FEATURES

1. Continuous short-circuit protection
2. No-load input current as low as 8mA
3. Operating ambient temperature range:-40℃ to +105℃
4. High efficiency up to 85%
5. Compact SMD package
6. I/O isolation test voltage 3k VDC
7. Industry standard pin-out

RoHS CE 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.		
F1205XT-2WR3	12 (10.8-13.2)	5	400/40	79/83	2400
F1206XT-2WR3		6	333/33	79/83	1000
F1209XT-2WR3		9	222/22	79/83	1000
F1212XT-2WR3		12	167/17	80/84	560
F1215XT-2WR3		15	133/13	80/84	560
F1224XT-2WR3		24	83/8	81/85	220
F1505XT-2WR3	15 (13.5-16.5)	5	400/40	79/83	2400
F1515XT-2WR3		15	133/13	80/84	560
F2405XT-2WR3	24 (21.6-26.4)	5	400/40	77/83	2400
F2409XT-2WR3		9	222/22	77/83	1000
F2412XT-2WR3		12	167/17	78/84	560
F2415XT-2WR3		15	133/13	78/84	560
F2424XT-2WR3		24	83/8	79/85	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	12VDC input	–	196/8	–	mA
	15VDC input	–	161/8	–	
	24VDC input	–	98/8	–	
Reflected Ripple Current*		–	30	–	
Surge Voltage (1sec. max.)	12VDC input	-0.7	–	18	VDC
	15VDC input	-0.7	–	21	
	24VDC input	-0.7	–	30	
Input Filter		Capacitance filter			
Hot Plug		Unavailable			
Note: * Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method.					

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curve (Fig. 1)			
Linear Regulation	Input voltage change: ±1%		–	–	±1.2	–
Load Regulation	10%-100% load	5VDC output	–	7	15	%
		6VDC output	–	7	15	

Load Regulation	10%-100% load	9VDC output	–	6	10	%
		12VDC output	–	5	10	
		15VDC output	–	4	10	
		24VDC output	–	3	10	
Ripple & Noise*	20MHz bandwidth		–	50	150	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	See Fig. 2	-40	–	105	°C
Storage Temperature		-55	–	125	
Case Temperature Rise	Ta=25°C, nominal input voltage, full load	–	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	–	260	–	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
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B
Note: Refer to Fig. 4 for recommended circuit test.		

Typical Characteristic Curves

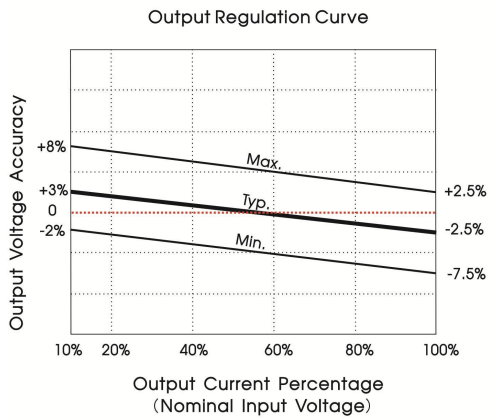


Fig. 1

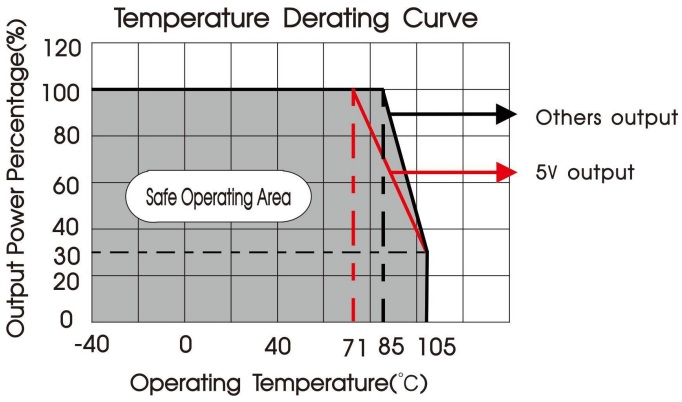
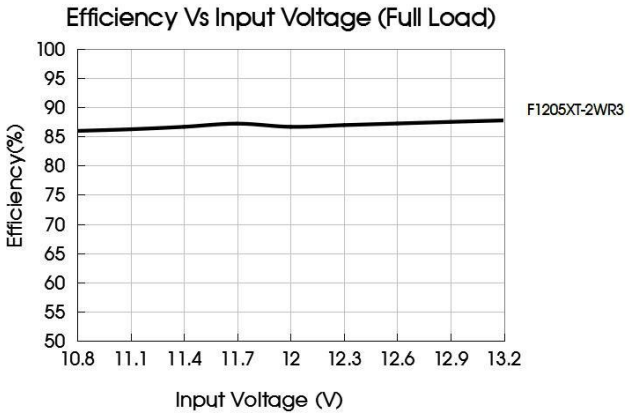
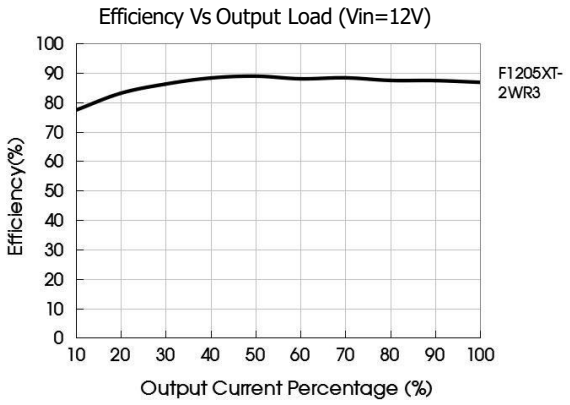
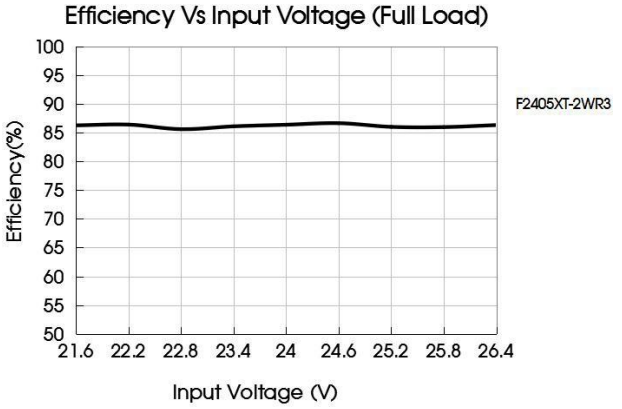
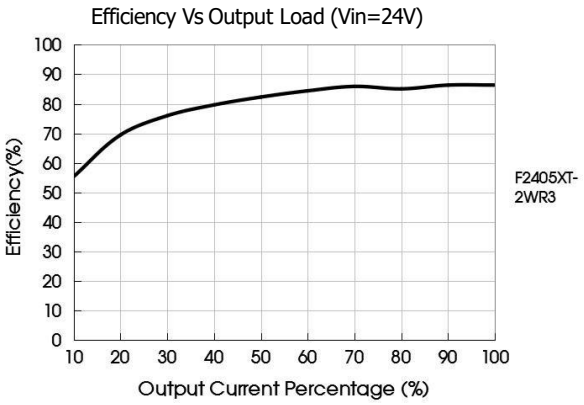


Fig. 2









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.

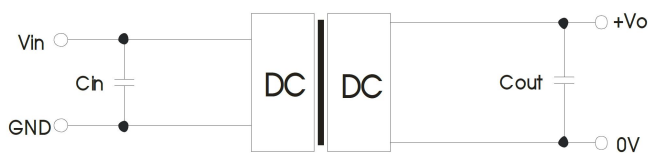


Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
12VDC	2.2μF/25V	5VDC	10μF/10V
15VDC	1μF/25V	6VDC	2.2μF/25V
24VDC	1μF/50V	9VDC	2.2μF/25V
–	–	12VDC	2.2μF/25V
–	–	15VDC	1μF/25V
–	–	24VDC	0.47μF/50V

2. EMC compliance circuit

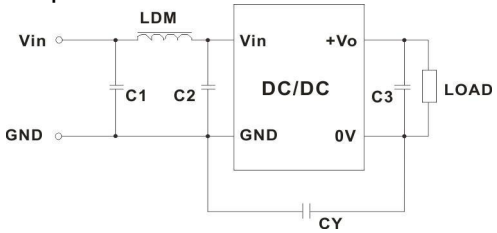
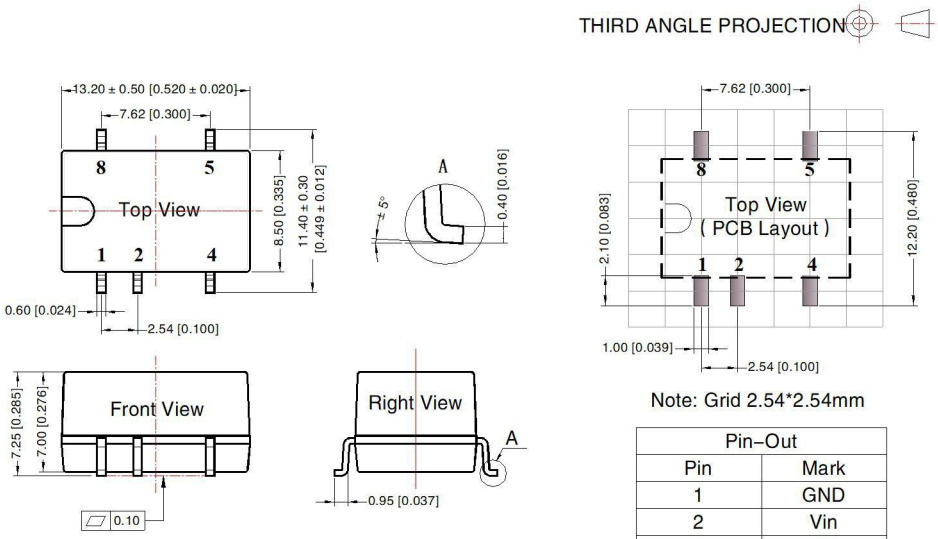


Fig. 4

Emissions	C1/C2	4.7μF /50V
	C3	Refer to the Cout in Fig. 3
	CY	270pF /3kV
	LDM	6.8μH

Dimensions and Recommended Layout



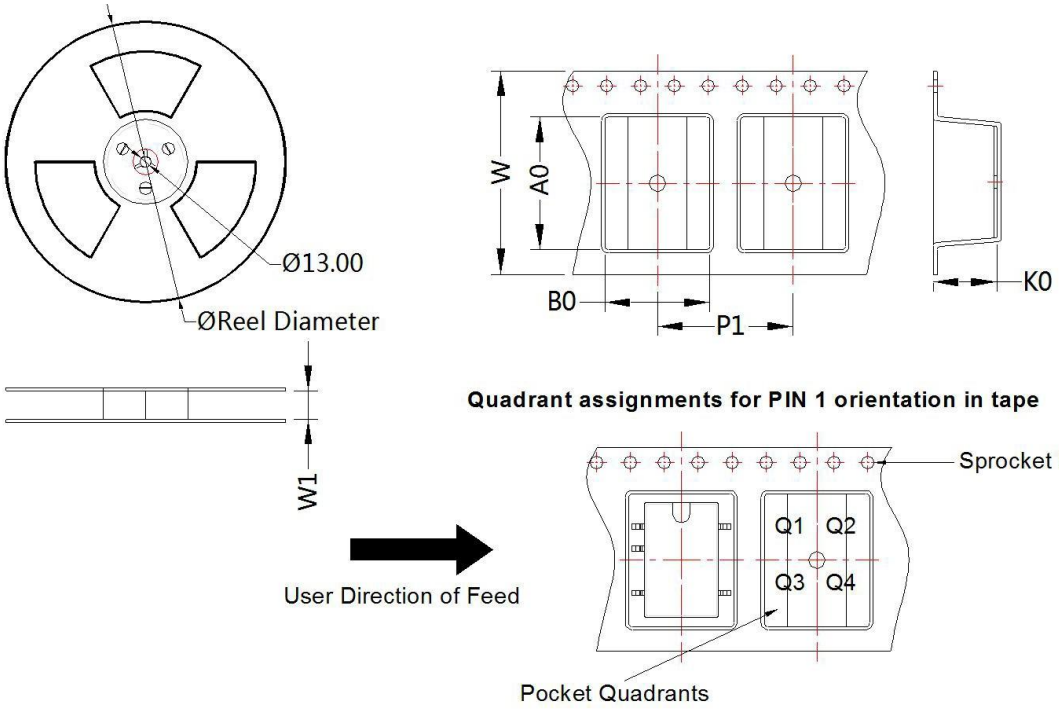
Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.25[± 0.010]

Note: Grid 2.54*2.54mm

Pin–Out	
Pin	Mark
1	GND
2	Vin
4	0V
5	+Vo
8	NC

NC: Pin to be isolated from circuitry

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 Ta=25℃, humidity <75%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;