Features

- Compliant with AEC-Q200 Rev-C- Stress Test Qualification for Passive Components in Automotive Applications
- Radial leaded devices
- Smaller size for similar I_{hold} rating
- Faster tripping
- RoHS compliant* and halogen free**
- Agency recognition: c UL us

Applications

- Automotive applications
- Where space is limited and fast tripping is required

MF-RG Series - PTC Resettable Fuses

Electrical Characteristics

Model	V max. Volts	I max. Amps	I_{hold}	I_{trip}	Initial Resistance		1 Hour (R_1) 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-RG300	16	100	3.00	5.10	0.038	0.065	0.0975	15	1.0	2.30
MF-RG400	16	100	4.00	6.80	0.021	0.0385	0.0600	20	1.7	2.40
MF-RG500	16	100	5.00	8.50	0.015	0.023	0.0340	25	2.0	2.60
MF-RG600	16	100	6.00	10.20	0.010	0.0185	0.0280	30	3.3	2.8
MF-RG650	16	100	6.50	11.10	0.0088	0.0158	0.0240	33	3.5	3.0
MF-RG700	16	100	7.00	11.90	0.0077	0.0130	0.0200	35	3.5	3.0
MF-RG800	16	100	8.00	13.60	0.0056	0.0110	0.0175	40	5.0	3.0
MF-RG900	16	100	9.00	15.30	0.0047	0.0092	0.0135	45	5.5	3.3
MF-RG1000	16	100	10.00	17.00	0.0040	0.0071	0.0102	50	6.0	3.6
MF-RG1100	16	100	11.00	18.70	0.0037	0.0062	0.0089	55	7.0	3.7

Environmental Characteristics

Operating Temperature.. -40 °C to +85 °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 .... -40 °C to +85 °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
Moisture Sensitivity Level (MSL) .... Level 1
ESD Classification - HBM.................................... Class 6

Test Procedures And Requirements For Model MF-RG Series

Test	Test Conditions	Accept/Reject Criteria
Visual/Mech.	Verify dimensions and materials	Per MF physical description
Resistance	In still air @ 23 °C	Rmin ≤ R ≤ Rmax
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

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-RG300	4.4	4.0	3.6	3.0	2.6	2.4	2.1	1.9	1.4
MF-RG400	5.9	5.3	4.8	4.0	3.5	3.2	2.8	2.5	1.9
MF-RG500	7.3	6.6	6.0	5.0	4.4	4.0	3.6	3.1	2.4
MF-RG600	8.8	8.0	7.2	6.0	5.2	4.8	4.2	3.8	2.8
MF-RG650	10.3	9.3	8.4	7.0	6.2	5.6	5.0	4.4	3.3
MF-RG700	10.3	9.3	8.4	7.0	6.2	5.6	5.0	4.4	3.3
MF-RG800	11.7	10.7	9.6	8.0	6.9	6.4	5.6	5.1	3.7
MF-RG900	13.2	11.9	10.7	9.0	7.9	7.2	6.4	5.6	4.2
MF-RG1000	14.7	13.3	12.0	10.0	8.7	8.0	7.0	6.3	4.7
MF-RG1100	16.1	14.6	13.1	11.0	9.7	8.8	7.8	6.9	5.2

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

WARNING Cancer and Reproductive Harm - 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.

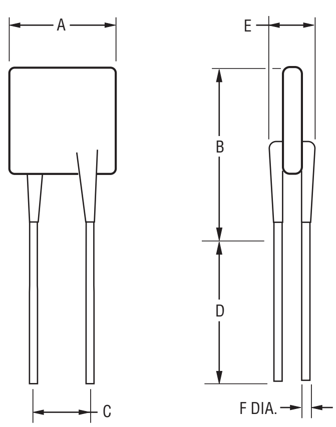
Product Dimensions

Model	A Max.	B Max.	C		D Min.	E Max.	F Nom.	Physical Characteristics	
			Nom.	Tol. ±				Style	Material
MF-RG300	7.1 (0.280)	11.0 (0.433)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG400	9.9 (0.350)	12.8 (0.504)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG500	10.4 (0.409)	14.3 (0.563)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG600	10.7 (0.421)	17.1 (0.673)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG650	11.2 (0.441)	19.7 (0.776)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG700	11.2 (0.441)	19.7 (0.776)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG800	12.7 (0.500)	20.9 (0.823)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG900	14.0 (0.551)	21.7 (0.854)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG1000	16.5 (0.650)	21.7 (0.854)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu
MF-RG1100	17.5 (0.689)	26.0 (1.024)	5.1 (0.201)	0.7 (0.028)	7.6 (0.299)	3.0 (0.118)	0.81 (0.032)	1	Sn/Cu

0.81 (20AWG)

DIMENSIONS: MM / (INCHES)

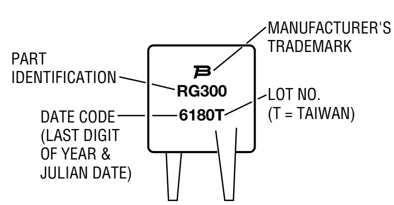
Packaging options:
BULK: MF-RG300~MF-RG1100 = 500 pcs. per bag.
TAPE & REEL: MF-RG300~MF-RG500 = 3000 pcs. per reel; MF-RG600~MF-RG1100 = 1000 pcs. per reel.
AMMO-PACK: MF-RG300~MF-RG500 = 2000 pcs. per reel; MF-RG600~MF-RG1100 = 1000 pcs. per reel.



Also available with kinked leads (see How to Order).

Typical Part Marking

Represents total content. Layout may vary.



How to Order

MF - RG 300 - 0 - 14

Multifuse® Product Designator

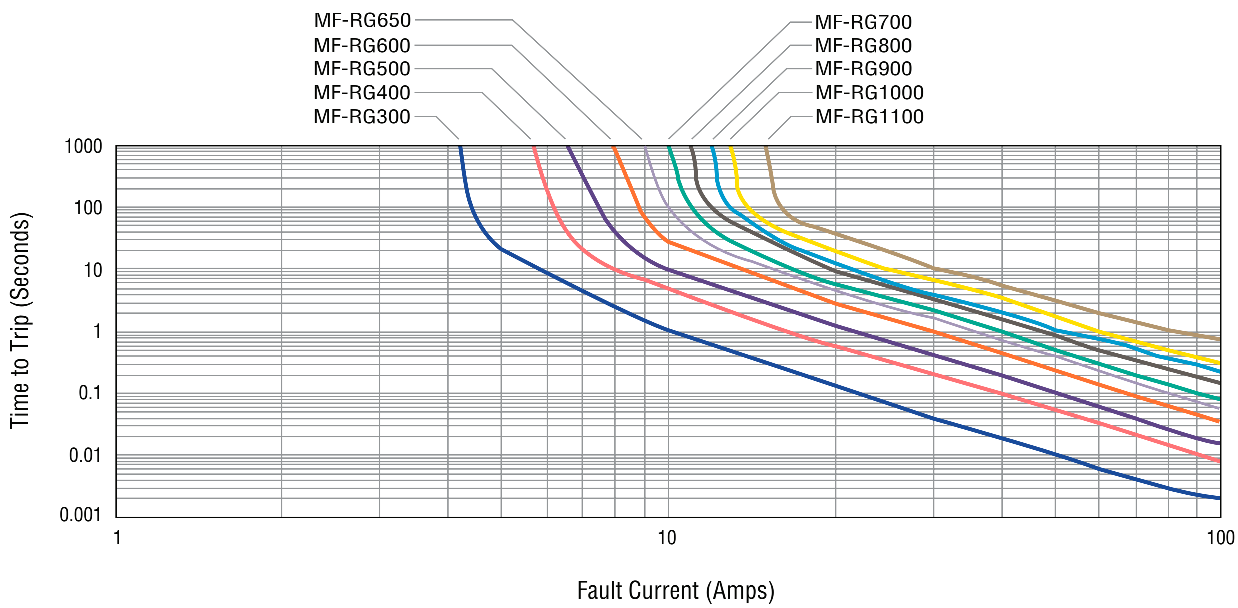
Series
RG = Smaller Radial Leaded Component

Hold Current, I_{hold}
300-1100 (3.0 Amps - 11.0 Amps)

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

Part Number Suffix Option
- __ = Standard Straight Leads without part number suffix option
- 14 = Kinked Leads in Place of Standard Straight Leads

Typical Time to Trip at 23 °C



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MF-RG Series Tape and Reel Specifications

BOURNS®

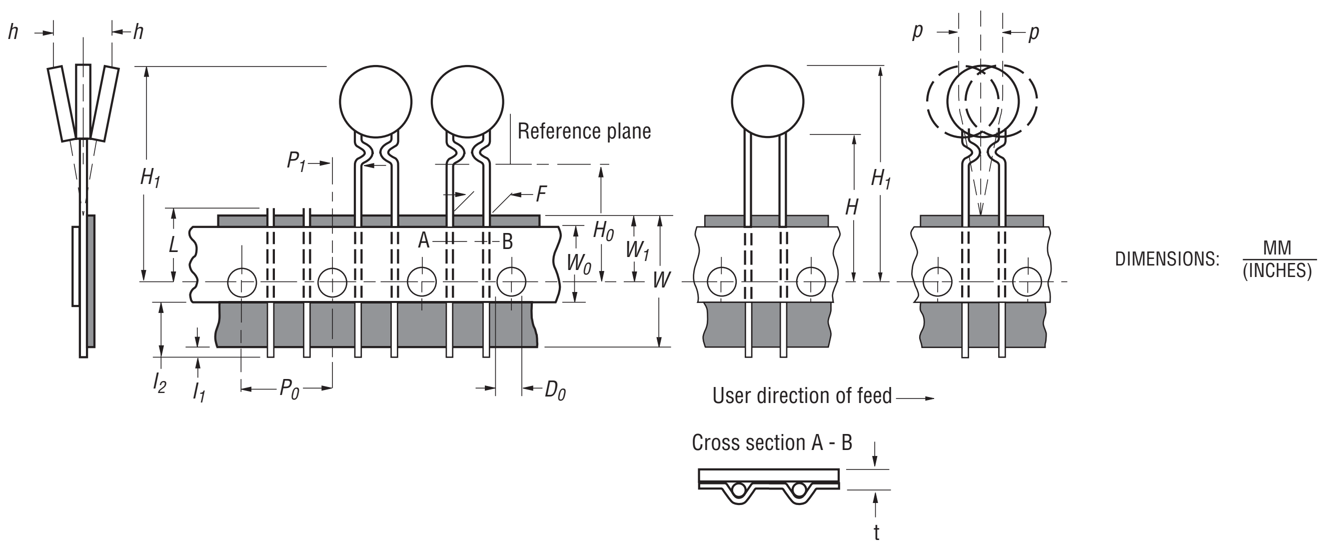
Devices taped using EIA468–B/IEC60286-2 standards. See table below and Figures 1 and 2 for details.

Dimension Description	IEC Mark	EIA Mark	Dimensions	Dimensions Tolerance
Carrier tape width	W	W	18 (.709)	-0.5/+1.0 (-0.02/+.039)
Hold down tape width		W_4	11 (.433)	min.
Hold down tape	W_0		No protrusion	
Top distance between tape edges	W_2	W_6	3 (.118)	max.
Sprocket hole position	W_1	W_5	9 (.354)	-0.5/+0.75 (-0.02/+0.03)
Sprocket hole diameter	D_0	D_0	4 (.157)	±0.2 (±.0078)
Abscissa to plane (straight lead)	H	H	18.5 (.728)	±3.0 (±.118)
Abscissa to plane (kinked lead)	H_0	H_0	16 (.63)	±0.5 (±.02)
Abscissa to top (straight lead)	H_1	H_1	38.0 (1.496)	max.
Abscissa to top (kinked lead)	H_1	H_1	32.2 (1.268)	max.
Overall width w/lead protrusion (straight lead)		C_1	55.0 (2.165)	max.
Overall width w/lead protrusion (kinked lead)		C_1	43.2 (1.7)	max.
Overall width w/o lead protrusion (straight lead)		C_2	54.0 (2.126)	max.
Overall width w/o lead protrusion (kinked lead)		C_2	42.5 (1.673)	max.
Lead protrusion	l_1	L_1	1.0 (.039)	max.
Protrusion of cutout	L	L	11 (.433)	max.
Protrusion beyond hold-down tape	l_2	l_2	Not specified	
Sprocket hole pitch	P_0	P_0	12.7 (0.5)	±0.3 (±.012)
Pitch tolerance			20 consecutive	±1 (±.039)
Device pitch			25.4 (1.000)	±0.3 (±.012)
Tape thickness	t	t	0.9 (.035)	max.
Tape thickness with splice		t_1	2.0 (.079)	max.
Splice sprocket hole alignment			4.0 (.157)	±0.2 (±.008)
Body lateral deviation	Δh	Δh	0	±1 (±.039)
Body tape plane deviation	Δp	Δp	0	±1.3 (±.051)
Lead seating plane deviation	ΔP_1	P_1	3.81 (.015)	±0.7 (±.028)
Lead spacing	F	F	5.08 (.200)	-0.2/+0.8 (.008/+.031)
Reel width	w	w	56.0 (2.20)	max.
Reel diameter	d	a	370.0 (14.57)	max.
Space between flanges less device			4.75 (.187)	±3.25 (±.128)

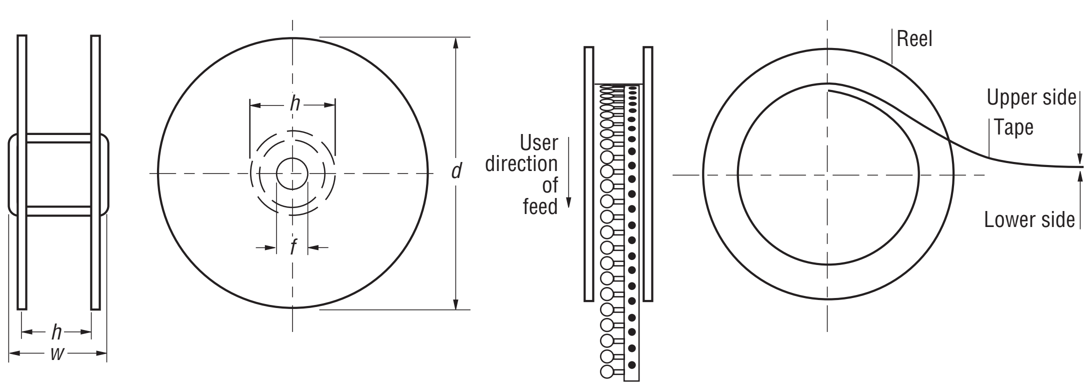
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

Dimension Description	IEC Mark	EIA Mark	Dimensions: Dimensions	Dimensions: Tolerance
Arbor hole diameter	*f*	*c*	26.0 (1.02)	±12.0 (±.472)
Core diameter	*h*	*n*	80.0 (3.15)	max.
Box			64 (2.50) 372 (14.6) 372 (14.6)	nom.
Consecutive missing places			3	max.
Empty places per reel			Not specified	

Taped Component Dimensions - Figure 1



Reel Dimensions - Figure 2



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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