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April 1st, 2010
Renesas Electronics Corporation

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3858 Group

Timer Z1 Operation (Pulse Width Measurement Mode)

1. Abstract

This document describes how to set up and use timer Z1 (pulse width measurement mode) on the 3858 Group device.

2. Introduction

The application example described in this document is applied to the following:

MCU: 3858 Group

Oscillation frequency: 8 MHz

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

3. Contents

3.1 Pulse Width Measurement

Outline: In pulse width measurement mode, the “H” width of pulses input to the P22/CNTR2 pin is counted using timer Z1.

Specifications:

- Timer Z1 counts the “H” width of pulses input to the P22/CNTR2 pin.
- The initial value of timer Z1 is 65535.
- Measurement is possible within the range of 65535 to 0.
- Error processing occurs if the “H” width cannot be measured due to timer Z1 underflow.
- The CNTR2 interrupt detects the input pulse “H” end.

Figure 3.1 shows the Timer Connection and Division Ratio, Figures 3.2 and 3.3 show the Relevant Register Settings (1) and (2), and Figures 3.4 and 3.5 show the Control Procedure (1) and (2), respectively.

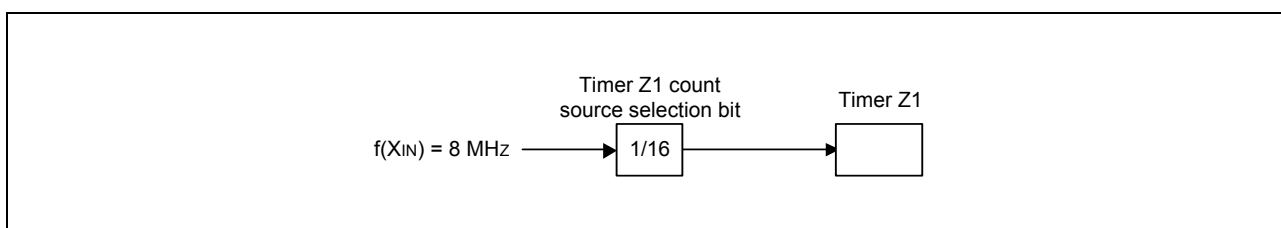


Figure 3.1 Timer Connection and Division Ratio

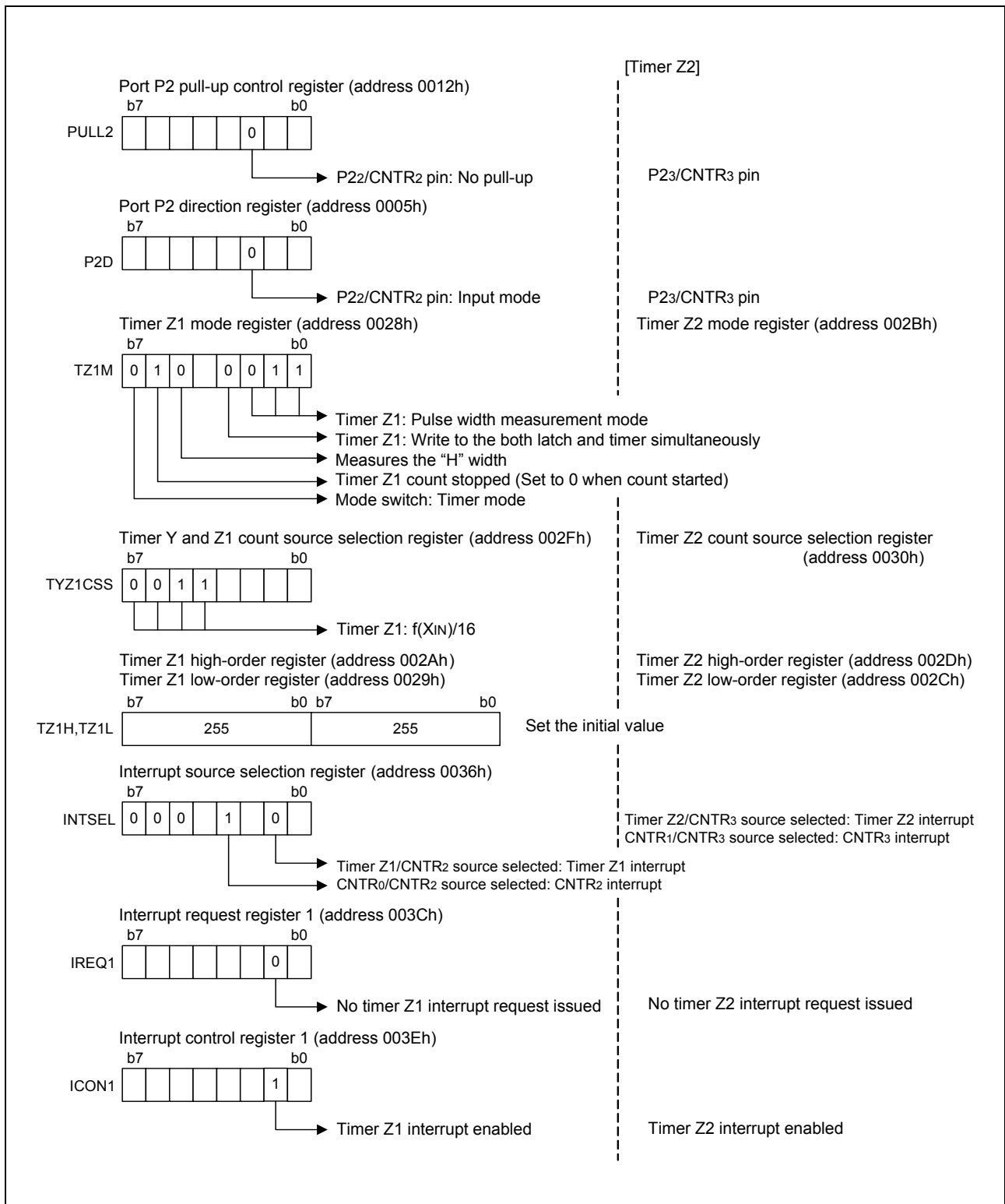


Figure 3.2 Relevant Register Settings (1)

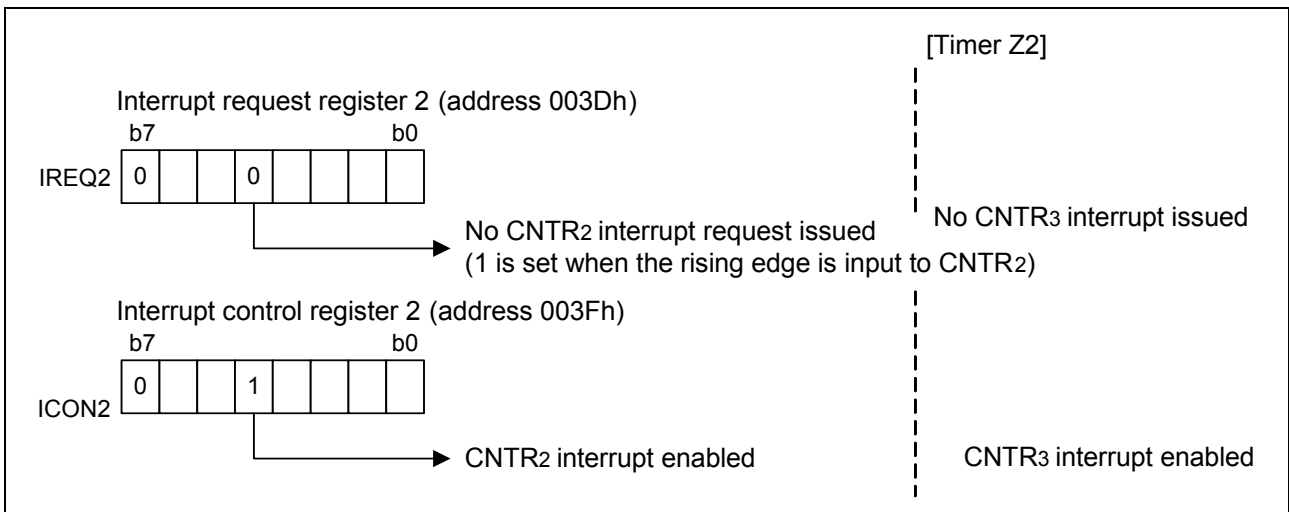


Figure 3.3 Relevant Register Settings (2)

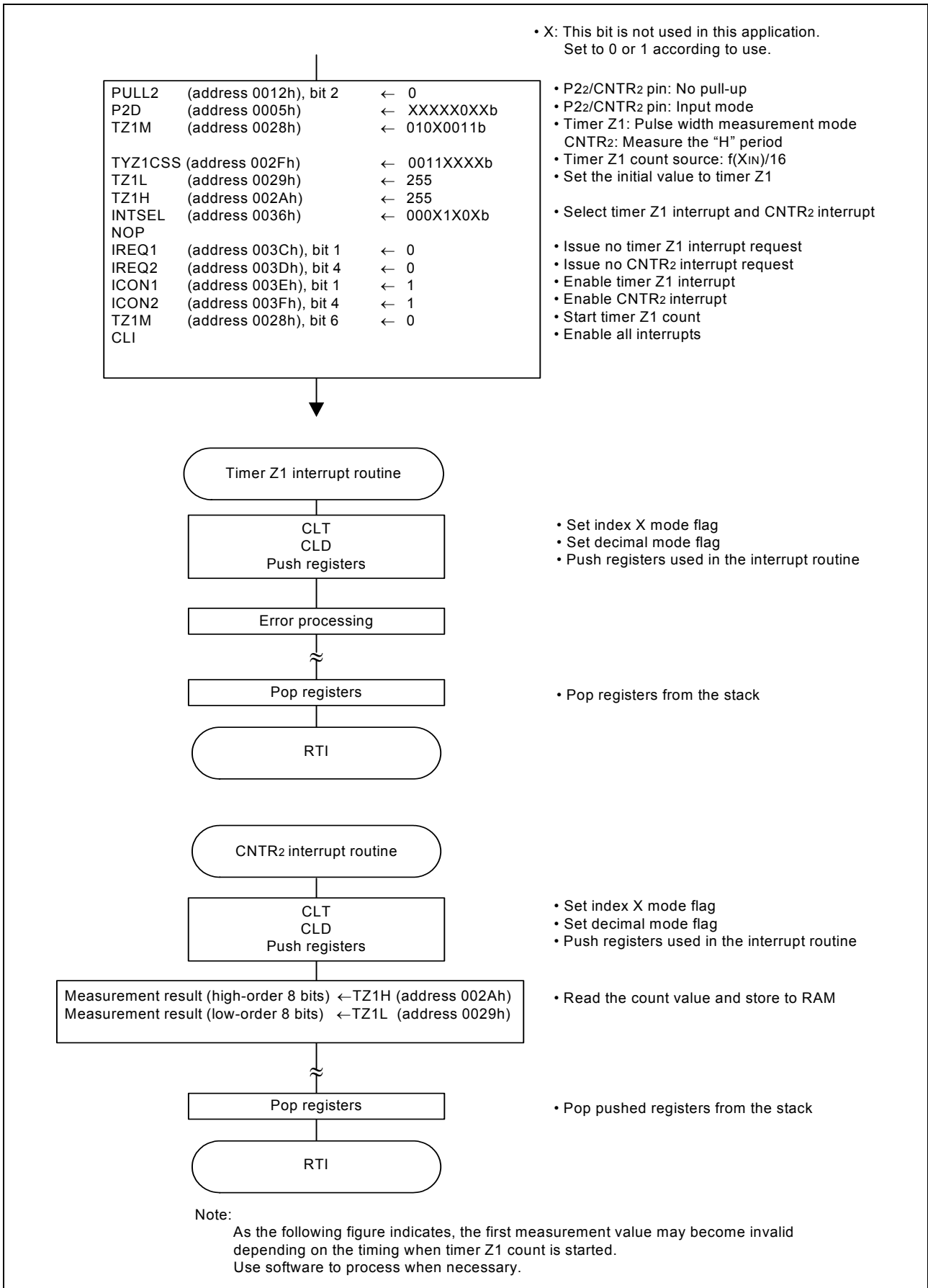
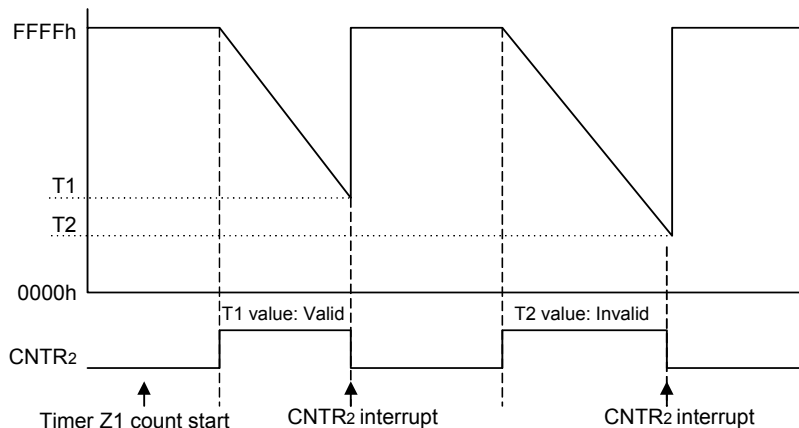


Figure 3.4 Control Procedure (1)

[Ex. 1] • When CNTR2 input level is "L", start timer Z1 count.
 (The CNTR2 input level can be determined by reading the register content in double-function port P22.)



[Ex. 2] • When the CNTR2 input level is "H", start timer Z1 count.
 After starting timer Z1 count, the first CNTR2 interrupt is disabled.

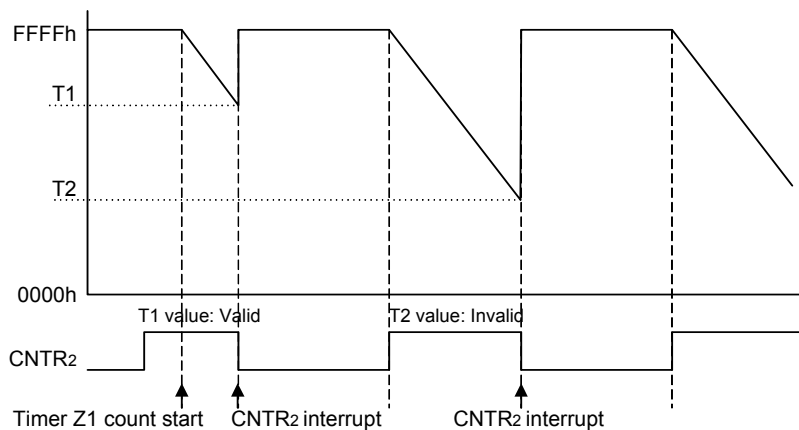


Figure 3.5 Control Procedure (2)

4. Sample Programming Code

Download a sample program from the Renesas Technology website.

To download, click “Application Notes” in the left-hand side menu on the page of the 3858 Group.

5. Reference Document

Datasheet

3858 Group Datasheet

Download the latest version from the Renesas Technology website.

Technical News/Technical Update

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REVISION HISTORY	3858 Group Timer Z1 Operation (Pulse Width Measurement Mode) Application Note
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Rev.	Date	Description	
		Page	Summary
1.00	Aug 10, 2006	-	First Edition issued

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