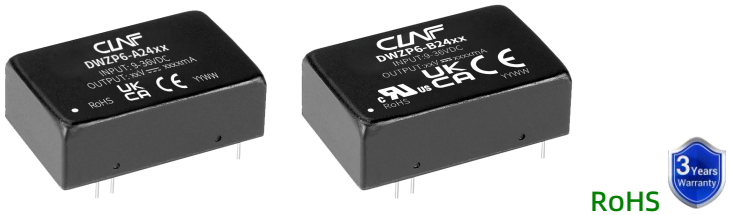
Descriptions

6W isolated，DC-DC Converter



RoHS

c UL us Report UL62368-1

CE Report EN62368-1

UKCA Report BS EN62368-1

Features

- Ultra-wide 4:1 input voltage range
- High efficiency up to 88%
- No-load power consumption as low as 0.12W
- I/O isolation test voltage 1.5k VDC
- Operating ambient temperature range: -40℃ to +85℃
- Input under-voltage, output over-voltage, short-circuit, over-current protection
- Meets CISPR32/EN55032 CLASS A, without extra components
- Industry standard pin-out

Applications

- Industrial Control
- Electric power
- Instruments
- Communication
- Railway

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency②(%) Min./Typ.	Capacitive Load③ (μF)Max.
		Nominal (Range)	Max.①	Voltage (VDC)	Current (mA) Max./Min.		
EN/BS EN	DWZP6-A2405	24 (9-36)	40	±5	±600/0	80/82	680
	DWZP6-A2409			±9	±333/0	82/84	220
	DWZP6-A2412			±12	±250/0	83/85	330
	DWZP6-A2415			±15	±200/0	83/85	220
	DWZP6-A2424			±24	±125/0	84/86	100
	DWZP6-B2403			3.3	1500/0	75/77	1800
UL/EN/BS EN	DWZP6-B2405			5	1200/0	80/82	1000
EN/BS EN	DWZP6-B2409			9	667/0	81/83	1000
	DWZP6-B2412			12	500/0	83/85	470
	DWZP6-B2415			15	400/0	84/86	220
	DWZP6-B2424			24	250/0	84/86	100
	DWZP6-A4805	48 (18-75)	80	±5	±600/0	81/83	680
	DWZP6-A4812			±12	±250/0	85/87	330
	DWZP6-A4815			±15	±200/0	86/88	220
--	DWZP6-B4803			3.3	1500/0	78/80	1800
EN/BS EN	DWZP6-B4805			5	1200/0	82/84	1000
--	DWZP6-B4809			9	667/0	83/85	680

	DWZP6-B4812			12	500/0	85/87	470
	DWZP6-B4815			15	400/0	86/88	220
	DWZP6-B4824			24	250/0	85/87	100

Notes:
①Exceeding the maximum input voltage may cause permanent damage;
②Efficiency is measured at nominal input voltage and rated output load;
③The specified maximum capacitive load for positive and negative output is identical;
④Product images are for reference only; the actual product shall prevail.

Specifications

Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)	24VDC input		--	302/5	333/12	mA
		48VDC input		--	156/4	160/8	
	Reflected Ripple Current			--	20	--	
	Surge Voltage (1sec. max.)	24VDC input		-0.7	--	50	VDC
		48VDC input		-0.7	--	100	
	Start-up Voltage	24VDC input		--	--	9	
		48VDC input		--	--	18	
	Input Under-voltage Protection	24VDC input		5.5	6.5	--	
		48VDC input		12	15.5	--	
	Input Filter			Pi filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy①	Positive output		--	±1	±3	%
		Negative output					
	Balance Of Output Voltage	Dual output, balanced load		--	±0.5	±1.5	
	Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
			Vo2	--	±0.5	±1	
	Load Regulation②	5%-100% load	Vo1	--	±0.5	±1	
			Vo2	--	±0.5	±1.5	
	Cross Regulation	Dual outputs, Vo1 load at 50%, Vo2 load at range of 10%-100%		--	--	±5	
	Transient Recovery Time	25% load step change		--	300	500	μs
	Transient Response Deviation		3.3V, 5V, ±5V output	--	±5	±8	%
			Others	--	±3	±5	
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Ripple&Noise③	20MHz bandwidth		--	--	85	mVp-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	Derating when operating temperature up to 71℃ (see Fig. 1)		-40	--	85	℃
	Storage Temperature			-55	--	125	
	Storage Humidity	Non-condensing		5	--	95	%RH

	Pin Soldering Resistance Temperature④	Soldering spot is 1.5mm away from the case, 10 seconds max.	--	--	+300	℃
		Wave soldering, maximum 10 seconds	255	260	265	
	Vibration		IEC/EN61373 - Category 1, Grade B			
	Switching Frequency⑤	PWM mode	--	300	--	kHz
	MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Mechanical Specifications	Case Material	Aluminum alloy				
	Dimensions	32.00 × 20.00 × 10.80mm				
	Weight	12.0g(Typ.)				
	Cooling Method	Free air convection				

Note:
①Output voltage accuracy of ±5VDC/±9VDC output converter for 0%-5% load is ±5% max;
②Load regulation for 0%-100% load is ±5%;
③The "parallel cable" method is used for Ripple and Noise test;
④The 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;
⑤Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Electromagnetic Compatibility (EMC)

Emissions (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)	
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

Electromagnetic Compatibility (EMC) (EN50155)

Emissions (EMI)	CE	EN50121-3-2 150kHz-500kHz 99dBμV (see Fig.3-② for recommended circuit) EN55016-2-1 500kHz-30MHz 93dBμV (see Fig.3-② for recommended circuit)	
	RE	EN50121-3-2 30MHz-230MHz 40dBμV/m at 10m (see Fig.3-② for recommended circuit) EN55016-2-1 230MHz-1GHz 47dBμV/m at 10m (see Fig.3-② for recommended circuit)	
Immunity (EMS)	ESD	EN50121-3-2 Contact ±6kV/Air ±8kV	perf. Criteria A
	RS	EN50121-3-2 20V/m	perf. Criteria A
	EFT	EN50121-3-2 ±2kV 5/50ns 5kHz (see Fig.3-① for recommended circuit)	perf. Criteria A
	Surge	EN50121-3-2 line to line ±1kV (42Ω, 0.5μF) (see Fig.3-① for recommended circuit)	perf. Criteria A
	CS	EN50121-3-2 0.15MHz-80MHz 10V r.m.s	perf. Criteria A

Characteristic Curve

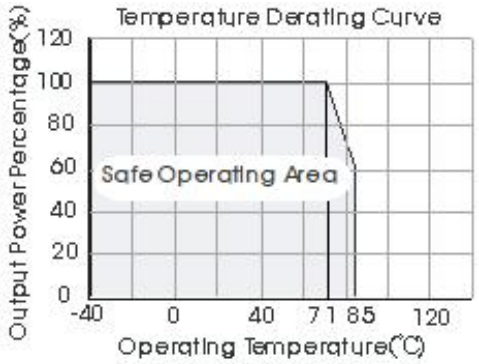
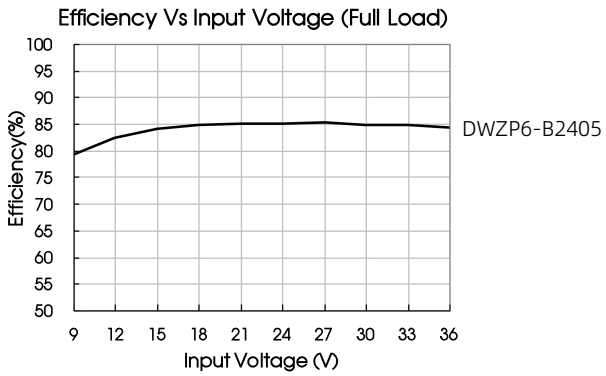
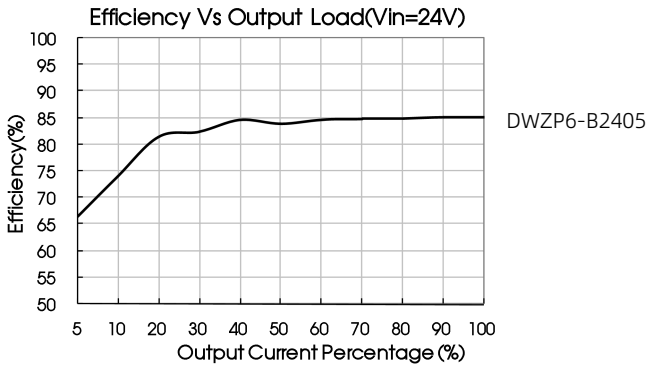
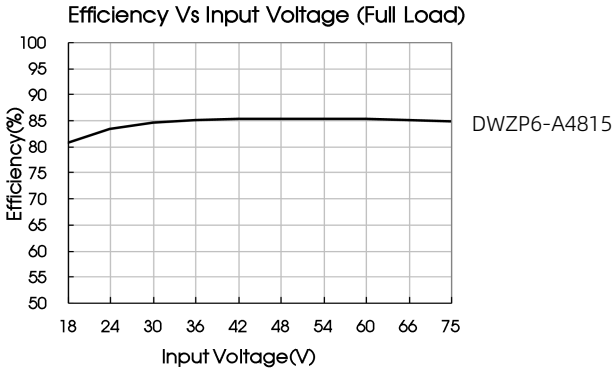
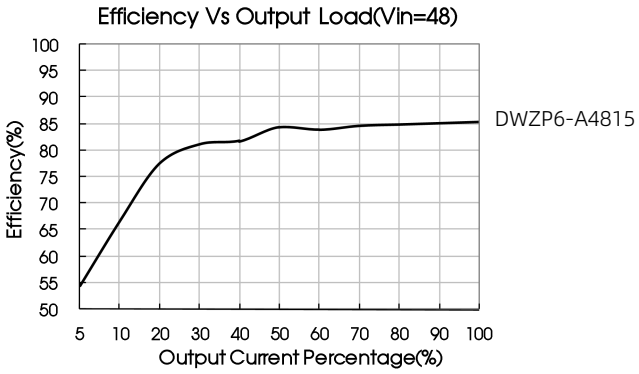


Fig. 1









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.

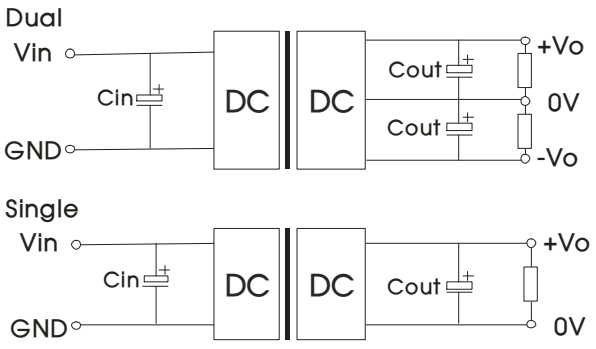
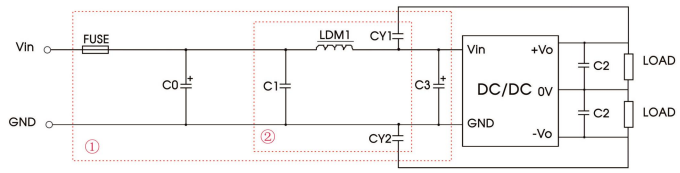


Fig. 2

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

2. EMC compliance circuit

Dual output:



Single output:

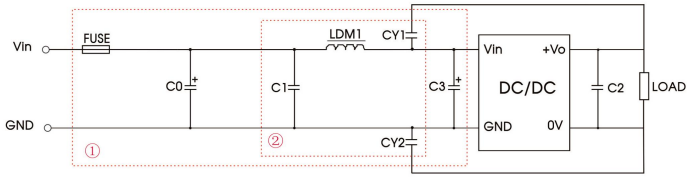


Fig. 3

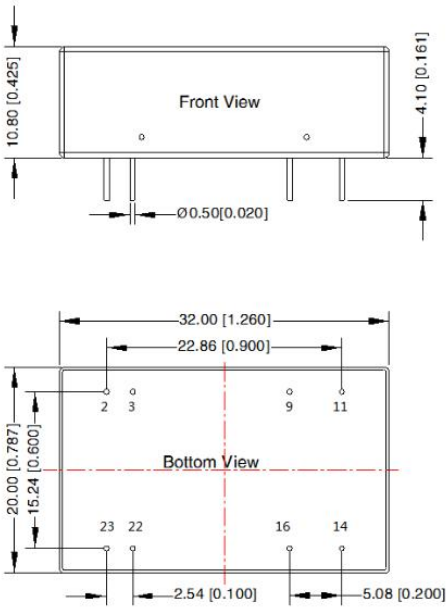
Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

Parameter description:

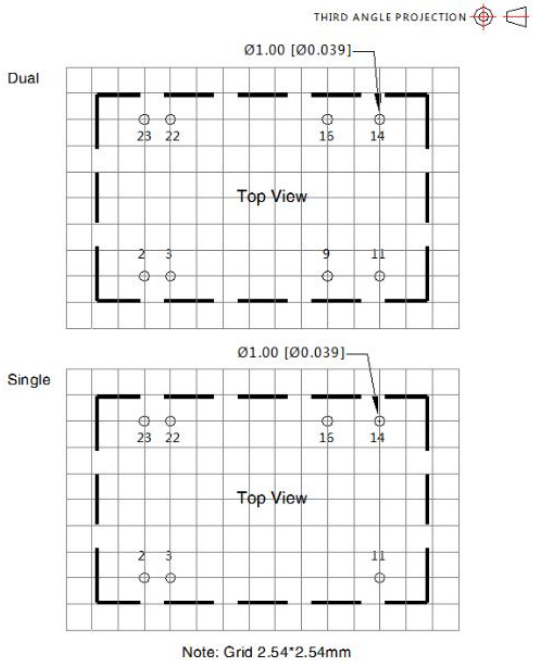
Model	Vin: 24VDC	Vin:48VDC
FUSE	Choose according to actual input current	
C0/C3	330μF/50V	330μF/100V
C1	1μF/50V	1μF/100V
C2	Refer to the Cout in Fig.2	
LDM1	4.7μH	
CY1/CY2	1nF/2kV	

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

Dimensions and Recommended Layout



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



Note: Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
2,3	GND	GND
9	No Pin	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22,23	Vin	Vin

NC: Pin to be isolated from circuit

Notes:

1. It is recommended that the load imbalance of the dual output is ≤±5%. If it exceeds ±5%, the performance of the product cannot be guaranteed to meet as datasheet marked;
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. The performance indexes of the product models listed in this datasheet are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements;
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.