TOSHIBA

SP-900-011

PLWDMSR

--Measuring Pulse Width Using 16-bit Timer--

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1. Target MCU

This sample program is created targetting 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 measures a pulse width using a 16-bit timer.

3. Description

The program measures a pulse width using a 16-bit timer in event counter mode with an 8-bit timer. It can measure the high-level width of an external pulse.
The following describes timer 8 and timer 0/1 as an example.

To use the program, the UC8 16-bit up counter must be operating in free running mode using the internal clock. The program triggers capturing at the rising and falling edges of the external pulses on the TI8 pin and fetches the up counter value into the CAP1 and CAP2 capture registers, respectively.
The INT5 interrupt handler calculates the difference between the CAP1 and CAP2 and multiplies the difference by the internal clock period to obtain the high-level width.

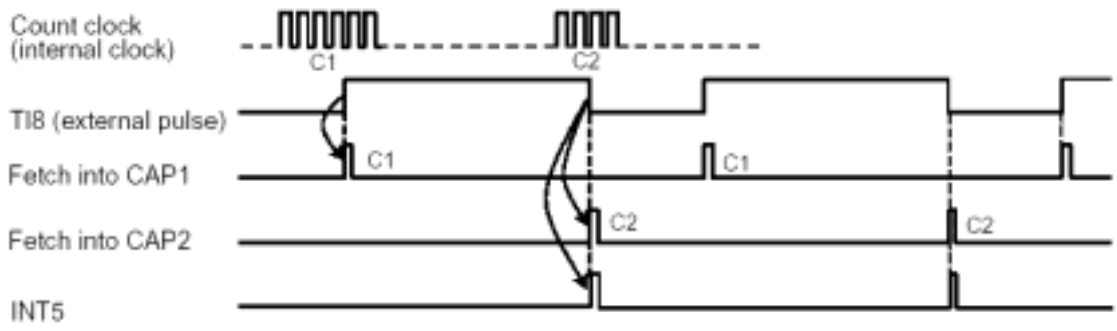

Figure 1 Measurement the high-level width

Example: When the difference between the CAP1 and CAP2 is 100 and the internal clock period is 0.8 µs, the high-level width is 100 * 0.8 µs = 80 µs.

4. Passing Data

Use the following variables to exchange data:

- gCAP1: Buffer for CAP1
- gCAP2: Buffer for CAP2
- gINT5CT: Edge counter
- gFLAG0: Cycle end flag
- gPLSWD: Difference between CAP1 and CAP2

5. Interrupts

- INTT0: 16-µs cycle (example)
- INTTO8

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