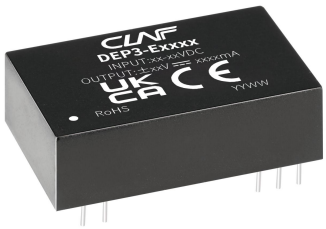
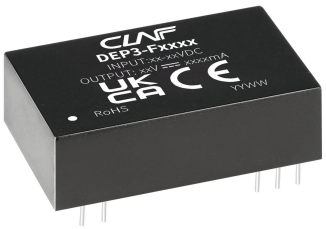
Descriptions

3W isolated, DC/DC Converter





RoHS

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Wide input voltage range (2:1)
- High efficiency up to 84%
- I/O isolation test voltage 3k VDC
- Output short-circuit protection(self-recovery)
- Operating ambient temperature range: -40℃ to +85℃

Applications

- Communication
- Instruments
- Industrial electronics

Selection Guide

Certification	Part No.	Input Voltage(VDC)		Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load② (μF)Max.
		Nominal (Range)	Max.①	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	DEP3-F0505	5 (4.5-9)	11	5	600/30	72/74	4700
	DEP3-F0512			12	250/12	75/77	2700
	DEP3-F0515			15	200/10	75/77	2200
	DEP3-E1205	12 (9-18)	20	±5	±300/±15	79/81	2200
	DEP3-E1209			±9	±166/±8	82/84	2000
	DEP3-E1212			±12	±125/±6	82/84	1800
	DEP3-E1215			±15	±100/±5	83/85	1000
	DEP3-E2405	24 (18-36)	40	±5	±300/±15	80/82	2200
	DEP3-E2412			±12	±125/±6	82/84	1800
	DEP3-E2415			±15	±100/±5	82/84	1000

Note:
①Exceeding the maximum input voltage may cause permanent damage;
②For dual output converter, the given value is the same for each output;
③Product 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	--	811/40	834/45	mA
		12VDC input	--	309/30	347/35	
		24VDC input	--	154/15	165/20	
	Reflected Ripple Current	5VDC input	--	20	--	
		12VDC input	--	30	--	
		24VDC input	--	30	--	
	Surge Voltage (1sec. max.)	5VDC input	-0.7	--	12	VDC
		12VDC input	-0.7	--	25	
		24VDC input	-0.7	--	50	
	Start-up Voltage	5VDC input	--	--	4.5	
		12VDC input	--	--	9	
		24VDC input	--	--	18	
	Input Filter		Pi filter			
	Hot Plug		Unavailable			
Output Specifications	Voltage Accuracy	5%-100% load	--	±1	±3	%
	No load Output Voltage Accuracy	Input voltage range	--	±1.5	±5	
	Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	
	Load Regulation	5%-100% load	--	±0.2	±0.5	
	Transient Recovery Time	25% load step change	--	0.5	2	ms
	Transient Response Deviation		--	±2	±5	%
	Temperature Coefficient	Full load	--	±0.02	±0.03	%/℃
	Ripple & Noise①	20MHz bandwidth, nominal input voltage	--	50	80	mV p-p
	Short-circuit Protection	Input voltage range	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	--	30	50	pF
	Operating Temperature	Derating when operating temperature up to 85℃ (see Fig. 1)	-40	--	85	℃
	Storage Temperature		-55	--	125	
	Case Temperature Rise	Ta=25℃	--	25	--	
	Pin Soldering Resistance Temperature②	Soldering spot is 1.5mm away from the case, 10 seconds max.	--	--	+300	
		Wave soldering, maximum 10 seconds	255	260	265	
	Storage Humidity	Non-condensing	5	--	95	%RH
	Switching Frequency (PFM mode)	100% load, nominal input voltage	--	200	--	kHz
	MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic Plastic(UL94-V0)				
	Dimensions	31.60 x 20.30 x 10.20 mm				
	Weight	14g(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.

Electromagnetic Compatibility (EMC)

Emissions (EMI)	CE	CISPR22/EN55022 CLASS B (see Fig.3-② for recommended circuit)	
	RE	CISPR22/EN55022 CLASS B (see Fig.3-② for recommended circuit)	
Immunity (EMS)	ESD	IEC/EN61000-4-2 Contact ±4kV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2kV (see Fig.3-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5 ±2kV (see Fig.3-①for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29 0-70%	perf. Criteria B

Characteristic Curve

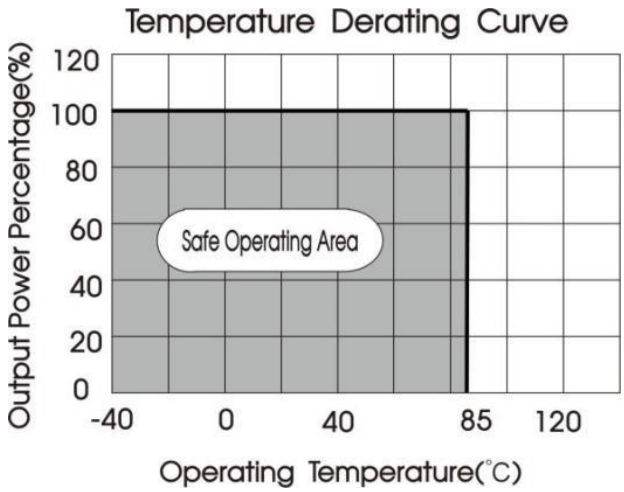
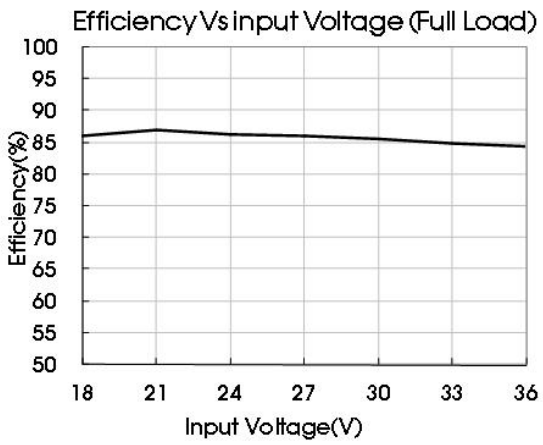
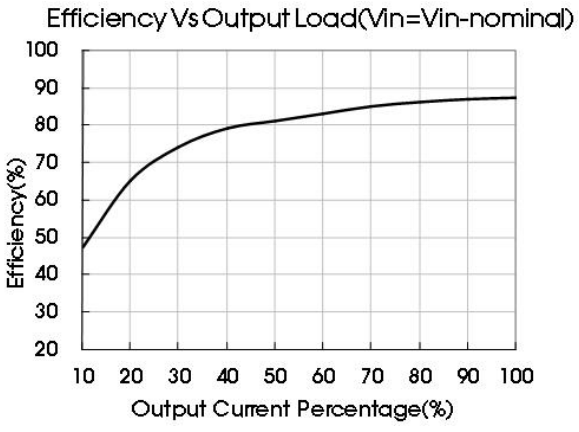


Fig. 1

DEP3-E2415



DEP3-E2415



Design Reference

1. Typical application

①All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.

②Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

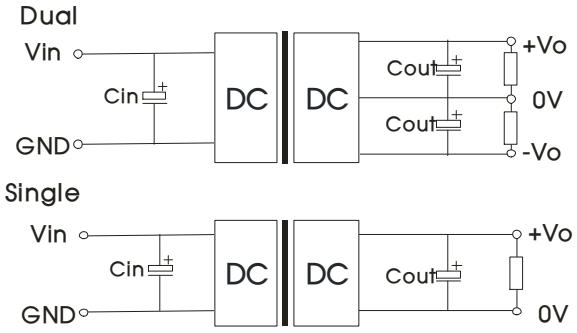


Fig. 2

Vin(VDC)	Cin	Cout
5V/12V	100μF/25V	Vo(5/±5/±9V):10μF/16V Vo(12/±12/15/±15V):10μF/25V
24V	10μF~47μF/100V	

2. EMC compliance circuit

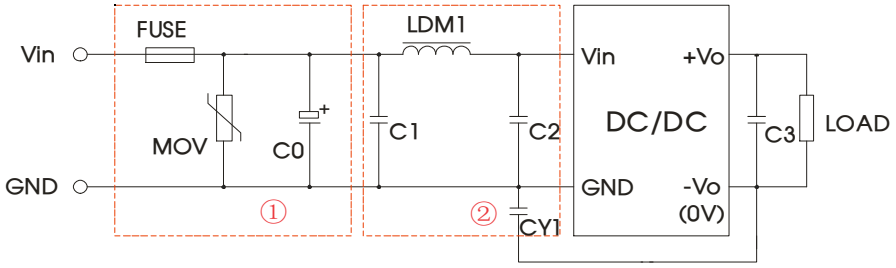


Fig. 3

Note: 1)For EMC tsets we use Part ① in the Fig. 3 for immunity and part ② for emissions, Selecting based on needs.

2)If there is no recommended parameters, the model no require the external component.

Parameter description

Model	Vin: 5VDC	Vin:12VDC	Vin: 24VDC
FUSE	Choose according to actual input current		
MOV	--	S14K20	S20K30
C0	1000μF/16V	1000μF/25V	330μF/50V
C1	4.7μF/50V		
LDM1	12μH		
C2	4.7μF/50V		
C3	Refer to the Cout in Fig.2		
CY1	1nF/3kV		

3. Input current

When the electricity is provided by the unstable power supply, please make sure that the range of the output voltage fluctuation and the ripple voltage of the power supply do not exceed the indicators of the modules. Input current of power supply should afford the flash startup current of this kind of DC/DC module(see Fig. 4).

Generally: Vin=5V Iave =1297mA

Vin=12V Iave=649mA

Vin=24V Iave=307mA

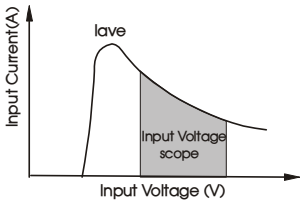
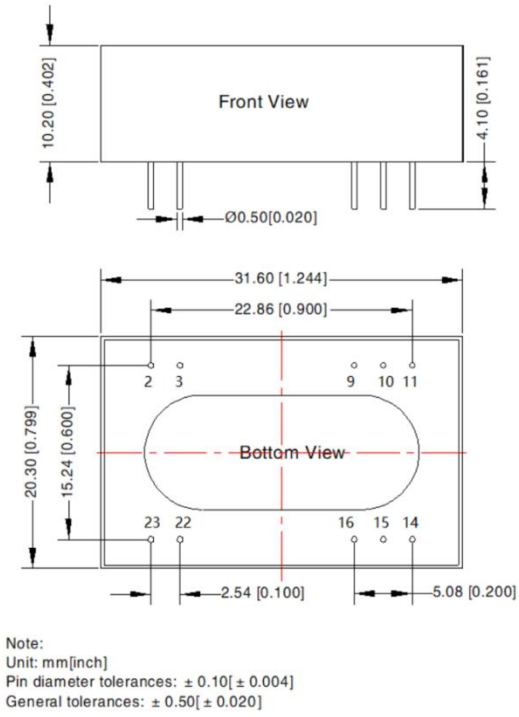


Fig. 4

4. Output load requirements

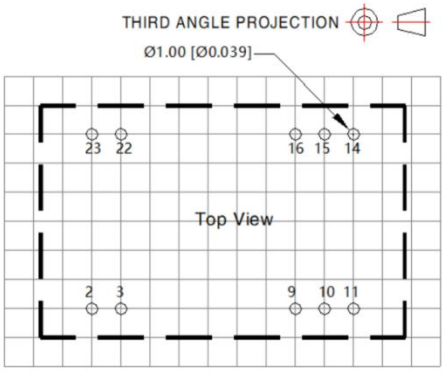
To ensure that the module can work efficiently and reliably, its output min. load shall be no lower than 5% of the rated load when using, or the output ripple may increase rapidly. Ensure that the product working load must be higher than 5% of the rated load.

Dimensions and Recommended



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

Dual Output
/Single Output



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
2,3	GND	GND
9	NC	0V
10,15	NC	NC
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22,23	Vin	Vin

NC: No Connection

Notes:

1. Recommend to use module with more than 5% load, if not, the ripple of the product may exceeds the specification, but does not affect the reliability of the product;
2. The maximum capacitive load offered were tested at nominal input voltage and full load;
3. 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;
4. All index testing methods in this datasheet are based on our company corporate standards;
5. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above;
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.