



Microsemi Corp.
The diode experts

SCOTTSDALE, AZ
For more information call:
(602) 941-6300

**1N5221
thru
1N5281
DO-35**

FEATURES

- 2.4 THRU 200 VOLTS
- COMPACT PACKAGE
- CONSULT FACTORY FOR VOLTAGES ABOVE 200 V

MAXIMUM RATINGS

Operating and Storage Temperature: -65°C to $+200^{\circ}\text{C}$
DC Power Dissipation: 500 mW
Power Derating: 4.0 mW/ $^{\circ}\text{C}$ above 50°C
Forward Voltage @ 200 mA: 1.1 Volts

ELECTRICAL CHARACTERISTICS

See following page for table of parameter values. (Fig. 3)

Table as shown on following page (Fig. 3) lists JEDEC type numbers, which indicate a tolerance of $\pm 20\%$ with guaranteed limits on only V_Z , I_r , and V_f . Devices with guaranteed limits on all six parameters are indicated by suffix 'A' for $\pm 10\%$ tolerance and suffix 'B' for $\pm 5\%$ tolerance. Also available with suffix C or D which indicates 2% and 1% tolerance respectively.

**SILICON
500 mW
ZENER DIODES**

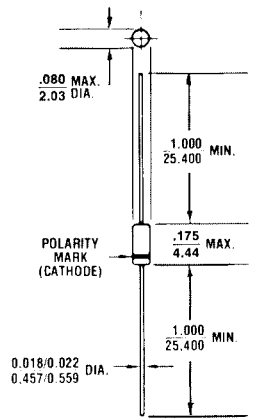


FIGURE 1

All dimensions in $\frac{\text{INCH}}{\text{m.m.}}$

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case. DO-35.

FINISH: All external surfaces are corrosion resistant and leads solderable.

THERMAL RESISTANCE: $250^{\circ}\text{C}/\text{W}$ (Maximum) junction to lead at 0.375-inches from body.

POLARITY: Diode to be operated with the banded end positive with respect to the opposite end.

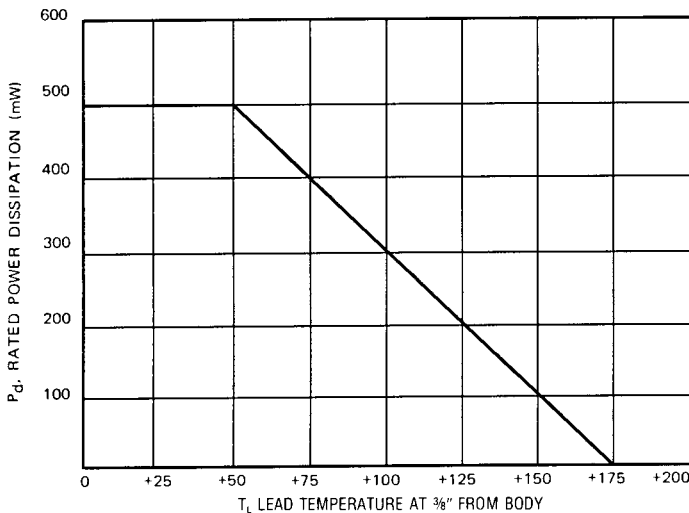


FIGURE 2
POWER DERATING CURVE

1N5221 thru 1N5281 DO-35

*ELECTRICAL CHARACTERISTICS @ 25°C

| JEDEC Type No. Note 1 | Nominal Zener Voltage $V_Z @ I_{ZT}$ Volts | Test Current I_{ZT} mA | Max Zener Impedance A & B Suffix Only Note 2 | | Max Reverse Leakage Current | | | | Max Zener Voltage Temp. Coeff. (A & B Suffix Only) α_{V_Z} (%/°C) Note 3 |
|-----------------------|--|--------------------------|--|----------------------------------|-----------------------------|----------|---------------------------------------|-----|---|
| | | | $Z_{ZT} @ I_{ZT}$ Ohms | $Z_{ZK} @ I_{ZK} = 0.25$ mA Ohms | A, B, C & D Suffix Only | | Non-Suffix | | |
| | | | | | I_A @ V_A Volts μ A | B, C & D | $I_A @ V_A$ Used For Suffix A μ 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 | ± 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 |
| 1N5273 | 120 | 1.0 | 900 | 4000 | 0.1 | 86 | 91 | 10 | +0.110 |
| 1N5274 | 130 | 0.95 | 1100 | 4500 | 0.1 | 94 | 99 | 10 | +0.110 |
| 1N5275 | 140 | 0.90 | 1300 | 4500 | 0.1 | 101 | 106 | 10 | +0.110 |
| 1N5276 | 150 | 0.85 | 1500 | 5000 | 0.1 | 108 | 114 | 10 | +0.110 |
| 1N5277 | 160 | 0.80 | 1700 | 5500 | 0.1 | 116 | 122 | 10 | +0.110 |
| 1N5278 | 170 | 0.74 | 1900 | 5500 | 0.1 | 123 | 129 | 10 | +0.110 |
| 1N5279 | 180 | 0.68 | 2200 | 6000 | 0.1 | 130 | 137 | 10 | +0.110 |
| 1N5280 | 190 | 0.66 | 2400 | 6500 | 0.1 | 137 | 144 | 10 | +0.110 |
| 1N5281 | 200 | 0.65 | 2500 | 7000 | 0.1 | 144 | 152 | 10 | +0.110 |

*JEDEC registered data

FIGURE 3

NOTE 1 The electrical characteristics are measured after allowing the device to stabilize for 20 seconds when mounted with a 3/8" minimum lead length from the case.

NOTE 2 The zener impedance is derived from the 60 HZ ac voltage, which results when an ac current having an r.m.s. 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 on the breakdown curve, thereby, eliminating unstable units.

NOTE 3 Temperature coefficient (α_{V_Z}). Test conditions for temperature coefficient are as follows:

- $I_{ZT} = 7.5$ mA, $T_1 = 25^\circ\text{C}$,
 $T_2 = 125^\circ\text{C}$ (1N5221A, B thru 1N5242A, B.)
- $I_{ZT} = \text{Rated } I_{ZT}$, $T_1 = 25^\circ\text{C}$,
 $T_2 = 125^\circ\text{C}$ (1N5243A, B thru 1N5281A, B.)

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

1N5221 thru 1N5281 DO-35

CAPACITANCE vs. V_Z CURVE

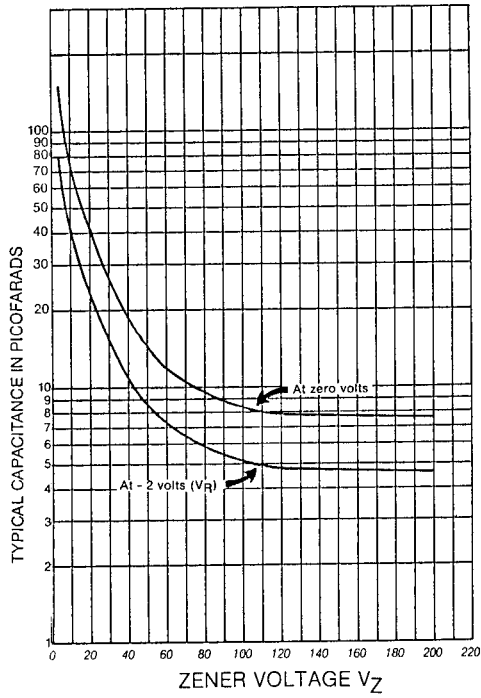


FIGURE 4
CAPACITANCE VS. ZENER VOLTAGE
(TYPICAL)