

A500RW Series

Wide Input Range, 5W Single & Dual Output DC/DC Converters



Key Features:

- 5W Output Power
- UL Approved (File E245422)
- 2:1 Input Voltage Range
- 1,500 VDC Isolation
- Meets EN55022 Class "A"
- Compact DIP Case
- Single & Dual Outputs
- 1.0 MH MTBF
- Industry Standard Pin-Out



RoHS Compliant



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Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Start Voltage	5 VDC Input	3.0	3.5	4.4	VDC
	12 VDC Input	4.5	6.0	8.0	
	24 VDC Input	8.0	12.0	16.0	
	48 VDC Input	16.0	24.0	32.0	
Input Filter	π (Pi) Filter (Complies with EN55022 Class "A")				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power			1,000	3,000	mW

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Balance	Dual Output, Balanced Loads		±0.5	±2.0	%
Line Regulation	Vin = Min to Max		±0.1	±0.3	%
Load Regulation	Iout = 20% to 100%		±0.3	±1.0	%
Ripple & Noise (20 MHz) (Note 1)			50	75	mV P - P
Ripple & Noise (20 MHz)	Over Line, Load & Temp.			100	mV P - P
Ripple & Noise (20 MHz)				15	mV rms
Output Power Protection		120			%
Transient Recovery Time (Note 2)	25% Load Step Change		150	300	µSec
Transient Response Deviation			±2.0	±6.0	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		380	500	pF
Switching Frequency			300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+71	°C
Operating Temperature Range	Case	-40		+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%
RFI	Six-Side Shielded Metal Case				
Conducted EMI	EN55022 Class "A"				

Physical

Case Size	1.25 x 0.80 x 0.40 Inches (31.8 x 20.3 x 10.2 mm)
Case Material	Metal with Non-Conductive Base (UL94-V0)
Weight	0.42 Oz (12g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign		1.0		MHours
Safety Standards	UL 1950, EN 60950, IEC 60950				
Safety Approvals	UL, cUL; File No. E245422				

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		10.0	VDC
	12 VDC Input	-0.7		25.0	
	24 VDC Input	-0.7		50.0	
	48 VDC Input	-0.7		100.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C
Internal Power Dissipation	All Models			2,500	mW

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

Model Selection Guide

Model Number	Input					Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Reflected Ripple Current (mA, Typ)	Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load						
A501RW	12	9.0 - 18.0	429	20	25	3.3	1,200.0	60.0	77	1,500
A502RW	12	9.0 - 18.0	514	20	25	5.0	1,000.0	50.0	81	1,500
A503RW	12	9.0 - 18.0	595	20	25	12.0	500.0	25.0	84	1,500
A504RW	12	9.0 - 18.0	595	20	25	15.0	400.0	20.0	84	1,500
A505RW	12	9.0 - 18.0	514	20	25	±5.0	±500.0	±25.0	81	1,500
A506RW	12	9.0 - 18.0	595	20	25	±12.0	±250.0	±12.5	84	1,500
A507RW	12	9.0 - 18.0	595	20	25	±15.0	±200.0	±10.0	84	1,500
A511RW	24	18.0 - 36.0	209	5	15	3.3	1,200.0	60.0	79	700
A512RW	24	18.0 - 36.0	251	5	15	5.0	1,000.0	50.0	83	700
A513RW	24	18.0 - 36.0	291	5	15	12.0	500.0	25.0	86	700
A514RW	24	18.0 - 36.0	291	5	15	15.0	400.0	20.0	86	700
A515RW	24	18.0 - 36.0	251	5	15	±5.0	±500.0	±25.0	83	700
A516RW	24	18.0 - 36.0	291	5	15	±12.0	±250.0	±12.5	86	700
A517RW	24	18.0 - 36.0	291	5	15	±15.0	±200.0	±10.0	86	700
A521RW	48	36.0 - 75.0	104	3	10	3.3	1,200.0	60.0	79	350
A522RW	48	36.0 - 75.0	126	3	10	5.0	1,000.0	50.0	83	350
A523RW	48	36.0 - 75.0	145	3	10	12.0	500.0	25.0	86	350
A524RW	48	36.0 - 75.0	145	3	10	15.0	400.0	20.0	86	350
A525RW	48	36.0 - 75.0	126	3	10	±5.0	±500.0	±25.0	83	350
A526RW	48	36.0 - 75.0	145	3	10	±12.0	±250.0	±12.5	86	350
A527RW	48	36.0 - 75.0	145	3	10	±15.0	±200.0	±10.0	86	350
A551RW	5	4.5 - 7.0	1,056	70	100	3.3	1,200.0	60.0	75	3,000
A552RW	5	4.5 - 7.0	1,265	70	100	5.0	1,000.0	50.0	79	3,000
A553RW	5	4.5 - 7.0	1,463	70	100	12.0	500.0	25.0	82	3,000
A554RW	5	4.5 - 7.0	1,463	70	100	15.0	400.0	20.0	82	3,000
A555RW	5	4.5 - 7.0	1,265	70	100	±5.0	±500.0	±25.0	79	3,000
A556RW	5	4.5 - 7.0	1,463	70	100	±12.0	±250.0	±12.5	82	3,000
A557RW	5	4.5 - 7.0	1,463	70	100	±15.0	±200.0	±10.0	82	3,000

Notes:

1. When measuring output ripple, it is recommended that an external $0.47\ \mu\text{F}$ ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. For noise sensitive applications, the use of $3.3\ \mu\text{F}$ capacitors will reduce the output ripple.
2. Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
3. Operation at no-load will not damage these units. However, they may not meet all specifications.
4. Dual output units may be connected to provide a 10 VDC, 24 VDC or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
5. The converter should be connected to a low ac-impedance source. An input source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up.

In this case, it is recommended that a low ESR (ESR <1.0Ω at 100 kHz) capacitor be mounted close to the converter. For 5V input units a 10 μF is recommended, for 12V input units, a 3.3 μF; and for 24V & 48V units a 2.2 μF.

6. It is recommended that a fuse be used on the input of a power supply for protection. See the table above for the correct rating.

Pin Connections

Pin	Single	Dual	Pin	Single	Dual
2, 3	-Vin	-Vin	14	+Vout	+Vout
9	No Pin	Common	16	-Vout	Common
11	NC	-Vout	22, 23	+Vin	+Vin

NC: No Connection

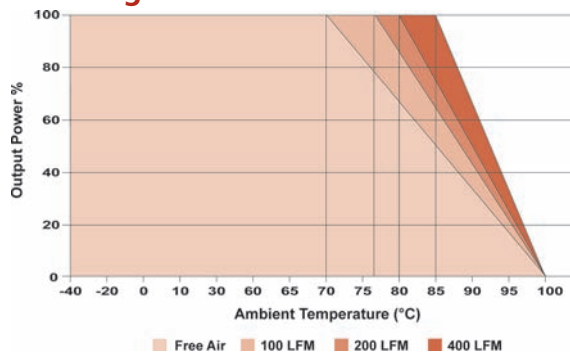
Capacitive Load

Single Output	Dual Output
6,800 μF Max	$\pm 1,000 \mu\text{F}$ Max

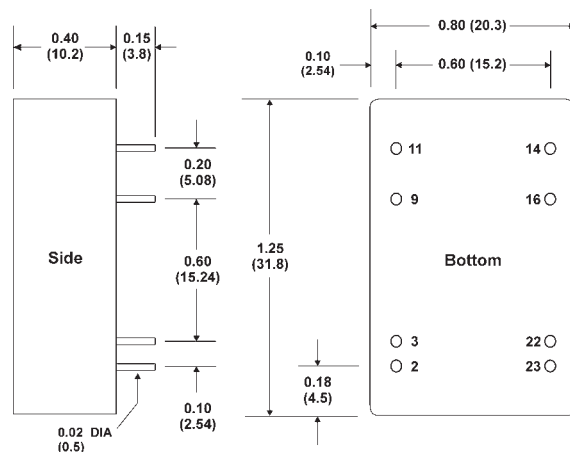
Mechanical Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ± 0.01 (± 0.25)
- Leads are gold plated for improved solderability.

Derating Curve



Mechanical Dimensions



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