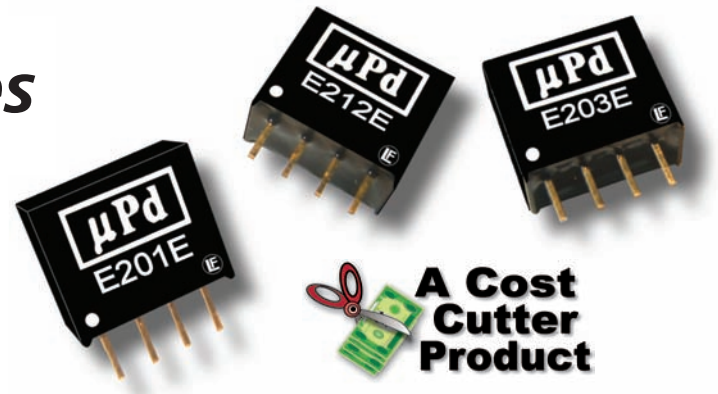
E200E Series

Low Cost, 2W Ultra-Miniature SIP DC/DC Converters



A Cost Cutter Product

Key Features:

- 2W Output Power
- Ultra-Miniature SIP Case
- Low 0.3" Profile
- 1,000 VDC Isolation
- >3.5 MHour MTBF
- 5V & 12V Inputs
- LOWEST COST!

RoHS Compliant

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	
Reverse Polarity Input Current				0.3	A
Input Filter	Internal Capacitor				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±1.0	±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)			50	75	mV P - P
Output Power Protection		120			%
Temperature Coefficient			±0.01	±0.03	%/°C
Output Short Circuit	Momentary (0.5 Sec.)				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,000			VDC
Isolation Test Voltage	Flash Tested For 1 Sec	1,100			VDC
Isolation Resistance	1,000 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		60	100	pF
Switching Frequency			75		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Operating Temperature Range	Case			+90	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%
Physical					
Case Size	0.46 x 0.40 x 0.30 Inches (11.6 x 10.2 x 7.55 mm)				
Case Material	Non-Conductive Black Plastic (UL-94V0)				
Weight	0.06 Oz (1.8g)				

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	3.5			MHours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	5 VDC Input	-0.7		9.0	VDC
	12 VDC Input	-0.7		18.0	
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.

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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						
E201E	5	4.5 - 5.5	513	38	5.0	400.0	40.0	15	78	1,000
E202E	5	4.5 - 5.5	506	38	12.0	167.0	17.0	15	79	1,000
E203E	5	4.5 - 5.5	506	38	15.0	133.0	14.0	15	79	1,000
E211E	12	10.8 - 13.2	214	20	5.0	400.0	40.0	15	78	500
E212E	12	10.8 - 13.2	208	20	12.0	167.0	17.0	15	80	500
E213E	12	10.8 - 13.2	206	20	15.0	133.0	14.0	15	81	500

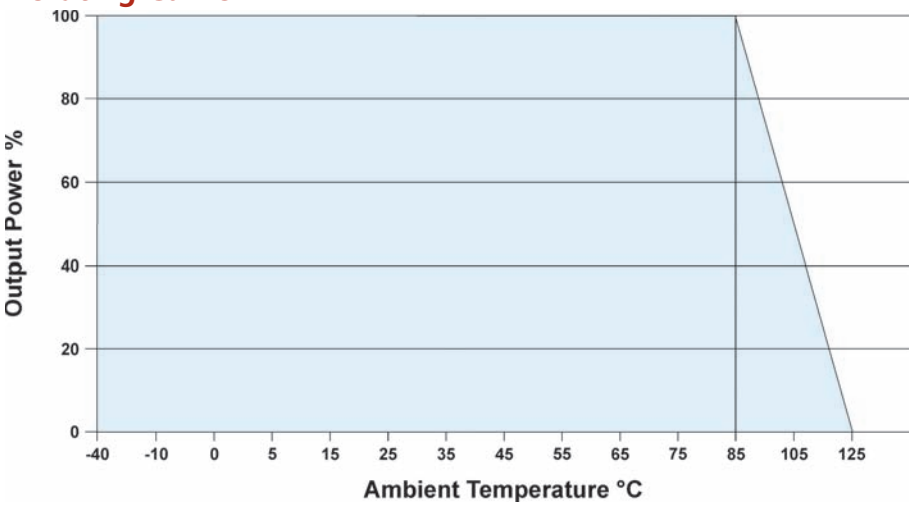
Notes:

1. Output load regulation is specified for a load change of 10% to 100%.
2. When measuring output ripple, it is recommended that an external 0.33 μF ceramic capacitor be placed from the +Vout pin to the -Vout pin.
3. These units should not be operated with a load under 10% of full load. Operation at no-load may cause damage to the unit.
4. These converters are specified for operation without external components. However, in some applications the addition of input/ouput capacitors will enhance stability and reduce output ripple. Recommended capacitor values are:

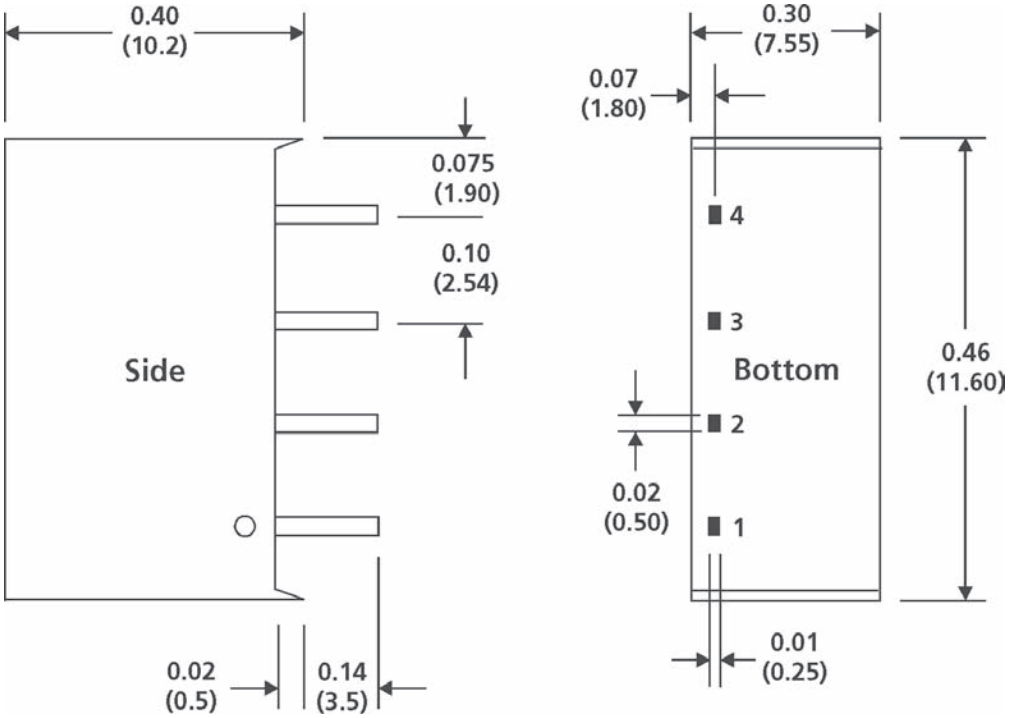
Vin	Input Capacitor	Vout	Output Capacitor
5 VDC	4.7 μF	5 VDC	10.0 μF
12 VDC	2.2 μF	12 VDC	2.2 μF
		15 VDC	1.0 μF

   For applications requiring very low output noise levels, a simple LC filter should be effective.
5. 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



Mechanical Dimensions



Pin Connections

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

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

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