

SMBJ-LC5.0 - 188A

SURFACE MOUNT LOW CAPACITANCE TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Voltage : 5.0 to 188V

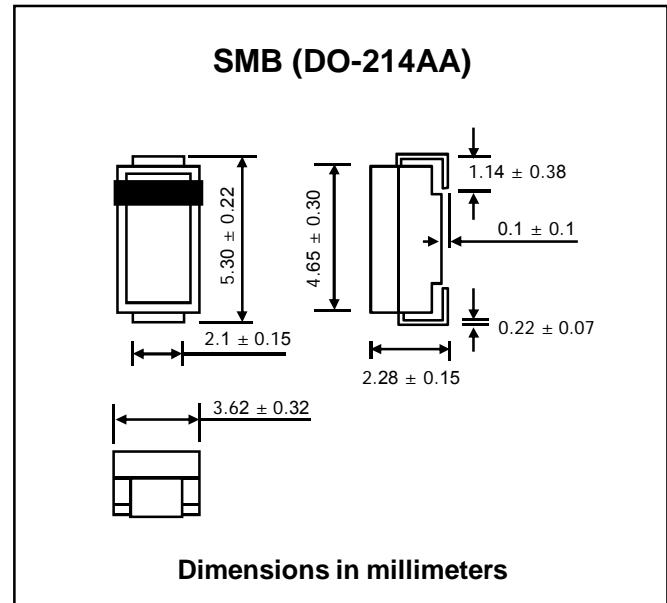
Peak Pulse Power : 600 W

FEATURES :

- * 600W peak pulse power capability with a 10/1000 μ s waveform
- * Low junction capacitance
- * 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
- * Polarity : Color band denotes cathode end
- * Mounting position : Any
- * Weight : 0.108 gram



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⁾ | P _{PPM} | Minimum 600 | W |
| Peak Pulse Current on 10/1000 μ s waveform ⁽¹⁾ | I _{PPM} | See Table | A |
| Typical Thermal resistance, Junction to ambient | R _{θJA} | 100 | °C/W |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | - 55 to + 150 | °C |

Notes :

- (1) Non-repetitive Current pulse and derated above Ta = 25 °C
- (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 temperature unless otherwise specified)

| Type No. | Breakdown Voltage ⁽¹⁾ @ I _T | | Reverse Stand-off Voltage | Maximum Reverse Leakage @ V _{RWM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I _{PPM} | Maximum Junction Capacitance @ 0 Volt | |
|-------------|---|-------|---------------------------|--|----------------------------------|---|---------------------------------------|------------------|
| | V _{BR} (V) | | | | | | | V _{RWM} |
| | Min. | Max. | (mA) | (V) | (μA) | (A) | (V) | pF |
| SMBJ-LC5.0 | 7.20 | 8.62 | 10 | 5.0 | 800 | 62.5 | 9.6 | 80 |
| SMBJ-LC5.0A | 7.20 | 7.87 | 10 | 5.0 | 800 | 65.2 | 9.2 | 80 |
| SMBJ-LC6.0 | 7.47 | 8.95 | 10 | 6.0 | 800 | 52.6 | 11.4 | 80 |
| SMBJ-LC6.0A | 7.47 | 8.17 | 10 | 6.0 | 800 | 58.3 | 10.3 | 80 |
| SMBJ-LC6.5 | 8.02 | 9.62 | 10 | 6.5 | 500 | 48.7 | 12.3 | 80 |
| SMBJ-LC6.5A | 8.02 | 8.78 | 10 | 6.5 | 500 | 53.6 | 11.2 | 80 |
| SMBJ-LC7.0 | 8.58 | 10.31 | 10 | 7.0 | 200 | 45.1 | 13.3 | 80 |
| SMBJ-LC7.0A | 8.58 | 9.40 | 10 | 7.0 | 200 | 50.0 | 12.0 | 80 |
| SMBJ-LC7.5 | 9.13 | 11.00 | 1.0 | 7.5 | 100 | 42.0 | 14.3 | 80 |
| SMBJ-LC7.5A | 9.13 | 10.01 | 1.0 | 7.5 | 100 | 46.5 | 12.9 | 80 |
| SMBJ-LC8.0 | 9.69 | 11.70 | 1.0 | 8.0 | 50 | 40.0 | 15.0 | 80 |
| SMBJ-LC8.0A | 9.69 | 10.63 | 1.0 | 8.0 | 50 | 44.1 | 13.6 | 80 |
| SMBJ-LC8.5 | 10.24 | 12.3 | 1.0 | 8.5 | 10 | 37.7 | 15.9 | 80 |
| SMBJ-LC8.5A | 10.24 | 11.2 | 1.0 | 8.5 | 10 | 41.7 | 14.4 | 80 |
| SMBJ-LC9.0 | 10.8 | 13.0 | 1.0 | 9.0 | 5.0 | 35.5 | 16.9 | 80 |
| SMBJ-LC9.0A | 10.8 | 11.9 | 1.0 | 9.0 | 5.0 | 39.0 | 15.4 | 80 |
| SMBJ-LC10 | 11.9 | 14.4 | 1.0 | 10 | 1.0 | 31.9 | 18.8 | 80 |
| SMBJ-LC10A | 11.9 | 13.1 | 1.0 | 10 | 1.0 | 35.3 | 17.0 | 80 |
| SMBJ-LC11 | 13.0 | 15.7 | 1.0 | 11 | 1.0 | 29.9 | 20.1 | 80 |
| SMBJ-LC11A | 13.0 | 14.3 | 1.0 | 11 | 1.0 | 33.0 | 18.2 | 80 |
| SMBJ-LC12 | 14.1 | 17.1 | 1.0 | 12 | 1.0 | 27.3 | 22.0 | 80 |
| SMBJ-LC12A | 14.1 | 15.5 | 1.0 | 12 | 1.0 | 30.2 | 19.9 | 80 |
| SMBJ-LC13 | 15.2 | 18.4 | 1.0 | 13 | 1.0 | 25.2 | 23.8 | 80 |
| SMBJ-LC13A | 15.2 | 16.7 | 1.0 | 13 | 1.0 | 27.9 | 21.5 | 80 |
| SMBJ-LC14 | 16.4 | 19.9 | 1.0 | 14 | 1.0 | 23.3 | 25.8 | 80 |
| SMBJ-LC14A | 16.4 | 18.0 | 1.0 | 14 | 1.0 | 25.8 | 23.2 | 80 |
| SMBJ-LC15 | 17.5 | 21.2 | 1.0 | 15 | 1.0 | 22.3 | 26.9 | 80 |
| SMBJ-LC15A | 17.5 | 19.3 | 1.0 | 15 | 1.0 | 24.0 | 24.4 | 80 |
| SMBJ-LC16 | 18.6 | 22.6 | 1.0 | 16 | 1.0 | 20.8 | 28.8 | 80 |
| SMBJ-LC16A | 18.6 | 20.5 | 1.0 | 16 | 1.0 | 23.1 | 26.0 | 80 |
| SMBJ-LC17 | 19.7 | 23.9 | 1.0 | 17 | 1.0 | 19.7 | 30.5 | 80 |
| SMBJ-LC17A | 19.7 | 21.7 | 1.0 | 17 | 1.0 | 21.7 | 27.6 | 80 |
| SMBJ-LC18 | 20.8 | 25.2 | 1.0 | 18 | 1.0 | 18.6 | 32.2 | 80 |
| SMBJ-LC18A | 20.8 | 22.9 | 1.0 | 18 | 1.0 | 20.5 | 29.2 | 80 |
| SMBJ-LC20 | 23.0 | 27.9 | 1.0 | 20 | 1.0 | 16.7 | 35.8 | 80 |
| SMBJ-LC20A | 23.0 | 25.3 | 1.0 | 20 | 1.0 | 18.5 | 32.4 | 80 |
| SMBJ-LC22 | 25.2 | 30.6 | 1.0 | 22 | 1.0 | 15.2 | 39.4 | 80 |
| SMBJ-LC22A | 25.2 | 27.7 | 1.0 | 22 | 1.0 | 16.9 | 35.5 | 80 |
| SMBJ-LC24 | 27.5 | 33.4 | 1.0 | 24 | 1.0 | 14.0 | 43.0 | 80 |
| SMBJ-LC24A | 27.5 | 30.3 | 1.0 | 24 | 1.0 | 15.4 | 38.9 | 80 |
| SMBJ-LC26 | 29.7 | 36.1 | 1.0 | 26 | 1.0 | 12.4 | 46.6 | 80 |
| SMBJ-LC26A | 29.7 | 32.7 | 1.0 | 26 | 1.0 | 14.2 | 42.1 | 80 |
| SMBJ-LC28 | 31.9 | 38.8 | 1.0 | 28 | 1.0 | 12.0 | 50.0 | 80 |
| SMBJ-LC28A | 31.9 | 35.2 | 1.0 | 28 | 1.0 | 13.2 | 45.4 | 80 |
| SMBJ-LC30 | 34.1 | 41.5 | 1.0 | 30 | 1.0 | 11.2 | 53.5 | 80 |
| SMBJ-LC30A | 34.1 | 37.6 | 1.0 | 30 | 1.0 | 12.4 | 48.4 | 80 |
| SMBJ-LC33 | 37.5 | 45.7 | 1.0 | 33 | 1.0 | 10.2 | 59.0 | 80 |
| SMBJ-LC33A | 37.5 | 41.4 | 1.0 | 33 | 1.0 | 11.3 | 53.3 | 80 |

ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temperature unless otherwise specified)

| Type No. | Breakdown Voltage ⁽¹⁾ @ I _T | | Reverse Stand-off Voltage | Maximum Reverse Leakage @ V _{RWM} | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ I _{PPM} | Maximum Junction Capacitance @ 0 Volt | |
|-------------|---|-------|---------------------------|--|----------------------------------|---|---------------------------------------|------------------|
| | V _{BR} (V) | | | | | | | V _{RWM} |
| | Min. | Max. | (mA) | (V) | (μA) | (A) | (V) | pF |
| SMBJ-LC36 | 40.8 | 49.7 | 1.0 | 36 | 1.0 | 9.3 | 64.3 | 80 |
| SMBJ-LC36A | 40.8 | 45.0 | 1.0 | 36 | 1.0 | 10.3 | 58.1 | 80 |
| SMBJ-LC40 | 45.2 | 55.1 | 1.0 | 40 | 1.0 | 8.4 | 71.4 | 80 |
| SMBJ-LC40A | 45.2 | 49.9 | 1.0 | 40 | 1.0 | 9.3 | 64.5 | 80 |
| SMBJ-LC43 | 48.6 | 59.2 | 1.0 | 43 | 1.0 | 7.8 | 76.7 | 80 |
| SMBJ-LC43A | 48.6 | 53.6 | 1.0 | 43 | 1.0 | 8.6 | 69.4 | 80 |
| SMBJ-LC45 | 50.8 | 61.9 | 1.0 | 45 | 1.0 | 7.5 | 80.3 | 80 |
| SMBJ-LC45A | 50.8 | 56.1 | 1.0 | 45 | 1.0 | 8.3 | 72.7 | 80 |
| SMBJ-LC48 | 54.1 | 65.9 | 1.0 | 48 | 1.0 | 7.0 | 85.5 | 80 |
| SMBJ-LC48A | 54.1 | 59.7 | 1.0 | 48 | 1.0 | 7.7 | 77.4 | 80 |
| SMBJ-LC51 | 57.5 | 70.1 | 1.0 | 51 | 1.0 | 6.6 | 91.1 | 80 |
| SMBJ-LC51A | 57.5 | 63.5 | 1.0 | 51 | 1.0 | 7.3 | 82.4 | 80 |
| SMBJ-LC54 | 60.8 | 74.1 | 1.0 | 54 | 1.0 | 6.2 | 96.3 | 80 |
| SMBJ-LC54A | 60.8 | 67.1 | 1.0 | 54 | 1.0 | 6.9 | 87.1 | 80 |
| SMBJ-LC58 | 65.2 | 79.5 | 1.0 | 58 | 1.0 | 5.8 | 103 | 80 |
| SMBJ-LC58A | 65.2 | 72.0 | 1.0 | 58 | 1.0 | 6.4 | 93.6 | 80 |
| SMBJ-LC60 | 67.5 | 82.3 | 1.0 | 60 | 1.0 | 5.6 | 107 | 80 |
| SMBJ-LC60A | 67.5 | 74.5 | 1.0 | 60 | 1.0 | 6.2 | 96.8 | 80 |
| SMBJ-LC64 | 71.9 | 87.7 | 1.0 | 64 | 1.0 | 5.3 | 114 | 80 |
| SMBJ-LC64A | 71.9 | 79.4 | 1.0 | 64 | 1.0 | 5.8 | 103 | 80 |
| SMBJ-LC70 | 78.6 | 95.9 | 1.0 | 70 | 1.0 | 4.8 | 125 | 80 |
| SMBJ-LC70A | 78.6 | 86.8 | 1.0 | 70 | 1.0 | 5.3 | 113 | 80 |
| SMBJ-LC75 | 84.1 | 102.8 | 1.0 | 75 | 1.0 | 4.5 | 134 | 80 |
| SMBJ-LC75A | 84.1 | 92.9 | 1.0 | 75 | 1.0 | 4.9 | 121 | 80 |
| SMBJ-LC78 | 87.5 | 106.8 | 1.0 | 78 | 1.0 | 4.3 | 139 | 80 |
| SMBJ-LC78A | 87.5 | 96.6 | 1.0 | 78 | 1.0 | 4.7 | 126 | 80 |
| SMBJ-LC85 | 95.2 | 115.8 | 1.0 | 85 | 1.0 | 3.9 | 151 | 80 |
| SMBJ-LC85A | 95.2 | 104.8 | 1.0 | 85 | 1.0 | 4.4 | 137 | 80 |
| SMBJ-LC90 | 100.8 | 122.8 | 1.0 | 90 | 1.0 | 3.8 | 160 | 80 |
| SMBJ-LC90A | 100.8 | 111.8 | 1.0 | 90 | 1.0 | 4.1 | 146 | 80 |
| SMBJ-LC100 | 111.8 | 136.8 | 1.0 | 100 | 1.0 | 3.4 | 179 | 80 |
| SMBJ-LC100A | 111.8 | 123.8 | 1.0 | 100 | 1.0 | 3.7 | 162 | 80 |
| SMBJ-LC110 | 122.8 | 149.8 | 1.0 | 110 | 1.0 | 3.0 | 196 | 80 |
| SMBJ-LC110A | 122.8 | 135.8 | 1.0 | 110 | 1.0 | 3.4 | 177 | 80 |
| SMBJ-LC120 | 133.8 | 163.8 | 1.0 | 120 | 1.0 | 2.8 | 214 | 80 |
| SMBJ-LC120A | 133.8 | 147.8 | 1.0 | 120 | 1.0 | 3.1 | 193 | 80 |
| SMBJ-LC130 | 144.8 | 176.8 | 1.0 | 130 | 1.0 | 2.6 | 231 | 80 |
| SMBJ-LC130A | 144.8 | 159.8 | 1.0 | 130 | 1.0 | 2.9 | 209 | 80 |
| SMBJ-LC150 | 167.8 | 204.8 | 1.0 | 150 | 1.0 | 2.2 | 268 | 80 |
| SMBJ-LC150A | 167.8 | 185.8 | 1.0 | 150 | 1.0 | 2.5 | 243 | 80 |
| SMBJ-LC160 | 178.8 | 218.8 | 1.0 | 160 | 1.0 | 2.1 | 287 | 80 |
| SMBJ-LC160A | 178.8 | 197.8 | 1.0 | 160 | 1.0 | 2.3 | 259 | 80 |
| SMBJ-LC170 | 189.8 | 231.8 | 1.0 | 170 | 1.0 | 2.0 | 304 | 80 |
| SMBJ-LC170A | 189.8 | 209.8 | 1.0 | 170 | 1.0 | 2.2 | 275 | 80 |
| SMBJ-LC188 | 209.8 | 255.8 | 1.0 | 188 | 1.0 | 1.7 | 344 | 80 |
| SMBJ-LC188A | 209.8 | 231.8 | 1.0 | 188 | 1.0 | 2.0 | 328 | 80 |

Notes:

(1) Pulse test : tp ≤ 50ms.

(2) "SMBJ-L" will be omitted in marking on the diode.

RATING AND CHARACTERISTIC CURVES (SMBJ-LC5.0 - SMBJ-LC188A)

FIG.1 - PULSE DERATING CURVE

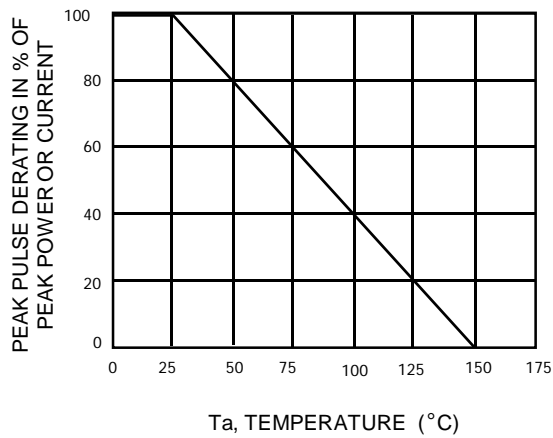


FIG.2 - PEAK PULSE POWER RATING CURVE

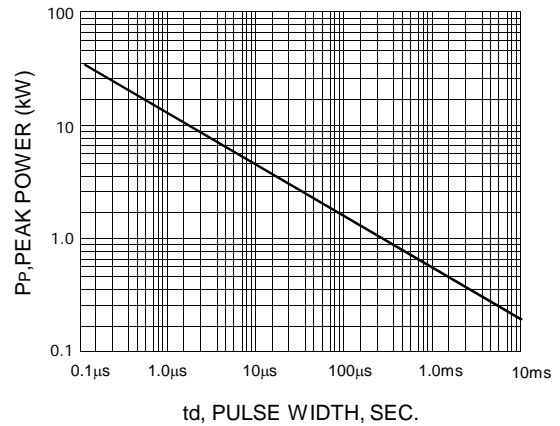


FIG.3 - PULSE WAVEFORM

