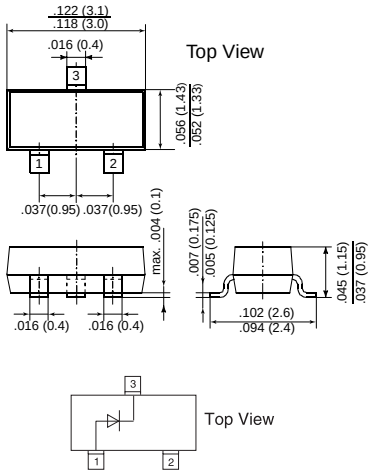
# BZX84-C2V4 THRU BZX84-C75

## ZENER DIODES

**SOT-23**




*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 ±5%. Replace “C” with “B” for ±2% tolerance. Other voltage tolerances and other Zener voltages are available upon request.

- These diodes are also available in other case styles and other configurations including: the SOD-123 case with type designation BZT52 series, the dual zener diode common anode configuration in the SOT-23 case with type designation AZ23 series and the dual zener diode common cathode configuration in the SOT-23 case with type designation DZ23 series.

## MECHANICAL DATA

**Case:** SOT-23 Plastic Package
**Weight:** approx. 0.008 g

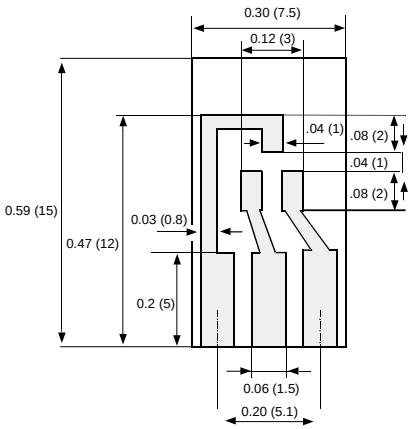
## MAXIMUM RATINGS

Ratings at 25°C ambient temperature unless otherwise specified.

| | *SYMBOL* | *VALUE* | *UNIT* |
|---|---|---|---|
| Zener Current | $I_{ZM}$ | 250 | mA |
| Power Dissipation at $T_{amb}$ = 25°C | $P_{tot}$ | 350(1) | mW |
| Junction Temperature | $T_j$ | 175 | °C |
| Storage Temperature Range | $T_S$ | – 65 to +150 | °C |

| | *SYMBOL* | *MIN.* | *TYP.* | *MAX.* | *UNIT* |
|---|---|---|---|---|---|
| Thermal Resistance Junction to Ambient Air | $R_{\Theta JA}$ | – | – | 420(1) | K/W |
| Forward Voltage at $I_F$ = 10 mA | $V_F$ | – | – | 0.9 | Volts |

**NOTES:**
(1) Device on fiberglass substrate, see layout.




**Layout for $R_{\Theta JA}$ test**
**Thickness:** Fiberglass 0.059 in (1.5mm)
Copper leads 0.012 in (0.3mm)



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## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

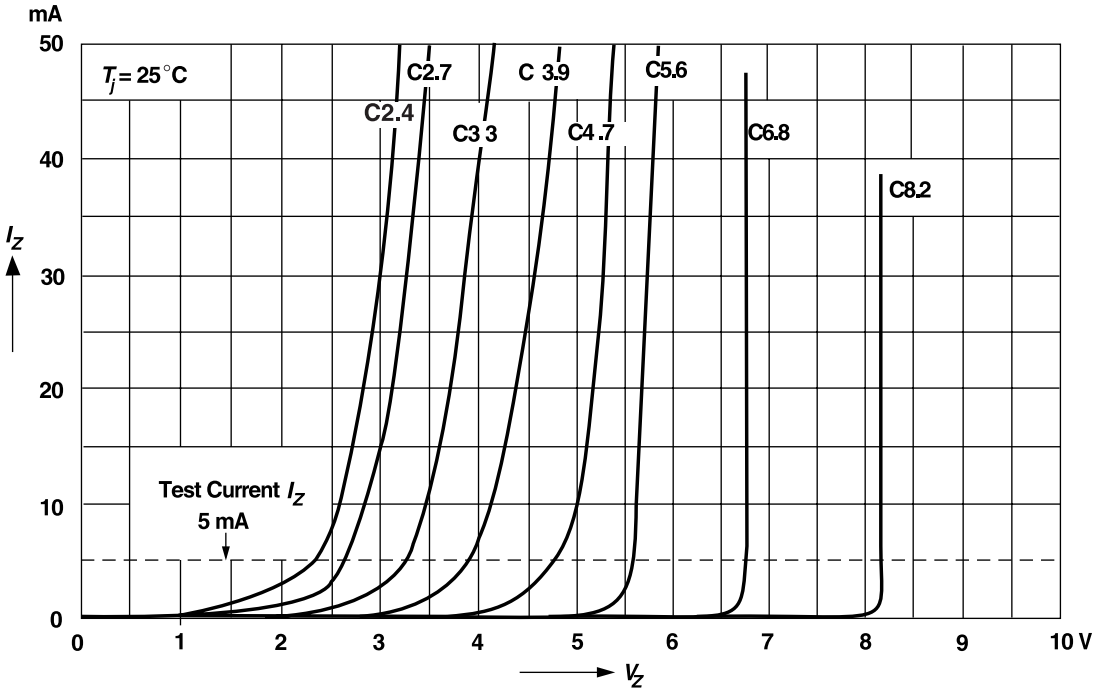
| Type | Marking Code | Zener Voltage[1] at $I_{ZT1}$ $V_Z$ (V) | Dynamic Resistance at $I_{ZT1}$ $r_{zj}$ (Ω) | Temp. Coefficient of Zener Voltage at $I_{ZT1}$ $\alpha_{VZ}$ ($10^{-4}$/K) | Test Current $I_{ZT1}$ (mA) | Dynamic Resistance at $I_{ZT2}$ $r_{zj}$ (Ω) | Test Current $I_{ZT2}$ (mA) | Reverse Leakage Current $I_R$ (μA) | Reverse Leakage Current at $V_R$ (V) |
|---|---|---|---|---|---|---|---|---|---|
| BZX84-C2V4 | Z11 | 2.20 … 2.60 | 70 (≤100) | –3.5 … 0.0 | 5 | 275 | 1.0 | 50 | 1.0 |
| BZX84-C2V7 | Z12 | 2.50 … 2.90 | 75 (≤100) | –9.0 … –4.0 | 5 | 300 (≤600) | 1.0 | 20 | 1.0 |
| BZX84-C3 | Z13 | 2.80 … 3.20 | 80 (≤95) | –9.0 … –3.0 | 5 | 325 (≤600) | 1.0 | 10 | 1.0 |
| BZX84-C3V3 | Z14 | 3.10 … 3.50 | 85 (≤95) | –8.0 … –3.0 | 5 | 350 (≤600) | 1.0 | 5.0 | 1.0 |
| BZX84-C3V6 | Z15 | 3.40 … 3.80 | 85 (≤90) | –8.0 … –3.0 | 5 | 375 (≤600) | 1.0 | 5.0 | 1.0 |
| BZX84-C3V9 | Z16 | 3.70 … 4.10 | 85 (≤90) | –7.0 … –3.0 | 5 | 400 (≤600) | 1.0 | 3.0 | 1.0 |
| BZX84-C4V3 | Z17 | 4.00 … 4.60 | 80 (≤90) | –6.0 … –1.0 | 5 | 410 (≤600) | 1.0 | 3.0 | 1.0 |
| BZX84-C4V7 | Z1 | 4.40 … 5.00 | 50 (≤80) | –5.0 … +2.0 | 5 | 425 (≤500) | 1.0 | 3.0 | 2.0 |
| BZX84-C5V1 | Z2 | 4.80 … 5.40 | 40 (≤60) | –3.0. … +4.0 | 5 | 400 (≤480) | 1.0 | 2.0 | 2.0 |
| BZX84-C5V6 | Z3 | 5.20 … 6.00 | 15 (≤40) | –2.0 … +6.0 | 5 | 80 (≤400) | 1.0 | 1.0 | 2.0 |
| BZX84-C6V2 | Z4 | 5.80 … 6.60 | 6.0 (≤10) | –1.0 … +7.0 | 5 | 40 (≤150) | 1.0 | 3.0 | 4.0 |
| BZX84-C6V8 | Z5 | 6.40 … 7.20 | 6.0 (≤15) | +2.0 … +7.0 | 5 | 30 (≤80) | 1.0 | 2.0 | 4.0 |
| BZX84-C7V5 | Z6 | 7.00 … 7.90 | 6.0 (≤15) | +3.0 … +7.0 | 5 | 30 (≤80) | 1.0 | 1.0 | 5.0 |
| BZX84-C8V2 | Z7 | 7.70 … 8.70 | 6.0 (≤15) | +4.0 … +7.0 | 5 | 40 (≤80) | 1.0 | 0.7 | 5.0 |
| BZX84-C9V1 | Z8 | 8.50 … 9.60 | 6.0 (≤15) | +5.0 … +8.0 | 5 | 40 (≤100) | 1.0 | 0.5 | 6.0 |
| BZX84-C10 | Z9 | 9.40 … 10.6 | 8.0 (≤20) | +5.0 … +8.0 | 5 | 50 (≤150) | 1.0 | 0.2 | 7.0 |
| BZX84-C11 | Y1 | 10.4 … 11.6 | 10 (≤20) | +5.0 … +9.0 | 5 | 50 (≤150) | 1.0 | 0.1 | 8.0 |
| BZX84-C12 | Y2 | 11.4 … 12.7 | 10 (≤25) | +6.0 … +9.0 | 5 | 50 (≤150) | 1.0 | 0.1 | 8.0 |
| BZX84-C13 | Y3 | 12.4 … 14.1 | 10 (≤30) | +7.0 … +9.0 | 5 | 50 (≤170) | 1.0 | 0.1 | 8.0 |
| BZX84-C15 | Y4 | 13.8 … 15.6 | 10 (≤30) | +7.0 … +9.0 | 5 | 50 (≤200) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C16 | Y5 | 15.3 … 17.1 | 10 (≤40) | +8.0 … +9.5 | 5 | 50 (≤200) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C18 | Y6 | 16.8 … 19.1 | 10 (≤45) | +8.0 … +9.5 | 5 | 50 (≤225) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C20 | Y7 | 18.8 … 21.2 | 15 (≤55) | +8.0 … +10 | 5 | 60 (≤225) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C22 | Y8 | 20.8 … 23.3 | 20 (≤55) | +8.0 … +10 | 5 | 60 (≤250) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C24 | Y9 | 22.8 … 25.6 | 25 (≤70) | +8.0 … +10 | 5 | 60 (≤250) | 1.0 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C27 | Y10 | 25.1 … 28.9 | 25 (≤80) | +8.0 … +10 | 2 | 65 (≤300) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C30 | Y11 | 28.0 … 32.0 | 30 (≤80) | +8.0 … +10 | 2 | 70 (≤300) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C33 | Y12 | 31.0 … 35.0 | 35 (≤80) | +8.0 … +10 | 2 | 75 (≤325) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C36 | Y13 | 34.0 … 38.0 | 35 (≤90) | +8.0 … +10 | 2 | 80 (≤350) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C39 | Y14 | 37.0 … 41.0 | 40 (≤130) | +10 … +12 | 2 | 80 (≤350) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C43 | Y15 | 40.0 … 46.0 | 45 (≤150) | +10 … +12 | 2 | 85 (≤375) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C47 | Y16 | 44.0 … 50.0 | 50 (≤170) | +10 … +12 | 2 | 85 (≤375) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C51 | Y17 | 48.0 … 54.0 | 60 (≤180) | +10 … +12 | 2 | 85 (≤400) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C56 | Y18 | 52.0 … 60.0 | 70 (≤200) | +9.0 … +11 | 2 | 100 (≤425) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C62 | Y19 | 58.0 … 66.0 | 80 (≤215) | +9.0 … +12 | 2 | 100 (≤450) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C68 | Y20 | 64.0 … 72.0 | 90 (≤240) | +10 … +12 | 2 | 150 (≤475) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |
| BZX84-C75 | Y21 | 70.0 … 79.0 | 95 (≤255) | +10 … +12 | 2 | 170 (≤500) | 0.5 | 0.05 | 0.7 $V_{Znom.}$ |

**NOTES:**

(1) Measured with pulses $t_p$ = 5 ms

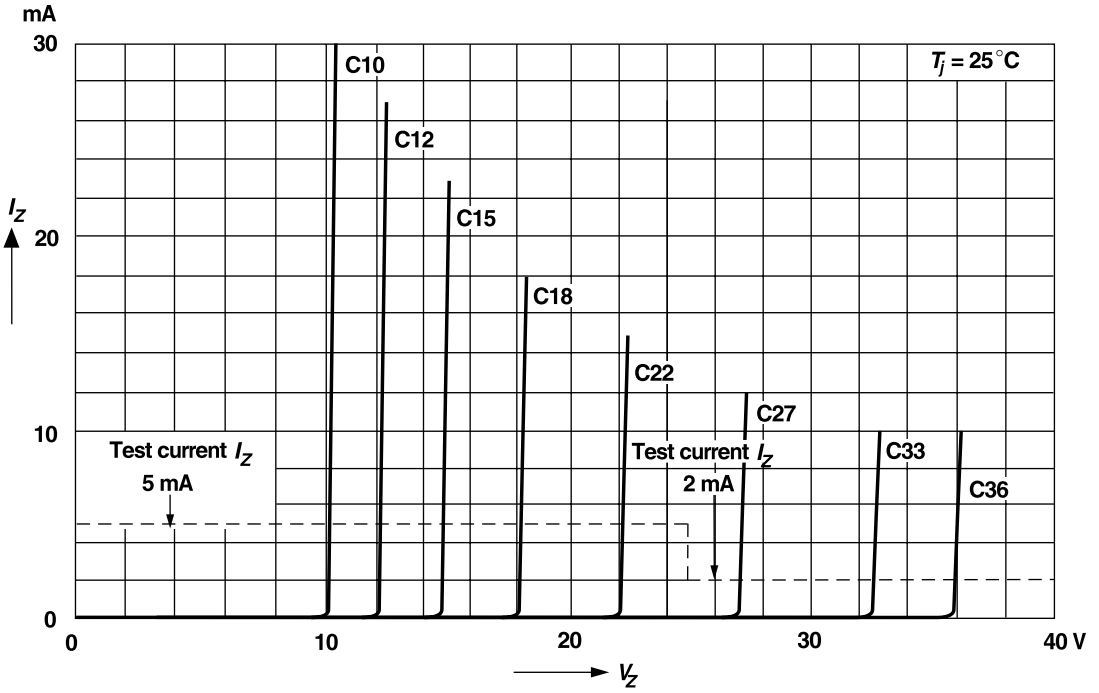
**Breakdown characteristics**

$T_j$ = constant (pulsed)



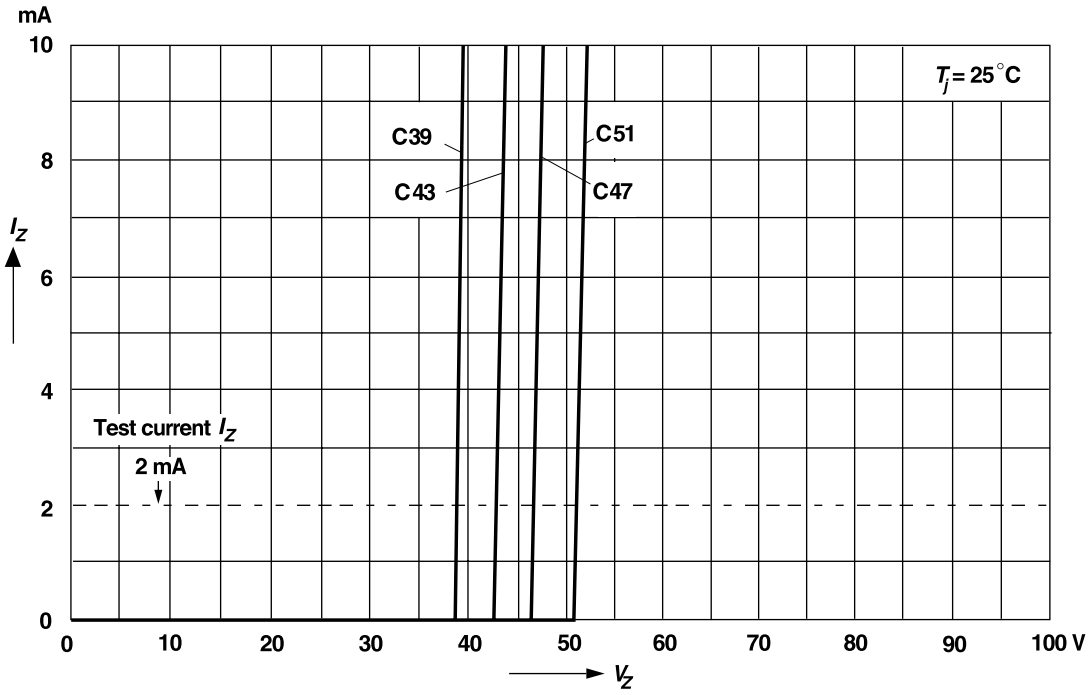

**Breakdown characteristics**

$T_j$ = constant (pulsed)

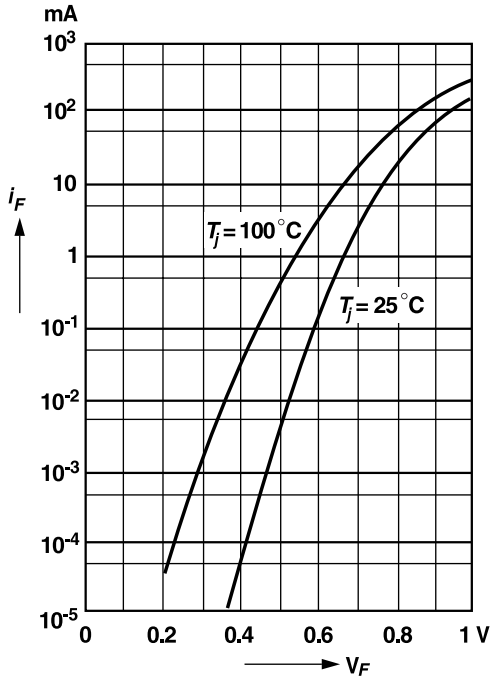


**Breakdown characteristics**

$T_j$ = constant (pulsed)

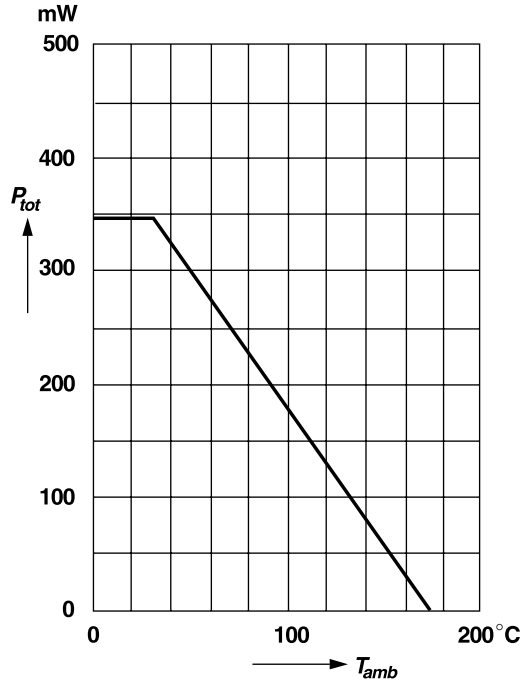



**Forward characteristics**



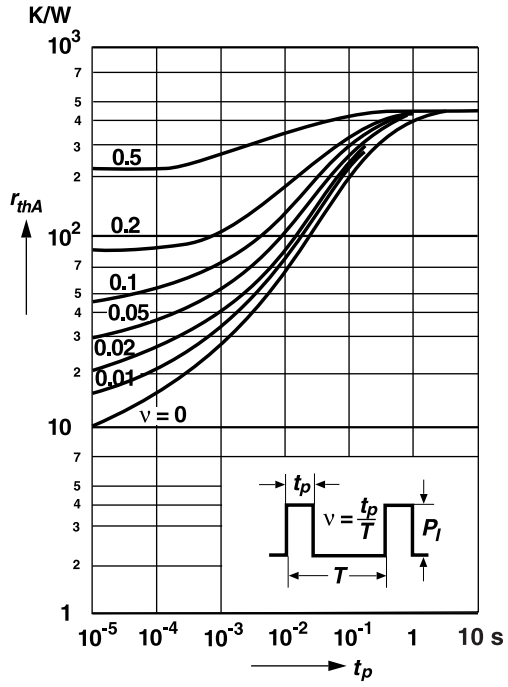

**Admissible power dissipation versus ambient temperature**

For conditions, see footnote in table "Absolute Maximum Ratings"

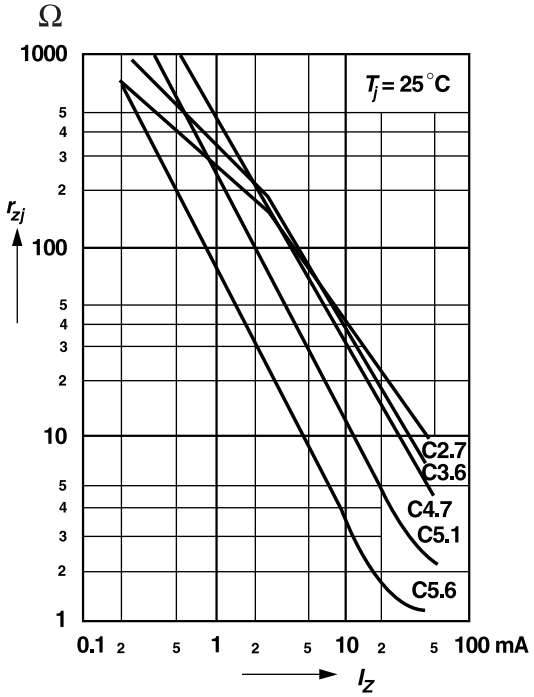


**Pulse thermal resistance versus pulse duration**

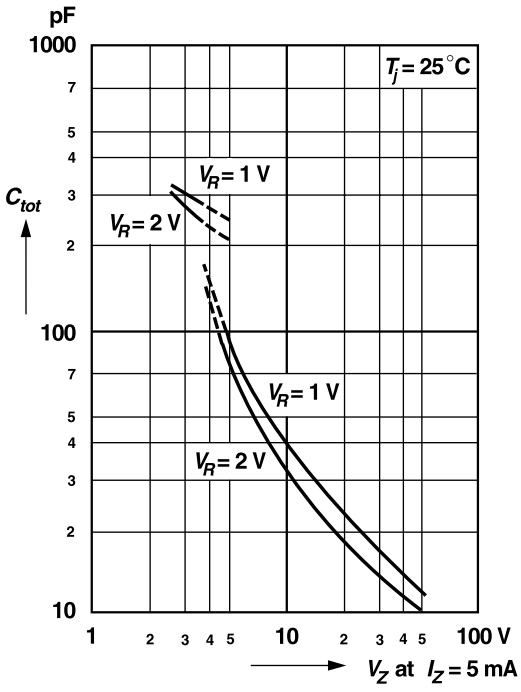
For conditions, see footnote in table "Absolute Maximum Ratings"



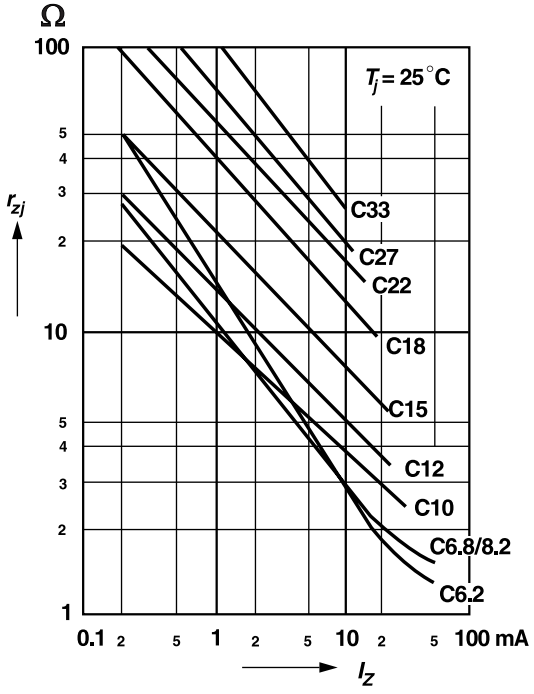

**Dynamic resistance versus Zener current**




**Capacitance versus Zener voltage**




**Dynamic resistance versus Zener current**

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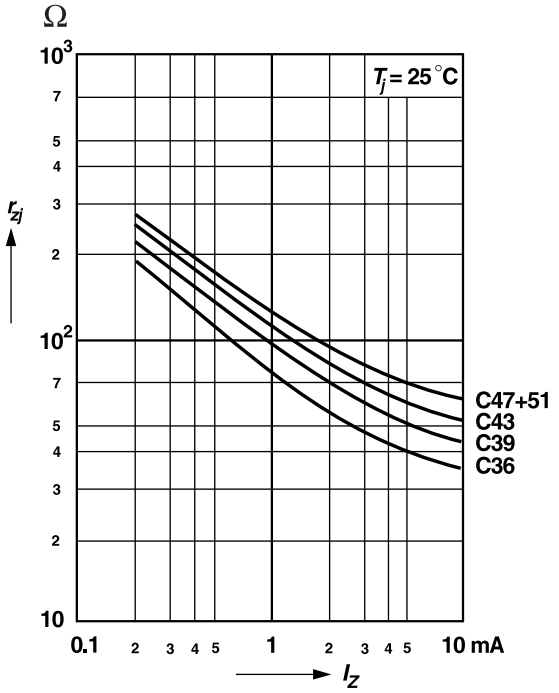
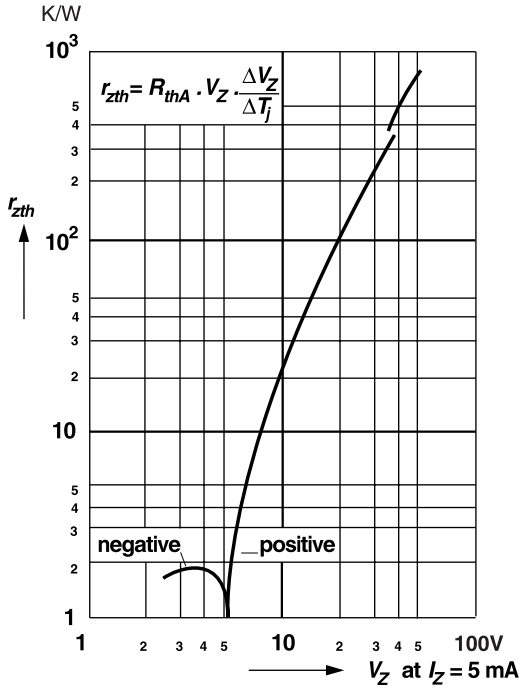
**Dynamic resistance versus Zener current**

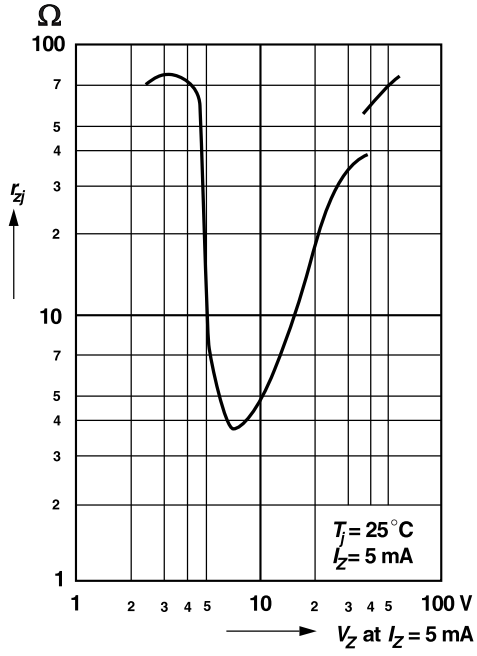



**Thermal differential resistance versus Zener voltage**

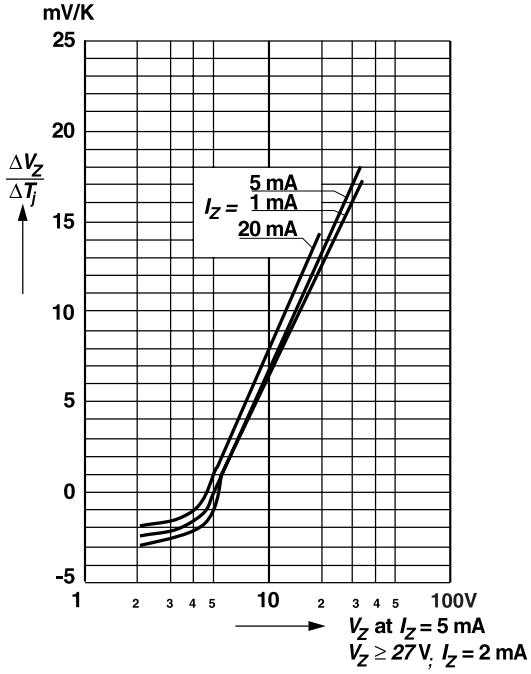
For conditions, see footnote in table "Absolute Maximum Ratings"




**Dynamic resistance versus Zener voltage**




**Temperature dependence of Zener voltage versus Zener voltage**

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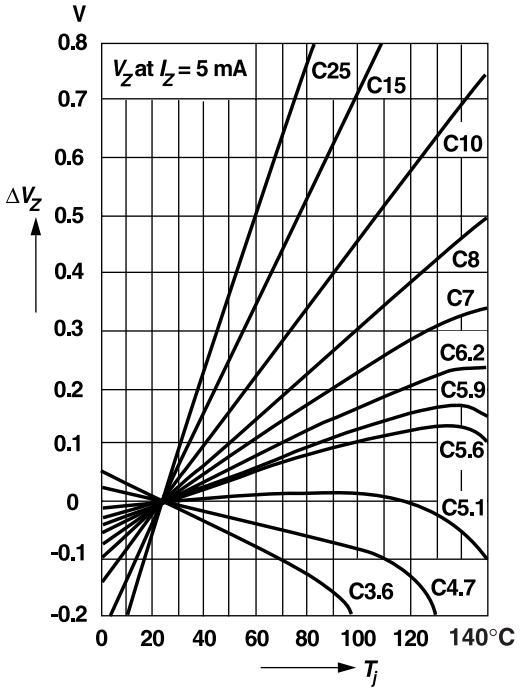
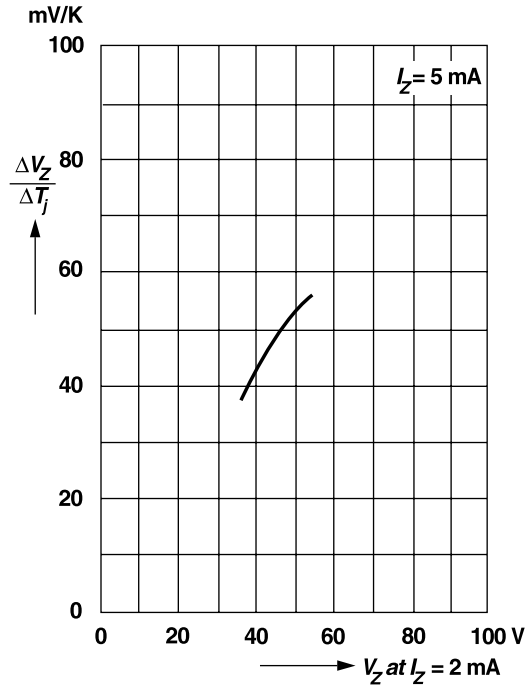
# RATINGS AND CHARACTERISTICS CURVES BZX84-C2V4 THRU BZX84-C75

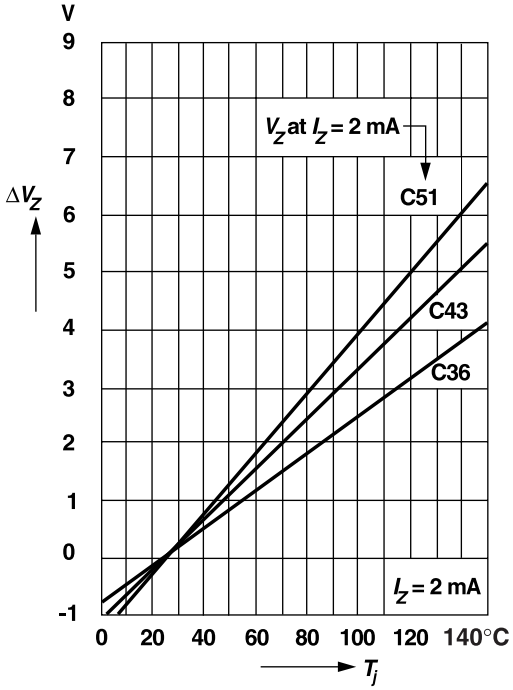
**Change of Zener voltage versus junction temperature**



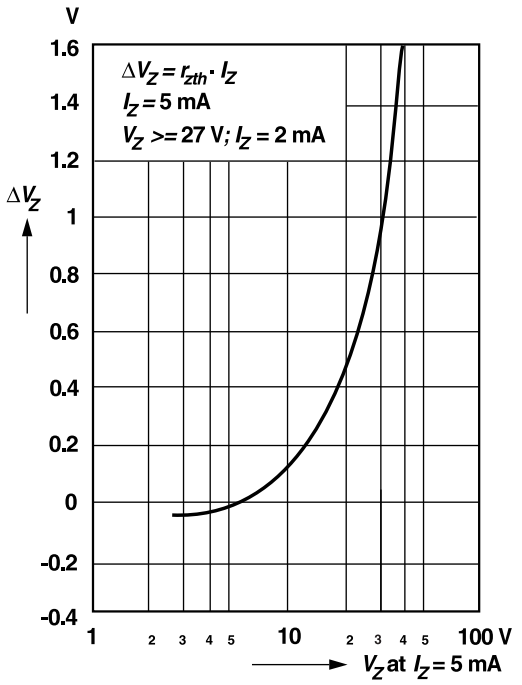

**Temperature dependence of Zener voltage versus Zener voltage**




**Change of Zener voltage versus junction temperature**




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

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