



**THE DATASHEET OF  
C8051F520A-IM**





July 11, 2011

## C8051F52xA-53xA and C8051F52x-F53x Errata

### Errata Status Summary

This document summarizes all known errata with these devices.

| Errata # | Title   | Impact | 'F52xA-53xA (Rev. B)<br>'F52x-53x (Rev. A) | 'F52xA-53xA<br>(Rev. C) |
|----------|---|--------|--|-------------------------|
| 1        | Oscillator Wakeup   | Minor  | Issue exists                               | Issue to be fixed       |
| 2        | Cold Programming Temperature on industrial grade (-I) parts only. | Minor  | Issue exists                               | Issue exists            |
| 3        | Long-reset Oscillator Lockup                                      | Minor  | Issue resolved from date code "1124"       | Issue to be fixed       |

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:** When a device enters a low power suspend mode by setting the SUSPEND bit in OSCICN, there is a low probability of the device remaining in suspend even when a wake-up condition is triggered.

**Impact:** The device remains in suspend mode until a power-on reset.

**Workaround:** To prevent the issue, set the ZTCEN bit in REF0CN to 1 before entering suspend mode. This will slightly increase the supply current in suspend mode but it will prevent the issue.

**Resolution:** Revision C of the device will not require setting ZTCEN before entering suspend mode.

2. **Description:** For -I (Industrial Grade) parts, a cold temperature programming deficiency may be present on weak flash memory bits. There is no problem programming the flash at 0 °C and above. There is only a potential flash read issue if programming was done at cold temperature below 0 °C. If programmed at 0 °C or higher, there is no problem reading flash across the entire temperature range of -40 °C to 125 °C. This errata does not apply to -A (Automotive Grade) devices.

**Impacts:** Flash bits programmed at temperatures below 0 °C might not read back correctly at elevated temperatures.

**Workaround:** Program the flash in production and in-system at 0 °C or higher. If programming must be performed at temperatures lower than 0 °C, a validation of the flash at 25 °C or greater is highly recommended.

**Resolution:** Silicon Labs is continuing to investigate this issue. There is no resolution at this time.

- Description:** If the /RST pin is held low for more than 1 second while power is applied to the device, and then /RST is released, a percentage of devices may “lock up”, and fail to execute code. Toggling the /RST pin does not clear the condition. The condition is cleared by cycling power. Most devices that are affected will show the lock up behavior only within a narrow range of temperatures (a 5 to 10 degrees C window).

**Impacts:** Devices that lock up due to this issue will fail to execute code until the next power-on reset.



**Workaround:** Ensure that the reset low time does not exceed 1 second.

**Resolution:** Silicon Labs has identified a solution to this problem and this solution has been tested and qualified. Parts with the fix do not have any restrictions on /RST low time. The silicon revision remains the same, but Revision B parts that implement the fix can be identified visually using the assembly date code marking on the device. A four-digit assembly build date code is marked on each part on the bottom-most line. This is in the format YYWW, where YY is the two-digit assembly build calendar year and WW is the two-digit assembly build work week. All parts that have an assembly date code of 1124 or later (year 2011, work week 24) do not have any restrictions on /RST low time.

**Note:** C8051F5xx products are AEC-Q100 compliant and qualification and fault coverage reports are available upon request. A list of Silicon Laboratories sales representatives can be found at [www.silabs.com](http://www.silabs.com). The next revision of the device datasheet will include this note in the relevant sections.

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