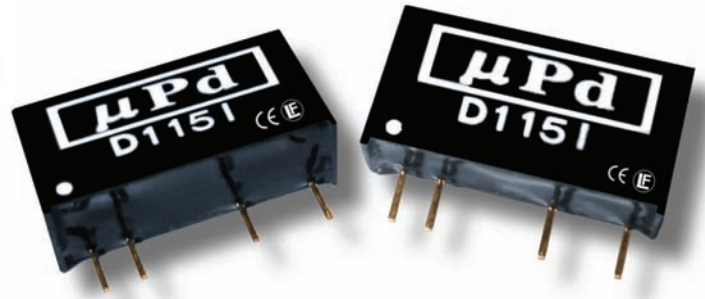


# D1001 Series

## 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 $\mu$ H Source Inductance		20		mA P - P

#### Output

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

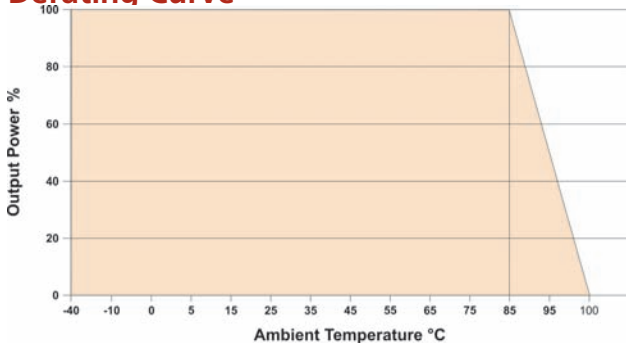
Model Number	Input				Output			Load Regulation (% Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
D101I	5	4.5 - 5.5	267	30	3.3	303.0	6.0	10	75	500
D102I	5	4.5 - 5.5	256	30	5.0	200.0	4.0	10	78	500
D103I	5	4.5 - 5.5	267	30	9.0	111.0	2.2	10	75	500
D104I	5	4.5 - 5.5	263	30	12.0	83.3	1.6	10	76	500
D105I	5	4.5 - 5.5	263	30	15.0	66.6	1.3	10	76	500
D106I	5	4.5 - 5.5	270	30	±5.0	±100.0	±2.0	10	74	500
D107I	5	4.5 - 5.5	256	30	±9.0	±55.5	±1.1	10	78	500
D108I	5	4.5 - 5.5	256	30	±12.0	±41.6	±0.8	10	78	500
D109I	5	4.5 - 5.5	250	30	±15.0	±33.3	±0.6	10	80	500
D111I	12	10.8 - 13.2	113	20	3.3	303.0	6.0	10	74	200
D112I	12	10.8 - 13.2	113	20	5.0	200.0	4.0	10	74	200
D113I	12	10.8 - 13.2	111	20	9.0	111.0	2.2	10	75	200
D114I	12	10.8 - 13.2	108	20	12.0	83.3	1.6	10	77	200
D115I	12	10.8 - 13.2	106	20	15.0	66.6	1.3	10	78	200
D116I	12	10.8 - 13.2	111	20	±5.0	±100.0	±2.0	10	75	200
D117I	12	10.8 - 13.2	109	20	±9.0	±55.5	±1.1	10	76	200
D118I	12	10.8 - 13.2	106	20	±12.0	±41.6	±0.8	10	78	200
D119I	12	10.8 - 13.2	104	20	±15.0	±33.3	±0.6	10	80	200
D121I	24	21.6 - 26.4	56	10	3.3	303.0	6.0	10	75	100
D122I	24	21.6 - 26.4	54	10	5.0	200.0	4.0	10	77	100
D123I	24	21.6 - 26.4	56	10	9.0	111.0	2.2	10	75	100
D124I	24	21.6 - 26.4	53	10	12.0	83.3	1.6	10	78	100
D125I	24	21.6 - 26.4	53	10	15.0	66.6	1.3	10	78	100
D126I	24	21.6 - 26.4	56	10	±5.0	±100.0	±2.0	10	74	100
D127I	24	21.6 - 26.4	54	10	±9.0	±55.5	±1.1	10	76	100
D128I	24	21.6 - 26.4	53	10	±12.0	±41.6	±0.8	10	78	100
D129I	24	21.6 - 26.4	53	10	±15.0	±33.3	±0.6	10	78	100
D131I	48	43.2 - 52.8	29	6	3.3	303.0	6.0	10	72	100
D132I	48	43.2 - 52.8	29	6	5.0	200.0	4.0	10	72	100
D133I	48	43.2 - 52.8	28	6	9.0	111.0	2.2	10	74	100
D134I	48	43.2 - 52.8	28	6	12.0	83.3	1.6	10	74	100
D135I	48	43.2 - 52.8	28	6	15.0	66.6	1.3	10	75	100
D136I	48	43.2 - 52.8	30	6	±5.0	±100.0	±2.0	10	70	100
D137I	48	43.2 - 52.8	29	6	±9.0	±55.5	±1.1	10	72	100
D138I	48	43.2 - 52.8	28	6	±12.0	±41.6	±0.8	10	74	100
D139I	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



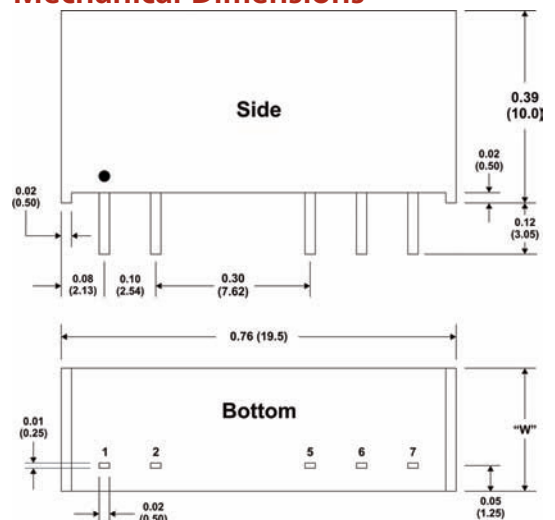
### Capacitive Load

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



W = 0.24 (6.0) for 5, 12, 24 Vin Models  
0.28 (7.2) for 48 Vin Models

### 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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