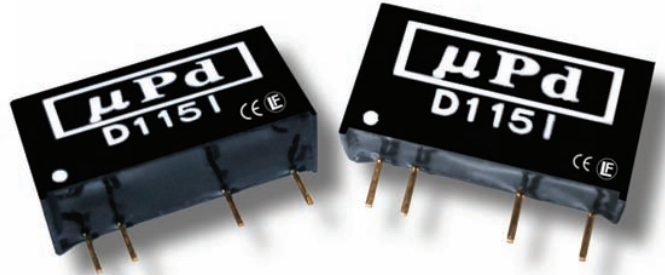


# D1001 Series

## High Isolation Miniature, 1W SIP DC/DC Converters



### Key Features:

- 1W Output Power
- Miniature SIP Case
- 3,000 VDC Isolation
- Single & Dual Outputs
- Complies to RFI Standards
- >1.12 MHour MTBF
- 36 Standard Models
- 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	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	24 VDC Input	21.6	24.0	26.4	
	48 VDC Input	43.2	48.0	52.8	
Input Filter	Internal Capacitor				
Reflected Ripple Current	12 μH Source Inductance		20		mA P - P

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±3.0		%
Output Voltage Balance	Dual Output , Balanced Loads		±1.0		%
Line Regulation	For Vin Change of 1%		±1.2		%
Load Regulation (Note 1)	See Model Selection Guide				
Ripple & Noise (20 MHz) (Note 2)			75		mV P - P
Output Power Protection		110			%
Temperature Coefficient				±0.02	%/°C
Output Short Circuit	Momentary (0.5 Sec.)				

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	3,000			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		60		pF
Switching Frequency			80		kHz
EMI/RFI	EN55022 B, EN55024 B, IEC 61000-4-2, IEC 61000-4-3, FCC 47 CFR Part 15 B				

#### 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 (5V 12V & 24V Input Models)	0.76 x 0.24 x 0.39 Inches (19.5 x 6.0 x 10.0 mm)				
Case Size (48V Input Models)	0.76 x 0.28 x 0.39 Inches (19.5 x 7.2 x 10.0 mm)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.08 Oz (2.3g)				

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.12			MHours

#### Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		7.0	VDC
	12 VDC Input	-0.7		15.0	
	24 VDC Input	-0.7		28.0	
	48 VDC Input	-0.7		54.0	
Lead Temperature	1.5 mm From Case For 10 Sec			260	°C
Internal Power Dissipation	All Models			450	mW

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

## Model Selection Guide

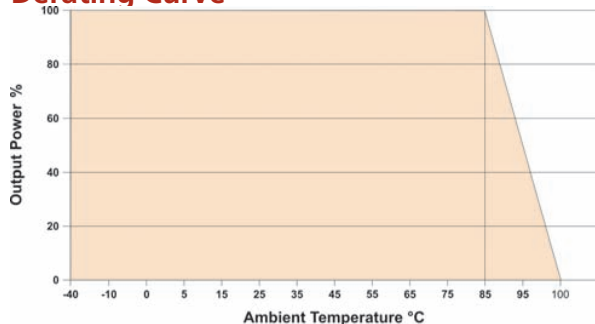
Model Number	Input				Output			Load Regulation (% Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
D1011	5	4.5 - 5.5	267	30	3.3	303.0	6.0	10	75	500
D1021	5	4.5 - 5.5	256	30	5.0	200.0	4.0	10	78	500
D1031	5	4.5 - 5.5	267	30	9.0	111.0	2.2	10	75	500
D1041	5	4.5 - 5.5	263	30	12.0	83.3	1.6	10	76	500
D1051	5	4.5 - 5.5	263	30	15.0	66.6	1.3	10	76	500
D1061	5	4.5 - 5.5	270	30	±5.0	±100.0	±2.0	10	74	500
D1071	5	4.5 - 5.5	256	30	±9.0	±55.5	±1.1	10	78	500
D1081	5	4.5 - 5.5	256	30	±12.0	±41.6	±0.8	10	78	500
D1091	5	4.5 - 5.5	250	30	±15.0	±33.3	±0.6	10	80	500
D1111	12	10.8 - 13.2	113	20	3.3	303.0	6.0	10	74	200
D1121	12	10.8 - 13.2	113	20	5.0	200.0	4.0	10	74	200
D1131	12	10.8 - 13.2	111	20	9.0	111.0	2.2	10	75	200
D1141	12	10.8 - 13.2	108	20	12.0	83.3	1.6	10	77	200
D1151	12	10.8 - 13.2	106	20	15.0	66.6	1.3	10	78	200
D1161	12	10.8 - 13.2	111	20	±5.0	±100.0	±2.0	10	75	200
D1171	12	10.8 - 13.2	109	20	±9.0	±55.5	±1.1	10	76	200
D1181	12	10.8 - 13.2	106	20	±12.0	±41.6	±0.8	10	78	200
D1191	12	10.8 - 13.2	104	20	±15.0	±33.3	±0.6	10	80	200
D1211	24	21.6 - 26.4	56	10	3.3	303.0	6.0	10	75	100
D1221	24	21.6 - 26.4	54	10	5.0	200.0	4.0	10	77	100
D1231	24	21.6 - 26.4	56	10	9.0	111.0	2.2	10	75	100
D1241	24	21.6 - 26.4	53	10	12.0	83.3	1.6	10	78	100
D1251	24	21.6 - 26.4	53	10	15.0	66.6	1.3	10	78	100
D1261	24	21.6 - 26.4	56	10	±5.0	±100.0	±2.0	10	74	100
D1271	24	21.6 - 26.4	54	10	±9.0	±55.5	±1.1	10	76	100
D1281	24	21.6 - 26.4	53	10	±12.0	±41.6	±0.8	10	78	100
D1291	24	21.6 - 26.4	53	10	±15.0	±33.3	±0.6	10	78	100
D1311	48	43.2 - 52.8	29	6	3.3	303.0	6.0	10	72	100
D1321	48	43.2 - 52.8	29	6	5.0	200.0	4.0	10	72	100
D1331	48	43.2 - 52.8	28	6	9.0	111.0	2.2	10	74	100
D1341	48	43.2 - 52.8	28	6	12.0	83.3	1.6	10	74	100
D1351	48	43.2 - 52.8	28	6	15.0	66.6	1.3	10	75	100
D1361	48	43.2 - 52.8	30	6	±5.0	±100.0	±2.0	10	70	100
D1371	48	43.2 - 52.8	29	6	±9.0	±55.5	±1.1	10	72	100
D1381	48	43.2 - 52.8	28	6	±12.0	±41.6	±0.8	10	74	100
D1391	48	43.2 - 52.8	28	6	±15.0	±33.3	±0.6	10	74	100

Other input/output combinations are available (i.e. 24.0 VDC). Contact the factory for details at: [sales@micropowerdirect.com](mailto:sales@micropowerdirect.com)

### Notes:

- Output load regulation is specified for a load change of 20% to 100%.
- These units do not require external components to operate, but the use of an input capacitor (10  $\mu$ F) may enhance performance in some applications. It is recommended that an input capacitor of 4.7  $\mu$ F to 47  $\mu$ F (dependent upon the application) be used on 48V input model. An output capacitor (4.7  $\mu$ F to 100  $\mu$ F or  $\pm 4.7 \mu$ F to  $\pm 68 \mu$ F) may be used to reduce ripple. To improve EMI performance, a simple filter network consisting of a 10  $\mu$ F to 100  $\mu$ F capacitor and 12  $\mu$ H inductor should be effective.
- These units will operate at no load without damage, but may not meet all specifications.
- Dual output units may be connected to provide a 10V, 18V, 24V or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- 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



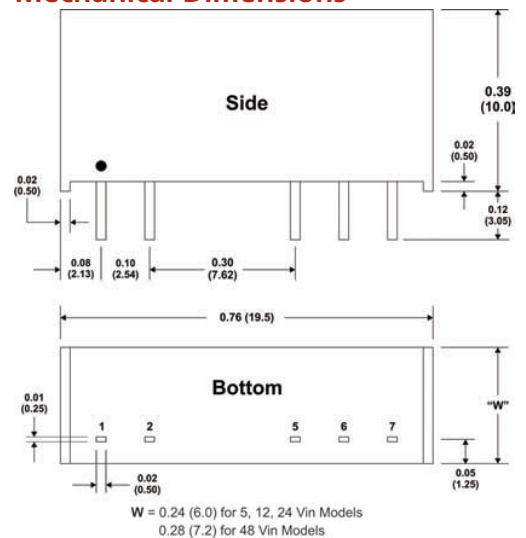
### Capacitive Load

Single Output ( $\mu$ F Max)	220
Dual Output ( $\mu$ F Max)	±100

### Pin Connections

Pin	Single	Dual	Pin	Single	Dual
1	+Vin	+Vin	6	No Pin	Common
2	-Vin	-Vin	7	+Vout	+Vout
5	-Vout	-Vout			

### Mechanical Dimensions



### 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



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