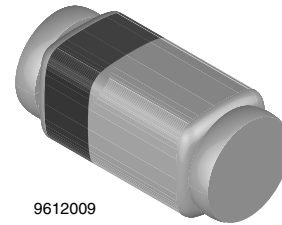
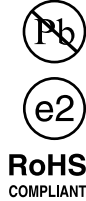


Small Signal Zener Diodes

Features

- Very sharp reverse characteristic
- Low reverse current level
- Available with tighter tolerances
- Very high stability
- Low noise
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



9612009

Applications

- Voltage stabilization

Mechanical Data

Case: QuadroMELF SOD-80

Weight: approx. 34 mg

Packaging codes/options:

GS08 / 2.5 k per 7" reel 12.5 k/box

GS18 / 10 k per 13" reel 10 k/box

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

| Parameter | Test condition | Symbol | Value | Unit |
|---------------------------|--------------------------------|-----------|---------------|--------------------|
| Power dissipation | $R_{thJA} \leq 300\text{ K/W}$ | P_V | 500 | mW |
| Z-current | | I_Z | P_V/V_Z | mA |
| Junction temperature | | T_j | 175 | $^{\circ}\text{C}$ |
| Storage temperature range | | T_{stg} | - 65 to + 175 | $^{\circ}\text{C}$ |

Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

| Parameter | Test condition | Symbol | Value | Unit |
|-------------------------|---------------------------------------|------------|-------|------|
| Junction to ambient air | On PC board 50 mm x 50 mm x 1.6 mm | R_{thJA} | 500 | K/W |

Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

| Parameter | Test condition | Symbol | Min | Typ. | Max | Unit |
|-----------------|-----------------------|--------|-----|------|-----|------|
| Forward voltage | $I_F = 200\text{ mA}$ | V_F | | | 1.5 | V |

Electrical Characteristics

BZT55C..

| Part number | Zener voltage ¹⁾ | | Dynamic resistance | | Test current | Temperature coefficient | | Test current | Reverse leakage current | | |
|-------------|-----------------------------|------|---|--------|--------------|-------------------------|--------|--------------|--|---|----------|
| | V_Z at I_{ZT} | | r_{zj} at I_{ZT} , $f = 1 \text{ kHz}$ | | I_{ZT} | TK_{VZ} | | I_{ZK} | I_R at $T_{amb} = 25^\circ\text{C}$ | I_R at $T_{amb} = 150^\circ\text{C}$ | at V_R |
| | V | | Ω | | mA | %K | | mA | μA | | V |
| | min. | max. | | | | min. | max. | | | | |
| BZT55C2V4 | 2.28 | 2.56 | < 85 | < 600 | 5 | - 0.09 | - 0.06 | 1 | < 50 | < 100 | 1 |
| BZT55C2V7 | 2.5 | 2.9 | < 85 | < 600 | 5 | - 0.09 | - 0.06 | 1 | < 10 | < 50 | 1 |
| BZT55C3V0 | 2.8 | 3.2 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 4 | < 40 | 1 |
| BZT55C3V3 | 3.1 | 3.5 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55C3V6 | 3.4 | 3.8 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55C3V9 | 3.7 | 4.1 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55C4V3 | 4 | 4.6 | < 90 | < 600 | 5 | - 0.06 | - 0.03 | 1 | < 1 | < 20 | 1 |
| BZT55C4V7 | 4.4 | 5 | < 80 | < 600 | 5 | - 0.05 | 0.02 | 1 | < 0.5 | < 10 | 1 |
| BZT55C5V1 | 4.8 | 5.4 | < 60 | < 550 | 5 | - 0.02 | 0.02 | 1 | < 0.1 | < 2 | 1 |
| BZT55C5V6 | 5.2 | 6 | < 40 | < 450 | 5 | - 0.05 | 0.05 | 1 | < 0.1 | < 2 | 1 |
| BZT55C6V2 | 5.8 | 6.6 | < 10 | < 200 | 5 | 0.03 | 0.06 | 1 | < 0.1 | < 2 | 2 |
| BZT55C6V8 | 6.4 | 7.2 | < 8 | < 150 | 5 | 0.03 | 0.07 | 1 | < 0.1 | < 2 | 3 |
| BZT55C7V5 | 7 | 7.9 | < 7 | < 50 | 5 | 0.03 | 0.07 | 1 | < 0.1 | < 2 | 5 |
| BZT55C8V2 | 7.7 | 8.7 | < 7 | < 50 | 5 | 0.03 | 0.08 | 1 | < 0.1 | < 2 | 6.2 |
| BZT55C9V1 * | 8.5 | 9.6 | < 10 | < 50 | 5 | 0.03 | 0.09 | 1 | < 0.1 | < 2 | 6.8 |
| BZT55C10 * | 9.4 | 10.6 | < 15 | < 70 | 5 | 0.03 | 0.1 | 1 | < 0.1 | < 2 | 7.5 |
| BZT55C11 * | 10.4 | 11.6 | < 20 | < 70 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 8.2 |
| BZT55C12 * | 11.4 | 12.7 | < 20 | < 90 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 9.1 |
| BZT55C13 * | 12.4 | 14.1 | < 26 | < 110 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 10 |
| BZT55C15 * | 13.8 | 15.6 | < 30 | < 110 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 11 |
| BZT55C16 * | 15.3 | 17.1 | < 40 | < 170 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 12 |
| BZT55C18 * | 16.8 | 19.1 | < 50 | < 170 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 13 |
| BZT55C20 * | 18.8 | 21.2 | < 55 | < 220 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 15 |
| BZT55C22 * | 20.8 | 23.3 | < 55 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 16 |
| BZT55C24 * | 22.8 | 25.6 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 18 |
| BZT55C27 * | 25.1 | 28.9 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 20 |
| BZT55C30 * | 28 | 32 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 22 |
| BZT55C33 * | 31 | 35 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 24 |
| BZT55C36 * | 34 | 38 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 27 |
| BZT55C39 * | 37 | 41 | < 90 | < 500 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 5 | 30 |
| BZT55C43 * | 40 | 46 | < 90 | < 600 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 5 | 33 |
| BZT55C47 * | 44 | 50 | < 110 | < 700 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 5 | 36 |
| BZT55C51 * | 48 | 54 | < 125 | < 700 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 39 |
| BZT55C56 * | 52 | 60 | < 135 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 43 |
| BZT55C62 * | 58 | 66 | < 150 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 47 |
| BZT55C68 * | 64 | 72 | < 200 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 51 |
| BZT55C75 * | 70 | 79 | < 250 | < 1500 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 56 |

¹⁾ $t_p \leq 10 \text{ ms}$, $T/t_p > 1000$

^{*)} Additional measurement of voltage group 9V1 to 75 % at 95 % $V_{zmin} \leq 35 \text{ nA}$ at $T_j 25^\circ\text{C}$

Electrical Characteristics

BZT55B..

| Part number | Zener voltage ¹⁾ | | Dynamic resistance | | Test current | Temperature coefficient of Zener voltage | | Test current | Reverse leakage current | | |
|-------------|-----------------------------|-------|---------------------------------------|--------|--------------|--|--------|--------------|--|---|----------|
| | V_Z at I_{ZT} | | r_{zj} at I_{ZT} , $f = 1$ kHz | | I_{ZT} | TK _{VZ} | | I_{ZK} | I_R at $T_{amb} = 25^\circ\text{C}$ | I_R at $T_{amb} = 150^\circ\text{C}$ | at V_R |
| | V | | Ω | | mA | %K | | mA | μA | V | |
| | min. | max. | | | | min. | max. | | | | |
| BZT55B2V4 | 2.35 | 2.45 | < 85 | < 600 | 5 | - 0.09 | - 0.06 | 1 | < 50 | < 100 | 1 |
| BZT55B2V7 | 2.64 | 2.76 | < 85 | < 600 | 5 | - 0.09 | - 0.06 | 1 | < 10 | < 50 | 1 |
| BZT55B3V0 | 2.94 | 3.06 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 4 | < 40 | 1 |
| BZT55B3V3 | 3.24 | 3.36 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55B3V6 | 3.52 | 3.68 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55B3V9 | 3.82 | 3.98 | < 90 | < 600 | 5 | - 0.08 | - 0.05 | 1 | < 2 | < 40 | 1 |
| BZT55B4V3 | 4.22 | 4.38 | < 90 | < 600 | 5 | - 0.06 | - 0.03 | 1 | < 1 | < 20 | 1 |
| BZT55B4V7 | 4.6 | 4.8 | < 80 | < 600 | 5 | - 0.05 | 0.02 | 1 | < 0.5 | < 10 | 1 |
| BZT55B5V1 | 5 | 5.2 | < 60 | < 550 | 5 | - 0.02 | 0.02 | 1 | < 0.1 | < 2 | 1 |
| BZT55B5V6 | 5.48 | 5.72 | < 40 | < 450 | 5 | - 0.05 | 0.05 | 1 | < 0.1 | < 2 | 1 |
| BZT55B6V2 | 6.08 | 6.32 | < 10 | < 200 | 5 | 0.03 | 0.06 | 1 | < 0.1 | < 2 | 2 |
| BZT55B6V8 | 6.66 | 6.94 | < 8 | < 150 | 5 | 0.03 | 0.07 | 1 | < 0.1 | < 2 | 3 |
| BZT55B7V5 | 7.35 | 7.65 | < 7 | < 50 | 5 | 0.03 | 0.07 | 1 | < 0.1 | < 2 | 5 |
| BZT55B8V2 | 8.04 | 8.36 | < 7 | < 50 | 5 | 0.03 | 0.08 | 1 | < 0.1 | < 2 | 6.2 |
| BZT55B9V1 * | 8.92 | 9.28 | < 10 | < 50 | 5 | 0.03 | 0.09 | 1 | < 0.1 | < 2 | 6.8 |
| BZT55B10 * | 9.8 | 10.2 | < 15 | < 70 | 5 | 0.03 | 0.1 | 1 | < 0.1 | < 2 | 7.5 |
| BZT55B11 * | 10.78 | 11.22 | < 20 | < 70 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 8.2 |
| BZT55B12 * | 11.76 | 12.24 | < 20 | < 90 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 9.1 |
| BZT55B13 * | 12.74 | 13.26 | < 26 | < 110 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 10 |
| BZT55B15 * | 14.7 | 15.3 | < 30 | < 110 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 11 |
| BZT55B16 * | 15.7 | 16.3 | < 40 | < 170 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 12 |
| BZT55B18 * | 17.64 | 18.36 | < 50 | < 170 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 13 |
| BZT55B20 * | 19.6 | 20.4 | < 55 | < 220 | 5 | 0.03 | 0.11 | 1 | < 0.1 | < 2 | 15 |
| BZT55B22 * | 21.55 | 22.45 | < 55 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 16 |
| BZT55B24 * | 23.5 | 24.5 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 18 |
| BZT55B27 * | 26.4 | 27.6 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 20 |
| BZT55B30 * | 29.4 | 30.6 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 22 |
| BZT55B33 * | 32.4 | 33.6 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 24 |
| BZT55B36 * | 35.3 | 36.7 | < 80 | < 220 | 5 | 0.04 | 0.12 | 1 | < 0.1 | < 2 | 27 |
| BZT55B39 * | 38.2 | 39.8 | < 90 | < 500 | 2.5 | 0.04 | 0.12 | 1 | < 0.1 | < 5 | 30 |
| BZT55B43 * | 42.1 | 43.9 | < 90 | < 600 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 5 | 33 |
| BZT55B47 * | 46.1 | 47.9 | < 110 | < 700 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 5 | 36 |
| BZT55B51 * | 50 | 52 | < 125 | < 700 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 39 |
| BZT55B56 * | 54.9 | 57.1 | < 135 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 43 |
| BZT55B62 * | 60.8 | 63.2 | < 150 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 47 |
| BZT55B68 * | 66.6 | 69.4 | < 200 | < 1000 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 51 |
| BZT55B75 * | 73.5 | 76.5 | < 250 | < 1500 | 2.5 | 0.04 | 0.12 | 0.5 | < 0.1 | < 10 | 56 |

¹⁾ $t_p \leq 10$ ms, $T/t_p > 1000$

²⁾ Additional measurement of voltage group 9V1 to 75 % at 95 % $V_{zmin} \leq 35$ nA at $T_j 25^\circ\text{C}$

Typical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

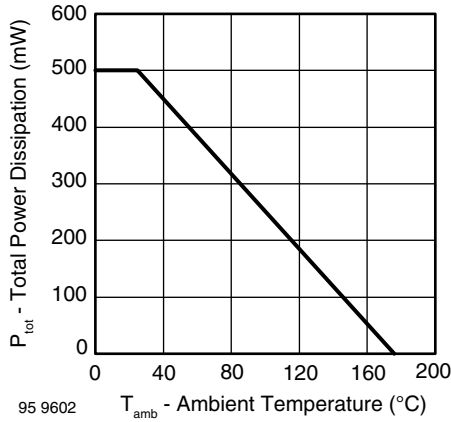


Figure 1. Total Power Dissipation vs. Ambient Temperature

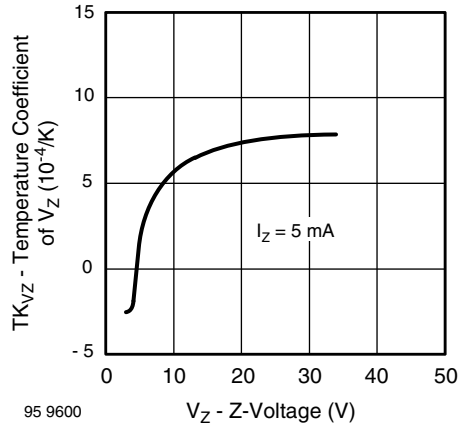


Figure 4. Temperature Coefficient of V_Z vs. Z-Voltage

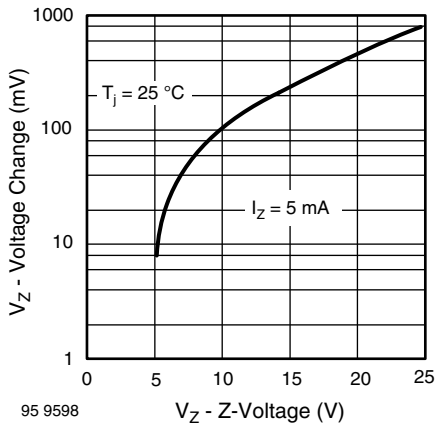


Figure 2. Typical Change of Working Voltage under Operating Conditions at $T_{amb}=25\text{ }^{\circ}\text{C}$

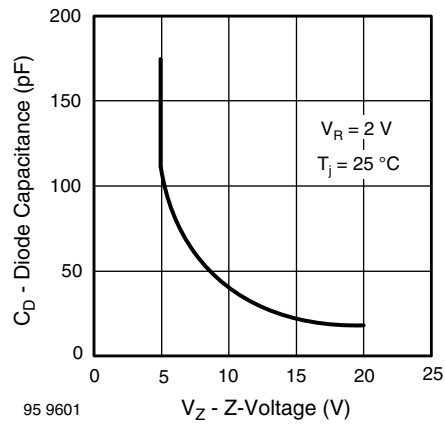


Figure 5. Diode Capacitance vs. Z-Voltage

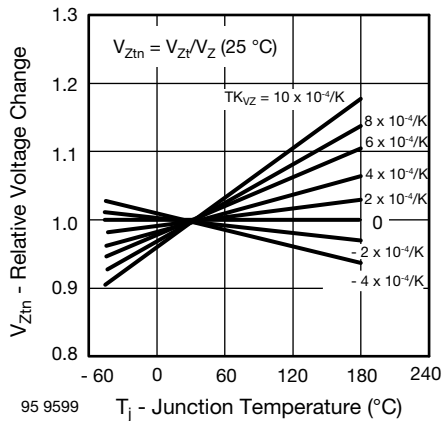


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

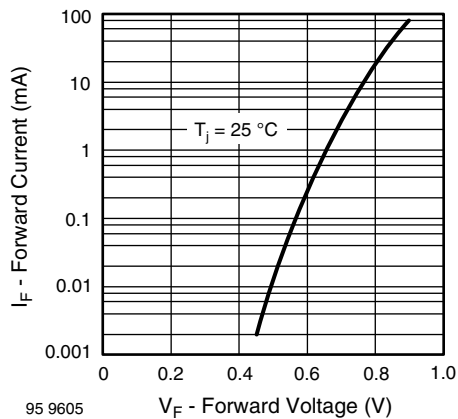


Figure 6. Forward Current vs. Forward Voltage

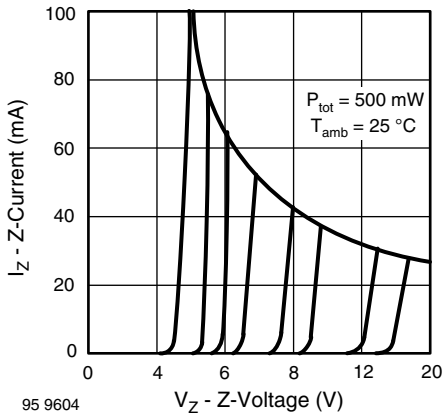


Figure 7. Z-Current vs. Z-Voltage

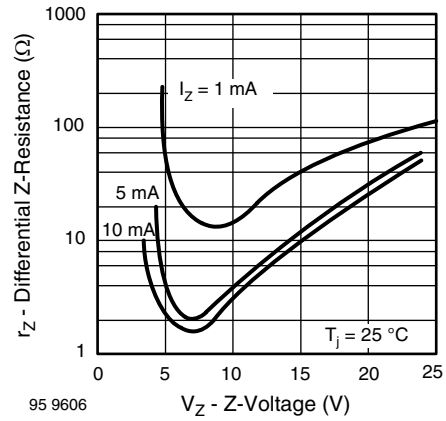


Figure 9. Differential Z-Resistance vs. Z-Voltage

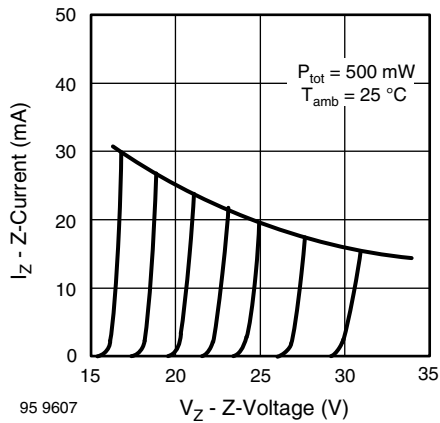


Figure 8. Z-Current vs. Z-Voltage

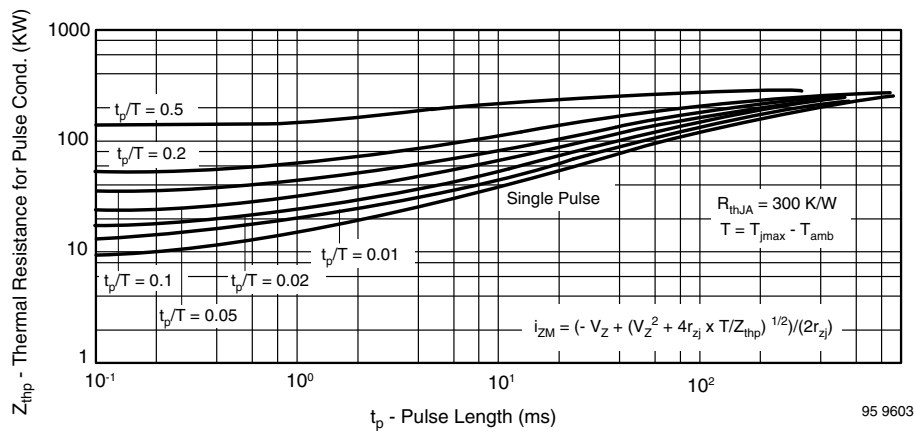


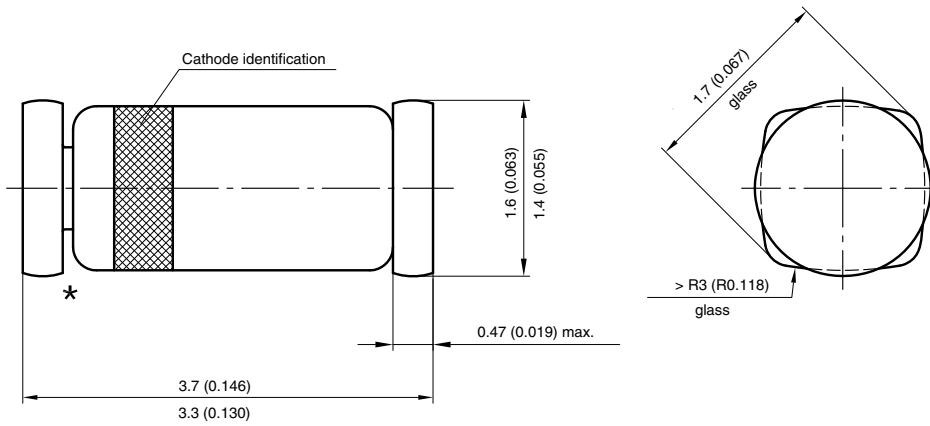
Figure 10. Thermal Response

BZT55-Series

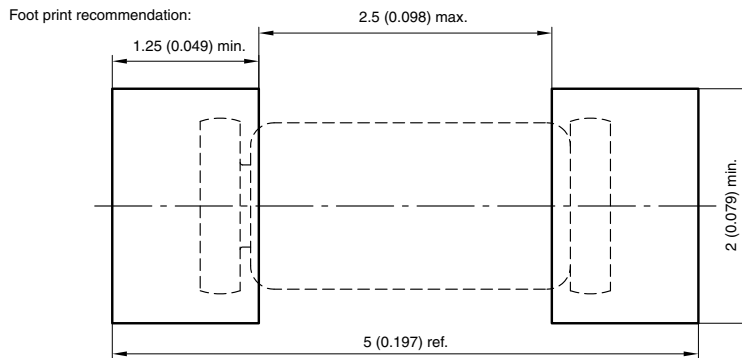
Vishay Semiconductors



Package Dimensions in millimeters (inches): QuadroMELF SOD-80



* The gap between plug and glass can be either on cathode or anode side



Created - Date: 03.November.2003
Rev. 11 - Date: 07.June 2006
Document no.: 6.560-5006.01-4
96 12071



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