

# MDE Semiconductor, Inc.

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## 1.5SMC SERIES

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

VOLTAGE - 6.8 TO 550 Volts

1500 Watt Peak Pulse Power

#### 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
- Repetition Rate(duty cycle):0.05%
- Fast response time: typically less than 1.0ps from 0 Volts to BV min.
- Typical IR less than 1mA above 10V
- High temperature soldering: 250°C/10 seconds at terminals

#### MECHANICAL DATA

**Case:** JEDEC DO214AB. Molded plastic over glass passivated junction

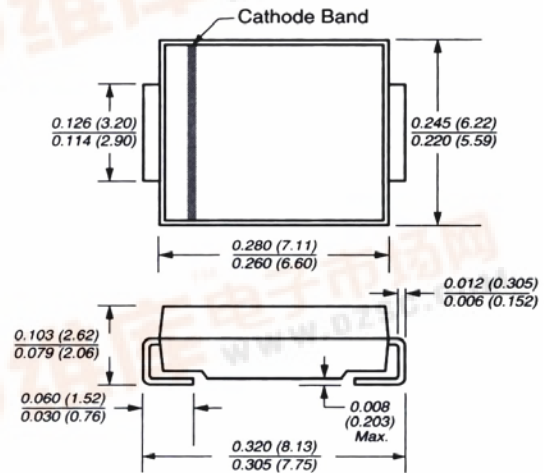
**Terminal:** Solder plated, solderable per MIL-STD-750, Method 2026

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

**Standard Packaging:** 16mm tape(EIA STD RS-481)

**Weight:** 0.007ounce, 0.21gram

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



Dimensions in inches and (millimeters)

#### 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 AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| RATING                                                                                                    | SYMBOL                            | VALUE           | UNITS |
|-----------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|-------|
| Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1,FIG.1)                                         | P <sub>PPM</sub>                  | Minimum<br>1500 | Watts |
| Peak Pulse Current of on 10/1000μs waveform (Note 1,FIG.3)                                                | I <sub>PPM</sub>                  | SEE TABLE 1     | Amps  |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note 3) | I <sub>FSM</sub>                  | 200             | Amps  |
| Operating junction and Storage Temperature Range                                                          | T <sub>J</sub> , T <sub>STG</sub> | -55 to + 150    | °C    |

#### Notes :

- 1.Non-repetitive current pulse , per Fig. 3 and derated above T<sub>a</sub>= 25°C per Fig. 2 .
- 2.Mounted on 8.0mm<sup>2</sup> Copper Pads to each terminal
- 3.8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Certified RoHS Compliant

UL File # E223026

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## 1.5SMC SERIES RATINGS AND CHARACTERISTIC CURVES

### Ratings and

### Characteristic Curves ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig. 1 - Peak Pulse Power Rating Curve

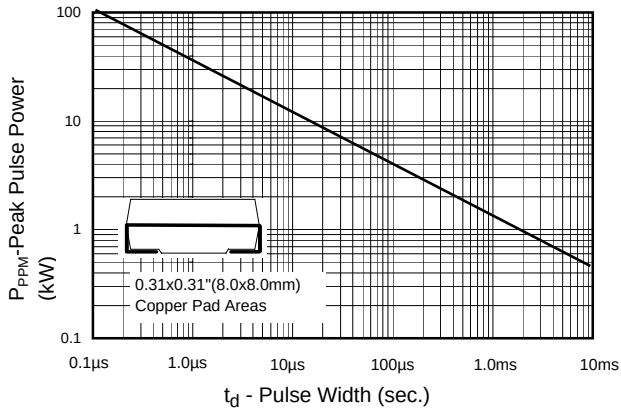


Fig.2 - Pulse Derating

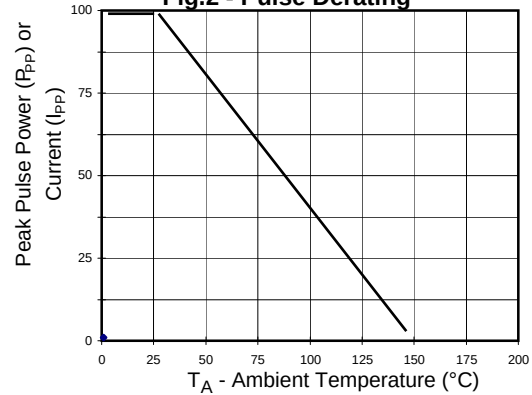


Fig.3 - Pulse Waveform

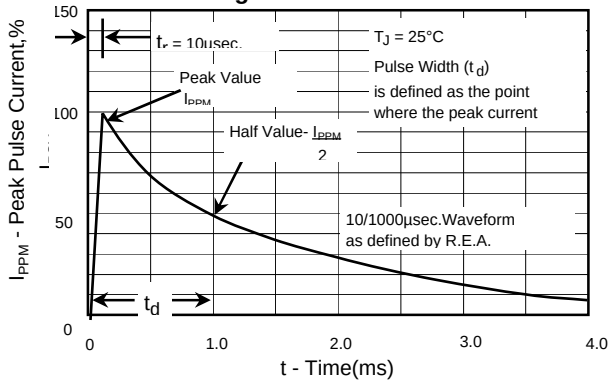


Fig.4 - Typical Junction Capacitance  
Uni-Directional

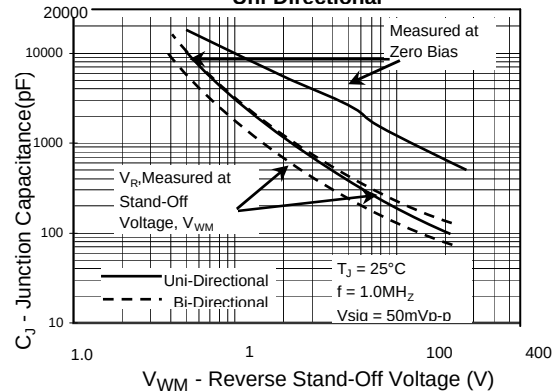


Fig. 5 - Typ. Transient Thermal Impedance

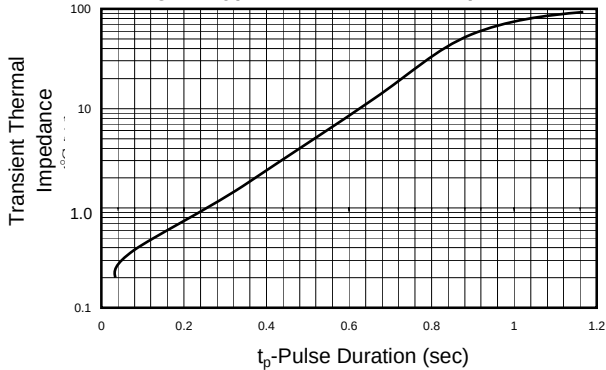
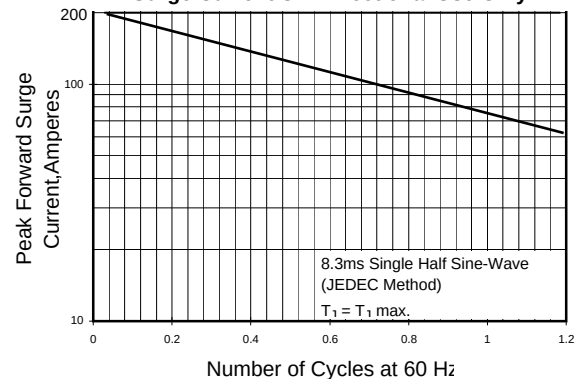


Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only



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## 1500 Watts Peak Power

| 1.5SMC<br>PART NUMBER |      |       | MARKING CODE  |              | REVERSE<br>STAND- OFF<br>VOLTAGE<br>V <sub>RWM</sub> (V) | BREAKDOWN<br>VOLTAGE<br>V <sub>BR</sub> (V)<br>MIN.@I <sub>T</sub> | BREAKDOWN<br>VOLTAGE<br>V <sub>BR</sub> (V)<br>MAX.@I <sub>T</sub> | TEST<br>CURRENT<br>I <sub>T</sub> (mA) | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@I <sub>pp</sub> Vc(V) | PEAK<br>PULSE<br>CURRENT<br>I <sub>pp</sub> (A) | REVERSE<br>LEAKAGE<br>@ VRWM<br>IR(mA) |
|-----------------------|------|-------|---------------|--------------|----------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------|-------------------------------------------------|----------------------------------------|
|                       |      |       | UNI-<br>POLAR | BI-<br>POLAR |                                                          |                                                                    |                                                                    |                                        |                                                          |                                                 |                                        |
| 1.5SMC                | 6.8A | 6.8CA | 6V8A          | 6V8C         | 5.80                                                     | 6.45                                                               | 7.14                                                               | 10                                     | 10.5                                                     | 144.8                                           | 1000                                   |
| 1.5SMC                | 7.5A | 7.5CA | 7V5A          | 7V5C         | 6.40                                                     | 7.13                                                               | 7.88                                                               | 10                                     | 11.3                                                     | 134.5                                           | 500                                    |
| 1.5SMC                | 8.2A | 8.2CA | 8V2A          | 8V2C         | 7.02                                                     | 7.79                                                               | 8.61                                                               | 10                                     | 12.1                                                     | 125.6                                           | 200                                    |
| 1.5SMC                | 9.1A | 9.1CA | 9V1A          | 9V1C         | 7.78                                                     | 8.65                                                               | 9.50                                                               | 1                                      | 13.4                                                     | 113.4                                           | 50                                     |
| 1.5SMC                | 10A  | 10CA  | 10A           | 10C          | 8.55                                                     | 9.50                                                               | 10.50                                                              | 1                                      | 14.5                                                     | 104.8                                           | 10                                     |
| 1.5SMC                | 11A  | 11CA  | 11A           | 11C          | 9.40                                                     | 10.50                                                              | 11.60                                                              | 1                                      | 15.6                                                     | 97.4                                            | 5                                      |
| 1.5SMC                | 12A  | 12CA  | 12A           | 12C          | 10.20                                                    | 11.40                                                              | 12.60                                                              | 1                                      | 16.7                                                     | 91.0                                            | 5                                      |
| 1.5SMC                | 13A  | 13CA  | 13A           | 13C          | 11.10                                                    | 12.40                                                              | 13.70                                                              | 1                                      | 18.2                                                     | 83.5                                            | 5                                      |
| 1.5SMC                | 15A  | 15CA  | 15A           | 15C          | 12.80                                                    | 14.30                                                              | 15.80                                                              | 1                                      | 21.2                                                     | 71.7                                            | 5                                      |
| 1.5SMC                | 16A  | 16CA  | 16A           | 16C          | 13.60                                                    | 15.20                                                              | 16.80                                                              | 1                                      | 22.5                                                     | 67.6                                            | 5                                      |
| 1.5SMC                | 18A  | 18CA  | 18A           | 18C          | 15.30                                                    | 17.10                                                              | 18.90                                                              | 1                                      | 25.2                                                     | 60.3                                            | 5                                      |
| 1.5SMC                | 20A  | 20CA  | 20A           | 20C          | 17.10                                                    | 19.00                                                              | 21.00                                                              | 1                                      | 27.7                                                     | 54.9                                            | 5                                      |
| 1.5SMC                | 22A  | 22CA  | 22A           | 22C          | 18.80                                                    | 20.90                                                              | 23.10                                                              | 1                                      | 30.6                                                     | 49.7                                            | 5                                      |
| 1.5SMC                | 24A  | 24CA  | 24A           | 24C          | 20.50                                                    | 22.80                                                              | 25.20                                                              | 1                                      | 33.2                                                     | 45.8                                            | 5                                      |
| 1.5SMC                | 27A  | 27CA  | 27A           | 27C          | 23.10                                                    | 25.70                                                              | 28.40                                                              | 1                                      | 37.5                                                     | 40.5                                            | 5                                      |
| 1.5SMC                | 30A  | 30CA  | 30A           | 30C          | 25.60                                                    | 28.50                                                              | 31.50                                                              | 1                                      | 41.4                                                     | 36.7                                            | 5                                      |
| 1.5SMC                | 33A  | 33CA  | 33A           | 33C          | 28.20                                                    | 31.40                                                              | 34.70                                                              | 1                                      | 45.7                                                     | 33.3                                            | 5                                      |
| 1.5SMC                | 36A  | 36CA  | 36A           | 36C          | 30.80                                                    | 34.20                                                              | 37.80                                                              | 1                                      | 49.9                                                     | 30.5                                            | 5                                      |
| 1.5SMC                | 39A  | 39CA  | 39A           | 39C          | 33.30                                                    | 37.10                                                              | 41.00                                                              | 1                                      | 53.9                                                     | 28.2                                            | 5                                      |
| 1.5SMC                | 43A  | 43CA  | 43A           | 43C          | 36.80                                                    | 40.90                                                              | 45.20                                                              | 1                                      | 59.3                                                     | 25.6                                            | 5                                      |
| 1.5SMC                | 47A  | 47CA  | 47A           | 47C          | 40.20                                                    | 44.70                                                              | 49.40                                                              | 1                                      | 64.8                                                     | 23.5                                            | 5                                      |
| 1.5SMC                | 51A  | 51CA  | 51A           | 51C          | 43.60                                                    | 48.50                                                              | 53.60                                                              | 1                                      | 70.1                                                     | 21.7                                            | 5                                      |
| 1.5SMC                | 56A  | 56CA  | 56A           | 56C          | 47.80                                                    | 53.20                                                              | 58.80                                                              | 1                                      | 77.0                                                     | 19.7                                            | 5                                      |
| 1.5SMC                | 62A  | 62CA  | 62A           | 62C          | 53.00                                                    | 58.90                                                              | 65.10                                                              | 1                                      | 85.0                                                     | 17.9                                            | 5                                      |
| 1.5SMC                | 68A  | 68CA  | 68A           | 68C          | 58.10                                                    | 64.60                                                              | 71.40                                                              | 1                                      | 92.0                                                     | 16.5                                            | 5                                      |
| 1.5SMC                | 75A  | 75CA  | 75A           | 75C          | 64.10                                                    | 71.30                                                              | 78.80                                                              | 1                                      | 103.0                                                    | 14.8                                            | 5                                      |
| 1.5SMC                | 82A  | 82CA  | 82A           | 82C          | 70.10                                                    | 77.90                                                              | 86.10                                                              | 1                                      | 113.0                                                    | 13.5                                            | 5                                      |
| 1.5SMC                | 91A  | 91CA  | 91A           | 91C          | 77.80                                                    | 86.50                                                              | 95.50                                                              | 1                                      | 125.0                                                    | 12.2                                            | 5                                      |
| 1.5SMC                | 100A | 100CA | 100A          | 100C         | 85.50                                                    | 95.00                                                              | 105.00                                                             | 1                                      | 137.0                                                    | 11.1                                            | 5                                      |
| 1.5SMC                | 110A | 110CA | 110A          | 110C         | 94.00                                                    | 105.00                                                             | 116.00                                                             | 1                                      | 152.0                                                    | 10.0                                            | 5                                      |
| 1.5SMC                | 120A | 120CA | 120A          | 120C         | 102.00                                                   | 114.00                                                             | 126.00                                                             | 1                                      | 165.0                                                    | 9.2                                             | 5                                      |
| 1.5SMC                | 130A | 130CA | 130A          | 130C         | 111.00                                                   | 124.00                                                             | 137.00                                                             | 1                                      | 179.0                                                    | 8.5                                             | 5                                      |
| 1.5SMC                | 150A | 150CA | 150A          | 150C         | 128.00                                                   | 143.00                                                             | 158.00                                                             | 1                                      | 207.0                                                    | 7.3                                             | 5                                      |
| 1.5SMC                | 160A | 160CA | 160A          | 160C         | 136.00                                                   | 152.00                                                             | 168.00                                                             | 1                                      | 219.0                                                    | 6.9                                             | 5                                      |
| 1.5SMC                | 170A | 170CA | 170A          | 170C         | 145.00                                                   | 162.00                                                             | 179.00                                                             | 1                                      | 234.0                                                    | 6.5                                             | 5                                      |
| 1.5SMC                | 180A | 180CA | 180A          | 180C         | 154.00                                                   | 171.00                                                             | 189.00                                                             | 1                                      | 246.0                                                    | 6.2                                             | 5                                      |
| 1.5SMC                | 200A | 200CA | 200A          | 200C         | 171.00                                                   | 190.00                                                             | 210.00                                                             | 1                                      | 274.0                                                    | 5.5                                             | 5                                      |
| 1.5SMC                | 220A | 220CA | 220A          | 220C         | 185.00                                                   | 209.00                                                             | 231.00                                                             | 1                                      | 328.0                                                    | 4.6                                             | 5                                      |
| 1.5SMC                | 250A | 250CA | 250A          | 250C         | 214.00                                                   | 237.00                                                             | 263.00                                                             | 1                                      | 344.0                                                    | 4.4                                             | 5                                      |
| 1.5SMC                | 300A | 300CA | 300A          | 300C         | 256.00                                                   | 285.00                                                             | 315.00                                                             | 1                                      | 414.0                                                    | 3.7                                             | 5                                      |
| 1.5SMC                | 350A | 350CA | 350A          | 350C         | 300.00                                                   | 332.00                                                             | 368.00                                                             | 1                                      | 482.0                                                    | 3.2                                             | 5                                      |
| 1.5SMC                | 400A | 400CA | 400A          | 400C         | 342.00                                                   | 380.00                                                             | 420.00                                                             | 1                                      | 548.0                                                    | 2.8                                             | 5                                      |
| 1.5SMC                | 440A | 440CA | 440A          | 440C         | 376.00                                                   | 418.00                                                             | 462.00                                                             | 1                                      | 602.0                                                    | 2.5                                             | 5                                      |
| 1.5SMC                | 480A | 480CA | 480A          | 480C         | 408.00                                                   | 456.00                                                             | 504.00                                                             | 1                                      | 658.0                                                    | 2.3                                             | 5                                      |
| 1.5SMC                | 510A | 510CA | 510A          | 510C         | 434.00                                                   | 485.00                                                             | 535.00                                                             | 1                                      | 698.0                                                    | 2.1                                             | 5                                      |
| 1.5SMC                | 530A | 530CA | 530A          | 530C         | 450.00                                                   | 503.50                                                             | 556.50                                                             | 1                                      | 725.0                                                    | 2.1                                             | 5                                      |
| 1.5SMC                | 540A | 540CA | 540A          | 540C         | 459.00                                                   | 513.00                                                             | 567.00                                                             | 1                                      | 740.0                                                    | 2.0                                             | 5                                      |
| 1.5SMC                | 550A | 550CA | 550A          | 550C         | 467.00                                                   | 522.50                                                             | 577.50                                                             | 1                                      | 760.0                                                    | 2.0                                             | 5                                      |

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

**Certified RoHS Compliant**

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