Descriptions

2W isolated，DC/DC Converter



RoHS

UL62368-1 EN62368-1 BS EN62368-1

Features

- Continuous short-circuit protection
- Operating ambient temperature range: -40℃ to +105℃
- Meets 8kV impulse withstand voltage
- I/O isolation test voltage 5k VAC or 7k VDC,reinforced insulation
- Industry standard pin-out
- Electrical clearance and creepage distance above 16mm
- Meets CTI level 1
- Isolation capacitance as low as 7pF
- High efficiency up to 84%

Applications

- Photo voltaic
- Energy storage

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//UL	DFCS2-H1205	12 (10.8-13.2)	5	400/40	80/83	1000
EN/BS EN/UL	DFCS2-H1212		12	167/17	81/84	470

Notes: *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)	12VDC input	5VDC output	--	217/15	--	mA
			12VDC output	--	209/15	--	
	Reflected Ripple Current			--	30	--	
	Surge Voltage (1sec. max.)			-0.7	--	18	VDC
	Input Filter			Capacitance Filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy			See output regulation curves(Fig. 1)			
	Linear Regulation	Input voltage change: ±1%	5VDC output	--	--	±1.2	--
			12VDC output	--	--		
	Load Regulation	10%-100% load	5VDC output	--	7	±25	%
			12VDC output	--	7	±15	
	Ripple & Noise①	20MHz bandwidth		--	50	150	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 5mA max.		5000	--	--	VAC
				7000	--	--	VDC
	Insulation Resistance	Input-output resistance at 500VDC		1000	--	--	MΩ
	Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		--	7	--	pF
	Operating Temperature	Derating when operating temperature up to 71℃, (see Fig. 2)		-40	--	105	℃
	Storage Temperature			-55	--	125	
	Case Temperature Rise	Ta=25℃		--	25	--	
	Storage Humidity	Non-condensing		5	--	95	%RH
	Pin Welding Resistance Temperature②	Soldering spot is 1.5mm away from case for 10 seconds		--	--	+300	℃
	Wave-soldering Temperature③	Peak temp.≤245℃, maximum duration time≤60s over 217℃					
	Switching Frequency	Full load, nominal input voltage		--	200	--	kHz
	MTBF	MIL-HDBK-217F@25℃		20000	--	--	k hours
	Creepage & Clearance Distance			16	--	--	mm
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)					
	Dimensions	27.40 x 9.50 x 12.00 mm					
	Weight	5.2 g(Typ.)					
	Cooling Method	Free air convection					

Note: :

①The "parallel cable" method is used for Ripple and Noise test;

②The pin soldering temperature tolerance is not the actual temperature set by the soldering iron but the temperature required for proper solder joints. The actual temperature set by the customer should be determined comprehensively based on factors such as PCB thickness, copper coverage, soldering iron power, and soldering iron tip selection;

③For actual application, please refer to IPC/JEDEC J-STD-020D.1.

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 ±6kV perf. Criteria B

Characteristic Curve

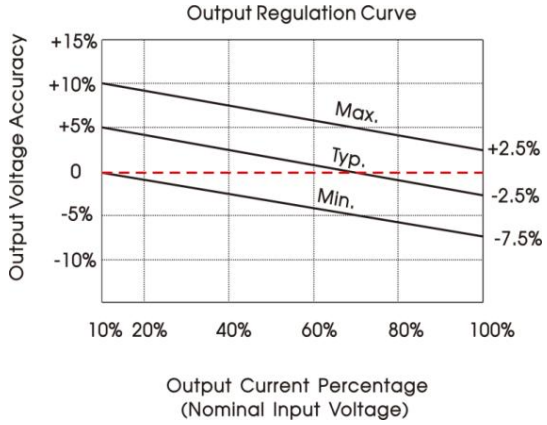


Fig. 1

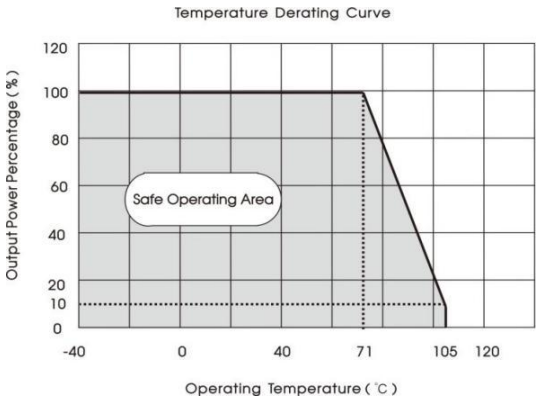
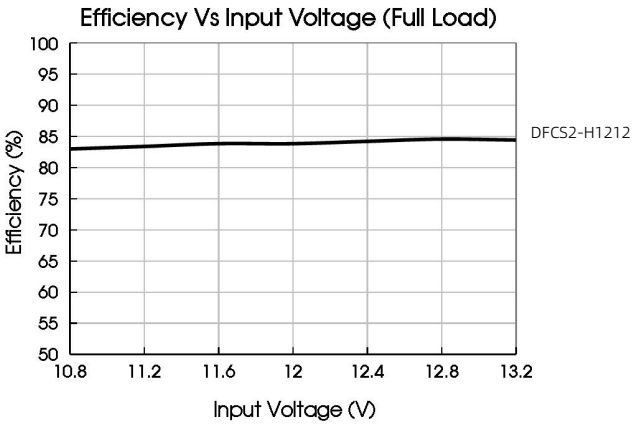
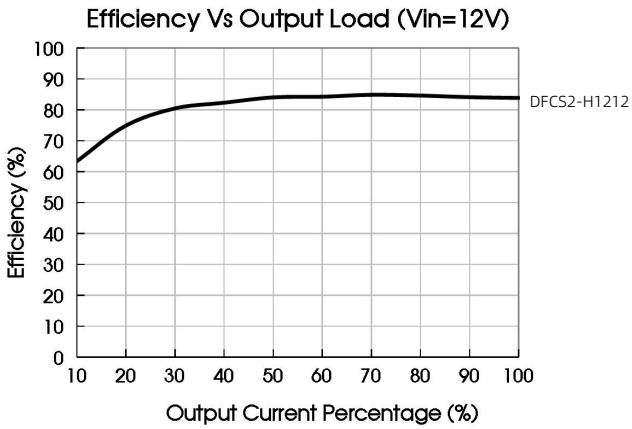


Fig. 2





Design Reference

1. Typical application

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.

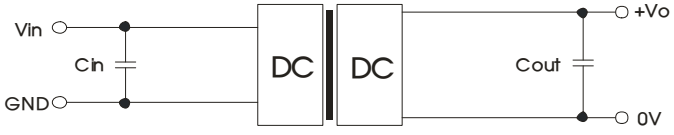


Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
12VDC	4.7μF/25V	5VDC	10μF/16V
		12VDC	4.7μF/25V

2. EMC compliance circuit

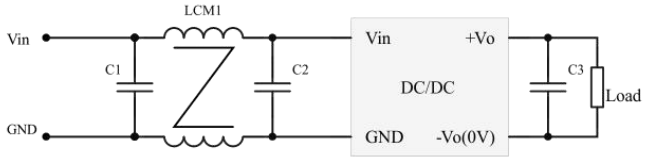


Fig. 4

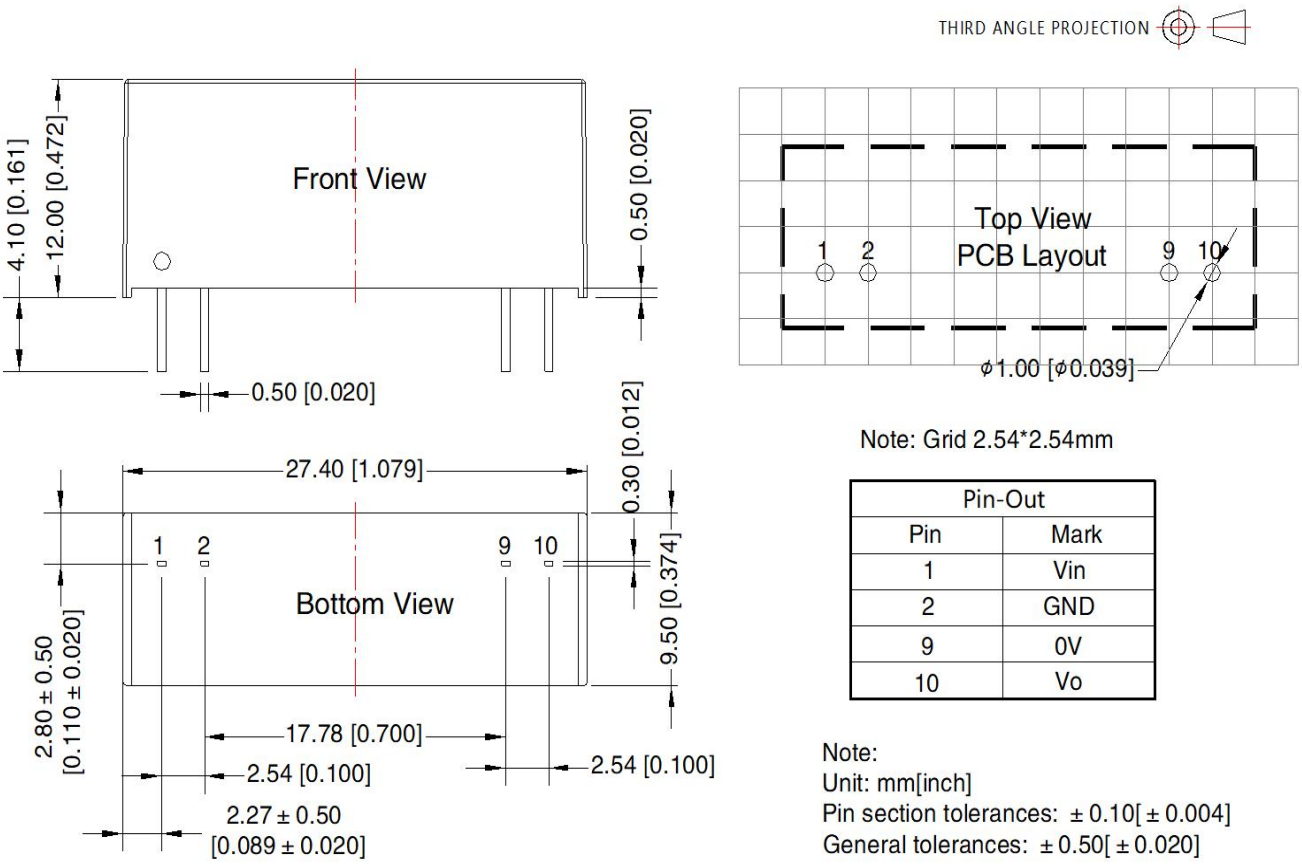
Table 2: Recommended EMC filter values

Input voltage		12VDC
Emissions	C1/C2	22μF/25V
	C3	Refer to the Cout in table 1
	LCM1	4.7 mH

3. Output load requirements

In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

Dimensions and Recommended



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	Vin
2	GND
9	0V
10	Vo

Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.50[± 0.020]

Note:

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. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company corporate standards;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
6. 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.