

matchgroup_test_routed

Design Report

Rev 1 | 2026-06-12 | jlpcb

kicad-tools 0.13.0

Board Summary

Property	Value
Layers	4 copper (F.Cu, In1.Cu, In2.Cu, B.Cu)
Footprints	8 (5 SMD, 3 THT, 0 other)
Nets	34
Traces	1150 segments
Vias	48
Board Size	110.0 x 95.0 mm

Design Overview

Theory of Operation

Match-Group Test Board

N-trace + group-of-pairs match-group regression testbench

Epic #2661 Phase 3L (issue #2724)

Power Architecture

Power Rails: PWR_FLAG

Assembly Notes

5 fine-pitch components

- **Fine-pitch components:** 5 (U2, U1, U5, U4, U3)

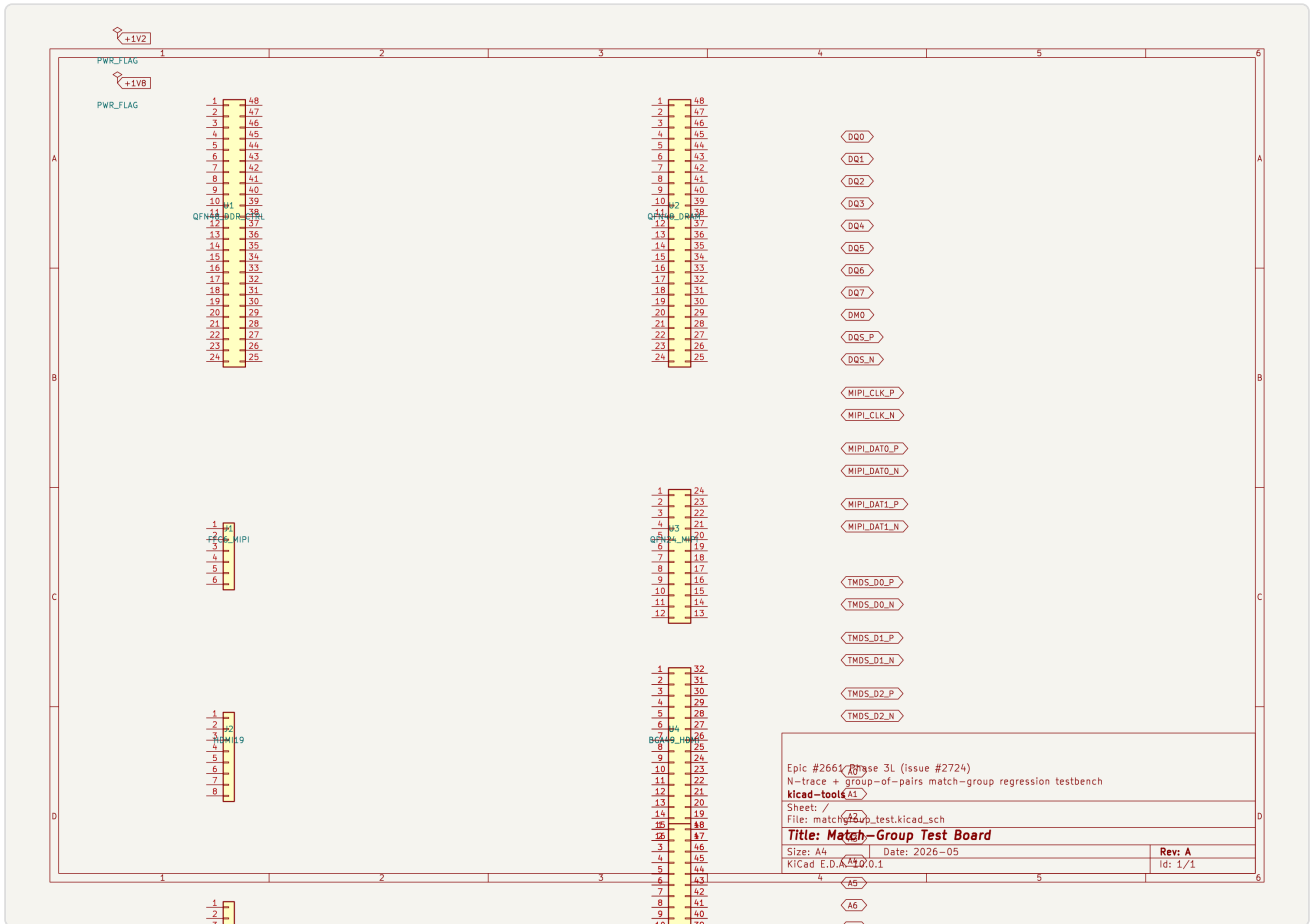
ERC Status

Metric	Count
Errors	0
Warnings	0

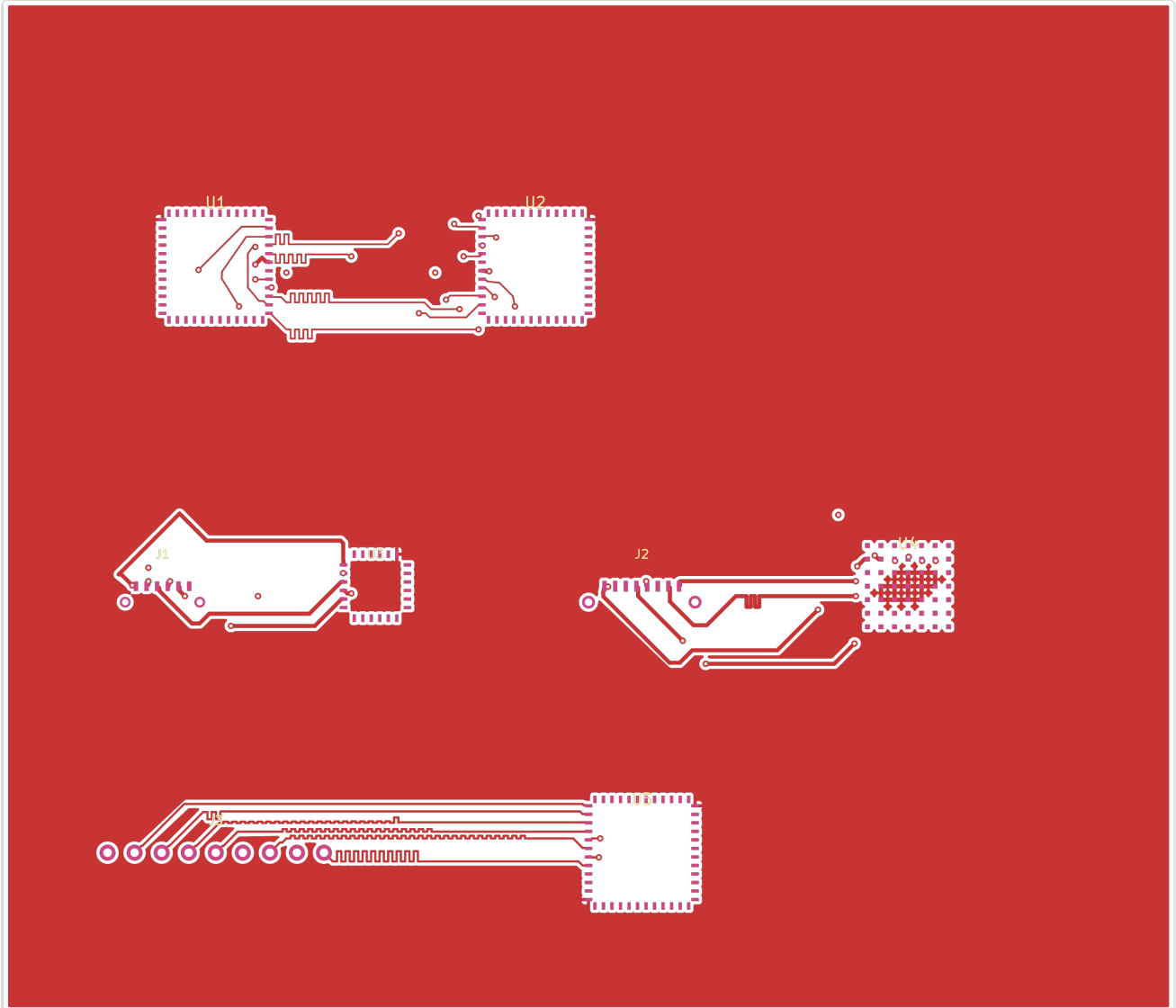
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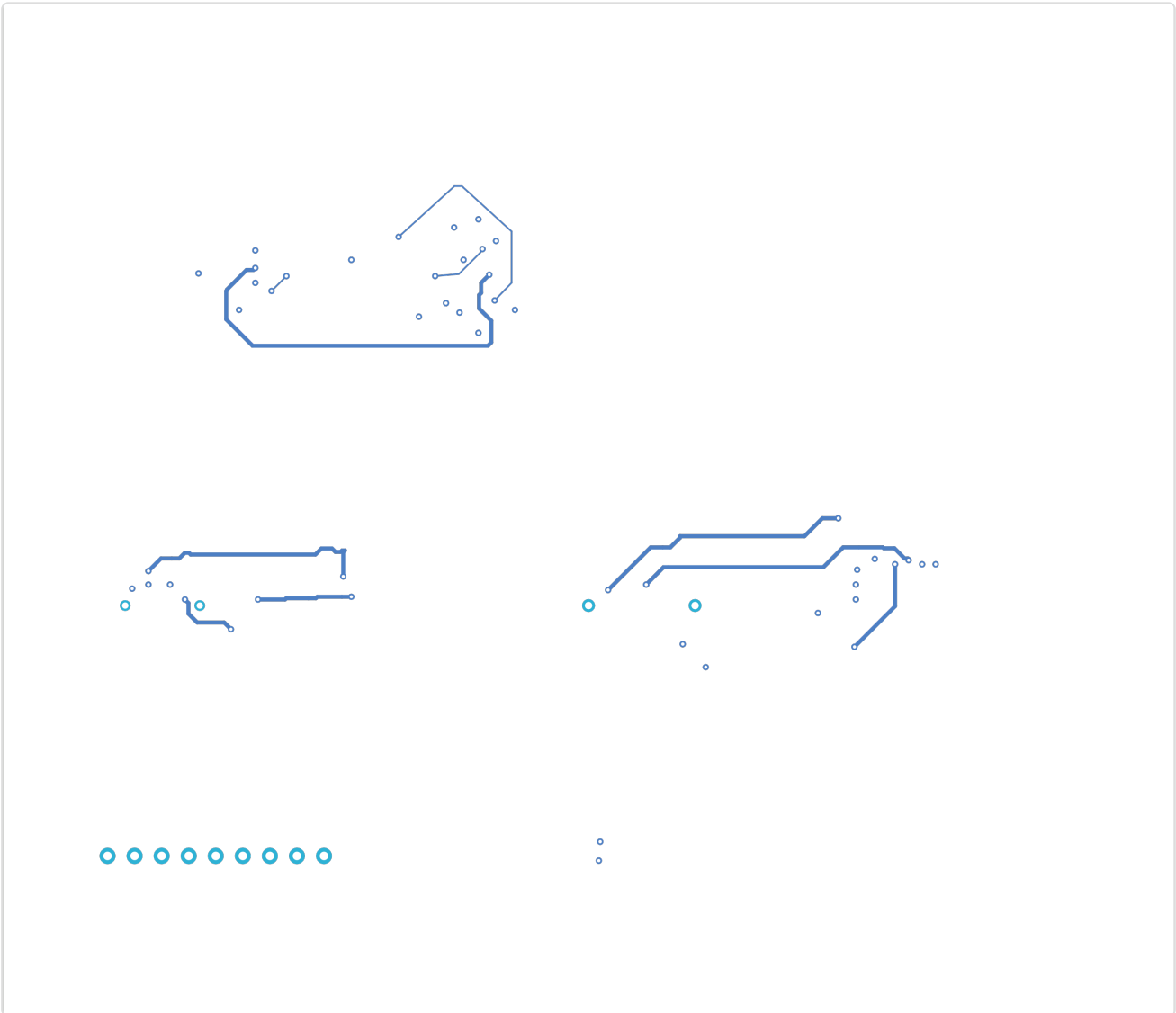
Schematic Overview

Schematic: matchgroup_test

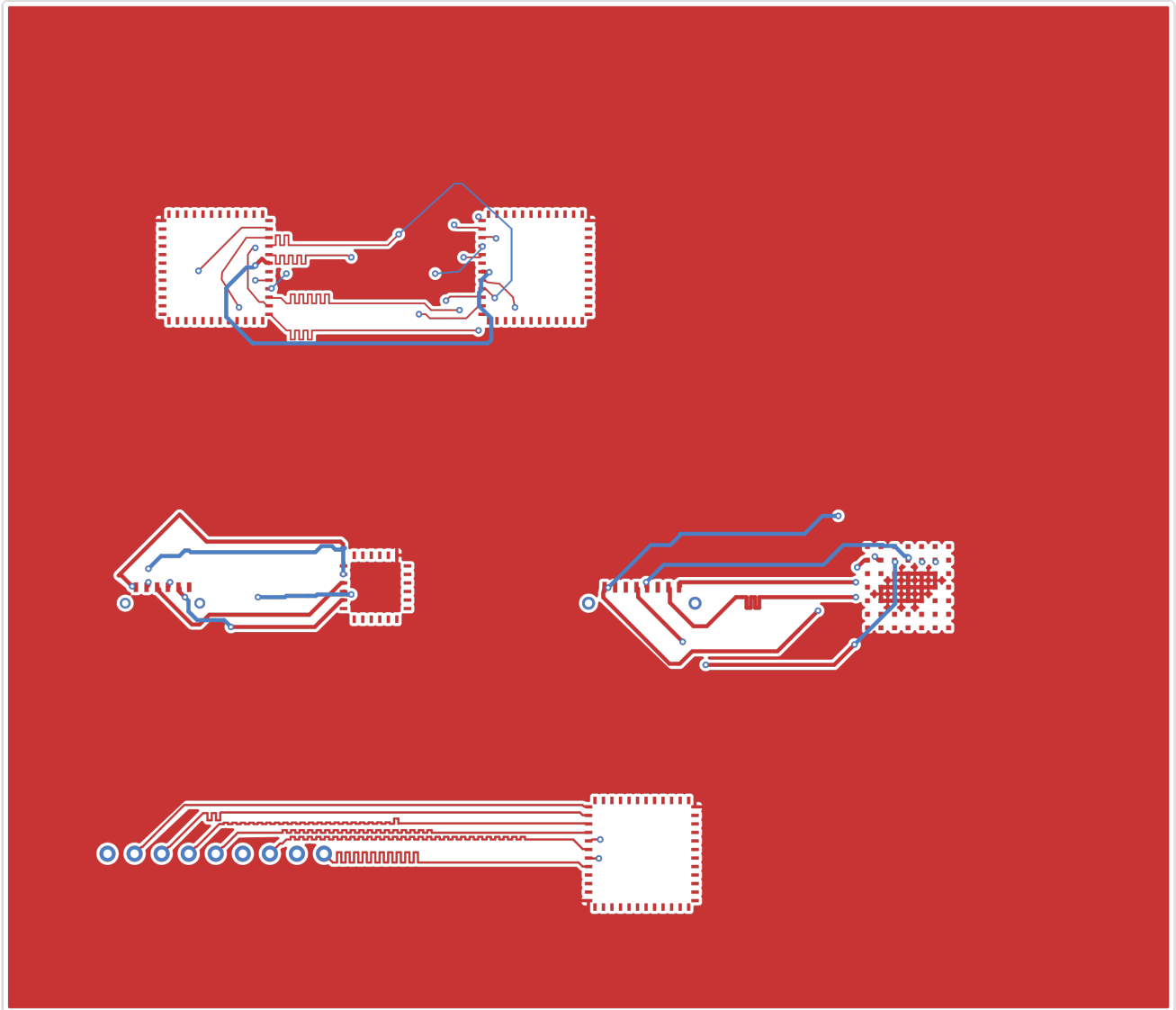


PCB Layout

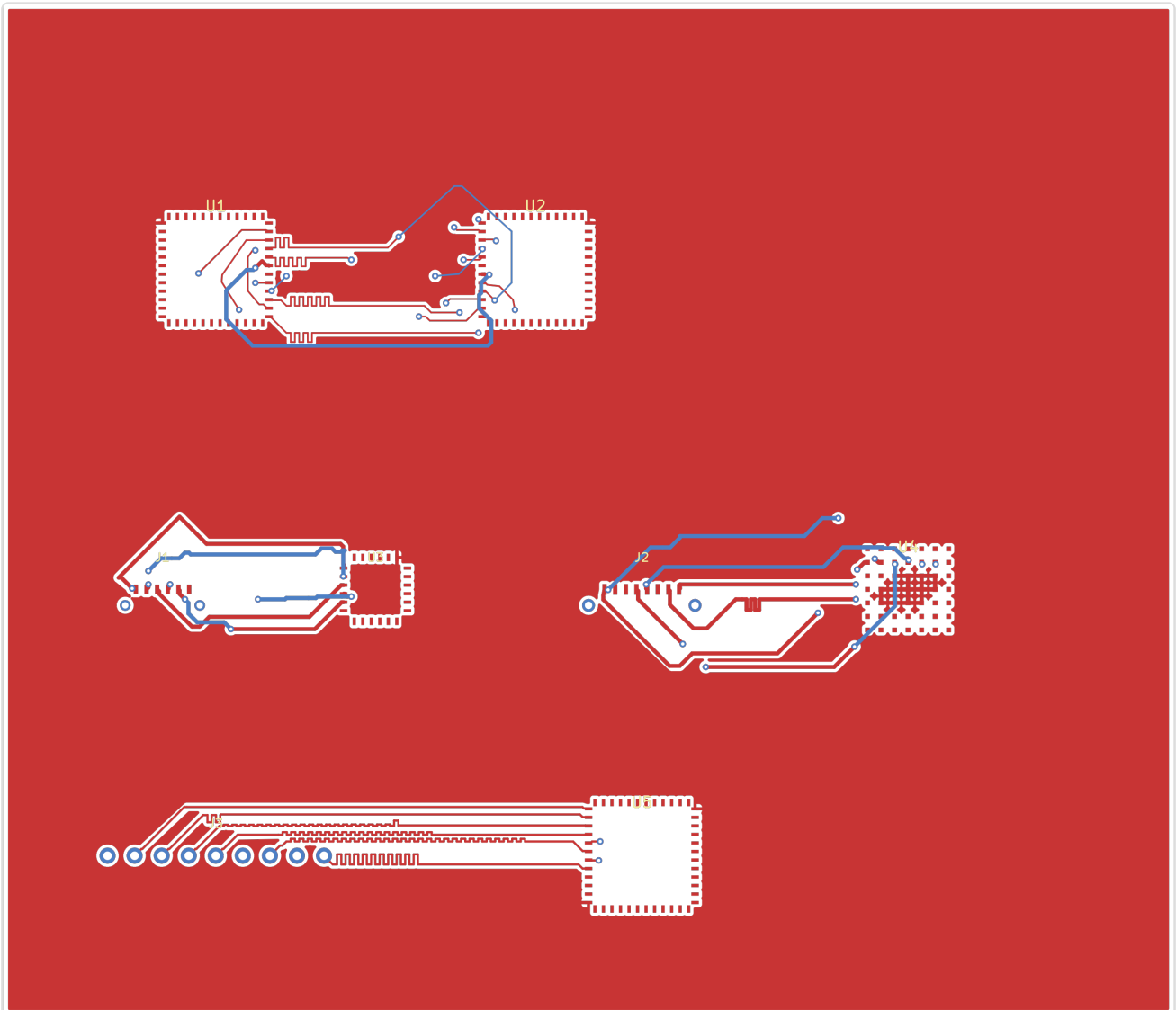




Copper

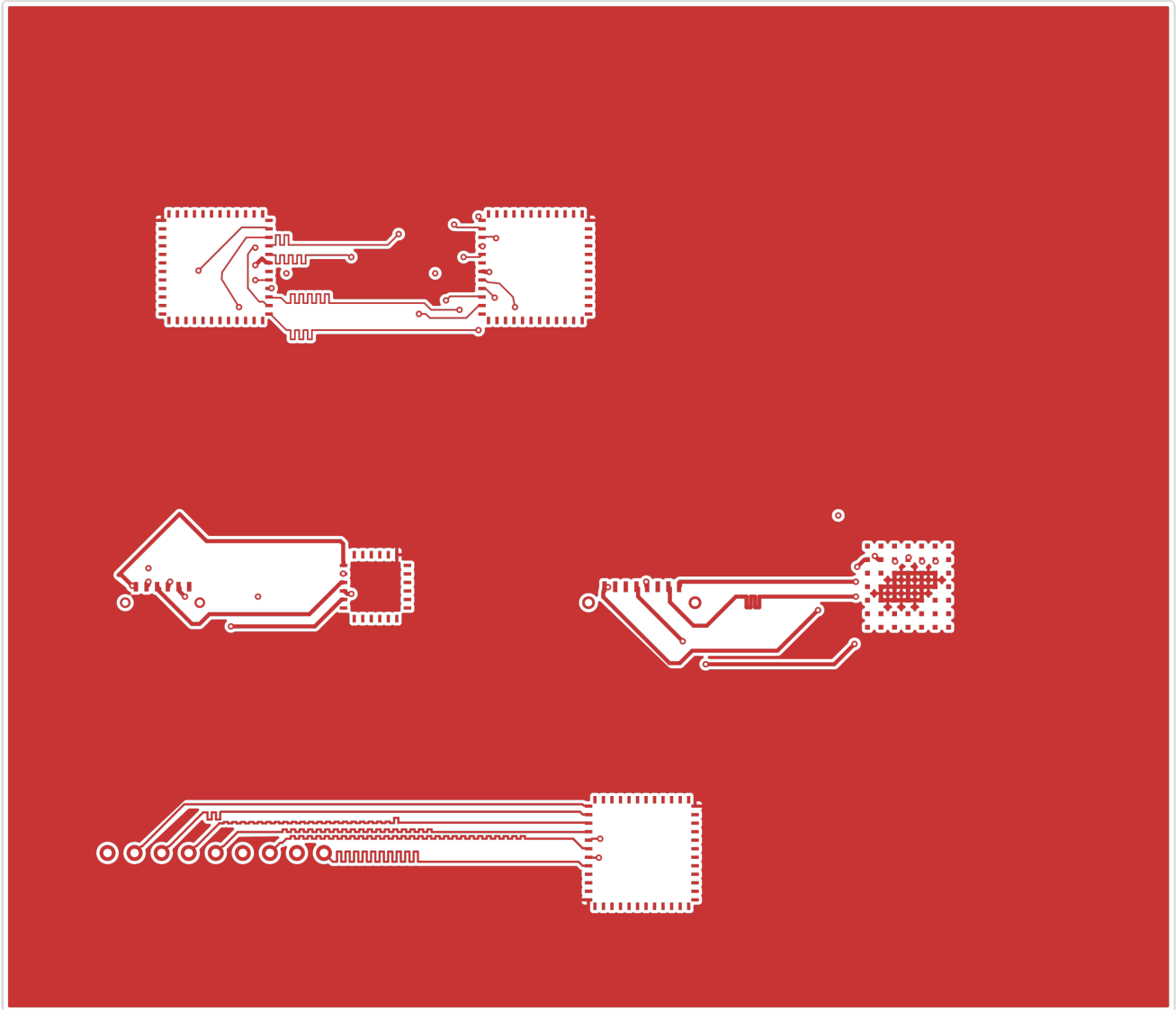


Assembly

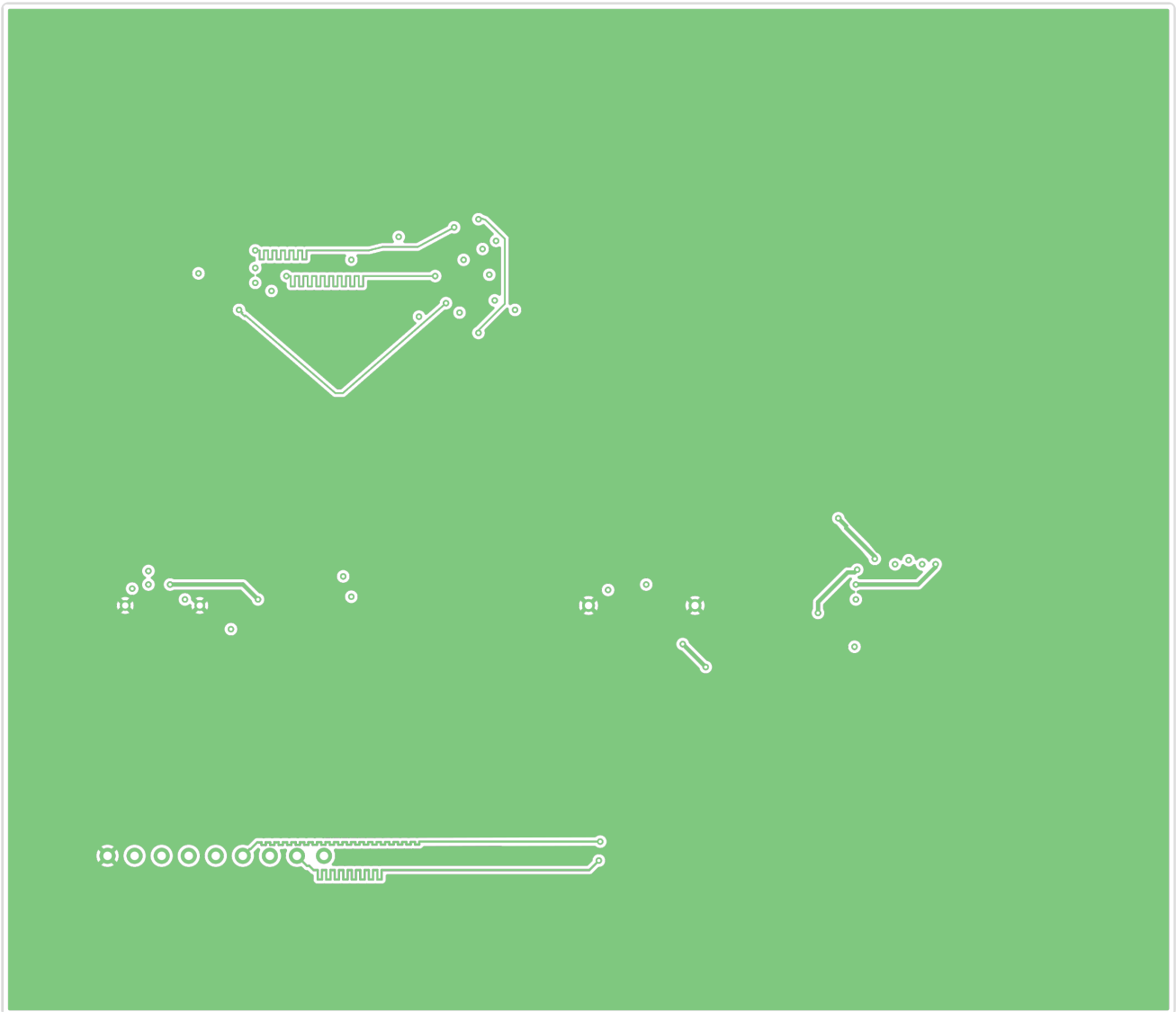


Copper Layers

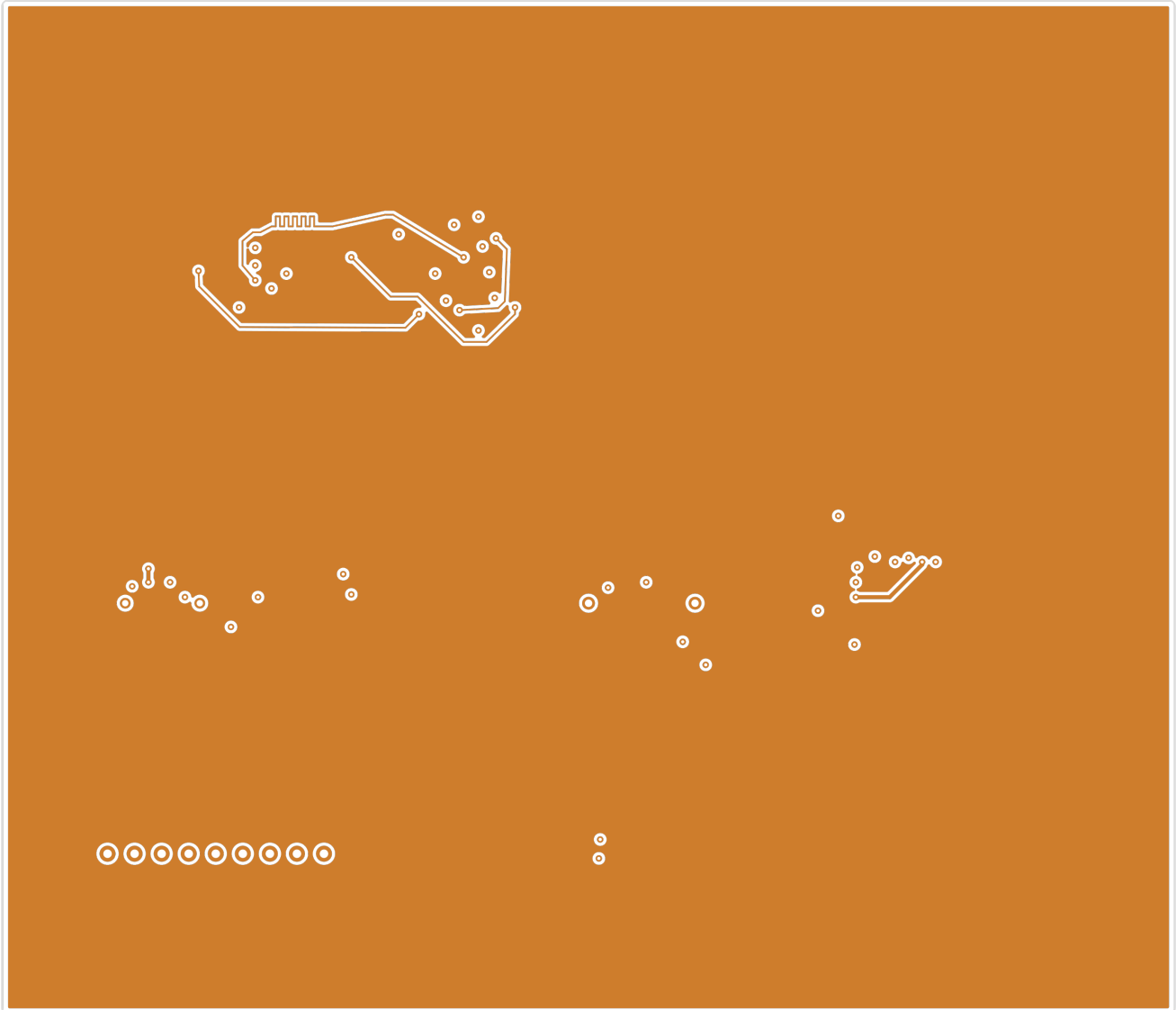
F.Cu



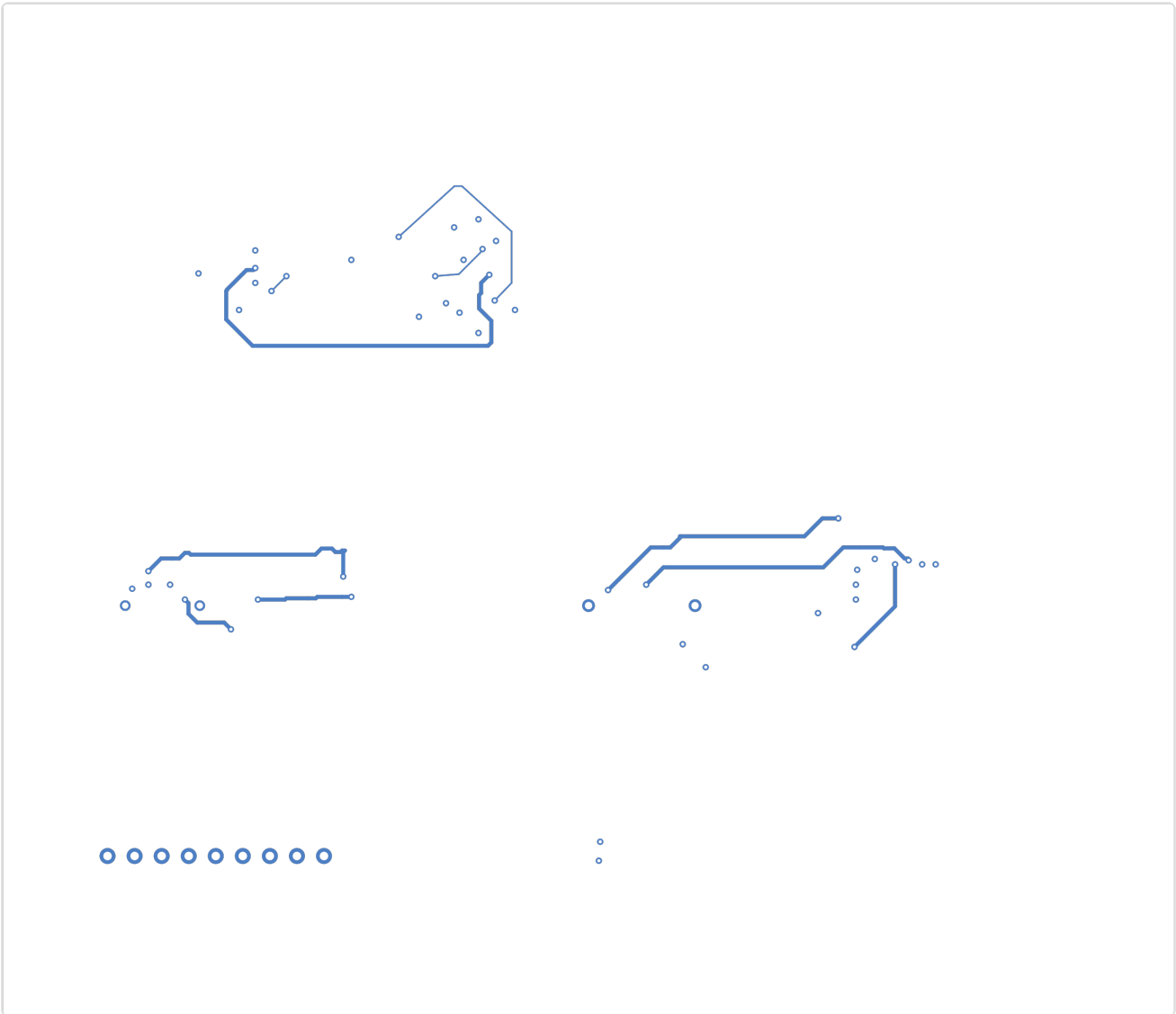
In1.Cu



In2.Cu



B.Cu



Bill of Materials

Value	Package	Qty	References
ADDR_HDR	PinHeader_1x09_P2.54 mm_Vertical	1	J3
FFC6_MIPI	FFC_6P_1.0mm	1	J1
HDMI19	HDMI_A_Receptacle	1	J2
BGA49_HDMI	BGA-49_5.0x5.0mm_La yout7x7_P0.5mm	1	U4
QFN24_MIPI	QFN-24-1EP_4x4mm_P 0.5mm	1	U3
QFN48_DDR_CTRL	QFN-48-1EP_7x7mm_P 0.5mm	1	U1
QFN48_DRAM	QFN-48-1EP_7x7mm_P 0.5mm	1	U2
QFP48_SRAM	LQFP-48_7x7mm_P0.5 mm	1	U5

DRC Status

Metric	Count
Errors	4
Warnings	8
Blocking	4

Status: FAIL

Violations by Type

Violation Type	Count
connectivity	5
silkscreen_text_height	4
zone_unfilled	3
clearance_segment_via	1
clearance_pad_segment	1
clearance_pad_via	1
diffpair_clearance_intra	1
silkscreen_over_pad	1

Manufacturing Readiness

Verdict: NOT_READY

Action Items

- **[CRITICAL]** Fix 4 blocking DRC violations (clearance_segment_via (1), clearance_pad_segment (1), clearance_pad_via (1))
- **[OPTIONAL]** Verify zone fill in KiCad: 3 nets appear incomplete but may be connected via zone fills
- **[OPTIONAL]** Verify zone fill in KiCad for 3 zone-connected nets
- **[OPTIONAL]** Review 8 DRC warnings

Routing Status

Metric	Value
Signal Net Completion	90.3% (28/31)
Overall Completion	85.3%
Complete Nets	29 / 34
Zone-Connected Nets	3
Incomplete Nets	5
Unconnected Pads	161

Zone-Connected Nets

- +1V2
- +1V8
- GND

Unrouted Signal Nets

- DQS_P
- MIPI_DAT1_N
- TMDS_D0_N

Unrouted Signal Nets

- DQS_P
- MIPI_DAT1_N
- TMDS_D0_N

Cost Estimate

Metric	Per Board (estimated)
PCB Fabrication	~4.09 USD
Components (estimated)	~2.8 USD
Assembly (estimated)	~2.05 USD
Total (estimated)	~8.94 USD
Batch Quantity	5
Batch Total (estimated)	~44.72 USD