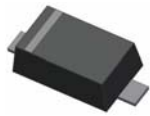


## Small Signal Diode



### Features

- ✧ Wide zener voltage range selection : 2.4V to 75V
- ✧  $V_Z$  Tolerance Selection of  $\pm 5\%$
- ✧ 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

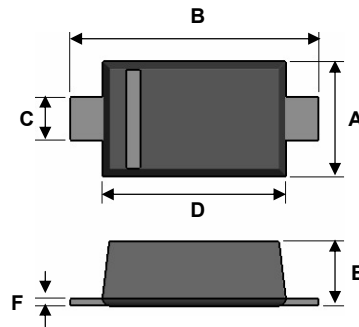
### Mechanical Data

- ✧ 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       |
|--------------|----------|---------------|
| BZT52CxxS RR | SOD-323F | 3Kpcs/7" Reel |

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 |

### Maximum Ratings and Electrical Characteristics

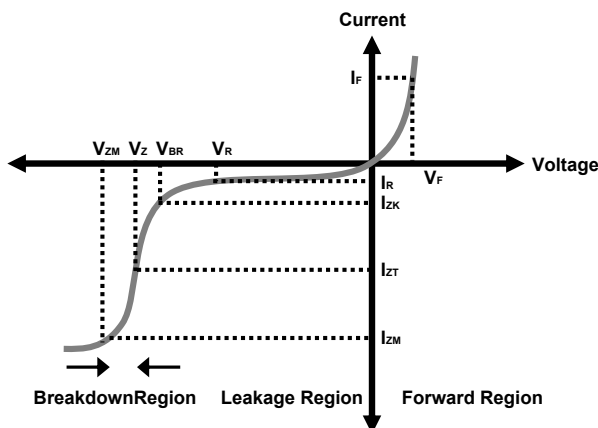
Rating at 25°C ambient temperature unless otherwise specified.

#### Maximum Ratings

| Type Number                                       | Symbol          | Value        | Units |
|---------------------------------------------------|-----------------|--------------|-------|
| Power Dissipation                                 | $P_D$           | 200          | mW    |
| Forward Voltage $I_F=10mA$                        | $V_F$           | 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  $I_{ZM}$

**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)<br>Max | IZK (mA) | ZZK @ IZK (Ω)<br>Max | IR @ VR (μA)<br>Max | VR (V) |
|-------------|----------------|-----------------|-------|-------|----------|----------------------|----------|----------------------|---------------------|--------|
|             |                | Min             | Nom   | Max   |          |                      |          |                      |                     |        |
| BZT52C2V4S  | Z0             | 2.28            | 2.40  | 2.52  | 5        | 100                  | 1        | 564                  | 45                  | 1      |
| BZT52C2V7S  | Z1             | 2.57            | 2.70  | 2.84  | 5        | 100                  | 1        | 564                  | 18                  | 1      |
| BZT52C3V0S  | Z2             | 2.85            | 3.00  | 3.15  | 5        | 100                  | 1        | 564                  | 9                   | 1      |
| BZT52C3V3S  | Z3             | 3.14            | 3.30  | 3.47  | 5        | 95                   | 1        | 564                  | 4.5                 | 1      |
| BZT52C3V6S  | Z4             | 3.42            | 3.60  | 3.78  | 5        | 90                   | 1        | 564                  | 4.5                 | 1      |
| BZT52C3V9S  | Z5             | 3.71            | 3.90  | 4.10  | 5        | 90                   | 1        | 564                  | 2.7                 | 1      |
| BZT52C4V3S  | Z6             | 4.09            | 4.30  | 4.52  | 5        | 90                   | 1        | 564                  | 2.7                 | 1      |
| BZT52C4V7S  | Z7             | 4.47            | 4.70  | 4.94  | 5        | 80                   | 1        | 470                  | 2.7                 | 2.0    |
| BZT52C5V1S  | Z8             | 4.85            | 5.10  | 5.36  | 5        | 60                   | 1        | 451                  | 1.8                 | 2.0    |
| BZT52C5V6S  | Z9             | 5.32            | 5.60  | 5.88  | 5        | 40                   | 1        | 376                  | 0.9                 | 2.0    |
| BZT52C6V2S  | ZA             | 5.89            | 6.20  | 6.51  | 5        | 10                   | 1        | 141                  | 2.7                 | 4.0    |
| BZT52C6V8S  | ZB             | 6.46            | 6.80  | 7.14  | 5        | 15                   | 1        | 75                   | 1.8                 | 4.0    |
| BZT52C7V5S  | ZC             | 7.11            | 7.50  | 7.86  | 5        | 15                   | 1        | 75                   | 0.9                 | 5.0    |
| BZT52C8V2S  | ZD             | 7.79            | 8.20  | 8.61  | 5        | 15                   | 1        | 75                   | 0.63                | 5.0    |
| BZT52C9V1S  | ZE             | 8.65            | 9.10  | 9.56  | 5        | 15                   | 1        | 94                   | 0.45                | 6.0    |
| BZT52C10S   | ZF             | 9.50            | 10.00 | 10.50 | 5        | 20                   | 1        | 141                  | 0.18                | 7.0    |
| BZT52C11S   | ZG             | 10.45           | 11.00 | 11.55 | 5        | 20                   | 1        | 141                  | 0.09                | 8.0    |
| BZT52C12S   | ZH             | 11.40           | 12.00 | 12.60 | 5        | 25                   | 1        | 141                  | 0.09                | 8.0    |
| BZT52C13S   | ZJ             | 12.35           | 13.00 | 13.65 | 5        | 30                   | 1        | 160                  | 0.09                | 8.0    |
| BZT52C15S   | ZK             | 14.25           | 15.00 | 15.75 | 5        | 30                   | 1        | 188                  | 0.045               | 10.5   |
| BZT52C16S   | ZL             | 15.20           | 16.00 | 16.80 | 5        | 40                   | 1        | 188                  | 0.045               | 11.2   |
| BZT52C18S   | ZM             | 17.10           | 18.00 | 18.90 | 5        | 45                   | 1        | 212                  | 0.045               | 12.6   |
| BZT52C20S   | ZN             | 19.00           | 20.00 | 21.00 | 5        | 55                   | 1        | 212                  | 0.045               | 14.0   |
| BZT52C22S   | ZP             | 20.90           | 22.00 | 23.10 | 5        | 55                   | 1        | 235                  | 0.045               | 15.4   |
| BZT52C24S   | ZR             | 22.80           | 24.00 | 25.20 | 5        | 70                   | 1        | 235                  | 0.045               | 16.8   |
| BZT52C27S   | ZS             | 25.65           | 27.00 | 28.35 | 2        | 80                   | 0.5      | 282                  | 0.045               | 18.9   |
| BZT52C30S   | ZT             | 28.50           | 30.00 | 31.50 | 2        | 80                   | 0.5      | 282                  | 0.045               | 21.0   |
| BZT52C33S   | ZU             | 31.35           | 33.00 | 34.65 | 2        | 80                   | 0.5      | 306                  | 0.045               | 23.0   |
| BZT52C36S   | ZV             | 34.20           | 36.00 | 37.80 | 2        | 90                   | 0.5      | 329                  | 0.045               | 25.2   |
| BZT52C39S   | ZW             | 37.05           | 39.00 | 40.95 | 2        | 130                  | 0.5      | 329                  | 0.045               | 27.3   |
| BZT52C43S   | ZX             | 40.85           | 43.00 | 45.15 | 2        | 150                  | 0.5      | 353                  | 0.045               | 30.1   |
| BZT52C47S   | ZY             | 44.65           | 47.00 | 49.35 | 2        | 170                  | 0.5      | 353                  | 0.045               | 33.0   |
| BZT52C51S   | Z-             | 48.45           | 51.00 | 53.55 | 2        | 180                  | 0.5      | 376                  | 0.045               | 35.7   |
| BZT52C56S   | Z=             | 53.20           | 56.00 | 58.80 | 2        | 200                  | 0.5      | 400                  | 0.045               | 39.2   |
| BZT52C62S   | Z≡             | 58.90           | 62.00 | 65.10 | 2        | 215                  | 0.5      | 423                  | 0.045               | 43.4   |
| BZT52C68S   | Z>             | 64.60           | 68.00 | 71.40 | 2        | 240                  | 0.5      | 447                  | 0.045               | 47.6   |
| BZT52C75S   | Z<             | 71.25           | 75.00 | 78.75 | 2        | 255                  | 0.5      | 470                  | 0.045               | 52.5   |

**Notes:**

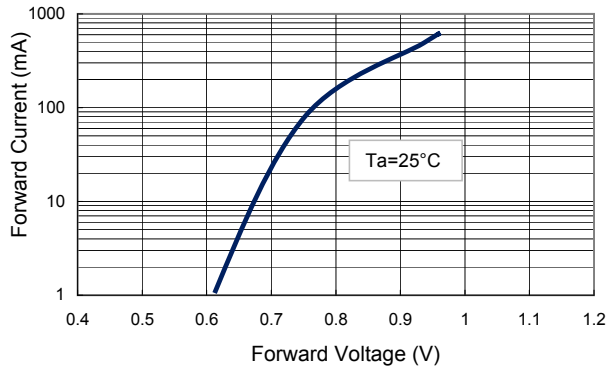
1. The Zener Voltage (Vz) is tested under pulse condition of 10ms.
2. The device numbers listed have a standard tolerance on the nominal zener voltage of **±5%**.
3. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, 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

## Small Signal Diode

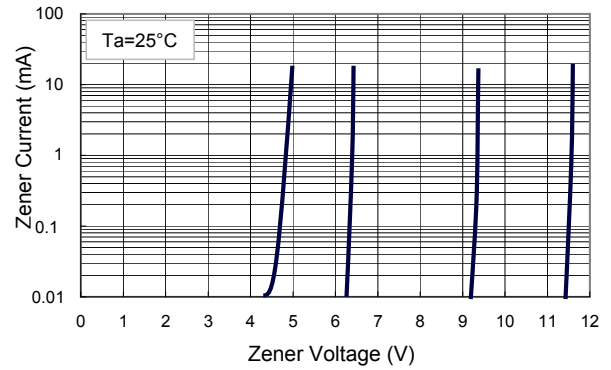
### Rating and Sharacteristic Curves

## BZT52C2V4S-BZT52C75S 200mW, 5% Tolerance SMD Zener Diode

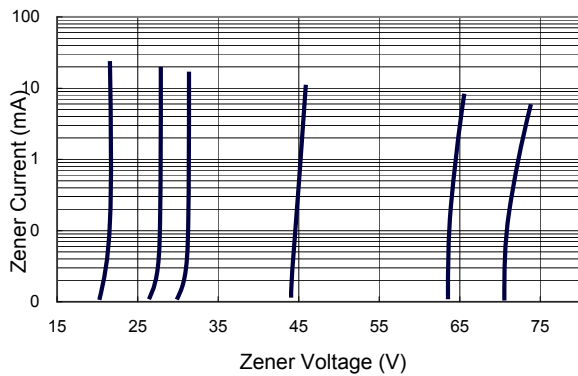
**FIG 1 Typical Forward Characteristics**



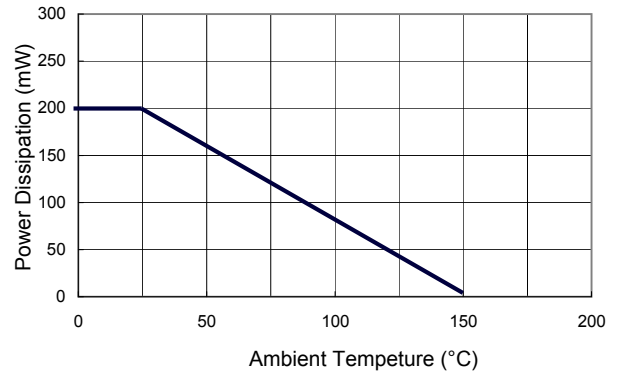
**FIG 2 Zener Breakdown Characteristics**



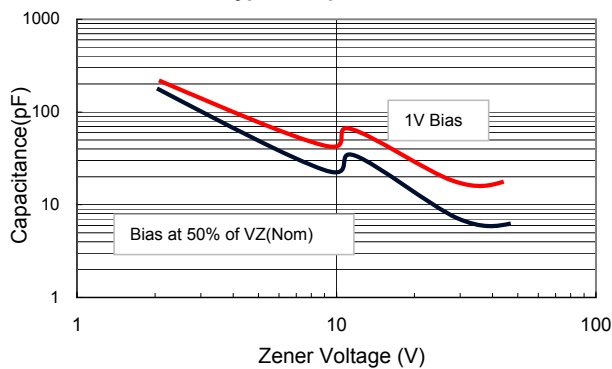
**FIG 3 Zener Breakdown Characteristics**



**FIG 4 Admissible Power Dissipation Curve**



**FIG 5 Typical Capacitance**



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

