

SMAJ 5.0C ~ 188CA

SURFACE MOUNT BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR

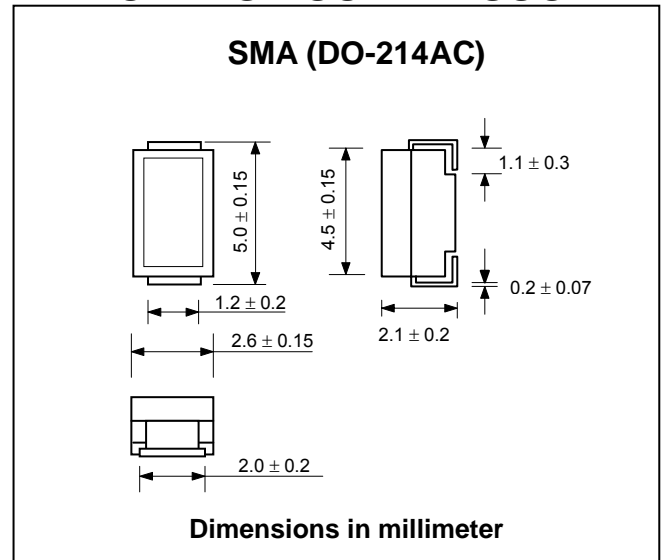
Stand-off Voltage : 5.0 to 188V
Peak Pulse Power : 400 W

FEATURES :

- * 400W peak pulse power capability with a 10/1000 μ s waveform
- * Optimized for LAN protection applications
- * Low clamping
- * Very fast response time
- * Pb / RoHS Free

MECHANICAL DATA

- * Case : SMA Molded plastic
- * Epoxy : UL94V-O rate flame retardant
- * Lead : Lead Formed for Surface Mount
- * Mounting position : Any
- * Weight : 0.064 grams



DEVICES FOR UNIPOLAR APPLICATIONS

For uni-directional without "C"
Electrical characteristics apply in both directions

MAXIMUM RATINGS

Rating at 25°C ambient temperature unless otherwise specified.

| Rating | Symbol | Value | Units |
|---|-----------------|---------------|-------|
| Peak Pulse Power Dissipation (Note1,2) Fig. 4 | P_{PPM} | Minimum 400 | W |
| Peak Pulse Current on 10/1000 μ s waveform (Note 1, Fig. 1) | I_{PPM} | See Table | A |
| Typical thermal resistance, junction to ambient | $R_{\theta JA}$ | 120 | °C/W |
| Typical thermal resistance, junction to leads | $R_{\theta JL}$ | 30 | °C/W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | - 55 to + 150 | °C |

Notes :

- (1) Non-repetitive Current pulse, per Fig. 3 and derated above $T_a = 25^\circ\text{C}$ per Fig. 1
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.
- (3) 8.3ms single half sine-wave duty cycle=4 pulses per minutes maximum.

ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified

| Type | Breakdown Voltage @ $I_T^{(1)}$ | | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V_{WM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I_{PPM} |
|-----------|---------------------------------|------|------------|------------------------------|------------------------------------|----------------------------------|--------------------------------------|
| | V_{BR} (V) | | I_T (mA) | | | | |
| | Min. | Max. | | | | | |
| SMAJ5.0C | 6.40 | 7.82 | 10 | 5.0 | 1600 | 41.7 | 9.6 |
| SMAJ5.0CA | 6.40 | 7.25 | 10 | 5.0 | 1600 | 43.5 | 9.2 |
| SMAJ6.0C | 6.67 | 8.15 | 10 | 6.0 | 1600 | 35.1 | 11.4 |
| SMAJ6.0CA | 6.67 | 7.37 | 10 | 6.0 | 1600 | 38.8 | 10.3 |
| SMAJ6.5C | 7.22 | 8.82 | 10 | 6.5 | 1000 | 32.5 | 12.3 |
| SMAJ6.5CA | 7.22 | 7.98 | 10 | 6.5 | 1000 | 35.7 | 11.2 |
| SMAJ7.0C | 7.78 | 9.51 | 10 | 7.0 | 400 | 30.1 | 13.3 |
| SMAJ7.0CA | 7.78 | 8.6 | 10 | 7.0 | 400 | 33.3 | 12.0 |
| SMAJ7.5C | 8.33 | 10.2 | 1.0 | 7.5 | 200 | 28.0 | 14.3 |
| SMAJ7.5CA | 8.33 | 9.21 | 1.0 | 7.5 | 200 | 31.0 | 12.9 |
| SMAJ8.0C | 8.89 | 10.9 | 1.0 | 8.0 | 100 | 26.7 | 15.0 |
| SMAJ8.0CA | 8.89 | 9.83 | 1.0 | 8.0 | 100 | 29.4 | 13.6 |
| SMAJ8.5C | 9.44 | 11.5 | 1.0 | 8.5 | 20 | 25.2 | 15.9 |
| SMAJ8.5CA | 9.44 | 10.4 | 1.0 | 8.5 | 20 | 27.8 | 14.4 |
| SMAJ9.0C | 10.0 | 12.2 | 1.0 | 9.0 | 10 | 23.7 | 16.9 |
| SMAJ9.0CA | 10.0 | 11.1 | 1.0 | 9.0 | 10 | 26.0 | 15.4 |
| SMAJ10C | 11.1 | 13.6 | 1.0 | 10 | 2.0 | 21.2 | 18.8 |
| SMAJ10CA | 11.1 | 12.3 | 1.0 | 10 | 2.0 | 23.5 | 17.0 |
| SMAJ11C | 12.2 | 14.9 | 1.0 | 11 | 1.0 | 19.9 | 20.1 |
| SMAJ11CA | 12.2 | 13.5 | 1.0 | 11 | 1.0 | 22.0 | 18.2 |
| SMAJ12C | 13.3 | 16.3 | 1.0 | 12 | 1.0 | 18.2 | 22.0 |
| SMAJ12CA | 13.3 | 14.7 | 1.0 | 12 | 1.0 | 20.1 | 19.9 |
| SMAJ13C | 14.4 | 17.6 | 1.0 | 13 | 1.0 | 16.8 | 23.8 |
| SMAJ13CA | 14.4 | 15.9 | 1.0 | 13 | 1.0 | 18.6 | 21.5 |
| SMAJ14C | 15.6 | 19.1 | 1.0 | 14 | 1.0 | 15.5 | 25.8 |
| SMAJ14CA | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 17.2 | 23.2 |
| SMAJ15C | 16.7 | 20.4 | 1.0 | 15 | 1.0 | 14.8 | 26.9 |
| SMAJ15CA | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 16.4 | 24.4 |
| SMAJ16C | 17.8 | 21.8 | 1.0 | 16 | 1.0 | 13.9 | 28.8 |
| SMAJ16CA | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 15.4 | 26.0 |
| SMAJ17C | 18.9 | 23.1 | 1.0 | 17 | 1.0 | 13.1 | 30.5 |
| SMAJ17CA | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 14.5 | 27.6 |
| SMAJ18C | 20.0 | 24.4 | 1.0 | 18 | 1.0 | 12.4 | 32.2 |
| SMAJ18CA | 20.0 | 22.1 | 1.0 | 18 | 1.0 | 13.7 | 29.2 |
| SMAJ20C | 22.2 | 27.1 | 1.0 | 20 | 1.0 | 11.2 | 35.8 |
| SMAJ20CA | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 12.3 | 32.4 |
| SMAJ22C | 24.4 | 29.8 | 1.0 | 22 | 1.0 | 10.2 | 39.4 |
| SMAJ22CA | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 11.3 | 35.5 |
| SMAJ24C | 26.7 | 32.6 | 1.0 | 24 | 1.0 | 9.3 | 43.0 |
| SMAJ24CA | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 10.3 | 38.9 |
| SMAJ26C | 28.9 | 35.3 | 1.0 | 26 | 1.0 | 8.6 | 46.6 |
| SMAJ26CA | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 9.5 | 42.1 |
| SMAJ28C | 31.1 | 38.0 | 1.0 | 28 | 1.0 | 8.0 | 50.0 |
| SMAJ28CA | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 8.8 | 45.4 |
| SMAJ30C | 33.3 | 40.7 | 1.0 | 30 | 1.0 | 7.5 | 53.5 |
| SMAJ30CA | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 8.3 | 48.4 |

ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified

| Type | Breakdown Voltage @ $I_T^{(1)}$ | | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ V_{WM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I_{PPM} |
|-----------|---------------------------------|------|------------|------------------------------|------------------------------------|----------------------------------|--------------------------------------|
| | V_{BR} (V) | | I_T (mA) | | | | |
| | Min. | Max. | | | | | |
| SMAJ33C | 36.7 | 44.9 | 1.0 | 33 | 1.0 | 6.8 | 59.0 |
| SMAJ33CA | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 7.5 | 53.3 |
| SMAJ36C | 40.0 | 48.9 | 1.0 | 36 | 1.0 | 6.2 | 64.3 |
| SMAJ36CA | 40.0 | 44.2 | 1.0 | 36 | 1.0 | 6.9 | 58.1 |
| SMAJ40C | 44.4 | 54.3 | 1.0 | 40 | 1.0 | 5.6 | 71.4 |
| SMAJ40CA | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 6.2 | 64.5 |
| SMAJ43C | 47.8 | 58.4 | 1.0 | 43 | 1.0 | 5.2 | 76.7 |
| SMAJ43CA | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 5.7 | 69.4 |
| SMAJ45C | 50.0 | 61.1 | 1.0 | 45 | 1.0 | 5.0 | 80.3 |
| SMAJ45CA | 50.0 | 55.3 | 1.0 | 45 | 1.0 | 5.5 | 72.7 |
| SMAJ48C | 53.3 | 65.1 | 1.0 | 48 | 1.0 | 4.7 | 85.5 |
| SMAJ48CA | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 5.2 | 77.4 |
| SMAJ51C | 56.7 | 69.3 | 1.0 | 51 | 1.0 | 4.4 | 91.1 |
| SMAJ51CA | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 4.9 | 82.4 |
| SMAJ54C | 60.0 | 73.3 | 1.0 | 54 | 1.0 | 4.2 | 96.3 |
| SMAJ54CA | 60.0 | 66.3 | 1.0 | 54 | 1.0 | 4.6 | 87.1 |
| SMAJ58C | 64.4 | 78.7 | 1.0 | 58 | 1.0 | 3.9 | 103 |
| SMAJ58CA | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 4.3 | 93.6 |
| SMAJ60C | 66.7 | 81.5 | 1.0 | 60 | 1.0 | 3.7 | 107 |
| SMAJ60CA | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 4.1 | 96.8 |
| SMAJ64C | 71.1 | 86.4 | 1.0 | 64 | 1.0 | 3.5 | 114 |
| SMAJ64CA | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 3.9 | 103 |
| SMAJ70C | 77.8 | 95.1 | 1.0 | 70 | 1.0 | 3.2 | 125 |
| SMAJ70CA | 77.8 | 86 | 1.0 | 70 | 1.0 | 3.5 | 113 |
| SMAJ75C | 83.3 | 102 | 1.0 | 75 | 1.0 | 3.0 | 134 |
| SMAJ75CA | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 3.3 | 121 |
| SMAJ78C | 86.7 | 106 | 1.0 | 78 | 1.0 | 2.9 | 139 |
| SMAJ78CA | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 3.2 | 126 |
| SMAJ85C | 94.4 | 115 | 1.0 | 85 | 1.0 | 2.0 | 151 |
| SMAJ85CA | 94.4 | 104 | 1.0 | 85 | 1.0 | 2.2 | 137 |
| SMAJ90C | 100 | 122 | 1.0 | 90 | 1.0 | 1.9 | 160 |
| SMAJ90CA | 100 | 111 | 1.0 | 90 | 1.0 | 2.1 | 146 |
| SMAJ100C | 111 | 136 | 1.0 | 100 | 1.0 | 1.7 | 179 |
| SMAJ100CA | 111 | 123 | 1.0 | 100 | 1.0 | 1.9 | 162 |
| SMAJ110C | 122 | 149 | 1.0 | 110 | 1.0 | 1.5 | 196 |
| SMAJ110CA | 122 | 135 | 1.0 | 110 | 1.0 | 1.7 | 177 |
| SMAJ120C | 133 | 163 | 1.0 | 120 | 1.0 | 1.4 | 214 |
| SMAJ120CA | 133 | 147 | 1.0 | 120 | 1.0 | 1.6 | 193 |
| SMAJ130C | 144 | 176 | 1.0 | 130 | 1.0 | 1.3 | 231 |
| SMAJ130CA | 144 | 159 | 1.0 | 130 | 1.0 | 1.4 | 209 |
| SMAJ150C | 167 | 204 | 1.0 | 150 | 1.0 | 1.1 | 268 |
| SMAJ150CA | 167 | 185 | 1.0 | 150 | 1.0 | 1.2 | 243 |
| SMAJ160C | 178 | 218 | 1.0 | 160 | 1.0 | 1.0 | 287 |
| SMAJ160CA | 178 | 197 | 1.0 | 160 | 1.0 | 1.2 | 259 |
| SMAJ170C | 189 | 231 | 1.0 | 170 | 1.0 | 0.99 | 304 |
| SMAJ170CA | 189 | 209 | 1.0 | 170 | 1.0 | 1.09 | 275 |
| SMAJ188C | 209 | 255 | 1.0 | 188 | 1.0 | 0.90 | 344 |
| SMAJ188CA | 209 | 231 | 1.0 | 188 | 1.0 | 0.91 | 328 |

Note: (1) Pulse test : $t_p \leq 50\text{ms}$.

RATING AND CHARACTERISTIC CURVES (SMAJ5.0C - SMAJ188CA)

FIG.1 - PULSE DERATING CURVE

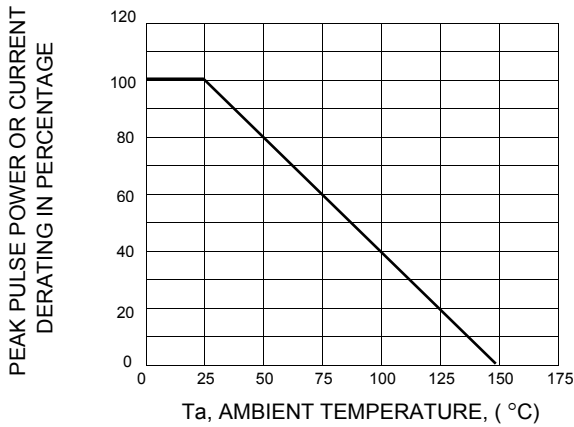


FIG.2 - TYPICAL JUNCTION CAPACITANCE

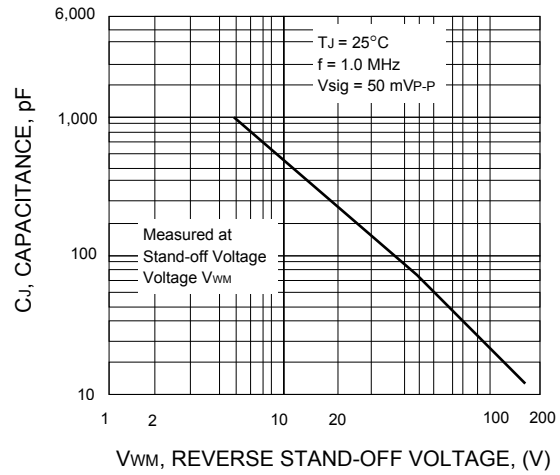


FIG.3 - PULSE WAVEFORM

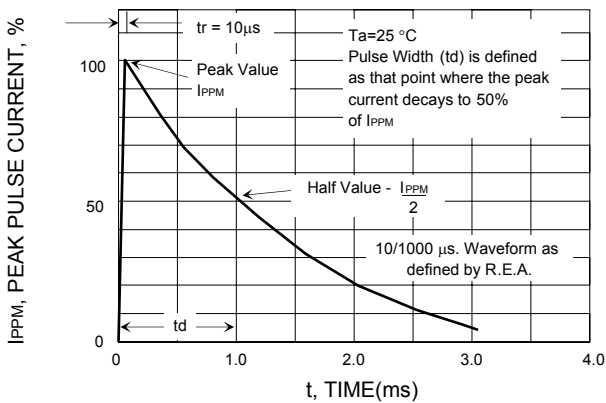


FIG.4 - PEAK PULSE POWER RATING CURVE

