

DESCRIPTIONS

DCDC Converter, 1W, Fixed input, unregulated single output



Report



Report

RoHS

EN62368-1

BS EN62368-1

Features

- Continuous short-circuit protection
- No-load input current as low as 8mA
- Operating ambient temperature range: -40°C to +105°C
- 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

Specifications

Product Specifications	Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	3.3VDC/5VDC output	--	270/8	286/--	mA
		9VDC/12VDC output	--	241/12	254/--	
		15VDC output	--	241/18	254/--	
	Reflected Ripple Current		--	15	--	

	Surge Voltage(1sec. max.)	5VDC input		-0.7	--	9	VDC
	Input Filter			Capacitance Filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy			See output regulation curves (Fig. 1)			
	Linear Regulation	Input voltage change: $\pm 1\%$	3.3VDC output	--	--	± 1.5	--
			Other output	--	--	± 1.2	
	Load Regulation	10%-100% load	3.3VDC output	--	15	20	%
			5VDC output	--	10	15	
			9VDC output	--	8	10	
			12VDC output	--	7	10	
			15VDC output	--	7	15	
	Ripple & Noise*	20MHz bandwidth	Other output	--	30	75	mVp-p
			15VDC output	--	30	100	
	Temperature Coefficient	100% load		--	± 0.02	--	%/ $^{\circ}\text{C}$
	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	--	--	M Ω
	Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		--	20	--	pF
	Operating Temperature	Derating when operating temperature $\geq 85^{\circ}\text{C}$ (see Fig.1)		-40	--	105	$^{\circ}\text{C}$
	Storage Temperature			-55	--	125	
	Case Temperature Rise	Ta=25 $^{\circ}\text{C}$	3.3VDC output	--	25	--	
			Other output	--	15	--	
	Storage Humidity	Non-condensing		--	--	95	%RH
	Reflow Soldering Temperature*			Peak temp. $\leq 245^{\circ}\text{C}$, maximum duration times $\leq 60\text{s}$ over 217°C			
	Vibration			10-150Hz, 5G, 0.75mm. along X, Y and Z			
	Switching Frequency	100% load, nominal input voltage	Other output	--	270	--	kHz
			15VDC output	--	300	--	
	MTBF	MIL-HDBK-217F@25 $^{\circ}\text{C}$		3500	--	--	k hours

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	IEC/EN61000-4-2	Air $\pm 8\text{kV}$, Contact $\pm 6\text{kV}$ perf. Criteria B
Note: Refer to Fig. 4 for recommended circuit test.			

Characteristic Curve

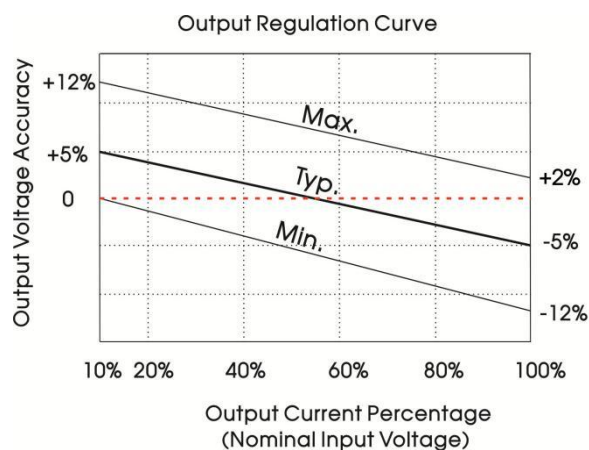


Fig. 1(3.3VDC output)

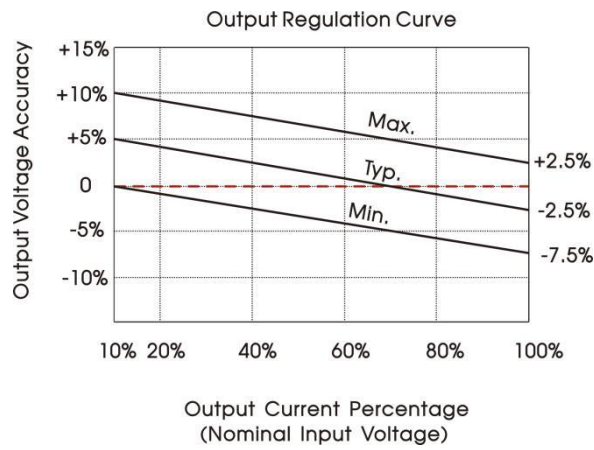


Fig. 1(Others output)

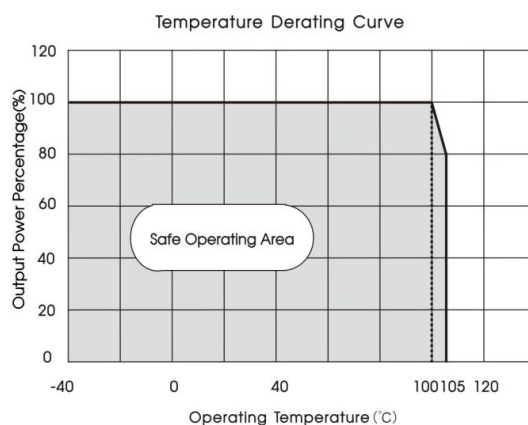


Fig. 2

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 Fig3.

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	3.3/5VDC	10μF/16V
		9VDC	4.7μF/25V
		12/15VDC	2.2μF/25V

2. EMC compliance circuit

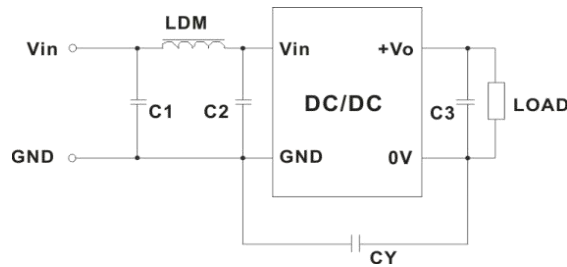
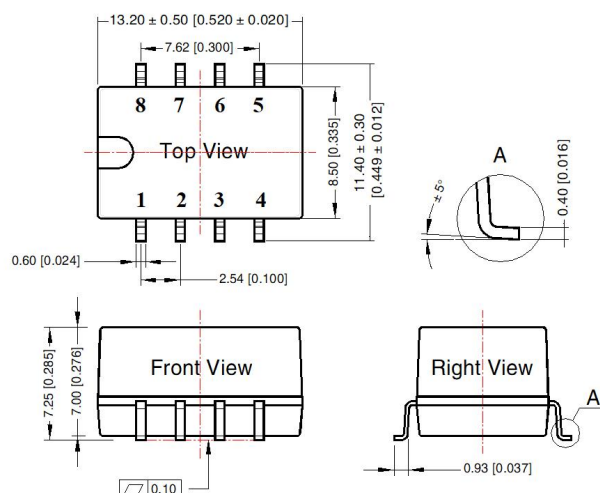


Fig. 4

Table 2: Recommended EMC filter values

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

Dimensions and Recommended Layout



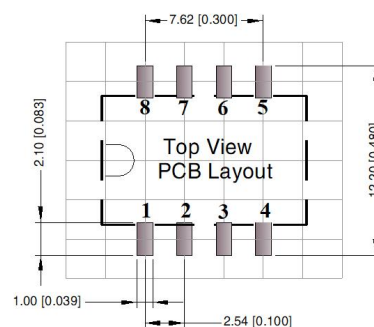
Note:

Unit: mm[inch]

Pin section tolerances: $\pm 0.10 [\pm 0.004]$

General tolerances: $\pm 0.25[\pm 0.010]$

THIRD ANGLE PROJECTION 



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	GND
2	V _{in}
4	0V
5	+V _o
3, 6, 7, 8	NC

NC: Pin to be isolated from circuitry

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 $T_a=25^{\circ}\text{C}$, 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.