

## 500mW 5% Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.0V to 75V
- VZ Tolerance Selection of  $\pm 5\%$
- 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

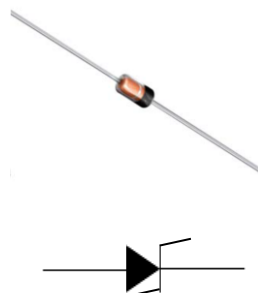
### APPLICATIONS

- 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        |
| $V_Z$                 | 2.0-75      | 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   | $^{\circ}C$ |

**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.            |     |
| BZX55C2V0   | 1.88           | 2.00  | 2.11  | 5.0          | 100               | 600               | 1.0          | 100             | 1.0 |
| BZX55C2V2   | 2.08           | 2.20  | 2.33  | 5.0          | 100               | 600               | 1.0          | 100             | 1.0 |
| BZX55C2V4   | 2.28           | 2.40  | 2.56  | 5.0          | 85                | 600               | 1.0          | 50              | 1.0 |
| BZX55C2V7   | 2.51           | 2.70  | 2.89  | 5.0          | 85                | 600               | 1.0          | 10              | 1.0 |
| BZX55C3V0   | 2.80           | 3.00  | 3.20  | 5.0          | 85                | 600               | 1.0          | 4.0             | 1.0 |
| BZX55C3V3   | 3.10           | 3.30  | 3.50  | 5.0          | 85                | 600               | 1.0          | 2.0             | 1.0 |
| BZX55C3V6   | 3.40           | 3.60  | 3.80  | 5.0          | 85                | 600               | 1.0          | 2.0             | 1.0 |
| BZX55C3V9   | 3.70           | 3.90  | 4.10  | 5.0          | 85                | 600               | 1.0          | 2.0             | 1.0 |
| BZX55C4V3   | 4.00           | 4.30  | 4.60  | 5.0          | 75                | 600               | 1.0          | 1.0             | 1.0 |
| BZX55C4V7   | 4.40           | 4.70  | 5.00  | 5.0          | 60                | 600               | 1.0          | 0.5             | 1.0 |
| BZX55C5V1   | 4.80           | 5.10  | 5.40  | 5.0          | 35                | 550               | 1.0          | 0.1             | 1.0 |
| BZX55C5V6   | 5.20           | 5.60  | 6.00  | 5.0          | 25                | 450               | 1.0          | 0.1             | 1.0 |
| BZX55C6V2   | 5.80           | 6.20  | 6.60  | 5.0          | 10                | 200               | 1.0          | 0.1             | 2.0 |
| BZX55C6V8   | 6.40           | 6.80  | 7.20  | 5.0          | 8                 | 150               | 1.0          | 0.1             | 3.0 |
| BZX55C7V5   | 7.00           | 7.50  | 7.90  | 5.0          | 7                 | 50                | 1.0          | 0.1             | 5.0 |
| BZX55C8V2   | 7.70           | 8.20  | 8.70  | 5.0          | 7                 | 50                | 1.0          | 0.1             | 6.2 |
| BZX55C9V1   | 8.50           | 9.10  | 9.60  | 5.0          | 10                | 50                | 1.0          | 0.1             | 6.8 |
| BZX55C10    | 9.40           | 10.00 | 10.60 | 5.0          | 15                | 70                | 1.0          | 0.1             | 7.5 |
| BZX55C11    | 10.40          | 11.00 | 11.60 | 5.0          | 20                | 70                | 1.0          | 0.1             | 8.2 |
| BZX55C12    | 11.40          | 12.00 | 12.70 | 5.0          | 20                | 90                | 1.0          | 0.1             | 9.1 |
| BZX55C13    | 12.40          | 13.00 | 14.10 | 5.0          | 26                | 110               | 1.0          | 0.1             | 10  |
| BZX55C15    | 13.80          | 15.00 | 15.60 | 5.0          | 30                | 110               | 1.0          | 0.1             | 11  |
| BZX55C16    | 15.30          | 16.00 | 17.10 | 5.0          | 40                | 170               | 1.0          | 0.1             | 12  |
| BZX55C18    | 16.80          | 18.00 | 19.10 | 5.0          | 50                | 170               | 1.0          | 0.1             | 14  |
| BZX55C20    | 18.80          | 20.00 | 21.20 | 5.0          | 55                | 220               | 1.0          | 0.1             | 15  |
| BZX55C22    | 20.80          | 22.00 | 23.30 | 5.0          | 55                | 220               | 1.0          | 0.1             | 17  |
| BZX55C24    | 22.80          | 24.00 | 25.60 | 5.0          | 80                | 220               | 1.0          | 0.1             | 18  |
| BZX55C27    | 25.10          | 27.00 | 28.90 | 5.0          | 80                | 220               | 1.0          | 0.1             | 20  |
| BZX55C30    | 28.00          | 30.00 | 32.00 | 5.0          | 80                | 220               | 1.0          | 0.1             | 22  |
| BZX55C33    | 31.00          | 33.00 | 35.00 | 5.0          | 80                | 220               | 1.0          | 0.1             | 24  |
| BZX55C36    | 34.00          | 36.00 | 38.00 | 5.0          | 80                | 220               | 1.0          | 0.1             | 27  |
| BZX55C39    | 37.00          | 39.00 | 41.00 | 2.5          | 90                | 500               | 0.5          | 0.1             | 28  |
| BZX55C43    | 40.00          | 43.00 | 46.00 | 2.5          | 90                | 600               | 0.5          | 0.1             | 32  |
| BZX55C47    | 44.00          | 47.00 | 50.00 | 2.5          | 110               | 700               | 0.5          | 0.1             | 35  |
| BZX55C51    | 48.00          | 51.00 | 54.00 | 2.5          | 125               | 700               | 0.5          | 0.1             | 38  |
| BZX55C56    | 52.00          | 56.00 | 60.00 | 2.5          | 135               | 1000              | 0.5          | 0.1             | 42  |
| BZX55C62    | 58.00          | 62.00 | 66.00 | 2.5          | 150               | 1000              | 0.5          | 0.1             | 47  |
| BZX55C68    | 64.00          | 68.00 | 72.00 | 2.5          | 160               | 1000              | 0.5          | 0.1             | 51  |
| BZX55C75    | 70.00          | 75.00 | 80.00 | 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  $\pm 5\%$
3. Specials available include : nominal Zener voltages between the voltages shown and tighter voltage, for detailed information on price, availability and delivery, contact your nearest Taiwan Semiconductor representative.
4. Zener impedance (ZZ) derivation : Zener impedance is derived from the 60-cycle ac voltage, which results when ac current having an RMS value equal to 10% of the dc Zener current (IZT) is superimposed to IZT

| <b>ORDERING INFORMATION</b> |                     |                            |                |                 |
|-----------------------------|---------------------|----------------------------|----------------|-----------------|
| <b>PART NO.</b>             | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>PACKAGE</b> | <b>PACKING</b>  |
| BZX55CXXX<br>(Note 1&2)     | R0                  | G                          | DO-35          | 10K / 14" Reel  |
|                             | A0                  |                            |                | 5K / Box (Ammo) |

**Notes:**

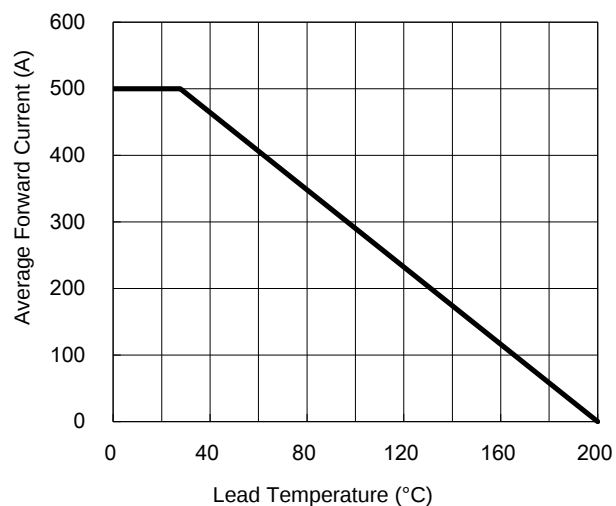
1. "xxx" defines voltage from 2.0V (BZX55C2V0) to 75V (BZX55C75)
2. Whole series with green compound

| <b>EXAMPLE</b>     |                 |                     |                            |                    |
|--------------------|-----------------|---------------------|----------------------------|--------------------|
| <b>EXAMPLE P/N</b> | <b>PART NO.</b> | <b>PACKING CODE</b> | <b>PACKING CODE SUFFIX</b> | <b>DESCRIPTION</b> |
| BZX55C75 R0G       | BZX55C75        | R0                  | G                          | Green compound     |

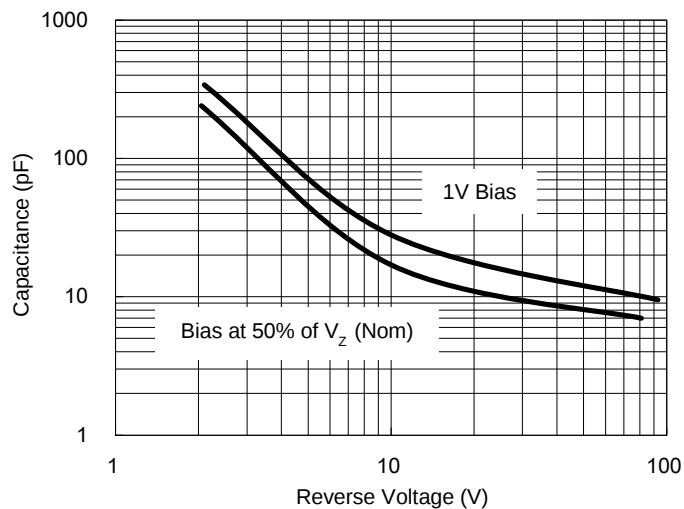
## CHARACTERISTICS CURVES

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

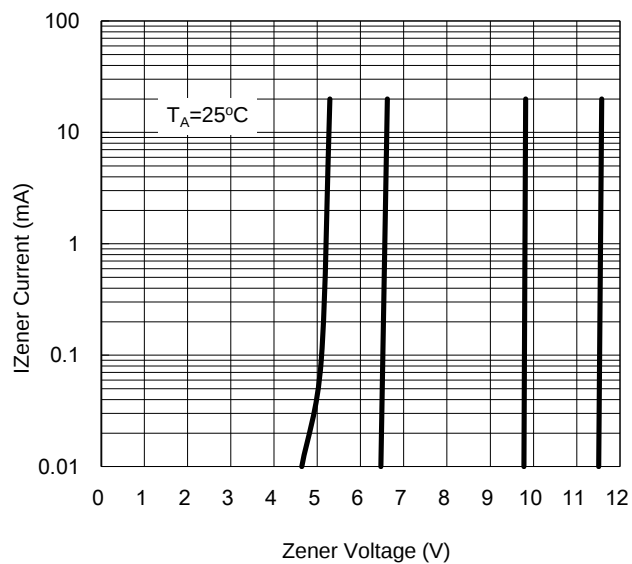
**Forward Current Derating Curve**



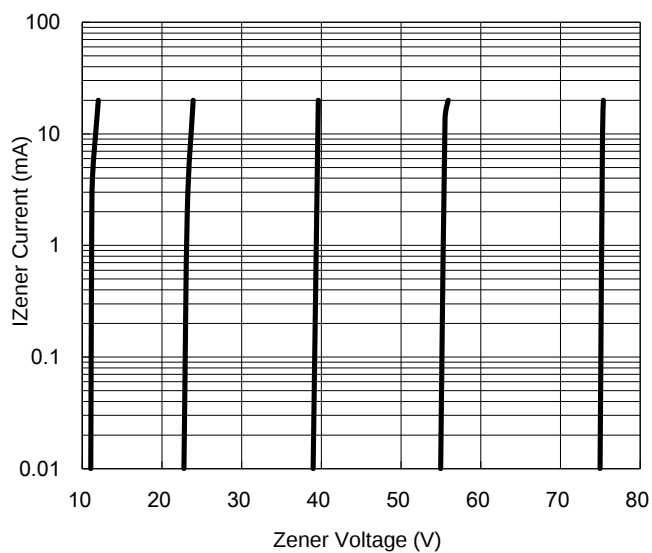
**Typical Junction Capacitance**



**Zener Breakdown Characteristics**



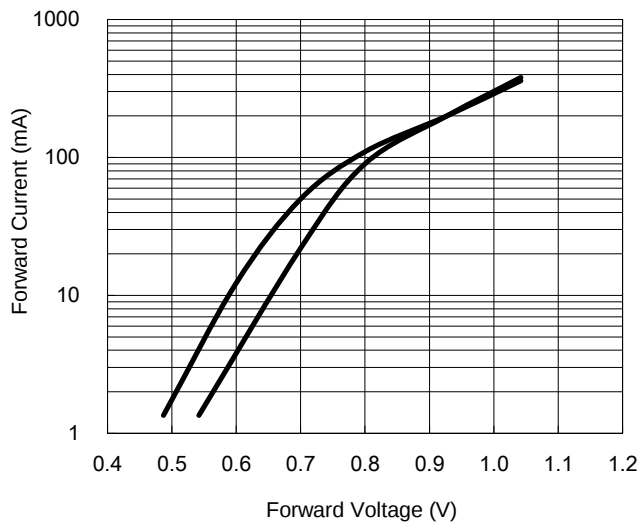
**Zener Breakdown Characteristics**



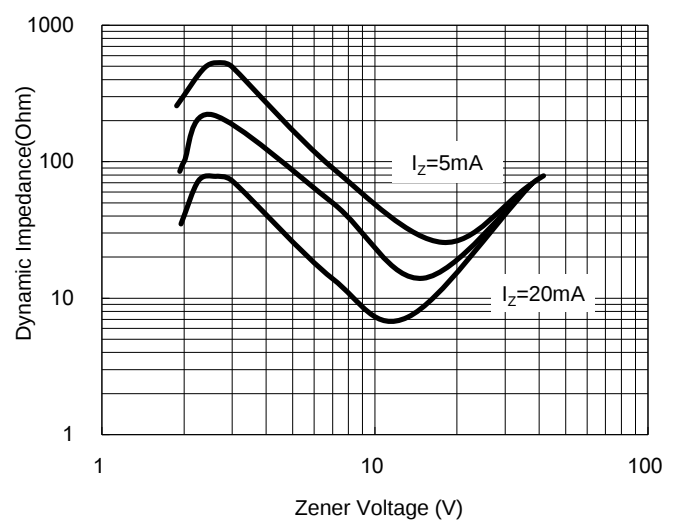
## CHARACTERISTICS CURVES

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

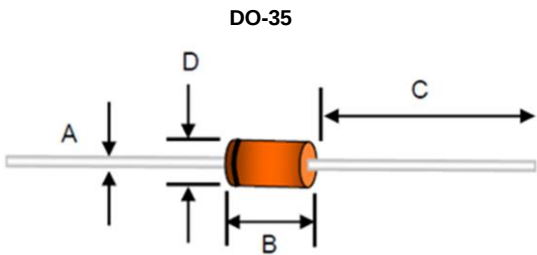
**Typical Forward Characteristics**



**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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