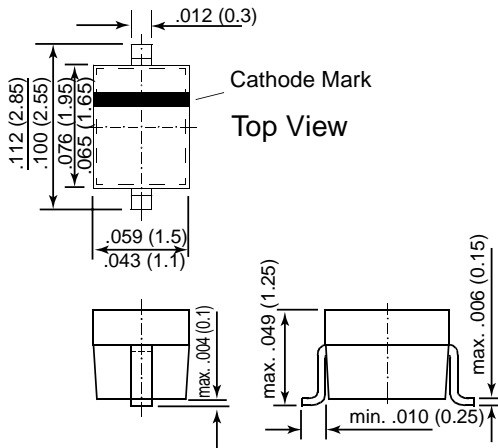


# BZX384-C2V4 THRU BZX384-C75

## ZENER DIODES

### SOD-323



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 "C" with "B" for  $\pm 2\%$  tolerance. Other voltage tolerances and other Zener voltages are available upon request.



### MECHANICAL DATA

Case: SOD-323 Plastic Package

Weight: approx. 0.004 g

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

|  | SYMBOL           | VALUE              | UNIT |
|--|------------------|--------------------|------|
| Zener Current                                | I <sub>ZM</sub>  | 250                | mA   |
| Power Dissipation at T <sub>amb</sub> = 25°C | P <sub>tot</sub> | 200 <sup>(1)</sup> | mW   |
| Junction Temperature                         | T <sub>j</sub>   | 175                | °C   |
| Storage Temperature Range                    | T <sub>s</sub>   | - 65 to +175       | °C   |

**NOTES:**

(1) Device on fiberglass substrate, see layout.

|   | SYMBOL            | MIN. | TYP. | MAX.               | UNIT  |
|---|-------------------|------|------|--------------------|-------|
| Thermal Resistance<br>Junction to Ambient Air | R <sub>thJA</sub> | -    | -    | 650 <sup>(1)</sup> | K/W   |
| Forward Voltage<br>at I <sub>F</sub> = 10 mA  | -                 | -    | -    | 0.9                | Volts |

**NOTES:**

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

# BZX384-C2V4 THRU BZX384-C75

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Type        | Marking | Zener Voltage <sup>(1)</sup><br>at I <sub>ZT1</sub><br>V <sub>Z</sub> (V) | Dynamic Resistance<br>at I <sub>ZT1</sub><br>r <sub>zj</sub> (Ω) | Temp. Coefficient of Zener Voltage at I <sub>ZT1</sub><br>α <sub>VZ</sub> (10 <sup>-4</sup> /K) | Test Current<br>I <sub>ZT1</sub> (mA) | Dynamic Resistance at I <sub>ZT2</sub><br>r <sub>zj</sub> (Ω) | Test Current<br>I <sub>ZT2</sub> (mA) | Reverse Leakage Current |                          |
|-------------|---------|---|--|---|---------------------------------------|---|---------------------------------------|-------------------------|--------------------------|
|             |         |   |  |   |                                       |   |                                       | I <sub>R</sub> (μA)     | at<br>V <sub>R</sub> (V) |
| BZX384-C2V4 | W1      | 2.20 ... 2.60   | 70 (≤100)  | -3.5 ... 0.0  | 5                                     | 275   | 1.0                                   | 50.0                    | 1.0                      |
| BZX384-C2V7 | W2      | 2.50 ... 2.90   | 75 (≤100)  | -9.0 ... -4.0   | 5                                     | 300 (≤600)  | 1.0                                   | 20.0                    | 1.0                      |
| BZX384-C3   | W3      | 2.80 ... 3.20   | 80 (≤95)   | -9.0 ... -3.0   | 5                                     | 325 (≤600)  | 1.0                                   | 10.0                    | 1.0                      |
| BZX384-C3V3 | W4      | 3.10 ... 3.50   | 85 (≤95)   | -8.0 ... -3.0   | 5                                     | 350 (≤600)  | 1.0                                   | 5.00                    | 1.0                      |
| BZX384-C3V6 | W5      | 3.40 ... 3.80   | 85 (≤90)   | -8.0 ... -3.0   | 5                                     | 375 (≤600)  | 1.0                                   | 5.00                    | 1.0                      |
| BZX384-C3V9 | W6      | 3.70 ... 4.10   | 85 (≤90)   | -7.0 ... -3.0   | 5                                     | 400 (≤600)  | 1.0                                   | 3.00                    | 1.0                      |
| BZX384-C4V3 | W7      | 4.00 ... 4.60   | 80 (≤90)   | -6.0 ... -1.0   | 5                                     | 410 (≤600)  | 1.0                                   | 3.00                    | 1.0                      |
| BZX384-C4V7 | W8      | 4.40 ... 5.00   | 50 (≤80)   | -5.0 ... +2.0   | 5                                     | 425 (≤500)  | 1.0                                   | 3.00                    | 2.0                      |
| BZX384-C5V1 | W9      | 4.80 ... 5.40   | 40 (≤60)   | -3.0 ... +4.0   | 5                                     | 400 (≤480)  | 1.0                                   | 2.00                    | 2.0                      |
| BZX384-C5V6 | WA      | 5.20 ... 6.00   | 15 (≤40)   | -2.0 ... +6.0   | 5                                     | 80 (≤400)   | 1.0                                   | 1.00                    | 2.0                      |
| BZX384-C6V2 | WB      | 5.80 ... 6.60   | 6.0 (≤10)  | -1.0 ... +7.0   | 5                                     | 40 (≤150)   | 1.0                                   | 3.00                    | 4.0                      |
| BZX384-C6V8 | WC      | 6.40 ... 7.20   | 6.0 (≤15)  | +2.0 ... +7.0   | 5                                     | 30 (≤80)  | 1.0                                   | 2.00                    | 4.0                      |
| BZX384-C7V5 | WD      | 7.00 ... 7.90   | 6.0 (≤15)  | +3.0 ... +7.0   | 5                                     | 30 (≤80)  | 1.0                                   | 1.00                    | 5.0                      |
| BZX384-C8V2 | WE      | 7.70 ... 8.70   | 6.0 (≤15)  | +4.0 ... +7.0   | 5                                     | 40 (≤80)  | 1.0                                   | 0.70                    | 5.0                      |
| BZX384-C9V1 | WF      | 8.50 ... 9.60   | 6.0 (≤15)  | +5.0 ... +8.0   | 5                                     | 40 (≤100)   | 1.0                                   | 0.50                    | 6.0                      |
| BZX384-C10  | WG      | 9.40 ... 10.6   | 8.0 (≤20)  | +5.0 ... +8.0   | 5                                     | 50 (≤150)   | 1.0                                   | 0.20                    | 7.0                      |
| BZX384-C11  | WH      | 10.4 ... 11.6   | 10 (≤20)   | +5.0 ... +9.0   | 5                                     | 50 (≤150)   | 1.0                                   | 0.10                    | 8.0                      |
| BZX384-C12  | WI      | 11.4 ... 12.7   | 10 (≤25)   | +6.0 ... +9.0   | 5                                     | 50 (≤150)   | 1.0                                   | 0.10                    | 8.0                      |
| BZX384-C13  | WK      | 12.4 ... 14.1   | 10 (≤30)   | +7.0 ... +9.0   | 5                                     | 50 (≤170)   | 1.0                                   | 0.10                    | 8.0                      |
| BZX384-C15  | WL      | 13.8 ... 15.6   | 10 (≤30)   | +7.0 ... +9.0   | 5                                     | 50 (≤200)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C16  | WM      | 15.3 ... 17.1   | 10 (≤40)   | +8.0 ... +9.5   | 5                                     | 50 (≤200)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C18  | WN      | 16.8 ... 19.1   | 10 (≤45)   | +8.0 ... +9.5   | 5                                     | 50 (≤225)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C20  | WO      | 18.8 ... 21.2   | 15 (≤55)   | +8.0 ... +10  | 5                                     | 60 (≤225)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C22  | WP      | 20.8 ... 23.3   | 20 (≤55)   | +8.0 ... +10  | 5                                     | 60 (≤250)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C24  | WR      | 22.8 ... 25.6   | 25 (≤70)   | +8.0 ... +10  | 5                                     | 60 (≤250)   | 1.0                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C27  | WS      | 25.1 ... 28.9   | 25 (≤80)   | +8.0 ... +10  | 2                                     | 65 (≤300)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C30  | WT      | 28.0 ... 32.0   | 30 (≤80)   | +8.0 ... +10  | 2                                     | 70 (≤300)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C33  | WU      | 31.0 ... 35.0   | 35 (≤80)   | +8.0 ... +10  | 2                                     | 75 (≤325)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C36  | WW      | 34.0 ... 38.0   | 35 (≤90)   | +8.0 ... +10  | 2                                     | 80 (≤350)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C39  | WX      | 37.0 ... 41.0   | 40 (≤130)  | +10.0 ... +12   | 2                                     | 80 (≤350)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C43  | WY      | 40.0 ... 46.0   | 45 (≤150)  | +10.0 ... +12   | 2                                     | 85 (≤375)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C47  | WZ      | 44.0 ... 50.0   | 50 (≤170)  | +10.0 ... +12   | 2                                     | 85 (≤375)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C51  | X1      | 48.0 ... 54.0   | 60 (≤180)  | +10.0 ... +12   | 2                                     | 85 (≤400)   | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C56  | X2      | 52.0 ... 60.0   | 70 (≤200)  | +9.0 ... +11  | 2                                     | 100 (≤425)  | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C62  | X3      | 58.0 ... 66.0   | 80 (≤215)  | +9.0 ... +12  | 2                                     | 100 (≤450)  | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C68  | X4      | 64.0 ... 72.0   | 90 (≤240)  | +10.0 ... +12   | 2                                     | 150 (≤475)  | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |
| BZX384-C75  | X5      | 70.0 ... 79.0   | 95 (≤255)  | +10.0 ... +12   | 2                                     | 170 (≤500)  | 0.5                                   | 0.05                    | 0.7 V <sub>Znom.</sub>   |

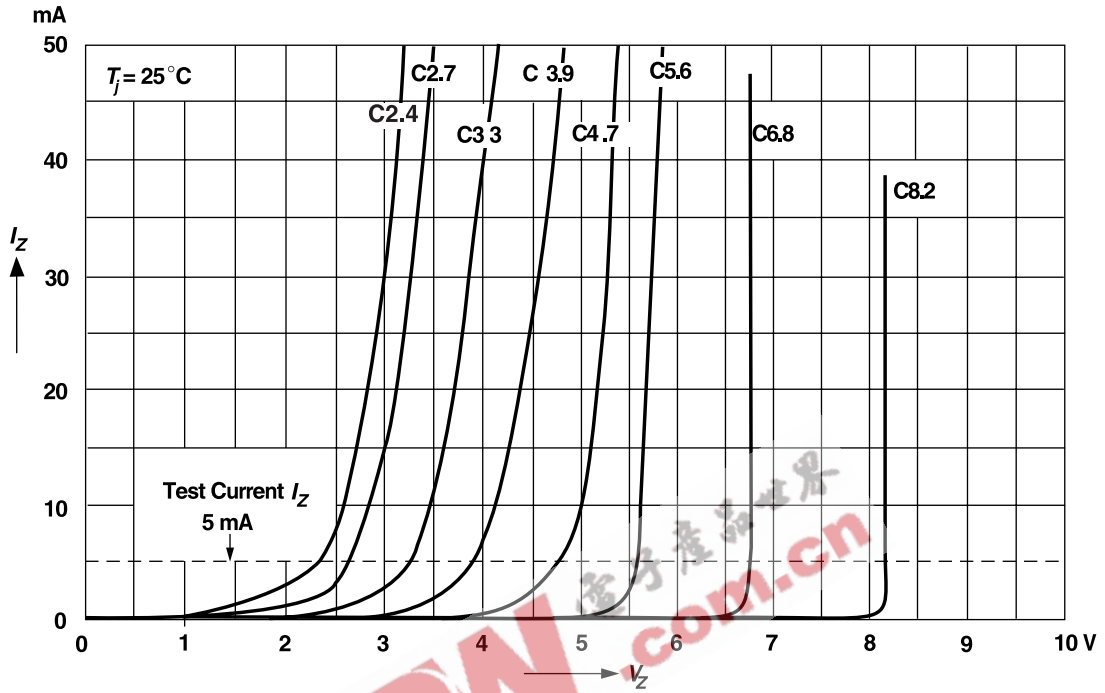
### NOTES:

(1) Measured with pulses t<sub>p</sub> = 5 ms

# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

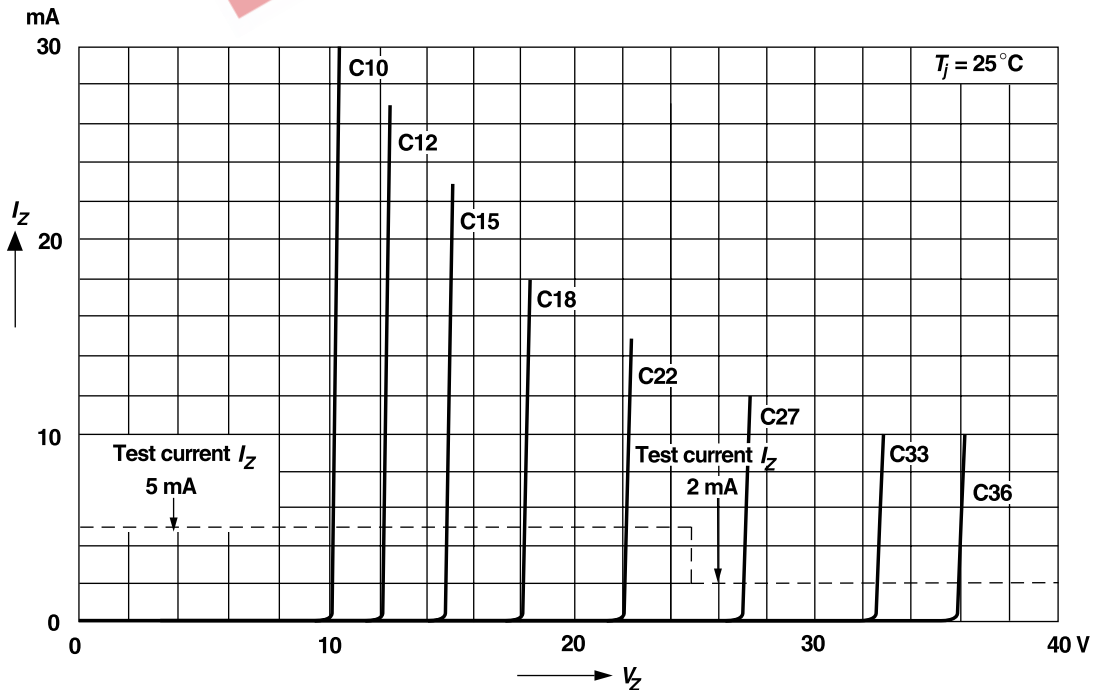
## Breakdown characteristics

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



## Breakdown characteristics

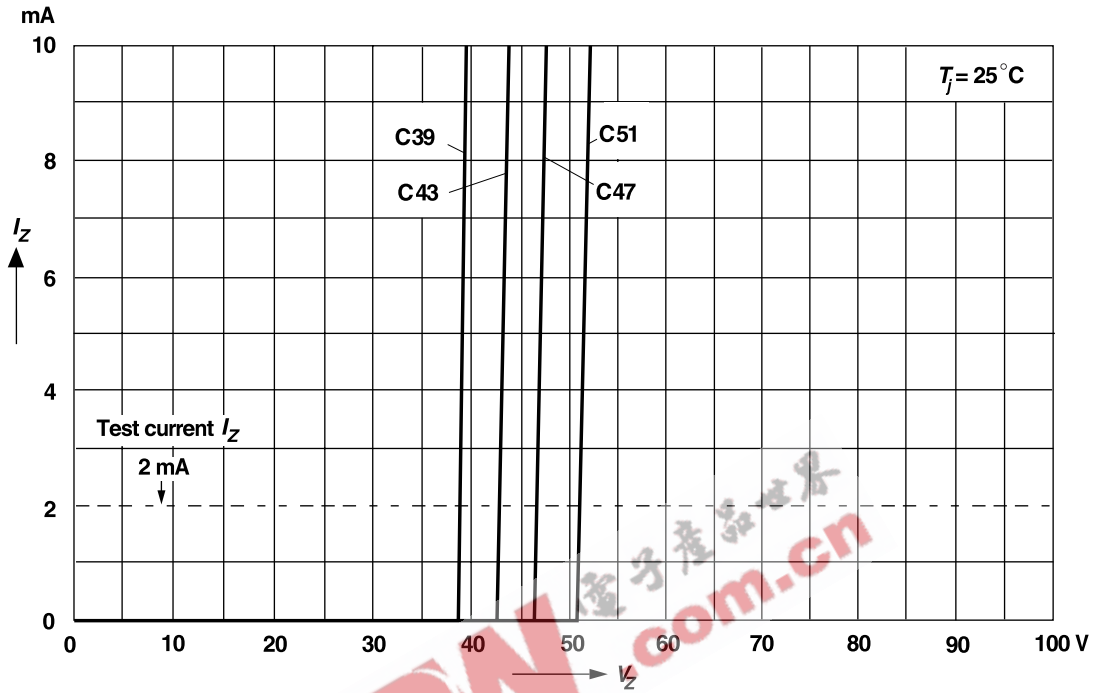
$T_j = \text{constant (pulsed)}$



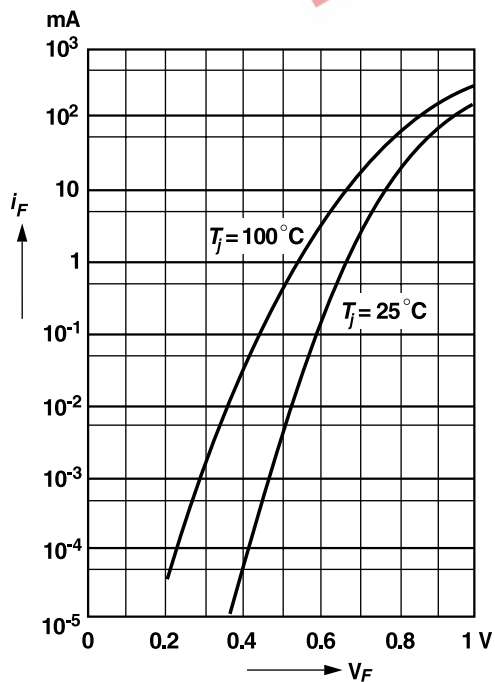
# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

## Breakdown characteristics

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

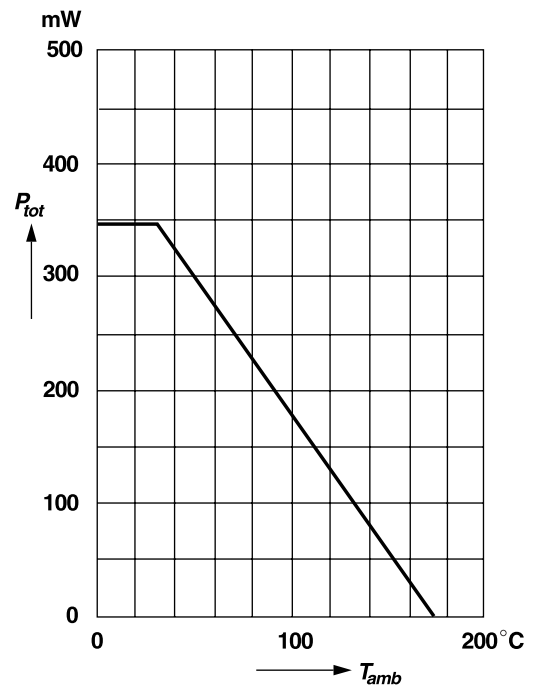


## Forward characteristics



## Admissible power dissipation versus ambient temperature

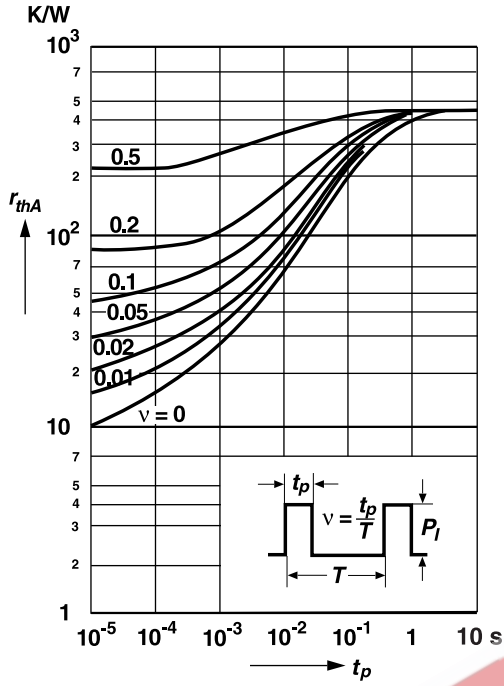
For conditions, see footnote in table "Absolute Maximum Ratings"



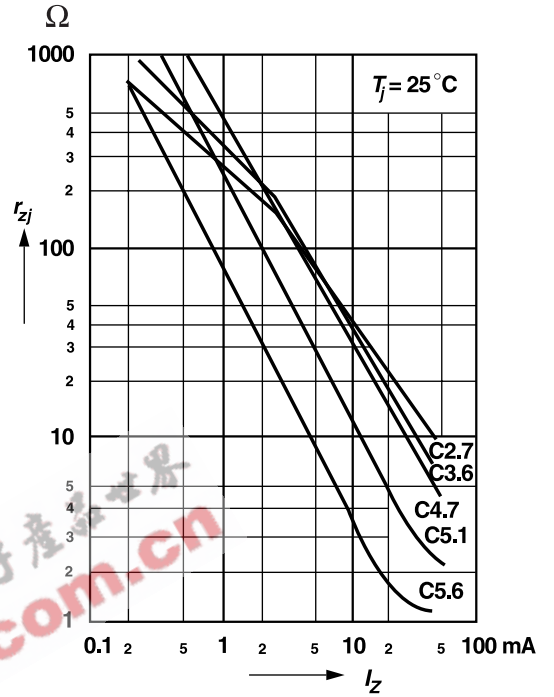
# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

**Pulse thermal resistance versus pulse duration**

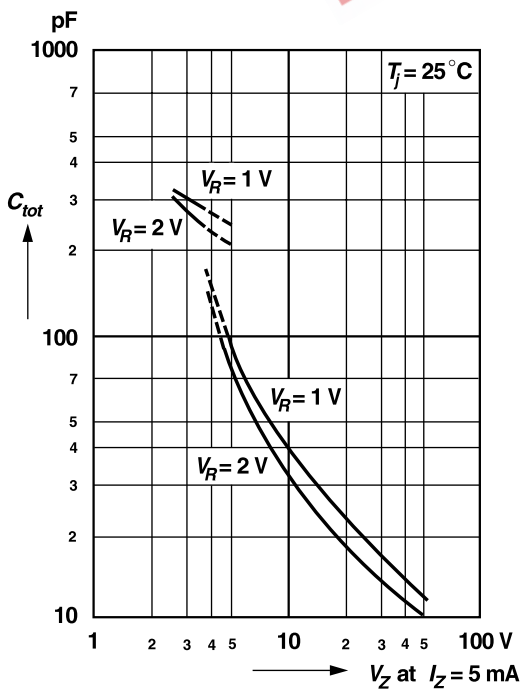
For conditions, see footnote in table "Absolute Maximum Ratings"



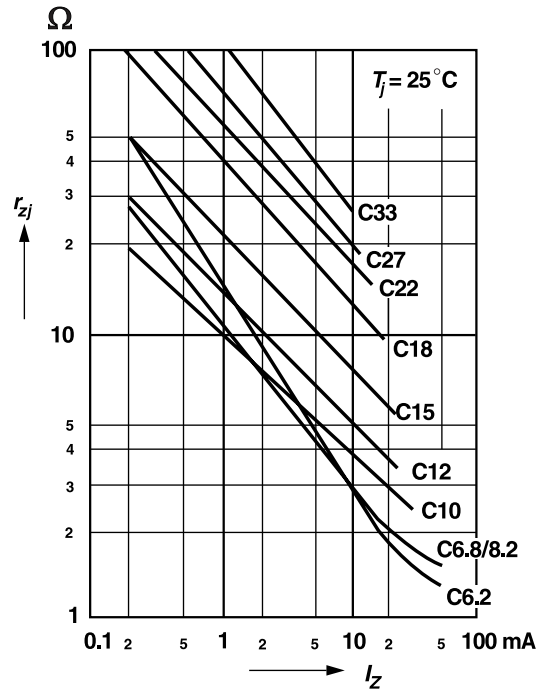
**Dynamic resistance versus Zener current**



**Capacitance versus Zener voltage**

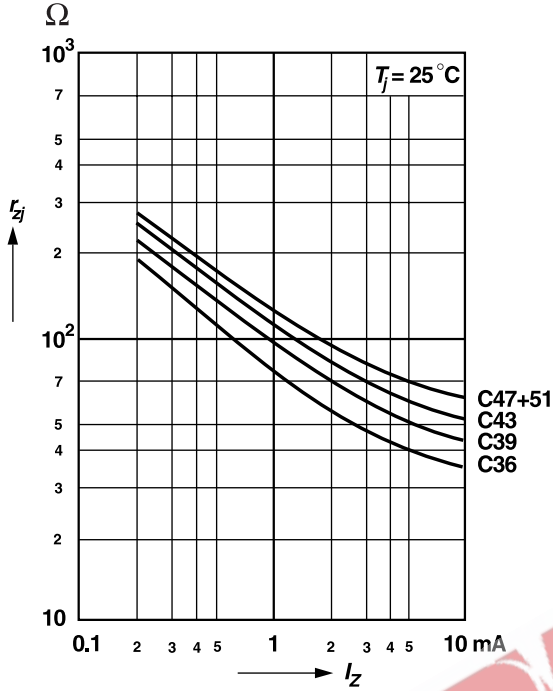


**Dynamic resistance versus Zener current**



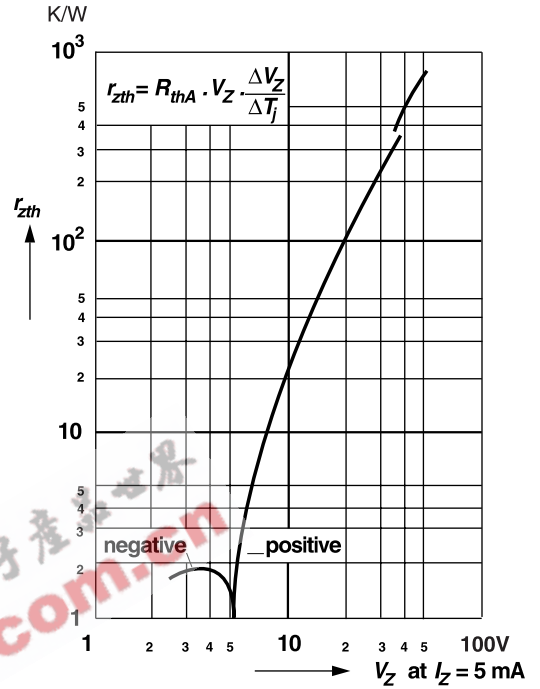
# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

**Dynamic resistance versus Zener current**

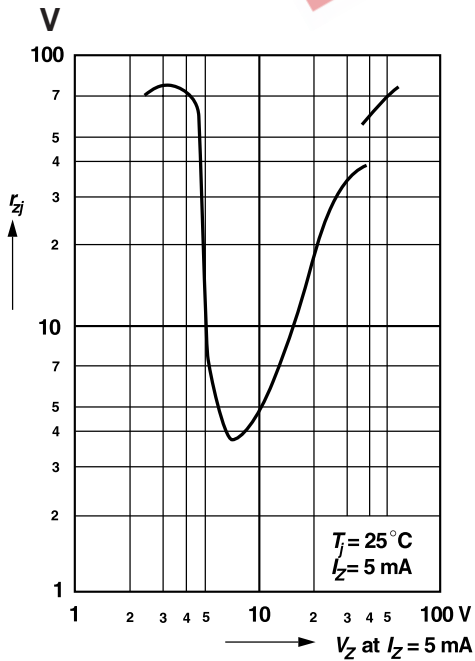


**Thermal differential resistance versus Zener voltage**

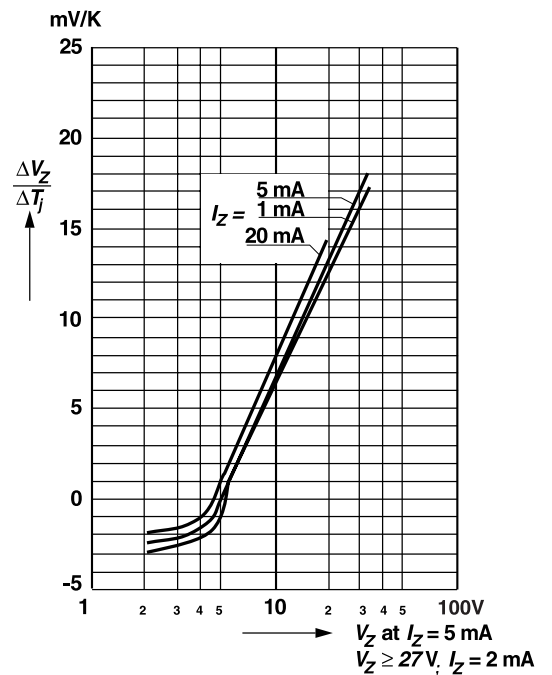
For conditions, see footnote in table "Absolute Maximum Ratings"



**Dynamic resistance versus Zener voltage**

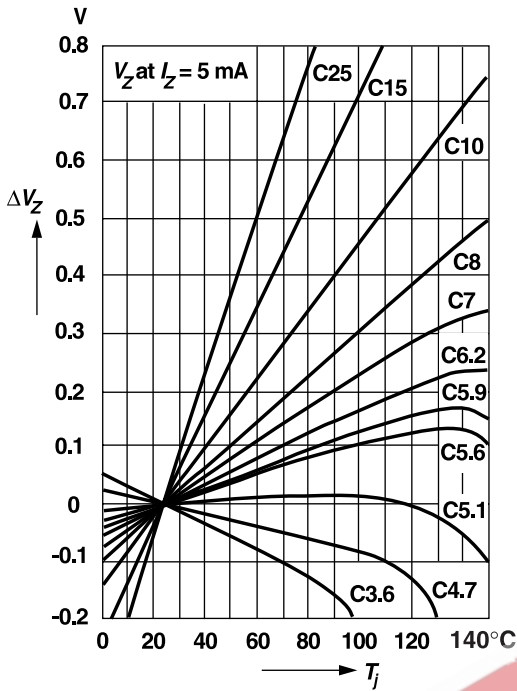


**Temperature dependence of Zener voltage versus Zener voltage**

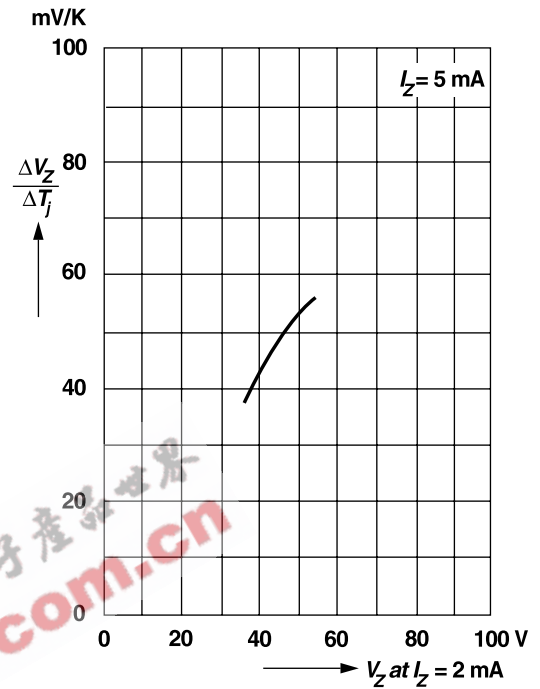


# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

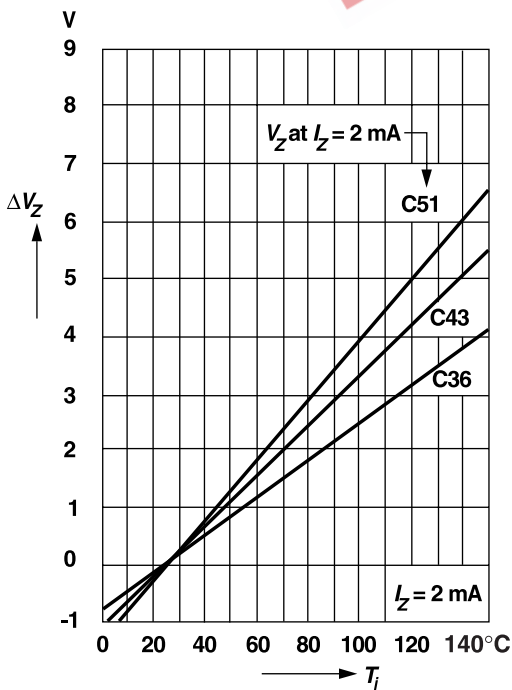
Change of Zener voltage versus junction temperature



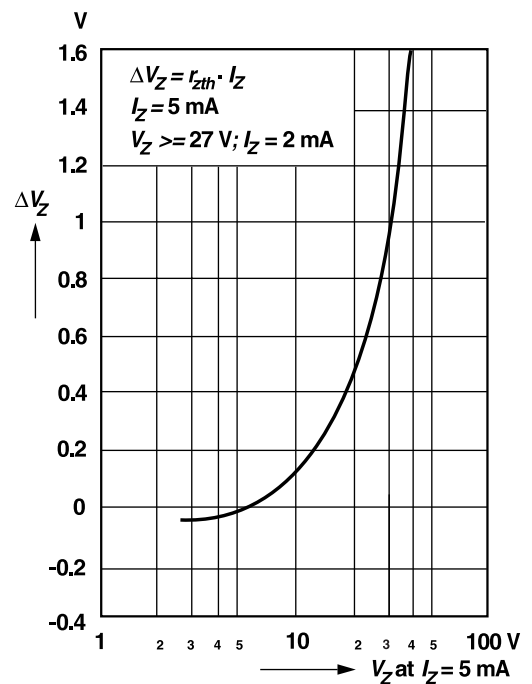
Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage versus junction temperature

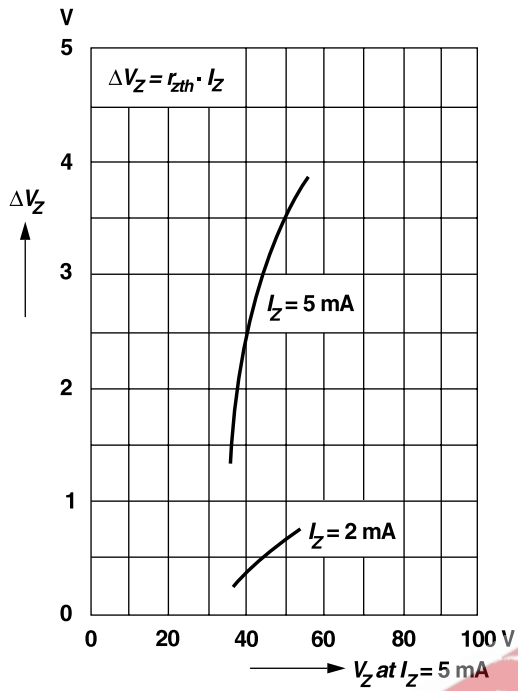


Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



# RATINGS AND CHARACTERISTICS CURVES BZX384-C2V4 THRU BZX384-C75

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



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