



EFM8LB1 LaserBee STK


Board Function	Page
Title Page	1
User Interface	2
EFM8 signal Assignments	3
EFM8	4
STK Common Interface	5
Clock Circuitry	6
STK Common/AEM	7
STK Board Controller/Control MCU	8
STK Board Controller/Misc	9
STK Common/Debug Interface	10
STK Common/Power & Misc	11

Revision History

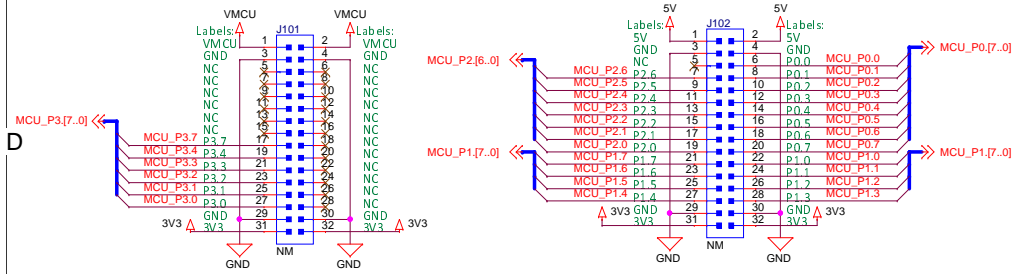
Rev.	Description
A00	Initial release.
A01	Changed to surface mounted joystick and smaller reset switch.



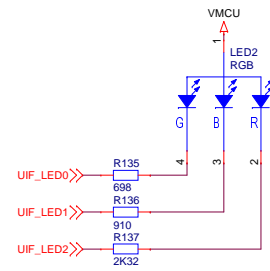
STK

 SILICON LABS		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW		Approved: JNO	
Page Title		Title Page	
Size: A3	BOM Doc No:	Document number	Revision
		BRD5300A	A01
Design Created Date:	Sheet Created Date	Sheet Modified Date	Sheet
Wednesday, December 03, 2008	Thursday, May 15, 2014	Friday, May 15, 2015	1 of 12

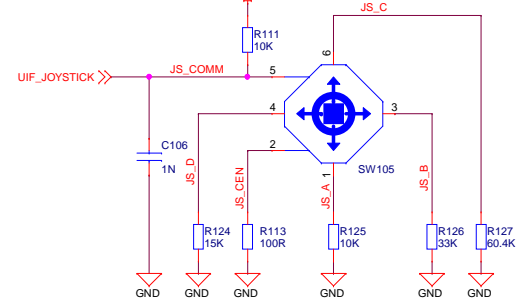
Breakout Connections



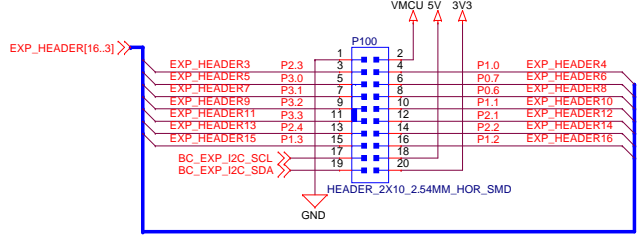
RGB LED



Analog Joystick



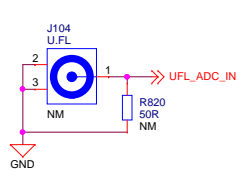
EXP port



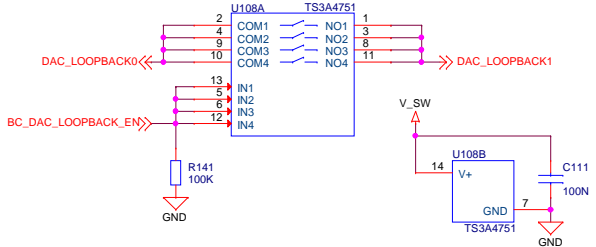
EXP-Header Functionality

1	GND		
3	P2.3		CMP1.5/ADC0.16
5	P3.0		DAC0
7	P3.1		DAC1
9	P3.2		DAC2
11	P3.3		DAC3
13	P2.4		CMP1.6/ADC0.17
15	P1.3	I2C0_SCL	ADC0.9
17			Reserved for EXP Board Identification
19			
2	VMCU		
4	P1.0	SPI0_MOSI	CMP1.1/ADC0.6
6	P0.7	SPI0_MISO	CMP0.5/ADC0.5
8	P0.6	SPI0_SCK	CMP0.4/ADC0.5
10	P1.1	SPI0_NSS	CMP0.7/ADC0.7
12	P2.1	UART1_TX	CMP1.3/ADC0.14
14	P2.2	UART1_RX	CMP1.4/ADC0.15
16	P1.2	I2C0_SDA	CMP0.8/ADC0.8
18	5V		
20	3V3		

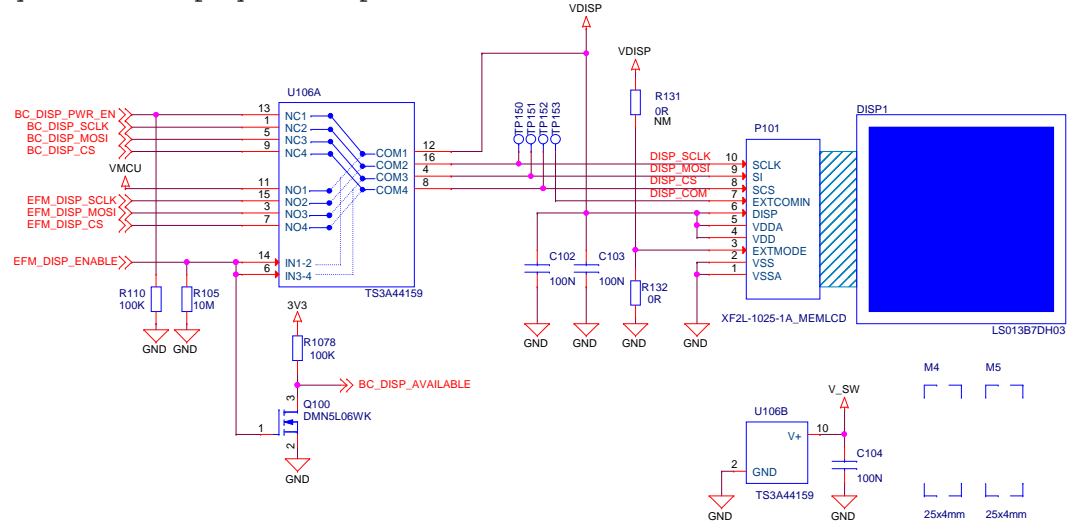
U.FL ADC Connection



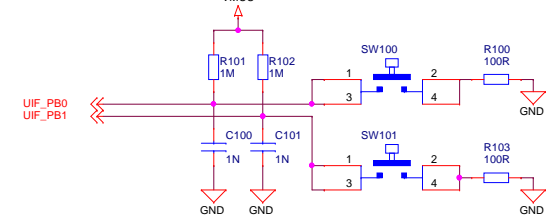
DAC Loopback Analog Switch



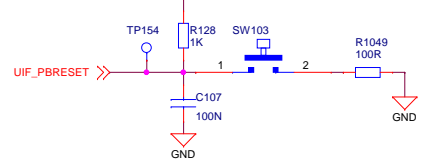
Memory LCD-TFT Display & Multiplexer



User pushbuttons



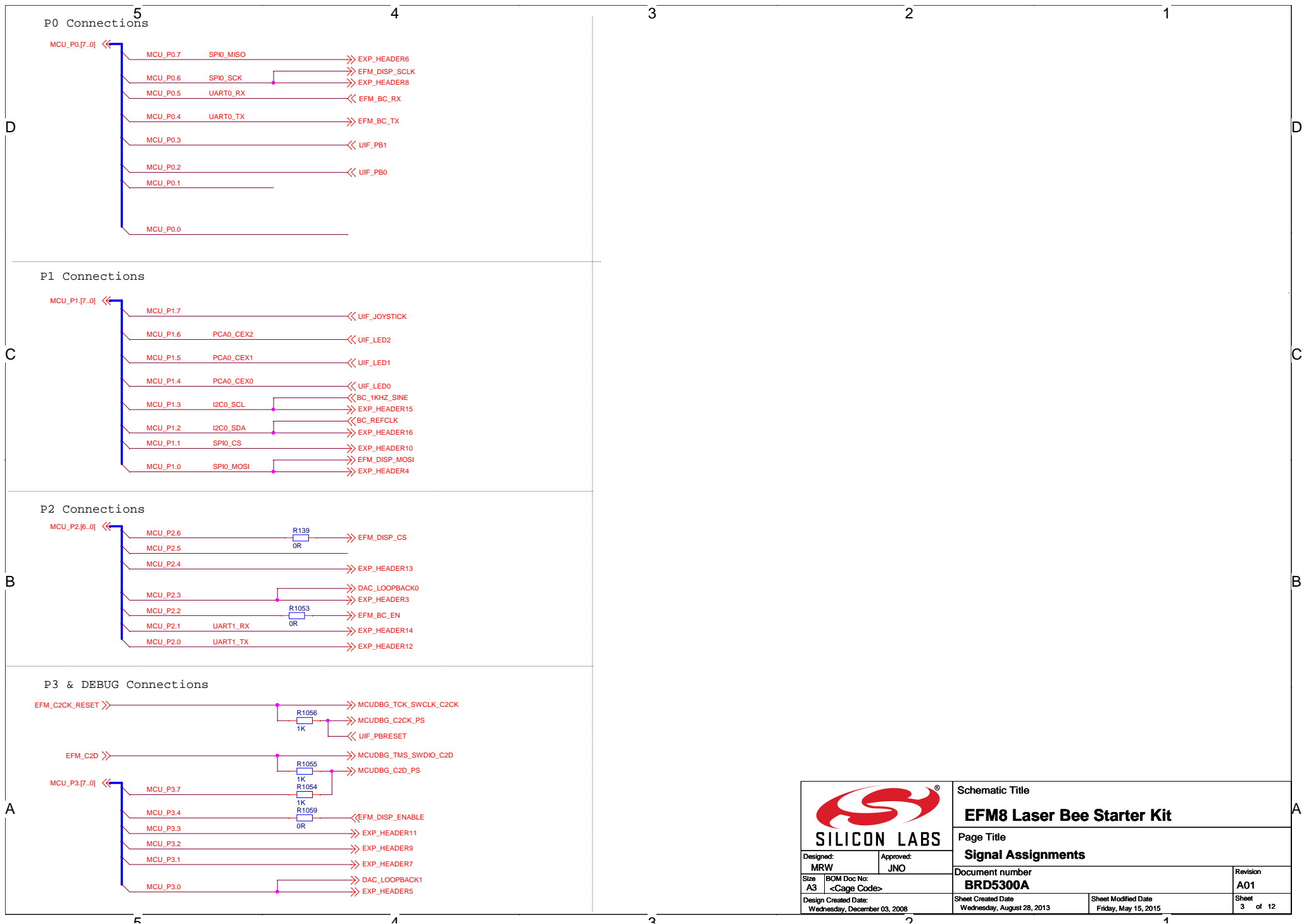
RESET Pushbutton




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

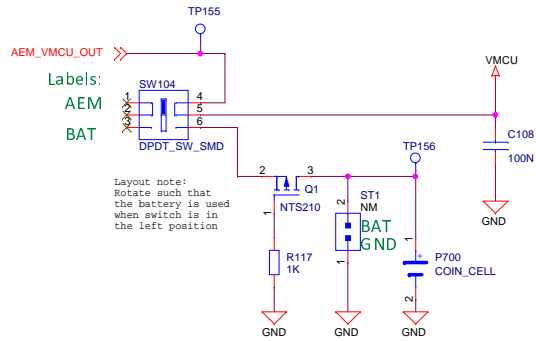
		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW Approved: JNO		Page Title	
		User Interfaces	
Size A3	BOM Doc No:	Document number	Revision
		BRD5300A	A01
Design Created Date:	Sheet Created Date:	Sheet Modified Date:	Sheet
Wednesday, December 03, 2008	Wednesday, August 28, 2013	Friday, May 15, 2015	2 of 12



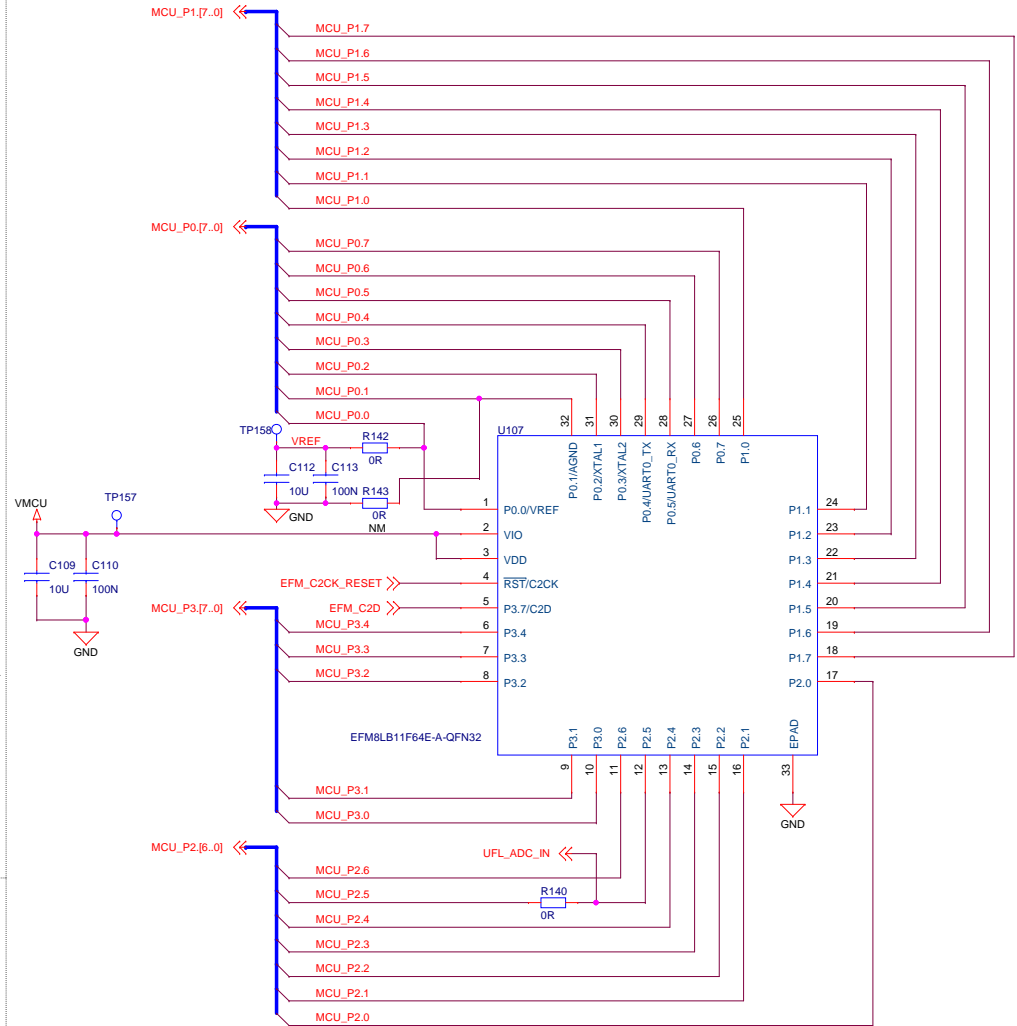
		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW Approved: JNO		Page Title	
		Signal Assignments	
Size A3	BOM Doc No: <Cage Code>	Document number BRD5300A	Revision A01
Design Created Date: Wednesday, December 03, 2008	Sheet Created Date Wednesday, August 28, 2013	Sheet Modified Date Friday, May 15, 2015	Sheet 3 of 12


Power Switch

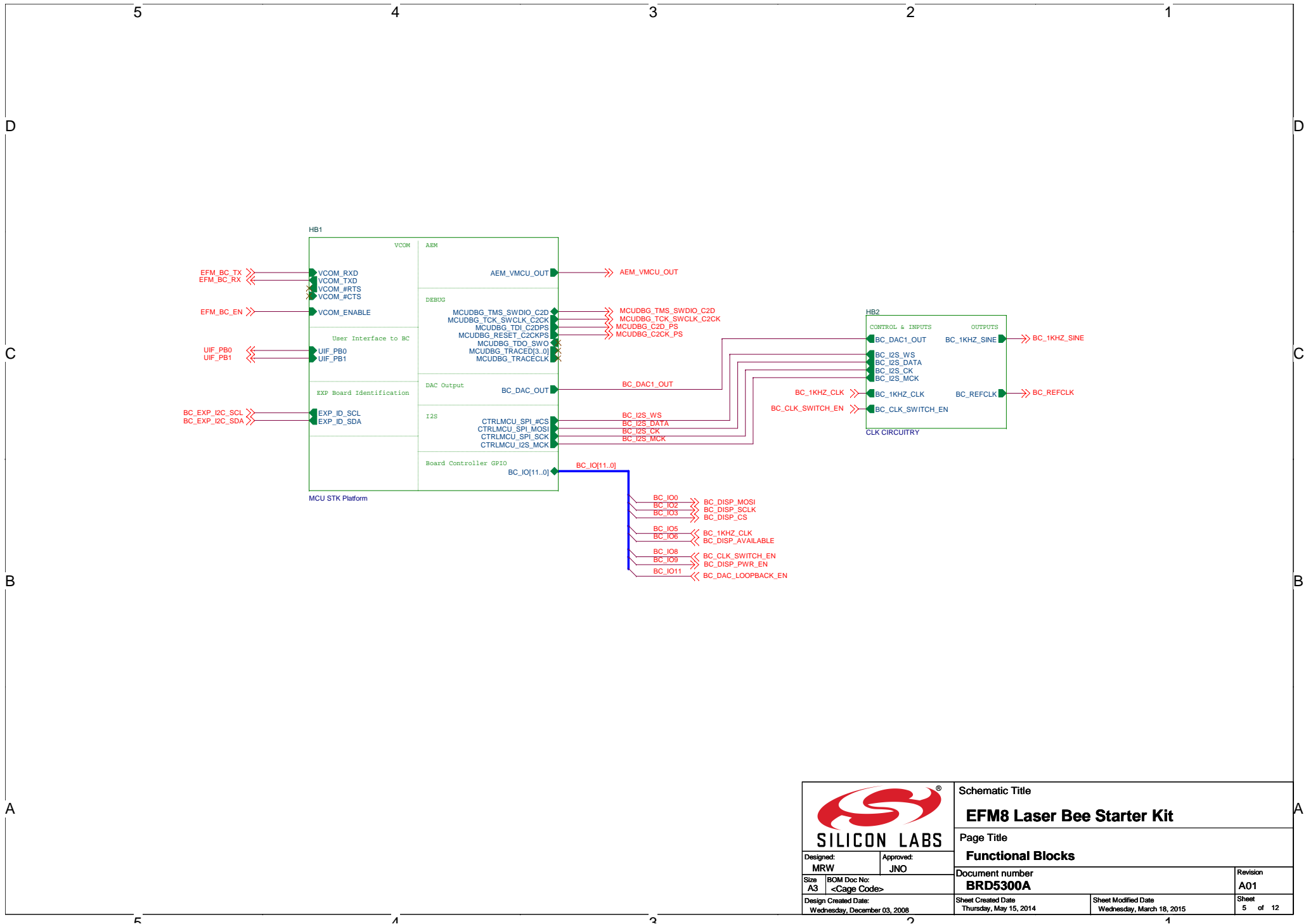
SWITCH POS	MODE DESCRIPTION
AEM	AEM Enabled, VMCU sourced from external 3.3V LDO powered by BC USB 5V supply
BAT	AEM Disabled, VMCU sourced from external coin-cell battery or external power supply




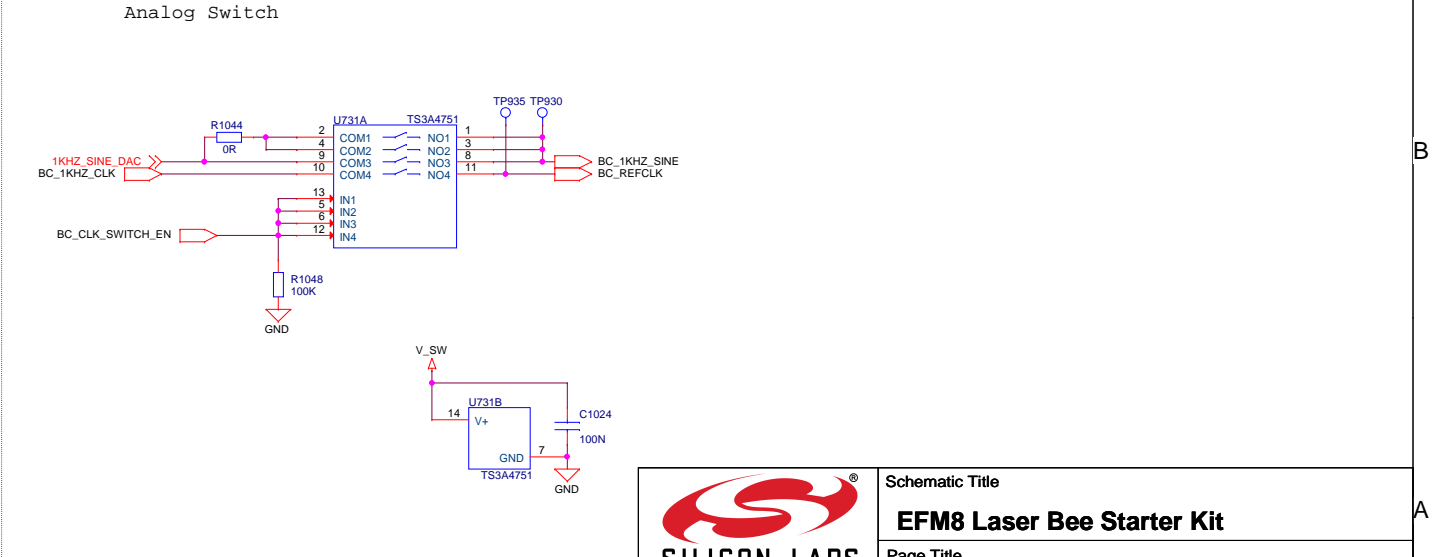
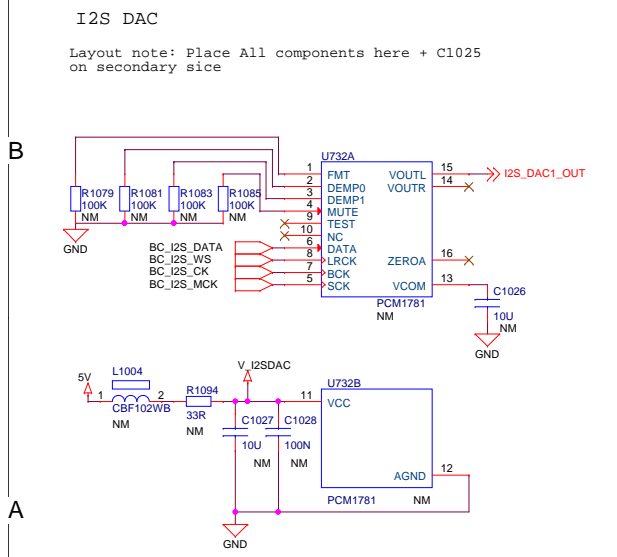
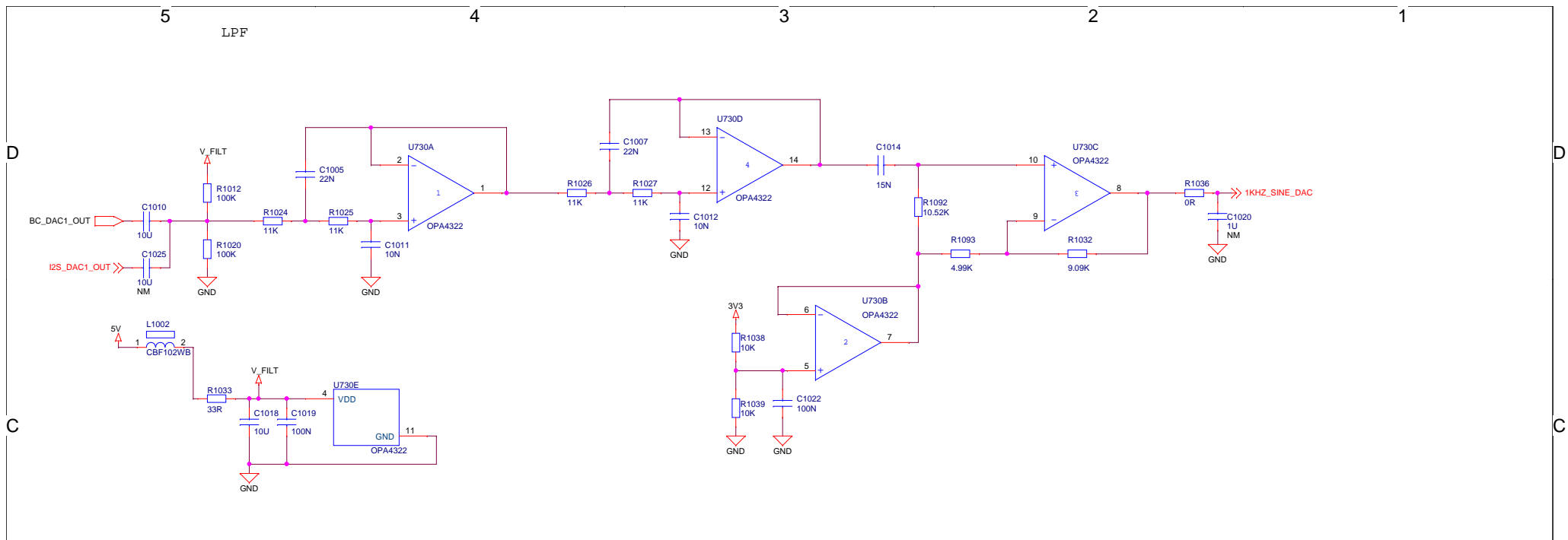
C2 Debug Header



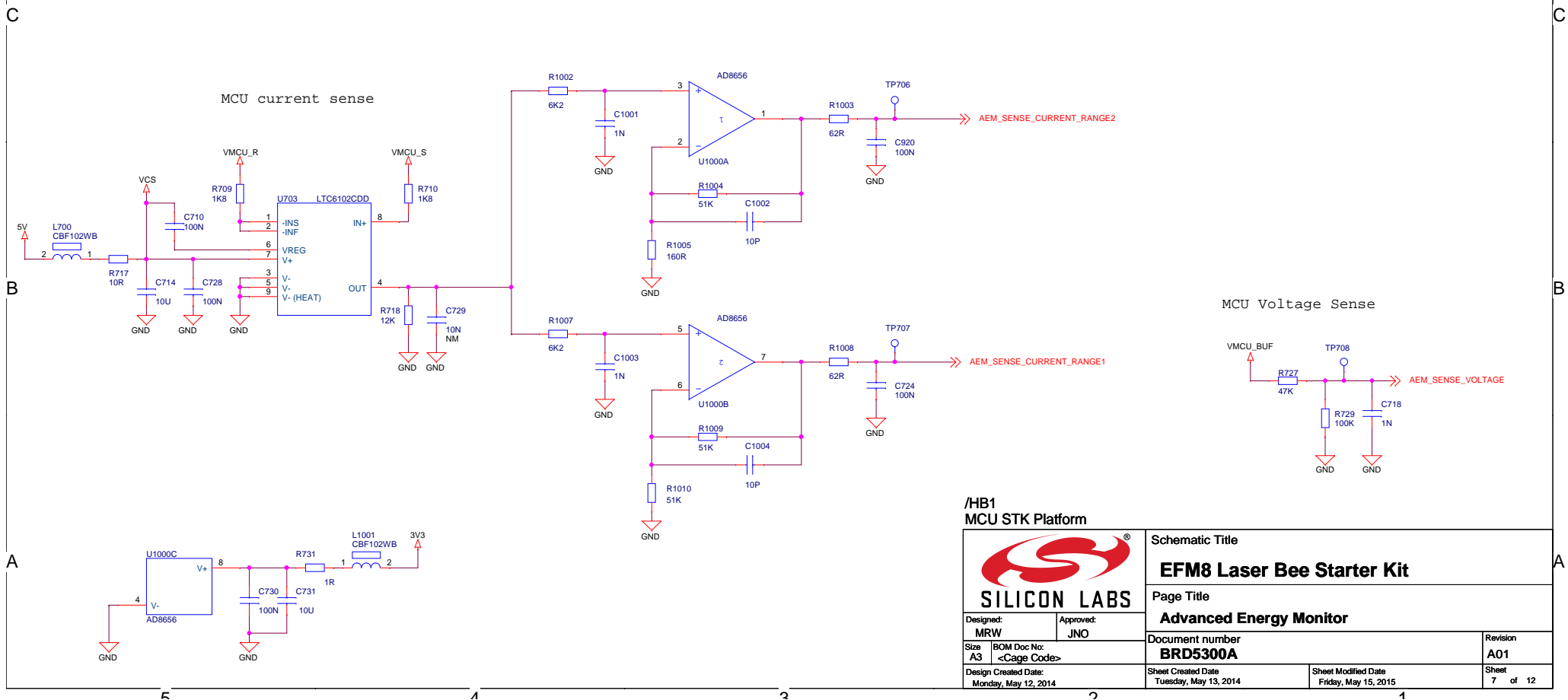
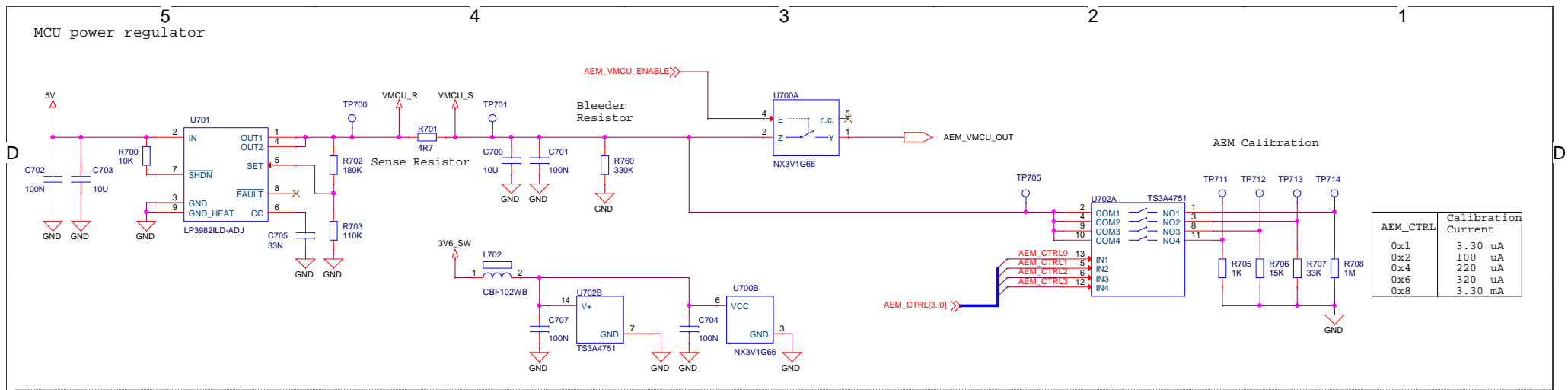
 <p>SILICON LABS</p>		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW		Approved: JNO	
Page Title		EFM8 I/O	
Size A3		Document number	
BOM Doc No: <Cage Code>		BRD5300A	
Design Created Date: Wednesday, December 03, 2008		Sheet Created Date: Wednesday, August 28, 2013	
		Sheet Modified Date: Friday, May 15, 2015	
		Revision	
		A01	
		Sheet 4 of 12	

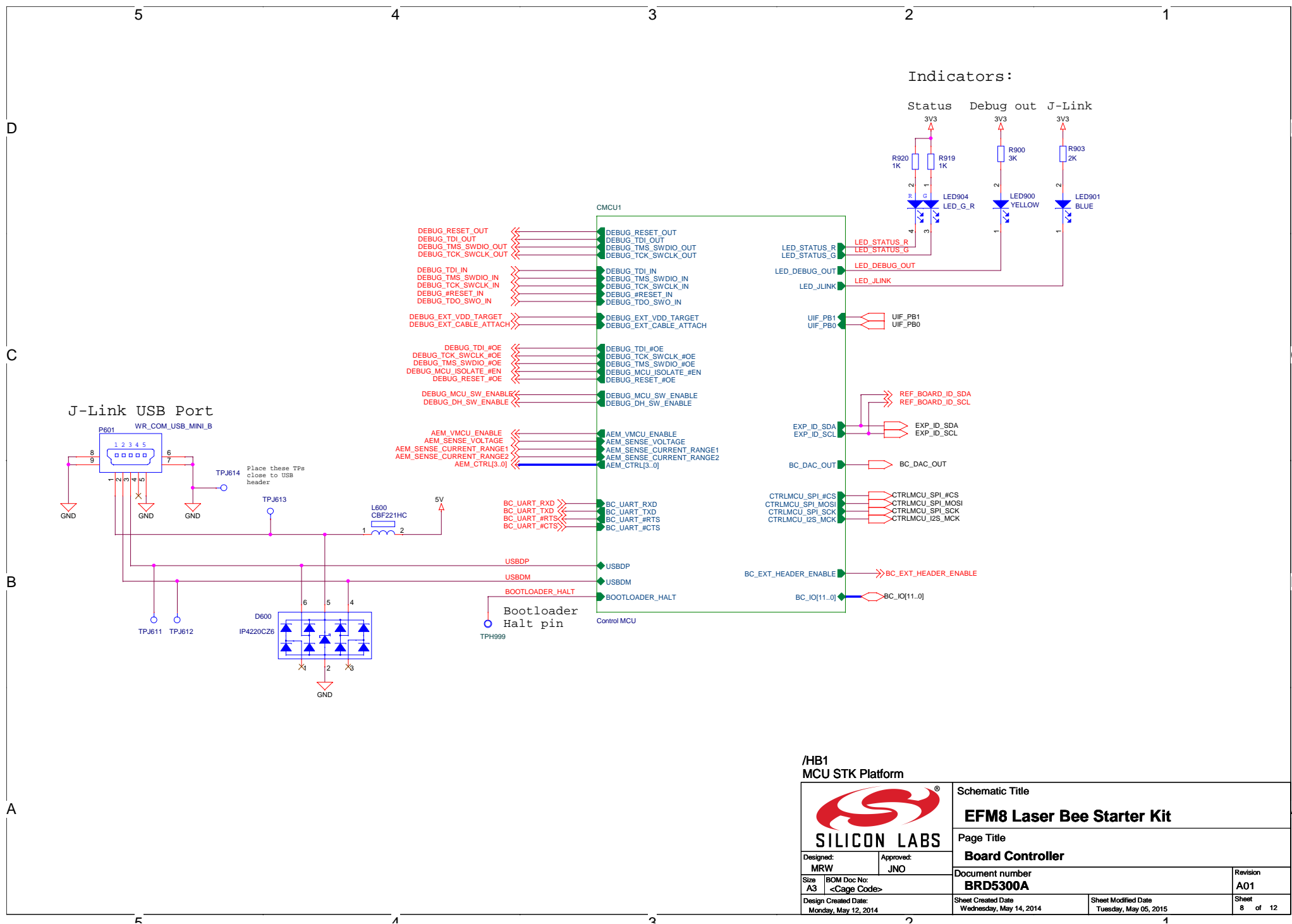


		Schematic Title	
		EFM8 Laser Bee Starter Kit	
SILICON LABS		Page Title	
		Functional Blocks	
Designed: MRW	Approved: JNO	Document number	
Size A3	BOM Doc No: <Cage Code>	BRD5300A	
Design Created Date: Wednesday, December 03, 2008	Sheet Created Date Thursday, May 15, 2014	Sheet Modified Date Wednesday, March 18, 2015	Revision A01
			Sheet 5 of 12



		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW Approved: JNO		Page Title	
		Functional Blocks	
Size A3	BOM Doc No: <Cage Code>	Document number BRD5300A	Revision A01
Design Created Date: Wednesday, December 03, 2008	Sheet Created Date Monday, June 16, 2014	Sheet Modified Date Friday, May 15, 2015	Sheet 6 of 12





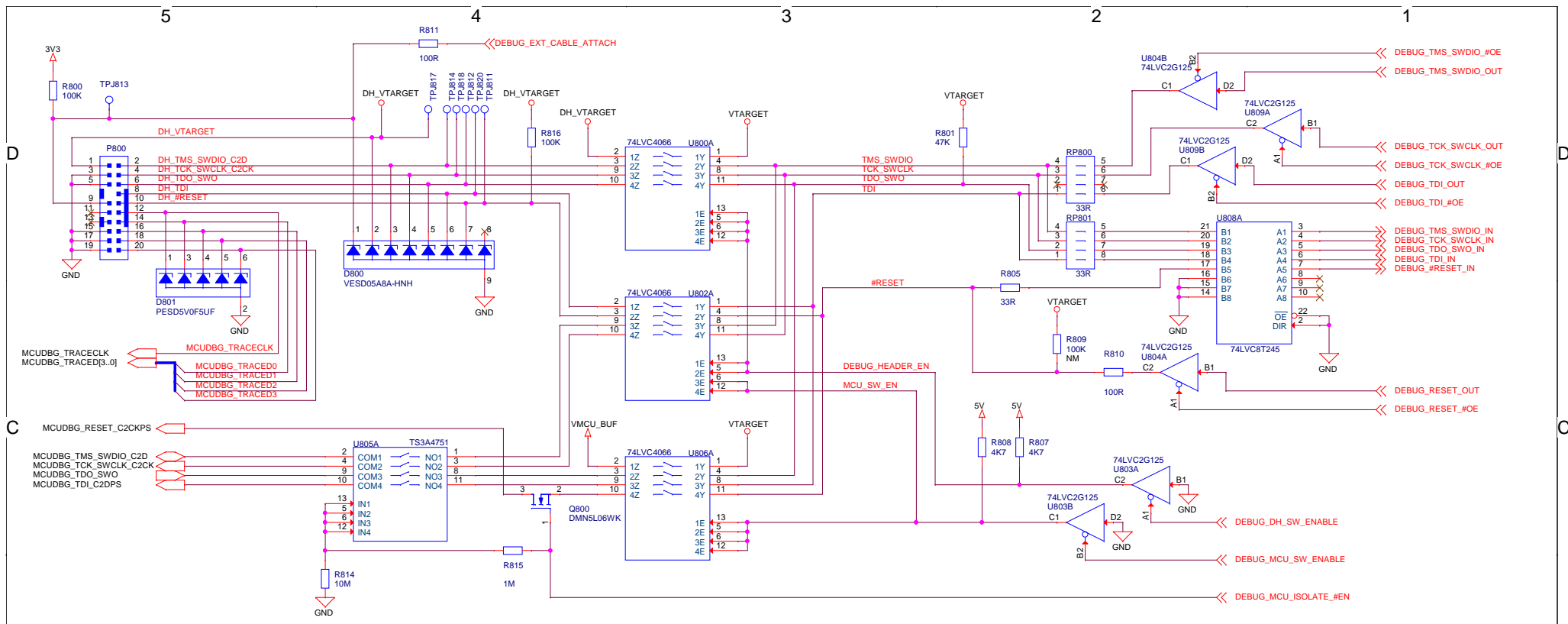
/HB1
MCU STK Platform



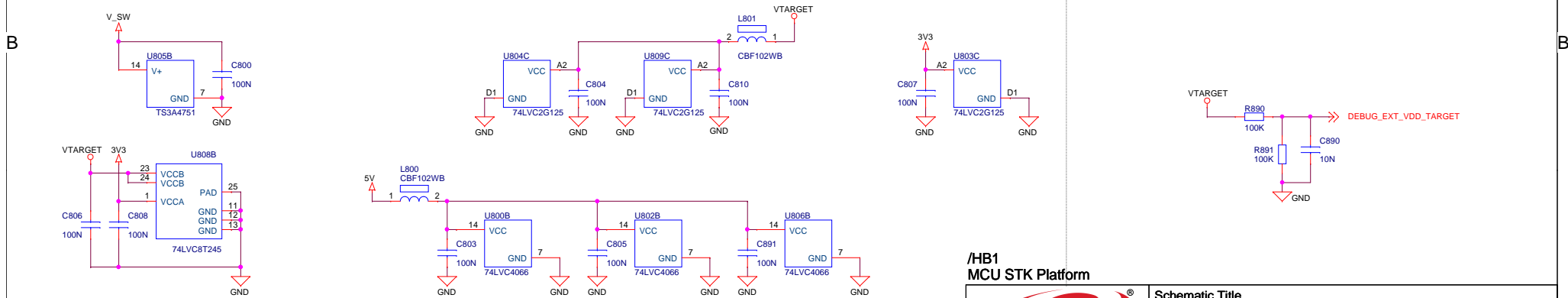
Designed: MRW		Approved: JNO	
Size A3	BOM Doc No: <Cage Code>	Document number BRD5300A	
Design Created Date: Monday, May 12, 2014		Sheet Created Date Wednesday, May 14, 2014	Sheet Modified Date Tuesday, May 05, 2015
		Revision A01	
		Sheet 8 of 12	

Schematic Title
EFM8 Laser Bee Starter Kit

Page Title
Board Controller



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	-	-

SILICON LABS

Design: MRW
Approved: JNO

Size: A3
BOM Doc No: <Cage Code>

Design Created Date: Monday, May 12, 2014

MCU STK Platform

Schematic Title
EFM8 Laser Bee Starter Kit

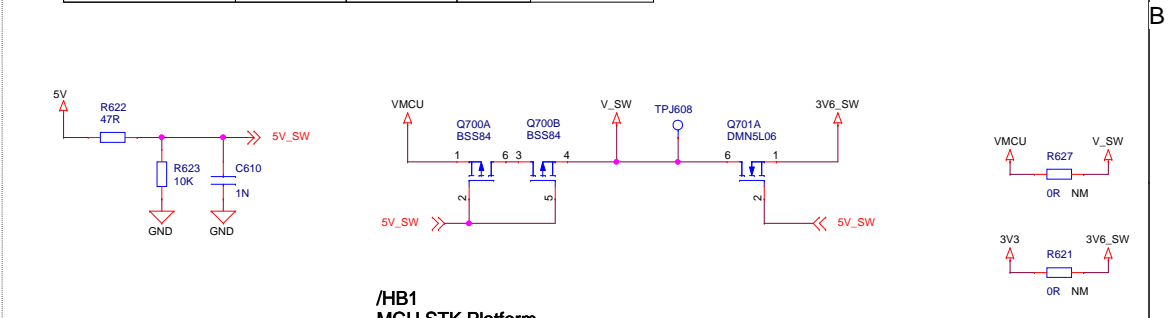
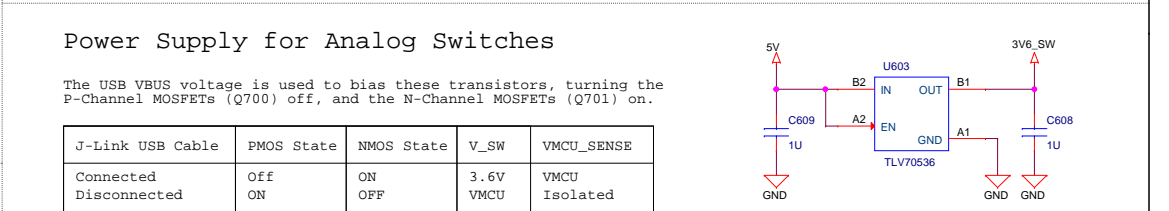
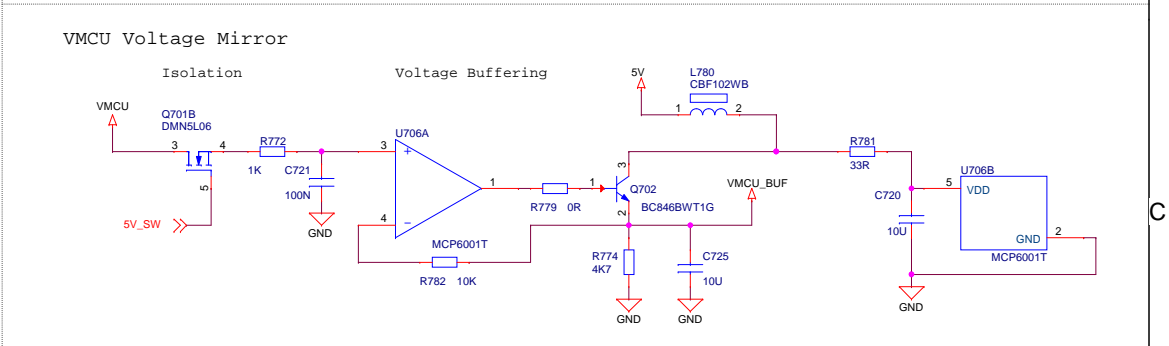
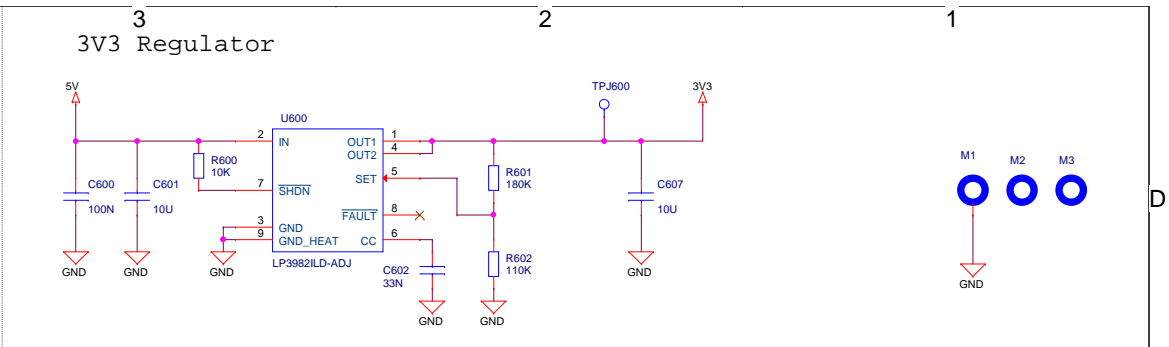
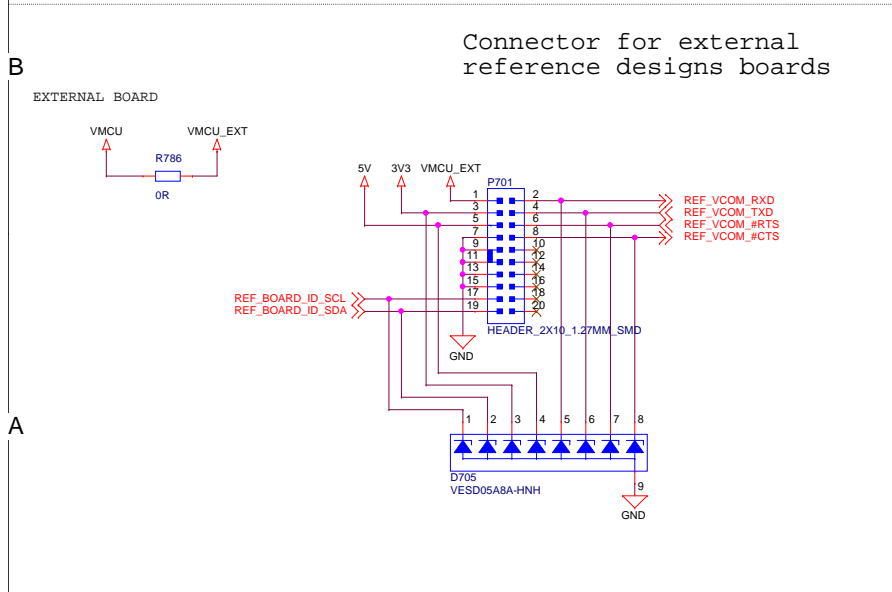
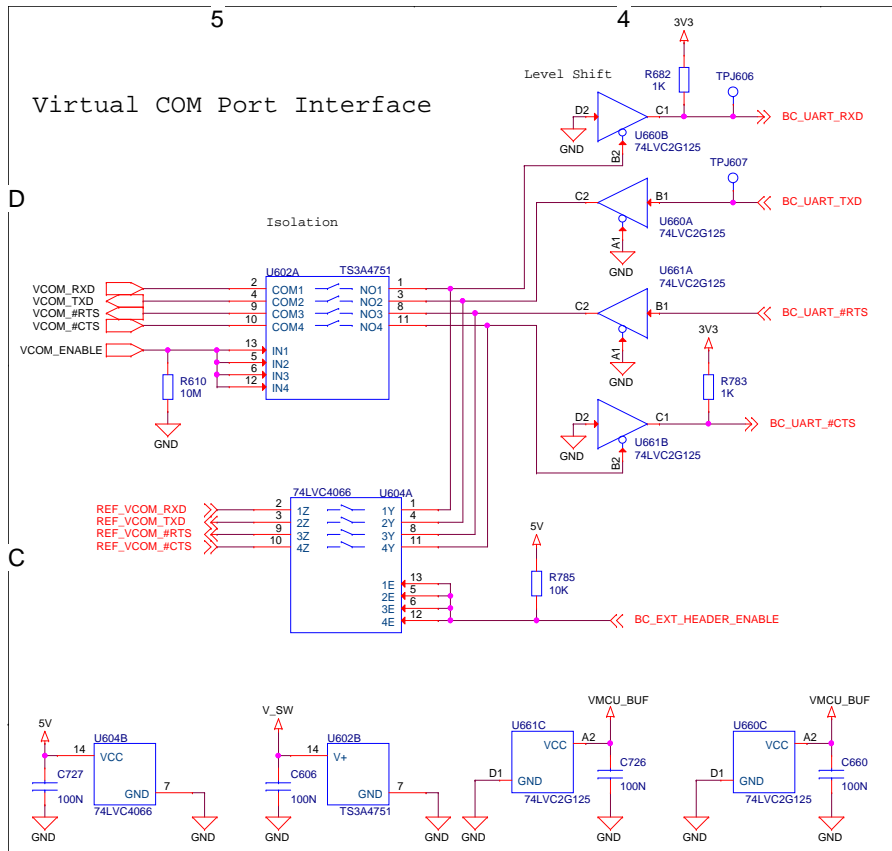
Page Title
Debug Interface

Document number
BRD5300A

Revision: A01

Sheet Created Date: Monday, May 12, 2014
Sheet Modified Date: Tuesday, May 19, 2015

Sheet 9 of 12



/HB1
MCU STK Platform

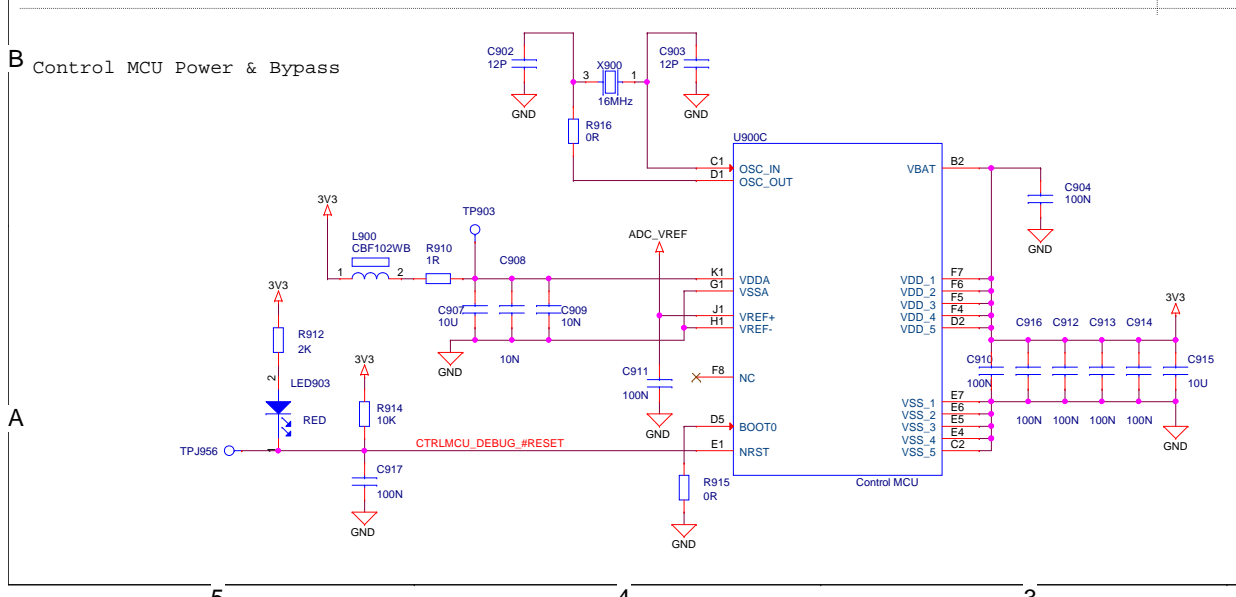
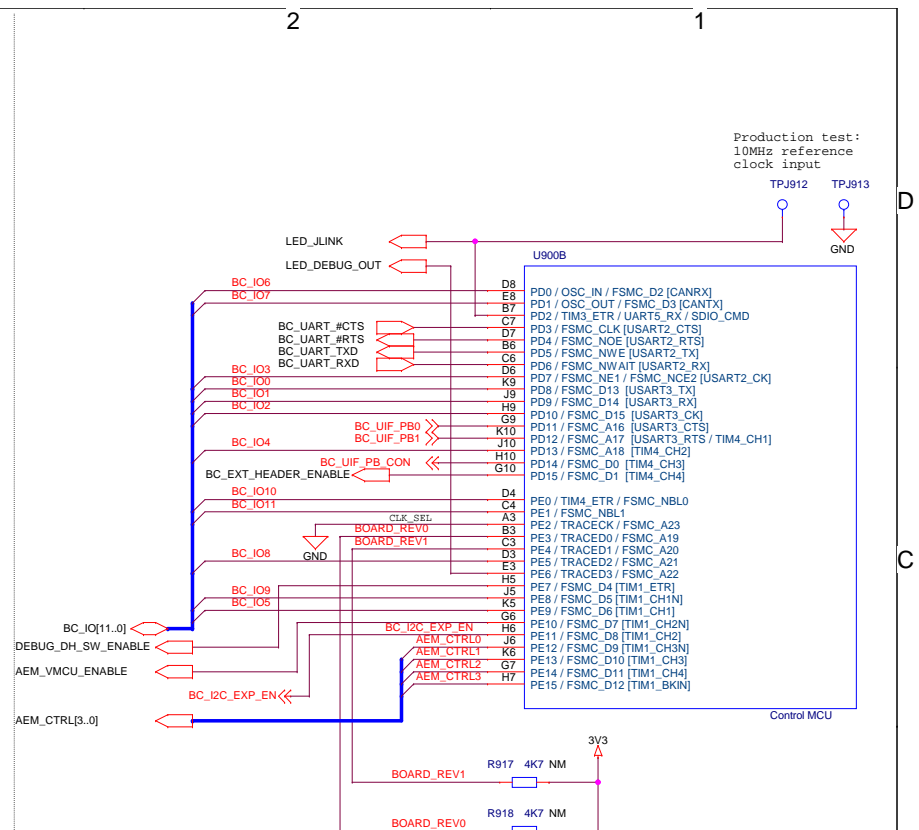
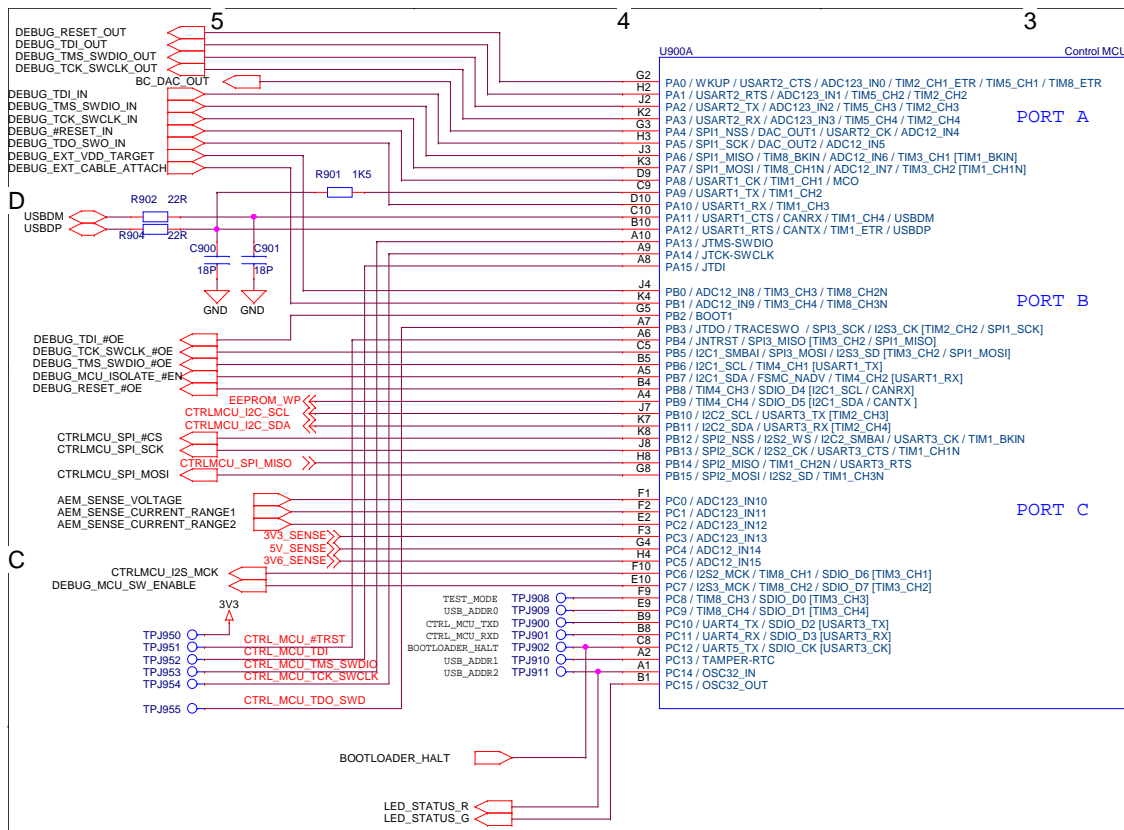
SILICON LABS

Designed: MRW
Approved: JNO

Size: A3
BOM Doc No: <Cage Code>

Design Created Date: Monday, May 12, 2014

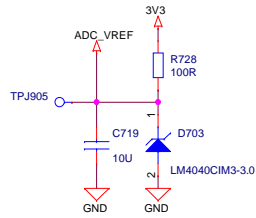
Schematic Title	
EFM8 Laser Bee Starter Kit	
Page Title	
Power & Misc	
Document number	Revision
BRD5300A	A01
Sheet Created Date	Sheet Modified Date
Monday, May 12, 2014	Friday, May 15, 2015
Sheet	of 12
10	12



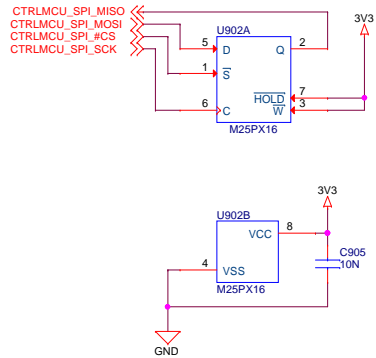
/HB1/CMCU1 Control MCU

		Schematic Title	
		EFM8 Laser Bee Starter Kit	
SILICON LABS		Page Title	
		Control MCU	
Designed: MRW	Approved: JNO	Document number	Revision
Size A3	BOM Doc No: <Cage Code>	BRD5300A	A01
Design Created Date: Monday, May 12, 2014	Sheet Created Date Wednesday, February 11, 2015	Sheet Modified Date Monday, May 18, 2015	Sheet 11 of 12

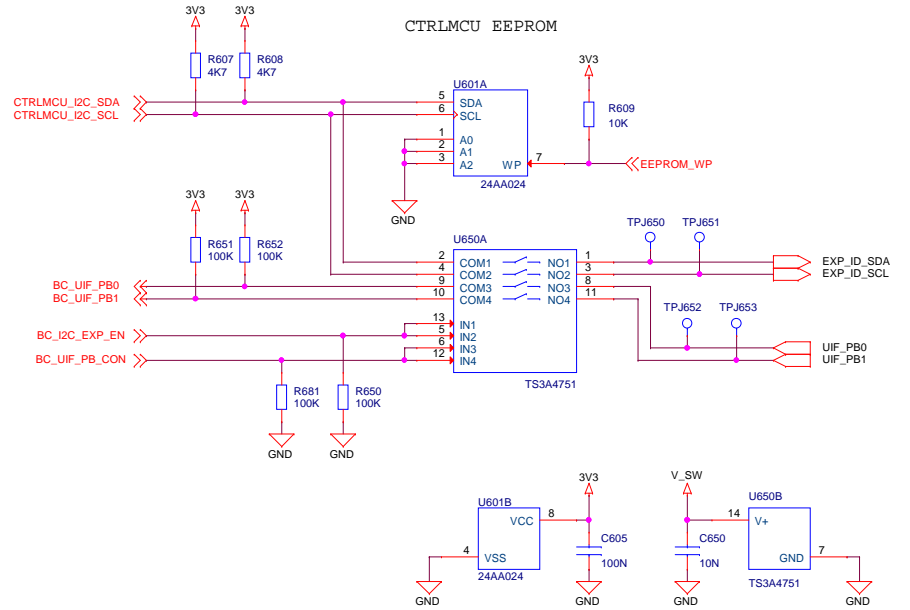
ADC reference voltage



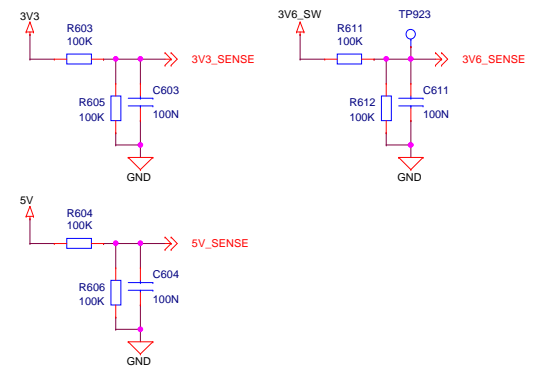
CTRLMCU SERIAL FLASH




CTRLMCU EEPROM



POWER SENSE



/HB1/CMCU1
Control MCU

		Schematic Title	
		EFM8 Laser Bee Starter Kit	
Designed: MRW		Page Title	
		Board Controller Misc	
Size A3	BOM Doc No: <Cage Code>	Document number BRD5300A	Revision A01
Design Created Date: Monday, May 12, 2014	Sheet Created Date Wednesday, February 11, 2015	Sheet Modified Date Tuesday, May 19, 2015	Sheet 12 of 12