



Features

- Compliant with AEC-Q200 Rev-C- Stress Test Qualification for Passive Components in Automotive Applications
- Operating temperature range up to 125 °C
- Low thermal derating factor
- Higher hold currents at elevated temperature
- Choice of operating currents
- RoHS compliant* and Pb free
- Resettable fault protection of general electronic equipment

MF-RHT Series - PTC Resettable Fuses

Electrical Characteristics

| Model | V max. Volts | I max. Amps | I _{hold} | I _{trip} | Resistance | | Max. Time To Trip | | Tripped Power Dissipation |
|------------|--------------|-------------|-------------------|-------------------|-------------------|--------------------------------|-------------------|------------------|---------------------------|
| | | | Amperes at 23 °C | | Ohms at 23 °C | | Amperes at 23 °C | Seconds at 23 °C | Watts at 23 °C |
| | | | Hold | Trip | R _{Min.} | R _{1Max.} (Post Trip) | | Max. | Typ. |
| MF-RHT070 | 16 | 40 | 0.7 | 1.4 | 0.3 | 0.8 | 3.5 | 4.0 | 1.4 |
| MF-RHT200 | 16 | 100 | 2.0 | 3.8 | 0.045 | 0.110 | 12.5 | 3.0 | 1.4 |
| MF-RHT450 | 16 | 100 | 4.5 | 7.8 | 0.022 | 0.054 | 22.5 | 3.0 | 3.6 |
| MF-RHT650 | 16 | 100 | 6.5 | 12.0 | 0.011 | 0.026 | 32.5 | 5.5 | 4.3 |
| MF-RHT750 | 16 | 100 | 7.5 | 13.1 | 0.0094 | 0.022 | 37.5 | 7.0 | 4.5 |
| MF-RHT1300 | 16 | 100 | 13.0 | 24.0 | 0.0041 | 0.010 | 60.0 | 13.0 | 6.9 |

Environmental Characteristics

| | |
|----------------------------|---|
| Operating Temperature..... | -40 °C to +125 °C |
| Storage Temperature..... | -40 °C to +85 °C |
| Passive Aging..... | +85 °C, 1000 hours..... ±15 % typical resistance change |
| Humidity Aging..... | +85 °C, 85 % R.H. 1000 hours..... ±15 % typical resistance change |
| Thermal Shock..... | MIL-STD-202, Method 107..... ±10 % typical resistance change |
| | +125 °C to -40 °C, 10 cycles |
| Vibration..... | MIL-STD-883C, Method 2007.1, Condition A..... No change |

Test Procedures And Requirements For Model MF-RHT Series

| Test | Test Conditions | Accept/Reject Criteria |
|----------------------|---|--|
| Visual/Mech..... | Verify dimensions and materials..... | Per MF physical description |
| Resistance..... | In still air @ 23 °C..... | R _{min} ≤ R ≤ R _{1max} |
| Time to Trip..... | At specified current, 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..... | MIL-STD-202, Method 208..... | 95 % min. coverage |

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 | 125 °C |
| MF-RHT070 | 0.95 | 0.87 | 0.79 | 0.7 | 0.62 | 0.56 | 0.51 | 0.47 | 0.39 | 0.17 |
| MF-RHT200 | 2.71 | 2.49 | 2.26 | 2.00 | 1.77 | 1.60 | 1.46 | 1.34 | 1.11 | 0.49 |
| MF-RHT450 | 6.1 | 5.6 | 5.1 | 4.5 | 4.0 | 3.6 | 3.3 | 3.0 | 2.5 | 1.1 |
| MF-RHT650 | 8.8 | 8.1 | 7.4 | 6.5 | 5.7 | 5.3 | 4.8 | 4.3 | 3.6 | 1.6 |
| MF-RHT750 | 10.2 | 9.4 | 8.6 | 7.5 | 6.6 | 6.1 | 5.6 | 5.0 | 4.1 | 1.9 |
| MF-RHT1300 | 17.7 | 16.3 | 14.8 | 13.0 | 11.4 | 10.5 | 9.6 | 8.6 | 7.2 | 3.3 |

How to Order

MF - RHT 750 -

| | |
|---------------------------------|--|
| Multifuse® Product Designator | MF - RHT 750 - |
| Series | RHT = High Temperature Radial Leaded Component |
| Hold Current, I _{hold} | 070 - 1300 (0.70 - 13.00 Amps) |
| Packaging Options | - = Bulk Packaging - 2 = Tape and Reel* - AP = Ammo-Pak* |

*Packaged per EIA 486-B

*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.

Applications

- Protection of automotive circuitry including engine control modules
- Overcurrent surge protection of electronic equipment required to operate at high operating temperature ranges
- Resettable fault protection of general electronic equipment

MF-RHT Series - PTC Resettable Fuses

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Product Dimensions

| Model | A | B | C | | D | E | F | Physical Characteristics | |
|------------|------------------------|------------------------|------------------------|-----------------------|----------------------|----------------------|------------------------|--------------------------|----------|
| | Max. | Max. | Nom. | Tol. ± | Min. | Max. | Nom. | Style | Material |
| MF-RHT070 | $\frac{6.86}{(0.27)}$ | $\frac{10.8}{(0.425)}$ | $\frac{5.1}{(0.201)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.0}{(0.12)}$ | $\frac{0.51}{(0.020)}$ | 1 | Sn/CuFe |
| MF-RHT200 | $\frac{9.4}{(0.37)}$ | $\frac{14.0}{(0.55)}$ | $\frac{5.1}{(0.201)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.0}{(0.12)}$ | $\frac{0.51}{(0.020)}$ | 3 | Sn/Cu |
| MF-RHT450 | $\frac{10.4}{(0.41)}$ | $\frac{15.6}{(0.61)}$ | $\frac{5.1}{(0.201)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.0}{(0.12)}$ | $\frac{0.81}{(0.032)}$ | 2 | Sn/Cu |
| MF-RHT650 | $\frac{12.7}{(0.50)}$ | $\frac{22.2}{(0.88)}$ | $\frac{5.1}{(0.201)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.0}{(0.12)}$ | $\frac{0.81}{(0.032)}$ | 2 | Sn/Cu |
| MF-RHT750 | $\frac{14.0}{(0.55)}$ | $\frac{23.5}{(0.93)}$ | $\frac{5.1}{(0.201)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.0}{(0.12)}$ | $\frac{0.81}{(0.032)}$ | 2 | Sn/Cu |
| MF-RHT1300 | $\frac{23.5}{(0.925)}$ | $\frac{28.7}{(1.17)}$ | $\frac{10.2}{(0.402)}$ | $\frac{0.7}{(0.028)}$ | $\frac{7.6}{(0.30)}$ | $\frac{3.6}{(0.14)}$ | $\frac{1.0}{(0.040)}$ | 2 | Sn/Cu |

Packaging:

BULK: 500 pcs. per bag

TAPE & REEL: MF-RHT070 ~ MF-RHT200 = 3000 pcs. per reel; MF-RHT450 ~ MF-RHT650 = 1500 pcs. per reel;
MF-RHT750 ~ MF-RHT1300 = 1000 pcs. per reel

AMMO-PACK: MF-RHT070 ~ MF-RHT200 = 2000 pcs. per pack; MF-RHT450 ~ MF-RHT750 = 1000 pcs. per pack;
MF-RHT1300 = 500 pcs. per pack

0.51 (24AWG) DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$
0.81 (20AWG)
1.0 (18AWG)



Typical Part Marking

Represents total content. Layout may vary.



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.

MF-RHT SERIES, REV. E, 01/10

Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

MF-RHT 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.

| 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: MF-RHT070 ~ MF-RHT450 | H_1 | H_1 | $\frac{32.2}{(1.268)}$ | max. |
| Abscissa to top: MF-RHT650 ~ MF-RHT1300 | H_1 | H_1 | $\frac{45.0}{(1.837)}$ | max. |
| Overall width w/lead protrusion: MF-RHT070 ~ MF-RHT450 | | C_1 | $\frac{42.5}{(1.673)}$ | max. |
| Overall width w/lead protrusion: MF-RHT650 ~ MF-RHT1300 | | C_1 | $\frac{55.0}{(2.165)}$ | max. |
| Overall width w/o lead protrusion: MF-RHT070 ~ MF-RHT450 | | C_2 | $\frac{42.5}{(1.673)}$ | max. |
| Overall width w/o lead protrusion: MF-RHT650 ~ MF-RHT1300 | | C_2 | $\frac{54.0}{(2.126)}$ | 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-RHT070 ~ MF-RHT450 | | | $\frac{12.7}{(0.5)}$ | $\frac{\pm 0.3}{(\pm .012)}$ |
| Device pitch: MF-RHT650 ~ MF-RHT1300 | | | $\frac{25.4}{(1.0)}$ | $\frac{\pm 0.6}{(\pm .024)}$ |
| Tape thickness | t | t | $\frac{0.9}{(.035)}$ | max. |
| Tape thickness with splice: MF-RHT070 | | t_1 | $\frac{1.5}{(.059)}$ | max. |
| Tape thickness with splice: MF-RHT450 ~ MF-RHT1300 | | t_1 | $\frac{2.3}{(.091)}$ | max. |
| Splice sprocket hole alignment | | | $\frac{4.0}{(.157)}$ | $\frac{\pm 0.2}{(\pm .008)}$ |
| Body lateral deviation | Δ_h | Δ_h | 0 | $\frac{\pm 1}{(\pm .039)}$ |
| Body tape plane deviation | Δ_p | Δ_p | 0 | $\frac{\pm 0.3}{(\pm .012)}$ |
| Ordinate to adjacent component lead | P_1 | P_1 | $\frac{3.81}{(.015)}$ | $\frac{\pm 0.07}{(\pm .028)}$ |

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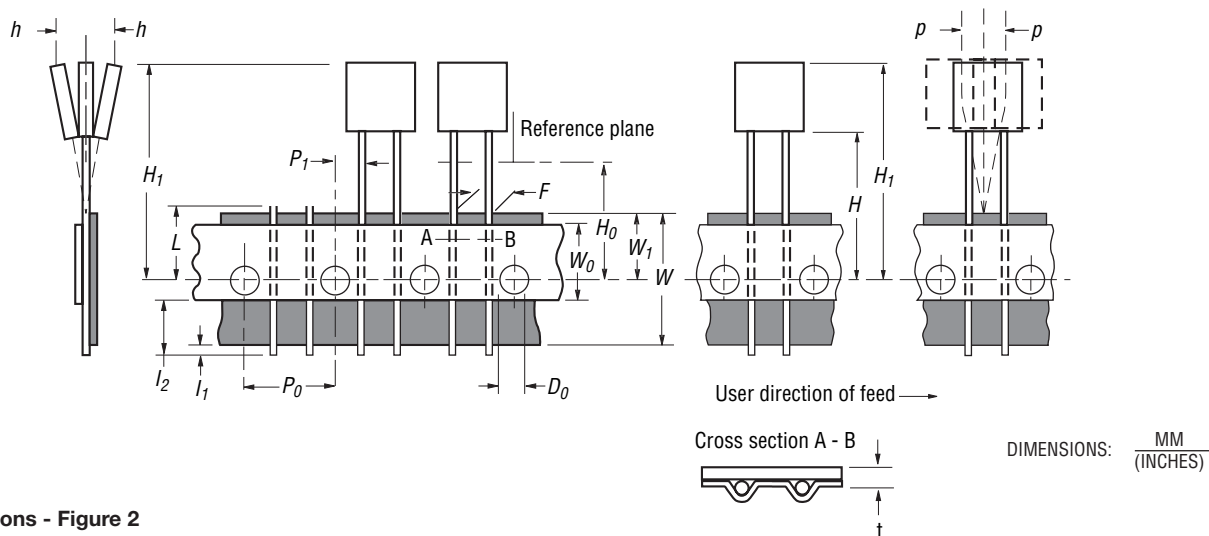
DIMENSIONS: $\frac{\text{MM}}{\text{(INCHES)}}$

MF-RHT Series Tape and Reel Specifications

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| Dimension Description | IEC Mark | EIA Mark | Dimensions | |
|-------------------------------------|----------------|----------------|-------------------------|---|
| | | | Dimensions | Tolerance |
| Lead spacing: MF-RHT070 ~ MF-RHT750 | F | F | $\frac{5.08}{(0.2)}$ | $\frac{-0.2/+0.8}{(-0.006/+0.031)}$ |
| Lead spacing: MF-RHT1300 | F | F | $\frac{10.2}{(0.402)}$ | $\frac{-0.2/+0.8}{(-0.006/+0.031)}$ |
| Reel width: MF-RHT070 ~ MF-RHT450 | w | W ₂ | $\frac{56}{(2.20)}$ | max. |
| Reel width: MF-RHT650 ~ MF-RHT1300 | w | W ₂ | $\frac{63.5}{(2.50)}$ | 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 | $\frac{26.0}{(1.02)}$ | $\frac{\pm 12.0}{(\pm .472)}$ |
| Core diameter | h | n | $\frac{80.0}{(3.15)}$ | max. |
| Box | | | $\frac{64}{(2.52)}$ | $\frac{372}{(14.6)}$ $\frac{372}{(14.6)}$ |
| Consecutive missing places | | | 3 | max. |
| Empty places per reel | | | Not specified | |

Taped Component Dimensions - Figure 1



Reel Dimensions - Figure 2



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