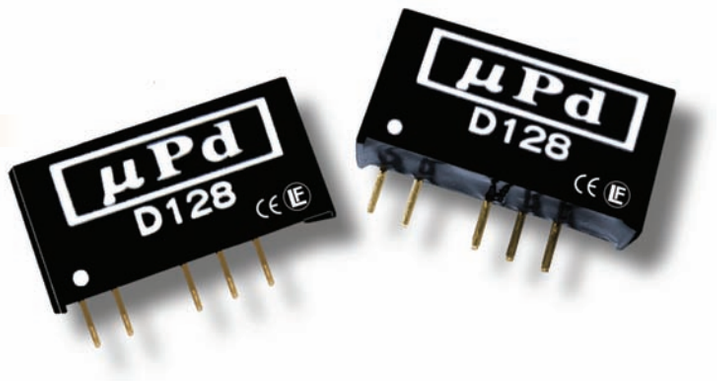
D100 Series

Single & Dual Output Miniature, 1W SIP DC/DC Converters



Key Features:

- 1W Output Power
- Miniature SIP Case
- Single & Dual Outputs
- Complies to RFI Standards
- 1,000 VDC Isolation
- >1.12 MHour MTBF
- 36 Standard Models
- Industry Standard Pin-Out

RoHS Compliant

MicroPower Direct
292 Page Street
Suite D
Stoughton, MA 02072
USA

T: (781) 344-8226
F: (781) 344-8481
E: sales@micropowerdirect.com
W: www.micropowerdirect.com

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	1,000			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						
D101	5	4.5 - 5.5	267	30	3.3	303.0	6.0	10	75	500
D102	5	4.5 - 5.5	256	30	5.0	200.0	4.0	10	78	500
D103	5	4.5 - 5.5	267	30	9.0	111.0	2.2	10	75	500
D104	5	4.5 - 5.5	263	30	12.0	83.3	1.6	10	76	500
D105	5	4.5 - 5.5	263	30	15.0	66.6	1.3	10	76	500
D106	5	4.5 - 5.5	270	30	±5.0	±100.0	±2.0	10	74	500
D107	5	4.5 - 5.5	256	30	±9.0	±55.5	±1.1	10	78	500
D108	5	4.5 - 5.5	256	30	±12.0	±41.6	±0.8	10	78	500
D109	5	4.5 - 5.5	250	30	±15.0	±33.3	±0.6	10	80	500
D111	12	10.8 - 13.2	113	20	3.3	303.0	6.0	10	74	200
D112	12	10.8 - 13.2	113	20	5.0	200.0	4.0	10	74	200
D113	12	10.8 - 13.2	111	20	9.0	111.0	2.2	10	75	200
D114	12	10.8 - 13.2	108	20	12.0	83.3	1.6	10	77	200
D115	12	10.8 - 13.2	106	20	15.0	66.6	1.3	10	78	200
D116	12	10.8 - 13.2	111	20	±5.0	±100.0	±2.0	10	75	200
D117	12	10.8 - 13.2	109	20	±9.0	±55.5	±1.1	10	76	200
D118	12	10.8 - 13.2	106	20	±12.0	±41.6	±0.8	10	78	200
D119	12	10.8 - 13.2	104	20	±15.0	±33.3	±0.6	10	80	200
D121	24	21.6 - 26.4	56	10	3.3	303.0	6.0	10	75	100
D122	24	21.6 - 26.4	54	10	5.0	200.0	4.0	10	77	100
D123	24	21.6 - 26.4	56	10	9.0	111.0	2.2	10	75	100
D124	24	21.6 - 26.4	53	10	12.0	83.3	1.6	10	78	100
D125	24	21.6 - 26.4	53	10	15.0	66.6	1.3	10	78	100
D126	24	21.6 - 26.4	56	10	±5.0	±100.0	±2.0	10	74	100
D127	24	21.6 - 26.4	54	10	±9.0	±55.5	±1.1	10	76	100
D128	24	21.6 - 26.4	53	10	±12.0	±41.6	±0.8	10	78	100
D129	24	21.6 - 26.4	53	10	±15.0	±33.3	±0.6	10	78	100
D131	48	43.2 - 52.8	29	6	3.3	303.0	6.0	10	72	100
D132	48	43.2 - 52.8	29	6	5.0	200.0	4.0	10	72	100
D133	48	43.2 - 52.8	28	6	9.0	111.0	2.2	10	74	100
D134	48	43.2 - 52.8	28	6	12.0	83.3	1.6	10	74	100
D135	48	43.2 - 52.8	28	6	15.0	66.6	1.3	10	75	100
D136	48	43.2 - 52.8	30	6	±5.0	±100.0	±2.0	10	70	100
D137	48	43.2 - 52.8	29	6	±9.0	±55.5	±1.1	10	72	100
D138	48	43.2 - 52.8	28	6	±12.0	±41.6	±0.8	10	74	100
D139	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**

Notes:

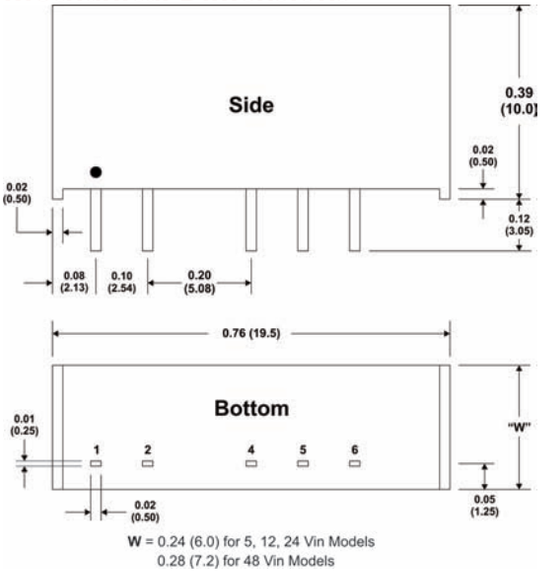
1. Output load regulation is specified for a load change of 20% to 100%.
2. These units do not require external components to operate, but the use of an input capacitor (10 µF) may enhance performance in some applications. It is recommended that an input capacitor of 4.7 uF to 47 uF (dependent upon the application) be used on 48V input model.
   An output capacitor (4.7 µF to 100 µF or ±4.7 µF to ±68 µF) may be used to reduce ripple. To improve EMI performance, a simple filter network consisting of a 10 uF to 100 uF capacitor and 12 uH inductor should be effective.
3. These units will operate at no load without damage, but may not meet all specifications.
4. 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.
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.

Pin Connections

Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
4	-Vout	-Vout

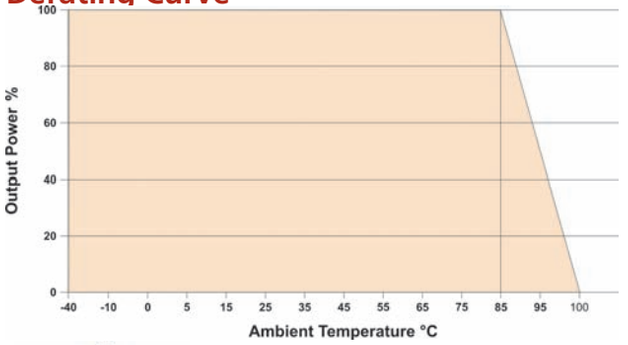
Pin	Single	Dual
5	No Pin	Common
6	+Vout	+Vout

Mechanical Dimensions



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

Derating Curve



Capacitive Load

Single Output (µF Max)
220

Dual Output (µF Max)
±100

Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ±0.01 (±0.25)
- Pin 1 is marked by a "dot" or indentation on the side of the unit

MicroPower Direct

www.micropowerdirect.com

292 Page Street, STE D, Stoughton, MA 02072 • TEL: (781) 344-8226 • FAX: (781) 344-8481 • E-Mail: sales@micropowerdirect.com