






Features

- Radial leaded devices
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- Bulk packaging, tape and reel available
- Resettable circuit protection
- Agency recognition:   
- RoHS compliant* and halogen free**

Applications

- Food blenders, coffee machines
- HVAC
- Electric fans, blowers
- AC adaptors

MF-RM Series - PTC Resettable Fuses

Electrical Characteristics

Model	Typical Current Trip Limit		V _{max}		I _{max}	Initial Resistance	One Hour Post-Trip Resistance	Max. Time to Trip		Tripped Power Dissipation
	I _{hold} at 23 °C	I _{trip} at 23 °C	Operating Voltage	Interrupt Voltage	Interrupt Current	R _{Min.} at 23 °C	R ₁ Max. at 23 °C	at 23 °C		PD Typ. at 23 °C
	(A)	(A)	(Vac)	(Vac)	(A)	(Ohms)	(Ohms)	(A)	(Sec.)	(W)
MF-RM005/240	0.05	0.12	240	265	1.0	18.50	65.00	0.25	10.0	0.9
MF-RM008/240	0.08	0.19	240	265	1.2	7.40	26.00	0.40	10.0	0.9
MF-RM012/240	0.12	0.30	240	265	1.2	3.00	12.00	0.60	15.0	1.0
MF-RM016/240	0.16	0.37	240	265	2.0	2.50	7.80	0.80	15.0	1.4
MF-RM025/240	0.25	0.56	240	265	3.5	1.30	3.80	1.25	18.5	1.5
MF-RM033/240	0.33	0.74	240	265	4.5	0.77	2.60	1.65	21.0	1.7
MF-RM040/240	0.40	0.90	240	265	5.5	0.60	1.90	2.00	24.0	2.0
MF-RM055/240	0.55	1.25	240	265	7.0	0.45	1.45	2.75	26.0	3.4

Environmental Characteristics

Operating Temperature.....	-20 °C to +85 °C
Humidity Aging.....	+85 °C, 85 % R.H. 1000 hours±20 % typical resistance change
Passive Aging.....	+85 °C, 1000 hours.....±20 % typical resistance change
Vibration	MIL-STD-883C, Method 2007.1,.....No change Condition A
Solvent Resistance.....	MIL-STD-202, Method 215No change

Test Procedures And Requirements For Model MF-RM Series

Item	Test Conditions	Accept/Reject Criteria
Visual/Mechanical.....	Verify dimensions and material.....	Per MF physical description
Resistance.....	In still air @ 23 °C.....	R _{min} ≤ R ≤ R _{1max}
Time to Trip.....	240 Vac, specified current	T ≤ max. time to trip
Hold Current.....	At I _{hold}	No trip
Trip Cycle Life.....	240 Vac, I _{max} , 100 cycles	No arcing or burning
Trip Endurance	a) 240 Vac, I _{max} , 24 hours	No arcing or burning
	b) 265 Vac, I _{max} , 30 mins.	
Solderability	MIL-STD-202, Method 208	95 % min. coverage

UL File NumberE174545..... <http://www.ul.com/> Follow link to Certifications, then UL File No., enter E174545
TUV Certificate Number50232433 http://www.tuvdotcom.com/certificates/50232433?locale=en&page_number=3

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

** Bourns follows the prevailing definition of "halogen free" in the industry. Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

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Users should verify actual device performance in their specific applications.

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Advantages

- Resettable feature with overtemperature and overcurrent protection can save expensive components from having to be replaced after tripping, e.g., transformers with built in thermal fuses
- Faster than bimetallic switch designs that take on average approximately 30 seconds to cool down and reset
- Generally lower electromagnetic interference than bimetallic switches

Benefits

- Reduced repair and replacement costs
- Reduced nuisance tripping
- Combined overcurrent and overtemperature protector in one device

MF-RM Series - PTC Resettable Fuses

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Thermal Derating Chart - I_{hold} (Amps)

Model	Ambient Operating Temperature							
	-20 °C	0 °C	23 °C	40 °C	50 °C	60 °C	70 °C	85 °C
MF-RM005/240	0.08	0.06	0.05	0.04	0.04	0.03	0.03	0.02
MF-RM008/240	0.12	0.10	0.08	0.07	0.06	0.05	0.04	0.03
MF-RM012/240	0.18	0.15	0.12	0.10	0.09	0.07	0.06	0.04
MF-RM016/240	0.24	0.20	0.16	0.13	0.11	0.10	0.08	0.05
MF-RM025/240	0.38	0.32	0.25	0.21	0.18	0.15	0.13	0.09
MF-RM033/240	0.50	0.42	0.33	0.27	0.23	0.20	0.17	0.11
MF-RM040/240	0.61	0.51	0.40	0.33	0.28	0.24	0.20	0.14
MF-RM055/240	0.80	0.68	0.55	0.46	0.40	0.35	0.29	0.22

Product Dimensions

Model	A Max.	B Max.	C		D Min.	E Max.	Physical Characteristics		
			Nom.	Tol. ±			Style	Lead Dia.	Material
MF-RM005/240	8.3 (0.327)	12.9 (0.508)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	1	0.51 (0.020)	Sn/Cu
MF-RM008/240	8.3 (0.327)	12.9 (0.508)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	1	0.51 (0.020)	Sn/Cu
MF-RM012/240	8.3 (0.327)	12.9 (0.508)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	1	0.51 (0.020)	Sn/Cu
MF-RM016/240	9.9 (0.390)	13.8 (0.543)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	1	0.51 (0.020)	Sn/Cu
MF-RM025/240	10.0 (0.394)	20.0 (0.787)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	2	0.65 (0.026)	Sn/Cu
MF-RM033/240	11.4 (0.449)	20.0 (0.787)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	2	0.65 (0.026)	Sn/Cu
MF-RM040/240	11.5 (0.453)	20.9 (0.823)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.8 (0.150)	2	0.65 (0.026)	Sn/Cu
MF-RM055/240	14.0 (0.551)	22.4 (0.882)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	4.1 (0.161)	2	0.81 (0.032)	Sn/Cu

Packaging options:

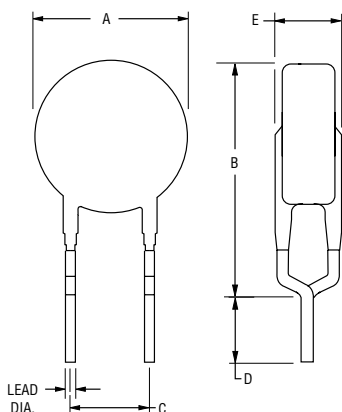
BULK: 500 pcs. per bag.

TAPE & REEL: 2000 pcs. per reel (MF-RM005/240~MF-RM040/240); 1000 pcs. per reel (MF-RM055/240)

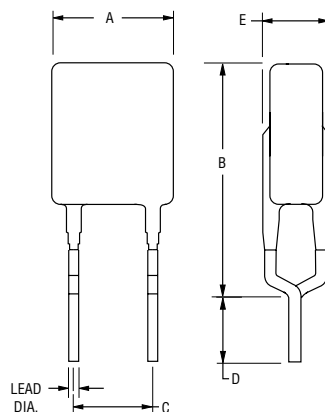
0.51 (24AWG)
0.65 (22AWG)
0.81 (20AWG)

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

Style 1



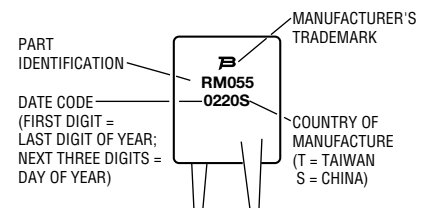
Style 2



Also available with straight leads (see How to Order).

Typical Part Marking

Represents total content. Layout may vary.



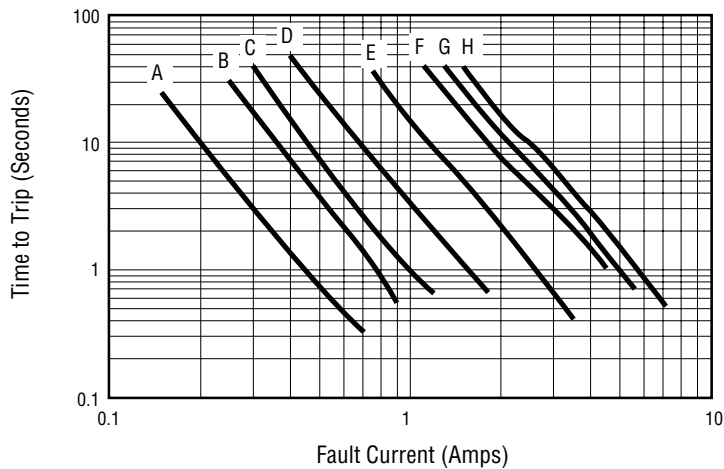
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MF-RM Series - PTC Resettable Fuses

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Typical Time to Trip at 23 °C



A = MF-RM005/240
 B = MF-RM008/240
 C = MF-RM012/240
 D = MF-RM016/240
 E = MF-RM025/240
 F = MF-RM033/240
 G = MF-RM040/240
 H = MF-RM055/240

How to Order

MF - RM 005 / 240 - 2 - 17

Multifuse®
 Product
 Designator
 Series
 RM = Radial Leaded Component
 Hold Current, I_{hold}
 005-055 (0.05 A - 0.55 A)
 Operating Voltage, V_{max}
 240 = 240 Vac
 Packaging Options
 - 0 = Bulk Packaging
 - 2 = Tape and Reel
 Part Number Suffix Option
 - 17 = Straight Leads in Place of Standard Kinked Leads

*Packaged per EIA486-B

MF-RM SERIES, REV. F, 09/16

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MF-RM Series Tape and Reel Specifications

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Devices taped using EIA468–B/IEC60286-2 standards. See table below and Figures 1 and 2 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	$\frac{4}{(.157)}$	$\frac{\pm 0.2}{(\pm .079)}$
Abscissa to plane (MF-RM005/240~MF-RM016/240)	H	H	$\frac{18.5}{(.728)}$	$\frac{\pm 3.0}{(\pm .118)}$
Abscissa to plane (MF-RM025/240~MF-RM055/240)	H_0	H_0	$\frac{16}{(.63)}$	$\frac{\pm 0.5}{(\pm .02)}$
Abscissa to top (MF-RM005/240~MF-RM016/240)	H_1	H_1	$\frac{32.2}{(1.268)}$	max.
Abscissa to top (MF-RM025/240~MF-RM055/240)	H_1	H_1	$\frac{45.0}{(1.772)}$	max.
Overall width w/lead protrusion (MF-RM005/240~MF-RM016/240)		C_1	$\frac{43.2}{(1.701)}$	max.
Overall width w/lead protrusion (MF-RM025/240~MF-RM055/240)		C_1	$\frac{56.0}{(2.205)}$	max.
Overall width w/o lead protrusion (MF-RM005/240~MF-RM016/240)		C_2	$\frac{42.5}{(1.673)}$	max.
Overall width w/o lead protrusion (MF-RM025/240~MF-RM055/240)		C_2	$\frac{56.0}{(2.205)}$	max.
Lead protrusion	l_1	L_1	$\frac{1.0}{(.039)}$	max.
Protrusion of cutout	L	L	$\frac{11}{(.433)}$	max.
Protrusion beyond hold-down tape	l_2	l_2	Not specified	
Sprocket hole pitch	P_0	P_0	$\frac{12.7}{(.500)}$	$\frac{\pm 0.3}{(\pm .012)}$
Pitch tolerance			20 consecutive	$\frac{\pm 1}{(\pm .039)}$
Device pitch (MF-RM005/240~MF-RM040/240)			$\frac{12.7}{(.500)}$	$\frac{\pm 0.3}{(\pm .012)}$
Device pitch (MF-RM055/240)			$\frac{25.4}{(1.00)}$	$\frac{\pm 0.6}{(\pm .024)}$
Tape thickness	t	t	$\frac{0.9}{(.035)}$	max.
Tape thickness with splice (MF-RM005/240~MF-RM040/240)		t_1	$\frac{1.5}{(.059)}$	max.
Tape thickness with splice (MF-RM055/240)		t_1	$\frac{2.3}{(.091)}$	max.
Splice sprocket hole alignment			0	$\frac{\pm 0.3}{(\pm .012)}$
Body lateral deviation	Δ_h	Δ_h	0	$\frac{\pm 1}{(\pm .039)}$
Body tape plane deviation	Δ_p	Δ_p	0	$\frac{\pm 0.3}{(\pm .012)}$
Lead seating plane deviation	ΔP_1	P_1	$\frac{3.81}{(.015)}$	$\frac{\pm 0.7}{(\pm .028)}$
Lead spacing	F	F	$\frac{5.08}{(.200)}$	$\frac{+0.8/-0.5}{(+.031/-0.020)}$

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

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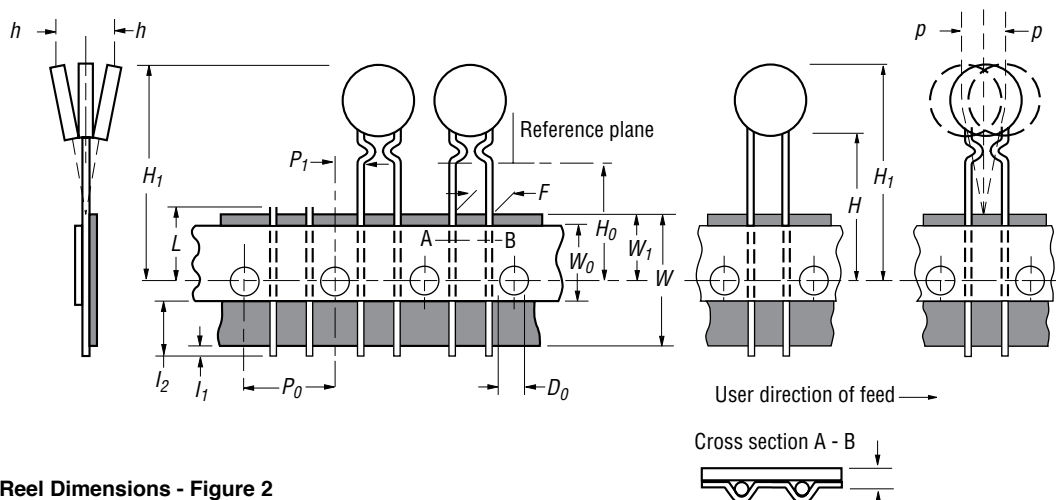
MF-RM Series Tape and Reel Specifications

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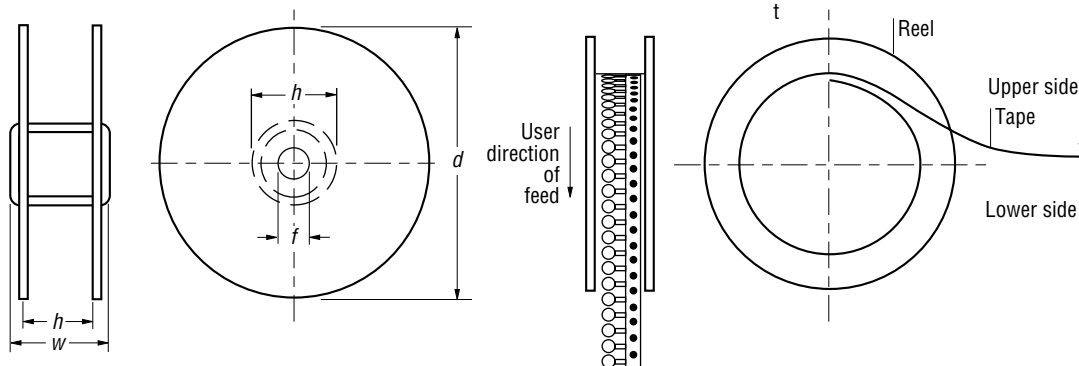
Dimension Description	IEC Mark	EIA Mark	Dimensions	
			Dimensions	Tolerance
Reel width (MF-RM005/240~MF-RM040/240)	w	w_2	$\frac{56.0}{(2.20)}$	max.
Reel width (MF-RM055/240)	w	w_2	$\frac{63.5}{(2.50)}$	max.
Reel diameter	d	a	$\frac{370.0}{(14.57)}$	max.
Space between flanges (MF-RM005/240~MF-RM040/240)	h	w_1	$\frac{48.0}{(1.89)}$	max.
Space between flanges (MF-RM055/240)	h	w_1	$\frac{55.0}{(2.17)}$	max.
Arbor hole diameter	f	c	$\frac{26.0}{(1.02)}$	± 12.0 (± 472)
Core diameter	h	n	$\frac{91.0}{(3.58)}$	max.
Box			$\frac{64}{(2.5)}$ $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$	max.
Consecutive missing places			3	max.
Empty places per reel			0.1 %	max.

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

Taped Component Dimensions - Figure 1



Reel Dimensions - Figure 2



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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

MFAN 12/18

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