

# Type RJS

## Telecom-Power Cross Protection & Ballast Protection

HF  RJS Series

RoHS 2 Compliant

### Description

RJS Fuses are primarily intended for use in telecommunication circuit applications requiring low current protection with high surge tolerance. They are typically used to replace heat coil type devices. They are designed to be placed between the line input and the surge arresting components (mov. gas tube, zenor diode, air gaps, etc.)

These fuses will withstand transient surge currents generated by lighting in accordance with the attached table.

RJS fuses guard protected circuitry against sustained overload or short circuit conditions. Such sustained overloads may be generated by accidental contact between utility cables and phone lines (power line cross).

RJS Fuse are primarily designed for use in telecommunications circuits which require compliance with the test requirements specified in UL/IEC 1950/60950 and Telcordia GR 1089, Issue 3

### Features

- Radial lead surge resistant slow blow fuse
- Meet UL 60950 power cross requirements
- Designed for compliance with Telcordia GR-1089-CORE
- Designed to serve the requirements of a wide range of telecommunication and networking equipment
- RoHS 2 compliant
- Halogen Free
- Lead Free

### Applications

- Fax machines
- Answering machines
- Telecommunication circuit
- Ballast protection

LEAD FREE =   
HALOGEN FREE = 



### Physical Specifications

|           |                                                                                                                                             |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Materials | Body : Glass                                                                                                                                |
|           | Leads : Matte Tin Plated Copper, Diameter 0.032"                                                                                            |
| Marking   | On Fuse :                                                                                                                                   |
|           | "bel", "RJS", "Current Rating", "Voltage Rating",                                                                                           |
|           | "Appropriate Safety Logos", "✓" ( RoHS 2 compliant )                                                                                        |
|           | On Label :                                                                                                                                  |
|           | "bel", "RJS", "Current Rating", "Voltage Rating", "Interrupting Rating",<br>"Appropriate Safety Logos" and "✓", "Ⓡ" (China RoHS compliant). |

### Electrical Characteristics

(UL/CSA STD.248-14)

| Testing Current | Blow Time |          |
|-----------------|-----------|----------|
|                 | Minimum   | Maximum  |
| 100%            | 4 hrs.    | N/A      |
| 135%            | N/A       | 1 hr.    |
| 200%            | 3 sec     | 20 sec   |
| 500%            | 100 msec  | 1.5 sec  |
| 1000%           | 30 msec   | 300 msec |

### Safety Agency Approvals

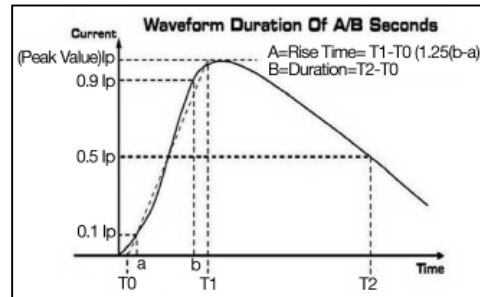
| Safety Agency                                                                       | Safety Agency Certificate | Power Factor | Voltage Rating (V)   | Ampere Range / Volt @ I.R. ability* | Intended Application               |
|-------------------------------------------------------------------------------------|---------------------------|--------------|----------------------|-------------------------------------|------------------------------------|
|  | E20624                    | 0.7-0.8      | 100mA-5V/<br>600V AC | 100mA-5A/125V AC@10.000A            | General Purpose                    |
|                                                                                     |                           | 0.7-0.8      |                      | 100mA-5A/250V AC@200A               | Primary Protection                 |
|  | LR39772                   | Resistive    |                      | 100mA-5A/350V AC@100A               | Ballast Protection                 |
|                                                                                     |                           | Resistive    |                      | 100mA-5A/600V AC@60A                | Telecom Protection                 |
|                                                                                     |                           | Resistive    |                      | 100mA-5A/600V AC@100A               | General Purpose Telecom Protection |

\*I.R.= Interrupting Rating = Short Circuit Rating(Amps)

## Power Cross (Telecom) Rating (Fuse Rated 0.1-1.5A)

| Overload Current | Voltage | Clearing Time Limit  |
|------------------|---------|----------------------|
| 135% Fuse Rating | 600V    | Less than 1 hour     |
| 200% Fuse Rating | 600V    | Less than 20 seconds |
| 2.2A             | 600V    | Less than 10 minutes |
| 7A               | 600V    | Less than 1 second   |
| 40A              | 600V    | Less than 50 msec    |
| 60A              | 600V    | Less than 20 msec    |

## Double-exponential Impulse Waveform



## Environmental Specifications

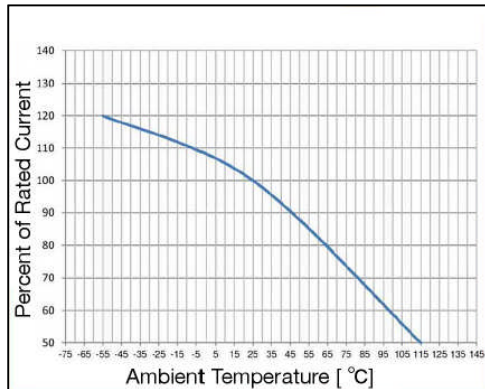
|                           |                                                                                                  |
|---------------------------|--------------------------------------------------------------------------------------------------|
| Shock Resistance          | MIL-STD-202G, Method 213B, Test Condition 1 (100 G's peak for 6 milliseconds; Sawtooth waveform) |
| Vibration Resistance      | MIL-STD-202G, Method 201A (10-55 Hz, 0.06 inch, total excursion).                                |
| Salt Spray Resistance     | MIL-STD-202G, Method 101E, Test Condition B (48 hrs.).                                           |
| Insulation Resistance     | MIL-STD-202G, Method 302, Test Condition A (After Opening) 10,000 ohms minimum.                  |
| Solderability             | MIL-STD-202G, Method 208H                                                                        |
| Resistance to solder Heat | MIL-STD-202G, Method 210F, Test Condition B (260+/-5°C, 10+/-1 sec)                              |
| Thermal Shock             | MIL-STD-202G, Method 107G, Test Condition B (-65°C to +125°C).                                   |
| Operating Temperature     | -55°C to +125°C                                                                                  |
| Terminal Strength         | IEC-68-2-21                                                                                      |

## Electrical Specifications

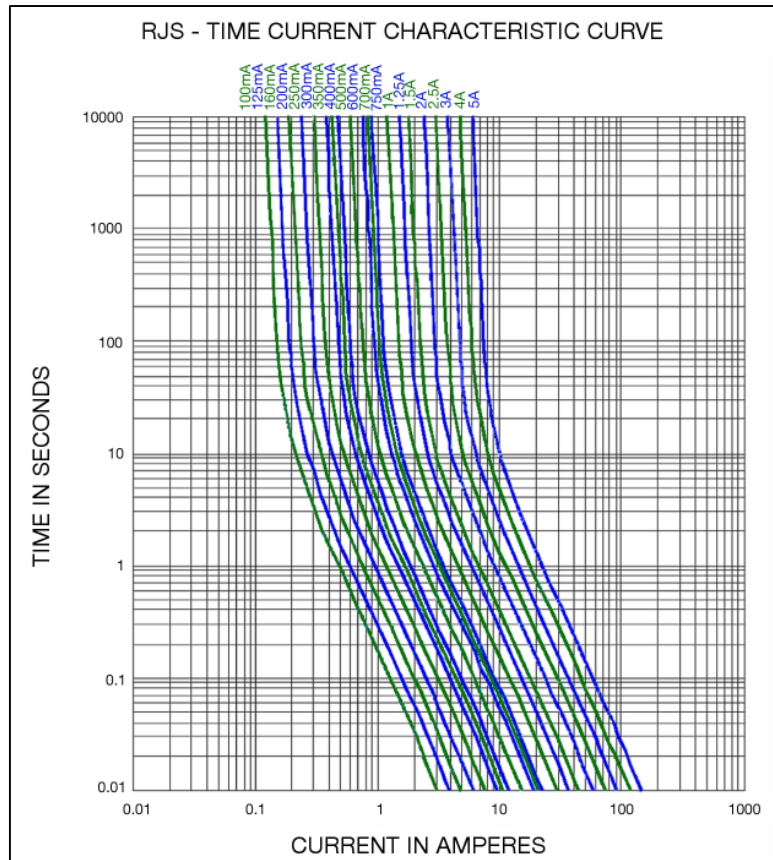
| Catalog Number | Ampere Rating | Typical Cold Resistance (ohm) | Volt-drop @100%In (Volt) max. | Voltage and Interrupting Ratings                                                        | Melting I²T <10m Sec (A² Sec) | Melting I²T @10 In (A² Sec) | Peak Surge Current (Amp) 50 Pulses 1,000V 10uS x 1000uS | Maximum Power Dissipation (W) | Agency Approvals |   |
|----------------|---------------|-------------------------------|-------------------------------|-----------------------------------------------------------------------------------------|-------------------------------|-----------------------------|---------------------------------------------------------|-------------------------------|------------------|---|
| RJS 100-R      | 100mA         | 17.5                          | 2.76                          | See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings | 0.09                          | 0.11                        | 6                                                       | 0.41                          | Y                | Y |
| RJS 125-R      | 125mA         | 11.5                          | 2.30                          |                                                                                         | 0.13                          | 0.17                        | 8                                                       | 0.43                          | Y                | Y |
| RJS 160-R      | 160mA         | 7.10                          | 2.01                          |                                                                                         | 0.21                          | 0.26                        | 10                                                      | 0.46                          | Y                | Y |
| RJS 200-R      | 200mA         | 4.94                          | 1.56                          |                                                                                         | 0.33                          | 0.41                        | 13                                                      | 0.49                          | Y                | Y |
| RJS 250-R      | 250mA         | 3.20                          | 1.26                          |                                                                                         | 0.51                          | 0.64                        | 16                                                      | 0.53                          | Y                | Y |
| RJS 300-R      | 300mA         | 2.16                          | 1.16                          |                                                                                         | 0.8                           | 1.0                         | 20                                                      | 0.56                          | Y                | Y |
| RJS 350-R      | 350mA         | 1.77                          | 1.10                          |                                                                                         | 1.0                           | 1.3                         | 24                                                      | 0.58                          | Y                | Y |
| RJS 400-R      | 400mA         | 1.48                          | 0.91                          |                                                                                         | 1.2                           | 1.6                         | 29                                                      | 0.60                          | Y                | Y |
| RJS 500-R      | 500mA         | 0.82                          | 0.65                          |                                                                                         | 1.9                           | 2.4                         | 36                                                      | 0.64                          | Y                | Y |
| RJS 600-R      | 600mA         | 0.62                          | 0.59                          |                                                                                         | 3.0                           | 3.8                         | 46                                                      | 0.68                          | Y                | Y |
| RJS 700-R      | 700mA         | 0.50                          | 0.58                          |                                                                                         | 3.8                           | 4.8                         | 54                                                      | 0.70                          | Y                | Y |
| RJS 750-R      | 750mA         | 0.435                         | 0.55                          |                                                                                         | 4.3                           | 5.5                         | 58                                                      | 0.71                          | Y                | Y |
| RJS 1-R        | 1A            | 0.248                         | 0.39                          |                                                                                         | 7.4                           | 9.3                         | 80                                                      | 0.77                          | Y                | Y |
| RJS 1.25-R     | 1.25A         | 0.166                         | 0.33                          |                                                                                         | 12                            | 15                          | 100                                                     | 0.82                          | Y                | Y |
| RJS 1.5-R      | 1.5A          | 0.121                         | 0.29                          |                                                                                         | 17                            | 21                          | 120                                                     | 0.86                          | Y                | Y |
| RJS 2-R        | 2A            | 0.080                         | 0.26                          |                                                                                         | 28                            | 36                          | 155                                                     | 0.93                          | Y                | Y |
| RJS 2.5-R      | 2.5A          | 0.056                         | 0.24                          |                                                                                         | 44                            | 56                          | 190                                                     | 0.99                          | Y                | Y |
| RJS 3-R        | 3A            | 0.043                         | 0.22                          |                                                                                         | 69                            | 87                          | 230                                                     | 1.06                          | Y                | Y |
| RJS 4-R        | 4A            | 0.027                         | 0.18                          |                                                                                         | 108                           | 136                         | 300                                                     | 1.13                          | Y                | Y |
| RJS 5-R        | 5A            | 0.020                         | 0.16                          |                                                                                         | 169                           | 212                         | 370                                                     | 1.20                          | Y                | Y |

Consult manufacturer for other ratings

## Temperature Derating Curve

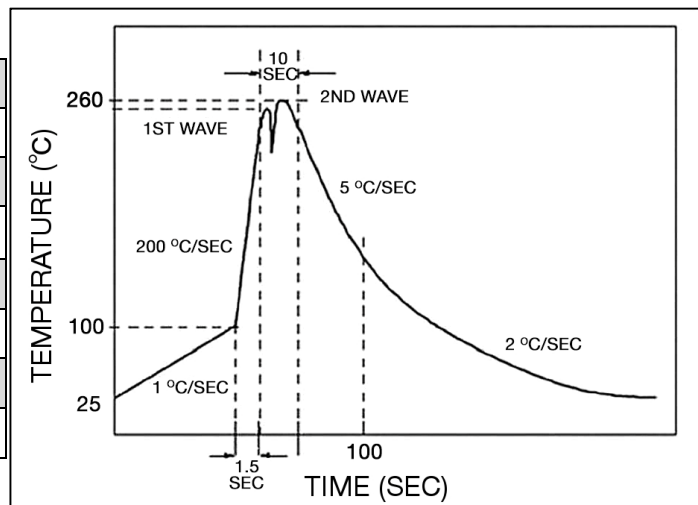


## Average Time Current Curve



## Soldering parameters

| Lead-free Wave Soldering Profile                   |                                           |
|----------------------------------------------------|-------------------------------------------|
| Wave Soldering Parameter                           |                                           |
| Average ramp-up rate                               | 200°C / second                            |
| Heating rate during preheat                        | typical 1 - 2°C / second Max 4°C / second |
| Final preheat temperature                          | within 125°C of soldering temperature     |
| Peak temperature $T_p$                             | 260°C                                     |
| Time within +0°C / -5°C of actual peak temperature | 10 seconds                                |
| Ramp-down rate                                     | 5°C / second max.                         |



## Fuse FGNO Explanation

0643 R [XXXX] -XX

0643R=RJS; [XXXX]=Ampere Rating; XX=See Ordering Information as below

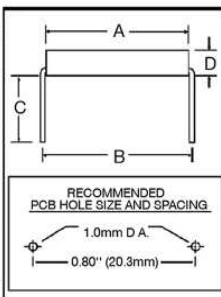
| Fraction | Decimal | Milliamps | Bel FGNO[XXXX] |
|----------|---------|-----------|----------------|
| 1/10     | 0.100   | 100       | 0100           |
| 1/8      | .125    | 125       | 0125           |
|          | .160    | 160       | 0160           |
| 2/10     | .200    | 200       | 0200           |
| 1/4      | .250    | 250       | 0250           |
| 3/10     | .300    | 300       | 0300           |
| 35/100   | .350    | 350       | 0350           |
| 4/10     | .400    | 400       | 0400           |
| 1/2      | .500    | 500       | 0500           |
| 6/10     | .600    | 600       | 0600           |
| 7/10     | .700    | 700       | 0700           |
| 3/4      | .750    | 750       | 0750           |

| Fraction | Decimal | Amps | Bel FGNO[XXXX] |
|----------|---------|------|----------------|
|          | 1.0     | 1    | 1000           |
| 1-1/4    | 1.25    | 1.25 | 1250           |
| 1-1/2    | 1.50    | 1.5  | 1500           |
|          | 2.0     | 2    | 2000           |
| 2-1/2    | 2.5     | 2.5  | 2500           |
|          | 3.0     | 3    | 3000           |
|          | 4.0     | 4    | 4000           |
|          | 5.0     | 5    | 5000           |
|          |         |      |                |
|          |         |      |                |
|          |         |      |                |

## Mechanical Dimensions

|   | Standard Lead                    | Short Lead                                                         |
|---|----------------------------------|--------------------------------------------------------------------|
| A | 0.76" +/-0.01"<br>(19.3+/-0.2mm) | 0.76" +/-0.01"<br>(19.3+/-0.2mm)                                   |
| B | 0.80" +/-0.05<br>(20.3+/-1.27mm) | 0.80" +/-0.05<br>(20.3+/-1.27mm)                                   |
| C | 0.4" Typical<br>(10.0mm)         | 0.134" +/-0.01"<br>(3.4+/-0.25mm) 0.11" +/-0.01"<br>(2.8+/-0.25mm) |
| D | 0.18" max<br>(4.6mm)             | 0.18" max<br>(4.6mm)                                               |

\*Diameter lead 0.032" for all ratings



## Ordering Information

|                                      |      |   |      |   |   |   |
|--------------------------------------|------|---|------|---|---|---|
|                                      | 0643 | R | XXXX | - | X | X |
| FUSE TYPE                            |      |   |      |   |   |   |
| 0643R = RJS Series                   |      |   |      |   |   |   |
| R = RoHS Compliant                   |      |   |      |   |   |   |
| AMPERE RATING                        |      |   |      |   |   |   |
| Refer to fuse FGNO explanation table |      |   |      |   |   |   |
| LEAD LENGTH / PACKAGING              |      |   |      |   |   |   |
| 0 = Std length, 0.400In., 2K/Box     |      |   |      |   |   |   |
| 1 = Short length, 0.11 In., 500/Box  |      |   |      |   |   |   |
| 2 = Short length, 0.134 In., 500/Box |      |   |      |   |   |   |
| LEAD LENGTH / PACKAGING              |      |   |      |   |   |   |
| 2 = 0.800 INCH                       |      |   |      |   |   |   |

## Packaging

| Packaging Option                  | Packaging Specification | Quantity | Packaging Code | Inside Tape Spacing |
|-----------------------------------|-------------------------|----------|----------------|---------------------|
| Bulk(Short lead-0.11" +/-0.01")   | N/A                     | 500      | 12             | N/A                 |
| Bulk (Short lead-0.134" +/-0.01") | N/A                     | 500      | 22             | N/A                 |
| Bulk (Standard lead)              | N/A                     | 2000     | 02             | N/A                 |

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