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

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## H8/300H SLP Series

### Clock Output Using RTC Clock Output Function

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#### Introduction

The RTC clock output function is used to output a clock pulse from the RTC divided clock output pin (TMOW).

#### Target Device

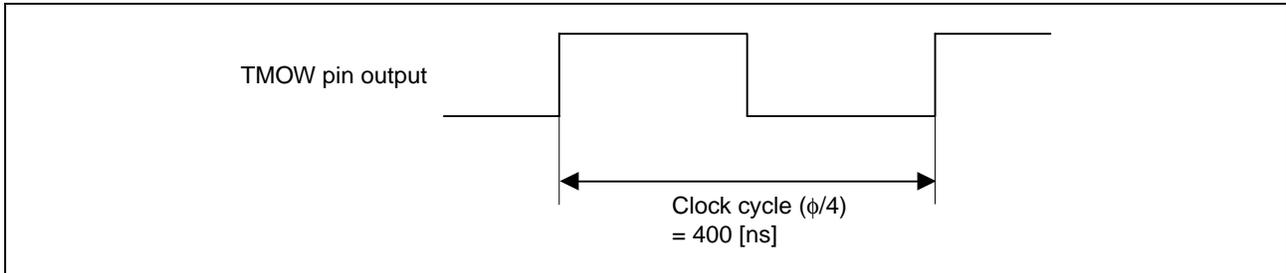
H8/38076R

#### Contents

1. Specifications .....	2
2. Functions Used.....	3
3. Principles of Operation .....	4
4. Description of Software .....	5
5. Flowcharts .....	6

## 1. Specifications

The RTC clock output function is used to output a clock pulse from the RTC divided clock output pin (TMOW), as shown in figure 1.



**Figure 1 Example of RTC Clock Output**

## 2. Functions Used

### 2.1 Functions

In this sample task, the RTC clock output function is used to output a clock pulse from TMOW. A block diagram of the RTC is shown in figure 2. The block diagram of RCT clock output is explained below.

- System clock ( $\phi$ )  
The reference clock for operating the CPU and peripheral function modules (in this sample task, 10 MHz)
- Prescaler S (PSS)  
A 13-bit counter with  $\phi$  as input, incremented every cycle
- Clock source select register (RTCCSR)  
RTCCSR selects the clock source. Clocks obtained by dividing the system clock by 32, 16, 8, and 4 are output in the active mode and sleep mode.
- Port mode register 3 (PMR3)  
Controls switching of port 3 functions.

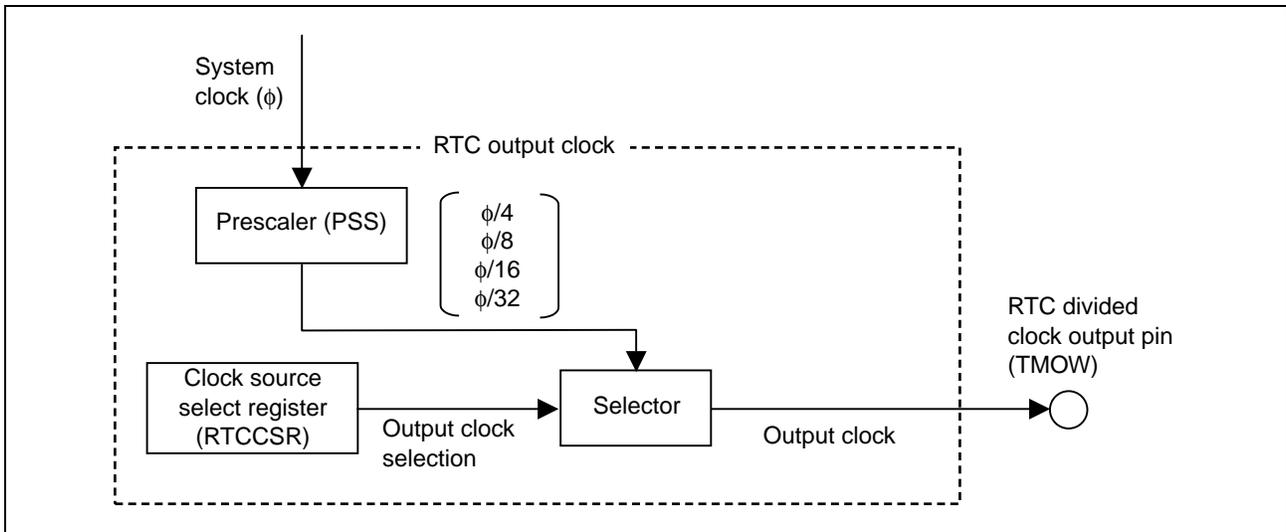


Figure 2 Block Diagram of RTC Clock Output

### 2.2 Assignment of Functions

Table 1 shows the assignment of functions in this sample task. RTC clock output is performed using functions assigned as shown in table 1.

Table 1 Assignment of Functions

Elements	Description
RTCCSR	Selects $\phi/4$ as clock to be output from TMOW pin.
PMR3	Sets P30/SCK32/TMOW pin to TMOW pin function.

### 3. Principles of Operation

The principles of operation of this sample task are illustrated below. By means of the hardware and software processing shown in figure 3, a clock pulse is output from TMOW using the RTC clock output function.

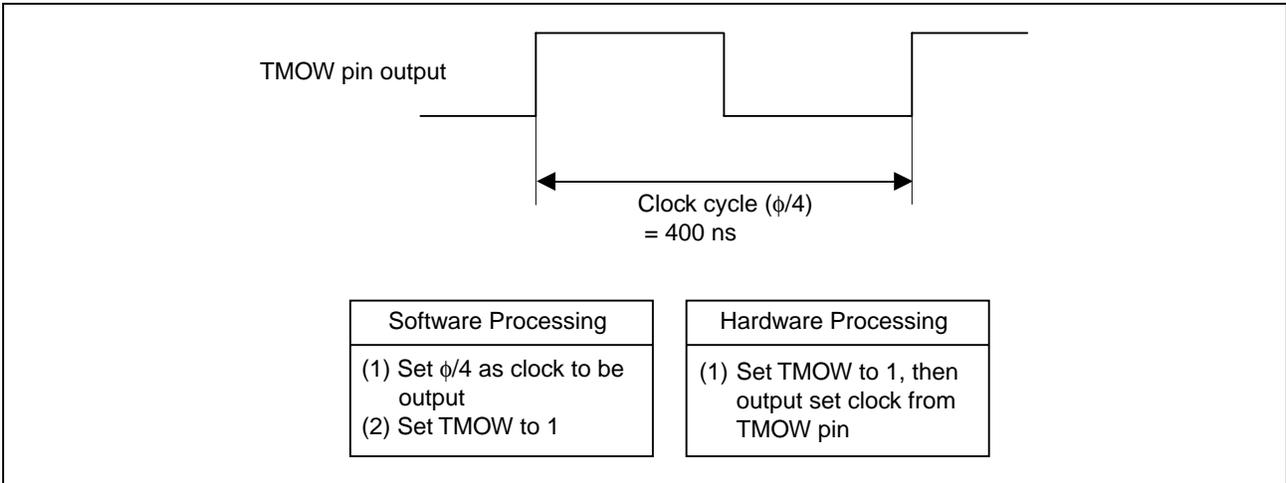


Figure 3 Principles of Operation

## 4. Description of Software

### 4.1 Modules

Table 2 shows the modules used in this sample task.

**Table 2 Modules**

Function Name	Description
main	Sets $\phi/4$ as clock to be output from TMOW pin, sets TMOW pin function, and outputs RTC clock.

### 4.2 Arguments

No arguments are used in this sample task.

### 4.3 Internal Registers Used

The internal registers used in this sample task are shown below.

- RTCCSR Clock source select register Address: H'F06F

Bit	Bit Name	Set Value	R/W	Description
6	RCS6	0	R/W	Clock output select
5	RCS5	0	R/W	Selects clock to be output from TMOW pin when the TMOW bit of PMR3 is set to 1.  000: $\phi/4$ 010: $\phi/8$ 100: $\phi/16$ 110: $\phi/32$ xx1: $\phi W$
4	SUB32K	0	R/W	

Note: x: Don't care

- PMR3 Port mode register 3 Address: H'FFC2

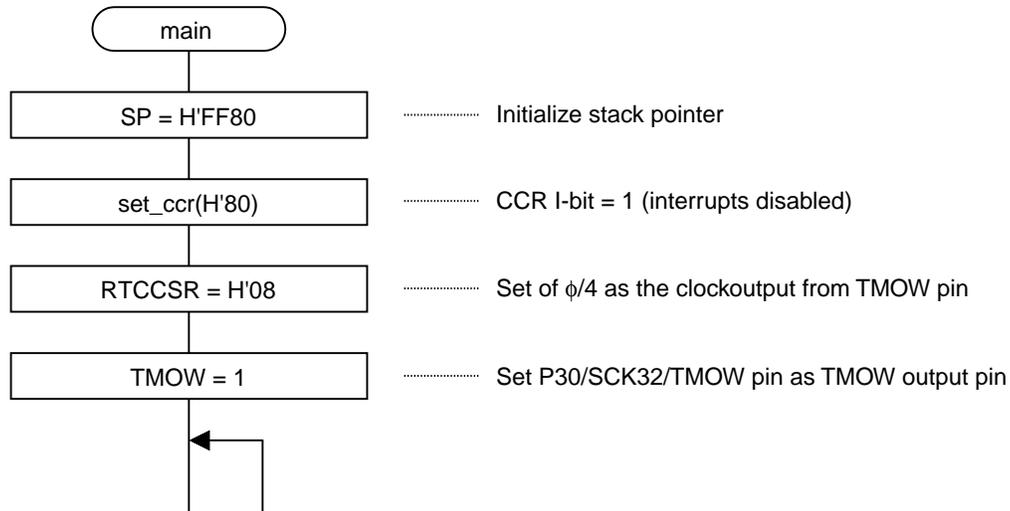
Bit	Bit Name	Set Value	R/W	Description
0	TMOW	1	R/W	P30/SCK32/TMOW pin function switching  Sets whether P30/SCK32/TMOW pin is to be used as P30/SCK32 pin or as TMOW pin.  0: Functions as P30/SCK32 I/O pin 1: Functions as TMOW output pin

### 4.4 RAM Usage

No RAM is used in this sample task.

### 5. Flowcharts

#### 5.1 main



- Link Address Specifications

Section Name	Address
CV1	H'0000
P	H'0100

### Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Sep.16.04	—	First edition issued

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