Descriptions

1W isolated, DC-DC converter



RoHS

3 Years Warranty

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Continuous short-circuit protection
- No-load input current as low as 4mA
- Operating ambient temperature range: -40℃ to +85℃
- High efficiency up to 71%
- Compact SMD package
- I/O isolation test voltage 3k VDC
- Industry standard pin-out

Applications

- Industrial control
- Power
- Home appliances
- Instrumentation
- Communication
- Civil applications

Selection Guide

Certification	Part No.①	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF) Max.
		Nominal (Range)	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	DFXT1-IF0503	5 (4.75-5.25)	3.3	250/25	62/66	2400
	DFXT1-IF0505		5	200/20	65/69	2400
	DFXT1-IF0509		9	111/12	66/70	1000
	DFXT1-IF0512		12	84/9	67/71	560
	DFXT1-IF0515		15	67/7	67/71	560
	DFXT1-IF1205	12 (11.4-12.6)	5	200/20	65/69	2400
	DFXT1-IF1212		12	84/9	67/71	560
	DFXT1-IF1215		15	67/7	67/71	220
	DFXT1-IF1505	15 (14.25-15.75)	5	200/20	64/68	2400
	DFXT1-IF2405	24 (22.8-25.2)	5	200/20	63/69	2400
	DFXT1-IF2412		12	84/9	65/71	560
	DFXT1-IF2415		15	67/7	65/71	220

Note:
①Product model suffix "-TR" indicates reel packaging;
②Product 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 output		--	303/8	323/--	mA
			5VDC output		--	290/8	308/--	
			9VDC output		--	286/8	304/--	
			12VDC/15VDC output		--	282/9	299/--	
		12VDC input	5VDC output		--	121/8	128/--	
			12VDC/15VDC output		--	117/8	124/--	
		15VDC input			--	99/8	105/--	
		24VDC input	5VDC output		--	60/4	66/--	
			12VDC/15VDC output		--	59/4	64/--	
	Reflected Ripple Current	5VDC input			--	30	--	
		12VDC/15VDC/24VDC input			--	15	--	
	Input Filter				Capacitance Filter			
	Hot Plug				Unavailable			
Output Specifications	Voltage Accuracy	100% load			--	--	±3	%
	Linear Regulation	Input voltage change: ±1%			--	--	±0.25	
	Load Regulation	10%-100% load	5VDC input	3.3VDC output	--	--	±3	
				other output	--	--	±2	
			12VDC/15VDC/24VDC input		--	--	±2	
	Ripple & Noise①	20MHz bandwidth			--	30	100	mVp-p
	Temperature Coefficient	100% load	5VDC input		--	--	±0.03	%/℃
			12VDC/15VDC/24VDC input		--	±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	Derating when operating temperature≥ 71℃ (see Fig.1)			-40	--	85	℃
	Storage Temperature				-55	--	125	
	Case Temperature Rise	Ta=25℃	5VDC input	3.3VDC output	--	30	--	
				other output	--	25	--	
			12VDC/15VDC/24VDC input		--	25	--	
	Pin Soldering Resistance Temperature②	Soldering spot is 1.5mm away from the case, 10 seconds max.			--	--	+300	
		Wave soldering, maximum 10 seconds			255	260	265	
	Storage Humidity	Non-condensing			5	--	95	%RH
	Vibration				10-150Hz, 5G, 0.75mm. along X, Y and Z			

	Reflow Soldering Temperature			Peak temp.≤245℃, maximum duration time≤60s over 217℃			
	Switching Frequency	100% load, nominal input voltage	5VDC input	--	250	--	kHz
			12/15/24VDC 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	15.24 x 11.40 x 7.25 mm					
	Weight	1.2g(Typ.)					
	Cooling Method	Free air convection					

Note:
①The "parallel cable" method is used for Ripple and Noise test;
②The pin soldering temperature tolerance is not the actual temperature set by the soldering iron but the temperature required for proper solder joints. The actual temperature set by the customer should be determined comprehensively based on factors such as PCB thickness, copper coverage, soldering iron power, and soldering iron tip selection.

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. 3 for recommended circuit test.

Characteristic Curve

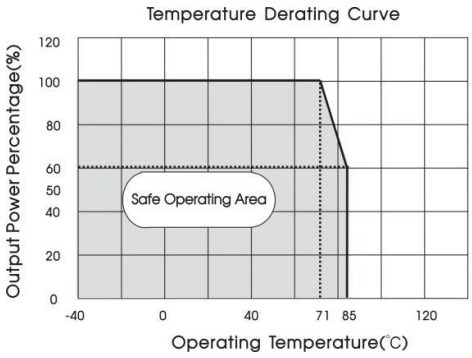
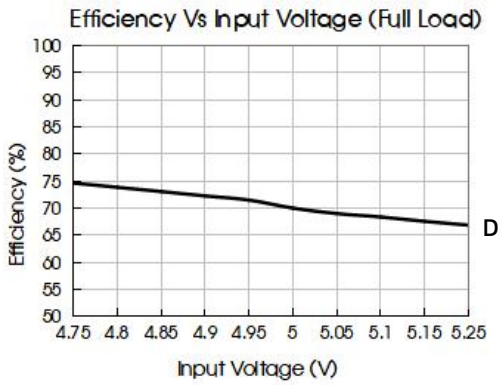
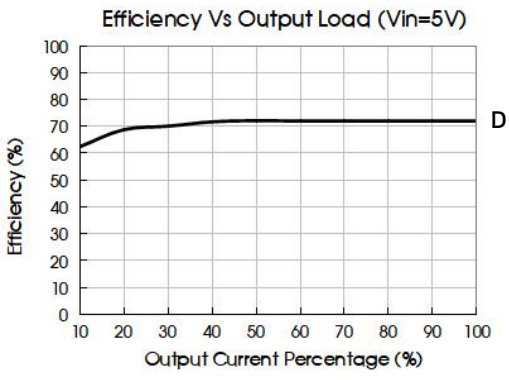


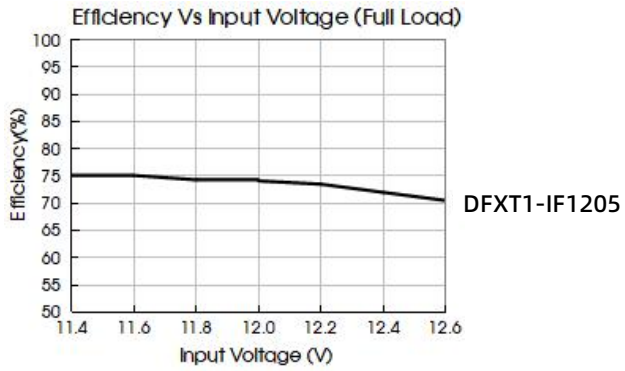
Fig. 1



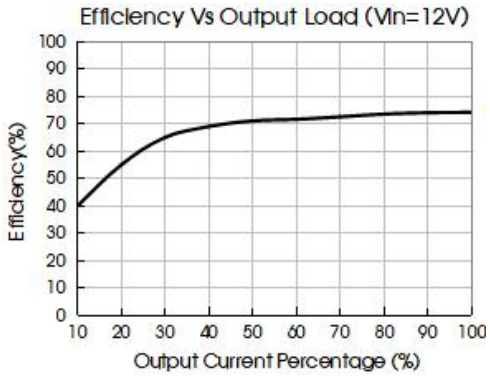
DFXT1-IF0505



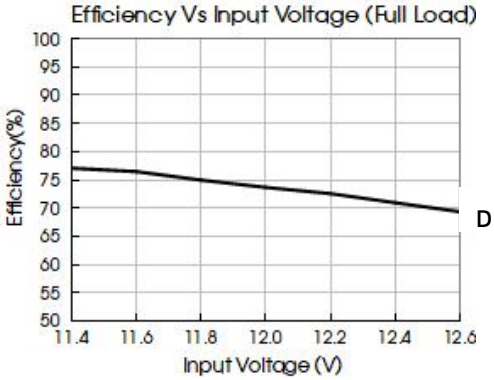
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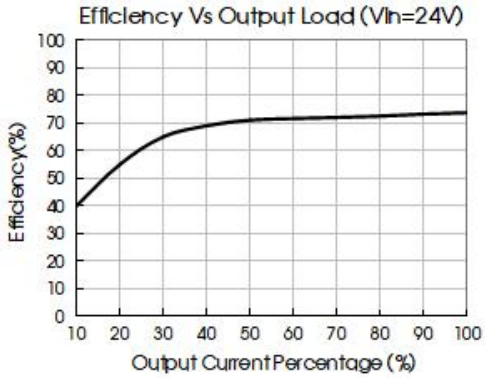
DFXT1-IF1205



DFXT1-IF1205



DFXT1-IF2405



DFXT1-IF2405

Design Reference

1. Typical application circuit

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. 2.

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.

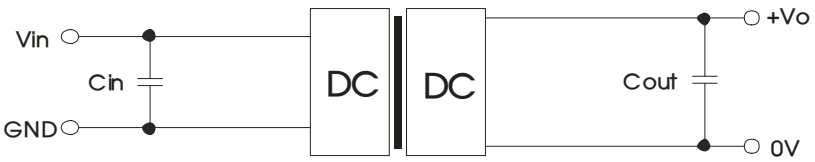


Fig. 2

Table 1: Recommended capacitive load value table

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

2. EMC compliance circuit

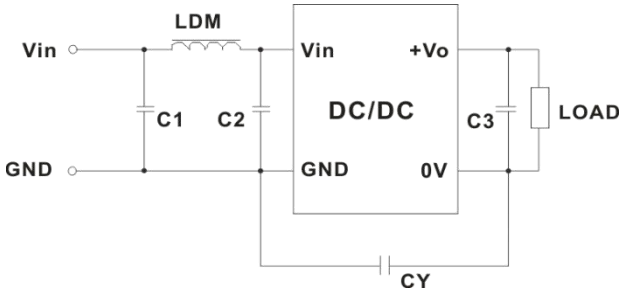


Fig. 3

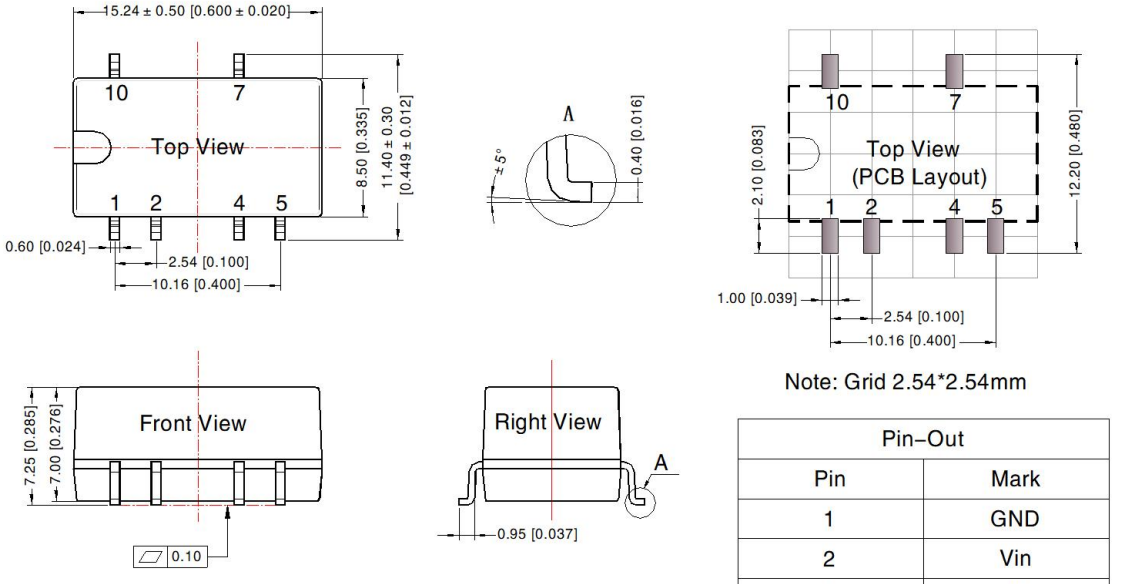
Table 2: Recommended EMC filter values

Input voltage		5VDC		12VDC/15VDC/24VDC
Output voltage		3.3/5/9VDC	12/15VDC	--
Emissions	C1/C2	4.7μF /25V	4.7μF /25V	4.7μF /50V
	CY	100pF/4kVDC	1nF /4kVDC	270pF /3kVDC
	C3	Refer to the Cout in table 1		Refer to the Cout in table 1
	LDM	6.8μH		6.8μH

Note: In the case of actual use, the requirements for EMI are high, it is subject to CY (1nF/4kV).

Dimensions and Recommended

THIRD ANGLE PROJECTION



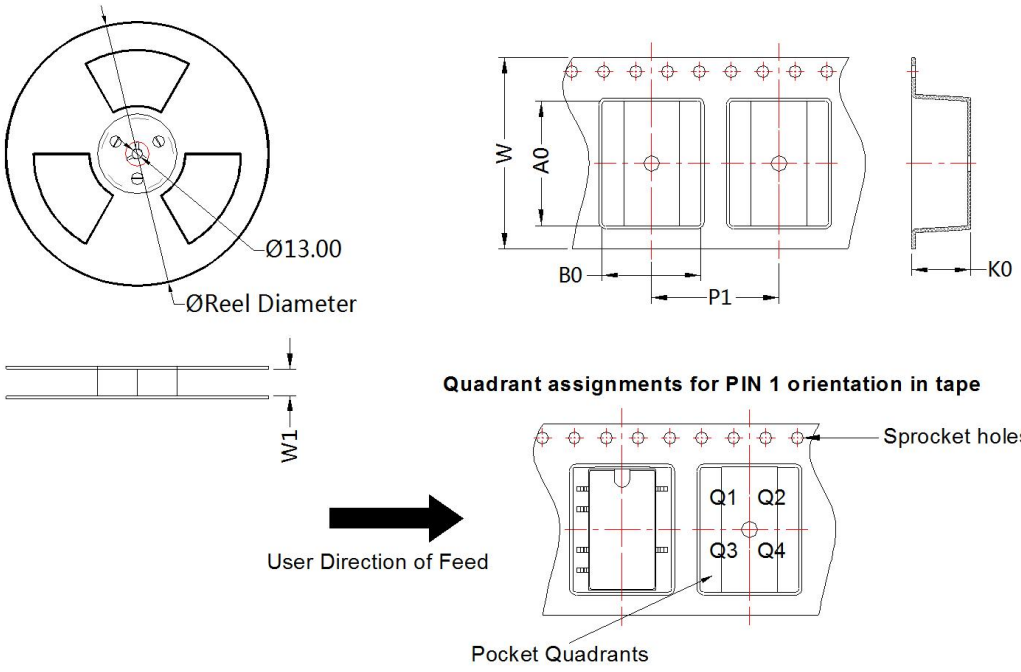
Note: Grid 2.54*2.54mm

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

NC: Pin to be isolated from circuitry

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

Tape and Reel info



Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SMD	6	500	330.0	24.5	15.64	12.4	7.45	16.0	24.0	Q1

Notes:

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.