TAK CHEONG®

SEMICONDUCTOR

500 mW LL-34 Hermetically Sealed Glass Zener Voltage Regulators



SURFACE MOUNT
LL34

DEVICE MARKING DIAGRAM



Cathode Band Color : Blue

Absolute Maximum Ratings

T_A = 25°C unless otherwise noted

Parameter	Value	Units
Power Dissipation	500	mW
Storage Temperature Range	-65 to +175	°C
Operating Junction Temperature	+175	°C

These ratings are limiting values above which the serviceability of the diode may be impaired.

Specification Features:

- Zener Voltage Range 2.4 to 75 Volts
- TCZMxxxB - VZ tolerance ± 2%
- TCZMxxxC - VZ tolerance ± 5%
- 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°C unless otherwise noted

Device Type	V_Z@ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω)	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω)	I_R @ V_R (μA)	V_R (Volts)
	Min	Nom	Max		Max		Max	Max	
TCZM2V4B	2.35	2.4	2.45	5	94	1	564	45	1
TCZM2V7B	2.65	2.7	2.75	5	94	1	564	18	1
TCZM3V0B	2.94	3.0	3.06	5	89	1	564	9	1
TCZM3V3B	3.23	3.3	3.37	5	89	1	564	4.5	1
TCZM3V6B	3.53	3.6	3.67	5	84	1	564	4.5	1
TCZM3V9B	3.82	3.9	3.98	5	84	1	564	2.7	1
TCZM4V3B	4.21	4.3	4.39	5	84	1	564	2.7	1
TCZM4V7B	4.61	4.7	4.79	5	75	1	470	2.7	2
TCZM5V1B	5.00	5.1	5.20	5	56	1	451	1.8	2
TCZM5V6B	5.49	5.6	5.71	5	37	1	376	0.9	2
TCZM6V2B	6.08	6.2	6.32	5	9	1	141	2.7	4
TCZM6V8B	6.66	6.8	6.94	5	14	1	75	1.8	4
TCZM7V5B	7.33	7.5	7.63	5	14	1	75	0.9	5
TCZM8V2B	8.04	8.2	8.36	5	14	1	75	0.63	5
TCZM9V1B	8.92	9.1	9.28	5	14	1	94	0.45	6
TCZM10B	9.80	10	10.20	5	18	1	141	0.18	7
TCZM11B	10.78	11	11.22	5	18	1	141	0.09	8
TCZM12B	11.76	12	12.24	5	23	1	141	0.09	8
TCZM13B	12.74	13	13.26	5	28	1	160	0.09	8

Electrical Characteristics

T_A = 25°C unless otherwise noted

Device Type	V_Z@ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω) Max	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω) Max	I_R @ V_R (μA) Max	V_R (Volts)
	Min	Nom	Max						
TCZM15B	14.70	15	15.30	5	28	1	188	0.045	10.5
TCZM16B	15.68	16	16.32	5	37	1	188	0.045	11.2
TCZM18B	17.64	18	18.36	5	42	1	212	0.045	12.6
TCZM20B	19.60	20	20.40	5	51	1	212	0.045	14.0
TCZM22B	21.56	22	22.44	5	51	1	235	0.045	15.4
TCZM24B	23.52	24	24.48	5	65	1	235	0.045	16.8
TCZM27B	26.46	27	27.54	2	75	0.5	282	0.045	18.9
TCZM30B	29.40	30	30.60	2	75	0.5	282	0.045	21.0
TCZM33B	32.34	33	33.66	2	75	0.5	306	0.045	23.0
TCZM36B	35.28	36	36.72	2	84	0.5	329	0.045	25.2
TCZM39B	38.22	39	39.78	2	122	0.5	329	0.045	27.3
TCZM43B	42.14	43	43.86	2	141	0.5	353	0.045	30.1
TCZM47B	46.06	47	47.94	2	160	0.5	353	0.045	33.0
TCZM51B	49.98	51	52.02	2	169	0.5	376	0.045	35.7
TCZM56B	54.88	56	57.12	2	188	0.5	400	0.045	39.2
TCZM62B	60.76	62	63.24	2	202	0.5	423	0.045	43.4
TCZM68B	66.64	68	69.36	2	226	0.5	447	0.045	47.6
TCZM75B	73.50	75	76.50	2	240	0.5	470	0.045	52.5

V_F Forward Voltage = 1 V Maximum @ I_F = 100 mA for all types

Electrical Characteristics

T_A = 25°C unless otherwise noted

Device Type	V_Z@ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω) Max	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω) Max	I_R @ V_R (μA) Max	V_R (Volts)
	Min	Nom	Max						
TCZM2V4C	2.28	2.4	2.52	5	94	1	564	45	1
TCZM2V7C	2.57	2.7	2.84	5	94	1	564	18	1
TCZM3V0C	2.85	3.0	3.15	5	89	1	564	9	1
TCZM3V3C	3.14	3.3	3.47	5	89	1	564	4.5	1
TCZM3V6C	3.42	3.6	3.78	5	84	1	564	4.5	1
TCZM3V9C	3.71	3.9	4.10	5	84	1	564	2.7	1
TCZM4V3C	4.09	4.3	4.52	5	84	1	564	2.7	1
TCZM4V7C	4.47	4.7	4.94	5	75	1	470	2.7	2
TCZM5V1C	4.85	5.1	5.36	5	56	1	451	1.8	2
TCZM5V6C	5.32	5.6	5.88	5	37	1	376	0.9	2
TCZM6V2C	5.89	6.2	6.51	5	9	1	141	2.7	4
TCZM6V8C	6.46	6.8	7.14	5	14	1	75	1.8	4
TCZM7V5C	7.11	7.5	7.86	5	14	1	75	0.9	5
TCZM8V2C	7.79	8.2	8.61	5	14	1	75	0.63	5
TCZM9V1C	8.65	9.1	9.56	5	14	1	94	0.45	6
TCZM10C	9.50	10	10.50	5	18	1	141	0.18	7
TCZM11C	10.45	11	11.55	5	18	1	141	0.09	8
TCZM12C	11.40	12	12.60	5	23	1	141	0.09	8
TCZM13C	12.35	13	13.65	5	28	1	160	0.09	8
TCZM15C	14.25	15	15.75	5	28	1	188	0.045	10.5
TCZM16C	15.20	16	16.80	5	37	1	188	0.045	11.2
TCZM18C	17.10	18	18.90	5	42	1	212	0.045	12.6
TCZM20C	19.00	20	21.00	5	51	1	212	0.045	14.0
TCZM22C	20.90	22	23.10	5	51	1	235	0.045	15.4
TCZM24C	22.80	24	25.20	5	65	1	235	0.045	16.8
TCZM27C	25.65	27	28.35	2	75	0.5	282	0.045	18.9
TCZM30C	28.50	30	31.50	2	75	0.5	282	0.045	21.0
TCZM33C	31.35	33	34.65	2	75	0.5	306	0.045	23.0
TCZM36C	34.20	36	37.80	2	84	0.5	329	0.045	25.2
TCZM39C	37.05	39	40.95	2	122	0.5	329	0.045	27.3
TCZM43C	40.85	43	45.15	2	141	0.5	353	0.045	30.1

Electrical Characteristics

T_A = 25°C unless otherwise noted

Device Type	V_Z @ I_{ZT} (Volts)			I_{ZT} (mA)	Z_{ZT} @ I_{ZT} (Ω) Max	I_{ZK} (mA)	Z_{ZK} @ I_{ZK} (Ω) Max	I_R @ V_R (μA) Max	V_R (Volts)
	Min	Nom	Max						
TCZM47C	44.65	47	49.35	2	160	0.5	353	0.045	33.0
TCZM51C	48.45	51	53.55	2	169	0.5	376	0.045	35.7
TCZM56C	53.20	56	58.80	2	188	0.5	400	0.045	39.2
TCZM62C	58.90	62	65.10	2	202	0.5	423	0.045	43.4
TCZM68C	64.60	68	71.40	2	226	0.5	447	0.045	47.6
TCZM75C	71.25	75	78.75	2	240	0.5	470	0.045	52.5

V_F Forward Voltage = 1 V Maximum @ I_F = 100 mA for all types

Notes:

1. 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.
2. 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

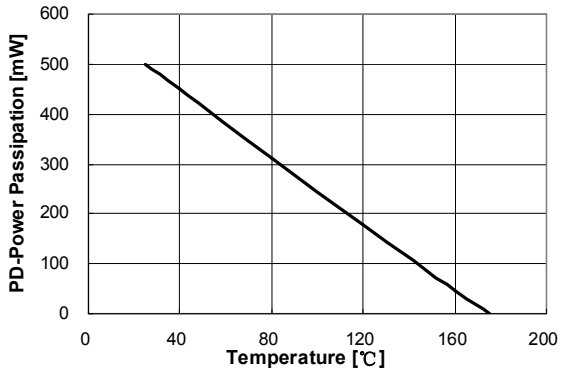


Figure 1. Power Dissipation vs Ambient Temperature
Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

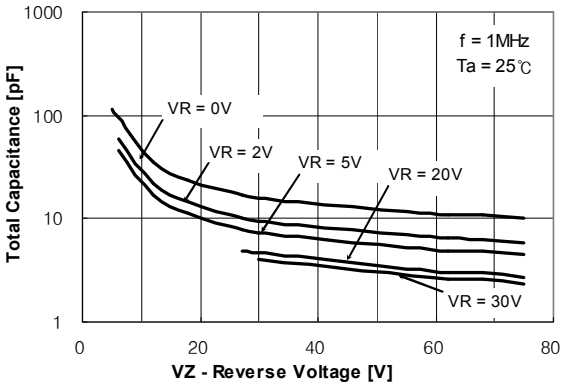


Figure 2. Total Capacitance

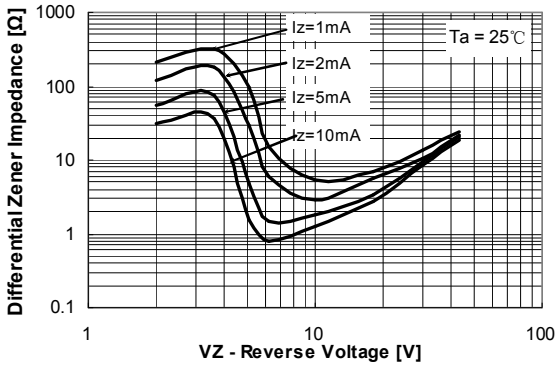


Figure 3. Differential Impedance vs. Zener Voltage

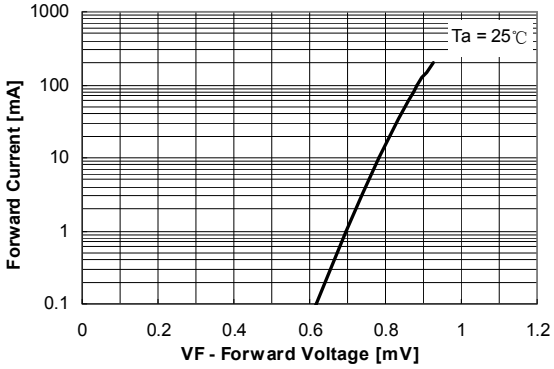


Figure 4. Forward Current vs. Forward Voltage

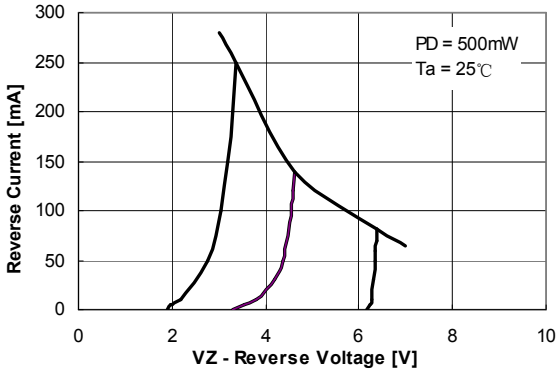


Figure 5. Reverse Current vs. Reverse Voltage

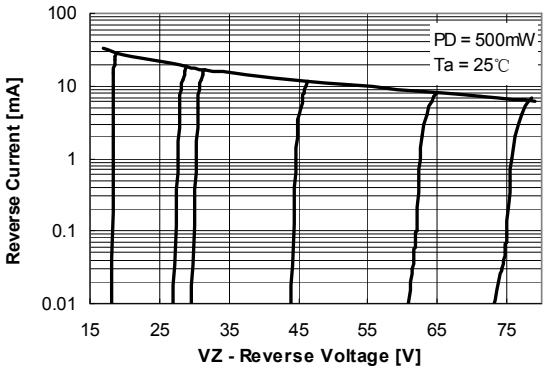
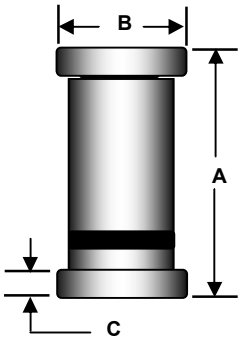


Figure 6. Reverse Current vs. Reverse Voltage

Package Outline

Package	Case Outline
LL34	

DIM	LL-34			
	Millimeters		Inches	
	Min	Max	Min	Max
A	3.30	3.60	0.130	0.142
B	1.40	1.50	0.055	0.059
C	0.35	0.50	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 with 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 damagers resulting from such improper use of sale.

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