

SMAJ Transient Voltage Suppressor Diode Series

BOURNS®

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

| Unidirectional Device | | Bidirectional Device | | Breakdown Voltage V _{BR} (Volts) | | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V _{RWM} | Maximum Clamping Voltage @ I _{pp} (10/1000 μs) | Maximum Peak Pulse Current (10/1000 μs) | Maximum Clamping Voltage @ I _{pp} (8/20 μs) | Maximum Peak Pulse Current (8/20 μs) |
|-----------------------|---------|----------------------|---------|---|------|-----------------------|------------------------------|--|---|---|--|--------------------------------------|
| Part No. | Marking | Part No. | Marking | Min. | Max. | @ I _T (mA) | V _{RWM} (V) | I _R (μA) | V _c (V) | I _{pp} (A) | V _c (V) | I _{pp} (A) |
| SMAJ5.0A | HE | SMAJ5.0CA | TE | 6.40 | 7.00 | 10 | 5.0 | 800 | 9.2 | 43.5 | 12.0 | 217.5 |
| SMAJ6.0A | HG | SMAJ6.0CA | TG | 6.67 | 7.37 | 10 | 6.0 | 800 | 10.3 | 38.8 | 13.4 | 194.0 |
| SMAJ6.5A | HK | SMAJ6.5CA | TK | 7.22 | 7.98 | 10 | 6.5 | 500 | 11.2 | 35.7 | 14.6 | 178.5 |
| SMAJ7.0A | HM | SMAJ7.0CA | TM | 7.78 | 8.60 | 10 | 7.0 | 200 | 12.0 | 33.3 | 15.6 | 166.5 |
| SMAJ7.5A | HP | SMAJ7.5CA | TP | 8.33 | 9.21 | 1.0 | 7.5 | 100 | 12.9 | 31.0 | 16.8 | 155.0 |
| SMAJ8.0A | HR | SMAJ8.0CA | TR | 8.89 | 9.83 | 1.0 | 8.0 | 50 | 13.6 | 29.4 | 17.7 | 147.0 |
| SMAJ8.5A | HT | SMAJ8.5CA | TT | 9.44 | 10.4 | 1.0 | 8.5 | 20 | 14.4 | 27.8 | 18.7 | 139.0 |
| SMAJ9.0A | HV | SMAJ9.0CA | TV | 10.0 | 11.1 | 1.0 | 9.0 | 10 | 15.4 | 26.0 | 20.0 | 130.0 |
| SMAJ10A | HX | SMAJ10CA | TX | 11.1 | 12.3 | 1.0 | 10 | 5 | 17.0 | 23.5 | 22.1 | 117.5 |
| SMAJ11A | HZ | SMAJ11CA | TZ | 12.2 | 13.5 | 1.0 | 11 | 1.0 | 18.2 | 22.0 | 23.7 | 110.0 |
| SMAJ12A | IE | SMAJ12CA | UE | 13.3 | 14.7 | 1.0 | 12 | 1.0 | 19.9 | 20.1 | 25.9 | 100.5 |
| SMAJ13A | IG | SMAJ13CA | UG | 14.4 | 15.9 | 1.0 | 13 | 1.0 | 21.5 | 18.6 | 28.0 | 93.0 |
| SMAJ14A | IK | SMAJ14CA | UK | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 23.2 | 17.2 | 30.2 | 86.0 |
| SMAJ15A | IM | SMAJ15CA | UM | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 24.4 | 16.4 | 31.7 | 82.0 |
| SMAJ16A | IP | SMAJ16CA | UP | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 26.0 | 15.4 | 33.8 | 77.0 |
| SMAJ17A | IR | SMAJ17CA | UR | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 27.6 | 14.5 | 35.9 | 72.5 |
| SMAJ18A | IT | SMAJ18CA | UT | 20.0 | 22.1 | 1.0 | 18 | 1.0 | 29.2 | 13.7 | 38.0 | 68.5 |
| SMAJ20A | IV | SMAJ20CA | UV | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 32.4 | 12.3 | 42.1 | 61.5 |
| SMAJ22A | IX | SMAJ22CA | UX | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 35.5 | 11.3 | 46.2 | 56.5 |
| SMAJ24A | IZ | SMAJ24CA | UZ | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 38.9 | 10.3 | 50.6 | 51.5 |
| SMAJ26A | JE | SMAJ26CA | VE | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 42.1 | 9.5 | 54.7 | 47.5 |
| SMAJ28A | JG | SMAJ28CA | VG | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 45.4 | 8.8 | 59.0 | 44.0 |
| SMAJ30A | JK | SMAJ30CA | VK | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 48.4 | 8.3 | 62.9 | 41.5 |
| SMAJ33A | JM | SMAJ33CA | VM | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 53.3 | 7.5 | 69.3 | 37.5 |
| SMAJ36A | JP | SMAJ36CA | VP | 40 | 44.2 | 1.0 | 36 | 1.0 | 58.1 | 6.9 | 75.5 | 34.5 |
| SMAJ40A | JR | SMAJ40CA | VR | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 64.5 | 6.2 | 83.9 | 31.0 |
| SMAJ43A | JT | SMAJ43CA | VT | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 69.4 | 5.8 | 90.2 | 29.0 |
| SMAJ45A | JV | SMAJ45CA | VV | 50 | 55.3 | 1.0 | 45 | 1.0 | 72.7 | 5.5 | 94.5 | 27.5 |
| SMAJ48A | JX | SMAJ48CA | VX | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 77.4 | 5.2 | 100.6 | 26.0 |
| SMAJ51A | JZ | SMAJ51CA | VZ | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 82.4 | 4.9 | 107.1 | 24.5 |
| SMAJ54A | RE | SMAJ54CA | WE | 60 | 66.3 | 1.0 | 54 | 1.0 | 87.1 | 4.6 | 113.2 | 23.0 |
| SMAJ58A | RG | SMAJ58CA | WG | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 93.6 | 4.3 | 121.7 | 21.5 |
| SMAJ60A | RK | SMAJ60CA | WK | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 96.8 | 4.1 | 125.8 | 20.5 |
| SMAJ64A | RM | SMAJ64CA | WM | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 103 | 3.9 | 133.9 | 19.5 |
| SMAJ70A | RP | SMAJ70CA | WP | 77.8 | 86.0 | 1.0 | 70 | 1.0 | 113 | 3.5 | 146.9 | 17.5 |
| SMAJ75A | RR | SMAJ75CA | WR | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 121 | 3.3 | 157.3 | 16.5 |
| SMAJ78A | RT | SMAJ78CA | WT | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 126 | 3.2 | 163.8 | 16.0 |
| SMAJ85A | RV | SMAJ85CA | WV | 94.4 | 104 | 1.0 | 85 | 1.0 | 137 | 2.9 | 178.1 | 14.5 |
| SMAJ90A | RX | SMAJ90CA | WX | 100 | 111 | 1.0 | 90 | 1.0 | 146 | 2.7 | 189.8 | 13.5 |
| SMAJ100A | RZ | SMAJ100CA | WZ | 111 | 123 | 1.0 | 100 | 1.0 | 162 | 2.5 | 210.6 | 12.5 |
| SMAJ110A | SE | SMAJ110CA | XE | 122 | 135 | 1.0 | 110 | 1.0 | 177 | 2.3 | 230.1 | 11.5 |
| SMAJ120A | SG | SMAJ120CA | XG | 133 | 147 | 1.0 | 120 | 1.0 | 193 | 2.1 | 250.9 | 10.5 |
| SMAJ130A | SK | SMAJ130CA | XK | 144 | 159 | 1.0 | 130 | 1.0 | 209 | 1.9 | 271.7 | 9.5 |
| SMAJ150A | SM | SMAJ150CA | XM | 167 | 185 | 1.0 | 150 | 1.0 | 243 | 1.6 | 315.9 | 8.0 |
| SMAJ160A | SP | SMAJ160CA | XP | 178 | 197 | 1.0 | 160 | 1.0 | 259 | 1.5 | 336.7 | 7.5 |
| SMAJ170A | SR | SMAJ170CA | XR | 189 | 209 | 1.0 | 170 | 1.0 | 275 | 1.5 | 357.5 | 7.5 |
| SMAJ180A | ST | SMAJ180CA | XT | 201 | 222 | 1.0 | 180 | 1.0 | 292 | 1.4 | 379.6 | 7.0 |
| SMAJ200A | SV | SMAJ200CA | XV | 224 | 247 | 1.0 | 200 | 1.0 | 324 | 1.2 | 421.2 | 6.0 |
| SMAJ220A | SX | SMAJ220CA | XX | 246 | 272 | 1.0 | 220 | 1.0 | 356 | 1.1 | 462.8 | 5.5 |
| SMAJ250A | SZ | SMAJ250CA | XZ | 279 | 309 | 1.0 | 250 | 1.0 | 405 | 1.0 | 526.5 | 5.0 |
| SMAJ300A | FE | SMAJ300CA | GE | 335 | 371 | 1.0 | 300 | 1.0 | 486 | 0.8 | 631.8 | 4.0 |
| SMAJ350A | FG | SMAJ350CA | GG | 391 | 432 | 1.0 | 350 | 1.0 | 567 | 0.7 | 737.1 | 3.5 |
| SMAJ400A | FK | SMAJ400CA | GK | 447 | 494 | 1.0 | 400 | 1.0 | 648 | 0.6 | 842.4 | 3.0 |
| SMAJ434A | 434U | SMAJ434CA | 434D | 485 | 535 | 1.0 | 434 | 1.0 | 698 | 0.6 | 907.4 | 2.9 |
| SMAJ440A | FM | SMAJ440CA | GM | 492 | 543 | 1.0 | 440 | 1.0 | 713 | 0.6 | 926.9 | 3.0 |
| SMAJ495A | 495U | SMAJ495CA | 495D | 522 | 578 | 1.0 | 495 | 1.0 | 760 | 0.5 | 988.0 | 2.6 |

Notes: 1. Suffix 'A' denotes a 5 % tolerance unidirectional device. 3. For bidirectional devices with a V_R of 10 volts or less, the I_R limit is double.
 2. Suffix 'CA' denotes a 5 % tolerance bidirectional device.

Specifications are subject to change without notice.

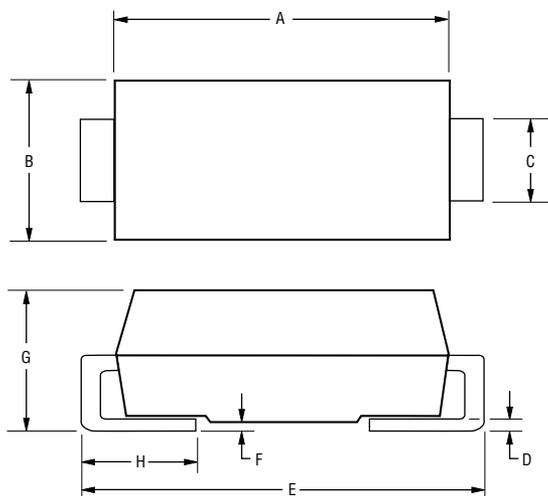
Users should verify actual device performance in their specific applications.

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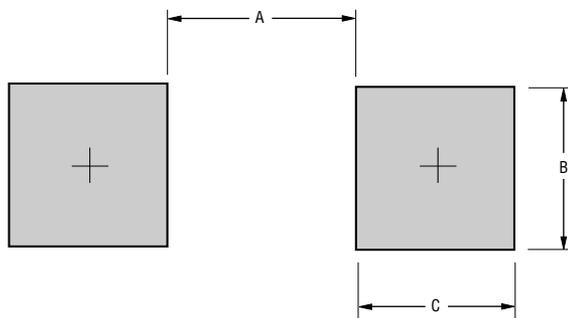


Product Dimensions



| Dimension | SMA (DO-214AC) |
|-----------|---------------------------------------|
| A | $\frac{3.99 - 4.50}{(0.157 - 0.177)}$ |
| B | $\frac{2.54 - 2.79}{(0.100 - 0.110)}$ |
| C | $\frac{1.25 - 1.65}{(0.049 - 0.065)}$ |
| D | $\frac{0.15 - 0.31}{(0.006 - 0.012)}$ |
| E | $\frac{4.93 - 5.28}{(0.194 - 0.208)}$ |
| F | $\frac{0.203}{(0.008)}$ MAX. |
| G | $\frac{1.98 - 2.29}{(0.078 - 0.090)}$ |
| H | $\frac{0.76 - 1.52}{(0.030 - 0.060)}$ |

Recommended Footprint



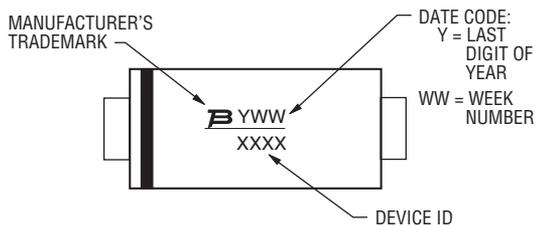
| Dimension | SMA (DO-214AC) |
|-----------|------------------------|
| A (Max.) | $\frac{2.70}{(0.106)}$ |
| B (Min.) | $\frac{2.10}{(0.083)}$ |
| C (Min.) | $\frac{1.27}{(0.050)}$ |

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

Physical Specifications

CaseMolded plastic per UL Class 94V-0
 Polarity..... Cathode band indicates unidirectional device
 No cathode band indicates bidirectional device
 Weight0.064 grams

Typical Part Marking



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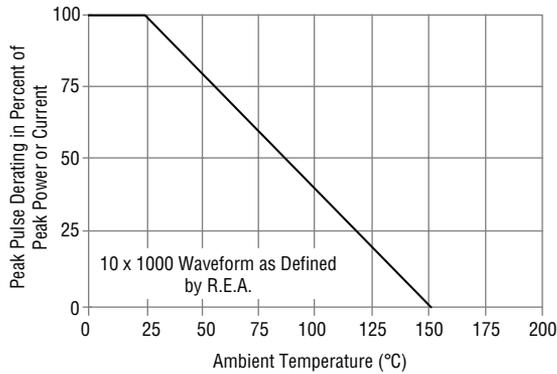
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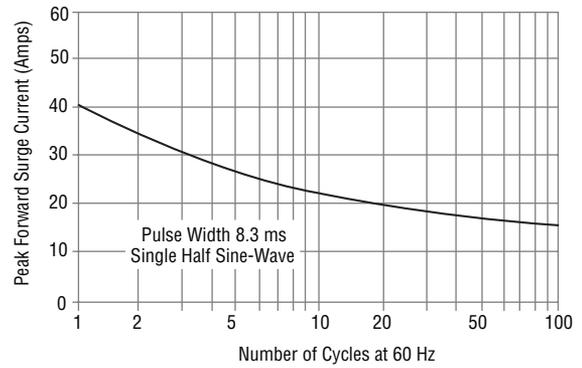


Rating & Characteristic Curves

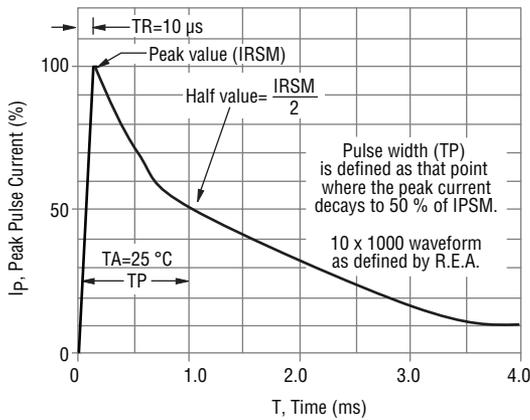
Pulse Derating Curve



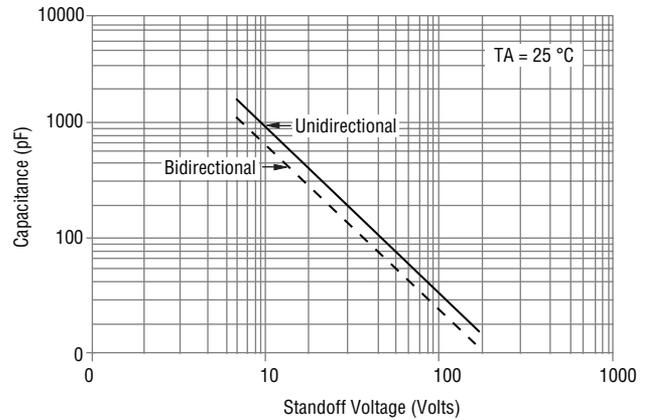
Maximum Non-Repetitive Surge Current



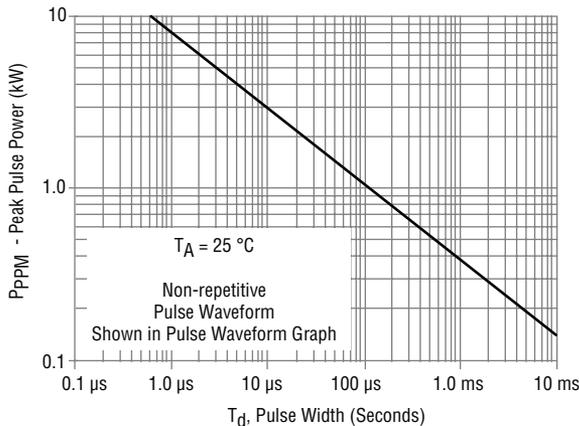
Pulse Waveform



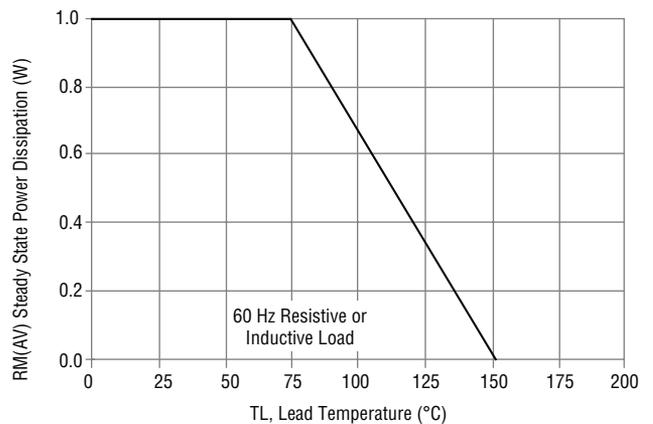
Typical Junction Capacitance



Pulse Rating Curve



Steady State Power Derating Curve



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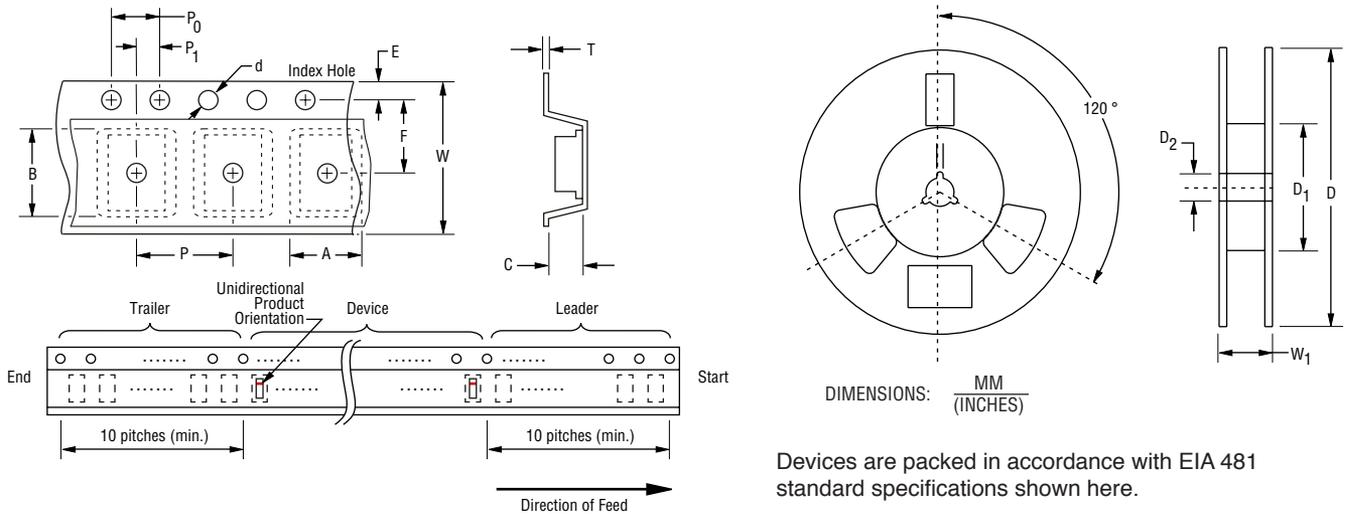
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Packaging Information

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



| Item | Symbol | SMA (DO-214AC) | |
|------------------------|----------------|--|------------------------|
| | | 7 Inch Reel | 13 Inch Reel |
| Carrier Width | A | $\frac{2.90 \pm 0.20}{(0.114 \pm 0.008)}$ | |
| Carrier Length | B | $\frac{5.50 \pm 0.20}{(0.217 \pm 0.008)}$ | |
| Carrier Depth | C | $\frac{2.26 \pm 0.20}{(0.089 \pm 0.008)}$ | |
| Sprocket Hole | d | $\frac{1.50 \pm 0.10}{(0.061 \pm 0.004)}$ | |
| Reel Outside Diameter | D | $\frac{178}{(7.008)}$ | $\frac{330}{(12.992)}$ |
| Reel Inner Diameter | D ₁ | $\frac{50.0}{(1.969)}$ MIN. | |
| Feed Hole Diameter | D ₂ | $\frac{13.0 \pm 0.20}{(0.512 \pm 0.008)}$ | |
| Sprocket Hole Position | E | $\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$ | |
| Punch Hole Position | F | $\frac{5.50 \pm 0.05}{(0.217 \pm 0.002)}$ | |
| Punch Hole Pitch | P | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$ | |
| Sprocket Hole Pitch | P ₀ | $\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$ | |
| Embossment Center | P ₁ | $\frac{2.00 \pm 0.05}{(0.079 \pm 0.002)}$ | |
| Overall Tape Thickness | T | $\frac{0.30 \pm 0.10}{(0.012 \pm 0.004)}$ | |
| Tape Width | W | $\frac{12.00 \pm 0.30}{(0.472 \pm 0.012)}$ | |
| Reel Width | W ₁ | $\frac{18.4}{(0.724)}$ MAX. | |
| Quantity per Reel | -- | 1,000 | 5,000 |

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