

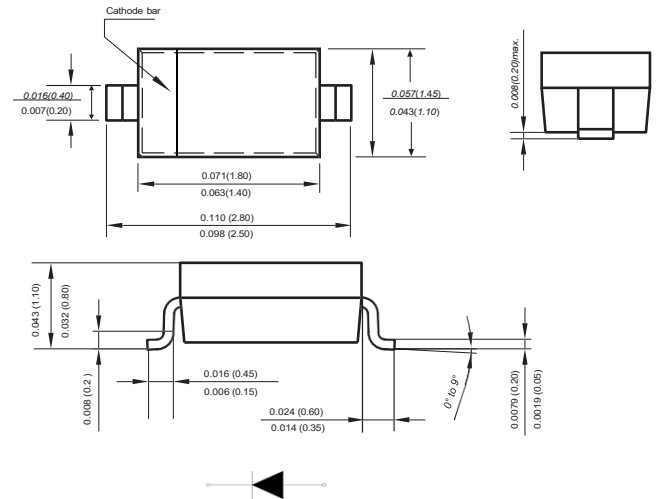
## SOD-323 Plastic-Encapsulate Diodes

### BZT52B2V0S-BZT52B75S ZENER DIODE

### SOD-323

#### FEATURES

- Total power dissipation: Max. 300mW
- Wide zener reverse voltage range 2.0V to 75V.
- Small plastic package suitable for surface mounted design.
- Tolerance approximately  $\pm 2\%$



Dimensions in inches and (millimeters)

#### Maximum Ratings( $T_a=25^\circ\text{C}$ unless otherwise specified)

| Characteristic                                              | Symbol          | Value      | Unit               |
|-------------------------------------------------------------|-----------------|------------|--------------------|
| Forward Voltage at $I_F = 10\text{mA}$ (Note 2)             | $V_F$           | 0.9        | V                  |
| Power Dissipation(Note 1)                                   | $P_d$           | 300        | mW                 |
| Typical thermal resistance from junction to ambient(Note 1) | $R_{\theta JA}$ | 417        | $^\circ\text{C/W}$ |
| Junction Temperature                                        | $T_j$           | 150        | $^\circ\text{C}$   |
| Storage Temperature Range                                   | $T_{stg}$       | -55 ~ +150 | $^\circ\text{C}$   |

Notes: 1. Thermal resistance from junction to ambient at P.C.B. mounted with 2.0" X 2.0" (5 X 5 cm) copper areas pads.

2. Short duration test pulse used to minimize self-heating effect

3.  $f = 1\text{kHz}$

## ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Type       | Marking | Zener Voltage Range <sup>(1)</sup>    |         |         |                 | Dynamic Impedance                     | Reverse Current |                   |
|------------|---------|---------------------------------------|---------|---------|-----------------|---------------------------------------|-----------------|-------------------|
|            |         | V <sub>ZT</sub> (at I <sub>ZT</sub> ) |         |         | I <sub>ZT</sub> | Z <sub>ZT</sub> (at I <sub>ZT</sub> ) | I <sub>R</sub>  | at V <sub>R</sub> |
|            |         | Min (V)                               | Nom (V) | Max (V) | (mA)            | Max (Ω)                               | Max (μA)        | (V)               |
| BZT52B2V0S | 20B     | 1.96                                  | 2       | 2.04    | 5               | 100                                   | 120             | 0.5               |
| BZT52B2V2S | 20C     | 2.16                                  | 2.2     | 2.24    | 5               | 100                                   | 120             | 0.7               |
| BZT52B2V4S | 2C1     | 2.35                                  | 2.4     | 2.45    | 5               | 100                                   | 120             | 1                 |
| BZT52B2V7S | 2D1     | 2.65                                  | 2.7     | 2.75    | 5               | 110                                   | 120             | 1                 |
| BZT52B3V0S | 2E1     | 2.94                                  | 3       | 3.06    | 5               | 120                                   | 50              | 1                 |
| BZT52B3V3S | 2F1     | 3.23                                  | 3.3     | 3.37    | 5               | 130                                   | 20              | 1                 |
| BZT52B3V6S | 2H1     | 3.53                                  | 3.6     | 3.67    | 5               | 130                                   | 10              | 1                 |
| BZT52B3V9S | 2J1     | 3.82                                  | 3.9     | 3.98    | 5               | 130                                   | 5               | 1                 |
| BZT52B4V3S | 2K1     | 4.21                                  | 4.3     | 4.39    | 5               | 130                                   | 5               | 1                 |
| BZT52B4V7S | 2M1     | 4.61                                  | 4.7     | 4.79    | 5               | 130                                   | 2               | 1                 |
| BZT52B5V1S | 2N1     | 5                                     | 5.1     | 5.20    | 5               | 130                                   | 2               | 1.5               |
| BZT52B5V6S | 2P1     | 5.49                                  | 5.6     | 5.71    | 5               | 80                                    | 1               | 2.5               |
| BZT52B6V2S | 2R1     | 6.08                                  | 6.2     | 6.32    | 5               | 50                                    | 1               | 3                 |
| BZT52B6V8S | 2X1     | 6.66                                  | 6.8     | 6.94    | 5               | 30                                    | 0.5             | 3.5               |
| BZT52B7V5S | 2Y1     | 7.35                                  | 7.5     | 7.65    | 5               | 30                                    | 0.5             | 4                 |
| BZT52B8V2S | 2Z1     | 8.04                                  | 8.2     | 8.36    | 5               | 30                                    | 0.5             | 5                 |
| BZT52B9V1S | 2A2     | 8.92                                  | 9.1     | 9.28    | 5               | 30                                    | 0.5             | 6                 |
| BZT52B10S  | 2B2     | 9.8                                   | 10      | 10.2    | 5               | 30                                    | 0.1             | 7                 |
| BZT52B11S  | 2C2     | 10.78                                 | 11      | 11.22   | 5               | 30                                    | 0.1             | 8                 |
| BZT52B12S  | 2D2     | 11.76                                 | 12      | 12.24   | 5               | 35                                    | 0.1             | 9                 |
| BZT52B13S  | 2E2     | 12.74                                 | 13      | 13.26   | 5               | 35                                    | 0.1             | 10                |
| BZT52B15S  | 2F2     | 14.7                                  | 15      | 15.3    | 5               | 40                                    | 0.1             | 11                |
| BZT52B16S  | 2H2     | 15.68                                 | 16      | 16.32   | 5               | 40                                    | 0.1             | 12                |
| BZT52B18S  | 2J2     | 17.64                                 | 18      | 18.36   | 5               | 45                                    | 0.1             | 13                |
| BZT52B20S  | 2K2     | 19.6                                  | 20      | 20.4    | 5               | 50                                    | 0.1             | 15                |
| BZT52B22S  | 2M2     | 21.56                                 | 22      | 22.44   | 5               | 55                                    | 0.1             | 17                |
| BZT52B24S  | 2N2     | 23.52                                 | 24      | 24.48   | 5               | 60                                    | 0.1             | 19                |
| BZT52B27S  | 2P2     | 26.46                                 | 27      | 27.54   | 2               | 70                                    | 0.1             | 21                |
| BZT52B30S  | 2R2     | 29.4                                  | 30      | 30.6    | 2               | 80                                    | 0.1             | 23                |
| BZT52B33S  | 2X2     | 32.34                                 | 33      | 33.66   | 2               | 80                                    | 0.1             | 25                |
| BZT52B36S  | 2Y2     | 35.28                                 | 36      | 36.72   | 2               | 90                                    | 0.1             | 27                |
| BZT52B39S  | 2Z2     | 38.22                                 | 39      | 39.78   | 2               | 100                                   | 0.1             | 30                |
| BZT52B43S  | 2A3     | 42.14                                 | 43      | 43.86   | 2               | 130                                   | 0.1             | 33                |
| BZT52B47S  | 2B3     | 46.06                                 | 47      | 47.94   | 2               | 150                                   | 0.1             | 36                |
| BZT52B51S  | 2C3     | 49.98                                 | 51      | 52.02   | 2               | 180                                   | 0.1             | 39                |
| BZT52B56S  | 2D3     | 54.88                                 | 56      | 57.12   | 2               | 200                                   | 0.1             | 43                |
| BZT52B62S  | 2E3     | 60.76                                 | 62      | 63.24   | 2               | 215                                   | 0.1             | 47                |
| BZT52B68S  | 2F3     | 66.64                                 | 68      | 69.36   | 2               | 240                                   | 0.1             | 52                |
| BZT52B75S  | 2H3     | 73.5                                  | 75      | 76.5    | 2               | 265                                   | 0.1             | 56                |

(1) V<sub>ZT</sub> is tested with pulses (20 ms)

## Typical Characteristics



Fig. 1 - Forward characteristics



Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature



Fig. 3 - Dynamic Resistance vs. Zener Current

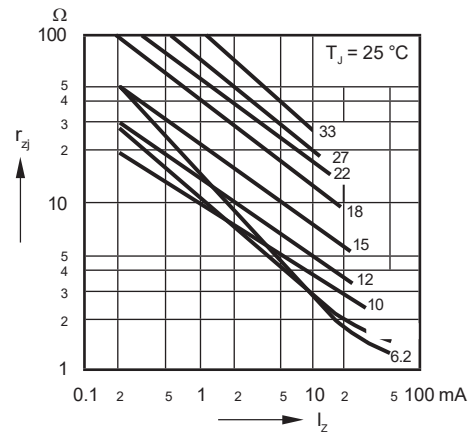


Fig. 4 - Dynamic Resistance vs. Zener Current



Fig. 5 - Dynamic Resistance vs. Zener Current

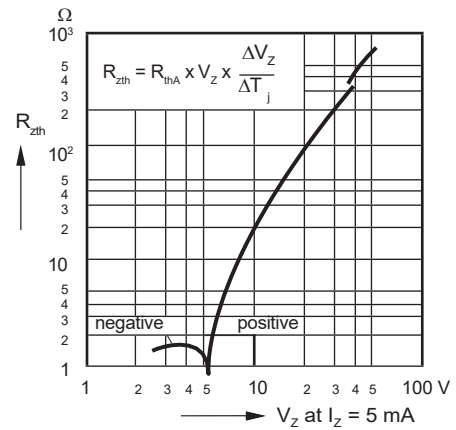


Fig. 6 - Thermal Differential Resistance vs. Zener Voltage

## Typical Characteristics



Fig. 7 - Dynamic Resistance vs. Zener Voltage



Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage



Fig. 9 - Change of Zener Voltage vs. Junction Temperature



Fig. 10 - Change of Zener Voltage vs. Junction Temperature

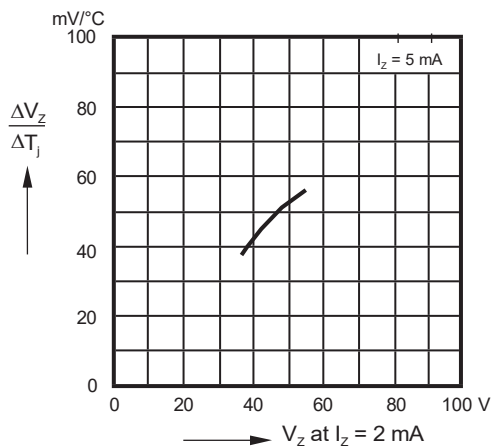


Fig. 11 - Temperature Dependence of Zener Voltage vs. Zener Voltage



Fig. 12 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

## Typical Characteristics

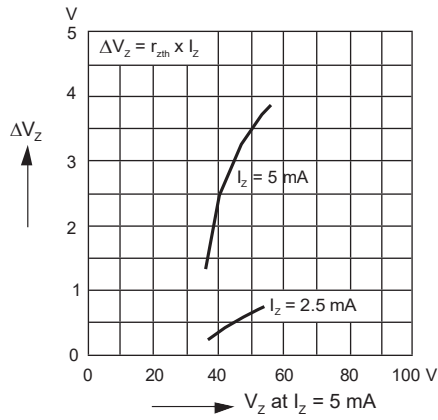


Fig. 13 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener Voltage

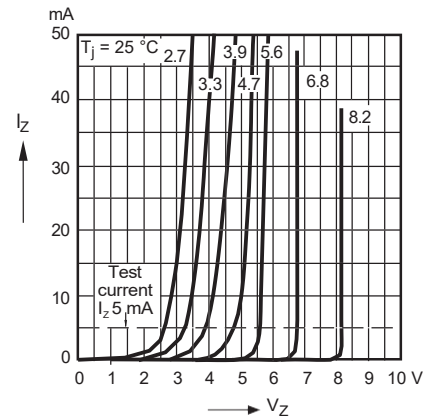


Fig. 14 - Breakdown Characteristics

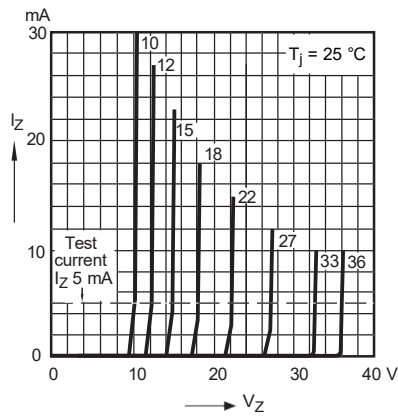


Fig. 15 - Breakdown Characteristics

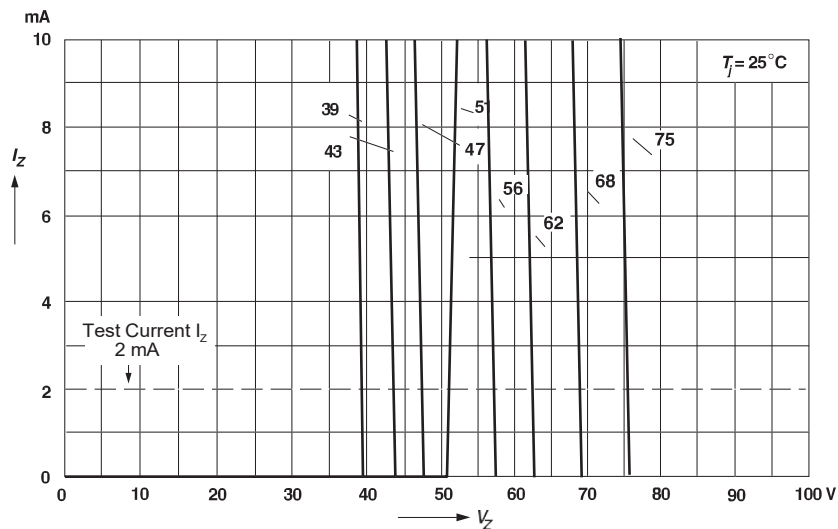


Fig. 16 - Breakdown Characteristics

The curve above is for reference only.