




## Features

- High power ratings
- Compliant with AEC-Q200 Rev-C- Stress Test Qualification for Passive Components in Automotive Applications
- 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 7555 mm (2920 mils) footprint

## MF-LSMF Series - PTC Resettable Fuses

### Electrical Characteristics

Model***	V max. Volts	I max. Amps	I <sub>hold</sub>		I <sub>trip</sub>		Resistance		Max. Time To Trip		Tripped Power Dissipation
			Amperes at 23 °C		Ohms at 23 °C		Amperes at 23 °C	Seconds at 23 °C	Watts at 23 °C		
			Hold	Trip	R <sub>Min.</sub>	R <sub>1Max.</sub>				Typ.	
MF-LSMF185/33X	33.0	40	1.85	3.70	0.045	0.150	8.0	2.50	1.5		
MF-LSMF260X	24.0	20	2.60	5.20	0.020	0.075	8.0	5.00	1.5		
MF-LSMF300X	6.0	40	3.00	5.00	0.015	0.048	8.0	20.00	1.5		
MF-LSMF300/24X	24.0	20	3.00	5.20	0.020	0.075	8.0	5.00	1.5		

\*\*\* Features Multifuse® Free Xpansion Design™ for MF-LSMF Series.

### Environmental Characteristics

Operating Temperature.....	-40 °C to +85 °C
Maximum Device Surface Temperature in Tripped State .....	125 °C
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 .....	+85 °C to -40 °C, 20 times..... ±10 % typical resistance change
Solvent Resistance.....	MIL-STD-202, Method 215..... No change
Vibration .....	MIL-STD-883C, Method 2007.1, Condition A..... No change

### Test Procedures And Requirements For Model MF-LSMF Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.....	Verify dimensions and materials.....	Per MF physical description
Resistance.....	In still air @ 23 °C.....	R <sub>min</sub> ≤ R ≤ R <sub>1max</sub>
Time to Trip.....	At specified current, V <sub>max</sub> , 23 °C.....	T ≤ max. time to trip (seconds)
Hold Current.....	30 min. at I <sub>hold</sub> .....	No trip
Trip Cycle Life.....	V <sub>max</sub> , I <sub>max</sub> , 100 cycles.....	No arcing or burning
Trip Endurance .....	V <sub>max</sub> , 48 hours.....	No arcing or burning
Solderability.....	ANSI/J-STD-002.....	95 % min. coverage

UL File Number ..... E174545  
<http://www.ul.com/> Follow link to Certifications, then UL File No., enter E174545

\*RoHS Directive 2002/95/EC Jan 27, 2003 including Annex.

\*\*Bourns is using the definition that appears to be the prevalent definition used as the industry standard at this time. The Bourns definition of "halogen-free" is: Bromine (Br) content: ≤ 900 ppm; Chlorine (Cl) content: ≤ 900 ppm; Total Br + Cl content: ≤ 1500 ppm.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

## Applications

- Automotive electronics
- Industrial controls
- IEEE ports
- Portable electronics

## MF-LSMF Series - PTC Resettable Fuses

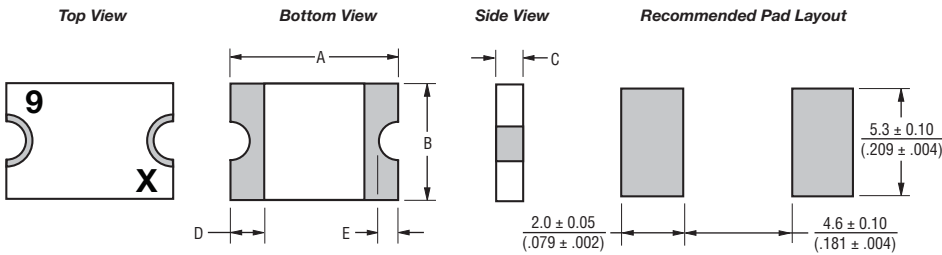
**BOURNS®**

### Product Dimensions

Model	A		B		C		D	E	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.
MF-LSMF185/33X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.312)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{2.00}{(0.079)}$
MF-LSMF260X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.312)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{2.00}{(0.079)}$
MF-LSMF300X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.312)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.35}{(0.014)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{2.00}{(0.079)}$
MF-LSMF300/24X	$\frac{6.73}{(0.265)}$	$\frac{7.98}{(0.312)}$	$\frac{4.80}{(0.189)}$	$\frac{5.44}{(0.214)}$	$\frac{0.75}{(0.030)}$	$\frac{1.60}{(0.063)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{2.00}{(0.079)}$

Packaging: 3000 pcs. per reel.

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



#### Terminal material:

Electroless Ni under immersion Au

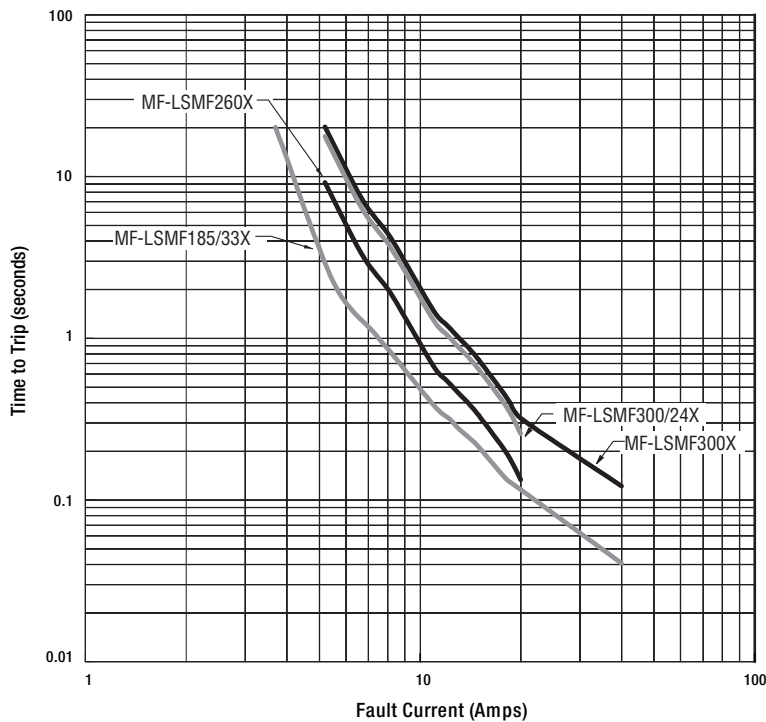
#### Termination pad solderability:

Standard Au finish:  
Meets ANSI/J-STD-002 Category 2.

#### Recommended Storage:

40 °C max./70 % RH max.

### Typical Time to Trip at 23 °C



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.

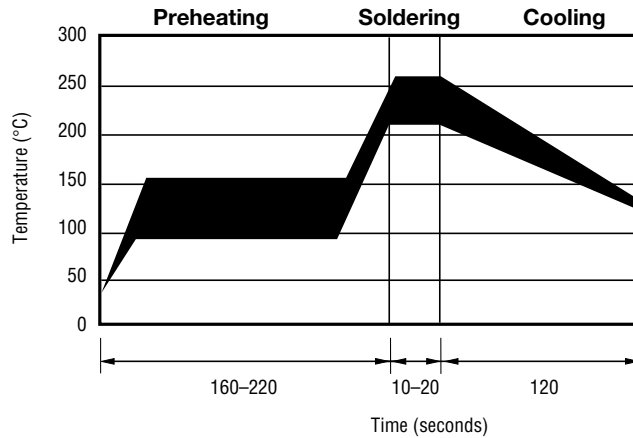
# MF-LSMF Series - PTC Resettable Fuses

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## Thermal Derating Chart - I<sub>hold</sub> (Amps)

Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-LSMF185/33X	2.80	2.47	2.17	1.85	1.54	1.39	1.22	1.07	0.85
MF-LSMF260X	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-LSMF300/24X	4.00	3.55	3.20	3.00	2.50	2.25	2.15	1.85	1.50

## Solder Reflow Recommendations



### Notes:

- MF-LSMF models cannot be wave soldered. Please contact Bourns for hand soldering recommendations.
- If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.
- Compatible with Pb and Pb-free solder reflow profiles.

## How to Order

**MF - LSMF 185/33X - 2**

Multifuse® Product Designator \_\_\_\_\_  
 Series \_\_\_\_\_  
 LSMF = 7555 mm (2920 mils)  
 Surface Mount Component  
 Hold Current, I<sub>hold</sub> \_\_\_\_\_  
 185-300 (1.85 Amps - 3.00 Amps)  
 Higher Voltage Option \_\_\_\_\_  
 /24 = 24 Volt Rated  
 /33 = 33 Volt Rated  
 X = Multifuse® freeXpansion™ Design  
 MF-LSMF Series  
 Packaging \_\_\_\_\_  
 Packaged per EIA 481-1  
 -2 = Tape and Reel

## Typical Part Marking

Represents total content. Layout may vary.

PART IDENTIFICATION EXAMPLES:  
 MF-LSMF185/33X = 9  
 MF-LSMF260X = E  
 MF-LSMF300X = F  
 MF-LSMF300/24X = J

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

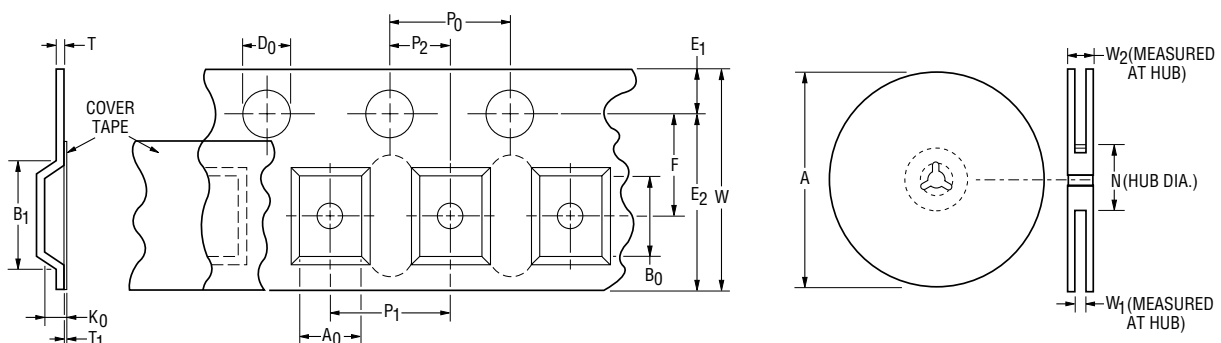
# MF-LSMF Series Tape and Reel Specifications

# BOURNS®

NOTE: Effective December 1, 2010 (product date code "X"), the cover tape will be changed to the new 3M™ Universal Cover Tape (UCT).

Tape Dimensions	MF-LSMF300X	MF-LSMF185/33X, MF-LSMF260X,
	per EIA 481-2	MF-LSMF300/24X per EIA 481-2
W	16.0 ± 0.30 (0.630 ± 0.012)	16.0 ± 0.30 (0.630 ± 0.012)
P <sub>0</sub>	4.0 ± 0.10 (0.157 ± 0.004)	4.0 ± 0.10 (0.157 ± 0.004)
P <sub>1</sub>	8.0 ± 0.10 (0.315 ± 0.004)	8.0 ± 0.10 (0.315 ± 0.004)
P <sub>2</sub>	2.0 ± 0.05 (0.079 ± 0.002)	2.0 ± 0.05 (0.079 ± 0.002)
A <sub>0</sub>	5.74 ± 0.10 (0.226 ± 0.004)	5.70 ± 0.10 (0.224 ± 0.004)
B <sub>0</sub>	8.02 ± 0.10 (0.316 ± 0.004)	8.10 ± 0.10 (0.319 ± 0.004)
B <sub>1</sub> max.	12.1 (0.476)	12.1 (0.476)
D <sub>0</sub>	1.5 + 0.10/-0.0 (0.059 + 0.004/-0)	1.5 + 0.10/-0.0 (0.059 + 0.004/-0)
F	7.5 ± 0.05 (0.295 ± 0.002)	7.5 ± 0.05 (0.295 ± 0.002)
E <sub>1</sub>	1.75 ± 0.10 (0.069 ± 0.004)	1.75 ± 0.10 (0.069 ± 0.004)
E <sub>2</sub> min.	14.25 (0.561)	14.25 (0.561)
T max.	0.6 (0.024)	0.6 (0.024)
T <sub>1</sub> max.	0.1 (0.004)	0.1 (0.004)
K <sub>0</sub>	0.91 ± 0.10 (0.036 ± 0.004)	1.70 ± 0.10 (0.067 ± 0.004)
Leader min.	390 (15.35)	390 (15.35)
Trailer min.	160 (6.30)	160 (6.30)
<b>Reel Dimensions</b>		
A max.	331 (13.03)	331 (13.03)
N min.	50 (1.97)	50 (1.97)
W <sub>1</sub>	16.4 + 2.0/-0.0 (0.646 + 0.079/-0.0)	16.4 + 2.0/-0.0 (0.646 + 0.079/-0.0)
W <sub>2</sub> max.	22.4 (0.882)	22.4 (0.882)

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



Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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