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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>

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RENESAS TECHNICAL UPDATE

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Product Category	MPU&MCU	Document No.	TN-16C-A149A/E	Rev.	1.00
Title	M16C/28 Group, M16C/29 Group Precautions on Writing to I2C0 Data Shift Register (S00) of Multi-Master I ² C bus Interface	Information Category	Technical Notification		
Applicable Product	M16C/28 Group, M16C/29 Group	Lot No.	Reference Document		
		—			

1. Precautionary Note

Write to the S00 register when the arbitration lost detection flag (AL bit in the S10 register) is set to "1" in either of the following conditions:

- (1) Start condition standby
- (2) Stop condition standby
- (3) When the SCL pin outputs "L"

The SCL pin may output short "L" when writing to the S00 register in the conditions other than above.

The PIN bit is set to "1" by writing to the S00 register and the SCL pin is left open when the following condition of (3-1) is applicable in the condition of (3). And then the SCL pin may output short "L".

(3-1) The SCL pin outputs "L" after the falling edge of the ACK clock at slave operation.

(* The I²C bus interface interrupt request bit (PIN bit in the S10 register) is set to "0" and the SCL pin outputs "L" after the falling edge of the ACK clock.)

2. Countermeasure

A countermeasure when the SCL pin outputs short "L" in the condition of (3-1) is described here.

To write to the S00 register, switch the SCL pin to the port output function with the SCL/port function select bit (PEC bit in the S3D0 register) before writing to the S00 register.

Return to the SCL output function from the port output function after writing to the S00 register and waiting 3 cycles or longer of I²C bus system clock VIIC.

(Example of Countermeasure)

The following sample source operates in the conditions of main clock=20MHz, VIIC=4MHz.

```
if(al == 1) {  
    p2_1 = 1;  
    pec = 1;           // SCL → Port  
    s00 = data;       // dummy write  
    asm("nop");       // Wait of 3VIIC cycle  
    asm("nop");       // 15nop : 15 cycles (= (20MHz/4MHz) x 3 = 5 x 3)  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    asm("nop");  
    pec = 0;         // Port → SCL  
} else {  
    s00 = data;       // dummy write  
}
```