



## SMCG Plastic-Encapsulate Diodes

### SMDJ SERIES Transient Voltage Suppressor Diodes

#### Features

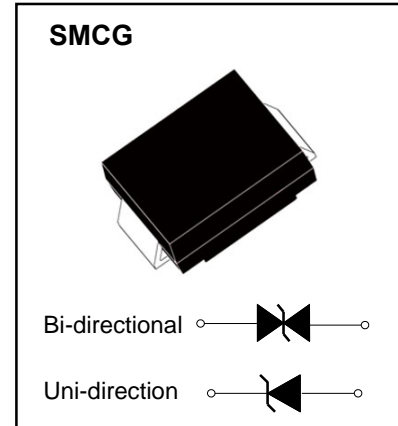
- $P_{PP}$  3000W
- $V_{RWM}$  5.0V- 440V
- Glass passivated chip

#### Applications

- Clamping Voltage

#### Marking

- SMDJXXCA/XXA  
XX : From 5.0 To 440



#### 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            |
| Operating junction and storage temperature range | $T_J, T_{STG}$ | °C   |  | -55 to +150    |

#### Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
- (3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$

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

| Part Number<br>Add C For<br>Bi-Directional<br>(Note 4) | Reverse<br>Standoff<br>Voltage<br>$V_{RWM}$ (V) | Breakdown<br>Voltage<br>$V_{BR}$ @ $I_T$ (Note 5) |         | Test<br>Current<br>$I_T$ (mA) | Max. Reverse<br>Leakage @<br>$V_{RWM}$ (Note 6)<br>$I_R$ ( $\mu\text{A}$ ) | Max. Clamping<br>Voltage @ $I_{pp}$<br>$V_C$ (V) | Max. Peak Pulse<br>Current<br>$I_{pp}$<br>(A) |
|--|---|---|---------|-------------------------------|--|--|---|
|  |   | Min (V)   | Max (V) |                               |  |  |   |
| SMDJ5.0(C)A  | 5.0   | 6.40  | 7.00    | 10                            | 800  | 9.2  | 326.09  |
| SMDJ6.0(C)A  | 6.0   | 6.67  | 7.37    | 10                            | 800  | 10.3   | 291.26  |
| SMDJ6.5(C)A  | 6.5   | 7.22  | 7.98    | 10                            | 500  | 11.2   | 267.86  |
| SMDJ7.0(C)A  | 7.0   | 7.78  | 8.60    | 10                            | 200  | 12.0   | 250.00  |
| SMDJ7.5(C)A  | 7.5   | 8.33  | 9.21    | 1.0                           | 100  | 12.9   | 232.56  |
| SMDJ8.0(C)A  | 8.0   | 8.89  | 9.83    | 1.0                           | 50   | 13.6   | 220.59  |
| SMDJ8.5(C)A  | 8.5   | 9.44  | 10.40   | 1.0                           | 20   | 14.4   | 208.33  |
| SMDJ9.0(C)A  | 9.0   | 10.00   | 11.10   | 1.0                           | 10   | 15.4   | 194.81  |
| SMDJ10(C)A   | 10.0  | 11.10   | 12.30   | 1.0                           | 5.0  | 17.0   | 176.47  |
| SMDJ11(C)A   | 11.0  | 12.20   | 13.50   | 1.0                           | 5.0  | 18.2   | 164.84  |
| SMDJ12(C)A   | 12.0  | 13.30   | 14.70   | 1.0                           | 2.0  | 19.9   | 150.75  |
| SMDJ13(C)A   | 13.0  | 14.40   | 15.90   | 1.0                           | 2.0  | 21.5   | 139.53  |
| SMDJ14(C)A   | 14.0  | 15.60   | 17.20   | 1.0                           | 2.0  | 23.2   | 129.31  |
| SMDJ15(C)A   | 15.0  | 16.70   | 18.50   | 1.0                           | 1.0  | 24.4   | 122.95  |
| SMDJ16(C)A   | 16.0  | 17.80   | 19.70   | 1.0                           | 1.0  | 26.0   | 115.38  |
| SMDJ17(C)A   | 17.0  | 18.90   | 20.90   | 1.0                           | 1.0  | 27.6   | 108.70  |
| SMDJ18(C)A   | 18.0  | 20.00   | 22.10   | 1.0                           | 1.0  | 29.2   | 102.74  |
| SMDJ20(C)A   | 20.0  | 22.20   | 24.50   | 1.0                           | 1.0  | 32.4   | 92.59   |
| SMDJ22(C)A   | 22.0  | 24.40   | 26.90   | 1.0                           | 1.0  | 35.5   | 84.51   |
| SMDJ24(C)A   | 24.0  | 26.70   | 29.50   | 1.0                           | 1.0  | 38.9   | 77.12   |
| SMDJ26(C)A   | 26.0  | 28.90   | 31.90   | 1.0                           | 1.0  | 42.1   | 71.26   |
| SMDJ28(C)A   | 28.0  | 31.10   | 34.40   | 1.0                           | 1.0  | 45.4   | 66.08   |
| SMDJ30(C)A   | 30.0  | 33.30   | 36.80   | 1.0                           | 1.0  | 48.4   | 61.98   |
| SMDJ33(C)A   | 33.0  | 36.70   | 40.60   | 1.0                           | 1.0  | 53.3   | 56.29   |
| SMDJ36(C)A   | 36.0  | 40.00   | 44.20   | 1.0                           | 1.0  | 58.1   | 51.64   |
| SMDJ40(C)A   | 40.0  | 44.40   | 49.10   | 1.0                           | 1.0  | 64.5   | 46.51   |
| SMDJ43(C)A   | 43.0  | 47.80   | 52.80   | 1.0                           | 1.0  | 69.4   | 43.23   |
| SMDJ45(C)A   | 45.0  | 50.00   | 55.30   | 1.0                           | 1.0  | 72.7   | 41.27   |
| SMDJ48(C)A   | 48.0  | 53.30   | 58.90   | 1.0                           | 1.0  | 77.4   | 38.76   |
| SMDJ51(C)A   | 51.0  | 56.70   | 62.70   | 1.0                           | 1.0  | 82.4   | 36.41   |
| SMDJ54(C)A   | 54.0  | 60.00   | 66.30   | 1.0                           | 1.0  | 87.1   | 34.44   |
| SMDJ58(C)A   | 58.0  | 64.40   | 71.20   | 1.0                           | 1.0  | 93.6   | 32.05   |
| SMDJ60(C)A   | 60.0  | 66.70   | 73.70   | 1.0                           | 1.0  | 96.8   | 30.99   |
| SMDJ64(C)A   | 64.0  | 71.10   | 78.60   | 1.0                           | 1.0  | 103.0  | 29.13   |
| SMDJ70(C)A   | 70.0  | 77.80   | 86.00   | 1.0                           | 1.0  | 113.0  | 26.55   |
| SMDJ75(C)A   | 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)

| Part Number<br>Add C For<br>Bi-Directional<br>(Note 4) | Reverse<br>Standoff<br>Voltage<br>$V_{RWM}$ (V) | Breakdown<br>Voltage<br>$V_{BR}$ @ $I_T$ (Note 5) |         | Test<br>Current<br>$I_T$ (mA) | Max. Reverse<br>Leakage @<br>$V_{RWM}$ (Note 6)<br>$I_R$ ( $\mu\text{A}$ ) | Max. Clamping<br>Voltage @ $I_{pp}$<br>$V_C$ (V) | Max. Peak Pulse<br>Current<br>$I_{pp}$<br>(A) |
|--|---|---|---------|-------------------------------|--|--|---|
|  |   | Min (V)   | Max (V) |                               |  |  |   |
| SMDJ78(C)A   | 78.0  | 86.70   | 95.80   | 1.0                           | 1.0  | 126.0  | 23.81   |
| SMDJ85(C)A   | 85.0  | 94.40   | 104.00  | 1.0                           | 1.0  | 137.0  | 21.90   |
| SMDJ90(C)A   | 90.0  | 100.0   | 111.00  | 1.0                           | 1.0  | 146.0  | 20.55   |
| SMDJ100(C)A  | 100.0   | 111.0   | 123.00  | 1.0                           | 1.0  | 162.0  | 18.52   |
| SMDJ110(C)A  | 110.0   | 122.0   | 135.00  | 1.0                           | 1.0  | 177.0  | 16.95   |
| SMDJ120(C)A  | 120.0   | 133.0   | 147.00  | 1.0                           | 1.0  | 193.0  | 15.54   |
| SMDJ130(C)A  | 130.0   | 144.0   | 159.00  | 1.0                           | 1.0  | 209.0  | 14.35   |
| SMDJ150(C)A  | 150.0   | 167.0   | 185.00  | 1.0                           | 1.0  | 243.0  | 12.35   |
| SMDJ160(C)A  | 160.0   | 178.0   | 197.00  | 1.0                           | 1.0  | 259.0  | 11.58   |
| SMDJ170(C)A  | 170.0   | 189.0   | 209.00  | 1.0                           | 1.0  | 275.0  | 10.91   |
| SMDJ180(C)A  | 180.0   | 200.0   | 220.00  | 1.0                           | 1.0  | 291.6  | 10.29   |
| SMDJ190(C)A  | 190.0   | 211.0   | 232.00  | 1.0                           | 1.0  | 307.8  | 9.75  |
| SMDJ200(C)A  | 200.0   | 224.0   | 247.00  | 1.0                           | 1.0  | 324.0  | 9.26  |
| SMDJ220(C)A  | 220.0   | 246.0   | 272.00  | 1.0                           | 1.0  | 356.0  | 8.43  |
| SMDJ250(C)A  | 250.0   | 279.0   | 309.00  | 1.0                           | 1.0  | 405.0  | 7.41  |
| SMDJ300(C)A  | 300.0   | 335.0   | 371.00  | 1.0                           | 1.0  | 486.0  | 6.17  |
| SMDJ350(C)A  | 350.0   | 391.0   | 432.00  | 1.0                           | 1.0  | 567.0  | 5.29  |
| SMDJ400(C)A  | 400.0   | 447.0   | 494.00  | 1.0                           | 1.0  | 648.0  | 4.63  |
| SMDJ440(C)A  | 440.0   | 492.0   | 543.00  | 1.0                           | 1.0  | 713.0  | 4.21  |

- Notes:
4. Suffix C denotes Bi-directional device.
  5.  $V_{BR}$  measured with  $I_T$  current pulse = 300 $\mu\text{s}$
  6. For Bi-Directional devices having  $V_{RWM}$  of 10V and under, the  $I_R$  is doubled.

Fig. 1 - Peak Pulse Power Rating Curve

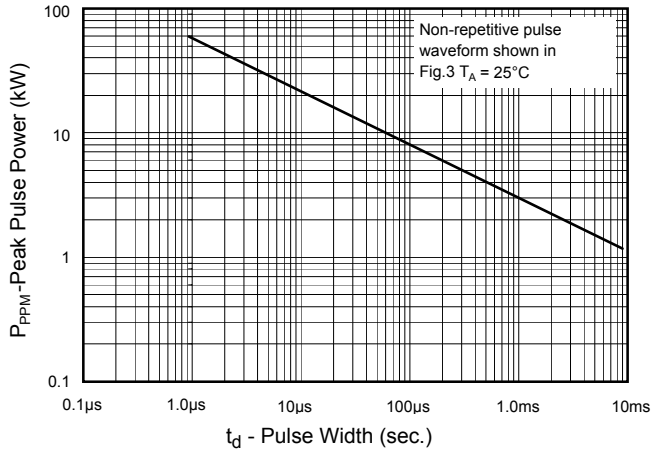


Fig.2 - Pulse Derating Curve

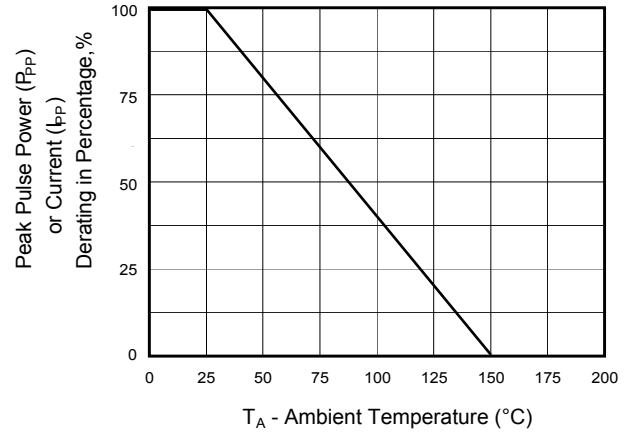


Fig.3 - Pulse Waveform

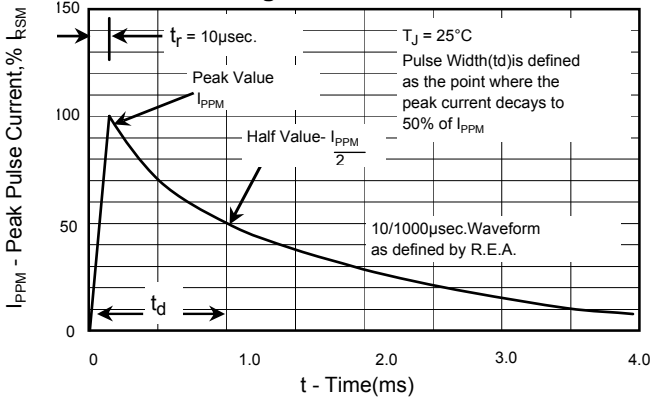


Fig. 4 - Typical Junction Capacitance

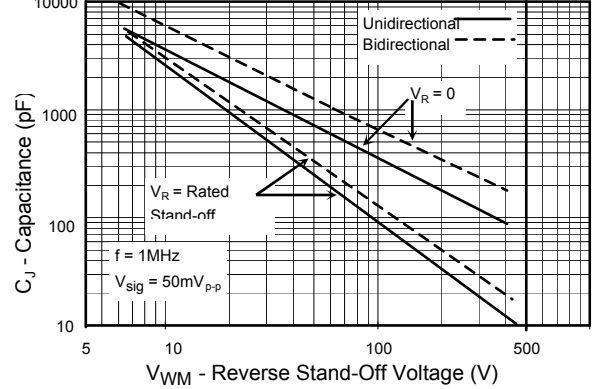


Fig. 5 - Steady State Power Derating Curve

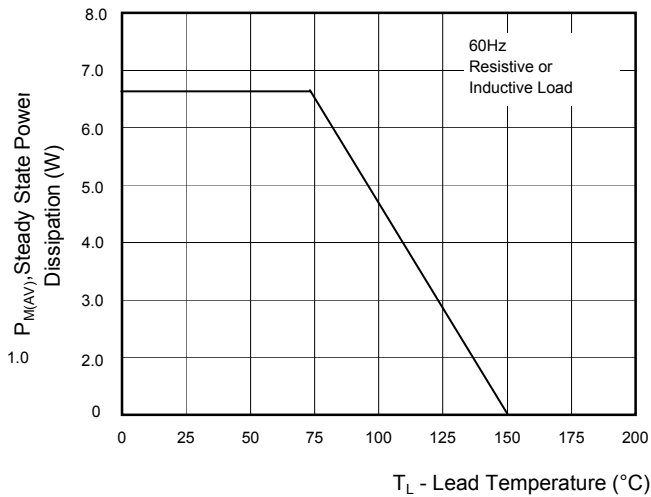
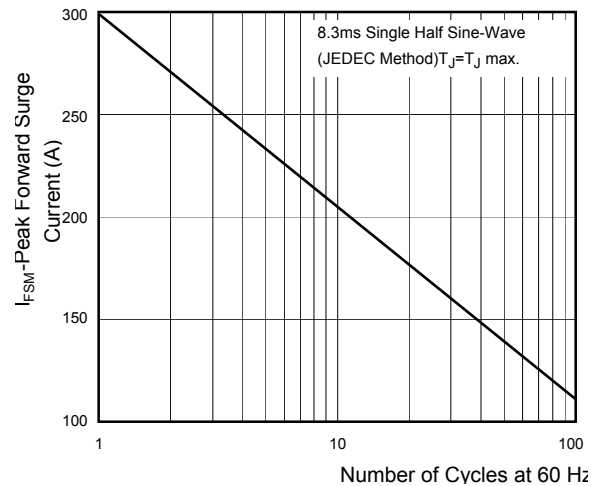
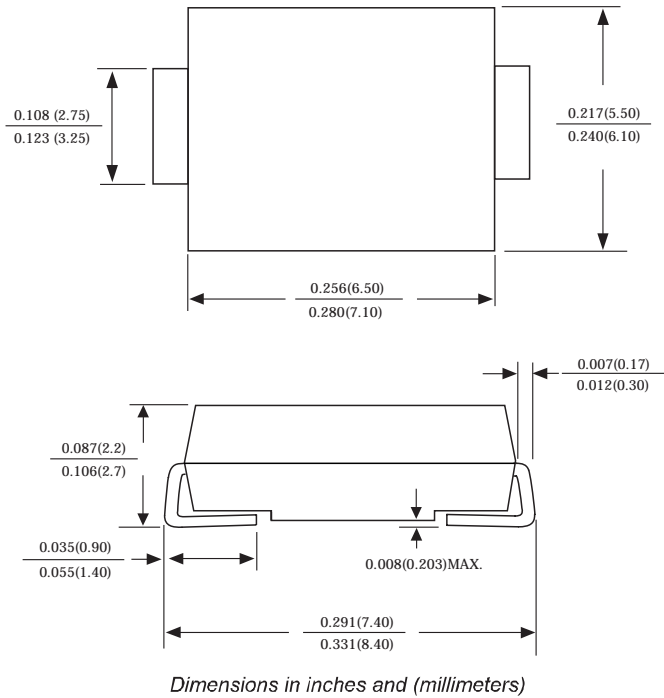


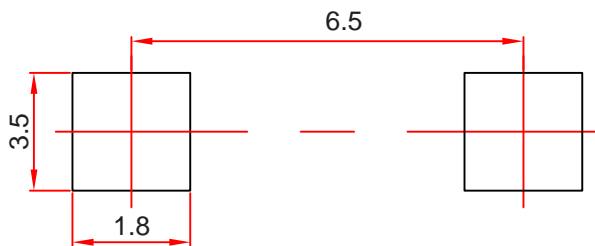
Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



## SMCG Package Outline Dimensions



## SMCG Suggested Pad Layout



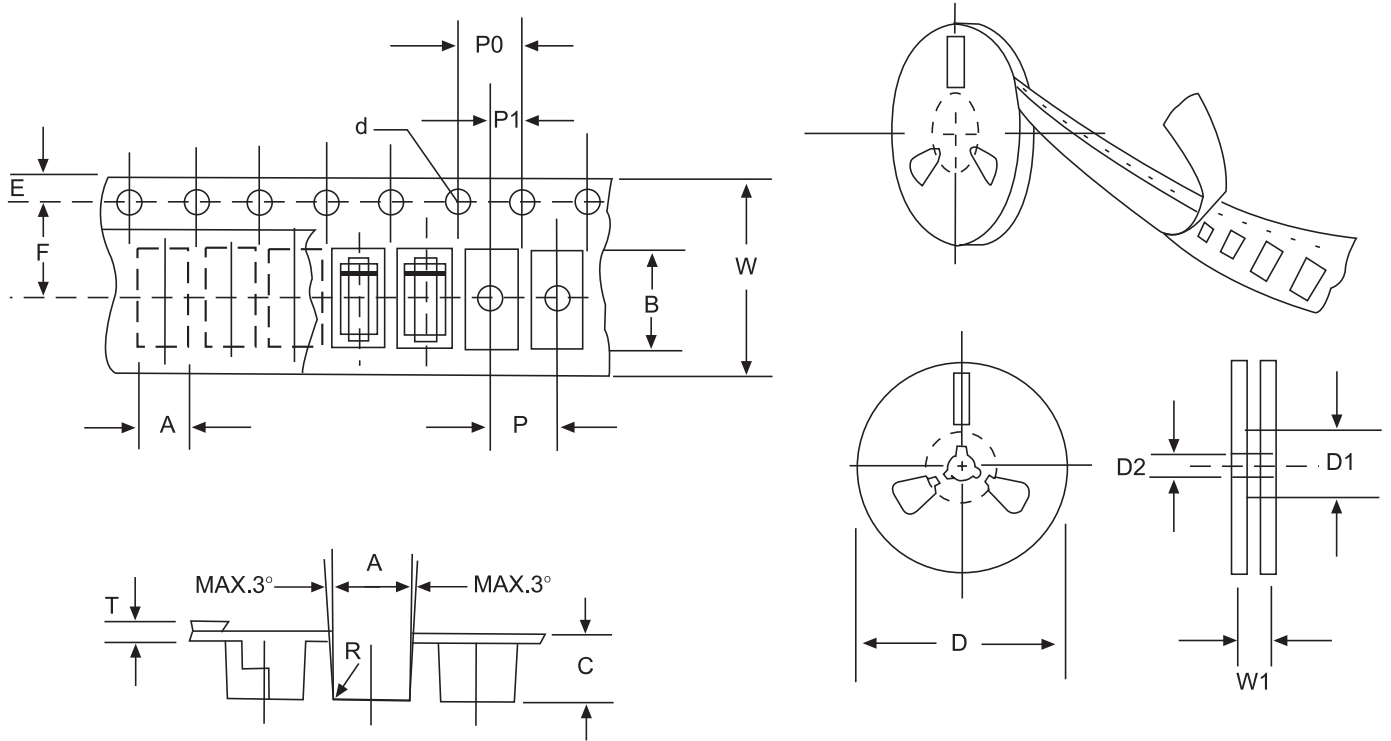
### Note:

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

### NOTICE

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## Reel Taping Specifications For Surface Mount Devices- SMCG



**FIG: CONFIGURATION OF SURFACE MOUNTED DEVICES TAPING**

| ITEM                   | SYMBOL | SMCG mm(inch)          |
|------------------------|--------|------------------------|
| Carrier width          | A      | 6.05±0.1(0.238±0.004)  |
| Carrier length         | B      | 8.31±0.1(0.327±0.004)  |
| Carrier depth          | C      | 2.70±0.1(0.106±0.004)  |
| Sprocket hole          | d      | 1.55±0.05(0.061±0.002) |
| Reel outside diameter  | D      | 330±2.0(13±0.079)      |
| Reel inner diameter    | D1     | 75 ±1.0 ( 2.95 ±0.039) |
| Feed hole diameter     | D2     | 13±0.5(0.512±0.020)    |
| Sprocket hole position | E      | 1.75±0.1(0.069±0.004)  |
| Punch hole position    | F      | 7.65±0.05(0.301±0.002) |
| Punch hole pitch       | P      | 8.0±0.1(0.315±0.004)   |
| Sprocket hole pitch    | P0     | 4.0±0.1(0.157±0.004)   |
| Embossment center      | P1     | 2.0±0.1(0.079±0.004)   |
| Total tape thickness   | T      | 0.3±0.1(0.012±0.004)   |
| Tape width             | W      | 16.0±0.2(0.630±0.008)  |
| Reel width             | W1     | 24.0±2.0(0.945±0.079)  |

NOTE: Devices are packed in accordance with EIA standard RS-481-A and specification given above.