Descriptions

6W isolated，DC-DC Converter

RoHS

3 Years Warranty

c UL us Report　CE Report　UK CA Report

UL62368-1　EN62368-1　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	86/88	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

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.

Specifications

Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Current (full load / no-load)			--	302/5	333/12	mA
	Reflected Ripple Current			--	20	--	
	Surge Voltage (1sec. max.)			-0.7	--	50	VDC
	Start-up Voltage			--	--	9	
	Input Under-voltage Protection			5.5	6.5	--	
	Input Filter			Pi filter			
	Hot Plug			Unavailable			
Output Specifications	Voltage Accuracy①	Vo1		--	±1	±3	%
		Vo2					
	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 Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	℃
	Vibration			IEC/EN61373 - Category 1, Grade B			
	Switching Frequency *	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;
④Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Electromagnetic Compatibility (EMC)

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)

Electromagnetic Compatibility (EMC)	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

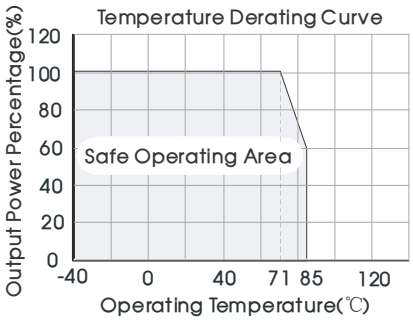
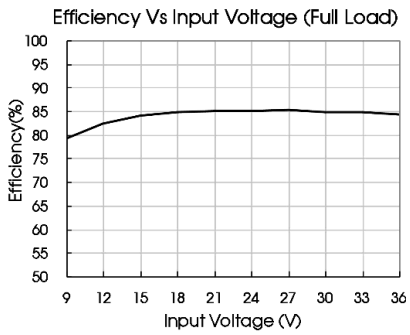
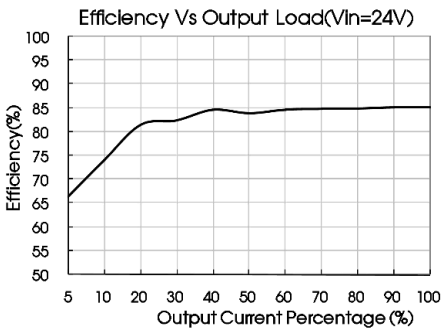


Fig. 1

DWZP6-B2405



DWZP6-B2405



Design Reference

1.Typical application

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

Input 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.

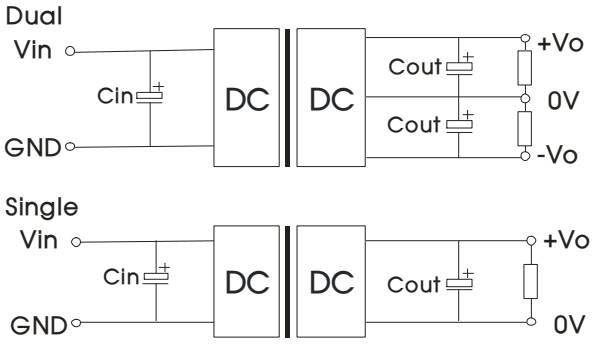
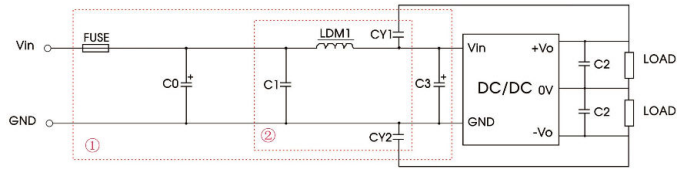


Fig. 2

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

2.EMC compliance circuit

Dual output:



Single output:

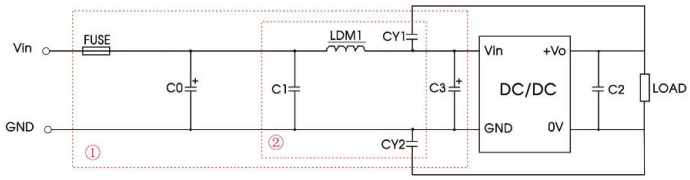


Fig. 3

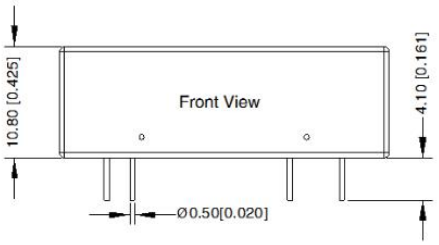
Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

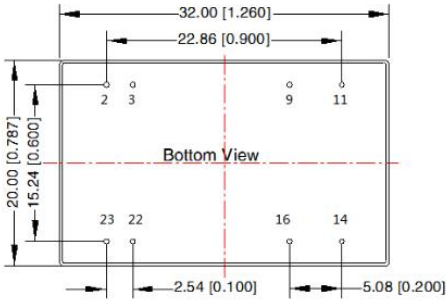
Parameter description:

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

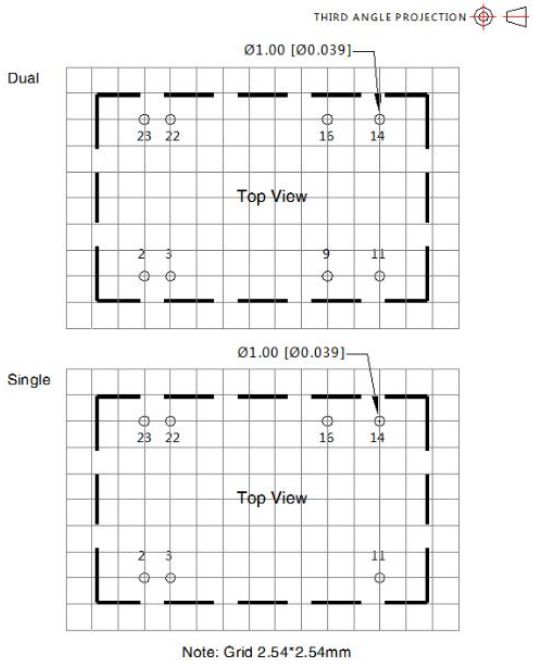
3.The products do not support parallel connection of their output

Dimensions and Recommended





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.