

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## 3823 Group

### Timer X Operation (Pulse Output Mode: Piezoelectric Buzzer Output)

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#### 1. Abstract

The following article introduces and shows an example of Timer X Operation (Pulse Output Mode: Piezoelectric Buzzer Output) on the 3823 group device.

#### 2. Introduction

The explanation of this issue is applied to the following conditions:

Applicable MCU: 3823 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 operational conditions of the user system.

3. Contents

3.1 Piezoelectric Buzzer Output

Outline: The piezoelectric buzzer output in pulse output mode of timer X.

Specifications:

- The square wave, generated by dividing the clock  $f(XIN) = 8\text{ MHz}$  into 2 kHz, is output from the P54/CNTR0 pin.
- The output level of the P54/CNTR0 pin is fixed to “H” while the piezoelectric buzzer output stops.

Figure 3.1 shows the Output Waveform and Peripheral Circuit Example, Figure 3.2 shows the Timer Connections and Division Ratios, Figure 3.3 shows the Relevant Register Settings, and Figure 3.4 shows the Control Procedure.

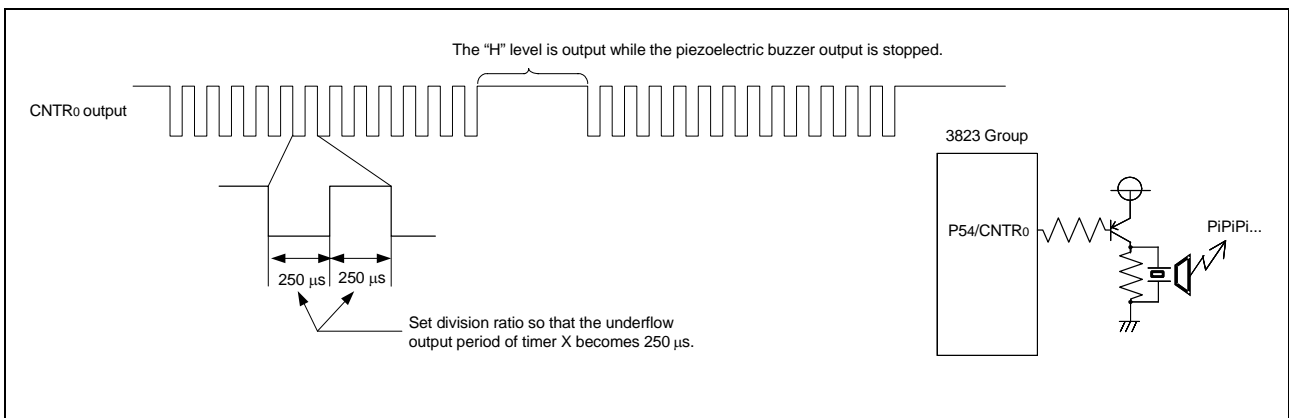


Figure 3.1 Output Waveform and Peripheral Circuit Example

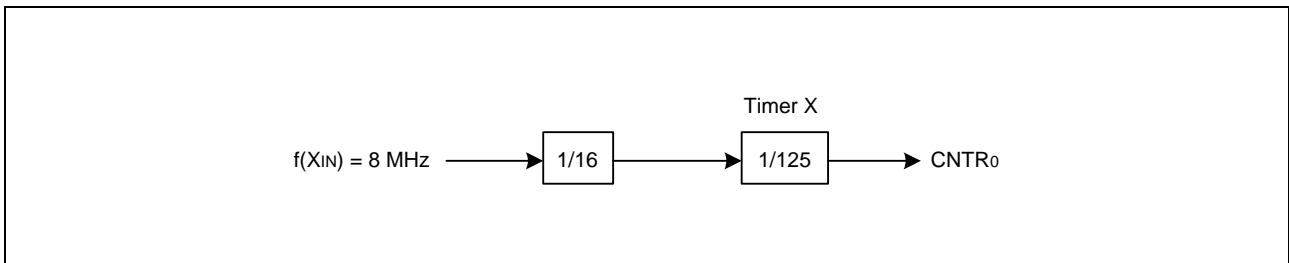


Figure 3.2 Timer Connections and Division Ratios

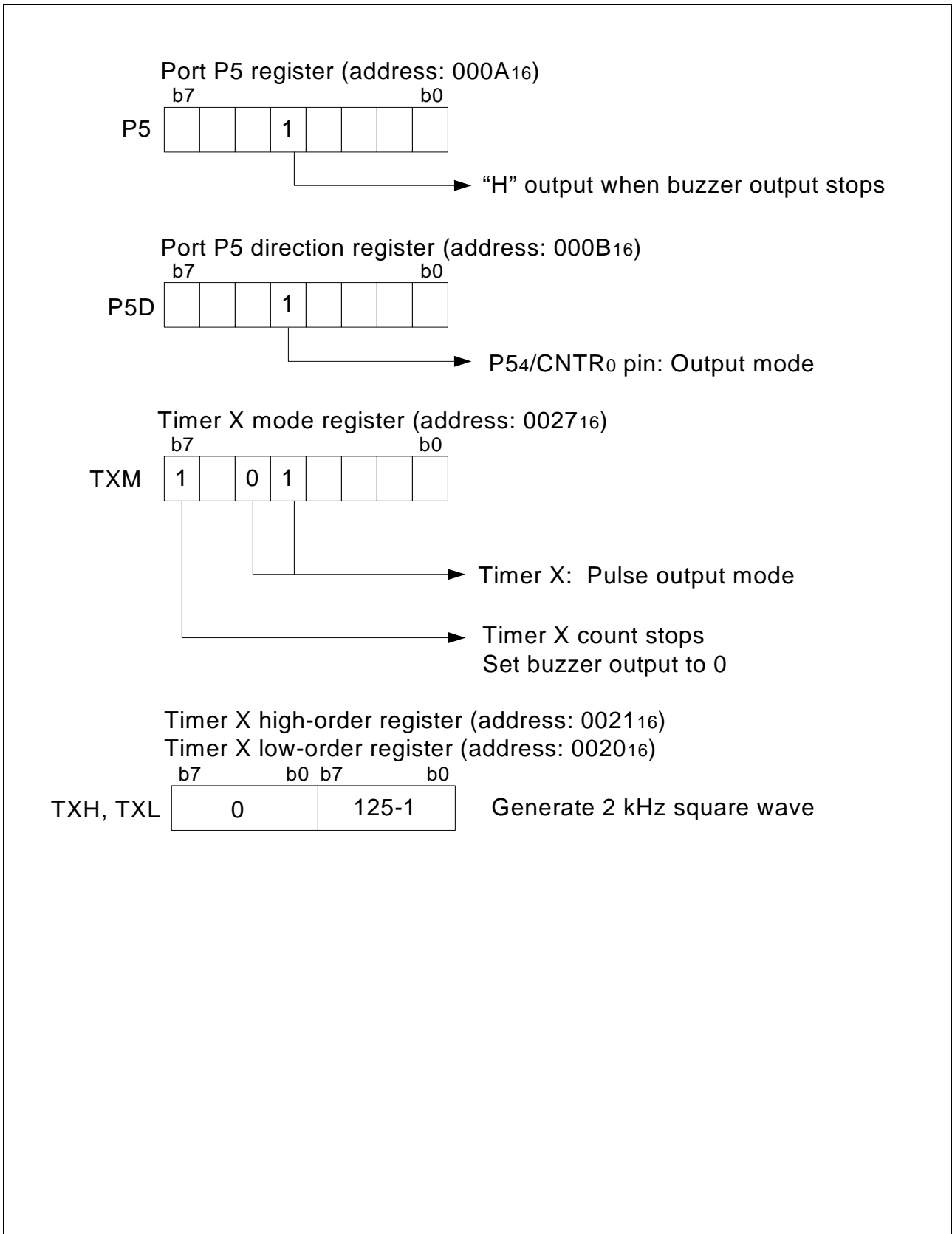


Figure 3.3 Relevant Register Settings

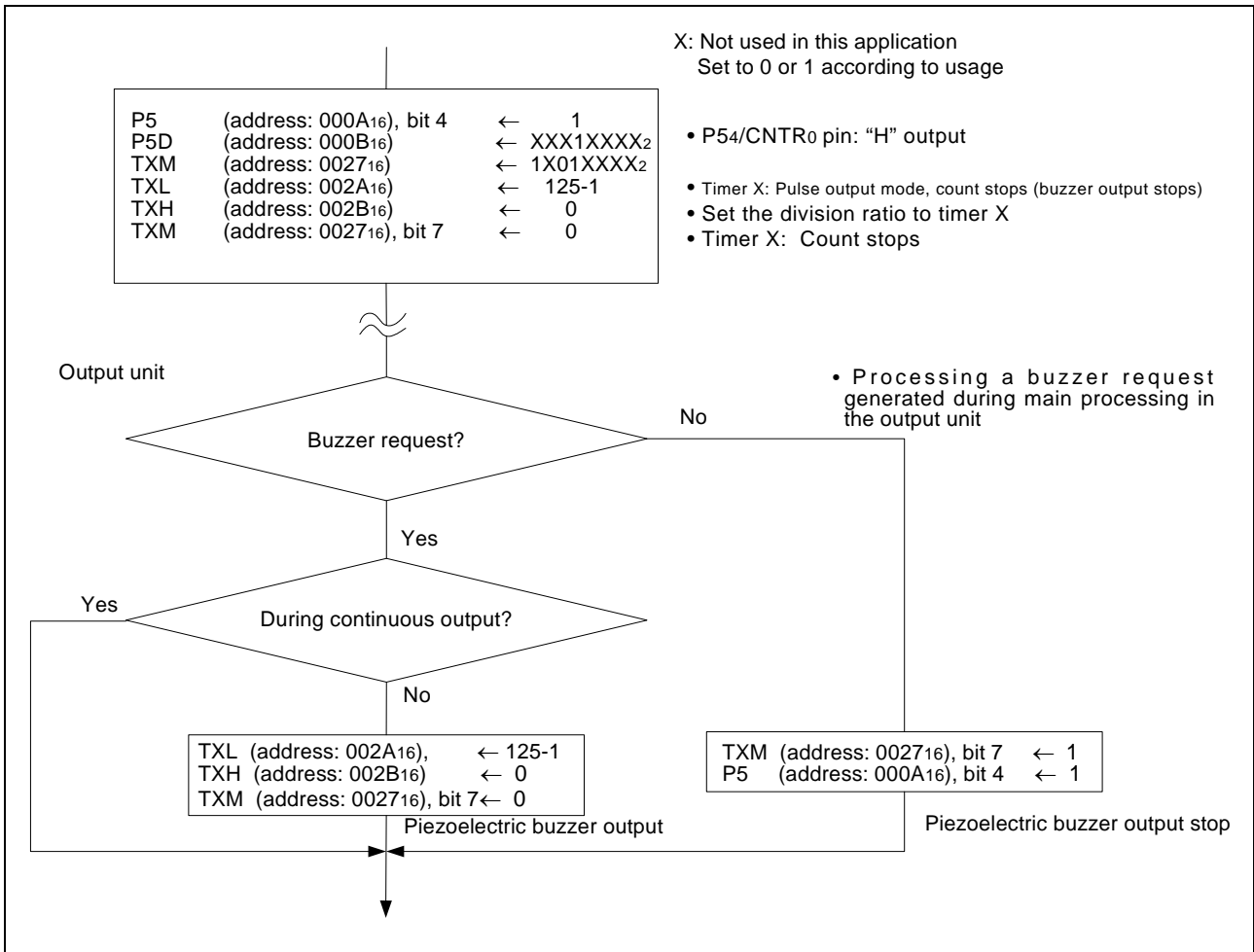


Figure 3.4 Control Procedure

#### **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 3823 Group.

#### **5. Reference Document**

Datasheet  
3823 Group Data sheet  
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REVISION HISTORY	3823 Group Timer X Operation (Pulse Output Mode: Piezoelectric Buzzer Output)
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Rev.	Date	Description	
		Page	Summary
1.00	Aug 10, 2006	-	First Edition issued



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