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

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HITACHI MICROCOMPUTER TECHNICAL UPDATE

DATE	7 Novenber 2001		No.	TN-SH7-374A/E
THEME	SH7706 usage notice about using TLB			
CLASSIFICATION	☐ Spec change ☐ Supplementof Documents		■ Limitation on Use	
PRODUCTNAME	SH7706 (HD6417706)			
REFERENCE DOCUMENTS	SH7706 Hardware manual Rev1.0		Effective Date Permanent	
			Lot No.: All	

SH7706 has followed usage notice.

1. Condition and phenomenon

    1) Using MMU (MMUCR.AT=1)
    2) A TLB entry has same VPN's in different ways.
    3) Occurring an exception on TLB

Under all above conditions, MMUCR.RC may be set incorrectly.

The VPN is not initialized at power-on/manual reset. Therefore, two or more VPN's may be the same value.

For example, a TLB entry has VPN "12345" in way0 and way3 after reset and the VPN "12345" is set into the way3(V:0->1). In this case the condition (2) is satisfied, since both way0's and way3's VPN are the same.

```
        After reset            after set way3
        WAY   VPN   V          WAY   VPN   V
        0     12345 0    ->    0     12345 0
        3     12345 0          3     12345 1
```

A TLB control program may also make the above conditions, for example, a way(way0) is invalidated(V:1->0) and the same VPN is set to the same entry but a different way(way3). The condition (2) is satisfied, since both way0's and way3's VPN are the same.

```
        after invalidated way0   after set way3
        WAY   VPN   V            WAY   VPN   V
        0     12345 0      ->    0     12345 0
        3     11111 0            3     12345 1
```

2. Work around

    The followings are work around.

    (1) Please initialize the top four bits of VPN (all entries of TLB) to "1".
        Before you set MMUCR.AT as "1".
    (2) When you invalidate an entry, please set V to "0" and
        the top four bits of VPN to "1".

    This work around can avoid the condition (3), because VPN is not applied for address translation.