

- AVAILABLE IN JAN, JANTX, JANTXV, AND JANS  
PER MIL-PRF-19500/533
- 500 mW ZENER DIODES
- NON CAVITY CONSTRUCTION
- METALLURGICALLY BONDED

**1N6309  
THRU  
1N6320**

## MAXIMUM RATINGS

Operating Temperature: -65°C to +175°C

Storage Temperature: -65°C to +175°C

Power Dissipation: 500 mW @  $T_L = +75^\circ\text{C}$  @  $L = 3/8"$

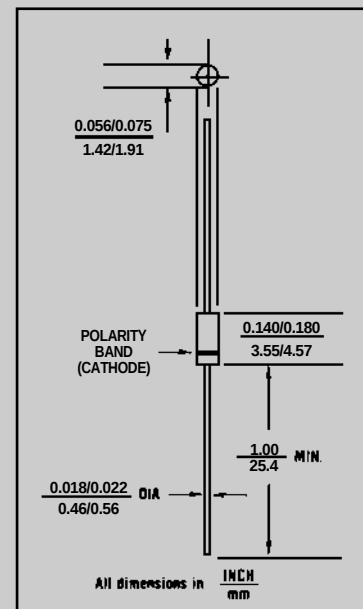
Power Derating: 5mW/°C above  $T_L = +75^\circ\text{C}$

Forward Voltage: 1.4V dc @  $I_F = 1\text{A}$  dc (Pulsed)

## ELECTRICAL CHARACTERISTICS @ 25°C, unless otherwise specified

| TYPE   | V <sub>Z2</sub><br>NOM.<br>±5% @<br>I <sub>Z2</sub> | V <sub>Z1</sub><br>MIN.<br>@ I <sub>Z1</sub><br>250μA | I <sub>Z2</sub><br>TEST<br>CURRENT | Z <sub>Z</sub><br>@<br>I <sub>Z2</sub> | Z <sub>ZK</sub><br>@<br>250μA | I <sub>ZM</sub> | V <sub>Z</sub> (reg)<br>Δ V <sub>Z</sub><br>(1) | I <sub>ZSM</sub><br>SURGE | V <sub>R</sub> | I <sub>R1</sub><br>@<br>25°C | I <sub>R2</sub><br>@<br>TA =<br>150°C | N <sub>D</sub><br>@ 250 μA<br>1-3 kHz |
|--------|-----------------------------------------------------|-------------------------------------------------------|------------------------------------|----------------------------------------|-------------------------------|-----------------|-------------------------------------------------|---------------------------|----------------|------------------------------|---------------------------------------|---------------------------------------|
|        | VOLTS                                               | VOLTS                                                 | mA                                 | OHMS                                   | OHMS                          | mA              | VOLTS                                           | AMPS                      | VOLTS          | μA                           | μA                                    | μ                                     |
| 1N6309 | 2.4                                                 | 1.1                                                   | 20                                 | 30                                     | 1200                          | 177             | 1.5                                             | 2.5                       | 1.0            | 100                          | 200                                   | 1.0                                   |
| 1N6310 | 2.7                                                 | 1.2                                                   | 20                                 | 30                                     | 1300                          | 157             | 1.5                                             | 2.2                       | 1.0            | 60                           | 150                                   | 1.0                                   |
| 1N6311 | 3.0                                                 | 1.3                                                   | 20                                 | 29                                     | 1400                          | 141             | 1.5                                             | 2.0                       | 1.0            | 30                           | 100                                   | 1.0                                   |
| 1N6312 | 3.3                                                 | 1.5                                                   | 20                                 | 24                                     | 1400                          | 128             | 1.6                                             | 1.8                       | 1.0            | 5.0                          | 20                                    | 1.0                                   |
| 1N6313 | 3.6                                                 | 1.8                                                   | 20                                 | 22                                     | 1400                          | 117             | 1.6                                             | 1.65                      | 1.0            | 3.0                          | 12                                    | 1.0                                   |
| 1N6314 | 3.9                                                 | 2.0                                                   | 20                                 | 20                                     | 1700                          | 108             | 1.6                                             | 1.5                       | 1.0            | 2.0                          | 12                                    | 1.0                                   |
| 1N6315 | 4.3                                                 | 2.4                                                   | 20                                 | 18                                     | 1400                          | 99              | 0.9                                             | 1.4                       | 1.0            | 2.0                          | 12                                    | 1.0                                   |
| 1N6316 | 4.7                                                 | 2.8                                                   | 20                                 | 16                                     | 1500                          | 90              | 0.5                                             | 1.27                      | 1.5            | 5.0                          | 12                                    | 1.0                                   |
| 1N6317 | 5.1                                                 | 3.3                                                   | 20                                 | 14                                     | 1300                          | 83              | 0.4                                             | 1.17                      | 2.0            | 5.0                          | 12                                    | 1.0                                   |
| 1N6318 | 5.6                                                 | 4.3                                                   | 20                                 | 8.0                                    | 1200                          | 76              | 0.4                                             | 1.10                      | 2.5            | 5.0                          | 10                                    | 2.0                                   |
| 1N6319 | 6.2                                                 | 5.2                                                   | 20                                 | 3.0                                    | 800                           | 68              | 0.3                                             | 0.97                      | 3.5            | 5.0                          | 10                                    | 5.0                                   |
| 1N6320 | 6.8                                                 | 6.0                                                   | 20                                 | 3.0                                    | 400                           | 63              | 0.35                                            | 1.23                      | 4.0            | 2.0                          | 50                                    | 5.0                                   |

**NOTE 1** Δ V<sub>Z</sub> = V<sub>Z</sub> @ 20 mAdc minus V<sub>Z</sub> @ 2 mAdc



**FIGURE 1**

## DESIGN DATA

**CASE:** Hermetically sealed, Glass "D"  
Body per MIL-PRF- 19500/533. D-5D

**LEAD MATERIAL:** Copper clad steel

**LEAD FINISH:** Tin / Lead

**THERMAL RESISTANCE:** (R<sub>ΘJL</sub>): 250  
°C/W maximum

**THERMAL IMPEDANCE:** (Z<sub>ΘJX</sub>): 15  
°C/W maximum

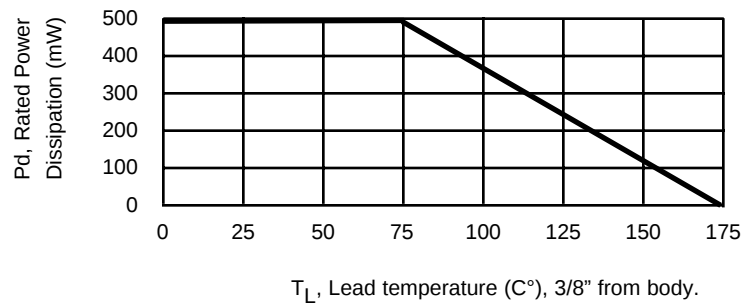
**POLARITY:** Diode to be operated with  
the banded (cathode) end positive.

**MOUNTING POSITION:** Any



# 1N6309 thru 1N6320

FIGURE 2



POWER DERATING CURVE

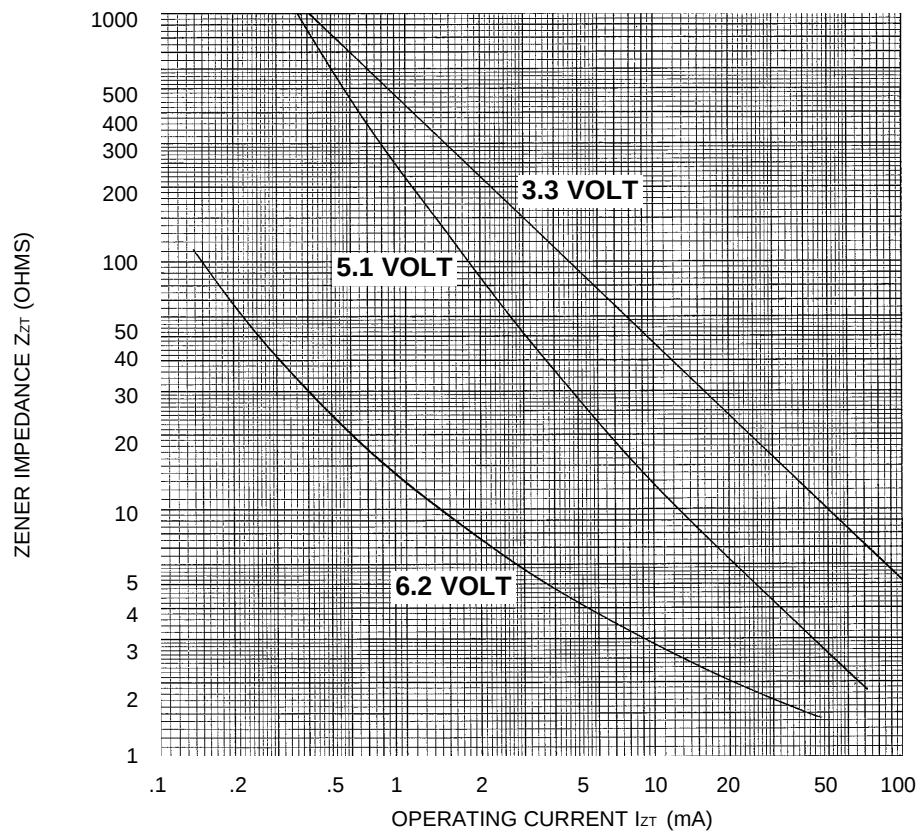


FIGURE 3

ZENER IMPEDANCE VS. OPERATING CURRENT