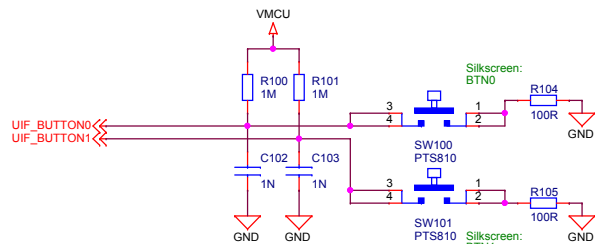
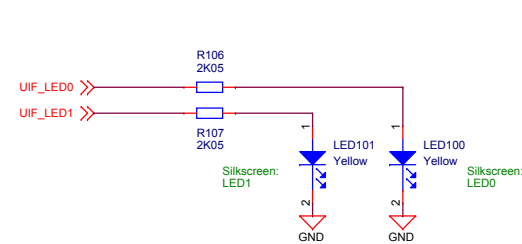




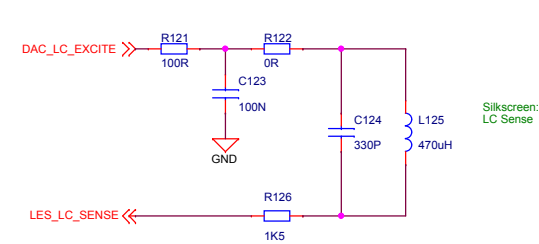
## Push Buttons



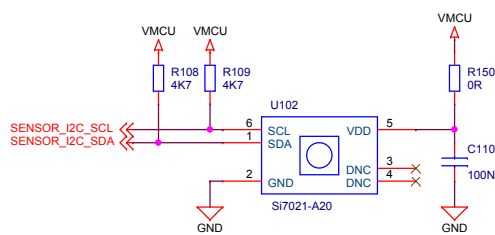
## LEDs



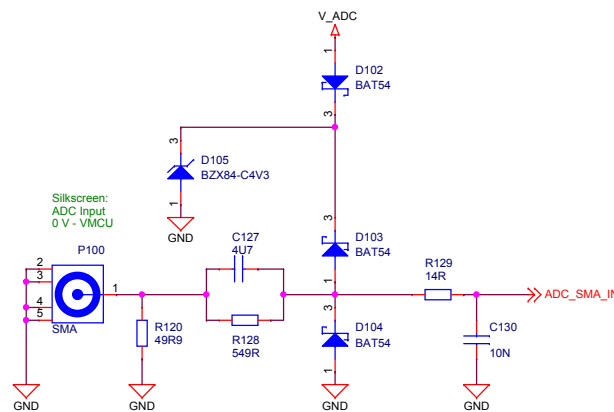
## LESENSE LC-Sensor



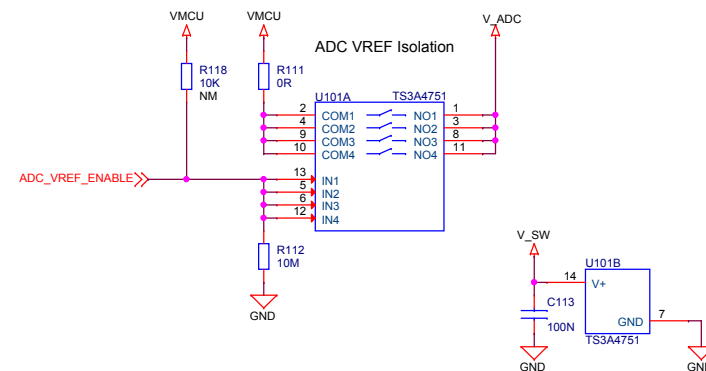
## Relative Humidity & Temperature Sensor



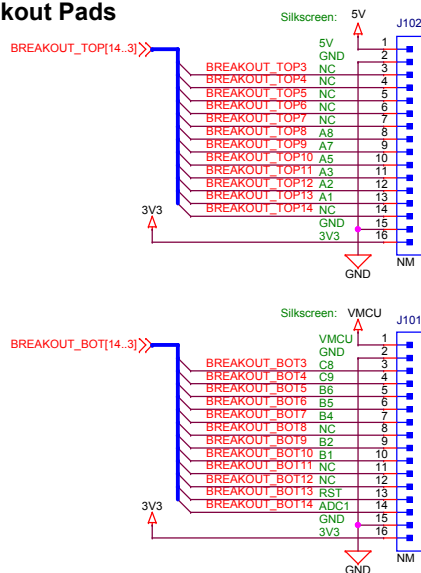
## SMA Connector



## ADC VREF

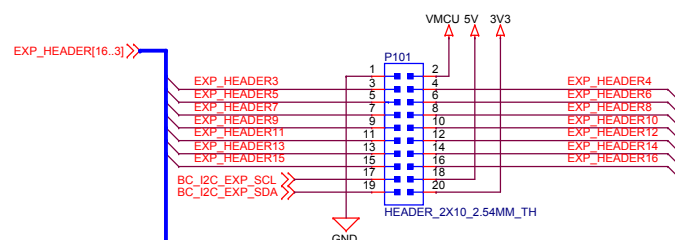


## Breakout Pads



## EXP Header

EXP Header Functionality		Top Row
2	VMCU	
4	NC	
6	NC	
8	NC	
10	NC	
12	PB5	UART_TX
14	PB6	UART_RX
16	PA7	I2C_SDA
18	5V	
20	3V3	
		Bottom Row
1	GND	
3	ADC1	
5	NC	
7	NC	
9	PA5	GPIO
11	PB4	GPIO
13	PC9	GPIO
15	PA8	I2C_SCL
17	Reserved for EXP Board Identification	
19	Reserved for EXP Board Identification	



**SILICON LABS**

Designed: MAH  
Approved: RGU

Size: A3  
Sheet Modified Date: Tuesday, March 09, 2021

Board Name  
**EFM32PG23 Pro Kit**

Page Title  
**User Interface**

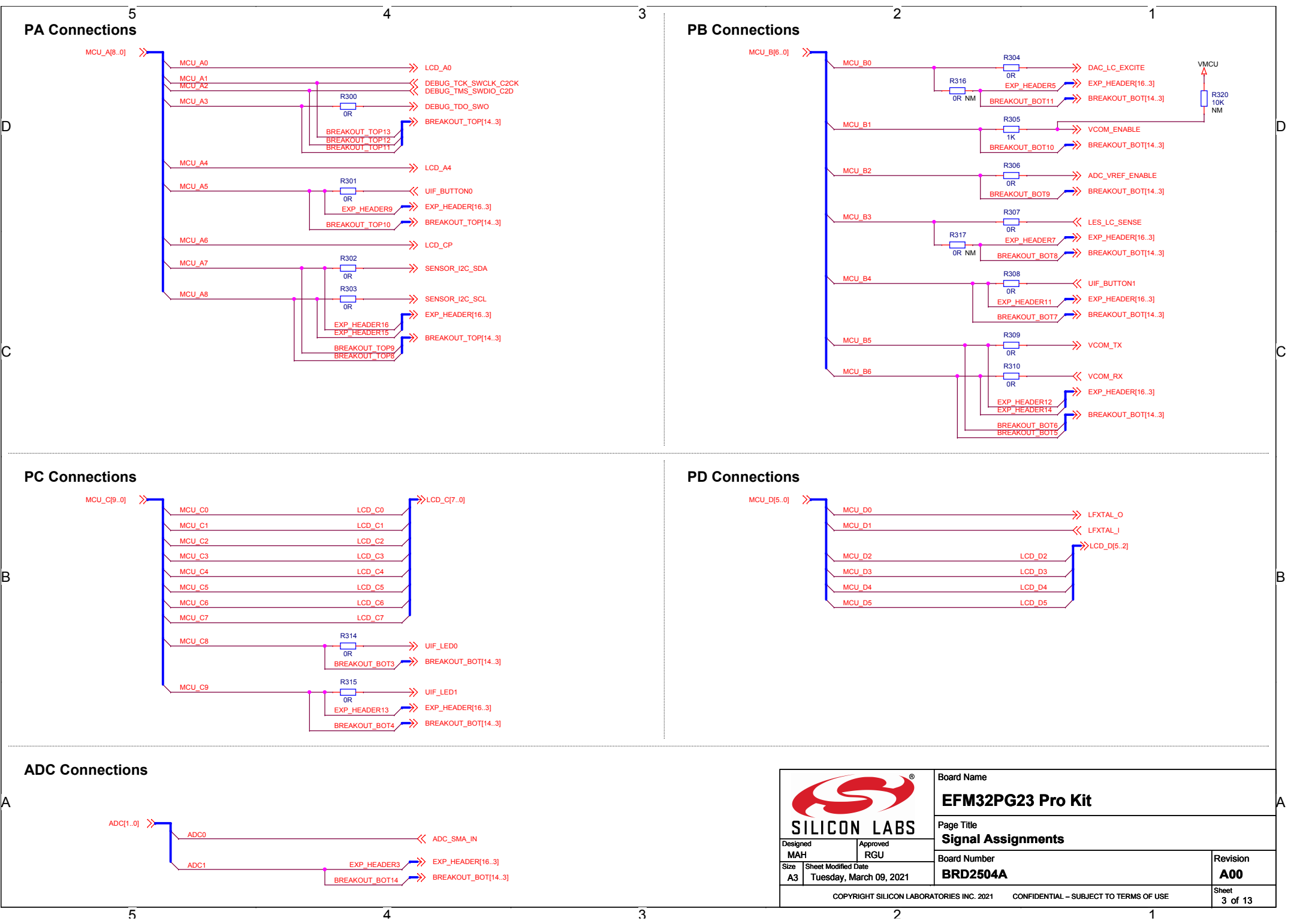
Board Number  
**BRD2504A**

Revision  
**A00**

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PA Connections

PB Connections

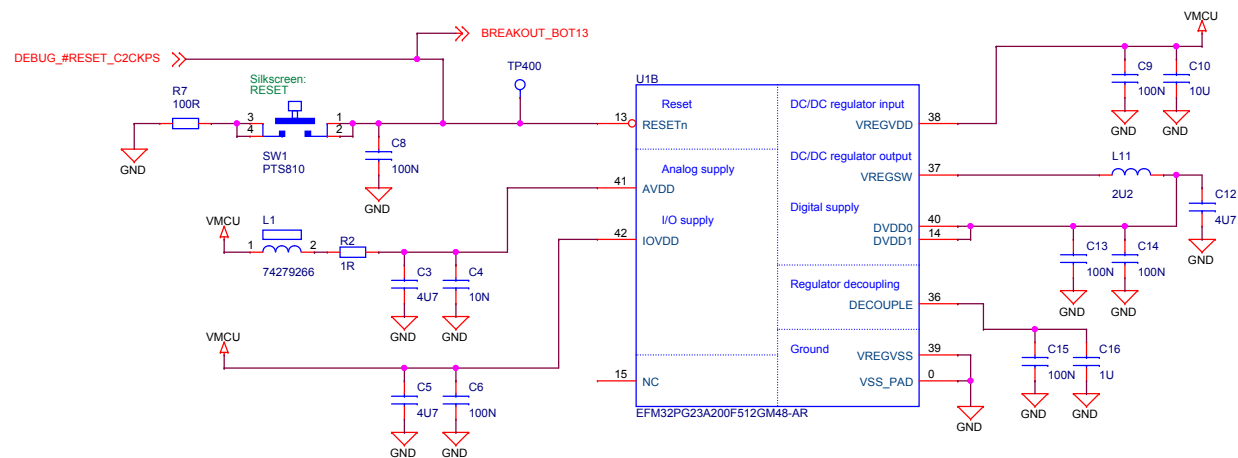
PC Connections

PD Connections

ADC Connections

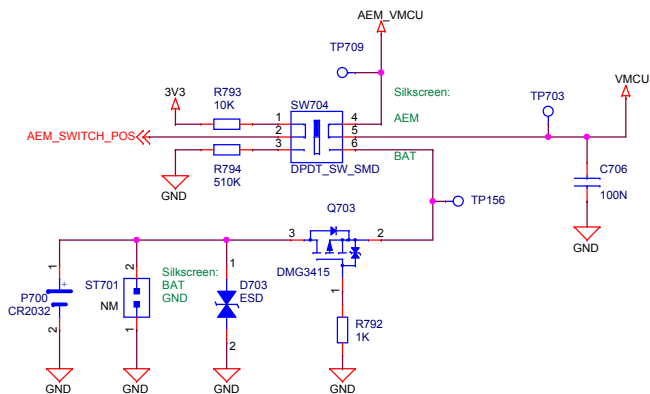
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	Page Title <b>Signal Assignments</b>	
Designed MAH	Approved RGU	
Size A3	Sheet Modified Date Tuesday, March 09, 2021	Board Number <b>BRD2504A</b>
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## EFM32 Power and Decoupling

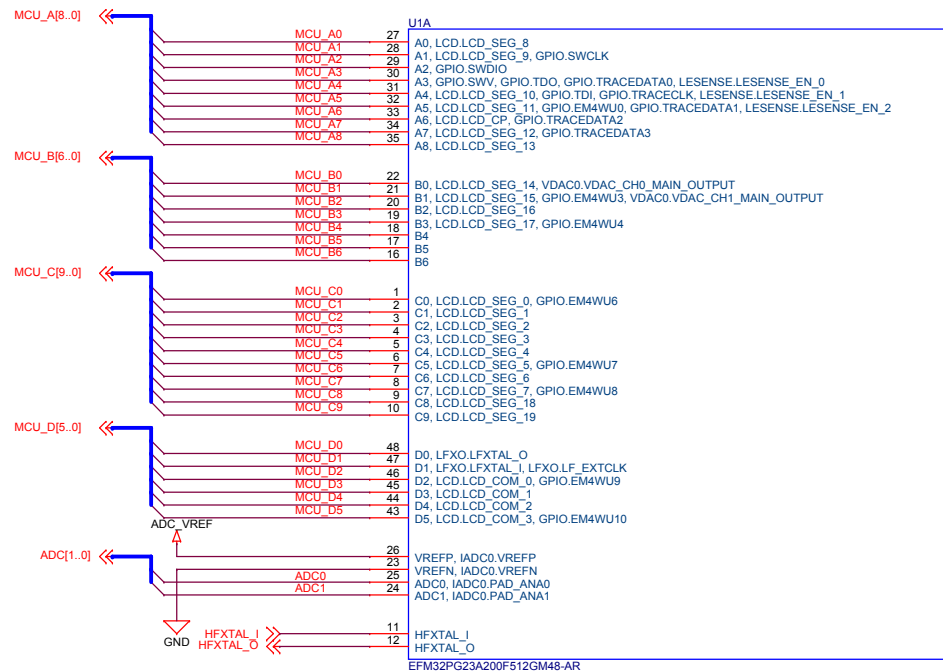


## Power Select Switch: AEM/BAT

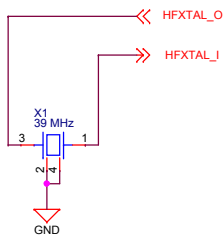
SWITCH POS	MODE DESCRIPTION
AEM	AEM Enabled, VMCU sourced from external 3.3V LDO powered by BC USB 5V supply
BAT	AEM Disabled, VMCU sourced from coin-cell battery or external power supply



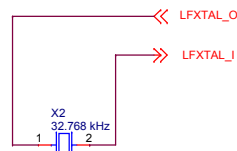
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		Page Title <b>EFM32 Power</b>	
Designed MAH	Approved RGU	Board Number <b>BRD2504A</b>	Revision <b>A00</b>
Size A3	Sheet Modified Date Wednesday, March 10, 2021	Copyright Silicon Laboratories Inc. 2021    CONFIDENTIAL – SUBJECT TO TERMS OF USE	
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## High Frequency Clock

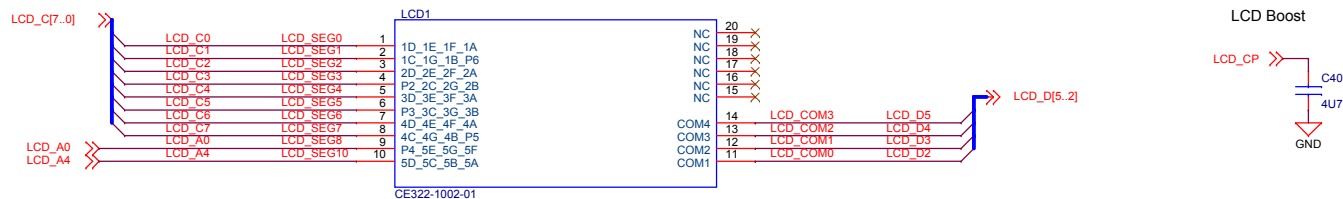


## Low Frequency Clock



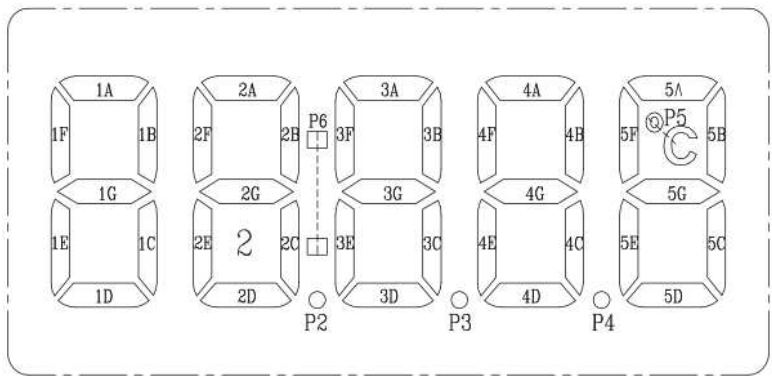
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		EFM32PG23 Pro Kit	
Designed MAH		Page Title	
Size A3		EFM32 I/O	
Sheet Modified Date Wednesday, March 10, 2021		Board Number	Revision
		BRD2504A	A00
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## Segment LCD Signal Connections



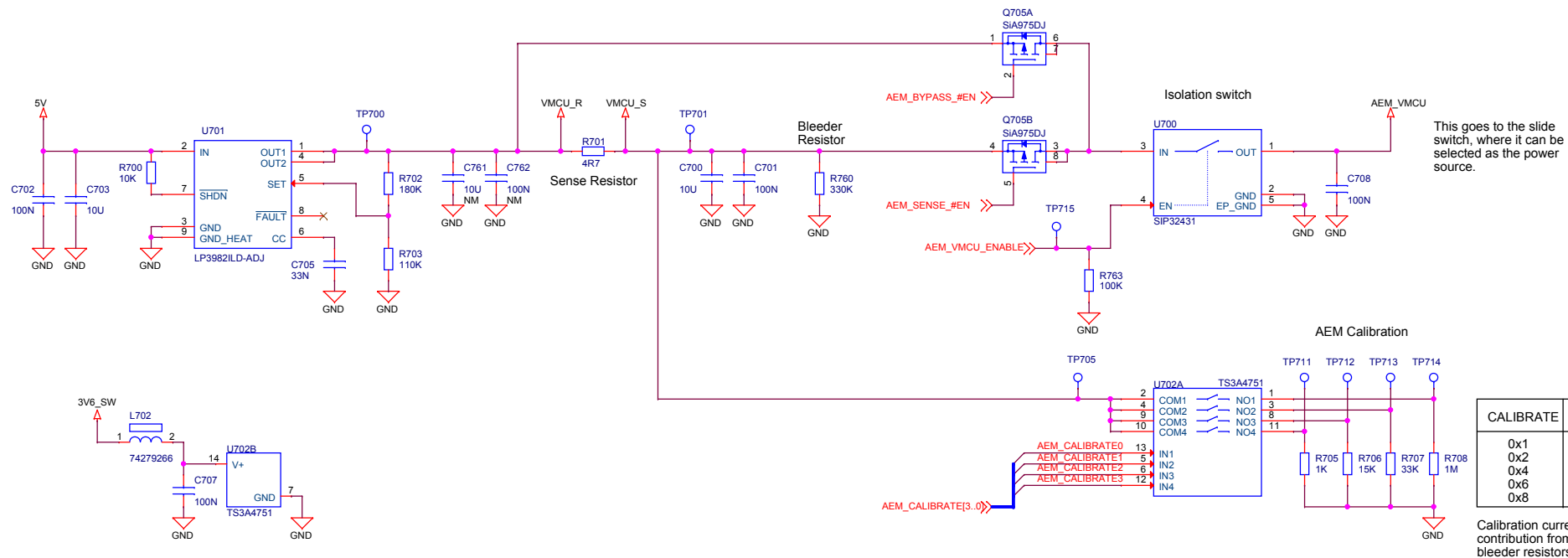
## Segment Names

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
COM1	1D	1C	2D	P2	3D	P3	4D	4C	P4	5D	COM1	--	--	--	--	--	--	--	--	--
COM2	1E	1G	2E	2C	3E	3C	4E	4G	5E	5C	--	COM2	--	--	--	--	--	--	--	--
COM3	1F	1B	2F	2G	3F	3G	4F	4B	5G	5B	--	--	COM3	--	--	--	--	--	--	--
COM4	1A	P6	2A	2B	3A	3B	4A	P5	5F	5A	--	--	--	COM4	--	--	--	--	--	--



 <b>SILICON LABS</b>		Board Name	
		<b>EFM32PG23 Pro Kit</b>	
Designed MAH		Page Title	
Size A3		<b>Segment LCD</b>	
Sheet Modified Date Tuesday, March 09, 2021		Board Number	
		<b>BRD2504A</b>	
		Revision	
		<b>A00</b>	
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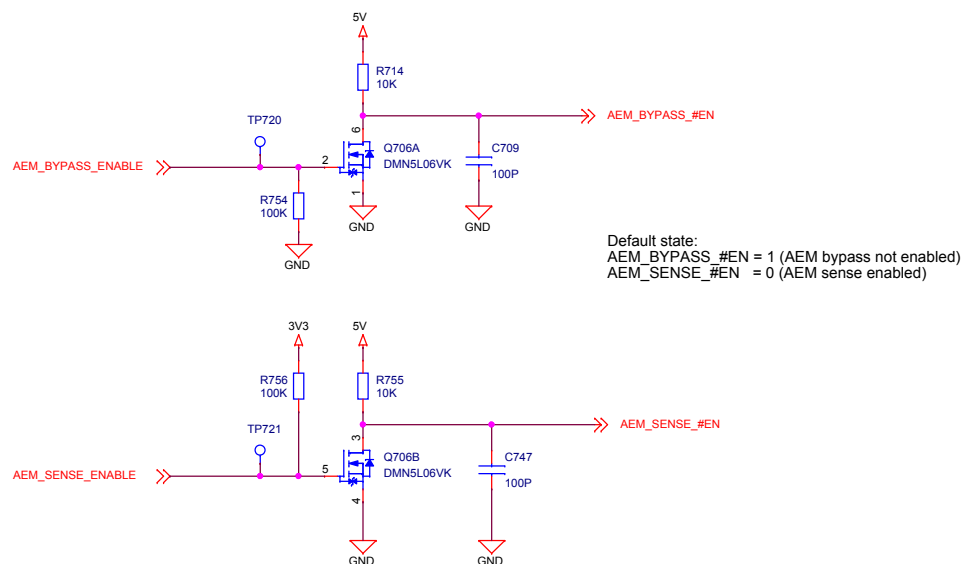
## MCU Power Regulator



CALIBRATE	Calibration Current
0x1	13.30 uA
0x2	110 uA
0x4	230 uA
0x6	320 uA
0x8	3.30 mA

Calibration currents include contribution from sense and bleeder resistors.

## AEM Bypass Control



	Board Name
--	------------

## EFM32PG23 Pro Kit

Page Title

**Target Voltage Supply**

Board Number

BRD2504A

	Revision
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**A00**

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## A

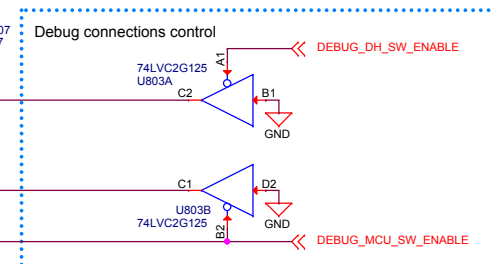
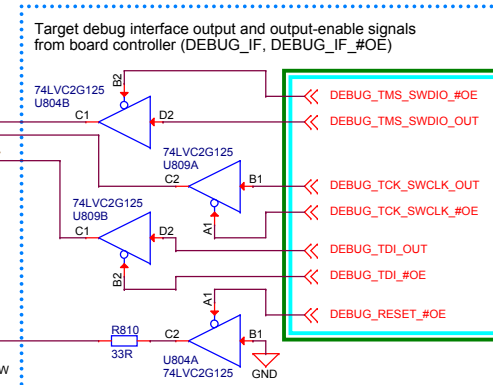
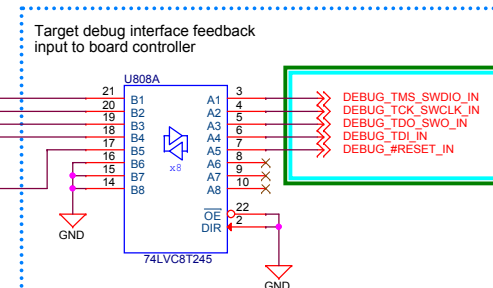
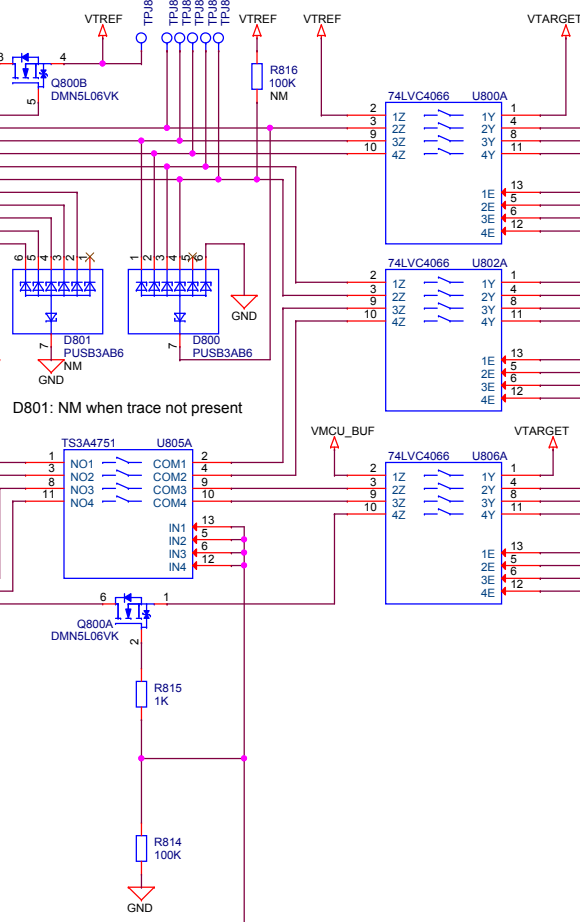
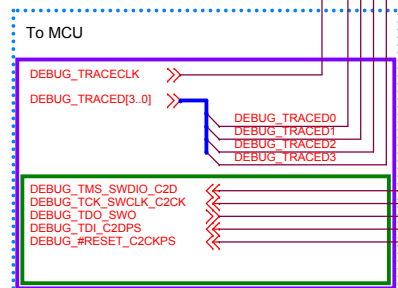




ARM Coresight 20-pin  
Debug + ETM header

Diagram showing the pinout for the ARM Coresight 20-pin Debug + ETM header (P800). The pins are numbered 1 through 20, and the connections are as follows:

- Pin 1: GND
- Pin 2: DH TMS SWDIO
- Pin 3: DH TCK SWCLK
- Pin 4: DH TDO SWO
- Pin 5: DH TDI
- Pin 6: DH #RESET
- Pin 7: (Empty)
- Pin 8: (Empty)
- Pin 9: (Empty)
- Pin 10: (Empty)
- Pin 11: (Empty)
- Pin 12: (Empty)
- Pin 13: (Empty)
- Pin 14: (Empty)
- Pin 15: (Empty)
- Pin 16: (Empty)
- Pin 17: (Empty)
- Pin 18: (Empty)
- Pin 19: (Empty)
- Pin 20: (Empty)



Mode	DEBUG_DH_SW_ENABLE	DEBUG_MCU_SW_ENABLE	DEBUG_IF_#OE	VTREF	VTARGET
Debug Out	1	0	0/1	External voltage	External voltage
MCU Debug	0	1	0/1	Disconnected	VMCU
Debug In	1	1	1	VMCU	VMCU
Debug Off	0	0	1	-	-

Color coded frames indicates which groups of signal nodes that are active in a given debug mode



Board Name	<b>EFM32PG23 Pro Kit</b>
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Page Title	<b>Debug Interface</b>
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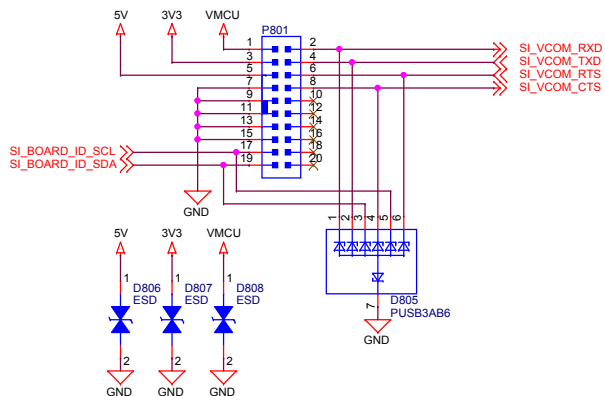
Board Number	<b>BRD2504A</b>
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Revision	A00
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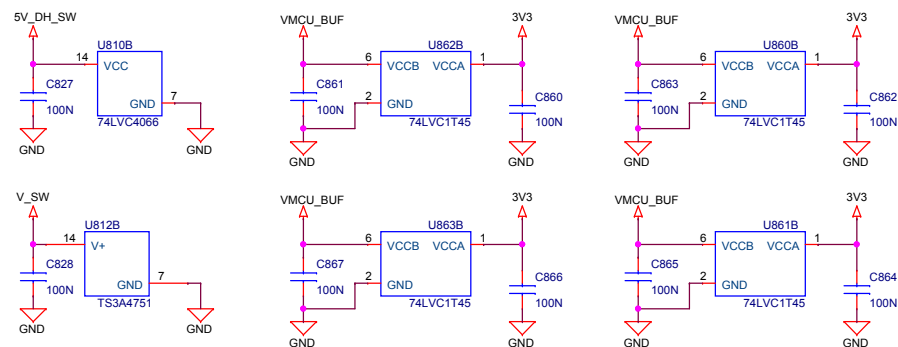
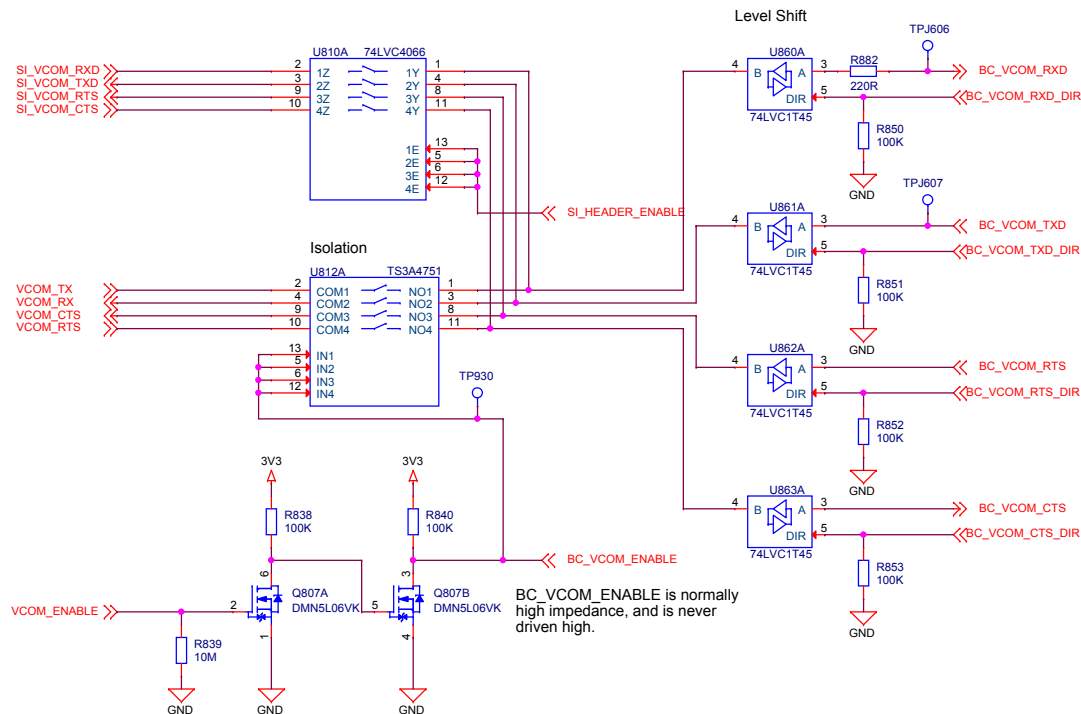
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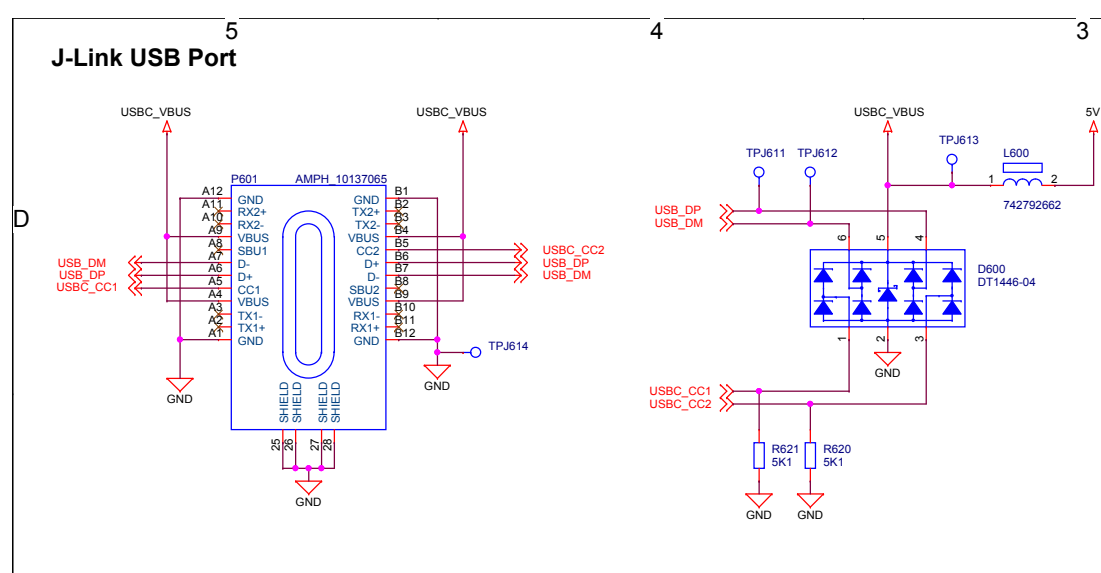
# Simplicity Connector



# VCOM Interface

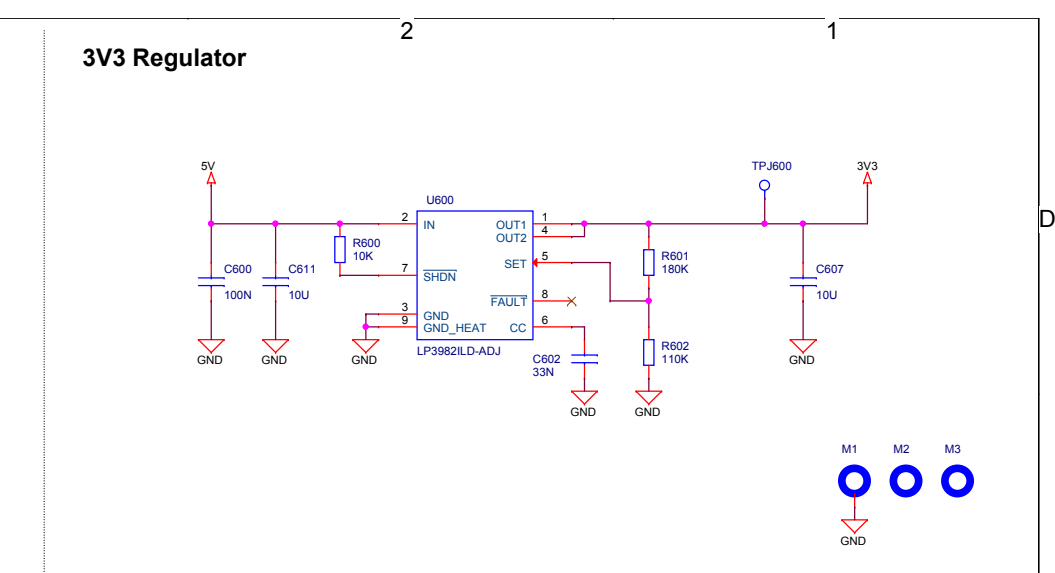


		Board Name	
		EFM32PG23 Pro Kit	
Designed MAH		Page Title	
Size A3		Simplicity & VCOM	
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[illegible]

### 3V3 Regulator

The schematic diagram illustrates a 3V3 Regulator circuit. The circuit is powered by a 5V supply. The input to the regulator (U600, LP3982ILD-ADJ) is connected to the 5V supply through a 100nF capacitor (C600) and a 10uF capacitor (C611). The input pin (IN) is connected to the 5V supply through a 10k resistor (R600). The output pin (OUT1) is connected to a 3V3 supply through a 180k resistor (R601). The output is also connected to a 10uF capacitor (C607). The regulator has a shutdown pin (SHDN) connected to GND through a 33nF capacitor (C602). The fault pin (FAULT) is connected to GND through a 110k resistor (R602). The regulator is also connected to GND through pins 3, 9, and 6. The output is also connected to a TPJ600 test point. The regulator is labeled U600 and LP3982ILD-ADJ.



**C**

### VTARGET Voltage Mirror

5V

R690 33R

C652 10U

U622B MCP6001T

VDD

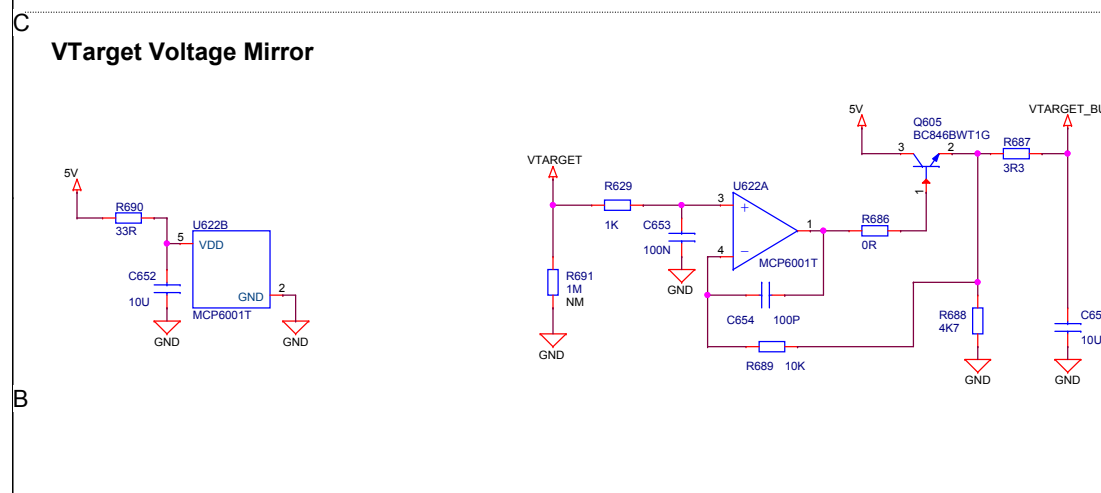
GND

2

GND

5

**B**



## Power Supply for Analog Switches

Analog switches used for isolation are powered by 3V6\_SW when the USB cable is connected, otherwise by VMCU.

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

## Power Supply for Analog Switches

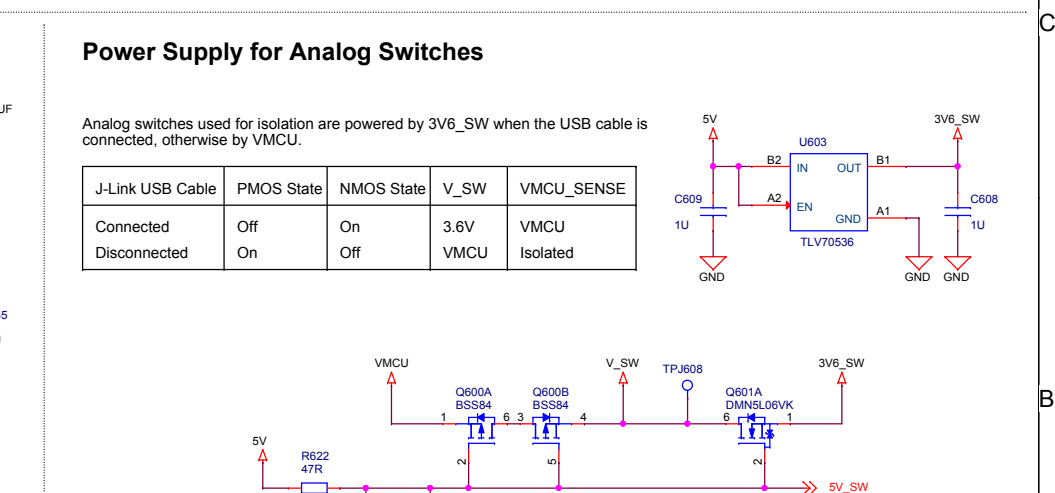
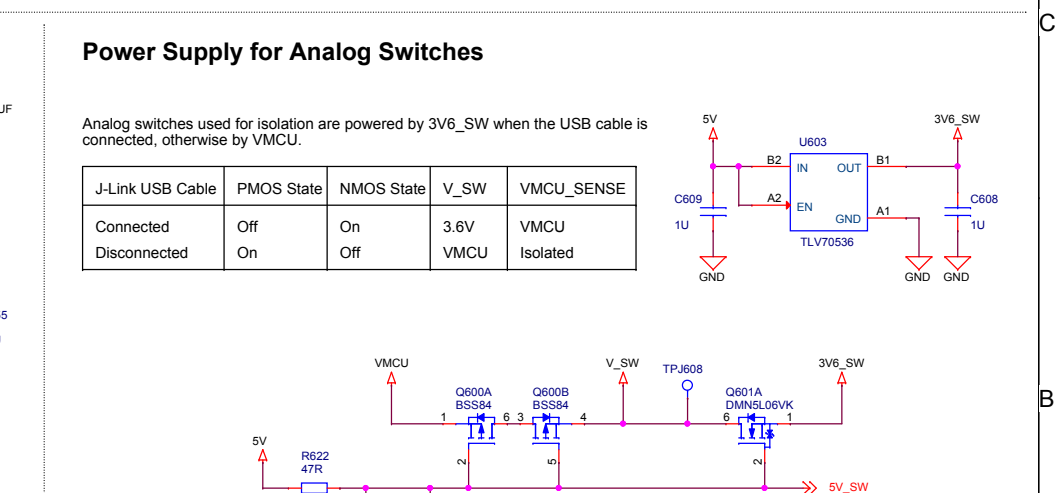
Analog switches used for isolation are powered by 3V6\_SW when the USB cable is connected, otherwise by VMCU.

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

## Power Supply for Analog Switches

Analog switches used for isolation are powered by 3V6\_SW when the USB cable is connected, otherwise by VMCU.

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



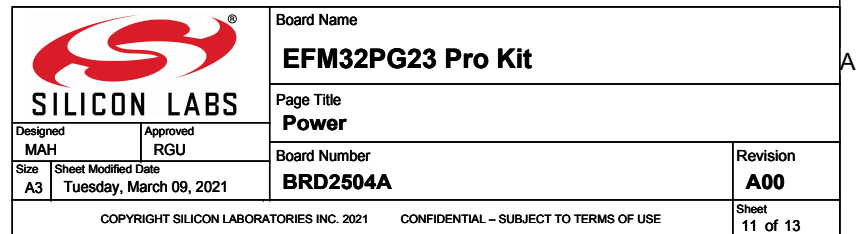
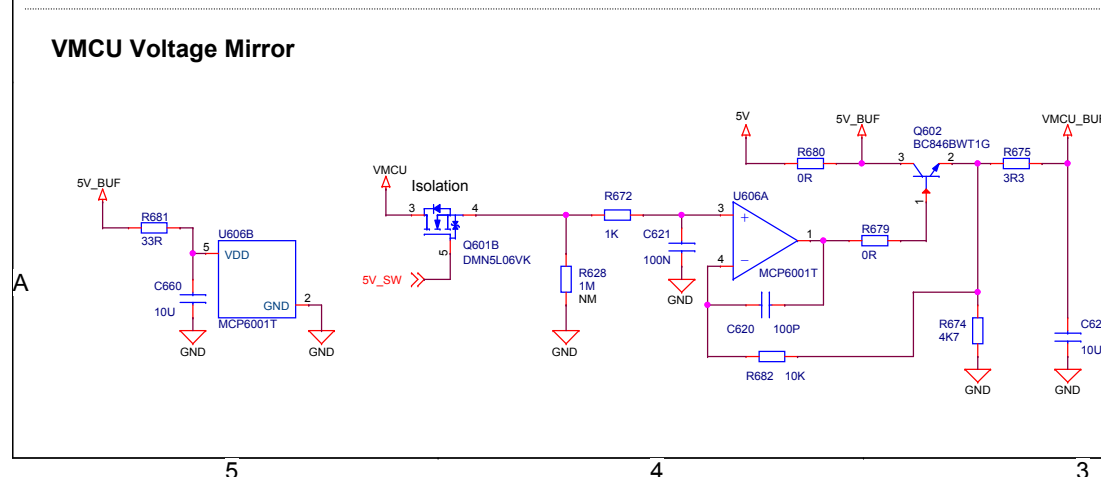
### VMCU Voltage Mirror

The schematic diagram illustrates the VMCU Voltage Mirror circuit, which is divided into three main sections labeled 5, 4, and 3.

**Section 5:** This section shows the input buffer. The 5V\_BUF signal is connected to a 33R resistor (R681), which is connected to the non-inverting input (pin 5) of the MCP6001T op-amp (U606B). The op-amp is configured as a voltage follower, with its output (pin 2) connected to GND. A 10uF capacitor (C660) is connected between the input and the op-amp input.

**Section 4:** This section shows the isolation stage. The 5V\_SW signal is connected to the gate of the DMN5L06VK MOSFET (Q601B). The MOSFET's source is connected to GND, and its drain is connected to the non-inverting input (pin 3) of the MCP6001T op-amp (U606A). The op-amp is configured as a voltage follower, with its output (pin 1) connected to GND. A 1M resistor (R628) is connected between the MOSFET drain and the op-amp input. A 100nF capacitor (C621) is connected between the op-amp input and GND.


**Section 3:** This section shows the final output buffer. The 5V signal is connected to a 0R resistor (R680), which is connected to the non-inverting input (pin 3) of the MCP6001T op-amp (U606A). The op-amp is configured as a voltage follower, with its output (pin 1) connected to GND. A 100pF capacitor (C620) is connected between the op-amp input and GND. The output of the op-amp is connected to the gate of the BC846BWT1G MOSFET (Q602). The MOSFET's source is connected to GND, and its drain is connected to the 5V\_BUF signal. A 3R3 resistor (R675) is connected between the MOSFET drain and the output (VMCU\_BUF). A 4K7 resistor (R674) is connected between the output and GND. A 10K resistor (R682) is connected between the output and the non-inverting input of the op-amp.




 <b>SILICON LABS</b>		Board Name	
		<b>EFM32PG23 Pro Kit</b>	
Designed <b>MAH</b>		Page Title	
Approved <b>RGU</b>		<b>Power</b>	
Size <b>A3</b>		Board Number	Revision
Sheet Modified Date <b>Tuesday, March 09, 2021</b>		<b>BRD2504A</b>	<b>A00</b>
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		<b>EFM32PG23 Pro Kit</b>	
Designed <b>MAH</b>		Page Title	
Approved <b>RGU</b>		<b>Power</b>	
Size <b>A3</b>		Board Number	Revision
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Designed <b>MAH</b>		Page Title	
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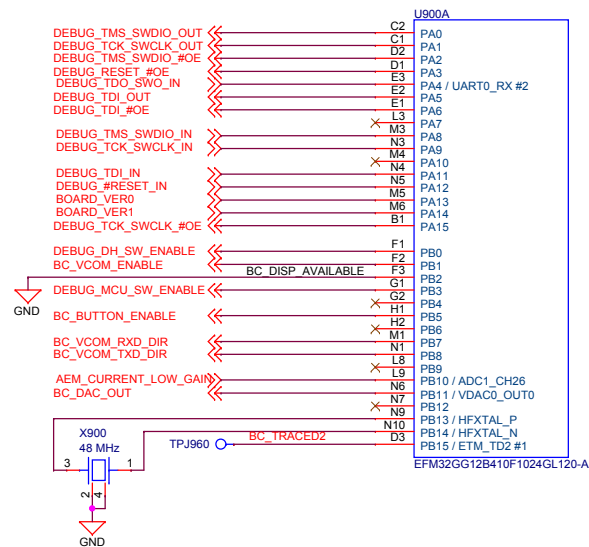
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Designed <b>MAH</b>		Page Title	
Approved <b>RGU</b>		<b>Power</b>	
Size <b>A3</b>		Board Number	Revision
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		<b>EFM32PG23 Pro Kit</b>	
Designed <b>MAH</b>		Page Title	
Approved <b>RGU</b>		<b>Power</b>	
Size <b>A3</b>		Board Number	Revision
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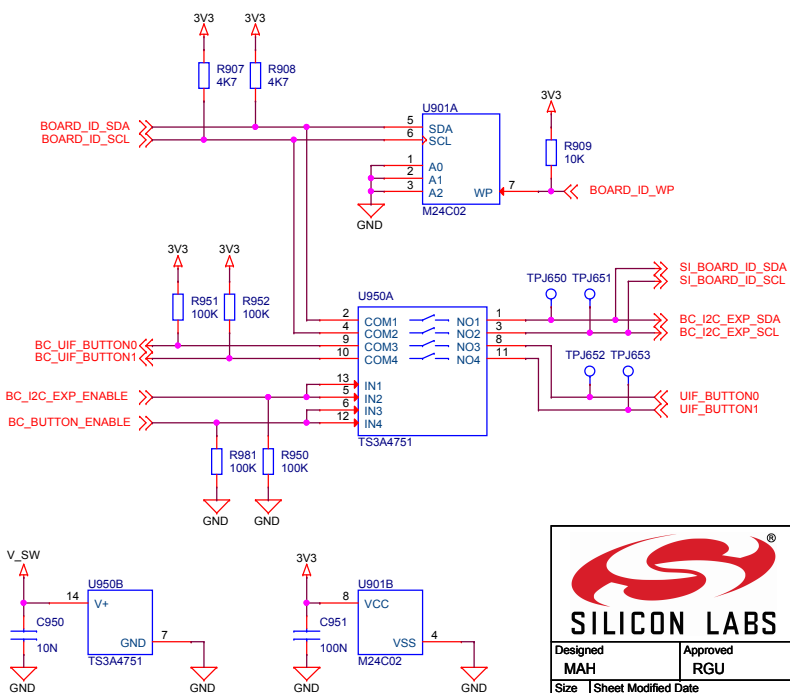
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Approved <b>RGU</b>			
Size <b>A3</b>		Board Number <b>BRD2504A</b>	Revision <b>A00</b>
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Designed <b>MAH</b>		Page Title <b>Power</b>	
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Size <b>A3</b>		Board Number <b>BRD2504A</b>	Revision <b>A00</b>
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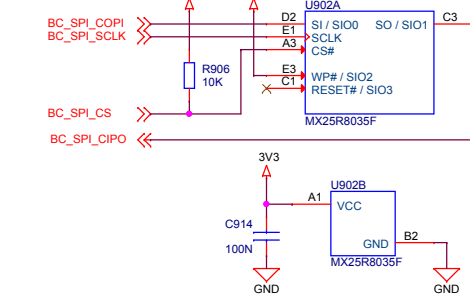
## Board Controller



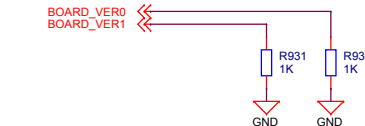
## Board ID & Button Isolation



## BC Serial Flash

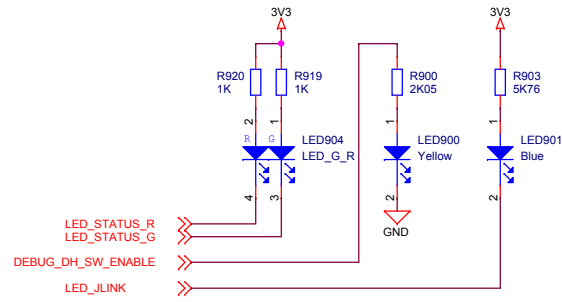


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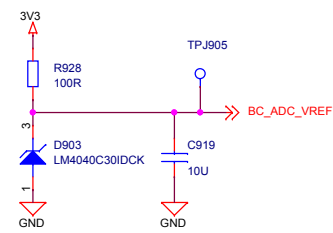


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		EFM32PG23 Pro Kit	
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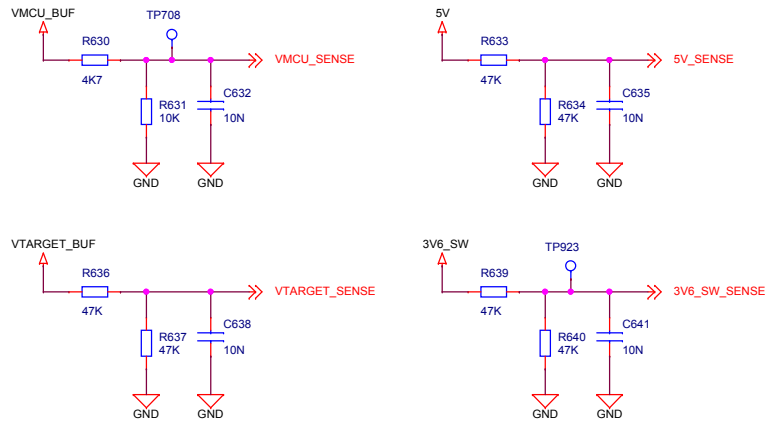
## Indicator LEDs



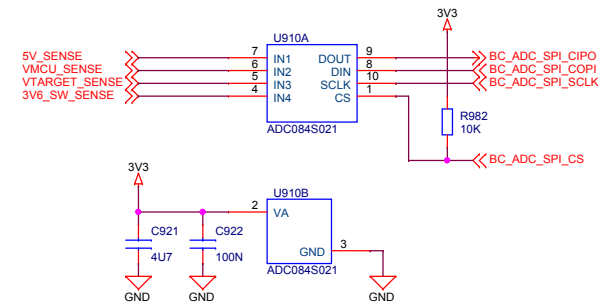
## BC ADC Reference



## BC Voltage Sense



## BC Voltage Sense ADC



		Board Name	
		EFM32PG23 Pro Kit	
Designed MAH		Page Title	
Size A3		Board Controller Misc	
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