Descriptions

2W isolated DC-DC converter

RoHS

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 86%
- Compact SMD package
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out

Applications

- Pure Digital Circuits
- Low Frequency Analog Circuits
- Relay-driven Circuits
- Data Switching Circuits

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-B0503	5 (4.5-5.5)	3.3	400/40	74/78	2400
--	DFXT2-B0503-TR					
EN/BS EN	DFXT2-B0505		5	400/40	80/84	2400
--	DFXT2-B0505-TR					
--	DFXT2-B05X7(-TR)		7	286/29	80/84	1000
EN/BS EN	DFXT2-B0509		9	222/22	81/85	1000
--	DFXT2-B0509-TR					
EN/BS EN	DFXT2-B0512		12	167/17	81/85	560
--	DFXT2-B0512-TR					
EN/BS EN	DFXT2-B0515		15	133/13	82/86	560
--	DFXT2-B0515-TR					
EN/BS EN	DFXT2-B0524		24	83/8	82/86	220
--	DFXT2-B0524-TR					

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	--	339/8	357/--	mA
			5VDC/7VDC output	--	477/8	500/--	
			9VDC/12VDC output	--	471/8	494/--	
			15VDC/24VDC output	--	466/8	488/--	
	Reflected Ripple Current			--	15	--	
	Surge Voltage (1sec. max.)			-0.7	--	9	VDC
	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/7VDC/9VDC/12VDC/ 15VDC/24VDC output	--	--	±1.2	
	Load Regulation	10%-100% load	3.3VDC output	--	10	20	%
			5VDC/7VDC output	--	9	15	
			9VDC output	--	8	10	
			12VDC/15VDC output	--	7	10	
			24VDC output	--	6	10	
	Ripple & Noise①	20MHz bandwidth		--	75	200	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.		1500	--	--	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≥85℃, (see Fig. 2)		-40	--	105	℃
	Storage Temperature			-55	--	125	
	Case Temperature Rise	Ta=25℃		--	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		--	220	--	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					

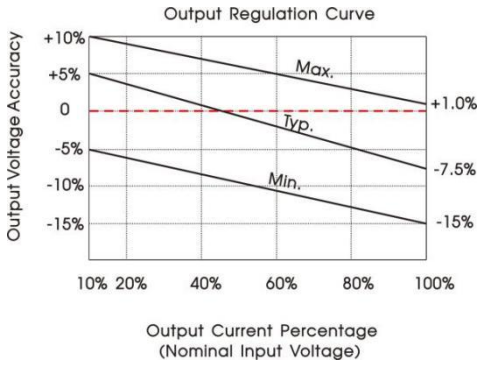
Note:
①The "parallel cable" method is used for ripple and noise test;
②See also IPC/JEDEC J-STD-020D.1.

Electromagnetic Compatibility (EMC)

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

Characteristic Curve

3.3VDC output



5VDC/7VDC/9VDC/12VDC/15VDC/24VDC output

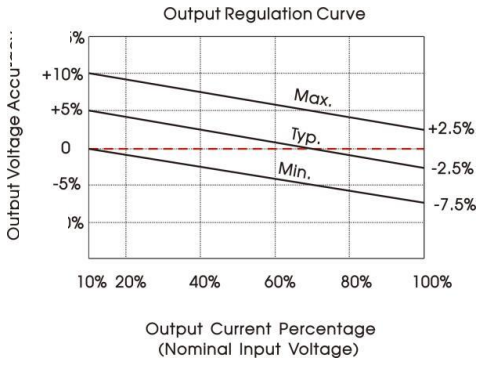


Fig. 1

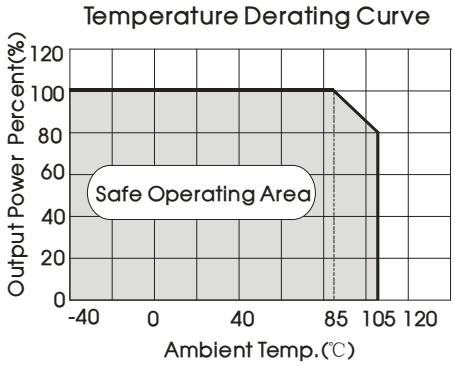
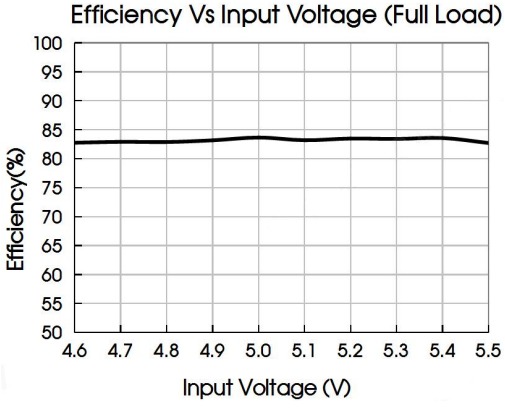
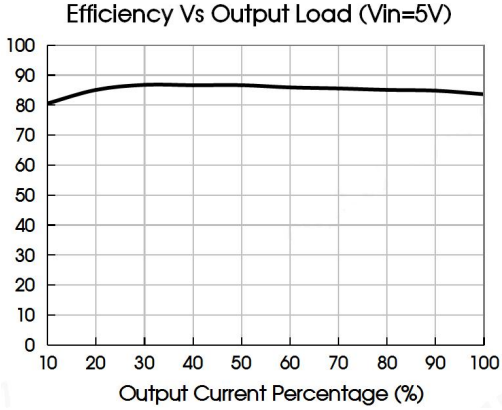


Fig. 2

DFXT2-B0505



DFXT2-B0505



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.

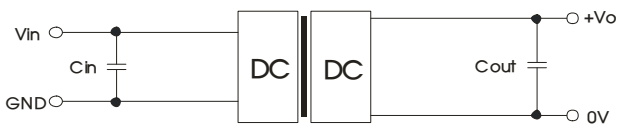


Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3VDC/5VDC	10μF/16V
--	--	7VDC/9VDC	4.7μF/16V
--	--	12VDC	2.2μF/25V
--	--	15VDC	1μF/25V
--	--	24VDC	0.47μF/50

2. EMC compliance circuit

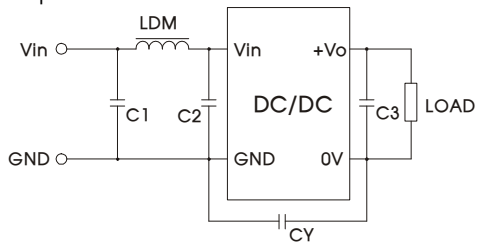
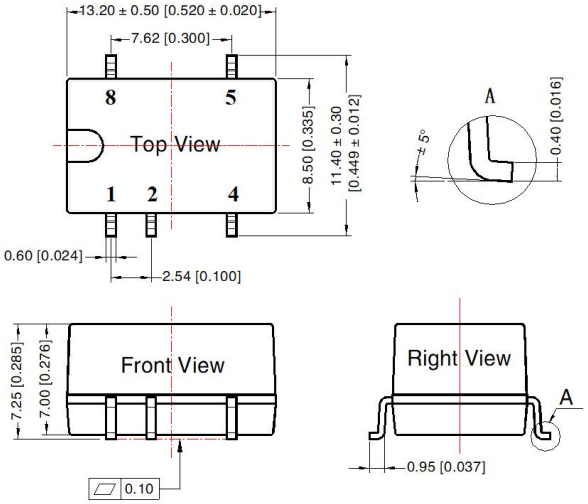


Fig. 4

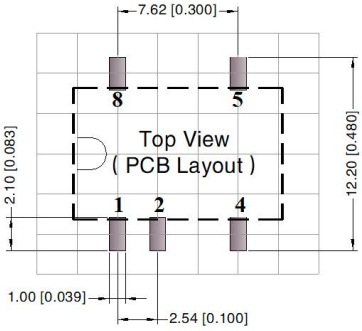
Emissions	C1, C2	4.7μF /16V
	C3	Refer to the Cout in Fig. 3
	CY	270pF/2kV
	LDM	6.8μH

Dimensions and Recommended



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

THIRD ANGLE PROJECTION

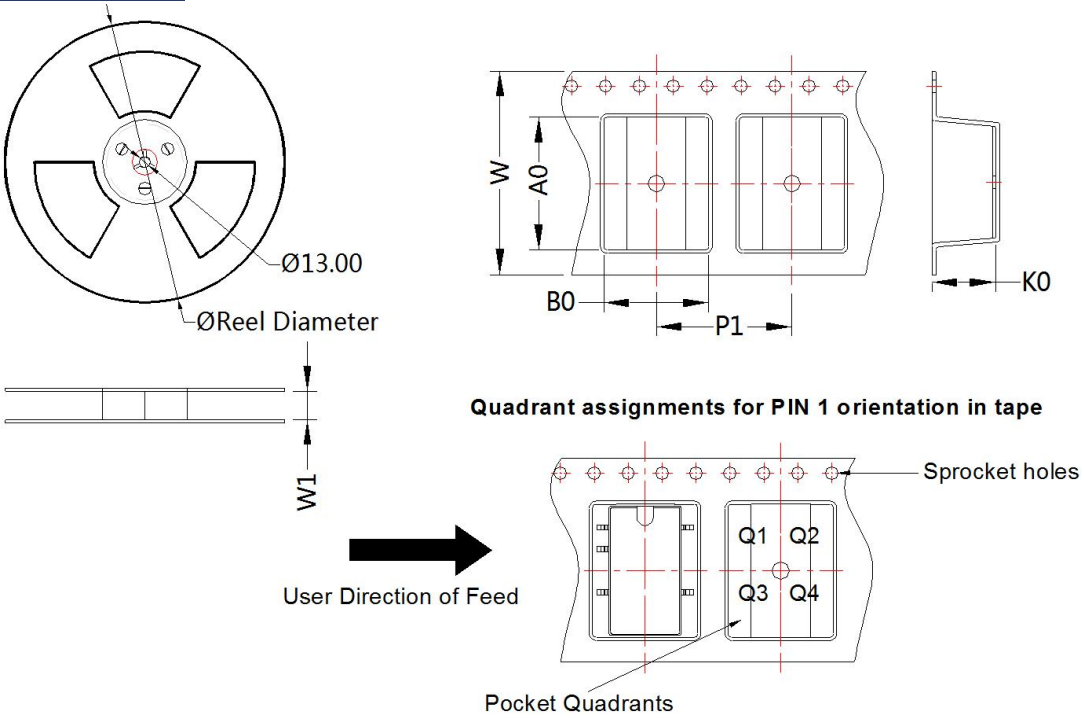


Note: Grid 2.54*2.54mm

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



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

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.