Descriptions

1W isolated DC-DC converter Fixed input voltage, unregulated single output

RoHS

3 Years Warranty

c UL us UL62368-1

CE Report EN 62368-1

UKCA Report BS EN 62368-1

Features

- Continuous short-circuit protection
- No-load input current as low as 5mA
- Operating ambient temperature range: -40℃ to +105℃
- High efficiency up to 85%
- Compact SMD package
- I/O isolation test voltage 3k 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	DFLT1-E0503	5 (4.5-5.5)	±3.3	±151/±15	70/74	1200
	DFLT1-E0505		±5	±100/±10	78/82	1200
	DFLT1-E0509		±9	±56/±6	79/83	470
	DFLT1-E0512		±12	±42/±5	79/83	220
	DFLT1-E0515		±15	±34/±4	79/83	220
	DFLT1-E0524		±24	±21/±2	81/85	100
EN/BS EN	DFLT1-F0503		3.3	303/30	70/74	2400
UL/EN/BS EN	DFLT1-F0505		5	200/20	78/82	2400
EN/BS EN	DFLT1-F0509		9	111/12	79/83	1000
EN/BS EN	DFLT1-F0512		12	84/9	79/83	560
EN/BS EN	DFLT1-F0515		15	67/7	79/83	560
EN/BS EN	DFLT1-F0524		24	42/4	81/85	220

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	3.3VDC/5VDC output		--	270/5	286/10	mA
		9VDC/12VDC output		--	241/12	254/20	
		15VDC output		--	241/18	254/30	
	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: ±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	--	6	10	
			24VDC output	--	5	10	
	Ripple & Noise*	20MHz bandwidth	Other output	--	30	75	mVp-p
			24VDC output	--	50	100	
	Temperature Coefficient	100% 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.		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≥ 100℃, (see Fig. 2)		-40	--	105	℃
	Storage Temperature			-55	--	125	
	Case Temperature Rise	Ta=25℃	3.3VDC output	--	25	--	
			Other output	--	15	--	
	Storage Humidity	Non-condensing		--	--	95	%RH
	Reflow Soldering Temperature*			Peak temp.≤245℃, maximum duration time≤ 60s over 217℃			
	Switching Frequency	100% load, nominal input voltage		--	270	--	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	15.24 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.

* For actual application, please refer to 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 ±4kV perf. Criteria B

Characteristic Curve

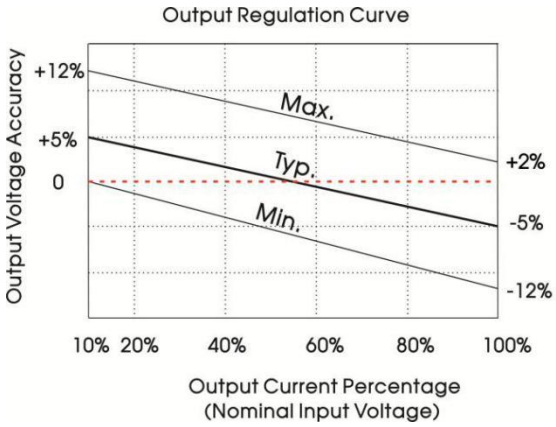


Fig. 1(3.3VDC output)

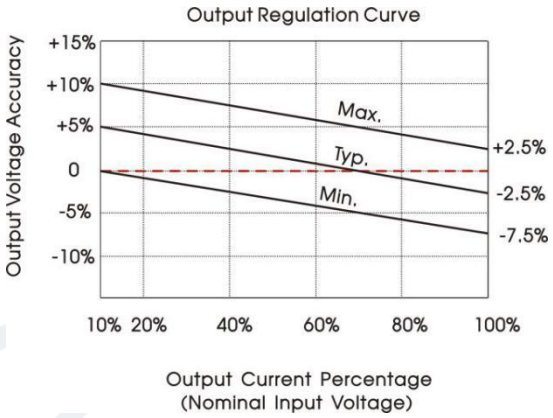
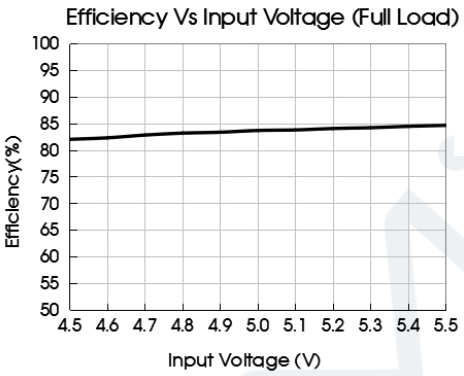
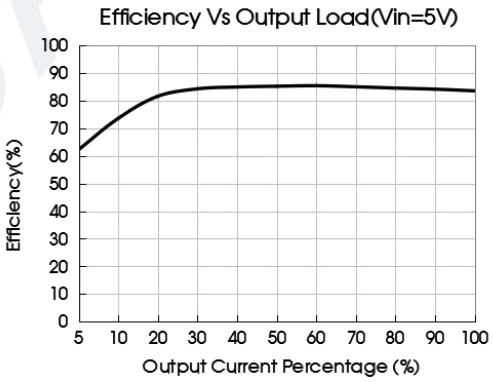


Fig. 1(Others output)



(DFLT1-F0505)



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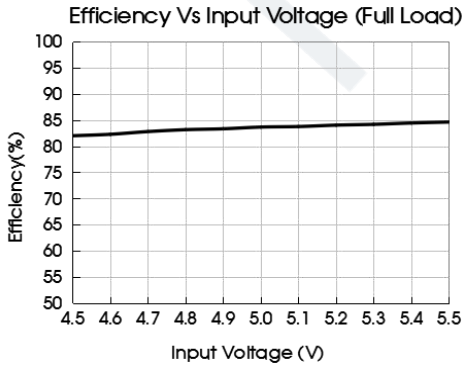

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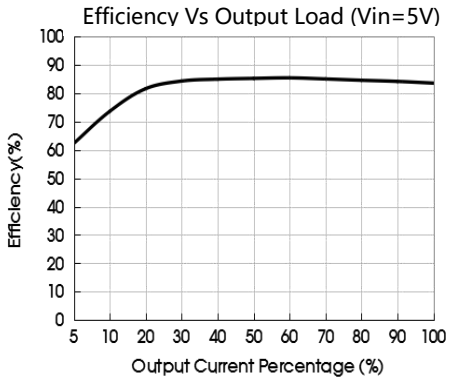


(DFLT1-E0505)

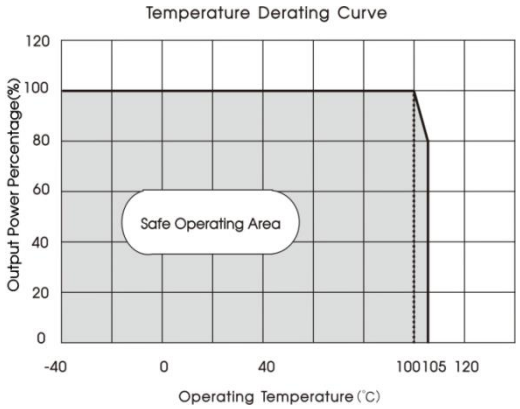


Fig. 2

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.

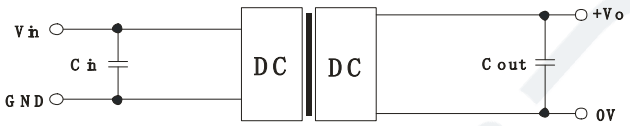


Fig.3

Table 1: Recommended input and output capacitor values

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

2.EMC compliance circuit

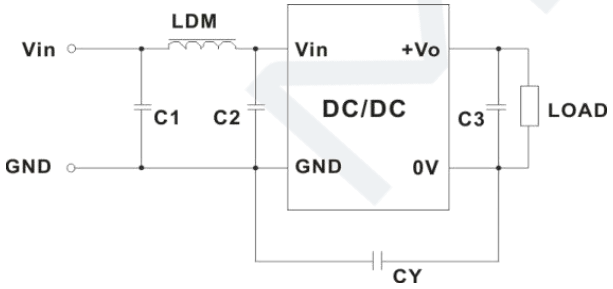


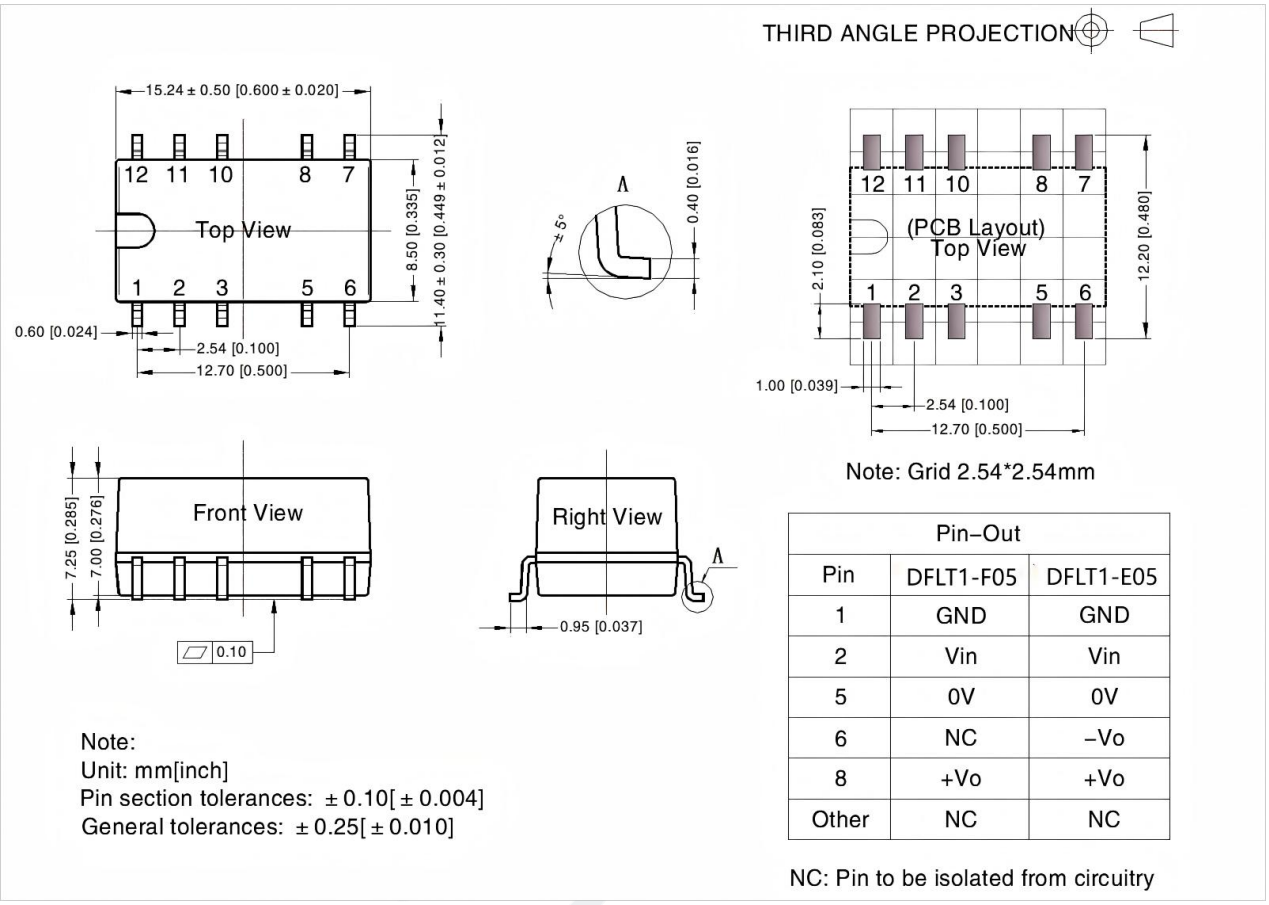
Fig. 4

EMC recommended circuit value table (Table 2)

Output voltage		3.3/5/9VDC	12/15/24VDC
Emissions	C1/C2	4.7μF /25V	4.7μF /25V
	CY	--	1nF /4kVDC VISHAY HGZ102MBP TDK CD45-E2GA102M-GKA
	C3	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.

Dimensions and Recommended



Note: Grid 2.54*2.54mm

Pin–Out		
Pin	DFLT1-F05	DFLT1-E05
1	GND	GND
2	Vin	Vin
5	0V	0V
6	NC	–Vo
8	+Vo	+Vo
Other	NC	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]

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.