



Features

- High power ratings
- Low profile
- Compatible with Pb and Pb-free solder reflow profiles
- RoHS compliant* and halogen free**
- Surface mount packaging for automated assembly
- Agency recognition:  
- Standard 7451 mm (2920 mils) footprint

MF-LSMF Series – PTC Resettable Fuses

Electrical Characteristics

Model	V _{max}	I _{max}	I _{hold}	I _{trip}	Resistance		Max. Time to Trip		Tripped Power Dissipation	Agency Recognition	
			at 23 °C		at 23 °C Ohms		at 23 °C		at 23 °C Watts	cUL	TÜV
	Volts	Amps	Amps		R _{Min}	R _{1Max}	Amps	Seconds	Typ.	E174545	R50256634
MF-LSMF075X	30	40	0.75	1.5	0.15	1.00	8.0	0.3	1.5	✓	✓
MF-LSMF110X	33	40	1.1	2.2	0.07	0.41	8.0	0.5	1.5	✓	✓
MF-LSMF125X	15	40	1.25	2.5	0.05	0.25	8.0	2.0	1.5	✓	✓
MF-LSMF125/33X	33	40	1.25	2.5	0.055	0.25	8.0	2.0	1.5	✓	✓
MF-LSMF150X	15	40	1.5	3.0	0.05	0.23	8.0	2.0	1.5	✓	✓
MF-LSMF150/33X	33	40	1.5	3.0	0.05	0.23	8.0	2.0	1.5	✓	✓
MF-LSMF185X	15	40	1.85	3.7	0.045	0.15	8.0	2.5	1.5	✓	✓
MF-LSMF185/24X	24	40	1.85	3.7	0.045	0.15	8.0	2.5	1.5	✓	✓
MF-LSMF185/33X	33	40	1.85	3.7	0.045	0.15	8.0	2.5	1.5	✓	✓
MF-LSMF200X	15	40	2.0	4.0	0.035	0.125	8.0	5.0	1.5	✓	✓
MF-LSMF200/24X	24	40	2.0	4.0	0.035	0.125	8.0	5.0	1.5	✓	✓
MF-LSMF260X	24	40	2.6	5.2	0.020	0.075	8.0	5.0	1.5	✓	✓
MF-LSMF260/6X	6	40	2.6	5.0	0.020	0.075	8.0	10	1.5	✓	✓
MF-LSMF260/16X	16	40	2.6	5.2	0.020	0.075	8.0	5.0	1.5	✓	✓
MF-LSMF300X	6	40	3.0	5.0	0.015	0.048	8.0	15	1.5	✓	✓
MF-LSMF300/16X	16	40	3.0	5.0	0.015	0.048	8.0	15	1.5	✓	✓
MF-LSMF300/24X	24	40	3.0	5.2	0.015	0.075	8.0	15	1.5	✓	✓
MF-LSMF330X	6	40	3.3	5.5	0.010	0.055	8.0	15	2.0	✓	✓
MF-LSMF330/12X	12	40	3.3	5.5	0.010	0.055	8.0	15	2.0	✓	✓
MF-LSMF330/16X	16	40	3.3	5.5	0.010	0.055	8.0	15	2.0	✓	✓
MF-LSMF330/24X	24	40	3.3	5.5	0.010	0.055	8.0	15	2.0	✓	✓
MF-LSMF400/16X	16	40	4.0	8.0	0.005	0.040	20	4.0	1.5	✓	✓
MF-LSMF500/16X	16	40	5.0	10.0	0.005	0.025	20	5.0	1.5	✓	✓
MF-LSMF600/12X	12	50	6.0	12.0	0.004	0.020	30	2.0	2.0	✓	✓

Environmental Characteristics

Item	Condition	Criteria
Operating Temperature	-40 °C to +85 °C	
Recommended Storage	+40 °C max. / 70 % R.H. max.	
Passive Aging	+85 °C, 1000 hours	±5 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 1000 hours	±5 % typical resistance change
Thermal Shock	-40 °C to +85 °C, 20 times	±10 % typical resistance change
Solvent Resistance	MIL-STD-202, Method 215	No change (marking still legible)
Vibration	MIL-STD-883C, Method 2007.1 Condition A	No change (R _{min} < R < R _{1max})
Moisture Sensitivity Level (MSL)	See Note	
ESD Classification	Class 6 (per AEC-Q200-2, HBM)	

Additional Information

Click these links for more information:



[PRODUCT SELECTOR](#) [TECHNICAL LIBRARY](#) [INVENTORY](#) [SAMPLES](#) [CONTACT](#)



WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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Applications

- Industrial controls
- IEEE ports
- Portable electronics

MF-LSMF Series - PTC Resettable Fuses

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Test Procedures and Requirements

Item	Test Conditions	Accept/Reject Criteria
Visual/Mechanical	Verify dimensions and materials	Per MF physical description
Resistance	In still air @ 23 °C	$R_{min} \leq R \leq R_{max}$
Time to Trip	At specified current, V_{max} , 23 °C, still air	$T \leq$ max. time to trip (seconds)
Hold Current	30 min. at I_{hold} , still air	No trip
Trip Cycle Life	V_{max} , I_{max} , 100 cycles	No arcing or burning
Trip Endurance	V_{max} , 48 hours	No arcing or burning
Solderability	245 °C \pm 5 °C, 5 seconds	95 % min. coverage

Product Dimensions

Model	A		B		C		D		E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
MF-LSMF075X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF110X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF125X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF125/33X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF150X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF150/33X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF185X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF185/24X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF185/33X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$	$\frac{0.30}{(0.012)}$	$\frac{2.50}{(0.098)}$	$\frac{0.25}{(0.010)}$	$\frac{2.00}{(0.079)}$
MF-LSMF200X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF200/24X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF260X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF260/6X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF260/16X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF300X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$				
MF-LSMF300/16X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				
MF-LSMF300/24X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.314)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$				

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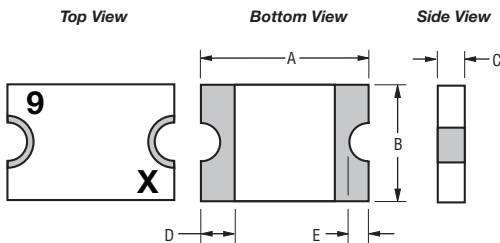
MF-LSMF Series - PTC Resettable Fuses

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Product Dimensions (continued)

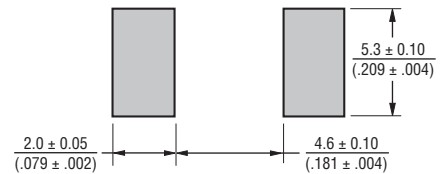
Model	A		B		C		D		E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
MF-LSMF330X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.35 (0.014)	0.85 (0.033)	0.30 (0.012)	2.50 (0.098)	0.25 (.010)	2.00 (.079)
MF-LSMF330/12X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				
MF-LSMF330/16X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				
MF-LSMF330/24X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				
MF-LSMF400/16X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				
MF-LSMF500/16X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				
MF-LSMF600/12X	6.73 (0.265)	7.98 (0.314)	4.80 (0.189)	5.44 (0.214)	0.75 (0.030)	1.60 (0.063)				

DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$



Terminal material:
Electroless Ni under immersion Au

Recommended Pad Layout



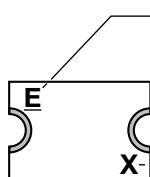
How to Order

MF - LSMF 185/33X - 2

Multifuse® Product Designator _____
Series _____
LSMF = 7451 mm (2920 mils)
Surface Mount Component
Hold Current, I_{hold} _____
0.75-600 (0.75 Amps - 6.0 Amps)
Voltage Option _____
/33 = 33 Volt Rated
X = Multifuse® freeXpansion™ Design
Packaging _____
-2 = Tape and Reel packaged per EIA-481

Typical Part Marking

Represents total content. Layout may vary.



PART IDENTIFICATION EXAMPLES:

MF-LSMF075X = 5	MF-LSMF185X = N	MF-LSMF300/16X = H
MF-LSMF110X = 6	MF-LSMF185/24X = 9	MF-LSMF300/24X = J
MF-LSMF125X = 7	MF-LSMF185/33X = 9	MF-LSMF330X = X
MF-LSMF125/33X = L	MF-LSMF200X = A	MF-LSMF330/12X = Q
MF-LSMF150X = M	MF-LSMF200/24X = A	MF-LSMF330/16X = Q
MF-LSMF150/33X = 8	MF-LSMF260X = E	MF-LSMF330/24X = Q
	MF-LSMF260/6X = P	MF-LSMF400/16X = K
	MF-LSMF260/16X = E	MF-LSMF500/16X = S
	MF-LSMF300X = F	MF-LSMF600/12X = I

BI-WEEKLY DATE CODE:
WEEKS 47-48 = X

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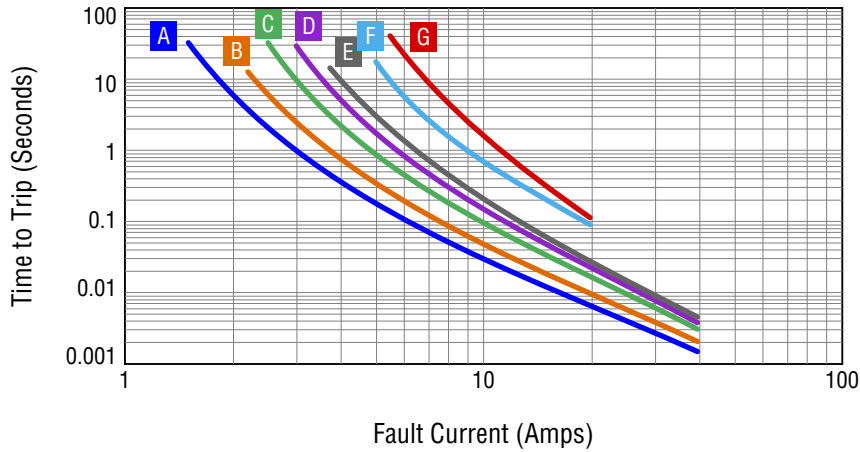
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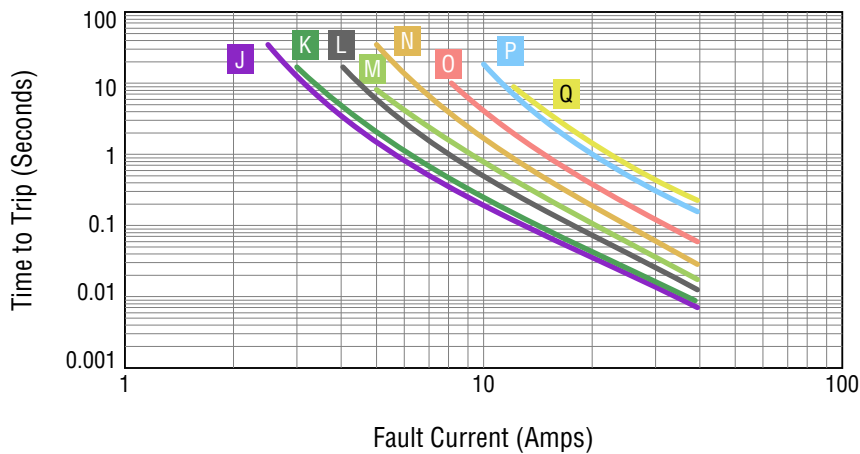
MF-LSMF Series - PTC Resettable Fuses



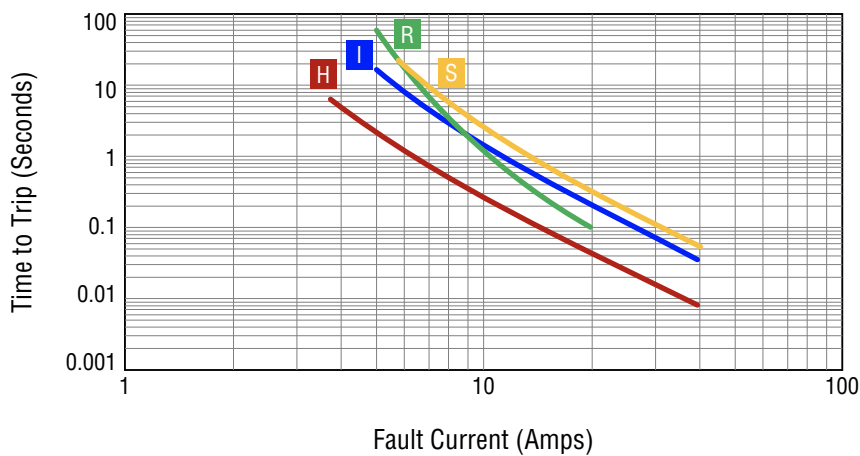
Typical Time to Trip at 23 °C



- A** MF-LSMF075X
- B** MF-LSMF110X
- C** MF-LSMF125X
- D** MF-LSMF150X
- E** MF-LSMF185X
- F** MF-LSMF260/6X
- G** MF-LSMF330X



- J** MF-LSMF125/33X
- K** MF-LSMF150/33X
- L** MF-LSMF200X, MF-LSMF200/24X
- M** MF-LSMF260X, MF-LSMF260/16X
- N** MF-LSMF300/16X
- O** MF-LSMF400/16X
- P** MF-LSMF500/16X
- Q** MF-LSMF600/12X



- H** MF-LSMF185/24X, MF-LSMF185/33X
- I** MF-LSMF300/24X
- R** MF-LSMF300X
- S** MF-LSMF330/12X, MF-LSMF330/16X, MF-LSMF330/24X

The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

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MF-LSMF Series - PTC Resettable Fuses



Thermal Derating Chart - I_{hold} (Amps)

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-LSMF075X	1.10	1.01	0.89	0.75	0.63	0.56	0.50	0.44	0.34
MF-LSMF110X	1.61	1.47	1.30	1.10	0.92	0.83	0.73	0.64	0.50
MF-LSMF125X	1.83	1.68	1.48	1.25	1.05	0.94	0.83	0.73	0.56
MF-LSMF125/33X	1.83	1.68	1.48	1.25	1.05	0.94	0.83	0.73	0.56
MF-LSMF150X	2.19	2.01	1.77	1.50	1.26	1.13	0.99	0.87	0.68
MF-LSMF150/33X	2.19	2.01	1.77	1.50	1.26	1.13	0.99	0.87	0.68
MF-LSMF185X	2.70	2.48	2.18	1.85	1.55	1.39	1.22	1.07	0.83
MF-LSMF185/24X	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
MF-LSMF185/33X	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
MF-LSMF200X	2.92	2.68	2.36	2.00	1.68	1.50	1.32	1.16	0.90
MF-LSMF200/24X	2.92	2.68	2.36	2.00	1.68	1.50	1.32	1.16	0.90
MF-LSMF260X	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
MF-LSMF260/6X	3.80	3.48	3.07	2.60	2.18	1.95	1.72	1.51	1.17
MF-LSMF260/16X	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.30
MF-LSMF300X	4.53	4.02	3.51	3.00	2.52	2.26	1.99	1.75	1.34
MF-LSMF300/16X	4.38	4.02	3.54	3.00	2.52	2.25	1.98	1.74	1.35
MF-LSMF300/24X	4.00	3.55	3.20	3.30	2.50	2.25	2.15	1.85	1.50
MF-LSMF330X	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
MF-LSMF330/12X	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
MF-LSMF330/16X	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
MF-LSMF330/24X	4.82	4.42	3.89	3.30	2.77	2.48	2.18	1.91	1.49
MF-LSMF400/16X	5.84	5.36	4.72	4.00	3.36	3.00	2.64	2.32	1.80
MF-LSMF500/16X	7.30	6.70	5.90	5.00	4.20	3.75	3.30	2.90	2.25
MF-LSMF600/12X	8.76	8.04	7.08	6.00	5.04	4.50	3.96	3.48	2.70

Packaging Quantity

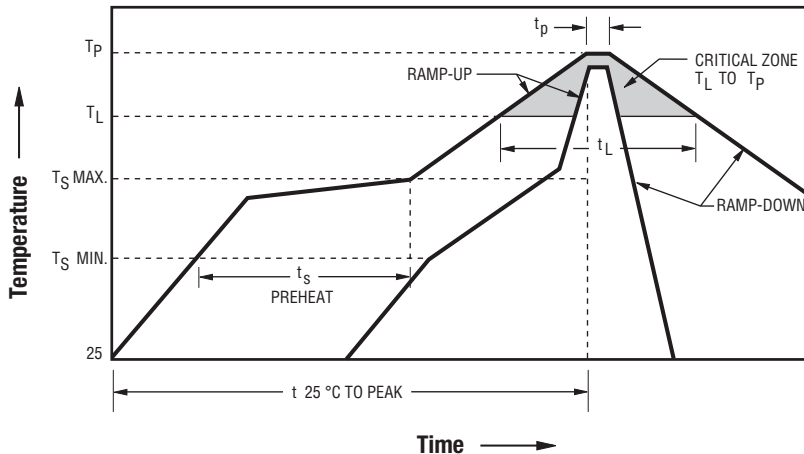
Model	Unit Quantity (pcs.)	Unit
MF-LSMF125/33X MF-LSMF150/33X MF-LSMF185/24X MF-LSMF185/33X MF-LSMF200X MF-LSMF200/24X	4000	Reel
MF-LSMF075X MF-LSMF110X MF-LSMF125X	6000	Reel

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Solder Reflow Recommendations



Notes:

- MF-LSMF models are intended for reflow soldering (including but not limited to heating plate, hot air, IR, nitrogen, and vapor phase).
- Wave soldering is permissible only if the device is on the top of the PCB, opposite the heat source.
- Hand soldering is not recommended for these devices.
- All temperatures refer to the topside of the device, measured on the device body surface.
- If reflow temperatures exceed the recommended profile, devices may not meet the published specifications.
- Compatible with Pb and Pb-free solder reflow profiles.
- Excess solder may cause a short circuit.
- Please refer to the [Multifuse® Polymer PTC Resettable Fuse Soldering Recommendations](#) document for more details.

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (TS _{max} to TP)	3 °C / second max.
PREHEAT:	
Temperature Min. (TS _{min})	150 °C
Temperature Max. (TS _{max})	200 °C
Time (TS _{min} to TS _{max}) (ts)	60~180 seconds
TIME MAINTAINED ABOVE:	
Temperature (TL)	217 °C
Time (tL)	60~150 seconds
Peak Temperature (TP)	260 °C
Time within 5 °C of Actual Peak Temperature (tp)	20~40 seconds
Ramp-Down Rate	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

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MF-LSMF Series Tape and Reel Specifications

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MF-LSMF075X, MF-LSMF110X,
MF-LSMF125X, MF-LSMF150X,
MF-LSMF185X, MF-LSMF260/6X,
MF-LSMF300X & MF-LSMF330X

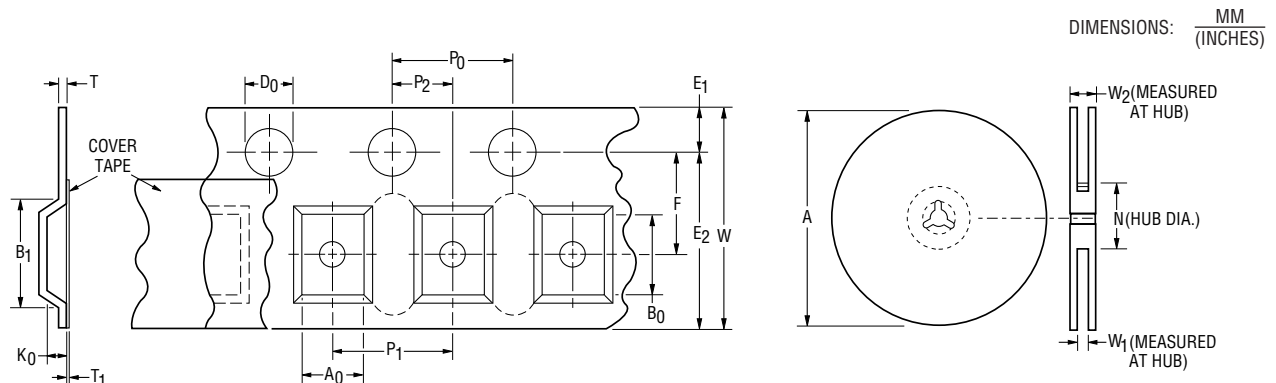
MF-LSMF125/33X, MF-LSMF150/33X, MF-LSMF185/24X,
MF-LSMF185/33X, MF-LSMF200X, MF-LSMF200/24X,
MF-LSMF260X, MF-LSMF260/16X, MF-LSMF300/16X,
MF-LSMF300/24X, MF-LSMF330/12X, MF-LSMF330/16X,
MF-LSMF330/24X, MF-LSMF400/16X, MF-LSMF500/16X
& MF-LSMF600/12X

Tape Dimensions per EIA 481

W	$\frac{16.0 \pm 0.30}{(0.630 \pm 0.012)}$	$\frac{16.0 \pm 0.30}{(0.630 \pm 0.012)}$
P ₀	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$
10 P ₀	$\frac{40 \pm 0.20}{(1.575 \pm 0.008)}$	$\frac{40 \pm 0.20}{(1.575 \pm 0.008)}$
P ₁	$\frac{8.0 \pm 0.10}{(0.315 \pm 0.004)}$	$\frac{8.0 \pm 0.10}{(0.315 \pm 0.004)}$
P ₂	$\frac{2.0 \pm 0.10}{(0.079 \pm 0.004)}$	$\frac{2.0 \pm 0.10}{(0.079 \pm 0.004)}$
A ₀	$\frac{5.74 \pm 0.10}{(0.226 \pm 0.004)}$	$\frac{5.70 \pm 0.10}{(0.224 \pm 0.004)}$
B ₀	$\frac{8.02 \pm 0.10}{(0.316 \pm 0.004)}$	$\frac{8.10 \pm 0.10}{(0.319 \pm 0.004)}$
B ₁ max.	$\frac{12.1}{(0.476)}$	$\frac{12.1}{(0.476)}$
D ₀	$\frac{1.5 + 0.10/-0}{(0.059 + 0.004/-0)}$	$\frac{1.5 + 0.10/-0}{(0.059 + 0.004/-0)}$
F	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$
E ₁	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
E ₂ min.	$\frac{14.25}{(0.561)}$	$\frac{14.25}{(0.561)}$
T max.	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$
T ₁ max	$\frac{0.1}{(0.004)}$	$\frac{0.1}{(0.004)}$
K ₀	$\frac{0.91 \pm 0.10}{(0.036 \pm 0.004)}$	$\frac{1.70 \pm 0.10}{(0.067 \pm 0.004)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$

Reel Dimensions

A max.	$\frac{331}{(13.03)}$	$\frac{331}{(13.03)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{16.4 + 2.0/-0}{(0.646 + 0.079/-0)}$	$\frac{16.4 + 2.0/-0}{(0.646 + 0.079/-0)}$
W ₂ max.	$\frac{22.4}{(0.882)}$	$\frac{22.4}{(0.882)}$



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Users should verify actual device performance in their specific applications.

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