

**V<sub>Z</sub> : 3.3 - 200 Volts**  
**P<sub>D</sub> : 3.0 Watts**

**SMB/DO-214AA**

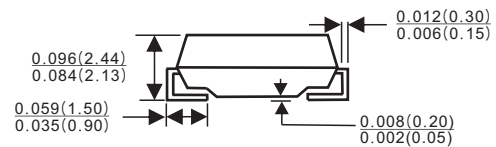
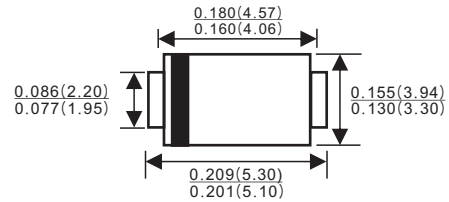


## Features

- ✧ Complete Voltage Range 3.3 to 200 Volts
- ✧ High peak reverse power dissipation
- ✧ Flat handling surface for accurate placement
- ✧ Low leakage current
- ✧ Pb / RoHS Free

## Mechanical Data

- ✧ Case : SMB (DO-214AA) Molded plastic
- ✧ Epoxy : UL94V-O rate flame retardant
- ✧ Maximum Lead Temperature for Soldering Purposes :  
260 °C for 10 Seconds
- ✧ Leads : Modified L-Bend providing more contact area to bond pads.
- ✧ Polarity : Cathode indicated by polarity band.
- ✧ Mounting position : Any
- ✧ Weight : 0.093 gram



Dimensions in inches and(millimeters)

## MAXIMUM RATINGS

| Rating  | Symbol           | Value         | Unit  |
|---|------------------|---------------|-------|
| Maximum Steady State Power Dissipation at T <sub>L</sub> = 75 °C,<br>Measured at Zero Lead Length<br>Derate Above 75 °C | P <sub>D</sub>   | 3.0           | W     |
| Thermal Resistance From Junction to Lead  | R <sub>θJL</sub> | 25            | °C/W  |
| Maximum Steady State Power Dissipation at Ta = 25 °C<br>Measured at Zero Lead Length<br>Derate Above 25 °C              | P <sub>D</sub>   | 550           | mW    |
| Thermal Resistance From Junction to Ambient   | R <sub>θJA</sub> | 4.4           | mW/°C |
| Maximum Forward Voltage at I <sub>F</sub> = 200 mA  | V <sub>F</sub>   | 226           | °C/W  |
| Junction Temperature Range  | T <sub>J</sub>   | 1.5           | Volts |
| Storage Temperature Range   | T <sub>stg</sub> | - 65 to + 150 | °C    |

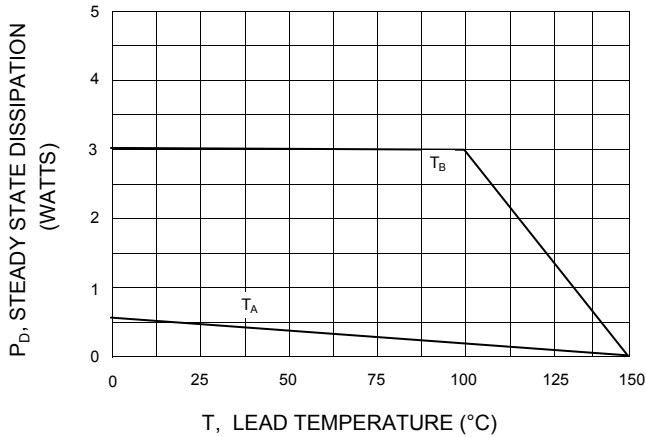
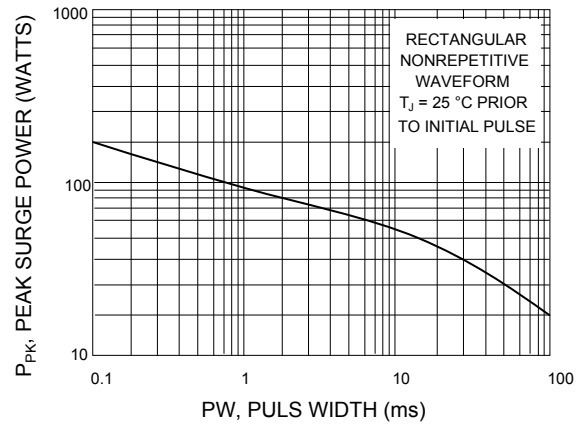
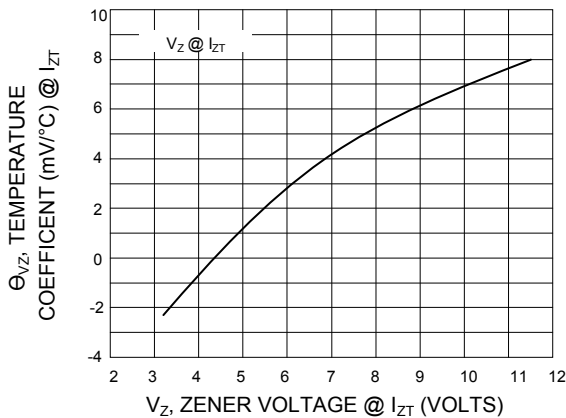
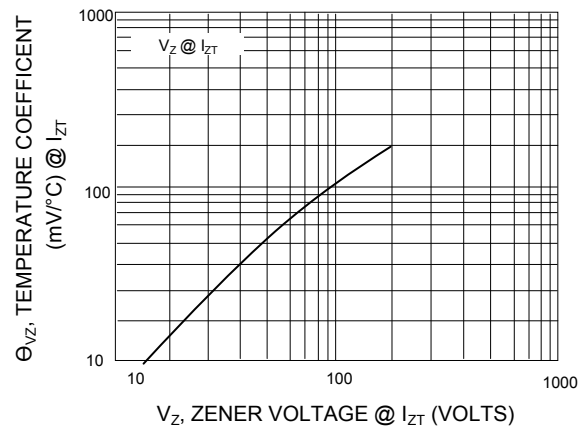
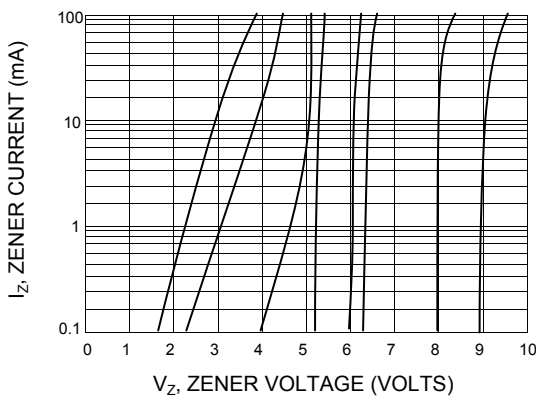
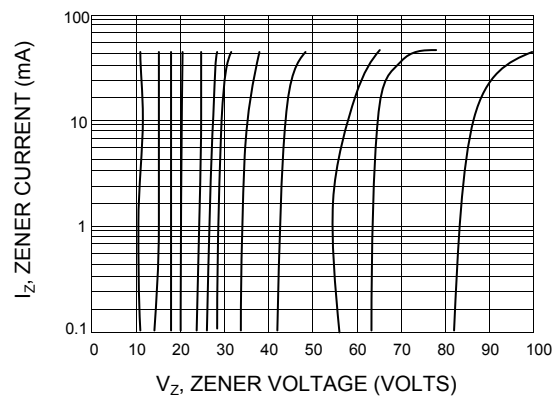
## ELECTRICAL CHARACTERISTICS

Rating at  $T_L = 30\text{ }^\circ\text{C}$  unless otherwise specified

| TYPE      | Nominal Zener Voltage |          | Maximum Zener Impedance |                   |          | Maximum Reverse Leakage Current |       | Maximum DC Zener Current |
|-----------|-----------------------|----------|-------------------------|-------------------|----------|---------------------------------|-------|--------------------------|
|           | $V_Z @ I_{ZT}$        | $I_{ZT}$ | $Z_{ZT} @ I_{ZT}$       | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R @ V_R$                     |       | $I_{ZM}$                 |
|           | (V)                   | (mA)     | ( $\Omega$ )            | ( $\Omega$ )      | (mA)     | ( $\mu\text{A}$ )               | (V)   | (mA)                     |
| 1SMB5913B | 3.3                   | 113.6    | 10                      | 500               | 1.0      | 100                             | 1.0   | 454                      |
| 1SMB5914B | 3.6                   | 104.2    | 9.0                     | 500               | 1.0      | 75                              | 1.0   | 416                      |
| 1SMB5915B | 3.9                   | 96.1     | 7.5                     | 500               | 1.0      | 25                              | 1.0   | 384                      |
| 1SMB5916B | 4.3                   | 87.2     | 6.0                     | 500               | 1.0      | 5.0                             | 1.0   | 348                      |
| 1SMB5917B | 4.7                   | 79.8     | 5.0                     | 500               | 1.0      | 5.0                             | 1.5   | 319                      |
| 1SMB5918B | 5.1                   | 73.5     | 4.0                     | 350               | 1.0      | 5.0                             | 2.0   | 294                      |
| 1SMB5919B | 5.6                   | 66.9     | 2.0                     | 250               | 1.0      | 5.0                             | 3.0   | 267                      |
| 1SMB5920B | 6.2                   | 60.5     | 2.0                     | 200               | 1.0      | 5.0                             | 4.0   | 241                      |
| 1SMB5921B | 6.8                   | 55.1     | 2.5                     | 200               | 1.0      | 5.0                             | 5.2   | 220                      |
| 1SMB5922B | 7.5                   | 50.0     | 3.0                     | 400               | 0.5      | 5.0                             | 6.0   | 200                      |
| 1SMB5923B | 8.2                   | 45.7     | 3.5                     | 400               | 0.5      | 5.0                             | 6.5   | 182                      |
| 1SMB5924B | 9.1                   | 41.2     | 4.0                     | 500               | 0.5      | 5.0                             | 7.0   | 164                      |
| 1SMB5925B | 10                    | 37.5     | 4.5                     | 500               | 0.25     | 5.0                             | 8.0   | 150                      |
| 1SMB5926B | 11                    | 34.1     | 5.5                     | 550               | 0.25     | 1.0                             | 8.4   | 136                      |
| 1SMB5927B | 12                    | 31.2     | 6.5                     | 550               | 0.25     | 1.0                             | 9.1   | 125                      |
| 1SMB5928B | 13                    | 28.8     | 7.0                     | 550               | 0.25     | 1.0                             | 9.9   | 115                      |
| 1SMB5929B | 15                    | 25.0     | 9.0                     | 600               | 0.25     | 1.0                             | 11.4  | 100                      |
| 1SMB5930B | 16                    | 23.4     | 10                      | 600               | 0.25     | 1.0                             | 12.2  | 93                       |
| 1SMB5931B | 18                    | 20.8     | 12                      | 650               | 0.25     | 1.0                             | 13.7  | 83                       |
| 1SMB5932B | 20                    | 18.7     | 14                      | 650               | 0.25     | 1.0                             | 15.2  | 75                       |
| 1SMB5933B | 22                    | 17.0     | 17.5                    | 650               | 0.25     | 1.0                             | 16.7  | 68                       |
| 1SMB5934B | 24                    | 15.6     | 19                      | 700               | 0.25     | 1.0                             | 18.2  | 62                       |
| 1SMB5935B | 27                    | 13.9     | 23                      | 700               | 0.25     | 1.0                             | 20.6  | 55                       |
| 1SMB5936B | 30                    | 12.5     | 26                      | 750               | 0.25     | 1.0                             | 22.8  | 50                       |
| 1SMB5937B | 33                    | 11.4     | 33                      | 800               | 0.25     | 1.0                             | 25.1  | 45                       |
| 1SMB5938B | 36                    | 10.4     | 38                      | 850               | 0.25     | 1.0                             | 27.4  | 41                       |
| 1SMB5939B | 39                    | 9.6      | 45                      | 900               | 0.25     | 1.0                             | 29.7  | 38                       |
| 1SMB5940B | 43                    | 8.7      | 53                      | 950               | 0.25     | 1.0                             | 32.7  | 34                       |
| 1SMB5941B | 47                    | 8.0      | 67                      | 1000              | 0.25     | 1.0                             | 35.8  | 31                       |
| 1SMB5942B | 51                    | 7.3      | 70                      | 1100              | 0.25     | 1.0                             | 38.8  | 29                       |
| 1SMB5943B | 56                    | 6.7      | 86                      | 1300              | 0.25     | 1.0                             | 42.6  | 26                       |
| 1SMB5944B | 62                    | 6.0      | 100                     | 1500              | 0.25     | 1.0                             | 47.1  | 24                       |
| 1SMB5945B | 68                    | 5.5      | 120                     | 1700              | 0.25     | 1.0                             | 51.7  | 22                       |
| 1SMB5946B | 75                    | 5.0      | 140                     | 2000              | 0.25     | 1.0                             | 56.0  | 20                       |
| 1SMB5947B | 82                    | 4.6      | 160                     | 2500              | 0.25     | 1.0                             | 62.2  | 18                       |
| 1SMB5948B | 91                    | 4.1      | 200                     | 3000              | 0.25     | 1.0                             | 69.2  | 16                       |
| 1SMB5949B | 100                   | 3.7      | 250                     | 3100              | 0.25     | 1.0                             | 76.0  | 15                       |
| 1SMB5950B | 110                   | 3.4      | 300                     | 4000              | 0.25     | 1.0                             | 83.6  | 13                       |
| 1SMB5951B | 120                   | 3.1      | 380                     | 4500              | 0.25     | 1.0                             | 91.2  | 12                       |
| 1SMB5952B | 130                   | 2.9      | 450                     | 5000              | 0.25     | 1.0                             | 98.8  | 11                       |
| 1SMB5953B | 150                   | 2.5      | 600                     | 6000              | 0.25     | 1.0                             | 114.0 | 10                       |
| 1SMB5954B | 160                   | 2.3      | 700                     | 6500              | 0.25     | 1.0                             | 121.6 | 9.0                      |
| 1SMB5955B | 180                   | 2.1      | 900                     | 7000              | 0.25     | 1.0                             | 136.8 | 8.0                      |
| 1SMB5956B | 200                   | 1.9      | 1200                    | 8000              | 0.25     | 1.0                             | 152.0 | 7.0                      |

Note :

( 1 ) Suffix " B " indicates  $\pm 5\%$  tolerance, suffix " A " indicates  $\pm 10\%$  tolerance.

**RATING AND CHARACTERISTIC CURVES( 1SMB5913B - 1SMB5956B )**
**FIG. 1 - POWER TEMPERATURE DERATING CURVE**

**FIG. 3 - MAXIMUM SURGE POWER**

**FIG. 5 - TEMPERATURE COEFFICIENT RANGES UNITS TO 12 VOLTS**

**FIG. 6 - TEMPERATURE COEFFICIENT RANGES UNITS 10 TO 400 VOLTS**

**FIG. 7 - ZENER VOLTAGE VS. ZENER CURRENT  $V_Z = 3.3$  thru 10 VOLTS**

**FIG. 8 - ZENER VOLTAGE VS. ZENER CURRENT  $V_Z = 12$  thru 82 VOLTS**


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