

ConnectCore for i.MX6 System Board Computer

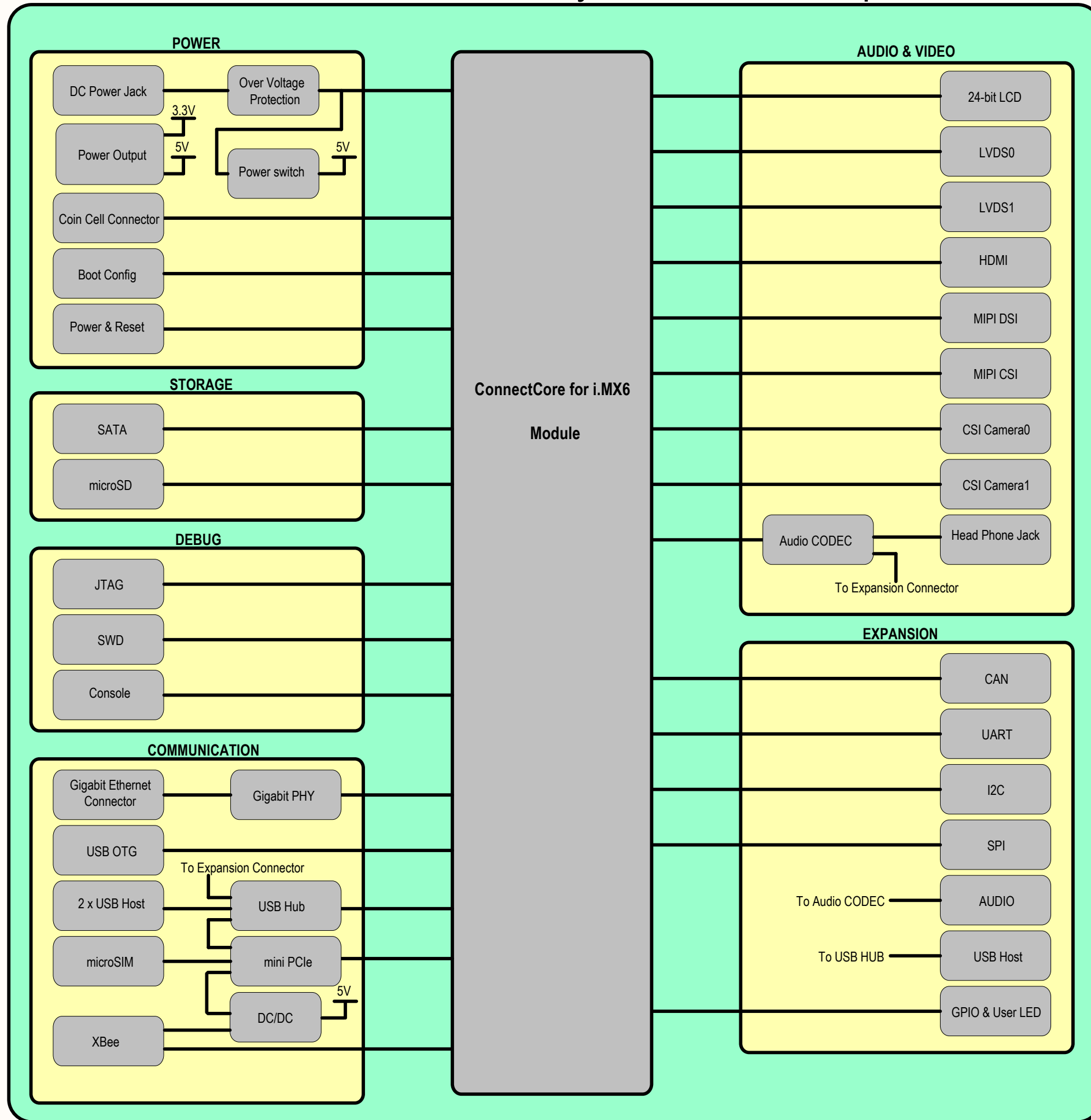


Table of Content

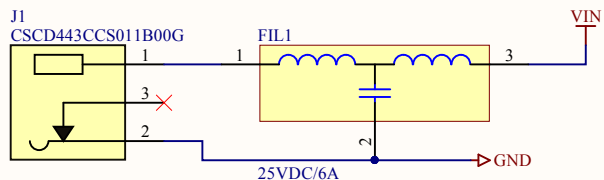
Page	Name
Page 1	Block Diagram
Page 2	ConnectCore for i.MX6 Module
Page 3	Power, boot strap, reset
Page 4	SATA, microSD, mini PCIe, microSIM
Page 5	JTAG, SWD, Console, UART
Page 6	Gigabit Ethernet
Page 7	USB OTG, USB HUB, USB Host
Page 8	Displays, HDMI, Cameras
Page 9	Audio
Page 10	CAN, I2C, XBee
Page 11	Expansion Connectors and User LEDs
Page 12	GPIO Table, System Power Rails
Page 13	History, Mechanical

ConnectCore for i.MX6 Module

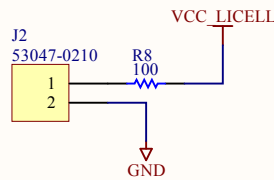


Supply Inputs

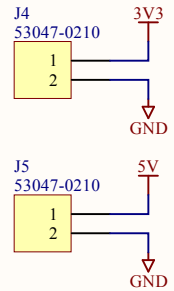
5V



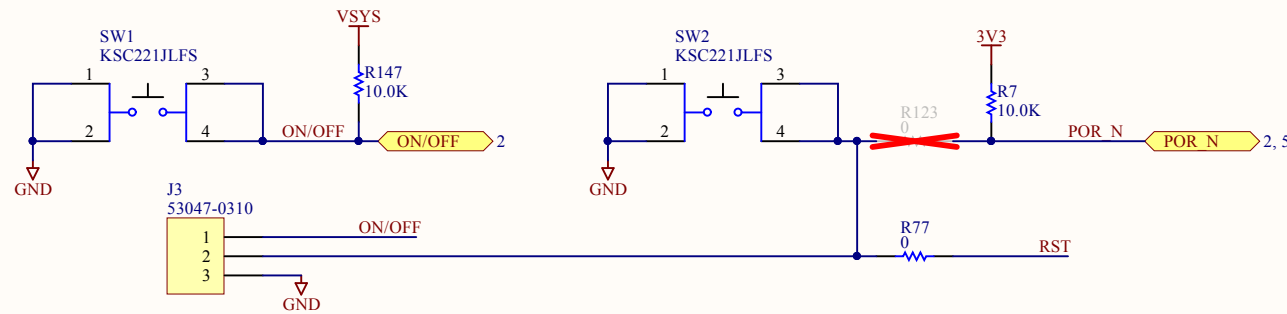
Coin Cell



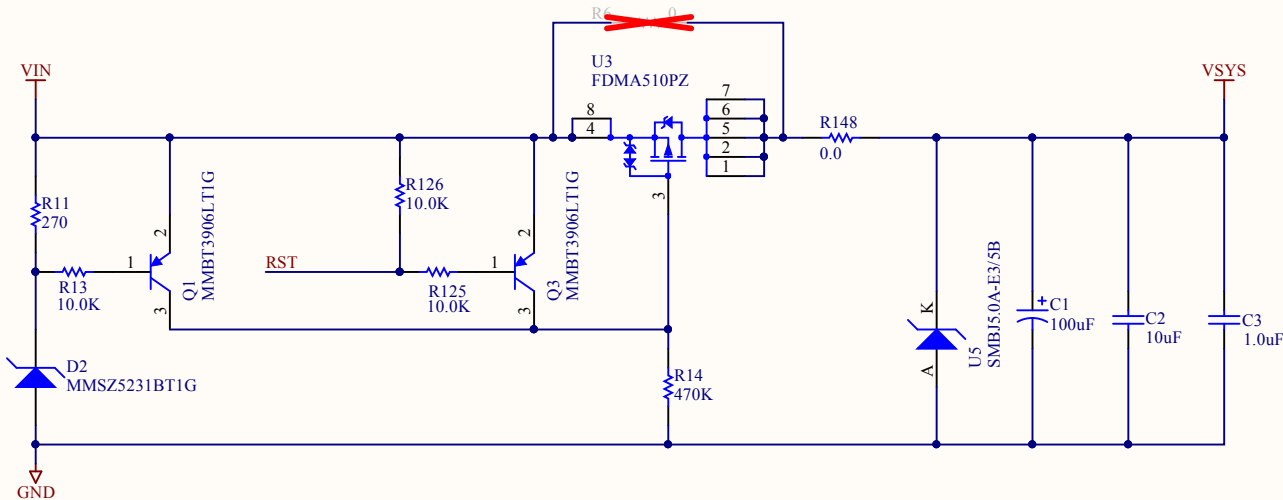
Supply Outputs



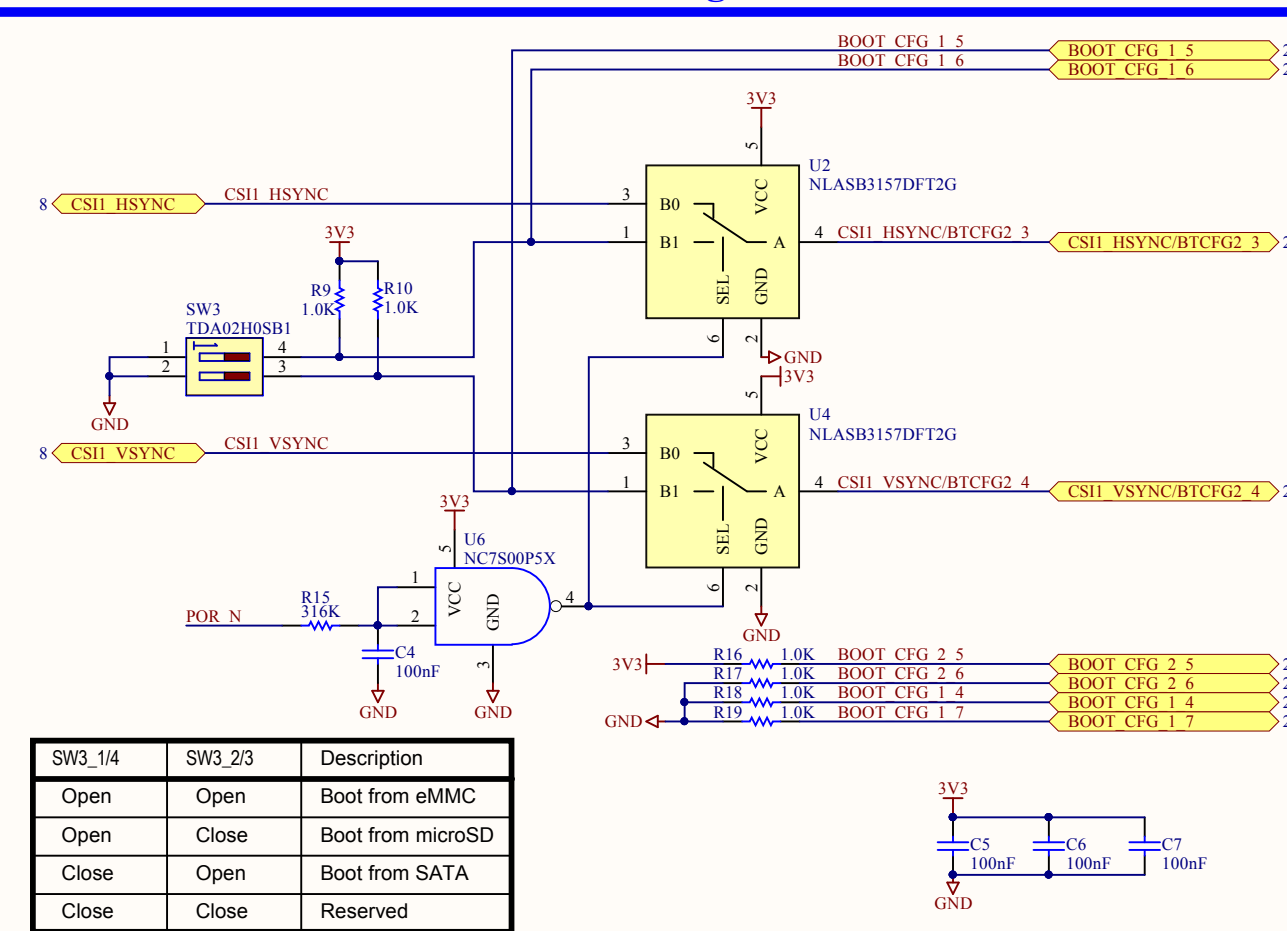
Power and Reset



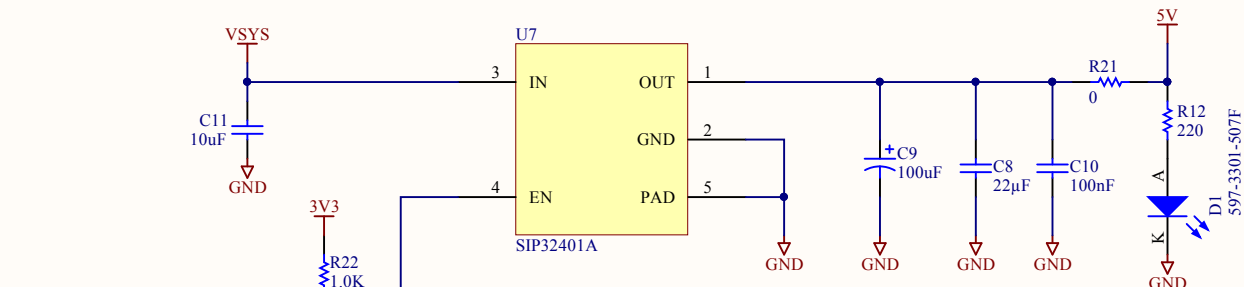
Over Voltage Protection



Boot Configuration

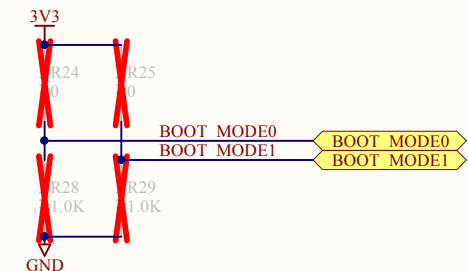


5V Load switch

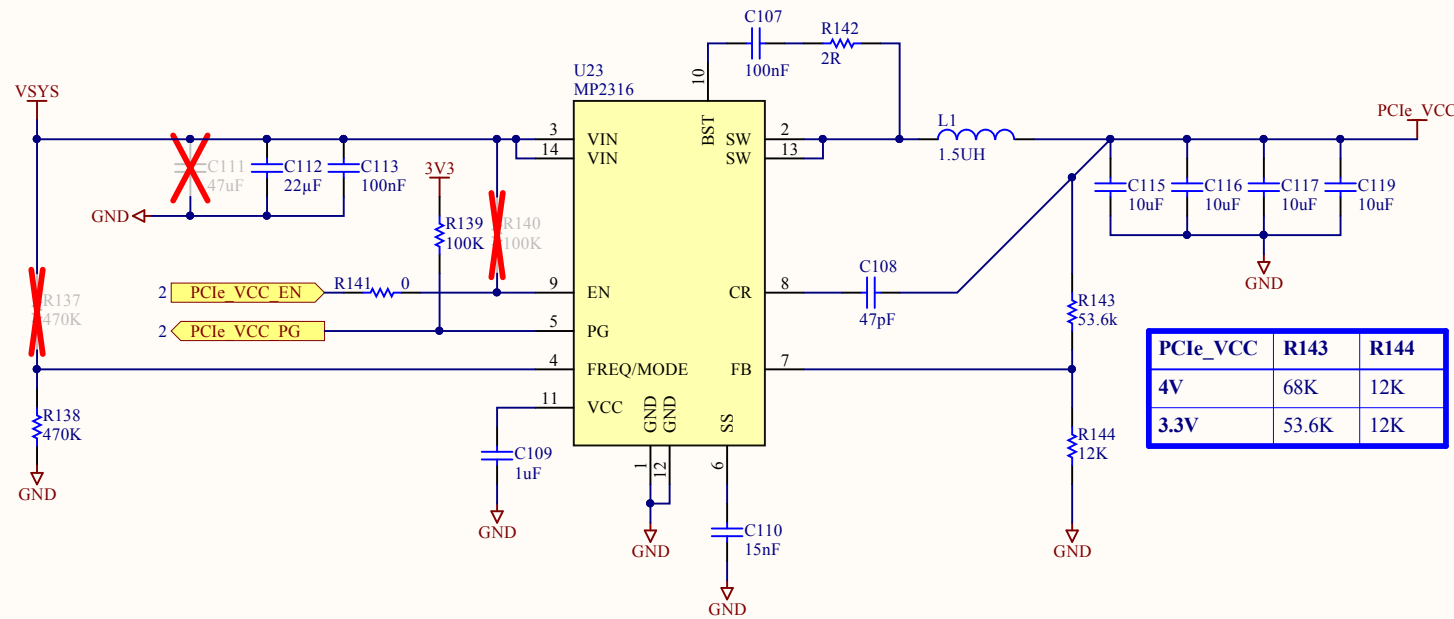


Boot Mode

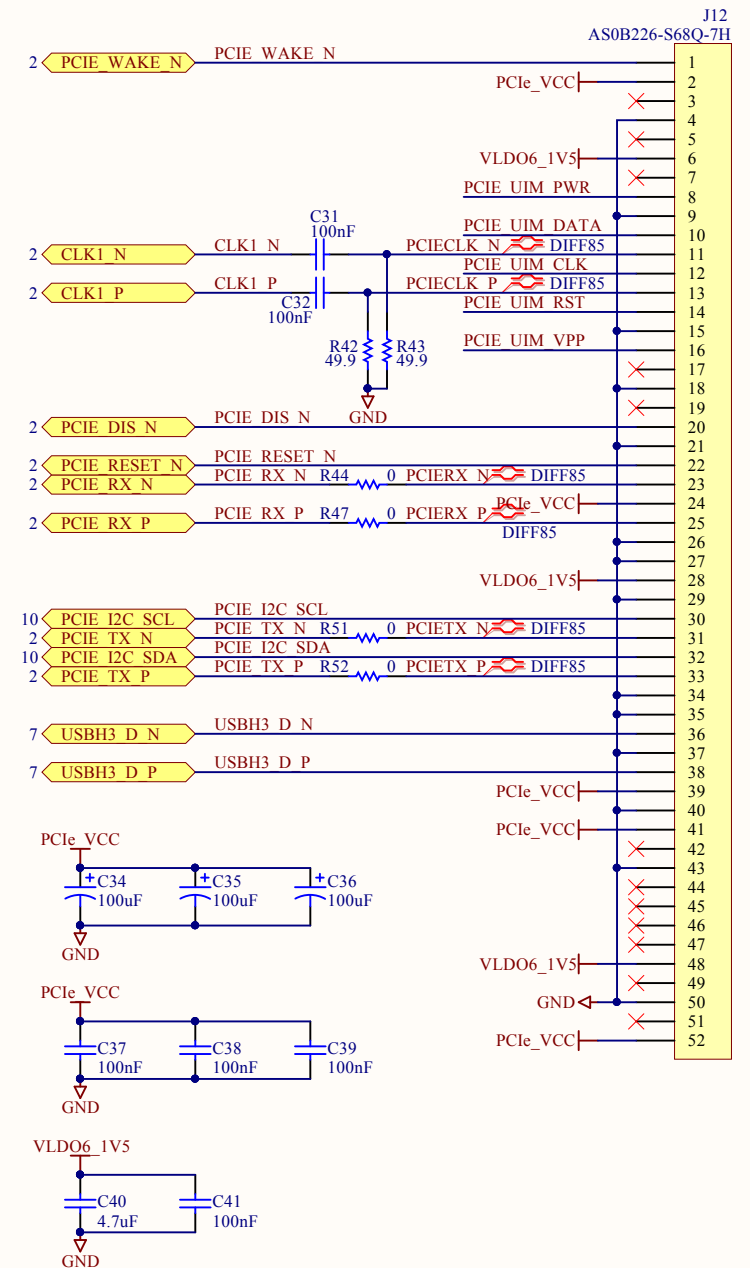
BOOT_MODE1	BOOT_MODE0	Description
0	0	Boot from Fuses
0	1	Serial Downloader
1	0	Boot from board settings
1	1	Reserved



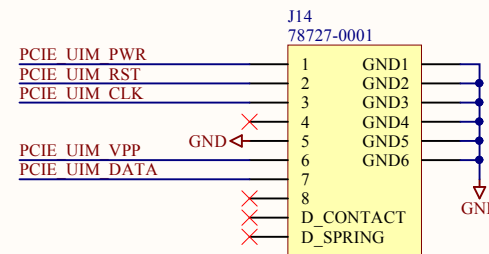
PCIe power supply



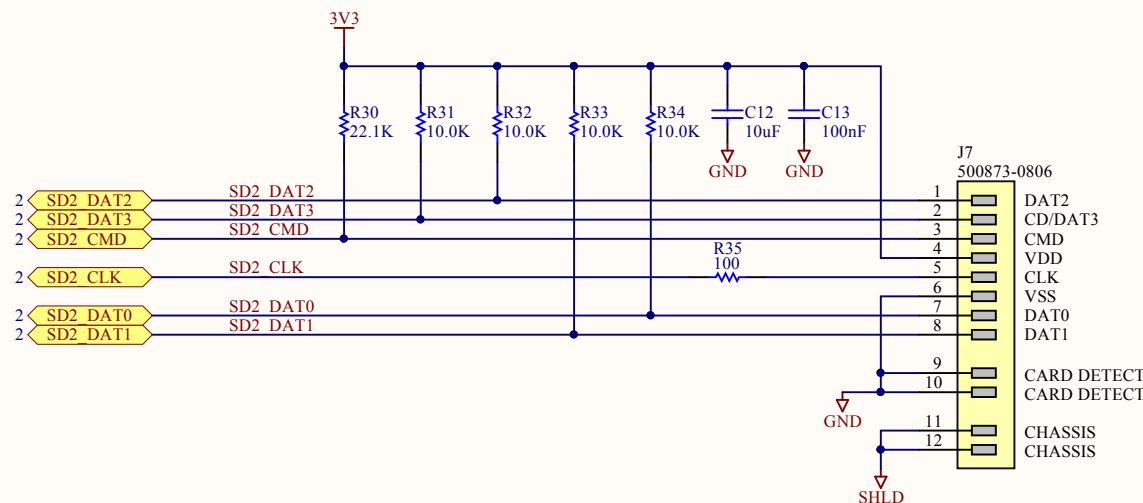
PCIe_VCC	R143	R144
4V	68K	12K
3.3V	53.6K	12K



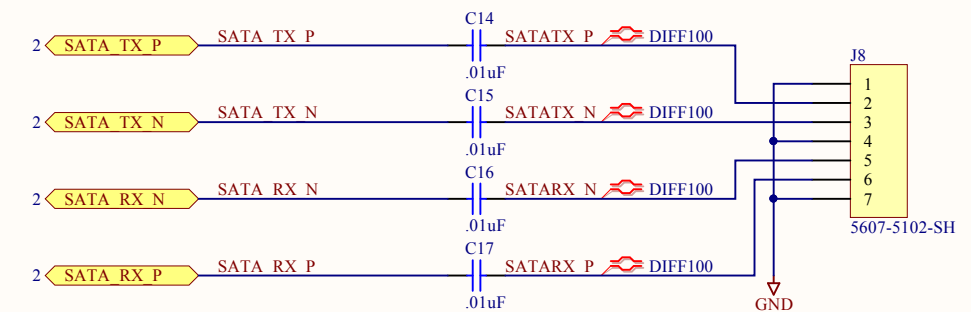
micro SIM



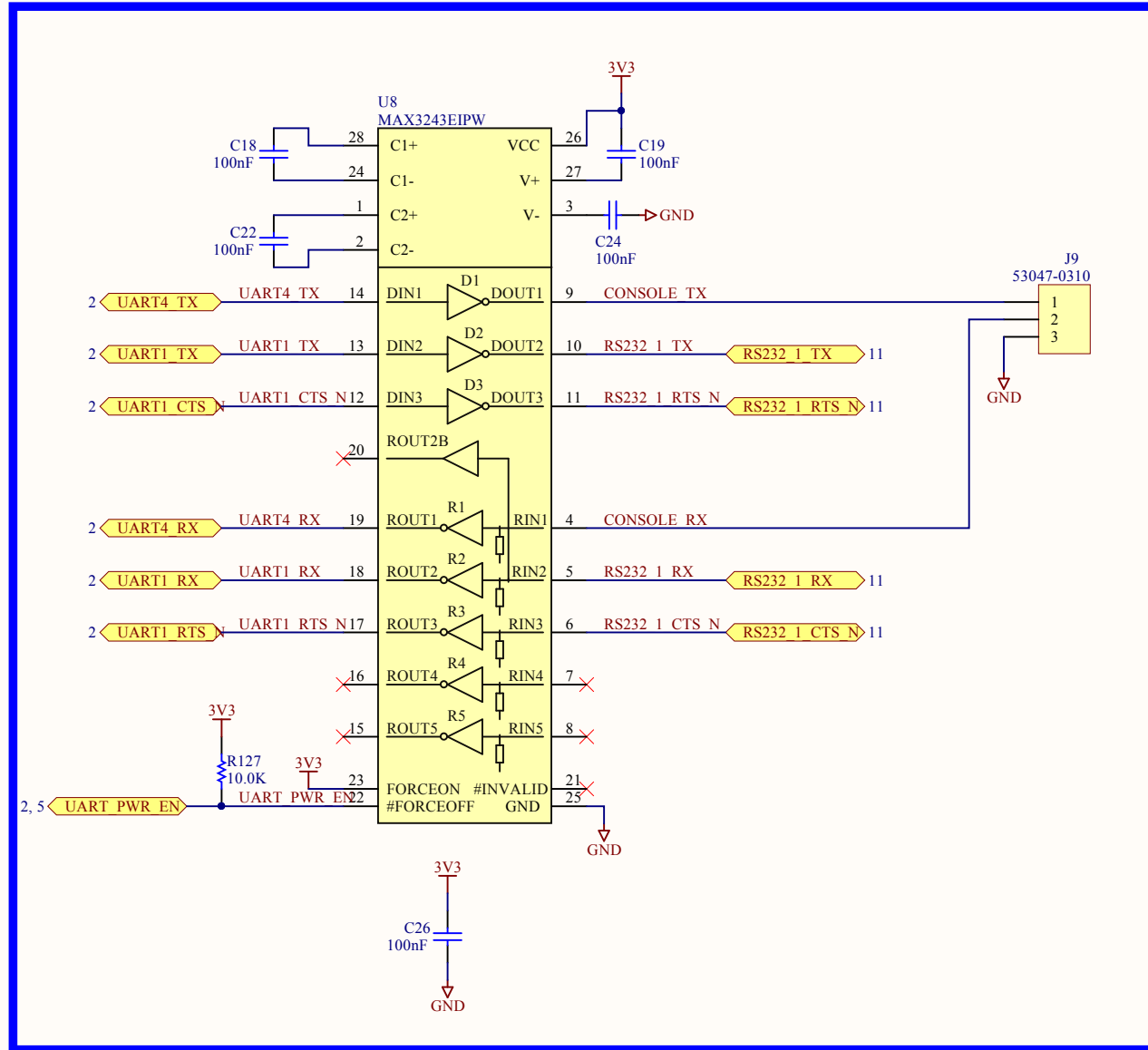
microSD



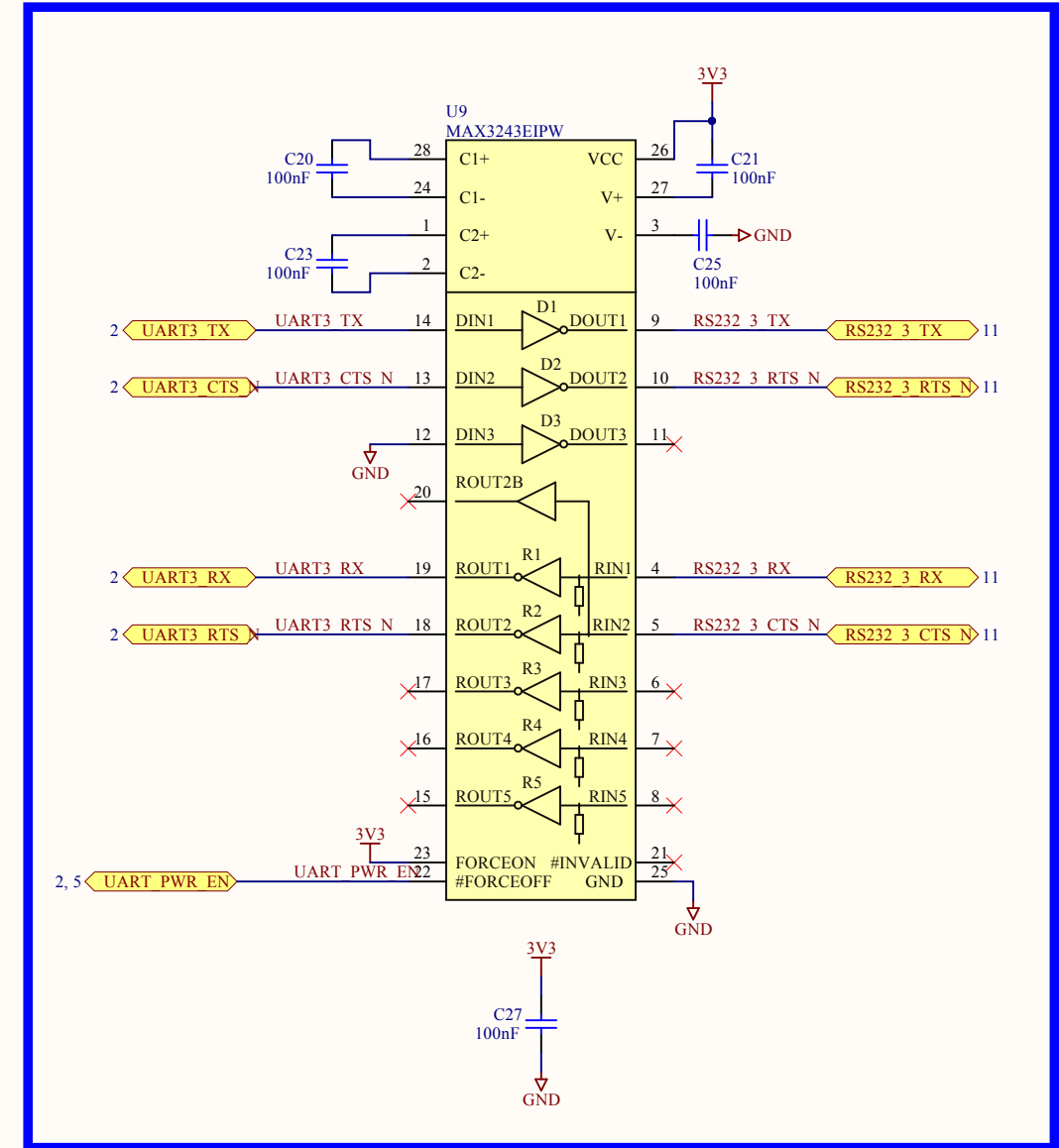
SATA



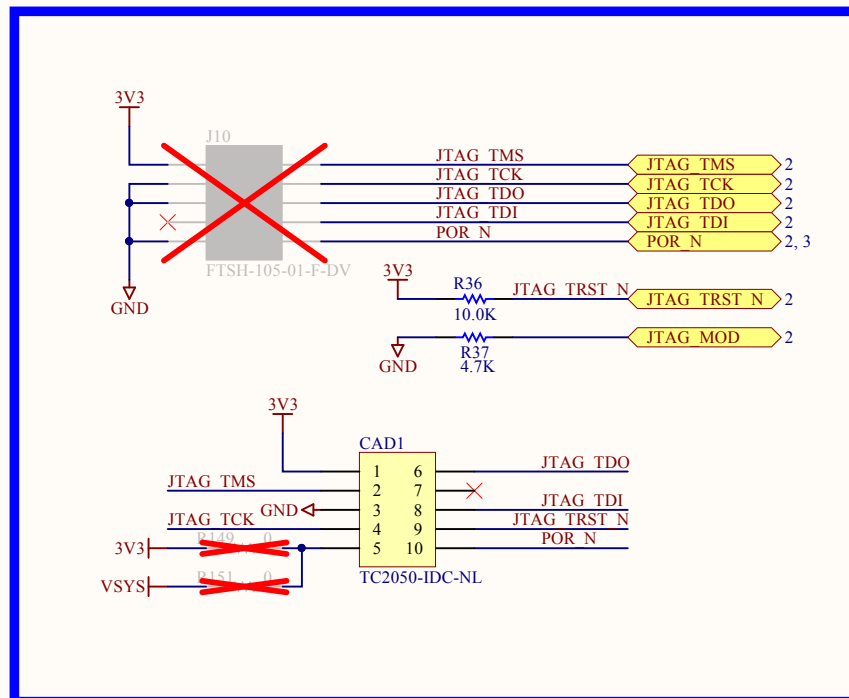
Console and UART1



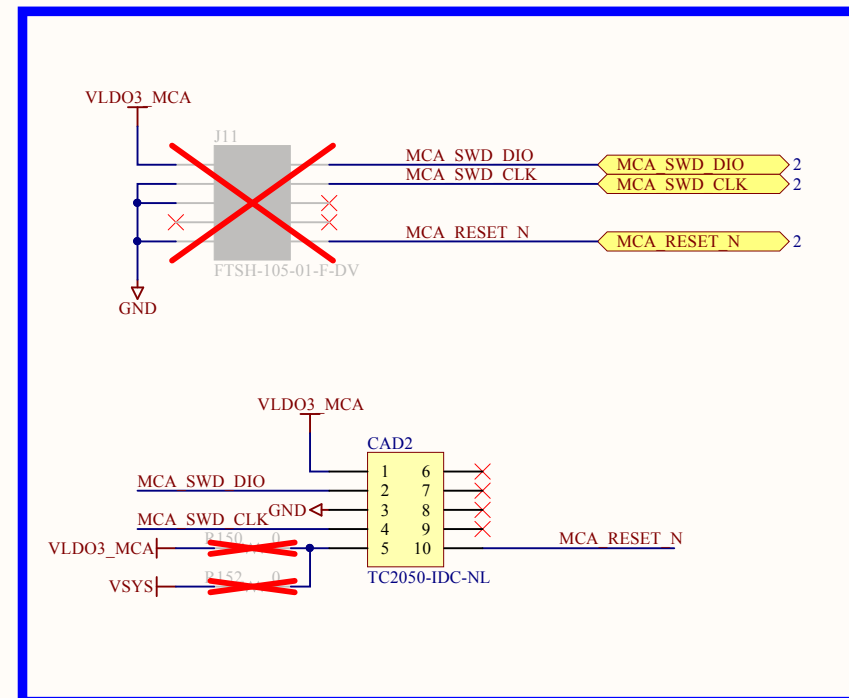
UART 3



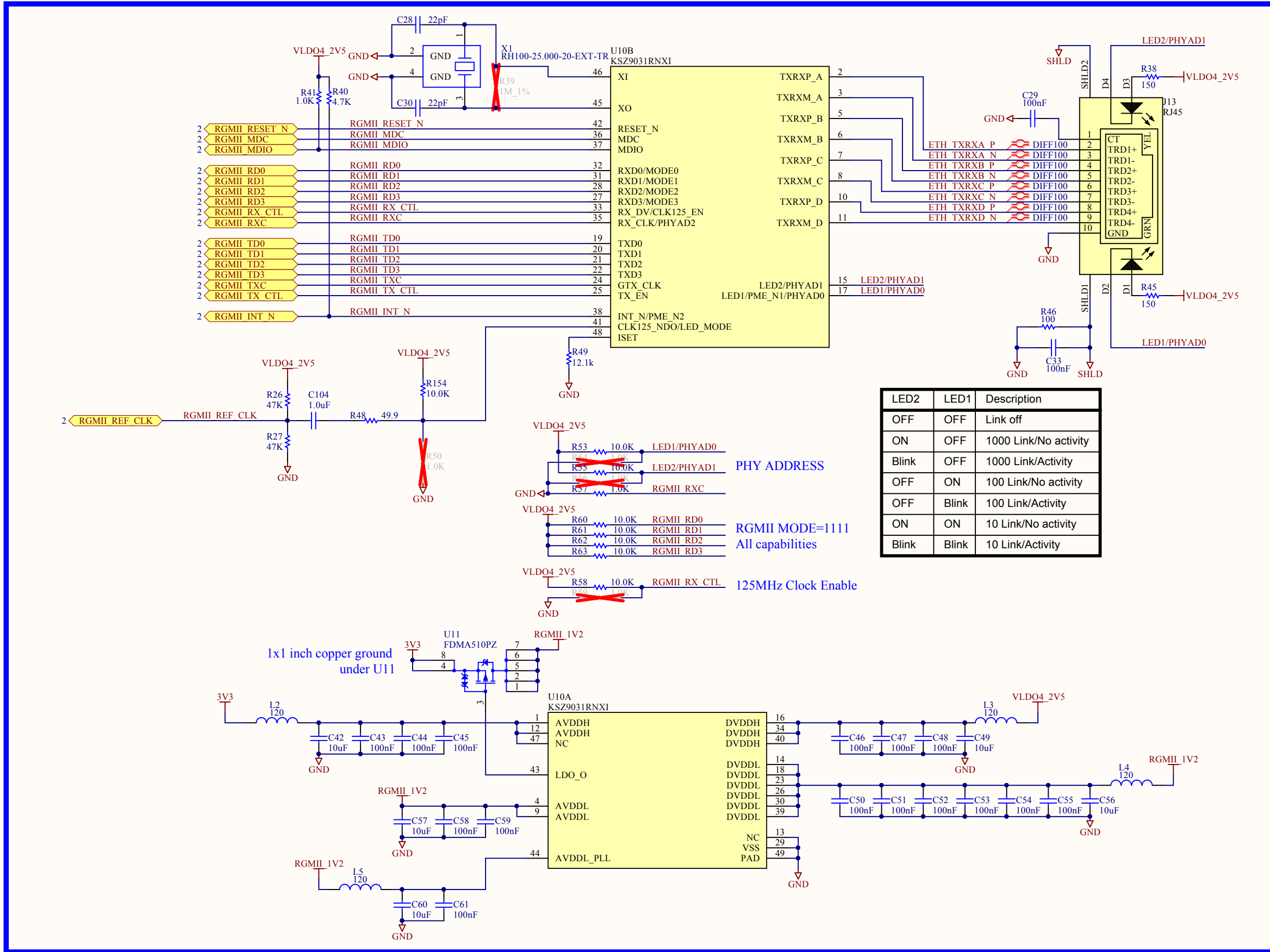
JTAG



SWD



Gigabit Ethernet



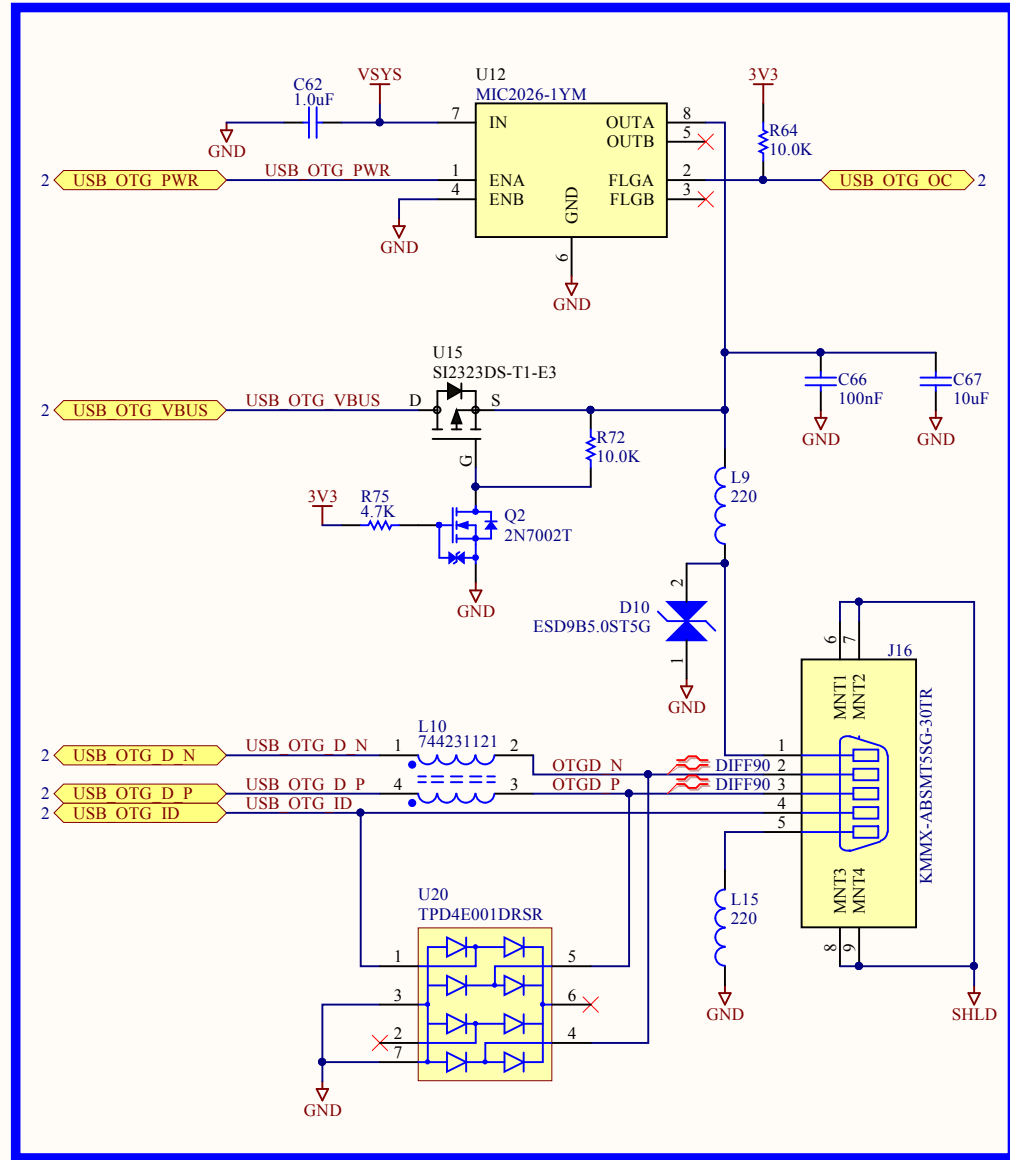
LED2	LED1	Description
OFF	OFF	Link off
ON	OFF	1000 Link/No activity
Blink	OFF	1000 Link/Activity
OFF	ON	100 Link/No activity
OFF	Blink	100 Link/Activity
ON	ON	10 Link/No activity
Blink	Blink	10 Link/Activity

PHY ADDRESS

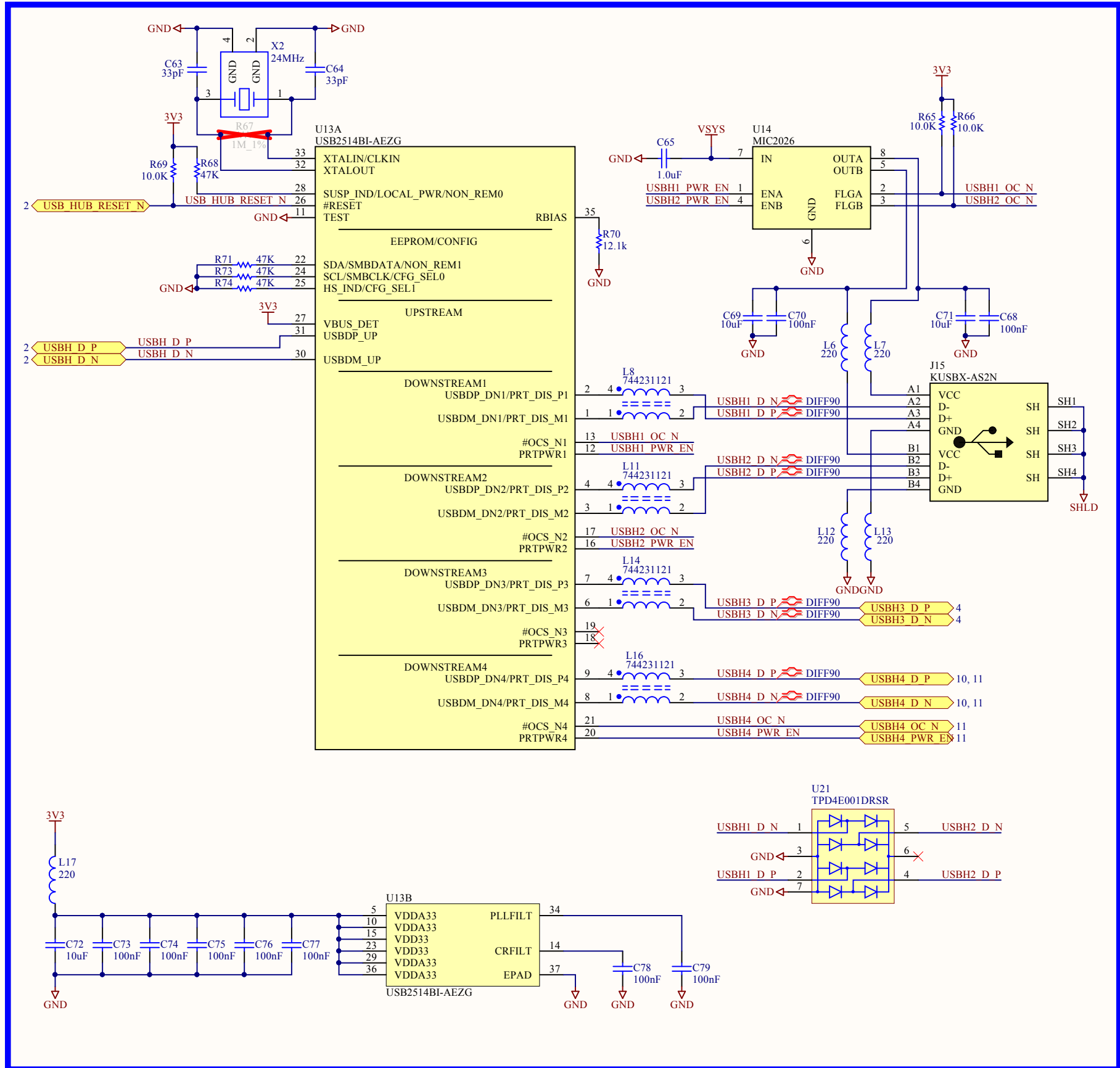
RGMII MODE=1111
All capabilities

125MHz Clock Enable

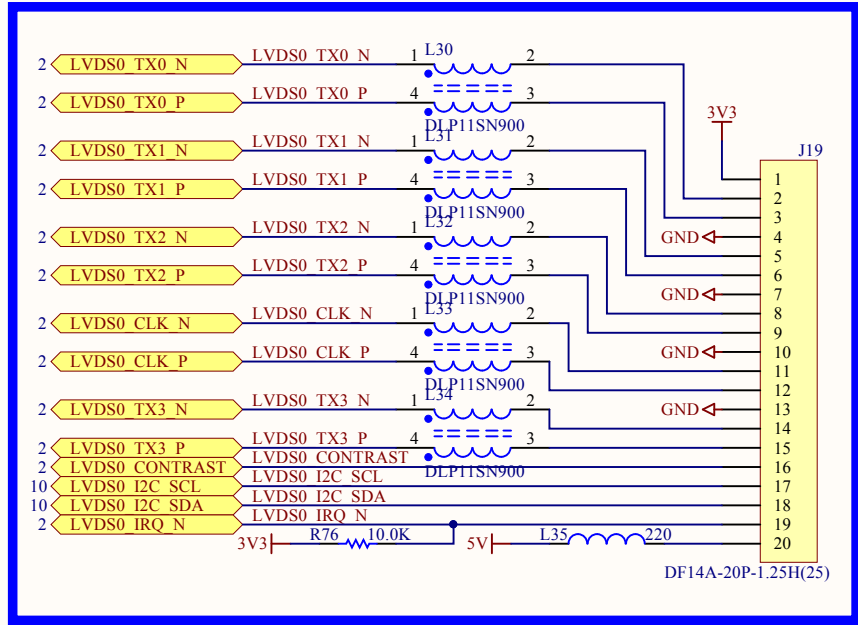
USB_OTG



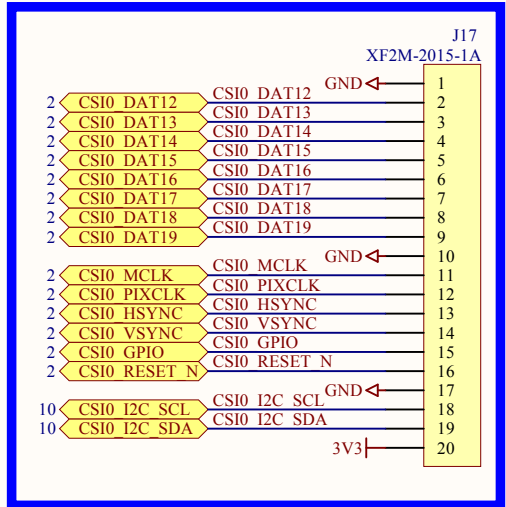
USB_HOST



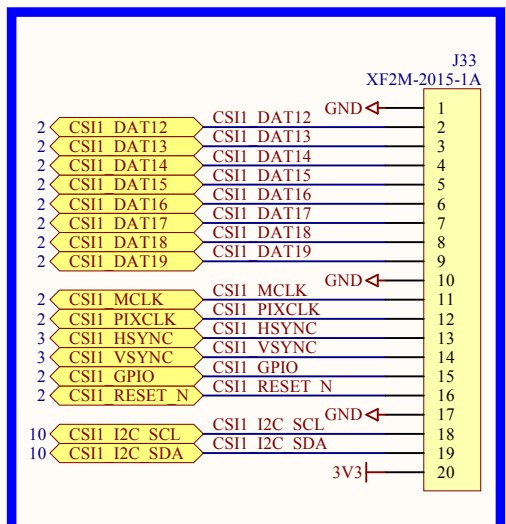
LVDS0



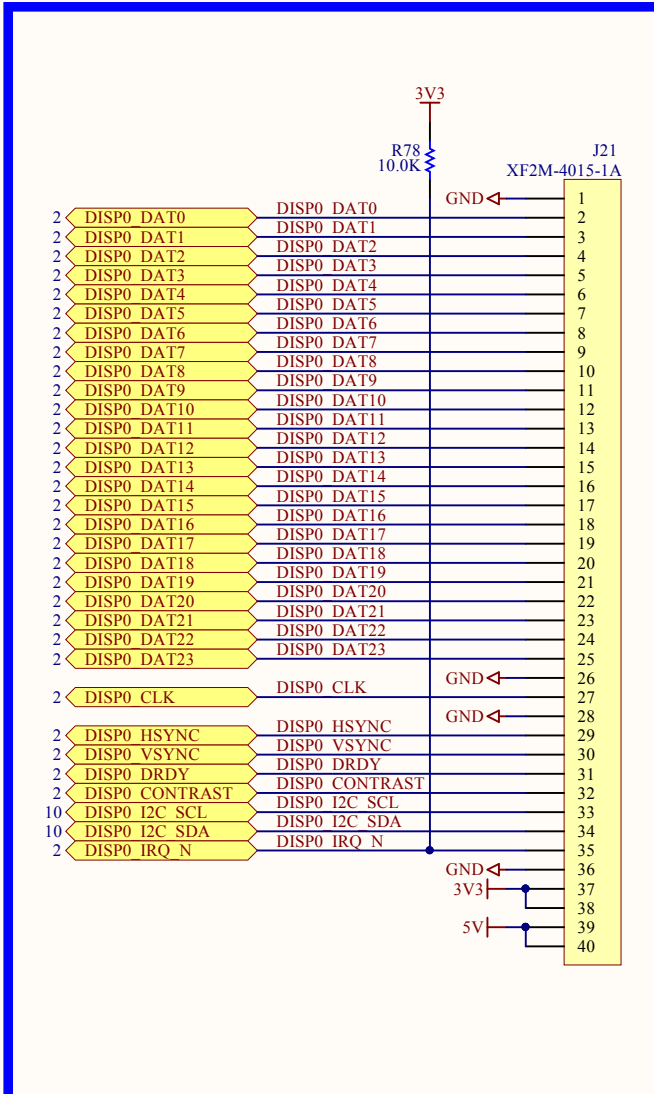
Parallel Camera 0



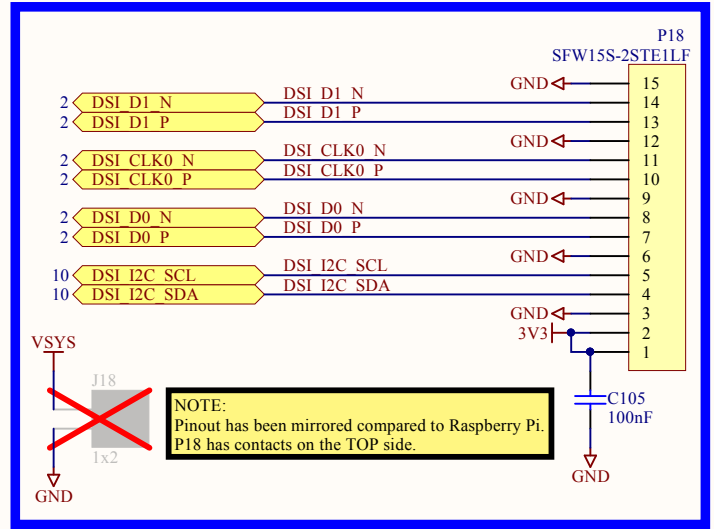
Parallel Camera 1



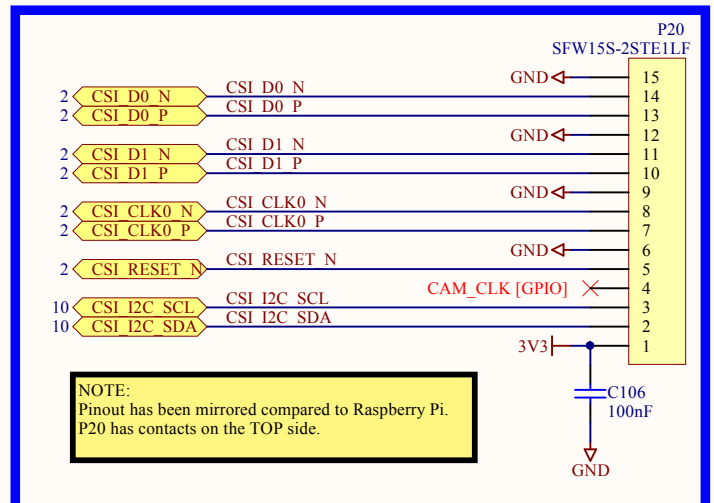
Parallel Display 0



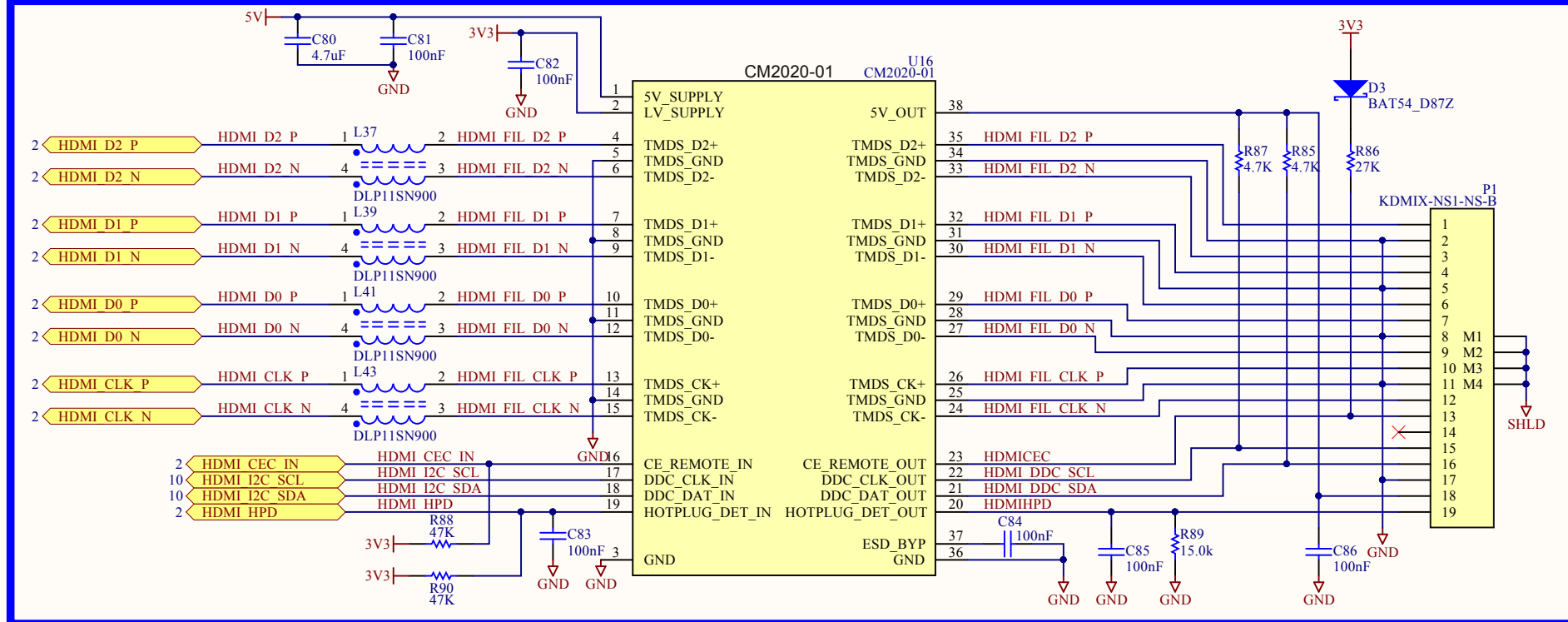
MIPI Display



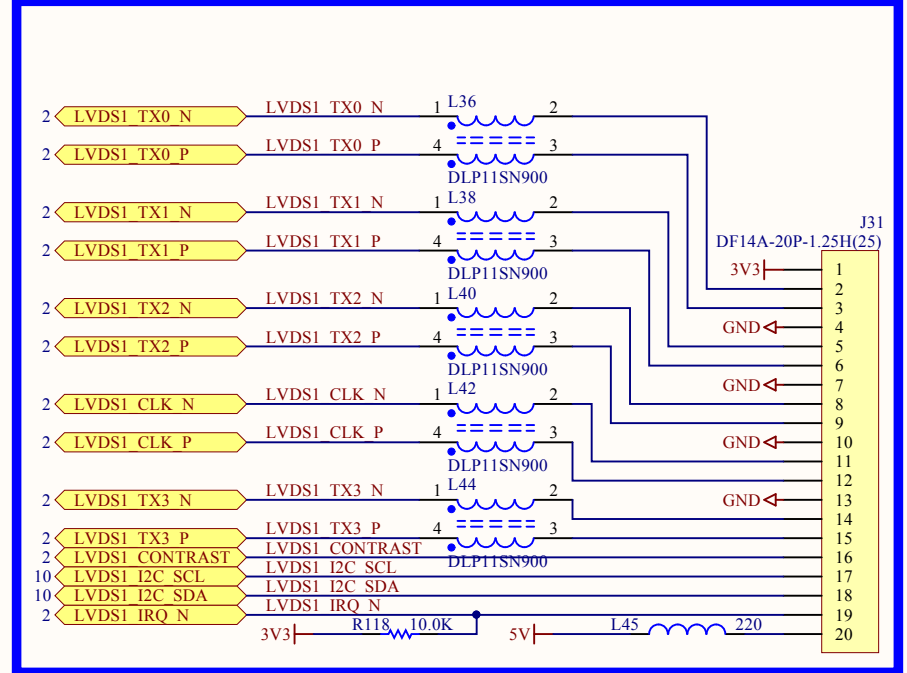
MIPI Camera



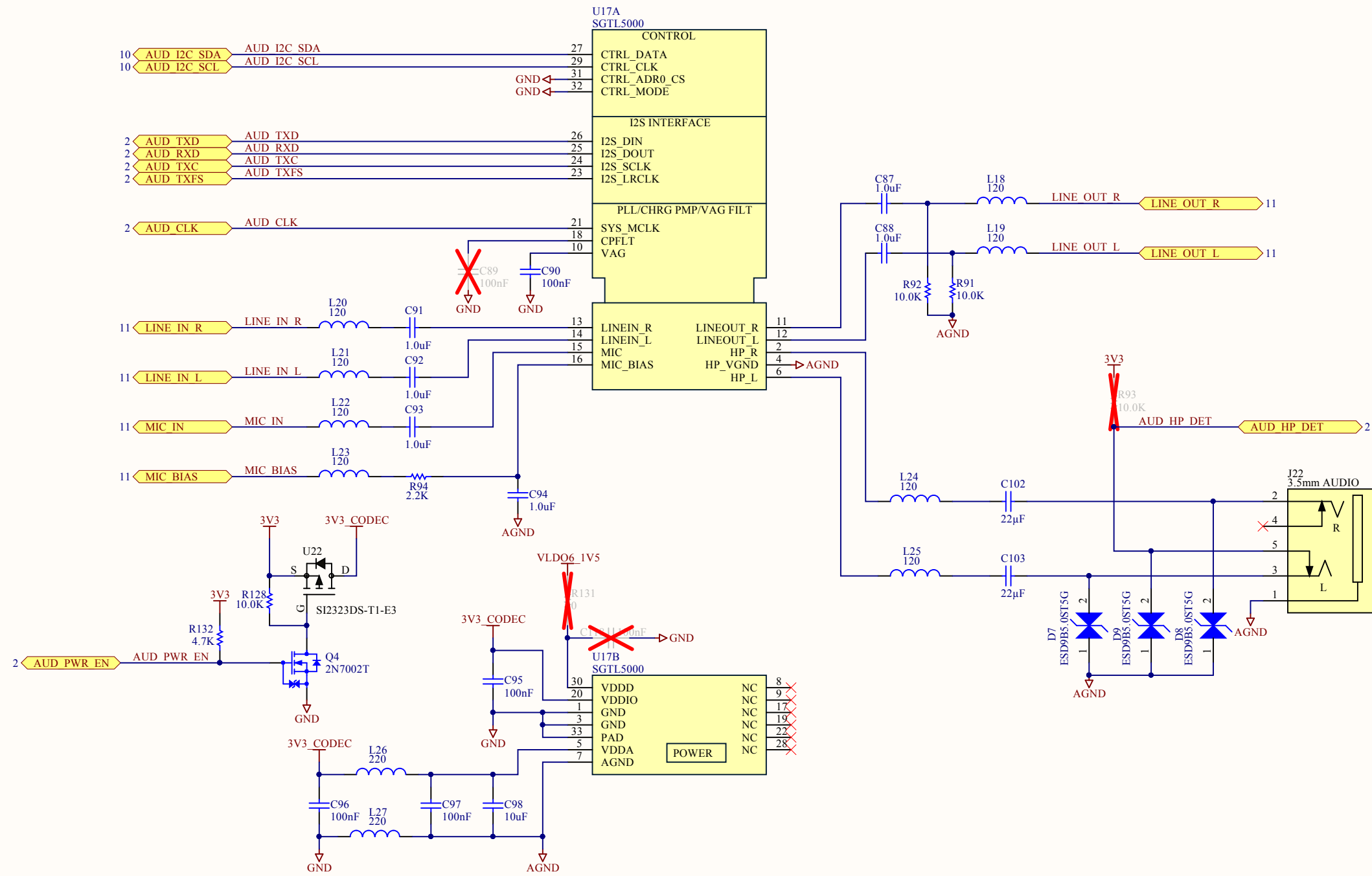
HDMI



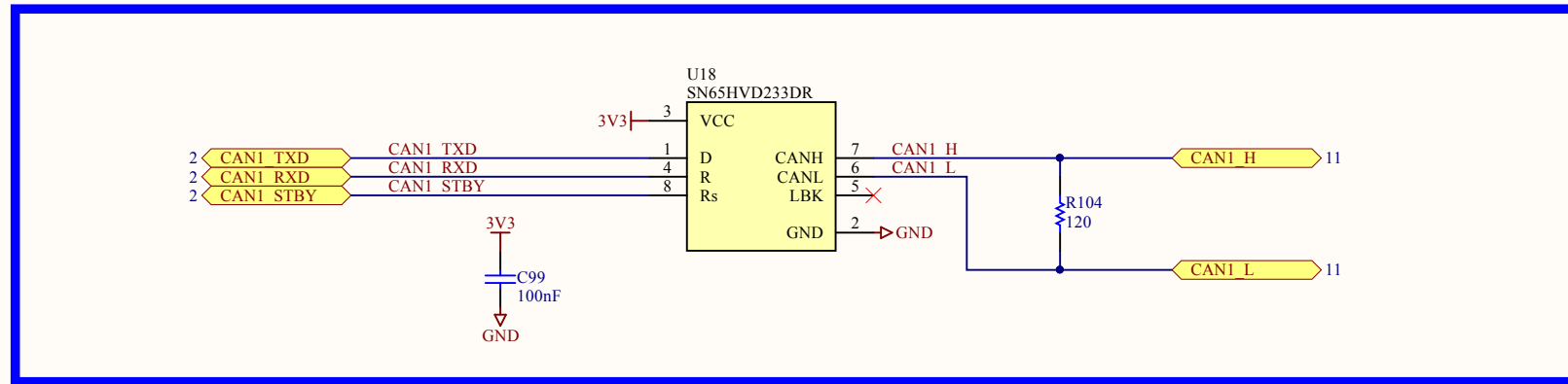
LVDS1



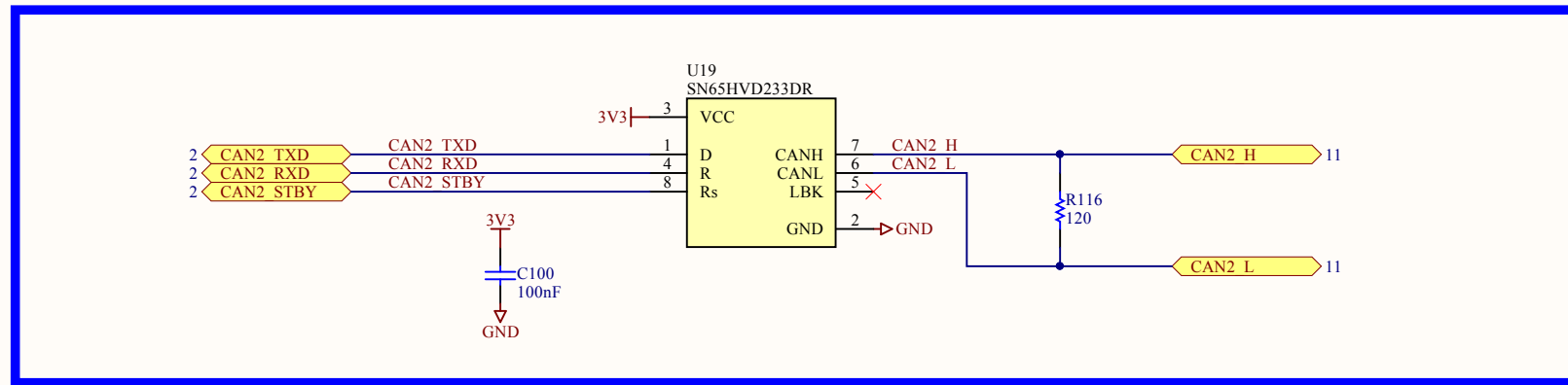
AUDIO



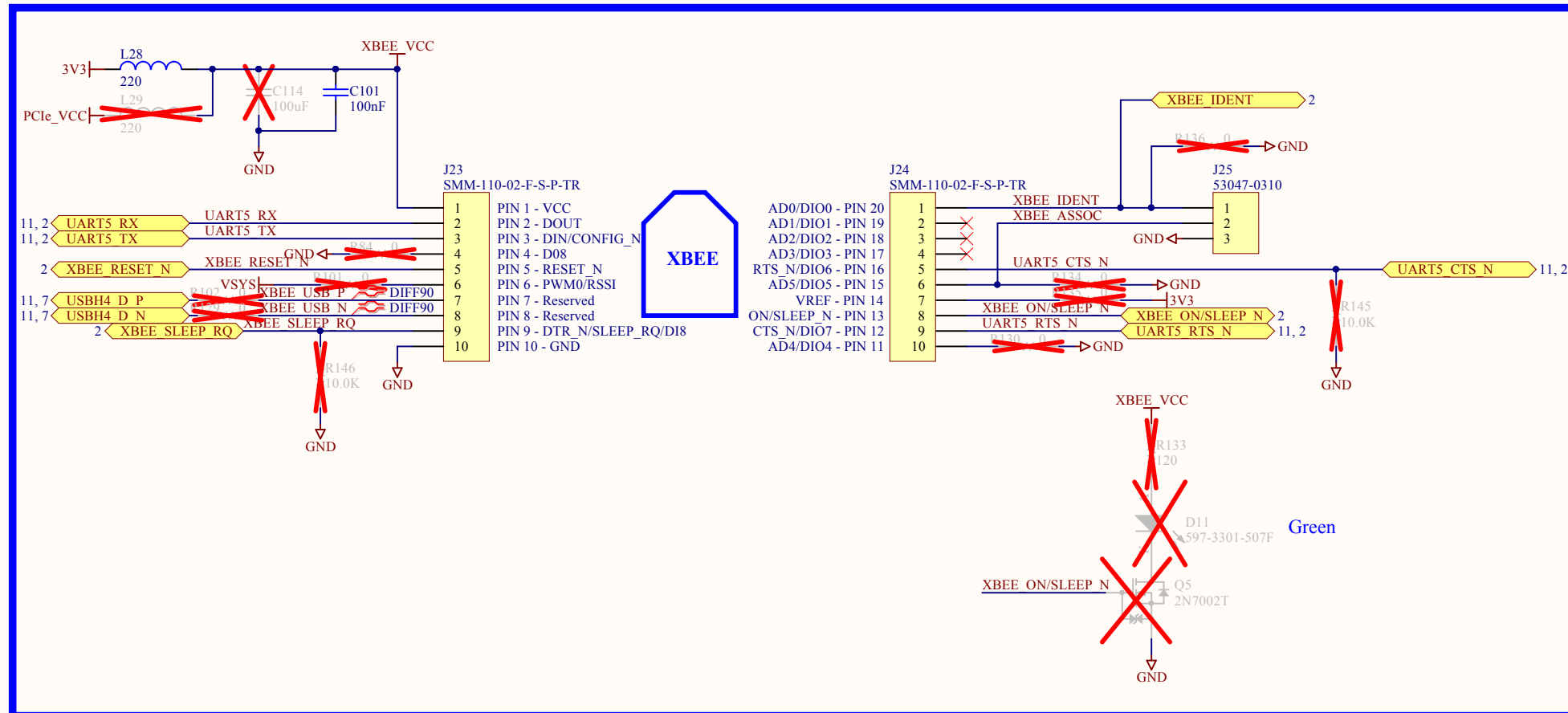
CAN1



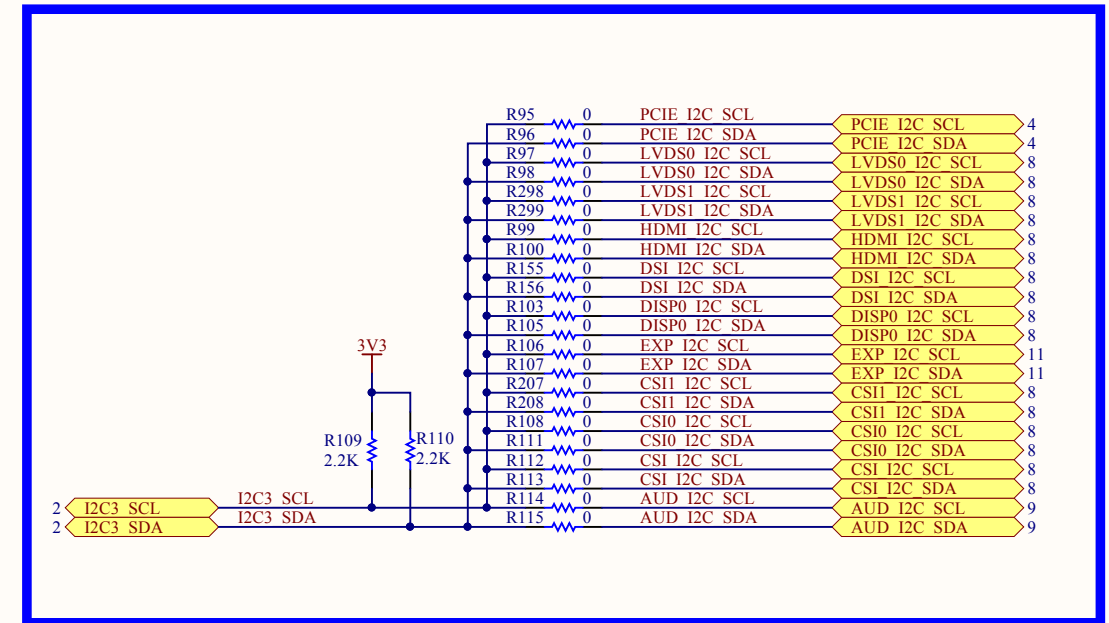
CAN2



XBee



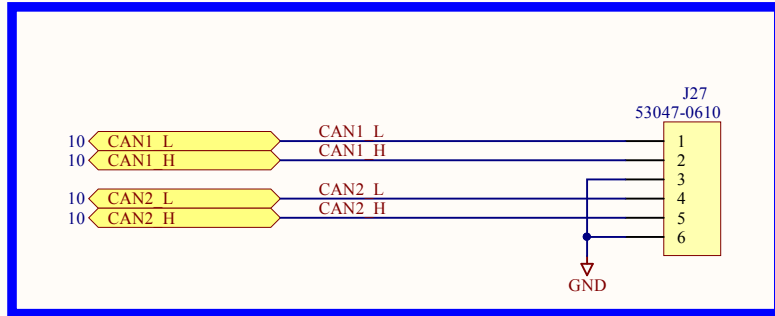
I2C



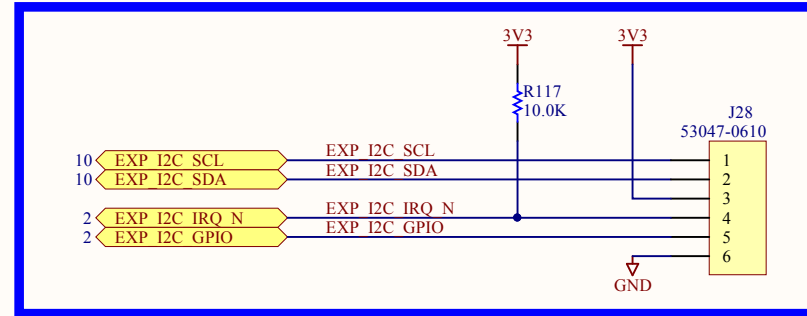
I2C3 (3.3V)

Peripheral	Speed (kbps)	Addresses (hex)	Default Address (hex)
PCIe Port	TBD	TBD	TBD
LVDS0 Touch	TBD	TBD	TBD
LVDS1 Touch	TBD	TBD	TBD
HDMI EDID	100	0x50	0x50
MIPI Display	TBD	TBD	TBD
LCD Touch	TBD	TBD	TBD
Expansion Port	TBD	TBD	TBD
CSI0 Camera	TBD	TBD	TBD
CSI1 Camera	TBD	TBD	TBD
MIPI Camera	TBD	TBD	TBD
Audio CODEC	400	Write : 0x14 Read : 0x15	Write : 0x14 Read : 0x15

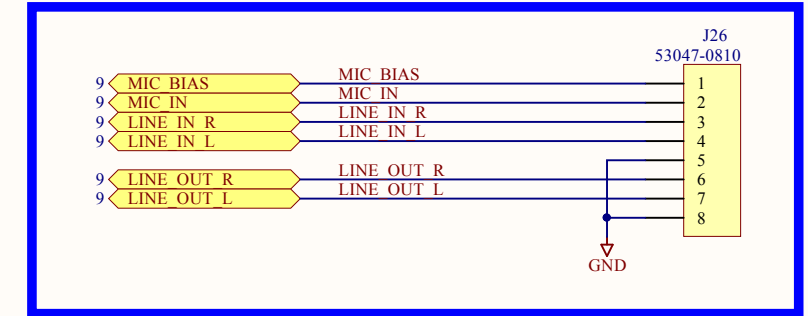
CAN



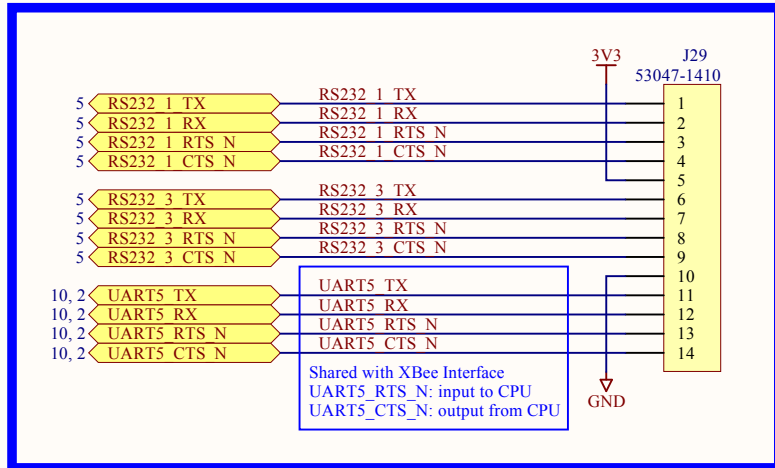
I2C



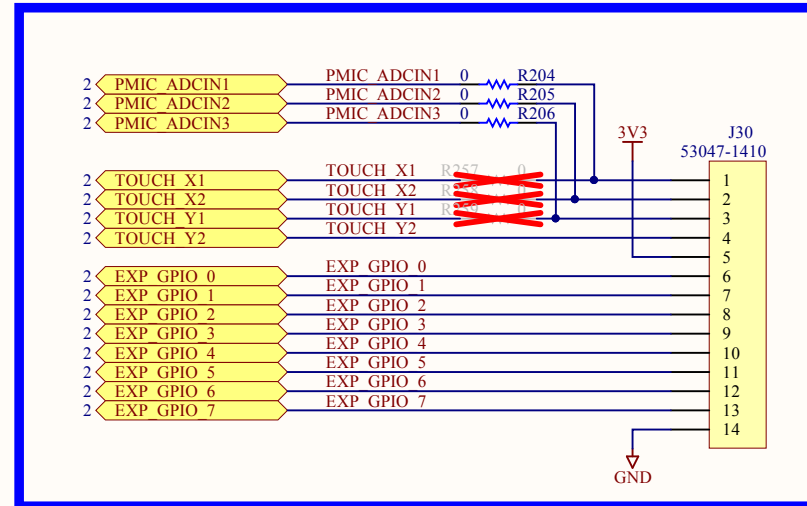
AUDIO



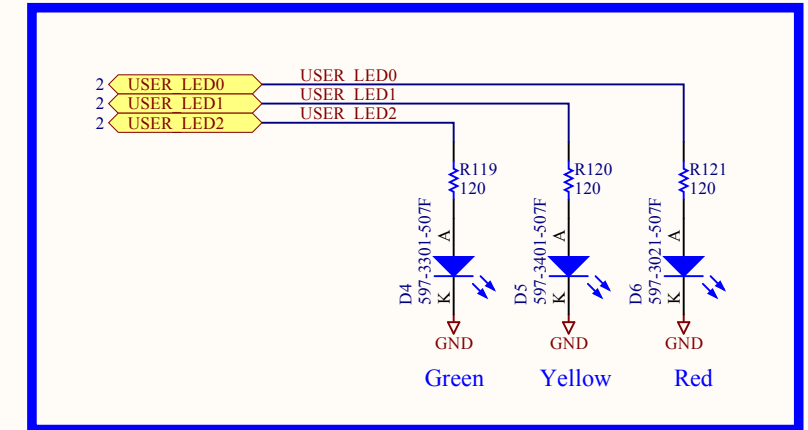
UART



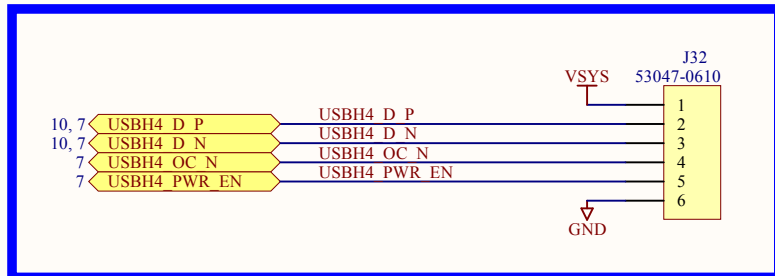
GPIO



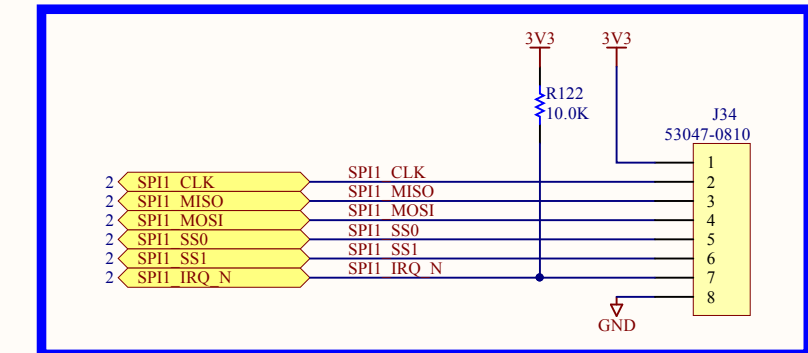
USER LEDs



USB



SPI



System Power Rails

Voltage (V)	Supply Name	Block	Generated by	Current Capability (mA)	Notes
5.0	VIN	Overvoltage Prot	External DC supply	3000	
	5V	USB Host	SIP32401A	2400	
		USB OTG			
		HDMI			
		LVDS0			
		LVDS1			
		MIPI DSI			
		MIPI CSI			
		LCD			
	3.3	3V3	EMMC	DA9063 BUCKPERI	1500
microSD					
UART					
JTAG					
ETHERNET					
miniPCIE					
AUDIO					
CAN1/2					
XBee					
I2C					
LVDS					
MIPI DSI					
Parallel Camera					
Parallel Display					
HDMI					
VLDO3_MCA	MCA	DA9063 LDO3	200	MCA_VREFH	
3.0	VCC_LICELL	RTC	External Coin Cell		
2.5	VLDO4_2V5	ETHERNET	DA9063 LDO4	200	NVCC_ENET
					NVCC_RGMII
1.5	VLDO6_1V5	miniPCIE	DA9063 LDO6	200	
3.3 - 4	PCIe_VCC	miniPCIE	MP2316	3000	

GPIO Table

Signal Name	GPIO	Use
CSI0_DATA_EN	GPIO_5_20	CSI0_GPIO
EIM_A25	GPIO_5_2	CSI1_GPIO
EIM_CS0	GPIO_2_23	SPI1_IRQ_N
EIM_CS1	GPIO_2_24	EXP_GPIO_3
EIM_D23	GPIO_3_23	LVDS1_PEN_IRQ_N
EIM_D27	GPIO_3_27	XBEE_ON/SLEEP_N
EIM_D28	GPIO_3_28	XBEE_RESET_N
EIM_D29	GPIO_3_29	XBEE_SLEEP_RQ
EIM_DA10	GPIO_3_10	USB_HUB_RESET_N
EIM_DA15	GPIO_3_15	CSI1_RESET_N
EIM_EB0	GPIO_2_28	EXP_GPIO_4
EIM_EB1	GPIO_2_29	EXP_GPIO_5
EIM_LBA	GPIO_2_27	PCIe_VCC_PG
EIM_OE	GPIO_2_25	AUD_PWR_EN
EIM_RW	GPIO_2_26	UART_PWR_EN
EIM_WAIT	GPIO_5_0	CSI0_RESET_N
ENET_CRSDV	GPIO_1_25	RGMII_RESET_N
ENET_TX_EN	GPIO_1_28	RGMII_INT_N
GPIO_2	GPIO_1_2	CAN1_STBY
GPIO_4	GPIO_1_4	PCIE_DIS_N
GPIO_5	GPIO_1_5	CAN2_STBY
GPIO_9	GPIO_1_9	BT_DISABLE_N
GPIO_16	GPIO_7_11	LVDS0_PEN_IRQ_N
GPIO_18	GPIO_7_13	EXP_GPIO_6
GPIO_19	GPIO_4_5	EXP_GPIO_7
NANDF_ALE	GPIO_6_8	XBEE_IDENT
NANDF_CS2	GPIO_6_15	EXP_I2C_IRQ_N
NANDF_CS3	GPIO_6_16	EXP_I2C_GPIO
NANDF_D0	GPIO_2_0	AUD_HP_DET
NANDF_D1	GPIO_2_1	DISP_IRQ
NANDF_D2	GPIO_2_2	USER_LED0
NANDF_D3	GPIO_2_3	USER_LED1
NANDF_D4	GPIO_2_4	USER_LED2
NANDF_D5	GPIO_2_5	EXT_GPIO_0
NANDF_D6	GPIO_2_6	EXT_GPIO_1
NANDF_D7	GPIO_2_7	EXT_GPIO_2
NANDF_RB0	GPIO_6_10	PCIe_VCC_EN
SD3_DAT2	GPIO_7_6	CSI_RESET_N
SD3_DAT3	GPIO_7_7	PCIE_WAKE_N
SD3_RST	GPIO_7_8	PCIE_RESET_N
PMIC_GPIO7	PMIC_GPIO7	PWR_EN

Format: DD/MM/YYYY

12/01/2015 - ConnectCore i.MX6 System Board Computer

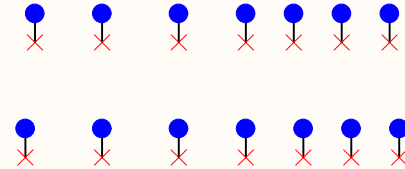
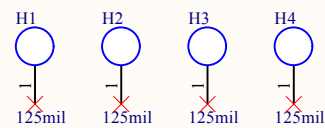
* PCB board spin SBCv1 => SBCv3:

- PCB spin: 3001475x-01 revB => 3001475x-03 revA
- Changed R11 to 270R_0805 (0,5W)
- Changed D2 to MMSZ5231TB1G
- Changed U7 to SIP32401A load switch
- Added a 2-pin 3.3V power connector and a 2-pin 5V power connector
- Removed SATA power connector
- PMIC_ADCIN signals connected to GPIO expansion connector
- Changed pin 3 of J28 (I2C expansion) from GND to +3.3V
- Changed pin 5 of J29 (UART expansion) from GND to +3.3V
- Changed pin 5 of J30 (GPIO expansion) from GND to +3.3V
- Changed J34 (SPI expansion) to an 8-pin connector
- Changed expansion LVDS1 to DF14 connector
- Changed expansion CS11 to FFC CS11 connector
- Changed XBee Connectors to SMD connectors
- Changed Boot configuration jumpers to a 2pos switch
- Changed U8 and U9 to MAX3243EIPW
- Changed C20-C27 to 0.1uF capacitors
- Changed X1 to and extended temperature range crystal
- Changed reset button SW2 to an extended temperature range button
- Reset button connected to over voltage circuit to completely reset the board
- Two 22uF capacitors added to the headphone output lines.
- Changed R28 and R29 from 10K to 1K
- Added two test points to the unused LDOs VLDO7 and VLDO8
- Added R26, R27 and C104 to improve RGMII_REF_CLK signal
- Added 1K pull-down (R50) on RGMII_REF_CLK signal for strapping purpose
- U11 changed from SI2323DS to FDMA510 to improve power dissipation
- Added R127 and UART_PWR_EN signal to disable UARTs
- Power LED D1 connected to 5V instead of to VSYS
- Added Q4, U22, R131 and R132 to put audio codec on standby
- Added AUD_PWR_EN signal connected to EIM_OE module pin
- Added UART_PWR_EN signal connected to EIM_RW module pin
- Moving SPI1_IRQ_N from EIM_EB3 (pad AA18) to EIM_CS0 (AB13) which correspond to GPIO2_IO23
- Added a 0R (R20) resistor to GND on PMIC_CHG_WAKE (V14)
- Added a 10K (R23) resistor to VLDO3_MCA on PMIC_PWR_EN/GPIO9 (W13)
- Added R80/R81/R82 as current measurement option for the module LDOs
- Added R83 as current measurement option for the on-module 3V3
- Connected VSYS to U12 and U14 instead of 5V
- Connected VSYS to J32.1 instead of 5V
- Added 10K to VSYS on ON/OFF signal (PMIC_ONKEY#)
- Added support of an extra power supply for PCIe minicard and Skywire cellular module on Xbee socket. See U23
- Added PCIe_VCC_EN net connected to CC6 (NANDE_RB0).
- Added PCIe_VCC_PG net connected to CC6 (EIM_LBA).
- Connected XBEE_IDENT to CC6 (NANDE_ALE).
- Adding 0R resistor as CMO for VGEN_3V3
- Changed MIPI camera and display connectors to support Raspberry Pi accessories
- Added Tag Connect footprints for JTAG and SWD debug ports
- Connected J3.2 directly to the reset button instead of the POR_N signal
- Updated Xbee connectivity to support NimbeLink Skywire modules
- Added EMI filter FIL1 on input DC voltage
- Changed supply of RJ45 connector (LEDs) from 3V3 to VLDO4_2V5

01/02/2016 - ConnectCore i.MX6 System Board Computer

* Revision: 1P - NPR004582

- 55001809-02 rev1P - Pilot release of the variant.
- Depopulate R93.
- Replaced RJ45 (J13) by industrial temperature range model.



Title: History		
Designer: Daniel Alesanco	Sheet: 13 of 13	
Variant: 55001809-02	Rev: 1P	
Description: ConnectCore for i.MX6 SBC - QC 1GHz, 4GB FL/1GB DDR3, -20°C / 70°C		