



## 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\*

## 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 <sub>max</sub>  |                   | I <sub>max</sub>  | Initial Resistance         | One Hour Post-Trip Resistance | Max. Time to Trip |        | Tripped Power Dissipation |
|--------------|----------------------------|----------------------------|-------------------|-------------------|-------------------|----------------------------|-------------------------------|-------------------|--------|---------------------------|
|              | I <sub>hold</sub> at 23 °C | I <sub>trip</sub> at 23 °C | Operating Voltage | Interrupt Voltage | Interrupt Current | R <sub>Min.</sub> at 23 °C | R <sub>1</sub> 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 ..... R <sub>min</sub> ≤ R ≤ R <sub>1max</sub> |
| Passive Aging.....         | +85 °C, 1000 hours..... R <sub>min</sub> ≤ R ≤ R <sub>1max</sub>            |
| Vibration .....            | MIL-STD-883C, Method 2007.1,.....No change<br>Condition A                   |
| Solvent Resistance.....    | MIL-STD-202, Method 215 .....No 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 <sub>min</sub> ≤ R ≤ R <sub>1max</sub> |
| Time to Trip.....      | 240 Vac, specified current .....              | T ≤ max. time to trip                    |
| Hold Current.....      | At I <sub>hold</sub> .....                    | No trip                                  |
| Trip Cycle Life.....   | 240 Vac, I <sub>max</sub> , 100 cycles .....  | No arcing or burning                     |
| Trip Endurance .....   | a) 240 Vac, I <sub>max</sub> , 24 hours ..... | No arcing or burning                     |
|                        | b) 265 Vac, I <sub>max</sub> , 30 mins.       |                                          |
| Solderability .....    | MIL-STD-202, Method 208 .....                 | 95 % min. coverage                       |

UL File Number ..... E174545

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

Packaging options:

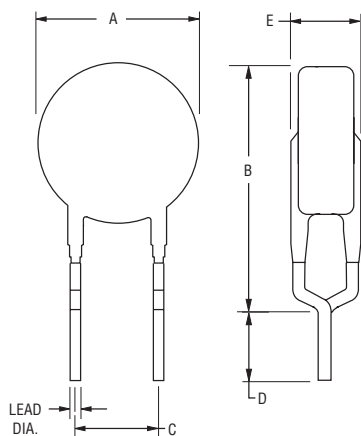
BULK: 500 pcs. per bag.

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

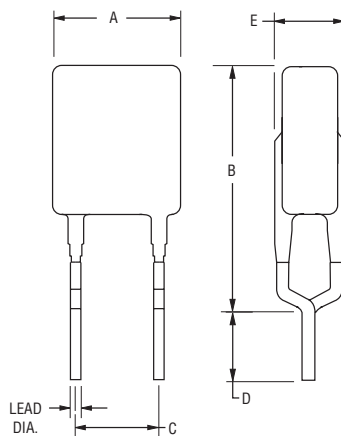
0.51 (24AWG)  
0.65 (22AWG)  
0.81 (20AWG)

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

Style 1

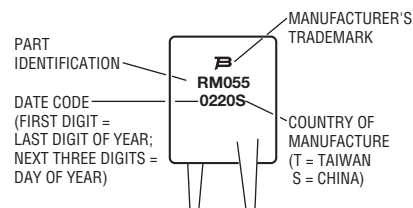


Style 2



### Typical Part Marking

Represents total content. Layout may vary.

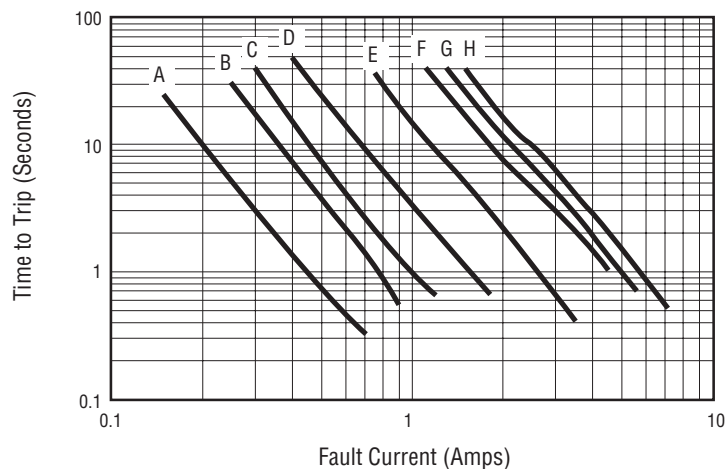


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## MF-RM Series - PTC Resettable Fuses

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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**

Multifuse®  
Product Designator  
Series  
RM = Radial Leaded Component  
Hold Current,  $I_{hold}$   
005-055 (0.05 Amps - 0.55 Amps)  
Operating Voltage,  $V_{max}$   
240 = 240 Vac  
Packaging Options  
- 0 = Bulk Packaging  
- 2 = Tape and Reel

\*Packaged per EIA486-B

**BOURNS®**

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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                                        | $D_0$        | $D_0$      | $\frac{4}{(.157)}$     | $\frac{\pm 0.2}{(\pm 0.079)}$      |
| 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                                        | $\Delta_h$   | $\Delta_h$ | 0                      | $\frac{\pm 1}{(\pm .039)}$         |
| Body tape plane deviation                                     | $\Delta_p$   | $\Delta_p$ | 0                      | $\frac{\pm 0.3}{(\pm .012)}$       |
| Lead seating plane deviation                                  | $\Delta P_1$ | $P_1$      | $\frac{3.81}{(.015)}$  | $\frac{\pm 0.7}{(\pm .028)}$       |
| 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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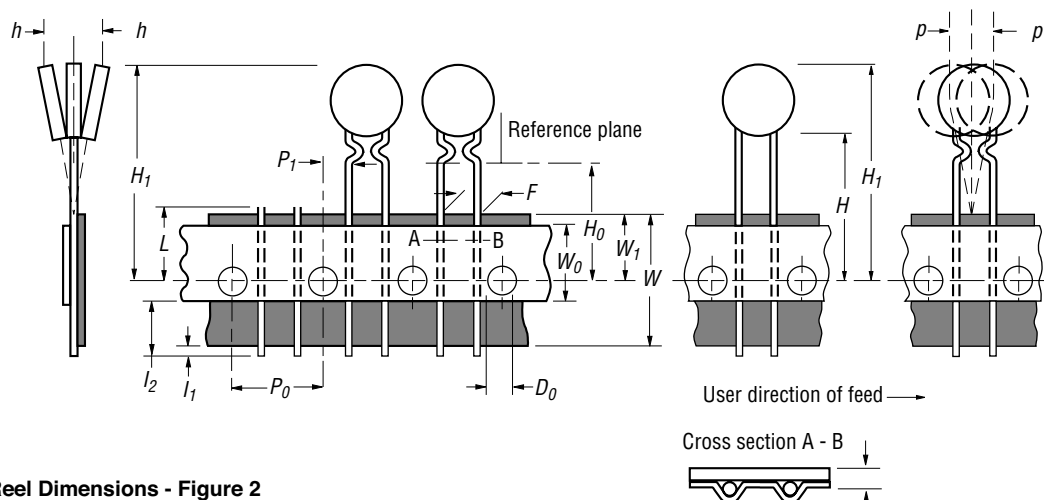
# MF-RM Series Tape and Reel Specifications

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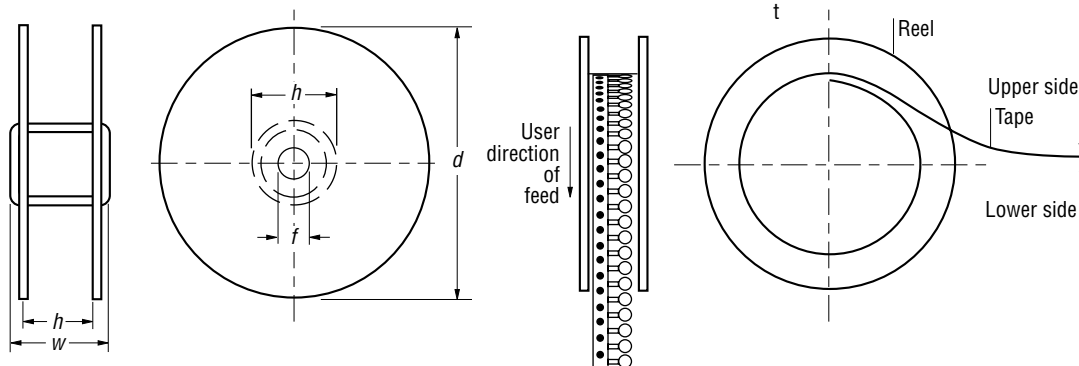
| Dimension Description                             | IEC Mark | EIA Mark | Dimensions                                                   |                              |
|---------------------------------------------------|----------|----------|--------------------------------------------------------------|------------------------------|
|                                                   |          |          | 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                               | $f$      | $c$      | $\frac{26.0}{(1.02)}$                                        | $\pm 12.0$<br>( $\pm 4.72$ ) |
| 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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