




## 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

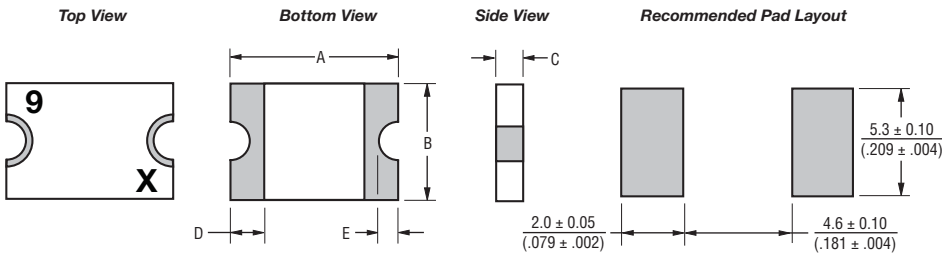
**BOURNS®**

### 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

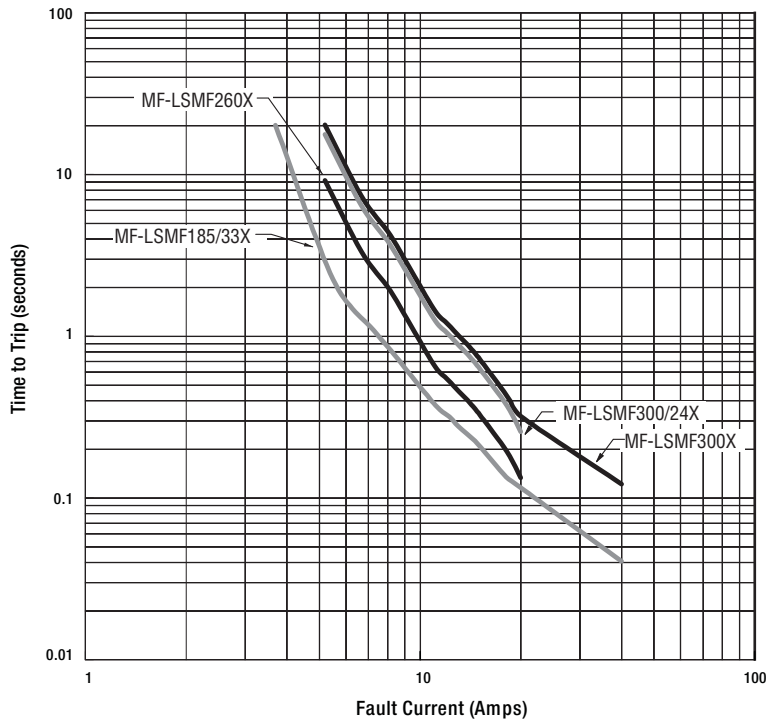
#### Termination pad solderability:

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.

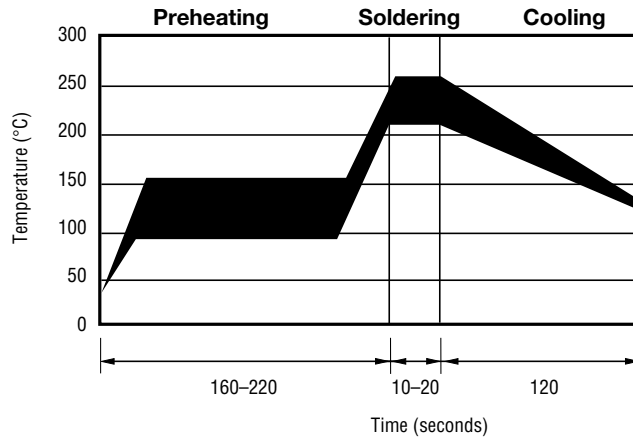
# MF-LSMF Series - PTC Resettable Fuses

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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

The diagram shows a rectangular component with a semi-circular notch on the left side and a semi-circular bump on the right side. The letter 'E' is printed on the left side, and the letter 'X' is printed on the right side.

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

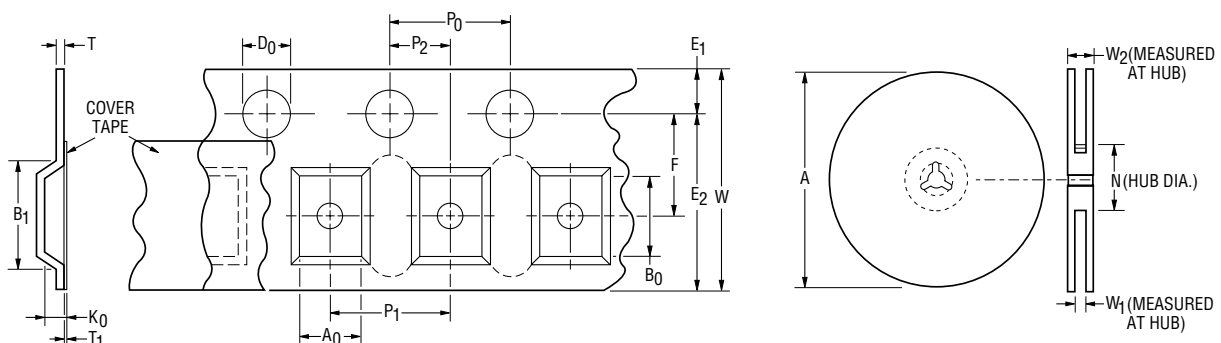
# MF-LSMF Series Tape and Reel Specifications

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



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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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