



BZX55 Series

Zener Diodes

Zener Voltage Range: 0.8, 2.4 to 200 Volts Power Dissipation: 500mW

Features

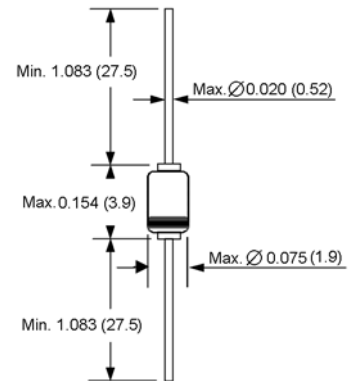
- ◆ Silicon Planar Power Zener Diodes.
- ◆ The Zener voltages are graded according to the international E 24 standard. Standard Zener voltage tolerance is $\pm 5\%$. Replace suffix "C" with "B" for $\pm 2\%$ tolerance. Other voltage tolerances and other Zener voltages are available upon request.



DO-204AH (DO-35 Glass)

Mechanical Data

- ◆ Case: DO-35 Glass Case
- ◆ Weight: approx. 0.13g



Dimensions in inches and (millimeters)

Maximum Ratings and Thermal Characteristics

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

| Parameter | Symbol | Value | Unit |
|---|-----------------|--------------------|---------------------------|
| Zener current (see Table "Characteristics") | | | |
| Power dissipation at $T_{amb} = 25^\circ\text{C}$ | P_{tot} | 500 ⁽¹⁾ | mW |
| Thermal resistance junction to ambient air | $R_{\theta JA}$ | 300 ⁽¹⁾ | $^\circ\text{C}/\text{W}$ |
| Junction temperature | T_j | 175 | $^\circ\text{C}$ |
| Storage temperature range | T_s | -55 to +175 | $^\circ\text{C}$ |

Notes: 1. Valid provided that leads at a distance of 3/8" from case are kept at ambient temperature.

Electrical Characteristics

(T_A=25°C unless otherwise noted) Maximum V_F=1.0V at I_F=100mA

| Type number y=C for +5% y=B for +2% | Dynamic resistance | | Temp. coefficient of zener voltage at I _Z =5mA α _{VZ} (% / °C) | | Reverse leakage current | | | Admissible zener current ⁽²⁾ I _{ZM} (mA) |
|---|---|---|---|--------|---|--|---------------------------------|---|
| | at I _Z =5mA f=1kHz r _{Z1} (Ω) | at I _Z =1mA f=1kHz r _{Z1} (Ω) | Min. | Max. | at T _{amb} =25°C I _R (nA) | at T _{amb} =150°C I _R (μA) | at V _R (Volts) | |
| BZX55 - y0V8 ⁽³⁾ | < 8 | < 600 | - 0.25 | - | - | - | - | - |
| BZX55 - y2V4 | < 85 | < 600 | - 0.08 | - 0.06 | < 50000 | < 100 | 1 | 145 |
| BZX55 - y2V7 | < 85 | < 600 | - 0.08 | - 0.06 | < 10000 | < 50 | 1 | 135 |
| BZX55 - y3V0 | < 85 | < 600 | - 0.08 | - 0.06 | < 4000 | < 40 | 1 | 125 |
| BZX55 - y3V3 | < 85 | < 600 | - 0.08 | - 0.05 | < 2000 | < 40 | 1 | 115 |
| BZX55 - y3V6 | < 85 | < 600 | - 0.08 | - 0.04 | < 2000 | < 40 | 1 | 105 |
| BZX55 - y3V9 | < 85 | < 600 | - 0.07 | - 0.03 | < 2000 | < 40 | 1 | 95 |
| BZX55 - y4V3 | < 75 | < 600 | - 0.04 | - 0.01 | < 1000 | < 20 | 1 | 90 |
| BZX55 - y4V7 | < 60 | < 600 | - 0.03 | + 0.01 | < 500 | < 10 | 1 | 85 |
| BZX55 - y5V1 | < 35 | < 550 | - 0.02 | + 0.05 | < 100 | < 2 | 1 | 80 |
| BZX55 - y5V6 | < 25 | < 450 | - 0.01 | + 0.06 | < 100 | < 2 | 1 | 70 |
| BZX55 - y6V2 | < 10 | < 200 | 0 | + 0.07 | < 100 | < 2 | 2 | 64 |
| BZX55 - y6V8 | < 8 | < 150 | + 0.01 | + 0.08 | < 100 | < 2 | 3 | 58 |
| BZX55 - y7V5 | < 7 | < 50 | + 0.01 | + 0.09 | < 100 | < 2 | 5 | 53 |
| BZX55 - y8V2 | < 7 | < 50 | + 0.01 | + 0.09 | < 100 | < 2 | 6.2 | 47 |
| BZX55 - y9V1 | < 10 | < 50 | + 0.02 | + 0.10 | < 100 | < 2 | 6.8 | 43 |
| BZX55 - y10 | < 15 | < 70 | + 0.03 | + 0.11 | < 100 | < 2 | 7.5 | 40 |
| BZX55 - y11 | < 20 | < 70 | + 0.03 | + 0.11 | < 100 | < 2 | 8.2 | 36 |
| BZX55 - y12 | < 20 | < 90 | + 0.03 | + 0.11 | < 100 | < 2 | 9.1 | 32 |
| BZX55 - y13 | < 26 | < 110 | + 0.03 | + 0.11 | < 100 | < 2 | 10 | 29 |
| BZX55 - y15 | < 30 | < 110 | + 0.03 | + 0.11 | < 100 | < 2 | 11 | 27 |
| BZX55 - y16 | < 40 | < 170 | + 0.03 | + 0.11 | < 100 | < 2 | 12 | 24 |
| BZX55 - y18 | < 50 | < 170 | + 0.03 | + 0.11 | < 100 | < 2 | 13 | 21 |
| BZX55 - y20 | < 55 | < 220 | + 0.03 | + 0.11 | < 100 | < 2 | 15 | 20 |
| BZX55 - y22 | < 55 | < 220 | + 0.03 | + 0.11 | < 100 | < 2 | 16 | 18 |
| BZX55 - y24 | < 80 | < 220 | + 0.04 | + 0.12 | < 100 | < 2 | 18 | 16 |
| BZX55 - y27 | < 80 | < 220 | + 0.04 | + 0.12 | < 100 | < 2 | 20 | 14 |
| BZX55 - y30 | < 80 | < 220 | + 0.04 | + 0.12 | < 100 | < 2 | 22 | 13 |
| BZX55 - y33 | < 80 | < 220 | + 0.04 | + 0.12 | < 100 | < 2 | 24 | 12 |
| BZX55 - y36 | < 80 | < 220 | + 0.04 | + 0.12 | < 100 | < 2 | 27 | 11 |
| BZX55 - y39 | < 90 ⁽⁴⁾ | < 500 ⁽⁵⁾ | + 0.04 | + 0.12 | < 100 | < 5 | 30 | 10 |
| BZX55 - y43 | < 90 ⁽⁴⁾ | < 600 ⁽⁵⁾ | + 0.04 | + 0.12 | < 100 | < 5 | 33 | 9.2 |
| BZX55 - y47 | < 110 ⁽⁴⁾ | < 700 ⁽⁵⁾ | + 0.04 | + 0.12 | < 100 | < 5 | 36 | 8.5 |
| BZX55 - y51 | < 125 ⁽⁴⁾ | < 700 ⁽⁵⁾ | + 0.04 | + 0.12 | < 100 | < 10 | 39 | 7.8 |
| BZX55 - y56 | < 135 ⁽⁴⁾ | < 1000 ⁽⁵⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 43 | 7.0 |
| BZX55 - y62 | < 150 ⁽⁴⁾ | < 1000 ⁽⁵⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 47 | 6.4 |
| BZX55 - y68 | < 200 ⁽⁴⁾ | < 1000 ⁽⁵⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 51 | 5.9 |
| BZX55 - y75 | < 250 ⁽⁴⁾ | < 1500 ⁽⁵⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 56 | 5.3 |
| BZX55 - y82 | < 300 ⁽⁴⁾ | < 2000 ⁽⁵⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 62 | 4.8 |
| BZX55 - y91 | < 450 ⁽⁶⁾ | < 5000 ⁽⁷⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 68 | 4.4 |
| BZX55 - y100 | < 450 ⁽⁶⁾ | < 5000 ⁽⁷⁾ | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 75 | 4.0 |
| BZX55 - y110 | < 600 | < 5000 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 82 | - |
| BZX55 - y120 | < 800 | < 5500 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 91 | - |
| BZX55 - y130 | < 950 | < 6000 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 100 | - |
| BZX55 - y150 | < 1250 | < 6500 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 110 | - |
| BZX55 - y160 | < 1400 | < 7000 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 120 | - |
| BZX55 - y180 | < 1700 | < 8500 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 130 | - |
| BZX55 - y200 | < 2000 | < 10000 | typ. +0.1 ⁽⁴⁾ | | < 100 | < 10 | 150 | - |

Notes: 1. Tested with pulses t_p=5 ms

2. Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case

3. The BZX55 - C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode lead to the negative pole.

4. at I_Z=2.5 mA

5. at I_Z=0.5 mA

6. at I_Z=1.0 mA

7. at I_Z=0.1 mA

Electrical Characteristics

(T_A=25°C unless otherwise noted) Maximum V_F=1.0V at I_F=100mA

| Type number ±5% Tol. | Zener voltage range ⁽¹⁾ at I _{ZT1} (mA) V _Z (Volts) | | Test current I _{ZT1} (mA) |
|---------------------------|---|------|---------------------------------------|
| | Min. | Max. | |
| BZX55-C0V8 ⁽³⁾ | 0.73 | 0.83 | 5.0 |
| BZX55-C2V4 | 2.28 | 2.56 | 5.0 |
| BZX55-C2V7 | 2.50 | 2.90 | 5.0 |
| BZX55-C3V0 | 2.80 | 3.20 | 5.0 |
| BZX55-C3V3 | 3.10 | 3.50 | 5.0 |
| BZX55-C3V6 | 3.40 | 3.90 | 5.0 |
| BZX55-C3V9 | 3.70 | 4.10 | 5.0 |
| BZX55-C4V3 | 4.00 | 4.60 | 5.0 |
| BZX55-C4V7 | 4.40 | 5.00 | 5.0 |
| BZX55-C5V1 | 4.80 | 5.40 | 5.0 |
| BZX55-C5V6 | 5.20 | 6.00 | 5.0 |
| BZX55-C6V2 | 5.80 | 6.60 | 5.0 |
| BZX55-C6V8 | 6.40 | 7.20 | 5.0 |
| BZX55-C7V5 | 7.00 | 7.90 | 5.0 |
| BZX55-C8V2 | 7.70 | 8.70 | 5.0 |
| BZX55-C9V1 | 8.50 | 9.60 | 5.0 |
| BZX55-C10 | 9.40 | 10.6 | 5.0 |
| BZX55-C11 | 10.4 | 11.6 | 5.0 |
| BZX55-C12 | 11.4 | 12.7 | 5.0 |
| BZX55-C13 | 12.4 | 14.1 | 5.0 |
| BZX55-C15 | 13.8 | 15.6 | 5.0 |
| BZX55-C16 | 15.3 | 17.1 | 5.0 |
| BZX55-C18 | 16.8 | 19.1 | 5.0 |
| BZX55-C20 | 18.8 | 21.2 | 5.0 |
| BZX55-C22 | 20.8 | 23.3 | 5.0 |
| BZX55-C24 | 22.8 | 25.6 | 5.0 |
| BZX55-C27 | 25.1 | 28.9 | 5.0 |
| BZX55-C30 | 28.0 | 32.0 | 5.0 |
| BZX55-C33 | 31.0 | 35.0 | 5.0 |
| BZX55-C36 | 34.0 | 38.0 | 5.0 |
| BZX55-C39 | 37.0 | 41.0 | 2.5 |
| BZX55-C43 | 40.0 | 46.0 | 2.5 |
| BZX55-C47 | 44.0 | 50.0 | 2.5 |
| BZX55-C51 | 48.0 | 54.0 | 2.5 |
| BZX55-C56 | 52.0 | 60.0 | 2.5 |
| BZX55-C62 | 58.0 | 66.0 | 2.5 |
| BZX55-C68 | 64.0 | 72.0 | 2.5 |
| BZX55-C75 | 70.0 | 80.0 | 2.5 |
| BZX55-C82 | 77.0 | 87.0 | 2.5 |
| BZX55-C91 | 85.0 | 96.0 | 1.0 |
| BZX55-C100 | 94.0 | 106 | 1.0 |
| BZX55-C110 | 104 | 116 | 1.0 |
| BZX55-C120 | 114 | 127 | 1.0 |
| BZX55-C130 | 124 | 141 | 1.0 |
| BZX55-C150 | 138 | 156 | 1.0 |
| BZX55-C160 | 153 | 171 | 1.0 |
| BZX55-C180 | 168 | 191 | 1.0 |
| BZX55-C200 | 188 | 212 | 1.0 |

| Type number ±2% Tol. | Zener voltage range ⁽¹⁾ at I _{ZT1} (mA) V _Z (Volts) | | Test current I _{ZT1} (mA) |
|---------------------------|---|------|---------------------------------------|
| | Min. | Max. | |
| BZX55-B0V8 ⁽³⁾ | 0.78 | 0.82 | 5.0 |
| BZX55-B2V7 | 2.35 | 2.45 | 5.0 |
| BZX55-B3 | 2.65 | 2.75 | 5.0 |
| BZX55-B3V0 | 2.94 | 3.06 | 5.0 |
| BZX55-B3V3 | 3.23 | 3.37 | 5.0 |
| BZX55-B3V6 | 3.53 | 3.67 | 5.0 |
| BZX55-B3V9 | 3.82 | 3.98 | 5.0 |
| BZX55-B4V3 | 4.21 | 4.39 | 5.0 |
| BZX55-B4V7 | 4.61 | 4.79 | 5.0 |
| BZX55-B5V1 | 5.00 | 5.20 | 5.0 |
| BZX55-B5V6 | 5.49 | 5.71 | 5.0 |
| BZX55-B6V2 | 6.08 | 6.32 | 5.0 |
| BZX55-B6V8 | 6.66 | 6.94 | 5.0 |
| BZX55-B7V5 | 7.35 | 7.65 | 5.0 |
| BZX55-B8V2 | 8.04 | 8.36 | 5.0 |
| BZX55-B9V1 | 8.92 | 9.28 | 5.0 |
| BZX55-B10 | 9.80 | 10.2 | 5.0 |
| BZX55-B11 | 10.8 | 11.2 | 5.0 |
| BZX55-B12 | 11.8 | 12.2 | 5.0 |
| BZX55-B13 | 12.7 | 13.3 | 5.0 |
| BZX55-B15 | 14.7 | 15.3 | 5.0 |
| BZX55-B16 | 15.7 | 16.3 | 5.0 |
| BZX55-B18 | 17.6 | 18.4 | 5.0 |
| BZX55-B20 | 19.6 | 20.4 | 5.0 |
| BZX55-B22 | 21.6 | 22.4 | 5.0 |
| BZX55-B24 | 23.5 | 24.5 | 5.0 |
| BZX55-B27 | 26.5 | 27.5 | 5.0 |
| BZX55-B30 | 29.4 | 30.6 | 5.0 |
| BZX55-B33 | 32.3 | 33.7 | 5.0 |
| BZX55-B36 | 35.3 | 36.7 | 5.0 |
| BZX55-B39 | 38.2 | 39.8 | 2.5 |
| BZX55-B43 | 42.1 | 43.9 | 2.5 |
| BZX55-B47 | 46.1 | 47.9 | 2.5 |
| BZX55-B51 | 50.0 | 52.0 | 2.5 |
| BZX55-B56 | 54.9 | 56.9 | 2.5 |
| BZX55-B62 | 60.8 | 63.2 | 2.5 |
| BZX55-B68 | 66.6 | 69.4 | 2.5 |
| BZX55-B75 | 73.5 | 76.5 | 2.5 |
| BZX55-B82 | 80.4 | 83.6 | 2.5 |
| BZX55-B91 | 89.2 | 92.8 | 1.0 |
| BZX55-B100 | 98.0 | 102 | 1.0 |
| BZX55-B110 | 108 | 112 | 1.0 |
| BZX55-B120 | 118 | 122 | 1.0 |
| BZX55-B130 | 127 | 133 | 1.0 |
| BZX55-B150 | 147 | 153 | 1.0 |
| BZX55-B160 | 157 | 163 | 1.0 |
| BZX55-B180 | 176 | 184 | 1.0 |
| BZX55-B200 | 196 | 204 | 1.0 |

- Notes:
1. Measured with pulses t_r=5 ms
 2. The BZX55 - C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode lead to the negative pole.

RATINGS AND CHARACTERISTIC CURVES

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

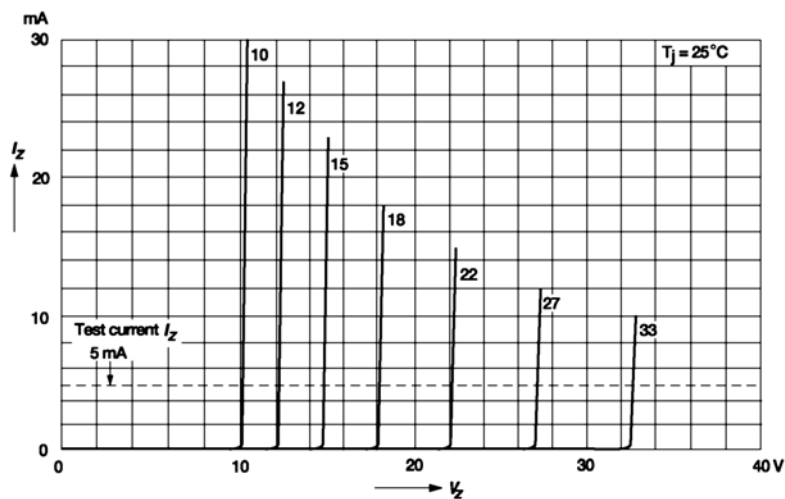
Breakdown characteristics

at $T_j = \text{constant}$ (pulsed)



Breakdown characteristics

at $T_j = \text{constant}$ (pulsed)

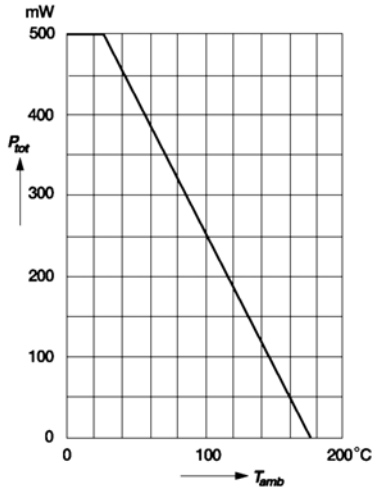


RATINGS AND CHARACTERISTIC CURVES

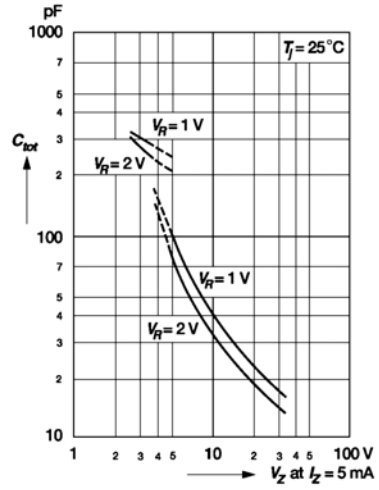
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Admissible power dissipation versus ambient temperature

Valid provided that leads are kept ambient temperature at a distance of 8 mm from case.

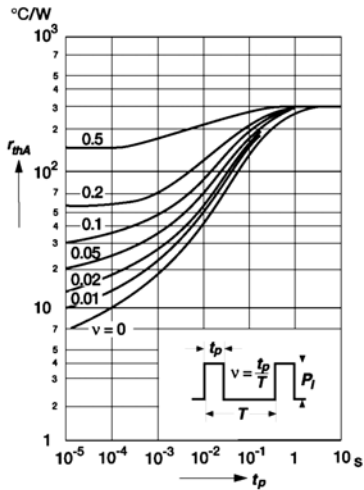


Capacitance versus Zener voltage

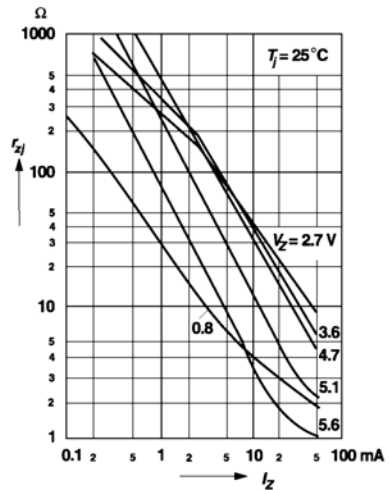


Pulse thermal resistance versus pulse duration

Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



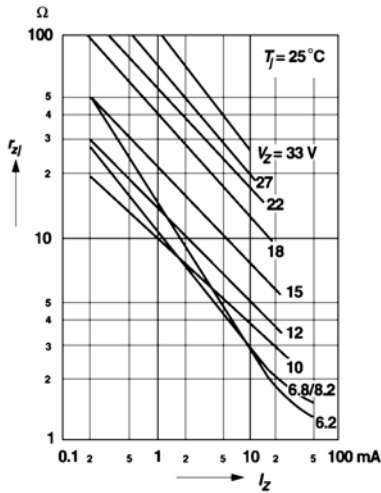
Dynamic resistance versus Zener current



RATINGS AND CHARACTERISTIC CURVES

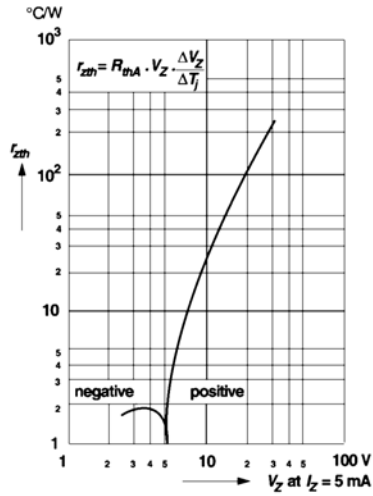
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Dynamic resistance versus Zener current

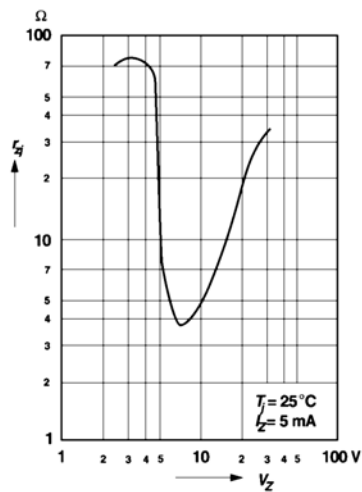


Thermal differential resistance versus Zener voltage

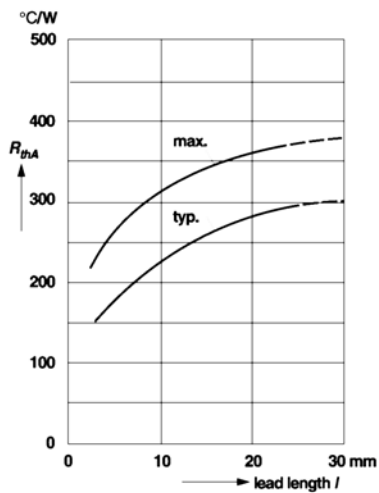
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



Dynamic resistance versus Zener voltage



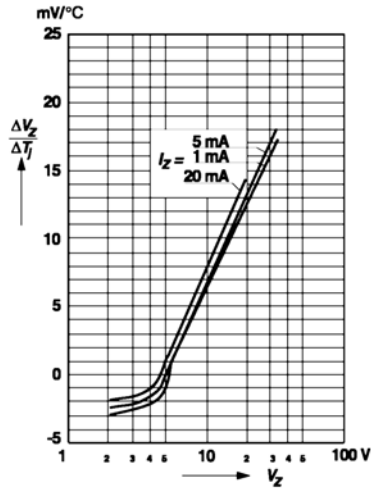
Thermal resistance versus lead length



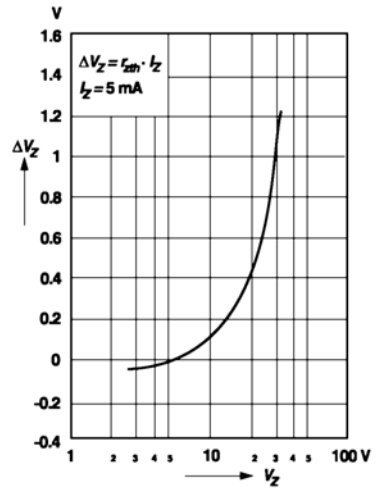
RATINGS AND CHARACTERISTIC CURVES

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

Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



Change of Zener voltage versus junction temperature

