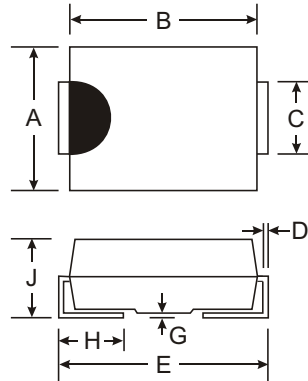


### Features

- 1.0W Power Dissipation
- High Surge Capability
- Ideally Suited for Automatic Assembly
- 5.1V - 39V Nominal Zener Voltage Range
- Standard  $V_Z$  Tolerance is  $\pm 5\%$

### Mechanical Data

- Case: SMA, Molded Plastic
- Plastic Material: UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Marking: Marking & Date Code (See Page 2)
- Ordering Information: See Page 2
- Polarity: Cathode Notch or Cathode Band
- Weight: 0.064 grams (approx.)



| SMA                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 2.29 | 2.92 |
| B                    | 4.00 | 4.60 |
| C                    | 1.27 | 1.63 |
| D                    | 0.15 | 0.31 |
| E                    | 4.80 | 5.59 |
| G                    | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.01 | 2.62 |
| All Dimensions in mm |      |      |

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic                                                                           | Symbol          | Value       | Unit                      |
|------------------------------------------------------------------------------------------|-----------------|-------------|---------------------------|
| Zener Current (see Table page 2)                                                         | $I_{ZM}$        | $P_d / V_Z$ | mA                        |
| Forward Voltage @ $I_F = 200\text{mA}$                                                   | $V_F$           | 1.2         | V                         |
| Power Dissipation @ $T_A = 50^\circ\text{C}$<br>Derate Above $50^\circ\text{C}$ (Note 1) | $P_d$           | 1.0<br>8.0  | W<br>mW/ $^\circ\text{C}$ |
| Typical Thermal Resistance - Junction to Terminal (Note 1)                               | $R_{\theta JT}$ | 30          | $^\circ\text{C/W}$        |
| Typical Thermal Resistance - Junction to Ambient (Note 1)                                | $R_{\theta JA}$ | 125         | $^\circ\text{C/W}$        |
| Operating and Storage Temperature Range                                                  | $T_j, T_{STG}$  | -65 to +150 | $^\circ\text{C}$          |

Notes: 1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise noted

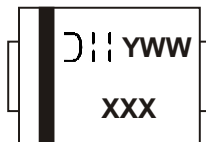
| Type Number<br>(Note 3) | Marking Code | Zener Voltage Range (Note 2)     |         |         | Test Current | Maximum Zener Impedance |                                   |                                   | Maximum Reverse Current |                                 | I <sub>ZM</sub> Max<br>(Note 1) |
|-------------------------|--------------|----------------------------------|---------|---------|--------------|-------------------------|-----------------------------------|-----------------------------------|-------------------------|---------------------------------|---------------------------------|
|                         |              | 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> |                                 |
|                         |              | Nom (V)                          | Min (V) | Max (V) | mA           | Ω                       | Ω                                 | mA                                | μA                      | V                               | mA                              |
| SMAZ5V1                 | ZHK          | 5.1                              | 4.84    | 5.40    | 100          | 5.0                     | 500                               | 1.0                               | 2.5                     | 1.0                             | 196                             |
| SMAZ5V6                 | ZHL          | 5.60                             | 5.32    | 5.88    | 100          | 2.0                     | 250                               | 2.0                               | 5.0                     | 2.0                             | 179                             |
| SMAZ6V2                 | ZHN          | 6.20                             | 5.89    | 6.51    | 100          | 2.0                     | 200                               | 2.0                               | 5.0                     | 3.0                             | 161                             |
| SMAZ6V8                 | ZHO          | 6.80                             | 6.46    | 7.14    | 100          | 2.0                     | 200                               | 1.0                               | 5.0                     | 4.0                             | 147                             |
| SMAZ7V5                 | ZHQ          | 7.50                             | 7.13    | 7.88    | 100          | 2.0                     | 450                               | 1.0                               | 5.0                     | 5.0                             | 133                             |
| SMAZ8V2                 | ZHR          | 8.20                             | 7.79    | 8.61    | 100          | 2.0                     | 200                               | 1.0                               | 5.0                     | 6.0                             | 122                             |
| SMAZ9V1                 | ZHT          | 9.10                             | 8.65    | 9.56    | 50           | 4.0                     | 200                               | 1.0                               | 5.0                     | 7.0                             | 110                             |
| SMAZ10                  | ZHU          | 10.00                            | 9.50    | 10.50   | 50           | 4.0                     | 200                               | 1.0                               | 1.0                     | 7.6                             | 100                             |
| SMAZ12                  | ZHW          | 12.00                            | 11.40   | 12.60   | 50           | 7.0                     | 150                               | 1.0                               | 1.0                     | 9.1                             | 83                              |
| SMAZ15                  | ZHZ          | 15.00                            | 14.25   | 15.75   | 50           | 10                      | 150                               | 1.0                               | 1.0                     | 11.4                            | 67                              |
| SMAZ16                  | ZJA          | 16.00                            | 15.20   | 16.80   | 25           | 15                      | 150                               | 1.0                               | 0.5                     | 12.2                            | 63                              |
| SMAZ18                  | ZJF          | 18.00                            | 17.10   | 18.90   | 25           | 15                      | 150                               | 1.0                               | 0.5                     | 13.7                            | 56                              |
| SMAZ20                  | ZJG          | 20.00                            | 19.00   | 21.00   | 25           | 15                      | 180                               | 1.0                               | 0.5                     | 15.2                            | 50                              |
| SMAZ22                  | ZJK          | 22.00                            | 20.90   | 23.10   | 25           | 15                      | 180                               | 1.0                               | 0.5                     | 16.7                            | 45                              |
| SMAZ24                  | ZJL          | 24.00                            | 22.80   | 25.20   | 25           | 15                      | 180                               | 1.0                               | 0.5                     | 18.2                            | 42                              |
| SMAZ27                  | ZJN          | 27.00                            | 25.65   | 28.35   | 25           | 15                      | 200                               | 1.0                               | 0.5                     | 20.5                            | 37                              |
| SMAZ30                  | ZJQ          | 30.00                            | 28.50   | 31.50   | 25           | 15                      | 250                               | 1.0                               | 0.5                     | 22.8                            | 33                              |
| SMAZ33                  | ZJR          | 33.00                            | 31.35   | 34.65   | 25           | 15                      | 300                               | 1.0                               | 0.5                     | 25.1                            | 30                              |
| SMAZ36                  | ZJS          | 36.00                            | 34.20   | 37.80   | 10           | 40                      | 350                               | 1.0                               | 0.5                     | 27.4                            | 28                              |
| SMAZ39                  | ZJT          | 39.00                            | 37.05   | 40.95   | 10           | 40                      | 450                               | 1.0                               | 0.5                     | 29.6                            | 26                              |

## Ordering Information (Note 4)

| Device*  | Packaging | Shipping         |
|----------|-----------|------------------|
| SMAZx-13 | SMA       | 5000/Tape & Reel |

- Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  2. Short duration test pulse used to minimize self-heating effect.
  3. Zener voltages below 5.1V available upon request. Please contact Diodes, Inc. Sales department for more information.
  4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
- \*x = Device Voltage, e.g SMAZ5V1-13.

## Marking Information



XXX = Product type marking code, ex. ZHK = SMAZ5V1  
 Diodes logo = Manufacturers' code marking  
 YWW = Date code marking  
 Y = Last digit of year ex: 2 for 2002  
 WW = Week code 01 to 52

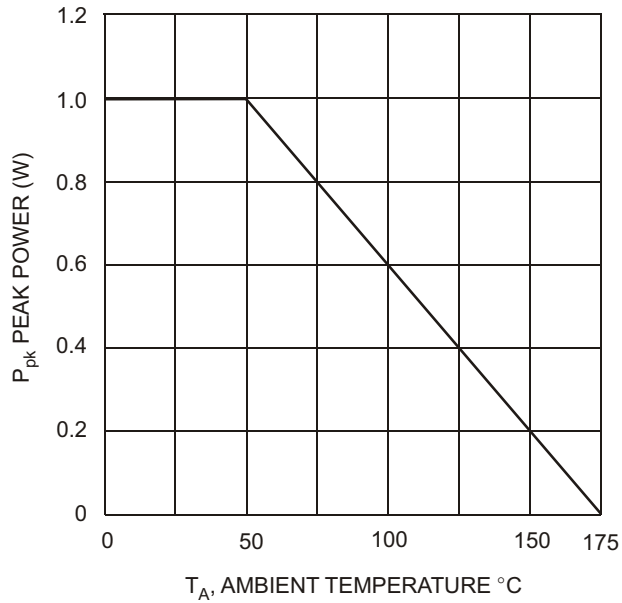


Fig. 1 Power Dissipation vs Ambient Temperature

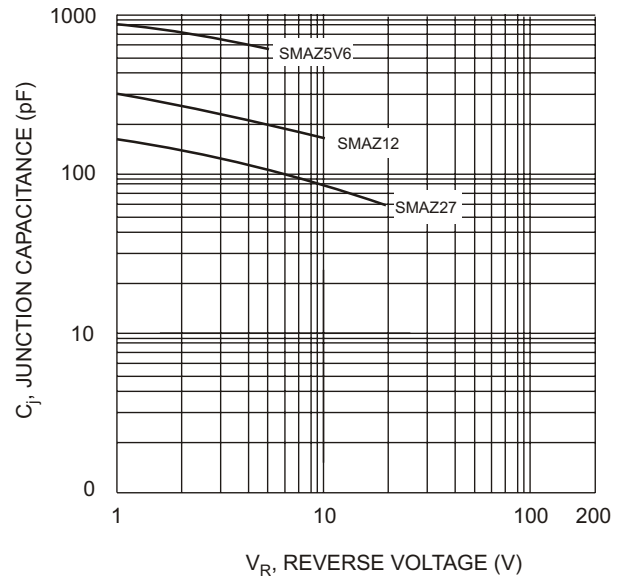


Fig. 2 Junction Capacitance vs Reverse Voltage

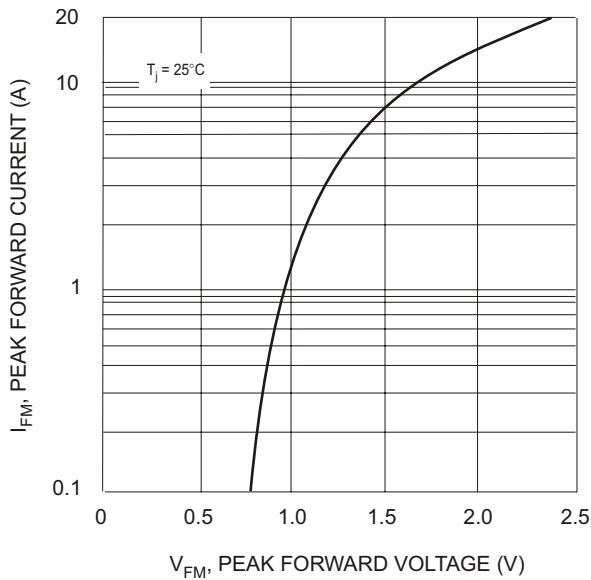


Fig. 3 Peak Forward Current vs Peak Forward Voltage

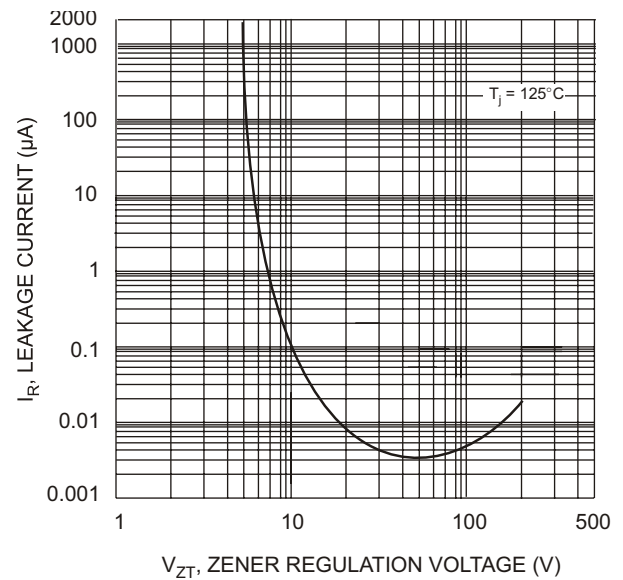


Fig. 4 Leakage Current vs Regulation Voltage

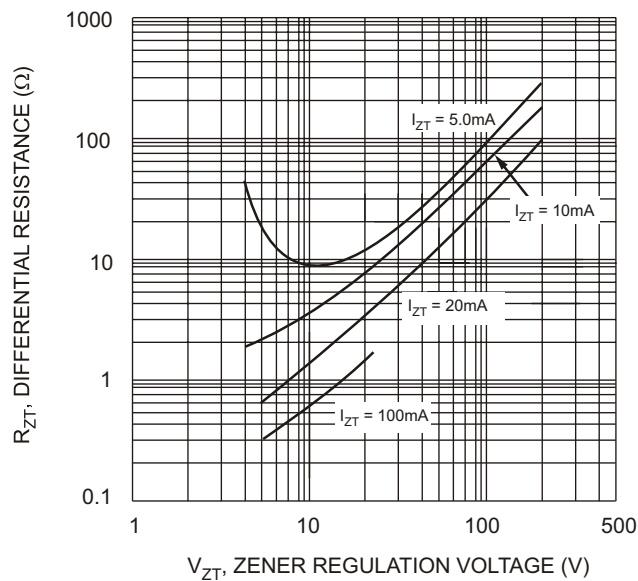


Fig. 5 Differential Resistance vs Regulation Voltage