



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 _{hold}	I _{trip}	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 _{Min.}	R _{1Max.}			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 215No 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 _{min} ≤ R ≤ R _{1max}
Time to Trip	At specified current, V _{max} , 23 °C	T ≤ max. time to trip (seconds)
Hold Current	30 min. at I _{hold}	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	ANSI/J-STD-002	95 % min. coverage

Thermal Derating Chart - I_{hold} / I_{trip} (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

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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	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$

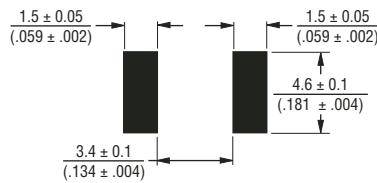
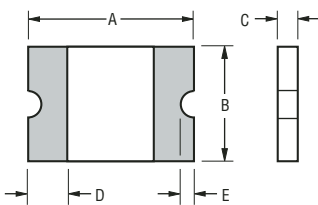
Packaging: 2000 pcs. per reel.

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:

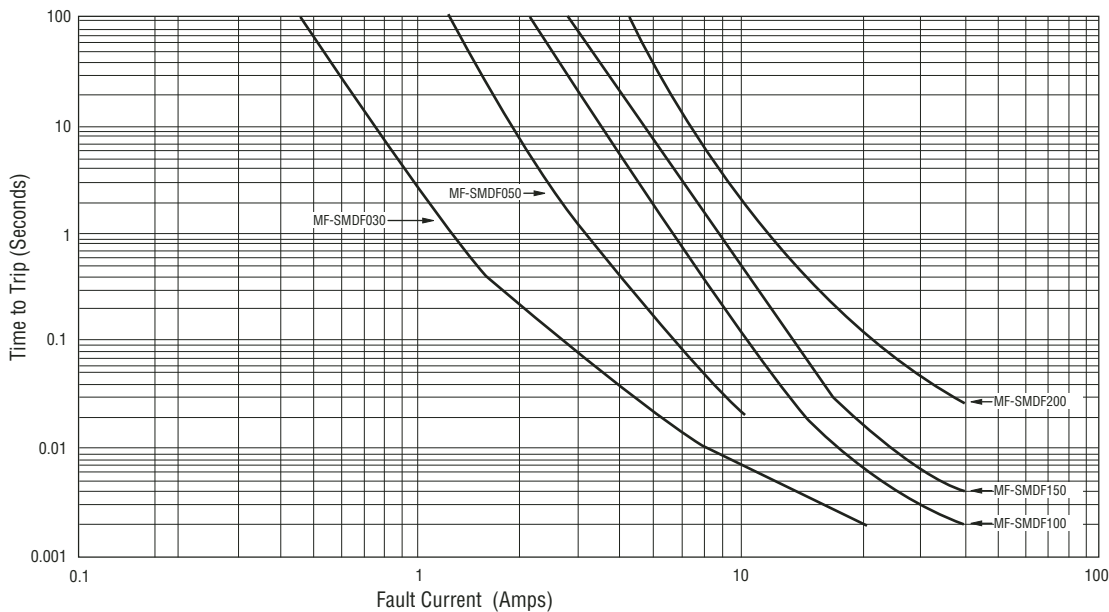
Standard Au finish:
Meets ANSI/J-STD-002 Category 2.

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



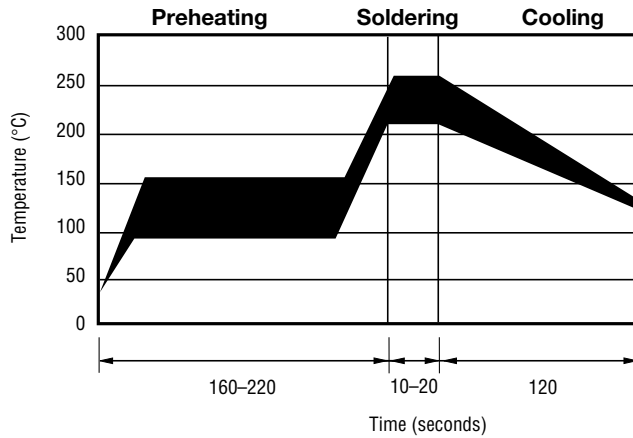
The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

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

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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)

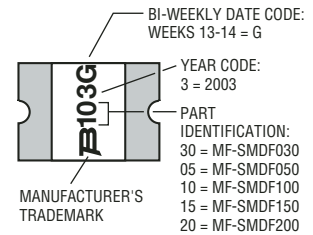
Higher Voltage Option _____
 ___ = Standard Voltage
 /33 = 33 Volt Rated

Optional Terminal Finish _____
 ___ = Standard Au Finish
 T = Optional Sn Finish

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

Typical Part Marking

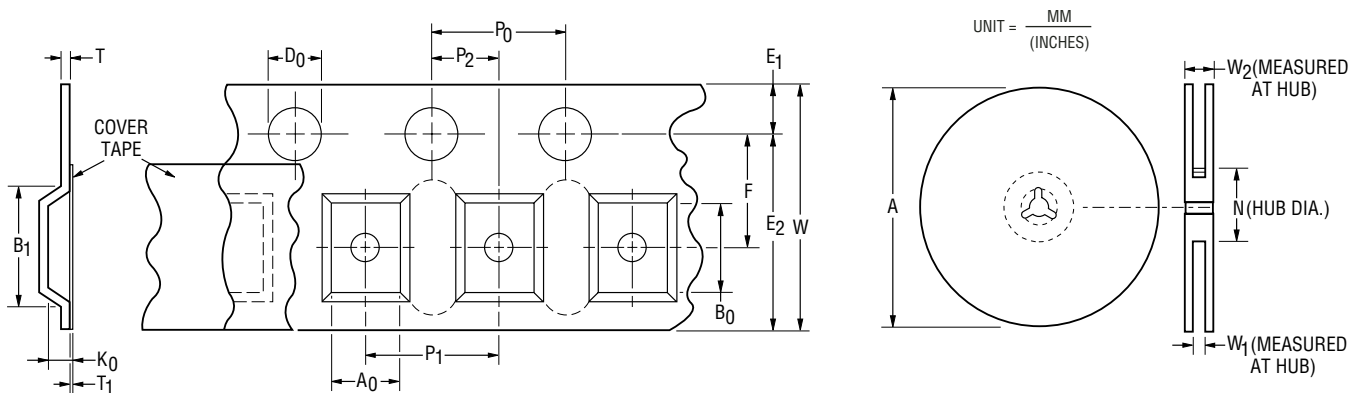
Represents total content. Layout may vary.



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 ₀	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$
P ₁	$\frac{4.0 \pm 0.10}{(0.157 \pm 0.004)}$	$\frac{8.0 \pm 0.1}{(0.315 \pm 0.004)}$
P ₂	$\frac{2.0 \pm 0.05}{(0.079 \pm 0.002)}$	$\frac{2.0 \pm 0.1}{(0.079 \pm 0.004)}$
A ₀	$\frac{1.85 \pm 0.10}{(0.073 \pm 0.004)}$	$\frac{5.1 \pm 0.15}{(0.201 \pm 0.006)}$
B ₀	$\frac{3.45 \pm 0.10}{(0.136 \pm 0.004)}$	$\frac{5.6 \pm 0.23}{(0.220 \pm 0.009)}$
B ₁ max.	$\frac{4.35}{(0.171)}$	$\frac{12.1}{(0.476)}$
D ₀	$\frac{1.50 + 0.1/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$	$\frac{7.5 \pm 0.10}{(0.295 \pm 0.004)}$
E 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.	$\frac{6.25}{(0.246)}$	$\frac{14.25}{(0.561)}$
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	$\frac{0.74 \pm 0.10}{(0.029 \pm 0.004)}$	$\frac{1.0 \pm 0.15}{(0.039 \pm 0.015)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
Reel Dimensions		
A max.	$\frac{185}{(7.28)}$	$\frac{331}{(13.03)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0.0)}$	$\frac{16.4 + 2.0/-0.0}{(0.646 + 0.079/-0.0)}$
W ₂ 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.