**FAILSAFE FUSE RESISTORS**

**1/2 WATT to 50 WATT**

**FR SERIES**

- Precision performance, flameproof design per UL94V-0
- Fusing-to-Operating current ratios as low as 3:1!
- Fusing times available from 1 millisecond to 30 seconds
- Available on exclusive SWIFT™ delivery program
- Custom design available for increased surge capability (specify Option P)
- Also available: Hi-Rel screening, burn-in, custom marking, etc.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>RCD Type*</th>
<th>Wattage @25°C(W_{25})</th>
<th>Resistance Range</th>
<th>L ±0.04 [Ω]</th>
<th>D±0.02 [.5]</th>
<th>d typ</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR1/2</td>
<td>0.5</td>
<td>06Ω to 500Ω</td>
<td>.29 [7.4]</td>
<td>.125 [3.2]</td>
<td>.020 [.5]</td>
</tr>
<tr>
<td>FR1</td>
<td>1.0</td>
<td>0.1Ω to 1.5K</td>
<td>.60 [15.2]</td>
<td>.130 [3.3]</td>
<td>.020 [.5]</td>
</tr>
<tr>
<td>FR2</td>
<td>2.0</td>
<td>0.1Ω to 2K</td>
<td>.69 [17.5]</td>
<td>.170 [4.3]</td>
<td>.032 [.8]</td>
</tr>
<tr>
<td>FR3</td>
<td>3.5</td>
<td>0.1Ω to 3K</td>
<td>.58 [14.7]</td>
<td>.230 [5.8]</td>
<td>.032 [.8]</td>
</tr>
<tr>
<td>FR5</td>
<td>5.5</td>
<td>0.1Ω to 5K</td>
<td>.984 [25]</td>
<td>.323 [8.2]</td>
<td>.032 [.8]</td>
</tr>
</tbody>
</table>

* Other sizes available up to 50 Watt on a custom basis.

**PERFORMANCE CHARACTERISTICS**

- Tolerance: 5% standard, 0.1-10% available
- Temperature Coefficient (typ): ±100ppm 0.1-9Ω, ±50ppm 1Ω & up, available to ±10ppm
- Dielectric Strength: 750 VAC
- Insulation Resistance: 1,000 megohms min. (dry)
- Derating: Derate linearly from full rated power @ 25°C to zero power @ 175°C (67%°C)

**FUSING CHARACTERISTICS:** Standard FR resistors are designed to fuse within 10 seconds as follows:
FR1/2 to FR2 ≥1Ω = 20 x W_{25} (20 times the 25°C wattage rating), <1Ω = 40 x W_{25}. FR3 & FR5 ≥5Ω = 25 x W_{25}, <5Ω = 50 x W_{25}.
Faster fusing is available. Max. fault condition not to exceed 300x W_{25}. Following chart depicts custom design capabilities.

**APPLICATION & DESIGN NOTES:**

1. Fusing current should be ≥ 4 times the continuous current for best performance.
2. Resistors reach elevated temperatures prior to opening- elevate body above the PCB.
3. Exercise care when testing fuse resistors.
4. RCD can custom manufacture fuse resistors from 1/8W to 50W per customer req’t. Design objectives are achieved by element material (wirewound or film), insulation (silicone, ceramic, epoxy), and process (alloy & resistor geometry).
5. Thermal fuses are also available and are designed to “blow” when the resistor body or the ambient temperature reaches preset temperature (110°C to 240°C).
6. Custom surge-tolerant fuses are designed not to “blow” due to short term voltage transients, lightning surges, or capacitor discharges, but will fuse under longer term overloads. Consult factory for details.
7. Please include the following information when customized design is required:
   - Continuous wattage or current; ambient temperature; fusing wattage or current; minimum and maximum “blow” times; resistance value & tolerance; max. size; voltage level, AC or DC, wave form, & frequency; and a general description of the application. Include info as to any pulse or overload conditions that the resistor must withstand.
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**PIN DESIGNATION:**

- RCD Type
- Options: P, ER (additional options to be assigned by RCD, leave blank if std)
- Resis. Code: ±1%; 3 signif. figures & multiplier, e.g. R100= 0.1Ω, R1000= 1Ω, R10k= 10Ω, R1k= 1KΩ.
- Resis. Code 2% - 10%: 2 signif. figures & multiplier, e.g. R11= 0.1Ω, R10= 1Ω, R100= 10Ω, R1k= 1KΩ.
- Tolerance: ±10%, ±5% (std), ±3%, ±2%, ±1%, ±0.5%, ±0.25%, ±0.1%
- Packaging: B= Bulk, T= T&R
- Optional Temp. Coef: (leave blank if standard) 10ppm, 25ppm, 50ppm, 100ppm
- Termination: W= Lead-free, Q= Tin/Lead

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**FA062A Sale of this product is in accordance with GF-061. Specifications subject to change without notice.**