

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

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

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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# SURGE ABSORBER DEVICES NSAD500H

## ELECTROSTATIC DISCHARGE SURGE ABSORBER DEVICES QUAD TYPE: COMMON ANODE SC-88A PACKAGE

### DESCRIPTION

NSAD500H is a low capacity ESD surge absorber developed for 100 to 500 Mbps-class data line ESD noise protection, such as USB2.0, IEEE1394, or 100B.

Based on an IEC61000-4-2 test for electromagnetic interference (EMI), this device assures an ESD endurance of 8 kV or more on contact discharge, and its capacity between pins is as small as about 3.5 pF TYP. Therefore, NSAD500H is suitable for external interface protection on data communication whose speed has been increasing.

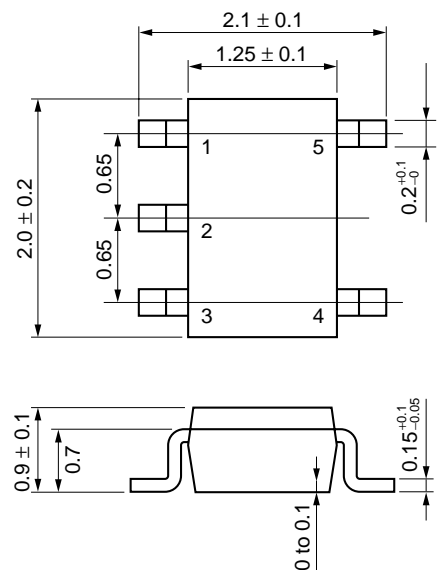
### FEATURES

- 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 4 elements mounted (common anode).  
Mounted in the SC-88A package, the products can achieve high density and automatic packaging.

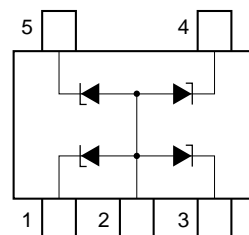
### APPLICATIONS

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

### <R> PACKAGE DRAWING (Unit: mm)



### ELECTRODE CONNECTION



1. K1: Cathode1
2. A: Anode (common)
3. K2: Cathode2
4. K3: Cathode3
5. K4: Cathode4

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

ITEM	SYMBOL	RATING	UNIT	REMARK
Power Dissipation	P	200	mW	Total
Surge Reverse Power	P <sub>RSM</sub>	2 (t = 10 μs, 1 pulse)	W	
Junction Temperature	T <sub>j</sub>	150	°C	
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C	

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

PARAMETER	BREAK OVER VOLTAGE V <sub>Bo</sub> (V)		CAPACITANCE C <sub>t</sub> (pF)		REVERSE CURRENT I <sub>R</sub> (μA)		ESD <sup>Note</sup> (kV)		<REFERENCE> FORWARD BREAK OVER VOLTAGE
	MIN.	TYP.	TYP.	Condition	MAX.	V <sub>F</sub> (V)	MIN.	Condition	
NSAD500H	5.3	8	3.5	V <sub>R</sub> = 0 V, f = 1 MHz	0.1	3.0	8	C = 150 pF, R = 330 Ω, Contact discharge	10 V TYP.

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

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

Figure 1. I vs. V<sub>BO</sub> CHARACTERISTICS

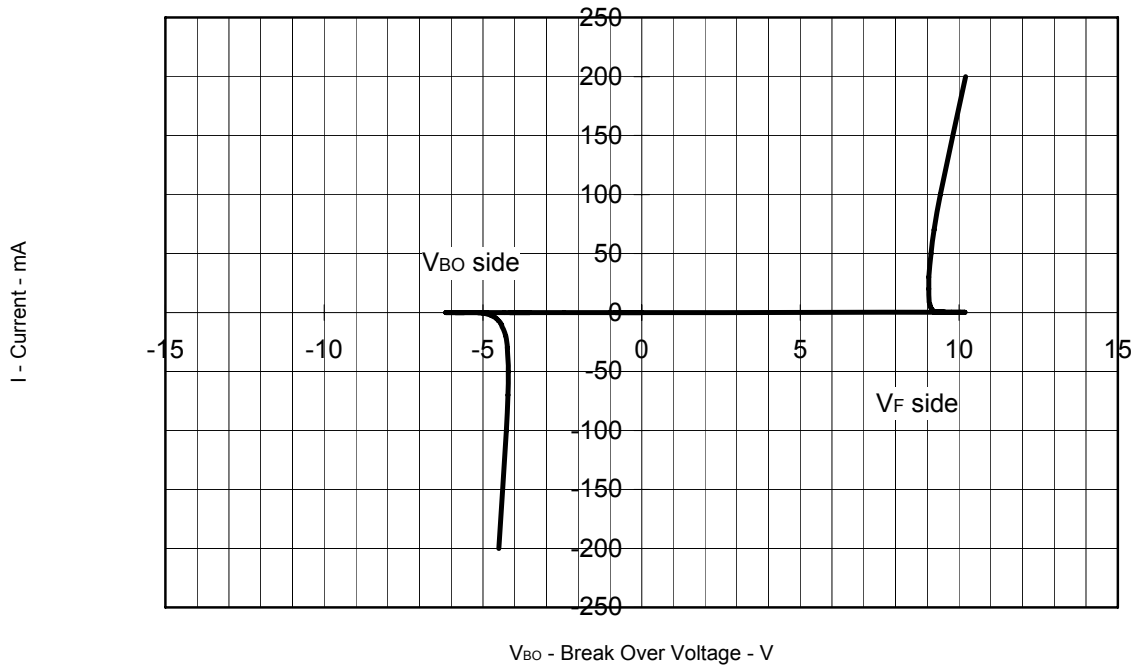


Figure 2. C<sub>i</sub> vs. V CHARACTERISTICS

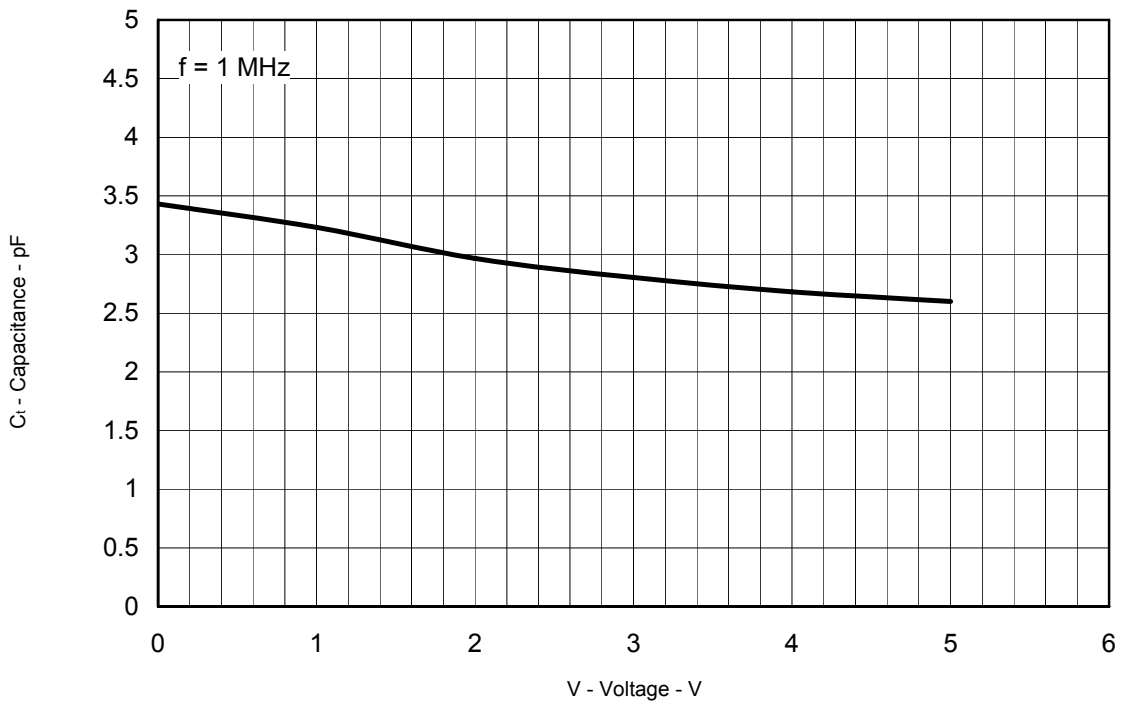
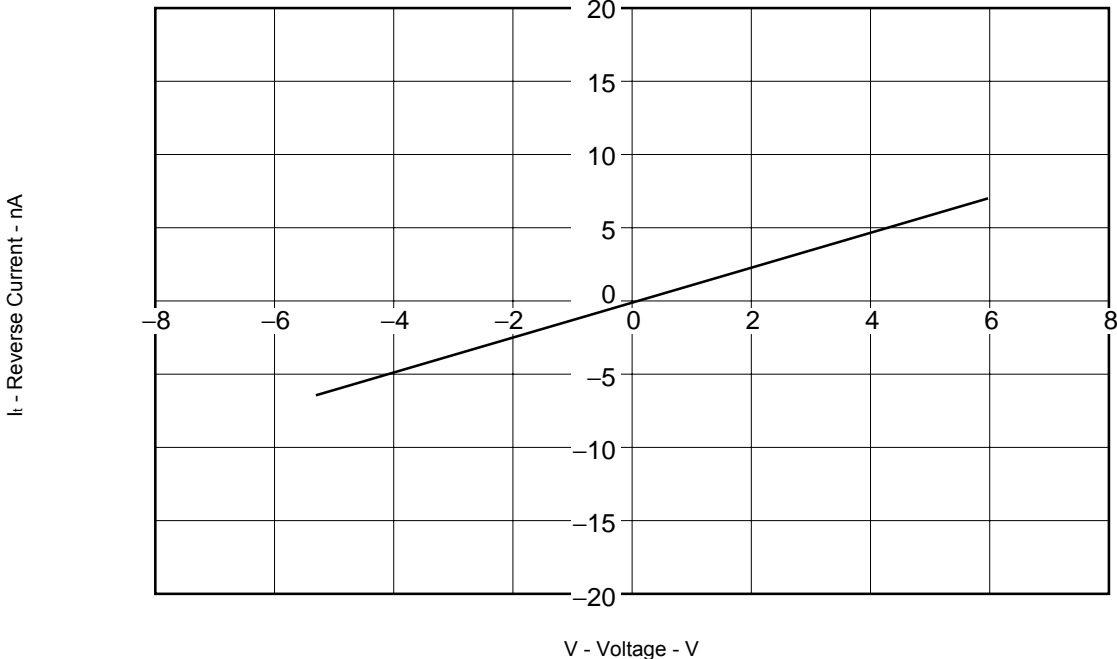


Figure 3.  $I_r$  vs. V CHARACTERISTICS



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