



### Features

- Very low profile
- High voltage
- Lead-free construction
- Symmetrical
- 2018 footprint
- Agency recognition pending

### Applications

- Power Over Ethernet (IEEE 802.3 af) port protection
- Firewire and i.Link IEEE 1394 port protection
- Automotive electronic control module protection
- Telecom equipment low voltage protection

## MF-SMDF 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-SMDF030	60	20	0.30	0.80	0.450	2.250	1.5	1.5	0.7
MF-SMDF050	60	10	0.55	1.20	0.200	0.950	2.5	4.0	1.0
MF-SMDF100	15	40	1.10	2.20	0.100	0.390	8.0	0.5	1.1
MF-SMDF150	15	40	1.50	3.00	0.070	0.175	8.0	0.9	1.2
MF-SMDF150/33	33	40	1.50	3.00	0.070	0.175	8.0	0.9	1.2
MF-SMDF200	10	40	2.00	4.10	0.048	0.095	8.0	2.7	1.3

### 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, .....No change Condition A

### Test Procedures And Requirements For Model MF-SMDF 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

### Thermal Derating Chart - I<sub>hold</sub> / I<sub>trip</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-SMDF030	0.48 / 0.96	0.42 / 0.84	0.35 / 0.70	0.30 / 0.60	0.24 / 0.48	0.21 / 0.42	0.17 / 0.34	0.15 / 0.30	0.10 / 0.20
MF-SMDF050	0.86 / 1.72	0.77 / 1.54	0.70 / 1.40	0.55 / 1.10	0.48 / 0.96	0.43 / 0.86	0.38 / 0.76	0.36 / 0.72	0.26 / 0.52
MF-SMDF100	1.59 / 3.18	1.43 / 2.86	1.20 / 2.40	1.10 / 2.20	0.94 / 1.88	0.85 / 1.70	0.72 / 1.44	0.69 / 1.38	0.57 / 1.14
MF-SMDF150	2.21 / 4.42	1.97 / 3.94	1.70 / 3.40	1.50 / 3.00	1.26 / 2.52	1.15 / 2.30	1.00 / 2.00	0.91 / 1.82	0.73 / 1.46
MF-SMDF150/33	2.21 / 4.42	1.97 / 3.94	1.70 / 3.40	1.50 / 3.00	1.26 / 2.52	1.15 / 2.30	1.00 / 2.00	0.91 / 1.82	0.73 / 1.46
MF-SMDF200	2.81 / 5.62	2.54 / 5.08	2.27 / 4.54	2.00 / 4.00	1.73 / 3.46	1.59 / 3.18	1.46 / 2.92	1.32 / 2.64	1.12 / 2.24

# MF-SMDF Series - PTC Resettable Fuses

**BOURNS®**

## Product Dimensions

Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
MF-SMDF030	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$
MF-SMDF050	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$
MF-SMDF100	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$
MF-SMDF150	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$
MF-SMDF150/33	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$
MF-SMDF200	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$

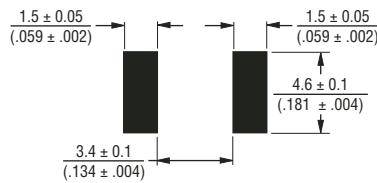
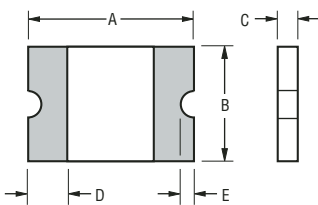
Packaging: 2000 pcs. per reel.

UNIT =  $\frac{\text{MM}}{\text{(INCHES)}}$

Top and Bottom View

Side View

Recommended Pad Layout



### Terminal material:

Electroless Ni under immersion Au

### Termination pad solderability:

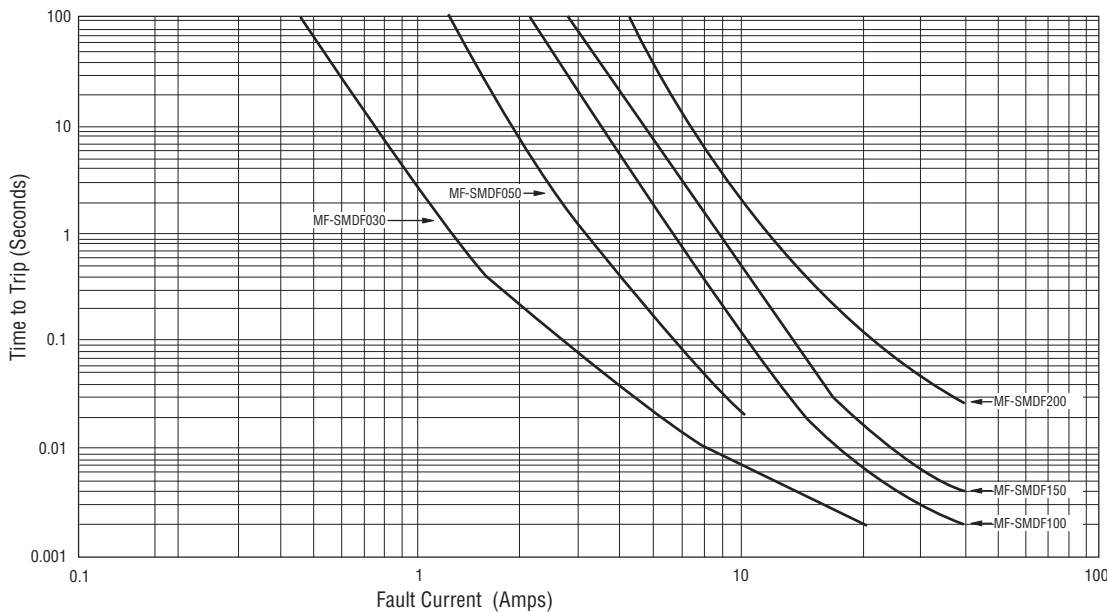
Standard Au finish:  
Meets ANSI/J-STD-002 Category 2.

Optional Sn finish:  
Meets ANSI/J-STD-002 Category 3.

### Recommended Storage:

40 °C max./70 % RH max.

## Typical Time to Trip at 23 °C



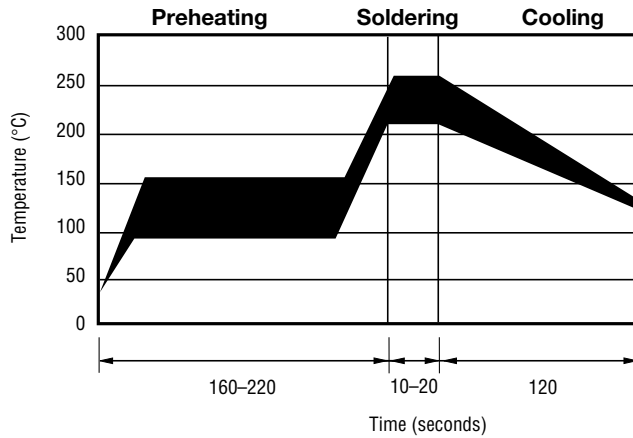
The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

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

# MF-SMDF Series - PTC Resettable Fuses

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## Solder Reflow Recommendations



### Notes:

- MF-SMDF models cannot be wave soldered.
- 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 - SMDF 150/33 T - 2**

Multifuse® Product Designator \_\_\_\_\_

Series \_\_\_\_\_  
 SMDF = 2018 Surface Mount Component

Hold Current,  $I_{hold}$  \_\_\_\_\_  
 030-200 (0.30 Amps - 2.00 Amps)

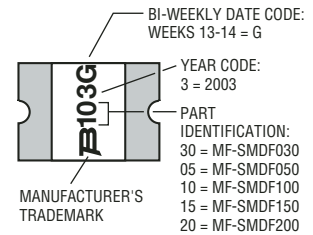
Higher Voltage Option \_\_\_\_\_  
 \_\_\_ = Standard Voltage  
 /33 = 33 Volt Rated

Optional Terminal Finish \_\_\_\_\_  
 \_\_\_ = Standard Au Finish  
 T = Optional Sn Finish

Packaging \_\_\_\_\_  
 Packaged per EIA 481-1  
 -2 = Tape and Reel

## Typical Part Marking

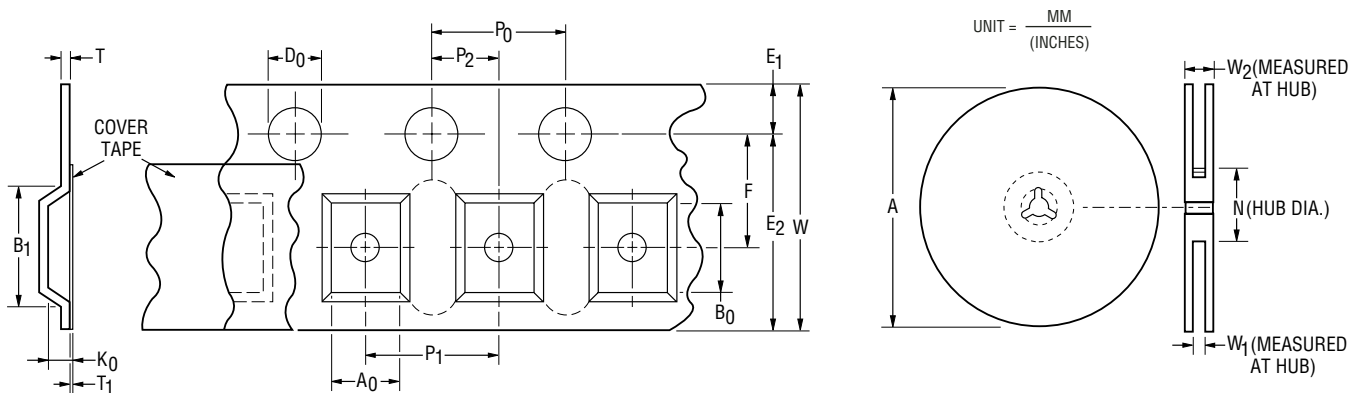
Represents total content. Layout may vary.



# MF-NSMF & MF-SMDF Series Tape and Reel Specifications



Tape Dimensions	MF-NSMF Series per EIA 481-1	MF-SMDF Series per EIA 481-2
W	$\frac{8.0 \pm 0.30}{(0.315 \pm 0.012)}$	$\frac{16.0 \pm 0.3}{(0.630 \pm 0.012)}$
P <sub>0</sub>	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$
P <sub>1</sub>	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{8.0 \pm 0.1}{(0.315 \pm 0.004)}$
P <sub>2</sub>	$\frac{2.0 \pm 0.05}{(0.079 \pm 0.002)}$	$\frac{2.0 \pm 0.1}{(0.079 \pm 0.004)}$
A <sub>0</sub>	$\frac{1.85 \pm 0.10}{(0.073 \pm 0.004)}$	$\frac{5.1 \pm 0.15}{(0.201 \pm 0.006)}$
B <sub>0</sub>	$\frac{3.45 \pm 0.10}{(0.136 \pm 0.004)}$	$\frac{5.6 \pm 0.23}{(0.220 \pm 0.009)}$
B <sub>1</sub> max.	$\frac{4.35}{(0.171)}$	$\frac{12.1}{(0.476)}$
D <sub>0</sub>	$\frac{1.50 + 0.1/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$
E <sub>1</sub>	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
E <sub>2</sub> min.	$\frac{6.25}{(0.246)}$	$\frac{14.25}{(0.561)}$
T max.	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$
T <sub>1</sub> max.	$\frac{0.1}{(0.004)}$	$\frac{0.1}{(0.004)}$
K <sub>0</sub>	$\frac{0.74 \pm 0.10}{(0.029 \pm 0.004)}$	$\frac{1.0 \pm 0.15}{(0.039 \pm 0.015)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
<b>Reel Dimensions</b>		
A max.	$\frac{185}{(7.28)}$	$\frac{331}{(13.03)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W <sub>1</sub>	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0.0)}$	$\frac{16.4 + 2.0/-0.0}{(0.646 + 0.079/-0.0)}$
W <sub>2</sub> max.	$\frac{14.4}{(0.567)}$	$\frac{22.4}{(0.882)}$



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