

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



### Maximum Ratings (Note 1)

Rating	Symbol	Value	Units
Maximum Steady State Power Dissipation @TL≤75°C, Lead Length = 3/8"	P <sub>D</sub>	500	mW
Derate Above 75°C		4.0	mW/°C
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to +200	°C

Note 1: Some part number series have lower JEDEC registered ratings.

### Specification Features:

- Zener Voltage Range = 2.4V to 200V
- ESD Rating of Class 3 (>6 KV) per Human Body Model
- DO-35 Package (DO-204AH)
- Double Slug Type Construction
- Metallurgical Bonded Construction
- RoHS Compliant
- Solder Hot Dip Tin (Sn) Lead Finish

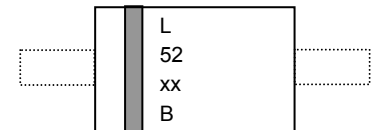
### Specification Features:

**Case** : Double slug type, hermetically sealed glass

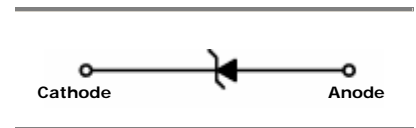
**Finish** : All external surfaces are corrosion resistant and leads are readily solderable

**Polarity** : Cathode indicated by polarity band

**Mounting:** Any



L = Logo  
52xxB = 1N52xxB Device Code



**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted.)

Device (Note 2.)	Device Marking	Zener Voltage (Note 3.)				Zener Impedance (Note 4.)			Leakage Current		$\theta_{VZ}$ (Note 5.)
		$V_Z$ (Volts)			$@I_{ZT}$	$Z_{ZT}$ @ $I_{ZT}$	$Z_{ZK}$ @ $I_{ZK}$		$I_R$ @ $V_R$		
		Min	Nom	Max	(mA)	( $\Omega$ )	( $\Omega$ )	(mA)	( $\mu\text{A}$ Max)	(Volts)	(%/°C)
1N5221B	1N5221B	2.280	2.4	2.520	20	30	1200	0.25	100	1	-0.085
1N5222B	1N5222B	2.375	2.5	2.625	20	30	1250	0.25	100	1	-0.085
1N5223B	1N5223B	2.565	2.7	2.835	20	30	1300	0.25	75	1	-0.080
1N5224B	1N5224B	2.660	2.8	2.940	20	30	1400	0.25	75	1	-0.080
1N5225B	1N5225B	2.850	3.0	3.150	20	29	1600	0.25	50	1	-0.075
1N5226B	1N5226B	3.135	3.3	3.465	20	28	1600	0.25	25	1	-0.070
1N5227B	1N5227B	3.420	3.6	3.780	20	24	1700	0.25	15	1	-0.065
1N5228B	1N5228B	3.705	3.9	4.095	20	23	1900	0.25	10	1	-0.060
1N5229B	1N5229B	4.085	4.3	4.515	20	22	2000	0.25	5	1	$\pm 0.055$
1N5230B	1N5230B	4.465	4.7	4.935	20	19	1900	0.25	5	2	$\pm 0.030$
1N5231B	1N5231B	4.845	5.1	5.355	20	17	1600	0.25	5	2	$\pm 0.030$
1N5232B	1N5232B	5.320	5.6	5.880	20	11	1600	0.25	5	3	+0.038
1N5233B	1N5233B	5.700	6.0	6.300	20	7	1600	0.25	5	3.5	+0.038
1N5234B	1N5234B	5.890	6.2	6.510	20	7	1000	0.25	5	4	+0.045
1N5235B	1N5235B	6.460	6.8	7.140	20	5	750	0.25	3	5	+0.050
1N5236B	1N5236B	7.125	7.5	7.875	20	6	500	0.25	3	6	+0.058
1N5237B	1N5237B	7.790	8.2	8.610	20	8	500	0.25	3	6.5	+0.062
1N5238B	1N5238B	8.265	8.7	9.135	20	8	600	0.25	3	6.5	+0.065
1N5239B	1N5239B	8.645	9.1	9.555	20	10	600	0.25	3	7	+0.068
1N5240B	1N5240B	9.500	10	10.500	20	17	600	0.25	3	8	+0.075
1N5241B	1N5241B	10.45	11	11.55	20	22	600	0.25	2	8.4	+0.076
1N5242B	1N5242B	11.40	12	12.60	20	30	600	0.25	1	9.1	+0.077
1N5243B	1N5243B	12.35	13	13.65	9.5	13	600	0.25	0.5	9.9	+0.079
1N5244B	1N5244B	13.30	14	14.70	9	15	600	0.25	0.1	10	+0.082
1N5245B	1N5245B	14.25	15	15.75	8.5	16	600	0.25	0.1	11	+0.082
1N5246B	1N5246B	15.20	16	16.80	7.8	17	600	0.25	0.1	12	+0.083
1N5247B	1N5247B	16.15	17	17.85	7.4	19	600	0.25	0.1	13	+0.084
1N5248B	1N5248B	17.10	18	18.90	7	21	600	0.25	0.1	14	+0.085
1N5249B	1N5249B	18.05	19	19.95	6.6	23	600	0.25	0.1	14	+0.086
1N5250B	1N5250B	19.00	20	21.00	6.2	25	600	0.25	0.1	15	+0.086
1N5251B	1N5251B	20.90	22	23.10	5.6	29	600	0.25	0.1	17	+0.087
1N5252B	1N5252B	22.80	24	25.20	5.2	33	600	0.25	0.1	18	+0.088
1N5253B	1N5253B	23.75	25	26.25	5	35	600	0.25	0.1	19	+0.089
1N5254B	1N5254B	25.65	27	28.35	4.6	41	600	0.25	0.1	21	+0.090
1N5255B	1N5255B	26.60	28	29.40	4.5	44	600	0.25	0.1	21	+0.091
1N5256B	1N5256B	28.50	30	31.50	4.2	49	600	0.25	0.1	23	+0.091
1N5257B	1N5257B	31.35	33	34.65	3.8	58	700	0.25	0.1	25	+0.092
1N5258B	1N5258B	34.20	36	37.80	3.4	70	700	0.25	0.1	27	+0.093
1N5259B	1N5259B	37.05	39	40.95	3.2	80	800	0.25	0.1	30	+0.094
1N5260B	1N5260B	40.85	43	45.15	3.0	93	800	0.25	0.1	33	+0.095

$V_F = 1.1\text{V Max @ }I_F = 200\text{mA}$  for 60V below types,  $V_F = 1.4\text{V Max @ }I_F = 200\text{mA}$  for 60V above types

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted.)

Device (Note 1.)	Device Marking	Zener Voltage (Note 2.)				Zener Impedance (Note 3.)			Leakage Current		$\theta_{V_Z}$ (Note 4.)
		$V_Z$ (Volts)			$@I_{ZT}$	$Z_{ZT} @I_{ZT}$	$Z_{ZK} @I_{ZK}$		$I_R @ V_R$		
		Min	Nom	Max	(mA)	( $\Omega$ )	( $\Omega$ )	(mA)	( $\mu\text{A Max}$ )	(Volts)	(mA)
1N5261B	1N5261B	44.65	47	49.35	2.7	105	1000	0.25	0.1	36	+0.095
1N5262B	1N5262B	48.45	51	53.55	2.5	125	1100	0.25	0.1	39	+0.096
1N5263B	1N5263B	53.20	56	58.80	2.2	150	1300	0.25	0.1	43	+0.096
1N5264B	1N5264B	57.00	60	63.00	2.1	170	1400	0.25	0.1	46	+0.097
1N5265B	1N5265B	58.90	62	65.10	2.0	185	1400	0.25	0.1	47	+0.097
1N5266B	1N5266B	64.60	68	71.40	1.8	230	1600	0.25	0.1	52	+0.097
1N5267B	1N5267B	71.25	75	78.75	1.7	270	1700	0.25	0.1	56	+0.098
1N5268B	1N5268B	77.90	82	86.10	1.5	330	2000	0.25	0.1	62	+0.098
1N5269B	1N5269B	82.65	87	91.35	1.4	370	2200	0.25	0.1	68	+0.099
1N5270B	1N5270B	86.45	91	95.55	1.4	400	2300	0.25	0.1	69	+0.099
1N5271B	1N5271B	95.0	100	105.0	1.3	500	2600	0.25	0.1	76	+0.11
1N5272B	1N5272B	104.5	110	115.5	1.1	750	3000	0.25	0.1	84	+0.11
1N5273B	1N5273B	114.0	120	126.0	1.0	900	4000	0.25	0.1	91	+0.11
1N5274B	1N5274B	123.5	130	136.5	0.95	1100	4500	0.25	0.1	99	+0.11
1N5275B	1N5275B	133.0	140	147.0	0.9	1300	4500	0.25	0.1	106	+0.11
1N5276B	1N5276B	142.5	150	157.5	0.85	1500	5000	0.25	0.1	114	+0.11
1N5277B	1N5277B	152.0	160	168.0	0.8	1700	5500	0.25	0.1	122	+0.11
1N5278B	1N5278B	161.5	170	178.5	0.74	1900	5500	0.25	0.1	129	+0.11
1N5279B	1N5279B	171.0	180	189.0	0.68	2200	6000	0.25	0.1	137	+0.11
1N5280B	1N5280B	180.5	190	199.5	0.66	2400	6500	0.25	0.1	144	+0.11
1N5281B	1N5281B	190.0	200	210.0	0.65	2500	7000	0.25	0.1	152	+0.11

 $V_F = 1.1\text{V Max @}I_F = 200\text{mA}$  for 60V below types,  $V_F = 1.4\text{V Max @}I_F = 200\text{mA}$  for 60V above types

**2. TOLERANCE AND TYPE NUMBER DESIGNATION ( $V_Z$ )**

 The type numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$ .

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

 The zener voltage ( $V_Z$ ) is tested under pulse condition. The measured  $V_Z$  is guaranteed to be within specification with device junction in thermal equilibrium.

**4. ZENER IMPEDANCE ( $Z_Z$ ) DERIVATION**
 $Z_{ZT}$  and  $Z_{ZK}$  are measured by dividing the AC voltage drop across the device by the AC current applied. The specified limits are for  $I_{Z(AC)} = 0.1 I_{Z(DC)}$  with AC frequency = 60Hz.

**5. TEMPERATURE COEFFICIENT ( $\theta_{V_Z}$ )**

Test conditions for temperature coefficient are as follows:

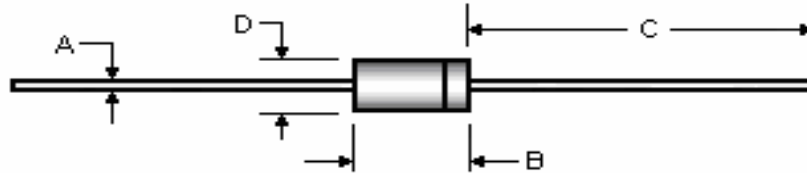
 A.  $I_{ZT} = 7.5\text{mA}$ ,  $T_1 = 25^\circ\text{C}$ ,  $T_2 = 125^\circ\text{C}$  (1N5221B through 1N5242B)

 B.  $I_{ZT} = \text{Rated } I_{ZT}$ ,  $T_1 = 25^\circ\text{C}$ ,  $T_2 = 125^\circ\text{C}$  (1N5243B through 1N5281B)

Device to be temperature stabilized with current applied prior to reading breakdown voltage at the specified ambient temperature.

## Package Outline

### Case Outline



DIM	DO-35			
	Millimeters		Inches	
	Min	Max	Min	Max
A	0.46	0.56	0.018	0.022
B	3.05	5.08	0.120	0.200
C	25.40	38.10	1.000	1.500
D	1.52	2.29	0.060	0.090

**Note:** all dimensions are within JEDEC standard.

This datasheet presents technical data of Tak Cheong's Zener Diodes. Complete specifications for the individual devices are provided in the form of datasheets. A comprehensive Selector Guide is included to simplify the task of choosing the best set of components required for a specific application. For additional information, please visit our website <http://www.takcheong.com>.

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