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NTE5174A thru NTE5232A Zener Diode, 10 Watt ±5% Tolerance

Features:

- Zener Voltage 3.9V to 200V
- Also Available in Reverse Polarity (NTE5174AK thru NTE5232AK)
- DO4 Stud Mount Package

Absolute Maximum Ratings:

Forward Voltage ($I_F = 2A$), V_F 1.5V
 DC Power Dissipation, P_D 10W
 Derate Above 50°C 80mW/°C
 Operating Junction Temperature Range, T_{opr} -65° to +175°C
 Storage Temperature Range, T_{stg} -65° to +175°C

Electrical Characteristics: ($T_C = +30°C$, unless otherwise specified)

| NTE Type Number (Note 1) | Nominal Zener Voltage $V_Z @ I_{zt}$ (Note 2) | Zener Test Current (I_{zt}) | Maximum Dynamic Impedance (Note 3) | | Maximum DC Zener Current* (I_{zm}) (Note 4) | Typical Temperature Coefficient α_{vz} | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------------------|---|------------------------------------|---------------------------------------|-------------------------|---|--|--|-------|
| | | | $Z_{zt} @ I_{zt}$ | $Z_{zk} @ 1mA (I_{zk})$ | | | μA | Volts |
| | | | Ohms | Ohms | | | mA | %/°C |
| NTE5174A | 3.9 | 640 | 2.0 | 400 | 2380 | -.046 | 100 | 0.5 |
| NTE5175A | 4.3 | 580 | 1.5 | 400 | 2130 | -.033 | 100 | 0.5 |
| NTE5176A | 4.7 | 530 | 1.2 | 500 | 1940 | -.015 | 50 | 1.0 |
| NTE5177A | 5.1 | 490 | 1.1 | 550 | 1780 | ±.010 | 10 | 1.0 |
| NTE5178A | 5.6 | 445 | 1.0 | 600 | 1620 | +.030 | 10 | 1.0 |
| NTE5179A | 6.0 | 425 | 1.0 | 675 | 1540 | +.035 | 10 | 1.5 |
| NTE5180A | 6.2 | 405 | 1.1 | 750 | 1460 | +.049 | 10 | 2.0 |
| NTE5181A | 6.8 | 370 | 1.2 | 500 | 1330 | +.040 | 10 | 2.0 |
| NTE5182A | 7.5 | 335 | 1.3 | 250 | 1180 | .045 | 100 | 5.7 |
| NTE5183A | 8.2 | 305 | 1.5 | 250 | 1040 | .048 | 50 | 6.2 |

* Stud Temperature = +75°C

Electrical Characteristics (Cont'd): ($T_C = +30^\circ\text{C}$, unless otherwise specified)

| NTE Type Number (Note 1) | Nominal Zener Voltage $V_z @ I_{zt}$ (Note 2) | Zener Test Current (I_{zt}) | Maximum Dynamic Impedance (Note 3) | | Maximum DC Zener Current* (I_{zm}) (Note 4) | Typical Temperature Coefficient α_{vz} %/°C | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------------------|---|------------------------------------|---------------------------------------|--------------------------------|---|--|--|-------|
| | | | $Z_{zt} @ I_{zt}$ | $Z_{zk} @ 1\text{mA} (I_{zk})$ | | | μA | Volts |
| | | | Ohms | Ohms | | | | |
| NTE5184A | 8.7 | 290 | 1.7 | 250 | 1000 | .049 | 37 | 6.6 |
| NTE5185A | 9.1 | 275 | 2 | 250 | 720 | .051 | 25 | 6.9 |
| NTE5186A | 10 | 250 | 3 | 250 | 860 | .055 | 25 | 7.6 |
| NTE5187A | 11 | 230 | 3 | 250 | 780 | .060 | 10 | 8.4 |
| NTE5188A | 12 | 210 | 3 | 250 | 720 | .065 | 10 | 9.1 |
| NTE5189A | 13 | 190 | 3 | 250 | 660 | .065 | 10 | 9.9 |
| NTE5190A | 14 | 180 | 3 | 250 | 600 | .070 | 10 | 10.5 |
| NTE5191A | 15 | 170 | 3 | 250 | 560 | .070 | 10 | 11.4 |
| NTE5192A | 16 | 155 | 4 | 250 | 530 | .070 | 10 | 12.2 |
| NTE5193A | 17 | 145 | 4 | 250 | 500 | .075 | 10 | 13.0 |
| NTE5194A | 18 | 140 | 4 | 250 | 460 | .075 | 10 | 13.7 |
| NTE5195A | 19 | 130 | 4 | 250 | 440 | .075 | 10 | 14.0 |
| NTE5196A | 20 | 125 | 4 | 250 | 420 | .075 | 10 | 15.2 |
| NTE5197A | 22 | 115 | 5 | 250 | 380 | .080 | 10 | 16.7 |
| NTE5198A | 24 | 105 | 5 | 250 | 350 | .080 | 10 | 18.2 |
| NTE5199A | 25 | 100 | 6 | 250 | 310 | .080 | 10 | 18.2 |
| NTE5200A | 27 | 95 | 7 | 250 | 300 | .085 | 10 | 20.6 |
| NTE5201A | 28 | 90 | 7.5 | 275 | 290 | .085 | 10 | 21.7 |
| NTE5202A | 30 | 85 | 8 | 300 | 280 | .085 | 10 | 22.8 |
| NTE5203A | 33 | 75 | 9 | 300 | 260 | .085 | 10 | 25.1 |
| NTE5204A | 36 | 70 | 10 | 300 | 230 | .085 | 10 | 27.4 |
| NTE5205A | 39 | 65 | 11 | 300 | 210 | .090 | 10 | 29.7 |
| NTE5206A | 43 | 60 | 12 | 400 | 195 | .090 | 10 | 32.7 |
| NTE5207A | 45 | 55 | 13 | 400 | 185 | .090 | 10 | 33.0 |
| NTE5208A | 47 | 55 | 14 | 400 | 175 | .090 | 10 | 35.8 |
| NTE5209A | 50 | 50 | 15 | 500 | 165 | .090 | 10 | 36.0 |
| NTE5210A | 51 | 50 | 15 | 500 | 160 | .090 | 10 | 38.8 |
| NTE5211A | 52 | 50 | 15 | 500 | 160 | .090 | 10 | 39.0 |
| NTE5212A | 56 | 45 | 16 | 500 | 150 | .090 | 10 | 42.6 |
| NTE5213A | 60 | 43 | 16 | 550 | 140 | .090 | 10 | 44.8 |
| NTE5214A | 62 | 40 | 17 | 600 | 130 | .090 | 10 | 47.1 |

* Stud Temperature = $+75^\circ\text{C}$

Electrical Characteristics (Cont'd): ($T_C = +30^\circ\text{C}$, unless otherwise specified)

| NTE Type Number (Note 1) | Nominal Zener Voltage $V_z @ I_{zt}$ (Note 2) | Zener Test Current (I_{zt}) | Maximum Dynamic Impedance (Note 3) | | Maximum DC Zener Current* (I_{zm}) (Note 4) | Typical Temperature Coefficient α_{vz} %/°C | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------------------|---|------------------------------------|---------------------------------------|---------------------------------|---|--|--|-------|
| | | | $Z_{zt} @ I_{zt}$ | $Z_{zk} @ 1\text{mA } (I_{zk})$ | | | μA | Volts |
| | | | Ohms | Ohms | | | mA | |
| NTE5215A | 68 | 37 | 18 | 600 | 120 | .090 | 10 | 51.7 |
| NTE5216A | 75 | 33 | 22 | 600 | 110 | .090 | 10 | 56.0 |
| NTE5217A | 82 | 30 | 25 | 700 | 100 | .090 | 10 | 62.2 |
| NTE5218A | 87 | 29 | 30 | 750 | 93 | .090 | 10 | 65.7 |
| NTE5219A | 91 | 28 | 35 | 800 | 85 | .090 | 10 | 69.2 |
| NTE5220A | 100 | 25 | 40 | 900 | 80 | .090 | 10 | 76.0 |
| NTE5221A | 105 | 25 | 45 | 1000 | 75 | .095 | 10 | 76.0 |
| NTE5222A | 110 | 23 | 55 | 1100 | 72 | .095 | 10 | 83.6 |
| NTE5223A | 120 | 20 | 75 | 1200 | 67 | .095 | 10 | 91.2 |
| NTE5224A | 130 | 19 | 100 | 1300 | 62 | .095 | 10 | 98.8 |
| NTE5225A | 140 | 18 | 125 | 1400 | 58 | .095 | 10 | 100.0 |
| NTE5226A | 150 | 17 | 175 | 1500 | 54 | .095 | 10 | 114.0 |
| NTE5227A | 160 | 16 | 200 | 1600 | 50 | .095 | 10 | 121.6 |
| NTE5228A | 170 | 15 | 225 | 1675 | 48 | .095 | 10 | 128.3 |
| NTE5229A | 175 | 14 | 250 | 1750 | 46 | .095 | 10 | 135.0 |
| NTE5230A | 180 | 14 | 260 | 1850 | 45 | .095 | 10 | 136.8 |
| NTE5231A | 190 | 13 | 280 | 1925 | 43 | .097 | 10 | 144.4 |
| NTE5232A | 200 | 12 | 300 | 2000 | 40 | .100 | 10 | 152.0 |

* Stud Temperature = $+75^\circ\text{C}$

Note 1. The NTE type 10W Zener Diodes listed have Anode (Standard Polarity) connected to stud. Add suffix letter "K" to the device number for Cathode (Reverse Polarity) connected to stud (i. e. NTE5174AK).

Note 2. The electrical characteristics are measured after allowing the device to stabilize for 90 seconds with $+30^\circ\text{C}$ base temperature.

Note 3. The zener impedance (Z_{zt}) is derived from the 60Hz AC voltage, which results when an 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} . When making zener impedance measurements at the I_{zk} test point, it may be necessary to insert a 60Hz band pass filter between the diode and voltmeter to avoid errors resulting from low level noise signals.

Note 4. These values of I_{zm} may be exceeded in the case of individual diodes. The values shown are calculated for the worst case which is a unit of $\pm 5\%$ tolerance at the high voltage and of its tolerance range. Allowance has also been made for the rise in zener voltage above V_{zt} , which results from zener impedance and the increase in junction temperature as power dissipation approaches 10 watts.

