Descriptions

3W isolated，DC/DC Converter



RoHS

3 Years Warranty

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Ultra-wide 4:1 input voltage range
- High efficiency up to 84%
- No-load power consumption as low as 0.10W
- I/O Isolation test voltage 1.5k VDC
- Input under-voltage protection, output short-circuit protection, over-current protection
- Operating ambient temperature range: -40℃ to +85℃
- Industry standard pin-out

Applications

- Industrial control
- Power
- Instrumentation
- 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.		
--	DWMT3-B2403	24 (9-36)	40	3.3	728/0	73/75	2200
EN/BS EN	DWMT3-B2405			5	600/0	78/80	2200
--	DWMT3-B2409			9	333/0	78/80	1000
EN/BS EN	DWMT3-B2412			12	250/0	80/82	680
	DWMT3-B2415			15	200/0	81/83	470
	DWMT3-B2424			24	125/0	80/82	100
	DWMT3-B4803	48 (18-75)	80	3.3	728/0	73/75	2200
	DWMT3-B4805			5	600/0	77/79	2200
	DWMT3-B4812			12	250/0	80/82	680
	DWMT3-B4815			15	200/0	82/84	470
	DWMT3-B4824			24	125/0	80/82	100

Note:
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)	24VDC input series nominal input voltage	3.3V Output	--	134/4	138/7	mA
			24V Output	--	152/4	156/12	
			Others	--	154/4	161/7	
		48VDC input series nominal input voltage	3.3V Output	--	67/4	69/7	
			Others	--	77/4	82/7	
	Reflected Ripple Current	Nominal 24VDC input series		--	120	--	
		Nominal 48VDC input series		--	60	--	
	Surge Voltage (1sec. max.)	Nominal 24VDC input series		-0.7	--	50	VDC
		Nominal 48VDC input series		-0.7	--	100	
	Start-up Voltage	Nominal 24VDC input series		--	--	9	
		Nominal 48VDC input series		--	--	18	
	Input Under-voltage Protection	Nominal 24VDC input series		5.5	6.5	--	
		Nominal 48VDC input series		13	15.5	--	
	Start-up Time	Nominal input voltage & constant resistance load		--	10	--	ms
	Input Filter			C filter			
	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
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy			--	±1	±3	%
	Linear Regulation	Input voltage variation from low to high at full load		--	±0.2	±0.5	
	Load Regulation	0%-100% load		--	±0.5	±1	
	Transient Recovery Time	25% load step change, nominal input voltage		--	300	500	μs
	Transient Response Deviation			--	±3	±5	%
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Ripple & Noise②	20MHz bandwidth , 5%-100% load		--	30	120	mVp-p
	Over-current Protection	Input voltage range		--	150	250	%Io
	Short-circuit Protection			Continuous			
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 Temperature			-55	--	+125	
	Case Temperature Rise	Ta=25℃, nominal input, full load output		--	+40	--	
	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	

	Storage Humidity	Non-condensing	5	--	95	%RH
	Reflow Soldering Temperature		Peak temp.≤245℃, maximum duration time≤ 60s at 217℃. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
	Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			
	Switching Frequency④	PWM Mode	--	350	--	kHz
	MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
	Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1			
Mechanical Specifications	Case Material	Black plastic; flame-retardant and heat-resistant				
	Dimensions	19.20 x 18.10 x 10.16 mm				
	Weight	3.5g (Typ.)				
	Cooling Method	Free air convection				

Note:

①The Ctrl pin voltage is referenced to input GND.

②Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo. 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)

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
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70%	perf. Criteria B

Typical Characteristic Curves

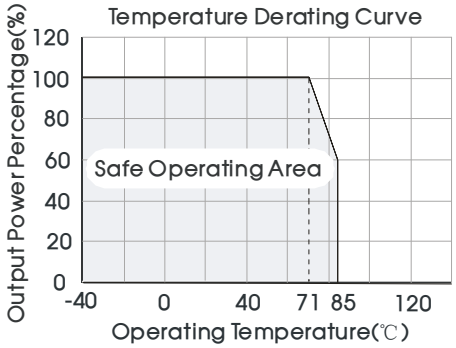
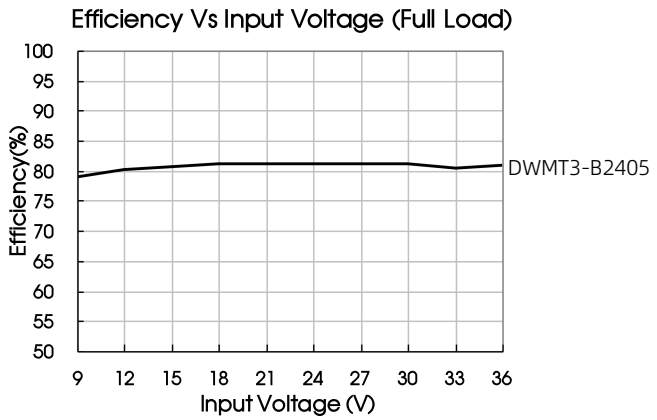
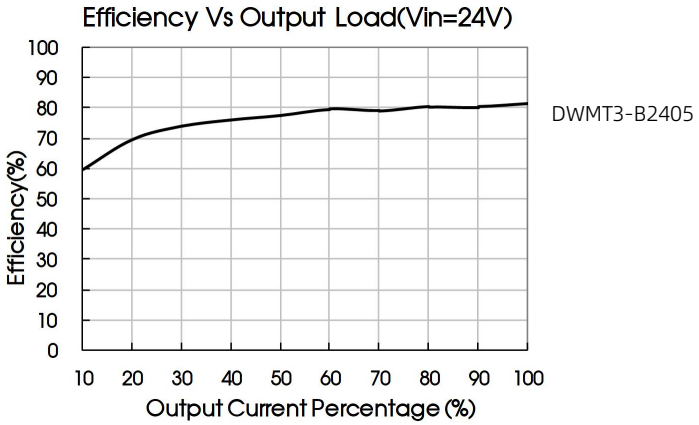
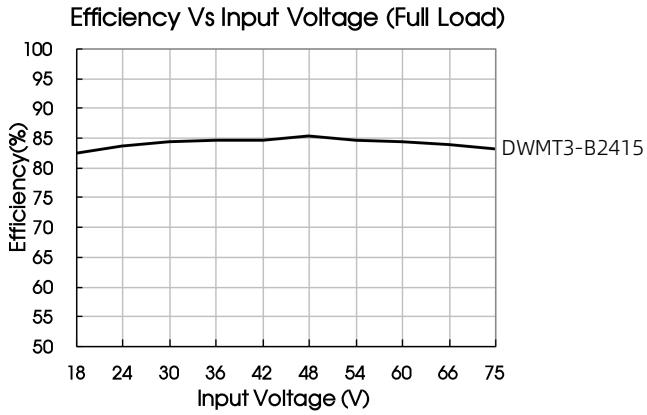
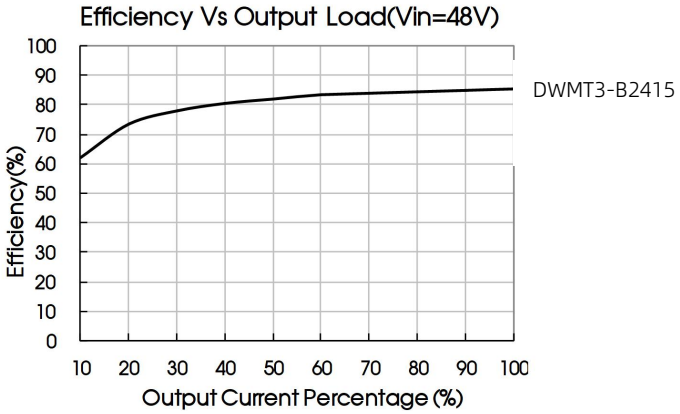


Fig. 1









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.

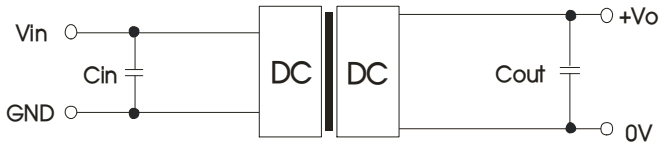


Fig. 2

Vin(VDC)	Cin	Vo(VDC)	Cout
24	100μF/50V	3.3/5/9	10μF/16V
		12/15	10μF/25V
		24	10μF/50V
48	10μF/100V -47μF/100V	3.3/5	10μF/16V
		12/15	10μF/25V
		24	10μF/50V

2. EMC solution-recommended circuit

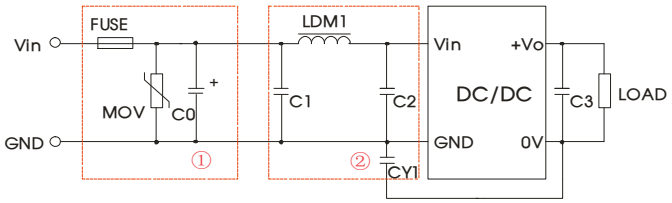


Fig. 3

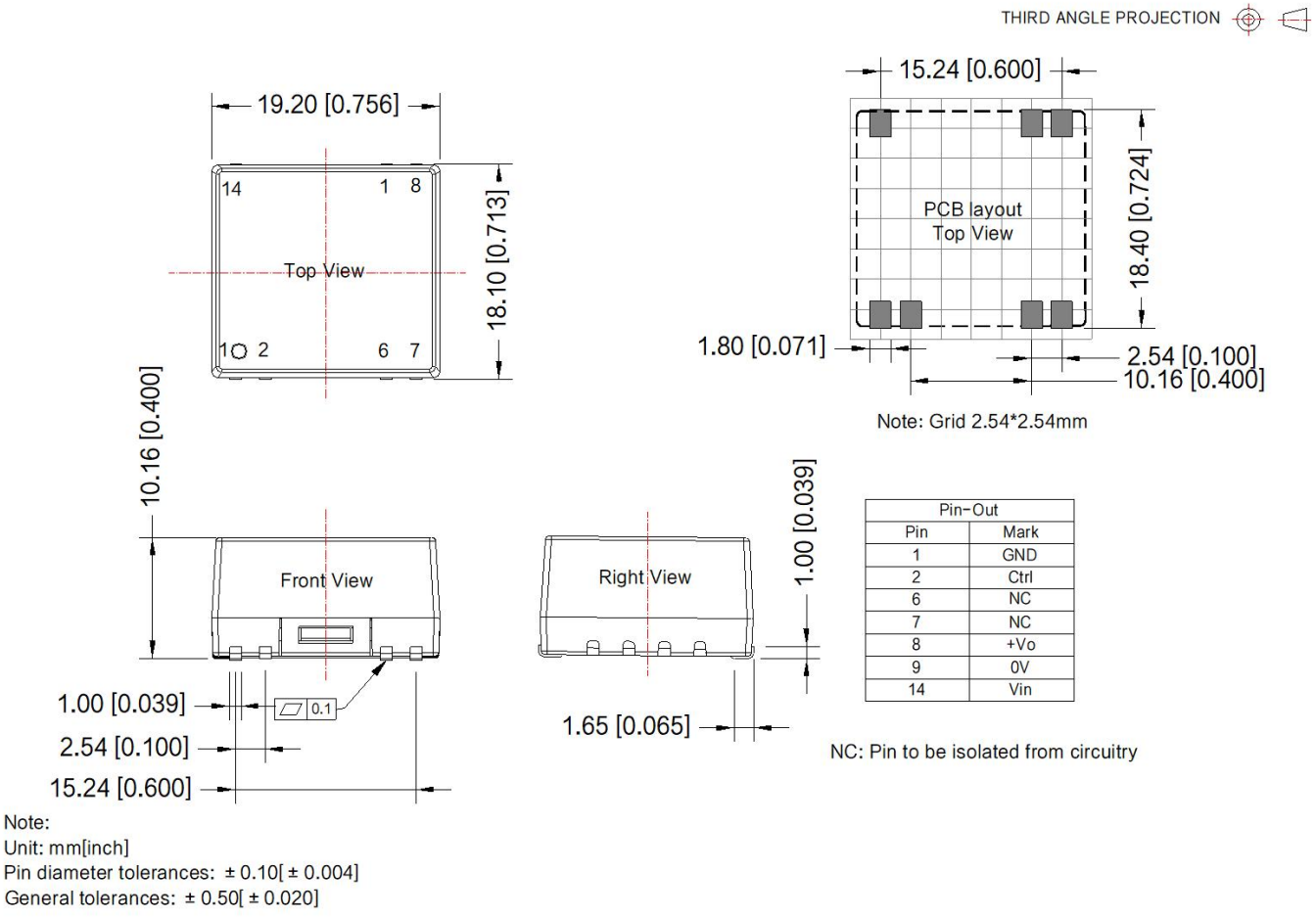
Notes: We use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

Parameter description:

Model	Vin: 24VDC	Vin: 48VDC
FUSE	Choose according to actual input current	
MOV	S20K30	S14K60
C0	680μF/50V	680μF/100V
C1/C2	4.7μF/50V	4.7μF/100V
C3	Refer to the Cout in Fig.2	
LDM1	12μH	
CY1	1nF/2kV	

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

Dimensions and Recommended Layout



Pin-Out	
Pin	Mark
1	GND
2	Ctrl
6	NC
7	NC
8	+Vo
9	0V
14	Vin

NC: Pin to be isolated from circuitry

Note:

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 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 company corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
8. 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.