

### Features

- Compliant with AEC-Q200 Rev-C- Stress Test Qualification for Passive Components in Automotive Applications
- Radial leaded devices
- Smaller size for similar lhold rating
- Faster tripping
- RoHS compliant\* and halogen free\*\*

MF-RG Series - PTC Resettable Fuses

Agency recognition: c August

### **Applications**

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

### **Electrical Characteristics**

	V max.	l max.	lhold	l <sub>trip</sub>	Ini Resis		1 Hour (R <sub>1</sub> ) Post-Trip Resistance	Max. Time To Trip		Tripped Power Dissipation
Model	Volts	Amps	Amp at 23		Oh at 2		Ohms at 23 °C	Amperes at 23 °C	Seconds at 23 °C	Watts at 23 °C
			Hold	Trip	Min.	Max.	Max.			Тур.
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

 Vibratice
 MIL STD -200, Method 2007, d
 No change

 Vibration ...... No change Null-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	$\dots$ Rmin $\leq$ R $\leq$ Rmax
Time to Trip	5 times lhold, 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 - Ihold (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	

Itrip is approximately two times Ihold.



- 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. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at <u>www.bourns.com/docs/legal/disclaimer.pdf</u>.

## **MF-RG Series - PTC Resettable Fuses**

## BOURN

#### **Product Dimensions**

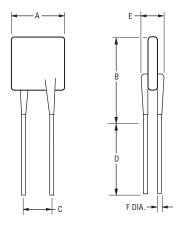
Model	A Max.	B Max.	С		D Min.	E	F	Physical Characteristics	
	wax.	iviax.	Nom.	Tol. ±		Max.	Nom.	Style	Material
MF-RG300	<u>7.1</u> (0.280)	<u>11.0</u> (0.433)	<u>5.1</u> (0.201)	<u>0.7</u> (0.028)	$\frac{7.6}{(0.299)}$	<u>3.0</u> (0.118)	<u>0.81</u> (0.032)	1	Sn/Cu
MF-RG400	<u>9.9</u> (0.350)	<u>12.8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

Packaging options:

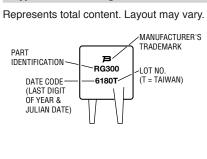
BULK: MF-RG300~MF-RG1100 = 500 pcs. per bag.

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.



### **Typical Part Marking**



How to Order
MF - RG 300 - 0 - 14
Multifuse® Product Designator Series
RG = Smaller Radial Leaded Component
Hold Current, I <sub>hold</sub> 300-1100 (3.0 Amps - 11.0 Amps)
Packaging Options - 0 = Bulk Packaging - 2 = Tape and Reel - AP = Ammo-Pak
Part Number Suffix Option

0.81 (20AWG)

Lloui to Ordon

MM

(INCHES)

DIMENSIONS:

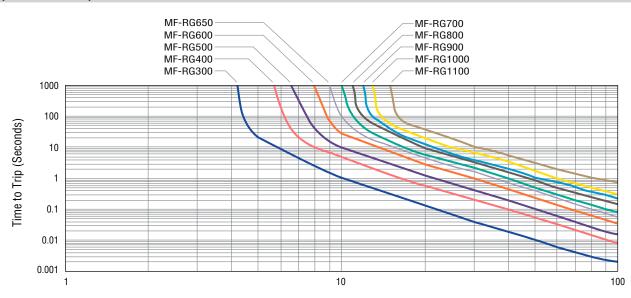
Also available with kinked leads (see How to Order).

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## **MF-RG Series - PTC Resettable Fuses**

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Typical Time to Trip at 23 °C



Fault Current (Amps)

## BOURNS®

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## **MF-RG Series Tape and Reel Specifications**

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

Initial constraints(1/09)(1/00)/(1/00)(1/00)/(1/00)odd down tape $W_0$ No protusionop distance between tape edges $W_2$ $W_6$ $\frac{3}{(118)}$ max.procket hole position $W_1$ $W_5$ $\frac{9}{(354)}$ $-0.540$ , 75procket hole diameter $D_0$ $D_0$ $\frac{4}{(157)}$ $\frac{4.02}{(40078)}$ bascissa to plane (straight lead) $H$ $H$ $H$ $\frac{18}{(120)}$ $\frac{4.02}{(4.167)}$ bascissa to plane (straight lead) $H_0$ $H_0$ $H_0$ $16$ $\frac{4.02}{(4.20)}$ bascissa to plane (kinked lead) $H_1$ $H_1$ $H_1$ $H_2$ $M_2$ bascissa to top (kinked lead) $H_1$ $H_1$ $H_1$ $M_2$ $M_2$ bascissa to top (kinked lead) $C_1$ $\frac{21.630}{(11673)}$ max.bascissa to top (kinked lead) $C_1$ $\frac{21.630}{(11673)}$ max.bascissa to top (kinked lead) $C_1$ $\frac{11.630}{(11673)}$ max.bascissa to top (kinked lead) $C_2$ $\frac{24.0}{(21.265)}$ max.bascissa to top (kinked lead) $C_2$ $\frac{42.5}{(21.265)}$ max.bascissa to top (kinked lead) $C_1$ $\frac{10.00}{(102)}$ max.bascissa to top (kinked lead) $C_2$ $\frac{24.0}{(21.265)}$ max.bascissa to top (kinked lead) $C_2$ $\frac{42.5}{(21.265)}$ max.bascissa top (kinked lead) $C_2$ $\frac{42.5}{(21.26)}$ max.bascissa top (kinked lead) $C_2$ $\frac{42.5}{(20.5)}$ max.bascissa top	Dimension Description	IEC Mark	EIA Mark	Dimensions Dimensions Tolerance		
bild down tape width $W_4$ $\frac{11}{(433)}$ min.         bild down tape $W_0$ No protrusion         op distance between tape edges $W_2$ $W_6$ $\frac{3}{(118)}$ max.         procket hole position $W_1$ $W_5$ $\frac{9}{9}$ $\frac{40.2}{(2078)}$ procket hole diameter $D_0$ $D_0$ $\frac{41}{(157)}$ $\frac{40.2}{(2078)}$ baciess to plane (straight lead) $H$ $H$ $H^{-1}_{(286)}$ $\frac{a3.0}{(4.22)}$ baciess to plane (kinked lead) $H_1$ $H_1$ $H_1$ $H_1$ $H_1$ baciess to top (straight lead) $H_1$ $H_1$ $H_1$ $H_1$ $H_2$ max.         baciess to top (kinked lead) $C_1$ $\frac{22.2}{(2.165)}$ max.         verall width wilead protrusion (straight lead) $C_1$ $\frac{43.2}{(4.75)}$ max.         verall width wo lead protrusion (kinked lead) $C_1$ $\frac{41.2}{(4.33)}$ max.         rotrusion of cutout $L$ $L$ $\frac{11.0}{(1673)}$ max.         rotrusion of cutout $L$ $L$ $\frac{11.0}{(1673)}$ max.         rotrusion of cutout $L$	Carrier tape width	W	W			
bild down tape $W_0$ No protusion         op distance between tape edges $W_2$ $W_0$ $\frac{3}{(118)}$ max.         piprocket hole position $W_1$ $W_5$ $9$ $-0.5440$ 75         piprocket hole diameter $D_0$ $\frac{4}{(157)}$ $\frac{4.02}{(40078)}$ backissa to plane (straight lead) $H$ $H$ $118.5$ $\frac{4.03}{(4.02)}$ backissa to plane (kinked lead) $H_0$ $H_0$ $116$ $\frac{4.02}{(4.02)}$ backissa to top (kinked lead) $H_1$ $H_1$ $H_1$ $28.5$ backissa to top (kinked lead) $H_1$ $H_1$ $H_1$ $28.5$ backissa to top (kinked lead) $C_1$ $(22.165)$ max.         backissa to top (kinked lead) $C_1$ $(22.165)$ max.         backissa to top (kinked lead) $C_2$ $(24.5)$ max.         backissa to top (kinked lead) $C_2$ $(24.5)$ max.         backissa to top (kinked lead) $C_2$ $(24.0)$ max.         backissa to top (kinked lead) $C_2$ $(24.5)$ max.         backis di portusion (kinked lead) $C_2$	Hold down tape width		W4	11	· · · · · · · · · · · · · · · · · · ·	
op distance between lape begies $W_2$ $W_6$ $(118)$ max.         procket hole position $W_1$ $W_5$ $\frac{9}{(354)}$ $(\frac{5540}{(2024)003})$ procket hole diameter $D_0$ $D_0$ $\frac{4}{(157)}$ $\frac{4}{(2007)}$ bacissa to plane (straight lead) $H$ $H$ $H$ $18.5$ $s3.0$ bacissa to plane (kinked lead) $H_0$ $H_0$ $16.5$ $\frac{43.0}{(53)}$ $\frac{40.5}{(50)}$ bacissa to top (kinked lead) $H_1$ $H_1$ $H_1$ $38.0$ max.         bacissa to top (kinked lead) $H_1$ $H_1$ $18.5$ $s3.0$ bacissa to top (kinked lead) $H_1$ $H_1$ $92.2$ max.         bacissa to top (kinked lead) $C_1$ $\frac{43.2}{(1.7)}$ max.         verall width wile ad protrusion (straight lead) $C_2$ $\frac{54.0}{(2.126)}$ max.         verall width wile lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(1.673)}$ max.         verall width wile lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(1.673)}$ max.         verall width wile lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(1.673)}$	Hold down tape	W <sub>0</sub>		· · · · ·		
procket hole position $W_I$ $W_5$ $\frac{9}{(354)}$ $\frac{0.5440}{(0.224003)}$ procket hole diameter $D_0$ $D_0$ $\frac{4}{(157)}$ $\frac{40.2}{(4.078)}$ biscissa to plane (straight lead) $H$ $H$ $H$ $\frac{18.5}{(728)}$ $\frac{4.10}{(4.118)}$ biscissa to plane (kinked lead) $H_0$ $H_0$ $\frac{16}{(65)}$ $\frac{40.5}{(4.22)}$ biscissa to plane (kinked lead) $H_1$ $H_1$ $H_1$ $\frac{11.360}{(1.360)}$ max.biscissa to top (straight lead) $H_1$ $H_1$ $H_1$ $\frac{32.2}{(2.165)}$ max.verall width wlead protrusion (straight lead) $C_1$ $\frac{43.2}{(2.165)}$ max.verall width wlead protrusion (straight lead) $C_2$ $\frac{54.0}{(2.165)}$ max.verall width wlead protrusion (straight lead) $C_2$ $\frac{54.0}{(2.165)}$ max.verall width wlo lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(2.126)}$ max.verall width wlo lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(1.673)}$ max.verall width wlo lead protrusion (kinked lead) $C_2$ $\frac{42.5}{(1.673)}$ max.verall width wlo lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(1.37)}$ $\frac{40.3}{(2.03)}$ verall width wlo lead protrusion (kinked lead) $I_1$ $L_1$ $\frac{10}{(2.39)}$ max.verall width wlo lead protrusion (kinked lead) $I_1$ $I_1$ $I_1$ $I_2$ verall width wlo lead protrusion (kinked lead) $I_1$ $I_1$ $I_1$ $I_2$ verall width wlo lead protrusion (kinked lead)<	Top distance between tape edges	W2	W <sub>6</sub>		max.	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Sprocket hole position	W <sub>1</sub>	$W_5$	9		
baselssa to plane (straight lead)       H       H $(18.5)$ $\pm 3.0$ baselssa to plane (kinked lead)       H <sub>0</sub> H <sub>0</sub> $(16)$ $\pm 0.5$ baselssa to plane (kinked lead)       H <sub>1</sub> H <sub>1</sub> $(16)$ $\pm 0.5$ baselssa to top (straight lead)       H <sub>1</sub> H <sub>1</sub> $(14.96)$ max.         baselssa to top (kinked lead)       H <sub>1</sub> H <sub>1</sub> $(14.96)$ max.         baselssa to top (kinked lead) $C_1$ $(2.65)$ max.         verail width wilead protrusion (straight lead) $C_1$ $(2.165)$ max.         verail width wilead protrusion (kinked lead) $C_2$ $(2.167)$ max.         verail width wilead protrusion (kinked lead) $C_2$ $(1.67)$ max.         verail width wilead protrusion (kinked lead) $C_2$ $(1.67)$ max.         verail width wilead protrusion (kinked lead) $C_2$ $(1.67)$ max.         ead protrusion $I_1$ $L_1$ $(1.00)$ max.         red protrusion for outout $L$ $L$ $(1.02)$ max.         rotrusion beyond hold-down tape $I_2$ $I_2$ Not specified	Sprocket hole diameter	D <sub>0</sub>	D <sub>0</sub>	4	±0.2	
baselsas to plane (kinked lead) $H_0$ $H_0$ $\frac{16}{(63)}$ $\frac{40.5}{(6.02)}$ baselsas to to (straight lead) $H_1$ $H_1$ $H_1$ $\frac{38.0}{(1.496)}$ max.baselsas to to (kinked lead) $H_1$ $H_1$ $H_1$ $\frac{32.2}{(1.286)}$ max.baselsas to top (kinked lead) $C_1$ $\frac{55.0}{(2.165)}$ max.overall width w/lead protrusion (straight lead) $C_1$ $\frac{43.2}{(1.7)}$ max.overall width w/lead protrusion (straight lead) $C_2$ $\frac{24.2.5}{(1.673)}$ max.overall width w/lead protrusion (straight lead) $C_2$ $\frac{42.5}{(1.673)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $\frac{11}{(433)}$ max.overall width w/lead protrusion (kinked lead) $L$ $L$ $$	Abscissa to plane (straight lead)	Н	Н	18.5	±3.0	
besissa to top (straight lead) $H_1$ $H$	Abscissa to plane (kinked lead)	H <sub>0</sub>	H <sub>0</sub>	16	±0.5	
biscissa to top (kinked lead) $H_1$ $H_2$ $H_1$ $H_1$ $H_1$ $H_1$ $H_1$ $H_2$ $H_2$ $H_2$ $H_2$ $H_2$ $H_2$ $H_2$ $H_2$ $H_2$ $H_1$ $H_$	Abscissa to top (straight lead)	H <sub>1</sub>	H <sub>1</sub>	38.0		
overall width w/lead protrusion (straight lead) $C_1$ $\frac{55.0}{(2,165)}$ max.overall width w/lead protrusion (kinked lead) $C_1$ $\frac{49.2}{(1,7)}$ max.overall width w/o lead protrusion (straight lead) $C_2$ $\frac{54.0}{(2,126)}$ max.overall width w/o lead protrusion (straight lead) $C_2$ $\frac{44.5}{(1,673)}$ max.overall width w/o lead protrusion (straight lead) $C_2$ $\frac{44.5}{(1,673)}$ max.overall width w/o lead protrusion (kinked lead) $L_1$ $L_1$ $\frac{10}{(0.09)}$ max.ead protrusion of cutout $L$ $L$ $\frac{11}{(433)}$ max.trotrusion of cutout $L$ $L$ $\frac{11}{(433)}$ max.trotrusion beyond hold-down tape $l_2$ $l_2$ Not specifiedipprocket hole pitch $P_0$ $P_0$ $\frac{12.7}{(0.5)}$ $\frac{40.3}{(1000)}$ proteck thole pitch $\frac{25.4}{(1.679)}$ $\frac{a0.3}{(1.000)}$ $\frac{4.01.3}{(2.012)}$ ape thickness $t$ $t$ $\frac{0.9}{(0.05)}$ max.ape thickness with splice $t_1$ $\frac{2.0}{(0.079)}$ max.tplice sprocket hole alignment $\frac{4.0}{(.157)}$ $\frac{40.7}{(1.609)}$ $\frac{4.07}{(1.615)}$ ody tape plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(0.015)}$ $\frac{4.0.7}{(2.00)}$ ody tape plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(0.015)}$ $\frac{4.0.7}{(2.00)}$ end blance $W$ $W$ $W$ $\frac{5.0.8}{(200)}$ $0.24.0.8$ ided spacing $F$ $F$ $F$ $\frac{5.0.8}{(200)}$ $0.24$	Abscissa to top (kinked lead)	H <sub>1</sub>	H <sub>1</sub>	32.2	max.	
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ead protrusion $l_1$ $L_1$ $\frac{1.0}{(0.039)}$ max.trotrusion of cutoutLL $\frac{1.1}{(4.33)}$ max.trotrusion beyond hold-down tape $l_2$ $l_2$ Not specifiedtrotrusion beyond hold-down tape $l_2$ $l_2$ Not specifiedtrot to to trotrusion beyond hold-down tape $l_2$ $l_2$ Not specifiedtrot to t	Overall width w/o lead protrusion (kinked lead)		C2	42.5	max.	
LLL $\frac{11}{(.433)}$ max.trotrusion of cutout $l_2$ $l_2$ Not specifiedtrotrusion beyond hold-down tape $l_2$ $l_2$ Not specifiedprocket hole pitch $P_0$ $P_0$ $\frac{12.7}{(.5)}$ $\frac{40.3}{(t.012)}$ thet to terance20 consecutive $\frac{\pm 1}{(t.039)}$ $\frac{\pm 1}{(t.039)}$ bevice pitch $\frac{25.4}{(1.000)}$ $\frac{40.3}{(t.012)}$ $\frac{40.3}{(t.012)}$ ape thicknesstt $\frac{0.9}{(.035)}$ max.ape thickness with splice $t_1$ $\frac{2.0}{(.079)}$ max.splice sprocket hole alignment $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(t.008)}$ body lateral deviation $\Delta_h$ $\Delta_h$ $0$ $\frac{\pm 1.3}{(t.051)}$ ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(t.028)}$ ead spacing $F$ $F$ $5.0.8$ $0.2/14.8$ ead spacing $F$ $F$ $5.0.8$ $0.2/24.8$ ead spacing $A$ $a$ $\frac{370.0}{(.200)}$ max.teel diameter $d$ $a$ $\frac{370.0}{(.14.57)}$ max.	Lead protrusion	I <sub>1</sub>	L <sub>1</sub>	1.0	max.	
Image: constraint of the system $l_2$ $l_2$ $l_2$ Not specifiedprocket hole pitch $P_0$ $P_0$ $\frac{12.7}{(0.5)}$ $\frac{\pm 0.3}{(\pm .012)}$ intic tolerance20 consecutive $\frac{\pm 1}{(\pm .039)}$ bevice pitch $\frac{25.4}{(1.000)}$ $\frac{\pm 0.3}{(\pm .012)}$ ape thickness $t$ $t$ $0.9$ (.035)ape thickness with splice $t$ $t$ $\frac{0.9}{(.035)}$ ape thickness with splice $t_1$ $\frac{2.0}{(.157)}$ max.ape thickness with splice $t_1$ $\frac{2.0.0}{(.157)}$ max.ape thickness with splice $t_1$ $\frac{2.0}{(.157)}$ $\frac{\pm 0.2}{(\pm .008)}$ body lateral deviation $\Delta_h$ $\Delta_h$ $0$ $\frac{\pm 1.3}{(\pm .051)}$ ead seating plane deviation $\Delta_P$ $\Lambda_P$ $0$ $\frac{\pm 1.3}{(.015)}$ ead spacing $F$ $F$ $F$ $\frac{5.08}{(.200)}$ $-0.2/+0.8$ ead spacing $F$ $F$ $\frac{5.08}{(.200)}$ $-0.2/+0.8$ teel width $w$ $w$ $\frac{5.08}{(.200)}$ $-0.2/+0.8$ teel diameter $d$ $a$ $\frac{370.0}{(.205)}$ max.teel diameter $d$ $a$ $\frac{370.0}{(.205)}$ max.	Protrusion of cutout	L	L		max.	
Proceed the pitchProProTotalProTotal20 consecutive $\frac{\pm 1}{(\pm 0.39)}$ Device pitch $\frac{25.4}{(1.000)}$ $\frac{\pm 0.3}{(\pm 0.12)}$ Device pitch $\frac{25.4}{(1.000)}$ $\frac{\pm 0.3}{(\pm 0.12)}$ Device pitch $t$ $t$ $\frac{0.9}{(0.35)}$ Device pitch $t_1$ $\frac{2.0}{(0.79)}$ Device pitch $t_1$ $\frac{2.0}{(0.79)}$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\Delta_h$ $\Delta_h$ $0$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\Delta_h$ $\Delta_h$ $0$ Device pitch $\Delta_h$ $\Delta_h$ $0$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\Delta_h$ $\Delta_h$ $0$ Device pitch $\Delta_h$ $\Delta_h$ $0$ Device pitch $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm 0.08)}$ Device pitch $\Delta_P$ $\Delta_P$ $0$ Device pitch $\Delta_P$ $\Delta_P$ $0$ Device pitch $\Delta_P$ $\Delta_P$ $0$ Device pitch $\frac{\pm 0.2}{(.157)}$ $\frac{\pm 0.2}{(.157)}$ Device pitch $\Delta_P$ $\Delta_P$ $0$ Device pitch $\Delta_P$ $0$ $\frac{\pm 1.3}{(.015)}$ Device pitch $\Delta_P$ $\Phi_P$ $0$ Device pitch $\Phi_P$ $0$ $\frac{\pm 1.3}{(.008)}$ Device pitch $\Phi_P$ </td <td>Protrusion beyond hold-down tape</td> <td>I2</td> <td>I2</td> <td></td> <td></td>	Protrusion beyond hold-down tape	I2	I2			
Variable20 consecutive $\frac{\pm 1}{(\pm .039)}$ vevice pitch $\frac{25.4}{(1.000)}$ $\frac{\pm 0.3}{(\pm .012)}$ ape thickness $t$ $t$ $\frac{0.9}{(.035)}$ ape thickness with splice $t_1$ $\frac{2.0}{(.079)}$ ape thickness with splice $t_1$ $\frac{2.0}{(.079)}$ splice sprocket hole alignment $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm .008)}$ sody lateral deviation $\Delta_h$ $\Delta_h$ $0$ $\frac{\pm 1}{(\pm .039)}$ sody tape plane deviation $\Delta_P$ $\Delta_P$ $0$ $\frac{\pm 1.3}{(\pm .051)}$ ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm .028)}$ ead spacing $F$ $F$ $\frac{5.08}{(.200)}$ $-0.2/+0.8$ teel width $w$ $w$ $w$ $\frac{370.0}{(14.57)}$ max.teel diameter $d$ $a$ $\frac{370.0}{(.14.57)}$ max.tages between flagges lass davise $4.75$ $\pm 3.25$ $\pm 3.25$	Sprocket hole pitch	P <sub>0</sub>	PO			
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ape thickness with splice $t_1$ $\frac{2.0}{(.079)}$ max.splice sprocket hole alignment $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm .008)}$ body lateral deviation $\Delta_h$ $\Delta_h$ 0 $\frac{\pm 1}{(\pm .039)}$ body tape plane deviation $\Delta_p$ $\Delta_p$ 0 $\frac{\pm 1.3}{(\pm .051)}$ ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm .028)}$ ead spacing $F$ $F$ $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ teel width $w$ $w$ $w$ $\frac{370.0}{(14.57)}$ max.teel diameter $d$ $a$ $\frac{370.0}{(14.57)}$ max.teace between flanges less device $\frac{4.75}{(.14.57)}$ $\pm 3.25$	Tape thickness	t	t	0.9		
Splice sprocket hole alignment $\frac{4.0}{(.157)}$ $\frac{\pm 0.2}{(\pm.008)}$ Body lateral deviation $\Delta_h$ $\Delta_h$ 0 $\frac{\pm 1}{(\pm.039)}$ Body tape plane deviation $\Delta_p$ $\Delta_p$ 0 $\frac{\pm 1.3}{(\pm.051)}$ Bed seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm.028)}$ Bed spacing $F$ $F$ $F$ $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ Beel width $w$ $w$ $w$ $\frac{370.0}{(.14.57)}$ max.Beel diameter $d$ $a$ $\frac{370.0}{(.14.57)}$ max.Brace between flanges less device $4.75$ $\pm 3.25$ $\pm 3.25$	Tape thickness with splice		t <sub>1</sub>	2.0	max.	
$\Delta_h$ $\Delta_h$ 0 $\frac{\pm 1}{(\pm .039)}$ body lateral deviation $\Delta_p$ $\Delta_p$ $\Delta_p$ 0 $\frac{\pm 1.3}{(\pm .051)}$ ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm .028)}$ ead spacing $F$ $F$ $F$ $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ eael width $w$ $w$ $w$ $\frac{56.0}{(2.20)}$ max.keel diameter $d$ $a$ $\frac{370.0}{(14.57)}$ max.taccor between flanges less device $4.75$ $\pm 3.25$	Splice sprocket hole alignment			4.0		
$\Delta_p$ $\Delta_p$ $0$ $\frac{\pm 1.3}{(\pm .051)}$ ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm .028)}$ ead spacing $F$ $F$ $F$ $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ keel width $w$ $w$ $w$ $\frac{56.0}{(2.20)}$ max.Reel diameter $d$ $a$ $\frac{370.0}{(14.57)}$ max.tabular back between flanges less device $4.75$ $\pm 3.25$	Body lateral deviation	$\Delta_h$	$\Delta_h$	5 I	±1	
ead seating plane deviation $\Delta P_1$ $P_1$ $\frac{3.81}{(.015)}$ $\frac{\pm 0.7}{(\pm .028)}$ ead spacing $F$ $F$ $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ eel width $w$ $w$ $w$ $\frac{56.0}{(2.20)}$ max.eel diameter $d$ $a$ $\frac{370.0}{(14.57)}$ max.teel diameter $4.75$ $\pm 3.25$	Body tape plane deviation	Δρ	$\Delta_{p}$	0	±1.3	
ead spacingF $\frac{5.08}{(.200)}$ $\frac{-0.2/+0.8}{(.008/+.031)}$ Reel widthww $\frac{56.0}{(2.20)}$ max.Reel diameterda $\frac{370.0}{(14.57)}$ max.Issace between flanges less device $4.75$ $\pm 3.25$	Lead seating plane deviation	$\Delta P_1$			±0.7	
Reel widthww $\frac{56.0}{(2.20)}$ max.Reel diameterda $\frac{370.0}{(14.57)}$ max.Iterace between flanges less device $4.75$ $\pm 3.25$	Lead spacing	F	F	5.08	-0.2/+0.8	
da $\frac{370.0}{(14.57)}$ max.the el diameter $\frac{370.0}{(14.57)}$ $\frac{370.0}{(14.57)}$ $\frac{370.0}{(14.57)}$	Reel width	W	W	56.0		
$\pm 3.25$	Reel diameter	d	а	370.0	max.	
	Space between flanges less device				<u>±3.25</u> (±.128)	

MM DIMENSIONS:

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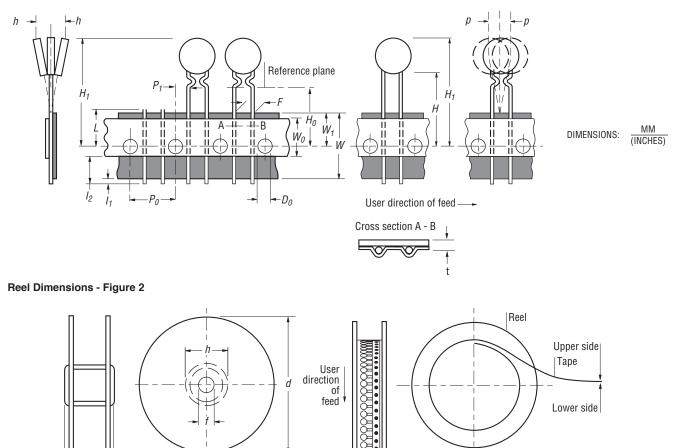
# **MF-RG Series Tape and Reel Specifications**

### BOURNS

Lower side

	IEC	EIA	Dimensions		
Dimension Description	Mark	Mark	Dimensions	Tolerance	
Arbor hole diameter	f	С	<u>26.0</u> (1.02)	<u>±12.0</u> (±.472)	
Core diameter	h	п	<u>80.0</u> (3.15)	max.	
Box			$\frac{64}{(2.50)} \frac{372}{(14.6)} \frac{372}{(14.6)}$	nom.	
Consecutive missing places			3	max.	
Empty places per reel			Not specified		

### **Taped Component Dimensions - Figure 1**



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feed

## Bourns® Multifuse® PPTC Resettable Fuses

## BOURNS

#### **Application Notice**

- Users are responsible for independent and adequate evaluation of Bourns<sup>®</sup> Multifuse<sup>®</sup> 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<sup>®</sup> Polymer PTC Moisture/Reflow Sensitivity Classification (MSL) note: <u>https://www.bourns.com/docs/RoHS-MSL/msl\_mf.pdf</u>

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