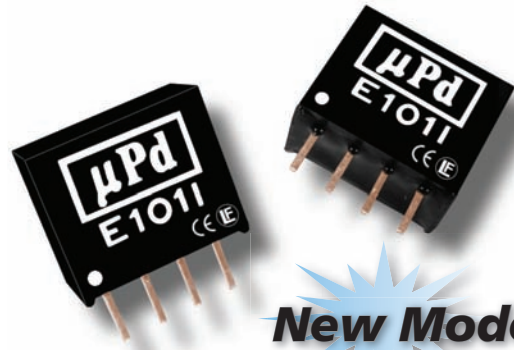


# E1001 Series

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



**New Models!!**

### Key Features:

- 1W Output Power
- Miniature SIP Case
- 3,000 VDC Isolation
- Complies to RFI Standards
- >2 MHour MTBF
- 20 Standard Models
- Industry Standard Pin-Out



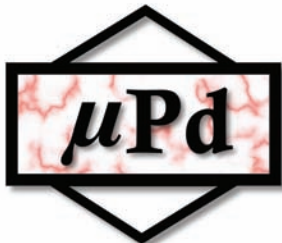
**RoHS Compliant**



### 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	
Reverse Polarity Input Current				0.3	A
Input Filter	Internal Capacitor				

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±3.0	%
Line Regulation	For Vin Change of 1%		±1.2		%
Load Regulation (Note 1)	See Model Selection Guide				
Ripple & Noise (20 MHz) (Note 2)			60		mV P - P
Output Power Protection		110			%
Temperature Coefficient			±0.01	±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	1,000 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		60		pF
Switching Frequency			50		kHz
EMI/RFI	EN55022 A, EN55024 A, 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)	0.46 x 0.24 x 0.40 Inches (11.68 x 6.0 x 10.2 mm)				
Case Size (48V Input Models)	0.46 x 0.29 x 0.40 Inches (11.68 x 7.5 x 10.2 mm)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.06 Oz (1.8g)				

#### Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	2.0			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			650	mW

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

## Model Selection Guide

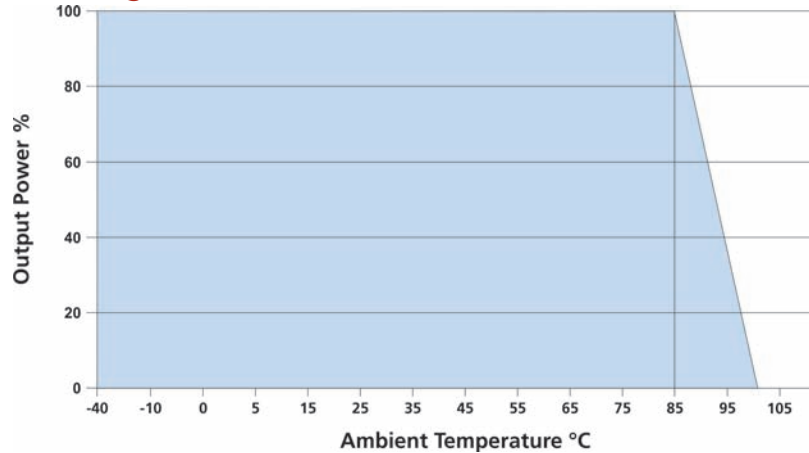
Model Number	Input				Output			Load Regulation (% Max)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)			
	Nominal	Range	Full-Load	No-Load						
E101I	5	4.5 - 5.5	267	25	5.0	200.0	4.0	10	75	500
E102I	5	4.5 - 5.5	260	25	9.0	111.0	2.0	10	77	500
E103I	5	4.5 - 5.5	256	25	12.0	83.3	2.0	10	78	500
E104I	5	4.5 - 5.5	257	25	15.0	66.6	2.0	10	78	500
E105I	5	4.5 - 5.5	257	25	24.0	41.6	2.0	10	78	500
E111I	12	10.8 - 13.2	112	16	5.0	200.0	4.0	10	75	200
E112I	12	10.8 - 13.2	109	16	9.0	111.0	2.0	10	77	200
E113I	12	10.8 - 13.2	107	16	12.0	83.3	2.0	10	78	200
E114I	12	10.8 - 13.2	107	16	15.0	66.6	2.0	10	78	200
E115I	12	10.8 - 13.2	107	16	24.0	41.6	2.0	10	78	200
E121I	24	21.6 - 26.4	56	10	5.0	200.0	4.0	10	75	100
E122I	24	21.6 - 26.4	55	10	9.0	111.0	2.0	10	77	100
E123I	24	21.6 - 26.4	54	10	12.0	83.3	2.0	10	78	100
E124I	24	21.6 - 26.4	54	10	15.0	66.6	2.0	10	78	100
E125I	24	21.6 - 26.4	54	10	24.0	41.6	2.0	10	78	100
E131I	48	43.2 - 52.8	28	7	5.0	200.0	4.0	10	75	50
E132I	48	43.2 - 52.8	27	7	9.0	111.0	2.0	10	76	50
E133I	48	43.2 - 52.8	27	7	12.0	83.3	2.0	10	76	50
E134I	48	43.2 - 52.8	27	7	15.0	66.6	2.0	10	76	50
E135I	48	43.2 - 52.8	27	7	24.0	41.6	2.0	10	76	50

**Models with other outputs are available. Contact the factory for details!!**

### Notes:

1. Output load regulation is specified for a load change of 20% to 100%.
2. When measuring output ripple, it is recommended that an external 0.33  $\mu\text{F}$  ceramic capacitor be placed from the +Vout pin to the -Vout pin.
3. Operation at no-load will not damage these units. However, they may not meet all specifications.
4. The 5V, 12V and 24V input units do not require external components to operate, but the use of a low ESR capacitor (approximately 10  $\mu\text{F}$ , ESR < 1.0 $\Omega$  at 100 kHz) mounted close to the converter input pins is recommended. For 48 VDC input units, an input capacitor should always be used. Dependent upon the application, a value between 4.7  $\mu\text{F}$  and 47  $\mu\text{F}$  should be sufficient.
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.

## Derating Curve



## Pin Connections

### Capacitive Load

( $\mu\text{F}$ Max)
220

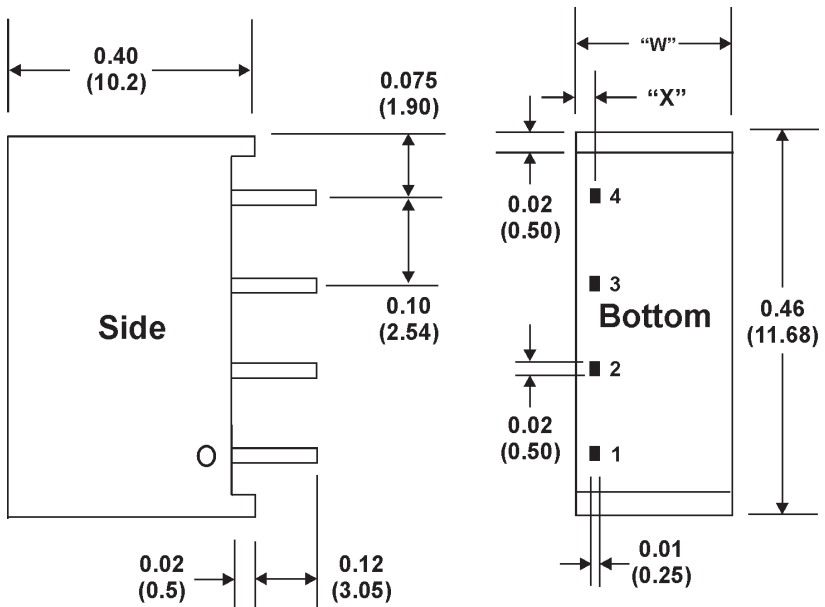
Pin	Description
1	-Vin
2	+Vin
3	-Vout
4	+Vout

### 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
- Dimensions indicated on the drawing are as follows:

Dimension	Input Voltage	
	5, 12 & 24V	48V
"W"	0.24 (6.0)	0.29 (7.5)
"X"	0.05 (1.25)	0.08 (2.00)

## Mechanical Dimensions



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