EFM32 Zero Gecko STK

Board Function	Page

Revision History

Rev.	Description
B00	Initial release for series production.
C01	Updated EFM32ZG chip revision + major updates to debugger

PCB1

PCB2010A

/
EFM32 ZG STK

Designed: HEL	Approved: JNO	Schematic Title: EFM32ZG Zero Gecko STK	
Size: A3	BOM Doc No: <Cage Code>	Page Title: Title Page	
Design Created Date: Wednesday, December 03, 2008		Document number: BRD2010A	Revision: C02
		Sheet Created Date: Saturday, March 21, 2009	Sheet Modified Date: Tuesday, October 15, 2019
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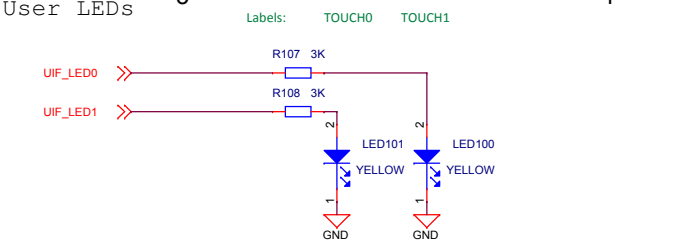
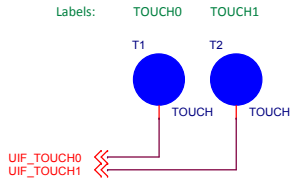
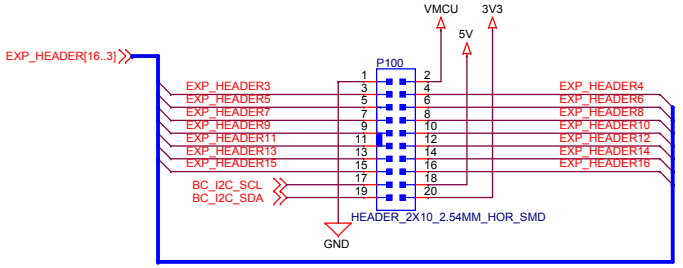
User LEDs



Touch Pads



EXP Header

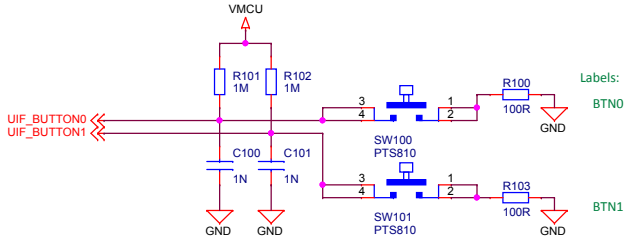


EXP-Header Functionality

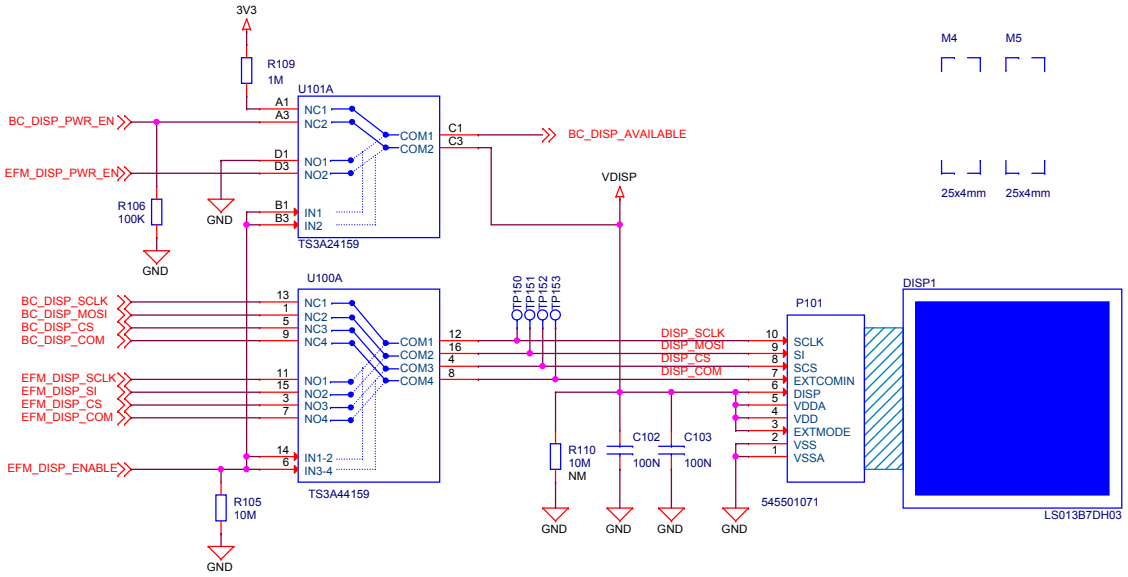
1	GND		
3	PC0		ACMP0_CH0
5	PC1		ACMP0_CH1
7	PC2		ACMP0_CH2
9	PA0		
11	PB11		IDAC0_OUT
13	PA1		
15	PE13	I2C0_SCL	
17	Reserved for EXP Board Identification		
19	Reserved for EXP Board Identification		

2	VMCU		
4	PD7	US1_TX	ADC0_CH7
6	PD6	US1_RX	ADC0_CH6
8	PC15	US1_CLK	
10	PC14	US1_CS	
12	PD4	LEU0_TX	ADC0_CH4
14	PD5	LEU0_RX	ADC0_CH5
16	PE12	I2C0_SDA	
18	5V		
20	3V3		

User Pushbuttons

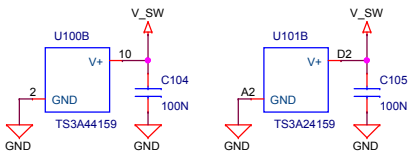


Memory LCD-TFT Display & Multiplexer



EFM_DISP_ENABLE	DISP_CTRL	VDISP	BC_DISP_AVAILABLE
1	EFM	EFM_DISP_PWR_EN	0
0	BC	BC_DISP_PWR_EN	1

The EFM32 always controls ownership of the display using the EFM_DISP_ENABLE signal.



EFM32 ZG STK

SILICON LABS

Schematic Title: **EFM32ZG Zero Gecko STK**

Page Title: **User Interfaces**

Designed: HEL	Approved: JNO	Document number: BRD2010A	Revision: C02
Size: A3	BOM Doc No:		
Design Created Date: Wednesday, December 03, 2008		Sheet Created Date: Friday, October 31, 2014	Sheet Modified Date: Tuesday, October 15, 2019
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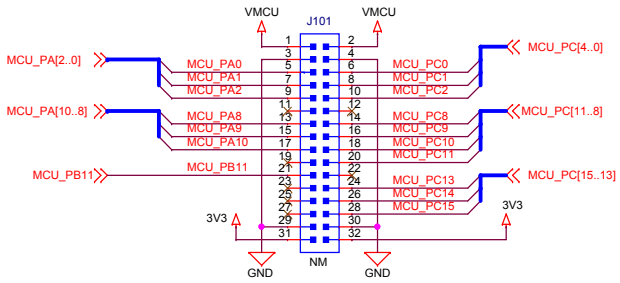
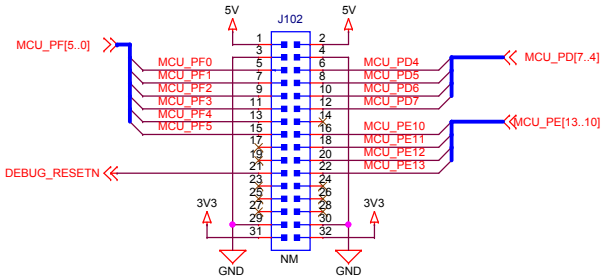
Breakout Connections



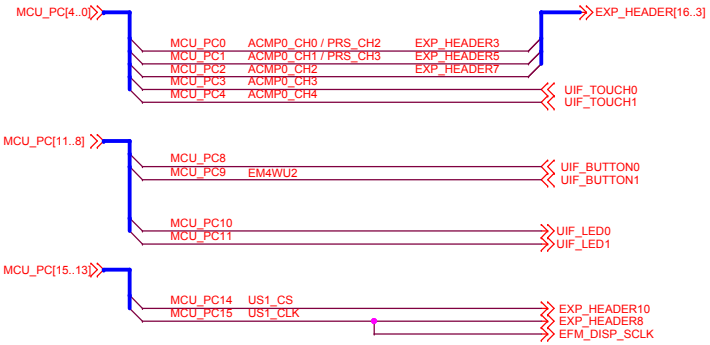
Breakout header labels:

VMCU	VMCU
GND	GND
A0	C0
A1	C1
A2	C2
NC	NC
A8	C8
A9	C9
A10	C10
NC	C11
B11	NC
NC	C13
NC	C14
NC	C15
GND	GND
3V3	3V3

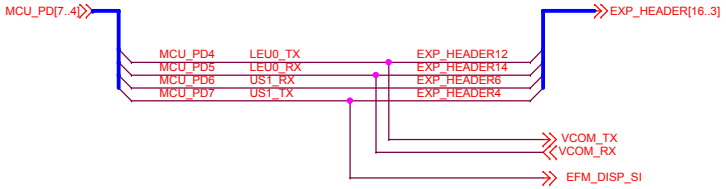


5V	5V
GND	GND
F0	D4
F1	D5
F2	D6
F3	D7
F4	NC
F5	E10
NC	E11
NC	E12
RST	E13
NC	NC
NC	NC
NC	NC
GND	GND
3V3	3V3

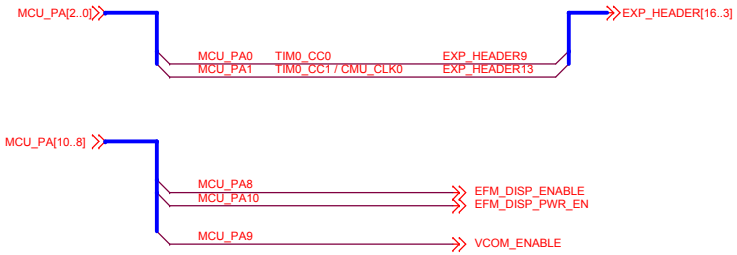
PC Connections



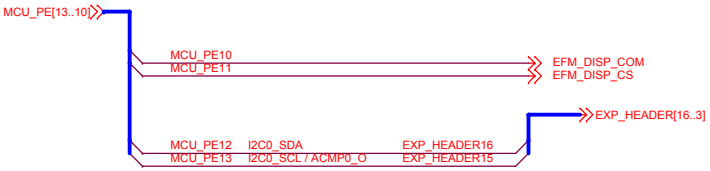
PD Connections



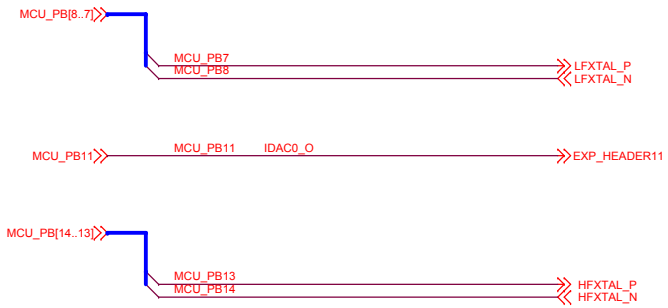
PA Connections



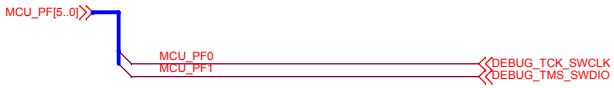
PE Connections



PB Connections



PF Connections



SILICON LABS

Designed: HEL	Approved: JNO
Size: A3	BOM Doc No: <Cage Code>
Design Created Date: Wednesday, December 03, 2008	

Schematic Title: **EFM32ZG Zero Gecko STK**

Page Title: **EFM32 Signal Assignments**

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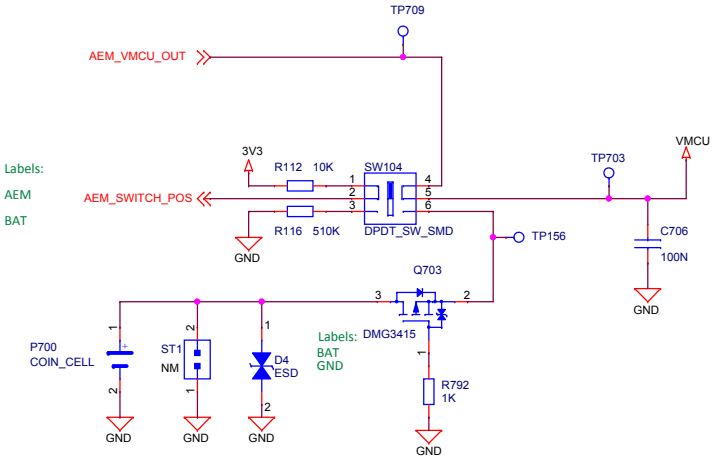
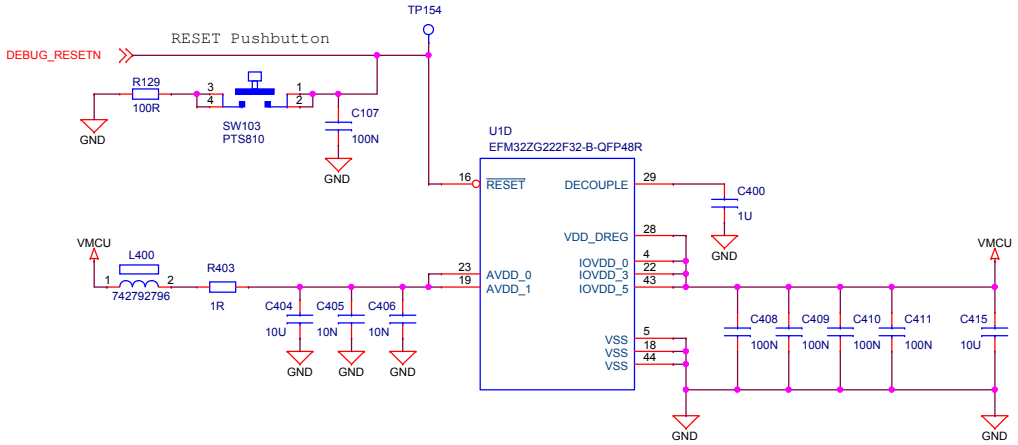
Power Select Switch: AEM/BAT



SWITCH POS	MODE DESCRIPTION
AEM	AEM Enabled, VMCU sourced from external 3.3V LDO powered by BC USB 5V supply
BAT	AEM Disabled, VMCU sourced from coin-cell battery or external power supply

EFM32 Power and Decoupling



SILICON LABS		Schematic Title: EFM32ZG Zero Gecko STK	
Designed: HEL	Approved: JNO	Page Title: EFM32 Power	
Size: A3	BOM Doc No: <Cage Code>	Document number: BRD2010A	Revision: C02
Design Created Date: Wednesday, December 03, 2008		Sheet Created Date: Friday, October 31, 2014	Sheet Modified Date: Tuesday, October 15, 2019
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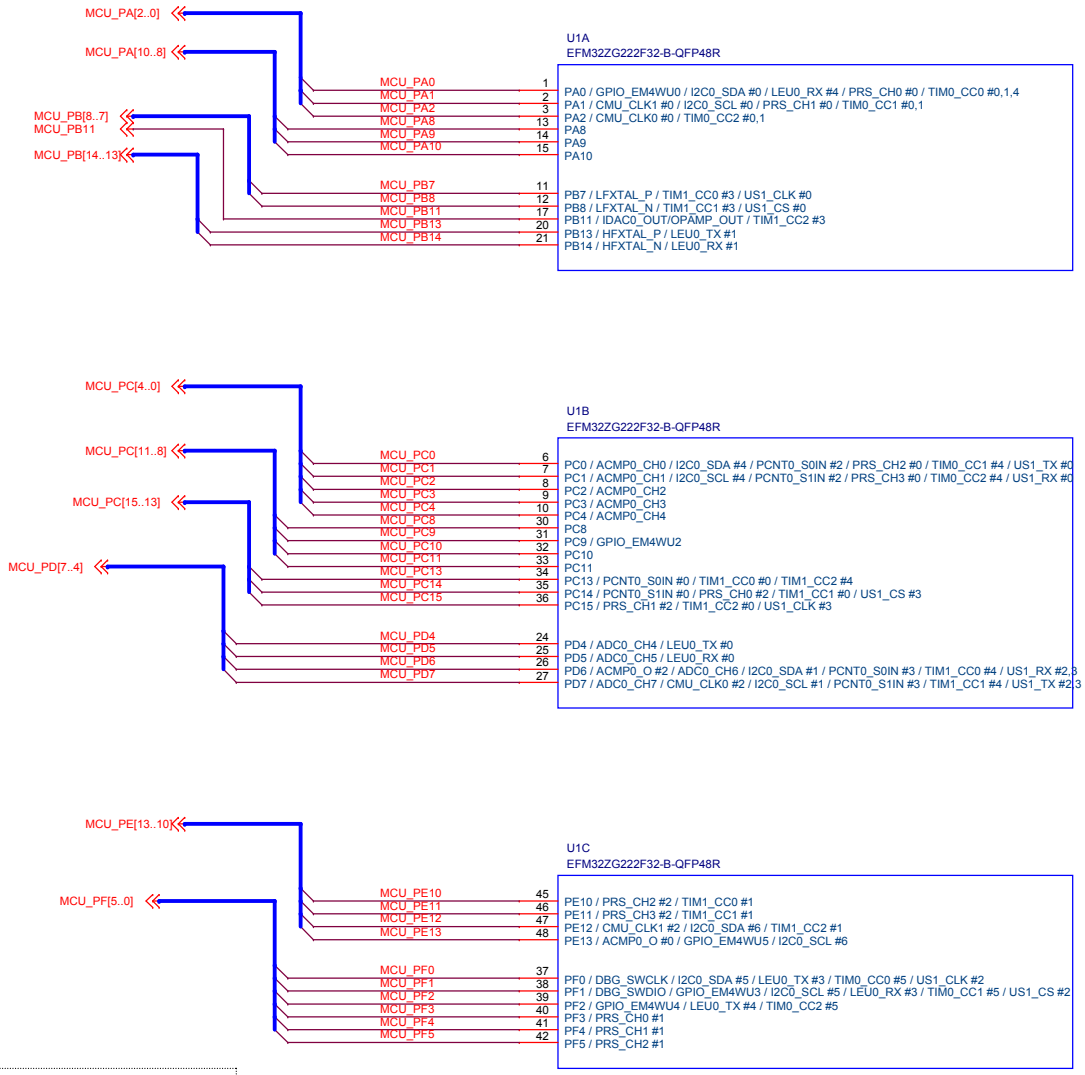
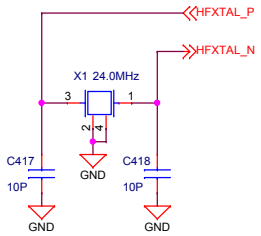
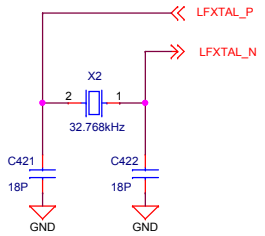
EFM32ZG MCU



High Frequency Clock



Low Frequency Clock



SILICON LABS

Designed: HEL	Approved: JNO
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Design Created Date: Wednesday, December 03, 2008	

Schematic Title: **EFM32ZG Zero Gecko STK**

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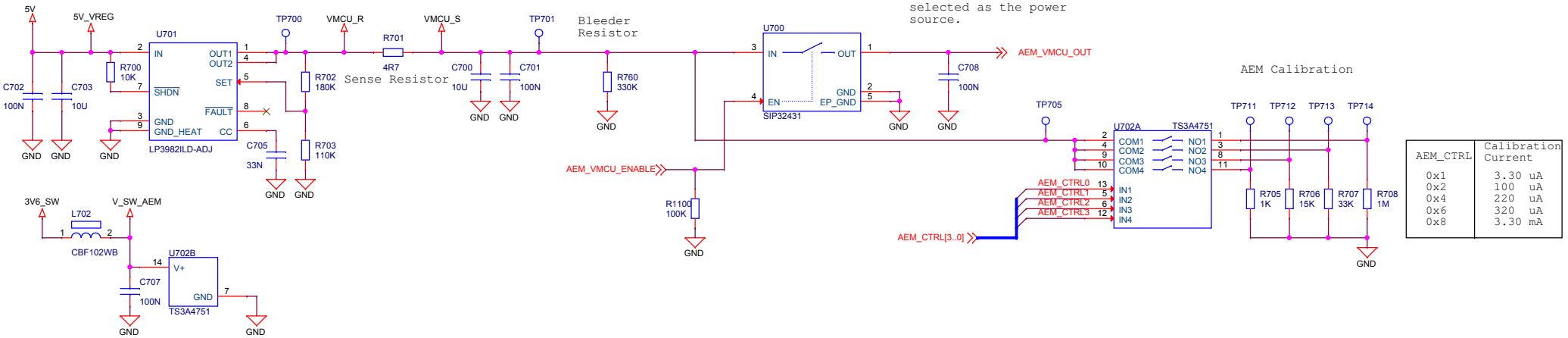
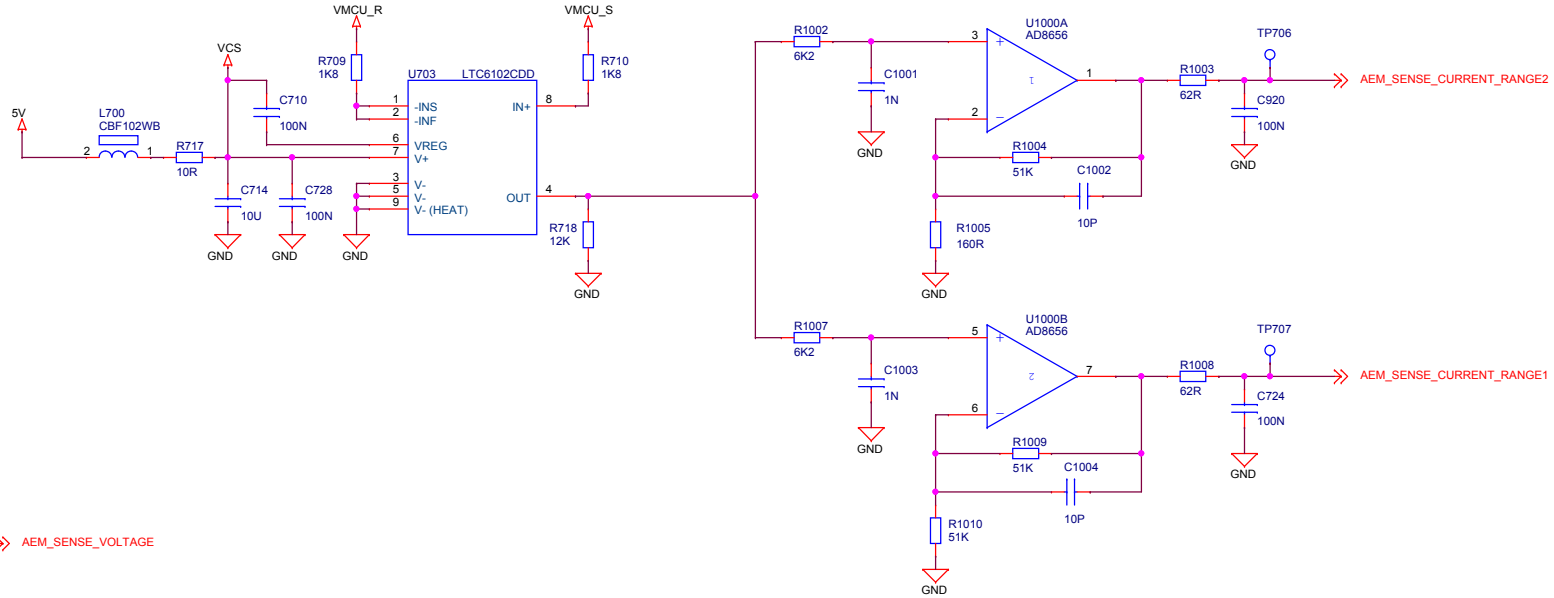
MCU power regulator

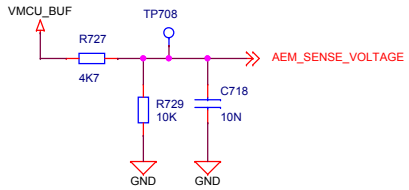


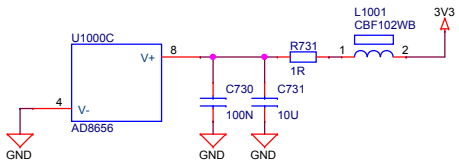
AEM_CTRL	Calibration Current
0x1	3.30 uA
0x2	100 uA
0x4	220 uA
0x6	320 uA
0x8	3.30 mA

MCU current sense



MCU Voltage Sense





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EFM32 ZG STK

SILICON LABS

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Design Created Date: Wednesday, December 03, 2008	

Schematic Title
EFM32ZG Zero Gecko STK

Page Title
Advanced Energy Monitor - Current Sense

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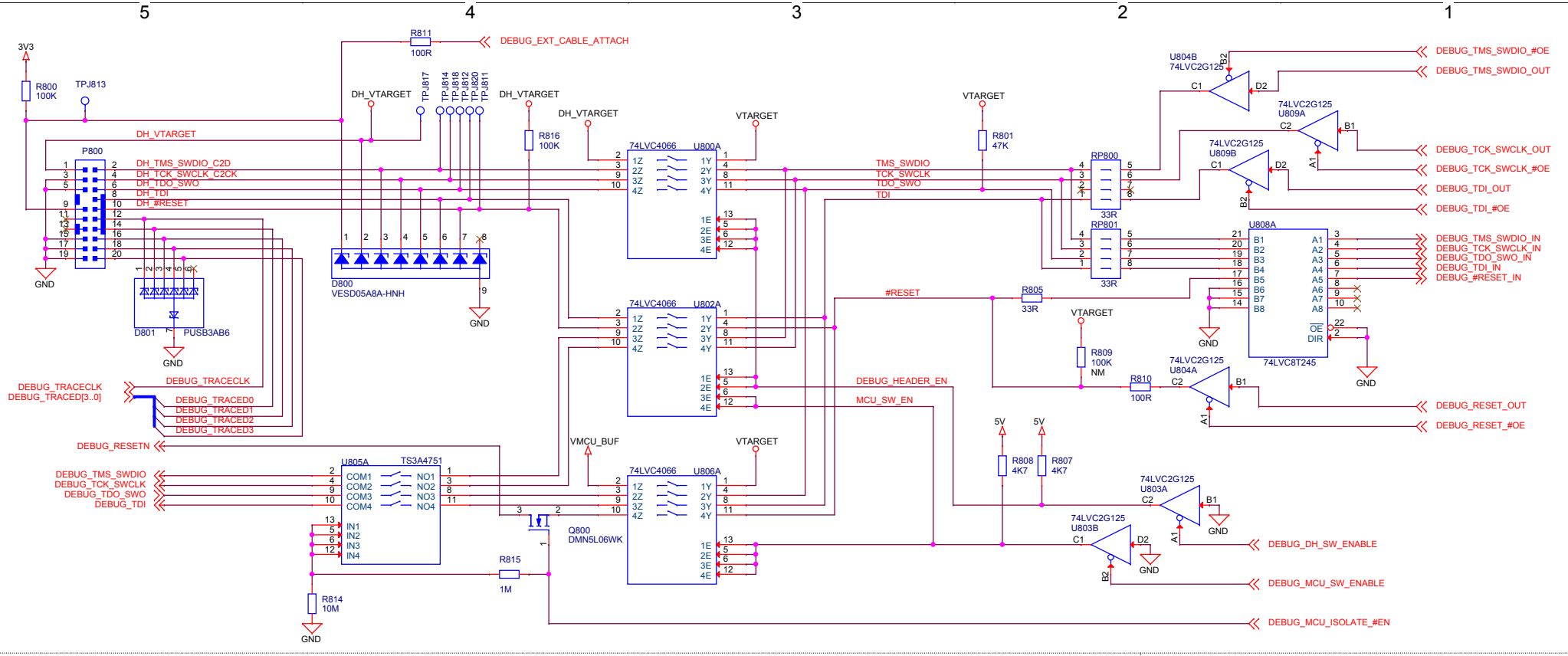
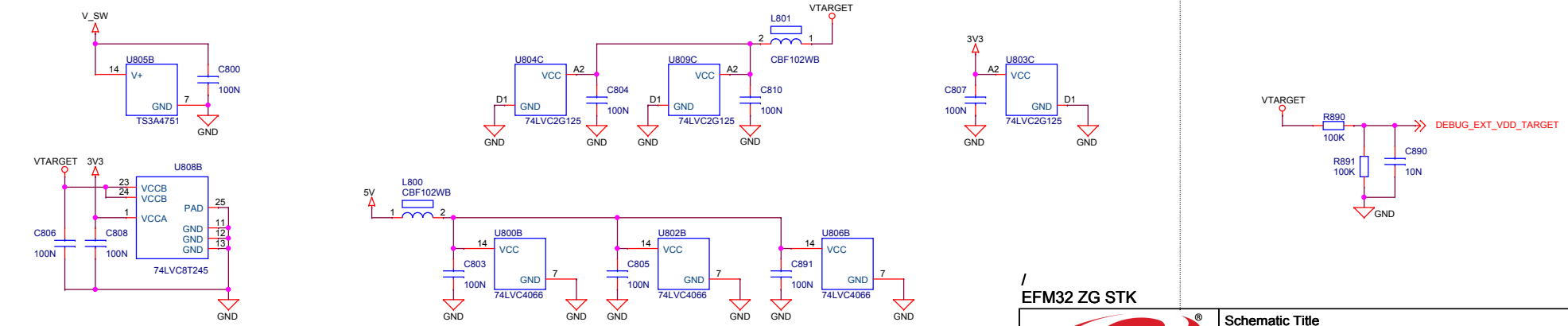


Power & Decoupling



Mode	DEBUG_MCU_SW_ENABLE	DEBUG_DH_SW_ENABLE	DEBUG_BUF_#OE	ISOLATE_#EN	DH_VTARGET	VTARGET
Debug Out	0	1	0	0	External voltage	External voltage
MCU Debug	1	0	0	1	Disconnected	VMCU
Debug In	1	1	1	1	VMCU	VMCU
Debug Off	1	1	1	0	-	-

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EFM32 ZG STK

SILICON LABS

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Size A3	BOM Doc No: <Cage Code>
Design Created Date: Wednesday, December 03, 2008	

Schematic Title
EFM32ZG Zero Gecko STK

Page Title
Debug Interface

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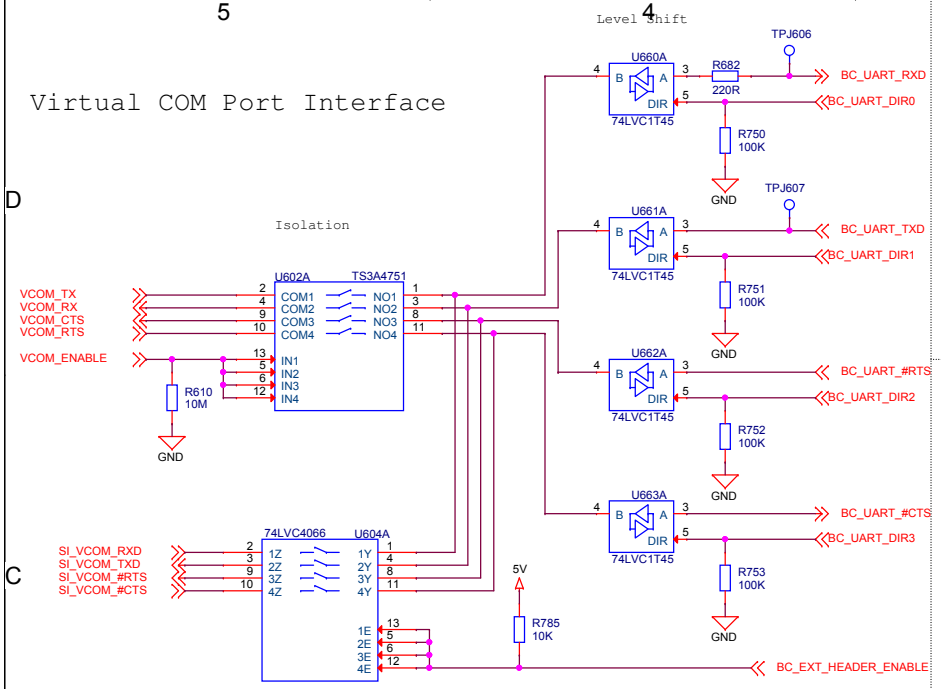
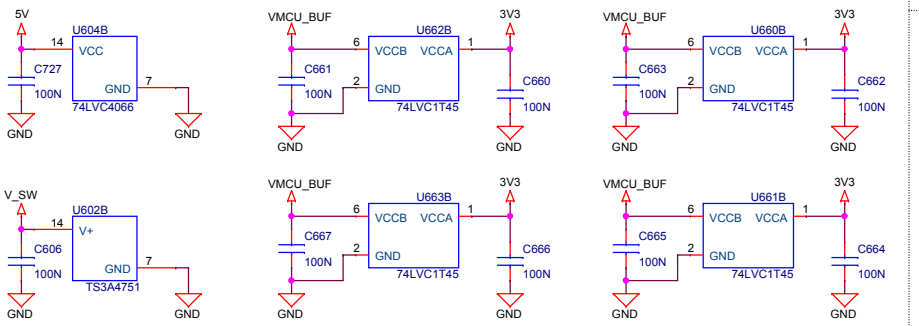
Virtual COM Port Interface

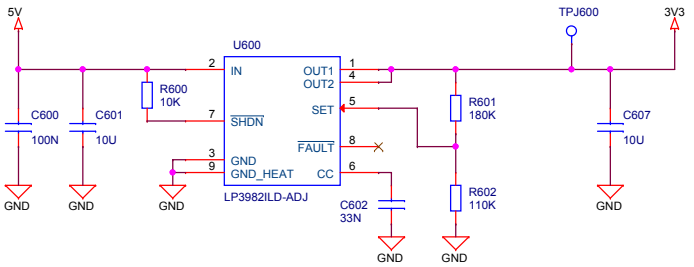
Level Shift

Isolation

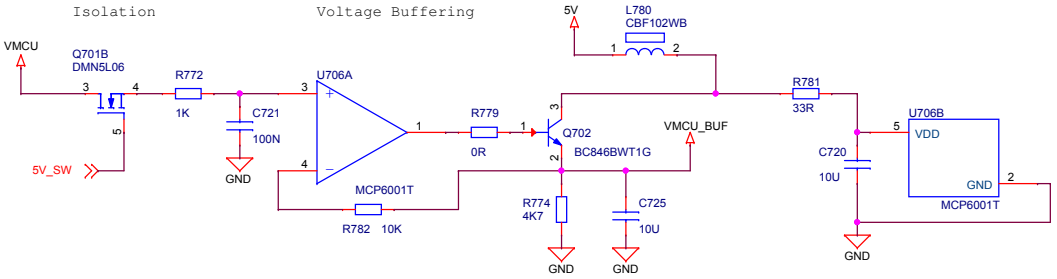




3V3 Regulator



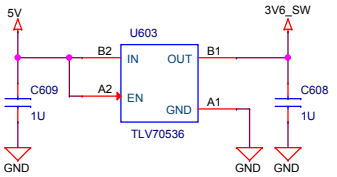
VMCU Voltage Mirror

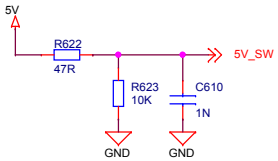


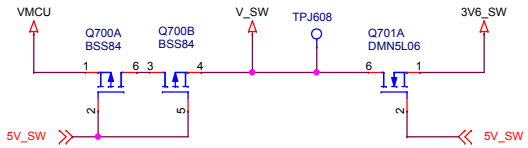
Power Supply for Analog Switches

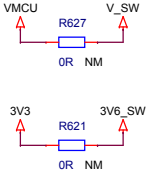
The USB VBUS voltage is used to bias these transistors, turning the P-Channel MOSFETs (Q700) off, and the N-Channel MOSFETs (Q701) on.

J-Link USB Cable	PMOS State	NMOS State	V_SW	VMCU_SENSE
Connected	Off	ON	3.6V	VMCU
Disconnected	ON	OFF	VMCU	Isolated



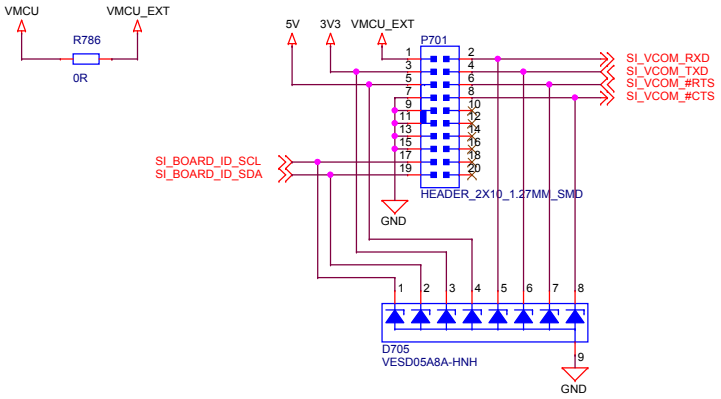






EXTERNAL BOARD

Simplicity Connector



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EFM32 ZG STK

SILICON LABS

Schematic Title	EFM32ZG Zero Gecko STK
Page Title	Power & Misc
Designed: DDB / Approved: JNO	
Size: A3 / BOM Doc No: <Cage Code>	
Design Created Date: Wednesday, December 03, 2008	
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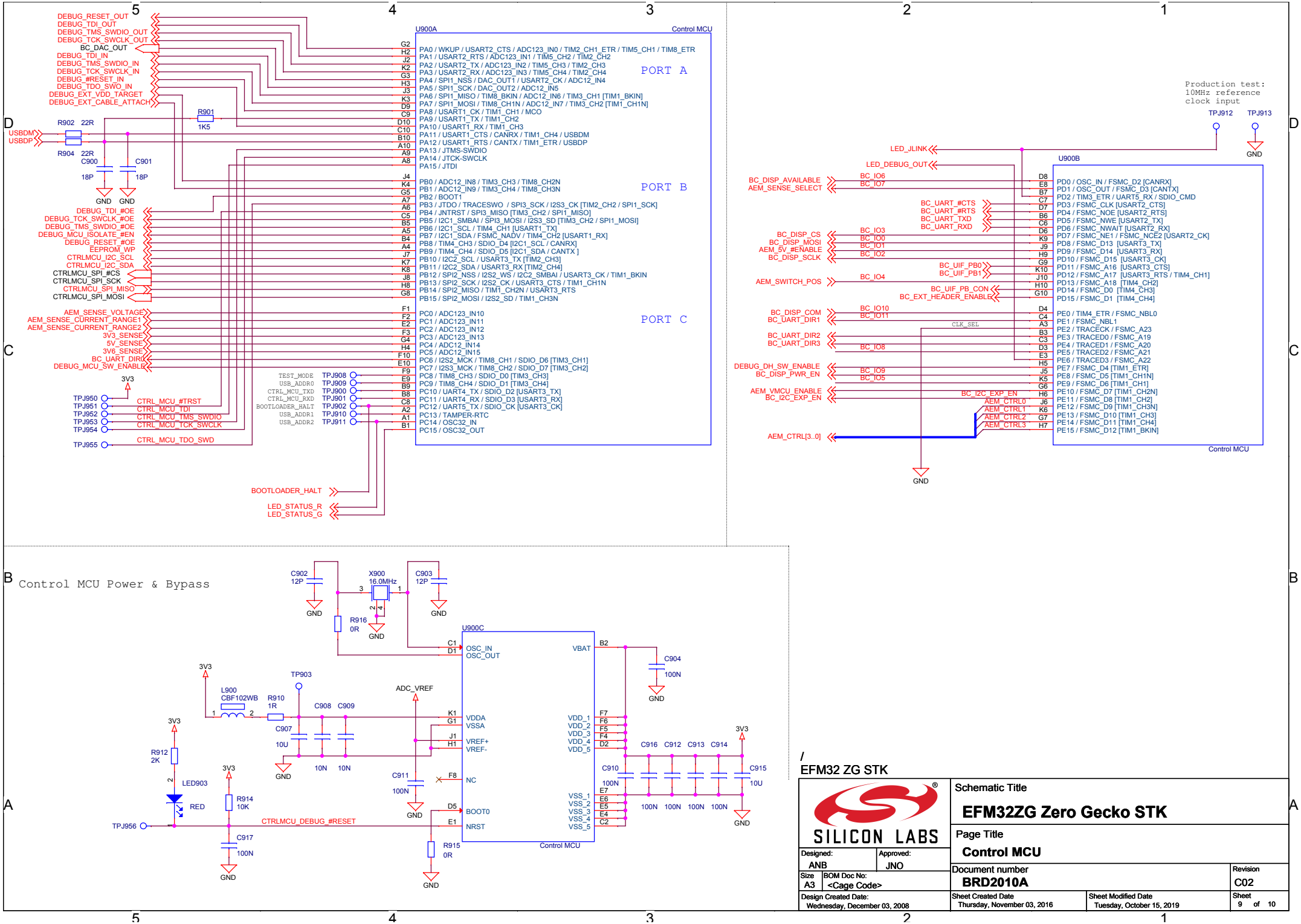

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EFM32 ZG STK

SILICON LABS

Schematic Title	EFM32ZG Zero Gecko STK
Page Title	Control MCU
Designed: ANB / Approved: JNO	
Size: A3 / BOM Doc No: <Cage Code>	Document number: BRD2010A / Revision: C02
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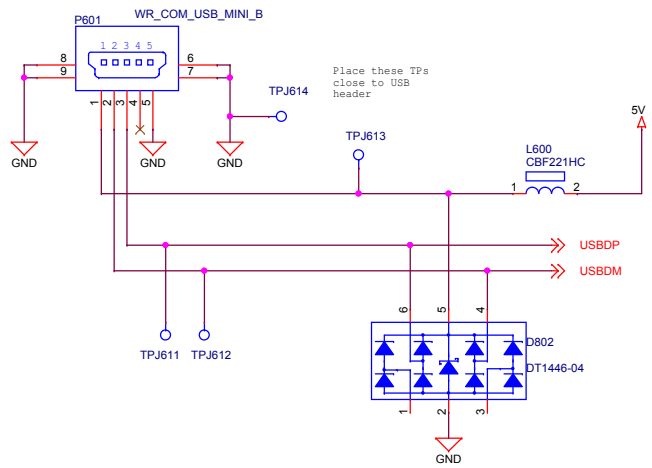
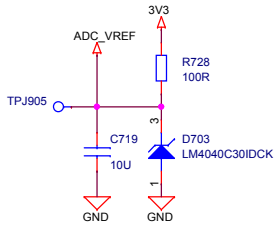
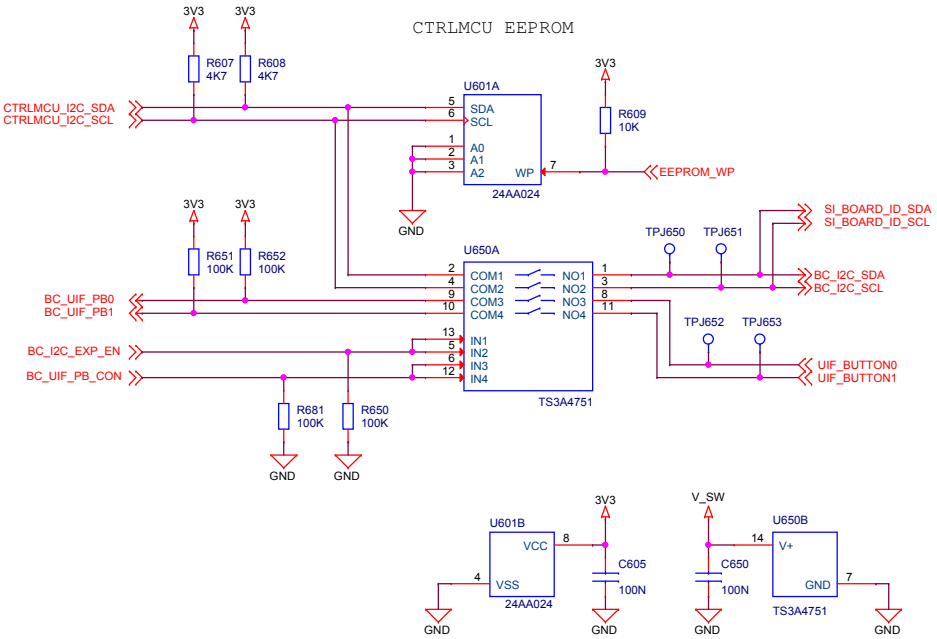
J-Link USB Port



ADC reference voltage



CTRLMCU EEPROM



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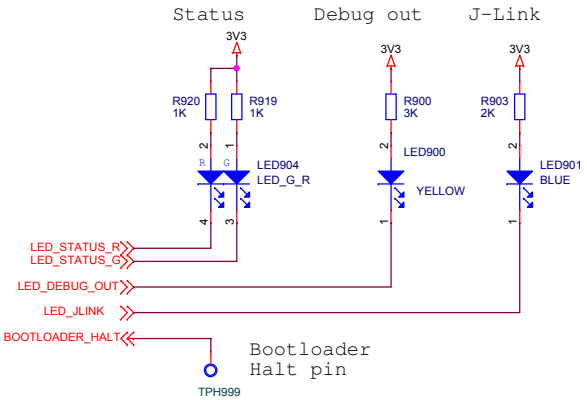
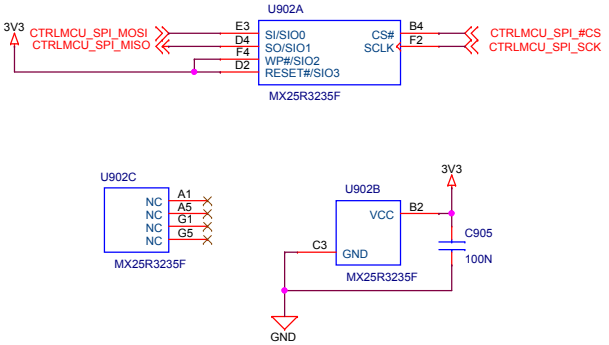
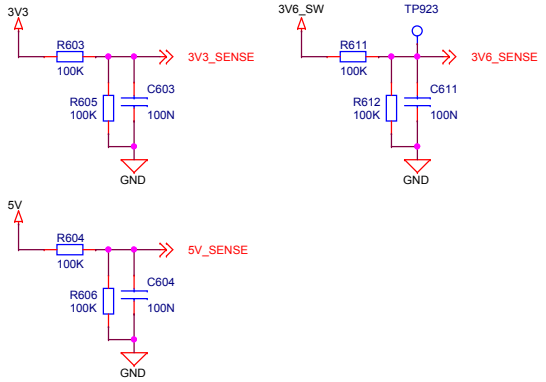


CTRLMCU SERIAL FLASH



POWER SENSE



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EFM32 ZG STK

SILICON LABS

Designed: ANB	Approved: JNO
Size: A3	BOM Doc No: <Cage Code>
Design Created Date: Wednesday, December 03, 2008	

Schematic Title: **EFM32ZG Zero Gecko STK**

Page Title: **Board Controller Misc**

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