

A

A

B

B

C

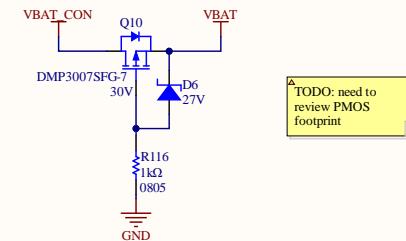
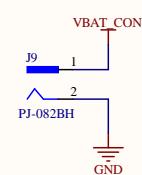
C

D

D

Reverse Polarity Protection

Power Jack



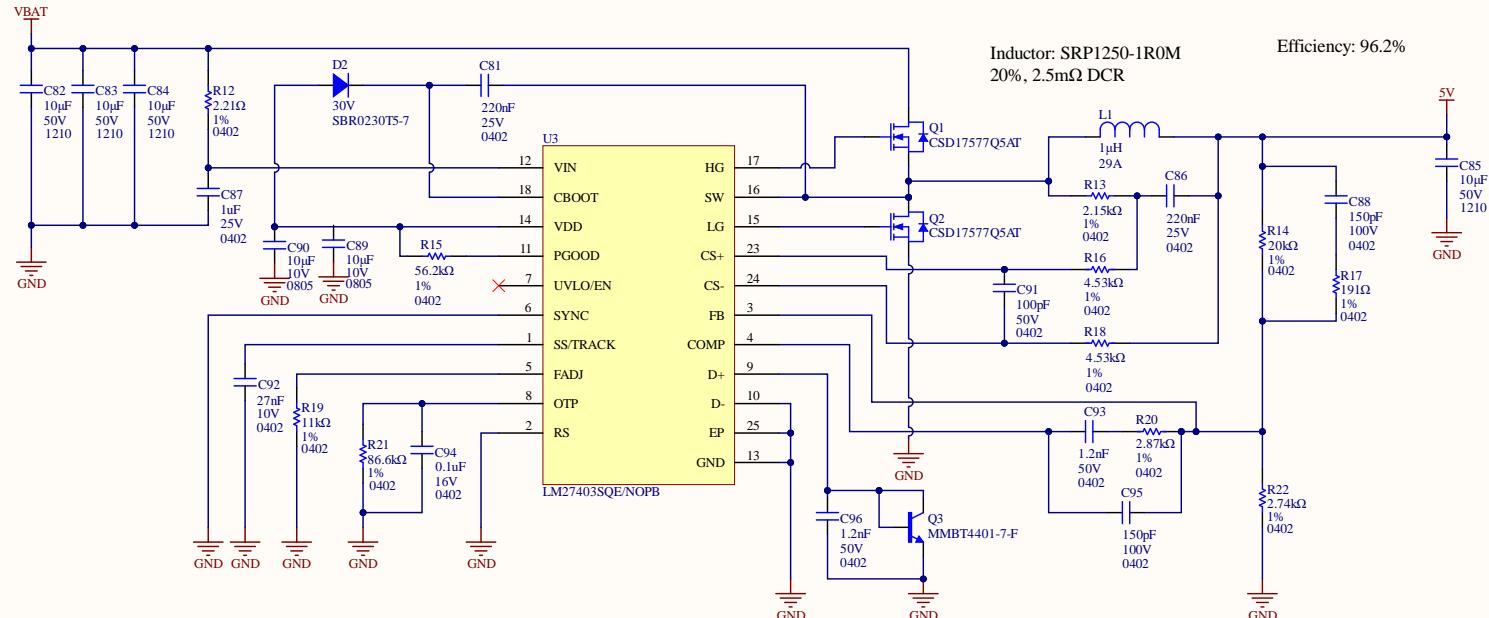
| | |
|---|----------------|
| Title: Power Connector | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 1 of 25 |

A

A

5V Buck Converter @ 16A

Input voltage range: 9V - 20V



Webench reference design: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=E23207869D5F0DD4>

| | |
|---|------------------|
| Title: 5V Power | |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | Date: 2021-07-13 |
| Sheet: 2 | of 25 |

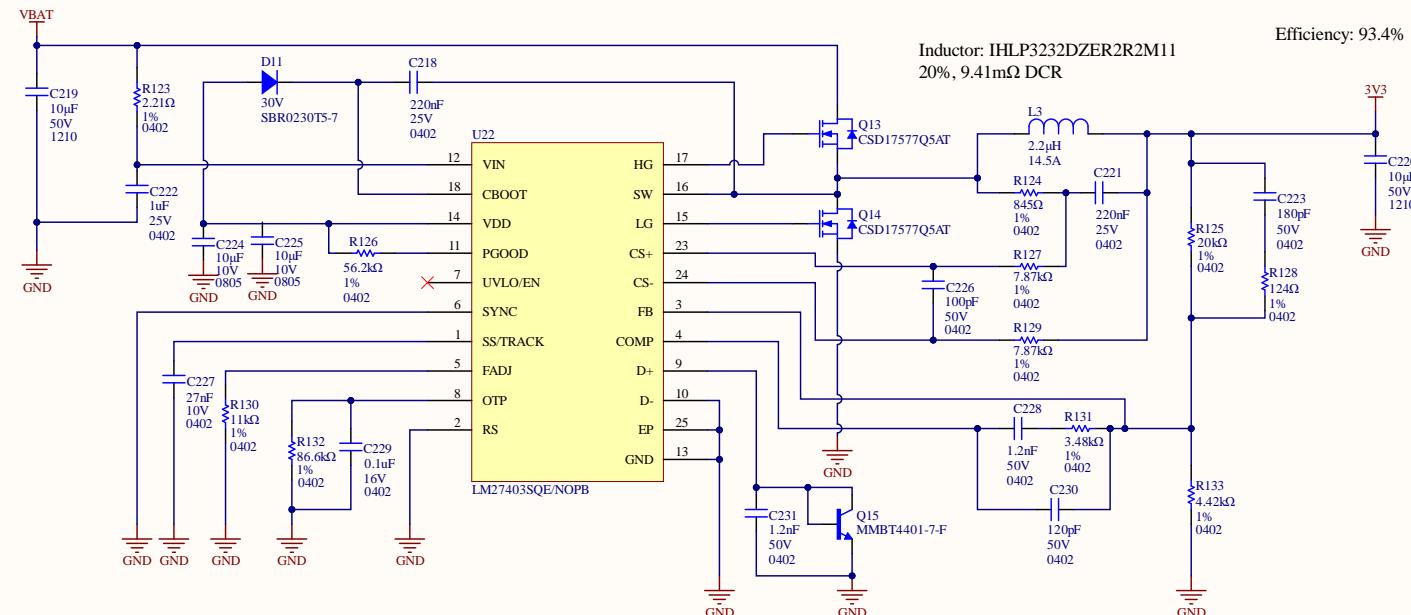


A

A

3.3V Buck Converter @ 6A

Input voltage range: 9V - 20V



Webench reference design: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=97FD766931642B43>

| | |
|---|---------------------------------|
| Title: 3.3V Power | |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | Date: 2021-07-13 Sheet: 3 of 25 |



A

A

B

B

C

C

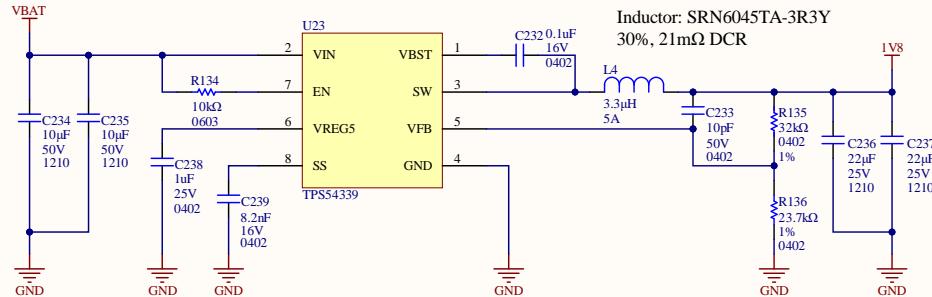
D

D

1.8V Buck Converter @ 2A

Input voltage range: 9V - 20V

Efficiency: 82.5%



Webench reference design: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=57C269DE61431294>

| | |
|---|-------------|
| Title: 1.8V Power | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |

Date: 2021-07-13 Sheet: 4 of 25



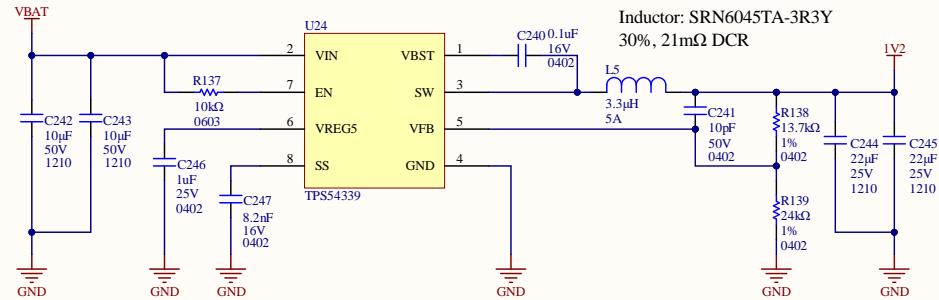
A

A

1.2V Buck Converter @ 2A

Input voltage range: 9V - 20V

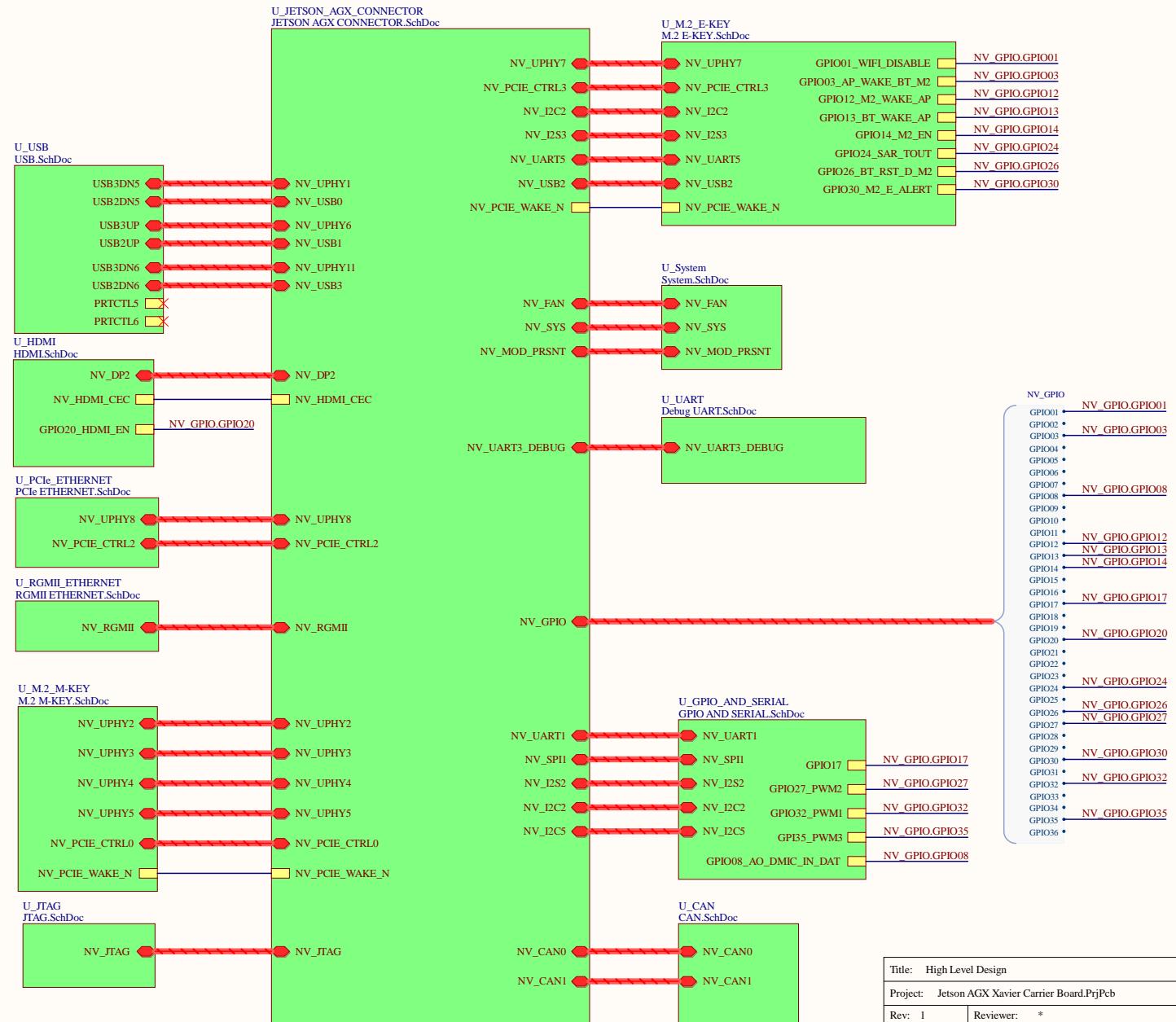
Efficiency: 77.5%



Webench reference design: <https://webench.ti.com/appinfo/webench/scripts/SDP.cgi?ID=348A2FAA81A09D71>

| | |
|---|----------------|
| Title: 1.2V Power | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 5 of 25 |





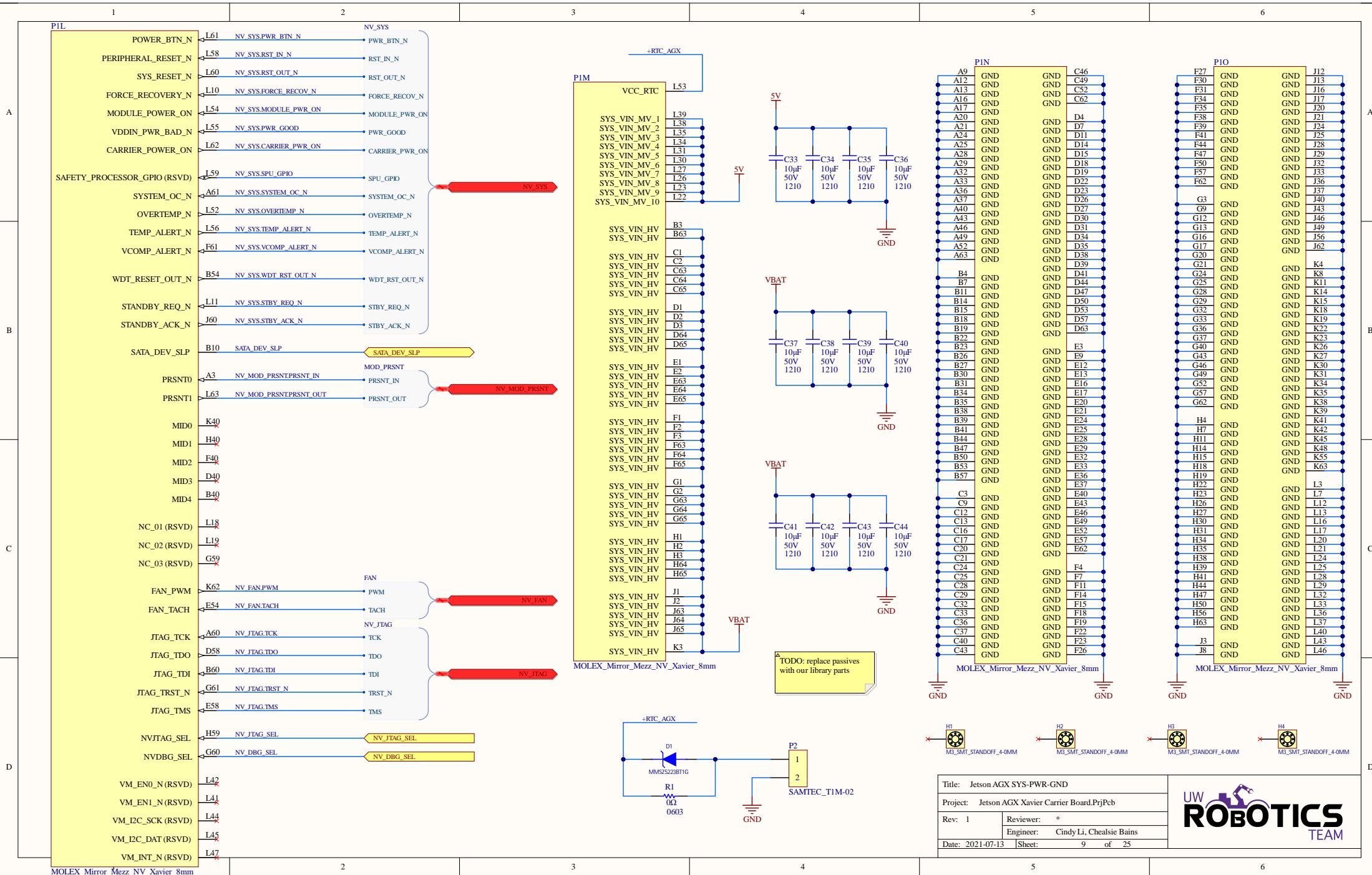


| | |
|---|---------------------------------|
| Title: Jetson AGX Connector | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li, Chealsie Bains | Date: 2021-07-13 Sheet: 7 of 25 |

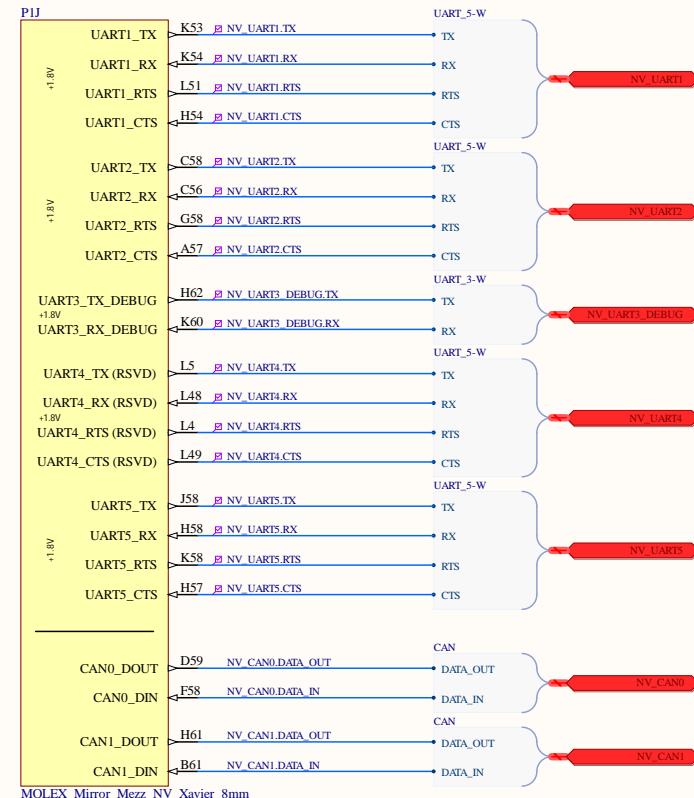
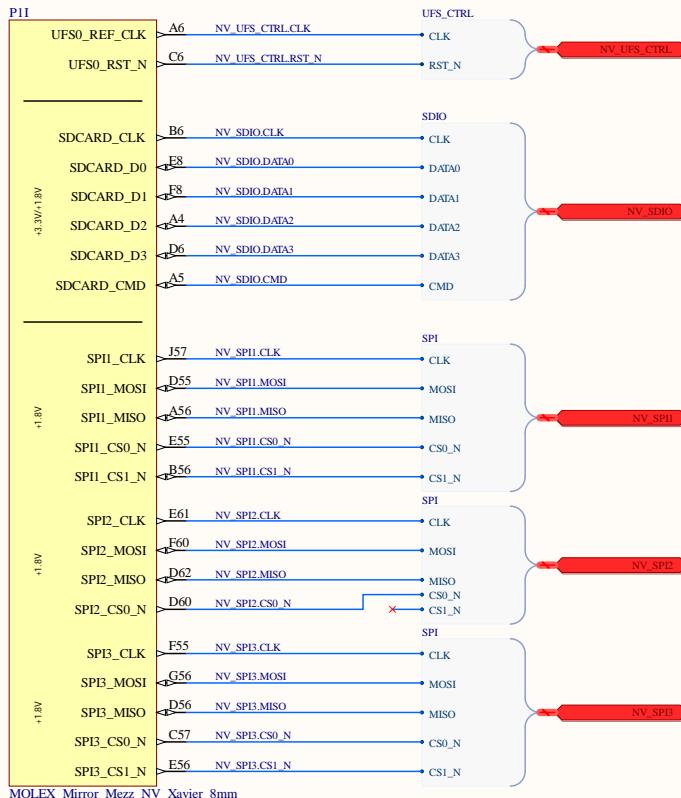


A





1 2 3 4 5 6

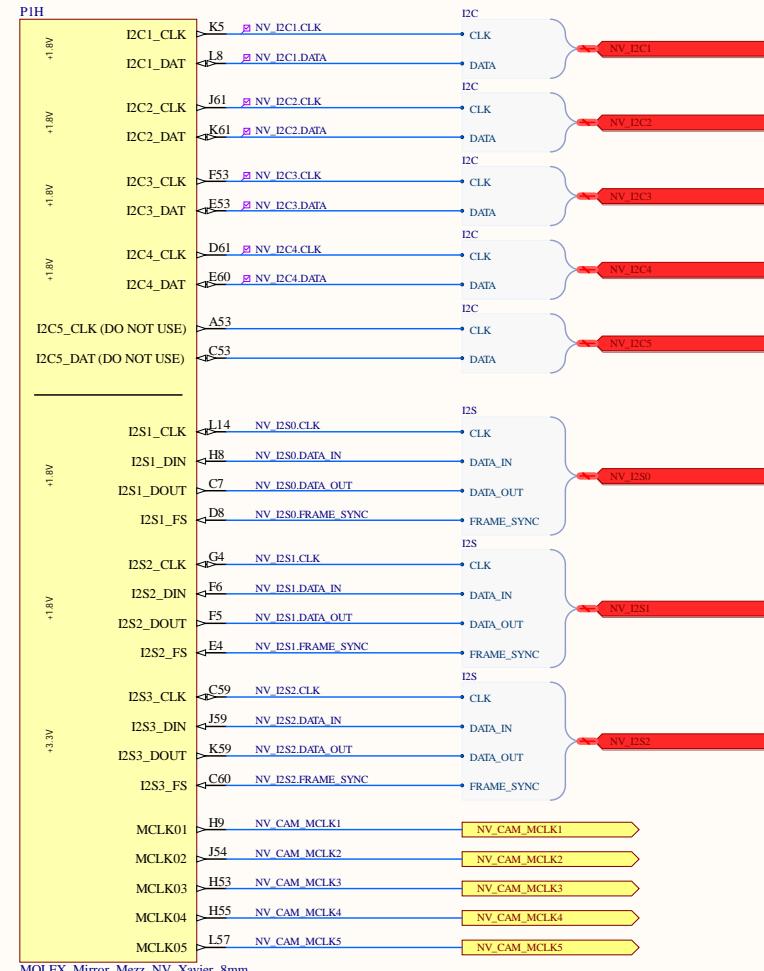
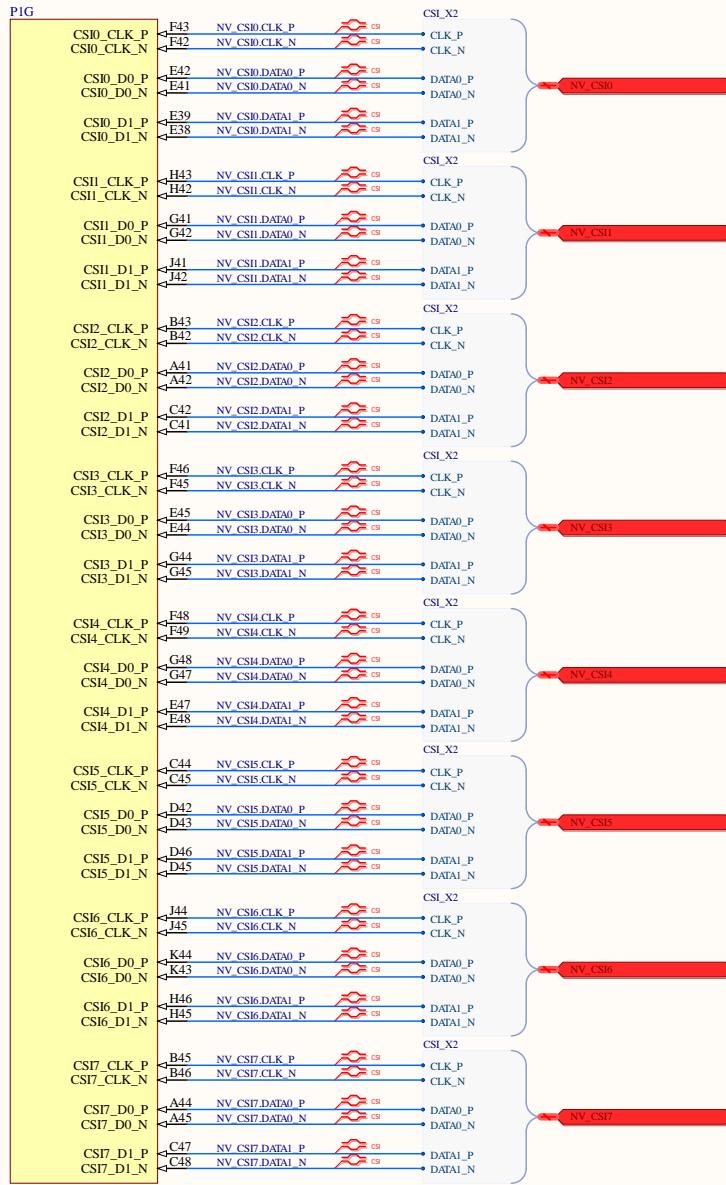


| | |
|---|-----------------|
| Title: Jetson AGX SDIO-SPI-UART-CAN-GPIO | |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li, Chealsie Bains | |
| Date: 2021-07-13 | Sheet: 10 of 25 |



1 2 3 4 5 6

1 2 3 4 5 6



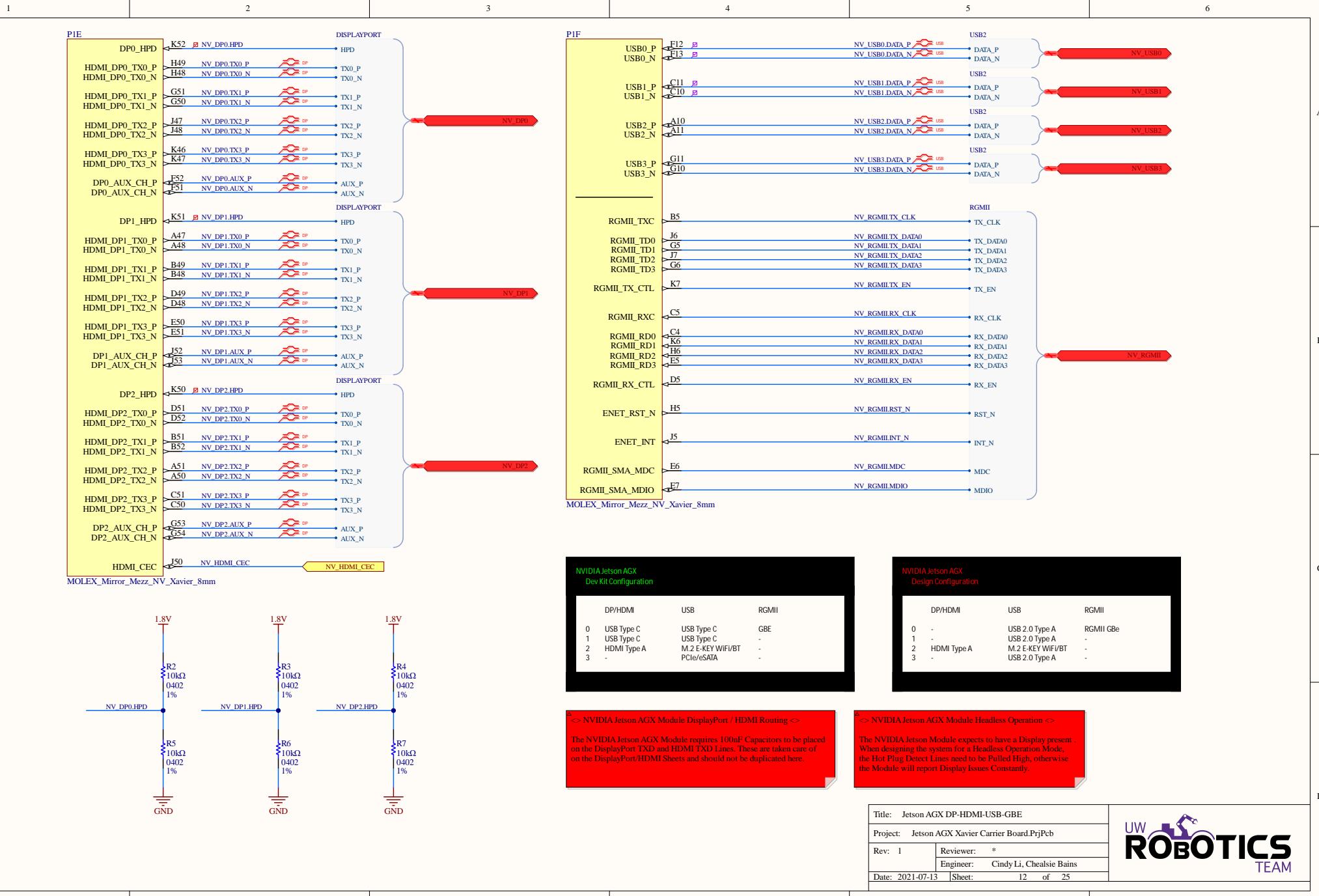
| NVIDIA Jetson AGX Dev Kit Configuration | | |
|---|------------------------------|------------------|
| CSI | I2C | I2S |
| 0 CAM Expansion | - | - |
| 1 CAM Expansion | ID EEPROM / Debug | - |
| 2 CAM Expansion | PCIe x16 / M.2 E-Key | 40 Pin Expansion |
| 3 CAM Expansion | PCIe x16 / M.2 E-Key WiFi/BT | CAM Expansion |
| 4 CAM Expansion | M.2 M-Key NVMe | - |
| 5 CAM Expansion | - | 40 Pin Expansion |
| 6 CAM Expansion | - | - |
| 7 CAM Expansion | - | - |

| NVIDIA Jetson AGX Design Configuration | | |
|--|------------------|-------------------|
| CSI | I2C | I2S |
| 0 - | - | - |
| 1 - | - | - |
| 2 - | M.2 E-Key + GPIO | GPIO |
| 3 - | - | M.2 E-Key WiFi/BT |
| 4 - | M.2 M-Key NVMe | - |
| 5 - | GPIO | M.2 E-Key WiFi/BT |
| 6 - | - | GPIO |
| 7 - | - | - |

| |
|---|
| Title: Jetson AGX CSI-I2C-I2S |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb |
| Rev: 1 Reviewer: * |
| Engineer: Cindy Li, Chealsie Bains |
| Date: 2021-07-13 Sheet: 11 of 25 |



1 2 3 4 5 6



A

A

B

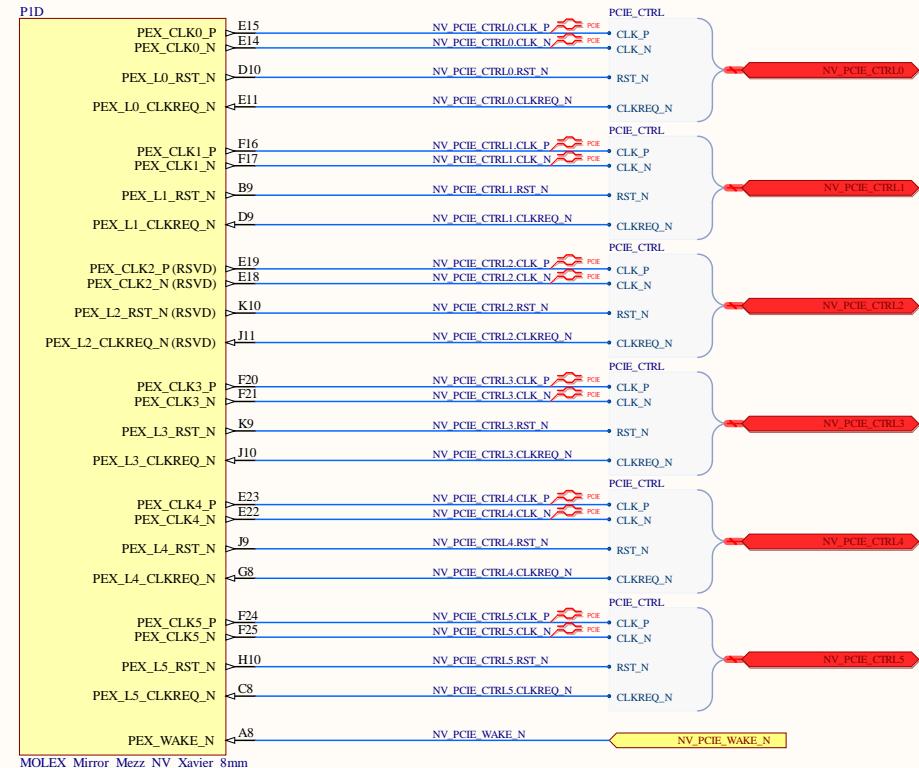
B

C

C

D

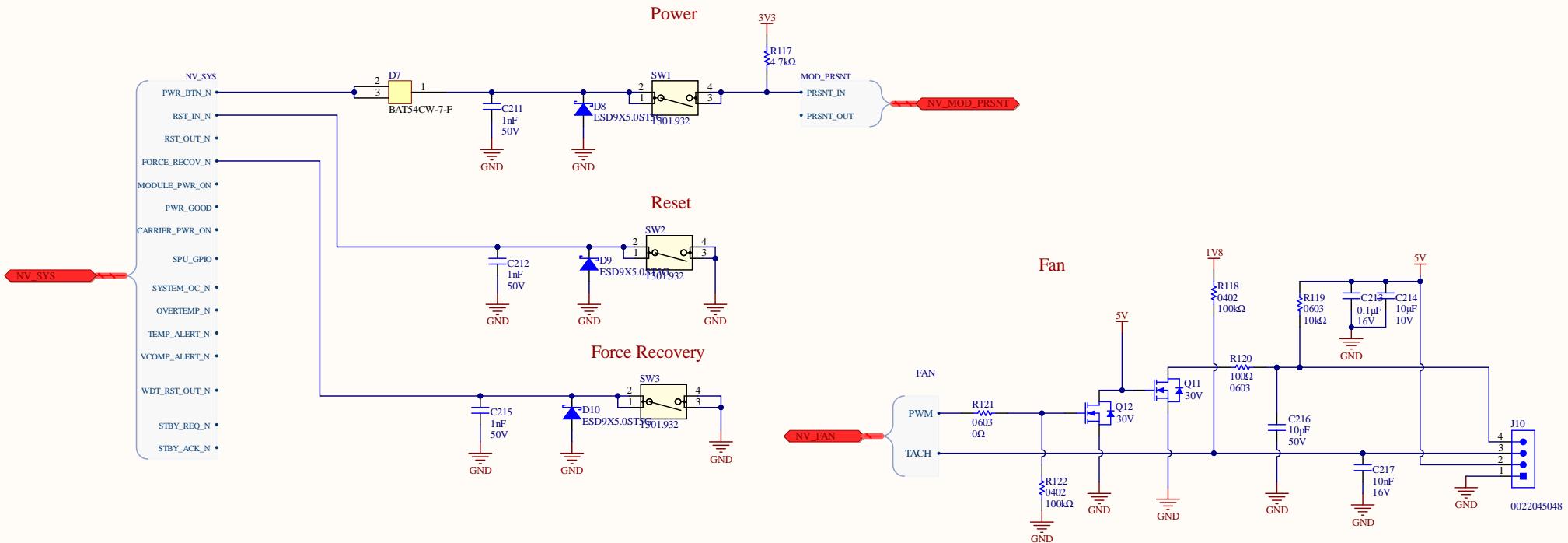
D



| | |
|---|----------------------------------|
| Title: Jetson AGX PCIe | |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li, Chealsie Bains | Date: 2021-07-13 Sheet: 13 of 25 |







| | |
|--|-----------------|
| Title: System | |
| Project: Jetson AGX Xavier Carrier Board.PjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Chealsie Bains | |
| Date: 2021-07-13 | Sheet: 15 of 25 |

A

A

B

B

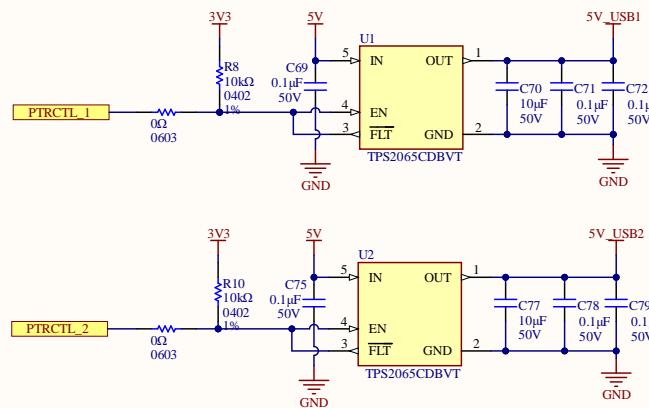
C

C

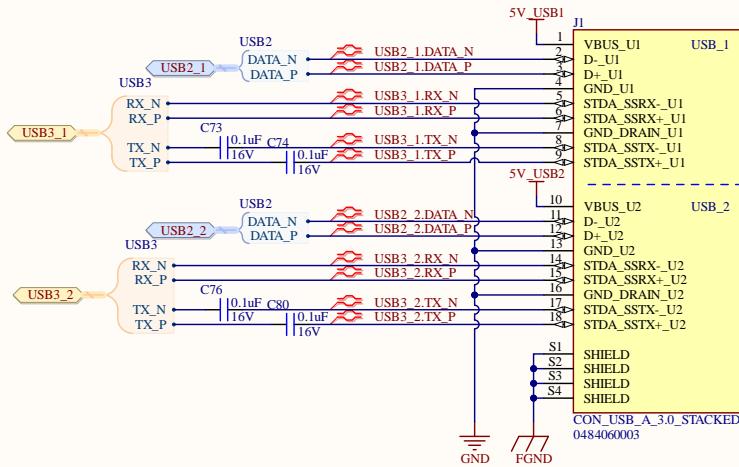
D

D

Power Switches



USB Ports

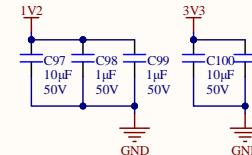


| | |
|---|-----------------|
| Title: USB Port | |
| Project: Jetson AGX Xavier Carrier Board.PnjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 16 of 25 |

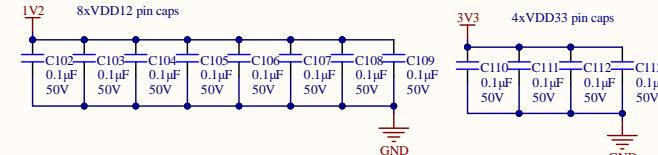


1 2 3 4 5 6

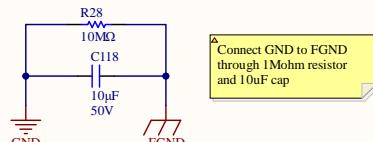
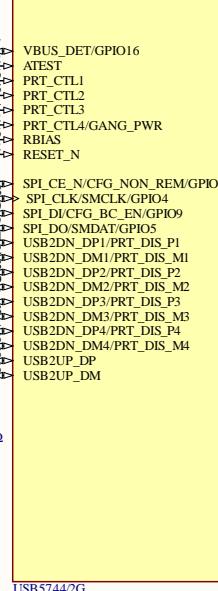
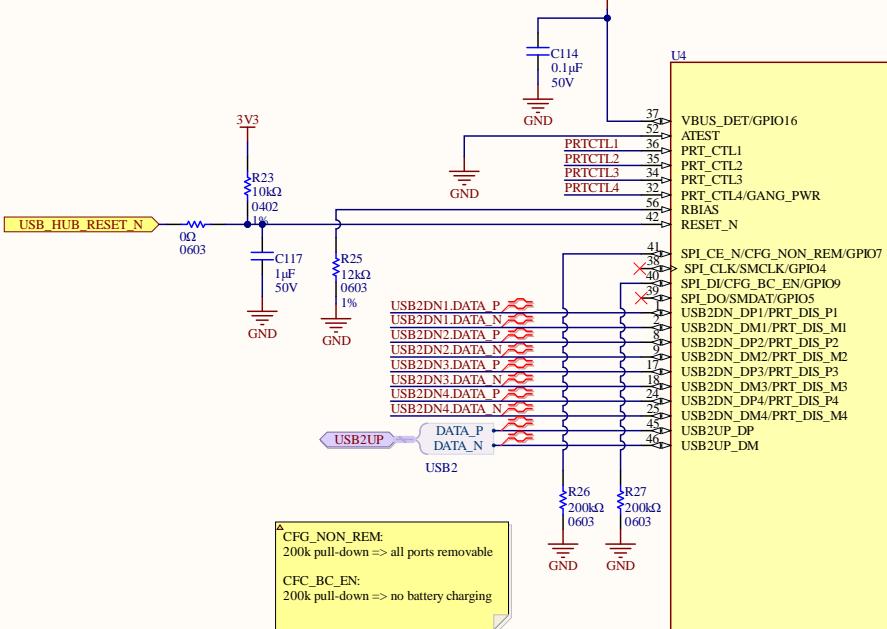
Bulk Capacitors



Decoupling Capacitors



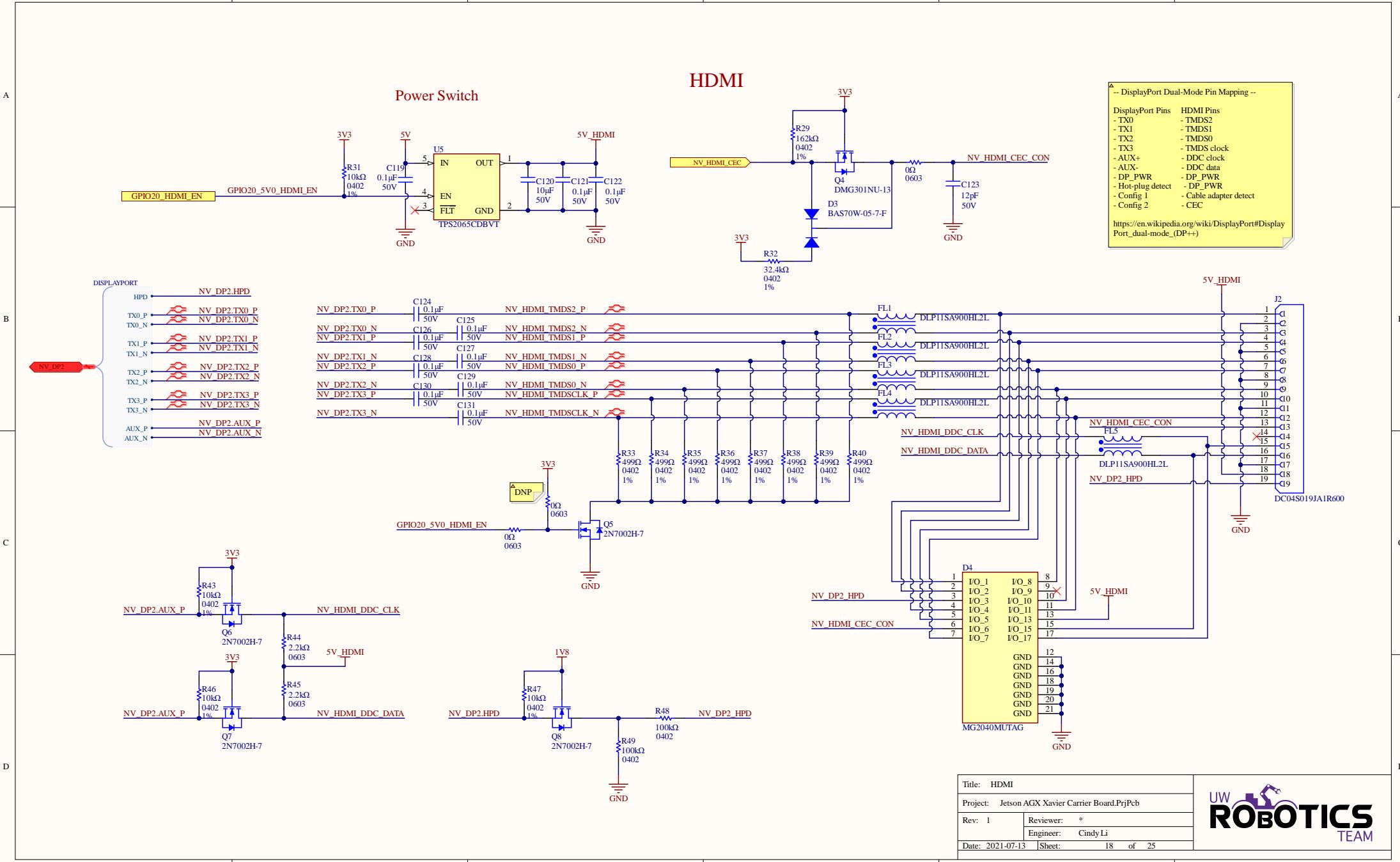
USB Controller

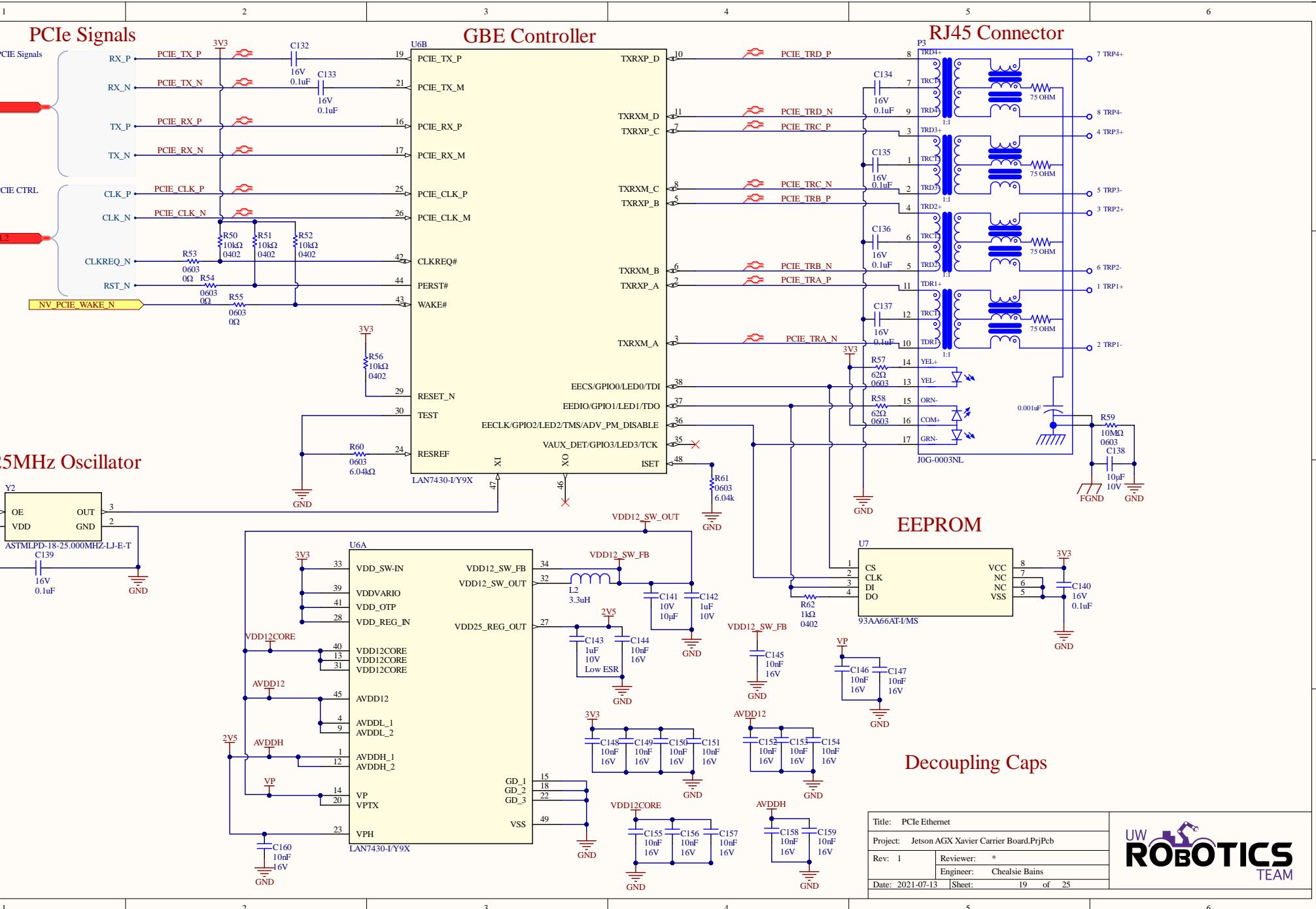


| | |
|---|-----------------|
| Title: USB | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 17 of 25 |



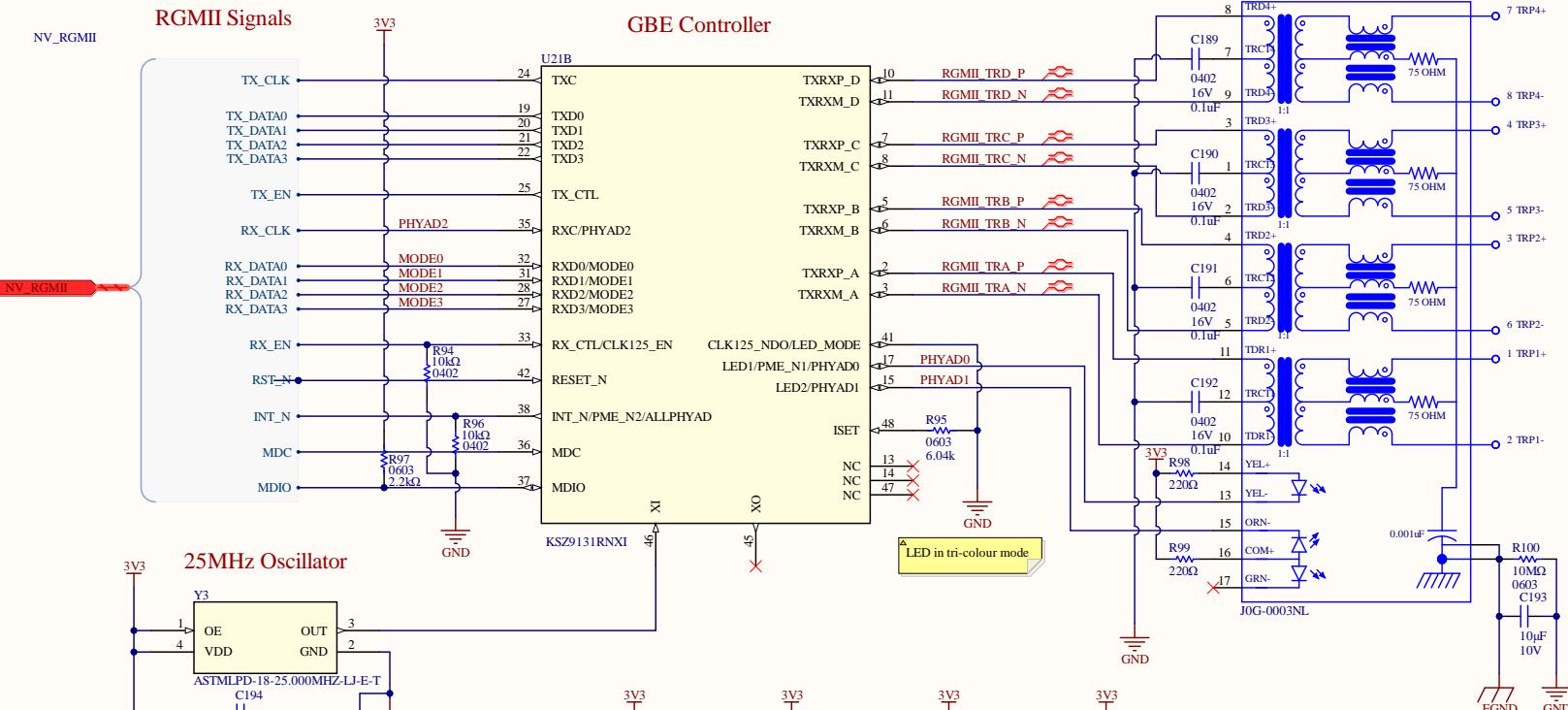
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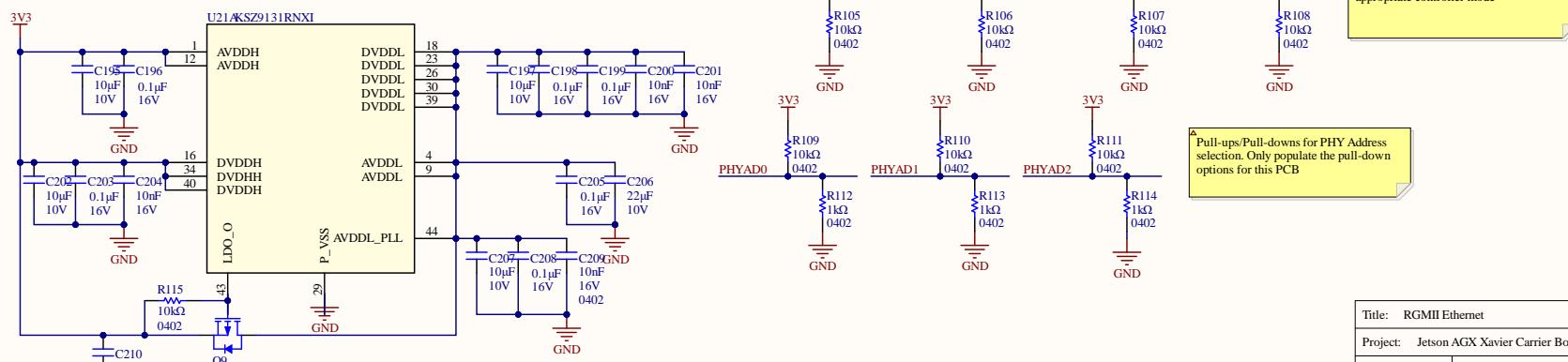


| | |
|--|------------------|
| Title: PCIe Ethernet | |
| Project: Jetson AGX Xavier Carrier Board.PjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Chealsie Bains | Date: 2021-07-13 |

RJ45 Ethernet Connector



GBE Power



Title: RGMII Ethernet

Project: Jetson AGX Xavier Carrier Board.PjnPcb

Rev: 1

Reviewer: *

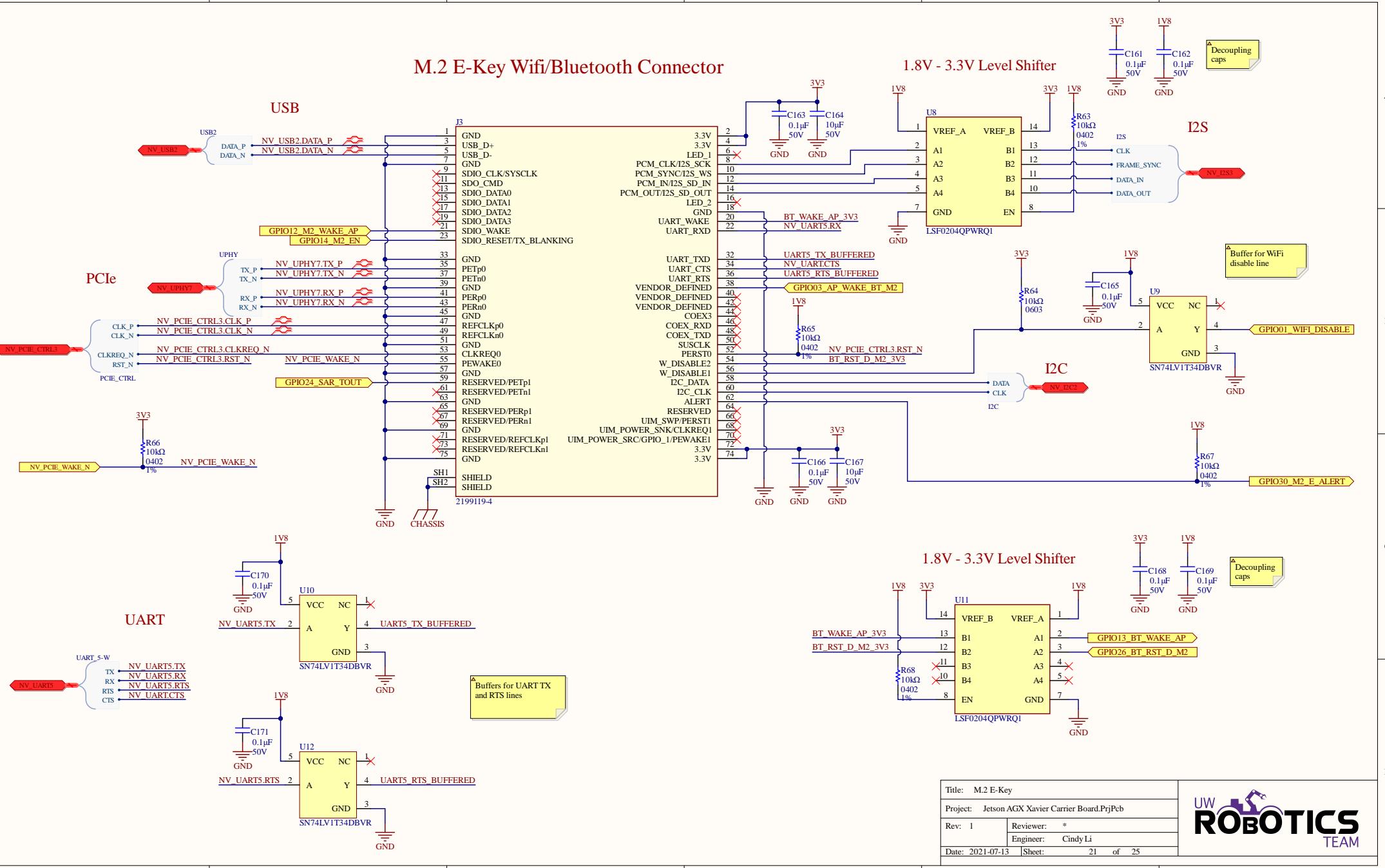
Engineer: Chealsie Bains

Date: 2021-07-13 Sheet: 20 of 25



1 2 3 4 5 6

M.2 E-Key Wifi/Bluetooth Connector



1 2 3 4 5 6

Title: M.2 E-Key

Project: Jetson AGX Xavier Carrier Board.PjPrjPcb

Rev: 1

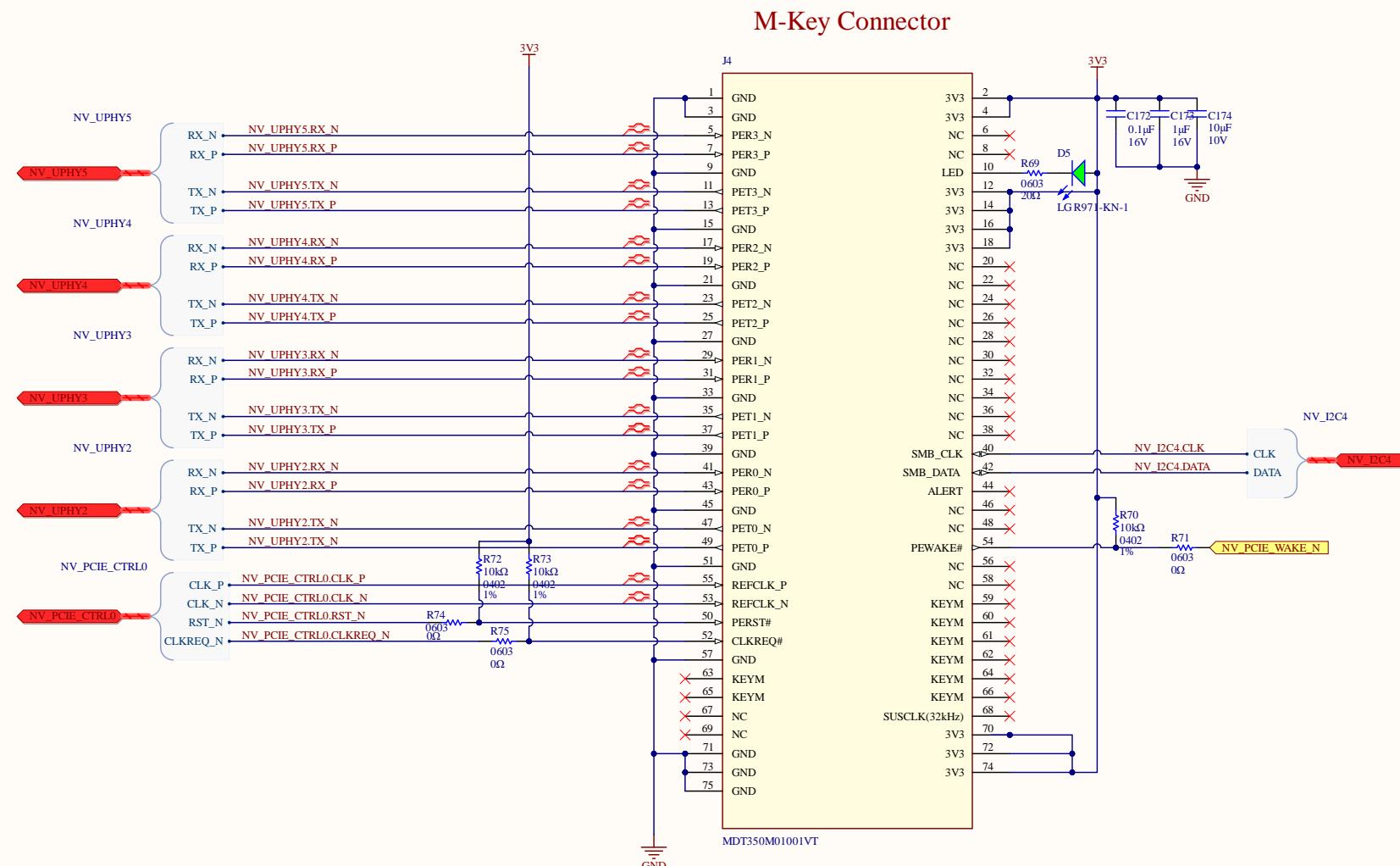
Reviewer: *

Engineer: Cindy Li

Date: 2021-07-13

Sheet: 21 of 25





| | |
|---|----------------------------------|
| Title: M.2 M-Key | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Chealsie Bains | Date: 2021-07-13 Sheet: 22 of 25 |

A

A

B

B

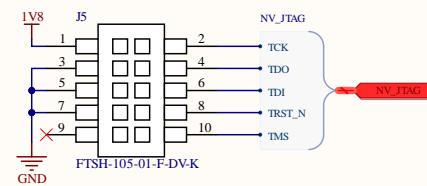
C

C

D

D

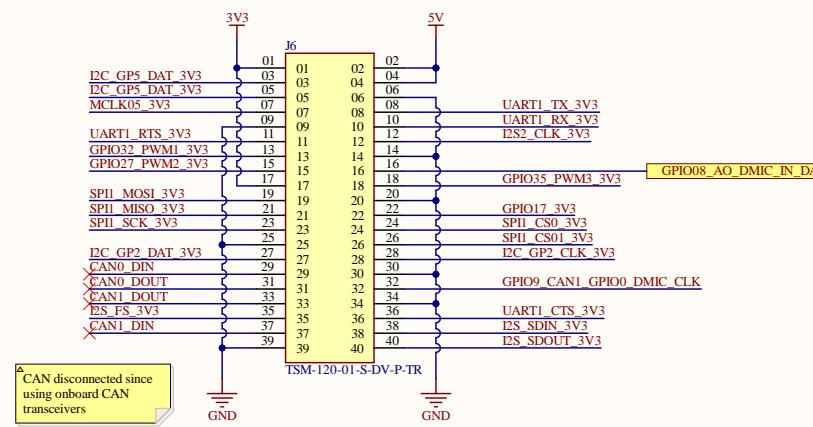
JTAG



| | |
|---|-----------------|
| Title: JTAG | |
| Project: Jetson AGX Xavier Carrier Board.PrjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 23 of 25 |

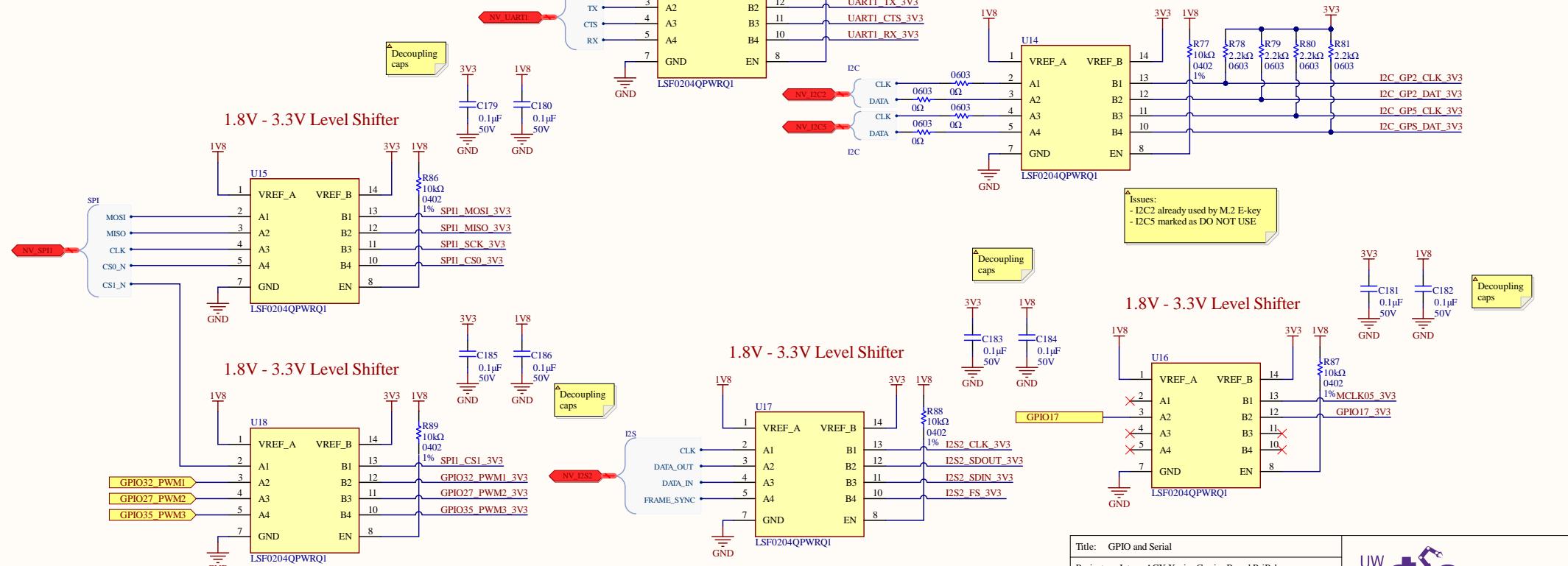


1 2 3 4 5 6



GPIO Expansion

▲ Level shifter IC out of stock, may need to replace

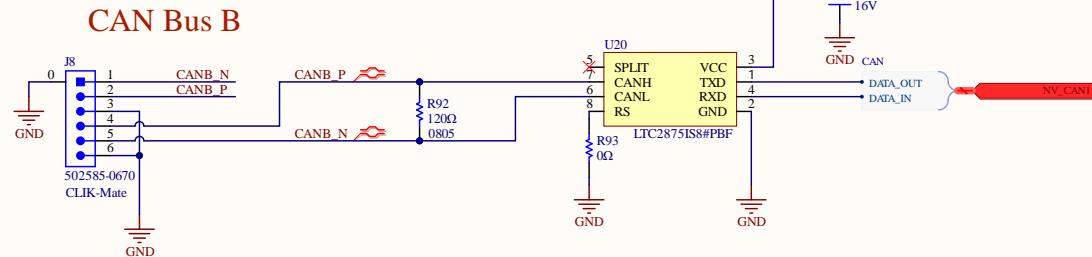
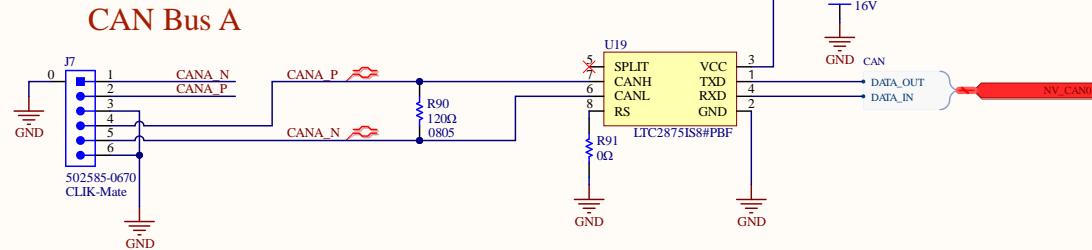


| | |
|---|------------------|
| Title: GPIO and Serial | |
| Project: Jetson AGX Xavier Carrier Board.PrtPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | Date: 2021-07-13 |



1 2 3 4 5 6

CAN Transceivers

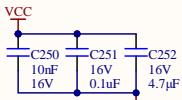


| | |
|--|-----------------|
| Title: CAN | |
| Project: Jetson AGX Xavier Carrier Board.PjPcb | |
| Rev: 1 | Reviewer: * |
| Engineer: Cindy Li | |
| Date: 2021-07-13 | Sheet: 25 of 25 |



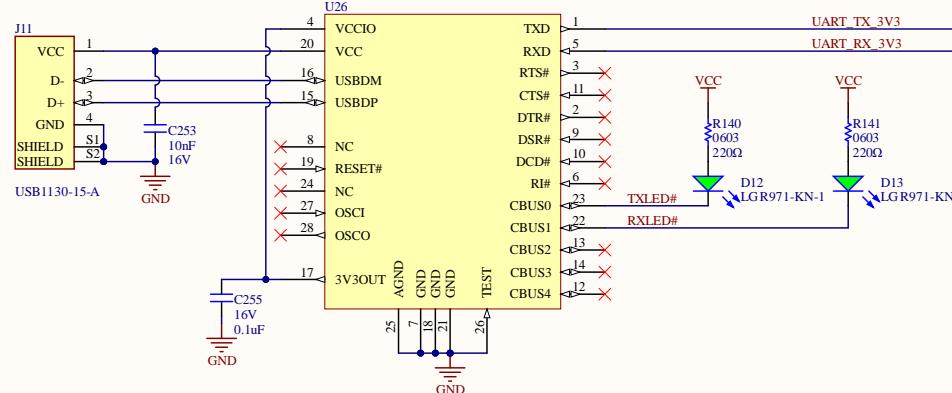
A

A



UART to USB

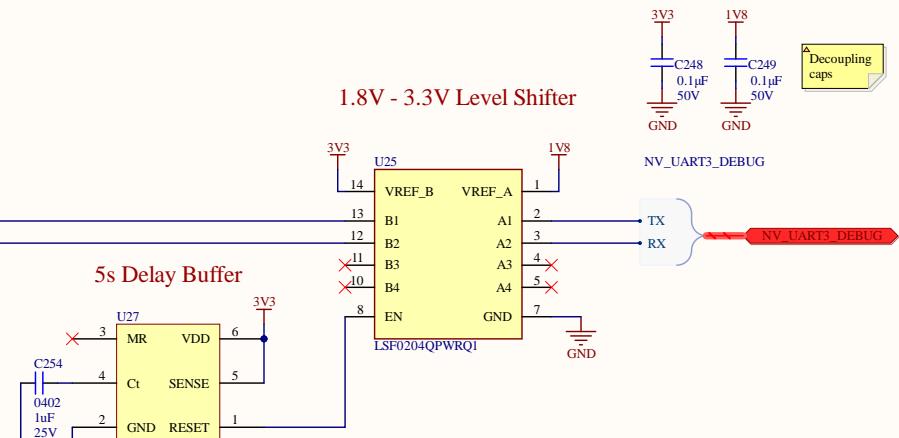
USB-A 2.0 Connector



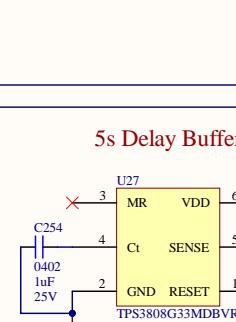
The power descriptors in the internal EEPROM of the FT232R should be programmed to match the current drawn by the device.

Default CBUS configurations:
CBUS0 - TXLED#
CBUS1 - RXLED#
CBUS2 - TXDEN
CBUS3 - PWREN#
CBUS4 - SLEEP#

1.8V - 3.3V Level Shifter



5s Delay Buffer



For a 5s delay:
 $Ct = (5 - 0.5E-3) * 175n = 875nF$
Can use 1000nF ie 1uF for a 5.7 s delay which is close enough

| Title | | | Altium Limited |
|--|------------------|-----------|-----------------------|
| Size: | Number: | Revision: | L3, 12a Rodborough Rd |
| B | | | Frenchs Forest |
| Date: 2021-07-13 | Time: 9:22:28 PM | Sheet of | NSW |
| | | | Australia 2086 |
| File: C:\UWRT\MarsRover2021-hardware\Projects\Jetson AGX Xavier Carrier Board\Rev1\Debug UART.SchDoc | | | |



Board Stack Report