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April 1st, 2010
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7548/7549 Group

Timer A Operation (Input Capture Function)

1. Abstract

The following article introduces and shows an example of how to use the Timer A Operation (Input Capture Function) 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: 1.8432 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 Input capture function application example

Outline: A waveform generated by the timer 2 pulse output function is input to the capture 0 input pin and the “H” width of the pulse is measured.

Specifications:

- A square wave of 1.00 Hz is output from the P13/T2OUT pin. MMThe waveform output from the P13/T2OUT pin is input to the P03/CAP0 pin and the “H” width of the pulse is measured.
- A falling edge of the pulse is selected for a capture interrupt.
- Read-out of the capture latch and calculation of the “H” width are operated in the capture interrupt processing routine.

Figure 3.1 shows the Connection Diagram and Circuit Example of Timer, Figure 3.2 and 3.3 show the Relevant Register Settings, and Figure 3.4 shows the Control Procedure.

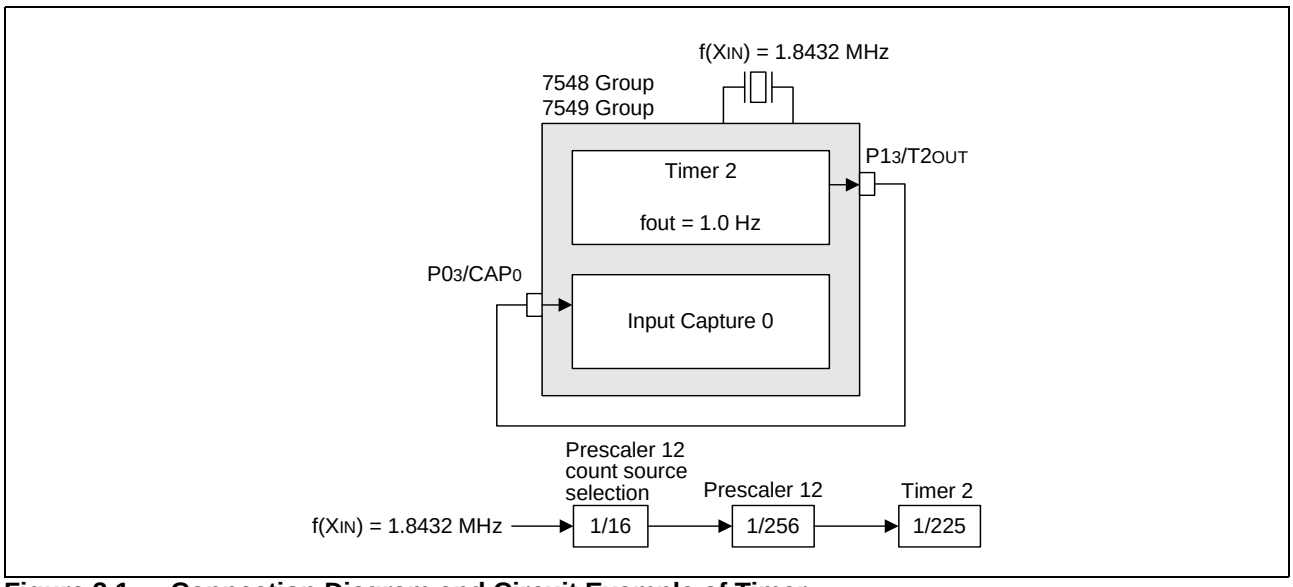
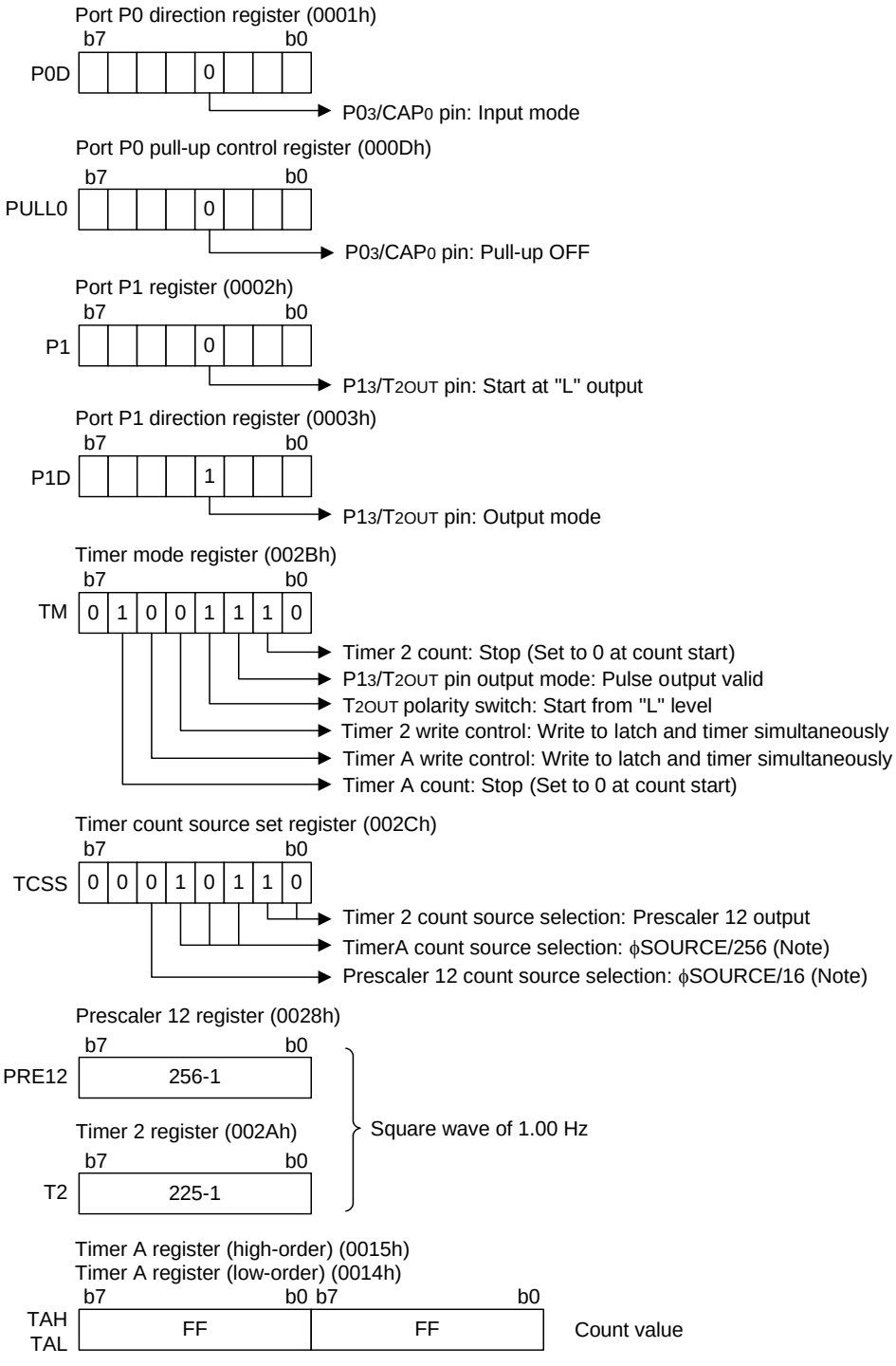


Figure 3.1 Connection Diagram and Circuit Example of Timer



Note: φSOURCE 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 3.2 Relevant Register Settings (1)

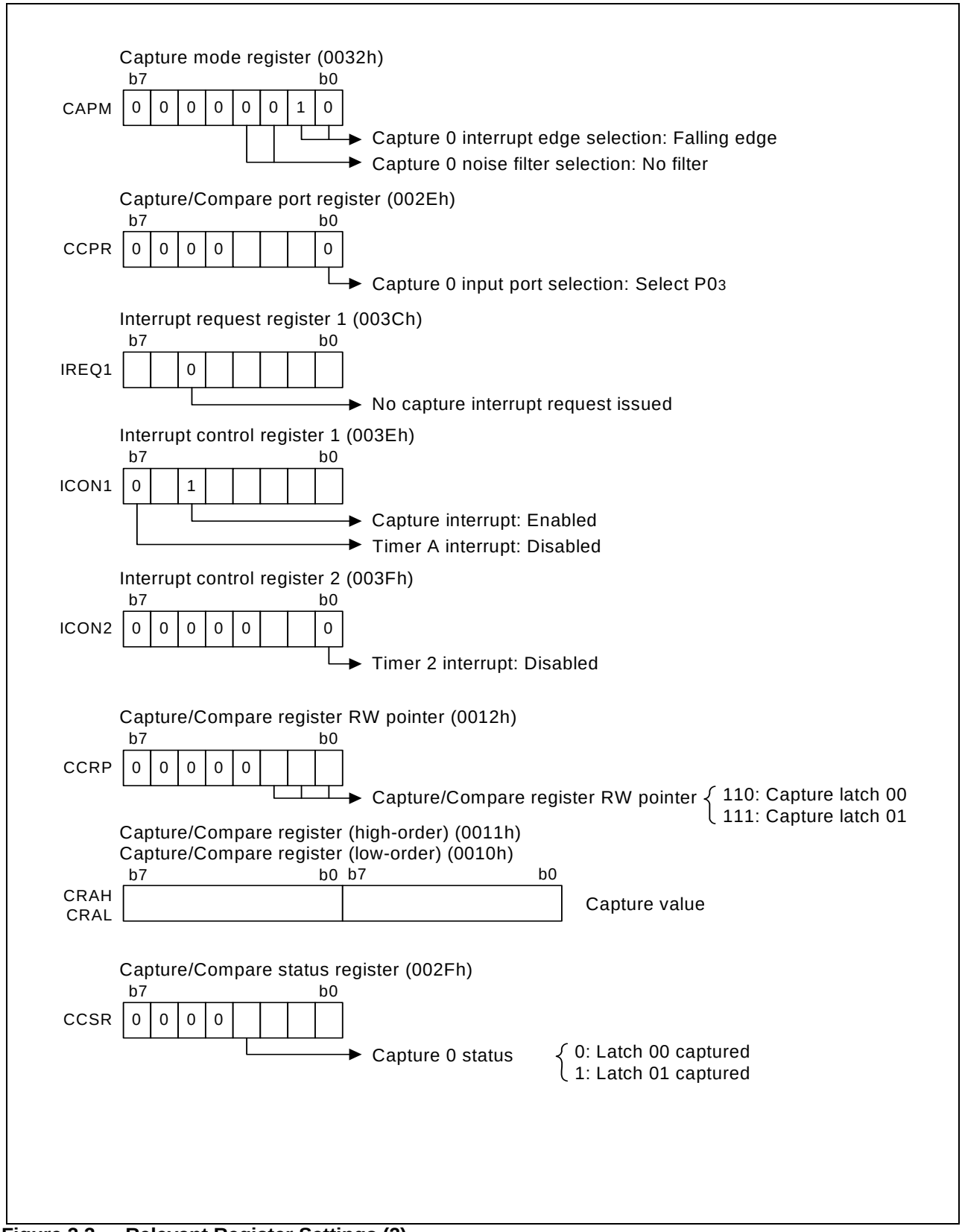


Figure 3.3 Relevant Register Settings (2)

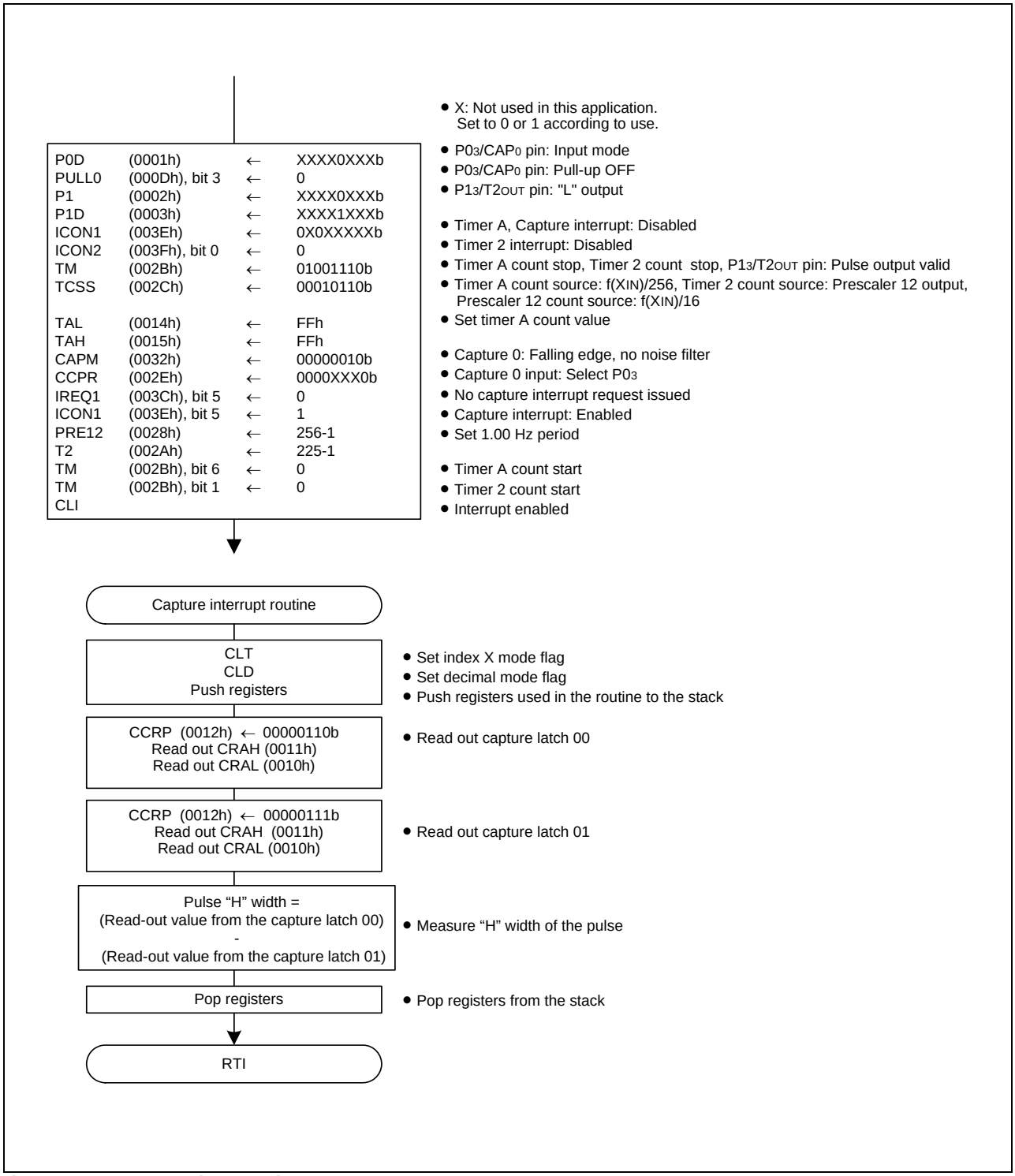


Figure 3.4 Control Procedure

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 Timer A Operation (Input Capture Function)

Rev.	Date	Description	
		Page	Summary
1.00	Mar 26, 2007	–	First Edition issued
1.01	Oct 01, 2007	2,3,5	Section 3.1, Figures 3.2 and 3.4 Clerical errors revised

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