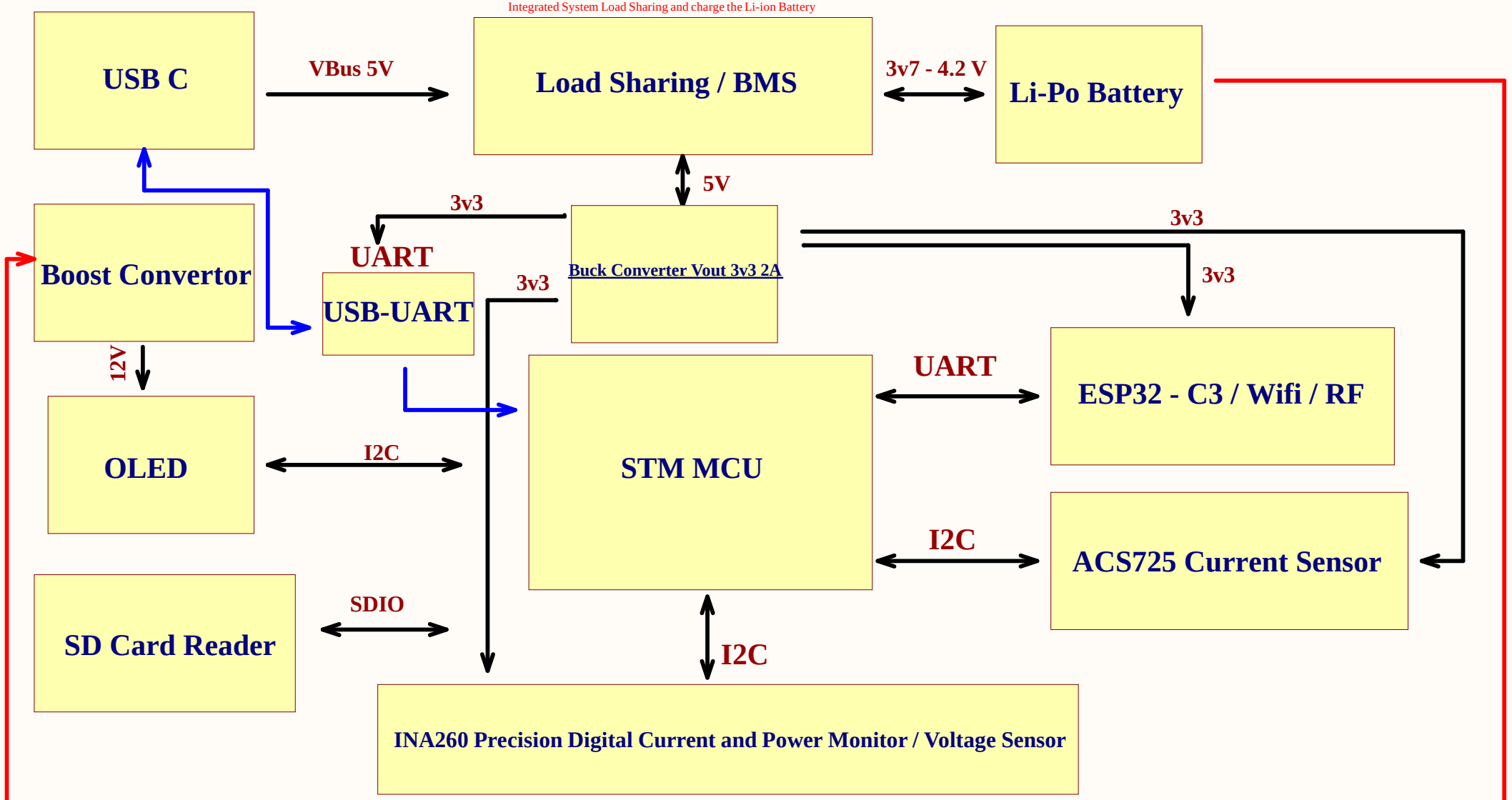
Functional Block Digram

System Load Sharing and Li-Ion/Li-Polymer Battery Charge Management Controller

Integrated System Load Sharing and charge the Li-ion Battery

Protection Addition

- Addition of Potential E fuse



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File: C:\Users\..\Functional Diagram.SchDoc		Drawn By:

Power Budget Analysis Digram

P = 5V x 3A = 15W

USB-C 5.1V 27W 5A Device Power Supply

Sinking from 5v Lap top PS / DC Adaptor

USB C

Sourcing Power to the system

5V Power Rail

Itotal = 1.8A x 1.5 = 2.7A

P = 5Vbus x 1.8A = 9W

Maximum Calculations with maximum values / input values

MCP73871

When is Battery Powered/

5V Power Rail

Li-Po 3.7v

2500mAh @ 3.7V

5V Power Rail

Buck Converter

SD CARD SOCKETS & Push-push

SD-006M

3V3 Power Rail

Itotal = 1.05A with 1.5 Safety Margin

P = 3.3V x 1.05A = 3.465W

STM32F410 / LQFP64 — 3.3 V, 160 mA

ESP32-C3-MINI-1 — 3.3 V, 500 mA

INA260 — 3.3 V

310 uA / 0.31mA

Measures up to 36V / 15A

ACS725 — 3.3 V, 14 mA

20A Range

It measures Cureent not Volt , so the

CP2102-9 — 3.3 V, 26 mA

12V Power Rail

Itotal = 0.03232A x 1.5 = 0.04848A

P = 32mA * 12 = 0.384mW

P = 320uA * 3.3V = 1.056mW

P=total = 385.1 mW

OLED — 12 V, 32 mA/ Display; 3.3 V, 320uA / Logic

3.7V-4.2V Bat Power Rail

Itotal = 0.143 x 1.5 = 0.2145A

P = 3.7Vbat x 0.143A = 0.5291W

TPS61040 — 3.7V, 134 mA

MC34063ADR

This is the replacement

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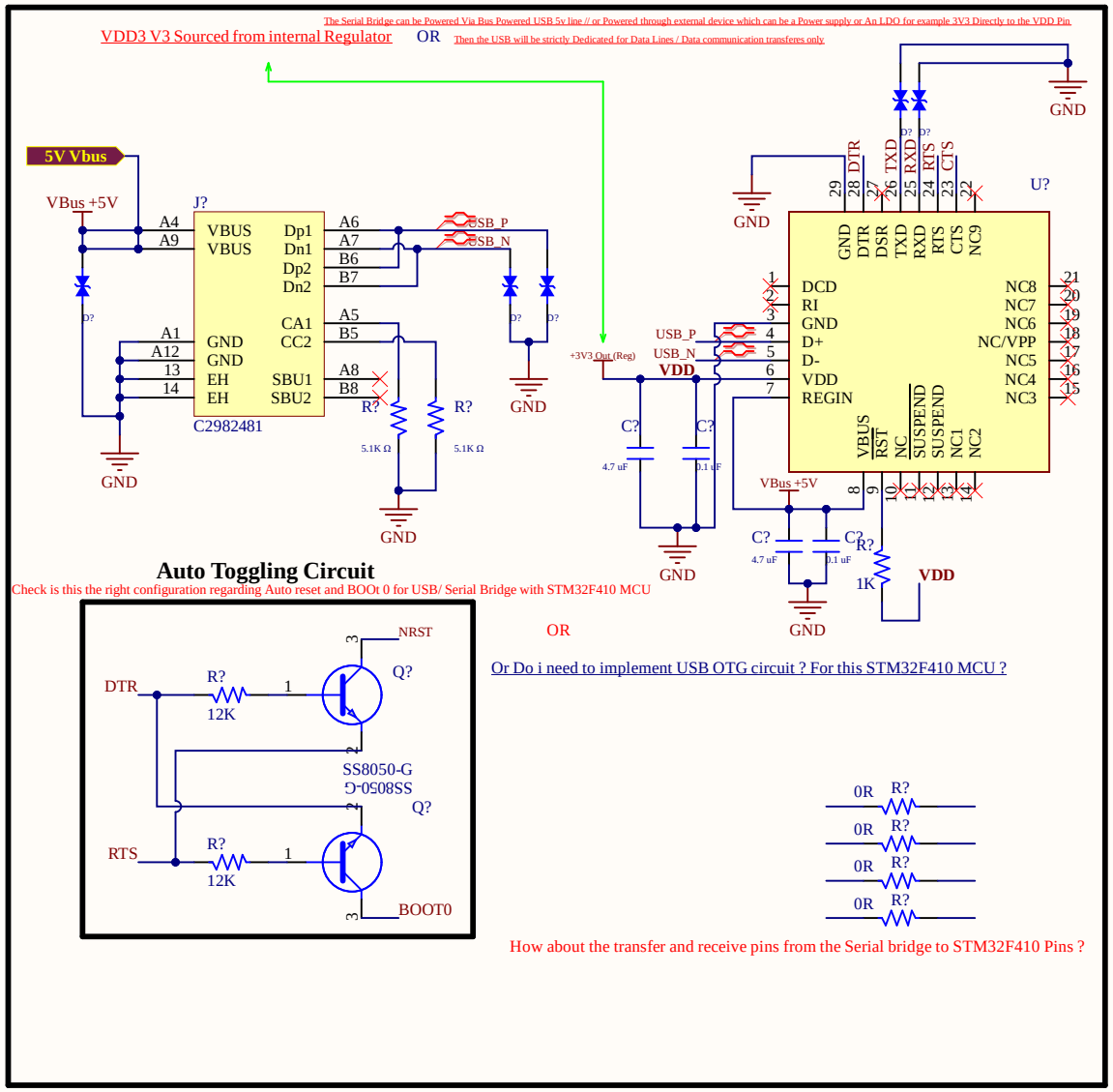
USB-C Supply - Serial Bridge UART



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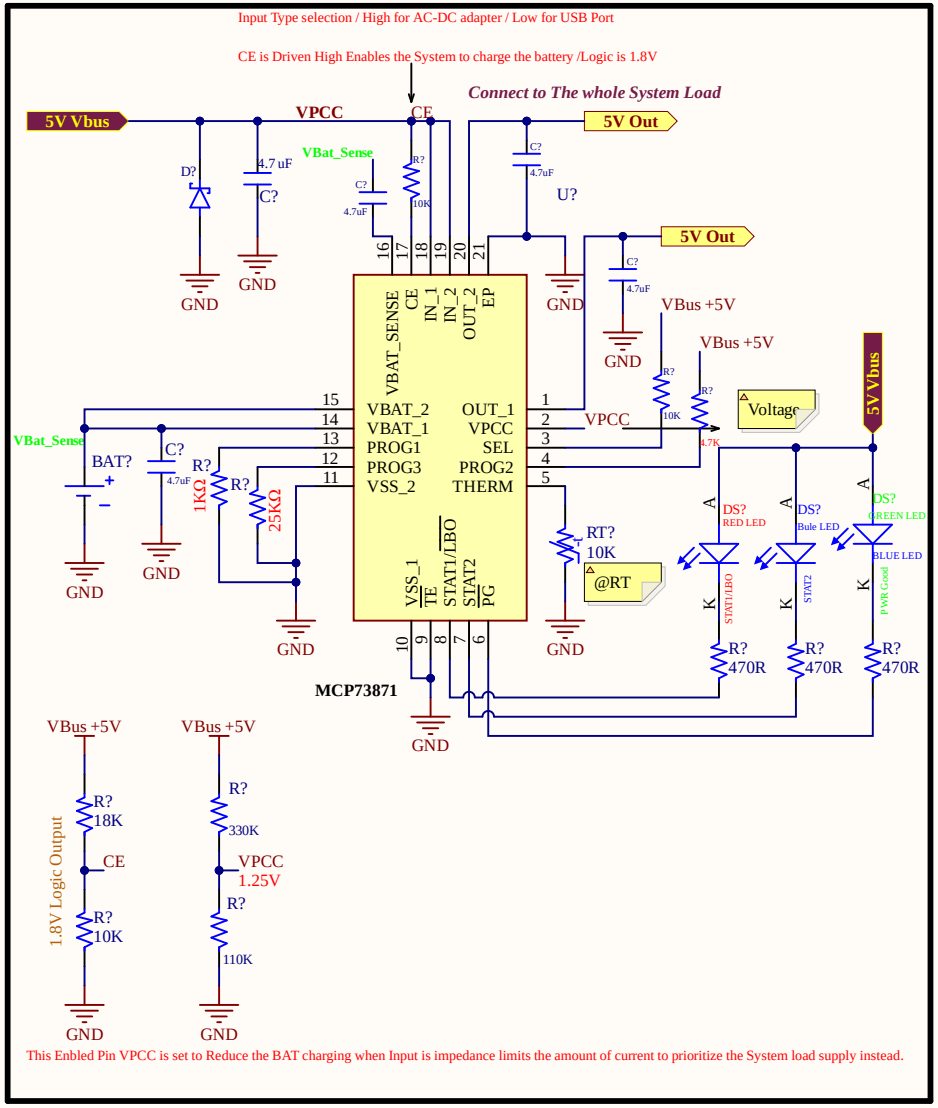
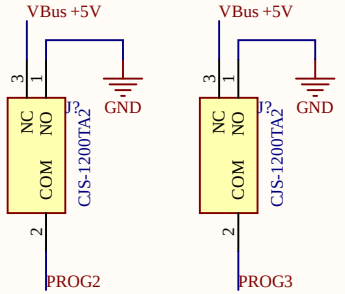
BMS - Load Sharing

EVL





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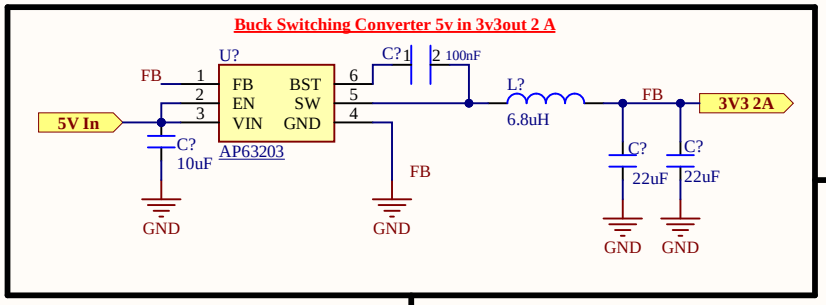
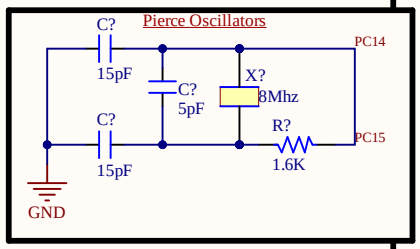
File: C:\Users\..\Load Sharing - BMS.SchDoc		Drawn By:

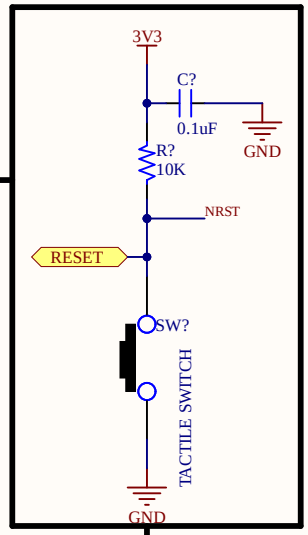
Buck Converter 5V to 3V3 2A



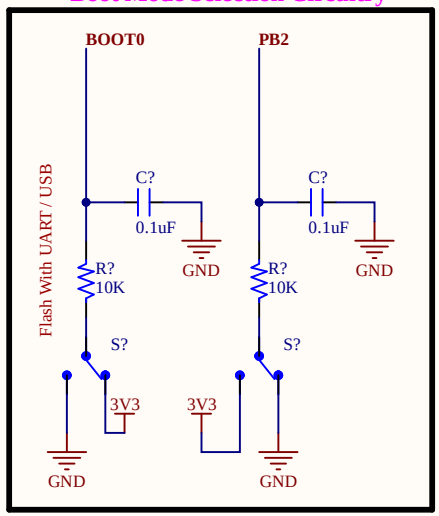
External X-Oscillation



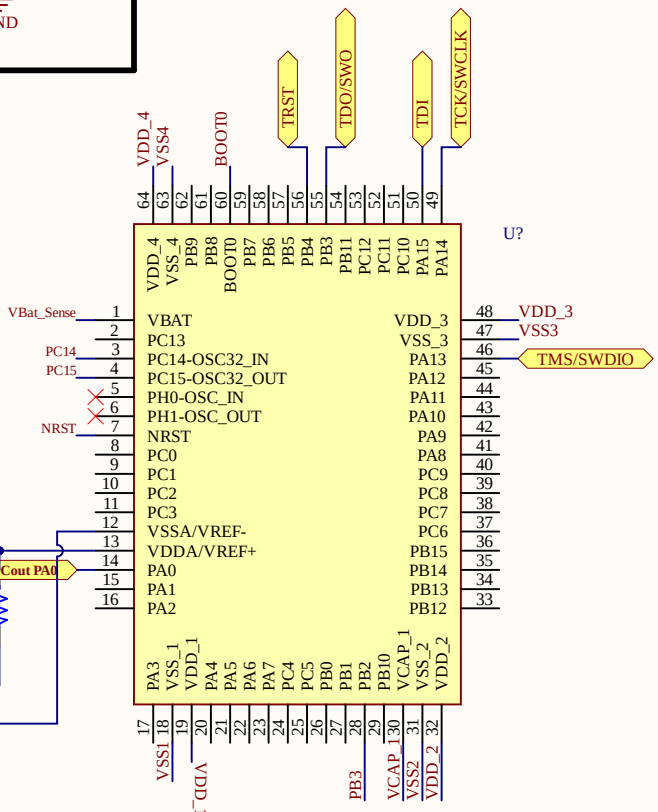
External Circuit System Reset

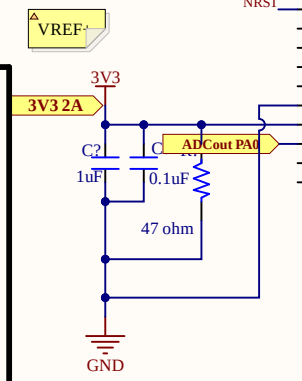


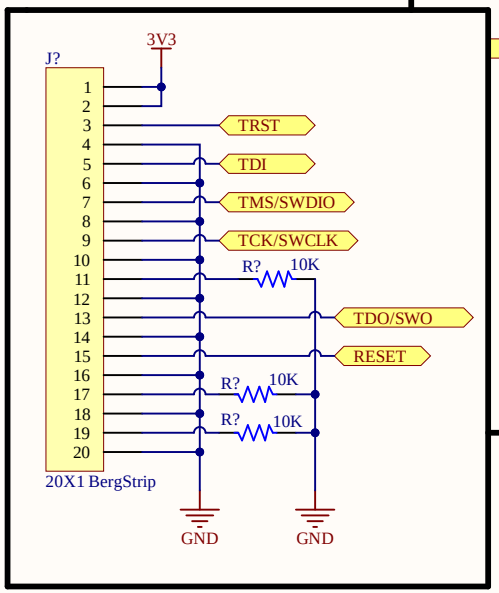
Boot Mode Selection Circuitry



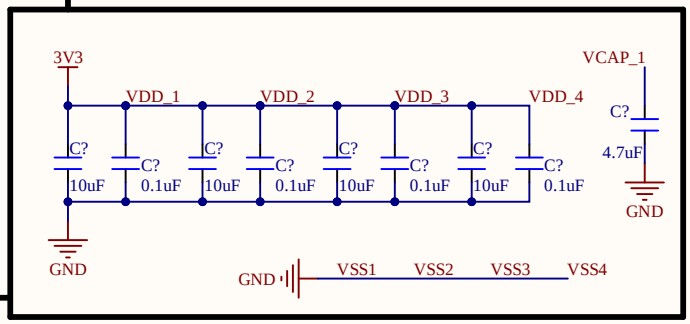
BOOT 0	BOOT 1 / PB2	
X	0	Main Flash memory
1	0	System memory
1	1	Embedded SRAM







Vin Supply @ 3V3



STM32F4691 Reference Schematic

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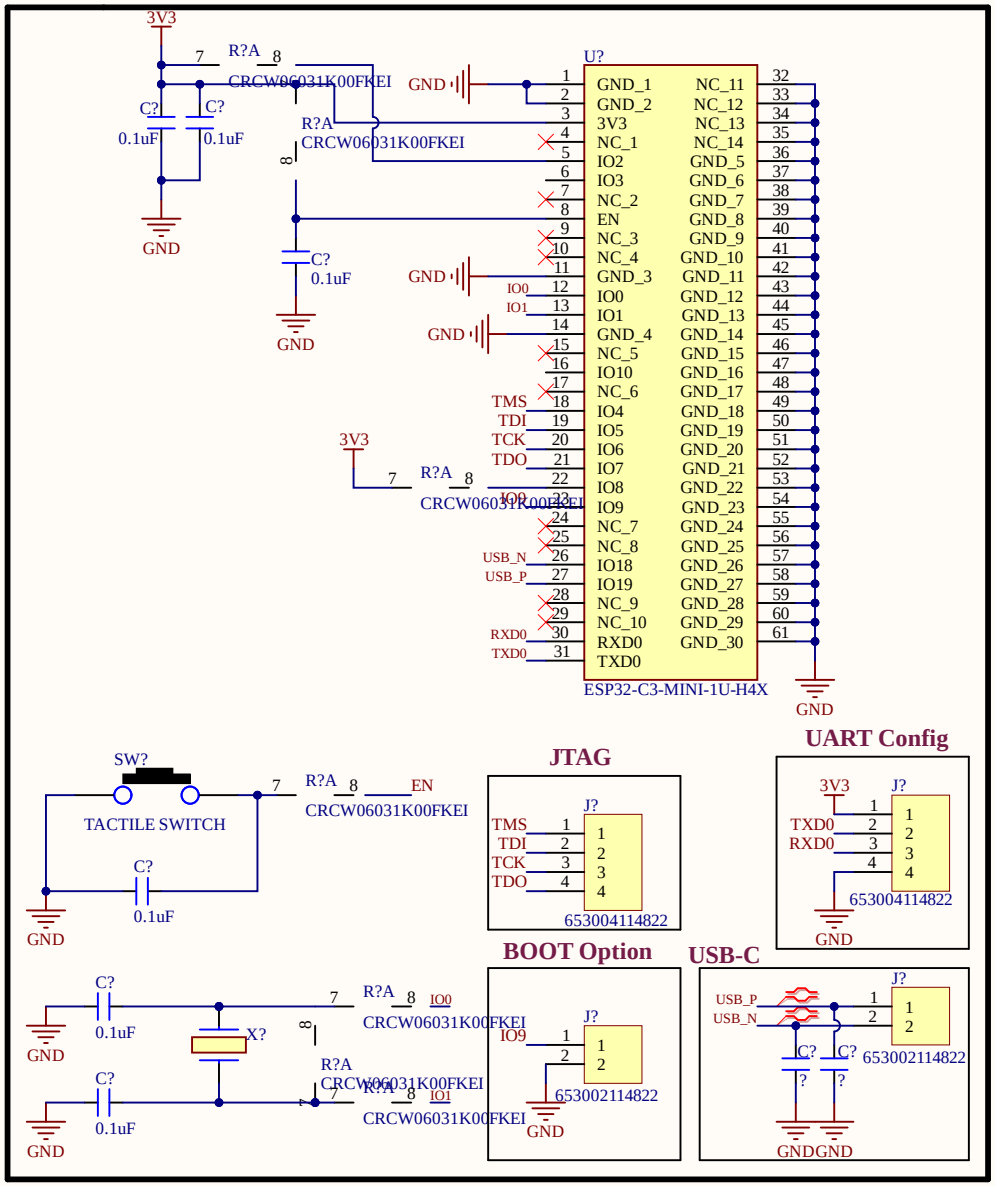
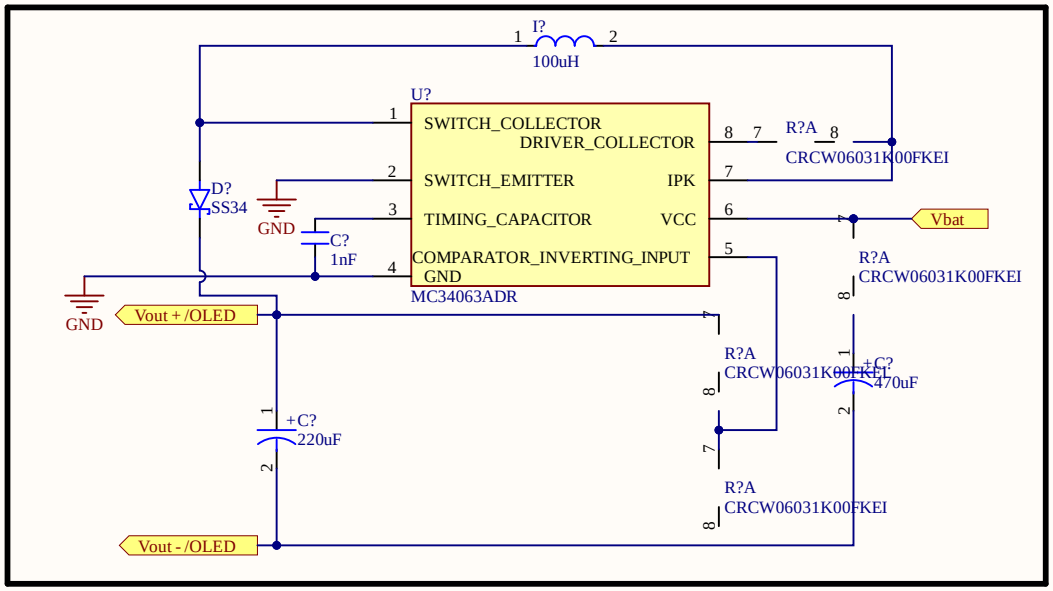
RF WiFi Module



Boost Converter to OLED



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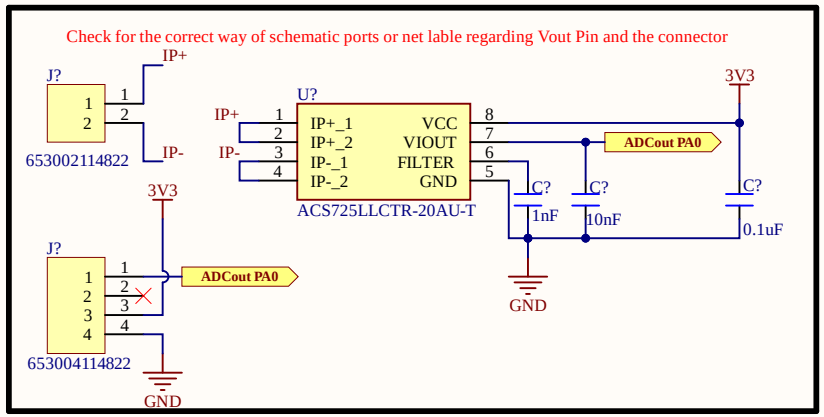
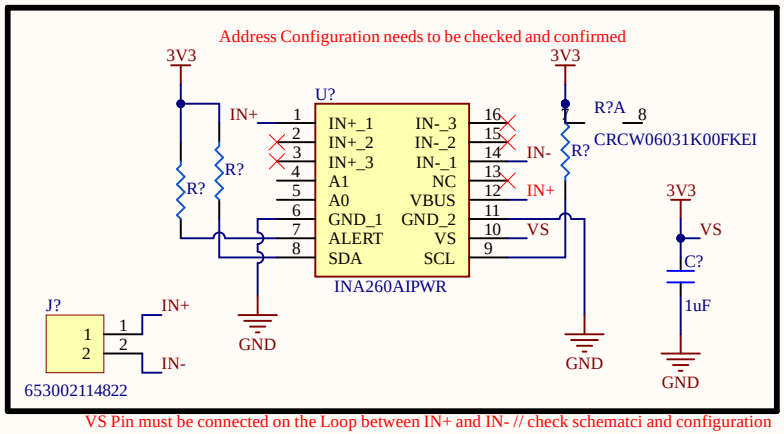
20A DC Current Sensor (ACS725)

The ACS725LLCTR-20AU-T is an analog output



https://wiki.seeedstudio.com/Grove-10A_DC_Current_Sensor-ACS725/

36V DC Voltage Sensor (INA260)



VS Pin must be connected on the Loop between IN+ and IN- // check schematci and configuration

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Board Stack Report