

# 1SMA5913A - 1SMA5957A

## SURFACE MOUNT SILICON ZENER DIODES

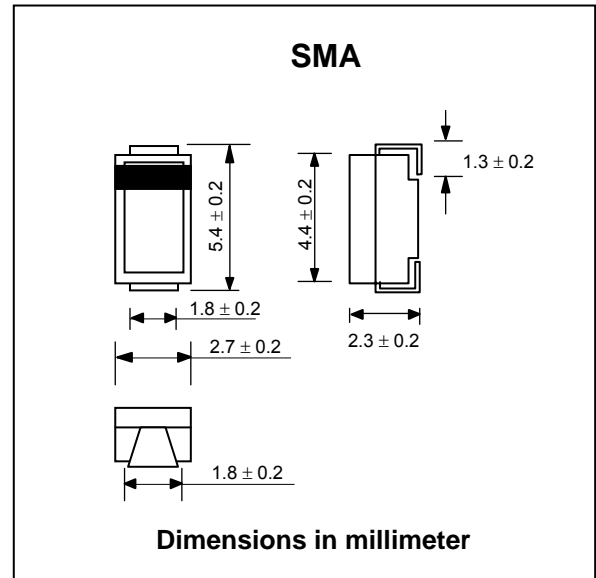
**V<sub>Z</sub> : 3.3 - 240 Volts**  
**P<sub>D</sub> : 1.5 Watts**

### FEATURES :

- \* Complete Voltage Range 3.3 to 240 Volts
- \* High peak reverse power dissipation
- \* High reliability
- \* Low leakage current
- \* Pb / RoHS Free

### MECHANICAL DATA :

- \* Case : SMA Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Polarity : Color band denotes cathode end
- \* Mounting position : Any
- \* Weight : 0.060 gram (Approximately)

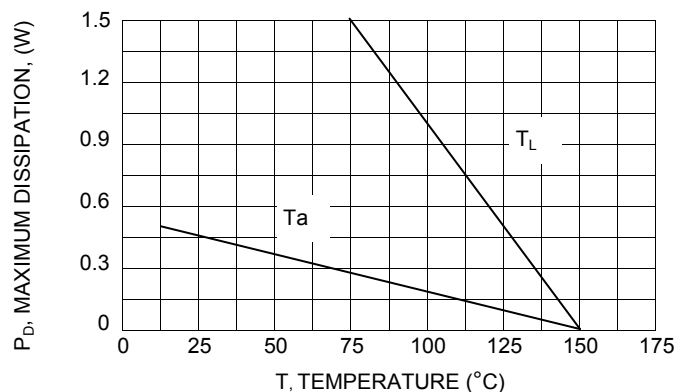


### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

| Rating  | Symbol                            | Value         | Unit  |
|---|-----------------------------------|---------------|-------|
| DC Power Dissipation @ T <sub>L</sub> = 75 °C               | P <sub>D</sub>                    | 1.5           | W     |
| Measured zero lead length(1" square copper pad, FR-4 board) |                                   | 20            | mW/°C |
| Derate above 75 °C  |                                   |               |       |
| Thermal Resistance Junction to Lead                         | R <sub>θJL</sub>                  | 50            | °C/W  |
| DC Power Dissipation @ T <sub>a</sub> = 25 °C               | P <sub>D</sub>                    | 0.5           | W     |
| (FR-4 board) Derate above 25 °C                             |                                   | 4.0           | mW/°C |
| Thermal Resistance Junction to Ambient                      | R <sub>θJA</sub>                  | 250           | °C/W  |
| Maximum Forward Voltage at I <sub>F</sub> = 200 mA          | V <sub>F</sub>                    | 1.5           | V     |
| Operating Junction and Storage Temperature Range            | T <sub>J</sub> , T <sub>STG</sub> | - 65 to + 150 | °C    |

Fig. 1 POWER TEMPERATURE DERATING CURVE



## 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 |
|-----------|-----------------------|----------|-------------------------|-------------------|----------|---------------------------------|----------|--------------------------|
|           | $V_Z @ I_{ZT}$        | $I_{ZT}$ | $Z_{ZT} @ I_{ZT}$       | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R @ V_R$                     | $I_{ZM}$ |                          |
|           | (V)                   | (mA)     | ( $\Omega$ )            | ( $\Omega$ )      | (mA)     | ( $\mu$ A)                      | (mA)     |                          |
| 1SMA5913A | 3.3                   | 113.6    | 10                      | 500               | 1.0      | 100                             | 1.0      | 454                      |
| 1SMA5914A | 3.6                   | 104.2    | 9.0                     | 500               | 1.0      | 75                              | 1.0      | 416                      |
| 1SMA5915A | 3.9                   | 96.1     | 7.5                     | 500               | 1.0      | 25                              | 1.0      | 384                      |
| 1SMA5916A | 4.3                   | 87.2     | 6.0                     | 500               | 1.0      | 5.0                             | 1.0      | 348                      |
| 1SMA5917A | 4.7                   | 79.8     | 5.0                     | 500               | 1.0      | 5.0                             | 1.5      | 319                      |
| 1SMA5918A | 5.1                   | 73.5     | 4.0                     | 500               | 1.0      | 5.0                             | 2.0      | 294                      |
| 1SMA5919A | 5.6                   | 66.9     | 2.0                     | 500               | 1.0      | 5.0                             | 3.0      | 267                      |
| 1SMA5920A | 6.2                   | 60.5     | 2.0                     | 200               | 1.0      | 5.0                             | 4.0      | 241                      |
| 1SMA5921A | 6.8                   | 55.1     | 2.5                     | 200               | 1.0      | 50                              | 5.2      | 220                      |
| 1SMA5922A | 7.5                   | 50.0     | 3.0                     | 400               | 0.5      | 50                              | 6.0      | 200                      |
| 1SMA5923A | 8.2                   | 45.7     | 3.5                     | 400               | 0.5      | 50                              | 6.5      | 182                      |
| 1SMA5924A | 9.1                   | 41.2     | 4.0                     | 500               | 0.5      | 50                              | 7.0      | 164                      |
| 1SMA5925A | 10                    | 37.5     | 4.5                     | 500               | 0.25     | 50                              | 8.0      | 150                      |
| 1SMA5926A | 11                    | 34.1     | 5.5                     | 550               | 0.25     | 50                              | 8.4      | 136                      |
| 1SMA5927A | 12                    | 31.2     | 6.5                     | 550               | 0.25     | 1.0                             | 9.1      | 125                      |
| 1SMA5928A | 13                    | 28.8     | 7.0                     | 550               | 0.25     | 1.0                             | 9.9      | 115                      |
| 1SMA5929A | 15                    | 25.0     | 9.0                     | 600               | 0.25     | 1.0                             | 11.4     | 100                      |
| 1SMA5930A | 16                    | 23.4     | 10                      | 600               | 0.25     | 1.0                             | 12.2     | 93                       |
| 1SMA5931A | 18                    | 20.8     | 12                      | 650               | 0.25     | 1.0                             | 13.7     | 83                       |
| 1SMA5932A | 20                    | 18.7     | 14                      | 650               | 0.25     | 1.0                             | 15.2     | 75                       |
| 1SMA5933A | 22                    | 17.0     | 17.5                    | 650               | 0.25     | 1.0                             | 16.7     | 68                       |
| 1SMA5934A | 24                    | 15.6     | 19                      | 700               | 0.25     | 1.0                             | 18.2     | 62                       |
| 1SMA5935A | 27                    | 13.9     | 23                      | 700               | 0.25     | 1.0                             | 20.6     | 55                       |
| 1SMA5936A | 30                    | 12.5     | 26                      | 750               | 0.25     | 1.0                             | 22.8     | 50                       |
| 1SMA5937A | 33                    | 11.4     | 33                      | 800               | 0.25     | 1.0                             | 25.1     | 45                       |
| 1SMA5938A | 36                    | 10.4     | 38                      | 850               | 0.25     | 1.0                             | 27.4     | 41                       |
| 1SMA5939A | 39                    | 9.6      | 45                      | 900               | 0.25     | 1.0                             | 29.7     | 38                       |
| 1SMA5940A | 43                    | 8.7      | 53                      | 950               | 0.25     | 1.0                             | 32.7     | 34                       |
| 1SMA5941A | 47                    | 8.0      | 67                      | 1000              | 0.25     | 1.0                             | 35.8     | 31                       |
| 1SMA5942A | 51                    | 7.3      | 70                      | 1100              | 0.25     | 1.0                             | 38.8     | 29                       |
| 1SMA5943A | 56                    | 6.7      | 86                      | 1300              | 0.25     | 1.0                             | 42.6     | 26                       |
| 1SMA5944A | 62                    | 6.0      | 100                     | 1500              | 0.25     | 1.0                             | 47.1     | 24                       |
| 1SMA5945A | 68                    | 5.5      | 120                     | 1700              | 0.25     | 1.0                             | 51.7     | 22                       |
| 1SMA5946A | 75                    | 5.0      | 140                     | 2000              | 0.25     | 1.0                             | 56.0     | 20                       |
| 1SMA5947A | 82                    | 4.6      | 160                     | 2500              | 0.25     | 1.0                             | 62.2     | 18                       |
| 1SMA5948A | 91                    | 4.1      | 200                     | 3000              | 0.25     | 1.0                             | 69.2     | 16                       |
| 1SMA5949A | 100                   | 3.7      | 250                     | 3100              | 0.25     | 1.0                             | 76.0     | 15                       |
| 1SMA5950A | 110                   | 3.4      | 300                     | 4000              | 0.25     | 1.0                             | 83.6     | 13                       |
| 1SMA5951A | 120                   | 3.1      | 380                     | 4500              | 0.25     | 1.0                             | 91.2     | 12                       |
| 1SMA5952A | 130                   | 2.9      | 450                     | 5000              | 0.25     | 1.0                             | 98.8     | 11                       |
| 1SMA5953A | 150                   | 2.5      | 600                     | 6000              | 0.25     | 1.0                             | 114.0    | 10                       |
| 1SMA5954A | 160                   | 2.3      | 700                     | 6500              | 0.25     | 1.0                             | 121.6    | 9.0                      |
| 1SMA5955A | 180                   | 2.1      | 900                     | 7000              | 0.25     | 1.0                             | 136.8    | 8.0                      |
| 1SMA5956A | 200                   | 1.9      | 1200                    | 8000              | 0.25     | 1.0                             | 152.0    | 7.0                      |
| 1SMA5957A | 240                   | 1.5      | 1600                    | 9000              | 0.25     | 1.0                             | 182.4    | 6.0                      |

Note :

( 1 ) Suffix "A " indicates  $\pm 10\%$  tolerance, suffix " B " indicates  $\pm 5\%$  tolerance.