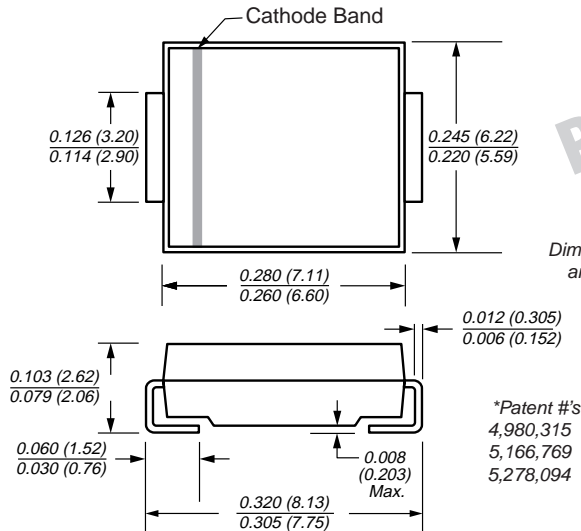


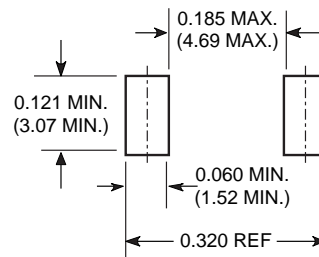


## Automotive Surface Mount Transient Voltage Suppressors

**DO-214AB (SMC)**
**Breakdown Voltage** 6.8 to 43V  
**Peak Pulse Power** 1500W


Patented\*

### Mounting Pad Layout



Available in uni-directional only

### Mechanical Data

**Case:** JEDEC DO-214AB molded plastic body over passivated junction

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

**Polarity:** The color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Mounting Position:** Any

**Weight:** 0.007 oz., 0.2 g

**Packaging codes/options:**

 9/3.5K per 13" Reel (16mm tape), 30K/box  
 7/850 EA per 7" Reel (16mm tape), 27K/box

### Features

- Designed for under the hood surface mount applications
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Easy pick and place
- Low profile package
- Built-in strain relief
- Ideal for automated placement
- Exclusive patented PAR<sup>®</sup> oxide passivated chip construction
- 1500W peak pulse power capability with a 10/1000ms waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- For devices with  $V_{(BR)} \geq 10V$   $I_D$  are typically less than 1.0mA at  $T_A = 150^\circ C$
- High temperature soldering: 250°C/10 seconds at terminals

### Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ C$ unless otherwise noted)

| Parameter   | Symbol                            | Value          | Unit |
|---|-----------------------------------|----------------|------|
| Peak pulse power dissipation with a 10/1000 $\mu s$ waveform <sup>(1)(2)</sup> (Fig. 3) | PPPM                              | Minimum 1500   | W    |
| Peak power pulse current with a 10/1000 $\mu s$ waveform <sup>(1)</sup> (Fig. 1)        | IPPM                              | See Next Table | A    |
| Peak forward surge current 8.3ms single half sine-wave <sup>(2)(3)</sup>                | IFSM                              | 200            | A    |
| Maximum instantaneous forward voltage at 100A <sup>(3)</sup>                            | V <sub>F</sub>                    | 3.5            | V    |
| Operating junction and storage temperature range  | T <sub>J</sub> , T <sub>STG</sub> | -65 to +185    | °C   |

**Notes:** (1) Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ C$  per Fig. 2

(2) Mounted on 0.31 x 0.31" (8.0 x 8.0mm) copper pads to each terminal

(3) Measured on 8.3ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum

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

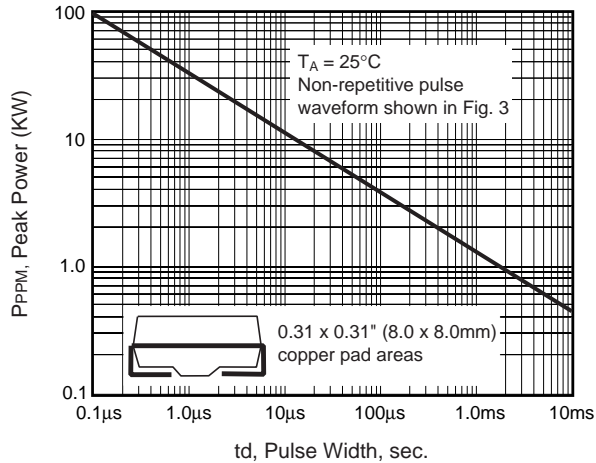
| Device    | Device Marking Code | Breakdown Voltage V <sub>(BR)</sub> <sup>(1)</sup> at I <sub>T</sub> (V) |      | Test Current I <sub>T</sub> (mA) | Stand-off Voltage V <sub>WM</sub> (V) | Maximum Reverse Leakage at V <sub>WM</sub> I <sub>R</sub> (μA) | T <sub>J</sub> = 150°C Maximum Reverse Leakage at V <sub>WM</sub> I <sub>D</sub> (μA) | Maximum Peak Pulse Surge Current I <sub>PPM</sub> <sup>(2)</sup> (A) | Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (V) |
|-----------|---------------------|--|------|----------------------------------|---------------------------------------|--|---|--|---|
|           |                     | Min.   | Max. |                                  |                                       |  |   |  |   |
| TPSMC6.8  | DDP                 | 6.12   | 7.48 | 10.0                             | 5.50                                  | 1000   | 10000   | 139.0  | 10.8  |
| TPSMC6.8A | DEP                 | 6.45   | 7.14 | 10.0                             | 5.80                                  | 1000   | 10000   | 143.0  | 10.5  |
| TPSMC7.5  | DFP                 | 6.75   | 8.25 | 10.0                             | 6.05                                  | 500  | 5000  | 128.0  | 11.7  |
| TPSMC7.5A | DGP                 | 7.13   | 7.88 | 10.0                             | 6.40                                  | 500  | 5000  | 133.0  | 11.3  |
| TPSMC8.2  | DHP                 | 7.38   | 9.02 | 10.0                             | 6.63                                  | 200  | 2000  | 120.0  | 12.5  |
| TPSMC8.2A | DKP                 | 7.79   | 8.61 | 10.0                             | 7.02                                  | 200  | 2000  | 124.0  | 12.1  |
| TPSMC9.1  | DLP                 | 8.19   | 10.0 | 1.0                              | 7.37                                  | 50   | 500   | 109.0  | 13.8  |
| TPSMC9.1A | DMP                 | 8.65   | 9.55 | 1.0                              | 7.78                                  | 50   | 500   | 112.0  | 13.4  |
| TPSMC10   | DNP                 | 9.00   | 11.0 | 1.0                              | 8.10                                  | 20   | 200   | 100.0  | 15.0  |
| TPSMC10A  | DPP                 | 9.50   | 10.5 | 1.0                              | 8.55                                  | 20   | 200   | 103.0  | 14.5  |
| TPSMC11   | DQP                 | 9.90   | 12.1 | 1.0                              | 8.92                                  | 5.0  | 50  | 92.6   | 16.2  |
| TPSMC11A  | DRP                 | 10.5   | 11.6 | 1.0                              | 9.40                                  | 5.0  | 50  | 96.2   | 15.6  |
| TPSMC12   | DSP                 | 10.8   | 13.2 | 1.0                              | 9.72                                  | 2.0  | 10  | 86.7   | 17.3  |
| TPSMC12A  | DTP                 | 11.4   | 12.6 | 1.0                              | 10.2                                  | 2.0  | 10  | 89.8   | 16.7  |
| TPSMC13   | DUP                 | 11.7   | 14.3 | 1.0                              | 10.5                                  | 2.0  | 10  | 78.9   | 19.0  |
| TPSMC13A  | DVP                 | 12.4   | 13.7 | 1.0                              | 11.1                                  | 2.0  | 10  | 82.4   | 18.2  |
| TPSMC15   | DWP                 | 13.5   | 16.5 | 1.0                              | 12.1                                  | 1.0  | 10  | 68.2   | 22.0  |
| TPSMC15A  | DXP                 | 14.3   | 15.8 | 1.0                              | 12.8                                  | 1.0  | 10  | 70.8   | 21.2  |
| TPSMC16   | DYP                 | 14.4   | 17.6 | 1.0                              | 12.9                                  | 1.0  | 10  | 63.8   | 23.5  |
| TPSMC16A  | DZP                 | 15.2   | 16.8 | 1.0                              | 13.6                                  | 1.0  | 10  | 66.7   | 22.5  |
| TPSMC18   | EDP                 | 16.2   | 19.8 | 1.0                              | 14.5                                  | 1.0  | 10  | 56.6   | 26.5  |
| TPSMC18A  | EEP                 | 17.1   | 18.9 | 1.0                              | 15.3                                  | 1.0  | 10  | 59.5   | 25.2  |
| TPSMC20   | EFP                 | 18.0   | 22.0 | 1.0                              | 16.2                                  | 1.0  | 10  | 51.5   | 29.1  |
| TPSMC20A  | EGP                 | 19.0   | 21.0 | 1.0                              | 17.1                                  | 1.0  | 10  | 54.2   | 27.7  |
| TPSMC22   | EHP                 | 19.8   | 24.2 | 1.0                              | 17.8                                  | 1.0  | 10  | 47.0   | 31.9  |
| TPSMC22A  | EKP                 | 20.9   | 23.1 | 1.0                              | 18.8                                  | 1.0  | 10  | 49.0   | 30.6  |
| TPSMC24   | ELP                 | 21.6   | 26.4 | 1.0                              | 19.4                                  | 1.0  | 10  | 43.2   | 34.7  |
| TPSMC24A  | EMP                 | 22.8   | 25.2 | 1.0                              | 20.5                                  | 1.0  | 10  | 45.2   | 33.2  |
| TPSMC27   | ENP                 | 24.3   | 29.7 | 1.0                              | 21.8                                  | 1.0  | 10  | 38.4   | 39.1  |
| TPSMC27A  | EPP                 | 25.7   | 28.4 | 1.0                              | 23.1                                  | 1.0  | 10  | 40.0   | 37.5  |
| TPSMC30   | EQP                 | 27.0   | 33.0 | 1.0                              | 24.3                                  | 1.0  | 10  | 34.5   | 43.5  |
| TPSMC30A  | ERP                 | 28.5   | 31.5 | 1.0                              | 25.6                                  | 1.0  | 10  | 36.2   | 41.4  |
| TPSMC33   | ESP                 | 29.7   | 36.3 | 1.0                              | 26.8                                  | 1.0  | 10  | 31.4   | 47.7  |
| TPSMC33A  | ETP                 | 31.4   | 34.7 | 1.0                              | 28.2                                  | 1.0  | 10  | 32.8   | 45.7  |
| TPSMC36   | EUP                 | 32.4   | 39.6 | 1.0                              | 29.1                                  | 1.0  | 10  | 28.8   | 52.0  |
| TPSMC36A  | EVP                 | 34.2   | 37.8 | 1.0                              | 30.8                                  | 1.0  | 10  | 30.1   | 49.9  |
| TPSMC39   | EWP                 | 35.1   | 42.9 | 1.0                              | 31.6                                  | 1.0  | 10  | 26.6   | 56.4  |
| TPSMC39A  | EXP                 | 37.1   | 41.0 | 1.0                              | 33.3                                  | 1.0  | 10  | 27.8   | 53.9  |
| TPSMC43   | EYP                 | 38.7   | 47.3 | 1.0                              | 34.8                                  | 1.0  | 10  | 24.2   | 61.9  |
| TPSMC43A  | EZP                 | 40.9   | 45.2 | 1.0                              | 36.8                                  | 1.0  | 10  | 25.3   | 59.3  |

**Notes:**

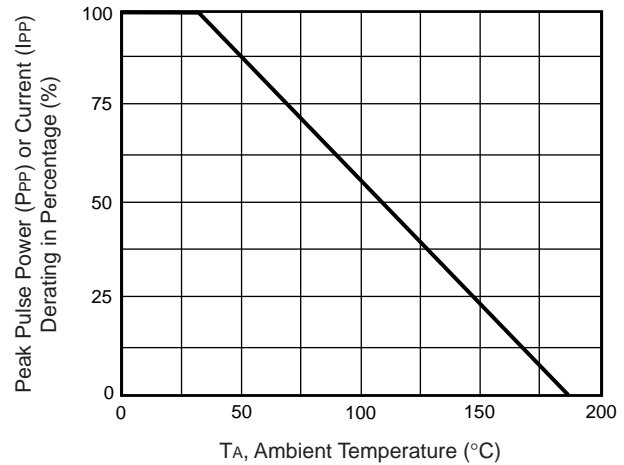
- (1) V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs, I<sub>T</sub> = square wave pulse or equivalent
- (2) Surge current waveform per Fig. 3 and derate per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35

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

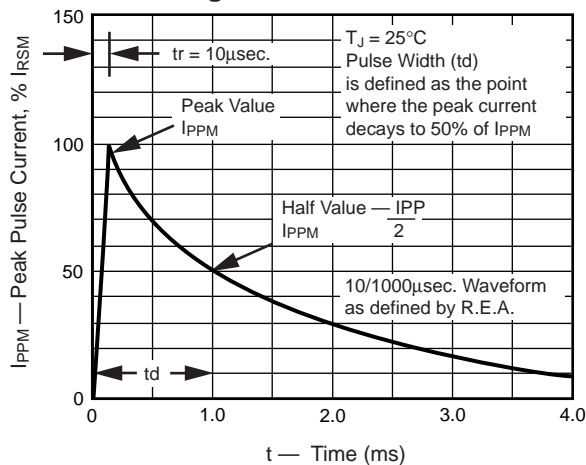
**Fig. 1 – Peak Pulse Power Rating Curve**



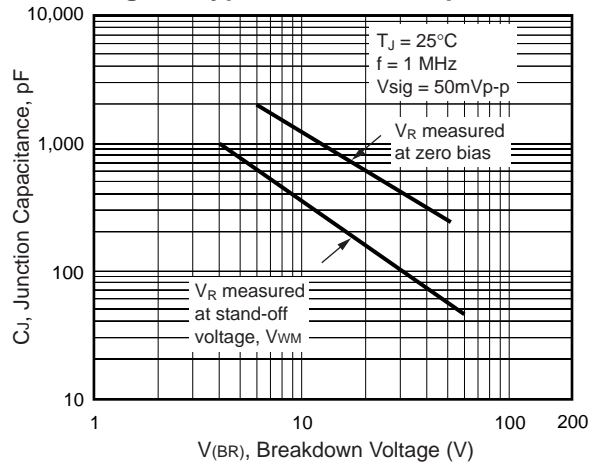
**Fig. 2 – Pulse Derating Curve**



**Fig. 3 – Pulse Waveform**



**Fig. 4 – Typical Junction Capacitance**



**Fig. 5 – Maximum Non-Repetitive Peak Forward Surge Current**

