



## 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                                 | 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 .....         | E174545                                                                                                                                                             |                                         |
|                              | <a href="http://www.ul.com/">http://www.ul.com/</a> Follow link to Certifications, then UL File No., enter E174545                                                  |                                         |
| CSA File Number.....         | CA110338                                                                                                                                                            |                                         |
|                              | <a href="http://directories.csa-international.org/">http://directories.csa-international.org/</a> Under "Certification Record" and "File Number" enter 110338-0-000 |                                         |
| TÜV Certificate Number ..... | R 02057213                                                                                                                                                          |                                         |
|                              | <a href="http://www.tuvdotcom.com/">http://www.tuvdotcom.com/</a> Follow link to "other certificates", enter File No. 2057213                                       |                                         |

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

\*\* Bourns follows the prevailing definition of "halogen free" in the industry. Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less. Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users 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

# BOURNS®

## 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     | 1.051<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**

Multifuse®  
Product Designator

Series  
RX = Radial Leaded Component

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

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

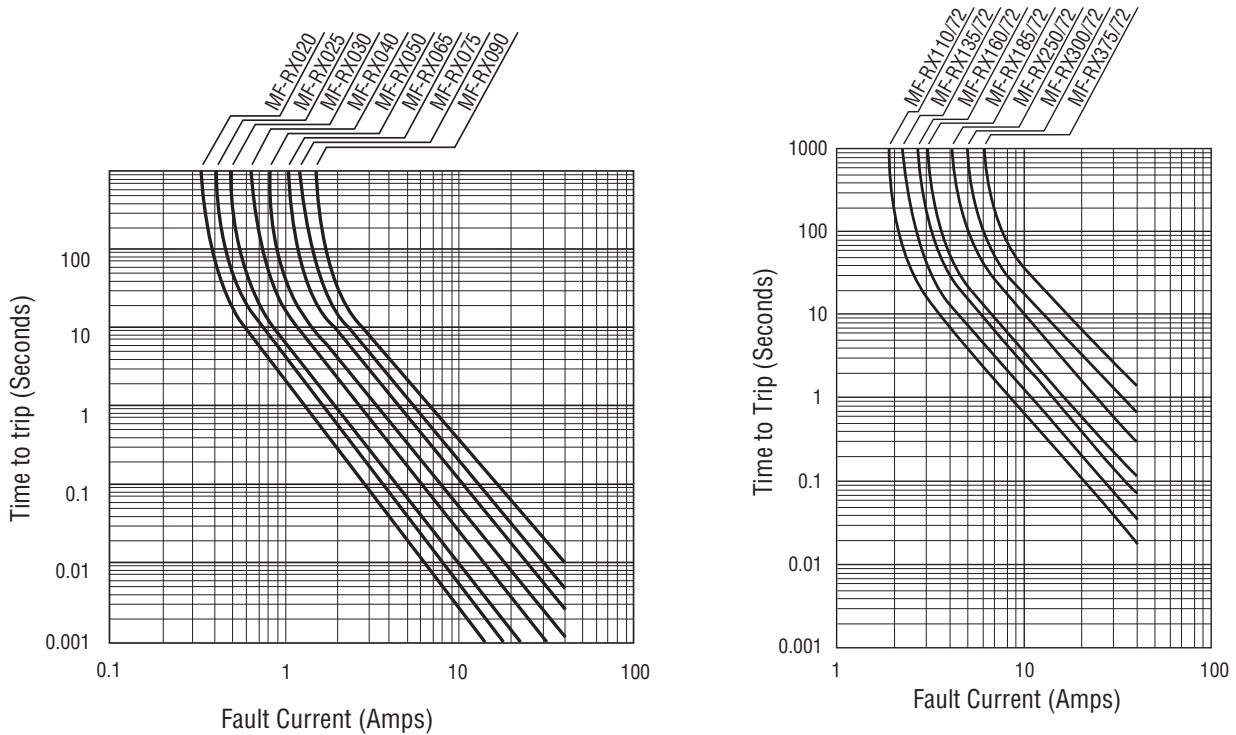
Packaging Options  
- 0 = Bulk Packaging  
- 2 = Tape and Reel\*  
- AP = Ammo-Pak\*  
\*Packaged per EIA 486-B

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# MF-RX/72 Series - PTC Resettable Fuses

**BOURNS®**

## 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. I, 11/14

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# MF-R/72 & MF-RX/72 Series Tape and Reel Specifications **BOURNS®**

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                                       | $D_0$        | $D_0$      | $\frac{4}{(.157)}$     | $\frac{\pm 0.2}{(\pm .0078)}$       |
| 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-R/72, MF-RX110/72-MF-RX185/72               |              |            | $\frac{12.7}{(0.5)}$   | $\frac{\pm 0.3}{(\pm .012)}$        |
| Device pitch: MF-RX250/72-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-R/72, MF-RX110/72-MF-RX185/72 |              | $t_1$      | $\frac{1.5}{(.059)}$   | max.                                |
| Tape thickness with splice: 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                      | $\frac{\pm 1}{(\pm .039)}$          |
| Body tape plane deviation                                    | $\Delta p$   | $\Delta p$ | 0                      | $\frac{\pm 1.3}{(\pm .051)}$        |
| Lead seating plane deviation                                 | $\Delta P_1$ | $P_1$      | $\frac{3.81}{(.015)}$  | $\frac{\pm 0.7}{(\pm .028)}$        |
| Lead spacing: MF-R/72, MF-RX110/72-MF-RX185/72               | $F$          | $F$        | $\frac{5.08}{(0.2)}$   | $\frac{-0.2/+0.8}{(-0.006/+0.031)}$ |
| Lead spacing: MF-RX250/72-MF-RX375/72                        | $F$          | $F$        | $\frac{10.2}{(0.402)}$ | $\frac{-0.2/+0.8}{(-0.006/+0.031)}$ |

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

# MF-R/72 & MF-RX/72 Series Tape and Reel Specifications **BOURNS®**

| Dimension Description             | IEC Mark | EIA Mark | Dimensions                                                    |                               |
|-----------------------------------|----------|----------|---------------------------------------------------------------|-------------------------------|
|                                   |          |          | Dimensions                                                    | Tolerance                     |
| Reel width                        | $w$      | $W_2$    | $\frac{56.0}{(2.205)}$                                        | max.                          |
| Reel diameter                     | $d$      | $a$      | $\frac{370.0}{(14.57)}$                                       | max.                          |
| Space between flanges less device | $W_1$    | $h$      | $\frac{4.75}{(.187)}$                                         | $\frac{\pm 3.25}{(\pm .128)}$ |
| Arbor hole diameter               | $f$      | $c$      | $\frac{26.0}{(1.024)}$                                        | $\frac{\pm 12.0}{(\pm .472)}$ |
| Core diameter                     | $h$      | $n$      | $\frac{80}{(3.15)}$                                           | max.                          |
| Box                               |          |          | $\frac{64}{(2.52)}$ $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$ | max.                          |
| Consecutive missing places        |          |          | 3                                                             | max.                          |
| Empty places per reel             |          |          | Not specified                                                 |                               |

**Taped Component Dimensions - Figure 1**



**Reel Dimensions - Figure 2**



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