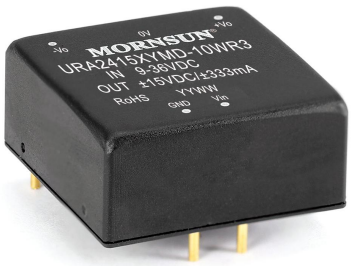
DC/DC Converter
URA2415XYMD-10WR3

MORNSUN®

10W isolated DC-DC converter in DIP package
Ultra-wide input and regulated dual output



Patent Protection RoHS

3 years Warranty

FEATURES

- Ultra-wide 4:1 input voltage range
- High efficiency up to 87%
- No-load power consumption as low as 0.12W
- I/O isolation test voltage1.5k VDC
- Input under-voltage protection, output short-circuit, over-current, over-voltage protection
- Operating ambient temperature range: -40℃ to +85℃
- Meets CISPR32/EN55032 CLASS A without extra components
- Industry standard pin-out

URA2415XYMD-10WR3 of isolated 10W DC-DC converter products feature an ultra-wide with 4:1 input voltage with efficiency of up to 87%, 1500VDC input to output isolation, operating ambient temperature range of -40℃ to +85℃, input under-voltage protection, output short-circuit, over-current, over-voltage protection. They meet CLASS A of CISPR32/EN55032 EMI standards without external components, they are widely used in applications such as industrial control, electric power, instruments, communication applications.

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.		
--	URA2415XYMD-10WR3	24 (9-36)	40	±15	±333/0	85/87	330

Notes:
① Exceeding the maximum input voltage may cause permanent damage;
② Efficiency is measured at nominal input voltage and rated output load;
③ The specified maximum capacitive load value for positive and negative output is identical.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current(full load/no-load)	24VDC nominal input series, nominal input voltage	--	502/5	514/12	mA
Reflected Ripple Current	24VDC nominal input series, nominal input voltage	--	40	--	
Surge Voltage (1sec. max.)	24VDC nominal input series	-0.7	--	50	VDC
Start-up Voltage	24VDC nominal input series	--	--	9	
Input Under-voltage Protection	24VDC nominal input series	5.5	6.5	--	
Start-up Time	Nominal input voltage & constant resistance load	--	10	--	ms
Input Filter		Pi filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy	0%-100% load		--	±1	±3	%
Linear Regulation	Input voltage variation from low to high at full load	Vo1	--	±0.2	±0.5	
		Vo2	--	±0.5	±1	
Load Regulation①	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 10%-100%		--	--	±5	
Transient Recovery Time	25% load step change, nominal input voltage		--	300	500	μs
Transient Response Deviation			--	±3	±5	%
Temperature Coefficient	Full load		--	--	±0.03	%/℃
Ripple & Noise②	20MHz bandwidth, 5%-100% load		--	40	80	mVp-p

Over-voltage Protection	Input voltage range	110	--	160	%Vo
Over-current Protection		110	140	190	%Io
Short-circuit Protection		Continuous, self-recovery			

Note:
①Load regulation for 0%-100% load is ±5%;
②Under 0% -5% load conditions, ripple & noise does not exceed 5%Vo. 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	--	1000	--	pF
Operating Temperature	See Fig. 1	-40	--	+85	℃
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	℃
Vibration		10-150Hz, 5G, 90min. along X, Y and Z			
Switching Frequency *	PWM mode	--	350	--	kHz
MTBF	MIL-HDBK-217F@25℃	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	12.5g (Typ.)
Cooling method	Free air convection

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	3 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70%	perf. Criteria B

Typical Characteristic Curves

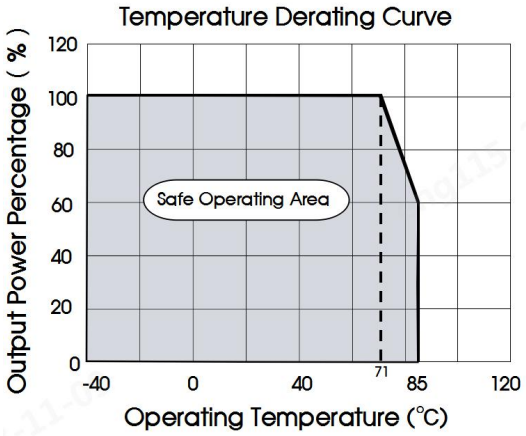


Fig. 1

Design Reference

1. Typical application

All the 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 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	24VDC
Cin	100μF/50V
Cout	10μF/25V

2. EMC compliance circuit

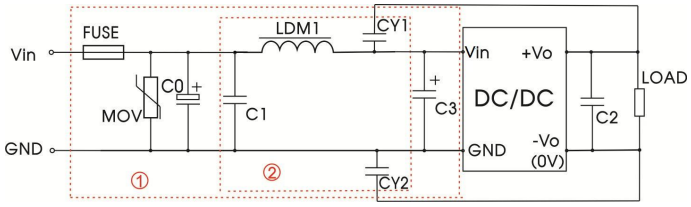


Fig. 3

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

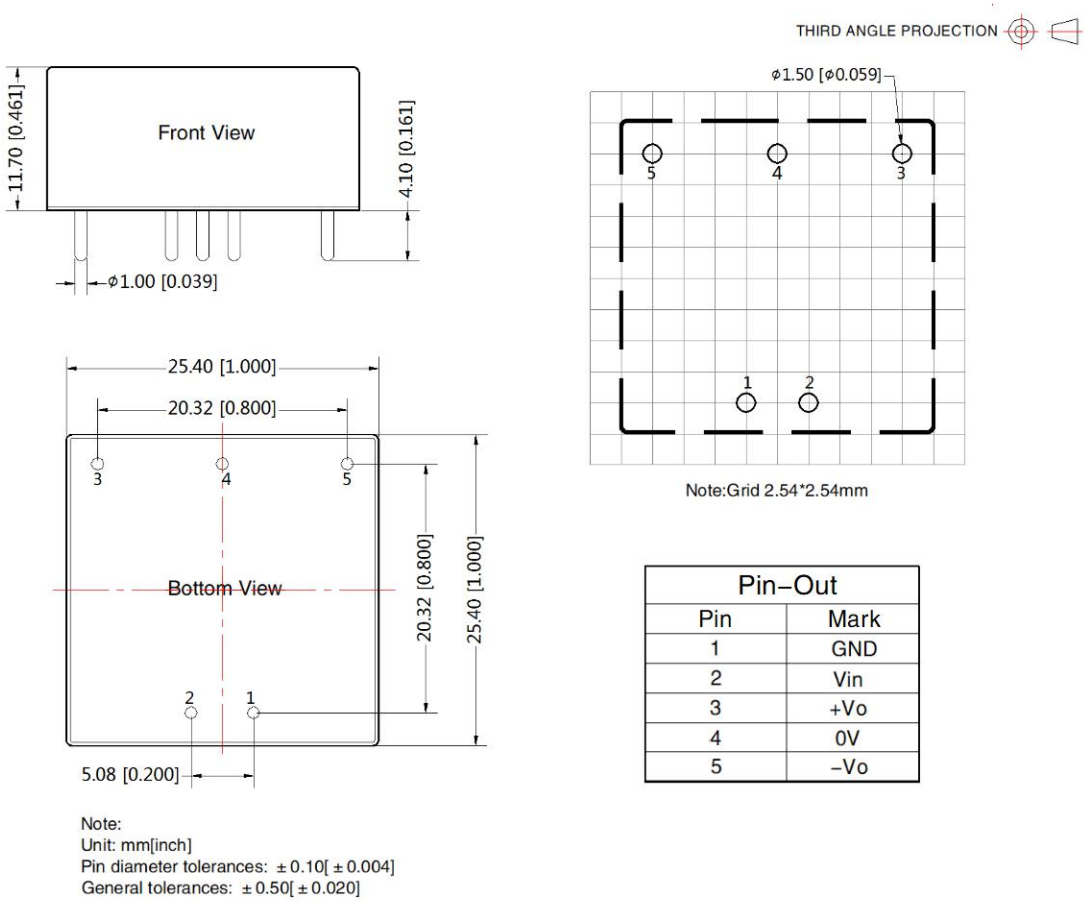
Parameter description:

Model	Vin: 24VDC
FUSE	Choose according to actual input current
MOV	S20K30
C0/C3	330μF/50V
C1	1μF/50V
C2	Refer to the Cout in Fig.2
LDM1	4.7μH
CY1/CY2	1nF/2kV

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

4. For additional information please refer to DC-DC converter application notes on www.mornsun-power.com

Dimensions and Recommended Layout



Pin–Out	
Pin	Mark
1	GND
2	Vin
3	+Vo
4	0V
5	–Vo

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

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 Ta=25℃, humidity<75%RH with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our 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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