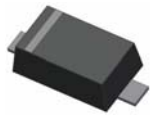


## Small Signal Diode



### Features

- Wide zener voltage range selection : 2.4V to 75V
- V<sub>Z</sub> Tolerance Selection of ±2%
- Moisture sensitivity level 1
- Matte Tin(Sn) lead finish with Nickel(Ni) underplate
- Pb free version and RoHS compliant
- Green compound (Halogen free) with suffix "G" on packing code and prefix "G" on date code

### Mechanical Data

- Case : Flat lead SOD-123 small outline plastic package
- Terminal: Matte tin plated, lead free., solderable per MIL-STD-202, Method 208 guaranteed
- High temperature soldering guaranteed: 260 °C/10s
- Polarity : Indicated by cathode band
- Weight : 8.85±0.5 mg

### Ordering Information

| Part No.    | Package  | Packing         |
|-------------|----------|-----------------|
| BZT52Bxx RH | SOD-123F | 3Kpcs / 7" Reel |

### Maximum Ratings and Electrical Characteristics

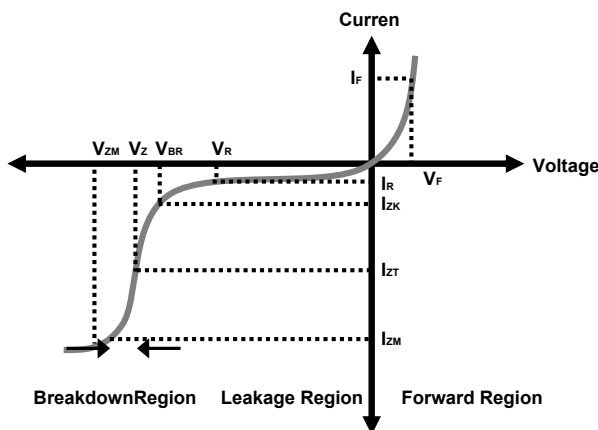
Rating at 25°C ambient temperature unless otherwise specified.

#### Maximum Ratings

| Type Number                              | Symbol                            | Value        | Units |
|------------------------------------------|-----------------------------------|--------------|-------|
| Power Dissipation                        | P <sub>D</sub>                    | 500          | mW    |
| Forward Voltage                          | I <sub>F</sub> =10mA              | 1            | V     |
| Thermal Resistance (Junction to Ambient) | (Note 1)                          | 350          | °C/W  |
| Junction and Storage Temperature Range   | T <sub>J</sub> , T <sub>STG</sub> | -65 to + 150 | °C    |

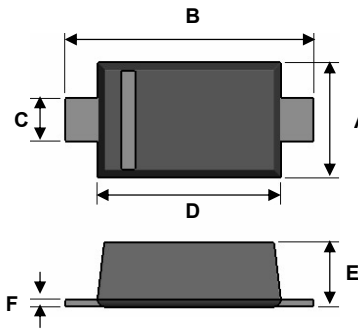
Notes:1. Valid provided that electrodes are kept at ambient temperature

### Zener I vs. V Characteristics



- V<sub>BR</sub> : Voltage at I<sub>ZK</sub>
- I<sub>ZK</sub> : Test current for voltage V<sub>BR</sub>
- Z<sub>ZK</sub> : Dynamic impedance at I<sub>ZK</sub>
- I<sub>ZT</sub> : Test current for voltage V<sub>Z</sub>
- V<sub>Z</sub> : Voltage at current I<sub>ZT</sub>
- Z<sub>ZT</sub> : Dynamic impedance at I<sub>ZT</sub>
- I<sub>ZM</sub> : Maximum steady state current
- V<sub>ZM</sub> : Voltage at I<sub>ZM</sub>

#### SOD-123F



| Dimensions | Unit (mm) |     | Unit (inch) |       |
|------------|-----------|-----|-------------|-------|
|            | Min       | Max | Min         | Max   |
| A          | 1.5       | 1.7 | 0.059       | 0.067 |
| B          | 3.3       | 3.7 | 0.130       | 0.146 |
| C          | 0.5       | 0.7 | 0.020       | 0.028 |
| D          | 2.5       | 2.7 | 0.098       | 0.106 |
| E          | 0.8       | 1.0 | 0.031       | 0.039 |
| F          | 0.05      | 0.2 | 0.002       | 0.008 |

## Small Signal Diode

### Electrical Characteristics

Ta = 25°C unless otherwise noted

V<sub>F</sub> Forward Voltage = 1V Maximum @ I<sub>F</sub> = 10 mA for all part numbers

| Part Number | V <sub>Z</sub> @ I <sub>ZT</sub> (Volt) |       |       | I <sub>ZT</sub> (mA) | Z <sub>TT</sub> @ I <sub>ZT</sub> (Ω)<br>Max | I <sub>ZK</sub> (mA) | Z <sub>ZK</sub> @ I <sub>ZK</sub> (Ω)<br>Max | I <sub>R</sub> @ V <sub>R</sub> (μA)<br>Max | V <sub>R</sub> (V) |
|-------------|-----------------------------------------|-------|-------|----------------------|----------------------------------------------|----------------------|----------------------------------------------|---------------------------------------------|--------------------|
|             | Nom                                     | Min   | Max   |                      |                                              |                      |                                              |                                             |                    |
| BZT52B2V4   | 2.4                                     | 2.35  | 2.45  | 5                    | 100                                          | 1                    | 564                                          | 45                                          | 1                  |
| BZT52B2V7   | 2.7                                     | 2.65  | 2.75  | 5                    | 100                                          | 1                    | 564                                          | 18                                          | 1                  |
| BZT52B3V0   | 3                                       | 2.94  | 3.06  | 5                    | 100                                          | 1                    | 564                                          | 9                                           | 1                  |
| BZT52B3V3   | 3.3                                     | 3.23  | 3.37  | 5                    | 95                                           | 1                    | 564                                          | 4.5                                         | 1                  |
| BZT52B3V6   | 3.6                                     | 3.53  | 3.67  | 5                    | 90                                           | 1                    | 564                                          | 4.5                                         | 1                  |
| BZT52B3V9   | 3.9                                     | 3.82  | 3.98  | 5                    | 90                                           | 1                    | 564                                          | 2.7                                         | 1                  |
| BZT52B4V3   | 4.3                                     | 4.21  | 4.39  | 5                    | 90                                           | 1                    | 564                                          | 2.7                                         | 1                  |
| BZT52B4V7   | 4.7                                     | 4.61  | 4.79  | 5                    | 80                                           | 1                    | 470                                          | 2.7                                         | 2                  |
| BZT52B5V1   | 5.1                                     | 5     | 5.2   | 5                    | 60                                           | 1                    | 451                                          | 1.8                                         | 2                  |
| BZT52B5V6   | 5.6                                     | 5.49  | 5.71  | 5                    | 40                                           | 1                    | 376                                          | 0.9                                         | 2                  |
| BZT52B6V2   | 6.2                                     | 6.08  | 6.32  | 5                    | 10                                           | 1                    | 141                                          | 2.7                                         | 4                  |
| BZT52B6V8   | 6.8                                     | 6.66  | 6.94  | 5                    | 15                                           | 1                    | 75                                           | 1.8                                         | 4                  |
| BZT52B7V5   | 7.5                                     | 7.35  | 7.65  | 5                    | 15                                           | 1                    | 75                                           | 0.9                                         | 5                  |
| BZT52B8V2   | 8.2                                     | 8.04  | 8.36  | 5                    | 15                                           | 1                    | 75                                           | 0.63                                        | 5                  |
| BZT52B9V1   | 9.1                                     | 8.92  | 9.28  | 5                    | 15                                           | 1                    | 94                                           | 0.45                                        | 6                  |
| BZT52B10    | 10                                      | 9.8   | 10.2  | 5                    | 20                                           | 1                    | 141                                          | 0.18                                        | 7                  |
| BZT52B11    | 11                                      | 10.78 | 11.22 | 5                    | 20                                           | 1                    | 141                                          | 0.09                                        | 8                  |
| BZT52B12    | 12                                      | 11.76 | 12.24 | 5                    | 25                                           | 1                    | 141                                          | 0.09                                        | 8                  |
| BZT52B13    | 13                                      | 12.74 | 13.26 | 5                    | 30                                           | 1                    | 160                                          | 0.09                                        | 8                  |
| BZT52B15    | 15                                      | 14.7  | 15.3  | 5                    | 30                                           | 1                    | 188                                          | 0.045                                       | 10.5               |
| BZT52B16    | 16                                      | 15.68 | 16.32 | 5                    | 40                                           | 1                    | 188                                          | 0.045                                       | 11.2               |
| BZT52B18    | 18                                      | 17.64 | 18.36 | 5                    | 45                                           | 1                    | 212                                          | 0.045                                       | 12.6               |
| BZT52B20    | 20                                      | 19.6  | 20.4  | 5                    | 55                                           | 1                    | 212                                          | 0.045                                       | 14                 |
| BZT52B22    | 22                                      | 21.56 | 22.44 | 5                    | 55                                           | 1                    | 235                                          | 0.045                                       | 15.4               |
| BZT52B24    | 24                                      | 23.52 | 24.48 | 5                    | 70                                           | 1                    | 235                                          | 0.045                                       | 16.8               |
| BZT52B27    | 27                                      | 26.46 | 27.54 | 2                    | 80                                           | 0.5                  | 282                                          | 0.045                                       | 18.9               |
| BZT52B30    | 30                                      | 29.4  | 30.6  | 2                    | 80                                           | 0.5                  | 282                                          | 0.045                                       | 21                 |
| BZT52B33    | 33                                      | 32.34 | 33.66 | 2                    | 80                                           | 0.5                  | 306                                          | 0.045                                       | 23                 |
| BZT52B36    | 36                                      | 35.28 | 36.72 | 2                    | 90                                           | 0.5                  | 329                                          | 0.045                                       | 25.2               |
| BZT52B39    | 39                                      | 38.22 | 39.78 | 2                    | 130                                          | 0.5                  | 329                                          | 0.045                                       | 27.3               |
| BZT52B43    | 43                                      | 42.14 | 43.86 | 2                    | 150                                          | 0.5                  | 353                                          | 0.045                                       | 30.1               |
| BZT52B47    | 47                                      | 46.06 | 47.94 | 2                    | 170                                          | 0.5                  | 353                                          | 0.045                                       | 33                 |
| BZT52B51    | 51                                      | 49.98 | 52.02 | 2                    | 180                                          | 0.5                  | 376                                          | 0.045                                       | 35.7               |
| BZT52B56    | 56                                      | 54.88 | 57.12 | 2                    | 200                                          | 0.5                  | 400                                          | 0.045                                       | 39.2               |
| BZT52B62    | 62                                      | 60.76 | 63.24 | 2                    | 215                                          | 0.5                  | 423                                          | 0.045                                       | 43.4               |
| BZT52B68    | 68                                      | 66.64 | 69.36 | 2                    | 240                                          | 0.5                  | 447                                          | 0.045                                       | 47.6               |
| BZT52B75    | 75                                      | 73.5  | 76.5  | 2                    | 255                                          | 0.5                  | 470                                          | 0.045                                       | 52.5               |

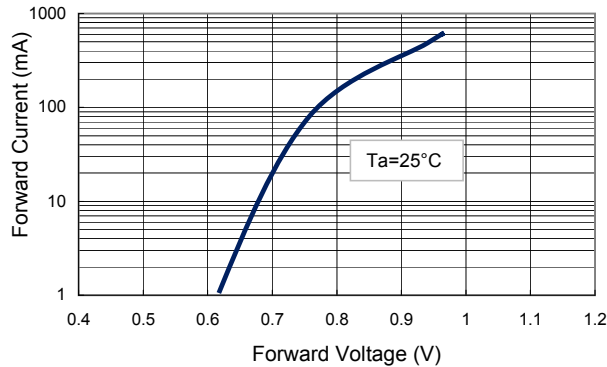
#### Notes:

1. The Zener Voltage (V<sub>Z</sub>) is tested under pulse condition of 10ms.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of **±2%**.
3. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest **Taiwan semiconductor** representative.
4. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the DC zener current (I<sub>ZT</sub> or I<sub>ZK</sub>) is superimposed to I<sub>ZT</sub> or I<sub>ZK</sub>.

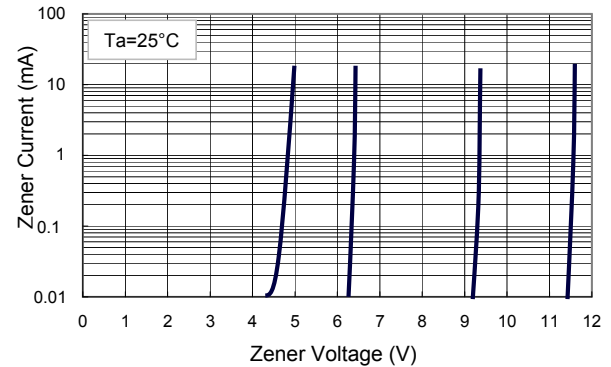
## Small Signal Diode

### Rating and Sharacteristic Curves

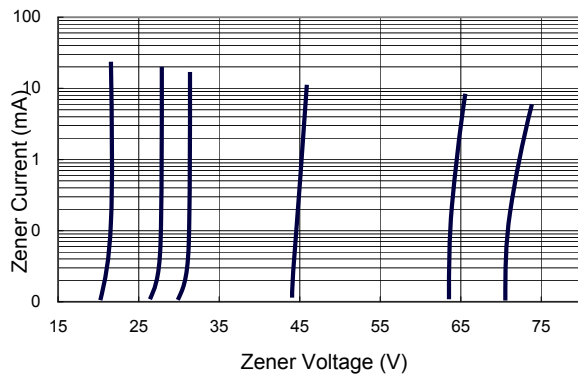
**FIG 1 Typical Forward Characteristics**



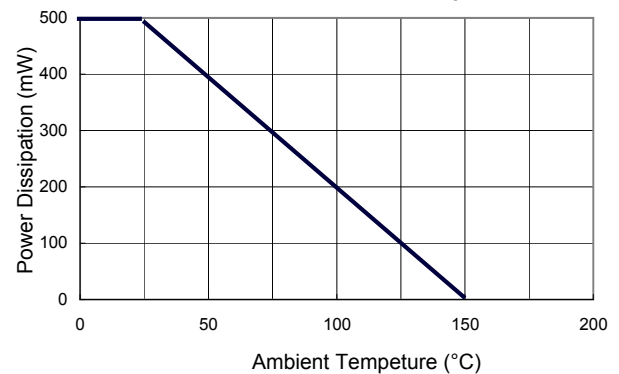
**FIG 2 Zener Breakdown Characteristics**



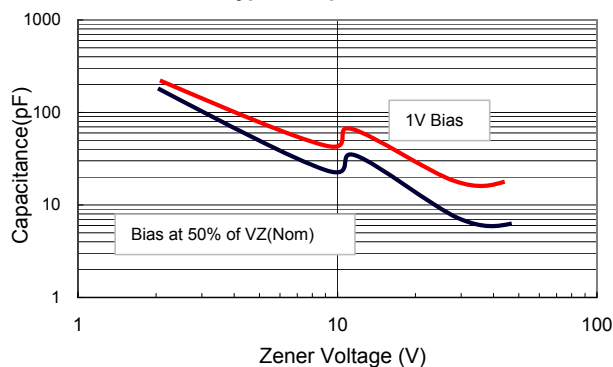
**FIG 3 Zener Breakdown Characteristics**



**FIG 4 Admissible Power Dissipation Curve**



**FIG 5 Typical Capacitance**



**FIG 6 Effect of Zener Voltage on Impedance**

