Descriptions

6W isolated，DC/DC Converter



RoHS

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Wide 2:1 input voltage range
- High efficiency up to 86%
- No-load power consumption as low as 0.12W
- I/O test isolation voltage 1.5k VDC
- Input under-voltage protection, output short- circuit, over-current, over-voltage protection
- Operating ambient temperature range: -40℃ to +85℃
- Meet CISPR32/EN55032 CLASS A, without extra components
- Industry standard pin-out
- IEC60950, UL60950, EN60950 approved
- Meets EN62368 standard

Applications

- Medical care
- Industrial control
- Electric power
- Instruments
- Communication

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency②(%) Min./Typ.	Capacitive Load (μF) Max.
		Nominal (Range)	Max. ①	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	DEMD6-B1205	12 (9-18)	20	5	1200/0	79/81	1000
	DEMD6-B1212			12	500/0	83/85	470
	DEMD6-B2403	24 (18-36)	40	3.3	1500/0	75/77	1800
	DEMD6-B2405			5	1200/0	80/82	1000
	DEMD6-B2409			9	667/0	83/85	470
	DEMD6-B2412			12	500/0	83/85	470
	DEMD6-B2415			15	400/0	84/86	220
	DEMD6-B2424			24	250/0	83/85	100

Notes:
①Exceeding the maximum input voltage may cause permanent damage;
②Efficiency is measured at nominal input voltage and rated output load;
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)	12VDC nominal input series, nominal input voltage		--	617/10	633/22	mA
		24VDC nominal input series, nominal input voltage	3.3VDC output	--	268/5	275/15	
			Others	--	305/5	313/15	
	Reflected Ripple Current			--	20	--	
	Surge Voltage (1sec. max.)	12VDC nominal input series		-0.7	--	25	VDC
		24VDC nominal input series		-0.7	--	50	
	Start-up Voltage	12VDC nominal input series		--	--	9	
		24VDC nominal input series		--	--	18	
	Input Under-voltage Protection	12VDC nominal input series		5.5	6.5	--	
		24VDC nominal input series		12	15.5	--	
	Input Filter			Pi filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy	5%-100% load		--	±1	±3	%
		0%-5% load		--	±1	±3	
	Linear Regulation	Input voltage variation from low to high at full load		--	±0.2	±0.5	
	Load Regulation①	5%-100% load		--	±0.5	±1	
	Cross Regulation	Vo1 load at 50%, Vo2 load at range of 10%-100%		--	--	±5	
	Transient Recovery Time	25% load step change	3.3VDC, 5VDC output	--	300	500	μs
	Transient Response Deviation			--	±5	±8	%
			Others	--	±3	±5	
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Ripple & Noise②	20MHz bandwidth, 5%-100% load		--	60	85	mV p-p
	Over-voltage Protection	Input voltage range		110	--	160	%Vo
	Over-current Protection			110	140	190	%Io
	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	--	--	MΩ
	Isolation Capacitance	Input-output capacitance at 100KHz/0.1V		--	1000	--	pF
	Operating Temperature	See Fig. 1		-40	--	+85	℃
	Storage Humidity	Non-condensing		5	--	95	%RH
	Storage Temperature			-55	--	+125	℃
	Pin Soldering Resistance Temperature③	Soldering spot is 1.5mm away from the case, 10 seconds max.		--	--	+300	
		Wave soldering, maximum 10 seconds		255	260	265	
	Vibration			10-55Hz, 2G, 30 Min. along X, Y and Z			
	Switching Frequency④	PWM mode		--	300	--	kHz
	MTBF	MIL-HDBK-217F@25℃		1000	--	--	k hours
Mechanical	Case Material	Aluminum alloy					

Specifications	Dimensions	25.40 × 25.40 × 11.70 mm
	Weight	12.5g(Typ.)
	Cooling Method	Free air convection

Note:
①Load regulation for 0%-100% load is ±5%;
②ripple & noise at ≤ 5% load is 5%Vo Max. The "parallel cable" method is used for ripple and noise test,
③The 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;
④Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Electromagnetic Compatibility (EMC)

EMI	CE	CISPR32/EN55032	CLASS A (without extra components)/ CLASS B (see Fig.3-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A (without extra components)/ CLASS B (see Fig.3-② for recommended circuit)	
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	line to line ±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

Typical Characteristic Curves

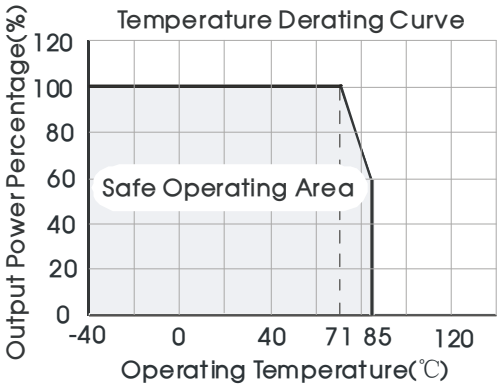
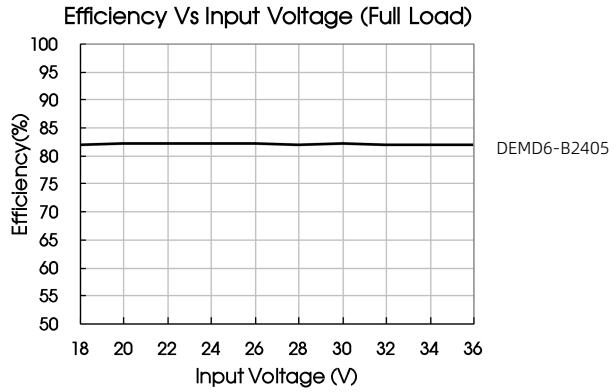
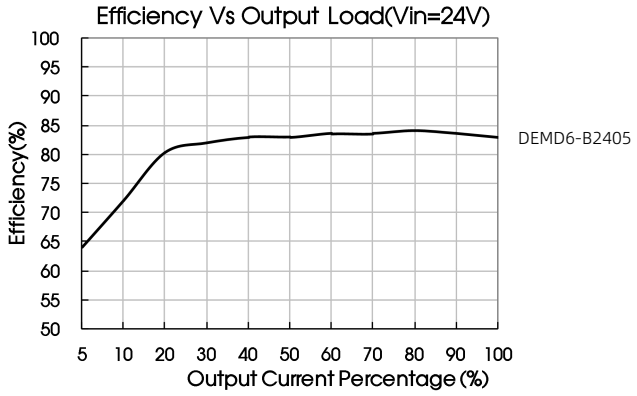


Fig. 1





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(uF)	Cout(uF)
12	100μF/25V	Vo(3/5/9):10μF/16V Vo(12/15):10μF/25V Vo(24):10μF/50V
24	10 - 47μF/50V	

2. EMC compliance circuit

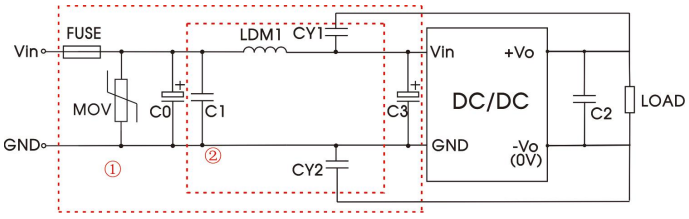


Fig. 3

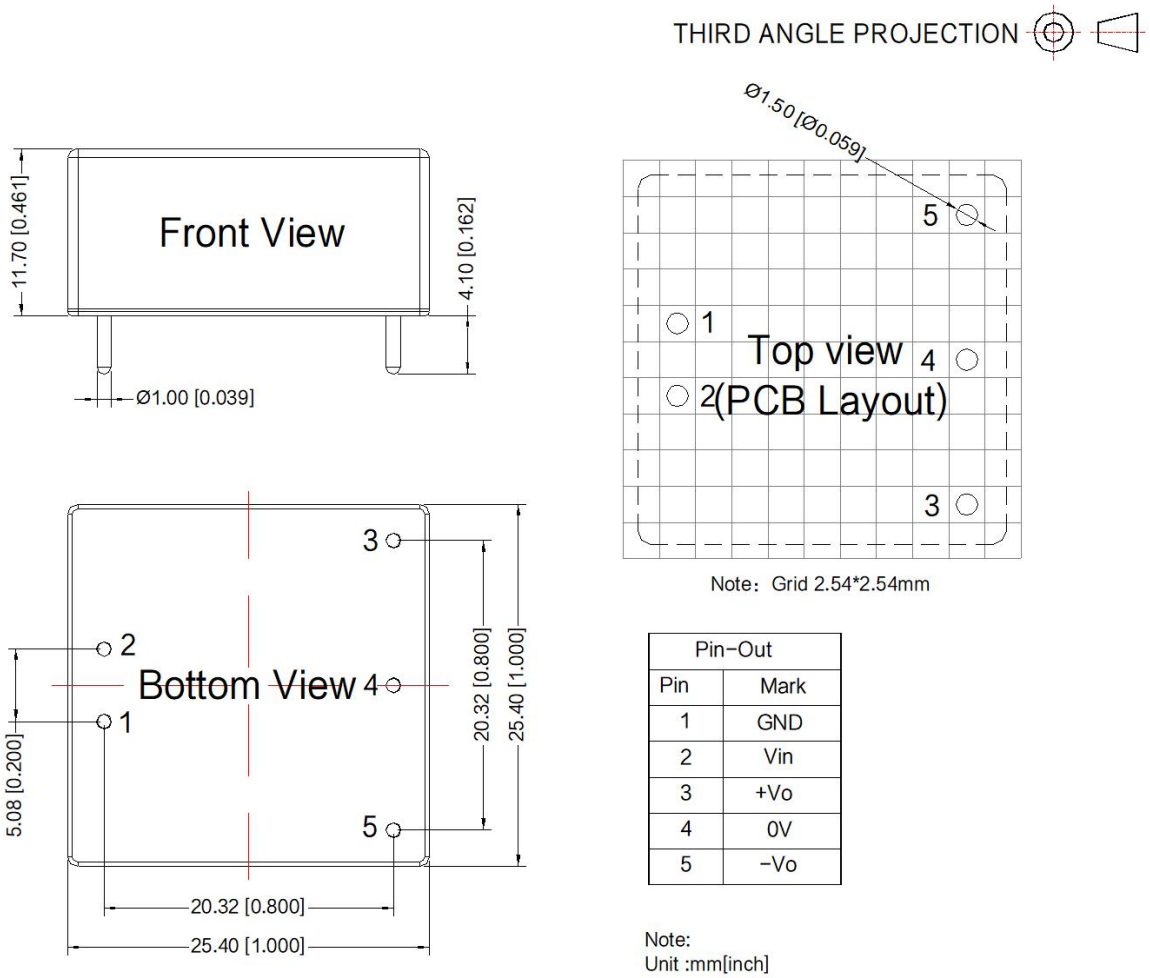
Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

Parameter description

Model	Vin:12V	Vin:24V
FUSE	Choose according to actual input current	
MOV	S14K20	S20K30
C0	1000μF/35V	1000μF/50V
C1	1μF/50V	
C2	Refer to the Cout in Fig.2	
C3	330μF/35V	330μF/50V
LDM1	4.7μH	
CY1/CY2	1nF/2KV	

3. The products do not support parallel connection of their output

Dimensions and Recommended



Pin-Out	
Pin	Mark
1	GND
2	Vin
3	+Vo
4	0V
5	-Vo

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

Note:

1. The maximum capacitive load offered were tested at input voltage range and full load;
2. 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;
3. All index testing methods in this datasheet are based on company corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
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;
7. 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.