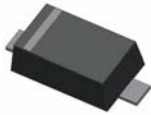


## Small Signal Diode



### Features

- ✧ Wide zener voltage range selection : 2.4V to 75V
- ✧  $V_Z$  Tolerance Selection of  $\pm 2\%$
- ✧ 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-323 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 : 4.02 $\pm$ 0.5 mg

### Ordering Information

| Part No.     | Package  | Packing         |
|--------------|----------|-----------------|
| BZT52BxxS RR | SOD-323F | 3Kpcs / 7" Reel |

### Maximum Ratings and Electrical Characteristics

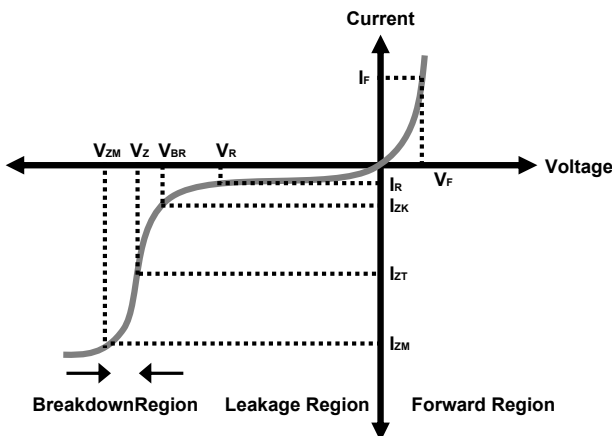
Rating at 25°C ambient temperature unless otherwise specified.

#### Maximum Ratings

| Type Number                                       | Symbol          | Value        | Units |
|---------------------------------------------------|-----------------|--------------|-------|
| Power Dissipation                                 | $P_D$           | 200          | mW    |
| Forward Voltage $I_F=10\text{mA}$                 | $V_F$           | 1            | V     |
| Thermal Resistance (Junction to Ambient) (Note 1) | $R_{\theta JA}$ | 625          | °C/W  |
| Junction and Storage Temperature Range            | $T_J, T_{STG}$  | -65 to + 150 | °C    |

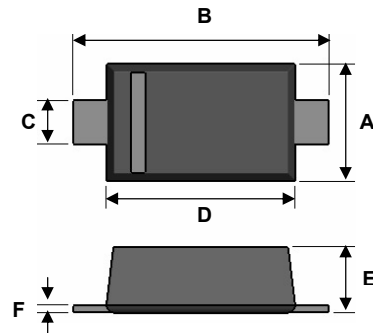
Notes:1. Valid provided that electrodes are kept at ambient temperature

### Zener I vs. V Characteristics



- $V_{BR}$  : Voltage at  $I_{ZK}$
- $I_{ZK}$  : Test current for voltage  $V_{BR}$
- $Z_{ZK}$  : Dynamic impedance at  $I_{ZK}$
- $I_{ZT}$  : Test current for voltage  $V_Z$
- $V_Z$  : Voltage at current  $I_{ZT}$
- $Z_{ZT}$  : Dynamic impedance at  $I_{ZT}$
- $I_{ZM}$  : Maximum steady state current
- $V_{ZM}$  : Voltage at  $I_{ZM}$

SOD-323F



| Dimensions | Unit (mm) |      | Unit (inch) |       |
|------------|-----------|------|-------------|-------|
|            | Min       | Max  | Min         | Max   |
| A          | 1.15      | 1.35 | 0.045       | 0.053 |
| B          | 2.30      | 2.70 | 0.091       | 0.106 |
| C          | 0.25      | 0.40 | 0.010       | 0.016 |
| D          | 1.60      | 1.80 | 0.063       | 0.071 |
| E          | 0.80      | 1.00 | 0.031       | 0.039 |
| F          | 0.05      | 0.20 | 0.002       | 0.008 |

### Small Signal Diode

#### Electrical Characteristics

Ta = 25°C unless otherwise noted

VF Forward Volatge = 1 V Maximum @ IF = 10mA for all part numbers

| Part Number | Device Marking | Vz @ IZT (Volt) |       |       | IZT (mA) | ZZT @ IZT (Ω) Max | IZK (mA) | ZZK @ IZK (Ω) Max | IR @ VR (μA) Max | VR (V) |
|-------------|----------------|-----------------|-------|-------|----------|-------------------|----------|-------------------|------------------|--------|
|             |                | Min             | Nom   | Max   |          |                   |          |                   |                  |        |
| BZT52B2V4S  | 0Z             | 2.35            | 2.40  | 2.45  | 5        | 100               | 1        | 564               | 45               | 1      |
| BZT52B2V7S  | 1Z             | 2.65            | 2.70  | 2.75  | 5        | 100               | 1        | 564               | 18               | 1      |
| BZT52B3V0S  | 2Z             | 2.94            | 3.00  | 3.06  | 5        | 100               | 1        | 564               | 9                | 1      |
| BZT52B3V3S  | 3Z             | 3.23            | 3.30  | 3.37  | 5        | 95                | 1        | 564               | 4.5              | 1      |
| BZT52B3V6S  | 4Z             | 3.53            | 3.60  | 3.67  | 5        | 90                | 1        | 564               | 4.5              | 1      |
| BZT52B3V9S  | 5Z             | 3.82            | 3.90  | 3.98  | 5        | 90                | 1        | 564               | 2.7              | 1      |
| BZT52B4V3S  | 6Z             | 4.21            | 4.30  | 4.39  | 5        | 90                | 1        | 564               | 2.7              | 1      |
| BZT52B4V7S  | 7Z             | 4.61            | 4.70  | 4.79  | 5        | 80                | 1        | 470               | 2.7              | 2.0    |
| BZT52B5V1S  | 8Z             | 5.00            | 5.10  | 5.20  | 5        | 60                | 1        | 451               | 1.8              | 2.0    |
| BZT52B5V6S  | 9Z             | 5.49            | 5.60  | 5.71  | 5        | 40                | 1        | 376               | 0.9              | 2.0    |
| BZT52B6V2S  | AZ             | 6.08            | 6.20  | 6.32  | 5        | 10                | 1        | 141               | 2.7              | 4.0    |
| BZT52B6V8S  | BZ             | 6.66            | 6.80  | 6.94  | 5        | 15                | 1        | 75                | 1.8              | 4.0    |
| BZT52B7V5S  | CZ             | 7.35            | 7.50  | 7.65  | 5        | 15                | 1        | 75                | 0.9              | 5.0    |
| BZT52B8V2S  | DZ             | 8.04            | 8.20  | 8.36  | 5        | 15                | 1        | 75                | 0.63             | 5.0    |
| BZT52B9V1S  | EZ             | 8.92            | 9.10  | 9.28  | 5        | 15                | 1        | 94                | 0.45             | 6.0    |
| BZT52B10S   | FZ             | 9.80            | 10.00 | 10.20 | 5        | 20                | 1        | 141               | 0.18             | 7.0    |
| BZT52B11S   | GZ             | 10.78           | 11.00 | 11.22 | 5        | 20                | 1        | 141               | 0.09             | 8.0    |
| BZT52B12S   | HZ             | 11.76           | 12.00 | 12.24 | 5        | 25                | 1        | 141               | 0.09             | 8.0    |
| BZT52B13S   | JZ             | 12.74           | 13.00 | 13.26 | 5        | 30                | 1        | 160               | 0.09             | 8.0    |
| BZT52B15S   | KZ             | 14.70           | 15.00 | 15.30 | 5        | 30                | 1        | 188               | 0.045            | 10.5   |
| BZT52B16S   | LZ             | 15.68           | 16.00 | 16.32 | 5        | 40                | 1        | 188               | 0.045            | 11.2   |
| BZT52B18S   | MZ             | 17.64           | 18.00 | 18.36 | 5        | 45                | 1        | 212               | 0.045            | 12.6   |
| BZT52B20S   | NZ             | 19.60           | 20.00 | 20.40 | 5        | 55                | 1        | 212               | 0.045            | 14.0   |
| BZT52B22S   | PZ             | 21.56           | 22.00 | 22.44 | 5        | 55                | 1        | 235               | 0.045            | 15.4   |
| BZT52B24S   | RZ             | 23.52           | 24.00 | 24.48 | 5        | 70                | 1        | 235               | 0.045            | 16.8   |
| BZT52B27S   | SZ             | 26.46           | 27.00 | 27.54 | 2        | 80                | 0.5      | 282               | 0.045            | 18.9   |
| BZT52B30S   | TZ             | 29.40           | 30.00 | 30.60 | 2        | 80                | 0.5      | 282               | 0.045            | 21.0   |
| BZT52B33S   | UZ             | 32.34           | 33.00 | 33.66 | 2        | 80                | 0.5      | 306               | 0.045            | 23.0   |
| BZT52B36S   | VZ             | 35.28           | 36.00 | 36.72 | 2        | 90                | 0.5      | 329               | 0.045            | 25.2   |
| BZT52B39S   | WZ             | 38.22           | 39.00 | 39.78 | 2        | 130               | 0.5      | 329               | 0.045            | 27.3   |
| BZT52B43S   | XZ             | 42.14           | 43.00 | 43.86 | 2        | 150               | 0.5      | 353               | 0.045            | 30.1   |
| BZT52B47S   | YZ             | 46.06           | 47.00 | 47.94 | 2        | 170               | 0.5      | 353               | 0.045            | 33.0   |
| BZT52B51S   | —Z             | 49.98           | 51.00 | 52.02 | 2        | 180               | 0.5      | 376               | 0.045            | 35.7   |
| BZT52B56S   | =Z             | 54.88           | 56.00 | 57.12 | 2        | 200               | 0.5      | 400               | 0.045            | 39.2   |
| BZT52B62S   | ≡Z             | 60.76           | 62.00 | 63.24 | 2        | 215               | 0.5      | 423               | 0.045            | 43.4   |
| BZT52B68S   | >Z             | 66.64           | 68.00 | 69.36 | 2        | 240               | 0.5      | 447               | 0.045            | 47.6   |
| BZT52B75S   | <Z             | 73.50           | 75.00 | 76.50 | 2        | 255               | 0.5      | 470               | 0.045            | 52.5   |

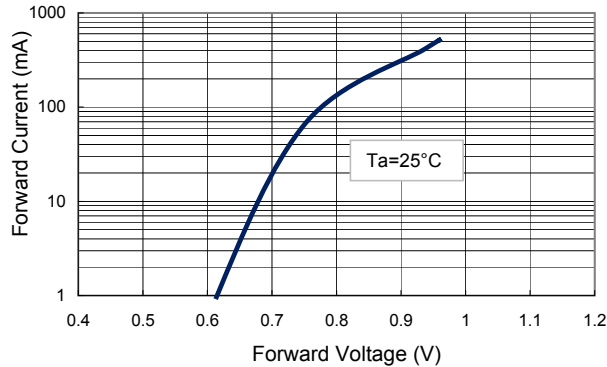
#### Notes:

1. The Zener Voltage (Vz) 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 volatge, which results when an ac current having an rms value equal to 10% of the dc zener current (IZT or IZK) is superimposed to IZT or IZK.

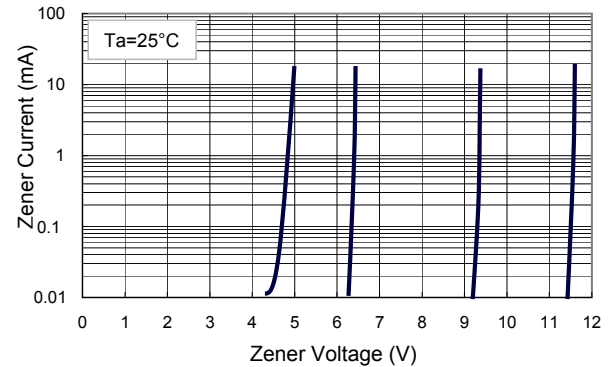
## Small Signal Diode

### Rating and Sharacteristic Curves

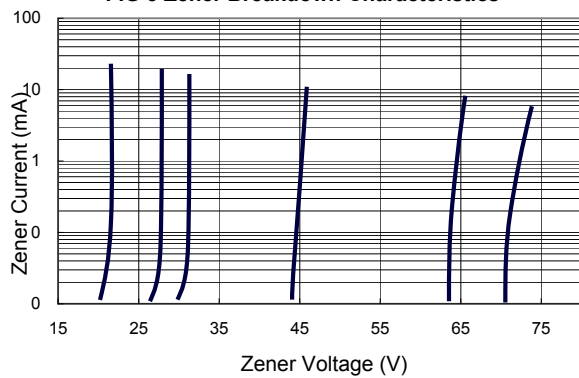
**FIG 1 Typical Forward Characteristics**



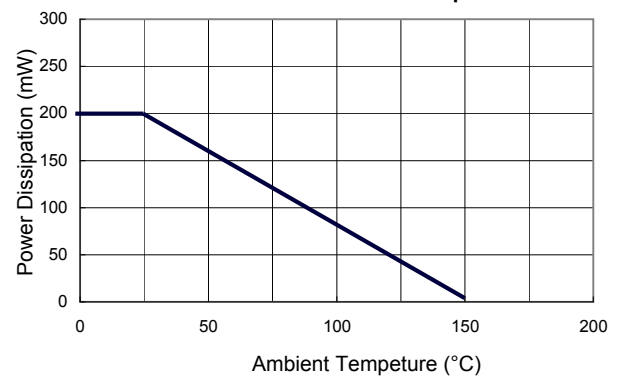
**FIG 2 Zener Breakdown Characteristics**



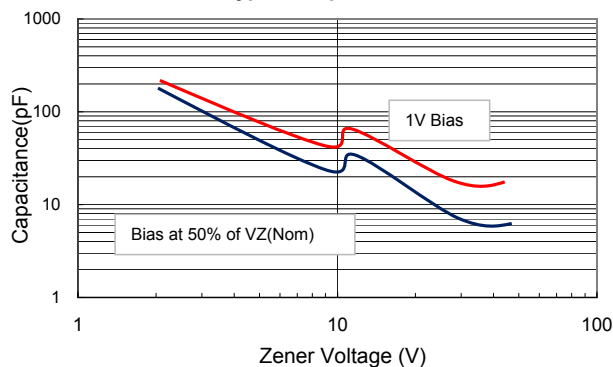
**FIG 3 Zener Breakdown Characteristics**



**FIG 4 Admissible Power Dissipation Curve**



**FIG 5 Typical Capacitance**



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

