Descriptions

6W isolated, DC-DC Converter



RoHS

3 Years Warranty

UL62368-1 | EN62368-1 | BS EN62368-1 | TUV UL62368

Features

- Ultra wide 4:1 input voltage range
- High efficiency up to 85%
- No-load power consumption as low as 0.12W
- Reinforced isolation, I/O isolation test voltage: 6KVDC and 2MOPP high isolation
- Leakage current < 5 μA, under 240VAC/60Hz operating conditions
- Transformer creepage distance is 8mm, transformer clearance is 5mm
- Operating ambient temperature range: -40℃ to +85℃
- Input under-voltage protection, output short circuit, over-current, over-voltage protection
- Industry standard pin-out

Applications

- Electrical Power
- Medical

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency(%) Min./Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Max.①	Voltage (VDC)	Current (mA) Max./Min.		
UL/EN/BS EN	DWP6-H2405	24 (9-36)	40	5	1200/0	78/80	2700
EN/BS EN	DWP6-H2406			6	1000/0	79/81	2200
	DWP6-H2409			9	667/0	81/83	1800
UL/EN/BS EN	DWP6-H2412			12	500/0	82/84	1000
EN/BS EN	DWP6-H2415			15	400/0	83/85	680
	DWP6-H2418			18	333/0	83/85	1200
EN/BS EN/TUV	DWP6-H2424			24	250/0	82/84	470
EN/BS EN	DWP6-H4805	48 (18-75)	80	5	1200/0	79/81	2700
	DWP6-H4809			9	667/0	81/83	1800
	DWP6-H4812			12	500/0	82/84	1000
	DWP6-H4815			15	400/0	83/85	680

	DWP6-H4824			24	250/0	82/84	470

Notes:
①Exceeding the maximum input voltage may cause permanent damage;
②Product 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	--	309/5	317/8	mA
		48VDC input	--	154/4	159/7	
	Reflected Ripple Current	24VDC input	--	20	--	
		48VDC input	--	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 Accuracy		--	±1	±3	%
	Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	
	Load Regulation①	5%-100% load	--	±0.5	±1	
	Transient Recovery Time	25% load step change	--	300	500	μs
	Transient Response Deviation		--	±3	±5	%
	Temperature Coefficient	Full load	--	--	±0.03	%/℃
	Ripple & Noise②	20MHz bandwidth	--	100	180	mVp-p
	Over-current Protection	Input voltage range	110	150	260	%Io
	Over-voltage Protection		110	--	160	%Vo
	Short-circuit Protection		Continuous, self-recovery			
General Specifications	Isolation	Input-output Electric Strength test for 1 minute with a leakage current of 1mA max.	6000	--	--	VDC
	Insulation Resistance	Input-output resistance at 500VDC	10000	--	--	MΩ
	Isolation Capacitance	Input-output capacitance at 100KHz/0.1V	--	13	20	pF
	Leakage Current	240VAC/60Hz	--	3.6	5	uA
	Application Part		CF Type			
	Reinforced Isolation	Transformer creepage	8.0	--	--	mm
		Transformer clearance	5.0	--	--	
		PCB creepage & clearance	8.0	--	--	
		Optocoupler creepage	8.0	--	--	
	Operating Temperature	Derating if the temperature is ≥71℃ (see Fig. 1)	-40	--	85	℃
	Storage Humidity	Without condensation	5	--	95	%RH
	Storage Temperature		-55	--	125	℃
	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	
	Vibration		10-55Hz, 2G, 30 Min. along X, Y and Z			
	Switching Frequency④	PWM mode(nominal, full load)	--	300	--	kHz
	Insulation Protection Grade	240VAC/60Hz	2×MOPP			
	MTBF	MIL-HDBK-217F@25℃	1000	--	--	k hours
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)				
	Dimensions	31.60 × 20.30 × 10.20 mm				
	Weight	13.0g(Typ.)				
	Cooling method	Free air convection				

Note:
①Load regulation for 0%-100% load is ±5%;
②Ripple & Noise at < 5% load is 5%Vo max. The "parallel cable" method is used for Ripple and Noise test, oscilloscope using the 1X probe;
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 (EMI)	CE	Others	CISPR32/EN55032 CLASS A (without extra components)	
		DWP6-H2418	CISPR32/EN55032 CLASS B (see Fig.3-② for recommended circuit)	
	ESD		IEC/EN61000-4-2 Contact ±6KV	perf. Criteria B
Immunity (EMS)	EFT		IEC/EN61000-4-4 ±2KV (see Fig.3-① for recommended circuit)	perf. Criteria B
	Surge		IEC/EN61000-4-5 ±2KV (see Fig.3-① for recommended circuit)	perf. Criteria B
	CS		IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A
	Immunities of voltage dip, drop and short interruption		IEC/EN61000-4-29 0-70%	perf. Criteria B

Characteristic Curve

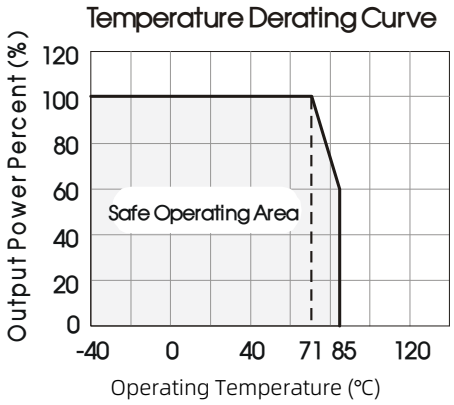
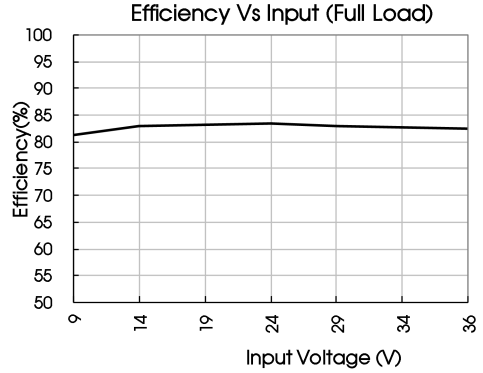
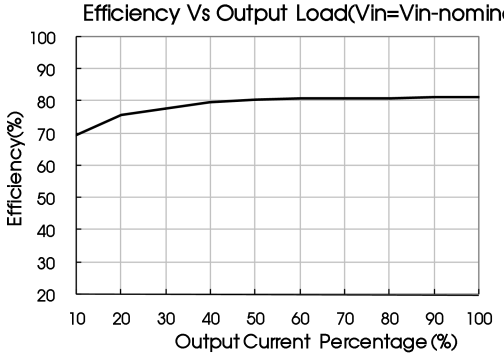


Fig. 1

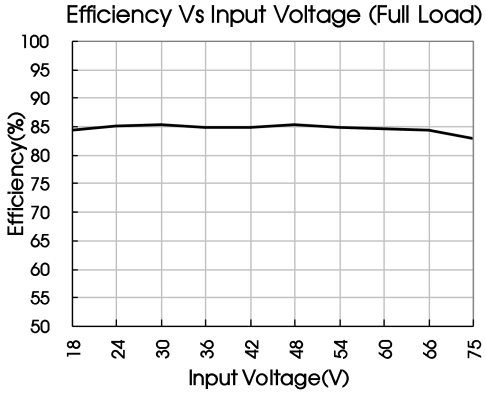
DWP6-H2405



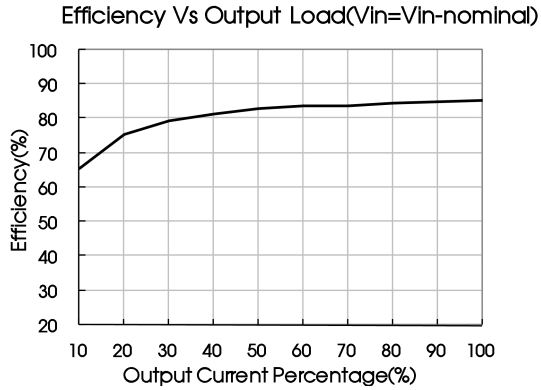
DWP6-H2405



DWP6-H4815



DWP6-H4815



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.

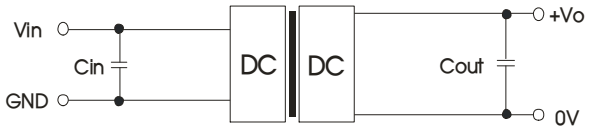


Fig. 2

Vin	Cin	Cout
24VDC	100uF	10μF
48VDC	10μF -47μF	10μF

2.EMC compliance circuit

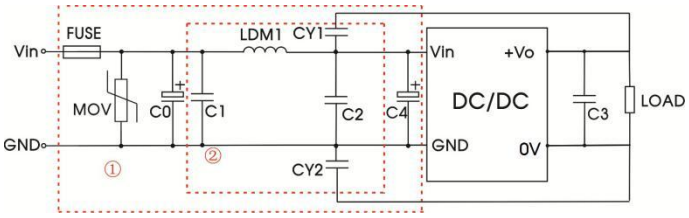


Fig. 3

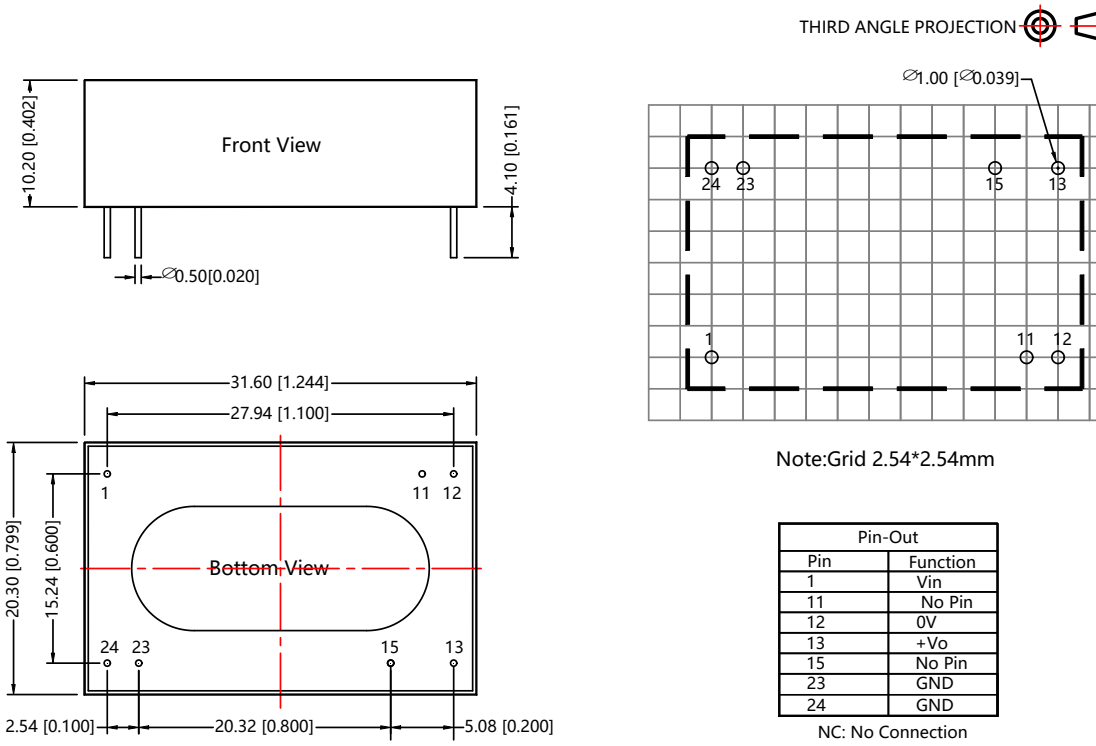
Notes: For EMC tests we use part ① in Fig. 3 for immunity and part ② for emissions test. Selecting based on needs.

Parameter description:

Model	Vin: 24VDC	Vin: 48VDC
FUSE	Choose according to actual input current	
MOV	S20K30	S14K60
C0, C4	330μF/50V	330μF/100V
C1, C2	10μF/50V	--
C3	Refer to the Cout in Fig.2	
LDM1	10μH	--
CY1, CY2	1nF/6KV	--

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

Dimensions and Recommended



Note:Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	Vin
11	No Pin
12	0V
13	+Vo
15	No Pin
23	GND
24	GND

NC: No Connection

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

Note:

1. The maximum capacitive load offered were tested at nominal 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. 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;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
7. 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.