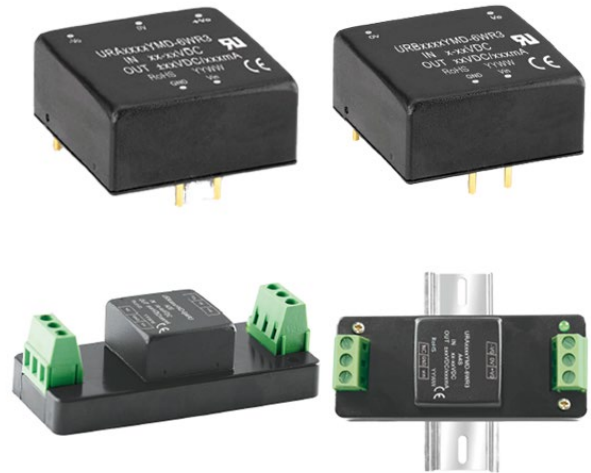


Features

- Ultra-wide 4:1 input voltage range
- High efficiency up to 88%
- No-load power consumption as low as 0.12W
- I/O test isolation voltage: 1.5k VDC
- Input UVP, Output SCP, OCP, OVP
- Operating ambient temperature range: -40°C to +85°C
- Meet CISPR32/EN55032 CLASS A, without extra components
- Input reverse polarity protection available
- Industry standard pin-out



Ideal Power's 36URx-YMD-6WR3-A2S 6W Enclosed Chassis Mount DC/DC Converter Series are certified to cURus, CE, UKCA, CB, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Audio & Video, Railway Industries and customised solutions are available upon request.

Models

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency ^② (%)Min./Typ.	Capacitive Load (µF)Max.
	Nominal (Range)	Max. ^②	Voltage (VDC)	Current(mA) Max./Min.		
36URA2405YMD-6WR3	24 (9-36)	40	±5	±600/0	81/83	470
36URA2412YMD-6WR3			±12	±250/0	84/87	100
36URA2415YMD-6WR3			±15	±200/0	83/85	100
36URA2424YMD-6WR3			±24	±125/0	85/87	100
36URB2403YMD-6WR3			3.3	1500/0	75/77	1800
36URB2405YMD-6WR3			5	1200/0	80/83	1000
36URB2409YMD-6WR3			9	667/0	82/84	680
36URB2412YMD-6WR3			12	500/0	83/85	470
36URB2415YMD-6WR3			15	400/0	84/86	220
36URB2424YMD-6WR3			24	250/0	84/86	100
36URA4805YMD-6WR3	48 (18-75)	80	±5	±600/0	81/83	470
36URA4812YMD-6WR3			±12	±250/0	85/87	100
36URA4815YMD-6WR3			±15	±200/0	86/88	100
36URB4803YMD-6WR3			3.3	1500/0	77/79	1800
36URB4805YMD-6WR3			5	1200/0	81/83	1000
36URB4812YMD-6WR3			12	500/0	85/87	470
36URB4815YMD-6WR3			15	400/0	86/88	220
36URB4824YMD-6WR3			24	250/0	86/88	100

Notes:

- ① Use "A2S" suffix for chassis mounting and "A4S" suffix for Din-Rail mounting.
- ② The A2S and A4S Model's start-up and minimum input voltages are increased by 1VDC due to the input reverse polarity protection circuit.
- ③ Exceeding the maximum input voltage may cause permanent damage.
- ④ Efficiency is measured at nominal input voltage and rated output load; efficiencies for A2S and A4S Model's is decreased by 2% due to the input reverse polarity protection circuit.
- ⑤ The specified maximum capacitive load value for Vo1 and Vo2 output is identical.

Ideal Power Limited

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Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Input Current (full load / no-load)	24VDC nominal input series, nominal input voltage	3.3V output	--	268/5	275/12	mA
		Others	--	301/5	312/12	
	48VDC nominal input series, nominal input voltage	3.3V output	--	130/4	134/8	
		Others	--	150/4	155/8	
Reflected Ripple Current	Nominal input voltage	--	--	20		
Surge Voltage (1sec. max.)	24VDC nominal input series	-0.7	-0.7	50		
	48VDC nominal input series	-0.7	-0.7	100		
Start-up Voltage	24VDC nominal input series	--	--	9	V DC	
	48VDC nominal input series	--	--	18		
Input Under-voltage Protection	24VDC nominal input series	5.5	6.5	--		
	48VDC nominal input series	12	15.5	--		
Input Filter			PI filter			
Hot Plug			Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Voltage Accuracy ^①	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 Regulation ^②	5% -100% load	Vo1	--	±0.5	±1	%
		Vo2	--	±0.5	±1.5	
Cross Regulation	Dual outputs, Vo1 load at 50%, Vo2 load at range of 10% - 100%	--	--	±5		
Transient Recovery Time	25% load step change, nominal	--	300	500	µs	
Transient Response Deviation	input voltage	3.3V, 5V, ±5V output	--	±5	±8	%
		Others	--	±3	±5	
Temperature Coefficient	Full load	--	--	±0.03	%/°C	
Ripple & Noise ^③	20MHz bandwidth, 5% - 100% load	--	60	85	mV p-p	
Over-voltage Protection		110	--	160	%Vo	
Over-current Protection	Input voltage range	110	140	190	%Io	
Short-circuit Protection		Continuous, self-recovery				

Note: ① Output voltage accuracy of ±5VDC/±9VDC output converter for 0%-5% load is ±5% 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
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 Humidity	Non-condensing	5	--	95	%RH
Storage Temperature		-55	--	+125	°C
Pin Soldering Resistance	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	
Vibration		IEC/EN61373 - Category 1, Grade B			
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

Mechanical Specifications

Case Material	Aluminum alloy case; Black plastic bottom, flame-retardant and heat-resistant (UL94 V-0)				
Dimension	Horizontal package	25.40 × 25.40 × 11.70 mm			
	A2S chassis mounting	76.00 × 31.50 × 21.20 mm			
	A4S DIN-rail mounting	76.00 × 31.50 × 25.80 mm			
Weight	Horizontal package	12.5g (Typ.)			
	A2S chassis mounting	36.0g (Typ.)			
	A4S DIN-rail mounting	56.0g (Typ.)			
Cooling Method	Free air convection (20LFM) or forced 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/EN61000-4-6	10V/m		perf. Criteria A
	CS	IEC/EN61000-4-6	±2kV (see Fig.3-① for recommended circuit)		perf. Criteria A
	EFT	IEC/EN61000-4-4	line to line ±2kV (see Fig.3-① for recommended circuit)		perf. Criteria A
	Surge	IEC/EN61000-4-5	3 Vr.m.s		perf. Criteria B
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	0%, 70%		perf. Criteria B

Electromagnetic Compatibility (EMC)(EN50155)

Emissions	CE	EN50121-3-2	150kHz-500kHz 99dBuV (see Fig.3-② for recommended circuit)	
		EN55016-2-1	500kHz-30MHz 93dBuV (see Fig.3-② for recommended circuit)	
	RE	EN50121-3-2	30MHz-230MHz 40dBuV/m at 10m (see Fig.3-② for recommended circuit)	
		EN55016-2-1	230MHz-1GHz 47dBuV/m at 10m(see Fig.3-② for recommended circuit)	
Immunity	ESD	EN50121-3-2	Contact ±6KV Air ±8KV	perf. Criteria B
	RS	EN50121-3-2	20V/m	perf. Criteria A
	CS	EN50121-3-2	0.15MHz-80MHz 10 Vr.m.s	perf. Criteria A
	EFT	EN50121-3-2	±2kV 5/50ns 5kHz (see Fig. 2 for recommended circuit)	perf. Criteria A
	Surge	EN50121-3-2	line to line ±1KV (42Ω, 0.5μF) (see Fig.2 for recommended circuit)	perf. Criteria B

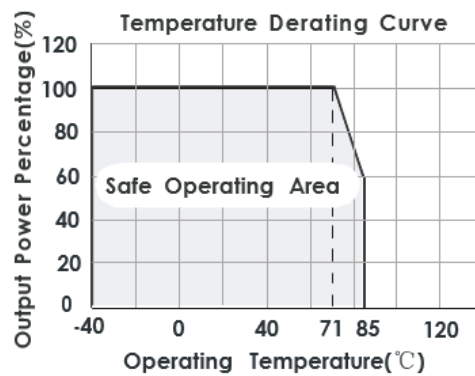
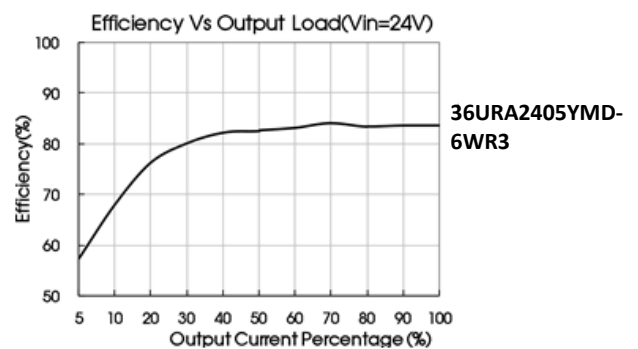
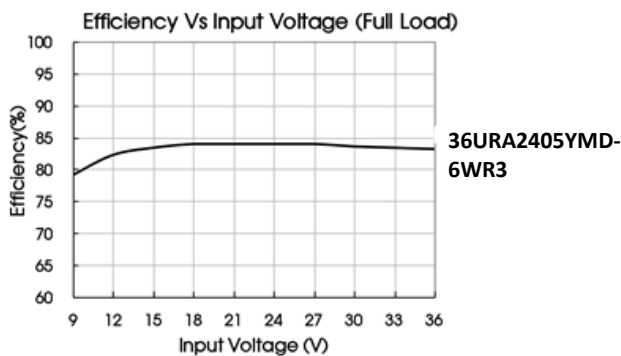
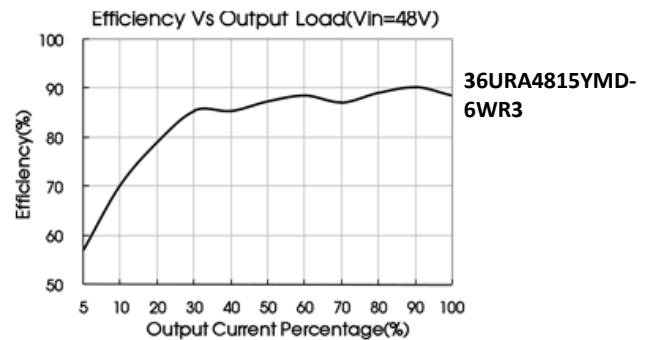
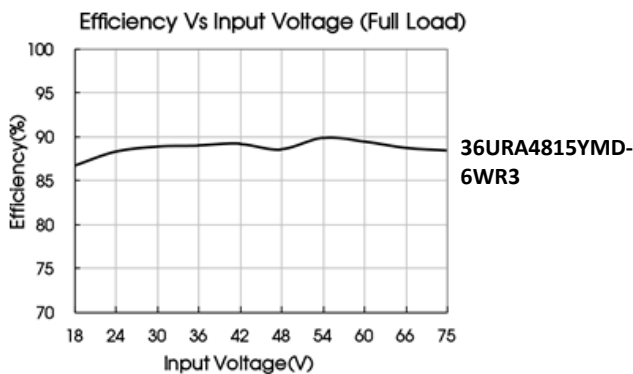
Characteristic Curves


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 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.

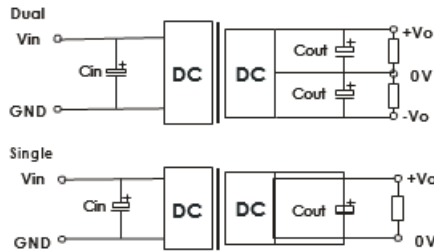


Fig. 2

Vin(VDC)	Cin	Cout
24	100 μ F/50V	10 μ F/50V
48	10 μ F- 47 μ F/100V	10 μ F/50V

2. EMC compliance circuit

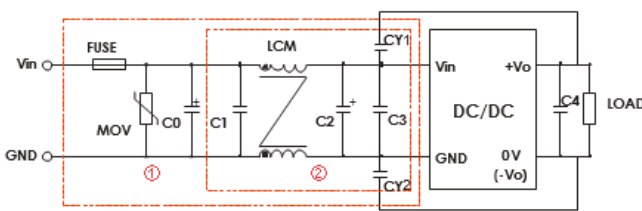
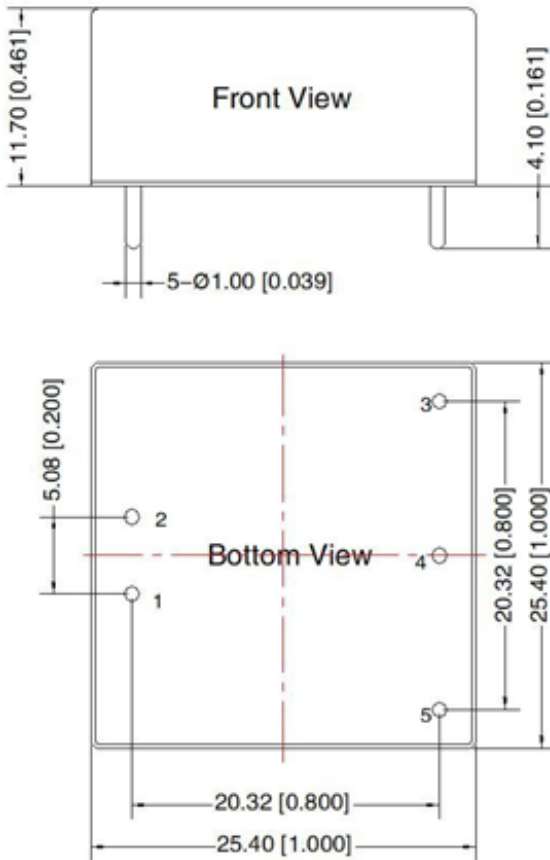
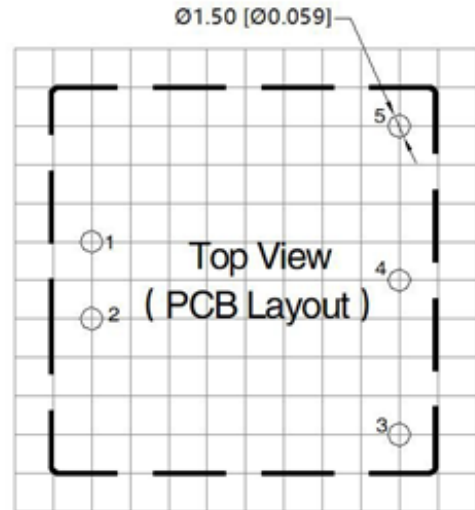


Fig. 3

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:

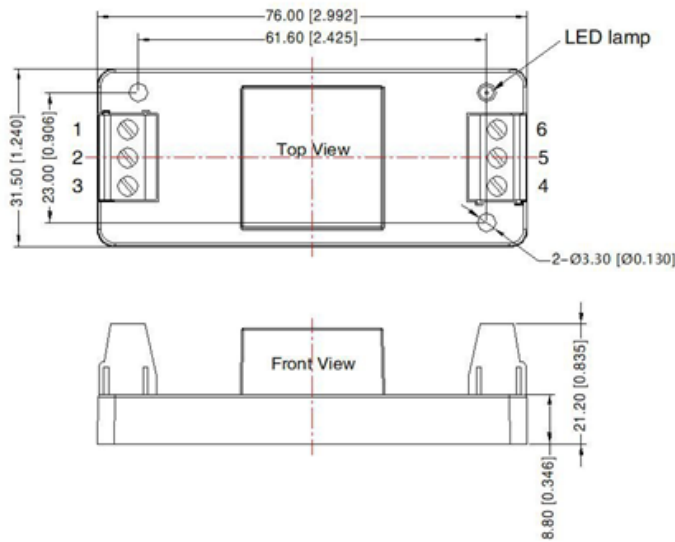
Model	Vin: 24VDC	Vin: 48VDC
FUSE	Choose according to actual input current	
MOV	S20K30	S14K60
C0	680 μ F/50V	680 μ F/100V
C1	1 μ F/50V	1 μ F/100V
C2	330 μ F/50V	330 μ F/100V
C3	4.7 μ F/50V	4.7 μ F/100V
C4	Refer to the Cout in Fig.2	
LCM	4.7mH	
CY1/CY2	1nF/2kV	

Dimensions and Recommended Layout

 THIRD ANGLE PROJECTION 


Note: Grid 2.54*2.54mm

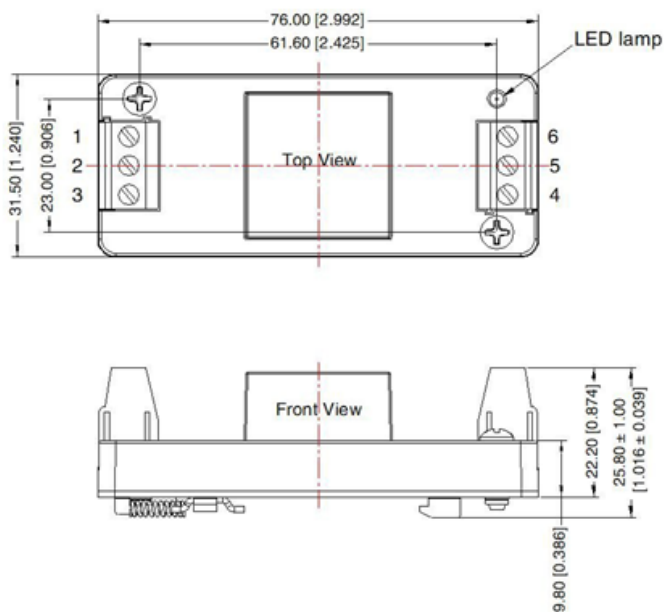
Pin-Out		
Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	No Pin	0V
5	0V	-Vo

Note:
 Unit: mm[inch]
 PIN1/2/3/4/5: \varnothing 1.0mm
 Pin diameter tolerances: \pm 0.10 [\pm 0.004]
 General tolerances: \pm 0.50 [\pm 0.020]

Dimensions and Recommended Layout (continued)
36URA_YMD-6WR3A2S & 36URB_YMD-6WR3A2S


Pin-Out						
Pin	1	2	3	4	5	6
Dual	NC	GND	V _{in}	+V _o	0V	-V _o
Single	NC	GND	V _{in}	+V _o	NC	0V

Note:
 Unit: mm[inch]
 Wire range: 24–12 AWG
 Tightening torque: Max 0.4 N · m
 General tolerances: ± 1.00 [± 0.039]

URA_YMD-6WR3A4S & URB_YMD-6WR3A4S


Pin-Out						
Pin	1	2	3	4	5	6
Dual	NC	GND	V _{in}	+V _o	0V	-V _o
Single	NC	GND	V _{in}	+V _o	NC	0V

Note:
 Unit: mm[inch]
 Mounting rail: TS35
 Wire range: 24–12 AWG
 Tightening torque: Max 0.4 N · m
 General tolerances: ± 1.00 [± 0.039]

Notes:

For additional information on Product Packaging please refer to www.IdealPower.co.uk.
 It is recommended that the load imbalance of the dual output is $\leq \pm 5\%$. If it exceeds $\pm 5\%$, the performance of the product cannot be guaranteed to meet as datasheet marked. For details, please contact our technical staff.
 The maximum capacitive load offered were tested at input voltage range and full load.
 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.
 All index testing methods in this datasheet are based on company corporate standards.
 We can provide product customization service, please contact our technicians directly for specific information.
 Products are related to laws and regulations: see "Features" and "EMC".
 Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.