

## Surface Mount Transient Voltage Suppressors(TVS)

**TPSMDJ Series      10 to 43 V      3000W**

### Features

- ◆ Glass passivated chip.
- ◆ 3000W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %.
- ◆ High reliability application and automotive grade AEC Q101 qualified.
- ◆ Low leakage.
- ◆ Uni and Bidirectional unit.
- ◆ Excellent clamping capability.
- ◆ Very fast response time.
- ◆ RoHS compliant.

### Mechanical Data

- ◆ Case: Molded plastic.
- ◆ Epoxy: UL 94V-0 rate flame retardant.
- ◆ Lead: Solderable per MIL-STD-750, method 2026.
- ◆ Polarity: Color band denotes cathode end except Bipolar.
- ◆ Mounting position: Any.



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

| Parameter  | Symbol         | Value          | Unit             |
|--|----------------|----------------|------------------|
| Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                      | $P_{PP}$       | 3000           | W                |
| Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>                          | $I_{PP}$       | See Next Table | A                |
| Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$                         | $P_D$          | 6.5            | W                |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only <sup>(2)</sup> | $I_{FSM}$      | 300            | A                |
| Maximum instantaneous forward voltage at 100 A for unidirectional only <sup>(3)</sup>      | $V_F$          | 3.5/5.0        | V                |
| Operating junction and storage temperature range   | $T_J, T_{STG}$ | -55 to +150    | $^\circ\text{C}$ |

**Notes:**

(1) Non-repetitive current pulse per Fig.5 and derated above  $T_A = 25^\circ\text{C}$  per Fig.1.

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

(3)  $V_F < 3.5\text{V}$  for devices of  $V_{BR} < 200\text{V}$  and  $V_F < 5.0\text{V}$  for devices of  $V_{BR} > 201\text{V}$ .

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Electrical Characteristics( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Part Number |            | Marking |      | Working Peak Reverse Voltage $V_{RWM}(V)$ | Breakdown Voltage $V_{BR}(V)$ @ $I_T$ |       | Test Current $I_T$ (mA) | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (V) | Maximum Peak Pulse Current $I_{PP}$ (A) | Maximum Reverse Leakage $I_R$ @ $V_{RWM}$ ( $\mu\text{A}$ ) |
|-------------|------------|---------|------|---|---------------------------------------|-------|-------------------------|---|---|---|
| Uni         | Bi         | Uni     | Bi   |   | MIN                                   | MAX   |                         |   |   |   |
| TPSMDJ10A   | TPSMDJ10CA | PDXA    | DDXA | 10.0                                      | 11.10                                 | 12.30 | 5                       | 17.0  | 176.47                                  | 15  |
| TPSMDJ11A   | TPSMDJ11CA | PDZA    | DDZA | 11.0                                      | 12.20                                 | 13.50 | 5                       | 18.2  | 164.84                                  | 2   |
| TPSMDJ12A   | TPSMDJ12CA | PEEA    | DEEA | 12.0                                      | 13.30                                 | 14.70 | 5                       | 19.9  | 150.75                                  | 2   |
| TPSMDJ13A   | TPSMDJ13CA | PEGA    | DEGA | 13.0                                      | 14.40                                 | 15.90 | 5                       | 21.5  | 139.53                                  | 2   |
| TPSMDJ14A   | TPSMDJ14CA | PEKA    | DEKA | 14.0                                      | 15.60                                 | 17.20 | 5                       | 23.2  | 129.31                                  | 2   |
| TPSMDJ15A   | TPSMDJ15CA | PEMA    | DEMA | 15.0                                      | 16.70                                 | 18.50 | 5                       | 24.4  | 122.95                                  | 2   |
| TPSMDJ16A   | TPSMDJ16CA | PEPA    | DEPA | 16.0                                      | 17.80                                 | 19.70 | 5                       | 26.0  | 115.38                                  | 2   |
| TPSMDJ17A   | TPSMDJ17CA | PERA    | DERA | 17.0                                      | 18.90                                 | 20.90 | 5                       | 27.6  | 108.70                                  | 2   |
| TPSMDJ18A   | TPSMDJ18CA | PETA    | DETA | 18.0                                      | 20.00                                 | 22.10 | 5                       | 29.2  | 102.74                                  | 2   |
| TPSMDJ19A   | TPSMDJ19CA | PEBA    | DEBA | 19.0                                      | 21.10                                 | 23.30 | 5                       | 30.8  | 97.47                                   | 2   |
| TPSMDJ20A   | TPSMDJ20CA | PEVA    | DEVA | 20.0                                      | 22.20                                 | 24.50 | 5                       | 32.4  | 92.59                                   | 2   |
| TPSMDJ22A   | TPSMDJ22CA | PEXA    | DEXA | 22.0                                      | 24.40                                 | 26.90 | 5                       | 35.5  | 84.51                                   | 2   |
| TPSMDJ24A   | TPSMDJ24CA | PEZA    | DEZA | 24.0                                      | 26.70                                 | 29.50 | 5                       | 38.9  | 77.12                                   | 2   |
| TPSMDJ26A   | TPSMDJ26CA | PFEA    | DFEA | 26.0                                      | 28.90                                 | 31.90 | 5                       | 42.1  | 71.26                                   | 2   |
| TPSMDJ28A   | TPSMDJ28CA | PFGA    | DFGA | 28.0                                      | 31.10                                 | 34.40 | 5                       | 45.4  | 66.08                                   | 2   |
| TPSMDJ30A   | TPSMDJ30CA | PFKA    | DFKA | 30.0                                      | 33.30                                 | 36.80 | 5                       | 48.4  | 61.98                                   | 2   |
| TPSMDJ33A   | TPSMDJ33CA | PFMA    | DFMA | 33.0                                      | 36.70                                 | 40.60 | 5                       | 53.3  | 56.29                                   | 2   |
| TPSMDJ36A   | TPSMDJ36CA | PFPA    | DFPA | 36.0                                      | 40.00                                 | 44.20 | 5                       | 58.1  | 51.64                                   | 2   |
| TPSMDJ40A   | TPSMDJ40CA | PFRA    | DFRA | 40.0                                      | 44.40                                 | 49.10 | 5                       | 64.5  | 46.51                                   | 2   |
| TPSMDJ43A   | TPSMDJ43CA | PFTA    | DFTA | 43.0                                      | 47.80                                 | 52.80 | 5                       | 69.4  | 43.23                                   | 2   |

**Note:**

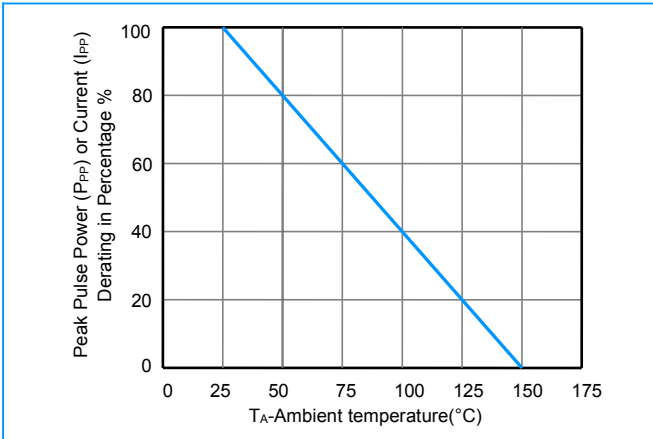
1. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices.
2. For Bi-Directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is double.

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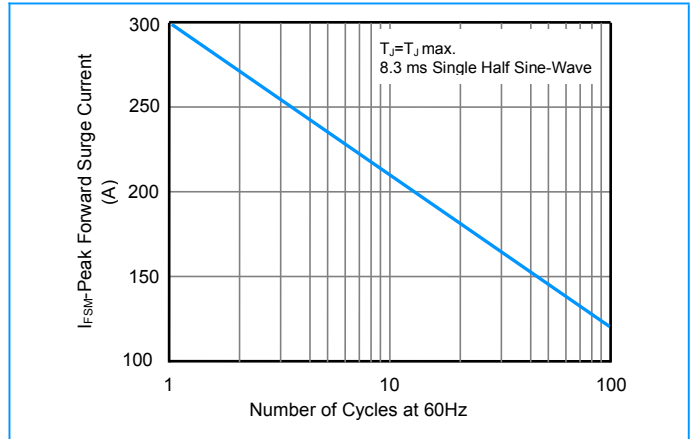
**TPSMDJ Series      10 to 43 V      3000W**

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

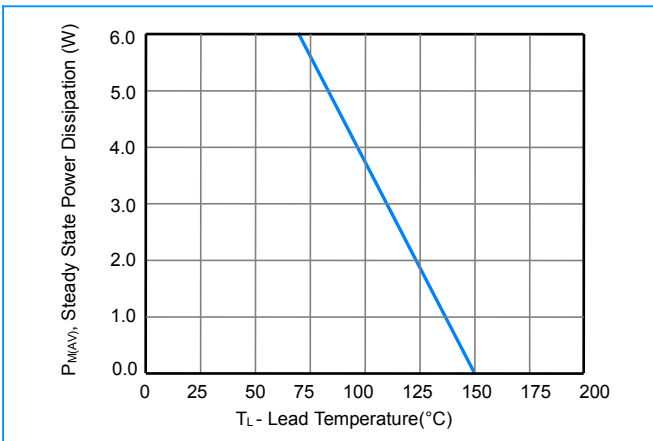
**Figure 1 - Pulse Derating Curve**



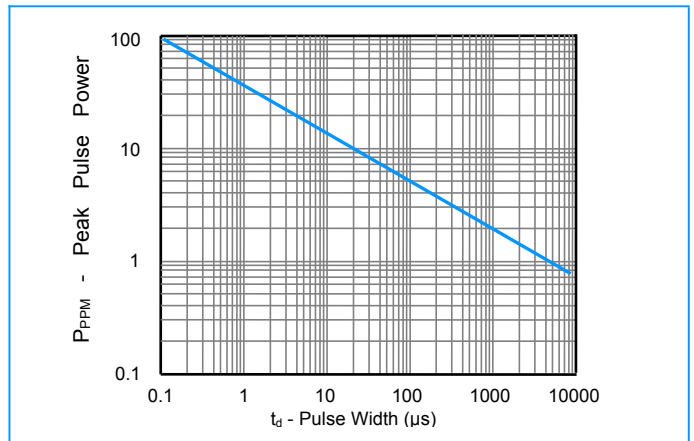
**Figure 2 - Maximum Non-Repetitive Surge Current**



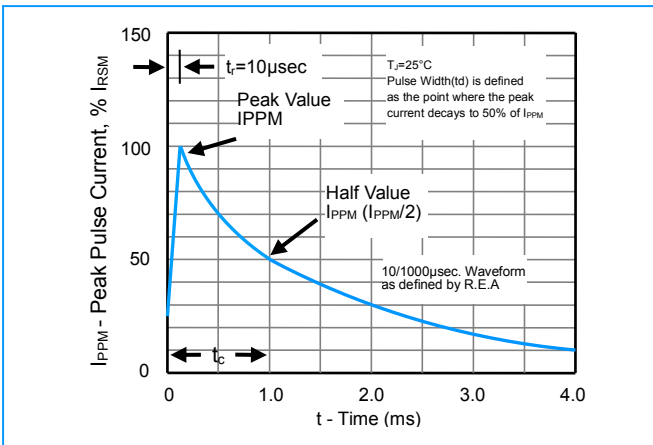
**Figure 3 - Steady State Power Derating Curve**



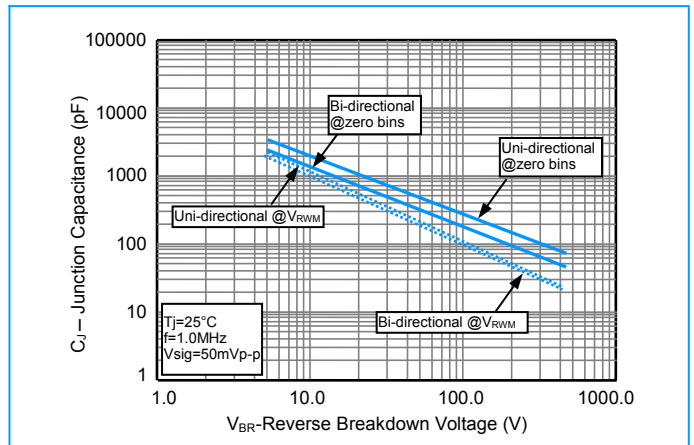
**Figure 4 - Peak Pulse Power Rating Curve**



**Figure 5 - Pulse Waveform**



**Figure 6 - Typical Junction Capacitance**

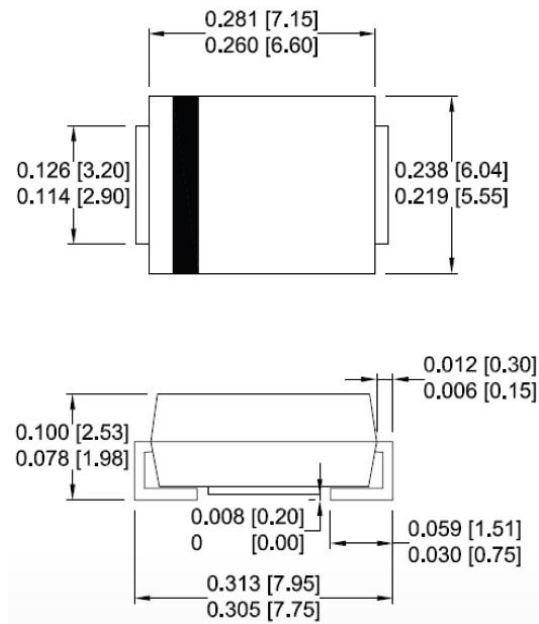


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### Dimensions

#### SMC/DO-214AB


**Dimensions : inch [ mm ]**

### Packaging

| Part Number   | Component Package | Quantity |
|---------------|-------------------|----------|
| TPSMDJ Series | SMC/DO-214AB      | 500 pcs  |