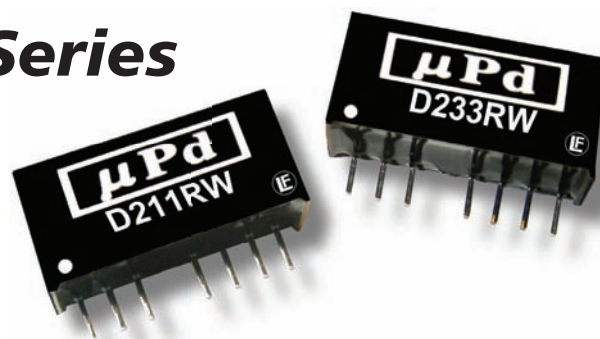


# D200RW Series

## Miniature SIP, 2W Wide Input Range DC/DC Converters



### Key Features:

- 2W Output Power
- 2:1 Input Voltage Range
- 1,000 VDC Isolation
- Short Circuit Protected
- Miniature SIP Case
- Single & Dual Outputs
- 2.7 MH MTBF
- Industry Standard Pin-Out



RoHS Compliant

### MicroPower Direct

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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 Voltage Range            | 5 VDC Input      | 4.5  | 5.0  | 9.0   | VDC      |
|                                | 12 VDC Input     | 9.0  | 12.0 | 18.0  |          |
|                                | 24 VDC Input     | 18.0 | 24.0 | 36.0  |          |
|                                | 48 VDC Input     | 36.0 | 48.0 | 72.0  |          |
| Input Filter                   | Capacitor Filter |      |      |       |          |
| Input Reflected Ripple Current |                  |      | 35   |       | mA P - P |
| Reverse Polarity Input Current |                  |      |      | 1.0   | A        |
| Short Circuit Input Power      |                  |      |      | 1,500 | mW       |

#### Output

| Parameter               | Conditions                | Min. | Typ. | Max.  | Units    |
|-------------------------|---------------------------|------|------|-------|----------|
| Output Voltage Accuracy |                           |      | ±2.0 |       | %        |
| Output Voltage Balance  |                           |      |      | ±2.0  | %        |
| Line Regulation         | Vin = Min to Max          |      |      | ±0.5  | %        |
| Load Regulation         | Iout = 25% to 100%        |      |      | ±1.0  | %        |
| Ripple & Noise (20 MHz) |                           |      |      | 80    | mV P - P |
| Output Power Protection |                           | 120  |      |       | %        |
| Temperature Coefficient |                           |      |      | ±0.02 | %/°C     |
| Output Short Circuit    | Continuous (Autorecovery) |      |      |       |          |

#### General

| Parameter             | Conditions  | Min.  | Typ. | Max. | Units |
|-----------------------|-------------|-------|------|------|-------|
| Isolation Voltage     | 60 Seconds  | 1,000 |      |      | VDC   |
| Isolation Resistance  | 1,000 VDC   | 1,000 |      |      | MΩ    |
| Isolation Capacitance | 100 kHz, 1V |       | 60   |      | pF    |
| Switching Frequency   |             | 100   |      | 650  | kHz   |

#### Environmental

| Parameter                   | Conditions          | Min. | Typ. | Max. | Units |
|-----------------------------|---------------------|------|------|------|-------|
| Operating Temperature Range | Ambient             | -40  | +25  | +85  | °C    |
| Operating Temperature Range | Case                |      |      | +100 | °C    |
| Storage Temperature Range   |                     | -40  |      | +125 | °C    |
| Cooling                     | Free Air Convection |      |      |      |       |
| Humidity                    | RH, Non-condensing  |      |      | 95   | %     |

#### Physical

|               |                                                   |
|---------------|---------------------------------------------------|
| Case Size     | 0.86 x 0.36 x 0.44 Inches (21.89 x 9.2 x 11.2 mm) |
| Case Material | Non-Conductive Black Plastic (UL94-V0)            |
| Weight        | 0.17 Oz (4.8g)                                    |

#### Remote On/Off

| Parameter         | Conditions | Min. | Typ. | Max. | Units |
|-------------------|------------|------|------|------|-------|
| Unit On (Note 2)  |            | 0    |      | 0.8  | VDC   |
| Unit Off (Note 2) |            |      |      | 5.0  | VDC   |
| Off Idle Current  |            |      | 5.0  |      | mA    |

#### Reliability Specifications

| Parameter | Conditions                      | Min. | Typ. | Max. | Units  |
|-----------|---------------------------------|------|------|------|--------|
| MTBF      | MIL HDBK 217F, 25°C, Gnd Benign | 2.73 |      |      | MHours |

#### Absolute Maximum Ratings

| Parameter                   | Conditions                  | Min. | Typ. | Max.  | Units |
|-----------------------------|-----------------------------|------|------|-------|-------|
| Input Voltage Surge (1 Sec) | 5 VDC Input                 | -0.7 |      | 12.0  | VDC   |
|                             | 12 VDC Input                | -0.7 |      | 24.0  |       |
|                             | 24 VDC Input                | -0.7 |      | 40.0  |       |
|                             | 48 VDC Input                | -0.7 |      | 80.0  |       |
| Lead Temperature            | 1.5 mm From Case For 10 Sec |      |      | 260   | °C    |
| Internal Power Dissipation  | All Models                  |      |      | 1,800 | mW    |

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

## Model Selection Guide

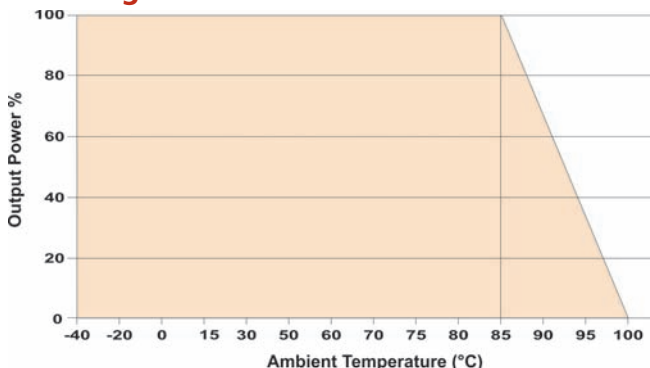
| Model Number | Input                 |             |                        |                      | Output        |                   |                   | Efficiency (% Typ) | Capacitive Load (μF, Max) | Fuse Rating Slow-Blow (mA) |
|--------------|-----------------------|-------------|------------------------|----------------------|---------------|-------------------|-------------------|--------------------|---------------------------|----------------------------|
|              | Voltage (VDC) Nominal | Range       | Current (mA) Full-Load | Current (mA) No-Load | Voltage (VDC) | Current (mA, Max) | Current (mA, Min) |                    |                           |                            |
| D201RW       | 5                     | 4.5 - 9.0   | 492                    | 15                   | 3.3           | 500.0             | 125.0             | 67                 | 3,300                     | 1,500                      |
| D202RW       | 5                     | 4.5 - 9.0   | 571                    | 15                   | 5.0           | 400.0             | 100.0             | 70                 | 3,300                     | 1,500                      |
| D203RW       | 5                     | 4.5 - 9.0   | 555                    | 30                   | 12.0          | 167.0             | 42.0              | 72                 | 470                       | 1,500                      |
| D204RW       | 5                     | 4.5 - 9.0   | 547                    | 30                   | 15.0          | 133.0             | 33.0              | 73                 | 470                       | 1,500                      |
| D205RW       | 5                     | 4.5 - 9.0   | 571                    | 20                   | ±5.0          | ±200.0            | ±50.0             | 70                 | ±1,000                    | 1,500                      |
| D206RW       | 5                     | 4.5 - 9.0   | 533                    | 25                   | ±12.0         | ±83.0             | ±21.0             | 75                 | ±220                      | 1,500                      |
| D207RW       | 5                     | 4.5 - 9.0   | 533                    | 25                   | ±15.0         | ±67.0             | ±17.0             | 75                 | ±220                      | 1,500                      |
| D208RW       | 5                     | 4.5 - 9.0   | 563                    | 60                   | ±24.0         | ±42.0             | ±10.0             | 71                 | ±100                      | 1,500                      |
| D211RW       | 12                    | 9.0 - 18.0  | 205                    | 15                   | 3.3           | 500.0             | 125.0             | 67                 | 3,300                     | 700                        |
| D212RW       | 12                    | 9.0 - 18.0  | 216                    | 15                   | 5.0           | 400.0             | 100.0             | 77                 | 3,300                     | 700                        |
| D213RW       | 12                    | 9.0 - 18.0  | 208                    | 15                   | 12.0          | 167.0             | 42.0              | 80                 | 470                       | 700                        |
| D214RW       | 12                    | 9.0 - 18.0  | 213                    | 15                   | 15.0          | 133.0             | 33.0              | 78                 | 470                       | 700                        |
| D215RW       | 12                    | 9.0 - 18.0  | 222                    | 15                   | ±5.0          | ±200.0            | ±50.0             | 75                 | ±1,000                    | 700                        |
| D216RW       | 12                    | 9.0 - 18.0  | 208                    | 15                   | ±12.0         | ±83.0             | ±21.0             | 80                 | ±220                      | 700                        |
| D217RW       | 12                    | 9.0 - 18.0  | 210                    | 15                   | ±15.0         | ±67.0             | ±17.0             | 79                 | ±220                      | 700                        |
| D218RW       | 12                    | 9.0 - 18.0  | 219                    | 30                   | ±24.0         | ±42.0             | ±10.0             | 76                 | ±100                      | 700                        |
| D221RW       | 24                    | 18.0 - 36.0 | 98                     | 8                    | 3.3           | 500.0             | 125.0             | 70                 | 3,300                     | 350                        |
| D222RW       | 24                    | 18.0 - 36.0 | 108                    | 8                    | 5.0           | 400.0             | 100.0             | 77                 | 3,300                     | 350                        |
| D223RW       | 24                    | 18.0 - 36.0 | 104                    | 8                    | 12.0          | 167.0             | 42.0              | 80                 | 470                       | 350                        |
| D224RW       | 24                    | 18.0 - 36.0 | 104                    | 8                    | 15.0          | 133.0             | 33.0              | 80                 | 470                       | 350                        |
| D225RW       | 24                    | 18.0 - 36.0 | 106                    | 8                    | ±5.0          | ±200.0            | ±50.0             | 78                 | ±1,000                    | 350                        |
| D226RW       | 24                    | 18.0 - 36.0 | 104                    | 8                    | ±12.0         | ±83.0             | ±21.0             | 80                 | ±220                      | 350                        |
| D227RW       | 24                    | 18.0 - 36.0 | 104                    | 8                    | ±15.0         | ±67.0             | ±17.0             | 80                 | ±220                      | 350                        |
| D228RW       | 24                    | 18.0 - 36.0 | 106                    | 20                   | ±24.0         | ±42.0             | ±10.0             | 78                 | ±100                      | 350                        |
| D231RW       | 48                    | 36.0 - 72.0 | 48                     | 6                    | 3.3           | 500.0             | 125.0             | 71                 | 3,300                     | 135                        |
| D232RW       | 48                    | 36.0 - 72.0 | 56                     | 6                    | 5.0           | 400.0             | 100.0             | 74                 | 3,300                     | 135                        |
| D233RW       | 48                    | 36.0 - 72.0 | 53                     | 6                    | 12.0          | 167.0             | 42.0              | 78                 | 470                       | 135                        |
| D234RW       | 48                    | 36.0 - 72.0 | 53                     | 6                    | 15.0          | 133.0             | 33.0              | 78                 | 470                       | 135                        |
| D235RW       | 48                    | 36.0 - 72.0 | 56                     | 6                    | ±5.0          | ±200.0            | ±50.0             | 74                 | ±1,000                    | 135                        |
| D236RW       | 48                    | 36.0 - 72.0 | 53                     | 6                    | ±12.0         | ±83.0             | ±21.0             | 79                 | ±220                      | 135                        |
| D237RW       | 48                    | 36.0 - 72.0 | 52                     | 6                    | ±15.0         | ±67.0             | ±17.0             | 80                 | ±220                      | 135                        |
| D238RW       | 48                    | 36.0 - 72.0 | 55                     | 12                   | ±24.0         | ±42.0             | ±10.0             | 75                 | ±100                      | 135                        |

Other input/output combinations are available (i.e. 9.0 VDC). Contact the factory for details at: [sales@micropowerdirect.com](mailto:sales@micropowerdirect.com)

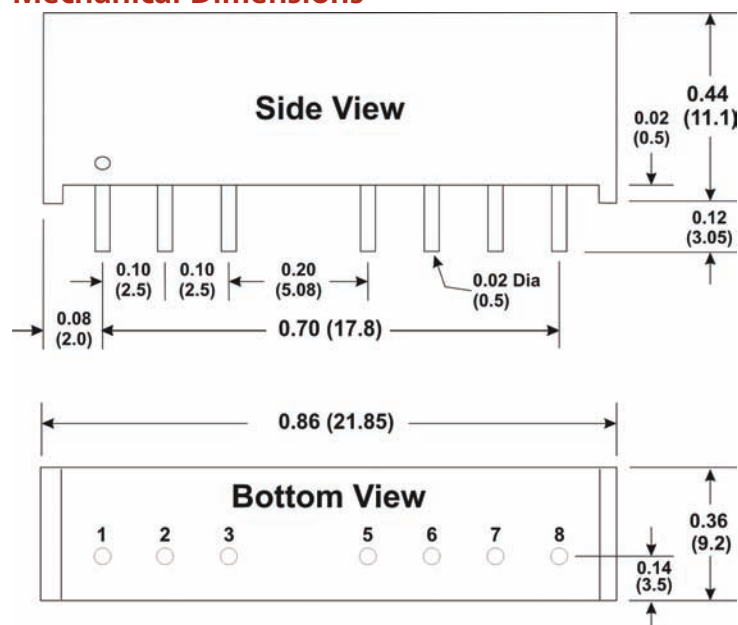
### Notes:

1. An external capacitor should 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 single output units a 100 μF is recommended, for dual output models ±48 μF should be used.
2. The Remote On/Off Control input (Pin 3) is referenced to -Vin (Pin 1). Connection to the pin should be made through a 1kΩ resistor and diode (1N4148). If it is not used, the control pin should be left open or tied directly to -Vin (Pin 1).
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, 30 VDC or 48 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
5. 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



A metal case is available  
Contact the factory for details at:  
[sales@micropowerdirect.com](mailto:sales@micropowerdirect.com)

### Mechanical Notes:

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

## Pin Connections

| Pin | Single        | Dual   |
|-----|---------------|--------|
| 1   | -Vin          | -Vin   |
| 2   | +Vin          | +Vin   |
| 3   | Remote ON/OFF |        |
| 5   | NC            | NC     |
| 6   | +Vout         | +Vout  |
| 7   | -Vout         | Common |
| 8   | NC            | -Vout  |

NC = No Connection



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