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April 1st, 2010
Renesas Electronics Corporation

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7548/7549 Group

Serial I/O (Clock Synchronous Serial I/O Mode: Example 1)

1. Abstract

The following article introduces and shows an example of how to use the Serial I/O (Clock Synchronous Serial I/O Mode: Example 1) on the 7548/7549 Group device.

2. Introduction

The application explained in this document applies to the following MCU and parameter(s):

Applicable MCU: 7548/7549 Group

Oscillation frequency: 4 MHz

Function set ROM data 0 to 2 are areas used to set peripheral functions by data written to the QzROM and can not be set by program. Data set to these areas are valid after a reset of the MCU is released. Make sure to set values according to the user system regardless of the use of peripheral functions. Set values used in this sample program are as follows.

Function set ROM data 0 FSROM0 (address FFD8h): 10000000b

Function set ROM data 1 FSROM1 (address FFD9h): 10000001b

Function set ROM data 2 FSROM2 (address FFDAh): 00001011b

This sample program may include operations of unused bit functions for the convenience of the SFR bit layout. Set the values according to the operational conditions of the user system.

3. Contents

3.1 Communication Using Clock Synchronous Serial I/O (Transmit/Receive)

Outline: 2-byte data is transmitted and received, using the clock synchronous serial I/O.
 $\overline{\text{SRDY}}$ signal is used for communication control.

Specifications:

- Serial I/O is used (clock synchronous serial I/O mode is selected).
- Synchronous clock frequency: 125 kHz ($f(\text{XIN}) = 4 \text{ MHz}$ divided by 32)
- $\overline{\text{SRDY}}$ signal (receivable signal) is used.
- The receive side outputs the $\overline{\text{SRDY}}$ signal at intervals of 2 ms (generated by the timer), and 2-byte data is received.
- The transmit side confirms the $\overline{\text{SRDY}}$ signal by INT1 interrupt request and transmits 2-byte data.

Figure 3.1 shows the Connection Diagram, Figure 3.2 shows the Timing Chart, Figure 3.3 shows the Register Settings Relevant to the Transmit Side, Figure 3.4 shows the Register Settings Relevant to the Receive Side, Figure 3.5 shows the Control Procedure of Transmit Side, and Figure 3.6 shows the Control Procedure of Receive Side.

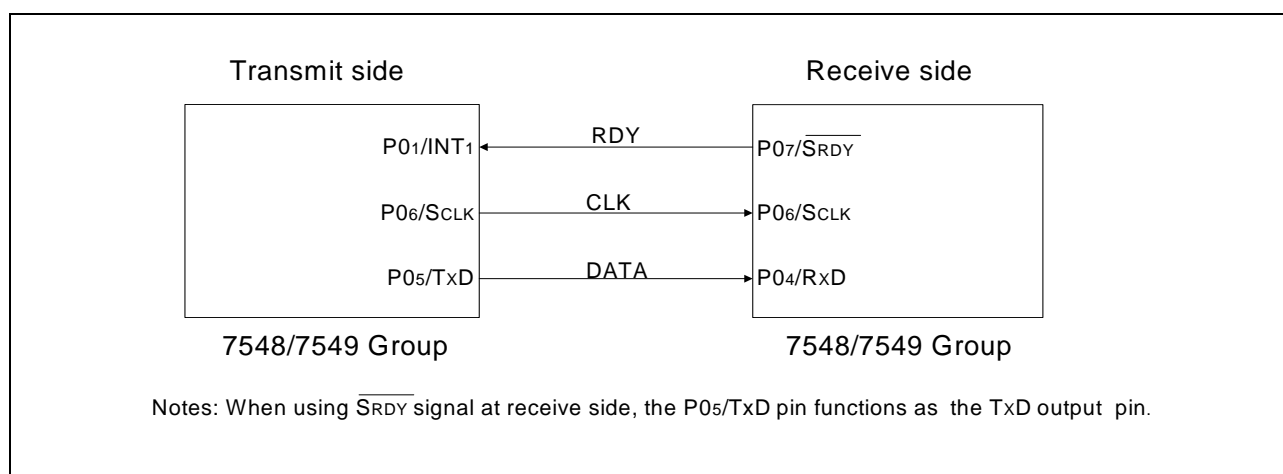


Figure 3.1 Connection Diagram

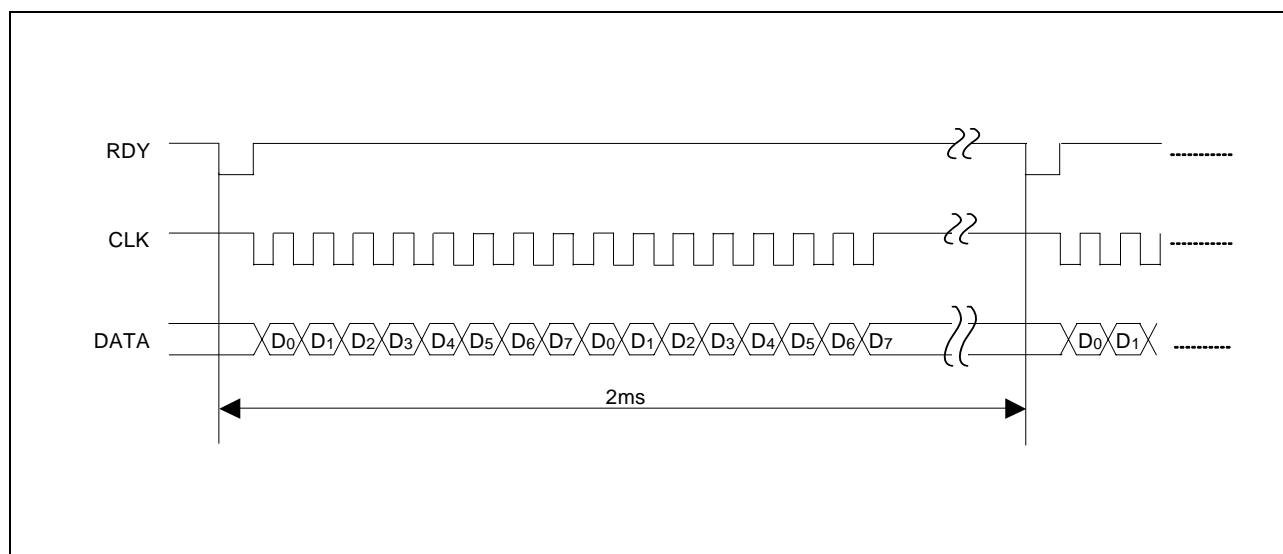
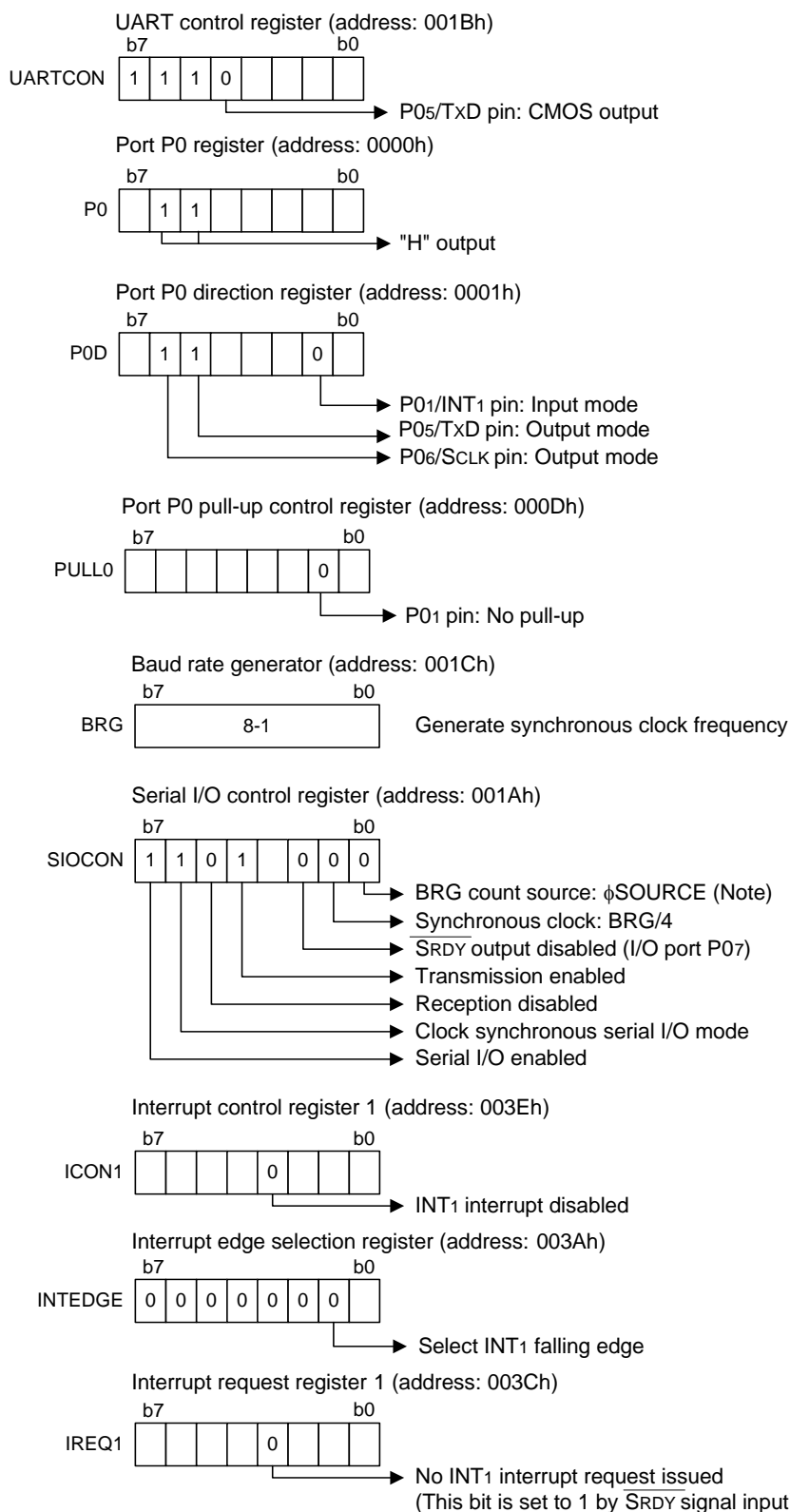


Figure 3.2 Timing Chart

Transmit Side



Note: ϕ SOURCE is the clock selected by bits 5 and 4 at the clock mode register (address 0037h).
Timer count sources are not affected by bits 7 and 6 (clock dividing ratio selection bits).

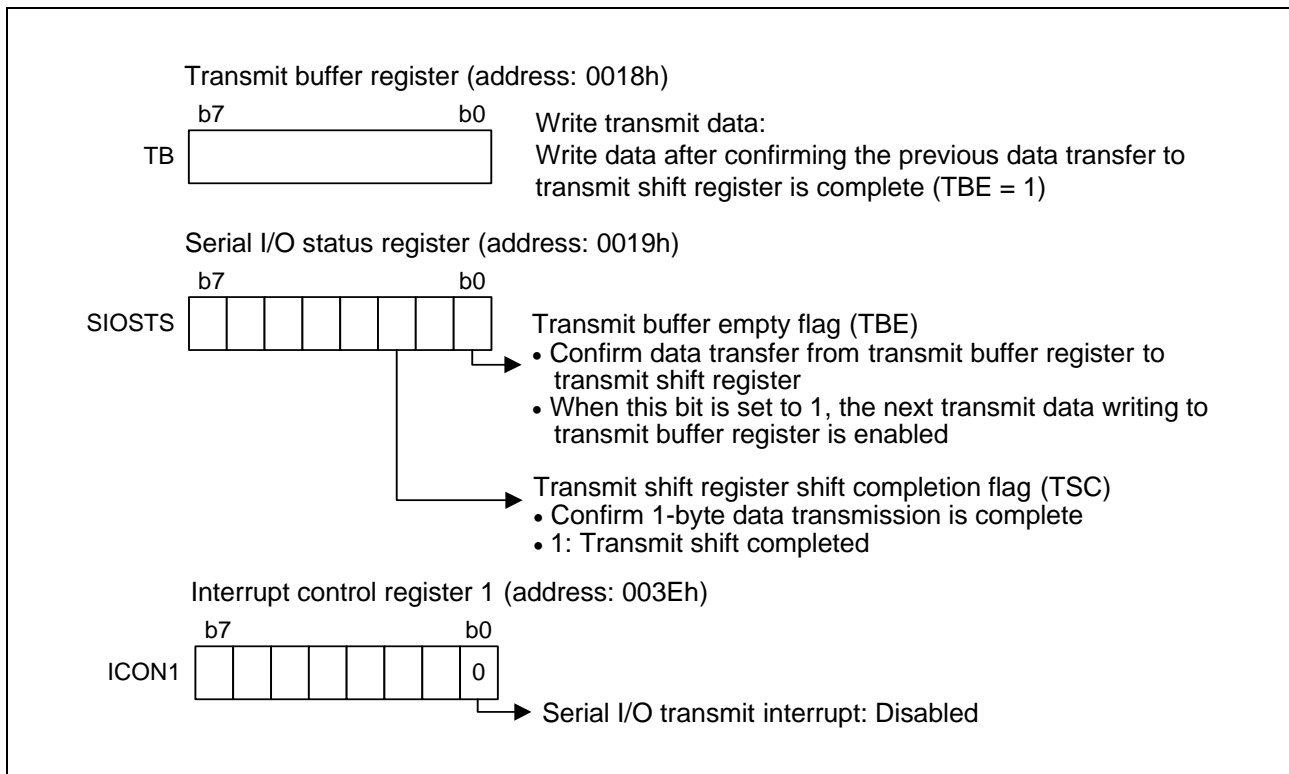


Figure 3.3 Register Settings Relevant to the Transmit Side

Receive side

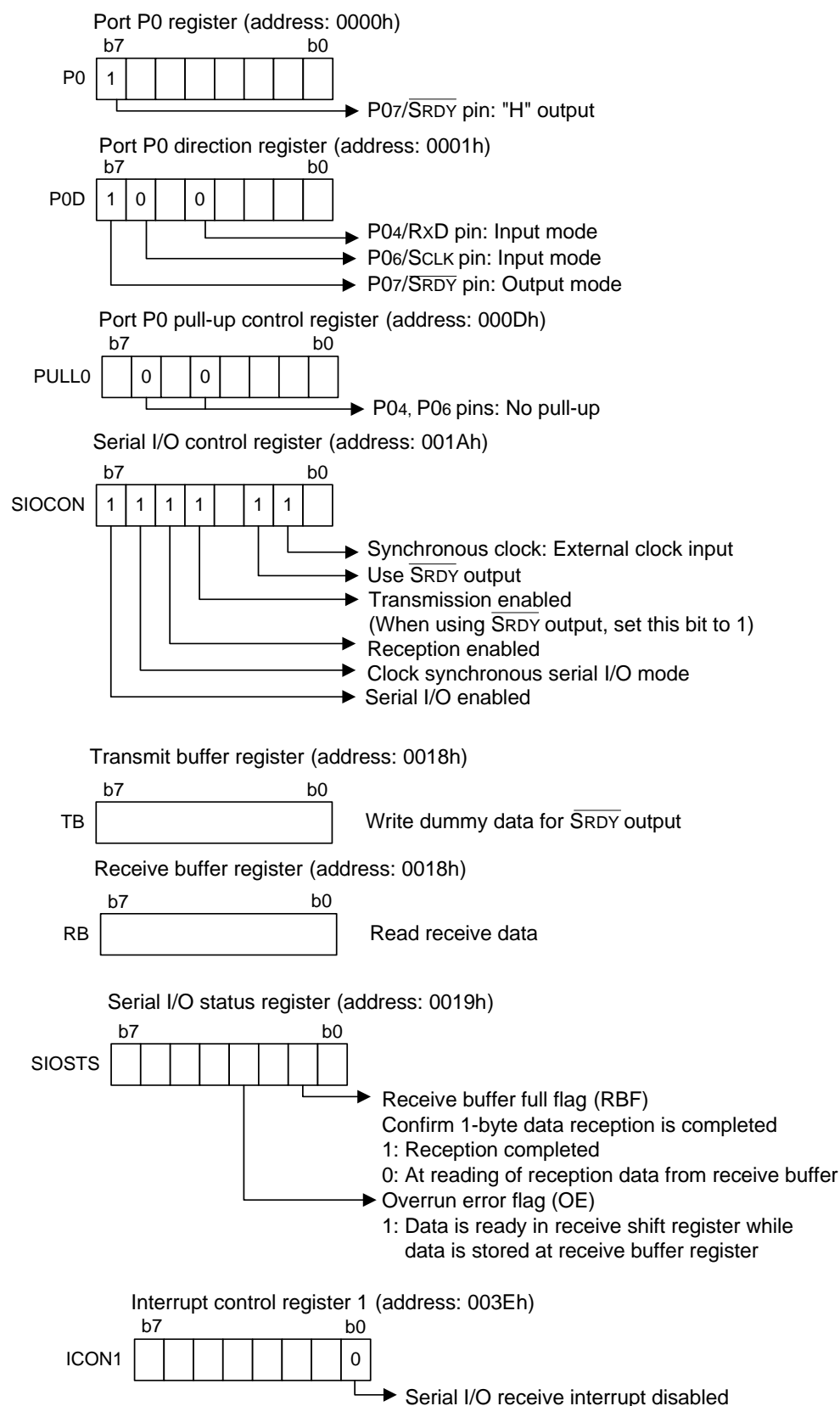


Figure 3.4 Register Settings Relevant to the Receive Side

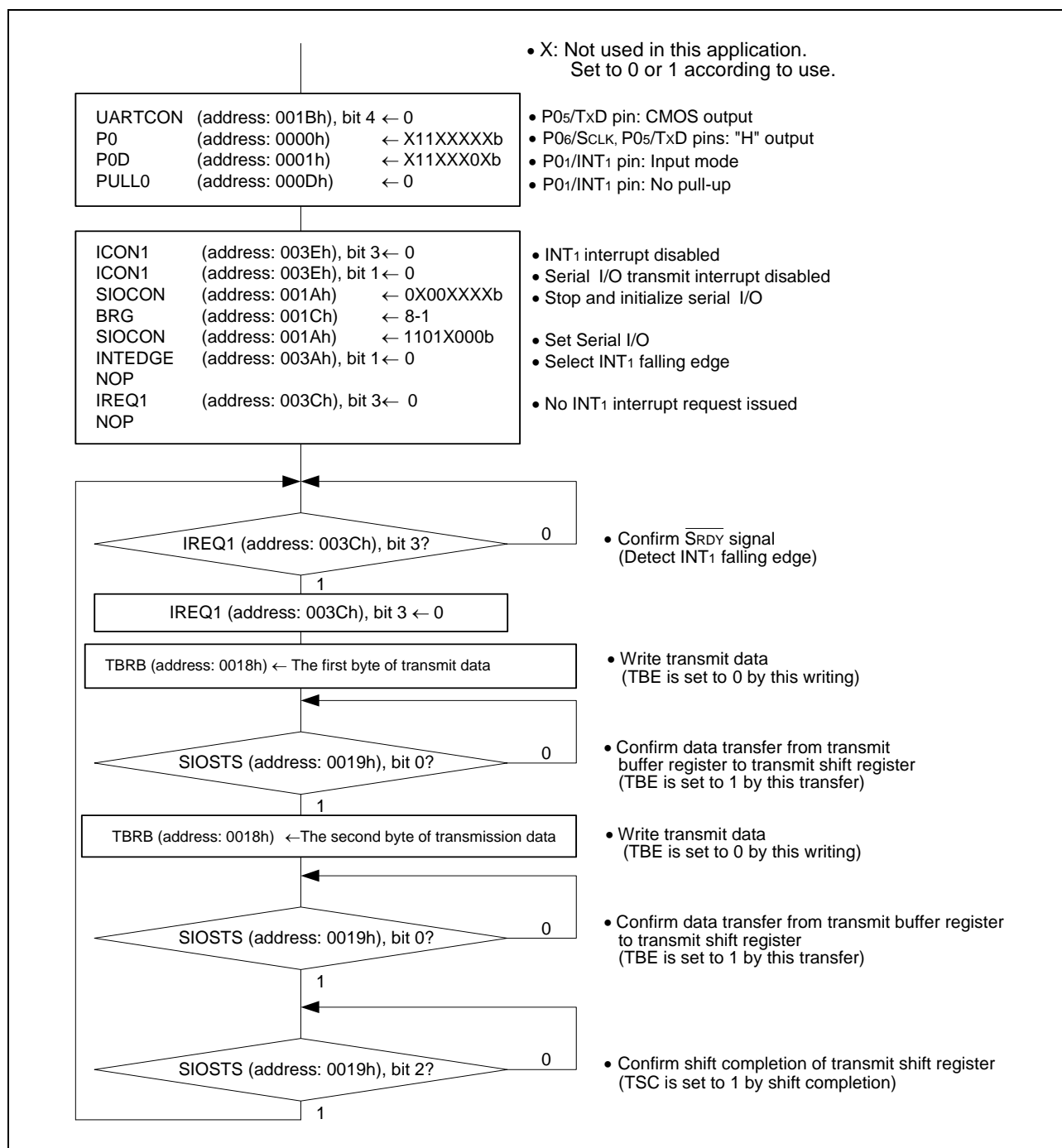


Figure 3.5 Control Procedure of Transmit Side

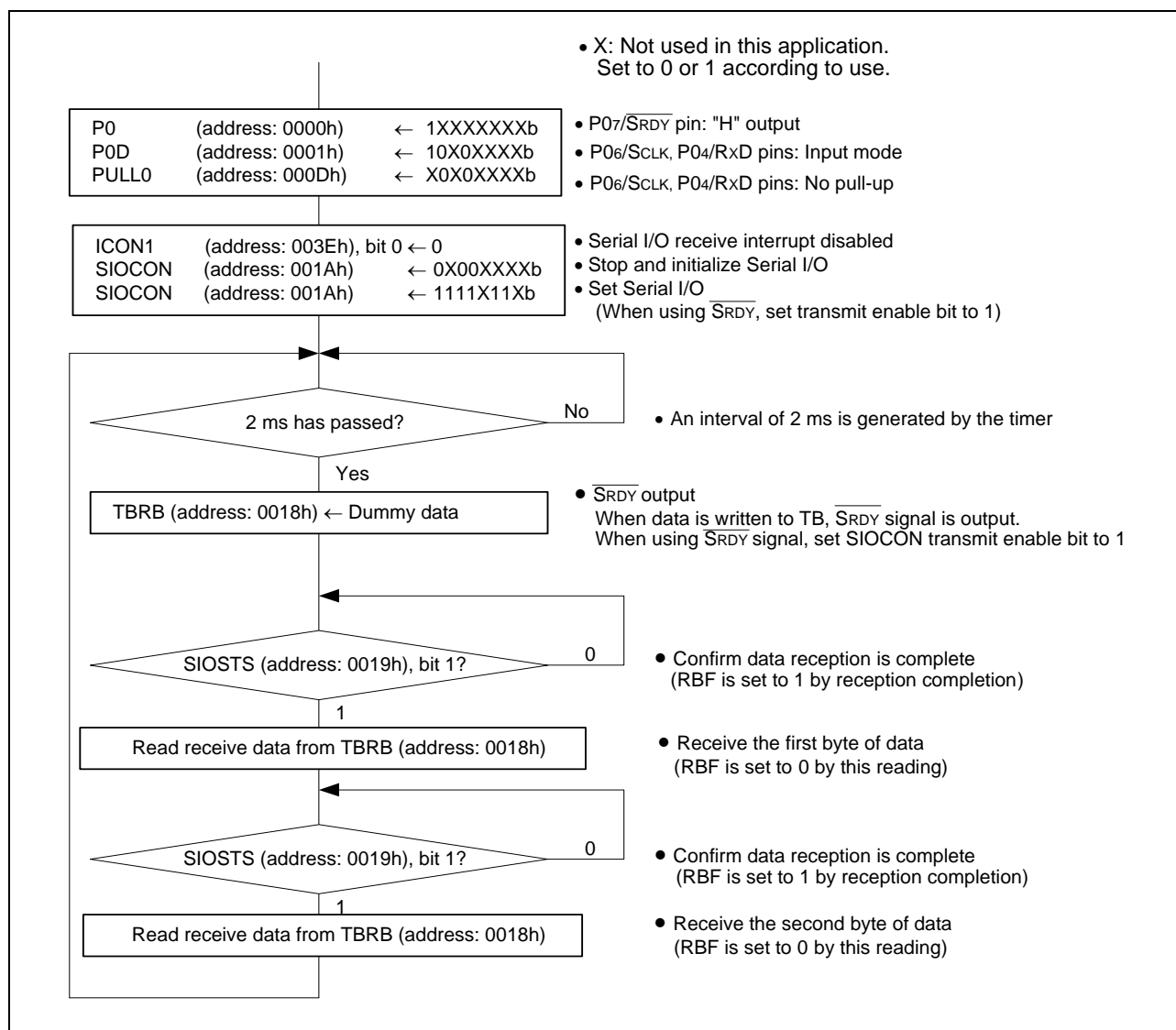


Figure 3.6 Control Procedure of Receive Side

4. Sample Programming Code

Download a sample program from the Renesas Technology website.

To download, click "Application Notes" in the left side menu on the page of the 7548/7549 Group.

5. Reference Document

Datasheet

7548/7549 Group Datasheet

Download the latest version from the Renesas Technology website.

Technical News/Technical Update

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REVISION HISTORY	7548/7549 Group Serial I/O (Clock Synchronous Serial I/O Mode: Example 1)
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Rev.	Date	Description	
		Page	Summary
1.00	Mar 26, 2007	–	First Edition issued
1.01	Oct 01, 2007	5	Figure 3.4 a clerical error revised

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