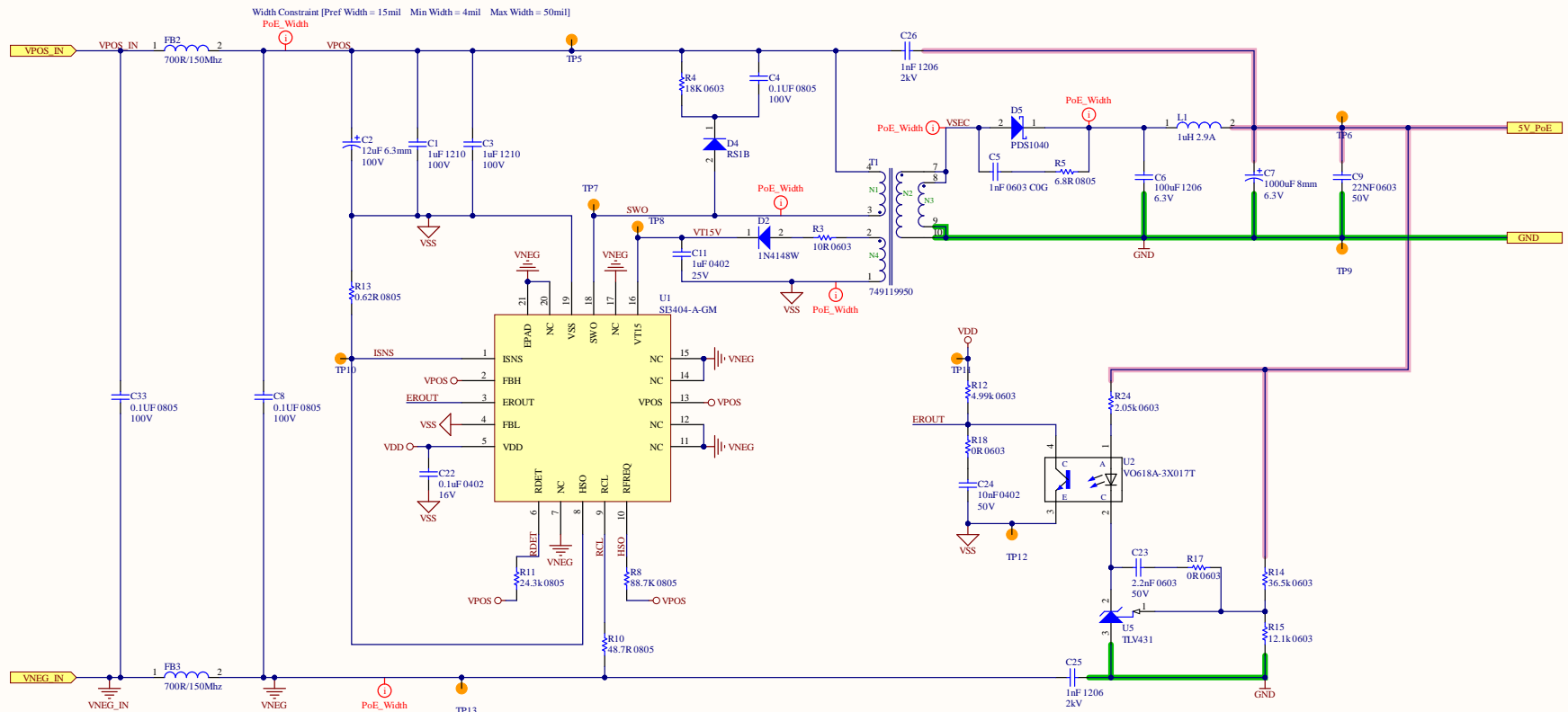


Project: *SJ2098POE*
Current Revision: *R0M0E0*

SJ2098POE Revision History:

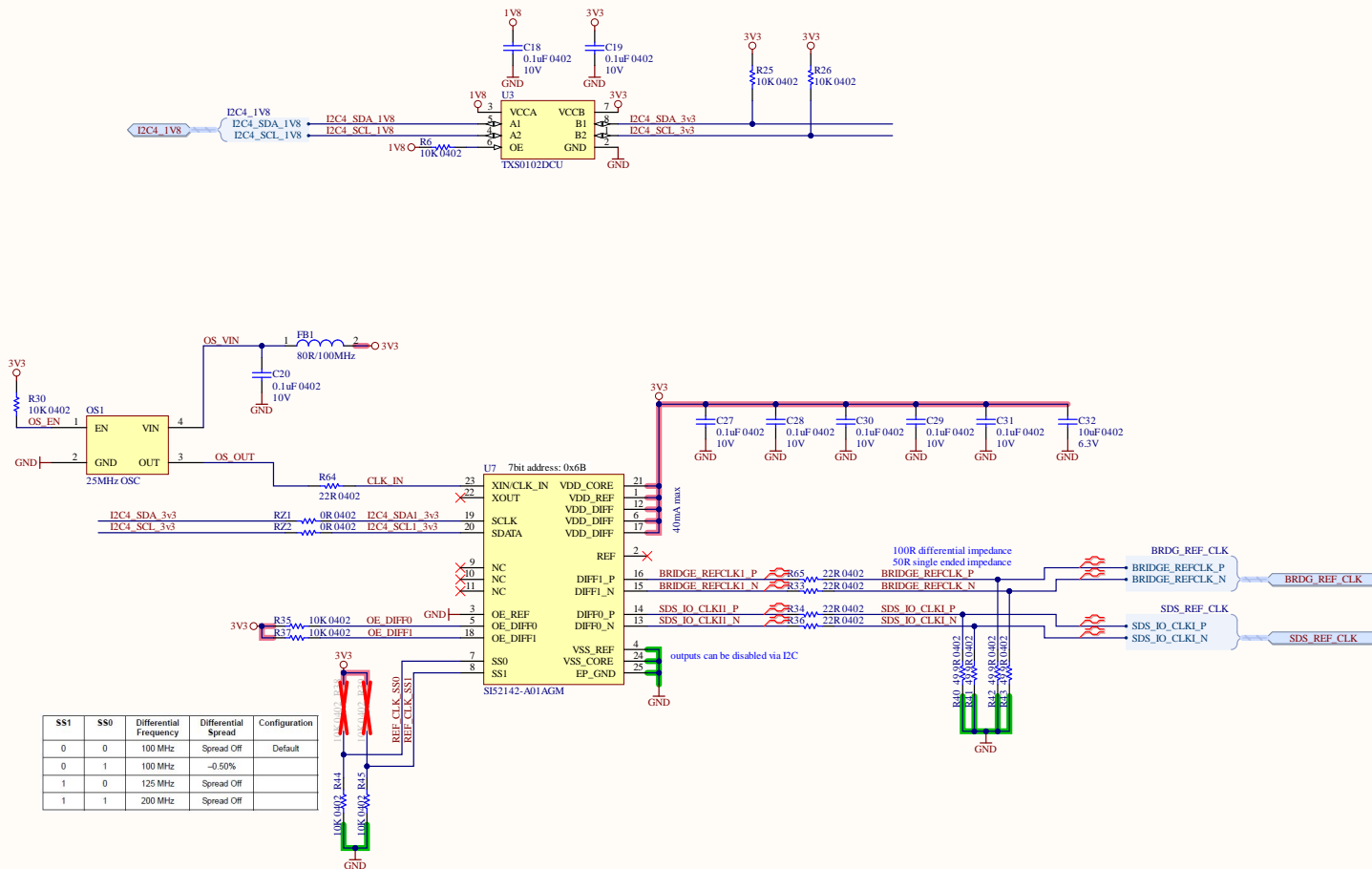
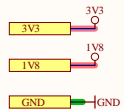
Date	Revision	Reason for Change	Changes Implemented
3/4/2020	Initial Release -> R0M0E0		
5/29/2020	R0M0E0 --> R1M1E1	1) Pull up the EN pin on the 3.3V regulator 2) R1 should be depopulated (PU for MA2485 WAKEUP line) 3) Add ESD protection diodes to the Ethernet lines 4) LEDs labels for "hRST" and "5V" are switched. 5) Polygon 3V3_L01_P425 is underneath GND polygon on Layer 1 and didn't pour correctly (still electrically connected by tracing). 6) J5/J8 are a bit too close for both cable housings 7) RGB camera connector tab hard to get to as it's under the BW2099 8) Label the boot switches 9) KingTop doesn't like the L1 inductor. Says it's too fragile and hard to handle. Try to find alternate.	1) 3.3V regulator EN pin pulled high to 5V 2) Depopulated R1 on Production variant 3) Added pads for ESD protection diodes on ethernet diff pairs 4) Swapped "hRST" and "5V" labels on overlay and added netnames to LEDs in schematic to help prevent this in the future. 5) Removed polygon and thickened traces 6) Increased connector spacing by 50mils to allow clearance 7) Moved connector 2mm right to make it a bit easier to grab the latch. Still not great, but better. 8) Added overlay labeling for each BOOT[4-0] and GPIO38. 9) Moved the L1 inductor to L1 on layout so it wasn't so exposed to impacts. Did not change PN or schematic.
7/23/2020	R1M1E1 --> R2M1E2	1) C35 preventing bridge from functioning properly. 2) Labeling of "GPIO6" is incorrect. Should be "GPIO8"	1) Removed C35 from PCB and BOM. 2) Changed references of GPIO6 to GPIO8. No physical change to PCB.
06/01/2021	R1M1E1 --> R0M0E0	Moved from BW2098POE to SJ2098POE	1. Minor changes in schematic with power circuit arrangement. 2. Programmable reset circuit removed. 3. PCB Layout redone.

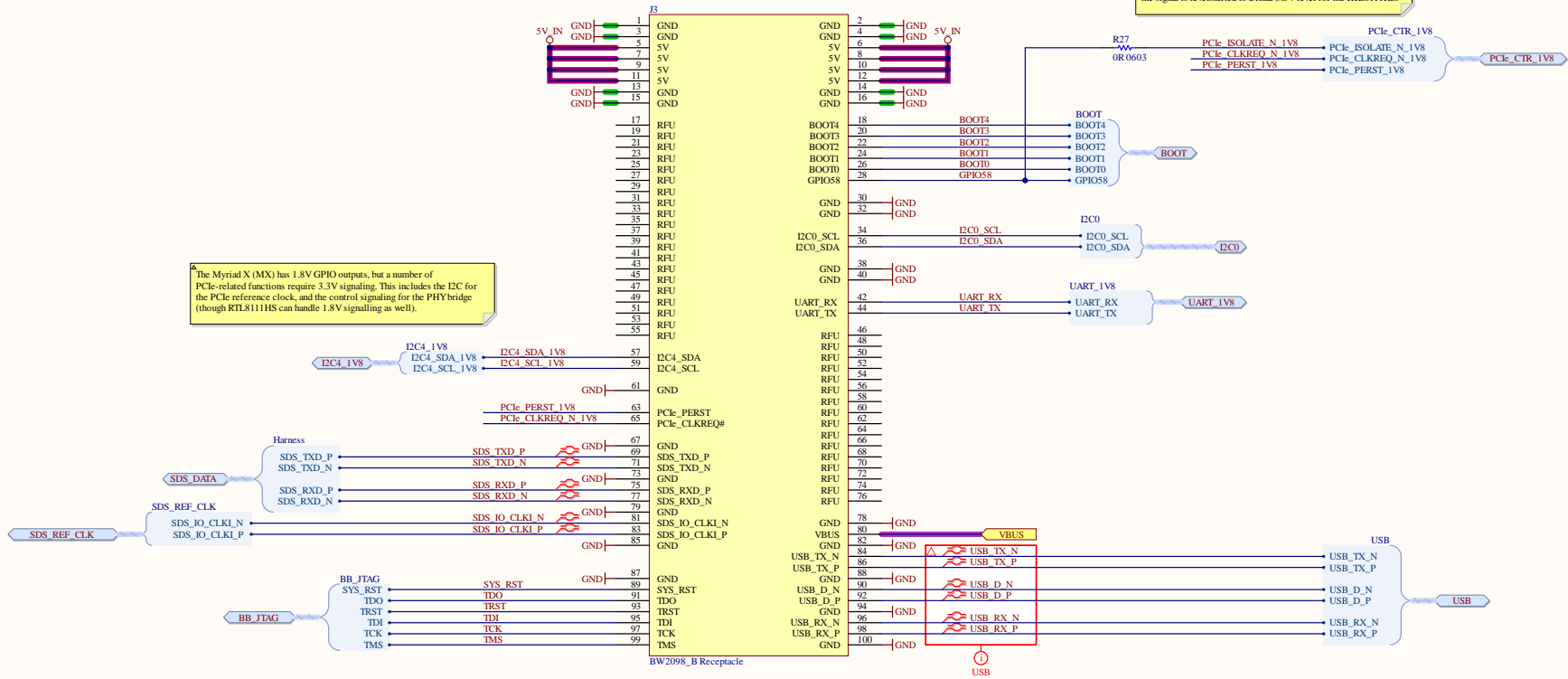
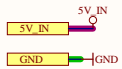
Title <i>SJ2098POE</i>			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234		Cannot open file C:\Users\Brian.Luxonis\Documents\... P... ..> < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < < <
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Schematic based on the reference design for the SE3404 PoE.

Title <i>SJ2098POE</i>			<i>Luxonis Holding</i> <i>1925 Harmony Park Drive</i> <i>Westminster, CO</i> <i>80234</i> <i>United States</i>	Cannot open file C:\Users\Brian.Luxonis\ Documents\...
Size: Tabloid	Number: D2098000	Revision: R0M0E0		
Date: 6/01/2021	Time: 9:52:03 PM	Sheet 3 of 12		
Drawn by: BW / MB / SJ				





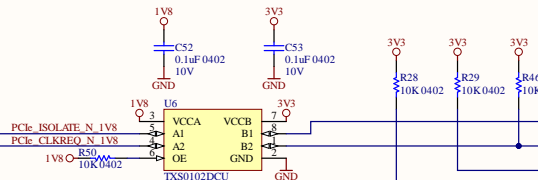
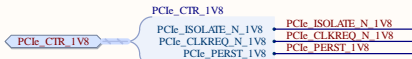
PCle_ISOLATE_N_1V8 can be pulled up or down via the BOOT DIP, assuming the R27 jumper resistor is stuffed. If pulled high, the signal is levelshifted to a final 3.3V level for the RTL8111HS.

Title SJ2098POE			Laxsonis Holding 1925 Harmony Park Drive Westminster, CO 80244 United States		Cannot open file C:\Users\Brian.Laxsonis\...
Size: Tabloid	Number: D2098000	Revision: ROM0E0	Date: 6/01/2021	Time: 9:52:04 PM	Sheet 6 of 12
Drawn by: BW/MB/SJ					

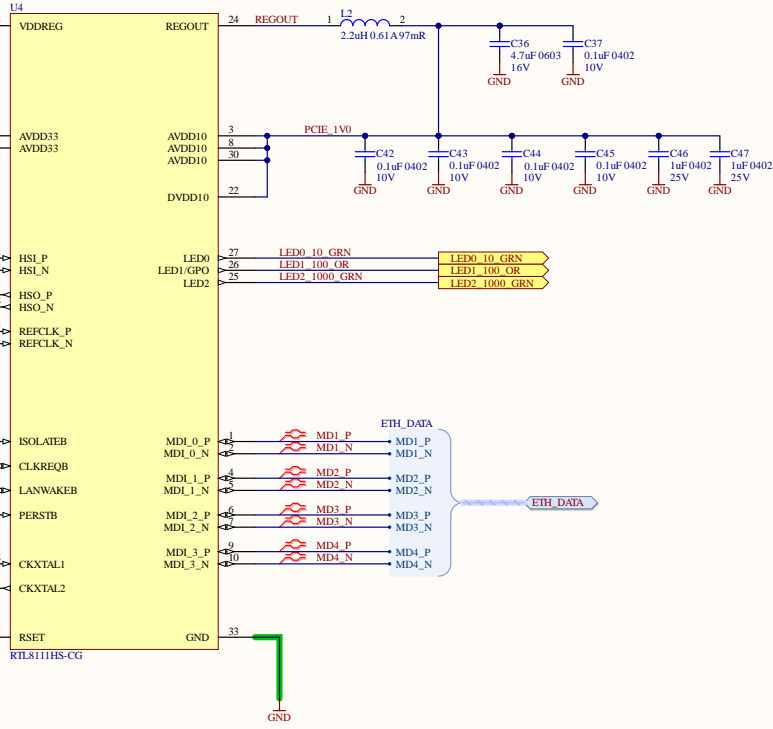
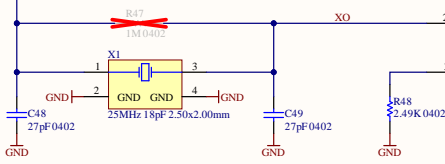


Power Sequence Requirements:
- 3.3V POR ramp must be: $1\text{ms} < t < 100\text{ms}$
- All power inputs must be held $>50\text{ms}$ at 0V between

Switching Regulator Layout:
- VDDREG $>40\text{mils}$
- REGOUT $>60\text{mils}$
- Place caps and inductor as close as possible to the RTL8111HS
- Place Lx and bulk C on the same layer as RTL8111HS
- No additional inductance or FBs
- Ceramic X5R caps or better

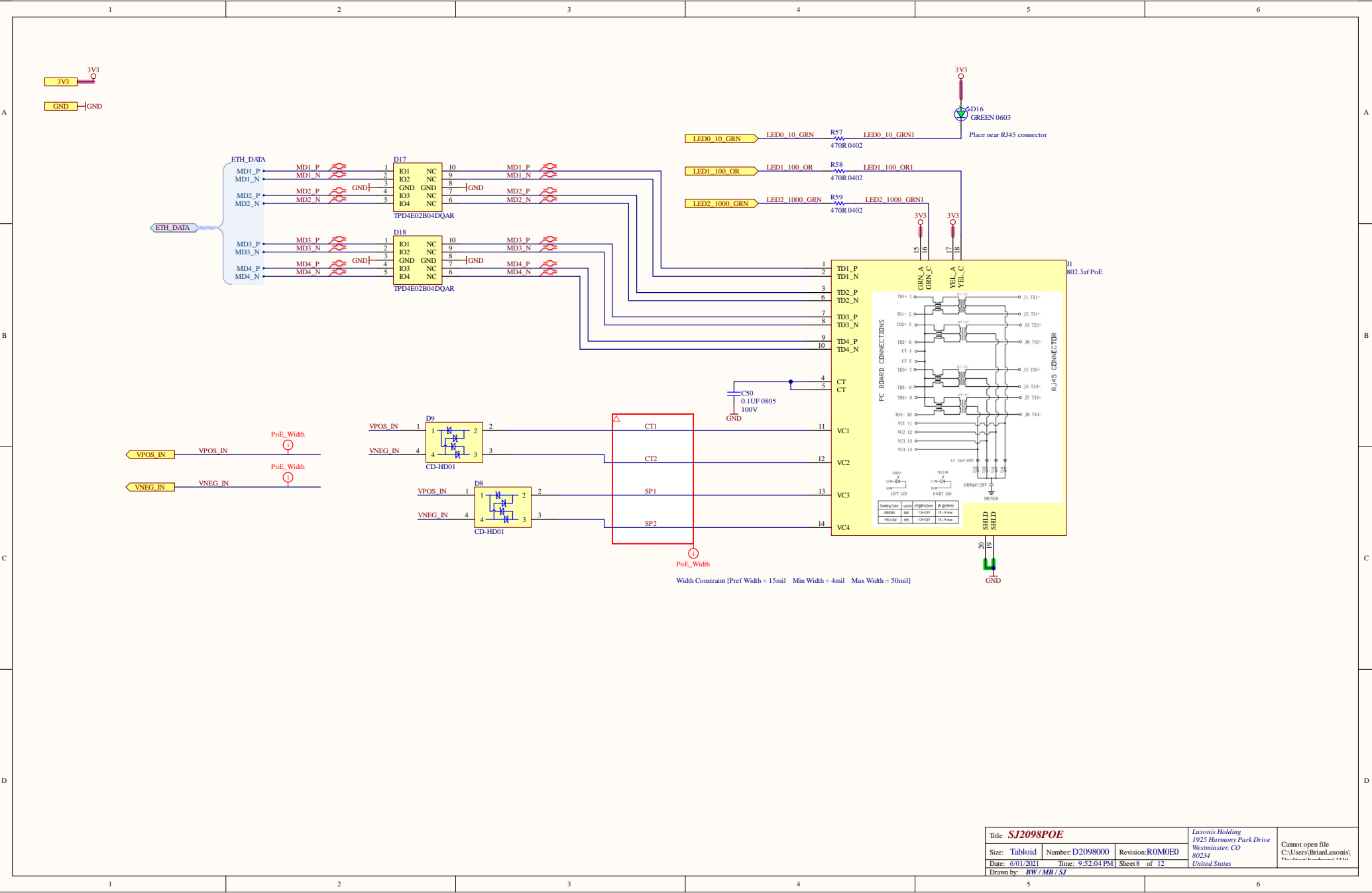


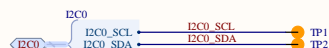
Drive PERST High to Enable PERST#
PERST# signal is used to indicate when the power supply is within its specified voltage tolerance and is stable. Fundamental Reset for the PCIe Card



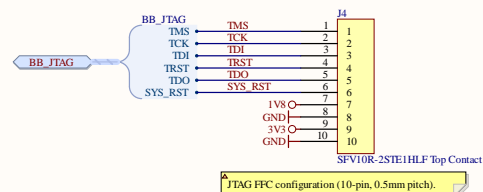
Schematic based on the reference design from the MV0247 PoE AOB reference design, with checking against the Realtek RTL8111HS reference design, layout guide, and datasheet.

Title: <i>SJ2098POE</i>			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 <i>United States</i>		Cannot open file C:\Users\Brian.Luxonis\Documents\... P:\...
Size: Tabloid	Number: D2098000	Revision: ROM0EO			
Date: 6/01/2021	Time: 9:52:04 PM	Sheet 7 of 12			
Drawn by: <i>BW/MB/SJ</i>					

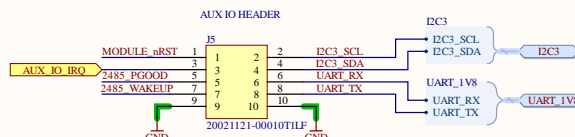




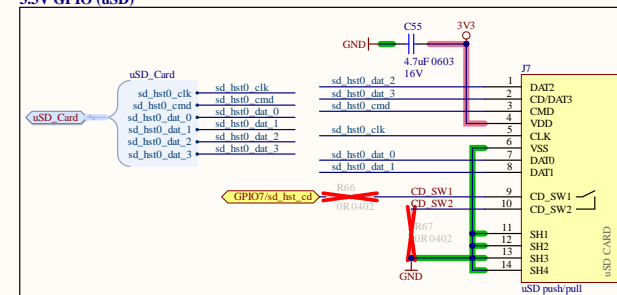
LED INDICATORS



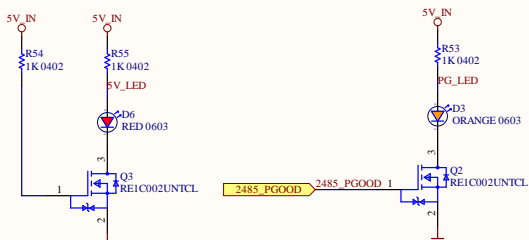
AUX IO HEADER



3.3V GPIO (uSD)

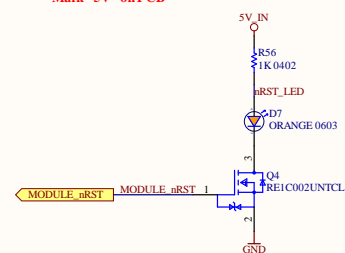


LED INDICATORS



Mark "5V" on PCB

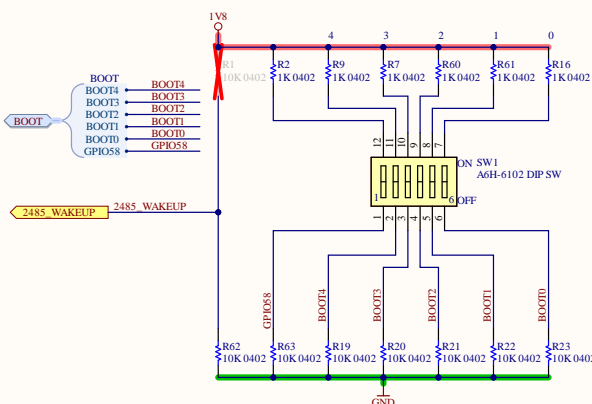
Mark "2485_PGOOD" on PCB



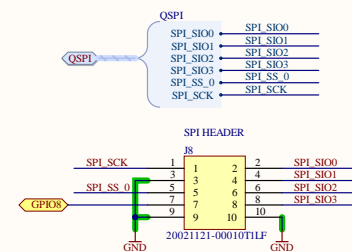
Mark "nRST" on PCB

2485_PGOOD and MODULE_nRST both have pull ups to 1.8V on 1099 module. 2485_PGOOD is held low by open-drain output on 1099 PMIC until power is good. MODULE_nRST rises with 1.8V at POR, but can be held low by user button or 1099 JTAG.

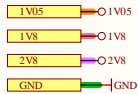
BOOT MODES



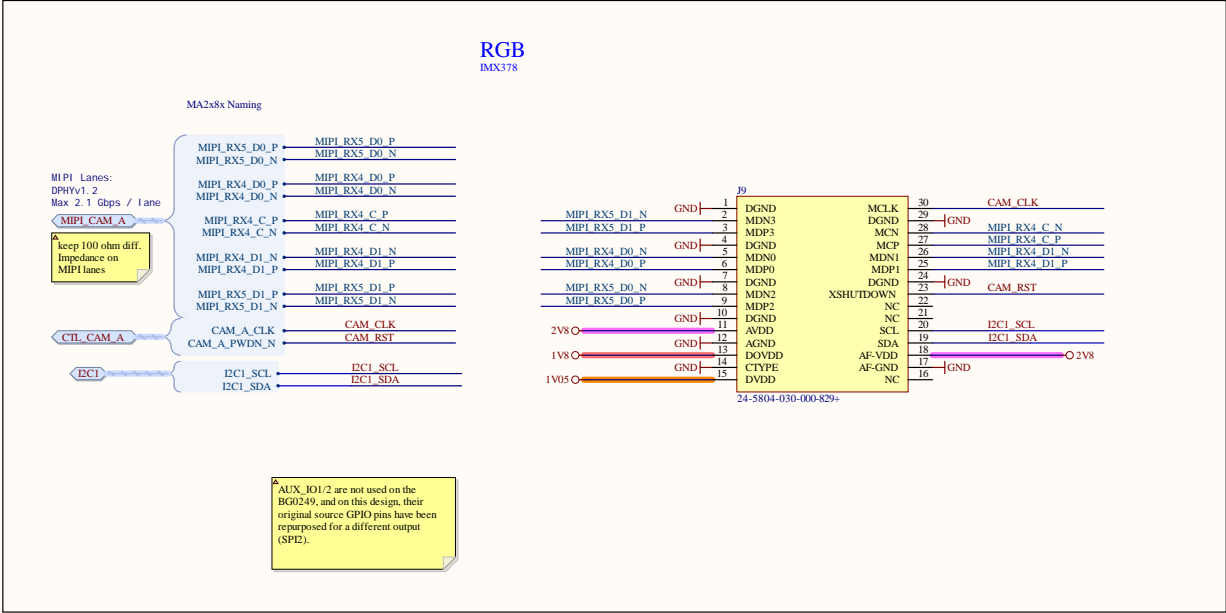
QUAD SPI



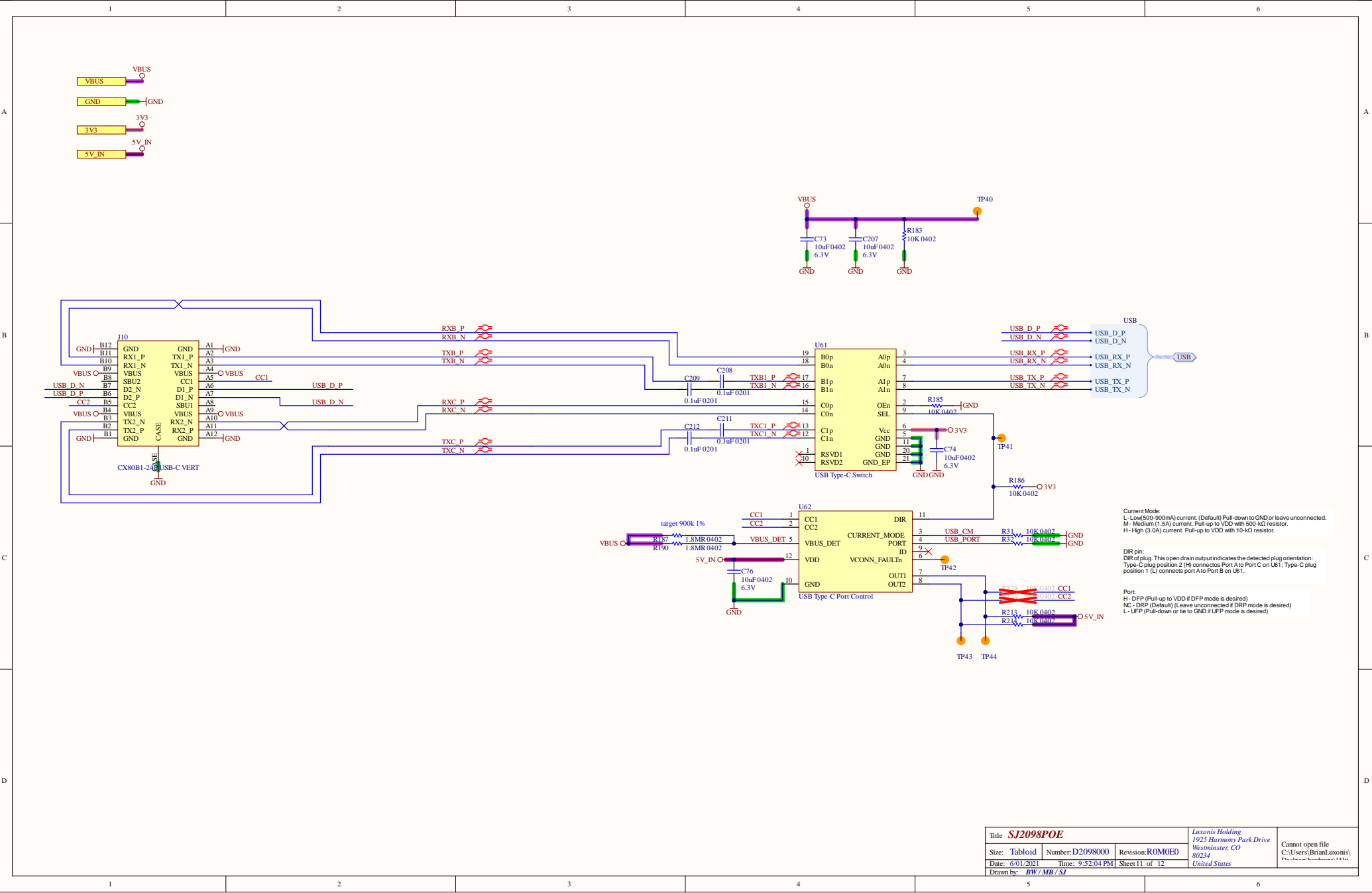
Title: <i>SJ2098POE</i>			Luxonis Holding 1925 Harmony Park Drive Westminster, CO 80234 United States	Cannot open file C:\Users\Brian\luxonis\Project\2098\2098.POE
Size: Tabloid	Number: D2098000	Revision: R0M0E0		
Date: 6/01/2021	Time: 9:52:04 PM	Sheet 9 of 12		
Drawn by: BW / MB / SJ				



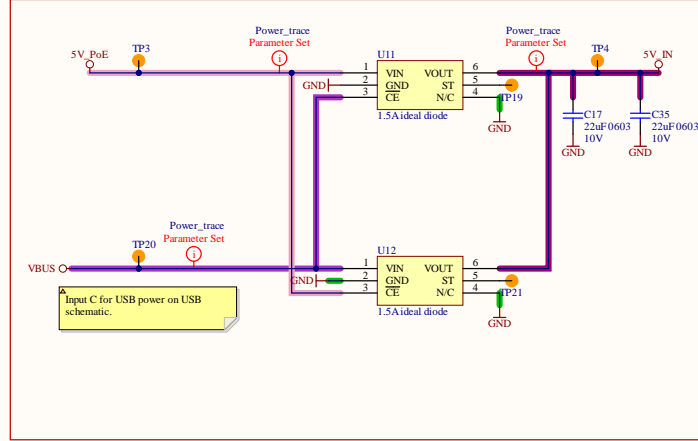
RGB CAMERA



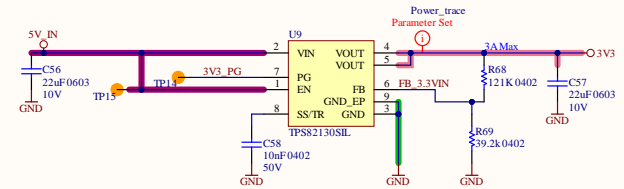
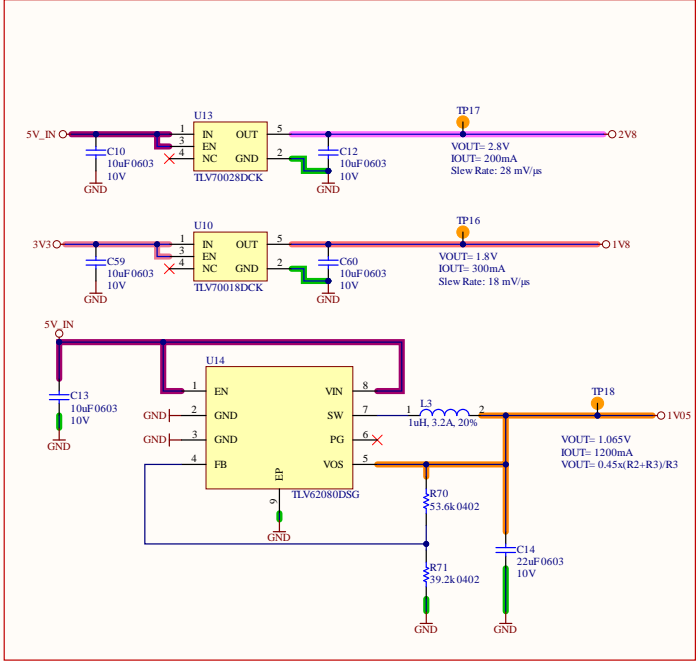
AUX_I01/2 are not used on the BG0249, and on this design, their original source GPIO pins have been repurposed for a different output (SPI2).



POWER INPUT



POWER SUPPLIES FOR CAMERA MODULES



Title <i>SJ2098POE</i>			Laxsonis Holding 1925 Harmony Park Drive Westminster, CO 80234 <i>United States</i>		Cannot open file C:\Users\Brian.Laxsonis\Documents\... P:\Data\... P:\Data\...
Size: <u>Tabloid</u>	Number: <u>D2098000</u>	Revision: <u>ROM0E0</u>			
Date: <u>6/01/2021</u>	Time: <u>9:52:04 PM</u>	Sheet <u>12</u> of <u>12</u>			
Drawn by: <i>BW/MB/SJ</i>					