LDM	6.8μH	

1. Typical applications

If further reduction of input and output ripple is required, a capacitor filtering network can be connected at the input and output terminals, and the application circuit is shown in Fig.3.

However, attention should be paid to selecting appropriate filtering capacitors. If the capacitance is too large, it is likely to cause startup problems. For each output, while ensuring safe and reliable operation, please refer to the recommended capacitive load value table above.

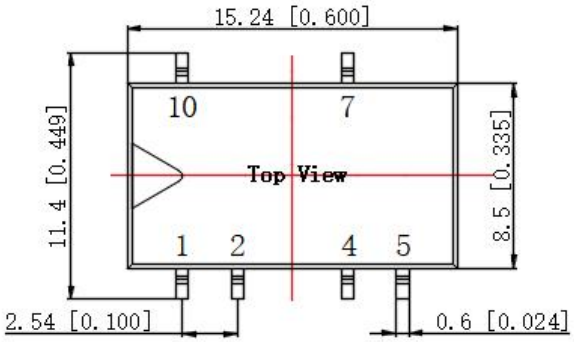
2. EMC typical recommended circuit See Fig. 4.

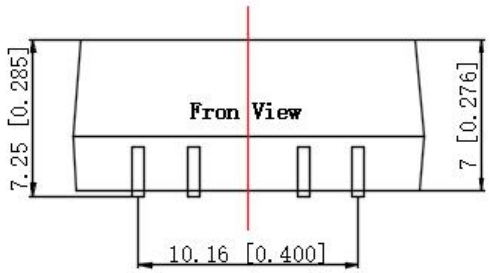
3. Output load requirements

To ensure the efficient and reliable operation of the module, its minimum output load should not be less than 10% of the rated load when in use. If your required power is indeed small, please connect a resistor in parallel at the output end (the sum of the power consumed by the resistor and the actual power used is greater than or equal to 10% of the rated power).

Dimensions and Recommended Layout

Dimensions





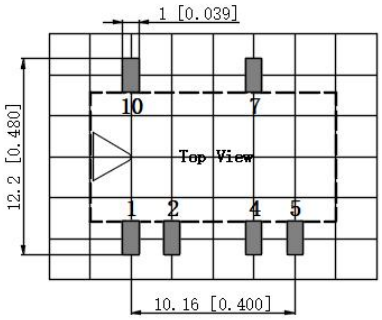
Note:

Unit: mm[inch]

Pin section tolerances:±0.10[±0.004]

General tolerances:±0.50[±0.020]

PCB Printing Layout



The grid distance is 2.54mm x2.54mm

Pin Definition Table

Pin	Function
1	GND
2	Vin
4	COM
5	-Vo
7	+Vo
10	NC

NC：cannot be connected to any external circuit

Note：

- The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
- It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
- Suggested dual output module load imbalance: ≤ ± 5%. If it exceeds ± 5%, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
- The maximum capacitive load is tested within the input voltage range and under full load conditions;
- Unless otherwise specified, all indicators in this manual are measured at Ta=25 ℃, humidity<75% RH, nominal input voltage, and output rated load;
- All indicator testing methods in this manual are based on our company's corporate standards;
- Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
- Product specifications are subject to change without prior notice.