



**THE DATASHEET OF
SMAZ15-13-F**



Features

- 1.0W Power Dissipation
- Ideally Suited for Automated Assembly
- 5.1V - 39V Nominal Zener Voltage Range
- Standard V_Z Tolerance is $\pm 5\%$
- **Lead Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SMA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Notch or Cathode Band
- Weight: 0.064 grams (Approximate)



Top View



Bottom

Ordering Information (Note 4)

| Device* | Compliance | Packaging | Shipping |
|------------|------------|-----------|-------------------|
| SMAZx-13-F | Commercial | SMA | 5,000/Tape & Reel |

*x = Device Voltage, e.g., SMAZ5V1-13-F.

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



xxx = Product Type Marking Code
 (See Electric Characteristics Table)
 DII = Manufacturers' Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 6 for 2016)
 WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|-----------------|---------------------------------|------|
| Forward Voltage @I _F = 200mA | V _F | 1.2 | V |
| Zener Current | I _{ZM} | P _D / V _Z | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|-------|
| Power Dissipation @T _A = +50°C | P _D | 1.0 | W |
| Derate Above +50°C (Note 5) | | 10.0 | mW/°C |
| Typical Thermal Resistance – Junction to Terminal (Note 5) | R _{θJT} | 30 | °C/W |
| Typical Thermal Resistance – Junction to Ambient (Note 5) | R _{θJA} | 100 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Type Number | Marking Code | Zener Voltage Range (Note 6) | | | Test Current | Maximum Zener Impedance | | | Maximum Reverse Current (Note 6) | | I _{ZM} Max (Note 5) |
|-------------|--------------|----------------------------------|---------|---------|--------------|-----------------------------------|-----------------------------------|-----|----------------------------------|------|------------------------------|
| | | V _Z @ I _{ZT} | | | | Z _{ZT} @ I _{ZT} | Z _{ZK} @ I _{ZK} | | I _R @ V _R | | |
| | | Nom (V) | Min (V) | Max (V) | mA | | Ω | Ω | mA | μA | V |
| 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 |

Notes: 5. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc.'s package outlines page, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
6. Short duration pulse test used to minimize self-heating effect.



Fig. 1 Power Dissipation vs. Ambient Temperature

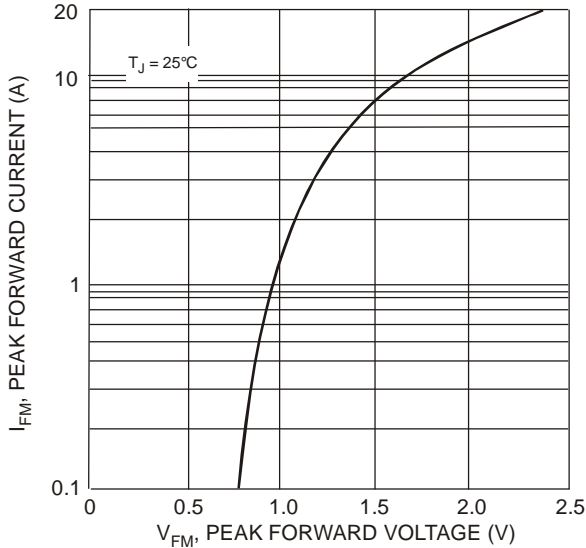


Fig. 3 Peak Forward Current vs. Peak Forward Voltage

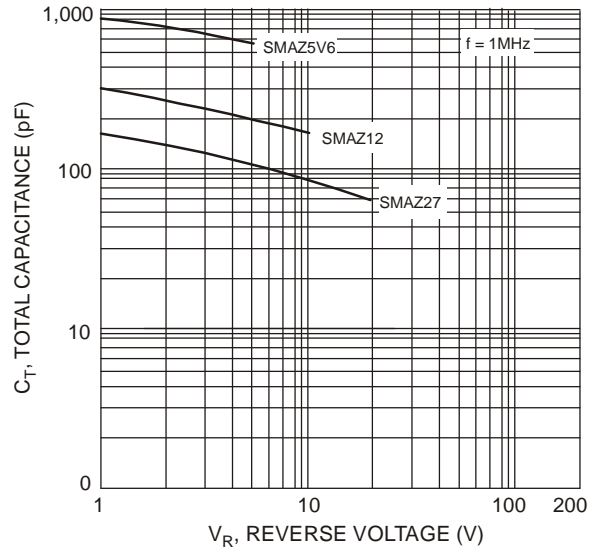


Fig. 2 Typical Total Capacitance vs. Reverse Voltage

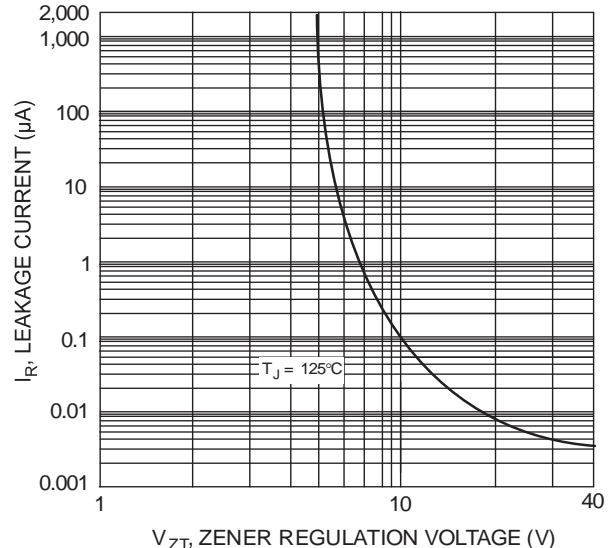


Fig. 4 Leakage Current vs. Regulation Voltage



Fig. 5 Differential Resistance vs. Regulation Voltage

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA

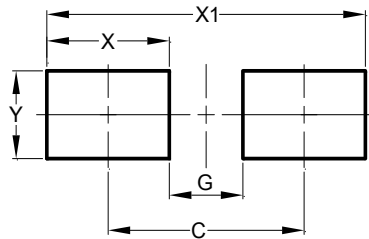


| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 1.96 | 2.40 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMA



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.00 |
| G | 1.50 |
| X | 2.50 |
| X1 | 6.50 |
| Y | 1.70 |

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