

TOSHIBA

SP-900-004

DVO

--Outputting 50%-Duty Pulses Using 8-bit Timer--

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1. Target MCU

This sample program is created targeting at the TLCS-900/H series.
When using an MCU other than the TLCS-900/H series, refer to the data sheet for that MCU.

2. Overview

This sample program outputs pulses with a duty cycle of 50% using an 8-bit timer.

3. Description

To output a rectangular wave with a duty cycle of 50%, set a count value that is half the desired period and configure the flip-flop so that it is inverted by a match detection signal from the 8-bit timer. Set P71 as the timer output pin.

The following describes timer 1 (INTT1) as an example.

Example: Outputting a rectangular wave which has a period of 3.84 μ s (when $f_c = 25$ MHz) and a duty cycle of 50% (1.92 μ s) through the TO1 pin

- Stop timer 1 and clear its contents to 0.
- Set 8-bit interval timer mode and select input clock $\phi T1$ (320 ns when $f_c = 25$ MHz).
- Write $3.84 \mu\text{s} / \phi T1 / 2 = 6$ (0x6) to the timer register via a register.
- Clear TFF1 to 0 and configure it to be inverted by a match detection signal from timer 1.
- Set P71 to the TO1 pin.
- Enable INTT1 and set its interrupt level to 5 (or any appropriate level between 1 and 6).
- Start timer 1.

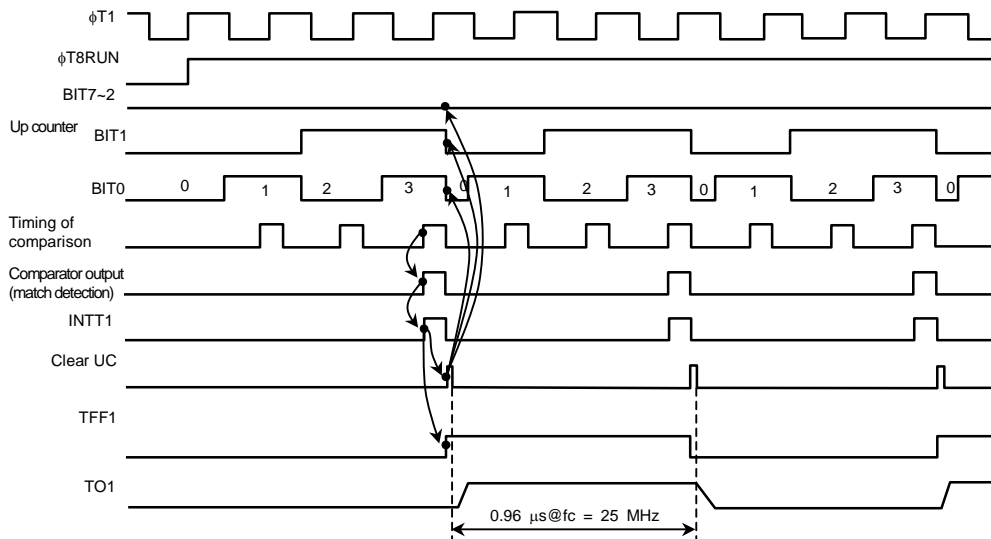


Figure 1 Rectangular wave (50% duty cycle) output timing

4. Passing Data

The counter value for activating timer 1 is the input parameter. This sample program uses register A to set a counter value.

Input: Timer register value (A = 0x06)

5. Interrupts

- INTT1: 1.92- μs cycle (example)

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