



# MicroPower Direct



Miniature SIP, 2W  
Wide Input Range  
DC/DC Converters  
**D200RW Series**

## Key Features

- Miniature SIP Package
- 2W Output Power
- Remote ON/OFF
- 2:1 Input Voltage Range
- Regulated Outputs
- 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
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	24.0	
	48 VDC Input	16.0	24.0	36.0	
Input Filter	Internal Capacitor				
Reverse Polarity Input Current				1.0	A
Short Circuit Input Power				1,500	mW

### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0	±2.0	%
Line Regulation	Vin = Min to Max		±0.3	±0.5	%
Load Regulation	Iout = 25% to 100%		±0.5	±0.75	%
Ripple & Noise (20 MHz) (Note 1)			30	50	mV P - P
Ripple & Noise (20 MHz)	Over Line, Load & Temp.			75	mV P - P
Ripple & Noise (20 MHz)				15	mV rms
Output Power Protection		120			%
Transient Response Time (Note 2)	50% Load Step Change		100	300	μSec
Transient Response Deviation			±3.0	±5.0	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,000			VDC
Isolation Test Voltage	Flash Tested For 1 Sec	1,100			VDC
Isolation Resistance	1,000 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		65	120	pF
Switching Frequency		100	300	650	kHz

### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case	-25	+25	+90	°C
Storage Temperature Range		-55		+105	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

### Physical

Case Size	0.86 x 0.37 x 0.44 Inches (21.8 x 9.3 x 11.1 mm)
Case Material	Non-Conductive Black Plastic
Weight	0.17 Oz (4.8g)

### 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)	5 VDC Input	-0.7		15.0	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			3,500	mW

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

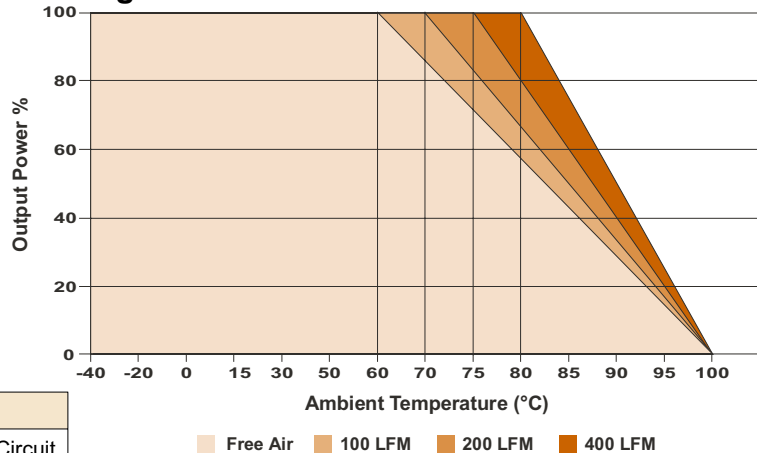
## Model Selection Guide

Model Number	Input				Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load					
D201RW	5	4.5 - 9.0	471	40	3.3	500.0	125.0	70	1,500
D202RW	5	4.5 - 9.0	548	40	5.0	400.0	100.0	73	1,500
D203RW	5	4.5 - 9.0	534	40	12.0	167.0	42.0	75	1,500
D211RW	12	9.0 - 18.0	184	20	3.3	500.0	125.0	73	700
D212RW	12	9.0 - 18.0	217	20	5.0	400.0	100.0	77	700
D213RW	12	9.0 - 18.0	209	20	12.0	167.0	42.0	80	700
D221RW	24	18.0 - 36.0	96	10	3.3	500.0	125.0	72	350
D222RW	24	18.0 - 36.0	109	10	5.0	400.0	100.0	77	350
D223RW	24	18.0 - 36.0	103	10	12.0	167.0	42.0	81	350
D231RW	48	36.0 - 75.0	49	8	3.3	500.0	125.0	71	135
D232RW	48	36.0 - 75.0	57	8	5.0	400.0	100.0	73	135
D233RW	48	36.0 - 75.0	53	8	12.0	167.0	42.0	79	135

### Notes:

- When measuring output ripple, it is recommended that an external 0.47  $\mu$ F ceramic capacitor be placed from the +Vout pin to the -Vout pin.
- Transient recovery is measured to within a 1% error band for a load step change of 50 to 100%.
- Operation at no-load will not damage these units. However, they may not meet all specifications. To maintain specified operation, the minimum output loading given in the table above must be maintained.
- 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



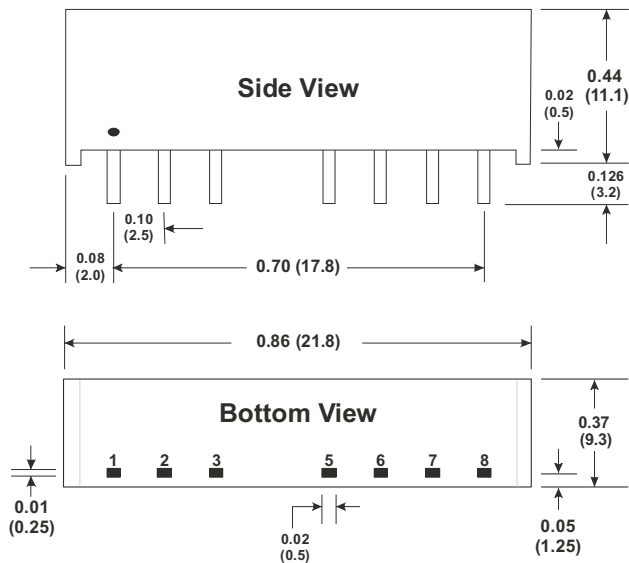
### Remote ON/OFF

Parameter	Min	Max
Supply On	Under 1 VDC or Open Circuit	
Supply Off	2.7 VDC	
Standby Input Current		0.2 mA
Control Input Current (On)		-0.4 mA
Control Input Current (Off)		1 mA
Control Common	Referenced to -Vin (pin 1)	

### Capacitive Load

Models (Vout)	3.3V	5V	12V	Units
Max. Capacitive Load	2,200	1,000	170	$\mu$ F

### Mechanical Dimensions



### Pin Connections

Pin	Function
1	-Vin
2	+Vin
3	Remote ON/OFF
5	No Function
6	+Vout
7	-Vout
8	No Function

### Mechanical Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx =  $\pm 0.01$  ( $\pm 0.25$ )
- Pin 1 is marked by a "dot" or indentation on the side of the unit
- Leads are tin plated for improved solderability.



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