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# SMLJ Transient Voltage Suppressor Diode Series

**BOURNS®**

## Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

| Unidirectional Device |              | Bidirectional Device |              | Breakdown Voltage V <sub>BR</sub> (Volts) |      |                       | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V <sub>RWM</sub> | Maximum Reverse Voltage @ I <sub>RSM</sub> | Maximum Reverse Surge Current |
|-----------------------|--------------|----------------------|--------------|-------------------------------------------|------|-----------------------|------------------------------|--------------------------------------------|--------------------------------------------|-------------------------------|
| Part Number           | Part Marking | Part Number          | Part Marking | Min.                                      | Max. | @ I <sub>T</sub> (mA) | V <sub>RWM</sub> (Volts)     | I <sub>R</sub> (μA)                        | V <sub>RSM</sub> (Volts)                   | I <sub>RSM</sub> (Amps)       |
| SMLJ5.0A              | HDE          | SMLJ5.0CA            | IDE          | 6.40                                      | 7.00 | 10                    | 5                            | 1000                                       | 9.2                                        | 326.00                        |
| SMLJ6.0A              | HDG          | SMLJ6.0CA            | IDG          | 6.67                                      | 7.37 | 10                    | 6                            | 1000                                       | 10.3                                       | 291.30                        |
| SMLJ6.5A              | HDK          | SMLJ6.5CA            | IDK          | 7.22                                      | 7.98 | 10                    | 6.5                          | 500                                        | 11.2                                       | 267.90                        |
| SMLJ7.0A              | HDM          | SMLJ7.0CA            | IDM          | 7.78                                      | 8.60 | 10                    | 7                            | 200                                        | 12                                         | 250.00                        |
| SMLJ7.5A              | HDP          | SMLJ7.5CA            | IDP          | 8.33                                      | 9.21 | 1                     | 7.5                          | 100                                        | 12.9                                       | 232.60                        |
| SMLJ8.0A              | HDR          | SMLJ8.0CA            | IDR          | 8.89                                      | 9.83 | 1                     | 8                            | 50                                         | 13.6                                       | 220.60                        |
| SMLJ8.5A              | HDT          | SMLJ8.5CA            | IDT          | 9.44                                      | 10.4 | 1                     | 8.5                          | 25                                         | 14.4                                       | 208.40                        |
| SMLJ9.0A              | HDV          | SMLJ9.0CA            | IDV          | 10.0                                      | 11.1 | 1                     | 9                            | 10                                         | 15.4                                       | 194.80                        |
| SMLJ10A               | HDX          | SMLJ10CA             | IDX          | 11.1                                      | 12.3 | 1                     | 10                           | 5                                          | 17                                         | 176.40                        |
| SMLJ11A               | HDZ          | SMLJ11CA             | IDZ          | 12.2                                      | 13.5 | 1                     | 11                           | 5                                          | 18.2                                       | 164.80                        |
| SMLJ12A               | HEE          | SMLJ12CA             | IEE          | 13.3                                      | 14.7 | 1                     | 12                           | 5                                          | 19.9                                       | 150.60                        |
| SMLJ13A               | HEG          | SMLJ13CA             | IEG          | 14.4                                      | 15.9 | 1                     | 13                           | 5                                          | 21.5                                       | 139.40                        |
| SMLJ14A               | HEK          | SMLJ14CA             | IEK          | 15.6                                      | 17.2 | 1                     | 14                           | 5                                          | 23.2                                       | 129.40                        |
| SMLJ15A               | HEM          | SMLJ15CA             | IEM          | 16.7                                      | 18.5 | 1                     | 15                           | 5                                          | 24.4                                       | 123.00                        |
| SMLJ16A               | HEP          | SMLJ16CA             | IEP          | 17.8                                      | 19.7 | 1                     | 16                           | 5                                          | 26                                         | 115.40                        |
| SMLJ17A               | HER          | SMLJ17CA             | IER          | 18.9                                      | 20.9 | 1                     | 17                           | 5                                          | 27.6                                       | 106.60                        |
| SMLJ18A               | HET          | SMLJ18CA             | IET          | 20.0                                      | 22.1 | 1                     | 18                           | 5                                          | 29.2                                       | 102.80                        |
| SMLJ20A               | HEV          | SMLJ20CA             | IEV          | 22.2                                      | 24.5 | 1                     | 20                           | 5                                          | 32.4                                       | 92.60                         |
| SMLJ22A               | HEX          | SMLJ22CA             | IEX          | 24.4                                      | 26.9 | 1                     | 22                           | 5                                          | 35.5                                       | 84.40                         |
| SMLJ24A               | HEZ          | SMLJ24CA             | IEZ          | 26.7                                      | 29.5 | 1                     | 24                           | 5                                          | 38.9                                       | 77.20                         |
| SMLJ26A               | HFE          | SMLJ26CA             | IFE          | 28.9                                      | 31.9 | 1                     | 26                           | 5                                          | 42.1                                       | 71.20                         |
| SMLJ28A               | HFG          | SMLJ28CA             | IFG          | 31.1                                      | 34.4 | 1                     | 28                           | 5                                          | 45.4                                       | 66.00                         |
| SMLJ30A               | HFK          | SMLJ30CA             | IFK          | 33.3                                      | 36.8 | 1                     | 30                           | 5                                          | 48.4                                       | 62.00                         |
| SMLJ33A               | HFM          | SMLJ33CA             | IFM          | 36.7                                      | 40.6 | 1                     | 33                           | 5                                          | 53.3                                       | 56.20                         |
| SMLJ36A               | HFP          | SMLJ36CA             | IFP          | 40                                        | 44.2 | 1                     | 36                           | 5                                          | 58.1                                       | 51.60                         |
| SMLJ40A               | HFR          | SMLJ40CA             | IFR          | 44.4                                      | 49.1 | 1                     | 40                           | 5                                          | 64.5                                       | 46.40                         |
| SMLJ43A               | HFT          | SMLJ43CA             | IFT          | 47.8                                      | 52.8 | 1                     | 43                           | 5                                          | 69.4                                       | 43.20                         |
| SMLJ45A               | HFV          | SMLJ45CA             | IFV          | 50                                        | 55.3 | 1                     | 45                           | 5                                          | 72.7                                       | 41.20                         |
| SMLJ48A               | HFX          | SMLJ48CA             | IFX          | 53.3                                      | 58.9 | 1                     | 48                           | 5                                          | 77.4                                       | 38.80                         |
| SMLJ51A               | HFZ          | SMLJ51CA             | IFZ          | 56.7                                      | 62.7 | 1                     | 51                           | 5                                          | 82.4                                       | 36.40                         |
| SMLJ54A               | HGE          | SMLJ54CA             | IGE          | 60                                        | 66.3 | 1                     | 54                           | 5                                          | 87.1                                       | 34.40                         |
| SMLJ58A               | HGG          | SMLJ58CA             | IGG          | 64.4                                      | 71.2 | 1                     | 58                           | 5                                          | 93.6                                       | 32.00                         |
| SMLJ60A               | HGK          | SMLJ60CA             | IGK          | 66.7                                      | 73.7 | 1                     | 60                           | 5                                          | 96.8                                       | 31.00                         |
| SMLJ64A               | HGM          | SMLJ64CA             | IGM          | 71.1                                      | 78.6 | 1                     | 64                           | 5                                          | 103                                        | 29.20                         |
| SMLJ70A               | HGP          | SMLJ70CA             | IGP          | 77.8                                      | 86.0 | 1                     | 70                           | 5                                          | 113                                        | 26.60                         |
| SMLJ75A               | HGR          | SMLJ75CA             | IGR          | 83.3                                      | 92.1 | 1                     | 75                           | 5                                          | 121                                        | 24.80                         |
| SMLJ78A               | HGT          | SMLJ78CA             | IGT          | 86.7                                      | 95.8 | 1                     | 78                           | 5                                          | 126                                        | 22.80                         |
| SMLJ85A               | HGV          | SMLJ85CA             | IGV          | 94.4                                      | 104  | 1                     | 85                           | 5                                          | 137                                        | 20.80                         |
| SMLJ90A               | HGX          | SMLJ90CA             | IGX          | 100                                       | 111  | 1                     | 90                           | 5                                          | 146                                        | 20.60                         |
| SMLJ100A              | HGZ          | SMLJ100CA            | IGZ          | 111                                       | 123  | 1                     | 100                          | 5                                          | 162                                        | 18.60                         |
| SMLJ110A              | HHE          | SMLJ110CA            | IHE          | 122                                       | 135  | 1                     | 110                          | 5                                          | 177                                        | 16.80                         |
| SMLJ120A              | HHG          | SMLJ120CA            | IHG          | 133                                       | 147  | 1                     | 120                          | 5                                          | 193                                        | 15.60                         |
| SMLJ130A              | HHH          | SMLJ130CA            | IHH          | 144                                       | 159  | 1                     | 130                          | 5                                          | 209                                        | 14.40                         |
| SMLJ150A              | HHM          | SMLJ150CA            | IHM          | 167                                       | 185  | 1                     | 150                          | 5                                          | 243                                        | 12.40                         |
| SMLJ160A              | HHP          | SMLJ160CA            | IHP          | 178                                       | 197  | 1                     | 160                          | 5                                          | 259                                        | 11.60                         |
| SMLJ170A              | HHR          | SMLJ170CA            | IHR          | 189                                       | 209  | 1                     | 170                          | 5                                          | 275                                        | 11.00                         |

### Notes:

- Suffix 'A' denotes a 5 % tolerance unidirectional device.
- Suffix 'CA' denotes a 5 % tolerance bidirectional device.
- For bidirectional devices with a V<sub>R</sub> of 10 volts or less, the I<sub>R</sub> limit is double.
- For unidirectional devices with a V<sub>F</sub> max. of 3.5 V at an I<sub>F</sub> of 35 A, 0.5 Sine Wave of 8.3 ms Pulse Width.

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## Product Dimensions



| Dimension | SMC (DO-214AB)                        |
|-----------|---------------------------------------|
| A         | $\frac{6.60 - 7.11}{(0.260 - 0.280)}$ |
| B         | $\frac{5.59 - 6.22}{(0.220 - 0.245)}$ |
| C         | $\frac{2.92 - 3.18}{(0.115 - 0.125)}$ |
| D         | $\frac{0.15 - 0.31}{(0.006 - 0.112)}$ |
| E         | $\frac{7.75 - 8.13}{(0.305 - 0.320)}$ |
| F         | $\frac{0.05 - 0.20}{(0.002 - 0.008)}$ |
| G         | $\frac{2.01 - 2.62}{(0.080 - 0.103)}$ |
| H         | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$ |

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

## Recommended Footprint



| Dimension | SMC (DO-214AB)         |
|-----------|------------------------|
| A (Max.)  | $\frac{4.69}{(0.185)}$ |
| B (Min.)  | $\frac{3.07}{(0.121)}$ |
| C (Min.)  | $\frac{1.52}{(0.060)}$ |

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

## Physical Specifications

Case .....Molded plastic per UL Class 94V-0  
 Polarity..... Cathode band indicates unidirectional device  
                     No cathode band indicates bidirectional device  
 Weight ..... 0.007 ounces / 0.21 grams

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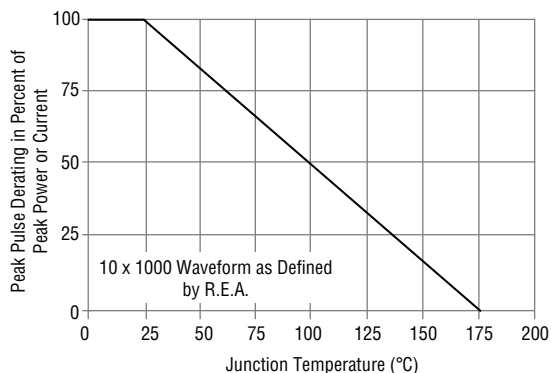
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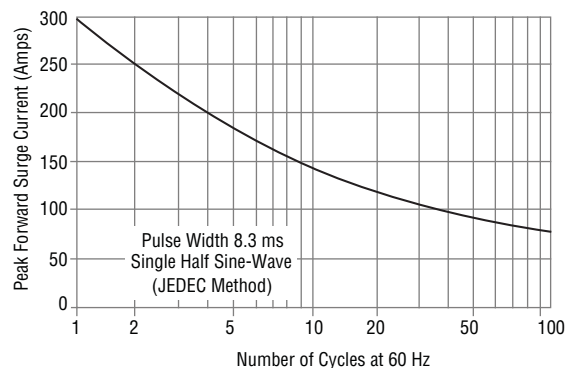
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## Rating & Characteristic Curves

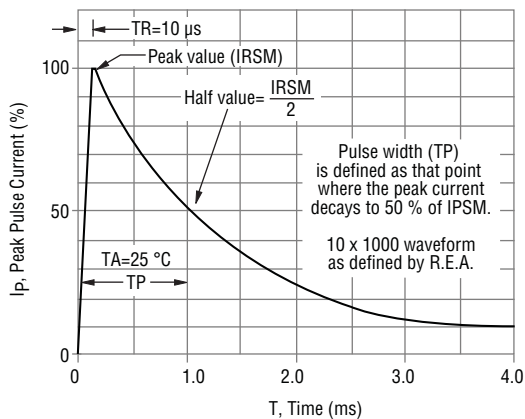
### Pulse Derating Curve



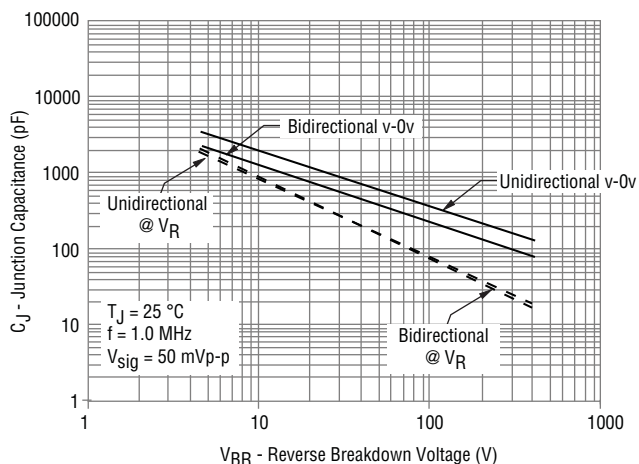
### Maximum Non-Repetitive Surge Current



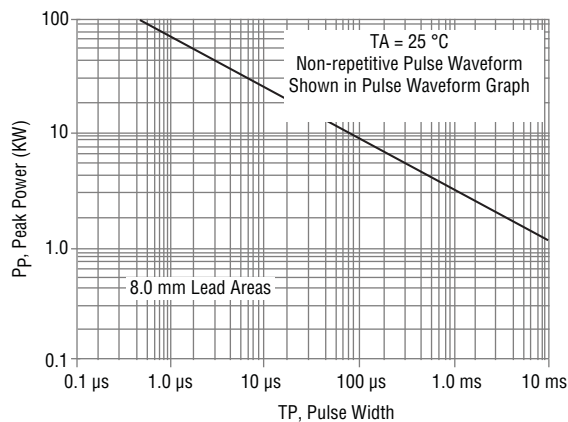
### Pulse Waveform



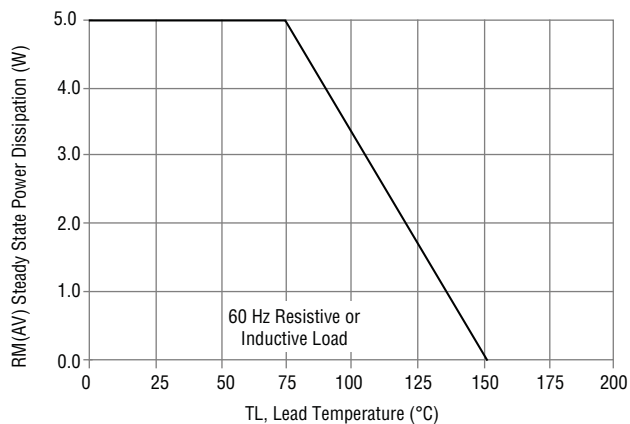
### Typical Junction Capacitance



### Pulse Rating Curve



### Steady State Power Derating Curve



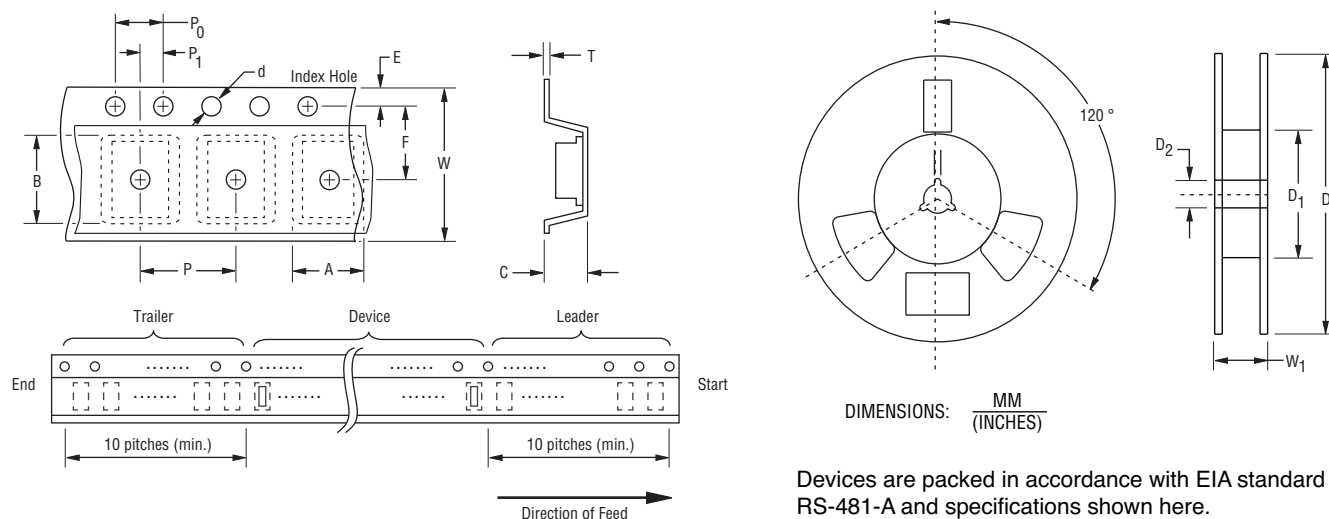
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## Packaging Information

The product will be dispensed in tape and reel format (see diagram below).



Devices are packed in accordance with EIA standard RS-481-A and specifications shown here.

| Item                   | Symbol         | SMC (DO-214AB)                      |
|------------------------|----------------|-------------------------------------|
| Carrier Width          | A              | $7.22 \pm 0.10$<br>(0.284 - 0.004)  |
| Carrier Length         | B              | $8.11 \pm 0.10$<br>(0.319 ± 0.004)  |
| Carrier Depth          | C              | $2.36 \pm 0.10$<br>(0.093 ± 0.004)  |
| Sprocket Hole          | d              | $1.55 \pm 0.05$<br>(0.061 ± 0.002)  |
| Reel Outside Diameter  | D              | $330$<br>(12.992)                   |
| Reel Inner Diameter    | D <sub>1</sub> | $50.0$<br>(1.969) MIN.              |
| Feed Hole Diameter     | D <sub>2</sub> | $13.0 \pm 0.20$<br>(0.512 ± 0.008)  |
| Sprocket Hole Position | E              | $1.75 \pm 0.10$<br>(0.069 ± 0.004)  |
| Punch Hole Position    | F              | $7.50 \pm 0.05$<br>(0.295 ± 0.002)  |
| Punch Hole Pitch       | P              | $4.00 \pm 0.10$<br>(0.157 ± 0.004)  |
| Sprocket Hole Pitch    | P <sub>0</sub> | $4.00 \pm 0.10$<br>(0.157 ± 0.004)  |
| Embossment Center      | P <sub>1</sub> | $2.00 \pm 0.05$<br>(0.079 ± 0.002)  |
| Overall Tape Thickness | T              | $0.30 \pm 0.10$<br>(0.012 ± 0.004)  |
| Tape Width             | W              | $16.00 \pm 0.20$<br>(0.630 ± 0.008) |
| Reel Width             | W <sub>1</sub> | $22.4$<br>(0.882) MAX.              |
| Quantity per Reel      | --             | 3,000                               |

REV. 02/13

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