Microsemi Corp.
The diode experts

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# 1N5518 thru 1N5546

## LOW VOLTAGE AVALANCHE DIODES DO-35

## FEATURES

- LOW ZENER NOISE SPECIFIED
- LOW ZENER IMPEDANCE
- LOW LEAKAGE CURRENT
- HERMETICALLY SEALED GLASS PACKAGE
- JAN/JANTX/JANTXV AVAILABLE ON 1N5518-1 THROUGH 1N5546B-1 PER MIL-S-19500/437

## MAXIMUM RATINGS

Operating Temperature: -65°C to +200°C
Storage Temperature: -65°C to +200°C

## ELECTRICAL CHARACTERISTICS

($T_A$ = 25°C unless otherwise noted. Based on dc measurements at thermal equilibrium.
$V_F$ = 1.1 Max @ $I_F$ = 200 mA for all types)

| JEDEC TYPE NO. (Note 1) | NOMINAL ZENER VOLTAGE $V_Z$ @ $I_{ZT}$ VOLTS (Note 2) | TEST CURRENT $I_{ZT}$ mAdc | MAX. ZENER IMPEDANCE B-C-D SUFFIX $Z_{ZT}$ @ $I_{ZT}$ OHMS (Note 3) | MAX. REVERSE LEAKAGE CURRENT | | | B-C-D SUFFIX MAXIMUM DC ZENER CURRENT | B-C-D SUFFIX MAX. NOISE DENSITY AT $I_Z$ = 250 μA $N_D$ | REGULATION FACTOR $\Delta V_Z$ VOLTS (Note 6) | LOW $V_Z$ CURRENT $I_{ZL}$ mAdc |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | $I_R$ μAdc (Note 4) | $V_R$ – VOLTS NON & A-SUFFIX | $V_R$ – VOLTS B-C-D SUFFIX | $I_{ZM}$ mAdc (Note 5) | (MICRO-VOLTS PER SQUARE ROOT CYCLE) | | |
| 1N5518 | 3.3 | 20 | 26 | 5.0 | 0.90 | 1.0 | 115 | 0.5 | 0.90 | 2.0 |
| 1N5519 | 3.6 | 20 | 24 | 3.0 | 0.90 | 1.0 | 105 | 0.5 | 0.90 | 2.0 |
| 1N5520 | 3.9 | 20 | 22 | 1.0 | 0.90 | 1.0 | 98 | 0.5 | 0.85 | 2.0 |
| 1N5521 | 4.3 | 20 | 18 | 3.0 | 1.0 | 1.5 | 86 | 0.5 | 0.75 | 2.0 |
| 1N5522 | 4.7 | 10 | 22 | 2.0 | 1.5 | 2.0 | 81 | 0.5 | 0.60 | 1.0 |
| 1N5523 | 5.1 | 5.0 | 26 | 2.0 | 2.0 | 2.5 | 75 | 0.5 | 0.65 | 0.25 |
| 1N5524 | 5.6 | 3.0 | 30 | 2.0 | 3.0 | 3.5 | 68 | 1.0 | 0.30 | 0.25 |
| 1N5525 | 6.2 | 1.0 | 30 | 1.0 | 4.5 | 5.0 | 61 | 1.0 | 0.20 | 0.01 |
| 1N5526 | 6.8 | 1.0 | 30 | 1.0 | 5.5 | 6.2 | 56 | 1.0 | 0.10 | 0.01 |
| 1N5527 | 7.5 | 1.0 | 35 | 0.5 | 6.0 | 6.8 | 51 | 2.0 | 0.05 | 0.01 |
| 1N5528 | 8.2 | 1.0 | 40 | 0.5 | 6.5 | 7.5 | 46 | 4.0 | 0.05 | 0.01 |
| 1N5529 | 9.1 | 1.0 | 45 | 0.1 | 7.0 | 8.2 | 42 | 4.0 | 0.05 | 0.01 |
| 1N5530 | 10.0 | 1.0 | 60 | 0.05 | 8.0 | 9.1 | 38 | 4.0 | 0.10 | 0.01 |
| 1N5531 | 11.0 | 1.0 | 80 | 0.05 | 9.0 | 9.9 | 35 | 5.0 | 0.20 | 0.01 |
| 1N5532 | 12.0 | 1.0 | 90 | 0.05 | 9.5 | 10.8 | 32 | 10 | 0.20 | 0.01 |
| 1N5533 | 13.0 | 1.0 | 90 | 0.01 | 10.5 | 11.7 | 29 | 15 | 0.20 | 0.01 |
| 1N5534 | 14.0 | 1.0 | 100 | 0.01 | 11.5 | 12.6 | 27 | 20 | 0.20 | 0.01 |
| 1N5535 | 15.0 | 1.0 | 100 | 0.01 | 12.5 | 13.5 | 25 | 20 | 0.20 | 0.01 |
| 1N5536 | 16.0 | 1.0 | 100 | 0.01 | 13.0 | 14.4 | 24 | 20 | 0.20 | 0.01 |
| 1N5537 | 17.0 | 1.0 | 100 | 0.01 | 14.0 | 15.3 | 22 | 20 | 0.20 | 0.01 |
| 1N5538 | 18.0 | 1.0 | 100 | 0.01 | 15.0 | 16.2 | 21 | 20 | 0.20 | 0.01 |
| 1N5539 | 19.0 | 1.0 | 100 | 0.01 | 16.0 | 17.1 | 20 | 20 | 0.20 | 0.01 |
| 1N5540 | 20.0 | 1.0 | 100 | 0.01 | 17.0 | 18.0 | 19 | 20 | 0.20 | 0.01 |
| 1N5541 | 22.0 | 1.0 | 100 | 0.01 | 18.0 | 19.8 | 17 | 20 | 0.25 | 0.01 |
| 1N5542 | 24.0 | 1.0 | 100 | 0.01 | 20.0 | 21.6 | 16 | 20 | 0.30 | 0.01 |
| 1N5543 | 25.0 | 1.0 | 100 | 0.01 | 21.0 | 22.4 | 15 | 20 | 0.35 | 0.01 |
| 1N5544 | 28.0 | 1.0 | 100 | 0.01 | 23.0 | 25.2 | 14 | 20 | 0.40 | 0.01 |
| 1N5545 | 30.0 | 1.0 | 100 | 0.01 | 24.0 | 27.0 | 13 | 20 | 0.45 | 0.01 |
| 1N5546 | 33.0 | 1.0 | 100 | 0.01 | 28.0 | 29.7 | 12 | 20 | 0.50 | 0.01 |

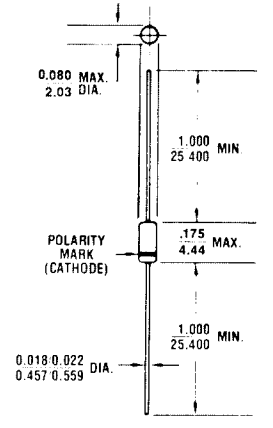


FIGURE 1

All dimensions in INCH / m.m.

### NOTE 1 — TOLERANCE AND VOLTAGE DESIGNATION

The JEDEC type numbers shown are ± 20% with guaranteed limits for only $V_Z$, $I_R$, and $V_F$. Units with A suffix are ± 10% with guaranteed limits for only $V_Z$, $I_R$, and $V_F$. Units with guaranteed limits for all six parameters are indicated by a B suffix for ± 5.0% units, C suffix for ± 2.0% and D suffix for ± 1.0%.

### NOTE 2 — ZENER ($V_Z$) VOLTAGE MEASUREMENT

Nominal zener voltage is measured with the device junction in thermal equilibrium with ambient temperature of 25°C.

### NOTE 3 — ZENER IMPEDANCE ($Z_Z$) DERIVATION

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 ($I_{ZT}$) is superimposed on $I_{ZT}$.

### NOTE 4 — REVERSE LEAKAGE CURRENT ($I_R$)

Reverse leakage currents are guaranteed and are measured at $V_R$ as shown on the table.

### NOTE 5 — MAXIMUM REGULATOR CURRENT ($I_{ZM}$)

The maximum current shown is based on the maximum voltage of a 5.0% type unit, therefore, it applies only to the B suffix device. The actual $I_{ZM}$ for any device may not exceed the value of 400 milliwatts divided by the actual $V_Z$ of the device.

### NOTE 6 — MAXIMUM REGULATION FACTOR ($\Delta V_Z$)

$\Delta V_Z$ is the maximum difference between $V_Z$ at $I_{ZT}$ and $V_Z$ at $I_{ZL}$ measured with the device junction in thermal equilibrium.

### MECHANICAL CHARACTERISTICS

CASE: Hermetically sealed glass case. DO-35.

LEAD MATERIAL: Tinned copper clad steel.

MARKING: Body painted, alpha numeric.

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

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/Watt at zero distance from body.

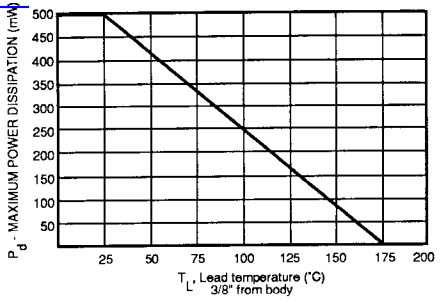


**FIGURE 2**
**POWER-TEMPERATURE DERATING CURVE**

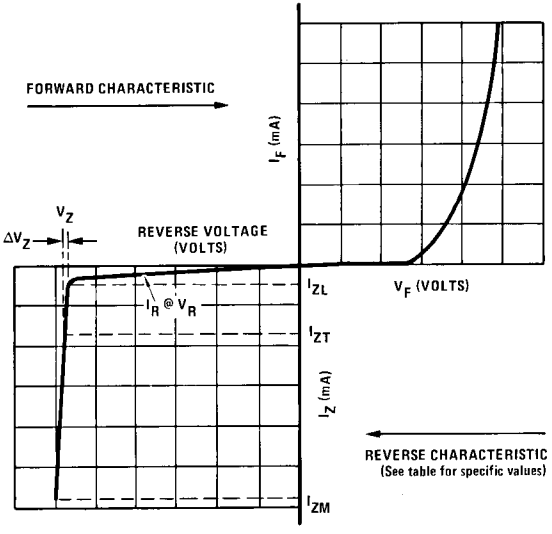


**FIGURE 3**

ZENER DIODE CHARACTERISTICS
AND SYMBOL IDENTIFICATION