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EFM32G290 Errata, Chip rev. D

F128/F64/F32

This document describes errata for the latest revision of EFM32G290 devices.

ARM ZERO TINY GECKO LEOPARD GIANT WONDER

SILICON LABS

1 Errata

This document contains information on the errata of the latest revision of this device. For errata on older revisions, please refer to the errata history for the device. 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 r2p0 (www.arm.com) also applies to this device.

1.1 Chip revision D

Table 1.1. Erratas

ID	Title/Problem	Effect	Fix/Workaround
AES_E101	**BYTEORDER does not work in combination with DATASTART/XORSTART** 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.
CMU_E106	**LFXO Digital External Mode** LFXO ready flags are never set when LFXO is configured in Digital External Clock mode.	When LFXOMODE in CMU_CTRL is set to DIGEXTCLK the LFXORDY flag in CMU_STATUS and CMU_IF will not be set when the number of cycles set in LFXOTIMEOUT in CMU_CTRL has elapsed. Thus polling of this flag will not work. However, the clock propagates as normal. It is only the flag that is not set.	To detect that the clock has propagated through the ripple counter, write to any Asynchronous Register in any Low Energy peripheral and wait for SYNCBUSY for that register field to go low. Remember to enable the LE core clock and the clock for the LE peripheral you choose. For example, write 0xA5 to RTC_COMP0 and wait for COMP0 in RTC_SYNCBUSY to go low.
DMA_E101	**EM2 with WFE and DMA** 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.
EMU_E103	**EM4 current** In EM4 the device may consume 700nA instead of 20nA.	If EM4 is issued within a 10µs-12µs window after the 1kHz RC oscillator rising edge transition the device will permanently consume 700nA.	There two possible workarounds for this issue. The first workaround is using the WDOG to identify the rising edge transition and add a delay before going into EM4. Write on the WDOG_CTRL register (for instance WDOG->CTRL|=WDOG_CTRL_CLKSEL_ULFRCO) and wait for the SYNCBUSY to be released. The release of the SYNCBUSY happens on a rising edge transition of the 1Khz clock. After that insert a number of __NOP(); to cause a delay of 20µs (12µs plus margin). The number of __NOP(); will depend on

ID	Title/Problem	Effect	Fix/Workaround
			the processor frequency. After the delay EM4 can be entered safely. Note: to implement this workaround the WDOG can not be locked, otherwise the registers will not be written. The second workaround is by outputting the ULFRCO on a pin (CMU_CLK0) using CMU_CTRL and CMU_ROUTE registers. That pin should then be configured as push pull with interrupt enable on rising edge, so the device can go to EM2 while it waits for the ULFRCO rising edge transition. When the interrupt occurs clear it and add a number of __NOP(); before entering EM4, as described in the first workaround. Note: the pin used to output the ULFRCO should be driven by an external source.
EMU_E104	**Sequencing of Analog and Digital Power** Power-on Reset might fail if power is applied to IOVDD_x or VDD_DREG before AVDD_x	The device might lock up if power is applied to IOVDD_x or VDD_DREG pins before AVDD_x pins during power up. This lock-up state can be exited by removing power to the device followed by a power up sequence according to what is described in the workaround.	Make sure that the power on the AVDD_x pins ramp earlier or at the same time as the power on IOVDD_x and VDD_DREG during power up. Practical schematic recommendations for this workaround are given in the EFM32 Application Note "AN0002 Hardware Design Considerations".
RTC_E101	**RTC PRS output** The RTC PRS output might cause false triggers	If the RTC is selected as a PRS producer there might occur glitches which will accidentally cause false triggers.	Do not use the RTC as a PRS producer, instead use one of the other timer sources (e.g. TIMER0).
TIMER_E102	**Timer capture and debugger** Timer capture triggered when timer is halted by debugger.	When DEBUGRUN is disabled, and the capture input is HIGH it is possible to wrongly trigger a capture event by halting the MCU and starting it again (for instance by setting a breakpoint).	Enable DEBUGRUN when using a debugger.
USART_E101	**U(S)ART Double Buffer** Transmission control through TXDATAX and TXDOUBLEX does not work with data double buffering.	When a frame is loaded into the transmission shift register, transmission control bits are always taken from outer buffer element. If only one frame is in the U(S)ART buffer, the content of the buffer elements is equivalent, and transmission control bits work as specified. If two frames are in the buffer however, the control bits for the frame in the outer buffer are used for transmitting the frame in inner buffer. This is not a problem for frames consisting of more than 9 bits, since these large frames occupy both the inner and outer buffer elements.	If using transmission control bits in registers TXDATAX or TXDOUBLEX make sure there are not more than one frame in the U(S)ART buffer at a time, or that the control bits are equal. When TXBL in U(S)ARTn_CTRL is cleared, the TXBL status and interrupt flags in U(S)ARTn_STATUS and U(S)ARTn_IF respectively tell when the buffer is empty. When using transmission control bits, a single frame can then be loaded into the USART for transmission.
WDOG_E103	**WDOG EM2 detection with LFXO digital/sine input**	When the WDOG is using LFXO with digital or sine input as a clock source, it will mistake EM2 for EM3. The EM2RUN and EM3RUN bits of WDOG_CTRL will behave accordingly.	When using LFXO with digital/sine input, EM3RUN must be set to keep the WDOG running in EM2.

ID	Title/Problem	Effect	Fix/Workaround
	The WDOG will mistake EM2 for EM3 if using LFXO with digital or sine input.		

1.2 Older Revisions

Erratas for older revisions can be found at the Silicon Laboratories Norway AS homepage:

www.energymicro.com/downloads/errata-archive

2 Revision History

2.1 Revision 2.0

August 21st, 2013

Updated disclaimer, trademark and contact information.

2.2 Revision 1.90

July 30th, 2013

Added DMA_E101.

Updated errata naming convention.

2.3 Revision 1.80

December 11th, 2012

Removed erratas no longer present for chip revision D: ADC15, CMU8, CMU9, EMU5, EMU6, WDOG2.

Added AES1.

Added TIMER2.

2.4 Revision 1.70

January 11th, 2011

Added CMU9.

Updated CMU8.

2.5 Revision 1.60

November 10th, 2011

Added CMU8.

Added EMU6.

2.6 Revision 1.50

May 20th, 2011

Added ADC15.

Added EMU5.

Added WDOG3.

2.7 Revision 1.40

November 17th, 2010

Added EMU4.

2.8 Revision 1.30

October 26th, 2010

Added EMU3 and RTC1.

2.9 Revision 1.20

August 31st, 2010

Removed Erratas not valid for chip revision C.

Added WDOG2.

2.10 Revision 1.10

June 25th, 2010

Removed ADC7, DAC6, and LCD3.

Added ACMP1, ADC12-ADC13, CMU6-CMU7, DAC7, LEUART3, LETIMER1, TIMER1, USART2-USART11, VCMP1-VCMP2.

2.11 Revision 1.00

April 23rd, 2010

Removed ADC_VCM errata.

Updated the erratas which are to be fixed in chip revision C.

2.12 Revision 0.10

April 8th, 2010

Initial preliminary release.

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