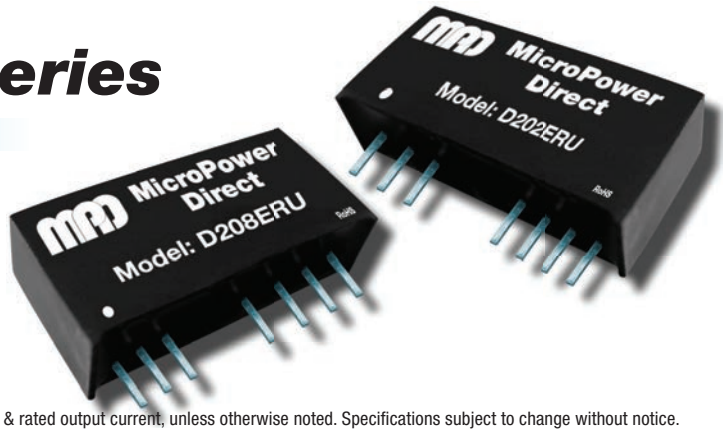
D200ERU Series

Low Cost, 4:1 Input Miniature, 2W SIP DC/DC Converters



Key Features:

- 2W Output Power
- 4:1 Input Voltage Range
- 1,500 VDC Isolation
- Short Circuit Protected
- Miniature SIP Case
- Single & Dual Outputs
- 1.0 MH MTBF
- Industry Standard Pin-Out
- ***Low Low Cost!!***

RoHS

Another Cost Cutter Product From MPD

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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	24 VDC Input	9.0	24.0	36.0	VDC
	48 VDC Input	18.0	48.0	72.0	

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0	±3.0	%
Output Voltage Balance			±1.0	±2.0	%
Line Regulation	Vin = Min to Max		±0.2	±0.75	%
Load Regulation	Iout = 10% to 100%		±0.5	±1.5	%
Ripple And Noise (20 MHz)	See Note 1		50	100	mV P - P
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 kHz, 1V		80		pF
Switching Frequency	Iout = 100%		300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.02 x 0.37 x 0.49 Inches (26.0 x 9.50 x 12.50 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	0.24 Oz (7.0g)

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

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

Model Selection Guide

Model Number	Input				Output			Capacitive Load (µF, Max)	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						
D201ERU	24	9.0 - 36.0	101	35	3.3	500.0	50.0	2,200	68	500
D202ERU	24	9.0 - 36.0	110	35	5.0	400.0	40.0	1,000	76	500
D203ERU	24	9.0 - 36.0	107	35	9.0	222.0	22.0	680	78	500
D204ERU	24	9.0 - 36.0	106	35	12.0	167.0	16.0	470	79	500
D205ERU	24	9.0 - 36.0	105	35	15.0	133.0	13.0	220	79	500
D206ERU	24	9.0 - 36.0	110	35	±5.0	±200.0	±20.0	±680	76	500
D207ERU	24	9.0 - 36.0	107	35	±9.0	±111.0	±11.0	±470	78	500
D208ERU	24	9.0 - 36.0	106	35	±12.0	±83.0	±8.0	±330	78	500
D209ERU	24	9.0 - 36.0	112	35	±15.0	±67.0	±7.0	±330	75	500
D211ERU	48	18.0 - 72.0	48	15	3.3	500.0	50.0	2,200	72	200
D212ERU	48	18.0 - 72.0	55	15	5.0	400.0	40.0	1,000	76	200
D213ERU	48	18.0 - 72.0	53	15	9.0	222.0	22.0	680	78	200
D214ERU	48	18.0 - 72.0	53	15	12.0	167.0	16.0	470	78	200
D215ERU	48	18.0 - 72.0	52	15	15.0	133.0	13.0	220	80	200
D216ERU	48	18.0 - 72.0	55	15	±5.0	±200.0	±20.0	±680	75	200
D217ERU	48	18.0 - 72.0	54	15	±9.0	±111.0	±11.0	±470	77	200
D218ERU	48	18.0 - 72.0	53	15	±12.0	±83.0	±8.0	±330	78	200
D219ERU	48	18.0 - 72.0	52	15	±15.0	±67.0	±7.0	±330	80	200

Notes:

1. When measuring output ripple, it is recommended that an external ceramic capacitor (approx. 1 µF to 10 µF) be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units.
2. These units should not be operated with a load under 10% of full load. Operation at no-load may cause damage to the unit.
3. Connection to the control (remote on/off) input must be made as shown in the typical connection diagram at right. This input is referenced to the -Vin pin. Input current to the pin (I_C) should be between 5 - 10 mA with a maximum of 20 mA. Exceeding 20 mA could cause damage to the unit. If not used, the pin should be left open. Grounding the pin could damage the unit. The value for R1 can be calculated by the formula at right.

	Min	Max
On	<0.6 VDC to Open Circuit	
Off	2.7 VDC	15.0 VDC

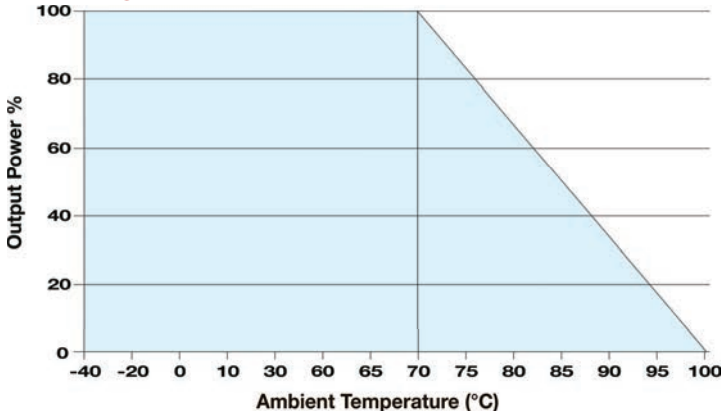
$$R_1 = \frac{V_C - V_D - 1}{I_C}$$

4. These converters are specified for operation without external components (except as noted above for the control input). However, in some applications the addition of input/output components will enhance stability and reduce output ripple. Recommended capacitor values are given in the table at right. Recommended inductor values would be 4.7-120 µH for the input and 2.2-10 µH for the output.

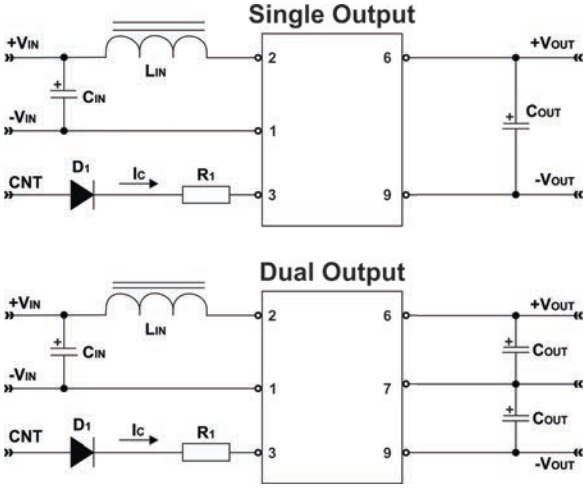
Vin	Input Capacitor	Vout	Output Capacitor
24 VDC	10-100 µF	3.3 VDC	100 µF
48 VDC	10-100 µF	5 VDC	100 µF
		9 VDC	100 µF
		12 VDC	100 µF
		15 VDC	100 µF

5. Dual output units may be connected to provide a 10V, 24V, or 30 VDC output. To do this, connect the load across the +Vout and -Vout outputs and float the output common.
6. 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.

Derating Curve



Typical Connection

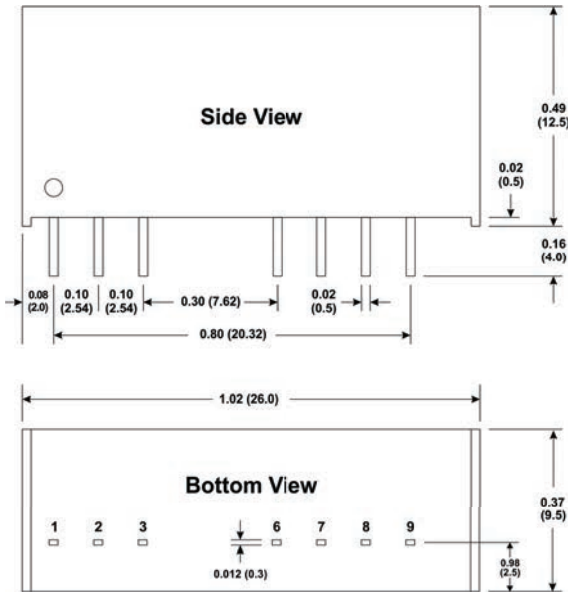


Pin Connections

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

NC = No Connection

Mechanical Dimensions



Mechanical Notes:

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

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