

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** SV420K10BL1

**Manufacturer:** Bourns Inc.

**Package:** Disc 10mm

**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/bourns-inc/sv420k10bl1.html>

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### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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## Features

- Formerly a **KEKOVARICON** product
- Six model sizes equivalent to standard disc varistors
- Smaller nominal dimensions than disc varistors
- Broad range of current and energy handling capabilities

- +85 °C Continuous operating temperature
- Low clamping voltage
- Available with straight or crimped leads
- Available in tape and reel packaging for automatic pick-and-place
- RoHS compliant\*

## SV Series – Special Medium Voltage Varistors

### General Information

The SV series is a series of lead style epoxy coated square or rectangular shaped varistors with an AC operating voltage ranging from 60 V to 550 V. This series offers both standard and custom options.

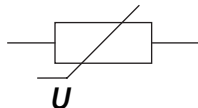
The standard offering consists of square shaped varistors with extremely high current and energy capabilities and a low clamping voltage, providing an increased level of protection for the transients expected in telecommunication and AC power networks. Compared to electrically equivalent disc varistors, SV varistors are produced with smaller nominal dimensions.

In addition to the standard offering, customers are offered the option to design their own customized varistor to suit their specific application needs. Parameters free to be chosen are: non-standard DC/AC operating voltage, leakage current, clamping voltage, maximum surge current, energy absorption level, maximum dissipation power as well as shape - the dimensions being the function of required electrical parameters and vice-versa.

### Summary of Custom Varistor Options

- DC operating voltage range ( $V_{dc}$ ): 85 V to 745 V (up to 1300 V for customized products)
- AC operating voltage range ( $V_{rms}$ ): 60 V to 550 V (up to 1000 V for customized products)
- Six standard sizes available; other customized sizes available upon request
- Broad range of current and energy handling capabilities
- +85 °C Continuous operating temperature
- Available electrical parameter options: AC/DC operating voltage, leakage current, clamping voltage, maximum surge current, energy absorption level, maximum dissipation power and threshold voltage temperature coefficient
- Available in tape and reel packaging for automatic pick-and-place
- Model SVxxxK20 with  $I_{max} = 1 \times 15 \text{ kA} @ 8/20 \mu\text{s}$  is available upon request
- Model SVxxxK23 with  $I_{max} = 1 \times 20 \text{ kA} @ 8/20 \mu\text{s}$  is available upon request

### Varistor Symbol



**WARNING Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)**

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

Specifications are subject to change without notice.

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### Agency Recognition

| Standard    | UL 1449                   |
|-------------|---------------------------|
| File Number | <a href="#">E313168**</a> |

\*\*Not all rated voltages are UL recognized; check the file for details.

| Standard    | IEC 61051-1,<br>IEC61051-2,<br>IEC 61051-2-2 |
|-------------|----------------------------------------------|
| File Number | <a href="#">J 50590630</a> (TÜV)***          |

\*\*\* The following models are recognized with deviated parameters:

SV 300 K 7: D (Max.) = 8.4 mm  
SV 550 K 14: h (Max) = 20.35 mm  
SV 550 K 20:  $V_c = 1500 \text{ V}$

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## SV Series – Special Medium Voltage Varistors

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### Absolute Maximum Ratings

| Parameter                                                            | Standard Types | Units      | Custom Designed Types | Units             |
|----------------------------------------------------------------------|----------------|------------|-----------------------|-------------------|
| <b>Continuous:</b>                                                   |                |            |                       |                   |
| Steady State Applied Voltage                                         | 85 to 745      | V          | 85 to 1300            | V                 |
| DC Voltage Range ( $V_{dc}$ )                                        | 60 to 550      | V          | 60 to 1000            | V                 |
| AC Voltage Range ( $V_{rms}$ )                                       |                |            |                       |                   |
| <b>Transient:</b>                                                    |                |            |                       |                   |
| Peak Single Pulse Surge Current, 8/20 $\mu s$ Waveform ( $I_{max}$ ) | 600 to 15,000  | A          | > 5500                | A/cm <sup>2</sup> |
| Single Pulse Surge Energy, 10/1000 $\mu s$ Waveform ( $W_{max}$ )    | 4 to 815       | J          | > 400                 | J/cm <sup>2</sup> |
| Operating Ambient Temperature                                        | -40 to +85     | °C         | -40 to +125           | °C                |
| Storage Temperature Range                                            | -40 to +125    | °C         | -40 to +125           | °C                |
| Threshold Voltage Temperature Coefficient                            | < +0.05        | %/°C       | < +0.05               | %/°C              |
| Insulation Resistance                                                | > 1            | G $\Omega$ | > 1                   | G $\Omega$        |
| Isolation Voltage Capability                                         | > 2.5          | kV         | > 2.5                 | kV                |
| Response Time                                                        | < 25           | ns         | < 2.5                 | $\mu s$           |
| Climatic Category                                                    | 40 / 85 / 56   |            | 40 / 125 / 56         |                   |

\* Valid for epoxy coated components

### Device Ratings

| Model       | $V_{rms}$ | $V_{dc}$ | $V_n$<br>@ 1 mA | $V_c$ | $I_c$ | $W_{max}$<br>10/1000 $\mu s$ | P<br>max. | $I_{max}^*$<br>8/20 $\mu s$ | C Typ.<br>@ 1 kHz |
|-------------|-----------|----------|-----------------|-------|-------|------------------------------|-----------|-----------------------------|-------------------|
|             | V         | V        | V               | V     | A     | J                            | W         | A                           | pF                |
| SV 60 K 5   | 60        | 85       | 100             | 155   | 5     | 4                            | 0.1       | 600                         | 370               |
| SV 60 K 7   | 60        | 85       | 100             | 155   | 10    | 9                            | 0.25      | 1750                        | 900               |
| SV 60 K 10  | 60        | 85       | 100             | 155   | 25    | 20                           | 0.4       | 3500                        | 1380              |
| SV 60 K 14  | 60        | 85       | 100             | 155   | 50    | 42                           | 0.6       | 8000                        | 2300              |
| SV 60 K 20  | 60        | 85       | 100             | 155   | 100   | 89                           | 1         | 12000                       | 3400              |
| SV 75 K 5   | 75        | 100      | 120             | 190   | 5     | 5                            | 0.1       | 600                         | 300               |
| SV 75 K 7   | 75        | 100      | 120             | 190   | 10    | 11                           | 0.25      | 1750                        | 720               |
| SV 75 K 10  | 75        | 100      | 120             | 190   | 25    | 26                           | 0.4       | 3500                        | 1080              |
| SV 75 K 14  | 75        | 100      | 120             | 190   | 50    | 51                           | 0.6       | 8000                        | 1850              |
| SV 75 K 20  | 75        | 100      | 120             | 190   | 100   | 101                          | 1         | 12000                       | 3100              |
| SV 95 K 5   | 95        | 125      | 150             | 240   | 5     | 7                            | 0.1       | 600                         | 240               |
| SV 95 K 7   | 95        | 125      | 150             | 240   | 10    | 14                           | 0.25      | 1750                        | 580               |
| SV 95 K 10  | 95        | 125      | 150             | 240   | 25    | 31                           | 0.4       | 3500                        | 870               |
| SV 95 K 14  | 95        | 125      | 150             | 240   | 50    | 64                           | 0.6       | 8000                        | 1480              |
| SV 95 K 20  | 95        | 125      | 150             | 240   | 100   | 133                          | 1         | 12000                       | 2700              |
| SV 115 K 5  | 115       | 150      | 180             | 290   | 5     | 8                            | 0.1       | 600                         | 200               |
| SV 115 K 7  | 115       | 150      | 180             | 290   | 10    | 16                           | 0.25      | 1750                        | 480               |
| SV 115 K 10 | 115       | 150      | 180             | 290   | 25    | 37                           | 0.4       | 3500                        | 750               |
| SV 115 K 14 | 115       | 150      | 180             | 290   | 50    | 78                           | 0.6       | 8000                        | 1230              |
| SV 115 K 20 | 115       | 150      | 180             | 290   | 100   | 147                          | 1         | 12000                       | 2200              |

Model SVxxxK 20 with  $I_{max} = 1 \times 15 \text{ kA}$  @ 8/20  $\mu s$  available upon request.

Continued on Next Page

Model SVxxxK 23 with  $I_{max} = 1 \times 20 \text{ kA}$  @ 8/20  $\mu s$  available upon request.

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## SV Series – Special Medium Voltage Varistors

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### Device Ratings (Continued)

| Model       | V <sub>rms</sub> | V <sub>dc</sub> | V <sub>n</sub><br>@ 1 mA | V <sub>c</sub> | I <sub>c</sub> | W <sub>max</sub><br>10/1000 $\mu$ s | P<br>max. | I <sub>max</sub> *<br>8/20 $\mu$ s | C Typ.<br>@ 1 kHz |
|-------------|------------------|-----------------|--------------------------|----------------|----------------|-------------------------------------|-----------|------------------------------------|-------------------|
|             | V                | V               | V                        | V              | A              | J                                   | W         | A                                  | pF                |
| SV 130 K 5  | 130              | 170             | 205                      | 320            | 5              | 9                                   | 0.1       | 600                                | 180               |
| SV 130 K 7  | 130              | 170             | 205                      | 320            | 10             | 19                                  | 0.25      | 1750                               | 430               |
| SV 130 K 10 | 130              | 170             | 205                      | 320            | 25             | 42                                  | 0.4       | 3500                               | 670               |
| SV 130 K 14 | 130              | 170             | 205                      | 320            | 50             | 85                                  | 0.6       | 8000                               | 1100              |
| SV 130 K 20 | 130              | 170             | 205                      | 320            | 100            | 177                                 | 1         | 12000                              | 2150              |
| SV 130 K 23 | 130              | 170             | 205                      | 320            | 100            | 222                                 | 1         | 15000                              | 3390              |
| SV 140 K 5  | 140              | 180             | 220                      | 340            | 5              | 9                                   | 0.1       | 600                                | 170               |
| SV 140 K 7  | 140              | 180             | 220                      | 340            | 10             | 22                                  | 0.25      | 1750                               | 400               |
| SV 140 K 10 | 140              | 180             | 220                      | 340            | 25             | 46                                  | 0.4       | 3500                               | 620               |
| SV 140 K 14 | 140              | 180             | 220                      | 340            | 50             | 94                                  | 0.6       | 8000                               | 1020              |
| SV 140 K 20 | 140              | 180             | 220                      | 340            | 100            | 196                                 | 1         | 12000                              | 1900              |
| SV 140 K 23 | 140              | 180             | 220                      | 340            | 100            | 247                                 | 1         | 15000                              | 3340              |
| SV 150 K 5  | 150              | 200             | 240                      | 360            | 5              | 11                                  | 0.1       | 600                                | 160               |
| SV 150 K 7  | 150              | 200             | 240                      | 360            | 10             | 23                                  | 0.25      | 1750                               | 380               |
| SV 150 K 10 | 150              | 200             | 240                      | 360            | 25             | 51                                  | 0.4       | 3500                               | 590               |
| SV 150 K 14 | 150              | 200             | 240                      | 360            | 50             | 101                                 | 0.6       | 8000                               | 690               |
| SV 150 K 20 | 150              | 200             | 240                      | 360            | 100            | 213                                 | 1         | 12000                              | 1740              |
| SV 150 K 23 | 150              | 200             | 240                      | 360            | 100            | 270                                 | 1         | 15000                              | 3050              |
| SV 175 K 5  | 175              | 225             | 270                      | 420            | 5              | 11                                  | 0.1       | 600                                | 140               |
| SV 175 K 7  | 175              | 225             | 270                      | 420            | 10             | 26                                  | 0.25      | 1750                               | 330               |
| SV 175 K 10 | 175              | 225             | 270                      | 420            | 25             | 58                                  | 0.4       | 3500                               | 500               |
| SV 175 K 14 | 175              | 225             | 270                      | 420            | 50             | 119                                 | 0.6       | 8000                               | 830               |
| SV 175 K 20 | 175              | 225             | 270                      | 420            | 100            | 241                                 | 1         | 12000                              | 1630              |
| SV 175 K 23 | 175              | 225             | 270                      | 420            | 100            | 305                                 | 1         | 15000                              | 2870              |
| SV 230 K 5  | 230              | 300             | 360                      | 550            | 5              | 16                                  | 0.1       | 600                                | 110               |
| SV 230 K 7  | 230              | 300             | 360                      | 550            | 10             | 35                                  | 0.25      | 1750                               | 250               |
| SV 230 K 10 | 230              | 300             | 360                      | 550            | 25             | 78                                  | 0.4       | 3500                               | 400               |
| SV 230 K 14 | 230              | 300             | 360                      | 550            | 50             | 157                                 | 0.6       | 8000                               | 650               |
| SV 230 K 20 | 230              | 300             | 360                      | 550            | 100            | 322                                 | 1         | 12000                              | 1220              |
| SV 230 K 23 | 230              | 300             | 360                      | 550            | 100            | 407                                 | 1         | 15000                              | 2020              |
| SV 250 K 5  | 250              | 320             | 390                      | 590            | 5              | 17                                  | 0.1       | 600                                | 100               |
| SV 250 K 7  | 250              | 320             | 390                      | 590            | 10             | 38                                  | 0.25      | 1750                               | 240               |
| SV 250 K 10 | 250              | 320             | 390                      | 590            | 25             | 85                                  | 0.4       | 3500                               | 370               |
| SV 250 K 14 | 250              | 320             | 390                      | 590            | 50             | 169                                 | 0.6       | 8000                               | 600               |
| SV 250 K 20 | 250              | 320             | 390                      | 590            | 100            | 345                                 | 1         | 12000                              | 1130              |
| SV 250 K 23 | 250              | 320             | 390                      | 590            | 100            | 437                                 | 1         | 15000                              | 1980              |

Model SVxxxK 20 with I<sub>max</sub> = 1 x 15 kA @ 8/20  $\mu$ s available upon request.

*Continued on Next Page*

Model SVxxxK 23 with I<sub>max</sub> = 1 x 20 kA @ 8/20  $\mu$ s available upon request.

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## SV Series – Special Medium Voltage Varistors

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### Device Ratings (Continued)

| Model       | V <sub>rms</sub> | V <sub>dc</sub> | V <sub>n</sub><br>@ 1 mA | V <sub>c</sub> | I <sub>c</sub> | W <sub>max</sub><br>10/1000 $\mu$ s | P<br>max. | I <sub>max</sub> *<br>8/20 $\mu$ s | C Typ.<br>@ 1 kHz |
|-------------|------------------|-----------------|--------------------------|----------------|----------------|-------------------------------------|-----------|------------------------------------|-------------------|
|             | V                | V               | V                        | V              | A              | J                                   | W         | A                                  | pF                |
| SV 275 K 5  | 275              | 350             | 430                      | 680            | 5              | 20                                  | 0.1       | 600                                | 90                |
| SV 275 K 7  | 275              | 350             | 430                      | 680            | 10             | 44                                  | 0.25      | 1750                               | 220               |
| SV 275 K 10 | 275              | 350             | 430                      | 680            | 25             | 97                                  | 0.4       | 3500                               | 350               |
| SV 275 K 14 | 275              | 350             | 430                      | 680            | 50             | 187                                 | 0.6       | 8000                               | 550               |
| SV 275 K 20 | 275              | 350             | 430                      | 680            | 100            | 380                                 | 1         | 12000                              | 1030              |
| SV 275 K 23 | 275              | 350             | 430                      | 680            | 100            | 481                                 | 1         | 15000                              | 1800              |
| SV 300 K 7  | 300              | 385             | 470                      | 700            | 10             | 46                                  | 0.25      | 1750                               | 200               |
| SV 300 K 10 | 300              | 385             | 470                      | 700            | 25             | 102                                 | 0.4       | 3500                               | 320               |
| SV 300 K 14 | 300              | 385             | 470                      | 700            | 50             | 211                                 | 0.6       | 8000                               | 510               |
| SV 300 K 20 | 300              | 385             | 470                      | 700            | 100            | 437                                 | 1         | 12000                              | 940               |
| SV 300 K 23 | 300              | 385             | 470                      | 700            | 100            | 554                                 | 1         | 15000                              | 1650              |
| SV 320 K 10 | 320              | 420             | 510                      | 760            | 25             | 144                                 | 0.4       | 3500                               | 300               |
| SV 320 K 14 | 320              | 420             | 510                      | 760            | 50             | 230                                 | 0.6       | 8000                               | 480               |
| SV 320 K 20 | 320              | 420             | 510                      | 760            | 100            | 485                                 | 1         | 12000                              | 860               |
| SV 320 K 23 | 320              | 420             | 510                      | 760            | 100            | 611                                 | 1         | 15000                              | 1520              |
| SV 385 K 10 | 385              | 505             | 620                      | 900            | 25             | 116                                 | 0.4       | 3500                               | 270               |
| SV 385 K 14 | 385              | 505             | 620                      | 900            | 50             | 241                                 | 0.6       | 8000                               | 410               |
| SV 385 K 20 | 385              | 505             | 620                      | 900            | 100            | 495                                 | 1         | 12000                              | 710               |
| SV 385 K 23 | 385              | 505             | 620                      | 900            | 100            | 624                                 | 1         | 15000                              | 1250              |
| SV 420 K 10 | 420              | 560             | 680                      | 980            | 25             | 121                                 | 0.4       | 3500                               | 240               |
| SV 420 K 14 | 420              | 560             | 680                      | 980            | 50             | 253                                 | 0.6       | 8000                               | 380               |
| SV 420 K 20 | 420              | 560             | 680                      | 980            | 100            | 523                                 | 1         | 12000                              | 680               |
| SV 420 K 23 | 420              | 560             | 680                      | 980            | 100            | 670                                 | 1         | 15000                              | 1200              |
| SV 460 K 10 | 460              | 615             | 750                      | 1080           | 25             | 132                                 | 0.4       | 3500                               | 230               |
| SV 460 K 14 | 460              | 615             | 750                      | 1080           | 50             | 275                                 | 0.6       | 8000                               | 350               |
| SV 460 K 20 | 460              | 615             | 750                      | 1080           | 100            | 572                                 | 1         | 12000                              | 620               |
| SV 460 K 23 | 460              | 615             | 750                      | 1080           | 100            | 728                                 | 1         | 15000                              | 1080              |
| SV 510 K 10 | 510              | 670             | 820                      | 1200           | 25             | 144                                 | 0.4       | 3500                               | 210               |
| SV 510 K 14 | 510              | 670             | 820                      | 1200           | 50             | 284                                 | 0.6       | 8000                               | 330               |
| SV 510 K 20 | 510              | 670             | 820                      | 1200           | 100            | 598                                 | 1         | 12000                              | 570               |
| SV 510 K 23 | 510              | 670             | 820                      | 1200           | 100            | 750                                 | 1         | 15000                              | 1000              |
| SV 550 K 10 | 550              | 745             | 910                      | 1350           | 25             | 168                                 | 0.4       | 3500                               | 200               |
| SV 550 K 14 | 550              | 745             | 910                      | 1350           | 50             | 330                                 | 0.6       | 8000                               | 310               |
| SV 550 K 20 | 550              | 745             | 910                      | 1350           | 100            | 644                                 | 1         | 12000                              | 510               |
| SV 550 K 23 | 550              | 745             | 910                      | 1350           | 100            | 815                                 | 1         | 15000                              | 900               |

Model SVxxxK 20 with I<sub>max</sub> = 1 x 15 kA @ 8/20  $\mu$ s available upon request.

Model SVxxxK 23 with I<sub>max</sub> = 1 x 20 kA @ 8/20  $\mu$ s available upon request.

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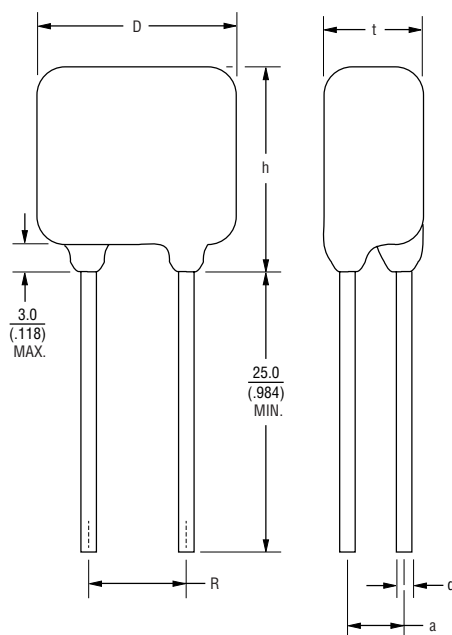
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# SV Series – Special Medium Voltage Varistors

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## Product Dimensions

| Model       | Dimension             |                      |                      |                      |                       |                      |
|-------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
|             | D (Max.)              | t (Max.)             | R                    | d                    | h (Max.)              | a                    |
| SV 60 K 5   | $\frac{7}{(.276)}$    | $\frac{2.5}{(.098)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.1}{(.043)}$ |
| SV 60 K 7   | $\frac{9}{(.354)}$    | $\frac{3.5}{(.482)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.1}{(.043)}$ |
| SV 60 K 10  | $\frac{12}{(.472)}$   | $\frac{4.1}{(.161)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{1.4}{(.055)}$ |
| SV 60 K 14  | $\frac{16}{(.630)}$   | $\frac{4.2}{(.165)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{1.5}{(.059)}$ |
| SV 60 K 20  | $\frac{22.5}{(.886)}$ | $\frac{4.5}{(.177)}$ | $\frac{10}{(.394)}$  | $\frac{0.8}{(.031)}$ | $\frac{26}{(1.024)}$  | $\frac{1.5}{(.059)}$ |
| SV 75 K 5   | $\frac{7}{(.276)}$    | $\frac{3.6}{(.142)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.2}{(.047)}$ |
| SV 75 K 7   | $\frac{9}{(.354)}$    | $\frac{3.6}{(.142)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.2}{(.047)}$ |
| SV 75 K 10  | $\frac{12}{(.472)}$   | $\frac{4.2}{(.165)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{1.5}{(.059)}$ |
| SV 75 K 14  | $\frac{16}{(.630)}$   | $\frac{4.2}{(.165)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{1.5}{(.059)}$ |
| SV 75 K 20  | $\frac{22.5}{(.886)}$ | $\frac{4.5}{(.181)}$ | $\frac{10}{(.394)}$  | $\frac{0.8}{(.031)}$ | $\frac{26}{(1.024)}$  | $\frac{1.5}{(.059)}$ |
| SV 95 K 5   | $\frac{7}{(.276)}$    | $\frac{3.8}{(.150)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.4}{(.055)}$ |
| SV 95 K 7   | $\frac{9}{(.354)}$    | $\frac{3.8}{(.150)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.4}{(.055)}$ |
| SV 95 K 10  | $\frac{12}{(.472)}$   | $\frac{4.3}{(.169)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{1.7}{(.067)}$ |
| SV 95 K 14  | $\frac{16}{(.630)}$   | $\frac{4.3}{(.169)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{1.7}{(.067)}$ |
| SV 95 K 20  | $\frac{22.5}{(.886)}$ | $\frac{4.6}{(.181)}$ | $\frac{10}{(.394)}$  | $\frac{0.8}{(.031)}$ | $\frac{26}{(1.024)}$  | $\frac{1.7}{(.067)}$ |
| SV 115 K 5  | $\frac{7}{(.276)}$    | $\frac{4.0}{(.157)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.6}{(.063)}$ |
| SV 115 K 7  | $\frac{9}{(.354)}$    | $\frac{4.0}{(.157)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.6}{(.063)}$ |
| SV 115 K 10 | $\frac{12}{(.472)}$   | $\frac{4.3}{(.169)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{1.9}{(.075)}$ |
| SV 115 K 14 | $\frac{16}{(.630)}$   | $\frac{4.4}{(.173)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{1.9}{(.075)}$ |
| SV 115 K 20 | $\frac{22.5}{(.886)}$ | $\frac{4.8}{(.189)}$ | $\frac{10}{(.394)}$  | $\frac{0.8}{(.031)}$ | $\frac{26}{(1.024)}$  | $\frac{1.9}{(.075)}$ |
| SV 130 K 5  | $\frac{7}{(.276)}$    | $\frac{4.0}{(.157)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.8}{(.071)}$ |
| SV 130 K 7  | $\frac{9}{(.354)}$    | $\frac{4.0}{(.157)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.8}{(.071)}$ |
| SV 130 K 10 | $\frac{12}{(.472)}$   | $\frac{4.5}{(.177)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{2.0}{(.079)}$ |
| SV 130 K 14 | $\frac{16}{(.630)}$   | $\frac{4.6}{(.181)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{2.0}{(.079)}$ |
| SV 130 K 20 | $\frac{22.5}{(.886)}$ | $\frac{5.0}{(.197)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{2.2}{(.087)}$ |
| SV 130 K 23 | $\frac{25}{(.984)}$   | $\frac{5.0}{(.197)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{2.2}{(.087)}$ |
| SV 140 K 5  | $\frac{7}{(.276)}$    | $\frac{4.1}{(.161)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{1.9}{(.075)}$ |
| SV 140 K 7  | $\frac{9}{(.354)}$    | $\frac{4.1}{(.161)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{1.9}{(.075)}$ |
| SV 140 K 10 | $\frac{12}{(.472)}$   | $\frac{4.6}{(.181)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{2.1}{(.083)}$ |
| SV 140 K 14 | $\frac{16}{(.630)}$   | $\frac{4.7}{(.185)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{2.1}{(.083)}$ |



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

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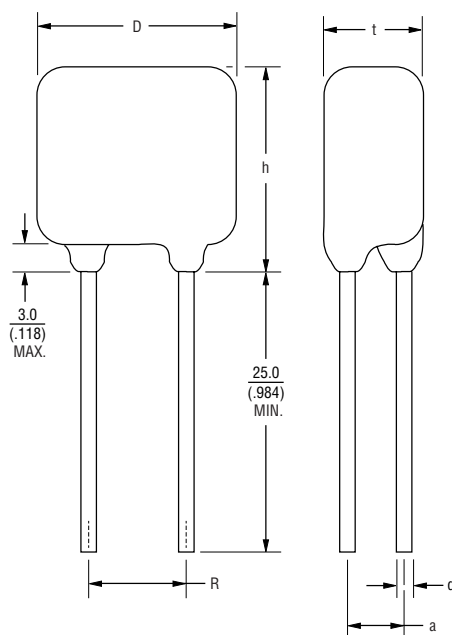
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# SV Series – Special Medium Voltage Varistors

**BOURNS®**

## Product Dimensions (Continued)

| Model       | Dimension             |                      |                      |                      |                       |                      |
|-------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
|             | D (Max.)              | t (Max.)             | R                    | d                    | h (Max.)              | a                    |
| SV 140 K 20 | $\frac{22.5}{(.886)}$ | $\frac{5.4}{(.213)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{2.3}{(.091)}$ |
| SV 140 K 23 | $\frac{25}{(.984)}$   | $\frac{5.4}{(.213)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{2.3}{(.091)}$ |
| SV 150 K 5  | $\frac{7}{(.276)}$    | $\frac{4.3}{(.169)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{2.0}{(.079)}$ |
| SV 150 K 7  | $\frac{9}{(.354)}$    | $\frac{4.3}{(.169)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{2.0}{(.079)}$ |
| SV 150 K 10 | $\frac{12}{(.472)}$   | $\frac{4.8}{(.189)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{2.2}{(.087)}$ |
| SV 150 K 14 | $\frac{16}{(.630)}$   | $\frac{4.8}{(.189)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{2.2}{(.087)}$ |
| SV 150 K 20 | $\frac{22.5}{(.886)}$ | $\frac{5.6}{(.220)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{2.4}{(.094)}$ |
| SV 150 K 23 | $\frac{25}{(.984)}$   | $\frac{5.6}{(.220)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{2.4}{(.094)}$ |
| SV 175 K 5  | $\frac{7}{(.276)}$    | $\frac{4.8}{(.189)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{2.1}{(.083)}$ |
| SV 175 K 7  | $\frac{9}{(.354)}$    | $\frac{4.8}{(.189)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{2.1}{(.083)}$ |
| SV 175 K 10 | $\frac{12}{(.472)}$   | $\frac{5.0}{(.197)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{2.3}{(.091)}$ |
| SV 175 K 14 | $\frac{16}{(.630)}$   | $\frac{5.0}{(.197)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{2.3}{(.091)}$ |
| SV 175 K 20 | $\frac{22.5}{(.886)}$ | $\frac{5.8}{(.228)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{2.5}{(.098)}$ |
| SV 175 K 23 | $\frac{25}{(.984)}$   | $\frac{5.8}{(.228)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{2.5}{(.098)}$ |
| SV 230 K 5  | $\frac{7}{(.276)}$    | $\frac{4.8}{(.189)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{2.6}{(.102)}$ |
| SV 230 K 7  | $\frac{9}{(.354)}$    | $\frac{4.8}{(.189)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{2.6}{(.102)}$ |
| SV 230 K 10 | $\frac{12}{(.472)}$   | $\frac{5.4}{(.213)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{2.8}{(.110)}$ |
| SV 230 K 14 | $\frac{16}{(.630)}$   | $\frac{5.5}{(.217)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{2.8}{(.110)}$ |
| SV 230 K 20 | $\frac{22.5}{(.886)}$ | $\frac{5.9}{(.232)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{3.0}{(.118)}$ |
| SV 230 K 23 | $\frac{25}{(.984)}$   | $\frac{5.9}{(.232)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{3.0}{(.118)}$ |
| SV 250 K 5  | $\frac{7}{(.276)}$    | $\frac{5.0}{(.197)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{2.8}{(.110)}$ |
| SV 250 K 7  | $\frac{9}{(.354)}$    | $\frac{5.0}{(.197)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{2.8}{(.110)}$ |
| SV 250 K 10 | $\frac{12}{(.472)}$   | $\frac{5.6}{(.220)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{3.0}{(.118)}$ |
| SV 250 K 14 | $\frac{16}{(.630)}$   | $\frac{5.7}{(.224)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{3.0}{(.118)}$ |
| SV 250 K 20 | $\frac{22.5}{(.886)}$ | $\frac{6.1}{(.240)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{3.2}{(.126)}$ |
| SV 250 K 23 | $\frac{25}{(.984)}$   | $\frac{6.1}{(.240)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{3.2}{(.126)}$ |
| SV 275 K 5  | $\frac{7}{(.276)}$    | $\frac{5.6}{(.220)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{9.5}{(.374)}$  | $\frac{3.0}{(.118)}$ |
| SV 275 K 7  | $\frac{9}{(.354)}$    | $\frac{5.6}{(.220)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{3.0}{(.118)}$ |
| SV 275 K 10 | $\frac{12}{(.472)}$   | $\frac{6.0}{(.236)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{3.2}{(.126)}$ |
| SV 275 K 14 | $\frac{16}{(.630)}$   | $\frac{6.0}{(.236)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{3.2}{(.126)}$ |



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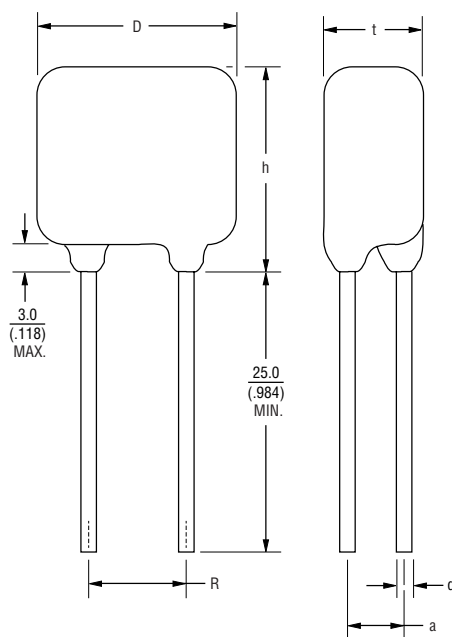
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# SV Series – Special Medium Voltage Varistors

**BOURNS®**

## Product Dimensions (Continued)

| Model       | Dimension             |                      |                      |                      |                       |                      |
|-------------|-----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
|             | D (Max.)              | t (Max.)             | R                    | d                    | h (Max.)              | a                    |
| SV 275 K 20 | $\frac{22.5}{(.886)}$ | $\frac{6.3}{(.248)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{26}{(1.024)}$  | $\frac{3.4}{(.134)}$ |
| SV 275 K 23 | $\frac{25}{(.984)}$   | $\frac{6.3}{(.248)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{3.4}{(.134)}$ |
| SV 300 K 7  | $\frac{7}{(.276)}$    | $\frac{5.8}{(.228)}$ | $\frac{5}{(.197)}$   | $\frac{0.6}{(.024)}$ | $\frac{11.5}{(.453)}$ | $\frac{3.2}{(.126)}$ |
| SV 300 K 10 | $\frac{12}{(.472)}$   | $\frac{6.1}{(.240)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{3.4}{(.134)}$ |
| SV 300 K 14 | $\frac{16}{(.630)}$   | $\frac{6.1}{(.240)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{3.4}{(.134)}$ |
| SV 300 K 20 | $\frac{22.5}{(.886)}$ | $\frac{6.6}{(.260)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{3.6}{(.141)}$ |
| SV 300 K 23 | $\frac{25}{(.984)}$   | $\frac{6.6}{(.260)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{3.6}{(.141)}$ |
| SV 320 K 10 | $\frac{12}{(.472)}$   | $\frac{6.5}{(.256)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{3.6}{(.141)}$ |
| SV 320 K 14 | $\frac{16}{(.630)}$   | $\frac{6.8}{(.268)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{3.6}{(.141)}$ |
| SV 320 K 20 | $\frac{22.5}{(.886)}$ | $\frac{6.8}{(.268)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{3.8}{(.150)}$ |
| SV 320 K 23 | $\frac{25}{(.984)}$   | $\frac{6.8}{(.268)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{3.8}{(.150)}$ |
| SV 385 K 10 | $\frac{12}{(.472)}$   | $\frac{6.9}{(.272)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{4.2}{(.165)}$ |
| SV 385 K 14 | $\frac{16}{(.630)}$   | $\frac{6.9}{(.272)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{4.2}{(.165)}$ |
| SV 385 K 20 | $\frac{22.5}{(.886)}$ | $\frac{7.5}{(.295)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{4.4}{(.173)}$ |
| SV 385 K 23 | $\frac{25}{(.984)}$   | $\frac{7.5}{(.295)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{4.4}{(.173)}$ |
| SV 420 K 10 | $\frac{12}{(.472)}$   | $\frac{7.3}{(.287)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{4.4}{(.173)}$ |
| SV 420 K 14 | $\frac{16}{(.630)}$   | $\frac{7.4}{(.291)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{4.4}{(.173)}$ |
| SV 420 K 20 | $\frac{22.5}{(.886)}$ | $\frac{7.8}{(.307)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{4.6}{(.181)}$ |
| SV 420 K 23 | $\frac{25}{(.984)}$   | $\frac{7.8}{(.307)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{4.6}{(.181)}$ |
| SV 460 K 10 | $\frac{12}{(.472)}$   | $\frac{7.8}{(.307)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{4.8}{(.189)}$ |
| SV 460 K 14 | $\frac{16}{(.630)}$   | $\frac{7.8}{(.307)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{4.8}{(.189)}$ |
| SV 460 K 20 | $\frac{22.5}{(.886)}$ | $\frac{8.2}{(.323)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{5.0}{(.197)}$ |
| SV 460 K 23 | $\frac{25}{(.984)}$   | $\frac{8.2}{(.323)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{5.0}{(.197)}$ |
| SV 510 K 10 | $\frac{12}{(.472)}$   | $\frac{8.2}{(.323)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{5.1}{(.201)}$ |
| SV 510 K 14 | $\frac{16}{(.630)}$   | $\frac{8.2}{(.323)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{5.1}{(.201)}$ |
| SV 510 K 20 | $\frac{22.5}{(.886)}$ | $\frac{8.7}{(.343)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{5.3}{(.209)}$ |
| SV 510 K 23 | $\frac{25}{(.984)}$   | $\frac{8.7}{(.343)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{5.3}{(.209)}$ |
| SV 550 K 10 | $\frac{12}{(.472)}$   | $\frac{8.8}{(.346)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{15}{(.591)}$   | $\frac{5.7}{(.224)}$ |
| SV 550 K 14 | $\frac{16}{(.630)}$   | $\frac{8.8}{(.346)}$ | $\frac{7.5}{(.295)}$ | $\frac{0.8}{(.031)}$ | $\frac{19}{(.748)}$   | $\frac{5.7}{(.224)}$ |
| SV 550 K 20 | $\frac{22.5}{(.886)}$ | $\frac{9.2}{(.362)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{27}{(1.063)}$  | $\frac{5.8}{(.228)}$ |
| SV 550 K 23 | $\frac{25}{(.984)}$   | $\frac{9.2}{(.362)}$ | $\frac{10}{(.394)}$  | $\frac{1}{(.039)}$   | $\frac{29}{(1.142)}$  | $\frac{5.8}{(.228)}$ |



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

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## SV Series – Special Medium Voltage Varistors

**BOURNS®**

### Full Custom Parameter Designed Medium Voltage Varistors

The SV series of full custom parameter designed varistors consists of square and rectangular shaped varistors, available either as epoxy coated lead style components or as metalized pellets.

The customer can specify the varistor electrical properties and set the limits of size parameters in accordance with the General Technical Data, as provided below. The customer can also choose to have standard electrical parameters in a non-standard varistor shape and size to best fit the available housing. The customer has our full engineering support to help realize his specific protection requirement.

### General Technical Data

| Electrical Parameters                                                      | Value                       | Units                   |
|----------------------------------------------------------------------------|-----------------------------|-------------------------|
| Varistor Threshold Voltage ( $V_n$ ) Range at 1 mA .....                   | 100 to 910.....             | V                       |
| Continuous:                                                                |                             |                         |
| Steady State Applied Voltage:                                              |                             |                         |
| DC Voltage Range ( $V_{dc}$ ).....                                         | 85 to 745.....              | V                       |
| AC Voltage Range ( $V_{rms}$ ).....                                        | 60 to 550.....              | V                       |
| Transient:                                                                 |                             |                         |
| Peak Single Pulse Surge Current, 8/20 $\mu$ s Waveform ( $I_{max}$ ) ..... | > 5500.....                 | A/cm <sup>2</sup>       |
| Single Pulse Surge Energy, 10/1000 $\mu$ s Waveform ( $W_{max}$ ) .....    | > 400.....                  | J/cm <sup>3</sup>       |
| <b>Protective Level Parameters</b>                                         |                             |                         |
| Clamping Voltage.....                                                      | < 1.9 x $V_{dc}$ .....      | V                       |
| Coefficient of non-linearity:                                              |                             |                         |
| Minimum.....                                                               | 45                          |                         |
| Typical.....                                                               | 60                          |                         |
| Leakage Current Level:                                                     |                             |                         |
| @ 25 °C.....                                                               | 0.5.....                    | $\mu$ A/cm <sup>2</sup> |
| @ 85 °C.....                                                               | 10.....                     | $\mu$ A/cm <sup>2</sup> |
| <b>Environmental Parameters</b>                                            |                             |                         |
| Operating Ambient Temperature.....                                         | -40 to +85 .....            | °C                      |
| Storage Temperature Range .....                                            | -40 to +125 .....           | °C                      |
| Minimum Threshold Voltage                                                  |                             |                         |
| Temperature Coefficient .....                                              | -0.001 .....                | %/°C                    |
| <b>Design Parameters</b>                                                   |                             |                         |
| Leaded                                                                     |                             |                         |
| Coating .....                                                              | Epoxy resin                 |                         |
| Lead Style.....                                                            | Straight or crimped         |                         |
| Metalized Pallet .....                                                     | Solderable electrode finish |                         |
| Shape .....                                                                | Square, rectangular         |                         |
| Packaging.....                                                             | Bulk, tape and reel         |                         |
| <b>Size Parameters</b>                                                     |                             |                         |
| Minimum Size.....                                                          | 5 x 5.....                  | mm                      |
| Maximum Size.....                                                          | 23 x 23.....                | mm                      |
| Lead Spacing.....                                                          | 5.0, 7.5, 10.....           | mm                      |
| Wire Diameter.....                                                         | 0.6, 0.8, 1.0.....          | mm                      |

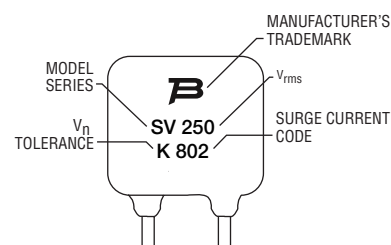
### How to Order

|                                                 |                                                                                                                                                                     |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series Designator                               | SV = SV Series                                                                                                                                                      |
| Max. Continuous Operating Voltage ( $V_{rms}$ ) |                                                                                                                                                                     |
| $V_n$ Tolerance                                 | K = $\pm 10$ % (Standard)<br>J = $\pm 5$ % (Available on Request)                                                                                                   |
| Model Size                                      | 5 = 5 mm      14 = 14 mm<br>7 = 7 mm      20 = 20 mm<br>10 = 10 mm    23 = 23 mm                                                                                    |
| Packaging                                       | R = Reel (Standard)*<br>B = Bulk (Standard)<br>A = Ammo Pack (Available on Request)*<br><i>*Reel and Ammo Pack options not available for Model Sizes 20 and 23.</i> |
| Lead Style                                      | 1 = Straight Leads<br>5 = Crimped Leads<br>M = Metalized pellet<br>(Available upon request)                                                                         |
| Special Parameters                              | YY = Unique two digit suffix is assigned to each customer requesting special parameters. Please contact Bourns for more information.                                |

### Instructions for Creating Orderable Part Number:

- 1) Start with base part number in characteristics table (example: SV250K20).
- 2) Add Packaging: Bulk (example part number becomes SV250K20B).
- 3) Add Lead Style: 1 (example part number becomes SV250K20BL1).
- 4) Part number can have no spaces or lower case letters.

### Typical Part Marking



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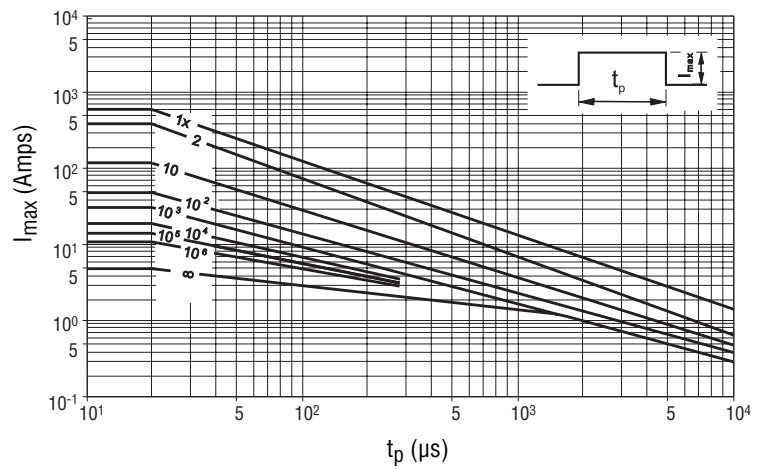
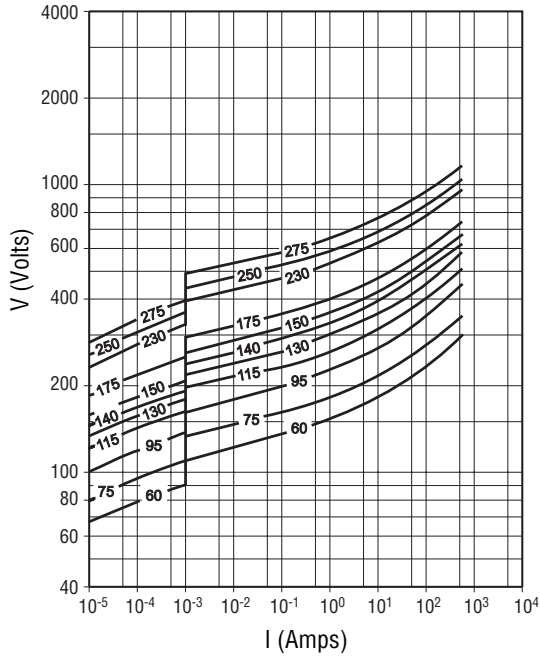
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## SV Series – Special Medium Voltage Varistors

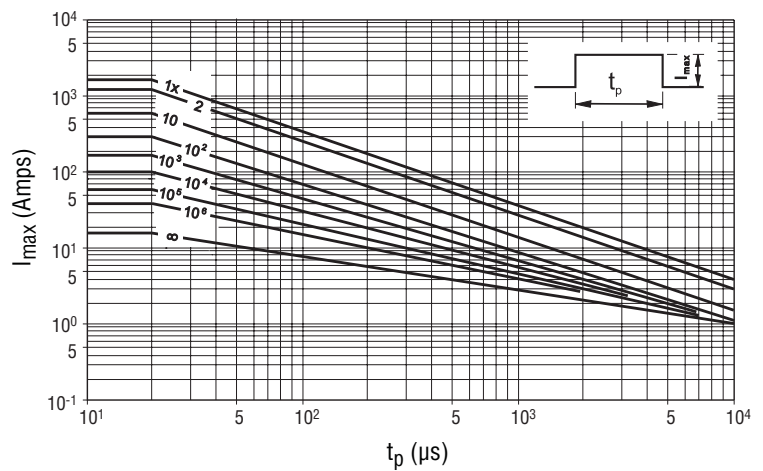
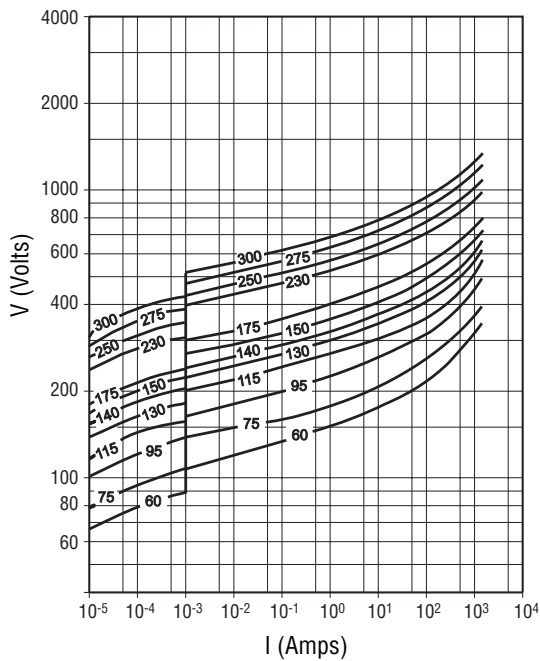
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**Pulse Rating Curves** - Protection level with worst-case condition in the tolerance region

### Model Size 5 - (SV60 ~ SV275)



### Model Size 7 - (SV60 ~ SV300)



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Users should verify actual device performance in their specific applications.

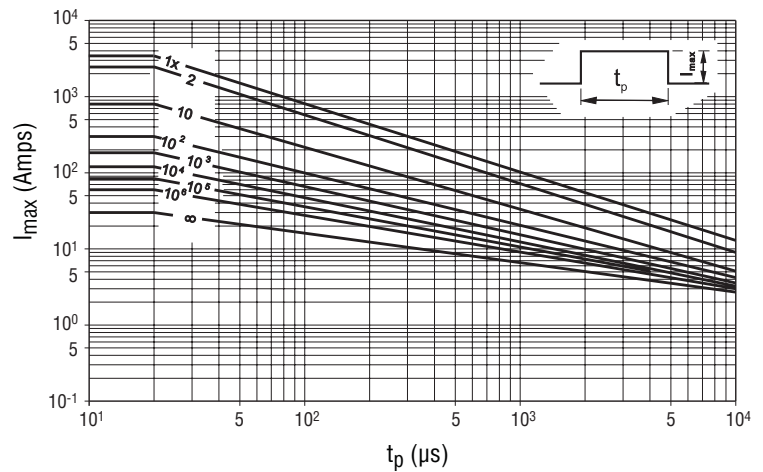
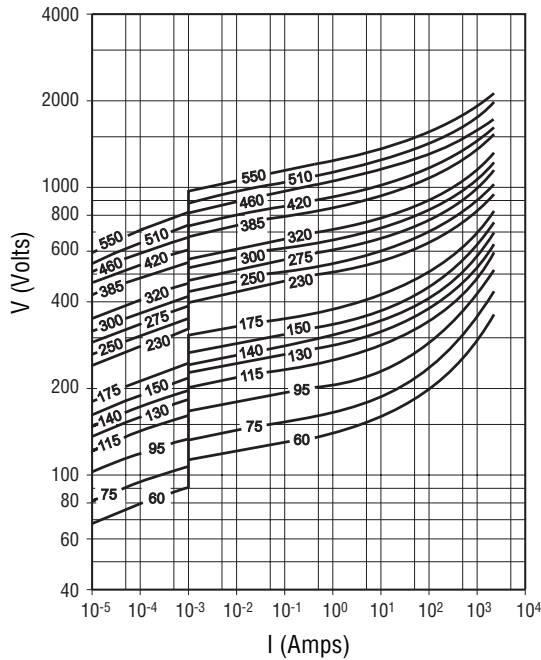
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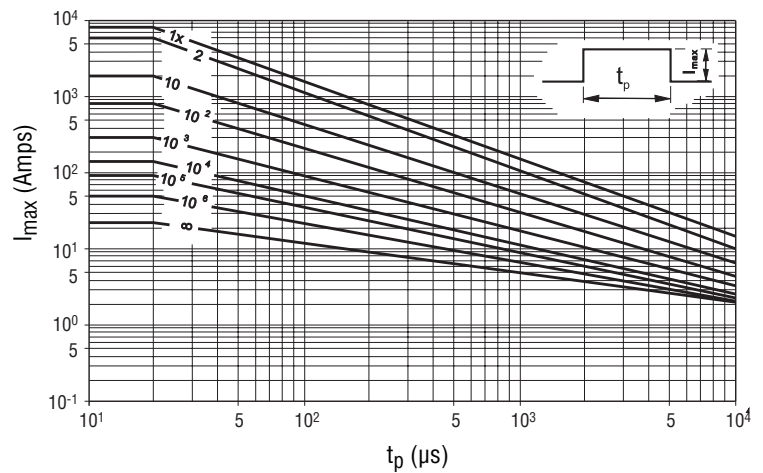
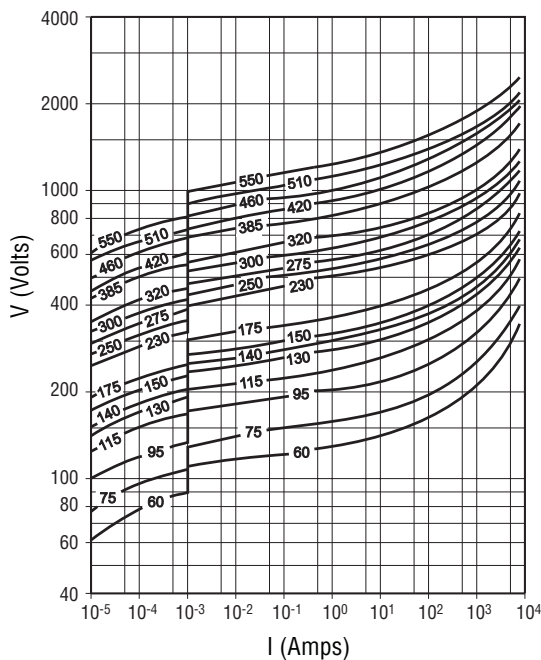
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### Pulse Rating Curves (Continued) - Protection level with worst-case condition in the tolerance region

#### Model Size 10 - (SV60 ~ SV550)



#### Model Size 14 - (SV60 ~ SV550)



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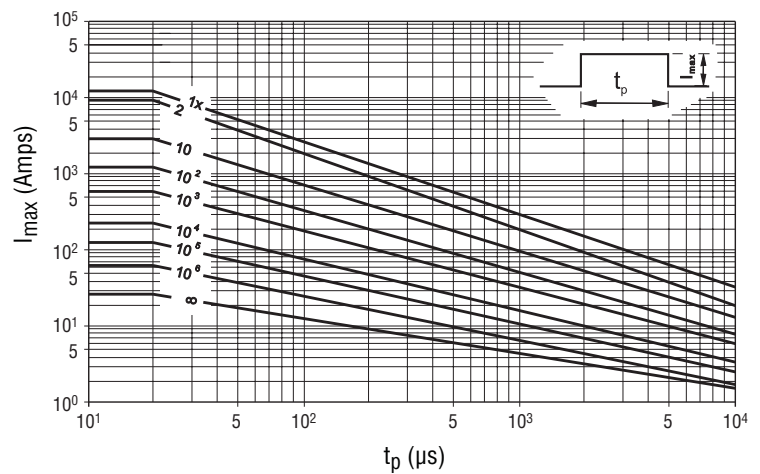
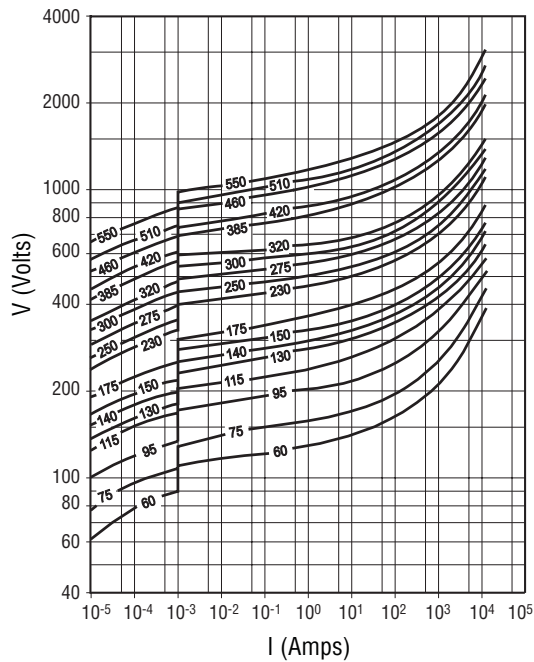
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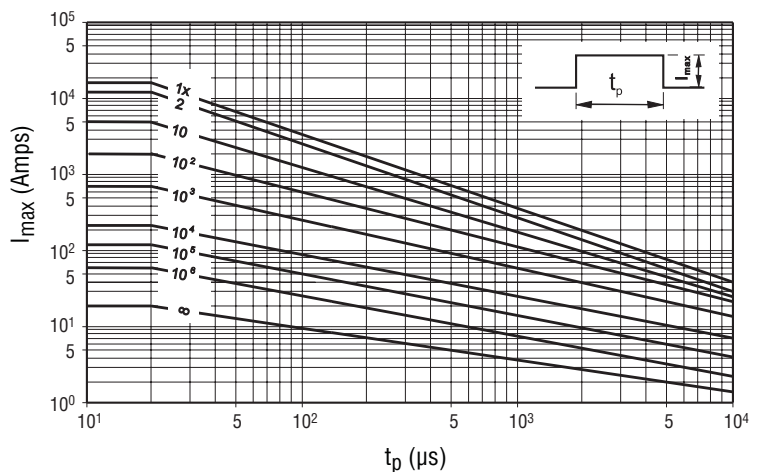
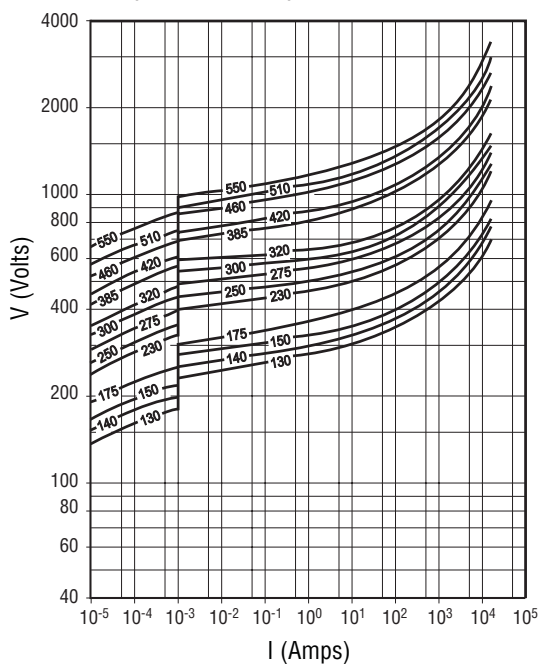
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### Pulse Rating Curves (Continued) - Protection level with worst-case condition in the tolerance region

#### Model Size 20 - (SV60 ~ SV550)



#### Model Size 23 - (SV130 ~ SV550)



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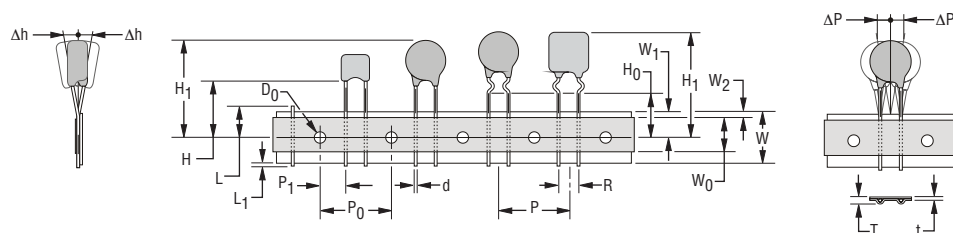
# SV Series – Special Medium Voltage Varistors

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## Packaging Specifications - Tape

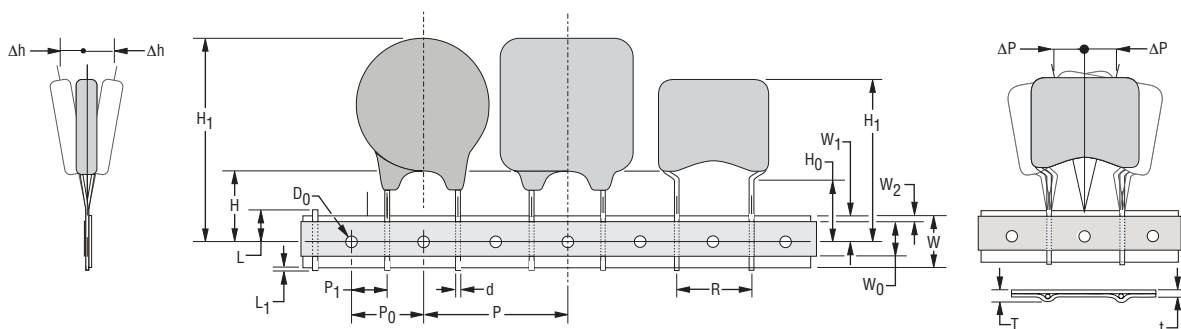
Conforms to IES Publication 286-2 Ed. 3: 2008-03

### Dimension R = 5 mm



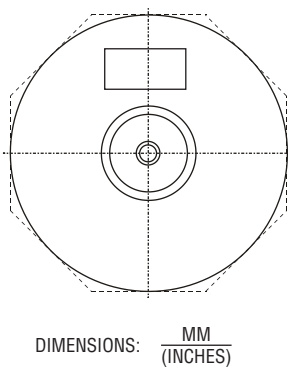
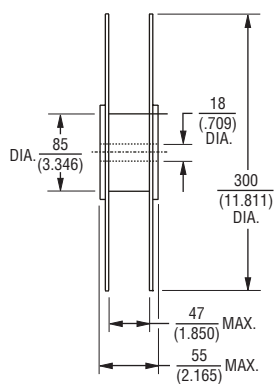
Dimensions on Next Page

### Dimension R = 7.5 mm & 10 mm

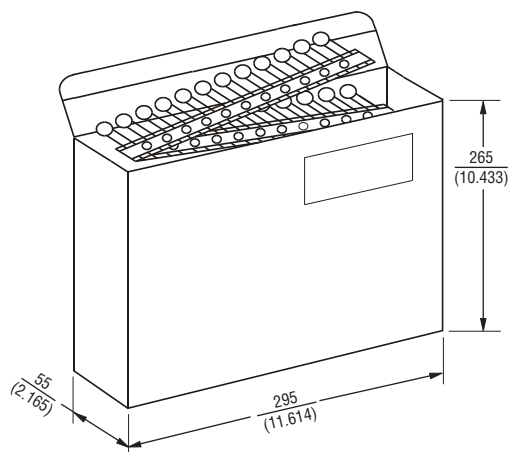


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## Reel



## Ammo Pack (Available upon Special Request)



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# SV Series – Special Medium Voltage Varistors

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## Packaging Specifications - Tape (Continued)

| Symbol         | Parameter                                                               | Model Size                                       |                                                   |    |                                                  |    |
|----------------|-------------------------------------------------------------------------|--------------------------------------------------|---------------------------------------------------|----|--------------------------------------------------|----|
|                |                                                                         | 5                                                | 7                                                 | 10 | 14                                               | 20 |
| W              | Carrier tape width                                                      | $\frac{18 \pm 1.0/-0.5}{(.709 \pm .039/- .020)}$ |                                                   |    |                                                  |    |
| W <sub>0</sub> | Hold down tape width                                                    | $\frac{5}{(.197)} \text{ MIN.}$                  |                                                   |    |                                                  |    |
| W <sub>1</sub> | Sprocket hole position                                                  | $\frac{9 \pm 0.75/-0.5}{(.354 \pm .030/- .020)}$ |                                                   |    |                                                  |    |
| W <sub>2</sub> | Distance between the upper edges of the carrier tape and hold down tape | $\frac{3}{(.118)} \text{ MAX.}$                  |                                                   |    |                                                  |    |
| T              | Total tape thickness                                                    | $\frac{1.5}{(.059)} \text{ MAX.}$                | $\frac{1.7}{(.067)} \text{ MAX.}$                 |    | $\frac{1.9}{(.075)} \text{ MAX.}$                |    |
| t              | Tape thickness                                                          | $\frac{0.9}{(.035)} \text{ MAX.}$                |                                                   |    |                                                  |    |
| P              | Pitch of component                                                      | $\frac{12.7 \pm 1.0}{(.500 \pm .039)}$           |                                                   |    | $\frac{25.4 \pm 1.0}{(1.000 \pm .039)}$          |    |
| P <sub>0</sub> | Feed hole pitch                                                         | $\frac{12.7 \pm 0.3}{(.500 \pm .012)}$           |                                                   |    |                                                  |    |
| P <sub>1</sub> | Feed hole center to pitch                                               | $\frac{3.85 \pm 0.7}{(.152 \pm .028)}$           | $\frac{8.95 \pm 0.7}{(.352 \pm .028)}$            |    | $\frac{7.7 \pm 0.7}{(.303 \pm .028)}$            |    |
| R              | Lead spacing                                                            | $\frac{5 \pm 0.5/-0.2}{(.197 \pm .020/- .008)}$  | $\frac{7.5 \pm 0.5/-0.2}{(.295 \pm .020/- .008)}$ |    | $\frac{10 \pm 0.5/-0.2}{(.394 \pm .020/- .008)}$ |    |
| ΔP             | Component alignment                                                     | $\frac{\pm 1.3}{(\pm .051)} \text{ MAX.}$        |                                                   |    |                                                  |    |
| Δh             | Component alignment                                                     | $\frac{\pm 2}{(\pm .079)} \text{ MAX.}$          |                                                   |    |                                                  |    |
| d              | Wire diameter                                                           | $\frac{0.6}{(.024)} \text{ MAX.}$                | $\frac{0.8}{(.031)} \text{ MAX.}$                 |    | $\frac{1}{(.039)} \text{ MAX.}$                  |    |
| D <sub>0</sub> | Feed hold diameter                                                      | $\frac{4 \pm 0.2}{(.157 \pm .008)}$              |                                                   |    |                                                  |    |
| H              | Height from tape center to component base                               | $\frac{18 \pm 2.0/-0.0}{(.709 \pm .079/- .000)}$ |                                                   |    |                                                  |    |
| H <sub>0</sub> | Seating plane height                                                    | $\frac{16 \pm 0.5}{(.630 \pm .020)}$             |                                                   |    |                                                  |    |
| H <sub>1</sub> | Component height                                                        | $\frac{32.2}{(1.268)} \text{ MAX.}$              | $\frac{46.5}{(1.831)} \text{ MAX.}$               |    |                                                  |    |
| L              | Protrusion - cut out                                                    | $\frac{11}{(.433)} \text{ MAX.}$                 |                                                   |    |                                                  |    |
| L <sub>1</sub> | Protrusion - cut off                                                    | $\frac{0.5}{(.020)} \text{ MAX.}$                |                                                   |    |                                                  |    |

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

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## SV Series – Special Medium Voltage Varistors

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### Packaging Quantities - Bulk

| Voltage | Model Size |      |     |     |     |     |
|---------|------------|------|-----|-----|-----|-----|
|         | 5          | 7    | 10  | 14  | 20  | 23  |
| 60      | 1300       | 1000 | 500 | 400 | 250 |     |
| 75      | 1300       | 1000 | 500 | 400 | 250 |     |
| 95      | 1300       | 900  | 500 | 400 | 250 |     |
| 115     | 1300       | 900  | 400 | 400 | 250 |     |
| 130     | 1300       | 900  | 400 | 400 | 250 | 150 |
| 140     | 1300       | 900  | 400 | 400 | 250 | 150 |
| 150     | 1300       | 900  | 400 | 400 | 250 | 150 |
| 175     | 1300       | 900  | 400 | 400 | 250 | 150 |
| 230     | 900        | 900  | 400 | 250 | 250 | 150 |
| 250     | 900        | 900  | 400 | 250 | 250 | 150 |
| 275     | 900        | 900  | 400 | 250 | 250 | 150 |
| 300     |            | 900  | 400 | 250 | 150 | 100 |
| 320     |            |      | 400 | 250 | 150 | 100 |
| 385     |            |      | 300 | 250 | 150 | 100 |
| 420     |            |      | 300 | 250 | 150 | 100 |
| 460     |            |      | 300 | 250 | 150 | 100 |
| 510     |            |      | 300 | 250 | 150 | 100 |
| 550-680 |            |      | 300 | 250 | 150 | 100 |

### Packaging Quantities - Reel

| Voltage | Model Size |      |      |     |
|---------|------------|------|------|-----|
|         | 5          | 7    | 10   | 14  |
| 60      | 1500       | 1500 | 1300 | 600 |
| 75      | 1300       | 1300 | 1300 | 600 |
| 95      | 1300       | 1300 | 1200 | 600 |
| 115     | 1300       | 1300 | 1200 | 500 |
| 130     | 1300       | 1300 | 1200 | 500 |
| 140     | 1300       | 1300 | 1200 | 500 |
| 150     | 1200       | 1200 | 1000 | 500 |
| 175     | 1200       | 1200 | 1000 | 500 |
| 230     | 1000       | 1000 | 1000 | 500 |
| 250     | 1000       | 1000 | 900  | 400 |
| 275     | 1000       | 1000 | 900  | 400 |
| 300     |            | 900  | 800  | 400 |
| 320     |            |      | 800  | 400 |
| 385     |            |      | 700  | 300 |
| 420     |            |      | 700  | 300 |
| 460     |            |      | 600  | 300 |
| 510     |            |      | 600  | 300 |
| 550-680 |            |      | 600  | 300 |

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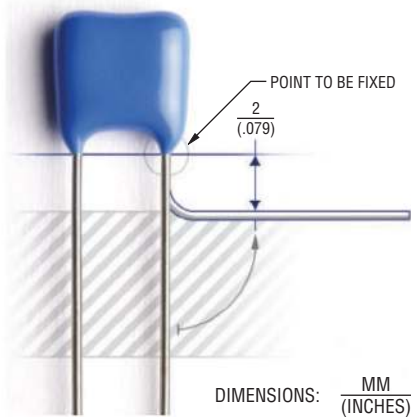
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## SV Series – Special Medium Voltage Varistors

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### Assembly Recommendations for Through-Hole Components



Very often before soldering through-hole components, their leads get bent. It is important not to damage the components during lead bending. Damage most commonly incurred during bending is cracks in epoxy parts, which can lead to increased humidity sensitivity of a component and, consequentially, a shorter lifetime.

In order to avoid epoxy damage, it is necessary to:

- fix the most sensitive point (epoxy parts) of a component body
- bend the wire at least 2 mm below the end of epoxy parts

Other potential damage to a component which can lead to component failure or a shorter lifetime is thermal shock during manual soldering with a soldering iron. This can occur when a soldering iron is placed too close to one point of the component body and it happens most often when the solder joint is too close to the varistor body.

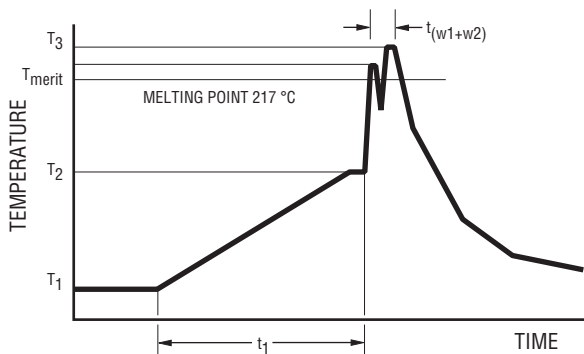
### Resistance to Soldering Heat

In the case of automatic wave soldering, it is important to provide sufficient resistance to soldering heat. In order to prevent any potential problems, internal standards were introduced for testing the resistance to soldering heat of through-hole components: 300 °C, 10 seconds.

### Pb-free Wave Soldering Profile Recommendations

Recommended soldering profiles for all above components are in accordance with JEDEC standard curves (J-STD-020D) and are, therefore, compatible with the Pb-free process.

### Lead-free Wave Soldering Profile - Pb-free wave profile requirements for soldering heat resistance of components



| Parameter                                      | Symbol            | Specification   |
|------------------------------------------------|-------------------|-----------------|
| Preheating temperature gradient                |                   | 4 °C/sec. max.  |
| Preheating time                                | $t_1$             | 2 to 5 min.     |
| Min. preheating temperature                    | $T_1$             | 130 °C          |
| Max. preheating temperature                    | $T_2$             | 180 °C          |
| Melting temperature/point                      | $T_{meltv}$       | 217 °C          |
| Time in wave soldering phase ( $w_1 + w_2$ )   | $t_{w1+w2}$       | 10 sec.         |
| Max. wave temperature ( $w_1 + w_2$ )          | $T_s$             | 265 °C +0/-5 °C |
| Cooling temperature gradient                   |                   | 6° C/sec. max.  |
| Temperature jump from $T_2$ to $T_3$ ( $w_1$ ) | $T_{3(w1)} - T_2$ | 120 °C max      |
| Time from 25 °C to $T_3$ (wave temperature)    |                   | 8 min. max.     |

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## SV Series – Special Medium Voltage Varistors

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### Reliability Testing Procedures

Varistor test procedures comply with CECC 42200, IEC 1051-1/2 (and AEC-Q200, if applicable for automotive grade products). Test results are available upon customer request. Special tests can be performed upon customer request.

| Reliability Parameter                        | Test                                 | Tested According to                                                                                                                                                                                                                                                                                                   | Condition to be Satisfied after Testing                      |
|----------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| <b>AC/DC Bias Reliability</b>                | AC/DC Life Test                      | CECC 42200, Test 4.20 or<br>IEC 1051-1, Test 4.20,<br>AEC-Q200 Test 8 - 1000 h at UCT                                                                                                                                                                                                                                 | $  \delta V_N (1 \text{ mA})   < 10 \%$                      |
| <b>Pulse Current Capability</b>              | $I_{\text{max}} 8/20 \mu\text{s}$    | CECC 42200, Test C 2.1 or<br>IEC 1051-1, Test 4.5<br>10 pulses in the same direction at<br>2 pulses per minute at maximum peak current for 10 pulses                                                                                                                                                                  | $  \delta V_N (1 \text{ mA})   < 10 \%$<br>no visible damage |
| <b>Pulse Energy Capability</b>               | $W_{\text{max}} 10/1000 \mu\text{s}$ | CECC 42200, Test C 2.1 or<br>IEC 1051-1, Test 4.5<br>10 pulses in the same direction at<br>1 pulse every 2 minutes at maximum peak current for 10 pulses                                                                                                                                                              | $  \delta V_N (1 \text{ mA})   < 10 \%$<br>no visible damage |
| <b>WLD Capability</b>                        | WLD x 10                             | ISO 7637, Test pulse 5, 10 pulses at rate of 1 per minute                                                                                                                                                                                                                                                             | $  \delta V_N (1 \text{ mA})   < 15 \%$<br>no visible damage |
| <b>V<sub>jump</sub> Capability</b>           | V <sub>jump</sub> 5 min.             | Increase of supply voltage to $V \geq V_{\text{jump}}$ for 1 minute                                                                                                                                                                                                                                                   | $  \delta V_N (1 \text{ mA})   < 15 \%$<br>no visible damage |
| <b>Environmental and Storage Reliability</b> | Climatic Sequence                    | CECC 42200, Test 4.16 or<br>IEC 1051-1, Test 4.17<br>a) Dry heat, 16h, UCT, Test Ba, IEC 68-2-2<br>b) Damp heat, cyclic, the first cycle: 55 °C, 93 % RH, 24 h, Test Db 68-2-4<br>c) Cold, LCT, 2 h, Test Aa, IEC 68-2-1<br>d) Damp heat cyclic, remaining 5 cycles: 55 °C, 93 % RH, 24 h/cycle, Test Bd, IEC 68-2-30 | $  \delta V_N (1 \text{ mA})   < 10 \%$                      |
|                                              | Thermal Shock                        | CECC 42200, Test 4.12, Test Na, IEC 68-2-14,<br>AEC-Q200 Test 16, 5                                                                                                                                                                                                                                                   | $  \delta V_N (1 \text{ mA})   < 10 \%$<br>no visible damage |
|                                              | Steady State Damp Heat               | CECC 42200, Test 4.17, Test Ca, IEC 68-2-3,<br>AEC-Q200 Test 6, 56 days, 40 °C, 93 % RH,<br>AEC-Q200 Test 7: Bias, Rh, T all at 85.                                                                                                                                                                                   | $  \delta V_N (1 \text{ mA})   < 10 \%$                      |
|                                              | Storage Test                         | IEC 68-2-2, Test Ba, AEC-Q200 Test 3, 1000 h at maximum storage temperature                                                                                                                                                                                                                                           | $  \delta V_N (1 \text{ mA})   < 5 \%$                       |

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## SV Series – Special Medium Voltage Varistors

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### Reliability Testing Procedures (Continued)

| Reliability Parameter                  | Test                         | Tested According to                                                                                                                                                                                                                                                                            | Condition to be Satisfied after Testing                                                                           |
|----------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>Mechanical Reliability</b>          | Solderability                | CECC 42200, Test 4.10.1, Test Ta, IEC 68-2-20 solder bath and reflow method                                                                                                                                                                                                                    | Solderable at shipment and after 2 years of storage, criteria: >95% must be covered by solder for reflow meniscus |
|                                        | Resistance to Soldering Heat | CECC 42200, Test 4.10.2, Test Tb, IEC 68-2-20 solder bath nad reflow method                                                                                                                                                                                                                    | $ \delta V_{\text{N}} (1 \text{ mA})  < 5 \%$                                                                     |
|                                        | Terminal Strength            | JIS-C-6429, App. 1, 18N for 60 sec. - same for AEC-Q200 Test 22                                                                                                                                                                                                                                | No visual damage                                                                                                  |
|                                        | Board Flex                   | JIS-C-6429, App. 2, 2 mm min.<br>AEC-Q200 test 21 - Board flex: 2 mm flex min.                                                                                                                                                                                                                 | $ \delta V_{\text{N}} (1 \text{ mA})  < 2 \%$<br>No visible damage                                                |
|                                        | Vibration                    | CECC 42200, Test 4.15, Test Fc, IEC 68-2-6,<br>AEC-Q200 Test 14<br>Frequency range 10 to 55 Hz (AEC: 10-2000 Hz)<br>Amplitude 0.75 m/s <sup>2</sup> or 98 m/s <sup>2</sup> (AEC: 5 g for 20 minutes) Total duration 6 h (3x2 h) (AEC: 12 cycles each of 3 directions)<br>Waveshape - half sine | $ \delta V_{\text{N}} (1 \text{ mA})  < 2 \%$<br>No visible damage                                                |
|                                        | Mechanical Shock             | CECC 42200, Test 4.14, Test Ea, IEC 68-2-27, AEC-Q200 Test 13.<br>Acceleration = 490 m/s <sup>2</sup> (AEC: MIL-STD-202-Method 213),<br>Pulse duration = 11 ms,<br>Waveshape - half sine; Number of shocks = 3x6                                                                               | $ \delta V_{\text{N}} (1 \text{ mA})  < 10 \%$<br>No visible damage                                               |
| <b>Electrical Transient Conduction</b> | ISO-7637-1 Pulses            | AEC-Q200 Test 30: Test pulses 1 to 3.<br>Also other pulses - freestyle.                                                                                                                                                                                                                        | $ \delta V_{\text{N}} (1 \text{ mA})  < 10 \%$<br>No visible damage                                               |

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### Terminology

| Term                               | Symbol              | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated AC Voltage .....             | $V_{rms}$ .....     | Maximum continuous sinusoidal AC voltage (<5 % total harmonic distortion) which may be applied to the component under continuous operation conditions at +25 °C                                                                                                                                                                                                                                                                                                                                                                                                  |
| Rated DC Voltage.....              | $V_{dc}$ .....      | Maximum continuous DC voltage (<5 % ripple) which may be applied to the component under continuous operating conditions at +25 °C                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Supply Voltage.....                | $V$ .....           | The voltage by which the system is designated and to which certain operating characteristics of the system are referred; $V_{rms} = 1.1 \times V$                                                                                                                                                                                                                                                                                                                                                                                                                |
| Leakage Current.....               | $I_{dc}$ .....      | The current passing through the varistor at $V_{dc}$ and at +25 °C or at any other specified temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Varistor Voltage .....             | $V_n$ .....         | Voltage across the varistor measured at a given reference current ( $I_n$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Reference Current.....             | $I_n$ .....         | Reference current = 1 mA DC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Clamping Voltage .....             | $V_c$ .....         | The peak voltage developed across the varistor under standard atmospheric conditions, when passing an 8/20 $\mu s$ class current pulse                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Protection Level                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Class Current.....                 | $I_c$ .....         | A peak value of current which is 1/10 of the maximum peak current for 100 pulses at two per minute for the 8/20 $\mu s$ pulse                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Voltage Clamping Ratio.....        | $V_c/V_{app}$ ..... | A figure of merit measure of the varistor clamping effectiveness as defined by the symbols $V_c/V_{app}$ , where ( $V_{app} = V_{rms}$ or $V_{dc}$ )                                                                                                                                                                                                                                                                                                                                                                                                             |
| Jump Start Transient .....         | $V_{jump}$ .....    | The jump start transient results from the temporary application of an overvoltage in excess of the rated battery voltage. The circuit power supply may be subjected to a temporary overvoltage condition due to the voltage regulation failing or it may be deliberately generated when it becomes necessary to boost start the car.                                                                                                                                                                                                                             |
| Rated Single Pulse .....           | $W_{max}$ .....     | Energy which may be dissipated for a single 10/1000 $\mu s$ pulse of a maximum rated current, with rated AC voltage or rated DC voltage also applied, without causing device failure                                                                                                                                                                                                                                                                                                                                                                             |
| Transient Energy                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Load Dump Transient .....          | WLD .....           | Load Dump is a transient which occurs in automotive environments. It is an exponentially decaying positive voltage which occurs in the event of a battery disconnect while the alternator is still generating charging current with other loads remaining on the alternator circuit at the time of battery disconnect.                                                                                                                                                                                                                                           |
| Rated Peak Single Pulse.....       | $I_{max}$ .....     | Maximum peak current which may be applied for a single 8/20 $\mu s$ pulse, with rated line voltage also applied, without causing device failure                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Transient Current                  |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Rated Transient Average .....      | $P$ .....           | Maximum average power which may be dissipated due to a group of pulses occurring within a specified isolated time period, without causing device failure at 25 °C                                                                                                                                                                                                                                                                                                                                                                                                |
| Power Dissipation                  |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Capacitance.....                   | $C$ .....           | Capacitance between two terminals of the varistor measured @ 1 kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Non-linearity Exponent .....       | $\alpha$ .....      | A measure of varistor nonlinearity between two given operating currents, $I_n$ and $I_1$ as described by $I = k V \exp(a)$ , where: <ul style="list-style-type: none"> <li>- <math>k</math> is a device constant,</li> <li>- <math>I_1 &lt; I &lt; I_n</math> and</li> <li>- <math>a \log(I_1/I_n)/\log(V_1/V_n) = 1/\log(V_1/V_n)</math>, where:</li> <li>- <math>I_r</math> is reference current (1 mA) and <math>V_n</math> is varistor voltage</li> <li>- <math>I_1 = 10 I_n</math>, <math>V_1</math> is the voltage measured at <math>I_1</math></li> </ul> |
| Response Time.....                 | $t_r$ .....         | The time lag between application of a surge and varistor's "turn-on" conduction action                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Varistor Voltage Temperature ..... | TC .....            | $(V_n @ 85 ^\circ C - V_n @ 25 ^\circ C) / (V_n @ 25 ^\circ C) \times 60 ^\circ C \times 100$                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Coefficient                        |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Insulation Resistance .....        | IR.....             | Minimum resistance between shorted terminals and varistor surface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Isolation Voltage .....            |                     | The maximum peak voltage which may be applied under continuous operating conditions between the varistor terminations and any conducting mounting surface                                                                                                                                                                                                                                                                                                                                                                                                        |
| Operating Temperature .....        |                     | The range of ambient temperature for which the varistor is designed to operate continuously as defined by the temperature limits of its climatic category                                                                                                                                                                                                                                                                                                                                                                                                        |
| Climatic Category .....            | LCT/UCT/DHD .....   | LCT & UCT = Lower and Upper Category Temperature - the minimum and maximum ambient temperatures for which a varistor has been designed to operate continuously.<br>DHD = Dump Heat Test Duration                                                                                                                                                                                                                                                                                                                                                                 |
| Storage Temperature.....           |                     | Storage temperature range without voltage applied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Current/Energy Derating.....       |                     | Derating of maximum values when operated above UCT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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