

SMBJ5.0C - 440CA

Stand-off Voltage : 5.0 to 440V

Peak Pulse Power : 600 W

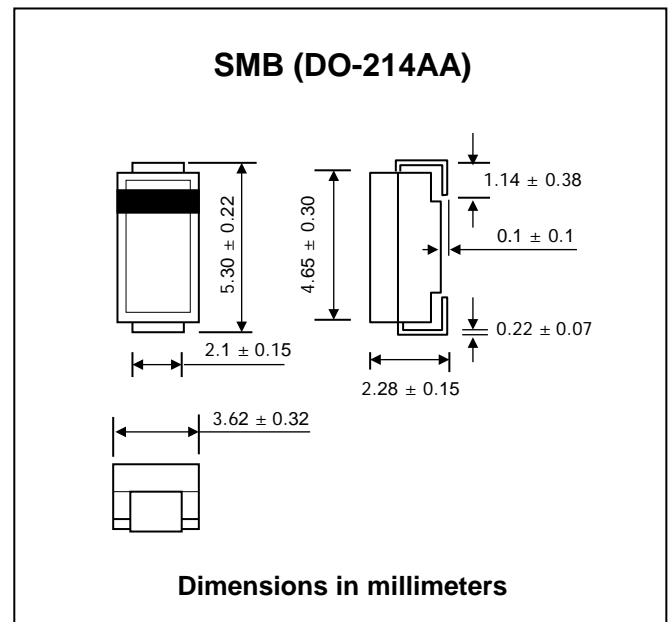
FEATURES :

- * 600W peak pulse power capability with a 10/1000 μ s waveform
- * Excellent clamping capability
- * Very fast response time
- * Pb / RoHS Free

MECHANICAL DATA

- * Case : SMB Molded plastic
- * Epoxy : UL94V-0 rate flame retardant
- * Lead : Lead Formed for Surface Mount
- * Mounting position : Any
- * Weight : 0.108 gram

SURFACE MOUNT BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR



MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

| Rating | Symbol | Value | Units |
|---|-----------------------------------|---------------|-------|
| Peak Pulse Power Dissipation on 10/1000 μ s waveform ⁽¹⁾⁽²⁾ (Fig. 3) | PPPM | Minimum 600 | W |
| Peak Pulse Current on 10/1000 μ s waveform ⁽¹⁾ (Fig. 4) | IPPM | See Table | A |
| Typical Thermal resistance, Junction to ambient | R θ JA | 100 | °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 Ta = 25 °C per Fig. 1
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.

ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

| Type | Breakdown Voltage @ $I_T^{(1)}$ | | | Reverse Stand-off Voltage | Maximum Reverse Leakage @ V_{WM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I_{PPM} |
|-----------|---------------------------------|------|-------|---------------------------|------------------------------------|----------------------------------|--------------------------------------|
| | V_{BR} (V) | | I_T | | | | |
| | Min. | Max. | | | | | |
| | | | (mA) | V_{WM} | I_R | I_{PPM} | V_C |
| | | | | (V) | (μA) | (A) | (V) |
| SMBJ5.0C | 6.40 | 7.82 | 10 | 5.0 | 1600 | 62.5 | 9.6 |
| SMBJ5.0CA | 6.40 | 7.25 | 10 | 5.0 | 1600 | 65.2 | 9.2 |
| SMBJ6.0C | 6.67 | 8.15 | 10 | 6.0 | 1600 | 52.6 | 11.4 |
| SMBJ6.0CA | 6.67 | 7.37 | 10 | 6.0 | 1600 | 58.3 | 10.3 |
| SMBJ6.5C | 7.22 | 8.82 | 10 | 6.5 | 1000 | 48.7 | 12.3 |
| SMBJ6.5CA | 7.22 | 7.98 | 10 | 6.5 | 1000 | 53.6 | 11.2 |
| SMBJ7.0C | 7.78 | 9.51 | 10 | 7.0 | 400 | 45.1 | 13.3 |
| SMBJ7.0CA | 7.78 | 8.6 | 10 | 7.0 | 400 | 50.0 | 12.0 |
| SMBJ7.5C | 8.33 | 10.2 | 1.0 | 7.5 | 200 | 42.0 | 14.3 |
| SMBJ7.5CA | 8.33 | 9.21 | 1.0 | 7.5 | 200 | 46.5 | 12.9 |
| SMBJ8.0C | 8.89 | 10.9 | 1.0 | 8.0 | 100 | 40.0 | 15.0 |
| SMBJ8.0CA | 8.89 | 9.83 | 1.0 | 8.0 | 100 | 44.1 | 13.6 |
| SMBJ8.5C | 9.44 | 11.5 | 1.0 | 8.5 | 20 | 37.7 | 15.9 |
| SMBJ8.5CA | 9.44 | 10.4 | 1.0 | 8.5 | 20 | 41.7 | 14.4 |
| SMBJ9.0C | 10.0 | 12.2 | 1.0 | 9.0 | 10 | 35.5 | 16.9 |
| SMBJ9.0CA | 10.0 | 11.1 | 1.0 | 9.0 | 10 | 39.0 | 15.4 |
| SMBJ10C | 11.1 | 13.6 | 1.0 | 10 | 2.0 | 31.9 | 18.8 |
| SMBJ10CA | 11.1 | 12.3 | 1.0 | 10 | 2.0 | 35.3 | 17.0 |
| SMBJ11C | 12.2 | 14.9 | 1.0 | 11 | 1.0 | 29.9 | 20.1 |
| SMBJ11CA | 12.2 | 13.5 | 1.0 | 11 | 1.0 | 33.0 | 18.2 |
| SMBJ12C | 13.3 | 16.3 | 1.0 | 12 | 1.0 | 27.3 | 22.0 |
| SMBJ12CA | 13.3 | 14.7 | 1.0 | 12 | 1.0 | 30.2 | 19.9 |
| SMBJ13C | 14.4 | 17.6 | 1.0 | 13 | 1.0 | 25.2 | 23.8 |
| SMBJ13CA | 14.4 | 15.9 | 1.0 | 13 | 1.0 | 27.9 | 21.5 |
| SMBJ14C | 15.6 | 19.1 | 1.0 | 14 | 1.0 | 23.3 | 25.8 |
| SMBJ14CA | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 25.8 | 23.2 |
| SMBJ15C | 16.7 | 20.4 | 1.0 | 15 | 1.0 | 22.3 | 26.9 |
| SMBJ15CA | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 24.0 | 24.4 |
| SMBJ16C | 17.8 | 21.8 | 1.0 | 16 | 1.0 | 20.8 | 28.8 |
| SMBJ16CA | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 23.1 | 26.0 |
| SMBJ17C | 18.9 | 23.1 | 1.0 | 17 | 1.0 | 19.7 | 30.5 |
| SMBJ17CA | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 21.7 | 27.6 |
| SMBJ18C | 20.0 | 24.4 | 1.0 | 18 | 1.0 | 18.6 | 32.2 |
| SMBJ18CA | 20.0 | 22.1 | 1.0 | 18 | 1.0 | 20.5 | 29.2 |
| SMBJ20C | 22.2 | 27.1 | 1.0 | 20 | 1.0 | 16.7 | 35.8 |
| SMBJ20CA | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 18.5 | 32.4 |
| SMBJ22C | 24.4 | 29.8 | 1.0 | 22 | 1.0 | 15.2 | 39.4 |
| SMBJ22CA | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 16.9 | 35.5 |
| SMBJ24C | 26.7 | 32.6 | 1.0 | 24 | 1.0 | 14.0 | 43.0 |
| SMBJ24CA | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 15.4 | 38.9 |
| SMBJ26C | 28.9 | 35.3 | 1.0 | 26 | 1.0 | 12.4 | 46.6 |
| SMBJ26CA | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 14.2 | 42.1 |
| SMBJ28C | 31.1 | 38 | 1.0 | 28 | 1.0 | 12.0 | 50.0 |
| SMBJ28CA | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 13.2 | 45.4 |
| SMBJ30C | 33.3 | 40.7 | 1.0 | 30 | 1.0 | 11.2 | 53.5 |
| SMBJ30CA | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 12.4 | 48.4 |
| SMBJ33C | 36.7 | 44.9 | 1.0 | 33 | 1.0 | 10.2 | 59.0 |
| SMBJ33CA | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 11.3 | 53.3 |
| SMBJ36C | 40.0 | 48.9 | 1.0 | 36 | 1.0 | 9.3 | 64.3 |
| SMBJ36CA | 40.0 | 44.2 | 1.0 | 36 | 1.0 | 10.3 | 58.1 |

ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

| Type | Breakdown Voltage @ $I_T^{(1)}$ | | | Reverse Stand-off Voltage | Maximum Reverse Leakage @ V_{WM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I_{PPM} |
|-----------|---------------------------------|------|-------|---------------------------|------------------------------------|----------------------------------|--------------------------------------|
| | V_{BR} (V) | | I_T | V_{WM} | I_R | I_{PPM} | V_C |
| | Min. | Max. | (mA) | (V) | (μA) | (A) | (V) |
| SMBJ40C | 44.4 | 54.3 | 1.0 | 40 | 1.0 | 8.4 | 71.4 |
| SMBJ40CA | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 9.3 | 64.5 |
| SMBJ43C | 47.8 | 58.4 | 1.0 | 43 | 1.0 | 7.8 | 76.7 |
| SMBJ43CA | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 8.6 | 69.4 |
| SMBJ45C | 50.0 | 61.1 | 1.0 | 45 | 1.0 | 7.5 | 80.3 |
| SMBJ45CA | 50.0 | 55.3 | 1.0 | 45 | 1.0 | 8.3 | 72.7 |
| SMBJ48C | 53.3 | 65.1 | 1.0 | 48 | 1.0 | 7.0 | 85.5 |
| SMBJ48CA | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 7.7 | 77.4 |
| SMBJ51C | 56.7 | 69.3 | 1.0 | 51 | 1.0 | 6.6 | 91.1 |
| SMBJ51CA | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 7.3 | 82.4 |
| SMBJ54C | 60.0 | 73.3 | 1.0 | 54 | 1.0 | 6.2 | 96.3 |
| SMBJ54CA | 60.0 | 66.3 | 1.0 | 54 | 1.0 | 6.9 | 87.1 |
| SMBJ58C | 64.4 | 78.7 | 1.0 | 58 | 1.0 | 5.8 | 103 |
| SMBJ58CA | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 6.4 | 93.6 |
| SMBJ60C | 66.7 | 81.5 | 1.0 | 60 | 1.0 | 5.6 | 107 |
| SMBJ60CA | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 6.2 | 96.8 |
| SMBJ64C | 71.1 | 86.9 | 1.0 | 64 | 1.0 | 5.3 | 114 |
| SMBJ64CA | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 5.8 | 103 |
| SMBJ70C | 77.8 | 95.1 | 1.0 | 70 | 1.0 | 4.8 | 125 |
| SMBJ70CA | 77.8 | 86 | 1.0 | 70 | 1.0 | 5.3 | 113 |
| SMBJ75C | 83.3 | 102 | 1.0 | 75 | 1.0 | 4.5 | 134 |
| SMBJ75CA | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 4.9 | 121 |
| SMBJ78C | 86.7 | 106 | 1.0 | 78 | 1.0 | 4.3 | 139 |
| SMBJ78CA | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 4.7 | 126 |
| SMBJ85C | 94.4 | 115 | 1.0 | 85 | 1.0 | 3.9 | 151 |
| SMBJ85CA | 94.4 | 104 | 1.0 | 85 | 1.0 | 4.4 | 137 |
| SMBJ90C | 100 | 122 | 1.0 | 90 | 1.0 | 3.8 | 160 |
| SMBJ90CA | 100 | 111 | 1.0 | 90 | 1.0 | 4.1 | 146 |
| SMBJ100C | 111 | 136 | 1.0 | 100 | 1.0 | 3.4 | 179 |
| SMBJ100CA | 111 | 123 | 1.0 | 100 | 1.0 | 3.7 | 162 |
| SMBJ110C | 122 | 149 | 1.0 | 110 | 1.0 | 3.0 | 196 |
| SMBJ110CA | 122 | 135 | 1.0 | 110 | 1.0 | 3.4 | 177 |
| SMBJ120C | 133 | 163 | 1.0 | 120 | 1.0 | 2.8 | 214 |
| SMBJ120CA | 133 | 147 | 1.0 | 120 | 1.0 | 3.1 | 193 |
| SMBJ130C | 144 | 176 | 1.0 | 130 | 1.0 | 2.6 | 231 |
| SMBJ130CA | 144 | 159 | 1.0 | 130 | 1.0 | 2.9 | 209 |
| SMBJ150C | 167 | 204 | 1.0 | 150 | 1.0 | 2.2 | 268 |
| SMBJ150CA | 167 | 185 | 1.0 | 150 | 1.0 | 2.5 | 243 |
| SMBJ160C | 178 | 218 | 1.0 | 160 | 1.0 | 2.1 | 287 |
| SMBJ160CA | 178 | 197 | 1.0 | 160 | 1.0 | 2.3 | 259 |
| SMBJ170C | 189 | 231 | 1.0 | 170 | 1.0 | 2.0 | 304 |
| SMBJ170CA | 189 | 209 | 1.0 | 170 | 1.0 | 2.2 | 275 |
| SMBJ188C | 209 | 255 | 1.0 | 188 | 1.0 | 1.7 | 344 |
| SMBJ188CA | 209 | 231 | 1.0 | 188 | 1.0 | 2.0 | 328 |
| SMBJ200C | 222 | 271 | 1.0 | 200 | 1.0 | 1.7 | 351 |
| SMBJ200CA | 222 | 246 | 1.0 | 200 | 1.0 | 1.9 | 323 |
| SMBJ220C | 245 | 299 | 1.0 | 220 | 1.0 | 1.6 | 386 |
| SMBJ220CA | 245 | 270 | 1.0 | 220 | 1.0 | 1.7 | 355 |

ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

| Type | Breakdown Voltage @ I_T ⁽¹⁾ | | | Reverse Stand-off Voltage | Maximum Reverse Leakage @ V_{WM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I_{PPM} |
|------------------|--|------|-------|---------------------------|------------------------------------|----------------------------------|--------------------------------------|
| | V_{BR} (V) | | I_T | V_{WM} | I_R | I_{PPM} | V_C |
| | Min. | Max. | (mA) | (V) | (μ A) | (A) | (V) |
| SMBJ250C | 278 | 339 | 1.0 | 250 | 1.0 | 1.4 | 439 |
| SMBJ250CA | 278 | 307 | 1.0 | 250 | 1.0 | 1.5 | 403 |
| SMBJ300C | 334 | 407 | 1.0 | 300 | 1.0 | 1.1 | 526 |
| SMBJ300CA | 334 | 368 | 1.0 | 300 | 1.0 | 1.2 | 484 |
| SMBJ350C | 389 | 475 | 1.0 | 350 | 1.0 | 1.0 | 614 |
| SMBJ350CA | 389 | 430 | 1.0 | 350 | 1.0 | 1.1 | 565 |
| SMBJ400C | 445 | 543 | 1.0 | 400 | 1.0 | 0.9 | 702 |
| SMBJ400CA | 445 | 491 | 1.0 | 400 | 1.0 | 0.9 | 645 |
| SMBJ440C | 489 | 597 | 1.0 | 440 | 1.0 | 0.8 | 772 |
| SMBJ440CA | 489 | 540 | 1.0 | 440 | 1.0 | 0.8 | 710 |

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

RATING AND CHARACTERISTIC CURVES (SMBJ5.0C - SMBJ440CA)

FIG.1 - PULSE DERATING CURVE

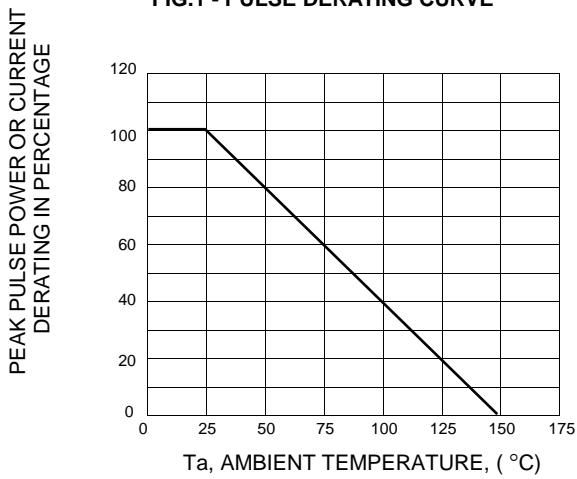


FIG.2 - TYPICAL JUNCTION CAPACITANCE

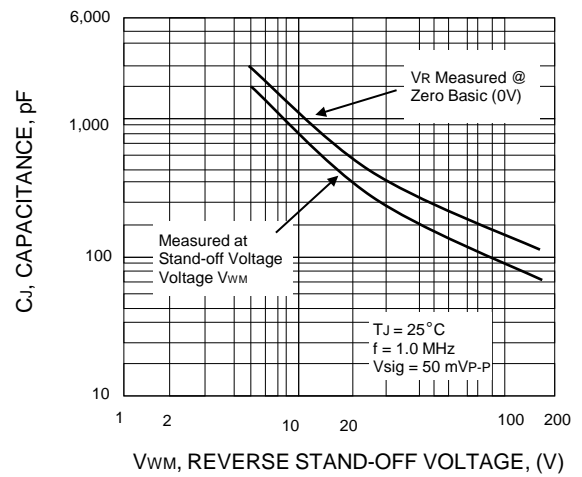


FIG.3 - PULSE WAVEFORM

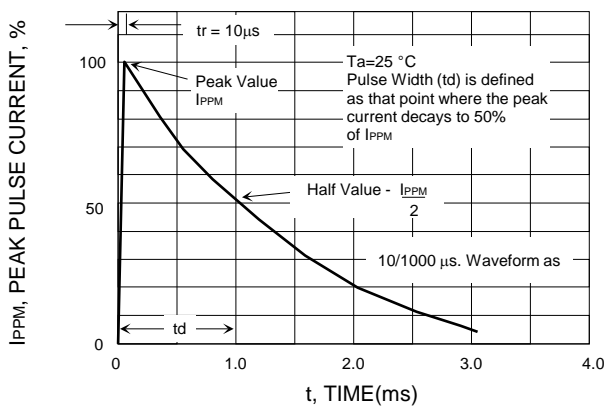
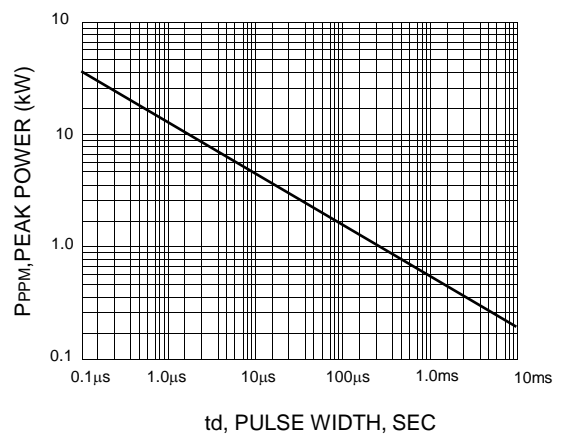


FIG.4 - PEAK PULSE POWER RATING CURVE



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