



## Features

- Radial Leaded Devices
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- RoHS compliant\* and halogen free\*\*
- Agency recognition: 

## Applications

Almost anywhere there is a low voltage power supply and a load to be protected, including:

- Computers & peripherals
- General electronics

# MF-R Series - PTC Resettable Fuses

## Electrical Characteristics

| Model        | V max.<br>Volts | I max.<br>Amps | Ihold            | Itrip | Initial Resistance |       | 1 Hour (R <sub>1</sub> )<br>Post-Trip Resistance | Max. Time to Trip |                  | Tripped Power<br>Dissipation | Agency Recognition |           |
|--------------|-----------------|----------------|------------------|-------|--------------------|-------|--------------------------------------------------|-------------------|------------------|------------------------------|--------------------|-----------|
|              |                 |                | Amperes at 23 °C |       | Ohms at 23 °C      |       | Ohms at 23 °C                                    | Amperes at 23 °C  | Seconds at 23 °C | Watts at 23 °C               | cUL                | TÜV       |
|              |                 |                | Hold             | Trip  | Min.               | Max.  | Max.                                             |                   |                  | Typ.                         | E174545            | R50366745 |
| MF-R005      | 60              | 40             | 0.05             | 0.10  | 7.3                | 11.1  | 22.0                                             | 0.5               | 5.0              | 0.22                         | ✓                  | ✓         |
| MF-R010      | 60              | 40             | 0.10             | 0.20  | 2.50               | 4.50  | 7.50                                             | 0.5               | 4.0              | 0.38                         | ✓                  | ✓         |
| MF-R017      | 60              | 40             | 0.17             | 0.34  | 2.00               | 3.20  | 8.00                                             | 0.85              | 3.0              | 0.48                         | ✓                  | ✓         |
| MF-R020      | 60              | 40             | 0.20             | 0.40  | 1.50               | 2.84  | 4.40                                             | 1.0               | 2.2              | 0.40                         | ✓                  | ✓         |
| MF-R025      | 60              | 40             | 0.25             | 0.50  | 1.00               | 1.95  | 3.00                                             | 1.25              | 2.5              | 0.45                         | ✓                  | ✓         |
| MF-R030      | 60              | 40             | 0.30             | 0.60  | 0.76               | 1.36  | 2.10                                             | 1.5               | 3.0              | 0.50                         | ✓                  | ✓         |
| MF-R040      | 60              | 40             | 0.40             | 0.80  | 0.52               | 0.86  | 1.29                                             | 2.0               | 3.8              | 0.55                         | ✓                  | ✓         |
| MF-R050      | 60              | 40             | 0.50             | 1.00  | 0.41               | 0.77  | 1.17                                             | 2.5               | 4.0              | 0.75                         | ✓                  | ✓         |
| MF-R065      | 60              | 40             | 0.65             | 1.30  | 0.27               | 0.48  | 0.72                                             | 3.25              | 5.3              | 0.90                         | ✓                  | ✓         |
| MF-R075      | 60              | 40             | 0.75             | 1.50  | 0.18               | 0.40  | 0.60                                             | 3.75              | 6.3              | 0.90                         | ✓                  | ✓         |
| MF-R090      | 60              | 40             | 0.90             | 1.80  | 0.14               | 0.31  | 0.47                                             | 4.5               | 7.2              | 1.00                         | ✓                  | ✓         |
| MF-R090-0-9  | 30              | 40             | 0.90             | 1.80  | 0.07               | 0.12  | 0.22                                             | 4.5               | 5.9              | 0.60                         | ✓                  | ✓         |
| MF-R110      | 30              | 40             | 1.10             | 2.20  | 0.10               | 0.18  | 0.27                                             | 5.5               | 6.6              | 0.70                         | ✓                  | ✓         |
| MF-R135      | 30              | 40             | 1.35             | 2.70  | 0.065              | 0.115 | 0.17                                             | 6.75              | 7.3              | 0.80                         | ✓                  | ✓         |
| MF-R160      | 30              | 40             | 1.60             | 3.20  | 0.055              | 0.105 | 0.15                                             | 8.0               | 8.0              | 0.90                         | ✓                  | ✓         |
| MF-R185      | 30              | 40             | 1.85             | 3.70  | 0.040              | 0.07  | 0.11                                             | 9.25              | 8.7              | 1.00                         | ✓                  | ✓         |
| MF-R250      | 30              | 40             | 2.50             | 5.00  | 0.025              | 0.048 | 0.07                                             | 12.5              | 10.3             | 1.20                         | ✓                  | ✓         |
| MF-R250-0-10 | 30              | 40             | 2.50             | 5.00  | 0.025              | 0.048 | 0.07                                             | 12.5              | 10.3             | 1.20                         | ✓                  | ✓         |
| MF-R300      | 30              | 40             | 3.00             | 6.00  | 0.020              | 0.05  | 0.08                                             | 15.0              | 10.8             | 2.00                         | ✓                  | ✓         |
| MF-R400      | 30              | 40             | 4.00             | 8.00  | 0.010              | 0.03  | 0.05                                             | 20.0              | 12.7             | 2.50                         | ✓                  | ✓         |
| MF-R500      | 30              | 40             | 5.00             | 10.00 | 0.010              | 0.03  | 0.05                                             | 25.0              | 14.5             | 3.00                         | ✓                  | ✓         |
| MF-R600      | 30              | 40             | 6.00             | 12.00 | 0.005              | 0.02  | 0.04                                             | 30.0              | 16.0             | 3.50                         | ✓                  | ✓         |
| MF-R700      | 30              | 40             | 7.00             | 14.00 | 0.005              | 0.02  | 0.03                                             | 35.0              | 17.5             | 3.80                         | ✓                  | ✓         |
| MF-R800      | 30              | 40             | 8.00             | 16.00 | 0.005              | 0.02  | 0.03                                             | 40.0              | 18.8             | 4.00                         | ✓                  | ✓         |
| MF-R900      | 30              | 40             | 9.00             | 18.00 | 0.005              | 0.01  | 0.02                                             | 40.0              | 20.0             | 4.20                         | ✓                  | ✓         |
| MF-R1100     | 16              | 100            | 11.00            | 22.00 | 0.003              | 0.01  | 0.014                                            | 40.0              | 20.0             | 4.50                         | ✓                  | ✓         |

## Environmental Characteristics

|                                       |                                               |                                                    |
|---------------------------------------|-----------------------------------------------|----------------------------------------------------|
| Operating Temperature.....            | -40 °C to +85 °C                              |                                                    |
| Recommended Storage.....              | +40 °C max. / 70 % R.H. max.                  |                                                    |
| 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.....                    | -40 °C to +85 °C, 10 times.....               | ±10 % typical resistance change                    |
| Solvent Resistance.....               | MIL-STD-202, Method 215.....                  | No change (marking still legible)                  |
| Vibration.....                        | MIL-STD-883C, Method 2007.1, Condition A..... | No change (R <sub>min</sub> <R<R <sub>1max</sub> ) |
| Moisture Sensitivity Level (MSL)..... | See Note                                      |                                                    |
| ESD Classification.....               | Class 6 (per AEC-Q200-2, HBM)                 |                                                    |

## Test Procedures and Requirements

| Test                 | Test Conditions                      | Accept/Reject Criteria                  |
|----------------------|--------------------------------------|-----------------------------------------|
| Visual/Mech.....     | Verify dimensions and materials..... | Per MF physical description             |
| Resistance.....      | In still air @ 23 °C.....            | R <sub>min</sub> ≤ R ≤ R <sub>max</sub> |
| Time to Trip.....    | 5 times Ihold, 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.....   | 245 °C ±5 °C, 5 seconds.....         | 95 % min. coverage                      |



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
 \*\* 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.  
 Specifications are subject to change without notice.  
 Users should verify actual device performance in their specific applications.  
 The products described herein and this document are subject to specific disclaimers as set forth on the last page of this document, and at [www.bourns.com/legal/disclaimer.pdf](http://www.bourns.com/legal/disclaimer.pdf).

## Additional Features

- Bulk packaging, tape and reel and Ammo-Pak available on most models

## MF-R Series - PTC Resettable Fuses

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Product Dimensions (see next page for outline drawing)

| Model        | A<br>Max.              | B<br>Max.              | C                      |                       | D<br>Min.             | E<br>Max.             | Physical Characteristics |                         |          |
|--------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------|
|              |                        |                        | Nom.                   | Tol. ±                |                       |                       | Style                    | Lead Dia.               | Material |
| MF-R005      | $\frac{8.0}{(0.315)}$  | $\frac{8.3}{(0.327)}$  | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 4                        | $\frac{0.405}{(0.016)}$ | Sn/NiCu  |
| MF-R010      | $\frac{7.4}{(0.291)}$  | $\frac{12.7}{(0.5)}$   | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/NiCu  |
| MF-R017      | $\frac{7.4}{(0.291)}$  | $\frac{12.7}{(0.5)}$   | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R020      | $\frac{7.4}{(0.291)}$  | $\frac{12.7}{(0.5)}$   | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R025      | $\frac{7.4}{(0.291)}$  | $\frac{12.7}{(0.5)}$   | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R030      | $\frac{7.4}{(0.291)}$  | $\frac{13.4}{(0.528)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R040      | $\frac{7.4}{(0.291)}$  | $\frac{13.7}{(0.539)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R050      | $\frac{7.9}{(0.311)}$  | $\frac{13.7}{(0.539)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R065      | $\frac{9.7}{(0.382)}$  | $\frac{15.2}{(0.598)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R075      | $\frac{10.4}{(0.409)}$ | $\frac{16.0}{(0.630)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R090      | $\frac{11.7}{(0.461)}$ | $\frac{16.7}{(0.657)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.1}{(0.122)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R090-0-9  | $\frac{7.4}{(0.291)}$  | $\frac{12.2}{(0.480)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 3                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R110      | $\frac{8.9}{(0.350)}$  | $\frac{14.0}{(0.551)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R135      | $\frac{8.9}{(0.350)}$  | $\frac{18.9}{(0.744)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R160      | $\frac{10.2}{(0.402)}$ | $\frac{16.8}{(0.661)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R185      | $\frac{12.0}{(0.472)}$ | $\frac{18.4}{(0.724)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 1                        | $\frac{0.51}{(0.020)}$  | Sn/Cu    |
| MF-R250      | $\frac{12.0}{(0.472)}$ | $\frac{18.3}{(0.720)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R250-0-10 | $\frac{12.0}{(0.472)}$ | $\frac{18.3}{(0.720)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 3                        | $\frac{0.51}{(0.020)}$  | Sn/CuFe  |
| MF-R300      | $\frac{12.0}{(0.472)}$ | $\frac{18.3}{(0.720)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R400      | $\frac{14.4}{(0.567)}$ | $\frac{24.8}{(0.976)}$ | $\frac{5.1}{(0.201)}$  | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R500      | $\frac{17.4}{(0.685)}$ | $\frac{24.9}{(0.980)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R600      | $\frac{19.3}{(0.760)}$ | $\frac{31.9}{(1.256)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R700      | $\frac{22.1}{(0.870)}$ | $\frac{29.8}{(1.173)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R800      | $\frac{24.2}{(0.953)}$ | $\frac{32.9}{(1.295)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R900      | $\frac{24.2}{(0.953)}$ | $\frac{32.9}{(1.295)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |
| MF-R1100     | $\frac{24.2}{(0.953)}$ | $\frac{32.9}{(1.295)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.299)}$ | $\frac{3.0}{(0.118)}$ | 2                        | $\frac{0.81}{(0.032)}$  | Sn/Cu    |

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

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

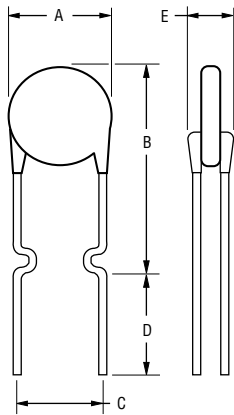
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# MF-R Series - PTC Resettable Fuses

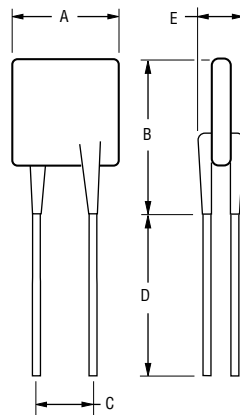
**BOURNS®**

## Product Dimensions (see previous page for dimensions)

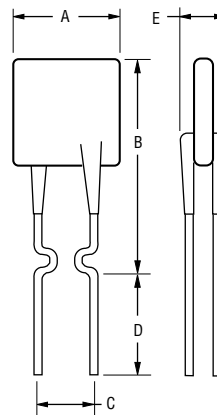
Style 1



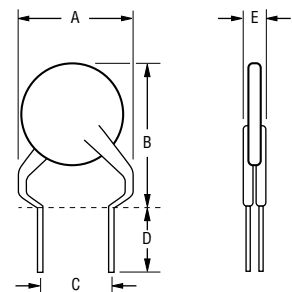
Style 2



Style 3



Style 4



NOTE: Kinked lead option is available for board standoff. Contact factory for details.

NOTE: Also available with straight leads. Contact factory for details.

## Thermal Derating Chart - $I_{hold}$ / $I_{trip}$ (Amps)

| Model        | Ambient Operating Temperature |             |             |             |             |             |             |             |             |
|--------------|-------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|              | -40 °C                        | -20 °C      | 0 °C        | 23 °C       | 40 °C       | 50 °C       | 60 °C       | 70 °C       | 85 °C       |
| MF-R005      | 0.08 / 0.16                   | 0.07 / 0.14 | 0.06 / 0.12 | 0.05 / 0.10 | 0.04 / 0.08 | 0.04 / 0.08 | 0.03 / 0.07 | 0.03 / 0.07 | 0.02 / 0.05 |
| MF-R010      | 0.16 / 0.32                   | 0.14 / 0.28 | 0.12 / 0.24 | 0.10 / 0.20 | 0.08 / 0.16 | 0.07 / 0.14 | 0.06 / 0.12 | 0.05 / 0.10 | 0.04 / 0.08 |
| MF-R017      | 0.26 / 0.52                   | 0.23 / 0.46 | 0.20 / 0.40 | 0.17 / 0.34 | 0.14 / 0.28 | 0.12 / 0.24 | 0.11 / 0.22 | 0.09 / 0.18 | 0.07 / 0.14 |
| MF-R020      | 0.31 / 0.62                   | 0.27 / 0.54 | 0.24 / 0.48 | 0.20 / 0.40 | 0.16 / 0.32 | 0.14 / 0.28 | 0.13 / 0.26 | 0.11 / 0.22 | 0.08 / 0.16 |
| MF-R025      | 0.39 / 0.78                   | 0.34 / 0.68 | 0.30 / 0.60 | 0.25 / 0.50 | 0.20 / 0.40 | 0.18 / 0.36 | 0.16 / 0.32 | 0.14 / 0.28 | 0.10 / 0.20 |
| MF-R030      | 0.47 / 0.94                   | 0.41 / 0.82 | 0.36 / 0.72 | 0.30 / 0.60 | 0.24 / 0.48 | 0.22 / 0.44 | 0.19 / 0.38 | 0.16 / 0.32 | 0.12 / 0.24 |
| MF-R040      | 0.62 / 1.24                   | 0.54 / 1.08 | 0.48 / 0.96 | 0.40 / 0.80 | 0.32 / 0.64 | 0.29 / 0.58 | 0.25 / 0.50 | 0.22 / 0.44 | 0.16 / 0.32 |
| MF-R050      | 0.78 / 1.56                   | 0.68 / 1.36 | 0.60 / 1.20 | 0.50 / 1.00 | 0.41 / 0.82 | 0.36 / 0.72 | 0.32 / 0.64 | 0.27 / 0.54 | 0.20 / 0.40 |
| MF-R065      | 1.01 / 2.02                   | 0.88 / 1.76 | 0.77 / 1.54 | 0.65 / 1.30 | 0.53 / 1.06 | 0.47 / 0.94 | 0.41 / 0.82 | 0.35 / 0.70 | 0.26 / 0.52 |
| MF-R075      | 1.16 / 2.32                   | 1.02 / 2.04 | 0.89 / 1.78 | 0.75 / 1.50 | 0.61 / 1.22 | 0.54 / 1.08 | 0.47 / 0.94 | 0.41 / 0.82 | 0.30 / 0.60 |
| MF-R090      | 1.40 / 2.80                   | 1.22 / 2.44 | 1.07 / 2.14 | 0.90 / 1.80 | 0.73 / 1.46 | 0.65 / 1.30 | 0.57 / 1.14 | 0.49 / 0.98 | 0.36 / 0.72 |
| MF-R090-0-9  | 1.40 / 2.80                   | 1.22 / 2.44 | 1.07 / 2.14 | 0.90 / 1.80 | 0.73 / 1.46 | 0.65 / 1.30 | 0.57 / 1.14 | 0.49 / 0.98 | 0.36 / 0.72 |
| MF-R110      | 1.60 / 3.20                   | 1.43 / 2.86 | 1.27 / 2.54 | 1.10 / 2.20 | 0.91 / 1.82 | 0.85 / 1.70 | 0.75 / 1.50 | 0.67 / 1.34 | 0.57 / 1.14 |
| MF-R135      | 1.96 / 3.92                   | 1.76 / 3.52 | 1.55 / 3.10 | 1.35 / 2.70 | 1.12 / 2.24 | 1.04 / 2.08 | 0.92 / 1.84 | 0.82 / 1.64 | 0.70 / 1.40 |
| MF-R160      | 2.32 / 4.64                   | 2.08 / 4.16 | 1.84 / 3.68 | 1.60 / 3.20 | 1.33 / 2.66 | 1.23 / 2.46 | 1.09 / 2.18 | 0.98 / 1.96 | 0.83 / 1.66 |
| MF-R185      | 2.68 / 5.36                   | 2.41 / 4.82 | 2.13 / 4.26 | 1.85 / 3.70 | 1.54 / 3.08 | 1.42 / 2.84 | 1.26 / 2.52 | 1.13 / 2.26 | 0.96 / 1.92 |
| MF-R250      | 3.63 / 7.26                   | 3.25 / 6.50 | 2.88 / 5.76 | 2.50 / 5.00 | 2.08 / 4.16 | 1.93 / 3.86 | 1.70 / 3.40 | 1.53 / 3.06 | 1.30 / 2.60 |
| MF-R250-0-10 | 3.63 / 7.26                   | 3.25 / 6.50 | 2.88 / 5.76 | 2.50 / 5.00 | 2.08 / 4.16 | 1.93 / 3.86 | 1.70 / 3.40 | 1.53 / 3.06 | 1.30 / 2.60 |
| MF-R300      | 4.35 / 8.70                   | 3.90 / 7.80 | 3.45 / 6.90 | 3.00 / 6.00 | 2.49 / 4.98 | 2.31 / 4.62 | 2.04 / 4.08 | 1.83 / 3.66 | 1.56 / 3.12 |
| MF-R400      | 5.80 / 11.6                   | 5.20 / 10.4 | 4.60 / 9.20 | 4.00 / 8.00 | 3.32 / 6.64 | 3.08 / 6.16 | 2.72 / 5.44 | 2.44 / 4.88 | 2.08 / 4.16 |
| MF-R500      | 7.25 / 14.5                   | 6.50 / 13.0 | 5.75 / 11.5 | 5.00 / 10.0 | 4.15 / 8.30 | 3.85 / 7.70 | 3.40 / 6.80 | 3.05 / 6.10 | 2.60 / 5.20 |
| MF-R600      | 8.70 / 17.4                   | 7.80 / 15.6 | 6.90 / 13.8 | 6.00 / 12.0 | 4.98 / 9.96 | 4.62 / 9.24 | 4.08 / 8.16 | 3.66 / 7.32 | 3.12 / 6.24 |
| MF-R700      | 10.1 / 20.3                   | 9.10 / 18.2 | 8.05 / 16.1 | 7.00 / 14.0 | 5.81 / 11.6 | 5.39 / 10.7 | 4.76 / 9.52 | 4.27 / 9.44 | 3.64 / 7.28 |
| MF-R800      | 11.6 / 23.2                   | 10.4 / 20.8 | 9.20 / 18.4 | 8.00 / 16.0 | 6.64 / 13.2 | 6.16 / 12.3 | 5.44 / 10.8 | 4.88 / 9.76 | 4.16 / 8.32 |
| MF-R900      | 13.0 / 26.1                   | 11.7 / 23.4 | 10.3 / 20.7 | 9.00 / 18.0 | 7.47 / 14.9 | 6.93 / 12.7 | 6.12 / 12.2 | 5.49 / 10.9 | 4.68 / 9.36 |
| MF-R1100     | 16.1 / 32.0                   | 14.6 / 29.2 | 13.1 / 26.2 | 11.0 / 22.1 | 9.40 / 18.4 | 8.80 / 17.6 | 7.80 / 15.6 | 6.90 / 13.8 | 5.20 / 10.4 |

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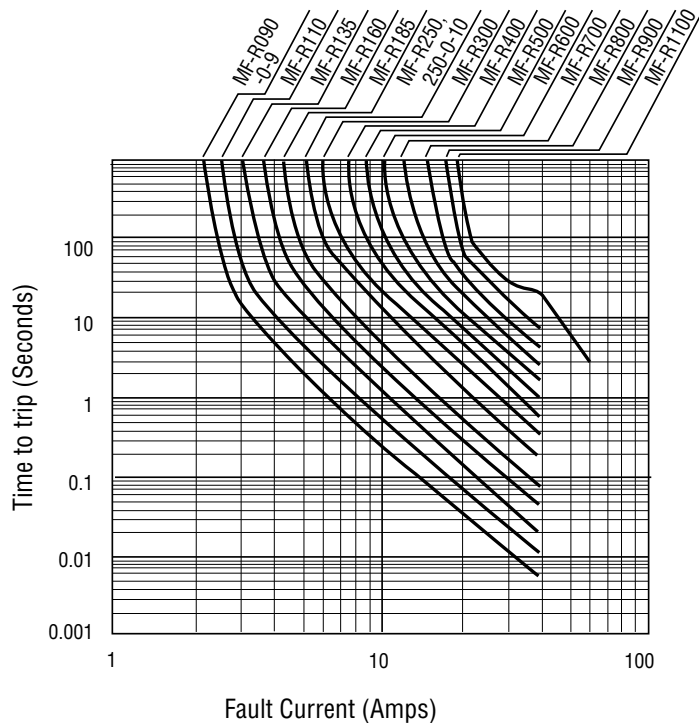
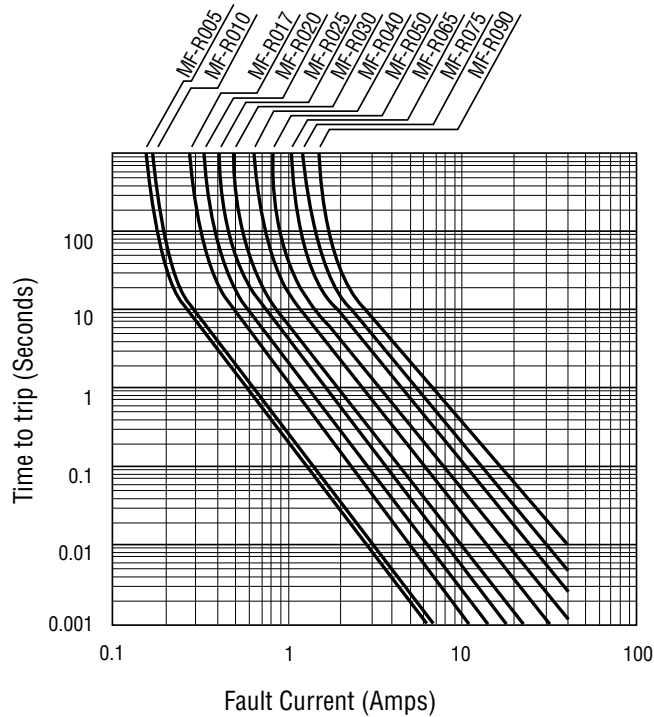
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# MF-R Series - PTC Resettable Fuses

**BOURNS®**

## Typical Time to Trip at 23 °C



## How to Order

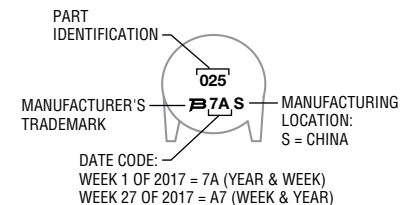
**MF - R 110 - 0 - 14**

Multifuse®  
Product Designator \_\_\_\_\_  
Series \_\_\_\_\_  
R = Radial Leaded Component  
Hold Current, I<sub>hold</sub> \_\_\_\_\_  
005-1100 (0.05 Amps - 11.0 Amps)  
Packaging Options \_\_\_\_\_  
- \_\_\_\_ = Bulk Packaging without part number suffix option  
- 0 = Bulk Packaging with part number suffix option  
- 2 = Tape and Reel  
- AP = Ammo-Pak\*  
Part Number Suffix Option \_\_\_\_\_  
- 14 = Kinked leads where straight leads are standard  
- 17 = Straight leads where kinked leads are standard  
- 99 = RoHS Compliance  
*As of date code April 1, 2005 all MF-R models are RoHS compliant. The suffix "-99" was originally provided to help customers distinguish between RoHS compliant and non-RoHS compliant products, but the -99 suffix option is no longer necessary. The -99 suffix option will no longer be available starting January 1, 2020. See [Note](#) for more details.*

\*Packaged per EIA-468

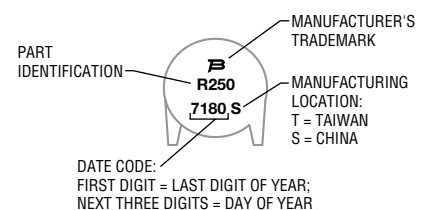
## Typical Part Marking: MF-R005 - R025

Represents total content. Layout may vary.



## Typical Part Marking: MF-R030 - R1100

Represents total content. Layout may vary.



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## MF-R Series - PTC Resettable Fuses

**BOURNS®**

### Packaging Quantity

Packaging options:

BULK: All models = 500 pcs. per bag

TAPE & REEL: MF-R005 ~ MF-R160 12.7 mm device pitch = 3000 pcs. per reel  
MF-R185 ~ MF-R400 25.4 mm device pitch = 1500 pcs. per reel  
MF-R500 ~ MF-R1100 25.4 mm device pitch = 1000 pcs. per reel

AMMO-PACK: MF-R005 ~ MF-R160 12.7 mm device pitch = 2000 pcs. per pack  
MF-R185 ~ MF-R400 25.4 mm device pitch = 1000 pcs. per pack  
MF-R500 ~ MF-R1100 25.4 mm device pitch = 500 pcs. per pack

# MF-R Series Tape and Reel Specifications

**BOURNS®**

Devices taped using EIA-468/IEC 60286-2 standards. See table below and Figures 1~4 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                                | $W_0$      | $W_0$      | $\frac{5}{(.197)}$                    | min.                               |
| Hold down tape                                      |            |            | No protrusion                         |                                    |
| Adhesive tape position                              | $W_2$      | $W_2$      | $\frac{3}{(.118)}$                    | max.                               |
| Sprocket hole position                              | $W_1$      | $W_1$      | $\frac{9}{(.354)}$                    | $\frac{-0.5/+0.75}{(-0.02/+0.03)}$ |
| Sprocket hole diameter                              | $D_0$      | $D_0$      | $\frac{4}{(.157)}$                    | $\frac{\pm 0.2}{(\pm .0078)}$      |
| Height to seating plane (straight lead)             | $H$        | $H$        | $\frac{18 \sim 20}{(.709 \sim .787)}$ |                                    |
| Height to seating plane (formed lead)               | $H_0$      | $H_0$      | $\frac{16}{(.63)}$                    | $\frac{\pm 0.5}{(\pm .02)}$        |
| Overall height above abscissa                       | $H_1$      | $H_1$      | $\frac{38.5}{(1.516)}$                | max.                               |
| Lead protrusion                                     | $L$        | $L_1$      | $\frac{1.0}{(.039)}$                  | max.                               |
| Cutout Length                                       |            | $L$        | $\frac{11}{(.433)}$                   | max.                               |
| Protrusion beyond hold-down tape, $l_2$             |            |            | Not specified                         |                                    |
| Sprocket hole pitch                                 | $P_0$      | $P_0$      | $\frac{12.7}{(0.5)}$                  | $\frac{\pm 0.3}{(\pm .012)}$       |
| Device pitch: MF-R005 ~ MF-R160                     | $P$        | $P$        | $\frac{12.7}{(0.5)}$                  | $\frac{\pm 0.3}{(\pm .012)}$       |
| Device pitch: MF-R185 ~ MF-R1100                    | $P$        | $P$        | $\frac{25.4}{(1.0)}$                  | $\frac{\pm 0.6}{(\pm .024)}$       |
| Pitch tolerance                                     |            |            | 20 consecutive                        | $\frac{\pm 1}{(\pm .039)}$         |
| Composite tape thickness                            | $t$        | $t$        | $\frac{0.9}{(.035)}$                  | max.                               |
| Overall tape and lead thickness: MF-R005 ~ MF-R185  | $t_1$      | $t_1$      | $\frac{2.0}{(0.079)}$                 | max.                               |
| Overall tape and lead thickness: MF-R250 ~ MF-R1100 | $t_1$      | $t_1$      | $\frac{2.3}{(0.091)}$                 | max.                               |
| Splice sprocket hole alignment                      |            |            | 0                                     | $\frac{\pm 0.3}{(\pm .012)}$       |
| Front-to-back deviation                             | $\Delta_h$ | $\Delta_h$ | 0                                     | $\frac{\pm 1.0}{(\pm .039)}$       |
| Side-to-side deviation                              | $\Delta_p$ | $\Delta_p$ | 0                                     | $\frac{\pm 1.3}{(\pm .051)}$       |

— Continued on next page —

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

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# MF-R Series Tape and Reel Specifications

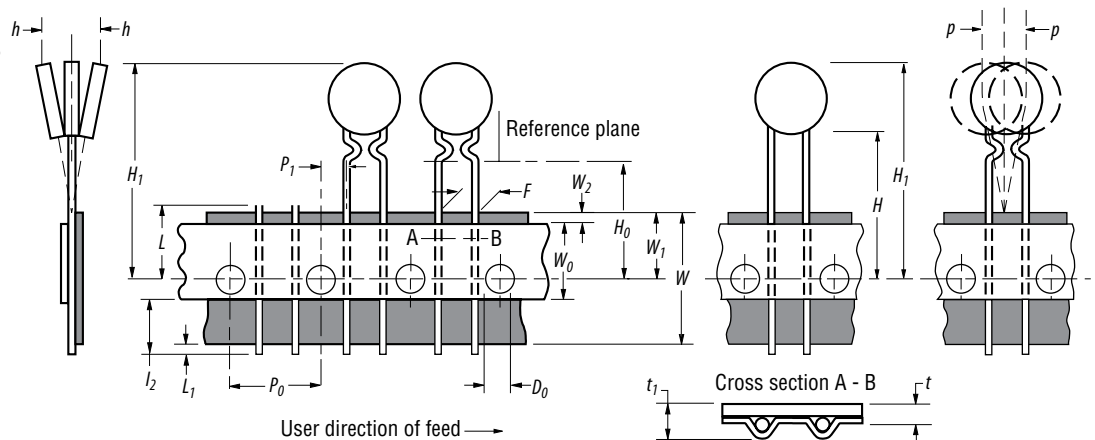
**BOURNS®**

| Dimension Description                            | IEC Mark | EIA Mark | Dimensions                                                    |                                     |
|--------------------------------------------------|----------|----------|---------------------------------------------------------------|-------------------------------------|
|                                                  |          |          | Dimensions                                                    | Tolerance                           |
| Ordinate to adjacent component lead              | $P_1$    | $P_1$    | $\frac{3.81}{(0.150)}$                                        | $\frac{\pm 0.7}{(\pm 0.028)}$       |
| Lead spacing: MF-R005 ~ MF-R400                  | $F$      | $F$      | $\frac{5.08}{(0.2)}$                                          | $\frac{+0.6/-0.2}{(+0.024/-0.008)}$ |
| Lead spacing: MF-R500 ~ MF-R1100                 | $F$      | $F$      | $\frac{10.2}{(0.4)}$                                          | $\frac{+0.6/-0.2}{(+0.024/-0.008)}$ |
| Reel width including flanges and hub             | $W_4$    | $w_2$    | $\frac{62.0}{(2.44)}$                                         | max.                                |
| Dimension between flanges (measured at hub)      | $W_3$    | $w_1$    | allow proper reeling and unreeling                            |                                     |
| Reel diameter                                    | $A$      | $a$      | $\frac{370.0}{(14.57)}$                                       | max.                                |
| Space between flanges (at hub, excluding device) |          |          | $\frac{4.75}{(.187)}$                                         | $\frac{\pm 3.25}{(\pm .128)}$       |
| Arbor hole diameter                              | $C$      | $c$      | $\frac{26.0}{(1.024)}$                                        | $\frac{\pm 12.0}{(\pm .472)}$       |
| Core diameter                                    | $N$      | $n$      | $\frac{80}{(3.15)}$                                           | min.                                |
| Box dimensions                                   |          |          | $\frac{62}{(2.44)}$ $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$ | max.                                |
| Consecutive missing places                       |          |          | 3                                                             | max.                                |
| Empty places per reel                            |          |          | Not specified                                                 |                                     |

**Taped Component Dimensions per EIA Mark - Figure 1**

**Applies to Models:**

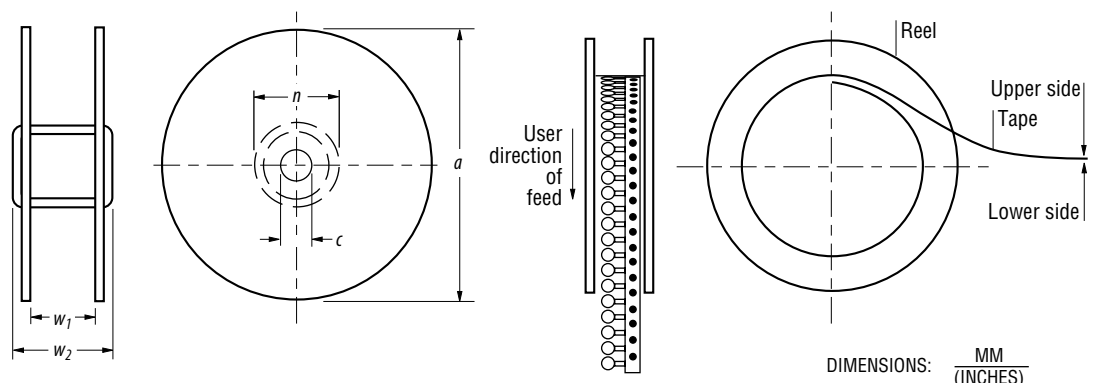
|          |
|----------|
| MF-R500  |
| MF-R600  |
| MF-R700  |
| MF-R800  |
| MF-R900  |
| MF-R1100 |



**Reel Dimensions per EIA Mark - Figure 2**

**Applies to Models:**

|          |
|----------|
| MF-R500  |
| MF-R600  |
| MF-R700  |
| MF-R800  |
| MF-R900  |
| MF-R1100 |



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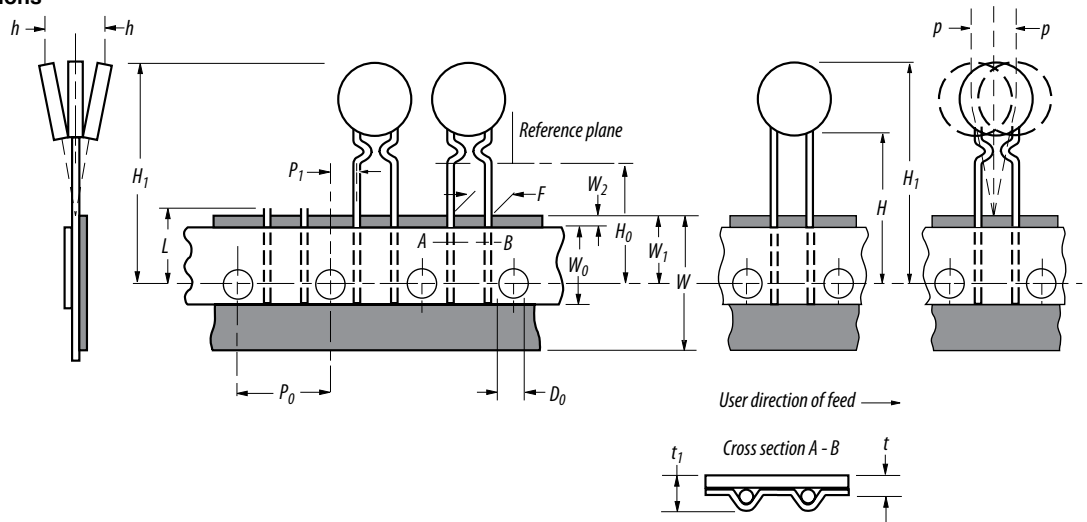
# MF-R Series Tape and Reel Specifications

**BOURNS®**

**Taped Component Dimensions -  
per EIA Mark -  
Figure 3**

**Applies to Models:**

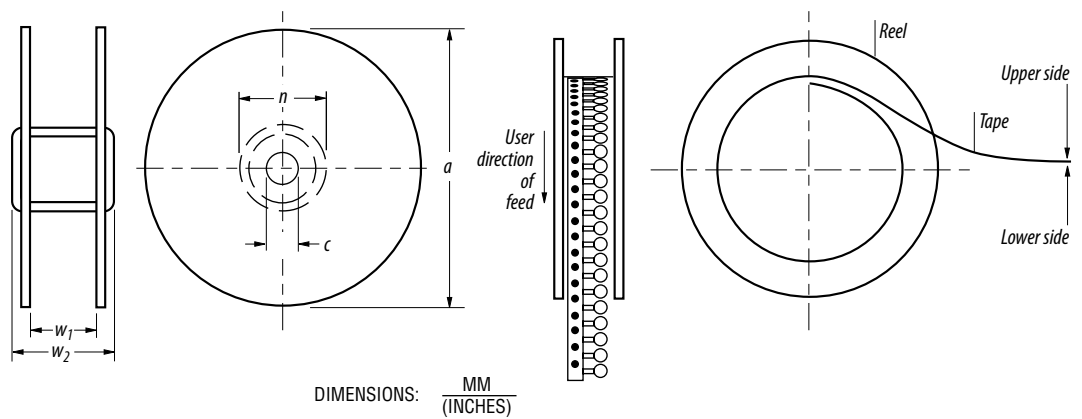
MF-R005 ~ MF-R400



**Reel Dimensions - per EIA Mark -  
Figure 4**

**Applies to Models:**

MF-R005 ~ MF-R400



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- 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](https://www.bourns.com/docs/RoHS-MSL/msl_mf.pdf)

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