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April 1st, 2010
Renesas Electronics Corporation

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7545 Group

Timer 2 / Timer 3 (Carrier Wave Form Control / Carrier Wave Output Control)

1. Abstract

The following article provides an application example of carrier wave generation (remote-control carrier wave output from P42/CARR) employing Timer 2 and Timer 3.

2. Introduction

The application example introduced in this issue is applied to the following condition:

- Applicable Microcomputer: 7545 Group
- Oscillation frequency: 4 MHz

3. Contents

3.1 Application Example of Carrier Wave Output Control

Outline

- Form carrier wave by Timer 2.
- Control output of carrier wave from P42/CARR using Timer 3.
- Switch output-enabled mode to output-disabled mode (or vice versa). Change On/Off of carrier wave output from P42/CARR pin every time Timer 3 underflow occurs. This switching operation is accomplished only when the carrier wave output trigger is valid.
- By setting values to Timer 3, determine carrier wave interval for output period and non-output period.
- Carrier wave is generated internally even when P42/CARR output is disabled.

Specification

- Carrier Wave: 40 kHz, Duty 1/2
- P42/CARR Output: Standard interval $T=0.55$ ms, $8T$ output On $-4T$ output Off $-T$ output On

Figure 1. shows auto-control of P42/CARR output by Timer 3, whereas Figure 2. illustrates the connection diagram of Timer and its divide ratio.

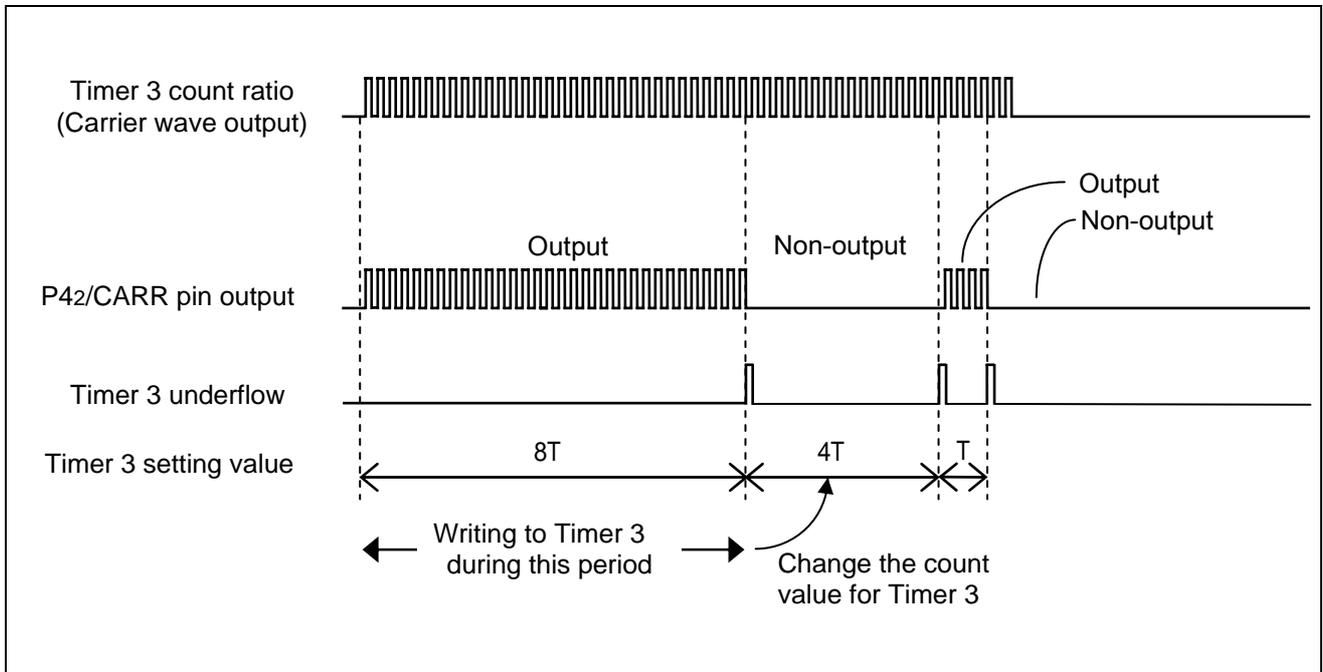


Figure 1. Auto-Control of P42/CARR Output by Timer 3

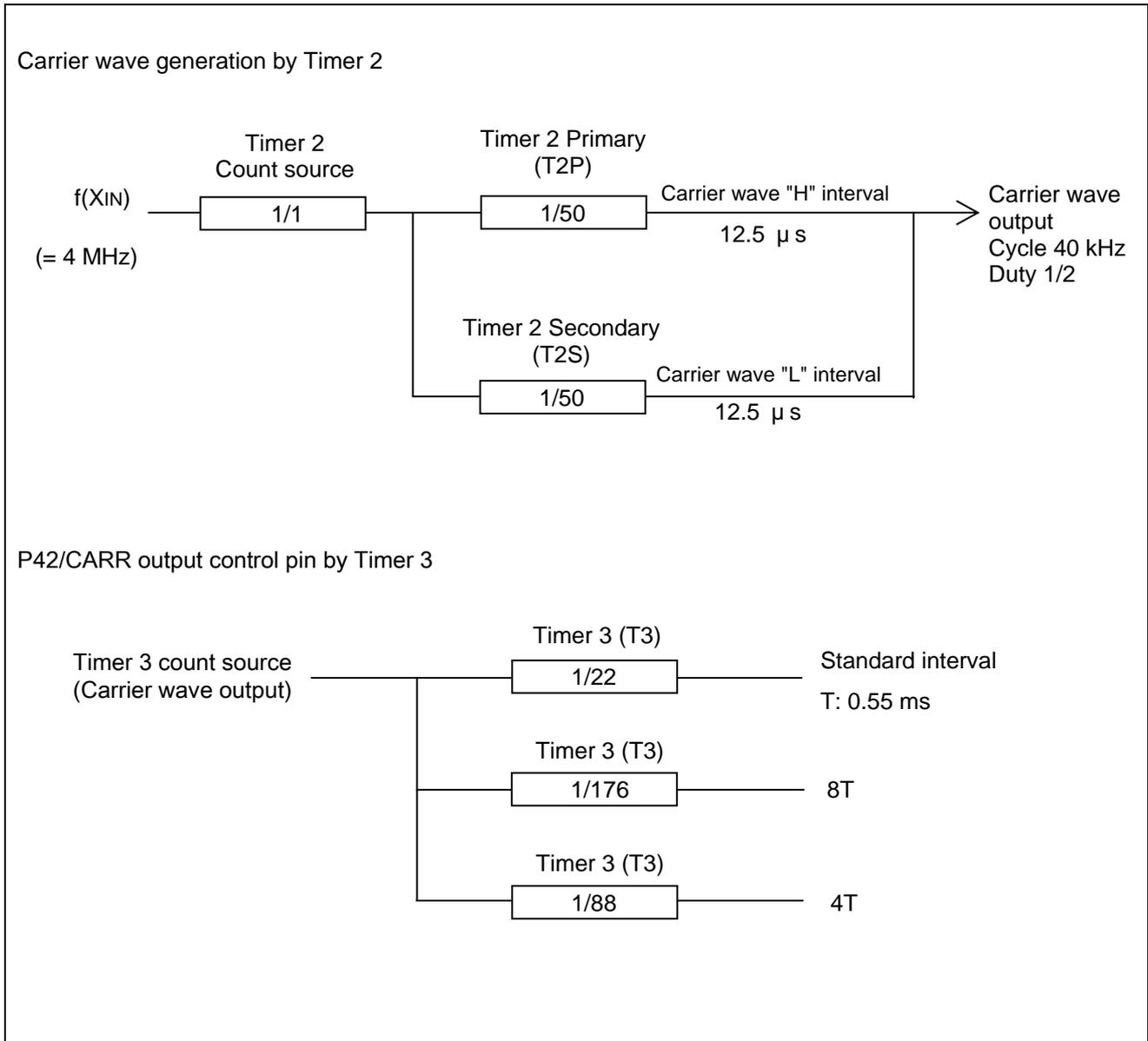


Figure 2. Connection Diagram of Timer and Dividing Ratio

3.2 Control Procedure

Figure 3 shows the control procedure.

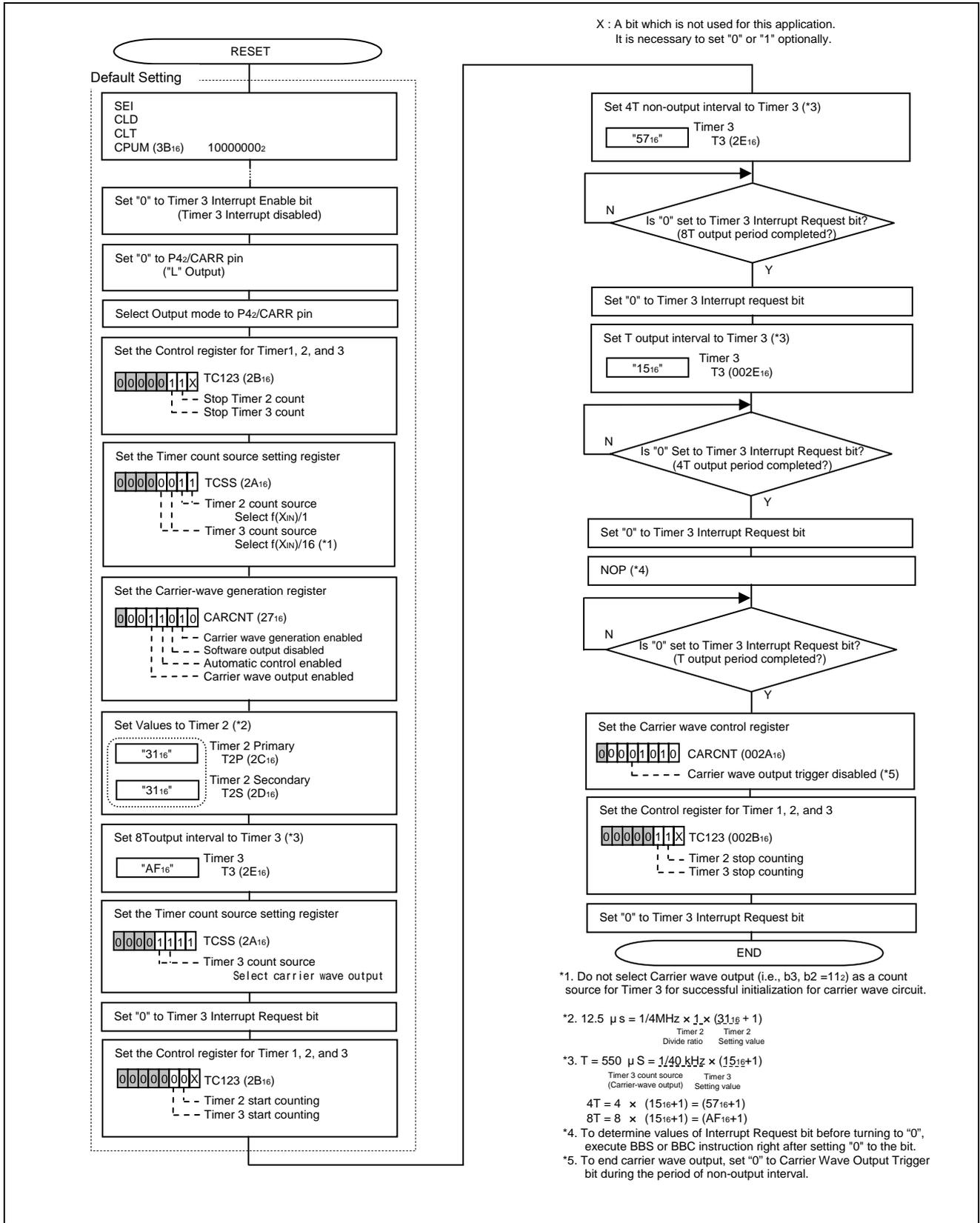


Figure 3. Control Procedure

4. Reference Software Programs

Reference software programs are available on Renesas Technology Corporation Home Page.
To obtain the programs, click “Application Note” on the left side of the page for the 7545 Group of microcomputers.

5. Reference Documents

Data Sheet

7545Group Data Sheet

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| Revision History | 7545 Group Timer 2 / Timer 3 (Carrier Wave Form Control / Carrier Wave Output Control) |
|------------------|---|

| Rev. | Date | Description | |
|------|------------|-------------|----------------------|
| | | Page | Summary |
| 1.00 | 2006.05.17 | — | First edition issued |
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