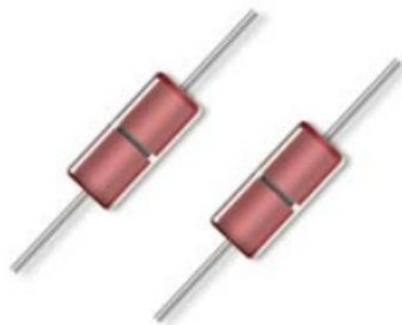


## Features

- Available in JAN, JANTX, JANTXV and JANS per MIL-PRF-19500/435
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively.
- 500 mW power handling
- Hermetically sealed axial-leaded glass DO-35 package.
- Also available in DO-213 MELF style package.



## Electrical Specifications: $T_A = +25^\circ\text{C}$ (unless otherwise specified)

| JEDEC TYPE<br>No.<br>(Note1) | Normal<br>Zener Voltage<br>VZ @ IZT | Zener Test<br>Current<br>IZT | Maximum<br>Zener Impedance<br>ZZT | Maximum<br>Reverse Current<br>IR @ VR |       | Maximum<br>Noise Density<br>ND @ IZT | Maximum<br>Zener Current<br>IZM |
|------------------------------|-------------------------------------|------------------------------|-----------------------------------|---------------------------------------|-------|--------------------------------------|---------------------------------|
|                              | Volts                               | $\mu\text{A}$                | Ohms                              | A                                     | Volts | $\mu\text{V}/\text{Sqrt (Hz)}$       | mA                              |
| 1N4099-1                     | 6.8                                 | 250                          | 200                               | 10                                    | 5.17  | 40                                   | 56                              |
| 1N4100-1                     | 7.5                                 | 250                          | 200                               | 10                                    | 5.7   | 40                                   | 51                              |
| 1N4101-1                     | 8.2                                 | 250                          | 200                               | 1                                     | 6.24  | 40                                   | 46                              |
| 1N4102-1                     | 8.7                                 | 250                          | 200                               | 1                                     | 6.61  | 40                                   | 44                              |
| 1N4103-1                     | 9.1                                 | 250                          | 200                               | 1                                     | 6.92  | 40                                   | 42                              |
| 1N4104-1                     | 10                                  | 250                          | 200                               | 1                                     | 7.6   | 40                                   | 38                              |
| 1N4105-1                     | 11                                  | 250                          | 200                               | 0.05                                  | 8.44  | 40                                   | 35                              |
| 1N4106-1                     | 12                                  | 250                          | 200                               | 0.05                                  | 8.12  | 40                                   | 32                              |
| 1N4107-1                     | 13                                  | 250                          | 200                               | 0.05                                  | 9.857 | 40                                   | 29                              |
| 1N4108-1                     | 14                                  | 250                          | 200                               | 0.05                                  | 10.65 | 40                                   | 27                              |
| 1N4109-1                     | 15                                  | 250                          | 100                               | 0.05                                  | 11.4  | 40                                   | 25                              |
| 1N4110-1                     | 16                                  | 250                          | 100                               | 0.05                                  | 12.15 | 40                                   | 24                              |
| 1N4111-1                     | 17                                  | 250                          | 100                               | 0.05                                  | 12.92 | 40                                   | 22                              |
| 1N4112-1                     | 18                                  | 250                          | 100                               | 0.05                                  | 13.67 | 40                                   | 21                              |
| 1N4113-1                     | 19                                  | 250                          | 150                               | 0.05                                  | 14.44 | 40                                   | 20                              |
| 1N4114-1                     | 20                                  | 250                          | 150                               | 0.01                                  | 15.2  | 40                                   | 19                              |
| 1N4115-1                     | 22                                  | 250                          | 150                               | 0.01                                  | 16.72 | 40                                   | 17                              |
| 1N4116-1                     | 24                                  | 250                          | 150                               | 0.01                                  | 18.25 | 40                                   | 16                              |
| 1N4117-1                     | 25                                  | 250                          | 150                               | 0.01                                  | 19    | 40                                   | 15                              |
| 1N4118-1                     | 27                                  | 250                          | 150                               | 0.01                                  | 20.45 | 40                                   | 14                              |
| 1N4119-1                     | 29                                  | 250                          | 200                               | 0.01                                  | 21.28 | 40                                   | 14                              |
| 1N4120-1                     | 30                                  | 250                          | 200                               | 0.01                                  | 22.8  | 40                                   | 13                              |

(Continued next page)

# 1N4099-1 thru 1N4135-1 & 1N4614-1 thru 1N4627-1

**MACOM**™

## Low Noise Zener Diode Series

Rev. V3

**Electrical Specifications:  $T_A = +25^\circ\text{C}$  (unless otherwise specified)**

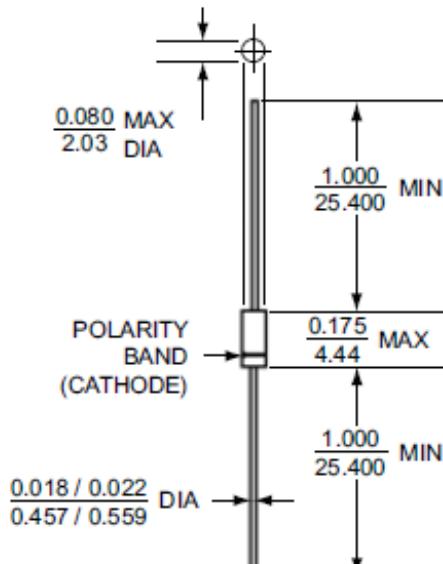
| JEDEC TYPE<br>No.<br>(Note1) | Normal<br>Zener Voltage<br>VZ @ IZT | Zener Test<br>Current<br>IZT | Maximum<br>Zener Impedance<br>ZZT | Maximum<br>Reverse Current<br>IR @ VR |       | Maximum<br>Noise Density<br>ND @ IZT | Maximum<br>Zener Current<br>IZM |
|------------------------------|-------------------------------------|------------------------------|-----------------------------------|---------------------------------------|-------|--------------------------------------|---------------------------------|
|                              | Volts                               | $\mu\text{A}$                | Ohms                              | A                                     | Volts | $\mu\text{V}/\text{Sqrt (Hz)}$       | mA                              |
| 1N4121-1                     | 33                                  | 250                          | 200                               | 0.01                                  | 25.08 | 40                                   | 12                              |
| 1N4122-1                     | 36                                  | 250                          | 200                               | 0.01                                  | 27.38 | 40                                   | 11                              |
| 1N4123-1                     | 39                                  | 250                          | 200                               | 0.01                                  | 29.65 | 40                                   | 9.8                             |
| 1N4124-1                     | 43                                  | 250                          | 250                               | 0.01                                  | 32.65 | 40                                   | 8.9                             |
| 1N4125-1                     | 47                                  | 250                          | 250                               | 0.01                                  | 35.75 | 40                                   | 8.1                             |
| 1N4126-1                     | 51                                  | 250                          | 300                               | 0.01                                  | 38.76 | 40                                   | 7.5                             |
| 1N4127-1                     | 56                                  | 250                          | 300                               | 0.01                                  | 42.6  | 40                                   | 6.7                             |
| 1N4128-1                     | 60                                  | 250                          | 400                               | 0.01                                  | 45.6  | 40                                   | 6.4                             |
| 1N4129-1                     | 62                                  | 250                          | 500                               | 0.01                                  | 47.1  | 40                                   | 6.1                             |
| 1N4130-1                     | 68                                  | 250                          | 700                               | 0.01                                  | 51.68 | 40                                   | 5.6                             |
| 1N4131-1                     | 75                                  | 250                          | 700                               | 0.01                                  | 57    | 40                                   | 5.1                             |
| 1N4132-1                     | 82                                  | 250                          | 800                               | 0.01                                  | 62.32 | 40                                   | 4.6                             |
| 1N4133-1                     | 87                                  | 250                          | 1000                              | 0.01                                  | 66.12 | 40                                   | 4.4                             |
| 1N4134-1                     | 91                                  | 250                          | 1200                              | 0.01                                  | 69.16 | 40                                   | 4.2                             |
| 1N4135-1                     | 100                                 | 250                          | 1500                              | 0.01                                  | 76    | 40                                   | 3                               |
| 1N4614-1                     | 1.8                                 | 250                          | 1200                              | 7.5                                   | 1     | 1                                    | 120                             |
| 1N4615-1                     | 2                                   | 250                          | 1250                              | 5                                     | 1     | 1                                    | 110                             |
| 1N4616-1                     | 2.2                                 | 250                          | 1300                              | 4                                     | 1     | 1                                    | 100                             |
| 1N4617-1                     | 2.4                                 | 250                          | 1400                              | 2                                     | 1     | 1                                    | 95                              |
| 1N4618-1                     | 2.7                                 | 250                          | 1500                              | 1                                     | 1     | 1                                    | 90                              |
| 1N4619-1                     | 3                                   | 250                          | 1600                              | 0.8                                   | 1     | 1                                    | 87                              |
| 1N4620-1                     | 3.3                                 | 250                          | 1650                              | 7.5                                   | 1.5   | 1                                    | 85                              |
| 1N4621-1                     | 3.6                                 | 250                          | 1700                              | 7.5                                   | 2     | 1                                    | 83                              |
| 1N4622-1                     | 3.9                                 | 250                          | 1650                              | 5                                     | 2     | 1                                    | 80                              |
| 1N4623-1                     | 4.3                                 | 250                          | 1600                              | 4                                     | 2     | 1                                    | 77                              |
| 1N4624-1                     | 4.7                                 | 250                          | 1550                              | 10                                    | 2     | 1                                    | 75                              |
| 1N4625-1                     | 5.1                                 | 250                          | 1500                              | 10                                    | 3     | 2                                    | 70                              |
| 1N4626-1                     | 5.6                                 | 250                          | 1400                              | 10                                    | 4     | 4                                    | 65                              |
| 1N4627-1                     | 6.2                                 | 250                          | 1200                              | 10                                    | 5     | 5                                    | 61                              |

1. The JEDEC type numbers shown with no suffix have a standard tolerance of  $\pm 5\%$  on the nominal Zener voltage; suffix C is used to identify  $\pm 2\%$ ; and suffix D is used identify  $\pm 1\%$  tolerance. Vz is measured with the diode in thermal equilibrium in  $25^\circ\text{C}$  still air.

## Absolute Maximum Ratings

| Parameter                       | Absolute Maximum |
|---------------------------------|------------------|
| Steady State Power Dissipation  | 0.5 W            |
| Forward Voltage                 | 1.1 V @ 200 mA   |
| Thermal Resistance              | 250°C/W          |
| Operating & Storage Temperature | -65°C to +175°C  |

## Outline Drawing



All dimensions in  $\frac{\text{INCH}}{\text{mm}}$

## LEADED DESIGN DATA

**CASE:** Hermetically sealed, DO – 35

**LEAD MATERIAL:** Copper clad steel

**LEAD FINISH:** Tin / Lead

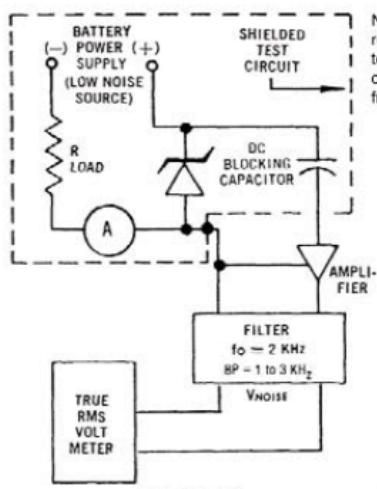
**THERMAL RESISTANCE:** ( $R_{\Theta JEC}$ ): 70 °C/W maximum at  $L = 0.375$  in

**THERMAL IMPEDANCE:** ( $Z_{\Theta JX}$ ): 12 °C/W maximum

**POLARITY:** Cathode end is banded.

**MOUNTING POSITION:** Any

## Circuits & graphs



Noise density, ( $N_0$ ) is specified in microvolt-rms per square-root-hertz. Actual measurement is performed using a 1 KHz to 3 KHz frequency bandpass filter at a constant Zener test current ( $I_T$ ) AT 25°C ambient temperature.  $N_0$  is calculated from the formula.

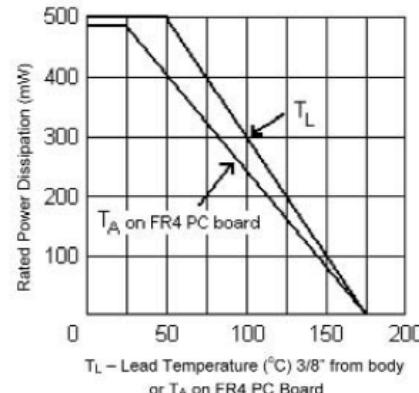


FIGURE 2 – POWER DERATING CURVE

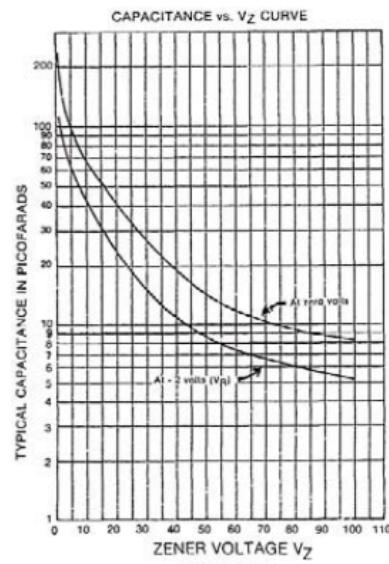


FIGURE 3  
CAPACITANCE vs. ZENER VOLTAGE (TYPICAL)

**1N4099-1 thru 1N4135-1 &  
1N4614-1 thru 1N4627-1**



**Low Noise Zener Diode Series**

**Rev. V3**

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