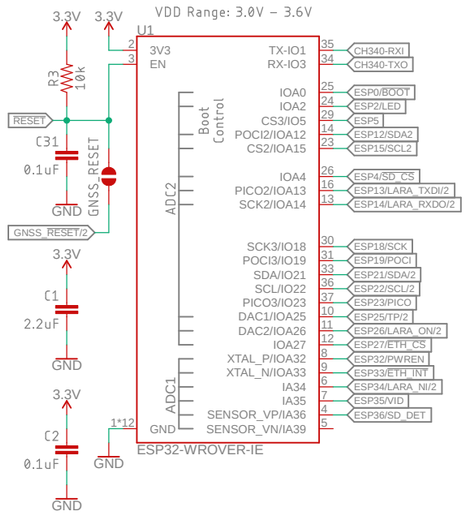
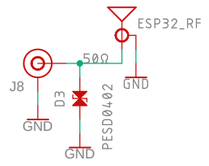
ESP32 WROVER



Use boot control pins with caution: 0, 2, 5, 12, 15

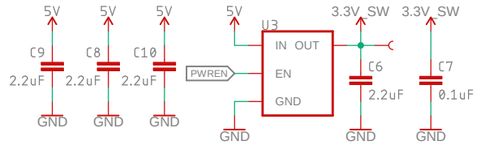
IO0: Avoid device connections. Can be used a stat LED.
IO2: Avoid external pullups – will cause bootloader fail.
IO5: Has builtin pullup at POR.
IO12: Avoid external pullups – will cause bootloader fail.
IO15: Has builtin pullup at POR.

ADC2 is unavailable when WiFi is enabled.

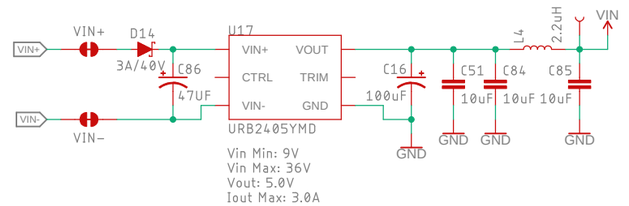


Secondary Power

Vin Max: 6.0V
Iout Max: 700mA
Vdo: 120mV @ 330mA
Output Discharge: 530Ω Typ

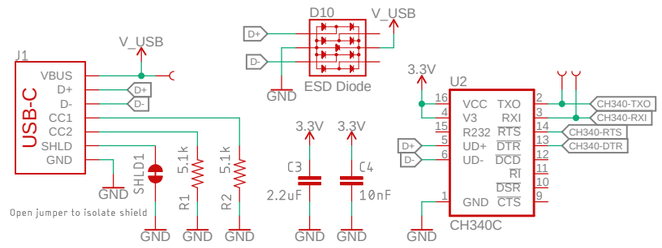


Power In



Vin Min: 9V
Vin Max: 36V
Vout: 5.0V
Iout Max: 3.0A

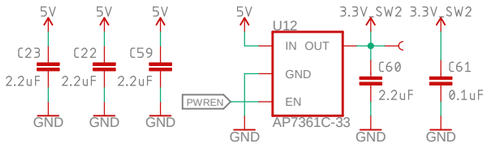
ESP32 USB-C



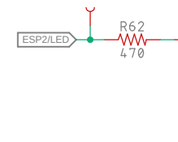
Open jumper to isolate shield

Tertiary Power

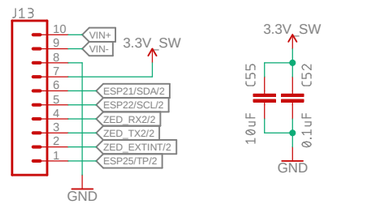
Vin Max: 6.0V
Iout Max: 1.0A
Vdo: 360mV @ 1A
Output Discharge: 100Ω Typ



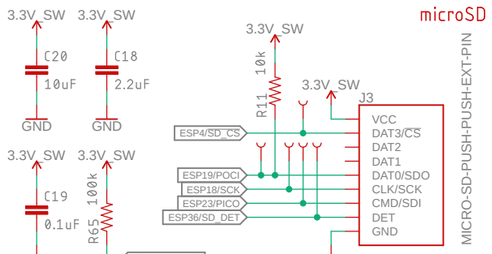
LED



I/O Connector

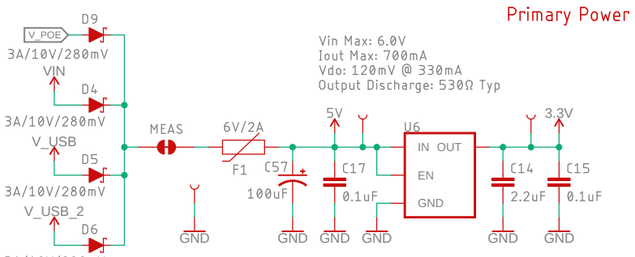


microSD

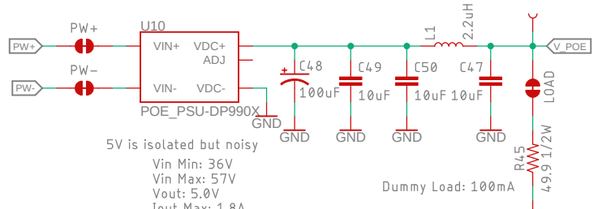


Primary Power

Vin Max: 6.0V
Iout Max: 700mA
Vdo: 120mV @ 330mA
Output Discharge: 530Ω Typ



Power Over Ethernet

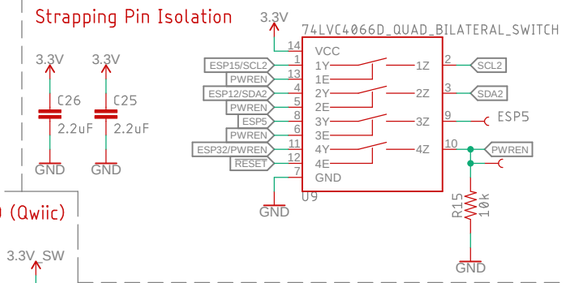


5V is isolated but noisy

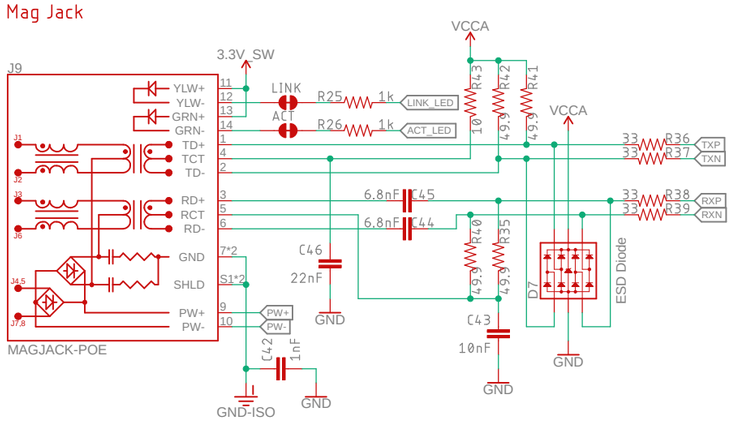
Vin Min: 36V
Vin Max: 57V
Vout: 5.0V
Iout Max: 1.8A

Dummy Load: 100mA

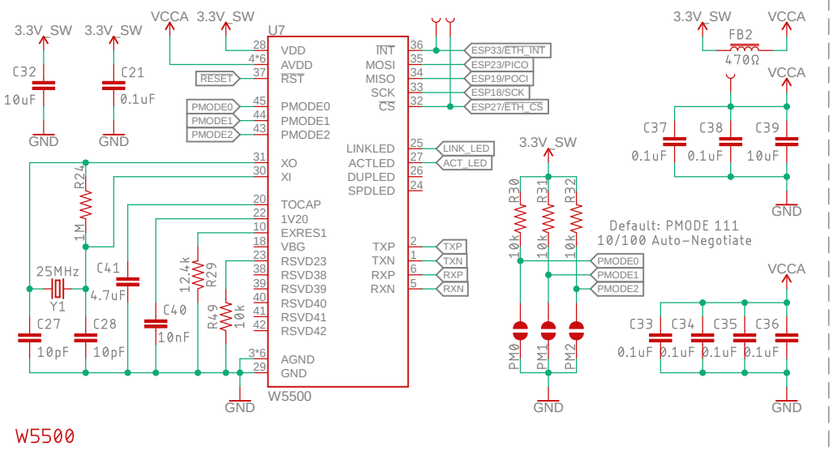
Strapping Pin Isolation



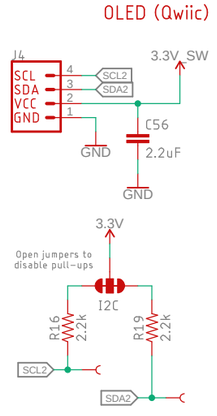
Mag Jack



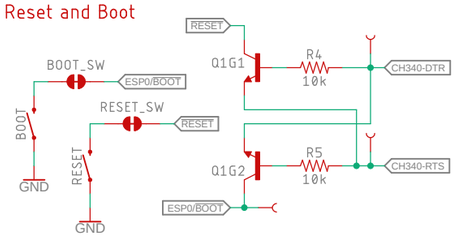
W5500



OLED (Qwiic)



Reset and Boot



Boot Mode Configuration

Pin	Run	Bootloader	Default
IO0	1	0	1
IO2	x	0	0
IO5	1	x	1
IO12	0	0	0
IO15	x	x	1

IO12 = MDTI, IO15 = MDTO

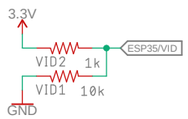
If DTR is LOW, toggling RTS from HIGH to LOW resets to run mode.

If RTS is HIGH, toggling DTR from LOW to HIGH resets to bootloader.

USB Track Impedance: Differential Pair
https://saturnpcb.com/saturn-pcb-toolkit/
Prepreg thickness: 0.2mm (7.87 mil). Er = 4.6
10.5 mil track with 9.5 mil gap (20 mil center to center) = 90 Ohms

RF Track Impedance: Coplanar Waveguide with Ground Calculations
Ground is on layer 2. Prepreg thickness: 0.2mm. Er = 4.6
13.74 mil track with 8 mil gap = 50 Ohms
https://saturnpcb.com/saturn-pcb-toolkit/

Product Identifier



RTK Product Voltage IDs:

Surveyor:	Pin 35 floats at 0.18V approx.
Express:	3.3 / 13.3 = 0.82V (0.74 – 0.90)
Reference Station:	10 / 30 = 1.1V (0.99 – 1.21)
Facet:	10 / 20 = 1.65V (1.49 – 1.82)
Facet L-Band:	20 / 30 = 2.2V (1.98 – 2.42)
Express Plus:	10 / 13.3 = 2.48V (2.23 – 2.73)
Everywhere:	10 / 11 = 3.00V (2.70 – 3.30)

open hardware

sparkfun

Special Instructions

TITLE: RTK_Everywhere_L-Band_Cellular

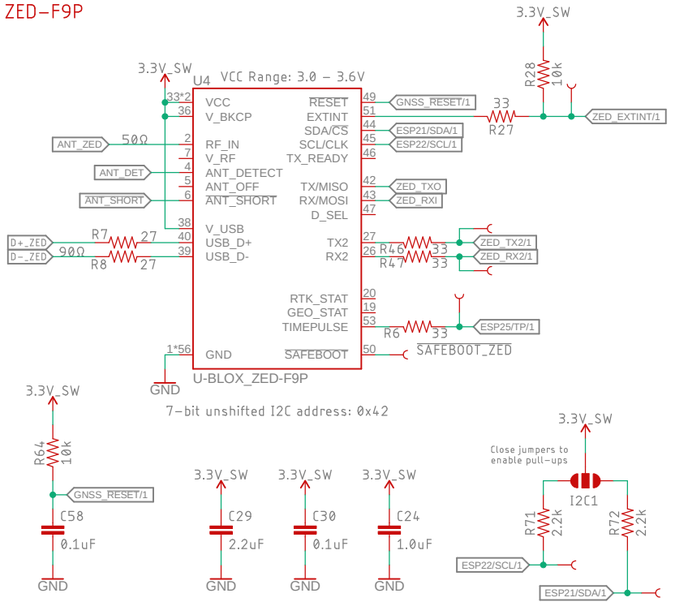
Design by: Paul Clark

REV: v01

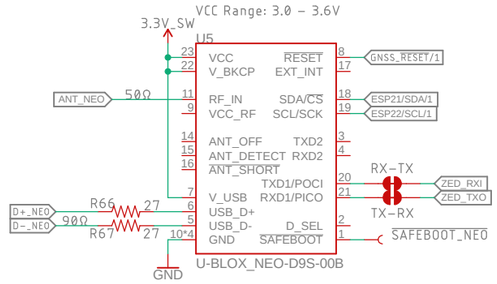
Date: 27/07/2023 10:49

Sheet: 1/2

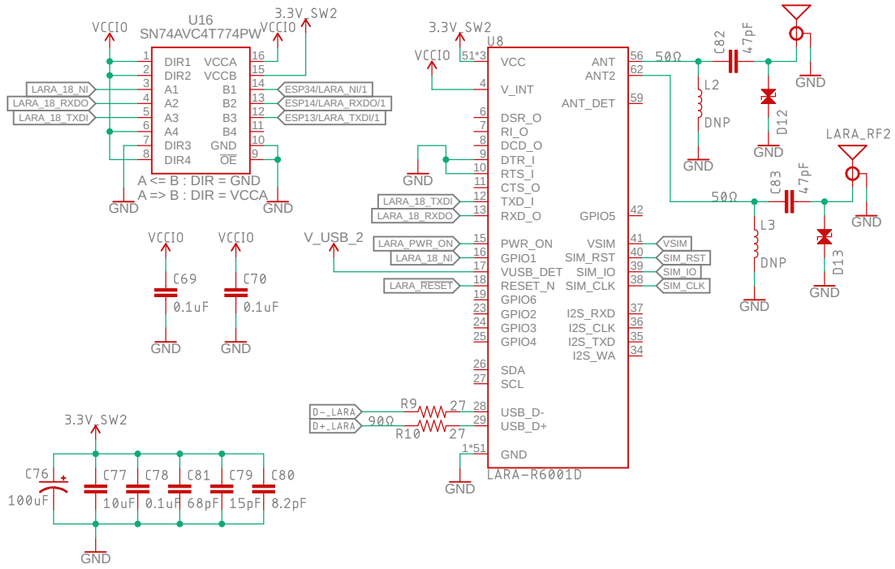
u-blox ZED-F9P



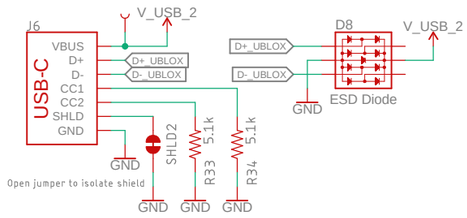
u-blox NEO-D9S



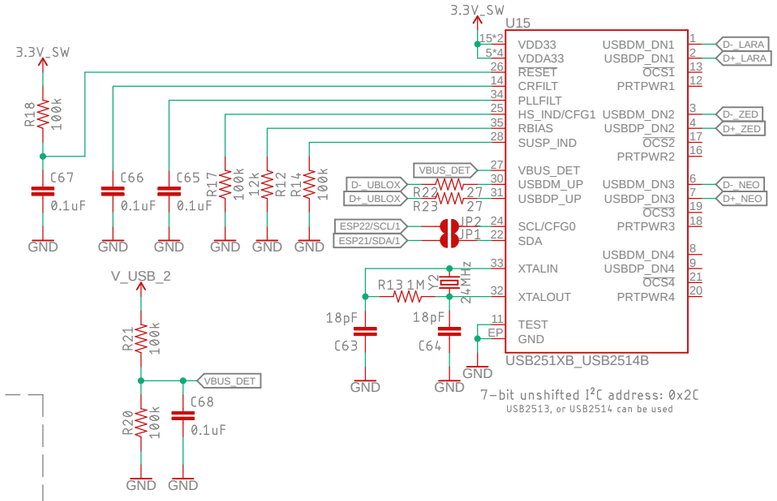
u-blox LARA-R6001



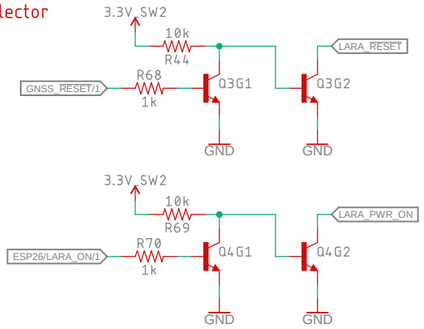
USB Hub USB-C



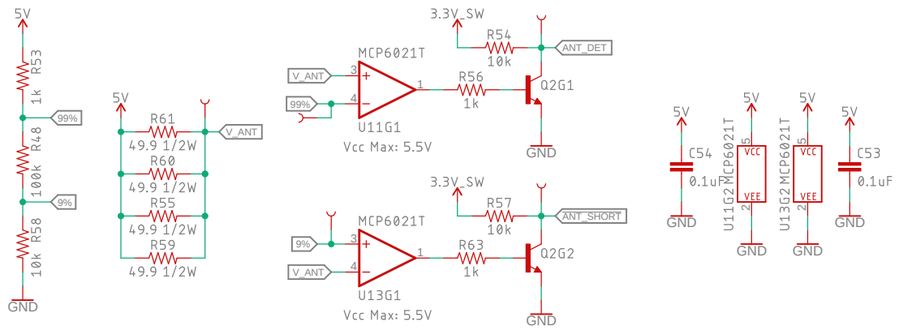
USB Hub



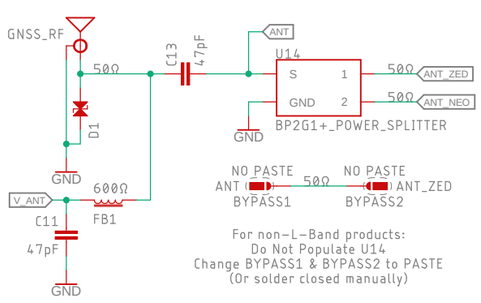
Open Collector Outputs



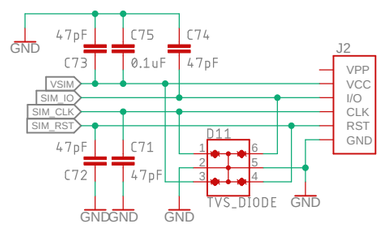
Antenna Power



Antenna Splitter



SIM



TITLE: RTK_Everywhere_L-Band_Cellular

Design by: Paul Clark

REV: V01

Date: 27/07/2023 10:49

Sheet: 2/2