



ELECTRONICS, INC.
44 FARRAND STREET
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NTE5111A thru NTE5166A Zener Diode, 5 Watt ±5% Tolerance

Features:

- Zener Voltage: 3.3V to 200V
- High Surge Current Capability

Absolute Maximum Ratings:

| | |
|---|-------------------------------------|
| DC Power Dissipation ($T_L = +75^\circ\text{C}$, Lead Length = 3/8"), P_D | 5W |
| Derate Above 75°C | 40mW/ $^\circ\text{C}$ |
| Forward Voltage ($I_F = 1\text{A}$), V_F | 1.2V |
| Operating Junction Temperature Range, T_J | -65° to $+200^\circ\text{C}$ |
| Storage Temperature Range, T_{stg} | -65° to $+200^\circ\text{C}$ |

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

| | Nominal Zener Voltage $V_Z @ I_{ZT}$ (Note 1) | Test Current I_{ZT} | Max Zener Impedance | | Max Reverse Leakage Current | | Max Surge Current i_r (Note 2) | Max Voltage Regulation ΔV_Z (Note 3) | Max Regulator Current I_{ZM} |
|----------|---|--------------------------|-------------------------------|--|-----------------------------|-------|--|--|-----------------------------------|
| | | | $Z_{ZT} @ I_{ZT}$ (Note 1) | $Z_{ZK} @ I_{ZK} = 1\text{mA}$ (Note 1) | $I_R @ V_R$ | | | | |
| | | | Ω | Ω | μA | Volts | | | |
| NTE5111A | 3.3 | 380 | 3.0 | 400 | 300 | 1 | 20 | 0.85 | 1440 |
| NTE5112A | 3.6 | 350 | 2.5 | 500 | 150 | 1 | 18.7 | 0.8 | 1320 |
| NTE5113A | 3.9 | 320 | 2 | 500 | 50 | 1 | 17.6 | 0.54 | 1220 |
| NTE5114A | 4.3 | 290 | 2 | 500 | 10 | 1 | 16.4 | 0.49 | 1100 |
| NTE5115A | 4.7 | 260 | 2 | 450 | 5 | 1 | 15.3 | 0.44 | 1010 |
| NTE5116A | 5.1 | 240 | 1.5 | 400 | 1 | 1 | 14.4 | 0.39 | 930 |
| NTE5117A | 5.6 | 220 | 1 | 400 | 1 | 2 | 13.4 | 0.25 | 865 |
| NTE5118A | 6.0 | 200 | 1 | 300 | 1 | 3 | 12.7 | 0.19 | 790 |
| NTE5119A | 6.2 | 200 | 1 | 200 | 1 | 3 | 12.4 | 0.1 | 765 |
| NTE5120A | 6.8 | 175 | 1 | 200 | 10 | 5.2 | 11.5 | 0.15 | 700 |
| NTE5121A | 7.5 | 175 | 1.5 | 200 | 10 | 5.7 | 10.7 | 0.15 | 630 |
| NTE5122A | 8.2 | 150 | 1.5 | 200 | 10 | 6.2 | 10 | 0.2 | 580 |

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | Nominal Zener Voltage $V_Z @ I_{ZT}$ (Note 1) | Test Current I_{ZT} | Max Zener Impedance | | Max Reverse Leakage Current | | Max Surge Current i_r (Note 2) | Max Voltage Regulation ΔV_Z (Note 3) | Max Regulator Current I_{ZM} |
|----------|---|--------------------------|-------------------------------|--|-----------------------------|-------|--|--|-----------------------------------|
| | | | $Z_{ZT} @ I_{ZT}$ (Note 1) | $Z_{ZK} @ I_{ZK} = 1\text{mA}$ (Note 1) | $I_R @ V_R$ | | | | |
| | | | Ω | Ω | μA | Volts | | | |
| NTE5123A | 8.7 | 150 | 2 | 200 | 10 | 6.6 | 9.5 | 0.2 | 545 |
| NTE5124A | 9.1 | 150 | 2 | 150 | 7.5 | 6.9 | 9.2 | 0.22 | 520 |
| NTE5125A | 10 | 125 | 2 | 125 | 5 | 7.6 | 8.6 | 0.22 | 475 |
| NTE5126A | 11 | 125 | 2.5 | 125 | 5 | 8.4 | 8 | 0.25 | 430 |
| NTE5127A | 12 | 100 | 2.5 | 125 | 2 | 9.1 | 7.5 | 0.25 | 395 |
| NTE5128A | 13 | 100 | 2.5 | 100 | 1 | 9.9 | 7 | 0.25 | 365 |
| NTE5129A | 14 | 100 | 2.5 | 75 | 1 | 10.6 | 6.7 | 0.25 | 340 |
| NTE5130A | 15 | 75 | 2.5 | 75 | 1 | 11.5 | 6.3 | 0.25 | 315 |
| NTE5131A | 16 | 75 | 2.5 | 75 | 1 | 12.2 | 6 | 0.3 | 295 |
| NTE5132A | 17 | 70 | 2.5 | 75 | 0.5 | 12.9 | 5.8 | 0.35 | 280 |
| NTE5133A | 18 | 65 | 2.5 | 75 | 0.5 | 13.7 | 5.5 | 0.4 | 265 |
| NTE5134A | 19 | 65 | 3 | 75 | 0.5 | 14.4 | 5.3 | 0.4 | 250 |
| NTE5135A | 20 | 65 | 3 | 75 | 0.5 | 15.2 | 5.1 | 0.4 | 237 |
| NTE5136A | 22 | 50 | 3.5 | 75 | 0.5 | 16.7 | 4.7 | 0.45 | 216 |
| NTE5137A | 24 | 50 | 3.5 | 100 | 0.5 | 18.2 | 4.4 | 0.55 | 198 |
| NTE5138A | 25 | 50 | 4 | 110 | 0.5 | 19 | 4.3 | 0.55 | 190 |
| NTE5139A | 27 | 50 | 5 | 120 | 0.5 | 20.6 | 4.1 | 0.6 | 176 |
| NTE5140A | 28 | 50 | 6 | 130 | 0.5 | 21.2 | 3.9 | 0.6 | 170 |
| NTE5141A | 30 | 40 | 8 | 140 | 0.5 | 22.8 | 3.7 | 0.6 | 158 |
| NTE5142A | 33 | 40 | 10 | 150 | 0.5 | 25.1 | 3.5 | 0.6 | 144 |
| NTE5143A | 36 | 30 | 11 | 160 | 0.5 | 27.4 | 3.3 | 0.65 | 132 |
| NTE5144A | 39 | 30 | 14 | 170 | 0.5 | 29.7 | 3.1 | 0.65 | 122 |
| NTE5145A | 43 | 30 | 20 | 190 | 0.5 | 32.7 | 2.8 | 0.7 | 110 |
| NTE5146A | 47 | 25 | 25 | 210 | 0.5 | 35.8 | 2.7 | 0.8 | 100 |
| NTE5147A | 51 | 25 | 27 | 230 | 0.5 | 38.8 | 2.5 | 0.9 | 93 |
| NTE5148A | 56 | 20 | 35 | 280 | 0.5 | 42.6 | 2.3 | 1 | 86 |
| NTE5149A | 60 | 20 | 40 | 350 | 0.5 | 42.5 | 2.2 | 1.2 | 79 |
| NTE5150A | 62 | 20 | 42 | 400 | 0.5 | 47.1 | 2.1 | 1.35 | 76 |
| NTE5151A | 68 | 20 | 44 | 500 | 0.5 | 51.7 | 2 | 1.5 | 70 |
| NTE5152A | 75 | 20 | 45 | 620 | 0.5 | 56 | 1.9 | 1.6 | 63 |
| NTE5153A | 82 | 15 | 65 | 720 | 0.5 | 62.2 | 1.8 | 1.8 | 58 |
| NTE5154A | 87 | 15 | 75 | 760 | 0.5 | 66 | 1.7 | 2 | 54.5 |
| NTE5155A | 91 | 15 | 75 | 760 | 0.5 | 69.2 | 1.6 | 2.2 | 52.5 |
| NTE5156A | 100 | 12 | 90 | 800 | 0.5 | 76 | 1.5 | 2.5 | 47.5 |
| NTE5157A | 110 | 12 | 125 | 1000 | 0.5 | 83.6 | 1.4 | 2.5 | 43 |
| NTE5158A | 120 | 10 | 170 | 1150 | 0.5 | 91.2 | 1.3 | 2.5 | 39.5 |

Electrical Characteristics (Cont'd): ($T_A = +25^\circ\text{C}$ unless otherwise specified)

| | Nominal Zener Voltage $V_Z @ I_{ZT}$ (Note 1) | Test Current I_{ZT} | Max Zener Impedance | | Max Reverse Leakage Current | | Max Surge Current i_r (Note 2) | Max Voltage Regulation ΔV_Z (Note 3) | Max Regulator Current I_{ZM} |
|----------|---|--------------------------|-------------------------------|--|-----------------------------|-------|--|--|-----------------------------------|
| | | | $Z_{ZT} @ I_{ZT}$ (Note 1) | $Z_{ZK} @ I_{ZK} = 1\text{mA}$ (Note 1) | $I_R @ V_R$ | | | | |
| | | | Ω | Ω | μA | Volts | | | |
| | Volts | mA | Ω | Ω | μA | Volts | Amps | Volt | mA |
| NTE5159A | 130 | 10 | 190 | 1250 | 0.5 | 98.8 | 1.2 | 2.5 | 36.6 |
| NTE5160A | 140 | 8 | 230 | 1500 | 0.5 | 106 | 1.2 | 2.5 | 34 |
| NTE5161A | 150 | 8 | 330 | 1500 | 0.5 | 114 | 1.1 | 3 | 31.6 |
| NTE5162A | 160 | 8 | 350 | 1650 | 0.5 | 122 | 1.1 | 3 | 29.4 |
| NTE5163A | 170 | 8 | 380 | 1750 | 0.5 | 129 | 1 | 3 | 28 |
| NTE5164A | 180 | 5 | 430 | 1750 | 0.5 | 137 | 1 | 4 | 26.4 |
| NTE5165A | 190 | 5 | 450 | 1850 | 0.5 | 144 | 0.9 | 5 | 25 |
| NTE5166A | 200 | 5 | 480 | 1850 | 0.5 | 152 | 0.9 | 5 | 23.6 |

Note 1 Test conditions for zener voltage and impedance are as follows: I_Z is applied $40 \pm 10\text{ms}$ prior to reading. Mounting contacts are located $3/8''$ to $1/2''$ from the inside edge of mounting clips to the body of the diode ($T_A = +25^\circ\text{C} +8^\circ, -2^\circ\text{C}$).

Note 2 Surge current is specified as the maximum allowable peak, non-recurrent square-wave current with a pulse width, PW, of 8.3ms. Mounting contact located as specified in Note 1.

Note 3 Test conditions for voltage regulation are as follows: V_Z measurements are made at 10% and then at 50% of the I_Z max value listed in the "Electrical Characteristic" table. The test current time duration for each V_Z measurement is $40 \pm 10\text{ms}$ ($T_A = +25^\circ\text{C} +8^\circ, -2^\circ\text{C}$). Mounting contact located as specified in Note 1.

