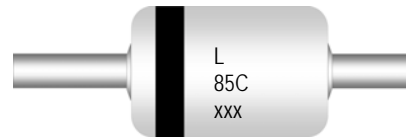


### 1.3 Watt DO-41 Hermetically Sealed Glass Zener Voltage Regulators



DEVICE MARKING DIAGRAM



L : Logo  
Device Code : TCBZX85C3V3

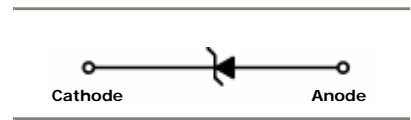
**Absolute Maximum Ratings**  $T_A = 25^\circ\text{C}$  unless otherwise noted

Parameter	Value	Units
Power Dissipation	1.3	W
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 3.3 to 56 Volts
- DO-41 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)
	$V_Z$ Min	$V_Z$ Max						
TCBZX85C 3V3	3.1	3.5	80	20	1	400	40	1
TCBZX85C 3V6	3.4	3.8	60	20	1	500	20	1
TCBZX85C 3V9	3.7	4.1	60	15	1	500	20	1
TCBZX85C 4V3	4.0	4.6	50	13	1	500	3	1
TCBZX85C 4V7	4.4	5.0	45	13	1	500	3	1
TCBZX85C 5V1	4.8	5.4	45	10	1	500	1	1.5
TCBZX85C 5V6	5.2	6.0	45	7	1	400	1	2
TCBZX85C 6V2	5.8	6.6	35	4	1	300	1	3
TCBZX85C 6V8	6.4	7.2	35	3.5	1	300	1	4
TCBZX85C 7V5	7.0	7.9	35	3	0.5	200	1	4.5
TCBZX85C 8V2	7.7	8.7	25	5	0.5	200	1	6.2
TCBZX85C 9V1	8.5	9.6	25	5	0.5	200	1	6.9
TCBZX85C 10	9.4	10.6	25	7	0.5	200	0.5	7.5
TCBZX85C 11	10.4	11.6	20	8	0.5	300	0.5	8.2
TCBZX85C 12	11.4	12.7	20	9	0.5	350	0.5	9.1
TCBZX85C 13	12.4	14.1	20	10	0.5	400	0.5	10

**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						
TCBZX85C 15	13.8	15.6	15	15	0.5	500	0.5	11
TCBZX85C 16	15.3	17.1	15	15	0.5	500	0.5	12
TCBZX85C 18	16.8	19.1	15	20	0.5	500	0.5	13
TCBZX85C 20	18.8	21.2	10	24	0.5	600	0.5	15
TCBZX85C 22	20.8	23.3	10	25	0.5	600	0.5	16
TCBZX85C 24	22.8	25.6	10	25	0.5	600	0.5	18
TCBZX85C 27	25.1	28.9	8	30	0.25	750	0.5	20
TCBZX85C 30	28	32	8	30	0.25	1000	0.5	22
TCBZX85C 33	31	35	8	35	0.25	1000	0.5	24
TCBZX85C 36	34	38	8	40	0.25	1000	0.5	25
TCBZX85C 39	37	41	6	45	0.25	1000	0.5	27
TCBZX85C 43	40	46	6	50	0.25	1000	0.5	30
TCBZX85C 47	44	50	4	90	0.25	1500	0.5	33
TCBZX85C 51	48	54	4	115	0.25	1500	0.5	36
TCBZX85C 56	52	60	4	120	0.25	2000	0.5	39

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

**Notes:**
**1. TOLERANCE AND TYPE NUMBER DESIGNATION ( $V_z$ )**

The type numbers listed have zener voltage min/max limits 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.

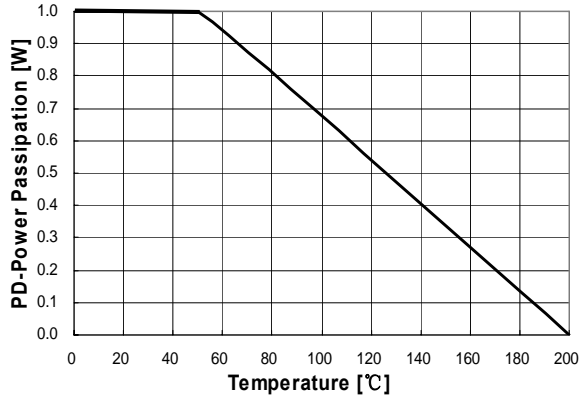
**3. ZENER VOLTAGE ( $V_z$ ) MEASUREMENT**

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

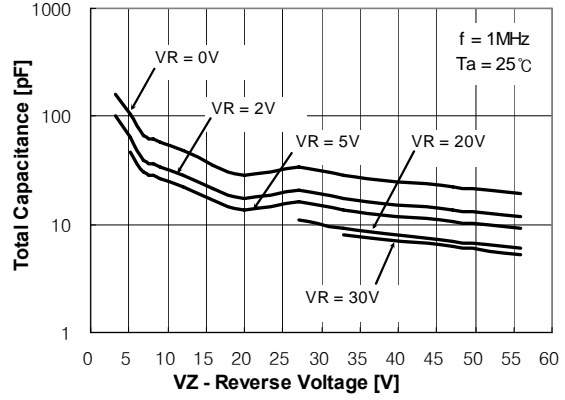
**4. ZENER IMPEDANCE ( $Z_z$ ) DERIVATION**

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 on  $I_{ZT}$  or  $I_{ZK}$ .

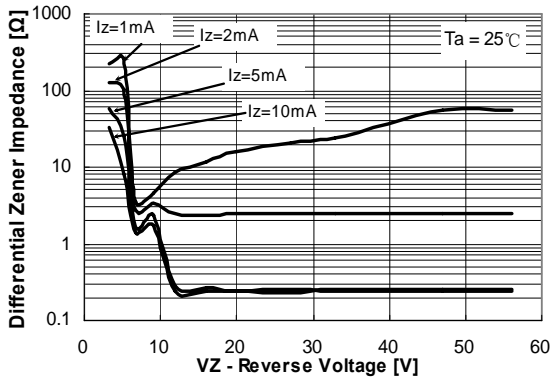
Typical Characteristics



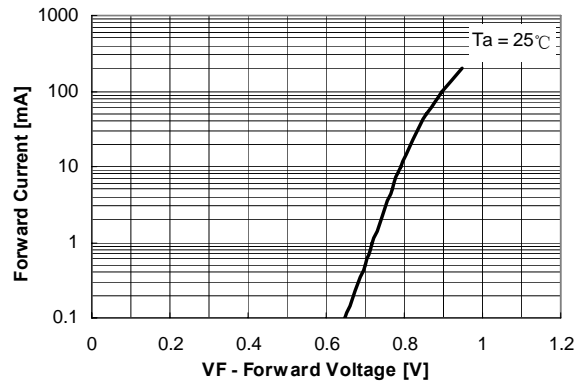
**Figure 1. Power Dissipation vs Ambient Temperature**  
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature



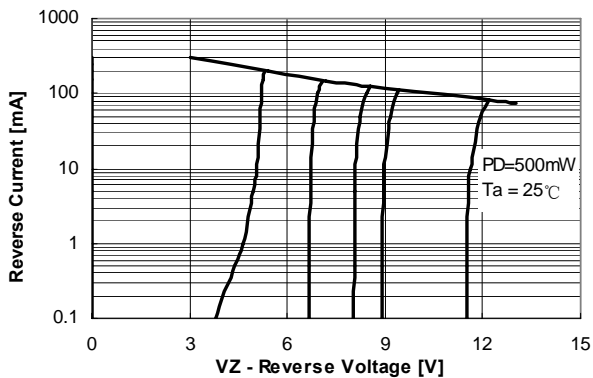
**Figure 2. Total Capacitance**



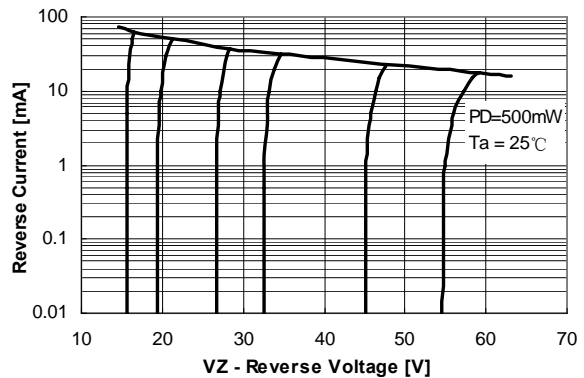
**Figure 3. Differential Impedance vs. Zener Voltage**



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

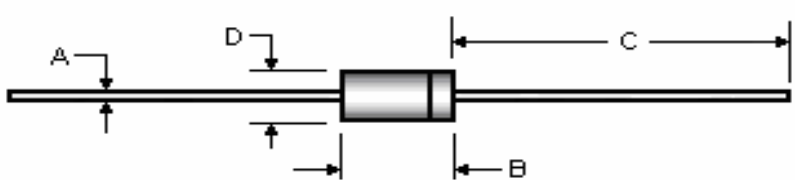


**Figure 5. Reverse Current vs. Reverse Voltage**



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

**Package Outline**

Package	Case Outline				
DO-41					
	<b>DIM</b>	<b>D0-41</b>			
		<b>Millimeters</b>		<b>Inches</b>	
		Min	Max	Min	Max
	<b>A</b>	0.72	0.86	0.028	0.034
	<b>B</b>	4.07	5.20	0.160	0.205
<b>C</b>	25.40	---	1.000	---	
<b>D</b>	2.04	2.71	0.080	0.107	

**Notes:**

1. All dimensions are within JEDEC standard.
2. DO41 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.

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