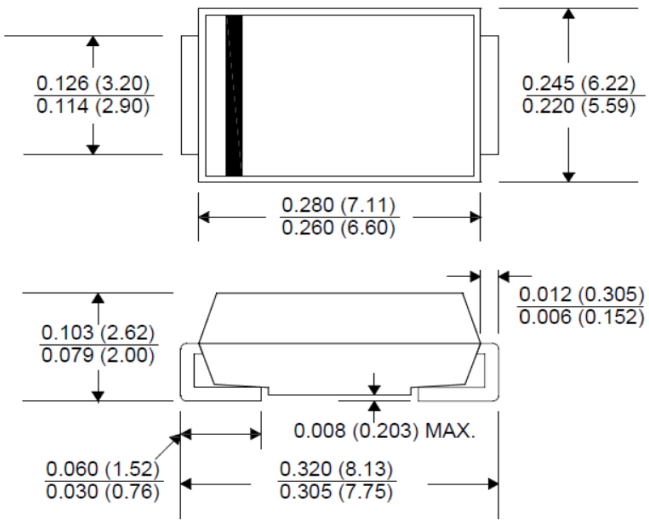
# SMCJ5.0 thru SMCJ440

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

### DO-214AB (SMC J-Bend)




*Dimensions in inches and(millimeters)*

| Agency | Agency File Number |
|---|---|
| | E521119 |

| PRIMARY CHARACTERISTICS | |
|---|---|
| $V_{RWM}$ | 5.0V to 440V |
| $V_{BR}$ | 6.4V to 543V |
| $P_{PPM}$ | 1500W |
| $T_J$ max | 150°C |
| Polarity | Uni-directional & Bi-directional |
| Package | DO-214AB |

## FEATURES

- For surface mounted applications in order to optimize board space
- Typical maximum temperature coefficient △VBR=0.1%xVBR@25°C x△T
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Excellent clamping capability
- Repetition Rate (duty cycle):0.01%
- Fast response time: typically less than 1.0ps from 0 Volts to BV
- Meet MSL1 Level, per J-STD-020, LF maximum peak of 260 ℃
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free plated

Green

## MECHANICAL DATA

**Case:** JEDEC DO-214AB. Molded plastic

**Terminal:** Solderable per MIL-STD-750, Method 2026

**Polarity:** Color band denoted positive end (cathode) except Bidirectional

## DEVICES FOR BIPOLAR APPLICATION

- For Bidirectional use C or CA Suffix for types SMCJ5.0 thru types SMCJ440 (e.g. SMCJ5.0A , SMCJ440CA)
- Electrical characteristics apply in both directions

## MAXIMUM RATINGS (25°C ambient temperature unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1，2) | $P_{PPM}$ | 1500 | Watts |
| Peak Pulse Current of on 10/1000μs waveform(Note 1) | $I_{PPM}$ | See Next Table | Amps |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave(Note 2，3) | $I_{FSM}$ | 200 | Amps |
| Operating junction and Storage Temperature Range | $T_J$ $T_{STG}$ | -55 to +150 | °C |
| Typical Thermal Resistance Junction to Lead | $R_{\theta JL}$ | 15 | °C/W |
| Typical Thermal Resistance Junction to Ambient | $R_{\theta JA}$ | 75 | °C/W |

Note

(1) Non-repetitive current pulse above $T_A$ = 25 °C
(2) Mounted on 8.0mm x 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.

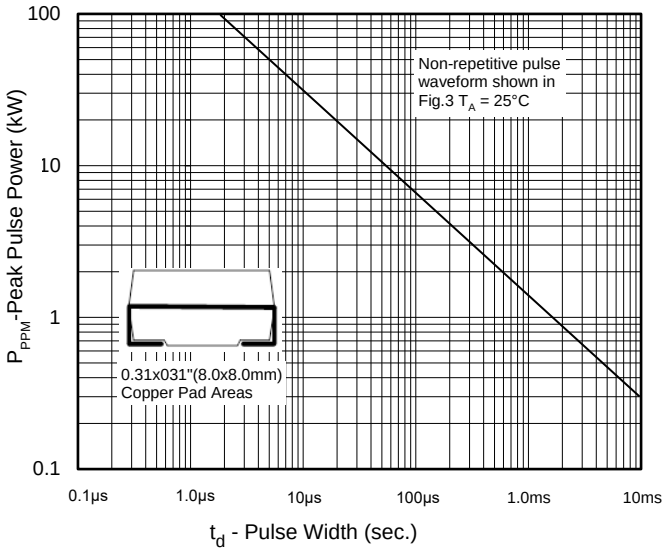
## ELECTRICAL CHARACTERISTICS

| PART NUMBER | | MARKING CODE | | TEST CURRENT IT (mA) | BREAKDOWN VOLTAGE VBR(V) @IT | | STAND-OFF VOLTAGE VRWM(V) | MAXIMUM CLAMPING VOLTAGE @Ipp Vc(V) | MAXIMUM PEAK PULSE CURRENT Ipp (A) | MAXIMUM REVERSE LEAKAGE @ VRWM IR(μA) |
|---|---|---|---|---|---|---|---|---|---|---|
| UNI- POLAR | BI-POLAR | UNI | BI | | MIN | MAX | | | | |
| SMCJ5.0A | SMCJ5.0CA | GDE | BDE | 10 | 6.40 | 7.00 | 5.0 | 9.2 | 167.9 | 800.0 |
| SMCJ6.0A | SMCJ6.0CA | GDG | BDG | 10 | 6.67 | 7.37 | 6.0 | 10.3 | 150.0 | 800.0 |
| SMCJ6.5A | SMCJ6.5CA | GDK | BDK | 10 | 7.22 | 7.98 | 6.5 | 11.2 | 137.9 | 500.0 |
| SMCJ7.0A | SMCJ7.0CA | GDM | BDM | 10 | 7.78 | 8.60 | 7.0 | 12.0 | 128.8 | 200.0 |
| SMCJ7.5A | SMCJ7.5CA | GDP | BDP | 1 | 8.33 | 9.21 | 7.5 | 12.9 | 119.8 | 100.0 |
| SMCJ8.0A | SMCJ8.0CA | GDR | BDR | 1 | 8.89 | 9.83 | 8.0 | 13.6 | 113.6 | 50.0 |
| SMCJ8.5A | SMCJ8.5CA | GDT | BDT | 1 | 9.44 | 10.40 | 8.5 | 14.4 | 107.3 | 20.0 |
| SMCJ9.0A | SMCJ9.0CA | GDV | BDV | 1 | 10.00 | 11.10 | 9.0 | 15.4 | 100.3 | 10.0 |
| SMCJ10A | SMCJ10CA | GDX | BDX | 1 | 11.10 | 12.30 | 10.0 | 17.0 | 90.9 | 5.0 |
| SMCJ11A | SMCJ11CA | GDZ | BDZ | 1 | 12.20 | 13.50 | 11.0 | 18.2 | 84.9 | 1.0 |
| SMCJ12A | SMCJ12CA | GEE | BEE | 1 | 13.30 | 14.70 | 12.0 | 19.9 | 77.6 | 1.0 |
| SMCJ13A | SMCJ13CA | GEG | BEG | 1 | 14.40 | 15.90 | 13.0 | 21.5 | 71.9 | 1.0 |
| SMCJ14A | SMCJ14CA | GEK | BEK | 1 | 15.60 | 17.20 | 14.0 | 23.2 | 66.6 | 1.0 |
| SMCJ15A | SMCJ15CA | GEM | BEM | 1 | 16.70 | 18.50 | 15.0 | 24.4 | 63.3 | 1.0 |
| SMCJ16A | SMCJ16CA | GEP | BEP | 1 | 17.80 | 19.70 | 16.0 | 26.0 | 59.4 | 1.0 |
| SMCJ17A | SMCJ17CA | GER | BER | 1 | 18.90 | 20.90 | 17.0 | 27.6 | 56.0 | 1.0 |
| SMCJ18A | SMCJ18CA | GET | BET | 1 | 20.00 | 22.10 | 18.0 | 29.2 | 52.9 | 1.0 |
| SMCJ20A | SMCJ20CA | GEV | BEV | 1 | 22.20 | 24.50 | 20.0 | 32.4 | 47.7 | 1.0 |
| SMCJ22A | SMCJ22CA | GEX | BEX | 1 | 24.40 | 26.90 | 22.0 | 35.5 | 43.5 | 1.0 |
| SMCJ24A | SMCJ24CA | GEZ | BEZ | 1 | 26.70 | 29.50 | 24.0 | 38.9 | 39.7 | 1.0 |
| SMCJ26A | SMCJ26CA | GFE | BFE | 1 | 28.90 | 31.90 | 26.0 | 42.1 | 36.7 | 1.0 |
| SMCJ28A | SMCJ28CA | GFG | BFG | 1 | 31.10 | 34.40 | 28.0 | 45.4 | 34.0 | 1.0 |
| SMCJ30A | SMCJ30CA | GFK | BFK | 1 | 33.30 | 36.80 | 30.0 | 48.4 | 31.9 | 1.0 |
| SMCJ33A | SMCJ33CA | GFM | BFM | 1 | 36.70 | 40.60 | 33.0 | 53.3 | 29.0 | 1.0 |
| SMCJ36A | SMCJ36CA | GFP | BFP | 1 | 40.00 | 44.20 | 36.0 | 58.1 | 26.6 | 1.0 |
| SMCJ40A | SMCJ40CA | GFR | BFR | 1 | 44.40 | 49.10 | 40.0 | 64.5 | 24.0 | 1.0 |
| SMCJ43A | SMCJ43CA | GFT | BFT | 1 | 47.80 | 52.80 | 43.0 | 69.4 | 22.3 | 1.0 |
| SMCJ45A | SMCJ45CA | GFV | BFV | 1 | 50.00 | 55.30 | 45.0 | 72.7 | 21.3 | 1.0 |
| SMCJ48A | SMCJ48CA | GFX | BFX | 1 | 53.30 | 58.90 | 48.0 | 77.4 | 20.0 | 1.0 |
| SMCJ51A | SMCJ51CA | GFZ | BFZ | 1 | 56.70 | 62.70 | 51.0 | 82.4 | 18.8 | 1.0 |
| SMCJ54A | SMCJ54CA | GGE | BGE | 1 | 60.00 | 66.30 | 54.0 | 87.1 | 17.7 | 1.0 |
| SMCJ58A | SMCJ58CA | GGG | BGG | 1 | 64.40 | 71.20 | 58.0 | 93.6 | 16.5 | 1.0 |
| SMCJ60A | SMCJ60CA | GGK | BGK | 1 | 66.70 | 73.70 | 60.0 | 96.8 | 16.0 | 1.0 |
| SMCJ64A | SMCJ64CA | GGM | BGM | 1 | 71.10 | 78.60 | 64.0 | 103.0 | 15.0 | 1.0 |
| SMCJ70A | SMCJ70CA | GGP | BGP | 1 | 77.80 | 86.00 | 70.0 | 113.0 | 13.7 | 1.0 |
| SMCJ75A | SMCJ75CA | GGR | BGR | 1 | 83.30 | 92.10 | 75.0 | 121.0 | 12.8 | 1.0 |
| SMCJ78A | SMCJ78CA | GGT | BGT | 1 | 86.70 | 95.80 | 78.0 | 126.0 | 12.3 | 1.0 |
| SMCJ85A | SMCJ85CA | GGV | BGV | 1 | 94.40 | 104.00 | 85.0 | 137.0 | 11.3 | 1.0 |
| SMCJ90A | SMCJ90CA | GGX | BGX | 1 | 100.00 | 111.00 | 90.0 | 146.0 | 10.6 | 1.0 |
| SMCJ100A | SMCJ100CA | GGZ | BGZ | 1 | 111.00 | 123.00 | 100.0 | 162.0 | 9.5 | 1.0 |
| SMCJ110A | SMCJ110CA | GHE | BHE | 1 | 122.00 | 135.00 | 110.0 | 177.0 | 8.7 | 1.0 |
| SMCJ120A | SMCJ120CA | GHG | BHG | 1 | 133.00 | 147.00 | 120.0 | 193.0 | 8.0 | 1.0 |
| SMCJ130A | SMCJ130CA | GHK | BHK | 1 | 144.00 | 159.00 | 130.0 | 209.0 | 7.4 | 1.0 |
| SMCJ150A | SMCJ150CA | GHM | BHM | 1 | 167.00 | 185.00 | 150.0 | 243.0 | 6.4 | 1.0 |
| SMCJ160A | SMCJ160CA | GHP | BHP | 1 | 178.00 | 197.00 | 160.0 | 259.0 | 6.0 | 1.0 |
| SMCJ170A | SMCJ170CA | GHR | BHR | 1 | 189.00 | 209.00 | 170.0 | 275.0 | 5.6 | 1.0 |
| SMCJ180A | SMCJ180CA | GHT | BHT | 1 | 201.00 | 222.00 | 180.0 | 292.0 | 5.2 | 1.0 |
| SMCJ200A | SMCJ200CA | GHV | BHV | 1 | 224.00 | 247.00 | 200.0 | 324.0 | 4.7 | 1.0 |
| SMCJ220A | SMCJ220CA | GHX | BHX | 1 | 246.00 | 272.00 | 220.0 | 356.0 | 4.3 | 1.0 |
| SMCJ250A | SMCJ250CA | GHZ | BHZ | 1 | 279.00 | 309.00 | 250.0 | 405.0 | 3.8 | 1.0 |
| SMCJ300A | SMCJ300CA | GJE | BJE | 1 | 335.00 | 371.00 | 300.0 | 486.0 | 3.1 | 1.0 |
| SMCJ350A | SMCJ350CA | GJG | BJG | 1 | 391.00 | 432.00 | 350.0 | 567.0 | 2.7 | 1.0 |
| SMCJ400A | SMCJ400CA | GJK | BJK | 1 | 447.00 | 494.00 | 400.0 | 648.0 | 2.4 | 1.0 |
| SMCJ440A | SMCJ440CA | GJM | BJM | 1 | 492.00 | 543.00 | 440.0 | 713.0 | 2.2 | 1.0 |

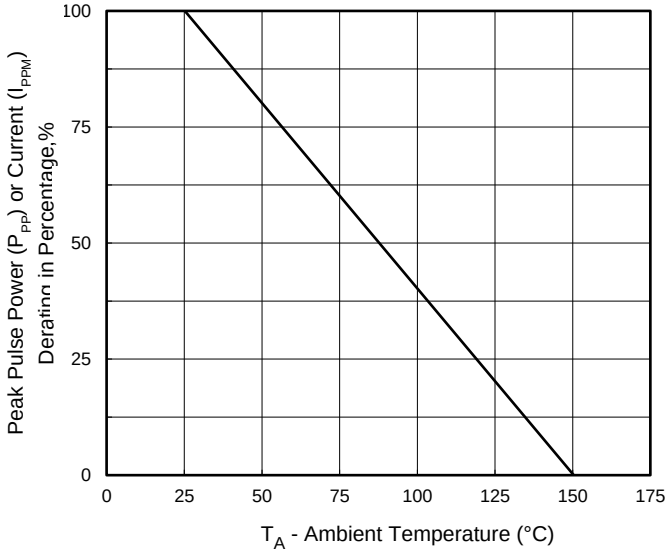
For bidirectional type having Vrwm of 10 volts and less, the IR limit is double.

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25℃ unless otherwise noted)

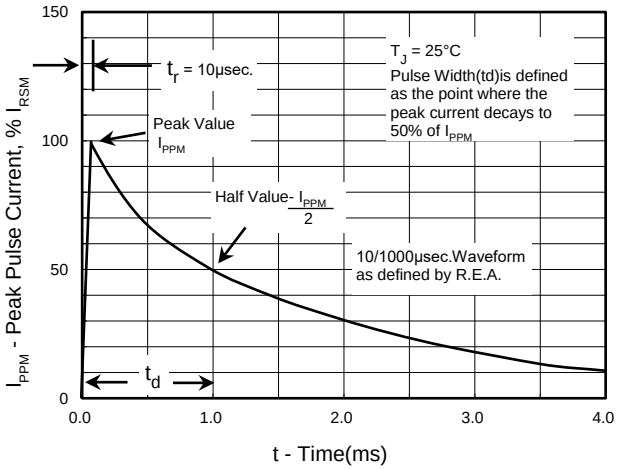
### Peak Pulse Power Rating



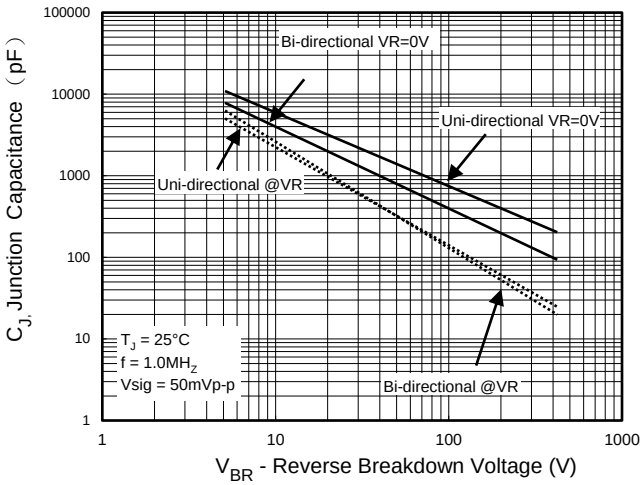

### Pulse Derating Curve



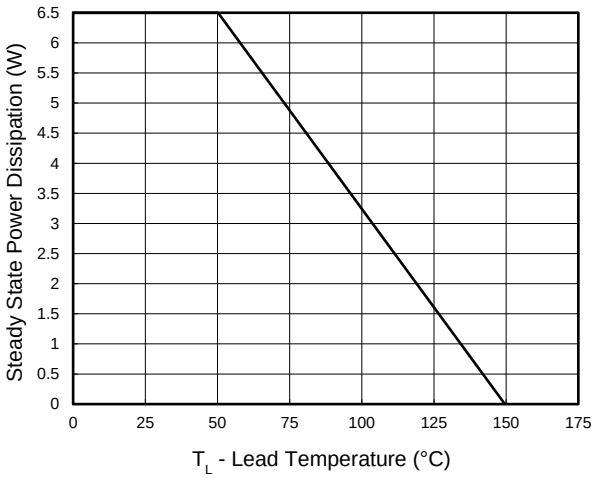

### Pulse Waveform



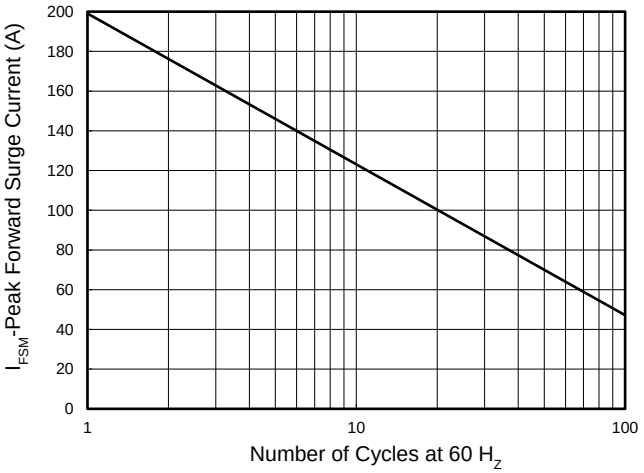

### Typical Junction Capacitance




### Steady State Power Derating Curve




### Maximum Non-repetitive Forward Surge current uni-directional only

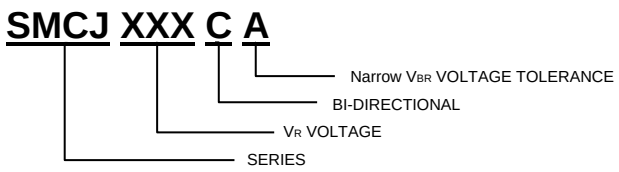
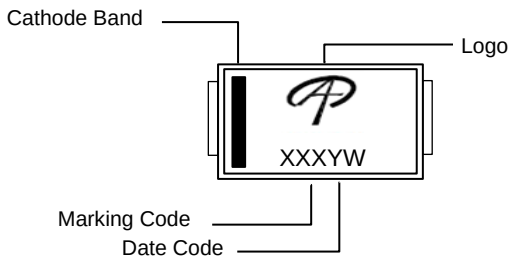


## Ordering Information

| Part Number | Quantity | Packing Option | Component Package | Packing Specification |
|---|---|---|---|---|
| SMCJxxxA | 3000 | Tape & Reel - 16mm/13" tape | DO-214AB | EIA STD RS-481 |

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/media/AOSGreenPolicy.pdf for additional information.

Note: Green Product means Pb-free, RoHS and Halogens free compliant.

| Part Number | Part Marking |
|---|---|
|  |  |