To our customers,

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation



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RENESAS

# ESD NOISE CLIPPING DIODE

# NNCD6.8PH

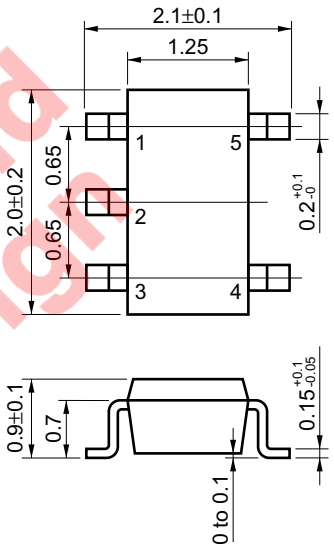
## LOW CAPACITANCE TYPE ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODE (QUARTO TYPE: COMMON ANODE) 5-PIN SUPER SMALL MINI MOLD

### DESCRIPTION

The NNCD6.8PH is a diode developed for ESD (Electrostatic Discharge) absorption. Based on the IEC-61000-4-2 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 super mini mold package, the product can cope with more high density assembling.

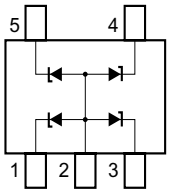
### PACKAGE DIMENSION (Unit: mm)




### FEATURES

- Base on the electrostatic discharge immunity test (IEC 61000-4-2), the product assures the minimum endurance of 30 kV.
- With four elements in the MINI MOLD package, the products can achieve high density and automatic packaging.

### ELECTRODE CONNECTION




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

### APPLICATIONS

- External interface circuit ESD absorption
- Circuits for waveform clipper, surge absorber



### MAXIMUM RATINGS ($T_A$ = 25°C)

| ITEM | SYMBOL | RATING | UNIT | REMARK |
|---|---|---|---|---|
| Power Dissipation | P | 200 | mW | Total |
| Surge Reverse Power | $P_{RSM}$ | 85 (t = 10 $\mu$s 1 pulse) | W | |
| Junction Temperature | $T_j$ | 150 | °C | |
| Storage Temperature | $T_{stg}$ | –55 to +150 | °C | |



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**The mark ★ shows major revised points.**

## ELECTRICAL CHARACTERISTICS ($T_A$ = 25°C) (A to K1, A to K2, A to K3, A to K4)

| TYPE No. | BREAKDOWN VOLTAGE Note1 $V_{BR}$ (V) | | | CAPACITANCE $C_t$ (pF) | | REVERSE LEAKAGE $I_R$ ($\mu$A) | | DYNAMIC IMPEDANCE Note2 $Z_z$ ($\Omega$) | | ESD VOLTAGE Note3 (kV) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MIN. | MAX. | $I_T$ (mA) | TYP. | Condition | MAX. | $V_R$ (V) | MAX. | $I_T$ (mA) | MIN. | Condition |
| NNCD6.8PH | 6.2 | 7.1 | 5 | 90 | $V_R$ = 0 V<br>f = 1 MHz | 2 | 3.5 | 40 | 5 | 30 | C = 150 pF<br>R = 330 Ω<br>Contact discharge |

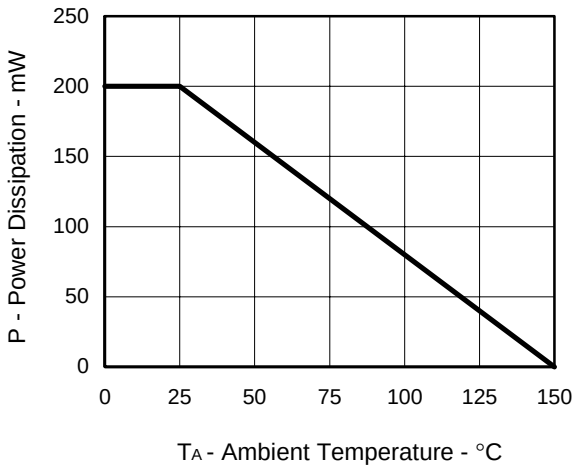
**Notes 1**. Tested with pulse (40 ms)

**2**. $Z_z$ is measured at $I_T$ given a small A.C. signal.

**3**. Based upon with IEC 61000-4-2

## TYPICAL CHARACTERISTICS ($T_A$ = 25°C)

Figure 1. POWER DISSIPATION vs. AMBIENT TEMPERATURE




★ Figure 2. $I_T$ - $V_{BR}$ CHARACTERISTICS (A-K1, A-K2, A-K3, A-K4)

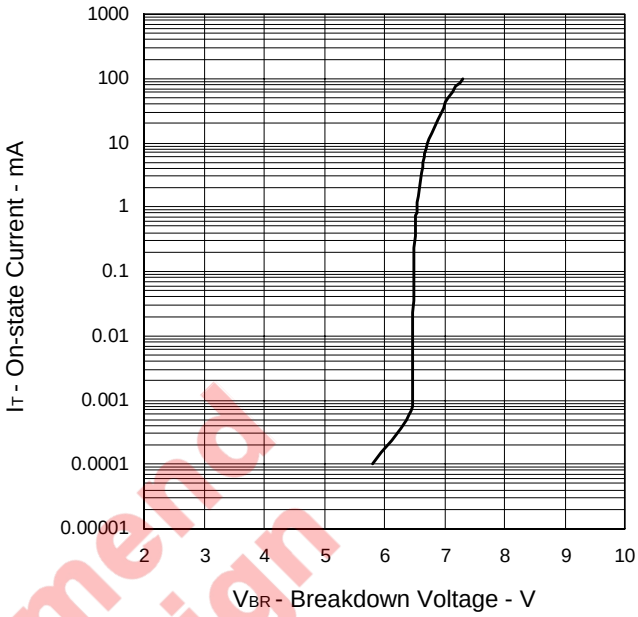



Figure 3. $Z_Z$ - $I_T$

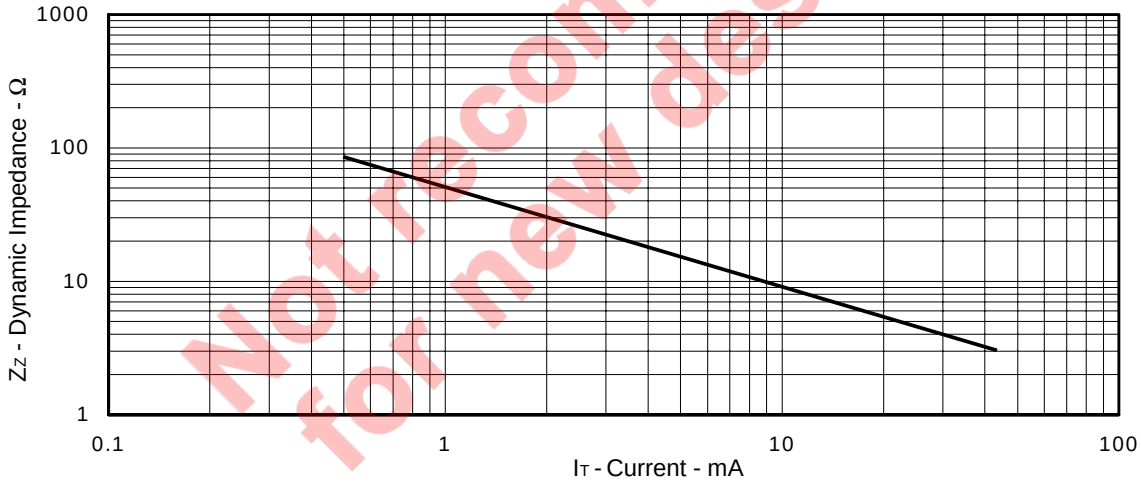





Figure 4. $C_t$ - $V_R$ CHARACTERISTICS

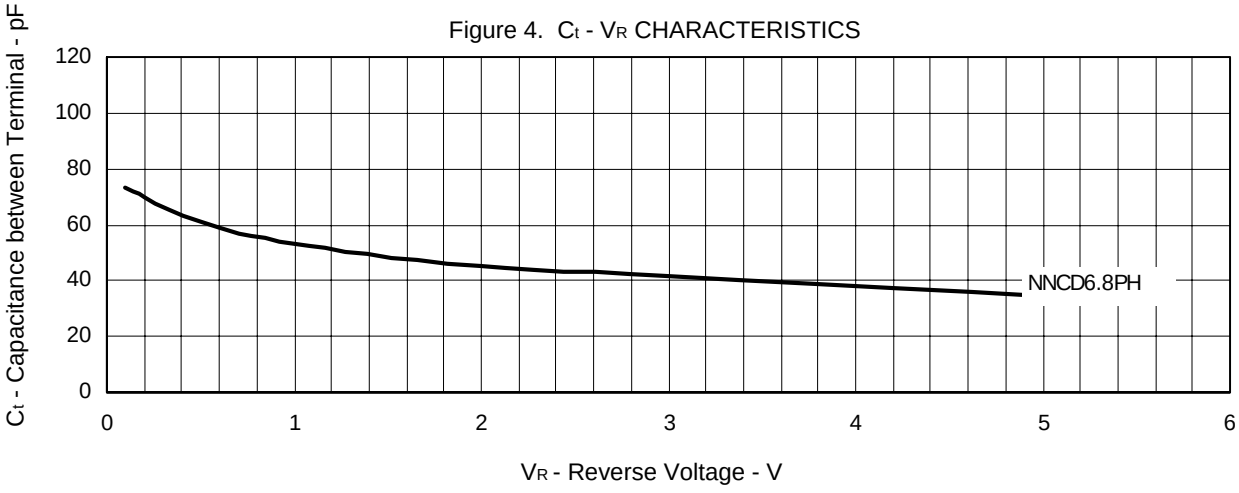
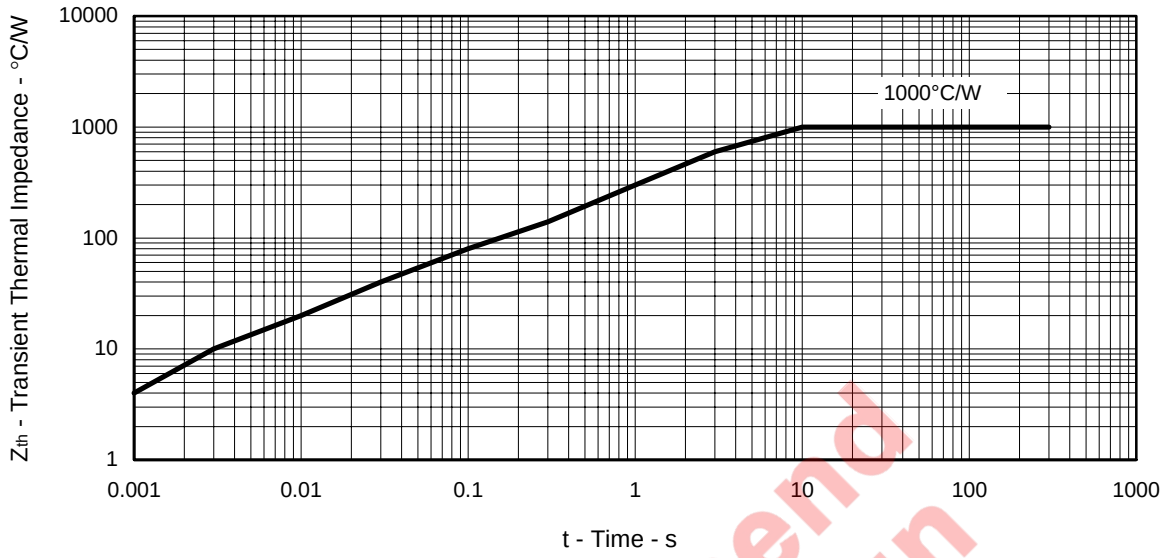
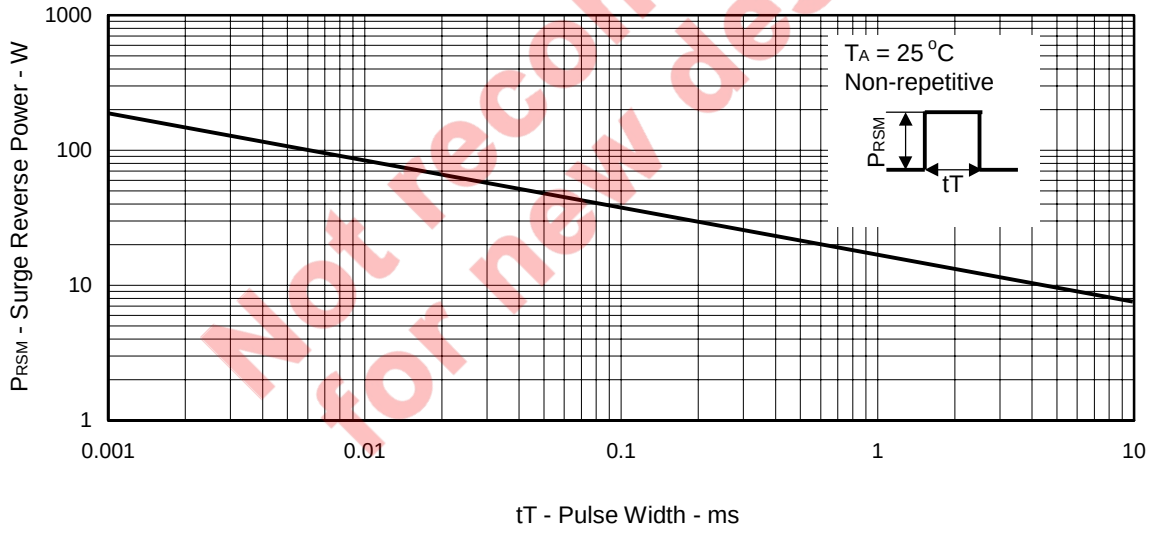


Figure 5. TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS




★ Figure 6. SURGE REVERSE POWER RATINGS



**[MEMO]**

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