Descriptions

2W isolated DC-DC converter

RoHS

3 Years Warranty

c UL us Report UL62368-1

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

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

Applications

- Industrial control
- Power
- Instrumentation

Selection Guide

Certification	Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Voltage(VDC)	Current(mA) Max./Min.		
EN/BS EN	DFXT2-F0503	5 (4.5-5.5)	3.3	400/40	74/78	2400
EN/BS EN	DFXT2-F0505		5	400/40	80/84	2400
EN/BS EN	DFXT2-F0509		9	222/22	81/85	1000
EN/BS EN	DFXT2-F0512		12	167/17	81/85	560
EN/BS EN	DFXT2-F0515		15	133/13	82/86	560
EN/BS EN	DFXT2-F0524		24	83/8	82/86	220
UL/EN/BS EN	DFXT2-F1205	12 (10.8-13.2)	5	400/40	79/83	2400
EN/BS EN	DFXT2-F1209		9	222/22	79/83	1000
EN/BS EN	DFXT2-F1212		12	167/17	80/84	560
EN/BS EN	DFXT2-F1215		15	133/13	80/84	560
EN/BS EN	DFXT2-F1224		24	83/8	81/85	220
EN/BS EN	DFXT2-F1505	15 (13.5-16.5)	5	400/40	79/83	2400
EN/BS EN	DFXT2-F1515		15	133/13	80/84	560

EN/BS EN	DFXT2-F2405	24 (21.6-26.4)	5	400/40	77/83	2400
EN/BS EN	DFXT2-F2409		9	222/22	77/83	1000
EN/BS EN	DFXT2-F2412		12	167/17	78/84	560
EN/BS EN	DFXT2-F2415		15	133/13	78/84	560
EN/BS EN	DFXT2-F2424		24	83/8	79/85	220

Specifications

Product Specifications	Item	Operating Conditions			Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	5VDC input		3.3VDC outpu	--	339/8	357/--	mA
				5VDC outpu	--	477/8	500/--	
				9VDC/12VDC outpu	--	471/8	494/--	
				15VDC/24VDC outpu	--	466/8	488/--	
		12VDC input			--	196/8	--	
		15VDC input			--	161/8	--	
		24VDC input			--	98/8	--	
	Reflected Ripple Current				--	30	--	
	Surge Voltage (1sec. max.)	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	Voltage Accuracy				See output regulation curve (Fig. 1)			
	Linear Regulation	Input voltage change: ±1%		3.3VDC output	--	--	±1.5	--
				5VDC/9VDC/12VDC/ 15VDC/24VDC output	--	--	±1.2	
	Load Regulation	10%-100% load	5VDC input	3.3VDC output	--	10	20	%
				5VDC output	--	9	15	
				9VDC output	--	8	10	
				12VDC/15VDC output	--	7	10	
				24VDC output	--	6	10	
			12VDC/ 15VDC /24VDC input	5VDC output	--	7	15	
				9VDC output	--	6	10	
				12VDC output	--	5	10	
				15VDC output	--	4	10	
				24VDC output	--	3	10	
	Ripple & Noise①	20MHz bandwidth			--	50	150	mVp-p
	Temperature Coefficient	Full load			--	±0.02	--	%/℃
	Short-circuit Protection				Continuous, self-recovery			
General Specifications	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	℃

	Storage Temperature		-55	--	125	
	Case Temperature Rise	Ta=25℃, nominal input voltage, full load	--	25	--	
	Storage Humidity	Non-condensing	5	--	95	%RH
	Reflow Soldering Temperature②		Peak temp. Tc≤245℃, maximum duration time≤60s over 217℃			
	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℃	3500	--	--	k hours
	Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 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				

Note:

①The "parallel cable" method is used for ripple and noise test.

②Please refer to IPC/JEDEC J-STD-020D.1.

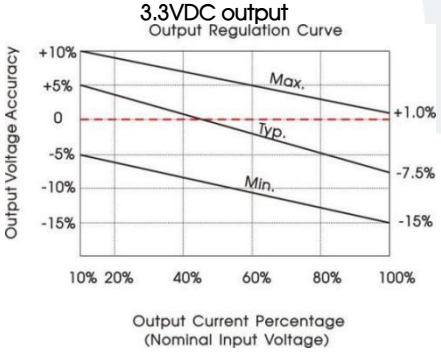
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions (EMI)	CE	CISPR32/EN55032 CLASS B
		RE	CISPR32/EN55032 CLASS B
	Immunity (EMS)	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B

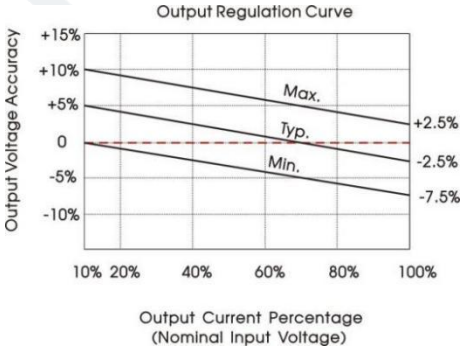
Note: Refer to Figure 4 for the recommended circuit test.

Characteristic Curve

3.3VDC output



5VDC/9VDC/12VDC/15VDC/24VDC output



Other output

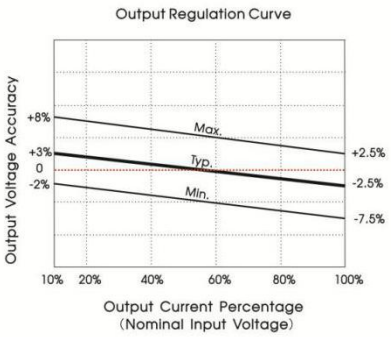
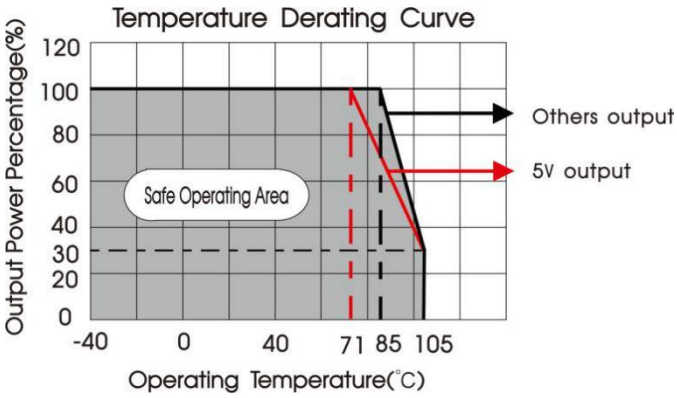


Fig. 1


Temperature Derating Curve
Output Power Percentage(%)
120
100
80
60
40
30
20
0
Safe Operating Area
Others output
5V output
-40
0
40
71
85
105
Operating Temperature(℃)

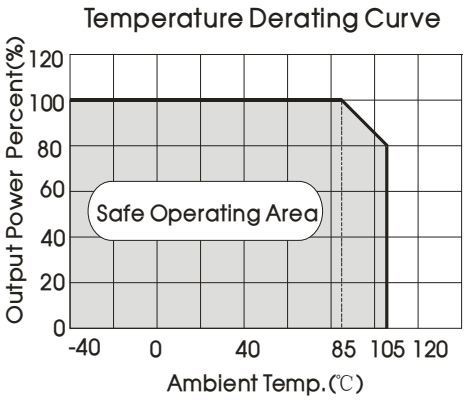
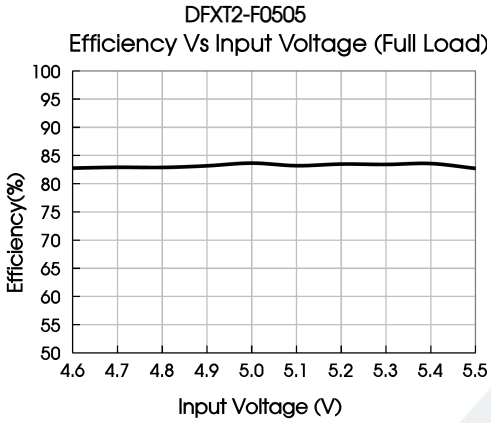
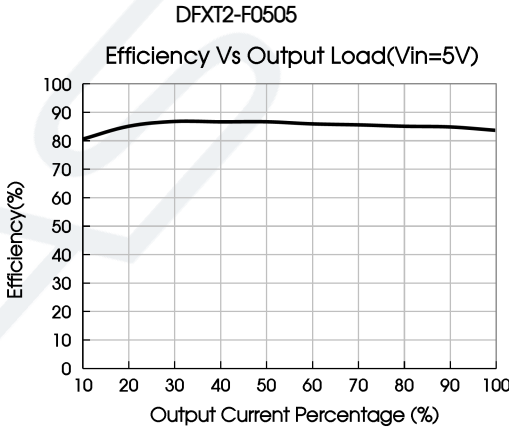
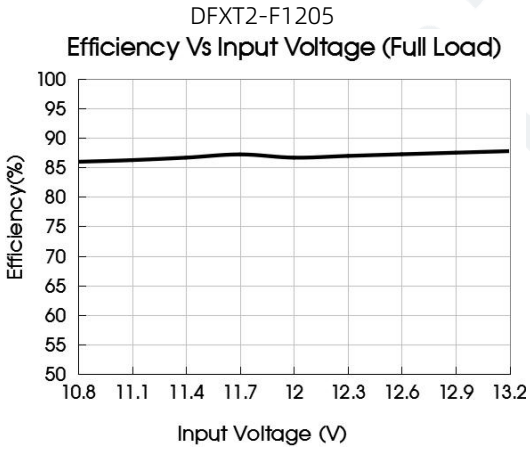
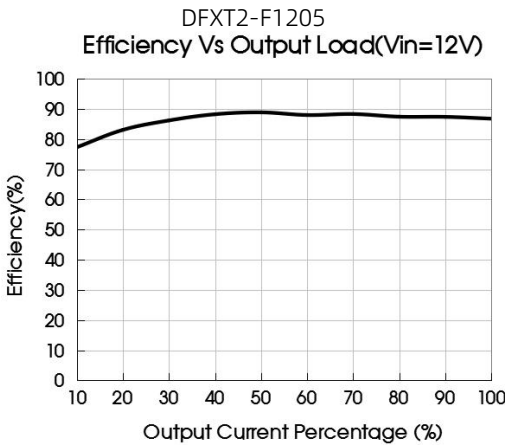

Temperature Derating Curve
Output Power Percent(%)
120
100
80
60
40
20
0
Safe Operating Area
-40
0
40
85
105
120
Ambient Temp.(℃)

Fig. 2


DFXT2-F0505
Efficiency Vs Input Voltage (Full Load)
Efficiency(%)
100
95
90
85
80
75
70
65
60
55
50
4.6
4.7
4.8
4.9
5.0
5.1
5.2
5.3
5.4
5.5
Input Voltage (V)

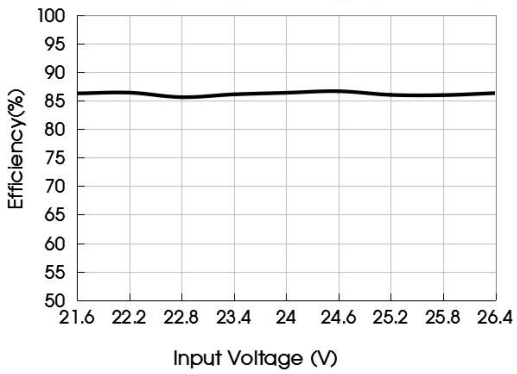

DFXT2-F0505
Efficiency Vs Output Load(Vin=5V)
Efficiency(%)
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
Output Current Percentage (%)


DFXT2-F1205
Efficiency Vs Input Voltage (Full Load)
Efficiency(%)
100
95
90
85
80
75
70
65
60
55
50
10.8
11.1
11.4
11.7
12
12.3
12.6
12.9
13.2
Input Voltage (V)


DFXT2-F1205
Efficiency Vs Output Load(Vin=12V)
Efficiency(%)
100
90
80
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
Output Current Percentage (%)

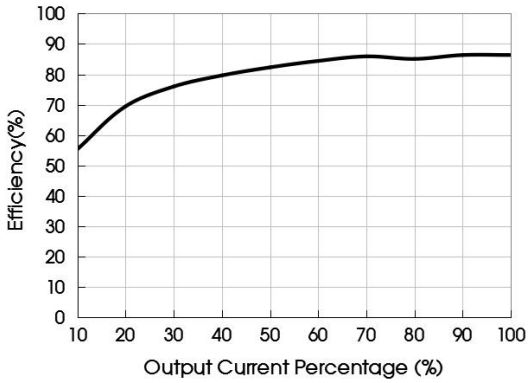
DFXT2-F2405

Efficiency Vs Input Voltage (Full Load)



DFXT2-F2405

Efficiency Vs Output Load(Vin=24V)



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.

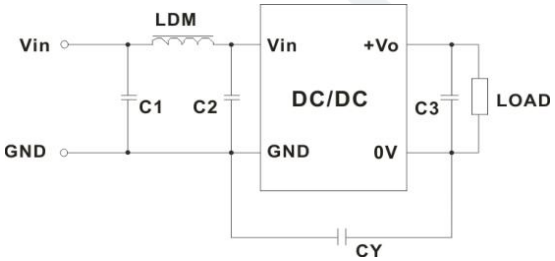
Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Fig. 3

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

Table 1: Recommended input and output capacitor values

2. EMC compliance recommended circuit

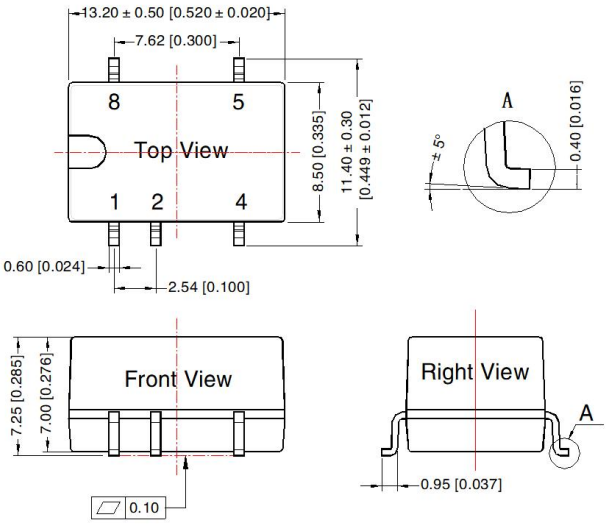


EMC application circuit with higher requirements

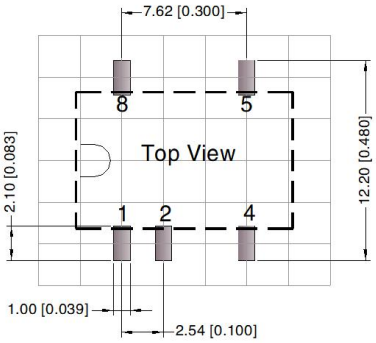
Emissions	C1/C2	4.7μF /50V
	C3	Refer to the Cout in Fig. 3
	CY	270pF /3kV
	LDM	6.8μH

Dimensions and Recommended

THIRD ANGLE PROJECTION



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

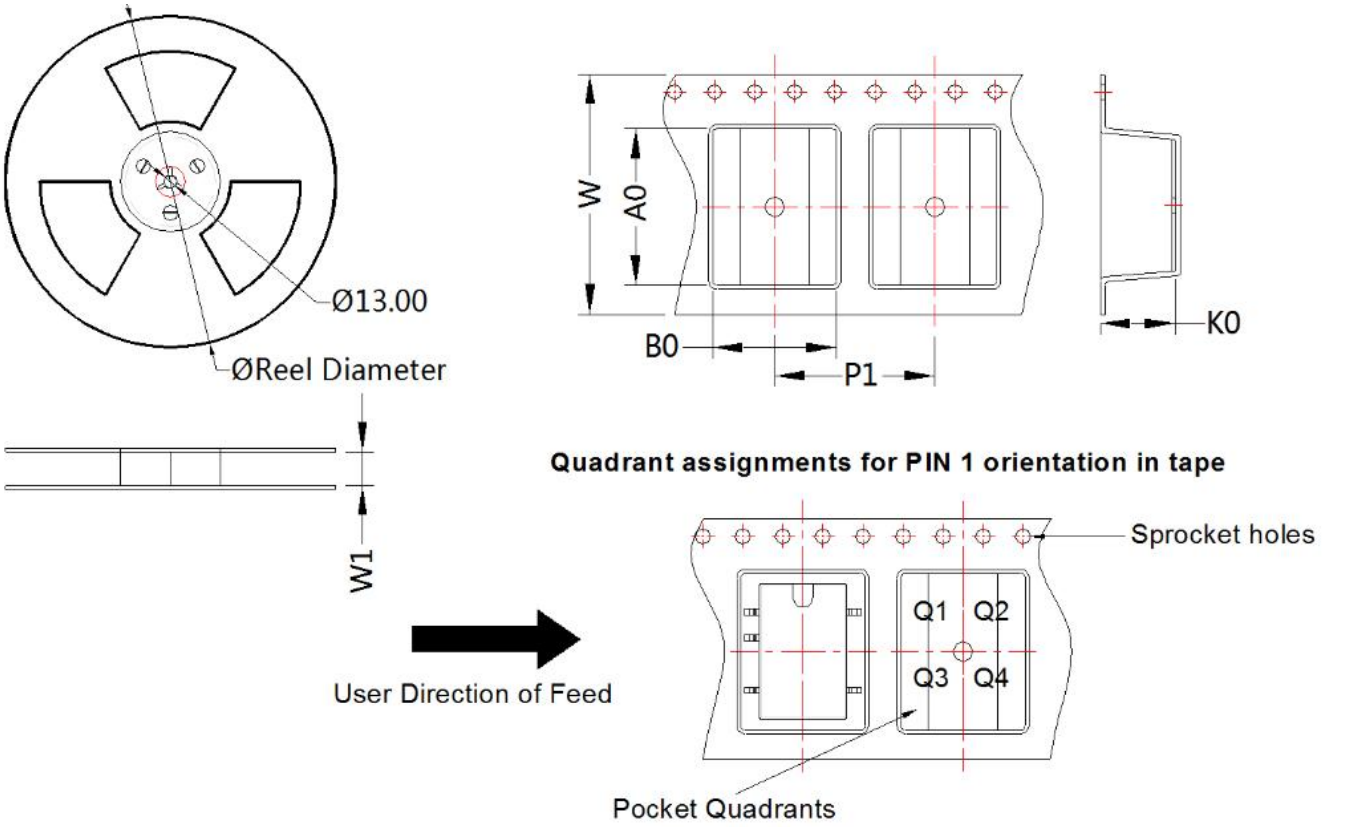


Note: Grid 2.54*2.54mm

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

NC: Pin to be isolated from circuitry

Package diagram



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

Note:

1.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;

2.The maximum capacitive load offered were tested at input voltage range and full load;

3.Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;

4.All index testing methods in this datasheet are based on our company corporate standards;

5.Products are related to laws and regulations: see "Features" and "EMC";

6.Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.