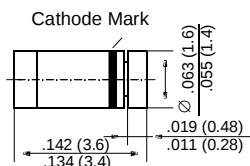


# BZV55 SERIES

## ZENER DIODES

### Mini-MELF



Dimensions are in inches and (millimeters)

### 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.



### MECHANICAL DATA

**Case:** Mini-MELF Glass Case (SOD-80)

**Weight:** approx. 0.05 g

**Cathode band color:** Blue

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

|                                                                      | 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        | °C   |
| Storage Temperature Range                                            | $T_s$            | -65 to +200        | °C   |
| Continuous Forward Current                                           | $I_F$            | 250                | mA   |
| Peak reverse power dissipation (non-repetitive) $t_p=100\mu\text{s}$ | $P_{\text{ZSM}}$ | 30 <sup>(2)</sup>  | W    |

|                                            | SYMBOL            | MIN. | TYP. | MAX.                | UNIT |
|--------------------------------------------|-------------------|------|------|---------------------|------|
| Thermal Resistance Junction to Ambient Air | $R_{\text{thJA}}$ |      |      | 0.38 <sup>(1)</sup> | K/mW |
| Thermal Resistance Junction to Lead        | $R_{\text{thJL}}$ |      |      | 0.30                | K/mW |
| Forward Voltage at $I_F = 10 \text{ mA}$   | $V_F$             |      |      | 0.9                 | V    |

#### NOTES:

1) Mounted on ceramic substrate 10mm x 10mm x 0.6mm

2)  $T_j = 150^{\circ}\text{C}$

# BZV55 SERIES

## ELECTRICAL CHARACTERISTICS

(1) Valid provided that electrodes are kept at ambient temperature.

| Type       | Dynamic Resistance                                                        |                                                                           | Temp. coefficient<br>of Zener Voltage |           | Reverse leakage<br>current |                    |
|------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------|-----------|----------------------------|--------------------|
|            | at<br>I <sub>z</sub> = 5 mA<br>f=1 kHz<br><br>r <sub>zj</sub> (Ω)<br>max. | at<br>I <sub>z</sub> = 1 mA<br>f=1 kHz<br><br>r <sub>zj</sub> (Ω)<br>max. |                                       |           | at T <sub>amb</sub> = 25°C |                    |
|            |                                                                           |                                                                           | min.                                  | max.      | at<br>I <sub>R</sub> (μA)  | V <sub>R</sub> (V) |
|            |                                                                           |                                                                           |                                       |           |                            |                    |
| 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(3)                                                                     | 300(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 19                 |
| BZV55-y30  | 80(3)                                                                     | 300(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 21                 |
| BZV55-y33  | 80(3)                                                                     | 325(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 23                 |
| BZV55-y36  | 90(3)                                                                     | 350(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 25                 |
| BZV55-y39  | 130(3)                                                                    | 350(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 27                 |
| BZV55-y43  | 150(3)                                                                    | 375(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 30                 |
| BZV55-y47  | 170(3)                                                                    | 375(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 33                 |
| BZV55-y51  | 180(3)                                                                    | 400(4)                                                                    | +0.04(3)                              | +0.12 (3) | 0.05                       | 36                 |
| BZV55-y56  | 200(3)                                                                    | 425(4)                                                                    | typ. +0.1(3)                          |           | 0.05                       | 39                 |
| BZV55-y62  | 215(3)                                                                    | 450(4)                                                                    | typ. +0.1(3)                          |           | 0.05                       | 43                 |
| BZV55-y68  | 240(3)                                                                    | 475(4)                                                                    | typ. +0.1(3)                          |           | 0.05                       | 48                 |
| BZV55-y75  | 255(3)                                                                    | 500(4)                                                                    | typ. +0.1(3)                          |           | 0.05                       | 53                 |

(1) Tested with pulses  $t_p = 5 \text{ ms}$ .

(2) Valid provided that electrodes are kept at ambient temperature.

(3) at  $I_z = 2.0 \text{ mA}$

(4) at  $I_z = 0.5 \text{ mA}$

y = Zener voltage tolerance designator

# BZV55 SERIES

## ELECTRICAL CHARACTERISTICS

(1) Valid provided that electrodes are kept at ambient temperature.

| Type       | Zener Voltage range(1) at $I_Z = 5 \text{ mA}$ |          |
|------------|------------------------------------------------|----------|
|            | $V_Z \text{ V}$<br>min.                        | max.     |
| ±5% Tol.   |                                                |          |
| 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(3) |
| BZV55-C30  | 28.00                                          | 32.00(3) |
| BZV55-C33  | 31.00                                          | 35.00(3) |
| BZV55-C36  | 34.00                                          | 38.00(3) |
| BZV55-C39  | 37.00                                          | 41.00(3) |
| BZV55-C43  | 40.00                                          | 46.00(3) |
| BZV55-C47  | 44.00                                          | 50.00(3) |
| BZV55-C51  | 48.00                                          | 54.00(3) |
| BZV55-C56  | 52.00                                          | 60.00(3) |
| BZV55-C62  | 58.00                                          | 66.00(3) |
| BZV55-C68  | 64.00                                          | 72.00(3) |
| BZV55-C75  | 70.00                                          | 79.00(3) |

| Type       | Zener Voltage range(1) at $I_Z = 5 \text{ mA}$ |          |
|------------|------------------------------------------------|----------|
|            | $V_Z \text{ V}$<br>min.                        | max.     |
| ±3% Tol.   |                                                |          |
| 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(3) |
| BZV55-F30  | 29.10                                          | 30.90(3) |
| BZV55-F33  | 32.00                                          | 34.00(3) |
| BZV55-F36  | 34.90                                          | 37.10(3) |
| BZV55-F39  | 37.80                                          | 40.20(3) |
| BZV55-F43  | 41.70                                          | 44.30(3) |
| BZV55-F47  | 45.60                                          | 48.40(3) |
| BZV55-F51  | 49.50                                          | 52.50(3) |
| BZV55-F56  | 54.30                                          | 57.70(3) |
| BZV55-F62  | 60.10                                          | 63.90(3) |
| BZV55-F68  | 66.00                                          | 70.00(3) |
| BZV55-F75  | 72.80                                          | 77.20(3) |

| Type       | Zener Voltage range(1) at $I_Z = 5 \text{ mA}$ |          |
|------------|------------------------------------------------|----------|
|            | $V_Z \text{ V}$<br>min.                        | max.     |
| ±2% Tol.   |                                                |          |
| 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(3) |
| BZV55-B30  | 29.40                                          | 30.60(3) |
| BZV55-B33  | 32.30                                          | 33.70(3) |
| BZV55-B36  | 35.30                                          | 36.70(3) |
| BZV55-B39  | 38.20                                          | 39.80(3) |
| BZV55-B43  | 42.10                                          | 43.90(3) |
| BZV55-B47  | 46.10                                          | 47.90(3) |
| BZV55-B51  | 50.00                                          | 52.00(3) |
| BZV55-B56  | 54.90                                          | 57.10(3) |
| BZV55-B62  | 60.80                                          | 63.20(3) |
| BZV55-B68  | 66.60                                          | 69.40(3) |
| BZV55-B75  | 73.50                                          | 76.50(3) |

(1) Tested with pulses  $t_p = 5 \text{ ms}$ .

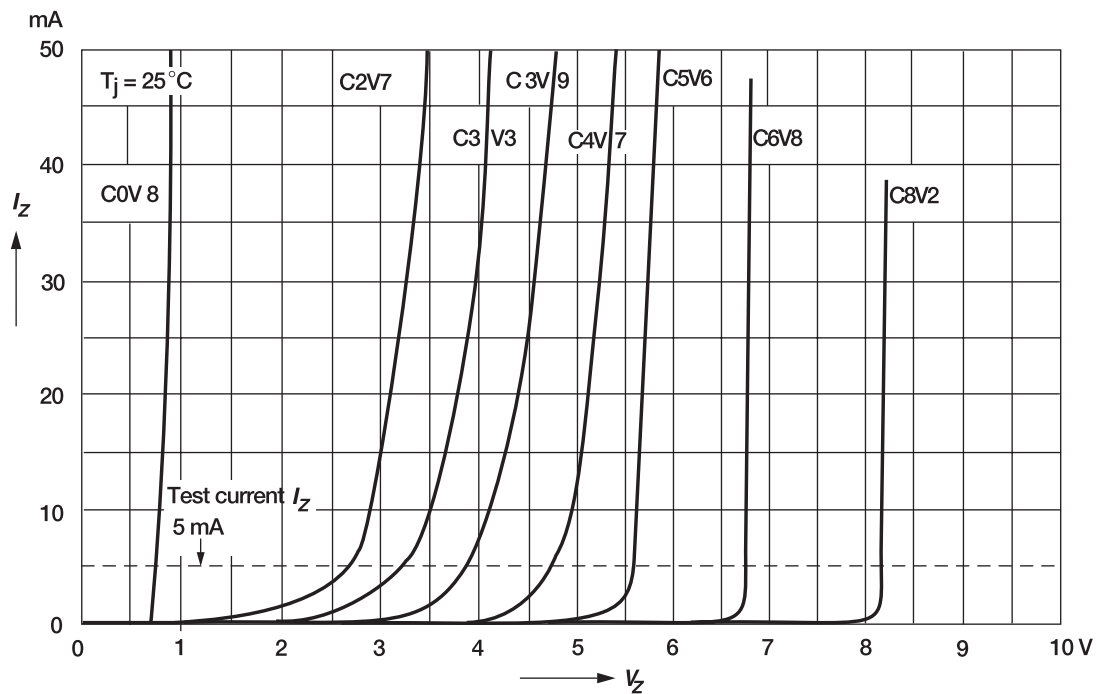
(3)  $I_Z = 2 \text{ mA}$

See BZV55-y table for all characteristics other than zener voltage range.

## RATINGS AND CHARACTERISTIC CURVES BZV55 Series

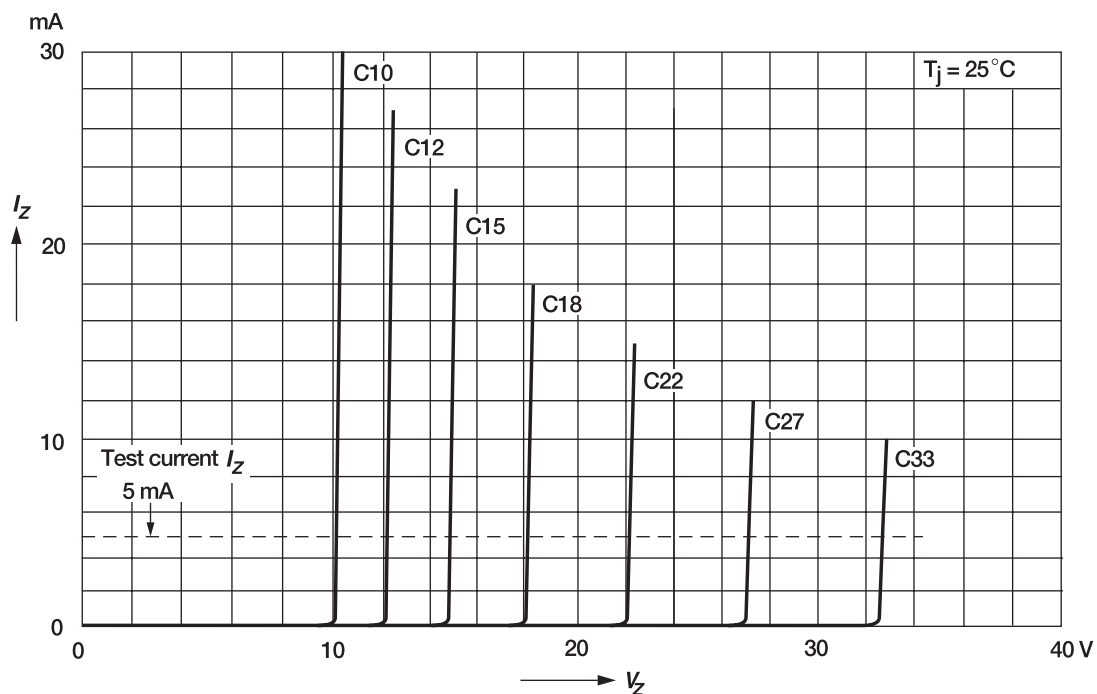
### Breakdown characteristics

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



### Breakdown characteristics

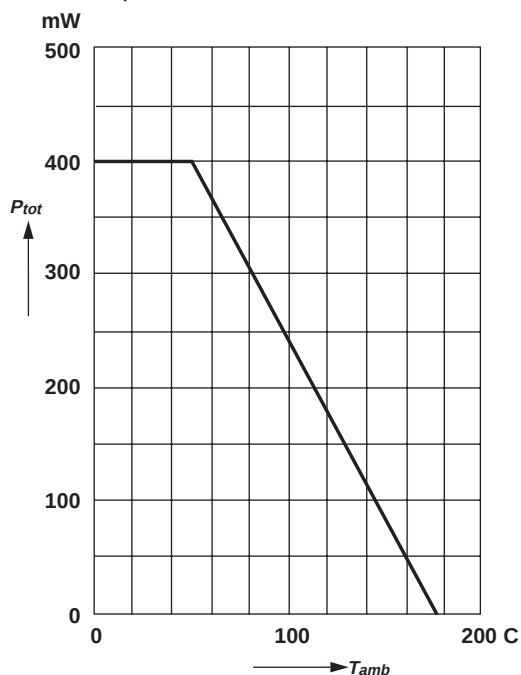
at  $T_j = \text{constant}$  (pulsed)



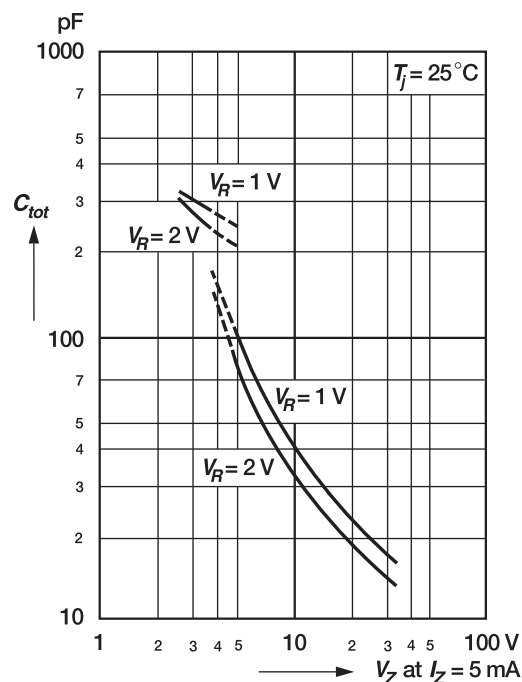
# RATINGS AND CHARACTERISTIC CURVES BZV55 Series

## Admissible power dissipation versus ambient temperature

Valid provided that leads are kept ambient temperature.

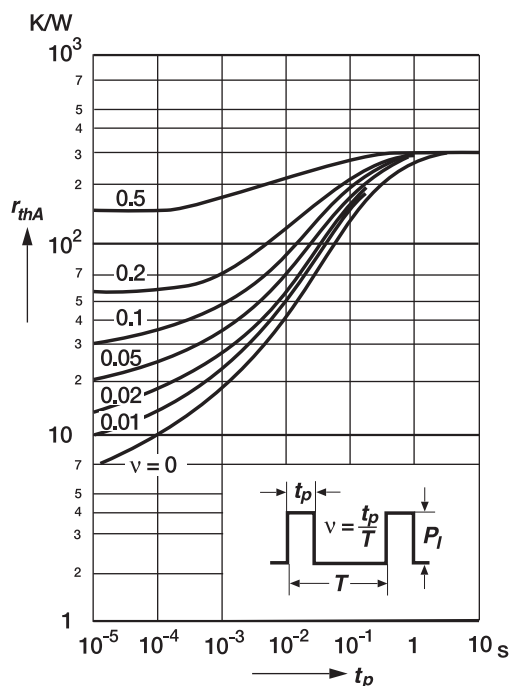


## Capacitance versus Zener voltage

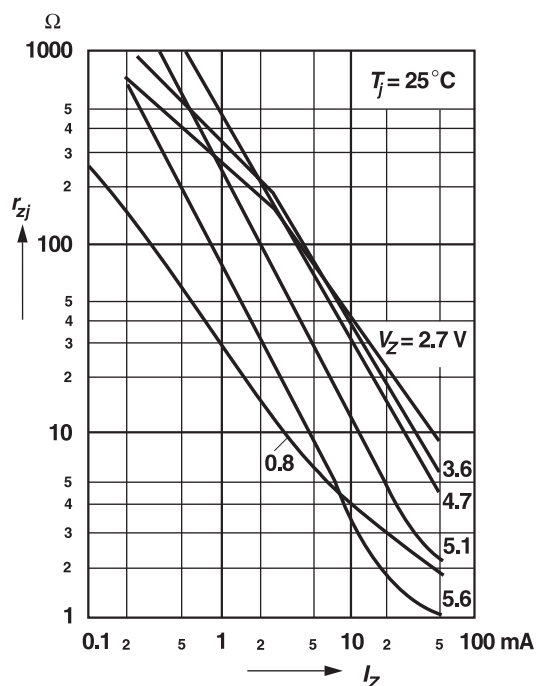


## Pulse thermal resistance versus pulse duration

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

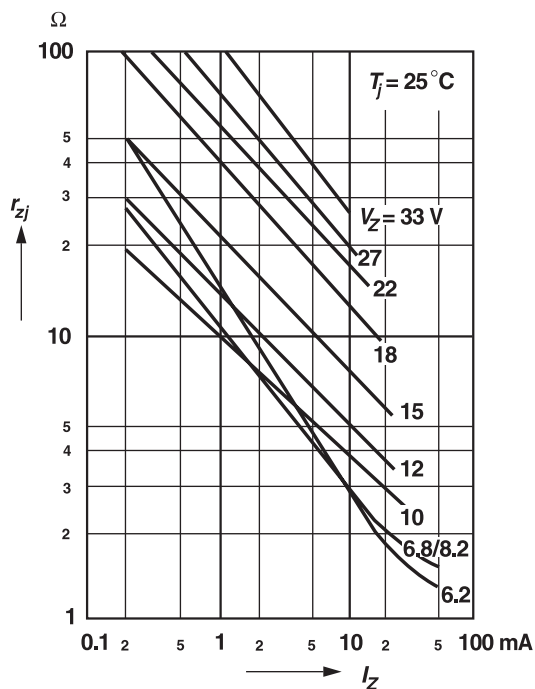


## Dynamic resistance versus Zener current



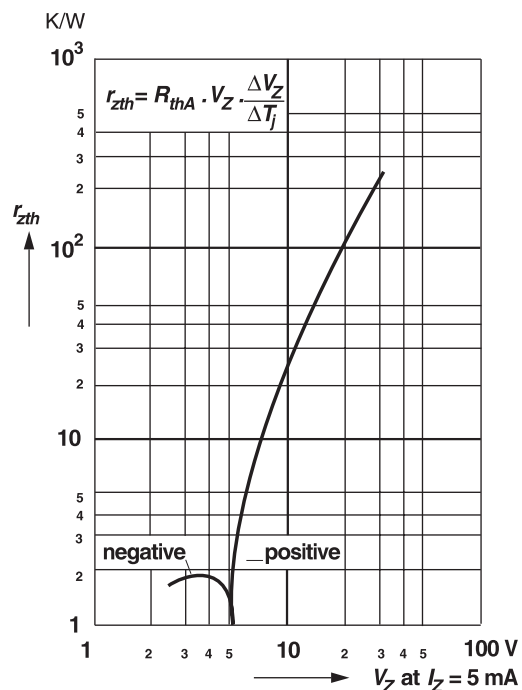
# RATINGS AND CHARACTERISTIC CURVES BZV55 Series

**Dynamic resistance  
versus Zener current**

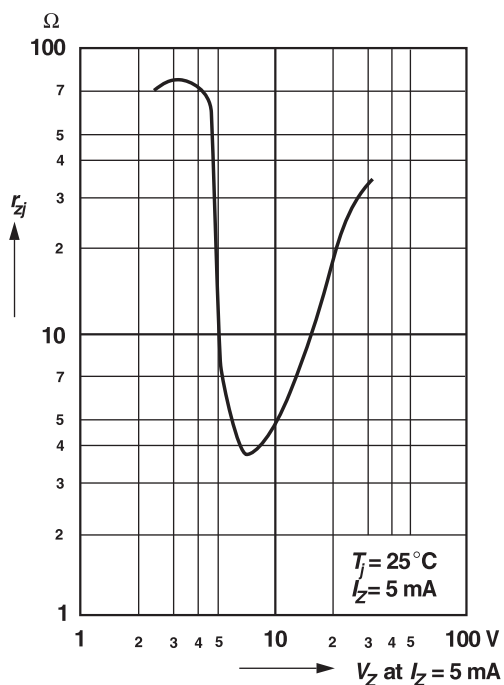


**Thermal differential resistance  
versus Zener voltage**

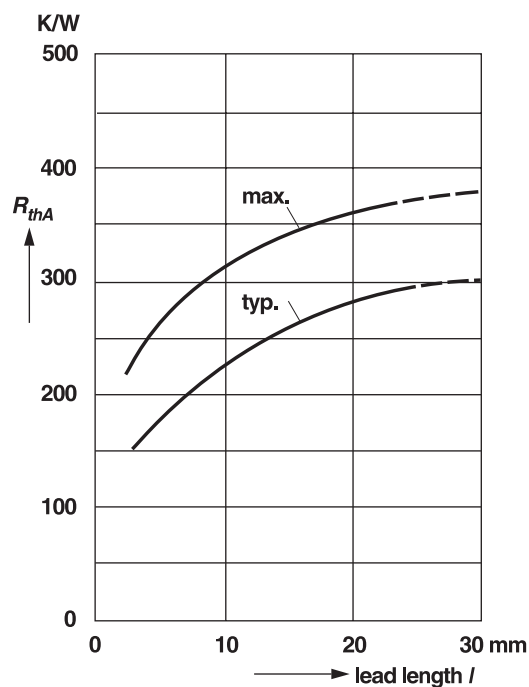
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



**Dynamic resistance  
versus Zener voltage**

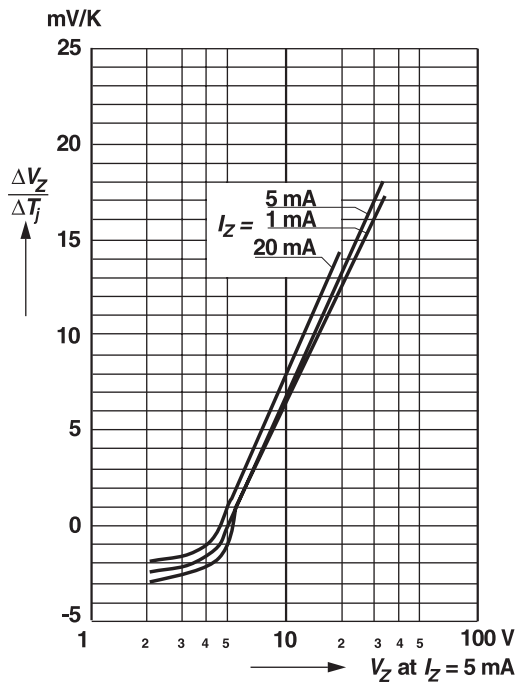


**Thermal resistance  
versus lead length**

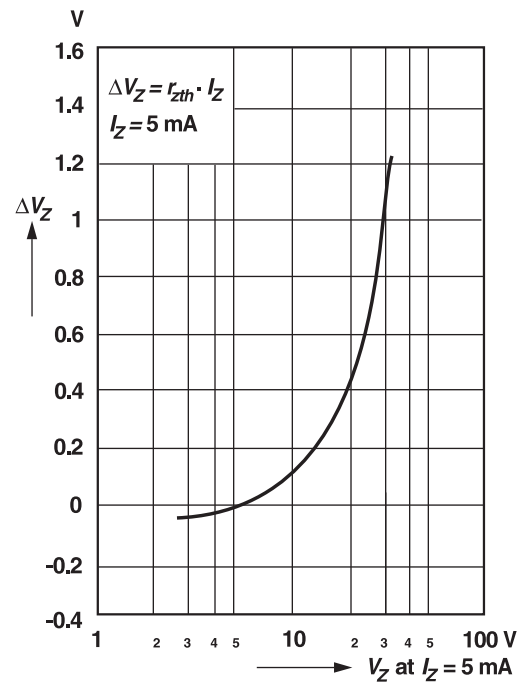


# RATINGS AND CHARACTERISTIC CURVES BZV55 Series

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

