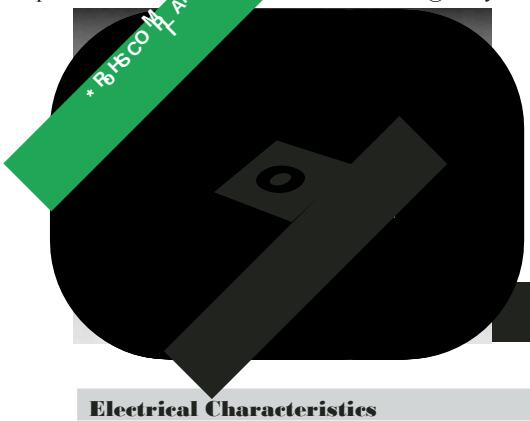


Features

- Compact design to save board space - 1206 footprint
- Small size results in very fast time to react to fault events
- Symmetrical design
- Low profile
- RoHS compliant*
- 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} Amperes at 23°C	I_{trip} Amperes at 23°C	Resistance Ohms at 23°C		Max. Time To Trip Amperes at 23°C	Max. Time To Trip Seconds at 23°C	Tripped Power Dissipation Watts at 23°C
			Hold	Trip	$R_{Min.}$	$R_{1Max.}$			Typ.
MF-NSMF012	30.0	10	0.12	0.29	1.35	8.50	1.0	0.20	0.4
MF-NSMF020	24.0	10	0.20	0.46	0.60	2.60	1.0	0.60	0.6
MF-NSMF035	6.0	100	0.35	0.75	0.30	1.20	8.0	0.10	0.6
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	0.40	8.0	0.10	0.4
MF-NSMF110	6.0	100	1.10	2.20	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
MF-NSMF200	6.0	100	2.00	4.00	0.02	0.085	8.0	1.00	0.7

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, Condition A.....No change

Test Procedures And Requirements For Model MF-NSMF Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.	Verify dimensions and materials	Per MF physical description
Resistance	In still air @ 23 °C	$R_{min} \leq R \leq R1_{max}$
Time to Trip	At specified current, Vmax, 23 °C	T ≤ max. time to trip (seconds)
Hold Current	30 min. at Ihold	No trip
Trip Cycle Life	Vmax, Imax, 100 cycles	No arcing or burning
Trip Endurance	Vmax, 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
CSA File Number CA110338
http://directories.csa-international.org/ Under “Certification Record” and “File Number” enter 110338-0-000
TÜV Certificate Number.....R 02057213
http://www.tuvdotcom.com/ Follow link to “other certificates”, enter File No. 2057213

Thermal Derating Chart I_{hold} (Amps)

Model	Ambient Operating Temperature								
	-40 °C	-20 °C0	°C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-NSMF012	0.19	0.17	0.15	0.12	0.11	0.10	0.09	0.08	0.07
MF-NSMF020	0.30	0.27	0.24	0.20	0.18	0.16	0.14	0.12	0.11
MF-NSMF035	0.51	0.46	0.40	0.35	0.30	0.27	0.24	0.22	0.18
MF-NSMF050	0.76	0.68	0.59	0.50	0.44	0.40	0.35	0.32	0.26
MF-NSMF075	1.11	1.00	0.85	0.75	0.67	0.61	0.52	0.50	0.42
MF-NSMF110	1.64	1.46	1.30	1.10	0.92	0.83	0.80	0.65	0.52
MF-NSMF150	2.20	1.99	1.77	1.50	1.34	1.23	1.10	1.01	0.84
MF-NSMF200	2.88	2.61	2.28	2.00	1.80	1.66	1.51	1.39	1.19

*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.

Additional Features

- Patents pending

Additional Applications

- Automotive electronic control modules

MF-NSMF Series PTC Resettable Fuses

BOURNS®

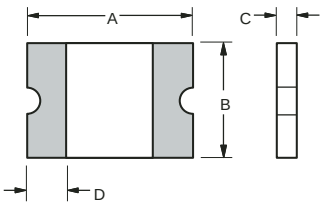
Product Dimensions

Model	A		B		C		D
	Min.	Max.	Min.	Max.	Min.	Max.	Min.
MF-NSMF012	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.10 (0.043)	0.25 (0.010)
MF-NSMF020	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
MF-NSMF035	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
MF-NSMF050	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.48 (0.019)	0.85 (0.033)	0.25 (0.010)
MF-NSMF075	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
MF-NSMF110	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
MF-NSMF150	3.00 (0.118)	3.40 (0.134)	1.40 (0.055)	1.80 (0.071)	0.40 (0.016)	0.70 (0.028)	0.25 (0.010)
MF-NSMF200	3.00 (0.118)	3.50 (0.138)	1.40 (0.055)	1.80 (0.071)	0.70 (0.028)	1.60 (0.063)	0.25 (0.010)

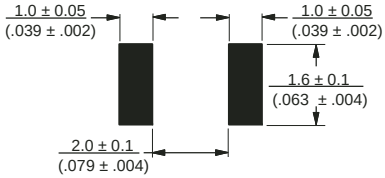
Packaging: 3000 pcs. per reel.

UNIT = MM (INCHES)

Top and Bottom View **Side View**



Recommended Pad Layout

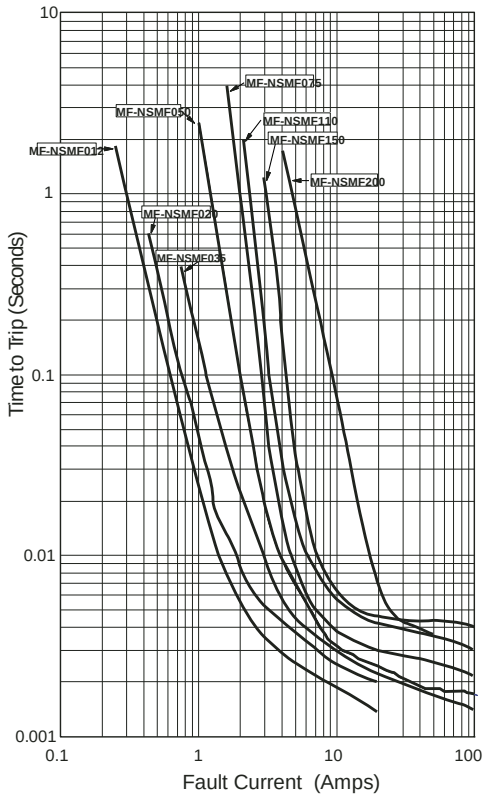


Terminal material:
Electroless Ni under immersion Au

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

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 - NSMF 075 - 2

Multifuse® Product Designator

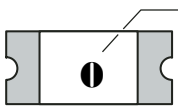
Series
NSMF = 1206 Surface Mount Component

Hold Current, I_{hold}
012-200 (0.12 Amps - 2.00 Amps)

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

Typical Part Marking

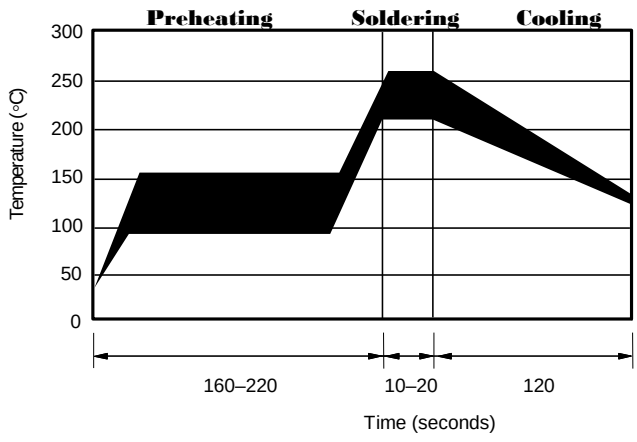
Represents total content. Layout may vary.



PART IDENTIFICATION:
MF-NSMF012 = 0
MF-NSMF020 = 2
MF-NSMF035 = 3
MF-NSMF050 = 4
MF-NSMF075 = 5
MF-NSMF110 = 6
MF-NSMF150 = 8
MF-NSMF200 = A

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

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.

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MF-NSMF Series Tape and Reel Specifications

BOURNS®

Tape Dimensions	MF-NSMF012 & MF-NSMF200 per EIA 481-1	MF-NSMF020 ~ MF-NSMF050 per EIA 481-1	MF-NSMF075 ~ MF-NSMF150 per EIA 481-1
W	8.0 ±0.30 (0.315 ±0.012)	8.0 ±0.30 (0.315 ±0.012)	8.0 ±0.30 (0.315 ±0.012)
P_0	4.0 ±0.10 (0.157 ±0.004)	4.0 ±0.10 (0.157 ±0.004)	4.0 ±0.10 (0.157 ±0.004)
P_1	4.0 ±0.10 (0.157 ±0.004)	4.0 ±0.10 (0.157 ±0.004)	4.0 ±0.10 (0.157 ±0.004)
P_2	2.0 ±0.05 (0.079 ±0.002)	2.0 ±0.05 (0.079 ±0.002)	2.0 ±0.05 (0.079 ±0.002)
A_0	1.90 ±0.10 (0.075 ±0.004)	1.90 ±0.10 (0.075 ±0.004)	1.90 ±0.10 (0.075 ±0.004)
B_0	3.50 ±0.10 (0.138 ±0.004)	3.45 ±0.10 (0.136 ±0.004)	3.45 ±0.10 (0.136 ±0.004)
B_1 max.	4.35 (0.171)	4.35 (0.171)	4.35 (0.171)
D_0	1.50 + 0.1/-0.0 (0.059 + 0.004/-0)	1.50 + 0.1/-0.0 (0.059 + 0.004/-0)	1.50 + 0.1/-0.0 (0.059 + 0.004/-0)
F	3.5 ±0.05 (0.138 ±0.002)	3.5 ±0.05 (0.138 ±0.002)	3.5 ±0.05 (0.138 ±0.002)
E_1	1.75 ±0.10 (0.069 ±0.004)	1.75 ±0.10 (0.069 ±0.004)	1.75 ±0.10 (0.069 ±0.004)
E_2 min.	6.25 (0.246)	6.25 (0.246)	6.25 (0.246)
T max.	0.6 (0.024)	0.6 (0.024)	0.6 (0.024)
T_1 max.	0.1 (0.004)	0.1 (0.004)	0.1 (0.004)
K_0	1.35 ±0.10 (0.053 ±0.004)	1.04 ±0.10 (0.041 ±0.004)	0.85 ±0.10 (0.033 ±0.004)
Leader min.	390 (15.35)	390 (15.35)	390 (15.35)
Trailer min.	160 (6.30)	160 (6.30)	160 (6.30)
Reel Dimensions			
A max.	185 (7.28)	185 (7.28)	185 (7.28)
N min.	50 (1.97)	50 (1.97)	50 (1.97)
W_1	8.4 + 1.5/-0.0 (0.331 + 0.059/-0.0)	8.4 + 1.5/-0.0 (0.331 + 0.059/-0.0)	8.4 + 1.5/-0.0 (0.331 + 0.059/-0.0)
W_2 max.	14.4 (0.567)	14.4 (0.567)	14.4 (0.567)