



SMCJ Series 5.0V TO 440V

## 1500W Surface Mount Transient Voltage Suppressor

### Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Repetition Rate(duty cycle):0.05%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Typical IR less than 1 $\mu$ A above 10V
- High temperature soldering: 250°C/10 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-O

SMC(DO-214AB)



### Mechanical Data

- MECHANICAL DATA
- Case: JEDEC DO214AB. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes positive end (cathode) except Bidirectional
- Standard Packaging: 16mm tape(EIA STDRS-481)
- Weight: 0.007ounce, 0.21gram

DEVICES FOR BIPOLAR APPLICATION:

For Bidirectional use C or CA Suffix for types SMCJ5.0 thru types SMCJ170(e.g. SMCJ5.0 , SMCJ170CA)

Electrical characteristics apply in both directions

### MAXIMUM RATINGS AND CHARACTERISTICS( $T_A=25^{\circ}\text{C}$ Unless otherwise specified)

| Rating                                                                                                    | Symbol    | Value       | Units              |
|-----------------------------------------------------------------------------------------------------------|-----------|-------------|--------------------|
| Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note 1,FIG.1)                                   | $P_{PPM}$ | 1500(Min)   | W                  |
| Peak Pulse Current of on 10/1000 $\mu$ s waveform (Note 1,FIG.3)                                          | $I_{PPM}$ | SEE TABLE 1 | A                  |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note 3) | $I_{FSM}$ | 200         | A                  |
| Operating junction Temperature Range                                                                      | $T_J$     | +150        | $^{\circ}\text{C}$ |
| Storage Temperature Range                                                                                 | $T_{STG}$ | -55 to +150 | $^{\circ}\text{C}$ |

Notes :

1. Non-repetitive current pulse , per Fig. 3 and derated above  $T_A= 25^{\circ}\text{C}$  per Fig.2.
2. Mounted on 8.0mm x 8.0mm Copper Pads to each terminal.
3. 8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

| SMCJ<br>PART NUMBER |           | DEVICE<br>MARKING<br>CODE |     | REVERS<br>E STAND-<br>OFF<br>VOLTAGE<br>V <sub>RWM</sub> (V) | BREAKDOW<br>N VOLTAGE<br>V <sub>BR</sub> (V)<br>MIN.@I <sub>T</sub> | BREAKDOW<br>N VOLTAGE<br>V <sub>BR</sub> (V)<br>MAX.@I <sub>T</sub> | TEST<br>CURRENT<br>I <sub>T</sub> (mA) | MAXIMUN<br>CLAMPING<br>VOLTAGE<br>@I <sub>pp</sub> V <sub>c</sub> (V) | PEAK<br>PULSE<br>CURREN<br>T I <sub>pp</sub> (A) | REVERS<br>E<br>LEAKAGE<br>@V <sub>RWM</sub><br>I <sub>R</sub> (μA) |
|---------------------|-----------|---------------------------|-----|--------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------|
| UNI- POLAR          | BI-POLAR  | UNI                       | BI  |                                                              |                                                                     |                                                                     |                                        |                                                                       |                                                  |                                                                    |
| SMCJ5.0A            | SMCJ5.0CA | GDE                       | BDE | 5.0                                                          | 6.40                                                                | 7.00                                                                | 10                                     | 9.2                                                                   | 163.0                                            | 1000                                                               |
| SMCJ6.0A            | SMCJ6.0CA | GDG                       | BDG | 6.0                                                          | 6.67                                                                | 7.37                                                                | 10                                     | 10.3                                                                  | 145.7                                            | 1000                                                               |
| SMCJ6.5A            | SMCJ6.5CA | GDK                       | BDK | 6.5                                                          | 7.22                                                                | 7.98                                                                | 10                                     | 11.2                                                                  | 134.0                                            | 500                                                                |
| SMCJ7.0A            | SMCJ7.0CA | GDM                       | BDM | 7.0                                                          | 7.78                                                                | 8.60                                                                | 10                                     | 12.0                                                                  | 125.0                                            | 200                                                                |
| SMCJ7.5A            | SMCJ7.5CA | GDP                       | BDP | 7.5                                                          | 8.33                                                                | 9.21                                                                | 1                                      | 12.9                                                                  | 116.3                                            | 100                                                                |
| SMCJ8.0A            | SMCJ8.0CA | GDR                       | BDR | 8.0                                                          | 8.89                                                                | 9.83                                                                | 1                                      | 13.6                                                                  | 110.3                                            | 50                                                                 |
| SMCJ8.5A            | SMCJ8.5CA | GDT                       | BDT | 8.5                                                          | 9.44                                                                | 10.40                                                               | 1                                      | 14.4                                                                  | 104.2                                            | 20                                                                 |
| SMCJ9.0A            | SMCJ9.0CA | GDV                       | BDV | 9.0                                                          | 10.00                                                               | 11.10                                                               | 1                                      | 15.4                                                                  | 97.4                                             | 10                                                                 |
| SMCJ10A             | SMCJ10CA  | GDX                       | BDX | 10.0                                                         | 11.10                                                               | 12.30                                                               | 1                                      | 17.0                                                                  | 88.3                                             | 5                                                                  |
| SMCJ11A             | SMCJ11CA  | GDZ                       | BDZ | 11.0                                                         | 12.20                                                               | 13.50                                                               | 1                                      | 18.2                                                                  | 82.5                                             | 5                                                                  |
| SMCJ12A             | SMCJ12CA  | GEE                       | BEE | 12.0                                                         | 13.30                                                               | 14.70                                                               | 1                                      | 19.9                                                                  | 75.4                                             | 5                                                                  |
| SMCJ13A             | SMCJ13CA  | GEG                       | BEG | 13.0                                                         | 14.40                                                               | 15.90                                                               | 1                                      | 21.5                                                                  | 69.8                                             | 5                                                                  |
| SMCJ14A             | SMCJ14CA  | GEK                       | GEK | 14.0                                                         | 15.60                                                               | 17.20                                                               | 1                                      | 23.2                                                                  | 64.7                                             | 5                                                                  |
| SMCJ15A             | SMCJ15CA  | GEM                       | GEM | 15.0                                                         | 16.70                                                               | 18.50                                                               | 1                                      | 24.4                                                                  | 61.5                                             | 5                                                                  |
| SMCJ16A             | SMCJ16CA  | GEP                       | BEP | 16.0                                                         | 17.80                                                               | 19.70                                                               | 1                                      | 26.0                                                                  | 57.7                                             | 5                                                                  |
| SMCJ17A             | SMCJ17CA  | GER                       | BER | 17.0                                                         | 18.90                                                               | 20.90                                                               | 1                                      | 27.6                                                                  | 54.4                                             | 5                                                                  |
| SMCJ18A             | SMCJ18CA  | GET                       | BET | 18.0                                                         | 20.00                                                               | 22.10                                                               | 1                                      | 29.2                                                                  | 51.4                                             | 5                                                                  |
| SMCJ20A             | SMCJ20CA  | GEV                       | BEV | 20.0                                                         | 22.20                                                               | 24.50                                                               | 1                                      | 32.4                                                                  | 46.3                                             | 5                                                                  |
| SMCJ22A             | SMCJ22CA  | GEX                       | BEX | 22.0                                                         | 24.40                                                               | 26.90                                                               | 1                                      | 35.5                                                                  | 42.3                                             | 5                                                                  |
| SMCJ24A             | SMCJ24CA  | GEZ                       | BEZ | 24.0                                                         | 26.70                                                               | 29.50                                                               | 1                                      | 38.9                                                                  | 38.6                                             | 5                                                                  |
| SMCJ26A             | SMCJ26CA  | GFE                       | BFE | 26.0                                                         | 28.90                                                               | 31.90                                                               | 1                                      | 42.1                                                                  | 35.7                                             | 5                                                                  |
| SMCJ28A             | SMCJ28CA  | GFG                       | BFG | 28.0                                                         | 31.10                                                               | 34.40                                                               | 1                                      | 45.4                                                                  | 33.1                                             | 5                                                                  |
| SMCJ30A             | SMCJ30CA  | GFK                       | BFK | 30.0                                                         | 33.30                                                               | 36.80                                                               | 1                                      | 48.4                                                                  | 31.0                                             | 5                                                                  |
| SMCJ33A             | SMCJ33CA  | GFM                       | BFM | 33.0                                                         | 36.70                                                               | 40.60                                                               | 1                                      | 53.3                                                                  | 28.2                                             | 5                                                                  |
| SMCJ36A             | SMCJ36CA  | GFP                       | BFP | 36.0                                                         | 40.00                                                               | 44.20                                                               | 1                                      | 58.1                                                                  | 25.9                                             | 5                                                                  |
| SMCJ40A             | SMCJ40CA  | GFR                       | BFR | 40.0                                                         | 44.40                                                               | 49.10                                                               | 1                                      | 64.5                                                                  | 23.3                                             | 5                                                                  |
| SMCJ43A             | SMCJ43CA  | GFT                       | BFT | 43.0                                                         | 47.80                                                               | 52.80                                                               | 1                                      | 69.4                                                                  | 21.7                                             | 5                                                                  |
| SMCJ45A             | SMCJ45CA  | GFV                       | BFV | 45.0                                                         | 50.00                                                               | 55.30                                                               | 1                                      | 72.7                                                                  | 20.6                                             | 5                                                                  |
| SMCJ48A             | SMCJ48CA  | GFX                       | BFX | 48.0                                                         | 53.30                                                               | 58.90                                                               | 1                                      | 77.4                                                                  | 19.4                                             | 5                                                                  |
| SMCJ51A             | SMCJ51CA  | GFZ                       | BFZ | 51.0                                                         | 56.70                                                               | 62.70                                                               | 1                                      | 82.4                                                                  | 18.2                                             | 5                                                                  |
| SMCJ54A             | SMCJ54CA  | GGE                       | BGE | 54.0                                                         | 60.00                                                               | 66.30                                                               | 1                                      | 87.1                                                                  | 17.3                                             | 5                                                                  |
| SMCJ58A             | SMCJ58CA  | GGG                       | BGG | 58.0                                                         | 64.40                                                               | 71.20                                                               | 1                                      | 93.6                                                                  | 16.1                                             | 5                                                                  |
| SMCJ60A             | SMCJ60CA  | GGK                       | BGK | 60.0                                                         | 66.70                                                               | 73.70                                                               | 1                                      | 96.8                                                                  | 15.5                                             | 5                                                                  |
| SMCJ64A             | SMCJ64CA  | GGM                       | BGM | 64.0                                                         | 71.10                                                               | 78.60                                                               | 1                                      | 103.0                                                                 | 14.6                                             | 5                                                                  |
| SMCJ70A             | SMCJ70CA  | GGP                       | BGP | 70.0                                                         | 77.80                                                               | 86.00                                                               | 1                                      | 113.0                                                                 | 13.3                                             | 5                                                                  |
| SMCJ75A             | SMCJ75CA  | GGR                       | BGR | 75.0                                                         | 83.30                                                               | 92.10                                                               | 1                                      | 121.0                                                                 | 12.4                                             | 5                                                                  |
| SMCJ78A             | SMCJ78CA  | GGT                       | BGT | 78.0                                                         | 86.70                                                               | 95.80                                                               | 1                                      | 126.0                                                                 | 11.9                                             | 5                                                                  |
| SMCJ85A             | SMCJ85CA  | GGV                       | BGV | 85.0                                                         | 94.40                                                               | 104.00                                                              | 1                                      | 137.0                                                                 | 11.0                                             | 5                                                                  |
| SMCJ90A             | SMCJ90CA  | GGX                       | BGX | 90.0                                                         | 100.00                                                              | 111.00                                                              | 1                                      | 146.0                                                                 | 10.3                                             | 5                                                                  |
| SMCJ100A            | SMCJ100CA | GGZ                       | BGZ | 100.0                                                        | 111.00                                                              | 123.00                                                              | 1                                      | 162.0                                                                 | 9.3                                              | 5                                                                  |
| SMCJ110A            | SMCJ110CA | GHE                       | BHE | 110.0                                                        | 122.00                                                              | 135.00                                                              | 1                                      | 177.0                                                                 | 8.5                                              | 5                                                                  |
| SMCJ120A            | SMCJ120CA | GHG                       | BHG | 120.0                                                        | 133.00                                                              | 147.00                                                              | 1                                      | 193.0                                                                 | 7.8                                              | 5                                                                  |
| SMCJ130A            | SMCJ130CA | GHK                       | BHK | 130.0                                                        | 144.00                                                              | 159.00                                                              | 1                                      | 209.0                                                                 | 7.2                                              | 5                                                                  |
| SMCJ150A            | SMCJ150CA | GHM                       | BHM | 150.0                                                        | 167.00                                                              | 185.00                                                              | 1                                      | 243.0                                                                 | 6.2                                              | 5                                                                  |
| SMCJ160A            | SMCJ160CA | GHP                       | BHP | 160.0                                                        | 178.00                                                              | 197.00                                                              | 1                                      | 259.0                                                                 | 5.8                                              | 5                                                                  |
| SMCJ170A            | SMCJ170CA | GHR                       | BHR | 170.0                                                        | 189.00                                                              | 209.00                                                              | 1                                      | 275.0                                                                 | 5.5                                              | 5                                                                  |
| SMCJ180A            | SMCJ180CA | GHT                       | BHT | 180.0                                                        | 201.00                                                              | 222.00                                                              | 1                                      | 292.0                                                                 | 5.1                                              | 5                                                                  |
| SMCJ200A            | SMCJ200CA | GHV                       | BHV | 200.0                                                        | 224.00                                                              | 247.00                                                              | 1                                      | 324.0                                                                 | 4.6                                              | 5                                                                  |
| SMCJ220A            | SMCJ220CA | GHX                       | BHX | 220.0                                                        | 246.00                                                              | 272.00                                                              | 1                                      | 356.0                                                                 | 4.2                                              | 5                                                                  |
| SMCJ250A            | SMCJ250CA | GHZ                       | BHZ | 250.0                                                        | 279.00                                                              | 309.00                                                              | 1                                      | 405.0                                                                 | 3.7                                              | 5                                                                  |
| SMCJ300A            | SMCJ300CA | GJE                       | BJE | 300.0                                                        | 335.00                                                              | 371.00                                                              | 1                                      | 486.0                                                                 | 3.1                                              | 5                                                                  |
| SMCJ350A            | SMCJ350CA | GJG                       | BJG | 350.0                                                        | 391.00                                                              | 432.00                                                              | 1                                      | 567.0                                                                 | 2.6                                              | 5                                                                  |
| SMCJ400A            | SMCJ400CA | GJK                       | BJK | 400.0                                                        | 447.00                                                              | 494.00                                                              | 1                                      | 648.0                                                                 | 2.3                                              | 5                                                                  |
| SMCJ440A            | SMCJ440CA | GJM                       | BJM | 440.0                                                        | 492.00                                                              | 543.00                                                              | 1                                      | 713.0                                                                 | 2.1                                              | 5                                                                  |

For bidirectional type having V<sub>rwm</sub> of 10 volts and less, the I<sub>R</sub> limit is double.

For parts without A , the V<sub>BR</sub> is ± 10%

Ratings and Characteristic Curves  $T_A=25^{\circ}\text{C}$  unless otherwise noted

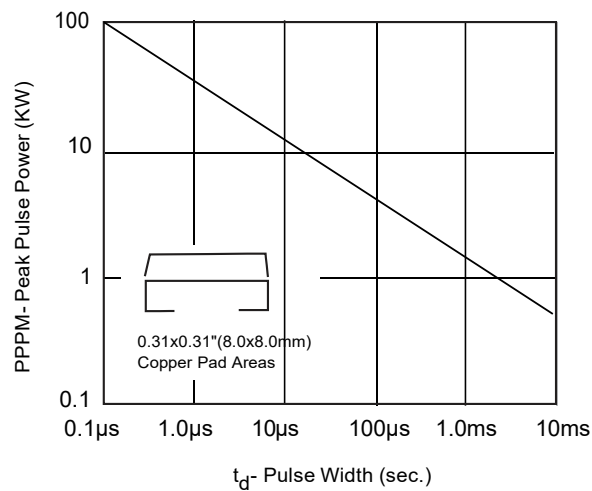


Fig.1 Peak Pulse Power Rating

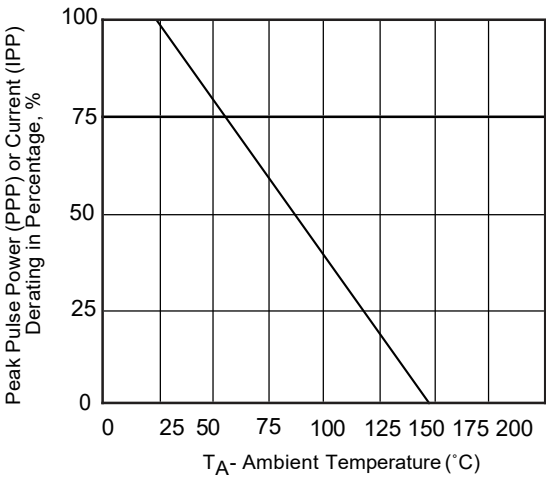


Fig.2 Pulse Derating Curve

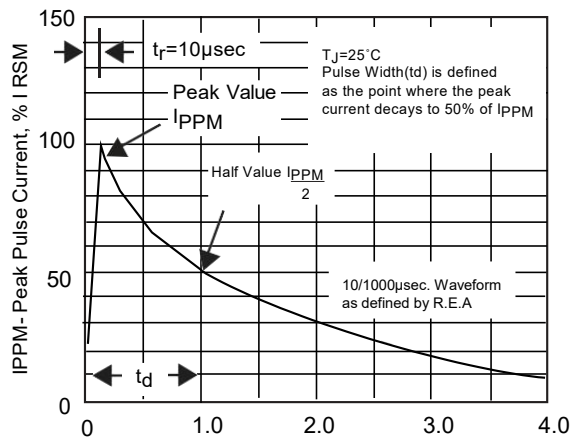


Fig.3 Pulse Waveform

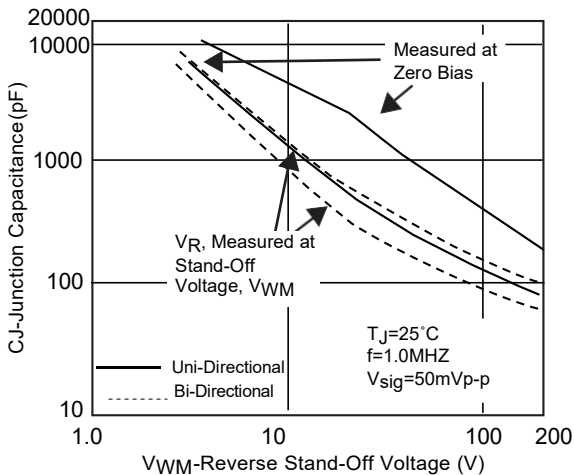


Fig.4 Typical Junction Capacitance

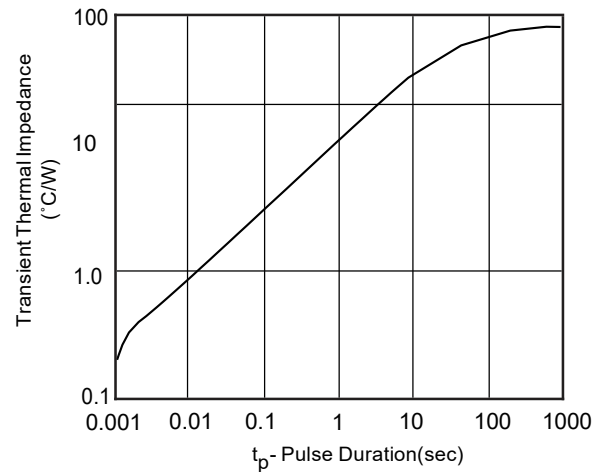


Fig.5 Typ. Transient Thermal Impedance

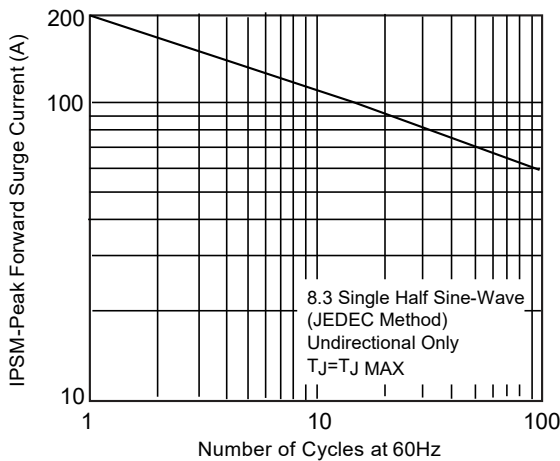
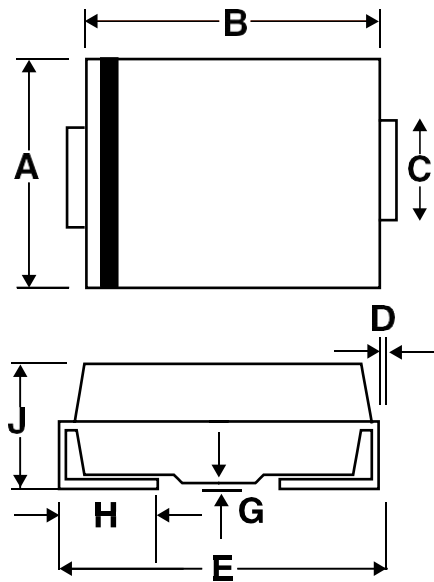


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current

SMC Outline Dimension

Unit:mm



| SMC |      |      |
|-----|------|------|
| Dim | Min  | Max  |
| A   | 5.59 | 6.22 |
| B   | 6.60 | 7.11 |
| C   | 2.75 | 3.18 |
| D   | 0.15 | 0.31 |
| E   | 7.75 | 8.13 |
| G   | 0.10 | 0.20 |
| H   | 0.76 | 1.52 |
| J   | 2.00 | 2.62 |