



**THE DATASHEET OF  
C8051F500-IQR**





July 11, 2011

## C8051F50x-51x Errata

### Errata Status Summary

This document summarizes all known errata with these devices.

| Errata # | Title   | Impact | Revisions A-B                        |
|----------|---|--------|--------------------------------------|
| 1        | Cold Programming Temperature on industrial grade (-I) parts only. | Minor  | Issue exists                         |
| 2        | Long-reset Oscillator Lockup                                      | Minor  | Issue resolved from date code "1124" |
| 3        | P0.0 Open-Drain Mode  | Minor  | Issue exists                         |

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:** 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:** The next revision of the data sheet, revision 1.3, will include a new specification for the valid temperature range to program a device.

- 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.

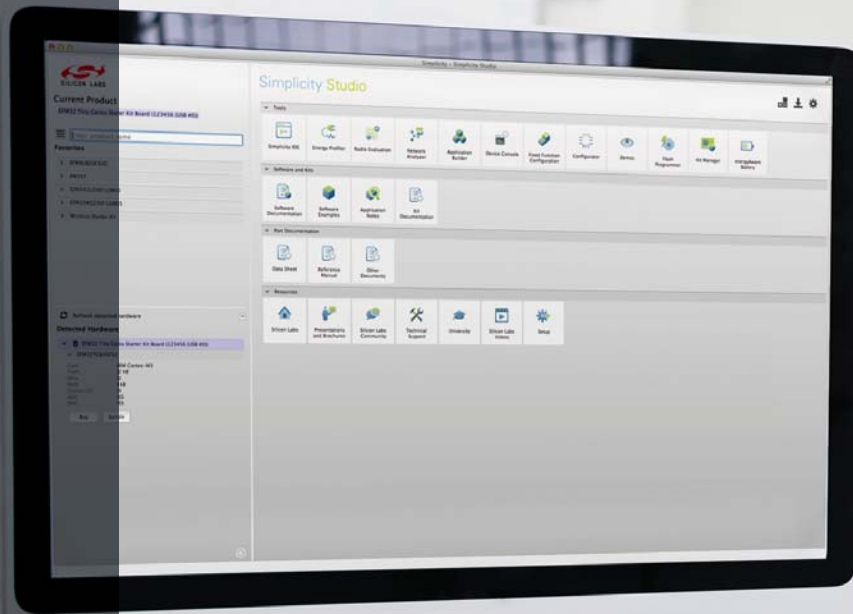
- Description:** If VDD is selected as the voltage reference (REF0CN.3 = 1), and the ADC is enabled (ADC0CN.7 = 1), the P0.0/VREF pin cannot operate as a general purpose I/O pin in open-drain mode. With the above settings, this pin can operate in push-pull output mode or as an analog input.

**Impacts:** If the P0.0/VREF pin is configured for open-drain mode with the voltage reference (VREF) set to VDD, the voltage at the pin is indeterminate.

**Workaround:** Ensure that the P0.0 pin is not used in open-drain mode as an input or output.

**Resolution:** The next revision of the data sheet, revision 1.3, will indicate that the conditions under which the P0.0/VREF pin should not be used in open-drain mode.

**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.



## Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!



**IoT Portfolio**  
[www.silabs.com/IoT](http://www.silabs.com/IoT)



**SW/HW**  
[www.silabs.com/simplicity](http://www.silabs.com/simplicity)



**Quality**  
[www.silabs.com/quality](http://www.silabs.com/quality)



**Support and Community**  
[community.silabs.com](http://community.silabs.com)

### Disclaimer

Silicon Laboratories intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Laboratories products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and "Typical" parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Laboratories reserves the right to make changes without further notice and limitation to product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Silicon Laboratories shall have no liability for the consequences of use of the information supplied herein. This document does not imply or express copyright licenses granted hereunder to design or fabricate any integrated circuits. The products must not be used within any Life Support System without the specific written consent of Silicon Laboratories. A "Life Support System" is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Laboratories products are generally not intended for military applications. Silicon Laboratories products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons.

### Trademark Information

Silicon Laboratories Inc., Silicon Laboratories, Silicon Labs, SiLabs and the Silicon Labs logo, CMEMS®, EFM, EFM32, EFR, Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Ember®, EZLink®, EZMac®, EZRadio®, EZRadioPRO®, DSPLL®, ISOModem®, Precision32®, ProSLIC®, SiPHY®, USBXpress® and others are trademarks or registered trademarks of Silicon Laboratories Inc. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. All other products or brand names mentioned herein are trademarks of their respective holders.



**SILICON LABS**

Silicon Laboratories Inc.  
 400 West Cesar Chavez  
 Austin, TX 78701  
 USA

<http://www.silabs.com>

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View C8051F500-IQR on WIN SOURCE](#)

 [Silicon Labs](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management