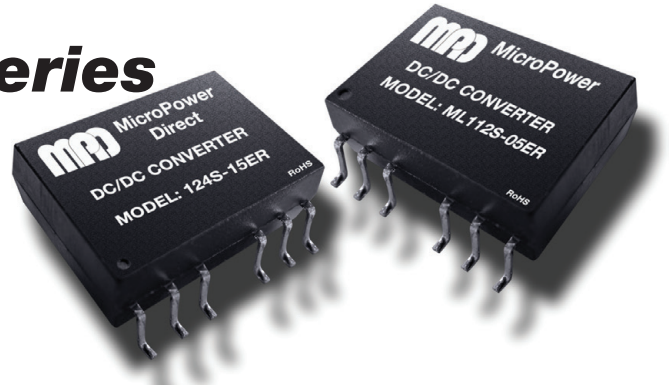


ML100SER Series

Low Cost, Regulated 1W SMT, Single Output DC/DC Converters



Key Features:

- 1W Output Power
- Miniature SMT Case
- Tight Regulation
- -40°C to +85°C Operation
- Short Circuit Protection
- Low 0.24" Profile
- >3.5 MHour MTBF
- Industry Standard Pin-Out
- **LOW COST!**

RoHS



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	4.75	5.0	5.25	VDC
	12 VDC Input	11.4	12.0	12.6	
	15 VDC Input	14.25	15.0	15.75	
	24 VDC Input	22.80	24.0	25.20	
Input Filter	Capacitor				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy				±3.0	%
Line Regulation	For Vin Change of 5%			±0.3	%
Load Regulation	For Iout = 10% to 100%			±1.0	%
Output Ripple (20 MHz)	See Note 1		10	20	mV P - P
Output Noise (20 MHz)	See Note 1		50	150	mV P - P
Temperature Coefficient				±0.03	%/°C
Output Short Circuit	Continuous (Autorecovery)				

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		70		pF
Switching Frequency			100		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+85	°C
Storage Temperature Range		-55		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	See Mechanical Drawing (Page 2)				
Case Material	Non-Conductive Black Plastic (UL94-V0)				
Weight	0.09 Oz (2.9g)				

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		7.0	VDC
	12 VDC Input	-0.7		15.0	
	15 VDC Input	-0.7		18.0	
	24 VDC Input	-0.7		28.0	
Peak Reflow Temperature				245	°C
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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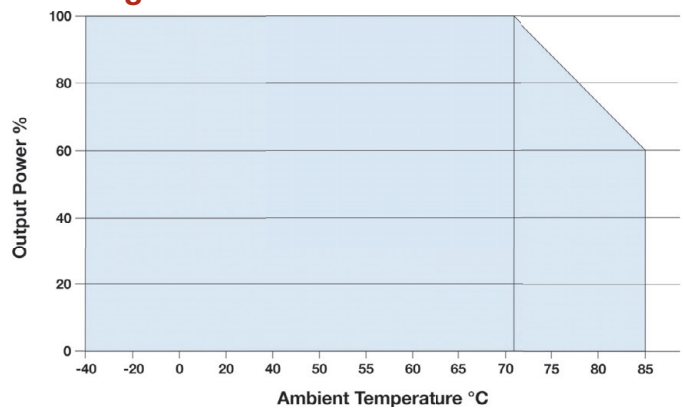
Model Number	Input				Output			Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load					
ML105S-05ER	5	4.75 - 5.25	217	20	5.0	150.0	15.0	69	500
ML105S-09ER	5	4.75 - 5.25	285	20	9.0	111.0	12.0	70	500
ML105S-12ER	5	4.75 - 5.25	281	20	12.0	83.0	9.0	71	500
ML105S-15ER	5	4.75 - 5.25	279	20	15.0	67.0	7.0	72	500
ML112S-05ER	12	11.40 - 12.60	91	15	5.0	150.0	15.0	69	250
ML112S-15ER	12	11.40 - 12.60	115	15	15.0	67.0	7.0	72	250
ML115S-05ER	15	14.25 - 15.75	72	10	5.0	150.0	15.0	69	200
ML115S-09ER	15	14.25 - 15.75	95	10	9.0	111.0	12.0	70	200
ML115S-12ER	15	14.25 - 15.75	93	10	12.0	83.0	9.0	71	200
ML115S-15ER	15	14.25 - 15.75	93	10	15.0	67.0	7.0	72	200
ML124S-05ER	24	22.80 - 25.20	45	7	5.0	150.0	15.0	69	150
ML124S-09ER	24	22.80 - 25.20	59	7	9.0	111.0	12.0	70	150
ML124S-15ER	24	22.80 - 25.20	58	7	12.0	83.0	9.0	71	150
ML112S-15ER	24	22.80 - 25.20	58	7	15.0	67.0	7.0	72	150

Notes:

- When measuring output ripple, it is recommended that an external 0.33 μ F ceramic capacitor be placed from the +Vout pin to the -Vout pin.
- Operating at no load will not damage the converter, however, it 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. Recommended capacitor values are:

Vin	Input Capacitor	Vout	Output Capacitor
5 VDC	4.7 μ F	5 VDC	4.7 μ F
12 VDC	2.2 μ F	9 VDC	2.2 μ F
15 VDC	1.0 μ F	12 VDC	2.2 μ F
24 VDC	1.0 μ F	15 VDC	1.0 μ F

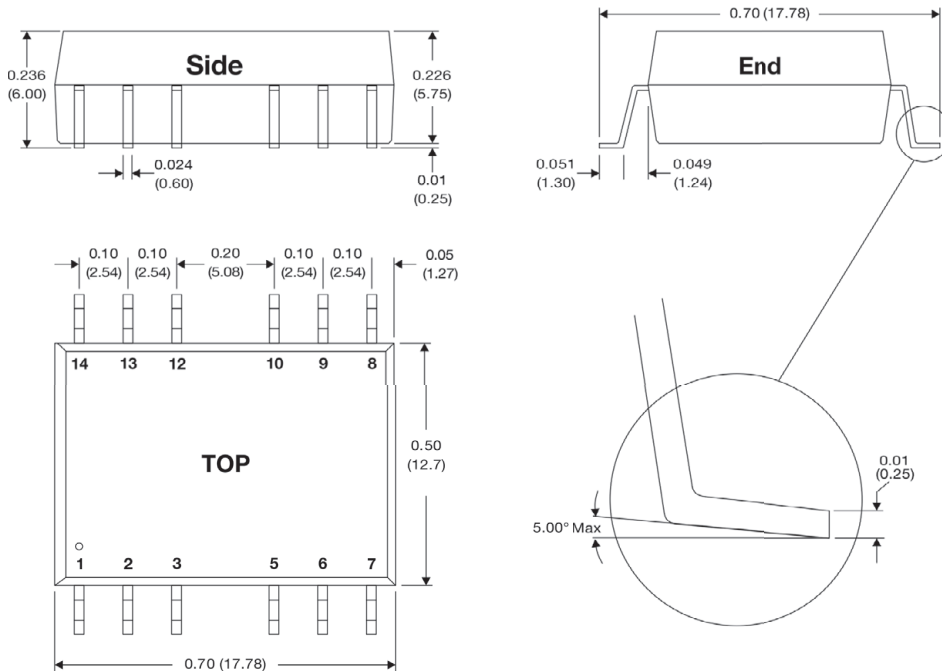
Derating Curve



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

- The recommended time above liquidous (T_L) is \leq 60 seconds at 217 °C. For more information, please contact the factory.
- 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

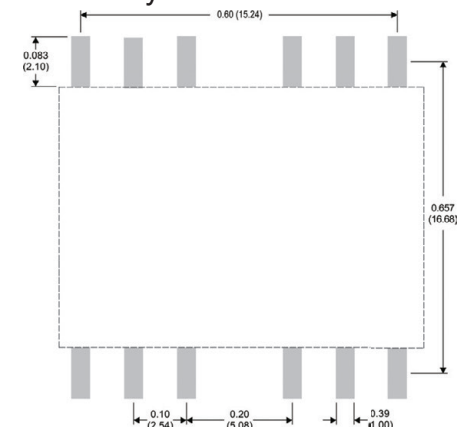


Pin Connections

Pin	Function	Pin	Function
1	-Vin	8	NC
2	+Vin	9	NC
3	NC	10	NC
5	NC	12	NC
6	-Vout	13	NC
7	+Vout	14	NC

NC = No Connection

Board Layout



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



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