

## 500mW 2% Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.4V to 75V
- VZ Tolerance Selection of  $\pm 2\%$
- Hermetically sealed glass
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

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

### MECHANICAL DATA

- Case: DO-35
- Packing code with suffix "G" means green compound (halogen-free)
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight:  $109 \pm 4$  mg (approximately)

| KEY PARAMETERS        |             |             |
|-----------------------|-------------|-------------|
| PARAMETER             | VALUE       | UNIT        |
| $V_Z$                 | 2.4-75      | V           |
| Test current $I_{ZT}$ | 2.5-5       | mA          |
| $P_{tot}$             | 500         | mW          |
| $V_F$ at $I_F=100mA$  | 1           | V           |
| $T_J$ MAX             | 175         | $^{\circ}C$ |
| Package               | DO-35       |             |
| Configuration         | Single dice |             |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^{\circ}C$ unless otherwise noted) |           |             |             |
|------------------------------------------------------------------------|-----------|-------------|-------------|
| PARAMETER                                                              | SYMBOL    | PART NUMBER | UNIT        |
| Forward voltage @ $I_F=100mA$                                          | $V_F$     | 1           | V           |
| Total power dissipation                                                | $P_{tot}$ | 500         | mW          |
| Junction temperature range                                             | $T_J$     | -55 ~ 175   | $^{\circ}C$ |
| Storage temperature range                                              | $T_{STG}$ | -55 ~ 175   | $^{\circ}C$ |

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

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

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

| <b>ORDERING INFORMATION</b> |                     |                            |                |                   |
|-----------------------------|---------------------|----------------------------|----------------|-------------------|
| <b>PART NO.</b>             | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>PACKAGE</b> | <b>PACKING</b>    |
| BZX55BXXX<br>(Note 1&2)     | R0                  | G                          | DO-35          | 10K / 14" Reel    |
|                             | A0                  |                            |                | 5K / Box ( Ammo ) |

**Notes:**

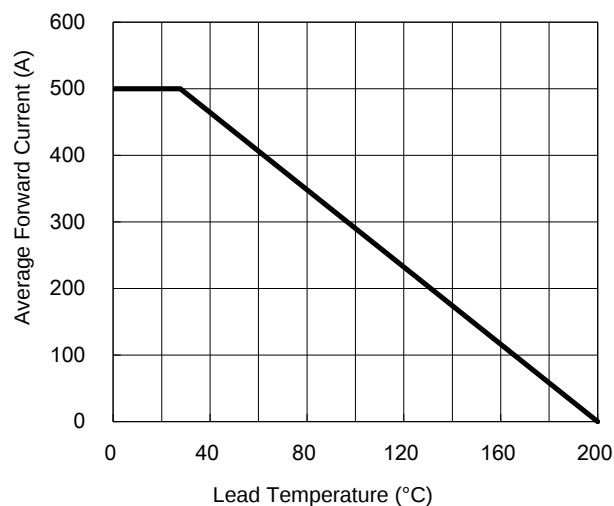
1. "xxx" defines voltage from 2.4V (BZX55B2V4) to 75V (BZX55B75)
2. Whole series with green compound

| <b>EXAMPLE</b>     |                 |                     |                            |                    |
|--------------------|-----------------|---------------------|----------------------------|--------------------|
| <b>EXAMPLE P/N</b> | <b>PART NO.</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>DESCRIPTION</b> |
| BZX55B75 R0G       | BZX55B75        | R0                  | G                          | Green compound     |

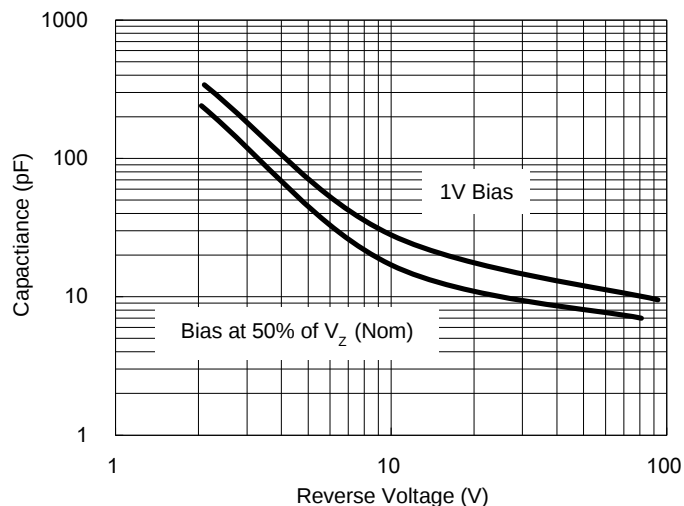
## CHARACTERISTICS CURVES

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

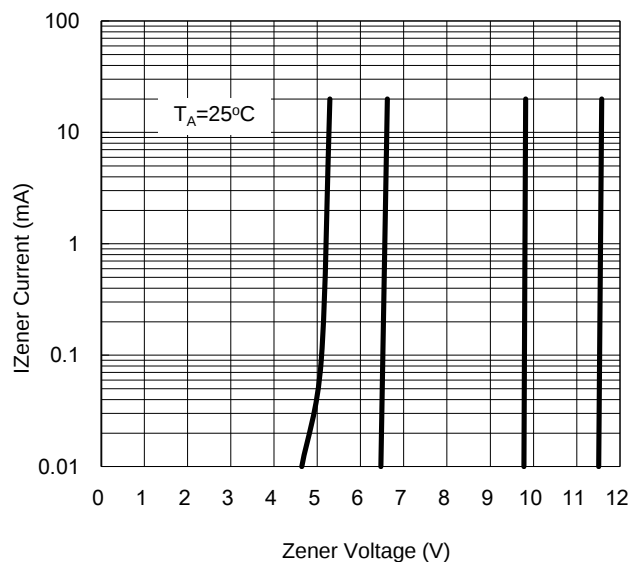
**Forward Current Derating Curve**



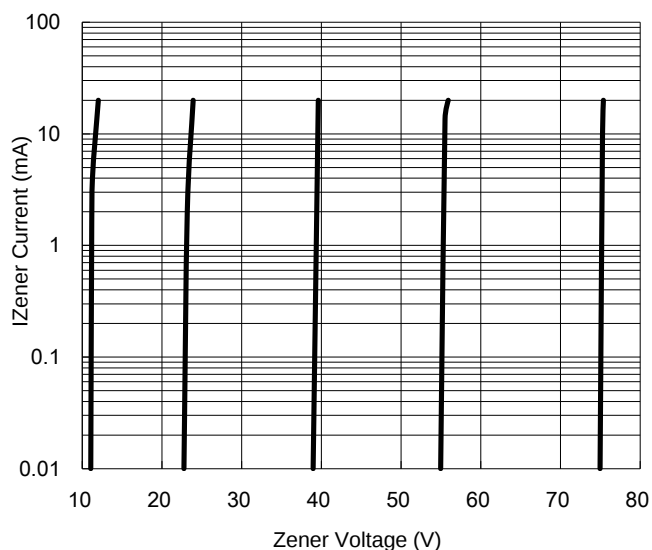
**Typical Junction Capacitance**



**Zener Breakdown Characteristics**



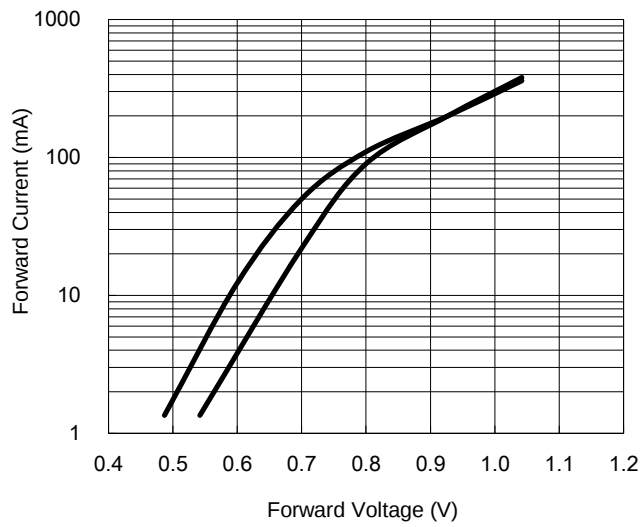
**Zener Breakdown Characteristics**



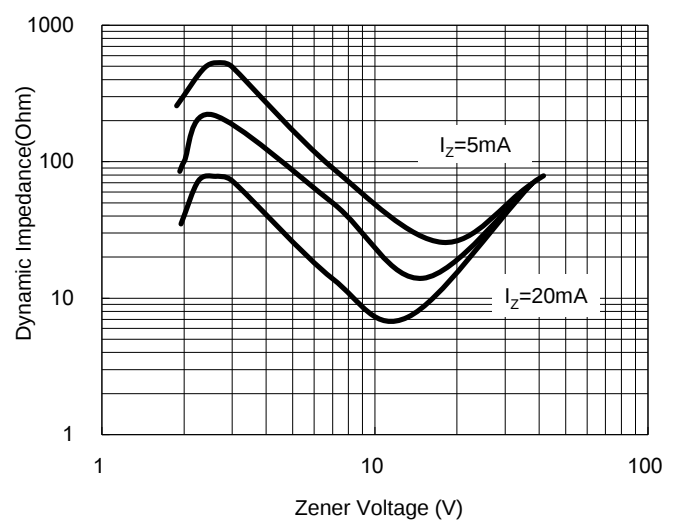
## CHARACTERISTICS CURVES

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

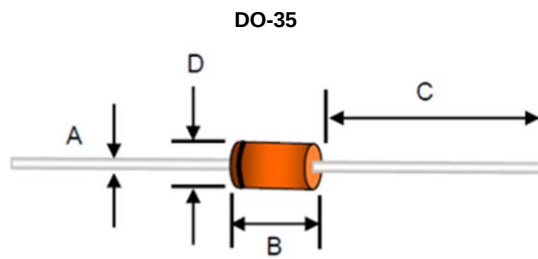
**Typical Forward Characteristics**



**Effect of Zener Voltage on Impedance**



## PACKAGE OUTLINE DIMENSION



| DIM. | Unit(mm) |       | Unit(inch) |       |
|------|----------|-------|------------|-------|
|      | Min      | Max   | Min        | Max   |
| A    | 0.34     | 0.60  | 0.013      | 0.024 |
| B    | 2.90     | 5.08  | 0.114      | 0.200 |
| C    | 25.40    | 38.10 | 1.000      | 1.500 |
| D    | 1.30     | 2.28  | 0.051      | 0.090 |

## MARKING DIAGRAM



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