

500 mW LL-34 Hermetically Sealed Glass Zener Voltage Regulators



SURFACE MOUNT
LL34

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.

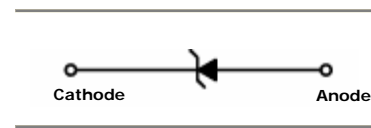
DEVICE MARKING DIAGRAM



Cathode Band Color : Blue

Specification Features:

- Zener Voltage Range 2.0 to 39 Volts (Graded)
- LL-34 (Mini-MELF) Package
- Surface Device Type Mounting
- Hermetically Sealed Glass
- Compression Bonded Construction
- All External Surfaces Are Corrosion Resistant And Terminals Are Readily Solderable
- RoHS Compliant
- Matte Tin (Sn) Terminal Finish
- Color band Indicates Negative Polarity



ELECTRICAL SYMBOL

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

Device Type	VZ Tolerance	VZ@IZT			Izt (mA)	Zzt@Izt (Ohms) Max	Zzk@Izk (Ohms) Max	Izk (mA)	I _R @V _R (uA) Max	V _R (V)
		Min	Nom	Max						
TCLZJ2V0	A	1.880	1.990	2.100	5	100	1000	0.5	120	0.5
	B	2.020	2.110	2.200						
TCLZJ2V2	A	2.120	2.210	2.300	5	100	1000	0.5	100	0.7
	B	2.220	2.315	2.410						
TCLZJ2V4	A	2.330	2.425	2.520	5	100	1000	0.5	120	1.0
	B	2.430	2.530	2.630						
TCLZJ2V7	A	2.540	2.645	2.750	5	110	1000	0.5	100	1.0
	B	2.690	2.800	2.910						
TCLZJ3V0	A	2.850	2.960	3.070	5	120	1000	0.5	50	1.0
	B	3.010	3.115	3.220						
TCLZJ3V3	A	3.160	3.270	3.380	5	120	1000	0.5	20	1.0
	B	3.320	3.425	3.530						
TCLZJ3V6	A	3.455	3.575	3.695	5	100	1000	1	10	1.0
	B	3.600	3.723	3.845						
TCLZJ3V9	A	3.740	3.875	4.010	5	100	1000	1	5	1.0
	B	3.890	4.025	4.160						
TCLZJ4V3	A	4.040	4.165	4.290	5	100	1000	1	5	1.0
	B	4.170	4.300	4.430						
	C	4.300	4.435	4.570						
TCLZJ4V7	A	4.44	4.56	4.68	5	80	900	1	5	1.0
	B	4.55	4.68	4.80						
	C	4.68	4.81	4.93						

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

Device Type	T Tolerance	$V_Z@I_{ZT}$			I_{ZT} (mA)	$Z_{ZT}@I_{ZT}$ (Ohms) Max	$Z_{ZK}@I_{ZK}$ (Ohms) Max	I_{ZK} (mA)	$I_{R@V_R}$ (uA) Max	V_R (V)
		Min	Nom	Max						
TCLZJ5V1	A	4.81	4.94	5.07	5	80	800	1	5	1.5
	B	4.94	5.07	5.20						
	C	5.09	5.23	5.37						
TCLZJ5V6	A	5.28	5.41	5.55	5	60	500	1	5	2.5
	B	5.45	5.59	5.73						
	C	5.61	5.76	5.91						
TCLZJ6V2	A	5.78	5.94	6.09	5	60	300	1	5	3.0
	B	5.96	6.12	6.27						
	C	6.12	6.28	6.44						
TCLZJ6V8	A	6.29	6.46	6.63	5	20	150	0.5	2	3.5
	B	6.49	6.66	6.83						
	C	6.66	6.84	7.01						
TCLZJ7V5	A	6.85	7.04	7.22	5	20	120	0.5	0.5	4.0
	B	7.07	7.26	7.45						
	C	7.29	7.48	7.67						
TCLZJ8V2	A	7.53	7.73	7.92	5	20	120	0.5	0.5	5.0
	B	7.78	7.99	8.19						
	C	8.03	8.24	8.45						
TCLZJ9V1	A	8.29	8.51	8.73	5	25	120	0.5	0.5	6.0
	B	8.57	8.79	9.01						
	C	8.83	9.07	9.30						
TCLZJ10V	A	9.12	9.36	9.59	5	30	120	0.5	0.2	7.0
	B	9.41	9.66	9.90						
	C	9.70	9.95	10.20						
	D	9.94	10.19	10.44						
TCLZJ11V	A	10.18	10.45	10.71	5	30	120	0.5	0.2	8.0
	B	10.50	10.78	11.05						
	C	10.82	11.10	11.38						
TCLZJ12V	A	11.13	11.42	11.71	5	30	110	0.5	0.2	9.0
	B	11.44	11.74	12.03						
	C	11.74	12.05	12.35						
TCLZJ13V	A	12.11	12.43	12.75	5	35	110	0.5	0.2	10
	B	12.55	12.88	13.21						
	C	12.99	13.33	13.66						
TCLZJ15V	A	13.44	13.79	14.13	5	40	110	0.5	0.2	11
	B	13.89	14.26	14.62						
	C	14.35	14.72	15.09						
TCLZJ16V	A	14.80	15.19	15.57	5	40	150	0.5	0.2	12
	B	15.25	15.65	16.04						
	C	15.69	16.10	16.51						
TCLZJ18V	A	16.22	16.64	17.06	5	45	150	0.5	0.2	13
	B	16.82	17.26	17.70						
	C	17.42	17.88	18.33						
TCLZJ20V	A	18.02	18.49	18.96	5	55	200	0.5	0.2	15
	B	18.63	19.11	19.59						
	C	19.23	19.73	20.22						
	D	19.72	20.22	20.72						
TCLZJ22V	A	20.15	21.68	21.20	5	30	200	0.5	0.2	17
	B	20.64	21.18	21.71						
	C	21.08	21.63	22.17						
	D	21.52	22.08	22.63						
TCLZJ24V	A	22.05	22.62	23.18	5	35	200	0.5	0.2	19
	B	22.61	23.19	23.77						
	C	23.12	23.72	24.31						
	D	23.63	24.24	24.85						
TCLZJ27V	A	24.26	24.89	25.52	5	45	250	0.5	0.2	21
	B	24.97	25.62	26.26						
	C	25.63	26.29	26.95						
	D	26.29	26.97	27.64						

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

Device Type	T Tolerance	$V_Z@I_{ZT}$			I_{ZT} (mA)	$Z_{zt}@I_{ZT}$ (Ohms) Max	$Z_{zk}@I_{zk}$ (Ohms) Max	I_{zk} (mA)	$I_R@V_R$ (μA) Max	V_R (V)
		Min	Nom	Max						
TCLZJ30V	A	26.99	27.69	28.39	5	55	250	0.5	0.2	23
	B	27.70	28.42	29.13						
	C	28.36	29.09	29.82						
	D	29.02	29.77	30.51						
TCLZJ33V	A	29.68	30.45	31.22	5	65	250	0.5	0.2	25
	B	30.32	31.10	31.88						
	C	30.90	31.70	32.50						
	D	31.49	32.30	33.11						
TCLZJ36V	A	32.14	32.97	33.79	5	75	250	0.5	0.2	27
	B	32.79	33.64	34.49						
	C	33.40	34.27	35.13						
	D	34.01	34.89	35.77						
TCLZJ39V	A	34.68	35.58	36.47	5	85	250	0.5	0.2	30
	B	35.36	36.28	37.19						
	C	36.00	36.93	37.85						
	D	36.63	37.58	38.52						

V_F (forward voltage) = 1.2 V maximum @ $I_F = 200\text{mA}$ 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} .

5. WHEN ORDERING, PLEASE SPECIFY TOLERANCE A, B, C OR D

Typical Characteristics

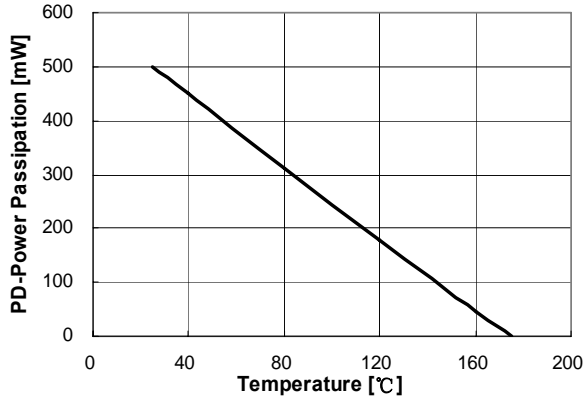


Figure 1. Power Dissipation vs Ambient Temperature
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

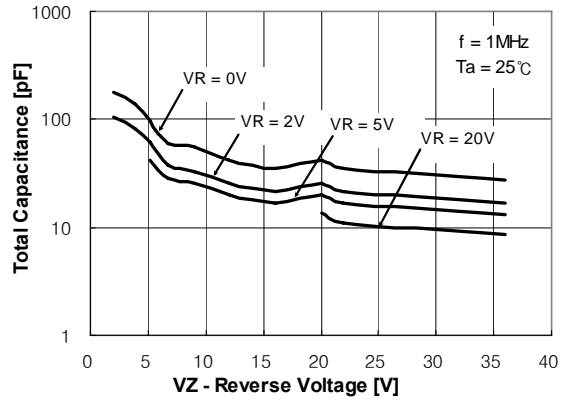


Figure 2. Total Capacitance

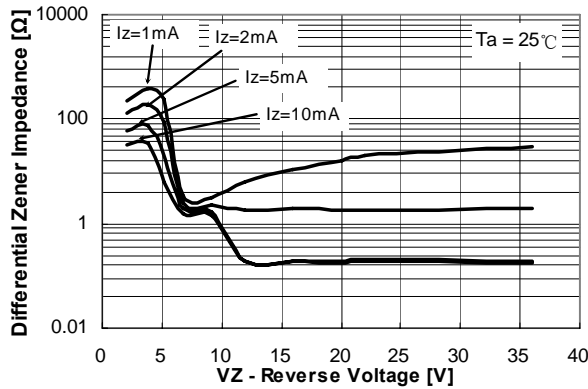


Figure 3. Differential Impedance vs. Zener Voltage

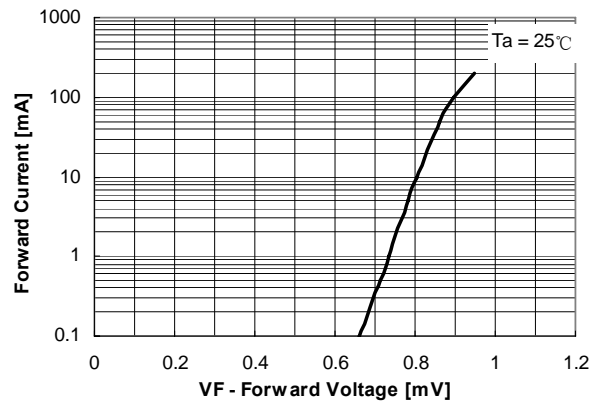


Figure 4. Forward Current vs. Forward Voltage

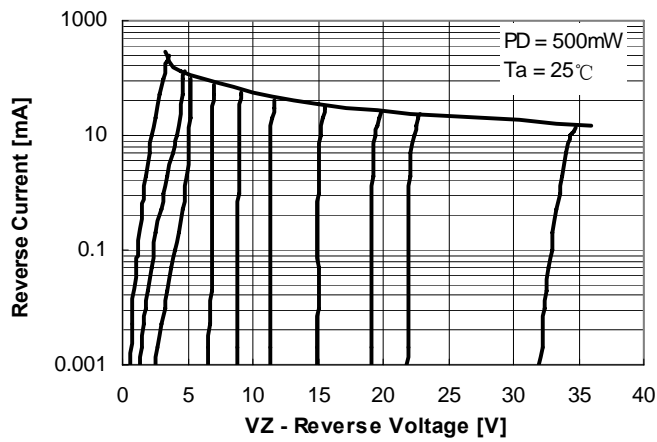
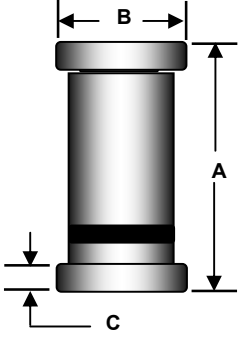


Figure 5. Reverse Current vs. Reverse Voltage

Package Outline

Package	Case Outline																																
LL34		<table border="1"> <thead> <tr> <th rowspan="3">DIM</th> <th colspan="4">LL-34</th> </tr> <tr> <th colspan="2">Millimeters</th> <th colspan="2">Inches</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>3.302</td> <td>3.505</td> <td>0.130</td> <td>0.138</td> </tr> <tr> <td>B</td> <td>1.397</td> <td>1.499</td> <td>0.055</td> <td>0.059</td> </tr> <tr> <td>C</td> <td>0.350</td> <td>0.500</td> <td>0.014</td> <td>0.020</td> </tr> </tbody> </table>				DIM	LL-34				Millimeters		Inches		Min	Max	Min	Max	A	3.302	3.505	0.130	0.138	B	1.397	1.499	0.055	0.059	C	0.350	0.500	0.014	0.020
DIM	LL-34																																
	Millimeters		Inches																														
	Min	Max	Min	Max																													
A	3.302	3.505	0.130	0.138																													
B	1.397	1.499	0.055	0.059																													
C	0.350	0.500	0.014	0.020																													

Notes:

1. All dimensions are within DO213AC JEDEC standard.
2. LL-34 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.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <http://www.takcheong.com>, or consult your nearest Tak Cheong's sales office for further assistance.