Descriptions

1W isolated，DC/DC Converter



RoHS

CE Report EN62368-1

UKCA Report BS EN 62368-1

Features

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40℃ to +105℃
- High efficiency up to 83%
- Compact SMD package
- I/O isolation test voltage 1.5k VDC
- Industry standard pin-out

Applications

- Pure digital circuit
- General low frequency analog circuit
- Relay drive circuit
- 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	DFT1-B0503	5 (4.5-5.5)	3.3	303/30	70/74	2400
	DFT1-B0505		5	200/20	78/82	2400
	DFT1-B0509		9	111/12	79/83	1000
	DFT1-B0512		12	84/9	79/83	560
	DFT1-B0515		15	67/7	79/83	470
EN	DFT1-B1205	12 (10.8-13.2)	5	200/20	78/82	2400

Note: *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/5VDC output		--	270/8	286/--	mA
			9VDC/12VDC output		--	241/12	254/--	
			15VDC output		--	241/18	254/--	
		12VDC input	5VDC output		--	102/8	107/--	
	Reflected Ripple Current				--	15	--	
	Surge Voltage (1sec. max.)	5VDC input			-0.7	--	9	VDC
		12VDC input			-0.7	--	18	
	Input Filter				Capacitance Filter			
	Hot Plug				Unavailable			
Output Specifications	Voltage Accuracy				See output regulation curves (Fig. 1)			
	Linear Regulation	Input voltage change: ±1%	5VDC input	3.3VDC output	--	--	±1.5	--
				Other output	--	--	±1.2	
			12VDC input		--	--	±1.2	
	Load Regulation	10%-100% load	5VDC input	3.3VDC output	--	15	20	%
				5VDC output	--	10	15	
				9VDC output	--	8	10	
				12VDC output	--	7	10	
				15VDC output	--	7	15	
			12VDC input	5VDC output	--	5	15	
	Ripple & Noise*	20MHz bandwidth	5VDC input	Other output	--	30	75	mVp-p
				15VDC output	--	30	100	
			12VDC input		--	30	75	
	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≥ 100℃ (see Fig.2)			-40	--	105	℃
	Storage Temperature				-55	--	125	
	Case Temperature Rise	Ta=25℃	5VDC input	3.3VDC output	--	25	--	
				Other output	--	15	--	
			Other input		--	25	--	
	Storage Humidity	Non-condensing	5VDC input		--	--	95	%RH
			Other input		5	--	95	
	Reflow Soldering Temperature				Peak temp.≤245℃, maximum duration times≤60s over 217℃			
	Vibration				10-150Hz, 5G, 0.75mm. along X, Y and Z			
	Switching Frequency	Full load,	5VDC input	Other output	--	270	--	kHz

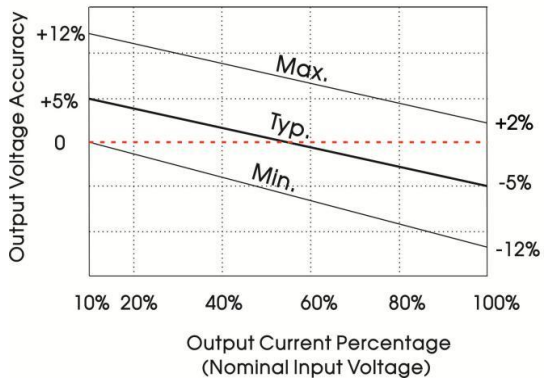
		nominal input voltage		15VDC output	--	300	--	
			12VDC input		--	260	--	
	MTBF	MIL-HDBK-217F@25℃			3500	--	--	k hours
	Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1			Level 1			
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)						
	Dimensions	13.20 x 11.40 x 7.25 mm						
	Weight	1.3g(Typ.)						
	Cooling Method	Free air convection						
Note: *The "parallel cable" method is used for ripple and noise test.								

Electromagnetic Compatibility (EMC)

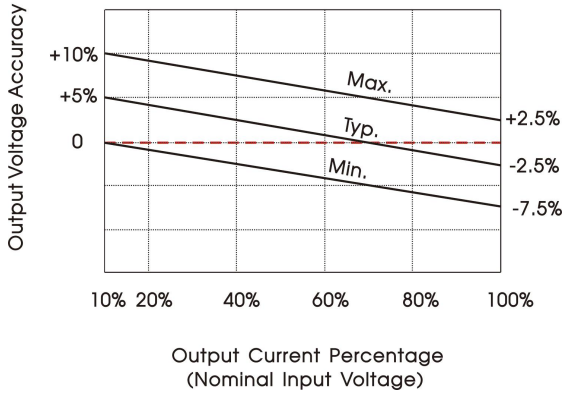
Emissions	CE		CISPR32/EN55032 CLASS B	
	RE		CISPR32/EN55032 CLASS B	
Immunity	ESD	5VDC input	IEC/EN61000-4-2 Air ±8kV, Contact ±4kV	perf. Criteria B
		Others input	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV	perf. Criteria B
Note: Refer to Fig. 4 for recommended circuit test.				

Characteristic Curve

5VDC input,3.3VDC output
Output Regulation Curve



5VDC input,Others output
Output Regulation Curve



12VDC input
Output Regulation Curve

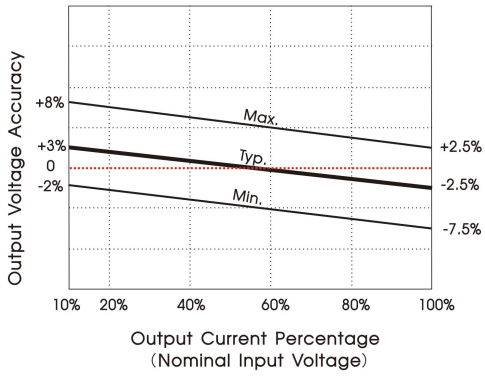


Fig.1

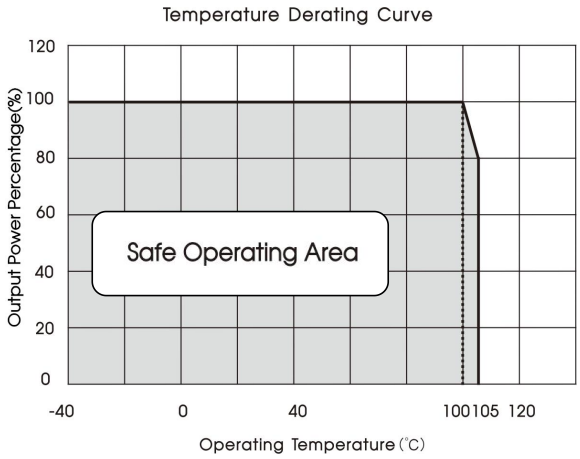
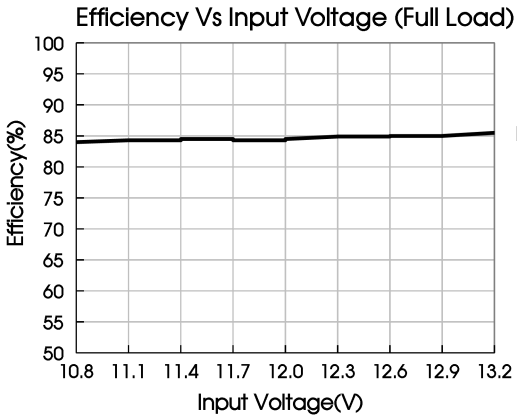
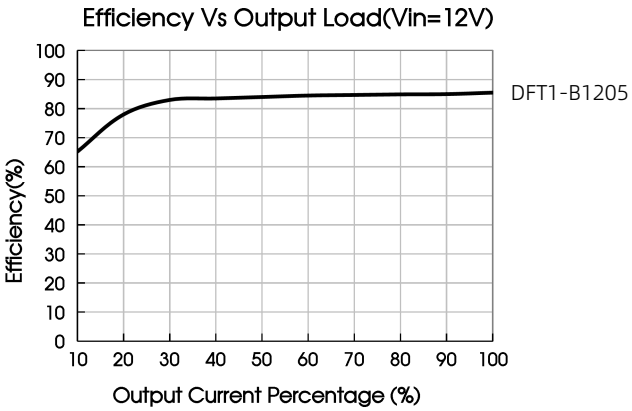


Fig. 2





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.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.

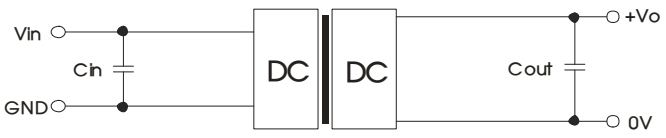


Fig.3

Table 1: Recommended input and output capacitor values

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

2. EMC compliance circuit

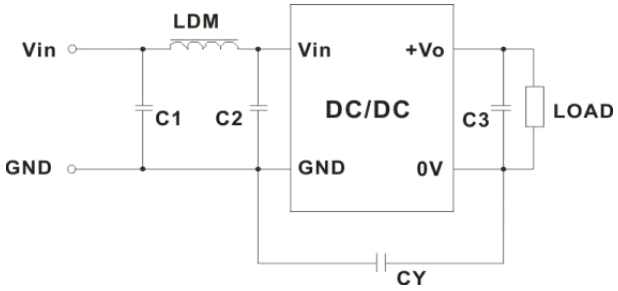


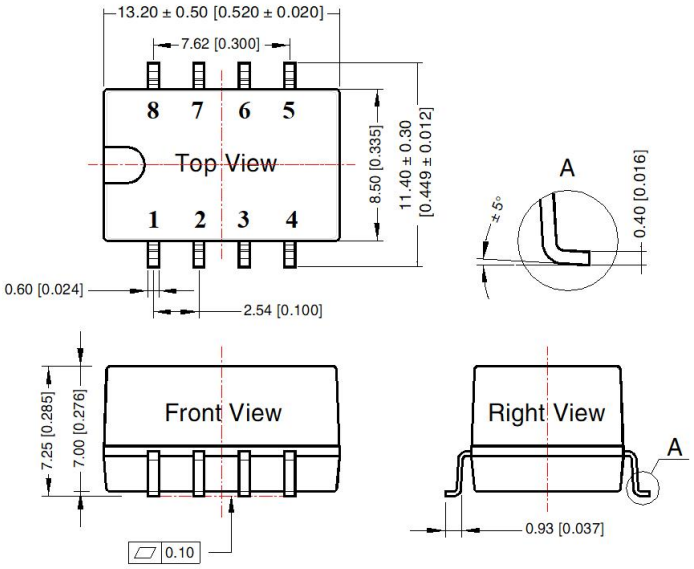
Fig. 4

Table 2: EMC recommended circuit value table

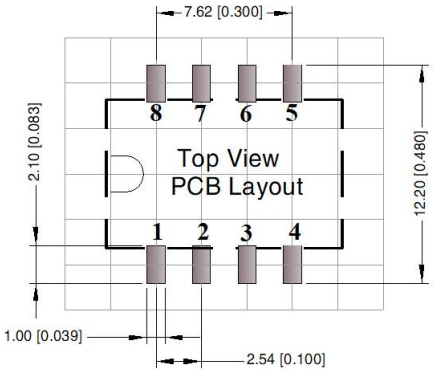
Input voltage		5VDC		Others
Output Voltage		3.3/5/9 VDC	12/15 VDC	--
Emissions	C1/C2	4.7μF /25V	4.7μF /25V	4.7μF /50V
	CY	--	1nF /2kVDC HEC C1206X102K202T JOHANSON 202R18W102KV4E	270pF/2kVDC
	C3	Refer to the Cout in table 1		
	LDM	6.8μH		

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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

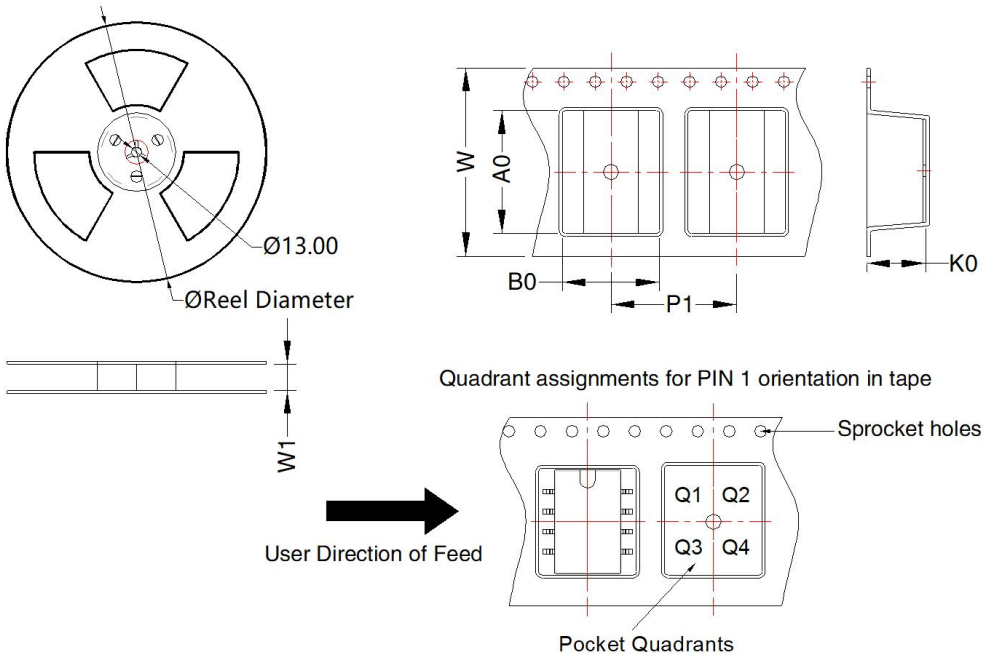


Note: Grid 2.54*2.54mm

Pin–Out	
Pin	Mark
1	GND
2	Vin
4	0V
5	+Vo
3, 6, 7, 8	NC

NC: Pin to be isolated from circuitry

Tape and Reel Info



Device	Package Type	Pin	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
DFT1-Bxxxx	SMD	8	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;
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