

# FRN Series — Fusing Resistors

## Features

- Coating meets UL 94V-0
- Flameproof – meets overload test of UL #1412
- Designed for constant current to provide overload protection
- Consistent performance and reliability
- Cut and formed product is available on select sizes, contact factory for details
- RoHS compliant / lead-free



## Electrical Specifications

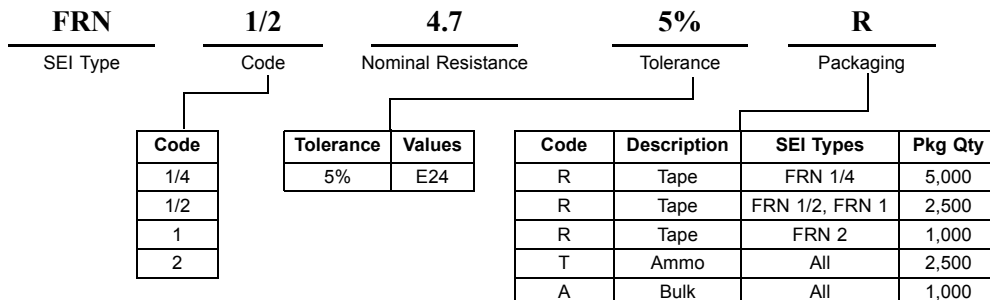
| Type / Code | Power Rating (Watts) @ 70°C | Maximum Working Voltage* | Maximum Overload Voltage | Resistance Temperature Coefficient | Ohmic Range and Tolerance |
|-------------|-----------------------------|--------------------------|--------------------------|------------------------------------|---------------------------|
|             |                             |                          |                          |                                    | 5%                        |
| FRN 1/4     | 0.25W                       | 200                      | 300                      | ±350 ppm/°C                        | 0.22Ω – 10K               |
| FRN 1/2     | 0.5W                        | 250                      | 400                      | ±350 ppm/°C                        | 0.47Ω – 10K               |
| FRN 1       | 1W                          | 300                      | 600                      | ±350 ppm/°C                        | 0.47Ω – 10K               |
| FRN 2       | 2W                          | 300                      | 600                      | ±350 ppm/°C                        | 1Ω – 3K                   |

\*Lesser of  $\sqrt{PR}$  or maximum working voltage.

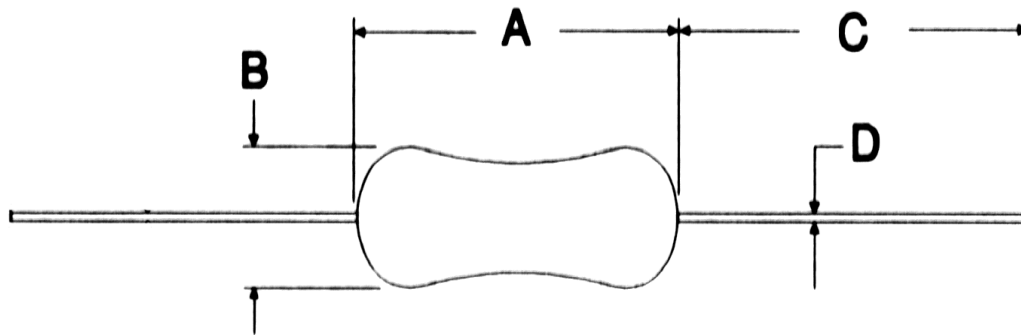
## Fusing Characteristics Magnification of Power Rating

| Type / Code | X25           | X15                        | X12          | Fusing Time        |
|-------------|---------------|----------------------------|--------------|--------------------|
| FRN 1/4     | 0.22Ω – 0.91Ω | 1Ω – 4.7KΩ<br>2.4KΩ – 10KΩ | 5.1Ω – 2.2KΩ | 30 Sec.<br>Maximum |
| FRN 1/2     | –             | 0.47Ω – 2Ω<br>1.1KΩ – 10KΩ | 2.2Ω – 1KΩ   |                    |
| FRN 1       | –             | 0.47Ω – 2Ω<br>1.1KΩ – 10KΩ | 2.2Ω – 1KΩ   |                    |
| FRN 2       | –             | 1Ω – 3.6Ω<br>1.1KΩ – 3KΩ   | 3.9Ω – 1KΩ   |                    |

## How to Order



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## Mechanical Specifications

| Type / Code | A<br>Body Length | B<br>Body Diameter | C<br>Lead Length (Bulk) | D<br>Lead Diameter | Units  |
|-------------|------------------|--------------------|-------------------------|--------------------|--------|
| FRN 1/4     | 0.24 ± 0.01      | 0.09 ± 0.01        | 1.10 ± 0.08             | 0.022 ± 0.002      | inches |
|             | 6.0 ± 0.2        | 2.3 ± 0.2          | 28.0 ± 2.0              | 0.55 ± 0.05        | mm     |
| FRN 1/2     | 0.35 ± 0.02      | 0.11 ± 0.02        | 1.10 ± 0.08             | 0.028 ± 0.002      | inches |
|             | 9.0 ± 0.5        | 2.8 ± 0.5          | 28.0 ± 2.0              | 0.70 ± 0.05        | mm     |
| FRN 1       | 0.43 ± 0.02      | 0.16 ± 0.02        | 1.10 ± 0.08             | 0.028 ± 0.002      | inches |
|             | 11.0 ± 0.5       | 4.0 ± 0.5          | 28.0 ± 2.0              | 0.70 ± 0.05        | mm     |
| FRN 2       | 0.59 ± 0.04      | 0.22 ± 0.02        | 1.38 ± 0.12             | 0.031 ± 0.002      | inches |
|             | 15.0 ± 1.0       | 5.5 ± 0.5          | 35.0 ± 3.0              | 0.80 ± 0.05        | mm     |

## Performance Characteristics

| Test                         | Test Results    |
|------------------------------|-----------------|
| Moisture Resistance          | ±5.0%           |
| Thermal Shock                | ±1.0%           |
| Load Life @ 70°C – 1,000hrs  | ±5.0%           |
| Resistance to Soldering Heat | ±1.0%           |
| Short Time Overload          | ±2.0%           |
| Operating Temperature Range  | -40°C to +155°C |