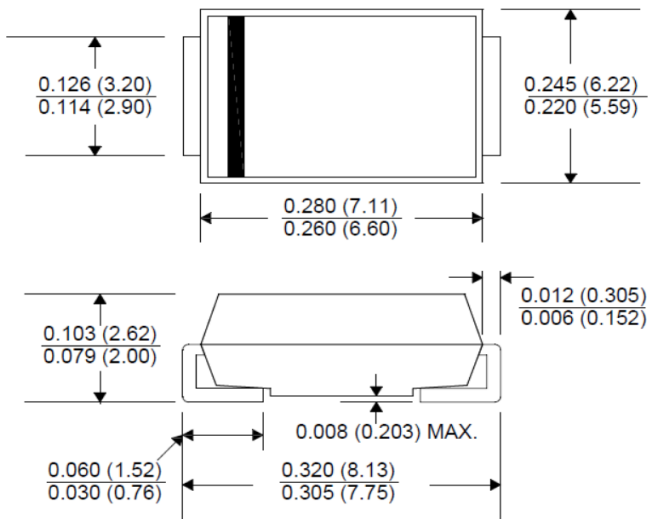


### DO-214AB (SMC J-Bend)



Dimensions in inches and (millimeters)

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

| PRIMARY CHARACTERISTICS |                                  |
|-------------------------|----------------------------------|
| VRWM                    | 5.0V to 250V                     |
| VBR                     | 6.4V to 309V                     |
| PPPM                    | 3000W                            |
| TJ max                  | 150°C                            |
| Polarity                | Uni-directional & Bi-directional |
| Package                 | DO-214AB                         |

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

| Parameter   | Symbol  | Value          | Unit  |
|---|---------|----------------|-------|
| Peak Pulse Power Dissipation on 10/1000µs waveform (Note 1, 2)      | PPPM    | 3000           | Watts |
| Peak Pulse Current of on 10/1000µs waveform (Note 1)                | IPPM    | See Next Table | Amps  |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave (Note 2, 3) | IFSM    | 300            | Amps  |
| Operating junction and Storage Temperature Range                    | TJ TSTG | -55 to +150    | °C    |
| Typical Thermal Resistance Junction to Lead                         | REJL    | 15             | °C/W  |
| Typical Thermal Resistance Junction to Ambient                      | REJA    | 75             | °C/W  |

#### Note

- (1) Non-repetitive current pulse above TA = 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.

### FEATURES

- For surface mounted applications in order to optimize board space
- Typical maximum temperature coefficient  $\Delta VBR = 0.1\% \times VBR @ 25^\circ C \times \Delta T$
- 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 °C
- Plastic package has Underwriters Laboratory Flammability 94V-0
- Matte Tin Lead-free plated



### 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 SMDJ5.0 thru types SMDJ250 (e.g. SMDJ5.0A, SMDJ250CA)
- Electrical characteristics apply in both directions

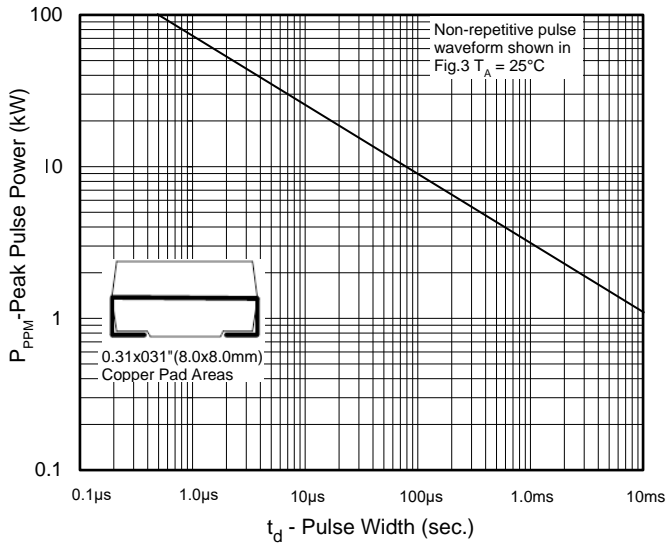
## ELECTRICAL CHARACTERISTICS

| PART NUMBER |           | MARKING CODE |     | TEST CURRENT IT (mA) | BREAKDOWN VOLTAGE VBR(V) @IT |        | REVERSE 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    |                                   |                                     |                                    |                                       |
| SMDJ5.0A    | SMDJ5.0CA | RDE          | DDE | 10                   | 6.40                         | 7.00   | 5.0                               | 9.2                                 | 326.1                              | 800.0                                 |
| SMDJ6.0A    | SMDJ6.0CA | RDG          | DDG | 10                   | 6.67                         | 7.37   | 6.0                               | 10.3                                | 291.3                              | 800.0                                 |
| SMDJ6.5A    | SMDJ6.5CA | RDK          | DDK | 10                   | 7.22                         | 7.98   | 6.5                               | 11.2                                | 267.9                              | 500.0                                 |
| SMDJ7.0A    | SMDJ7.0CA | PDM          | DDM | 10                   | 7.78                         | 8.60   | 7.0                               | 12.0                                | 250.0                              | 200.0                                 |
| SMDJ7.5A    | SMDJ7.5CA | PDP          | DDP | 1                    | 8.33                         | 9.21   | 7.5                               | 12.9                                | 232.6                              | 100.0                                 |
| SMDJ8.0A    | SMDJ8.0CA | PDR          | DDR | 1                    | 8.89                         | 9.83   | 8.0                               | 13.6                                | 220.6                              | 50.0                                  |
| SMDJ8.5A    | SMDJ8.5CA | PDT          | DDT | 1                    | 9.44                         | 10.40  | 8.5                               | 14.4                                | 208.4                              | 20.0                                  |
| SMDJ9.0A    | SMDJ9.0CA | PDV          | DDV | 1                    | 10.00                        | 11.10  | 9.0                               | 15.4                                | 194.9                              | 10.0                                  |
| SMDJ10A     | SMDJ10CA  | PDX          | DDX | 1                    | 11.10                        | 12.30  | 10.0                              | 17.0                                | 176.5                              | 5.0                                   |
| SMDJ11A     | SMDJ11CA  | PDZ          | DDZ | 1                    | 12.20                        | 13.50  | 11.0                              | 18.2                                | 164.9                              | 2.0                                   |
| SMDJ12A     | SMDJ12CA  | PEE          | DEE | 1                    | 13.30                        | 14.70  | 12.0                              | 19.9                                | 150.8                              | 2.0                                   |
| SMDJ13A     | SMDJ13CA  | PEG          | DEG | 1                    | 14.40                        | 15.90  | 13.0                              | 21.5                                | 139.6                              | 2.0                                   |
| SMDJ14A     | SMDJ14CA  | PEK          | DEK | 1                    | 15.60                        | 17.20  | 14.0                              | 23.2                                | 129.4                              | 2.0                                   |
| SMDJ15A     | SMDJ15CA  | PEM          | DEM | 1                    | 16.70                        | 18.50  | 15.0                              | 24.4                                | 123.0                              | 2.0                                   |
| SMDJ16A     | SMDJ16CA  | PEP          | DEP | 1                    | 17.80                        | 19.70  | 16.0                              | 26.0                                | 115.4                              | 2.0                                   |
| SMDJ17A     | SMDJ17CA  | PER          | DER | 1                    | 18.90                        | 20.90  | 17.0                              | 27.6                                | 108.7                              | 2.0                                   |
| SMDJ18A     | SMDJ18CA  | PET          | DET | 1                    | 20.00                        | 22.10  | 18.0                              | 29.2                                | 102.8                              | 2.0                                   |
| SMDJ20A     | SMDJ20CA  | PEV          | DEV | 1                    | 22.20                        | 24.50  | 20.0                              | 32.4                                | 92.6                               | 2.0                                   |
| SMDJ21A     | SMDJ21CA  | PHV          | DHV | 1                    | 23.31                        | 25.73  | 21.0                              | 34.1                                | 88.0                               | 2.0                                   |
| SMDJ22A     | SMDJ22CA  | PEX          | DEX | 1                    | 24.40                        | 26.90  | 22.0                              | 35.5                                | 84.6                               | 2.0                                   |
| SMDJ24A     | SMDJ24CA  | PEZ          | DEZ | 1                    | 26.70                        | 29.50  | 24.0                              | 38.9                                | 77.2                               | 2.0                                   |
| SMDJ26A     | SMDJ26CA  | PFE          | DFE | 1                    | 28.90                        | 31.90  | 26.0                              | 42.1                                | 71.3                               | 2.0                                   |
| SMDJ28A     | SMDJ28CA  | PFG          | DFG | 1                    | 31.10                        | 34.40  | 28.0                              | 45.4                                | 66.1                               | 2.0                                   |
| SMDJ30A     | SMDJ30CA  | PFK          | DFK | 1                    | 33.30                        | 36.80  | 30.0                              | 48.4                                | 62.0                               | 2.0                                   |
| SMDJ33A     | SMDJ33CA  | PFM          | DFM | 1                    | 36.70                        | 40.60  | 33.0                              | 53.3                                | 56.3                               | 2.0                                   |
| SMDJ36A     | SMDJ36CA  | PFP          | DFP | 1                    | 40.00                        | 44.20  | 36.0                              | 58.1                                | 51.7                               | 2.0                                   |
| SMDJ40A     | SMDJ40CA  | PFR          | DFR | 1                    | 44.40                        | 49.10  | 40.0                              | 64.5                                | 46.6                               | 2.0                                   |
| SMDJ43A     | SMDJ43CA  | PFT          | DFT | 1                    | 47.80                        | 52.80  | 43.0                              | 69.4                                | 43.3                               | 2.0                                   |
| SMDJ45A     | SMDJ45CA  | PFV          | DFV | 1                    | 50.00                        | 55.30  | 45.0                              | 72.7                                | 41.3                               | 2.0                                   |
| SMDJ48A     | SMDJ48CA  | PFX          | DFX | 1                    | 53.30                        | 58.90  | 48.0                              | 77.4                                | 38.8                               | 2.0                                   |
| SMDJ51A     | SMDJ51CA  | PFZ          | DFZ | 1                    | 56.70                        | 62.70  | 51.0                              | 82.4                                | 36.5                               | 2.0                                   |
| SMDJ54A     | SMDJ54CA  | RGE          | DGE | 1                    | 60.00                        | 66.30  | 54.0                              | 87.1                                | 34.5                               | 2.0                                   |
| SMDJ58A     | SMDJ58CA  | PGG          | DGG | 1                    | 64.40                        | 71.20  | 58.0                              | 93.6                                | 32.1                               | 2.0                                   |
| SMDJ60A     | SMDJ60CA  | PGK          | DGK | 1                    | 66.70                        | 73.70  | 60.0                              | 96.8                                | 31.0                               | 2.0                                   |
| SMDJ64A     | SMDJ64CA  | PGM          | DGM | 1                    | 71.10                        | 78.60  | 64.0                              | 103.0                               | 29.2                               | 2.0                                   |
| SMDJ70A     | SMDJ70CA  | PGP          | DGP | 1                    | 77.80                        | 86.00  | 70.0                              | 113.0                               | 26.6                               | 2.0                                   |
| SMDJ75A     | SMDJ75CA  | PGR          | DGR | 1                    | 83.30                        | 92.10  | 75.0                              | 121.0                               | 24.8                               | 2.0                                   |
| SMDJ78A     | SMDJ78CA  | PGT          | DGT | 1                    | 86.70                        | 95.80  | 78.0                              | 126.0                               | 23.9                               | 2.0                                   |
| SMDJ85A     | SMDJ85CA  | PGV          | DGV | 1                    | 94.40                        | 104.00 | 85.0                              | 137.0                               | 21.9                               | 2.0                                   |
| SMDJ90A     | SMDJ90CA  | PGX          | DGX | 1                    | 100.00                       | 111.00 | 90.0                              | 146.0                               | 20.6                               | 2.0                                   |
| SMDJ100A    | SMDJ100CA | PGZ          | DGZ | 1                    | 111.00                       | 123.00 | 100.0                             | 162.0                               | 18.6                               | 2.0                                   |
| SMDJ110A    | SMDJ110CA | PHE          | DHE | 1                    | 122.00                       | 135.00 | 110.0                             | 177.0                               | 17.0                               | 2.0                                   |
| SMDJ120A    | SMDJ120CA | PHG          | DHG | 1                    | 133.00                       | 147.00 | 120.0                             | 193.0                               | 15.6                               | 2.0                                   |
| SMDJ130A    | SMDJ130CA | PHK          | DHK | 1                    | 144.00                       | 159.00 | 130.0                             | 209.0                               | 14.4                               | 2.0                                   |
| SMDJ150A    | SMDJ150CA | PHM          | DHM | 1                    | 167.00                       | 185.00 | 150.0                             | 243.0                               | 12.4                               | 2.0                                   |
| SMDJ160A    | SMDJ160CA | PHP          | DHP | 1                    | 178.00                       | 197.00 | 160.0                             | 259.0                               | 11.6                               | 2.0                                   |
| SMDJ170A    | SMDJ170CA | PHR          | DHR | 1                    | 189.00                       | 209.00 | 170.0                             | 275.0                               | 11.0                               | 2.0                                   |
| SMDJ180A    | SMDJ180CA | PHT          | DHT | 1                    | 201.00                       | 222.00 | 180.0                             | 292.0                               | 10.4                               | 2.0                                   |
| SMDJ200A    | SMDJ200CA | PHX          | DHX | 1                    | 224.00                       | 247.00 | 200.0                             | 324.0                               | 9.3                                | 2.0                                   |
| SMDJ220A    | SMDJ220CA | PHZ          | DHZ | 1                    | 246.00                       | 272.00 | 220.0                             | 356.0                               | 8.5                                | 2.0                                   |
| SMDJ250A    | SMDJ250CA | PIE          | DIE | 1                    | 279.00                       | 309.00 | 250.0                             | 405.0                               | 7.5                                | 2.0                                   |

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

RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$  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 |
|-------------|----------|-----------------------------|-------------------|-----------------------|
| SMDJxxxA    | 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](http://www.aosmd.com/media/AOSGreenPolicy.pdf) for additional information.

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

| Part Number   | Part Marking  |
|---|---|
| <p><b>SMDJ XXX C A</b></p> <p>Narrow <math>V_{BR}</math> VOLTAGE TOLERANCE<br/>BI-DIRECTIONAL<br/><math>V_R</math> VOLTAGE<br/>SERIES</p> | <p>Cathode Band<br/>Logo<br/>Marking Code<br/>Date Code</p> |

LEGAL DISCLAIMER

APPLICATIONS OR USES AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS ARE NOT AUTHORIZED. AOS DOES NOT ASSUME ANY LIABILITY ARISING OUT OF SUCH APPLICATIONS OR USES OF ITS PRODUCTS. AOS RESERVES THE RIGHT TO MAKE CHANGES TO PRODUCT SPECIFICATIONS WITHOUT NOTICE. IT IS THE RESPONSIBILITY OF THE CUSTOMER TO EVALUATE SUITABILITY OF THE PRODUCT FOR THEIR INTENDED APPLICATION. CUSTOMER SHALL COMPLY WITH APPLICABLE LEGAL REQUIREMENTS, INCLUDING ALL APPLICABLE EXPORT CONTROL RULES, REGULATIONS AND LIMITATIONS.

AOS' products are provided subject to AOS' terms and conditions of sale which are set forth at:

[http://www.aosmd.com/terms\\_and\\_conditions\\_of\\_sale](http://www.aosmd.com/terms_and_conditions_of_sale)

LIFE SUPPORT POLICY

ALPHA AND OMEGA SEMICONDUCTOR PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.