

# Surface-Mount Silicon Zener Diode

Voltage range 11-68 Volts

1.5W Peak Power

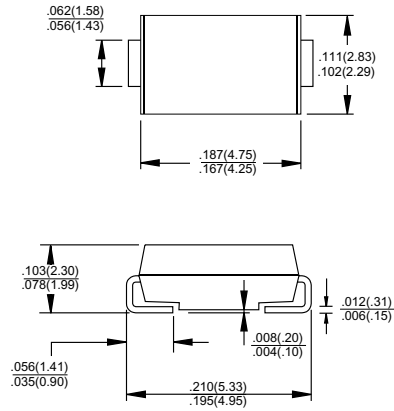
## FEATURES

For surface-mount applications in order to optimize board space  
 Low-profile package  
 Built-in strain relief  
 Glass-passivated junction  
 Low inductance  
 Typical  $I_R$  less than 0.5  $\mu$ A above 11V  
 High-temperature soldering guaranteed:  
 260°C / 10 seconds at terminals  
 Plastic package has Underwriters Laboratory  
 Flammability Classification 94V-0

## MECHANICAL DATA

Case: Molded plastic over passivated junction  
 Terminals: Matte-Sn plated  
 Polarity: Color band denotes positive end (cathode)  
 Standard packaging: 12mm tape (EIA-481)  
 Weight: 0.002 ounces, 0.064 gram

### SMA/DO-214AC



Dimensions in inches and (millimeters)



**Pb-free, RoHS compliant.**

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Rating at 25°C ambient temperature unless otherwise specified.

| Parameter                                                                                                            | Symbol         | Value        | Units          |
|----------------------------------------------------------------------------------------------------------------------|----------------|--------------|----------------|
| DC Power Dissipation at $T_L=75^\circ\text{C}$ ,<br>measure at zero lead length (Note 1)<br>Derate above 75°C        | $P_D$          | 1.5<br>20    | Watts<br>mW/°C |
| Peak Forward Surge Current, 8.3 ms Single Half<br>Sine-wave Superimposed on Rated Load<br>(JEDEC method) (Note 1, 2) | $I_{FSM}$      | 10.0         | Amps           |
| Operating and Storage Temperature Range                                                                              | $T_J, T_{STG}$ | -55 to + 150 | °C             |

Notes: 1. Mounted on 5.0mm<sup>2</sup> (0.013mm thick) land areas.

2. Measured on 8.3ms single half sine-wave or equivalent square wave.

Duty cycle=4 pulses per minute maximum.

## ELECTRICAL CHARACTERISTICS

(TA=25°C unless otherwise noted) VF=1.5V max, IF=200mA for all types.

| Device<br>(Note 1) | Device<br>Marking<br>Code | Nominal<br>Zener Voltage<br>Vz @ Izt<br>Voltage<br>(Notes 2) | Test<br>Current<br>IZT<br>mA | Zener Impedance |           |      | Leakage Current |      | Maximum<br>DC Zener<br>Current<br>IZM<br>mA (dc) |
|--------------------|---------------------------|--------------------------------------------------------------|------------------------------|-----------------|-----------|------|-----------------|------|--------------------------------------------------|
|                    |                           |                                                              |                              | ZZT @ IZT       | ZZK @ IZK |      | IR @ VR         |      |                                                  |
|                    |                           |                                                              |                              |                 | Ohms      | Ohms | mA              | uA   | Volts                                            |
|                    |                           |                                                              |                              |                 |           |      |                 |      |                                                  |
| 1SMA5926           | 926A                      | 11                                                           | 34.1                         | 5.5             | 550       | 0.25 | 0.5             | 8.4  | 136                                              |
| 1SMA5927           | 927A                      | 12                                                           | 31.2                         | 6.5             | 550       | 0.25 | 0.5             | 9.1  | 125                                              |
| 1SMA5928           | 928A                      | 13                                                           | 28.8                         | 7.0             | 550       | 0.25 | 0.5             | 9.9  | 115                                              |
| 1SMA5929           | 929A                      | 15                                                           | 25.0                         | 9.0             | 600       | 0.25 | 0.5             | 11.4 | 100                                              |
| 1SMA5930           | 930A                      | 16                                                           | 23.4                         | 10.0            | 600       | 0.25 | 0.5             | 12.2 | 94                                               |
| 1SMA5931           | 931A                      | 18                                                           | 20.8                         | 12              | 650       | 0.25 | 0.5             | 13.7 | 83                                               |
| 1SMA5932           | 932A                      | 20                                                           | 18.7                         | 14              | 650       | 0.25 | 0.5             | 15.2 | 75                                               |
| 1SMA5933           | 933A                      | 22                                                           | 17.0                         | 17.5            | 650       | 0.25 | 0.5             | 16.7 | 68                                               |
| 1SMA5934           | 934A                      | 24                                                           | 15.6                         | 19              | 700       | 0.25 | 0.5             | 18.2 | 63                                               |
| 1SMA5935           | 935A                      | 27                                                           | 13.9                         | 23              | 700       | 0.25 | 0.5             | 20.6 | 56                                               |
| 1SMA5936           | 936A                      | 30                                                           | 12.5                         | 26              | 750       | 0.25 | 0.5             | 22.8 | 50                                               |
| 1SMA5937           | 937A                      | 33                                                           | 11.4                         | 33              | 800       | 0.25 | 0.5             | 25.1 | 45                                               |
| 1SMA5938           | 938A                      | 36                                                           | 10.4                         | 38              | 850       | 0.25 | 0.5             | 27.4 | 42                                               |
| 1SMA5939           | 939A                      | 39                                                           | 9.6                          | 45              | 900       | 0.25 | 0.5             | 29.7 | 38                                               |
| 1SMA5940           | 940A                      | 43                                                           | 8.7                          | 53              | 950       | 0.25 | 0.5             | 32.7 | 35                                               |
| 1SMA5941           | 941A                      | 47                                                           | 8.0                          | 67              | 1000      | 0.25 | 0.5             | 35.8 | 32                                               |
| 1SMA5942           | 942A                      | 51                                                           | 7.3                          | 70              | 1100      | 0.25 | 0.5             | 38.8 | 29                                               |
| 1SMA5943           | 943A                      | 56                                                           | 6.7                          | 86              | 1300      | 0.25 | 0.5             | 42.6 | 27                                               |
| 1SMA5944           | 944A                      | 62                                                           | 6.0                          | 100             | 1500      | 0.25 | 0.5             | 47.1 | 24                                               |
| 1SMA5945           | 945A                      | 68                                                           | 5.5                          | 120.0           | 1700      | 0.25 | 0.5             | 51.7 | 22                                               |

Notes: 1: Tolerance and voltage regulation designation - the type number listed indicates a tolerance of  $\pm 5\%$ .

2: VZ limits are to be guaranteed at thermal equilibrium.

## RATINGS AND CHARACTERISTIC CURVES

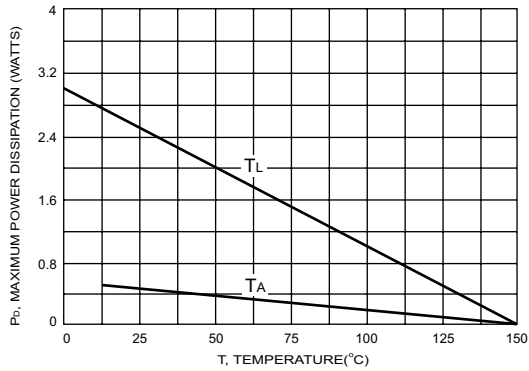
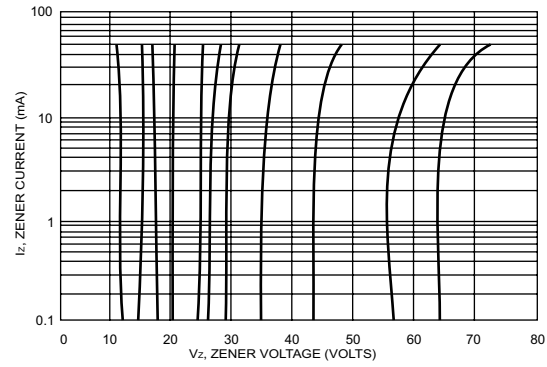
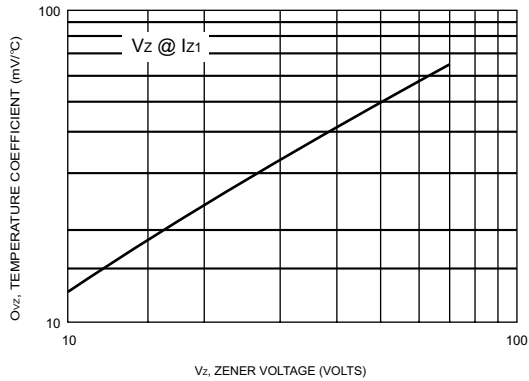
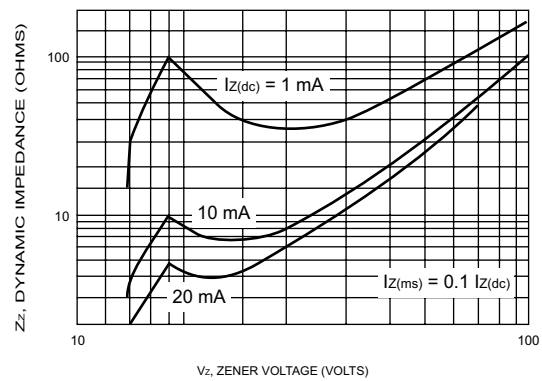
**FIG.1- STEADY STATE POWER DERATING**

**FIG.2-  $V_Z = 12$  THRU 68 VOLTS**

**FIG.3- ZENER VOLTAGE - 14 TO 68 VOLTS**

**FIG.4- EFFECT OF ZENER VOLTAGE**


FIG.5- CAPACITANCE CURVE

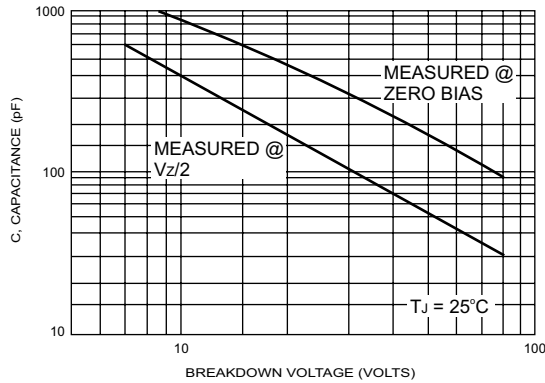


FIG.6- TYPICAL PULSE RATING CURVE

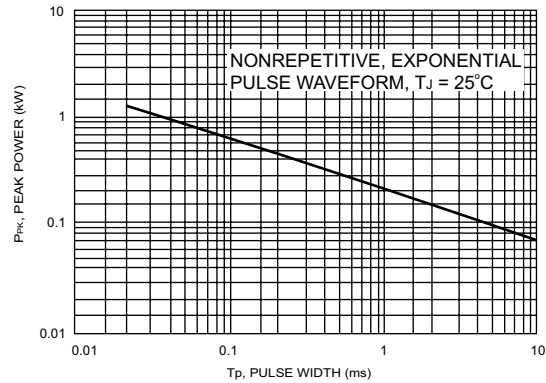


FIG.7- PULSE WAVEFORM

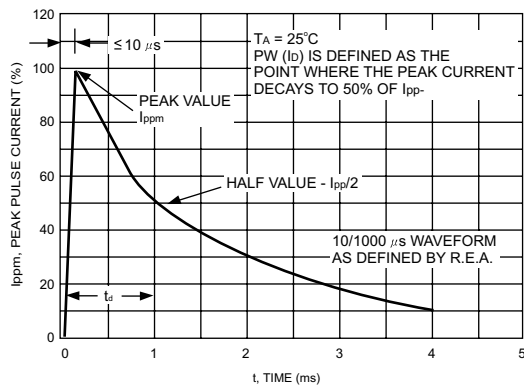
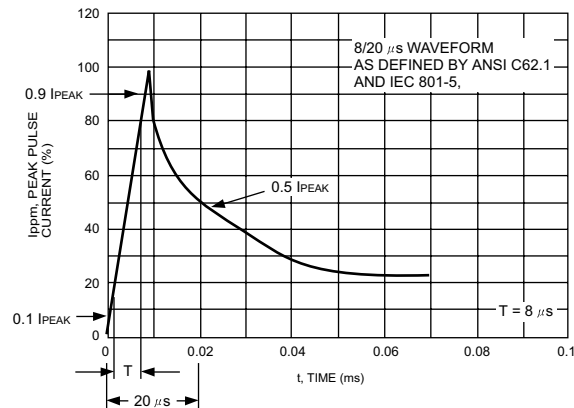


FIG.8- PULSE WAVEFORM



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