

**DESCRIPTION**

The AD-URBxxxxS-3WR3 (Single) and AD-URAxS-3WR3 (Dual) series are isolated 3W DC-DC converter products a 4:1 input voltage range. They feature efficiencies of up to 81%, 1500VDC input to output isolation, operating ambient temperature of -40°C to +85°C, input under-voltage protection, output over-current, short-circuit protection, which is widely used in medical, industrial controls, electricity, instrumentation, communications and other fields.

FEATURES

- Wide 4:1 input voltage range
- High efficiency up to 81%
- I/O isolation test voltage 1.5K VDC
- No-load power consumption bottom 0.16W
- Input under-voltage protection, output short-circuit, over-current protection
- Continuous short-circuit protection
- Operating temperature range:-40°C to +85°C
- International Standard Pin out
- Small SIP8 Package

ORDERING INFORMATION

Part Number	Input Voltage (VDC)	Output		Full Load Efficiency(%) Min/Typ	Capacitive Load (uF) Max.
	Nominal (Range)	Voltage (VDC)	Current (mA) Max/Min		
AD-URA1205S-3WR3	12.0 (4.5~18.0)	±5	±300	76/78	1000
AD-URA1212S-3WR3		±12	±125	78/80	470
AD-URA1215S-3WR3		±15	±100	78/80	220
AD-URA1224S-3WR3		±24	±62	78/80	100
AD-URB1203S-3WR3		3.3	909	73/75	2200
AD-URB1205S-3WR3		5	600	78/80	2200
AD-URB1212S-3WR3		12	250	79/81	680
AD-URB1215S-3WR3		15	200	79/81	470
AD-URB1224S-3WR3		24	125	79/81	330
AD-URA2405S-3WR3		24 (9.0~36)	±5	±300	77/79
AD-URA2412S-3WR3	±12		±125	78/80	470
AD-URA2415S-3WR3	±15		±100	79/81	220
AD-URA2424S-3WR3	±24		±62	79/81	100
AD-URB2403S-3WR3	3.3		909	72/74	2200
AD-URB2405S-3WR3	5		600	76/78	2200
AD-URB2412S-3WR3	12		250	78/80	680
AD-URB2415S-3WR3	15		200	78/80	470
AD-URB2424S-3WR3	24		125	78/80	330
AD-URA4805S-3WR3	48.0 (18.0~75.0)		±5	±300	76/78
AD-URA4812S-3WR3		±12	±125	78/80	470
AD-URA4815S-3WR3		±15	±100	78/80	220
AD-URA4824S-3WR3		±24	±62	78/80	100
AD-URB4803S-3WR3		3.3	909	72/74	2200
AD-URB4805S-3WR3		5	600	76/78	2200
AD-URB4812S-3WR3		12	250	78/80	680
AD-URB4815S-3WR3		15	200	78/80	470
AD-URB4824S-3WR3		24	125	78/80	330

**INPUT SPECIFICATIONS**

Item	Operating Conditions	Min	Typ	Max	Unit
Input Voltage	12VDC input	4.5	12	18	VDC
	24VDC input	9	24	36	
	48VDC input	18	48	75	
Input Current (Full Load/No-Load)	12VDC input	--	320/15	328/30	mA
	24VDC input	--	160/6	164/10	
	48VDC input	--	80/4	82/6	
Reflect Ripple Current	12VDC input	--	40	--	mA
	24VDC input	--	55	--	
	48VDC input	--	45	--	
Surge Voltage (1sec. max)	5VDC input	-0.7	--	12	VDC
	12VDC input	-0.7	--	25	
	24VDC input	-0.7	--	50	
	48VDC input	-0.7	--	100	
Start-up Voltage	5VDC input	--	--	4.5	VDC
	12VDC input	--	--	9	
	24VDC input	--	--	18	
	48VDC input	--	--	36	
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			
Ctrl *	Module on	Ctrl pin open or pulled high (>0.8VDC)			
	Module off	Ctrl pin pull low to GND (<0.6VDC)			

*The Ctrl pin voltage is referenced to input GND.

OUTPUT SPECIFICATIONS

Item	Operating Conditions	Min	Typ	Max	Unit	
Output Voltage Accuracy	5%~100% Load	3.3V/5V output	--	±3	±5	%
		Others	--	±1	±3	
Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	%	
Load Regulation	5~100% Load	--	±0.4	±1.0	%	
Ripple & Noise	Pure resistance load, 20MHz bandwidth peak-to-peak value	--	50	100	mVp-p	
Temperature Drift Coefficient	Full Load	--	±0.02	±0.03	%/°C	
Output Short Circuit Protection		Continuous, self-recovery				
Transient Recovery Time	25% load step change	--	±0.5	±2	ms	
Transient Response Deviation		--	±2.5	±5	%	

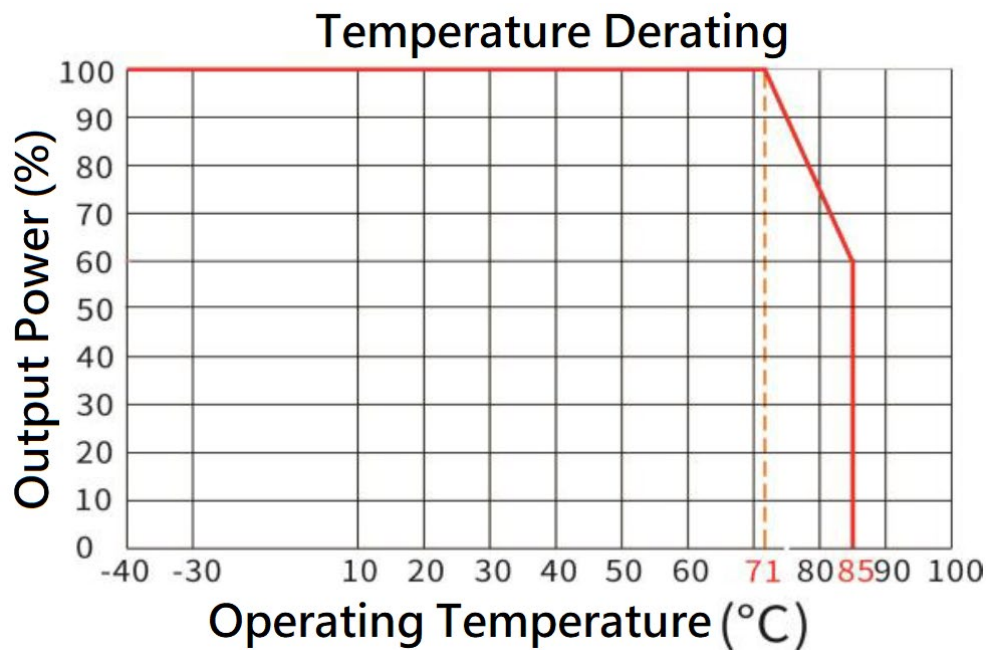


GENERAL SPECIFICATIONS

Item	Test Condition	Min	Typ	Max	Unit
Insulation Voltage	Input-output, test time 1minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitor	Input-output, 100KHz/0.1V	--	120	--	pF
Operating Temperature	Refer to Fig1. Temperature Derating	-40	--	+85	°C
Storage Temperature		-40	--	+125	°C
Case Temperature Rise During Operation		--	25	--	%RH
Storage Humidity	No Condensation	5	--	95	%RH
Pin Soldering Temperature Resistance	Solder joint distance from housing 1.5mm, 10s	--	--	+300	°C
Switching Frequency	Full load, nominal voltage input	--	300	--	KHz
Vibrations	10-55Hz, 10G, 30Min along X,Y & Z				
Housing Material	Black flame retardant & heat resistant plastic (UL94V-0)				
MTBF	MIL-HDBK-217F@25°C	1000			KHrs

TYPICAL CHARACTERISTIC CURVES

Fig 1.



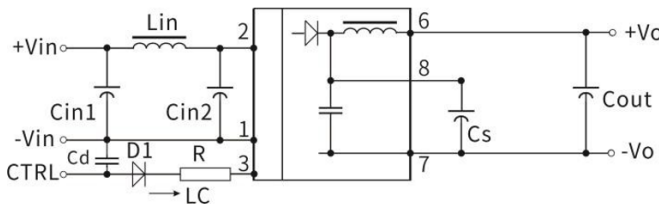


DESIGN REFERENCE

Typical Application

If the input and output ripples are required to be further reduced, the input and output external capacitors Cin1, Cs and Cout can be appropriately increased or capacitors with small equivalent impedance values can be selected in series. Cs is used to reduce the ripples. If the ripples have met the requirements, there is no need to add Cs. However, a suitable filter capacitor value should be selected. If the capacitor is too large, it is likely to cause startup problems. For each output, the maximum capacitance of its filter capacitor must be less than the maximum capacitive load while ensuring safe and reliable operation.

Fig 2. Single Output



Input Voltage	5VDC & 12VDC	24VDC & 48VDC
Cin1	100uF/25V	10uF/100V
Cin2	47uF/25V	1uF/100V
Lin	4.7uH~12uH	4.7uH-12uH
Cs	10uF-22uF /50V	
Cout	100uF (Typ.) /50V	
Lout	2.2uH-10uH	
Cd	47nF/100V	

Fig 3. Dual Output

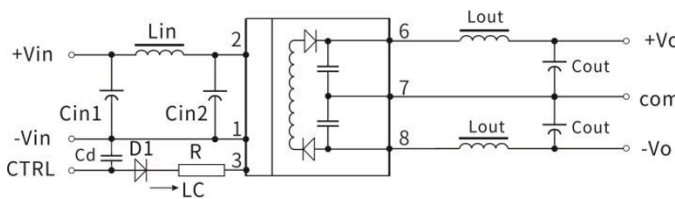


Table1. Recommend Input and output Capacitor Values

EMC Compliance Circuit

Fig4.

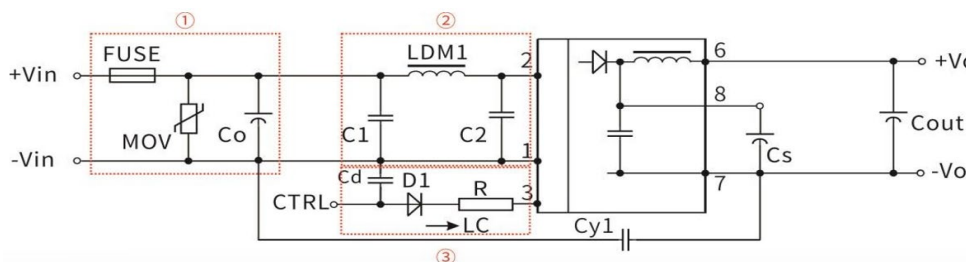


Table 2. Parameter Description

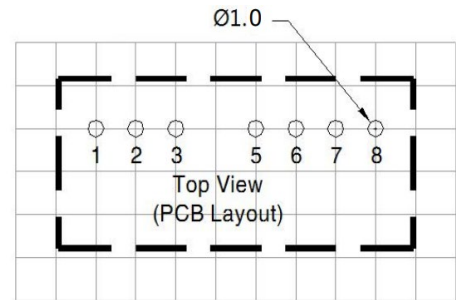
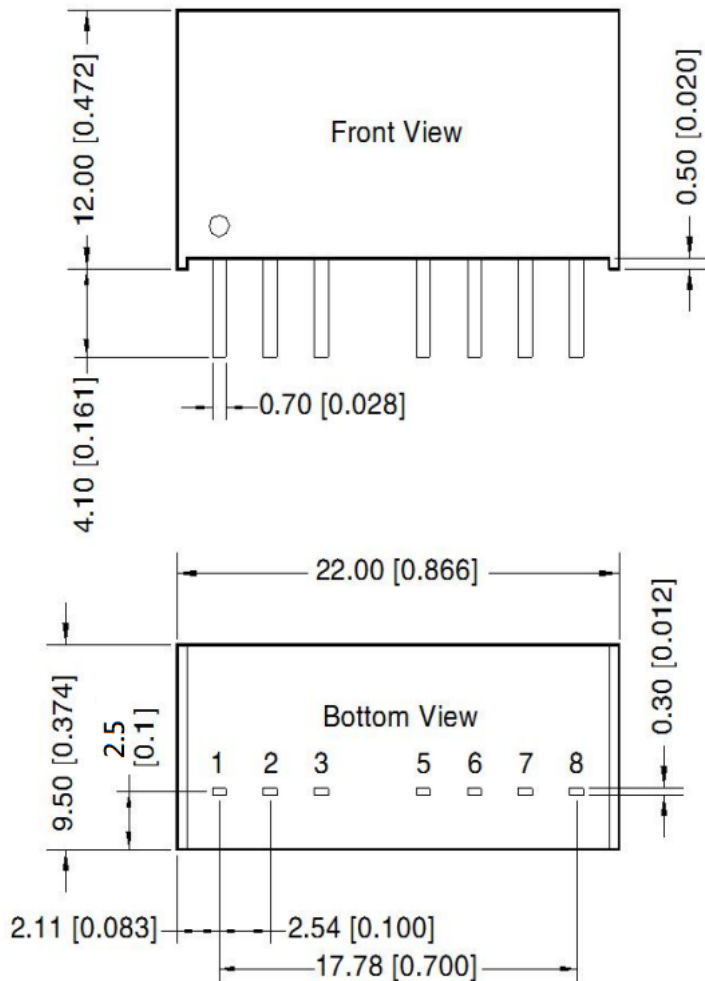
Components	5V input	12V input	24V input	48V input
Fuse	Choose according to actual input current			
MOV Varistor	-	14D390K;	14D560K	14D101K
LDM1 Inductor	12uH	12uH	12uH	12uH
Co Electrolytic Cap	1000uF/16v	1000uF/16v	330uF/50v	330uF/50v
C1 Ceramic Cap	4.7uF/50v	4.7uF/50v	4.7uF/50v	4.7uF/50v
C2 Ceramic Cap	4.7uF/50v	4.7uF/50v	4.7uF/50v	4.7uF/50v
Cout Ceramic Cap	Refer to Cout in Fig 2 & 3.			
CY1 Ceramic Cap	1nF/2Kv			
D1 Diode	RB160M-60v/1A			
R Resistance	Formula: $R = ((Vc - Vd - 1) / IC) - 300\Omega$			
Cd	47nF/100V			



PACKAGE INFORMATION

Package Code: S

Dimension: 22.0x9.5x12.0 mm (0.866x0.374x0.472 inch)



Note: Grid 2.54 * 2.54mm

Unit: mm(inch)

Pin section tolerances: ±0.10 (±0.004)

General tolerances: ±0.25 (±0.010)

Pin-Out		
Pin #	Single	Dual
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
5	NC	NC
6	+Vo	+Vo
7	-Vo	Com
8	CS	-Vo