UTMC ERRATA

UT80CRH196KD PTS Servicing of the HSO Module (PIC# JDO2A)

Problem

An anomaly has been found in revision "A" of the UT80CRH196KD in the way that the Peripheral Transaction Server (PTS) functions in the HSO Mode of operation. In order for the PTS to function properly in the HSO Mode of operation, the HSO Holding Register must be checked before loading an event into the CAM. Checking the Holding Register is necessary because the PTS should not load CAM entries into a full Holding Register. If the PTS loads a CAM entry into a full Holding Register, the previous CAM entry is overwritten. In the UT80CRH196KD, the Holding Register check is not automatically performed during PTS interrupt transfers to the HSO.

Work Around

The suggested work around for the JD02A die, is to only use the PTS HSO Mode with the PTSBLOCK = 01h. Setting the PTSBLOCK = 01h forces the PTS service to perform a single cycle. The single cycle transfer works as long as the interrupting HSO event is not locked into the CAM or is timed to gurantee that the HSO Holding Register is empty. If the interrupting HSO event is not locked into the CAM, it will be removed after it has been executed. The HSO PTS cycle takes a minimum of 11 state times before it is ready to load the CAM holding register. This delay provides enough time for the interrupting CAM entry to be replaced with the contents of the CAM holding register; thus, leaving room in the holding register for the PTS service routine to load the next CAM entry.

Please refer to the following 2 examples to see how the above work-around functions:

Example 1:

Assume the HSO is filled according to Figure 1. All events except the T2RST HSO command are locked into the CAM, and only the T2RST command is configured to provide an HSO interrupt. Further, the HSO Command for the T2RST instruction is setup according to Figure 2. This HSO configuration would provide an HSO interrupt when the T2RST command executes. Because the T2RST command is not locked into the CAM, it will be removed immediately following its execution. The contents of the HSO Holding Register will replace the T2RST CAM entry, leaving space for the PTS servicing routine to load the next command into the Holding Register. Following this methodology ensures the Holding Register is always ready for the PTS to load a command.

	HSO CAM				
	Command Tag				Time Tag
HSO1 →	0	0	0	1	1000h
HSO2 →	0	0	1	0	2000h
HSO4 →	0	1	0	0	3000h
SWT0 →	1	0	0	0	4000h
SWT1 →	1	0	0	1	5000h
SWT2 →	1	0	1	0	6000h
HSOALL →	1	1	0	0	7000h
T2RST →	1	1	1	0	8000h

	HSO Holding Register				
HSO0 →	0	0	0	0	5050h

Figure 1. The HSO CAM and Holding Register

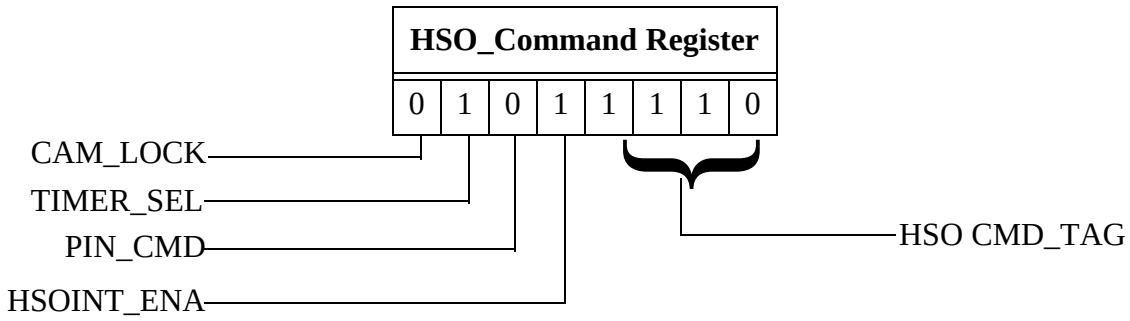

Figure 2. HSO_COMMAND Register

Example 2:

Assume the HSO is configured according to Figure 1. All events except the SWT2 command are locked into the CAM, and only the HSOALL command is configured to provide an HSO interrupt. Under this scenario, the event timing ensures that the HSO Holding Register is empty. The SWT2 event will be executed when the time base reaches 6000h. Because this event is not locked, it will be cleared from the CAM and the available entry slot will be replaced by the contents of the Holding Register. Next, the HSOALL command will be executed, and an HSO interrupt will be generated. Once the HSO interrupt occurs, the PTS will update the Holding Register. There will not be any contention for the Holding Register because the removal of the SWT2 CAM entry guarantees that the HSO Holding Register will have moved its content to the CAM before the PTS service routine can load the Holding Register.

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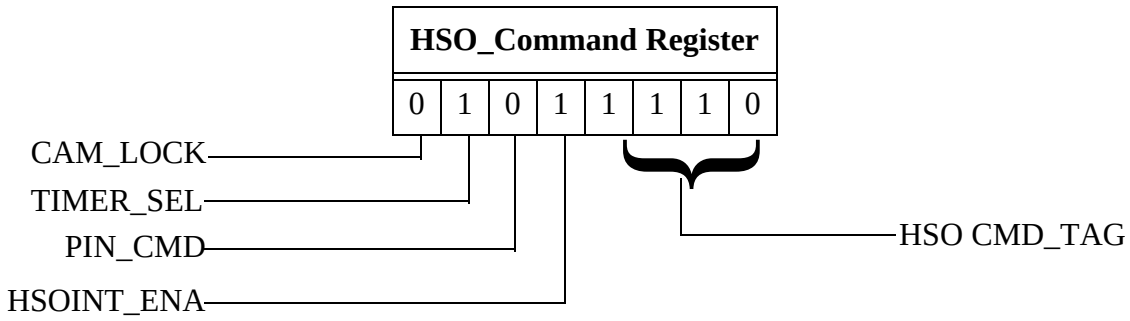

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