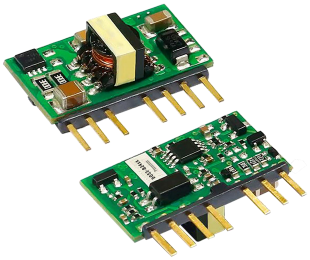
Descriptions

DC/DC Converter



RoHS

Features

- Ultra small SIP encapsulation
- Wide 2:1 input voltage range
- No-load power consumption as low as 0.24W
- I/O isolation test voltage: 1.5k VDC
- Input under-voltage protection, output short-circuit, over-current protection
- Operating ambient temperature range: -40℃ to +85℃
- 100% localization of electronic components
- Industry standard pin-out

Applications

- Medical
- Industrial control
- Electric power
- Instrumentation
- Communications

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Max.*	Voltage(VDC)	Current (mA) Max./Min.		
--	DOS3-B2405	24 (18-36)	40	5	600/0	79/81	2200
	DOS3-B2412			12	250/0	79/81	560
	DOS3-B2415			15	200/0	76/78	470

Notes: *Exceeding the maximum input voltage may cause permanent damage.

Specifications

Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	Nominal input voltage		--	155/10	158/16	mA
	Reflected Ripple Current			--	50	--	
	Surge Voltage (1sec. max.)			-0.7	--	40	VDC
	Start-up Voltage			--	--	18	
	Under-voltage Protection			11	13	--	
	Input Filter			Capacitance filter			
	Hot Plug			Unavailable			
	Ctrl①	Module on		Ctrl pin open or pulled high(3.5-12VDC)			
		Module off		Ctrl pin pulled low to GND(0-1.2VDC)			
		Input current when off		--	6	10	mA
Output Specifications	Voltage Accuracy	0% -100% load, input voltage range	5V	--	±2	±5	%
			Other output	--	±1	±3	
	Linear Regulation	Full load, the input voltage is from low to high		--	±0.8	±1.5	
	Load Regulation	5% -100% load		--	±1	±2	
	Transient Recovery Time	25% load step change, nominal input voltage		--	450	500	μs
	Transient Response Deviation			--	±5	±7	%
	Ripple & Noise②	20MHz bandwidth, 5% -100% load		--	150	250	mVp-p
	Over-current Protection	Input voltage range		110	170	250	%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	Fig.1		-40	--	+85	℃
	Storage Temperature			-55	--	+125	
	Storage Humidity	Non-condensing		5	--	95	%RH
	Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from PCB for 10 seconds		--	--	+300	℃
	Vibration			10-150Hz, 5G, 0.75mm. along X, Y and Z			
	Switching Frequency③	PWM mode		--	330	--	kHz
	MTBF	MIL-HDBK-217F@25℃		1000	--	--	k hours
Mechanical Specifications	Dimensions	21.50 × 7.85 × 11.30 mm					
	Weight	1.8g (Typ.)					
	Cooling Method	Nature convection					

Note:
①The voltage of Ctrl pin is relative to input pin GND;
②The testing method for ripple and noise adopts the reliable measurement method;
④Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 3-② for recommended circuit)	
	RE	CISPR32/EN55032 CLASS B (see Fig. 3-② for recommended circuit)	
Immunity	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. 3-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A

Characteristic Curve

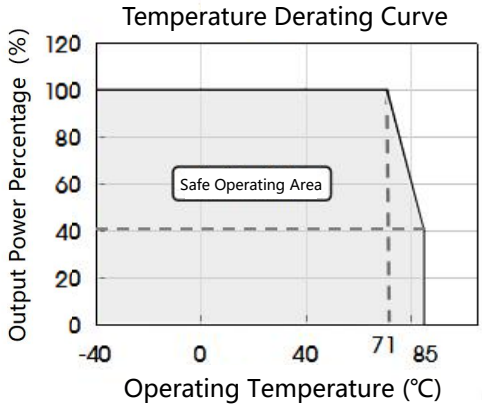
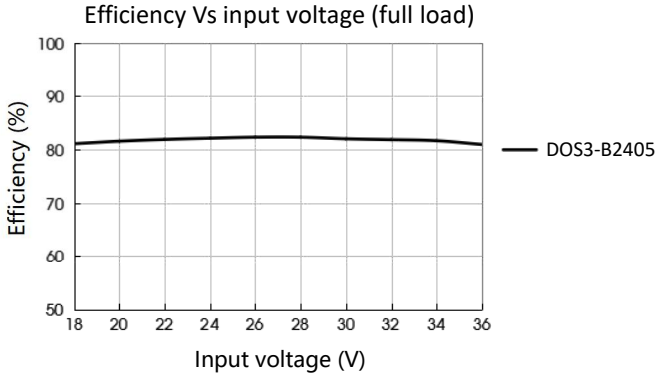
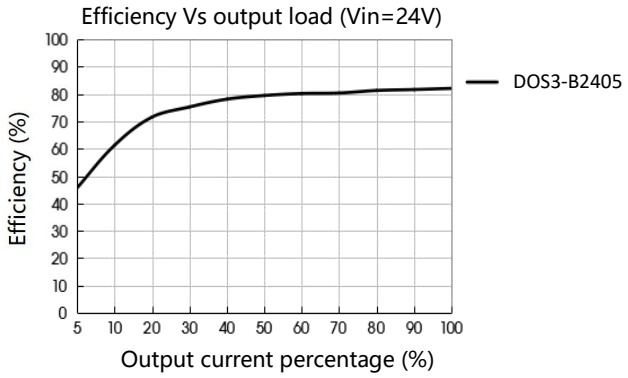


Fig. 1





Design Reference

1. Typical application

①All 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

Vout	Cin	Cout
5V	100μF/50V	22μF/10V
12V/15V		22μF/25V

2. EMC solution-recommended circuit

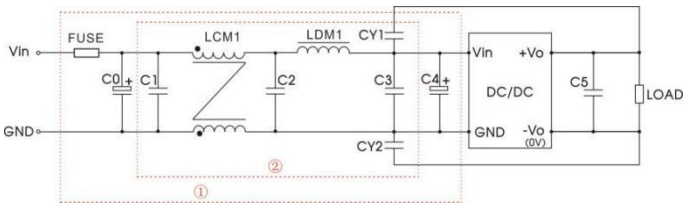


Fig. 3

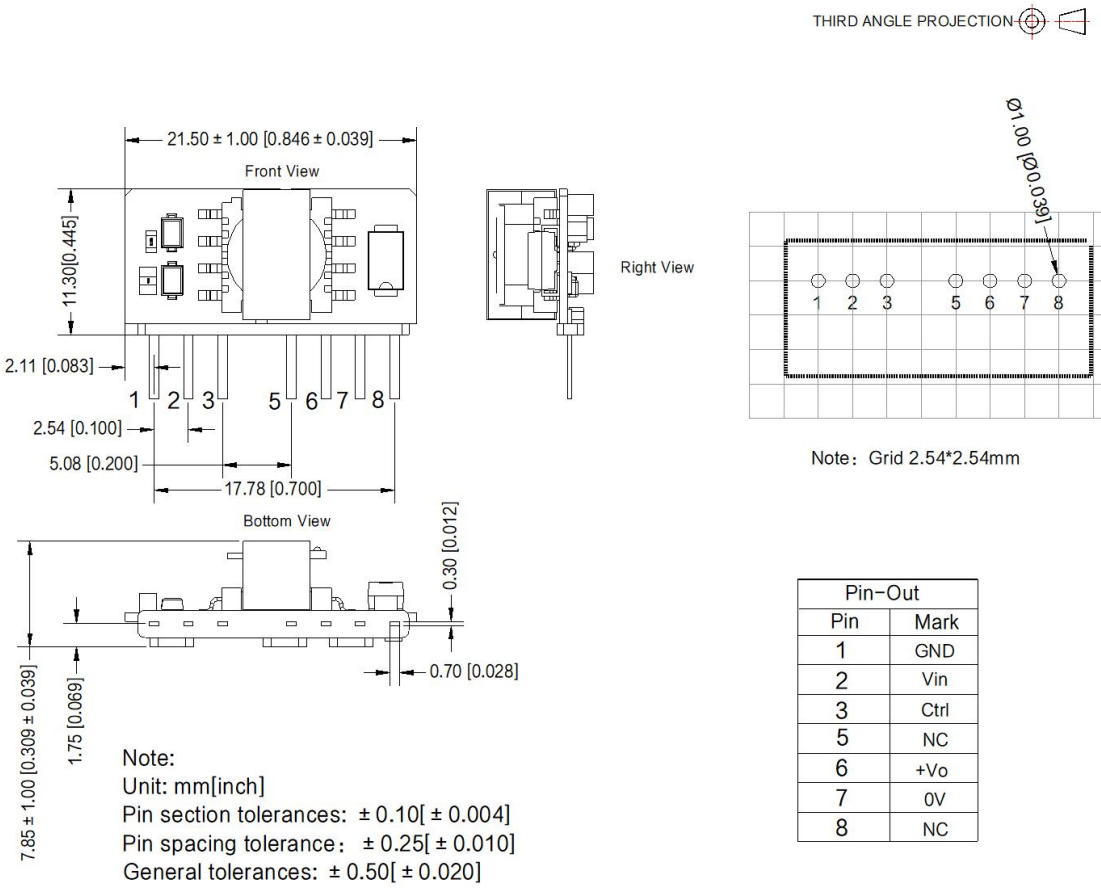
Note: For EMC tests we use Part ① in Fig. 3 and part ② for emissions test. Selecting based on needs.

Parameter description:

Model	Vin: 24VDC
FUSE	Select based on the actual input current of the customer
C0/C4	680μF/50V
C1/C2/C3	10μF/50V
C5	Refer to Cout parameters in Figure 2
LDM1	12uH（＞1.4A）
LCM1	2.2mH (Recommended to use our company's EFL2D-1-222)
CY1/CY2	Y1/102M/400VAC

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

Dimensions and Recommended Layout



Pin-Out	
Pin	Mark
1	GND
2	Vin
3	Ctrl
5	NC
6	+Vo
7	0V
8	NC

Notes:

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 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.