Wireless Pro Kit Mainboard

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Revision History

Rev.	Description
A05	Initial release.
A06	Changes to SW102, R746 & R784.
A07	Replaced DMN5L06VK-7 with NX3008NBKV.

PCB1

PCB4002A

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Board Name: **Wireless Pro Kit Mainboard**

Page Title: **Title Page**

Board Number: **BRD4002A**

Revision: **A07**

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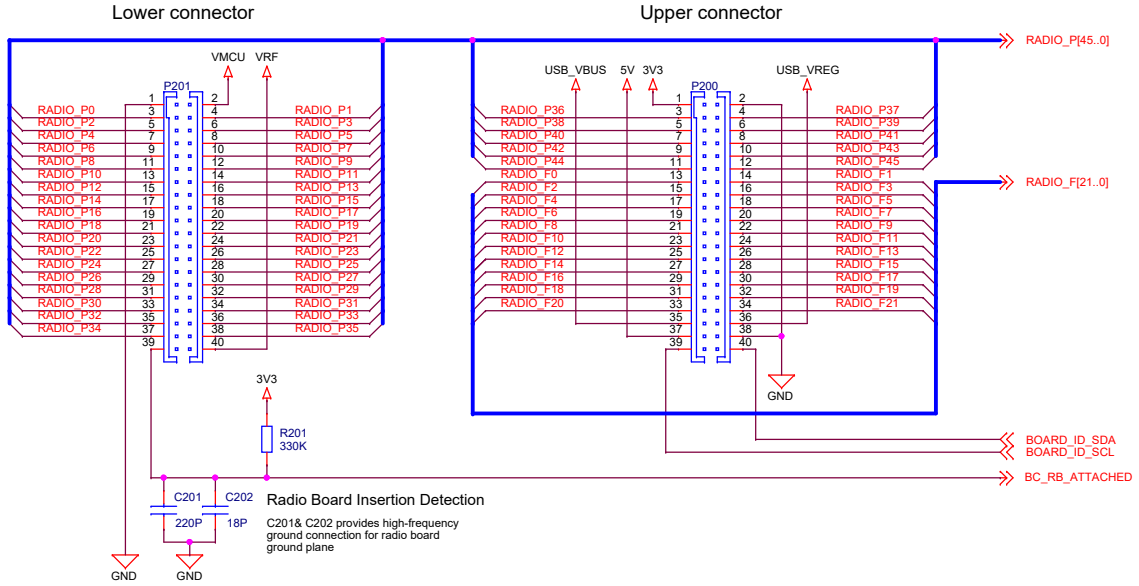
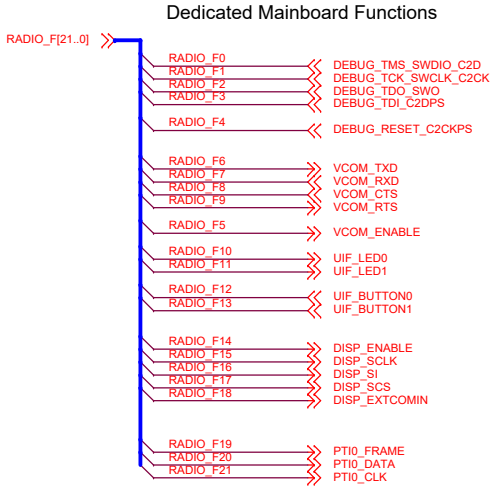
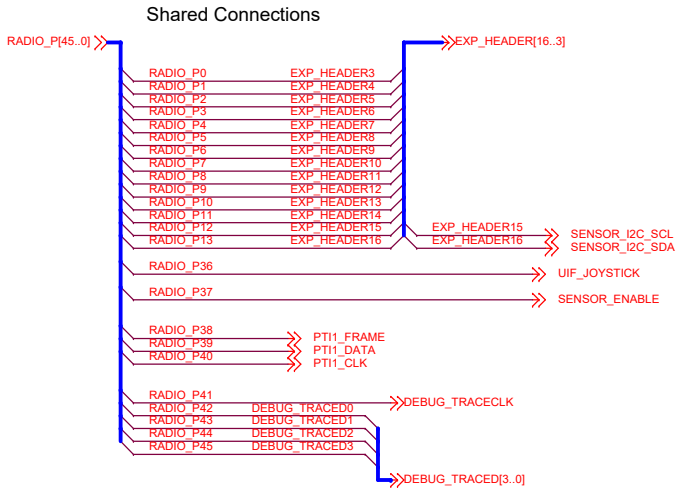
Radio Board Socket

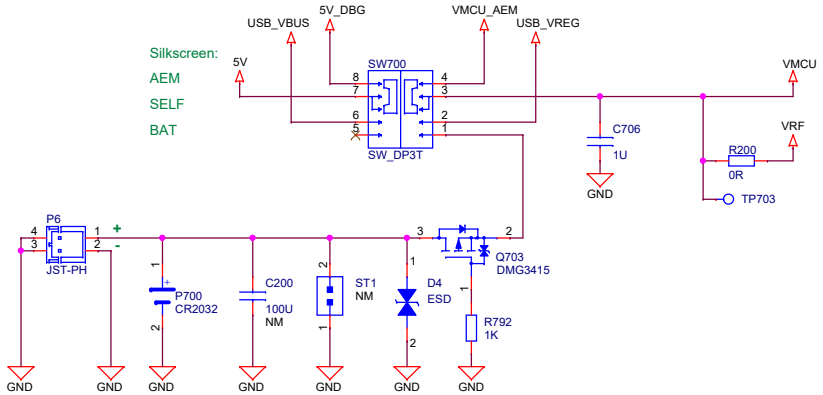


Radio Board Signal Assignments



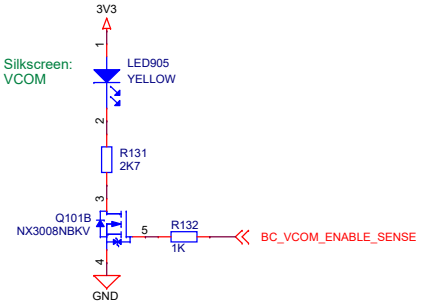


Radio Board Power Selection Switch



Switch Pos.	VMCU Source	5V Source
AEM	AEM output	5V_DBG from debug USB
SELF	USB_VREG pin on radio board	USB_VBUS pin on radio board
BAT	Coin cell battery, P6 or ST1	Not connected

VCOM Enable Indicator LED



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Board Name: **Wireless Pro Kit Mainboard**

Page Title: **Radio Board Interface**

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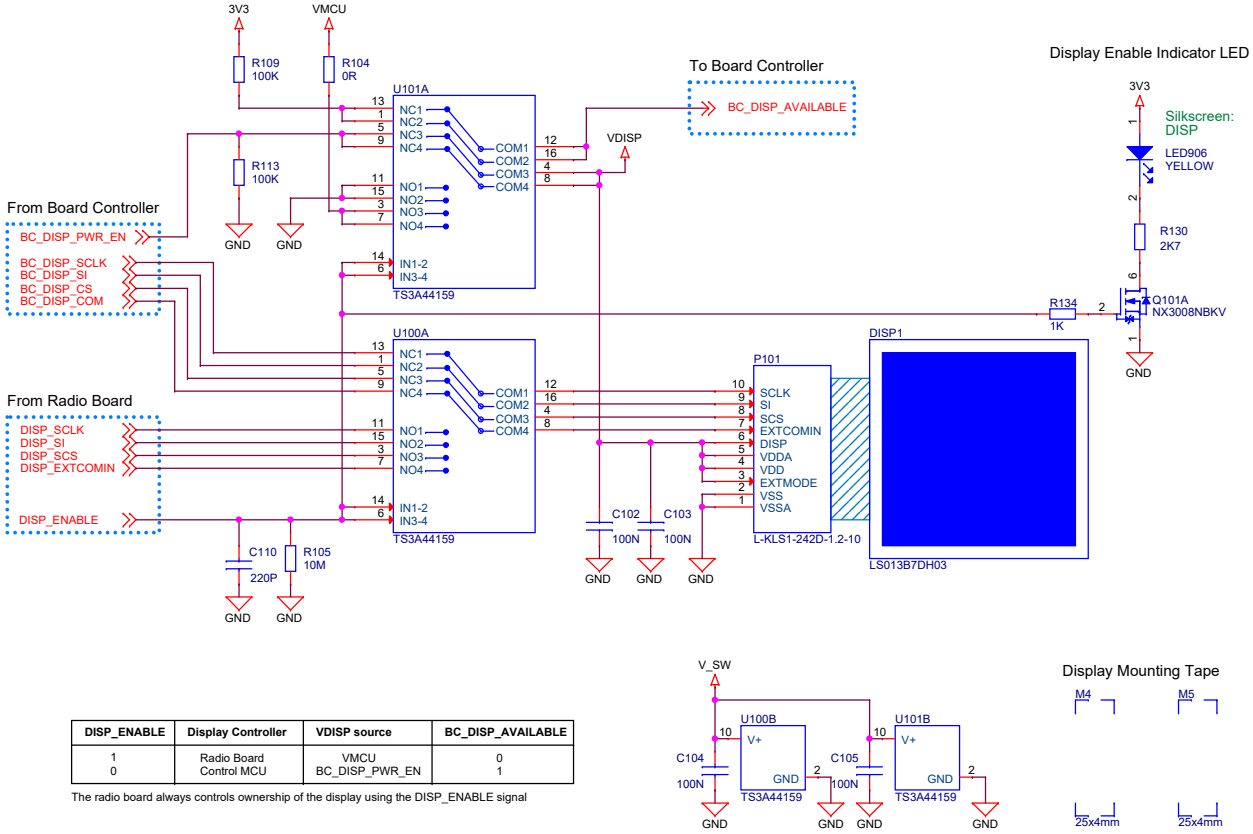
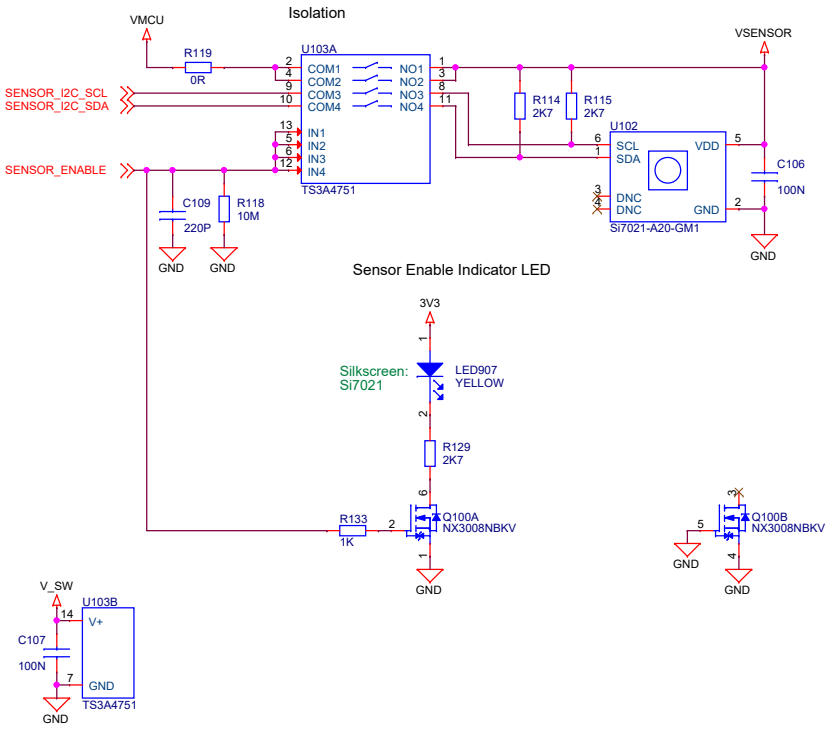
Memory LCD-TFT Display & Multiplexer



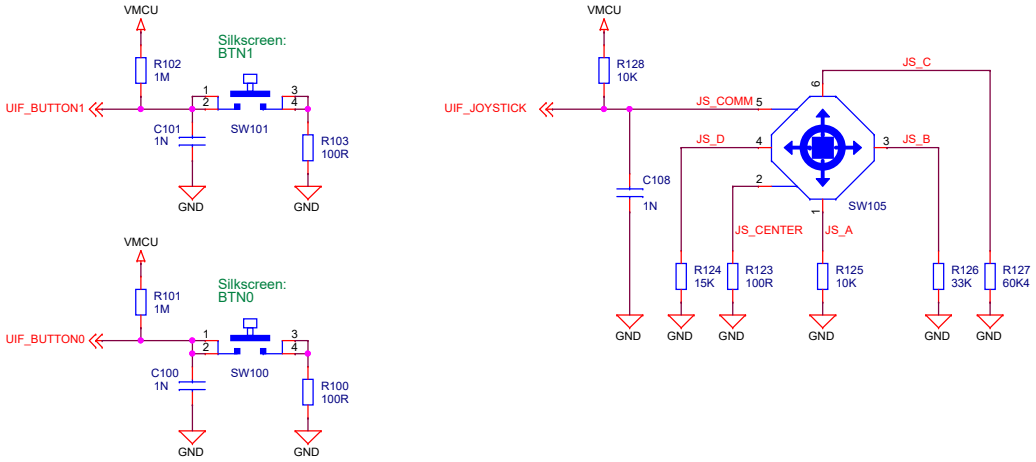
DISP_ENABLE	Display Controller	VDISP source	BC_DISP_AVAILABLE
1	Radio Board	VMCU	0
0	Control MCU	BC_DISP_PWR_EN	1

The radio board always controls ownership of the display using the DISP_ENABLE signal

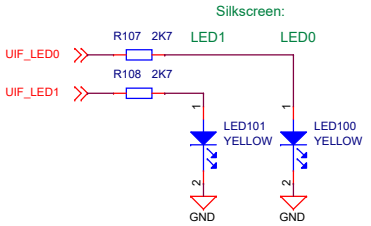
Relative Humidity & Temperature Sensor



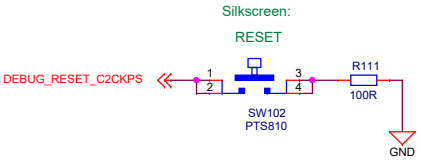
User Buttons & Joystick



User LEDs



Reset Pushbutton



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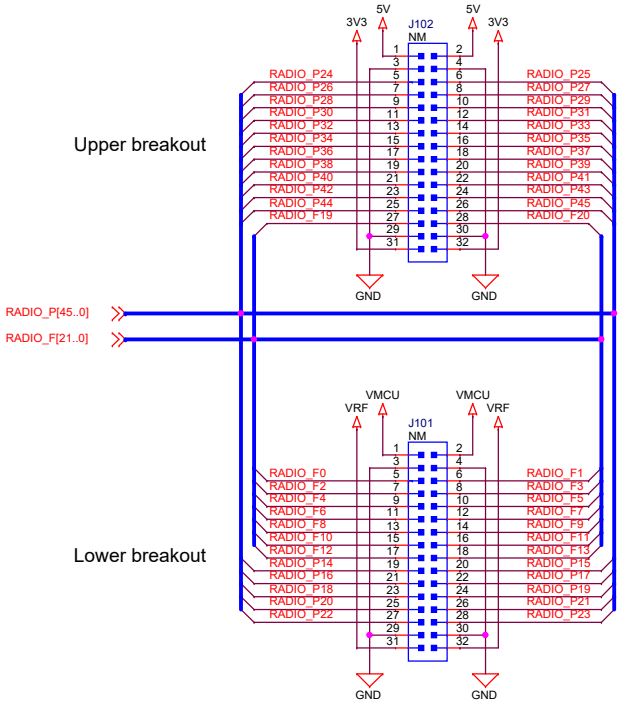
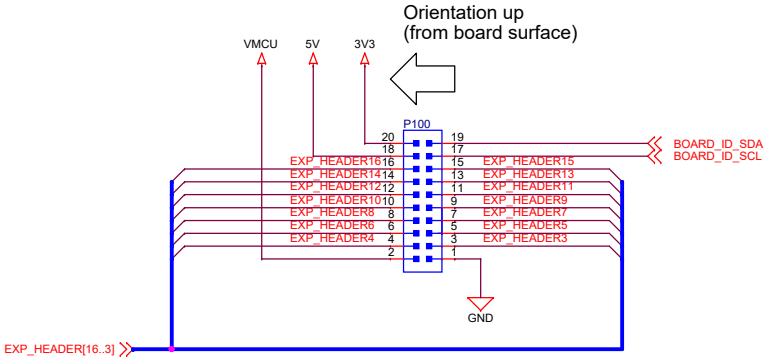
Radio Board Breakout Connections



EXP Header



EXP header functionality

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

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

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EXP Header & Breakout Signals

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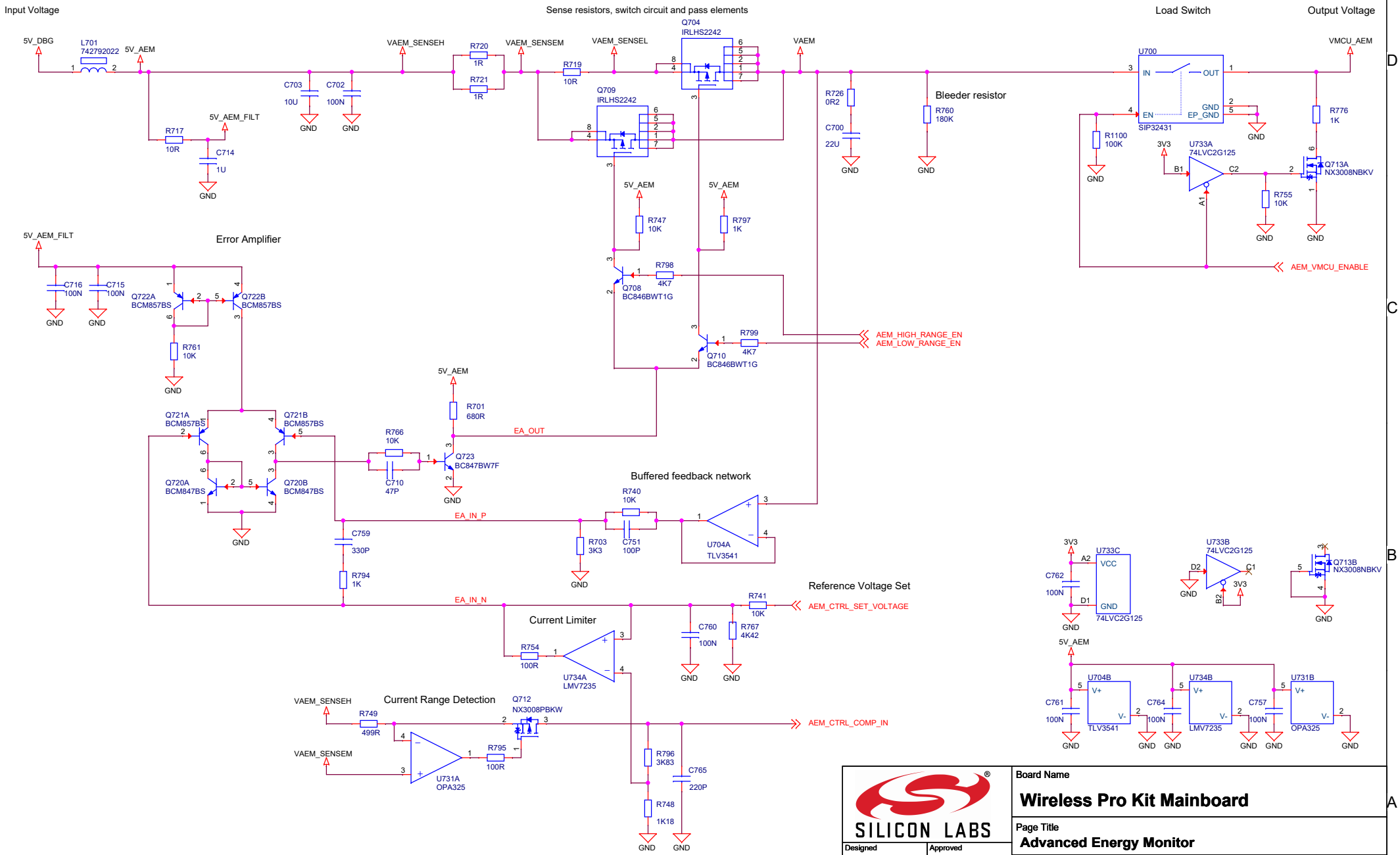
Advanced Energy Monitor



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Board Name: **Wireless Pro Kit Mainboard**

Page Title: **Advanced Energy Monitor**

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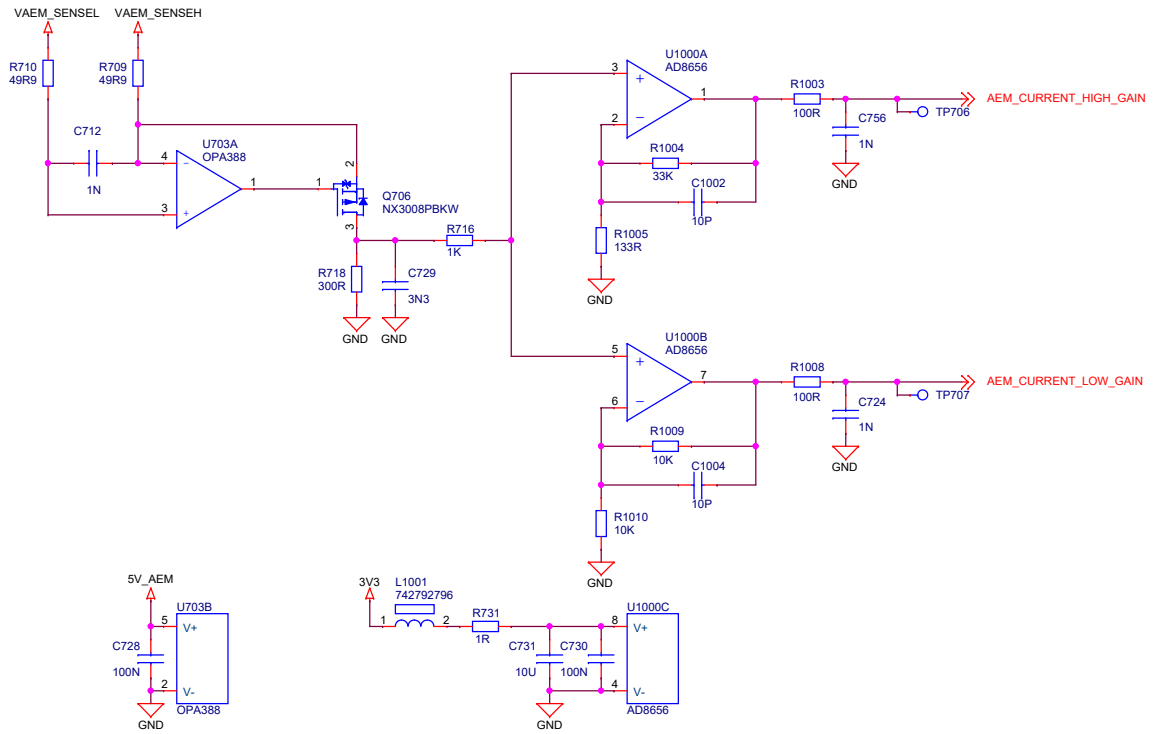
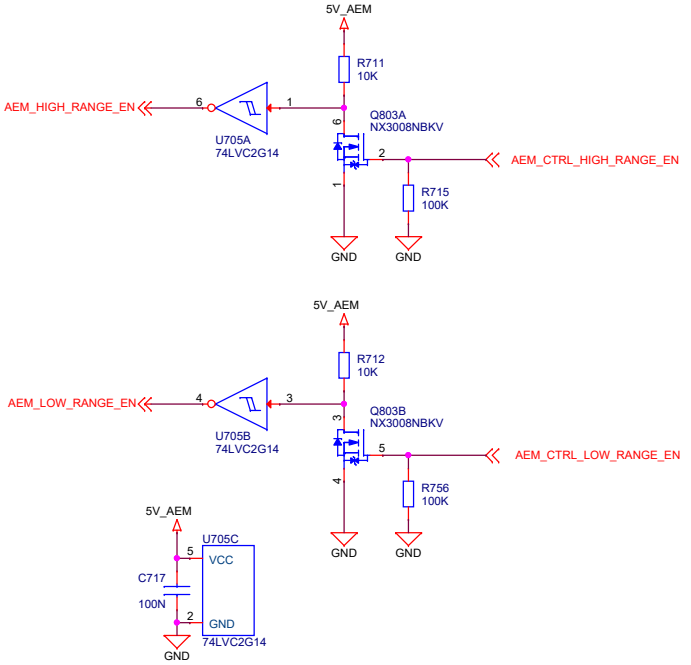
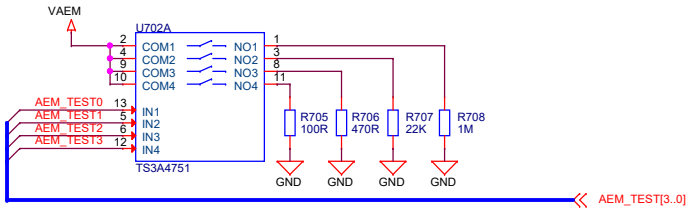
AEM Current Sense

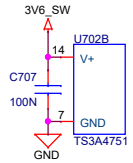


AEM Range Control



AEM Test Circuit



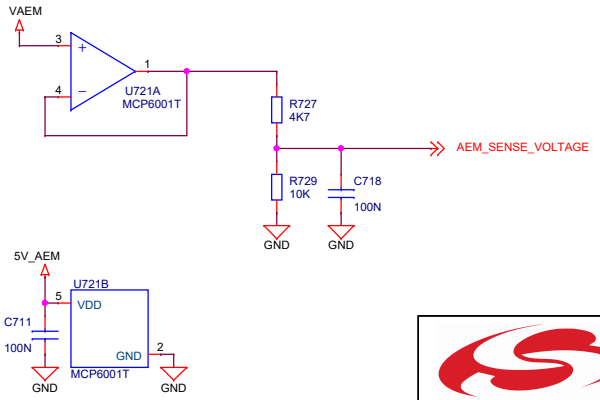


AEM_TEST	Test Current
0x1	21.6 uA
0x2	168 uA
0x4	7.04 mA
0x8	33.0 mA
0xC	40.0 mA

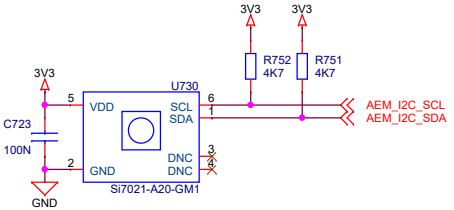
Valid for VMCU = 3.30 V

Current from bleeder resistor R760 is included.

AEM Voltage Sense



AEM Temperature Sensor



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AEM Range Selection

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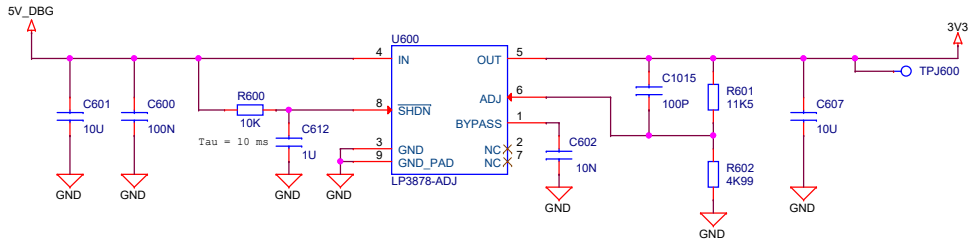
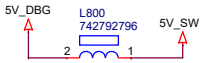
3V3 Regulator

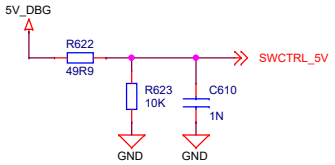


5V Misc.

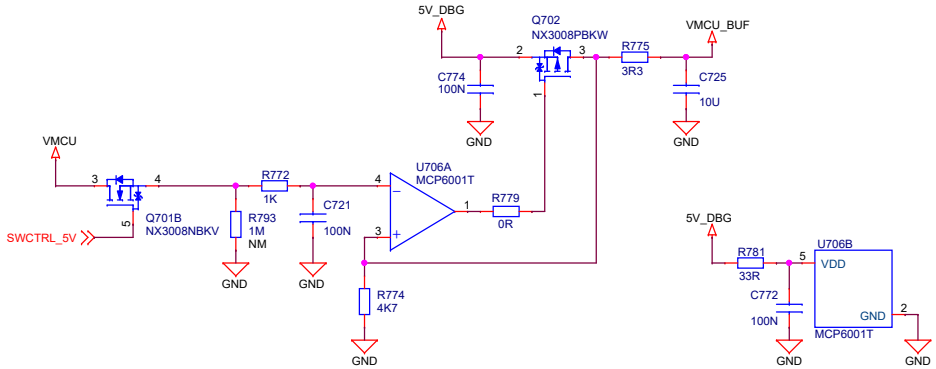
Supply for Isolation Switches



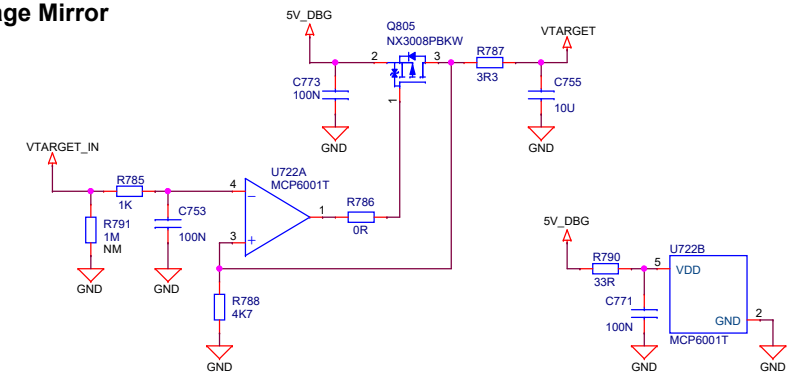
Control Signal for Isolation Switches



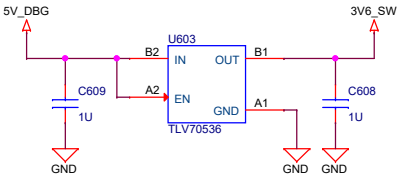
VMCU Voltage Mirror

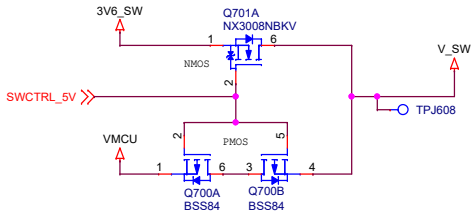


VTarget Voltage Mirror



Power Supply for Isolation Switches

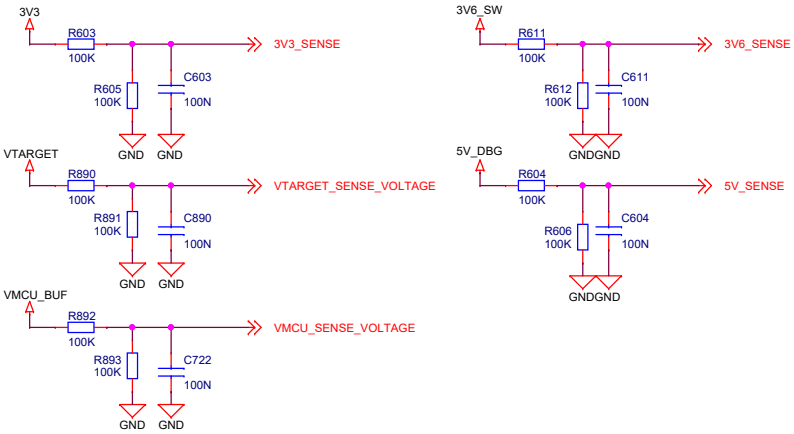




J-Link USB Cable	Q700 State	Q701A State	V_SW	VMCU_SENSE
Connected Disconnected	OFF ON	ON OFF	3.6V VMCU	VMCU Isolated

Isolation switches are powered by 3V6_SW when the USB cable is connected, otherwise by VMCU.

Voltage Sensing



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Page Title: **Voltage Regulators**

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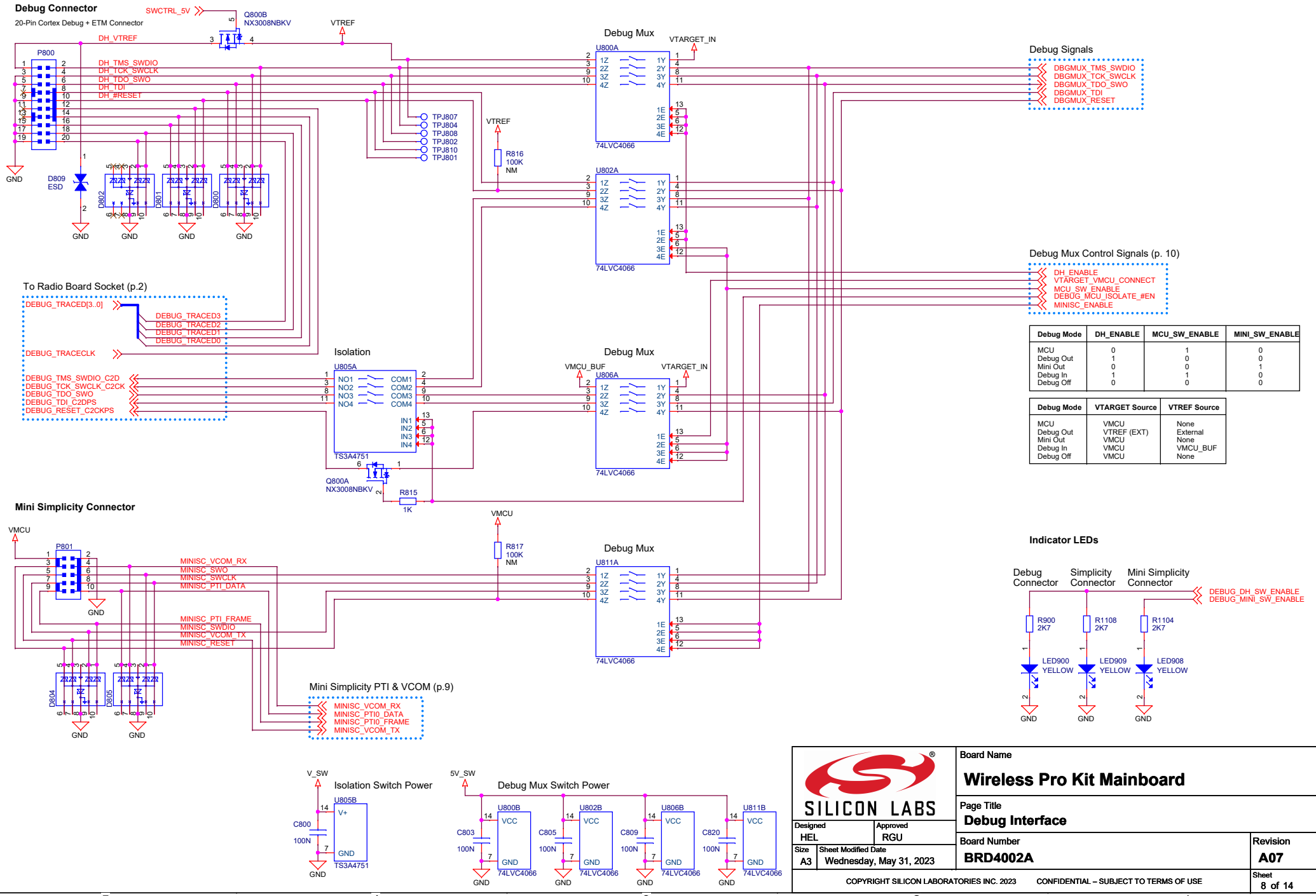
Debug Interface



Debug Mode	DH_ENABLE	MCU_SW_ENABLE	MINI_SW_ENABLE
MCU	0	1	0
Debug Out	1	0	0
Mini Out	0	0	1
Debug In	1	1	0
Debug Off	0	0	0

Debug Mode	VTARGET Source	VTREF Source
MCU	VMCU	None
Debug Out	VTREF (EXT)	External
Mini Out	VMCU	None
Debug In	VMCU	VMCU_BUF
Debug Off	VMCU	None

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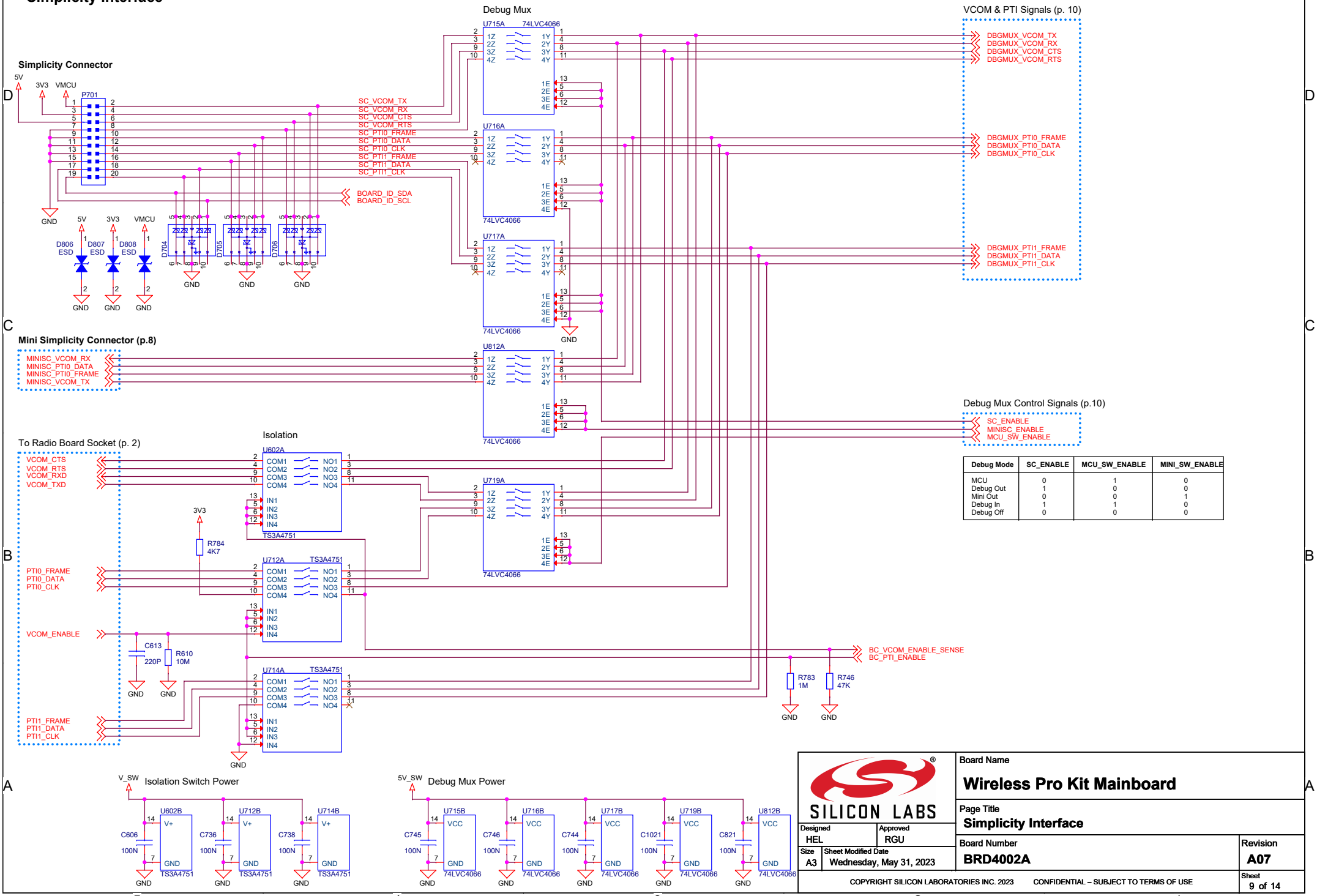
Simplicity Interface



Debug Mode	SC_ENABLE	MCU_SW_ENABLE	MINI_SW_ENABLE
MCU	0	1	0
Debug Out	1	0	0
Mini Out	0	0	1
Debug In	1	1	0
Debug Off	0	0	0

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Simplicity Interface

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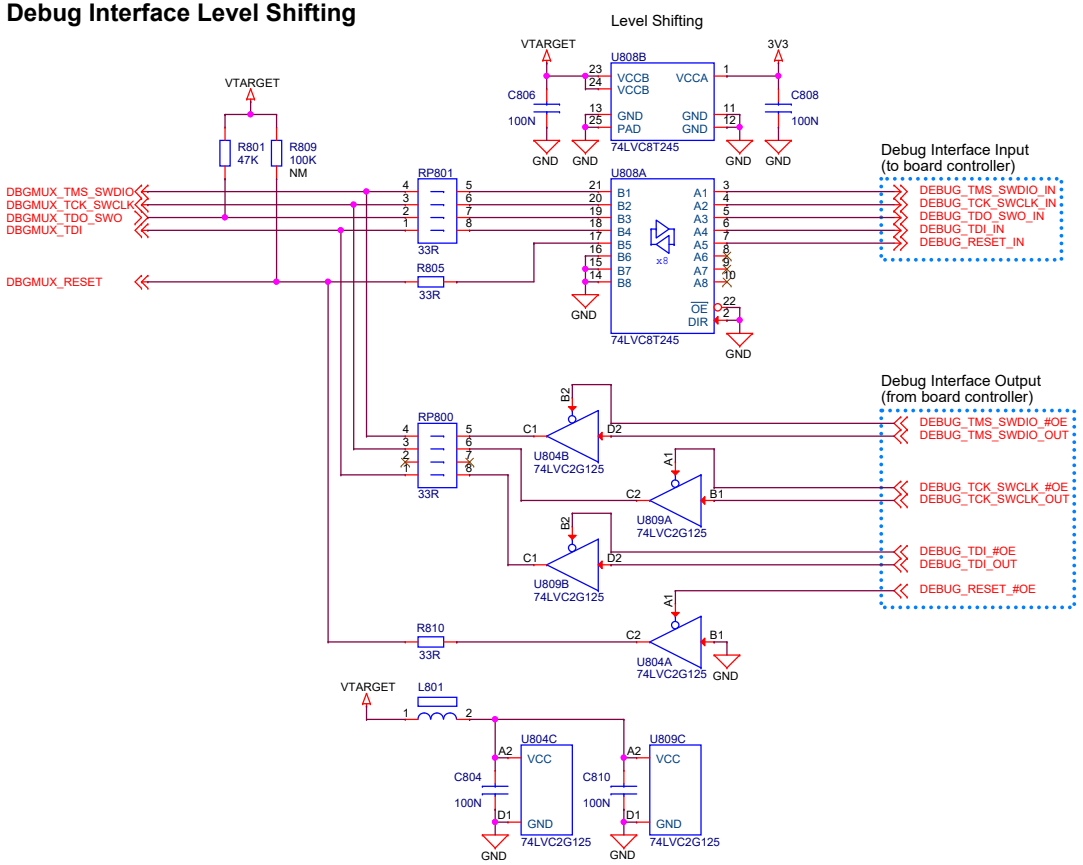
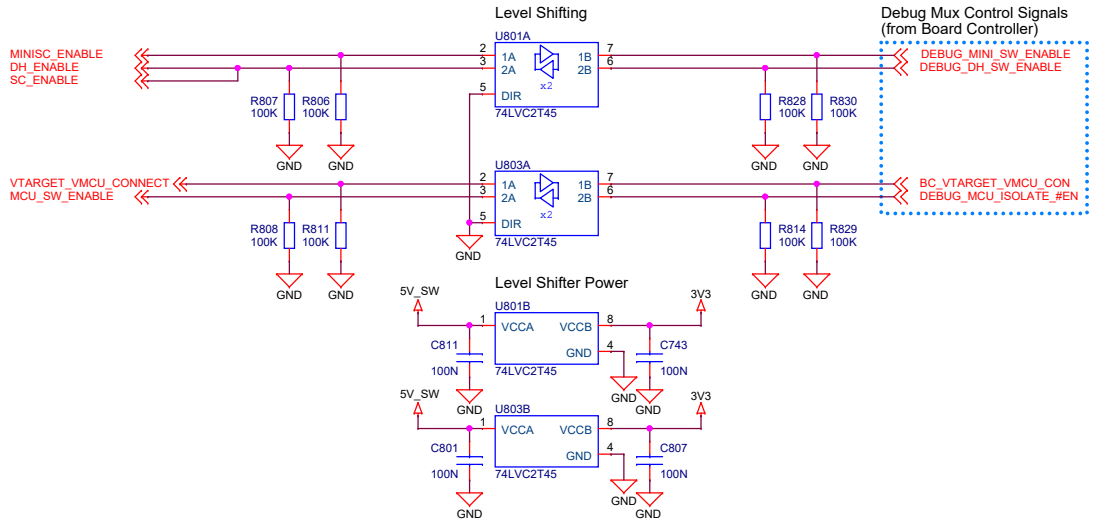
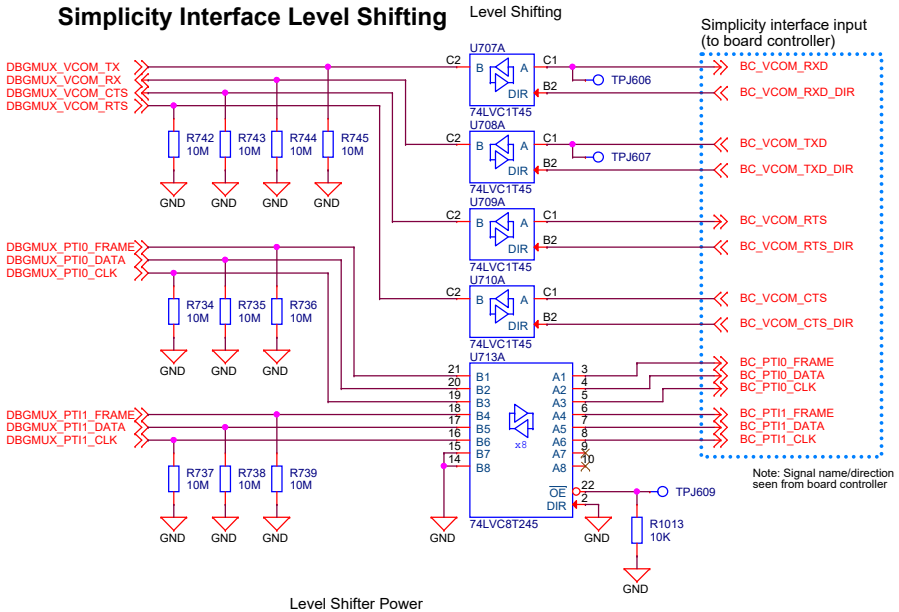
Debug Interface Level Shifting

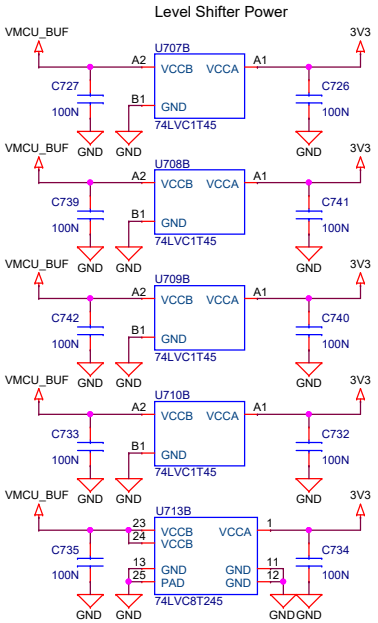


Debug Mux Control Signal Level Shifting



Simplicity Interface Level Shifting





Debug Mode	BC_VCOM_TX_DIR	BC_VCOM_RX_DIR
MCU	1	0
Debug Out	1	0
Mini Out	1	0
Debug In	0	0
Debug Off	0	0

Debug Mode	BC_VCOM_RTS_DIR	BC_VCOM_CTS_DIR
MCU	1	0
Debug Out	1	0
Mini Out	0	0
Debug In	0	0
Debug Off	0	0

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Board Name: **Wireless Pro Kit Mainboard**

Page Title: **Debug Mux Level Shifting**

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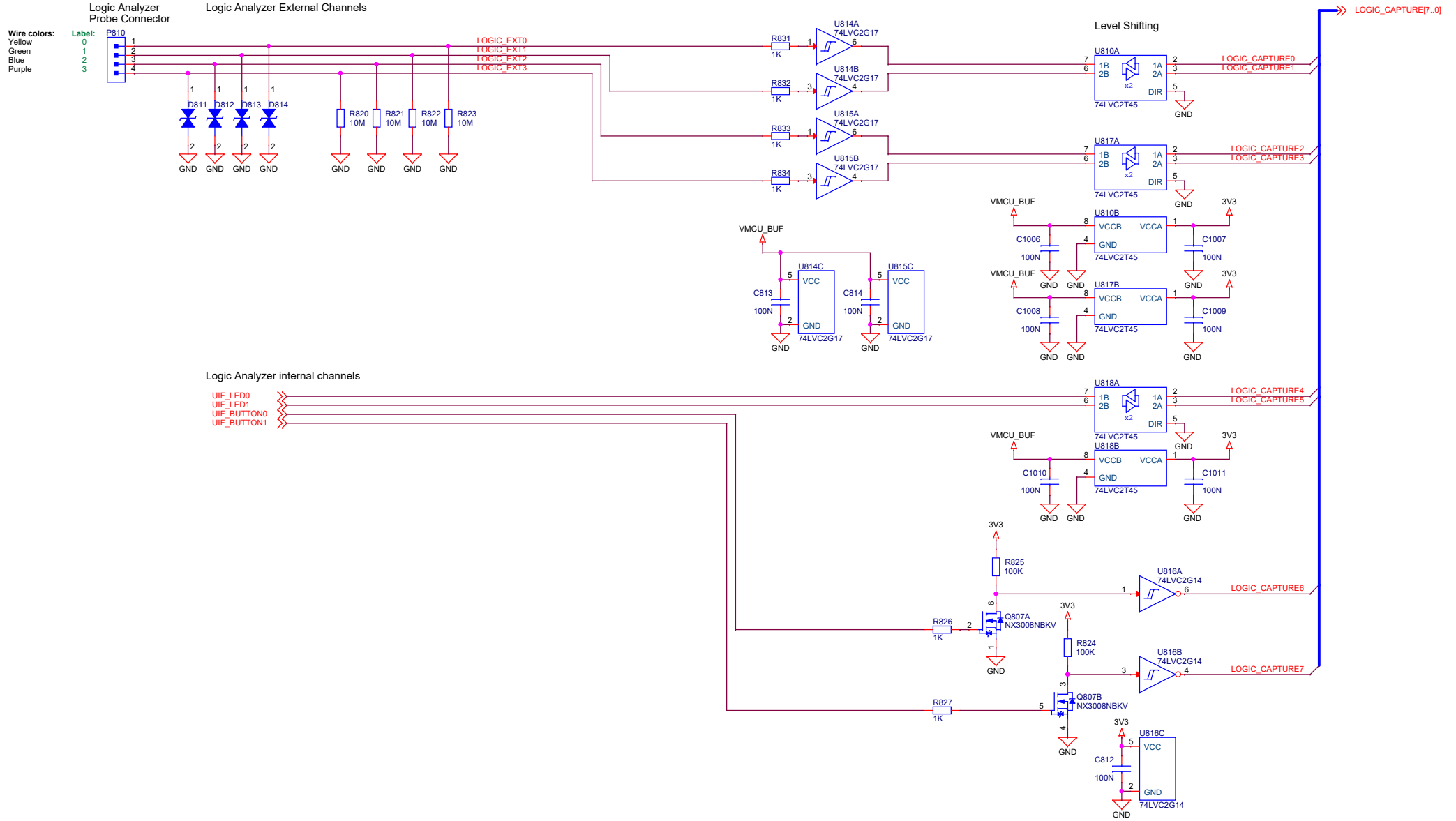
Logic Analyzer Front End



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Board Name: **Wireless Pro Kit Mainboard**

Page Title: **Logic Analyzer Front End**

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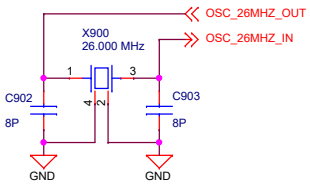
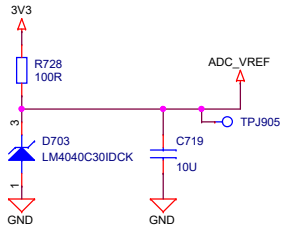
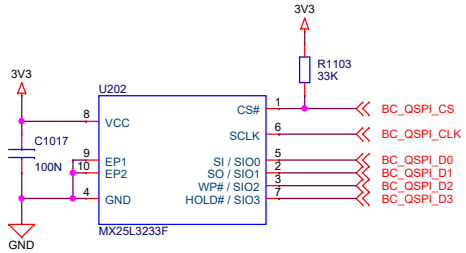
Board Controller Crystal



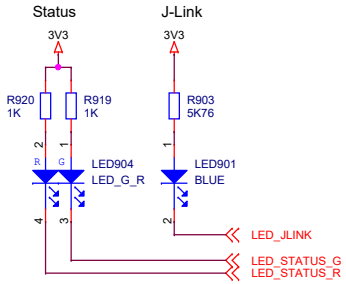
Board Controller ADC Reference



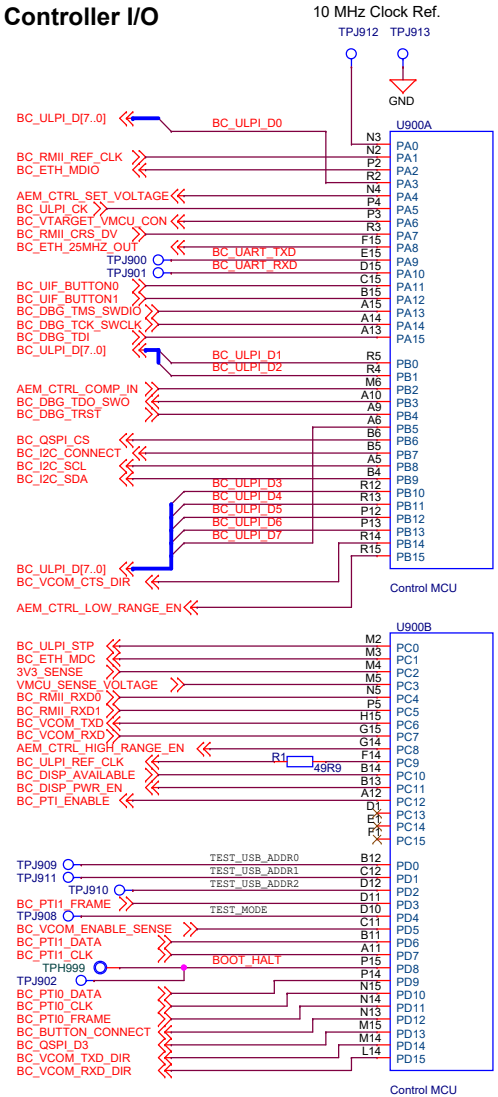
Board Controller Serial Flash Memory

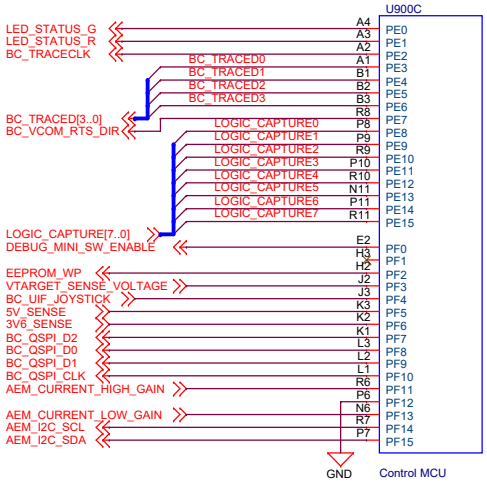


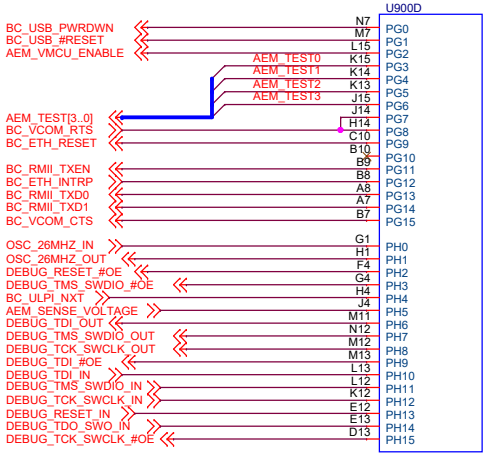
Board Controller Indicator LEDs

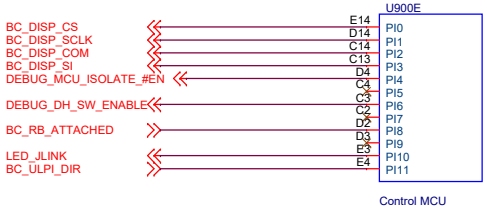


Board Controller I/O

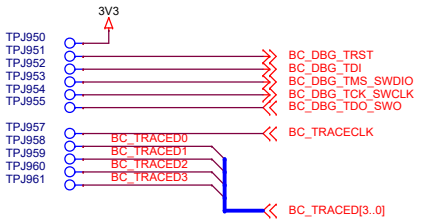








Board Controller Test Points



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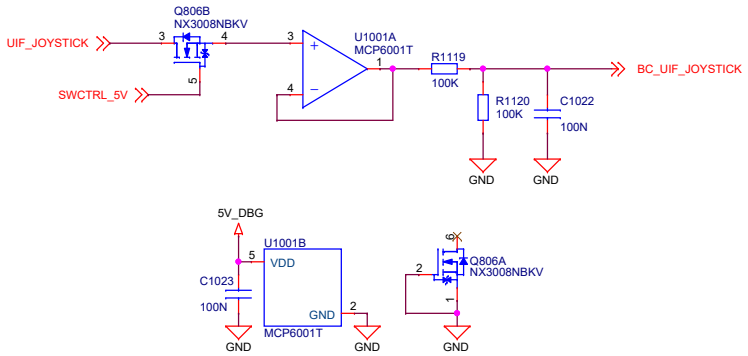
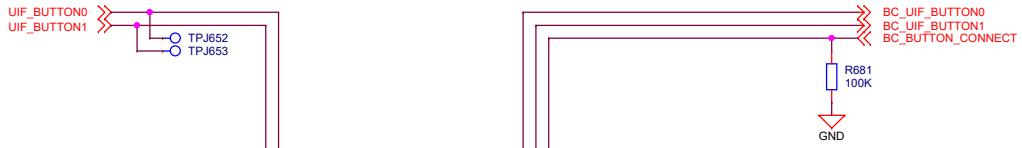
Board Controller Joystick Connection



Board Controller Button Connection



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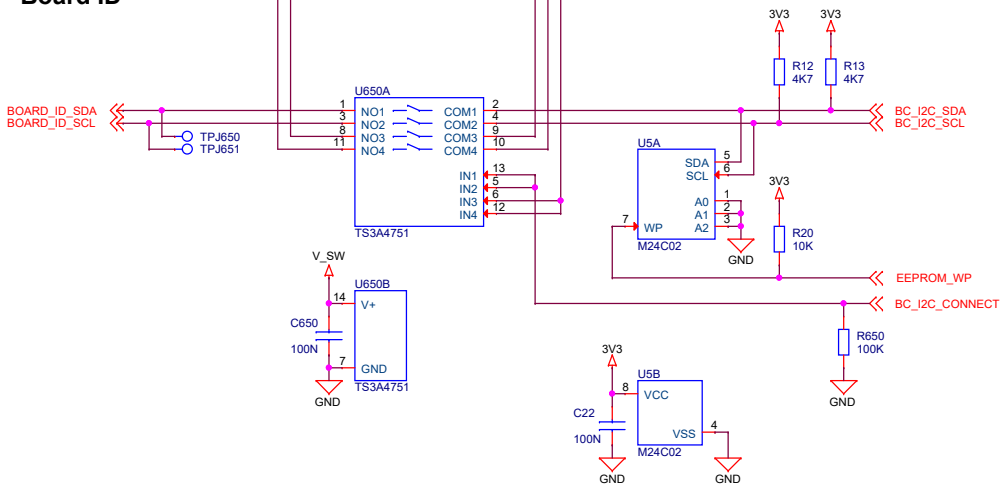
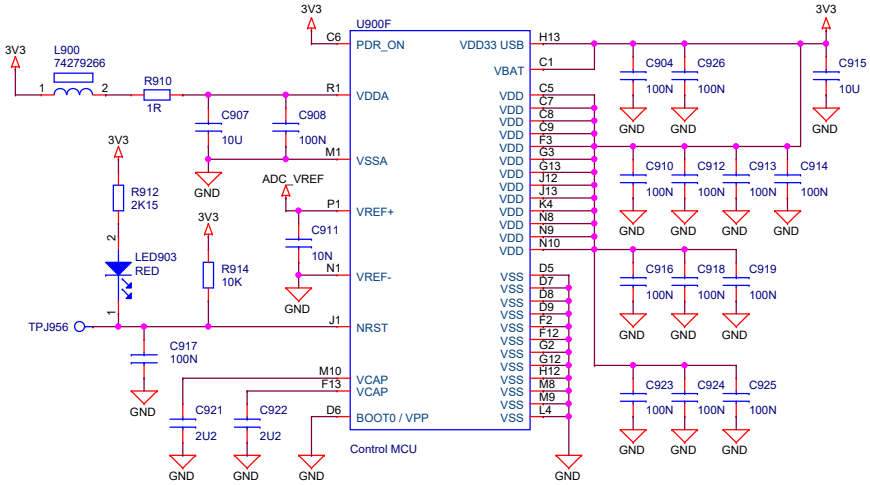
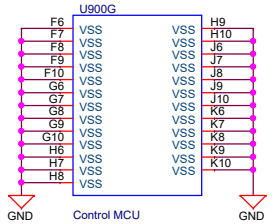


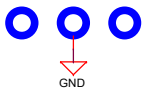
Board Controller Power & Decoupling





Mounting Holes

Mounting holes - M3



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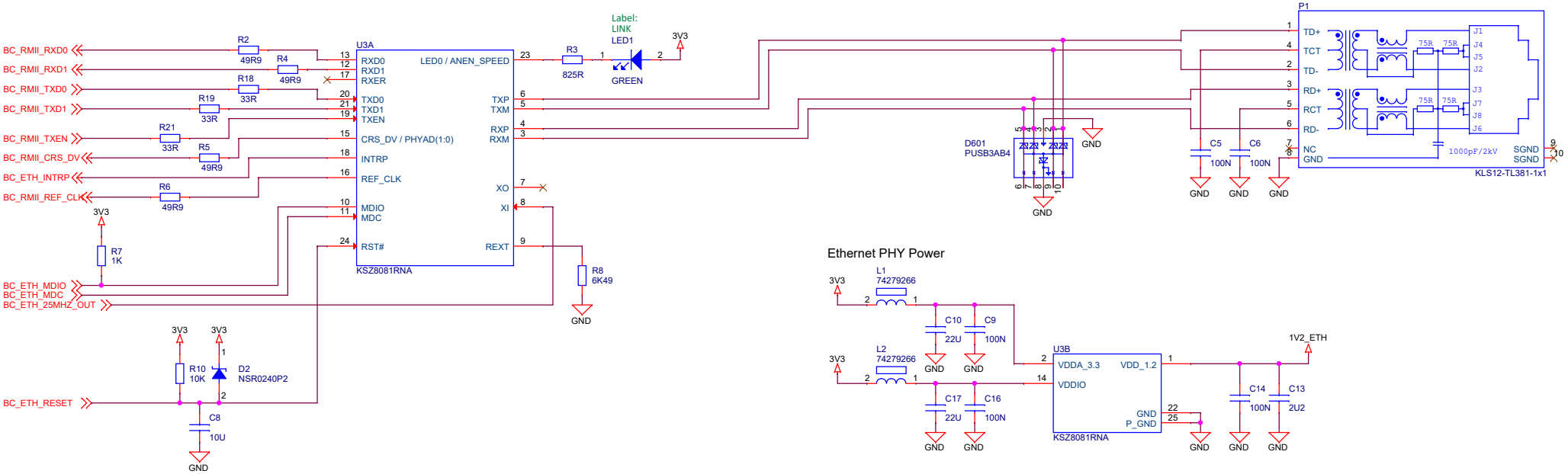
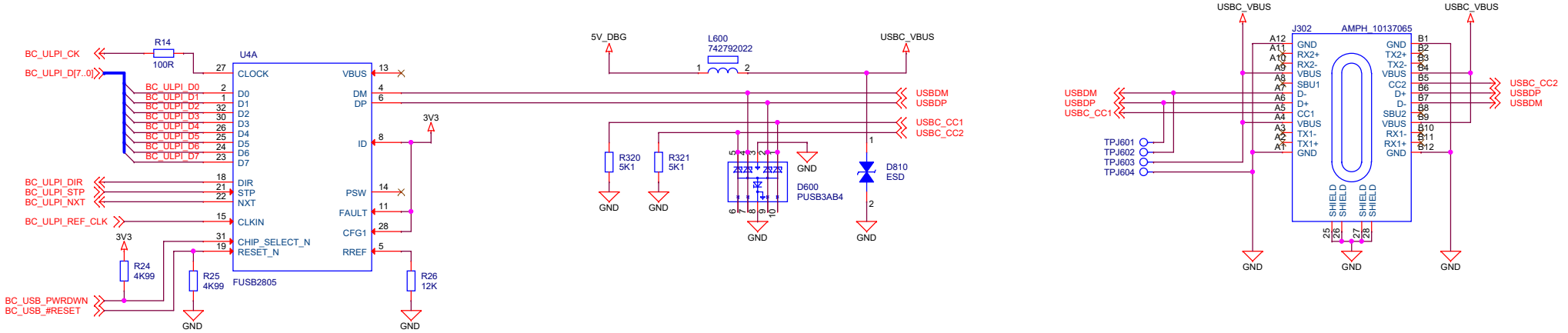
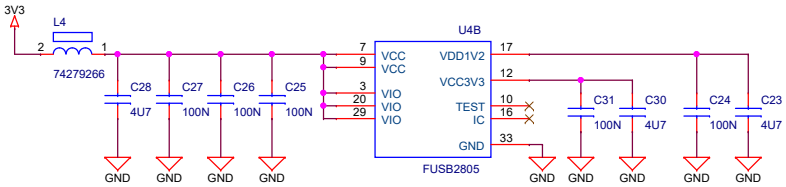
10/100 Mbit Ethernet PHY



USB High Speed





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