

# A300ERW Series



## Low Cost, Wide Input, 3W Single & Dual Output DC/DC Converters

### Key Features:

- 3W Output Power
- UL Approved (File E245422)
- 2:1 Input Voltage Range
- 1,500 VDC Isolation
- Compact DIP Case
- Single & Dual Outputs
- Meets EN55022 Class A
- 1.0 MH MTBF
- Industry Standard Pin-Out
- **LOW COST!**



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	3.5	4.0	4.5	VDC
	12 VDC Input	4.5	7.0	9.0	
	24 VDC Input	8.0	12.0	18.0	
	48 VDC Input	16.0	24.0	36.0	
Input Filter	π (Pi) Filter (Meets EN55022 Class "A")				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power			1,000	1,500	mW

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±2.0	%
Output Voltage Balance	Dual Output, Balanced Loads		±0.5	±2.0	%
Line Regulation	Vin = Min to Max		±0.2	±0.5	%
Load Regulation	Iout = 10% to 100%		±0.2	±0.5	%
Ripple & Noise (20 MHz) (Note 1)			45	50	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		300	500	μSec
Transient Response Deviation			±2.0	±5.0	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous (Autorecovery)				

#### 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			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		11.0	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.

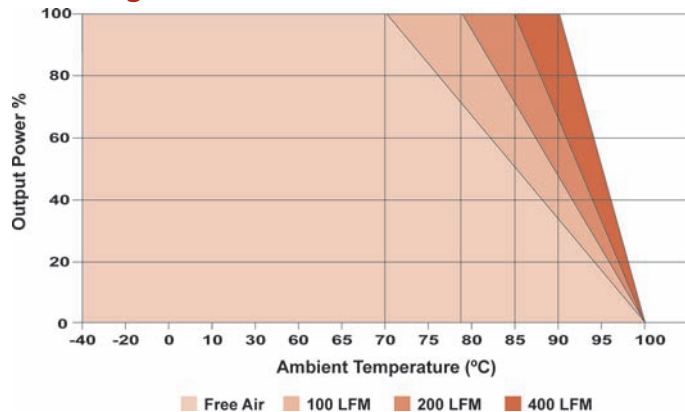
## Model Selection Guide

Model Number	Input				Reflected Ripple Current (mA, Typ)	Output			Efficiency (% , Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)			Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load						
A301ERW	5	4.5 - 9.0	857	40	100	5.0	600	60	70	1,500
A302ERW	5	4.5 - 9.0	811	40	100	12.0	250	25	74	1,500
A303ERW	5	4.5 - 9.0	811	40	100	15.0	200	20	74	1,500
A304ERW	5	4.5 - 9.0	811	40	100	±12.0	±125	±12	74	1,500
A305ERW	5	4.5 - 9.0	811	40	100	±15.0	±100	±10	74	1,500
A311ERW	12	9.0 - 18.0	329	20	30	5.0	600	60	76	700
A312ERW	12	9.0 - 18.0	313	20	30	12.0	250	25	80	700
A313ERW	12	9.0 - 18.0	313	20	30	15.0	200	20	80	700
A314ERW	12	9.0 - 18.0	313	20	30	±12.0	±125	±12	80	700
A315ERW	12	9.0 - 18.0	313	20	30	±15.0	±100	±10	80	700
A321ERW	24	18.0 - 36.0	162	5	15	5.0	600	60	77	350
A322ERW	24	18.0 - 36.0	154	5	15	12.0	250	25	81	350
A323ERW	24	18.0 - 36.0	154	5	15	15.0	200	20	81	350
A324ERW	24	18.0 - 36.0	154	5	15	±12.0	±125	±12	81	350
A325ERW	24	18.0 - 36.0	154	5	15	±15.0	±100	±10	81	350
A331ERW	48	36.0 - 75.0	81	3	10	5.0	600	60	77	135
A332ERW	48	36.0 - 75.0	77	3	10	12.0	250	25	81	135
A333ERW	48	36.0 - 75.0	77	3	10	15.0	200	20	81	135
A334ERW	48	36.0 - 75.0	77	3	10	±12.0	±125	±12	81	135
A335ERW	48	36.0 - 75.0	77	3	10	±15.0	±100	±10	81	135

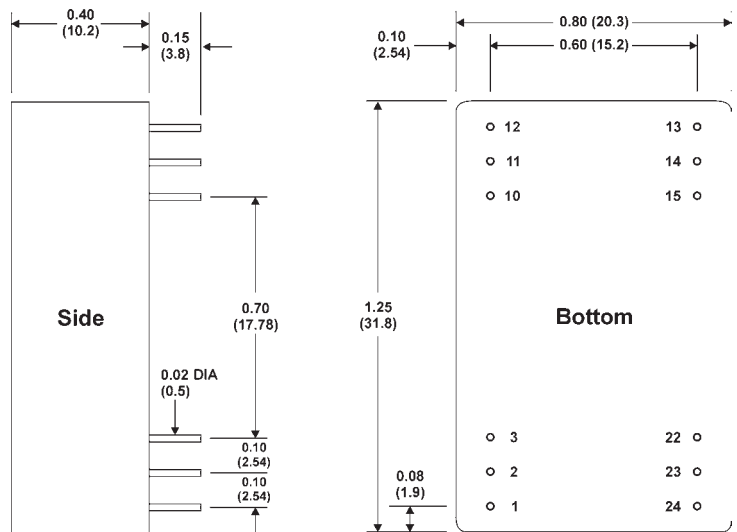
### Notes:

- 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.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- Operation at no-load will not damage these units. However, they may not meet all specifications.
- Dual output units may be connected to provide a 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.
- 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 < 1.0 $\Omega$  at 100 kHz) capacitor be mounted close to the converter. For 5V input units a 8.2  $\mu\text{F}$  is recommended, for 12V input units, a 3.3  $\mu\text{F}$ ; and for 24V & 48V units a 1.5  $\mu\text{F}$ .
- 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.

## Derating Curve



## Mechanical Dimensions



## Pin Connections

Pin	Single	Dual
1, 24	+Vin	+Vin
2, 23	NC	-Vout
3, 22	NC	Common
10, 15	-Vout	Common
11, 14	+Vout	+Vout
12, 13	-Vin	-Vin

NC: No Connection

## Capacitive Load

Single Output ( $\mu\text{F}$ Max)	Dual Output ( $\mu\text{F}$ Max)
2,000	±1,000

### Mechanical Notes:

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



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