

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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

April 1st, 2010
Renesas Electronics Corporation

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

Send any inquiries to <http://www.renesas.com/inquiry>.

To all our customers

Regarding the change of names mentioned in the document, such as Hitachi Electric and Hitachi XX, to Renesas Technology Corp.

The semiconductor operations of Mitsubishi Electric and Hitachi were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Hitachi, Hitachi, Ltd., Hitachi Semiconductors, and other Hitachi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Renesas Technology Home Page: <http://www.renesas.com>

Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

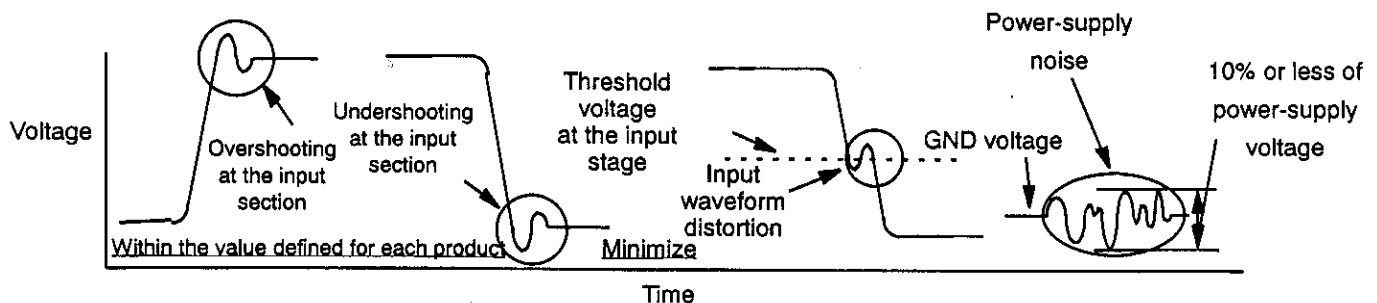
HITACHI SEMICONDUCTOR TECHNICAL UPDATE

DATE	30 July 2001	No.	TN-M62-090A/E
THEME	Instructions for Using SRAM Devices		
CLASSIFICATION	<input type="checkbox"/> Spec. change <input checked="" type="checkbox"/> Limitation on Use <input type="checkbox"/> Others <input type="checkbox"/> Supplement of Documents <input type="checkbox"/> Product line addition		
PRODUCT NAME	All SRAM Products	Lot	All lots
REFERENCE DOCUMENTS	Hitachi IC Memory Data Book Mar. 2001 ADE-403-001Q		Effective Date
			Permanent

As SRAM products become faster, various design margins are becoming difficult to secure. There is an increased possibility of the disruption of normal operation by noise in the input signal or from the power supply. Before using our SRAM products, please note the following points which you may recognize by reading the notes in the Hitachi IC Memory Data Book on the Instructions for Using Memory Devices. This will help you to prevent abnormal operation of the SRAM.

1. Precaution

When operating a semiconductor product, input-signal noise or power-supply noise may prevent the normal operation of the product and cause a malfunction of some kind. Input-signal noise includes overshooting, undershooting, and distortion of the input waveform near the threshold voltage. Make sure that the values of any overshooting or undershooting are within the specified values for the product as described in Hitachi's Data Book. Minimize the input waveform's distortion near the threshold voltage. The level of power-supply noise should be 10% or less than 10% of the peak-to-peak standard power-supply voltage.



2. Countermeasures

(1) Minimize overshooting, undershooting, and distortion of input waveform

- a. Place resistors (50 Ω or less) in series on each input
- b. Place terminal resistors on the ends of input line
- c. Make good choices in terms of pattern layout and wiring methods
- d. Suppress instabilities of reference voltages (GND level etc.)

(2) Reduce power-supply noise

- a. Place a bypass capacitor (0.1 to 0.01 μ F) at the shortest possible distance from the device
- b. Make good choices in terms of pattern layout and wiring methods

(3) When replacing an existing product, please prepare a board that suits the product that is now on the market in terms of the decreased operational margins that go along with the higher speeds of product operation.