

SURFACE MOUNT SILICON ZENER DIODE

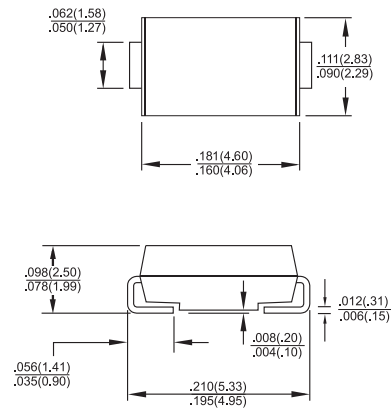
PRODUCT SUMMARY

1.0 Watts Surface Mount

FEATURES

For surface mounted applications in order to optimize board space
 Low profile package
 Built-in strain relief
 Glass passivated junction
 Low inductance
 Typical IR less than 5.0uA above 11V
 High temperature soldering guaranteed:
 260°C / 10 seconds at terminals
 Plastic package has Underwriters Laboratory Flammability Classification 94V-0

SMA/DO-214AC



Dimensions in inches and (millimeters)

MECHANICAL DATA

Case: Molded plastic over passivated junction
 Terminals: Pure tin plated lead free, solderable per MIL-STD-750, Method 2025
 Polarity: Color Band denotes positive end (cathode)
 Standard packaging: 12mm tape (EIA-481)
 Weight: 0.002 ounces, 0.064 gram

Pb **Pb-free; RoHS-compliant**

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

(Ratings at 25 °C ambient temperature unless otherwise specified.)

| Type Number | Symbol | Value | Units |
|---|----------------|--------------|----------------|
| Peak Power Dissipation at $T_A=50^{\circ}\text{C}$, Derate above 50°C (Note 1) | P_D | 1.0 6.67 | Watts mW/°C |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2) | I_{FSM} | 10.0 | Amps |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | °C |

Notes: 1. Mounted on 5.0mm² (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=1.2V max, IF=200mA for all types.

| Device (Note 1) | Device Marking Code | Nominal Zener Voltage Vz @ Izt Voltage (Notes 2 & 3) | Test Current Izt mA | Maximum Zener Impedance (Note 4) | | | Leakage Current | | Surge Current @ TA = 25°C Ir - mA (Note 5) |
|--------------------|---------------------------|---|------------------------------|----------------------------------|-----------|------|-----------------|-------|---|
| | | | | ZZT @ IZT Ohms | ZZK @ IZK | | IR @ VR | | |
| | | | | | Ohms | mA | uA Max | Volts | |
| 1SMA4741 | 741A | 11 | 23 | 8 | 700 | 0.25 | 5.0 | 8.4 | 414 |
| 1SMA4742 | 742A | 12 | 21 | 9 | 700 | 0.25 | 5.0 | 9.1 | 380 |
| 1SMA4743 | 743A | 13 | 19 | 10 | 700 | 0.25 | 5.0 | 9.9 | 344 |
| 1SMA4744 | 744A | 15 | 17 | 14 | 700 | 0.25 | 5.0 | 11.4 | 304 |
| 1SMA4745 | 745A | 16 | 15.5 | 16 | 700 | 0.25 | 5.0 | 12.2 | 285 |
| 1SMA4746 | 746A | 18 | 14.0 | 20 | 750 | 0.25 | 5.0 | 13.7 | 250 |
| 1SMA4747 | 747A | 20 | 12.5 | 22 | 750 | 0.25 | 5.0 | 15.2 | 225 |
| 1SMA4748 | 748A | 22 | 11.5 | 23 | 750 | 0.25 | 5.0 | 16.7 | 205 |
| 1SMA4749 | 749A | 24 | 10.5 | 25 | 750 | 0.25 | 5.0 | 18.2 | 190 |
| 1SMA4750 | 750A | 27 | 9.5 | 35 | 750 | 0.25 | 5.0 | 20.6 | 170 |
| 1SMA4751 | 751A | 30 | 8.5 | 40 | 1000 | 0.25 | 5.0 | 22.8 | 150 |
| 1SMA4752 | 752A | 33 | 7.5 | 45 | 1000 | 0.25 | 5.0 | 25.1 | 135 |
| 1SMA4753 | 753A | 36 | 7.0 | 50 | 1000 | 0.25 | 5.0 | 27.4 | 125 |
| 1SMA4754 | 754A | 39 | 6.5 | 60 | 1000 | 0.25 | 5.0 | 29.7 | 115 |
| 1SMA4755 | 755A | 43 | 6.0 | 70 | 1500 | 0.25 | 5.0 | 32.7 | 110 |
| 1SMA4756 | 756A | 47 | 5.5 | 80 | 1500 | 0.25 | 5.0 | 35.8 | 95 |
| 1SMA4757 | 757A | 51 | 5.0 | 95 | 1500 | 0.25 | 5.0 | 38.8 | 90 |
| 1SMA4758 | 758A | 56 | 4.5 | 110 | 2000 | 0.25 | 5.0 | 42.6 | 80 |
| 1SMA4759 | 759A | 62 | 4.0 | 125 | 2000 | 0.25 | 5.0 | 47.1 | 70 |
| 1SMA4760 | 760A | 68 | 3.7 | 150 | 2000 | 0.25 | 5.0 | 51.7 | 65 |
| 1SMA4761 | 761A | 75 | 3.3 | 175 | 2000 | 0.25 | 5.0 | 56.0 | 60 |
| 1SMA4762 | 762A | 82 | 3.0 | 200 | 3000 | 0.25 | 5.0 | 62.2 | 55 |
| 1SMA4763 | 763A | 91 | 2.8 | 250 | 3000 | 0.25 | 5.0 | 69.2 | 50 |
| 1SMA4764 | 764A | 100 | 2.5 | 350 | 3000 | 0.25 | 5.0 | 76.0 | 45 |
| 1SMA110Z | 110A | 110 | 2.3 | 450 | 4000 | 0.25 | 5.0 | 83.6 | - |
| 1SMA120Z | 120A | 120 | 2.0 | 550 | 4500 | 0.25 | 5.0 | 91.2 | - |
| 1SMA130Z | 130A | 130 | 1.9 | 700 | 5000 | 0.25 | 5.0 | 98.8 | - |
| 1SMA150Z | 150A | 150 | 1.7 | 1000 | 6000 | 0.25 | 5.0 | 114.0 | - |
| 1SMA160Z | 160A | 160 | 1.6 | 1100 | 6500 | 0.25 | 5.0 | 121.6 | - |
| 1SMA180Z | 180A | 180 | 1.4 | 1200 | 7000 | 0.25 | 5.0 | 136.8 | - |
| 1SMA200Z | 200A | 200 | 1.2 | 1500 | 8000 | 0.25 | 5.0 | 152.0 | - |

- Notes: 1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of $\pm 5\%$.
2. Specials Available Include:
- A. Nominal zener voltages between the voltages shown and tighter voltage tolerances.
 - B. Matched sets.
3. Zener Voltage (VZ) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (TL) at $30^{\circ}\text{C} \pm 1^{\circ}\text{C}$, from the diode body.
4. Zener Impedance (ZZ) Derivation. The zener impedance is derived from the 60 cycle ac voltage, which results when an ac current having and rms value equal to 10% of the dc zener current (IZT or IZK) is superimposed on IZT or IZK.
5. Surge Current (Ir) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, IZT, per JEDEC registration; however, actual device capability is as described in Figure 10.

RATINGS AND CHARACTERISTIC CURVES (1SMA4741 THRU 1SMA200Z)

FIG.1- POWER TEMPERATURE DERATING CURVE

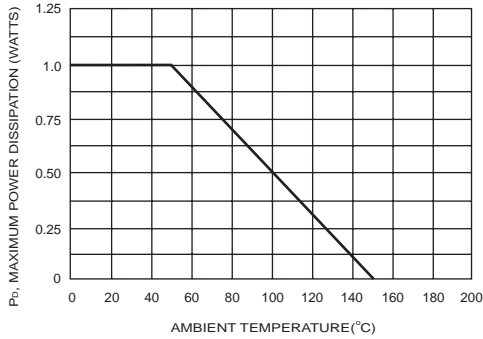


FIG.2- TYPICAL FORWARD CHARACTERISTICS

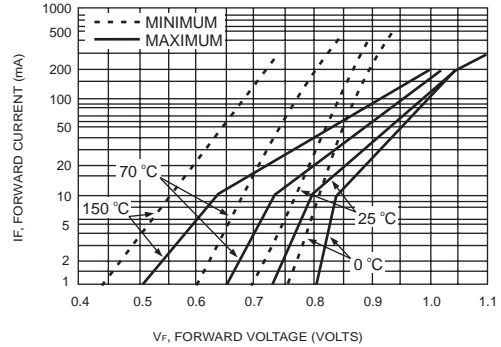


FIG.3- EFFECT OF ZENER CURRENT ON ZENER IMPEDANCE

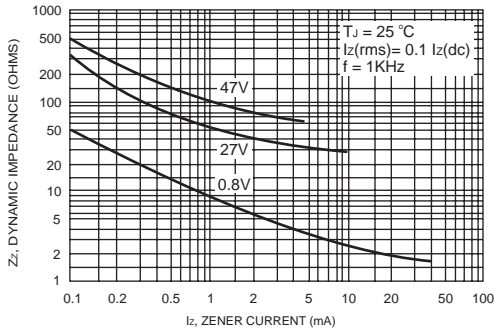


FIG.5- TYPICAL LEAKAGE CURRENT

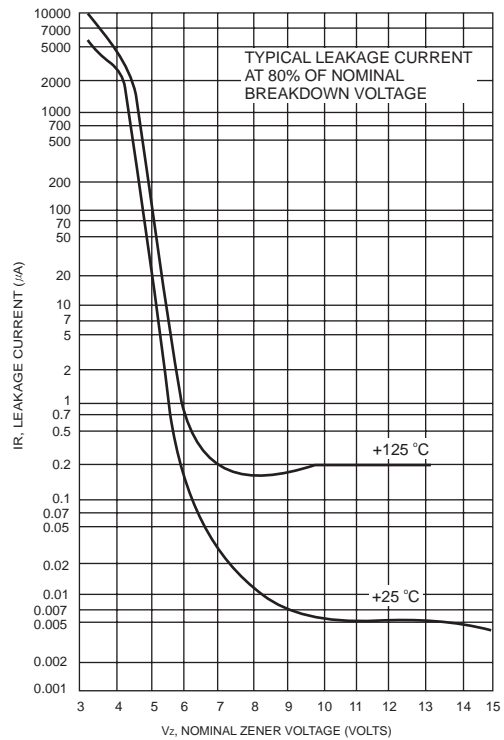
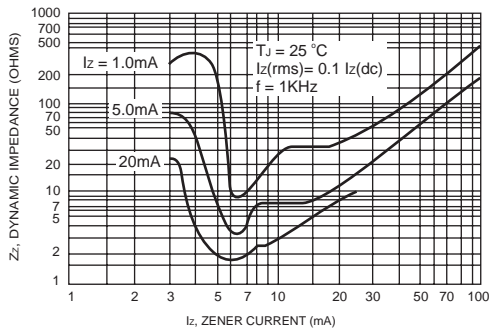


FIG.4- EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE



RATINGS AND CHARACTERISTIC CURVES (1SMA4741 THRU 1SMA200Z)

FIG.6- TYPICAL CAPACITANCE versus V_z

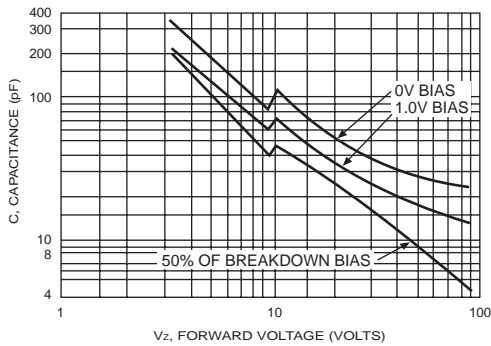


FIG.7- TEMPERATURE COEFFICIENTS

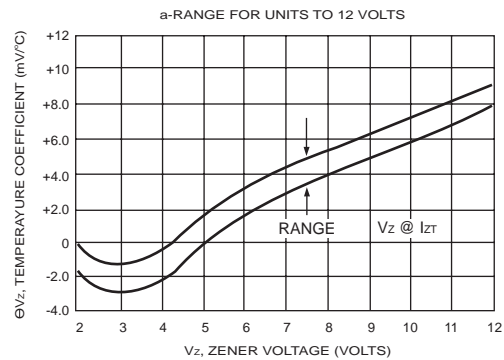


FIG.8- TEMPERATURE COEFFICIENTS

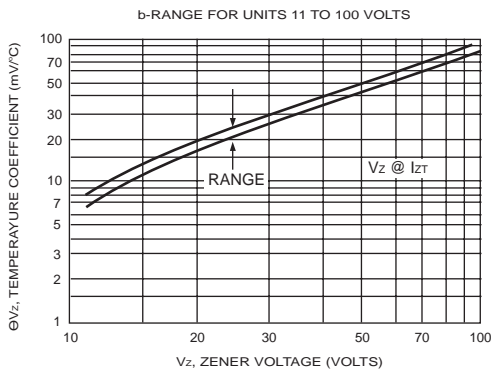


FIG.9- EFFECT OF ZENER CURRENT

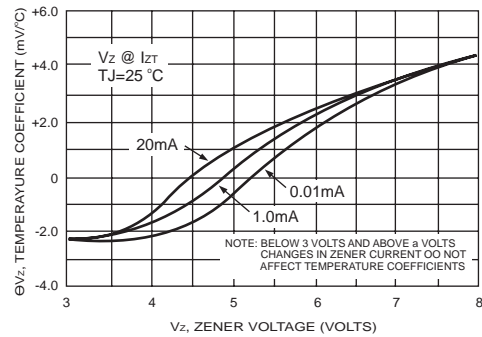
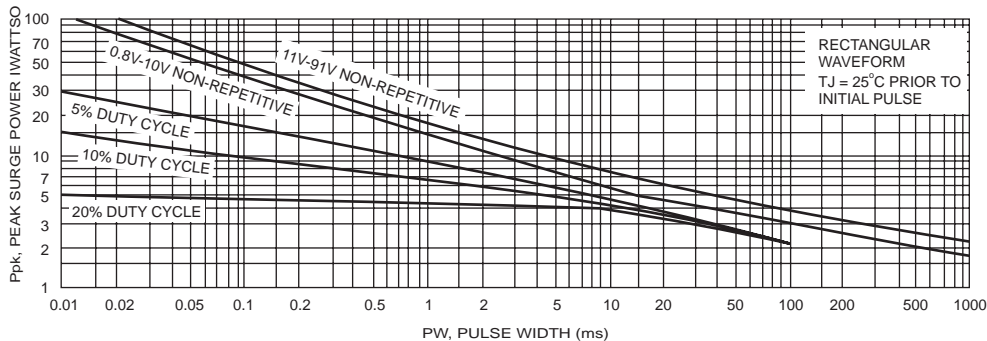


FIG.10- MAXIMUM SURGE POWER



Information furnished by Silicon Standard Corporation is believed to be accurate and reliable. However, Silicon Standard Corporation makes no guarantee or warranty, expressed or implied, as to the reliability, accuracy, timeliness or completeness of such information and assumes no responsibility for its use, or for infringement of any patent or other intellectual property rights of third parties that may result from its use. Silicon Standard reserves the right to make changes as it deems necessary to any products described herein for any reason, including without limitation enhancement in reliability, functionality or design. No license is granted, whether expressly or by implication, in relation to the use of any products described herein or to the use of any information provided herein, under any patent or other intellectual property rights of Silicon Standard Corporation or any third parties.