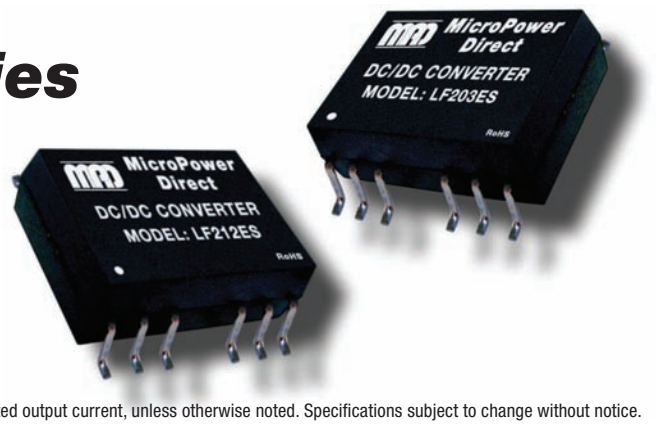
LF200ES Series

Low Cost, 2W SMT Single Output DC/DC Converters



Key Features:

- 2W Output Power
- Ultra-Miniature SMT Case
- 1,000 VDC Isolation
- -40ºC to +85ºC Operation
- Single Output
- Low 0.24" Profile
- >3.5 MHour MTBF
- Industry Standard Pin-Out
- ***LOWEST COST!***

RoHS

Tape/Reel Available

Another Cost Cutter Product From MPD

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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	
Reverse Polarity Input Current				1.0	A
Input Filter	Capacitor				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±3.0		%
Line Regulation	For Vin Change of 1%			±1.2	%
Load Regulation	For Iout = 10% to 100%		±8	±15	%
Output Ripple (20 MHz)			75	150	mV P - P
Output Noise (20 MHz)			150	250	mV P - P
Temperature Coefficient				±0.03	%/ºC
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		70		pF
Switching Frequency			100		kHz

Environmental

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

Physical

Case Size	0.70 x 0.72 x 0.24 Inches (17.78 x 18.03 x 6.0 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	0.05 Oz (1.5g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25ºC, 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	
Lead Temperature	1.5 mm From Case For 10 Sec			260.0	ºC
Internal Power Dissipation	All Models			450	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			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					
LF201ES	5	4.5 - 5.5	494	30	5.0	400.0	40.0	81	500
LF202ES	5	4.5 - 5.5	487	30	9.0	222.0	23.0	82	500
LF203ES	5	4.5 - 5.5	477	30	12.0	167.0	17.0	84	500
LF204ES	5	4.5 - 5.5	475	30	15.0	133.0	14.0	84	500
LF211ES	12	10.8 - 13.2	203	15	5.0	400.0	40.0	82	200
LF212ES	12	10.8 - 13.2	201	15	9.0	222.0	23.0	83	200
LF213ES	12	10.8 - 13.2	197	15	12.0	167.0	17.0	85	200
LF214ES	12	10.8 - 13.2	196	15	15.0	133.0	14.0	85	200

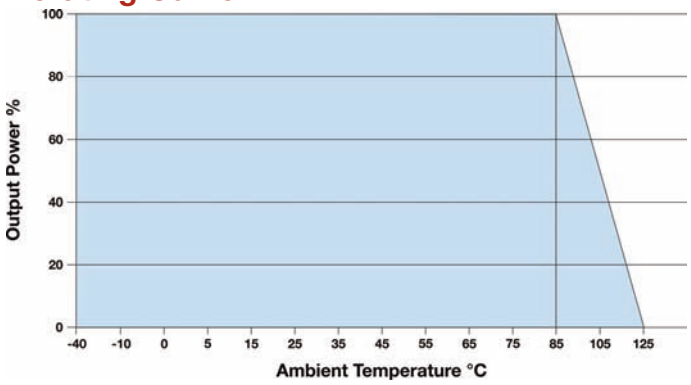
Notes:

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. During operation, care must be taken not to exceed the specified input range of the unit or to allow the output load to drop below the specified minimum (10% of full load). Operating the unit under either of these conditions could cause damage to the unit.
4. 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 μF	5 VDC	4.7 μF
12 VDC	2.2 μF	9 VDC	2.2 μF
		12 VDC	1.0 μF
		15 VDC	0.47 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

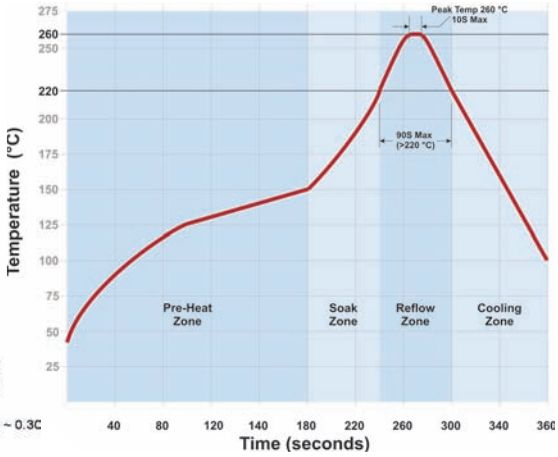


Pin Connections

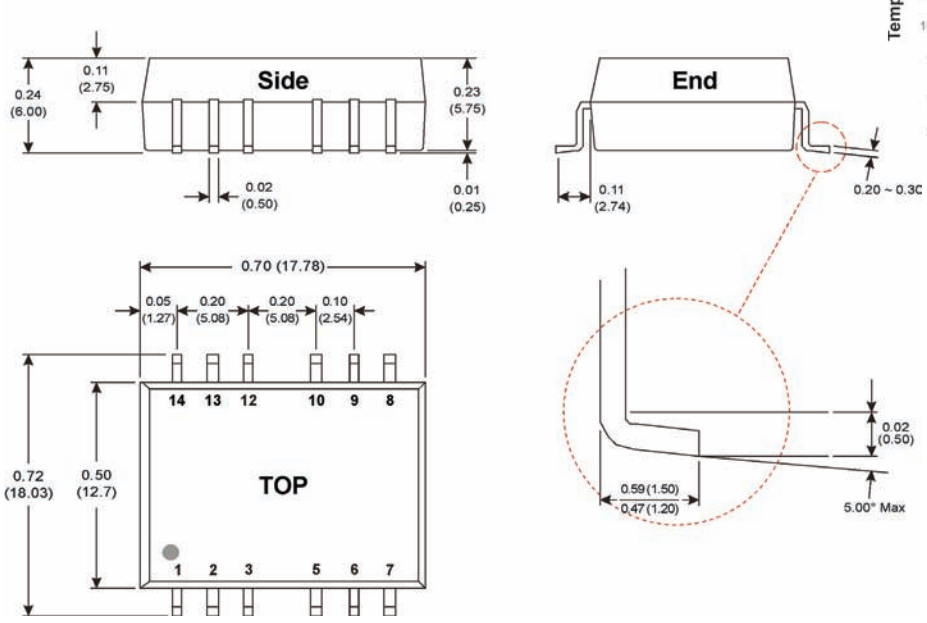
Pin	Function	Pin	Function
1	-Vin	8	NC
2	+Vin	9	NC
3	NC	10	NC
5	NC	12	NC
6	-Vout	13	NC
7	+Vout	14	NC

NC = No Connection

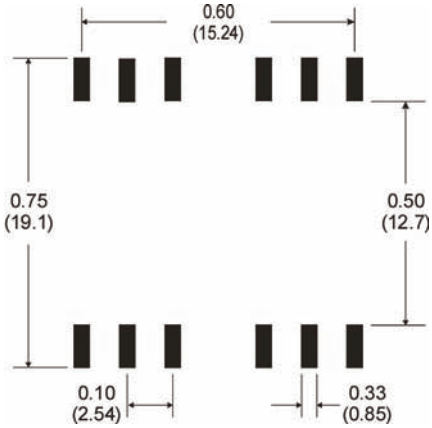
Recommended Solder Profile



Mechanical Dimensions



Board Layout



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 unit

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