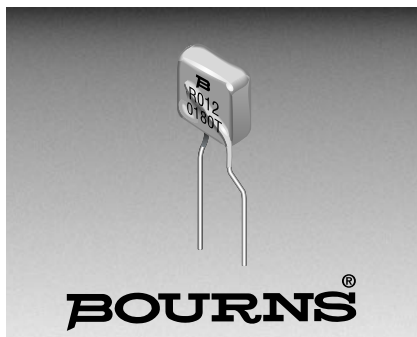




Features

- Radial Leaded Devices
- High voltage surge capabilities
- Binned and sorted resistance ranges
- Assists in meeting ITU K.20/K.21 specifications
- Withstands lightning power induction
- Agency recognition:   

Applications

Used as a secondary overcurrent protection device in:

- Customer Premise Equipment (CPE)
- Central Office (CO)
- Subscriber Line Interface Cards (SLIC)

MF-R/250 Series - Telecom PTC Resettable Fuses

Electrical Characteristics

Model	Max. Operating Voltage Volts	Max. Interrupt Ratings		Hold Current Amps at 23°C	Initial Resistance		One Hour Post-Trip Resistance Ohms at 23°C
		Volts (V)	Amps (A)		Ohms at 23°C	Ohms at 23°C	
		Max.	Max.		Min.	Max.	
MF-R008/250U	60	250	3.0	0.08	14.0	20.0	33.0
MF-R008/250	60	250	3.0	0.08	15.0	22.0	33.0
MF-R011/250U	60	250	3.0	0.11	5.0	9.0	16.0
MF-R012/250	60	250	3.0	0.12	4.0	8.0	16.0
MF-R012/250U	60	250	3.0	0.12	6.0	10.0	16.0
MF-R014/250	60	250	3.0	0.14	3.0	6.0	12.0
MF-R014/250U	60	250	3.0	0.14	3.5	6.5	12.0

"U" suffix indicates product without insulation coating.

Environmental Characteristics

Operating/Storage Temperature	-45°C to +85°C
Maximum Device Surface Temperature in Tripped State	125°C
Passive Aging	+85°C, 1000 hours ±2% typical resistance change
	+60°C, 1000 hours ±3% typical resistance change
Humidity Aging	+85°C, 85% R.H. 500 hours ±3% typical resistance change
Thermal Shock	MIL-STD-202F, Method 107G, ±10% typical resistance change
	+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
Flammability	IEC 695-2-2 No Flame for 60 secs.
Vibration	MIL-STD-883C, Method 2007.1, Condition A No change

Test Procedures And Requirements For Model MF-R/250 Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.	Verify dimensions and materials.....	Per MF physical description
Resistance	In still air @ 23°C	$R_{min} \leq R \leq R_{max}$
Time to Trip	5 times I_{hold} , V_{max} , 23°C	$T \leq \text{max. time to trip (seconds)}$
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
UL File Number	E 174545S	
CSA File Number	CA 110338	
TUV File Number	R2057213	

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-R008/250	0.124	0.110	0.095	0.080	0.066	0.059	0.051	0.044	0.033
MF-R011/250U	0.171	0.151	0.131	0.110	0.091	0.081	0.071	0.061	0.046
MF-R012/250	0.186	0.165	0.143	0.120	0.099	0.088	0.077	0.066	0.050
MF-R014/250	0.255	0.199	0.172	0.145	0.119	0.106	0.093	0.080	0.060
MF-R018/250	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} .

Additional Features

- Patents pending

MF-R/250 Series - Telecom PTC Resettable Fuses

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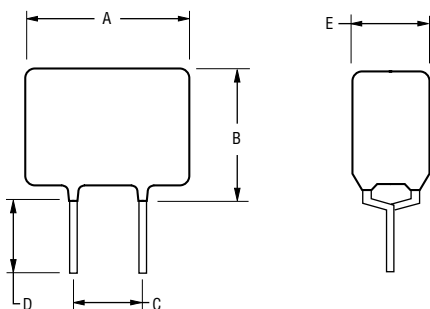
Product Dimensions

Model	A Max.	B Max.	C Max.	D Nom.	E Nom.	Physical Characteristics		
						Style	Lead Dia.	Material
MF-R008/250U	$\frac{4.8}{(0.189)}$	$\frac{9.1}{(0.358)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R008/250	$\frac{5.3}{(0.209)}$	$\frac{9.3}{(0.366)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R011/250U	$\frac{5.3}{(0.209)}$	$\frac{9.4}{(0.370)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R012/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R012/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R014/250	$\frac{6.5}{(0.256)}$	$\frac{11.0}{(0.433)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu
MF-R014/250U	$\frac{6.0}{(0.236)}$	$\frac{10.0}{(0.394)}$	$\frac{5.1 \pm 0.7}{(0.201 \pm 0.028)}$	$\frac{4.7}{(0.185)}$	$\frac{5.0}{(0.197)}$	1	$\frac{0.65}{(0.026)}$	Sn/Cu

Packaging options:

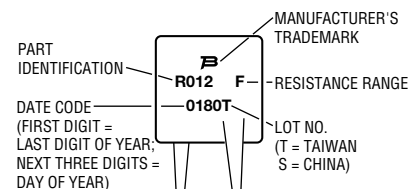
BULK: 500 pcs. per bag. TAPE & REEL: 1500 pcs. per reel.

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



Typical Part Marking

Represents total content. Layout may vary.



MF-R/250 Series - Telecom PTC Resettable Fuses

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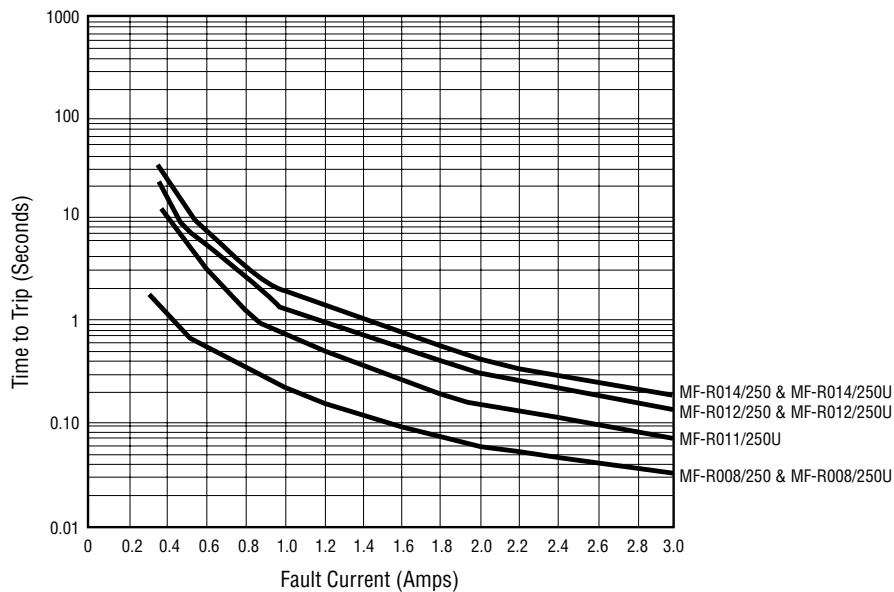
How to Order

MF - R 012/250 - - -

Multifuse® _____
 Product Designator _____
 Series _____
 R = Radial Leaded Component
 SM = Surface Mount Component
 Hold Current, I_{hold} _____
 008-018 (0.08 - 0.18 Amps)
 Max. Interrupt Voltage, V _____
 Resistance Range _____
 Narrow resistance ranges are available on all models; consult Bourns for details.
 Resistance Sorted in Bins _____
 05 = 0.5 Ω
 Packaging Options _____
 - = Bulk Packaging
 - 2 = Tape and Reel*
 *Packaged per EIA486-B

NOTE: All parts are also available "binned". All parts within a package will be within 0.5Ω of each other within the initial resistance range.

Typical Time to Trip at 23°C



Tape and Reel Specifications

MF-R, MF-RX & MF-R/250 Series Tape and Reel Specifications

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

Dimension Description	IEC Mark	EIA Mark	Dimensions	
			Dimensions	Tolerance
Carrier tape width	<i>W</i>	<i>W</i>	$\frac{18}{(.709)}$	$\frac{-0.5/+1.0}{(-0.02/+0.039)}$
Hold down tape width		<i>W4</i>	$\frac{5}{(.197)}$	min.
Hold down tape	<i>W0</i>		No protrusion	
Top distance between tape edges	<i>W2</i>	<i>W6</i>	$\frac{3}{(.118)}$	max.
Sprocket hole position	<i>W1</i>	<i>W5</i>	$\frac{9}{(.354)}$	$\frac{-0.5/+0.75}{(-0.02/+0.03)}$
Sprocket hole diameter	<i>D0</i>	<i>D0</i>	$\frac{4}{(.157)}$	$\frac{\pm 0.2}{(\pm .0078)}$
Abscissa to plane (straight lead)	<i>H</i>	<i>H</i>	$\frac{18.5}{(.728)}$	$\frac{\pm 3.0}{(\pm .118)}$
Abscissa to plane (kinked lead)	<i>H0</i>	<i>H0</i>	$\frac{16}{(.63)}$	$\frac{\pm 0.5}{(\pm .02)}$
Abscissa to top	<i>H1</i>	<i>H1</i>	$\frac{32.2}{(1.268)}$	max.
Overall width w/lead protrusion		<i>C1</i>	$\frac{43.2}{(1.7)}$	max.
Overall width w/o lead protrusion		<i>C2</i>	$\frac{42.5}{(1.673)}$	max.
Lead protrusion	<i>I1</i>	<i>L1</i>	$\frac{1.0}{(.039)}$	max.
Protrusion of cutout	<i>L</i>	<i>L</i>	$\frac{11}{(.433)}$	max.
Protrusion beyond hold tape	<i>I2</i>	<i>I2</i>	Not specified	
Sprocket hole pitch	<i>P0</i>	<i>P0</i>	$\frac{12.7}{(0.5)}$	$\frac{\pm 0.3}{(\pm .012)}$
Pitch tolerance			20 seconds	± 1 second
Device pitch: MF-R010 – MF-R160			$\frac{12.7}{(0.5)}$	
Device pitch: MF-R185 – MF-R400			$\frac{25.4}{(1.0)}$	
Device pitch: MF-RX110 – MF-RX160			$\frac{12.7}{(0.5)}$	
Device pitch: MF-RX185 – MF-RX375			$\frac{12.7}{(0.5)}$	
Device pitch: MF-R012/250			$\frac{25.4}{(1.0)}$	
Tape thickness	<i>t</i>	<i>t</i>	$\frac{0.9}{(.035)}$	max.
Tape thickness with splice		<i>t1</i>	$\frac{2.0}{(.079)}$	max.
Splice sprocket hole alignment			0	$\frac{\pm 0.3}{(\pm .012)}$
Body lateral deviation	Δh	Δh	0	$\frac{\pm 1.0}{(\pm .039)}$
Body tape plane deviation	Δp	Δp	0	$\frac{\pm 1.3}{(\pm .051)}$
Lead seating plane deviation	$\Delta P1$	<i>P1</i>	0	$\frac{\pm 0.7}{(\pm .028)}$
Lead spacing	<i>F</i>	<i>F</i>	$\frac{5.08}{(0.2)}$	$\frac{\pm 0.8}{(\pm .035)}$
Reel width	<i>w</i>	<i>w</i>	$\frac{56}{(2.205)}$	max.
Reel diameter	<i>d</i>	<i>a</i>	$\frac{370}{(14.57)}$	max.
Space between flanges less device			$\frac{4.75}{(.187)}$	$\frac{\pm 3.25}{(\pm .128)}$

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

MF-R, MF-RX & MF-R/250 Series Tape and Reel Specifications

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Dimension Description	IEC Mark	EIA Mark	Dimensions	
			Dimensions	Tolerance
Space between flanges less device			$\frac{4.75}{(.187)}$	$\frac{\pm 3.25}{(\pm .128)}$
Arbor hole diameter	<i>f</i>	<i>c</i>	$\frac{26}{(1.024)}$	$\frac{\pm 12.0}{(\pm .472)}$
Core diameter	<i>h</i>	<i>n</i>	$\frac{80}{(3.15)}$	max.
Box			$\frac{56}{(2.2)}$ $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$	max.
Consecutive missing places			3 maximum	
Empty places per reel			Not specified	

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

Taped Component Dimensions

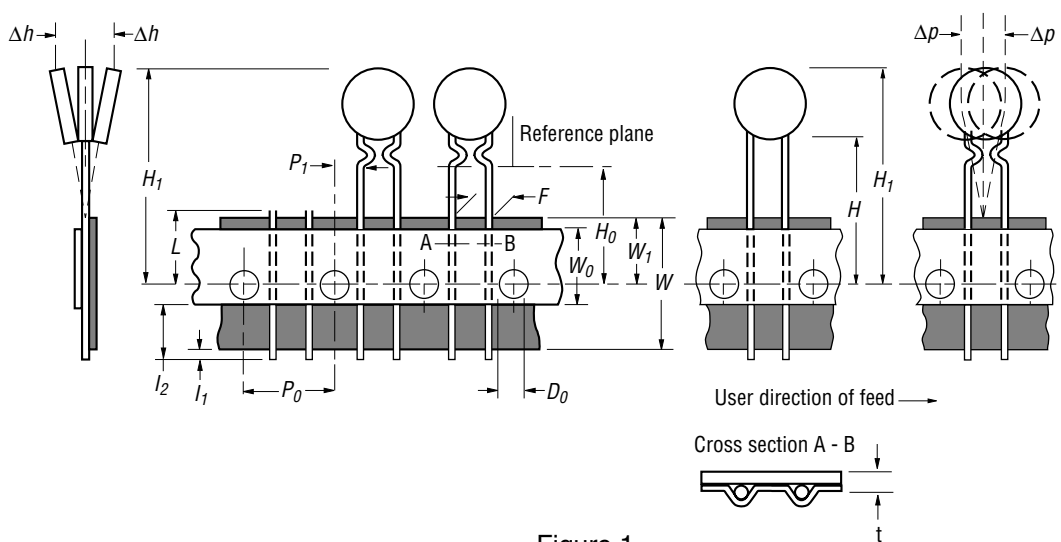


Figure 1

Reel Dimensions

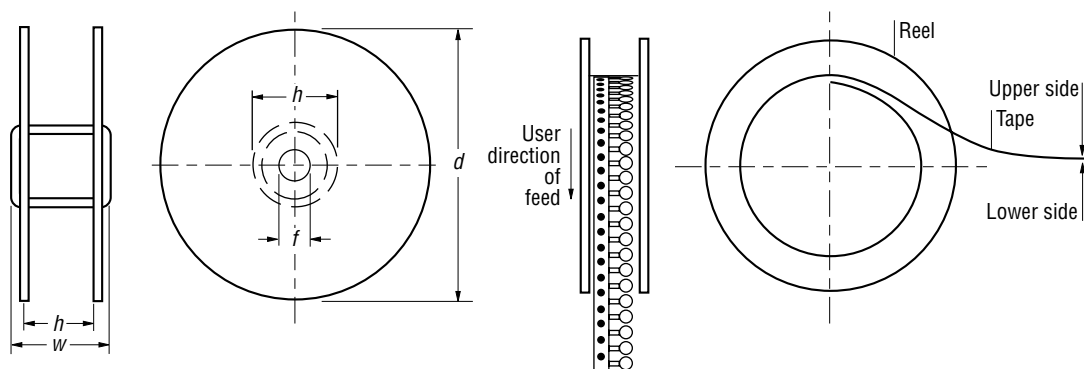


Figure 2