



ELECTRONICS, INC.
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NTE4903 thru NTE4999 Surge Clamping, Transient Overvoltage Suppressor Bidirectional

Description:

The NTE4900 series of silicon Transient Suppressors designed to protect voltage sensitive components from high energy voltage transients. Transient over voltage suppressor devices have become very important as a consequence of their high surge capability, extremely fast response time, and low incremental surge resistance (Rs).

Application:

The NTE4900 series has a peak pulse power rating of 1500 watts for one millisecond. Can protect integrated circuits, hybrids, CMOS, MOS, and other voltage sensitive components in a broad range of applications such as telecommunications, power supplies, computers, automotive, industrial and medical equipment.

Absolute Maximum Ratings:

Peak Pulse Power Dissipation ($T_A = +25^\circ\text{C}$) 1500W
 t_{clamping} (0 volts to B_V Min) $< 5 \times 10^{-9}$ sec
 Operating and Storage Temperature -65°C to $+175^\circ\text{C}$
 Forward Surge Rating 200 Amps, 1/20 Second at $+25^\circ\text{C}$
 Steady State Power Dissipation 5.0 W @ $T_1 = +25^\circ\text{C}$

Note 1. **NTE4908** and **NTE4909** are **discontinued** devices and **no longer available**.

Electrical Characteristics:

Clamping Factor: 1.33 @ full rated power
 1.20 @ 50% rated power

The clamping factor is defined as: The ratio of the actual V_C (Clamping Voltage) to the actual B_V (Breakdown Voltage) as measured on a specific device.

| NTE Type Number | Diagram Number | Maximum Reverse Stand Off Voltage (Volts) | Breakdown Voltage @ I_T (Volts) | | | | Maximum Ratings | | | Temperature Coefficient of B_V %/°C |
|-----------------|----------------|---|-----------------------------------|----------|----------|------|---|---|---------------------------|---------------------------------------|
| | | | | | | | Clamping Voltage @ I_{pp} (1msec) (Volts) | Reverse Leakage Current @ V_R (μA) | Peak Pulse Current (Amps) | |
| | | | V_R | V_{BR} | | | | V_C | I_R | |
| | | Min | Typ | Max | I_T mA | | | | | |
| 4903 | 183 | 5.50 | 6.12 | 6.80 | 7.48 | 10.0 | 10.8 | 1000.0 | 139.00 | 0.057 |
| 4905 | 183 | 6.40 | 7.13 | 7.50 | 7.88 | 10.0 | 11.3 | 500.0 | 132.00 | 0.061 |
| 4907 | 183 | 7.02 | 7.79 | 8.20 | 8.61 | 10.0 | 12.1 | 200.0 | 124.00 | 0.065 |
| 4911 | 183 | 8.55 | 9.50 | 10.00 | 10.50 | 10.0 | 14.5 | 10.0 | 103.00 | 0.073 |
| 4915 | 183 | 10.20 | 11.40 | 12.00 | 12.60 | 1.0 | 16.7 | 5.0 | 90.00 | 0.078 |

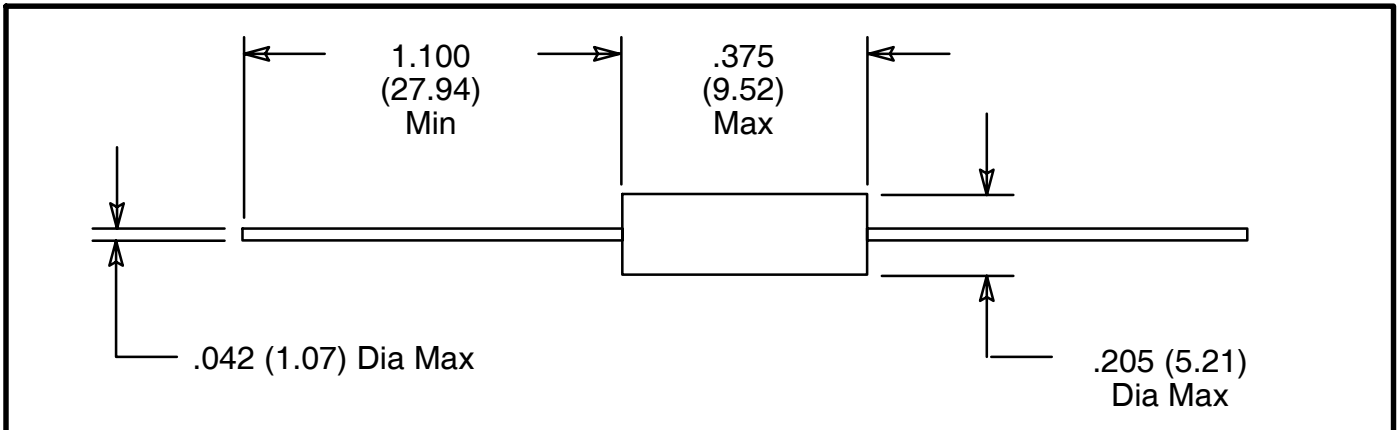
Electrical Characteristics (Cont'd):

Clamping Factor: 1.33 @ full rated power
 1.20 @ 50% rated power

The clamping factor is defined as: The ratio of the actual V_C (Clamping Voltage) to the actual BV (Breakdown Voltage) as measured on a specific device.

| NTE Type Number | Diagram Number | Maximum Reverse Stand Off Voltage (Volts) | Breakdown Voltage @ I_T (Volts) | | | | Maximum Ratings | | | Temperature Coefficient of BV%/°C |
|-----------------|----------------|---|-----------------------------------|----------|----------|-----|---|--|---------------------------|-----------------------------------|
| | | | | | | | Clamping Voltage @ I_{pp} (1msec) (Volts) | Reverse Leakage Current @ V_R (μ A) | Peak Pulse Current (Amps) | |
| | | | V_R | V_{BR} | | | | V_C | I_R | |
| | | Min | Typ | Max | I_T mA | | | | | |
| 4919 | 183 | 11.10 | 12.40 | 13.00 | 13.70 | 1.0 | 18.2 | 5.0 | 82.00 | 0.081 |
| 4921 | 183 | 12.80 | 14.30 | 15.00 | 15.80 | 1.0 | 21.1 | 5.0 | 71.00 | 0.084 |
| 4923 | 183 | 13.60 | 15.20 | 16.00 | 16.80 | 1.0 | 22.5 | 5.0 | 67.00 | 0.086 |
| 4927 | 183 | 15.30 | 17.10 | 18.00 | 18.90 | 1.0 | 25.2 | 5.0 | 59.50 | 0.088 |
| 4929 | 183 | 17.10 | 19.00 | 20.00 | 21.00 | 1.0 | 27.7 | 5.0 | 54.00 | 0.090 |
| 4933 | 183 | 20.50 | 22.80 | 24.00 | 25.20 | 1.0 | 33.2 | 5.0 | 45.00 | 0.094 |
| 4935 | 183 | 23.10 | 25.70 | 27.05 | 28.40 | 1.0 | 37.5 | 5.0 | 40.00 | 0.096 |
| 4937 | 183 | 25.60 | 28.50 | 30.00 | 31.50 | 1.0 | 36.0 | 5.0 | 41.40 | 0.097 |
| 4939 | 183 | 28.20 | 31.40 | 33.00 | 34.70 | 1.0 | 45.7 | 5.0 | 33.00 | 0.098 |
| 4941 | 183 | 30.80 | 34.20 | 36.00 | 37.80 | 1.0 | 49.9 | 5.0 | 30.00 | 0.099 |
| 4943 | 183 | 33.30 | 37.10 | 39.00 | 41.00 | 1.0 | 53.9 | 5.0 | 28.00 | 0.100 |
| 4945 | 183 | 36.80 | 40.90 | 43.00 | 45.20 | 1.0 | 59.3 | 5.0 | 25.30 | 0.101 |
| 4947 | 183 | 40.20 | 44.70 | 47.00 | 49.40 | 1.0 | 64.8 | 5.0 | 23.30 | 0.101 |
| 4951 | 183 | 43.60 | 48.50 | 51.05 | 53.60 | 1.0 | 70.1 | 5.0 | 21.40 | 0.102 |
| 4953 | 183 | 47.80 | 53.20 | 56.00 | 58.80 | 1.0 | 77.0 | 5.0 | 19.50 | 0.103 |
| 4955 | 183 | 53.00 | 58.90 | 62.00 | 65.10 | 1.0 | 85.0 | 5.0 | 17.70 | 0.104 |
| 4959 | 183 | 58.10 | 64.60 | 68.00 | 71.40 | 1.0 | 92.0 | 5.0 | 16.30 | 0.104 |
| 4961 | 183 | 64.10 | 71.30 | 75.00 | 78.80 | 1.0 | 103.0 | 5.0 | 14.60 | 0.105 |
| 4963 | 183 | 70.10 | 77.90 | 82.00 | 86.10 | 1.0 | 113.0 | 5.0 | 13.30 | 0.105 |
| 4965 | 183 | 77.80 | 86.50 | 91.00 | 95.50 | 1.0 | 125.0 | 5.0 | 12.00 | 0.106 |
| 4967 | 183 | 85.50 | 95.00 | 100.00 | 105.00 | 1.0 | 137.0 | 5.0 | 11.00 | 0.106 |
| 4969 | 183 | 94.00 | 105.00 | 110.00 | 116.00 | 1.0 | 152.0 | 5.0 | 9.90 | 0.107 |
| 4971 | 183 | 102.00 | 114.00 | 120.00 | 126.00 | 1.0 | 165.0 | 5.0 | 9.10 | 0.107 |
| 4973 | 183 | 111.00 | 124.00 | 130.00 | 137.00 | 1.0 | 179.0 | 5.0 | 8.40 | 0.107 |
| 4975 | 183 | 128.00 | 143.00 | 150.00 | 158.00 | 1.0 | 207.0 | 5.0 | 7.20 | 0.108 |
| 4977 | 183 | 136.00 | 152.00 | 160.00 | 168.00 | 1.0 | 219.0 | 5.0 | 6.80 | 0.108 |
| 4979 | 183 | 145.00 | 162.00 | 170.00 | 179.00 | 1.0 | 234.0 | 5.0 | 6.40 | 0.108 |
| 4981 | 183 | 154.00 | 171.00 | 180.00 | 189.00 | 1.0 | 246.0 | 5.0 | 6.10 | 0.108 |
| 4983 | 183 | 185.00 | 209.00 | 220.00 | 231.00 | 1.0 | 328.0 | 5.0 | 4.60 | 0.109 |
| 4985 | 183 | 214.00 | 237.00 | 250.00 | 263.00 | 1.0 | 344.0 | 5.0 | 5.00 | 0.109 |
| 4989 | 183 | 171.00 | 190.00 | 200.00 | 210.00 | 1.0 | 274.0 | 5.0 | 5.50 | 0.108 |
| 4991 | 183 | 256.00 | 285.00 | 300.00 | 315.00 | 1.0 | 414.0 | 5.0 | 3.58 | 0.110 |
| 4993 | 183 | 273.00 | 304.00 | 320.00 | 336.00 | 1.0 | 438.0 | 5.0 | 4.50 | 0.110 |
| 4995 | 183 | 300.00 | 333.00 | 350.00 | 368.00 | 1.0 | 482.0 | 4.0 | 3.08 | 0.110 |
| 4997 | 183 | 342.00 | 380.00 | 400.00 | 420.00 | 1.0 | 548.0 | 4.0 | 2.78 | 0.110 |
| 4999 | 183 | 376.00 | 418.00 | 440.00 | 462.00 | 1.0 | 603.0 | 5.0 | 3.50 | 0.110 |

Note 2. Normal selection of a zener transient over voltage suppressor is by rated stand-off voltage (V_{WM}) and should be equal or greater than DC or continuous peak operating voltage.



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