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

April 1st, 2010
Renesas Electronics Corporation

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# SURGE ABSORBER DEVICES
# NSAD500S

## ELECTROSTATIC DISCHARGE SURGE ABSORBER DEVICES
## DUAL TYPE: COMMON ANODE
## SC-70 PACKAGE

### DESCRIPTION

This product series is a low capacity for ESD surge absorber devices. Use by 100 to 500 Mbps class data line (USB2.0, IEEE1394, 100B, etc.).

Based on the IEC 61000-4-2 test on electromagnetic interference (EMI), the devices assures an endurance of no less than 8 kV, thus making itself most suitable for external high signal interface circuit protection.

### FEATURES

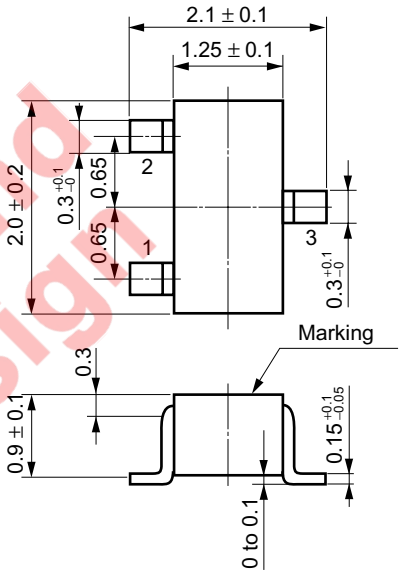
- Base on the electrostatic discharge immunity test (IEC 61000-4-2) product assures the minimum endurance of 8 kV.
- Capacitance: 3.5 pF TYP.
  It's an extraordinarily small capacitance.
- With 2 elements mounted (common anode).
  Mounted in the SC-70 package, the products can achieve high density and automatic packaging.

### APPLICATIONS

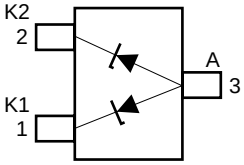
- USB2.0, IEEE1394, 100B external interface circuit ESD protection.

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### PACKAGE DRAWING (Unit: mm)




### ELECTRODE CONNECTION




1. K1: Cathode 1
2. K2: Cathode 2
3. A: Anode (common)

### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C)

| ITEM | SYMBOL | RATING | UNIT | REMARK |
|---|---|---|---|---|
| Power Dissipation | P | 150 | mW | Total |
| Surge Reverse Power | $P_{RSM}$ | 2 (t = 10 μs, 1 pulse) | W | |
| Junction Temperature | $T_j$ | 150 | °C | |
| Storage Temperature | $T_{stg}$ | −55 to +150 | °C | |

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Printed in Japan

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

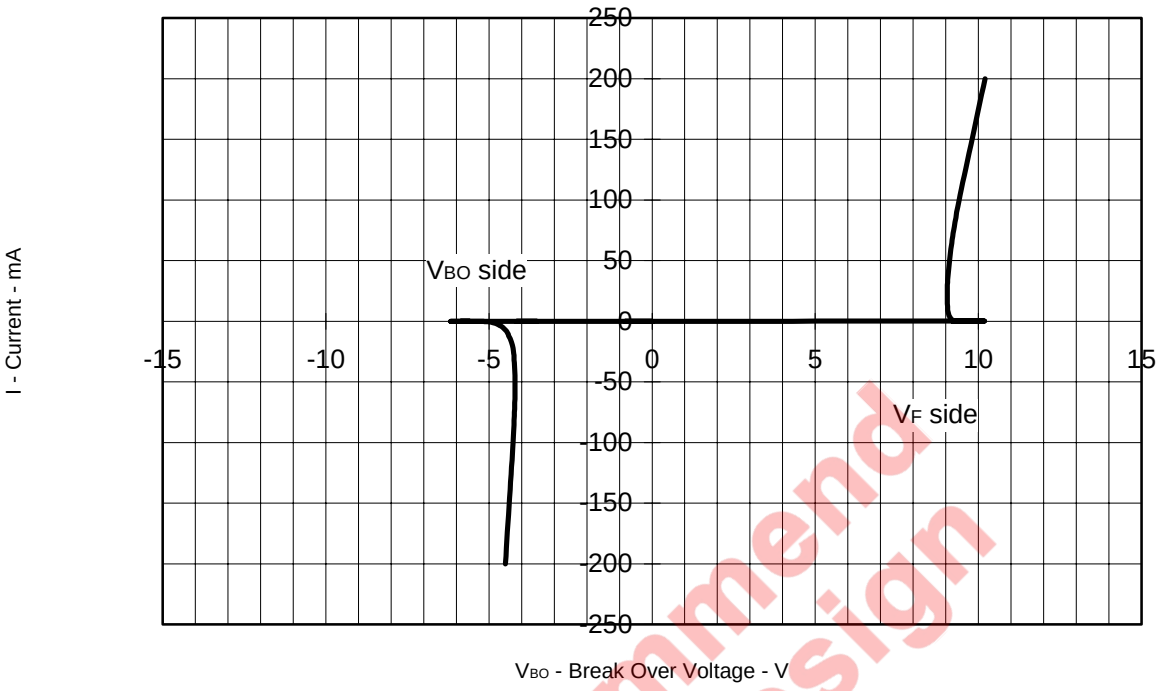
| PARAMETER | BREAK OVER VOLTAGE $V_{BO}$ (V) | | CAPACITANCE $C_t$ (pF) | | REVERSE CURRENT $I_R$ ($\mu$A) | | ESD Note (kV) | | <REFERENCE> FORWARD BREAK OVER VOLTAGE |
|---|---|---|---|---|---|---|---|---|---|
| | MIN. | TYP. | TYP. | Condition | MAX. | $V_F$ (V) | MIN. | Condition | |
| NSAD500S | 5.3 | 8 | 3.5 | $V_R$ = 0 V<br>f = 1 MHz | 0.1 | 3.0 | 8 | C = 150 pF<br>R = 330 Ω<br>Contact discharge | 10 V TYP. |

**Note** Biased upon with IEC 61000-4-2.

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

Figure 1. I vs. $V_{BO}$ CHARACTERISTICS




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Figure 2. $C_t$ vs. V CHARACTERISTICS

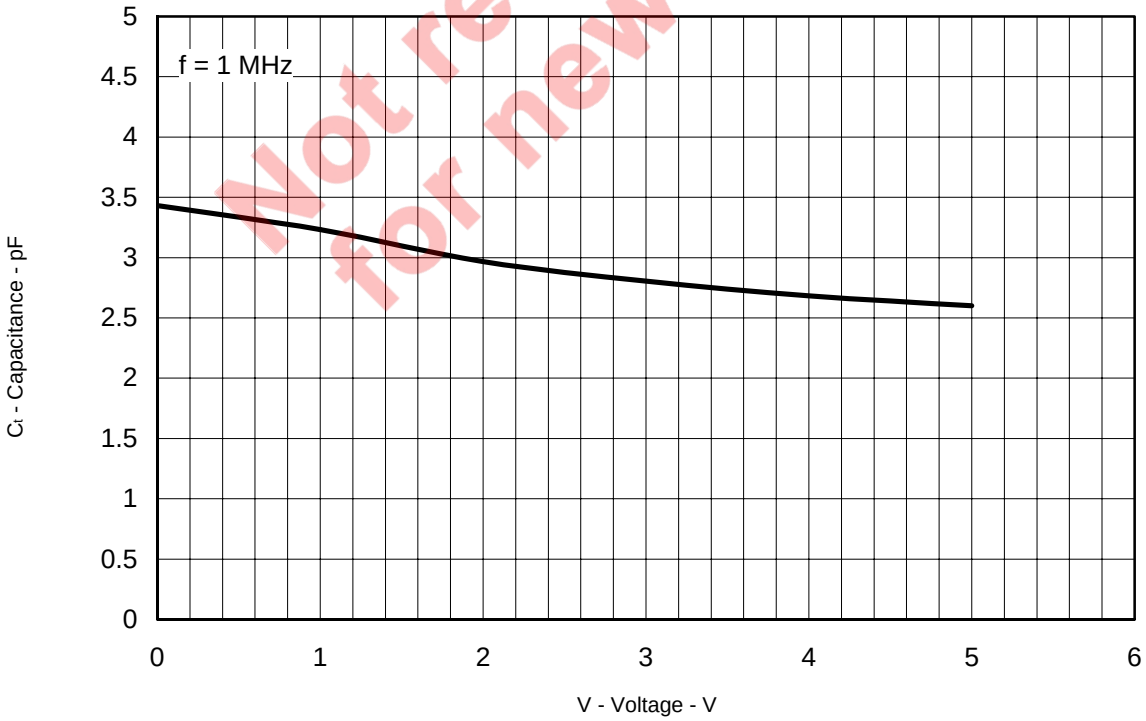
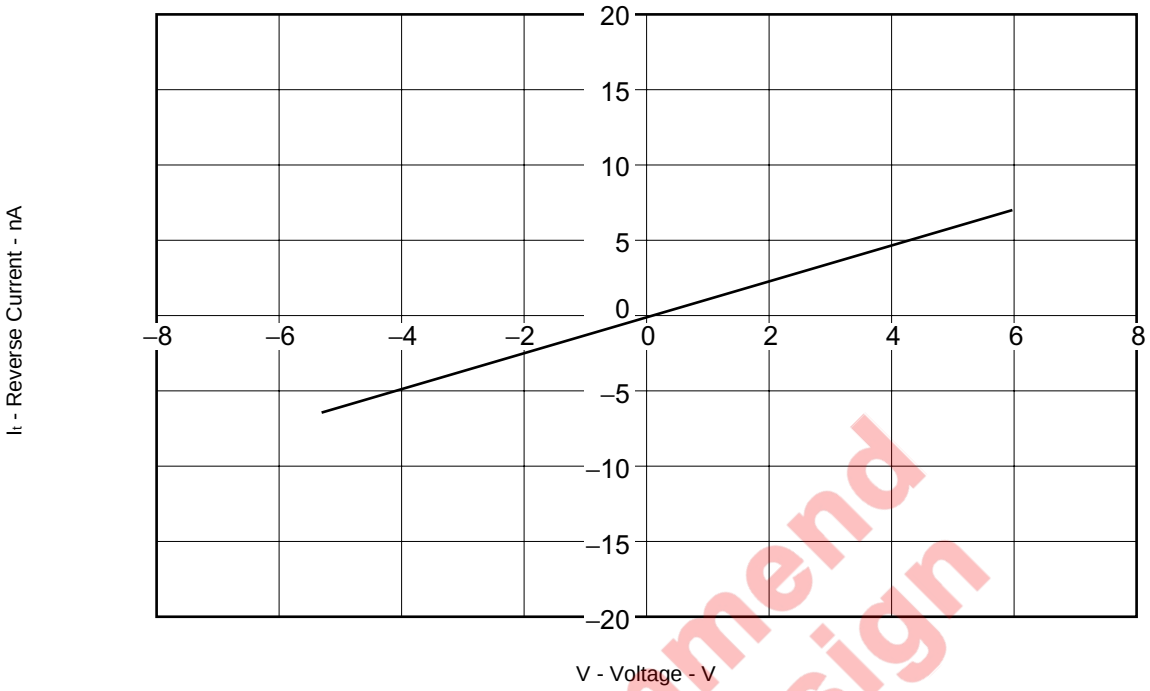


Figure 3. $I_t$ vs. V CHARACTERISTICS




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