

## 500 mW DO-35 Hermetically Sealed Glass Zener Voltage Regulators



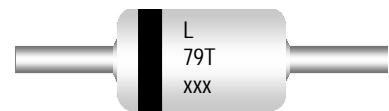
AXIAL LEAD  
DO35

### 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.

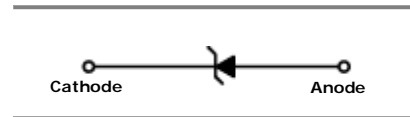
DEVICE MARKING DIAGRAM



L : Logo  
Device Code : TCBZX79Txxx  
T : VZ tolerance B or C

### Specification Features:

- § Zener Voltage Range 2.0 to 75 Volts
- § DO-35 Package (JEDEC)
- § Through-Hole Device Type Mounting
- § Hermetically Sealed Glass
- § Compression Bonded Construction
- § All External Surfaces Are Corrosion Resistant And Leads Are Readily Solderable
- § RoHS Compliant
- § Solder Hot Dip Tin (Sn) Terminal Finish
- § Cathode Indicated By Polarity Band



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						
TCBZX79C 2V0	1.88	2.12	5	100	1	600	150	1
TCBZX79C 2V2	2.08	2.33	5	100	1	600	150	1
TCBZX79C 2V4	2.28	2.56	5	100	1	600	100	1
TCBZX79C 2V7	2.51	2.89	5	100	1	600	75	1
TCBZX79C 3V0	2.8	3.2	5	95	1	600	50	1
TCBZX79C 3V3	3.1	3.5	5	95	1	600	25	1
TCBZX79C 3V6	3.4	3.8	5	90	1	600	15	1
TCBZX79C 3V9	3.7	4.1	5	90	1	600	10	1
TCBZX79C 4V3	4	4.6	5	90	1	600	5	1
TCBZX79C 4V7	4.4	5	5	80	1	500	3	2
TCBZX79C 5V1	4.8	5.4	5	60	1	480	2	2
TCBZX79C 5V6	5.2	6	5	40	1	400	1	2
TCBZX79C 6V2	5.8	6.6	5	10	1	150	3	4
TCBZX79C 6V8	6.4	7.2	5	15	1	80	2	4
TCBZX79C 7V5	7	7.9	5	15	1	80	1	5
TCBZX79C 8V2	7.7	8.7	5	15	1	80	0.7	5
TCBZX79C 9V1	8.5	9.6	5	15	1	100	0.5	6
TCBZX79C 10	9.4	10.6	5	20	1	150	0.2	7
TCBZX79C 11	10.4	11.6	5	20	1	150	0.1	8
TCBZX79C 12	11.4	12.7	5	25	1	150	0.1	8
TCBZX79C 13	12.4	14.1	5	30	1	170	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)
	Min	Max						
TCBZX79C 15	13.8	15.6	5	30	1	200	0.05	10.5
TCBZX79C 16	15.3	17.1	5	40	1	200	0.05	11.2
TCBZX79C 18	16.8	19.1	5	45	1	225	0.05	12.6
TCBZX79C 20	18.8	21.2	5	55	1	225	0.05	14
TCBZX79C 22	20.8	23.3	5	55	1	250	0.05	15.4
TCBZX79C 24	22.8	25.6	5	70	1	250	0.05	16.8
TCBZX79C 27	25.1	28.9	2	80	0.5	300	0.05	18.9
TCBZX79C 30	28	32	2	80	0.5	300	0.05	21
TCBZX79C 33	31	35	2	80	0.5	325	0.05	23.1
TCBZX79C 36	34	38	2	90	0.5	350	0.05	25.2
TCBZX79C 39	37	41	2	130	0.5	350	0.05	27.3
TCBZX79C 43	40	46	2	150	0.5	375	0.05	30.1
TCBZX79C 47	44	50	2	170	0.5	375	0.05	32.9
TCBZX79C 51	48	54	2	180	0.5	400	0.05	35.7
TCBZX79C 56	52	60	2	200	0.5	425	0.05	39.2
TCBZX79C 62	58	66	2.5	215	0.5	1000	0.05	43.4
TCBZX79C 68	64	72	2.5	240	0.5	1000	0.05	47.6
TCBZX79C 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						
TCBZX79B 2V4	2.35	2.45	5	100	1	600	100	1
TCBZX79B 2V7	2.65	2.75	5	100	1	600	75	1
TCBZX79B 3V0	2.94	3.06	5	95	1	600	50	1
TCBZX79B 3V3	3.23	3.37	5	95	1	600	25	1
TCBZX79B 3V6	3.53	3.67	5	90	1	600	15	1
TCBZX79B 3V9	3.82	3.98	5	90	1	600	10	1
TCBZX79B 4V3	4.21	4.39	5	90	1	600	5	1
TCBZX79B 4V7	4.61	4.79	5	80	1	500	3	2
TCBZX79B 5V1	5.00	5.20	5	60	1	480	2	2
TCBZX79B 5V6	5.49	5.71	5	40	1	400	1	2
TCBZX79B 6V2	6.08	6.32	5	10	1	150	3	4
TCBZX79B 6V8	6.66	6.94	5	15	1	80	2	4
TCBZX79B 7V5	7.33	7.63	5	15	1	80	1	5
TCBZX79B 8V2	8.04	8.36	5	15	1	80	0.7	5
TCBZX79B 9V1	8.92	9.28	5	15	1	100	0.5	6
TCBZX79B 10	9.80	10.20	5	20	1	150	0.2	7
TCBZX79B 11	10.78	11.22	5	20	1	150	0.1	8
TCBZX79B 12	11.76	12.24	5	25	1	150	0.1	8
TCBZX79B 13	12.74	13.26	5	30	1	170	0.1	8
TCBZX79B 15	14.70	15.30	5	30	1	200	0.05	10.5
TCBZX79B 16	15.68	16.32	5	40	1	200	0.05	11.2
TCBZX79B 18	17.64	18.36	5	45	1	225	0.05	12.6
TCBZX79B 20	19.60	20.40	5	55	1	225	0.05	14
TCBZX79B 22	21.56	22.44	5	55	1	250	0.05	15.4
TCBZX79B 24	23.52	24.48	5	70	1	250	0.05	16.8
TCBZX79B 27	26.46	27.54	2	80	0.5	300	0.05	18.9
TCBZX79B 30	29.40	30.60	2	80	0.5	300	0.05	21
TCBZX79B 33	32.34	33.66	2	80	0.5	325	0.05	23.1
TCBZX79B 36	35.28	36.72	2	90	0.5	350	0.05	25.2
TCBZX79B 39	38.22	39.78	2	130	0.5	350	0.05	27.3
TCBZX79B 43	42.14	43.86	2	150	0.5	375	0.05	30.1
TCBZX79B 47	46.06	47.94	2	170	0.5	375	0.05	32.9
TCBZX79B 51	49.98	52.02	2	180	0.5	400	0.05	35.7

**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						
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. 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.

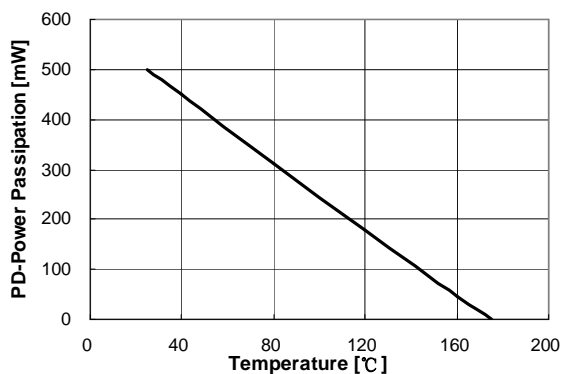
**3. ZENER VOLTAGE ( $V_Z$ ) MEASUREMENT**

The zener voltage is measured under pulse conditions such that  $T_J$  is no more than  $2^\circ\text{C}$  above  $T_A$ .

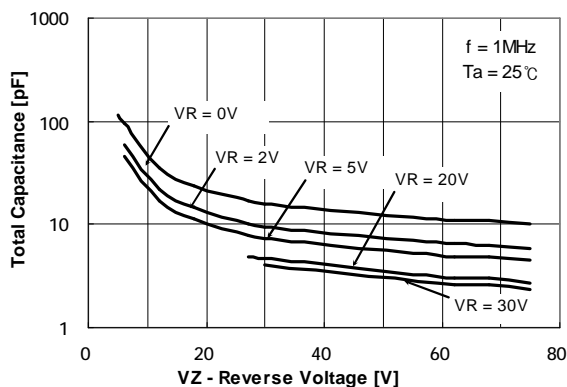
**4. ZENER IMPEDANCE ( $Z_Z$ ) DERIVATION**

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  $I_{ZT}$ .

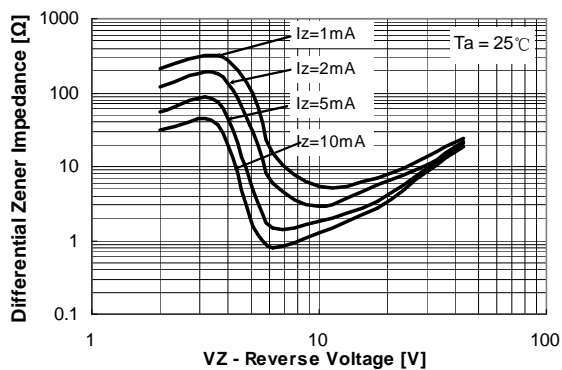
Typical Characteristics



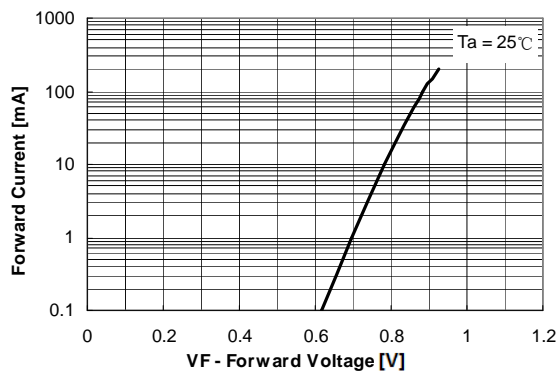
**Figure 1. Power Dissipation vs Ambient Temperature**  
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature



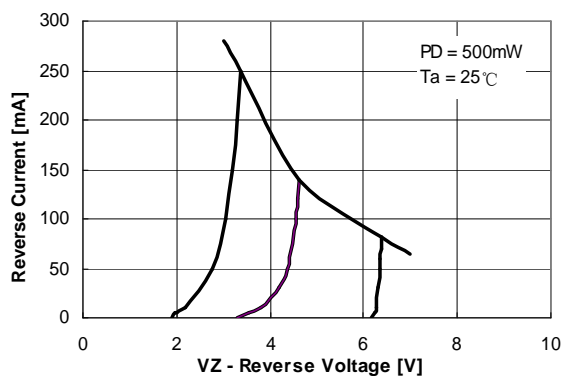
**Figure 2. Total Capacitance**



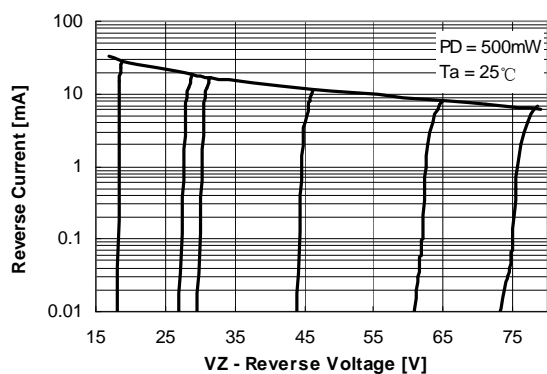
**Figure 3. Differential Impedance vs. Zener Voltage**



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

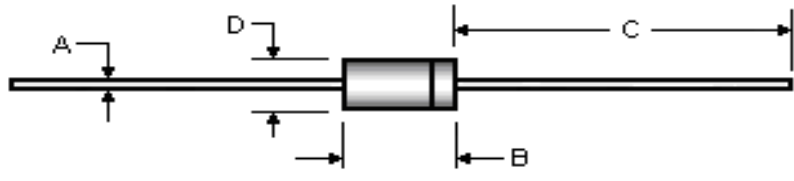


**Figure 5. Reverse Current vs. Reverse Voltage**



**Figure 6. Reverse Current vs. Reverse Voltage**

Package Outline

Package	Case Outline				
DO-35					
	<b>DO-35</b>				
	<b>DIM</b>	<b>Millimeters</b>		<b>Inches</b>	
		Min	Max	Min	Max
	<b>A</b>	0.46	0.55	0.018	0.022
<b>B</b>	---	5.08	---	0.200	
<b>C</b>	25.40	38.10	1.000	1.500	
<b>D</b>	1.53	2.28	0.060	0.090	

Notes:

1. All dimensions are within JEDEC standard.
2. DO35 polarity denoted by cathode band.