

## 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.

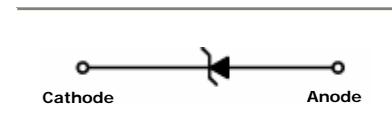
### DEVICE MARKING DIAGRAM



Cathode Band Color : Blue

### Specification Features:

- Zener Voltage Range 2.0 to 75 Volts
- 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	$V_Z @ I_{ZT}$ (Volts)		$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
	Min	Max						
TCBZV79C 2V0	1.88	2.12	5	100	1	600	150	1
TCBZV79C 2V2	2.08	2.33	5	100	1	600	150	1
TCBZV79C 2V4	2.28	2.56	5	100	1	600	100	1
TCBZV79C 2V7	2.51	2.89	5	100	1	600	75	1
TCBZV79C 3V0	2.8	3.2	5	95	1	600	50	1
TCBZV79C 3V3	3.1	3.5	5	95	1	600	25	1
TCBZV79C 3V6	3.4	3.8	5	90	1	600	15	1
TCBZV79C 3V9	3.7	4.1	5	90	1	600	10	1
TCBZV79C 4V3	4	4.6	5	90	1	600	5	1
TCBZV79C 4V7	4.4	5	5	80	1	500	3	2
TCBZV79C 5V1	4.8	5.4	5	60	1	480	2	2
TCBZV79C 5V6	5.2	6	5	40	1	400	1	2
TCBZV79C 6V2	5.8	6.6	5	10	1	150	3	4
TCBZV79C 6V8	6.4	7.2	5	15	1	80	2	4
TCBZV79C 7V5	7	7.9	5	15	1	80	1	5
TCBZV79C 8V2	7.7	8.7	5	15	1	80	0.7	5
TCBZV79C 9V1	8.5	9.6	5	15	1	100	0.5	6
TCBZV79C 10	9.4	10.6	5	20	1	150	0.2	7
TCBZV79C 11	10.4	11.6	5	20	1	150	0.1	8
TCBZV79C 12	11.4	12.7	5	25	1	150	0.1	8

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

Device Type	$V_Z @ I_{ZT}$ (Volts)		$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
	$V_Z$ Min	$V_Z$ Max						
TCBZV79C 13	12.4	14.1	5	30	1	170	0.1	8
TCBZV79C 15	13.8	15.6	5	30	1	200	0.05	10.5
TCBZV79C 16	15.3	17.1	5	40	1	200	0.05	11.2
TCBZV79C 18	16.8	19.1	5	45	1	225	0.05	12.6
TCBZV79C 20	18.8	21.2	5	55	1	225	0.05	14
TCBZV79C 22	20.8	23.3	5	55	1	250	0.05	15.4
TCBZV79C 24	22.8	25.6	5	70	1	250	0.05	16.8
TCBZV79C 27	25.1	28.9	2	80	0.5	300	0.05	18.9
TCBZV79C 30	28	32	2	80	0.5	300	0.05	21
TCBZV79C 33	31	35	2	80	0.5	325	0.05	23.1
TCBZV79C 36	34	38	2	90	0.5	350	0.05	25.2
TCBZV79C 39	37	41	2	130	0.5	350	0.05	27.3
TCBZV79C 43	40	46	2	150	0.5	375	0.05	30.1
TCBZV79C 47	44	50	2	170	0.5	375	0.05	32.9
TCBZV79C 51	48	54	2	180	0.5	400	0.05	35.7
TCBZV79C 56	52	60	2	200	0.5	425	0.05	39.2
TCBZV79C 62	58	66	2.5	215	0.5	1000	0.05	43.4
TCBZV79C 68	64	72	2.5	240	0.5	1000	0.05	47.6
TCBZV79C 75	70	80	2.5	255	0.5	1000	0.05	52.5

$V_F$  Forward Voltage = 1.5 V Maximum @  $I_F = 100$  mA for all types

Device Type	$V_Z @ I_{ZT}$ (Volts)		$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
	Min	Max						
TCBZV79B 2V4	2.35	2.45	5	100	1	600	100	1
TCBZV79B 2V7	2.65	2.75	5	100	1	600	75	1
TCBZV79B 3V0	2.94	3.06	5	95	1	600	50	1
TCBZV79B 3V3	3.23	3.37	5	95	1	600	25	1
TCBZV79B 3V6	3.53	3.67	5	90	1	600	15	1
TCBZV79B 3V9	3.82	3.98	5	90	1	600	10	1
TCBZV79B 4V3	4.21	4.39	5	90	1	600	5	1
TCBZV79B 4V7	4.61	4.79	5	80	1	500	3	2
TCBZV79B 5V1	5.00	5.20	5	60	1	480	2	2
TCBZV79B 5V6	5.49	5.71	5	40	1	400	1	2
TCBZV79B 6V2	6.08	6.32	5	10	1	150	3	4
TCBZV79B 6V8	6.66	6.94	5	15	1	80	2	4
TCBZV79B 7V5	7.33	7.63	5	15	1	80	1	5
TCBZV79B 8V2	8.04	8.36	5	15	1	80	0.7	5
TCBZV79B 9V1	8.92	9.28	5	15	1	100	0.5	6
TCBZV79B 10	9.80	10.20	5	20	1	150	0.2	7
TCBZV79B 11	10.78	11.22	5	20	1	150	0.1	8
TCBZV79B 12	11.76	12.24	5	25	1	150	0.1	8
TCBZV79B 13	12.74	13.26	5	30	1	170	0.1	8
TCBZV79B 15	14.70	15.30	5	30	1	200	0.05	10.5
TCBZV79B 16	15.68	16.32	5	40	1	200	0.05	11.2
TCBZV79B 18	17.64	18.36	5	45	1	225	0.05	12.6
TCBZV79B 20	19.60	20.40	5	55	1	225	0.05	14
TCBZV79B 22	21.56	22.44	5	55	1	250	0.05	15.4
TCBZV79B 24	23.52	24.48	5	70	1	250	0.05	16.8
TCBZV79B 27	26.46	27.54	2	80	0.5	300	0.05	18.9
TCBZV79B 30	29.40	30.60	2	80	0.5	300	0.05	21
TCBZV79B 33	32.34	33.66	2	80	0.5	325	0.05	23.1
TCBZV79B 36	35.28	36.72	2	90	0.5	350	0.05	25.2

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

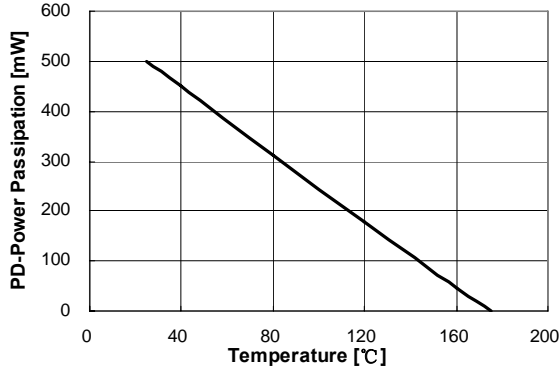
Device Type	$V_Z @ I_{ZT}$ (Volts)		$I_{ZT}$ (mA)	$Z_{ZT} @ I_{ZT}$ ( $\Omega$ ) Max	$I_{ZK}$ (mA)	$Z_{ZK} @ I_{ZK}$ ( $\Omega$ ) Max	$I_R @ V_R$ ( $\mu\text{A}$ ) Max	$V_R$ (Volts)
	Min	Max						
TCBZV79B 39	38.22	39.78	2	130	0.5	350	0.05	27.3
TCBZV79B 43	42.14	43.86	2	150	0.5	375	0.05	30.1
TCBZV79B 47	46.06	47.94	2	170	0.5	375	0.05	32.9
TCBZV79B 51	49.98	52.02	2	180	0.5	400	0.05	35.7
TCBZX79B 56	54.88	57.12	2	200	0.5	425	0.05	39.2
TCBZX79B 62	60.76	63.24	2.5	215	0.5	430	0.05	43.4
TCBZX79B 68	66.64	69.36	2.5	240	0.5	447	0.05	47.6
TCBZX79B 75	73.50	76.50	2.5	255	0.5	470	0.05	52.5

$V_F$  Forward Voltage = 1.5 V Maximum @  $I_F = 100$  mA for all types

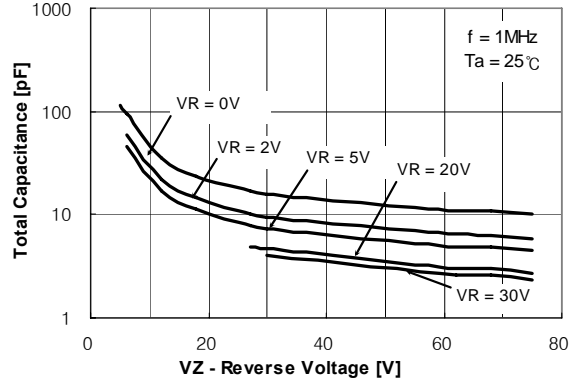
**Notes:**

1. The type numbers listed have zener voltage min/max limits as shown.
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  $I_{ZK}$ .

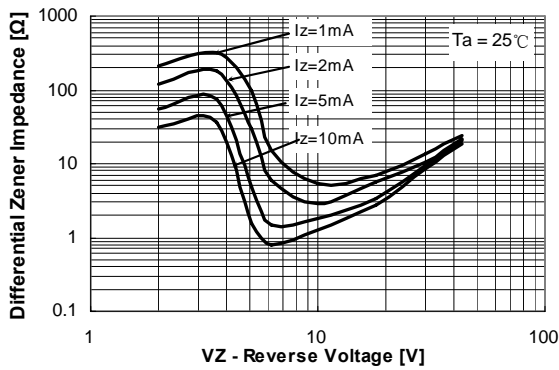
Typical Characteristics



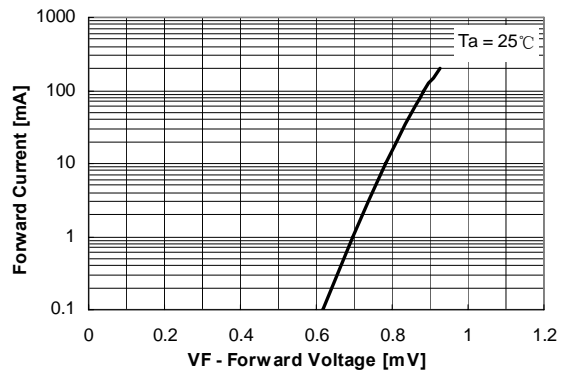
**Figure 1. Power Dissipation vs Ambient Temperature**  
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature



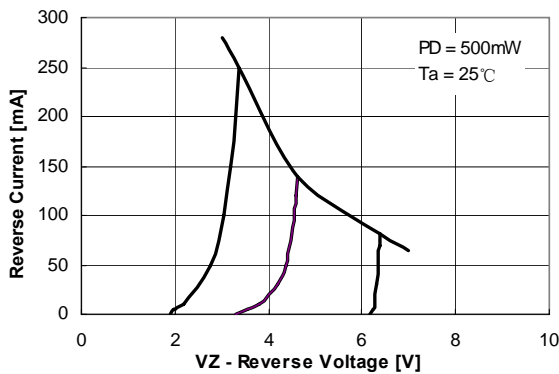
**Figure 2. Total Capacitance**



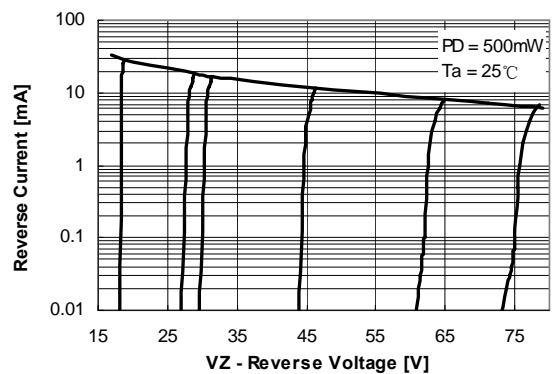
**Figure 3. Differential Impedance vs. Zener Voltage**



**Figure 4. Forward Current vs. Forward Voltage**

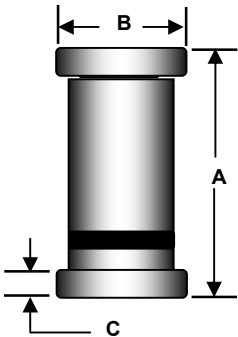


**Figure 5. Reverse Current vs. Reverse Voltage**



**Figure 6. 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
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- Notes:**
1. All dimensions are within DO213AC JEDEC standard.
  2. LL-34 polarity denoted by cathode band.