Microsemi Corp.
The diode experts

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# SMBG5913 thru SMBG5956B and SMBJ5913 thru SMBJ5956B

SILICON
1.5 WATT
ZENER DIODES
SURFACE MOUNT

## Features

- SURFACE MOUNT EQUIVALENT TO 1N5913 THRU 1N5956B
- IDEAL FOR HIGH DENSITY, LOW PROFILE MOUNTING
- ZENER VOLTAGE 3.3V TO 200V
- WITHSTANDS LARGE SURGE STRESSES

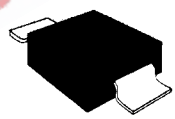
## Maximum Ratings

Junction and Storage: -55°C to +200°C
DC Power Dissipation: 1.5 Watt
12mW/°C above 75°C
Forward Voltage @ 200 mA: 1.2 Volts

## Electrical Characteristics @ $T_L$ = 30° C

| MICROSEMI PART NUMBER | | ZENER VOLTAGE $V_Z$ | TEST CURRENT $I_{ZT}$ | DYNAMIC IMPEDANCE $Z_{ZT}$ | KNEE CURRENT $I_{ZK}$ | KNEE IMPEDANCE $Z_{ZK}$ | REVERSE CURRENT $I_R$ | REVERSE VOLTAGE $V_R$ | MAX. DC CURRENT $I_{ZM}$ |
|---|---|---|---|---|---|---|---|---|---|
| Gull-Wing Lead | C-Bend (Mod.-J) | Volts | mA | Ω | mA | Ω | µ Adc | Volts | mA |
| SMBG5913 | SMBJ5913 | 3.3 | 113.6 | 10.0 | 1.0 | 500 | 100.0 | 1.0 | 454 |
| SMBG5914 | SMBJ5914 | 3.6 | 104.2 | 9.0 | 1.0 | 500 | 75.0 | 1.0 | 416 |
| SMBG5915 | SMBJ5915 | 3.9 | 96.1 | 7.5 | 1.0 | 500 | 25.0 | 1.0 | 384 |
| SMBG5916 | SMBJ5916 | 4.3 | 87.2 | 6.0 | 1.0 | 500 | 5.0 | 1.0 | 348 |
| SMBG5917 | SMBJ5917 | 4.7 | 79.8 | 5.0 | 1.0 | 500 | 5.0 | 1.5 | 319 |
| SMBG5918 | SMBJ5918 | 5.1 | 73.5 | 4.0 | 1.0 | 350 | 5.0 | 2.0 | 294 |
| SMBG5919 | SMBJ5919 | 5.6 | 66.9 | 2.0 | 1.0 | 250 | 5.0 | 3.0 | 267 |
| SMBG5920 | SMBJ5920 | 6.2 | 60.5 | 2.0 | 1.0 | 200 | 5.0 | 4.0 | 241 |
| SMBG5921 | SMBJ5921 | 6.8 | 55.1 | 2.5 | 1.0 | 200 | 5.0 | 5.2 | 220 |
| SMBG5922 | SMBJ5922 | 7.5 | 50.0 | 3.0 | 0.5 | 400 | 5.0 | 6.0 | 200 |
| SMBG5923 | SMBJ5923 | 8.2 | 45.7 | 3.5 | 0.5 | 400 | 5.0 | 6.5 | 182 |
| SMBG5924 | SMBJ5924 | 9.1 | 41.2 | 4.0 | 0.5 | 500 | 5.0 | 7.0 | 164 |
| SMBG5925 | SMBJ5925 | 10 | 37.5 | 4.5 | 0.25 | 500 | 5.0 | 8.0 | 150 |
| SMBG5926 | SMBJ5926 | 11 | 34.1 | 5.5 | 0.25 | 550 | 1.0 | 8.4 | 136 |
| SMBG5927 | SMBJ5927 | 12 | 31.2 | 6.5 | 0.25 | 550 | 1.0 | 9.1 | 125 |
| SMBG5928 | SMBJ5928 | 13 | 28.8 | 7.0 | 0.25 | 550 | 1.0 | 9.9 | 115 |
| SMBG5929 | SMBJ5929 | 15 | 25.0 | 9.0 | 0.25 | 600 | 1.0 | 11.4 | 100 |
| SMBG5930 | SMBJ5930 | 16 | 23.4 | 10.0 | 0.25 | 600 | 1.0 | 12.2 | 93 |
| SMBG5931 | SMBJ5931 | 18 | 20.8 | 12.0 | 0.25 | 650 | 1.0 | 13.7 | 83 |
| SMBG5932 | SMBJ5932 | 20 | 18.7 | 14.0 | 0.25 | 650 | 1.0 | 15.2 | 75 |
| SMBG5933 | SMBJ5933 | 22 | 17.0 | 17.5 | 0.25 | 650 | 1.0 | 16.7 | 68 |
| SMBG5934 | SMBJ5934 | 24 | 15.6 | 19.0 | 0.25 | 700 | 1.0 | 18.2 | 62 |
| SMBG5935 | SMBJ5935 | 27 | 13.9 | 23.0 | 0.25 | 700 | 1.0 | 20.6 | 55 |
| SMBG5936 | SMBJ5936 | 30 | 12.5 | 28.0 | 0.25 | 750 | 1.0 | 22.8 | 50 |
| SMBG5937 | SMBJ5937 | 33 | 11.4 | 33.0 | 0.25 | 800 | 1.0 | 25.1 | 45 |
| SMBG5938 | SMBJ5938 | 36 | 10.4 | 38.0 | 0.25 | 850 | 1.0 | 27.4 | 41 |
| SMBG5939 | SMBJ5939 | 39 | 9.6 | 45.0 | 0.25 | 900 | 1.0 | 29.7 | 38 |
| SMBG5940 | SMBJ5940 | 43 | 8.7 | 53.0 | 0.25 | 950 | 1.0 | 32.7 | 34 |
| SMBG5941 | SMBJ5941 | 47 | 8.0 | 67.0 | 0.25 | 1000 | 1.0 | 35.8 | 31 |
| SMBG5942 | SMBJ5942 | 51 | 7.3 | 70.0 | 0.25 | 1100 | 1.0 | 38.8 | 29 |
| SMBG5943 | SMBJ5943 | 56 | 6.7 | 86.0 | 0.25 | 1300 | 1.0 | 42.6 | 26 |
| SMBG5944 | SMBJ5944 | 62 | 6.0 | 100.0 | 0.25 | 1500 | 1.0 | 47.1 | 24 |
| SMBG5945 | SMBJ5945 | 68 | 5.5 | 120.0 | 0.25 | 1700 | 1.0 | 51.2 | 22 |
| SMBG5946 | SMBJ5946 | 75 | 5.0 | 140.0 | 0.25 | 2000 | 1.0 | 56.0 | 20 |
| SMBG5947 | SMBJ5947 | 82 | 4.6 | 160.0 | 0.25 | 2500 | 1.0 | 62.2 | 18 |
| SMBG5948 | SMBJ5948 | 91 | 4.1 | 200.0 | 0.25 | 3000 | 1.0 | 69.2 | 16 |
| SMBG5949 | SMBJ5949 | 100 | 3.7 | 250.0 | 0.25 | 3100 | 1.0 | 76.0 | 15 |
| SMBG5950 | SMBJ5950 | 110 | 3.4 | 300.0 | 0.25 | 4000 | 1.0 | 83.6 | 13 |
| SMBG5951 | SMBJ5951 | 120 | 3.1 | 380.0 | 0.25 | 4500 | 1.0 | 91.2 | 12 |
| SMBG5952 | SMBJ5952 | 130 | 2.9 | 450.0 | 0.25 | 5000 | 1.0 | 98.8 | 11 |
| SMBG5953 | SMBJ5953 | 150 | 2.5 | 600.0 | 0.25 | 6000 | 1.0 | 114.0 | 10 |
| SMBG5954 | SMBJ5954 | 160 | 2.3 | 700.0 | 0.25 | 6500 | 1.0 | 121.6 | 9 |
| SMBG5955 | SMBJ5955 | 180 | 2.1 | 900.0 | 0.25 | 7000 | 1.0 | 136.8 | 8 |
| SMBG5956 | SMBJ5956 | 200 | 1.9 | 1200.0 | 0.25 | 8000 | 1.0 | 152.0 | 7 |

**DO-215AA**



**DO-214AA**

NOTE: All SMB series are equivalent to prior SMS package identifications.

## Mechanical Characteristics

**CASE:** Molded Surface Mountable.

**TERMINALS:** Gull-wing or C-bend (modified J-bend) leads, tin lead plated.

**POLARITY:** Cathode indicated by band.

**PACKAGING:** Standard 12mm tape (see EIA Std. RS-481).

**THERMAL RESISTANCE:** 25°C/ Watt (typical) junction to lead (tab) at mounting plane.

# SMB (G or J) 5913 thru SMB (G or J) 5956B

**NOTE 1** No suffix indicates a ± 20% tolerance on nominal $V_Z$. Suffix A denotes a ± 10% tolerance, B denotes a ± 5% tolerance, C denotes a ± 2% tolerance, and D denotes a ± 1% tolerance.

**NOTE 2** Zener voltage (Vz) is measured at $T_L$ = 30°C. Voltage measurement to be performed 90 seconds after application of dc current.

**NOTE 3** The zener impedance is derived from the 60 Hz ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current ($I_{ZT}$ or $I_{ZK}$) is superimposed on $I_{ZT}$ or $I_{ZK}$.

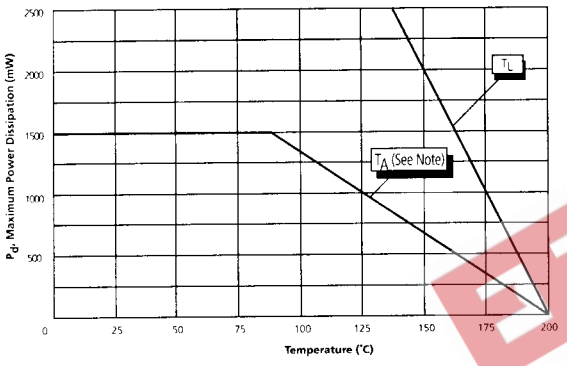



**FIGURE 2** Power Derating Curve
Note: Lead temperature ($T_L$) at mounting plane for typical pc board thermal resistance design of 50°C/w will result in 75°C lead temperatures above ambient ($T_A$), if operating at the full rated 1.5 watts.

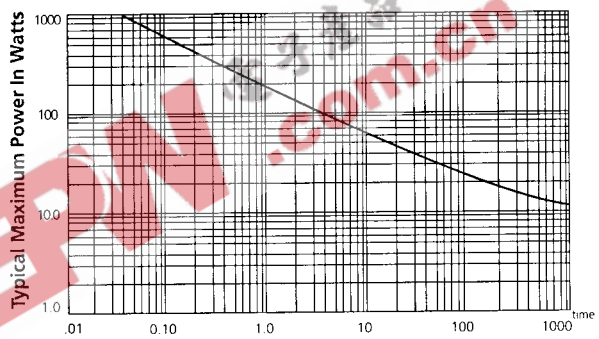



**FIGURE 3** Transient Surge Capability Square Wave Pulse Width (Non-Repetitive) In Milliseconds

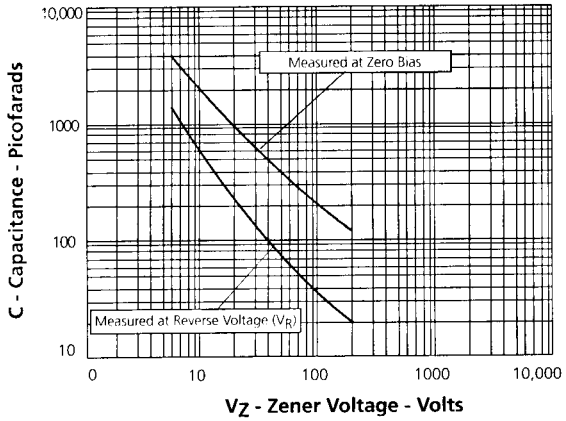
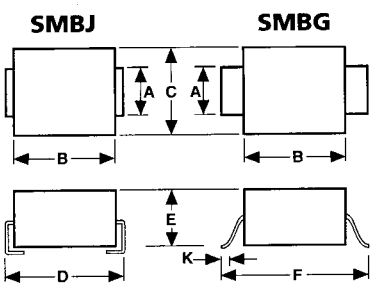



**FIGURE 4** Typical Capacitance Vs. Zener Voltage

## PACKAGE DIMENSIONS




DIMENSIONS IN INCHES

| | A | B | C | D | E | F | K | L |
|---|---|---|---|---|---|---|---|---|
| MIN. | .077 | .160 | .130 | .205 | .075 | .235 | .015 | .030 |
| MAX. | .083 | .180 | .155 | .220 | .095 | .255 | .030 | .060 |
| DIMENSIONS IN MILLIMETERS | | | | | | | | |
| MIN. | 1.96 | 4.06 | 3.30 | 5.21 | 1.90 | 5.97 | 0.381 | 0.760 |
| MAX. | 2.10 | 4.57 | 3.94 | 5.59 | 2.41 | 6.48 | 0.762 | 1.520 |