Wireless STK Mainboard

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Revision History

Rev.	Description
A00	Initial prodcution version.
A01	Minor updates for pre-production version.

PCB1

PCB4001

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STK

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Page Title	Title Page
Designed: DDB	Approved: JNO
Size A3	BOM Doc No: <Cage Code>
Document number	BRD4001A
Revision	A01
Design Created Date:	Wednesday, December 03, 2008
Sheet Created Date	Saturday, March 21, 2009
Sheet Modified Date	Thursday, April 30, 2015
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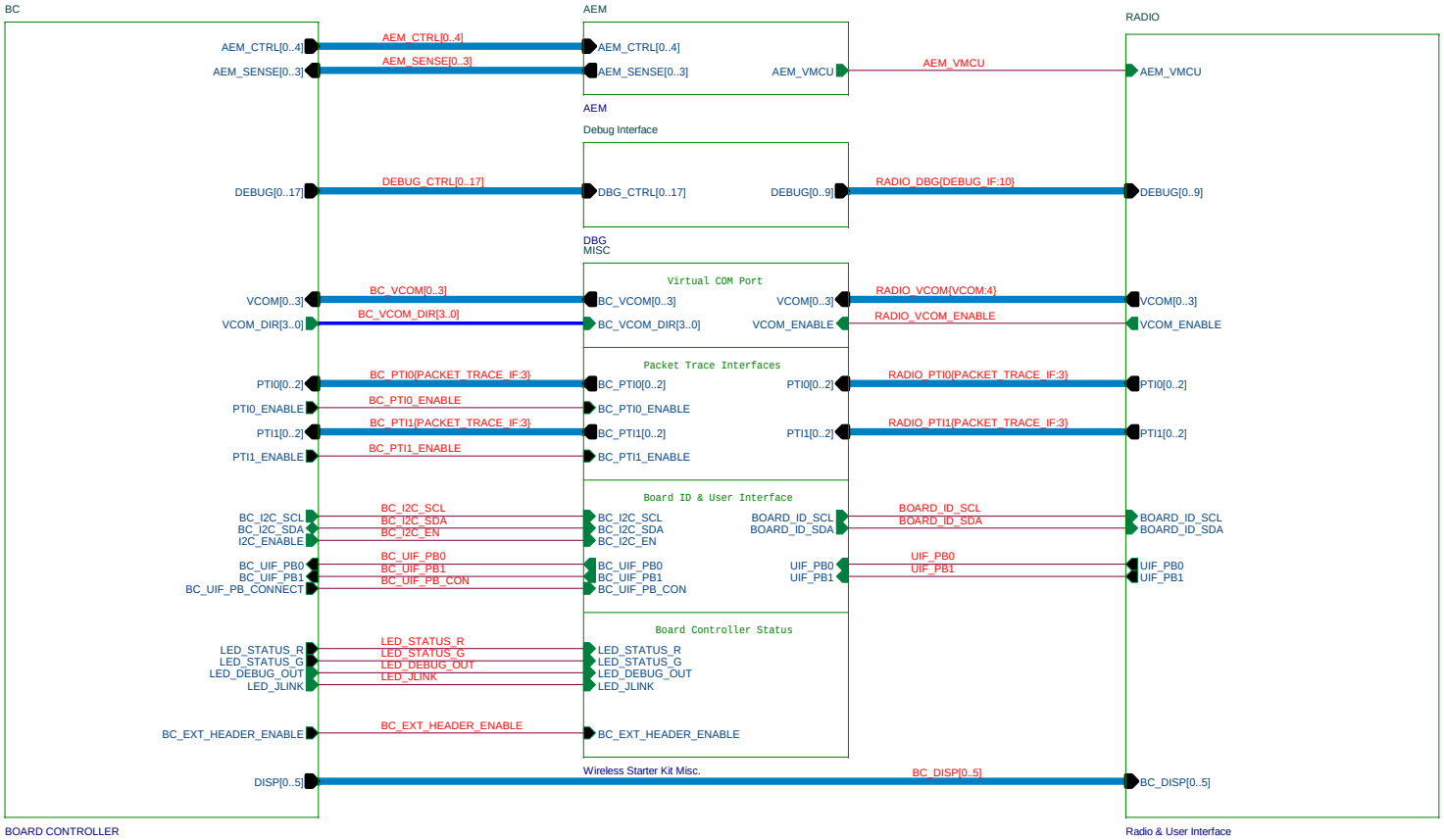

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STK

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Schematic Title	**Wireless Starter Kit Mainboard**
Page Title	**Top Level Hierarchy**
Designed: DDB	Approved: JNO
Size: A3	BOM Doc No: <Cage Code>
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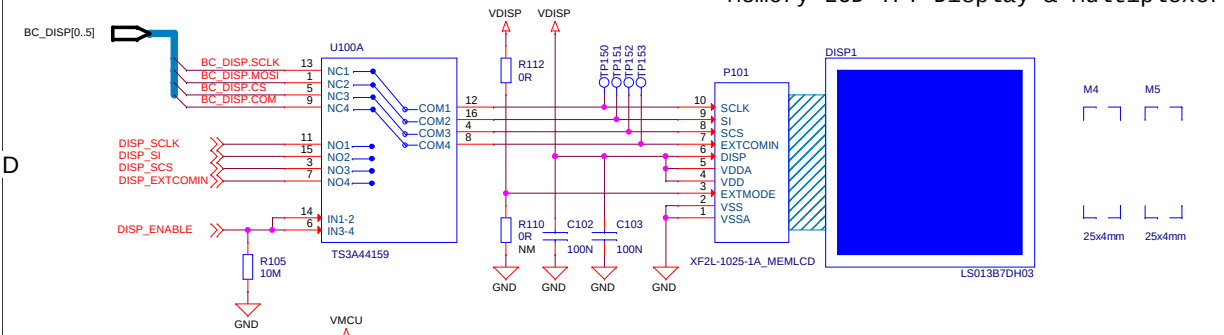
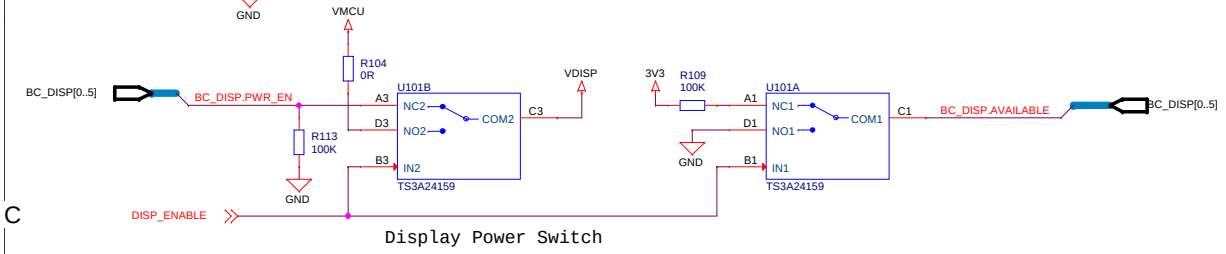
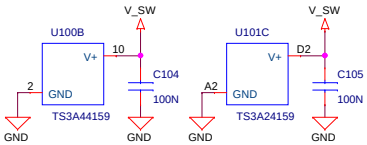
Memory LCD-TFT Display & Multiplexer



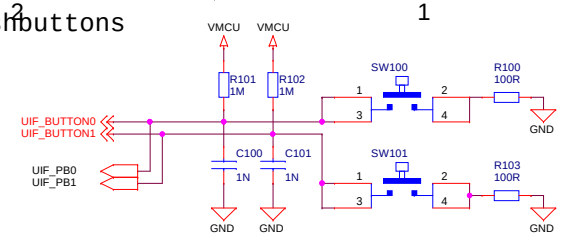


Display Power Switch

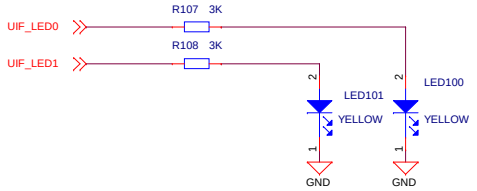
DISP_ENABLE	Connected	VDISP	BC_DISP_AVAILABLE
1	RADIO	VMCU	GND
0	BC	BC_DISP_PWR_EN	3V3



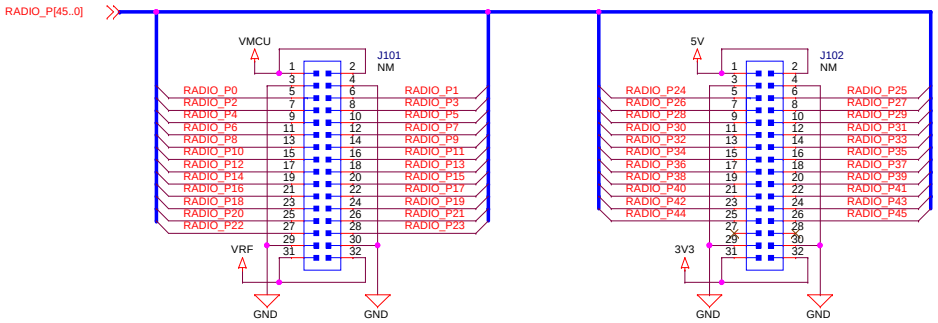
User pushbuttons



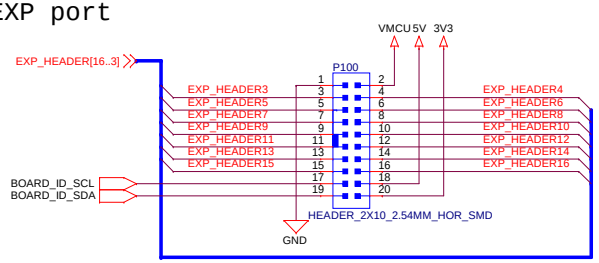
User LEDs



Breakout Connections



EXP port



EXP-Header Functionality

1	GND	
3		ACMP
5		ACMP
7		ACMP
9		ACMP
11		DAC
13		DAC
15	I2C_SCL	ADC
17	Reserved for EXP Board ID	
19	Reserved for EXP Board ID	

2	VMCU	
4	SPI_MOSI	ADC
6	SPI_MISO	ADC
8	SPI_SCLK	ADC
10	SPI_#CS	ADC
12	UART_TX	ADC
14	UART_RX	ADC
16	I2C_SDA	ADC
18	5V	
20	3V3	

Radio & User Interface

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Designed: DDB
Approved: JNO
Size: A3
BOM Doc No:
Design Created Date: Wednesday, December 03, 2008

Schematic Title: **Wireless Starter Kit Mainboard**
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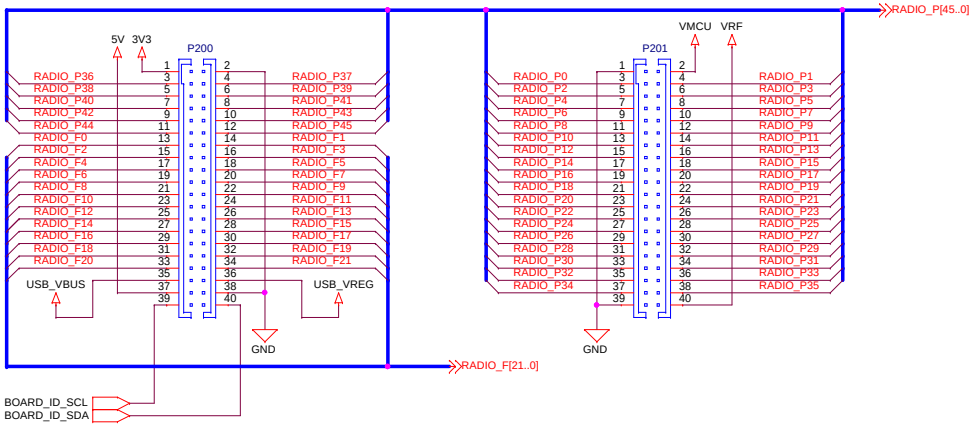
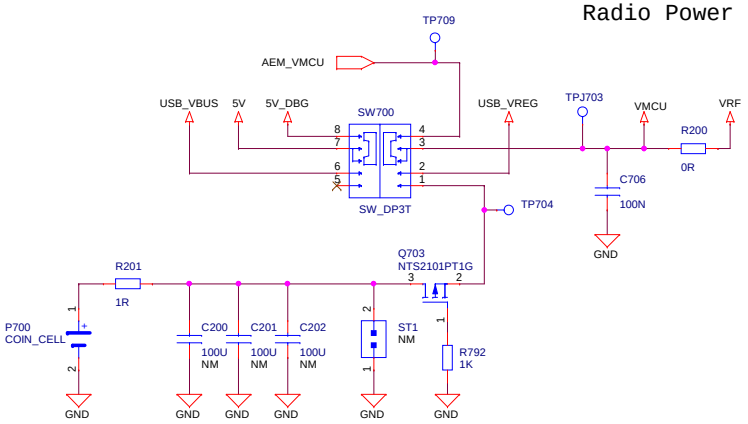
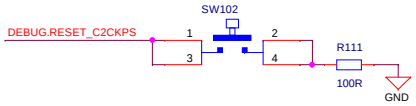
Radio Board Connectors



Radio Power Switch

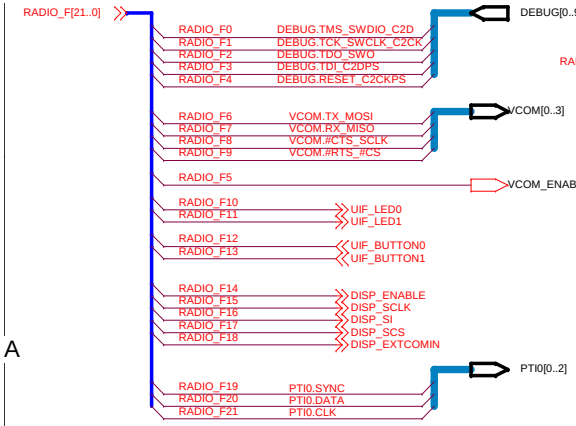


Radio Reset

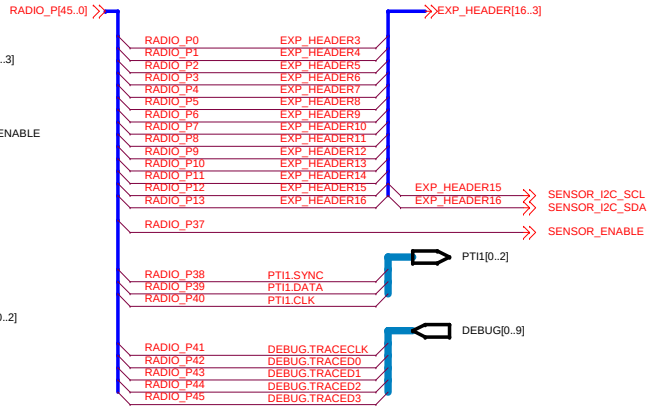


Switch Pos.	Target Supply	EXP Header 5V
1	Output from AEM	J-Link 5V_DBG
2	Target USB_VREG	Target USB_VBUS
3	Coin Cell Battery	(J-Link 5V_DBG)

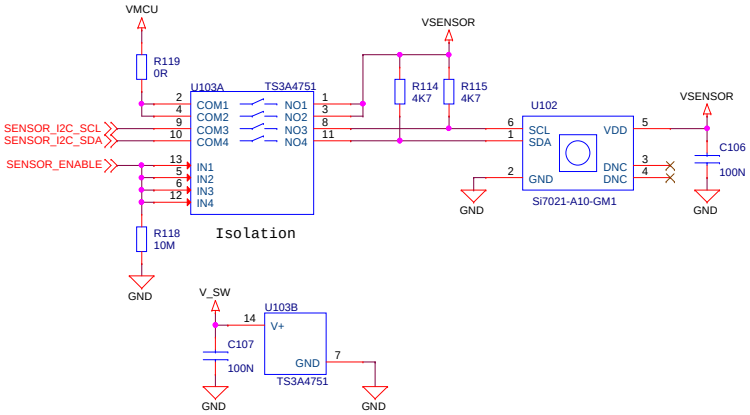
Dedicated functions on RF Board Connectors



Functions shared with breakout pins on RF Board Connectors



Relative Humidity & Temperature Sensor



Radio & User Interface

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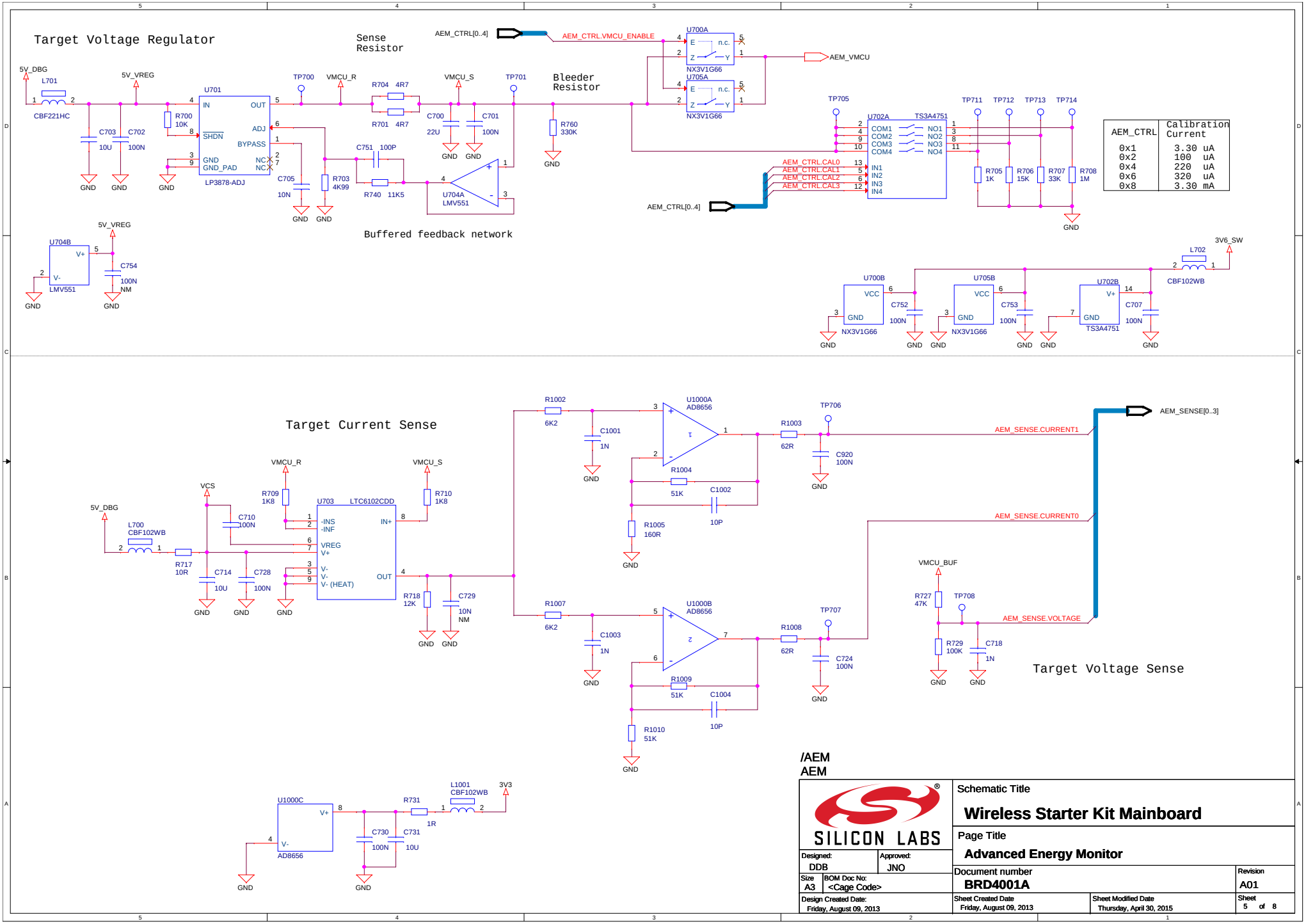
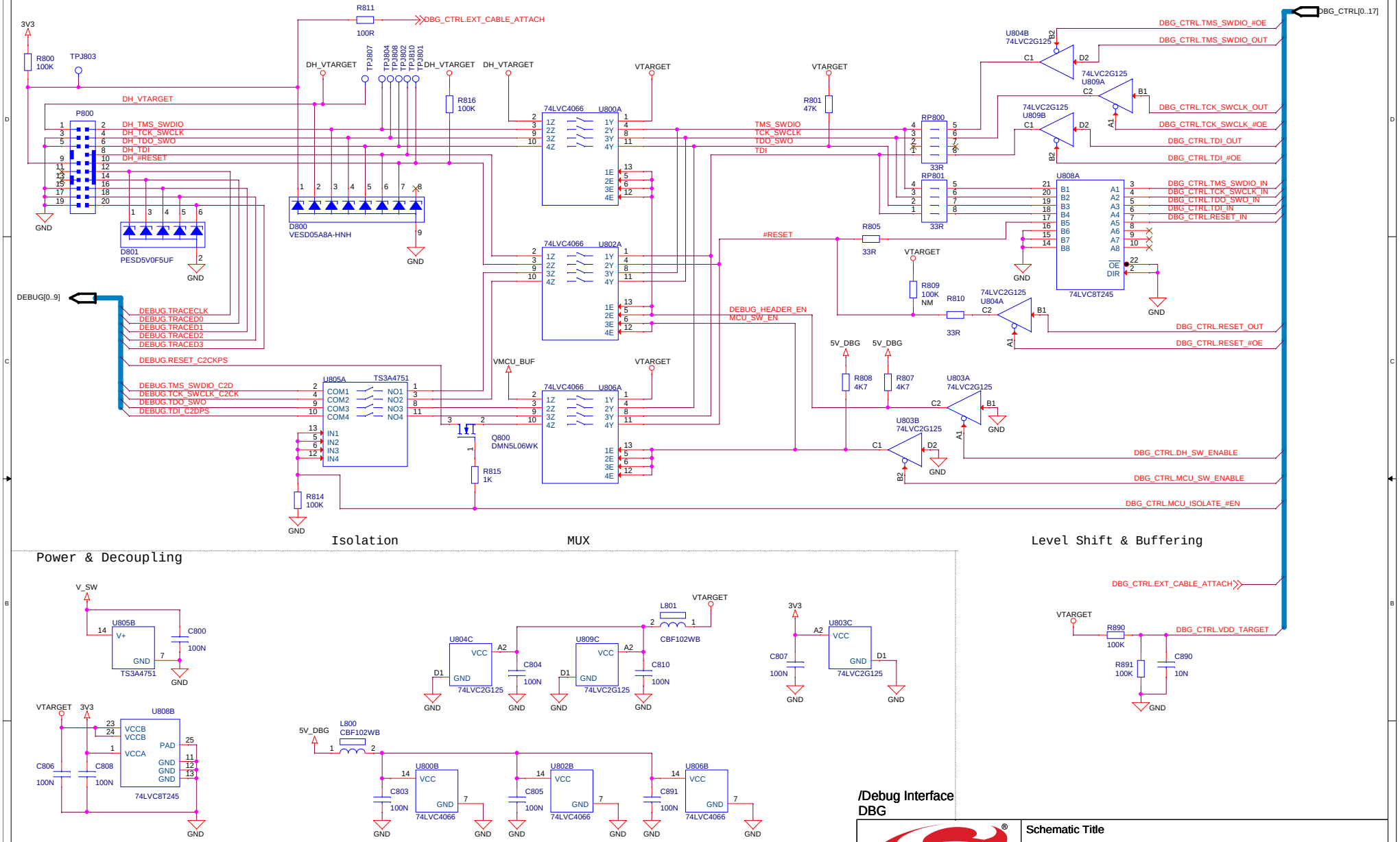


AEM_CTRL	Calibration Current
0x1	3.30 uA
0x2	100 uA
0x4	220 uA
0x6	320 uA
0x8	3.30 mA



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	0	0	1	0	-	-

/Debug Interface
DBG

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Debug Interface

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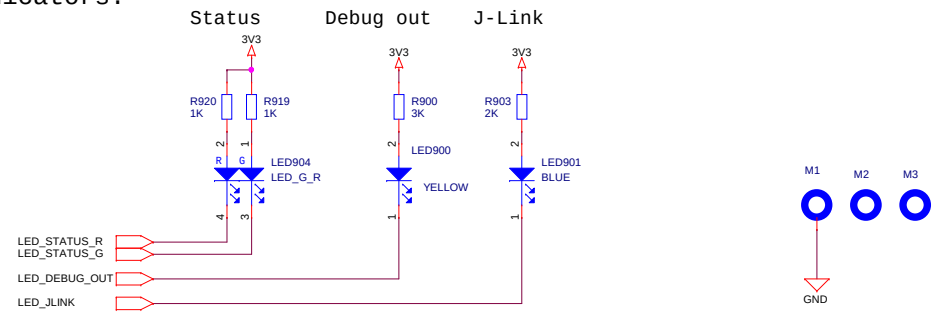
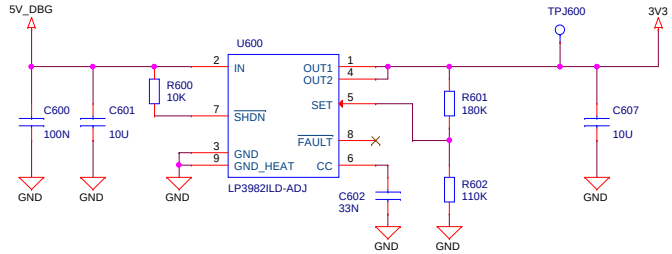
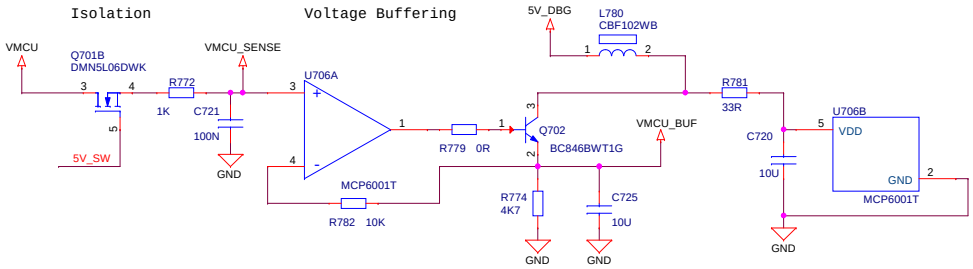
Indicators:



3V3 Regulator



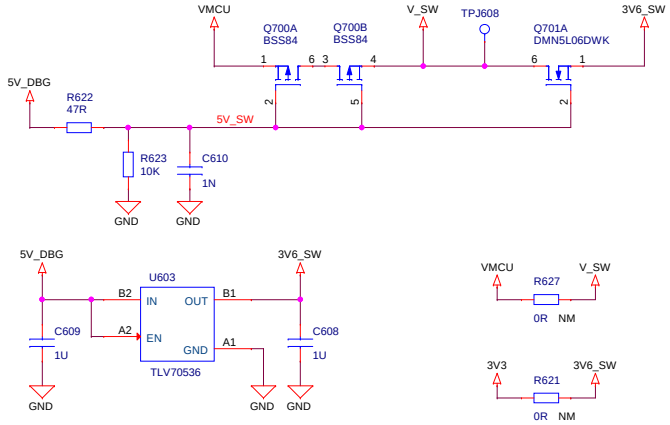
VMCU Voltage Mirror



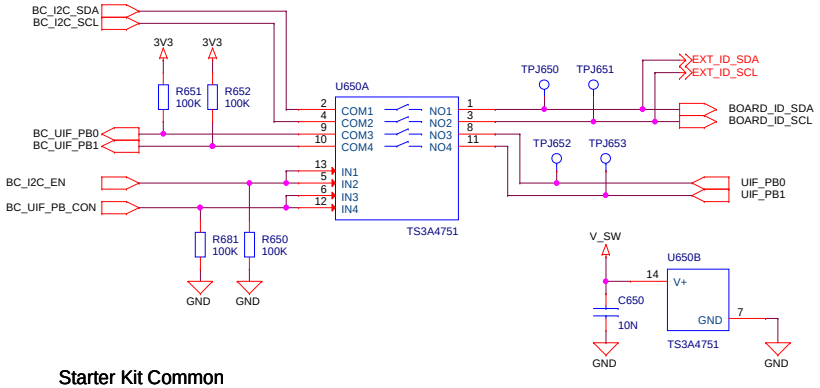
Power Supply for Analog Switches

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



I2C & Push Button <-> Board Controller Isolation



Starter Kit Common

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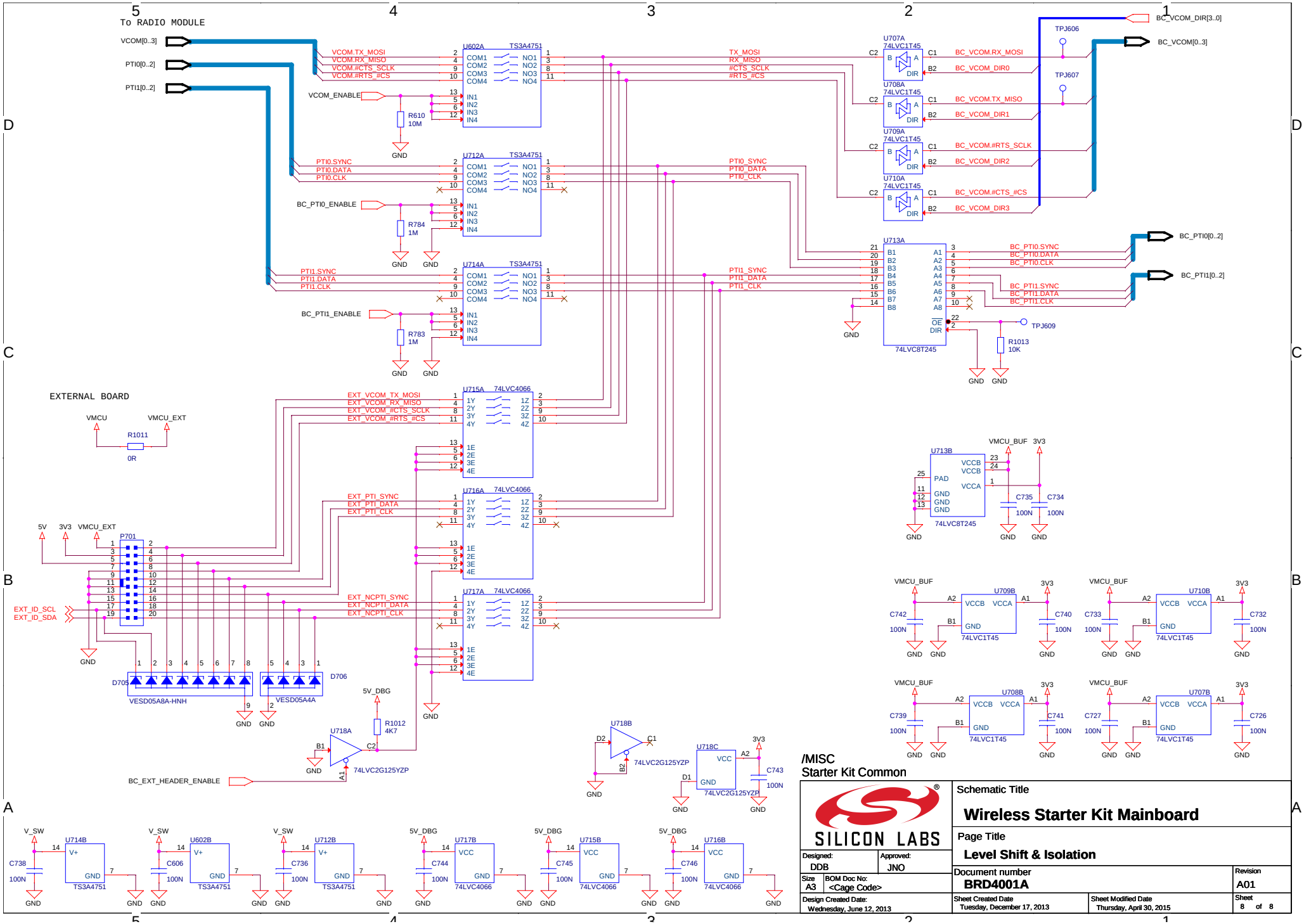
Designed: DDB	Approved: JNO
Size: A3	BOM Doc No: <Cage Code>
Design Created Date: Wednesday, June 12, 2013	

Schematic Title: **Wireless Starter Kit Mainboard**

Page Title: **Voltage Regulators**

Document number: BRD4001A		Revision: A01
Sheet Created Date: Tuesday, June 18, 2013	Sheet Modified Date: Thursday, April 30, 2015	Sheet: 7 of 8


To RADIO MODULE
VCOM[0..3]
PTI0[0..2]
PTI1[0..2]
VCOM.TX_MOSI
VCOM.RX_MISO
VCOM.#CTS_SCLK
VCOM.#RTS_#CS
VCOM_ENABLE
R610
10M
PTI0.SYNC
PTI0.DATA
PTI0.CLK
BC_PTI0_ENABLE
R784
1M
PTI1.SYNC
PTI1.DATA
PTI1.CLK
BC_PTI1_ENABLE
R783
1M
TS3A4751
TX_MOSI
RX_MISO
#CTS_SCLK
#RTS_#CS
PTI0_SYNC
PTI0_DATA
PTI0_CLK
PTI1_SYNC
PTI1_DATA
PTI1_CLK
74LVC1T45
BC_VCOM_DIR[3..0]
BC_VCOM[0..3]
TPJ606
TPJ607
BC_VCOM.RX_MOSI
BC_VCOM_DIR0
BC_VCOM.TX_MISO
BC_VCOM_DIR1
BC_VCOM.#RTS_SCLK
BC_VCOM_DIR2
BC_VCOM.#CTS_#CS
BC_VCOM_DIR3
74LVC8T245
BC_PTI0[0..2]
BC_PTI1[0..2]
BC_PTI0.SYNC
BC_PTI0.DATA
BC_PTI0.CLK
BC_PTI1.SYNC
BC_PTI1.DATA
BC_PTI1.CLK
TPJ609
R1013
10K
EXTERNAL BOARD
VMCU
VMCU_EXT
R1011
0R
74LVC4066
EXT_VCOM_TX_MOSI
EXT_VCOM_RX_MISO
EXT_VCOM_#CTS_SCLK
EXT_VCOM_#RTS_#CS
EXT_PTI_SYNC
EXT_PTI_DATA
EXT_PTI_CLK
EXT_NCPTI_SYNC
EXT_NCPTI_DATA
EXT_NCPTI_CLK
5V
3V3
P701
EXT_ID_SCL
EXT_ID_SDA
D705
D706
VESD05A8A-HNH
VESD05A4A
5V_DBG
R1012
4K7
74LVC2G125YZP
BC_EXT_HEADER_ENABLE
VMCU_BUF
74LVC1T45
100N
/MISC
Starter Kit Common
SILICON LABS
Schematic Title
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Page Title
Level Shift & Isolation
Designed: DDB
Approved: JNO
Size A3
BOM Doc No: <Cage Code>
Design Created Date: Wednesday, June 12, 2013
Document number BRD4001A
Revision A01
Sheet Created Date Tuesday, December 17, 2013
Sheet Modified Date Thursday, April 30, 2015
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