

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

### MECHANICAL DATA

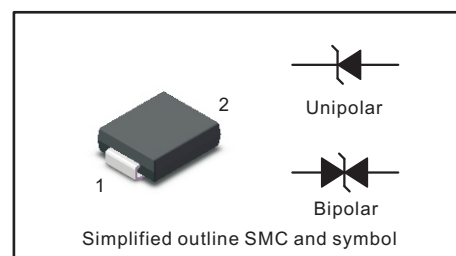
- Case: SMC
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.22g / 0.0077oz

### FEATURES

- Halogen-Free
- RoHS compliant
- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Typical maximum temperature coefficient  $\Delta VBR = 0.1\% \times VBR@25^{\circ}C \times \Delta T$
- Glass passivated chip junction
- 3000W peak pulse power capability at IOxIOOOUs waveform, repetition rate {duty cycles}:0.01 %

### PINNING

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



- Fast response time: typically less than 1.0ps from OV to BV min
- Excellent clamping capability
- Low incremental surge resistance
- Typical IR less than 2UA above 12V
- High Temperature soldering guaranteed: 260°C/40 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-O
- Matte Tin Lead-free Plated

### Maximum Ratings and Thermal Characteristics (TA=25°C unless otherwise noted)

| Parameter  | Symbol                          | Value      | Unit |
|--|---------------------------------|------------|------|
| Peak Pulse Power Dissipation at TA=25°C by 10x1000 us waveform (Fig.1)(Note 1), (Note 2) | P <sub>PPM</sub>                | 3000       | W    |
| Power Dissipation on infinite heat sink at TA=50°C                                       | P <sub>M(AV)</sub>              | 6.5        | W    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)                         | I <sub>FSM</sub>                | 300        | A    |
| Maximum Instantaneous Forward Voltage at 100A for Unidirectional only                    | V <sub>F</sub>                  | 3.5        | V    |
| Operating Junction and Storage Temperature Range   | T <sub>J</sub> T <sub>STG</sub> | -65 to 150 | °C   |
| Typical Thermal Resistance Junction to Lead  | R <sub>UJL</sub>                | 15         | °C/W |
| Typical Thermal Resistance Junction to Ambient   | R <sub>UJA</sub>                | 75         | °C/W |

#### Notes:

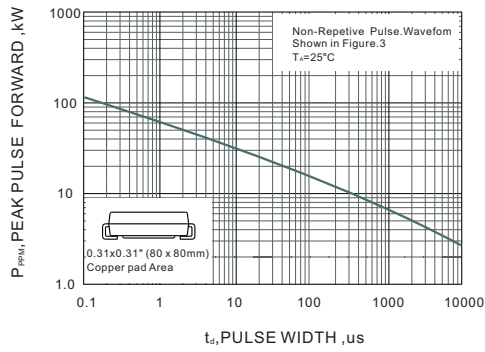
1. Non-repetitive current pulse . per Fig 3 and derated above Ta = 25°C per Fig. 2
2. Mounted on copper pad area of 0.31x0.31" (8.0 x 8.0mm) to each terminal
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

Characteristics at Ta = 25°C

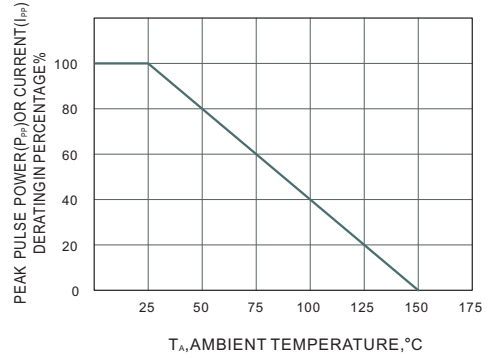
Table 1

| Type     |           | Reverse Stand-off Voltage | Breakdown Voltage                |      | Test Current     | Max. Clamp Voltage | Max. Peak Pulse Current | Max. Reverse Leakage | Package                          |                 |
|----------|-----------|---------------------------|----------------------------------|------|------------------|--------------------|-------------------------|----------------------|----------------------------------|-----------------|
|          |           |                           | V <sub>BR</sub> @ I <sub>T</sub> |      |                  |                    |                         |                      | SMC                              |                 |
|          |           |                           | UNI                              | BI   | V <sub>RMW</sub> | Min                | Max                     | I <sub>T</sub>       | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub> |
|          |           | V                         | V                                | V    | mA               | V                  | A                       | uA                   | UNI                              | BI              |
| SMDJ5.0A | SMDJ5.0CA | 5.0                       | 6.4                              | 7    | 10               | 9.2                | 326.1                   | 800                  | RDE                              | DDE             |
| SMDJ6.0A | SMDJ6.0CA | 6.0                       | 6.67                             | 7.37 | 10               | 10.3               | 291.3                   | 800                  | RDG                              | DDG             |
| SMDJ6.5A | SMDJ6.5CA | 6.5                       | 7.22                             | 7.98 | 10               | 11.2               | 267.9                   | 500                  | RDK                              | DDK             |
| SMDJ7.0A | SMDJ7.0CA | 7.0                       | 7.78                             | 8.6  | 10               | 12                 | 250                     | 200                  | PDM                              | DDM             |
| SMDJ7.5A | SMDJ7.5CA | 7.5                       | 8.33                             | 9.21 | 1                | 12.9               | 232.6                   | 100                  | PDP                              | DDP             |
| SMDJ8.0A | SMDJ8.0CA | 8.0                       | 8.89                             | 9.83 | 1                | 13.6               | 220.6                   | 50                   | PDR                              | DDR             |
| SMDJ8.5A | SMDJ8.5CA | 8.5                       | 9.44                             | 10.4 | 1                | 14.4               | 208.3                   | 20                   | PDT                              | DDT             |
| SMDJ9.0A | SMDJ9.0CA | 9.0                       | 10                               | 11.1 | 1                | 15.4               | 194.8                   | 10                   | PDV                              | DDV             |
| SMDJ10A  | SMDJ10CA  | 10.0                      | 11.1                             | 12.3 | 1                | 17                 | 176.5                   | 5                    | PDX                              | DDX             |
| SMDJ11A  | SMDJ11CA  | 11.0                      | 12.2                             | 13.5 | 1                | 18.2               | 164.8                   | 2                    | PDZ                              | DDZ             |
| SMDJ12A  | SMDJ12CA  | 12.0                      | 13.3                             | 14.7 | 1                | 19.9               | 150.8                   | 2                    | PEE                              | DEE             |
| SMDJ13A  | SMDJ13CA  | 13.0                      | 14.4                             | 15.9 | 1                | 21.5               | 139.5                   | 2                    | PEG                              | DEG             |
| SMDJ14A  | SMDJ14CA  | 14.0                      | 15.6                             | 17.2 | 1                | 23.2               | 129.3                   | 2                    | PEK                              | DEK             |
| SMDJ15A  | SMDJ15CA  | 15.0                      | 16.7                             | 18.5 | 1                | 24.4               | 123                     | 2                    | PEM                              | DEM             |
| SMDJ16A  | SMDJ16CA  | 16.0                      | 17.8                             | 19.7 | 1                | 26                 | 115.4                   | 2                    | PEP                              | DEP             |
| SMDJ17A  | SMDJ17CA  | 17.0                      | 18.9                             | 20.9 | 1                | 27.6               | 108.7                   | 2                    | PER                              | DER             |
| SMDJ18A  | SMDJ18CA  | 18.0                      | 20                               | 22.1 | 1                | 29.2               | 102.7                   | 2                    | PET                              | DET             |
| SMDJ20A  | SMDJ20CA  | 20.0                      | 22.2                             | 24.5 | 1                | 32.4               | 92.6                    | 2                    | PEV                              | DEV             |
| SMDJ22A  | SMDJ22CA  | 22.0                      | 24.4                             | 26.9 | 1                | 35.5               | 84.5                    | 2                    | PEX                              | DEX             |
| SMDJ24A  | SMDJ24CA  | 24.0                      | 26.7                             | 29.5 | 1                | 38.9               | 77.1                    | 2                    | PEZ                              | DEZ             |
| SMDJ26A  | SMDJ26CA  | 26.0                      | 28.9                             | 31.9 | 1                | 42.1               | 71.3                    | 2                    | PFE                              | DFE             |
| SMDJ28A  | SMDJ28CA  | 28.0                      | 31.1                             | 34.4 | 1                | 45.4               | 66.1                    | 2                    | PFG                              | DFG             |
| SMDJ30A  | SMDJ30CA  | 30.0                      | 33.3                             | 36.8 | 1                | 48.4               | 62                      | 2                    | PFK                              | DFK             |
| SMDJ33A  | SMDJ33CA  | 33.0                      | 36.7                             | 40.6 | 1                | 53.3               | 56.3                    | 2                    | PFM                              | DFM             |
| SMDJ36A  | SMDJ36CA  | 36.0                      | 40                               | 44.2 | 1                | 58.1               | 51.6                    | 2                    | PFP                              | DFP             |
| SMDJ40A  | SMDJ40CA  | 40.0                      | 44.4                             | 49.1 | 1                | 64.5               | 46.5                    | 2                    | PFR                              | DFR             |
| SMDJ43A  | SMDJ43CA  | 43.0                      | 47.8                             | 52.8 | 1                | 69.4               | 43.2                    | 2                    | PFT                              | DFT             |
| SMDJ45A  | SMDJ45CA  | 45.0                      | 50                               | 55.3 | 1                | 72.7               | 41.3                    | 2                    | PFV                              | DFV             |
| SMDJ48A  | SMDJ48CA  | 48.0                      | 53.3                             | 58.9 | 1                | 77.4               | 38.8                    | 2                    | PFX                              | DFX             |
| SMDJ51A  | SMDJ51CA  | 51.0                      | 56.7                             | 62.7 | 1                | 82.4               | 36.4                    | 2                    | PFZ                              | DFZ             |
| SMDJ54A  | SMDJ54CA  | 54.0                      | 60                               | 66.3 | 1                | 87.1               | 34.4                    | 2                    | RGE                              | DGE             |
| SMDJ58A  | SMDJ58CA  | 58.0                      | 64.4                             | 71.2 | 1                | 93.6               | 32.1                    | 2                    | PGG                              | DGG             |
| SMDJ60A  | SMDJ60CA  | 60.0                      | 66.7                             | 73.7 | 1                | 96.8               | 31                      | 2                    | PGK                              | DGK             |
| SMDJ64A  | SMDJ64CA  | 64.0                      | 71.1                             | 78.6 | 1                | 103                | 29.1                    | 2                    | PGM                              | DGM             |
| SMDJ70A  | SMDJ70CA  | 70.0                      | 77.8                             | 86   | 1                | 113                | 26.5                    | 2                    | PGP                              | DGP             |
| SMDJ75A  | SMDJ75CA  | 75.0                      | 83.3                             | 92.1 | 1                | 121                | 24.8                    | 2                    | PGR                              | DGR             |
| SMDJ78A  | SMDJ78CA  | 78.0                      | 86.7                             | 95.8 | 1                | 126                | 23.8                    | 2                    | PGT                              | DGT             |
| SMDJ85A  | SMDJ85CA  | 85.0                      | 94.4                             | 104  | 1                | 137                | 21.9                    | 2                    | PGV                              | DGV             |
| SMDJ90A  | SMDJ90CA  | 90.0                      | 100                              | 111  | 1                | 146                | 20.5                    | 2                    | PGX                              | DGX             |
| SMDJ100A | SMDJ100CA | 100.0                     | 111                              | 123  | 1                | 162                | 18.5                    | 2                    | PGZ                              | DGZ             |
| SMDJ110A | SMDJ110CA | 110.0                     | 122                              | 135  | 1                | 177                | 16.9                    | 2                    | PHE                              | DHE             |
| SMDJ120A | SMDJ120CA | 120.0                     | 133                              | 147  | 1                | 193                | 15.5                    | 2                    | PHG                              | DHG             |
| SMDJ130A | SMDJ130CA | 130.0                     | 144                              | 159  | 1                | 209                | 14.4                    | 2                    | PHK                              | DHK             |
| SMDJ150A | SMDJ150CA | 150.0                     | 167                              | 185  | 1                | 243                | 12.3                    | 2                    | PHM                              | DHM             |
| SMDJ160A | SMDJ160CA | 160.0                     | 178                              | 197  | 1                | 259                | 11.6                    | 2                    | PHP                              | DHP             |
| SMDJ170A | SMDJ170CA | 170.0                     | 189                              | 209  | 1                | 275                | 10.9                    | 2                    | PHR                              | DHR             |

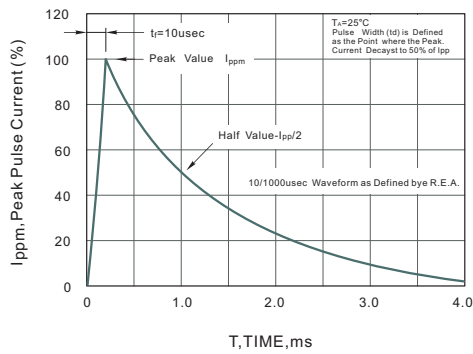
**Fig.1 Peak Pulse Power Rating Curve**



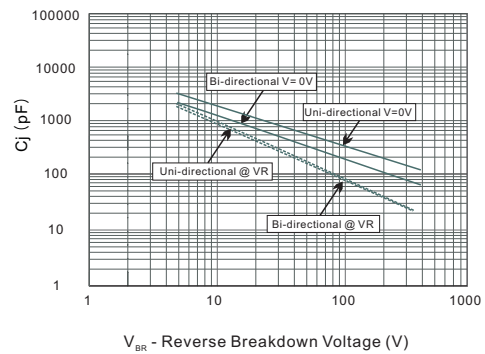
**Fig.2 Forward Current Derating Curve**



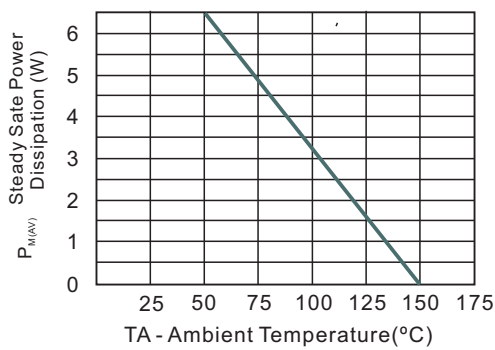
**Fig.3 Pulse Waveform**



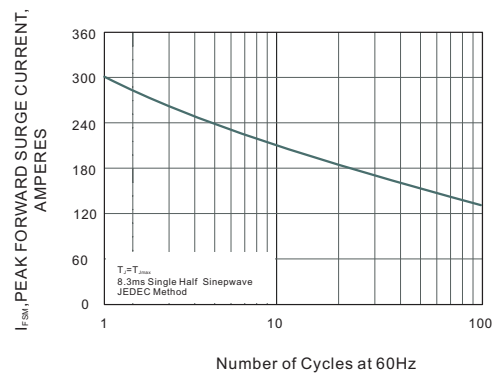
**Fig.4 Typical Junction Capacitance**



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



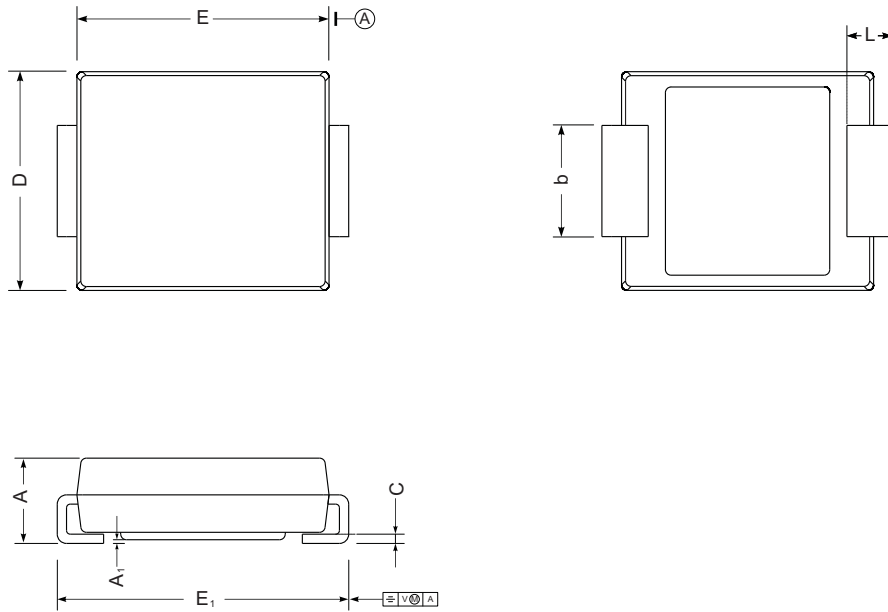
**Fig.6 Maximum Non-Repetitive Peak Forward Surge Current**



## PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

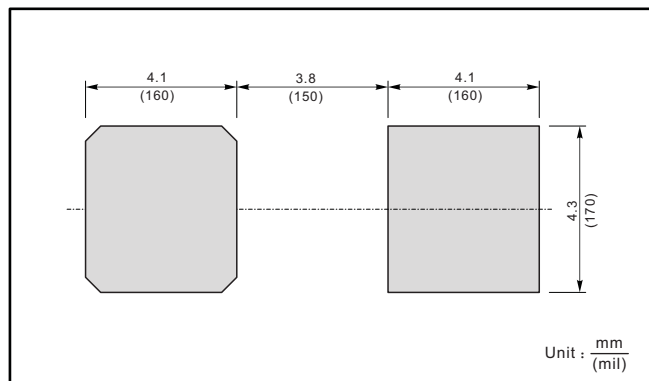
SMC



SMC mechanical data

| UNIT |     | A    | E   | D   | E <sub>1</sub> | A <sub>1</sub> | C    | L   | b    |
|------|-----|------|-----|-----|----------------|----------------|------|-----|------|
| mm   | max | 2.62 | 7.1 | 6.2 | 8.1            | 0.21           | 0.31 | 1.7 | 3.25 |
|      | min | 2.00 | 6.6 | 5.6 | 7.8            | 0.05           | 0.15 | 1.0 | 2.75 |
| mil  | max | 103  | 280 | 244 | 319            | 8.3            | 12   | 59  | 128  |
|      | min | 79   | 260 | 220 | 307            | 2.0            | 5.9  | 32  | 108  |

### The recommended mounting pad size



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