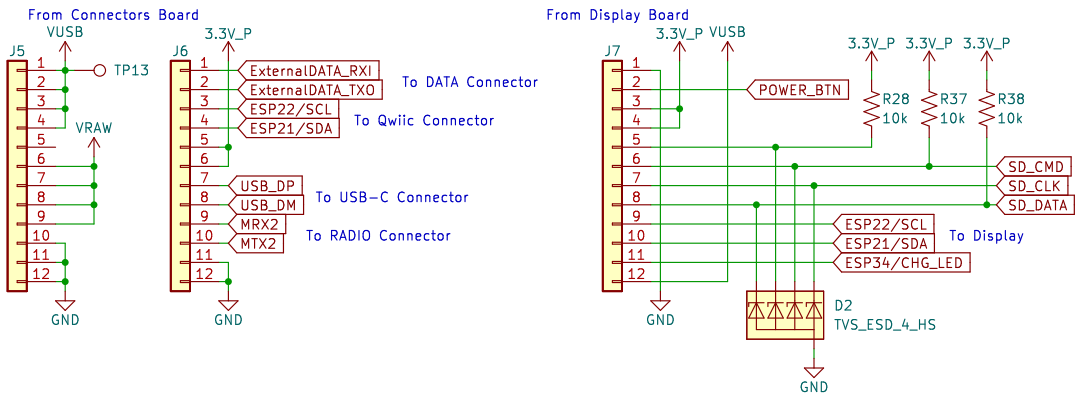
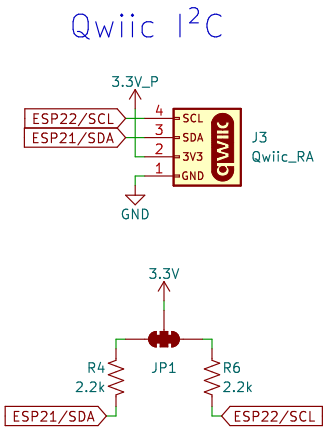
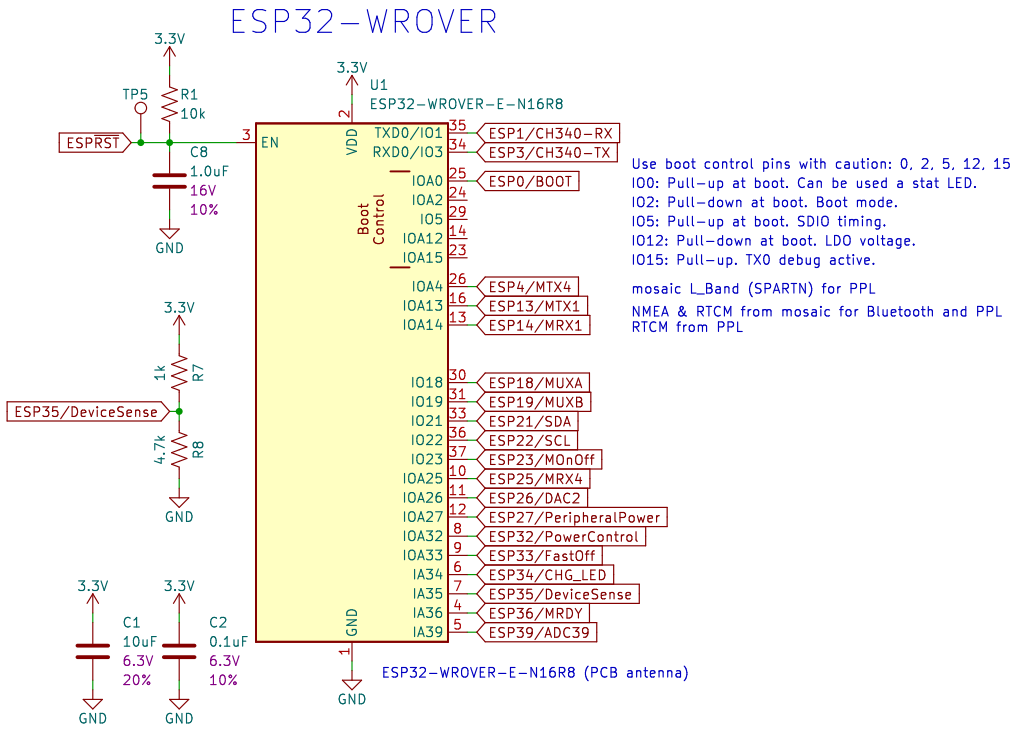






GNSS

File: GNSS.kicad_sch

USB

File: USB.kicad_sch

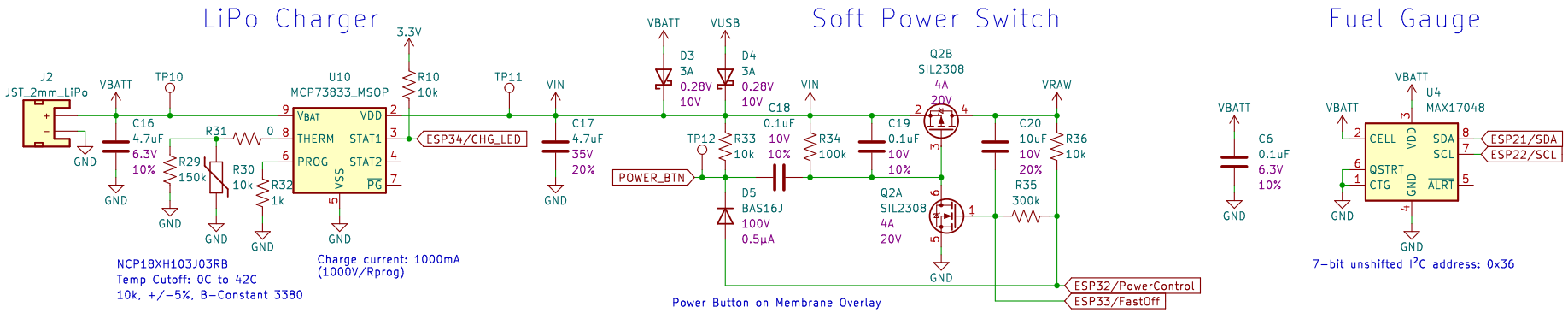
Power

File: Power.kicad_sch

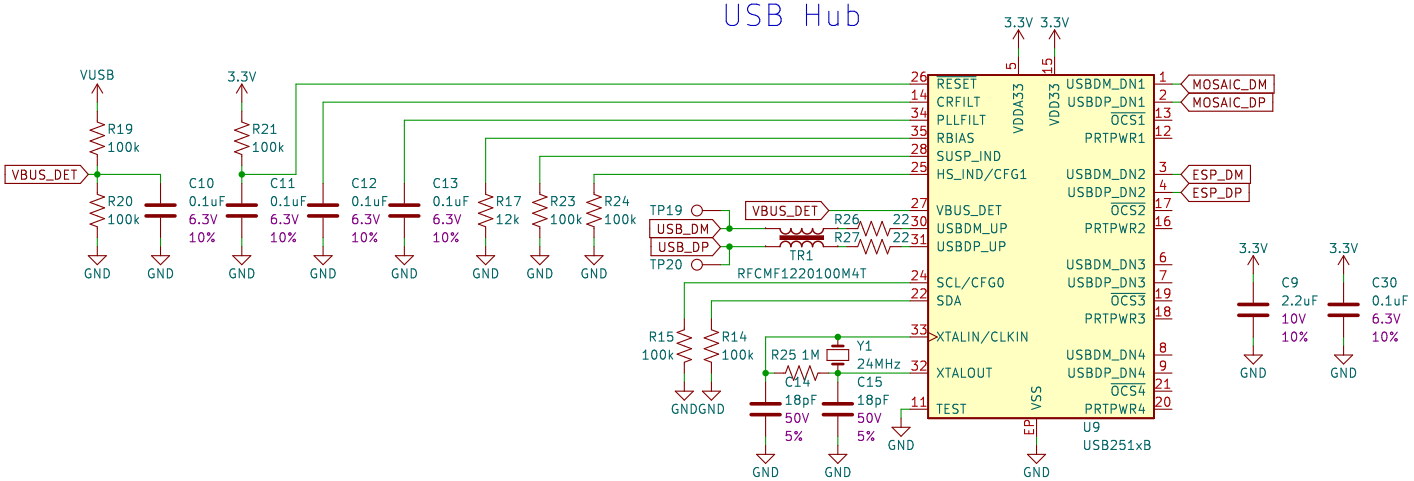
open source hardware

sparkfun

Ordering Instructions

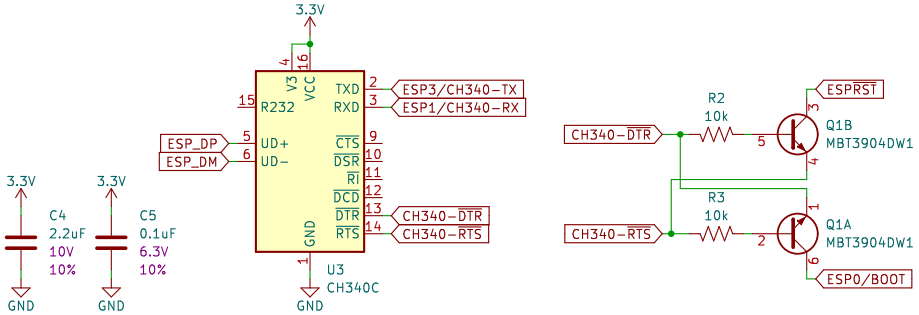

LiPo Charger
J2
JST_2mm_LiPo
VBATT
TP10
C16
4.7uF
6.3V
10%
GND
R31
0
R29
150k
R30
10k
R32
1k
U10
MCP73833_MSOP
VBAT
VDD
THERM
STAT1
PROG
STAT2
VSS
PG
3.3V
R10
10k
ESP34/CHG_LED
TP11
VIN
C17
4.7uF
35V
20%
NCP18XH103J03RB
Temp Cutoff: 0C to 42C
10k, +/-5%, B-Constant 3380
Charge current: 1000mA
(1000V/Rprog)
Soft Power Switch
VBATT
VUSB
D3
3A
0.28V
10V
D4
3A
0.28V
10V
VIN
C18
0.1uF
10V
10%
TP12
R33
10k
R34
100k
POWER_BTN
D5
BAS16J
100V
0.5µA
Q2B
SIL2308
4A
20V
C19
0.1uF
10V
10%
Q2A
SIL2308
4A
20V
VRAW
C20
10uF
10V
20%
R35
300k
R36
10k
ESP32/PowerControl
ESP33/FastOff
Power Button on Membrane Overlay
Fuel Gauge
VBATT
C6
0.1uF
6.3V
10%
GND
U4
MAX17048
CELL
VDD
SDA
SCL
QSTRT
CTG
GND
ALRT
ESP21/SDA
ESP22/SCL
7-bit unshifted I²C address: 0x36
Main 3.3V
VRAW
TP8
C22
1.0uF
16V
10%
U11
AP2112K-3.3
VIN
VOUT
EN
GND
3.3V
C23
1.0uF
16V
10%
TP1
TP4
Peripheral 3.3V
ESP27/PeripheralPower
C7
1.0uF
16V
10%
U5
AP2112K-3.3
3.3V_P
C21
1.0uF
16V
10%
TP7
GNSS RTC Backup
VBATT
C24
1.0uF
16V
10%
U12
STLQ015-3.3
TP9
M_BACKUP
C25
1.0uF
16V
10%

USB Hub

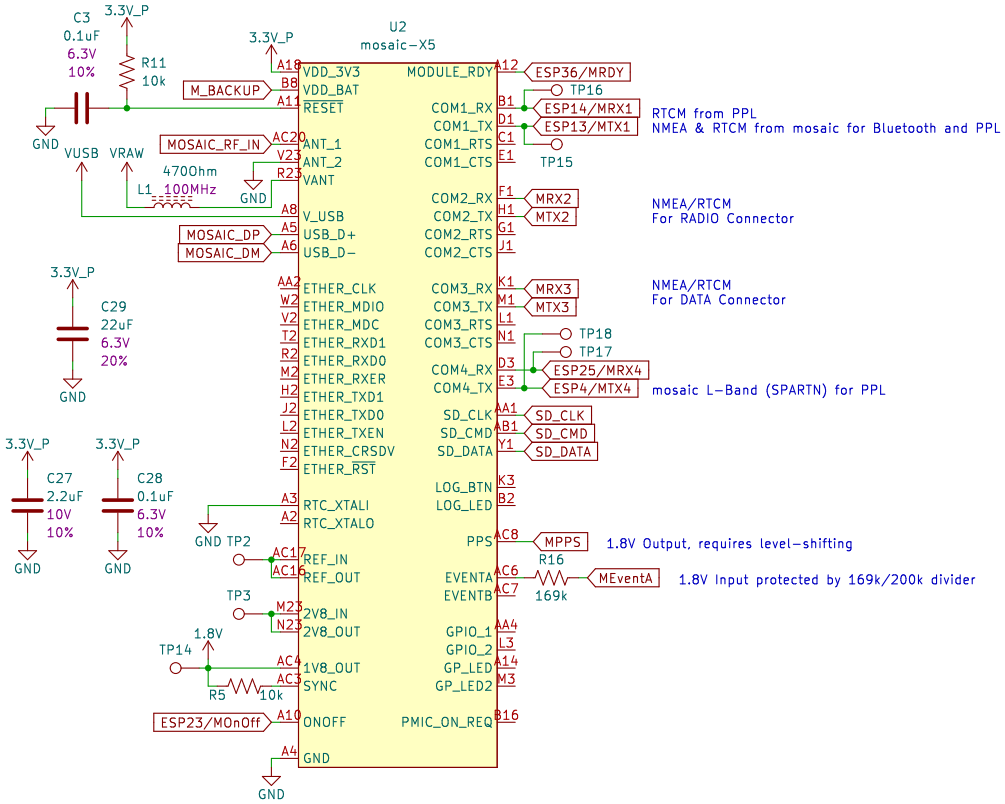


7-bit unshifted I²C address: 0x2C

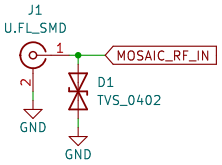
ESP32 USB to Serial



mosaic Tri-band GNSS

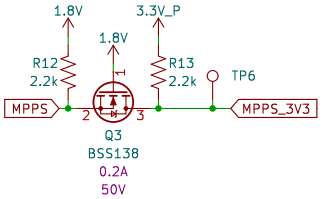
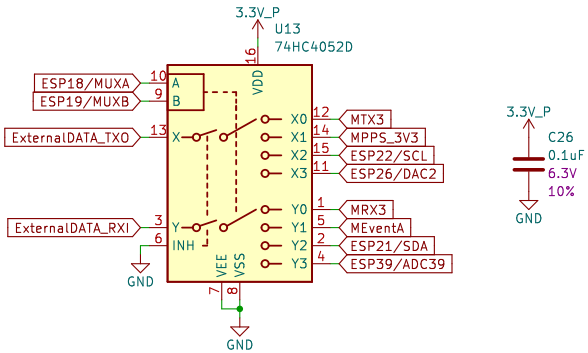


GNSS Antenna



Microstrip Calculation:
Copper Thickness (1oz): 1.4mil/0.035mm
Board thickness: 1.6mm
Dielectric thickness (layer 1 to 2): 0.2mm
Er: 4.6
Polygon Isolation: 6mil/0.1524mm
RF Trace Width: 13mil/0.33mm
https://chemandy.com/calculators/coplanar-waveguide-with-ground-calculator.htm

PPS Level-Shifting



Data Output Multiplexer