

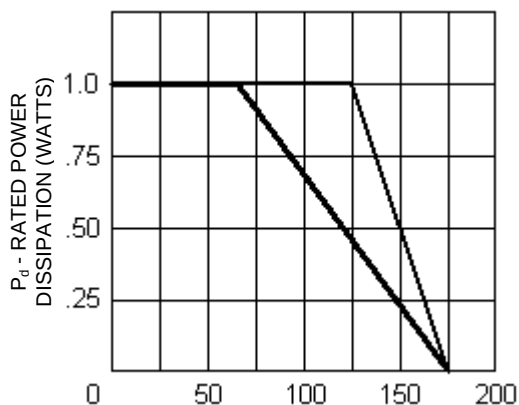
**\*ELECTRICAL CHARACTERISTICS @ 25°C**

| JEDEC<br>TYPE<br>NUMBER<br>(Note 1) | NOMINAL<br>ZENER<br>VOLTAGE<br>$V_Z @ I_{ZT}$<br>(Note 2) | ZENER<br>TEST<br>CURRENT<br>$I_{ZT}$ | MAXIMUM ZENER IMPEDANCE<br>(Note 3) |                   |     | MAXIMUM<br>ZENER<br>CURRENT<br>$I_{ZM}$<br>(Note 4) | MAXIMUM<br>REVERSE<br>LEAKAGE<br>CURRENT†<br>$I_R @ V_R$ |       | TYPICAL<br>TEMP. COEFF.<br>OF ZENER<br>VOLTAGE<br>$\alpha_{VZ}$ |
|-------------------------------------|-----------------------------------------------------------|--------------------------------------|-------------------------------------|-------------------|-----|-----------------------------------------------------|----------------------------------------------------------|-------|-----------------------------------------------------------------|
|                                     |                                                           |                                      | $Z_{ZT} @ I_{ZT}$                   | $Z_{ZK} @ I_{ZK}$ |     |                                                     | $\mu A$                                                  | Volts |                                                                 |
|                                     |                                                           |                                      | OHMS                                | OHMS              | mA  |                                                     |                                                          |       |                                                                 |
| 1N3016B                             | 6.8                                                       | 37                                   | 3.5                                 | 700               | 1.0 | 140                                                 | 150                                                      | 5.2   | .040                                                            |
| 1N3017B                             | 7.5                                                       | 34                                   | 4.0                                 | 700               | .5  | 125                                                 | 100                                                      | 5.7   | .045                                                            |
| 1N3018B                             | 8.2                                                       | 31                                   | 4.5                                 | 700               | .5  | 115                                                 | 50                                                       | 6.2   | .048                                                            |
| 1N3019B                             | 9.1                                                       | 28                                   | 5                                   | 700               | .5  | 105                                                 | 25                                                       | 6.9   | .050                                                            |
| 1N3020B                             | 10                                                        | 25                                   | 7                                   | 700               | .25 | 95                                                  | 25                                                       | 7.6   | .055                                                            |
| 1N3021B                             | 11                                                        | 23                                   | 8                                   | 700               | .25 | 85                                                  | 10                                                       | 8.4   | .060                                                            |
| 1N3022B                             | 12                                                        | 21                                   | 9                                   | 700               | .25 | 80                                                  | 10                                                       | 9.1   | .065                                                            |
| 1N3023B                             | 13                                                        | 19                                   | 10                                  | 700               | .25 | 74                                                  | 10                                                       | 9.9   | .065                                                            |
| 1N3024B                             | 15                                                        | 17                                   | 14                                  | 700               | .25 | 63                                                  | 10                                                       | 11.4  | .070                                                            |
| 1N3025B                             | 16                                                        | 15.5                                 | 16                                  | 700               | .25 | 60                                                  | 10                                                       | 12.2  | .070                                                            |
| 1N3026B                             | 18                                                        | 14                                   | 20                                  | 750               | .25 | 52                                                  | 10                                                       | 13.7  | .075                                                            |
| 1N3027B                             | 20                                                        | 12.5                                 | 22                                  | 750               | .25 | 47                                                  | 10                                                       | 15.2  | .075                                                            |
| 1N3028B                             | 22                                                        | 11.5                                 | 23                                  | 750               | .25 | 43                                                  | 10                                                       | 16.7  | .080                                                            |
| 1N3029B                             | 24                                                        | 10.5                                 | 25                                  | 750               | .25 | 40                                                  | 10                                                       | 18.2  | .080                                                            |
| 1N3030B                             | 27                                                        | 9.5                                  | 35                                  | 750               | .25 | 34                                                  | 10                                                       | 20.6  | .085                                                            |
| 1N3031B                             | 30                                                        | 8.5                                  | 40                                  | 1000              | .25 | 31                                                  | 10                                                       | 22.8  | .085                                                            |
| 1N3032B                             | 33                                                        | 7.5                                  | 45                                  | 1000              | .25 | 28                                                  | 10                                                       | 25.1  | .085                                                            |
| 1N3033B                             | 36                                                        | 7.0                                  | 50                                  | 1000              | .25 | 26                                                  | 10                                                       | 27.4  | .085                                                            |
| 1N3034B                             | 39                                                        | 6.5                                  | 60                                  | 1000              | .25 | 23                                                  | 10                                                       | 29.7  | .090                                                            |
| 1N3035B                             | 43                                                        | 6.0                                  | 70                                  | 1500              | .25 | 21                                                  | 10                                                       | 32.7  | .090                                                            |
| 1N3036B                             | 47                                                        | 5.5                                  | 80                                  | 1500              | .25 | 19                                                  | 10                                                       | 35.8  | .090                                                            |
| 1N3037B                             | 51                                                        | 5.0                                  | 95                                  | 1500              | .25 | 18                                                  | 10                                                       | 38.8  | .090                                                            |
| 1N3038B                             | 56                                                        | 4.5                                  | 110                                 | 2000              | .25 | 17                                                  | 10                                                       | 42.6  | .090                                                            |
| 1N3039B                             | 62                                                        | 4.0                                  | 125                                 | 2000              | .25 | 15                                                  | 10                                                       | 47.1  | .090                                                            |
| 1N3040B                             | 68                                                        | 3.7                                  | 150                                 | 2000              | .25 | 14                                                  | 10                                                       | 51.7  | .090                                                            |
| 1N3041B                             | 75                                                        | 3.3                                  | 175                                 | 2000              | .25 | 12                                                  | 10                                                       | 56.0  | .090                                                            |
| 1N3042B                             | 82                                                        | 3.0                                  | 200                                 | 3000              | .25 | 11                                                  | 10                                                       | 62.2  | .090                                                            |
| 1N3043B                             | 91                                                        | 2.8                                  | 250                                 | 3000              | .25 | 10                                                  | 10                                                       | 69.2  | .090                                                            |
| 1N3044B                             | 100                                                       | 2.5                                  | 350                                 | 3000              | .25 | 9.0                                                 | 10                                                       | 76.0  | .090                                                            |
| 1N3045B                             | 110                                                       | 2.3                                  | 450                                 | 4000              | .25 | 8.3                                                 | 10                                                       | 83.6  | .095                                                            |
| 1N3046B                             | 120                                                       | 2.0                                  | 550                                 | 4500              | .25 | 8.0                                                 | 10                                                       | 91.2  | .095                                                            |
| 1N3047B                             | 130                                                       | 1.9                                  | 700                                 | 5000              | .25 | 6.9                                                 | 10                                                       | 98.8  | .095                                                            |
| 1N3048B                             | 150                                                       | 1.7                                  | 1000                                | 6000              | .25 | 5.7                                                 | 10                                                       | 114.0 | .095                                                            |
| 1N3049B                             | 160                                                       | 1.6                                  | 1100                                | 6500              | .25 | 5.4                                                 | 10                                                       | 121.6 | .095                                                            |
| 1N3050B                             | 180                                                       | 1.4                                  | 1200                                | 7000              | .25 | 4.9                                                 | 10                                                       | 136.8 | .095                                                            |
| 1N3051B                             | 200                                                       | 1.2                                  | 1500                                | 8000              | .25 | 4.6                                                 | 10                                                       | 152.0 | .100                                                            |

\*JEDEC Registered Data. †Not JEDEC Data.

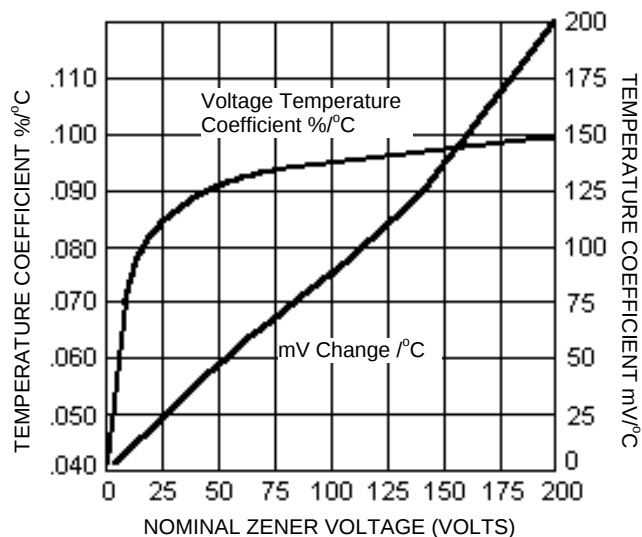
- NOTES:**
- When using JEDEC numbers, B suffix signifies +/-5% tolerance on nominal zener voltage. The suffix A is used to identify +/-10% tolerance; no suffix indicates +/-20% tolerance; suffix C is used to identify +/- 2%; and suffix D is used to identify +/- 1% tolerance.
  - Zener Voltage ( $V_Z$ ) is measured with junction in thermal equilibrium with still air at a temperature of 25°C. The test currents ( $I_{ZT}$ ) at nominal voltages provide a constant 0.25 watts.
  - The zener impedance is derived when a 60 cycle ac current having an rms 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 2 points to ensure a sharp knee on the breakdown curve and to eliminate unstable units. See MicroNote 202 for variation in dynamic impedance with different zener currents.
  - These values of  $I_{ZM}$  may often be exceeded in the case of individual diodes. The values shown are calculated for a unit at the high voltage end of its tolerance range. Allowance has also been made for the rise in zener voltage above  $V_{ZT}$  that results from zener impedance and the increase in junction temperature as a unit approaches thermal equilibrium at a dissipation of 1 watt. The  $I_{ZM}$  values shown for +/-5% tolerance units may be used with little error for +/-10% tolerance units, but should be reduced by 7% to include a +/-20% tolerance unit near the high voltage end of its tolerance range.

OUTLINE AND CIRCUIT

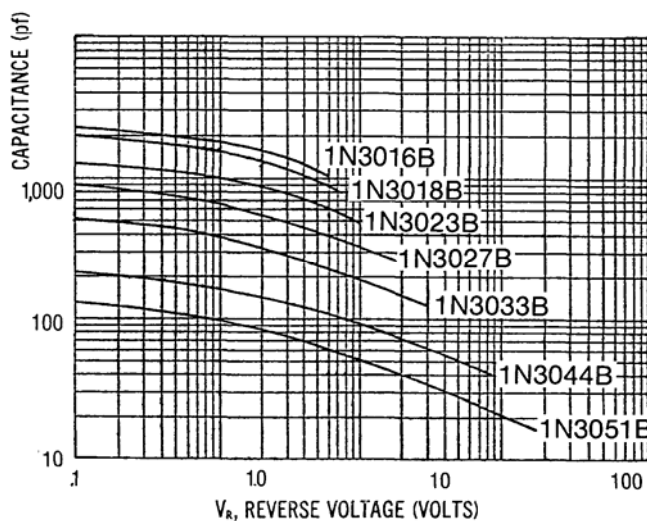


$T_L$  - Lead Temperature ( $^{\circ}\text{C}$ ) 3/8" from body  
or  $T_A$  on FR4 PC Board

**FIGURE 1**  
Power Derating Curve

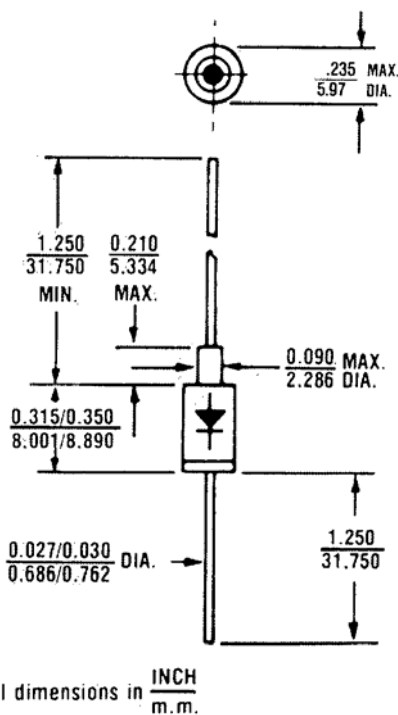


**FIGURE 2**  
Typical Zener Voltage Temperature  
Coeff. vs. Zener Voltage



**FIGURE 3**  
Typical Capacitance vs. Reverse Voltage for 1-Watt Zeners

PACKAGE DIMENSIONS



All dimensions in  $\frac{\text{INCH}}{\text{m.m.}}$   
**DO-13 (DO-202AA)**