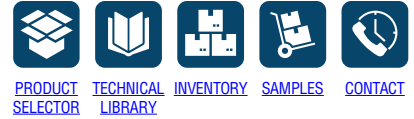


Features

- Very low profile
- Very fast tripping time
- High voltage
- RoHS compliant* and halogen free**
- 2018 footprint
- Agency recognition:  

Additional Information

Click these links for more information:



MF-SMDF Series – PTC Resettable Fuses

Electrical Characteristics

Model	V _{max}	I _{max}	I _{hold}	I _{trip}	Resistance		Max. Time To Trip		Tripped Power Dissipation	Agency Recognition	
			at 23 °C		Ohms at 23 °C		at 23 °C	at 23 °C	Watts at 23 °C	cUL	TÜV
	Volts	Amps	Amps	Amps	R _{min}	R _{1max}	Amps	Seconds	Typ.	E174545	R50256634
MF-SMDF030	60	20	0.30	0.8	0.45	2.15	1.5	1.2	0.8	✓	
MF-SMDF050	60	10	0.55	1.2	0.20	1.00	2.5	3.0	0.9	✓	✓
MF-SMDF100/33X	33	40	1.1	2.2	0.06	0.40	8.0	0.5	1.4	✓	
MF-SMDF150	15	40	1.5	3.0	0.05	0.17	8.0	0.8	1.1	✓	✓
MF-SMDF200	10	40	2.0	4.0	0.03	0.10	8.0	2.4	1.1		
MF-SMDF260/24X	24	20	2.6	5.2	0.015	0.075	8.0	5.0	1.5	✓	✓

Environmental Characteristics

Item	Condition	Criteria
Operating Temperature	-40 °C to +85 °C	
Recommended Storage	+40 °C max. / 70 % R.H. max.	
Passive Aging	+85 °C, 1000 hours	±5 % typical resistance change
Humidity Aging	MF-SMDF030, 050, 150, 200	±1.2 % typical resistance change
	MF-SMDF100/33X, 260/24X	±5 % typical resistance change
Thermal Shock	MF-SMDF030, 050, 150, 200	-20 % typical resistance change
	MF-SMDF100/33X, 260/24X	±10 % typical resistance change
Solvent Resistance	MIL-STD-202, Method 215	No change (marking still legible)
Vibration	MIL-STD-883C, Method 2007.1 Condition A	No change (R _{min} < R < R _{1max})
Moisture Sensitivity Level (MSL)	See Note	
ESD Classification	Class 6 (per AEC-Q200-2, HBM)	

Test Procedures and Requirements

Item	Test Conditions	Accept/Reject Criteria
Visual/Mechanical	Verify dimensions and materials	Per MF physical description
Resistance	In still air @ 23 °C	R _{min} ≤ R ≤ R _{max}
Time to Trip	At specified current, V _{max} , 23 °C, still air	T ≤ max. time to trip (seconds)
Hold Current	30 min. at I _{hold} , still air	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	245 °C ±5 °C, 5 seconds	95 % min. coverage



WARNING
Cancer and Reproductive Harm
www.P65Warnings.ca.gov

** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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

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Thermal Derating Table - I_{hold} (Amps)

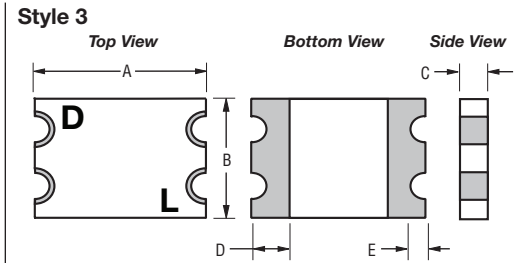
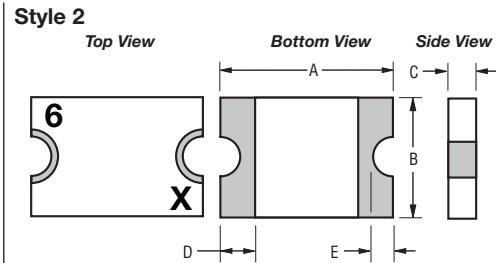
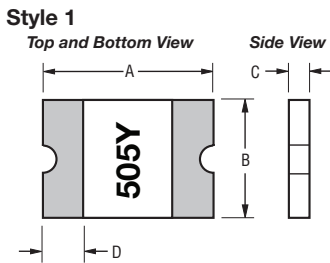
Model	Ambient Operating Temperature								
	-40 °C	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-SMDF030	0.50	0.43	0.37	0.30	0.25	0.22	0.18	0.15	0.11
MF-SMDF050	0.87	0.77	0.67	0.55	0.46	0.41	0.36	0.31	0.23
MF-SMDF100/33X	1.66	1.47	1.29	1.10	0.91	0.83	0.73	0.64	0.50
MF-SMDF150	2.38	2.10	1.82	1.50	1.27	1.13	0.99	0.85	0.64
MF-SMDF200	2.95	2.65	2.35	2.00	1.74	1.59	1.44	1.29	1.06
MF-SMDF260/24X	3.75	3.35	3.00	2.60	2.35	2.15	2.05	1.80	1.50

I_{trip} is approximately two times I_{hold} .

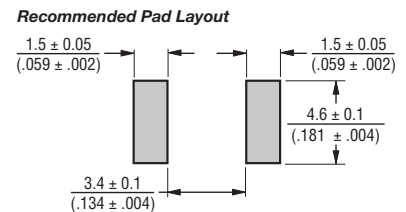
Product Dimensions

Model	A		B		C		D	E		Style
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.	Max.	
MF-SMDF030	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	N/A	N/A	1
MF-SMDF050	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.79}{(0.031)}$	$\frac{1.09}{(0.043)}$	$\frac{0.30}{(0.012)}$	N/A	N/A	1
MF-SMDF100/33X	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.70}{(0.028)}$	$\frac{1.25}{(0.049)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{0.70}{(0.028)}$	2
MF-SMDF150	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$	N/A	N/A	1
MF-SMDF200	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.55}{(0.022)}$	$\frac{0.85}{(0.033)}$	$\frac{0.30}{(0.012)}$	N/A	N/A	1
MF-SMDF260/24X	$\frac{4.72}{(0.186)}$	$\frac{5.44}{(0.214)}$	$\frac{4.22}{(0.166)}$	$\frac{4.93}{(0.194)}$	$\frac{0.70}{(0.028)}$	$\frac{2.00}{(0.079)}$	$\frac{0.30}{(0.012)}$	$\frac{0.25}{(0.010)}$	$\frac{0.70}{(0.028)}$	3

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



Terminal material:
Electroless Ni under immersion Au



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MF-SMDF Series – PTC Resettable Fuses

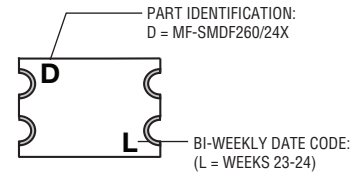
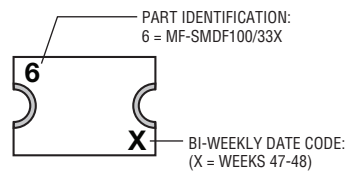
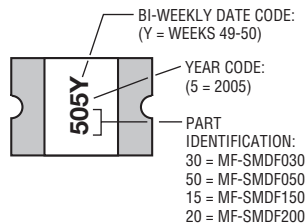


Packaging Quantity

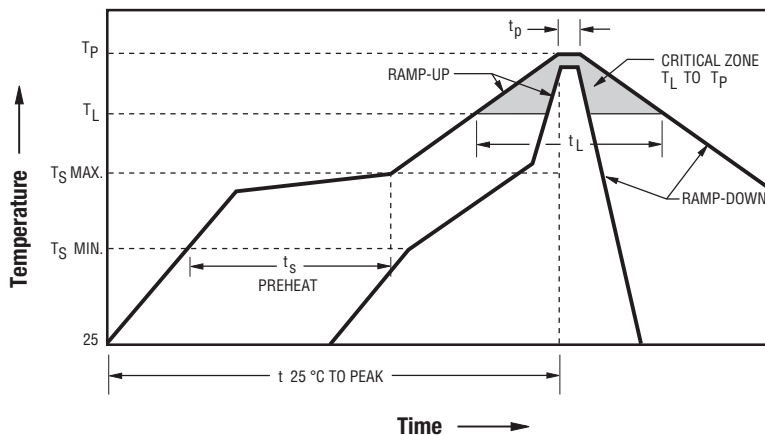
Model	Unit Quantity (pcs.)	Unit
MF-SMDF030 MF-SMDF050	6000	Reel
MF-SMDF100/33X MF-SMDF150		
MF-SMDF260/24X	4000	Reel

Typical Part Marking

Represents total content. Layout may vary.



Solder Reflow Recommendations



Notes:

- MF-SMDF models are intended for reflow soldering (including but not limited to heating plate, hot air, IR, nitrogen, and vapor phase).
- Wave soldering is permissible only if the device is on the top of the PCB, opposite the heat source.
- Hand soldering is not recommended for these devices.
- All temperatures refer to the topside of the device, measured on the device body surface.
- If reflow temperatures exceed the recommended profile, devices may not meet the published specifications.
- Compatible with Pb and Pb-free solder reflow profiles.
- Excess solder may cause a short circuit.
- Please refer to the [Multifuse® Polymer PTC Resettable Fuse Soldering Recommendations](#) document for more details.

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ($T_{s_{max}}$ to T_p)	3 °C / second max.
PREHEAT:	
Temperature Min. ($T_{s_{min}}$)	150 °C
Temperature Max. ($T_{s_{max}}$)	200 °C
Time ($T_{s_{min}}$ to $T_{s_{max}}$) (ts)	60~180 seconds
TIME MAINTAINED ABOVE:	
Temperature (T_L)	217 °C
Time (t_L)	60~150 seconds
Peak Temperature (T_p)	260 °C
Time within 5 °C of Actual Peak Temperature (t_p)	20~40 seconds
Ramp-Down Rate	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

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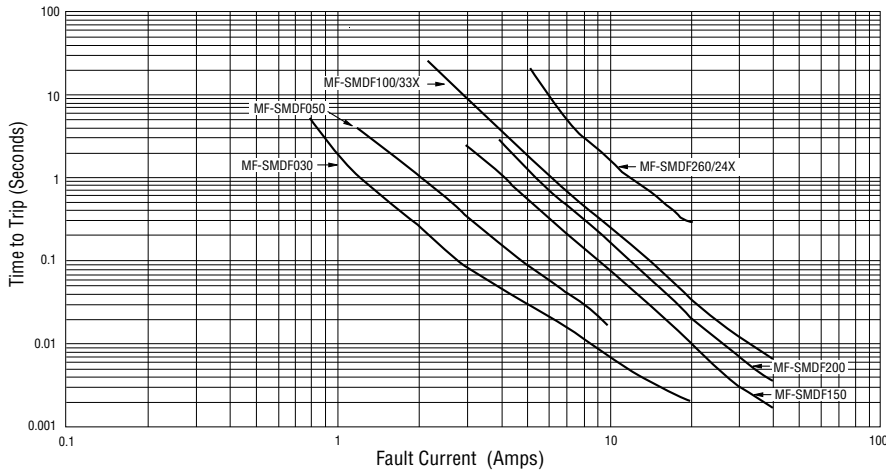
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MF-SMDF Series – PTC Resettable Fuses



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.

How to Order

MF - SMDF 100 /33X - 2

Product Designator _____
 Series _____
 SMDF = 2018 Surface Mount Component
 Hold Current, I_{hold} _____
 030 = 0.30 A
 050 = 0.50 A
 100 = 1.10 A
 150 = 1.50 A
 200 = 2.00 A
 260 = 2.60 A
 Higher Voltage Option _____
 = Standard Voltage
 /24X = 24 V Rated
 /33X = 33 V Rated
 X = Multifuse® freeXpansion Design™
 MF-SMDF Series
 Packaging _____
 -2 = Tape and Reel Packaged per EIA-481



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EMEA: Tel: +36 88 885 877 • Email: eurocus@bourns.com

The Americas: Tel: +1-951 781-5500 • Email: americus@bourns.com

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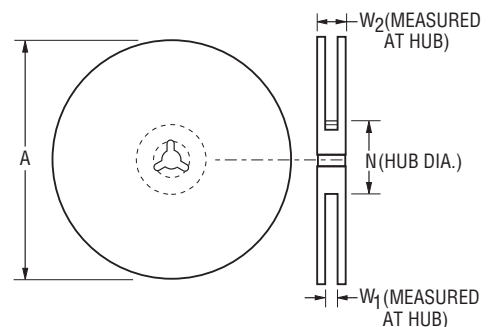
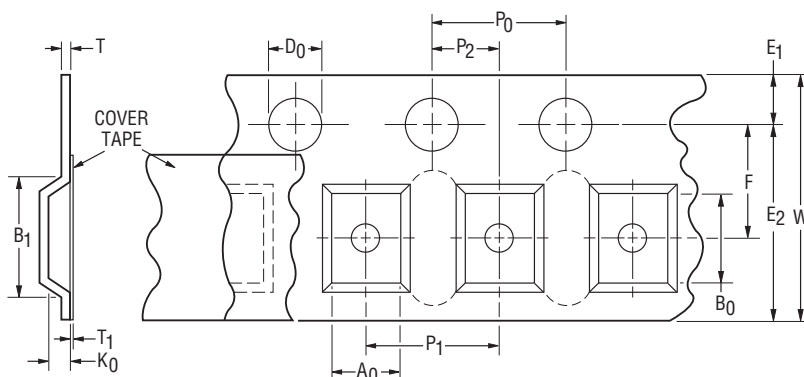
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MF-SMDF Series Tape and Reel Specifications

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Tape Dimensions per EIA 481	MF-SMDF030, 050, 150, 200	MF-SMDF100/33X	MF-SMDF260/24X
W	$\frac{16.0 \pm 0.3}{(0.630 \pm 0.012)}$	$\frac{16.0 \pm 0.3}{(0.630 \pm 0.012)}$	$\frac{16.0 \pm 0.3}{(0.630 \pm 0.012)}$
P ₀	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$	$\frac{4.0 \pm 0.1}{(0.157 \pm 0.004)}$
10P ₀	$\frac{40 \pm 0.2}{(1.575 \pm 0.008)}$	$\frac{40 \pm 0.2}{(1.575 \pm 0.008)}$	$\frac{40 \pm 0.2}{(1.575 \pm 0.008)}$
P ₁	$\frac{8.0 \pm 0.1}{(0.315 \pm 0.004)}$	$\frac{8.0 \pm 0.1}{(0.315 \pm 0.004)}$	$\frac{8.0 \pm 0.1}{(0.315 \pm 0.004)}$
P ₂	$\frac{2.0 \pm 0.1}{(0.079 \pm 0.004)}$	$\frac{2.0 \pm 0.1}{(0.079 \pm 0.004)}$	$\frac{2.0 \pm 0.1}{(0.079 \pm 0.004)}$
A ₀	$\frac{5.1 \pm 0.15}{(0.201 \pm 0.006)}$	$\frac{5.1 \pm 0.15}{(0.201 \pm 0.006)}$	$\frac{5.4 \pm 0.15}{(0.213 \pm 0.006)}$
B ₀	$\frac{5.6 \pm 0.15}{(0.220 \pm 0.006)}$	$\frac{5.6 \pm 0.15}{(0.221 \pm 0.006)}$	$\frac{5.7 \pm 0.15}{(0.234 \pm 0.006)}$
B ₁ max.	$\frac{12.1}{(0.476)}$	$\frac{12.1}{(0.476)}$	$\frac{12.1}{(0.476)}$
D ₀	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.5 + 0.1/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{7.5 \pm 0.10}{(0.295 + 0.004)}$	$\frac{7.5 \pm 0.10}{(0.295 + 0.004)}$	$\frac{7.5 \pm 0.10}{(0.295 + 0.004)}$
E ₁	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
E ₂ min.	$\frac{14.25}{(0.561)}$	$\frac{14.25}{(0.561)}$	$\frac{14.25}{(0.561)}$
T max.	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$
T ₁ max.	$\frac{0.1}{(0.004)}$	$\frac{0.1}{(0.004)}$	$\frac{0.1}{(0.004)}$
K ₀	$\frac{1.1 \pm 0.15}{(0.043 \pm 0.006)}$	$\frac{1.1 \pm 0.15}{(0.043 \pm 0.006)}$	$\frac{2.15 \pm 0.15}{(0.085 \pm 0.006)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
Reel Dimensions			
A max.	$\frac{331}{(13.03)}$	$\frac{331}{(13.03)}$	$\frac{331}{(13.03)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{16.4 + 2.0/-0.0}{(0.646 + 0.079/-0)}$	$\frac{16.4 + 2.0/-0.0}{(0.646 + 0.079/-0)}$	$\frac{16.4 + 2.0/-0.0}{(0.646 + 0.079/-0)}$
W ₂ max.	$\frac{22.4}{(0.882)}$	$\frac{22.4}{(0.882)}$	$\frac{22.4}{(0.882)}$

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



MF-SMDF SERIES, REV. W, 02/23

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