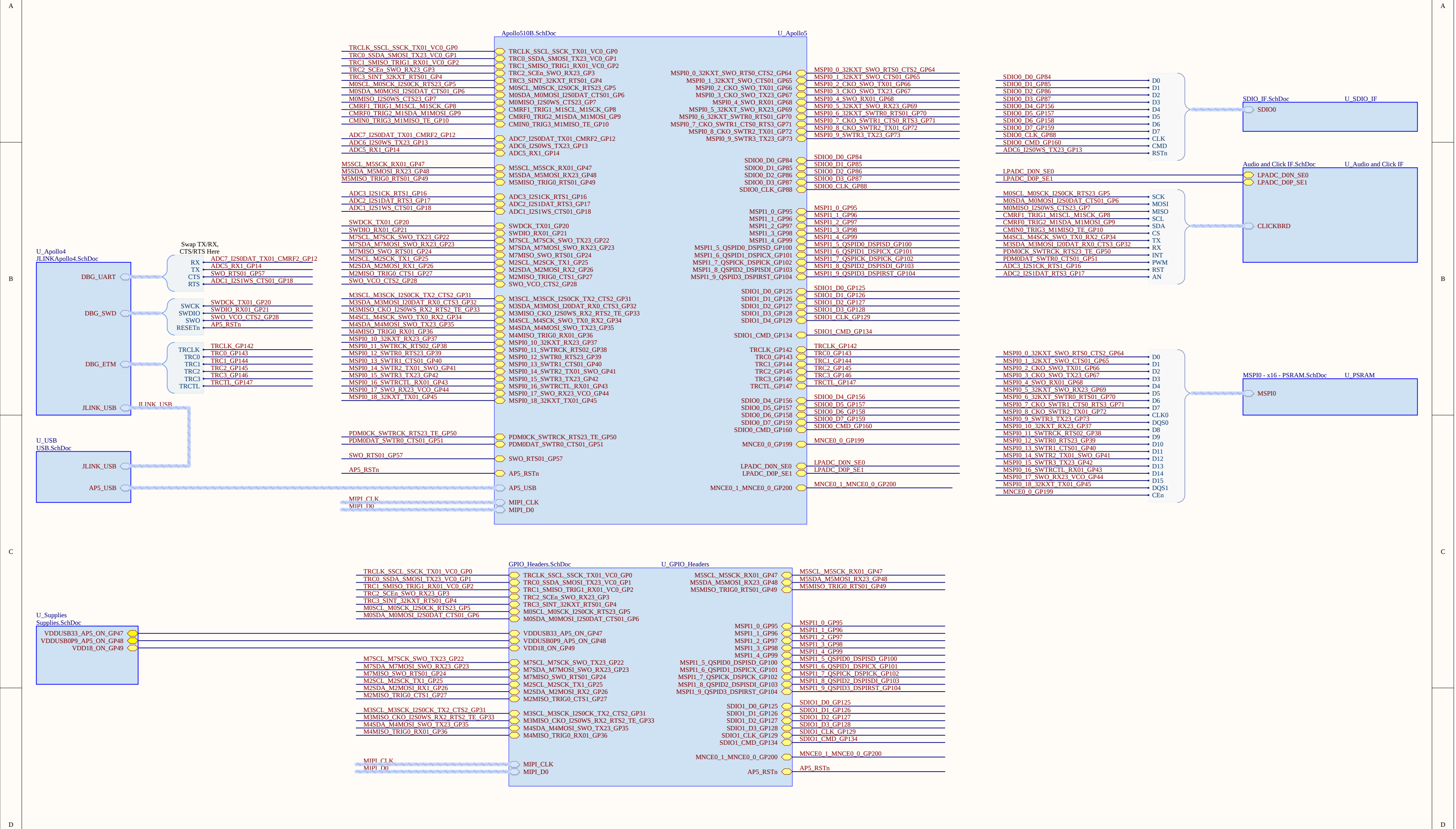


Apollo510B EVB Connection Diagram



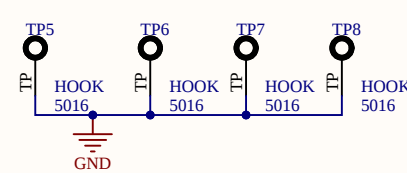
Fiducial Marks

FID1 FID2 FID3

M3 Standoffs

MP1 MP2 MP3 MP4

GND Hooks





endpoint intelligence

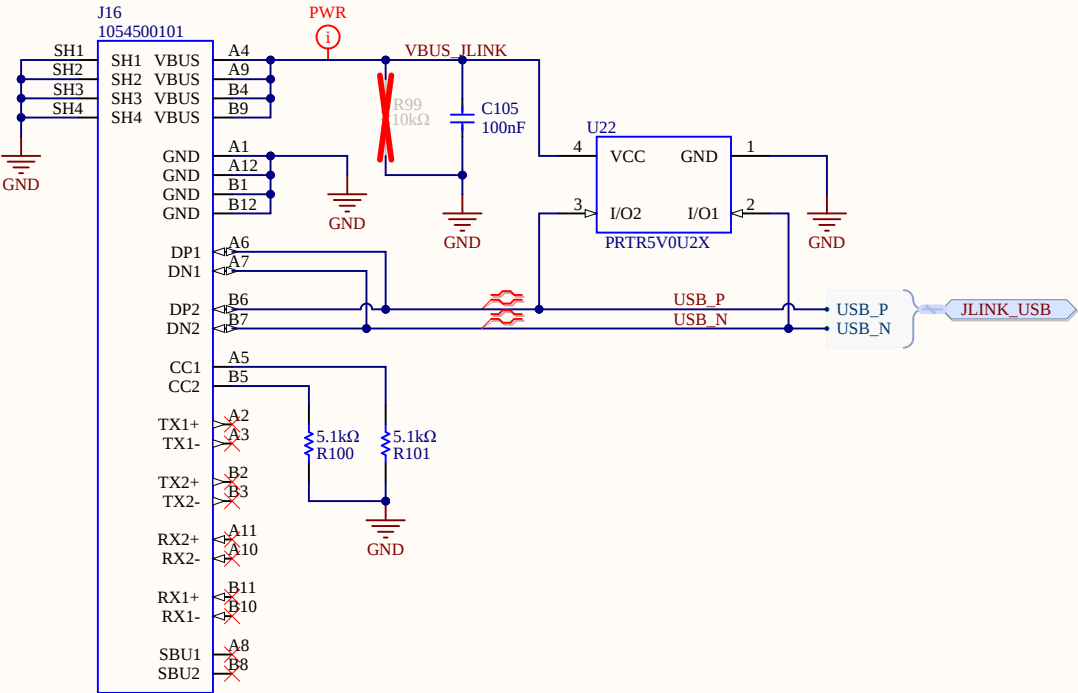
Title: Apollo510B EVB
Revision: 2.0

Sheet Name: Top Level
Sheet 1 of 9

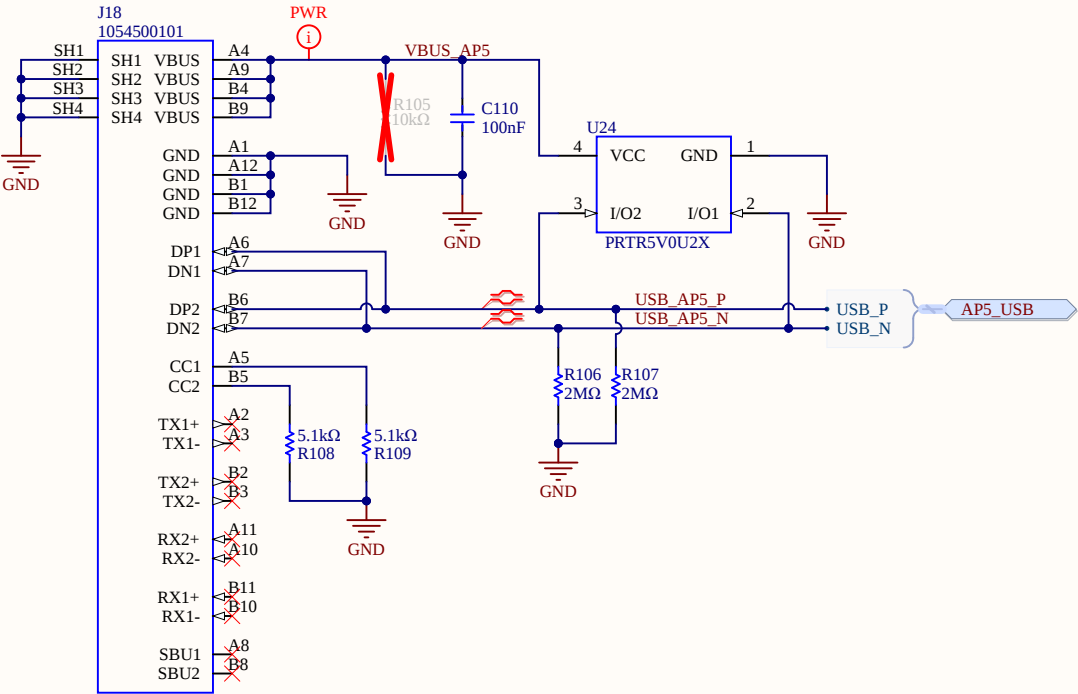
Date: 7/8/2025
Number: AP510BEVB

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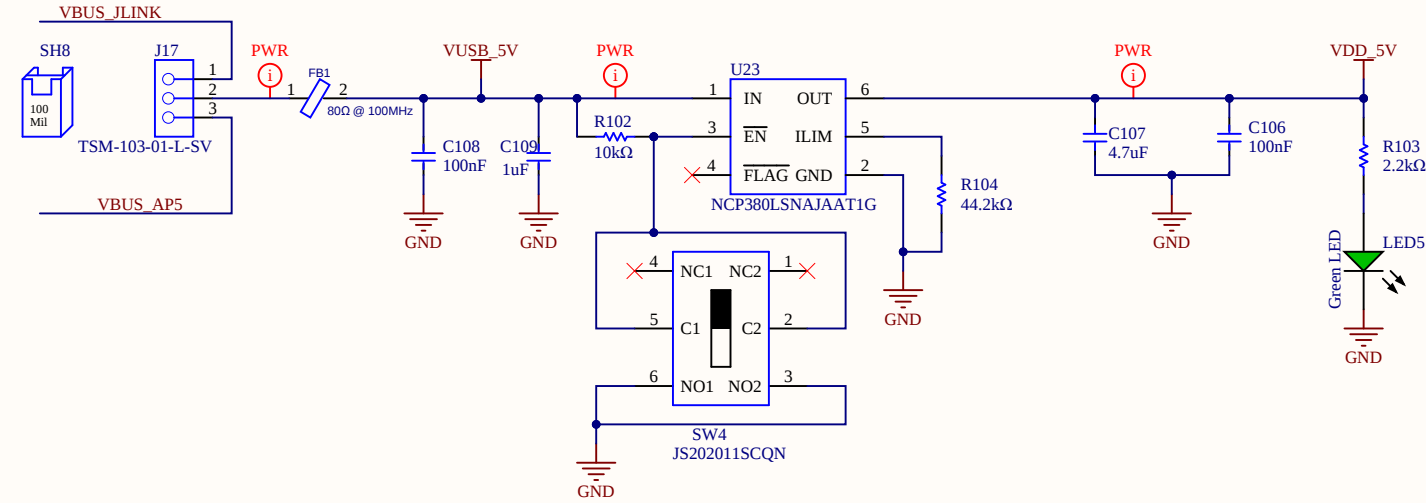
USB-C Connector



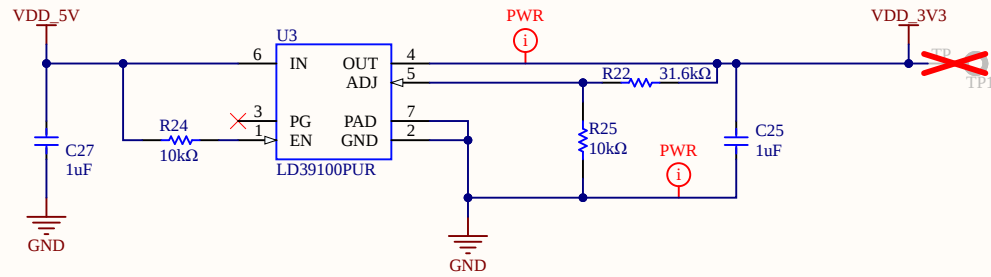
AP5 USB-C Connector



5V Source Select & USB Protection Circuit

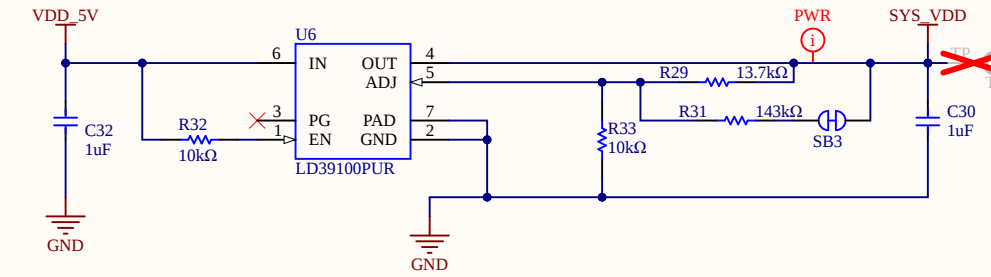


3.3V Supply

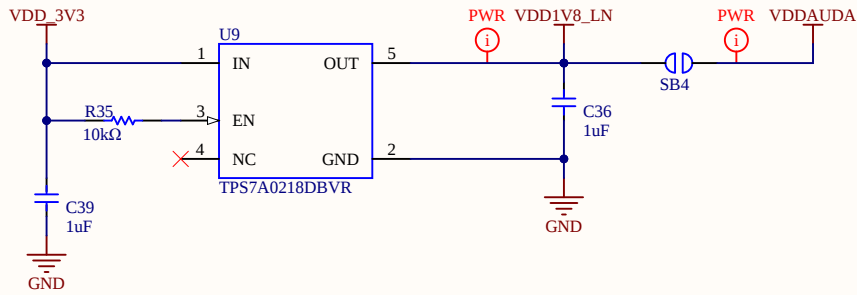


1.8V Supply

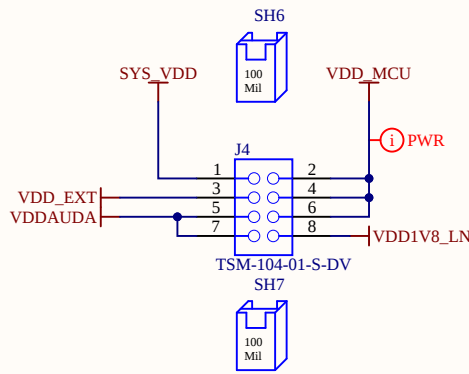
Cut SB3 for 1.9V



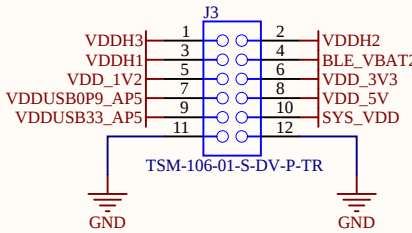
1.8V Low Noise Supply



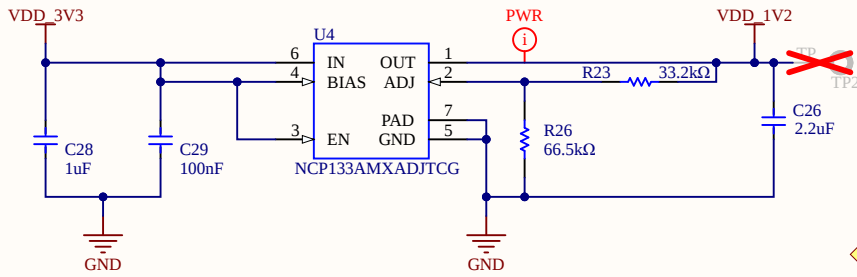
Supply selection



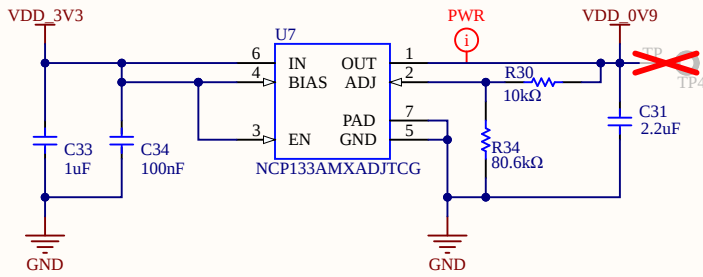
Supply visibility



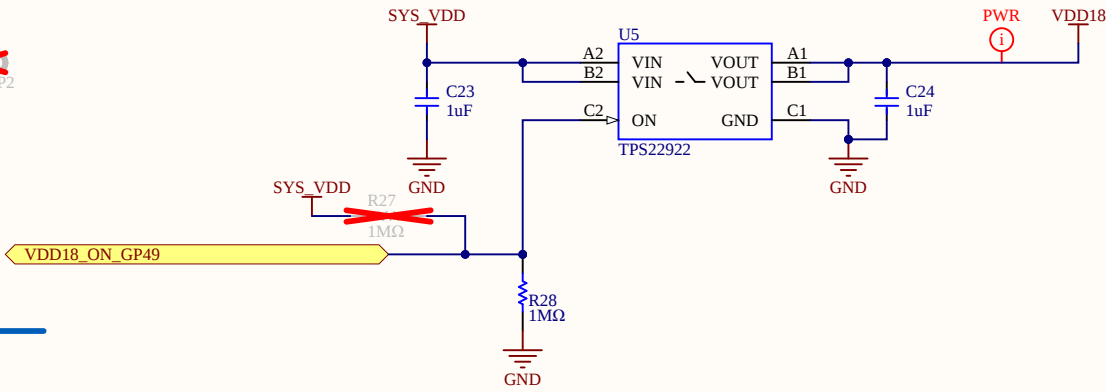
1.2V Supply



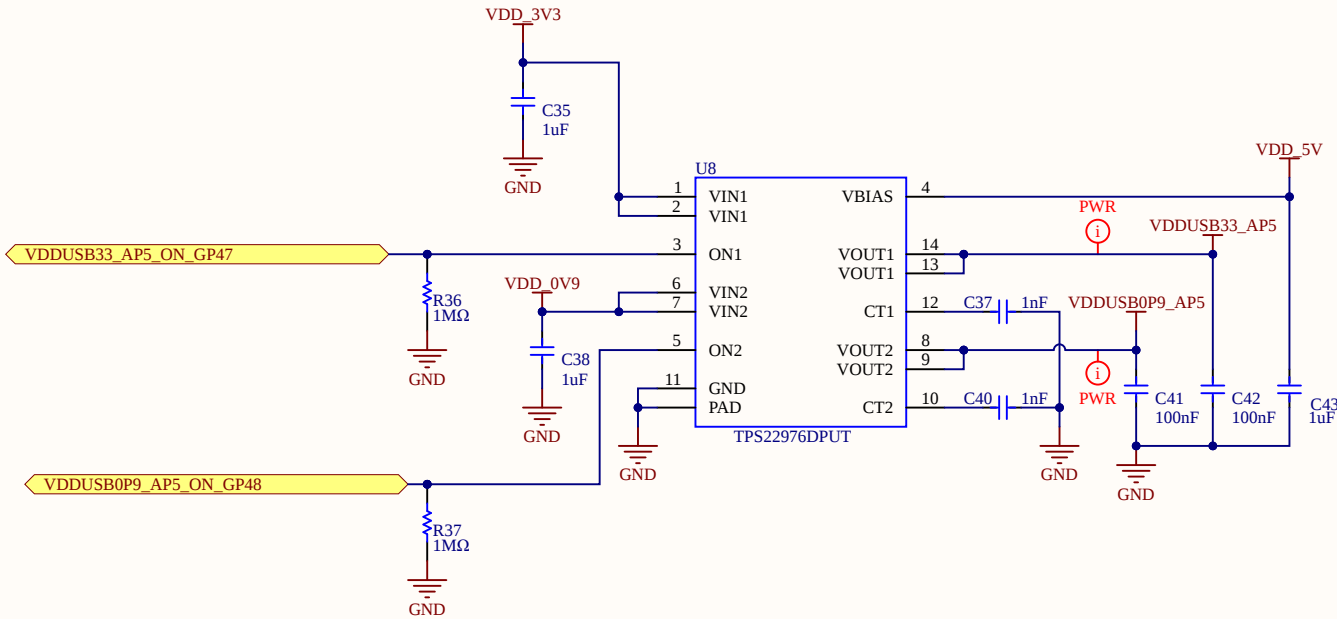
0.9V USB Supply



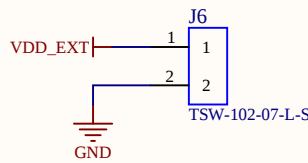
Display Controller Loadswith



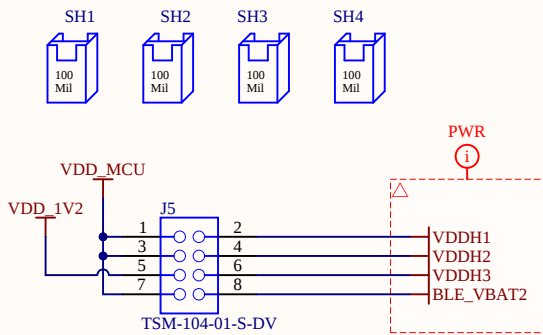
USB Sequencing

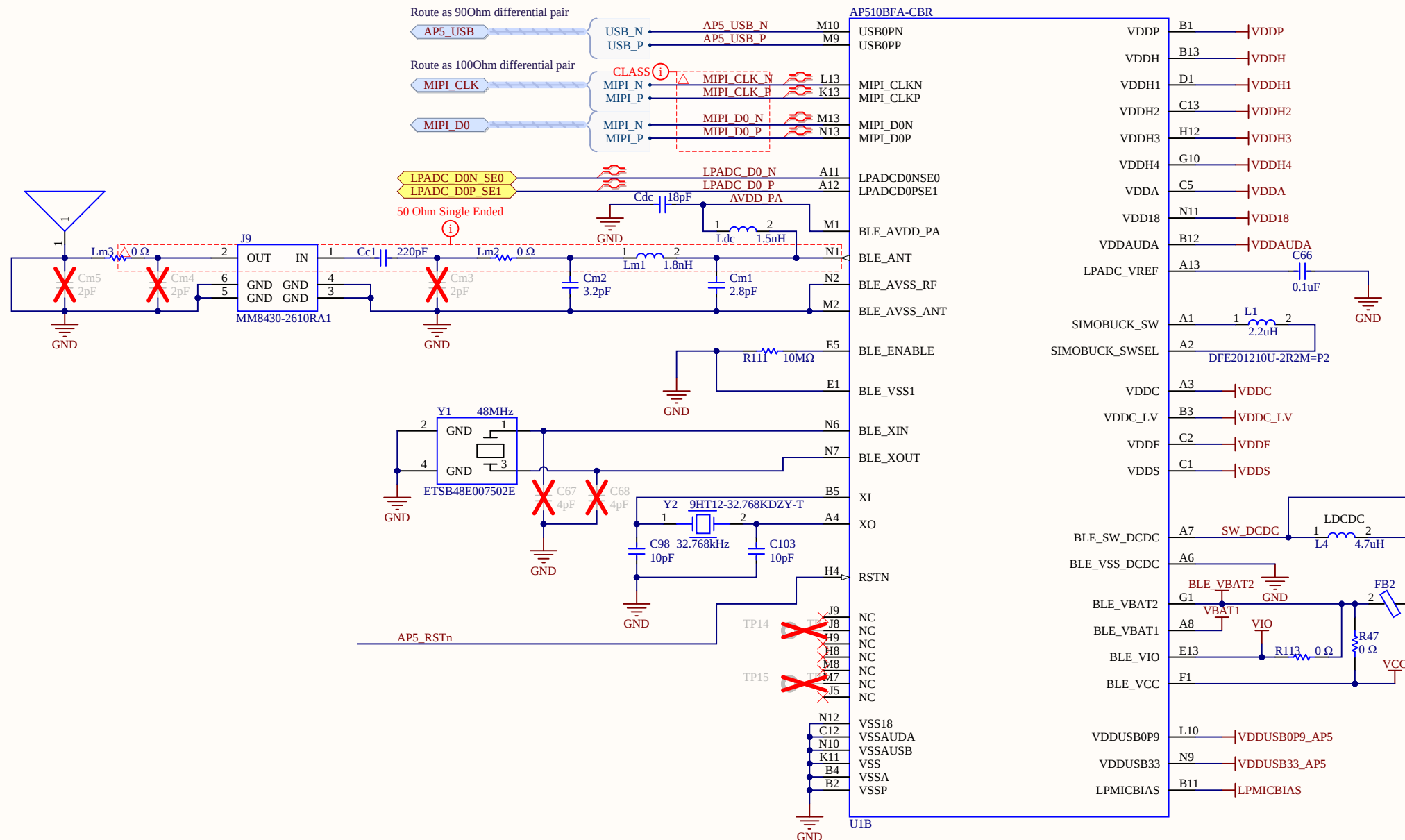


External Supply Input



Power Configuration Header



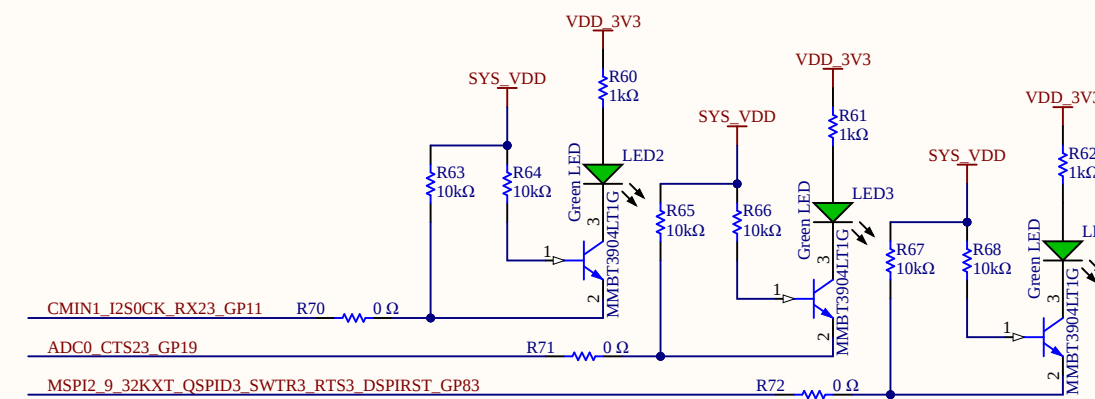
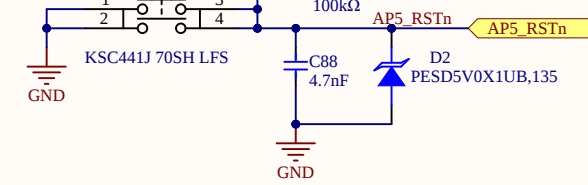
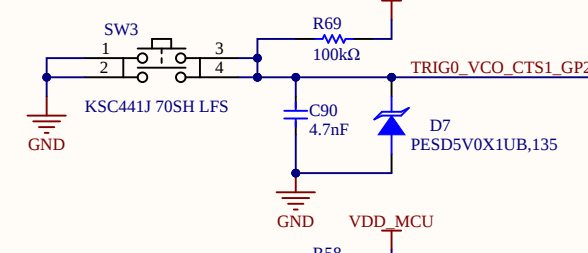
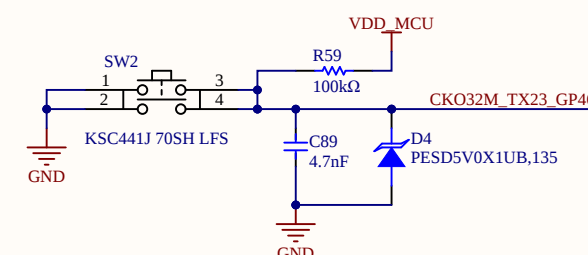
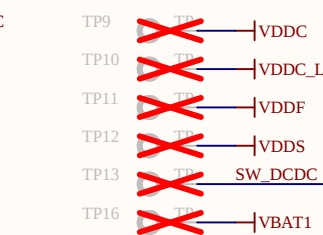
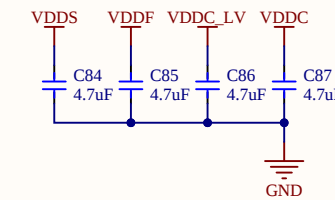
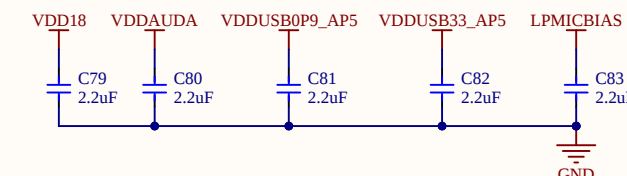
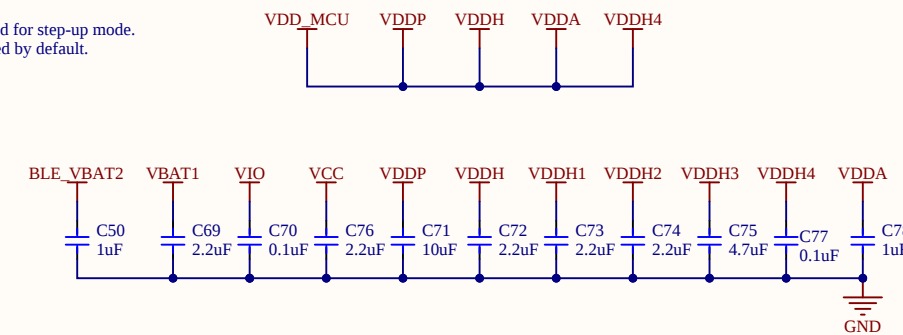


BLE Controller Modes Population Options:

Mode	C97	L4	FB2	R112
Step-Up	X	X	X	
Voltage Multiplier				X

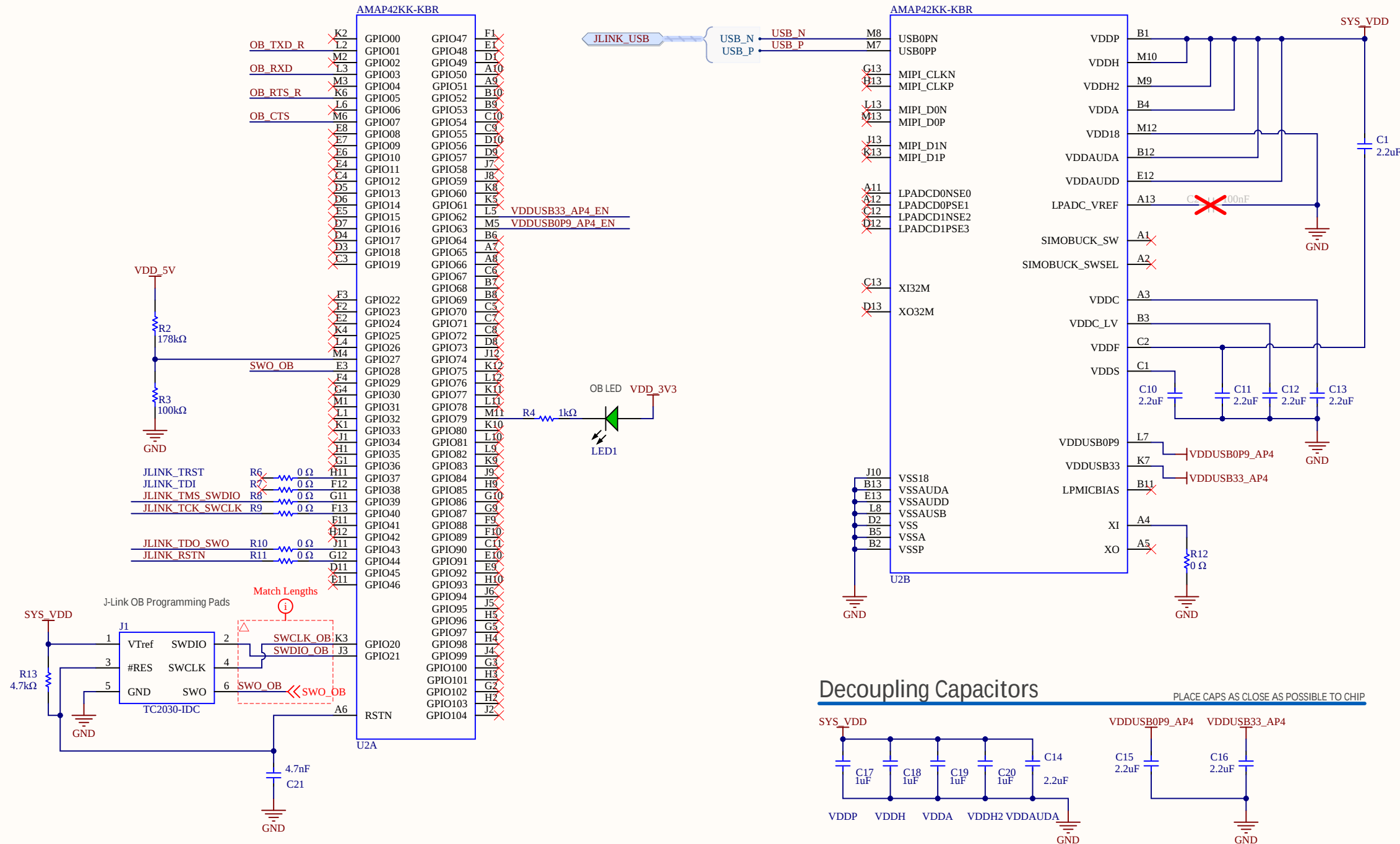
Notes:

By default, the population option is configured for step-up mode.
C76 is optional in both modes and is populated by default.

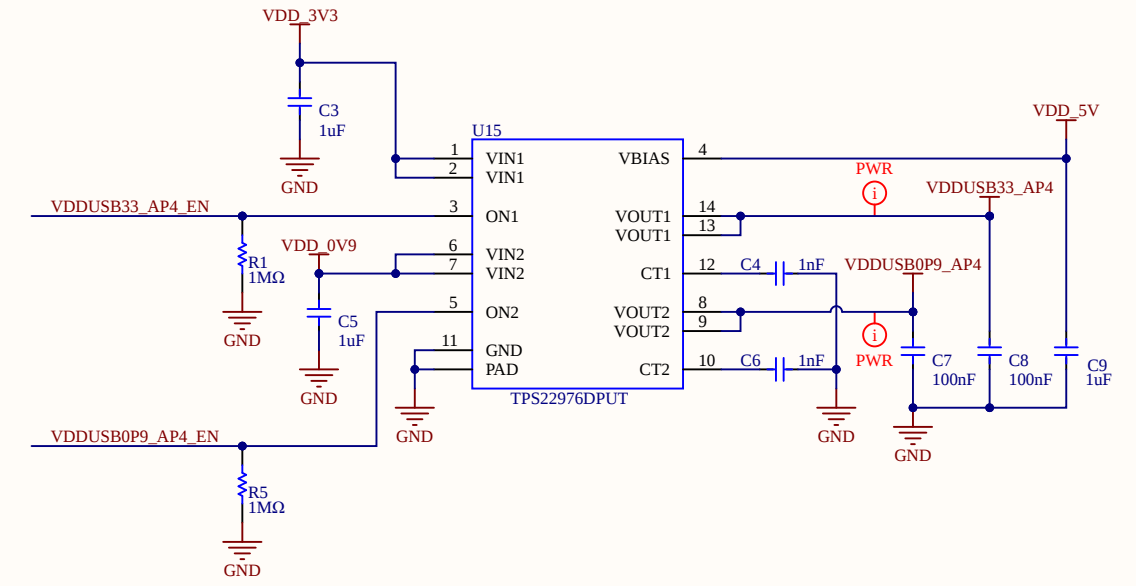


TRCLK_SSCL_SSCK TX01_VCO_GP0	TRCLK_SSCL_SSCK TX01_VCO_GP0	L4	GPIO0	H11 MSP10_0_32KXT_SWO_RTS0_CTS2_GP64	MSP10_0_32KXT_SWO_RTS0_CTS2_GP64
TRC0_SSDA_SMOSI_TX23_VCO_GP1	TRC0_SSDA_SMOSI_TX23_VCO_GP1	N4	GPIO1	J13 MSP10_1_32KXT_SWO_CTS01_GP65	MSP10_1_32KXT_SWO_CTS01_GP65
TRC1_SMISO_TRIG1_RX01_VCO_GP2	TRC1_SMISO_TRIG1_RX01_VCO_GP2	M4	GPIO2	L12 MSP10_2_CKO_SWO_TX01_GP66	MSP10_2_CKO_SWO_TX01_GP66
TRC2_SCEn_SWO_RX23_GP3	TRC2_SCEn_SWO_RX23_GP3	N5	GPIO3	J12 MSP10_3_CKO_SWO_TX23_GP67	MSP10_3_CKO_SWO_TX23_GP67
TRC3_SINT_32KXT_RTS01_GP4	TRC3_SINT_32KXT_RTS01_GP4	M6	GPIO4	M12 MSP10_4_SWO_RX01_GP68	MSP10_4_SWO_RX01_GP68
M0SCL_M0SCK_I2S0CK_RTS23_GP5	M0SCL_M0SCK_I2S0CK_RTS23_GP5	L6	GPIO5	F10 MSP10_5_32KXT_SWO_RX23_GP69	MSP10_5_32KXT_SWO_RX23_GP69
M0SDA_M0MOSI_I2S0DAT_CTS01_GP6	M0SDA_M0MOSI_I2S0DAT_CTS01_GP6	K6	GPIO6	J11 MSP10_6_32KXT_SWTR0_RTS01_GP70	MSP10_6_32KXT_SWTR0_RTS01_GP70
M0MISO_I2S0WS_CTS23_GP7	M0MISO_I2S0WS_CTS23_GP7	J6	GPIO7	K12 MSP10_7_CKO_SWTR1_CTS0_RTS3_GP71	MSP10_7_CKO_SWTR1_CTS0_RTS3_GP71
CMRF1_TRIG1_M1SCL_M1SCK_GP8	CMRF1_TRIG1_M1SCL_M1SCK_GP8	D5	GPIO8	M11 MSP10_8_CKO_SWTR2_TX01_GP72	MSP10_8_CKO_SWTR2_TX01_GP72
CMRF0_TRIG2_M1SDA_M1MOSI_GP9	CMRF0_TRIG2_M1SDA_M1MOSI_GP9	B6	GPIO9	G11 MSP10_9_SWTR3_TX23_GP73	MSP10_9_SWTR3_TX23_GP73
CMIN0_TRIG3_M1MISO_TE_GP10	CMIN0_TRIG3_M1MISO_TE_GP10	C6	GPIO10	L11 MSP12_9_32KXT_QSPID3_SWTR3_RTS3_DSPIRST_GP83	
ADC7_I2S0DAT_TX01_CMRF2_GP12	ADC7_I2S0DAT_TX01_CMRF2_GP12	B7	GPIO11	H10 SDIO0_D0_GP84	SDIO0_D0_GP84
ADC6_I2S0WS_TX23_GP13	ADC6_I2S0WS_TX23_GP13	C7	GPIO12	J10 SDIO0_D1_GP85	SDIO0_D1_GP85
ADC5_RX1_GP14	ADC5_RX1_GP14	D7	GPIO13	K10 SDIO0_D2_GP86	SDIO0_D2_GP86
ADC3_I2S1CK_RTS1_GP16	ADC3_I2S1CK_RTS1_GP16	H5	GPIO14	L9 SDIO0_D3_GP87	SDIO0_D3_GP87
ADC2_I2S1DAT_RTS3_GP17	ADC2_I2S1DAT_RTS3_GP17	G5	GPIO16	K9 SDIO0_CLK_GP88	SDIO0_CLK_GP88
ADC1_I2S1WS_CTS01_GP18	ADC1_I2S1WS_CTS01_GP18	F5	GPIO17	H1 MSP11_0_GP95	MSP11_0_GP95
	ADC0_CTS23_GP19	C4	GPIO18	H2 MSP11_1_GP96	MSP11_1_GP96
M7SCL_M7SCK_SWO_TX23_GP22	M7SCL_M7SCK_SWO_TX23_GP22	D8	GPIO19	G4 MSP11_2_GP97	MSP11_2_GP97
M7SDA_M7MOSI_SWO_RX23_GP23	M7SDA_M7MOSI_SWO_RX23_GP23	C8	GPIO22	H3 MSP11_3_GP98	MSP11_3_GP98
M7MISO_SWO_RTS01_GP24	M7MISO_SWO_RTS01_GP24	D9	GPIO23	F4 MSP11_4_GP99	MSP11_4_GP99
M2SCL_M2SCK_TX1_GP25	M2SCL_M2SCK_TX1_GP25	K5	GPIO29	G3 MSP11_5_QSPID0_DSPISD_GP100	MSP11_5_QSPID0_DSPISD_GP100
M2SDA_M2MOSI_RX2_GP26	M2SDA_M2MOSI_RX2_GP26	L5	GPIO31	E4 MSP11_6_QSPID1_DSPICX_GP101	MSP11_6_QSPID1_DSPICX_GP101
M2MISO_TRIG0_CTS1_GP27	M2MISO_TRIG0_CTS1_GP27	L7	GPIO32	D4 MSP11_7_QSPICK_DSPICK_GP102	MSP11_7_QSPICK_DSPICK_GP102
	TRIG0_VCO_CTS1_GP29	M5	GPIO33	F3 MSP11_8_QSPID2_DSPISDI_GP103	MSP11_8_QSPID2_DSPISDI_GP103
M3SCL_M3SCK_I2S0CK_TX2_CTS2_GP31	M3SCL_M3SCK_I2S0CK_TX2_CTS2_GP31	L3	GPIO34	C3 MSP11_9_QSPID3_DSPIRST_GP104	MSP11_9_QSPID3_DSPIRST_GP104
M3SDA_M3MOSI_I20DAT_RX0_CTS3_GP32	M3SDA_M3MOSI_I20DAT_RX0_CTS3_GP32	L3	GPIO37	B10 SDIO1_D0_GP125	SDIO1_D0_GP125
M3MISO_CKO_I2S0WS_RX2_RTS2_TE_GP33	M3MISO_CKO_I2S0WS_RX2_RTS2_TE_GP33	K2	GPIO38	A10 SDIO1_D1_GP126	SDIO1_D1_GP126
M4SCL_M4SCK_SWO_TX0_RX2_GP34	M4SCL_M4SCK_SWO_TX0_RX2_GP34	K3	GPIO39	C9 SDIO1_D2_GP127	SDIO1_D2_GP127
M4SDA_M4MOSI_SWO_TX23_GP35	M4SDA_M4MOSI_SWO_TX23_GP35	J4	GPIO40	B9 SDIO1_CLK_GP129	SDIO1_CLK_GP129
M4MISO_TRIG0_RX01_GP36	M4MISO_TRIG0_RX01_GP36	J3	GPIO41		
MSP10_10_32KXT_RX23_GP37	MSP10_10_32KXT_RX23_GP37	F13	GPIO42	B8 SDIO1_CMD_GP134	SDIO1_CMD_GP134
MSP10_11_SWTRCK_RTS02_GP38	MSP10_11_SWTRCK_RTS02_GP38	G13	GPIO43	G2 GPIO142_R52_0Ω_TRCLK_GP142	TRCLK_GP142
MSP10_12_SWTR0_RTS23_GP39	MSP10_12_SWTR0_RTS23_GP39	F11	GPIO44	F2 GPIO143_R53_0Ω_TRC0_GP143	TRC0_GP143
MSP10_13_SWTR1_CTS01_GP40	MSP10_13_SWTR1_CTS01_GP40	D13	GPIO45	E2 GPIO144_R54_0Ω_TRC1_GP144	TRC1_GP144
MSP10_14_SWTR2_TX01_SWO_GP41	MSP10_14_SWTR2_TX01_SWO_GP41	E10	GPIO46	D2 GPIO145_R55_0Ω_TRC2_GP145	TRC2_GP145
MSP10_15_SWTR3_TX23_GP42	MSP10_15_SWTR3_TX23_GP42	H13	GPIO47	E3 GPIO146_R56_0Ω_TRC3_GP146	TRC3_GP146
MSP10_16_SWTRCTL_RX01_GP43	MSP10_16_SWTRCTL_RX01_GP43	G12	GPIO48	D3 GPIO147_R57_0Ω_TRCTL_GP147	TRCTL_GP147
MSP10_17_SWO_RX23_VCO_GP44	MSP10_17_SWO_RX23_VCO_GP44	F12	GPIO49		
MSP10_18_32KXT_TX01_GP45	MSP10_18_32KXT_TX01_GP45	E11	GPIO50	H7 SDIO0_D4_GP156	SDIO0_D4_GP156
	CKO32M_TX23_GP46	C11	GPIO51	J7 SDIO0_D5_GP157	SDIO0_D5_GP157
M5SCL_M5SCK_RX01_GP47	M5SCL_M5SCK_RX01_GP47	K1	GPIO57	K7 SDIO0_D6_GP158	SDIO0_D6_GP158
M5SDA_M5MOSI_RX23_GP48	M5SDA_M5MOSI_RX23_GP48	J2	GPIO20	L8 SDIO0_D7_GP159	SDIO0_D7_GP159
M5MISO_TRIG0_RTS01_GP49	M5MISO_TRIG0_RTS01_GP49	J1	GPIO21	K8 SDIO0_CMD_GP160	SDIO0_CMD_GP160
PDMOCK_SWTRCK_RTS23_TE_GP50	PDMOCK_SWTRCK_RTS23_TE_GP50	D11	GPIO28		
PDMODAT_SWTR0_CTS01_GP51	PDMODAT_SWTR0_CTS01_GP51	G10		D12 MNCE0_0_GP199	MNCE0_0_GP199
	SWO_RTS01_GP57	D10		E12 MNCE0_1_MNCE0_0_GP200	MNCE0_1_MNCE0_0_GP200
SWDCK_TX01_GP20	SWDCK_TX01_GP20	M3			
SWDIO_RX01_GP21	SWDIO_RX01_GP21	N3			
SWO_VCO_CTS2_GP28	SWO_VCO_CTS2_GP28	L1			

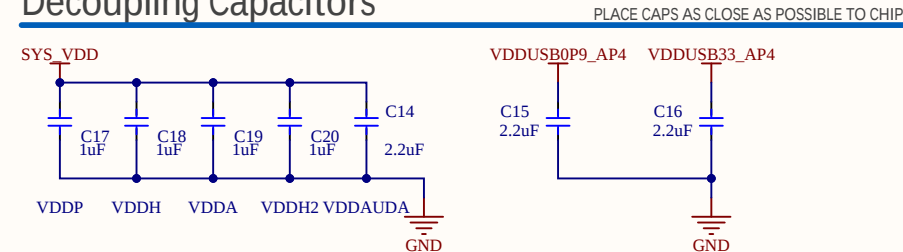
JLINK OB Debugger



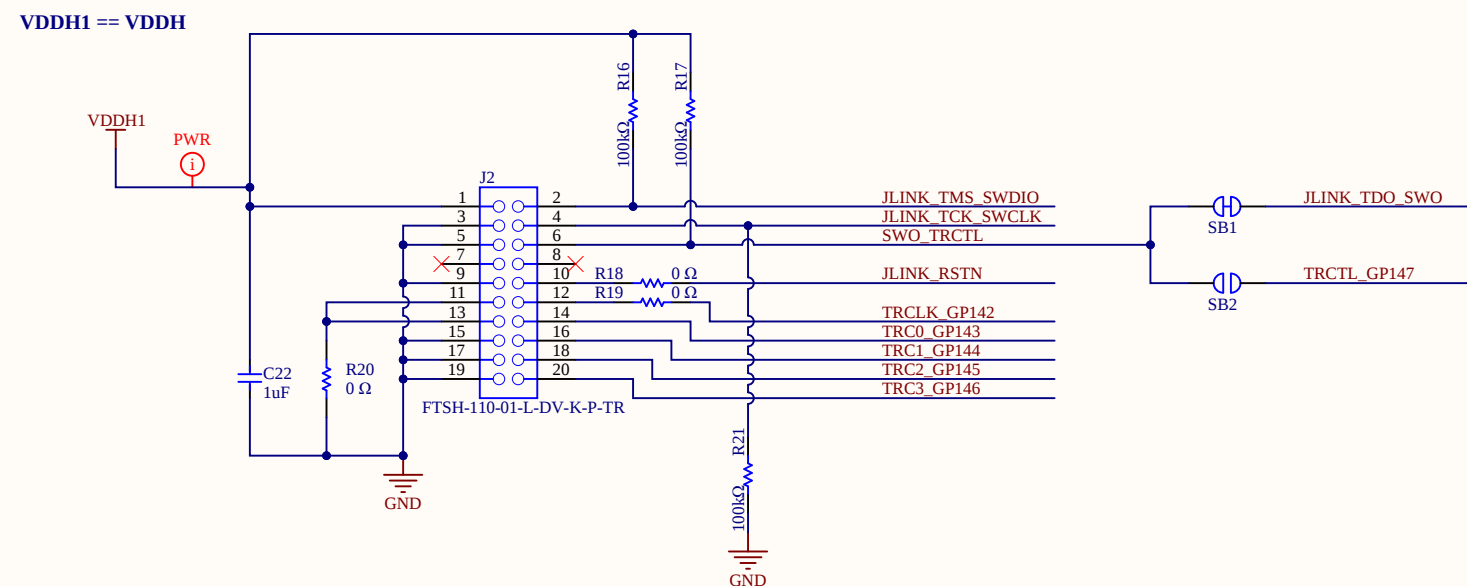
USB Sequencing for OB



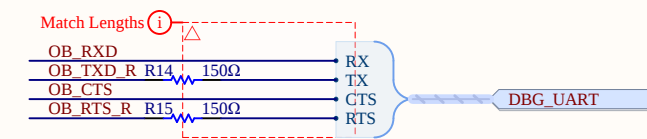
Decoupling Capacitors



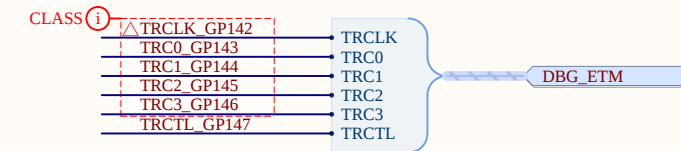
20Pin Cortex Debug + ETM



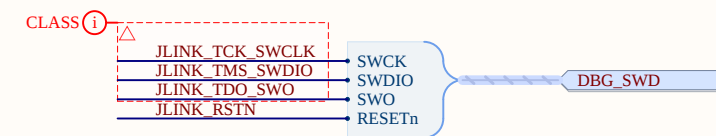
VCOM Interface



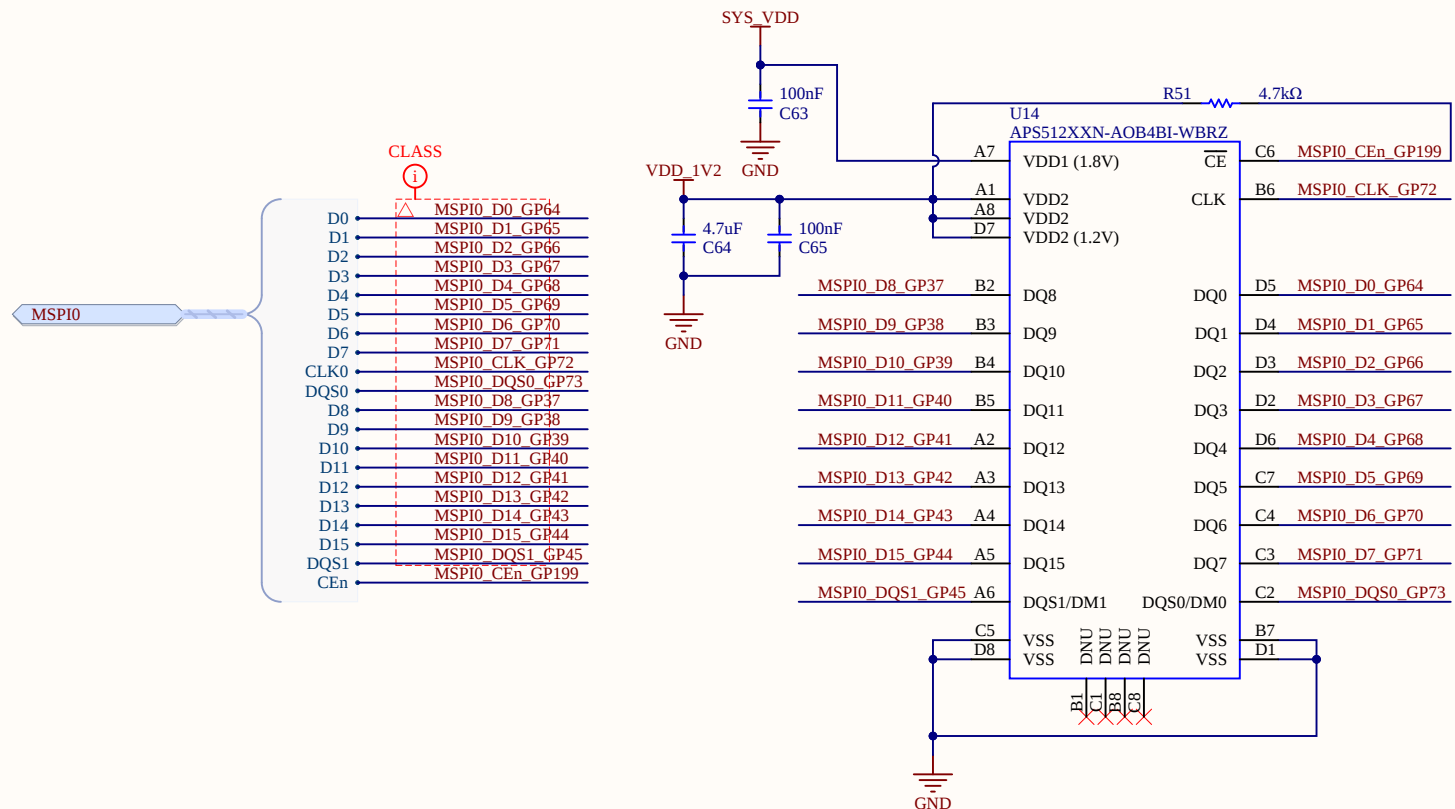
ETM Interface



Target Debug Interface



MSPI0 - x16 - AP PSRAM



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Apollo510B EVB

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MSPI0 - x16 - PSRAM

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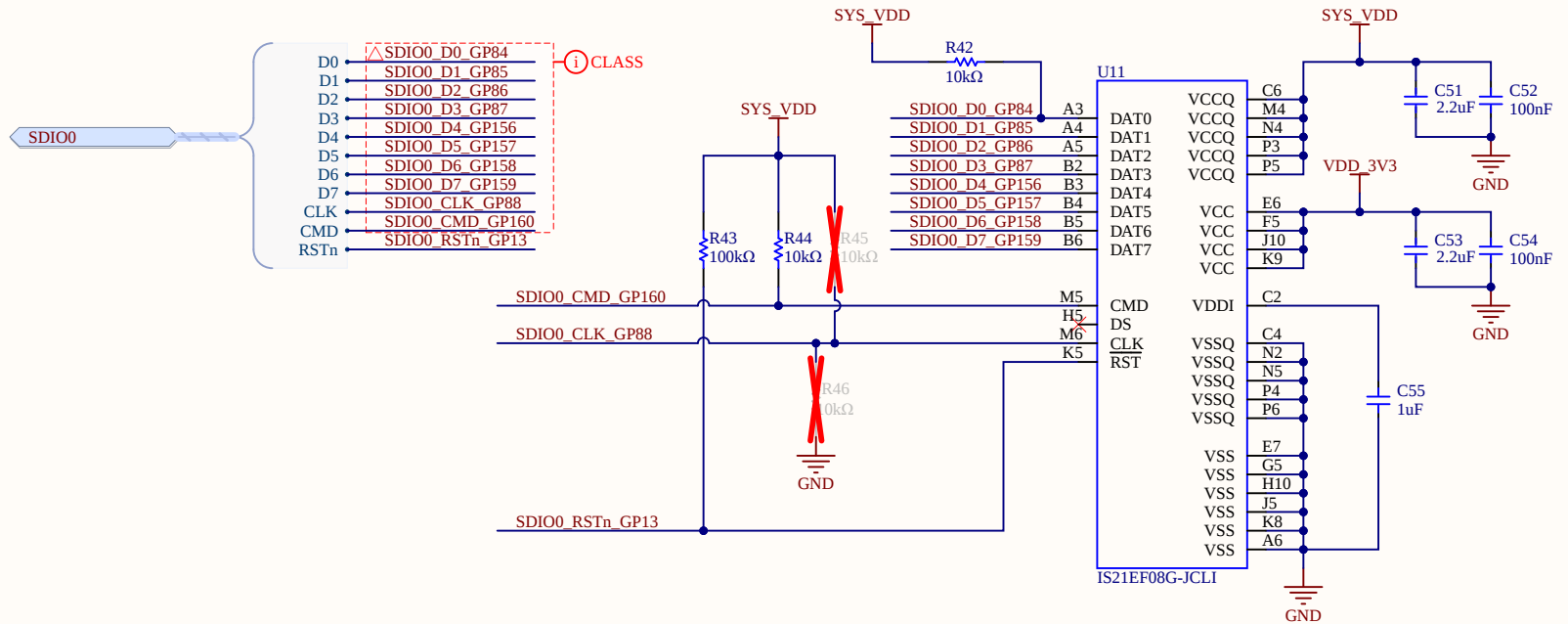
Date
7/2/2025

Number
AP510BEVB

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SDIOs Ports

eMMC0



Title
Apollo510B EVB

Revision
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Sheet Name
SDIO_IF

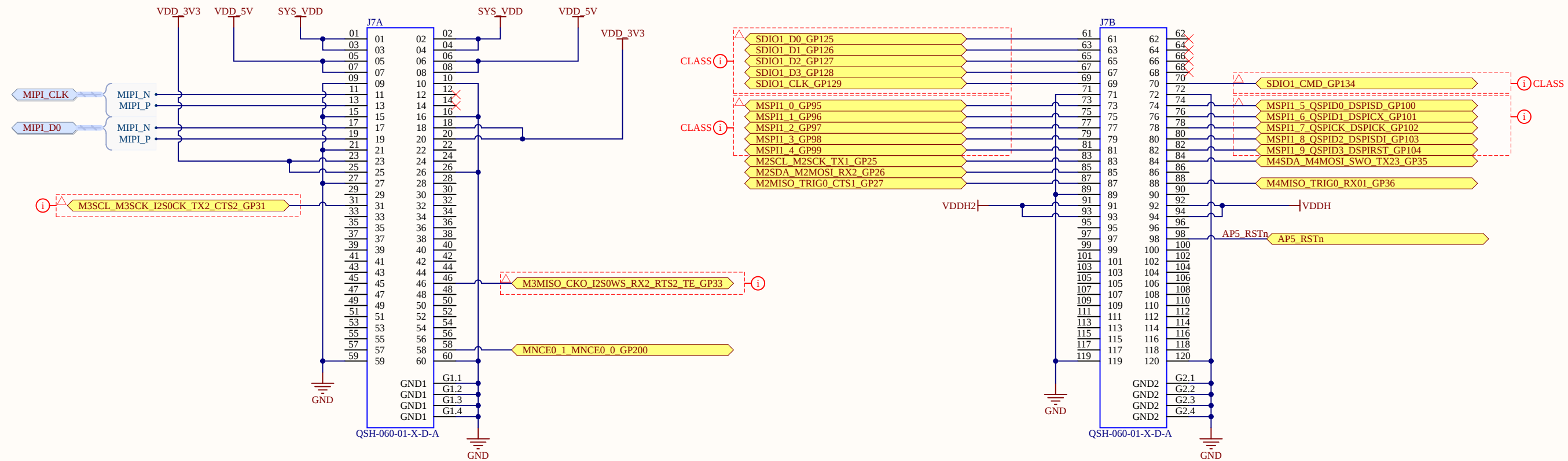
Sheet 7 of 9

Date
7/8/2025

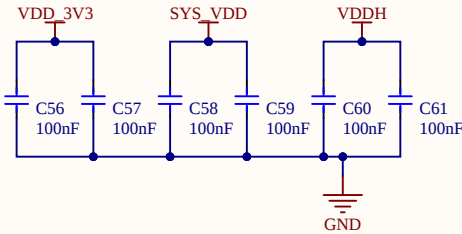
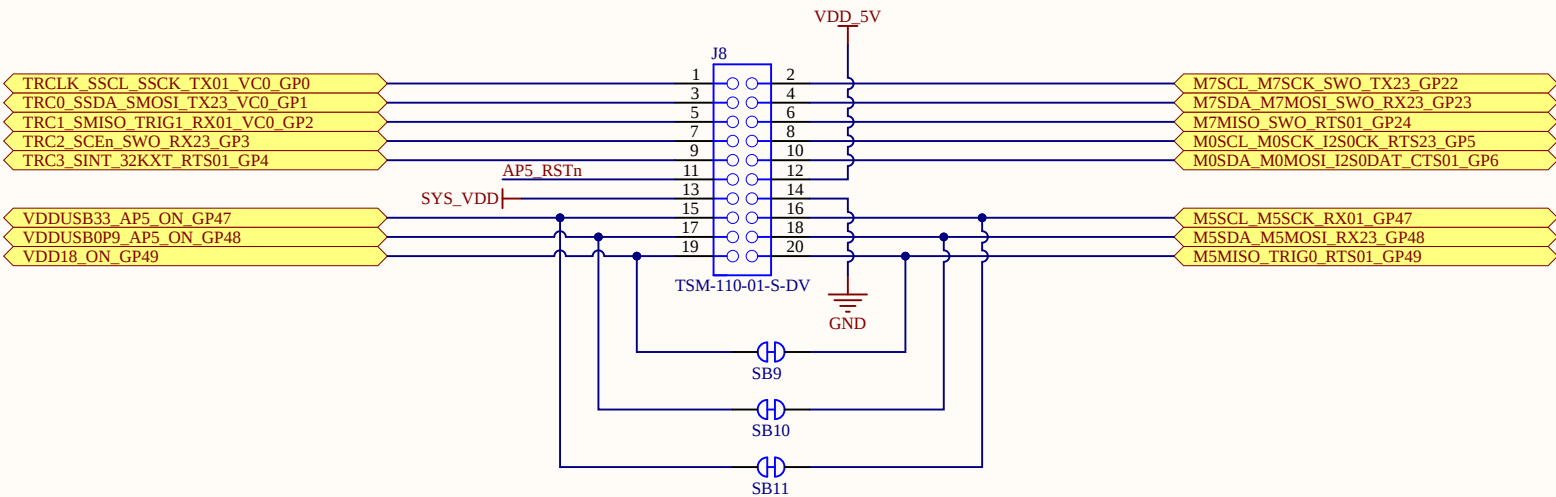
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AP510BEVB

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High-speed header



GPIO headers

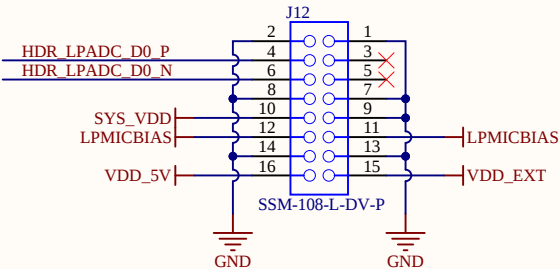
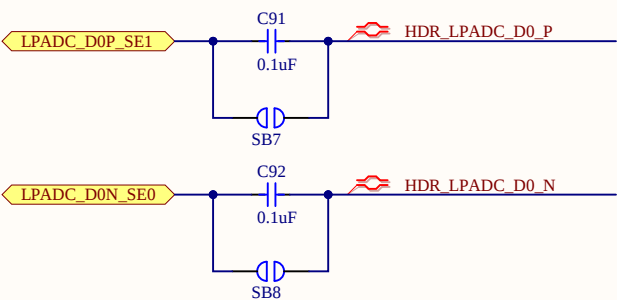




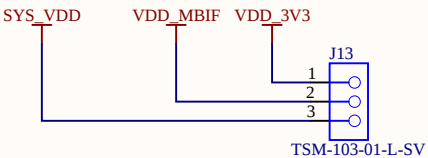
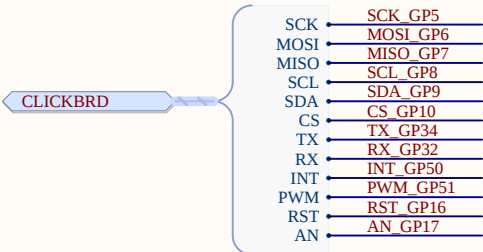
ambiq
endpoint intelligence

Title Apollo510B EVB		Revision 2.0
Sheet Name GPIO_Headers		Sheet 8 of 9
Date 7/23/2025	Number AP510BEVB	
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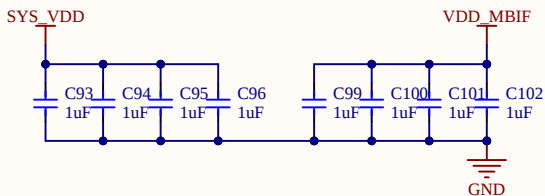
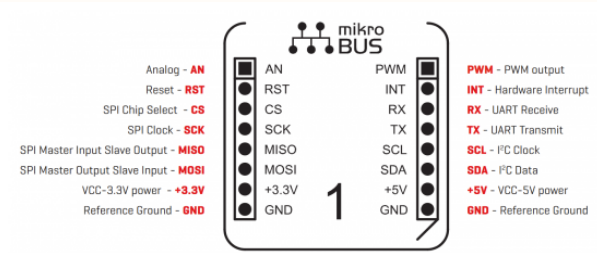
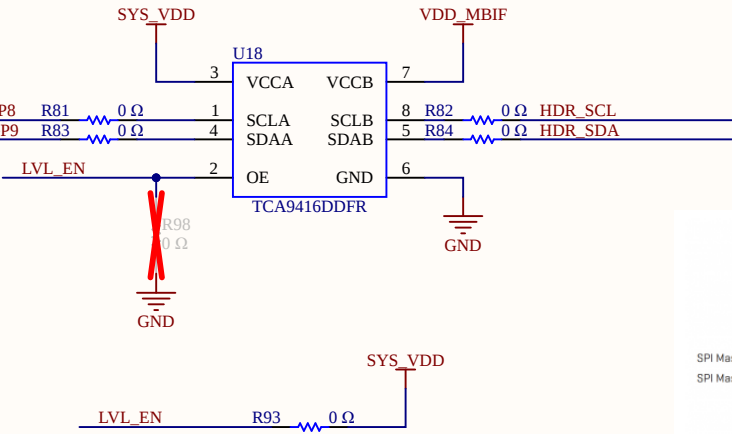
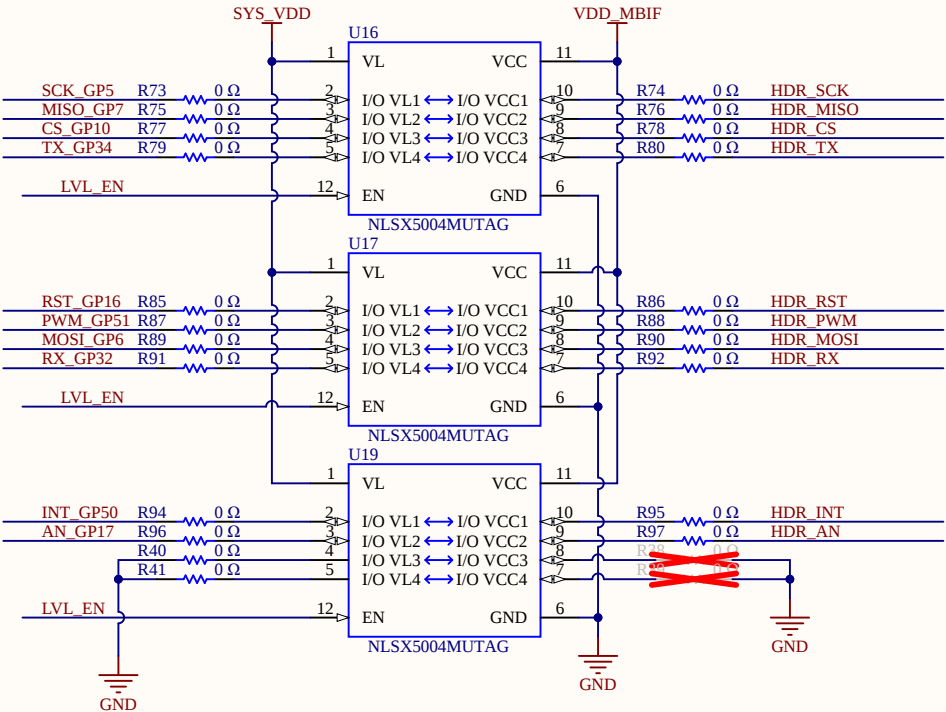
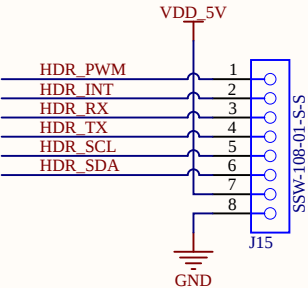
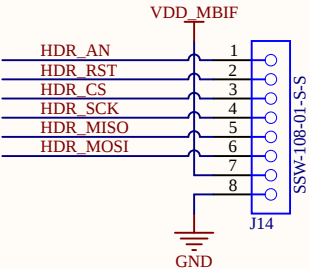
LPADC Solder Bridge Options



ClickBoard Interface



Select the IO voltage for mikroBus
Default should be 3.3V





endpoint intelligence

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Audio and Click IF

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