





**THE DATASHEET OF
MF-RX018/250-2**





Features

- Radial leaded devices
- Fast tripping resettable PTCs
- Binned and sorted narrow resistance ranges available
- RoHS compliant*
- Agency recognition:  

Applications

- Customer Premise Equipment (CPE)
- Central Office / Telecom Centers (CO)
- Access equipment

MF-RX/250 Series - Telecom PTC Resettable Fuses

Electrical Characteristics

Model	Max. Operating Voltage (Vdc)	Max. Interrupt Ratings		Hold Current	Initial Resistance		One Hour Post-Trip Resistance
		Volts (Vrms)	Amps (A)		Amps at 23 °C	Ohms at 23 °C	
		Max.	Max.	I _H	Min.	Max.	Max.
MF-RX012/250	60	250	3.0	0.12	4.0	8.0	16.0
MF-RX012/250-A	60	250	3.0	0.12	7.0	9.0	16.0
MF-RX012/250-C	60	250	3.0	0.12	5.5	7.5	14.0
MF-RX012/250-F	60	250	3.0	0.12	6.0	10.5	16.0
MF-RX012/250-1	60	250	3.0	0.12	6.0	9.0	16.0
MF-RX012/250-2	60	250	3.0	0.12	8.0	10.5	16.0
MF-RX012/250-T	60	250	3.0	0.12	7.0	12.0	16.0
MF-RX012/250U	60	250	3.0	0.12	6.0	10.0	16.0
MF-RX014/250	60	250	3.0	0.145	3.0	6.0	14.0
MF-RX014/250-A	60	250	3.0	0.145	3.0	5.5	12.0
MF-RX014/250-B	60	250	3.0	0.145	4.5	6.0	14.0
MF-RX014/250-T	60	250	3.0	0.145	5.4	7.5	14.0
MF-RX014/250U	60	250	3.0	0.145	3.5	6.5	12.0
MF-RX018/250	60	250	10.0	0.18	0.8	2.0	4.0
MF-RX018/250U	60	250	10.0	0.18	0.8	2.0	4.0

"U" suffix indicates product without insulation coating.

Environmental Characteristics

Operating/Storage Temperature	-40 °C to +85 °C
Maximum Device Surface Temperature	
in Tripped State	125 °C
Passive Aging	+85 °C, 1000 hours..... ±15 % typical resistance change
Humidity Aging	+85 °C, 85 % R.H. 1000 hours ±15 % typical resistance change
Thermal Shock	+125 °C to -55 °C, 10 times..... ±15 % typical resistance change
Solvent Resistance.....	MIL-STD-202, Method 215B..... No change
Lead Solderability	ANSI/J-STD-002..... >95 % coverage
Vibration	MIL-STD-883C, Method 2007.1, Condition A ±5 % typical resistance change
Moisture Sensitivity Level (MSL)	Level 1
ESD Classification - HBM.....	Class 6

Test Procedures And Requirements For Model MF-RX/250 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 _{max}
Time to Trip.....	TTT current, V _{max} , 23 °C.....	T ≤ max. time to trip (seconds)
Hold Current	30 min. at I _{hold}	No trip
Trip Cycle Life.....	250 Vrms, 3A, 10 cycles	No arcing or burning
UL File Number	E174545	
TÜV File Number.....	50260658	

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

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Users should verify actual device performance in their specific applications.

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Additional Features

- Ability to withstand AC power cross conditions
- Assists equipment with meeting ITU-T K.20/K.21/K.45
- Assists equipment with meeting Telcordia GR-1089-C Intrabuilding

MF-RX/250 Series - Telecom PTC Resettable Fuses

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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-RX012/250	0.186	0.165	0.143	0.120	0.099	0.088	0.077	0.066	0.050
MF-RX014/250	0.225	0.199	0.172	0.145	0.119	0.106	0.093	0.080	0.060
MF-RX018/250	0.269	0.240	0.211	0.180	0.153	0.138	0.123	0.109	0.087

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

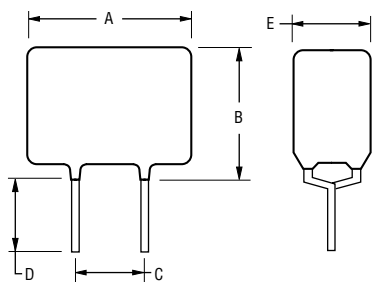
Product Dimensions

Model	A Max.	B Max.	C Nom.	D Min.	E Max.	Physical Characteristics		
						Lead Dia.	Style	Material
MF-RX012/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX012/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu
MF-RX014/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX014/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu
MF-RX018/250	$\frac{11.0}{(0.433)}$	$\frac{13.6}{(0.535)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{4.6}{(0.181)}$	$\frac{0.65}{(0.026)}$	1	Sn/Cu
MF-RX018/250U	$\frac{10.4}{(0.409)}$	$\frac{12.6}{(0.496)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{3.8}{(0.150)}$	$\frac{0.65}{(0.026)}$	2	Sn/Cu

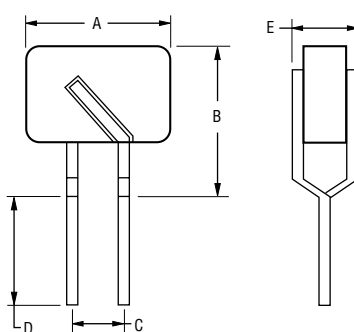
Packaging options: BULK: 500 pcs. per bag. TAPE & REEL: 1500 pcs. per reel (available binned).

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

Style 1

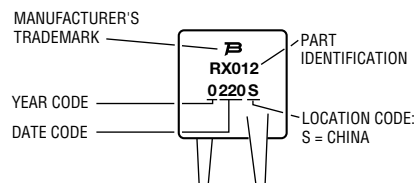


Style 2



Typical Part Marking

Represents total content. Layout may vary.



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MF-RX/250 Series - Telecom PTC Resettable Fuses

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How to Order

MF - RX 012/250 U - A 5 - 2

Multifuse®
Product
Designator

Series

RX = Radial Leaded
Component

Hold Current, I_{hold}

008-018 (0.08-0.18 Amps)

Max. Interrupt Voltage, V

250 (250 Volts)

Telecom Options

U = Uncoated (radial parts only)

Resistance Sorted

Narrow resistance ranges - see
Resistance Options chart

Resistance Bins of 0.5 ohms

05 = 0.5 ohm binned parts (epoxy coated)

5 = 0.5 ohm binned parts (uncoated)

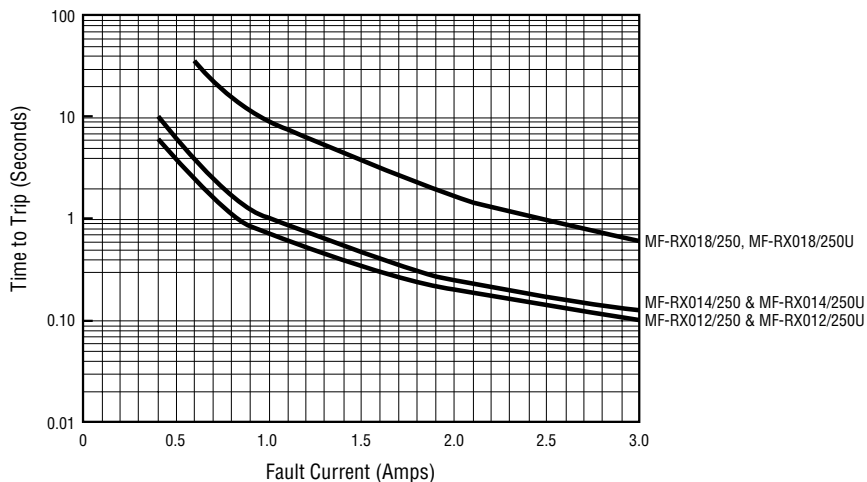
Packaging Options

- 0 = Bulk Packaging

- 2 = Tape and Reel* (available with binned
option)

*Packaged per EIA486-B

Typical Time to Trip at 23 °C



Resistance Options

Model	Initial Resistance Values		R1max	Bin
	Ohms @ 23 ° C		Ohms @ 23 ° C	
	Min.	Max.	Max.	
MF-RX012/250	4.0	8.0	16.0	N/A
MF-RX012/250-A05	7.0	9.0	16.0	0.5
MF-RX012/250-C05	5.5	7.5	14.0	0.5
MF-RX012/250-F05	6.0	10.5	16.0	0.5
MF-RX012/250-105	6.0	9.0	16.0	0.5
MF-RX012/250-205	8.0	10.5	16.0	0.5
MF-RX012/250-T05	7.0	12.0	16.0	0.5
MF-RX012/250U	6.0	10.0	16.0	N/A
MF-RX014/250	3.0	6.0	14.0	N/A
MF-RX014/250-A05	3.0	5.5	12.0	0.5
MF-RX014/250-B05	4.5	6.0	14.0	0.5
MF-RX014/250U	3.5	6.5	12.0	N/A

MF-RX/250, REV. N 06/17

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MF-RX/250 Series Tape and Reel Specifications

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Devices taped using EIA468–B/IEC286-2 standards. See table below and Figures 1 through 4 for details.

Dimension Description	IEC Mark	EIA Mark	Dimensions	
			Dimensions	Tolerance
Carrier tape width	W	W	$\frac{18}{(.709)}$	$\frac{-0.5/+1.0}{(-0.02/+0.039)}$
Hold down tape width	W_0	W_4	$\frac{11}{(.433)}$	min.
Hold down tape			No protrusion	
Top distance between tape edges	W_2	W_6	$\frac{3}{(.118)}$	max.
Sprocket hole position	W_1	W_5	$\frac{9}{(.354)}$	$\frac{-0.5/+0.75}{(-0.02/+0.03)}$
Sprocket hole diameter	D_0	D_0	$\frac{4}{(.157)}$	$\frac{\pm 0.2}{(\pm 0.078)}$
Abscissa to plane (straight lead)	H	H	$\frac{18.5}{(.728)}$	$\frac{\pm 3.0}{(\pm 1.18)}$
Abscissa to plane (kinked lead)	H_0	H_0	$\frac{16}{(.63)}$	$\frac{\pm 0.5}{(\pm 0.2)}$
Abscissa to top (straight lead)	H_1	H_1	$\frac{38.0}{(1.496)}$	max.
Abscissa to top (kinked lead)	H_1	H_1	$\frac{32.2}{(1.268)}$	max.
Overall width w/lead protrusion (straight lead)		C_1	$\frac{55.0}{(2.165)}$	max.
Overall width w/lead protrusion (kinked lead)		C_1	$\frac{43.2}{(1.7)}$	max.
Overall width w/o lead protrusion (straight lead)		C_2	$\frac{54.0}{(2.126)}$	max.
Overall width w/o lead protrusion (kinked lead)		C_2	$\frac{42.5}{(1.673)}$	max.
Protrusion of cutout	L	L	$\frac{11}{(.433)}$	max.
Sprocket hole pitch	P_0	P_0	$\frac{12.7}{(0.5)}$	$\frac{\pm 0.3}{(\pm 0.12)}$
Pitch tolerance			20 consecutive	$\frac{\pm 1}{(\pm 0.039)}$
Device pitch			$\frac{12.7}{(0.5)}$	$\frac{\pm 0.3}{(\pm 0.12)}$
Tape thickness	t	t	$\frac{0.9}{(.035)}$	max.
Tape thickness with splice		t_1	$\frac{1.5}{(.059)}$	max.
Splice sprocket hole alignment			0	$\frac{\pm 0.3}{(\pm 0.12)}$
Body lateral deviation	Δ_h	Δ_h	0	$\frac{\pm 1.0}{(\pm 0.039)}$
Body tape plane deviation	Δ_p	Δ_p	0	$\frac{\pm 1.3}{(\pm 0.051)}$
Lead spacing	F	F	$\frac{5.08}{(0.2)}$	$\frac{-0.5/+0.6}{(-.020/+0.024)}$
Reel width	w	W_2	$\frac{56.0}{(2.205)}$	max.
Reel diameter	d	a	$\frac{370.0}{(14.57)}$	max.
Space between flanges less device	W_1	h	$\frac{4.75}{(.187)}$	$\frac{\pm 3.25}{(\pm 1.28)}$
Arbor hole diameter	f	c	$\frac{26.0}{(1.024)}$	$\frac{\pm 12.0}{(\pm 4.72)}$
Core diameter	h	n	$\frac{91}{(3.58)}$	max.
Box			$\frac{67}{(2.64)}$ $\frac{372}{(14.6)}$ $\frac{362}{(14.25)}$	max.
Consecutive missing places			none	
Empty places per reel			0.1 %	

MM
(INCHES)

DIMENSIONS:

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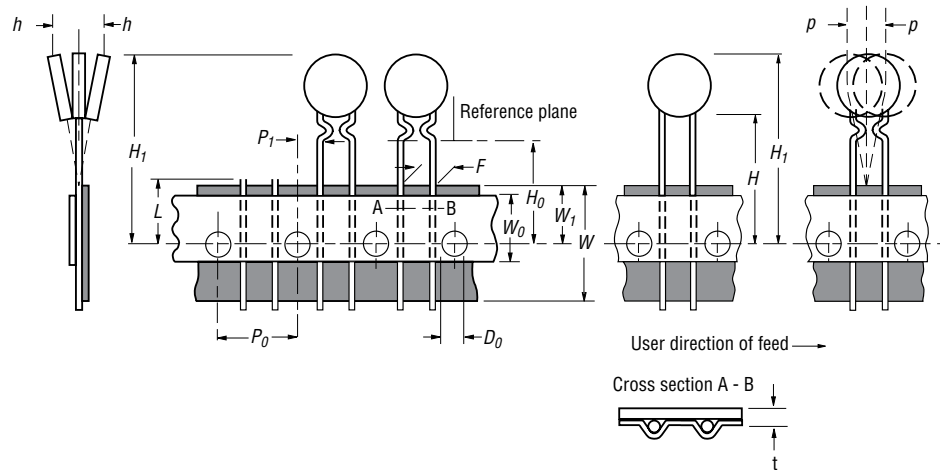
MF-RX/250 Series Tape and Reel Specifications

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Taped Component Dimensions - Figure 1

Applies to Models:

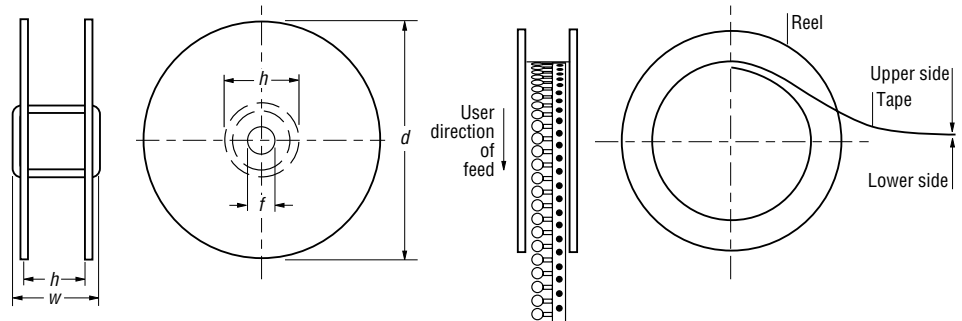
MF-RX012/250U
MF-RX014/250U
MF-RX018/250
MF-RX018/250U



Reel Dimensions - Figure 2

Applies to Models:

MF-RX012/250U
MF-RX014/250U
MF-RX018/250
MF-RX018/250U



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

MF-RX/250 Series Tape and Reel Specifications

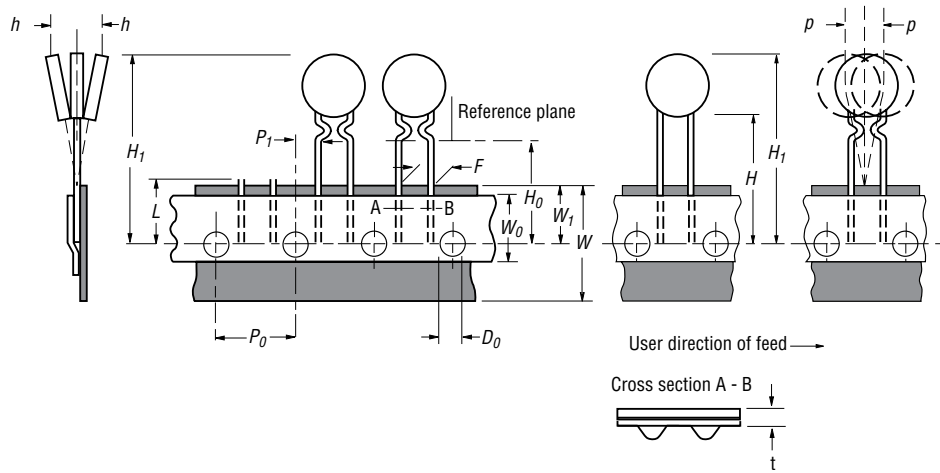
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**Taped Component Dimensions -
Figure 3**

Applies to Models:

MF-RX012/250
MF-RX012/250-A
MF-RX012/250-C
MF-RX012/250-F
MF-RX012/250-1
MF-RX012/250-2
MF-RX012/250-T

MF-RX014/250
MF-RX014/250-A
MF-RX014/250-B
MF-RX014-250-T

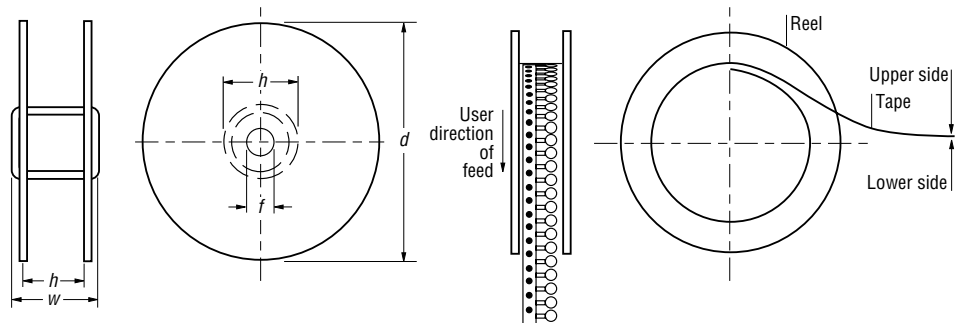


**Reel Dimensions -
Figure 4**

Applies to Models:

MF-RX012/250
MF-RX012/250-A
MF-RX012/250-C
MF-RX012/250-F
MF-RX012/250-1
MF-RX012/250-2
MF-RX012/250-T

MF-RX014/250
MF-RX014/250-A
MF-RX014/250-B
MF-RX014-250-T



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

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Application Notice

- Users are responsible for independent and adequate evaluation of Bourns® Multifuse® Polymer PTC devices in the user's application, including the PPTC device characteristics stated in the applicable data sheet.
- Polymer PTC devices must not be allowed to operate beyond their stated maximum ratings. Operation in excess of such maximum ratings could result in damage to the PTC device and possibly lead to electrical arcing and/or fire. Circuits with inductance may generate a voltage above the rated voltage of the polymer PTC device and should be thoroughly evaluated within the user's application during the PTC selection and qualification process.
- Polymer PTC devices are intended to protect against adverse effects of temporary overcurrent or overtemperature conditions up to rated limits and are not intended to serve as protective devices where overcurrent or overvoltage conditions are expected to be repetitive or prolonged.
- In normal operation, polymer PTC devices experience thermal expansion under fault conditions. Thus, a polymer PTC device must be protected against mechanical stress, and must be given adequate clearance within the user's application to accommodate such thermal expansion. Rigid potting materials or fixed housings or coverings that do not provide adequate clearance should be thoroughly examined and tested by the user, as they may result in the malfunction of polymer PTC devices if the thermal expansion is inhibited.
- Exposure to lubricants, silicon-based oils, solvents, gels, electrolytes, acids, and other related or similar materials may adversely affect the performance of polymer PTC devices.
- Aggressive solvents may adversely affect the performance of polymer PTC devices. Conformal coating, encapsulating, potting, molding, and sealing materials may contain aggressive solvents including but not limited to xylene and toluene, which are known to cause adverse effects on the performance of polymer PTCs. Such aggressive solvents must be thoroughly cured or baked to ensure their complete removal from polymer PTCs to minimize the possible adverse effect on the device.
- Recommended storage conditions should be followed at all times. Such conditions can be found on the applicable data sheet and on the Multifuse® Polymer PTC Moisture/Reflow Sensitivity Classification (MSL) note:
https://www.bourns.com/docs/RoHS-MSL/msl_mf.pdf

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-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management