

E.S.D NOISE CLIPPING DIODES  
**NNCD3.3G to NNCD7.5G, NNCD27G**

**ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODES  
 (QUARTO TYPE : COMMON ANODE)  
 5 PIN MINI MOLD**

This product series is a diode developed for E.S.D (Electrostatic Discharge) noise protection. Based on the IEC1000-4-2 test on electromagnetic interference (EMI), the diode assures an endurance of no less than 30 KV, thus making itself most suitable for external interface circuit protection.

With four elements mounted in the 5 PIN Mini Mold Package, the product can cope with high density and automatic packaging.

**FEATURES**

- Based on the electrostatic discharge immunity test (IEC1000-4-2), the product assures the minimum endurance of 30 KV.
- Based on the reference supply of the set, the product achieves a series over a wide range (11 product name lined up).
- With 4 elements mounted (common anode) mounted in the 5 PIN MINI MOLD package, the product can achieve a high density and automatic packaging.

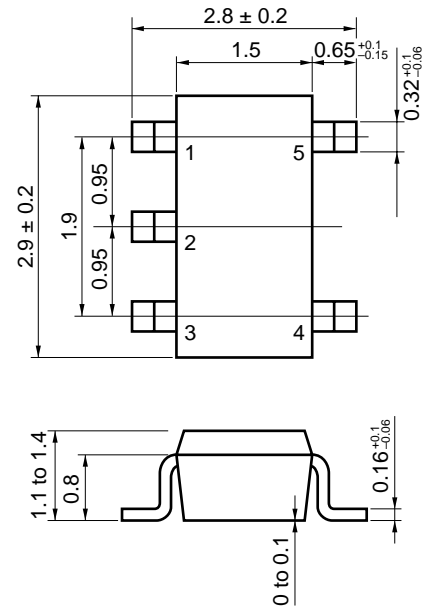
**APPLICATIONS**

- External interface circuit E.S.D protection.
- Circuits for Waveform clipper, Surge absorber.

**MAXIMUM RATINGS (T<sub>A</sub> = 25 °C)**

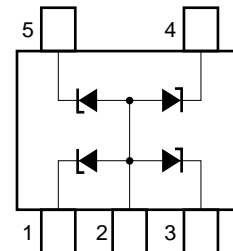
|                      |                  |                          |         |
|----------------------|------------------|--------------------------|---------|
| Power Dissipation    | P                | 200 mW                   | (Total) |
| Surge Reverse Power  | P <sub>RSM</sub> | 85 W (t = 10 μs 1 pulse) | Fig. 5  |
| Junction Temperature | T <sub>j</sub>   | 150 °C                   |         |
| Storage Temperature  | T <sub>stg</sub> | -55 °C to +150 °C        |         |

**PACKAGE DIMENSIONS  
 (in millimeters)**



(5 PIN mini MOLD)  
 (SC-74A)

**PIN CONNECTION**



- 1 : K1 Cathode 1
- 2 : A Anode (common)
- 3 : K2 Cathode 2
- 4 : K3 Cathode 3
- 5 : K4 Cathode 4

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C) (A-K1, A-K2, A-K3, A-K4)**

| Parameter | Breakdown Voltage*<br>V <sub>BR</sub> (V) |       |                     | Dynamic**<br>Impedance<br>Z <sub>z</sub> (Ω) |                     | Reverse<br>Leakage<br>IR (μA) |                    | Capacitance<br>C <sub>t</sub> (pF) |                                   | E.S.D Voltage<br>(KV) |  |
|-----------|---|-------|---------------------|--|---------------------|-------------------------------|--------------------|------------------------------------|-----------------------------------|-----------------------|--|
|           | MIN.                                      | MAX.  | I <sub>T</sub> (mA) | MAX.   | I <sub>T</sub> (mA) | MAX.                          | V <sub>R</sub> (V) | TYP.                               | Test<br>Condition                 | MIN.                  | Test<br>Condition                            |
| NNCD3.3G  | 3.10                                      | 3.50  | 5                   | 130  | 5                   | 20                            | 1.0                | 220                                | V <sub>R</sub> = 0 V<br>f = 1 MHz | 30                    | C = 150 pF<br>R = 330 Ω<br>(IEC1000<br>-4-2) |
| NNCD3.6G  | 3.40                                      | 3.80  | 5                   | 130  | 5                   | 10                            | 1.0                | 210                                |                                   | 30                    |  |
| NNCD3.9G  | 3.70                                      | 4.10  | 5                   | 130  | 5                   | 10                            | 1.0                | 200                                |                                   | 30                    |  |
| NNCD4.3G  | 4.01                                      | 4.48  | 5                   | 130  | 5                   | 10                            | 1.0                | 180                                |                                   | 30                    |  |
| NNCD4.7G  | 4.42                                      | 4.90  | 5                   | 130  | 5                   | 10                            | 1.0                | 170                                |                                   | 30                    |  |
| NNCD5.1G  | 4.84                                      | 5.37  | 5                   | 130  | 5                   | 5                             | 1.5                | 160                                |                                   | 30                    |  |
| NNCD5.6G  | 5.31                                      | 5.92  | 5                   | 80   | 5                   | 5                             | 2.5                | 140                                |                                   | 30                    |  |
| NNCD6.2G  | 5.86                                      | 6.53  | 5                   | 50   | 5                   | 2                             | 3.0                | 120                                |                                   | 30                    |  |
| NNCD6.8G  | 6.47                                      | 7.14  | 5                   | 30   | 5                   | 2                             | 3.5                | 110                                |                                   | 30                    |  |
| NNCD7.5G  | 7.06                                      | 7.84  | 5                   | 30   | 5                   | 2                             | 4.0                | 90                                 |                                   | 30                    |  |
| NNCD27G   | 25.10                                     | 28.90 | 2                   | 70   | 2                   | 2                             | 21                 | 25                                 | 30                                |                       |  |

\* Tested with pulse (40 ms)

\*\* Z<sub>z</sub> is measured at I<sub>T</sub> give a small A.C. signal.

TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)

Fig. 1 P - T<sub>A</sub> RATING

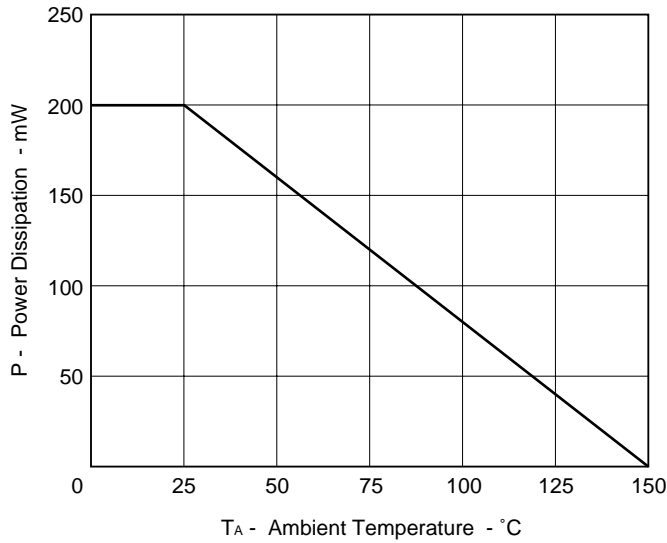


Fig. 2 I<sub>T</sub> - V<sub>BR</sub> CHARACTERISTICS (A-K1, A-K2, A-K3, A-K4)

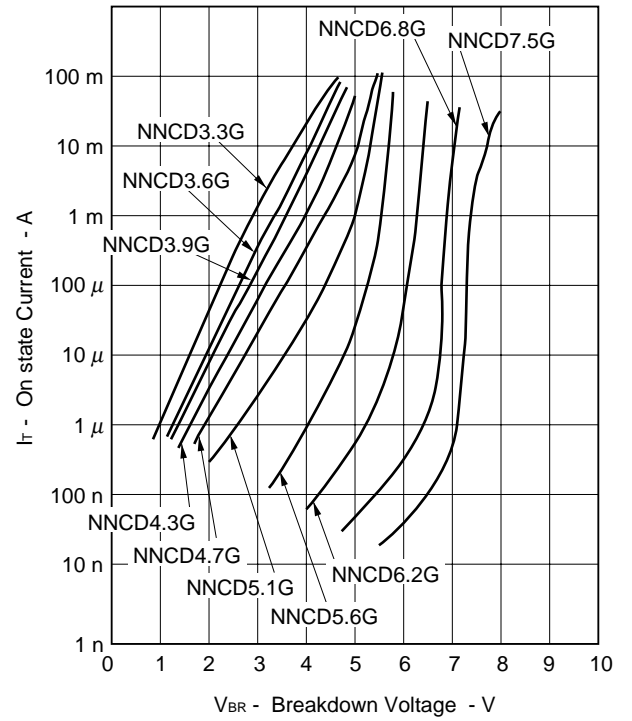


Fig. 3 Z<sub>T</sub> - I<sub>T</sub> CHARACTERISTICS

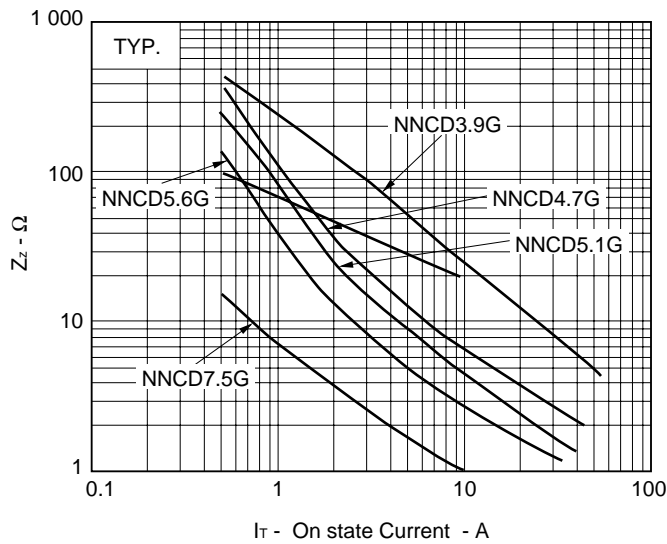


Fig. 4 TRANSIENT THERMAL IMPEDANCE

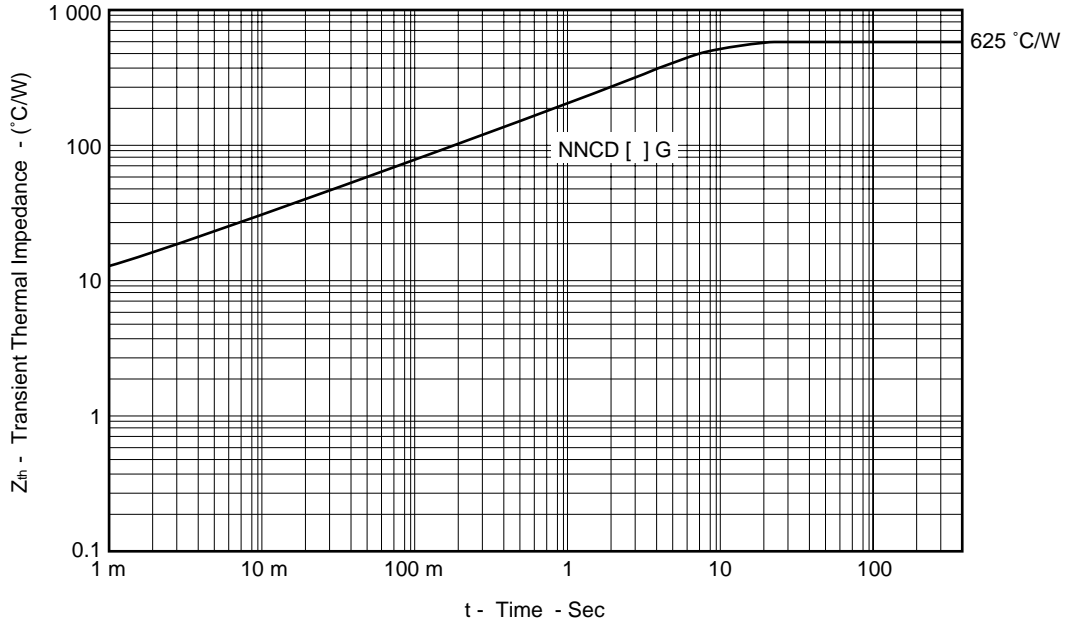
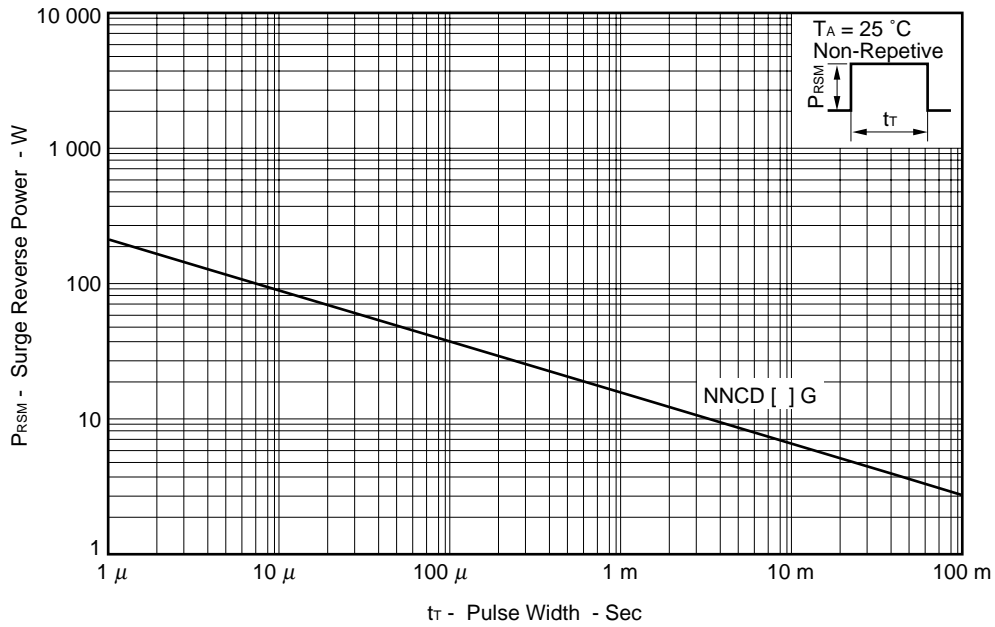
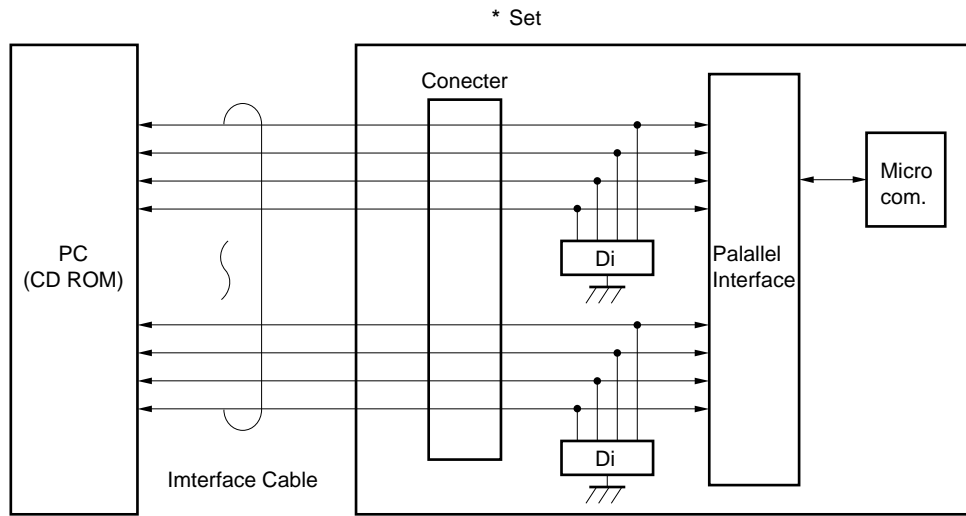


Fig. 5 SURGE REVERSE POWER RATING



Sample Application Circuits



\* Set  
Printer, P.D.C, T.V Game etc

**REFERENCE**

| Document Name   | Document No. |
|---|--------------|
| NEC semiconductor device reliability/quality control system | C11745E      |
| NEC semiconductor device reliability/quality control system | MEI-1201     |
| Quality grade on NEC semiconductor devices                  | C11531E      |
| Semiconductor device mounting technology manual             | C10535E      |
| Guide to quality assurance for semiconductor device         | MEI-1202     |

[MEMO]

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Anti-radioactive design is not implemented in this product.