

## 500mW, 2.4V - 75V Zener Diode

### FEATURES

- Wide Zener voltage range selection: 2.4V to 75V
- $V_Z$  Tolerance Selection of  $\pm 2\%$
- Hermetically sealed glass
- RoHS Compliant

### APPLICATIONS

- Low voltage stabilizers or voltage references
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: DO-35
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 101.67mg (approximately)

| KEY PARAMETERS                |            |                    |
|-------------------------------|------------|--------------------|
| PARAMETER                     | VALUE      | UNIT               |
| $V_Z$                         | 2.4 - 75   | V                  |
| Test current $I_{ZT}$         | 2.5 - 5.0  | mA                 |
| $P_D$                         | 500        | mW                 |
| $V_F$ at $I_F = 100\text{mA}$ | 1          | V                  |
| $T_{J\text{ MAX}}$            | 175        | $^{\circ}\text{C}$ |
| Package                       | DO-35      |                    |
| Configuration                 | Single die |                    |



DO-35



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted) |           |             |                    |
|---|-----------|-------------|--------------------|
| PARAMETER   | SYMBOL    | VALUE       | UNIT               |
| Power dissipation   | $P_D$     | 500         | mW                 |
| Forward voltage @ $I_F = 100\text{mA}$  | $V_F$     | 1           | V                  |
| Junction temperature range  | $T_J$     | -55 to +175 | $^{\circ}\text{C}$ |
| Storage temperature range   | $T_{STG}$ | -55 to +175 | $^{\circ}\text{C}$ |

| THERMAL PERFORMANCE                    |                 |       |                      |
|--|-----------------|-------|----------------------|
| PARAMETER                              | SYMBOL          | LIMIT | UNIT                 |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 240   | $^{\circ}\text{C/W}$ |

## ELECTRICAL SPECIFICATIONS (T<sub>A</sub> = 25°C unless otherwise noted)

| PART NUMBER | MARKING CODE | ZENER VOLTAGE                    |       |       | TEST CURRENT    | REGULAR IMPEDANCE                 |                                   | TEST CURRENT    | LEAKAGE CURRENT                 |     |
|-------------|--------------|----------------------------------|-------|-------|-----------------|-----------------------------------|-----------------------------------|-----------------|---------------------------------|-----|
|             |              | V <sub>Z</sub> @ I <sub>ZT</sub> |       |       | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | I <sub>R</sub> @ V <sub>R</sub> |     |
|             |              | V                                |       |       | mA              | Ω                                 | Ω                                 | mA              | μA                              | V   |
|             |              | Min                              | Nom   | Max.  |                 | Max                               | Max                               |                 | Max                             |     |
| BZX55B2V4   | BZX55B2V4    | 2.35                             | 2.40  | 2.45  | 5               | 85                                | 600                               | 1.0             | 50                              | 1.0 |
| BZX55B2V7   | BZX55B2V7    | 2.65                             | 2.70  | 2.75  | 5               | 85                                | 600                               | 1.0             | 10                              | 1.0 |
| BZX55B3V0   | BZX55B3V0    | 2.94                             | 3.00  | 3.06  | 5               | 85                                | 600                               | 1.0             | 4.0                             | 1.0 |
| BZX55B3V3   | BZX55B3V3    | 3.23                             | 3.30  | 3.37  | 5               | 85                                | 600                               | 1.0             | 2.0                             | 1.0 |
| BZX55B3V6   | BZX55B3V6    | 3.53                             | 3.60  | 3.67  | 5               | 85                                | 600                               | 1.0             | 2.0                             | 1.0 |
| BZX55B3V9   | BZX55B3V9    | 3.82                             | 3.90  | 3.98  | 5               | 85                                | 600                               | 1.0             | 2.0                             | 1.0 |
| BZX55B4V3   | BZX55B4V3    | 4.21                             | 4.30  | 4.39  | 5               | 75                                | 600                               | 1.0             | 1.0                             | 1.0 |
| BZX55B4V7   | BZX55B4V7    | 4.61                             | 4.70  | 4.79  | 5               | 60                                | 600                               | 1.0             | 0.5                             | 1.0 |
| BZX55B5V1   | BZX55B5V1    | 5.00                             | 5.10  | 5.20  | 5               | 35                                | 550                               | 1.0             | 0.1                             | 1.0 |
| BZX55B5V6   | BZX55B5V6    | 5.49                             | 5.60  | 5.71  | 5               | 25                                | 450                               | 1.0             | 0.1                             | 1.0 |
| BZX55B6V2   | BZX55B6V2    | 6.08                             | 6.20  | 6.32  | 5               | 10                                | 200                               | 1.0             | 0.1                             | 2.0 |
| BZX55B6V8   | BZX55B6V8    | 6.66                             | 6.80  | 6.94  | 5               | 8                                 | 150                               | 1.0             | 0.1                             | 3.0 |
| BZX55B7V5   | BZX55B7V5    | 7.35                             | 7.50  | 7.65  | 5               | 7                                 | 50                                | 1.0             | 0.1                             | 5.0 |
| BZX55B8V2   | BZX55B8V2    | 8.04                             | 8.20  | 8.36  | 5               | 7                                 | 50                                | 1.0             | 0.1                             | 6.2 |
| BZX55B9V1   | BZX55B9V1    | 8.92                             | 9.10  | 9.28  | 5               | 10                                | 50                                | 1.0             | 0.1                             | 6.8 |
| BZX55B10    | BZX55B10     | 9.80                             | 10.00 | 10.20 | 5               | 15                                | 70                                | 1.0             | 0.1                             | 7.5 |
| BZX55B11    | BZX55B11     | 10.78                            | 11.00 | 11.22 | 5               | 20                                | 70                                | 1.0             | 0.1                             | 8.2 |
| BZX55B12    | BZX55B12     | 11.76                            | 12.00 | 12.24 | 5               | 20                                | 90                                | 1.0             | 0.1                             | 9.1 |
| BZX55B13    | BZX55B13     | 12.74                            | 13.00 | 13.26 | 5               | 26                                | 110                               | 1.0             | 0.1                             | 10  |
| BZX55B15    | BZX55B15     | 14.70                            | 15.00 | 15.30 | 5               | 30                                | 110                               | 1.0             | 0.1                             | 11  |
| BZX55B16    | BZX55B16     | 15.68                            | 16.00 | 16.32 | 5               | 40                                | 170                               | 1.0             | 0.1                             | 12  |
| BZX55B18    | BZX55B18     | 17.64                            | 18.00 | 18.36 | 5               | 50                                | 170                               | 1.0             | 0.1                             | 14  |
| BZX55B20    | BZX55B20     | 19.60                            | 20.00 | 20.40 | 5               | 55                                | 220                               | 1.0             | 0.1                             | 15  |
| BZX55B22    | BZX55B22     | 21.56                            | 22.00 | 22.44 | 5               | 55                                | 220                               | 1.0             | 0.1                             | 17  |
| BZX55B24    | BZX55B24     | 23.52                            | 24.00 | 24.48 | 5               | 80                                | 220                               | 1.0             | 0.1                             | 18  |
| BZX55B27    | BZX55B27     | 26.46                            | 27.00 | 27.54 | 5               | 80                                | 220                               | 1.0             | 0.1                             | 20  |
| BZX55B30    | BZX55B30     | 29.40                            | 30.00 | 30.6  | 5               | 80                                | 220                               | 1.0             | 0.1                             | 22  |
| BZX55B33    | BZX55B33     | 32.34                            | 33.00 | 33.66 | 5               | 80                                | 220                               | 1.0             | 0.1                             | 24  |
| BZX55B36    | BZX55B36     | 35.28                            | 36.00 | 36.72 | 5               | 80                                | 220                               | 1.0             | 0.1                             | 27  |
| BZX55B39    | BZX55B39     | 38.22                            | 39.00 | 39.78 | 2.5             | 90                                | 500                               | 0.5             | 0.1                             | 28  |
| BZX55B43    | BZX55B43     | 42.14                            | 43.00 | 43.86 | 2.5             | 90                                | 600                               | 0.5             | 0.1                             | 32  |
| BZX55B47    | BZX55B47     | 46.06                            | 47.00 | 47.94 | 2.5             | 110                               | 700                               | 0.5             | 0.1                             | 35  |
| BZX55B51    | BZX55B51     | 49.98                            | 51.00 | 52.02 | 2.5             | 125                               | 700                               | 0.5             | 0.1                             | 38  |
| BZX55B56    | BZX55B56     | 54.88                            | 56.00 | 57.12 | 2.5             | 135                               | 1000                              | 0.5             | 0.1                             | 42  |
| BZX55B62    | BZX55B62     | 60.76                            | 62.00 | 63.24 | 2.5             | 150                               | 1000                              | 0.5             | 0.1                             | 47  |
| BZX55B68    | BZX55B68     | 66.64                            | 68.00 | 69.36 | 2.5             | 160                               | 1000                              | 0.5             | 0.1                             | 51  |
| BZX55B75    | BZX55B75     | 73.50                            | 75.00 | 76.50 | 2.5             | 170                               | 1000                              | 0.5             | 0.1                             | 56  |

**Notes:**

1. Tolerance and voltage designation : the type numbers listed have Zener voltage as shown
2. The device numbers listed have a standard tolerance on the nominal Zener voltage of  $\pm 2\%$
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 ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$

| <b>ORDERING INFORMATION</b>        |                |                   |
|------------------------------------|----------------|-------------------|
| <b>ORDERING CODE<sup>(1)</sup></b> | <b>PACKAGE</b> | <b>PACKING</b>    |
| BZX55Bx R0G                        | DO-35          | 10,000 / 14" Reel |
| BZX55Bx A0G                        | DO-35          | 5,000 / Ammo Box  |

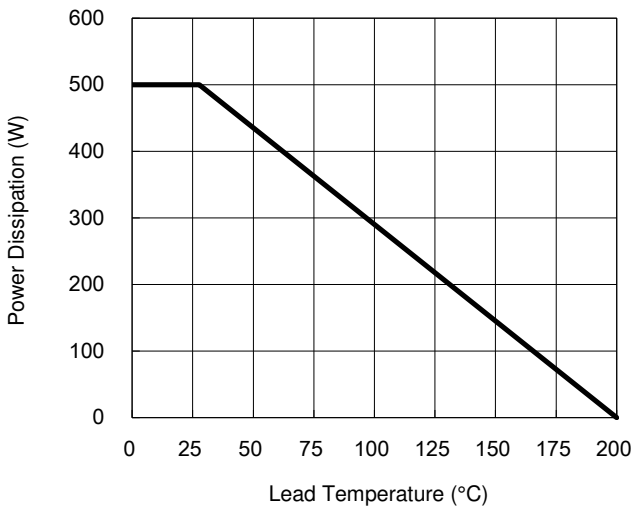
**Notes:**

1. "x" defines voltage from 2.4V (BZX55B2V4) to 75V (BZX55B75)

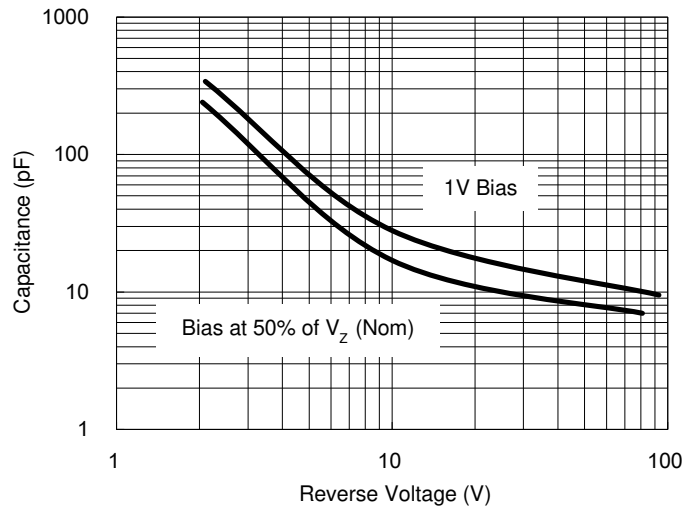
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

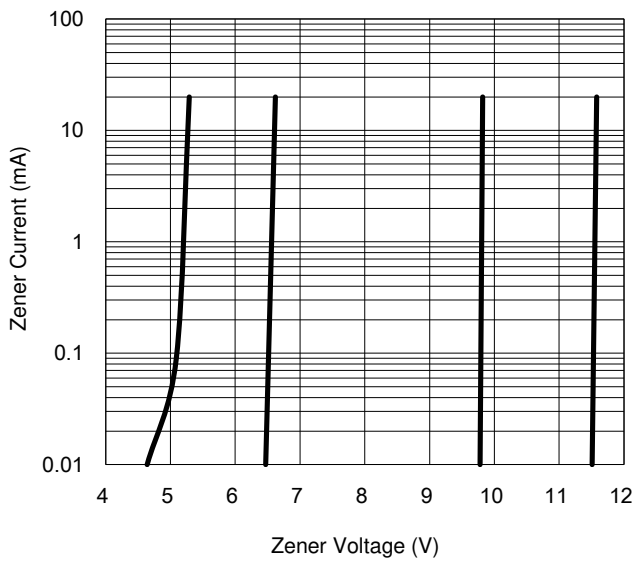
**Fig.1 Admissible Power Dissipation**



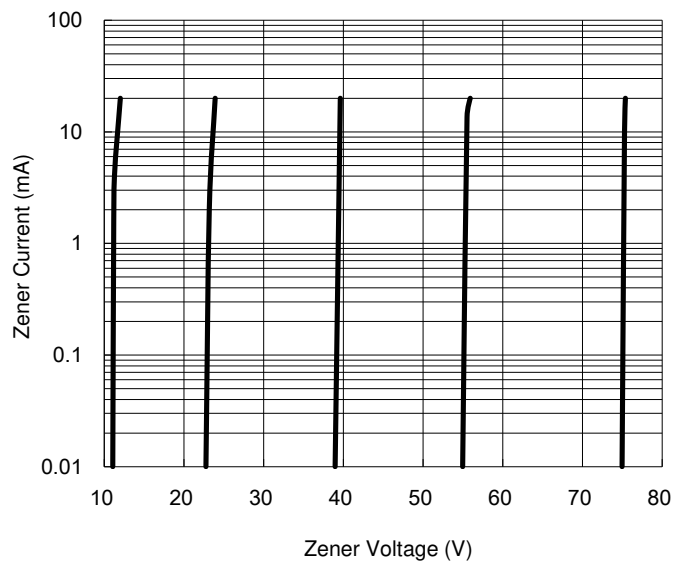
**Fig.2 Typical Junction Capacitance**



**Fig.3 Zener Breakdown Characteristics**



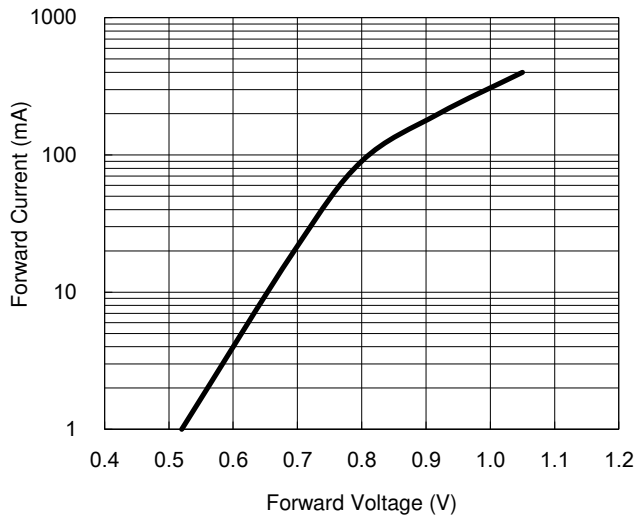
**Fig.4 Zener Breakdown Characteristics**



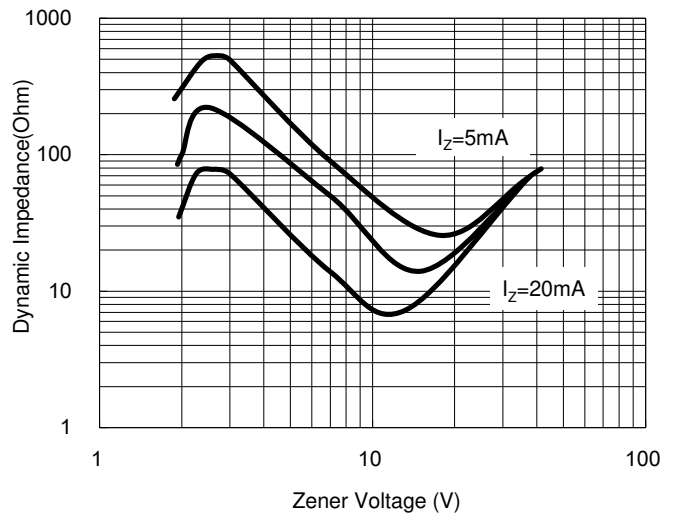
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.5 Typical Forward Characteristics**

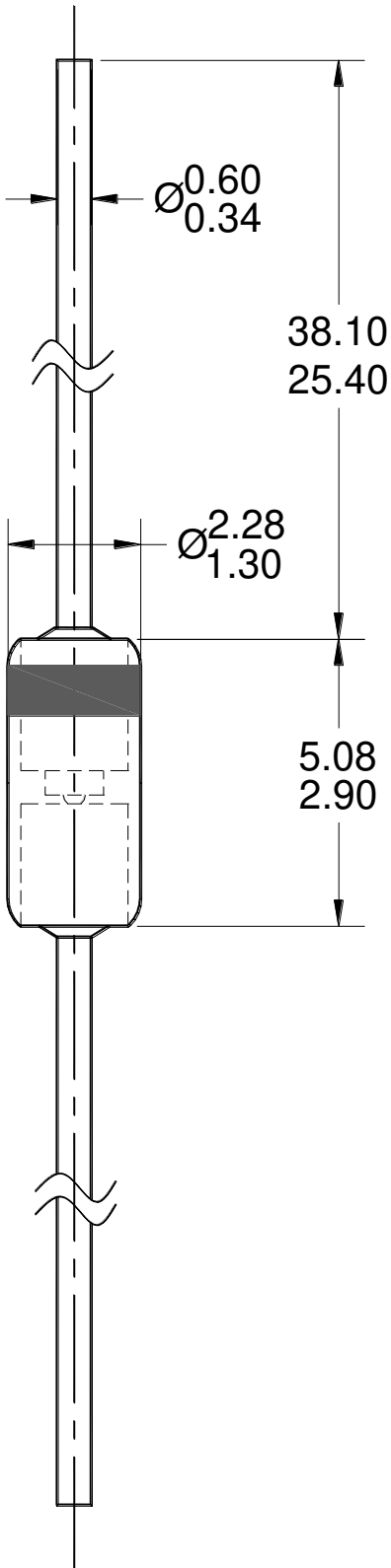


**Fig.6 Effect of Zener Voltage on Impedance**



**PACKAGE OUTLINE DIMENSIONS**

**DO-35**



**NOTES: UNLESS OTHERWISE SPECIFIED**

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
3. DWG NO. REF: HQ2SD07-DO35-058 REV A.



XX = MARKING CODE

**MARKING DIAGRAM**

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