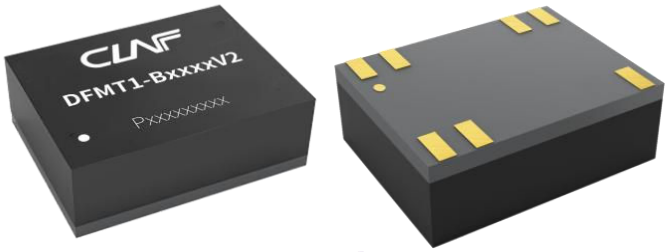
Descriptions

1W isolated, DC/DC Converter



RoHS

Report Report

EN62368-1 BS EN62368-1

Features

- Ultra-small, ultra-thin DFN package(9.00x7.00x3.10mm)
- Isolation capacitance as low as 8pF
- I/O isolation test voltage 3k VDC
- Operating ambient temperature range:-40℃ to +125℃
- High efficiency up to 85%
- Continuous short-circuit protection

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	DFMT1-B0505V2	5 (4.5-5.5)	5	200/20	81/85	2400

Specifications

Production Specifications	Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	5VDC input	--	235/7	247/15	mA
	Reflected Ripple Current		--	10	--	
	Surge Voltage (1sec. max.)	5VDC input	-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%	--	--	1.2	--
	Load Regulation	10%-100% load	--	8	15	%
	Ripple & Noise①	20MHz bandwidth	--	30	75	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.	3000	--	--	VDC
			1500	--	--	VAC
	Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
	Isolation Capacitance	Input-output capacitance at 100kHz/0.1V	--	8	--	pF
	Operating Temperature	Derating when operating temperature≥105℃, (see Fig. 2)	-40	--	125	℃
	Storage Temperature		-55	--	125	
	Case Temperature Rise	Ta=25℃	--	10	--	
	Storage Humidity	Non-condensing	--	--	95	%RH
	Reflow Soldering Temperature②		Peak temp.≤245℃, maximum duration time≤60s over 217℃			
	Vibration		10-150Hz, 0.75mm, 5G, 90Min. along X, Y and Z			
	Switching Frequency	Full load, nominal input voltage	--	300	--	kHz
	MTBF	MIL-HDBK-217F@25℃	7500	--	--	k hours
	Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 3			
Mechanical Specifications	Case Material	Black epoxy resin; flame-retardant and heat-resistant (UL94 V-0)				
	Dimensions	9.00 x 7.00 x 3.10 mm				
	Weight	0.5g(Typ.)				
	Cooling Method	Free air convection				

Note:
①The "parallel cable" method is used for Ripple and Noise test.
②For actual application, please refer to IPC/JEDEC J-STD-020D.1.

Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 4 for recommended circuit)
		RE	CISPR32/EN55032 CLASS B (see Fig. 4 for recommended circuit)
	Immunity	ESD	IEC/EN61000-4-2 Contact ±8kV perf. Criteria B
		RS	IEC/EN61000-4-3 10V/m perf. Criteria A
		CS	IEC/EN61000-4-6 3Vr.m.s perf. Criteria A

Note: The recommended circuit is shown in Figure 4

Characteristic Curve

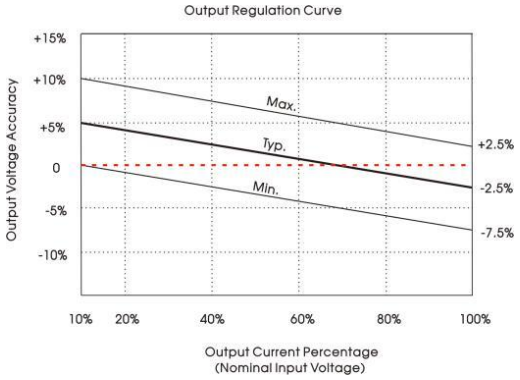


Fig. 1

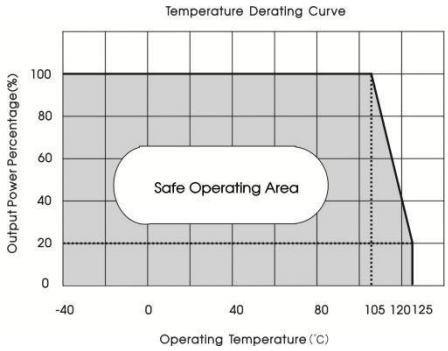
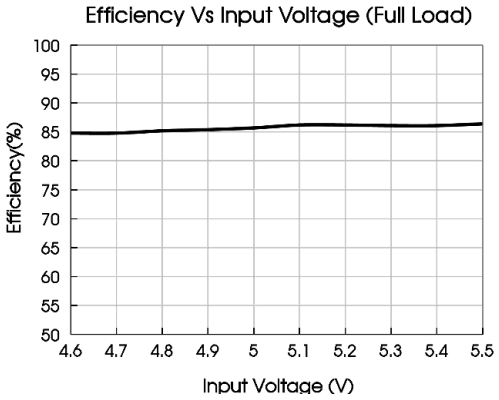
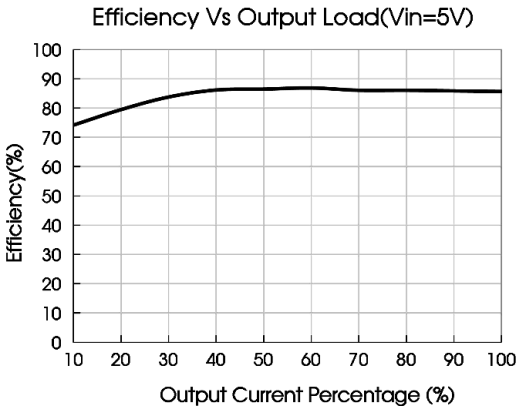


Fig. 2





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. For recommended input and output capacitor values refer to Table 1.

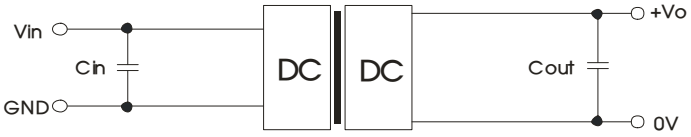


Fig.3

Recommended capacitive load value table (Table 1)

Vin	Cin	Vo	Cout
5VDC	4.7μF/25V	5VDC	10μF/16V

2. EMC compliance circuit

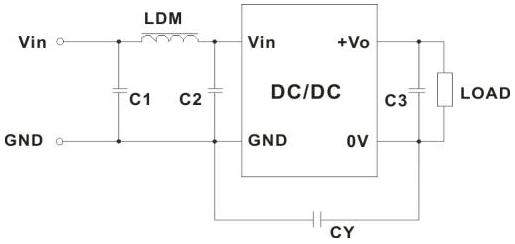
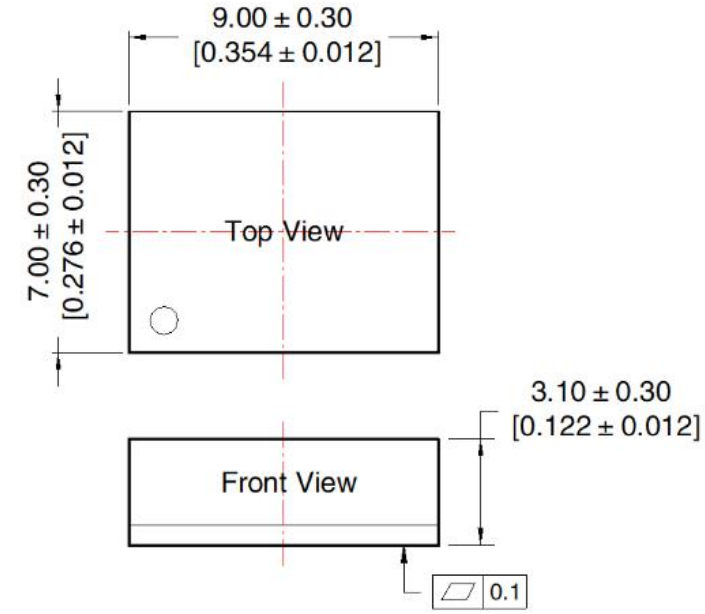


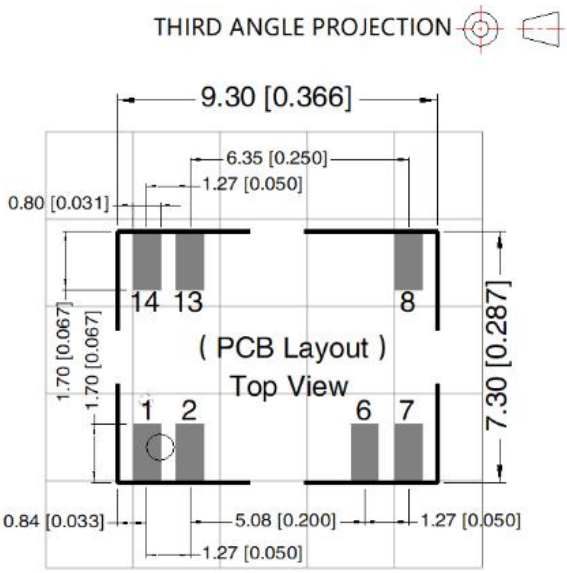
Fig. 4

EMC recommended circuit value table (Table 2)

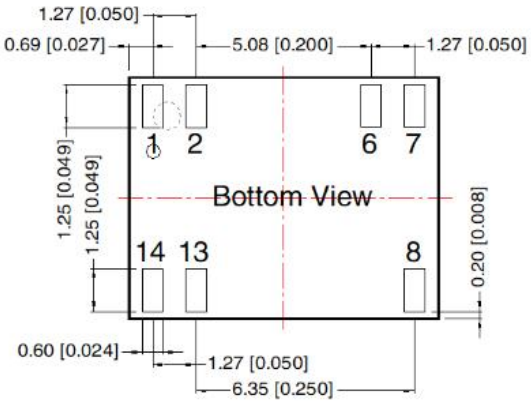
Output voltage		5VDC
Emissions	C1/C2	4.7μF /25V
	CY	47pF /4kVDC
	C3	Refer to the Cout in table 1
	LDM	6.8μH

Dimensions and Recommended





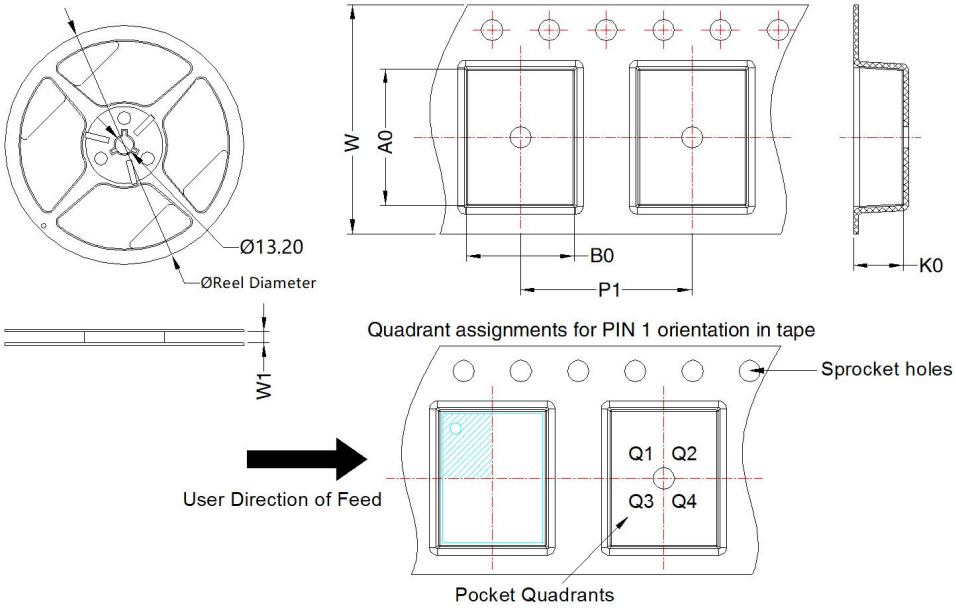
Note: Grid 2.54*2.54mm



Pin–Out	
Pin	Mark
1,2	GND
6,7	0V
8	+Vo
13,14	Vin

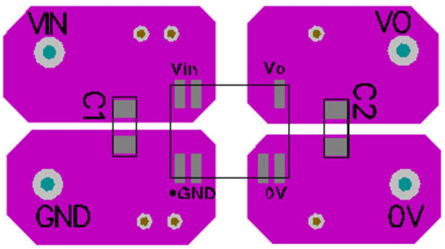
Note:
Unit: mm[inch]
Pin diameter tolerances: ± 0.10[± 0.004]

Tape and Reel Info



Package Type	Pin	MPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
DFN 7x9	7	400	180.0	16.4	9.56	7.56	3.5	12.0	16.0	Q1

Temperature Rise Test PCB Layout



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.