SF XT-2WR4

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 5mA
- Fields of application：Electricity, Industrial control, Communication, Internet of Things, Automotive.

Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency % (Typ.)	Capacitive Load(μF) Max.
	Nominal (Range)	Voltage (VDC)	Output Current Max./Min.(mA)		
SF-0503 XT-2WR4	5 (4.5-5.5)	3.3	400/40	80	2400
SF-0505 XT-2WR4	5 (4.5-5.5)	5	400/40	83	2400
SF-0509 XT-2WR4	5 (4.5-5.5)	9	222/22	83	1000
SF-0512 XT-2WR4	5 (4.5-5.5)	12	167/17	84	560
SF-0515 XT-2WR4	5 (4.5-5.5)	15	133/13	84	560
SF-0524 XT-2WR4	5 (4.5-5.5)	24	84/8	84	560
SF-1203 XT-2WR4	12 (10.8-13.2)	3.3	400/40	81	2400
SF-1205 XT-2WR4	12 (10.8-13.2)	5	400/40	83	2400
SF-1209 XT-2WR4	12 (10.8-13.2)	9	222/22	84	1000
SF-1212 XT-2WR4	12 (10.8-13.2)	12	167/17	84	560
SF-1215 XT-2WR4	12 (10.8-13.2)	15	133/13	84	560
SF-1224 XT-2WR4	12 (10.8-13.2)	24	84/8	85	560
SF-1503 XT-2WR4	15（13.5-16.5）	3.3	400/40	81	2400
SF-1505 XT-2WR4	15（13.5-16.5）	5	400/40	83	2400
SF-1509 XT-2WR4	15（13.5-16.5）	9	222/22	84	1000
SF-1512 XT-2WR4	15（13.5-16.5）	12	167/17	84	560
SF-1515 XT-2WR4	15（13.5-16.5）	15	133/13	84	560
SF-1524 XT-2WR4	15（13.5-16.5）	24	84/8	84	560
SF-2403 XT-2WR4	24 (21.6-26.4)	3.3	400/40	82	2400
SF-2405 XT-2WR4	24 (21.6-26.4)	5	400/40	83	2400
SF-2409 XT-2WR4	24 (21.6-26.4)	9	222/22	84	1000
SF-2412 XT-2WR4	24 (21.6-26.4)	12	167/17	84	560
SF-2415 XT-2WR4	24 (21.6-26.4)	15	133/13	85	560
SF-2424 XT-2WR4	24 (21.6-26.4)	24	84/8	85	560

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Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current(full load/no load)	5VDC Input	--	477/12	--	mA
	12VDC Input	--	196/8	--	
	15VDC Input	--	161/6	--	
	24VDC Input	--	98/4	--	
Reflected Ripple Current		--	30	--	mA
Impulse Voltage	5VDC Input	-0.7	--	9	VDC
	12VDC Input	-0.7	--	18	
	15VDC Input	-0.7	--	21	
	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 Envelope Curve Figure 1			
Linear Regulation	Input Voltage Variation ±1%		--	--	±1.5	%
Load Regulation	10% - 100% Load	3.3VDC output	--	13	--	%
		5VDC output	--	10	--	
		9VDC output	--	8	--	
		12VDC output	--	8	--	
		15VDC output	--	7	--	
		24VDC output	--	6	--	
Ripple & Noise	20MHz Bandwidth(peak-peak)		--	50	150	mV
Temperature Coeffcient	Full Load		--	±0.02	--	%/℃
Short-circuit Protection			Continuous, Self-Recovery			

SF XT-2WR4

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 Figure 2	-40	--	105	℃
Storage Temperature		-55	--	125	℃
Case Temperature Rise	Ta=25℃, nominal input, output load	--	25	--	℃
Storage Humidity	Non-condensing	5	--	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

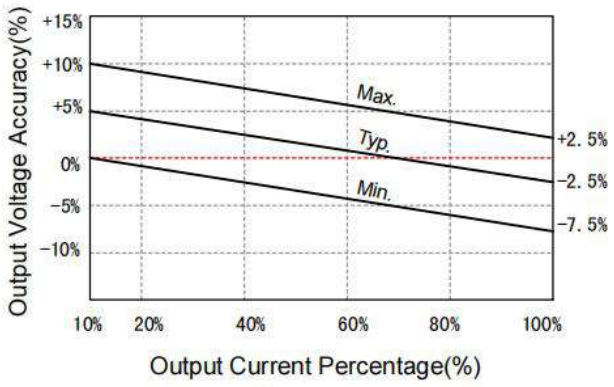
Case Material	Black plastic; flame-retardant and heat-resistant（UL94V-0 rated）
Package Dimensions	13.50 x 11.10 x 7.25mm
Weight	1.7g(Typ.)
Cooling Method	Free air convection

EMC Specifications

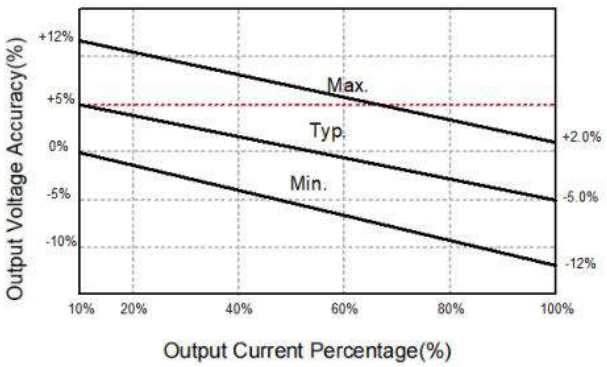
EMI	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
EMS	ESD	IEC/EN61000-4-2 Air±8KV,Contact ±4KV	perf. Criteria B

Typical Characteristic Curves

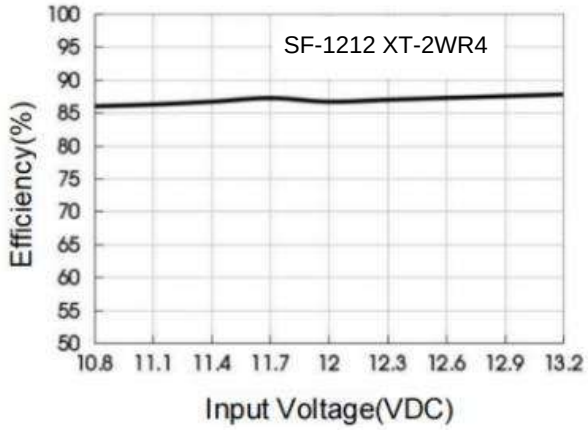
Output Regulation Curve（Figure 1-1）



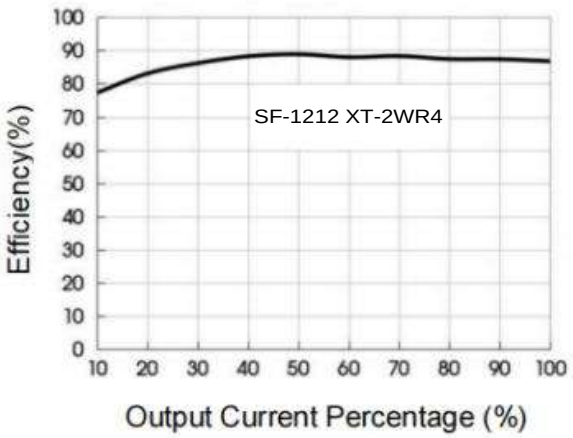
Output Regulation Curve 3.3V Output（Figure 1-1）



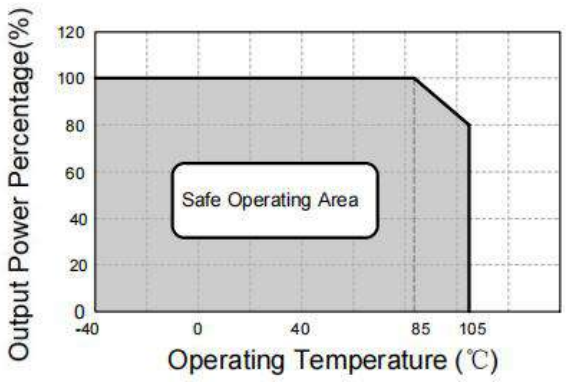
Efficiency VS Input Voltage Curve(Full load)



Efficiency VS Output Load（Vin=12V）

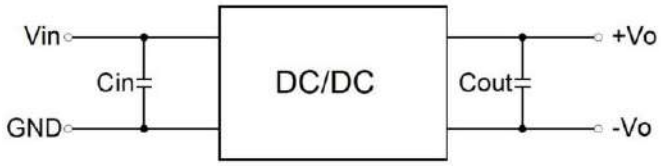


Temperature Derating Curve（Figure 2）



Typical Circuit Design and Application

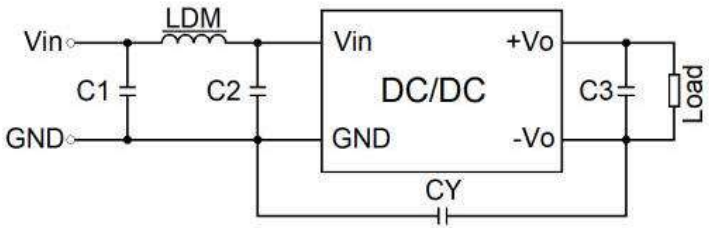
Application circuit（Figure 3）



Recommended Capacitive Load Value Table

Vin	Cin	Vo	Cout
5VDC	10μF/16V	3.3/5VDC	10μF/10V
12VDC	2.2μF/25V	9/12VDC	2.2μF/25V
15VDC	1μF/25V	15VDC	1μF/25V
24VDC	1μF/25V	24VDC	1μF/25V

Application circuit（Figure 4）



EMI Recommended Parameter Table

EMI	C1,C2	4.7μF / 50V
	C3	Refer to the Cout parameter in Figure 3
	CY	270pF / 3kV
	LDM	6.8μH

1.Typical applications

To further reduce input and output ripple, a capacitor filtering network can be connected at the input and output terminals.The application circuit is shown in Figure 3.However, care should be taken to select a suitable filter capacitor. If the capacitance is too large, it is likely to cause start-up problems. For each output, the recommended capacitive load values are shown in "Recommended Capacitive Load Value Table" for safe and reliable operation.

2.EMC typical recommended circuit See Figure 4

3.Output load requirements

In order to ensure that the module can work efficiently and reliably, the minimum output load should not be less than 10% of the rated load when used. If the power required is really small, connect a resistor in parallel to the output end (the sum of the power consumed by the resistance and the power actually used is greater than or equal to 10% of the rated power).

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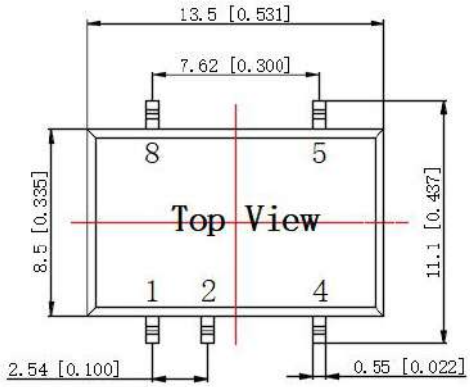
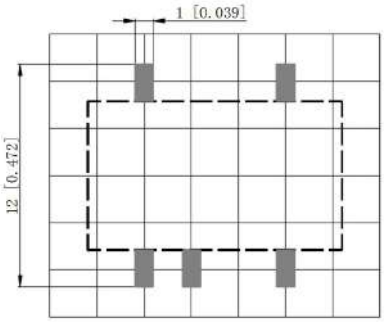
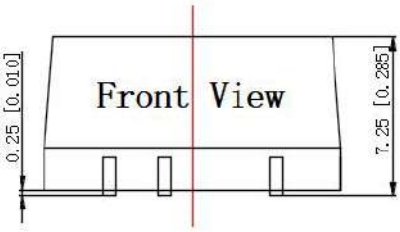
Dimensions and Recommended Layout

Dimensions	PCB Printing Layout





The grid distance is 2.54mm x2.54mm



Note:

Unit: mm[inch]

Pin section tolerances:±0.10[±0.004]

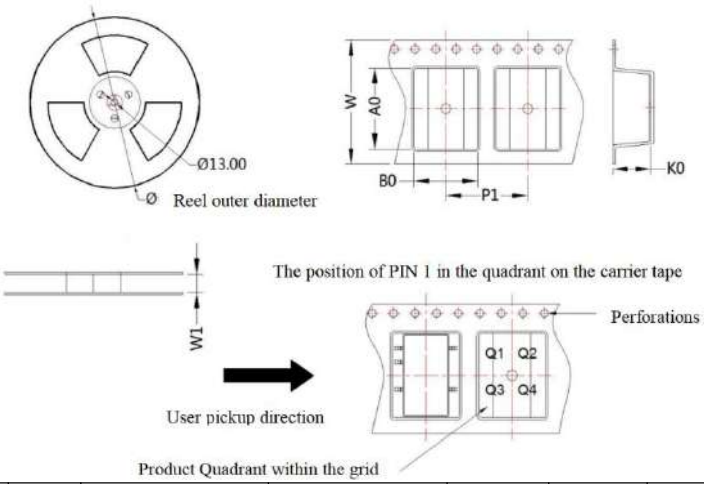
General tolerances:±0.50[±0.020]

Pin Definition Table

Pin	Function
1	GND
2	Vin
4	-Vo
5	+Vo
8	NC
NC：cannot be connected to any external circuit	

Packing diagram

Carrier tape packaging diagram



Part number	package type	Pin	MPQ	Reel outer diameter(mm)	Reel width W1(mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 quadrant
SF XT-2WR4	SMD	5	500	330.0	24.5	13.9	11.7	7.5	16.0	24.0	Q1

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;
- 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.