



Features

- Compact design to save board space - 1206 footprint
- Small size results in very fast time to react to fault events
- Symmetrical design
- Low profile
- Agency recognition: ®

Applications

- USB port protection - On the Go and 2.0
- PC motherboards - Plug and Play protection
- Mobile phones - Battery and port protection
- PDAs / Digital Cameras
- Game console port protection

MF-NSMF 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-NSMF012	30.0	10	0.12	0.29	1.50	6.00	1.0	0.20	0.4
MF-NSMF050	13.2	100	0.50	1.00	0.15	0.70	8.0	0.10	0.4
MF-NSMF075	6.0	100	0.75	1.50	0.10	0.29	8.0	0.10	0.4
MF-NSMF110	6.0	100	1.10	1.80	0.06	0.20	8.0	0.10	0.6
MF-NSMF150	6.0	100	1.50	3.00	0.03	0.13	8.0	0.30	0.6

Environmental Characteristics

Operating Temperature-40 °C to +85 °C
 Maximum Device Surface Temperature
 in Tripped State125 °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 ResistanceMIL-STD-202, Method 215No change
 VibrationMIL-STD-883C, Method 2007.1,No change
 Condition A

Test Procedures And Requirements For Model MF-MSMF 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 NumberE174545
<http://www.ul.com/> Follow link to Certifications, then UL File No., enter E174545

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-NSMF012	0.19 / 0.38	0.17 / 0.34	0.15 / 0.30	0.12 / 0.24	0.11 / 0.22	0.10 / 0.20	0.09 / 0.18	0.08 / 0.16	0.07 / 0.14
MF-NSMF050	0.76 / 1.52	0.68 / 1.36	0.59 / 1.18	0.50 / 1.00	0.44 / 0.88	0.40 / 0.80	0.35 / 0.70	0.32 / 0.64	0.26 / 0.52
MF-NSMF075	1.11 / 2.22	1.00 / 2.00	0.85 / 1.70	0.75 / 1.50	0.67 / 1.34	0.61 / 1.22	0.52 / 1.04	0.50 / 1.00	0.42 / 0.84
MF-NSMF110	1.64 / 3.28	1.46 / 2.92	1.30 / 2.60	1.10 / 2.20	0.92 / 1.84	0.83 / 1.66	0.80 / 1.60	0.65 / 1.30	0.52 / 1.04
MF-NSMF150	2.20 / 4.40	1.99 / 3.98	1.77 / 3.54	1.50 / 3.00	1.34 / 2.68	1.23 / 2.46	1.10 / 2.20	1.01 / 2.02	0.84 / 1.68

Additional Features

- Patents pending

Additional Applications

- Automotive electronic control modules

MF-NSMF Series - PTC Resettable Fuses

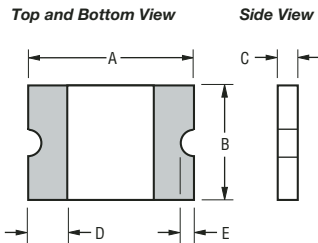
BOURNS®

Product Dimensions

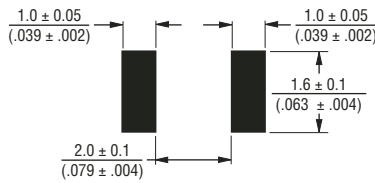
Model	A		B		C		D	E
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Min.
MF-NSMF012	$\frac{3.00}{(0.118)}$	$\frac{3.40}{(0.134)}$	$\frac{1.40}{(0.055)}$	$\frac{1.80}{(0.071)}$	$\frac{0.7}{(0.028)}$	$\frac{1.10}{(0.043)}$	$\frac{0.25}{(0.010)}$	$\frac{0.127}{(0.005)}$
MF-NSMF050	$\frac{3.00}{(0.118)}$	$\frac{3.40}{(0.134)}$	$\frac{1.40}{(0.055)}$	$\frac{1.80}{(0.071)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.25}{(0.010)}$	$\frac{0.127}{(0.005)}$
MF-NSMF075	$\frac{3.00}{(0.118)}$	$\frac{3.40}{(0.134)}$	$\frac{1.40}{(0.055)}$	$\frac{1.80}{(0.071)}$	$\frac{0.48}{(0.019)}$	$\frac{0.85}{(0.033)}$	$\frac{0.25}{(0.010)}$	$\frac{0.127}{(0.005)}$
MF-NSMF110	$\frac{3.00}{(0.118)}$	$\frac{3.40}{(0.134)}$	$\frac{1.40}{(0.055)}$	$\frac{1.80}{(0.071)}$	$\frac{0.7}{(0.028)}$	$\frac{1.35}{(0.053)}$	$\frac{0.25}{(0.010)}$	$\frac{0.127}{(0.005)}$
MF-NSMF150	$\frac{3.00}{(0.118)}$	$\frac{3.40}{(0.134)}$	$\frac{1.40}{(0.055)}$	$\frac{1.80}{(0.071)}$	$\frac{0.7}{(0.028)}$	$\frac{1.35}{(0.053)}$	$\frac{0.25}{(0.010)}$	$\frac{0.127}{(0.005)}$

Packaging: 2000 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.

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

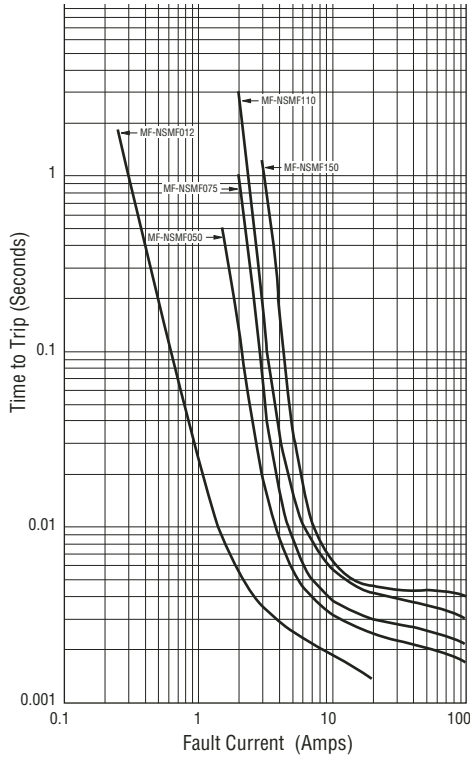
Recommended Storage:

40 °C max./70 % RH max.

MF-NSMF Series - PTC Resettable Fuses

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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 - NSMF 075 T - 2

Multifuse® Product Designator _____

Series _____
 NSMF = 1206 Surface Mount Component

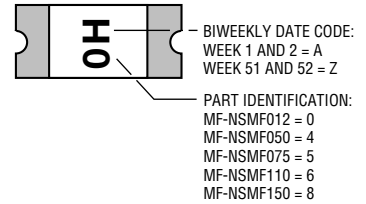
Hold Current, I_{hold} _____
 012-150 (0.12 Amps - 1.50 Amps)

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

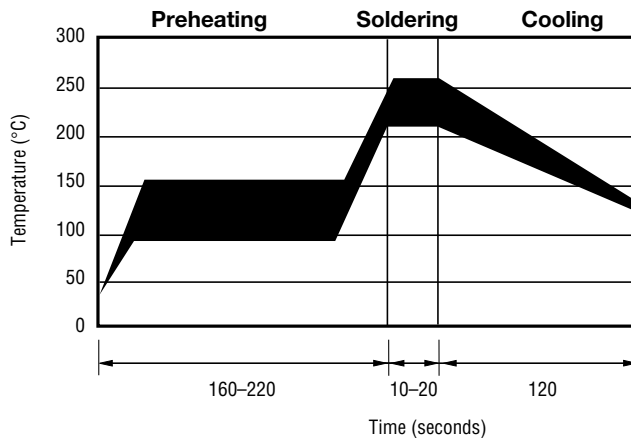
Packaging _____
 Packaged per EIA 481-1
 -2 = Tape and Reel

Typical Part Marking

Represents total content. Layout may vary.



Solder Reflow Recommendations



Notes:

- MF-NSMF 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.



Circuit Protection Division

Asia-Pacific:

Tel: +886-2 2562-4117 • Fax: +886-2 2562-4116

Europe:

Tel: +41-41 768 5555 • Fax: +41-41 768 5510

North America:

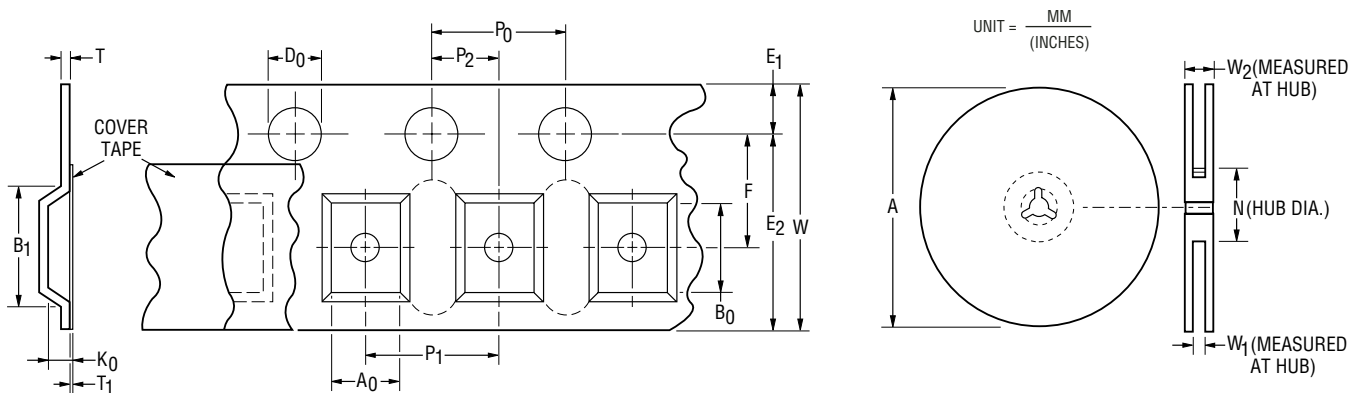
Tel: +1-909 781-5500 • Fax: +1-909 781-5700

www.bourns.com

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.