



Microsemi Corp.
The diode experts

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

**1N957B, -1
thru
1N992B, -1
DO-35**

FEATURES

- 6.8 TO 200 V ZENER VOLTAGE RANGE
- 1N962B-1 THRU 1N992B-1 AVAILABLE IN JAN, JANTX AND JANTXV QUALIFICATIONS TO MIL-S-19500/117. DIE ALSO AVAILABLE AS JANHC FOR HYBRIDS.
- METALLURGICALLY BONDED DEVICE TYPES
- CONSULT FACTORY FOR VOLTAGES ABOVE 200 V

MAXIMUM RATINGS

Steady State Power Dissipation: 500mW
Operating and Storage Temperature: -65°C to +175°C
Derating Factor Above 50°C: 4.0mW/°C
Forward Voltage @ 200 mA: 1.5 Volts

SILICON
500 mW
ZENER DIODES

ELECTRICAL CHARACTERISTICS @ 25°C

| JEDEC TYPE NUMBER (Ref. 1) | NOMINAL ZENER VOLTAGE V_z | ZENER TEST CURRENT I_{zT} | MAX. ZENER IMPEDANCE (Note 3) | | | MAX. DC ZENER CURRENT (Note 4) I_{zM} | MAX. SURGE CURRENT (RECURRENT) (Note 5) I_z (SURGE) | MAX. REVERSE LEAKAGE CURRENT | | MAX. TEMP. COEFFICIENT α_{Vz} |
|----------------------------|-----------------------------|-----------------------------|-------------------------------|---------------------|---------------------|---|---|------------------------------|-------|--------------------------------------|
| | | | Z_{z1} @ I_{zT} | Z_{z2} @ I_{zT} | Z_{z3} @ I_{zT} | | | I_L | V_R | |
| 1N957B | 6.8 | 18.5 | 4.5 | 700 | 1.0 | 55 | 300 | 150 | 5.2 | +0.05 |
| 1N958B | 7.5 | 16.5 | 5.5 | 700 | .5 | 50 | 275 | 75 | 5.7 | +0.058 |
| 1N959B | 8.2 | 15.0 | 6.5 | 700 | .5 | 45 | 250 | 50 | 6.2 | +0.065 |
| 1N960B | 9.1 | 14.0 | 7.5 | 700 | .5 | 41 | 225 | 25 | 6.9 | +0.068 |
| 1N961B | 10 | 12.5 | 8.5 | 700 | .25 | 38 | 200 | 10 | 7.6 | +0.075 |
| 1N962B | 11 | 11.5 | 9.5 | 700 | .25 | 32 | 175 | 5 | 8.4 | +0.076 |
| 1N963B | 12 | 10.5 | 11.5 | 700 | .25 | 31 | 160 | 5 | 9.1 | +0.077 |
| 1N964B | 13 | 9.5 | 13.0 | 700 | .25 | 28 | 150 | 5 | 9.9 | +0.079 |
| 1N965B | 15 | 8.5 | 16 | 700 | .25 | 25 | 130 | 5 | 11.4 | +0.082 |
| 1N966B | 16 | 7.8 | 17 | 700 | .25 | 24 | 120 | 5 | 12.2 | +0.083 |
| 1N967B | 18 | 7.0 | 21 | 750 | .25 | 20 | 110 | 5 | 13.7 | +0.085 |
| 1N968B | 20 | 6.2 | 25 | 750 | .25 | 18 | 100 | 5 | 15.2 | +0.086 |
| 1N969B | 22 | 5.6 | 29 | 750 | .25 | 16 | 90 | 5 | 16.7 | +0.087 |
| 1N970B | 24 | 5.2 | 33 | 750 | .25 | 15 | 80 | 5 | 18.2 | +0.088 |
| 1N971B | 27 | 4.6 | 41 | 750 | .25 | 13 | 70 | 5 | 20.6 | +0.090 |
| 1N972B | 30 | 4.2 | 49 | 1000 | .25 | 12 | 65 | 5 | 22.8 | +0.091 |
| 1N973B | 33 | 3.8 | 58 | 1000 | .25 | 11 | 60 | 5 | 25.1 | +0.092 |
| 1N974B | 36 | 3.4 | 70 | 1000 | .25 | 10 | 55 | 5 | 27.4 | +0.093 |
| 1N975B | 39 | 3.2 | 80 | 1000 | .25 | 9.5 | 46 | 5 | 29.7 | +0.094 |
| 1N976B | 43 | 3.0 | 93 | 1500 | .25 | 8.8 | 44 | 5 | 32.7 | +0.095 |
| 1N977B | 47 | 2.7 | 105 | 1500 | .25 | 7.9 | 40 | 5 | 35.8 | +0.095 |
| 1N978B | 51 | 2.5 | 125 | 1500 | .25 | 7.4 | 37 | 5 | 38.8 | +0.096 |
| 1N979B | 56 | 2.2 | 150 | 2000 | .25 | 6.8 | 35 | 5 | 42.6 | +0.096 |
| 1N980B | 62 | 2.0 | 185 | 2000 | .25 | 6.0 | 30 | 5 | 47.1 | +0.097 |
| 1N981B | 68 | 1.8 | 230 | 2000 | .25 | 5.5 | 28 | 5 | 51.7 | +0.097 |
| 1N982B | 75 | 1.7 | 270 | 2000 | .25 | 5.0 | 26 | 5 | 56.0 | +0.098 |
| 1N983B | 82 | 1.5 | 330 | 3000 | .25 | 4.6 | 23 | 5 | 62.2 | +0.098 |
| 1N984B | 91 | 1.4 | 400 | 3000 | .25 | 4.1 | 21 | 5 | 69.2 | +0.099 |
| 1N985B | 100 | 1.3 | 500 | 3000 | .25 | 3.7 | 18 | 5 | 76.0 | +0.11 |
| 1N986B | 110 | 1.1 | 750 | 4000 | .25 | 3.3 | 16 | 5 | 83.6 | +0.11 |
| 1N987B | 120 | 1.0 | 900 | 4500 | .25 | 3.1 | 15 | 5 | 91.2 | +0.11 |
| 1N988B | 130 | 0.95 | 1100 | 5000 | .25 | 2.7 | 13 | 5 | 98.8 | +0.11 |
| 1N989B | 150 | 0.85 | 1500 | 6000 | .25 | 2.4 | 12 | 5 | 114.0 | +0.11 |
| 1N990B | 160 | 0.80 | 1700 | 6500 | .25 | 2.2 | 11 | 5 | 121.6 | +0.11 |
| 1N991B | 180 | 0.68 | 2200 | 7100 | .25 | 2.0 | 10 | 5 | 136.8 | +0.11 |
| 1N992B | 200 | 0.65 | 2500 | 8000 | .25 | 1.8 | 9 | 5 | 152.0 | +0.11 |

* JEDEC Registered Data

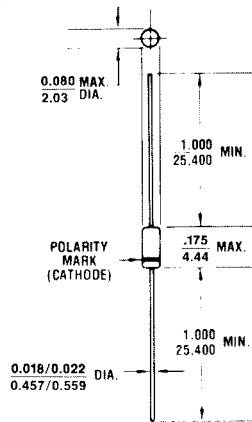


FIGURE 1

All dimensions in INCH m.m.

MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case, DO-35.

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

THERMAL RESISTANCE: 200°C/W (Typical) junction to lead at 0.375-inches from body. Metallurgically bonded DO-35's exhibit less than 100°C/W at zero distance from body.

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

WEIGHT: 0.2 grams.

MOUNTING POSITION: Any.

1N957B, -1 thru 1N992B, -1 DO-35

NOTE 1 The JEDEC type numbers shown (B suffix) have a $\pm 5\%$ tolerance on nominal zener voltage. The suffix A is used to identify $\pm 10\%$ tolerance; suffix C is used to identify $\pm 2\%$; and suffix D is used to identify $\pm 1\%$ tolerance; no suffix indicates $\pm 20\%$ tolerance.

NOTE 2 Zener voltage (V_Z) is measured after the test current has been applied for 20 ± 5 seconds. The device shall be suspended by its leads with the inside edge of the mounting clips between .375" and .500" from the body. Mounting clips shall be maintained at a temperature of $25 \pm 8/-2^\circ\text{C}$.

NOTE 3 The zener impedance is derived from the 60 cycle A.C. voltage, which results when an A.C. current

having an R.M.S. value equal to 10% of the D.C. zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK} . Zener impedance is measured at 2 points to insure a sharp knee on the breakdown curve and to eliminate unstable units.

NOTE 4 The values of I_{ZM} are calculated for a $\pm 5\%$ tolerance on nominal zener voltage. Allowance has been made for the rise in zener voltage above V_{ZT} which results from zener impedance and the increase in junction temperature as power dissipation approaches 400 mW. In the case of individual diodes I_{ZM} is that value of current which results in a dissipation of 400 mW at 75°C lead temperature at 3/8" from body.

NOTE 5 Surge is 1/2 square wave or equivalent sine wave pulse of 1/120 sec. duration.

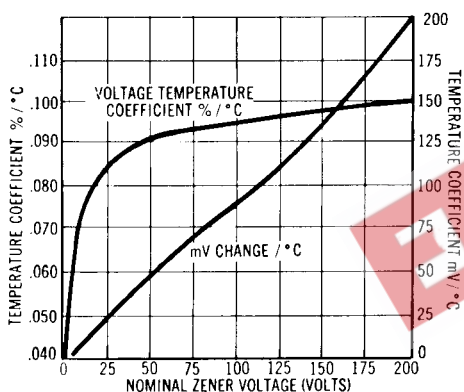


FIGURE 2
ZENER VOLTAGE TEMPERATURE
COEFF. vs. ZENER VOLTAGE

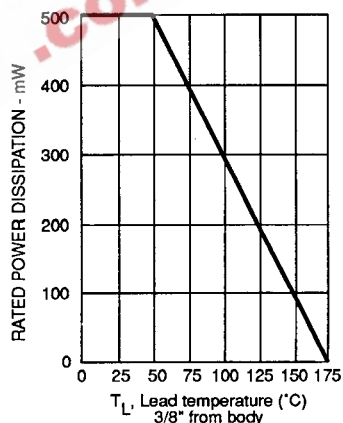


FIGURE 3
POWER DERATING CURVE

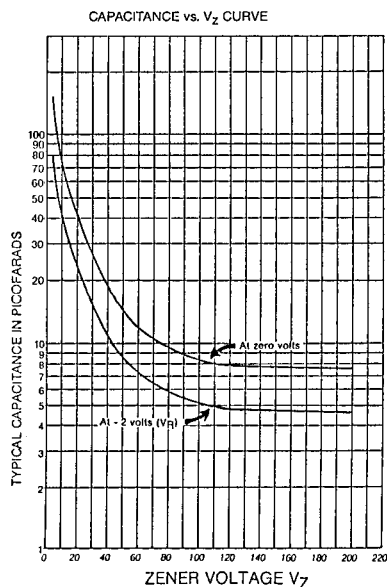


FIGURE 4
CAPACITANCE VS. ZENER VOLTAGE
(TYPICAL)