

**SMB**

**Features**

- High forward surge capability
- Glass passivated junction
- Low Zener Impedance
- Power Dissipation of 3000mW
- High Stability and High Reliability
- Halogen free and RoHS compliant

**Mechanical Data**

CASE: SMBJ(DO-214AA) Molded Plastic  
 Polarity: Color band denotes cathode end  
 Mounting position: ANY  
 Weight: 0.0035 ounces, 0.098 gram

**Maximum Ratings & Electrical Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified.)

| Parameter   | Symbol            | Value         | Unit  |
|---|-------------------|---------------|-------|
| DC power dissipation at TL=75°C, measure at zero lead length (Note 1) derate above 75°C | P <sub>D</sub>    | 3.0           | W     |
|   |                   | 40            | mW/°C |
| Junction to ambient thermal resistance  | R <sub>thJA</sub> | 226           | °C/W  |
| Junction to lead thermal resistance   | R <sub>thJL</sub> | 25            | °C/W  |
| Junction Temperature Range  | T <sub>J</sub>    | - 55 to + 150 | °C    |
| Storage Temperature Range   | T <sub>STG</sub>  | - 55 to + 150 | °C    |

**Note:** 1. Mounted on Cu-Pad size 5mm x 5mm on PCB.

**Electrical Characteristics**

(Ratings at 25°C ambient temperature unless otherwise specified).

| Type      | Marking | Nominal Zener Voltage <sup>(3)</sup> |                        |         |                 | Zener Impedance <sup>(4)</sup>    |                                   |      | Leakage Current                 |      | Maximum DC Zener Current<br>I <sub>ZM</sub> (mA)(DC) |
|-----------|---------|--------------------------------------|------------------------|---------|-----------------|-----------------------------------|-----------------------------------|------|---------------------------------|------|--|
|           |         | V <sub>Z</sub>                       |                        |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> |      | I <sub>R</sub> @ V <sub>R</sub> |      |  |
|           |         | Min (V)                              | Nom (V) <sup>(2)</sup> | Max (V) | (mA)            | (Ω)                               | (Ω)                               | (mA) | (μA)                            | (V)  |  |
| 1SMB5913B | 913B    | 3.13                                 | 3.3                    | 3.47    | 113.6           | 10                                | 500                               | 1    | 100                             | 1    | 454  |
| 1SMB5914B | 914B    | 3.42                                 | 3.6                    | 3.78    | 104.2           | 9                                 | 500                               | 1    | 75                              | 1    | 416  |
| 1SMB5915B | 915B    | 3.70                                 | 3.9                    | 4.10    | 96.1            | 7.5                               | 500                               | 1    | 25                              | 1    | 384  |
| 1SMB5916B | 916B    | 4.08                                 | 4.3                    | 4.52    | 87.2            | 6                                 | 500                               | 1    | 5                               | 1    | 348  |
| 1SMB5917B | 917B    | 4.46                                 | 4.7                    | 4.94    | 79.8            | 5                                 | 500                               | 1    | 5                               | 1.5  | 319  |
| 1SMB5918B | 918B    | 4.84                                 | 5.1                    | 5.36    | 73.5            | 4                                 | 350                               | 1    | 5                               | 2    | 294  |
| 1SMB5919B | 919B    | 5.32                                 | 5.6                    | 5.88    | 66.9            | 2                                 | 250                               | 1    | 5                               | 3    | 267  |
| 1SMB5920B | 920B    | 5.89                                 | 6.2                    | 6.51    | 60.5            | 2                                 | 200                               | 1    | 5                               | 4    | 241  |
| 1SMB5921B | 921B    | 6.46                                 | 6.8                    | 7.14    | 55.1            | 2.5                               | 200                               | 1    | 5                               | 5.2  | 220  |
| 1SMB5922B | 922B    | 7.12                                 | 7.5                    | 7.88    | 50              | 3                                 | 400                               | 0.5  | 5                               | 6    | 200  |
| 1SMB5923B | 923B    | 7.79                                 | 8.2                    | 8.61    | 45.7            | 3.5                               | 400                               | 0.5  | 5                               | 6.5  | 182  |
| 1SMB5924B | 924B    | 8.64                                 | 9.1                    | 9.56    | 41.2            | 4                                 | 500                               | 0.5  | 5                               | 7    | 164  |
| 1SMB5925B | 925B    | 9.5                                  | 10                     | 10.5    | 37.5            | 4.5                               | 500                               | 0.25 | 5                               | 8    | 150  |
| 1SMB5926B | 926B    | 10.45                                | 11                     | 11.55   | 34.1            | 5.5                               | 550                               | 0.25 | 1                               | 8.4  | 136  |
| 1SMB5927B | 927B    | 11.4                                 | 12                     | 12.6    | 31.2            | 6.5                               | 550                               | 0.25 | 1                               | 9.1  | 125  |
| 1SMB5928B | 928B    | 12.35                                | 13                     | 13.65   | 28.8            | 7                                 | 550                               | 0.25 | 1                               | 9.9  | 115  |
| 1SMB5929B | 929B    | 14.25                                | 15                     | 15.75   | 25              | 9                                 | 600                               | 0.25 | 1                               | 11.4 | 100  |

| Type      | Marking | Nominal Zener Voltage <sup>(3)</sup> |         |         |                 | Zener <sup>(4)</sup> Impedance    |                                   |                                 | Leakage Current |       | Maximum DC Zener Current |
|-----------|---------|--------------------------------------|---------|---------|-----------------|-----------------------------------|-----------------------------------|---------------------------------|-----------------|-------|--------------------------|
|           |         | V <sub>Z</sub>                       |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>R</sub> @ V <sub>R</sub> |                 |       |                          |
|           |         | Min (V)                              | Nom (V) | Max (V) | (mA)            | (Ω)                               | (Ω)                               | (μA)                            | (V)             |       |                          |
| 1SMB5930B | 930B    | 15.2                                 | 16      | 16.8    | 23.4            | 10                                | 600                               | 0.25                            | 1               | 12.2  | 93                       |
| 1SMB5931B | 931B    | 17.1                                 | 18      | 18.9    | 20.8            | 12                                | 650                               | 0.25                            | 1               | 13.7  | 83                       |
| 1SMB5932B | 932B    | 19                                   | 20      | 21      | 18.7            | 14                                | 650                               | 0.25                            | 1               | 15.2  | 75                       |
| 1SMB5933B | 933B    | 20.9                                 | 22      | 23.1    | 17              | 17.5                              | 650                               | 0.25                            | 1               | 16.7  | 68                       |
| 1SMB5934B | 934B    | 22.8                                 | 24      | 25.2    | 15.6            | 19                                | 700                               | 0.25                            | 1               | 18.2  | 62                       |
| 1SMB5935B | 935B    | 25.65                                | 27      | 28.35   | 13.9            | 23                                | 700                               | 0.25                            | 1               | 20.6  | 55                       |
| 1SMB5936B | 936B    | 28.5                                 | 30      | 31.5    | 12.5            | 28                                | 750                               | 0.25                            | 1               | 22.8  | 50                       |
| 1SMB5937B | 937B    | 31.35                                | 33      | 34.65   | 11.4            | 33                                | 800                               | 0.25                            | 1               | 25.1  | 45                       |
| 1SMB5938B | 938B    | 34.2                                 | 36      | 37.8    | 10.4            | 38                                | 850                               | 0.25                            | 1               | 27.4  | 41                       |
| 1SMB5939B | 939B    | 37.05                                | 39      | 40.95   | 9.6             | 45                                | 900                               | 0.25                            | 1               | 29.7  | 38                       |
| 1SMB5940B | 940B    | 40.85                                | 43      | 45.15   | 8.7             | 53                                | 950                               | 0.25                            | 1               | 32.7  | 34                       |
| 1SMB5941B | 941B    | 44.65                                | 47      | 49.35   | 8               | 67                                | 1000                              | 0.25                            | 1               | 35.8  | 31                       |
| 1SMB5942B | 942B    | 48.45                                | 51      | 53.55   | 7.3             | 70                                | 1100                              | 0.25                            | 1               | 38.8  | 29                       |
| 1SMB5943B | 943B    | 53.2                                 | 56      | 58.8    | 6.7             | 86                                | 1300                              | 0.25                            | 1               | 42.6  | 26                       |
| 1SMB5944B | 944B    | 58.9                                 | 62      | 65.1    | 6               | 100                               | 1500                              | 0.25                            | 1               | 47.1  | 24                       |
| 1SMB5945B | 945B    | 64.6                                 | 68      | 71.4    | 5.5             | 120                               | 1700                              | 0.25                            | 1               | 51.7  | 22                       |
| 1SMB5946B | 946B    | 71.25                                | 75      | 78.75   | 5               | 140                               | 2000                              | 0.25                            | 1               | 56    | 20                       |
| 1SMB5947B | 947B    | 77.9                                 | 82      | 86.1    | 4.6             | 160                               | 2500                              | 0.25                            | 1               | 62.2  | 18                       |
| 1SMB5948B | 948B    | 86.45                                | 91      | 95.55   | 4.1             | 200                               | 3000                              | 0.25                            | 1               | 69.2  | 16                       |
| 1SMB5949B | 949B    | 95                                   | 100     | 105     | 3.7             | 250                               | 3100                              | 0.25                            | 1               | 76    | 15                       |
| 1SMB5950B | 950B    | 104.5                                | 110     | 115.5   | 3.4             | 300                               | 4000                              | 0.25                            | 1               | 83.6  | 13                       |
| 1SMB5951B | 951B    | 114                                  | 120     | 126     | 3.1             | 380                               | 4500                              | 0.25                            | 1               | 91.2  | 12                       |
| 1SMB5952B | 952B    | 123.5                                | 130     | 136.5   | 2.9             | 450                               | 5000                              | 0.25                            | 1               | 98.8  | 11                       |
| 1SMB5953B | 953B    | 142.5                                | 150     | 157.5   | 2.5             | 600                               | 6000                              | 0.25                            | 1               | 114   | 10                       |
| 1SMB5954B | 954B    | 152                                  | 160     | 168     | 2.3             | 700                               | 6500                              | 0.25                            | 1               | 121.6 | 9                        |
| 1SMB5955B | 955B    | 171                                  | 180     | 189     | 2.1             | 900                               | 7000                              | 0.25                            | 1               | 136.8 | 8                        |
| 1SMB5956B | 956B    | 190                                  | 200     | 210     | 1.9             | 1200                              | 8000                              | 0.25                            | 1               | 152   | 7                        |

Note : ( 1 ) Suffix " A " indicates ± 10% tolerance, suffix " B " indicates ± 5.0% tolerance.

## Ratings and Characteristic Curves

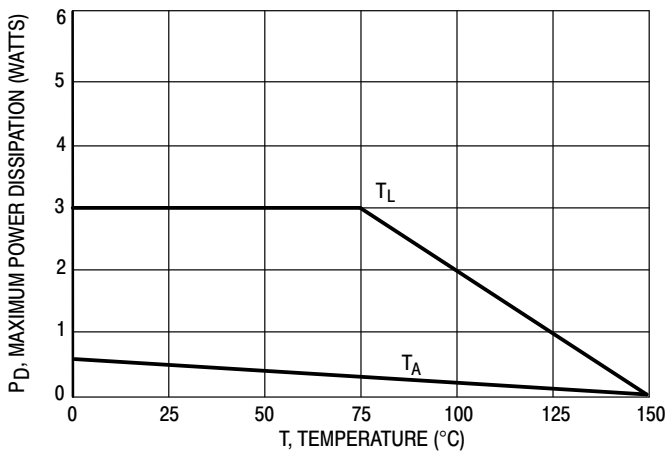


Figure 1. Steady State Power Derating

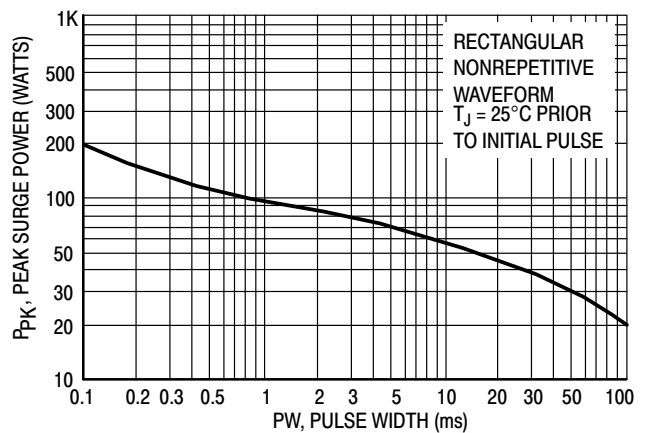


Figure 2. Maximum Surge Power

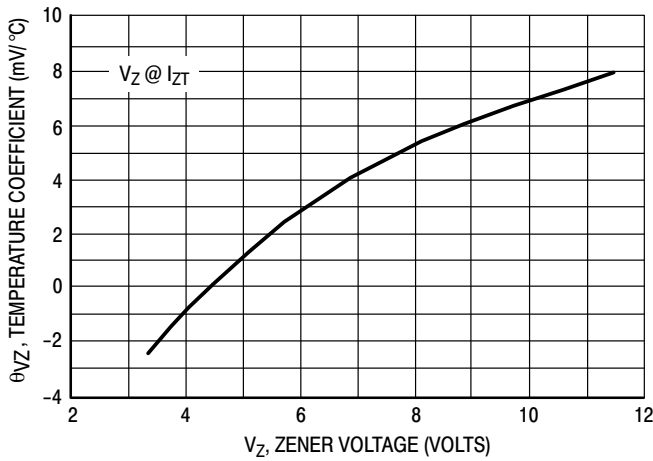


Figure 3. Zener Voltage - To 12 Volts

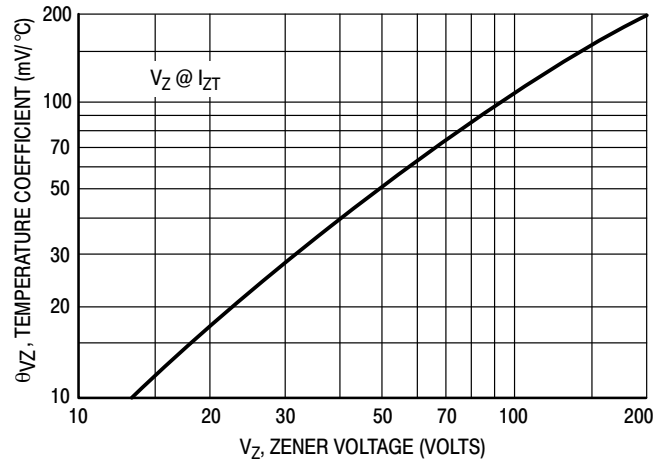


Figure 4. Zener Voltage - 14 To 200 Volts

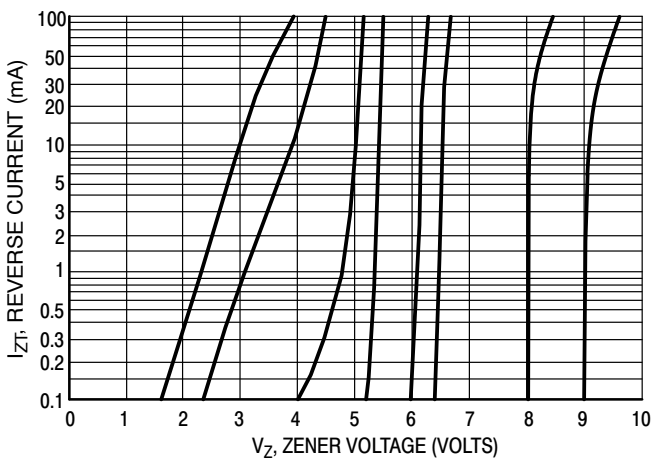


Figure 5.  $V_Z = 3.3$  thru 10 Volts

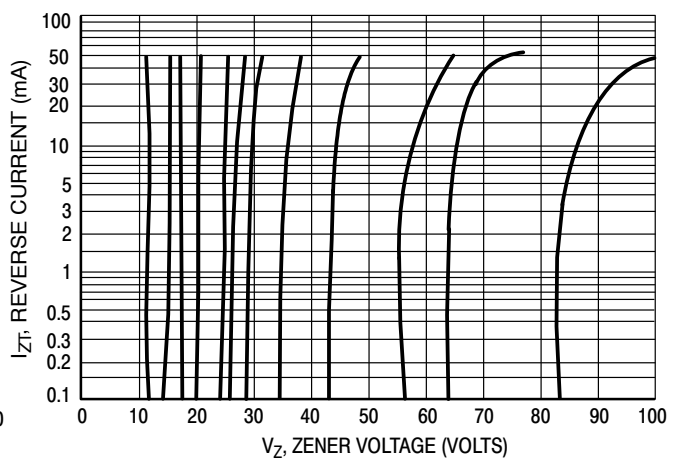


Figure 6.  $V_Z = 12$  thru 82 Volts

### Summary of Packing Options

| Package | Packing Description | Packing Quantity | Industry Standard |
|---------|---------------------|------------------|-------------------|
| SMB     | Tape/Reel, 13" reel | 3000             | EIA-481-1         |

### Package Outline Dimensions: SMB(DO-214AA)

| Dim | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min         | Max  | Min    | Max   |
| L   | 4.4         | 4.6  | 0.173  | 0.181 |
| D   | 3.5         | 3.7  | 0.138  | 0.146 |
| D1  | 1.9         | 2.1  | 0.075  | 0.083 |
| T   | 5.1         | 5.48 | 0.201  | 0.216 |
| T1  | 1.0         | 1.6  | 0.039  | 0.063 |
| d   | -           | 0.2  | -      | 0.008 |
| H   | 2.2         | 2.45 | 0.087  | 0.096 |
| H1  | 2.15        | 2.35 | 0.085  | 0.093 |

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