

ConnectCore i.MX 8M Mini Development board

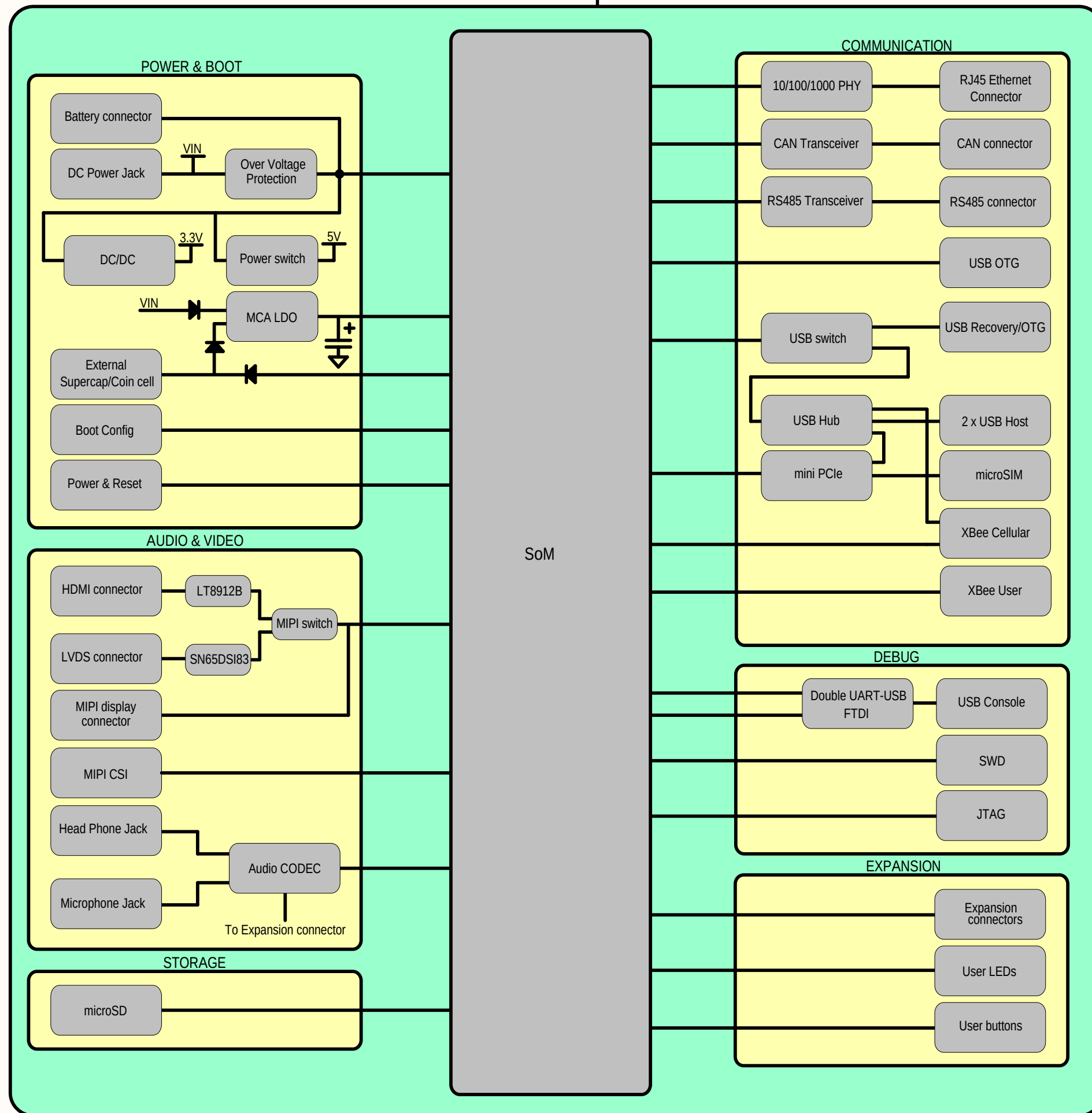
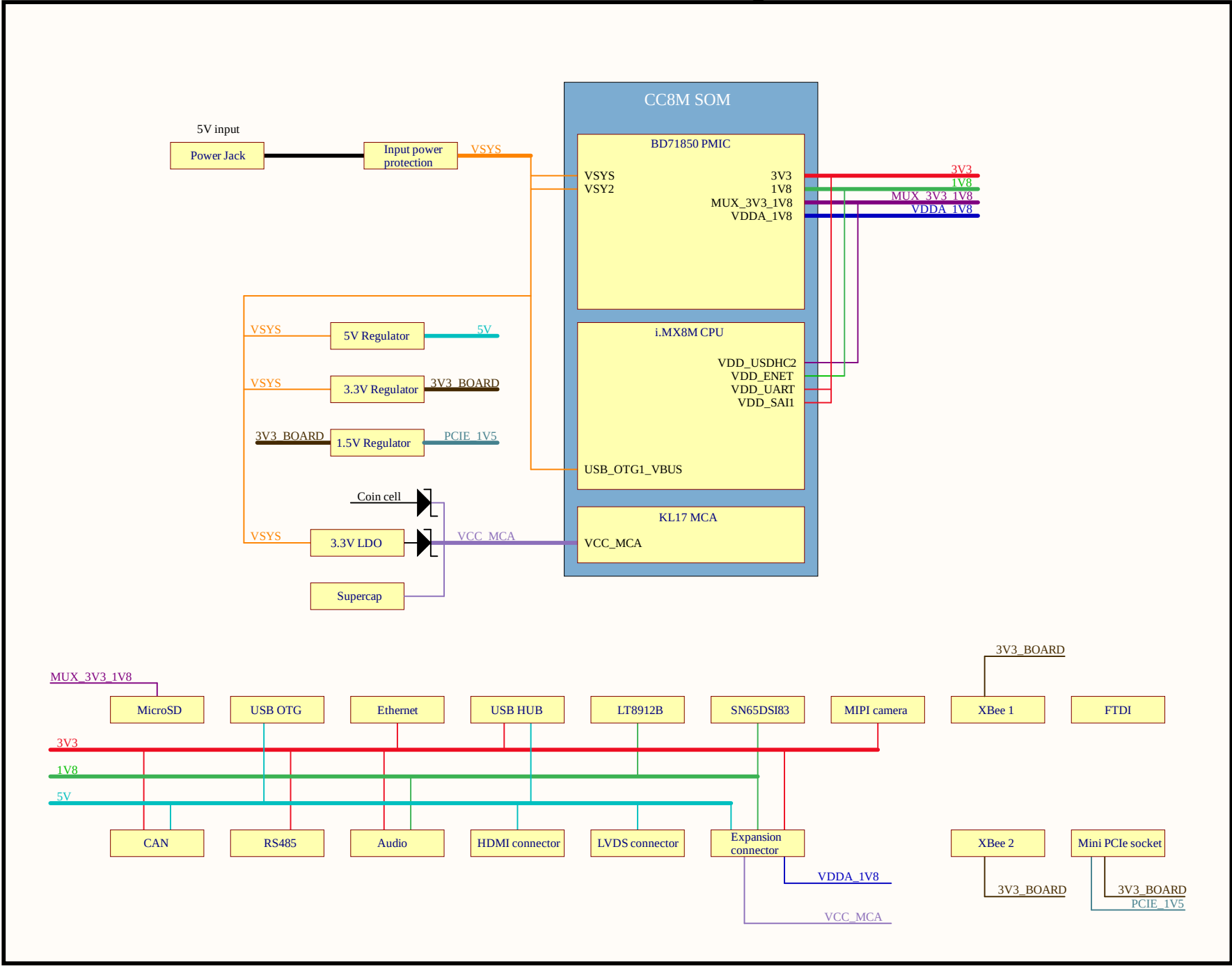


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Power architecture diagram

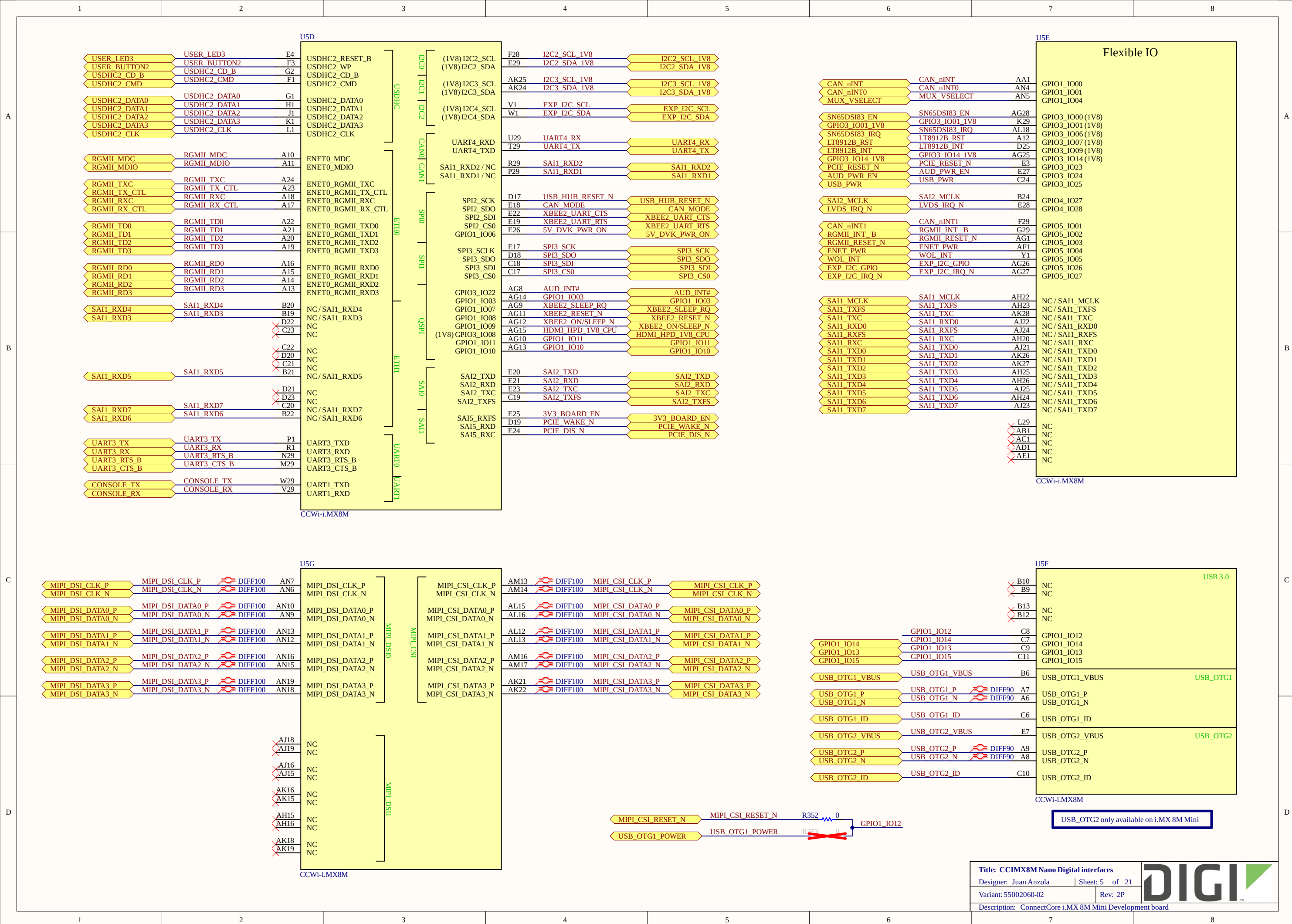


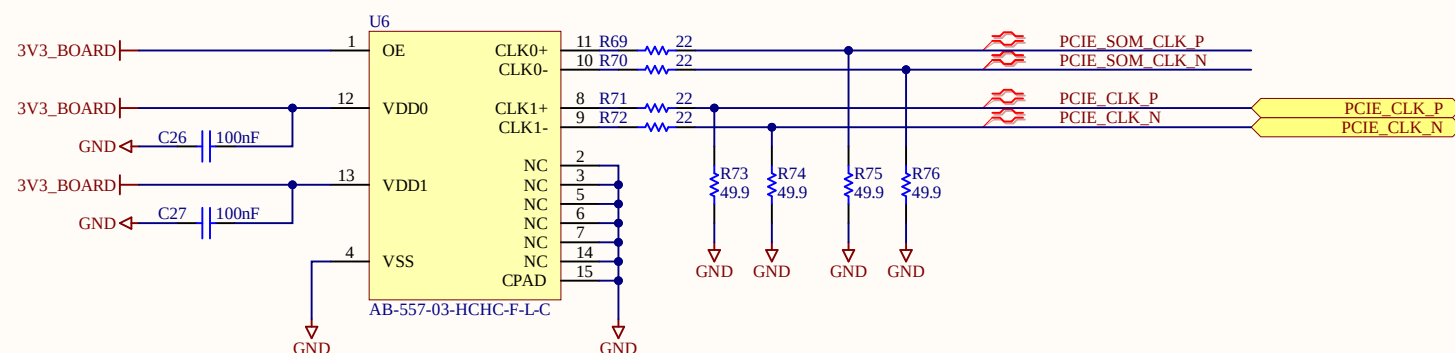
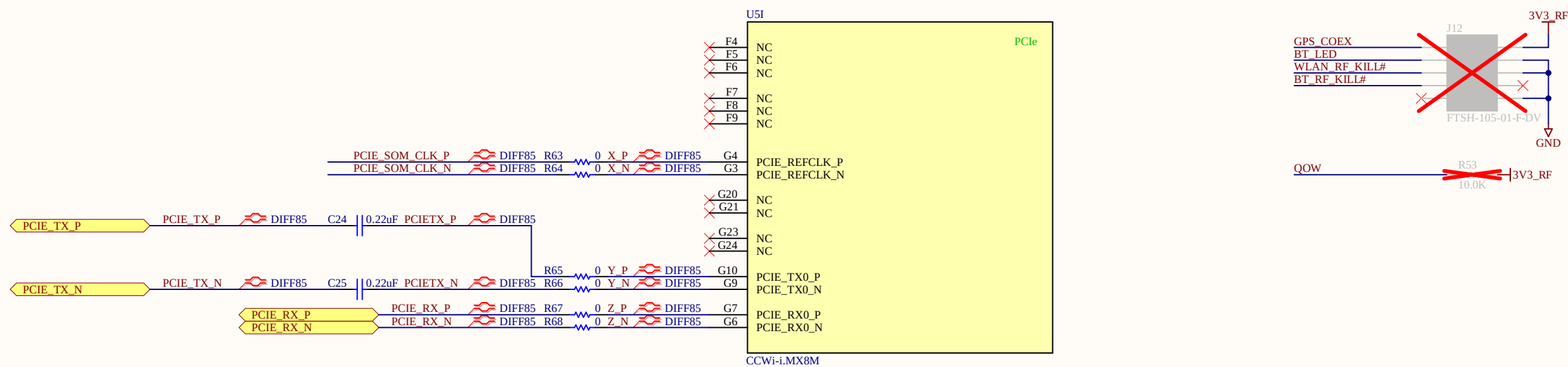
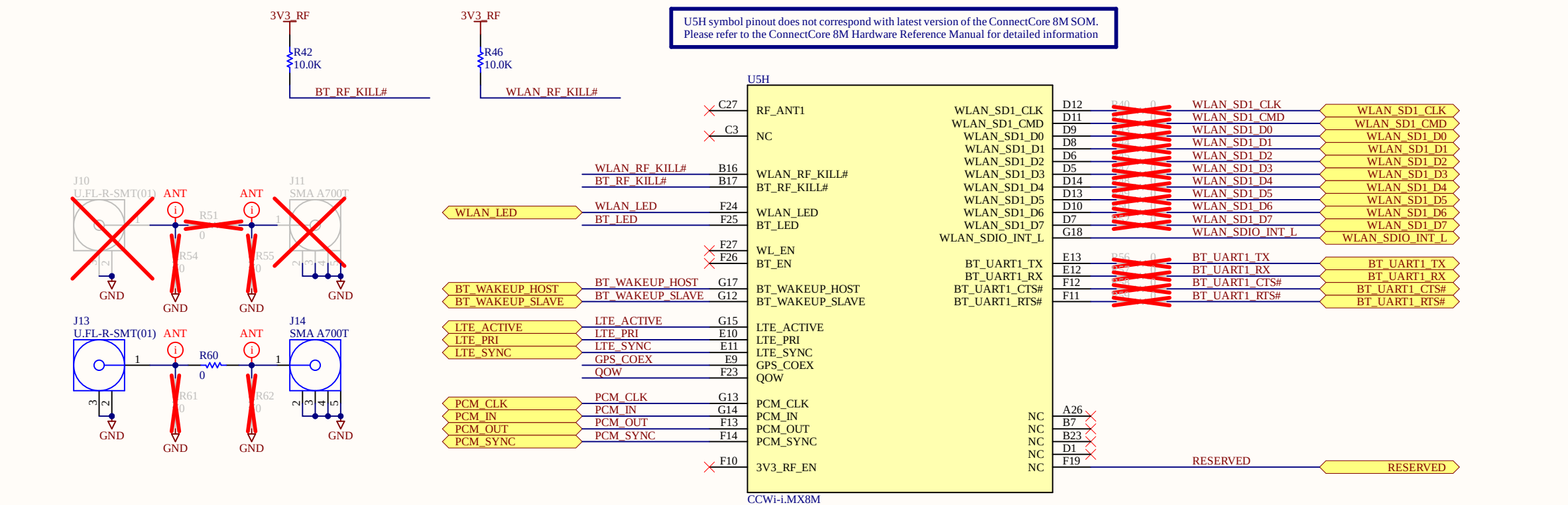
The schematic diagram illustrates the MP2316 DC-DC converter circuit. The input VIN_PROT is connected to the VIN pin (pin 3) through a network of capacitors C11 (22µF), C12 (22µF), and C13 (100nF). A red 'X' is over C11. The EN pin (pin 9) is connected to the 3V3_BOARD_EN signal through a 470K resistor R23 (marked with a red 'X') and a 470K resistor R26 to GND. The PG pin (pin 5) is connected to GND through a 100K resistor R20. The FREQ/MODE pin (pin 4) is connected to GND through a 2.2µF capacitor C22. The VCC pin (pin 11) is connected to GND through a 100K resistor R21. The BST pin (pin 10) is connected to the SW pin (pin 2) through a 100nF capacitor C9. The SW pin (pin 2) is connected to the SW pin (pin 13) through a 4.7µH inductor L1. The CR pin (pin 8) is connected to the SW pin (pin 13) through a 47pF capacitor C21. The FB pin (pin 7) is connected to the SW pin (pin 13) through a 53.6K resistor R24. The SS pin (pin 6) is connected to GND through a 15nF capacitor C23. The output 3V3_BOARD is connected to the SW pin (pin 13) through a network of capacitors C15 (10µF), C16 (10µF), C17 (10µF), and C18 (10µF). A table on the right shows the resistor values for the output voltage:

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

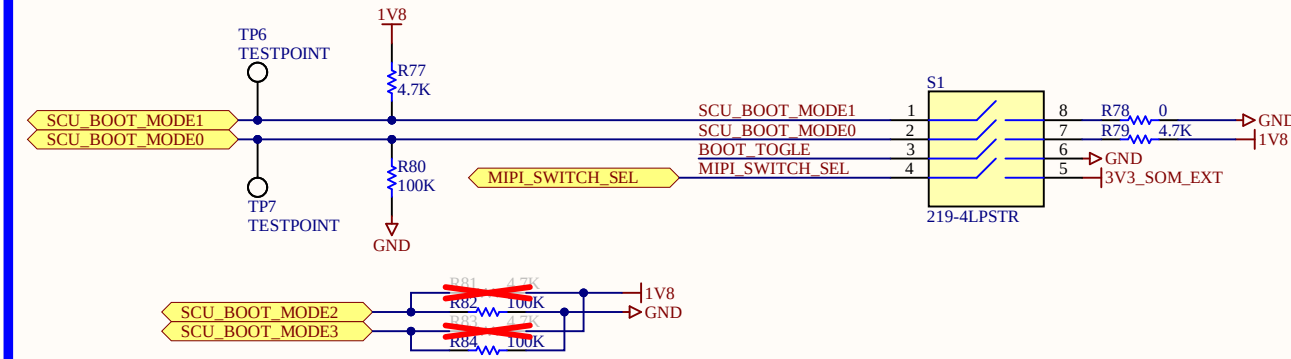
The schematic diagram shows the SIP32401A voltage detector circuit. The detector's IN pin (pin 3) is connected to VIN_PROT through a 10uF capacitor (C10). The EN pin (pin 4) is connected to 3V3_SOM_EXT through a 100K resistor (R25). The OUT pin (pin 1) is connected to the 5V_DVK_PWR_ON signal. The detector's GND pin (pin 2) and PAD pin (pin 5) are connected to ground. A voltage divider is connected to the 5V supply, with R19 (10K) and R20 (100K) resistors. The output of the divider is connected to the detector's IN pin. Decoupling capacitors C14 (100uF), C19 (22uF), and C20 (100nF) are connected to ground. The detector is labeled SIP32401A.

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





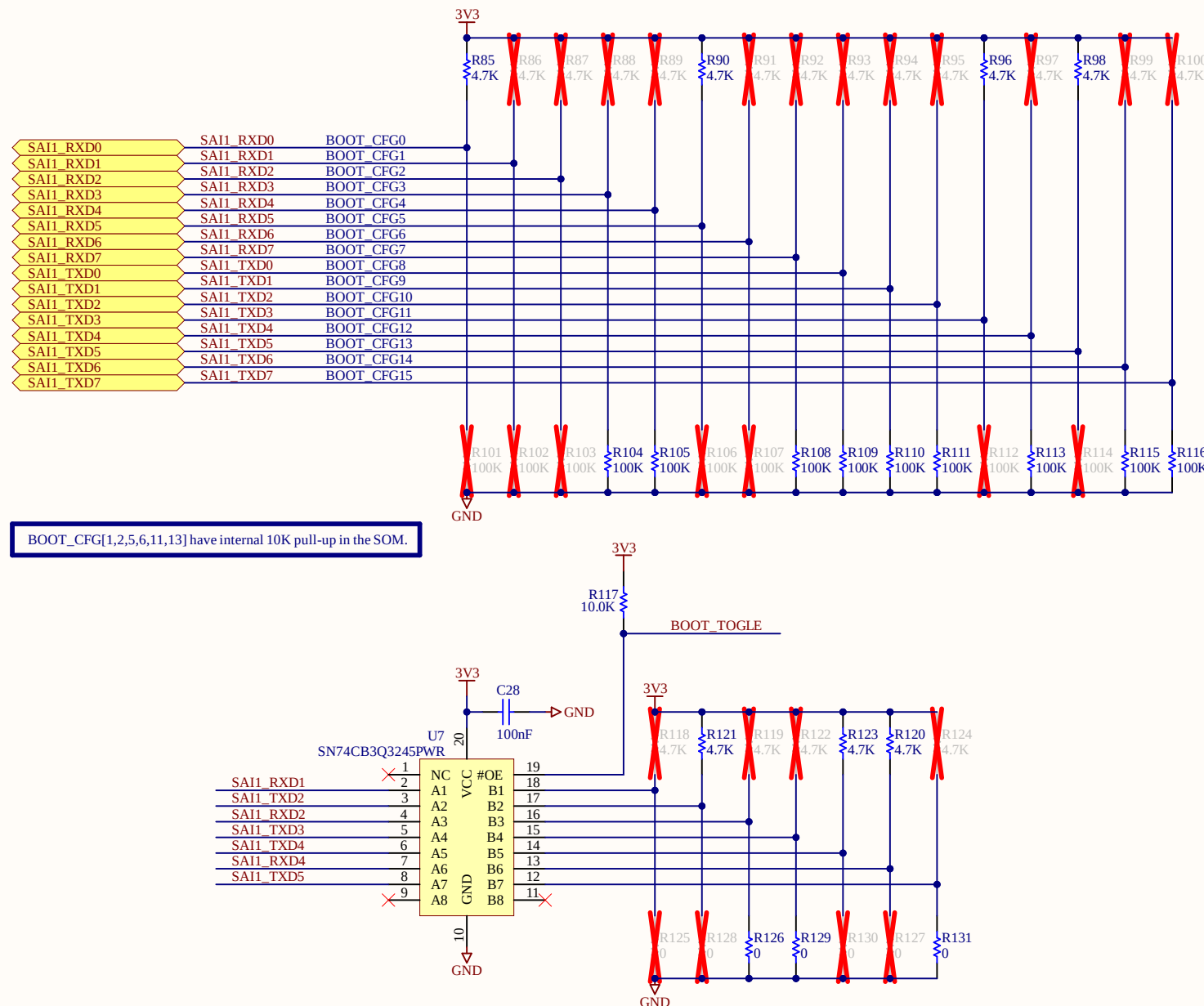
Boot Mode



SW1.4	SW1.3	SW1.2	SW1.1	Description
-	Open	Open	Open	Boot from eMMC0
-	Close	Close	Open	Boot from microSD
-	-	Open	Close	Boot from Fuses
-	-	Close	Close	Serial downloader
Open	-	-	-	MIPI connected to HDMI
Close	-	-	-	MIPI connected to LVDS

SW1.3 only required for CC8M Mini

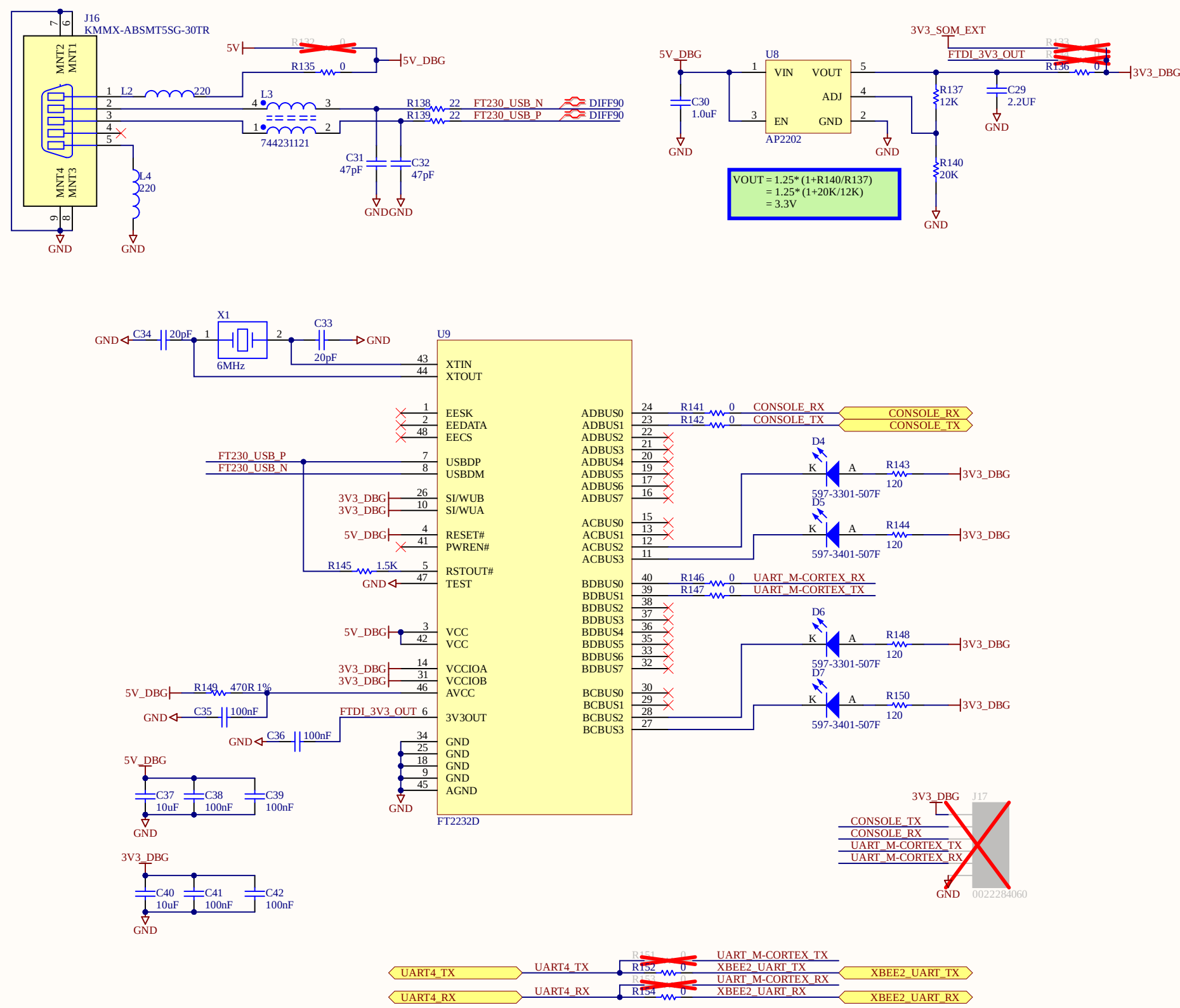
i.MX 8M Mini bootstrap



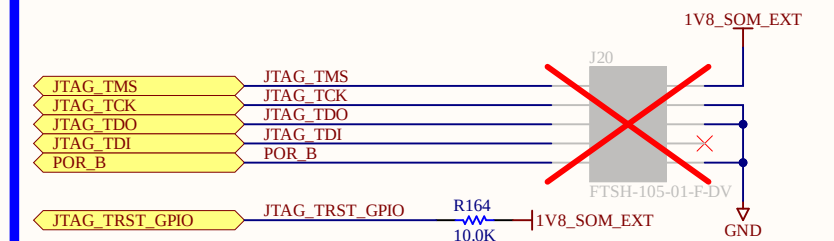
BOOT_CFG[15]	BOOT_CFG[14]	BOOT_CFG[13]	BOOT_CFG[12]	BOOT_CFG[11]	BOOT_CFG[10]	BOOT_CFG[9]	BOOT_CFG[8]
Infinity loop (Debug USE only) 0 - Disable 1 - Enable	001 - SD/eSD			Port Select: 00 - uSDHC1 01 - uSDHC2 10 - uSDHC3		Power Cycle Enable: 0 - No Power Cycle 1 - Enabled via	SD Loopback Clock Source Sel (for SDR50 and SDR104 only): 0 - through SD pad 1 - direct
	010 - MMC/eMMC						
	011 - NAND			Pages In Block: 00 - 128 01 - 64 10 - 32 11 - 256		Nand_Row_address_bytes: 00 - 3 01 - 2 10 - 4 11 - 5	
	100 - QSPI			Flash Auto Probe	FLASH_TYPE: 000 - Device supports 3B read by default 001 - Device supports 4B read by default 010 - HyperFlash 1V8 011 - HyperFlash 3V3 100 - MXIC Octal DDR		
	110 - SPI NOR			Port Select 000 - eCSP11 001 - eCSP12 010 - eCSP13		SPI Addressing: 0 - 3-bytes (24-bit) 1 - 2-bytes (16-bit)	

[illegible]

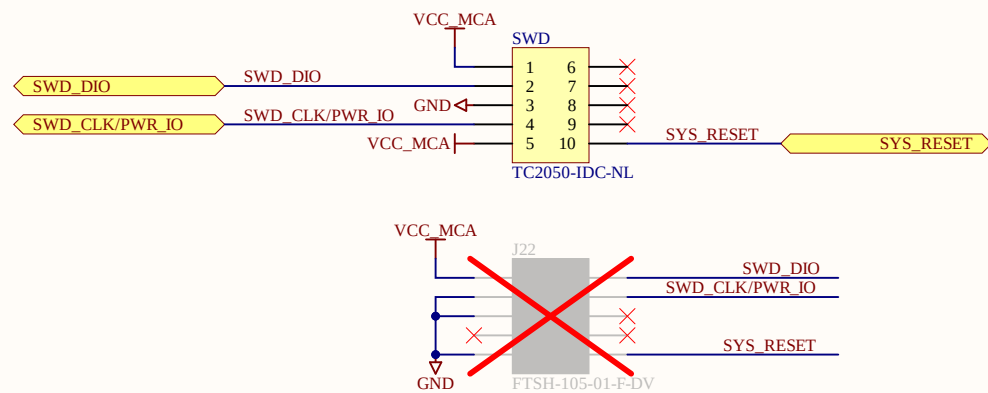
Console ports



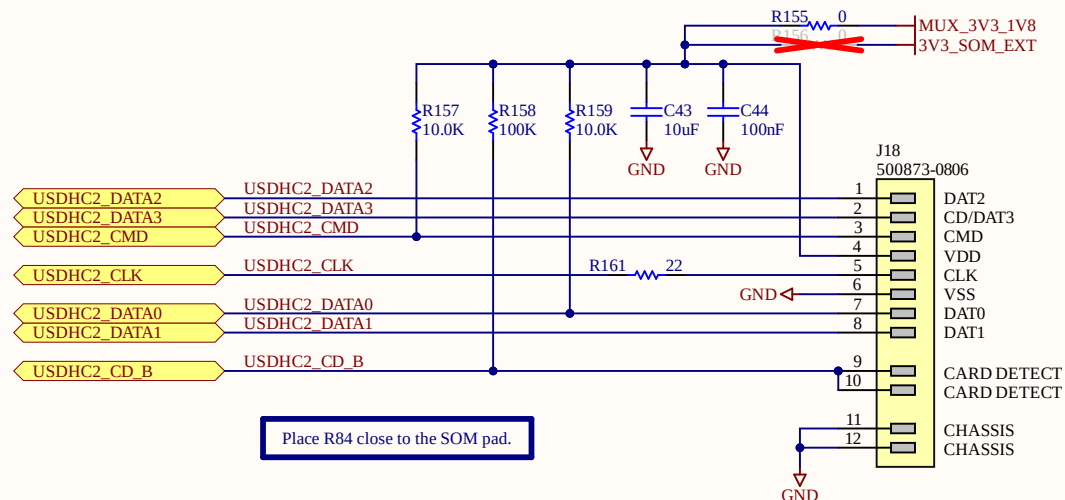
JTAG



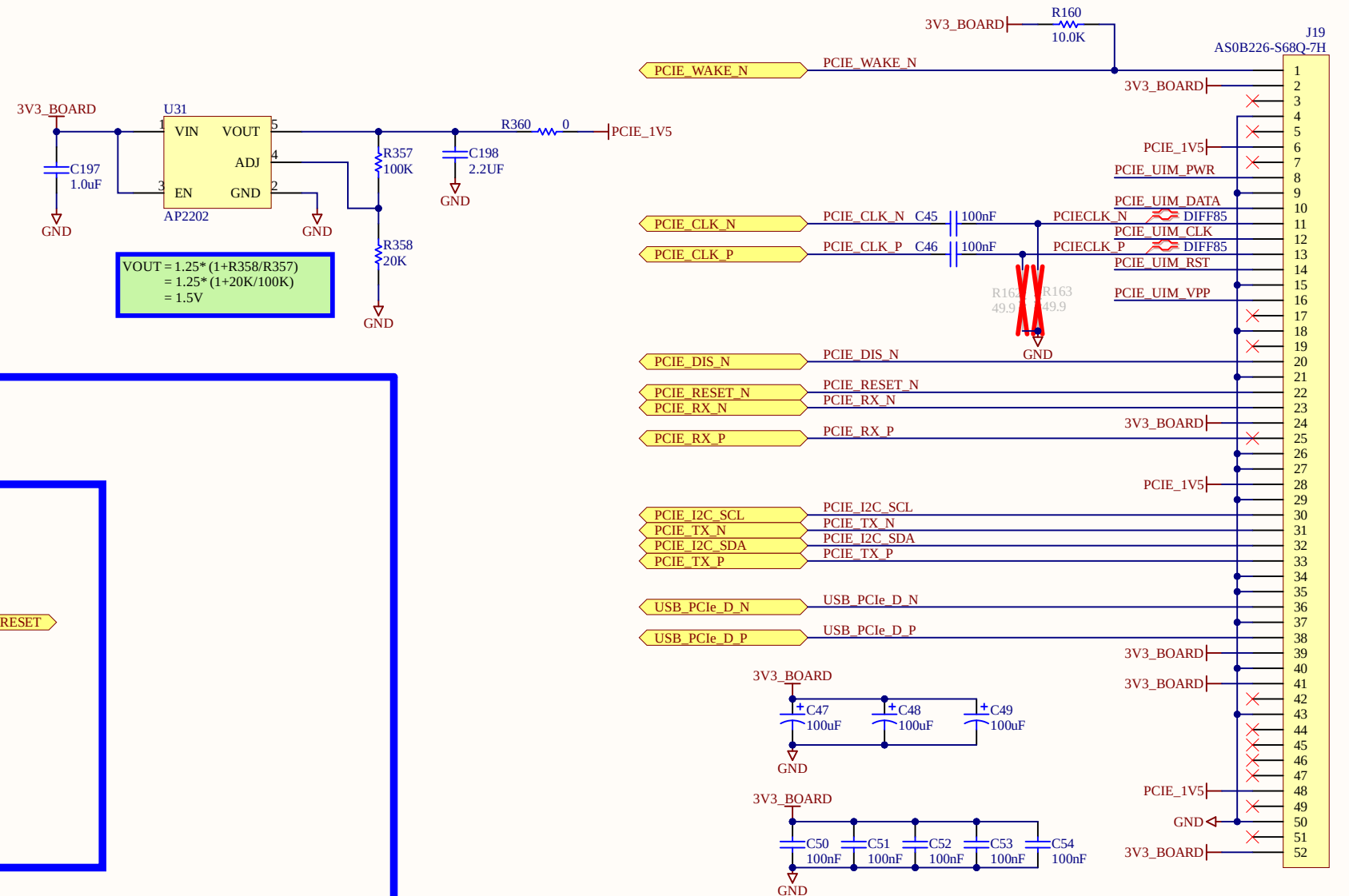
SWD



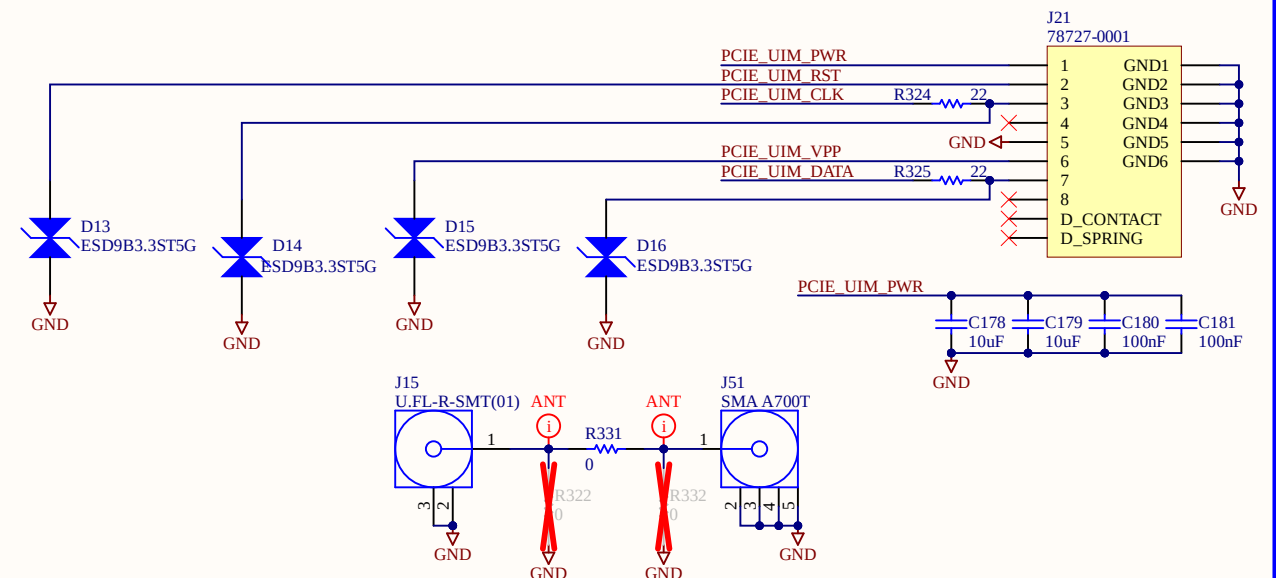
microSD



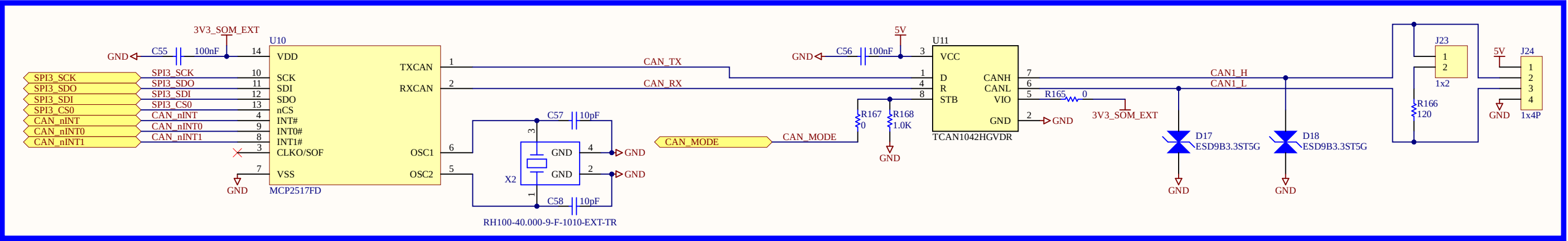
miniPCIe



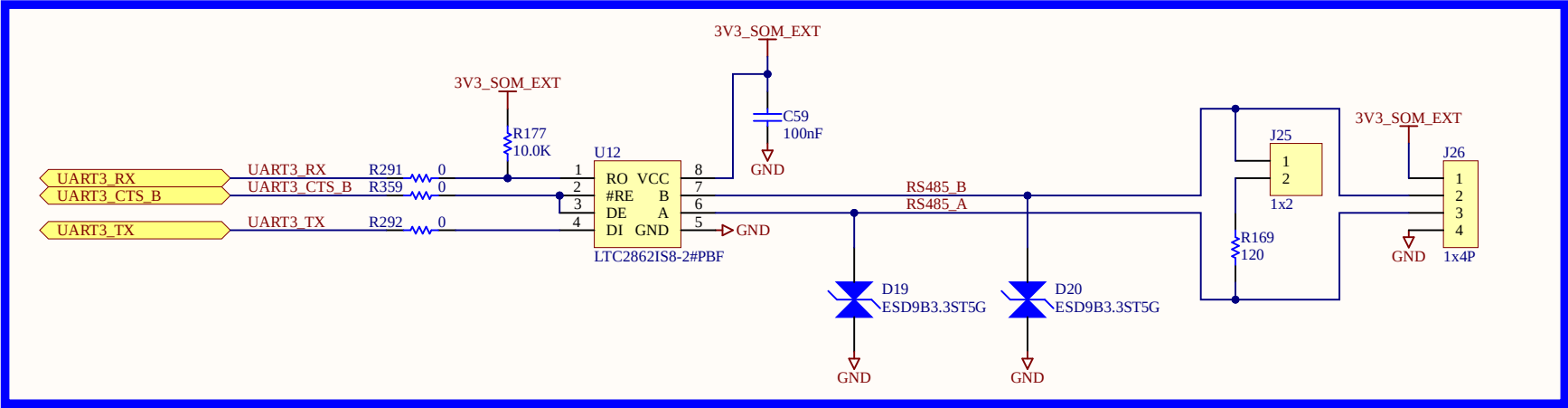
micro SIM



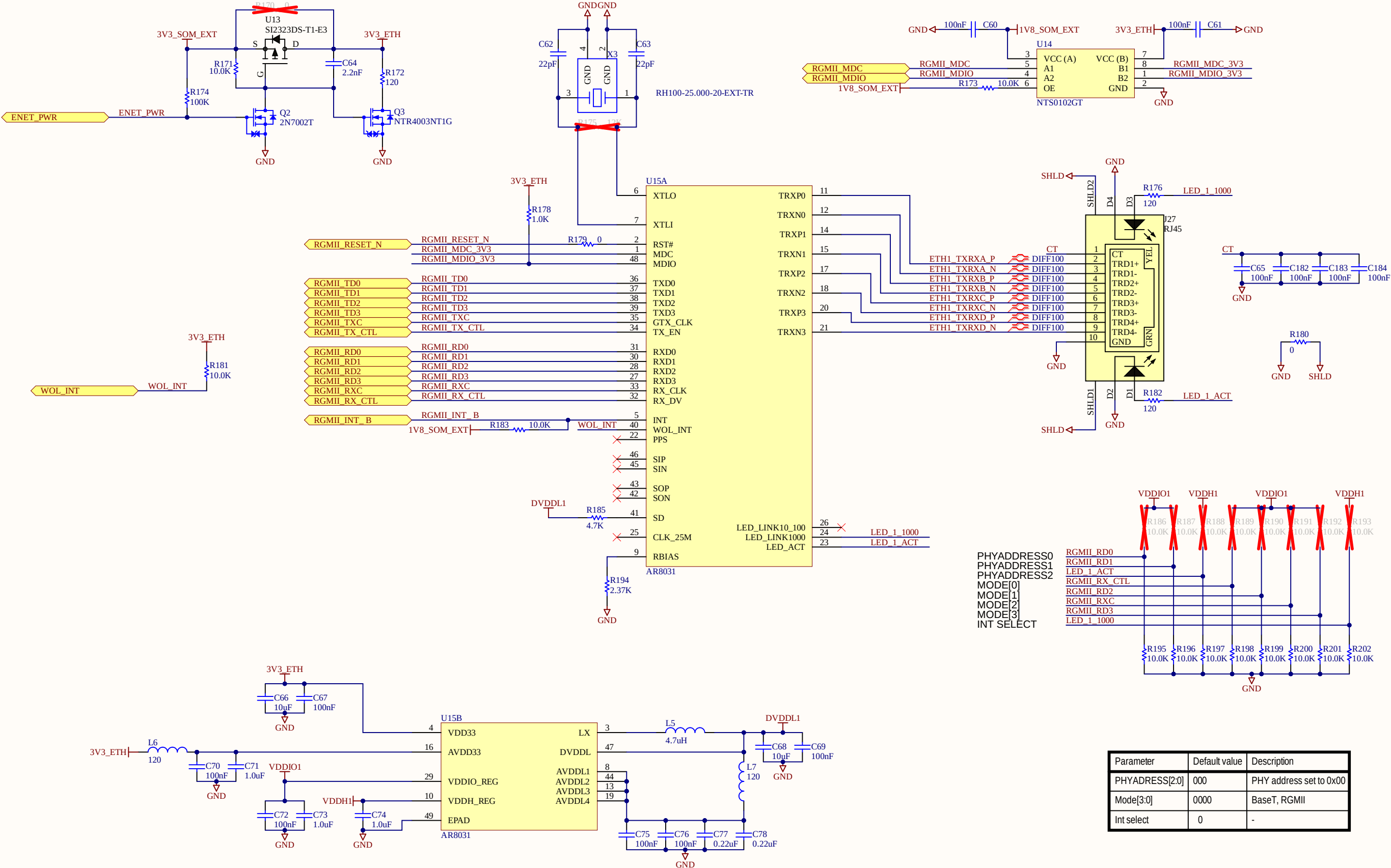
CAN



RS485

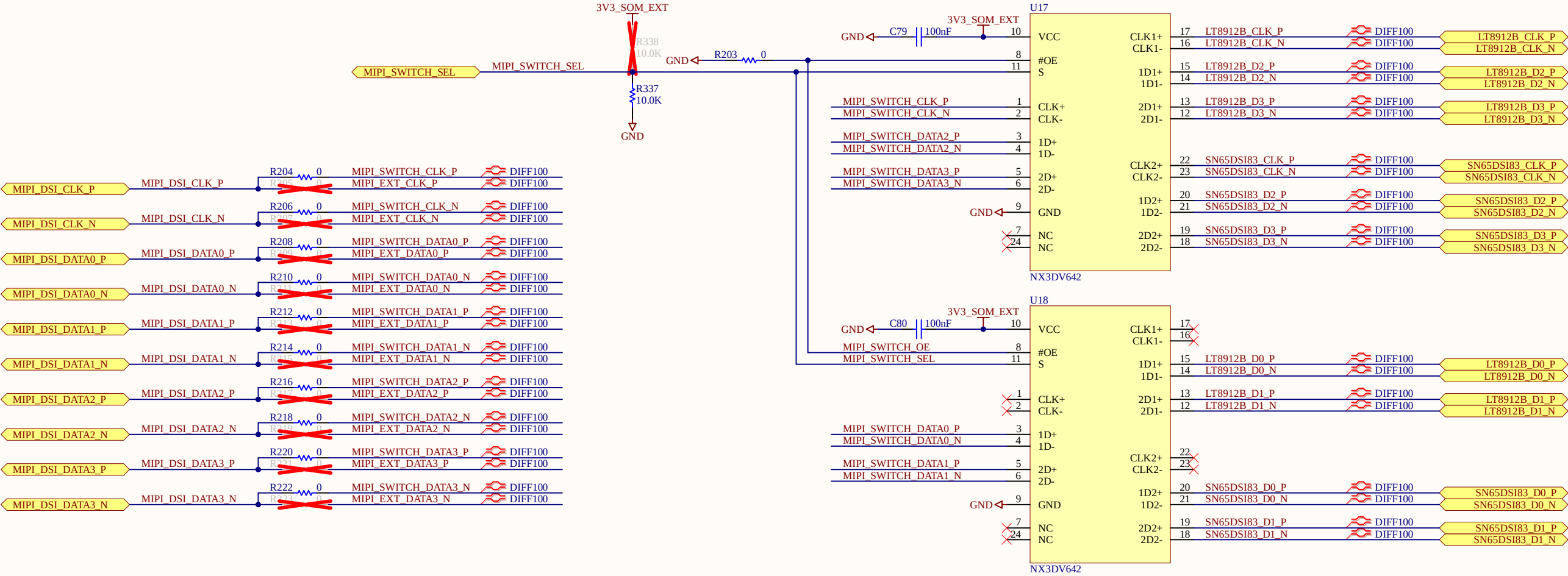


Gigabit Ethernet

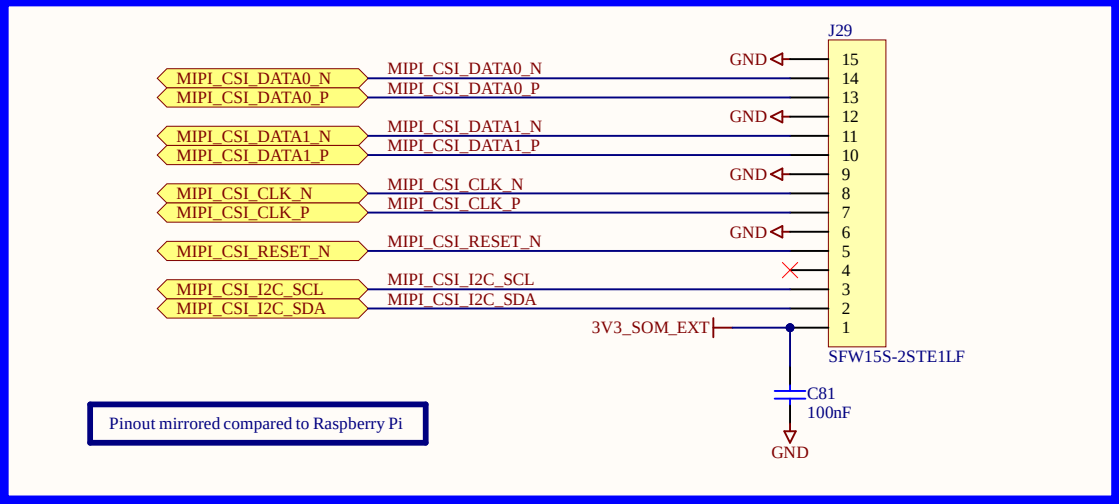


Parameter	Default value	Description
PHYADDRESS[2:0]	000	PHY address set to 0x00
Mode[3:0]	0000	BaseT, RGMII
Int select	0	-

MIPI Display switch

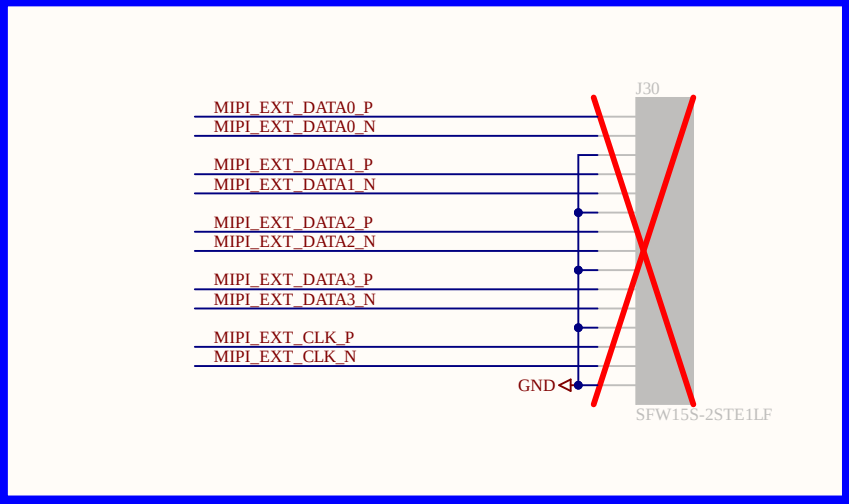


MIPI Camera



Pinout mirrored compared to Raspberry Pi

External MIPI display



Title: MIPI display and switch, MIPI camera

Designer: Juan Anzola Sheet: 12 of 21

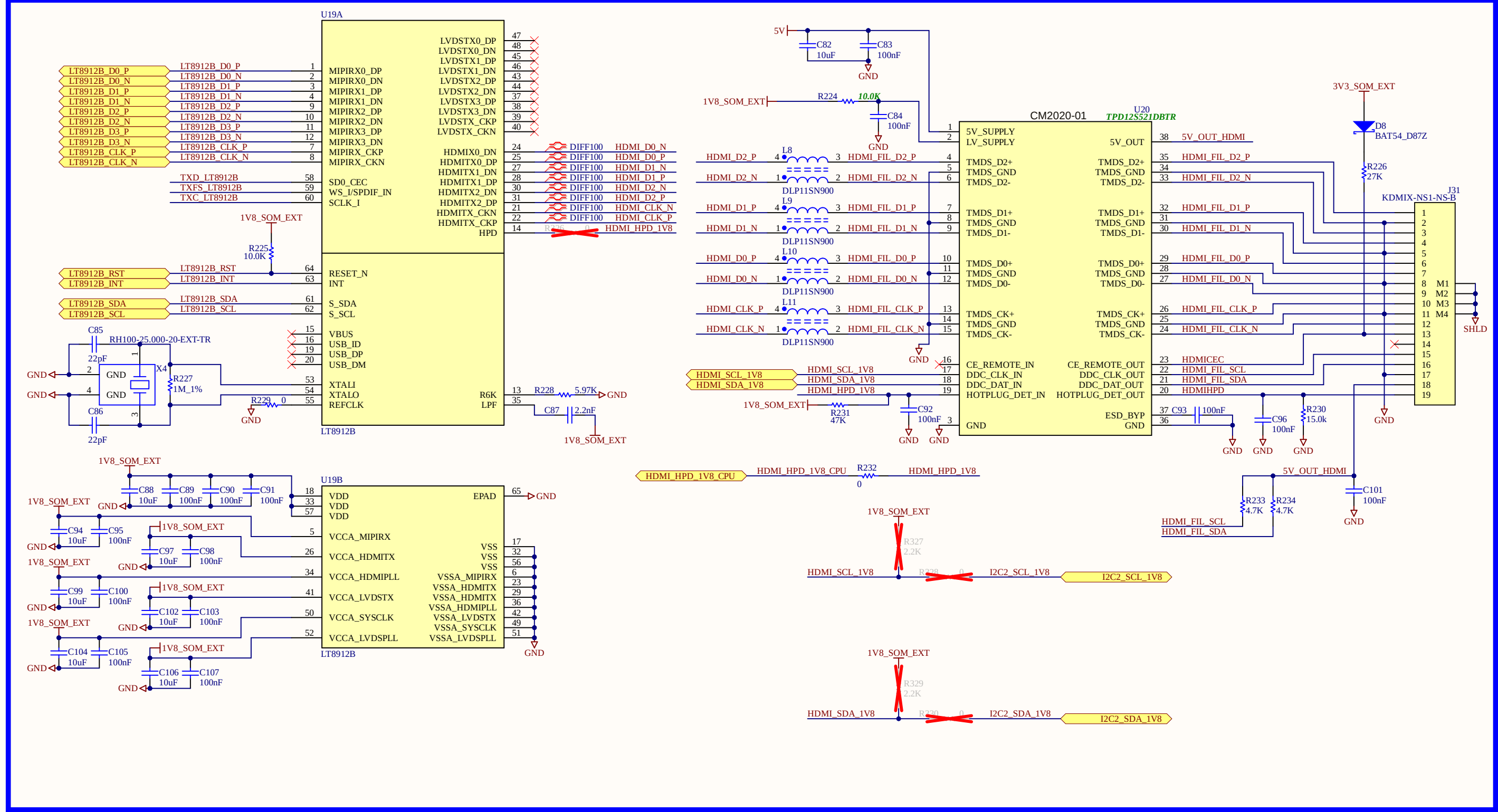
Variant: 55002060-02

Rev: 2P

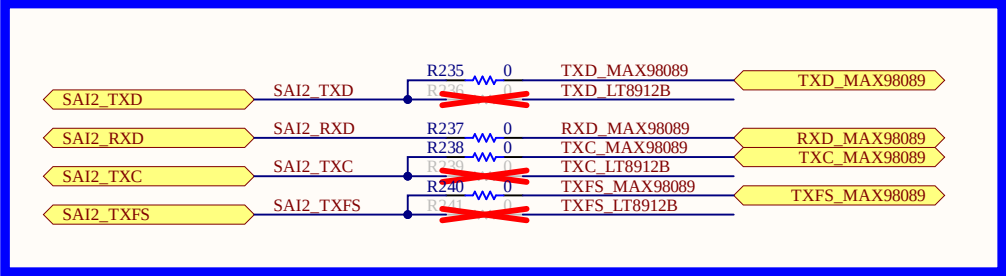
Description: ConnectCore i.MX 8M Mini Development board



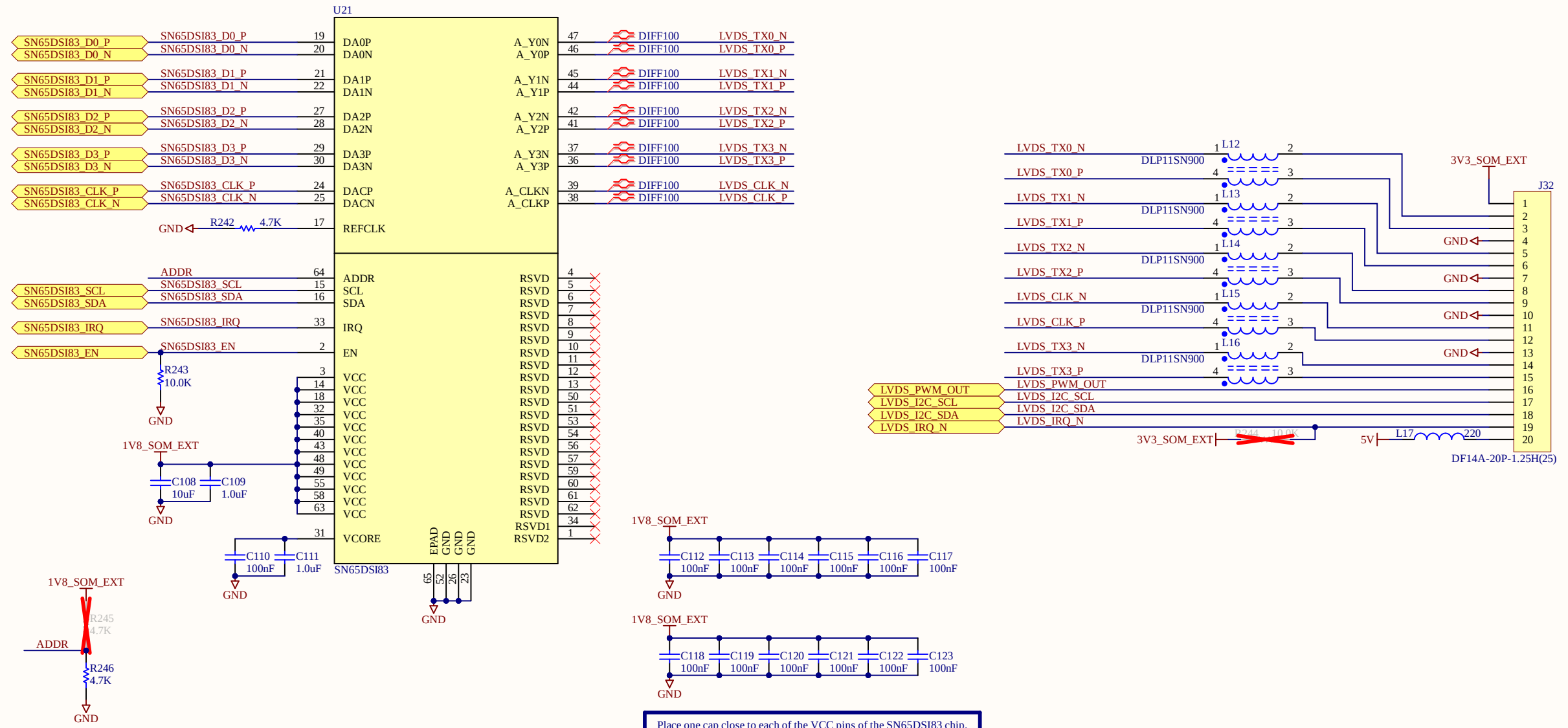
LT8912 MIPI to HDMI/LVDS bridge



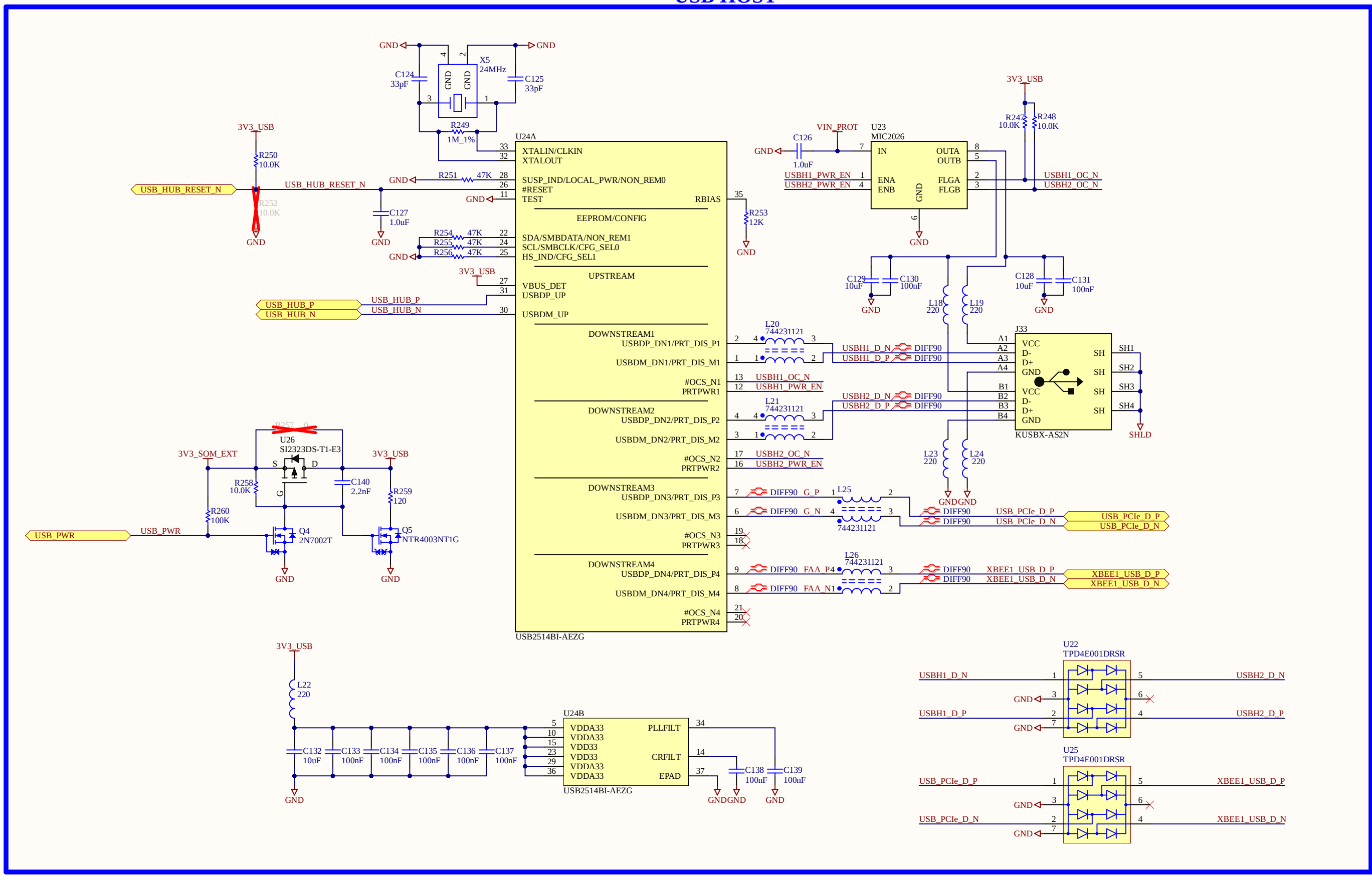
SAI bus selection



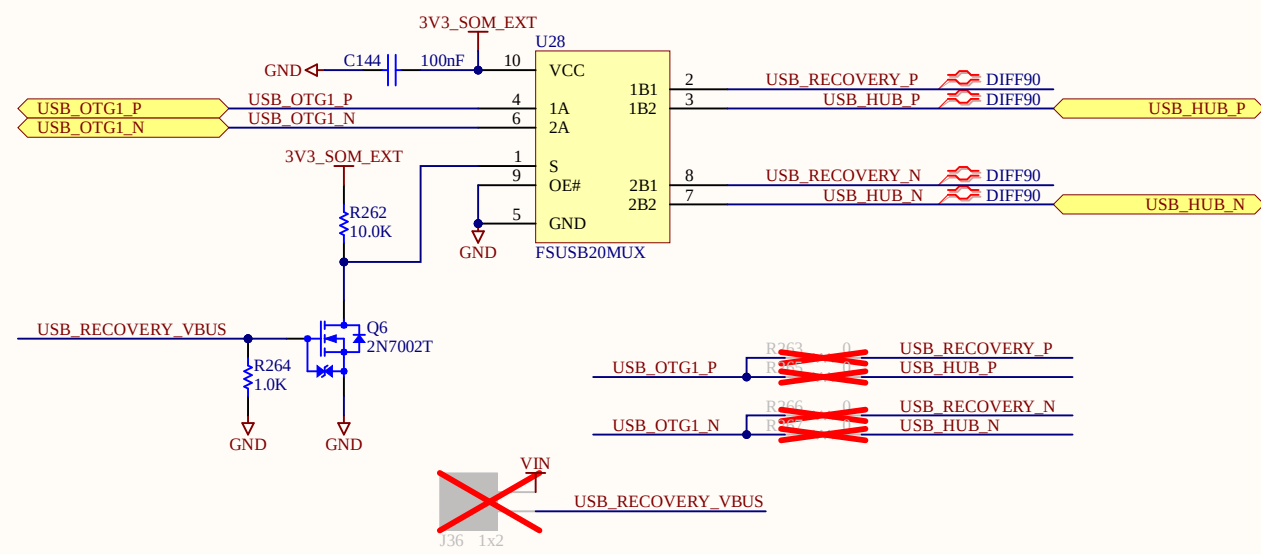
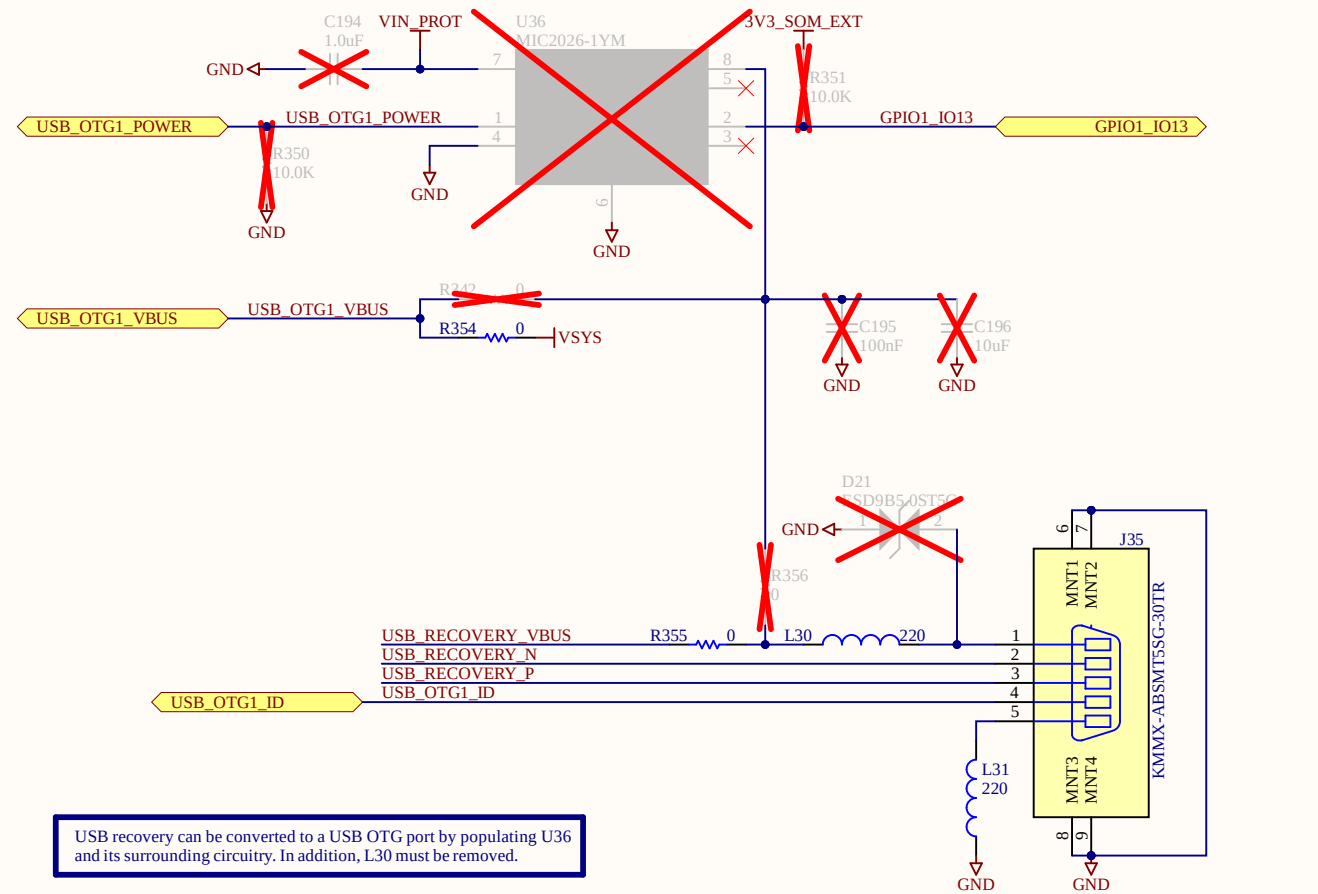
SN65DSI83 MIPI to LVDS bridge



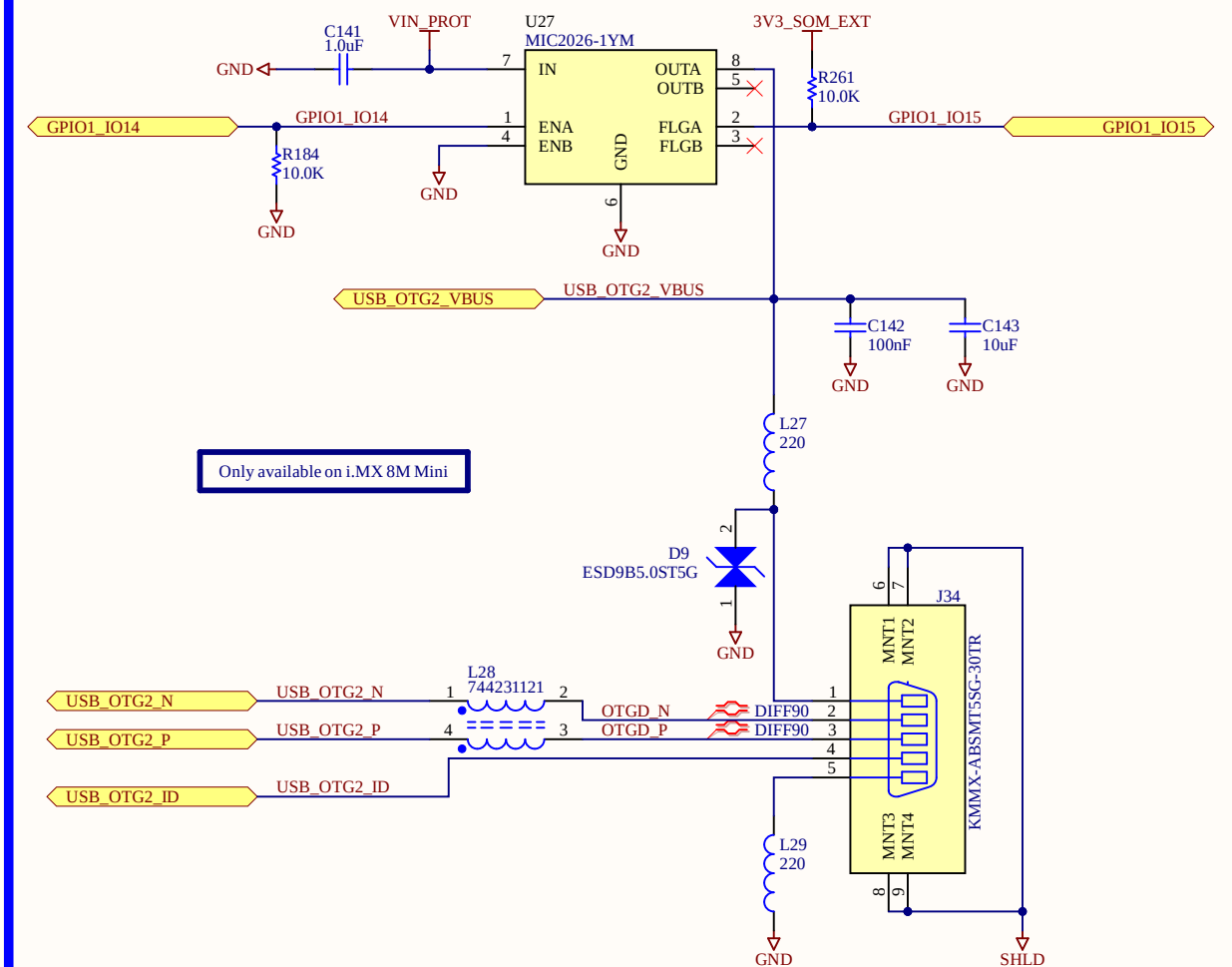
USB HOST



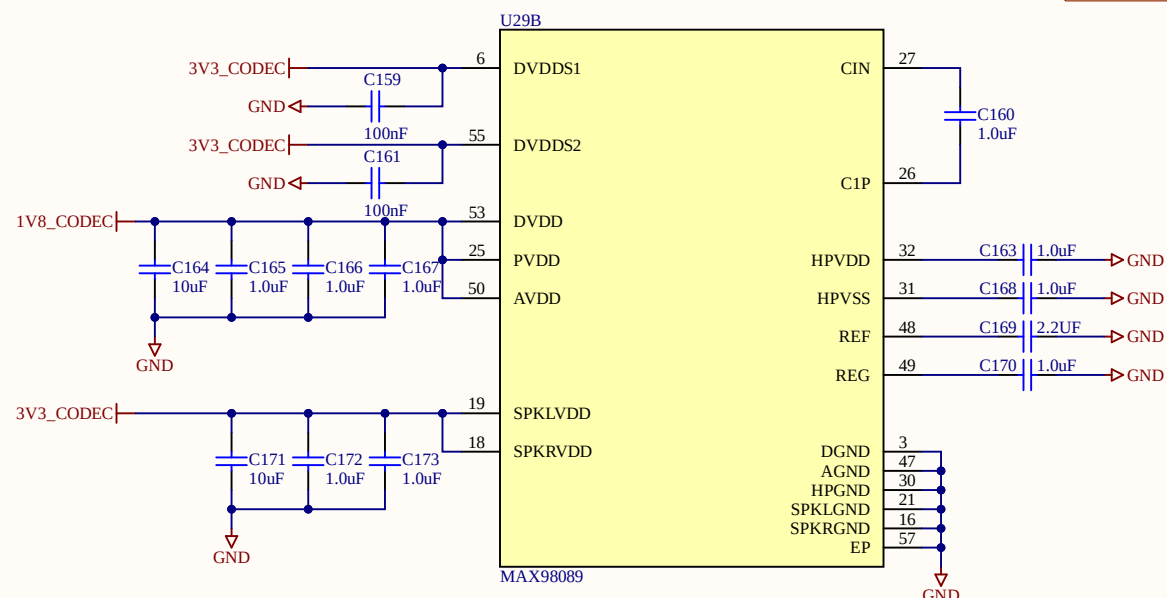
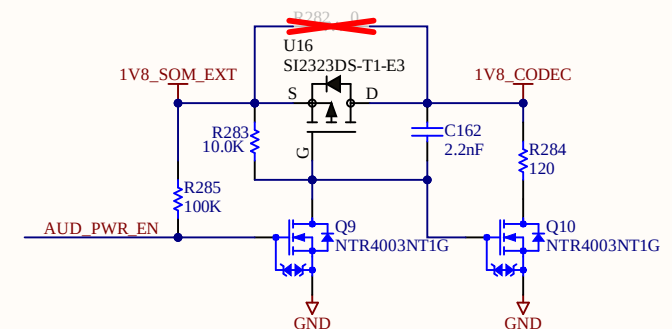
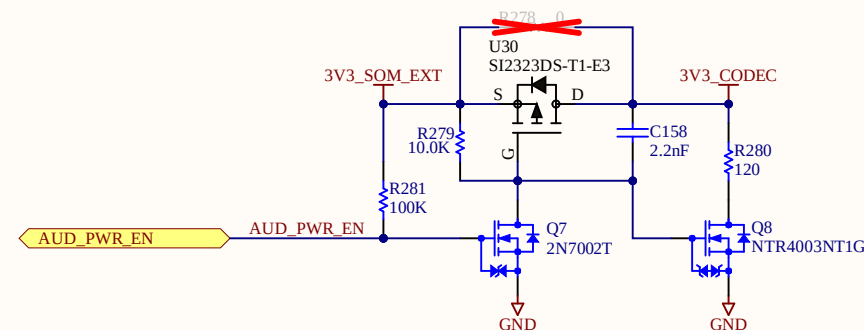
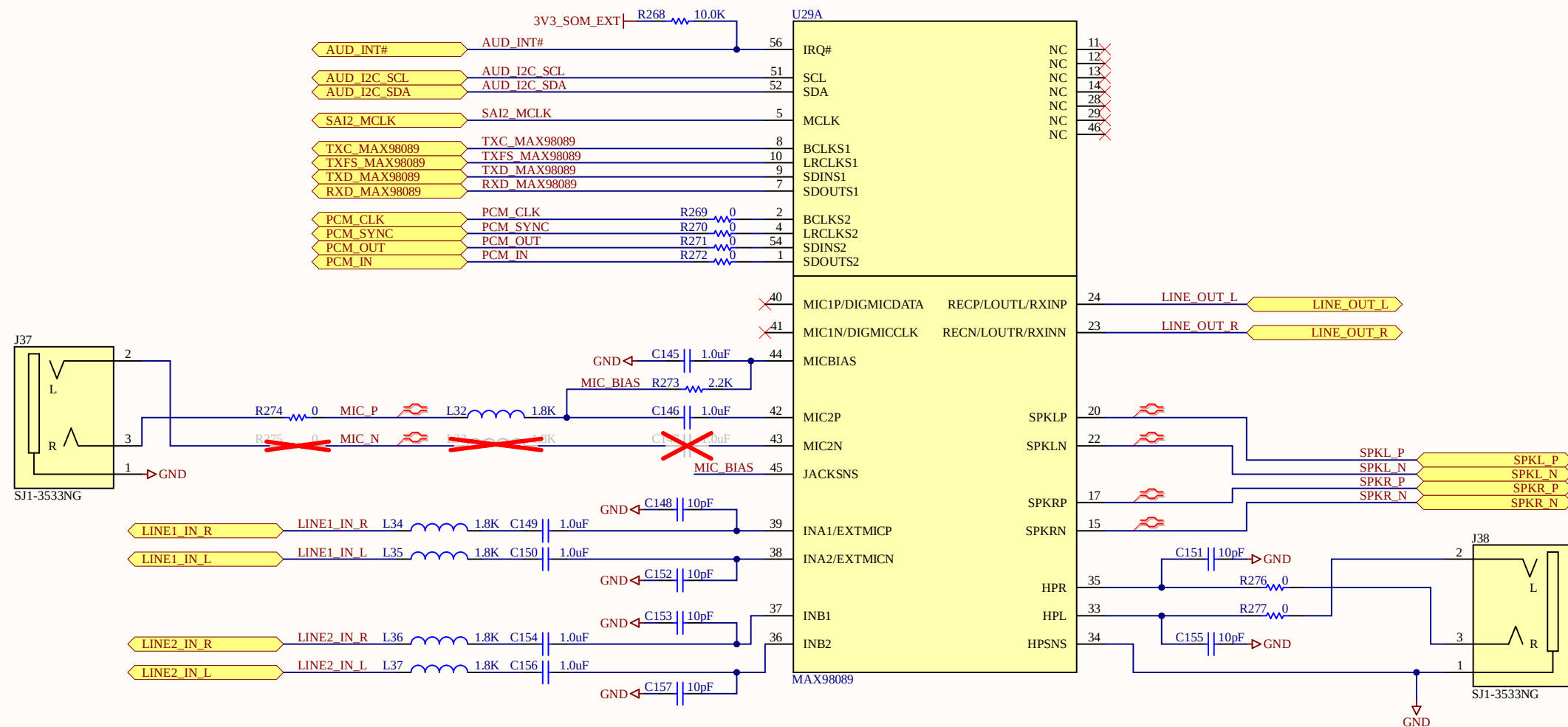
USB Recovery / OTG



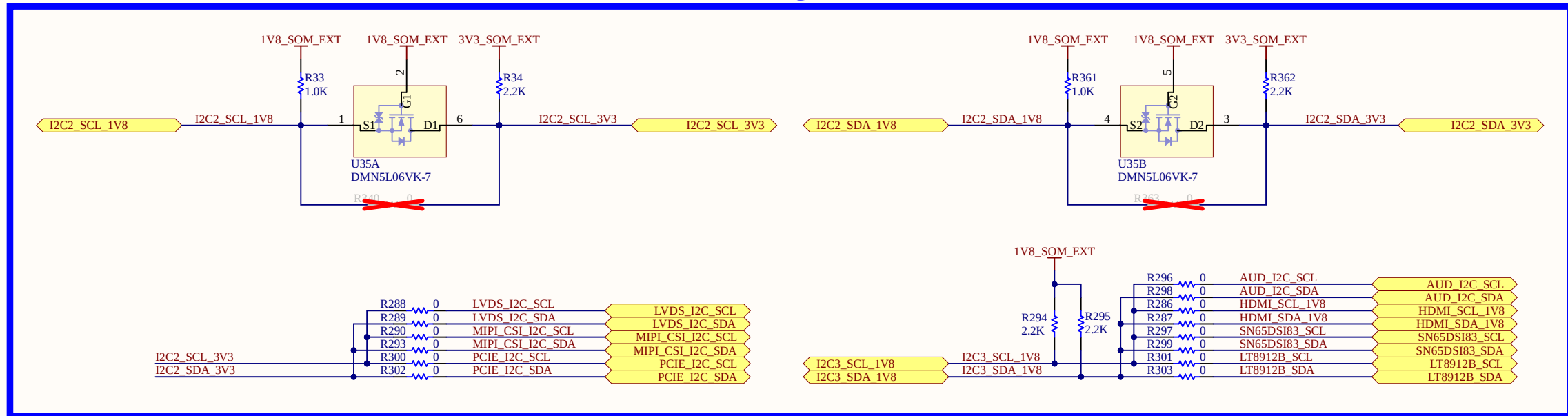
USB OTG



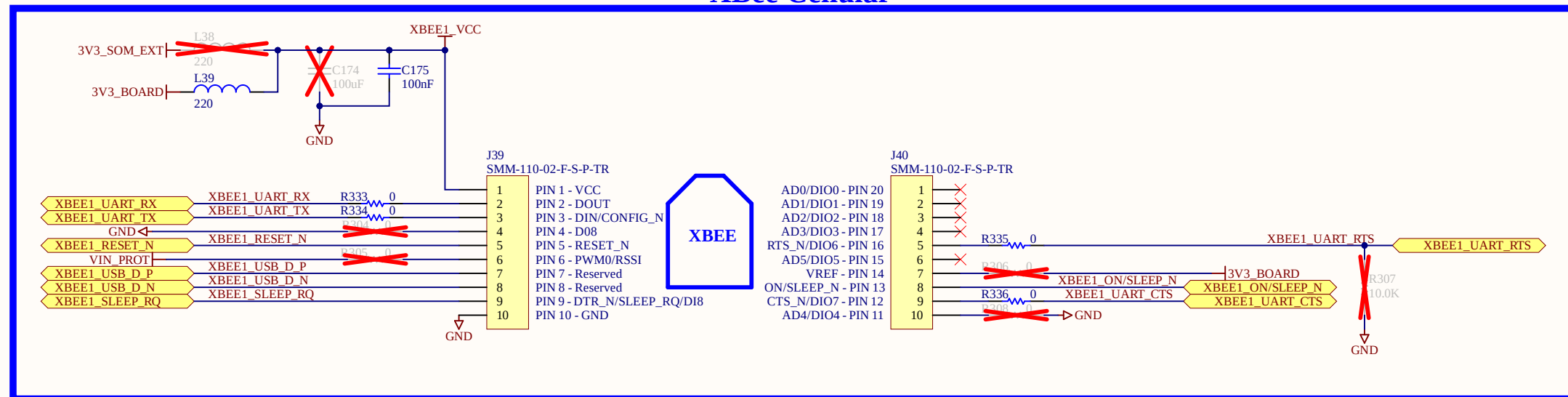
AUDIO



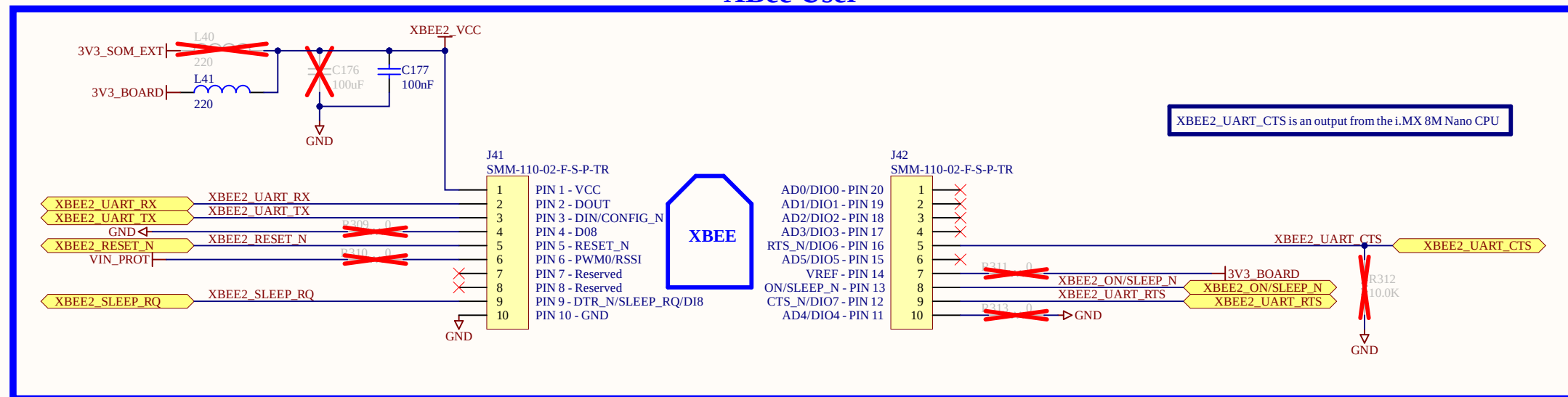
I2C



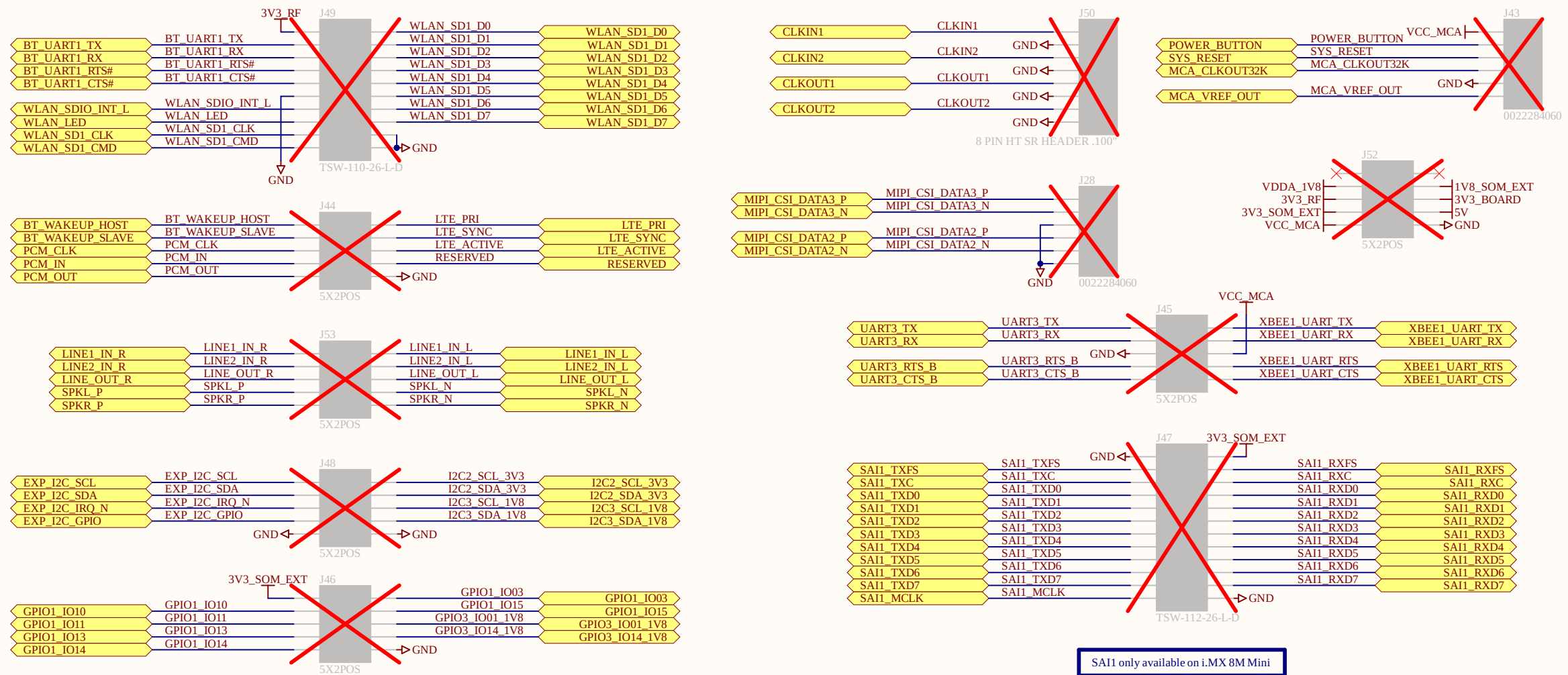
XBee Cellular



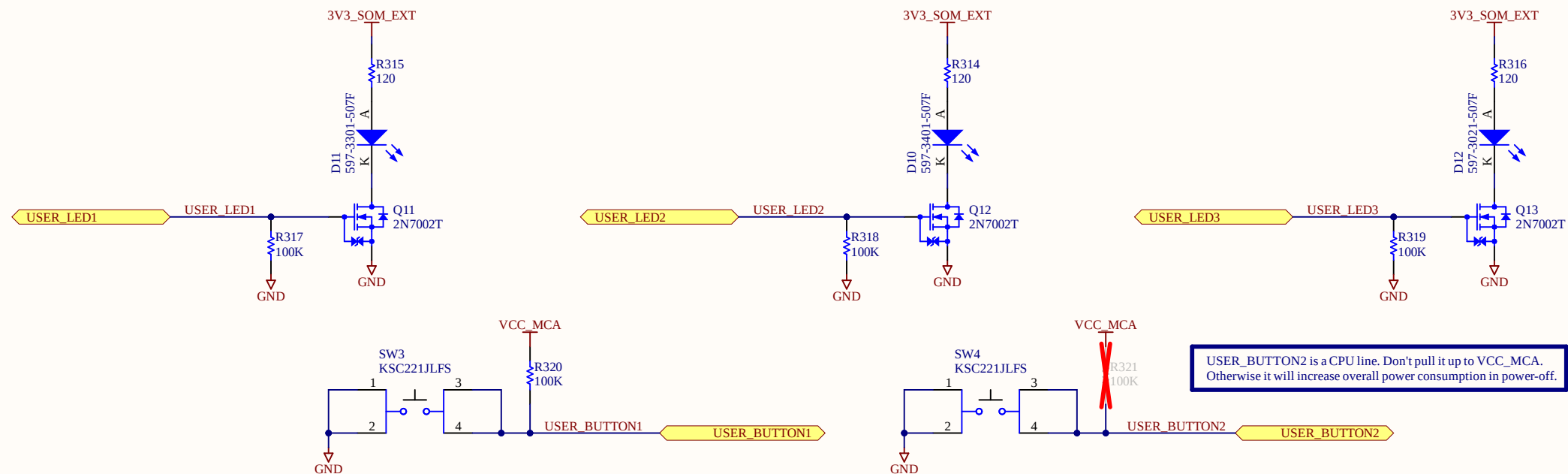
XBee User



Expansion connectors



User LEDs & Buttons



System Power Rails				
Voltage (V)	Supply Name	Block	Generated by	Current Capability (mA)
5.0	VIN	Input power protection	External DC supply	-
		MCA LDO		
	VIN_PROT	ConnectCore 8M Nano	Overvoltage Prot	-
		5V load switch		
		3.3V board regulator		
		USB Host		
		USB OTG		
	5V	CAN	Load switch (U3)	-
		HDMI		
		LVDS		
3.3	3V3_EXT	MicroSD	CC8M	3A Used also inside the SOM
		RS-485		
		CAN		
		Ethernet		
		MIPI CSI		
		LVDS		
		USB HUB		
		Audio		
		XBee1		
		XBee2		
	3V3_BOARD	PCIe	Switching regulator (U4)	3A
		XBee1		
		XBee2		
	VCC_MCA	MCA	AP2202	150mA
3.0	VCC_RTC	RTC	C1	
1.8	1V8_EXT	HDMI	CC8M	3A Used also inside the SOM
		LDVS		
		Audio		
1.5	PCIe_1V5	PCIe	3V3_BOARD	150mA

Signal Name	GPIO
3V3_BOARD_EN	GPIO3_IO19
5V_DVK_PWR_ON	GPIO1_IO06
AUD_INT#	GPIO3_IO22
AUD_PWR_EN	GPIO3_IO24
CAN_MODE	GPIO5_IO11
CAN_nINT	GPIO1_IO00
CAN_nINT0	GPIO1_IO01
CAN_nINT1	GPIO5_IO01
ENET_PWR	GPIO5_IO04
EXP_I2C_GPIO	GPIO5_IO26
EXP_I2C_IRQ_N	GPIO5_IO27
HDMI_HPD_1V8_CPU	GPIO3_IO08
LT8912B_INT	GPIO3_IO09
LT8912B_RST	GPIO3_IO07
LVDS_IRQ_N	GPIO4_IO28
LVDS_PWM_OUT	MCA_IO17
MIPI_CSI_RESET_N	GPIO1_IO12
PCIe_DIS_N	GPIO3_IO20
PCIe_RESET_N	GPIO3_IO23
PCIe_WAKE_N	GPIO3_IO21
POWER_LED	MCA_IO13
RGMII_INT_B	GPIO5_IO02
RGMII_RESET_N	GPIO5_IO03
SN65DSI83_EN	GPIO3_IO00
SN65DSI83_IRQ	GPIO3_IO06
USB_HUB_RESET_N	GPIO5_IO10
USB_PWR	GPIO3_IO25
USER_BUTTON1	MCA_IO10
USER_BUTTON2	GPIO2_IO20
USER_LED1	MCA_IO12
USER_LED2	MCA_IO18
USER_LED3	GPIO2_IO19
WOL_INT	GPIO5_IO05
XBEE1_ON/SLEEP_N	MCA_IO16
XBEE2_ON/SLEEP_N	GPIO1_IO09
XBEE1_RESET_N	MCA_IO15
XBEE2_RESET_N	GPIO1_IO08
XBEE1_SLEEP_RQ	MCA_IO11
XBEE2_SLEEP_RQ	GPIO1_IO07

Peripheral	7-bit address (Hex)
LVDS	-
MIPI CSI	-
Audio	0x10
PCIe	-
Expansion I2C	-

Peripheral	7-bit address (Hex)
SN65DSI83	0x2C
LT8912B	0x48, 0x49, 0x4A

1	2	3	4	5	6	7	8											
A	Format: DD/MM/YYYY 11/11/2019 - CC8M Development Board * Revision: 01 - Initial version 18/12/2019 - CC8M Development Board * Revision: 02 - PCB spin: 3001623x-01 revA => 3001623x-02 revA 20/02/2020 - CC8M Development Board * Revision: 1P (NPRO-005669) - Release to 1P without BOM changes 15/09/2020 - CC8M Development Board * Revision: 2P (ECO-010844) - PCB spin: 3001623x-02 revA => 3001623x-03 revA 28/10/2020 - CC8M Development Board * Revision: 2P (ECO-010946) - Replace U20: 16052004 (going EOL) to 16000235 - Replace C22: 14050618 to 14050730 - Replace R224: 13050387 to 13051084 13/01/2021 - CC8M Development Board * ECO-011117 : 55002060-01 rev 4P - SoM PCB spin. No BOM changes on the DVK. 03/02/2021 - CC8M Development Board * NPRO-005871 : 55002060-02 rev 1P - Release to 1P the DVK variant for the CC8M Mini SOM. - Add USB2 port. - Change bootstrap resistors to boot from microSD. 16/03/2021 - CC8M Development Board * ECO-011170 : 55002060-01 rev A - Release to rev A. No BOM changes on the DVK. 12/04/2021 - CC8M Development Board * ECO-011172 : 55002060-02 rev 2P - CC8M Mini SOM PCB spin: 3001639x-01 revB => 3001639x-03 revA						A											
B							B											
C	LBL1 LABEL 28000351_LABEL TXT1 LABEL TEXT 95022489 H1 H2 H3 H4 125mil 125mil 125mil 125mil						C											
D							D											
						<table><tr><td colspan="2">Title: History, Mechanicals</td><td rowspan="4"></td></tr><tr><td colspan="2">Designer: Juan Anzola</td><td>Sheet: 21 of 21</td></tr><tr><td colspan="2">Variant: 55002060-02</td><td>Rev: 2P</td></tr><tr><td colspan="2">Description: ConnectCore i.MX 8M Mini Development board</td></tr></table>		Title: History, Mechanicals			Designer: Juan Anzola		Sheet: 21 of 21	Variant: 55002060-02		Rev: 2P	Description: ConnectCore i.MX 8M Mini Development board	
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