

Features

- 72 V rated
- Cured, flame retardant epoxy polymer insulating material meets UL 94 V-0 requirements
- RoHS compliant* and halogen free**
- Agency recognition: c 📆 us 🚔

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}	I _{max}	l _{hold}	l _{trip}		tial stance	1 Hour (R ₁) Post-Trip Resistance	Max. Time to Trip		Tripped Power Dissipation		ency gnition
			at 23 °C		at 23 °C Ohms		at 23 °C Ohms	at 23 °C		at 23 °C Watts	cUL	ΤÜV
	Volts	Amps	Am	nps	Min.	Max.	Max.	Amps	Seconds	Тур.	E174545	R50366745
MF-RX020/72	72	40	0.20	0.40	1.50	2.84	4.40	1.00	2.2	0.40	✓	1
MF-RX025/72	72	40	0.25	0.50	1.00	1.95	3.00	1.25	2.5	0.45	/	1
MF-RX030/72	72	40	0.30	0.60	0.76	1.36	2.10	1.50	3.0	0.50	✓	✓
MF-RX040/72	72	40	0.40	0.80	0.52	0.86	1.29	2.00	3.9	0.55	✓	1
MF-RX050/72	72	40	0.50	1.00	0.41	0.77	1.17	2.50	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	4.50	7.2	1.00	✓	/
MF-RX110/72	72	40	1.10	2.20	0.15	0.25	0.38	5.50	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	/	1
MF-RX160/72	72	40	1.60	3.20	0.09	0.14	0.22	8.00	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	/	1
MF-RX250/72	72	40	2.50	5.00	0.05	0.08	0.13	12.50	15.6	2.50	✓	1
MF-RX300/72	72	40	3.00	6.00	0.04	0.06	0.10	15.00	19.8	2.80	✓	1
MF-RX375/72	72	40	3.75	7.50	0.03	0.05	0.08	18.75	24.0	3.20	/	1

Environmental Characteristics

Item	Condition	Criteria	
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 _{min} < R < R _{1max})	
Moisture Sensitivity Level (MSL)	See Note		
ESD Classification	Class 6 (per AEC-Q200-2, HBM)		

Test Procedures and Requirements

Item	Test Condition	Accept/Reject Criteria
Visual/Mechanical	Verify dimensions and materials	
Resistance	In still air @ 23 °C	$R_{min} \le R \le R_{max}$
Time to Trip	5 times I _{hold} , V _{max} , 23 °C	T ≤ max. time to trip (seconds)
Hold Current	30 min. at I _{hold}	No trip
Trip Cycle Life	V _{max} , I _{max} , 100 cycles	No arcing or burning
Trip Endurance	V _{max} , 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

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 (CI) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (CI) content is 1500 ppm or less.

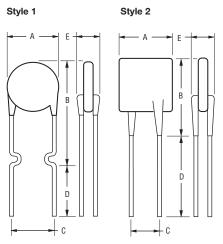
MF-RX/72 Series - PTC Resettable Fuses

BOURNS®

Product Dimensions

Model	Α	В	С		D	E	Phy	teristics	
Wiodei	Max.	Max.	Nom.	Tol. ±	Min.	Max.	Style	Lead Dia.	Material
MF-RX020/72	7.4 (0.291)	12.7 (0.5)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	<u>0.51</u> (0.020)	Sn/CuFe
MF-RX025/72	7.4 (0.291)	12.7 (0.5)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/CuFe
MF-RX030/72	7.4 (0.291)	13.4 (0.528)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/CuFe
MF-RX040/72	7.4 (0.291)	13.7 (0.539)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/CuFe
MF-RX050/72	7.9 (0.311	13.7 (0.539)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/Cu
MF-RX065/72	9.7 (0.382)	15.2 (0.598)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/Cu
MF-RX075/72	10.4 (0.409)	16.0 (0.630)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/Cu
MF-RX090/72	11.7 (0.461)	16.70 (0.657)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	1	0.51 (0.020)	Sn/Cu
MF-RX110/72	10.84 (0.427)	16.84 (0.663)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX135/72	12.26 (0.483)	18.26 (0.719)	5.1 (0.201)	0.7 (0.028)	$\frac{7.6}{(0.30)}$	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX160/72	13.94 (0.549)	19.94 (0.785)	5.1 (0.201)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX185/72	15.18 (0.598)	21.18 (0.834)	5.1 (0.201)	0.7 (0.028)	$\frac{7.6}{(0.30)}$	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX250/72	17.84 (0.702)	23.84 (0.939)	10.2 (0.402)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX300/72	20.67 (0.814)	26.67 (1.050)	10.2 (0.402)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu
MF-RX375/72	23.51 (0.926)	29.51 (1.162)	10.2 (0.402)	0.7 (0.028)	7.6 (0.30)	3.1 (0.122)	2	0.81 (0.032)	Sn/Cu

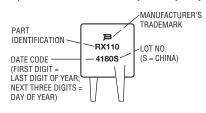
DIMENSIONS: $\frac{MM}{(INCHES)}$



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

Typical Part Marking

Represents total content. Layout may vary.



MF - RX 110/72 - 2 - 14 Multifuse® Product Designator Series RX = Radial Leaded Component Hold Current, Ihold 020-375 (0.20 A - 3.75 A) Maximum Voltage, Vmax 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

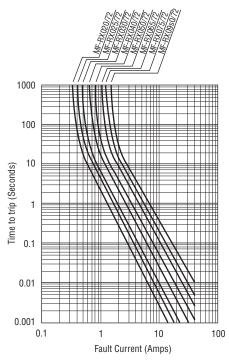
 - 17 = Straight Leads in Place of Standard Kinked Leads

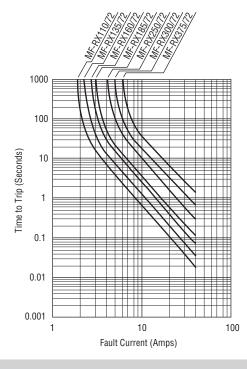
*Packaged per EIA-468

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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 Table - Ihold (Amps)

NA1 - 1	Ambient Operating Temperature									
Model	-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	

 I_{trip} is approximately two times I_{hold} .

MF-RX/72 Series - PTC Resettable Fuses

Packaging Quantity

Packaging options	Models	Unit Quantity (Pcs.)	Unit	
Bulk	All models	500	Bag	
	MF-RX020/72 ~ MF-RX090/72	3000		
Tape & Reel	MF-RX110/72 ~ MF-RX160/72	1500	Reel	
	MF-RX185/72 ~ MF-RX375/72	1000		
	MF-RX020/72 ~ MF-RX090/72	2000		
Ammo-Pack	MF-RX110/72 ~ MF-RX160/72	1000	Pack	
	MF-RX185/72 ~ MF-RX375/72	500		

MF-RX/72 Series Tape and Reel Specifications

Devices taped using EIA-468/IEC 60286-2 standards. See table below and figure for details.

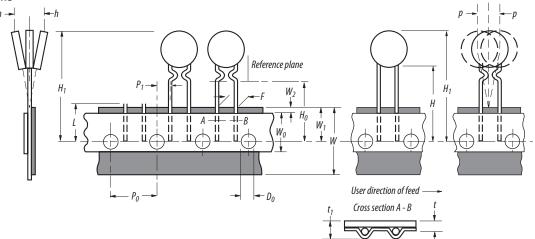
Dimension Description	IEC Mark	EIA Mark	Dim Dimensions	ensions Tolerance
Carrier tape width	W	W	18 (.709)	-0.5/+1.0 (-0.02/+.039)
Hold down tape width	W_0	W_0	5 (.197)	min.
Hold down tape			No protrusion	
Adhesive tape position	W ₂	W ₂	<u>3</u> (.118)	max.
Sprocket hole position	W_1	W_1	<u>9</u> (.354)	-0.5/+0.75 (-0.02/+0.03)
Sprocket hole diameter	D ₀	D ₀	4 (.157)	±0.2 (±.0078)
Height to seating plane (straight lead)	Н	Н	18 ~ 20 (.709 ~ .787)	,
Height to seating plane (formed lead)	Н0	Н ₀	<u>16</u> (.63)	±0.5 (±.02)
Overall height above abscissa	H ₁	H ₁	38.5 (1.516)	max.
Cutout Length		L	<u>11</u> (.433)	max.
Sprocket hole pitch: MF-RX020/72 ~ MF-RX185/72	P ₀	P ₀	12.7 (0.5)	±0.3 (±.012)
Sprocket hole pitch: MF-RX250/72 ~ MF-RX375/72	P ₀	P ₀	25.4 (1.0)	±0.3 (±.012)
Device pitch: MF-RX020/72 ~ MF-RX090/72	Р	Р	12.7 (0.5)	±0.3 (±.012)
Device pitch: MF-RX110/72 ~ MF-RX375/72	Р	Р	25.4 (1.0)	±0.6 (±.024)
Pitch tolerance			20 consecutive	±1 (±.039)
Composite tape thickness	t	t	<u>0.9</u> (.035)	max.
Overall tape and lead thickness: MF-RX020/72 ~ MF-RX090/72	t ₁	t ₁	2.0 (0.079)	max.
Overall tape and lead thickness: MF-RX110/72 ~ MF-RX375/72	t ₁	t ₁	2.3 (0.091)	max.
Splice sprocket hole alignment			0	±0.3 (±.012)
Front-to-back deviation	Δh	Δh	0	±1.0 (±.039)
Side-to-side deviation	$\Delta_{\mathcal{P}}$	$\Delta_{\mathcal{P}}$	0	±1.3 (±.051)
Ordinate to adjacent component lead	P ₁	P ₁	3.81 (0.150)	±0.7 (±0.028)
Lead spacing: MF-RX020/72 ~ MF-RX185/72	F	F	5.08 (0.2)	+0.6/-0.2 (+0.024/-0.008)
Lead spacing: MF-RX250/72 ~ MF-RX375/72	F	F	10.2 (0.4)	+0.6/-0.2 (+0.024/-0.008)

- Continued on next page -

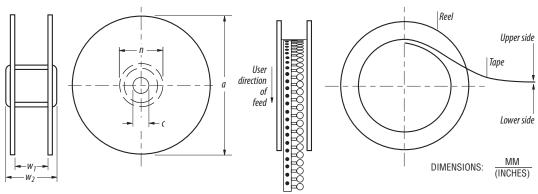
MM DIMENSIONS: (INCHES)

MF-RX/72 Series Tape and Reel Specifications IEC EIA **Dimensions Dimension Description** Mark Dimensions Mark **Tolerance** 62.0 Reel width including flanges and hub W_4 W2 (2.44)allow proper reeling and unreeling Dimension between flanges (measured at hub) W_3 W₁ 370.0 Reel diameter Α а max. $\overline{(14.57)}$ 4.75 ±3.25 Space between flanges (at hub, excluding device) (.187)(±.128) 26.0 ±12.0 Arbor hole diameter С (1.024)(±.472) 80 Core diameter Ν n min. (3.15)62 372 372 Box dimensions max. (2.44) (14.6)(14.6)Consecutive missing places 3 max. Empty places per reel Not specified

Taped Component Dimensions - per EIA Mark - Figure 1



Reel Dimensions - per EIA Mark - Figure 2



Bourns® Multifuse® PPTC Resettable Fuses

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Application Notice

- 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

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