

500 mW DO-35 Hermetically Sealed Glass Zener Voltage Regulators



AXIAL LEAD
DO35

Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

| Parameter | Value | Units |
|--------------------------------|-------------|------------------|
| Power Dissipation | 500 | mW |
| Storage Temperature Range | -65 to +175 | $^\circ\text{C}$ |
| Operating Junction Temperature | +175 | $^\circ\text{C}$ |

These ratings are limiting values above which the serviceability of the diode may be impaired.

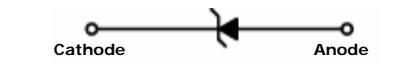


DEVICE MARKING DIAGRAM

L : Logo
Device Code : TCBZX79Txxx
T : VZ tolerance B or C

Specification Features:

- Zener Voltage Range 2.0 to 75 Volts
- DO-35 Package (JEDEC)
- Through-Hole Device Type Mounting
- Hermetically Sealed Glass
- Compression Bonded Construction
- All External Surfaces Are Corrosion Resistant And Leads Are Readily Solderable
- RoHS Compliant
- Solder Hot Dip Tin (Sn) Terminal Finish
- Cathode Indicated By Polarity Band



ELECTRICAL SYMBOL

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| Device Type | $V_Z @ I_{ZT}$ (Volts) | | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | I_{ZK} (mA) | $Z_{ZK} @ I_{ZK}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|--------------|---------------------------|------|------------------|--|------------------|--|---|------------------|
| | Min | Max | | | | | | |
| TCBZX79C 2V0 | 1.88 | 2.12 | 5 | 100 | 1 | 600 | 150 | 1 |
| TCBZX79C 2V2 | 2.08 | 2.33 | 5 | 100 | 1 | 600 | 150 | 1 |
| TCBZX79C 2V4 | 2.28 | 2.56 | 5 | 100 | 1 | 600 | 100 | 1 |
| TCBZX79C 2V7 | 2.51 | 2.89 | 5 | 100 | 1 | 600 | 75 | 1 |
| TCBZX79C 3V0 | 2.8 | 3.2 | 5 | 95 | 1 | 600 | 50 | 1 |
| TCBZX79C 3V3 | 3.1 | 3.5 | 5 | 95 | 1 | 600 | 25 | 1 |
| TCBZX79C 3V6 | 3.4 | 3.8 | 5 | 90 | 1 | 600 | 15 | 1 |
| TCBZX79C 3V9 | 3.7 | 4.1 | 5 | 90 | 1 | 600 | 10 | 1 |
| TCBZX79C 4V3 | 4 | 4.6 | 5 | 90 | 1 | 600 | 5 | 1 |
| TCBZX79C 4V7 | 4.4 | 5 | 5 | 80 | 1 | 500 | 3 | 2 |
| TCBZX79C 5V1 | 4.8 | 5.4 | 5 | 60 | 1 | 480 | 2 | 2 |
| TCBZX79C 5V6 | 5.2 | 6 | 5 | 40 | 1 | 400 | 1 | 2 |
| TCBZX79C 6V2 | 5.8 | 6.6 | 5 | 10 | 1 | 150 | 3 | 4 |
| TCBZX79C 6V8 | 6.4 | 7.2 | 5 | 15 | 1 | 80 | 2 | 4 |
| TCBZX79C 7V5 | 7 | 7.9 | 5 | 15 | 1 | 80 | 1 | 5 |
| TCBZX79C 8V2 | 7.7 | 8.7 | 5 | 15 | 1 | 80 | 0.7 | 5 |
| TCBZX79C 9V1 | 8.5 | 9.6 | 5 | 15 | 1 | 100 | 0.5 | 6 |
| TCBZX79C 10 | 9.4 | 10.6 | 5 | 20 | 1 | 150 | 0.2 | 7 |
| TCBZX79C 11 | 10.4 | 11.6 | 5 | 20 | 1 | 150 | 0.1 | 8 |
| TCBZX79C 12 | 11.4 | 12.7 | 5 | 25 | 1 | 150 | 0.1 | 8 |
| TCBZX79C 13 | 12.4 | 14.1 | 5 | 30 | 1 | 170 | 0.1 | 8 |

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| Device Type | $V_Z @ I_{ZT}$ (Volts) | | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | I_{ZK} (mA) | $Z_{ZK} @ I_{ZK}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|-------------|---------------------------|------|------------------|--|------------------|--|---|------------------|
| | Min | Max | | | | | | |
| TCBZX79C 15 | 13.8 | 15.6 | 5 | 30 | 1 | 200 | 0.05 | 10.5 |
| TCBZX79C 16 | 15.3 | 17.1 | 5 | 40 | 1 | 200 | 0.05 | 11.2 |
| TCBZX79C 18 | 16.8 | 19.1 | 5 | 45 | 1 | 225 | 0.05 | 12.6 |
| TCBZX79C 20 | 18.8 | 21.2 | 5 | 55 | 1 | 225 | 0.05 | 14 |
| TCBZX79C 22 | 20.8 | 23.3 | 5 | 55 | 1 | 250 | 0.05 | 15.4 |
| TCBZX79C 24 | 22.8 | 25.6 | 5 | 70 | 1 | 250 | 0.05 | 16.8 |
| TCBZX79C 27 | 25.1 | 28.9 | 2 | 80 | 0.5 | 300 | 0.05 | 18.9 |
| TCBZX79C 30 | 28 | 32 | 2 | 80 | 0.5 | 300 | 0.05 | 21 |
| TCBZX79C 33 | 31 | 35 | 2 | 80 | 0.5 | 325 | 0.05 | 23.1 |
| TCBZX79C 36 | 34 | 38 | 2 | 90 | 0.5 | 350 | 0.05 | 25.2 |
| TCBZX79C 39 | 37 | 41 | 2 | 130 | 0.5 | 350 | 0.05 | 27.3 |
| TCBZX79C 43 | 40 | 46 | 2 | 150 | 0.5 | 375 | 0.05 | 30.1 |
| TCBZX79C 47 | 44 | 50 | 2 | 170 | 0.5 | 375 | 0.05 | 32.9 |
| TCBZX79C 51 | 48 | 54 | 2 | 180 | 0.5 | 400 | 0.05 | 35.7 |
| TCBZX79C 56 | 52 | 60 | 2 | 200 | 0.5 | 425 | 0.05 | 39.2 |
| TCBZX79C 62 | 58 | 66 | 2.5 | 215 | 0.5 | 1000 | 0.05 | 43.4 |
| TCBZX79C 68 | 64 | 72 | 2.5 | 240 | 0.5 | 1000 | 0.05 | 47.6 |
| TCBZX79C 75 | 70 | 80 | 2.5 | 255 | 0.5 | 1000 | 0.05 | 52.5 |

V_F Forward Voltage = 1.5 V Maximum @ $I_F = 100$ mA for all types

| Device Type | $V_Z @ I_{ZT}$ (Volts) | | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | I_{ZK} (mA) | $Z_{ZK} @ I_{ZK}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|--------------|---------------------------|-------|------------------|--|------------------|--|---|------------------|
| | Min | Max | | | | | | |
| TCBZX79B 2V4 | 2.35 | 2.45 | 5 | 100 | 1 | 600 | 100 | 1 |
| TCBZX79B 2V7 | 2.65 | 2.75 | 5 | 100 | 1 | 600 | 75 | 1 |
| TCBZX79B 3V0 | 2.94 | 3.06 | 5 | 95 | 1 | 600 | 50 | 1 |
| TCBZX79B 3V3 | 3.23 | 3.37 | 5 | 95 | 1 | 600 | 25 | 1 |
| TCBZX79B 3V6 | 3.53 | 3.67 | 5 | 90 | 1 | 600 | 15 | 1 |
| TCBZX79B 3V9 | 3.82 | 3.98 | 5 | 90 | 1 | 600 | 10 | 1 |
| TCBZX79B 4V3 | 4.21 | 4.39 | 5 | 90 | 1 | 600 | 5 | 1 |
| TCBZX79B 4V7 | 4.61 | 4.79 | 5 | 80 | 1 | 500 | 3 | 2 |
| TCBZX79B 5V1 | 5.00 | 5.20 | 5 | 60 | 1 | 480 | 2 | 2 |
| TCBZX79B 5V6 | 5.49 | 5.71 | 5 | 40 | 1 | 400 | 1 | 2 |
| TCBZX79B 6V2 | 6.08 | 6.32 | 5 | 10 | 1 | 150 | 3 | 4 |
| TCBZX79B 6V8 | 6.66 | 6.94 | 5 | 15 | 1 | 80 | 2 | 4 |
| TCBZX79B 7V5 | 7.33 | 7.63 | 5 | 15 | 1 | 80 | 1 | 5 |
| TCBZX79B 8V2 | 8.04 | 8.36 | 5 | 15 | 1 | 80 | 0.7 | 5 |
| TCBZX79B 9V1 | 8.92 | 9.28 | 5 | 15 | 1 | 100 | 0.5 | 6 |
| TCBZX79B 10 | 9.80 | 10.20 | 5 | 20 | 1 | 150 | 0.2 | 7 |
| TCBZX79B 11 | 10.78 | 11.22 | 5 | 20 | 1 | 150 | 0.1 | 8 |
| TCBZX79B 12 | 11.76 | 12.24 | 5 | 25 | 1 | 150 | 0.1 | 8 |
| TCBZX79B 13 | 12.74 | 13.26 | 5 | 30 | 1 | 170 | 0.1 | 8 |
| TCBZX79B 15 | 14.70 | 15.30 | 5 | 30 | 1 | 200 | 0.05 | 10.5 |
| TCBZX79B 16 | 15.68 | 16.32 | 5 | 40 | 1 | 200 | 0.05 | 11.2 |
| TCBZX79B 18 | 17.64 | 18.36 | 5 | 45 | 1 | 225 | 0.05 | 12.6 |
| TCBZX79B 20 | 19.60 | 20.40 | 5 | 55 | 1 | 225 | 0.05 | 14 |
| TCBZX79B 22 | 21.56 | 22.44 | 5 | 55 | 1 | 250 | 0.05 | 15.4 |
| TCBZX79B 24 | 23.52 | 24.48 | 5 | 70 | 1 | 250 | 0.05 | 16.8 |
| TCBZX79B 27 | 26.46 | 27.54 | 2 | 80 | 0.5 | 300 | 0.05 | 18.9 |
| TCBZX79B 30 | 29.40 | 30.60 | 2 | 80 | 0.5 | 300 | 0.05 | 21 |
| TCBZX79B 33 | 32.34 | 33.66 | 2 | 80 | 0.5 | 325 | 0.05 | 23.1 |
| TCBZX79B 36 | 35.28 | 36.72 | 2 | 90 | 0.5 | 350 | 0.05 | 25.2 |
| TCBZX79B 39 | 38.22 | 39.78 | 2 | 130 | 0.5 | 350 | 0.05 | 27.3 |
| TCBZX79B 43 | 42.14 | 43.86 | 2 | 150 | 0.5 | 375 | 0.05 | 30.1 |
| TCBZX79B 47 | 46.06 | 47.94 | 2 | 170 | 0.5 | 375 | 0.05 | 32.9 |
| TCBZX79B 51 | 49.98 | 52.02 | 2 | 180 | 0.5 | 400 | 0.05 | 35.7 |

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

| Device Type | $V_Z @ I_{ZT}$ (Volts) | | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | I_{ZK} (mA) | $Z_{ZK} @ I_{ZK}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|-------------|---------------------------|-------|------------------|--|------------------|--|---|------------------|
| | Min | Max | | | | | | |
| TCBZX79B 56 | 54.88 | 57.12 | 2 | 200 | 0.5 | 425 | 0.05 | 39.2 |
| TCBZX79B 62 | 60.76 | 63.24 | 2.5 | 215 | 0.5 | 430 | 0.05 | 43.4 |
| TCBZX79B 68 | 66.64 | 69.36 | 2.5 | 240 | 0.5 | 447 | 0.05 | 47.6 |
| TCBZX79B 75 | 73.50 | 76.50 | 2.5 | 255 | 0.5 | 470 | 0.05 | 52.5 |

V_F Forward Voltage = 1.5 V Maximum @ $I_F = 100$ mA for all types

Notes:

1. TOLERANCE AND VOLTAGE DESIGNATION

The type numbers listed have zener voltage as shown.

2. SPECIALS AVAILABLE INCLUDE

Nominal zener voltages between the voltages shown and tighter voltage, for detailed information on price, availability and delivery, contact you nearest Tak Cheong representative.

3. ZENER VOLTAGE (V_Z) MEASUREMENT

The zener voltage is measured under pulse conditions such that T_J is no more than 2°C above T_A .

4. ZENER IMPEDANCE (Z_Z) DERIVATION

Zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an RMS value equal to 10% of the dc zener current (I_{ZT}) is superimposed to I_{ZT} .

Typical Characteristics

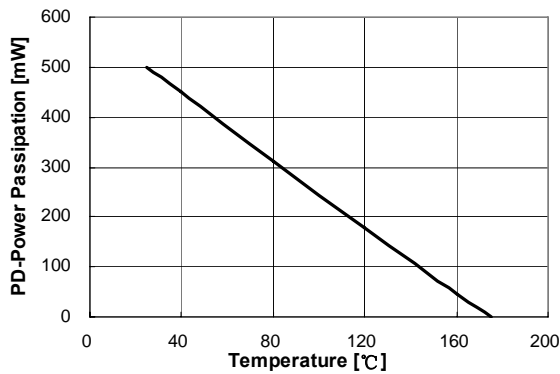


Figure 1. Power Dissipation vs Ambient Temperature
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

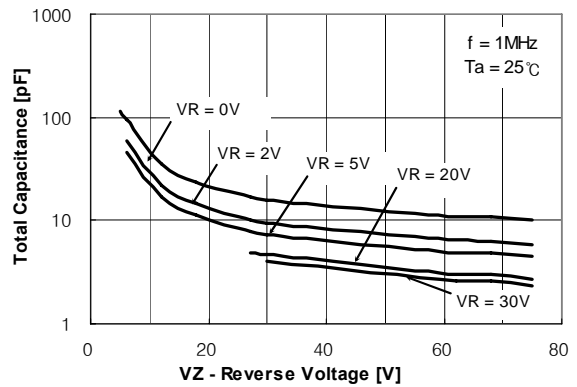


Figure 2. Total Capacitance

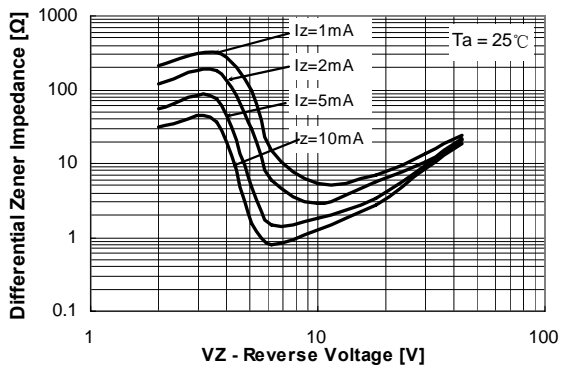


Figure 3. Differential Impedance vs. Zener Voltage

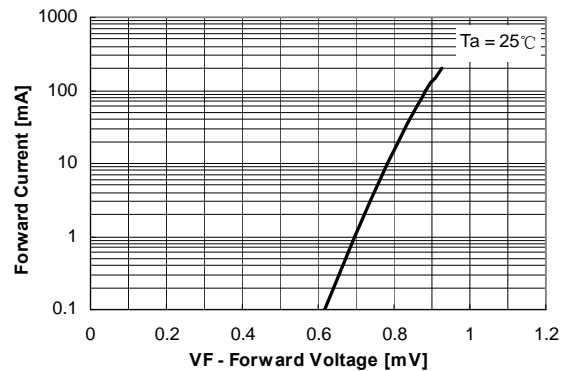


Figure 4. Forward Current vs. Forward Voltage

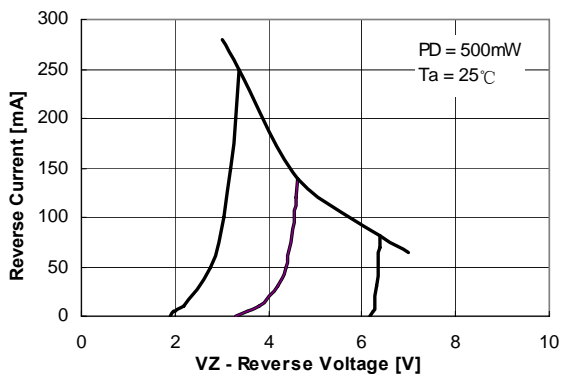


Figure 5. Reverse Current vs. Reverse Voltage

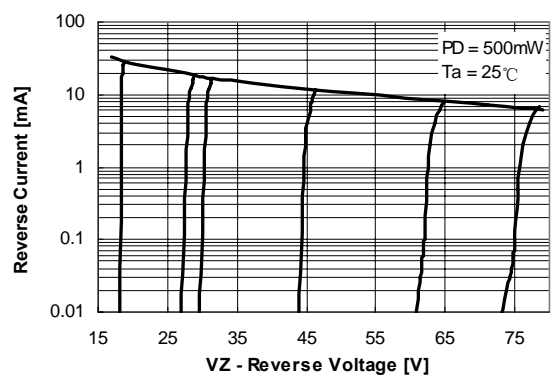
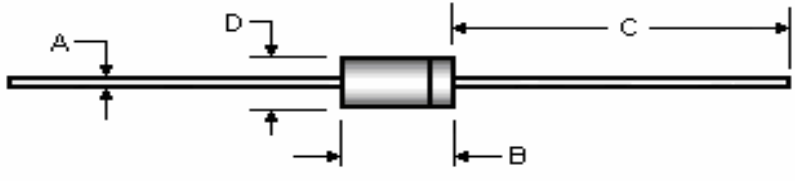


Figure 6. Reverse Current vs. Reverse Voltage

Package Outline

| Package | Case Outline | | | | |
|----------|--|--------------------|-------|---------------|-------|
| DO-35 |  | | | | |
| | DO-35 | | | | |
| | DIM | Millimeters | | Inches | |
| | | Min | Max | Min | Max |
| | A | 0.46 | 0.55 | 0.018 | 0.022 |
| B | 3.05 | 5.08 | 0.120 | 0.200 | |
| C | 25.40 | 38.10 | 1.000 | 1.500 | |
| D | 1.53 | 2.28 | 0.060 | 0.090 | |

Notes:

1. All dimensions are within JEDEC standard.
2. DO35 polarity denoted by cathode band.

NOTICE

The information presented in this document is for reference only. Tak Cheong reserves the right to make changes without notice for the specification of the products displayed herein.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Tak Cheong Semiconductor Co., Ltd., or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

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