

matchgroup_test_routed

Design Report

Rev 1 | 2026-09-10 | jlcpcb

kicad-tools 0.20.0

Board Summary

Property	Value
Layers	6 copper (F.Cu, In1.Cu, In2.Cu, In3.Cu, In4.Cu, B.Cu)
Footprints	43 (40 SMD, 3 THT, 0 other)
Nets	55
Traces	8739 segments
Vias	192
Board Size	100.0 x 80.0 mm

Stackup

Layer	Type	Thickness (mm)	Material
F.Mask	Top Solder Mask	0.01	--
F.Cu	copper	0.035	--
dielectric 1	prepreg	0.1164	FR4 2116
In1.Cu	copper	0.0152	--
dielectric 2	core	0.13	FR4
In2.Cu	copper	0.0152	--
dielectric 3	prepreg	0.1164	FR4 2116
dielectric 3 (sublayer 2)	prepreg	0.7	FR4 core
dielectric 3 (sublayer 3)	prepreg	0.1164	FR4 2116
In3.Cu	copper	0.0152	--
dielectric 4	core	0.13	FR4
In4.Cu	copper	0.0152	--
dielectric 5	prepreg	0.1164	FR4 2116
B.Cu	copper	0.035	--
B.Mask	Bottom Solder Mask	0.01	--

Design Overview

Theory of Operation

Board 07 real SDRAM memory test — DRAFT

Communication Interfaces

Protocol	Signals
UART	UART_RX, UART_TX

Power Architecture

Power Rails: PWR_FLAG

Regulator	Device
U3	AP2112K-3.3TRG1

Assembly Notes

1 fine-pitch component; 2 polarized components

- **Fine-pitch components:** 1 (U1)
- **Polarized components:** 2 -- check orientation markings

Hand-Solder (THT) Components

The following 3 through-hole components are **excluded from the SMT pick-and-place file** and must be hand-soldered (or wave/selective-soldered) after SMT assembly. They appear in the BOM for sourcing.

Value	Package	Qty	References
5V_INPUT	PinHeader_1x02_P2.54 mm_Vertical	1	J1
SWD_3V3	PinHeader_1x06_P2.54 mm_Vertical	1	J2
UART_3V3	PinHeader_1x03_P2.54 mm_Vertical	1	J3

ERC Status

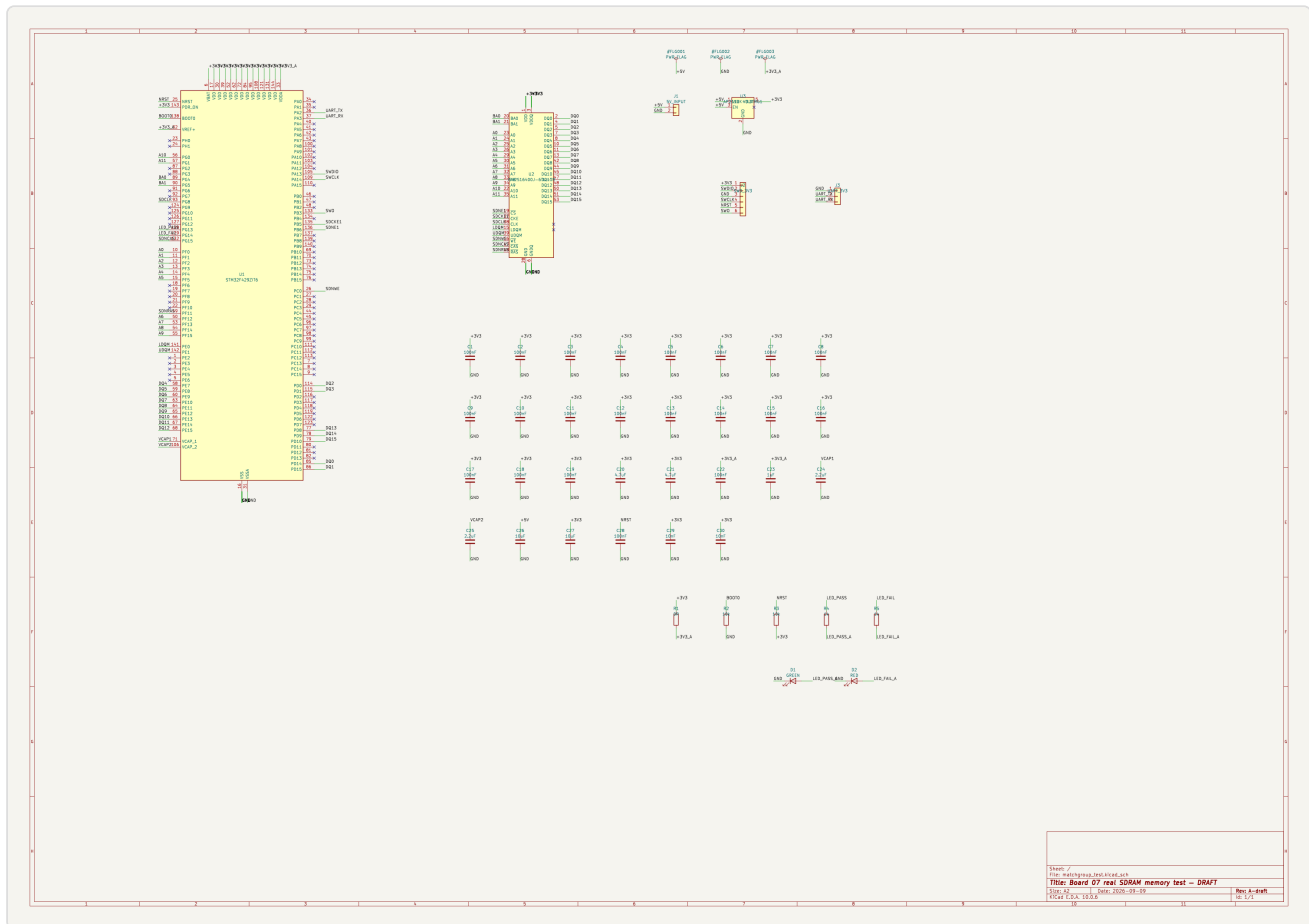
Metric	Count
Errors	0
Warnings	0

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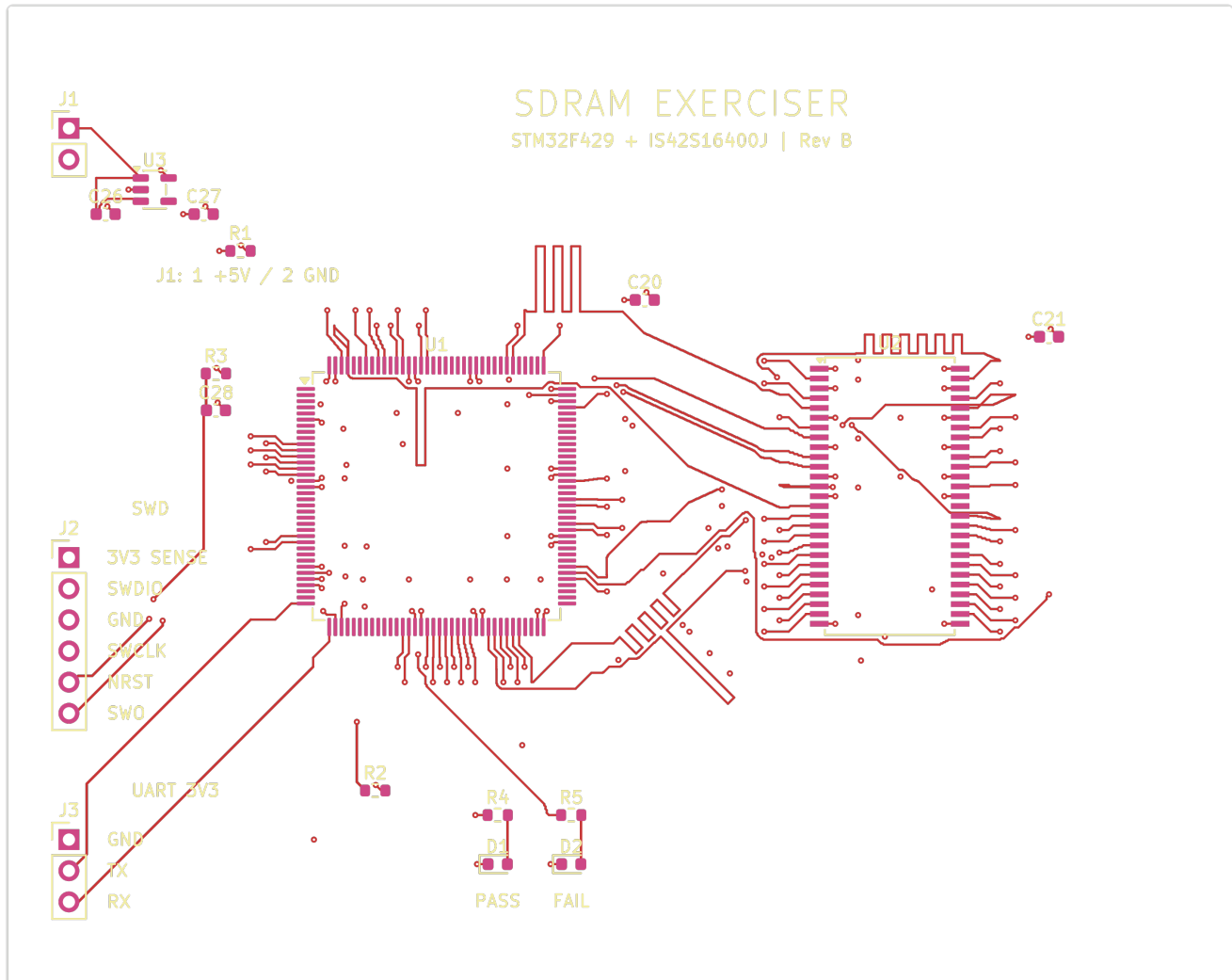
Status: SKIPPED -- ERC skipped by user request

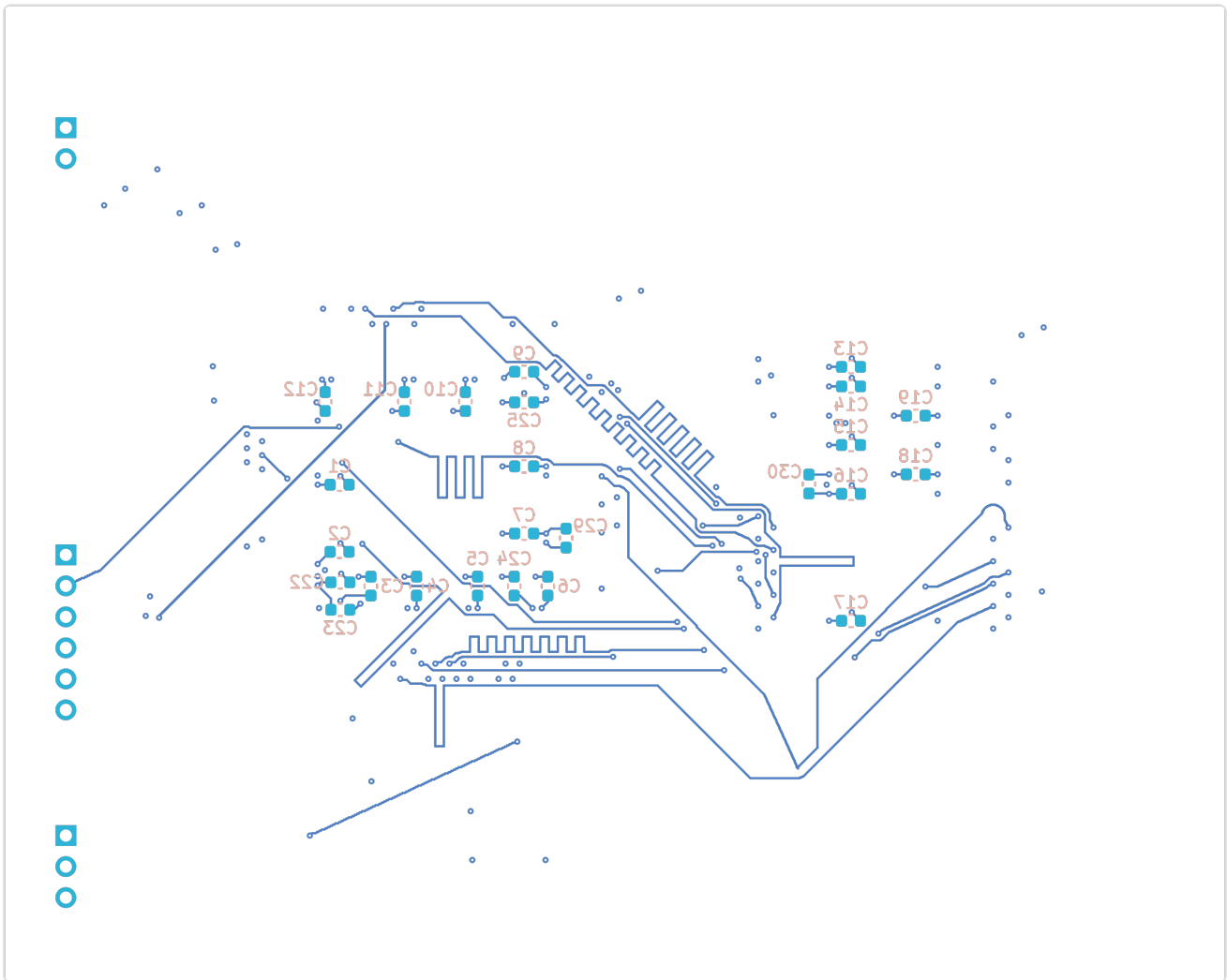
Schematic Overview

Schematic: matchgroup_test

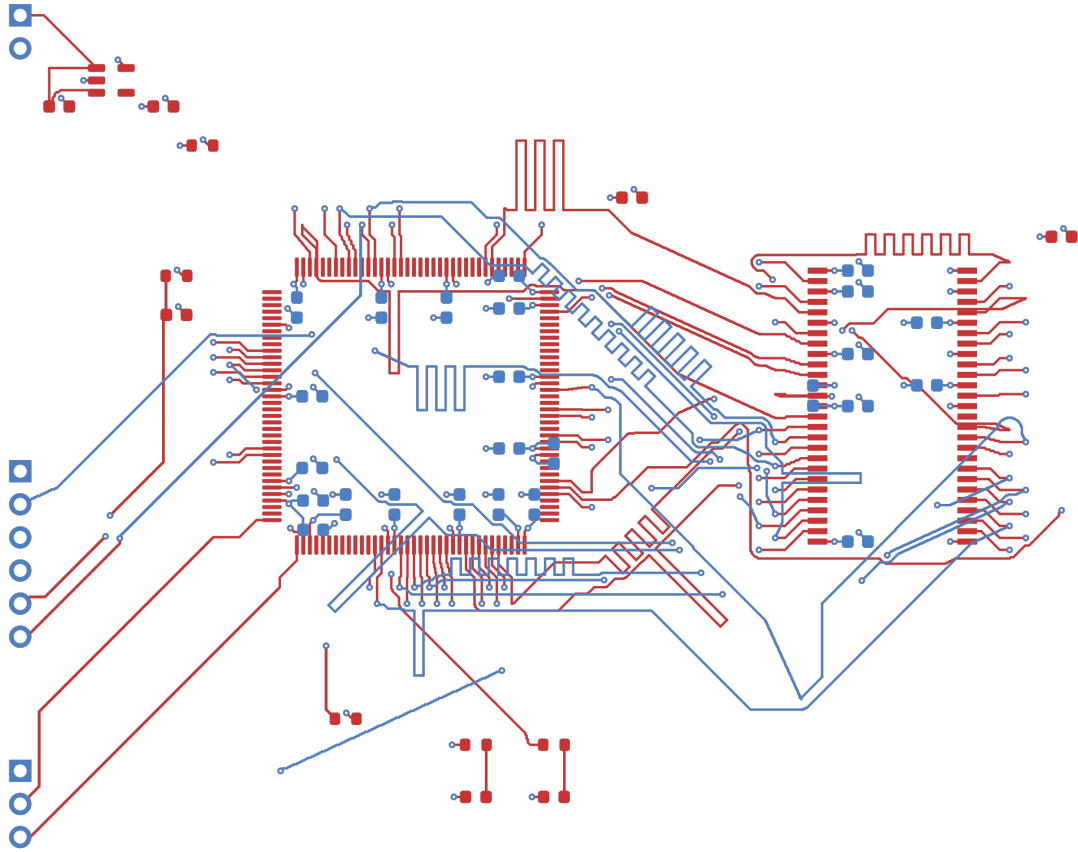


PCB Layout

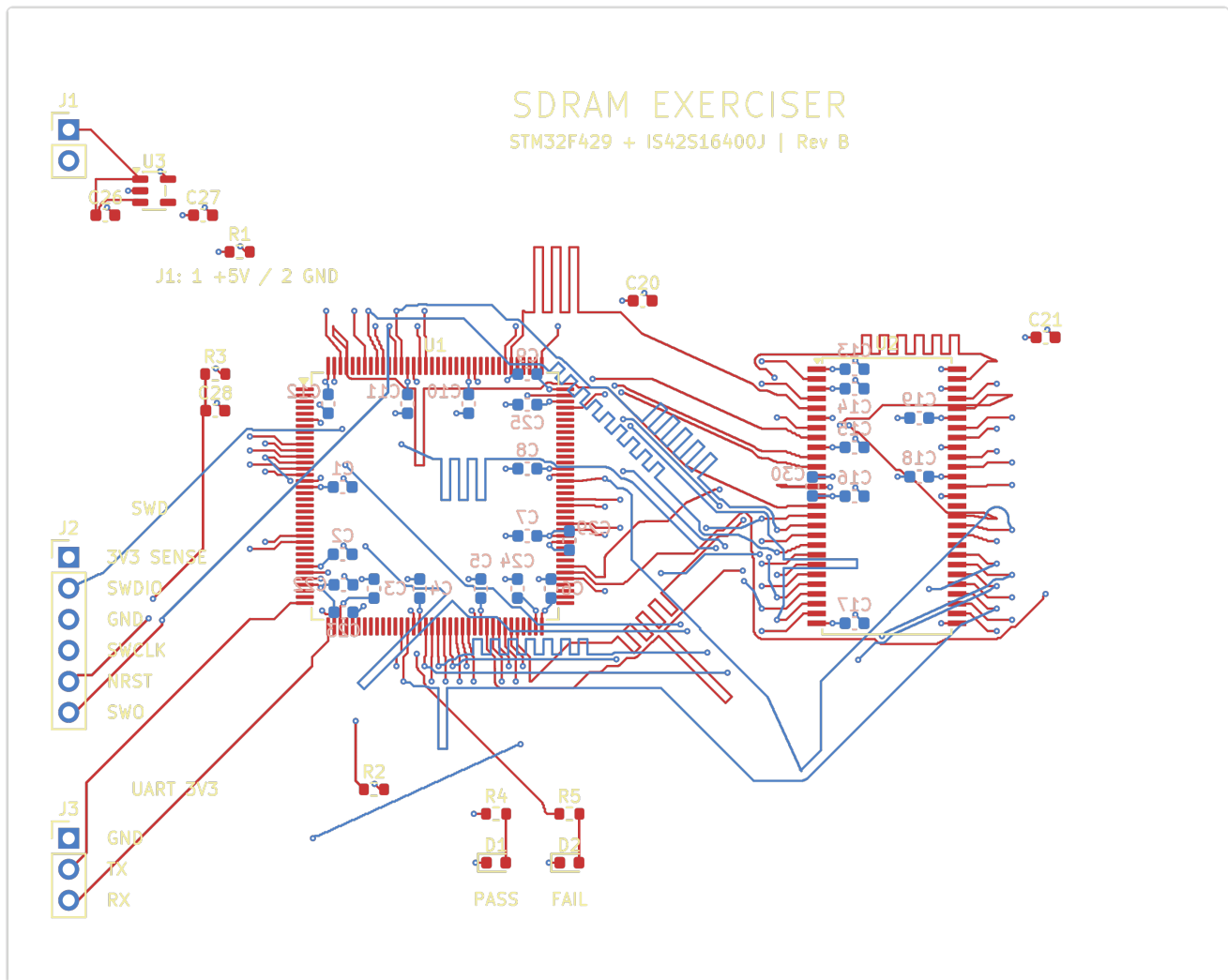




Copper

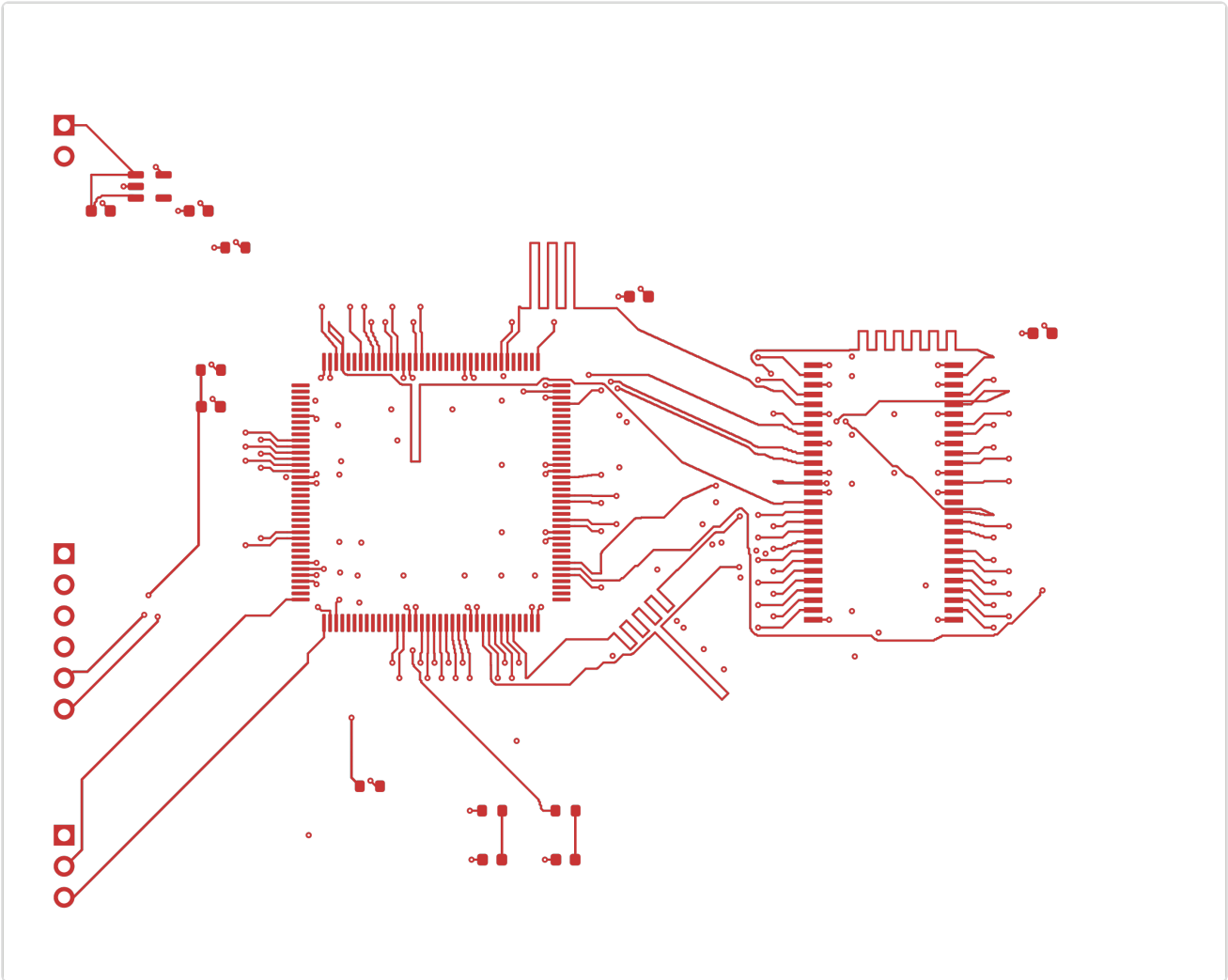


Assembly

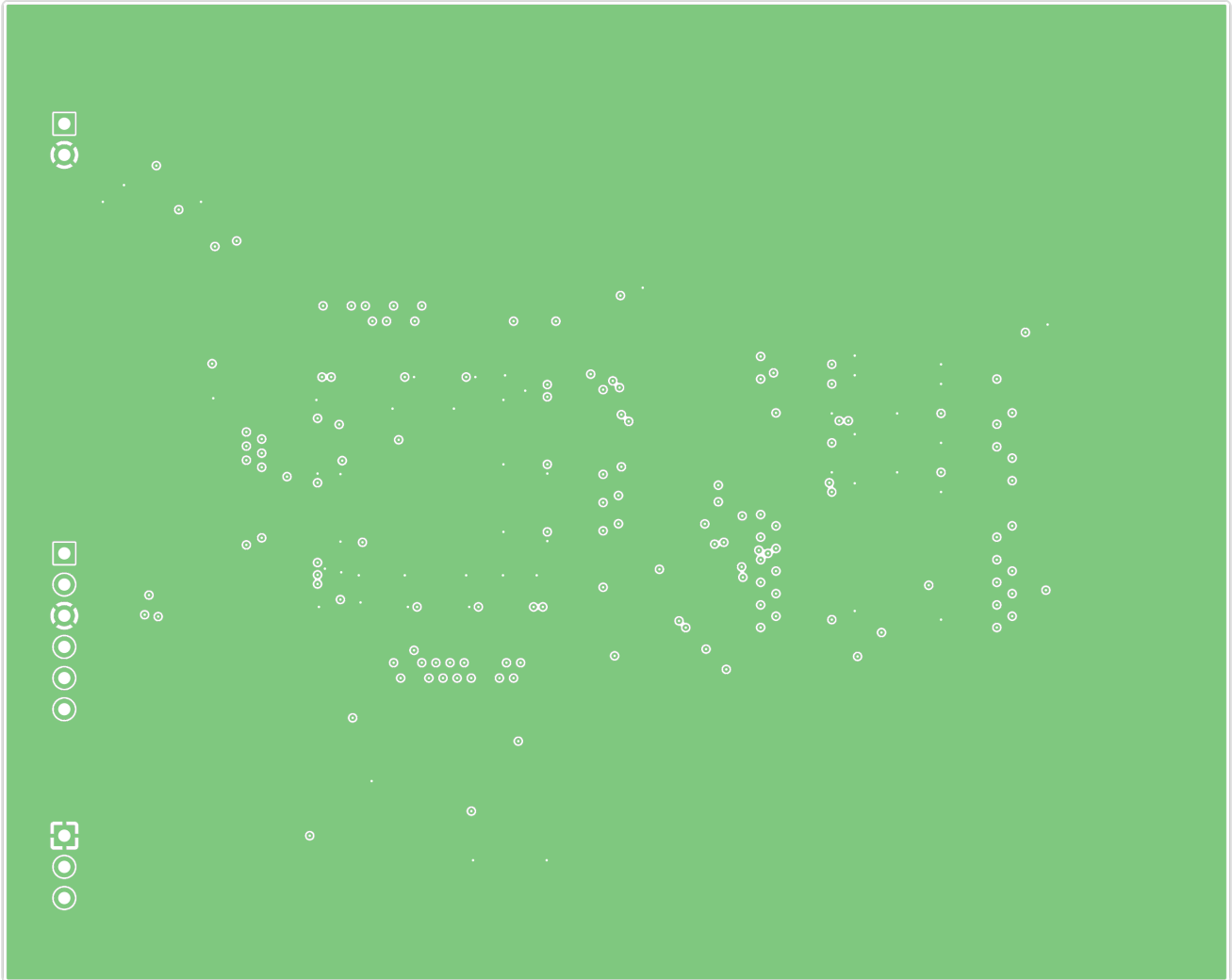


Copper Layers

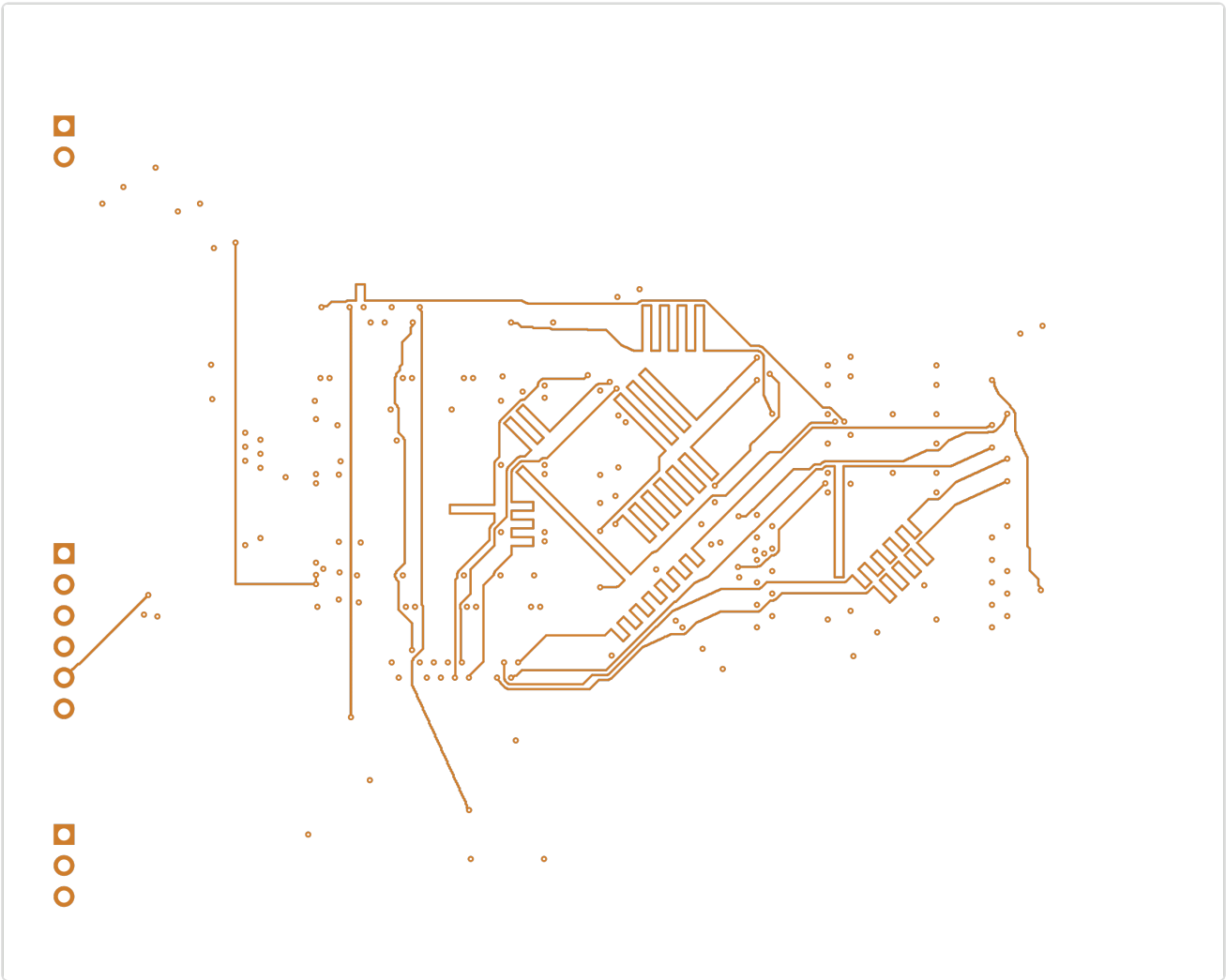
F.Cu



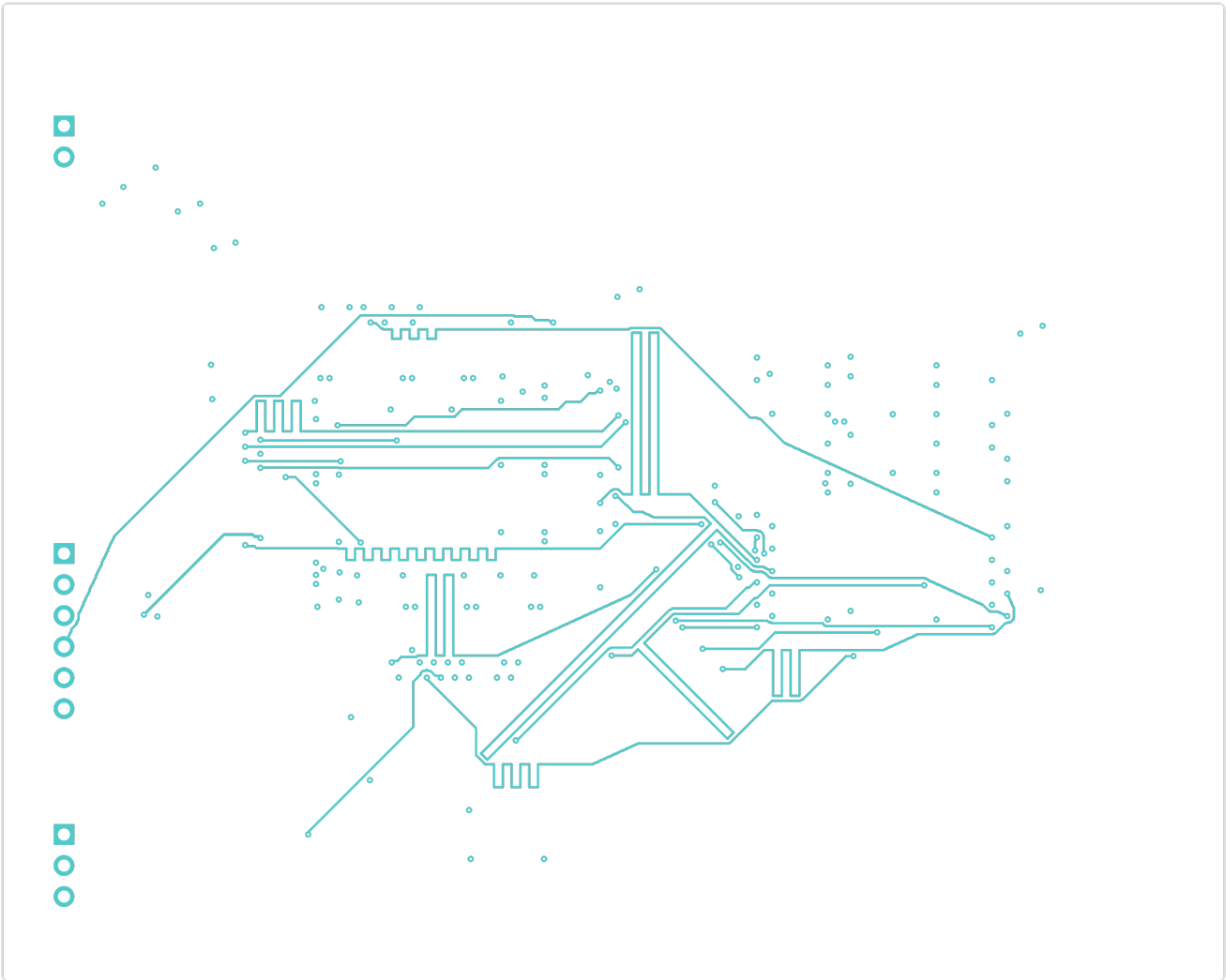
In1.Cu



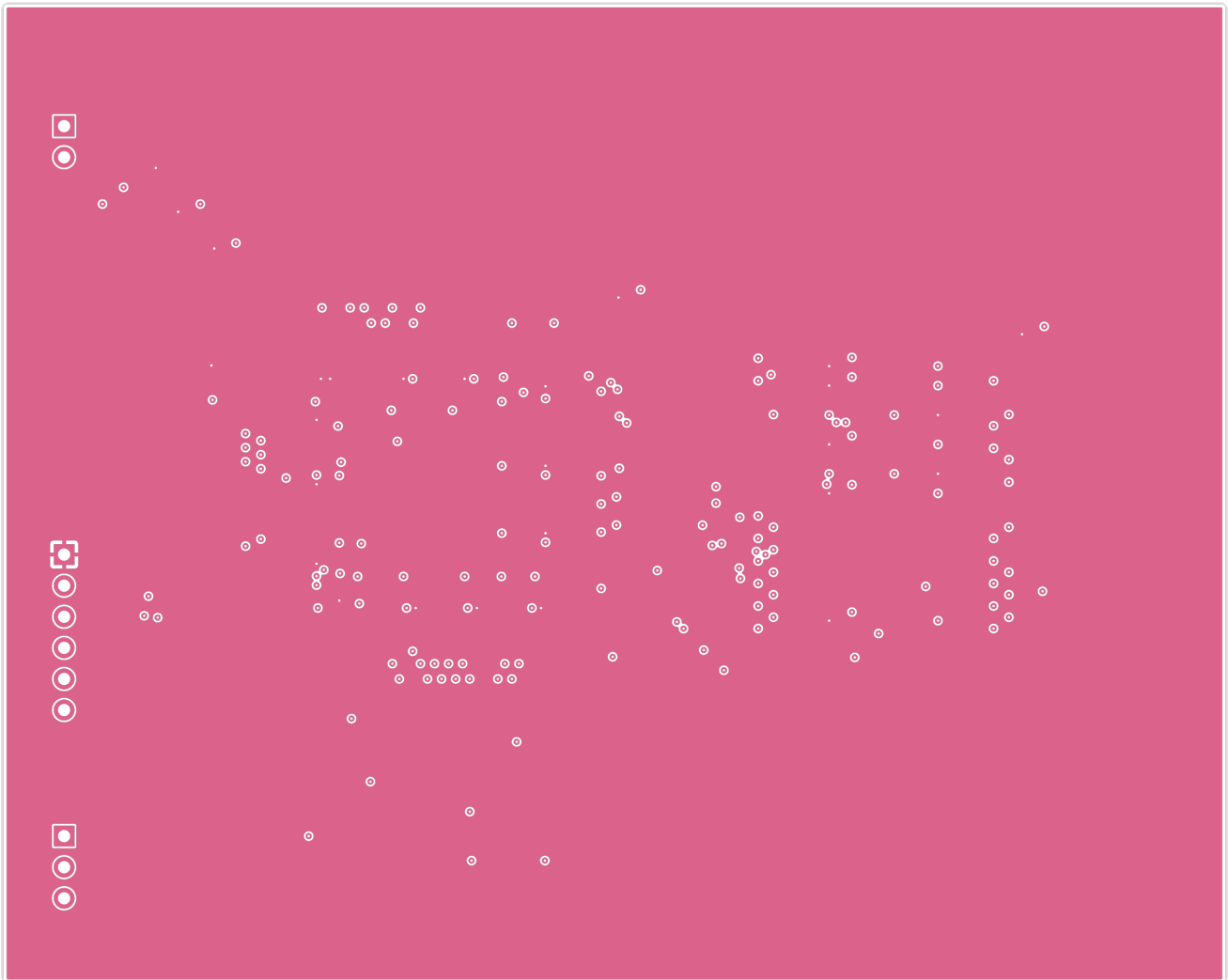
In2.Cu



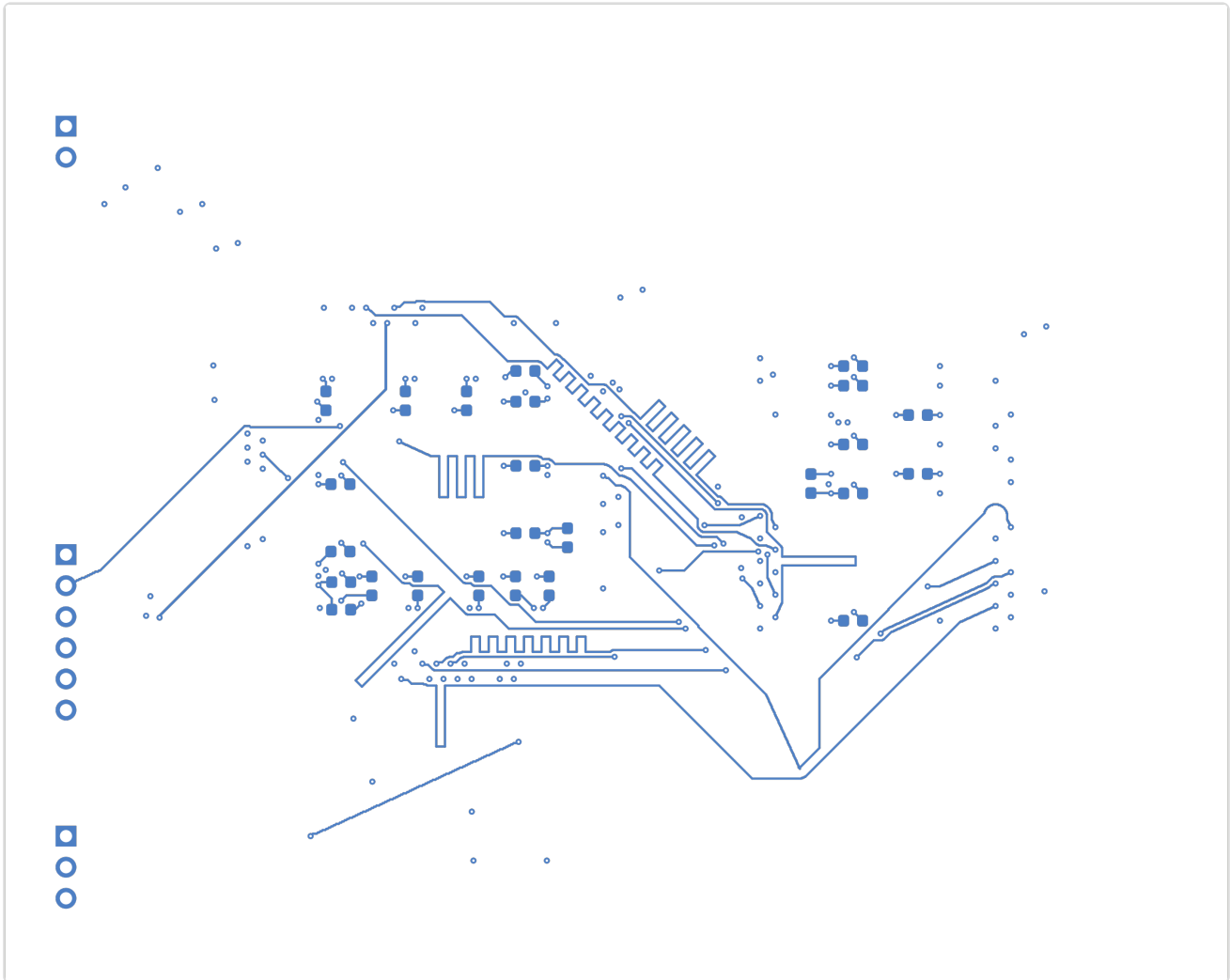
In3.Cu



In4.Cu



B.Cu



Bill of Materials

Value	Package	Qty	References	LCSC
100nF	C_0603_1608Metric	21	C1, C2, C3, C4, C5, C6, C7, C8, C9, C10 ... (+11 more)	C14663
10nF	C_0603_1608Metric	2	C29, C30	C1589
10uF	C_0603_1608Metric	2	C26, C27	C19702
1uF	C_0603_1608Metric	1	C23	C15849
2.2uF	C_0603_1608Metric	2	C24, C25	C23630
4.7uF	C_0603_1608Metric	2	C20, C21	C1705
GREEN	LED_0603_1608Metric	1	D1	C125094
RED	LED_0603_1608Metric	1	D2	C94869
5V_INPUT	PinHeader_1x02_P2.54mm_Vertical	1	J1	C124375
SWD_3V3	PinHeader_1x06_P2.54mm_Vertical	1	J2	C37208
UART_3V3	PinHeader_1x03_P2.54mm_Vertical	1	J3	C49257
0R	R_0603_1608Metric	1	R1	C21189
10k	R_0603_1608Metric	2	R2, R3	C25804
1k	R_0603_1608Metric	2	R4, R5	C21190
AP2112K-3.3TRG1	SOT-23-5	1	U3	C51118
IS42S16400J-6TLI-TR	TSOP-II-54_22.2x10.16mm_P0.8mm	1	U2	C17216754

Value	Package	Qty	References	LCSC
STM32F429ZIT6	LQFP-144_20x20 mm_P0.5mm	1	U1	C84808

DRC Status

Metric	Count
Errors	0
Warnings	0
Blocking	0

Status: PASS

Manufacturing Readiness

Verdict: READY

Action Items

- **[OPTIONAL]** Verify zone fill in KiCad for 2 zone-connected nets

Routing Status

Metric	Value
Signal Net Completion	100.0% (53/53)
Overall Completion	100.0%
Complete Nets	55 / 55
Zone-Connected Nets	2
Incomplete Nets	0
Unconnected Pads	0

Zone-Connected Nets

- +3V3
- GND

Cost Estimate

Metric	Per Board (estimated)
PCB Fabrication	~5.0 USD
Components (estimated)	~1.95 USD
Assembly (estimated)	~2.43 USD
Total (estimated)	~9.37 USD
Batch Quantity	5
Batch Total (estimated)	~46.87 USD