

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |

The SMCJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.



## Features

- ◆ 1500W peak pulse power capability at 10/1000µs waveform
- ◆ For surface mounted applications to optimize board space
- ◆ Glass passivated chip junction
- ◆ Halogen free and RoHS compliant

## Mechanical Data

- ◆ Case: SMC
- ◆ Terminals: Solderable per MIL-STD-750, Method 2026
- ◆ Approx. Weight: 0.22g (0.0077oz)

| Parameter   | Symbol                             | Value          | Unit          |
|---|------------------------------------|----------------|---------------|
| Peak Pulse Power Dissipation on 10/1000 us waveform   | $P_{PPM}$                          | 1500           | W             |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) | $I_{FSM}$<br>(UNI)                 | 200            | A             |
| Power dissipation on Infinite heat sink at $T_A=50^{\circ}C$                                      | $P_D$                              | 6.5            | W             |
| Maximum instantaneous forward voltage at 100 A for unidirectional only                            | $V_F$                              | 3.5            | V             |
| Peak Pulse Current on 10/1000 us waveform   | $I_{PPM}$                          | See Next Table | A             |
| Typical Thermal Resistance Junction to Ambient(Note 1)  | $R_{\theta JA}$<br>$R_{\theta JL}$ | 75<br>15       | $^{\circ}C/W$ |
| Operating Junction Temperature and Storage Temperature Range                                      | $T_j, T_{stg}$                     | -55 ~ +150     | $^{\circ}C$   |

### NOTES:

1. Mounted on 8 mm<sup>2</sup> (0.13mm thick) land areas.



# SMCJ5.0 THRU SMCJ440CA

Stand-off Voltage - 5.0 to 440 Volts Peak Pulse Power: 1500 Watts

## Electrical Characteristics (TA=25°C)

| Part Number    |               | Device Marking Code |     | Reverse Stand-Off Voltage | Breakdown Voltage @I <sub>T</sub> | Test Current        | Maximum Clamping Voltage @I <sub>PP</sub> | Peak Pulse Current  | Reverse Leakage @V <sub>RWM</sub> |
|----------------|---------------|---------------------|-----|---------------------------|-----------------------------------|---------------------|---|---------------------|-----------------------------------|
| Unidirectional | Bidirectional | UNI                 | BI  | V <sub>RWM</sub> (V)      | V <sub>BR</sub> (V)               | I <sub>T</sub> (mA) | V <sub>C</sub> (V)                        | I <sub>PP</sub> (A) | I <sub>R</sub> (μA)               |
| SMCJ5.0A       | SMCJ5.0CA     | GDE                 | BDE | 5.0                       | 6.40~7.00                         | 10                  | 9.2                                       | 163.0               | 800                               |
| SMCJ6.0A       | SMCJ6.0CA     | GDG                 | BDG | 6.0                       | 6.67~7.37                         | 10                  | 10.3                                      | 145.7               | 800                               |
| 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                | 1                                 |
| SMCJ12A        | SMCJ12CA      | GEE                 | BEE | 12.0                      | 13.30~14.70                       | 1                   | 19.9                                      | 75.4                | 1                                 |
| SMCJ13A        | SMCJ13CA      | GEG                 | BEG | 13.0                      | 14.40~15.90                       | 1                   | 21.5                                      | 69.8                | 1                                 |
| SMCJ14A        | SMCJ14CA      | GEK                 | BEK | 14.0                      | 15.60~17.20                       | 1                   | 23.2                                      | 64.7                | 1                                 |
| SMCJ15A        | SMCJ15CA      | GEM                 | BEM | 15.0                      | 16.70~18.50                       | 1                   | 24.4                                      | 61.5                | 1                                 |
| SMCJ16A        | SMCJ16CA      | GEP                 | BEP | 16.0                      | 17.80~19.70                       | 1                   | 26.0                                      | 57.7                | 1                                 |
| SMCJ17A        | SMCJ17CA      | GER                 | BER | 17.0                      | 18.90~20.90                       | 1                   | 27.6                                      | 54.4                | 1                                 |
| SMCJ18A        | SMCJ18CA      | GET                 | BET | 18.0                      | 20.00~22.10                       | 1                   | 29.2                                      | 51.4                | 1                                 |
| SMCJ20A        | SMCJ20CA      | GEV                 | BEV | 20.0                      | 22.20~24.50                       | 1                   | 32.4                                      | 46.3                | 1                                 |
| SMCJ22A        | SMCJ22CA      | GEX                 | BEX | 22.0                      | 24.40~26.90                       | 1                   | 35.5                                      | 42.3                | 1                                 |
| SMCJ24A        | SMCJ24CA      | GEZ                 | BEZ | 24.0                      | 26.70~29.50                       | 1                   | 38.9                                      | 38.6                | 1                                 |
| SMCJ26A        | SMCJ26CA      | GFE                 | BFE | 26.0                      | 28.90~31.90                       | 1                   | 42.1                                      | 35.7                | 1                                 |
| SMCJ28A        | SMCJ28CA      | GFG                 | BFG | 28.0                      | 31.10~34.40                       | 1                   | 45.4                                      | 33.1                | 1                                 |
| SMCJ30A        | SMCJ30CA      | GFK                 | BFK | 30.0                      | 33.30~36.80                       | 1                   | 48.4                                      | 31.0                | 1                                 |
| SMCJ33A        | SMCJ33CA      | GFM                 | BFM | 33.0                      | 36.70~40.60                       | 1                   | 53.3                                      | 28.2                | 1                                 |
| SMCJ36A        | SMCJ36CA      | GFP                 | BFP | 36.0                      | 40.00~44.20                       | 1                   | 58.1                                      | 25.9                | 1                                 |
| SMCJ40A        | SMCJ40CA      | GFR                 | BFR | 40.0                      | 44.40~49.10                       | 1                   | 64.5                                      | 23.3                | 1                                 |
| SMCJ43A        | SMCJ43CA      | GFT                 | BFT | 43.0                      | 47.80~52.80                       | 1                   | 69.4                                      | 21.7                | 1                                 |
| SMCJ45A        | SMCJ45CA      | GFV                 | BFV | 45.0                      | 50.00~55.30                       | 1                   | 72.7                                      | 20.6                | 1                                 |
| SMCJ48A        | SMCJ48CA      | GFX                 | BFX | 48.0                      | 53.30~58.90                       | 1                   | 77.4                                      | 19.4                | 1                                 |
| SMCJ51A        | SMCJ51CA      | GFZ                 | BFZ | 51.0                      | 56.70~62.70                       | 1                   | 82.4                                      | 18.2                | 1                                 |
| SMCJ54A        | SMCJ54CA      | GGE                 | BGE | 54.0                      | 60.00~66.30                       | 1                   | 87.1                                      | 17.3                | 1                                 |
| SMCJ58A        | SMCJ58CA      | GGG                 | BGG | 58.0                      | 64.40~71.20                       | 1                   | 93.6                                      | 16.1                | 1                                 |
| SMCJ60A        | SMCJ60CA      | GGK                 | BGK | 60.0                      | 66.70~73.70                       | 1                   | 96.8                                      | 15.5                | 1                                 |
| SMCJ64A        | SMCJ64CA      | GGM                 | BGM | 64.0                      | 71.10~78.60                       | 1                   | 103.0                                     | 14.6                | 1                                 |
| SMCJ70A        | SMCJ70CA      | GGP                 | BGP | 70.0                      | 77.80~86.00                       | 1                   | 113.0                                     | 13.3                | 1                                 |
| SMCJ75A        | SMCJ75CA      | GGR                 | BGR | 75.0                      | 83.30~92.10                       | 1                   | 121.0                                     | 12.4                | 1                                 |
| SMCJ78A        | SMCJ78CA      | GGT                 | BGT | 78.0                      | 86.70~95.80                       | 1                   | 126.0                                     | 11.9                | 1                                 |
| SMCJ85A        | SMCJ85CA      | GGV                 | BGV | 85.0                      | 94.40~104.00                      | 1                   | 137.0                                     | 11.0                | 1                                 |
| SMCJ90A        | SMCJ90CA      | GGX                 | BGX | 90.0                      | 100.00~111.00                     | 1                   | 146.0                                     | 10.3                | 1                                 |
| SMCJ100A       | SMCJ100CA     | GGZ                 | BGZ | 100.0                     | 111.00~123.00                     | 1                   | 162.0                                     | 9.3                 | 1                                 |
| SMCJ110A       | SMCJ110CA     | GHE                 | BHE | 110.0                     | 122.00~135.00                     | 1                   | 177.0                                     | 8.5                 | 1                                 |
| SMCJ120A       | SMCJ120CA     | GHG                 | BHG | 120.0                     | 133.00~147.00                     | 1                   | 193.0                                     | 7.8                 | 1                                 |



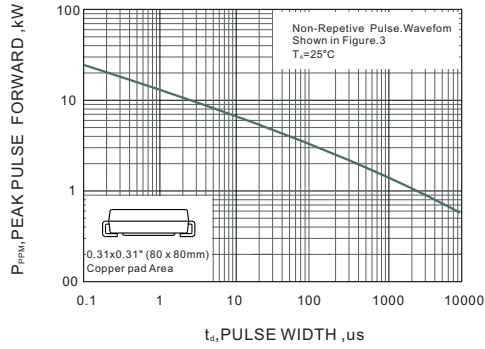
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Stand-off Voltage - 5.0 to 440 Volts Peak Pulse Power: 1500 Watts

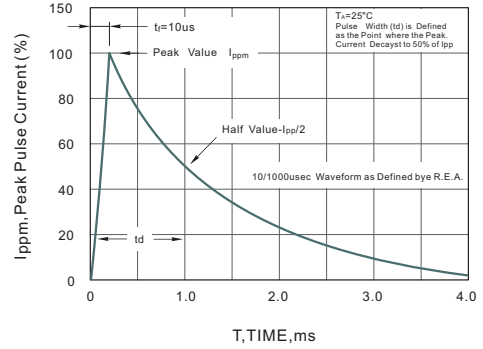
## Electrical Characteristics (TA=25°C)

| Part Number    |               | Device Marking Code |     | Reverse Stand-Off Voltage | Breakdown Voltage @I <sub>T</sub> | Test Current        | Maximum Clamping Voltage @I <sub>PP</sub> | Peak Pulse Current  | Reverse Leakage @V <sub>RWM</sub> |
|----------------|---------------|---------------------|-----|---------------------------|-----------------------------------|---------------------|---|---------------------|-----------------------------------|
| Unidirectional | Bidirectional | UNI                 | BI  | V <sub>RWM</sub> (V)      | V <sub>BR</sub> (V)               | I <sub>T</sub> (mA) | V <sub>C</sub> (V)                        | I <sub>PP</sub> (A) | I <sub>R</sub> (μA)               |
| SMCJ130A       | SMCJ130CA     | GHK                 | BHK | 130.0                     | 144.00~159.00                     | 1                   | 209.0                                     | 7.2                 | 1                                 |
| SMCJ150A       | SMCJ150CA     | GHM                 | BHM | 150.0                     | 167.00~185.00                     | 1                   | 243.0                                     | 6.2                 | 1                                 |
| SMCJ160A       | SMCJ160CA     | GHP                 | BHP | 160.0                     | 178.00~197.00                     | 1                   | 259.0                                     | 5.8                 | 1                                 |
| SMCJ170A       | SMCJ170CA     | GHR                 | BHR | 170.0                     | 189.00~209.00                     | 1                   | 275.0                                     | 5.5                 | 1                                 |
| SMCJ180A       | SMCJ180CA     | GHT                 | BHT | 180.0                     | 201.00~222.00                     | 1                   | 292.0                                     | 5.1                 | 1                                 |
| SMCJ190A       | SMCJ190CA     | GHU                 | BHU | 190.0                     | 211.00~233.00                     | 1                   | 308.0                                     | 4.8                 | 1                                 |
| SMCJ200A       | SMCJ200CA     | GHV                 | BHV | 200.0                     | 224.00~247.00                     | 1                   | 324.0                                     | 4.6                 | 1                                 |
| SMCJ210A       | SMCJ210CA     | GHW                 | BHW | 210.0                     | 237.00~263.00                     | 1                   | 340.0                                     | 4.4                 | 1                                 |
| SMCJ220A       | SMCJ220CA     | GHX                 | BHX | 220.0                     | 246.00~272.00                     | 1                   | 356.0                                     | 4.2                 | 1                                 |
| SMCJ250A       | SMCJ250CA     | GHZ                 | BHZ | 250.0                     | 279.00~309.00                     | 1                   | 405.0                                     | 3.7                 | 1                                 |
| SMCJ300A       | SMCJ300CA     | GJE                 | BJE | 300.0                     | 335.00~371.00                     | 1                   | 486.0                                     | 3.1                 | 1                                 |
| SMCJ350A       | SMCJ350CA     | GJG                 | BJG | 350.0                     | 391.00~432.00                     | 1                   | 567.0                                     | 2.6                 | 1                                 |
| SMCJ400A       | SMCJ400CA     | GJK                 | BJK | 400.0                     | 447.00~494.00                     | 1                   | 648.0                                     | 2.3                 | 1                                 |
| SMCJ440A       | SMCJ440CA     | GJM                 | BJM | 440.0                     | 492.00~543.00                     | 1                   | 713.0                                     | 2.1                 | 1                                 |

**Fig.1 Peak Pulse Power Rating Curve**



**Fig.2 Pulse Waveform**



**Fig.3 Forward Current Derating Curve**



**Fig.4 Typical Junction Capacitance**



**Fig.5 Maximum Non-Repetitive Peak Forward Surge Current**



## PACKAGE OUTLINE

Plastic surface mounted package; 2 leads



SMC mechanical data

| UNIT |     | A    | E   | D   | E <sub>1</sub> | A <sub>1</sub> | C    | L   | b    |
|------|-----|------|-----|-----|----------------|----------------|------|-----|------|
| mm   | max | 2.62 | 7.0 | 6.2 | 8.0            | 0.21           | 0.31 | 1.6 | 3.25 |
|      | min | 2.00 | 6.5 | 5.6 | 7.6            | 0.05           | 0.15 | 0.9 | 2.75 |
| mil  | max | 103  | 276 | 244 | 315            | 8.3            | 12   | 63  | 128  |
|      | min | 79   | 256 | 220 | 299            | 2.0            | 5.9  | 35  | 108  |

### The recommended mounting pad size



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