

**V<sub>Z</sub> : 3.3 - 240 Volts**  
**P<sub>D</sub> : 1.5 Watts**



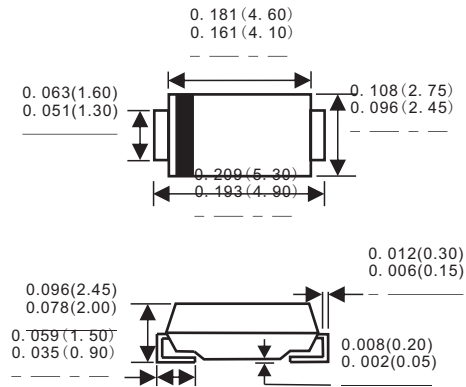
## Features

- ✧ Complete Voltage Range 3.3 to 200 Volts
- ✧ High peak reverse power dissipation
- ✧ High reliability

## Mechanical Data

- ✧ Case : SMA (DO-214AC) Molded plastic
  - ✧ Epoxy : UL94V-O rate flame retardant
  - ✧ Lead : Lead formed for Surface mount
  - ✧ Polarity : Color band denotes cathode end
  - ✧ Mounting position : Any
- Weight : 0.093 gram

## SMA/DO-214AC



Dimensions in inches and(millimeters)

## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

| Rating   | Symbol         | Value         | Unit  |
|--|----------------|---------------|-------|
| DC Power Dissipation at T <sub>L</sub> = 75 °C (Note1) | P <sub>D</sub> | 1.5           | Watts |
| Maximum Forward Voltage at I <sub>F</sub> = 200 mA     | V <sub>F</sub> | 1.5           | Volts |
| Junction Temperature Range                             | T <sub>J</sub> | - 55 to + 150 | °C    |
| Storage Temperature Range                              | T <sub>s</sub> | - 55 to + 150 | °C    |

### Note :

(1) T<sub>L</sub> = Lead temperature at 5.0 mm<sup>2</sup> ( 0.013 mm thick ) copper land areas.

## ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

| TYPE      | Nominal Zener Voltage            |                 | Maximum Zener Impedance           |                                   |                 | Maximum Reverse Leakage Current |       | Maximum DC 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>ZK</sub> | I <sub>R</sub> @ V <sub>R</sub> |       | I <sub>ZM</sub>          |
|           | (V)                              | (mA)            | (Ω)                               | (Ω)                               | (mA)            | (μA)                            | (V)   | (mA)                     |
| 1SMA5913B | 3.3                              | 113.6           | 10                                | 500                               | 1.0             | 100                             | 1.0   | 454                      |
| 1SMA5914B | 3.6                              | 104.2           | 9.0                               | 500                               | 1.0             | 75                              | 1.0   | 416                      |
| 1SMA5915B | 3.9                              | 96.1            | 7.5                               | 500                               | 1.0             | 25                              | 1.0   | 384                      |
| 1SMA5916B | 4.3                              | 87.2            | 6.0                               | 500                               | 1.0             | 5.0                             | 1.0   | 348                      |
| 1SMA5917B | 4.7                              | 79.8            | 5.0                               | 500                               | 1.0             | 5.0                             | 1.5   | 319                      |
| 1SMA5918B | 5.1                              | 73.5            | 4.0                               | 500                               | 1.0             | 5.0                             | 2.0   | 294                      |
| 1SMA5919B | 5.6                              | 66.9            | 2.0                               | 250                               | 1.0             | 5.0                             | 3.0   | 267                      |
| 1SMA5920B | 6.2                              | 60.5            | 2.0                               | 200                               | 1.0             | 5.0                             | 4.0   | 241                      |
| 1SMA5921B | 6.8                              | 55.1            | 2.5                               | 200                               | 1.0             | 5.0                             | 5.2   | 220                      |
| 1SMA5922B | 7.5                              | 50.0            | 3.0                               | 400                               | 0.5             | 5.0                             | 6.0   | 200                      |
| 1SMA5923B | 8.2                              | 45.7            | 3.5                               | 400                               | 0.5             | 5.0                             | 6.5   | 182                      |
| 1SMA5924B | 9.1                              | 41.2            | 4.0                               | 500                               | 0.5             | 5.0                             | 7.0   | 164                      |
| 1SMA5925B | 10                               | 37.5            | 4.5                               | 500                               | 0.25            | 5.0                             | 8.0   | 150                      |
| 1SMA5926B | 11                               | 34.1            | 5.5                               | 550                               | 0.25            | 5.0                             | 8.4   | 136                      |
| 1SMA5927B | 12                               | 31.2            | 6.5                               | 550                               | 0.25            | 1.0                             | 9.1   | 125                      |
| 1SMA5928B | 13                               | 28.8            | 7.0                               | 550                               | 0.25            | 1.0                             | 9.9   | 115                      |
| 1SMA5929B | 15                               | 25.0            | 9.0                               | 600                               | 0.25            | 1.0                             | 11.4  | 100                      |
| 1SMA5930B | 16                               | 23.4            | 10                                | 600                               | 0.25            | 1.0                             | 12.2  | 93                       |
| 1SMA5931B | 18                               | 20.8            | 12                                | 650                               | 0.25            | 1.0                             | 13.7  | 83                       |
| 1SMA5932B | 20                               | 18.7            | 14                                | 650                               | 0.25            | 1.0                             | 15.2  | 75                       |
| 1SMA5933B | 22                               | 17.0            | 17.5                              | 650                               | 0.25            | 1.0                             | 16.7  | 68                       |
| 1SMA5934B | 24                               | 15.6            | 19                                | 700                               | 0.25            | 1.0                             | 18.2  | 62                       |
| 1SMA5935B | 27                               | 13.9            | 23                                | 700                               | 0.25            | 1.0                             | 20.6  | 55                       |
| 1SMA5936B | 30                               | 12.5            | 26                                | 750                               | 0.25            | 1.0                             | 22.8  | 50                       |
| 1SMA5937B | 33                               | 11.4            | 33                                | 800                               | 0.25            | 1.0                             | 25.1  | 45                       |
| 1SMA5938B | 36                               | 10.4            | 38                                | 850                               | 0.25            | 1.0                             | 27.4  | 41                       |
| 1SMA5939B | 39                               | 9.6             | 45                                | 900                               | 0.25            | 1.0                             | 29.7  | 38                       |
| 1SMA5940B | 43                               | 8.7             | 53                                | 950                               | 0.25            | 1.0                             | 32.7  | 34                       |
| 1SMA5941B | 47                               | 8.0             | 67                                | 1000                              | 0.25            | 1.0                             | 35.8  | 31                       |
| 1SMA5942B | 51                               | 7.3             | 70                                | 1100                              | 0.25            | 1.0                             | 38.8  | 29                       |
| 1SMA5943B | 56                               | 6.7             | 86                                | 1300                              | 0.25            | 1.0                             | 42.6  | 26                       |
| 1SMA5944B | 62                               | 6.0             | 100                               | 1500                              | 0.25            | 1.0                             | 47.1  | 24                       |
| 1SMA5945B | 68                               | 5.5             | 120                               | 1700                              | 0.25            | 1.0                             | 51.7  | 22                       |
| 1SMA5946B | 75                               | 5.0             | 140                               | 2000                              | 0.25            | 1.0                             | 56.0  | 20                       |
| 1SMA5947B | 82                               | 4.6             | 160                               | 2500                              | 0.25            | 1.0                             | 62.2  | 18                       |
| 1SMA5948B | 91                               | 4.1             | 200                               | 3000                              | 0.25            | 1.0                             | 69.2  | 16                       |
| 1SMA5949B | 100                              | 3.7             | 250                               | 3100                              | 0.25            | 1.0                             | 76.0  | 15                       |
| 1SMA5950B | 110                              | 3.4             | 300                               | 4000                              | 0.25            | 1.0                             | 83.6  | 13                       |
| 1SMA5951B | 120                              | 3.1             | 380                               | 4500                              | 0.25            | 1.0                             | 91.2  | 12                       |
| 1SMA5952B | 130                              | 2.9             | 450                               | 5000                              | 0.25            | 1.0                             | 98.8  | 11                       |
| 1SMA5953B | 150                              | 2.5             | 600                               | 6000                              | 0.25            | 1.0                             | 114.0 | 10                       |
| 1SMA5954B | 160                              | 2.3             | 700                               | 6500                              | 0.25            | 1.0                             | 121.6 | 9.0                      |
| 1SMA5955B | 180                              | 2.1             | 900                               | 7000                              | 0.25            | 1.0                             | 136.8 | 8.0                      |
| 1SMA5956B | 200                              | 1.9             | 1200                              | 8000                              | 0.25            | 1.0                             | 152.0 | 7.0                      |
| 1SMA5957B | 240                              | 1.5             | 1600                              | 9000                              | 0.25            | 1.0                             | 182.4 | 6.0                      |

**Note :**

( 1 ) Suffix " B " indicates ± 5% tolerance.

| PACKAGE | SPQ/PCS   | CARTON SPQ/PCS | CARTON SIZE/CM | CARTON GW/KG | CARTON NW/KG |
|---------|-----------|----------------|----------------|--------------|--------------|
| SMA     | 5000/REEL | 80000          | 36X30.6X31     | 12.00        | 11.00        |

## RATING AND TYPICAL CHARACTERISTIC CURVES ( $T_A = 25^\circ\text{C}$ )

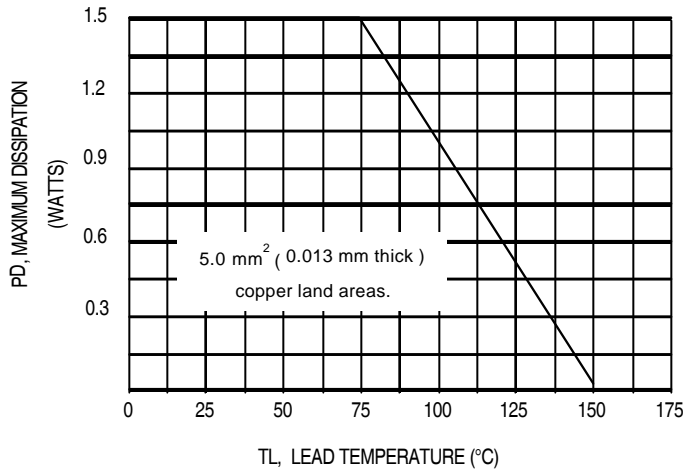


Figure 1. POWER TEMPERATURE DERATING CURVE

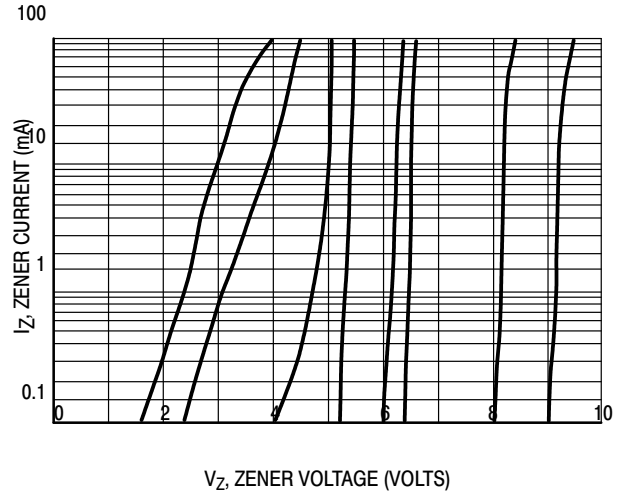


Figure 2.  $V_Z$  - 3.3 thru 10 Volts

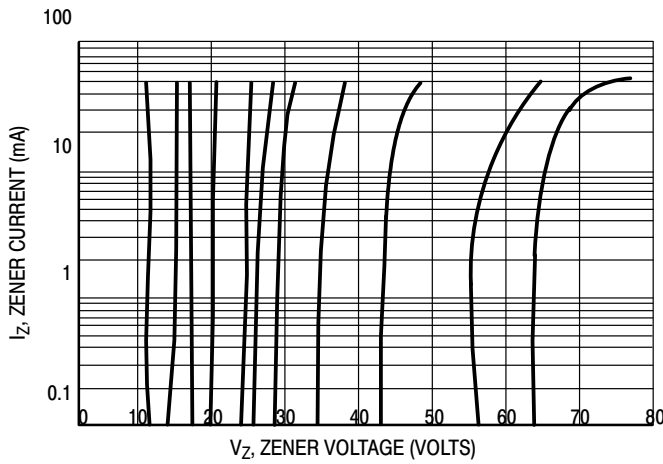


Figure 3.  $V_Z = 12$  thru 68 Volts

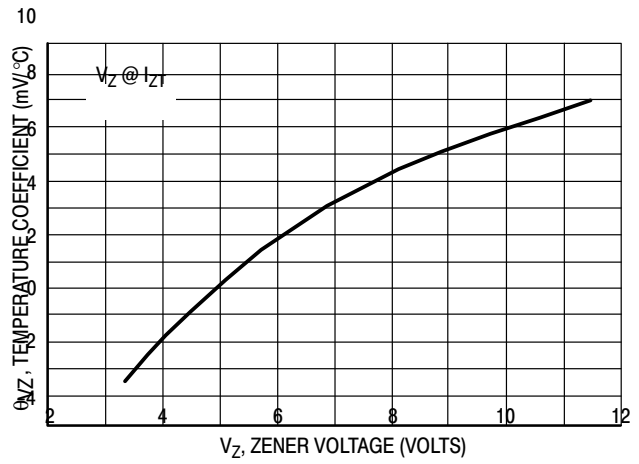


Figure 4. Zener Voltage - 3.3 to 12 Volts

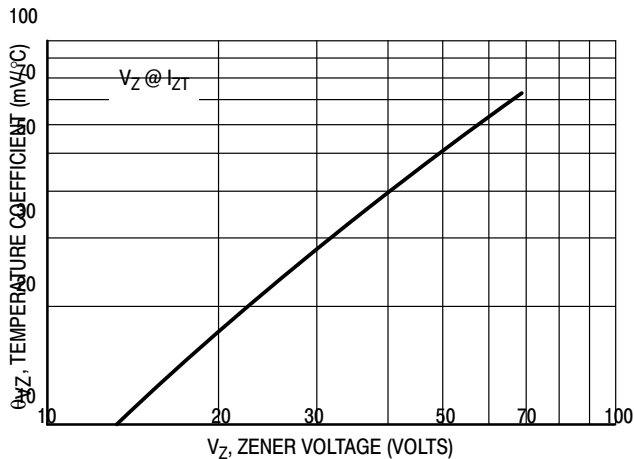


Figure 5. Zener Voltage - 12 to 68 Volts

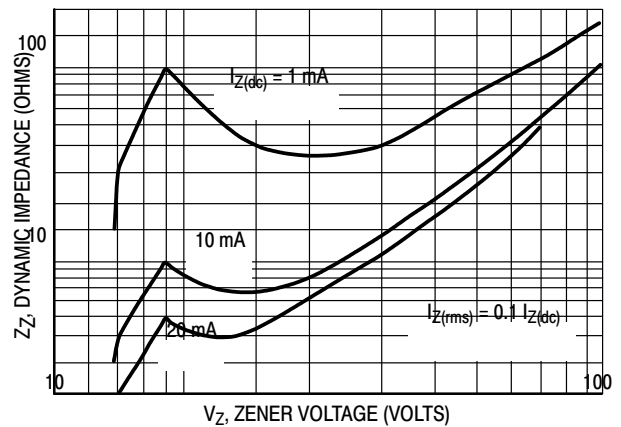


Figure 6. Effect of Zener Voltage

# 1SMA5913B-1SMA5957B

Silicon Zener Diodes



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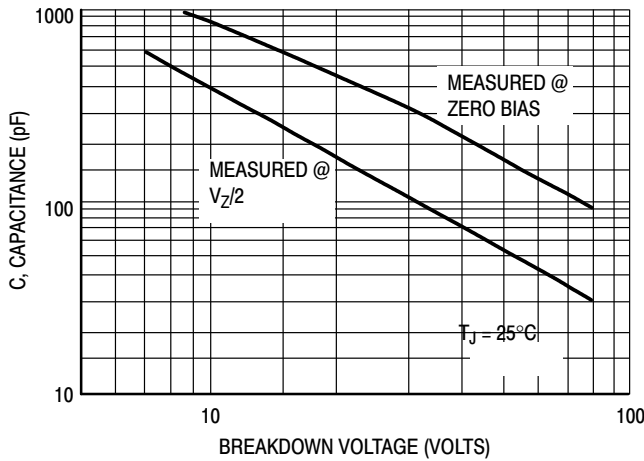


Figure 7. Capacitance Curve

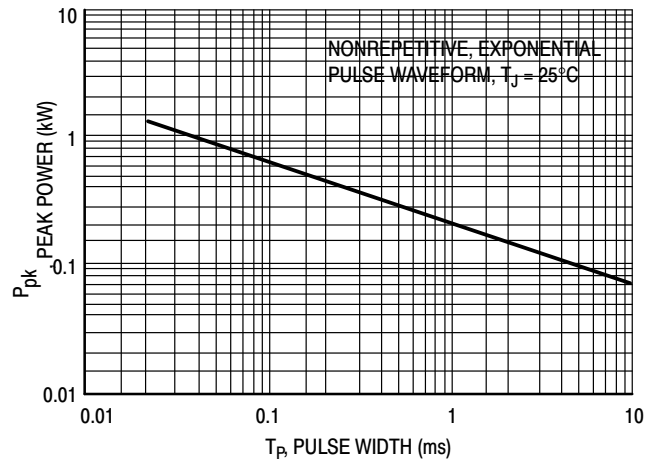


Figure 8. Typical Pulse Rating Curve

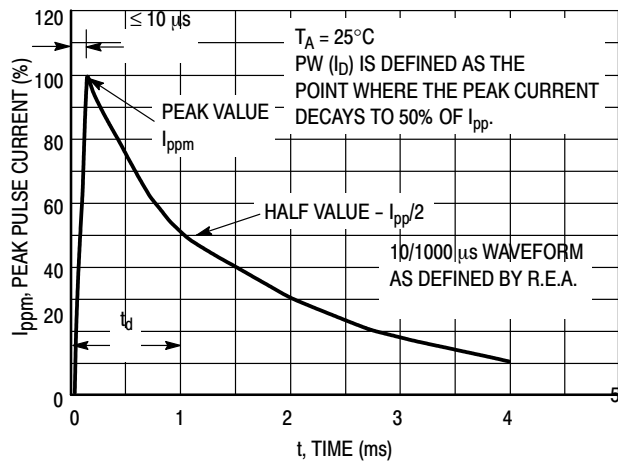


Figure 9. Pulse Waveform

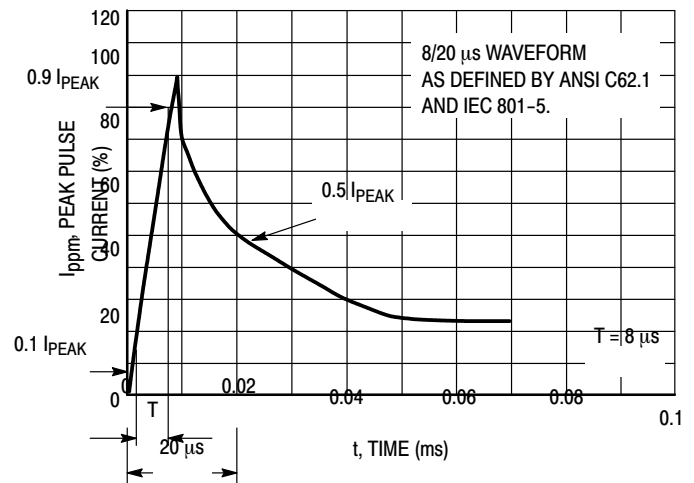


Figure 10. Pulse Waveform