



EFM8BB1 Busy Bee STK

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Revision History

Rev.	Description
A00	Initial version released for production.
A01	Minor updates to design. Updated sine wave generator and new PCB.

STK

 SILICON LABS		Schematic Title EFM8BB1 Busy Bee Starter Kit	
Designed: MRW		Page Title Title Page	
Size A3	BOM Doc No:	Document number BRD5200A	Revision A01
Design Created Date: Wednesday, December 03, 2008		Sheet Created Date Thursday, May 15, 2014	Sheet Modified Date Tuesday, November 25, 2014
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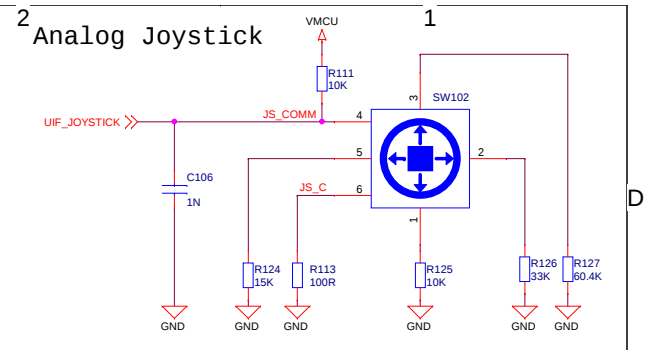


The image contains three circuit diagrams for the Breakout Connections, RGB LED, and Analog Joystick.

Breakout Connections: This diagram shows the pin connections for the MCU. The left side shows the MCU pins (MCU_P2[1..0], MCU_P2[0], MCU_P1[7..0], MCU_P1[6], MCU_P1[5], MCU_P1[4], 3V3, GND, NM) connected to the breakout board pins (J101). The right side shows the breakout board pins (J102) connected to the MCU pins (MCU_P0[0], MCU_P0[1], MCU_P0[2], MCU_P0[3], MCU_P0[4], MCU_P0[5], MCU_P0[6], MCU_P0[7], MCU_P1[0], MCU_P1[1], MCU_P1[2], MCU_P1[3], GND, 3V3, NM).

RGB LED: This diagram shows the connection of the RGB LED to the breakout board. The LED pins (LED2 RGB) are connected to the breakout board pins (J102) and the MCU pins (MCU_P0[0], MCU_P0[1], MCU_P0[2], MCU_P0[3], MCU_P0[4], MCU_P0[5], MCU_P0[6], MCU_P0[7], MCU_P1[0], MCU_P1[1], MCU_P1[2], MCU_P1[3], GND, 3V3, NM).

Analog Joystick: This diagram shows the connection of the Analog Joystick to the breakout board. The joystick pins (JS_COMM, JS_C) are connected to the breakout board pins (J102) and the MCU pins (MCU_P0[0], MCU_P0[1], MCU_P0[2], MCU_P0[3], MCU_P0[4], MCU_P0[5], MCU_P0[6], MCU_P0[7], MCU_P1[0], MCU_P1[1], MCU_P1[2], MCU_P1[3], GND, 3V3, NM).



EXP port

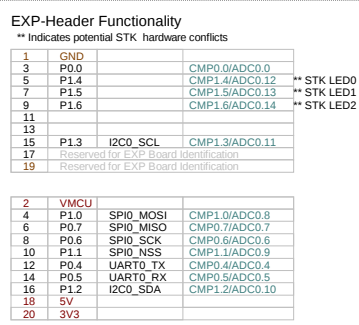
EXP-Header Functionality

** Indicates potential STK hardware conflicts

Pin	Function	Notes
1	GND	
3	P0.0	
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		
13		
15	P1.3	I2C0_SCL CMP1.3/ADC0.11
17	Reserved for EXP Board Identification	
19	Reserved for EXP Board Identification	

Pin	Function	Notes
2	VMCU	
4	P1.0	SPI0_MOSI CMP1.0/ADC0.8
6	P0.7	SP0_MISO CMP0.7/ADC0.7
8	P0.6	SPI0_SCK CMP0.6/ADC0.6
10	P1.1	SPI0_NSS CMP1.1/ADC0.9
12	P0.4	UART0_TX CMP0.4/ADC0.4
14	P0.5	UART0_RX CMP0.5/ADC0.5
16	P1.2	I2C0_SDA CMP1.2/ADC0.10
18	5V	
20	3V3	

U.FL ADC Connection



Memory LCD-TFT Display & Multiplexer

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

EFM_DISP_ENABLE	DISP_CTRL	VDISP
0	BC	BC_DISP_PWR_EN
1	EFM	VMCU

User pushbuttons

RESET Pushbutton

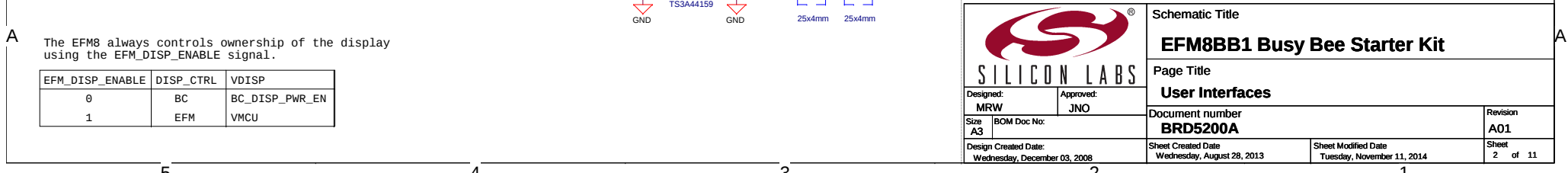
STK

		Schematic Title	
		EFM8BB1 Busy Bee Starter Kit	
Designed: MRW		Page Title	
Approved: JNO		User Interfaces	
Size A3		Document number	
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Memory LCD-TFT Display & Multiplexer

User pushbuttons

RESET Pushbutton



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

EFM_DISP_ENABLE	DISP_CTRL	VDISP
0	BC	BC_DISP_PWR_EN
1	EFM	VMCU



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Schematic Title

EFM8BB1 Busy Bee Starter Kit

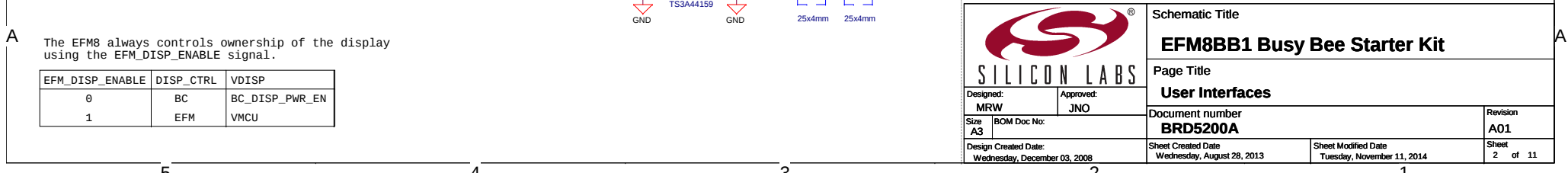
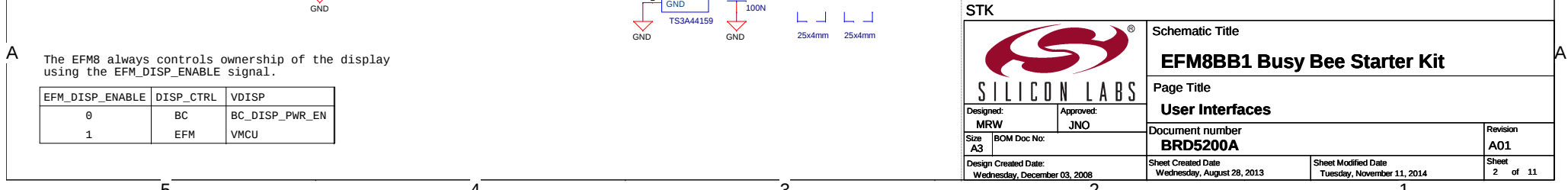
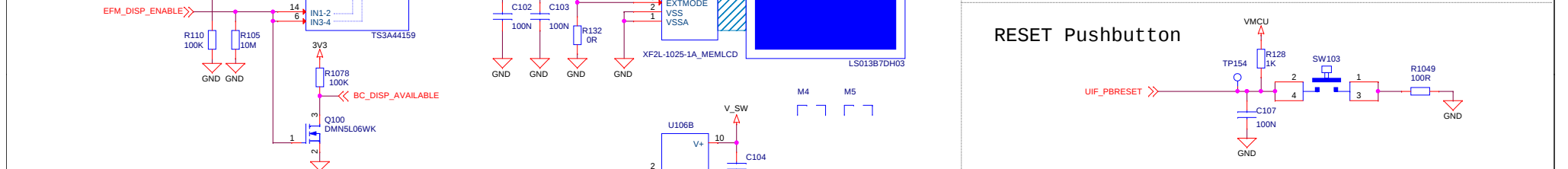
Page Title

User Interfaces

Document number **BRD5200A**

Revision **A01**

The left schematic, titled "Memory LCD-TFT Display & Multiplexer", shows the connection of the VMCU to the display. The VMCU pins 13, 5, 9, 11, 15, 3, and 7 are connected to the display's control lines: BC_DISP_PWR_EN, BC_DISP_SCLK, BC_DISP_MOSI, BC_DISP_CS, EFM_DISP_SCLK, EFM_DISP_MOSI, and EFM_DISP_CS. The display (DISP1) is connected to the multiplexer (U106A) via COM1, COM2, COM3, and COM4. The multiplexer's NC1, NC2, NC3, and NC4 pins are connected to the display's SCLK, SI, SCS, and EXTCOMIN pins. The multiplexer's NO1, NO2, NO3, and NO4 pins are connected to the display's DISP, VDDA, VDD, and GND pins. The multiplexer's output is connected to the display's VDISP pin. The right schematic, titled "User pushbuttons", shows the connection of the VMCU to the pushbuttons. The VMCU pins 1, 3, 4, and 7 are connected to the pushbutton inputs. The pushbutton inputs are connected to the VMCU pins 1, 3, 4, and 7. The pushbutton inputs are connected to the VMCU pins 1, 3, 4, and 7. The pushbutton inputs are connected to the VMCU pins 1, 3, 4, and 7.



EFM_DISP_ENABLE	DISP_CTRL	VDISP
0	BC	BC_DISP_PWR_EN
1	EFM	VMCU

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

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EFM_DISP_ENABLE	DISP_CTRL	VDISP
0	BC	BC_DISP_PWR_EN
1	EFM	VMCU



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[illegible]

The schematic shows the following connections:

- GND (Microcontroller) to GND (Starter Kit)
- TS3A44159 (Microcontroller) to GND (Starter Kit)
- 25x4mm (Microcontroller) to 25x4mm (Starter Kit)

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

EFM_DISP_ENABLE	DISP_CTRL	VDISP
0	BC	BC_DISP_PWR_EN
1	EFM	VMCU

GNDTS3A44159GND25x4mm25x4mm

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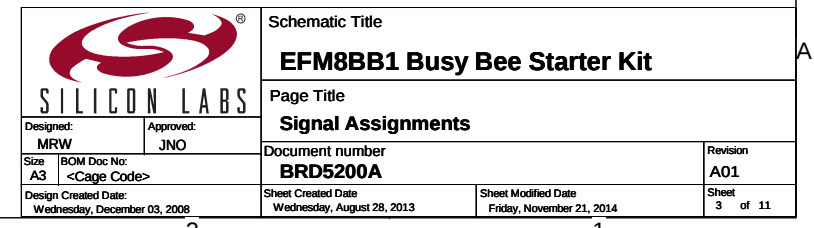
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B



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D

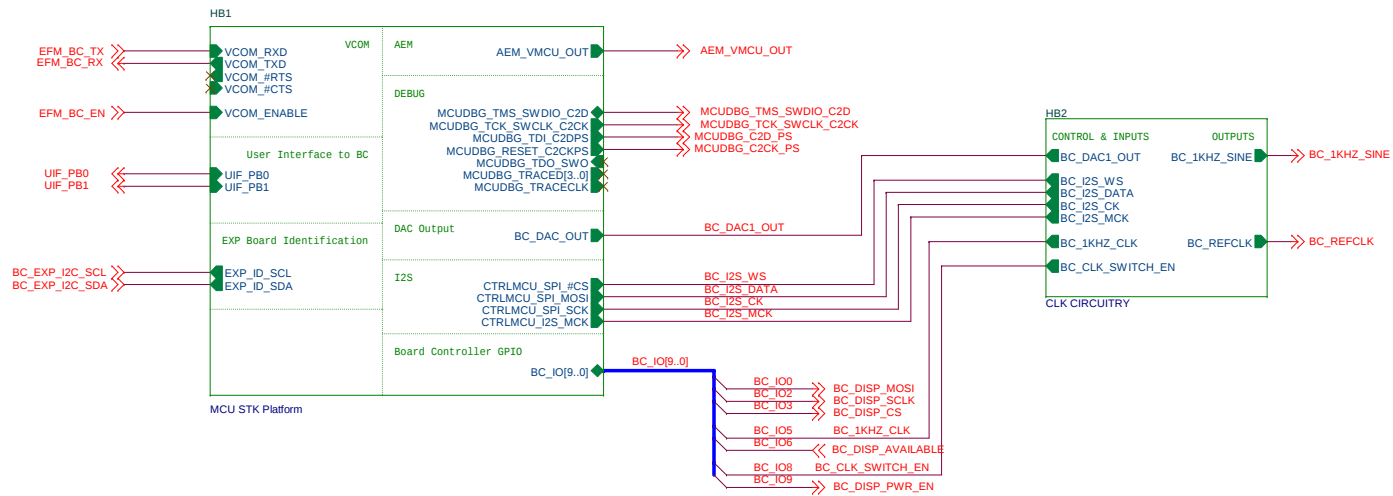
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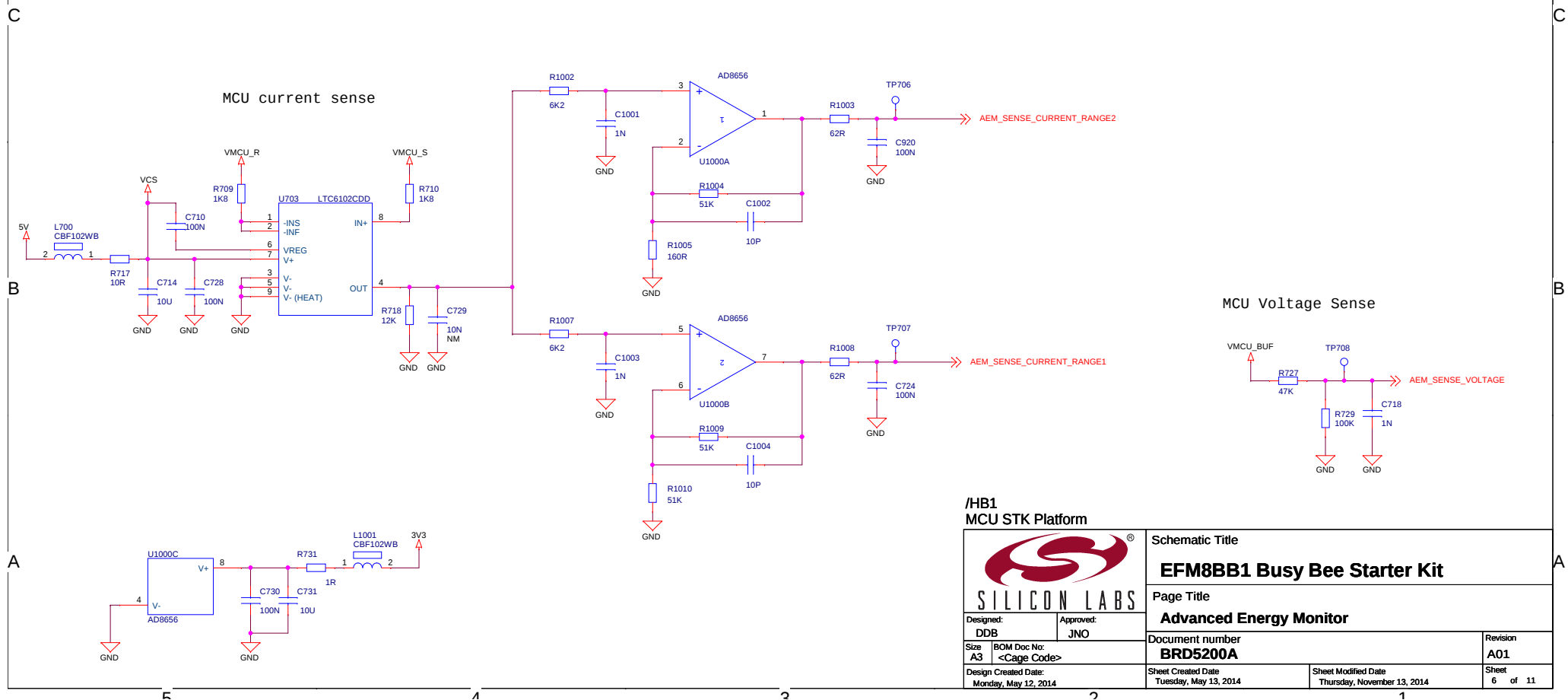
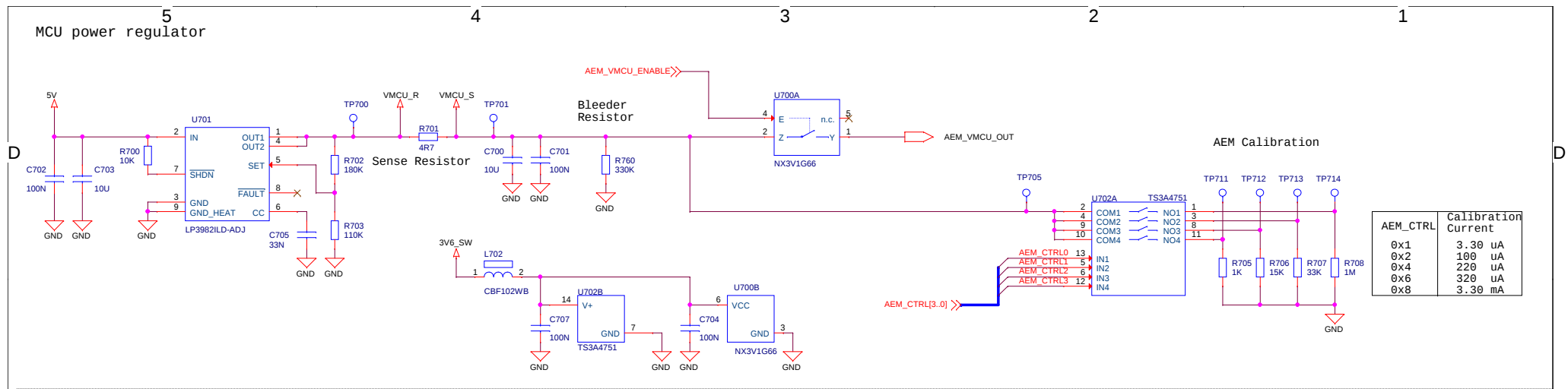


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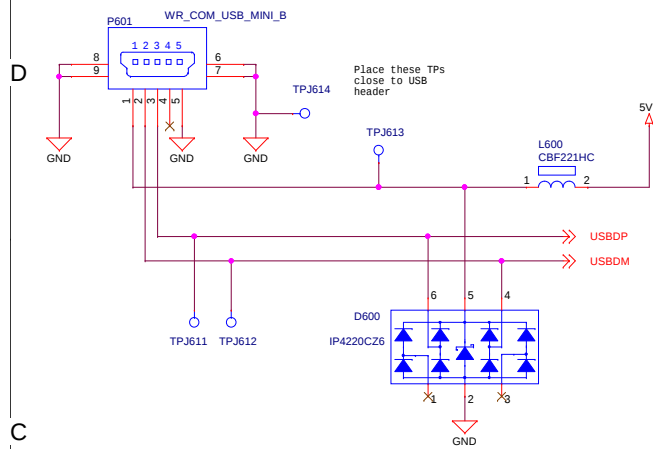
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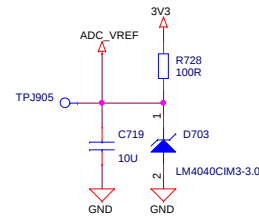
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Approved: JNO		Functional Blocks	
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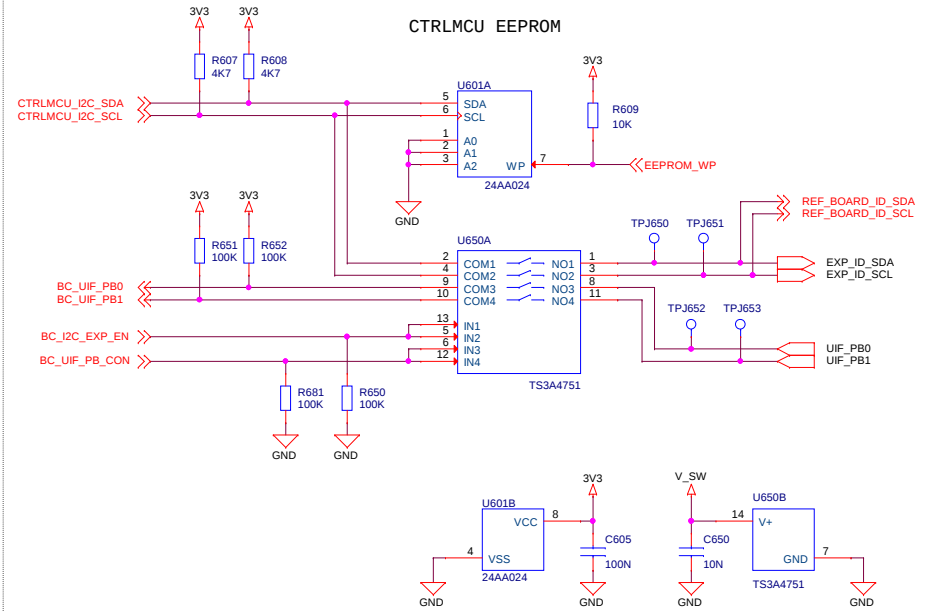
J-Link USB Port



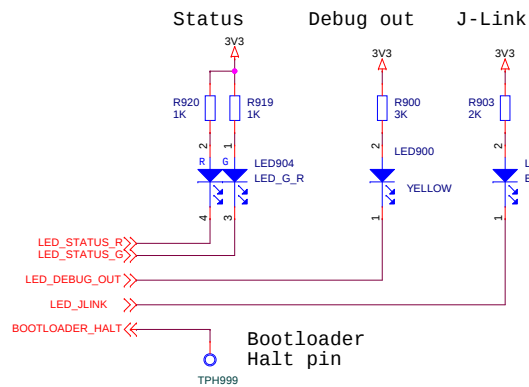
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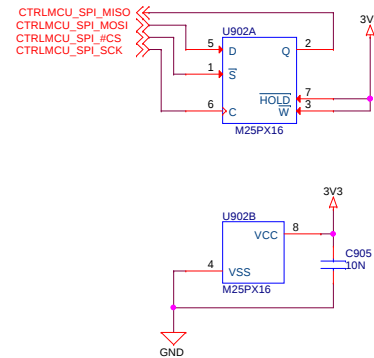
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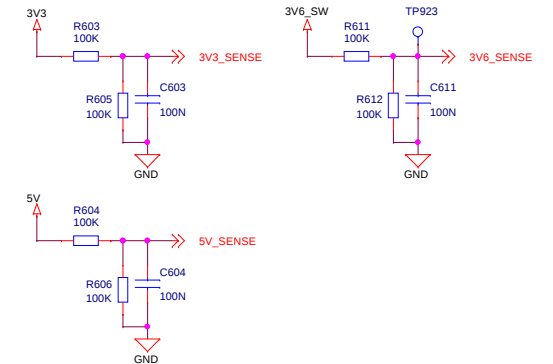
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CTRLMCU SERIAL FLASH

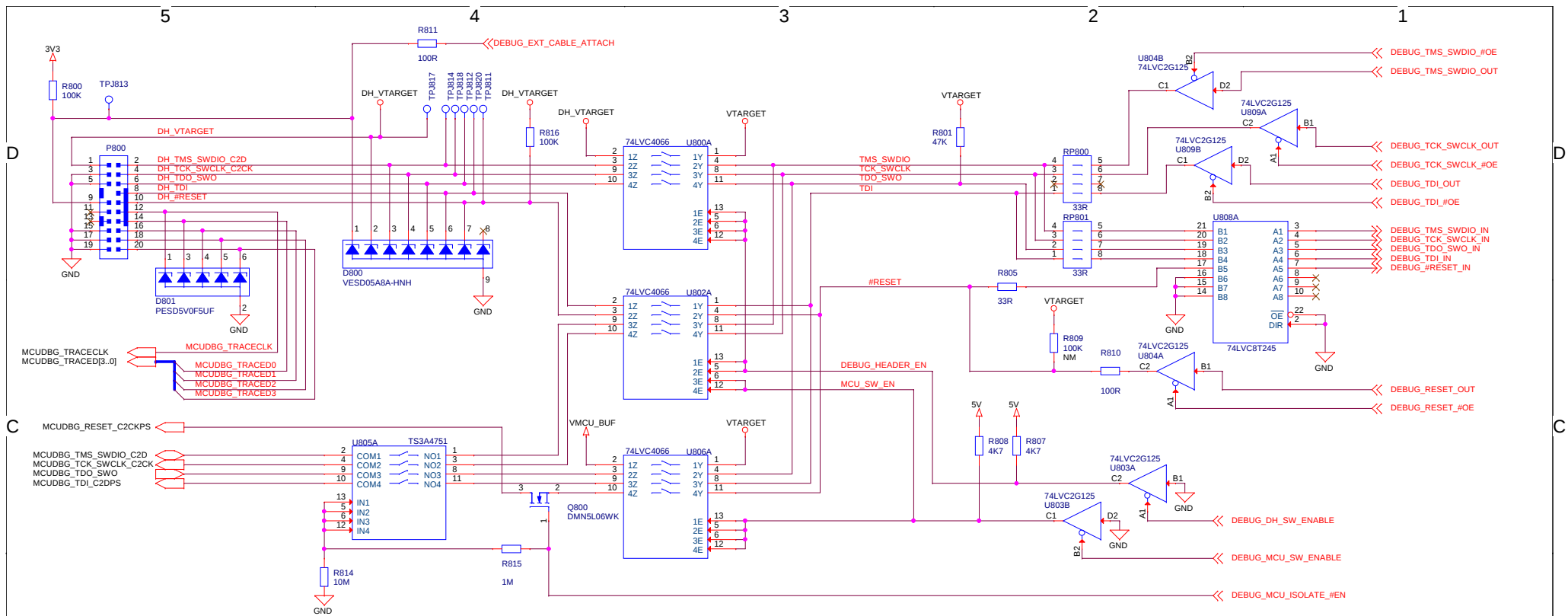


POWER SENSE

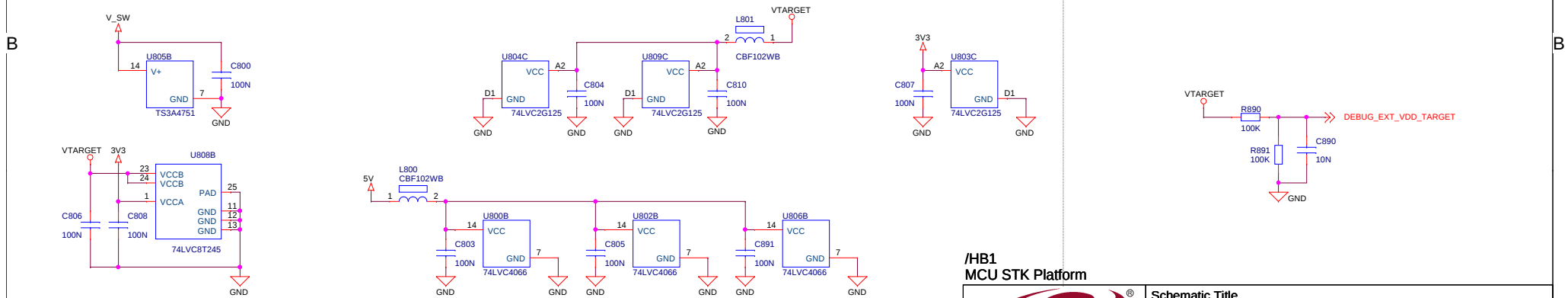


/HB1
MCU STK Platform

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Designed: ANB		Page Title	
Approved: JNO		Board Controller Misc	
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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	-	-

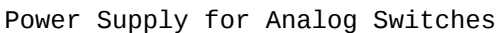
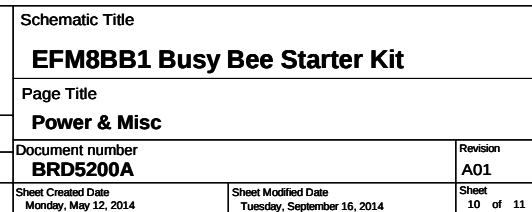
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MCU STK Platform

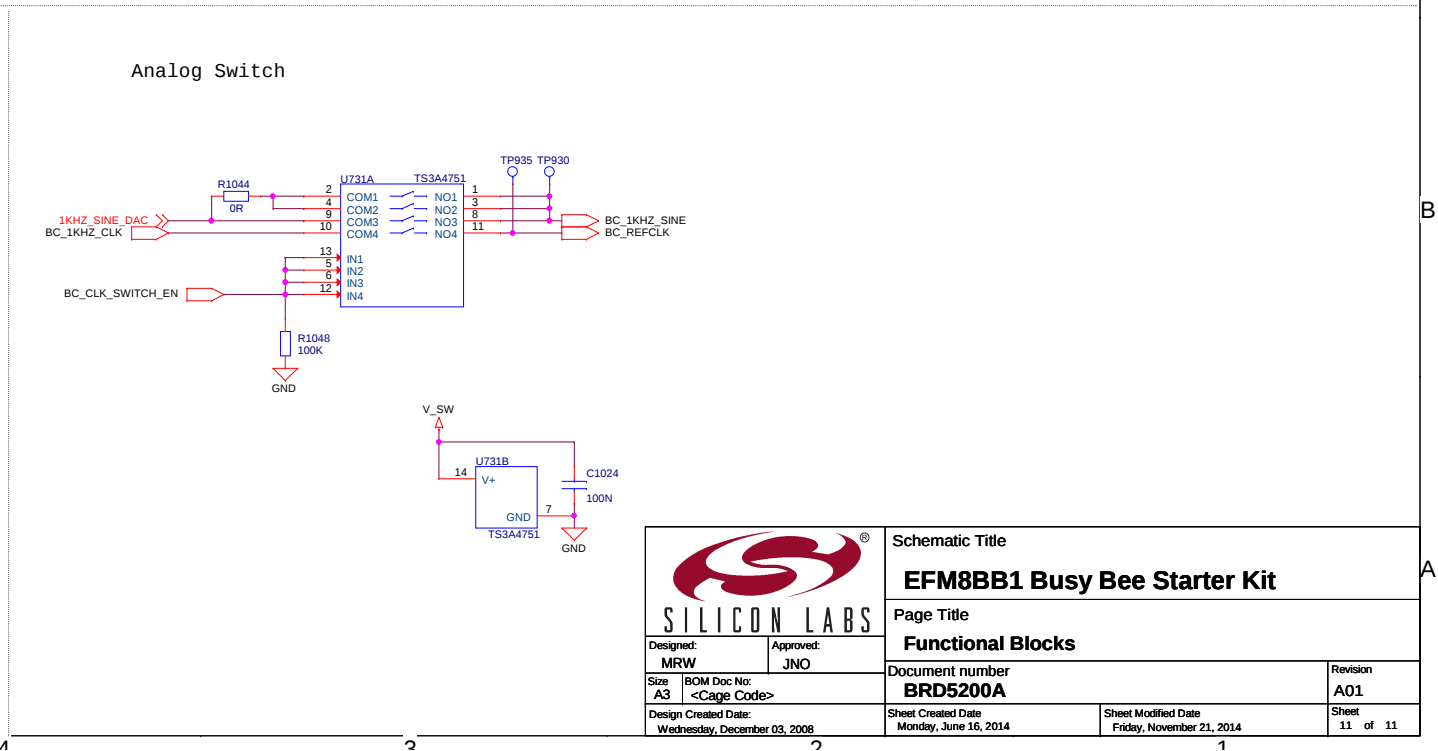
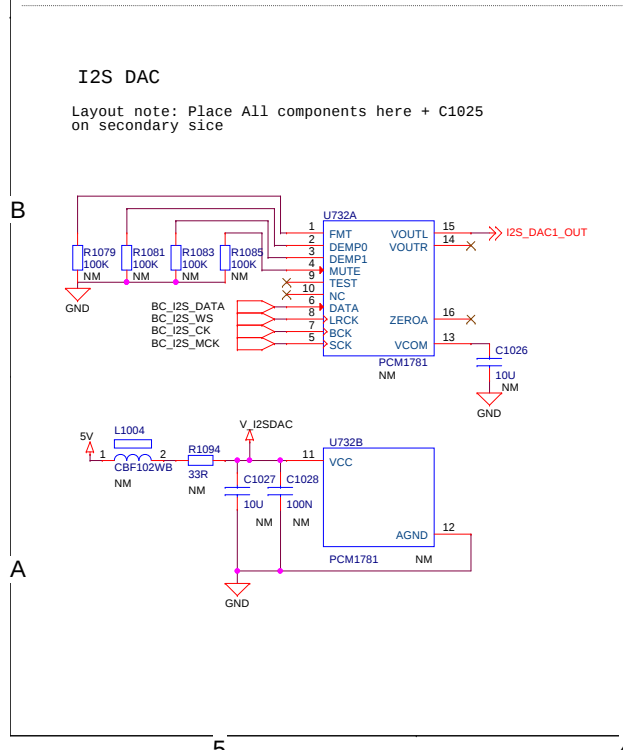
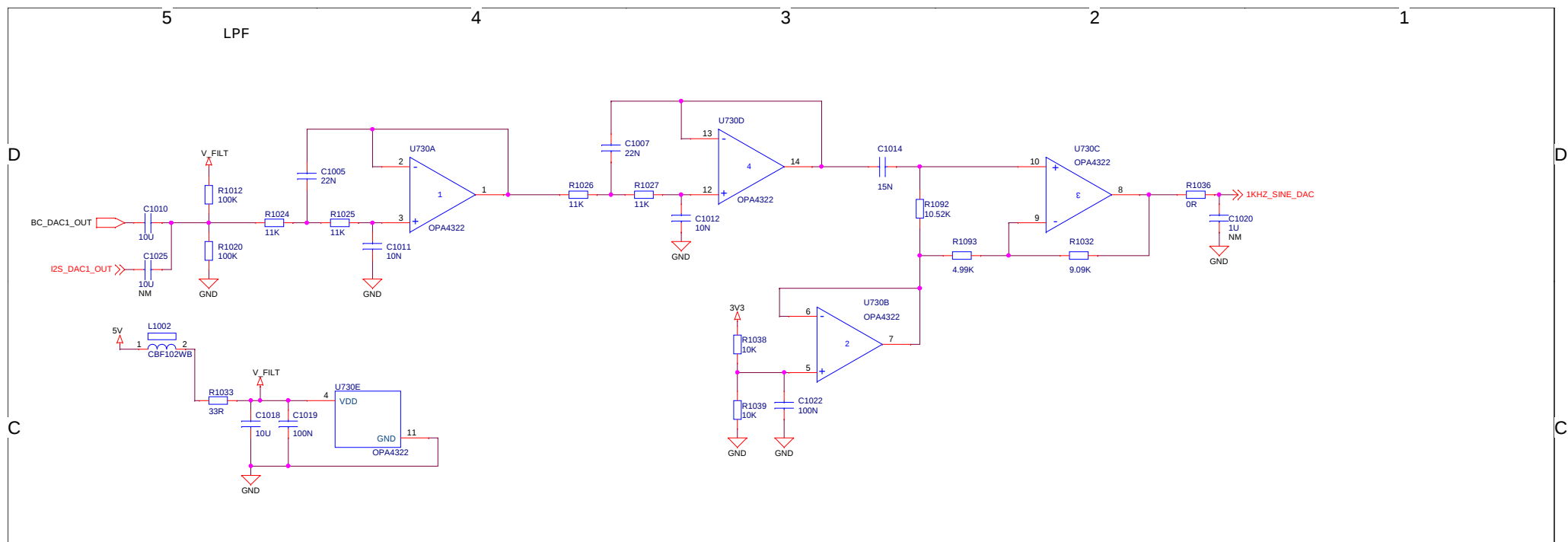
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B

 ∇ / HB1
MCU STK Platform



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