**Microsemi Corp.**
*The diode experts*

**ALSO AVAILABLE IN SURFACE MOUNT**

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

## FEATURES

- Popular DO-35 Package—Small and Rugged
- Double Slug Construction
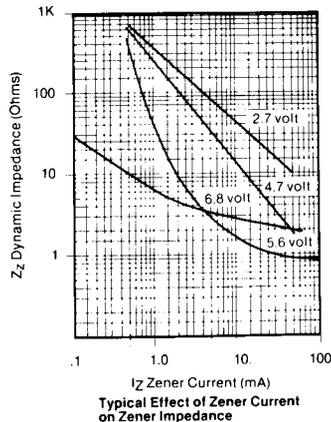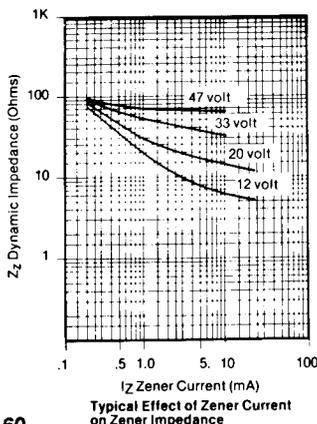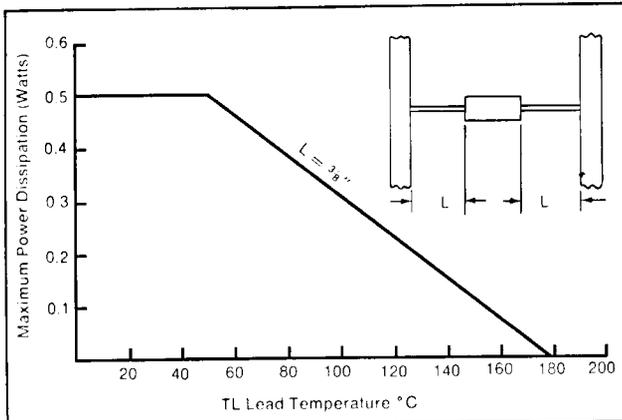- Constructed with an Oxide Passivated All Diffused Die

## MAXIMUM RATINGS

Operating & Storage Temp.: −65°C to +200°C
DC Power Dissipation: At Lead Temp. TL ⩽ 50°C
Lead length 3/8″:          500 mW
Derate above +50°C:        3.33mW/°C
Forward voltage @ 100mA:   1.5V
and TL = 30°C  L = 3/8″

## ELECTRICAL CHARACTERISTICS

See the following table:
The type number listed indicates a 20% tolerance. For 10% tolerance, add suffix A;
for 5% tolerance, add suffix B; for 2% tolerance add suffix C; for 1% tolerance, add suffix D.

**SILICON**
**500 mW**
**ZENER DIODES**



.080 MAX.
2.03 DIA.

1.000 MIN.
25.400

POLARITY BAND (CATHODE)

0.175 MAX.
4.44

1.000 MIN.
25.400

0.018/0.022 DIA.
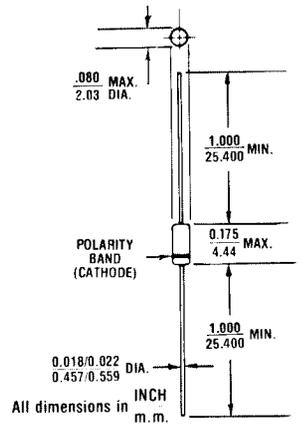0.457/0.559

All dimensions in INCH / m.m.

**FIGURE 1**

## 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.

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



**Typical Effect of Zener Current on Zener Impedance**



**Typical Effect of Zener Current on Zener Impedance**

# 1N5985 thru 1N6031

**\*ELECTRICAL CHARACTERISTICS** @ 30°C Lead Temperature. Lead Length 3/8″.

| JEDEC Type Number | Nominal Zener Voltage V_Z @ I_ZT Volts (Note 2) | Test Current I_ZT mA | Max. Zener Impedance (Note 1) | | | | Max. Reverse Leakage Current Current | | | | Max. DC Zener Current I_ZM (Note 3) | Typical Temp. Coef. of Zener Voltage α_VZ %/°C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Z_ZT @ I_ZT Ohms | | Z_ZK @ I_ZK = 0.25mA Ohms | | I_R μA | @ | V_R Volts | | | |
| | | | B, C, D Suffix | A, Non-Suffix | B, C, D Suffix | A, Non-Suffix | B, C, D Suffix | A, Non-Suffix | B, C, D Suffix | A, Non-Suffix | | |
| 1N5985 | 2.4 | 5.0 | 100 | 110 | 1800 | 2000 | 100 | 100 | 1.0 | 0.5 | 208 | −0.09 |
| 1N5986 | 2.7 | 5.0 | 100 | 110 | 1900 | 2200 | 75 | 100 | 1.0 | 0.5 | 185 | −0.075 |
| 1N5987 | 3.0 | 5.0 | 95 | 100 | 2000 | 2300 | 50 | 100 | 1.0 | 0.5 | 167 | −0.07 |
| 1N5988 | 3.3 | 5.0 | 95 | 100 | 2200 | 2400 | 25 | 75 | 1.0 | 0.5 | 152 | −0.06 |
| 1N5989 | 3.6 | 5.0 | 90 | 95 | 2300 | 2500 | 15 | 50 | 1.0 | 0.5 | 139 | −0.055 |
| 1N5990 | 3.9 | 5.0 | 90 | 95 | 2400 | 2500 | 10 | 25 | 1.0 | 1.0 | 128 | −0.045 |
| 1N5991 | 4.3 | 5.0 | 88 | 90 | 2500 | 2500 | 5.0 | 15 | 1.0 | 1.0 | 116 | −0.01 |
| 1N5992 | 4.7 | 5.0 | 70 | 90 | 2200 | 2500 | 3.0 | 10 | 1.5 | 1.0 | 106 | +0.01 |
| 1N5993 | 5.1 | 5.0 | 50 | 88 | 2050 | 2500 | 2.0 | 5.0 | 2.0 | 1.0 | 98 | +0.025 |
| 1N5994 | 5.6 | 5.0 | 25 | 70 | 1800 | 2200 | 2.0 | 3.0 | 3.0 | 1.5 | 89 | +0.035 |
| 1N5995 | 6.2 | 5.0 | 10 | 50 | 1300 | 2050 | 1.0 | 2.0 | 4.0 | 2.0 | 81 | +0.04 |
| 1N5996 | 6.8 | 5.0 | 8.0 | 25 | 750 | 1800 | 1.0 | 2.0 | 5.2 | 3.0 | 74 | +0.044 |
| 1N5997 | 7.5 | 5.0 | 7.0 | 10 | 600 | 1300 | 0.5 | 1.0 | 6.0 | 4.0 | 67 | +0.051 |
| 1N5998 | 8.2 | 5.0 | 7.0 | 15 | 600 | 750 | 0.5 | 1.0 | 6.5 | 5.2 | 61 | +0.055 |
| 1N5999 | 9.1 | 5.0 | 10 | 18 | 600 | 600 | 0.1 | 0.5 | 7.0 | 6.0 | 55 | +0.061 |
| 1N6000 | 10 | 5.0 | 15 | 22 | 600 | 600 | 0.1 | 0.5 | 8.0 | 6.5 | 50 | +0.065 |
| 1N6001 | 11 | 5.0 | 18 | 25 | 600 | 600 | 0.1 | 0.1 | 8.4 | 7.0 | 45 | +0.068 |
| 1N6002 | 12 | 5.0 | 22 | 32 | 600 | 600 | 0.1 | 0.1 | 9.1 | 8.0 | 42 | +0.073 |
| 1N6003 | 13 | 5.0 | 25 | 36 | 600 | 600 | 0.1 | 0.1 | 9.9 | 8.4 | 38 | +0.075 |
| 1N6004 | 15 | 5.0 | 32 | 42 | 600 | 600 | 0.1 | 0.1 | 11 | 9.1 | 33 | +0.079 |
| 1N6005 | 16 | 5.0 | 36 | 48 | 600 | 600 | 0.1 | 0.1 | 12 | 9.9 | 31 | +0.080 |
| 1N6006 | 18 | 5.0 | 42 | 55 | 600 | 600 | 0.1 | 0.1 | 14 | 11 | 28 | +0.083 |
| 1N6007 | 20 | 5.0 | 48 | 62 | 600 | 600 | 0.1 | 0.1 | 15 | 12 | 25 | +0.085 |
| 1N6008 | 22 | 5.0 | 55 | 70 | 600 | 600 | 0.1 | 0.1 | 17 | 14 | 23 | +0.087 |
| 1N6009 | 24 | 5.0 | 62 | 78 | 600 | 600 | 0.1 | 0.1 | 18 | 15 | 21 | +0.090 |
| 1N6010 | 27 | 5.0 | 70 | 88 | 600 | 700 | 0.1 | 0.1 | 21 | 17 | 19 | +0.091 |
| 1N6011 | 30 | 5.0 | 78 | 95 | 600 | 700 | 0.1 | 0.1 | 23 | 18 | 17 | +0.093 |
| 1N6012 | 33 | 5.0 | 88 | 110 | 700 | 800 | 0.1 | 0.1 | 25 | 21 | 15 | +0.094 |
| 1N6013 | 36 | 5.0 | 95 | 130 | 700 | 900 | 0.1 | 0.1 | 27 | 23 | 14 | +0.094 |
| 1N6014 | 39 | 2.0 | 130 | 170 | 800 | 1000 | 0.1 | 0.1 | 30 | 25 | 13 | +0.095 |
| 1N6015 | 43 | 2.0 | 150 | 180 | 900 | 1100 | 0.1 | 0.1 | 33 | 27 | 12 | +0.095 |
| 1N6016 | 47 | 2.0 | 170 | 200 | 1000 | 1300 | 0.1 | 0.1 | 36 | 30 | 11 | +0.096 |
| 1N6017 | 51 | 2.0 | 180 | 225 | 1300 | 1400 | 0.1 | 0.1 | 39 | 33 | 9.8 | +0.096 |
| 1N6018 | 56 | 2.0 | 200 | 240 | 1400 | 1600 | 0.1 | 0.1 | 43 | 36 | 8.9 | +0.096 |
| 1N6019 | 62 | 2.0 | 225 | 265 | 1400 | 1700 | 0.1 | 0.1 | 47 | 39 | 8.0 | +0.097 |
| 1N6020 | 68 | 2.0 | 240 | 280 | 1600 | 2000 | 0.1 | 0.1 | 52 | 43 | 7.4 | +0.097 |
| 1N6021 | 75 | 2.0 | 265 | 300 | 1700 | 2300 | 0.1 | 0.1 | 56 | 47 | 6.7 | +0.098 |
| 1N6022 | 82 | 2.0 | 280 | 350 | 2000 | 2600 | 0.1 | 0.1 | 62 | 52 | 6.1 | +0.098 |
| 1N6023 | 91 | 2.0 | 300 | 400 | 2300 | 3000 | 0.1 | 0.1 | 69 | 56 | 5.5 | +0.099 |
| 1N6024 | 100 | 1.0 | 500 | 800 | 2600 | 4000 | 0.1 | 0.1 | 76 | 62 | 5.0 | +0.110 |
| 1N6025 | 110 | 1.0 | 650 | 950 | 3000 | 4500 | 0.1 | 0.1 | 84 | 69 | 4.5 | +0.110 |
| 1N6026 | 120 | 1.0 | 800 | 1250 | 4000 | 5000 | 0.1 | 0.1 | 91 | 76 | 4.2 | +0.110 |
| 1N6027 | 130 | 1.0 | 950 | 1400 | 4500 | 5500 | 0.1 | 0.1 | 99 | 84 | 3.8 | +0.110 |
| 1N6028 | 150 | 1.0 | 1250 | 1700 | 5000 | 6000 | 0.1 | 0.1 | 114 | 91 | 3.3 | +0.110 |
| 1N6029 | 160 | 1.0 | 1400 | 2000 | 5500 | 7000 | 0.1 | 0.1 | 122 | 99 | 3.1 | +0.110 |
| 1N6030 | 180 | 1.0 | 1700 | 2350 | 6000 | 8000 | 0.1 | 0.1 | 137 | 114 | 2.8 | +0.110 |
| 1N6031 | 200 | 1.0 | 2000 | 2700 | 7000 | 9000 | 0.1 | 0.1 | 152 | 122 | 2.5 | +0.110 |

*Indicates JEDEC Registered Data.

# 1N5985 thru 1N6031

## "1N5985"

NOTE 1.
Zener impedance is derived from the 1KHz AC voltage which results when an AC current having an rms value equal to 10% of DC zener current (IZT or IZK) is superimposed on IZT or IZK.

NOTE 2.
Voltage measurements to be performed 20 seconds after application of the DC test current.

NOTE 3.
The maximum zener current Izm shown is for the nominal voltages. The following formula can be used to determine the worst case current for any tolerance device.

$$Izm = \frac{P}{Vzm}$$

Where Vzm is the high end of the voltage tolerance specified and P is the rated power of the device.

CAPACITANCE vs. $V_Z$ CURVE



At zero volts

At - 2 volts ($V_R$)

TYPICAL CAPACITANCE IN PICOFARADS

ZENER VOLTAGE $V_Z$