

### Features

- $P_{PP}$  3000W
- $V_{RWM}$  5.0V- 440V
- Glass passivated chip

SMC



Bi-directional 

Uni-direction 

### Limiting values (Absolute Maximum Rating)

| Item                                             | Symbol         | Unit               | Conditions                                        | Max            |
|--------------------------------------------------|----------------|--------------------|---------------------------------------------------|----------------|
| Peak pulse power dissipation                     | $P_{PPM}$      | W                  | with a 10/1000us waveform                         | 3000           |
| Peak pulse current (1)                           | $I_{PPM}$      | A                  | with a 10/1000us waveform                         | See Next Table |
| Peak forward surge current(2)                    | $I_{FSM}$      | A                  | 8.3 ms single half sine-wave unidirectional only  | 300            |
| Power dissipation                                | $P_D$          | W                  | On infinite heat sink at $T_L=73^{\circ}\text{C}$ | 6.5            |
| Operating junction and storage temperature range | $T_J, T_{STG}$ | $^{\circ}\text{C}$ |                                                   | -55 to +150    |

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

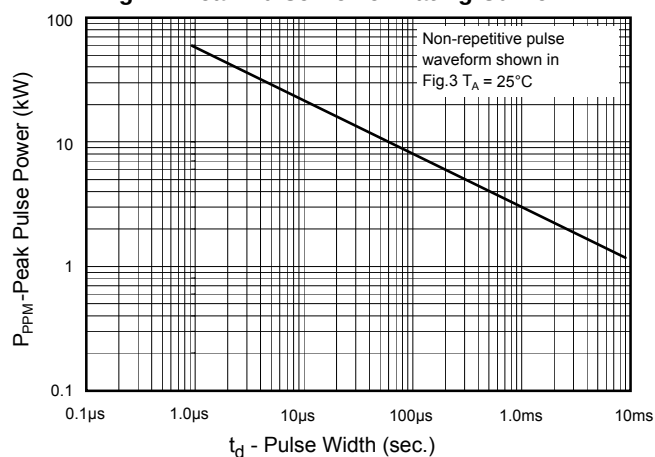
| Number<br>A(UNI) For CA(BI) |     |     | Reverse<br>Standoff<br>Voltage | Breakdown<br>Voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |         | Test<br>Current     | Reverse<br>Leakage @<br>V <sub>RWM</sub> | Clamping<br>Voltage @ I <sub>pp</sub> | Peak Pulse<br>Current<br>I <sub>pp</sub> |
|-----------------------------|-----|-----|--------------------------------|----------------------------------------------------------|---------|---------------------|------------------------------------------|---------------------------------------|------------------------------------------|
|                             |     |     | V <sub>RWM</sub> (V)           | Min (V)                                                  | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                      | V <sub>C</sub> (V)                    | (A)                                      |
| SMDJ5.0(C)A                 | RDE | DDE | 5.0                            | 6.40                                                     | 7.00    | 10                  | 800                                      | 9.2                                   | 326.09                                   |
| SMDJ6.0(C)A                 | RDG | DDG | 6.0                            | 6.67                                                     | 7.37    | 10                  | 800                                      | 10.3                                  | 291.26                                   |
| SMDJ6.5(C)A                 | RDK | DDK | 6.5                            | 7.22                                                     | 7.98    | 10                  | 500                                      | 11.2                                  | 267.86                                   |
| SMDJ7.0(C)A                 | PDM | DDM | 7.0                            | 7.78                                                     | 8.60    | 10                  | 200                                      | 12.0                                  | 250.00                                   |
| SMDJ7.5(C)A                 | PDP | DDP | 7.5                            | 8.33                                                     | 9.21    | 1.0                 | 100                                      | 12.9                                  | 232.56                                   |
| SMDJ8.0(C)A                 | PDR | DDR | 8.0                            | 8.89                                                     | 9.83    | 1.0                 | 50                                       | 13.6                                  | 220.59                                   |
| SMDJ8.5(C)A                 | PDT | DDT | 8.5                            | 9.44                                                     | 10.40   | 1.0                 | 20                                       | 14.4                                  | 208.33                                   |
| SMDJ9.0(C)A                 | PDV | DDV | 9.0                            | 10.00                                                    | 11.10   | 1.0                 | 10                                       | 15.4                                  | 194.81                                   |
| SMDJ10(C)A                  | PDX | DDX | 10.0                           | 11.10                                                    | 12.30   | 1.0                 | 5.0                                      | 17.0                                  | 176.47                                   |
| SMDJ11(C)A                  | PDZ | DDZ | 11.0                           | 12.20                                                    | 13.50   | 1.0                 | 5.0                                      | 18.2                                  | 164.84                                   |
| SMDJ12(C)A                  | PEE | DEE | 12.0                           | 13.30                                                    | 14.70   | 1.0                 | 2.0                                      | 19.9                                  | 150.75                                   |
| SMDJ13(C)A                  | PEG | DEG | 13.0                           | 14.40                                                    | 15.90   | 1.0                 | 2.0                                      | 21.5                                  | 139.53                                   |
| SMDJ14(C)A                  | PEK | DEK | 14.0                           | 15.60                                                    | 17.20   | 1.0                 | 2.0                                      | 23.2                                  | 129.31                                   |
| SMDJ15(C)A                  | PEM | DEM | 15.0                           | 16.70                                                    | 18.50   | 1.0                 | 1.0                                      | 24.4                                  | 122.95                                   |
| SMDJ16(C)A                  | PEP | DEP | 16.0                           | 17.80                                                    | 19.70   | 1.0                 | 1.0                                      | 26.0                                  | 115.38                                   |
| SMDJ17(C)A                  | PER | DER | 17.0                           | 18.90                                                    | 20.90   | 1.0                 | 1.0                                      | 27.6                                  | 108.70                                   |
| SMDJ18(C)A                  | PET | DET | 18.0                           | 20.00                                                    | 22.10   | 1.0                 | 1.0                                      | 29.2                                  | 102.74                                   |
| SMDJ20(C)A                  | PEV | DEV | 20.0                           | 22.20                                                    | 24.50   | 1.0                 | 1.0                                      | 32.4                                  | 92.59                                    |
| SMDJ22(C)A                  | PEX | DEX | 22.0                           | 24.40                                                    | 26.90   | 1.0                 | 1.0                                      | 35.5                                  | 84.51                                    |
| SMDJ24(C)A                  | PEZ | DEZ | 24.0                           | 26.70                                                    | 29.50   | 1.0                 | 1.0                                      | 38.9                                  | 77.12                                    |
| SMDJ26(C)A                  | PFE | DFE | 26.0                           | 28.90                                                    | 31.90   | 1.0                 | 1.0                                      | 42.1                                  | 71.26                                    |
| SMDJ28(C)A                  | PFG | DFG | 28.0                           | 31.10                                                    | 34.40   | 1.0                 | 1.0                                      | 45.4                                  | 66.08                                    |
| SMDJ30(C)A                  | PFK | DFK | 30.0                           | 33.30                                                    | 36.80   | 1.0                 | 1.0                                      | 48.4                                  | 61.98                                    |
| SMDJ33(C)A                  | PFM | DFM | 33.0                           | 36.70                                                    | 40.60   | 1.0                 | 1.0                                      | 53.3                                  | 56.29                                    |
| SMDJ36(C)A                  | PFP | DFP | 36.0                           | 40.00                                                    | 44.20   | 1.0                 | 1.0                                      | 58.1                                  | 51.64                                    |
| SMDJ40(C)A                  | PFR | DFR | 40.0                           | 44.40                                                    | 49.10   | 1.0                 | 1.0                                      | 64.5                                  | 46.51                                    |
| SMDJ43(C)A                  | PFT | DFT | 43.0                           | 47.80                                                    | 52.80   | 1.0                 | 1.0                                      | 69.4                                  | 43.23                                    |
| SMDJ45(C)A                  | PFV | DFV | 45.0                           | 50.00                                                    | 55.30   | 1.0                 | 1.0                                      | 72.7                                  | 41.27                                    |
| SMDJ48(C)A                  | PFX | DFX | 48.0                           | 53.30                                                    | 58.90   | 1.0                 | 1.0                                      | 77.4                                  | 38.76                                    |
| SMDJ51(C)A                  | PFZ | DFZ | 51.0                           | 56.70                                                    | 62.70   | 1.0                 | 1.0                                      | 82.4                                  | 36.41                                    |
| SMDJ54(C)A                  | RGE | DGE | 54.0                           | 60.00                                                    | 66.30   | 1.0                 | 1.0                                      | 87.1                                  | 34.44                                    |
| SMDJ58(C)A                  | PGG | DGG | 58.0                           | 64.40                                                    | 71.20   | 1.0                 | 1.0                                      | 93.6                                  | 32.05                                    |
| SMDJ60(C)A                  | PGK | DGK | 60.0                           | 66.70                                                    | 73.70   | 1.0                 | 1.0                                      | 96.8                                  | 30.99                                    |
| SMDJ64(C)A                  | PGM | DGM | 64.0                           | 71.10                                                    | 78.60   | 1.0                 | 1.0                                      | 103.0                                 | 29.13                                    |
| SMDJ70(C)A                  | PGP | DGP | 70.0                           | 77.80                                                    | 86.00   | 1.0                 | 1.0                                      | 113.0                                 | 26.55                                    |
| SMDJ75(C)A                  | PGR | DGR | 75.0                           | 83.30                                                    | 92.10   | 1.0                 | 1.0                                      | 121.0                                 | 24.79                                    |

## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

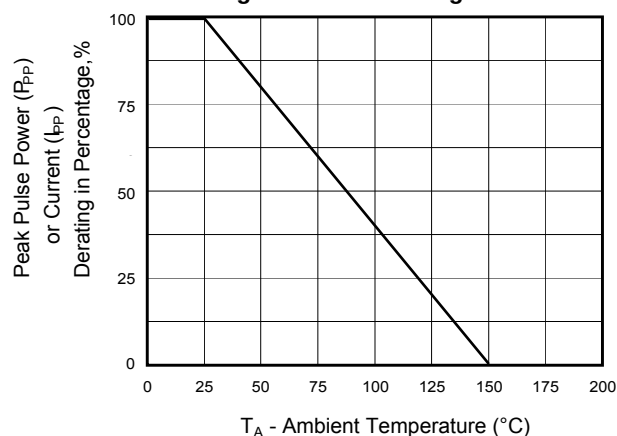
| Number<br>A(UNI) For CA(BI) |     |     | Reverse<br>Standoff<br>Voltage | Breakdown<br>Voltage<br>$V_{BR}$ @ $I_T$ |         | Test<br>Current | Reverse<br>Leakage @<br>$V_{RWM}$ | Clamping<br>Voltage @ $I_{pp}$ | Peak Pulse<br>Current<br>$I_{pp}$ |
|-----------------------------|-----|-----|--------------------------------|------------------------------------------|---------|-----------------|-----------------------------------|--------------------------------|-----------------------------------|
|                             |     |     | $V_{RWM}$ (V)                  | Min (V)                                  | Max (V) | $I_T$ (mA)      | $I_R$ ( $\mu\text{A}$ )           | $V_C$ (V)                      | (A)                               |
| SMDJ78(C)A                  | PGT | DGT | 78.0                           | 86.70                                    | 95.80   | 1.0             | 1.0                               | 126.0                          | 23.81                             |
| SMDJ85(C)A                  | PGV | DGV | 85.0                           | 94.40                                    | 104.00  | 1.0             | 1.0                               | 137.0                          | 21.90                             |
| SMDJ90(C)A                  | PGX | DGX | 90.0                           | 100.0                                    | 111.00  | 1.0             | 1.0                               | 146.0                          | 20.55                             |
| SMDJ100(C)A                 | PGZ | DGZ | 100.0                          | 111.0                                    | 123.00  | 1.0             | 1.0                               | 162.0                          | 18.52                             |
| SMDJ110(C)A                 | PHE | DHE | 110.0                          | 122.0                                    | 135.00  | 1.0             | 1.0                               | 177.0                          | 16.95                             |
| SMDJ120(C)A                 | PHG | DHG | 120.0                          | 133.0                                    | 147.00  | 1.0             | 1.0                               | 193.0                          | 15.54                             |
| SMDJ130(C)A                 | PHK | DHK | 130.0                          | 144.0                                    | 159.00  | 1.0             | 1.0                               | 209.0                          | 14.35                             |
| SMDJ150(C)A                 | PHM | DHM | 150.0                          | 167.0                                    | 185.00  | 1.0             | 1.0                               | 243.0                          | 12.35                             |
| SMDJ160(C)A                 | PHP | DHP | 160.0                          | 178.0                                    | 197.00  | 1.0             | 1.0                               | 259.0                          | 11.58                             |
| SMDJ170(C)A                 | PHR | DHR | 170.0                          | 189.0                                    | 209.00  | 1.0             | 1.0                               | 275.0                          | 10.91                             |
| SMDJ180(C)A                 | PHT | DHT | 180.0                          | 200.0                                    | 220.00  | 1.0             | 1.0                               | 291.6                          | 10.29                             |
| SMDJ190(C)A                 | PHV | DHV | 190.0                          | 211.0                                    | 232.00  | 1.0             | 1.0                               | 307.8                          | 9.75                              |
| SMDJ200(C)A                 | PHX | DHX | 200.0                          | 224.0                                    | 247.00  | 1.0             | 1.0                               | 324.0                          | 9.26                              |
| SMDJ220(C)A                 | PHZ | DHZ | 220.0                          | 246.0                                    | 272.00  | 1.0             | 1.0                               | 356.0                          | 8.43                              |

## Typical Characteristics

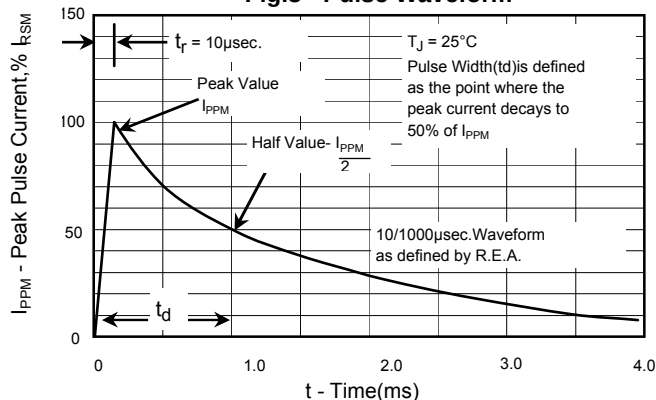
**Fig. 1 - Peak Pulse Power Rating Curve**



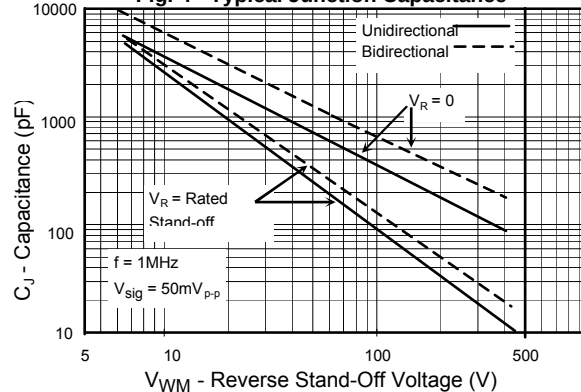
**Fig.2 - Pulse Derating Curve**



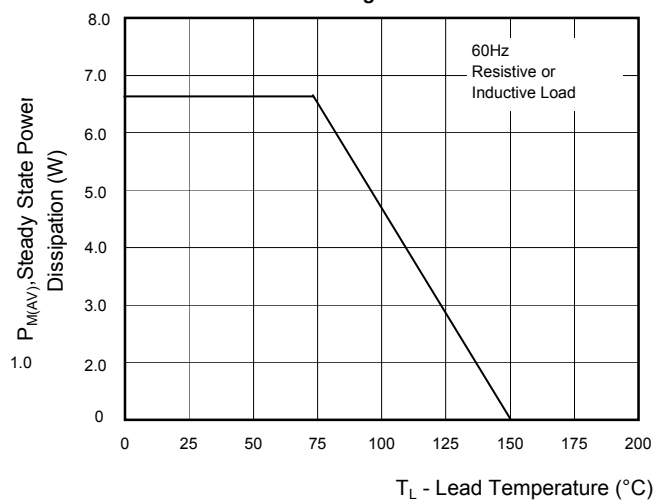
**Fig.3 - Pulse Waveform**



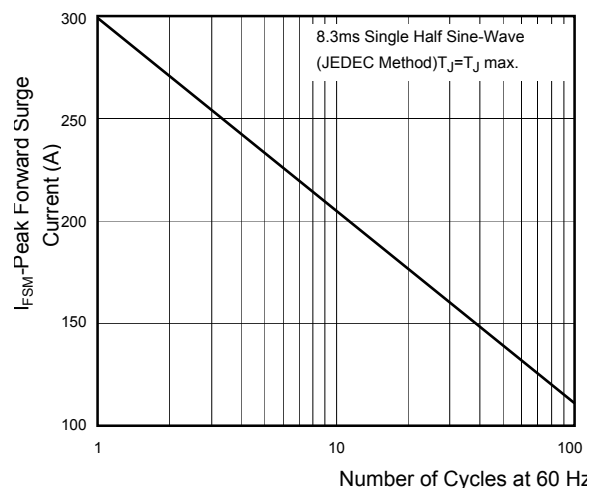
**Fig. 4 - Typical Junction Capacitance**



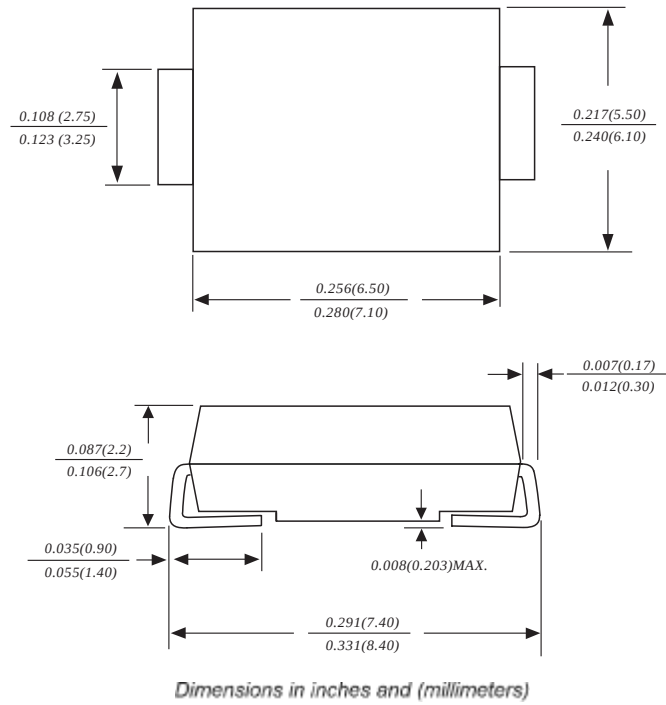
**Fig. 5 - Steady State Power Derating Curve**



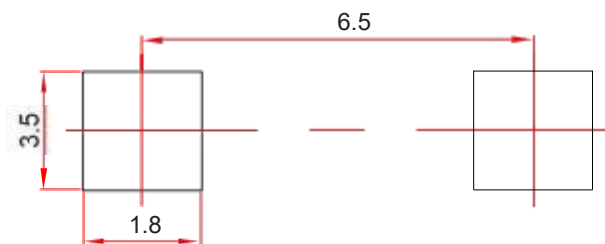
**Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**



## SMC Package outline Dimensions



## SMC Suggested pad Layout



### Note:

1. Controlling dimension: In millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.