



ELECTRONICS, INC.
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NTE5000A thru NTE5060A Zener Diode, 1/2 Watt ±5% Tolerance

Features:

- Zener Voltage 2.4 to 200V
- DO35 Package

Maximum Ratings:

Operating Junction Temperature Range, T_{opr} -65° to +200°C
 Storage Temperature Range, T_{stg} -65° to +200°C
 DC Power Dissipation, P_D 500mW
 Derate Above 75°C 4.0mW/°C
 Forward Voltage ($I_F = 200mA$), V_F 1.1V

Electrical Characteristics: ($T_C = +25^\circ C$, unless otherwise specified)

| NTE Type Number | Nominal Zener Voltage $V_Z @ I_{zt}$ (Note 1) | Zener Test Current (I_{zt}) | Maximum Dynamic Impedance | | Typical Temperature Coefficient (Note 2) α_{vz} | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------|-----------------------------------------------|---------------------------------|---------------------------|----------------------------|--------------------------------------------------------|-------------------------------------|-------|
| | | | $Z_{zt} @ I_{zt}$ | $Z_{zk} @ 0.25mA (I_{zk})$ | | μA | Volts |
| | | | Ohms | Ohms | | | |
| NTE5000A | 2.4 | 20 | 30 | 1200 | -0.085 | 100 | 1.0 |
| NTE5001A | 2.5 | 20 | 30 | 1250 | -0.085 | 100 | 1.0 |
| NTE5002A | 2.7 | 20 | 30 | 1300 | -0.080 | 75 | 1.0 |
| NTE5003A | 2.8 | 20 | 30 | 1400 | -0.080 | 75 | 1.0 |
| NTE5004A | 3.0 | 20 | 29 | 1600 | -0.075 | 50 | 1.0 |
| NTE5005A | 3.3 | 20 | 28 | 1600 | -0.070 | 25 | 1.0 |
| NTE5006A | 3.6 | 20 | 24 | 1700 | -0.065 | 15 | 1.0 |
| NTE5007A | 3.9 | 20 | 23 | 1900 | -0.060 | 10 | 1.0 |
| NTE5008A | 4.3 | 20 | 22 | 2000 | ±0.055 | 5 | 1.0 |
| NTE5009A | 4.7 | 20 | 19 | 1900 | ±0.030 | 5 | 2.0 |
| NTE5010A | 5.1 | 20 | 17 | 1600 | ±0.030 | 5 | 2.0 |
| NTE5011A | 5.6 | 20 | 11 | 1600 | +0.038 | 5 | 3.0 |

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

| NTE Type Number | Nominal Zener Voltage $V_Z @ I_{ZT}$ (Note 1) | Zener Test Current (I_{ZT}) | Maximum Dynamic Impedance | | Typical Temperature Coefficient (Note 2) α_{VZ} | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------|-----------------------------------------------|---------------------------------|---------------------------|-----------------------------------|--------------------------------------------------------|-------------------------------------|-------|
| | | | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ 0.25\text{mA} (I_{ZK})$ | | μA | Volts |
| | Volts | mA | Ohms | Ohms | %/ $^\circ\text{C}$ | | |
| NTE5012A | 6.0 | 20 | 7 | 1600 | +0.038 | 5 | 3.5 |
| NTE5013A | 6.2 | 20 | 7 | 1000 | 0.045 | 5 | 4.0 |
| NTE5014A | 6.8 | 20 | 5 | 750 | 0.050 | 3 | 5.0 |
| NTE5015A | 7.5 | 20 | 6 | 500 | 0.058 | 3 | 6.0 |
| NTE5016A | 8.2 | 20 | 8 | 500 | 0.062 | 3 | 6.5 |
| NTE5017A | 8.7 | 20 | 8 | 600 | 0.065 | 3 | 6.5 |
| NTE5018A | 9.1 | 20 | 10 | 600 | 0.068 | 3 | 7.0 |
| NTE5019A | 10 | 20 | 17 | 600 | 0.075 | 3 | 8.0 |
| NTE5020A | 11 | 20 | 22 | 600 | 0.076 | 2 | 8.4 |
| NTE5021A | 12 | 20 | 30 | 600 | 0.077 | 1 | 9.1 |
| NTE5022A | 13 | 9.5 | 13 | 600 | 0.079 | 0.5 | 9.9 |
| NTE5023A | 14 | 9.0 | 15 | 600 | 0.082 | 0.1 | 10 |
| NTE5024A | 15 | 8.5 | 16 | 600 | 0.082 | 0.1 | 11 |
| NTE5025A | 16 | 7.8 | 17 | 600 | 0.083 | 0.1 | 12 |
| NTE5026A | 17 | 7.4 | 19 | 600 | 0.084 | 0.1 | 13 |
| NTE5027A | 18 | 7.0 | 21 | 600 | 0.085 | 0.1 | 14 |
| NTE5028A | 19 | 6.6 | 23 | 600 | 0.086 | 0.1 | 14 |
| NTE5029A | 20 | 6.2 | 25 | 600 | 0.086 | 0.1 | 15 |
| NTE5030A | 22 | 5.6 | 29 | 600 | 0.087 | 0.1 | 17 |
| NTE5031A | 24 | 5.2 | 33 | 600 | 0.088 | 0.1 | 18 |
| NTE5032A | 25 | 5.0 | 35 | 600 | 0.089 | 0.1 | 19 |
| NTE5033A | 27 | 4.6 | 41 | 600 | 0.090 | 0.1 | 21 |
| NTE5034A | 28 | 4.5 | 44 | 600 | 0.091 | 0.1 | 21 |
| NTE5035A | 30 | 4.2 | 49 | 600 | 0.091 | 0.1 | 23 |
| NTE5036A | 33 | 3.8 | 58 | 700 | 0.092 | 0.1 | 25 |
| NTE5037A | 36 | 3.4 | 70 | 700 | 0.093 | 0.1 | 27 |
| NTE5038A | 39 | 3.2 | 80 | 800 | 0.094 | 0.1 | 30 |
| NTE5039A | 43 | 3.0 | 93 | 900 | 0.095 | 0.1 | 33 |
| NTE5040A | 47 | 2.7 | 105 | 1000 | 0.095 | 0.1 | 36 |

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

| NTE Type Number | Nominal Zener Voltage $V_Z @ I_{ZT}$ (Note 1) | Zener Test Current (I_{ZT}) | Maximum Dynamic Impedance | | Typical Temperature Coefficient (Note 2) α_{VZ} | Maximum Leakage Current $I_R @ V_R$ | |
|-----------------|-----------------------------------------------|---------------------------------|---------------------------|------------------------------------|--------------------------------------------------------|-------------------------------------|-------|
| | | | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ 0.25\text{mA } (I_{ZK})$ | | μA | Volts |
| | Volts | mA | Ohms | Ohms | %/ $^\circ\text{C}$ | | |
| NTE5041A | 51 | 2.5 | 125 | 1100 | 0.096 | 0.1 | 39 |
| NTE5042A | 56 | 2.2 | 150 | 1300 | 0.096 | 0.1 | 43 |
| NTE5043A | 60 | 2.1 | 170 | 1400 | 0.097 | 0.1 | 46 |
| NTE5044A | 62 | 2.0 | 185 | 1400 | 0.097 | 0.1 | 47 |
| NTE5045A | 68 | 1.8 | 230 | 1600 | 0.097 | 0.1 | 52 |
| NTE5046A | 75 | 1.7 | 270 | 1700 | 0.098 | 0.1 | 56 |
| NTE5047A | 82 | 1.5 | 330 | 2000 | 0.098 | 0.1 | 62 |
| NTE5048A | 87 | 1.4 | 370 | 2200 | 0.099 | 0.1 | 68 |
| NTE5049A | 91 | 1.4 | 400 | 2300 | 0.099 | 0.1 | 69 |
| NTE5050A | 100 | 1.3 | 500 | 2600 | 0.110 | 0.1 | 76 |
| NTE5051A | 110 | 1.1 | 750 | 3000 | 0.110 | 0.1 | 84 |
| NTE5052A | 120 | 1.0 | 900 | 4000 | 0.110 | 0.1 | 91 |
| NTE5053A | 130 | 0.95 | 1100 | 4500 | 0.110 | 0.1 | 00 |
| NTE5054A | 140 | 0.90 | 1300 | 4500 | 0.110 | 0.1 | 106 |
| NTE5055A | 150 | 0.85 | 1500 | 5000 | 0.110 | 0.1 | 114 |
| NTE5056A | 160 | 0.80 | 1700 | 5500 | 0.110 | 0.1 | 122 |
| NTE5057A | 170 | 0.74 | 1900 | 5500 | 0.110 | 0.1 | 129 |
| NTE5058A | 180 | 0.68 | 2200 | 6000 | 0.110 | 0.1 | 137 |
| NTE5059A | 190 | 0.66 | 2400 | 6500 | 0.110 | 0.1 | 144 |
| NTE5060A | 200 | 0.65 | 2500 | 7000 | 0.110 | 0.1 | 152 |

Note 1. The electrical characteristics are measured after allowing the device to stabilize for 90 seconds with $+30^\circ\text{C}$ lead temperature.

Note 2. Test conditions for temperature coefficient are as follows:

a. $I_{ZT} = 7.5\text{mA}$, $T_1 = +25^\circ\text{C}$, $T_2 = +125^\circ\text{C}$ (NTE5000A thru NTE5021A)

b. $I_{ZT} = \text{Rated } I_{ZT}$, $T_1 = +25^\circ\text{C}$, $T_2 = +125^\circ\text{C}$ (NTE5022A thru NTE5060A)

Device to be temperature stabilized with current applied prior to reading breakdown voltage at the specified ambient temperature.

