

500 mW LL-34 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	$^\circ\text{C}$

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

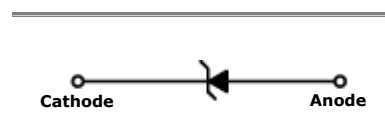
DEVICE MARKING DIAGRAM



Cathode Band Color : Blue

Specification Features:

- Zener Voltage Range 2.0 to 56 Volts
- LL-34 (Mini-MELF) Package
- Surface Device Type Mounting
- Hermetically Sealed Glass
- Compression Bonded Construction
- All external surfaces are corrosion resistant and leads are readily solderable
- 1st band indicates negative polarity



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)
TCLLZ2V0	2.0	5	100	120	0.5
TCLLZ2V2	2.2	5	100	120	0.7
TCLLZ2V4	2.4	5	100	120	1
TCLLZ2V7	2.7	5	110	100	1
TCLLZ3V0	3.0	5	120	50	1
TCLLZ3V3	3.3	5	120	20	1
TCLLZ3V6	3.6	5	100	10	1
TCLLZ3V9	3.9	5	100	5	1
TCLLZ4V3	4.3	5	100	5	1
TCLLZ4V7	4.7	5	80	5	1
TCLLZ5V1	5.1	5	80	5	1.5
TCLLZ5V6	5.6	5	60	5	2.5
TCLLZ6V2	6.2	5	60	5	3
TCLLZ6V8	6.8	5	20	2	3.5
TCLLZ7V5	7.5	5	20	0.5	4
TCLLZ8V2	8.2	5	20	0.5	5
TCLLZ9V1	9.1	5	25	0.5	6
TCLLZ10V	10	5	30	0.2	7
TCLLZ11V	11	5	30	0.2	8
TCLLZ12V	12	5	30	0.2	9
TCLLZ13V	13	5	35	0.2	10
TCLLZ15V	15	5	40	0.2	11

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

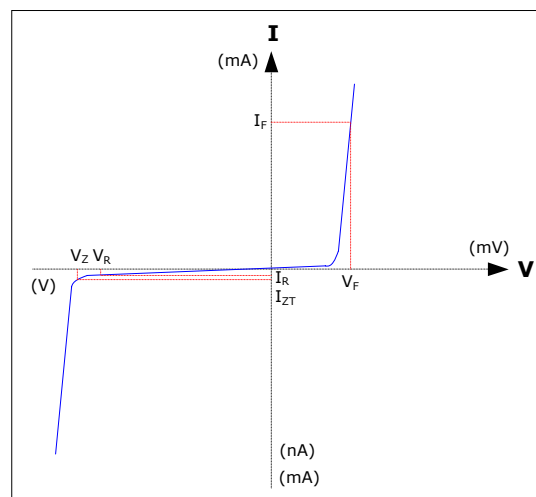
 V_F Forward Voltage = 1.2 V Maximum @ $I_F = 200$ mA for all types

Notes:

- The type numbers listed have zener voltage as shown and have a standard tolerance on the nominal zener voltage of 5%.
- 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

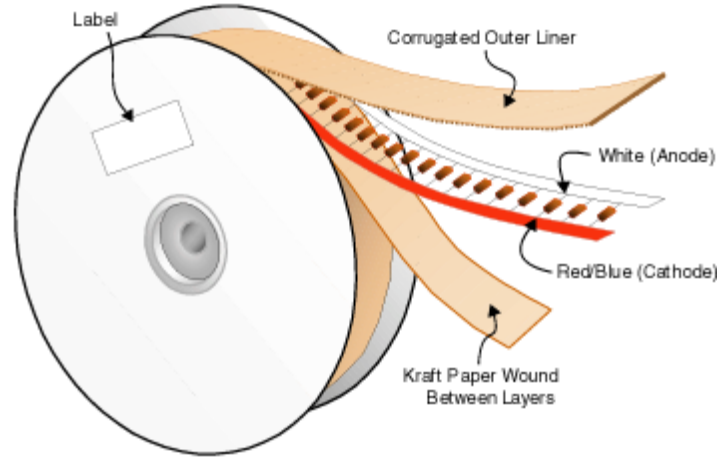
Device	Package	Quantity
TCxxx	Bulk	10,000
TCxxx.TB	Tape and Ammo	5,000
TCxxx.TR	Tape and Reel	10,000
TCxxx	Others (...contact Tak Cheong sales representatives)	

Axial-Lead Tape Packaging Standards

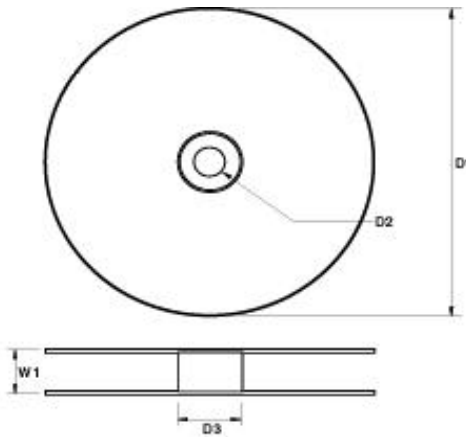
This axial-lead component's packaging requirements use in automatic testing and assembly equipment. And this standard practices for lead-tape packaging of axial-lead components meets the requirements of EIA Standard RS-296-D "Lead-taping of Components on Axial Lead Configuration for Automatic Insertion".

Tape & Reel Packaging Information

Tape & Reel Outline



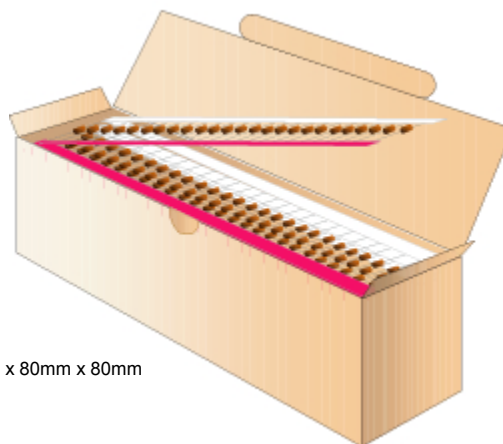
Reel Dimensions



DIM	Millimeters
D1	356
D2	30
D3	84
W1	77.5

Quantity Per Reel

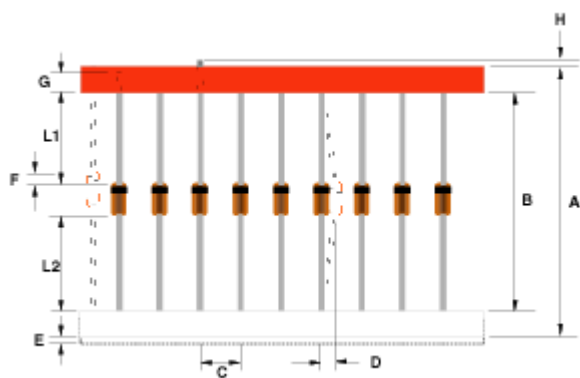
PKG Type	Quantity Per Reel
DO-35	10,000

Tape & Ammo Packaging Information
Tape & Ammo Outline


250mm x 80mm x 80mm

Quantity Per Ammo Box

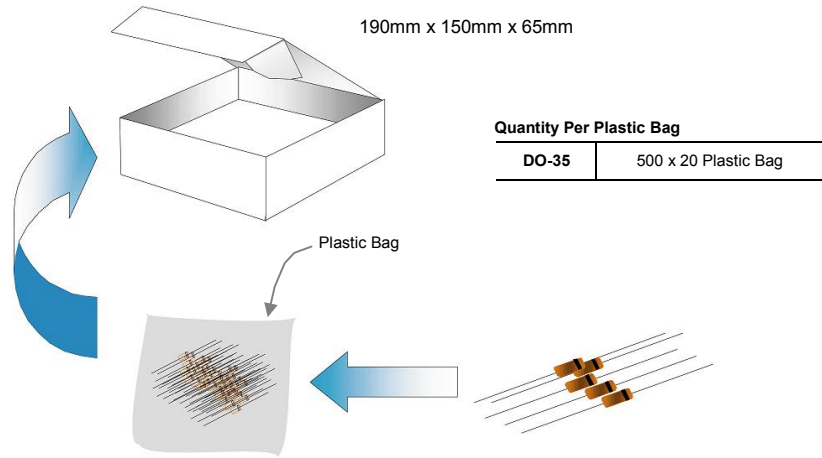
PKG Type	Quantity Per Box
DO-35	5,000

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

Bulk Packaging Information

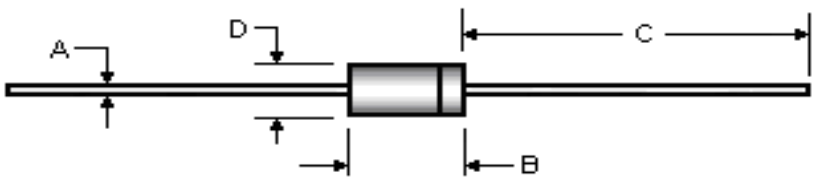
Bulk Outline



Quantity Per Box

PKG Type	Quantity Per Box
DO-35	10,000

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.

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TCLLZ16V	16	5	40	0.2	12
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TCLLZ24V	24	5	35	0.2	19
TCLLZ27V	27	5	45	0.2	21
TCLLZ30V	30	5	55	0.2	23
TCLLZ33V	33	5	65	0.2	25
TCLLZ36V	36	5	75	0.2	27
TCLLZ39V	39	5	85	0.2	30
TCLLZ43V	43	5	90	0.2	33
TCLLZ47V	47	5	90	0.2	36
TCLLZ51V	51	5	110	0.2	39
TCLLZ56V	56	5	110	0.2	43

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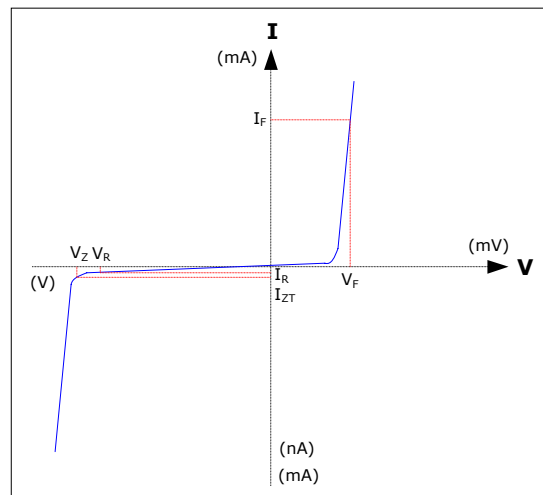
Notes:

1. The type numbers listed have zener voltage min/max limits 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 Tak Cheong Electronics 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} .

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V_R	Breakdown Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F

Typical Characteristics



Ordering Information

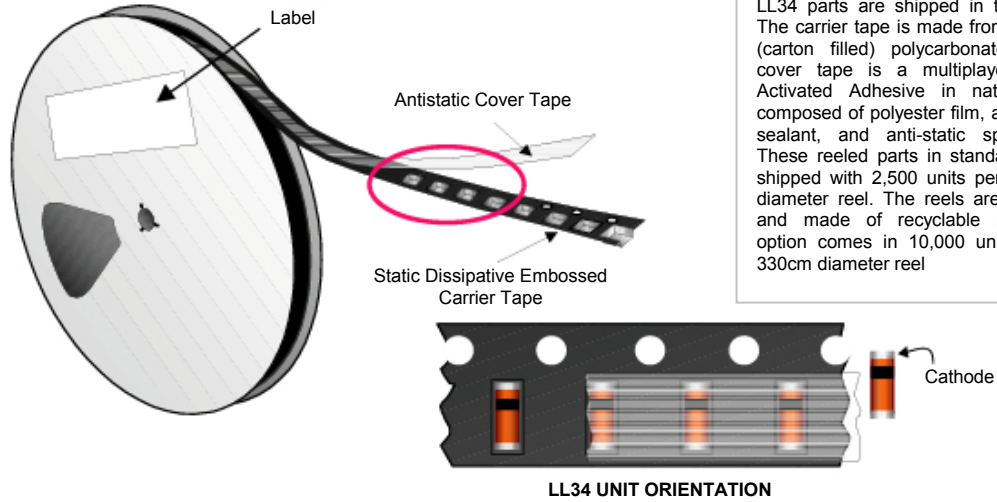
Pack Option	Package	Quantity
7" Reel	Tape and Reel	2500
13" Reel	Tape and Reel	10,000
Others	(...contact Tak Cheong sales representatives)	

LL34 (Mini-MELF) Tape Packaging Standards

This standard practices for surface-mount tape packaging of leadless (Mini-MELF) components meets the requirements of EIA Standard RS-481-A.

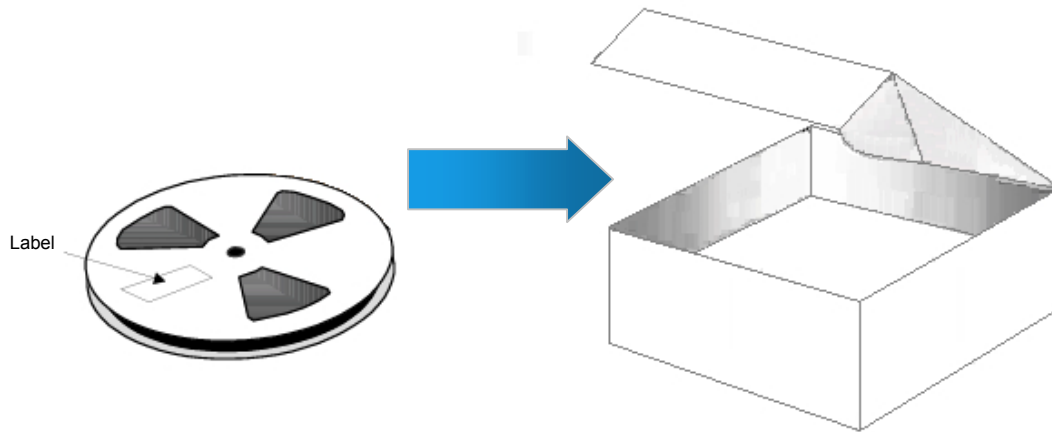
LL-34 (Mini-MELF) Tape & Reel Packaging Information

LL-34 Packaging Outline

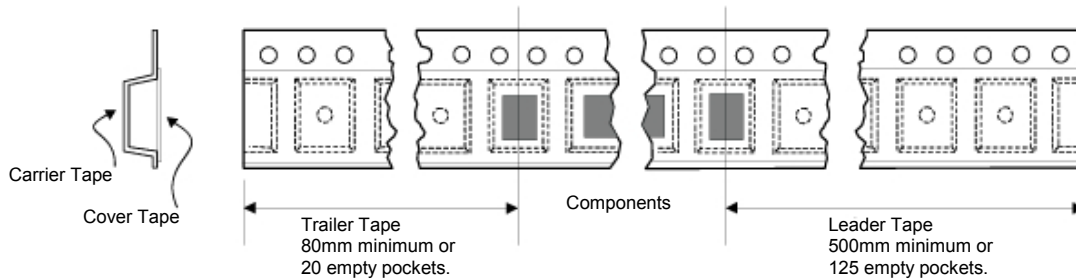


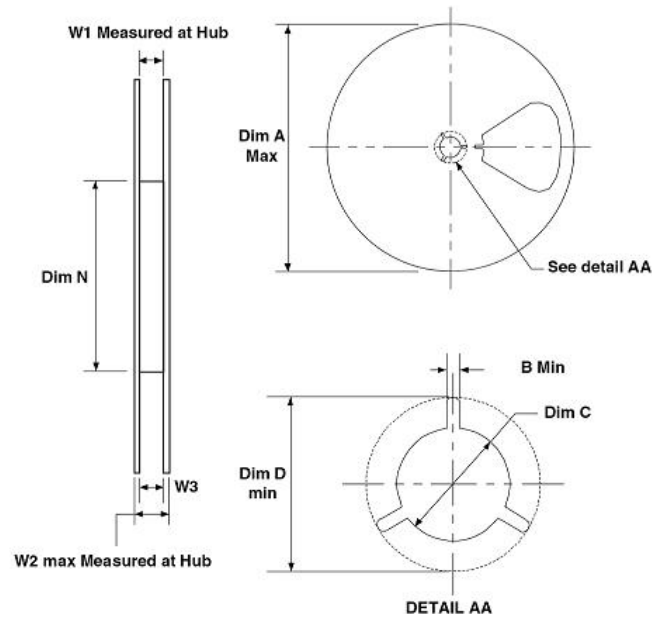
Packaging Description:

LL34 parts are shipped in tape and reel. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multiplayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 2,500 units per 7" or 178cm diameter reel. The reels are blue in color and made of recyclable plastic. Other option comes in 10,000 units per 13" or 330cm diameter reel



LL-34 Leader and Trailer



LL-34 (Mini-MELF) Tape & Reel Packaging Information
LL-34 Reel Outline


Dimensions are in millimeters

Tape Size	QTY Option	Dim A	Dim B	Dim C	Dim D	Dim N	W1	W2	W3
8mm	2,500	178	1.5	13	20.2	55	8.4	14.4	7.9 – 10.9
	10,000	330	1.5	13	20.2	100	8.4	14.4	7.9 – 10.9