January 7, 2008

C8051F41x Revisions A-F Errata

Errata Status Summary

Errata #	Title	Impact	Status	
			Affected Revisions	Fixed Revision
1	XTLVLD is incorrect	Minor	Revisions A-F	Not Fixed
2	Port Pin Overvoltage	Minor	Revision E only	Fixed in Revision F

Impact Definition: Each erratum is marked with an impact, as defined below:

- Minor—Workaround exists.
- Major—Errata that do not conform to the data sheet or standard.
- Information—The device behavior is not ideal but acceptable. Typically, the data sheet will be changed to match the device behavior.

Errata Details

1. **Description**: The XTLVLD bit in the OSCXCN register may not properly indicate when an external crystal oscillator is running and stable. The XTLVLD bit may read as 0, even if the crystal is properly oscillating.

   Impact: The recommended procedure in the datasheet for using an external oscillator as the system clock includes a step to poll the XTLVLD bit. Since the XTLVLD bit may not correctly indicate the status of the external crystal, this procedure is no longer valid.

   Workaround: The firmware can determine if the external oscillator is running by using the external oscillator as the clock source for the PCA or one of the four Timers. Once enabled, if the PCA or Timer counter counts the expected number of cycles over a fixed period of time, the firmware can safely switch to the external oscillator as the system clock. Using the external oscillator as the clock source for a PCA or Timer does not require switching to the crystal oscillator as the main system clock. Once the crystal oscillator is selected as the system clock, the PCA or Timer no longer needs to be used for this purpose.

   The updated procedure for using a crystal oscillator as the system clock is provided below. Contact mcuapps@silabs.com for example code that implements this procedure.

   Step 1 Force the XTAL1 and XTAL2 pins low by writing 0s to the port latch.
   Step 2 Configure XTAL1 and XTAL2 as analog inputs.
   Step 3 Release the crystal pins by writing 1s to the port latch.
   Step 4 Enable the external oscillator.
   Step 5 Wait at least 1 ms.
   Step 6 Configure the PCA or a Timer to use the external oscillator as the clock source.
   Step 7 Monitor the PCA or Timer over a fixed period of system clock cycles to ensure the external oscillator is oscillating at the correct speed.
   Step 8 Enable the Missing Clock Detector as a Reset Source.
   Step 9 Switch the system clock to the external oscillator.

2. **Description:** Port pins that are programmed for push-pull output mode and a logic-high state (‘1’ written to the port pin latch) may become forced to a logic-low state if exposed to an overvoltage condition that exceeds the specified limits as posted in the data sheet (see "Absolute Maximum Specifications").

   Impact: This can result in up to 40 mA of current consumption (per pin affected) from the on-chip voltage supply, or higher than expected current consumption from an off-chip source connected to the pin due to the low impedance path to ground. Revision F will fix this problem.

   Workaround: Standard system level design practices to ensure port pins are protected from over voltage conditions (i.e., conditions outside the specified limits in the data sheet) should be implemented, such as in-series resistors (e.g., 100 ohm in-series resistor) and/or schottky protection diodes to prevent over voltage conditions (e.g., BAT54S) for pins that are considered high risk (e.g., pins connected to signals that are exposed to human contact off-board).