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R32C/100 Series

Timer B Operation in Timer Mode

1. Abstract

This mode decrements a counter value using an internally generated count source. An interrupt request is generated when the counter value underflows.

Timer period = (timer Bi register (i = 0 to 5) +1) × timer count source period

f1 = 25 MHz, fC = 32.768 kHz

Count Source	Count Source Period	Maximum Period (Timer Value = 0xFFFF)
f1	40 ns	2.621 ms
f8	320 ns	20.972 ms
f2n (n = 15)	1200 ns	78.64 ms
fC32	Approx. 0.977 ms	64 s

2. Introduction

The application described in this document applies to the following MCU:

- MCU: R32C/118 Group

This program can be used with other R32C/100 Series MCUs which have the same special function registers (SFRs) as the R32C/118 Group. Check the manual for any additions or modifications to functions. Careful evaluation is recommended before using this application note.

3. Application Example

This section describes how to generate a timer interrupt request with a 1 ms period using the count source f8.

3.1 Explanation

(1) After setting the TBiS bit (i = 0 to 5) in the TABSR or TBSR register to 1 (count started), the counter decrements the count source.
(2) When the counter underflows, the value from the reload register is reloaded, and the count continues.
(3) After setting the TBiS bit to 0 (counter stopped), the counter holds the count value and stops.

The diagram below shows operation timing.

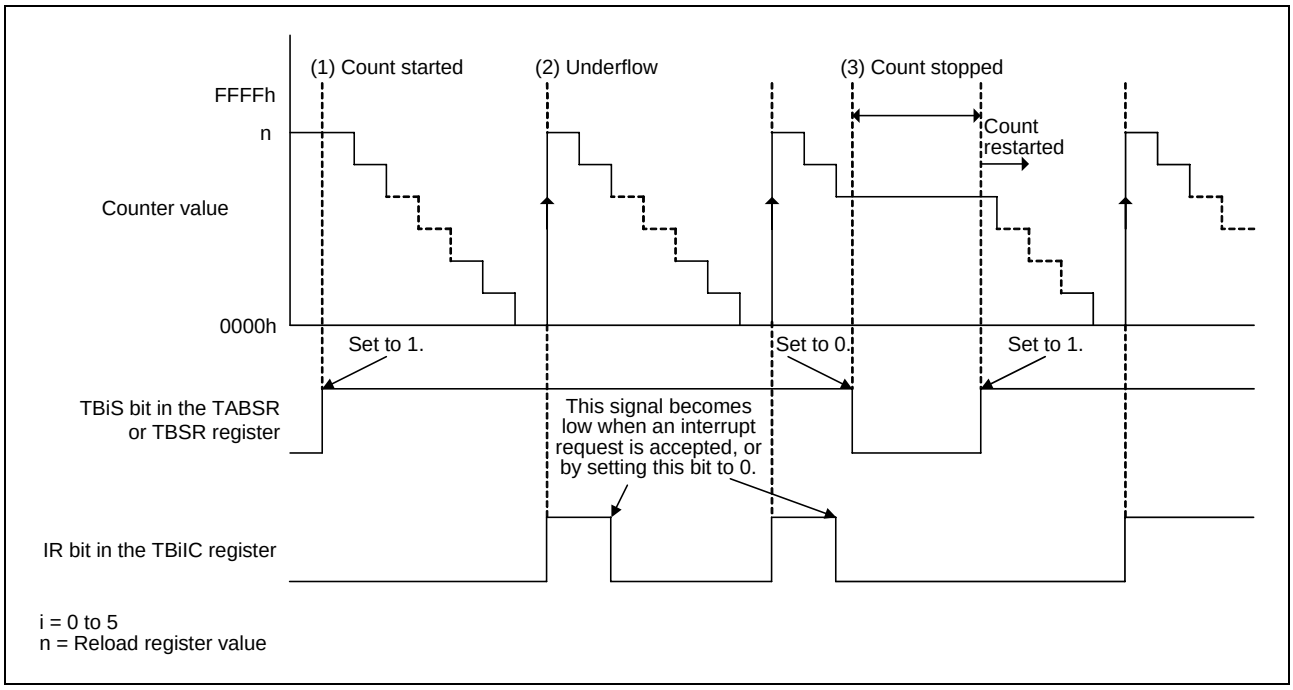
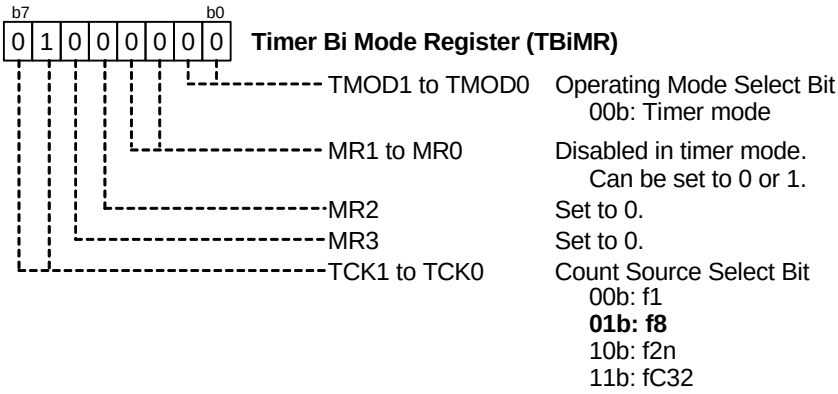


Figure 3.1 Operation in Timer Mode

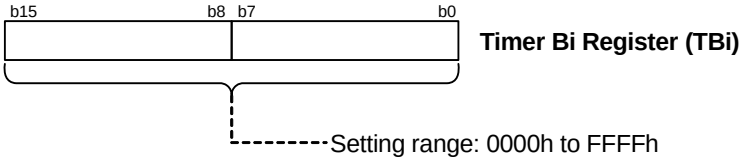
3.2 Setting

This section shows the procedures and values to set the example shown in section **3.1 "Explanation"**. Refer to individual MCU hardware manuals for details on individual registers.

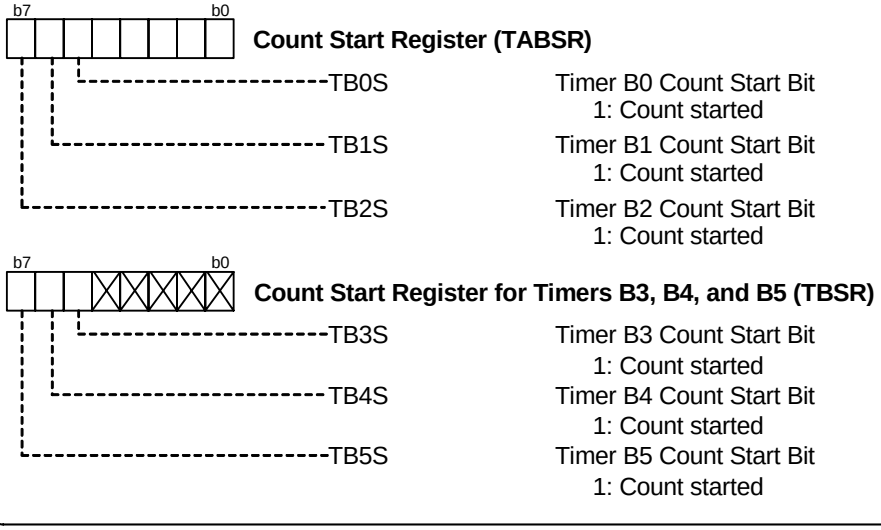
(1) Set the timer Bi mode register (i = 0 to 5).



(2) Set the timer Bi register.



(3) Set the count start register.



4. Sample Program

A sample program can be downloaded from the Renesas Technology website.

5. Reference Documents

Hardware Manual
R32C/118 Group Hardware Manual Rev.1.00
The latest version can be downloaded from the Renesas Technology website.

Technical Update/Technical News
The latest information can be downloaded from the Renesas Technology website.

C Compiler Manual
R32C/100 Series C Compiler Package Ver. 1.02 Compiler User's Manual Rev. 1.00
The latest version can be downloaded from the Renesas Technology website.

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REVISION HISTORY	Timer B Operation in Timer Mode

Rev.	Date	Description	
		Page	Summary
1.00	Mar. 5, 2010	—	Initial release

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