

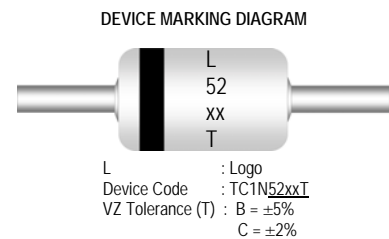
# 500 mW DO-35 Hermetically Sealed Glass Zener Voltage Regulators



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

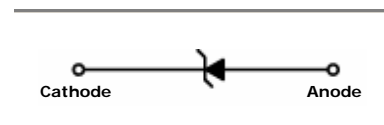
| Parameter   | Value       | Units            |
|---|-------------|------------------|
| Power Dissipation                                 | 500         | mW               |
| Storage Temperature Range                         | -65 to +200 | $^\circ\text{C}$ |
| Operating Junction Temperature                    | +200        | $^\circ\text{C}$ |
| Lead Temperature (1/16" from case for 10 seconds) | +230        | $^\circ\text{C}$ |

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



## Specification Features:

- Zener Voltage Range 2.4 to 56 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
- Cathode indicated by polarity band



ELECTRICAL SYMBOL

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

| Device Type | $V_Z @ I_{ZT}$<br>(Volts)<br>Nominal | $I_{ZT}$<br>(mA) | $Z_{ZT} @ I_{ZT}$<br>( $\Omega$ )<br>Max | $Z_{ZK} @ I_{ZK} = 0.25\text{mA}$<br>( $\Omega$ )<br>Max | $I_R @ V_R$<br>( $\mu\text{A}$ )<br>Max | $V_R$<br>(Volts) |
|-------------|--------------------------------------|------------------|--|--|---|------------------|
| TC1N5221B   | 2.4                                  | 20               | 30                                       | 1200   | 100                                     | 1                |
| TC1N5222B   | 2.5                                  | 20               | 30                                       | 1250   | 100                                     | 1                |
| TC1N5223B   | 2.7                                  | 20               | 30                                       | 1300   | 75                                      | 1                |
| TC1N5224B   | 2.8                                  | 20               | 30                                       | 1400   | 75                                      | 1                |
| TC1N5225B   | 3                                    | 20               | 29                                       | 1600   | 50                                      | 1                |
| TC1N5226B   | 3.3                                  | 20               | 28                                       | 1600   | 25                                      | 1                |
| TC1N5227B   | 3.6                                  | 20               | 24                                       | 1700   | 15                                      | 1                |
| TC1N5228B   | 3.9                                  | 20               | 23                                       | 1900   | 10                                      | 1                |
| TC1N5229B   | 4.3                                  | 20               | 22                                       | 2000   | 5                                       | 1                |
| TC1N5230B   | 4.7                                  | 20               | 19                                       | 1900   | 5                                       | 2                |
| TC1N5231B   | 5.1                                  | 20               | 17                                       | 1600   | 5                                       | 2                |
| TC1N5232B   | 5.6                                  | 20               | 11                                       | 1600   | 5                                       | 3                |
| TC1N5233B   | 6                                    | 20               | 7  | 1600   | 5                                       | 3.5              |
| TC1N5234B   | 6.2                                  | 20               | 7  | 1000   | 5                                       | 4                |
| TC1N5235B   | 6.8                                  | 20               | 5  | 750  | 3                                       | 5                |
| TC1N5236B   | 7.5                                  | 20               | 6  | 500  | 3                                       | 6                |
| TC1N5237B   | 8.2                                  | 20               | 8  | 500  | 3                                       | 6.5              |
| TC1N5238B   | 8.7                                  | 20               | 8  | 600  | 3                                       | 6.5              |
| TC1N5239B   | 9.1                                  | 20               | 10                                       | 600  | 3                                       | 7                |
| TC1N5240B   | 10                                   | 20               | 17                                       | 600  | 3                                       | 8                |
| TC1N5241B   | 11                                   | 20               | 22                                       | 600  | 2                                       | 8.4              |
| TC1N5242B   | 12                                   | 20               | 30                                       | 600  | 1                                       | 9.1              |
| TC1N5243B   | 13                                   | 9.5              | 13                                       | 600  | 0.5                                     | 9.9              |
| TC1N5244B   | 14                                   | 9                | 15                                       | 600  | 0.1                                     | 10               |

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

| Device Type | $V_Z @ I_{ZT}$<br>(Volts)<br>Nominal | $I_{ZT}$<br>(mA) | $Z_{ZT} @ I_{ZT}$<br>( $\Omega$ )<br>Max | $Z_{ZK} @ I_{ZK} = 0.25\text{mA}$<br>( $\Omega$ )<br>Max | $I_R @ V_R$<br>( $\mu\text{A}$ )<br>Max | $V_R$<br>(Volts) |
|-------------|--------------------------------------|------------------|--|--|---|------------------|
| TC1N5245B   | 15                                   | 8.5              | 16                                       | 600  | 0.1                                     | 11               |
| TC1N5246B   | 16                                   | 7.8              | 17                                       | 600  | 0.1                                     | 12               |
| TC1N5247B   | 17                                   | 7.4              | 19                                       | 600  | 0.1                                     | 13               |
| TC1N5248B   | 18                                   | 7                | 21                                       | 600  | 0.1                                     | 14               |
| TC1N5249B   | 19                                   | 6.6              | 23                                       | 600  | 0.1                                     | 14               |
| TC1N5250B   | 20                                   | 6.2              | 25                                       | 600  | 0.1                                     | 15               |
| TC1N5251B   | 22                                   | 5.6              | 29                                       | 600  | 0.1                                     | 17               |
| TC1N5252B   | 24                                   | 5.2              | 33                                       | 600  | 0.1                                     | 18               |
| TC1N5253B   | 25                                   | 5                | 35                                       | 600  | 0.1                                     | 19               |
| TC1N5254B   | 27                                   | 4.6              | 41                                       | 600  | 0.1                                     | 21               |
| TC1N5255B   | 28                                   | 4.5              | 44                                       | 600  | 0.1                                     | 21               |
| TC1N5256B   | 30                                   | 4.2              | 49                                       | 600  | 0.1                                     | 23               |
| TC1N5257B   | 33                                   | 3.8              | 58                                       | 700  | 0.1                                     | 25               |
| TC1N5258B   | 36                                   | 3.4              | 70                                       | 700  | 0.1                                     | 27               |
| TC1N5259B   | 39                                   | 3.2              | 80                                       | 800  | 0.1                                     | 30               |
| TC1N5258B   | 36                                   | 3.4              | 70                                       | 700  | 0.1                                     | 27               |
| TC1N5259B   | 39                                   | 3.2              | 80                                       | 800  | 0.1                                     | 30               |
| TC1N5260B   | 43                                   | 3                | 93                                       | 900  | 0.1                                     | 33               |
| TC1N5261B   | 47                                   | 2.7              | 105                                      | 1000   | 0.1                                     | 36               |
| TC1N5262B   | 51                                   | 2.5              | 125                                      | 1100   | 0.1                                     | 39               |
| TC1N5263B   | 56                                   | 2.2              | 150                                      | 1300   | 0.1                                     | 43               |

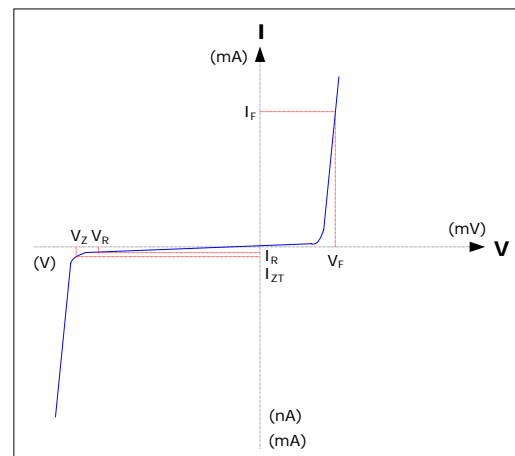
 $V_F$  Forward Voltage = 1.1 V Maximum @  $I_F = 200$  mA for all types

**Notes:**

- The type numbers listed have zener voltage as shown and have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ . Device of  $\pm 2\%$  is indicated by a "C" instead of a "B".
- For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Tak Cheong Electronics representative.
- The 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 ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$ .

**Electrical Symbol Definition**

| Symbol   | Parameter                          |
|----------|------------------------------------|
| $V_Z$    | Reverse Zener Voltage @ $I_{ZT}$   |
| $I_{ZT}$ | Reverse Current                    |
| $Z_{ZT}$ | Maximum Zener Impedance @ $I_{ZT}$ |
| $I_{ZK}$ | Reverse Current                    |
| $Z_{ZK}$ | Maximum Zener Impedance @ $I_{ZK}$ |
| $I_R$    | Reverse Leakage Current @ $V_R$    |
| $V_R$    | Breakdown Voltage                  |
| $I_F$    | Forward Current                    |
| $V_F$    | Forward Voltage @ $I_F$            |

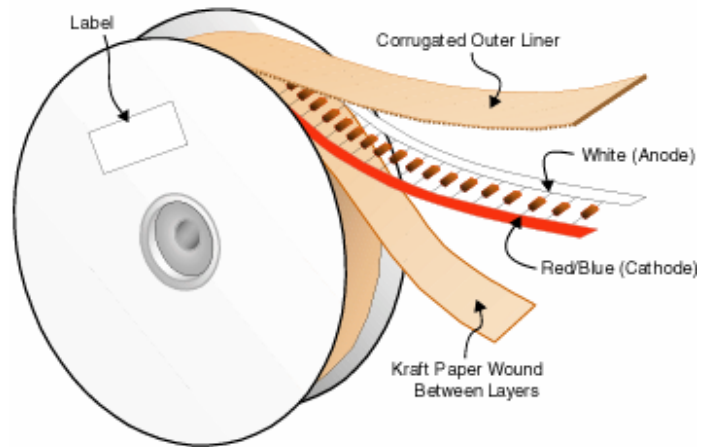
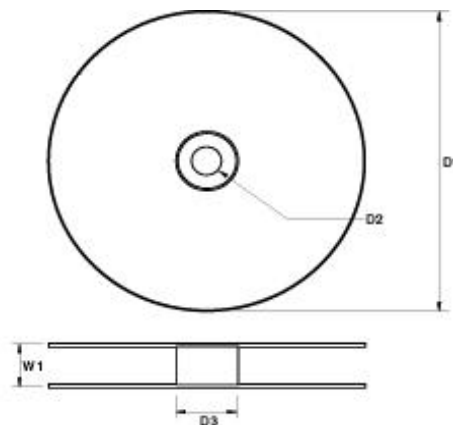
**Typical Characteristics**


**Ordering Information**

| <b>Device</b>  | <b>Package</b>                                       | <b>Quantity</b> |
|----------------|--|-----------------|
| TC1N52xxB      | Bulk   | 10,000          |
| TC1N52xxB.TB   | Tape and Ammo (52mm)                                 | 5,000           |
| TC1N52xxB.TR   | Tape and Reel (52mm)                                 | 10,000          |
| TC1N52xxB.T26B | Tape and Ammo (26mm)                                 | 5,000           |
| TC1N52xxB      | Others (...contact Tak Cheong sales representatives) |                 |

**Axial-Lead Tape Packaging Standards**

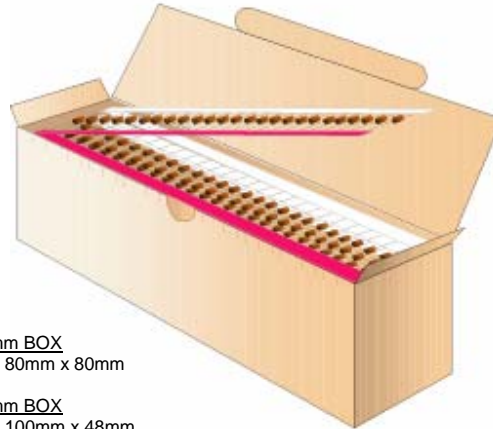
This axial-lead component's packaging requirements use in automatic testing and assembly equipment. And this standard practices for lead-tape packaging of axial-lead components meets the requirements of EIA Standard RS-296-D "Lead-taping of Components on Axial Lead Configuration for Automatic Insertion".

**Tape & Reel Packaging Information**
**Tape & Reel Outline**

**Reel Dimensions**


| DIM | Millimeters |
|-----|-------------|
| D1  | 356         |
| D2  | 30          |
| D3  | 84          |
| W1  | 77.5        |

**Quantity Per Reel**

| PKG Type | Quantity Per Reel |
|----------|-------------------|
| DO-35    | 10,000            |

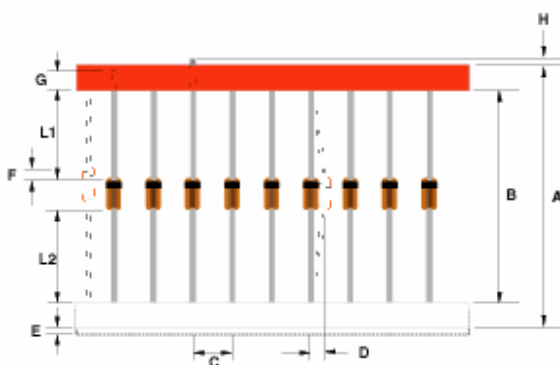
**Tape & Ammo Packaging Information**
**Tape & Ammo Outline**


FOR 52mm BOX  
250mm x 80mm x 80mm

FOR 26mm BOX  
255mm x 100mm x 48mm

**Quantity Per Ammo Box**

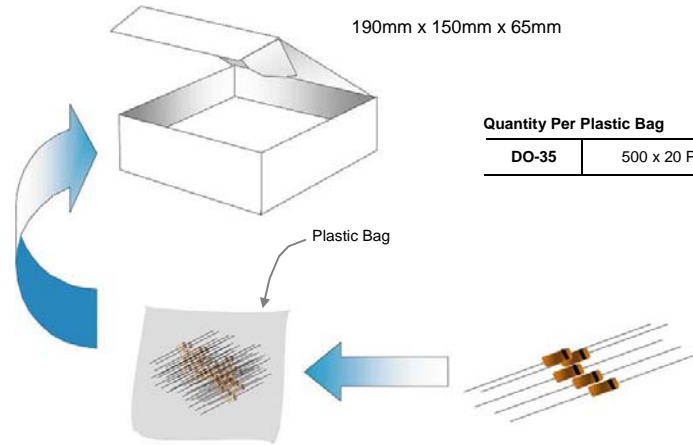
| PKG Type | Quantity Per Box |
|----------|------------------|
| DO-35    | 5,000            |

**Taping Dimensions**


| Description            | Millimeters    |               |
|------------------------|----------------|---------------|
|                        | Standard Width | 52            |
| Tape Spacing (B)       | 52 ± 0.69      | 26 +0.5 / -0  |
| Component Pitch (C)    | 5.08 ± 0.4     | 5.08 ± 0.4    |
| Untaped Lead (L1 – L2) | ± 0.69         | ± 0.69        |
| Glass Offset (F)       | ± 0.69         | ± 0.69        |
| Bent (D)               | 1.2 Max        | 1.2 Max       |
| Tape Width (G)         | 6.138 ± 0.576  | 6.138 ± 0.576 |
| Tape Mismatch (E)      | 0.55 Max       | 0.55 Max      |
| Taped Lead (G)         | 3.2 Min        | 3.2 Min       |
| Lead Beyond Tape (H)   | 0              | 0             |

**Bulk Packaging Information**

**Bulk Outline**

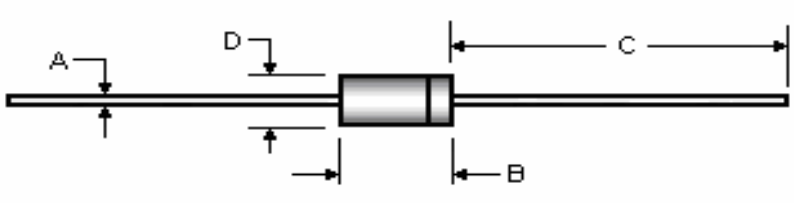


| Quantity Per Plastic Bag |                      |
|--------------------------|----------------------|
| DO-35                    | 500 x 20 Plastic Bag |

**Quantity Per Box**

| PKG Type | Quantity Per Box |
|----------|------------------|
| DO-35    | 10,000           |

**Package Outline**

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

**Notes:**

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