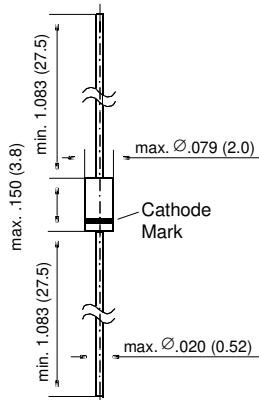


BZX79 SERIES

SILICON PLANAR ZENER DIODES

DO-35



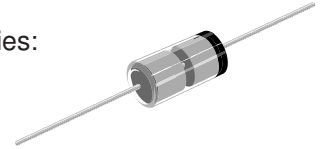
Dimensions in inches and (millimeters)

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:

±2% BZX79-B
±3% BZX79-F
±5% BZX79-C



MECHANICAL DATA

Case: DO-35 Glass Case

Weight: approx. 0.13 g

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 $T_{amb} = 25^{\circ}\text{C}$ | P_{tot} | 500 ⁽¹⁾ | 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) $t_p=100\text{ms}$, square wave | P_{ZSM} | 40 | Watts |

Characteristics at $T_{amb} = 25^{\circ}\text{C}$

| | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|------------|------|------|--------------------|-------|
| Thermal Resistance Junction to Ambient Air | R_{thJA} | — | — | 0.3 ⁽¹⁾ | °C/W |
| Forward Voltage at $I_F = 10\text{ mA}$ | V_F | — | — | 0.9 | Volts |

NOTES:

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

BZX79 SERIES

ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Type y = B for $\pm 2\%V_Z$ y = F for $\pm 3\%V_Z$ y = C for $\pm 5\%V_Z$ | Dynamic resistance | | Temp coefficient of Zener Voltage at $I_Z = 5 \text{ mA}$ $\propto \text{mvz \% / K}$ | | Reverse leakage Current | | Admissible Zener current ⁽²⁾ I_Z (mA) | Capacitance $V_R = 0$ $f = 1 \text{ MHz}$ (pF) max. | Non-Repetitive Peak Reverse Current at $t_p = 100 \mu\text{s}$ I_{ZSM} (A) |
|--|--|--|--|--------|-------------------------|------------|---|---|---|
| | at $I_Z = 5 \text{ mA}$ $f = 1 \text{ kHz}$ | at $I_Z = 1 \text{ mA}$ $f = 1 \text{ kHz}$ | | | I_R nA | at V_R V | | | |
| | $r_{zj} \Omega$ max. | $r_{zj} \Omega$ max. | min. | max. | | | | | |
| 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 ⁽³⁾ | 300 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 20 | 14 | 50 | 1.0 |
| BZX79 – y30 | 80 ⁽³⁾ | 300 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 22 | 13 | 50 | 1.0 |
| BZX79 – x33 | 80 ⁽³⁾ | 325 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 24 | 12 | 45 | 0.9 |
| BZX79 – x36 | 90 ⁽³⁾ | 350 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 27 | 11 | 45 | 0.8 |
| BZX79 – x39 | 130 ⁽³⁾ | 350 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 28 | 10 | 45 | 0.7 |
| BZX79 – x43 | 150 ⁽³⁾ | 375 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 32 | 9.2 | 40 | 0.6 |
| BZX79 – x47 | 170 ⁽³⁾ | 375 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 35 | 8.5 | 40 | 0.5 |
| BZX79 – x51 | 180 ⁽³⁾ | 400 ⁽⁴⁾ | +0.04 ⁽³⁾ | +0.12 | 50 | 38 | 7.8 | 40 | 0.4 |
| BZX79 – x56 | 200 ⁽³⁾ | 425 ⁽⁴⁾ | typ. +0.1 ⁽³⁾ | | 50 | 39 | 7.1 | 40 | 0.3 |
| BZX79 – x62 | 215 ⁽³⁾ | 450 ⁽⁴⁾ | typ. +0.1 ⁽³⁾ | | 50 | 43 | 6.4 | 35 | 0.3 |
| BZX79 – x68 | 240 ⁽³⁾ | 475 ⁽⁴⁾ | typ. +0.1 ⁽³⁾ | | 50 | 48 | 5.8 | 35 | 0.3 |
| BZX79 – x75 | 255 ⁽³⁾ | 500 ⁽⁴⁾ | typ. +0.1 ⁽³⁾ | | 50 | 53 | 5.3 | 35 | 0.2 |

NOTES:

- (1) Tested with pulses $t_p = 5 \text{ ms}$.
- (2) Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.
- (3) at $I_Z = 2.0 \text{ mA}$
- (4) at $I_Z = 0.5 \text{ mA}$

Y = Zener voltage tolerance designator

BZX79 SERIES

ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Type | Zener Voltage range ⁽¹⁾ at I _Z = 5 mA | |
|--------------|---|-----------------------|
| | V _Z V min. | V _Z V max. |
| ±5% Tol. | | |
| 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 ⁽³⁾ |
| BZX79 – C30 | 28.00 | 32.00 ⁽³⁾ |
| BZX79 – C33 | 31.00 | 35.00 ⁽³⁾ |
| BZX79 – C36 | 34.00 | 38.00 ⁽³⁾ |
| BZX79 – C39 | 37.00 | 41.00 ⁽³⁾ |
| BZX79 – C43 | 40.00 | 46.00 ⁽³⁾ |
| BZX79 – C47 | 44.00 | 50.00 ⁽³⁾ |
| BZX79 – C51 | 48.00 | 54.00 ⁽³⁾ |
| BZX79 – C56 | 52.00 | 60.00 ⁽³⁾ |
| BZX79 – C62 | 58.00 | 66.00 ⁽³⁾ |
| BZX79 – C68 | 64.00 | 72.00 ⁽³⁾ |
| BZX79 – C75 | 70.00 | 79.00 ⁽³⁾ |

| Type | Zener Voltage range ⁽¹⁾ at I _Z = 5 mA | |
|--------------|---|-----------------------|
| | V _Z V min. | V _Z V max. |
| ±3% Tol. | | |
| 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 ⁽³⁾ |
| BZX79 – F30 | 29.10 | 30.90 ⁽³⁾ |
| BZX79 – F33 | 32.00 | 34.00 ⁽³⁾ |
| BZX79 – F36 | 34.90 | 37.10 ⁽³⁾ |
| BZX79 – F39 | 37.80 | 40.20 ⁽³⁾ |
| BZX79 – F43 | 41.70 | 44.30 ⁽³⁾ |
| BZX79 – F47 | 45.60 | 48.40 ⁽³⁾ |
| BZX79 – F51 | 49.50 | 52.50 ⁽³⁾ |
| BZX79 – F56 | 54.30 | 57.70 ⁽³⁾ |
| BZX79 – F62 | 60.10 | 63.90 ⁽³⁾ |
| BZX79 – F68 | 66.00 | 70.00 ⁽³⁾ |
| BZX79 – F75 | 72.80 | 77.20 ⁽³⁾ |

| Type | Zener Voltage range ⁽¹⁾ at I _Z = 5 mA | |
|------------|---|-----------------------|
| | V _Z V min. | V _Z V max. |
| ±2% Tol. | | |
| BZX79 B2V4 | 2.35 | 2.45 |
| BZX79 B2V7 | 2.65 | 2.75 |
| BZX79B3V0 | 2.94 | 3.06 |
| BZX79B3V3 | 3.23 | 3.37 |
| BZX79 B3V6 | 3.53 | 3.67 |
| BZX79B3V9 | 3.82 | 3.98 |
| BZX79B4V3 | 4.21 | 4.39 |
| BZX79B4V7 | 4.61 | 4.79 |
| BZX79B5V1 | 5.00 | 5.20 |
| BZX79 B5V6 | 5.49 | 5.71 |
| BZX79B6V2 | 6.08 | 6.32 |
| BZX79B6V8 | 6.66 | 6.94 |
| BZX79B7V5 | 7.35 | 7.65 |
| BZX79B8V2 | 8.04 | 8.36 |
| BZX79B9V1 | 8.92 | 9.28 |
| BZX79B10 | 9.80 | 10.20 |
| BZX79B11 | 10.80 | 11.20 |
| BZX79B12 | 11.80 | 12.20 |
| BZX79B13 | 12.70 | 13.30 |
| BZX79B15 | 14.70 | 15.30 |
| BZX79B16 | 15.70 | 16.30 |
| BZX79B18 | 17.60 | 18.40 |
| BZX79B20 | 19.60 | 20.40 |
| BZX79B22 | 21.60 | 22.40 |
| BZX79B24 | 23.50 | 24.50 |
| BZX79B27 | 26.50 | 27.50 ⁽³⁾ |
| BZX79B30 | 29.40 | 30.60 ⁽³⁾ |
| BZX79B33 | 32.30 | 33.70 ⁽³⁾ |
| BZX79B36 | 35.30 | 36.70 ⁽³⁾ |
| BZX79B39 | 38.20 | 39.80 ⁽³⁾ |
| BZX79B43 | 42.10 | 43.90 ⁽³⁾ |
| BZX79B47 | 46.10 | 47.90 ⁽³⁾ |
| BZX79B51 | 50.00 | 52.00 ⁽³⁾ |
| BZX79B56 | 54.90 | 57.10 ⁽³⁾ |
| BZX79B62 | 60.80 | 63.20 ⁽³⁾ |
| BZX79B68 | 66.60 | 69.40 ⁽³⁾ |
| BZX79B75 | 73.50 | 76.50 ⁽³⁾ |

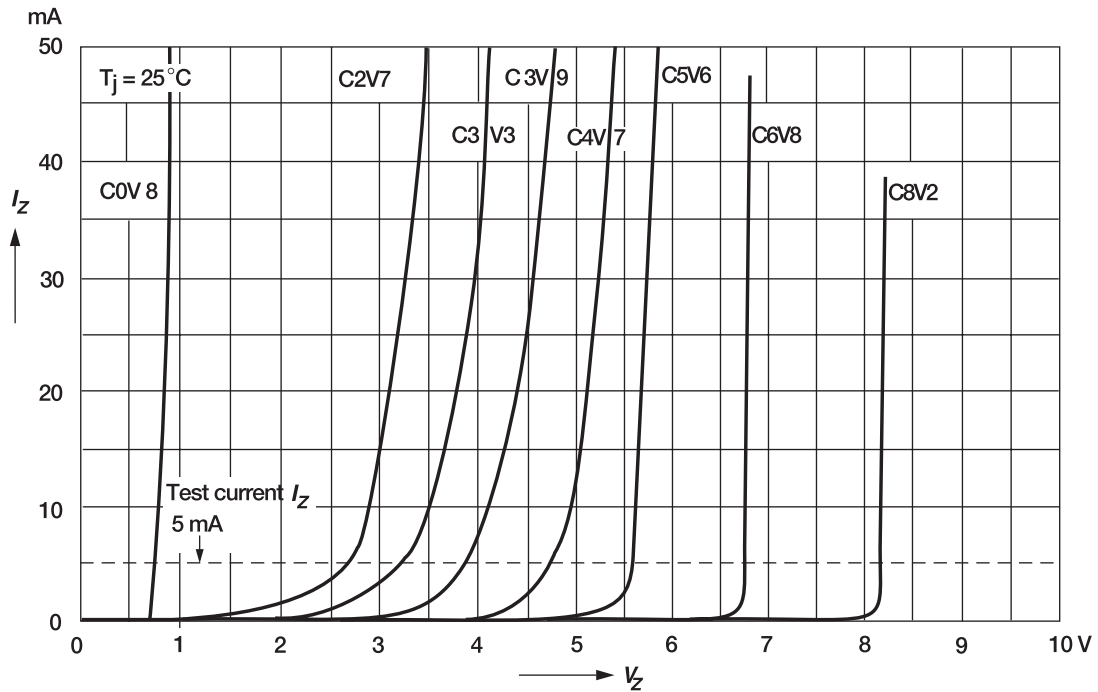
See BZX79-y table for all characteristics other than zener voltage range.

BZX79 SERIES

ELECTRICAL CHARACTERISTICS

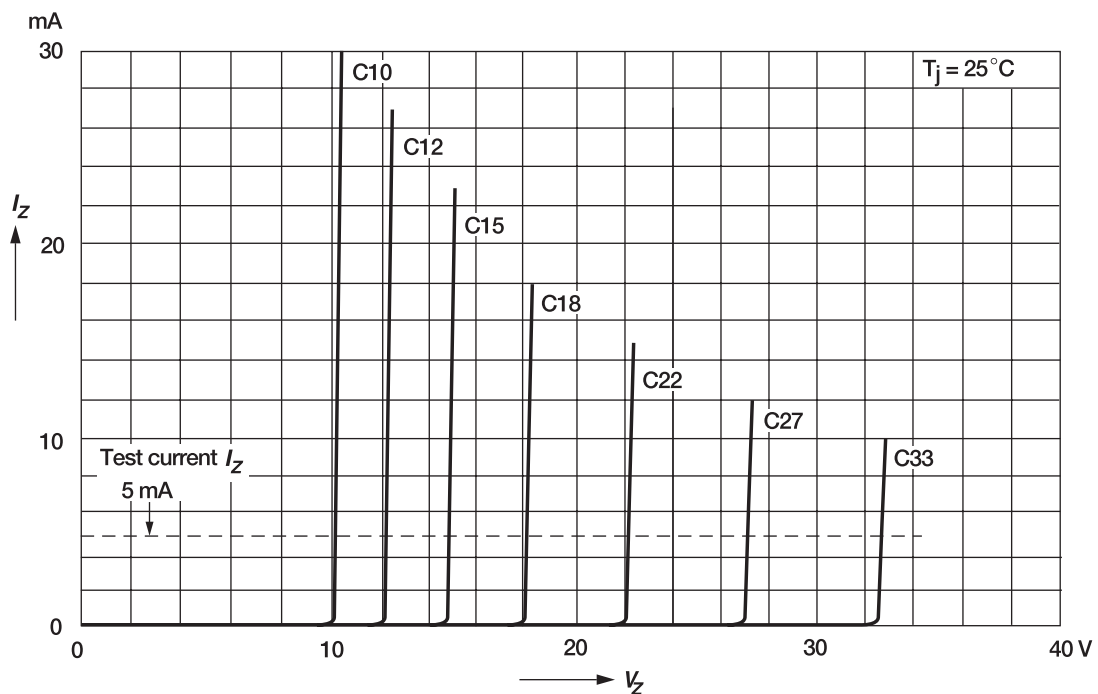
Breakdown characteristics

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



Breakdown characteristics

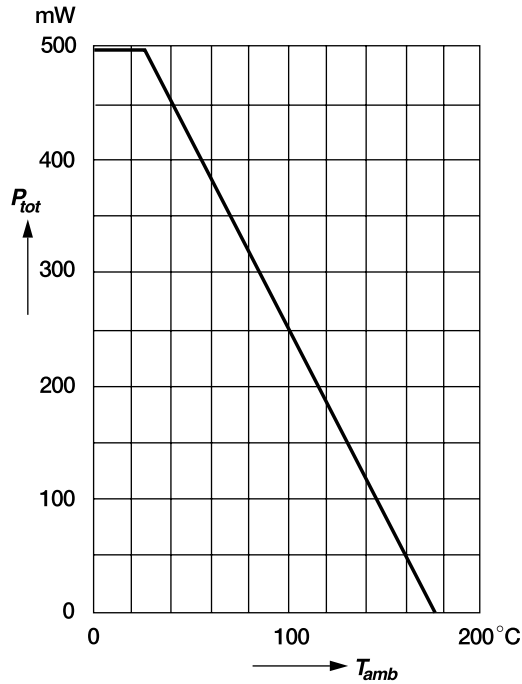
at $T_j = \text{constant}$ (pulsed)



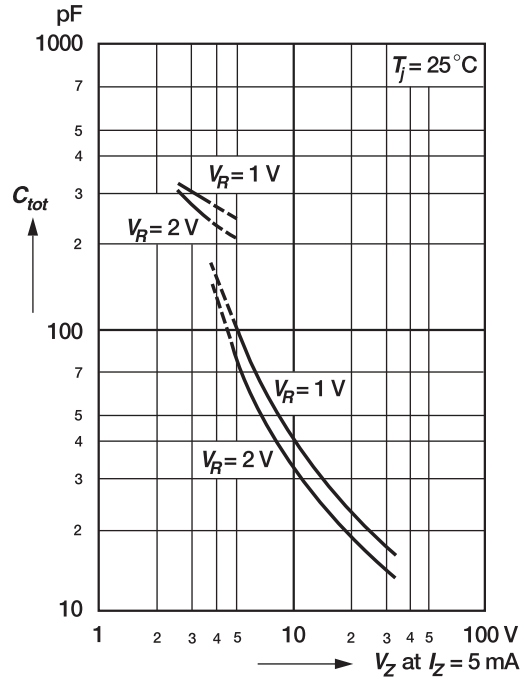
RATINGS AND CHARACTERISTIC CURVES BZX79 SERIES

Admissible power dissipation versus ambient temperature

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

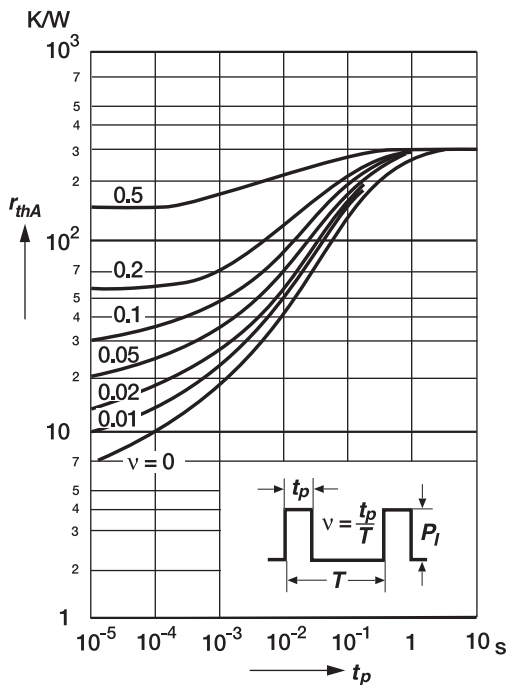


Capacitance versus Zener voltage

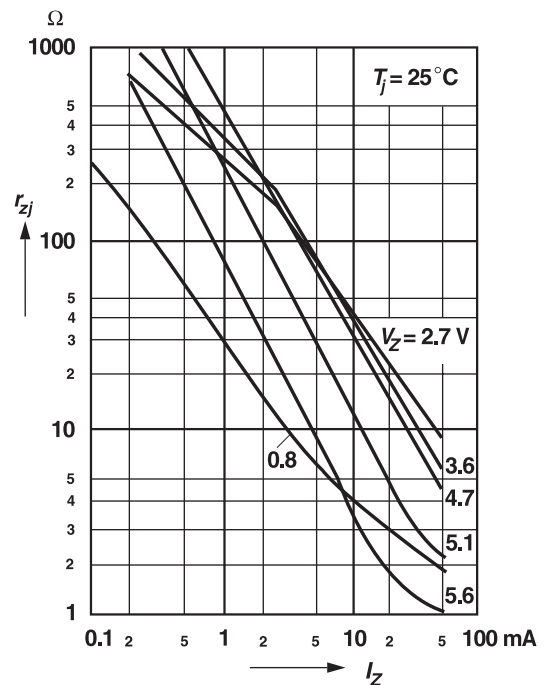


Pulse thermal resistance versus pulse duration

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

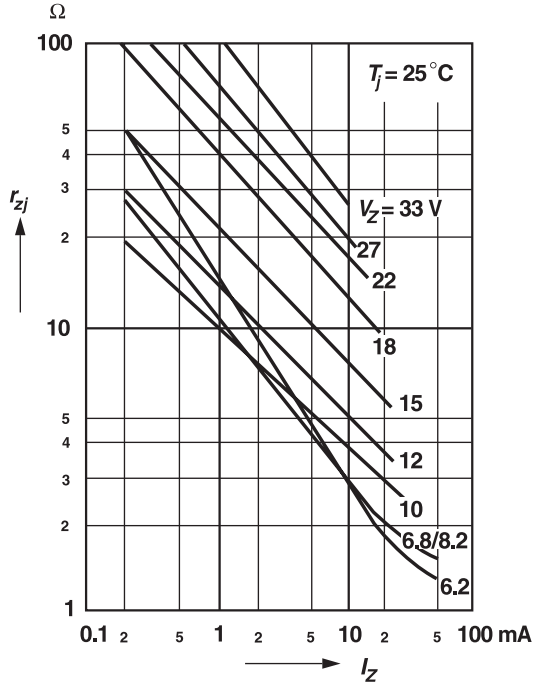


Dynamic resistance versus Zener current



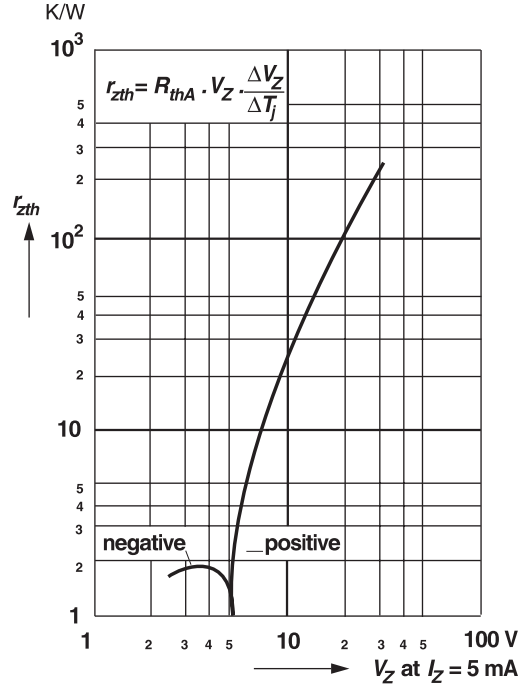
RATINGS AND CHARACTERISTIC CURVES BZX79 SERIES

Dynamic resistance versus Zener current

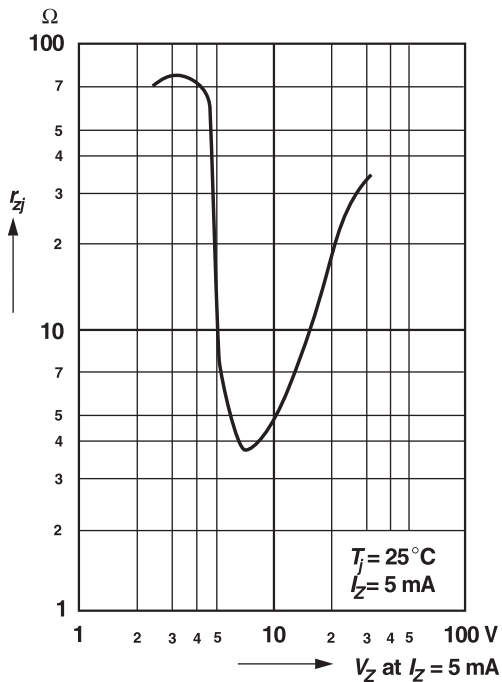


Thermal differential resistance versus Zener voltage

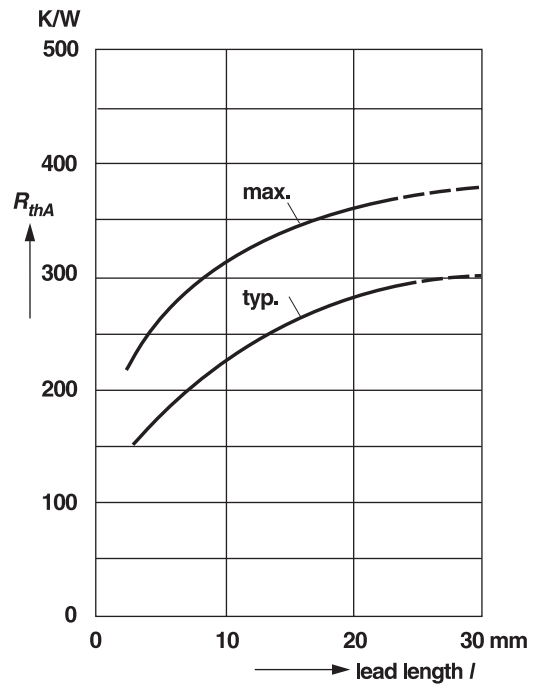
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



Dynamic resistance versus Zener voltage

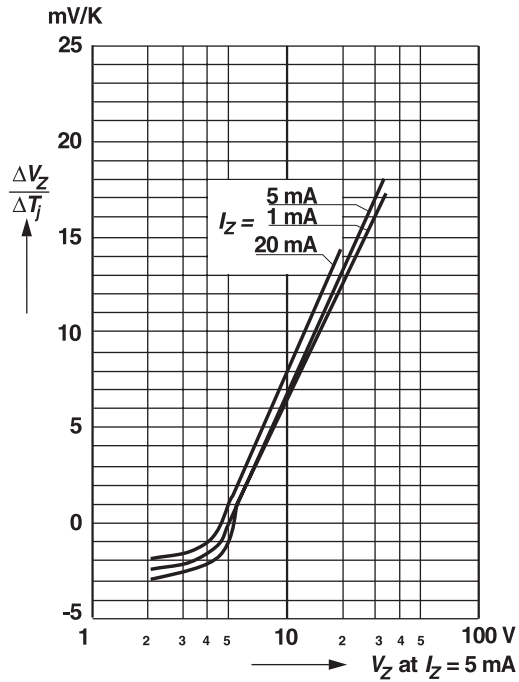


Thermal resistance versus lead length

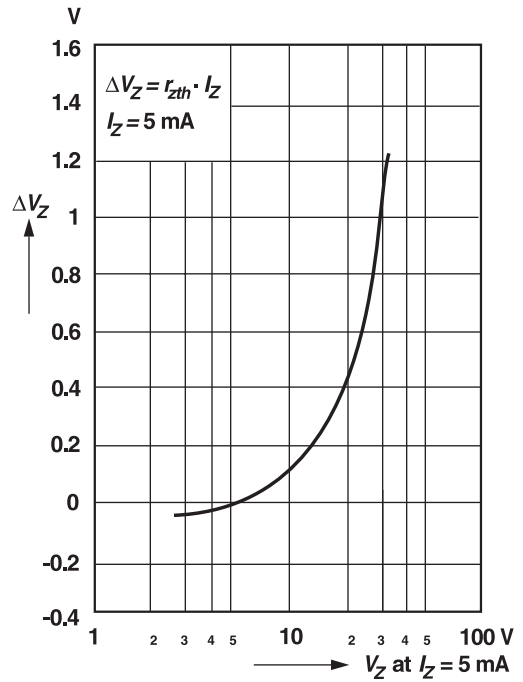


RATINGS AND CHARACTERISTIC CURVES BZX79 SERIES

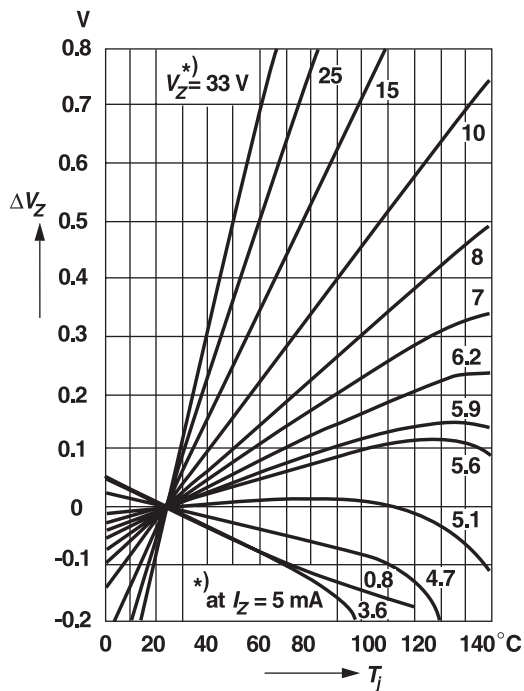
Temperature dependence of Zener voltage versus Zener voltage



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



Change of Zener voltage versus junction temperature



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