



ELECTRONICS, INC.

44 FARRAND STREET  
 BLOOMFIELD, NJ 07003  
 (973) 748-5089

## 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) $\alpha_{vz}$	Maximum Leakage Current $I_R @ V_R$	
			$Z_{zt} @ I_{zt}$	$Z_{zk} @ 0.25mA (I_{zk})$		$\mu A$	Volts
	Volts	mA	Ohms	Ohms	%/°C		
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) $\alpha_{VZ}$	Maximum Leakage Current $I_R @ V_R$	
			$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ 0.25\text{mA} (I_{ZK})$		$\mu\text{A}$	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) $\alpha_{VZ}$	Maximum Leakage Current $I_R @ V_R$	
			$Z_{zt} @ I_{zt}$	$Z_{zk} @ 0.25\text{mA} (I_{zk})$		$\mu\text{A}$	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.

