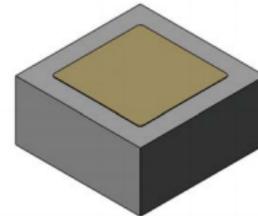


Features

- Low reverse Leakage Characteristics
- Low Noise Characteristics
- All Junctions Completely Protected with Silicon Dioxide
- Electronically Equivalent to 1N6309 - 1N6349
- Compatible with All Wire Bonding and Die Attach Techniques
- JANHC, JANKC available per MIL-PRF-19500/533



Description

This zener diode chip series is military qualified to MIL-PRF-19500/533 and is ideal for high reliability applications where a failure cannot be tolerated. It includes zener selections from 2.4 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 and axial lead packages. VPT Components also offers numerous other zener products to meet higher and lower power ratings in both thru-hole and surface mount packages.

Electrical Specifications

| Part Types ¹ | Zener Voltage | Test Current | Dynamic Impedance | | Current Maximum Zener | Voltage Reg. ² | Reverse Current | | Noise Density |
|-------------------------|---------------|--------------|-------------------|-------------------|-----------------------|---------------------------|---------------------------------------|-------|------------------------------|
| | +/-5% @ IZ1 | IZT | ZZT @ IZ2 | ZZK @ 250 μ A | IZM | VZ (reg.) | I _{R1} @ V _R 25°C | | @ 250 mA 1 to 3 kHz |
| | Volts | mA | Ohms | | mA | Volts | μ A | Volts | μ V / $\sqrt{\text{Hz}}$ |
| | Nom. | Typ. | Typ. | | Max. | Typ. | Max. | | Max. |
| CD6309 | 2.4 | 20 | 30 | 1200 | 177 | 1.5 | 100 | 1.0 | 1 |
| CD6310 | 2.7 | 20 | 30 | 1300 | 157 | 1.5 | 60 | 1.0 | 1 |
| CD6311 | 3.0 | 20 | 29 | 1400 | 141 | 1.5 | 30 | 1.0 | 1 |
| CD6312 | 3.3 | 20 | 27 | 1400 | 128 | 1.6 | 5 | 1.0 | 1 |
| CD6313 | 3.6 | 20 | 25 | 1400 | 117 | 1.6 | 3 | 1.0 | 1 |
| CD6314 | 3.9 | 20 | 23 | 1700 | 108 | 1.6 | 2 | 1.0 | 1 |
| CD6315 | 4.3 | 20 | 20 | 1900 | 99 | 0.90 | 2 | 1.0 | 1 |
| CD6316 | 4.7 | 20 | 17 | 1500 | 90 | 0.50 | 5 | 1.5 | 1 |
| CD6317 | 5.1 | 20 | 14 | 1300 | 83 | 0.40 | 5 | 2.0 | 1 |
| CD6318 | 5.6 | 20 | 8 | 1200 | 76 | 0.40 | 5 | 2.5 | 2 |
| CD6319 | 6.2 | 20 | 3 | 800 | 68 | 0.30 | 5 | 3.5 | 5 |
| CD6320 | 6.8 | 20 | 3 | 400 | 63 | 0.35 | 2 | 4.0 | 5 |
| CD6321 | 7.5 | 20 | 4 | 400 | 57 | 0.40 | 2 | 5.0 | 5 |
| CD6322 | 8.2 | 20 | 5 | 400 | 52 | 0.40 | 1 | 6.0 | 20 |

(Continued next page)

Electrical Specifications

| Part Types ¹ | Zener Voltage | Test Current | Dynamic Impedance | | Current Maxium Zener | Voltage Reg. ² | Reverse Current | | Noise Density |
|-------------------------|---------------|--------------|-------------------|-------------------|----------------------|---------------------------|---------------------------------------|-------|------------------------------|
| | +/-5% @ IZ1 | IZT | ZZT @ IZ2 | ZZK @ 250 μ A | IZM | VZ (reg.) | I _{R1} @ V _R 25°C | | @ 250 mA 1 to 3 kHz |
| | Volts | mA | Ohms | | mA | Volts | μ A | Volts | μ V / $\sqrt{\text{Hz}}$ |
| | Nom. | Typ. | Typ. | | Max. | Typ. | Max. | | Max. |
| CD6323 | 9.1 | 20 | 6 | 500 | 47 | 0.50 | 1 | 7.0 | 40 |
| CD6324 | 10 | 20 | 6 | 500 | 43 | 0.50 | 1 | 8.0 | 80 |
| CD6325 | 11 | 20 | 7 | 550 | 39 | 0.50 | 1.0 | 8.5 | 100 |
| CD6326 | 12 | 20 | 7 | 550 | 35 | 0.55 | 1.0 | 9.0 | 100 |
| CD6327 | 13 | 12 | 8 | 550 | 33 | 0.55 | 0.05 | 9.9 | 100 |
| CD6328 | 15 | 8.5 | 10 | 600 | 28 | 0.70 | 0.05 | 11 | 100 |
| CD6329 | 16 | 7.8 | 12 | 600 | 27 | 0.75 | 0.05 | 12 | 100 |
| CD6330 | 18 | 7.0 | 14 | 600 | 24 | 0.85 | 0.05 | 14 | 100 |
| CD6331 | 20 | 6.2 | 18 | 500 | 21 | 0.95 | 0.05 | 15 | 100 |
| CD6332 | 22 | 5.6 | 20 | 500 | 19 | 1.05 | 0.05 | 17 | 100 |
| CD6333 | 24 | 5.2 | 24 | 500 | 18 | 1.15 | 0.05 | 18 | 100 |
| CD6334 | 27 | 4.6 | 27 | 500 | 16 | 1.30 | 0.05 | 21 | 100 |
| CD6335 | 30 | 4.2 | 32 | 500 | 14 | 1.45 | 0.05 | 23 | 100 |
| CD6336 | 33 | 3.8 | 40 | 600 | 13 | 1.60 | 0.05 | 25 | 100 |
| CD6337 | 36 | 3.4 | 50 | 600 | 12 | 1.75 | 0.05 | 27 | 100 |
| CD6338 | 39 | 3.2 | 55 | 700 | 11 | 1.90 | 0.05 | 30 | 100 |
| CD6339 | 43 | 3.0 | 65 | 800 | 9.9 | 2.10 | 0.05 | 33 | 80 |
| CD6340 | 47 | 2.7 | 75 | 900 | 9.0 | 2.25 | 0.05 | 36 | 80 |
| CD6341 | 51 | 2.5 | 85 | 1000 | 8.3 | 2.50 | 0.05 | 39 | 80 |
| CD6342 | 56 | 2.2 | 100 | 1200 | 7.6 | 2.70 | 0.05 | 43 | 80 |
| CD6343 | 62 | 2.0 | 125 | 1300 | 6.8 | 2.90 | 0.05 | 47 | 80 |
| CD6344 | 68 | 1.8 | 155 | 1500 | 6.3 | 3.20 | 0.05 | 52 | 80 |
| CD6345 | 75 | 1.7 | 180 | 1600 | 5.7 | 3.40 | 0.05 | 56 | 80 |
| CD6346 | 82 | 1.5 | 220 | 1800 | 5.2 | 3.80 | 0.05 | 62 | 80 |
| CD6347 | 91 | 1.4 | 270 | 2100 | 4.7 | 4.20 | 0.05 | 69 | 80 |
| CD6348 | 100 | 1.3 | 340 | 2400 | 4.3 | 4.40 | 0.05 | 76 | 80 |
| CD6349 | 110 | 1.1 | 500 | 2800 | 3.9 | 4.80 | 0.05 | 84 | 80 |

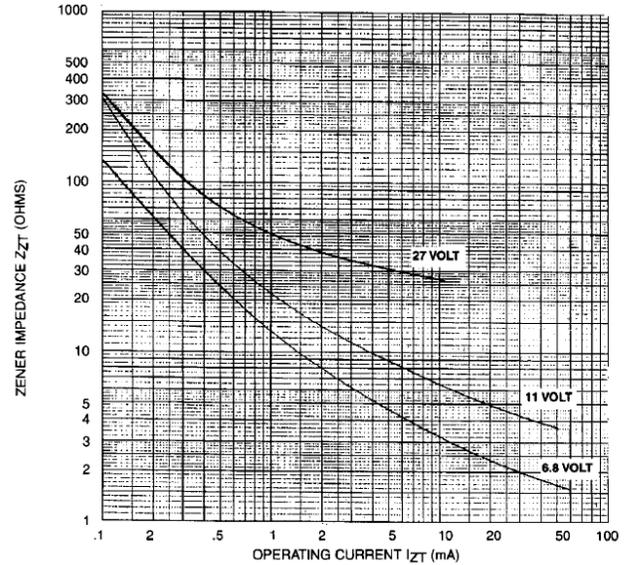
1. The JEDEC type numbers shown above have a standard tolerance of $\pm 5\%$ of the nominal Zener voltage. Nominal Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$. Suffix "C" signifies $\pm 2\%$, suffix "D" signifies $\pm 1\%$ tolerance.
2. $V_z \text{ REG} = V_z @ 50\% \text{ of } I_{zm} \text{ minus } V_z @ 10\% \text{ of } I_{zm}$.
3. Zener impedance is derived by superimposing on 1 ZZT A 60 Hz rms a.c. current equal to 10% of 1 ZZT or 1 ZZK.

Absolute Maximum Ratings^{4,5}

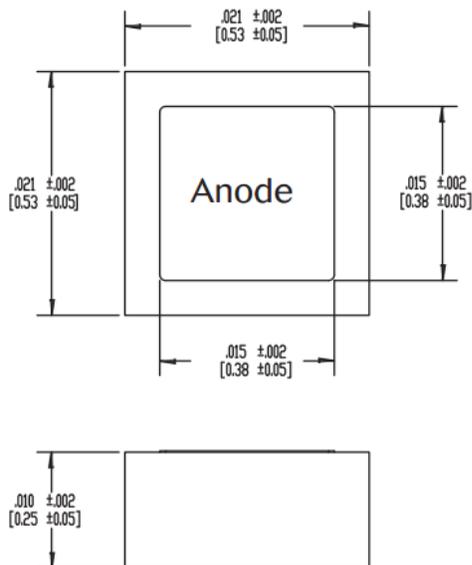
| Parameter | Absolute Maximum |
|-----------------------|------------------|
| Forward Voltage | 1.4 V @ 1 A |
| Storage Temperature | -65°C to +175°C |
| Operating Temperature | -65°C to +175°C |

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- VPT Components does not recommend sustained operation near these survivability limits.

Zener Impedance vs. Operating Current



Die



Metallization: Top: (anode) AL
 Back: (cathode) Au
 AL Thickness: 25,000 Å Minimum
 Gold Thickness: 3,500 Å Minimum
 Chip Thickness: 10 mils
 Circuit Layout Data: For Zener operation, cathode must be operated positive with respect to anode.

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