

## Features

- ◆ Silicon Planar Power Zener Diodes.
- ◆ For use as low voltage stabilizer or voltage reference.
- ◆ The Zener voltages are graded according to the international E 24 standard. Higher Zener voltages and 1% tolerance available on request.
- ◆ Diodes available in these tolerance series:  
±2% BZV55-B, ±3% BZV55-F, ±5% BZV55-C.

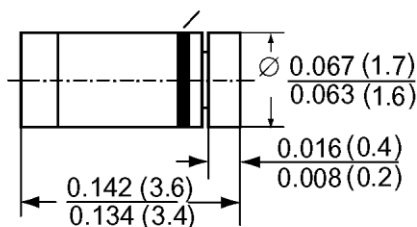


**MiniMELF (SOD-80C)**

## Mechanical Data

- ◆ Case: MiniMELF Glass Case (SOD-80C)
- ◆ Weight: approx. 0.05g
- ◆ Cathode Band Color: Blue

### Cathode Mark



**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 $T_{\text{flange}}=50^{\circ}\text{C}$          | $P_{\text{tot}}$ | 500                 | mW                           |
| Power dissipation at $T_A=50^{\circ}\text{C}$                        | $P_{\text{tot}}$ | 400 <sup>(1)</sup>  | mW                           |
| Junction temperature                                                 | $T_j$            | -65 to +200         | $^{\circ}\text{C}$           |
| Storage temperature range                                            | $T_s$            | -65 to +200         | $^{\circ}\text{C}$           |
| Continuous forward current                                           | $I_F$            | 250                 | mA                           |
| Thermal resistance junction to ambient air                           | $R_{\theta JA}$  | 0.38 <sup>(1)</sup> | $^{\circ}\text{C}/\text{mW}$ |
| Thermal resistance junction to lead                                  | $R_{\theta JL}$  | 0.30                | $^{\circ}\text{C}/\text{mW}$ |
| Peak reverse power dissipation (non-repetitive) $t_p=100\mu\text{s}$ | $P_{\text{ZSM}}$ | 30 <sup>(2)</sup>   | W                            |

- Notes:**
1. Mounted on ceramic substrate 10mm x 10mm x 0.6mm
  2.  $T_j=150^{\circ}\text{C}$

# Electrical Characteristics

(T<sub>A</sub>=25°C unless otherwise noted) Maximum V<sub>Z</sub>=0.9V at I<sub>Z</sub>=10mA

| Type number<br>y=B for +2% V <sub>Z</sub><br>y=F for +3% V <sub>Z</sub><br>y=C for +5% V <sub>Z</sub> | Dynamic resistance                                           |                                                              | Temp. coefficient of zener voltage<br>at I <sub>Z</sub> =5mA<br>α <sub>VZ</sub> (% / °C) |                       | Reverse leakage current<br>at T <sub>amb</sub> =25°C |                              |
|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------|------------------------------------------------------|------------------------------|
|                                                                                                       | at I <sub>Z</sub> =5mA<br>f=1kHz<br>r <sub>zj</sub> (Ω) Max. | at I <sub>Z</sub> =1mA<br>f=1kHz<br>r <sub>zj</sub> (Ω) Max. | Min.                                                                                     | Max.                  | I <sub>R</sub> (uA)                                  | at V <sub>R</sub><br>(Volts) |
| BZV55 - y2V4                                                                                          | 100                                                          | 600                                                          | - 0.08                                                                                   | - 0.06                | 50                                                   | 1                            |
| BZV55 - y2V7                                                                                          | 100                                                          | 600                                                          | - 0.08                                                                                   | - 0.06                | 20                                                   | 1                            |
| BZV55 - y3V0                                                                                          | 95                                                           | 600                                                          | - 0.08                                                                                   | - 0.06                | 10                                                   | 1                            |
| BZV55 - y3V3                                                                                          | 95                                                           | 600                                                          | - 0.08                                                                                   | - 0.05                | 5                                                    | 1                            |
| BZV55 - y3V6                                                                                          | 90                                                           | 600                                                          | - 0.08                                                                                   | - 0.04                | 5                                                    | 1                            |
| BZV55 - y3V9                                                                                          | 90                                                           | 600                                                          | - 0.07                                                                                   | - 0.03                | 3                                                    | 1                            |
| BZV55 - y4V3                                                                                          | 90                                                           | 600                                                          | - 0.04                                                                                   | - 0.01                | 3                                                    | 1                            |
| BZV55 - y4V7                                                                                          | 80                                                           | 500                                                          | - 0.03                                                                                   | + 0.01                | 3                                                    | 2                            |
| BZV55 - y5V1                                                                                          | 60                                                           | 480                                                          | - 0.02                                                                                   | + 0.05                | 2                                                    | 2                            |
| BZV55 - y5V6                                                                                          | 40                                                           | 400                                                          | - 0.01                                                                                   | + 0.06                | 1                                                    | 2                            |
| BZV55 - y6V2                                                                                          | 10                                                           | 150                                                          | 0                                                                                        | + 0.07                | 3                                                    | 4                            |
| BZV55 - y6V8                                                                                          | 15                                                           | 80                                                           | + 0.01                                                                                   | + 0.08                | 2                                                    | 4                            |
| BZV55 - y7V5                                                                                          | 15                                                           | 80                                                           | + 0.01                                                                                   | + 0.09                | 1                                                    | 5                            |
| BZV55 - y8V2                                                                                          | 15                                                           | 80                                                           | + 0.01                                                                                   | + 0.09                | 0.7                                                  | 5                            |
| BZV55 - y9V1                                                                                          | 15                                                           | 100                                                          | + 0.02                                                                                   | + 0.10                | 0.5                                                  | 6                            |
| BZV55 - y10                                                                                           | 20                                                           | 150                                                          | + 0.03                                                                                   | + 0.11                | 0.2                                                  | 7                            |
| BZV55 - y11                                                                                           | 20                                                           | 150                                                          | + 0.03                                                                                   | + 0.11                | 0.1                                                  | 8                            |
| BZV55 - y12                                                                                           | 25                                                           | 150                                                          | + 0.03                                                                                   | + 0.11                | 0.1                                                  | 8                            |
| BZV55 - y13                                                                                           | 30                                                           | 170                                                          | + 0.03                                                                                   | + 0.11                | 0.1                                                  | 8                            |
| BZV55 - y15                                                                                           | 30                                                           | 200                                                          | + 0.03                                                                                   | + 0.11                | 0.05                                                 | 10                           |
| BZV55 - y16                                                                                           | 40                                                           | 200                                                          | + 0.03                                                                                   | + 0.11                | 0.05                                                 | 11                           |
| BZV55 - y18                                                                                           | 45                                                           | 225                                                          | + 0.03                                                                                   | + 0.11                | 0.05                                                 | 13                           |
| BZV55 - y20                                                                                           | 55                                                           | 225                                                          | + 0.03                                                                                   | + 0.11                | 0.05                                                 | 14                           |
| BZV55 - y22                                                                                           | 55                                                           | 250                                                          | + 0.03                                                                                   | + 0.11                | 0.05                                                 | 15                           |
| BZV55 - y24                                                                                           | 70                                                           | 250                                                          | + 0.04                                                                                   | + 0.12                | 0.05                                                 | 17                           |
| BZV55 - y27                                                                                           | 80 <sup>(3)</sup>                                            | 300 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 19                           |
| BZV55 - y30                                                                                           | 80 <sup>(3)</sup>                                            | 300 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 21                           |
| BZV55 - y33                                                                                           | 80 <sup>(3)</sup>                                            | 325 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 23                           |
| BZV55 - y36                                                                                           | 90 <sup>(3)</sup>                                            | 350 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 25                           |
| BZV55 - y39                                                                                           | 130 <sup>(3)</sup>                                           | 350 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 27                           |
| BZV55 - y43                                                                                           | 150 <sup>(3)</sup>                                           | 375 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 30                           |
| BZV55 - y47                                                                                           | 170 <sup>(3)</sup>                                           | 375 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 33                           |
| BZV55 - y51                                                                                           | 180 <sup>(3)</sup>                                           | 400 <sup>(4)</sup>                                           | + 0.04 <sup>(3)</sup>                                                                    | + 0.12 <sup>(3)</sup> | 0.05                                                 | 36                           |
| BZV55 - y56                                                                                           | 200 <sup>(3)</sup>                                           | 425 <sup>(4)</sup>                                           | typ. +0.1 <sup>(3)</sup>                                                                 |                       | 0.05                                                 | 39                           |
| BZV55 - y62                                                                                           | 215 <sup>(3)</sup>                                           | 450 <sup>(4)</sup>                                           | typ. +0.1 <sup>(3)</sup>                                                                 |                       | 0.05                                                 | 43                           |
| BZV55 - y68                                                                                           | 240 <sup>(3)</sup>                                           | 475 <sup>(4)</sup>                                           | typ. +0.1 <sup>(3)</sup>                                                                 |                       | 0.05                                                 | 48                           |
| BZV55 - y75                                                                                           | 255 <sup>(4)</sup>                                           | 500 <sup>(4)</sup>                                           | typ. +0.1 <sup>(3)</sup>                                                                 |                       | 0.05                                                 | 53                           |

- Notes:**
1. Tested with pulses t<sub>p</sub>=5 ms.
  2. Valid provided that electrodes are kept at ambient temperature.
  3. at I<sub>Z</sub>=2.0 mA
  4. at I<sub>Z</sub>=0.5 mA
- y = Zener voltage tolerance designator (see next page for V<sub>Z</sub> specifications)

Electrical Characteristics

(T<sub>A</sub> =25°C unless otherwise noted) Maximum V<sub>F</sub> =0.9V at I<sub>F</sub> =10mA

| Type number<br>±5% Tol. | Zener voltage range <sup>(1)</sup><br>at I <sub>Z</sub> =5mA<br>V <sub>Z</sub> (Volts) |                      |
|-------------------------|----------------------------------------------------------------------------------------|----------------------|
|                         | Min.                                                                                   | Max.                 |
| BZV55-C2V4              | 2.20                                                                                   | 2.60                 |
| BZV55-C2V7              | 2.50                                                                                   | 2.90                 |
| BZV55-C3V0              | 2.80                                                                                   | 3.20                 |
| BZV55-C3V3              | 3.10                                                                                   | 3.50                 |
| BZV55-C3V6              | 3.40                                                                                   | 3.80                 |
| BZV55-C3V9              | 3.70                                                                                   | 4.10                 |
| BZV55-C4V3              | 4.00                                                                                   | 4.60                 |
| BZV55-C4V7              | 4.40                                                                                   | 5.00                 |
| BZV55-C5V1              | 4.80                                                                                   | 5.40                 |
| BZV55-C5V6              | 5.20                                                                                   | 6.00                 |
| BZV55-C6V2              | 5.80                                                                                   | 6.60                 |
| BZV55-C6V8              | 6.40                                                                                   | 7.20                 |
| BZV55-C7V5              | 7.00                                                                                   | 7.90                 |
| BZV55-C8V2              | 7.70                                                                                   | 8.70                 |
| BZV55-C9V1              | 8.50                                                                                   | 9.60                 |
| BZV55-C10               | 9.40                                                                                   | 10.60                |
| BZV55-C11               | 10.40                                                                                  | 11.60                |
| BZV55-C12               | 11.40                                                                                  | 12.70                |
| BZV55-C13               | 12.40                                                                                  | 14.10                |
| BZV55-C15               | 13.80                                                                                  | 15.60                |
| BZV55-C16               | 15.30                                                                                  | 17.10                |
| BZV55-C18               | 16.80                                                                                  | 19.10                |
| BZV55-C20               | 18.80                                                                                  | 21.20                |
| BZV55-C22               | 20.80                                                                                  | 23.30                |
| BZV55-C24               | 22.80                                                                                  | 25.60                |
| BZV55-C27               | 25.10                                                                                  | 28.90 <sup>(3)</sup> |
| BZV55-C30               | 28.00                                                                                  | 32.00 <sup>(3)</sup> |
| BZV55-C33               | 31.00                                                                                  | 35.00 <sup>(3)</sup> |
| BZV55-C36               | 34.00                                                                                  | 38.00 <sup>(3)</sup> |
| BZV55-C39               | 37.00                                                                                  | 41.00 <sup>(3)</sup> |
| BZV55-C43               | 40.00                                                                                  | 46.00 <sup>(3)</sup> |
| BZV55-C47               | 44.00                                                                                  | 50.00 <sup>(3)</sup> |
| BZV55-C51               | 48.00                                                                                  | 54.00 <sup>(3)</sup> |
| BZV55-C56               | 52.00                                                                                  | 60.00 <sup>(3)</sup> |
| BZV55-C62               | 58.00                                                                                  | 66.00 <sup>(3)</sup> |
| BZV55-C68               | 64.00                                                                                  | 72.00 <sup>(3)</sup> |
| BZV55-C75               | 70.00                                                                                  | 79.00 <sup>(3)</sup> |

| Type number<br>±3% Tol. | Zener voltage range <sup>(1)</sup><br>at I <sub>Z</sub> =5mA<br>V <sub>Z</sub> (Volts) |                      |
|-------------------------|----------------------------------------------------------------------------------------|----------------------|
|                         | Min.                                                                                   | Max.                 |
| BZV55-F2V4              | 2.33                                                                                   | 2.47                 |
| BZV55-F2V7              | 2.62                                                                                   | 2.78                 |
| BZV55-F3V0              | 2.91                                                                                   | 3.09                 |
| BZV55-F3V3              | 3.20                                                                                   | 3.40                 |
| BZV55-F3V6              | 3.49                                                                                   | 3.71                 |
| BZV55-F3V9              | 3.78                                                                                   | 4.02                 |
| BZV55-F4V3              | 4.17                                                                                   | 4.43                 |
| BZV55-F4V7              | 4.56                                                                                   | 4.84                 |
| BZV55-F5V1              | 4.95                                                                                   | 5.25                 |
| BZV55-F5V6              | 5.43                                                                                   | 5.77                 |
| BZV55-F6V2              | 6.01                                                                                   | 6.39                 |
| BZV55-F6V8              | 6.60                                                                                   | 7.00                 |
| BZV55-F7V5              | 7.28                                                                                   | 7.72                 |
| BZV55-F8V2              | 7.95                                                                                   | 8.45                 |
| BZV55-F9V1              | 8.83                                                                                   | 9.37                 |
| BZV55-F10               | 9.70                                                                                   | 10.30                |
| BZV55-F11               | 10.67                                                                                  | 11.33                |
| BZV55-F12               | 11.64                                                                                  | 12.36                |
| BZV55-F13               | 12.61                                                                                  | 13.39                |
| BZV55-F15               | 14.55                                                                                  | 15.45                |
| BZV55-F16               | 15.50                                                                                  | 16.50                |
| BZV55-F18               | 17.50                                                                                  | 18.50                |
| BZV55-F20               | 19.40                                                                                  | 20.60                |
| BZV55-F22               | 21.30                                                                                  | 22.70                |
| BZV55-F24               | 23.30                                                                                  | 24.70                |
| BZV55-F27               | 26.20                                                                                  | 27.80 <sup>(3)</sup> |
| BZV55-F30               | 29.10                                                                                  | 30.90 <sup>(3)</sup> |
| BZV55-F33               | 32.00                                                                                  | 34.00 <sup>(3)</sup> |
| BZV55-F36               | 34.90                                                                                  | 37.10 <sup>(3)</sup> |
| BZV55-F39               | 37.80                                                                                  | 40.20 <sup>(3)</sup> |
| BZV55-F43               | 41.70                                                                                  | 44.30 <sup>(3)</sup> |
| BZV55-F47               | 45.60                                                                                  | 48.40 <sup>(3)</sup> |
| BZV55-F51               | 49.50                                                                                  | 52.50 <sup>(3)</sup> |
| BZV55-F56               | 54.30                                                                                  | 57.70 <sup>(3)</sup> |
| BZV55-F62               | 60.10                                                                                  | 63.90 <sup>(3)</sup> |
| BZV55-F68               | 66.00                                                                                  | 70.00 <sup>(3)</sup> |
| BZV55-F75               | 72.80                                                                                  | 77.20 <sup>(3)</sup> |

| Type number<br>±2% Tol. | Zener voltage range <sup>(1)</sup><br>at I <sub>Z</sub> =5mA<br>V <sub>Z</sub> (Volts) |                      |
|-------------------------|----------------------------------------------------------------------------------------|----------------------|
|                         | Min.                                                                                   | Max.                 |
| BZV55-B2V4              | 2.35                                                                                   | 2.45                 |
| BZV55-B2V7              | 2.65                                                                                   | 2.75                 |
| BZV55-B3V0              | 2.94                                                                                   | 3.06                 |
| BZV55-B3V3              | 3.23                                                                                   | 3.37                 |
| BZV55-B3V6              | 3.53                                                                                   | 3.67                 |
| BZV55-B3V9              | 3.82                                                                                   | 3.98                 |
| BZV55-B4V3              | 4.21                                                                                   | 4.39                 |
| BZV55-B4V7              | 4.61                                                                                   | 4.79                 |
| BZV55-B5V1              | 5.00                                                                                   | 5.20                 |
| BZV55-B5V6              | 5.49                                                                                   | 5.71                 |
| BZV55-B6V2              | 6.08                                                                                   | 6.32                 |
| BZV55-B6V8              | 6.66                                                                                   | 6.94                 |
| BZV55-B7V5              | 7.35                                                                                   | 7.65                 |
| BZV55-B8V2              | 8.04                                                                                   | 8.36                 |
| BZV55-B9V1              | 8.92                                                                                   | 9.28                 |
| BZV55-B10               | 9.80                                                                                   | 10.20                |
| BZV55-B11               | 10.80                                                                                  | 11.20                |
| BZV55-B12               | 11.80                                                                                  | 12.20                |
| BZV55-B13               | 12.70                                                                                  | 13.30                |
| BZV55-B15               | 14.70                                                                                  | 15.30                |
| BZV55-B16               | 15.70                                                                                  | 16.30                |
| BZV55-B18               | 17.60                                                                                  | 18.40                |
| BZV55-B20               | 19.60                                                                                  | 20.40                |
| BZV55-B22               | 21.60                                                                                  | 22.40                |
| BZV55-B24               | 23.50                                                                                  | 24.50                |
| BZV55-B27               | 26.50                                                                                  | 27.50 <sup>(3)</sup> |
| BZV55-B30               | 29.40                                                                                  | 30.60 <sup>(3)</sup> |
| BZV55-B33               | 32.30                                                                                  | 33.70 <sup>(3)</sup> |
| BZV55-B36               | 35.30                                                                                  | 36.70 <sup>(3)</sup> |
| BZV55-B39               | 38.20                                                                                  | 39.80 <sup>(3)</sup> |
| BZV55-B43               | 42.10                                                                                  | 43.90 <sup>(3)</sup> |
| BZV55-B47               | 46.10                                                                                  | 47.90 <sup>(3)</sup> |
| BZV55-B51               | 50.00                                                                                  | 52.00 <sup>(3)</sup> |
| BZV55-B56               | 54.90                                                                                  | 57.10 <sup>(3)</sup> |
| BZV55-B62               | 60.80                                                                                  | 63.20 <sup>(3)</sup> |
| BZV55-B68               | 66.60                                                                                  | 69.40 <sup>(3)</sup> |
| BZV55-B75               | 73.50                                                                                  | 76.50 <sup>(3)</sup> |

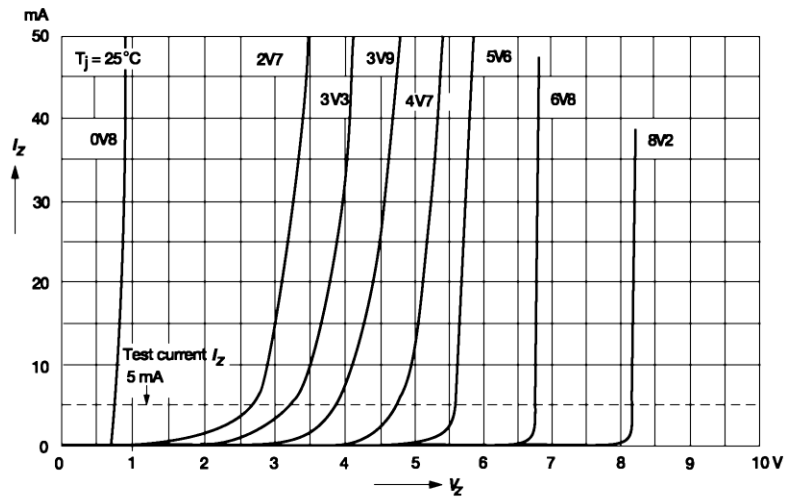
- Notes:**
- 1. Tested with pulses t<sub>p</sub> =5ms
  - 2. Valid provided that electrodes are kept at ambient temperature
  - 3. at I<sub>Z</sub>=2.0 mA

## RATINGS AND CHARACTERISTIC CURVES

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

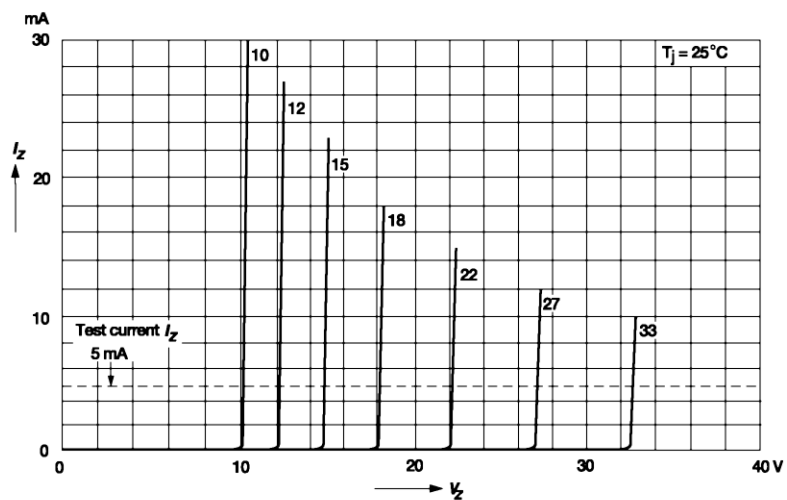
### Breakdown characteristics

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



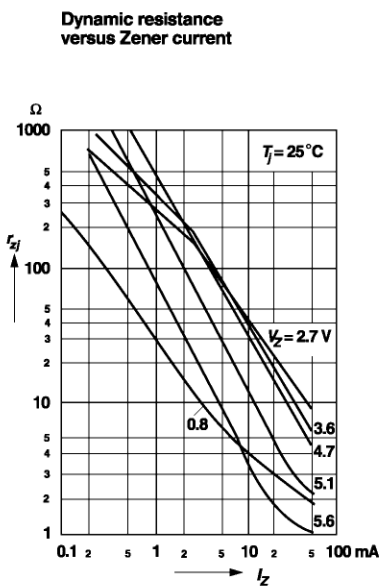
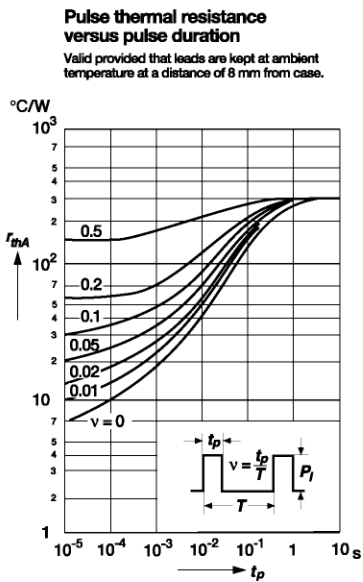
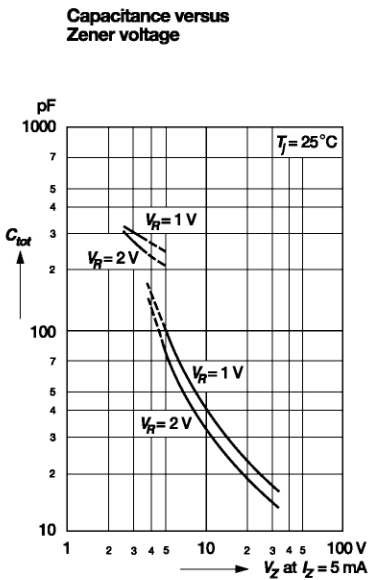
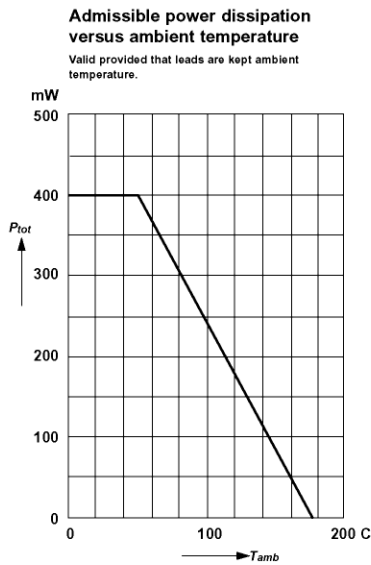
### Breakdown characteristics

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



RATINGS AND CHARACTERISTIC CURVES

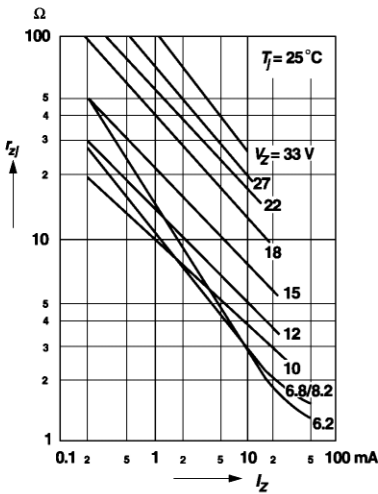
( $T_A = 25^{\circ}\text{C}$  unless otherwise noted)



RATINGS AND CHARACTERISTIC CURVES

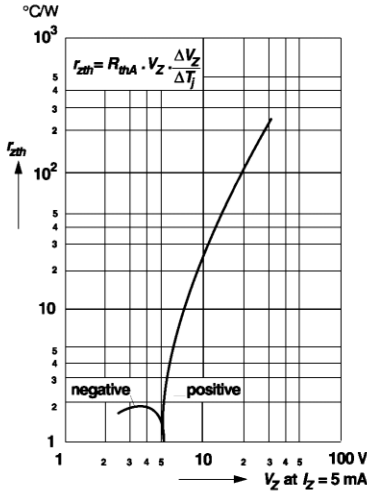
(T<sub>A</sub> = 25°C unless otherwise noted)

Dynamic resistance  
versus Zener current

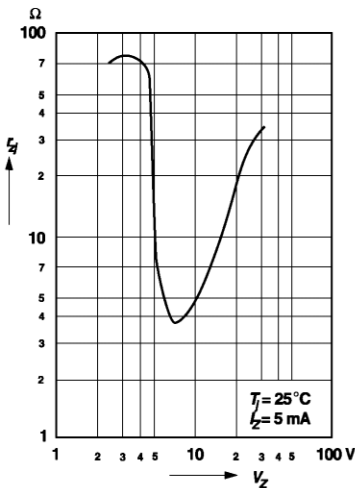


Thermal differential resistance  
versus Zener voltage

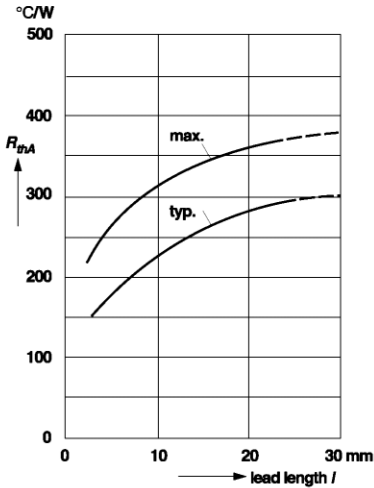
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



Dynamic resistance  
versus Zener voltage



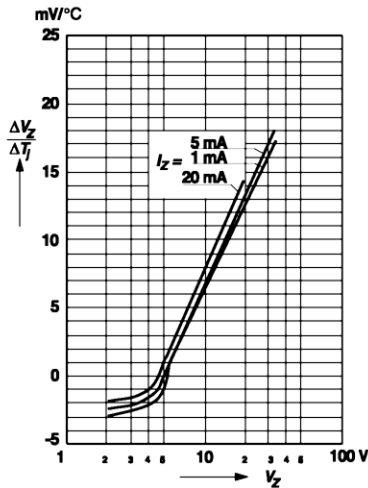
Thermal resistance  
versus lead length



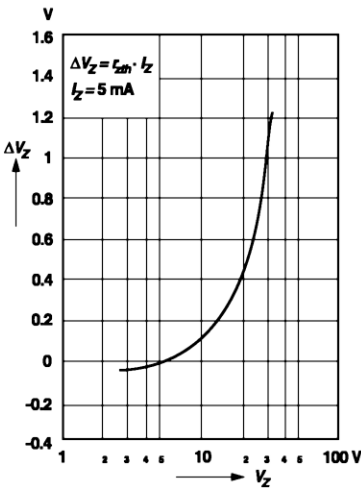
RATINGS AND CHARACTERISTIC CURVES

( $T_A = 25^{\circ}\text{C}$  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

