

Descriptions

1W isolated DC-DC converter



EN62368-1



BS EN62368-1

Features

- Continuous short-circuit protection
- No-load input current as low as 4mA
- Operating ambient temperature range: -40°C to +85°C
- 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.*	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: * Product model suffix "-TR" indicates reel packaging.

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 & Noise*	20MHz bandwidth			--	30	100	mVp-p
	Temperature Coefficient	100% load	5VDC input		--	--	±0.03	% / °C
			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°C (see Fig.1)			-40	--	85	°C
	Storage Temperature				-55	--	125	
	Case Temperature Rise	Ta=25°C	5VDC input	3.3VDC output	--	30	--	

				other output	--	25	--	
			12VDC/15VDC/24VDC input		--	25	--	
	Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds			--	--	300	
	Storage Humidity	Non-condensing			5	--	95	%RH
	Vibration				10-150Hz, 5G, 0.75mm. along X, Y and Z			
	Reflow Soldering Temperature				Peak temp.≤245°C, maximum duration times≤60s over 217°C			
	Switching Frequency	100% load, nominal input voltage	5VDC input		--	250	--	kHz
			12/15/24VDC input		--	260	--	
	MTBF	MIL-HDBK-217F@25°C			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: * The “parallel cable” method is used for Ripple and Noise test.								

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

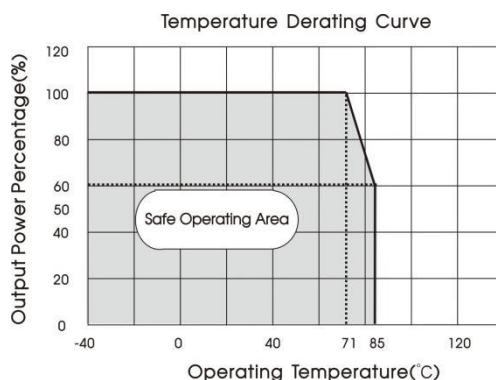
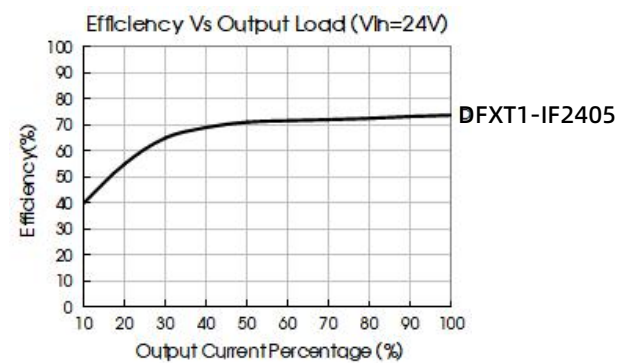
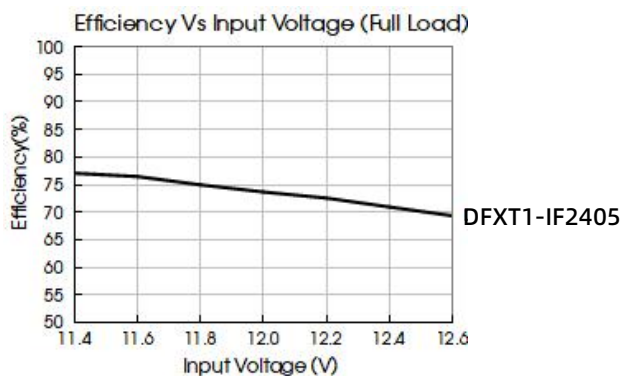
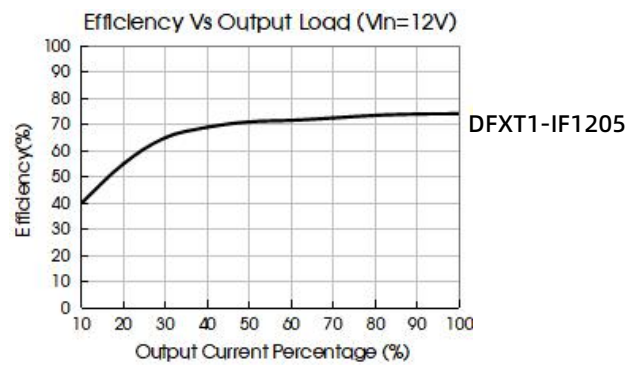
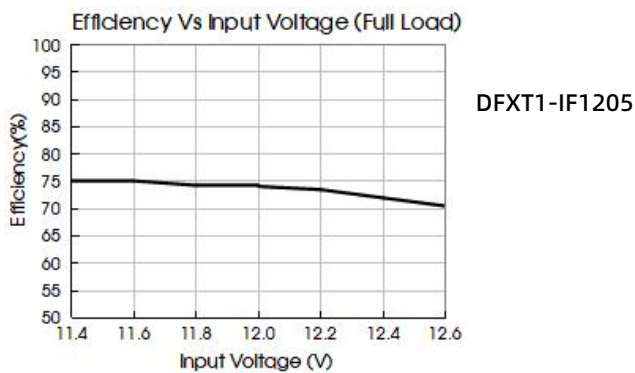
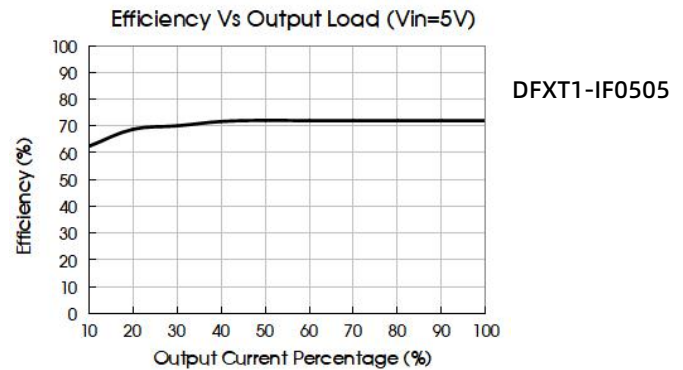
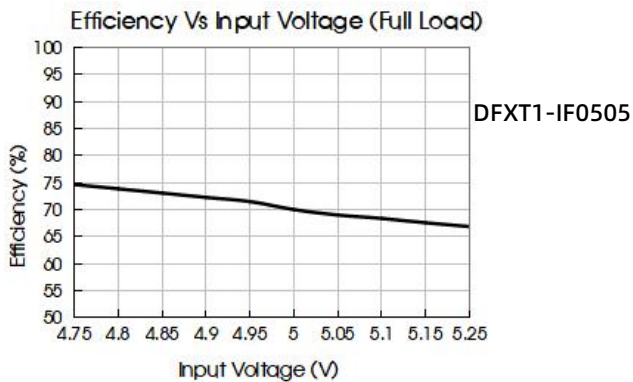


Fig. 1



Design Reference

1. Typical application circuit

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. 2.

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. 2

Table 1: Recommended capacitive load value table

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

2. EMC compliance circuit

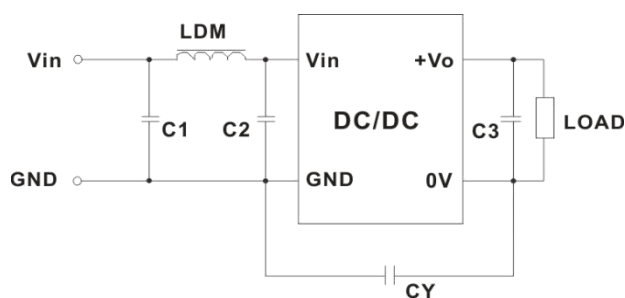


Fig. 3

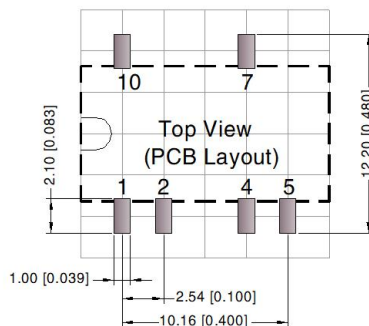
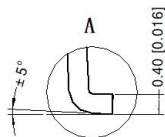
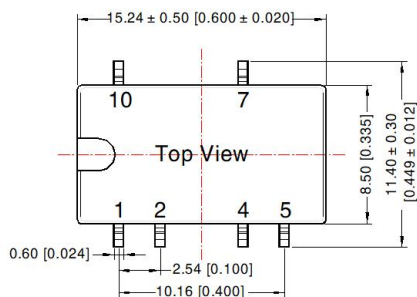
Table 2: Recommended EMC filter values

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

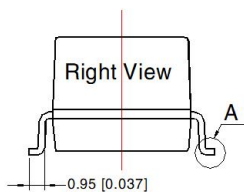
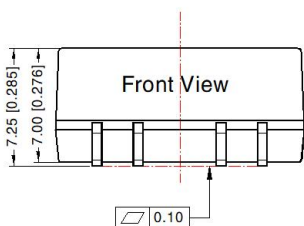
Note: In the case of actual use, the requirements for EMI are high, it is subject to CY (1nF/4kV).

Dimensions and Recommended

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

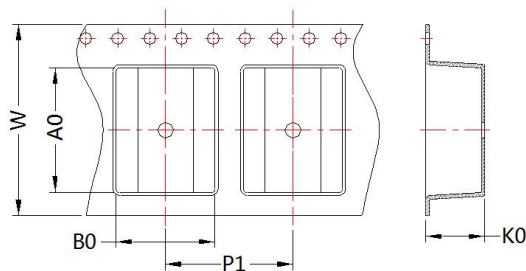
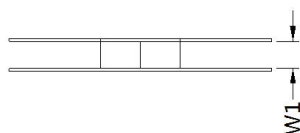
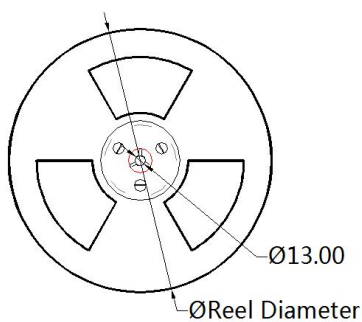


Pin-Out	
Pin	Mark
1	GND
2	Vin
4	0V
5	0V
7	+Vo
10	NC

Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10 [\pm 0.004]$
General tolerances: $\pm 0.25 [\pm 0.010]$

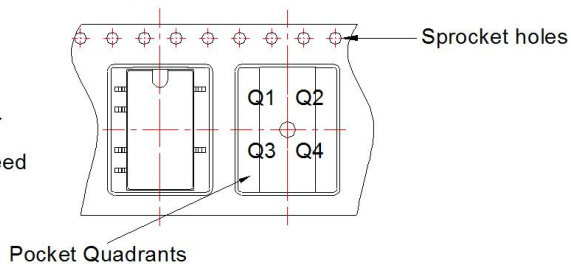
NC: Pin to be isolated from circuitry

Tape and Reel info



Quadrant assignments for PIN 1 orientation in tape

User Direction of Feed



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°C, 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.