

\*RoHS COMPLIANT



**BOURNS®**

## Features

- Very low profile
- Very fast tripping time
- High voltage
- RoHS compliant\*
- Symmetrical
- 2018 footprint
- Agency recognition:   

## Applications

- Power Over Ethernet (IEEE 802.3 af) 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-SMDF050	60	10	0.55	1.20	0.200	1.0	2.5	3.0	0.9
MF-SMDF100*	15	40	1.1	2.20	0.06	0.36	8.0	0.4	1.0
MF-SMDF150*	15	40	1.5	3.00	0.05	0.17	8.0	0.8	1.1
MF-SMDF200	10	40	2.0	4.00	0.03	0.100	8.0	2.40	1.1

\*Agency approval pending.

### 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

UL File Number .....	E174545 <a href="http://www.ul.com/">http://www.ul.com/</a> Follow link to Certifications, then UL File No., enter E174545
CSA File Number .....	CA110338 <a href="http://directories.csa-international.org/">http://directories.csa-international.org/</a> Under "Certification Record" and "File Number" enter 110338-0-000
TÜV Certificate Number .....	R 02057213 <a href="http://www.tuvdotcom.com/">http://www.tuvdotcom.com/</a> Follow link to "other certificates", enter File No. 2057213

### 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-SMDF050	0.87 / 1.90	0.77 / 1.68	0.67 / 1.46	0.55 / 1.20	0.46 / 1.00	0.41 / 0.89	0.36 / 0.79	0.31 / 0.68	0.23 / 0.50
MF-SMDF100	1.71 / 3.42	1.52 / 3.04	1.32 / 2.64	1.10 / 2.20	0.94 / 1.88	0.84 / 1.68	0.74 / 1.48	0.64 / 1.28	0.50 / 1.00
MF-SMDF150	2.38 / 4.76	2.10 / 4.20	1.82 / 3.64	1.50 / 3.00	1.27 / 2.54	1.13 / 2.26	0.99 / 1.98	0.85 / 1.70	0.64 / 1.28
MF-SMDF200	2.95 / 5.90	2.65 / 5.30	2.35 / 4.70	2.00 / 4.00	1.74 / 3.48	1.59 / 3.18	1.44 / 2.88	1.29 / 2.58	1.06 / 2.12

\*RoHS Directive 2002/95/EC Jan 27 2003 including Annex  
Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# MF-SMDF Series - PTC Resettable Fuses

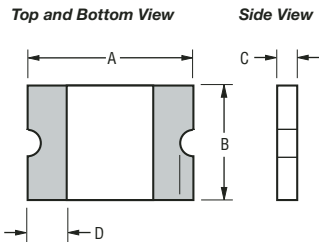
**BOURNS®**

## Product Dimensions

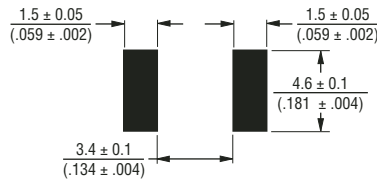
Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
MF-SMDF050	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$
MF-SMDF100	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
MF-SMDF150	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$
MF-SMDF200	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$

Packaging: 3000 pcs. per reel.

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



### Recommended Pad Layout



### Terminal material:

Electroless Ni under immersion Au

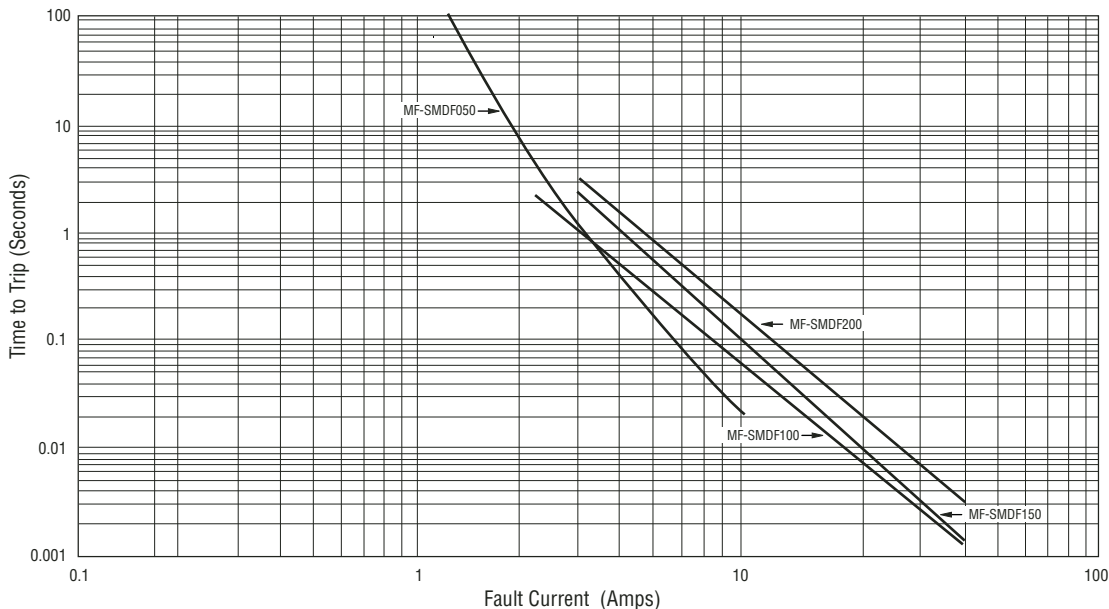
### Termination pad solderability:

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

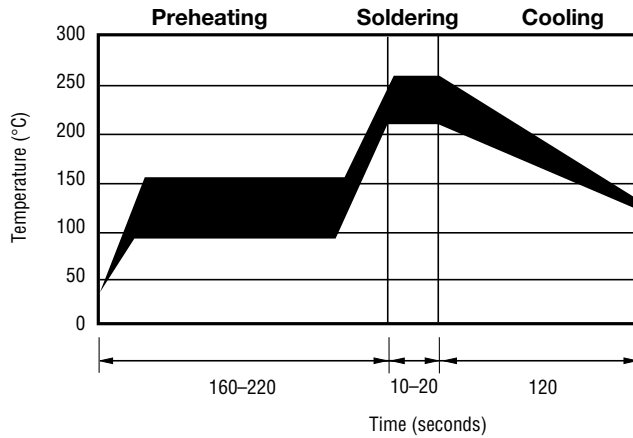


The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

# MF-SMDF Series - PTC Resettable Fuses

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## Solder Reflow Recommendations



### Notes:

- MF-SMDF 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 - SMDF 050 - 2**

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

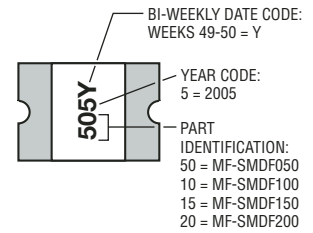
Series \_\_\_\_\_  
 SMDF = 2018 Surface Mount Component

Hold Current,  $I_{hold}$  \_\_\_\_\_  
 050, 100, 150, 200 (0.50 - 2.00 Amps)

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

## Typical Part Marking

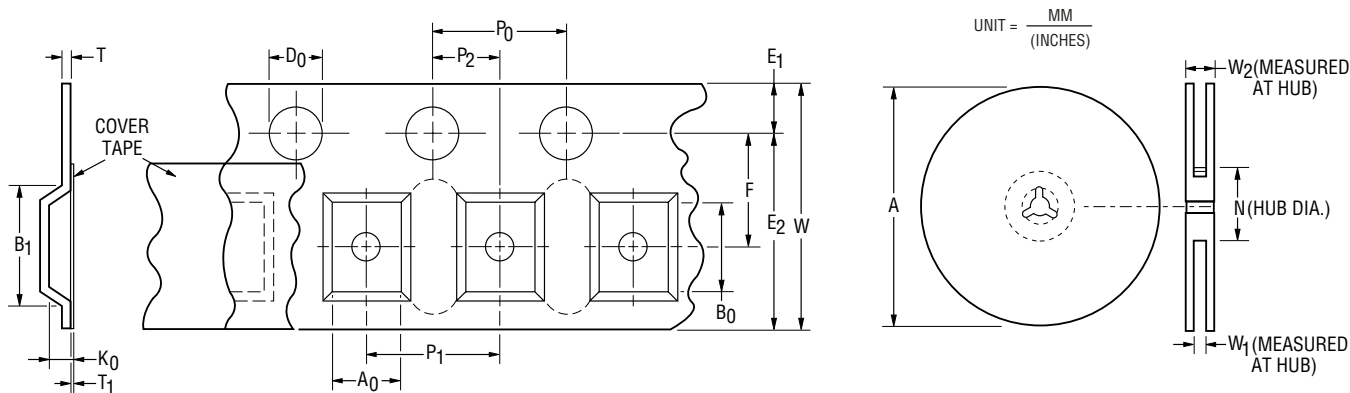
Represents total content. Layout may vary.



# MF-SMDF Series Tape and Reel Specifications

# BOURNS®

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



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