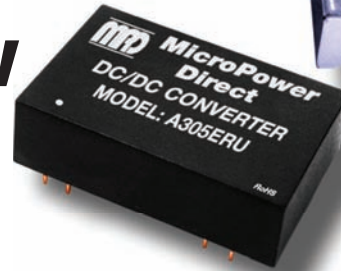


# A300ERU Series

## Low Cost, 4:1 Input 3W Single & Dual Output DC/DC Converters



### Key Features:

- 3W Output Power
- 4:1 Input Voltage Range
- 1,500 VDC Isolation
- -40°C to +85°C Temp Range
- Compact DIP Case
- Single & Dual Outputs
- 1.0 MH MTBF
- Industry Standard Pin-Out
- **Low, Low Cost!**



### MicroPower Direct

292 Page Street  
Suite D  
Stoughton, MA 02072  
USA

T: (781) 344-8226  
F: (781) 344-8481  
E: sales@micropowerdirect.com  
W: www.micropowerdirect.com



### 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 Voltage Range (See Note 1) | 24 VDC Input | 9.0  | 24.0  | 36.0 | VDC   |
|                                  | 48 VDC Input | 36.0 | 48.0  | 72.0 |       |
| Input Filter                     | Capacitors   |      |       |      |       |
| Short Circuit Input Power        |              |      | 2,000 |      | mW    |

#### Output

| Parameter               | Conditions                   | Min. | Typ. | Max.  | Units    |
|-------------------------|------------------------------|------|------|-------|----------|
| Output Voltage Accuracy | See Note 2                   |      | ±1.0 | ±3.0  | %        |
| Output Voltage Balance  | Dual Output , Balanced Loads |      | ±3.0 |       | %        |
| Line Regulation         | Vin = Min to Max             |      | ±0.2 | ±0.5  | %        |
| Load Regulation         | Iout = 10% to 100%           |      | ±0.5 | ±1.0  | %        |
| Ripple & Noise (20 MHz) | See Note 3                   |      | 75   | 150   | mV P - P |
| Output Power Protection |                              | 120  |      |       | %        |
| Temperature Coefficient |                              |      |      | ±0.03 | %/°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  |      | pF    |
| Switching Frequency   |            |       | 300  |      | kHz   |

#### Environmental

| Parameter                   | Conditions          | Min. | Typ. | Max. | Units |
|-----------------------------|---------------------|------|------|------|-------|
| Operating Temperature Range | Ambient             | -40  |      | +85  | °C    |
| Storage Temperature Range   |                     | -55  |      | +125 | °C    |
| Cooling                     | Free Air Convection |      |      |      |       |
| Humidity                    | RH, Non-condensing  |      | 95   |      | %     |

#### Physical

|                            |                                                  |
|----------------------------|--------------------------------------------------|
| Case Size (See Note 4)     | 1.25 x 0.80 x 0.37 Inches (31.8 x 20.3 x 9.5 mm) |
| Case Material (See Note 4) | Non-Conductive Black Plastic (UL94V-0)           |
| Weight                     | 0.52 Oz (15g)                                    |

#### Reliability Specifications

| Parameter | Conditions                      | Min. | Typ. | Max. | Units  |
|-----------|---------------------------------|------|------|------|--------|
| MTBF      | MIL HDBK 217F, 25°C, Gnd Benign | 1.0  |      |      | MHours |

#### Absolute Maximum Ratings

| Parameter                   | Conditions                  | Min. | Typ. | Max.  | Units |
|-----------------------------|-----------------------------|------|------|-------|-------|
| Input Voltage Surge (1 Sec) | 24 VDC Input                | -0.7 |      | 40.0  | VDC   |
|                             | 48 VDC Input                | -0.7 |      | 80.0  |       |
| Lead Temperature            | 1.5 mm From Case For 10 Sec |      |      | 300   | °C    |
| Internal Power Dissipation  | All Models                  |      |      | 2,500 | mW    |

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

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| 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 |                                    |               |                   |                   |                    |                            |
| A301ERU      | 24            | 9.0 - 36.0  | 169          | 16      | 10                                 | 3.3           | 909               | 90.0              | 74                 | 750                        |
| A302ERU      | 24            | 9.0 - 36.0  | 164          | 16      | 10                                 | 5.0           | 600               | 60.0              | 76                 | 750                        |
| A303ERU      | 24            | 9.0 - 36.0  | 157          | 16      | 10                                 | 12.0          | 250               | 25.0              | 80                 | 750                        |
| A304ERU      | 24            | 9.0 - 36.0  | 157          | 16      | 10                                 | 15.0          | 200               | 20.0              | 80                 | 750                        |
| A305ERU      | 24            | 9.0 - 36.0  | 164          | 16      | 10                                 | ±5.0          | ±300              | ±30.0             | 76                 | 750                        |
| A306ERU      | 24            | 9.0 - 36.0  | 157          | 16      | 10                                 | ±12.0         | ±125              | ±12.0             | 80                 | 750                        |
| A307ERU      | 24            | 9.0 - 36.0  | 157          | 16      | 10                                 | ±15.0         | ±100              | ±10.0             | 80                 | 750                        |
| A311ERU      | 48            | 18.0 - 72.0 | 84           | 8       | 10                                 | 3.3           | 909               | 90.0              | 74                 | 500                        |
| A312ERU      | 48            | 18.0 - 72.0 | 80           | 8       | 10                                 | 5.0           | 600               | 60.0              | 78                 | 500                        |
| A313ERU      | 48            | 18.0 - 72.0 | 78           | 8       | 10                                 | 12.0          | 250               | 25.0              | 80                 | 500                        |
| A314ERU      | 48            | 18.0 - 72.0 | 78           | 8       | 10                                 | 15.0          | 200               | 20.0              | 80                 | 500                        |
| A315ERU      | 48            | 18.0 - 72.0 | 82           | 8       | 10                                 | ±5.0          | ±300              | ±30.0             | 76                 | 500                        |
| A316ERU      | 48            | 18.0 - 72.0 | 78           | 8       | 10                                 | ±12.0         | ±125              | ±12.0             | 80                 | 500                        |
| A317ERU      | 48            | 18.0 - 72.0 | 78           | 8       | 10                                 | ±15.0         | ±100              | ±10.0             | 80                 | 500                        |

For models with a metal case, add an "M" to the model number (ie: A315ERUM)

**Notes:**

- Exceeding the input range by a significant margin may damage the units. For 24V input the input voltage should not exceed 40V; for 48V models it should not exceed 80V.
- Voltage accuracy for the negative output on Dual output models is typically  $\pm 3\%$  with a max of  $\pm 5\%$ .
- Maximum output noise for dual output units is 150 mV P-P. When measuring output ripple, it is recommended that an external 0.33  $\mu\text{F}$  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.
- The optional metal package is nickel plated steel. The dimensions of the metal package are 1.25 x 0.80 x 0.39 Inches (31.8 x 20.3 x 10.0 mm).
- These units should not be operated with a load under the specified minimum. Operation at no-load will increase ripple significantly and may cause damage to the unit.
- These converters are specified for operation without external components. However, in some applications the addition of input/output capacitors will enhance stability and reduce output ripple. Recommended capacitor values are:

Vin: 10  $\mu\text{F}$  - 47  $\mu\text{F}$

Vout: 10  $\mu\text{F}$ /100 mA

For applications requiring very low output noise levels, a simple LC filter should be effective.

- The maximum load capacitance is:

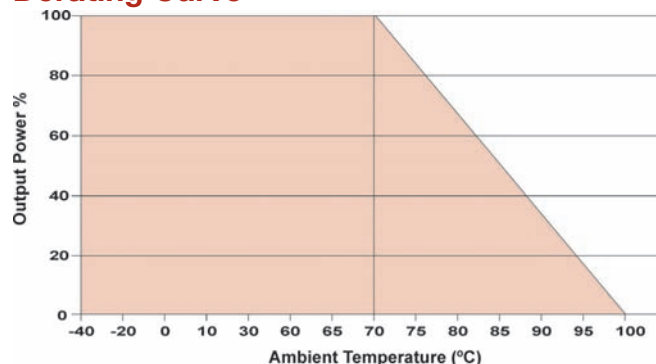
| Vout    | Maximum Load Capacitance | Vout    | Maximum Load Capacitance |
|---------|--------------------------|---------|--------------------------|
| 3.3 VDC | 2,200 $\mu\text{F}$      | ±5 VDC  | 2,200 $\mu\text{F}$      |
| 5 VDC   | 1,000 $\mu\text{F}$      | ±12 VDC | 1,000 $\mu\text{F}$      |
| 12 VDC  | 470 $\mu\text{F}$        | ±15 VDC | 470 $\mu\text{F}$        |
| 15 VDC  | 330 $\mu\text{F}$        |         |                          |

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

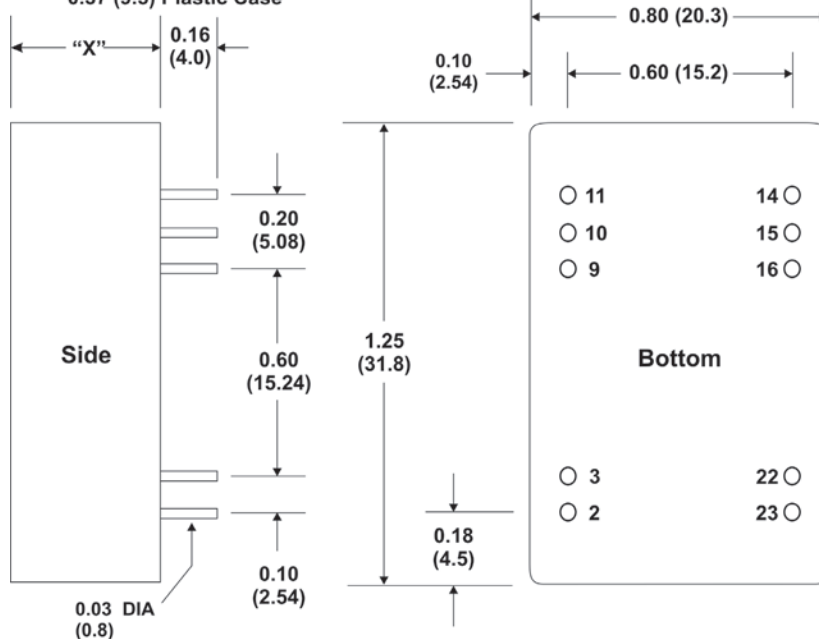
**Pin Connections**

| Pin    | Single | Dual   |
|--------|--------|--------|
| 2, 3   | -Vin   | -Vin   |
| 9      | NC     | Common |
| 10     | NC     | NC     |
| 11     | NC     | -Vout  |
| 14     | +Vout  | +Vout  |
| 15     | NC     | NC     |
| 16     | -Vout  | Common |
| 22, 23 | +Vin   | +Vin   |

NC: No Connection

**Derating Curve****Mechanical Dimensions**

"X" = 0.39 (10.0) Metal Case  
0.37 (9.5) Plastic Case

**Mechanical Notes:**

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )



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292 Page Street Ste D Stoughton, MA 02072 • TEL: (781) 344-8226 • FAX: (781) 344-8481 • E-Mail: sales@micropowerdirect.com