



# BZX79 Series

Zener Diodes

$V_Z$  Range: 2.4 to 75 Volts Power Dissipation: 500mW

## Features

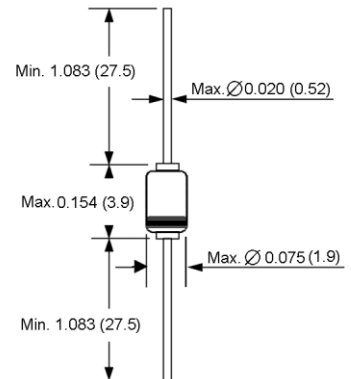
- ◆ The Zener voltages are graded according to the international E 24 standard. Higher Zener voltages and 1% tolerance available on request.
- ◆ Diodes available in these tolerance series:  
 $\pm 2\%$  BZX79-B,  $\pm 3\%$  BZX79-F,  $\pm 5\%$  BZX79-C.



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 $T_{\text{amb}} = 25^\circ\text{C}$                              | $P_{\text{tot}}$ | 500 <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                                            | $R_{\theta JA}$  | 0.3 <sup>(1)</sup> | $^\circ\text{C/mW}$ |
| Peak reverse power dissipation (non-repetitive)<br>$t_p = 100\mu\text{s}$ square wave | $P_{\text{ZSM}}$ | 40                 | W                   |

**Notes:** 1. Valid provided that leads are kept at ambient temperature at a distance of 8mm from case.

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<br>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<br>of zener voltage<br>at I <sub>Z</sub> =5mA<br>αmvz (% / °C) |        | Reverse leakage<br>current |                              | Admissible<br>zener current <sup>(2)</sup> | Capacitance<br>V <sub>R</sub> =0<br>f=1 MHz<br>(pF)<br>Max. | Non-Repetitive<br>peak reverse<br>current<br>at t <sub>p</sub> =100µs |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------|--------|----------------------------|------------------------------|--------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------|
|                                                                                                          | at I <sub>Z</sub> =5mA<br>f=1kHz<br>r <sub>zj</sub> (Ω)<br>Max. | at I <sub>Z</sub> =1mA<br>f=1kHz<br>r <sub>zj</sub> (Ω)<br>Max. | Min.                                                                             | Max.   | I <sub>R</sub><br>(nA)     | at V <sub>R</sub><br>(Volts) |                                            |                                                             |                                                                       |
|                                                                                                          |                                                                 |                                                                 |                                                                                  |        |                            |                              |                                            |                                                             |                                                                       |
| BZX79 - y2V4                                                                                             | 100                                                             | < 600                                                           | - 0.08                                                                           | - 0.06 | 50,000                     | 1                            | 167                                        | 450                                                         | 6.0                                                                   |
| BZX79 - y2V7                                                                                             | 100                                                             | < 600                                                           | - 0.08                                                                           | - 0.06 | 20,000                     | 1                            | 135                                        | 450                                                         | 6.0                                                                   |
| BZX79 - y3V0                                                                                             | 95                                                              | < 600                                                           | - 0.08                                                                           | - 0.06 | 10,000                     | 1                            | 125                                        | 450                                                         | 6.0                                                                   |
| BZX79 - y3V3                                                                                             | 95                                                              | < 600                                                           | - 0.08                                                                           | - 0.05 | 5,000                      | 1                            | 115                                        | 450                                                         | 6.0                                                                   |
| BZX79 - y3V6                                                                                             | 90                                                              | < 600                                                           | - 0.08                                                                           | - 0.04 | 5,000                      | 1                            | 105                                        | 450                                                         | 6.0                                                                   |
| BZX79 - y3V9                                                                                             | 90                                                              | < 600                                                           | - 0.07                                                                           | - 0.03 | 3,000                      | 1                            | 95                                         | 450                                                         | 6.0                                                                   |
| BZX79 - y4V3                                                                                             | 90                                                              | < 600                                                           | - 0.04                                                                           | - 0.01 | 3,000                      | 1                            | 90                                         | 450                                                         | 6.0                                                                   |
| BZX79 - y4V7                                                                                             | 80                                                              | 500                                                             | - 0.03                                                                           | + 0.01 | 3,000                      | 1                            | 85                                         | 300                                                         | 6.0                                                                   |
| BZX79 - y5V1                                                                                             | 60                                                              | 480                                                             | - 0.02                                                                           | + 0.05 | 2,000                      | 1                            | 80                                         | 300                                                         | 6.0                                                                   |
| BZX79 - y5V6                                                                                             | 40                                                              | 400                                                             | - 0.01                                                                           | + 0.06 | 1,000                      | 1                            | 70                                         | 300                                                         | 6.0                                                                   |
| BZX79 - y6V2                                                                                             | 10                                                              | 150                                                             | 0                                                                                | + 0.07 | 3,000                      | 2                            | 64                                         | 200                                                         | 6.0                                                                   |
| BZX79 - y6V8                                                                                             | 15                                                              | 80                                                              | + 0.01                                                                           | + 0.08 | 2,000                      | 3                            | 58                                         | 200                                                         | 6.0                                                                   |
| BZX79 - y7V5                                                                                             | 15                                                              | 80                                                              | +0.01                                                                            | + 0.09 | 1,000                      | 5                            | 53                                         | 150                                                         | 4.0                                                                   |
| BZX79 - y8V2                                                                                             | 15                                                              | 80                                                              | +0.01                                                                            | + 0.09 | 700                        | 6                            | 47                                         | 150                                                         | 4.0                                                                   |
| BZX79 - y9V1                                                                                             | 15                                                              | 100                                                             | + 0.02                                                                           | + 0.10 | 500                        | 7                            | 43                                         | 150                                                         | 3.0                                                                   |
| BZX79 - y10                                                                                              | 20                                                              | 150                                                             | + 0.03                                                                           | + 0.11 | 200                        | 7.5                          | 40                                         | 90                                                          | 3.0                                                                   |
| BZX79 - y11                                                                                              | 20                                                              | 150                                                             | + 0.03                                                                           | + 0.11 | 100                        | 8.5                          | 36                                         | 85                                                          | 2.5                                                                   |
| BZX79 - y12                                                                                              | 25                                                              | 150                                                             | + 0.03                                                                           | + 0.11 | 100                        | 9                            | 32                                         | 85                                                          | 2.5                                                                   |
| BZX79 - y13                                                                                              | 30                                                              | 170                                                             | + 0.03                                                                           | + 0.11 | 100                        | 10                           | 29                                         | 80                                                          | 2.5                                                                   |
| BZX79 - y15                                                                                              | 30                                                              | 200                                                             | + 0.03                                                                           | + 0.11 | 50                         | 11                           | 27                                         | 75                                                          | 2.0                                                                   |
| BZX79 - y16                                                                                              | 40                                                              | 200                                                             | + 0.03                                                                           | + 0.11 | 50                         | 12                           | 24                                         | 75                                                          | 1.5                                                                   |
| BZX79 - y18                                                                                              | 45                                                              | 225                                                             | + 0.03                                                                           | + 0.11 | 50                         | 14                           | 21                                         | 70                                                          | 1.5                                                                   |
| BZX79 - y20                                                                                              | 55                                                              | 225                                                             | + 0.03                                                                           | + 0.11 | 50                         | 15                           | 20                                         | 60                                                          | 1.5                                                                   |
| BZX79 - y22                                                                                              | 55                                                              | 250                                                             | + 0.03                                                                           | + 0.11 | 50                         | 17                           | 18                                         | 60                                                          | 1.3                                                                   |
| BZX79 - y24                                                                                              | 70                                                              | 250                                                             | + 0.04                                                                           | + 0.12 | 50                         | 18                           | 16                                         | 55                                                          | 1.3                                                                   |
| BZX79 - y27                                                                                              | 80 <sup>(3)</sup>                                               | 300 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 20                           | 14                                         | 50                                                          | 1.0                                                                   |
| BZX79 - y30                                                                                              | 80 <sup>(3)</sup>                                               | 300 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 22                           | 13                                         | 50                                                          | 1.0                                                                   |
| BZX79 - y33                                                                                              | 80 <sup>(3)</sup>                                               | 325 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 24                           | 12                                         | 45                                                          | 0.9                                                                   |
| BZX79 - y36                                                                                              | 90 <sup>(3)</sup>                                               | 350 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 27                           | 11                                         | 45                                                          | 0.8                                                                   |
| BZX79 - y39                                                                                              | 130 <sup>(3)</sup>                                              | 350 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 28                           | 10                                         | 45                                                          | 0.7                                                                   |
| BZX79 - y43                                                                                              | 150 <sup>(3)</sup>                                              | 375 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 32                           | 9.2                                        | 40                                                          | 0.6                                                                   |
| BZX79 - y47                                                                                              | 170 <sup>(3)</sup>                                              | 375 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 35                           | 8.5                                        | 40                                                          | 0.5                                                                   |
| BZX79 - y51                                                                                              | 180 <sup>(3)</sup>                                              | 400 <sup>(4)</sup>                                              | + 0.04 <sup>(3)</sup>                                                            | + 0.12 | 50                         | 38                           | 7.8                                        | 40                                                          | 0.4                                                                   |
| BZX79 - y56                                                                                              | 200 <sup>(3)</sup>                                              | 425 <sup>(4)</sup>                                              | typ. +0.1 <sup>(3)</sup>                                                         |        | 50                         | 39                           | 7.1                                        | 40                                                          | 0.3                                                                   |
| BZX79 - y62                                                                                              | 215 <sup>(3)</sup>                                              | 450 <sup>(4)</sup>                                              | typ. +0.1 <sup>(3)</sup>                                                         |        | 50                         | 43                           | 6.4                                        | 35                                                          | 0.3                                                                   |
| BZX79 - y68                                                                                              | 240 <sup>(3)</sup>                                              | 475 <sup>(4)</sup>                                              | typ. +0.1 <sup>(3)</sup>                                                         |        | 50                         | 48                           | 5.8                                        | 35                                                          | 0.3                                                                   |
| BZX79 - y75                                                                                              | 255 <sup>(3)</sup>                                              | 500 <sup>(4)</sup>                                              | typ. +0.1 <sup>(3)</sup>                                                         |        | 50                         | 53                           | 5.3                                        | 35                                                          | 0.2                                                                   |

- Notes:**
- 1. Tested with pulses t<sub>p</sub>=5 ms.
  - 2. Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.
  - 3. at I<sub>Z</sub>=2.0 mA
  - 4. at I<sub>Z</sub>=0.5 mA
- y = Zener voltage tolerance designator

Electrical Characteristics

(T<sub>A</sub>=25°C unless otherwise noted) Maximum V<sub>r</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.                 |
| BZX79-C2V4              | 2.20                                                                                   | 2.60                 |
| BZX79-C2V7              | 2.50                                                                                   | 2.90                 |
| BZX79-C3V0              | 2.80                                                                                   | 3.20                 |
| BZX79-C3V3              | 3.10                                                                                   | 3.50                 |
| BZX79-C3V6              | 3.40                                                                                   | 3.80                 |
| BZX79-C3V9              | 3.70                                                                                   | 4.10                 |
| BZX79-C4V3              | 4.00                                                                                   | 4.60                 |
| BZX79-C4V7              | 4.40                                                                                   | 5.00                 |
| BZX79-C5V1              | 4.80                                                                                   | 5.40                 |
| BZX79-C5V6              | 5.20                                                                                   | 6.00                 |
| BZX79-C6V2              | 5.80                                                                                   | 6.60                 |
| BZX79-C6V8              | 6.40                                                                                   | 7.20                 |
| BZX79-C7V5              | 7.00                                                                                   | 7.90                 |
| BZX79-C8V2              | 7.70                                                                                   | 8.70                 |
| BZX79-C9V1              | 8.50                                                                                   | 9.60                 |
| BZX79-C10               | 9.40                                                                                   | 10.60                |
| BZX79-C11               | 10.40                                                                                  | 11.60                |
| BZX79-C12               | 11.40                                                                                  | 12.70                |
| BZX79-C13               | 12.40                                                                                  | 14.10                |
| BZX79-C15               | 13.80                                                                                  | 15.60                |
| BZX79-C16               | 15.30                                                                                  | 17.10                |
| BZX79-C18               | 16.80                                                                                  | 19.10                |
| BZX79-C20               | 18.80                                                                                  | 21.20                |
| BZX79-C22               | 20.80                                                                                  | 23.30                |
| BZX79-C24               | 22.80                                                                                  | 25.60                |
| BZX79-C27               | 25.10                                                                                  | 28.90 <sup>(3)</sup> |
| BZX79-C30               | 28.00                                                                                  | 32.00 <sup>(3)</sup> |
| BZX79-C33               | 31.00                                                                                  | 35.00 <sup>(3)</sup> |
| BZX79-C36               | 34.00                                                                                  | 38.00 <sup>(3)</sup> |
| BZX79-C39               | 37.00                                                                                  | 41.00 <sup>(3)</sup> |
| BZX79-C43               | 40.00                                                                                  | 46.00 <sup>(3)</sup> |
| BZX79-C47               | 44.00                                                                                  | 50.00 <sup>(3)</sup> |
| BZX79-C51               | 48.00                                                                                  | 54.00 <sup>(3)</sup> |
| BZX79-C56               | 52.00                                                                                  | 60.00 <sup>(3)</sup> |
| BZX79-C62               | 58.00                                                                                  | 66.00 <sup>(3)</sup> |
| BZX79-C68               | 64.00                                                                                  | 72.00 <sup>(3)</sup> |
| BZX79-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.                 |
| BZX79-F2V4              | 2.33                                                                                   | 2.47                 |
| BZX79-F2V7              | 2.62                                                                                   | 2.78                 |
| BZX79-F3V0              | 2.91                                                                                   | 3.09                 |
| BZX79-F3V3              | 3.20                                                                                   | 3.40                 |
| BZX79-F3V6              | 3.49                                                                                   | 3.71                 |
| BZX79-F3V9              | 3.78                                                                                   | 4.02                 |
| BZX79-F4V3              | 4.17                                                                                   | 4.43                 |
| BZX79-F4V7              | 4.56                                                                                   | 4.84                 |
| BZX79-F5V1              | 4.95                                                                                   | 5.25                 |
| BZX79-F5V6              | 5.43                                                                                   | 5.77                 |
| BZX79-F6V2              | 6.01                                                                                   | 6.39                 |
| BZX79-F6V8              | 6.60                                                                                   | 7.00                 |
| BZX79-F7V5              | 7.28                                                                                   | 7.72                 |
| BZX79-F8V2              | 7.95                                                                                   | 8.45                 |
| BZX79-F9V1              | 8.83                                                                                   | 9.37                 |
| BZX79-F10               | 9.70                                                                                   | 10.30                |
| BZX79-F11               | 10.67                                                                                  | 11.33                |
| BZX79-F12               | 11.64                                                                                  | 12.36                |
| BZX79-F13               | 12.61                                                                                  | 13.39                |
| BZX79-F15               | 14.55                                                                                  | 15.45                |
| BZX79-F16               | 15.50                                                                                  | 16.50                |
| BZX79-F18               | 17.50                                                                                  | 18.50                |
| BZX79-F20               | 19.40                                                                                  | 20.60                |
| BZX79-F22               | 21.30                                                                                  | 22.70                |
| BZX79-F24               | 23.30                                                                                  | 24.70                |
| BZX79-F27               | 26.20                                                                                  | 27.80 <sup>(3)</sup> |
| BZX79-F30               | 29.10                                                                                  | 30.90 <sup>(3)</sup> |
| BZX79-F33               | 32.00                                                                                  | 34.00 <sup>(3)</sup> |
| BZX79-F36               | 34.90                                                                                  | 37.10 <sup>(3)</sup> |
| BZX79-F39               | 37.80                                                                                  | 40.20 <sup>(3)</sup> |
| BZX79-F43               | 41.70                                                                                  | 44.30 <sup>(3)</sup> |
| BZX79-F47               | 45.60                                                                                  | 48.40 <sup>(3)</sup> |
| BZX79-F51               | 49.50                                                                                  | 52.50 <sup>(3)</sup> |
| BZX79-F56               | 54.30                                                                                  | 57.70 <sup>(3)</sup> |
| BZX79-F62               | 60.10                                                                                  | 63.90 <sup>(3)</sup> |
| BZX79-F68               | 66.00                                                                                  | 70.00 <sup>(3)</sup> |
| BZX79-F75               | 72.80                                                                                  | 77.20 <sup>(3)</sup> |

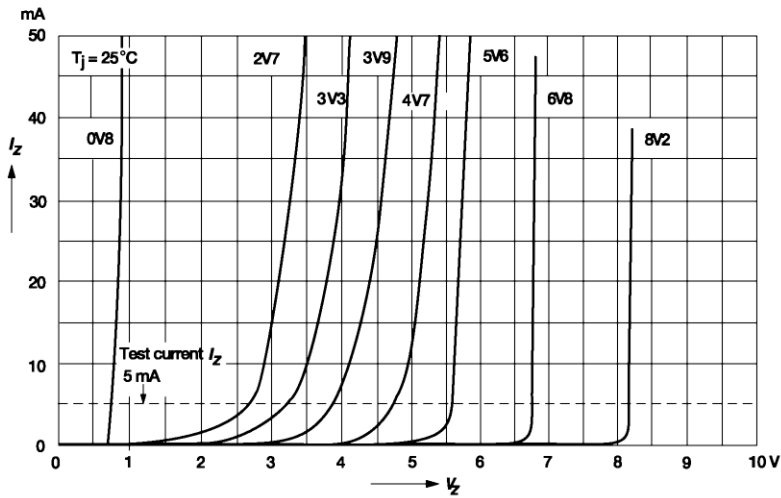
| Type number<br>±2% Tol. | Zener voltage range <sup>(1)</sup><br>at I <sub>Z</sub> =5mA<br>V <sub>Z</sub> (Volts) |                      |
|-------------------------|----------------------------------------------------------------------------------------|----------------------|
|                         | Min.                                                                                   | Max.                 |
| BZX79-B2V4              | 2.35                                                                                   | 2.45                 |
| BZX79-B2V7              | 2.65                                                                                   | 2.75                 |
| BZX79-B3V0              | 2.94                                                                                   | 3.06                 |
| BZX79-B3V3              | 3.23                                                                                   | 3.37                 |
| BZX79-B3V6              | 3.53                                                                                   | 3.67                 |
| BZX79-B3V9              | 3.82                                                                                   | 3.98                 |
| BZX79-B4V3              | 4.21                                                                                   | 4.39                 |
| BZX79-B4V7              | 4.61                                                                                   | 4.79                 |
| BZX79-B5V1              | 5.00                                                                                   | 5.20                 |
| BZX79-B5V6              | 5.49                                                                                   | 5.71                 |
| BZX79-B6V2              | 6.08                                                                                   | 6.32                 |
| BZX79-B6V8              | 6.66                                                                                   | 6.94                 |
| BZX79-B7V5              | 7.35                                                                                   | 7.65                 |
| BZX79-B8V2              | 8.04                                                                                   | 8.36                 |
| BZX79-B9V1              | 8.92                                                                                   | 9.28                 |
| BZX79-B10               | 9.80                                                                                   | 10.20                |
| BZX79-B11               | 10.80                                                                                  | 11.20                |
| BZX79-B12               | 11.80                                                                                  | 12.20                |
| BZX79-B13               | 12.70                                                                                  | 13.30                |
| BZX79-B15               | 14.70                                                                                  | 15.30                |
| BZX79-B16               | 15.70                                                                                  | 16.30                |
| BZX79-B18               | 17.60                                                                                  | 18.40                |
| BZX79-B20               | 19.60                                                                                  | 20.40                |
| BZX79-B22               | 21.60                                                                                  | 22.40                |
| BZX79-B24               | 23.50                                                                                  | 24.50                |
| BZX79-B27               | 26.50                                                                                  | 27.50 <sup>(3)</sup> |
| BZX79-B30               | 29.40                                                                                  | 30.60 <sup>(3)</sup> |
| BZX79-B33               | 32.30                                                                                  | 33.70 <sup>(3)</sup> |
| BZX79-B36               | 35.30                                                                                  | 36.70 <sup>(3)</sup> |
| BZX79-B39               | 38.20                                                                                  | 39.80 <sup>(3)</sup> |
| BZX79-B43               | 42.10                                                                                  | 43.90 <sup>(3)</sup> |
| BZX79-B47               | 46.10                                                                                  | 47.90 <sup>(3)</sup> |
| BZX79-B51               | 50.00                                                                                  | 52.00 <sup>(3)</sup> |
| BZX79-B56               | 54.90                                                                                  | 57.10 <sup>(3)</sup> |
| BZX79-B62               | 60.80                                                                                  | 63.20 <sup>(3)</sup> |
| BZX79-B68               | 66.60                                                                                  | 69.40 <sup>(3)</sup> |
| BZX79-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  
See BZV55-y table for all characteristics other than zener voltage range.

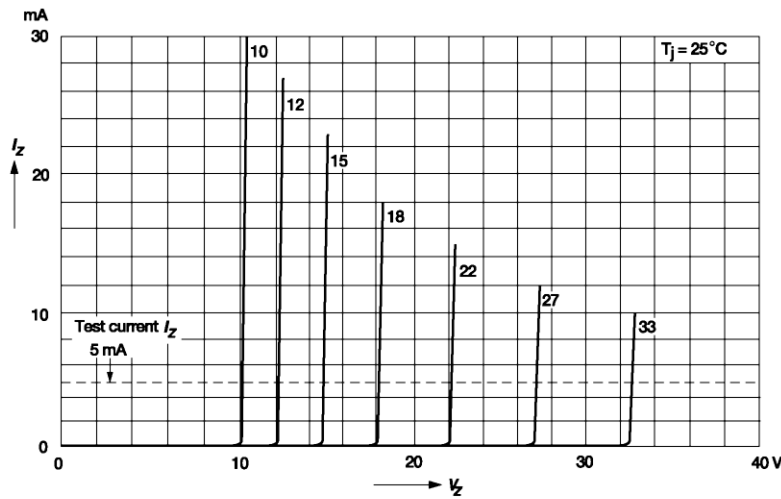
# RATINGS AND CHARACTERISTIC CURVES

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

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



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

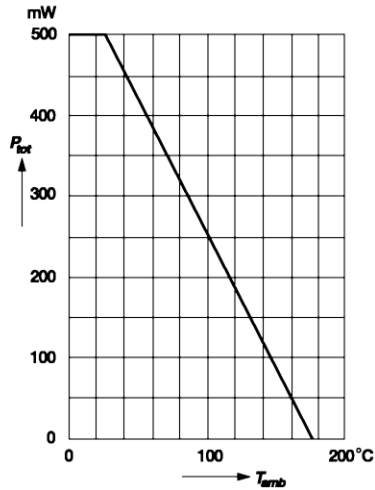


## RATINGS AND CHARACTERISTIC CURVES

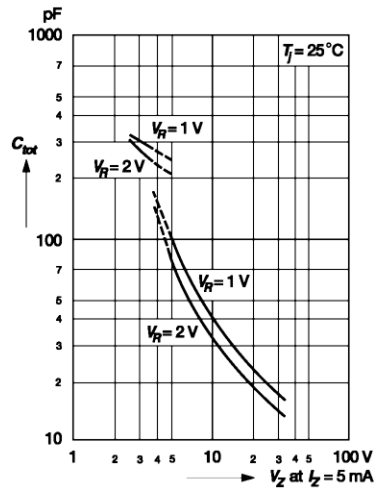
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

### Admissible power dissipation versus ambient temperature

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

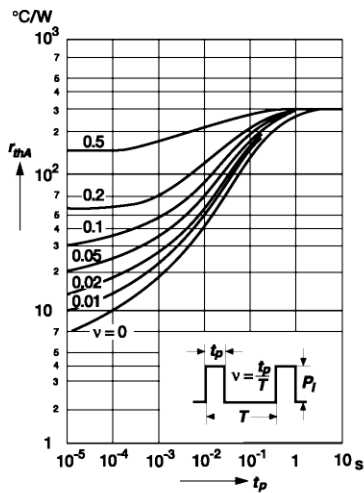


### Capacitance versus Zener voltage

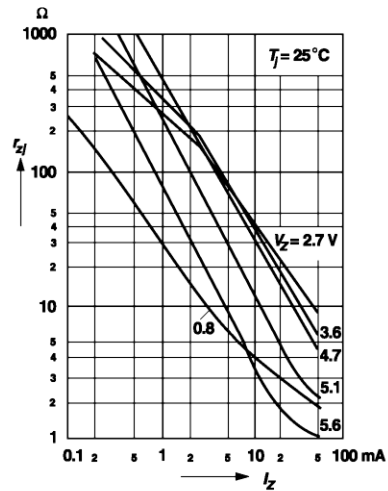


### Pulse thermal resistance versus pulse duration

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



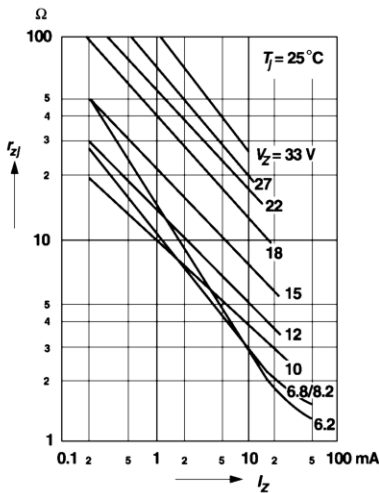
### Dynamic resistance versus Zener current



RATINGS AND CHARACTERISTIC CURVES

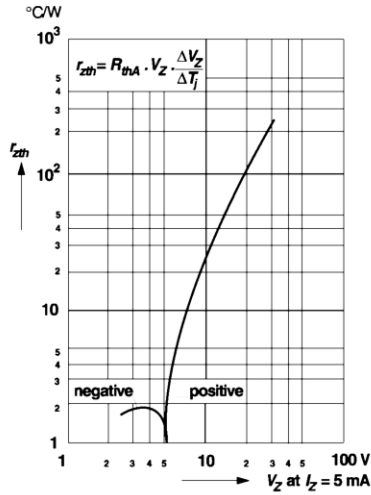
( $T_A = 25^{\circ}\text{C}$  unless otherwise noted)

Dynamic resistance  
versus Zener current

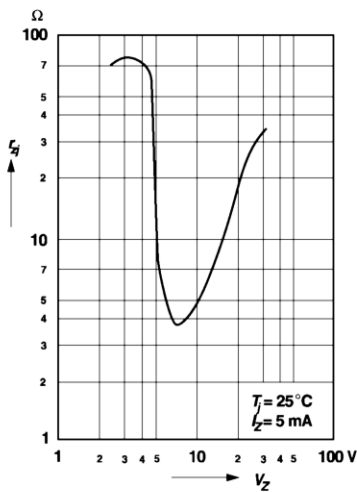


Thermal differential resistance  
versus Zener voltage

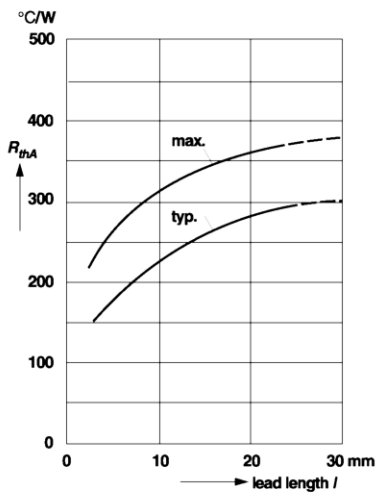
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



Dynamic resistance  
versus Zener voltage



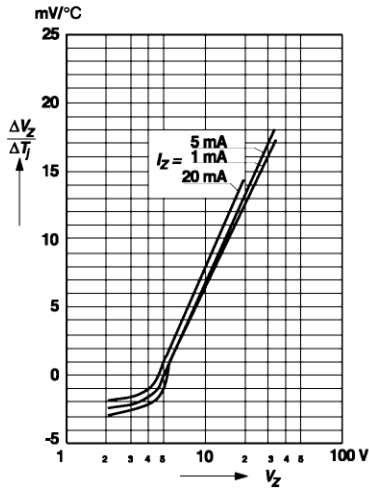
Thermal resistance  
versus lead length



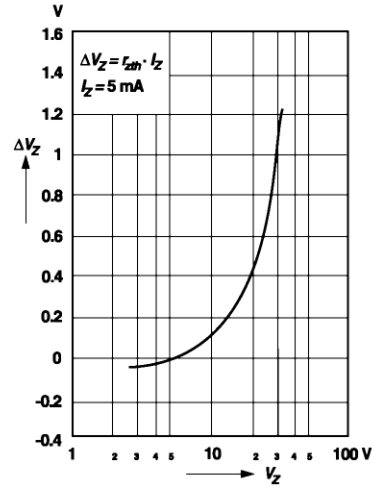
## RATINGS AND CHARACTERISTIC CURVES

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

