



## Features

- 72 V rated
- Radial leaded devices
- Cured, flame retardant epoxy polymer insulating material meets UL 94V-0 requirements
- RoHS compliant\*
- 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                                 | 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 .....±5 % typical resistance change           |
| Humidity Aging                                      | +85 °C, 85 % R.H. 1000 hours .....±5 % typical resistance change |
| Thermal Shock                                       | +85 °C to -55 °C, 10 times .....±10 % typical resistance change  |
| Solvent Resistance                                  | MIL-STD-202, Method 215 .....No change                           |
| Vibration   | MIL-STD-883C, Method 2007.1, .....No change 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  | E 174545S   |   |

\*RoHS Directive 2002/95/EC Jan 27 2003 including Annex  
 Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

## 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.             | Min.             | Max.            | Min.           | Nom.            | Tol. ±         | Min.           | Max.           | Max. | Min.            | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 1                        | 0.51<br>0.020   | Sn/CuFe  |
| MF-RX040/72 | 7.40<br>0.291    | 13.7<br>0.539    | 5.1<br>0.201    | 0.7<br>0.028   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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   | 5.1<br>0.201    | 0.7<br>0.028   | 7.6<br>0.299   | 3.1<br>0.122   | 1    | 0.51<br>0.020   | 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) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 5.1<br>(0.201)  | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 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) | 10.2<br>(0.402) | 0.7<br>(0.028) | 7.6<br>(0.299) | 3.1<br>(0.122) | 2    | 0.81<br>(0.032) | 2                        | 0.81<br>(0.032) | Sn/Cu    |

Packaging options:

BULK: 500 pcs. per bag.

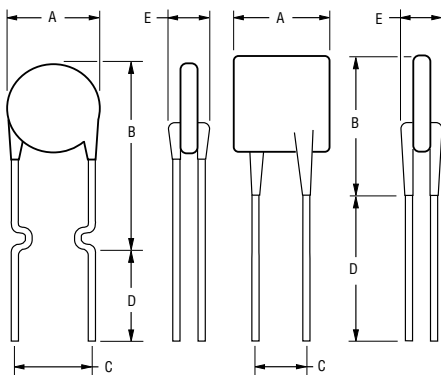
TAPE & REEL: MF-RX020/72-2 ~ MF-RX090/72-2 = 3000 pcs. per reel; MF-RX110/72-2 ~ MF-RX160/72-2 = 1500 pcs. per reel; MF-RX185/72-2 - MF-RX375/72-2 = 1000 pcs. per reel.

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

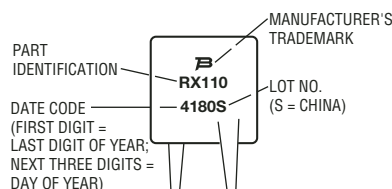
Style 1

Style 2



## Typical Part Marking

Represents total content. Layout may vary.



## How to Order

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

Multifuse®  
Product Designator

Series  
RX = Radial Leaded Component

Hold Current,  $I_{hold}$   
020-375 (0.20 Amps - 3.75 Amps)

Maximum Voltage,  $V_{max}$   
72 (72 Volts)

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

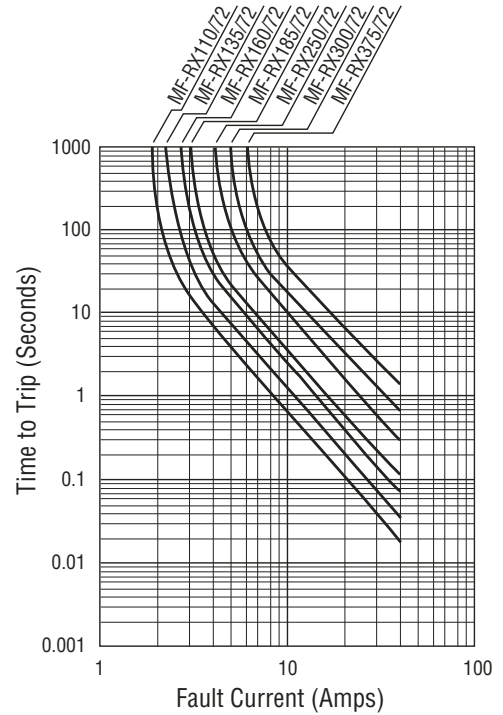
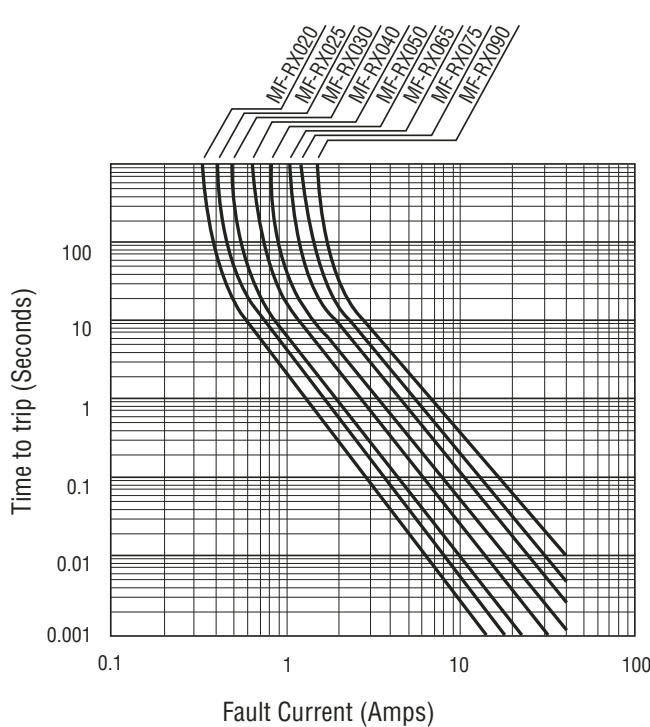
\*Packaged per EIA 486-B

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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 - $I_{hold}$ (Amps)

| Model       | Ambient Operating Temperature |        |      |       |       |       |       |       |       |
|-------------|-------------------------------|--------|------|-------|-------|-------|-------|-------|-------|
|             | -40 °C                        | -20 °C | 0 °C | 23 °C | 40 °C | 50 °C | 60 °C | 70 °C | 85 °C |
| MF-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-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 & MF-RX/250 Series  
Tape and Reel Specifications**

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

| Dimension Description  | IEC Mark   | EIA Mark   | Dimensions             |                                    |
|--|------------|------------|------------------------|------------------------------------|
|  |            |            | Dimensions             | Tolerance                          |
| Carrier tape width   | $W$        | $W$        | $\frac{18}{(.709)}$    | $\frac{-0.5/+1.0}{(-0.02/+0.039)}$ |
| 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   | $D_0$      | $D_0$      | $\frac{4}{(.157)}$     | $\frac{+0.2}{(\pm.0078)}$          |
| Abscissa to plane (straight lead)  | $H$        | $H$        | $\frac{18.5}{(.728)}$  | $\frac{+3.0}{(\pm.118)}$           |
| Abscissa to plane (kinked lead)  | $H_0$      | $H_0$      | $\frac{16}{(.63)}$     | $\frac{+0.5}{(\pm.02)}$            |
| 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  | $I_1$      | $L_1$      | $\frac{1.0}{(.039)}$   | max.                               |
| Protrusion of cutout   | $L$        | $L$        | $\frac{11}{(.433)}$    | max.                               |
| Protrusion beyond hold tape  | $I_2$      | $I_2$      | Not specified          |                                    |
| Sprocket hole pitch  | $P_0$      | $P_0$      | $\frac{12.7}{(0.5)}$   | $\frac{+0.3}{(\pm.012)}$           |
| Pitch tolerance  |            |            | 20 consecutive         | $\frac{+1}{(\pm.039)}$             |
| Device pitch: MF-R005-MF-R160, MF-R/90, MF-RX110/72-MF-RX185/72                                  |            |            | $\frac{12.7}{(0.5)}$   | $\frac{+0.3}{(\pm.012)}$           |
| Device pitch: MF-R185-MF-R400, MF-RX110-MF-RX375 MF-R/600, MF-RX250/72-MF-RX375/72               |            |            | $\frac{25.4}{(1.0)}$   | $\frac{+0.6}{(\pm.024)}$           |
| Tape thickness   | $t$        | $t$        | $\frac{0.9}{(.035)}$   | max.                               |
| Tape thickness with splice: MF-R010-MF-R160, MF-RX110/72-MF-RX185/72,                            |            | $t_1$      | $\frac{1.5}{(.059)}$   | max.                               |
| Tape thickness with splice: MF-R250-MF-R1100 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                      | $\frac{+0.3}{(\pm.012)}$           |
| Body lateral deviation   | $\Delta h$ | $\Delta h$ | 0                      | $\frac{+1.0}{(\pm.039)}$           |
| Body tape plane deviation  | $\Delta p$ | $\Delta p$ | 0                      | $\frac{+1.3}{(\pm.051)}$           |
| Lead spacing   | $F$        | $F$        | $\frac{5.08}{(0.2)}$   | $\frac{+0.2}{(\pm.008)}$           |
| Reel width   | $w$        | $W_2$      | $\frac{56}{(2.205)}$   | max.                               |
| Reel diameter  | $d$        | $a$        | $\frac{370}{(14.57)}$  | max.                               |
| Space between flanges less device  | $W_1$      | $h$        | $\frac{4.75}{(.187)}$  | $\frac{+3.25}{(\pm.128)}$          |

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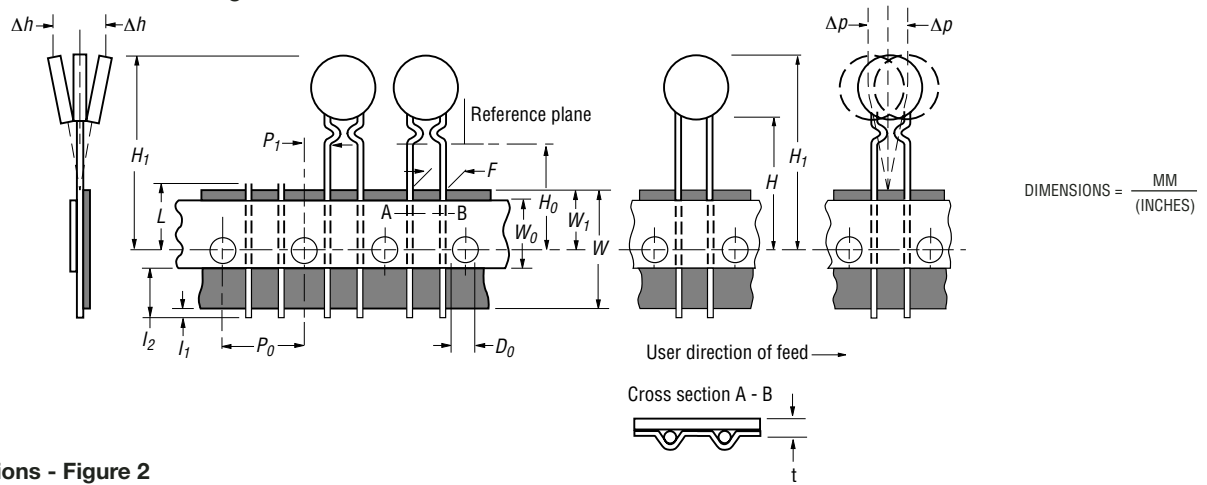
DIMENSIONS =  $\frac{\text{MM}}{\text{(INCHES)}}$

**MF-R, MF-R/90, MF-R/600, MF-RX, MF-RX/72 & MF-RX/250 Series  
Tape and Reel Specifications**

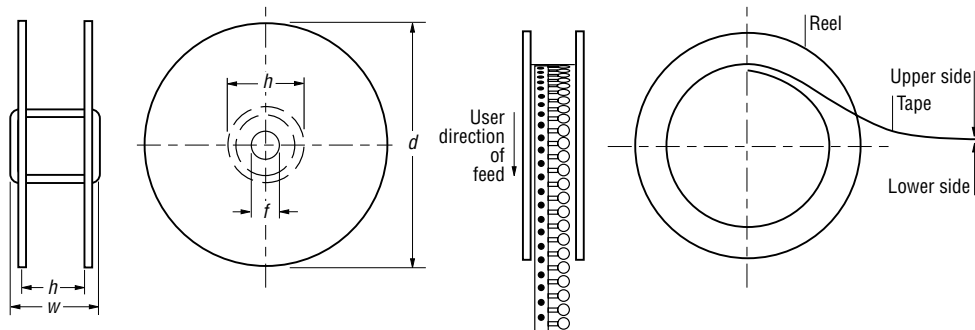
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| Dimension Description                            | IEC Mark | EIA Mark | Dimensions   |                               |
|--|----------|----------|--|-------------------------------|
|  |          |          | Dimensions   | Tolerance                     |
| Arbor hole diameter                              | <i>f</i> | <i>c</i> | $\frac{26}{(1.024)}$   | $\frac{\pm 12.0}{(\pm .472)}$ |
| Core diameter: MF-R, MF-RX, MF-R/90              | <i>h</i> | <i>n</i> | $\frac{80}{(3.15)}$  | max.                          |
| Core diameter: MF-RX/250, MF-R/600               | <i>h</i> | <i>n</i> | $\frac{91}{(3.58)}$  | max.                          |
| Box: MF-R, MF-RX, MF-R/90                        |          |          | $\frac{56}{(2.2)}$ $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$   | max.                          |
| Box: MF-RX/250                                   |          |          | $\frac{67}{(2.64)}$ $\frac{372}{(14.6)}$ $\frac{362}{(14.25)}$ | max.                          |
| 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-RX/250, MF-R/600  |          |          | none   |                               |
| Empty places per reel: MF-R, MF-RX, MF-R/90      |          |          | Not specified  |                               |
| Empty places per reel: MF-RX/250, MF-R/600       |          |          | 0.1 %  |                               |

**Taped Component Dimensions - Figure 1**



**Reel Dimensions - Figure 2**



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