


EFM32 Zero Gecko STK

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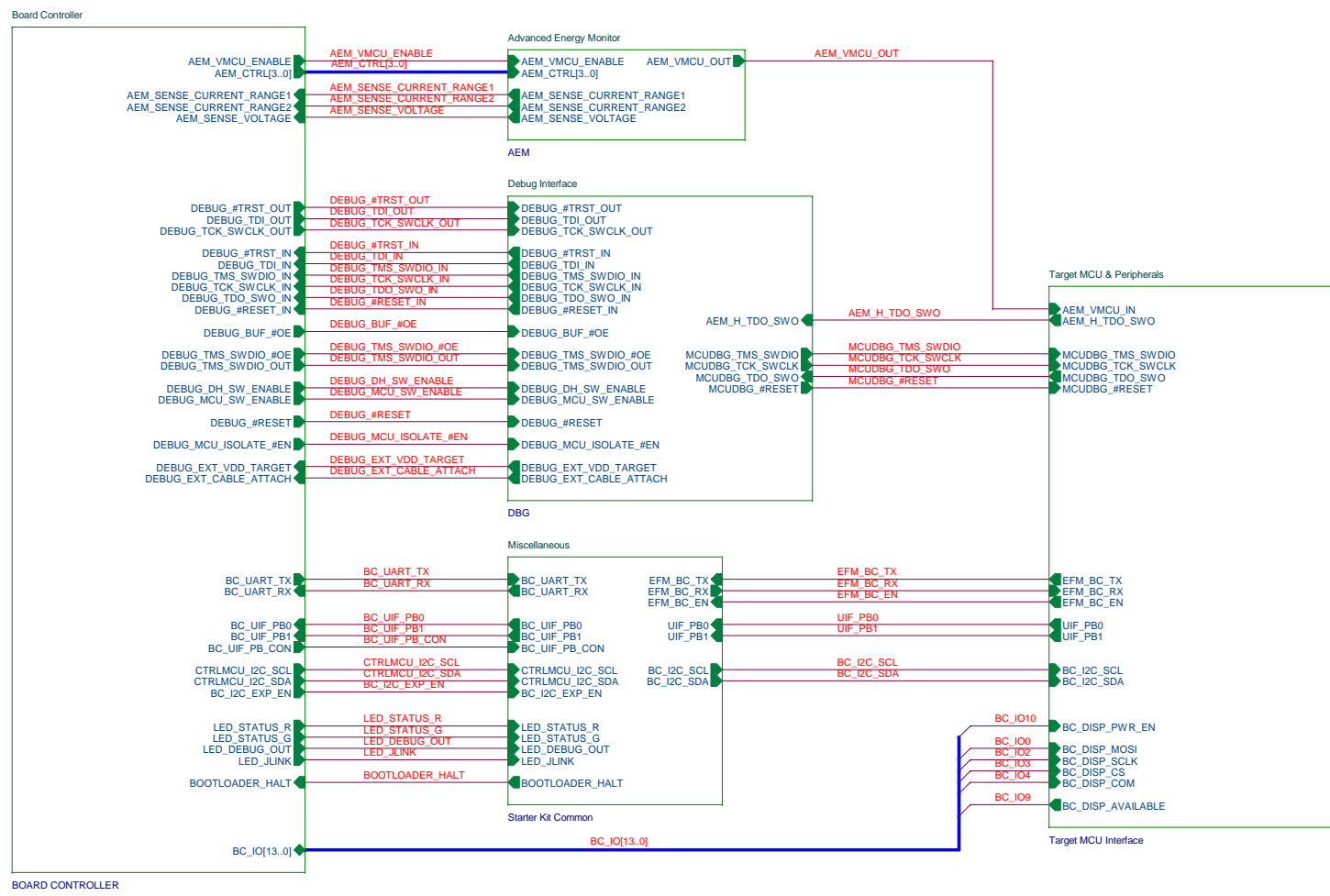
Revision History

| Rev. | Description |
|------|--|
| PB10 | Added 3V6_SENSE. Added TPJ608. Changed TP703 to TPJ703. |
| PB11 | Swapped BC_DISP_COM from BC_IO1 to BC_IO4. |
| PB12 | Swapped EXP Header pins 15 and 17. Moved TPJ606 and TPJ607. |
| PB13 | Extended CTRLMCU_I2C bus to EXP Header. Added EFM_DISP_PWR_EN signal. |
| B00 | Initial release for series production. |
| B01 | Changed U603 from LD6806 to TLV70536. |

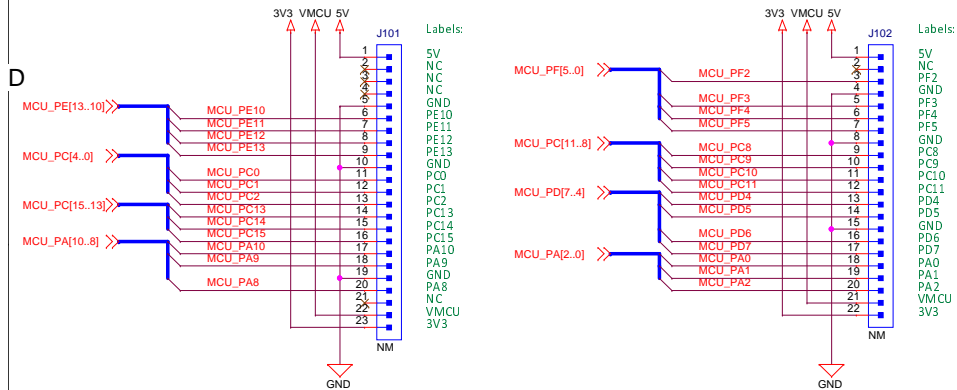
STK

| | | | |
|---|-------------|-------------------------------------|------------|
|  | | Schematic Title | |
| | | EFM32 Zero Gecko Starter Kit | |
| Designed: ANB | | Approved: JNO | |
| Size A3 | BOM Doc No: | Page Title | |
| Design Created Date: Wednesday, December 03, 2008 | | Title Page | |
| Sheet Created Date: Saturday, March 21, 2009 | | Document number | Revision |
| Sheet Modified Date: Monday, January 13, 2014 | | BRD2010A | B01 |
| Sheet 1 of 11 | | | |

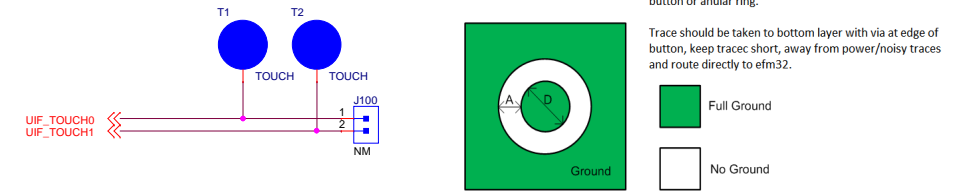




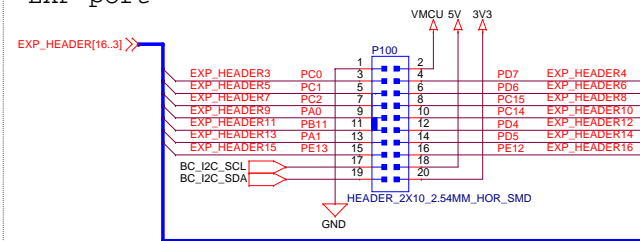
Breakout Connections



Touch Pads



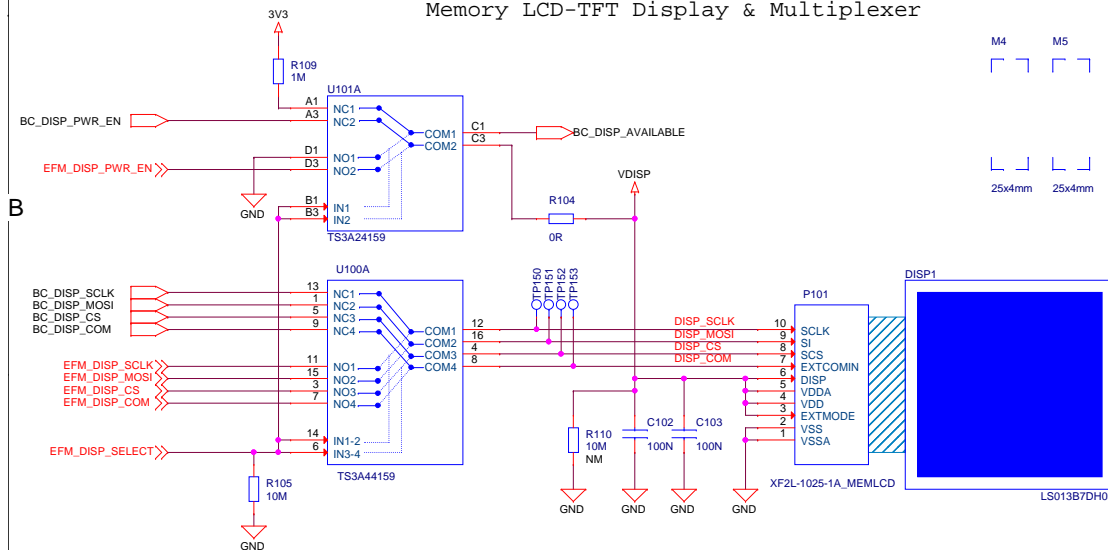
EXP port



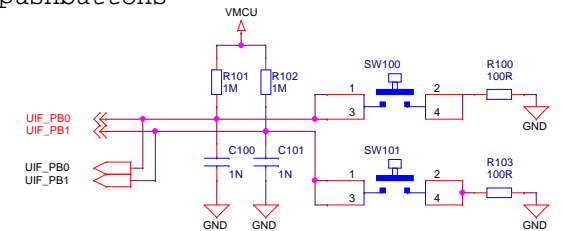
EXP-Header Functionality

| | | | |
|----|------|----------|-----------|
| 1 | GND | | ACMP0_CH0 |
| 3 | PC0 | | ACMP0_CH1 |
| 5 | PC1 | | ACMP0_CH2 |
| 7 | PC2 | | |
| 9 | PC15 | | |
| 11 | PC14 | | |
| 13 | PC4 | | |
| 15 | PC5 | | |
| 17 | PC6 | | |
| 19 | PC7 | | |
| 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 | SV | | |
| 20 | 3V3 | | |

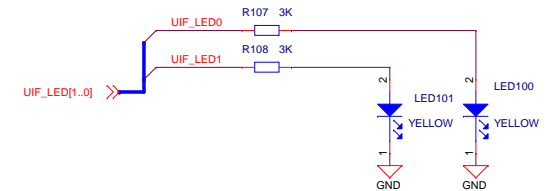
Memory LCD-TFT Display & Multiplexer



User pushbuttons



User LEDs

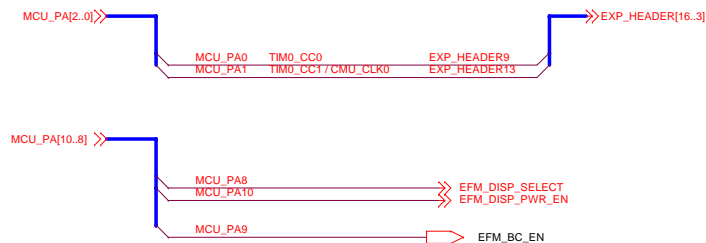


Target MCU Interface

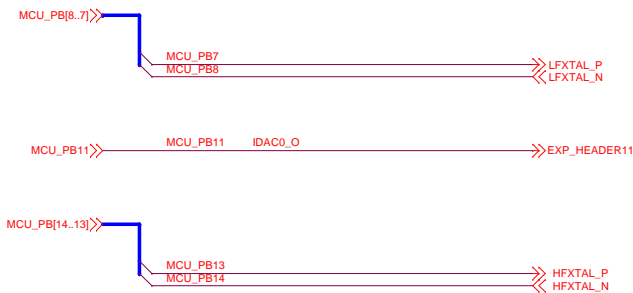
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| | | Schematic Title | |
| | | EFM32 Zero Gecko Starter Kit | |
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| Size A3 | | User Interfaces | |
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The EFM32 always controls ownership of the display using the EFM_DISP_SELECT signal.

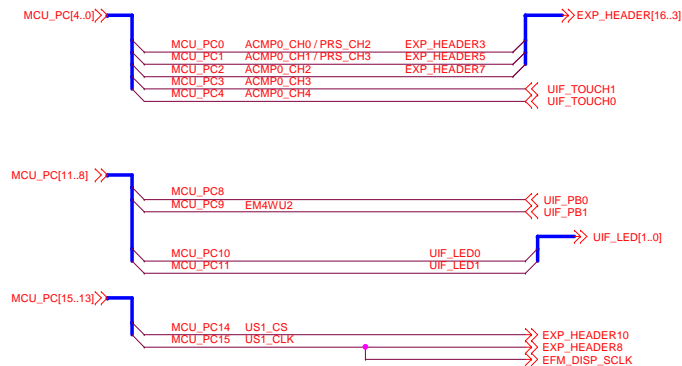
PA Connections



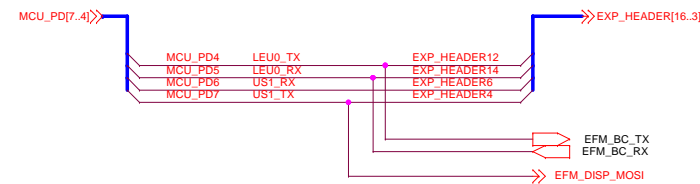
PB Connections



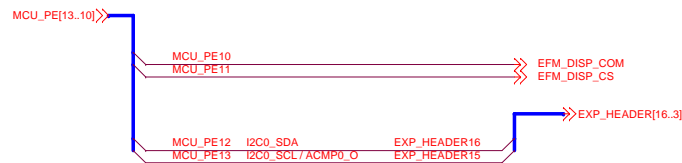
PC Connections



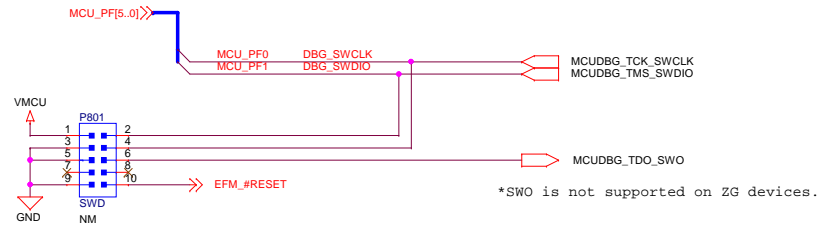
PD Connections



PE Connections

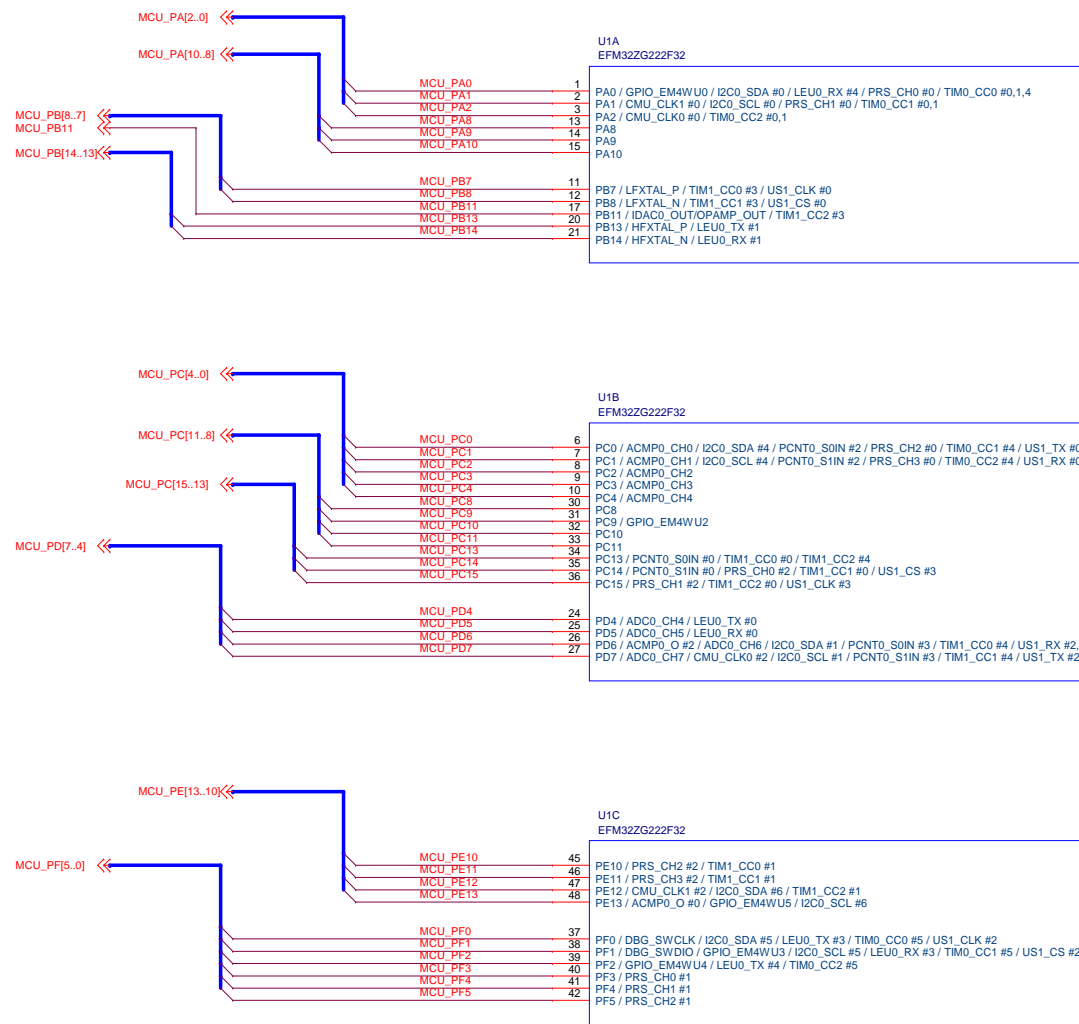


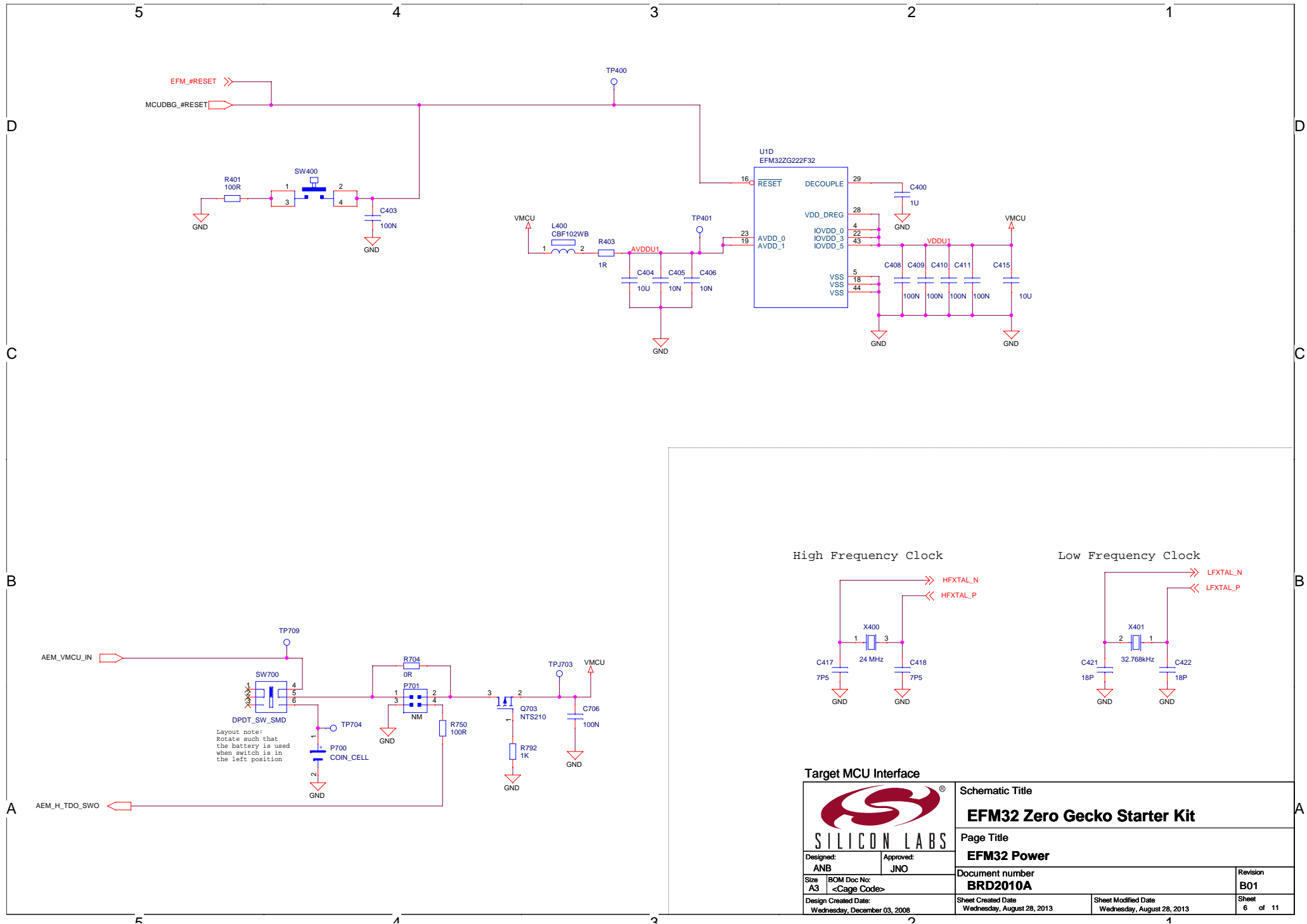
PF Connections



Target MCU Interface

| | | | |
|--|--|------------------------------|--|
|  SILICON LABS® | | Schematic Title | |
| | | EFM32 Zero Gecko Starter Kit | |
| Designed: ANB | | Page Title | |
| Size A3 | | Signal Assignments | |
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Indicators:

5

4

D

Status

Debug out

J-Link

3V3

R920 1K

R919 1K

LED904 LED_G_R

LED900 YELLOW

LED901 BLUE

LED_STATUS_R

LED_STATUS_G

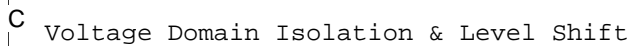
LED_DEBUG_OUT

LED_ILINK

BOOTLOADER_HALT

Bootloader Halt pin

TPH999



The schematic diagram illustrates the Voltage Buffering circuit. It features an isolation stage with a MOSFET (Q701B, DMNSL06) and a voltage buffering stage with an op-amp (U706A) and a BC846BWT1G transistor. The output is connected to a 5V supply through an inductor (L780, CBF102WB) and a resistor (R781, 33R). The circuit includes various passive components like resistors (R772, R779, R782, R774, R781, C721, C725) and capacitors (C720, C725) for timing and filtering. The output is labeled VMCU_BUF.

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



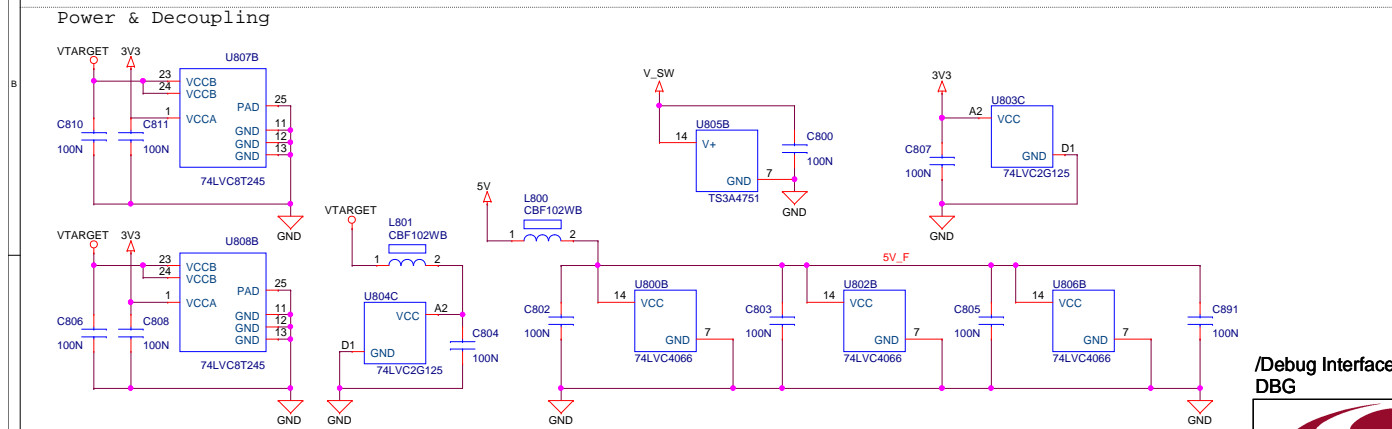
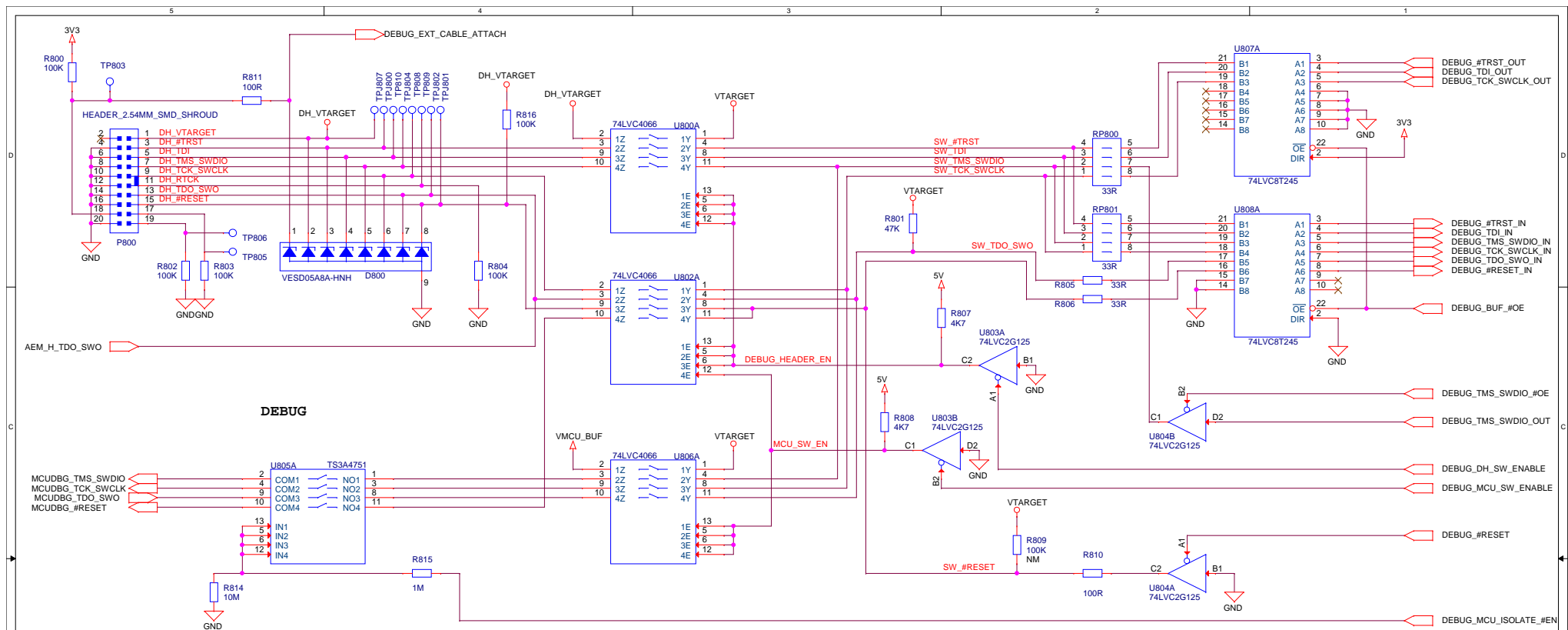
EFM32 Zero Gecko Starter Kit

| | |
|--|-------------------------|
| | Power & Misc |
|--|-------------------------|

| |
|----------|
| Revision |
| B01 |

| | |
|---------------------|--------------------------|
| Sheet Modified Date | Friday, January 10, 2014 |
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| 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 | - | - |

/Debug Interface
DBG

SILICON LABS

Designed: <OrgAddr1>
Size: A3
BOM Doc No: <Cage Code>
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Approved: <OrgAddr2>
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Schematic Title
EFM32 Zero Gecko Starter Kit

Page Title
Debug Interface

Document number
BRD2010A

Revision
B01

Sheet Created Date: Monday, August 12, 2013
Sheet Modified Date: Monday, August 12, 2013
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MCU Voltage Sense

VMCU_BUF

R727 47K

TP708

R729 100K

C718 1N

AEM_SENSE_VOLTAGE

GND

GND

MCU current sense

5V

L700 CBF102WB

R717 10R

C714 10U

C728 100N

GND

GND

GND

VCS

R709 1K8

C710 100N

VMCU_R

U703 LTC6102CDD

1 -INS

2 -INF

3 VREG V+

4 OUT

5 V-

6 V-

7 V-

8 V-

9 V-

10 V-

11 V-

12 V-

13 V-

14 V-

15 V-

16 V-

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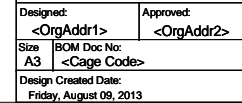
372 V-

373 V-

374 V-

375 V-

376 V-</



EFM32 Zero Gecko Starter Kit

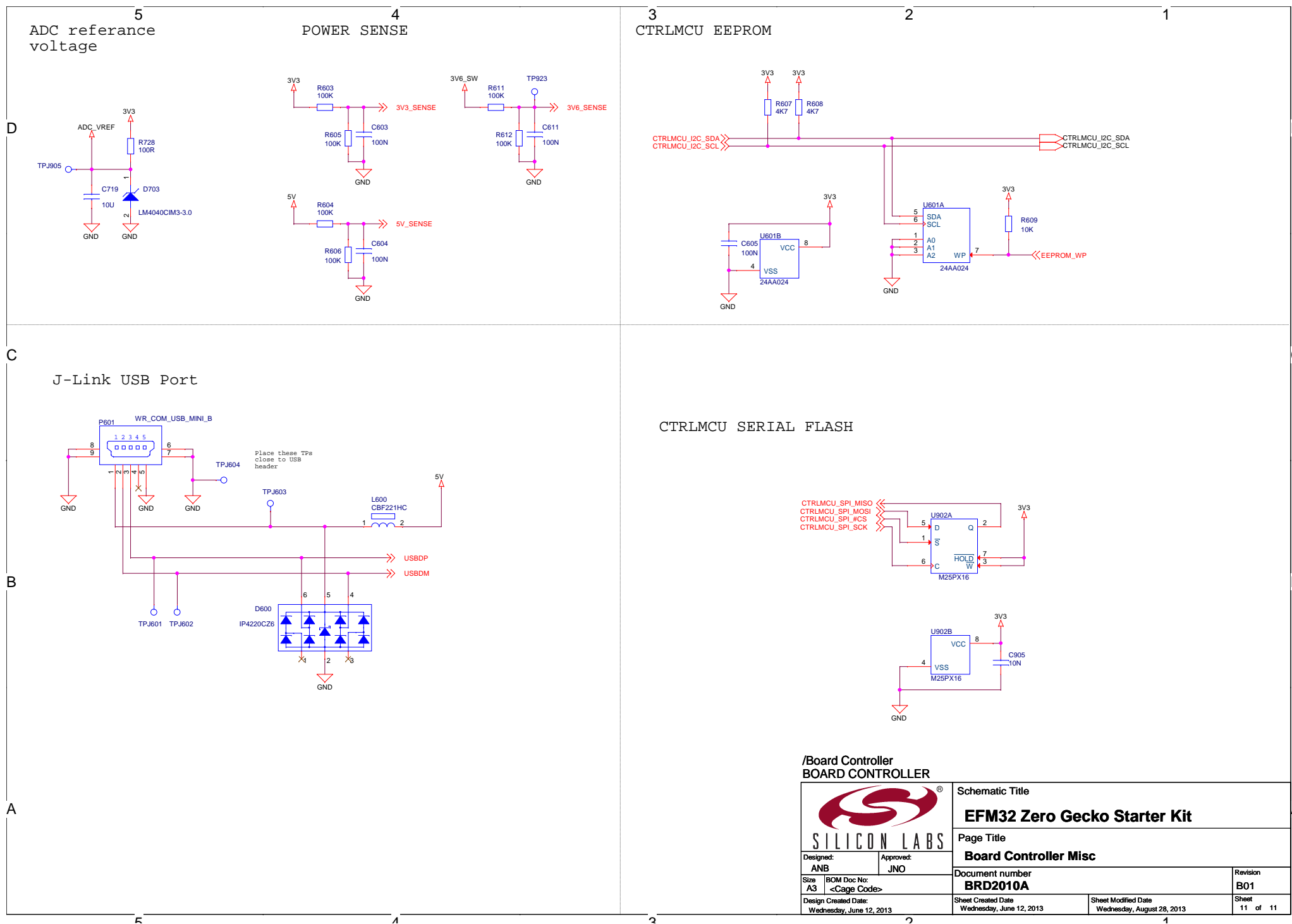
| | |
|--|--------------------------------|
| | Advanced Energy Monitor |
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| Sheet Modified Date | Friday, August 09, 20 |
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Revision
B01

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/Board Controller
BOARD CONTROLLER

| | | |
|---|------------------------------|---|
|  | Schematic Title | |
| | EFM32 Zero Gecko Starter Kit | |
| Designed: ANB | Page Title | |
| | Board Controller Misc | |
| Size A3 | BOM Doc No: <Cage Code> | Document number BRD2010A |
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| Sheet Created Date Wednesday, June 12, 2013 | | Sheet Modified Date Wednesday, August 28, 2013 |
| | | Sheet 11 of 11 |