

Zener Voltage Regulator Series

1N6321US thru 1N6349US



Features

- JAN, JANTX, JANTXV and JANS available per MIL-PRF-19500/533
- Voidless hermetically sealed glass package
- Triple-layer passivation
- Internal "Category I" Metallurgical bonds for 1N6321US thru 1N6349US
- Also available in axial-leaded glass DO-35 style package.



Description

This Zener Voltage Regulator series is military qualified to MIL-PRF-19500/533 and is ideal for high reliability applications where a failure cannot be tolerated. These industry-recognized 0.5 Watt Zener Voltage Regulators are hermetically sealed with voidless-glass construction using an internal metallurgical bond. It includes Zener selections from 7.5 to 110 volts in standard 5% tolerances as well as tighter tolerances identified by different suffix letters on the part number. They are also available in surface-mount packages. Aeroflex / Metelics also offers numerous other Zener products to meet higher and lower power ratings in both thru-hole and surface mount packages.

Applications / Benefits

- DO-213AA, Hermetically sealed glass case. (MELF, SOD-80, LL34)
- Regulates voltage over a broad operating current and temperature range
- Extensive selection from 7.5 to 110 V
- Standard voltage tolerances are plus/minus 5% with no suffix
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Extremely robust construction
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020

Maximum Ratings

- Operating Temperature: -65°C to $+175^{\circ}\text{C}$
- Storage Temperature: -65°C to $+175^{\circ}\text{C}$
- Power Dissipation: $0.5\text{ Watts}@ T_L = 75^{\circ}\text{C}$
- Thermal Resistance: 200°C/W junction to lead at $3/8$ inch (10 mrn) from body
- Thermal Impedance: 15°C/W at 10 ms
- Forward Voltage: 1.4 V at 1.0 A



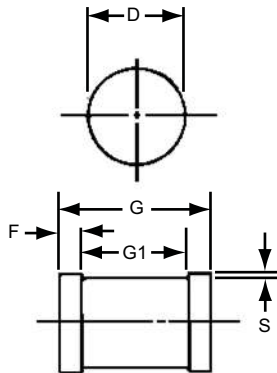
Electrical Characteristics

| TYPE Note 1 | V _{Z2} Nominal +/-5% @ I _{Z2} | V _{Z1} Nominal +/-5% @ I _{Z1} | Test Current I _{Z2} | Dynamic Impedance Z _Z @ I _{Z2} | Dynamic Impedance Z _{Zk} @ 250 mA | Maximum Current I _{ZM} | Voltage Regulation V _Z (reg) (ΔV _Z) Note 2 | Surge Current @ 8.3 ms sq. wave I _{ZSM} | Reverse Current V _R | Maximum Reverse Current I _{R1} @ V _R 25 °C | Maximum Reverse Current I _{R2} @ V _R 150 °C | Maximum Noise Density ND @ 250 μA 1 to 3 kHz | Maximum Temperature Coefficient Zener Voltage α _{VZ} | Maximum Capacitance @ 0 V |
|----------------|--|--|------------------------------------|--|---|---------------------------------------|---|--|--------------------------------------|--|---|---|--|---------------------------------|
| | Volts | Volts | mA | Ohms | Ohms | mA | Volts | Amps | Volts | μA | μA | mV / √Hz | %/°C | pF |
| 1N6321US | 7.5 | 6.6 | 20 | 4 | 400 | 57 | 0.4 | 1.16 | 5.0 | 2.0 | 10 | 5.0 | +0.068 | 900 |
| 1N6322US | 8.2 | 7.5 | 20 | 5 | 400 | 52 | 0.4 | 1.07 | 6.0 | 1.0 | 10 | 20 | +0.075 | 800 |
| 1N6323US | 9.1 | 8.4 | 20 | 6 | 500 | 47 | 0.5 | 0.97 | 7.0 | 1.0 | 10 | 40 | +0.076 | 700 |
| 1N6324US | 10 | 9.1 | 20 | 6 | 500 | 43 | 0.5 | 0.89 | 8.0 | 1.0 | 10 | 80 | +0.079 | 600 |
| 1N6325US | 11 | 10.0 | 20 | 7 | 550 | 39 | 0.5 | 0.83 | 8.5 | 1.0 | 10 | 100 | +0.082 | 500 |
| 1N6326US | 12 | 11.0 | 20 | 7 | 550 | 35 | 0.55 | 0.77 | 9.0 | 1.0 | 10 | 100 | +0.083 | 450 |
| 1N6327US | 13 | 11.9 | 9.5 | 8 | 550 | 33 | 0.55 | 0.71 | 9.9 | 0.05 | 10 | 100 | +0.079 | 400 |
| 1N6328US | 15 | 13.8 | 8.5 | 10 | 600 | 28 | 0.70 | 0.62 | 11 | 0.05 | 10 | 100 | +0.082 | 350 |
| 1N6329US | 16 | 14.7 | 7.8 | 12 | 600 | 27 | 0.75 | 0.58 | 12 | 0.05 | 10 | 100 | +0.083 | 325 |
| 1N6330US | 18 | 16.6 | 7.0 | 14 | 600 | 24 | 0.85 | 0.52 | 14 | 0.05 | 10 | 100 | +0.085 | 300 |
| 1N6331US | 20 | 18.5 | 6.2 | 18 | 500 | 21 | 0.95 | 0.47 | 15 | 0.05 | 10 | 100 | +0.086 | 275 |
| 1N6332US | 22 | 20.4 | 5.6 | 20 | 500 | 19 | 1.05 | 0.43 | 17 | 0.05 | 10 | 100 | +0.087 | 260 |
| 1N6333US | 24 | 22.3 | 5.2 | 24 | 500 | 18 | 1.15 | 0.39 | 18 | 0.05 | 10 | 100 | +0.088 | 240 |
| 1N6334US | 27 | 25.2 | 4.6 | 27 | 500 | 16 | 1.30 | 0.35 | 21 | 0.05 | 10 | 100 | +0.090 | 220 |
| 1N6335US | 30 | 28.0 | 4.2 | 32 | 500 | 14 | 1.45 | 0.31 | 23 | 0.05 | 10 | 100 | +0.091 | 200 |
| 1N6336US | 33 | 30.9 | 3.8 | 40 | 600 | 13 | 1.60 | 0.28 | 25 | 0.05 | 10 | 100 | +0.092 | 185 |
| 1N6337US | 36 | 33.7 | 3.4 | 50 | 600 | 12 | 1.75 | 0.26 | 27 | 0.05 | 10 | 100 | +0.093 | 175 |
| 1N6338US | 39 | 36.6 | 3.2 | 55 | 700 | 11 | 1.90 | 0.24 | 30 | 0.05 | 10 | 100 | +0.094 | 170 |
| 1N6339US | 43 | 40.4 | 3.0 | 65 | 800 | 9.9 | 2.10 | 0.22 | 33 | 0.05 | 10 | 80 | +0.095 | 165 |
| 1N6340US | 47 | 44.2 | 2.7 | 75 | 900 | 9.0 | 2.25 | 0.20 | 36 | 0.05 | 10 | 80 | +0.095 | 155 |
| 1N6341US | 51 | 48.0 | 2.5 | 85 | 1000 | 8.3 | 2.50 | 0.18 | 39 | 0.05 | 10 | 80 | +0.096 | 145 |
| 1N6342US | 56 | 52.7 | 2.2 | 100 | 1200 | 7.6 | 2.70 | 0.17 | 43 | 0.05 | 10 | 80 | +0.007 | 135 |
| 1N6343US | 62 | 58.4 | 2.0 | 125 | 1300 | 6.8 | 2.90 | 0.15 | 47 | 0.05 | 10 | 80 | +0.097 | 130 |
| 1N6344US | 68 | 64.1 | 2.8 | 155 | 1500 | 6.3 | 3.20 | 0.13 | 52 | 0.05 | 10 | 80 | +0.098 | 120 |
| 1N6345US | 75 | 70.8 | 1.7 | 180 | 1600 | 5.7 | 3.40 | 0.125 | 56 | 0.05 | 10 | 80 | +0.098 | 110 |
| 1N6346US | 82 | 77.4 | 1.5 | 220 | 1800 | 5.2 | 3.80 | 0.115 | 62 | 0.05 | 10 | 80 | +0.099 | 105 |
| 1N6347US | 91 | 86.0 | 1.4 | 270 | 2100 | 4.7 | 4.20 | 0.100 | 69 | 0.05 | 10 | 80 | +0.099 | 100 |
| 1N6348US | 100 | 94.5 | 1.3 | 340 | 2400 | 4.2 | 4.40 | 0.095 | 76 | 0.05 | 10 | 80 | +0.110 | 85 |
| 1N6349US | 110 | 104 | 1.1 | 500 | 2800 | 3.9 | 4.80 | 0.085 | 84 | 0.05 | 10 | 80 | +0.110 | 90 |

NOTE 1: Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively, e.g. 1N6309C, 1N6335D, etc.

NOTE2: Voltage regulation V_{Z(reg)} is the measured voltage change at thermal equilibrium between the current of 10% and 50% of Maximum Zener Current I_{ZM} when the lead temperature is maintained at 25°C = +8°C, -2°C.

Outline Drawing



| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| D | 1.60 | 1.70 | 0.063 | 0.067 |
| F | 0.41 | 0.55 | 0.016 | 0.022 |
| G | 3.30 | 3.70 | .130 | .146 |
| G1 | 2.54 REF. | | .100 REF. | |
| S | 0.03 MIN. | | .001 MIN. | |

LEADED DESIGN DATA

CASE: DO-213AA, Hermetically sealed glass case. (MELF, SOD-80, LL34)

LEAD FINISH: Tin / Lead

THERMAL RESISTANCE: ($R_{\theta JEC}$): 100 °C/W maximum at L = 0 inch

THERMAL IMPEDANCE: ($Z_{\theta JX}$): 25 °C/W maximum

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

MOUNTING POSITION: Any.

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.