

Features

- Compact design to save board space - 0805 footprint
- Small size results in very fast time to react to fault events
- Symmetrical design
- Low profile
- RoHS compliant* and halogen free**
- Agency recognition: 

Applications

- USB port protection - USB 2.0, 3.0 & OTG
- HDMI 1.4 Source protection
- PC motherboards - Plug and Play protection
- Mobile phones - Battery and port protection
- PDAs / digital cameras
- Game console port protection

MF-PSMF 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-PSMF010X	15	40	0.10	0.30	1.0	7.5	0.5	1.5	0.5
MF-PSMF020X	9	40	0.20	0.50	0.65	3.5	8.00	0.02	0.5
MF-PSMF035X	6	40	0.35	0.75	0.250	1.200	8.00	0.10	0.5
MF-PSMF050X	6	40	0.50	1.00	0.150	0.900	8.00	0.10	0.5
MF-PSMF075X	6	40	0.75	1.50	0.090	0.350	8.00	0.20	0.6
MF-PSMF110X	6	40	1.10	2.20	0.060	0.210	8.00	0.30	0.6

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-PSMF 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

UL File Number E174545
<http://www.ul.com/> Follow link to Certifications, then UL File No., enter E174545

Thermal Derating Chart - 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-PSMF010X	0.15	0.13	0.12	0.10	0.09	0.08	0.07	0.06	0.05
MF-PSMF020X	0.28	0.25	0.23	0.20	0.17	0.14	0.12	0.10	0.07
MF-PSMF035X	0.47	0.44	0.39	0.35	0.30	0.27	0.24	0.20	0.14
MF-PSMF050X	0.68	0.62	0.55	0.50	0.40	0.37	0.33	0.29	0.23
MF-PSMF075X	1.00	0.90	0.79	0.75	0.63	0.57	0.53	0.42	0.35
MF-PSMF110X	1.45	1.35	1.20	1.10	0.92	0.84	0.75	0.65	0.52

*RoHS Directive 2002/95/EC Jan 27 2003 including Annex.

**To be considered halogen free, each homogenous material can have a maximum concentration of 900 ppm of either bromine or chlorine.

Specifications are subject to change without notice.

Customers should verify actual device performance in their specific applications.

Additional Features

- Patents pending

Additional Applications

- Automotive electronic control modules

MF-PSMF Series - PTC Resettable Fuses

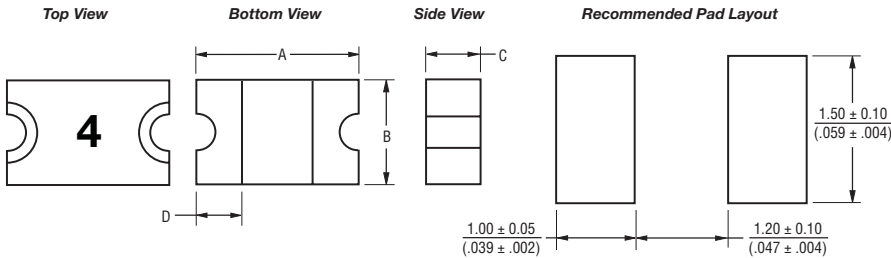
BOURNS®

Product Dimensions

Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
MF-PSMF010X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.20}{(0.008)}$
MF-PSMF020X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.20}{(0.008)}$
MF-PSMF035X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.20}{(0.008)}$
MF-PSMF050X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.20}{(0.008)}$
MF-PSMF075X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.75}{(0.030)}$	$\frac{1.25}{(0.049)}$	$\frac{0.20}{(0.008)}$
MF-PSMF110X	$\frac{2.00}{(0.079)}$	$\frac{2.30}{(0.091)}$	$\frac{1.20}{(0.047)}$	$\frac{1.50}{(0.059)}$	$\frac{0.75}{(0.030)}$	$\frac{1.25}{(0.049)}$	$\frac{0.20}{(0.008)}$

Packaging: 3000 pcs. per reel.

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



Terminal material:

Nickel/gold plated.

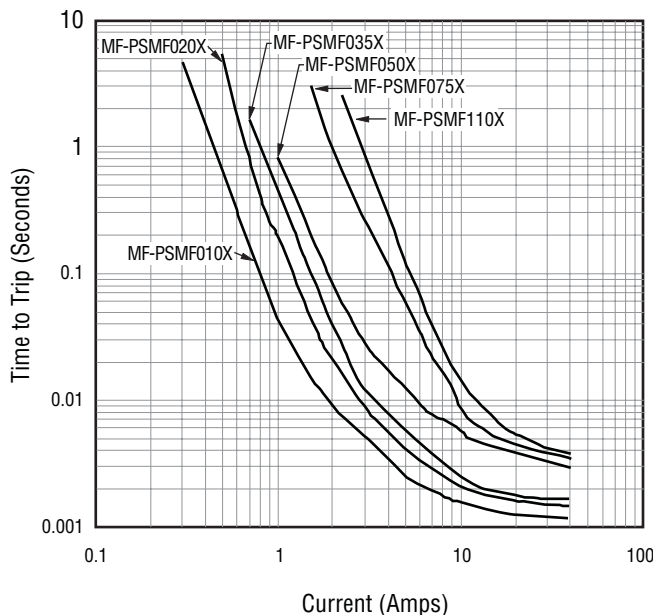
Termination pad solderability:

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.

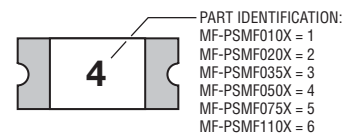
How to Order

MF - PSMF 050 X - 2

Multifuse® Product Designator _____
Series _____
PSMF = 0805 Surface Mount Component
Hold Current, Ihold _____
010-110 (0.10 - 1.10 Amps)
Multifuse® freeXpansion™ Design _____
Packaging _____
Packaged per EIA 481-1
-2 = Tape and Reel

Typical Part Marking

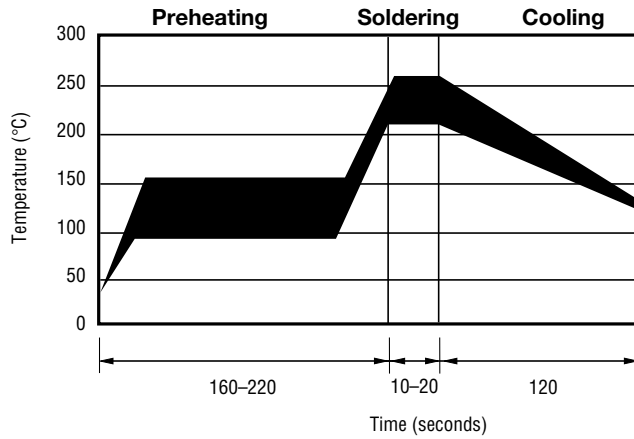
Represents total content. Layout may vary.



BIWEEKLY DATE CODE WILL APPEAR ON THE PACKAGING LABEL:
WEEK 1 AND 2 = A
WEEK 51 AND 52 = Z

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Solder Reflow Recommendations



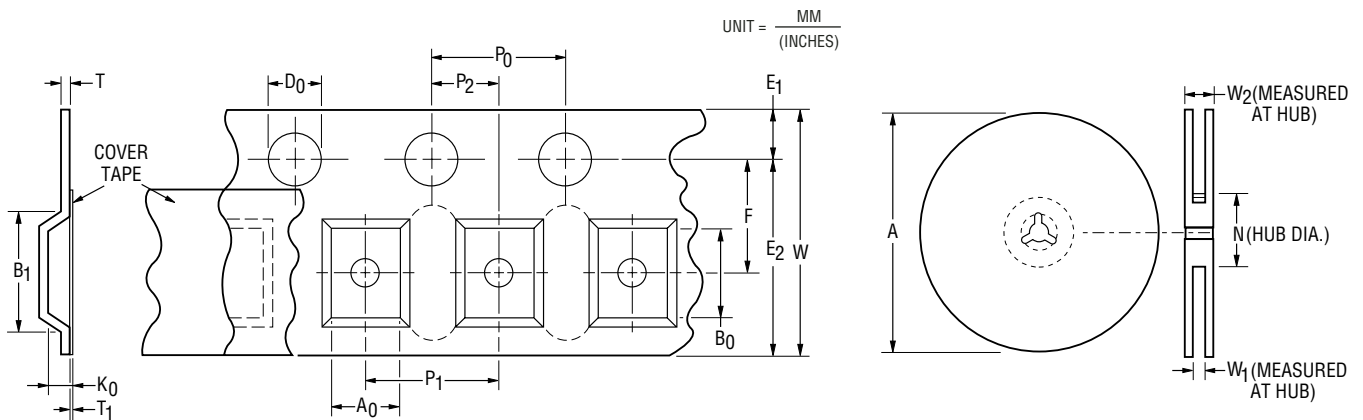
Notes:

- MF-NSMF 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.
- Excess solder may cause a short circuit, especially during hand soldering. Please refer to the Multifuse® Polymer PTC Soldering Recommendation guidelines.

MF-PSMF Series Tape and Reel Specifications

BOURNS®

Tape Dimensions	MF-PSMF010X, MF-PSMF020X, MF-PSMF035X & MF-PSMF050X per EIA 481-1	MF-PSMF075X & MF-PSMF110X per EIA 481-1
W	$\frac{8.0 - 0.30}{(0.315 - 0.012)}$	$\frac{8.0 - 0.30}{(0.315 - 0.012)}$
P ₀	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$
P ₁	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$	$\frac{4.0 - 0.10}{(0.157 - 0.004)}$
P ₂	$\frac{2.0 - 0.05}{(0.079 - 0.002)}$	$\frac{2.0 - 0.05}{(0.079 - 0.002)}$
A ₀	$\frac{1.65 - 0.10}{(0.065 - 0.004)}$	$\frac{1.65 - 0.10}{(0.065 - 0.004)}$
B ₀	$\frac{2.4 - 0.10}{(0.094 - 0.004)}$	$\frac{2.4 - 0.10}{(0.094 - 0.004)}$
B ₁ max.	$\frac{4.35}{(0.171)}$	$\frac{4.35}{(0.171)}$
D ₀	$\frac{1.50 + 0.10/-0.0}{(0.059 + 0.004/-0)}$	$\frac{1.50 + 0.10/-0.0}{(0.059 + 0.004/-0)}$
F	$\frac{3.5 - 0.05}{(0.138 + 0.002)}$	$\frac{3.5 - 0.05}{(0.138 + 0.002)}$
E ₁	$\frac{1.75 - 0.10}{(0.069 - 0.004)}$	$\frac{1.75 - 0.10}{(0.069 - 0.004)}$
E ₂ min.	$\frac{6.25}{(0.246)}$	$\frac{6.25}{(0.246)}$
T max.	$\frac{0.6}{(0.024)}$	$\frac{0.6}{(0.024)}$
T ₁ max.	$\frac{0.10}{(0.004)}$	$\frac{0.10}{(0.004)}$
K ₀	$\frac{0.95 - 0.10}{(0.037 - 0.004)}$	$\frac{1.25 - 0.10}{(0.049 - 0.004)}$
Leader min.	$\frac{390}{(15.35)}$	$\frac{390}{(15.35)}$
Trailer min.	$\frac{160}{(6.30)}$	$\frac{160}{(6.30)}$
Reel Dimensions		
A max.	$\frac{185}{(7.28)}$	$\frac{185}{(7.28)}$
N min.	$\frac{50}{(1.97)}$	$\frac{50}{(1.97)}$
W ₁	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0)}$	$\frac{8.4 + 1.5/-0.0}{(0.331 + 0.059/-0)}$
W ₂ max.	$\frac{14.4}{(0.567)}$	$\frac{14.4}{(0.567)}$



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