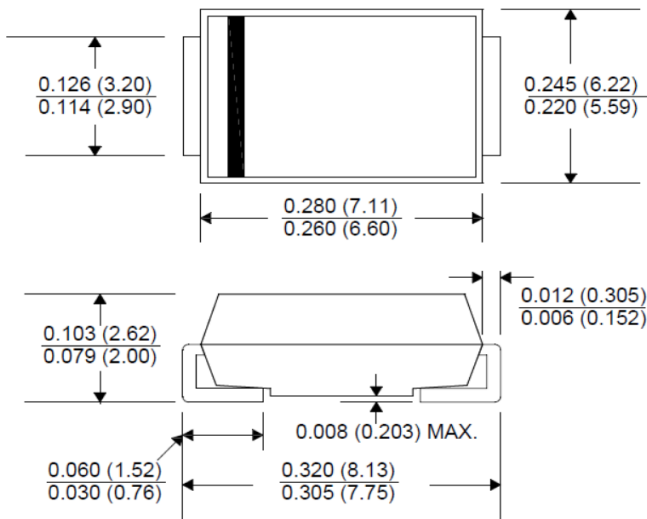



### DO-214AB (SMC J-Bend)



Dimensions in inches and (millimeters)

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

| PRIMARY CHARACTERISTICS |                                  |
|-------------------------|----------------------------------|
| VRWM                    | 5.8V to 495V                     |
| VBR                     | 6.45V to 577.5V                  |
| PPPM                    | 1500W                            |
| TJ 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  $\Delta VBR = 0.1\% \times VBR @ 25^\circ C \times \Delta T$
- 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 Suffix CA for types 1.5SMC6.8CA thru types 1.5SMC550CA
- 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)      | PPPM             | 1500           | 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             | 200            | Amps  |
| Operating junction and Storage Temperature Range                    | TJ TSTG          | -55 to +150    | °C    |
| Typical Thermal Resistance Junction to Lead                         | R <sub>θJL</sub> | 15             | °C/W  |
| Typical Thermal Resistance Junction to Ambient                      | R <sub>θJA</sub> | 75             | °C/W  |

#### Note

- (1) Non-repetitive current pulse above T<sub>A</sub> = 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 |        | REVERSE STAND-OFF VOLTAGE V <sub>RWM</sub> (V) | MAXIMUM CLAMPING VOLTAGE @I <sub>pp</sub> V <sub>c</sub> (V) | MAXIMUM PEAK PULSE CURRENT I <sub>pp</sub> (A) | MAXIMUM REVERSE LEAKAGE @ V <sub>RWM</sub> I <sub>r</sub> (µA) |
|-------------|-------------|--------------|------|----------------------|------------------------------|--------|--|--|--|--|
| UNI- POLAR  | BI-POLAR    | UNI          | BI   |                      | MIN                          | MAX    |  |  |  |  |
| 1.5SMC6.8A  | 1.5SMC6.8CA | 6V8A         | 6V8C | 10                   | 6.45                         | 7.14   | 5.8  | 10.5   | 144.8  | 1000.0   |
| 1.5SMC7.5A  | 1.5SMC7.5CA | 7V5A         | 7V5C | 10                   | 7.13                         | 7.88   | 6.4  | 11.3   | 134.5  | 500.0  |
| 1.5SMC8.2A  | 1.5SMC8.2CA | 8V2A         | 8V2C | 10                   | 7.79                         | 8.61   | 7.0  | 12.1   | 125.6  | 200.0  |
| 1.5SMC9.1A  | 1.5SMC9.1CA | 9V1A         | 9V1C | 1                    | 8.65                         | 9.50   | 7.8  | 13.4   | 113.4  | 50.0   |
| 1.5SMC10A   | 1.5SMC10CA  | 10A          | 10C  | 1                    | 9.50                         | 10.50  | 8.6  | 14.5   | 104.8  | 10.0   |
| 1.5SMC11A   | 1.5SMC11CA  | 11A          | 11C  | 1                    | 10.50                        | 11.60  | 9.4  | 15.6   | 97.4   | 5.0  |
| 1.5SMC12A   | 1.5SMC12CA  | 12A          | 12C  | 1                    | 11.40                        | 12.60  | 10.2   | 16.7   | 91.0   | 5.0  |
| 1.5SMC13A   | 1.5SMC13CA  | 13A          | 13C  | 1                    | 12.40                        | 13.70  | 11.1   | 18.2   | 83.5   | 1.0  |
| 1.5SMC15A   | 1.5SMC15CA  | 15A          | 15C  | 1                    | 14.30                        | 15.80  | 12.8   | 21.2   | 71.7   | 1.0  |
| 1.5SMC16A   | 1.5SMC16CA  | 16A          | 16C  | 1                    | 15.20                        | 16.80  | 13.6   | 22.5   | 67.6   | 1.0  |
| 1.5SMC18A   | 1.5SMC18CA  | 18A          | 18C  | 1                    | 17.10                        | 18.90  | 15.3   | 25.2   | 60.3   | 1.0  |
| 1.5SMC20A   | 1.5SMC20CA  | 20A          | 20C  | 1                    | 19.00                        | 21.00  | 17.1   | 27.7   | 54.9   | 1.0  |
| 1.5SMC22A   | 1.5SMC22CA  | 22A          | 22C  | 1                    | 20.90                        | 23.10  | 18.8   | 30.6   | 49.7   | 1.0  |
| 1.5SMC24A   | 1.5SMC24CA  | 24A          | 24C  | 1                    | 22.80                        | 25.20  | 20.5   | 33.2   | 45.8   | 1.0  |
| 1.5SMC27A   | 1.5SMC27CA  | 27A          | 27C  | 1                    | 25.70                        | 28.40  | 23.1   | 37.5   | 40.5   | 1.0  |
| 1.5SMC30A   | 1.5SMC30CA  | 30A          | 30C  | 1                    | 28.50                        | 31.50  | 25.6   | 41.4   | 36.7   | 1.0  |
| 1.5SMC33A   | 1.5SMC33CA  | 33A          | 33C  | 1                    | 31.40                        | 34.70  | 28.2   | 45.7   | 33.3   | 1.0  |
| 1.5SMC36A   | 1.5SMC36CA  | 36A          | 36C  | 1                    | 34.20                        | 37.80  | 30.8   | 49.9   | 30.5   | 1.0  |
| 1.5SMC39A   | 1.5SMC39CA  | 39A          | 39C  | 1                    | 37.10                        | 41.00  | 33.3   | 53.9   | 28.2   | 1.0  |
| 1.5SMC43A   | 1.5SMC43CA  | 43A          | 43C  | 1                    | 40.90                        | 45.20  | 36.8   | 59.3   | 25.6   | 1.0  |
| 1.5SMC47A   | 1.5SMC47CA  | 47A          | 47C  | 1                    | 44.70                        | 49.40  | 40.2   | 64.8   | 23.5   | 1.0  |
| 1.5SMC51A   | 1.5SMC51CA  | 51A          | 51C  | 1                    | 48.50                        | 53.60  | 43.6   | 70.1   | 21.7   | 1.0  |
| 1.5SMC56A   | 1.5SMC56CA  | 56A          | 56C  | 1                    | 53.20                        | 58.80  | 47.8   | 77.0   | 19.7   | 1.0  |
| 1.5SMC62A   | 1.5SMC62CA  | 62A          | 62C  | 1                    | 58.90                        | 65.10  | 53.0   | 85.0   | 17.9   | 1.0  |
| 1.5SMC68A   | 1.5SMC68CA  | 68A          | 68C  | 1                    | 64.60                        | 71.40  | 58.1   | 92.0   | 16.5   | 1.0  |
| 1.5SMC75A   | 1.5SMC75CA  | 75A          | 75C  | 1                    | 71.30                        | 78.80  | 64.1   | 103.0  | 14.8   | 1.0  |
| 1.5SMC82A   | 1.5SMC82CA  | 82A          | 82C  | 1                    | 77.90                        | 86.10  | 70.1   | 113.0  | 13.5   | 1.0  |
| 1.5SMC91A   | 1.5SMC91CA  | 91A          | 91C  | 1                    | 86.50                        | 95.50  | 77.8   | 125.0  | 12.2   | 1.0  |
| 1.5SMC100A  | 1.5SMC100CA | 100A         | 100C | 1                    | 95.00                        | 105.00 | 85.5   | 137.0  | 11.1   | 1.0  |
| 1.5SMC110A  | 1.5SMC110CA | 110A         | 110C | 1                    | 105.00                       | 116.00 | 94.0   | 152.0  | 10.0   | 1.0  |
| 1.5SMC120A  | 1.5SMC120CA | 120A         | 120C | 1                    | 114.00                       | 126.00 | 102.0  | 165.0  | 9.2  | 1.0  |
| 1.5SMC130A  | 1.5SMC130CA | 130A         | 130C | 1                    | 124.00                       | 137.00 | 111.0  | 179.0  | 8.5  | 1.0  |
| 1.5SMC150A  | 1.5SMC150CA | 150A         | 150C | 1                    | 143.00                       | 158.00 | 128.0  | 207.0  | 7.3  | 1.0  |
| 1.5SMC160A  | 1.5SMC160CA | 160A         | 160C | 1                    | 152.00                       | 168.00 | 136.0  | 219.0  | 6.9  | 1.0  |
| 1.5SMC170A  | 1.5SMC170CA | 170A         | 170C | 1                    | 162.00                       | 179.00 | 145.0  | 234.0  | 6.5  | 1.0  |
| 1.5SMC180A  | 1.5SMC180CA | 180A         | 180C | 1                    | 171.00                       | 189.00 | 154.0  | 246.0  | 6.2  | 1.0  |
| 1.5SMC200A  | 1.5SMC200CA | 200A         | 200C | 1                    | 190.00                       | 210.00 | 171.0  | 274.0  | 5.5  | 1.0  |
| 1.5SMC220A  | 1.5SMC220CA | 220A         | 220C | 1                    | 209.00                       | 231.00 | 185.0  | 328.0  | 4.6  | 1.0  |
| 1.5SMC250A  | 1.5SMC250CA | 250A         | 250C | 1                    | 237.00                       | 263.00 | 214.0  | 344.0  | 4.4  | 1.0  |
| 1.5SMC300A  | 1.5SMC300CA | 300A         | 300C | 1                    | 285.00                       | 315.00 | 256.0  | 414.0  | 3.7  | 1.0  |
| 1.5SMC350A  | 1.5SMC350CA | 350A         | 350C | 1                    | 332.00                       | 368.00 | 300.0  | 482.0  | 3.2  | 1.0  |
| 1.5SMC400A  | 1.5SMC400CA | 400A         | 400C | 1                    | 380.00                       | 420.00 | 342.0  | 548.0  | 2.8  | 1.0  |
| 1.5SMC440A  | 1.5SMC440CA | 440A         | 440C | 1                    | 418.00                       | 462.00 | 376.0  | 602.0  | 2.5  | 1.0  |
| 1.5SMC480A  | 1.5SMC480CA | 480A         | 480C | 1                    | 456.00                       | 504.00 | 408.0  | 658.0  | 2.3  | 1.0  |
| 1.5SMC510A  | 1.5SMC510CA | 510A         | 510C | 1                    | 485.00                       | 535.00 | 434.0  | 698.0  | 2.1  | 1.0  |
| 1.5SMC530A  | 1.5SMC530CA | 530A         | 530C | 1                    | 503.50                       | 556.50 | 477.0  | 725.0  | 2.1  | 1.0  |
| 1.5SMC540A  | 1.5SMC540CA | 540A         | 540C | 1                    | 513.00                       | 567.00 | 486.0  | 740.0  | 2.0  | 1.0  |
| 1.5SMC550A  | 1.5SMC550CA | 550A         | 550C | 1                    | 522.50                       | 577.50 | 495.0  | 760.0  | 2.0  | 1.0  |

For bidirectional type having V<sub>rwm</sub> of 10 volts and less, the IR limit is double

## RATINGS AND CHARACTERISTICS CURVES ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Peak Pulse Power Rating



Fig.2 - Pulse Derating Curve



Fig. 3 - Pulse Waveform

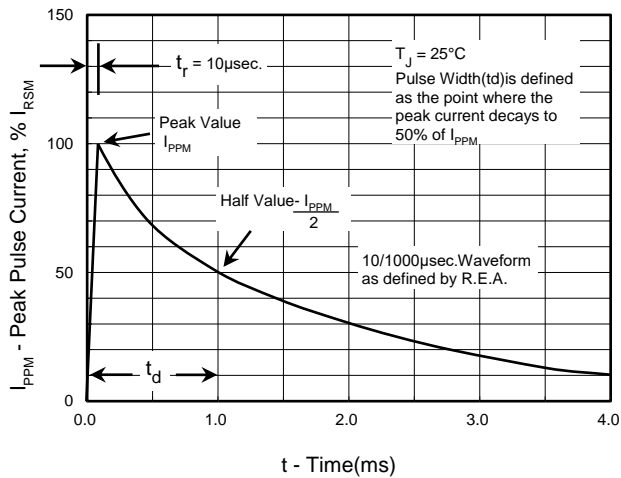


Fig. 4 - Typical Junction Capacitance



Fig. 5 - Steady State Power Derating Curve



Fig.6 - Maximum Non-repetitive Forward Surge current uni-directional only



## Ordering Information

| Part Number | Quantity | Packing Option              | Component Package | Packing Specification |
|-------------|----------|-----------------------------|-------------------|-----------------------|
| 1.5SMCxxxA  | 3000     | Tape & Reel - 16mm/13" tape | DO-214AB          | EIA STD RS-481        |



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| Part Number  | Part Marking  |
|--|---|
| <p><b>1.5SMC XXX C A</b></p> <p>Series<br/>V<sub>BR</sub> VOLTAGE<br/>BI-DIRECTIONAL<br/>Narrow V<sub>BR</sub> VOLTAGE TOLERANCE</p> | <p>Cathode Band<br/>Logo<br/>Marking Code<br/>Date Code</p> |

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