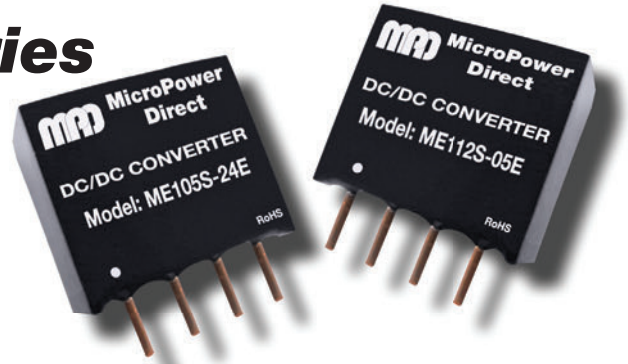


# ME100SE Series

## Low Cost, 1W Ultra-Miniature SIP DC/DC Converters



### Key Features:

- 1W Output Power
- Ultra-Miniature SIP Case
- Short Circuit Protected
- 1,500 VDC Isolation
- >3.5 MHour MTBF
- -40°C to +105°C Operation
- **LOW COST**

**RoHS**



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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	3.3 VDC Input	2.97	3.3	3.63	VDC
	5 VDC Input	4.50	5.0	5.50	
	12 VDC Input	10.80	12.0	13.20	
	15 VDC Input	13.50	15.0	16.50	
	24 VDC Input	21.60	24.0	26.40	
Input Filter	Internal Capacitor				

#### Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±3.0		%
Capacitive Load				220	µF
Line Regulation	For V <sub>IN</sub> Change of 1%			±1.2	%
Load Regulation, See Note 1	See Model Selection Guide				
Ripple & Noise (20 MHz), See Note 2	Output Voltage ≤12 VDC		30		mV P - P
	15 VDC, 24 VDC Output		60		
Temperature Coefficient				±0.03	%/°C
Output Short Circuit	Continuous (Autorecovery)				

#### General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance, See Note 3	100 kHz, 1V		20		pF
Switching Frequency			100	300	kHz

#### EMI Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Units
EMI Compliance, See Note 5	Conducted	CISPR22/EN 55022 Level B			
EMC Compliance	Electrostatic Discharge (ESD)	EN 61000-4-2 Level B Contact ±8 kV			

#### Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+105	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

#### Physical

Case Size	0.46 x 0.23 x 0.394 Inches (11.6 x 6.0 x 10.0 mm)				
Case Material	Non-Conductive Black Plastic (UL-94V0)				
Weight	0.04 Oz (1.2g)				

#### Reliability Specifications

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

#### Absolute Maximum Ratings

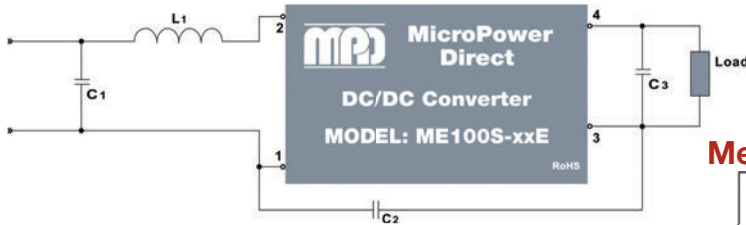
Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	3.3 VDC Input	-0.7		5.0	VDC
	5 VDC Input	-0.7		9.0	
	12 VDC Input	-0.7		18.0	
	12 VDC Input	-0.7		21.0	
	24 VDC Input	-0.7		30.0	
Lead Temperature	1.5 mm From Case For 10 Sec			300	°C

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

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Model Number	Input				Output			Load Regulation		Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)	% Typ.	% Max		
	Nominal	Range	Full-Load	No-Load							
ME103S-05E	3	2.97 - 3.63	380	30	5.0	200.0	20.0	12.0	15.0	80	750
ME105S-05E	5	4.5 - 5.5	250	20	5.0	200.0	20.0	12.0	15.0	80	500
ME105S-09E	5	4.5 - 5.5	250	20	9.0	111.0	12.0	8.0	15.0	80	500
ME105S-12E	5	4.5 - 5.5	248	20	12.0	84.0	9.0	7.0	15.0	81	500
ME105S-15E	5	4.5 - 5.5	248	20	15.0	67.0	7.0	6.0	15.0	81	500
ME105S-24E	5	4.5 - 5.5	248	20	24.0	42.0	4.0	5.0	15.0	81	500
ME112S-05E	12	10.8 - 13.2	104	15	5.0	200.0	20.0	12.0	15.0	80	200
ME112S-09E	12	10.8 - 13.2	104	15	9.0	111.0	12.0	8.0	15.0	80	200
ME112S-12E	12	10.8 - 13.2	103	15	12.0	84.0	9.0	7.0	15.0	81	200
ME112S-15E	12	10.8 - 13.2	103	15	15.0	67.0	7.0	6.0	15.0	80	200
ME115S-15E	15	13.5 - 16.5	82	10	15.0	67.0	7.0	6.0	15.0	81	200
ME124S-05E	24	21.6 - 26.4	52	7	5.0	200.0	20.0	12.0	15.0	80	100
ME124S-09E	24	21.6 - 26.4	52	7	9.0	111.0	12.0	8.0	15.0	80	100
ME124S-12E	24	21.6 - 26.4	50	7	12.0	84.0	9.0	7.0	15.0	81	100
ME124S-15E	24	21.6 - 26.4	50	7	15.0	67.0	7.0	6.0	15.0	82	100
ME124S-24E	24	21.6 - 26.4	50	7	24.0	42.0	4.0	5.0	15.0	82	100

- Notes:
- Output load regulation is specified for a load change of 10% to 100%.
  - When measuring output ripple, it is recommended that an external 0.33  $\mu$ F ceramic capacitor be placed from the +Vout pin to the -Vout pin.
  - The isolation capacitance of model **ME124S-24E** is 30 pF.
  - Operation at no load will not damage these units, however, they may not meet all specifications.
  - These converters are specified for operation without external components. However, in some applications the addition of input/output capacitors will enhance stability and reduce output ripple. The simple connection shown below will typically meet EN 55022 Class B.



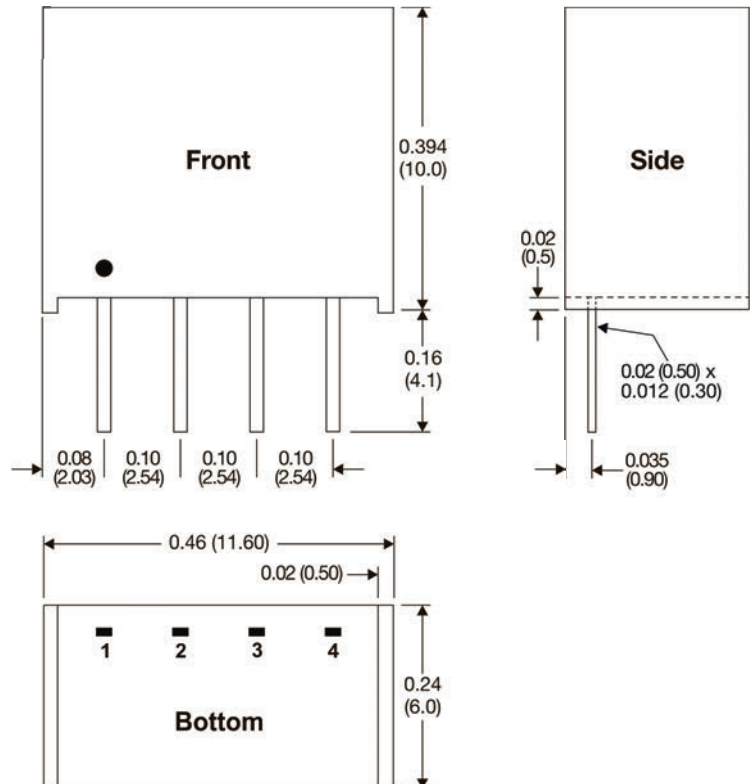
Pin Connections

Pin	Description	Pin	Description
1	-VIN	3	-VOUT
2	+VIN	4	+VOUT

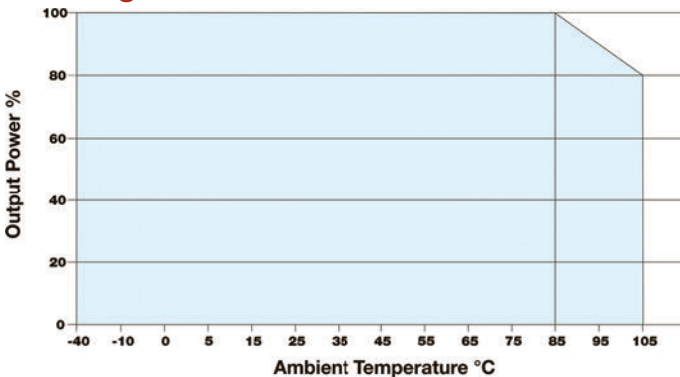
V <sub>IN</sub>	C <sub>1</sub>	L <sub>1</sub>	C <sub>2</sub>	V <sub>OUT</sub>	C <sub>3</sub>
3.3 VDC	4.7 $\mu$ F/50V	6.8 $\mu$ H	---	5 VDC	10 $\mu$ F
5 VDC	4.7 $\mu$ F/50V	6.8 $\mu$ H	---	9 VDC	4.7 $\mu$ F
12 VDC	4.7 $\mu$ F/50V	6.8 $\mu$ H	---	12 VDC	2.2 $\mu$ F
15 VDC	4.7 $\mu$ F/50V	6.8 $\mu$ H	470 pF/2kV	15 VDC	1.0 $\mu$ F
24 VDC	4.7 $\mu$ F/50V	6.8 $\mu$ H	470 pF/2kV	24 VDC	0.47 $\mu$ F

- 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.

Mechanical Dimensions



Derating Curve



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- 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 unit