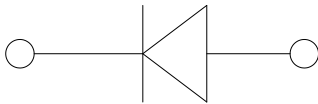
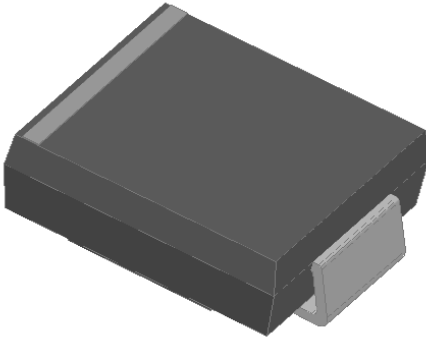


Surface Mount Transient Voltage Suppressor Diodes



Features

- Excellent clamping capability
- Low dynamic impedance
- Solder dip 260 °C max. 10 s, per JESD 22-B106

Mechanical Data

- **Package:** DO-214AB (SMC)
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Color band denotes cathode end

■Maximum Ratings (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Max |
|---|-----------------------------------|------|----------------|
| Peak power dissipation, with a 10/1000us waveform ⁽¹⁾ ⁽²⁾ | P _{PPM} | W | 1500 |
| Peak pulse current, with a 10/1000us waveform ⁽¹⁾ | I _{PPM} | A | See Next Table |
| Power dissipation, on infinite heat sink at T _L =75°C ⁽²⁾ | P _D | W | 6.5 |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽³⁾ | I _{FSM} | A | 200 |
| Operating junction and storage temperature range | T _J , T _{STG} | °C | -55 to +150 |

■Electrical Characteristics (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | VALUE |
|--|-----------------|------|---------|
| Maximum instantaneous forward voltage at 100A for unidirectional only ⁽⁴⁾ | V _{FM} | V | 3.5/5.0 |

■Thermal Characteristics (T_a=25°C Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | Conditions | VALUE |
|-----------------------------|----------------------------------|------|---------------------|-------|
| Thermal Resistance(Typical) | R _{θJ-A} ⁽⁵⁾ | °C/W | junction to ambient | 75 |
| | R _{θJ-L} | °C/W | junction to lead | 15 |

Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig.2.
- (2) Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal
- (3) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.
- (4) VF=3.5V Max for devices of VBR≤220v, and VF=5.0v Max for devices of VBR>220v.
- (5) Mounted on minimum recommended pad layout.



SMCJ SERIES

■Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage $V_{BR}@I_T$ | | | Maximum Reverse Leakage $I_R^{(3)}$ (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A) | Maximum Clamping Voltage V_c @ I_{PP} (V) |
|----------------------|--------------------------|--------------------------------|---------|------------------|--|---|--|---|
| | | Min(V) | Max (V) | $I_T^{(1)}$ (mA) | | | | |
| SMCJ5.0 | SMCJ5.0C | 6.40 | 7.30 | 10.0 | 1000 | 5.0 | 156.2 | 9.6 |
| SMCJ5.0A | SMCJ5.0CA ⁽⁴⁾ | 6.40 | 7.07 | 10.0 | 1000 | 5.0 | 163.0 | 9.2 |
| SMCJ6.0 | SMCJ6.0C | 6.67 | 8.15 | 10.0 | 1000 | 6.0 | 131.6 | 11.4 |
| SMCJ6.0A | SMCJ6.0CA | 6.67 | 7.37 | 10.0 | 1000 | 6.0 | 145.6 | 10.3 |
| SMCJ6.5 | SMCJ6.5C | 7.22 | 8.82 | 10.0 | 500 | 6.5 | 121.9 | 12.3 |
| SMCJ6.5A | SMCJ6.5CA | 7.22 | 7.98 | 10.0 | 500 | 6.5 | 133.9 | 11.2 |
| SMCJ7.0 | SMCJ7.0C | 7.78 | 9.51 | 10.0 | 200 | 7.0 | 112.7 | 13.3 |
| SMCJ7.0A | SMCJ7.0CA | 7.78 | 8.60 | 10.0 | 200 | 7.0 | 125.0 | 12.0 |
| SMCJ7.5 | SMCJ7.5C | 8.33 | 10.20 | 1.0 | 100 | 7.5 | 104.9 | 14.3 |
| SMCJ7.5A | SMCJ7.5CA | 8.33 | 9.21 | 1.0 | 100 | 7.5 | 116.3 | 12.9 |
| SMCJ8.0 | SMCJ8.0C | 8.89 | 10.90 | 1.0 | 50 | 8.0 | 100.0 | 15.0 |
| SMCJ8.0A | SMCJ8.0CA | 8.89 | 9.83 | 1.0 | 50 | 8.0 | 110.3 | 13.6 |
| SMCJ8.5 | SMCJ8.5C | 9.44 | 11.50 | 1.0 | 20 | 8.5 | 94.3 | 15.9 |
| SMCJ8.5A | SMCJ8.5CA | 9.44 | 10.40 | 1.0 | 20 | 8.5 | 104.2 | 14.4 |
| SMCJ9.0 | SMCJ9.0C | 10.00 | 12.20 | 1.0 | 10 | 9.0 | 88.7 | 16.9 |
| SMCJ9.0A | SMCJ9.0CA | 10.00 | 11.10 | 1.0 | 10 | 9.0 | 97.4 | 15.4 |
| SMCJ10 | SMCJ10C | 11.10 | 13.60 | 1.0 | 5 | 10.0 | 79.8 | 18.8 |
| SMCJ10A | SMCJ10CA | 11.10 | 12.30 | 1.0 | 5 | 10.0 | 88.2 | 17.0 |
| SMCJ11 | SMCJ11C | 12.20 | 14.90 | 1.0 | 5 | 11.0 | 74.6 | 20.1 |
| SMCJ11A | SMCJ11CA | 12.20 | 13.50 | 1.0 | 5 | 11.0 | 82.4 | 18.2 |
| SMCJ12 | SMCJ12C | 13.30 | 16.30 | 1.0 | 5 | 12.0 | 68.2 | 22.0 |
| SMCJ12A | SMCJ12CA | 13.30 | 14.70 | 1.0 | 5 | 12.0 | 75.4 | 19.9 |
| SMCJ13 | SMCJ13C | 14.40 | 17.60 | 1.0 | 5 | 13.0 | 63.0 | 23.8 |
| SMCJ13A | SMCJ13CA | 14.40 | 15.90 | 1.0 | 5 | 13.0 | 69.8 | 21.5 |
| SMCJ14 | SMCJ14C | 15.60 | 19.10 | 1.0 | 5 | 14.0 | 58.1 | 25.8 |
| SMCJ14A | SMCJ14CA | 15.60 | 17.20 | 1.0 | 5 | 14.0 | 64.7 | 23.2 |
| SMCJ15 | SMCJ15C | 16.70 | 20.40 | 1.0 | 5 | 15.0 | 55.7 | 26.9 |
| SMCJ15A | SMCJ15CA | 16.70 | 18.50 | 1.0 | 5 | 15.0 | 61.5 | 24.4 |
| SMCJ16 | SMCJ16C | 17.80 | 21.80 | 1.0 | 5 | 16.0 | 52.1 | 28.8 |
| SMCJ16A | SMCJ16CA | 17.80 | 19.70 | 1.0 | 5 | 16.0 | 57.7 | 26.0 |
| SMCJ17 | SMCJ17C | 18.90 | 23.10 | 1.0 | 5 | 17.0 | 49.2 | 30.5 |
| SMCJ17A | SMCJ17CA | 18.90 | 20.90 | 1.0 | 5 | 17.0 | 54.3 | 27.6 |
| SMCJ18 | SMCJ18C | 20.00 | 24.40 | 1.0 | 5 | 18.0 | 46.5 | 32.2 |
| SMCJ18A | SMCJ18CA | 20.00 | 22.10 | 1.0 | 5 | 18.0 | 51.4 | 29.2 |
| SMCJ19 | SMCJ19C | 21.10 | 25.70 | 1.0 | 5 | 19.0 | 44.1 | 34.0 |
| SMCJ19A | SMCJ19CA | 21.10 | 23.30 | 1.0 | 5 | 19.0 | 48.7 | 30.8 |
| SMCJ20 | SMCJ20C | 22.20 | 27.10 | 1.0 | 5 | 20.0 | 41.9 | 35.8 |
| SMCJ20A | SMCJ20CA | 22.20 | 24.50 | 1.0 | 5 | 20.0 | 46.3 | 32.4 |
| SMCJ22 | SMCJ22C | 24.40 | 29.80 | 1.0 | 5 | 22.0 | 38.1 | 39.4 |
| SMCJ22A | SMCJ22CA | 24.40 | 26.90 | 1.0 | 5 | 22.0 | 42.3 | 35.5 |



SMCJ SERIES

■Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage $V_{BR}@I_T$ | | | Maximum Reverse Leakage $I_R^{(3)}$ (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A) | Maximum Clamping Voltage V_c @ I_{PP} (V) |
|----------------------|---------------------|--------------------------------|---------|------------------|--|---|--|---|
| | | Min(V) | Max (V) | $I_T^{(1)}$ (mA) | | | | |
| SMCJ24 | SMCJ24C | 26.70 | 32.60 | 1.0 | 5 | 24.0 | 34.9 | 43.0 |
| SMCJ24A | SMCJ24CA | 26.70 | 29.50 | 1.0 | 5 | 24.0 | 38.6 | 38.9 |
| SMCJ26 | SMCJ26C | 28.90 | 35.30 | 1.0 | 5 | 26.0 | 32.2 | 46.6 |
| SMCJ26A | SMCJ26CA | 28.90 | 31.90 | 1.0 | 5 | 26.0 | 35.6 | 42.1 |
| SMCJ28 | SMCJ28C | 31.10 | 38.00 | 1.0 | 5 | 28.0 | 30.0 | 50.0 |
| SMCJ28A | SMCJ28CA | 31.10 | 34.40 | 1.0 | 5 | 28.0 | 33.0 | 45.4 |
| SMCJ30 | SMCJ30C | 33.30 | 40.70 | 1.0 | 5 | 30.0 | 28.0 | 53.5 |
| SMCJ30A | SMCJ30CA | 33.30 | 36.80 | 1.0 | 5 | 30.0 | 31.0 | 48.4 |
| SMCJ33 | SMCJ33C | 36.70 | 44.90 | 1.0 | 5 | 33.0 | 25.4 | 59.0 |
| SMCJ33A | SMCJ33CA | 36.70 | 40.60 | 1.0 | 5 | 33.0 | 28.1 | 53.3 |
| SMCJ36 | SMCJ36C | 40.00 | 48.90 | 1.0 | 5 | 36.0 | 23.3 | 64.3 |
| SMCJ36A | SMCJ36CA | 40.00 | 44.20 | 1.0 | 5 | 36.0 | 25.8 | 58.1 |
| SMCJ40 | SMCJ40C | 44.40 | 54.30 | 1.0 | 5 | 40.0 | 21.0 | 71.4 |
| SMCJ40A | SMCJ40CA | 44.40 | 49.10 | 1.0 | 5 | 40.0 | 23.3 | 64.5 |
| SMCJ43 | SMCJ43C | 47.80 | 58.40 | 1.0 | 5 | 43.0 | 19.6 | 76.7 |
| SMCJ43A | SMCJ43CA | 47.80 | 52.80 | 1.0 | 5 | 43.0 | 21.6 | 69.4 |
| SMCJ45 | SMCJ45C | 50.00 | 61.10 | 1.0 | 5 | 45.0 | 18.7 | 80.3 |
| SMCJ45A | SMCJ45CA | 50.00 | 55.30 | 1.0 | 5 | 45.0 | 20.6 | 72.7 |
| SMCJ48 | SMCJ48C | 53.30 | 65.10 | 1.0 | 5 | 48.0 | 17.5 | 85.5 |
| SMCJ48A | SMCJ48CA | 53.30 | 58.90 | 1.0 | 5 | 48.0 | 19.4 | 77.4 |
| SMCJ51 | SMCJ51C | 56.70 | 69.30 | 1.0 | 5 | 51.0 | 16.4 | 91.1 |
| SMCJ51A | SMCJ51CA | 56.70 | 62.70 | 1.0 | 5 | 51.0 | 18.2 | 82.4 |
| SMCJ54 | SMCJ54C | 60.00 | 73.30 | 1.0 | 5 | 54.0 | 15.5 | 96.3 |
| SMCJ54A | SMCJ54CA | 60.00 | 66.30 | 1.0 | 5 | 54.0 | 17.2 | 87.1 |
| SMCJ58 | SMCJ58C | 64.40 | 78.70 | 1.0 | 5 | 58.0 | 14.5 | 103.0 |
| SMCJ58A | SMCJ58CA | 64.40 | 71.20 | 1.0 | 5 | 58.0 | 16.0 | 93.6 |
| SMCJ60 | SMCJ60C | 66.70 | 81.50 | 1.0 | 5 | 60.0 | 14.0 | 107.0 |
| SMCJ60A | SMCJ60CA | 66.70 | 73.70 | 1.0 | 5 | 60.0 | 15.5 | 96.8 |
| SMCJ64 | SMCJ64C | 71.10 | 86.90 | 1.0 | 5 | 64.0 | 13.1 | 114.0 |
| SMCJ64A | SMCJ64CA | 71.10 | 78.60 | 1.0 | 5 | 64.0 | 14.5 | 103.0 |
| SMCJ70 | SMCJ70C | 77.80 | 95.10 | 1.0 | 5 | 70.0 | 12.0 | 125.0 |
| SMCJ70A | SMCJ70CA | 77.80 | 86.00 | 1.0 | 5 | 70.0 | 13.3 | 113.0 |
| SMCJ75 | SMCJ75C | 83.30 | 102.00 | 1.0 | 5 | 75.0 | 11.2 | 134.0 |
| SMCJ75A | SMCJ75CA | 83.30 | 92.10 | 1.0 | 5 | 75.0 | 12.4 | 121.0 |
| SMCJ78 | SMCJ78C | 86.70 | 106.00 | 1.0 | 5 | 78.0 | 10.8 | 139.0 |
| SMCJ78A | SMCJ78CA | 86.70 | 95.80 | 1.0 | 5 | 78.0 | 11.9 | 126.0 |
| SMCJ80 | SMCJ80C | 88.96 | 108.80 | 1.0 | 5 | 80.0 | 10.4 | 143.2 |
| SMCJ80A | SMCJ80CA | 88.80 | 97.60 | 1.0 | 5 | 80.0 | 11.6 | 129.6 |



SMCJ SERIES

■Electrical Characteristics (TA=25°C unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage $V_{BR}@I_T$ | | | Maximum Reverse Leakage $I_R^{(3)}$ (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A) | Maximum Clamping Voltage V_c @ I_{PP} (V) |
|-------------------|------------------|--------------------------------|---------|------------------|---|--|--|---|
| | | Min(V) | Max (V) | $I_T^{(1)}$ (mA) | | | | |
| SMCJ85 | SMCJ85C | 94.40 | 115.00 | 1.0 | 5 | 85.0 | 9.9 | 151.0 |
| SMCJ85A | SMCJ85CA | 94.40 | 104.00 | 1.0 | 5 | 85.0 | 10.9 | 137.0 |
| SMCJ90 | SMCJ90C | 100.00 | 122.00 | 1.0 | 5 | 90.0 | 9.4 | 160.0 |
| SMCJ90A | SMCJ90CA | 100.00 | 111.00 | 1.0 | 5 | 90.0 | 10.3 | 146.0 |
| SMCJ100 | SMCJ100C | 111.00 | 136.00 | 1.0 | 5 | 100.0 | 8.4 | 179.0 |
| SMCJ100A | SMCJ100CA | 111.00 | 123.00 | 1.0 | 5 | 100.0 | 9.3 | 162.0 |
| SMCJ110 | SMCJ110C | 122.00 | 149.00 | 1.0 | 5 | 111.0 | 7.7 | 196.0 |
| SMCJ110A | SMCJ110CA | 122.00 | 135.00 | 1.0 | 5 | 110.0 | 8.5 | 177.0 |
| SMCJ120 | SMCJ120C | 133.00 | 163.00 | 1.0 | 5 | 120.0 | 7.0 | 214.0 |
| SMCJ120A | SMCJ120CA | 133.00 | 147.00 | 1.0 | 5 | 120.0 | 7.8 | 193.0 |
| SMCJ130 | SMCJ130C | 144.00 | 176.00 | 1.0 | 5 | 130.0 | 6.5 | 231.0 |
| SMCJ130A | SMCJ130CA | 144.00 | 159.00 | 1.0 | 5 | 130.0 | 7.2 | 209.0 |
| SMCJ140 | SMCJ140C | 155.70 | 190.40 | 1.0 | 5 | 140.0 | 6.0 | 250.6 |
| SMCJ140A | SMCJ140CA | 155.00 | 171.00 | 1.0 | 5 | 140.0 | 6.6 | 226.8 |
| SMCJ150 | SMCJ150C | 167.00 | 204.00 | 1.0 | 5 | 150.0 | 5.6 | 268.0 |
| SMCJ150A | SMCJ150CA | 167.00 | 185.00 | 1.0 | 5 | 150.0 | 6.2 | 243.0 |
| SMCJ160 | SMCJ160C | 178.00 | 218.00 | 1.0 | 5 | 160.0 | 5.2 | 287.0 |
| SMCJ160A | SMCJ160CA | 178.00 | 197.00 | 1.0 | 5 | 160.0 | 5.8 | 259.0 |
| SMCJ170 | SMCJ170C | 189.00 | 231.00 | 1.0 | 5 | 170.0 | 4.9 | 304.0 |
| SMCJ170A | SMCJ170CA | 189.00 | 209.00 | 1.0 | 5 | 170.0 | 5.4 | 275.0 |
| SMCJ180 | SMCJ180C | 200.20 | 244.80 | 1.0 | 5 | 180.0 | 4.6 | 322.2 |
| SMCJ180A | SMCJ180CA | 200.00 | 220.00 | 1.0 | 5 | 180.0 | 5.1 | 291.6 |
| SMCJ190 | SMCJ190C | 211.30 | 258.40 | 1.0 | 5 | 190.0 | 4.4 | 340.1 |
| SMCJ190A | SMCJ190CA | 211.00 | 232.00 | 1.0 | 5 | 190.0 | 4.8 | 307.8 |
| SMCJ200A | SMCJ200CA | 224.00 | 247.00 | 1.0 | 5 | 200.0 | 4.6 | 324.0 |
| SMCJ220A | SMCJ220CA | 246.00 | 272.00 | 1.0 | 5 | 220.0 | 4.2 | 356.0 |
| SMCJ250A | SMCJ250CA | 279.00 | 309.00 | 1.0 | 5 | 250.0 | 3.7 | 405.0 |
| SMCJ300A | SMCJ300CA | 335.00 | 371.00 | 1.0 | 5 | 300.0 | 3.1 | 486.0 |
| SMCJ350A | SMCJ350CA | 391.00 | 432.00 | 1.0 | 5 | 350.0 | 2.6 | 567.0 |
| SMCJ400A | SMCJ400CA | 447.00 | 494.00 | 1.0 | 5 | 400.0 | 2.3 | 648.0 |
| SMCJ440A | SMCJ440CA | 492.00 | 543.00 | 1.0 | 5 | 440.0 | 2.1 | 713.0 |

Notes:

- (1) Pulse Test: $t_p \leq 50ms$ Pulse test: $t_p \leq 50ms$
- (2) Surge current waveform per Fig. 3 and derated per Fig.2.
- (3) For bi-directional types having VWM of 10 V and less, the IR limit is doubled
- (4) For the bi-directional SMCJ5.0CA, the maximum VBR is 7.25 V

■Ordering Information (Example)

| PREFERRED P/N | PACKAGE CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| SMCJ SERIES | F1 | Approximate 0.257 | 3000 | 6000 | 42000 | 13" reel |



SMCJ SERIES

■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

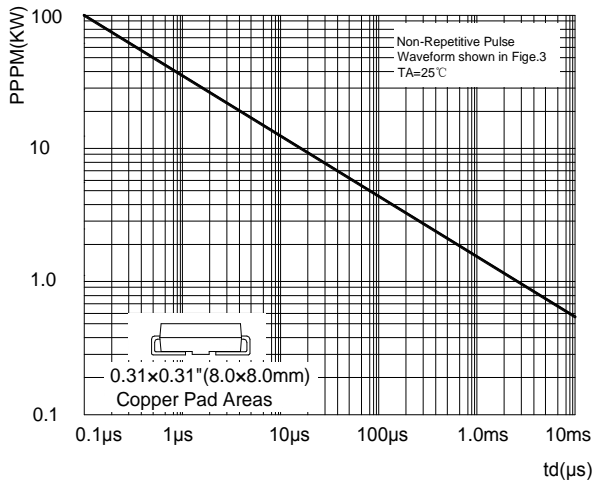


FIG2: Pulse Power or Current vs. Initial Junction Temperature

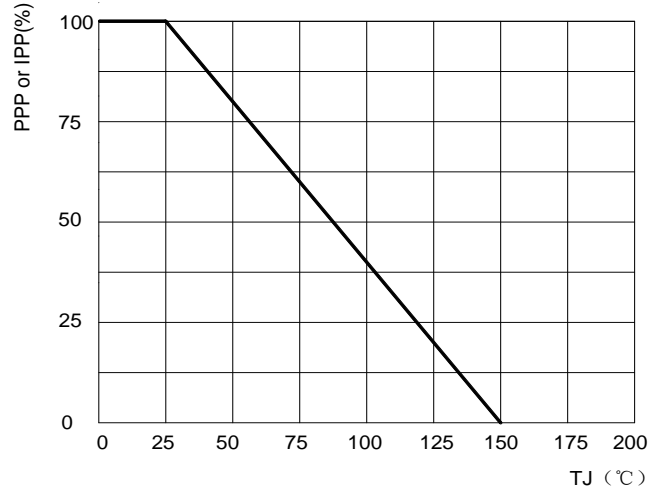


FIG3: Pulse Waveform

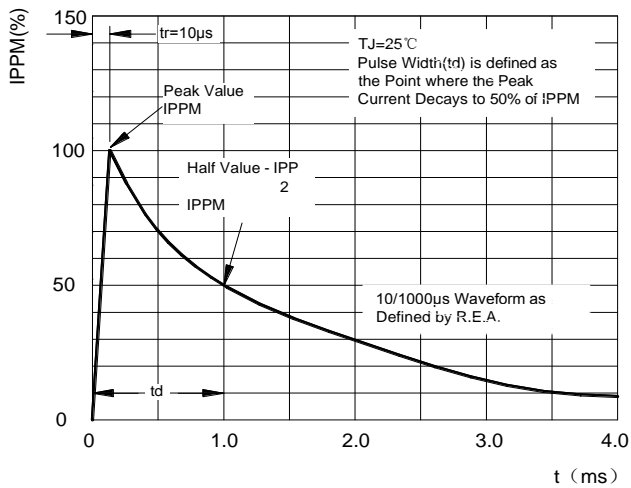


FIG4: Typical Transient Thermal Impedance

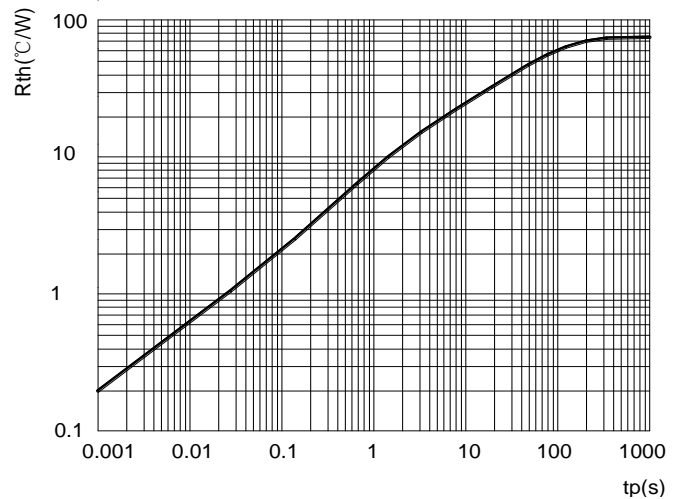


FIG5: Maximum Non-Repetitive Surge Current

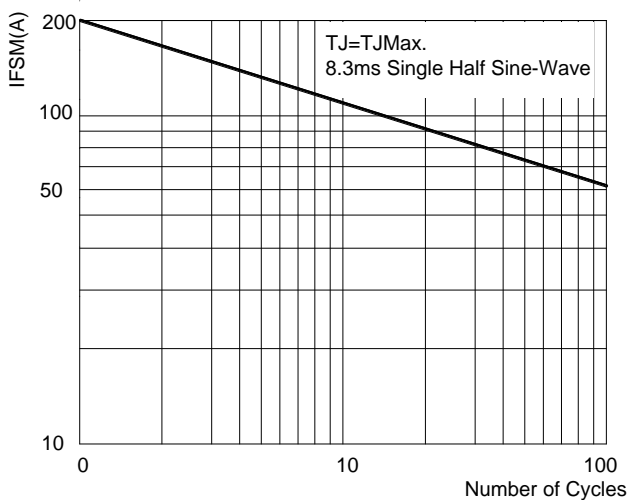
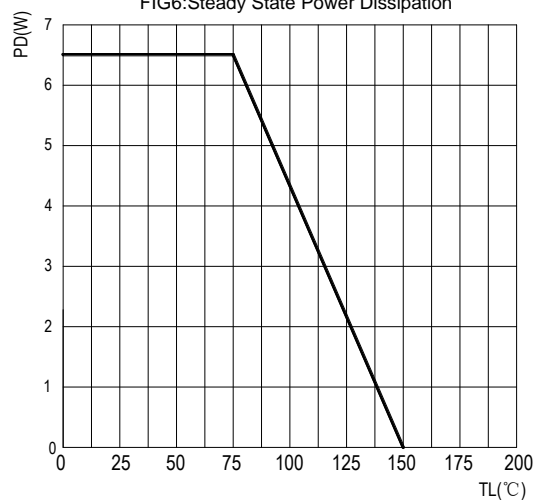


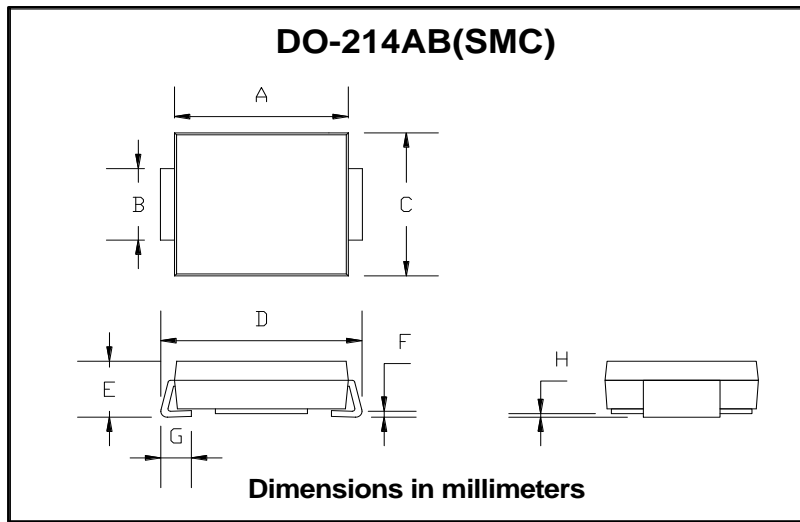
FIG6: Steady State Power Dissipation





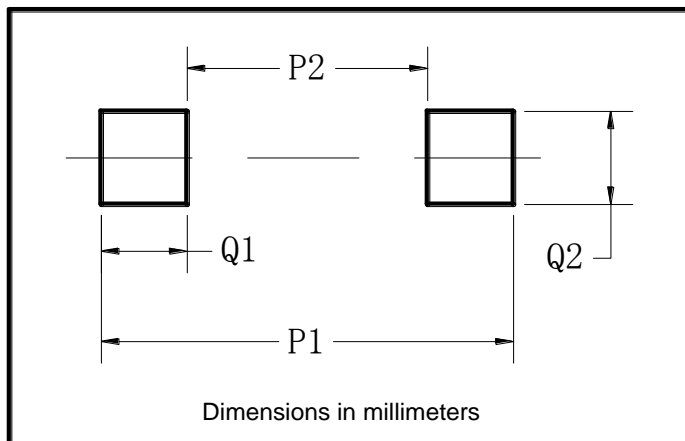
SMCJ SERIES

■ Outline Dimensions



| DO-214AB (SMC) | | |
|----------------|------|------|
| Dim | Min | Max |
| A | 6.60 | 7.11 |
| B | 2.85 | 3.27 |
| C | 5.59 | 6.22 |
| D | 7.75 | 8.13 |
| E | 1.99 | 2.61 |
| F | 0.15 | 0.31 |
| G | 0.76 | 1.52 |
| H | 0.10 | 0.20 |

■ Suggested pad layout



| Dim | Typ |
|-----|------|
| P1 | 9.9 |
| P2 | 3.84 |
| Q1 | 3.03 |
| Q2 | 3.82 |



SMCJ SERIES

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[SA110CA](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#) [SMBJ33CATR](#) [SMBJ8.0A](#) [ESD101-B1-02ELS E6327](#) [ESD105-B1-02EL E6327](#) [ESD112-B1-02EL E6327](#) [ESD119B1W01005E6327XTSA1](#) [ESD5V0L1B02VH6327XTSA1](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-HF](#)
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