

500 mW LL-34 Hermetically Sealed Glass Zener Voltage Regulators



**SURFACE MOUNT
LL34**

DEVICE MARKING DIAGRAM



Cathode Band Color : Blue

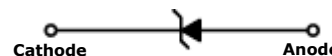
Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise noted

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.

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

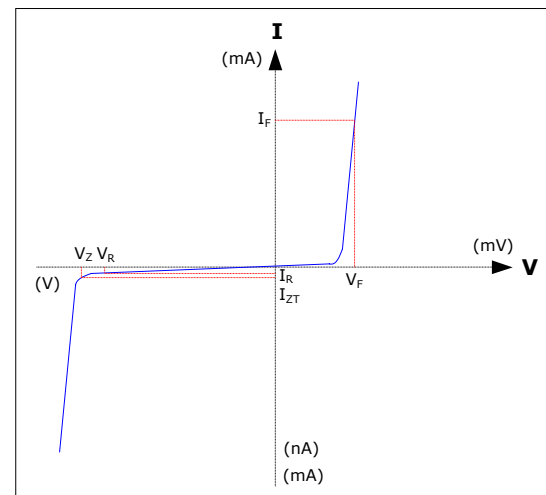
V_F Forward Voltage = 1.2 V Maximum @ $I_F = 200$ mA for all types

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

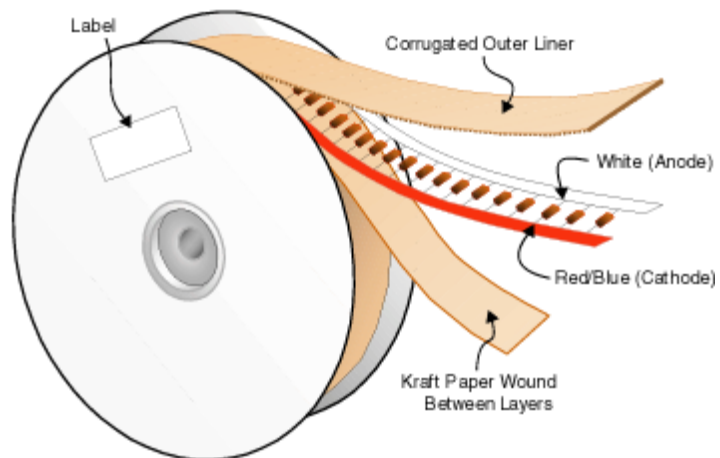
Device	Package	Quantity
TCxxx	Bulk	10,000
TCxxx.TB	Tape and Ammo	5,000
TCxxx.TR	Tape and Reel	10,000
TCxxx	Others (...contact Tak Cheong sales representatives)	

Axial-Lead Tape Packaging Standards

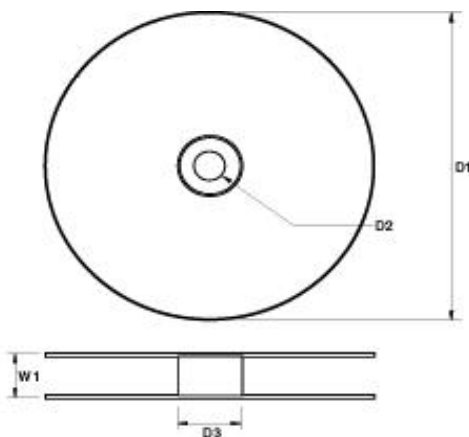
This axial-lead component's packaging requirements use in automatic testing and assembly equipment. And this standard practices for lead-tape packaging of axial-lead components meets the requirements of EIA Standard RS-296-D "Lead-taping of Components on Axial Lead Configuration for Automatic Insertion".

Tape & Reel Packaging Information

Tape & Reel Outline



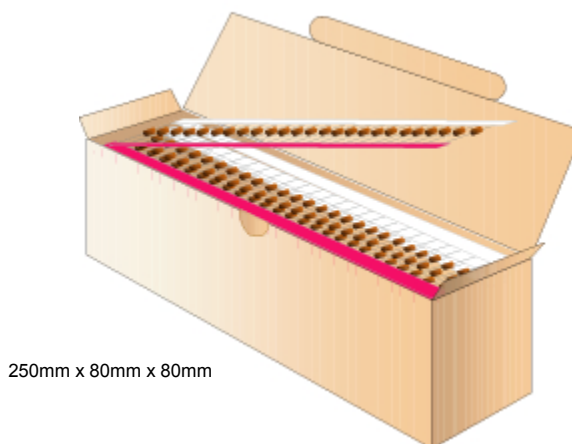
Reel Dimensions



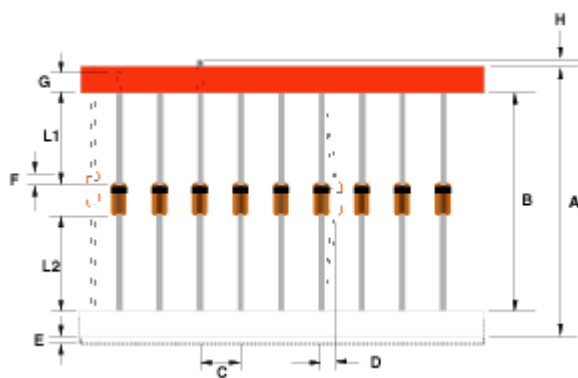
DIM	Millimeters
D1	356
D2	30
D3	84
W1	77.5

Quantity Per Reel

PKG Type	Quantity Per Reel
DO-35	10,000

Tape & Ammo Packaging Information
Tape & Ammo Outline

Quantity Per Ammo Box

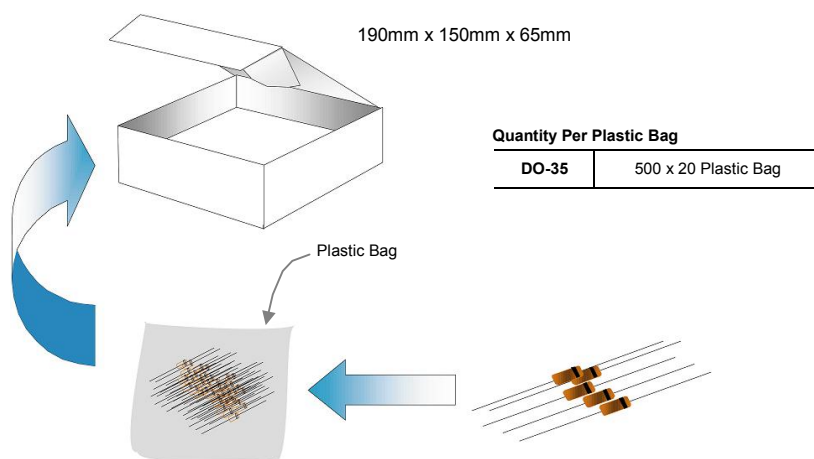
PKG Type	Quantity Per Box
DO-35	5,000

Taping Dimensions


Description	Millimeters	
Standard Width	52	26
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

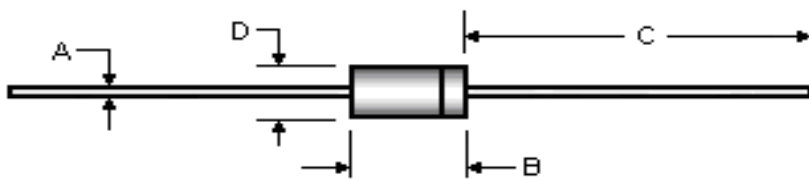
Bulk Outline



Quantity Per Box

PKG Type	Quantity Per Box
DO-35	10,000

Package Outline

Package	Case Outline				
DO-35					
	DIM	DO-35			
		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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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)
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

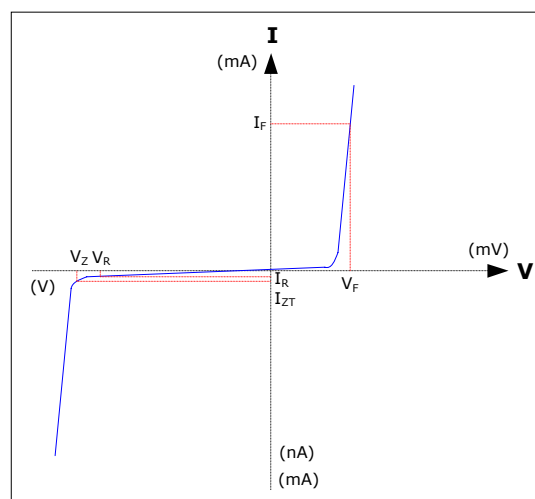
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Notes:

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

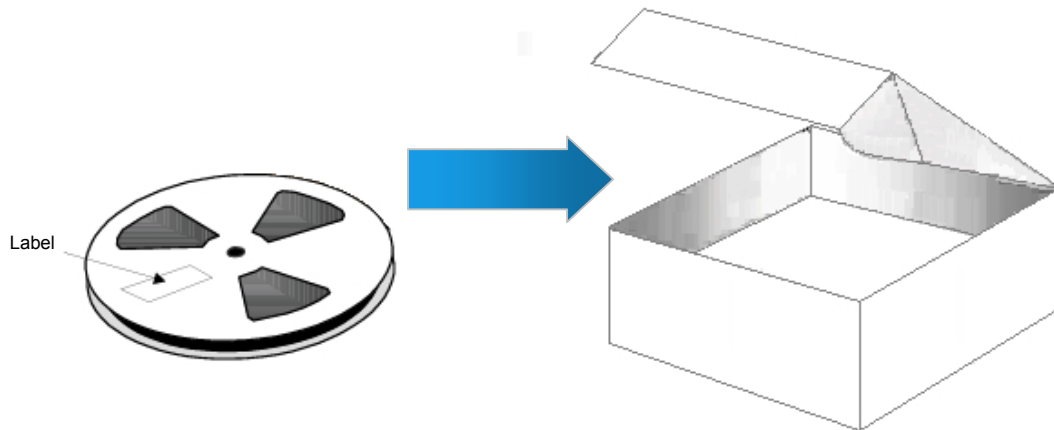
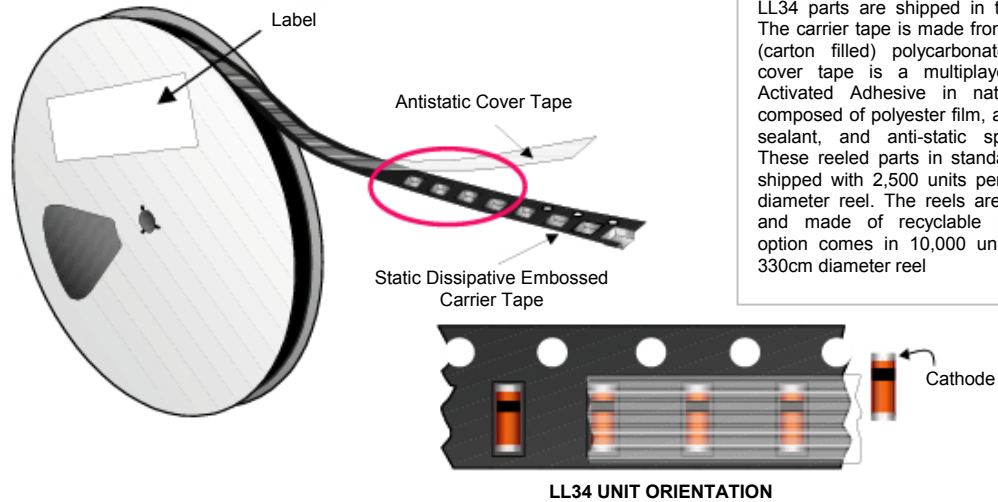
Pack Option	Package	Quantity
7" Reel	Tape and Reel	2500
13" Reel	Tape and Reel	10,000
Others	(...contact Tak Cheong sales representatives)	

LL34 (Mini-MELF) Tape Packaging Standards

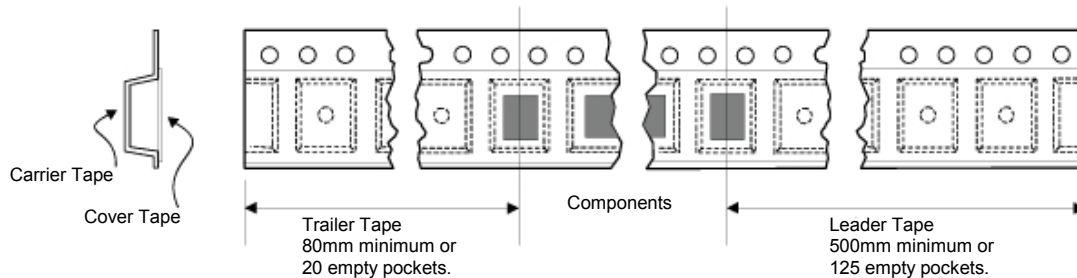
This standard practices for surface-mount tape packaging of leadless (Mini-MELF) components meets the requirements of EIA Standard RS-481-A.

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

LL-34 Packaging Outline

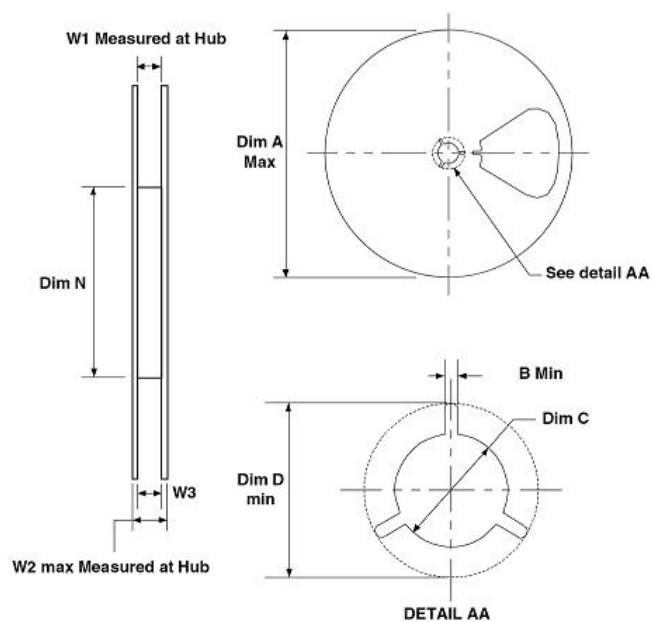


LL-34 Leader and Trailer



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

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