

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.

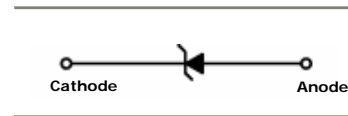
DEVICE MARKING DIAGRAM



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	Max						
TCLZ2V2	A	2.12	2.30	20	35	400	1	55	0.7
	B	2.22	2.41						
TCLZ2V4	A	2.33	2.52	20	35	400	1	84	1
	B	2.43	2.63						
TCLZ2V7	A	2.54	2.75	20	35	450	1	70	1
	B	2.69	2.91						
TCLZ3V0	A	2.85	3.07	20	35	450	1	35	1
	B	3.01	3.22						
TCLZ3V3	A	3.16	3.38	20	35	450	1	14	1
	B	3.32	3.53						
TCLZ3V6	A	3.46	3.70	20	48	850	1	2.8	1
	B	3.60	3.85						
TCLZ3V9	A	3.74	4.01	20	40	850	1	1.4	1
	B	3.89	4.16						
TCLZ4V3	A	4.04	4.29	20	32	850	1	0.47	1
	B	4.17	4.43						
	C	4.30	4.57						
TCLZ4V7	A	4.44	4.68	20	21	770	1	0.19	1
	B	4.55	4.80						
	C	4.68	4.93						
TCLZ5V1	A	4.81	5.07	20	17	685	1	0.19	1.5
	B	4.94	5.20						
	C	5.09	5.37						

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	Max						
TCLZ5V6	A	5.28	5.55	20	10.5	425	1	0.75	2.5
	B	5.45	5.73						
	C	5.61	5.91						
TCLZ6V2	A	5.78	6.09	20	8.5	255	1	3.30	3.0
	B	5.96	6.27						
	C	6.12	6.44						
TCLZ6V8	A	6.29	6.63	20	6.6	123	0.5	1.10	3.5
	B	6.49	6.83						
	C	6.66	7.01						
TCLZ7V5	A	6.85	7.22	20	6.6	95	0.5	0.30	4.0
	B	7.07	7.45						
	C	7.29	7.67						
TCLZ8V2	A	7.53	7.92	20	6.6	95	0.5	0.30	5.0
	B	7.78	8.19						
	C	8.03	8.45						
TCLZ9V1	A	8.29	8.73	20	6.6	95	0.5	0.30	6.0
	B	8.57	9.01						
	C	8.83	9.30						
TCLZ10V	A	9.12	9.59	20	6.6	95	0.5	0.11	7.0
	B	9.41	9.90						
	C	9.70	10.2						
TCLZ11V	A	10.18	10.71	10	8.5	95	0.5	0.133	8.0
	B	10.50	11.05						
	C	10.82	11.38						
TCLZ12V	A	11.13	11.71	10	9.5	95	0.5	0.133	9.0
	B	11.44	12.03						
	C	11.74	12.35						
TCLZ13V	A	12.11	12.75	10	11.4	95	0.5	0.133	10
	B	12.55	13.21						
	C	12.99	13.66						
TCLZ15V	A	13.44	14.13	10	13.3	95	0.5	0.133	11
	B	13.89	14.62						
	C	14.35	15.09						
TCLZ16V	A	14.80	15.57	10	15.2	132	0.5	0.133	12
	B	15.25	16.04						
	C	15.69	16.51						
TCLZ18V	A	16.22	17.06	10	19.4	123	0.5	0.133	13
	B	16.82	17.70						
	C	17.42	18.33						
TCLZ20V	A	18.02	18.96	10	23.5	170	0.5	0.133	15
	B	18.63	19.59						
	C	19.23	20.22						
	D	19.72	20.72						
TCLZ22V	A	20.15	21.2	5	25.6	170	0.5	0.133	17
	B	20.64	21.71						
	C	21.08	22.17						
	D	21.52	22.63						
TCLZ24V	A	22.05	23.18	5	29.0	170	0.5	0.133	19
	B	22.61	23.77						
	C	23.12	24.31						
	D	23.63	24.85						
TCLZ27V	A	24.26	25.52	5	38.0	210	0.5	0.133	21
	B	24.97	26.26						
	C	25.63	26.95						
	D	26.29	27.64						
TCLZ30V	A	26.99	28.39	5	46.0	210	0.5	0.133	23
	B	27.70	29.13						
	C	28.36	29.82						
	D	29.02	30.51						

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	Max						
TCLZ33V	A	29.68	31.22	5	55.0	210	0.5	0.133	25
	B	30.32	31.88						
	C	30.90	32.50						
	D	31.49	33.11						
TCLZ36V	A	32.14	33.79	5	63.0	210	0.5	0.133	27
	B	32.79	34.49						
	C	33.40	35.13						
	D	34.01	35.77						
TCLZ39V	A	34.68	36.47	5	72.0	210	0.5	0.133	30
	B	35.36	37.19						
	C	36.00	37.85						
	D	36.63	38.52						

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

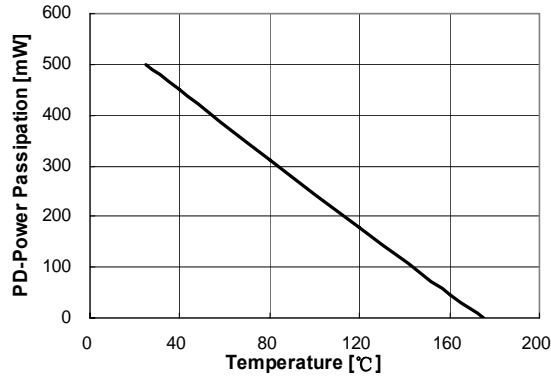


Figure 1. Power Dissipation vs Ambient Temperature
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

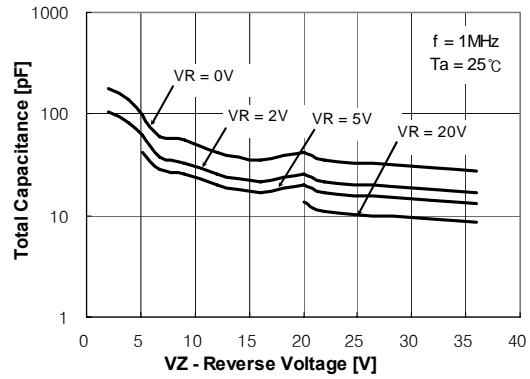


Figure 2. Total Capacitance

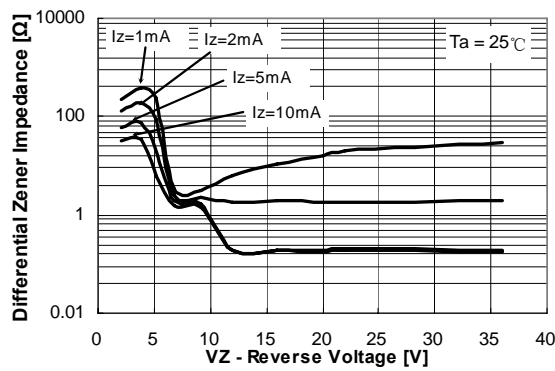


Figure 3. Differential Impedance vs. Zener Voltage

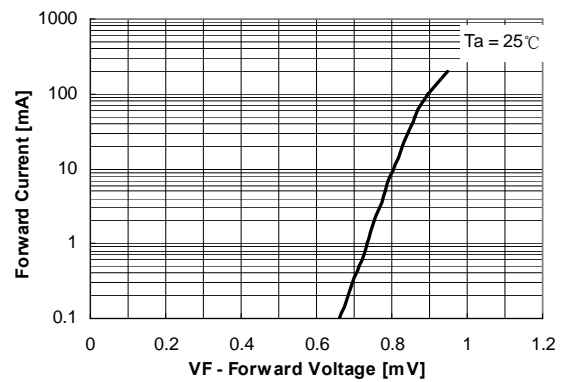


Figure 4. Forward Current vs. Forward Voltage

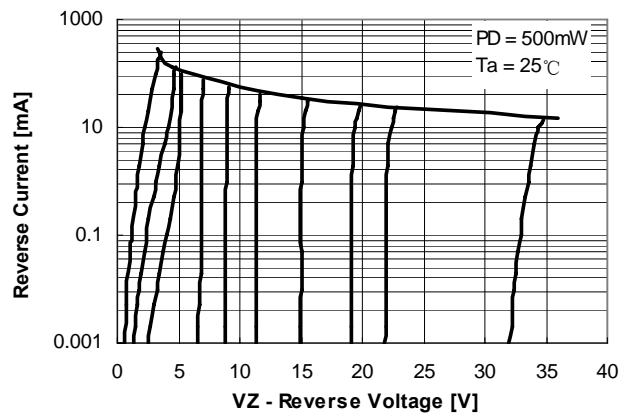
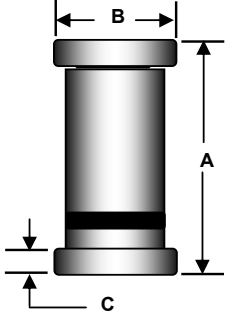


Figure 5. Reverse Current vs. Reverse Voltage

Package Outline

Package	Case Outline																															
LL34		<table border="1"> <thead> <tr> <th data-bbox="737 516 841 653" rowspan="3">DIM</th> <th colspan="4" data-bbox="846 516 1378 558">LL-34</th> </tr> <tr> <th colspan="2" data-bbox="846 564 1114 606">Millimeters</th> <th colspan="2" data-bbox="1118 564 1378 606">Inches</th> </tr> <tr> <th data-bbox="846 613 980 653">Min</th> <th data-bbox="985 613 1114 653">Max</th> <th data-bbox="1118 613 1247 653">Min</th> <th data-bbox="1252 613 1378 653">Max</th> </tr> </thead> <tbody> <tr> <td data-bbox="737 659 841 699">A</td> <td data-bbox="846 659 980 699">3.30</td> <td data-bbox="985 659 1114 699">3.50</td> <td data-bbox="1118 659 1247 699">0.130</td> <td data-bbox="1252 659 1378 699">0.138</td> </tr> <tr> <td data-bbox="737 705 841 745">B</td> <td data-bbox="846 705 980 745">1.40</td> <td data-bbox="985 705 1114 745">1.50</td> <td data-bbox="1118 705 1247 745">0.055</td> <td data-bbox="1252 705 1378 745">0.059</td> </tr> <tr> <td data-bbox="737 751 841 791">C</td> <td data-bbox="846 751 980 791">0.35</td> <td data-bbox="985 751 1114 791">0.50</td> <td data-bbox="1118 751 1247 791">0.014</td> <td data-bbox="1252 751 1378 791">0.020</td> </tr> </tbody> </table>			DIM	LL-34				Millimeters		Inches		Min	Max	Min	Max	A	3.30	3.50	0.130	0.138	B	1.40	1.50	0.055	0.059	C	0.35	0.50	0.014	0.020
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Notes:

1. All dimensions are within DO213AC JEDEC standard.
2. LL-34 polarity denoted by cathode band.

NOTICE

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