EFM8UB1 Universal Bee STK

Board Function	Page

Revision History

Rev.	Description
A00	Update to new STK platform

PCB1

PCB5000B

SILICON LABS

Designed: SKV	Approved: RGU
Size: A3	Sheet Modified Date: Tuesday, June 22, 2021

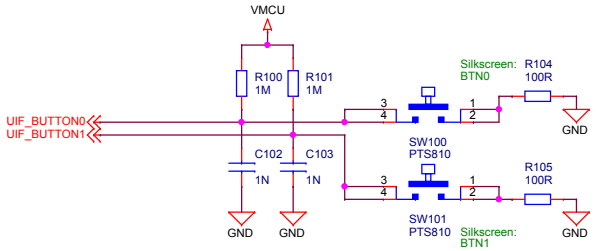
Board Name: **EFM8UB1 Universal Bee STK**

Page Title: **Title Page**

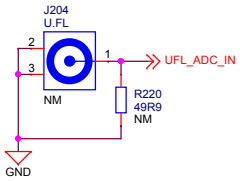
Board Number: **BRD5000B**

Revision: **A00**

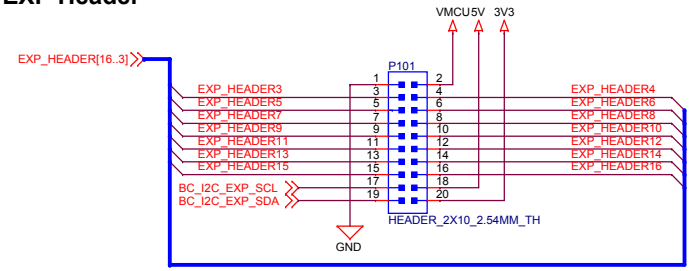
Push Buttons



U.FL ADC Connection



EXP Header



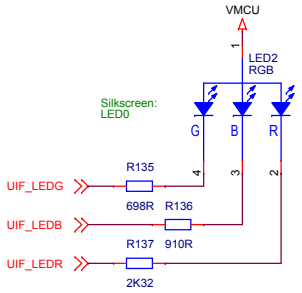
EXP-Header Functionality

** Indicates potential STK hardware conflicts

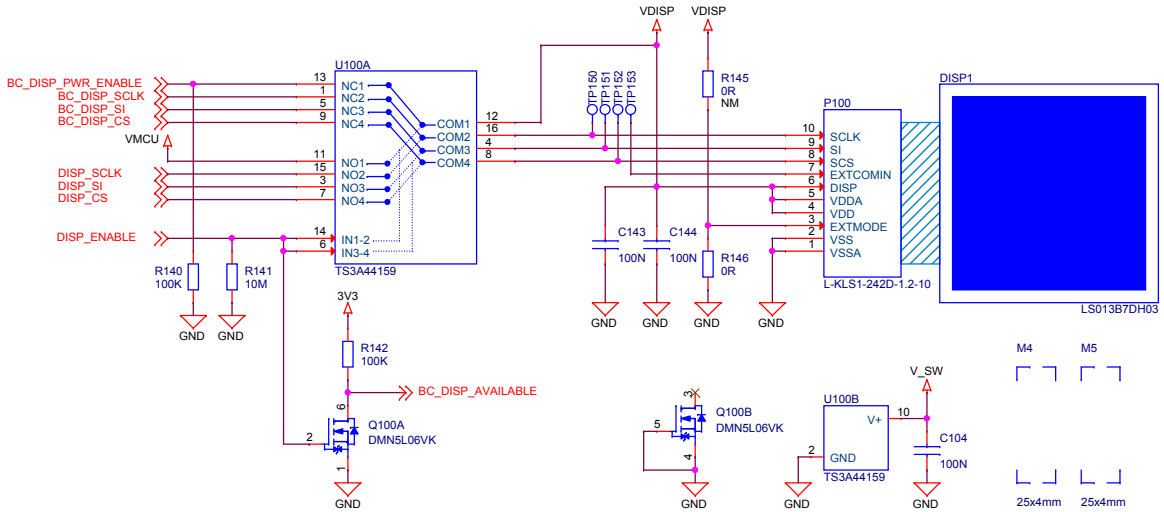
1	GND			
3	P0.0		CMP0.0/ADC0.0	
5	P1.4		CMP1.4/ADC0.12	** STK LED0
7	P1.5		CMP1.5/ADC0.13	** STK LED1
9	P1.6		CMP1.6/ADC0.14	** STK LED2
11	P2.3		CMP1.12/ADC0.23	
13	P3.1			
15	P1.3	I2C0_SCL	CMP1.3/ADC0.11	
17	Reserved for EXP Board Identification			
19	Reserved for EXP Board Identification			

2	VMCU			
4	P1.0	SPI0_MOSI	CMP1.0/ADC0.8	
6	P0.7	SPI0_MISO	CMP0.7/ADC0.7	
8	P0.6	SPI0_SCK	CMP0.6/ADC0.6	
10	P1.1	SPI0_NSS	CMP1.1/ADC0.9	
12	P2.1	UART1_TX	CMP1.10/ADC0.21	
14	P2.2	UART1_RX	CMP1.11/ADC0.22	
16	P1.2	I2C0_SDA	CMP1.2/ADC0.10	
18	5V			
20	3V3			

RGB LED



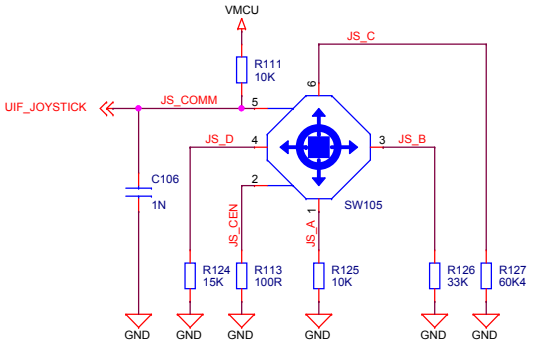
Memory LCD-TFT Display & Multiplexer



The EFM8 always controls ownership of the display using the DISP_ENABLE signal.

DISP_ENABLE	Connected	VDISP	BC_DISP_AVAILABLE
1	MCU	VMCU	GND
0	BC	BC_DISP_PWR_ENABLE	3V3

Analog Joystick



SILICON LABS

Designed	SKV
Approved	RGU
Size	A3
Sheet Modified Date	Thursday, June 17, 2021

Board Name: **EFM8UB1 Universal Bee STK**

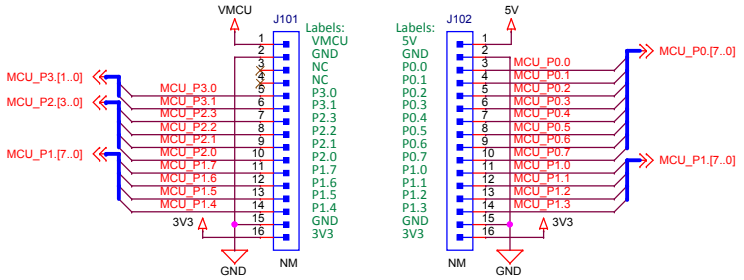
Page Title: **User Interface**

Board Number: **BRD5000B**

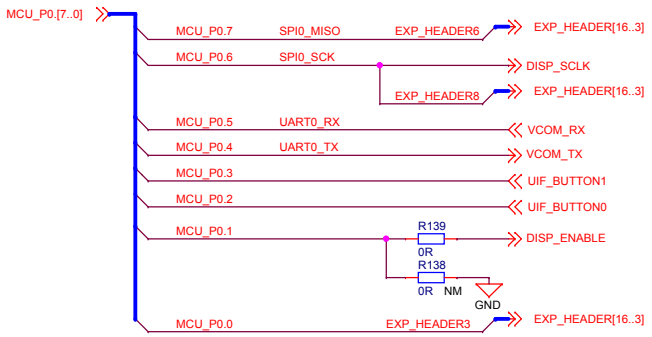
Revision: **A00**

Sheet: 2 of 11

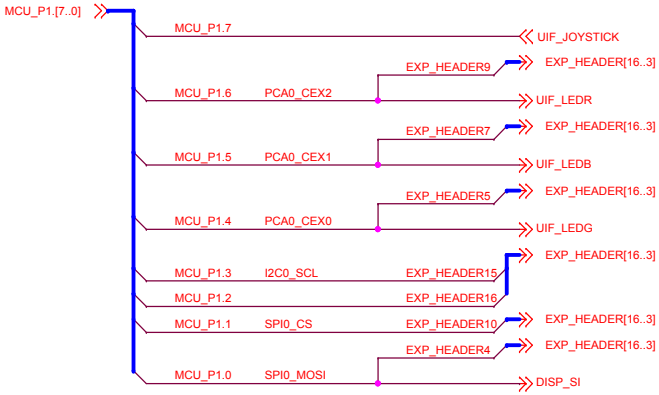
Breakout Connections



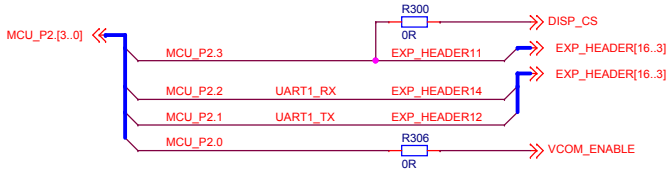
P0 Connections



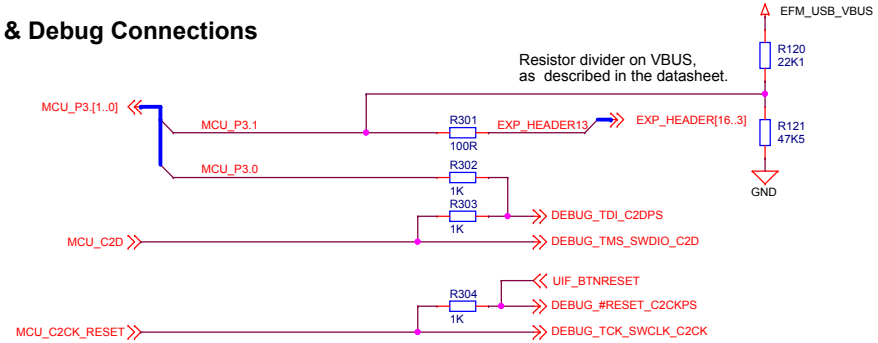
P1 Connections



P2 Connections



P3 & Debug Connections



SILICON LABS

Designed: SKV	Approved: RGU
Size: A3	Sheet Modified Date: Tuesday, June 22, 2021

Board Name: **EFM8UB1 Universal Bee STK**

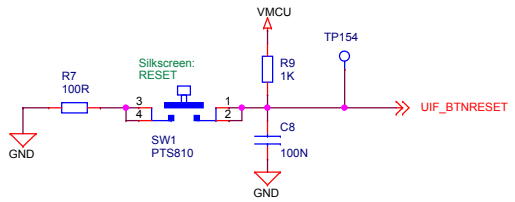
Page Title: **Signal Assignments**

Board Number: **BRD5000B**

Revision: **A00**

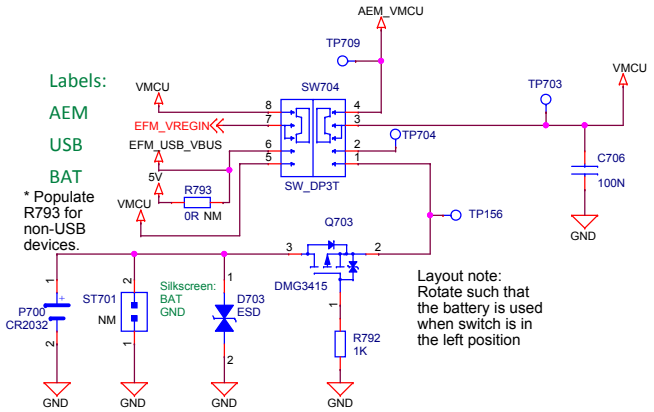
Sheet: 3 of 11

Reset Push Button

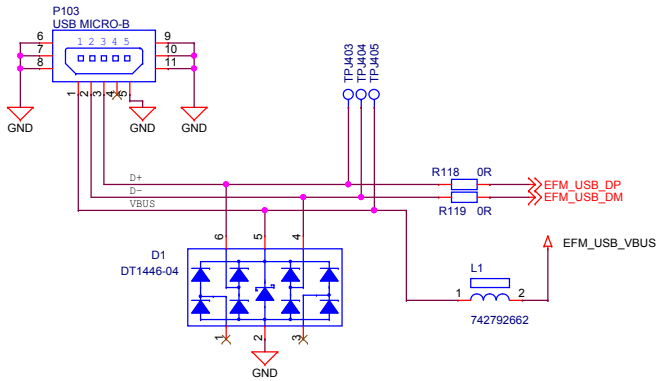


Power Select Switch: AEM/BAT

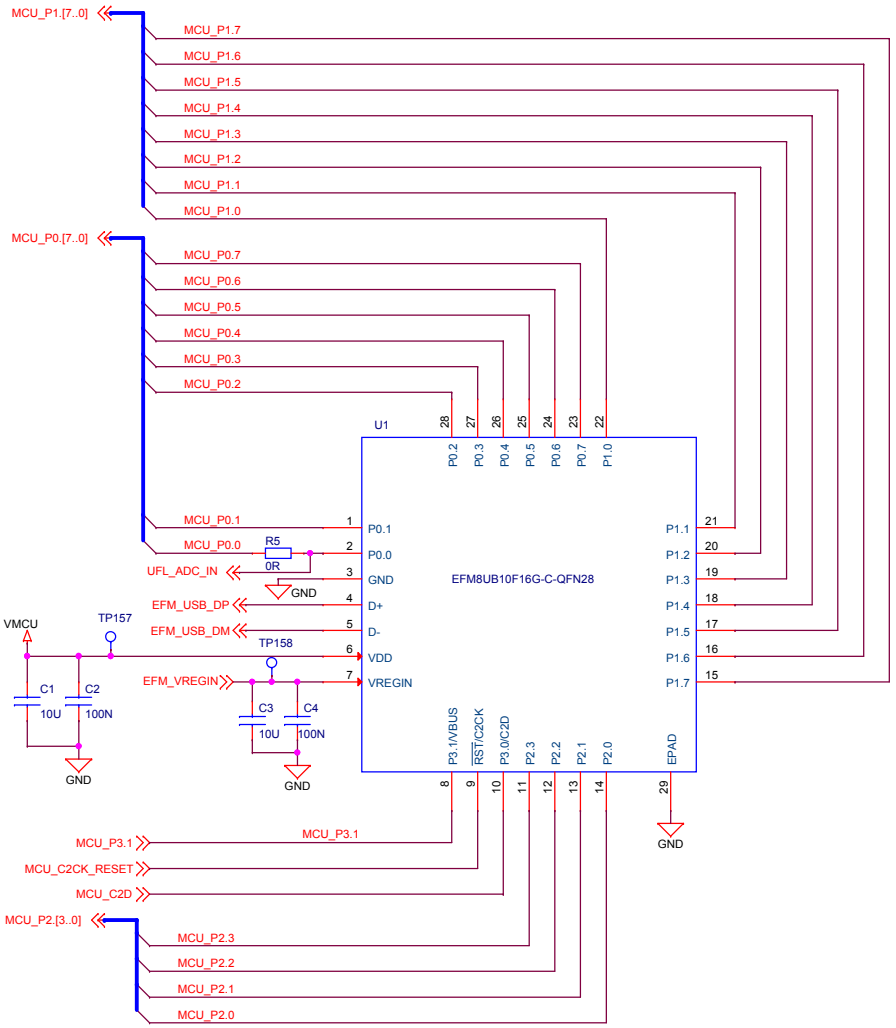
SWITCH POS	MODE DESCRIPTION
AEM	AEM Enabled, VMCU sourced from external 3.3V LDO powered by BC USB 5V supply
USB	AEM Disabled, VMCU sourced from internal 3.3V LDO powered by EFM8 USB 5V
BAT	AEM Disabled, VMCU sourced from external coin-cell battery or external power supply



USB Connection and ESD protection

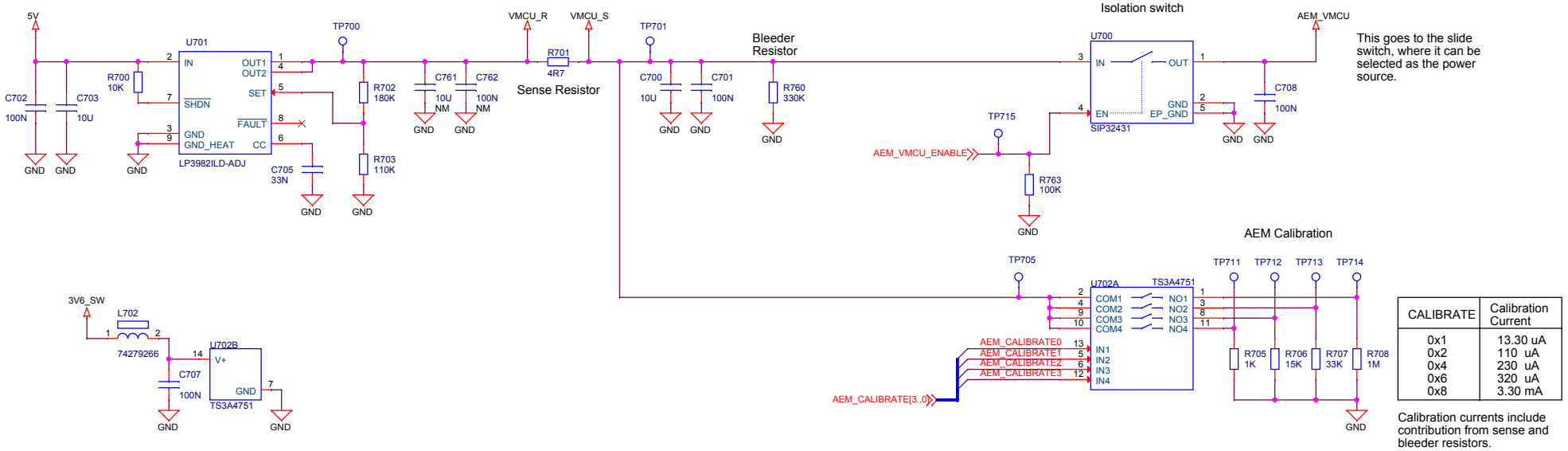


EFM8 I/O



SILICON LABS	Board Name: **EFM8UB1 Universal Bee STK**	
	Page Title: **EFM8 Power & I/O**	
Designed: SKV / Approved: RGU	Board Number: **BRD5000B**	Revision: **A00**
Size: A3 / Sheet Modified Date: Friday, June 25, 2021		Sheet: 4 of 11

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.

Board Name	**EFM8UB1 Universal Bee STK**
Page Title	**Target Voltage Supply**
Designed: SKV	Approved: RGU
Size: A3	Sheet Modified Date: Thursday, June 17, 2021
Board Number	**BRD5000B**
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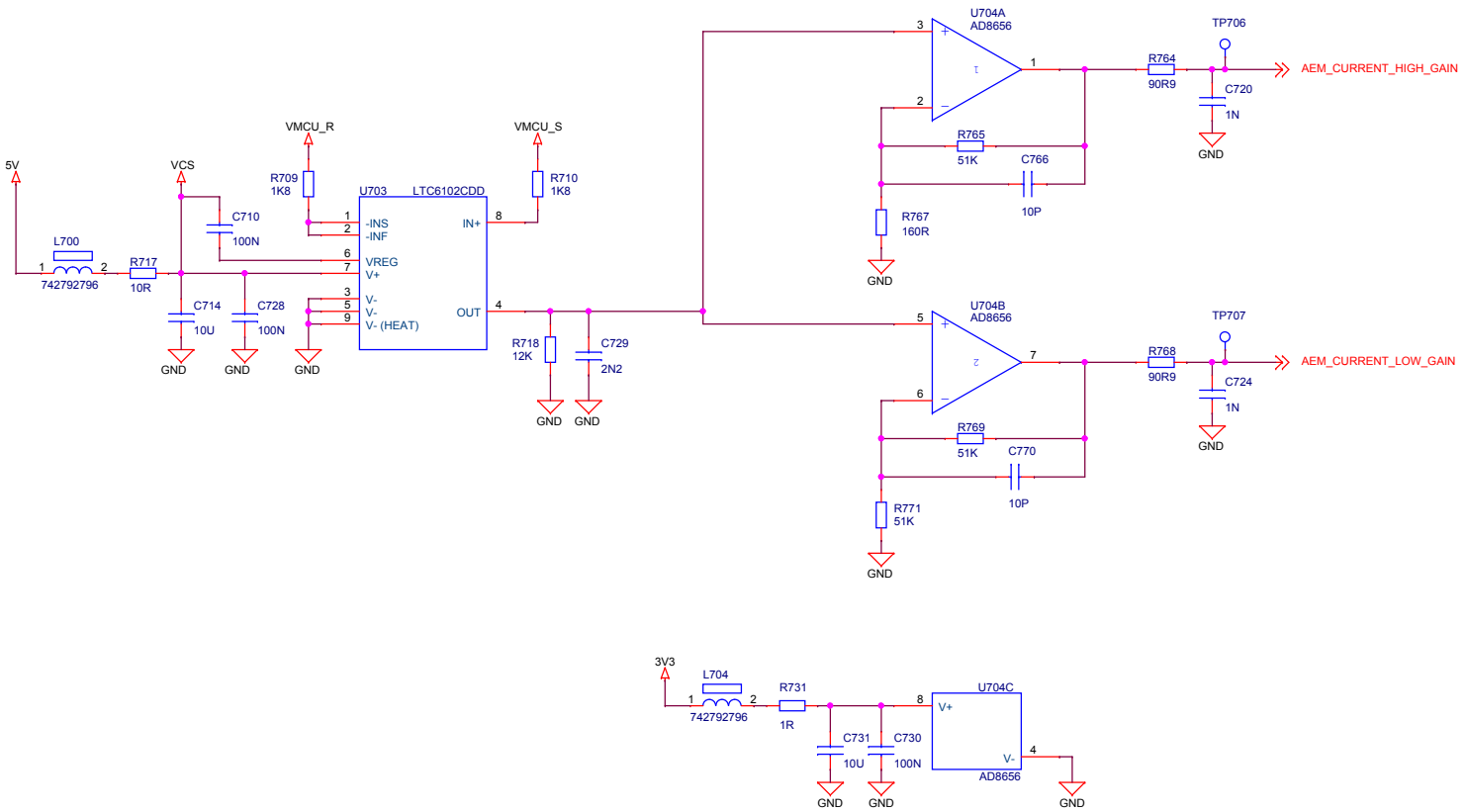
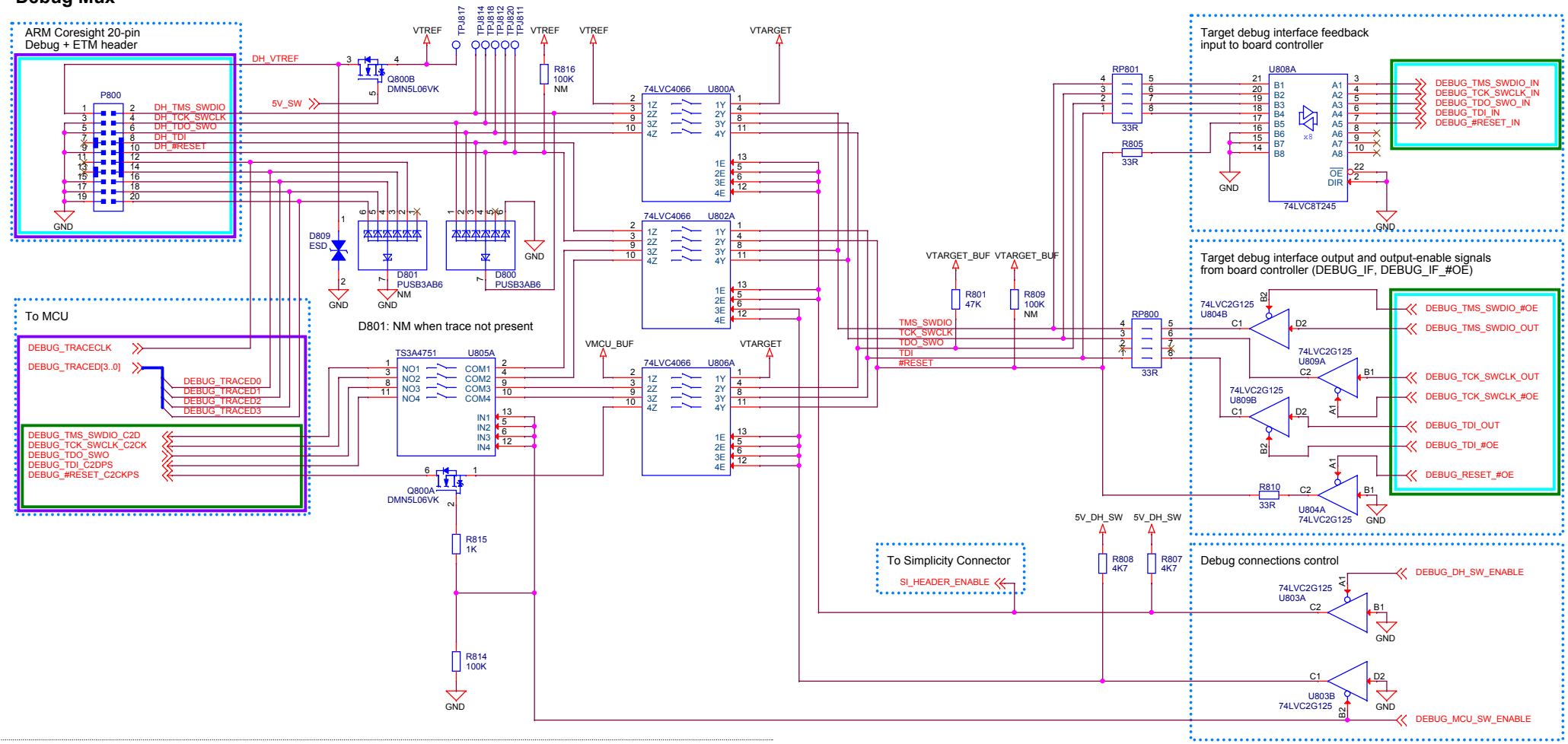
MCU Current Sense

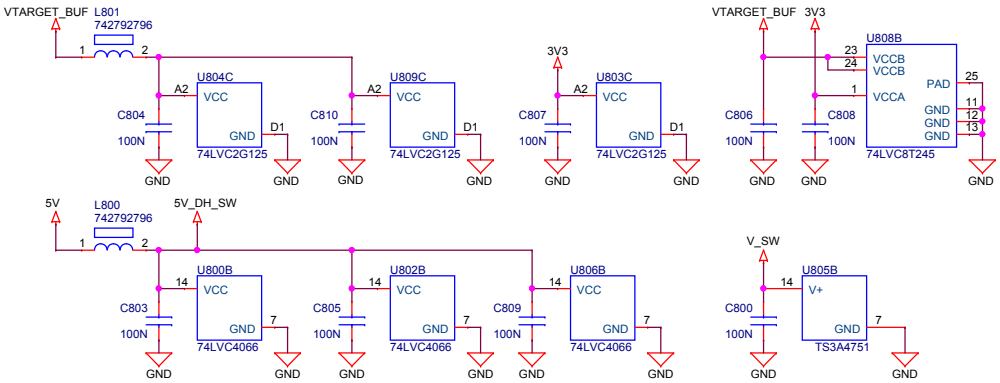


Board Name	**EFM8UB1 Universal Bee STK**
Page Title	**AEM**
Designed: SKV / Approved: RGU	
Size: A3 / Sheet Modified Date: Thursday, June 17, 2021	Board Number: **BRD5000B** / Revision: **A00**
	Sheet: 6 of 11

Debug Mux



Power & Decoupling



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

SILICON LABS

Designed	SKV
Approved	RGU
Size	A3
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Board Name
EFM8UB1 Universal Bee STK

Page Title
Debug Interface

Board Number
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Revision
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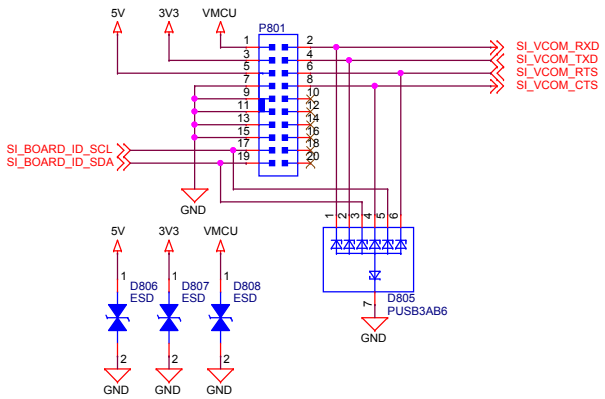
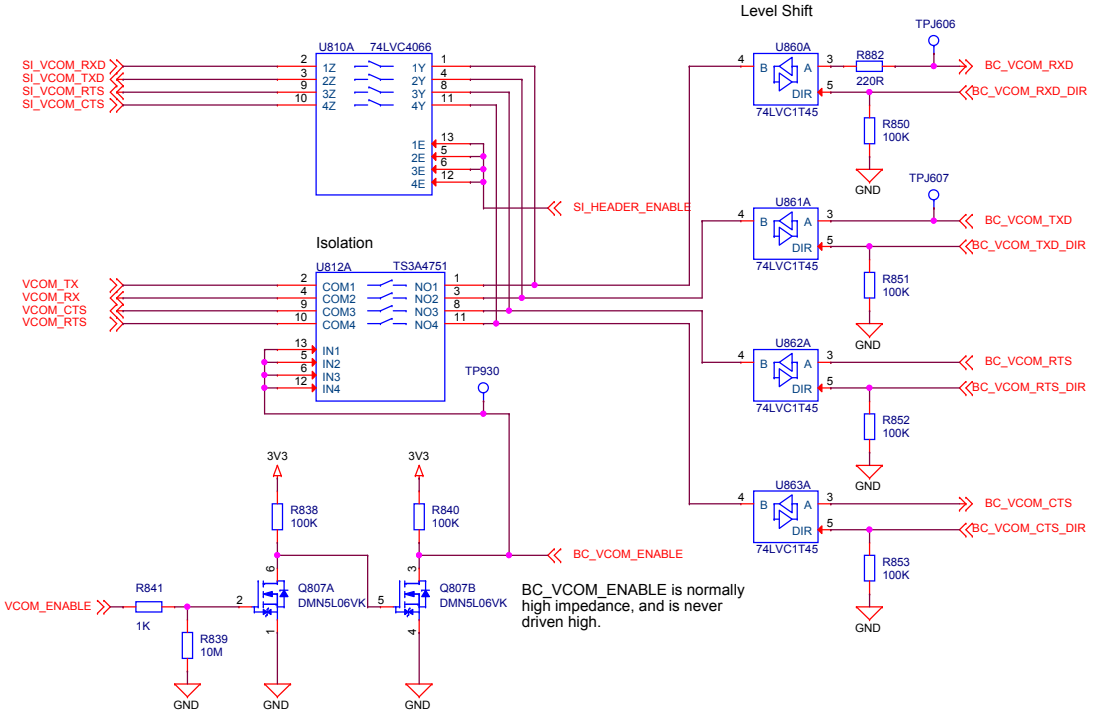
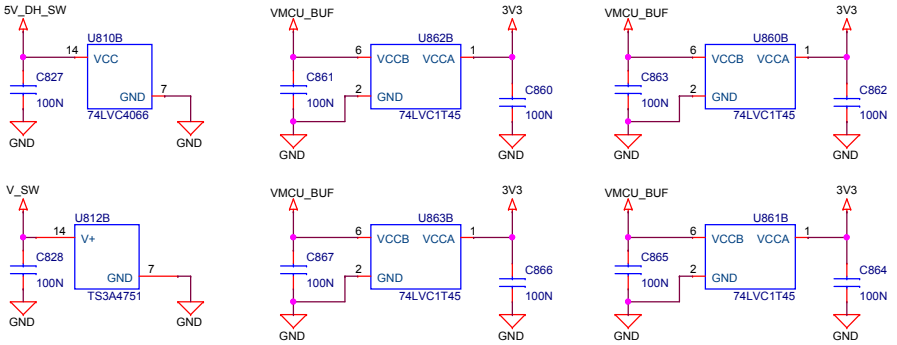
Simplicity Connector



VCOM Interface





Board Name	**EFM8UB1 Universal Bee STK**
Page Title	**Simplicity & VCOM**
Designed: SKV / Approved: RGU	
Size: A3 / Sheet Modified Date: Thursday, June 17, 2021	Board Number: **BRD5000B** / Revision: **A00**
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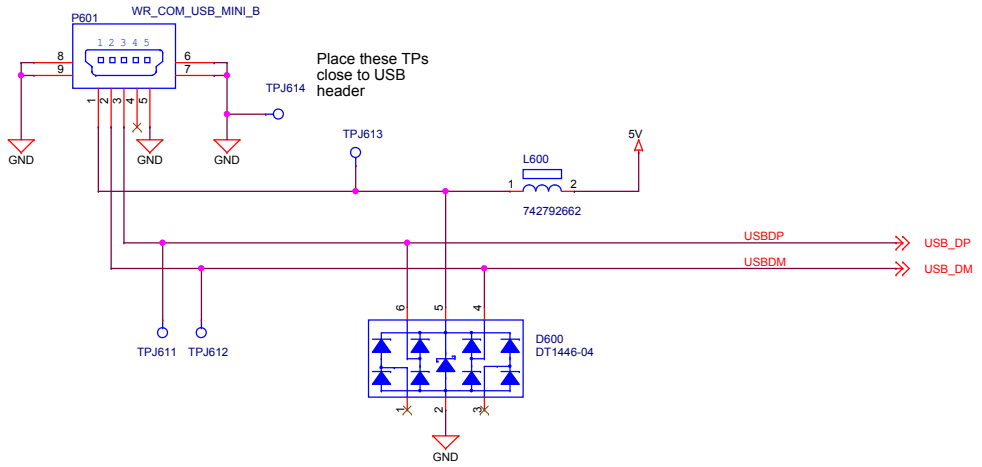
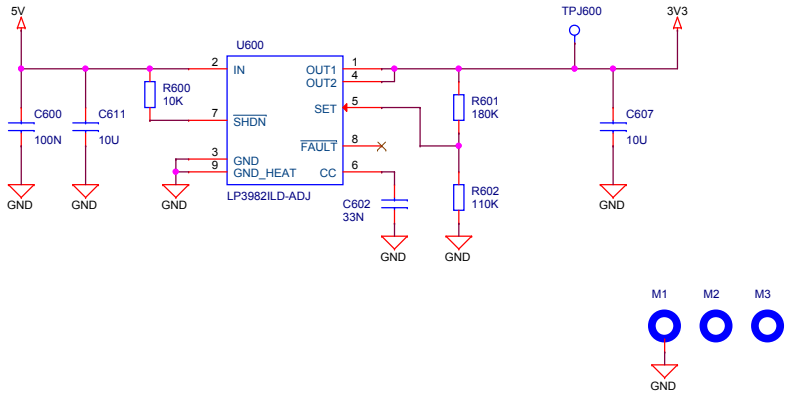
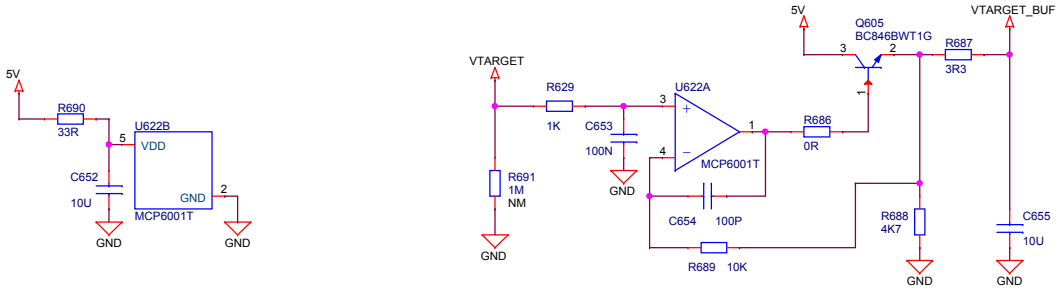
J-Link USB Port



3V3 Regulator



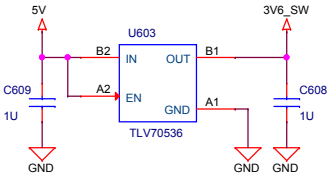
VTarget Voltage Mirror

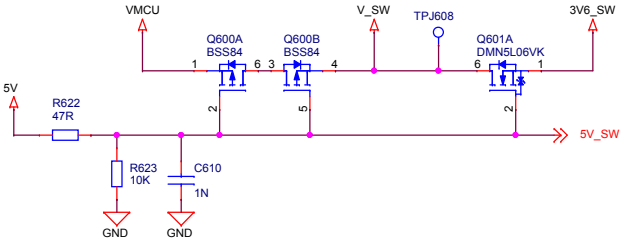


Power Supply for Analog Switches

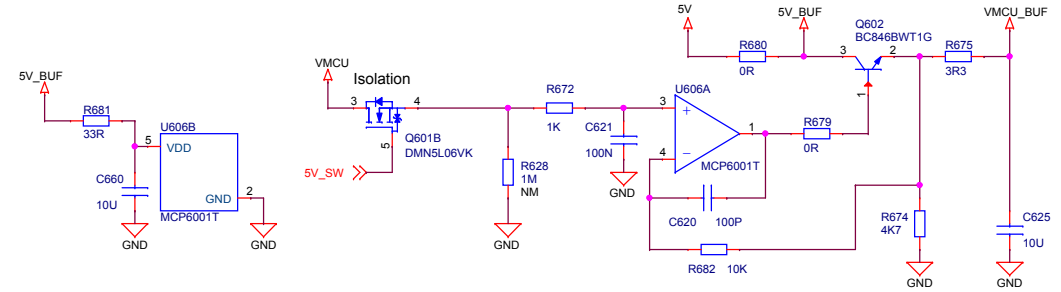
Analog switches used for isolation are powered by 3V6_SW when the USB cable is connected, otherwise by VMCU.

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



SILICON LABS	Board Name: **EFM8UB1 Universal Bee STK**	
	Page Title: **Power**	
Designed: SKV / Approved: RGU	Board Number: **BRD5000B**	Revision: **A00**
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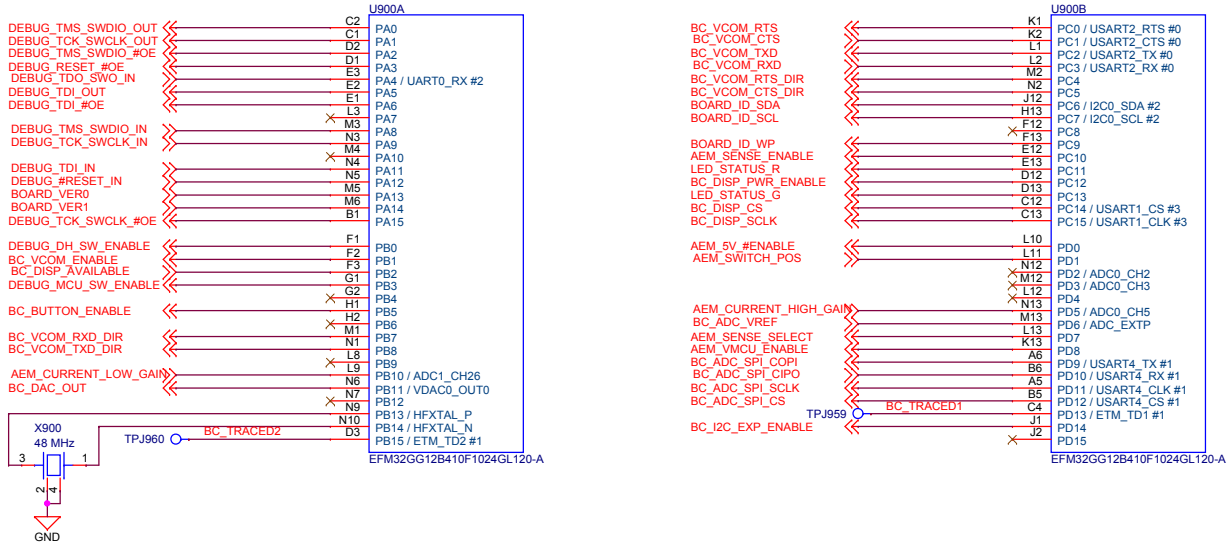
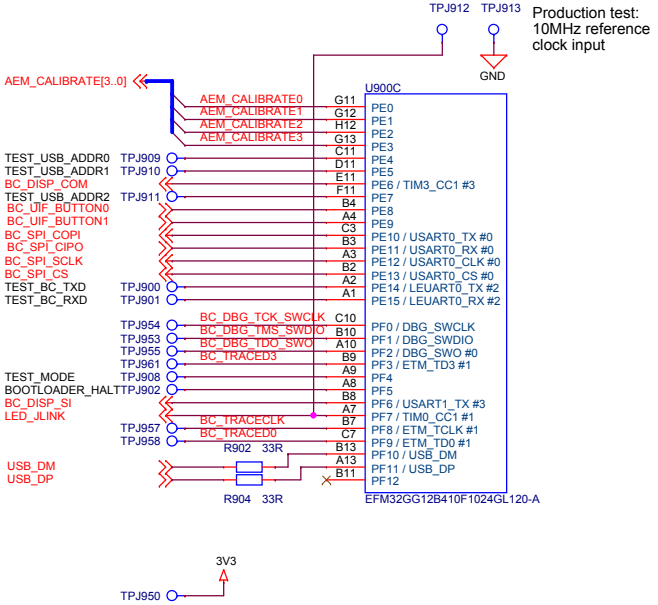
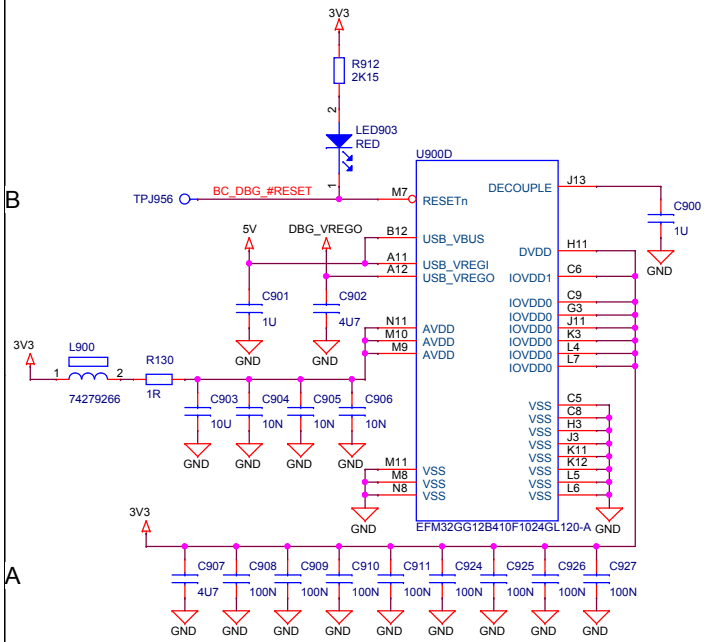
Board Controller

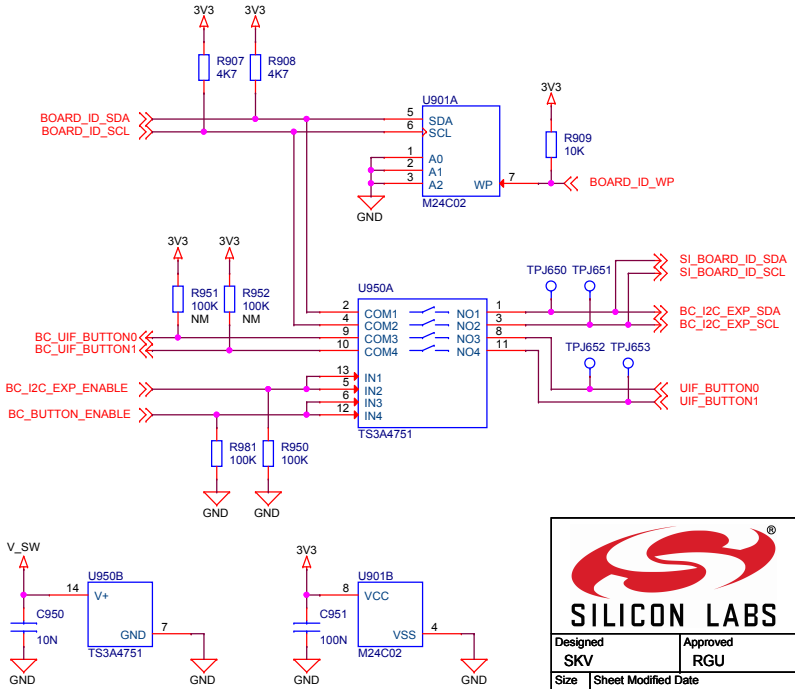




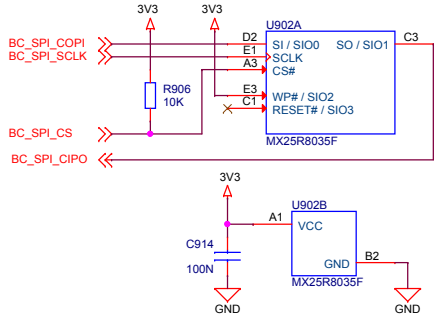
Power & Decoupling



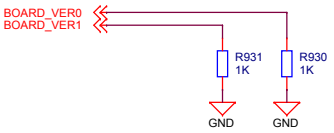
Board ID & Button Isolation



BC Serial Flash



Board Version



SILICON LABS

Designed: SKV	Approved: RGU
Size: A3	Sheet Modified Date: Thursday, June 17, 2021

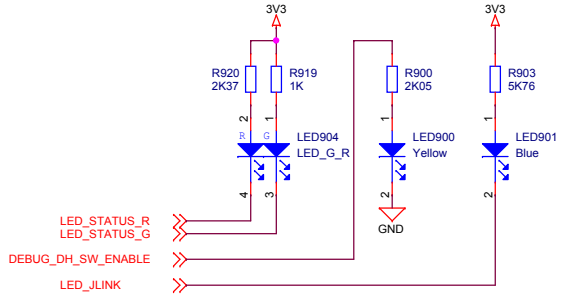
Board Name: **EFM8UB1 Universal Bee STK**

Page Title: **Board Controller**

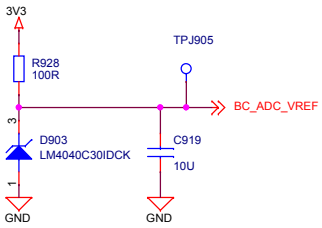
Board Number: **BRD5000B**

Revision: **A00**

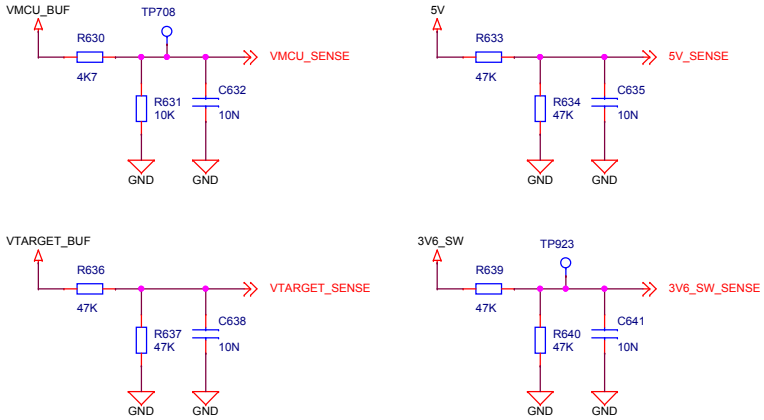
Indicator LEDs



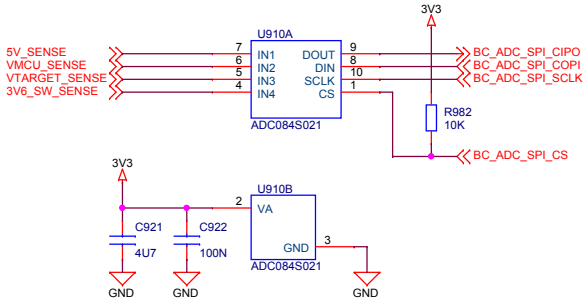
BC ADC Reference



BC Voltage Sense



BC Voltage Sense ADC



SILICON LABS	Board Name: **EFM8UB1 Universal Bee STK**
	Page Title: **Board Controller Misc**
Designed: SKV / Approved: RGU	
Size: A3 / Sheet Modified Date: Thursday, June 17, 2021	Board Number: **BRD5000B** / Revision: **A00**
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