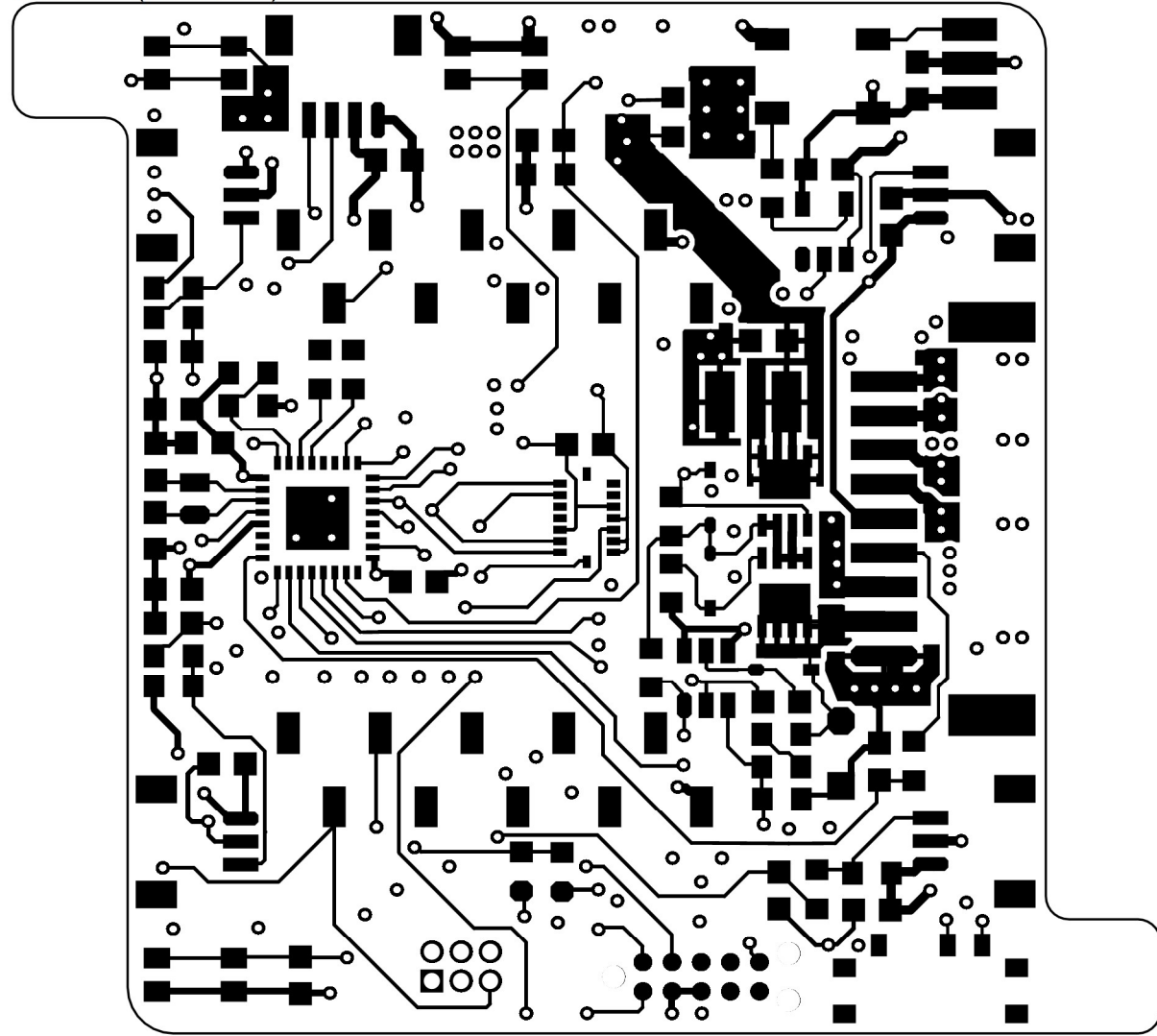
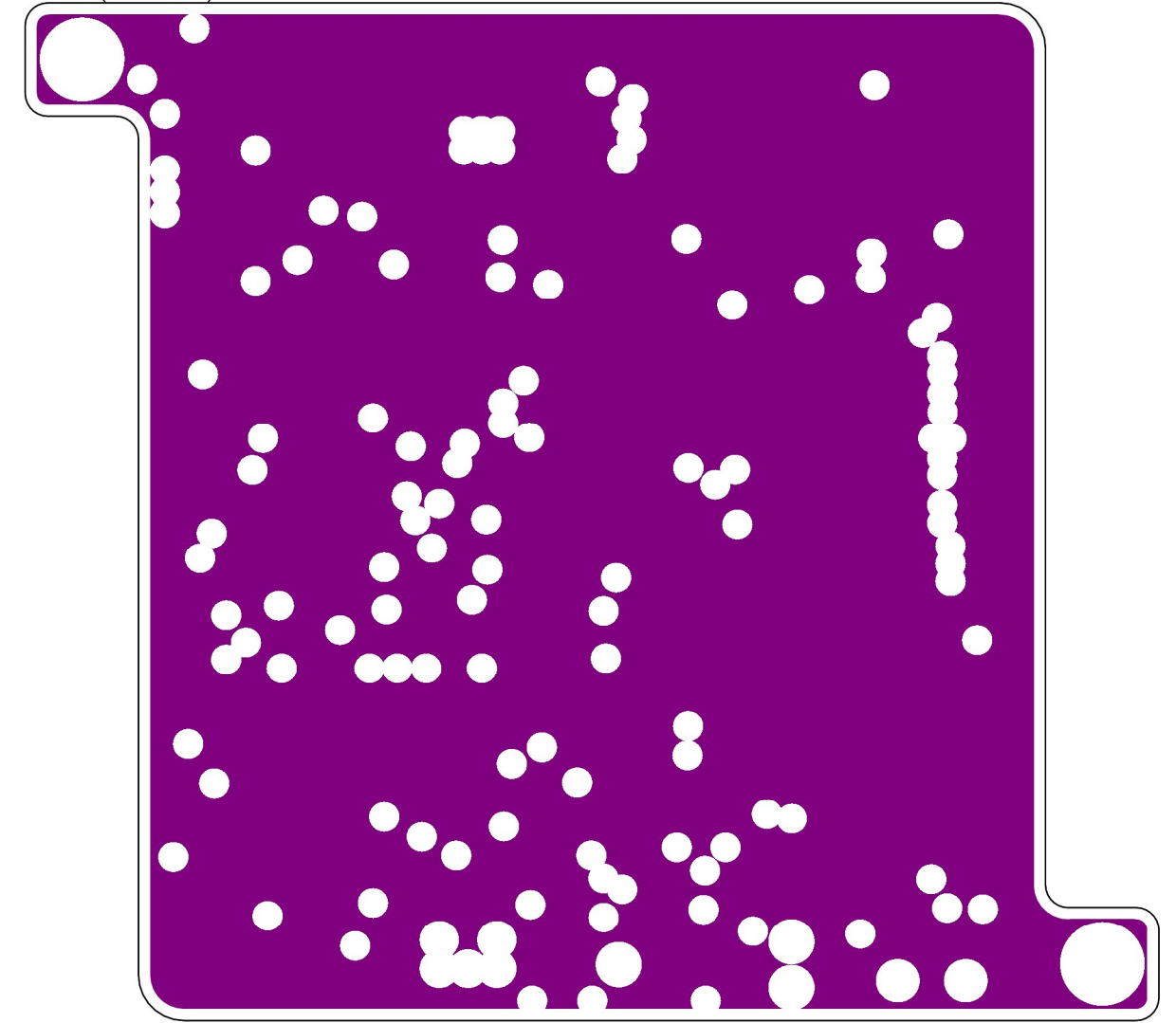


SIG TOP (Scale: 3:1)

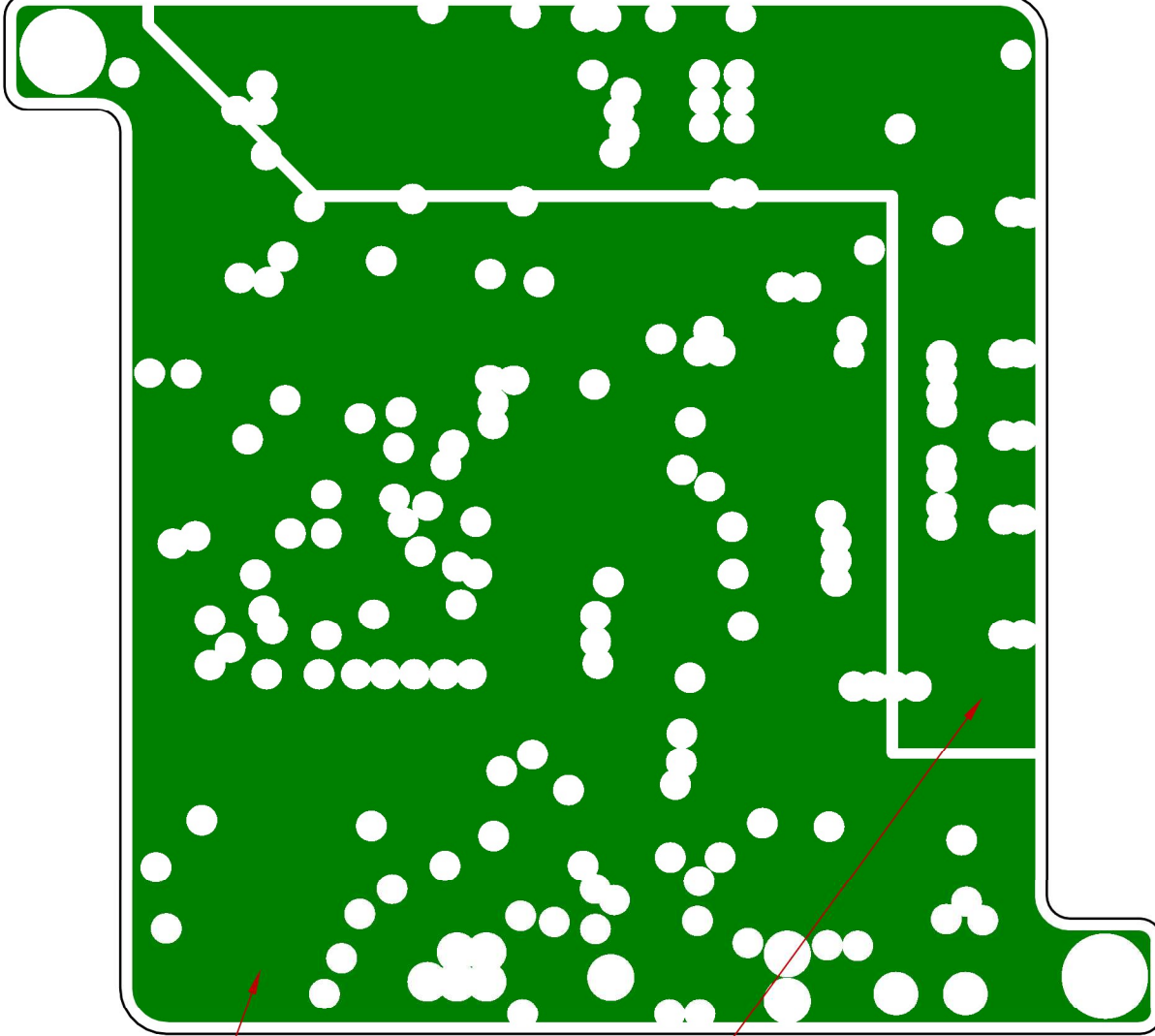


GND2 (Scale 3:1)



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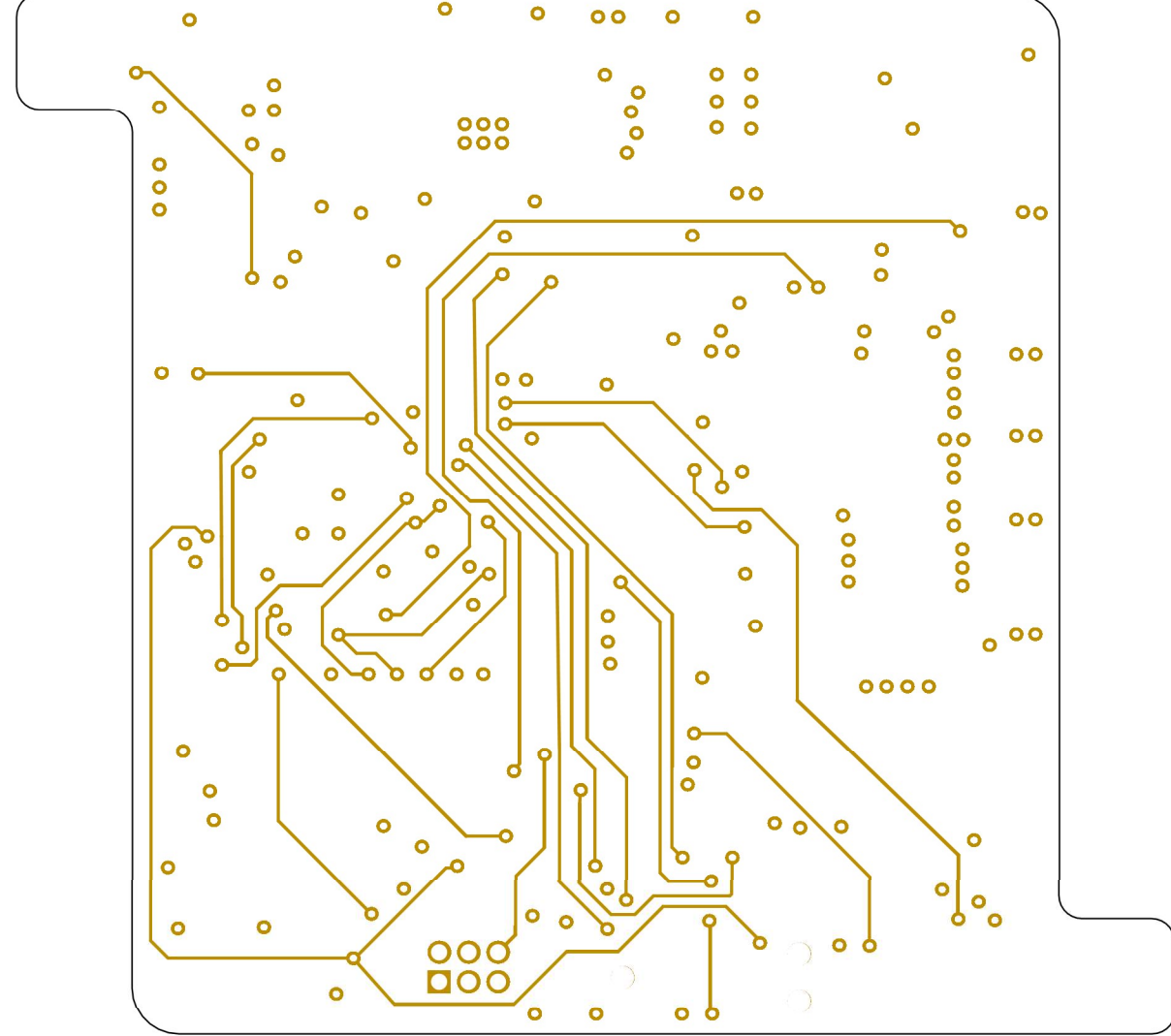
PWR (Scale: 3:1)



3.3V

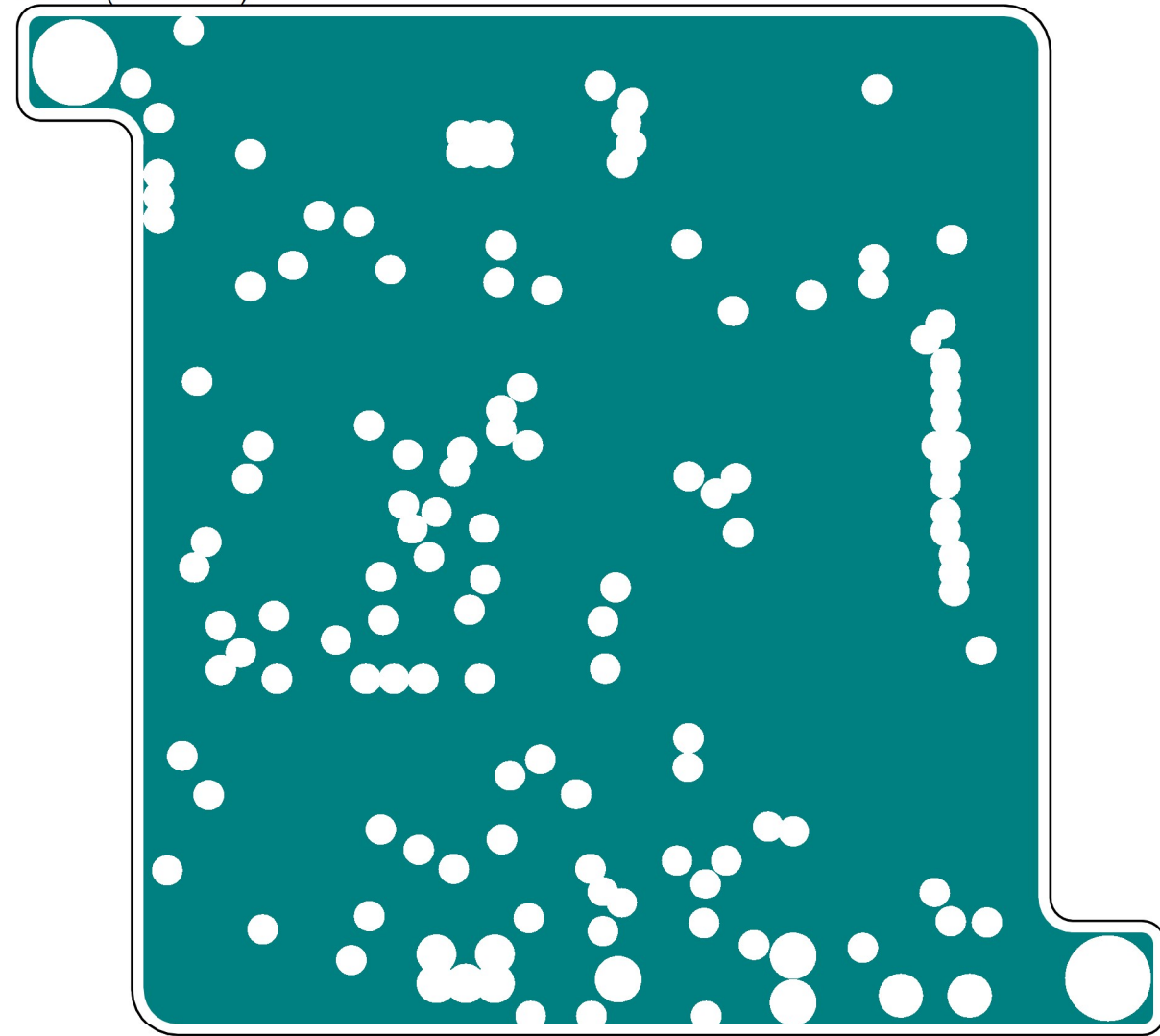
5V

SIG4 (Scale 3:1)

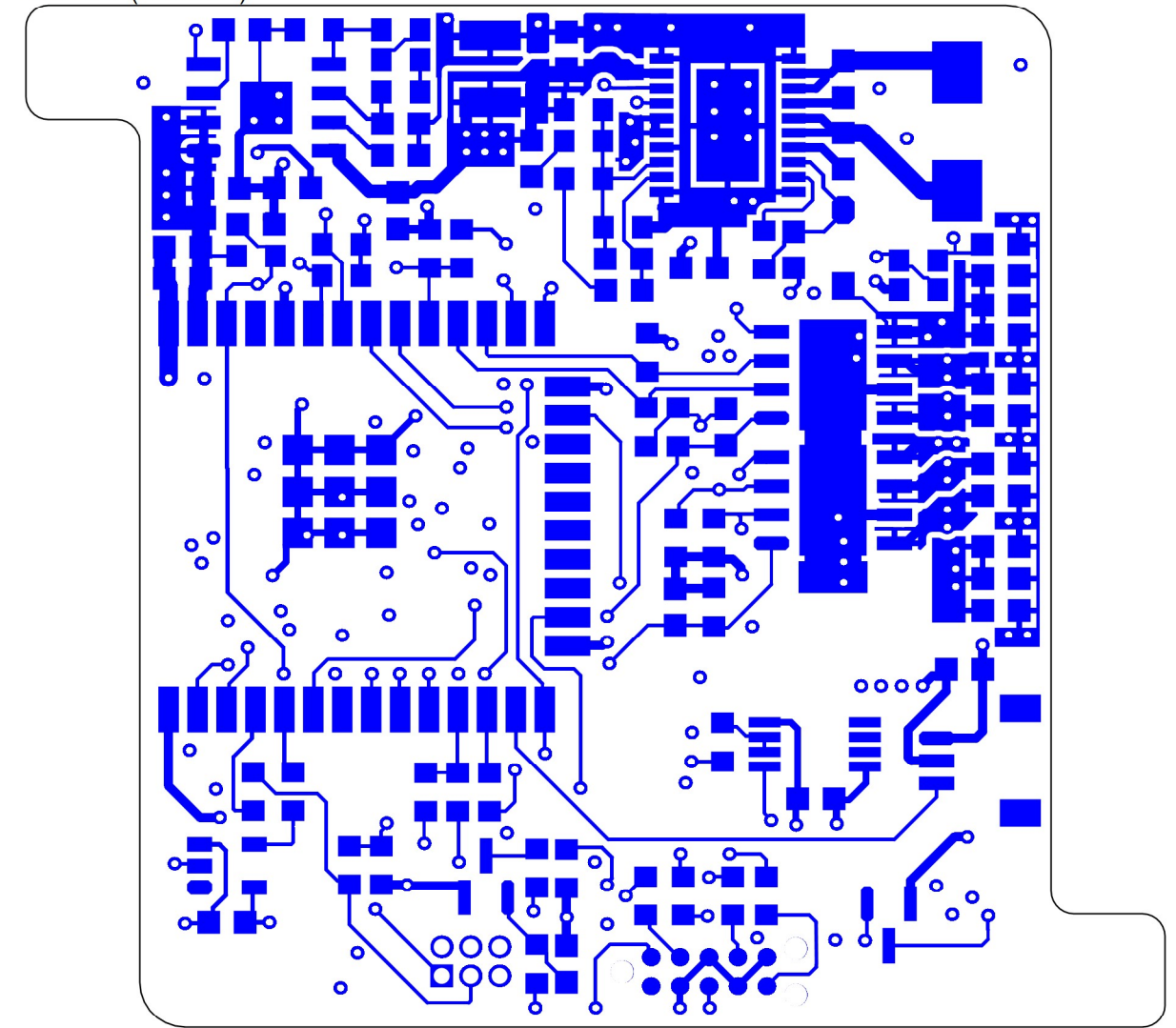


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GND5 (Scale: 3:1)

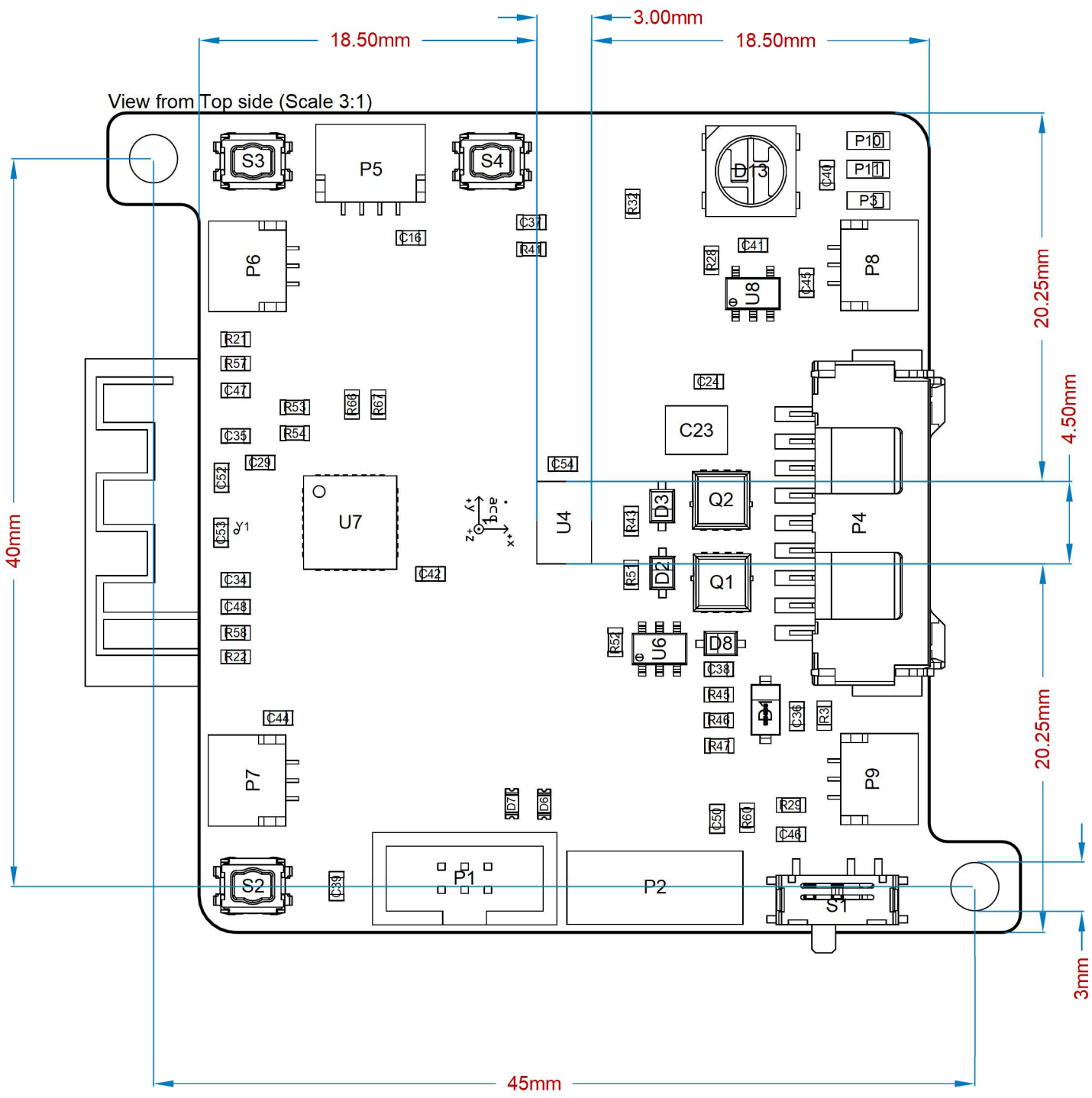


SIG BOT (Scale 3:1)

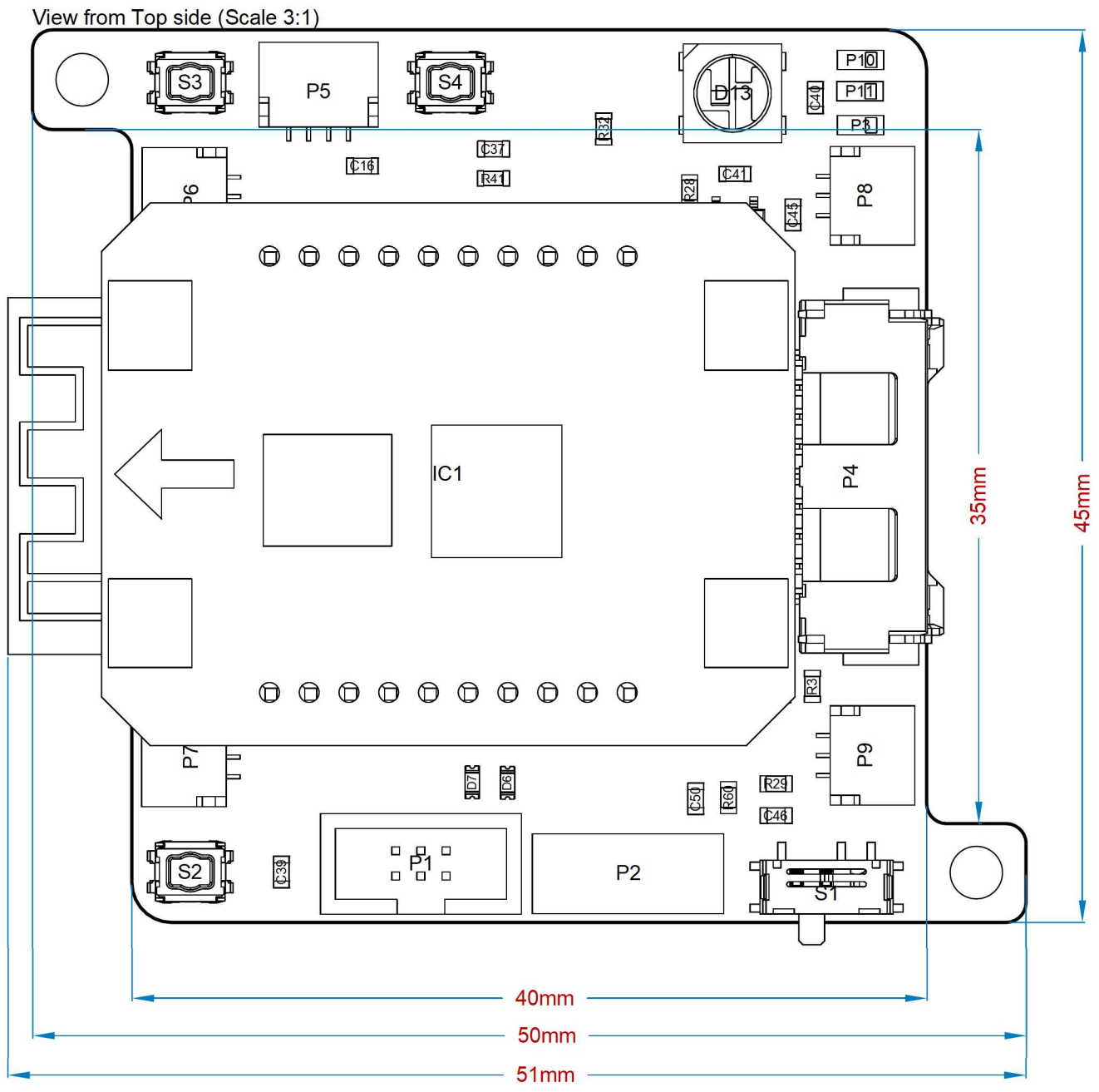


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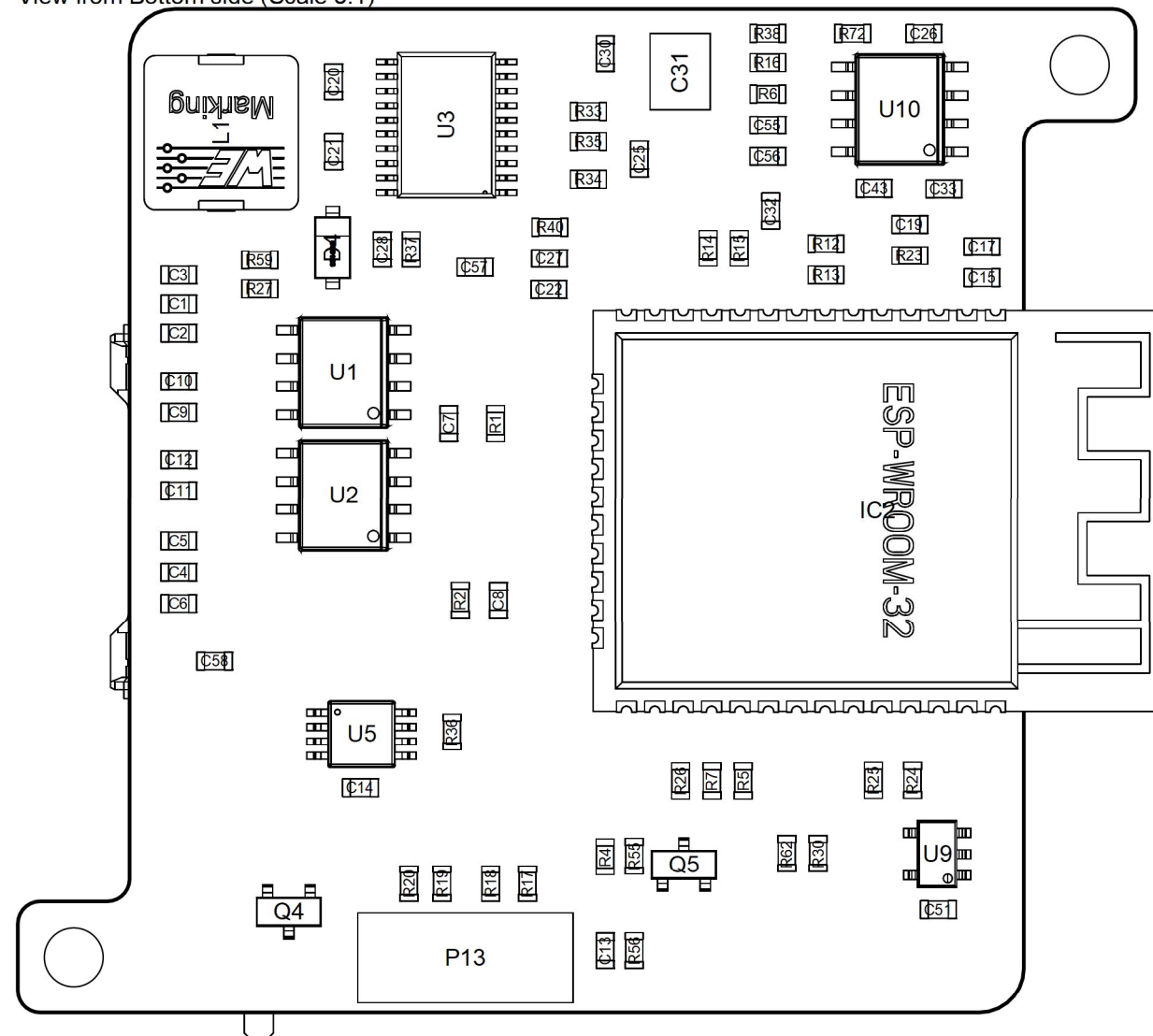
Without lighthouse module



With lighthouse module



View from Bottom side (Scale 3:1)



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1

2

3

4

5

6

7

8

A

B

C

D

Line #	Designator	Comment	Quantity	Layer
34	R3, R23, R35, R54	10k	4	Top, Bottom
7	C16, C19, C24, C26, C28, C30, C40, C43, C44, C45, C46, C55, C56, C57, C58	1uF	15	Top, Bottom
10	C23, C31	47uF	2	Top, Bottom
24	P2, P13	Tag-Connect TC2050-IDC-NL	2	Top, Bottom
13	C47, C48, C49, C50	DNP	4	Top, Bottom
62	U8, U9	SN74LV1T34	2	Top, Bottom
44	R32, R37	1M	2	Top, Bottom
26	P4	5025840970	1	Top
27	P5	Side entry	1	Top
28	P6, P7, P8, P9	JST_SH/SR 3POS 1MM - Side entry	4	Top
23	P1	Header 3X2	1	Top
58	U4	BMI088	1	Top
25	P3, P10, P11	Pad	3	Top
54	S1	SW SPDT	1	Top
51	R47	110k 0.1%	1	Top
52	R51	10	1	Top
50	R45, R46	499k 0.1%	2	Top
49	R41	42.2k	1	Top
30	Q1, Q2	MOSFET-P-Power_2	2	Top
55	S2, S3, S4	SW PB	3	Top
14	C52, C53	6.8pF	2	Top
15	D1	Diode Tranzorb	1	Top
64	Y1	32768Hz	1	Top
61	U7	NB: this pinout is only true for the UFQFPN32 model!!	1	Top
60	U6	TLV6713	1	Top
16	D2, D3, D8	Diode Zener	3	Top
20	IC1	Lighthouse positioning deck	1	Top
18	D6, D7		2	Top
19	D13	ADR LED	1	Top
6	C13, C36, C38	10nF	3	Bottom, Top
36	R5, R6, R43, R52, R72	100k	5	Bottom, Top
42	R25, R57, R58, R59, R60, R66, R67	0Ohm	7	Bottom, Top
38	R10, R11, R14, R15, R53, R64, R65	DNP	7	Bottom, Top
37	R7, R21, R22, R24, R27, R29, R36	1k	7	Bottom, Top
11	C25, C37	47pF	2	Bottom, Top
43	R26, R28	330R	2	Bottom, Top
8	C17, C29	10uF	2	Bottom, Top
3	C3, C6, C14, C15, C20, C21, C34, C35, C39, C41, C42, C51, C54	0.1uF	13	Bottom, Top
48	R40	158k	1	Bottom
47	R38	1.6k	1	Bottom
1	C1, C4	2u2F	2	Bottom
59	U5	LMV358-DUAL	1	Bottom
57	U3	LTC3112	1	Bottom
56	U1, U2	DRV8231A	2	Bottom
63	U10	ADP7157ARDZ-04-R7	1	Bottom
53	R62	18k	1	Bottom
21	IC2	ESP32-WROOM-32D/E	1	Bottom
17	D4	Diode Schottky	1	Bottom
29	P12	DNP	1	Bottom
22	L1	Inductor	1	Bottom
12	C32, C33	4.7uF	2	Bottom
4	C7, C8, C27	10pF	3	Bottom
2	C2, C5	22uF	2	Bottom
9	C22	680pF	1	Bottom
5	C9, C10, C11, C12	1nF	4	Bottom
41	R17, R18, R19, R20, R56	100	5	Bottom
40	R16	75k	1	Bottom
46	R34	33k	1	Bottom
45	R33	845k	1	Bottom
39	R12, R13	2.4k	2	Bottom
32	R1	1580	1	Bottom
31	Q4, Q5	BSS138	2	Bottom
35	R4, R30, R55	1.4k	3	Bottom
33	R2	2740	1	Bottom

ETH

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Project:

CRS Car

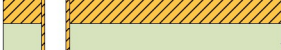
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Layer Stack Legend

	Material	Layer	Thickness	Dielectric Material	Type	Gerber
		Top Overlay			Legend	GTO
	Surface Material	Top Solder	0.01mm	Solder Resist	Solder Mask	GTS
	Copper	SIG TOP	0.04mm		Signal	GTL
	Prepreg		0.10mm	PP-006	Dielectric	
	CF-004	GND2	0.02mm		Internal Plane	GP1
	Core		0.55mm	PP-006	Dielectric	
	CF-004	PWR	0.02mm		Internal Plane	GP2
	Prepreg		0.11mm	FR-4	Dielectric	
	CF-004	SIG4	0.02mm		Signal	G1
	Core		0.55mm	PP-006	Dielectric	
	CF-004	GND5	0.02mm		Internal Plane	GP3
	Prepreg		0.10mm	PP-006	Dielectric	
	Copper	SIG BOT	0.04mm		Signal	GBL
	Surface Material	Bottom Solder	0.01mm	Solder Resist	Solder Mask	GBS
		Bottom Overlay			Legend	GBO
Total thickness: 1.57mm						



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CRS Car

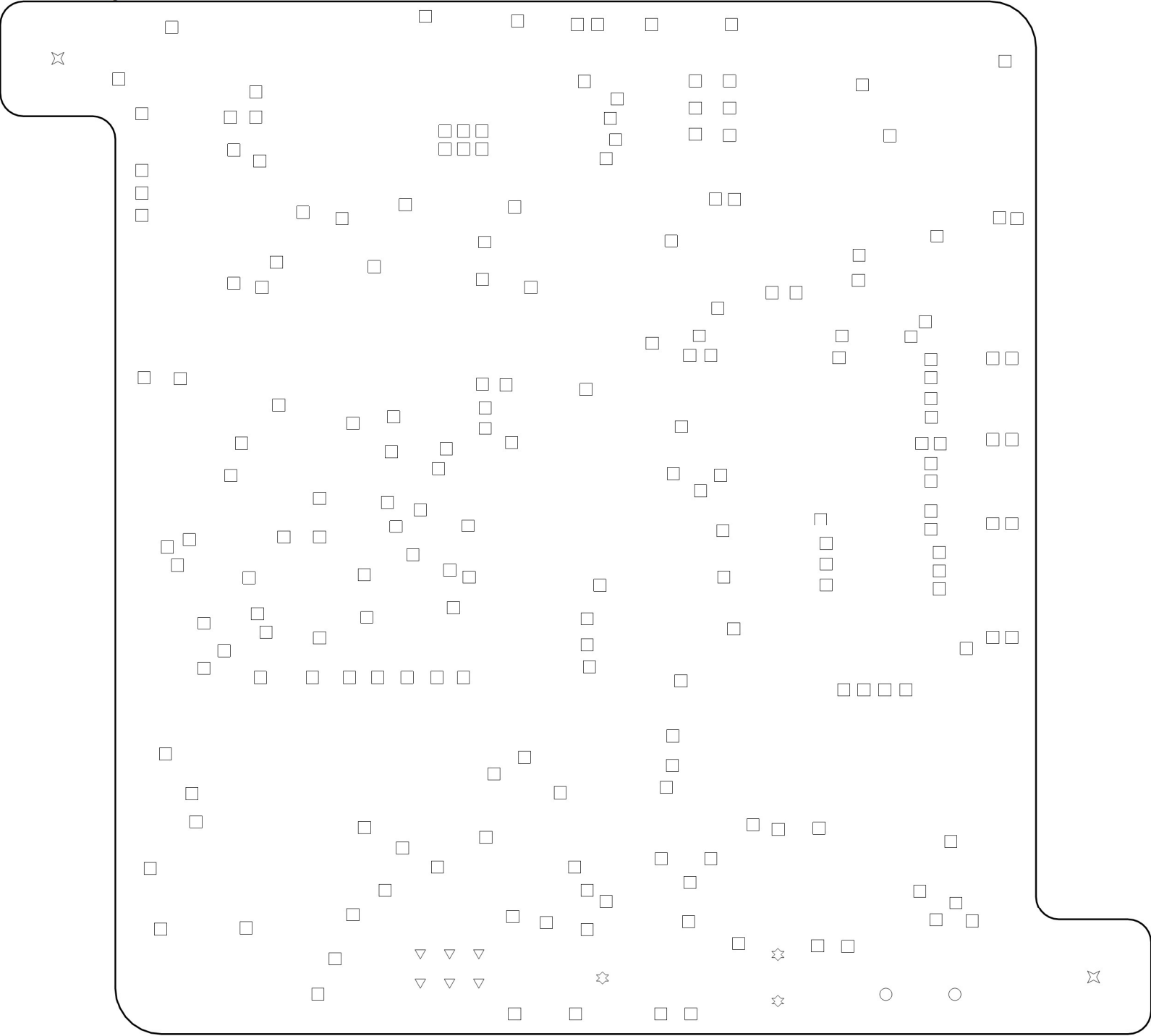
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Drill Drawing View



Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
▽	6	0.70	Plated	
☆	3	1.00	Non-Plated	
○	2	0.90	Plated	
✱	2	2.70	Plated	
□	200	0.30	Plated	



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Revision history

v1.0 -> v1.1	
1	Added JTAG for the ESP32
2	Reset line of the STM from the ESP
3	RGB LED has been moved from GPIO15 to GPIO16
4	I2C has been moved to GPIO34(SDA) GPIO35(SCL)
5	STM32 ADC reading formual for Iout is now $A = V_{adc} \cdot 2$.
6	Turned around the Flash con. for the ESP32
7	Moved IMU to the center and middle of the PCB
8	Changed footprint for the motor driver
v1.1 -> 2.0	
1	current feedback is directly to the stm32
2	both LH and esp32 tx line gose throug the voltage level shifter

JLCPCB oder details:

Product Detail

Gerber file:	CRS RC car v20_Y32	Build Time:	5-6 days
Base Material:	FR-4	Layers:	6
Dimension:	50 mm* 45 mm	PCB Qty:	10
Product Type:	Industrial/Consumer electronics	Different Design:	1
Delivery Format:	Single PCB	PCB Thickness:	1.6mm
Impedance Control:	yes No requirement	Layer Sequence:	View Layer Sequence
PCB Color:	Black	Silkscreen:	White
Material Type:	FR4-Standard TG 135-140	Via Covering:	Epoxy Filled & Capped
Surface Finish:	ENIG Gold Fingers: 2U"	Deburring/Edge rounding:	No
Outer Copper Weight:	1 oz	Inner Copper Weight:	0.5 oz
Gold Fingers:	No	30°finger chamfered:	No
Electrical Test:	Flying Probe Fully Test	Castellated Holes:	no
Press-Fit Hole:	No	Edge Plating:	No
Mark on PCB	Remove Mark	Min via hole size/diameter:	0.3mm/(0.4/0.45mm)
4-Wire Kelvin Test:	No	Paper between PCBs:	No
Appearance Quality:	IPC Class 2 Standard	Confirm Production file:	No
Silkscreen Technology:	Ink-jet/Screen Printing Silkscreen	Package Box:	With JLCPCB logo
Board Outline Tolerance:	±0.2mm(Regular)		

Layer Sequence

L1 (Top layer):	Gerber/Main.GTL
L2 (Inner layer1):	Gerber/Main.GP1
L3 (Inner layer2):	Gerber/Main.GP2
L4 (Inner layer3):	Gerber/Main.G1
L5 (Inner layer4):	Gerber/Main.GP3
L6 (Bottom layer):	Gerber/Main.GBL



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