Descriptions

2W isolated DC-DC converter



RoHS

3 Years Warranty

UL62368-1 | EN62368-1 Report | BS EN62368-1 Report

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
	DFXT2-F0505		5	400/40	80/84	2400
	DFXT2-F0509		9	222/22	81/85	1000
	DFXT2-F0512		12	167/17	81/85	560
	DFXT2-F0515		15	133/13	82/86	560
	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
	DFXT2-F1212		12	167/17	80/84	560
	DFXT2-F1215		15	133/13	80/84	560
	DFXT2-F1224		24	83/8	81/85	220
	DFXT2-F1505	15 (13.5-16.5)	5	400/40	79/83	2400
	DFXT2-F1515		15	133/13	80/84	560
	DFXT2-F2405	24 (21.6-26.4)	5	400/40	77/83	2400
	DFXT2-F2409		9	222/22	77/83	1000
	DFXT2-F2412		12	167/17	78/84	560
	DFXT2-F2415		15	133/13	78/84	560

	DFXT2-F2424		24	83/8	79/85	220
Notes: *Product images are for reference only; the actual product shall prevail.						

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	5VDC/6VDC/9VDC output	--	201/8	221/--	
			12VDC/15VDC output	--	199/8	209/--	
			24VDC output	--	196/8	206/--	
		15VDC input	5VDC output	--	161/8	169/--	
			15VDC output	--	159/8	167/--	
		24VDC input	5VDC/9VDC output	--	101/8	109/--	
			12VDC/15VDC output	--	99/8	107/--	
			24VDC output	--	98/8	106/--	
	Reflected Ripple Current	5VDCinput		--	--	--	
		12VDC/15VDC/24VDC input		--	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 input: 5VDC output	--	9	15	
			5VDC input: 9VDC output	--	8	10	
			5VDC input: 12VDC/15VDC output	--	7	10	
			5VDC input: 24VDC output	--	6	10	
			12VDC/15VDC/24VDC input: 5VDC output	--	7	15	
			12VDC/15VDC/24VDC input: 9VDC output	--	6	10	
			12VDC/15VDC/24VDC input: 12VDC output	--	5	10	
			12VDC/15VDC/24VDC input: 15VDC output	--	4	10	
			12VDC/15VDC/24VDC input: 24VDC output	--	3	10	
	Ripple & Noise①	20MHz bandwidth	5VDC input	--	50	200	mVp-p
			12VDC/15VDC/24VDC input	--	75	200	
	Temperature Coefficient	Full load		--	±0.02	--	%/℃
	Short-circuit			Continuous, self-recovery			

	Protection					
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 / 5VDC input	--	220	--	kHz
		Full load, nominal input voltage / 12VDC/15VDC/24VDC input	--	260	--	
	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.

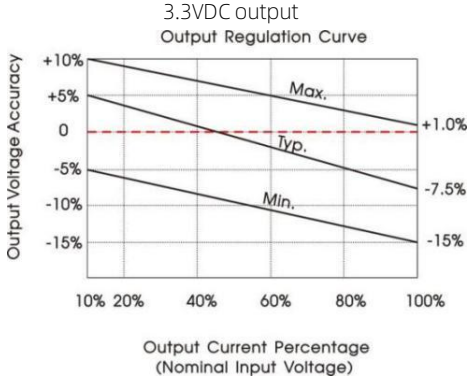
Electromagnetic Compatibility (EMC)

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

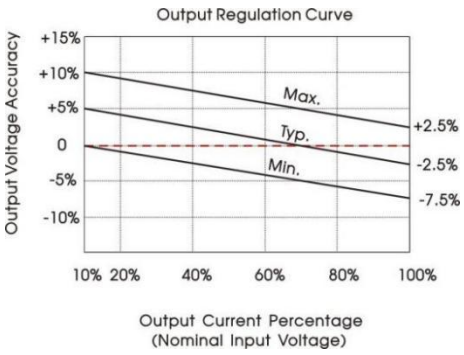
Note: Refer to Figure 4 for the recommended circuit test.

Characteristic Curve

3.3VDC output



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



Other output

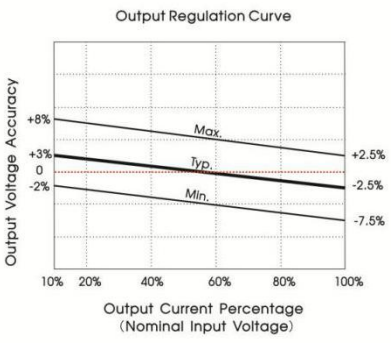
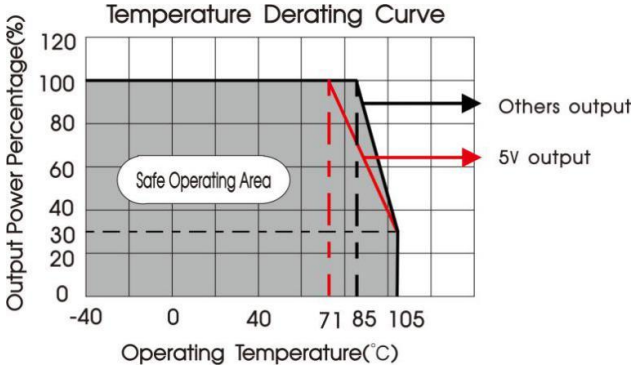


Fig. 1

12/15/24VDC input



5VDC input

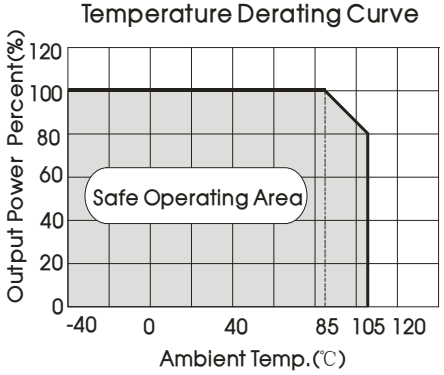
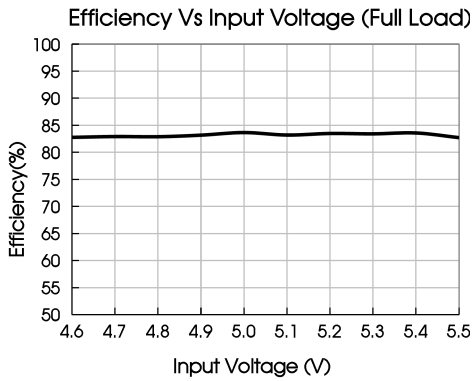
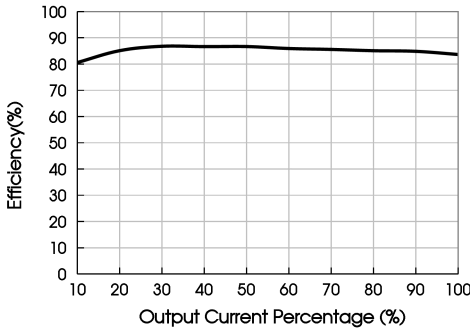


Fig. 2

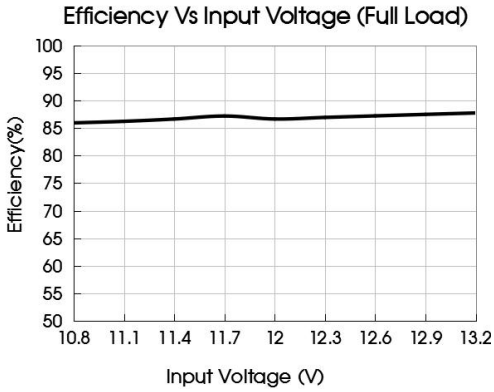
DFXT2-F0505



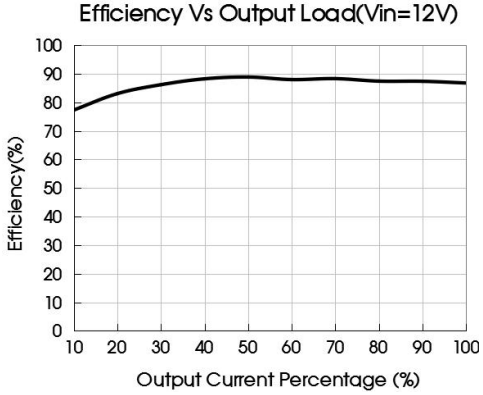
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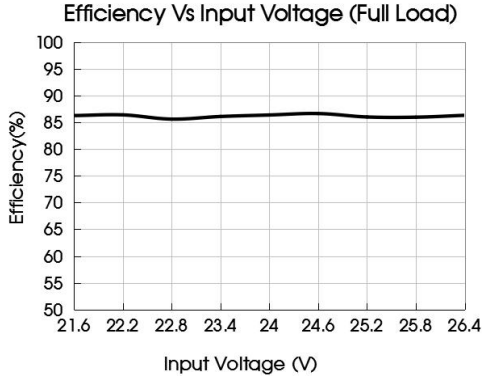
DFXT2-F1205



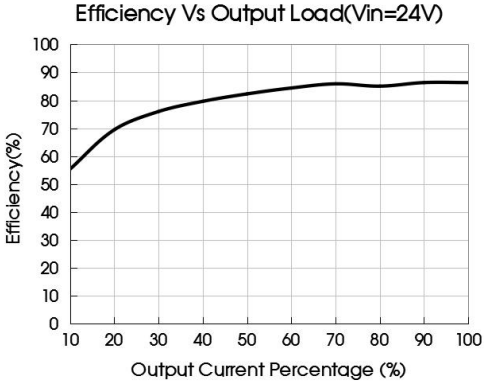
DFXT2-F1205



DFXT2-F2405



DFXT2-F2405



Design Reference

1. Typical application

①Input 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.
②Choosing 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.

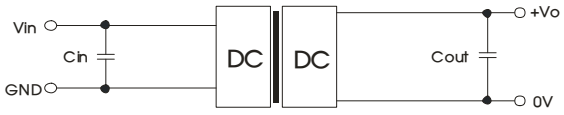


Fig. 3

Table 1: Recommended input and output capacitor values

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

2. EMC compliance recommended circuit

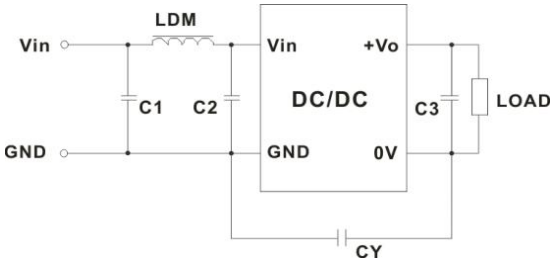


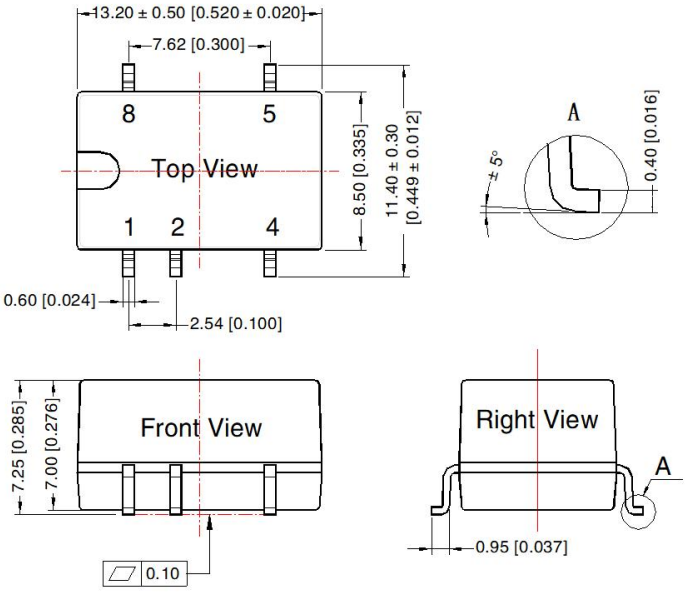
Fig. 4

EMC application circuit with higher requirements

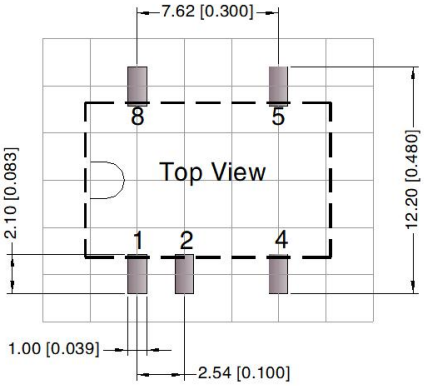
Emissions	C1/C2	4.7μF /50V
	C3	Refer to the Cout in Fig. 3
	CY	270pF /3kV
	LDM	6.8μH

Dimensions and Recommended

THIRD ANGLE PROJECTION



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

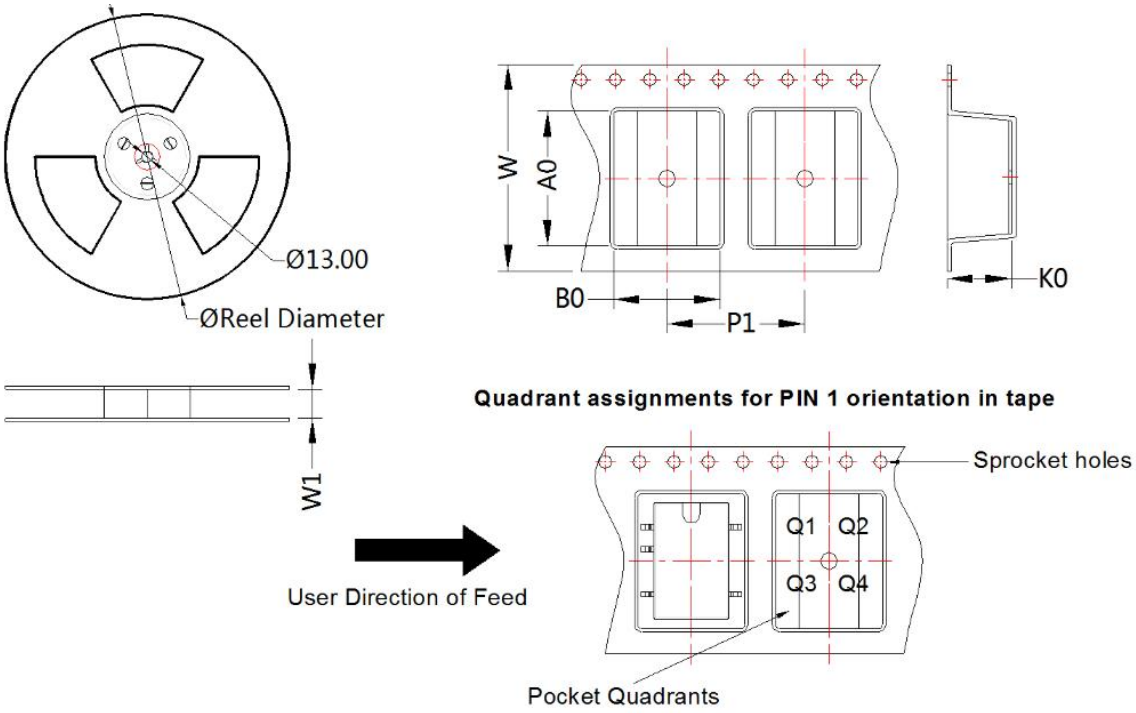


Note: Grid 2.54*2.54mm

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;
7. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.