



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 | 26 | 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 | ± 0.055 |
| 1N5230 | 4.7 | 20 | 19 | 1900 | 5.0 | 1.9 | 2.0 | 50 | ± 0.030 |
| 1N5231 | 5.1 | 20 | 17 | 1600 | 5.0 | 1.9 | 2.0 | 50 | ± 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

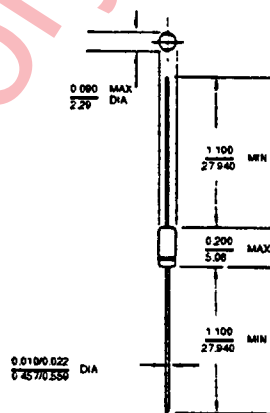


FIGURE 1 all dimensions in INCH mm

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.

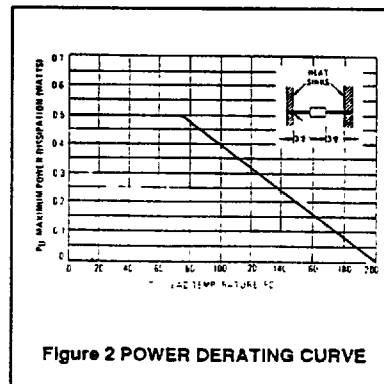


Figure 2 POWER DERATING CURVE

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 sharp knee at breakdown thus eliminating unstable devices.

Note 3 Temperature Coefficient (θ_{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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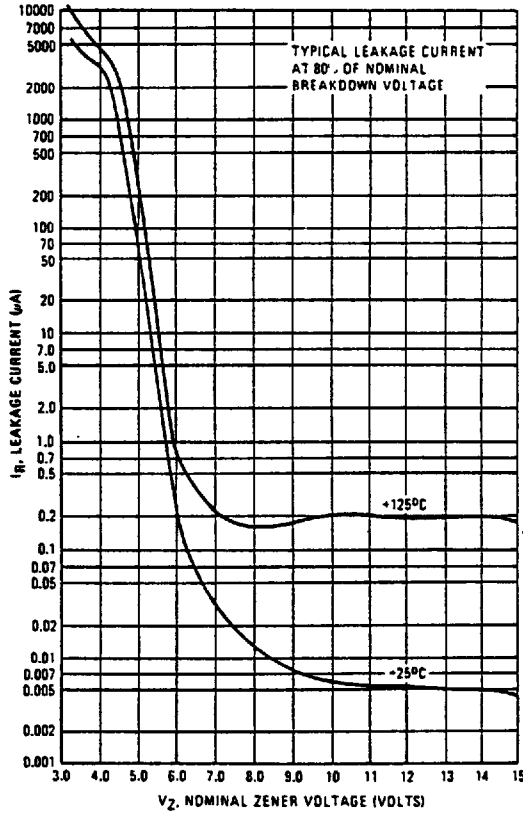
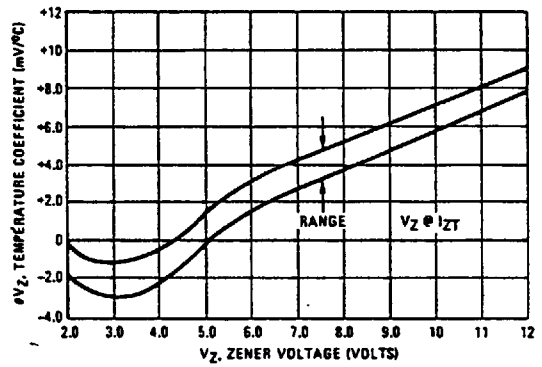


Figure 3 TYPICAL LEAKAGE CURRENT

(-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

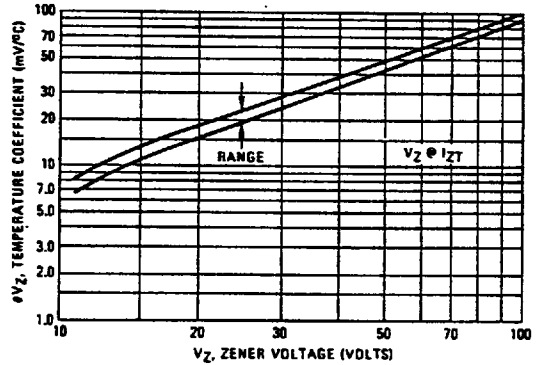


Figure 4 TEMPERATURE COEFFICIENTS