

FEATURES

1. Continuous short-circuit protection
2. No-load input current as low as 8mA
3. Operating ambient temperature range: -40°C to +105°C
4. +105°C
5. High efficiency up to 86%
6. Compact SMD package
7. I/O isolation test voltage 3k VDC
8. Industry standard pin-out



3 years
Warranty

Selection Guide

Part No.*	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF)Max.
	Nominal (Range)	Voltage (VDC)	Current(mA) Max./Min.		
F0503XT-2WR3(-TR)	5 (4.5-5.5)	3.3	400/40	74/78	2400
F0505XT-2WR3(-TR)		5	400/40	80/84	2400
F05X7XT-2WR3(-TR)		7	286/29	80/84	1000
F0509XT-2WR3(-TR)		9	222/22	81/85	1000
F0512XT-2WR3(-TR)		12	167/17	81/85	560
F0515XT-2WR3(-TR)		15	133/13	82/86	560
F0524XT-2WR3(-TR)		24	83/8	82/86	220

Note: * Product model suffix "-TR" indicates reel packaging.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5VDC input	3.3VDC output	–	339/8	357/–	mA
		5VDC/7VDC output	–	477/8	500/–	
		9VDC/12VDC output	–	471/8	494/–	
		15VDC/24VDC output	–	466/8	488/–	
Reflected Ripple Current*			–	15	–	
Surge Voltage (1sec. max.)			-0.7	–	9	VDC
Input Filter			Capacitance filter			
Hot Plug			Unavailable			

Note: *Reflected ripple current testing method please refer to *DC-DCConverterApplicationNote* for specific operation.

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curve (Fig. 1)			
Linear Regulation	Input voltage change: ±1%	3.3VDC output	–	–	±1.5	–
		5VDC/7VDC/9VDC/12VDC /15VDC/24VDC output	–	–	±1.2	
Load Regulation	10%-100% load	3.3VDC output	–	10	20	%
		5VDC/7VDC output	–	9	15	
		9VDC output	–	8	10	
		12VDC/15VDC output	–	7	10	
		24VDC output	–	6	10	
Ripple & Noise*	20MHz bandwidth		–	75	200	mVp-p
Temperature Coefficient	Full load		–	±0.02	–	%/°C

Short-circuit Protection		Continuous, self-recovery
Note:* The "parallel cable" method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information.		

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output electric strength test for 1 minute with a leakage current of 1mA max.	3000	—	—	VDC
Insulation Resistance	Input-output resistance at 500VDC	1000	—	—	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	—	20	—	pF
Operating Temperature	Derating when operating temperature≥85°C, (see Fig. 2)	-40	—	105	°C
Storage Temperature		-55	—	125	
Case Temperature Rise	Ta=25°C	—	25	—	
Storage Humidity	Non-condensing	5	—	95	%RH
Reflow Soldering Temperature*		Peak temp. Tc≤245°C, maximum duration time≤60s over 217°C			
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	Full load, nominal input voltage	—	220	—	kHz
MTBF	MIL-HDBK-217F@25°C	3500	—	—	k hours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1			
Note: * See also IPC/JEDEC J-STD-020D.1.					

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	13.20 x 11.40 x 7.25 mm
Weight	1.4g(Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2	Air ±8kV, Contact ±6kV perf. Criteria B

Typical Characteristic Curves

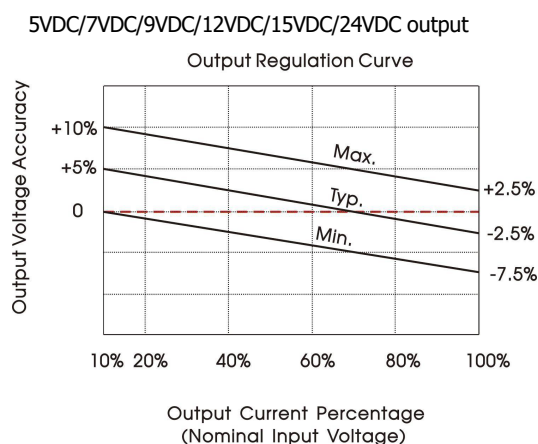
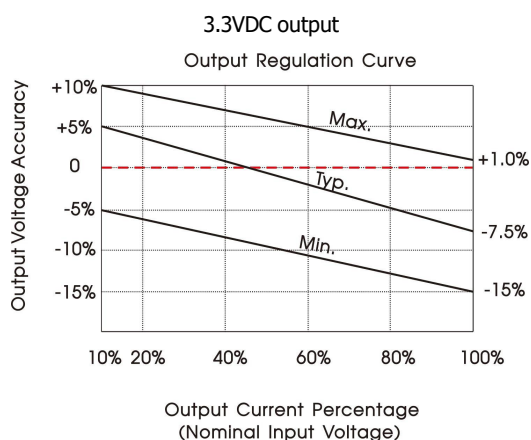


Fig. 1

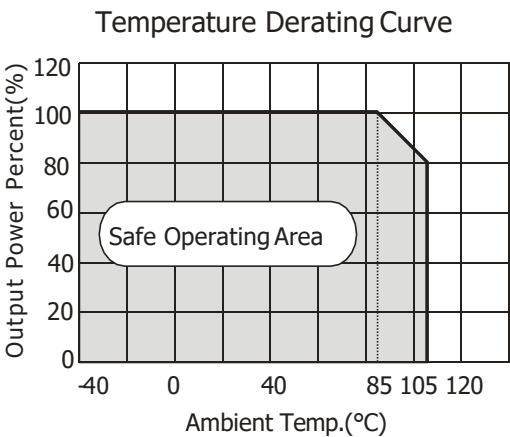
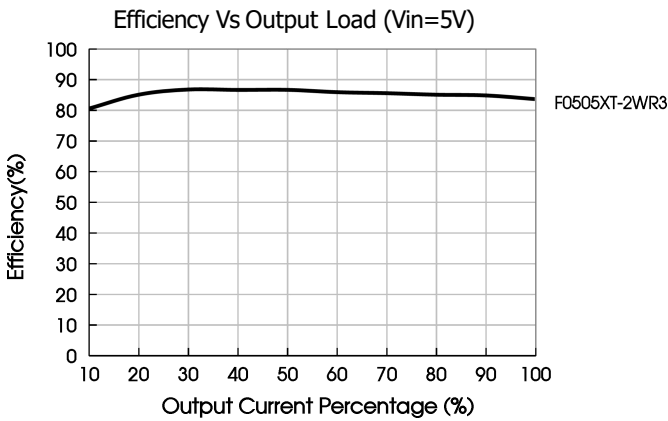
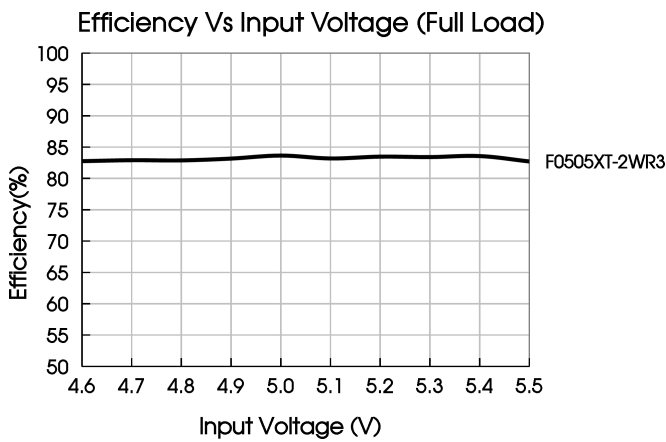


Fig. 2



Design Reference

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig. 3.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

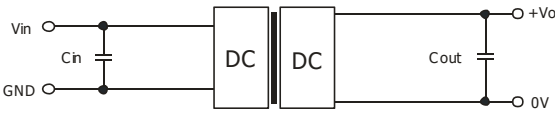


Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3VDC/5VDC	10μF/16V
—	—	7VDC/9VDC	4.7μF/16V
—	—	12VDC	2.2μF/25V
—	—	15VDC	1μF/25V
—	—	24VDC	0.47μF/50V

2. EMC compliance circuit

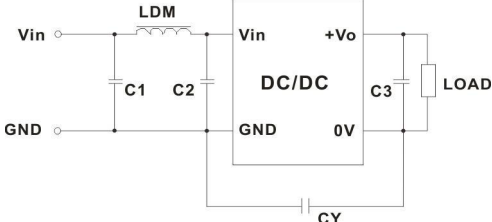
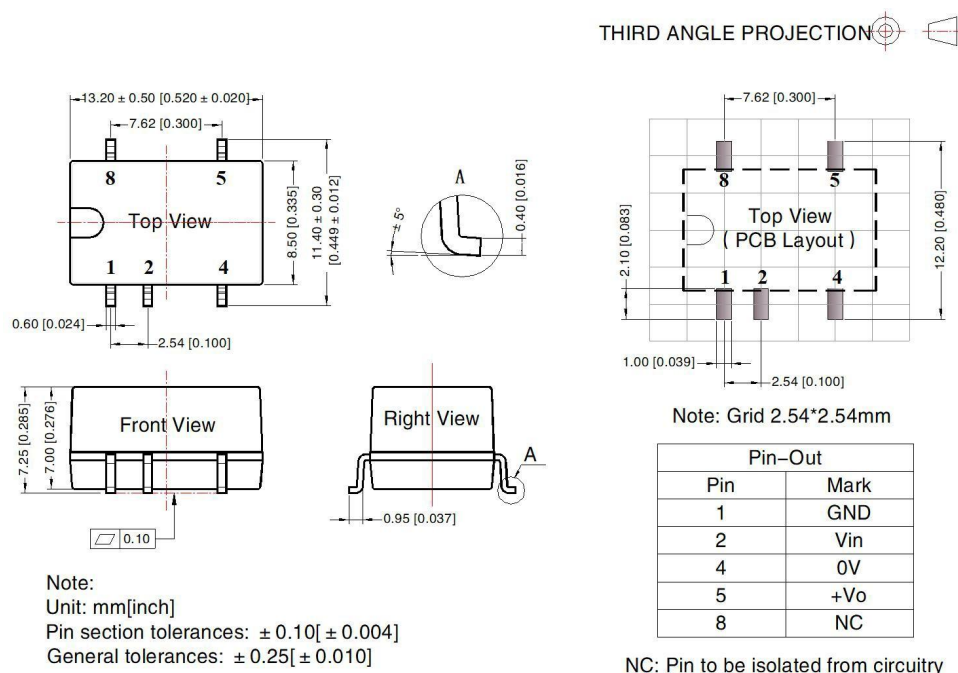


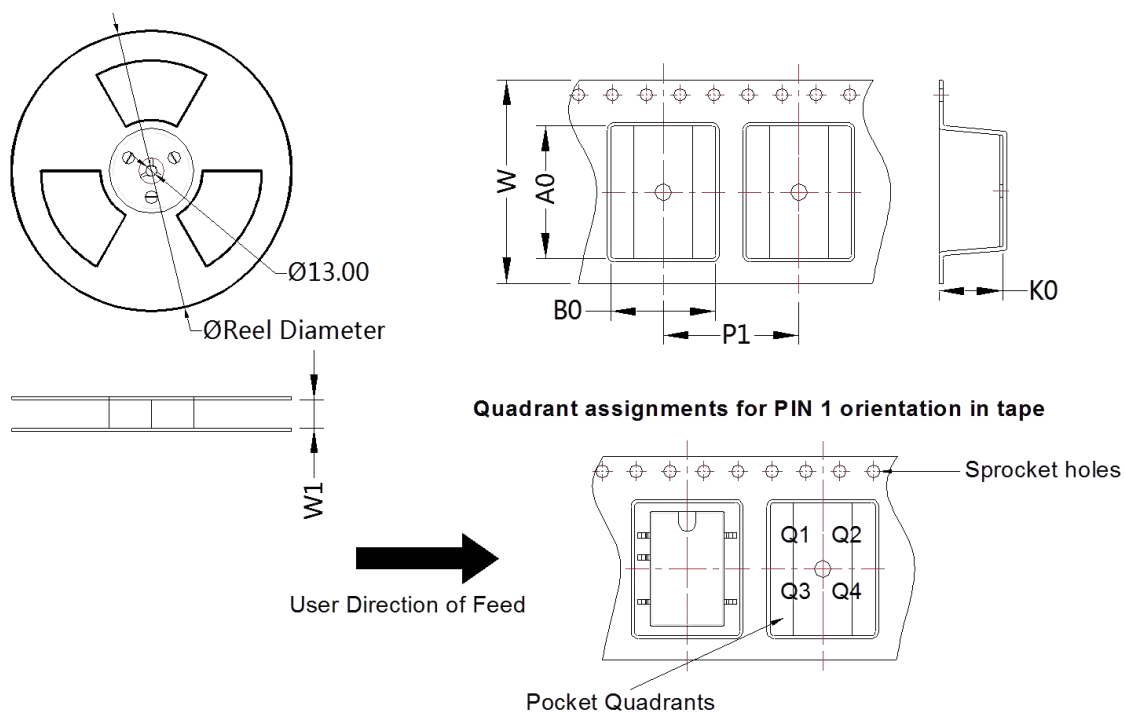
Fig. 4

Emissions	C1, C2	4.7μF /16V
	C3	Refer to the Cout in Fig. 3
	CY	270pF/4kV
	LDM	6.8μH

Dimensions and Recommended Layout



Tape and Reel Info



Device	Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
F_XT-2WR3	SMD	5	500	330.0	24.5	13.4	11.7	7.5	16.0	24.0	Q1

Notes & Instructions

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at $T_a=25^{\circ}\text{C}$, humidity $<75\%\text{RH}$, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;