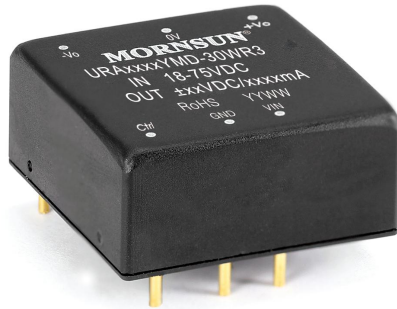


30W isolated DC-DC converter in YMD package  
Ultra-wide input and regulated dual output



Patent Protection **RoHS**



## FEATURES

- Ultra-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
- Meet EN62368 standards

URA\_YMD-30WR3 series 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 safely operate ambient temperature of -40°C to +85°C, input under-voltage protection, output over-voltage, over-current, short-circuit protection. They are 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 <sup>②</sup> (%) Min./Typ.	Capacitive Load <sup>③</sup> (μF)Max.
		Nominal (Range)	Max. <sup>①</sup>	Voltage (VDC)	Current(mA) Max./Min.		
--	URA4812YMD-30WR3	48 (18-75)	80	±12	±1250	86/88	2000
	URA4815YMD-30WR3			±15	±1000	86/88	1500
	URA4824YMD-30WR3			±24	±625	86/88	470

Notes:

- ① Exceeding the maximum input voltage may cause permanent damage;
- ② Efficiency is measured in nominal input voltage and rated output load;
- ③ The specified maximum capacitive load value for Vo1 and Vo2 output is identical.

## Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	Nominal input voltage	--	711/4	727/12	mA
Reflected Ripple Current		--	80	--	
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			
Ctrl*	Module on	Ctrl pin open or pulled high (TTL 3.5-12VDC)			
	Module off	Ctrl pin pulled low to GND (0-1.2VDC)			
	Input current when off	--	2	7	mA

Note: \*The Ctrl pin voltage is referenced to input GND.

## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy <sup>①</sup>	5%-100% load	--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	Vo1	±0.2	±0.5	
		Vo2	±0.2	±1	

Load Regulation <sup>®</sup>	5%-100% load	--	±0.5	±1	%
Cross Regulation	Vo1 load at 50%, Vo2 load at range of 10% - 100%	--	--	±5	
Transient Recovery Time	25% load step change, nominal input voltage	--	300	500	μs
Transient Response Deviation	25% load step change, input voltage range	--	±3	±5	%
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise <sup>®</sup>	20MHz bandwidth, nominal input voltage, 5%-100% load	--	100	150	mVp-p
Over-voltage Protection	Input voltage range	110	--	160	%Vo
Over-current Protection		110	150	260	%Io
Short-circuit Protection		Continuous, self-recovery			

Note: ① Output voltage accuracy for 0%-5% load is ±4% max.;  
 ② Load regulation for 0% -100% load increases to ±5%;  
 ③ The "Tip and barrel" method is used for ripple and noise test, please refer to *DC-DC Converter Application Notes* for specific information. Ripple & Noise at <5% load is 5%Vo max.

### 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
	Input/output-case Electric Strength Test for 1 minute with a leakage current of 1mA max.	1000	--	--	
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100KHz/0.1V	--	1000	--	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	--	300	--	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	25.40 x 25.40 x 11.70 mm
Weight	17.2g
Cooling method	Free air convection

### Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig.3-② for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV 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.3-① for recommended circuit) perf. Criteria B	
	CS	IEC/EN61000-4-6	10 Vr.m.s perf. Criteria A	

Typical Characteristic Curves

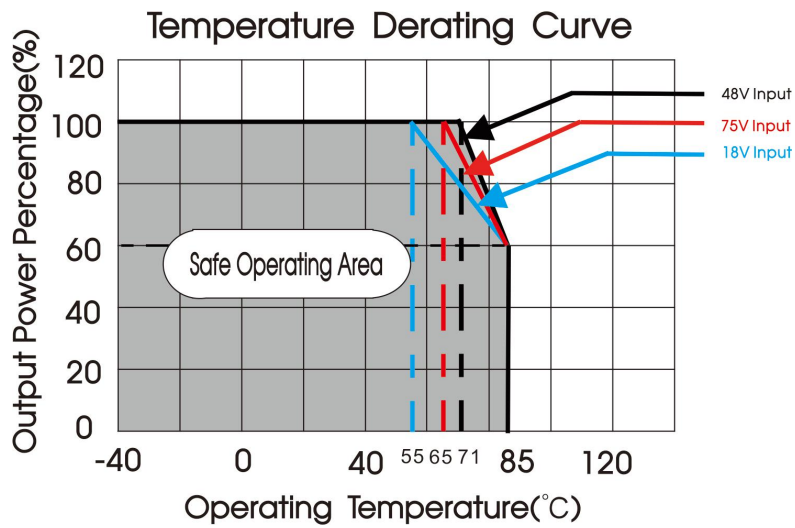
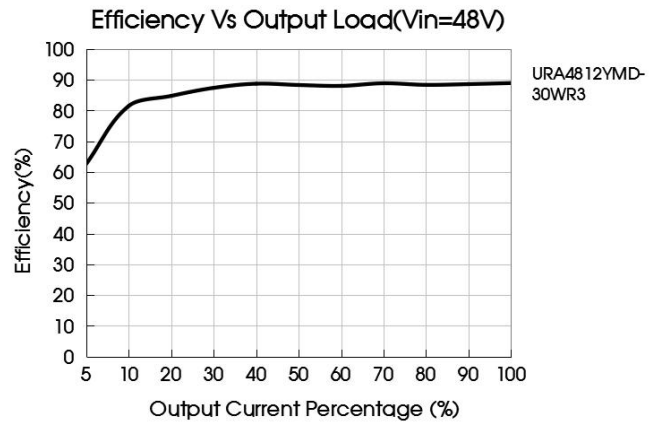
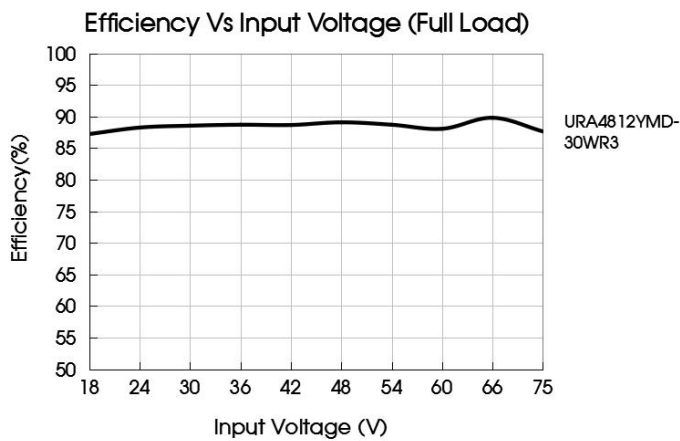


Fig. 1

Note: The temperature derating curve is tested at free air convection.



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

$V_{out}$ (VDC)	$C_{in}$	$C_{out}$
12, 15	100uF/100V	100uF/50V
24		47uF/50V

2. EMC compliance circuit

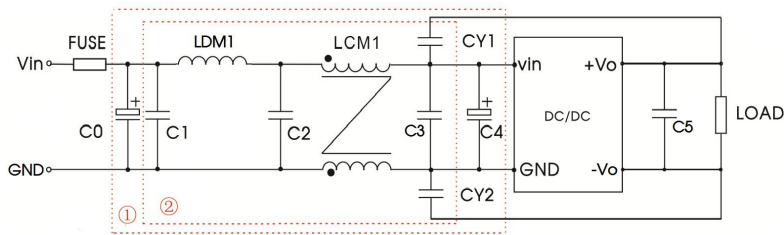


Fig. 3

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

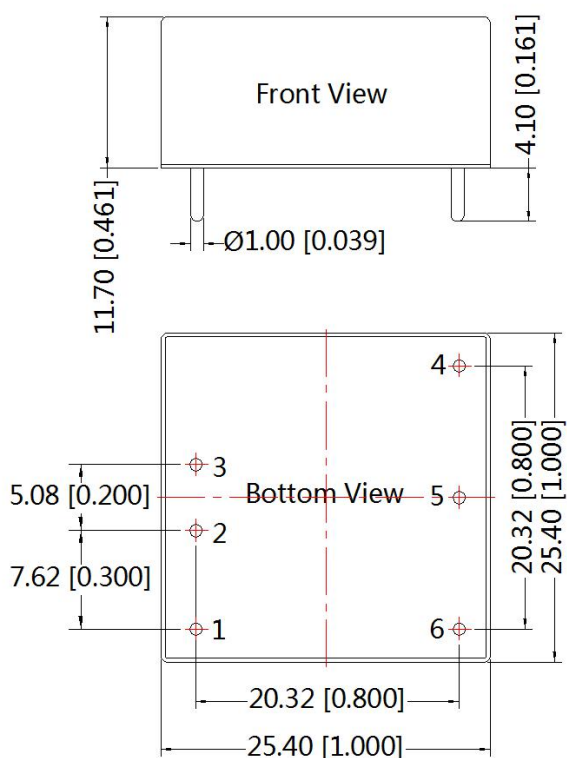
Parameter description:

Model	Vin:48V
FUSE	Choose according to actual input current
C0, C4	470μF/100V
C1, C2, C3	4.7μF/100V
LDM1	6.8uH/3A
LCM1	1.0mH/3A (FL2D-30-102, Recommend use Mornsun's common mode inductance)
C5	Refer to the Cout in Fig.2
CY1, CY2	1nF/2KV

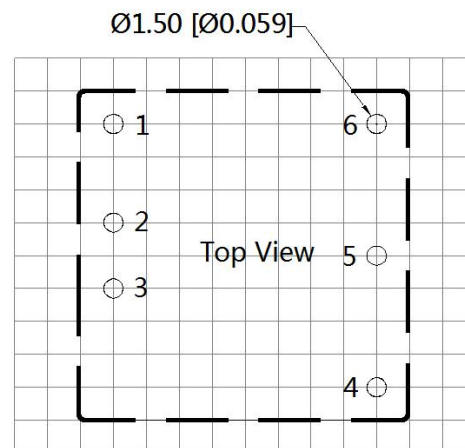
4. The products do not support parallel connection of their output

5. For additional information please refer to DC-DC converter application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions



THIRD ANGLE PROJECTION



Note: Grid 2.54\*2.54mm

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

Pin-Out	
Pin	Dual
1	Ctrl
2	GND
3	Vin
4	+Vo
5	0V
6	-Vo

Note:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://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.

## Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China  
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: [info@mornsun.cn](mailto:info@mornsun.cn) [www.mornsun-power.com](http://www.mornsun-power.com)