



SYNSEMI SEMICONDUCTOR

500 mW DO-35 Hermetically Sealed Glass Zener Voltage Regulators



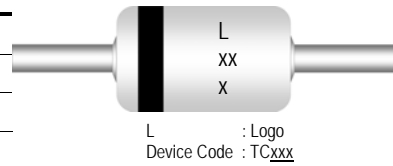
AXIAL LEAD
DO-35

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 | $^\circ\text{C}$ |

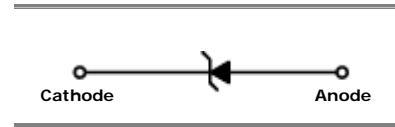
These ratings are limiting values above which the serviceability of the diode may be impaired.

DEVICE MARKING DIAGRAM



Specification Features:

- Zener Voltage Range 2.0 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 | $V_Z @ I_{ZT}$ (Volts) Nominal | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|-------------|--------------------------------------|------------------|--|---|------------------|
| TC2V0 | 2.0 | 5 | 100 | 120 | 0.5 |
| TC2V2 | 2.2 | 5 | 100 | 120 | 0.7 |
| TC2V4 | 2.4 | 5 | 100 | 120 | 1 |
| TC2V7 | 2.7 | 5 | 110 | 100 | 1 |
| TC3V0 | 3.0 | 5 | 120 | 50 | 1 |
| TC3V3 | 3.3 | 5 | 120 | 20 | 1 |
| TC3V6 | 3.6 | 5 | 100 | 10 | 1 |
| TC3V9 | 3.9 | 5 | 100 | 5 | 1 |
| TC4V3 | 4.3 | 5 | 100 | 5 | 1 |
| TC4V7 | 4.7 | 5 | 80 | 5 | 1 |
| TC5V1 | 5.1 | 5 | 80 | 5 | 1.5 |
| TC5V6 | 5.6 | 5 | 60 | 5 | 2.5 |
| TC6V2 | 6.2 | 5 | 60 | 5 | 3 |
| TC6V8 | 6.8 | 5 | 20 | 2 | 3.5 |
| TC7V5 | 7.5 | 5 | 20 | 0.5 | 4 |
| TC8V2 | 8.2 | 5 | 20 | 0.5 | 5 |
| TC9V1 | 9.1 | 5 | 25 | 0.5 | 6 |
| TC10V | 10 | 5 | 30 | 0.2 | 7 |
| TC11V | 11 | 5 | 30 | 0.2 | 8 |
| TC12V | 12 | 5 | 30 | 0.2 | 9 |
| TC13V | 13 | 5 | 35 | 0.2 | 10 |
| TC15V | 15 | 5 | 40 | 0.2 | 11 |



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

| Device Type | $V_Z @ I_{ZT}$ (Volts) Nominal | I_{ZT} (mA) | $Z_{ZT} @ I_{ZT}$ (Ω) Max | $I_R @ V_R$ (μA) Max | V_R (Volts) |
|-------------|--------------------------------------|------------------|--|---|------------------|
| TC16V | 16 | 5 | 40 | 0.2 | 12 |
| TC18V | 18 | 5 | 45 | 0.2 | 13 |
| TC20V | 20 | 5 | 45 | 0.2 | 15 |
| TC22V | 22 | 5 | 30 | 0.2 | 17 |
| TC24V | 24 | 5 | 35 | 0.2 | 19 |
| TC27V | 27 | 5 | 45 | 0.2 | 21 |
| TC30V | 30 | 5 | 55 | 0.2 | 23 |
| TC33V | 33 | 5 | 65 | 0.2 | 25 |
| TC36V | 36 | 5 | 75 | 0.2 | 27 |
| TC39V | 39 | 5 | 85 | 0.2 | 30 |
| TC43V | 43 | 5 | 90 | 0.2 | 33 |
| TC47V | 47 | 5 | 90 | 0.2 | 36 |
| TC51V | 51 | 5 | 110 | 0.2 | 39 |
| TC56V | 56 | 5 | 110 | 0.2 | 43 |

V_F Forward Voltage = 1.2 V Maximum @ $I_F = 200$ mA for all types

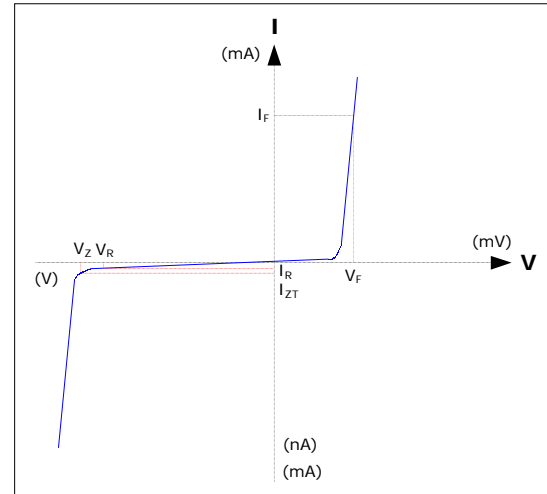
Notes:

1. The type numbers listed have zener voltage as shown and have a standard tolerance on the nominal zener voltage of 5%.
2. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances, contact your nearest Synsemi representative.
3. 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

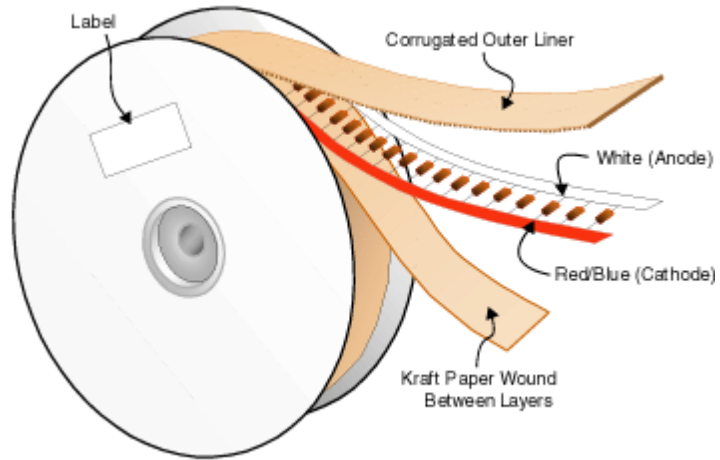
| Device | Package | Quantity |
|----------|---------------|----------|
| TCxxx | Bulk | 10,000 |
| TCxxx.TB | Tape and Ammo | 5,000 |
| TCxxx.TR | Tape and Reel | 10,000 |



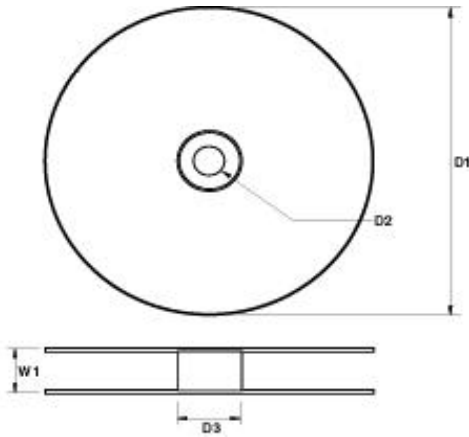
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Tape & Reel Packaging Information

Tape & Reel Outline



Reel Dimensions



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

Quantity Per Reel

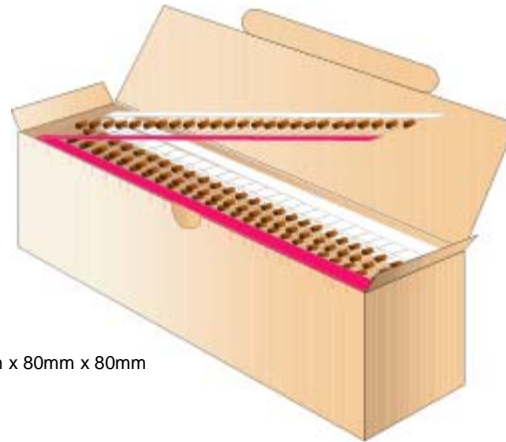
| PKG Type | Quantity Per Reel |
|----------|-------------------|
| DO-35 | 10,000 |



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Tape & Ammo Packaging Information

Tape & Ammo Outline

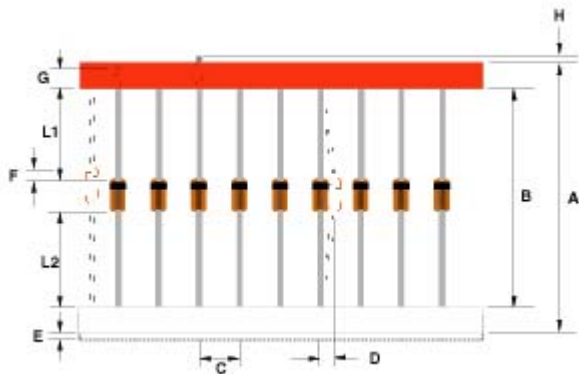


250mm x 80mm x 80mm

Quantity Per Ammo Box

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

Taping Dimensions



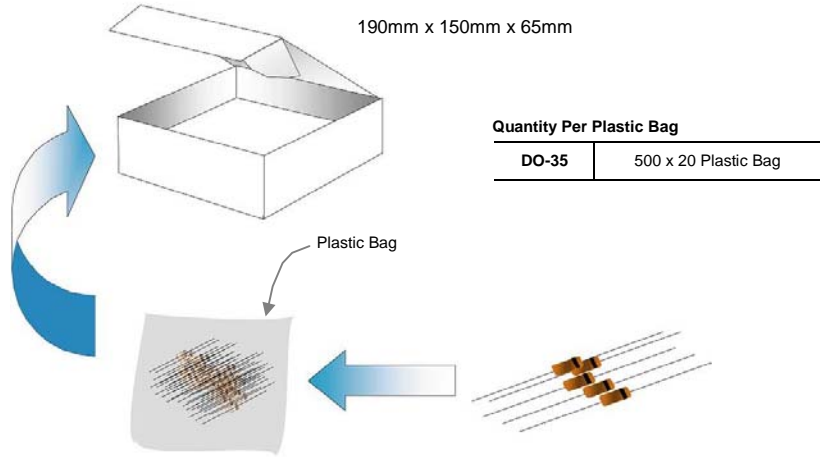
| Description | Millimeters | |
|------------------------|----------------|---------------|
| | Standard Width | 52 |
| Tape Spacing (B) | 52 ± 0.69 | 26 +0.5 / -0 |
| Component Pitch (C) | 5.08 ± 0.4 | 5.08 ± 0.4 |
| Untaped Lead (L1 – L2) | ± 0.69 | ± 0.69 |
| Glass Offset (F) | ± 0.69 | ± 0.69 |
| 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 |



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Bulk Packaging Information

Bulk Outline



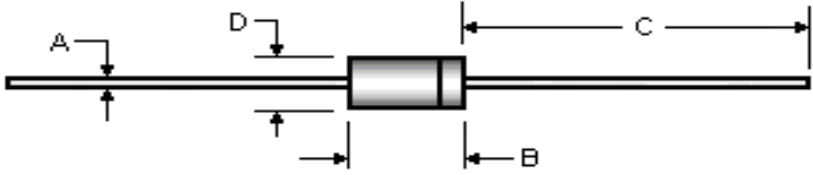
Quantity Per Box

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



SYNSEMI SEMICONDUCTOR

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.