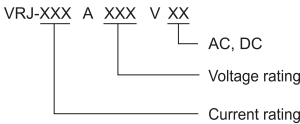


# Semiconductor Protection Fuses

## UL Standard Fuses



**Ordering Information:**



**Description:**

VRJ semiconductor protection fuses are rated 1000V, extending the range of protection for UPS systems, AC and DC drives, reduced voltage motor starters and similar applications where lower  $I^2t$  and superior reliability are needed. With ratings from 35 through 2000 amperes, a wide range of high voltage applications can be served. VRJ serie rated at 1000V is a kind of fast acting fuse designed according to UL standard.

**Features:**

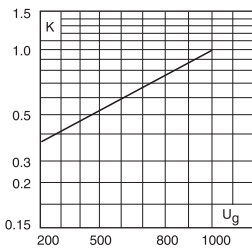
- Designed according to UL 248
- Complying with CE and RoHS
- Suitable for short-circuit
- Low  $I^2t$  for greatest protection of semiconductor circuits
- Low watts loss
- Operating class : aR

Operating temperature: -40°C to +125°C

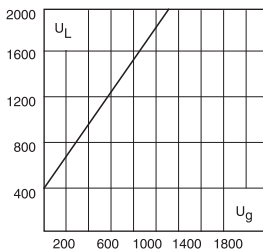
**Ratings:**

Voltage Rating: 1000V AC / DC  
Current Rating: 35A-2000A  
Interrupt Rating: 50kA

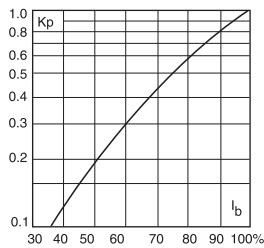
### Electrical Characteristics:



Total Clearing  $I^2t$

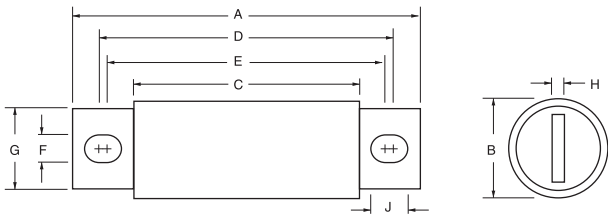


Arc Voltage



Power Losses

### Mechanical Dimensions:



| Current Rating (A) | Mechanical Dimensions (mm) |    |    |     |     |    |    |    |    |
|--------------------|----------------------------|----|----|-----|-----|----|----|----|----|
|                    | A                          | B  | C  | D   | E   | F  | G  | H  | J  |
| 35-60              | 127                        | 24 | 79 | 108 | 106 | 9  | 19 | 3  | 10 |
| 70-100             | 125                        | 29 | 78 | 108 | 106 | 9  | 25 | 5  | 10 |
| 125-200            | 144                        | 39 | 83 | 122 | 103 | 11 | 25 | 6  | 21 |
| 250-400            | 147                        | 51 | 89 | 122 | 105 | 11 | 38 | 6  | 19 |
| 500-600            | 196                        | 64 | 88 | 161 | 120 | 14 | 51 | 10 | 33 |
| 800-2000           | 173                        | 89 | 84 | 139 | 126 | 16 | 70 | 13 | 22 |

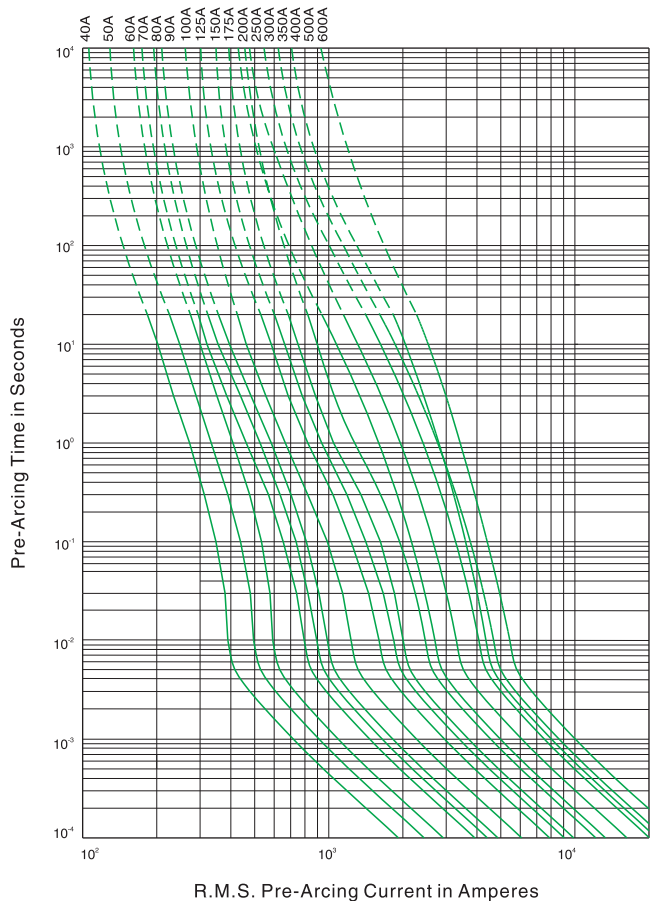
UL Standard Fuses(VRJ 1000V AC/800V DC)

● Electrical Specifications:

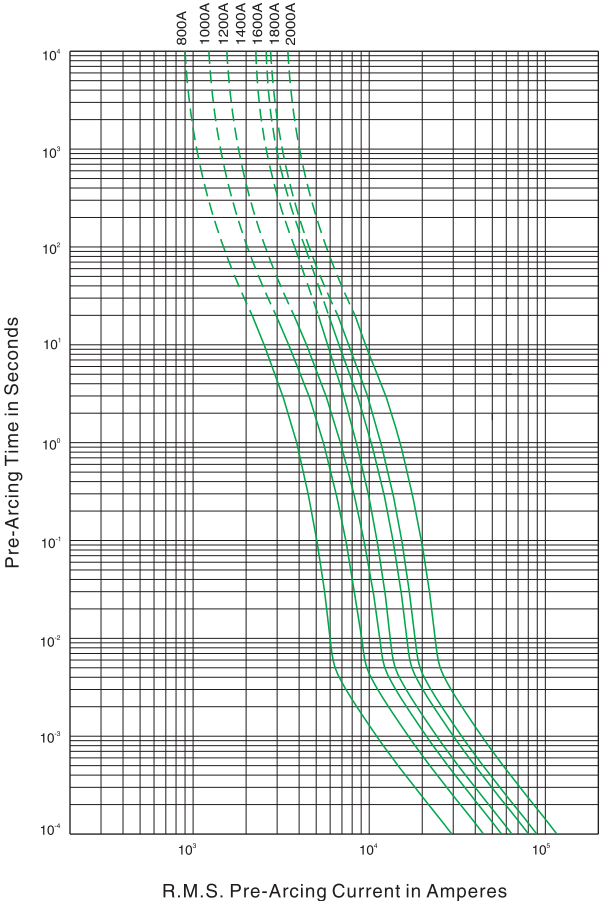
| Catalog Numbers | Current Rating (A) | Pre-arc I <sup>2</sup> t(A <sup>2</sup> s) | Clearing I <sup>2</sup> t(A <sup>2</sup> s) | Power Loss (W) | Voltage Rating | Interrupt Rating  | Remark |
|-----------------|--------------------|--------------------------------------------|---------------------------------------------|----------------|----------------|-------------------|--------|
| VRJ             | 35                 | 200                                        | 1900                                        | 6              | 1000V AC DC    | 50kA<br>(L/R≤1ms) | aR     |
|                 | 40                 | 280                                        | 2300                                        | 7              |                |                   |        |
|                 | 50                 | 250                                        | 3300                                        | 9              |                |                   |        |
|                 | 60                 | 660                                        | 5000                                        | 10             |                |                   |        |
|                 | 70                 | 1080                                       | 6800                                        | 11             |                |                   |        |
|                 | 80                 | 1500                                       | 9500                                        | 12             |                |                   |        |
|                 | 90                 | 1860                                       | 11500                                       | 13             |                |                   |        |
|                 | 100                | 2780                                       | 16000                                       | 14             |                |                   |        |
|                 | 125                | 4780                                       | 32000                                       | 15             |                |                   |        |
|                 | 150                | 6250                                       | 43000                                       | 24             |                |                   |        |
|                 | 175                | 7440                                       | 63000                                       | 28             |                |                   |        |
|                 | 200                | 11500                                      | 78000                                       | 30             |                |                   |        |
|                 | 250                | 15600                                      | 110000                                      | 47             |                |                   |        |
|                 | 300                | 23000                                      | 160000                                      | 53             |                |                   |        |
|                 | 350                | 32500                                      | 221000                                      | 60             |                |                   |        |
|                 | 400                | 46400                                      | 322000                                      | 64             |                |                   |        |
|                 | 500                | 38000                                      | 321000                                      | 92             |                |                   |        |
|                 | 600                | 60000                                      | 510000                                      | 101            |                |                   |        |
|                 | 800                | 85000                                      | 490000                                      | 180            |                |                   |        |
|                 | 1000               | 183500                                     | 1080000                                     | 201            |                |                   |        |
|                 | 1200               | 364000                                     | 2030000                                     | 236            |                |                   |        |
|                 | 1400               | 460000                                     | 2600000                                     | 240            |                |                   |        |
|                 | 1600               | 670000                                     | 6850000                                     | 263            |                |                   |        |
|                 | 1800               | 920000                                     | 5200000                                     | 235            |                |                   |        |
|                 | 2000               | 1300000                                    | 7500000                                     | 240            |                |                   |        |

● Electrical Characteristics:

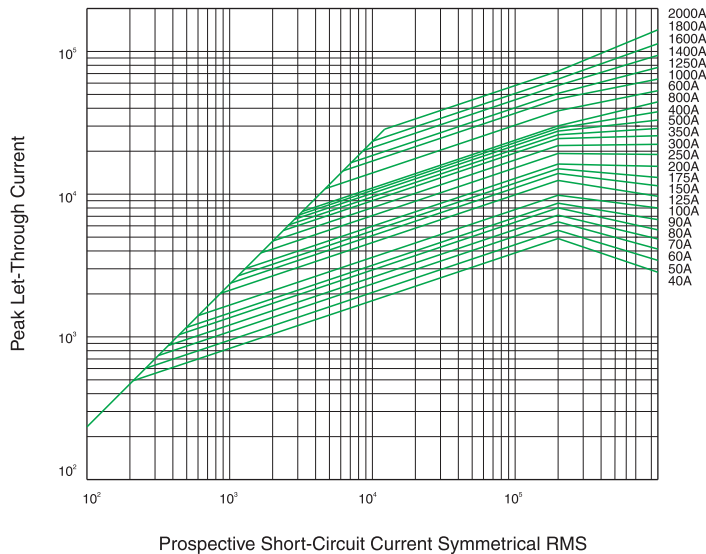
Average Time-Current Curve



Average Time-Current Curve



Peak Let-Thru Curve



## ■ Temperature Correction Curve Kc

The rated current value of our fuses is based on the ambient temperature in the space below the fuse of 25°C up to 30°C max. The following graph gives correction factors Kc for a range of temperatures -55°C to +125°C.

Altitude: IEC defines normal atmospheric operating conditions. Regarding the altitude, it's generally below 2000M. For altitude above 2000M, the fuse's rated current is derated by 0.5% every 100M.

## ■ 温度折减率曲线Kc

熔断器的额定电流定义在温度为20°C最大不超过30°C，左图给出了从-55°C到+125°C时的温度修正曲线。

高海拔对熔断器的使用影响：IEC标准规定，熔断器在海拔2000米下使用性能不受影响；高过2000米海拔高度，每升高100米，熔断器的额定电流减少0.5%

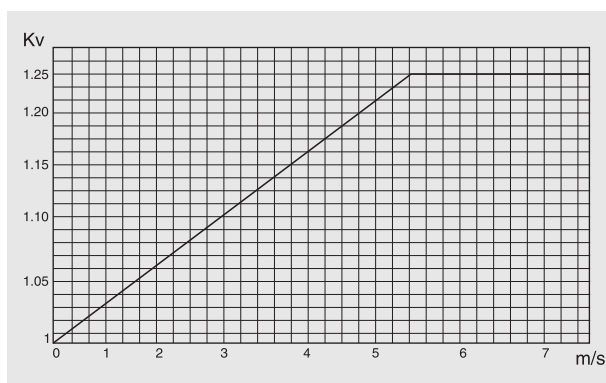


## ■ Forced cooling correction coefficient Kv

If forced air is used to cool the fuse in working, the continuous current rating of the fuse may be increased, by multiplying the rated current by a coefficient Kv. The value of the correction coefficient used by vicfuse is shown in the right chart above. Kv increases linearly with air speed up to 5m/s. Further increase in air speed does not improve the fuse cooling. The limiting value Kv is typically 1.25. Often, box mounted fuses are given an additional Kv factor of 0.8.

## ■ 冷却条件Kv

如果采用风冷方式对工作中的熔断器进行降温，则熔断器的负载在风速为5米/秒时的系数为1.25，高过此风速对熔断器的额定负载无影响，通常封闭环境内的Kv=0.8.



风速修正系数曲线