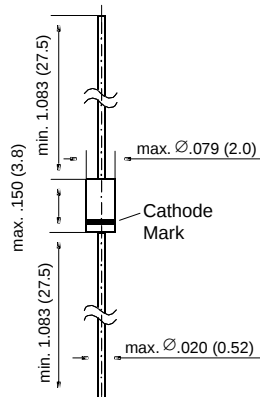


# BZX55-C0V8 THRU BZX55-C75

## ZENER DIODES

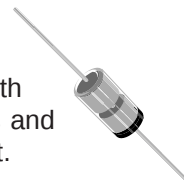
### DO-35



Dimensions are in inches and (millimeters)

### 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.



### MECHANICAL DATA

**Case:** DO-35 Glass Case

**Weight:** approx. 0.13 g

### MAXIMUM RATINGS

Ratings at 25°C ambient temperature unless otherwise specified.

|                                             | SYMBOL           | VALUE              | UNIT |
|---------------------------------------------|------------------|--------------------|------|
| Zener Current (see Table "Characteristics") |                  |                    |      |
| Power Dissipation at Tamb = 25°C            | P <sub>tot</sub> | 500 <sup>(1)</sup> | mW   |
| Junction Temperature                        | T <sub>j</sub>   | 175                | °C   |
| Storage Temperature Range                   | T <sub>s</sub>   | - 55 to +175       | °C   |

|                                               | SYMBOL            | MIN. | TYP. | MAX.               | UNIT  |
|-----------------------------------------------|-------------------|------|------|--------------------|-------|
| Thermal Resistance<br>Junction to Ambient Air | R <sub>thJA</sub> | —    | —    | 300 <sup>(1)</sup> | °C/W  |
| Forward Voltage<br>at I <sub>F</sub> = 100 mA | V <sub>F</sub>    | —    | —    | 1.0                | Volts |

#### NOTES:

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

# BZX55-C0V8 THRU BZX55-C75

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Type                        | Zener Voltage range <sup>(1)</sup><br>at<br>I <sub>Z</sub> = 5 mA<br><br>V <sub>Z</sub> V | Dynamic resistance                       |                                         | Temp. coefficient<br>of Zener Voltage<br>at<br>I <sub>Z</sub> = 5 mA<br>αV <sub>Z</sub> %/K |        | Reverse leakage current          |                                   |                        | Admissible<br>Zener<br>current <sup>(2)</sup><br><br>I <sub>ZM</sub> mA |
|-----------------------------|-------------------------------------------------------------------------------------------|------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------|--------|----------------------------------|-----------------------------------|------------------------|-------------------------------------------------------------------------|
|                             |                                                                                           | at<br>I <sub>Z</sub> = 5 mA<br>f = 1 kHz | at<br>I <sub>Z</sub> = 1mA<br>f = 1 kHz |                                                                                             |        | at<br>T <sub>amb</sub> =<br>25°C | at<br>T <sub>amb</sub> =<br>150°C | at<br>V <sub>R</sub> V |                                                                         |
|                             |                                                                                           | r <sub>Zj</sub> Ω                        | r <sub>Zj</sub> Ω                       | min                                                                                         | max    | I <sub>R</sub> nA                | I <sub>R</sub> μA                 |                        |                                                                         |
| BZX55 – C0V8 <sup>(3)</sup> | 0.73 ... 0.83                                                                             | < 8                                      | < 600                                   | – 0.25                                                                                      | –      | –                                | –                                 | –                      | –                                                                       |
| BZX55 – C2V7                | 2.5 ... 2.9                                                                               | < 85                                     | < 600                                   | – 0.08                                                                                      | – 0.06 | < 10000                          | < 50                              | 1                      | 135                                                                     |
| BZX55 – C3V0                | 2.8 ... 3.2                                                                               | < 85                                     | < 600                                   | – 0.08                                                                                      | – 0.06 | < 4000                           | < 40                              | 1                      | 125                                                                     |
| BZX55 – C3V3                | 3.1 ... 3.5                                                                               | < 85                                     | < 600                                   | – 0.08                                                                                      | – 0.05 | < 2000                           | < 40                              | 1                      | 115                                                                     |
| BZX55 – C3V6                | 3.4 ... 3.9                                                                               | < 85                                     | < 600                                   | – 0.08                                                                                      | – 0.04 | < 2000                           | < 40                              | 1                      | 105                                                                     |
| BZX55 – C3V9                | 3.7 ... 4.1                                                                               | < 85                                     | < 600                                   | – 0.07                                                                                      | – 0.03 | < 2000                           | < 40                              | 1                      | 95                                                                      |
| BZX55 – C4V3                | 4.0 ... 4.6                                                                               | < 75                                     | < 600                                   | – 0.04                                                                                      | – 0.01 | < 1000                           | < 20                              | 1                      | 90                                                                      |
| BZX55 – C4V7                | 4.4 ... 5.0                                                                               | < 60                                     | < 600                                   | – 0.03                                                                                      | +0.01  | < 500                            | < 10                              | 1                      | 85                                                                      |
| BZX55 – C5V1                | 4.8 ... 5.4                                                                               | < 35                                     | < 550                                   | – 0.02                                                                                      | +0.05  | < 100                            | < 2                               | 1                      | 80                                                                      |
| BZX55 – C5V6                | 5.2 ... 6.0                                                                               | < 25                                     | < 450                                   | – 0.01                                                                                      | +0.06  | < 100                            | < 2                               | 1                      | 70                                                                      |
| BZX55 – C6V2                | 5.8 ... 6.6                                                                               | < 10                                     | < 200                                   | 0                                                                                           | +0.07  | < 100                            | < 2                               | 2                      | 64                                                                      |
| BZX55 – C6V8                | 6.4 ... 7.2                                                                               | < 8                                      | < 150                                   | +0.01                                                                                       | +0.08  | < 100                            | < 2                               | 3                      | 58                                                                      |
| BZX55 – C7V5                | 7.0 ... 7.9                                                                               | < 7                                      | < 50                                    | +0.01                                                                                       | +0.09  | < 100                            | < 2                               | 5                      | 53                                                                      |
| BZX55 – C8V2                | 7.7 ... 8.7                                                                               | < 7                                      | < 50                                    | +0.01                                                                                       | +0.09  | < 100                            | < 2                               | 6                      | 47                                                                      |
| BZX55 – C9V1                | 8.5 ... 9.6                                                                               | < 10                                     | < 50                                    | +0.02                                                                                       | +0.10  | < 100                            | < 2                               | 7                      | 43                                                                      |
| BZX55 – C10                 | 9.4 ... 10.6                                                                              | < 15                                     | < 70                                    | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 7.5                    | 40                                                                      |
| BZX55 – C11                 | 10.4 ... 11.6                                                                             | < 20                                     | < 70                                    | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 8.5                    | 36                                                                      |
| BZX55 – C12                 | 11.4 ... 12.7                                                                             | < 20                                     | < 90                                    | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 9                      | 32                                                                      |
| BZX55 – C13                 | 12.4 ... 14.1                                                                             | < 26                                     | < 110                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 10                     | 29                                                                      |
| BZX55 – C15                 | 13.8 ... 15.6                                                                             | < 30                                     | < 110                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 11                     | 27                                                                      |
| BZX55 – C16                 | 15.3 ... 17.1                                                                             | < 40                                     | < 170                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 12                     | 24                                                                      |
| BZX55 – C18                 | 16.8 ... 19.1                                                                             | < 50                                     | < 170                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 14                     | 21                                                                      |
| BZX55 – C20                 | 18.8 ... 21.2                                                                             | < 55                                     | < 220                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 15                     | 20                                                                      |
| BZX55 – C22                 | 20.8 ... 23.3                                                                             | < 55                                     | < 220                                   | +0.03                                                                                       | +0.11  | < 100                            | < 2                               | 17                     | 18                                                                      |
| BZX55 – C24                 | 22.8 ... 25.6                                                                             | < 80                                     | < 220                                   | +0.04                                                                                       | +0.12  | < 100                            | < 2                               | 18                     | 16                                                                      |
| BZX55 – C27                 | 25.1 ... 28.9                                                                             | < 80                                     | < 220                                   | +0.04                                                                                       | +0.12  | < 100                            | < 2                               | 20                     | 14                                                                      |
| BZX55 – C30                 | 28 ... 32                                                                                 | < 80                                     | < 220                                   | +0.04                                                                                       | +0.12  | < 100                            | < 2                               | 22                     | 13                                                                      |
| BZX55 – C33                 | 31 ... 35                                                                                 | < 80                                     | < 220                                   | +0.04                                                                                       | +0.12  | < 100                            | < 2                               | 24                     | 12                                                                      |
| BZX55 – C36                 | 34 ... 38                                                                                 | < 80                                     | < 220                                   | +0.04                                                                                       | +0.12  | < 100                            | < 2                               | 27                     | 11                                                                      |
| BZX55 – C39                 | 37 ... 41 <sup>(4)</sup>                                                                  | < 90 <sup>(4)</sup>                      | < 500 <sup>(5)</sup>                    | +0.04                                                                                       | +0.12  | < 100                            | < 5                               | 28                     | 10                                                                      |
| BZX55 – C43                 | 40 ... 46 <sup>(4)</sup>                                                                  | < 90 <sup>(4)</sup>                      | < 600 <sup>(5)</sup>                    | +0.04                                                                                       | +0.12  | < 100                            | < 5                               | 32                     | 9.2                                                                     |
| BZX55 – C47                 | 44 ... 50 <sup>(4)</sup>                                                                  | < 110 <sup>(4)</sup>                     | < 700 <sup>(5)</sup>                    | +0.04                                                                                       | +0.12  | < 100                            | < 5                               | 35                     | 8.5                                                                     |
| BZX55 – C51                 | 48 ... 54 <sup>(4)</sup>                                                                  | < 125 <sup>(4)</sup>                     | < 700 <sup>(5)</sup>                    | +0.04                                                                                       | +0.12  | < 100                            | < 10                              | 38                     | 7.8                                                                     |
| BZX55-C56                   | 52.0 ... 60.0 <sup>(4)</sup>                                                              | < 135 <sup>(4)</sup>                     | < 1000 <sup>(5)</sup>                   | typ. +0.1 <sup>(4)</sup>                                                                    |        | < 100                            | < 10                              | 42                     | 7.0                                                                     |
| BZX55-C62                   | 58.0 ... 66.0 <sup>(4)</sup>                                                              | < 150 <sup>(4)</sup>                     | < 1000 <sup>(5)</sup>                   | typ. +0.1 <sup>(4)</sup>                                                                    |        | < 100                            | < 10                              | 47                     | 6.4                                                                     |
| BZX55-C68                   | 64.0 ... 72.0 <sup>(4)</sup>                                                              | < 200 <sup>(4)</sup>                     | < 1000 <sup>(5)</sup>                   | typ. +0.1 <sup>(4)</sup>                                                                    |        | < 100                            | < 10                              | 51                     | 5.9                                                                     |
| BZX55-C75                   | 70.0 ... 79.0 <sup>(4)</sup>                                                              | < 250 <sup>(4)</sup>                     | < 1000 <sup>(5)</sup>                   | typ. +0.1 <sup>(4)</sup>                                                                    |        | < 100                            | < 10                              | 56                     | 5.3                                                                     |

### 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) 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

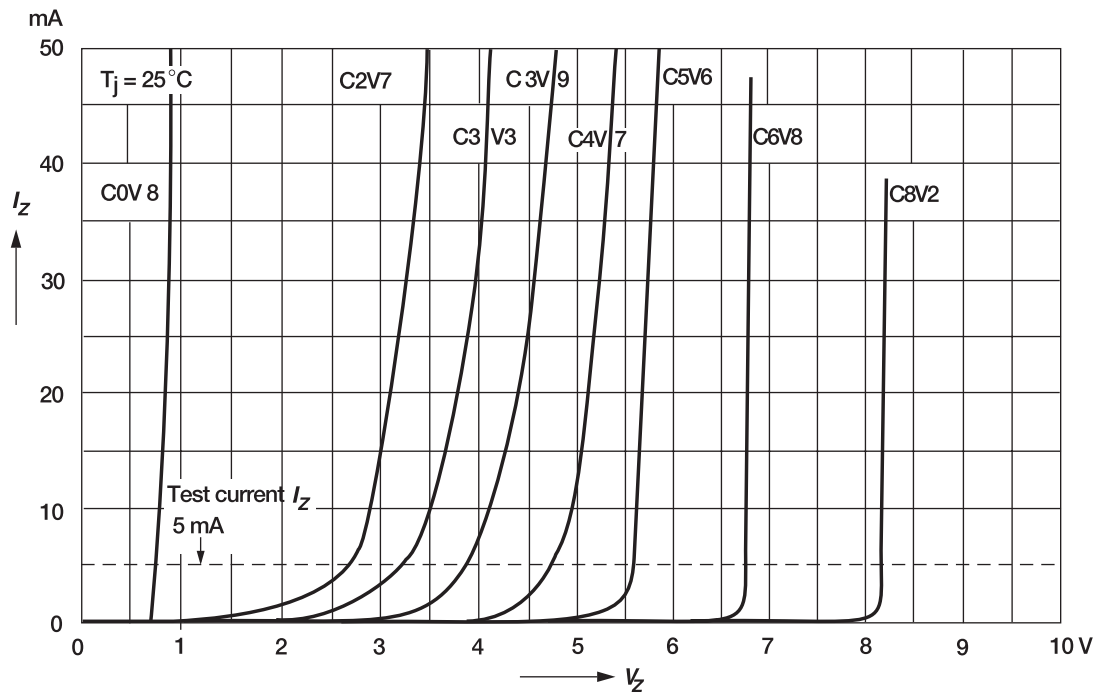
(4) at I<sub>Z</sub> = 2.5 mA

(5) at I<sub>Z</sub> = 0.5 mA

# RATINGS AND CHARACTERISTIC CURVES BZX55-C0V8 THRU BZX55-C75

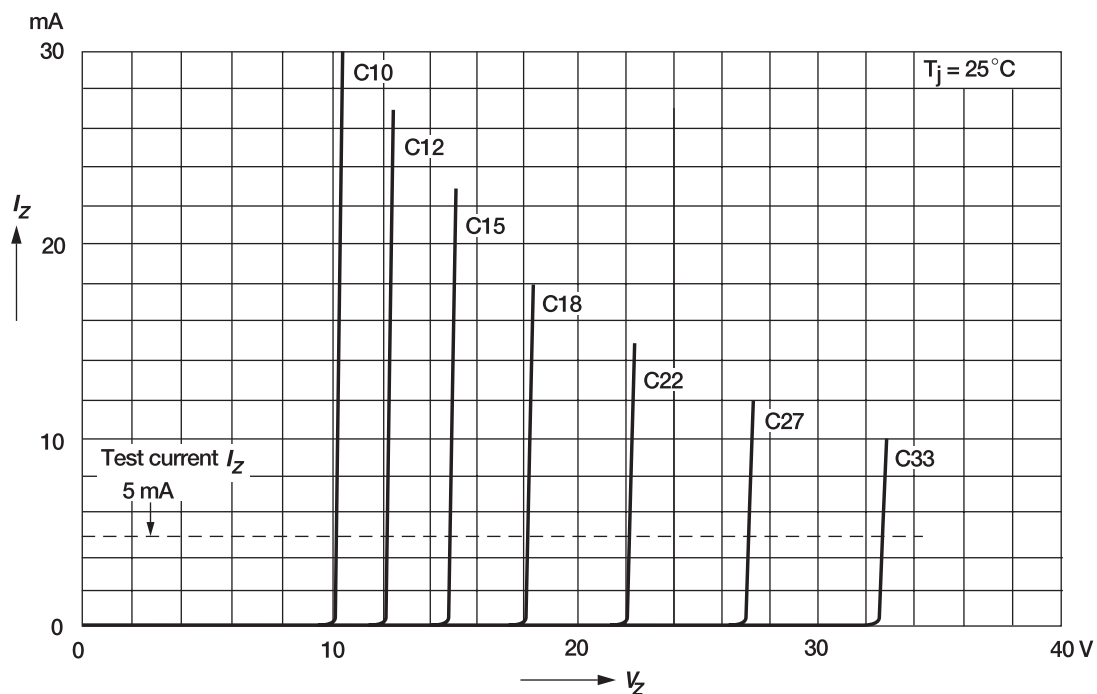
## Breakdown characteristics

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



## Breakdown characteristics

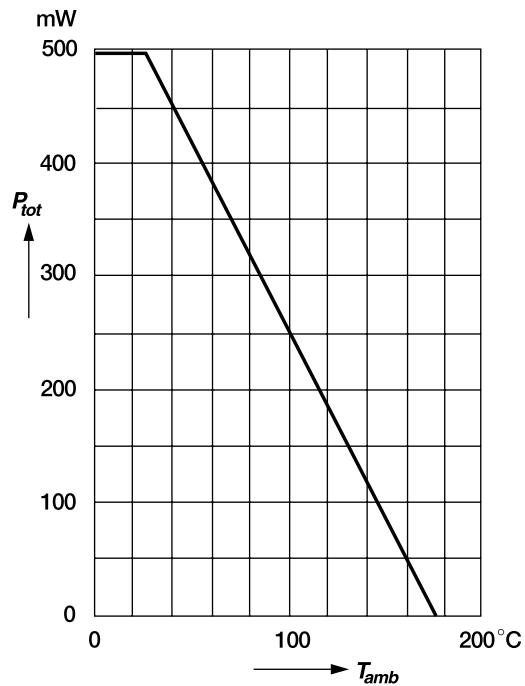
at  $T_j = \text{constant}$  (pulsed)



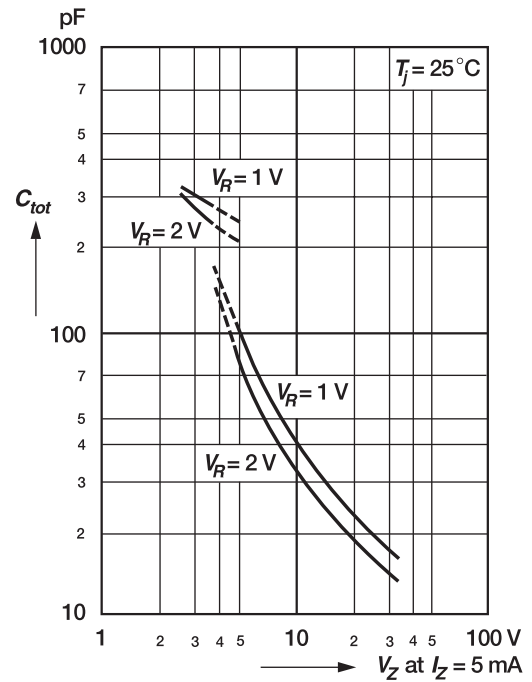
# RATINGS AND CHARACTERISTIC CURVES BZX55-C0V8 THRU BZX55-C75

## Admissible power dissipation versus ambient temperature

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

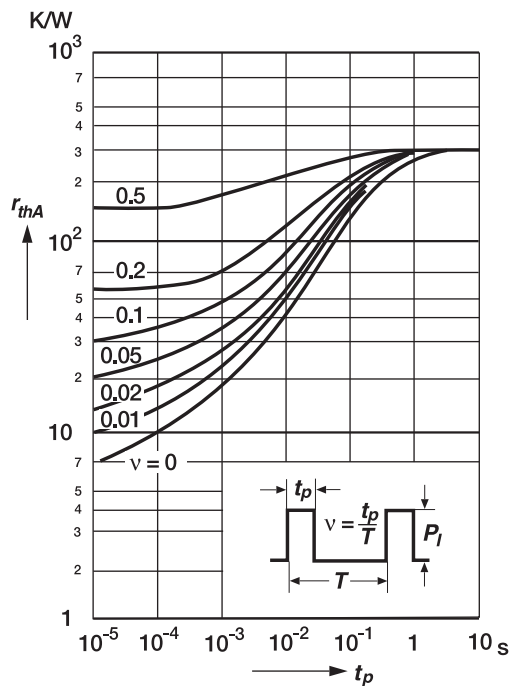


## Capacitance versus Zener voltage

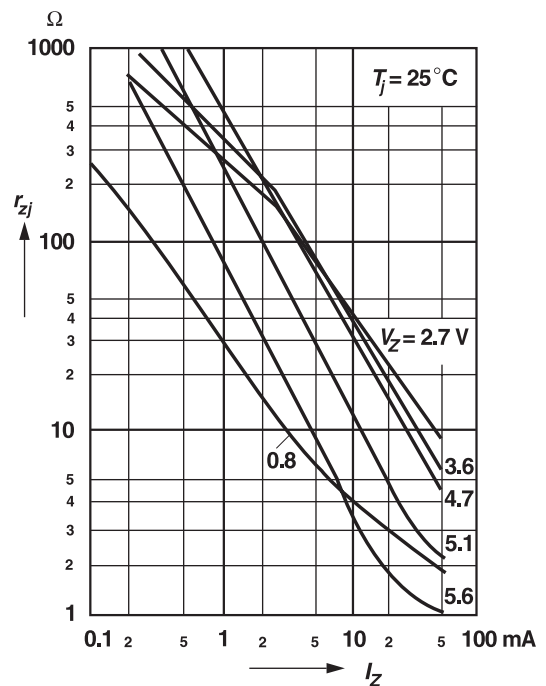


## Pulse thermal resistance versus pulse duration

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

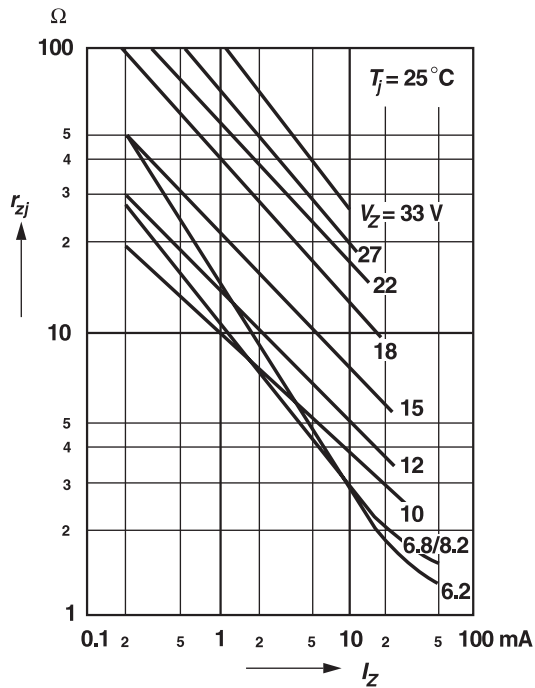


## Dynamic resistance versus Zener current



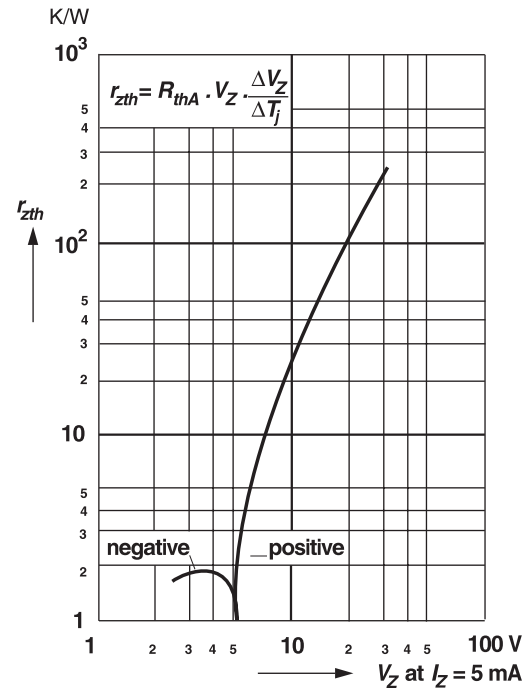
# RATINGS AND CHARACTERISTIC CURVES BZX55-C0V8 THRU BZX55-C75

Dynamic resistance  
versus Zener current

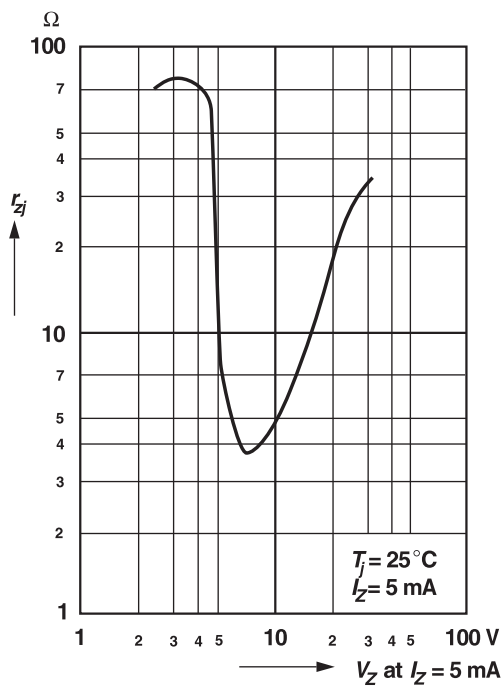


Thermal differential resistance  
versus Zener voltage

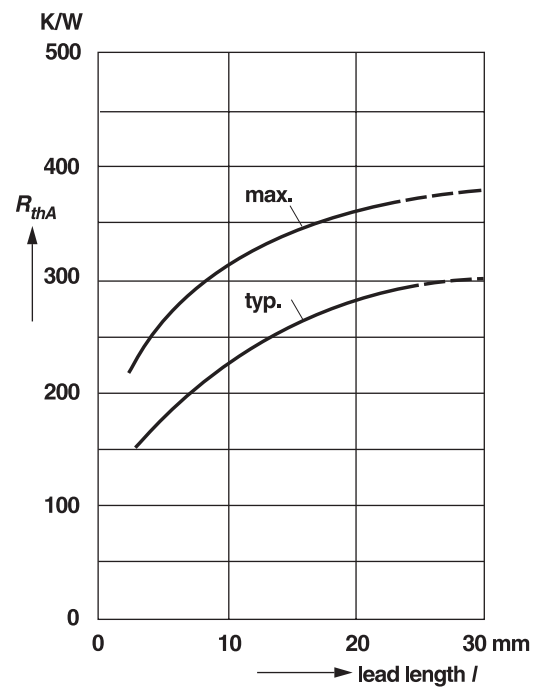
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



Dynamic resistance  
versus Zener voltage

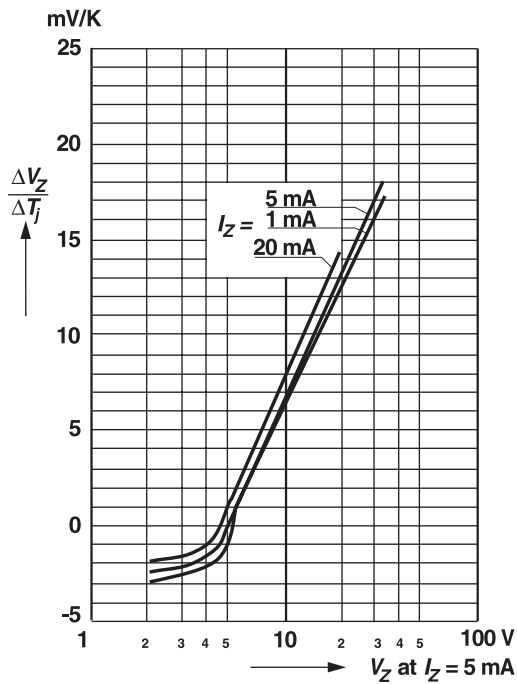


Thermal resistance  
versus lead length

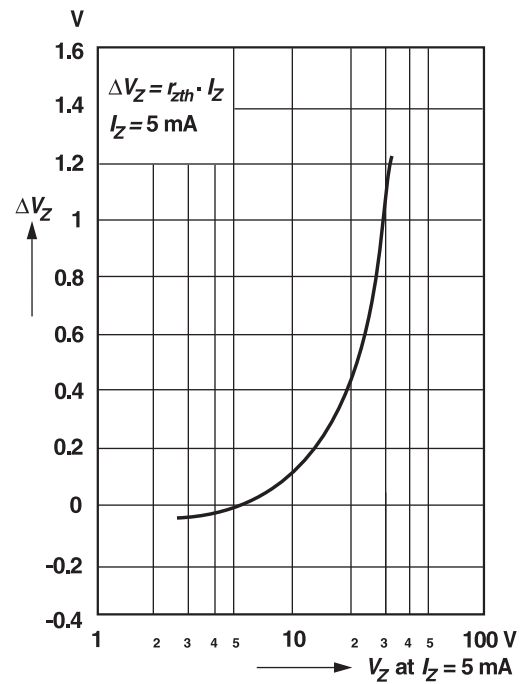


# RATINGS AND CHARACTERISTIC CURVES BZX55-C0V8 THRU BZX55-C75

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

