



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

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated chip junction
- 3000W peak pulse power capability at 10x1000Us waveform, repetition rate {duty cycles}:0.01 %
- Excellent clamping capability
- Low incremental surge resistance
- Matte Tin Lead-free Plated

#### PINNING

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



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

| Parameter   | Symbol                          | Value      | Unit |
|---|---------------------------------|------------|------|
| Peak Pulse Power Dissipation at T <sub>A</sub> =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     |                      |
|          |           |                           | V <sub>RMW</sub>                 | Min  | Max          | I <sub>T</sub>    | V <sub>c</sub> @ I <sub>PP</sub> | I <sub>PP</sub>      | IR@VR   | Device Marking Ccode |
| UNI      | BI        | 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

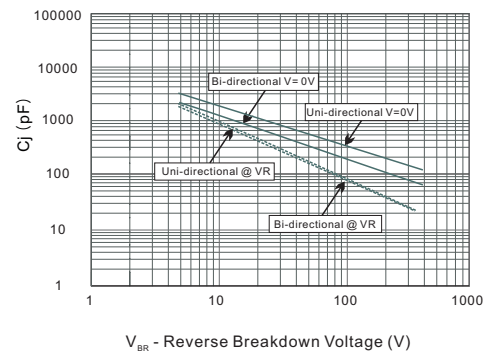


Fig.5 Steady State Power Derating Curve



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 | 7.0 | 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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