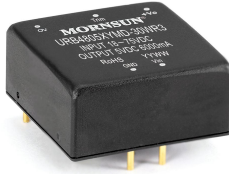


30W isolated DC-DC converter in 1x1 inch
Ultra-wide input and regulated single output



Patent Protection RoHS



FEATURES

- Wide 4:1 input voltage range
- High efficiency up to 88%
- I/O isolation test voltage 1.5K VDC
- Input under-voltage protection, output short circuit, over-current, over-voltage protection
- Operating ambient temperature range: -40°C to +85°C
- Industry standard pin-out

URB4805XYMD-30WR3 of isolated 30W DC-DC converter products with an ultra-wide 4:1 input voltage range. They feature efficiencies up to 88%, input to output isolation is tested with 1500VDC and the converter safety operate ambient temperature of -40°C to +85°C, input under-voltage protection, output over-voltage, over-current, short-circuit, protection. They are ideally and widely used in applications such as industrial control, electric power, instruments and communications.

Selection Guide

Certification	Part No.	Input Voltage (VDC)		Output		Full Load Efficiency ^② (%) Min./Typ.	Capacitive Load (μF)Max.
		Nominal (Range)	Max. ^①	Voltage (VDC)	Current(mA) Max./Min.		
--	URB4805XYMD-30WR3	48 (18-75)	80	5	6000/0	86/88	7200

Notes:

- ① Exceeding the maximum input voltage may cause permanent damage;
② Efficiency is measured in nominal input voltage and rated output load.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	Nominal input voltage	--	710/8	735/15	mA
Reflected Ripple Current		--	40	--	
Surge Voltage (1sec. max.)		-0.7	--	100	VDC
Start-up Voltage		--	--	18	
Input under-voltage protection		12	15.5	--	
Start-up Time	Nominal input voltage & constant resistance load	--	10	--	ms
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy	5%-100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	
Load Regulation	5%-100% load	--	±0.5	±1	%
Transient Recovery Time	25% load step change, nominal input voltage	--	250	500	μs
Transient Response Deviation	25% load step change, input voltage range	--	±3	±8	%
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise*	20MHz bandwidth, nominal input voltage, 5%-100% load	--	60	120	mV p-p
Trim	Input voltage range	90	--	110	%Vo
Over-voltage Protection		110	--	160	
Over-current Protection		110	170	260	%Io
Short circuit Protection		Continuous, self-recovery			

Note: *Ripple & Noise at < 5% load is 300mV max. The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
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	°C
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	°C
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency *	PWM mode	--	270	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours

Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Mechanical Specifications

Case Material	Aluminum alloy	
Dimensions	Horizontal package	25.40 × 25.40 × 11.70 mm
Weight		18.4g
Cooling method	Free air convection	

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)/CLASS A (see Fig.4 for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)/CLASS A (see Fig.4 for recommended circuit)
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria B
	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 B

Typical Characteristic Curves

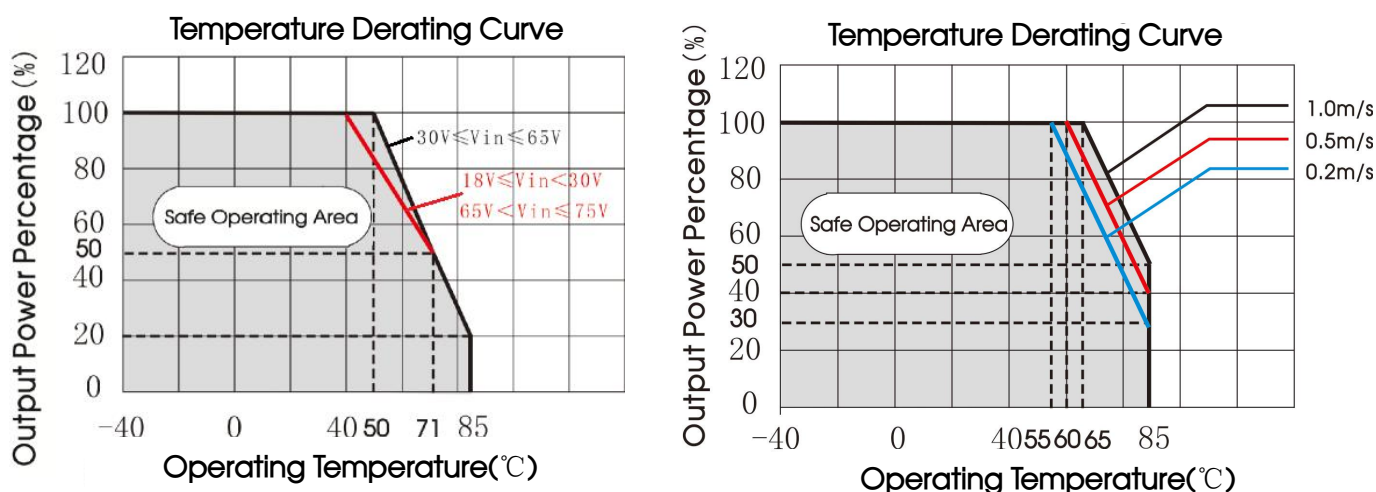


Fig. 1

Design Reference

1. Typical application

All 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 C_{in} and C_{out} 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.

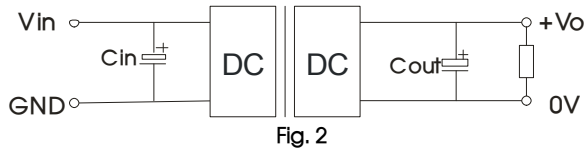


Fig. 2

Vout (VDC)	Cin (μF)	Cout (μF)
5	100	100

2. EMC compliance circuit

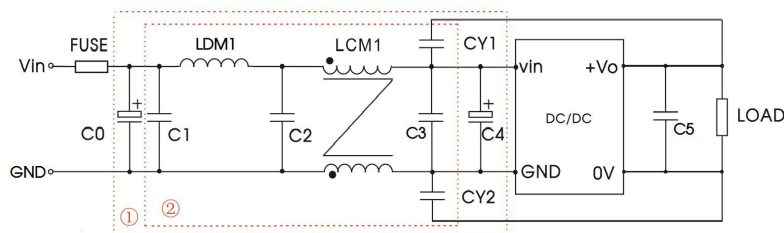


Fig. 3

Notes: We use Part ① in Fig. 3 for Immunity tests and Part ② for Emissions test. Selecting based on needs.

Parameter description:

Model	Vin:48V
FUSE	Choose according to actual input current
C0, C4	470μF/100V
C1	10μF/100V
LDM1	22uH/3A
C2	22uF/100V
LCM1	10mH, recommended to use MORNSUN P/N: FL2D-30-103(C)
C3	22uF/100V
C5	Refer to the Cout in Fig.2
CY1, CY2	1nF/2KV

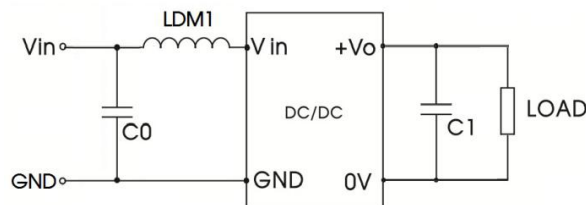
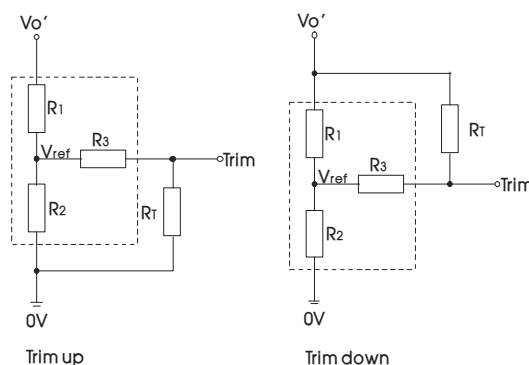


Fig. 4

Parameter description:

Model	Vin:48V
C0	4.7μF/100V
LDM1	22uH/3A
C1	Refer to the Cout in Fig.2

3. Trim Function for Output Voltage Adjustment (open if unused)



TRIM resistor connection (dashed line shows internal resistor network)

Calculating Trim resistor values:

$$\begin{aligned} \text{up: } R_T &= \frac{\alpha R_2}{R_2 - \alpha} - R_3 & \alpha &= \frac{V_{ref}}{V_{O'} - V_{ref}} \cdot R_1 \\ \text{down: } R_T &= \frac{\alpha R_1}{R_1 - \alpha} - R_3 & \alpha &= \frac{V_{O'} - V_{ref}}{V_{ref}} \cdot R_2 \end{aligned}$$

R_T is Trim resistance
 α is a self-defined parameter, with no real meaning.

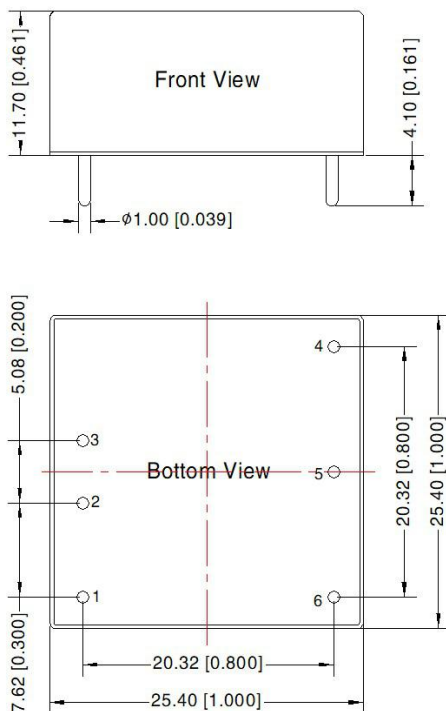
Vout(V)	R1(K Ω)	R2(K Ω)	R3(K Ω)	Vref(V)
5	8.832	2.87	10	1.24

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

5. For additional information please refer to DC-DC converter application notes on

www.mornsun-power.com

Dimensions and Recommended Layout



Note:

Unit: mm[inch]

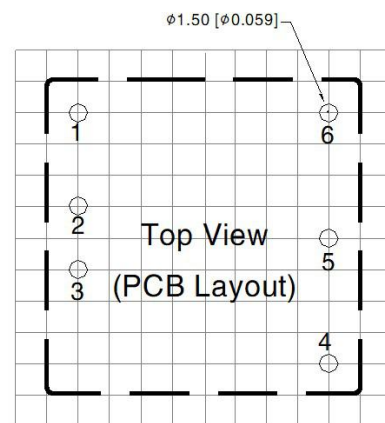
Pin diameter tolerances: ± 0.10 [± 0.004]

General tolerances: ± 0.50 [± 0.020]

PIN 1/2/3/4/5/6: $\phi 1.5$ mm

The layout of the device is for reference only,
please refer to the actual product

THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Single
1	No Pin
2	GND
3	Vin
4	+Vo
5	Trim
6	0V

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58210003;
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 $T_a=25^{\circ}\text{C}$, 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.

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