



**american**  
power devices, inc.

1N5221B-1N5271B

Standard tolerances are 5%  
10%, 2% & 1% are available

# 500 mW industrial/commercial silicon zener diodes

## FEATURES

- Zener voltage 2.4 to 110 V
- Guaranteed temperature coefficient
- Hermetically sealed glass package
- APD can select any voltage in tolerances 1%, 2%, 5% and 10% at your application's test current.

## MAXIMUM RATINGS

- Junction Temperature: -65°C to +200°C
- Storage Temperature: -65°C to +200°C
- DC Power Dissipation: 500 mW @  $T_L = 75^\circ\text{C}$
- Derate above 75°C: 4 mW/°C
- Forward Voltage @ 200 mA: 1.1 Volts

## \*ELECTRICAL CHARACTERISTICS @ 25°C

JEDEC Type No. (Note 1)	Nominal Zener Voltage $V_Z @ I_ZT$ Volts (Note 4)	Test Current $I_ZT$ mA	Max Zener Impedance A and B Suffix only		Max Reverse Leakage Current			Max Zener Voltage Temperature Coeff. (A and B Suffix only) $\theta_{VZ} (\%/^\circ\text{C})$ (Note 3)	
			(Note 2)		A and B Suffix only		Non-Suffix		
			$Z_{ZT} @ I_ZT$ Ohms	$Z_{ZK} @ I_{ZK} = 0.25 \text{ mA}$ Ohms	$I_R @ V_R$ Volts	$I_R @ V_R$ Used for Suffix A			
1N5221	2.4	20	30	1200	100	0.95	1.0	200	-0.085
1N5222	2.5	20	30	1250	100	0.95	1.0	200	-0.085
1N5223	2.7	20	30	1300	75	0.95	1.0	150	-0.080
1N5224	2.8	20	30	1400	75	0.95	1.0	150	-0.080
1N5225	3.0	20	29	1600	50	0.95	1.0	100	-0.075
1N5226	3.3	20	28	1600	25	0.95	1.0	100	-0.070
1N5227	3.6	20	24	1700	15	0.95	1.0	100	-0.065
1N5228	3.9	20	23	1900	10	0.95	1.0	75	-0.060
1N5229	4.3	20	22	2000	5.0	0.95	1.0	50	$\pm 0.055$
1N5230	4.7	20	19	1900	5.0	1.9	2.0	50	$\pm 0.030$
1N5231	5.1	20	17	1600	5.0	1.9	2.0	50	$\pm 0.030$
1N5232	5.6	20	11	1600	5.0	2.9	3.0	50	+0.038
1N5233	6.0	20	7.0	1600	5.0	3.3	3.5	50	+0.038
1N5234	6.2	20	7.0	1000	5.0	3.8	4.0	50	+0.045
1N5235	6.8	20	5.0	750	3.0	4.8	5.0	30	+0.050
1N5236	7.5	20	6.0	500	3.0	5.7	6.0	30	+0.058
1N5237	8.2	20	8.0	500	3.0	6.2	6.5	30	+0.062
1N5238	8.7	20	8.0	600	3.0	6.2	6.5	30	+0.065
1N5239	9.1	20	10	600	3.0	6.7	7.0	30	+0.068
1N5240	10	20	17	600	3.0	7.6	8.0	30	+0.075
1N5241	11	20	22	600	2.0	8.0	8.4	30	+0.076
1N5242	12	20	30	600	1.0	8.7	9.1	10	+0.077
1N5243	13	9.5	13	600	0.5	9.4	9.9	10	+0.079
1N5244	14	9.0	15	600	0.1	9.5	10	10	+0.082
1N5245	15	8.5	16	600	0.1	10.5	11	10	+0.082
1N5246	16	7.8	17	600	0.1	11.4	12	10	+0.083
1N5247	17	7.4	19	600	0.1	12.4	13	10	+0.084
1N5248	18	7.0	21	600	0.1	13.3	14	10	+0.085
1N5249	19	6.6	23	600	0.1	13.3	14	10	+0.086
1N5250	20	6.2	25	600	0.1	14.3	15	10	+0.086
1N5251	22	5.6	29	600	0.1	16.2	17	10	+0.087
1N5252	24	5.2	33	600	0.1	17.1	18	10	+0.088
1N5253	25	5.0	35	600	0.1	18.1	19	10	+0.089
1N5254	27	4.6	41	600	0.1	20	21	10	+0.090
1N5255	28	4.5	44	600	0.1	20	21	10	+0.091
1N5256	30	4.2	49	600	0.1	22	23	10	+0.091
1N5257	33	3.8	58	700	0.1	24	25	10	+0.092
1N5258	36	3.4	70	700	0.1	26	27	10	+0.093
1N5259	39	3.2	80	800	0.1	29	30	10	+0.094
1N5260	43	3.0	93	900	0.1	31	33	10	+0.095
1N5261	47	2.7	105	1000	0.1	34	36	10	+0.095
1N5262	51	2.5	125	1100	0.1	37	39	10	+0.096
1N5263	56	2.2	150	1300	0.1	41	43	10	+0.096
1N5264	60	2.1	170	1400	0.1	44	46	10	+0.097
1N5265	62	2.0	185	1400	0.1	45	47	10	+0.097
1N5266	68	1.8	230	1600	0.1	49	52	10	+0.097
1N5267	75	1.7	270	1700	0.1	53	56	10	+0.098
1N5268	82	1.5	330	2000	0.1	59	62	10	+0.098
1N5269	87	1.4	370	2200	0.1	65	68	10	+0.099
1N5270	91	1.4	400	2300	0.1	66	69	10	+0.099
1N5271	100	1.3	500	2600	0.1	72	76	10	+0.110
1N5272	110	1.1	750	3000	0.1	80	84	10	+0.110

## MECHANICAL CHARACTERISTICS

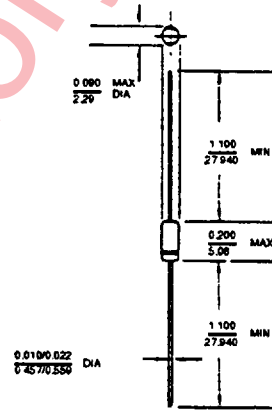


FIGURE 1 all dimensions in INCH mm

CASE: Hermetically sealed glass package (DO-35)  
FINISH: Corrosion resistant.  
Leads are tin plated  
THERMAL RESISTANCE: 200°C/W junction to lead at 0.330-inches from body  
POLARITY: Cathode banded  
WEIGHT: 0.2 grams (typ)

This series also offered in DO-7 package up to 12 V. Consult factory for availability.

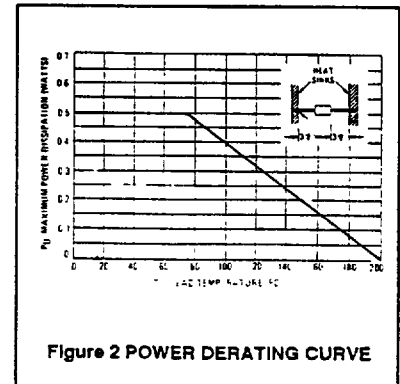


Figure 2 POWER DERATING CURVE

Note 1 The JEDEC type numbers shown with a B suffix have a 5% tolerance on nominal  $V_Z$ . A suffix indicates a  $\pm 10\%$  tolerance. Suffix C denotes a  $\pm 2\%$  tolerance and suffix D denotes a  $\pm 1\%$  tolerance.

Note 2 The zener impedance is derived from the 60 Hz 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  $I_{ZK}$ . Zener impedance is measured at two points to insure a knee at breakdown thus eliminating unstable devices.

Note 3 Temperature Coefficient ( $\theta_{VZ}$ ): Test Conditions

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 1N5272B)

Note 4 Voltage measurement performed 90 seconds after application of DC current



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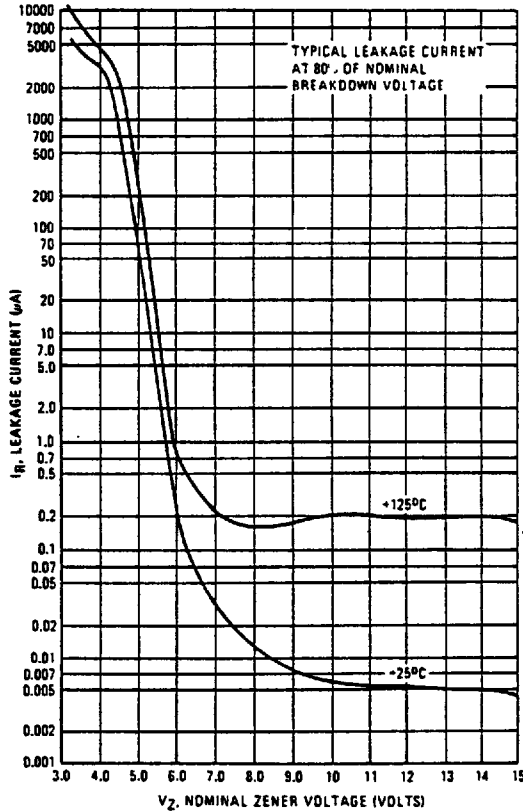
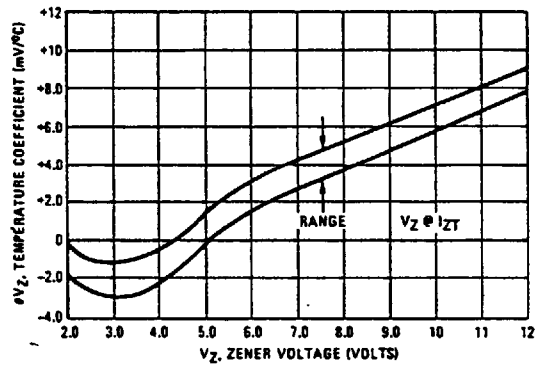


Figure 3 TYPICAL LEAKAGE CURRENT

(-55°C to +150°C temperature range; 90% of the units are in the indicated range.)

a - RANGE FOR UNITS TO 12 VOLTS



b - RANGE FOR UNITS 12 TO 100 VOLTS

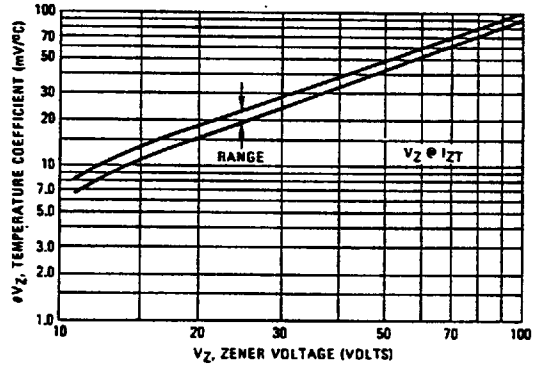


Figure 4 TEMPERATURE COEFFICIENTS