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# EFM32GG942 Errata History

*F1024/F512*

This document describes known errata for all revisions of EFM32GG942 devices.

ARM ZERO TINY GECKO LEOPARD GIANT WONDER

SILICON LABS

# 1 Errata History

## 1.1 Errata Overview

Table 1.1 (p. 2) shows which erratum is applicable for each revision. The device datasheet explains how to identify chip revision, either from package marking or electronically.

In addition to the errata noted below, the errata for the ARM Cortex-M3 r2p1 (www.arm.com) also applies to all revisions of this device.

***Table 1.1. Errata Overview***

| Erratum ID | Rev. D | Rev. C | Rev. B |
|---|---|---|---|
| ADC_E116 | X | | |
| ADC_E117 | X | X | X |
| AES_E101 | X | X | X |
| AES_E102 | X | X | X |
| BU_E101 | | | X |
| BU_E102 | | | X |
| BU_E104 | | | X |
| BU_E105 | X | X | X |
| BU_E106 | X | | |
| BURTC_E101 | X | X | X |
| BURTC_E102 | X | X | X |
| CMU_E108 | | | X |
| CMU_E110 | | | X |
| CMU_E111 | | X | X |
| CMU_E112 | X | | |
| CMU_E113 | X | | |
| CMU_E114 | X | X | X |

| Erratum ID | Rev. D | Rev. C | Rev. B |
|---|---|---|---|
| CUR_E103 | | X | |
| CUR_E104 | | X | X |
| DI_E101 | X | X | X |
| DMA_E101 | X | X | X |
| EMU_E105 | | | X |
| ETM_E101 | | | X |
| GPIO_E101 | | | X |
| LES_E101 | | | X |
| LES_E102 | | | X |
| LES_E103 | X | | |
| MSC_E101 | | X | X |
| OPA_E101 | | | X |
| PRS_E101 | X | X | X |
| USART_E112 | X | X | X |
| USB_E101 | | | X |
| USB_E102 | | | X |
| USB_E103 | X | X | X |
| USB_E104 | X | X | X |
| USB_E105 | X | X | X |
| USB_E106 | | | X |
| USB_E107 | | X | X |
| USB_E108 | | X | X |
| USB_E109 | X | X | X |
| USB_E110 | X | X | X |

## 1.2 EFM32GG942 Errata Descriptions

***Table 1.2. EFM32GG942 Errata Descriptions***

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| ADC_E116 | **Offset in ADC Temperature Sensor Calibration DataData**<br><br>The ADC temperature sensor calibration value stored in the Device Information (DI) Page has an offset. | For devices with PROD_REV values of 16 or 17, the ADC0_TEMP_0_READ_1V25 register of the Device Information Page has an offset of 112. Using this value for calculating the absolute temperature gives an approximately 18 degrees too high value. Relative temperature measurements (temperature changes) are not affected by this offset. | For devices with PROD_REV values of 16 or 17, use ADC0_TEMP_0_READ_1V25 - 112 instead of ADC0_TEMP_0_READ_1V25 when calculating the temperature. |
| ADC_E117 | **TIMEBASE not wide enough**<br><br>For 48 MHz ADC clock, the ADC_CTRL_TIMEBASE is not wide enough. | For ADC warm-up, the user is required to set the ADC_CTRL_TIMEBASE to the number of ADC clock cycles in 1 µs. As this register is only 5 bits wide, it does not support frequencies above 32 MHz. | If an ADC clock above 32 MHz is required, the acquistion time should be increased to also account for too short warmup-time. |
| AES_E101 | **BYTEORDER does not work in combination with DATASTART/XORSTART**<br><br>When the BYTEORDER bit in AES_CTRL is set, an encryption or decryption should not be started through DATASTART or XORSTART. | If BYTEORDER is used in combination with DATASTART or XORSTART, the AES data and key are interpreted in the wrong order. | Do not use BYTEORDER in combination with DATASTART or XORSTART. |
| AES_E102 | **AES_STATUS_RUNNING set one cycle late with BYTEORDER set**<br><br>When the BYTEORDER bit in AES_CTRL is set, AES_STATUS_RUNNING is set one cycle late. | If BYTEORDER is used, it will take one cycle for the AES_STATUS_RUNNING flag to be set. This means that polling this status flag should be postponed at least one cycle after starting encryption/decryption. | If polling the AES_STATUS_RUNNING is preferred, insert a No Operation assembly instruction (NOP()) before starting to poll the status flag. |
| BU_E101 | **Backup power increased power consumtion**<br><br>Additional current consumption on BU_VIN approximately 100uA when VDD_DREG is between 0.3 BU_VIN to 0.7 BU_VIN. | Additional current consumption on BU_VIN approximately 100uA when VDD_DREG is between 0.3 BU_VIN to 0.7 BU_VIN. | Avoid having VDD_DREG in between 0.3 BU_VIN to 0.7 BU_VIN. |

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| BU_E102 | **EM4 GPIO retention in backup mode**<br><br>EM4 GPIO retention not shut off in backup mode. | With GPIO retention enabled, GPIO pins will still drive in backup mode. | Do not use EM4 GPIO retention in combination with backup mode. |
| BU_E104 | **EM4 with backup BODs**<br><br>EM4 with backup BODs does not trigger reset. | EM4 with backup BODs does not trigger reset. | Avoid using backup BODs when entering EM4. |
| BU_E105 | **LFXO missing cycles during IOVDD rampings**<br><br>LFXO missing cycles during IOVDD ramping when used in combination with Backup mode. | When IOVDD is ramped, the DC-level of the XTAL signal changes, resulting in missed LFXO cycles and possible glitches on the LFXO clock. | Set PRESC in BURTC_CTRL to greater then 0 when ramping IOVDD in combination with Backup mode to avoid glitches on the LFXO clock. |
| BU_E106 | **Current leakage in Backup mode** | In Backup mode, when VDD > BU_VIN + 0.7, current will leak from VDD. | To avoid leakage, exit Backup mode before VDD exceeds the voltage where the leakage start by configuring the threshold in EMU_BUACT. |
| BURTC_E101 | **BURTC LPMODE entry**<br><br>Entering LPMODE with LPCOMP=7 causes counter error. | Counting error occurs if overflow on 7 LSBs happens when entering LPMODE with LPCOMP=7. This results in the counter value being 256 less than it should be after the error. The error accumulates. | Avoid using LPMODE with LPCOMP=7. |
| BURTC_E102 | **BURTC_CNT read error**<br><br>Software reads from BURTC_CNT might fail when LPMODE is activated | When LPMODE is active (i.e. BURTC_STATUS_LPMODEACT is high), software reads might result in wrong value being read from BURTC_CNT. | Before reading BURTC_CNT, disable LPMODE and wait for BURTC_STATUS_LPMODEACT to be cleared before reading BURTC_CNT. |
| CMU_E108 | **LFxCLKEN write**<br><br>First write to LFxCLKEN can be missed. | For devices with PROD_REV < 15, enabling the clock for LFA/LFB after reset and then immediately writing LFACLKEN/LFBCLKEN, may cause the write to miss its effect. | For devices with PROD_REV < 15, make sure CMU_SYNCBUSY is not set before writing LFACLKEN/LFBCLKEN. Can temporarily switch to HFCORECLKLEDIV2 to speed up clearing synchbusy. |
| CMU_E110 | **LFXO phase shift**<br><br>Transients on pin D8 cause LFXO phase shift. | Transients on pin D8 can give a temporary phase shift on LFXO. Frequency is unchanged. | No known workaround. |
| CMU_E111 | **LFXO configuration incorrect**<br><br>LFXO configuration incorrect. | For devices with PROD_REV < 15, LFXOBUFCUR in CMU_CTRL is default 0 and LFXOBOOST in CMU_CTRL is default 1. However, these values are incorrect. | On devices with PROD_REV < 15, change LFXOBUFCUR to 1 and LFXOBOOST to 0. |

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| CMU_E112 | **LFXO boost buffer current setting**<br><br>LFXO boost buffer current must be disabled | LFXO will not work properly with LFXOBUFCUR in CMU_CTRL set. | Do not set LFXOBUFCUR in CMU_CTRL. |
| CMU_E113 | **LFXO startup at high temperature**<br><br>LFXO does not start at high temperature with default configuration. | For devices with PROD_REV = 16, LFXO may have startup issues with low capacitance crystals when using the default LFXO configuration. | Make this line of code part of your starup code, typically in the start of main(): *((volatile uint32_t*) 0x400c80C0) = (*((volatile uint32_t*) 0x400c80C0) & ~(1<<6)) \| (1<<4);. |
| CMU_E114 | **Chip not waking up from EM2 when using prescaled non-HFRCO oscillator as HFCLK**<br><br>Chip not waking up from EM2 when using prescaled non-HFRCO oscillator as HFCLK. | When the chip is running from any other prescaled oscillator than HFRCO as HFCLK and HFRCO disabled the chip will not wake-up from EM2. | Before entering EM2, clear CMU_CTRL_HFCLKDIV or enable HFRCO by setting CMU_OSCENCMD_HFRCOEN and wait until CMU_STATUS_HFRCORDY is set. |
| CUR_E103 | **Increased EM2 current**<br><br>Increased consumption in EM2 | Current consumption in EM2 and EM3 has two stable states, the normal state (1200 nA and 900 nA for EM2 and EM3 respectively) and an error state. In the error state the current consumption in EM2 and EM3 is typically 4.5 uA at 25C (manufacturing test limits is set to 7 uA) but will increase with increased temperature. At 85C the error state EM2 and EM3 current consumption is typically 25 uA. It is unpredictable which state the device will go into on EM2/EM3 entry and it can also change state during operation. | No known workaround. |
| CUR_E104 | **Increased current on AVDD2**<br><br>Increased current on AVDD2 related to VREGO | When VREGO is floating or 0 V, a leakage can appear on AVDD2. This leakage is typically less than 10 uA, but can also rise to around 300 uA. | Make sure VREGO is always defined high when there is power on AVDD2. For bus-powered devices this is always the case, but for devices where the power on VREGO can be lost during operation, e.g. a USB device where the USB phy is powered from VBUS when a master is attached, a 5 MOhm to VDD can help keep VREGO defined. |
| DI_E101 | **Flash Page Size**<br><br>The MEM_INFO_PAGE_SIZE value stored in Device Information (DI) Page is incorrect. | For devices with PROD_REV values lower than 18, the MEM_INFO_PAGE_SIZE register value in the Device Information Page is incorrect. | Use fixed flash page size of 4k bytes. |
| DMA_E101 | **EM2 with WFE and DMA**<br><br>WFE does not work for the DMA in EM2. | In EM2, when sleeping with WFE (Wait for Event), an interrupt from the DMA will not wake up the system. | Use WFI (Wait for Interrupt) or EM1 instead. |

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| EMU_E105 | **Debug unavailable during DMA processing from EM2**<br><br>The debugger cannot access the system processing DMA request from EM2. | DMA requests from the LEUART can trigger a DMA operation from EM2. While waiting for the DMA to fetch data from the respective peripheral, the debugger cannot access the system. If such a DMA request is not handled by the DMA controller, the system will keep waiting for it while denying debug access. | Make sure DMA requests triggered from EM2 are handled. |
| ETM_E101 | **ETM Trace Clock**<br><br>ETM Trace Clock needs to be delayed. | ETM trace clock is out of phase making the data transition occur at the same time as the ETM trace clock transitions. | ETM trace clock needs to be delayed between 10 ns and 1/4 of the trace clock period. |
| GPIO_E101 | **GPIO wakeup from EM4**<br><br>On GPIO wakeup from EM4 all cause bits for high-polarity wakeup pins are set. | All EM4 wakeup cause bits for EM4 wakeup pins with high polarity are set on wakeup. | Use low polarity if possible. For active high, slow changing inputs, a solution is to sample the inputs on wakeup. |
| LES_E101 | **LESENSE and Schmitt trigger**<br><br>Schmitt trigger cannot be disabled on pins used for sensor excitation | When using LESENSE to excite a pin, the pin has to be configured in push-pull mode, which also enables the Schmitt trigger. If this pin has an input voltage somewhere in between 0.3*VDD and 0.7*VDD, the Schmitt trigger will consume a considerable ammount of current. | Keep the input voltage to pins configured as push-pull outside the range 0.3*VDD to 0.7*VDD when LESENSE is not interacting with the connected sensor. |
| LES_E102 | **LESENSE and DAC CH1 configuration**<br><br>LESENSE cannot control DAC CH1 if DACCH0CONV in LESENSE_PERCTRL is set to DISABLE. | LESENSE control of DAC CH1 cannot be enabled if DACCH0CONV in LESENSE_PERCTRL is set to DISABLE. | Configure DACCH0CONV in LESENSE_PERCTRL to anything but DISABLE, this enables DAC CH1 to be controlled properly. If DAC CH0 is not to be used, set DACCH0OUT in LESENSE_PERCTRL to DISABLE. This will disable LESENSE control of DAC CH0, but still allow LESENSE to control DAC CH1. |
| LES_E103 | **AUXHFRCO and LESENSE**<br><br>LESENSE will not work properly at low AUXHFRCO frequencies. | LESENSE will not work properly when used with the AUXHFRCO running at the 1 or 7 MHz band. | Do not use a AUXHFRCO frequency band of 1 or 7 MHz when used in combination with LESENSE. |
| MSC_E101 | **Prefetch unreliable**<br><br>Prefetch unreliable. | When prefetch is enabled, i.e. PREFETCH is set in MSC_READCTRL, wrong instruction data can be prefetched causing system failure. | Do not use prefetch. |
| OPA_E101 | **Opamp 2 startup rampup** | When OPA2 is started the output rampup is constant independent of bias setting. | No known workaround. |

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| | When OPA2 is started the output ramp-up is constant independent of bias setting. | | |
| PRS_E101 | **Edge detect on GPIO/ACMP**<br><br>Edge detect on peripherals with asynchronous edges might be missed. | When using edge detect in PRS on signals from ACMP, GPIO, RTC, LETIMER, LESENSE, VCMP and BURTC edges can be missed. | Do not use edge detect on ACMP, GPIO, RTC, LETIMER, LESENSE, VCMP and BURTC. |
| USART_E112 | **USART AUTOTX continues to transmit even with full RX buffer**<br><br>USART AUTOTX continues to transmit even with full RX buffer. | When AUTOTX in USARTn_CTRL or AUTOTXEN in USARTn_TRIGCTRL is set, the USART will continue to transmit data even after the RX buffer is full. This may cause the RX buffer to overflow if the data is not read out in time. | No known workaround. |
| USB_E101 | **USB DMA transfers with prescaled HFCLK**<br><br>USB DMA transfers to flash fail when prescaling HFCLK. | USB DMA transfers to flash may fail when prescaling HFCLK. | Do not prescale HFCLK when using USB-DMA transfers to read from flash. |
| USB_E102 | **USB datalines**<br><br>USB datalines rise and fall time are slightly outside specification. | USB datalines rise and fall time are slightly outside specification under worst case conditions. They may fail USB certification eye test depending on PCB layout. | No known workaround. |
| USB_E103 | **HNP Sequence fails if A-Device connects after 3.4ms**<br><br>HNP Sequence fails if A-Device connects after 3.4ms. | The B-Device core waits for less amount of time (3.4ms) and signals HNP fail and reverts back to Peripheral. HNP sequence fails if A-Device connects after 3.4ms. | No known workaround. |
| USB_E104 | **USB A-Device delays the HNP switch back process**<br><br>Disconnecting the D+ lines only occur after 200ms, making the HNP switch back delayed. | The A-Device core delays the HNP switch back process. As per the USB-OTG 2.0 specification, the B-Device on the other side of USB either should wait for disconnect from A-Device or should switch to Peripheral mode and wait for A-Device to issue reset. Hence, there is no significant impact on actual operation. | No known workaround. |
| USB_E105 | **B-Device as Host driving K-J pairs during reset**<br><br>A-Device misinterprets the K-J pairs as Suspend, after switching to High Speed mode. | If B-Device as Host on the other side of USB drives K-J pairs for more than 200ms during USB reset, the A-Device core exits peripheral state causing HNP process to fail. There is no significant impact since normally the host drives USB reset for lesser time than 200ms. | No known workaround. |

| ID | Title/Problem | Effect | Fix/Workaround |
|---|---|---|---|
| USB_E106 | **USB interrupts**<br><br>USB interrupts have changed from being level triggered to edge triggered. | USB inteerrupts are now trigggered by signal edge rather then signal level. | Make sure to handle edge triggered interrupt, rather then signal level interrupts. |
| USB_E107 | **Entry to EM4 causes temporary leakage from VREGO**<br><br>Entry to EM4 causes temporary leakage from VREGO. | On transition from EM0 to EM4 a current leakage from VREGO of up to 1 mA lasting a few seconds can occur. | No known workaround. |
| USB_E108 | **Floating DM/DP pins cause leakage when USB is disabled**<br><br>Floating DM/DP pins cause leakage when USB is disabled. | When the USB_DM or USB_DP pins are floating while the USB PHY is disabled, a current in the order of a couple hundred uA may leak from USB_VREGO to VSS. This will not be an issue if there is no voltage applied to USB_VREGO, either externally or through the USB regulator. | If there is no intention to use the USB module, e.g. the USB PHY is disabled, but there is still a voltage on USB_VREGO, make sure the USB_DM and USB_DP pins are defined. This can be done using GPIO or by defining them externally. |
| USB_E109 | **Missing GINTSTS.SessReq Interrupt with USB_PCGCCTL.STOPPCLK = 1**<br><br>A Host-initiated Suspend, followed by a Host Disconnect and Host Connect will not result in a SessReq interrupt. | When USB_PCGCCTL.STOPPCLK is set and the device is acting as a B-peripheral, a Host-initated Suspend, followed by a Host Disconnect and Host Connect will not result in a SessReq interrupt. | If this is an expected use-case, USB_PCGCCTL.STOPPCLK should not be set. USB_PCGCCTL.GATEHCLK can still be used to save power. |
| USB_E110 | **Unexpected HCINTn.ChHltd interrupt**<br><br>In some cases the HCINTn.ChHltd interrupt might be wrongly set. | In some cases an unexpected HCINTn.ChHltd interrupt might be received from another endpoint from which it has not set the HCCHARn.CHDis, HCINTn.XactErr, HCINTn.BblErr, HCINTn.DataTglErr or HCINTn.XferComplete interrupt. | If such an interrupt is received, the application must re-enable the channel for which it received the unexpected HCINTn.ChHltd interrupt. |

# 2 Revision History

## 2.1 Revision 0.70

March 26th, 2014

Corrected typos in document.

## 2.2 Revision 0.60

August 21st, 2013

Added ADC_E117.

Added AES_E102.

Updated disclaimer, trademark and contact information.

## 2.3 Revision 0.50

July 30th, 2013

Added AES_E101.

Added BURTC_E102.

Added CMU_E114.

Added DMA_E101.

Updated errata naming convention.

## 2.4 Revision 0.40

June 5th, 2012

Added ADC1.

Added DI1.

## 2.5 Revision 0.30

April 24th, 2012

Added BU6.

Added CMU4.

Added CMU5.

Added LES3.

Updated CMU3.

## 2.6 Revision 0.20

January 20th, 2012

Updated CUR5.

## 2.7 Revision 0.10

January 9th, 2012

Initial preliminary release.

# A Disclaimer and Trademarks

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

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# Table of Contents

# List of Tables

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ZERO
ARM Cortex-M0+
TINY
ARM Cortex-M3
GECKO
ARM Cortex-M3
LEOPARD
ARM Cortex-M3
GIANT
ARM Cortex-M3
WONDER
ARM Cortex-M4