

# ESD NOISE CLIPPING DIODE NNCD18DT to NNCD36DT

## ELECTROSTATIC DISCHARGE NOISE CLIPPING DIODE FOR LIN BUS APPLICATION

### DESCRIPTION

These products are the ESD (Electrostatic Discharge) Noise Clipping Diode that is designed to protect from both positive and negative noise. NNCD18DT and NNCD36DT are suitable for ESD protection of LIN (Local Interconnect Network) bus.

### FEATURES

- Suitable to absorb positive and negative noise
- Comply with IEC61000-4-2 or higher
- Possible to high density mounting with small sized 2-pin Super Mini Mold Package (SC-76)

### APPLICATIONS

- ESD protection
- Surge absorbing

### ORDERING INFORMATION

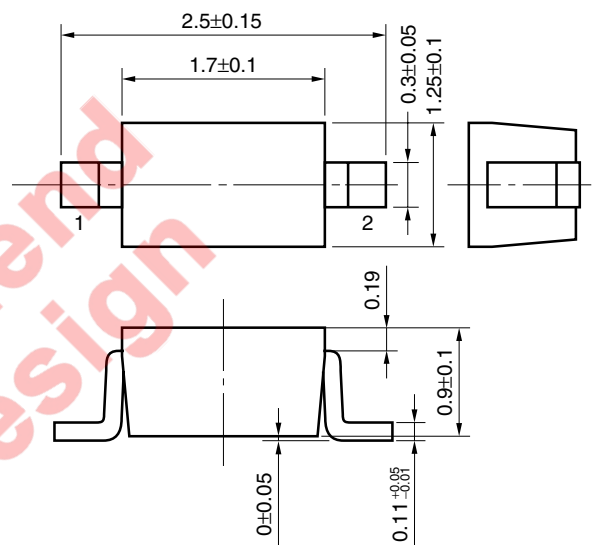
| PART NUMBER                    | LEAD PLATING  | PACKING          | PACKAGE                       |
|--------------------------------|---------------|------------------|-------------------------------|
| NNCD18DT-T1-AT <sup>Note</sup> | Pure Sn (Tin) | Tape 3000 p/reel | 2-pin Super Mini Mold (SC-76) |
| NNCD20DT-T1-AT <sup>Note</sup> |               |                  |                               |
| NNCD27DT-T1-AT <sup>Note</sup> |               |                  |                               |
| NNCD36DT-T1-AT <sup>Note</sup> |               |                  |                               |

**Note** Pb-free (This product does not contain Pb in the external electrode and other parts.)

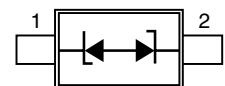
### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

| Parameter            | Symbol           | Rating      | Unit | Remark                                                                                         |
|----------------------|------------------|-------------|------|------------------------------------------------------------------------------------------------|
| Power Dissipation    | P                | 200         | mW   | When surface mounting on 50 mm x 50 mm x 1.6 mm P.C.B. (Glass Epoxy), refer to <b>Figure 1</b> |
| Surge Reverse Power  | P <sub>RSM</sub> | 85          | W    | t <sub>r</sub> = 10 μs, 1 pulse, refer to <b>Figure 4</b>                                      |
| Junction Temperature | T <sub>j</sub>   | 150         | °C   |                                                                                                |
| Storage Temperature  | T <sub>stg</sub> | -55 to +150 | °C   |                                                                                                |

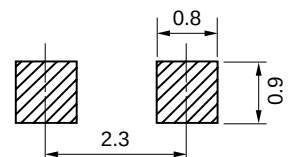
### PACKAGE DRAWING (Unit: mm)



### PIN CONFIGURATION



### RECOMMENDED MOUNT PAD (Unit: mm)



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

| Type Number | Breakdown Voltage<br>V <sub>BR</sub> (V) <sup>Note</sup> |      |                     | Reverse Leakage<br>I <sub>R</sub> (μA) |                    | Capacitance<br>C <sub>i</sub> (pF) |                                    | ESD Voltage<br>(kV) |                          |
|-------------|----------------------------------------------------------|------|---------------------|----------------------------------------|--------------------|------------------------------------|------------------------------------|---------------------|--------------------------|
|             | MIN.                                                     | MAX. | I <sub>Z</sub> (mA) | MAX.                                   | V <sub>R</sub> (V) | TYP.                               | Condition                          | MIN.                | Condition                |
| NNCD18DT    | 16                                                       | 20   | 5                   | 0.1                                    | 12                 | 15                                 | V <sub>R</sub> = 0 V,<br>f = 1 MHz | 30                  | C = 150 pF,<br>R = 330 Ω |
| NNCD20DT    | 18                                                       | 22   | 5                   | 0.1                                    | 13                 | 14                                 |                                    | 30                  |                          |
| NNCD27DT    | 25                                                       | 31   | 2                   | 0.1                                    | 21                 | 11                                 |                                    | 20                  |                          |
| NNCD36DT    | 33                                                       | 39   | 2                   | 0.1                                    | 27                 | 9                                  |                                    | 15                  |                          |

**Note** V<sub>BR</sub> is tested with pulse (40 ms).

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

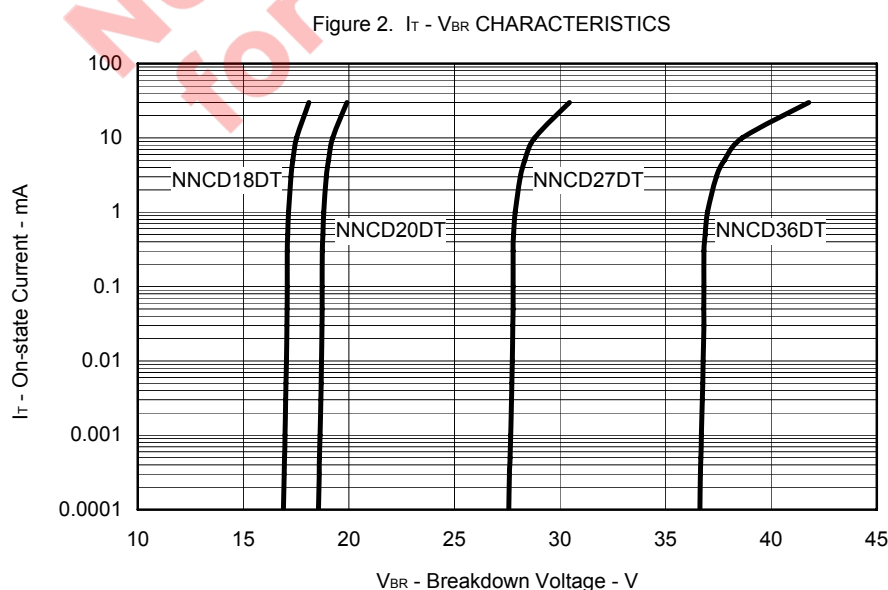
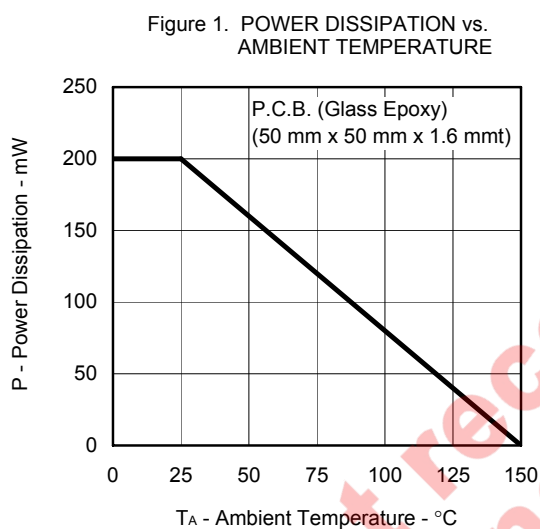


Figure 3. TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

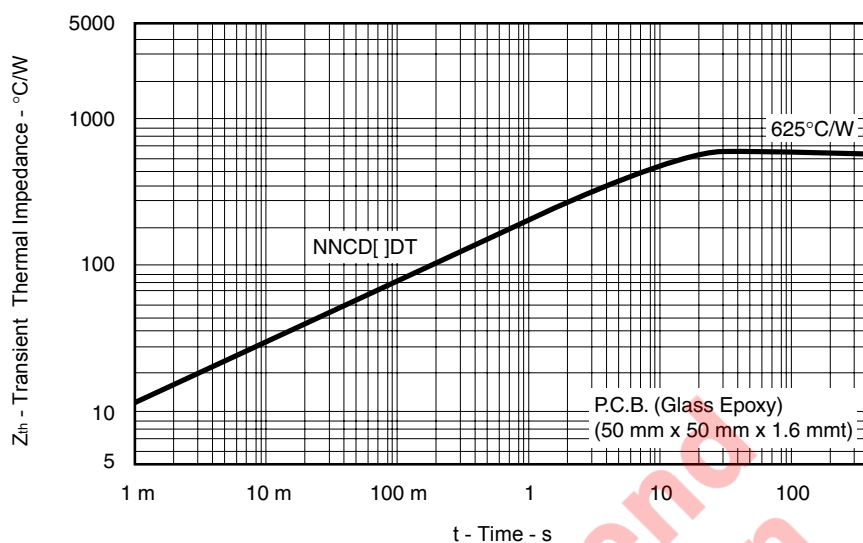
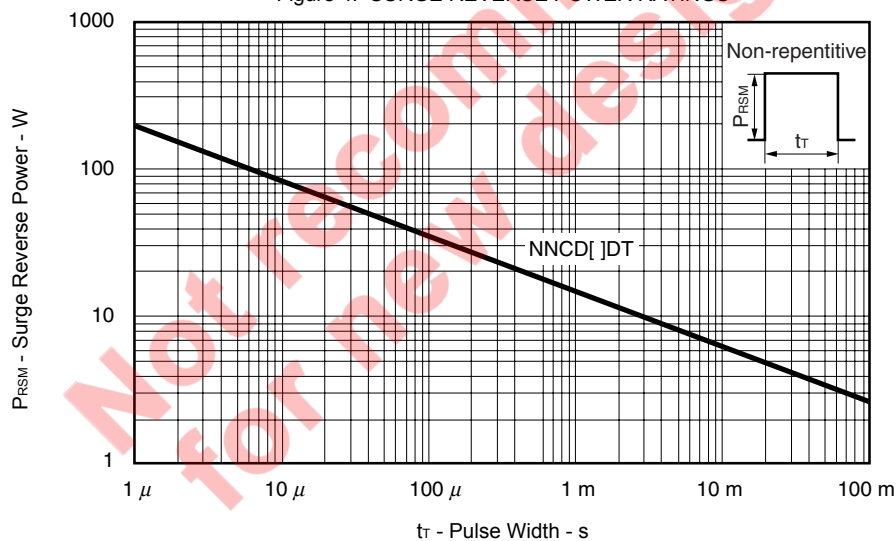


Figure 4. SURGE REVERSE POWER RATINGS



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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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