

- Operating temperature: -40 to +85°C
- Wide voltage input: 4:1
- Package size: 1 "x 1"
- High efficiency: 90%
- Isolation voltage: 1500VDC
- Input under-voltage protection, output over-current and short-circuit protection (self-recovery)



Selection Table

Product Model	Input Voltage (VDC)		Output		Full Load efficiency (%) Min./Typ.	Maximum Capacitive Load (μF)
	Nominal value Range	Crest value	Output Voltage (VDC)	Output (mA) Max./Min.		
URB2403YMD-15WR3	24 (9-36)	40	3.3	4000/0	84/85	4700
URB2405YMD-15WR3			5	3000/0	87/89	4700
URB2409YMD-15WR3			9	1666/0	86/88	1000
URB2412YMD-15WR3			12	1250/0	88/90	1000
URB2415YMD-15WR3			15	1000/0	88/90	820
URB2424YMD-15WR3			24	625/0	88/90	270
URA2405YMD-15WR3			±5	±1500/0	85/87	1500
URA2412YMD-15WR3			±12	±625/0	87/89	470
URA2415YMD-15WR3			±15	±500/0	87/89	330
URA2424YMD-15WR3			±24	±313/0	87/89	200
URB4803YMD-15WR3	48 (18-75)	80	3.3	4000/0	84/85	4700
URB4805YMD-15WR3			5	3000/0	87/89	4700
URB4809YMD-15WR3			9	1666/0	86/88	1000
URB4812YMD-15WR3			12	1250/0	86/88	1000
URB4815YMD-15WR3			15	1000/0	88/90	820
URB4824YMD-15WR3			24	625/0	88/90	270
URA4805YMD-15WR3			±5	±1500/0	84/85	1500
URA4812YMD-15WR3			±12	±625/0	85/86	470
URA4815YMD-15WR3			±15	±500/0	86/87	330
URA4824YMD-15WR3			±24	±313/0	87/89	200

## Input Characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit	
Input current	24VDC nominal input series, nominal input voltage	3.3V output	--	780/30	799/50	mA
		Other	--	926/35	958/70	
	48VDC nominal input series, nominal input voltage	3.3V output	--	391/15	400/30	
		Other	--	463/4	469/15	
Reflection ripple current	24VDC nominal input series	--	40	--	mA	
	48VDC nominal input series	--	30	--		
Input surge voltage (1sec.max.)	24VDC nominal input series	-0.7	--	50	VDC	
	48VDC nominal input series	-0.7	--	100		
Starting voltage	24VDC nominal input series	--	--	9		
	48VDC nominal input series	--	--	18		
Input under-voltage protection	24VDC nominal input series	--	6.5	--		
	48VDC nominal input series	--	15.5	--		
Input filter type		PI filter				
Hot swap		Not supported				
CTR control logic	On-state	Floating				
	Off-state	Grounded or below 2VDC				
	Input current in off-state		1		mA	

## Output Characteristic

Parameter	Condition	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	0% -100% Load	--	$\pm 1$	$\pm 3$	%	
Linear Rate of adjustment	At full load, the input voltage ranges from low to high.	--	--	$\pm 0.5$		
Load regulation rate	From 5% to 100% load	positive output	--	$\pm 1$		
		negative output	--	$\pm 1.5$		
Ripple noise	20MHz bandwidth, 5% -100% load	--	50	100	mVp-p	
Transient recovery time	25% load step	--	400	500	$\mu$ s	
Transient response deviation	change, nominal input voltage	3.3V/5V/ $\pm 5$ V output	--	$\pm 5$	$\pm 8$	%
		Other voltages	--	$\pm 3$	$\pm 5$	
Temperature drift coefficient	loaded to capacity	--	--	$\pm 0.03$	%/ $^{\circ}$ C	
Overcurrent protection		110	150	--	%Io	
Short-circuit protection		Sustainable, self-recovering				

## General characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Isolation voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation resistance	Input/Output, Insulation Voltage 500VDC	1000	--	--	MΩ
Isolating capacitance	Input-output, 100KHz/0.1V	--	2000	--	pF
Working temperature		-40	--	+85	C°
Storage temperature		-55	--	+125	
Storage humidity	no condensation	5	--	95	%RH
Pin soldering temperature	The solder joint is 1.5mm away from the housing for 10 seconds.	--	--	+300	°C
Switching frequency		--	300	--	kHz
Mean Time Between Failures (MTBF)		1000			kHours

Note: This product series uses frequency reduction technology. The switching frequency is the test value at full load. When the load decreases, the switching frequency decreases accordingly.

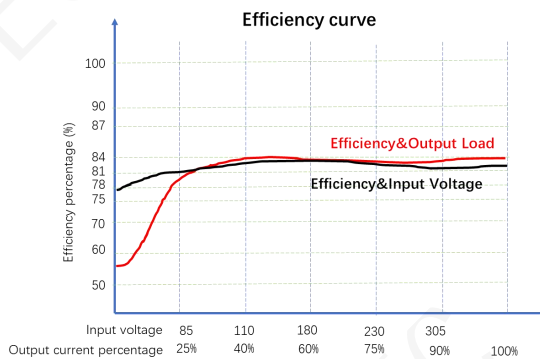
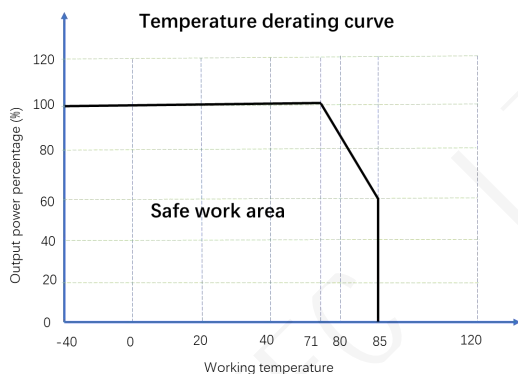
## Physical properties

Encapsulation Material	Aluminum Alloy
Encapsulation size	25.50×25.50×12.00mm
Weight	15g
Heat Dissipation Method	Natural Air Cooling

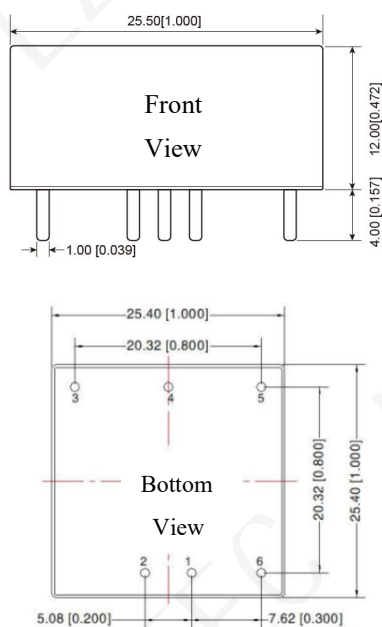
## EMC characteristic

EMI	conduction disturbance	CISPR32/EN55032: CLASS A (bare board) / CLASS B (recommended circuitry shown in
	radiation disturbance	CISPR32/EN55032: CLASS A (bare board) / CLASS B (recommended circuitry shown in
EMS	electrostatic discharge	IEC/EN61000-4-2 Contact±4KV Perf.Criteria B
	radiation immunity	IEC/EN61000-4-3 10V/m Perf.Criteria A
	pulse group anti-jamming	IEC/EN61000-4-4 ±2KV (Recommended circuit is shown in Figure 3-①) Perf.Criteria B
	surge immunity	IEC/EN61000-4-5 line to line±2KV (recommended circuit is shown in Figure 3-①)
	Conduction interference	IEC/EN61000-4-6 3 Vr.m.s Perf.Criteria A

## Product Feature Curve Diagram



## Dimensions/Recommended print layout



PIN	Single channel	Double channel
1	GND	GND
2	V <sub>in</sub>	V <sub>in</sub>
3	+V <sub>o</sub>	+V <sub>o</sub>
4	Trim	COM
5	-V <sub>o</sub>	-V <sub>o</sub>
6	CTR	CTR

Trim: Single Output Voltage Adjustment Pin

COM: Dual Output Common Terminal

Unit of measurement: mm [inch]

Terminal diameter tolerance: ±0.10 [±0.004]

Unspecified tolerance: ±0.50 [±0.020]

## 1. Application Circuit

All DC/DC converters in this series undergo testing according to the recommended test circuit (Figure 2) prior to factory release.

To further reduce input/output ripple, the external input/output capacitors (C<sub>in</sub> and C<sub>out</sub>) can be increased in capacitance or replaced with capacitors in series that have lower equivalent impedance. However, the total capacitance must not exceed the product's maximum capacitive load.

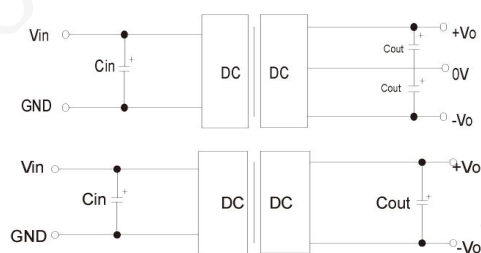


Figure 2

V <sub>in</sub>	24V	48V
C <sub>in</sub>	100uF	10-47uF
C <sub>out</sub>	10uF	10uF

## 2. EMC Solution---Recommended Circuit

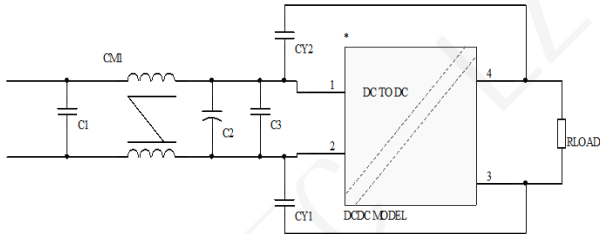


Figure 3

Model	Vin: 24V	Vin: 48V
FUSE	Select based on the actual current input by the customer	
C2	220uF/50V	220uF/100V
C1	4.7uF/50V	4.7uF/100V
C3	10uF/voltage rating selected based on actual application	
CM1	4.7mH	
CY1、CY2	1nF/2KV	

### NOTE

1. If the product operates below the minimum required load, it cannot be guaranteed that all performance metrics specified in this manual will be met.
2. The maximum capacitive load is tested under the condition of input voltage range and full load.
3. Unless otherwise specified, all measurements in this manual are taken at Ta=25°C, temperature <75% RH, nominal input voltage, and rated output load.
4. All test methods in this manual are based on our company's enterprise standards.
5. We offer customized product solutions. For specific requirements, please contact our technical team directly.

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