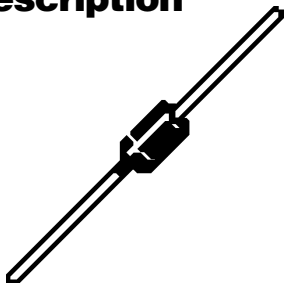
Data Sheet

# ½ Watt ZENER DIODES (2.4V to 200V)

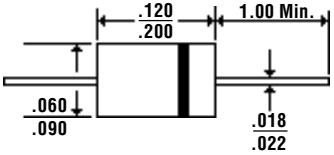
**1N5221...5281 Series**

## Description



## Mechanical Dimensions

JEDEC DO-35

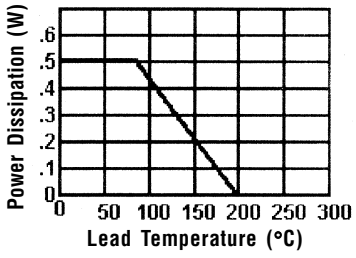



## Features

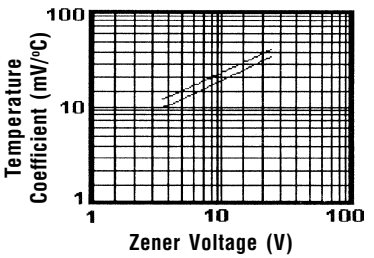
- 5 & 10% VOLTAGE TOLERANCES AVAILABLE
- WIDE VOLTAGE RANGE
- MEETS UL SPECIFICATION 94V-0

| Maximum Ratings | 1N5221...5281 Series | Units |
|---|---|---|
| DC Power Dissipation with $T_L$ = > = 75°C ...$P_D$ | 500 | mW |
| Lead Length = .375 Inches<br>Derate Above 50 °C | 4 | mW / °C |
| Operating & Storage Temperature Range...$T_J$, $T_{STRG}$ | -65 to 100 | °C |

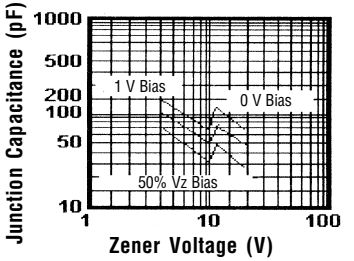
**Steady State Power Derating**



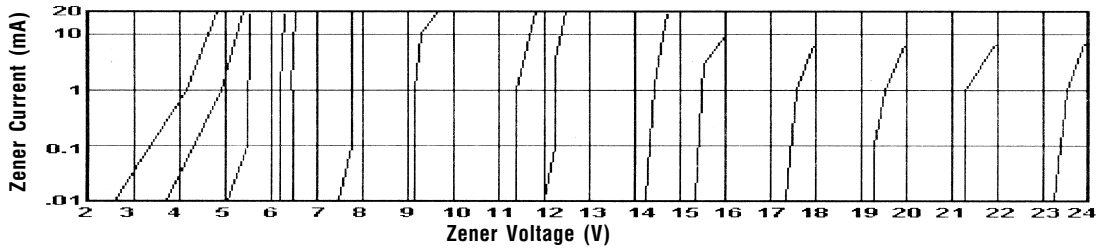

**Temperature Coefficients vs. Voltage**




**Typical Junction Capacitance**




**Zener Current vs. Zener Voltage**



# ½ Watt ZENER DIODES (2.4V to 200V)



**NOTES:** 1. For 10% Tolerance on Zener Voltage, Specify Suffix "A". For 5% Tolerance, Specify Suffix "B". (Example: 1N5230B = 4.7V +/- 5%)
2. $T_A$ = 25°C unless otherwise specified. Measurements made at Thermal Equilibrium.
Lead Length = .375". Thermal Resistance of Heat Sink = 30°C / W, $V_F$ = 1.1V Max. @ $I_F$ = 200mA

## Electrical Characteristics @ 25°C.

| Part # Jedec Type # | Nominal Zener Voltage, $V_Z$(V) | Test Current $I_{ZT}$ (mA) | Max. Zener Impedance $Z_{ZT}$ @ $I_{ZT}$ (Ω) | Max. Zener Impedance $Z_{ZK}$ @ $I_{ZK}$ = 0.25mA (Ω) | Max. Reverse Leakage Current @ $V_R$ $I_R$ (μA) | Max. Reverse Leakage Current @ $V_R$ $V_R$ (V) | Max. Zener Voltage Temp. Coeff. (%/°C) |
|---|---|---|---|---|---|---|---|
| 1N5221A or B | 2.4 | 20 | 30 | 1200 | 100 | 1 | -0.085 |
| 1N5222A or B | 2.5 | 20 | 30 | 1250 | 100 | 1 | -0.085 |
| 1N5223A or B | 2.7 | 20 | 30 | 1300 | 75 | 1 | -0.08 |
| 1N5224A or B | 2.8 | 20 | 30 | 1400 | 75 | 1 | -0.08 |
| 1N5225A or B | 3.0 | 20 | 29 | 1600 | 50 | 1 | -0.075 |
| 1N5226A or B | 3.3 | 20 | 28 | 1600 | 25 | 1 | -0.07 |
| 1N5227A or B | 3.6 | 20 | 24 | 1700 | 15 | 1 | -0.065 |
| 1N5228A or B | 3.9 | 20 | 23 | 1900 | 10 | 1 | -0.06 |
| 1N5229A or B | 4.3 | 20 | 22 | 2000 | 5 | 1 | +/- 0.055 |
| 1N5230A or B | 4.7 | 20 | 19 | 1900 | 5 | 2 | +/- 0.03 |
| 1N5231A or B | 5.1 | 20 | 17 | 1600 | 5 | 2 | +/- 0.03 |
| 1N5232A or B | 5.6 | 20 | 11 | 1600 | 5 | 3 | + 0.038 |
| 1N5233A or B | 6.0 | 20 | 7 | 1600 | 5 | 3.5 | + 0.038 |
| 1N5234A or B | 6.2 | 20 | 7 | 1000 | 5 | 4 | + 0.045 |
| 1N5235A or B | 6.8 | 20 | 5 | 750 | 5 | 5 | + 0.050 |
| 1N5236A or B | 7.5 | 20 | 6 | 500 | 3 | 6 | + 0.058 |
| 1N5237A or B | 8.2 | 20 | 8 | 500 | 3 | 6.5 | + 0.062 |
| 1N5238A or B | 8.7 | 20 | 8 | 600 | 3 | 6.5 | + 0.065 |
| 1N5239A or B | 9.1 | 20 | 10 | 600 | 3 | 7 | + 0.068 |
| 1N5240A or B | 10 | 20 | 17 | 600 | 3 | 8 | + 0.075 |
| 1N5241A or B | 11 | 20 | 22 | 600 | 2 | 8.4 | + 0.076 |
| 1N5242A or B | 12 | 20 | 30 | 600 | 1 | 9.1 | + 0.077 |
| 1N5243A or B | 13 | 9.5 | 13 | 600 | .5 | 9.9 | + 0.079 |
| 1N5244A or B | 14 | 9.0 | 15 | 600 | .1 | 10 | + 0.082 |
| 1N5245A or B | 15 | 8.5 | 16 | 600 | .1 | 11 | + 0.082 |
| 1N5246A or B | 16 | 7.8 | 17 | 600 | .1 | 12 | + 0.083 |
| 1N5247A or B | 17 | 7.4 | 19 | 600 | .1 | 13 | + 0.084 |
| 1N5248A or B | 18 | 7.0 | 21 | 600 | .1 | 14 | + 0.085 |
| 1N5249A or B | 19 | 6.6 | 23 | 600 | .1 | 15 | + 0.086 |
| 1N5250A or B | 20 | 6.2 | 25 | 600 | .1 | 16 | + 0.086 |
| 1N5251A or B | 22 | 5.6 | 29 | 600 | .1 | 17 | + 0.087 |
| 1N5252A or B | 24 | 5.2 | 33 | 600 | .1 | 18 | + 0.088 |
| 1N5253A or B | 25 | 5.0 | 35 | 600 | .1 | 19 | + 0.089 |
| 1N5254A or B | 27 | 4.6 | 41 | 600 | .1 | 21 | + 0.090 |
| 1N5255A or B | 28 | 4.5 | 44 | 600 | .1 | 21 | + 0.091 |

# ½ Watt ZENER DIODES (2.4V to 200V)



**NOTES:** 1. For 10% Tolerance on Zener Voltage, Specify Suffix "A". For 5% Tolerance, Specify Suffix "B". (Example: 1N5230B = 4.7V +/- 5%)
2. $T_A$ = 25°C unless otherwise specified. Measurements made at Thermal Equilibrium.
Lead Length = .375". Thermal Resistance of Heat Sink = 30°C / W, $V_F$ = 1.1V Max. @ $I_F$ = 200mA

## Electrical Characteristics @ 25°C.

| Part # Jedec Type # | Nominal Zener Voltage, $V_Z$(V) | Test Current $I_{ZT}$ (mA) | Max. Zener Impedance $Z_{ZT}$ @ $I_{ZT}$ (Ω) | Max. Zener Impedance $Z_{ZK}$ @ $I_{ZK}$ = 0.25mA (Ω) | Max. Reverse Leakage Current @ $V_R$ $I_R$ (μA) | Max. Reverse Leakage Current @ $V_R$ $V_R$ (V) | Max. Zener Voltage Temp. Coeff. (%/°C) |
|---|---|---|---|---|---|---|---|
| 1N5256A or B | 30 | 4.2 | 49 | 600 | .1 | 23 | + 0.091 |
| 1N5257A or B | 33 | 3.8 | 58 | 700 | .1 | 25 | + 0.092 |
| 1N5258A or B | 36 | 3.4 | 70 | 700 | .1 | 27 | + 0.093 |
| 1N5259A or B | 39 | 3.2 | 80 | 800 | .1 | 30 | + 0.094 |
| 1N5260A or B | 43 | 3.0 | 93 | 900 | .1 | 33 | + 0.095 |
| 1N5261A or B | 47 | 2.7 | 105 | 1000 | .1 | 36 | + 0.095 |
| 1N5262A or B | 51 | 2.5 | 125 | 1100 | .1 | 39 | + 0.096 |
| 1N5263A or B | 56 | 2.2 | 150 | 1300 | .1 | 43 | + 0.096 |
| 1N5264A or B | 60 | 2.1 | 170 | 1400 | .1 | 46 | + 0.097 |
| 1N5265A or B | 62 | 2.0 | 185 | 1400 | .1 | 47 | + 0.097 |
| 1N5266A or B | 68 | 1.8 | 230 | 1600 | .1 | 52 | + 0.097 |
| 1N5267A or B | 75 | 1.7 | 270 | 1700 | .1 | 56 | + 0.098 |
| 1N5268A or B | 82 | 1.5 | 330 | 2000 | .1 | 62 | + 0.098 |
| 1N5269A or B | 87 | 1.4 | 370 | 2200 | .1 | 68 | + 0.099 |
| 1N5270A or B | 91 | 1.4 | 400 | 2300 | .1 | 69 | + 0.099 |
| 1N5271A or B | 100 | 1.3 | 500 | 2600 | .1 | 76 | + 0.11 |
| 1N5272A or B | 110 | 1.1 | 750 | 3000 | .1 | 84 | + 0.11 |
| 1N5273A or B | 120 | 1.0 | 900 | 4000 | .1 | 91 | + 0.11 |
| 1N5274A or B | 130 | 0.95 | 1100 | 4500 | .1 | 99 | + 0.11 |
| 1N5275A or B | 140 | 0.9 | 1300 | 4500 | .1 | 106 | + 0.11 |
| 1N5276A or B | 150 | 0.85 | 1500 | 5000 | .1 | 114 | + 0.11 |
| 1N5277A or B | 160 | 0.8 | 1700 | 5500 | .1 | 122 | + 0.11 |
| 1N5278A or B | 170 | 0.74 | 1900 | 5500 | .1 | 129 | + 0.11 |
| 1N5279A or B | 180 | 0.68 | 2200 | 6000 | .1 | 137 | + 0.11 |
| 1N5280A or B | 190 | 0.66 | 2400 | 6500 | .1 | 144 | + 0.11 |
| 1N5281A or B | 200 | 0.65 | 2500 | 7000 | .1 | 152 | + 0.11 |