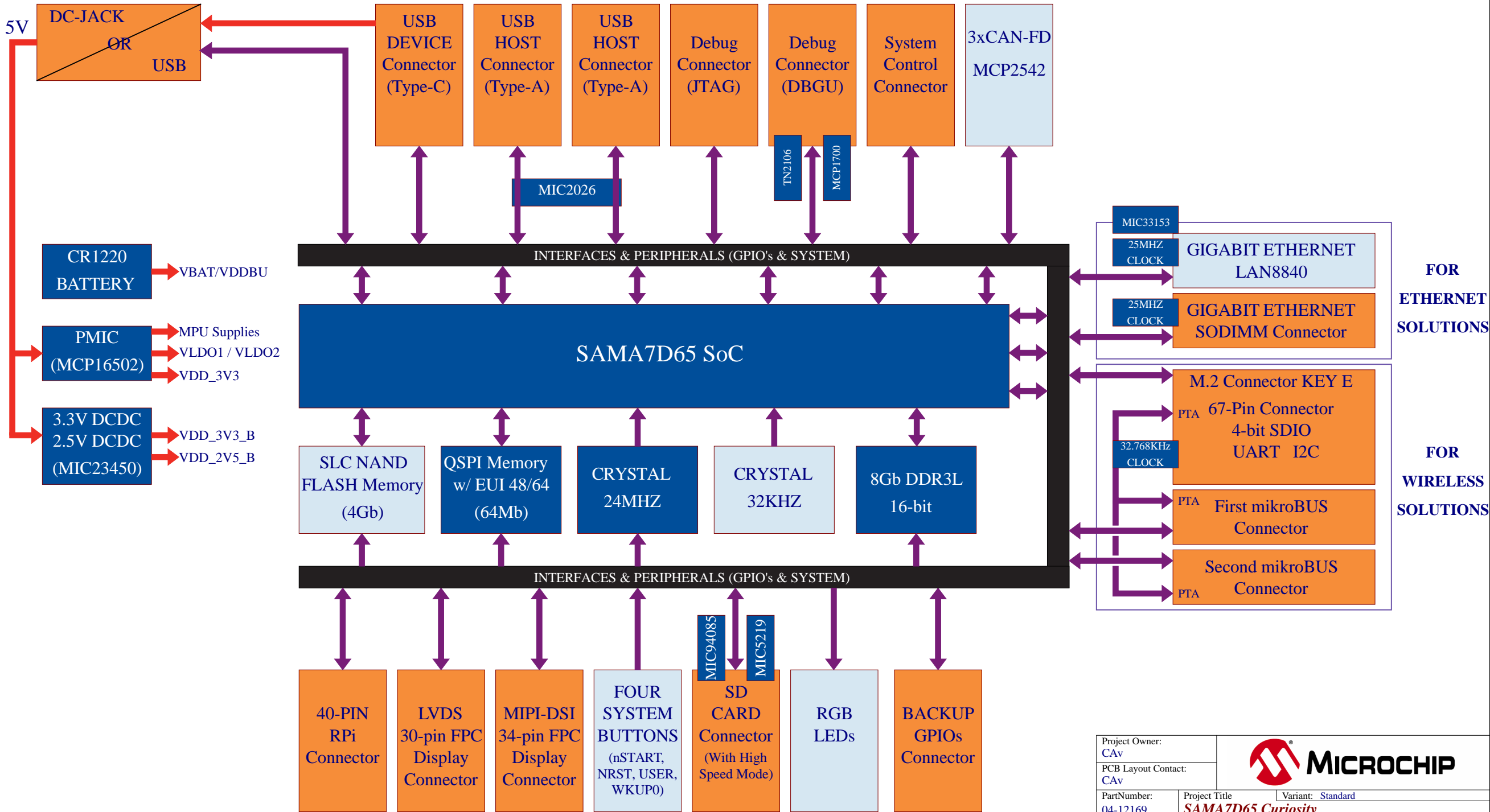




SAMA7D65-CURIOSITY



Project Owner: CAv		 MICROCHIP	
PCB Layout Contact: CAv			
PartNumber: 04-12169		Project Title SAMA7D65 Curiosity	
Sheet Title Block Diagram		Variant: Standard	
Size B	SCH #: 02-01103	Rev: 6	Date: 10/16/2024
	PCB #: 04-12169	Rev: 4	Sheet 1 of 15
File: 01 - Block Diagram.SchDoc			

Designed with



Altium.com

PIO muxing and jumper settings

PIOA	PERIPHERAL	FUNCTION
PA0	NAND Flash	WE
PA1	NAND Flash	ALE
PA2	NAND Flash	CLE
PA3	NAND Flash	D0
PA4	NAND Flash	D1
PA5	NAND Flash	D4
PA6	NAND Flash	D5
PA7	NAND Flash	D6
PA8	NAND Flash	D7
PA9	NAND Flash	D2
PA10	NAND Flash	D3
PA11	NAND Flash	RDY
PA12	NAND Flash	RE
PA13	NAND Flash	CS
PA14	MIKROBUS 2	SPI CS
PA15	MIKROBUS 1	SPI CS
PA16	MIKROBUS 1	SPI SCK
	MIKROBUS 2	SPI SCK
	RPi 40Pin	SPI SPCK
	GMAC1 SODIMM	SPI SPCK
PA17	MIKROBUS 1	MISO
	MIKROBUS 2	MISO
	RPi 40Pin	MISO
	GMAC1 SODIMM	MISO
PA18	MIKROBUS 1	MOSI
	MIKROBUS 2	MOSI
	RPi 40Pin	MOSI
	GMAC1 SODIMM	MOSI
PA19	RPi 40Pin	NPCS0
PA20	RPi 40Pin	NPCS1
PA21	GMAC1 SODIMM	NPCS
PA22	RGB LED	BLUE
PA23	MIKROBUS 2	Interrupt
PA24	RPi 40Pin	RXD
PA25	RPi 40Pin	TXD
PA26	GMAC0	TXCTL
PA27	GMAC0	TX0
PA28	GMAC0	TX1
PA29	GMAC0	RXCTL
PA30	GMAC0	RX0
PA31	GMAC0	RX1
PA31	GMAC0	MDC

PIOB	PERIPHERAL	FUNCTION
PB0	GMAC0	MDIO
PB1	GMAC0	TXCK
PB2	GMAC0	RX2
PB3	GMAC0	RXCK
PB4	GMAC0	TX2
PB5	GMAC0	TX3
PB6	GMAC0	RX3
PB7	MIKROBUS 1	INT
PB8	OSPI Flash	IO3
PB9	OSPI Flash	IO2
PB10	OSPI Flash	IO1
PB11	OSPI Flash	IO0
PB12	OSPI Flash	CS
PB13	OSPI Flash	SCK
PB14	MIPI LCD	PWM
PB15	LVDS LCD	PWM
	RGB LED	GREEN
	MIKROBUS 1	PWM
	RPi 40Pin	PWM0
PB16	MIPI LCD	MAXTouch
PB17	LVDS LCD	Interrupt
	RGB LED	RED
	MIKROBUS 2	PWM
	RPi 40Pin	PWM1
PB18	MIPI LCD	ENABLE
	LVDS LCD	
	MCP16502	
	PAC1934	
PB19	EEPROM	TWCK
	GMAC1	
	MCP16502	
	PAC1934	
PB20	EEPROM	TWD
	GMAC1	
	MCP16502	
	PAC1934	
PB21	SDMMC1	NRST
PB22	SDMMC1	CMD
PB23	SDMMC1	CK
PB24	SDMMC1	DAT0
PB25	SDMMC1	DAT1
PB26	SDMMC1	DAT2
PB27	SDMMC1	DAT3
PB28	SDMMC1	WP
PB29	SDMMC1	CD
PB30	SDMMC1	1V8SEL
PB31	PAC1934	Interrupt
	RPi 40Pin	GPCLK0
PB31	USBA	CC1



PIOC	PERIPHERAL	FUNCTION
PC0	RPi 40Pin	GPCLK2
PC1	USBA	CC2
PC2	GMAC0	Interrupt
PC3	MCP16502	Interrupt
PC4	RPi 40Pin	GPIO17
PC5	RPi 40Pin	GPIO27
PC5	MIKROBUS 1	AN Input
PC6	LVDS LCD	TWCK
	MIPI LCD	
	MIKROBUS 1	
	MIKROBUS 2	
	RPi 40Pin	
	M.2 WiFi	
PC7	LVDS LCD	TWD
	MIPI LCD	
	MIKROBUS 1	
	MIKROBUS 2	
	RPi 40Pin	
	M.2 WiFi	
PC8	MPU USBA	VBUS DET
PC9	MIKROBUS 1/2	NRST
PC10	MPU	USER BTN
PC11	RPi 40Pin	GPIO25
PC12	RPi 40Pin	GPIO24
PC13	MIKROBUS 2	AN Input
PC14	RPi 40Pin	I2S DINO
PC15	RPi 40Pin	I2S WS
PC16	RPi 40Pin	I2S CK
PC17	RPi 40Pin	I2S DOUT0
PC18	MPU USBB	OVCUR
	RPi 40Pin	GPIO16
PC19	MPU USBC	OVCUR
	RPi 40Pin	GPIO26
PC20	MPU USBB	VOUT EN
PC21	MPU USBC	VOUT EN
PC22	MPU JTAG	NTRST
PC23	MPU JTAG	TCK
PC24	MPU JTAG	TMS
PC25	MPU JTAG	TDI
PC26	MPU JTAG	TDO
PC27	M.2 SDMMC2	CMD
	M.2 WiFi	SPI MOSI
PC28	M.2 SDMMC2	CK
	M.2 WiFi	SPI MISO
PC29	M.2 SDMMC2	DAT0
	M.2 WiFi	SPI SCK
PC30	M.2 SDMMC2	DAT1
PC31	M.2 SDMMC2	DAT2

PIOD	PERIPHERAL	FUNCTION
PD0	M.2 SDMMC2	DAT2
PD1	M.2 WiFi	Interrupt
	RPi 40Pin	GPIO22
PD2	M.2 WiFi	TWI Interrupt
	RPi 40Pin	GPIO23
PD3	M.2 Bluetooth	RTS
PD4	M.2 WiFi	Wake Host
PD5	M.2 Bluetooth	CTS
PD6	M.2 Bluetooth	RXD
PD7	M.2 Bluetooth	TXD
PD8	MIKROBUS 1	TXD
	CAN0	TXD
PD9	MIKROBUS 1	RXD
	CAN0	RXD
PD10	CAN1	TXD
PD11	CAN1	RXD
PD12	CAN2	TXD
PD13	CAN2	RXD
PD14	CAN3	TXD
PD15	CAN3	RXD
PD16	MIKROBUS 2	TXD
	CAN4	TXD
PD17	MIKROBUS 2	RXD
	CAN4	RXD
PD18	DBGU	TXD
PD19	DBGU	RXD
PD20	M.2 WiFi	RSTN
	RPi 40Pin	GPCLK1
PD21	GMAC1	TXEN
PD22	GMAC1	TX0
PD23	GMAC1	TX1
PD24	GMAC1	RXCTL
PD25	GMAC1	MDC
PD26	GMAC1	MDIO
PD27	GMAC1	RX0
PD28	GMAC1	RX1
PD29	GMAC1	TXCK
PD30	GMAC1	RX2
PD31	GMAC1	RX3

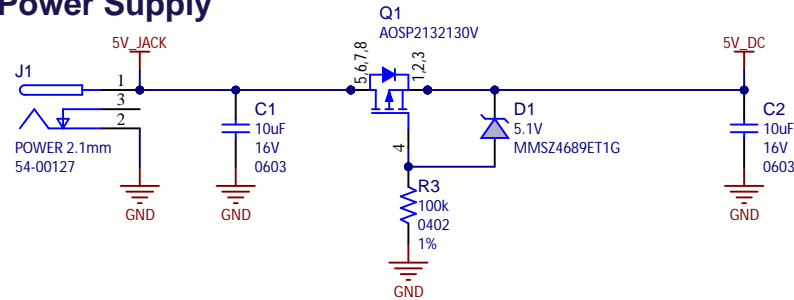
PIOE	PERIPHERAL	FUNCTION
PE0	GMAC1	TX2
PE1	GMAC1	TX3
PE2	GMAC1	RXCK
PE3	GMAC1	Interrupt
PE4	LVDS	D0_N
PE5	LVDS	D0_P
PE6	LVDS	D1_N
PE7	LVDS	D1_P
PE8	LVDS	D2_N
PE9	LVDS	D2_P
PE10	LVDS	D3_N
PE11	LVDS	D3_P
PE12	LVDS	CK_N
PE13	LVDS	CK_P

PIOBU	PERIPHERAL	FUNCTION
PIOBU0	M.2 WiFi	MPU WAKE
PIOBU1	GMAC1	MPU WAKE
PIOBU2	J32 connector	N/A
PIOBU3	J32 connector	N/A

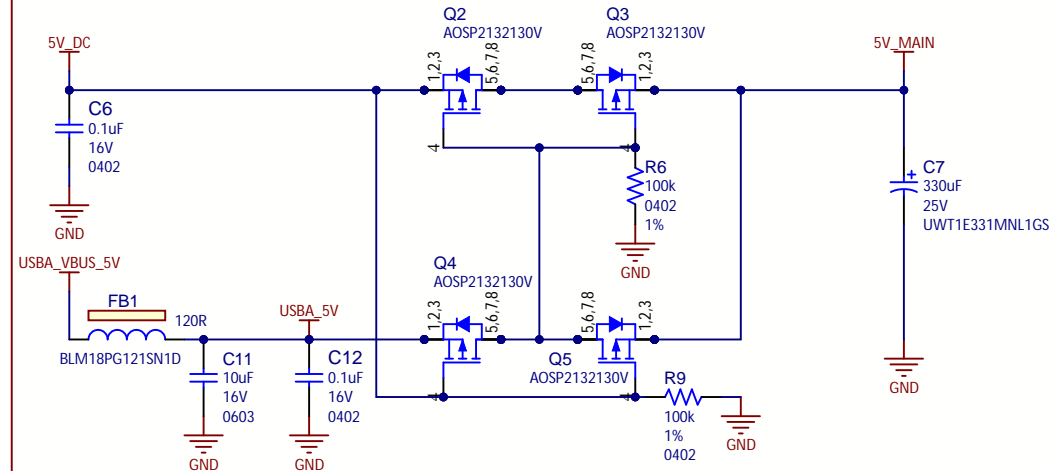
Header	Function	Default position
J2	Always/PMIC selectable VDD_3V3_B enable	2-3 (Always)
J4	VBAT series jumper	1-2
J6, J7	PAC1934 TWI selection MPU/MCP2221A	1-2 (MCP2221A)
J12	M.2 WiFi Interface select	1-2
J32	CAN1, CAN2, CAN3 Standby	1-2, 3-4, 5-6
J36	NAND Chip Select	1-2
J37	GMAC1 25MHz Clock enable	1-2
J39	OSPI0 Chip Select	1-2

Project Owner: CAv		 MICROCHIP		
PCB Layout Contact: CAv				
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity		Variant: Standard	
Sheet Title PIO Muxing			<div>Designed with</div>  <div>Altium.com</div>	
Size B	SCH #: 02-01103	Rev: 6		Date: 10/16/2024
	PCB #: 04-12169	Rev: 4		Sheet 2 of 15
File: 02 - PIO muxing SchDoc				

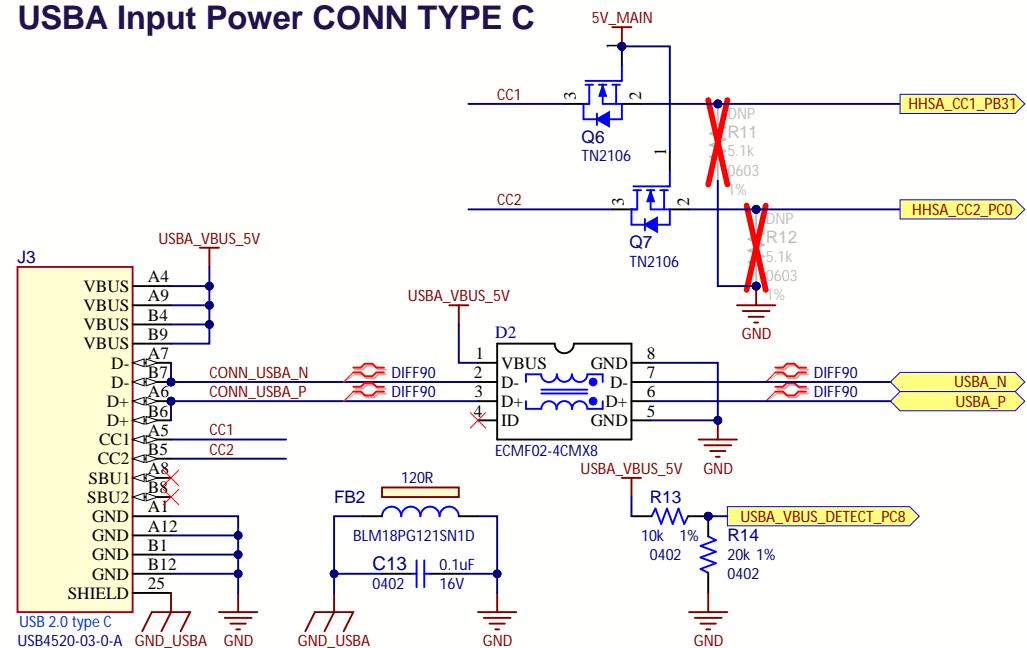
5V Power Supply



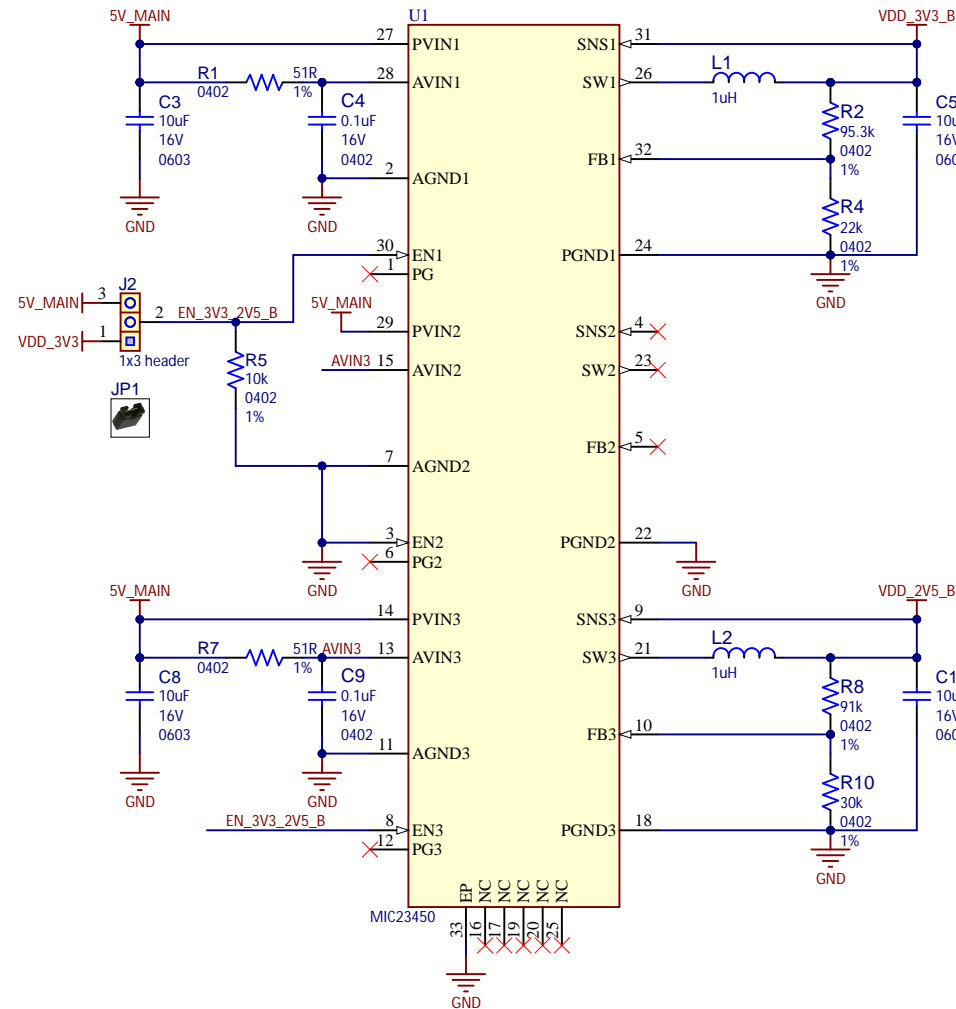
Automatic Power Switch



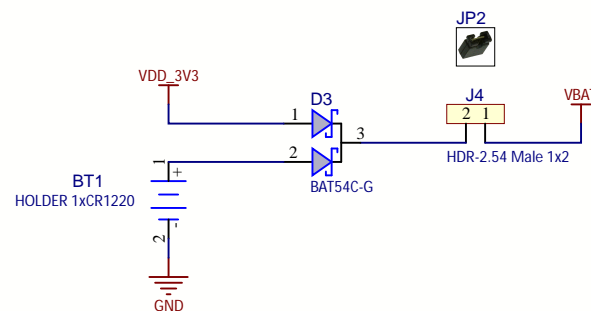
USBA Input Power CONN TYPE C





EXTRA 3.3V & 2.5V POWER SUPPLY

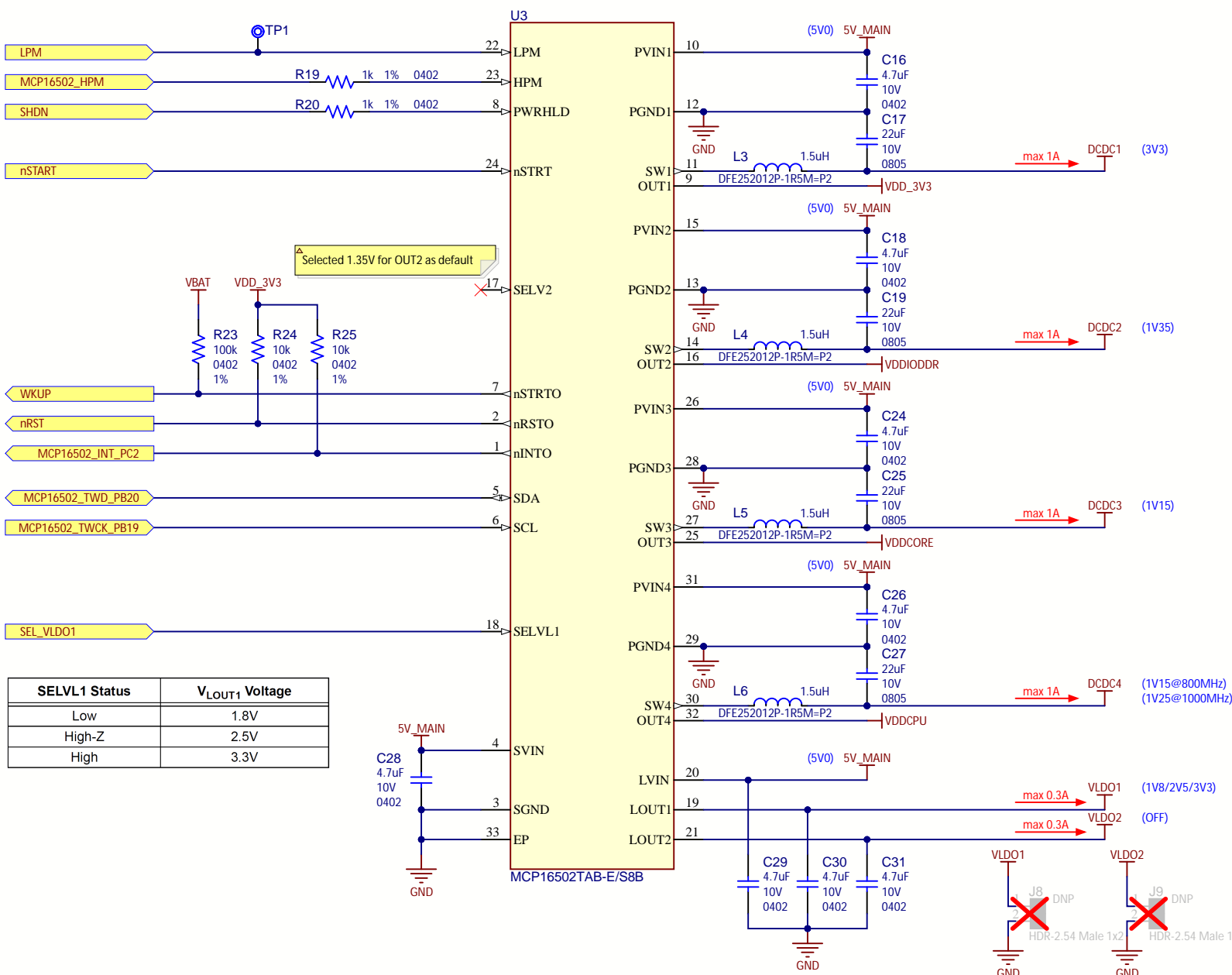


Backup Battery

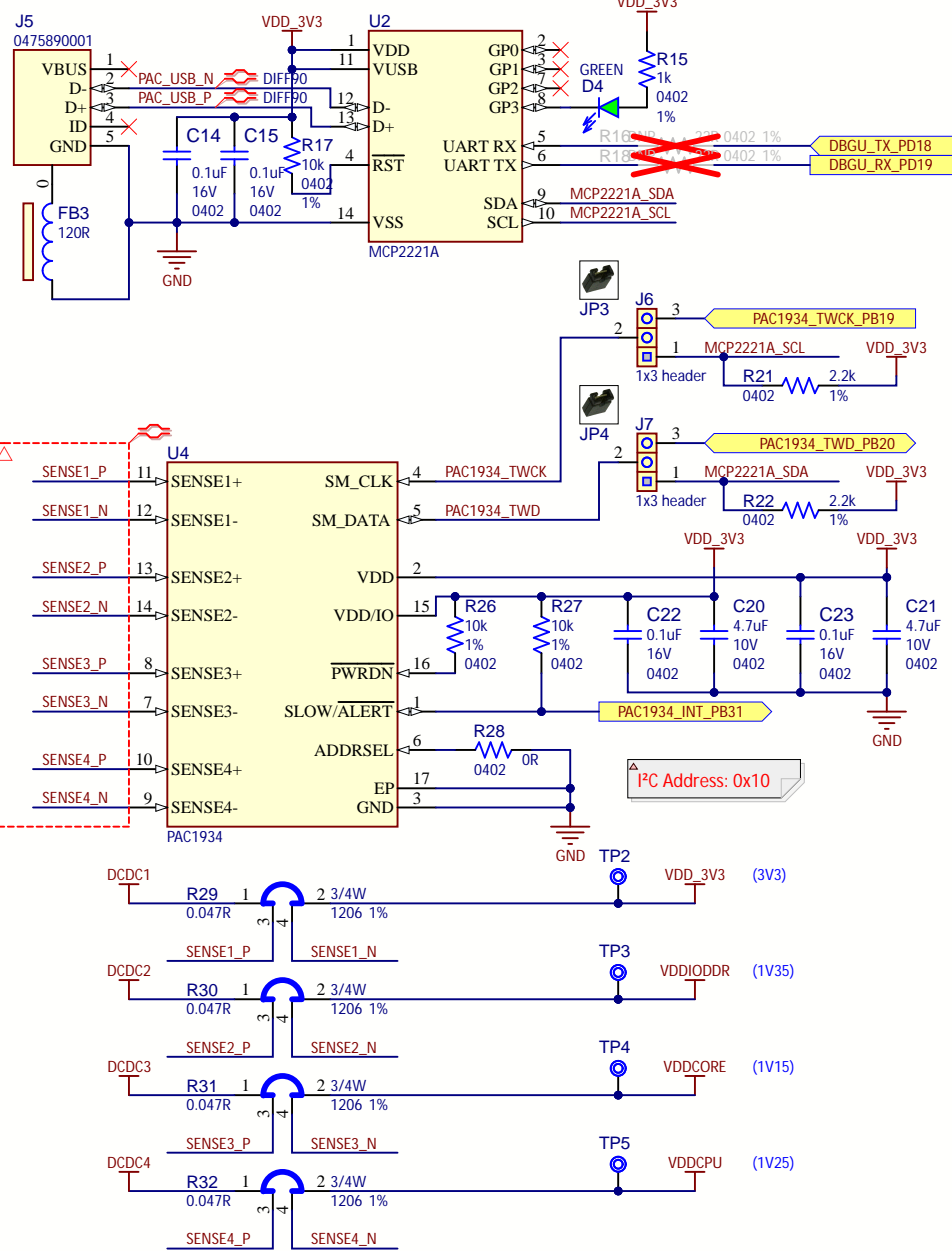


Project Owner: CAV		 MICROCHIP			
PCB Layout Contact: CAV					
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity	Variant: Standard			
Sheet Title Power Supply		<div>Designed with</div>  <div>Altium.com</div>			
Size B	SCH #: 02-01103			Rev: 6	Date: 10/16/2024
	PCB #: 04-12169			Rev: 4	Sheet 3 of 15
File: 03 - Power.SchDoc					

Power Management Unit



Power Measurement



Project Owner:
CAv

PCB Layout Contact:
CAv

MICROCHIP

PartNumber:
04-12169

Project Title
SAMA7D65 Curiosity

Variant: Standard

Sheet Title
PMIC Power Monitor

Size B

SCH #: 02-01103

Rev: 6

Date: 10/16/2024

PCB #: 04-12169

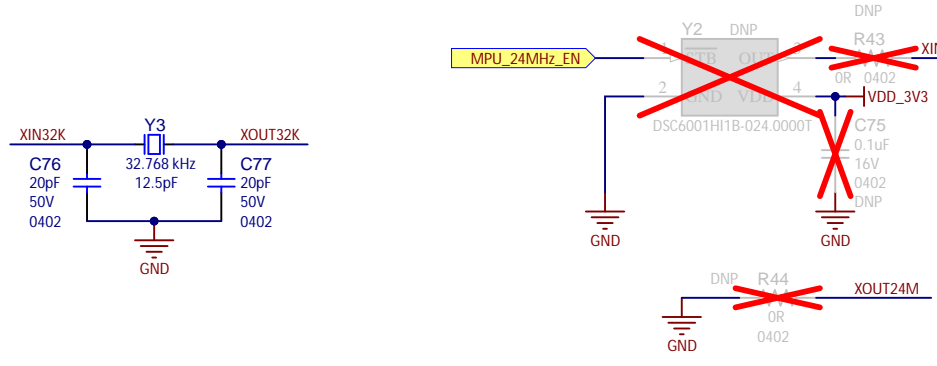
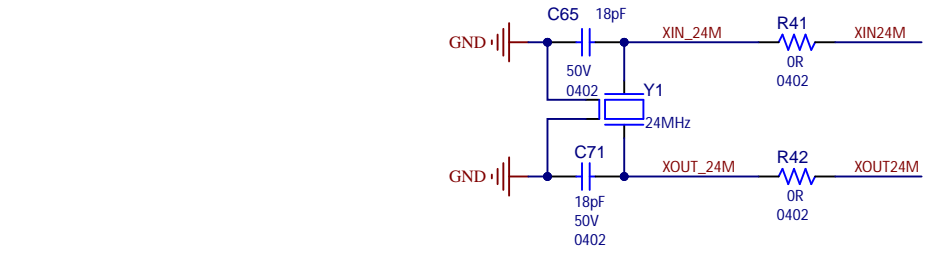
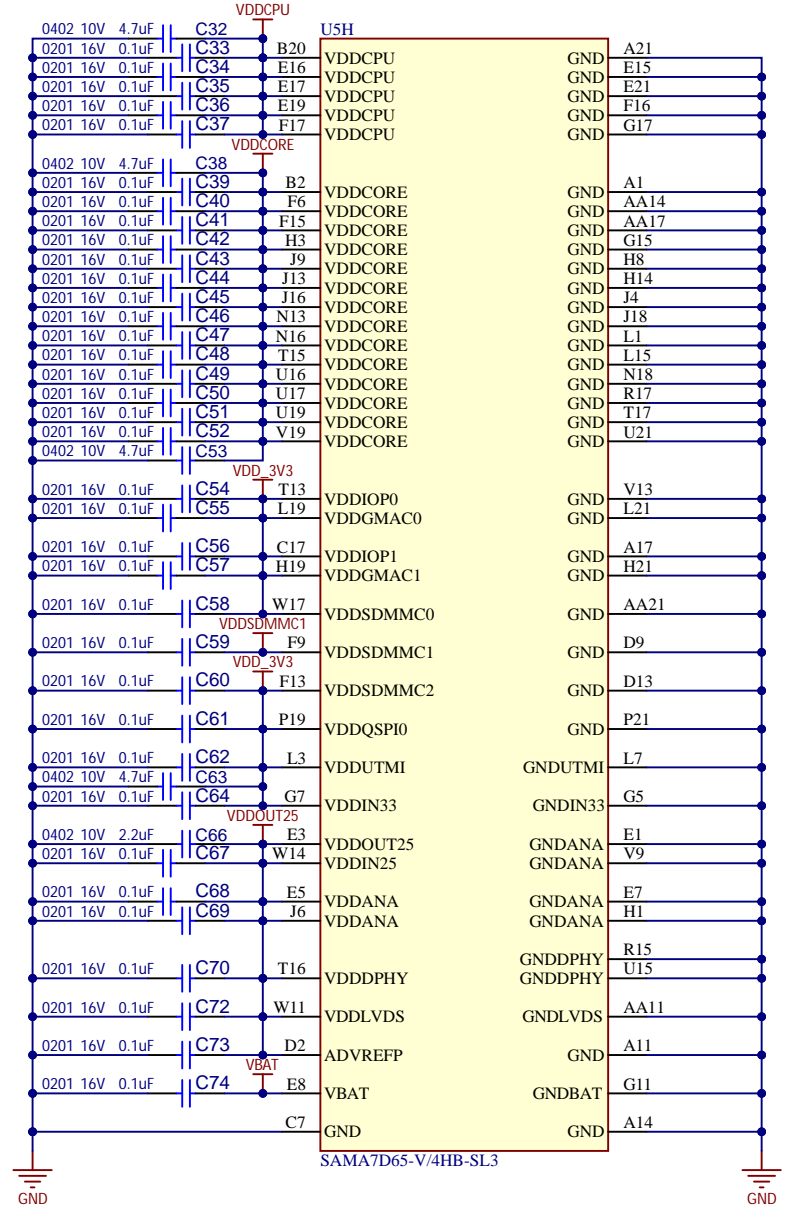
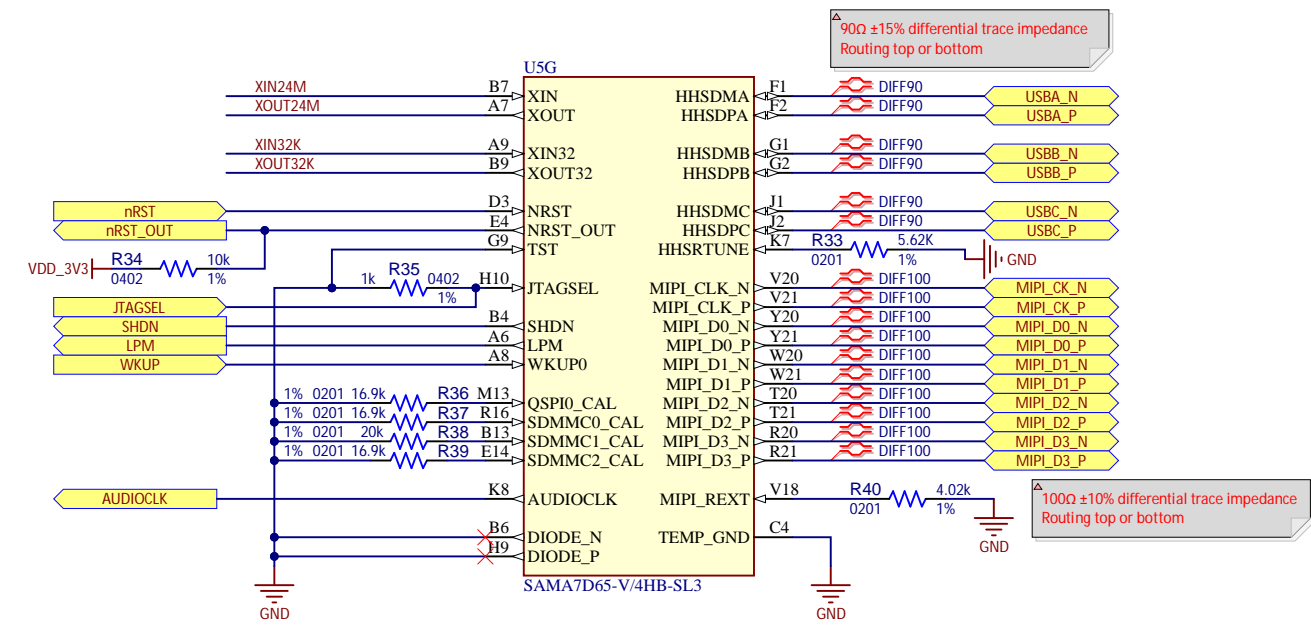
Rev: 4


Sheet 4 of 15


File: 04 - PMIC-PWR Monitor.SchDoc

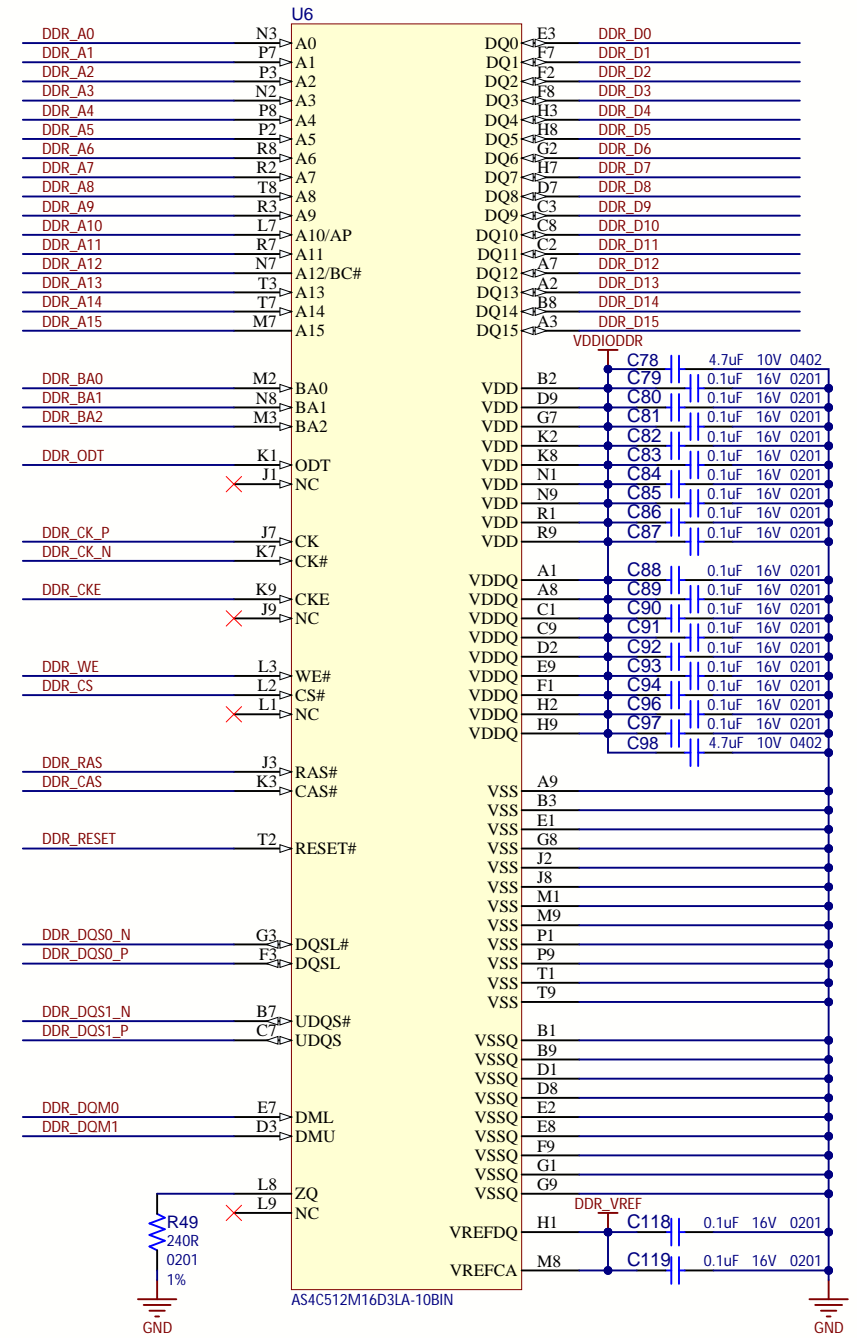
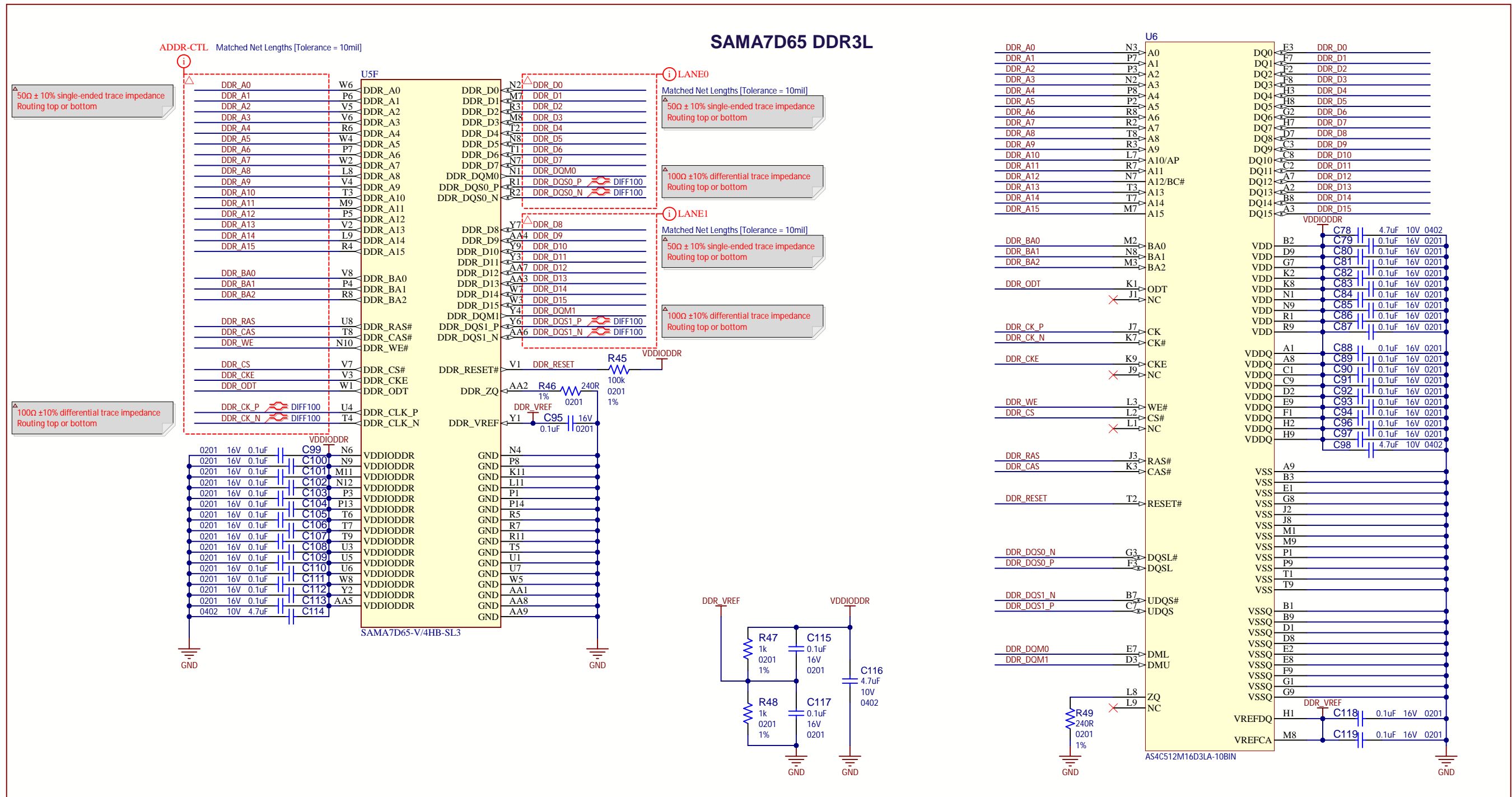
Designed with
Altium
Altium.com



SAMA7D65 SoC



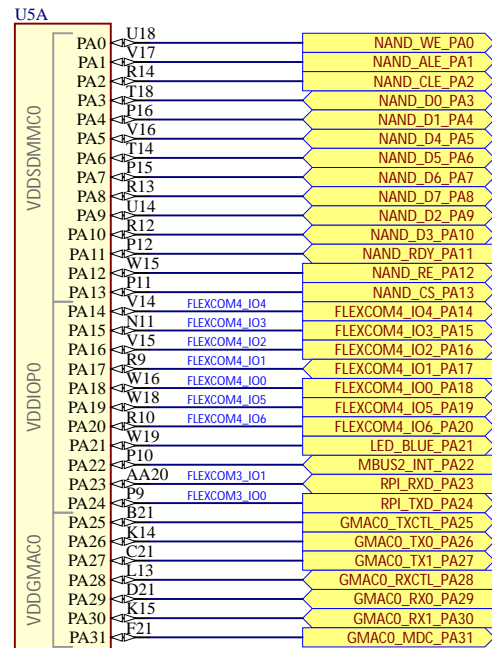
Project Owner: CAV			
PCB Layout Contact: CAV			
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity	Variant: Standard	
Sheet Title SAMA7D65 SoC			
Size B	SCH #: 02-01103	Rev: 6	Date: 10/16/2024
	PCB #: 04-12169	Rev: 4	Sheet 5 of 15
File: 05 - SAMA7D65-MPU.SchDoc			

Designed with

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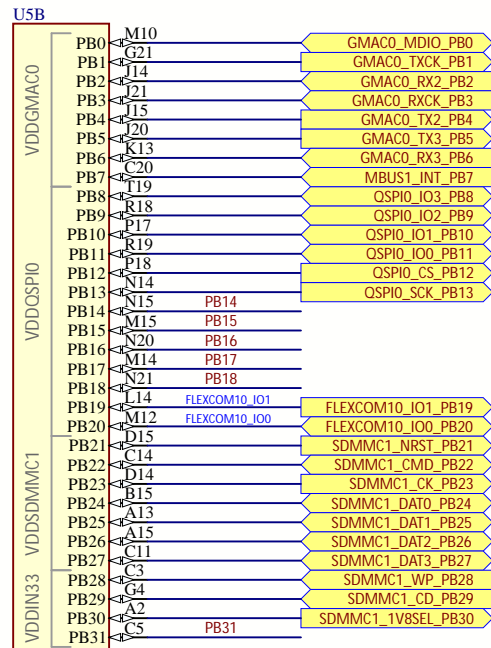


Project Owner: CAv		 MICROCHIP	
PCB Layout Contact: CAv			
PartNumber: 04-12169	Project Title <i>SAMA7D65 Curiosity</i>	Variant: <u>Standard</u>	
Sheet Title SAMA7D65 DDR3L		<i>Designed with</i>  <u>Altium.com</u>	
Size B	SCH #: 02-01103 PCB #: 04-12169	Rev: 6 Rev: 4	Date: 10/16/2024 Sheet 6 of 15
File: 06 - SAMA7D65-DDR3L_SchDoc			

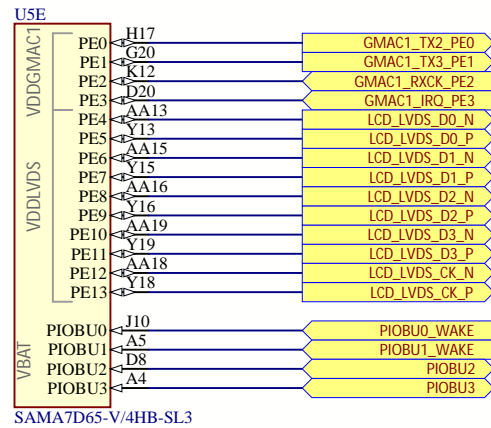
PIO A bank



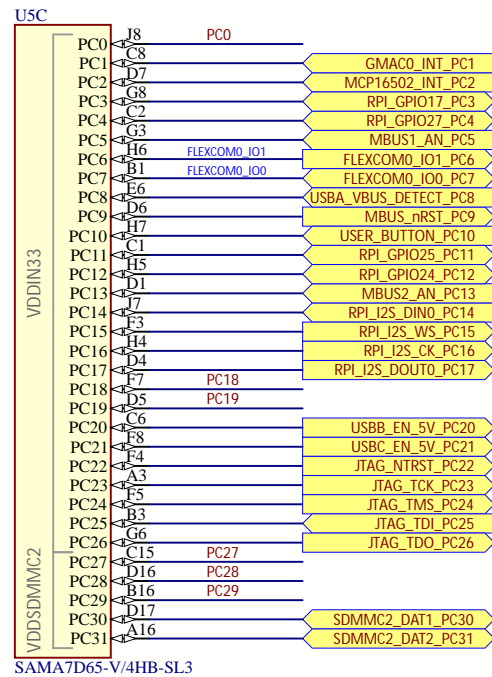
PIO B bank



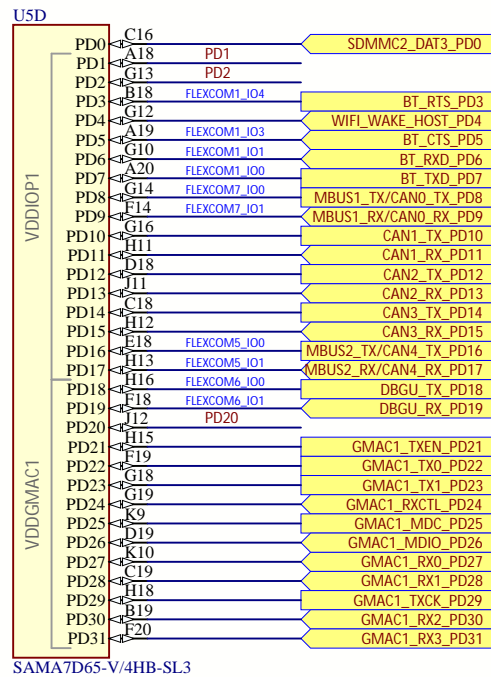
PIO E bank



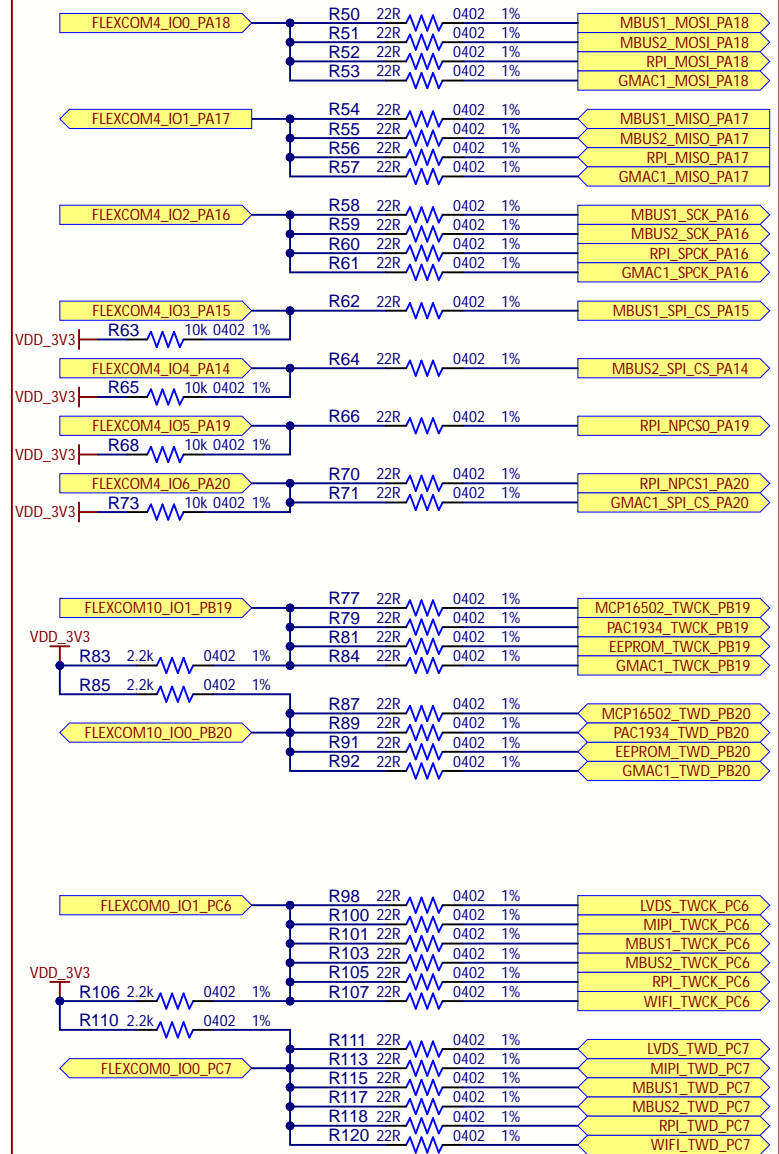
PIO C bank



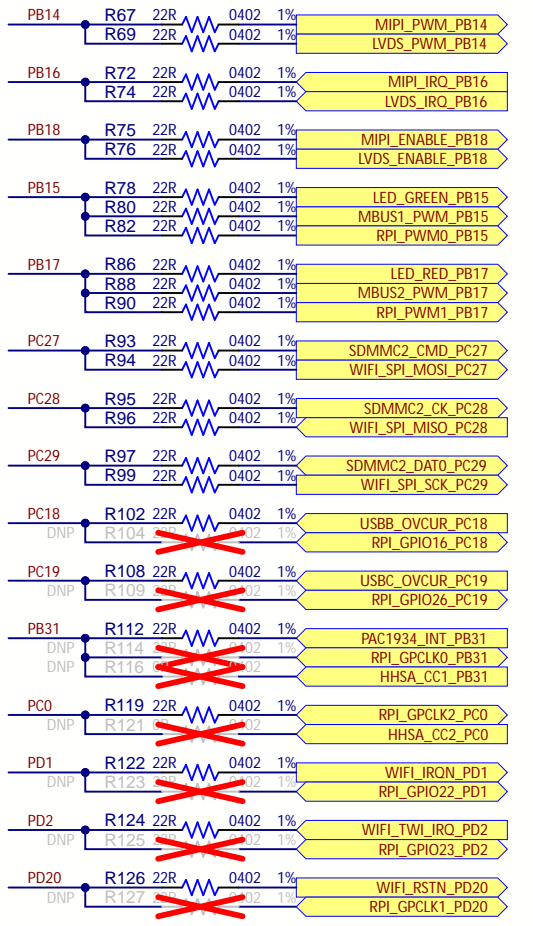
PIO D bank



FLEXCOM distribution



GPIO distribution



Project Owner:

CAV

PCB Layout Contact:

CAV

PartNumber:

04-12169

Project Title

SAMA7D65 Curiosity

Variant: Standard

Sheet Title

PIO Assignment

Size

B

SCH #: 02-01103

PCB #: 04-12169

Rev: 6

Rev: 4

Date: 10/16/2024

Sheet 7 of 15

File: 07 - SAMA7D65-PIO.SchDoc



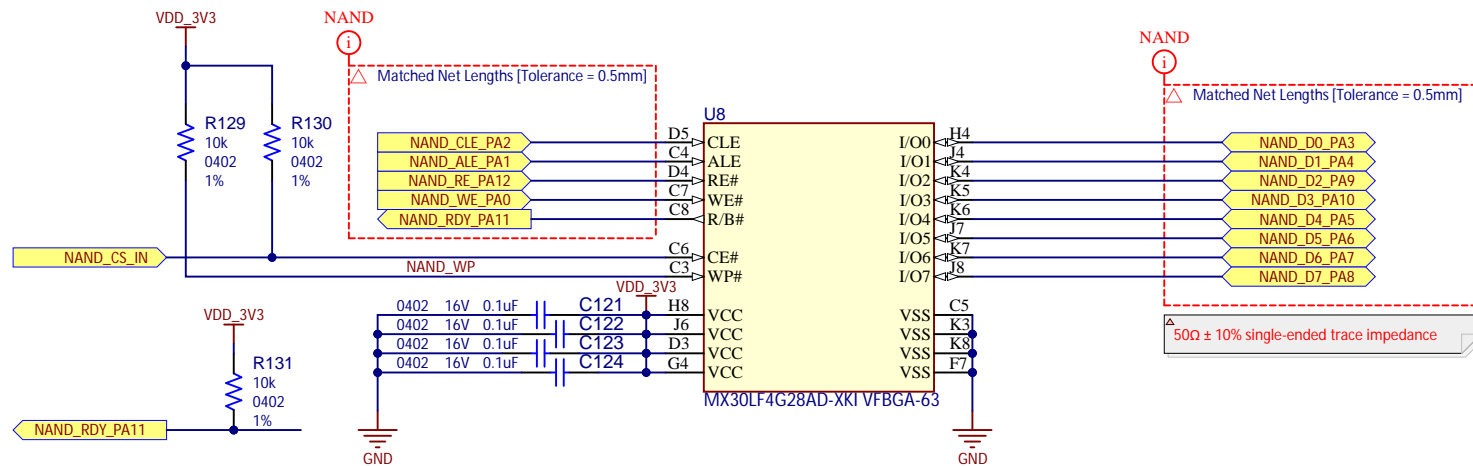
MICROCHIP

Designed with

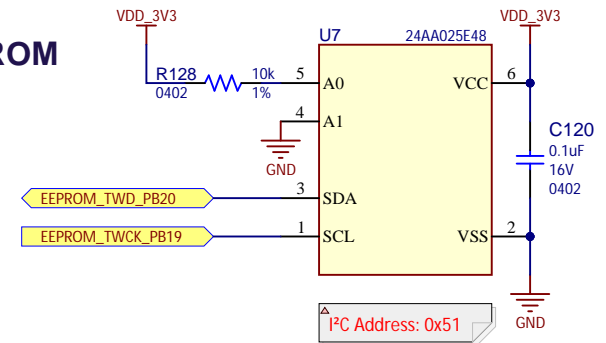
Altium

Altium.com

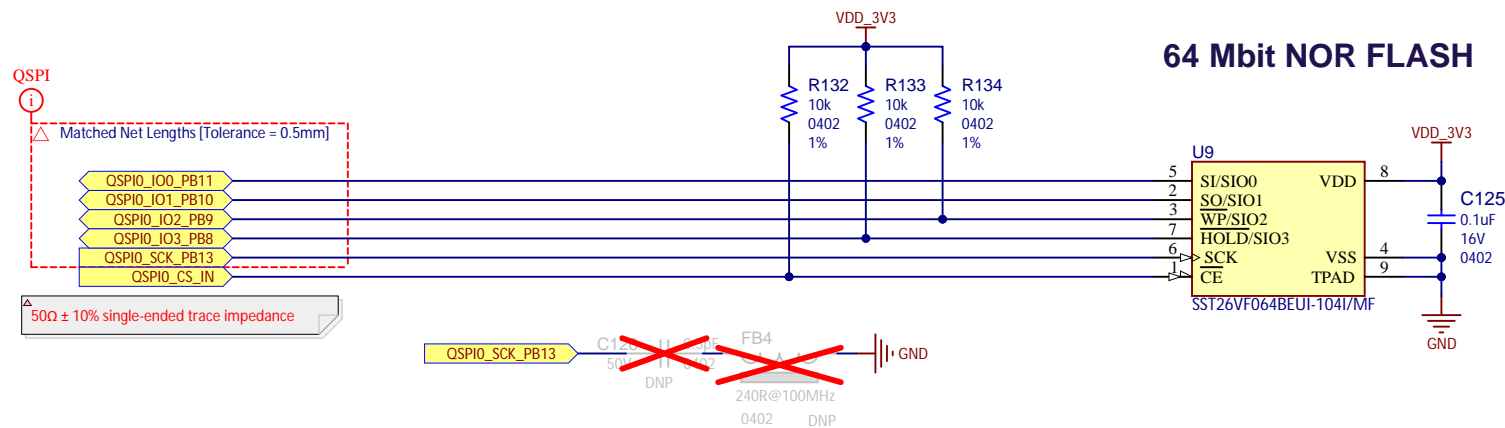
NAND FLASH



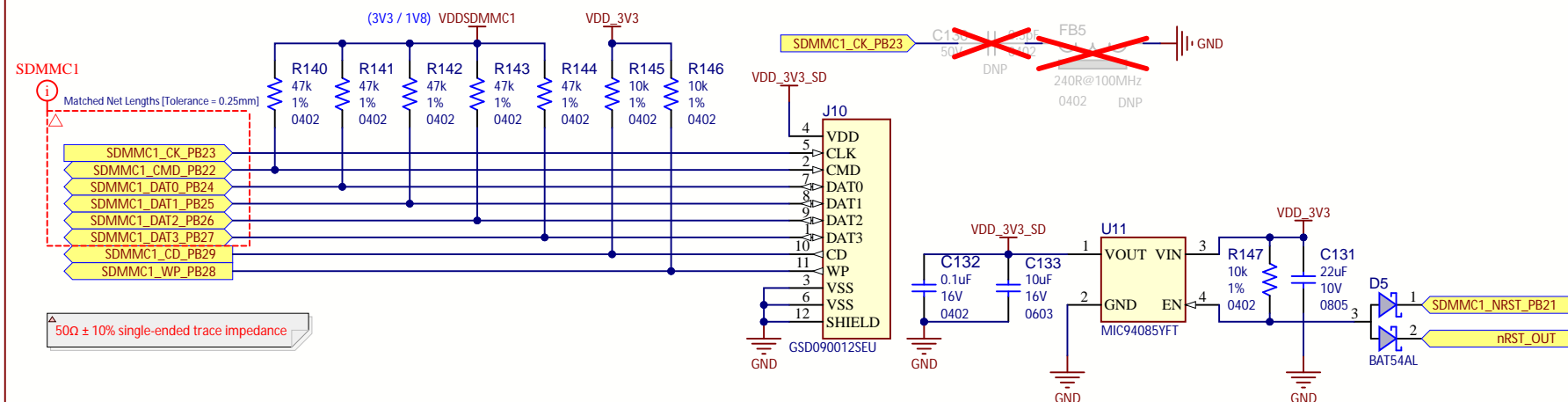
TWI EEPROM



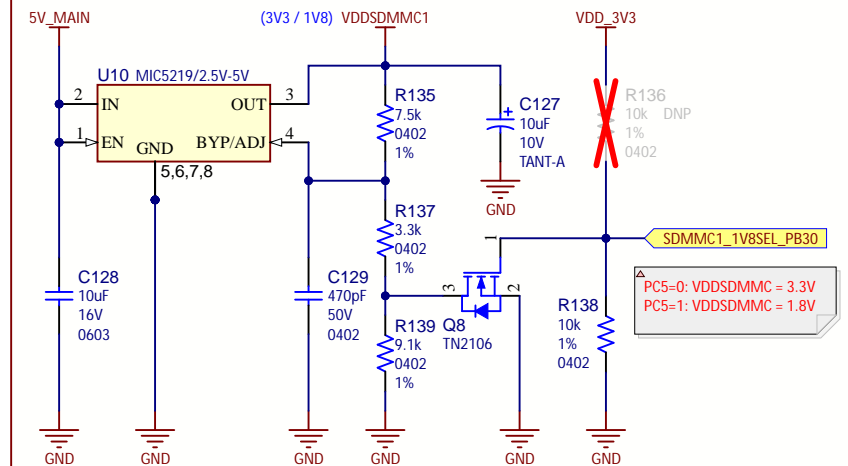
64 Mbit NOR FLASH


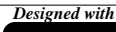


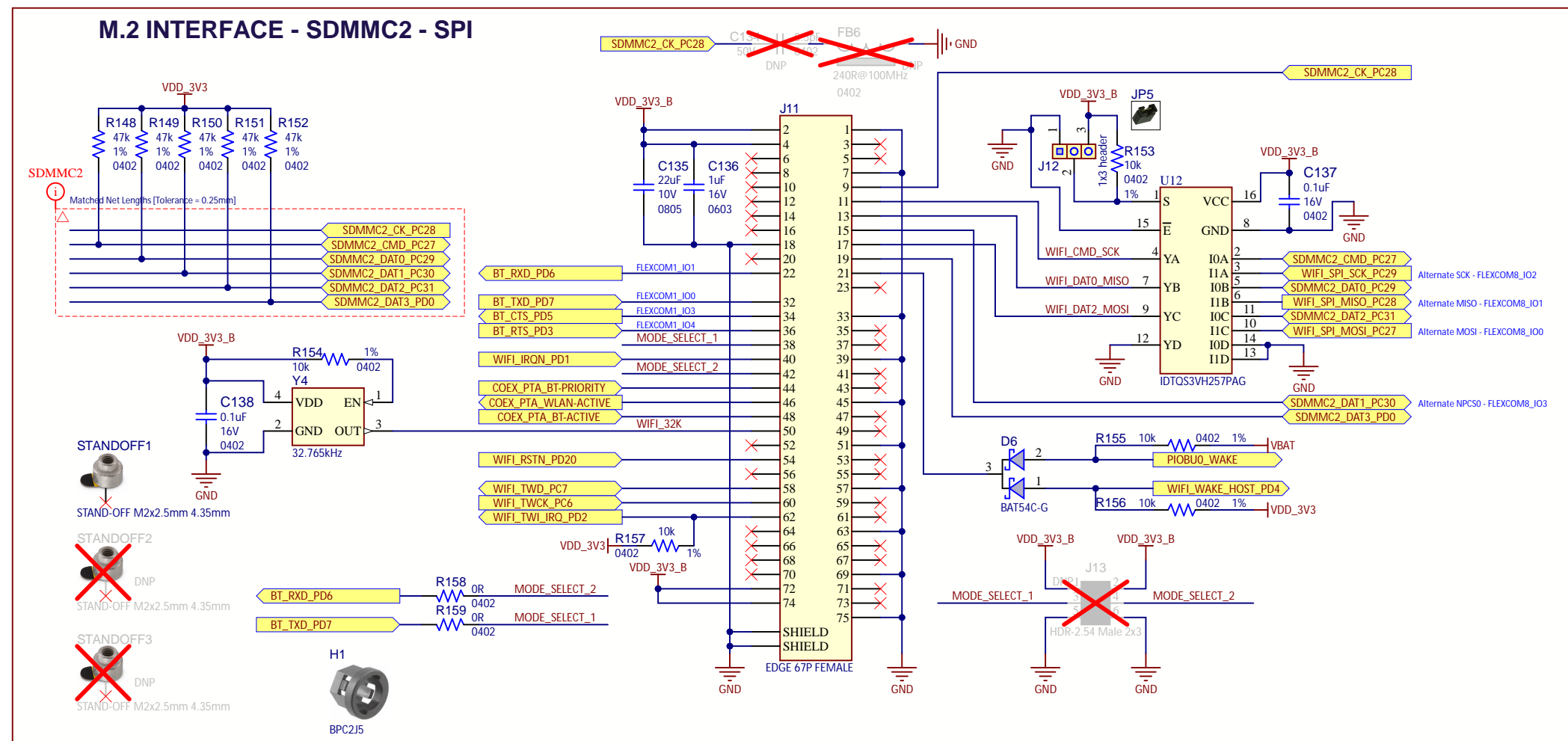
SD CARD INTERFACE - SDMMC1





SDMMC1 - SIGNAL VOLTAGE SWITCH

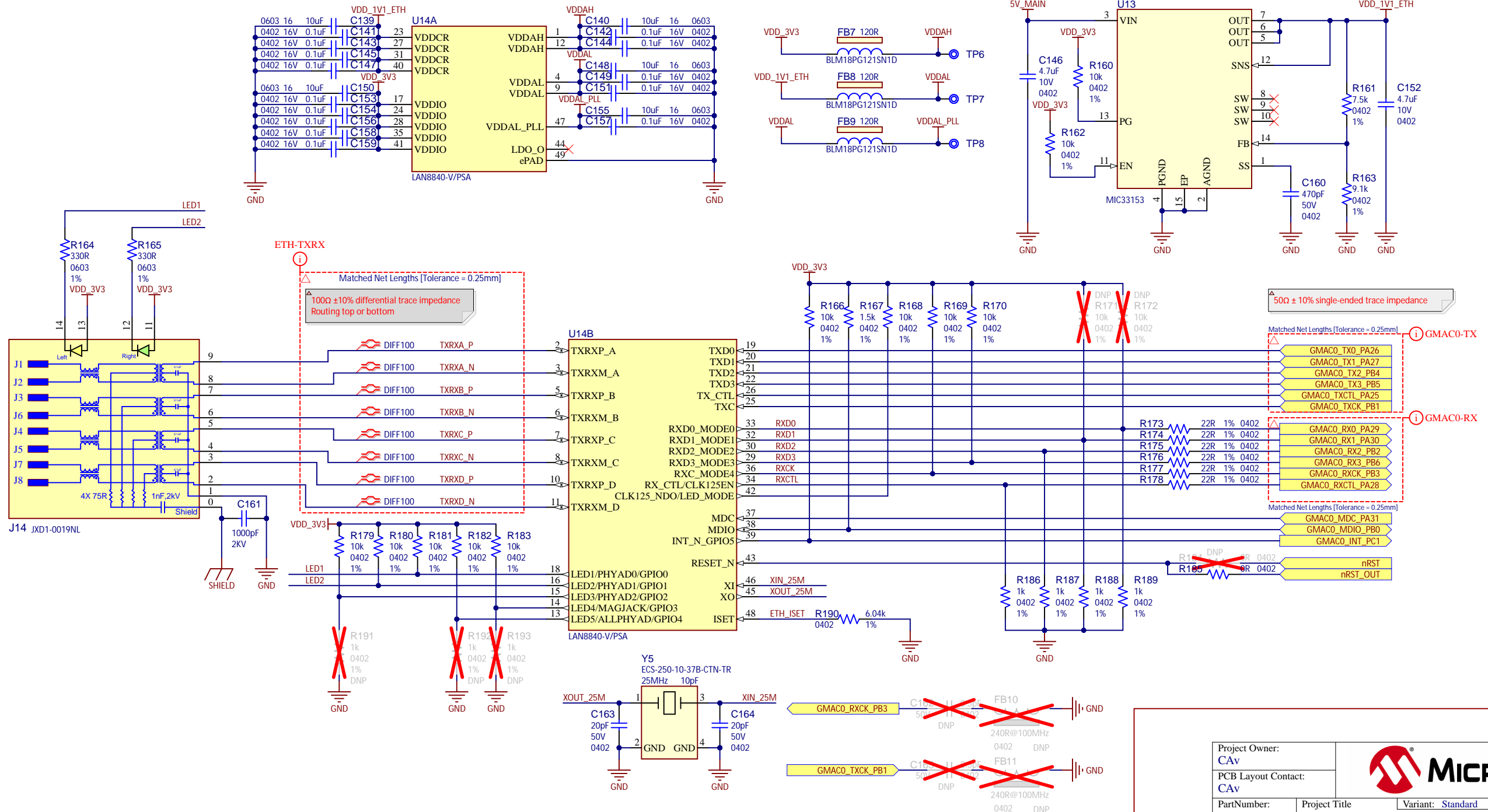



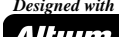
Project Owner: CAV		 MICROCHIP			
PCB Layout Contact: CAV					
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity	Variant: Standard			
Sheet Title NAND, QSPI Flash Memories, SD Card		<div>Designed with</div>  <div>Altium.com</div>			
Size B	SCH #: 02-01103			Rev: 6	Date: 10/16/2024
	PCB #: 04-12169			Rev: 4	Sheet 8 of 15
File: 08 - Memories.SchDoc					



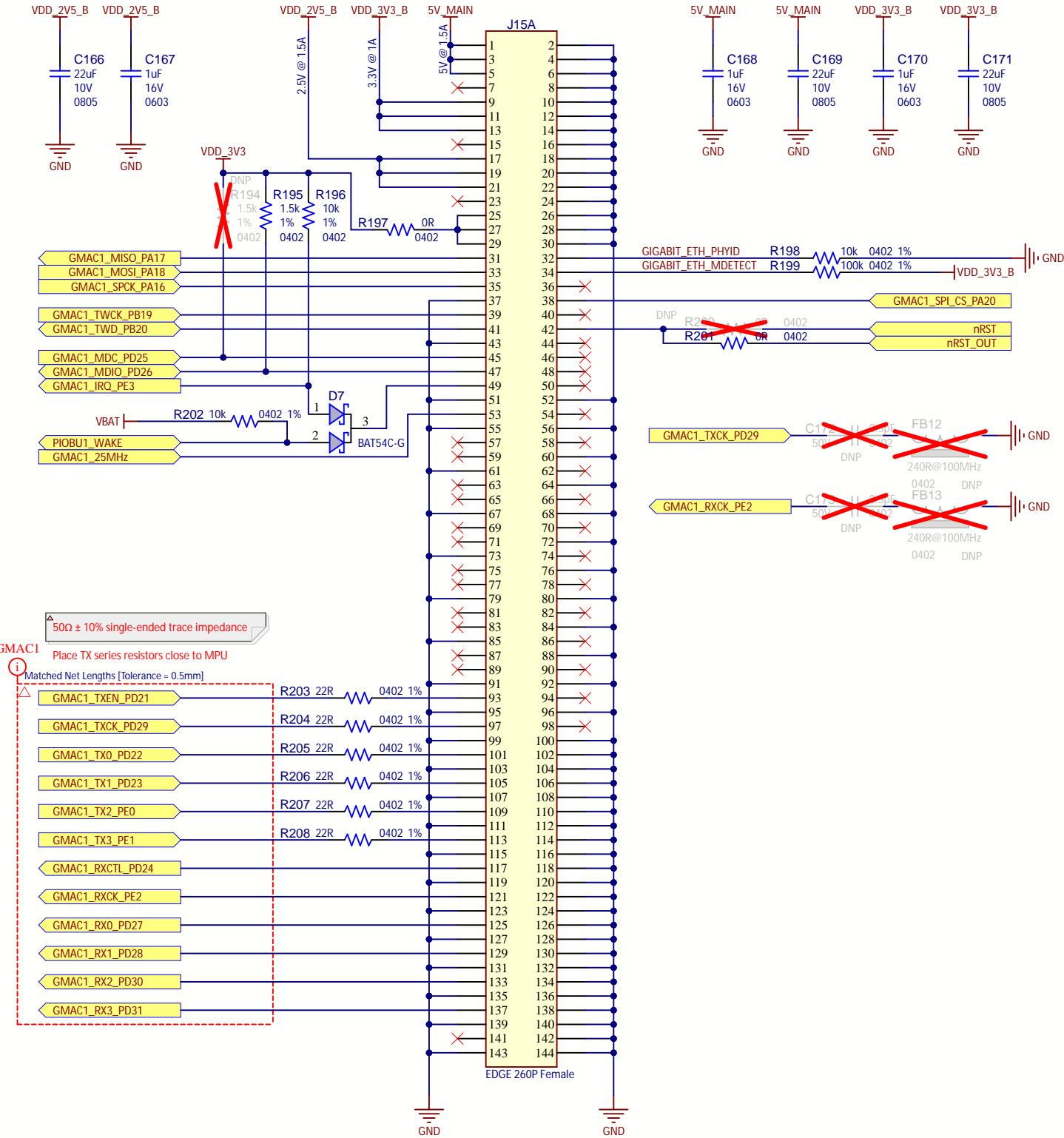
Project Owner: CAV		 MICROCHIP	
PCB Layout Contact: CAV			
PartNumber: 04-12169	Project Title <i>SAMA7D65 Curiosity</i>	Variant: <u>Standard</u>	
Sheet Title <u>M.2 Connector</u>		<div>Designed with</div> 	
Size B	SCH #: 02-01103 PCB #: 04-12169		
File: 09 - M.2-SDDMMC2.SchDoc			

RGMII ETHERNET 1Gbps LAN8840

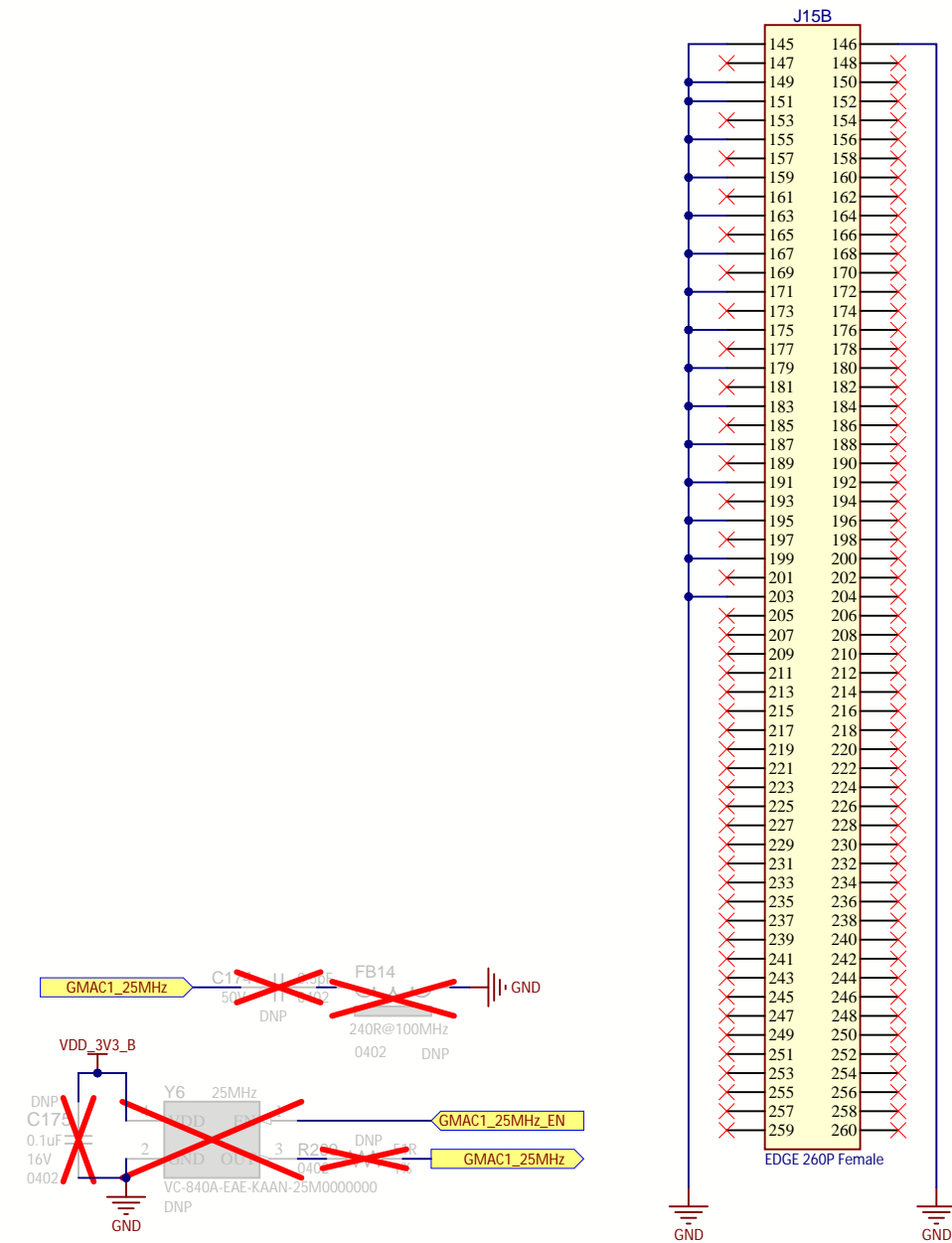



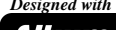
Project Owner: CAV		 MICROCHIP			
PCB Layout Contact: CAV					
PartNumber: 04-12169		Project Title SAMA7D65 Curiosity		Variant: Standard	
Sheet Title RGMII LAN8840					
Size B	SCH #: 02-01103	Rev: 6	Date: 10/16/2024		<div>Designed with</div>  <div>Altium.com</div>
	PCB #: 04-12169	Rev: 4	Sheet 10 of 15		
File: 10 - GMACO.SchDoc					

GIGABIT ETHERNET MODULE - SODIMM Connector 1/2

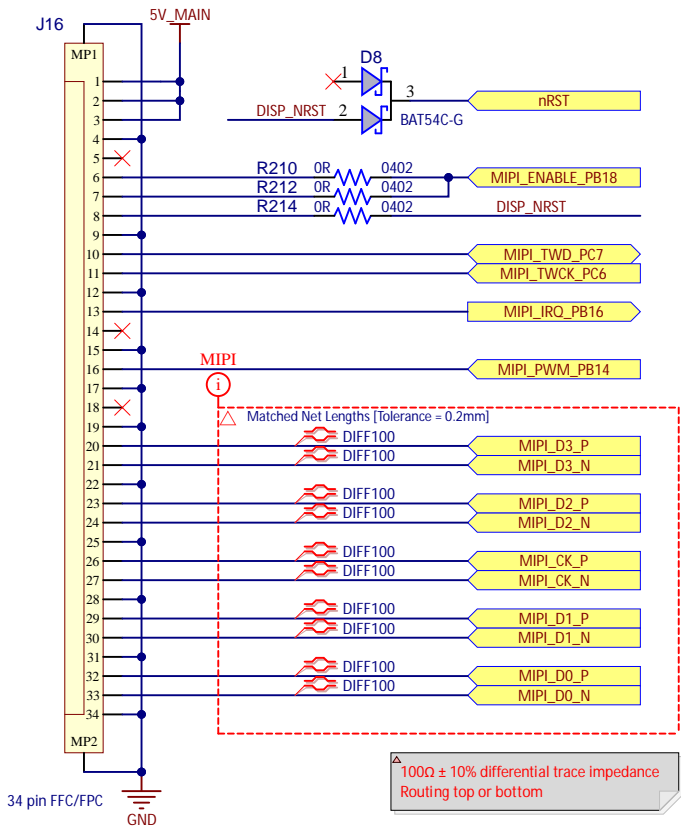


GIGABIT ETHERNET MODULE - SODIMM Connector 2/2

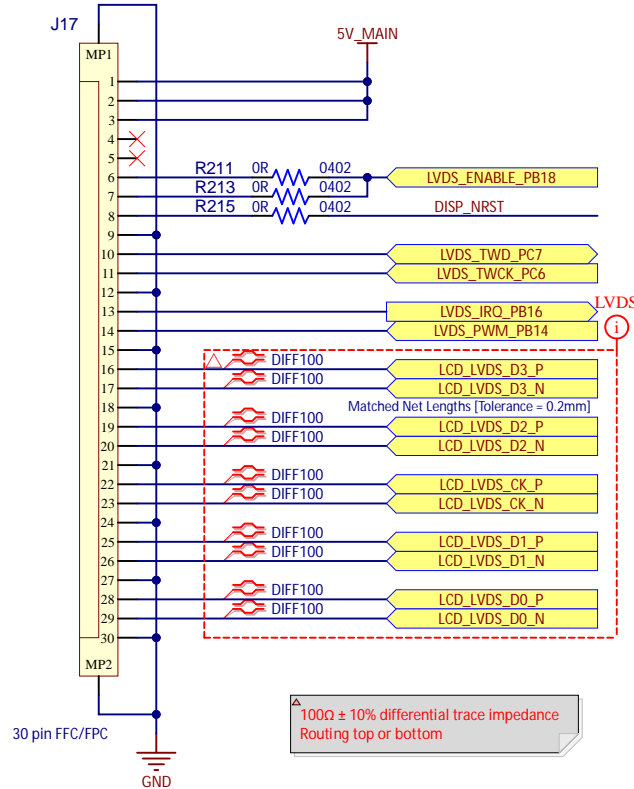


Project Owner: CAV		 MICROCHIP	
PCB Layout Contact: CAV			
PartNumber: 04-12169	Project Title <i>SAMA7D65 Curiosity</i>	Variant: <u>Standard</u>	
Sheet Title GMAC1 SODIMM		<div>Designed with  <u>Altium.com</u></div>	
Size B	SCH #: 02-01103		
	PCB #: 04-12169	Rev: 4	Sheet 11 of 15
File: 11 - GMAC1-SODIMM.SchDoc			

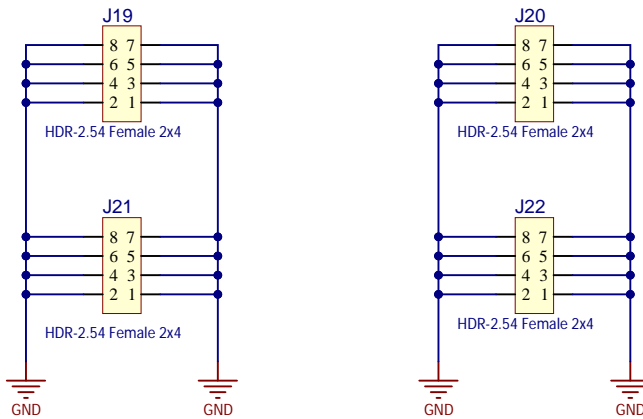
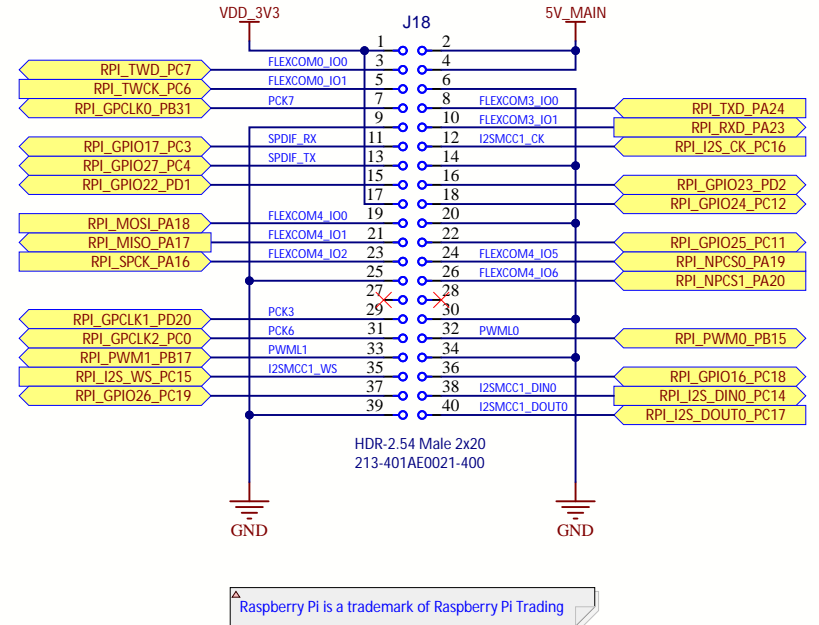
MIPI DSI interface





LVDS interface

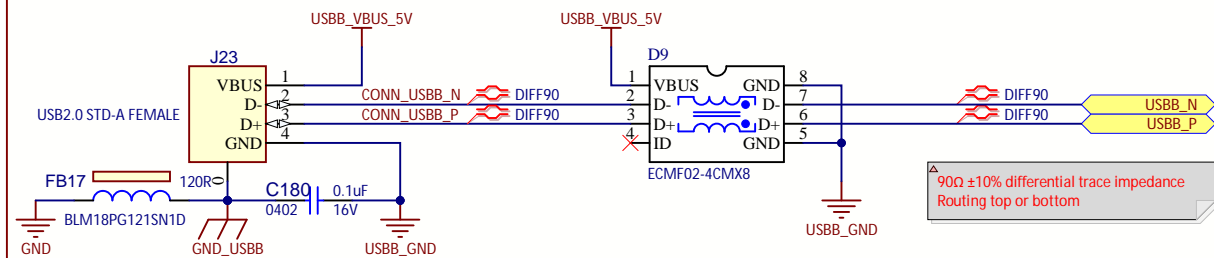


Raspberry Pi 40-pin Connector

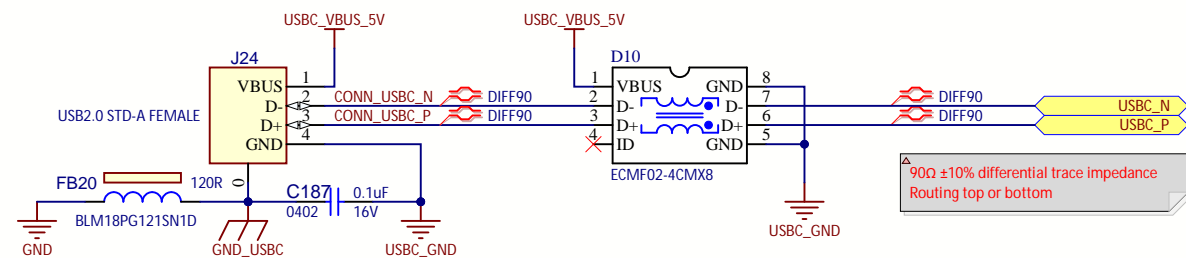


Project Owner: CAv		 MICROCHIP	
PCB Layout Contact: CAv			
PartNumber: 04-12169	Project Title <i>SAMA7D65 Curiosity</i>	Variant: <u>Standard</u>	
Sheet Title MIPI LVDS Connectors		Designed with  <u>Altium.com</u>	
Size B	SCH #: 02-01103	Rev: 6	Date: 10/16/2024
	PCB #: 04-12169	Rev: 4	Sheet 12 of 15
File: 12 - MIPI-LVDS-RGB.SchDoc			

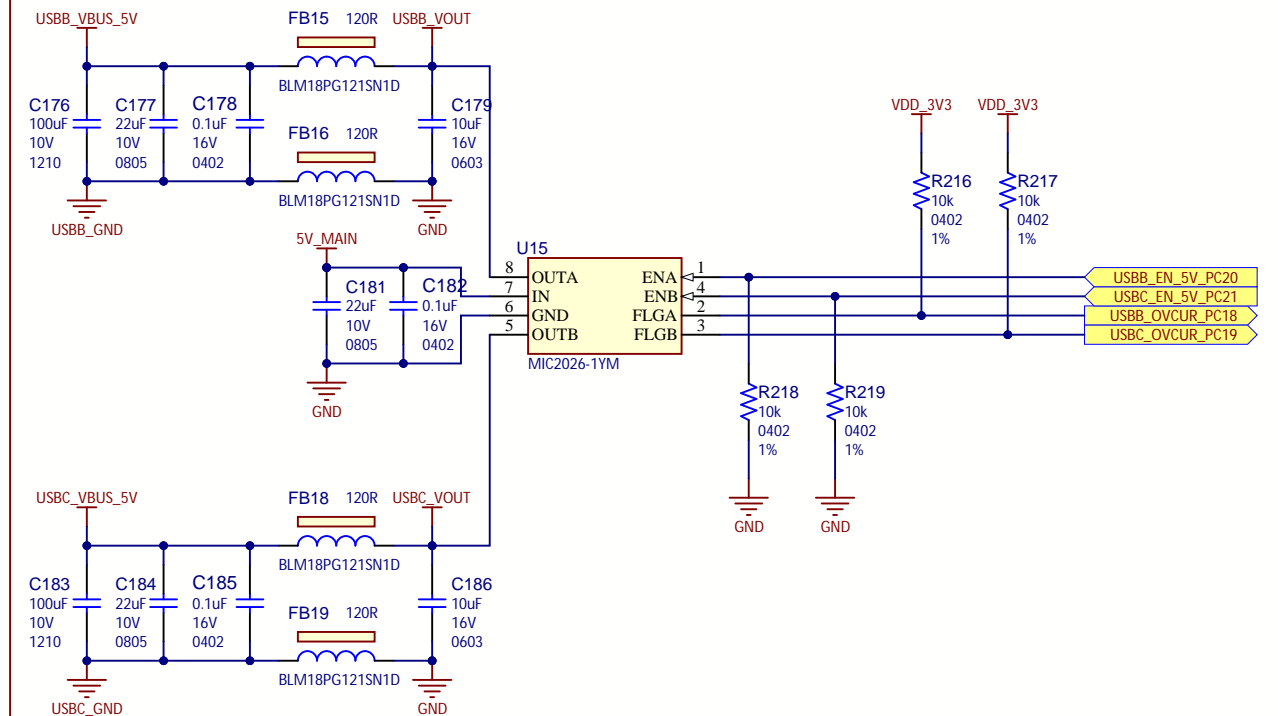
USB-B port CONN TYPE A


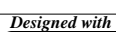


USB-C port CONN TYPE A

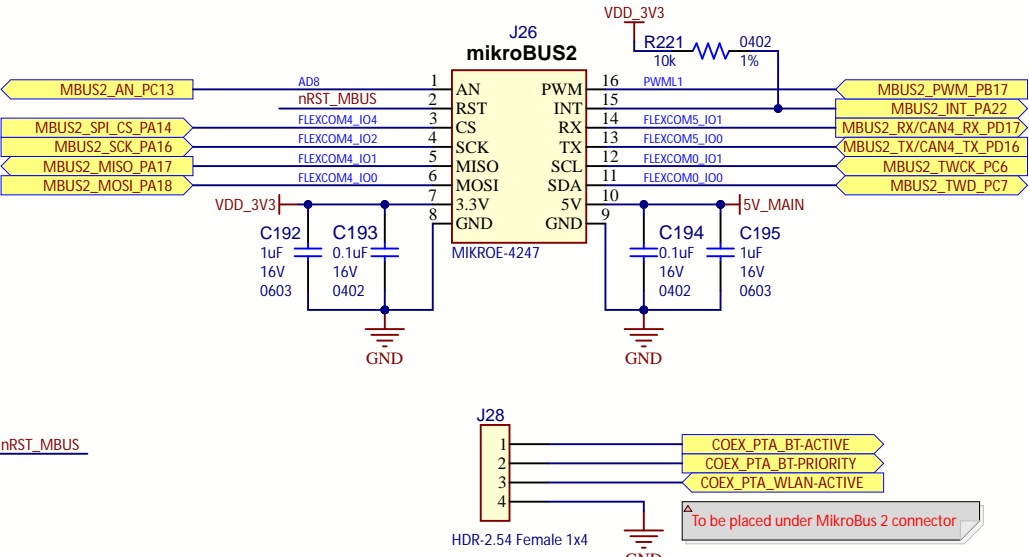
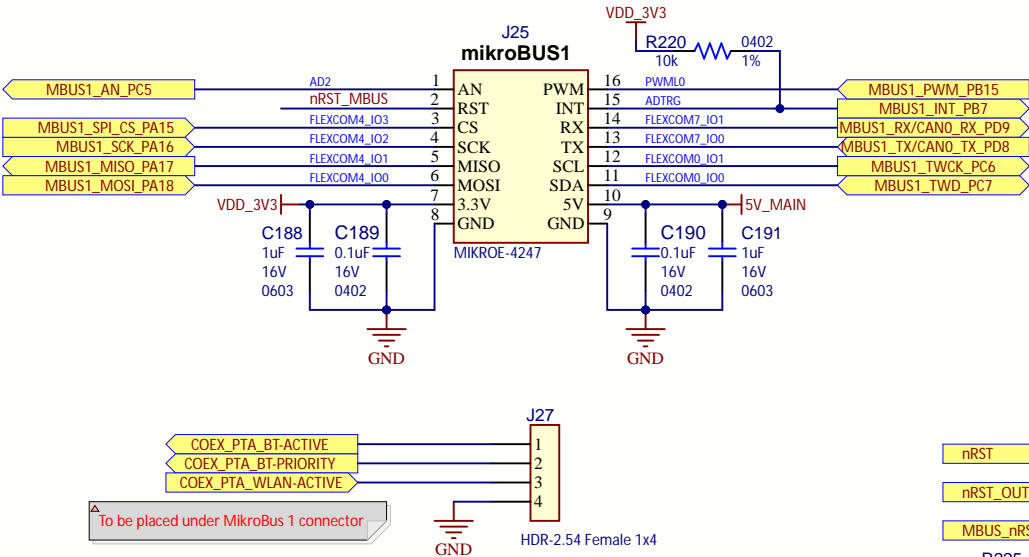


USB-B / USB-C Host Power Switch

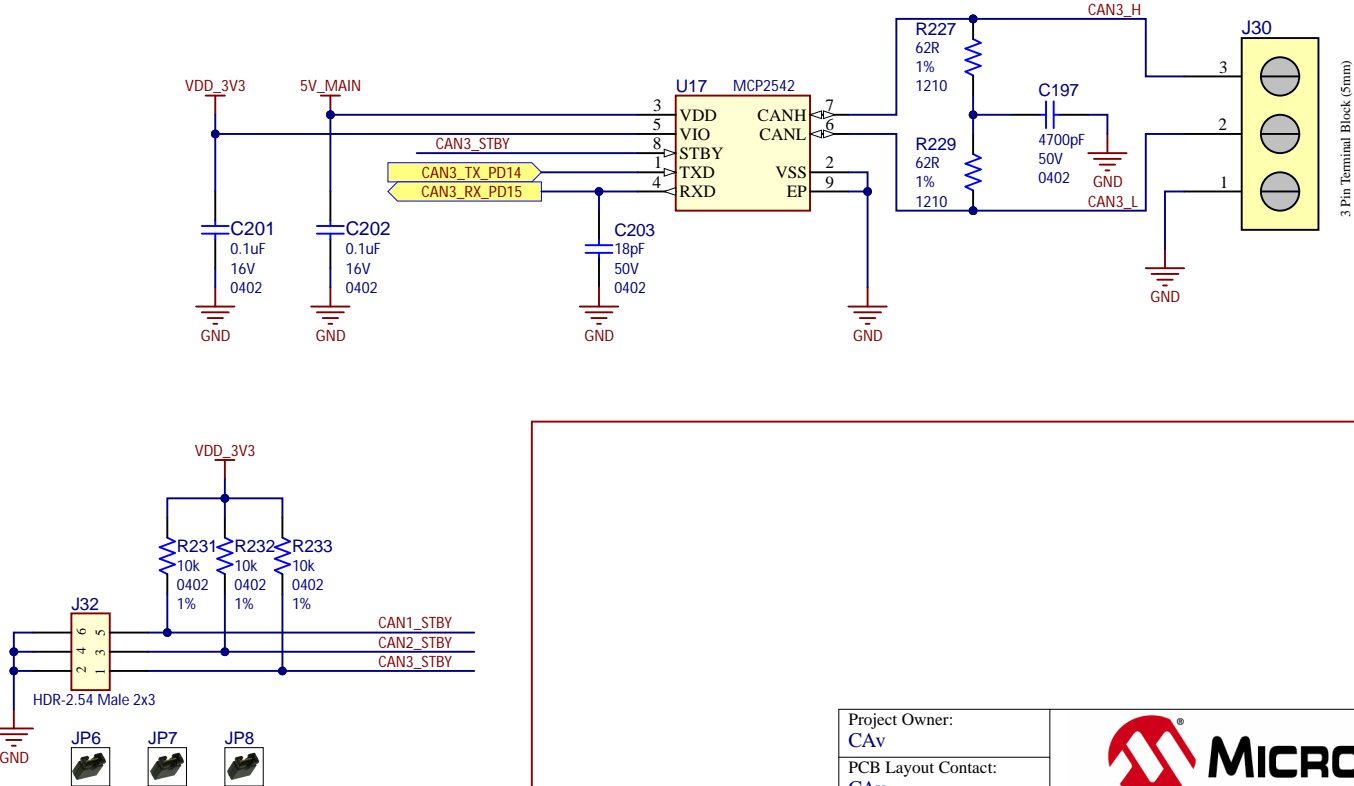
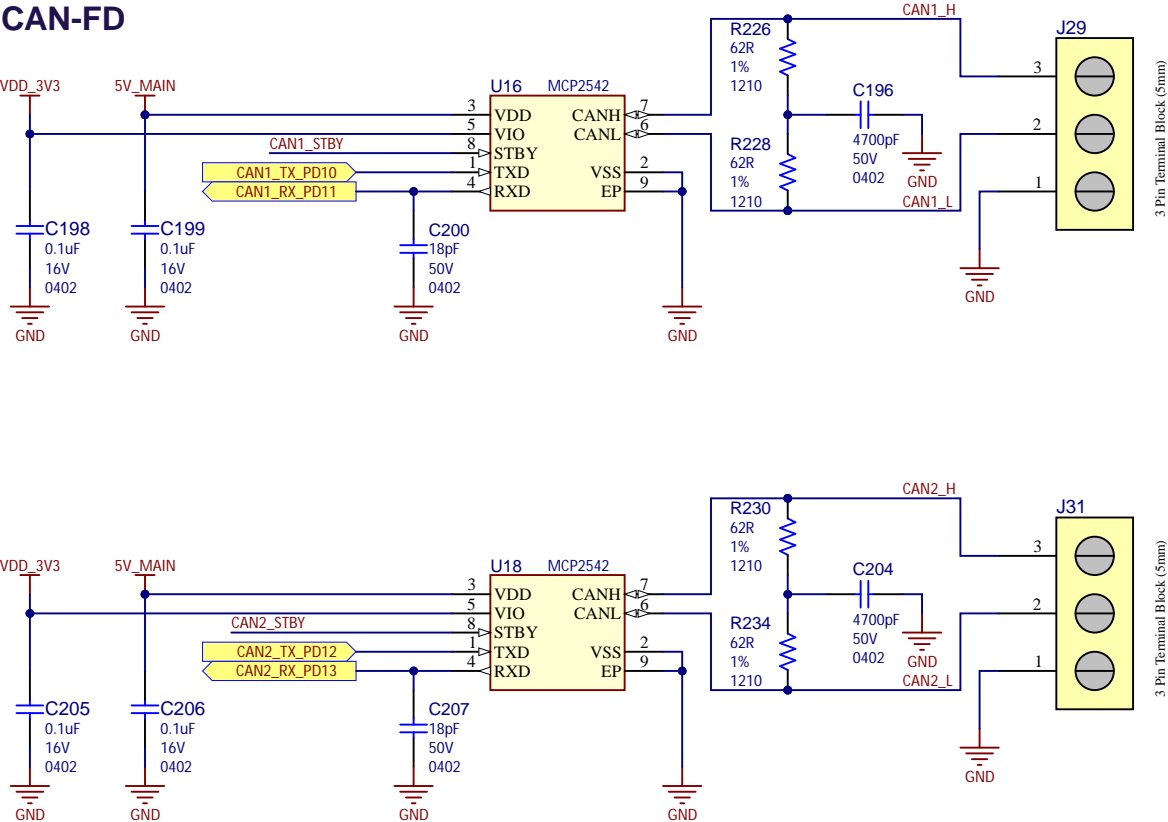




Project Owner: CAV		 MICROCHIP					
PCB Layout Contact: CAV							
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity	Variant: Standard					
Sheet Title USBB, USBC		<div>Designed with</div>  <div>Altium.com</div>					
Size B	SCH #:02-01103					Rev: 6	Date: 10/16/2024
	PCB #:04-12169					Rev: 4	Sheet 13 of 15
File: 13 - USB_SchDoc							

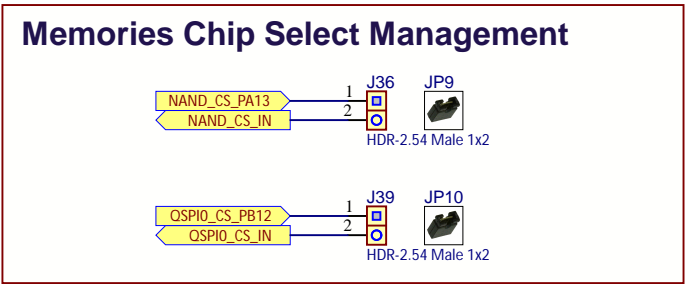
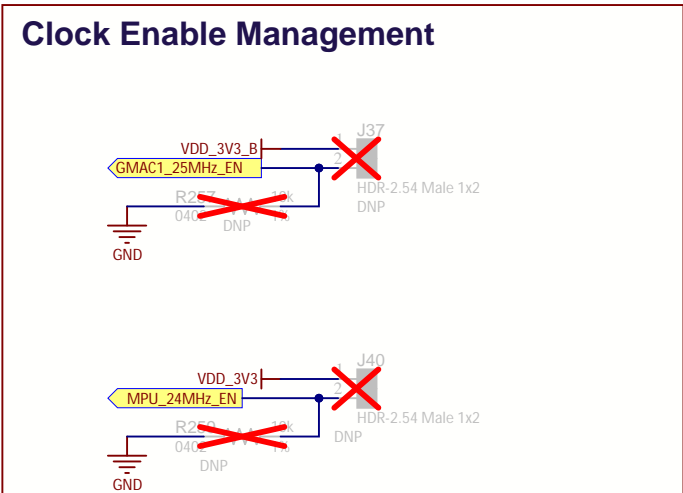
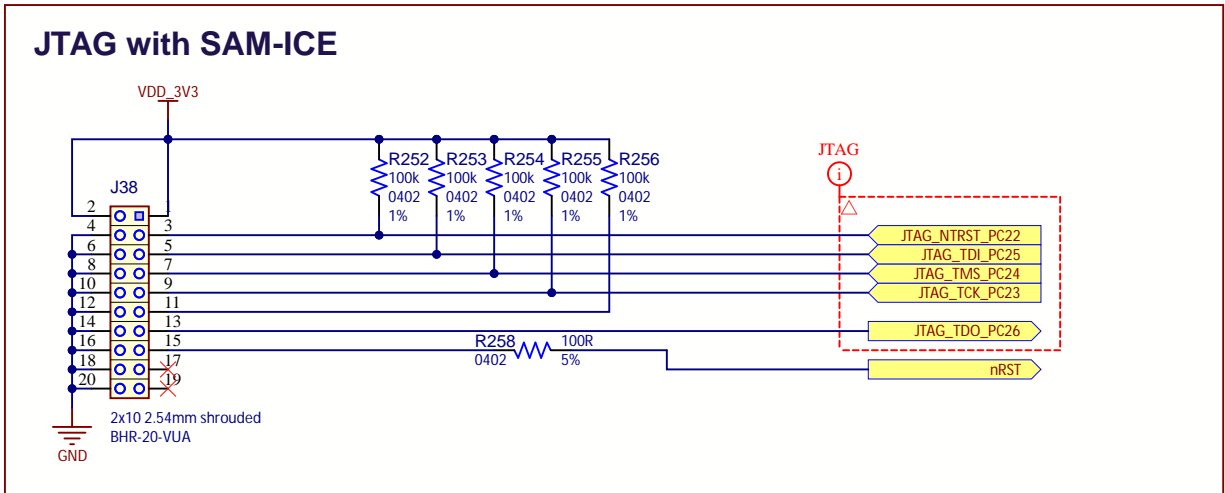
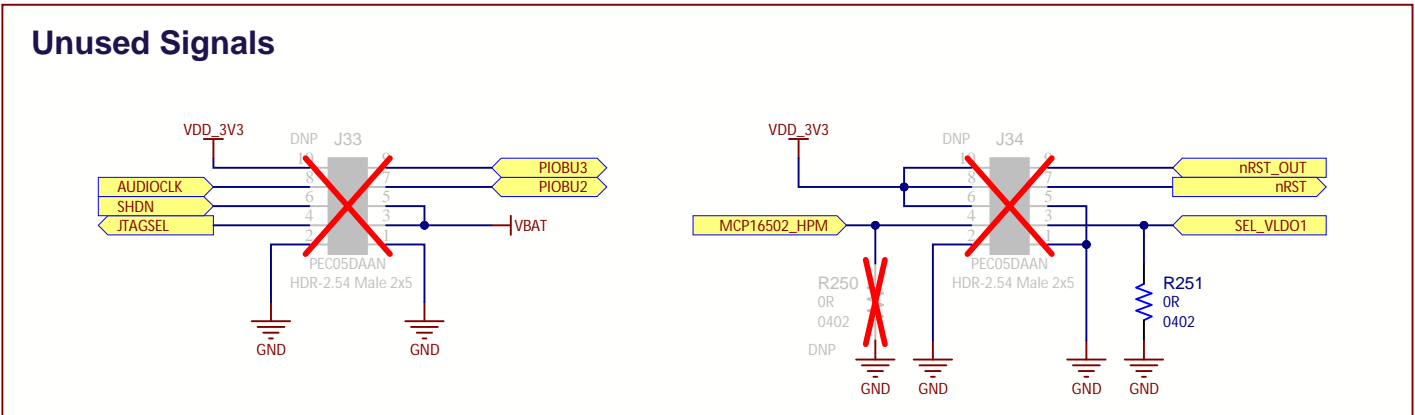
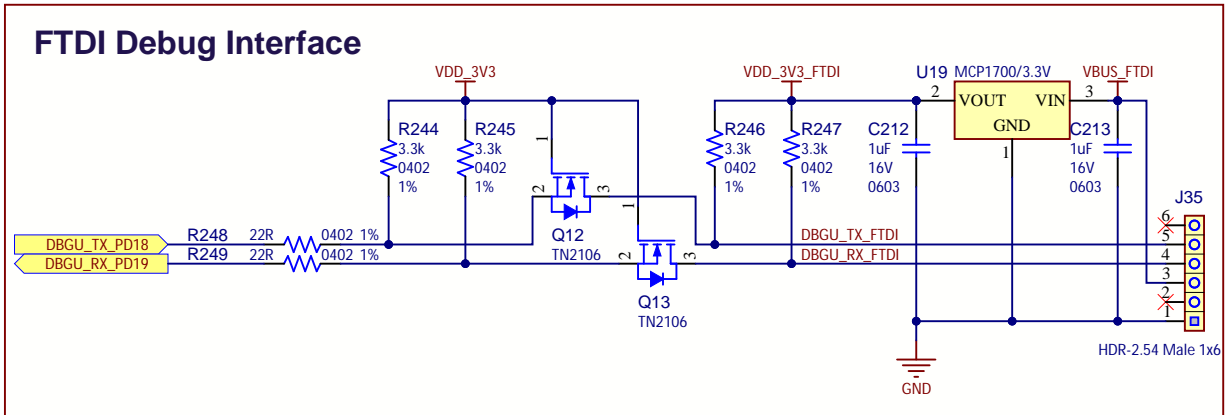
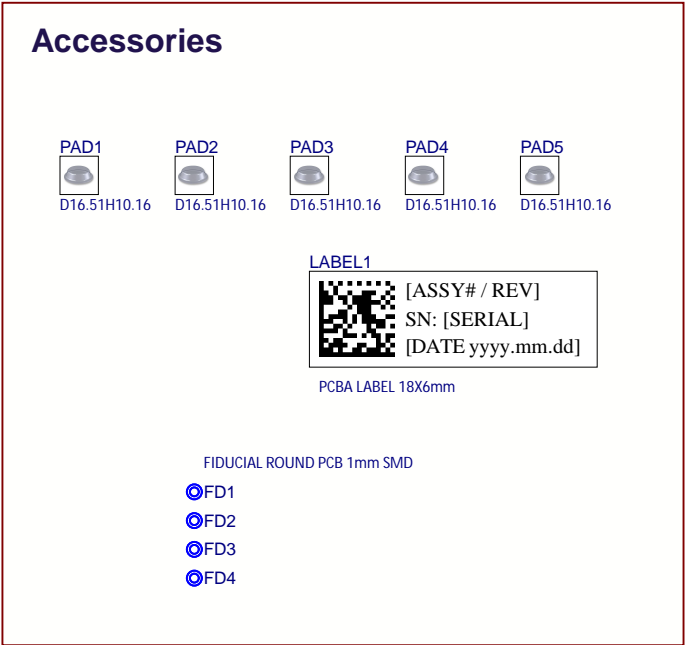
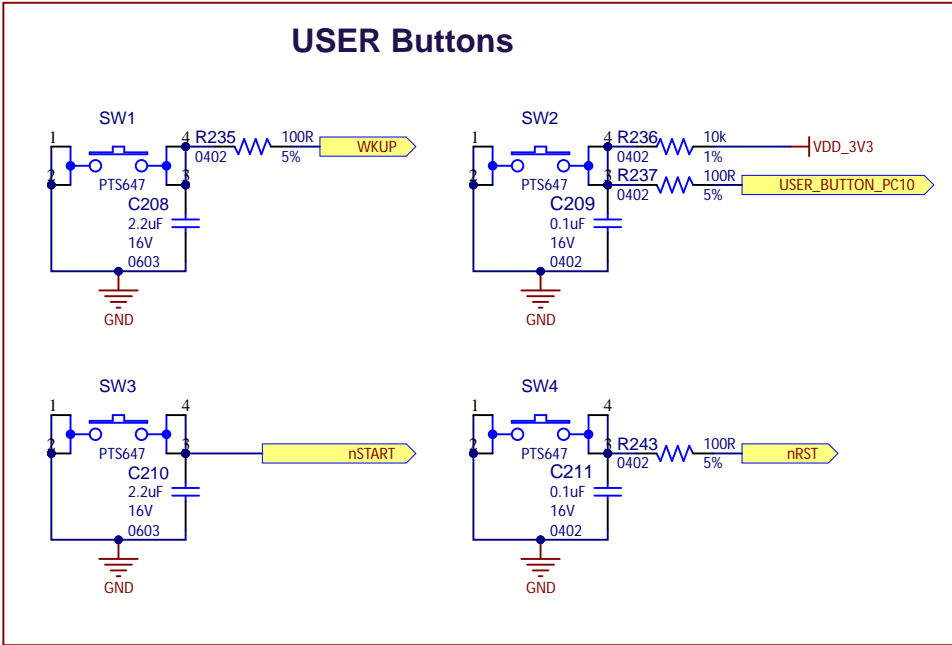
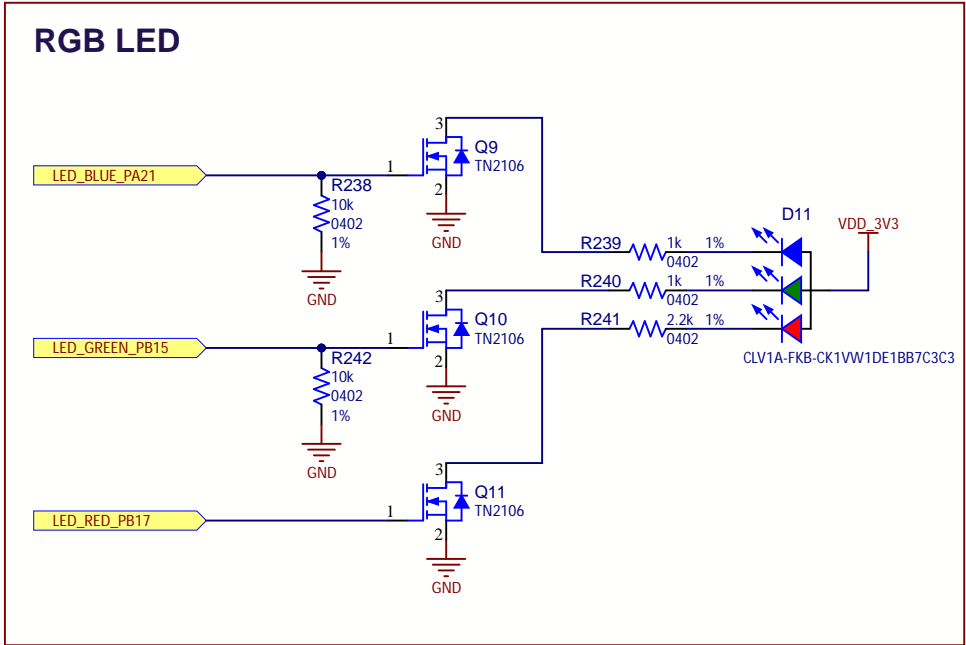
mikroBUS





CAN-FD



Project Owner: Cav		 MICROCHIP	
PCB Layout Contact: Cav			
PartNumber: 04-12169		Project Title SAMA7D65 Curiosity	
		Variant: Standard	
Sheet Title mikroBUS CAN			
Size B	SCH #: 02-01103	Rev: 6	Date: 10/16/2024
	PCB #: 04-12169	Rev: 4	Sheet 14 of 15
File: 14 - mBUS-CAN.SchDoc			
		<div>Designed with</div> <div></div> <div>Altium.com</div>	



Project Owner: CAv		 MICROCHIP		
PCB Layout Contact: CAv				
PartNumber: 04-12169	Project Title SAMA7D65 Curiosity	Variant: Standard		
Sheet Title User, Debug Interfaces		 Altium Altium.com		
Size B	SCH #: 02-01103			Rev: 6
	PCB #: 04-12169	Rev: 4	Sheet 15 of 15	Altium.com
File: 15 - LED-User-Debug_SchDoc				

1

2

3

4

5

6

REV

ECO

Comments

Date

Exported with Altium Designer 24.10.1.45 on 10/16/2024 at 3:45:39 PM

ASSEMBLY NOTES:

1. ALL COMPONENTS SHALL BE RoHS COMPLIANT.

2. ALL UNUSED THROUGH HOLE COMPONENT LOCATIONS SHALL BE FREE OF SOLDER.

3. ALL COMPONENTS SHALL BE MOUNTED FLUSH TO THE BOARD, EXCEPT AS NOTED.

4. FINISHED BOARD SHALL BE FREE OF ALL RESIDUES.

5. ALL LEADS SHALL BE TRIMMED TO A MAXIMUM HEIGHT OF 2mm

6. PLACE LABEL ON THE LOCATION INDICATED.

7.

Microchip Technology Inc.

2355 W. Chandler Blvd.

Chandler, AZ 85224

TITLE:

SAMA7D65 Curiosity

PART NUMBER: 04-12169

PCB DESIGNER:

CAv

GERBER FILE:

Top Assembly Drawing

ENGINEER:

CAv

BOARD NUMBER:

04-12169

DOCUMENT NUMBER:

02-01103_ASSY-D

DATE:

10/16/2024

PCB FILE NAME:

SAMA7D65-Curiosity.PcbDoc

LAYER NAME:

Bottom Assembly

REV:

6

10mm

400mil

1

2

3

4

5

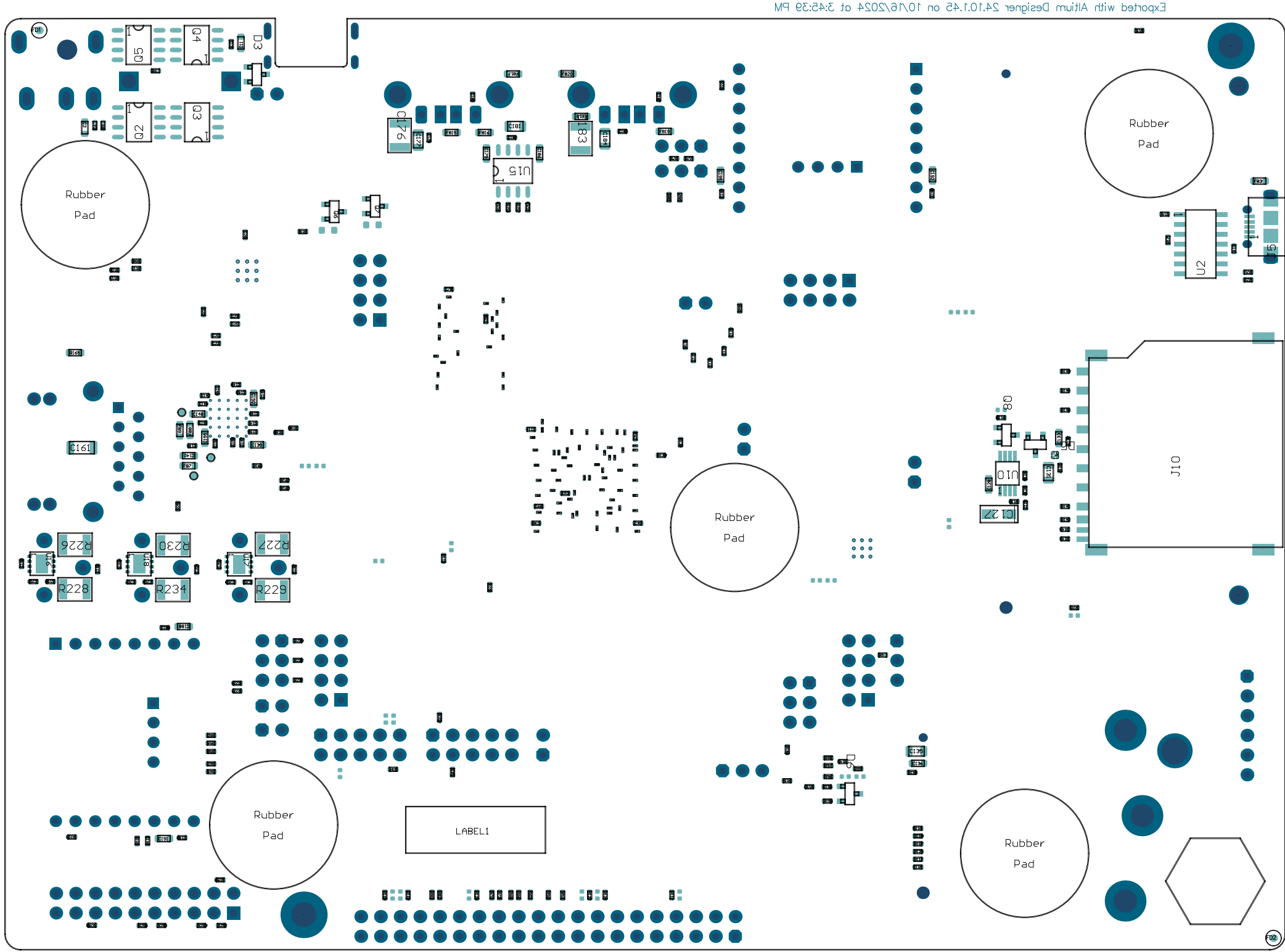
6

D

C

B

A



TITLE:		PART NUMBER: 04-12169	
SAMA7D65 Curiosity			
ASSEMBLY VARIANT: Standard			
PCB DESIGNER: CAv		GERBER FILE: Bottom Assembly Drawing	
ENGINEER: CAv		BOARD NUMBER: 04-12169	DOCUMENT NUMBER: 02-01103_ASSY-D
PCB FILE NAME: SAMA7D65-Curiosity.PcbDoc		LAYER NAME: Bottom Assembly	DATE: 10/16/2024
		REV: 6	10mm 400mil

