

500mW, 5% Tolerance SMD Zener Diodes

FEATURES

- Wide Zener voltage range selection: 2.4V to 75V
- V_Z tolerance selection of $\pm 5\%$
- 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
- 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: 31mg (approximately)

| KEY PARAMETERS | | |
|-----------------------|------------|-------------|
| PARAMETER | VALUE | UNIT |
| V_Z | 2.4-75 | V |
| Test current I_{ZT} | 5 | mA |
| P_D | 500 | mW |
| V_F at $I_F=10mA$ | 1 | V |
| T_J Max. | 175 | $^{\circ}C$ |
| Package | Mini-MELF | |
| Configuration | Single die | |



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}C$ unless otherwise noted) | | | |
|--|-----------|-------------|-------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Forward voltage @ $I_F=10mA$ | V_F | 1 | V |
| Power dissipation | P_D | 500 | mW |
| Junction temperature range | T_J | -65 to +175 | $^{\circ}C$ |
| Storage temperature range | T_{STG} | -65 to +175 | $^{\circ}C$ |

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

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 | Ω | Ω | mA | μA | V |
| | Min. | Nom. | Max. | | Max. | Max. | | Max. | |
| BZV55C2V4 | 2.28 | 2.4 | 2.56 | 5 | 85 | 600 | 1.0 | 50 | 1.0 |
| BZV55C2V7 | 2.51 | 2.7 | 2.89 | 5 | 85 | 600 | 1.0 | 10 | 1.0 |
| BZV55C3V0 | 2.8 | 3.0 | 3.2 | 5 | 85 | 600 | 1.0 | 4 | 1.0 |
| BZV55C3V3 | 3.1 | 3.3 | 3.5 | 5 | 85 | 600 | 1.0 | 2 | 1.0 |
| BZV55C3V6 | 3.4 | 3.6 | 3.8 | 5 | 85 | 600 | 1.0 | 2 | 1.0 |
| BZV55C3V9 | 3.7 | 3.9 | 4.1 | 5 | 85 | 600 | 1.0 | 2 | 1.0 |
| BZV55C4V3 | 4.0 | 4.3 | 4.6 | 5 | 75 | 600 | 1.0 | 1 | 1.0 |
| BZV55C4V7 | 4.4 | 4.7 | 5.0 | 5 | 60 | 600 | 1.0 | 0.5 | 1.0 |
| BZV55C5V1 | 4.8 | 5.1 | 5.4 | 5 | 35 | 550 | 1.0 | 0.1 | 1.0 |
| BZV55C5V6 | 5.2 | 5.6 | 6.0 | 5 | 25 | 450 | 1.0 | 0.1 | 1.0 |
| BZV55C6V2 | 5.8 | 6.2 | 6.6 | 5 | 10 | 200 | 1.0 | 0.1 | 2.0 |
| BZV55C6V8 | 6.4 | 6.8 | 7.2 | 5 | 8 | 150 | 1.0 | 0.1 | 3.0 |
| BZV55C7V5 | 7.0 | 7.5 | 7.9 | 5 | 7 | 50 | 1.0 | 0.1 | 5.0 |
| BZV55C8V2 | 7.7 | 8.2 | 8.7 | 5 | 7 | 50 | 1.0 | 0.1 | 6.2 |
| BZV55C9V1 | 8.5 | 9.1 | 9.6 | 5 | 10 | 50 | 1.0 | 0.1 | 6.8 |
| BZV55C10 | 9.4 | 10 | 10.6 | 5 | 15 | 70 | 1.0 | 0.1 | 7.5 |
| BZV55C11 | 10.4 | 11 | 11.6 | 5 | 20 | 70 | 1.0 | 0.1 | 8.2 |
| BZV55C12 | 11.4 | 12 | 12.7 | 5 | 20 | 90 | 1.0 | 0.1 | 9.1 |
| BZV55C13 | 12.4 | 13 | 14.1 | 5 | 26 | 110 | 1.0 | 0.1 | 10 |
| BZV55C15 | 13.8 | 15 | 15.6 | 5 | 30 | 110 | 1.0 | 0.1 | 11 |
| BZV55C16 | 15.3 | 16 | 17.1 | 5 | 40 | 170 | 1.0 | 0.1 | 12 |
| BZV55C18 | 16.8 | 18 | 19.1 | 5 | 50 | 170 | 1.0 | 0.1 | 13 |
| BZV55C20 | 18.8 | 20 | 21.1 | 5 | 55 | 220 | 1.0 | 0.1 | 15 |
| BZV55C22 | 20.8 | 22 | 23.3 | 5 | 55 | 220 | 1.0 | 0.1 | 16 |
| BZV55C24 | 22.8 | 24 | 25.6 | 5 | 80 | 220 | 1.0 | 0.1 | 18 |
| BZV55C27 | 25.1 | 27 | 28.9 | 5 | 80 | 220 | 1.0 | 0.1 | 20 |
| BZV55C30 | 28 | 30 | 32 | 5 | 80 | 220 | 1.0 | 0.1 | 22 |
| BZV55C33 | 31 | 33 | 35 | 5 | 80 | 220 | 1.0 | 0.1 | 24 |
| BZV55C36 | 34 | 36 | 38 | 5 | 80 | 220 | 1.0 | 0.1 | 27 |
| BZV55C39 | 37 | 39 | 41 | 2.5 | 90 | 500 | 0.5 | 0.1 | 28 |
| BZV55C43 | 40 | 43 | 46 | 2.5 | 90 | 600 | 0.5 | 0.1 | 32 |
| BZV55C47 | 44 | 47 | 50 | 2.5 | 110 | 700 | 0.5 | 0.1 | 35 |
| BZV55C51 | 48 | 51 | 54 | 2.5 | 125 | 700 | 0.5 | 0.1 | 38 |
| BZV55C56 | 52 | 56 | 60 | 2.5 | 135 | 1,000 | 0.5 | 0.1 | 42 |
| BZV55C62 | 58 | 62 | 66 | 2.5 | 150 | 1,000 | 0.5 | 0.1 | 47 |
| BZV55C68 | 64 | 68 | 72 | 2.5 | 160 | 1,000 | 0.5 | 0.1 | 51 |
| BZV55C75 | 70 | 75 | 80 | 2.5 | 170 | 1,000 | 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 normal zener voltage of $\pm 5\%$.
3. For detailed information on price, availability and delivery of normal 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} .

| ORDERING INFORMATION | | |
|-----------------------------|----------------|----------------|
| PART NO. (Note 1) | PACKAGE | PACKING |
| BZV55Cxxx L0 | MINI MELF | 10K / 13" Reel |
| BZV55Cxxx L0G | MINI MELF | 10K / 13" Reel |
| BZV55Cxxx L1 | MINI MELF | 2.5K / 7" Reel |
| BZV55Cxxx L1G | MINI MELF | 2.5K / 7" Reel |

Notes:

"xxx" defines voltage from 2.4V (BZV55C2V4) to 75V (BZV55C75)

CHARACTERISTICS CURVES

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

Fig.1 Power Dissipation VS. Ambient Temperature

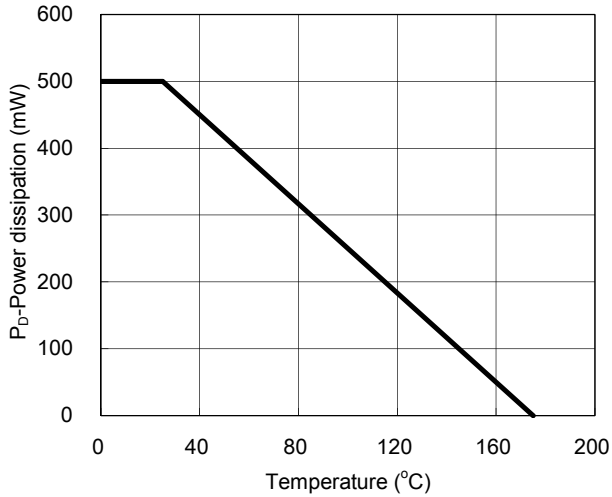


Fig. 2 Total Capacitance

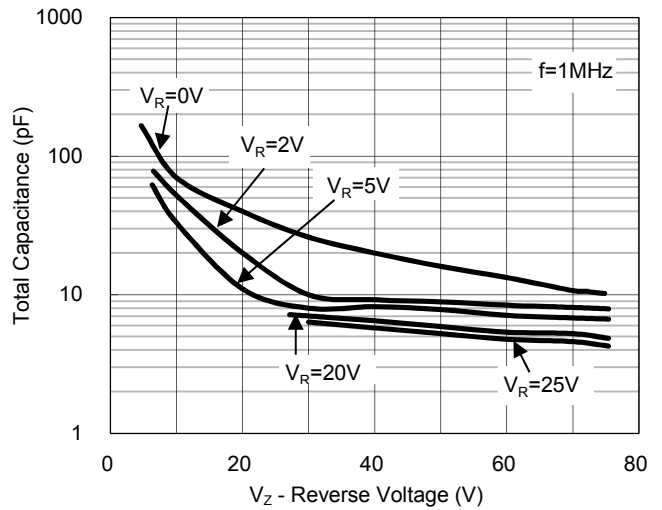


Fig. 3 Differential Impedance VS. Zener Voltage

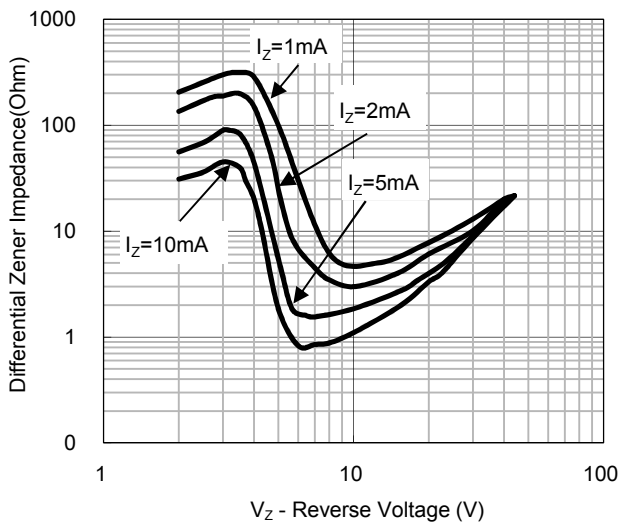
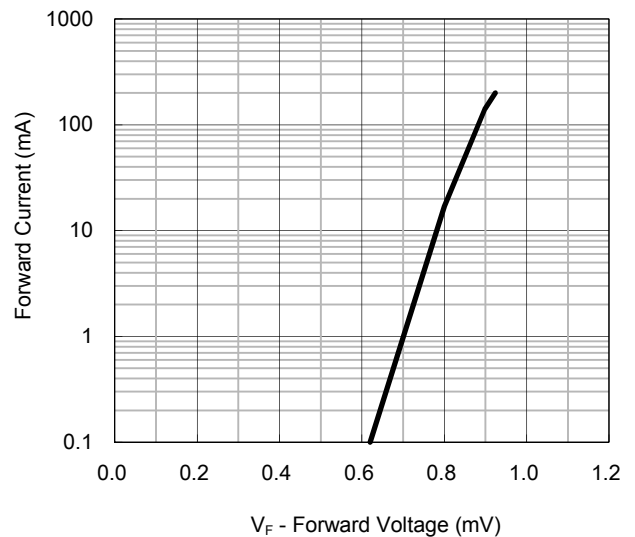
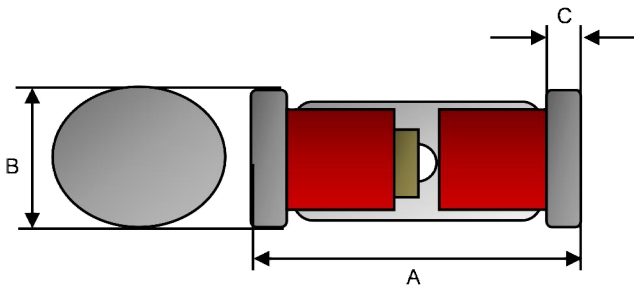


Fig.4 Forward Current VS. Forward Voltage



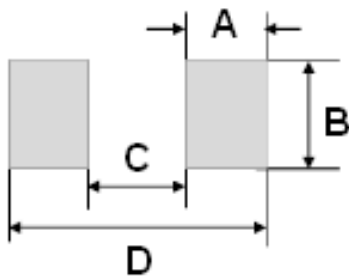
PACKAGE OUTLINE DIMENSION

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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