

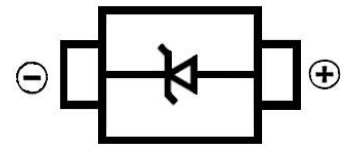
## TVS DIODE

### FEATURES

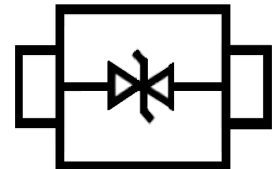
- Built-in strain relief
- Glass passivated junction
- Peak pulse power:1500W
- Breakdown voltage range:from 6.8V to 220V
- Low clamping factor
- Fast response time



**SMC**



**Uni-polarity**



**Bi-polarity**

### MECHANICAL DATA

- Case: SMC(DO-214AB)
- Case material: Molded Plastic. UL flammability
- Classification rating: 94V-0
- Weight: 0.21grams (approximate)

### MAXIMUM RATINGS AND CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

| Parameter                                                                                                 | Symbol                           | Value          | Unit |
|-----------------------------------------------------------------------------------------------------------|----------------------------------|----------------|------|
| Peak Pulse Power Dissipation on 10/1000μs waveform (Note 1,fig.1)                                         | P <sub>PPM</sub>                 | 1500           | W    |
| Peak Pulse Current of on 10/1000μs waveform (Note 1,FIG.3)                                                | I <sub>PPM</sub>                 | efer the table | W    |
| Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load,(JEDEC Method) (Note 3) | I <sub>FSM</sub>                 | 200            | A    |
| Operating junction,storage temperature range                                                              | T <sub>J</sub> ,T <sub>STG</sub> | -55 ~+150      | °C   |

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

| Part number<br>(Uni) | Part number<br>(Bi) | Marking |     | Breakdown voltage V <sub>BR</sub> @I <sub>T</sub> |        |        |                     | Maximum<br>clamping<br>voltage<br>@I <sub>pp</sub><br>V <sub>c</sub> (V) | Peak<br>pulse<br>current<br>I <sub>pp</sub><br>(A) | Reverse<br>leakage<br>@ VRWM<br>IR(mA) |
|----------------------|---------------------|---------|-----|---------------------------------------------------|--------|--------|---------------------|--------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------|
|                      |                     | Uni     | Bi  | Min(V)                                            | Nor(V) | Max(V) | I <sub>T</sub> (mA) |                                                                          |                                                    |                                        |
| SM15T6V8A            | SM15T6V8CA          | MDE     | BDE | 5.80                                              | 6.45   | 7.14   | 10                  | 10.5                                                                     | 143.0                                              | 1000                                   |
| SM15T7V5A            | SM15T7V5CA          | MDG     | BDG | 6.40                                              | 7.13   | 7.88   | 10                  | 11.3                                                                     | 133.0                                              | 500                                    |
| SM15T10A             | SM15T10CA           | MDP     | BDP | 8.55                                              | 9.50   | 10.50  | 1                   | 14.5                                                                     | 103.0                                              | 10                                     |
| SM15T12A             | SM15T12CA           | MDT     | BDT | 10.20                                             | 11.40  | 12.60  | 1                   | 16.7                                                                     | 89.8                                               | 5                                      |
| SM15T15A             | SM15T15CA           | MDX     | BDX | 12.80                                             | 14.30  | 15.80  | 1                   | 21.2                                                                     | 70.8                                               | 5                                      |
| SM15T18A             | SM15T18CA           | MEE     | BEE | 15.30                                             | 17.10  | 18.90  | 1                   | 25.2                                                                     | 59.5                                               | 5                                      |
| SM15T22A             | SM15T22CA           | MEK     | BEK | 18.80                                             | 20.90  | 23.10  | 1                   | 30.6                                                                     | 49.0                                               | 5                                      |
| SM15T24A             | SM15T24CA           | MEM     | BEM | 20.50                                             | 22.80  | 25.20  | 1                   | 33.2                                                                     | 45.2                                               | 5                                      |
| SM15T27A             | SM15T27CA           | MEP     | BEP | 23.10                                             | 25.70  | 28.40  | 1                   | 37.5                                                                     | 40.0                                               | 5                                      |
| SM15T30A             | SM15T30CA           | MER     | BER | 25.60                                             | 28.50  | 31.50  | 1                   | 41.4                                                                     | 36.2                                               | 5                                      |
| SM15T33A             | SM15T33CA           | MET     | BET | 28.20                                             | 31.40  | 34.70  | 1                   | 45.7                                                                     | 32.8                                               | 5                                      |
| SM15T36A             | SM15T36CA           | MEV     | BEV | 30.80                                             | 34.20  | 37.80  | 1                   | 49.9                                                                     | 30.1                                               | 5                                      |
| SM15T39A             | SM15T39CA           | MEX     | BEX | 33.30                                             | 37.10  | 41.00  | 1                   | 53.9                                                                     | 27.8                                               | 5                                      |
| SM15T68A             | SM15T68CA           | MFP     | BFP | 58.10                                             | 64.60  | 71.40  | 1                   | 92.0                                                                     | 16.3                                               | 5                                      |
| SM15T100A            | SM15T100CA          | MFX     | BFX | 85.50                                             | 95.00  | 105.00 | 1                   | 137.0                                                                    | 11.0                                               | 5                                      |
| SM15T150A            | SM15T150CA          | MGK     | BGK | 128.00                                            | 143.00 | 158.00 | 1                   | 207.0                                                                    | 7.2                                                | 5                                      |
| SM15T200A            | SM15T200CA          | MGV     | BGV | 171.00                                            | 190.00 | 210.00 | 1                   | 274.0                                                                    | 5.5                                                | 5                                      |
| SM15T220A            | SM15T220CA          | MGX     | BGX | 188.00                                            | 208.00 | 231.00 | 1                   | 328.0                                                                    | 4.6                                                | 5                                      |

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.

## Typical Characteristics

Fig. 1 - Peak Pulse Power Rating Curve

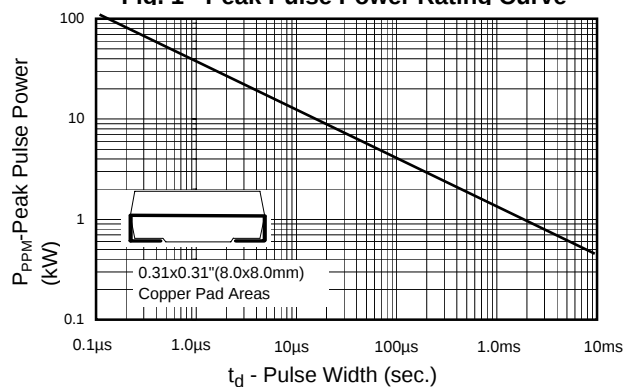


Fig.2 - Pulse Derating Curve

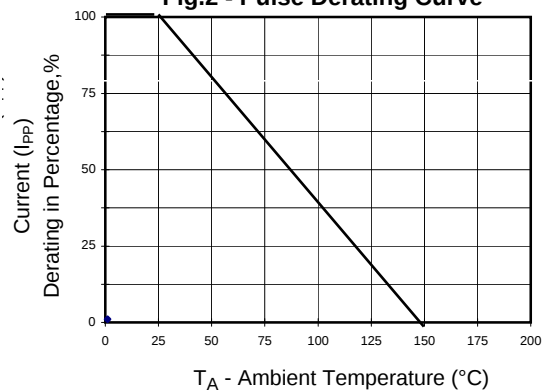


Fig.3 - Pulse Waveform

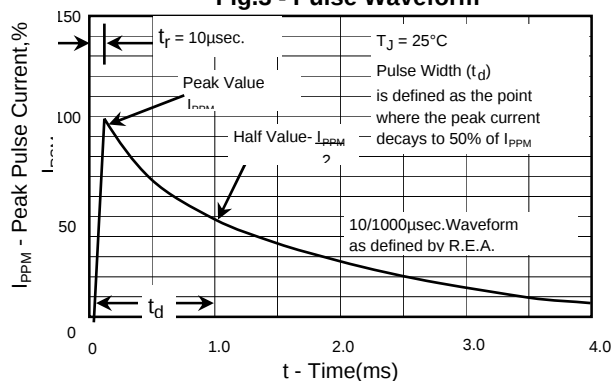


Fig.4 - Typical Junction Capacitance Uni-Directional

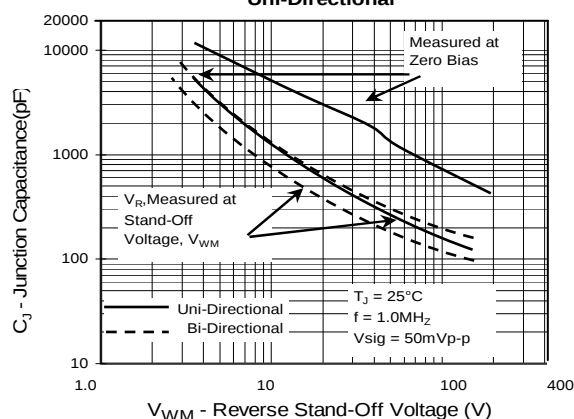


Fig. 5 - Typ. Transient Thermal Impedance

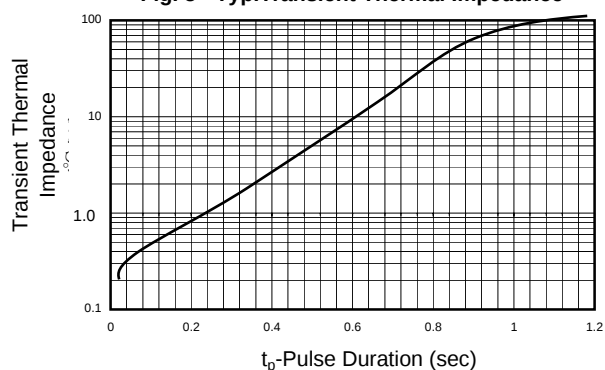
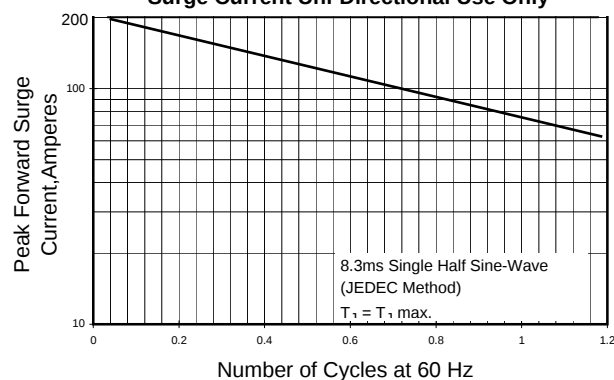
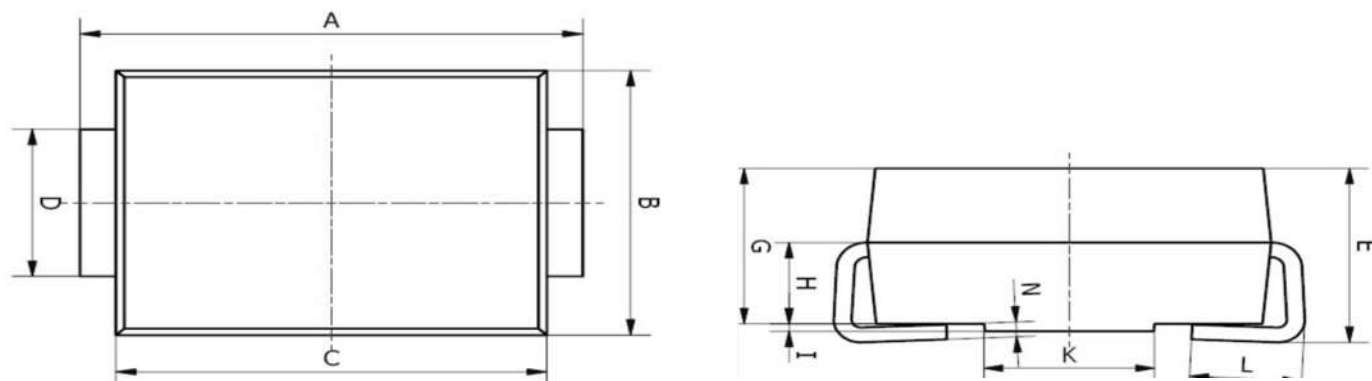


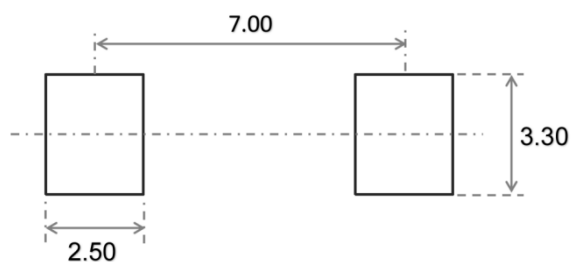
Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only



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**SMC Package Outline Dimensions**


| Symbol | Dimensions In Millimeters |      | Dimensions In Inches |       |
|--------|---------------------------|------|----------------------|-------|
|        | Min.                      | Max. | Min.                 | Max.  |
| A      | 7.75                      | 8.13 | 0.305                | 0.320 |
| B      | 5.59                      | 6.22 | 0.220                | 0.245 |
| C      | 6.60                      | 7.11 | 0.260                | 0.280 |
| D      | 2.75                      | 3.25 | 0.108                | 0.128 |
| E      | 2.25                      | 2.82 | 0.089                | 0.111 |
| G      | 2.00                      | 2.62 | 0.079                | 0.103 |
| H      | 1.26                      | 1.56 | 0.050                | 0.061 |
| I      | 0.05                      | 0.15 | 0.002                | 0.006 |
| K      | 4.30                      | 6.00 | 0.169                | 0.236 |
| L      | 1.25                      | 1.75 | 0.049                | 0.069 |
| N      | 0.10                      | 0.30 | 0.004                | 0.012 |

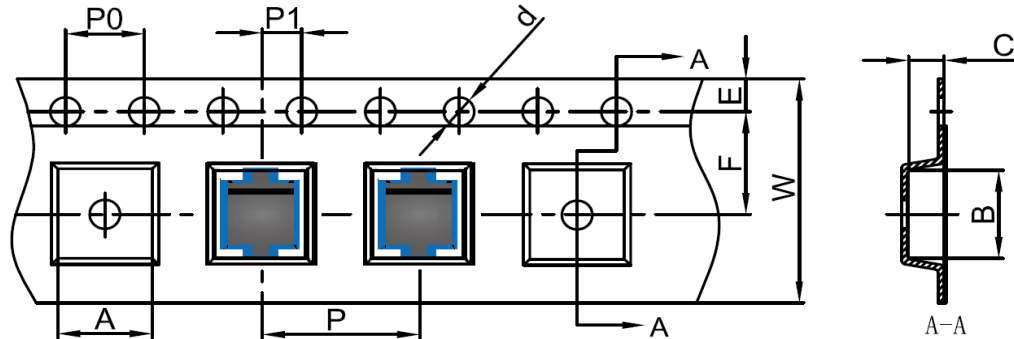
**SMC Suggested Pad Layout**

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance:  $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only

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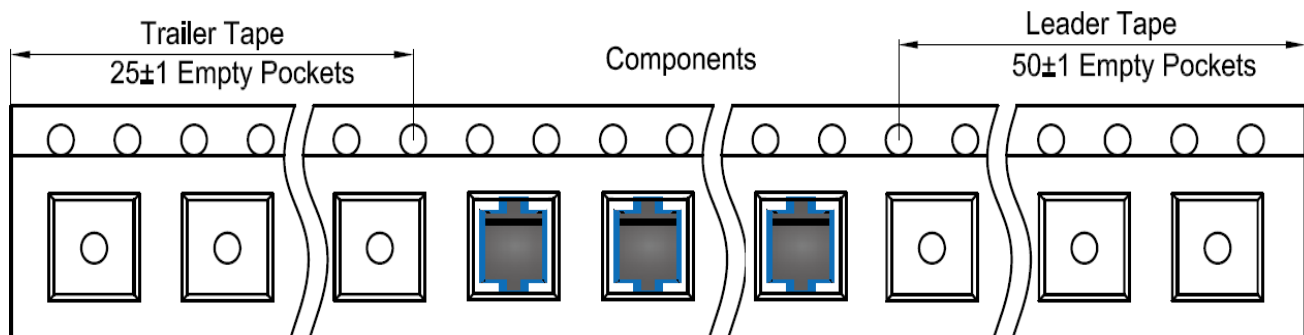
## SMC Tape and Reel

### SMC Embossed Carrier Tape

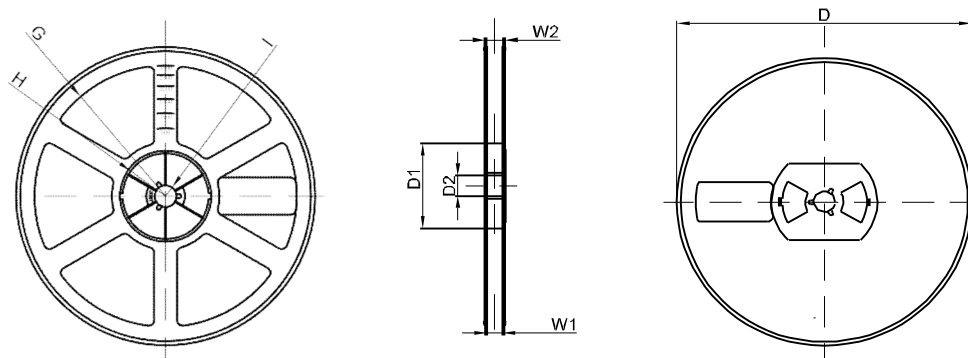


| DIMENSIONS ARE IN MILLIMETER |      |      |      |       |      |      |      |      |      |       |
|------------------------------|------|------|------|-------|------|------|------|------|------|-------|
| TYPE                         | A    | B    | C    | d     | E    | F    | P0   | P    | P1   | W     |
| SMC                          | 6.3  | 8.25 | 2.90 | Ø1.55 | 1.75 | 7.50 | 4.00 | 8.00 | 2.00 | 16.00 |
| TOLERANCE                    | ±0.1 | ±0.1 | ±0.1 | ±0.1  | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1  |

### SMC Tape Leader and Trailer



### SMC Reel



| DIMENSIONS ARE IN MILLIMETER |      |     |    |      |     |       |      |       |
|------------------------------|------|-----|----|------|-----|-------|------|-------|
| REEL OPTION                  | D    | D1  | D2 | G    | H   | I     | W1   | W2    |
| 13" DIA                      | Ø330 | 100 | 21 | R165 | R50 | R6.50 | 16.4 | 21.00 |
| TOLERANCE                    | ±2   | ±1  | ±1 | ±1   | ±1  | ±1    | ±1   | ±1    |