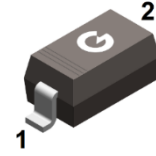
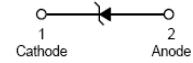


## Features

- Tight voltage tolerance:  $\pm 5\%$
- Ultra low-profile package well suited for automated assembly
- Moisture sensitivity level 1
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF



SOD-123

## Mechanical Data

- Case: SOD-123
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

## Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| TBZT52C13   | SOD-123 | 3000 pcs / Tape & Reel | WI           |

## Thermal Characteristics

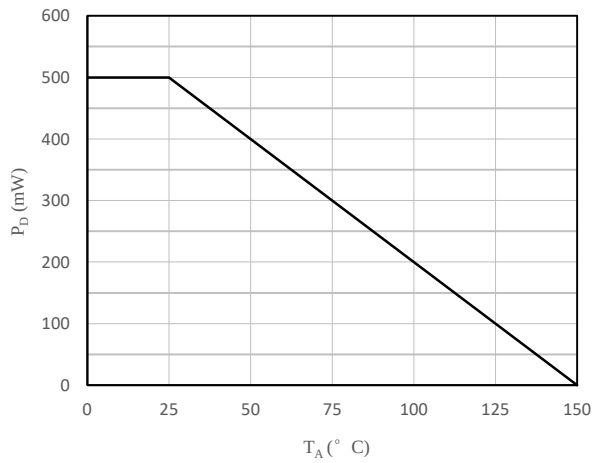
| Parameter                                         | Symbol          | Value      | Unit                 |
|---------------------------------------------------|-----------------|------------|----------------------|
| Power Dissipation                                 | $P_D$           | 500        | mW                   |
| Thermal Resistance Junction-to-Air <sup>*1</sup>  | $R_{\theta JA}$ | 250        | $^{\circ}\text{C/W}$ |
| Thermal Resistance Junction-to-Case <sup>*1</sup> | $R_{\theta JC}$ | 150        | $^{\circ}\text{C/W}$ |
| Thermal Resistance Junction-to-Lead <sup>*1</sup> | $R_{\theta JL}$ | 180        | $^{\circ}\text{C/W}$ |
| Operating Junction Temperature Range              | $T_J$           | -55 ~ +150 | $^{\circ}\text{C}$   |
| Storage Temperature Range                         | $T_{STG}$       | -65 ~ +150 | $^{\circ}\text{C}$   |

Note 1: The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper

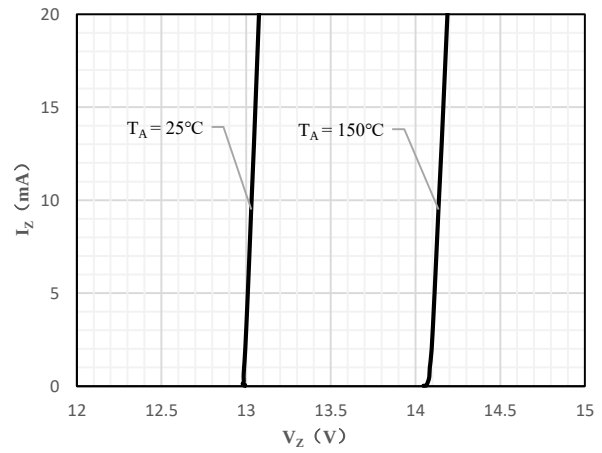
## Electrical Characteristics (@ $T_A = 25^{\circ}\text{C}$ unless otherwise specified)

| Parameter               | Symbol   | Test Condition        | Min.  | Typ.  | Max.  | Unit                         |
|-------------------------|----------|-----------------------|-------|-------|-------|------------------------------|
| Zener Voltage           | $V_Z$    | $I_{ZT} = 5\text{mA}$ | 12.35 | 13.00 | 13.65 | V                            |
| Forward Voltage         | $V_F$    | $I_F = 10\text{mA}$   | -     | -     | 0.9   | V                            |
| Maximum Reverse Current | $I_R$    | $V_R = 8\text{V}$     | -     | -     | 0.1   | $\mu\text{A}$                |
| Maximum Zener Impedance | $Z_{ZT}$ | $I_{ZT} = 5\text{mA}$ | -     | -     | 30    | $\Omega$                     |
| Maximum Zener Impedance | $Z_{ZK}$ | $I_{ZK} = 1\text{mA}$ | -     | -     | 170   | $\Omega$                     |
| Temperature Coefficient | $T_C$    | $I_{ZT} = 5\text{mA}$ | 7     | 9.06  | 11    | $\text{mV}/^{\circ}\text{C}$ |

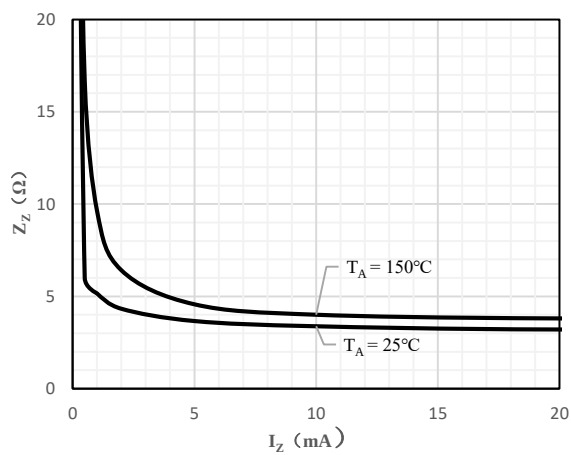
**TYPICAL CHARACTERISTICS** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



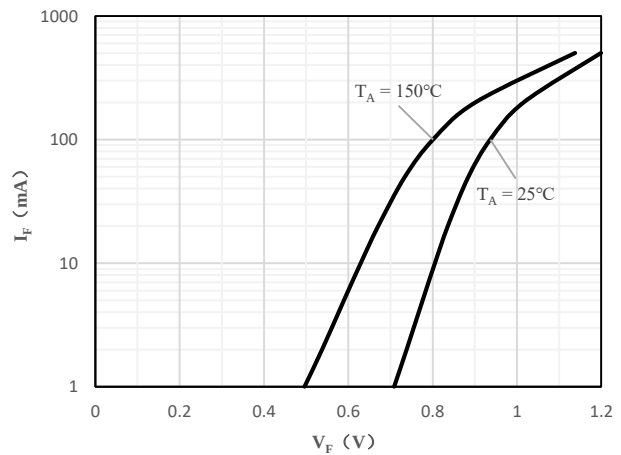
**Fig 1 Steady State Power Derating**



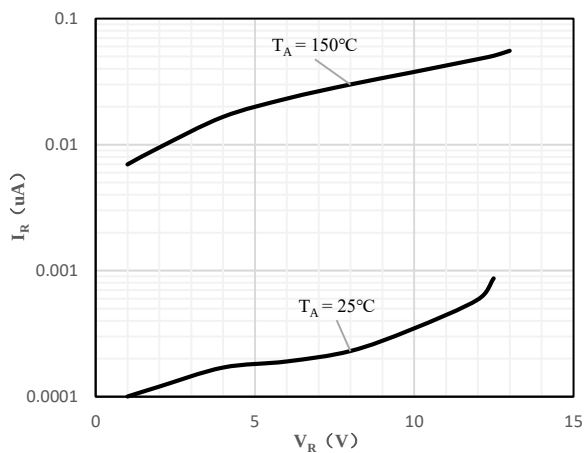
**Fig 2 Typical Zener Breakdown Characteristics**



**Fig 3 Zener Impedance vs. Zener Current**

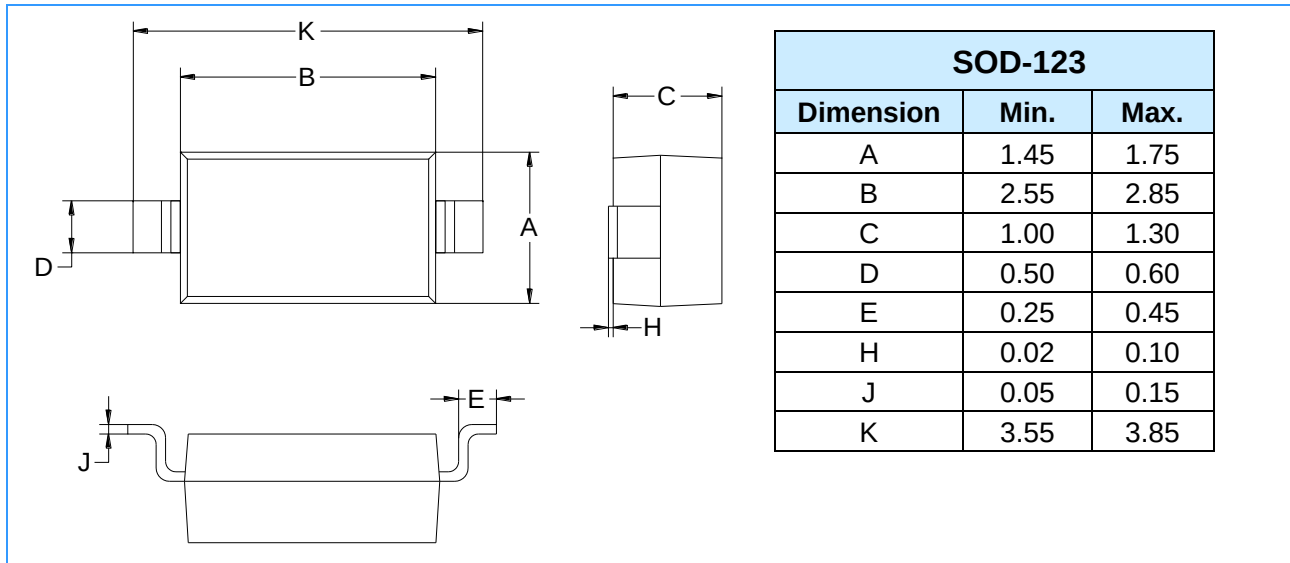


**Fig 4 Typical Forward Characteristics**

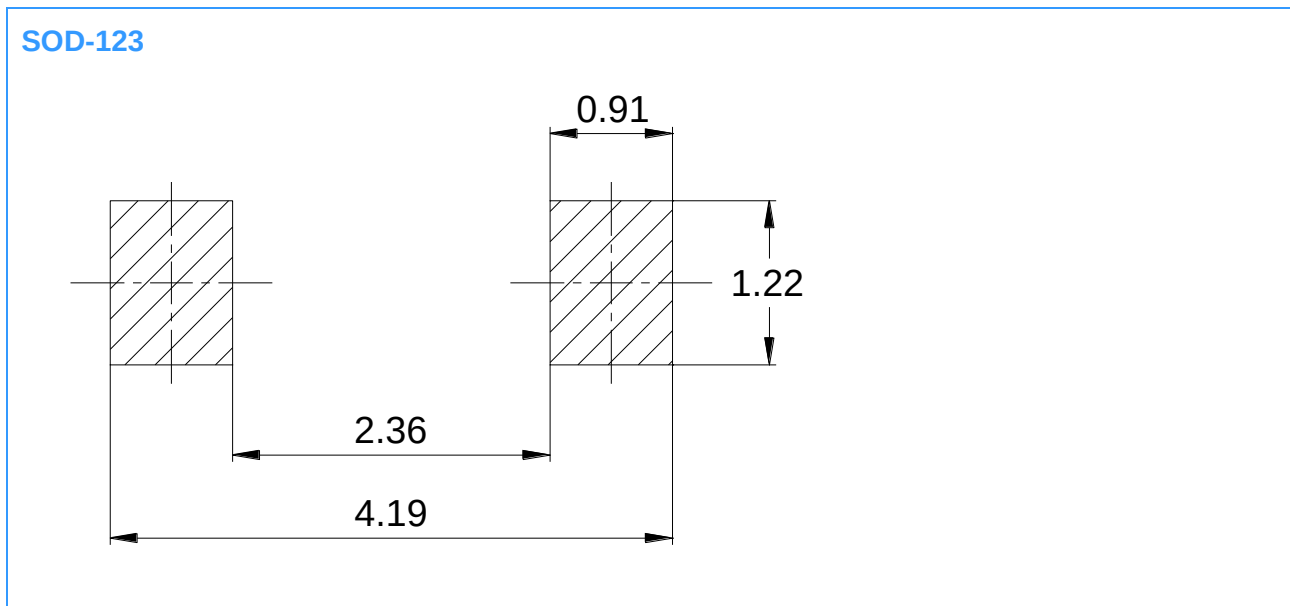


**Fig 5 Typical Reverse Characteristics**

## Package Outline Dimensions (Unit: mm)



## Package Outline Dimensions (Unit: mm)



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