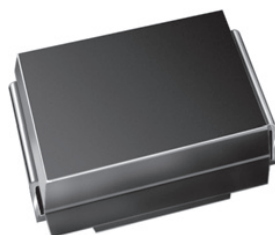


# Surface Mount TRANSZORB® Transient Voltage Suppressors


**SMB (DO-214AA)**

## PRIMARY CHARACTERISTICS

|                            |                 |
|----------------------------|-----------------|
| $V_{WM}$                   | 3.3 V           |
| $V_{BR}$ (uni-directional) | 4.1 V           |
| $P_{PPM}$                  | 600 W           |
| $I_{FSM}$                  | 60 A            |
| $T_J$ max.                 | 175 °C          |
| Polarity                   | Uni-directional |
| Package                    | SMB (DO-214AA)  |

## FEATURES

- Uni-directional polarity only
- Peak pulse power: 600 W (10/1000  $\mu$ s)
- Excellent clamping capability
- Very fast response time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units specifically for protecting 3.3 V supplied sensitive equipment against transient overvoltages.

## MECHANICAL DATA

**Case:** SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD22-B102

M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

## MAXIMUM RATINGS ( $T_A = 25$ °C, unless otherwise noted)

| PARAMETER                                                              | SYMBOL             | VALUE         | UNIT |
|------------------------------------------------------------------------|--------------------|---------------|------|
| Peak pulse power dissipation                                           | $P_{PPM}^{(1)(2)}$ | 600           | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform (fig. 1)            | $I_{PP}$           | 50            | A    |
| Peak pulse current with a 8/20 $\mu$ s waveform (fig. 1)               | $I_{PPM}$          | 200           | A    |
| Non-repetitive peak forward surge current 8.3 ms single half sine-wave | $I_{FSM}^{(2)}$    | 60            | A    |
| Power dissipation on infinite heatsink, $T_L = 75$ °C                  | $P_D$              | 5             | W    |
| Operating junction and storage temperature range                       | $T_J, T_{STG}$     | - 65 to + 175 | °C   |

### Notes

(1) Non-repetitive current pulse, per fig. 1

(2) Mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal

## ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)

| DEVICE TYPE | DEVICE MARKING CODE | BREAKDOWN VOLTAGE $V_{BR}$ AT $I_T$ |     | MAXIMUM REVERSE LEAKAGE CURRENT $I_R$ AT $V_{WM}$ | STAND-OFF VOLTAGE $V_{WM}$ | MAXIMUM CLAMPING VOLTAGE $V_C$ AT $I_{PP}$ 10/1000 $\mu$ s |    | MAXIMUM CLAMPING VOLTAGE $V_C$ AT $I_{PPM}$ 8/20 $\mu$ s |     | TYPICAL TEMPERATURE COEFFICIENT OF $V_{BR}$ | TYPICAL JUNCTION CAPACITANCE $C_J$ AT 0 V 1 MHz |
|-------------|---------------------|-------------------------------------|-----|---------------------------------------------------|----------------------------|------------------------------------------------------------|----|----------------------------------------------------------|-----|---------------------------------------------|-------------------------------------------------|
|             |                     | MIN.                                |     |                                                   |                            | $V_C$ AT $I_{PP}$                                          |    | $V_C$ AT $I_{PPM}$                                       |     |                                             |                                                 |
|             |                     | V                                   | mA  |                                                   |                            | V                                                          | A  | V                                                        | A   |                                             |                                                 |
| SMBJ3V3     | KC                  | 4.1                                 | 1.0 | 200                                               | 3.3                        | 7.3                                                        | 50 | 10.3                                                     | 200 | -5.3                                        | 5200                                            |

**THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                       | SYMBOL                | VALUE | UNIT                 |
|-------------------------------------------------|-----------------------|-------|----------------------|
| Typical thermal resistance, junction to lead    | $R_{\theta JL}^{(1)}$ | 20    | $^{\circ}\text{C/W}$ |
| Typical thermal resistance, junction to ambient | $R_{\theta JA}^{(2)}$ | 100   | $^{\circ}\text{C/W}$ |

**Notes**

- (1) Thermal resistance from junction to lead - mounted on 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pads to each terminal  
 (2) Thermal resistance from junction to ambient - mounted on the recommended PCB pad layout

**ORDERING INFORMATION** (Example)

| PREFERRED P/N | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                      |
|---------------|-----------------|------------------------|---------------|------------------------------------|
| SMBJ3V3-M3/52 | 0.096           | 52                     | 750           | 7" diameter plastic tape and reel  |
| SMBJ3V3-M3/5B | 0.096           | 5B                     | 3200          | 13" diameter plastic tape and reel |

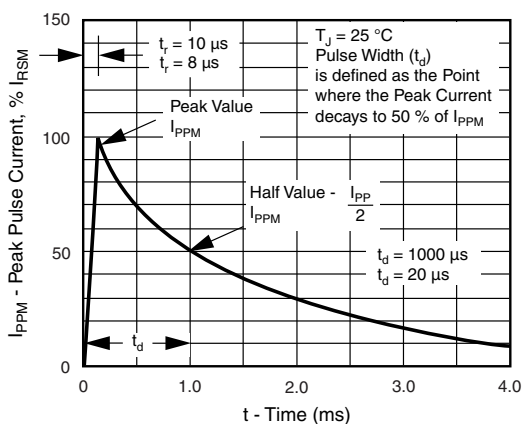
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Pulse Waveform

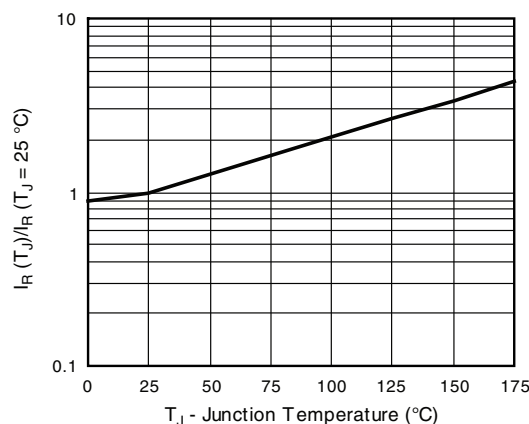


Fig. 3 - Relative Variation of Leakage Current vs. Junction Temperature

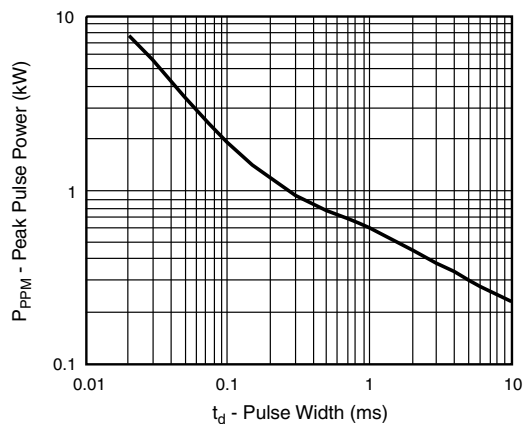
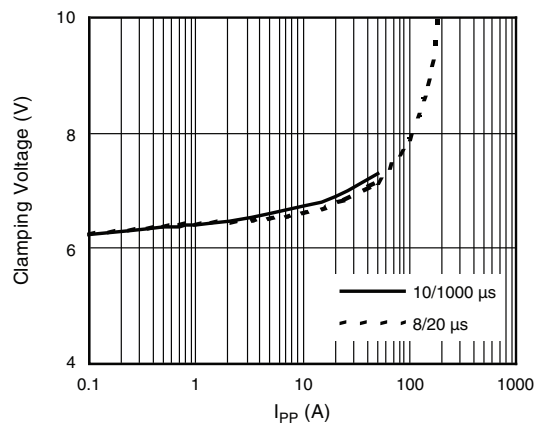


Fig. 2 - Peak Pulse Power Rating Curve

Fig. 4 - Clamping Voltage vs. Peak Pulse Current ( $T_J$  initial =  $25\text{ }^{\circ}\text{C}$ )

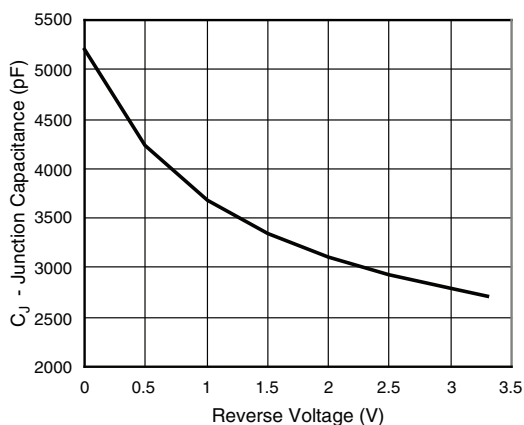


Fig. 5 - Typical Junction Capacitance

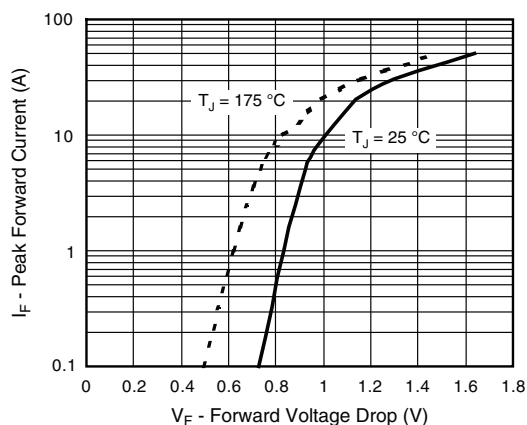


Fig. 7 - Typical Peak Forward Voltage Drop vs. Peak Forward Current

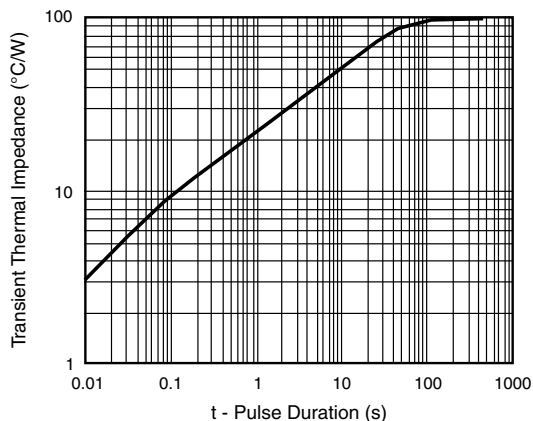
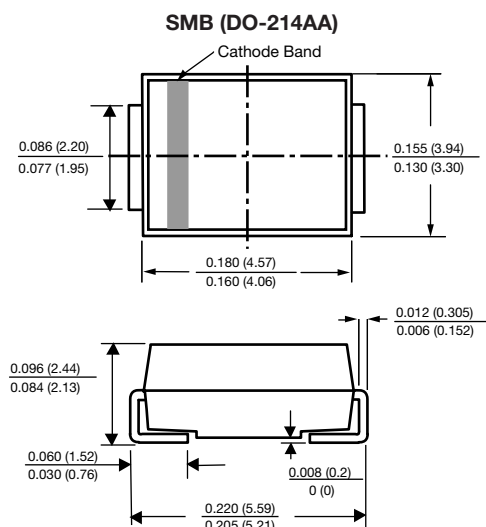
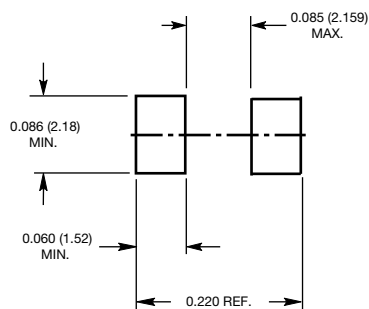


Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



## Mounting Pad Layout





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