

SuperTVS – 1500W Transient Voltage Suppressor

1. Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- Meets MSL level 1, per J-STD-020
- 1500W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical IR less than 1µA above 10V
- Plastic package has underwriters laboratory flammability 94V-0
- High Temperature soldering: 260°C/10 seconds at terminals

2. Mechanical Data

- Case: JEDEC DO-214AB. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 12mm tape
- Weight: 0.26g

3. Maximum Ratings and Characteristics

Ratings at 25° ambient temperature unless otherwise specified

| Rating | Symbol | Value | Units |
|--|-----------------------------------|------------|-------|
| Peak pulse power dissipation at 10/1000us waveform(Note1,2) | P _{PPM} | 1500 | W |
| Peak pulse current of at 10/1000us waveform(Note1) | I _{PPM} | See Table | A |
| Steady state power dissipation at TA=50°C | P _{M(AV)} | 6.5 | W |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)(Note3) | I _{FSM} | 200 | A |
| Operating junction and Storage Temperature Range | T _J , T _{STG} | -65 to 150 | °C |
| Typical thermal resistance junction to lead | R _{θJL} | 15 | °C/W |
| Typical thermal resistance junction to ambient | R _{θJA} | 75 | °C/W |

SMCJ SERIES

Rev-1.1

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig.2.
2. Mounted on 8.0mm×8.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.

4. Electrical Characteristics (TA=25°C)

| Part Number | Part Number | Marking | | Reverse Stand off Voltage V _R | Breakdown Voltage V _{BR} (Volts) @ I _T | | Test Current I _T | Maximum Clamping Voltage V _C @ I _{PP} | Maximum Peak Pulse Current I _{PP} | Maximum Reverse Leakage I _R @ V _R | ROHS2.0 |
|-------------|-------------|---------|-----|--|--|------|-----------------------------|---|--|---|---------|
| | | | | | MIN | MAX | | | | | |
| UNI | BI | UNI | BI | (V) | | | (mA) | (V) | (A) | (μA) | |
| SMCJ5.0A | SMCJ5.0CA | GDE | BDE | 5 | 6.4 | 7 | 10 | 9.2 | 163 | 400 | y |
| SMCJ6.0A | SMCJ6.0CA | GDG | BDG | 6 | 6.67 | 7.37 | 10 | 10.3 | 145.7 | 400 | y |
| SMCJ6.5A | SMCJ6.5CA | GDK | BDK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 134 | 250 | y |
| SMCJ7.0A | SMCJ7.0CA | GDM | BDM | 7 | 7.78 | 8.6 | 10 | 12 | 125 | 100 | y |
| SMCJ7.5A | SMCJ7.5CA | GDP | BDP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 116.3 | 80 | y |
| SMCJ8.0A | SMCJ8.0CA | GDR | BDR | 8 | 8.89 | 9.83 | 1 | 13.6 | 110.3 | 50 | y |
| SMCJ8.5A | SMCJ8.5CA | GDT | BDT | 8.5 | 9.44 | 10.4 | 1 | 14.4 | 104.2 | 20 | y |
| SMCJ9.0A | SMCJ9.0CA | GDV | BDV | 9 | 10 | 11.1 | 1 | 15.4 | 97.4 | 10 | y |
| SMCJ10A | SMCJ10CA | GDX | BDX | 10 | 11 | 12.3 | 1 | 17 | 88.3 | 5 | y |
| SMCJ11A | SMCJ11CA | GDZ | BDZ | 11 | 12.2 | 13.5 | 1 | 18.2 | 82.5 | 1 | y |
| SMCJ12A | SMCJ12CA | GEE | BEE | 12 | 13.3 | 14.7 | 1 | 19.9 | 75.4 | 1 | y |
| SMCJ13A | SMCJ13CA | GEG | BEG | 13 | 14.4 | 15.9 | 1 | 21.5 | 69.8 | 1 | y |
| SMCJ14A | SMCJ14CA | GEK | BEK | 14 | 15.6 | 17.2 | 1 | 23.2 | 64.7 | 1 | y |
| SMCJ15A | SMCJ15CA | GEM | BEM | 15 | 16.7 | 18.5 | 1 | 24.4 | 61.5 | 1 | y |
| SMCJ16A | SMCJ16CA | GEP | BEP | 16 | 17.8 | 19.7 | 1 | 26 | 57.7 | 1 | y |
| SMCJ17A | SMCJ17CA | GER | BER | 17 | 18.9 | 20.9 | 1 | 27.6 | 54.4 | 1 | y |
| SMCJ18A | SMCJ18CA | GET | BET | 18 | 20 | 22.1 | 1 | 29.2 | 51.4 | 1 | y |
| SMCJ20A | SMCJ20CA | GEV | BEV | 20 | 22.2 | 24.5 | 1 | 32.4 | 46.3 | 1 | y |
| SMCJ22A | SMCJ22CA | GEX | BEX | 22 | 24.4 | 26.9 | 1 | 35.5 | 42.3 | 1 | y |
| SMCJ24A | SMCJ24CA | GEZ | BEZ | 24 | 26.7 | 29.5 | 1 | 38.9 | 38.6 | 1 | y |
| SMCJ26A | SMCJ26CA | GFE | BFE | 26 | 28.9 | 31.9 | 1 | 42.1 | 35.7 | 1 | y |
| SMCJ28A | SMCJ28CA | GFG | BFG | 28 | 31.1 | 34.4 | 1 | 45.4 | 33.1 | 1 | y |
| SMCJ30A | SMCJ30CA | GFK | BFK | 30 | 33.3 | 36.8 | 1 | 48.4 | 31 | 1 | y |
| SMCJ33A | SMCJ33CA | GFM | BFM | 33 | 36.7 | 40.6 | 1 | 53.3 | 28.2 | 1 | y |
| SMCJ36A | SMCJ36CA | GFP | BFP | 36 | 40 | 44.2 | 1 | 58.1 | 25.9 | 1 | y |
| SMCJ40A | SMCJ40CA | GFR | BFR | 40 | 44.4 | 49.1 | 1 | 64.5 | 23.3 | 1 | y |
| SMCJ43A | SMCJ43CA | GFT | BFT | 43 | 47.8 | 52.8 | 1 | 69.4 | 21.7 | 1 | y |

SMCJ SERIES

Rev-1.1

| Part Number | Part Number | Marking | | Reverse Stand off Voltage V_R | Breakdown Voltage V_{BR} (Volts) @ I_R | | Test Current I_R (mA) | Maximum Clamping Voltage V_C @ I_{PP} (V) | Maximum Peak Pulse Current I_{PP} (A) | Maximum Reverse Leakage I_R @ V_R (μ A) | ROHS2.0 |
|-------------|-------------|---------|-----|---------------------------------|--|------|-------------------------|---|---|--|---------|
| | | | | | MIN | MAX | | | | | |
| SMCJ45A | SMCJ45CA | GFV | BFV | 45 | 50 | 55.3 | 1 | 72.7 | 20.6 | 1 | y |
| SMCJ48A | SMCJ48CA | GFX | BFX | 48 | 53.3 | 58.9 | 1 | 77.4 | 19.4 | 1 | y |
| SMCJ51A | SMCJ51CA | GFZ | BFZ | 51 | 56.7 | 62.7 | 1 | 82.4 | 18.2 | 1 | y |
| SMCJ54A | SMCJ54CA | GGE | BGE | 54 | 60 | 66.3 | 1 | 87.1 | 17.3 | 1 | y |
| SMCJ58A | SMCJ58CA | GGG | BGG | 58 | 64.4 | 71.2 | 1 | 93.6 | 16.1 | 1 | y |
| SMCJ60A | SMCJ60CA | GGK | BGK | 60 | 66.7 | 73.7 | 1 | 96.8 | 15.5 | 1 | y |
| SMCJ64A | SMCJ64CA | GGM | BGM | 64 | 71.1 | 78.6 | 1 | 103 | 14.6 | 1 | y |
| SMCJ70A | SMCJ70CA | GGP | BGP | 70 | 77.8 | 86 | 1 | 113 | 13.3 | 1 | y |
| SMCJ75A | SMCJ75CA | GGR | BGR | 75 | 83.3 | 92.1 | 1 | 121 | 12.4 | 1 | y |
| SMCJ78A | SMCJ78CA | GGT | BGT | 78 | 86.7 | 95.8 | 1 | 126 | 11.9 | 1 | y |
| SMCJ85A | SMCJ85CA | GGV | BGV | 85 | 94.4 | 104 | 1 | 137 | 11 | 1 | y |
| SMCJ90A | SMCJ90CA | GGX | BGX | 90 | 100 | 111 | 1 | 146 | 10.3 | 1 | y |
| SMCJ100A | SMCJ100CA | GGZ | BGZ | 100 | 111 | 123 | 1 | 162 | 9.3 | 1 | y |
| SMCJ110A | SMCJ110CA | GHE | BHE | 110 | 122 | 135 | 1 | 177 | 8.5 | 1 | y |
| SMCJ120A | SMCJ120CA | GHG | BHG | 120 | 133 | 147 | 1 | 193 | 7.8 | 1 | y |
| SMCJ130A | SMCJ130CA | GHK | BHK | 130 | 144 | 159 | 1 | 209 | 7.2 | 1 | y |
| SMCJ150A | SMCJ150CA | GHM | BHM | 150 | 167 | 185 | 1 | 243 | 6.2 | 1 | y |
| SMCJ160A | SMCJ160CA | GHP | BHP | 160 | 178 | 197 | 1 | 259 | 5.8 | 1 | y |
| SMCJ170A | SMCJ170CA | GHR | BHR | 170 | 189 | 209 | 1 | 275 | 5.5 | 1 | y |
| SMCJ180A | SMCJ180CA | GHT | BHT | 180 | 201 | 222 | 1 | 292 | 5.1 | 1 | y |
| SMCJ200A | SMCJ200CA | GHV | BHV | 200 | 224 | 247 | 1 | 324 | 4.6 | 1 | y |
| SMCJ220A | SMCJ220CA | GHX | BHX | 220 | 246 | 272 | 1 | 356 | 4.2 | 1 | y |
| SMCJ250A | SMCJ250CA | GHZ | BHZ | 250 | 279 | 309 | 1 | 405 | 3.7 | 1 | y |
| SMCJ300A | SMCJ300CA | GJE | BJE | 300 | 335 | 371 | 1 | 486 | 3.1 | 1 | y |
| SMCJ350A | SMCJ350CA | GJG | BJG | 350 | 391 | 432 | 1 | 567 | 2.6 | 1 | y |
| SMCJ400A | SMCJ400CA | GJK | BJK | 400 | 447 | 494 | 1 | 648 | 2.3 | 1 | y |
| SMCJ440A | SMCJ440CA | GJM | BJM | 440 | 492 | 543 | 1 | 713 | 2.1 | 1 | y |

For bidirectional type having V_R of 10 volts and less, the I_R limit is double.

5. Ratings and Characteristic Curves (TA =25°C unless otherwise noted)

Figure 1. Peak Pulse Power Rating Curve

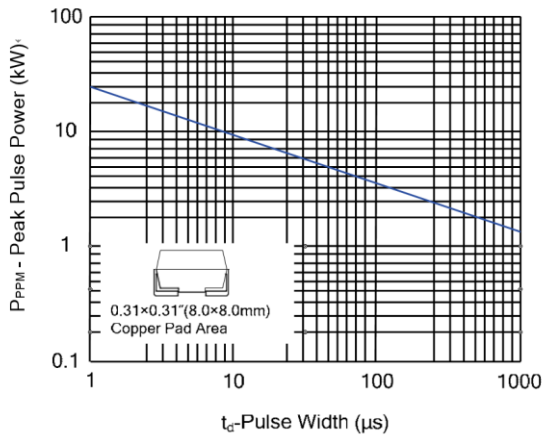


Figure 2 Pulse Derating Curve

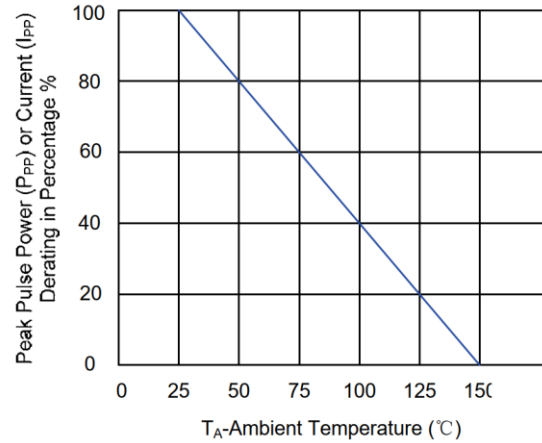


Figure 3 Pulse Waveform

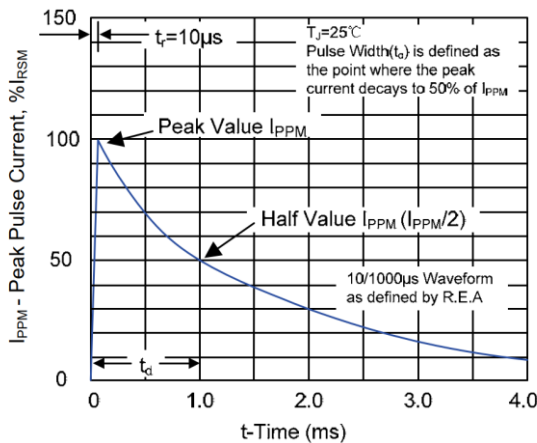


Figure 4 Typical Junction Capacitance

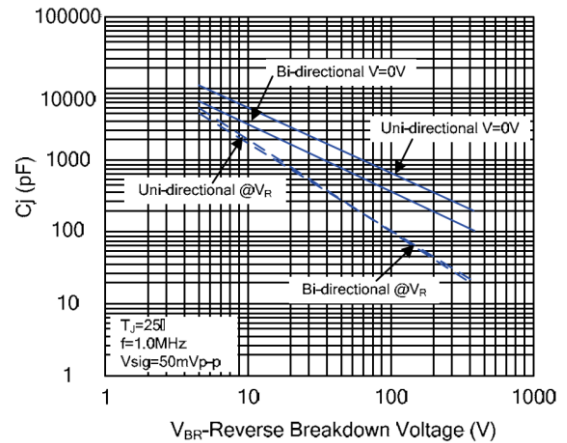


Figure 5 Steady State Power Dissipation Derating Curve

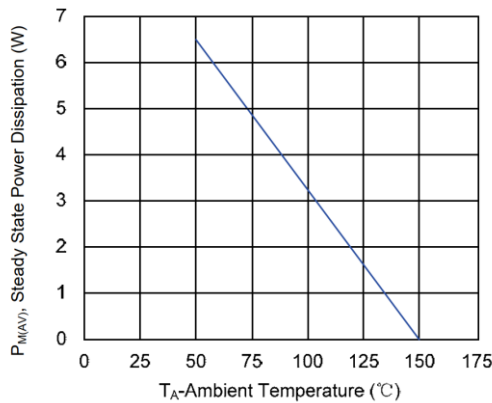
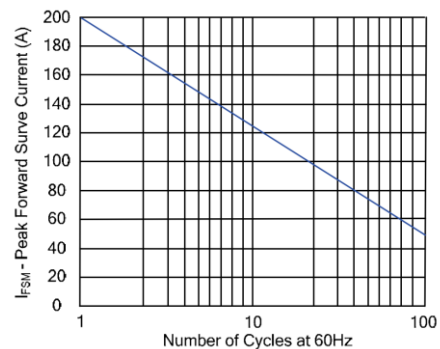
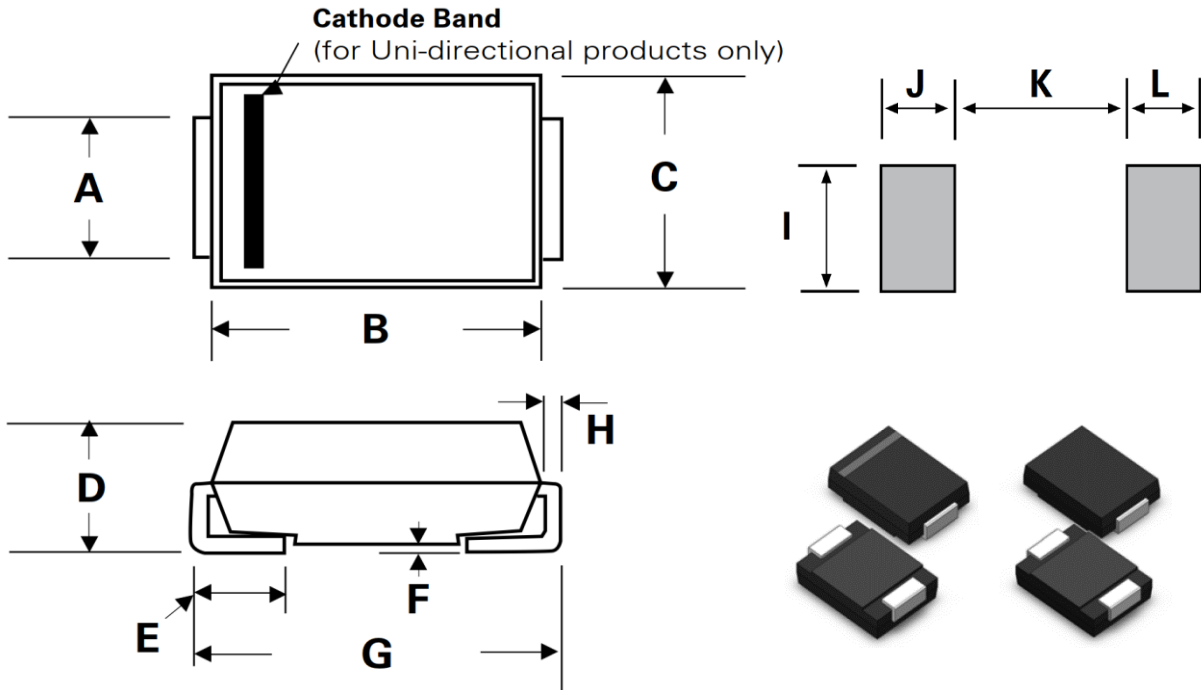


Figure 6 Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only

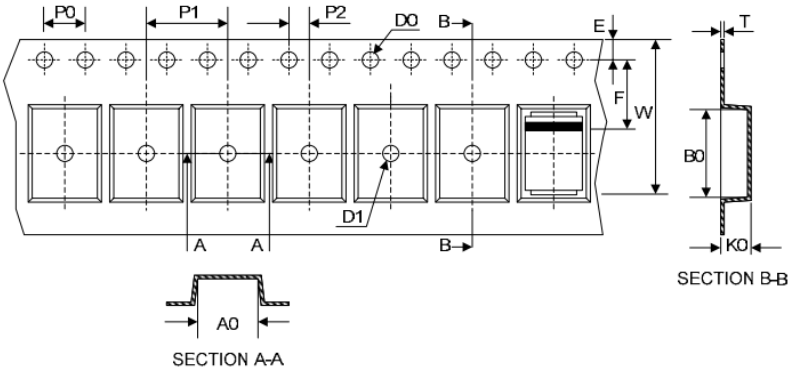
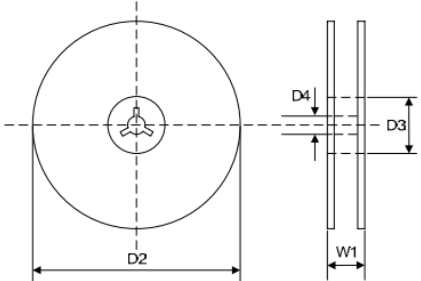
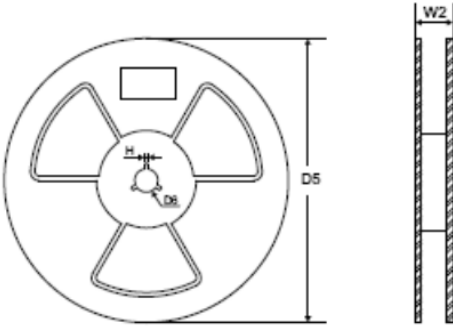


6. Dimension (SMC/DO-214AB)



| Dimensions | Inches | | Millimeters | |
|------------|--------|-------|-------------|-------|
| | Min | Max | Min | Max |
| A | 0.114 | 0.126 | 2.9 | 3.2 |
| B | 0.26 | 0.28 | 6.6 | 7.11 |
| C | 0.22 | 0.245 | 5.59 | 6.22 |
| D | 0.079 | 0.103 | 2.06 | 2.62 |
| E | 0.03 | 0.06 | 0.76 | 1.52 |
| F | - | 0.008 | - | 0.203 |
| G | 0.305 | 0.32 | 7.75 | 8.13 |
| H | 0.006 | 0.012 | 0.152 | 0.305 |
| I | 0.129 | - | 3.3 | - |
| J | 0.094 | - | 2.4 | - |
| K | - | 0.165 | - | 4.2 |
| L | 0.094 | - | 2.4 | - |

7. Packaging

| Tape | Symbol | Dimension (mm) | |
|---|-------------------|----------------|------------|
|  | W | 16.00±0.20 | |
| | P0 | 4.00±0.10 | |
| | P1 | 8.00±0.10 | |
| | P2 | 2.00±0.10 | |
| | D0 | Φ1.5±0.10 | |
| | D1 | Φ1.5±0.10 | |
| | E | 1.75±0.10 | |
| | F | 7.50±0.10 | |
| | A0 | 6.27±0.10 | |
| | B0 | 8.30±0.10 | |
| | K0 | 3.15±0.15 | |
| | | T | 0.30±0.05 |
| | 7" Reel | D2 | Φ178.0±2.0 |
|  | D3 | Φ50.0Min. | |
| | D4 | Φ13.0±0.5 | |
| | W1 | 20.0±2.0 | |
| | Quantity: 500PCS | | |
| 13" Reel | D5 | Φ330.0±2.0 | |
|  | D6 | Φ13.5±0.5 | |
| | H | 2.5±1.0 | |
| | W2 | 20.0±2.0 | |
| | Quantity: 3000PCS | | |

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