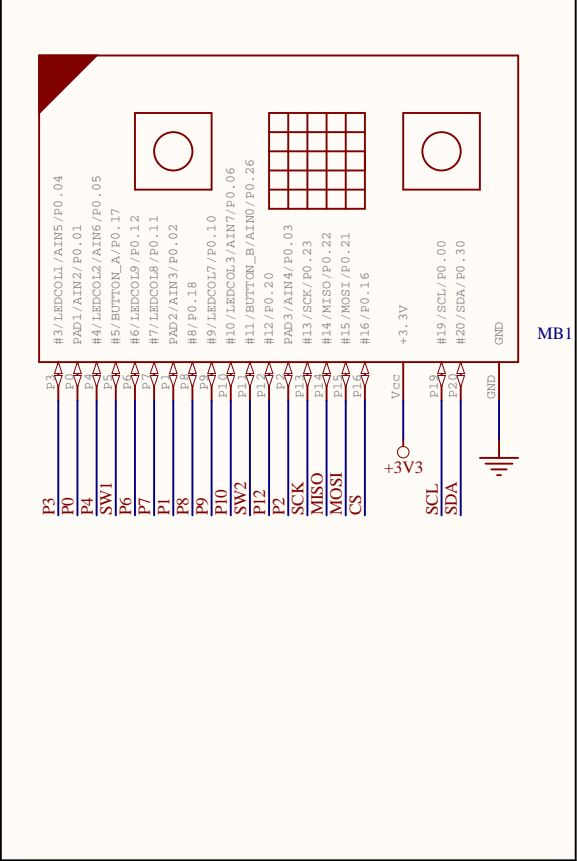
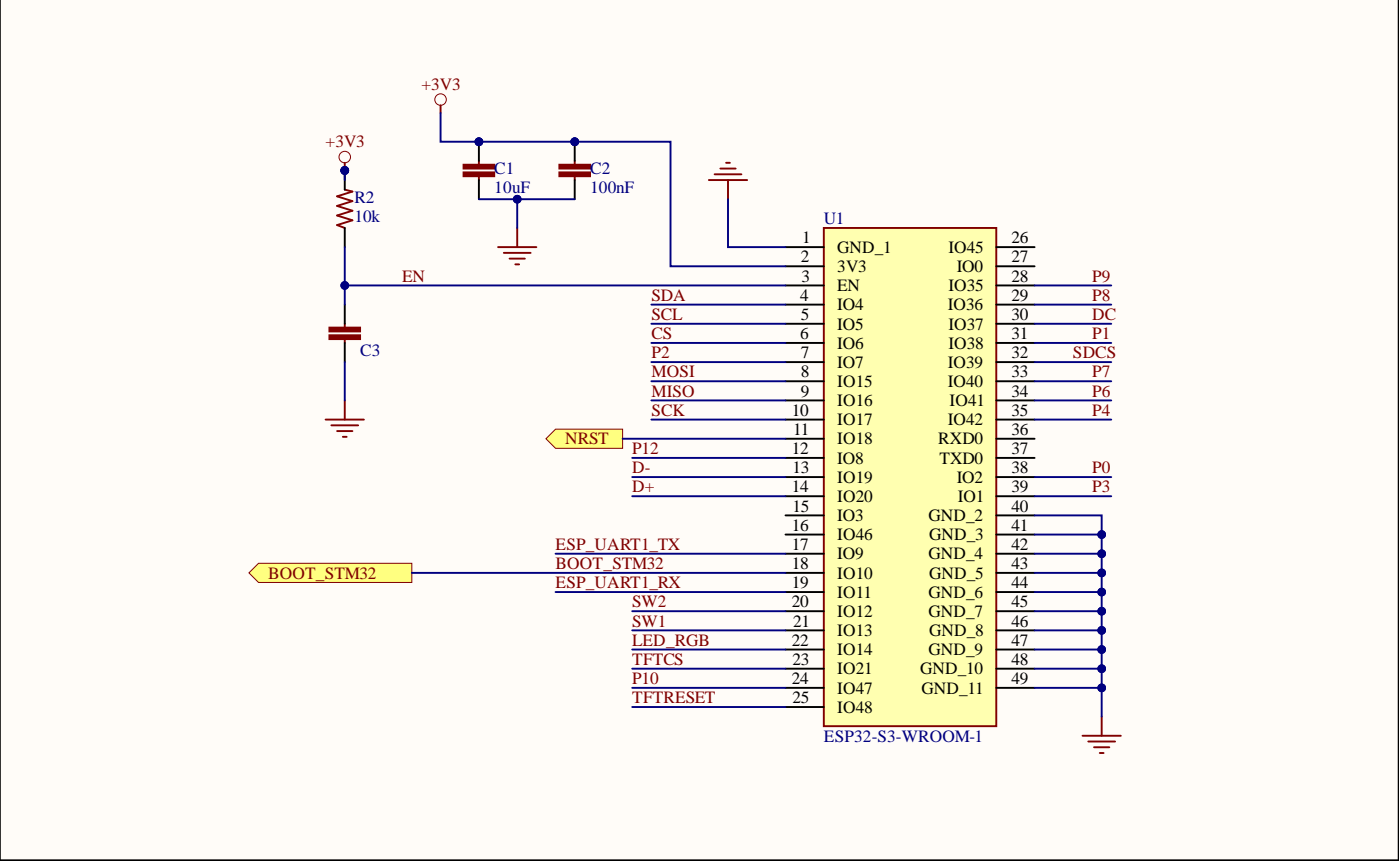


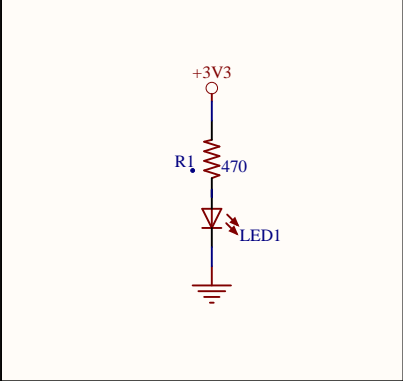
EDGE CONNECTOR



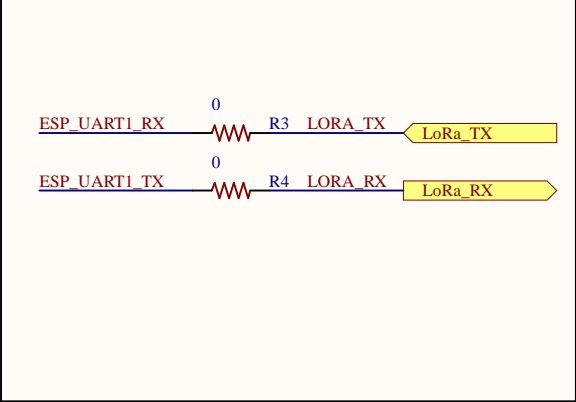
ESP32 MICROCONTROLLER / WIFI MODULE



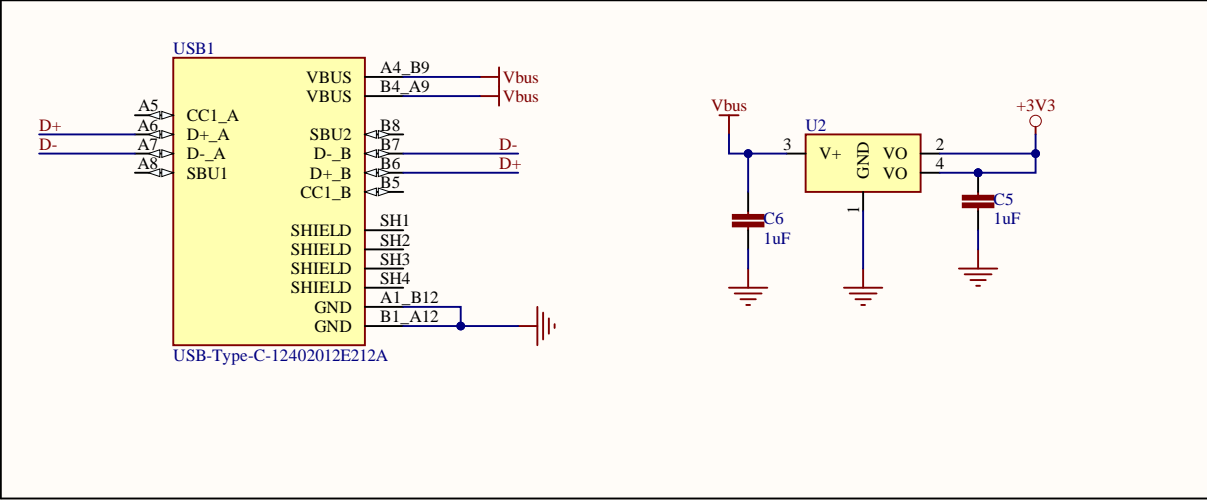
POWER LED



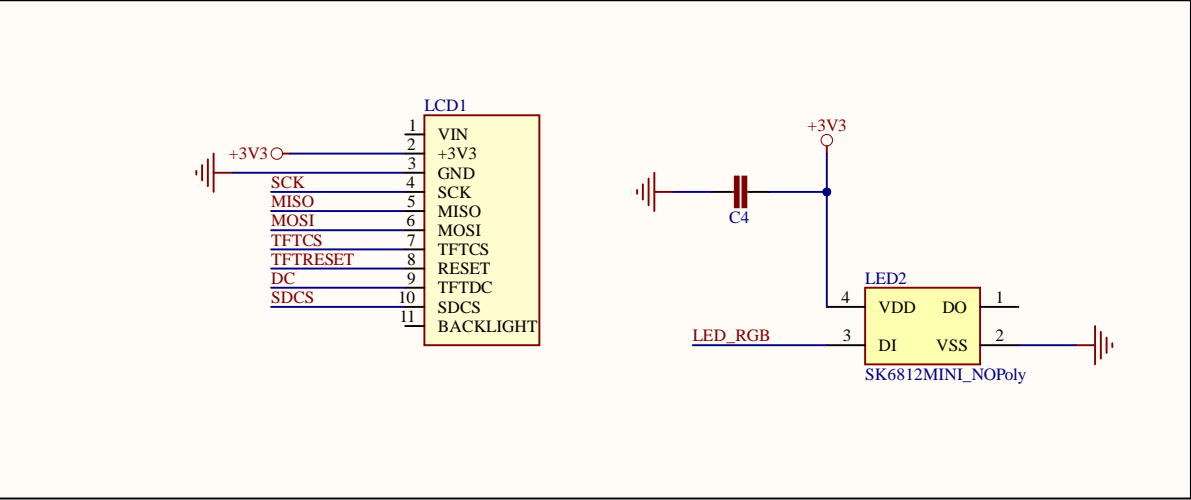
SERIAL - TO STM32



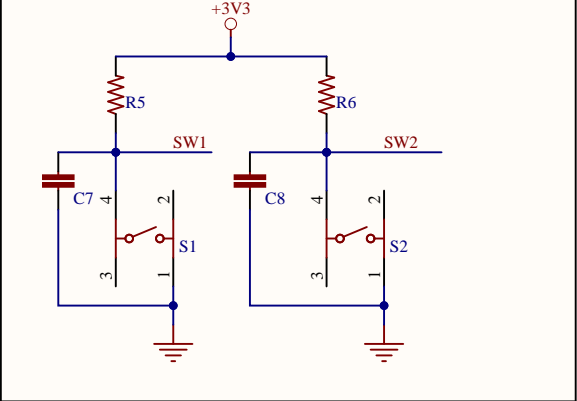
USB CONNECTION/ POWER



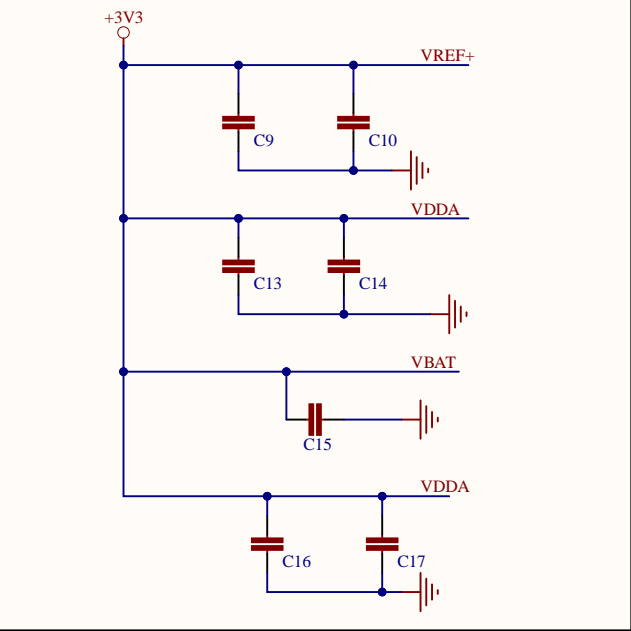
LED/LCD



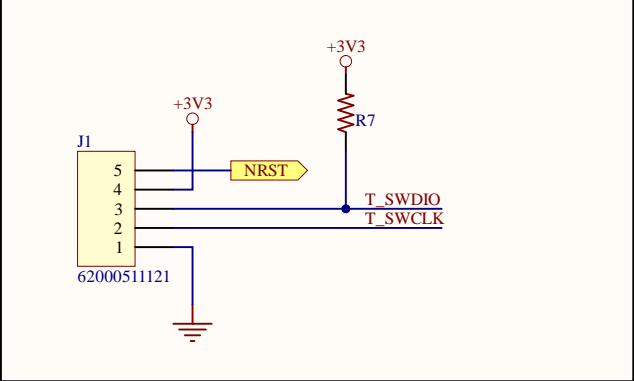
SERIAL - TO STM32



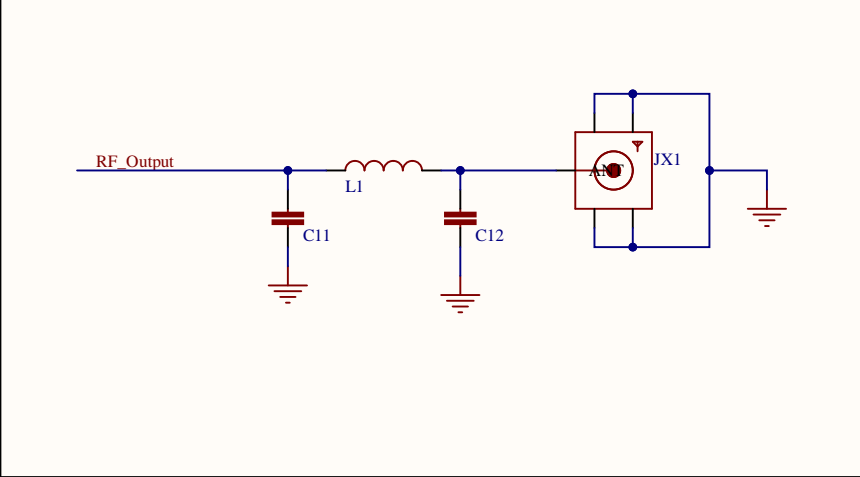
POWER SUPPLY DECOUPLING



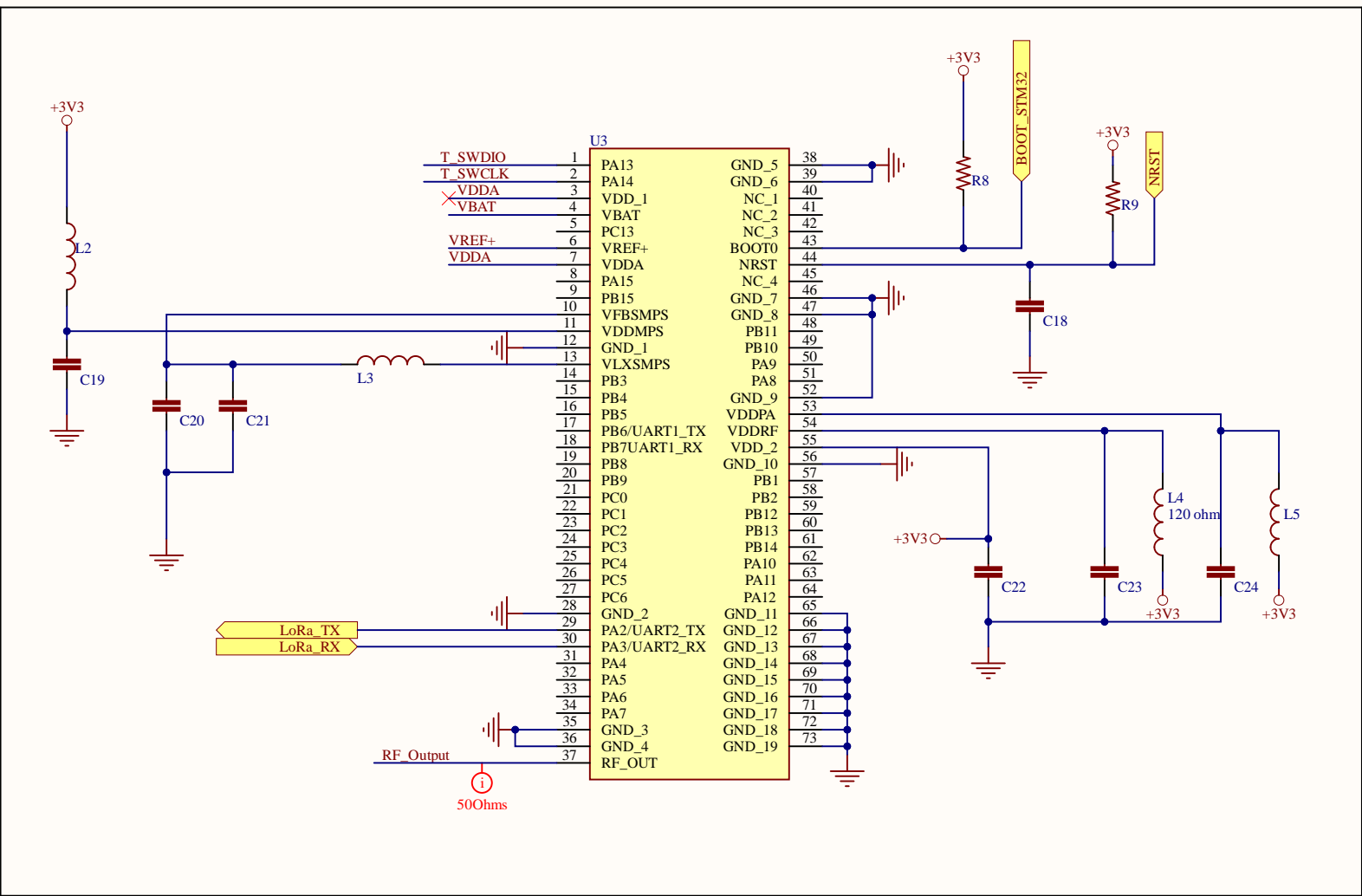
JTAG

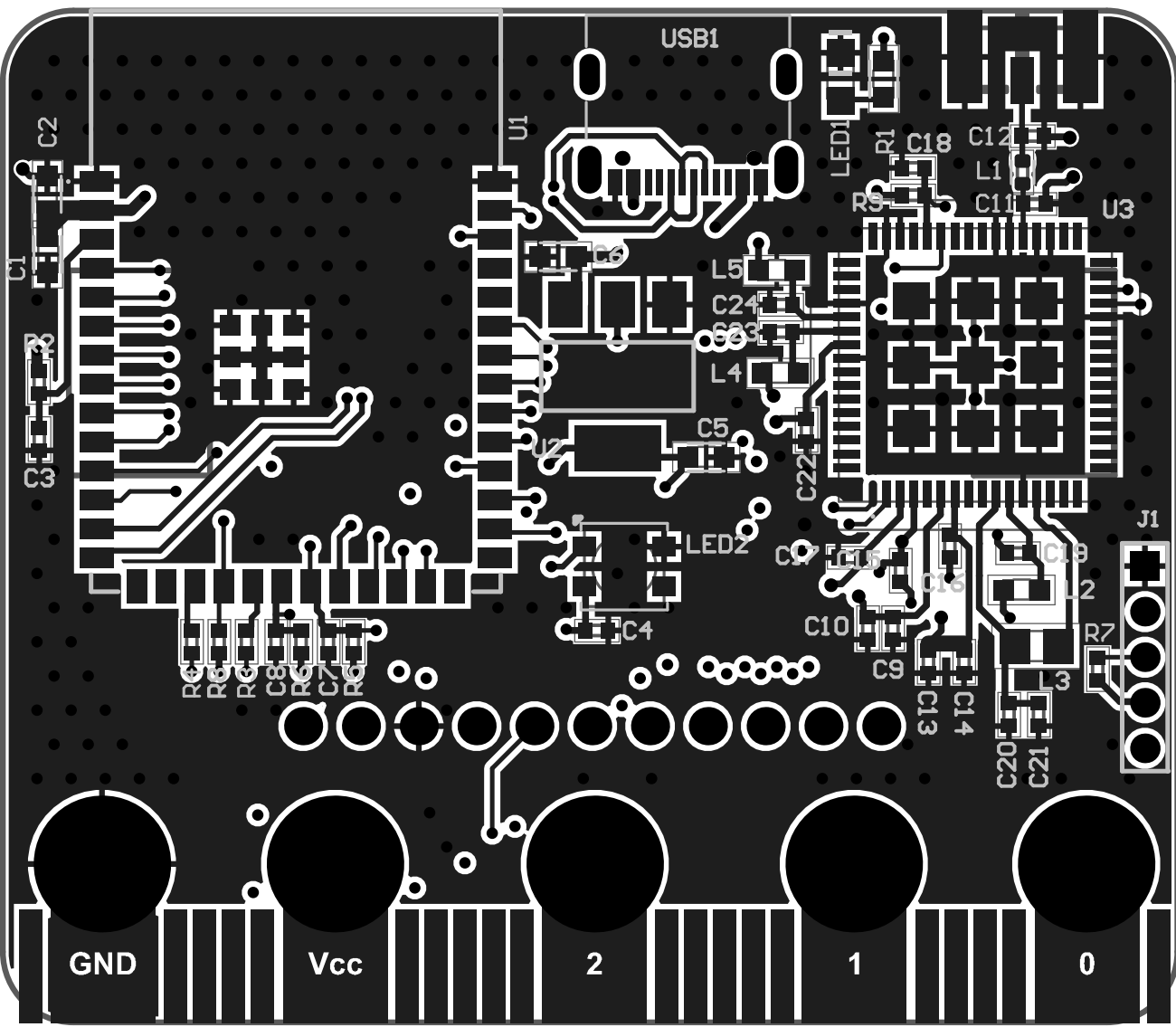
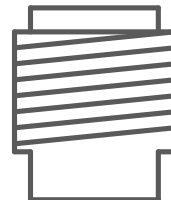


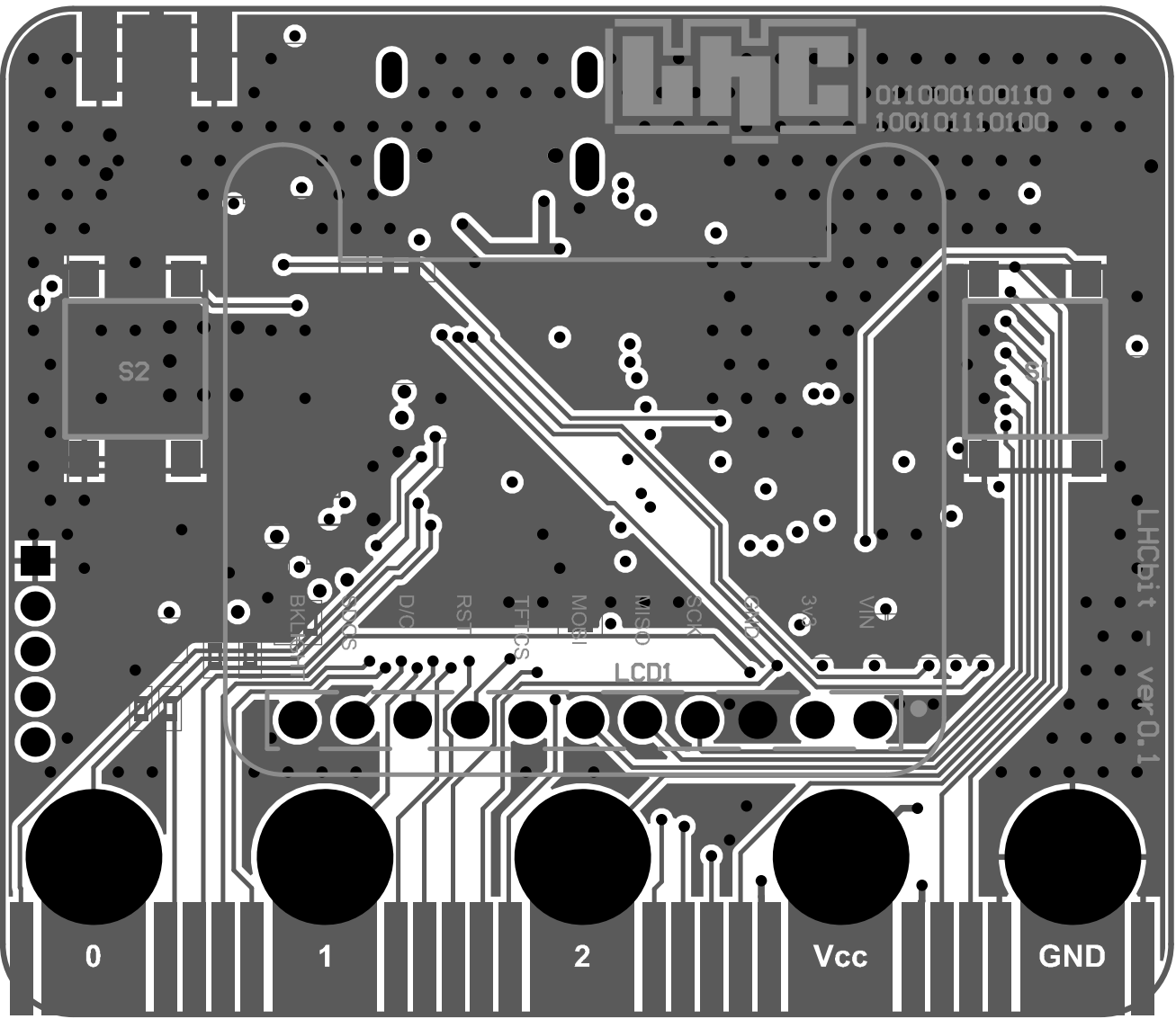
RF FILTER / SWITCH / ANTENNA CONNECTOR

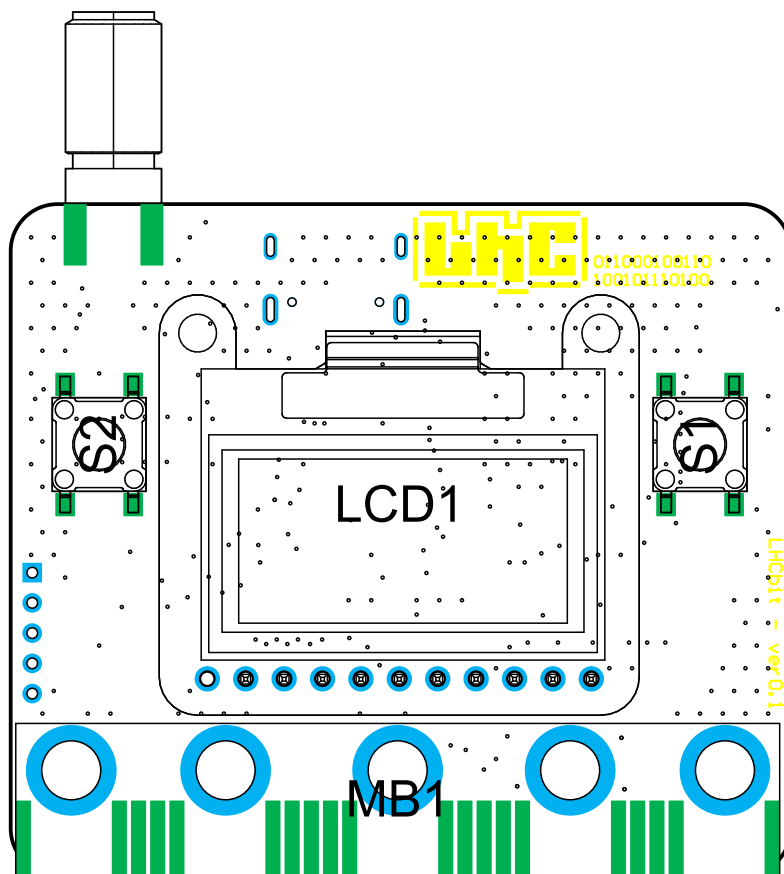
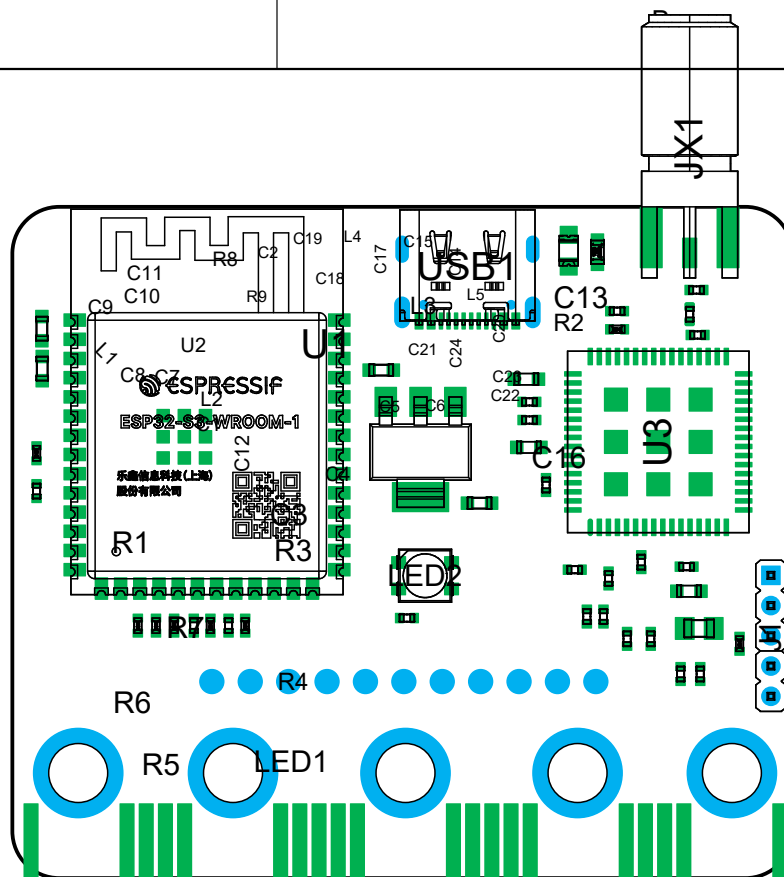


MULTIPROTOCOL LPWAN 32-BIT ARM MICROCONTROLLER








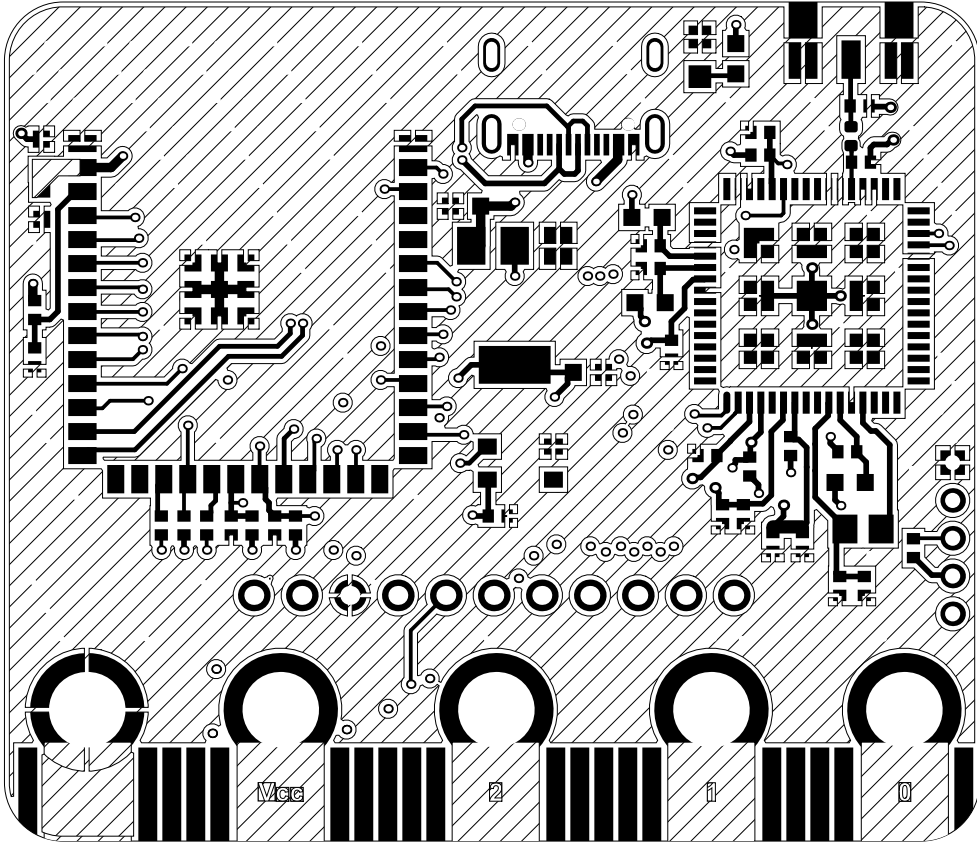


Bill Of Materials

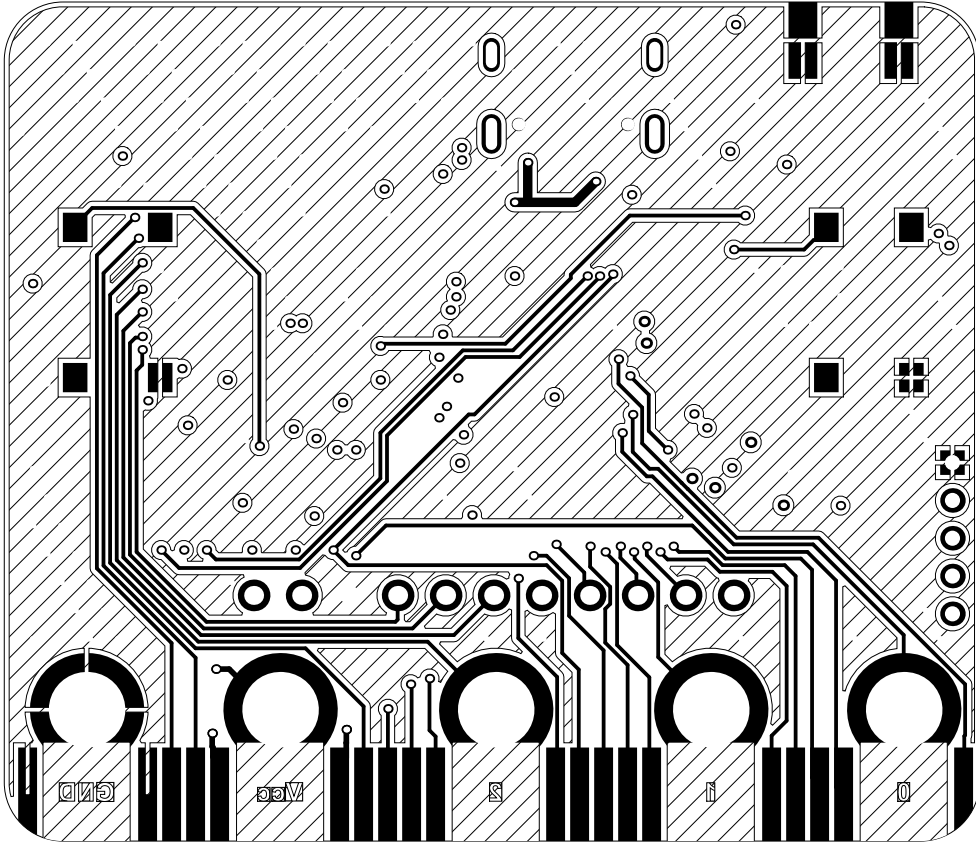
Designator	Quantity	Part Number
C1	1	ZRB18AR61A106ME01L
C2	1	06033C104KAT2A
C3, C4, C7, C8, C14, C16, C18, C19, C21, C22	10	C0402C104K8, GRM188R71E104KA01D, 06033C104KAT2A
C5, C6	2	CL10A105KO8NND
C9, C10	2	
C13, C15, C23, C24	4	CL10A105KO8NND
C17	1	CC0603KRX5R7BB475
C20	1	0603YD474KAT2A
J1	1	62000511121
JX1	1	SMA-J-P-H-ST-EM1
L1	1	LQW15AN8N7G00D
L2, L4, L5	3	ILHB0603ER121V
L3	1	MLZ2012M150WTD25
LCD1	1	
LED1	1	AP2012EC
LED2	1	SK6812MINI
MB1	1	
R1	1	RC0603FR-07470RL
R2, R7, R8, R9	4	CRCW040210K0FKEDC, RC0603FR-0710KL
R3, R4	2	CRCW04020000Z0EDC
R5, R6	2	
S1, S2	2	DTSM-6
U1	1	ESP32-S3-WROOM-1-N16R2
U2	1	TLV1117LV33DCYR
U3	1	RAK3172-SiP
USB1	1	12402012E212A


DATA		Time Energy			
DRAWN	11/04/2024				
		TITLE			
		Neras X - Apolo			
		SIZE	DWG. NO.		
			2.0		
SCALE:		1:1		SHEET 1 OF 3	

Top Layer (Scale 5:2)

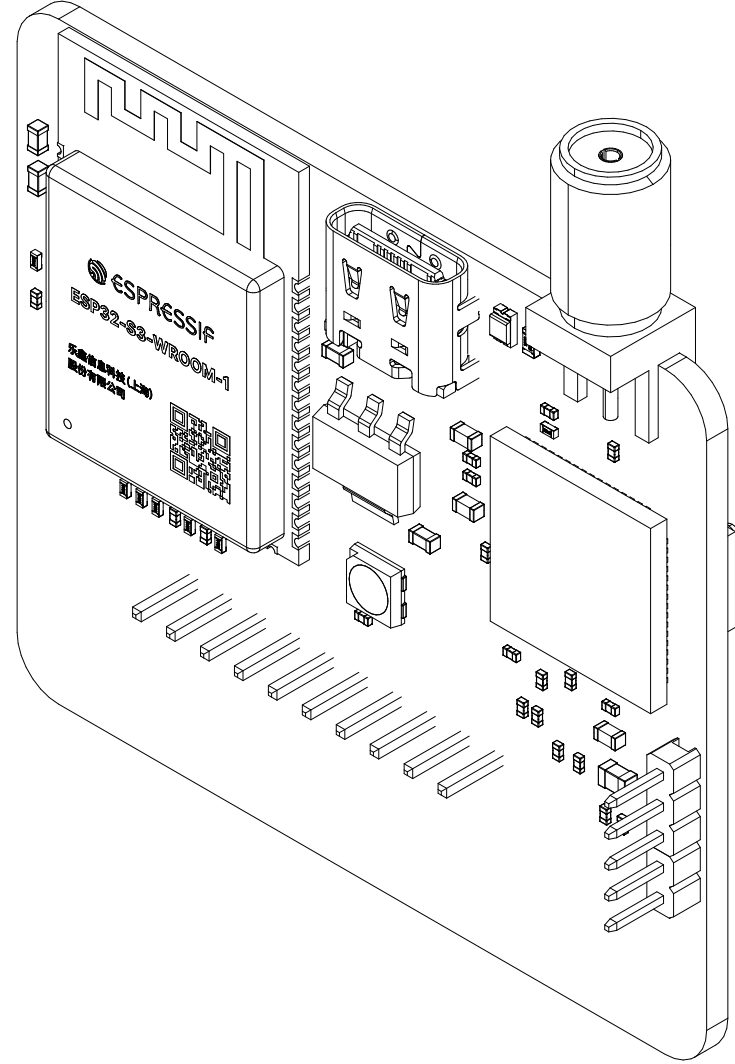


Bottom Layer (Scale 5:2)

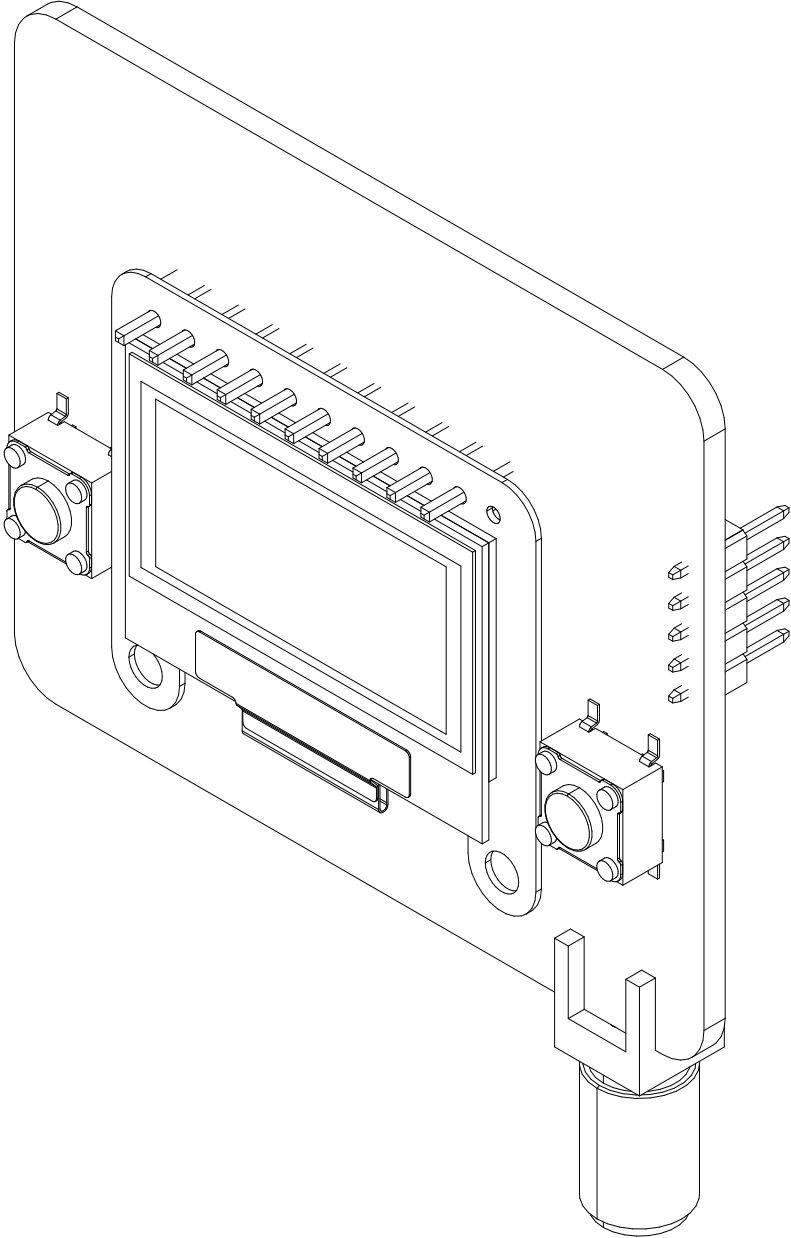



DATA		Time Energy	
DRAWN	11/04/2024		
		TITLE	
		Neras X - Apolo	
		SIZE	DWG. NO.
			2.0
SCALE:		1:1	SHEET 2 OF 3

View from Top side (Scale 5:2)



View from Bottom side (Scale 5:2)



DATA		Time Energy		
DRAWN	11/04/2024	TITLE		
		Neras X - Apolo		
		SIZE	DWG. NO.	
			2.0	
SCALE: 1:1			SHEET 3 OF 3	