

**SMBG5333B thru SMBG5388B  
 and  
 SMBJ5333B thru SMBJ5388B**

**5 Watt  
 Surface Mount  
 Silicon  
 Zener Diodes**

**Features**

- Low profile package for surface mounting (flat handling surface for accurate placement)
- Zener Voltage 3.3V to 200V
- High Surge Current Capability
- For available tolerances – see note 1
- Available on Tape and Reel (see EIA std RS-481)

**Mechanical Data**

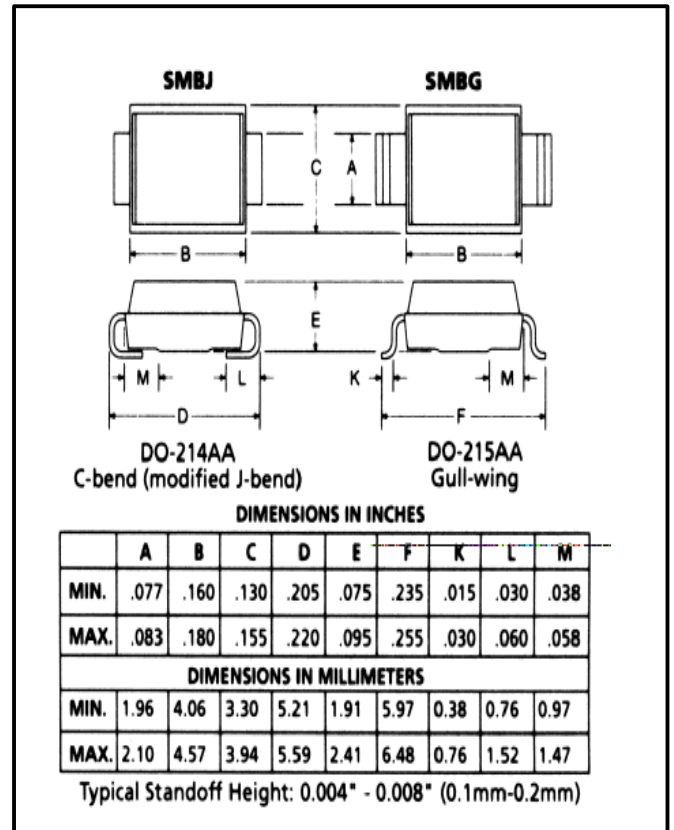
- Standard JEDEC outlines as shown
- Terminals gull-wing or c-bend (modified J-bend) tin-lead plated and solderable per MIL-STD-750, method 2026
- Polarity is indicated by cathode band
- Maximum temperature for soldering: 260°C for 10 seconds.

**Maximum Ratings @ 25°C Unless Otherwise Specified**

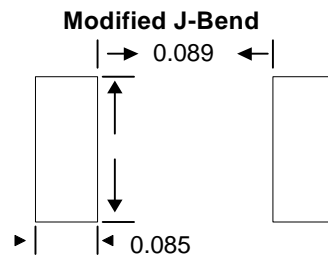
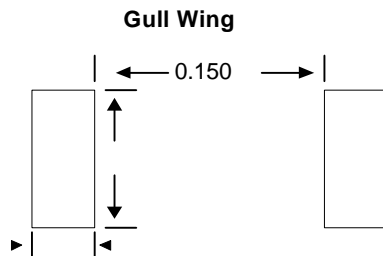
|                                    |                 |                       |
|------------------------------------|-----------------|-----------------------|
| Forward Voltage at 1.0A Current    | $V_F$           | 1.2 Volts             |
| Steady State Power Dissipation     | $P_{(AV)}$      | 5 Watts<br>See note 2 |
| Operating and Storage Temperatures | $T_J, T_{STG}$  | -65°C to +150°C       |
| Thermal Resistance                 | $R_{\theta JL}$ | 25°C/W                |

**Notes**

1. Mounted on copper pads as shown below.
2. Lead temperature at 25°C =  $T_L$  at mounting plane. Derate linearly above 25°C to zero power at 150°C



**Pad Layout**





SMB(G or J)5333B thru SMB(G or J)5333B

Electrical Characteristics

| Microsemi Part Number |                  | Regulator Voltage (V <sub>Z</sub> ) | Test Current (I <sub>ZT</sub> ) | Maximum Dynamic Impedance (Z <sub>Z</sub> )<br>(A&B Suffix) | Maximum Reverse Current (I <sub>R</sub> )<br>@ V <sub>R</sub> | I <sub>R</sub> Test Voltage (V <sub>R</sub> )<br>(Non-Suffix & A Suffix) | I <sub>R</sub> Test Voltage (V <sub>R</sub> )<br>(B,C,D Suffix) | Maximum Regulator Current (I <sub>ZM</sub> )<br>(B,C,D Suffix) | Maximum Dynamic Knee Impedance Z <sub>zk</sub> @ 1.0 mA<br>(A,B,C,D Suffix) | Maximum Surge Current (I <sub>ZSM</sub> ) | Maximum Voltage Regulation (ΔV <sub>Z</sub> )<br>(A,B,C,D Suffix) |
|-----------------------|------------------|-------------------------------------|---------------------------------|---|---|--|---|--|---|---|---|
| Gull-Wing Lead        | C-Bend (Mod - J) | V                                   | mAdc                            | OHMS  | μA  | V  | V   | mA   | OHMS  | AMPS                                      | VOLTS   |
| SMBG5333B             | SMBJ5333B        | 3.3                                 | 380                             | 3.0   | 300   | 1.0  | 1.0   | 1440   | 400   | 20  | 0.85  |
| SMBG5334B             | SMBJ5334B        | 3.6                                 | 350                             | 2.5   | 150   | 1.0  | 1.0   | 1320   | 500   | 18.7                                      | 0.80  |
| SMBG5335B             | SMBJ5335B        | 3.9                                 | 320                             | 2.0   | 50  | 1.0  | 1.0   | 1220   | 500   | 17.6                                      | 0.54  |
| SMBG5336B             | SMBJ5336B        | 4.3                                 | 290                             | 2.0   | 10  | 1.0  | 1.0   | 1100   | 500   | 16.4                                      | 0.49  |
| SMBG5337B             | SMBJ5337B        | 4.7                                 | 260                             | 2.0   | 5.0   | 1.0  | 1.0   | 1010   | 450   | 15.3                                      | 0.44  |
| SMBG5338B             | SMBJ5338B        | 5.1                                 | 240                             | 1.5   | 1.0   | 1.0  | 1.0   | 930  | 400   | 14.4                                      | 0.39  |
| SMBG5339B             | SMBJ5339B        | 5.6                                 | 220                             | 1.0   | 1.0   | 2.0  | 2.0   | 865  | 400   | 13.4                                      | 0.25  |
| SMBG5340B             | SMBJ5340B        | 6.0                                 | 220                             | 1.0   | 1.0   | 3.0  | 3.0   | 790  | 300   | 12.7                                      | 0.19  |
| SMBG5341B             | SMBJ5341B        | 6.2                                 | 200                             | 1.0   | 1.0   | 3.0  | 3.0   | 765  | 200   | 12.4                                      | 0.10  |
| SMBG5342B             | SMBJ5342B        | 6.8                                 | 175                             | 1.0   | 10  | 4.9  | 5.2   | 700  | 200   | 11.5                                      | 0.15  |
| SMBG5343B             | SMBJ5343B        | 7.5                                 | 175                             | 1.5   | 10  | 6.4  | 5.7   | 630  | 200   | 10.7                                      | 0.15  |
| SMBG5344B             | SMBJ5344B        | 8.2                                 | 150                             | 1.5   | 10  | 6.9  | 6.2   | 580  | 200   | 10  | 0.20  |
| SMBG5345B             | SMBJ5345B        | 8.7                                 | 150                             | 2.0   | 10  | 6.25   | 6.6   | 545  | 200   | 9.5                                       | 0.20  |
| SMBG5346B             | SMBJ5346B        | 9.1                                 | 150                             | 2.0   | 7.5   | 6.6  | 6.9   | 520  | 150   | 9.2                                       | 0.22  |
| SMBG5347B             | SMBJ5347B        | 10                                  | 125                             | 2.0   | 5.0   | 7.2  | 7.6   | 475  | 125   | 8.6                                       | 0.22  |
| SMBG5348B             | SMBJ5348B        | 11                                  | 125                             | 2.5   | 5.0   | 8.0  | 8.4   | 430  | 125   | 8.0                                       | 0.25  |
| SMBG5349B             | SMBJ5349B        | 12                                  | 100                             | 2.5   | 2.0   | 8.6  | 9.1   | 395  | 125   | 7.5                                       | 0.25  |
| SMBG5350B             | SMBJ5350B        | 13                                  | 100                             | 2.5   | 1.0   | 9.4  | 9.9   | 265  | 100   | 7.0                                       | 0.25  |
| SMBG5351B             | SMBJ5351B        | 14                                  | 100                             | 2.5   | 1.0   | 10.1   | 10.6  | 340  | 75  | 6.7                                       | 0.25  |
| SMBG5352B             | SMBJ5352B        | 15                                  | 75                              | 2.5   | 1.0   | 10.8   | 11.5  | 315  | 75  | 6.3                                       | 0.25  |
| SMBG5353B             | SMBJ5353B        | 16                                  | 75                              | 2.5   | 1.0   | 11.5   | 12.2  | 295  | 75  | 6.0                                       | 0.30  |
| SMBG5354B             | SMBJ5354B        | 17                                  | 70                              | 2.5   | 0.5   | 12.2   | 12.3  | 280  | 75  | 5.8                                       | 0.35  |
| SMBG5355B             | SMBJ5355B        | 18                                  | 65                              | 2.5   | 0.5   | 13   | 13.7  | 264  | 75  | 5.5                                       | 0.40  |
| SMBG5356B             | SMBJ5356B        | 19                                  | 65                              | 3.0   | 0.5   | 13.7   | 14.4  | 250  | 75  | 5.3                                       | 0.40  |
| SMBG5357B             | SMBJ5357B        | 20                                  | 65                              | 3.0   | 0.5   | 14.4   | 15.2  | 237  | 75  | 5.1                                       | 0.40  |
| SMBG5358B             | SMBJ5358B        | 22                                  | 50                              | 3.5   | 0.5   | 15.8   | 16.7  | 216  | 75  | 4.7                                       | 0.45  |
| SMBG5359B             | SMBJ5359B        | 24                                  | 50                              | 3.5   | 0.5   | 17.3   | 18.2  | 198  | 100   | 4.4                                       | 0.55  |
| SMBG5360B             | SMBJ5360B        | 25                                  | 50                              | 4.0   | 0.5   | 18   | 19  | 190  | 110   | 4.3                                       | 0.55  |
| SMBG5361B             | SMBJ5361B        | 27                                  | 50                              | 5.0   | 0.5   | 19.4   | 20.6  | 176  | 120   | 4.1                                       | 0.60  |
| SMBG5362B             | SMBJ5362B        | 28                                  | 50                              | 6.0   | 0.5   | 20.1   | 21.2  | 170  | 130   | 3.9                                       | 0.60  |
| SMBG5363B             | SMBJ5363B        | 30                                  | 40                              | 8.0   | 0.5   | 21.6   | 22.8  | 158  | 140   | 3.7                                       | 0.60  |
| SMBG5364B             | SMBJ5364B        | 33                                  | 40                              | 10  | 0.5   | 23.8   | 25.1  | 144  | 150   | 3.5                                       | 0.63  |
| SMBG5365B             | SMBJ5365B        | 36                                  | 30                              | 11  | 0.5   | 25.9   | 27.4  | 132  | 160   | 3.3                                       | 0.65  |
| SMBG5366B             | SMBJ5366B        | 39                                  | 30                              | 14  | 0.5   | 28.1   | 29.7  | 122  | 170   | 3.1                                       | 0.65  |
| SMBG5367B             | SMBJ5367B        | 43                                  | 30                              | 20  | 0.5   | 31   | 32.7  | 110  | 190   | 2.8                                       | 0.70  |
| SMBG5368B             | SMBJ5368B        | 47                                  | 25                              | 25  | 0.5   | 33.8   | 35.8  | 100  | 210   | 2.7                                       | 0.80  |
| SMBG5369B             | SMBJ5369B        | 51                                  | 25                              | 27  | 0.5   | 36.7   | 38.8  | 93   | 230   | 2.5                                       | 0.90  |
| SMBG5370B             | SMBJ5370B        | 56                                  | 20                              | 35  | 0.5   | 40.3   | 42.5  | 86   | 280   | 2.3                                       | 1.00  |
| SMBG5371B             | SMBJ5371B        | 60                                  | 20                              | 40  | 0.5   | 43   | 45.5  | 79   | 350   | 2.2                                       | 1.20  |
| SMBG5372B             | SMBJ5372B        | 62                                  | 20                              | 42  | 0.5   | 44.6   | 47.1  | 76   | 400   | 2.1                                       | 1.35  |
| SMBG5373B             | SMBJ5373B        | 68                                  | 20                              | 44  | 0.5   | 49   | 51.7  | 70   | 500   | 2.0                                       | 1.50  |
| SMBG5374B             | SMBJ5374B        | 75                                  | 20                              | 45  | 0.5   | 54   | 56  | 63   | 620   | 1.9                                       | 1.60  |
| SMBG5375B             | SMBJ5375B        | 82                                  | 15                              | 65  | 0.5   | 59   | 62.2  | 58   | 720   | 1.8                                       | 1.80  |
| SMBG5376B             | SMBJ5376B        | 87                                  | 15                              | 75  | 0.5   | 63   | 66  | 54.5   | 760   | 1.7                                       | 2.00  |
| SMBG5377B             | SMBJ5377B        | 91                                  | 15                              | 75  | 0.5   | 65.5   | 69.2  | 52.5   | 760   | 1.6                                       | 2.20  |
| SMBG5378B             | SMBJ5378B        | 100                                 | 12                              | 90  | 0.5   | 72   | 76  | 47.5   | 800   | 1.5                                       | 2.30  |
| SMBG5379B             | SMBJ5379B        | 110                                 | 12                              | 125   | 0.5   | 79.2   | 83.6  | 43   | 1000  | 1.4                                       | 2.50  |
| SMBG5380B             | SMBJ5380B        | 120                                 | 10                              | 170   | 0.5   | 86.4   | 91.2  | 39.5   | 1150  | 1.3                                       | 2.50  |
| SMBG5381B             | SMBJ5381B        | 130                                 | 10                              | 190   | 0.5   | 93.6   | 93.8  | 36.6   | 1250  | 1.2                                       | 2.50  |
| SMBG5382B             | SMBJ5382B        | 140                                 | 8.0                             | 230   | 0.5   | 101  | 106   | 34   | 1500  | 1.2                                       | 2.50  |
| SMBG5383B             | SMBJ5383B        | 150                                 | 8.0                             | 330   | 0.5   | 108  | 114   | 31.5   | 1500  | 1.1                                       | 3.00  |
| SMBG5384B             | SMBJ5384B        | 160                                 | 8.0                             | 350   | 0.5   | 115  | 122   | 29.4   | 1660  | 1.1                                       | 3.00  |
| SMBG5385B             | SMBJ5385B        | 170                                 | 8.0                             | 380   | 0.5   | 122  | 129   | 28   | 1750  | 1.0                                       | 3.00  |
| SMBG5386B             | SMBJ5386B        | 180                                 | 5.0                             | 430   | 0.5   | 130  | 137   | 26.4   | 1750  | 1.0                                       | 4.00  |
| SMBG5387B             | SMBJ5387B        | 190                                 | 5.0                             | 450   | 0.5   | 137  | 144   | 25   | 1850  | 0.9                                       | 5.00  |
| SMBG5388B             | SMBJ5388B        | 200                                 | 5.0                             | 480   | 0.5   | 144  | 152   | 23.6   | 1850  | 0.9                                       | 5.00  |

## SMB(G or J)5333B thru SMB(G or J)5333B

**Note 1** Devices listed have a  $\pm 5\%$  tolerance on nominal  $V_Z$ . The suffix A denotes a  $\pm 20\%$  tolerance, suffix C denotes  $\pm 2\%$ , and suffix D denotes  $\pm 1\%$ .

**Note 2** Nominal Zener Voltage ( $V_Z$ ) is read with the device in standard test clips with  $3/8$  to  $1/2$  inch spacing between clip and case of the diode. Before reading, the diode is allowed to stabilize for a period of  $40 \pm 10$  milliseconds at  $25^\circ\text{C}$  ( $+8, -2^\circ\text{C}$ ).

**Note 3** The Zener impedance ( $Z_{ZT}$  or  $Z_{ZK}$ ) is derived from the 60 Hz ac voltage, which results when an ac current having a rms value equal to 10% of the dc zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed on  $I_{ZT}$  or  $I_{ZK}$  respectively. Dynamic impedance variations with other current values are described in Micronote 202.

**Note 4** The Maximum Reverse (leakage) Current is specified for devices with  $\pm 20\%$  and  $\pm 10\%$  voltage tolerances on nominal  $V_Z$  in another column.

**Note 5** The Maximum Zener Current ( $I_{ZM}$ ) shown is for  $\pm 5\%$  tolerance devices.  $I_{ZM}$  for  $\pm 10\%$  and  $\pm 20\%$  devices can be calculated using the formula:

$$I_{ZM} = \frac{P}{V_{ZM}}$$

Where " $V_{ZM}$ " is  $V_Z$  at the high end of the voltage tolerance specified and " $P$ " is the rated power of the device.

**Note 6** The Surge Current ( $I_{SM}$ ) is specified as the maximum peak of a nonrecurring sine wave of 8.3 milliseconds duration.

**Note 7** Voltage Regulation ( $\Delta V_Z$ ) is the difference between the voltage measured at 10% and 50%  $I_{ZM}$ .

