



# 1SMB5926 - 1SMB5956

## 3.0 Watts Surface Mount Silicon Zener Diode

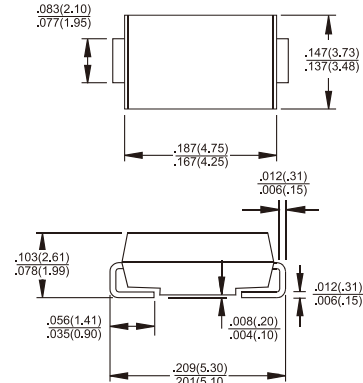
### SMB/DO-214AA

#### Features

- ✧ For surface mounted applications in order to optimize board space
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Glass passivated junction
- ✧ Low inductance
- ✧ High temperature soldering guaranteed: 260°C / 10 seconds at terminals
- ✧ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ✧ Green compound with suffix "G" on packing code & prefix "G" on datecode

#### Mechanical Data

- ✧ Case: Molded plastic over passivated junction
- ✧ Terminals: Pure tin plated lead free,, solderable per MIL-STD-750, Method 2026
- ✧ Polarity: Color Band denotes positive end (cathode)
- ✧ Standard packaging: 12mm tape (EIA-481)
- ✧ Weight: 0.107 grams



Dimensions in inches and (millimeters)

#### Marking Diagram



9XXB = Specific Device Code  
G = Green Compound  
Y = Year  
M = Work Month

#### Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.

| Type Number                                                                                             | Symbol          | Value        | Units                                       |
|---------------------------------------------------------------------------------------------------------|-----------------|--------------|---------------------------------------------|
| DC Power Dissipation at $T_L=75^{\circ}\text{C}$ ,<br>measure at Zero Lead Length<br>Derate above 75 °C | $P_D$           | 3.0<br>4.0   | Watts<br>$\text{mW}/^{\circ}\text{C}$       |
| DC Power Dissipation @ $T_A=25^{\circ}\text{C}$<br>Derate above 25°C                                    | $P_D$           | 550<br>4.4   | $\text{mW}$<br>$\text{mW}/^{\circ}\text{C}$ |
| Thermal Resistance from Junction-to-Lead                                                                | $R_{\theta JL}$ | 25           | $^{\circ}\text{C}/\text{W}$                 |
| Thermal Resistance from Junction-to-Ambient                                                             | $R_{\theta JA}$ | 226          | $^{\circ}\text{C}/\text{W}$                 |
| Operating and Storage Temperature Range                                                                 | $T_J, T_{STG}$  | -65 to + 150 | $^{\circ}\text{C}$                          |

Maximum ratings are those values beyond which device damage can occur.

Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be attached.

ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted)

| Device<br>(Notes 1) | Device<br>Marking<br>Code | Zener Voltage Range (Notes 2)    |        |        | Zener Impedance (Notes 3) |                                   |                                   |      | Leakage Current                 |       | Maximum DC<br>Zener Current |
|---------------------|---------------------------|----------------------------------|--------|--------|---------------------------|-----------------------------------|-----------------------------------|------|---------------------------------|-------|-----------------------------|
|                     |                           | V <sub>Z</sub> @ I <sub>ZT</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> |       | I <sub>ZM</sub>             |
|                     |                           | V                                |        |        | mA                        | Ω                                 | Ω                                 | mA   | μA                              | V     | mA (DC)                     |
|                     |                           | Nom.                             | Min.   | Max.   |                           |                                   |                                   |      |                                 |       |                             |
| 1SMB5926            | 926B                      | 11                               | 10.45  | 11.55  | 34.1                      | 5.5                               | 550                               | 0.25 | 1                               | 8.4   | 136                         |
| 1SMB5927            | 927B                      | 12                               | 11.40  | 12.60  | 31.2                      | 6.5                               | 550                               | 0.25 | 1                               | 9.1   | 125                         |
| 1SMB5928            | 928B                      | 13                               | 12.35  | 13.65  | 28.8                      | 7.0                               | 550                               | 0.25 | 1                               | 9.9   | 115                         |
| 1SMB5929            | 929B                      | 15                               | 14.25  | 15.75  | 25.0                      | 9.0                               | 600                               | 0.25 | 1                               | 11.4  | 100                         |
| 1SMB5930            | 930B                      | 16                               | 15.20  | 16.80  | 23.4                      | 10.0                              | 600                               | 0.25 | 1                               | 12.2  | 93                          |
| 1SMB5931            | 931B                      | 18                               | 17.10  | 18.90  | 20.8                      | 12.0                              | 650                               | 0.25 | 1                               | 13.7  | 83                          |
| 1SMB5932            | 932B                      | 20                               | 19.00  | 21.00  | 18.7                      | 14.0                              | 650                               | 0.25 | 1                               | 15.2  | 75                          |
| 1SMB5933            | 933B                      | 22                               | 20.90  | 23.10  | 17.0                      | 17.5                              | 650                               | 0.25 | 1                               | 16.7  | 66                          |
| 1SMB5934            | 934B                      | 24                               | 22.80  | 25.20  | 15.6                      | 19.0                              | 700                               | 0.25 | 1                               | 18.2  | 62                          |
| 1SMB5935            | 935B                      | 27                               | 25.65  | 28.35  | 13.9                      | 23.0                              | 700                               | 0.25 | 1                               | 20.6  | 55                          |
| 1SMB5936            | 936B                      | 30                               | 28.50  | 31.50  | 12.5                      | 26.0                              | 750                               | 0.25 | 1                               | 22.8  | 50                          |
| 1SMB5937            | 937B                      | 33                               | 31.35  | 34.65  | 11.4                      | 33.0                              | 800                               | 0.25 | 1                               | 25.1  | 45                          |
| 1SMB5938            | 938B                      | 36                               | 34.20  | 37.80  | 10.4                      | 38.0                              | 850                               | 0.25 | 1                               | 27.4  | 41                          |
| 1SMB5939            | 939B                      | 39                               | 37.05  | 40.95  | 9.6                       | 45.0                              | 900                               | 0.25 | 1                               | 29.7  | 38                          |
| 1SMB5940            | 940B                      | 43                               | 40.85  | 45.15  | 8.7                       | 53.0                              | 950                               | 0.25 | 1                               | 32.7  | 34                          |
| 1SMB5941            | 941B                      | 47                               | 44.65  | 49.35  | 8.0                       | 67.0                              | 1000                              | 0.25 | 1                               | 35.8  | 31                          |
| 1SMB5942            | 942B                      | 51                               | 48.45  | 53.55  | 7.3                       | 70.0                              | 1100                              | 0.25 | 1                               | 38.8  | 29                          |
| 1SMB5943            | 943B                      | 56                               | 53.20  | 58.80  | 6.7                       | 86.0                              | 1300                              | 0.25 | 1                               | 42.6  | 26                          |
| 1SMB5944            | 944B                      | 62                               | 58.90  | 65.10  | 6.0                       | 100.0                             | 1500                              | 0.25 | 1                               | 47.1  | 24                          |
| 1SMB5945            | 945B                      | 68                               | 64.60  | 71.40  | 5.5                       | 120.0                             | 1700                              | 0.25 | 1                               | 51.7  | 22                          |
| 1SMB5946            | 946B                      | 75                               | 71.25  | 78.75  | 5.0                       | 140.0                             | 2000                              | 0.25 | 1                               | 56.0  | 20                          |
| 1SMB5947            | 947B                      | 82                               | 77.90  | 86.10  | 4.6                       | 160.0                             | 2500                              | 0.25 | 1                               | 62.2  | 18                          |
| 1SMB5948            | 948B                      | 91                               | 86.45  | 95.55  | 4.1                       | 200.0                             | 3000                              | 0.25 | 1                               | 69.2  | 16                          |
| 1SMB5949            | 949B                      | 100                              | 95.00  | 105.00 | 3.7                       | 250.0                             | 3100                              | 0.25 | 1                               | 76.0  | 15                          |
| 1SMB5950            | 950B                      | 110                              | 104.50 | 115.50 | 3.4                       | 300.0                             | 4000                              | 0.25 | 1                               | 83.6  | 13                          |
| 1SMB5951            | 951B                      | 120                              | 114.00 | 126.00 | 3.1                       | 360.0                             | 4500                              | 0.25 | 1                               | 91.2  | 12                          |
| 1SMB5952            | 952B                      | 130                              | 123.50 | 136.50 | 2.9                       | 450.0                             | 5000                              | 0.25 | 1                               | 98.8  | 11                          |
| 1SMB5953            | 953B                      | 150                              | 142.50 | 157.50 | 2.5                       | 600.0                             | 6000                              | 0.25 | 1                               | 114.0 | 10                          |
| 1SMB5954            | 954B                      | 160                              | 152.00 | 168.00 | 2.3                       | 700.0                             | 6500                              | 0.25 | 1                               | 121.6 | 9                           |
| 1SMB5955            | 955B                      | 180                              | 171.00 | 189.00 | 2.1                       | 900.0                             | 7000                              | 0.25 | 1                               | 136.8 | 8                           |
| 1SMB5956            | 956B                      | 200                              | 190.00 | 210.00 | 1.9                       | 1200.0                            | 8000                              | 0.25 | 1                               | 152.0 | 7                           |

Notes: 1. Tolerance and type number designation the type numbers listed indicate a tolerance of ±5%

2. Zener voltage (V<sub>Z</sub>) measurement

Nominal Zener voltage is measured with the device junction in thermal equilibrium with ambient temperature at 25°C

3. Zener impedance (Z<sub>Z</sub>) derivation : Z<sub>ZT</sub> and Z<sub>ZK</sub> are measured by dividing the AC voltage drop across the device by the AC current applied.

The specified limits are for I<sub>Z</sub>(AC) = 0.1 I<sub>Z</sub>(DC) with the AC frequency = 60 Hz

## RATINGS AND CHARACTERISTIC CURVES (1SMB5926 THRU 1SMB5956)

FIG.1- STEADY STATE POWER DERATING

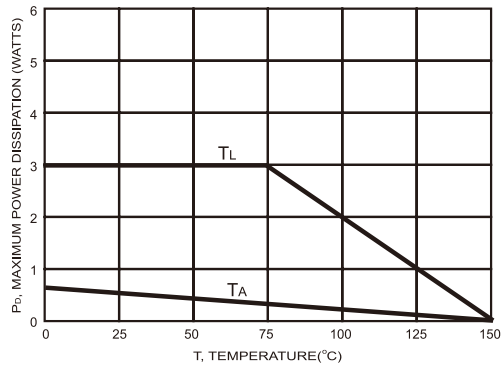


FIG.2- MAXIMUM SURGE POWER

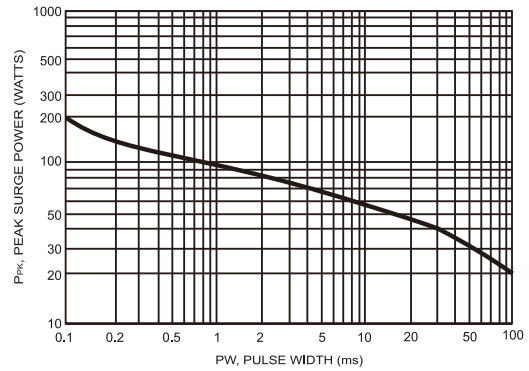


FIG.3- ZENER VOLTAGE - TO 12 VOLTS

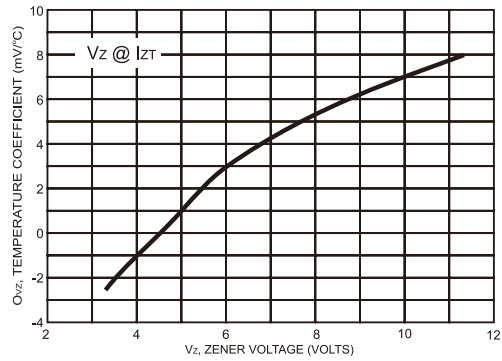


FIG.4- ZENER VOLTAGE - 14 TO 200 VOLTS

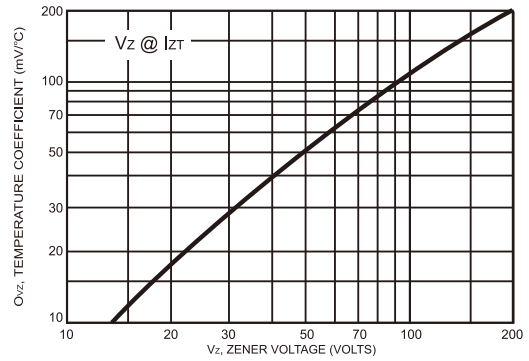


FIG.5-  $V_Z = 3.3$  THRU 10 VOLTS

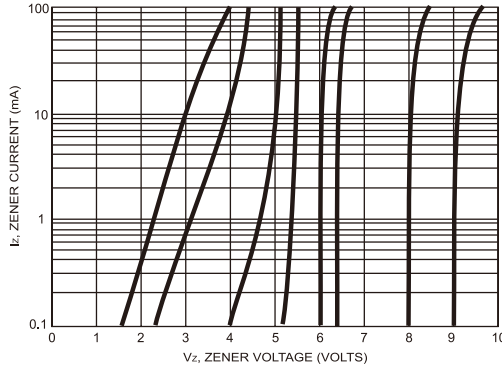
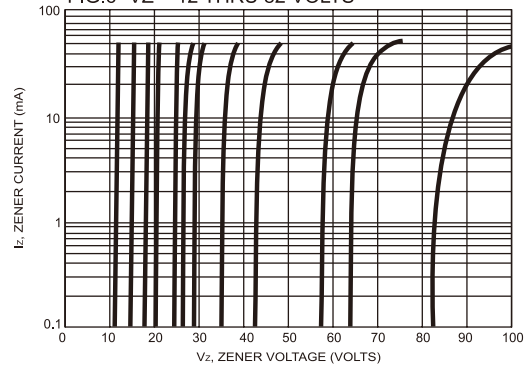


FIG.6-  $V_Z = 12$  THRU 82 VOLTS



## RATINGS AND CHARACTERISTIC CURVES (1SMB5926 THRU 1SMB5956)

FIG.7- EFFECT OF ZENER VOLTAGE

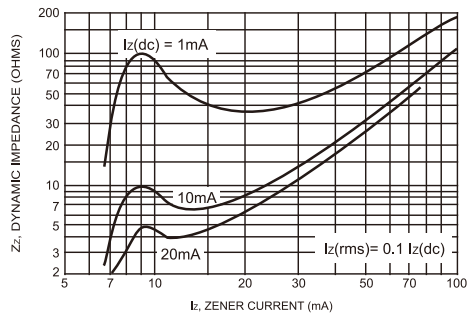


FIG.8- EFFECT OF ZENER CURRENT

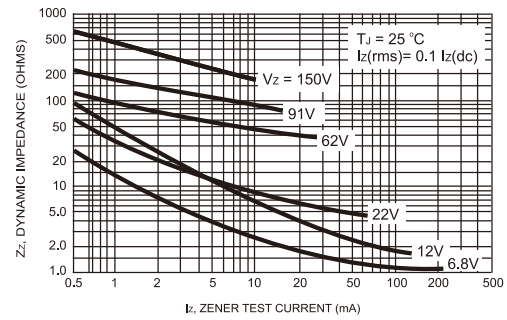


FIG.9- CAPACITANCE CURVE

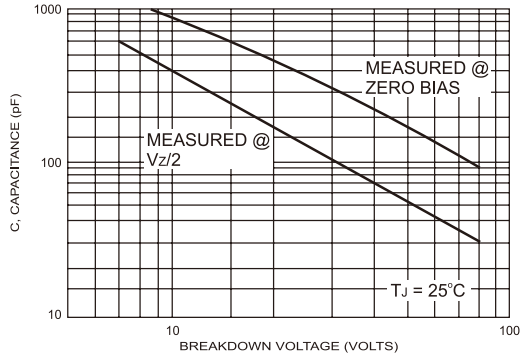


FIG.10- TYPICAL PULSE RATING CURVE

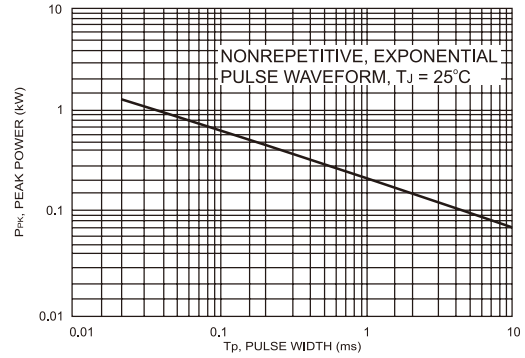


FIG.11- PULSE WAVEFORM

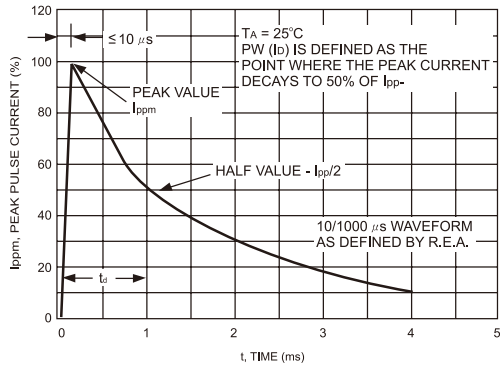


FIG.12- PULSE WAVEFORM

