

## 500mW, 2% Tolerance Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.4V to 75V
- $V_Z$  tolerance selection of  $\pm 2\%$
- 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: Mini-MELF
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 0.03g (approximately)

| KEY PARAMETERS        |            |      |
|-----------------------|------------|------|
| PARAMETER             | VALUE      | UNIT |
| $V_Z$                 | 2.4-75     | V    |
| Test current $I_{ZT}$ | 5          | mA   |
| $P_D$                 | 500        | mW   |
| VF at $I_F=100mA$     | 1          | V    |
| $T_J$ Max.            | 175        | °C   |
| Package               | Mini-MELF  |      |
| Configuration         | Single die |      |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |           |             |      |
|---|-----------|-------------|------|
| PARAMETER   | SYMBOL    | VALUE       | UNIT |
| Forward voltage @ $I_F=100mA$   | $V_F$     | 1           | V    |
| Power dissipation   | $P_D$     | 500         | mW   |
| Junction temperature range  | $T_J$     | -65 to +175 | °C   |
| Storage temperature range   | $T_{STG}$ | -65 to +175 | °C   |

| THERMAL PERFORMANCE                    |                 |     |      |
|--|-----------------|-----|------|
| PARAMETER                              | SYMBOL          | TYP | UNIT |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 300 | °C/W |

| <b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ 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.            |     |
| BZV55B2V4   | 2.35           | 2.4  | 2.45  | 5            | 85                | 600               | 1.0          | 50              | 1.0 |
| BZV55B2V7   | 2.65           | 2.7  | 2.75  | 5            | 85                | 600               | 1.0          | 10              | 1.0 |
| BZV55B3V0   | 2.94           | 3.0  | 3.06  | 5            | 85                | 600               | 1.0          | 4               | 1.0 |
| BZV55B3V3   | 3.23           | 3.3  | 3.37  | 5            | 85                | 600               | 1.0          | 2               | 1.0 |
| BZV55B3V6   | 3.53           | 3.6  | 3.67  | 5            | 85                | 600               | 1.0          | 2               | 1.0 |
| BZV55B3V9   | 3.82           | 3.9  | 3.98  | 5            | 85                | 600               | 1.0          | 2               | 1.0 |
| BZV55B4V3   | 4.21           | 4.3  | 4.39  | 5            | 75                | 600               | 1.0          | 1               | 1.0 |
| BZV55B4V7   | 4.61           | 4.7  | 4.79  | 5            | 60                | 600               | 1.0          | 0.5             | 1.0 |
| BZV55B5V1   | 5.00           | 5.1  | 5.20  | 5            | 35                | 550               | 1.0          | 0.1             | 1.0 |
| BZV55B5V6   | 5.49           | 5.6  | 5.71  | 5            | 25                | 450               | 1.0          | 0.1             | 1.0 |
| BZV55B6V2   | 6.08           | 6.2  | 6.32  | 5            | 10                | 200               | 1.0          | 0.1             | 2.0 |
| BZV55B6V8   | 6.66           | 6.8  | 6.94  | 5            | 8                 | 150               | 1.0          | 0.1             | 3.0 |
| BZV55B7V5   | 7.35           | 7.5  | 7.65  | 5            | 7                 | 50                | 1.0          | 0.1             | 5.0 |
| BZV55B8V2   | 8.04           | 8.2  | 8.36  | 5            | 7                 | 50                | 1.0          | 0.1             | 6.2 |
| BZV55B9V1   | 8.92           | 9.1  | 9.28  | 5            | 10                | 50                | 1.0          | 0.1             | 6.8 |
| BZV55B10  | 9.80           | 10   | 10.20 | 5            | 15                | 70                | 1.0          | 0.1             | 7.5 |
| BZV55B11  | 10.78          | 11   | 11.22 | 5            | 20                | 70                | 1.0          | 0.1             | 8.2 |
| BZV55B12  | 11.76          | 12   | 12.24 | 5            | 20                | 90                | 1.0          | 0.1             | 9.1 |
| BZV55B13  | 12.74          | 13   | 13.26 | 5            | 26                | 110               | 1.0          | 0.1             | 10  |
| BZV55B15  | 14.70          | 15   | 15.30 | 5            | 30                | 110               | 1.0          | 0.1             | 11  |
| BZV55B16  | 15.68          | 16   | 16.32 | 5            | 40                | 170               | 1.0          | 0.1             | 12  |
| BZV55B18  | 17.64          | 18   | 18.36 | 5            | 50                | 170               | 1.0          | 0.1             | 13  |
| BZV55B20  | 19.60          | 20   | 20.40 | 5            | 55                | 220               | 1.0          | 0.1             | 15  |
| BZV55B22  | 21.56          | 22   | 22.44 | 5            | 55                | 220               | 1.0          | 0.1             | 16  |
| BZV55B24  | 23.52          | 24   | 24.48 | 5            | 80                | 220               | 1.0          | 0.1             | 18  |
| BZV55B27  | 26.46          | 27   | 27.54 | 5            | 80                | 220               | 1.0          | 0.1             | 20  |
| BZV55B30  | 29.40          | 30   | 30.60 | 5            | 80                | 220               | 1.0          | 0.1             | 22  |
| BZV55B33  | 32.34          | 33   | 33.66 | 5            | 80                | 220               | 1.0          | 0.1             | 24  |
| BZV55B36  | 35.28          | 36   | 36.72 | 5            | 80                | 220               | 1.0          | 0.1             | 27  |
| BZV55B39  | 38.22          | 39   | 39.78 | 2.5          | 90                | 500               | 0.5          | 0.1             | 28  |
| BZV55B43  | 42.14          | 43   | 43.86 | 2.5          | 90                | 600               | 0.5          | 0.1             | 32  |
| BZV55B47  | 46.06          | 47   | 47.94 | 2.5          | 110               | 700               | 0.5          | 0.1             | 35  |
| BZV55B51  | 49.98          | 51   | 52.02 | 2.5          | 125               | 700               | 0.5          | 0.1             | 38  |
| BZV55B56  | 54.88          | 56   | 57.12 | 2.5          | 135               | 1000              | 0.5          | 0.1             | 42  |
| BZV55B62  | 60.76          | 62   | 63.24 | 2.5          | 150               | 1000              | 0.5          | 0.1             | 47  |
| BZV55B68  | 66.64          | 68   | 69.36 | 2.5          | 160               | 1000              | 0.5          | 0.1             | 51  |
| BZV55B75  | 73.50          | 75   | 76.50 | 2.5          | 170               | 1000              | 0.5          | 0.1             | 56  |

**Notes:**

1. The zener voltage ( $V_Z$ ) is tested under pulse condition of 30ms.
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>PART NO.</b><br>(Note 1) | <b>PACKAGE</b> | <b>PACKING</b> |
| BZV55Bxxx L0                | MINI MELF      | 10K / 13" Reel |
| BZV55Bxxx L0G               | MINI MELF      | 10K / 13" Reel |
| BZV55Bxxx L1                | MINI MELF      | 2.5K / 7" Reel |
| BZV55Bxxx L1G               | MINI MELF      | 2.5K / 7" Reel |

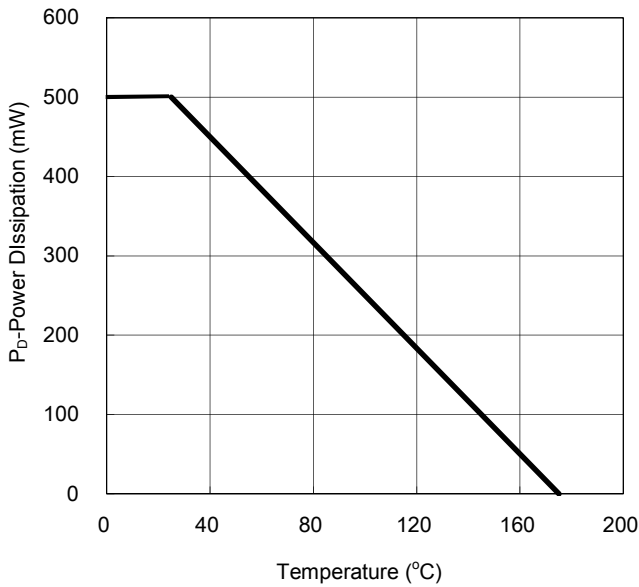
**Notes:**

1. "xxx" defines voltage from 2.4V (BZV55B2V4) to 75V (BZV55B75)

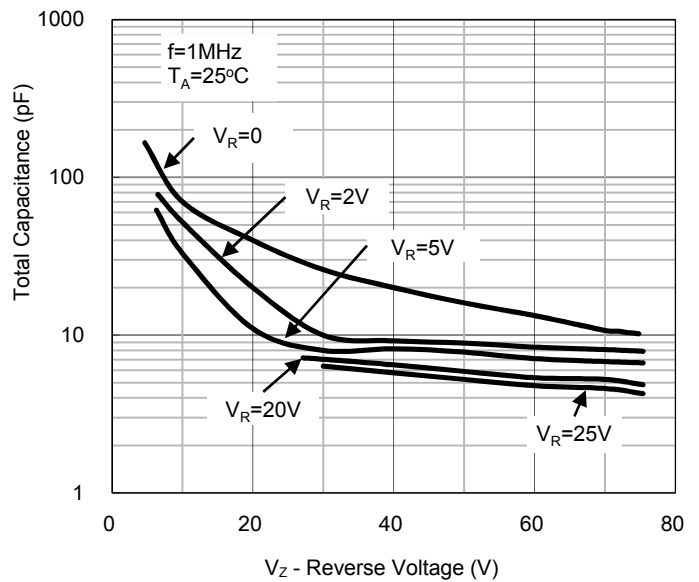
**CHARACTERISTICS CURVES**

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

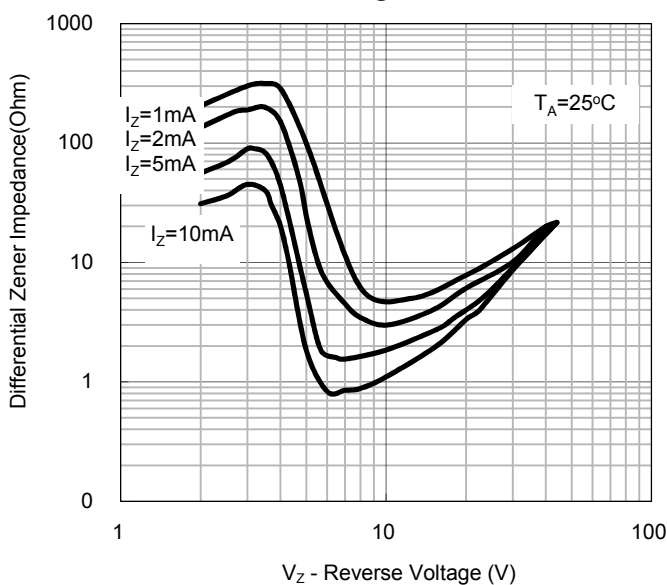
**Fig. 1 Power Dissipation VS. Ambient Temperature**



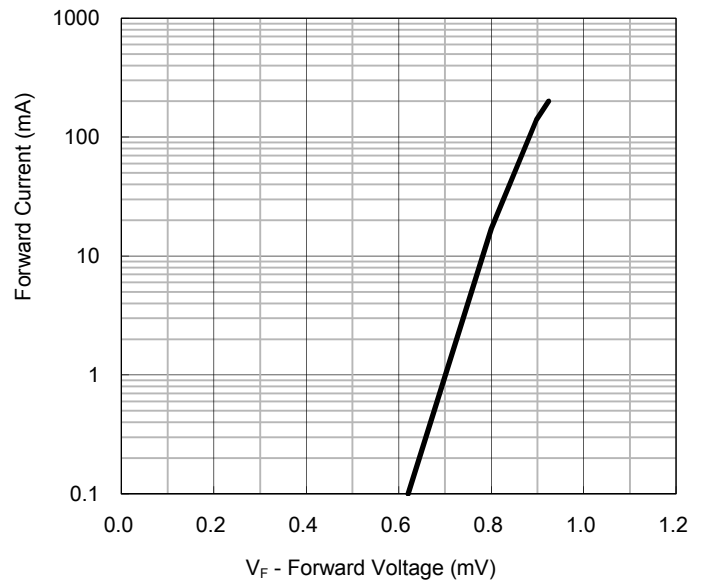
**Fig. 2 Total Capacitance**



**Fig. 3 Differential Impedance VS. Zener Voltage**

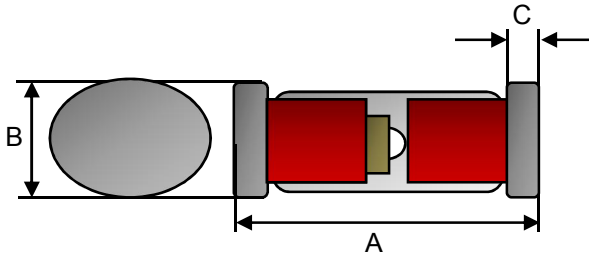


**Fig. 4 Forward Current VS. Forward Voltage**



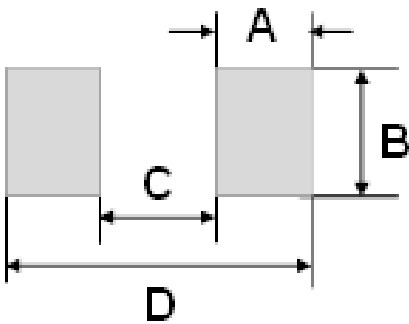
**PACKAGE OUTLINE DIMENSION**

Mini-MELF



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 3.30      | 3.70 | 0.130       | 0.146 |
| B    | 1.40      | 1.60 | 0.055       | 0.063 |
| C    | 0.20      | 0.50 | 0.008       | 0.020 |

**SUGGEST PAD LAYOUT**



| DIM. | Unit (mm) | Unit (inch) |
|------|-----------|-------------|
|      | Typ.      | Typ.        |
| A    | 1.25      | 0.049       |
| B    | 2.00      | 0.079       |
| C    | 2.50      | 0.098       |
| D    | 5.00      | 0.197       |

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