Descriptions

10W 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 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 protection, output short-circuit, over-current and over-voltage protection
- Meet CISPR32/EN55032 CLASS A, without extra components
- Industry standard pin-out
- Meets EN50155 standards

Applications

- Industrial controls
- Electric power
- Instrumentation
- Communications
- 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.		
--	DWZP10-A2415	24 (9-36)	40	±15	±333/0	85/87	330
EN/BS EN	DWZP10-B2403			3.3	2400/0	84/86	1200
	DWZP10-B2405			5	2000/0	85/87	1000
	DWZP10-B2412			12	833/0	85/87	470
	DWZP10-B2415			15	667/0	85/87	330
	DWZP10-B2424			24	416/0	85/87	100
	DWZP10-B4803	48 (18-75)	80	3.3	2400/0	83/85	1200
	DWZP10-B4805			5	2000/0	84/86	1000
	DWZP10-B4812			12	833/0	85/87	470
	DWZP10-B4815			15	667/0	85/87	330
	DWZP10-B4824			24	416/0	86/88	100

Notes:
①Exceeding the maximum input voltage may cause permanent damage;
②Efficiency is measured at nominal input voltage and rated output load;
③We suggest to connect an external electrolytic capacitor if there is a spike voltage at the input, details please refer to application circuit;
④Product 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 nominal input series, nominal input voltage	3.3VDC single output	--	380/12	389/25	mA
			5VDC single output	--	474/6	485/15	
			others	--	502/5	515/12	
		48VDC nominal input series, nominal input voltage	3.3VDC single output	--	192/5	197/20	
			5VDC single output	--	240/6	245/15	
			others	--	251/4	258/8	
	Reflected Ripple Current	24VDC nominal input series, nominal input voltage		--	40	--	
		48VDC nominal input series, nominal input voltage		--	30	--	
	Surge Voltage (1sec. max.)	24VDC nominal input series		-0.7	--	50	VDC
		48VDC nominal input series		-0.7	--	100	
	Start-up Voltage	24VDC nominal input series		--	--	9	
		48VDC nominal input series		--	--	18	
	Under-voltage Protection	24VDC nominal input series		5.5	6.5	--	
		48VDC nominal input series		12	15.5	--	
	Input Filter			Pi filter			
	Hot Plug			Unavailable			
	Ctrl ①	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 Accuracy②	0%-100% load	3.3VDC/5VDC single output	--	±0.5	±2	%
			Others	--	±1	±3	
	Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
			Vo2	--	±0.5	±1	
	Load Regulation③	5%-100% load	Vo1	--	±0.5	±1	
			Vo2	--	±0.5	±1.5	
	Cross Regulation	Dual output，Vo1 load at 50%，Vo2 load at range of 25%-100%		--	--	±5	
	Transient Recovery Time			--	300	500	μs
	Transient Response Deviation	25% load step change, nominal input voltage	3.3VDC/5VDC single output	--	±5	±8	%
			Others	--	±3	±5	
	Temperature Coefficient	Full load		--	--	±0.03	%/℃
	Ripple & Noise④	20MHz bandwidth		--	40	80	mVp-p
	Over-voltage Protection	Input voltage range		110	--	160	%Vo
	Over-current Protection	Input voltage range	3.3VDC/5VDC single output	110	160	230	%Io
			Others	110	140	190	

	Short-circuit Protection	Input voltage range	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	--	2000	--	pF
	Operating Temperature	See Fig. 1	-40	--	+85	℃
	Storage Temperature		-55	--	+125	
	Storage Humidity	Non-condensing	5	--	95	%RH
	Pin Soldering Resistance Temperature⑤	Soldering spot is 1.5mm away from the case, 10 seconds max.	--	--	+300	℃
		Wave soldering, maximum 10 seconds	255	260	265	
	Vibration(EN62368)		10-150Hz, 5G, 0.75mm. along X, Y and Z			
	Vibration(EN50155)		IEC/EN61373 - Category 1, Grade B			
	Switching Frequency⑥	PWM mode	--	350	--	kHz
	MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Mechanical Specifications	Case Material	Aluminum alloy				
	Dimensions	32.00 x 20.00 x 10.80mm				
	Weight	12.0g(Typ.)				
	Cooling Method	Free air convection				

Note:
①The Ctrl pin voltage is referenced to input pin GND;
②At 0% -5% load, the Max. output voltage accuracy of 3.3VDC 5VDC output converter is ±3%;
③Load regulation for 0% - 100% load increases to ±5%;
④Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo;
⑤The 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;
⑥Switching 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 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	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	10 Vr.m.s	perf. Criteria A
	Immunities of voltage dip, drop and short interruption	IEC/EN61000-4-29	0%, 70%	perf. Criteria B

Electromagnetic Compatibility (EMC)(EN50155)

EMI	CE	EN50121-3-2 150kHz-500kHz 99dBuV(see Fig.3-② for recommended circuit) EN55016-2-1 500kHz-30MHz 93dBuV(see Fig.3-② for recommended circuit)	
	RE	EN50121-3-2 30MHz-230MHz 40dBuV/m at 10m(see Fig.3-② for recommended circuit) EN55016-2-1 230MHz-1GHz 47dBuV/m at 10m(see Fig.3-② for recommended circuit)	
EMS	ESD	EN50121-3-2 Contact ±6kV/Air ±8kV	perf. Criteria B
	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 10 Vr.m.s	perf. Criteria A

Characteristic Curve

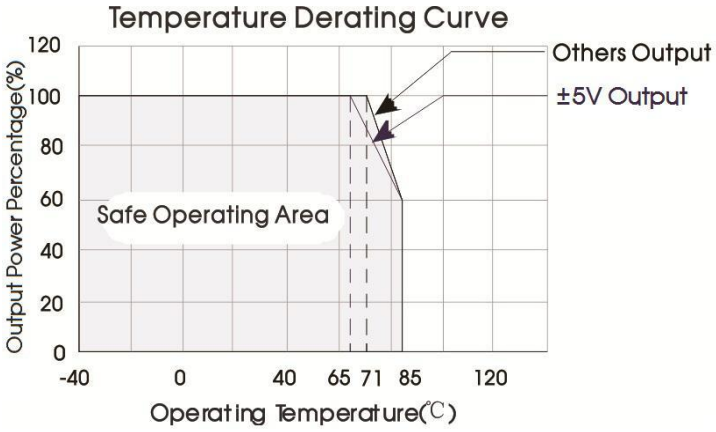
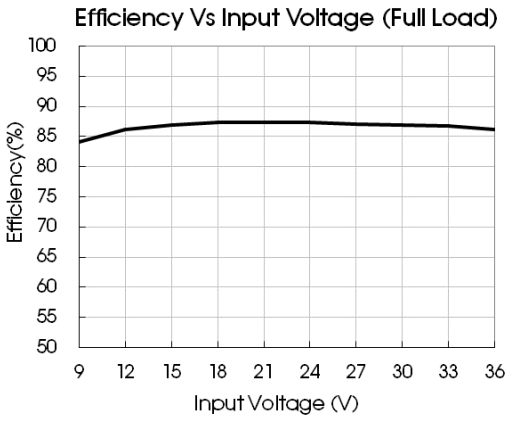
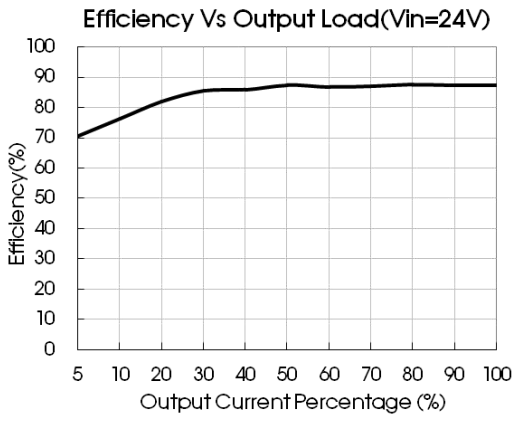


Fig. 1

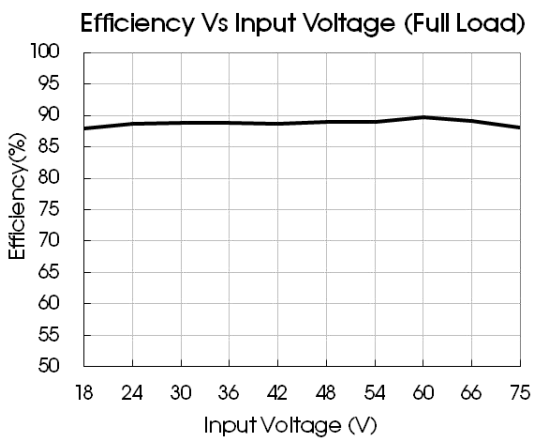
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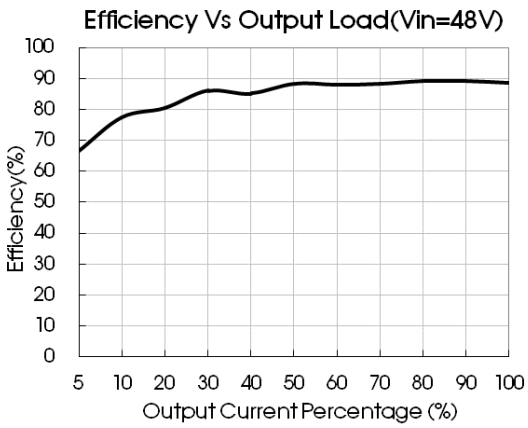
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DWZP10-B4815



DWZP10-B4815



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 max. capacitive load value of the product.

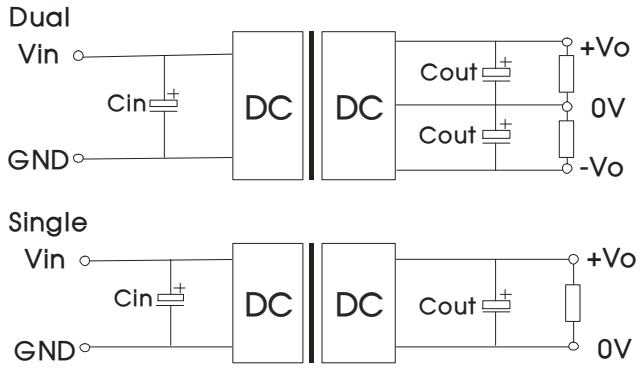
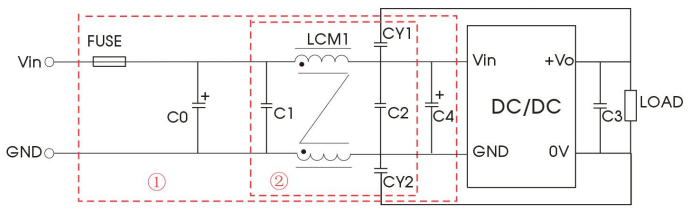


Fig. 2

Vin(VDC)	Vout(VDC)	Cin	Cout
24	3/5	100μF/50V	10μF/16V
	12/15/±15		10μF/25V
	24		10μF/50V
48	3/5	10μF - 47μF/100V	10μF/16V
	12/15		10μF/25V
	24		10μF/50V

2. EMC compliance circuit

3.3VDC/5VDC single output:



Parameter description:

Model	Vin: 24VDC	Vin: 48VDC
FUSE	Select FUSE value according to actual input current	
C0, C4	330μF/50V	330μF/100V
C1, C2	10μF/50V	10μF/100V
LDM1	10μH	
LCM1	1.4-1.7mH（TN150P-RH12.7*12.7*7.9）	
C3	Refer to the Cout in Fig.2	
CY1, CY2	1nF/2kV	

Others:

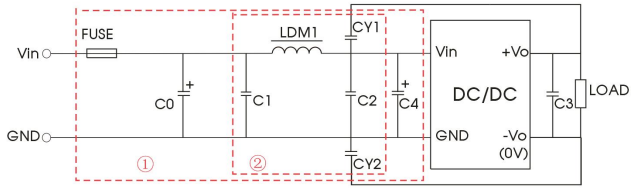
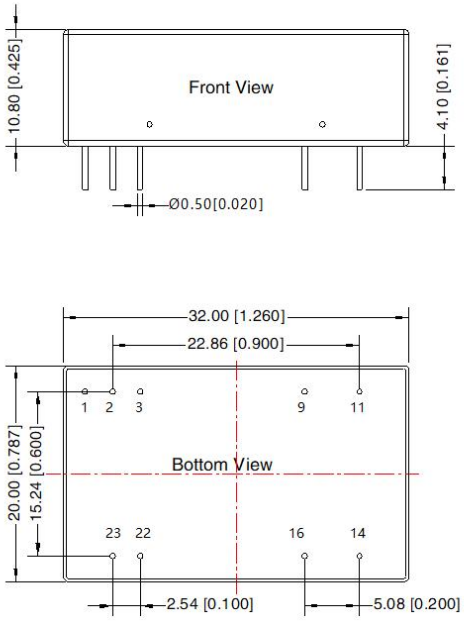


Fig. 3

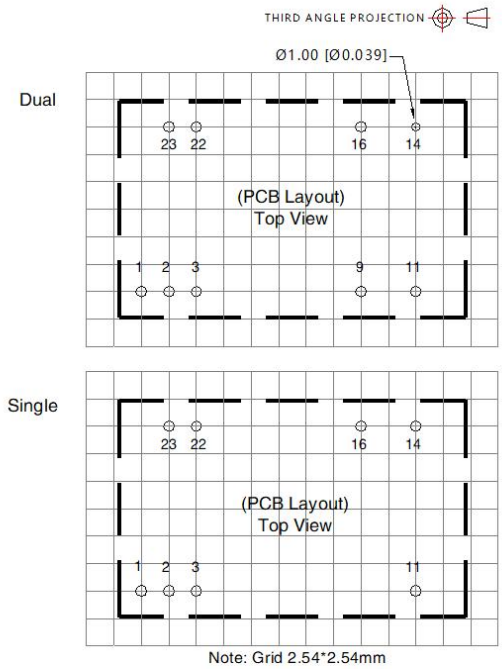
Notes: For EMC tests we use Part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

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
1	Ctrl	Ctrl
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. 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. 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;
6. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on t he physical mark or packaging label.