


## Features

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

## Applications

Almost anywhere there is a low voltage power supply, up to 72 V and a load to be protected, including:

- Security and fire alarm systems
- Loudspeakers
- Power transformers

# MF-RX/72 Series - PTC Resettable Fuses

## Electrical Characteristics

| Model       | V max. Volts | I max. Amps | I <sub>hold</sub> |      | I <sub>trip</sub> |      | Initial Resistance |       | 1 Hour (R <sub>1</sub> ) Post-Trip Resistance | Max. Time To Trip |                  | Tripped Power Dissipation |
|-------------|--------------|-------------|-------------------|------|-------------------|------|--------------------|-------|---|-------------------|------------------|---------------------------|
|             |              |             | Amperes at 23 °C  |      | Ohms at 23 °C     |      | Ohms at 23 °C      |       | Ohms at 23 °C                                 | Amperes at 23 °C  | Seconds at 23 °C | Watts at 23 °C            |
|             |              |             | Hold              | Trip | Min.              | Max. | Max.               |       |   | Typ.              |                  |                           |
| MF-RX020/72 | 72           | 40          | 0.20              | 0.40 | 1.50              | 2.84 | 4.40               | 1.0   | 2.2   | 0.40              |                  |                           |
| MF-RX025/72 | 72           | 40          | 0.25              | 0.50 | 1.00              | 1.95 | 3.00               | 1.25  | 2.5   | 0.45              |                  |                           |
| MF-RX030/72 | 72           | 40          | 0.30              | 0.60 | 0.76              | 1.36 | 2.10               | 1.5   | 3.0   | 0.50              |                  |                           |
| MF-RX040/72 | 72           | 40          | 0.40              | 0.80 | 0.52              | 0.86 | 1.29               | 2.0   | 3.9   | 0.55              |                  |                           |
| MF-RX050/72 | 72           | 40          | 0.50              | 1.00 | 0.41              | 0.77 | 1.17               | 2.5   | 4.0   | 0.75              |                  |                           |
| MF-RX065/72 | 72           | 40          | 0.65              | 1.30 | 0.27              | 0.48 | 0.72               | 3.25  | 5.3   | 0.90              |                  |                           |
| MF-RX075/72 | 72           | 40          | 0.75              | 1.50 | 0.18              | 0.40 | 0.60               | 3.75  | 6.3   | 0.90              |                  |                           |
| MF-RX090/72 | 72           | 40          | 0.90              | 1.80 | 0.14              | 0.31 | 0.47               | 4.5   | 7.2   | 1.00              |                  |                           |
| MF-RX110/72 | 72           | 40          | 1.10              | 2.20 | 0.15              | 0.25 | 0.38               | 5.5   | 8.2   | 1.50              |                  |                           |
| MF-RX135/72 | 72           | 40          | 1.35              | 2.70 | 0.12              | 0.19 | 0.30               | 6.75  | 9.6   | 1.70              |                  |                           |
| MF-RX160/72 | 72           | 40          | 1.60              | 3.20 | 0.09              | 0.14 | 0.22               | 8.0   | 11.4  | 1.90              |                  |                           |
| MF-RX185/72 | 72           | 40          | 1.85              | 3.70 | 0.08              | 0.12 | 0.19               | 9.25  | 12.6  | 2.10              |                  |                           |
| MF-RX250/72 | 72           | 40          | 2.50              | 5.00 | 0.05              | 0.08 | 0.13               | 12.5  | 15.6  | 2.50              |                  |                           |
| MF-RX300/72 | 72           | 40          | 3.00              | 6.00 | 0.04              | 0.06 | 0.10               | 15.0  | 19.8  | 2.80              |                  |                           |
| MF-RX375/72 | 72           | 40          | 3.75              | 7.50 | 0.03              | 0.05 | 0.08               | 18.75 | 24.0  | 3.20              |                  |                           |

## 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                       |
| Humidity Aging                                      | +85 °C, 85 % R.H. 1000 hours             |
| Thermal Shock                                       | +85 °C to -55 °C, 10 times               |
| Solvent Resistance                                  | MIL-STD-202, Method 215                  |
| Vibration   | MIL-STD-883C, Method 2007.1, Condition A |

## Test Procedures And Requirements For Model MF-RX/72 Series

| 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 I <sub>hold</sub> , V <sub>max</sub> , 23 °C | T ≤ max. time to trip (seconds)         |
| Hold Current    | 30 min. at I <sub>hold</sub>                         | No trip                                 |
| Trip Cycle Life | V <sub>max</sub> , I <sub>max</sub> , 100 cycles     | No arcing or burning                    |
| Trip Endurance  | V <sub>max</sub> , 48 hours                          | No arcing or burning                    |

|                        |   |
|------------------------|---|
| UL File Number         | E174545<br><a href="http://www.ul.com/">http://www.ul.com/</a> Follow link to Certifications, then UL File No., enter E174545               |
| TÜV Certificate Number | R 02057213<br><a href="http://www.tuvdotcom.com/">http://www.tuvdotcom.com/</a> Follow link to "other certificates", enter File No. 2057213 |



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

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

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## Additional Features

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

# MF-RX/72 Series - PTC Resettable Fuses

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### Product Dimensions

| Model       | A                |                  | B               |                | C             |                | D     |                 | E        |  | Physical Characteristics |  |  |
|-------------|------------------|------------------|-----------------|----------------|---------------|----------------|-------|-----------------|----------|--|--------------------------|--|--|
|             | Max.             | Max.             | Nom.            | Tol. ±         | Min.          | Max.           | Style | Lead Dia.       | Material |  |                          |  |  |
| MF-RX020/72 | 7.4<br>(0.291)   | 12.7<br>(0.5)    | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/CuFe  |  |                          |  |  |
| MF-RX025/72 | 7.4<br>(0.291)   | 12.7<br>(0.5)    | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/CuFe  |  |                          |  |  |
| MF-RX030/72 | 7.4<br>(0.291)   | 13.4<br>(0.528)  | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/CuFe  |  |                          |  |  |
| MF-RX040/72 | 7.4<br>(0.291)   | 13.7<br>(0.539)  | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/CuFe  |  |                          |  |  |
| MF-RX050/72 | 7.9<br>(0.311)   | 13.7<br>(0.539)  | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/Cu    |  |                          |  |  |
| MF-RX065/72 | 9.7<br>(0.382)   | 15.2<br>(0.598)  | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/Cu    |  |                          |  |  |
| MF-RX075/72 | 10.4<br>(0.409)  | 16.0<br>(0.630)  | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/Cu    |  |                          |  |  |
| MF-RX090/72 | 11.7<br>(0.461)  | 16.70<br>(0.657) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 1     | 0.51<br>(0.020) | Sn/Cu    |  |                          |  |  |
| MF-RX110/72 | 10.84<br>(0.427) | 16.84<br>(0.662) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX135/72 | 12.26<br>(0.483) | 18.26<br>(0.718) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX160/72 | 13.94<br>(0.549) | 19.94<br>(0.785) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX185/72 | 15.18<br>(0.598) | 21.18<br>(0.833) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX250/72 | 17.84<br>(0.702) | 23.84<br>(0.938) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX300/72 | 20.67<br>(0.814) | 26.67<br>(1.050) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |
| MF-RX375/72 | 23.51<br>(0.926) | 29.51<br>(1.161) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.30) | 3.1<br>(0.122) | 2     | 0.81<br>(0.032) | Sn/Cu    |  |                          |  |  |

#### Packaging options:

BULK: 500 pcs. per bag.

TAPE & REEL: MF-RX020/72-2 ~ MF-RX090/72-2 = 3000 pcs. per reel; MF-RX110/72-2 ~ MF-RX160/72-2 = 1500 pcs. per reel;

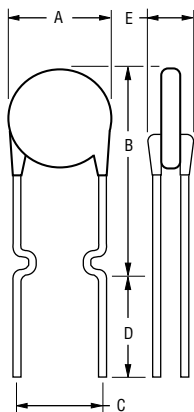
MF-RX185/72-2 - MF-RX375/72-2 = 1000 pcs. per reel.

AMMO-PACK: MF-RX020/72-AP ~ MF-RX090/72-AP = 2000 pcs. per pack; MF-RX110/72-AP ~ MF-RX160/72-AP = 1000 pcs. per pack;

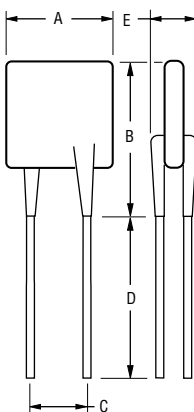
MF-RX185/72-AP - MF-RX375/72-AP = 500 pcs. per pack.

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

#### Style 1

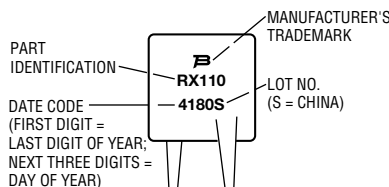


#### Style 2



#### Typical Part Marking

Represents total content. Layout may vary.



#### How to Order

**MF - RX 110/72 - 2 - 14**

Multifuse®  
Product Designator

Series  
RX = Radial Leaded Component

Hold Current, I<sub>hold</sub>  
020-375 (0.20 A - 3.75 A)

Maximum Voltage, V<sub>max</sub>  
72 (72 Volts)

Packaging Options

- 0 = Bulk Packaging
- 2 = Tape and Reel\*
- AP = Ammo-Pak\*

Part Number Suffix Option

- 14 = Kinked Leads in Place of Standard Straight Leads
- 17 = Straight Leads in Place of Standard Kinked Leads

\*Packaged per EIA 486-B

Also available with kinked and straight leads in place of standard leads (see How to Order).

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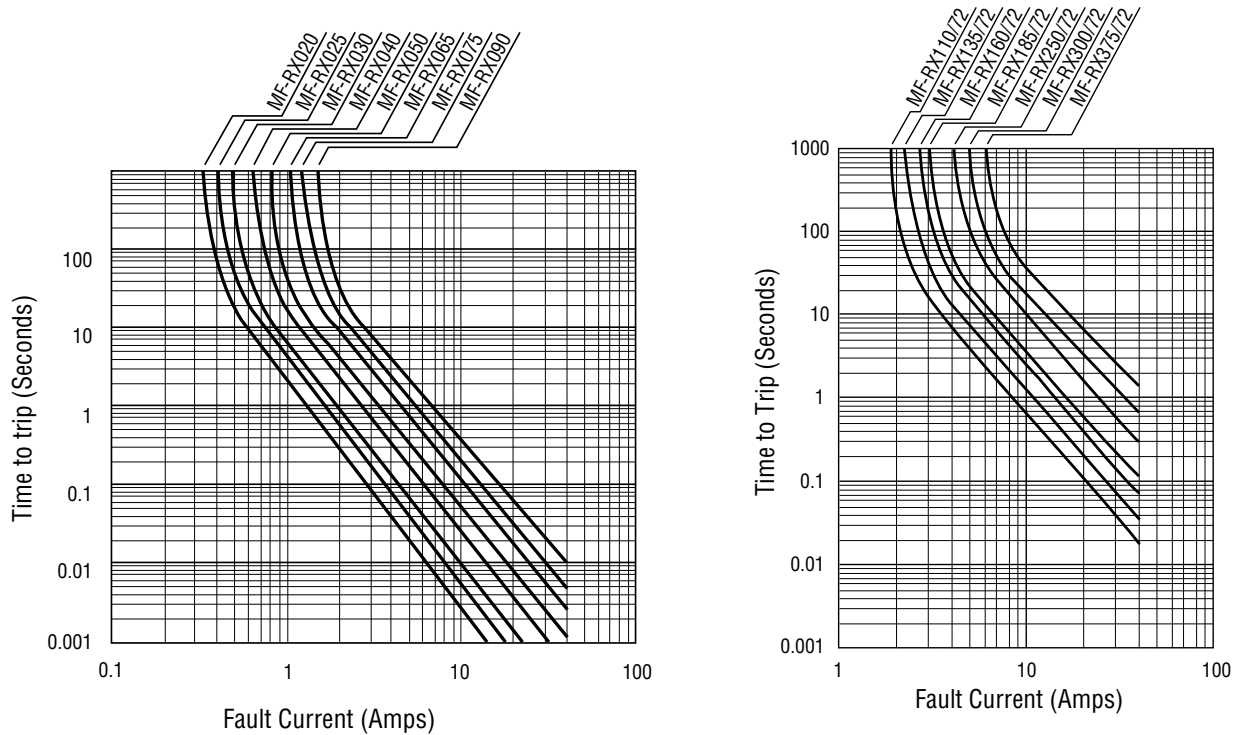
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# MF-RX/72 Series - PTC Resettable Fuses

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## Typical Time to Trip at 23 °C



The Time to Trip curves represent typical performance of a device in a simulated application environment. Actual performance in specific customer applications may differ from these values due to the influence of other variables.

## Thermal Derating Chart - I<sub>hold</sub> (Amps)

| Model       | Ambient Operating Temperature |        |      |       |       |       |       |       |       |
|-------------|-------------------------------|--------|------|-------|-------|-------|-------|-------|-------|
|             | -40 °C                        | -20 °C | 0 °C | 23 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| MF-RX020/72 | 0.31                          | 0.27   | 0.24 | 0.20  | 0.16  | 0.14  | 0.13  | 0.11  | 0.08  |
| MF-RX025/72 | 0.39                          | 0.34   | 0.30 | 0.25  | 0.20  | 0.18  | 0.16  | 0.14  | 0.10  |
| MF-RX030/72 | 0.47                          | 0.41   | 0.36 | 0.30  | 0.24  | 0.22  | 0.19  | 0.16  | 0.12  |
| MF-RX040/72 | 0.62                          | 0.54   | 0.48 | 0.40  | 0.32  | 0.29  | 0.25  | 0.22  | 0.16  |
| MF-RX050/72 | 0.78                          | 0.68   | 0.60 | 0.50  | 0.41  | 0.36  | 0.32  | 0.27  | 0.20  |
| MF-RX065/72 | 1.01                          | 0.88   | 0.77 | 0.65  | 0.53  | 0.47  | 0.41  | 0.35  | 0.26  |
| MF-RX075/72 | 1.16                          | 1.02   | 0.89 | 0.75  | 0.61  | 0.54  | 0.47  | 0.41  | 0.30  |
| MF-RX090/72 | 1.40                          | 1.22   | 1.07 | 0.90  | 0.73  | 0.65  | 0.57  | 0.49  | 0.36  |
| MF-RX110/72 | 1.71                          | 1.50   | 1.31 | 1.10  | 0.89  | 0.79  | 0.69  | 0.59  | 0.44  |
| MF-RX135/72 | 2.09                          | 1.84   | 1.61 | 1.35  | 1.09  | 0.97  | 0.85  | 0.73  | 0.54  |
| MF-RX160/72 | 2.48                          | 2.18   | 1.90 | 1.60  | 1.30  | 1.15  | 1.01  | 0.86  | 0.64  |
| MF-RX185/72 | 2.87                          | 2.52   | 2.20 | 1.85  | 1.50  | 1.33  | 1.17  | 1.00  | 0.74  |
| MF-RX250/72 | 3.88                          | 3.40   | 2.98 | 2.50  | 2.03  | 1.80  | 1.58  | 1.35  | 1.00  |
| MF-RX300/72 | 4.65                          | 4.08   | 3.57 | 3.00  | 2.43  | 2.16  | 1.89  | 1.62  | 1.20  |
| MF-RX375/72 | 5.81                          | 5.10   | 4.46 | 3.75  | 3.04  | 2.70  | 2.36  | 2.03  | 1.50  |

MF-RX/72 SERIES, REV. O 03/17

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## MF-R, MF-R/90, MF-R/600, & MF-RX, & MF-RX/72 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   | $W$        | $W$        | $\frac{18}{(.709)}$    | $\frac{-0.5/+1.0}{(-0.02/+0.039)}$ |
| 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   | $D_0$      | $D_0$      | $\frac{4}{(.157)}$     | $\frac{\pm 0.2}{(\pm .0078)}$      |
| Abscissa to plane (straight lead)  | $H$        | $H$        | $\frac{18.5}{(.728)}$  | $\frac{\pm 3.0}{(\pm .118)}$       |
| Abscissa to plane (kinked lead)  | $H_0$      | $H_0$      | $\frac{16}{(.63)}$     | $\frac{\pm 0.5}{(\pm .02)}$        |
| 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.                               |
| 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  | $P_0$      | $P_0$      | $\frac{12.7}{(0.5)}$   | $\frac{\pm 0.3}{(\pm .012)}$       |
| Pitch tolerance  |            |            | 20 consecutive         | $\frac{\pm 1}{(\pm .039)}$         |
| Device pitch: MF-R005–MF-R160, MF-R/90,<br>MF-RX020/72–MF-RX030/72                                   |            |            | $\frac{12.7}{(0.5)}$   | $\frac{\pm 0.3}{(\pm .012)}$       |
| Device pitch: MF-R185–MF-R400, MF-R/600, MF-RX110–MF-RX375<br>MF-RX040/72–MF-RX375/72                |            |            | $\frac{25.4}{(1.0)}$   | $\frac{\pm 0.6}{(\pm .024)}$       |
| Tape thickness   | $t$        | $t$        | $\frac{0.9}{(.035)}$   | max.                               |
| Tape thickness with splice: MF-R010–MF-R160,<br>MF-RX110/72–MF-RX185/72                              |            | $t_1$      | $\frac{1.5}{(.059)}$   | max.                               |
| Tape thickness with splice: MF-R250–MF-R1100,<br>MF-RX110–MF-RX375, MF-R/90, MF-RX250/72–MF-RX375/72 |            | $t_1$      | $\frac{2.3}{(.091)}$   | max.                               |
| Splice sprocket hole alignment   |            |            | 0                      | $\frac{\pm 0.3}{(\pm .012)}$       |
| Body lateral deviation   | $\Delta_h$ | $\Delta_h$ | 0                      | $\frac{\pm 1.0}{(\pm .039)}$       |
| Body tape plane deviation  | $\Delta_p$ | $\Delta_p$ | 0                      | $\frac{\pm 1.3}{(\pm .051)}$       |

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

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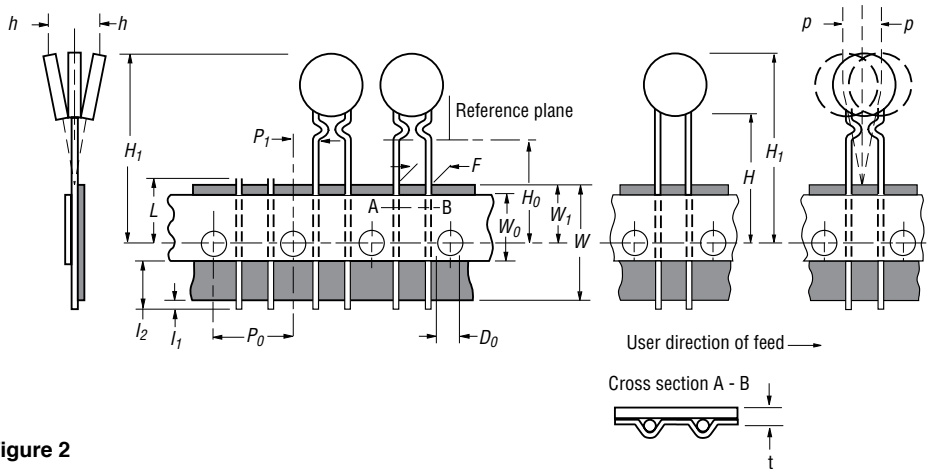
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# MF-R, MF-R/90, MF-R/600, MF-RX, & MF-RX/72 Series Tape and Reel Specifications

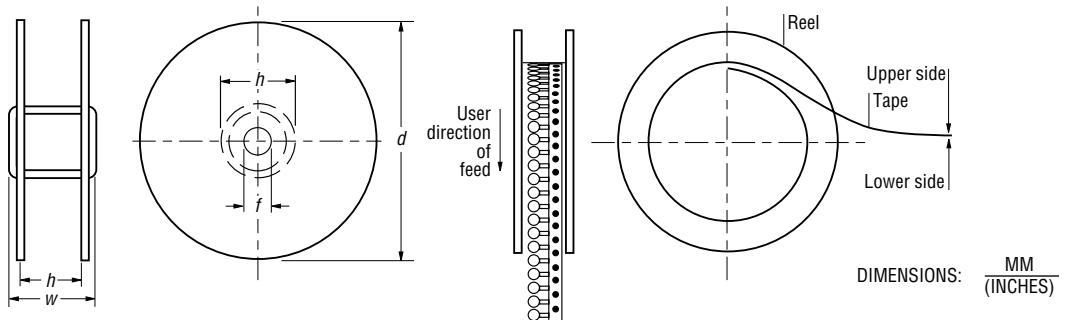
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| Dimension Description                                  | IEC Mark             | EIA Mark             | Dimensions   |                               |
|--|----------------------|----------------------|--|-------------------------------|
|  |                      |                      | Dimensions   | Tolerance                     |
| Lead spacing: MF-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 | <i>F</i>             | <i>F</i>             | $\frac{5.08}{(0.2)}$   | $\frac{\pm 0.2}{(\pm 0.008)}$ |
| Reel width   | <i>w</i>             | <i>W<sub>2</sub></i> | $\frac{56.0}{(2.205)}$   | max.                          |
| Reel diameter  | <i>d</i>             | <i>a</i>             | $\frac{370.0}{(14.57)}$  | max.                          |
| Space between flanges less device                      | <i>W<sub>1</sub></i> | <i>h</i>             | $\frac{4.75}{(.187)}$  | $\frac{\pm 3.25}{(\pm .128)}$ |
| Arbor hole diameter                                    | <i>f</i>             | <i>c</i>             | $\frac{26.0}{(1.024)}$   | $\frac{\pm 12.0}{(\pm .472)}$ |
| Core diameter: MF-R, MF-RX, MF-R/90                    | <i>h</i>             | <i>n</i>             | $\frac{80}{(3.15)}$  | max.                          |
| Core diameter: MF-R/600                                | <i>h</i>             | <i>n</i>             | $\frac{91}{(3.58)}$  | max.                          |
| Box: MF-R, MF-RX, MF-R/90                              |                      |                      | $\frac{62}{(2.44)}$ $\frac{355}{(14.0)}$ $\frac{345}{(13.6)}$  | nom.                          |
| Box: MF-R/600  |                      |                      | $\frac{64}{(2.52)}$ $\frac{372}{(14.6)}$ $\frac{362}{(14.25)}$ | max.                          |
| Consecutive missing places: MF-R, MF-RX, MF-R/90       |                      |                      | 3  | max.                          |
| Consecutive missing places: MF-R/600                   |                      |                      | none   |                               |
| Empty places per reel: MF-R, MF-RX, MF-R/90            |                      |                      | Not specified  |                               |
| Empty places per reel: MF-R/600                        |                      |                      | 0.1 %  |                               |

**Taped Component Dimensions -  
Figure 1**



**Reel Dimensions - Figure 2**



Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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