



# MicroPower Direct



10W, 5 VDC Input  
Dual Output  
DC/DC Converters  
**B1000R Series**

## Key Features

- 5 VDC Input
- 10W Output Power
- Meets EN55022 Class "A"
- Compact 1" x 2" Case
- 1500 VDC I/O Isolation
- Low Cost

## Electrical Specifications

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

### Input

| Parameter                      | Conditions                                        | Min. | Typ.  | Max.  | Units |
|--------------------------------|---------------------------------------------------|------|-------|-------|-------|
| Start Voltage                  |                                                   | 4.5  | 5.0   | 5.5   | VDC   |
| Input Filter                   | $\pi$ (Pi) Filter (Complies with EN55022 Class A) |      |       |       |       |
| Reverse Polarity Input Current |                                                   |      |       | 5.0   | A     |
| Short Circuit Input Power      |                                                   |      | 3,500 | 4,500 | mW    |

### Output

| Parameter                        | Conditions                  | Min. | Typ.  | Max.  | Units  |
|----------------------------------|-----------------------------|------|-------|-------|--------|
| Output Voltage Accuracy          |                             |      | ±0.5  | ±1.0  | %      |
| Output Voltage Balance           | Dual Output, Balanced Loads |      | ±0.3  | ±0.5  | %      |
| Line Regulation                  | Vin = Min to Max            |      | ±0.03 | ±0.1  | %      |
| Load Regulation                  | Io = 10% to 100%            |      | ±0.03 | ±0.1  | %      |
| Ripple & Noise (20 MHz)          |                             |      | 20    | 30    | mV P-P |
| Output Power Protection          |                             | 150  |       |       | %      |
| Transient Response Time (Note 1) | 25% Load Step Change        |      |       | 200   | μSec   |
| Transient Response Deviation     |                             |      |       | ±4.0  | %      |
| 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 |       | 500  | 600  | pF    |
| Switching Frequency   |             | 270   | 280  | 290  | KHz   |

### Environmental

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

### Physical

|               |                                                |
|---------------|------------------------------------------------|
| Case Size     | 2.0 x 1.0 x 0.4 inches (50.8 x 25.4 x 10.2 mm) |
| Case Material | Metal with Non-Conductive Base                 |
| Weight        | 1.06 oz (30g)                                  |

### Reliability Specifications

| Parameter | Conditions                      | Min. | Typ. | Max. | Units   |
|-----------|---------------------------------|------|------|------|---------|
| MTBF      | MIL STD 217F, 25°C, Grnd Benign |      | 700  |      | k Hours |

### Absolute Maximum Ratings

| Parameter                   | Conditions | Min. | Typ. | Max.  | Units |
|-----------------------------|------------|------|------|-------|-------|
| Input Voltage Surge (1 sec) |            | -0.7 |      | 7.5   | VDC   |
| Internal Power Dissipation  | All Models |      |      | 5,000 | mW    |

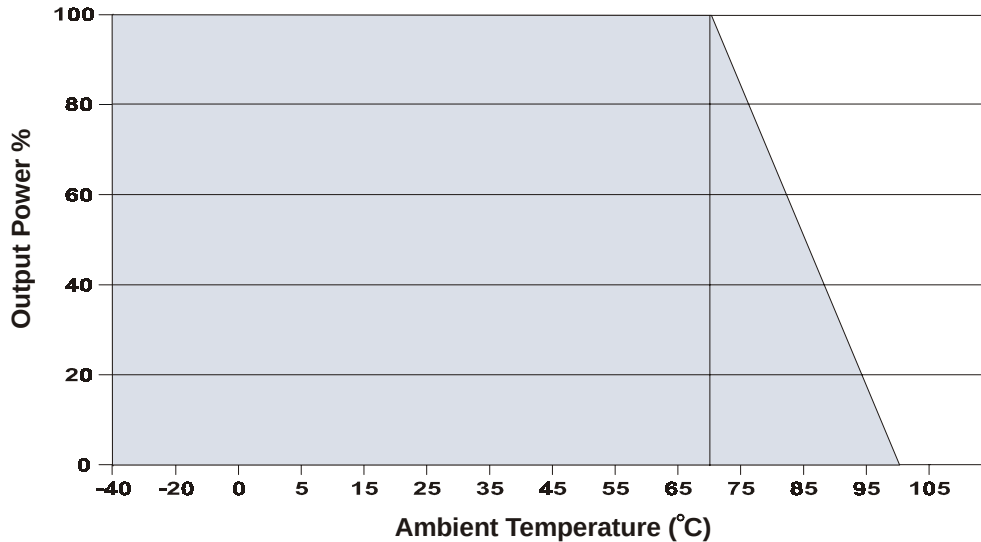
Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

## Model Selection Guide

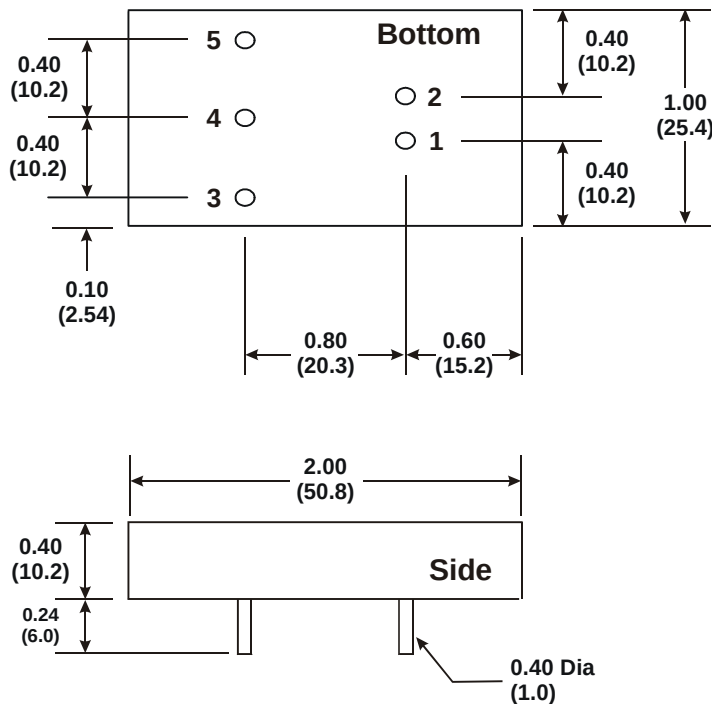
| Model Number | Input         |           |              |         |                                    | Output        |                   |                   | Efficiency %, Typ | Fuse Rating Slow Blow (mA) |
|--------------|---------------|-----------|--------------|---------|------------------------------------|---------------|-------------------|-------------------|-------------------|----------------------------|
|              | Voltage (VDC) |           | Current (mA) |         | Reflected Ripple Current (mA, Typ) | Voltage (VDC) | Current (mA, Max) | Current (mA, Min) |                   |                            |
|              | Nominal       | Range     | Full-Load    | No-Load |                                    |               |                   |                   |                   |                            |
| B1001R       | 5.0           | 4.5 - 5.5 | 2500.0       | 30.0    | >50.0                              | ±12.0         | ±415              | ±42               | 78                | 5,000                      |
| B1002R       | 5.0           | 4.5 - 5.5 | 2538.0       | 30.0    | >50.0                              | ±15.0         | ±330              | ±33               | 78                | 5,000                      |

- Notes:**
1. Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
  2. When measuring output ripple, it is recommended that an external 0.1 uF ceramic capacitor be placed from each output (pin 3 & pin 5) to common (pin 4).
  3. Dual output units may be connected to provide a 24 VDC or 30VDC output. To do this, float the common output (pin 4), and connect the load across the output pins (pin 3 & pin 5).

## Derating Curve



## Mechanical Dimensions



## Capacitive Load

| pF Max |
|--------|
| 1,000  |

## Pin Connections

| Pin | Dual   |
|-----|--------|
| 1   | +Vin   |
| 2   | -Vin   |
| 3   | +Vout  |
| 4   | Common |
| 5   | -Vout  |

- Notes:**
- All dimensions are typical in inches (mm)
  - Tolerance x.xx = ±0.01 (±0.25)



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