

6W, ultra-wide input isolated & regulated dual / single output



Patent Protection RoHS

### FEATURES

- Wide range of input voltage (4:1)
- Efficiency up to 88%
- Isolation voltage : 1500VDC
- Operating temperature range: -40°C to +85°C
- Output short circuit protection
- Output over voltage protection
- International standard pin-out
- Low ripple & noise
- Meet CISPR22/EN55022 CLASS A

URA\_ZP-6WR2 & URB\_ZP-6WR2 series products are of 6W output power, ultra-wide range of voltage input of 9-36VDC, 18-75VDC, isolation voltage of 1500VDC, output over-voltage protection and output short circuit protection with the six-sided metal shielding package; these products are widely used in fields such as industrial control, electric power, instruments and communication.

### Selection Guide

Part No.	Input Voltage (VDC)		Output		Efficiency (%Min./Typ.) @ Full Load	Max. Capacitive Load <sup>②</sup> (μF)
	Nominal (Range)	Max. <sup>①</sup>	Output Voltage (VDC)	Output Current (mA)(Max./Min.)		
URA2405ZP-6WR2	24 (9-36)	40	±5	±600/±30	81/83	470
URA2412ZP-6WR2			±12	±250/±12	85/87	100
URA2415ZP-6WR2			±15	±200/±10	85/87	100
URA2424ZP-6WR2			±24	±125/±6.25	85/87	47
URB2403ZP-6WR2			3.3	1500/75	77/79	1800
URB2405ZP-6WR2			5	1200/60	81/83	1000
URB2412ZP-6WR2			12	500/25	85/87	100
URB2415ZP-6WR2			15	400/20	86/88	100
URB2424ZP-6WR2			24	250/12	85/87	47
URA4805ZP-6WR2			48 (18-75)	80	±5	±600/±30
URA4812ZP-6WR2	±12	±250/±12			85/87	100
URA4815ZP-6WR2	±15	±200/±10			86/88	100
URB4803ZP-6WR2	3.3	1500/75			78/80	1800
URB4805ZP-6WR2	5	1200/60			82/84	1000
URB4812ZP-6WR2	12	500/25			85/87	100
URB4815ZP-6WR2	15	400/20			86/88	100
URB4824ZP-6WR2	24	250/12			85/87	47

Note:①Absolute maximum rating without damage on the converter, but it isn't recommended;

②The capacitive loads of positive and negative outputs are identical.

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	24VDC input	--	301/7	--	mA
	48VDC input	--	149/3	--	
Reflected Ripple Current	24VDC/48VDC input	--	20	--	
Input Impulse Voltage (1sec. max.)	24VDC input	-0.7	--	50	VDC
	48VDC input	-0.7	--	100	
Starting Voltage	24VDC input	--	--	9	
	48VDC input	--	--	18	
Input Filter					TT filter

### Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	5%-100% load		--	±1	±2	%
Output Voltage Balance	Dual output, balance load		--	±0.5	±1.5	
Line Regulation	Full load, the input voltage is from low voltage to high voltage	Main load	--	±0.2	±0.5	
		Supplement load	--	--	±1.0	
Load Regulation	5%-100% load		--	±0.5	±1	
Cross Regulation	Dual output, main output 50% load, Supplement output from 10% to 100% load		--	--	±5	
Transient Recovery Time	25% load step change		--	300	500	μs
Transient Response Deviation			--	±3	±5	%
Temperature Drift Coefficient	Full load		--	--	±0.03	%/°C
Ripple *	20MHz bandwidth		--	10	25	mV p-p
Noise *	20MHz bandwidth	3.3V, 5V output	--	30	80	
		others	--	50	100	
Output Over-voltage Protection	Input voltage range		110	--	140	%Vo
Output Short circuit Protection			Hiccup, continuous, self-recovery			

Note: \* Ripple and noise tested with "parallel cable" method, please see *DC-DC Converter Application Notes* for specific operation methods.

### General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Isolation Resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	see Fig. 1	-40	--	85	°C
Storage Temperature		-55	--	125	
Storage Humidity	Non-condensing	5	--	95	%RH
Max. Operating Temperature for casing	Within the operating temperature curve	--	--	105	°C
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Switching Frequency	PWM mode	--	300	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours

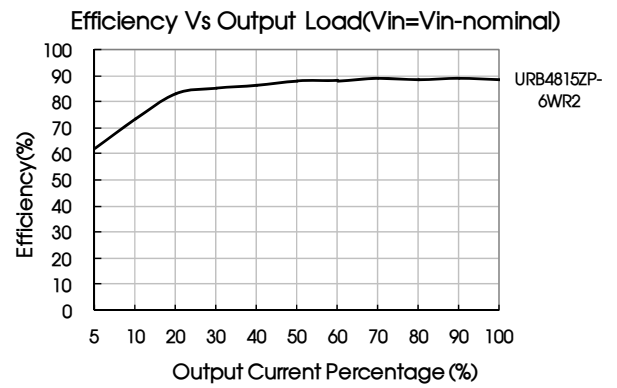
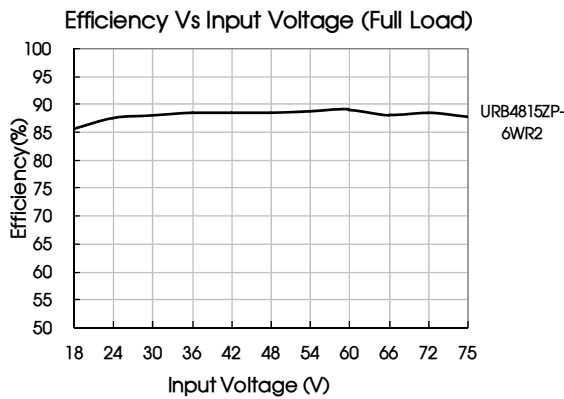
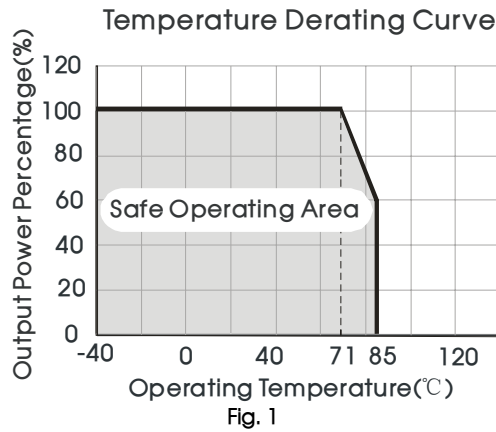
### Physical Specifications

Casing Material	Aluminum alloy
Package Dimensions	32.00*20.00*10.80mm
Weight	14g (Typ.)
Cooling Method	Free air convection

### EMC Specifications

EMI	Conducted disturbance	CISPR22/EN55022	CLASS A (Bare component)/ CLASS B (see Fig.3-② for recommended circuit)		
	Radiated emission	CISPR22/EN55022	CLASS A(Bare component)/ CLASS B (see Fig.3-② for recommended circuit)		
EMS	Electrostatic discharge	IEC/EN61000-4-2	Contact ±4KV		perf. Criteria B
	Radiation immunity	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 immunity	IEC/EN61000-4-5	±2KV (see Fig.3-① for recommended circuit)		perf. Criteria B
	Conducted disturbance immunity	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

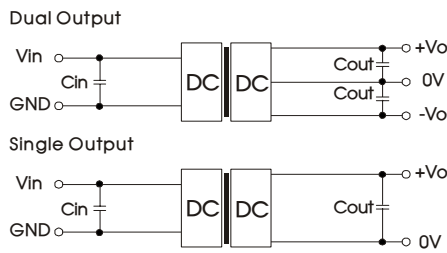
Product Characteristic Curve



Design Reference

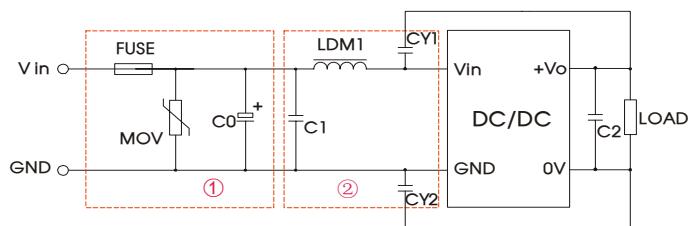
1. Typical application

All the DC/DC converters of this series are tested according to the recommended circuit (see Fig. 2) before delivery. If it is required to further reduce input and output ripple, properly increase the input & output of additional capacitors Cin and Cout or select capacitors of low equivalent impedance provided that the capacitance is no larger than the max. capacitive load of the product.



Vin(VDC)	Cin(μF)	Cout(μF)
12	100	10
24/48	10~47	

2. EMC solution-recommended circuit



Notes: Part ① in the Fig. 3 is used for EMS test and part ② for EMI filtering; selected based on needs.

Parameter description

Model	Vin:24V	Vin:48V
FUSE	Choose according to actual input current	
MOV	S14K35	S14K60
C0	330μF/50V	330μF/100V
C1	1μF/50V	1μF/100V
C2	Refer to the Cout in Fig.2	
LDM1	4.7μH	
CY1, CY2	1nF/2KV	

EMC solution-recommended circuit PCB layout

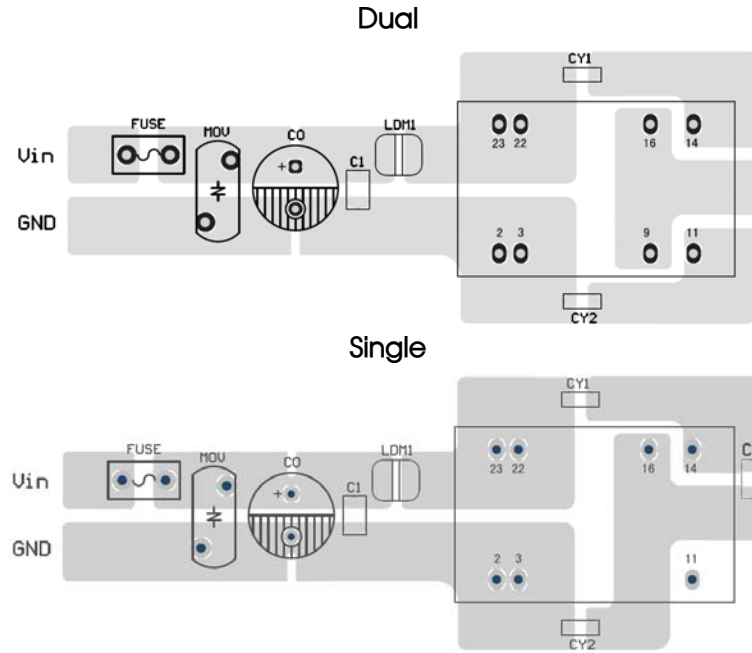
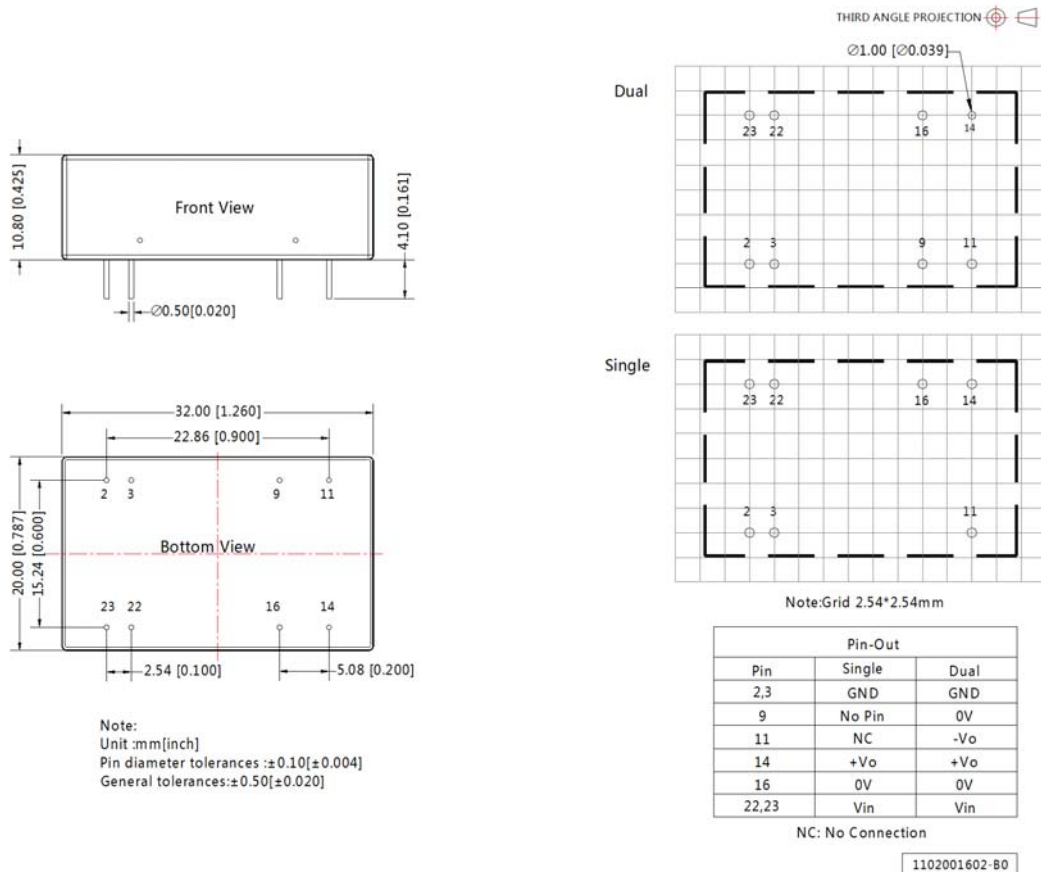


Fig. 4

Note: the min. distance of the bonding pads between input & output isolation capacitors (CY1/CY2) shall be  $\geq 2\text{mm}$ .

3. The product does not support output in parallel with power per liter or hot-plug use
4. For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

Horizontal Package Dimensions and Recommended Layout (without heat sink)



Notes:

1. Packing Information please refer to 'Product Packing Information'. The Packing bag number of Horizontal package :58210008 ;
2. Recommended used in more than 5% load, if the load is lower than 5%, then the ripple index of the product may exceed the specification, but does not affect the reliability of the product;
3. The unbalance degree of the recommended dual output module load:  $\leq 5\%$ ; if the degree exceeds  $\pm 5\%$ , then the product performances cannot be guaranteed to comply with all the performance indicators in the manual, and please directly contact our technicians for specific information;
4. The max. capacitive load should be tested within the input voltage range and under full load conditions;
5. Unless otherwise specified, data in this datasheet should be tested under the conditions of  $T_a=25^\circ\text{C}$ , humidity $<75\%$  when inputting nominal voltage and outputting rated load;
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7. 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, and please directly contact our technicians for specific information;
8. We can provide product customization service;
9. Specifications of this product are subject to changes without prior notice.

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