

matchgroup_test_routed

Design Report

kicad-tools 0.14.0

Rev 1 | 2026-07-09 | jlcpb

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	897 segments
Vias	209
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); wired netlist #4012

Power Architecture

Power Rails: PWR_FLAG

Assembly Notes

5 fine-pitch components

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

ERC Status

Metric	Count
Errors	0
Warnings	0

Status: SKIPPED – ERC skipped by user request

Schematic Overview

Schematic: matchgroup_test

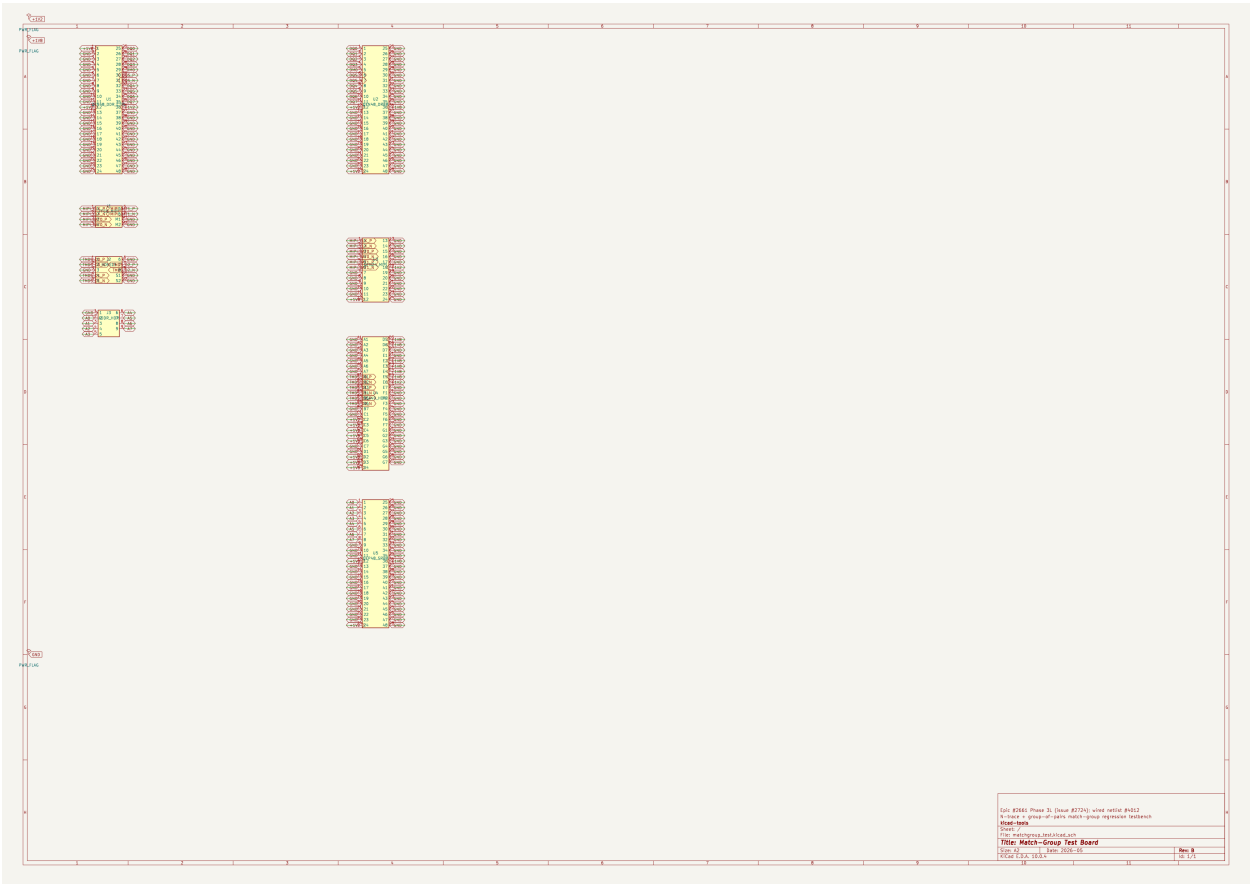


Figure 1: Schematic: matchgroup_test

PCB Layout

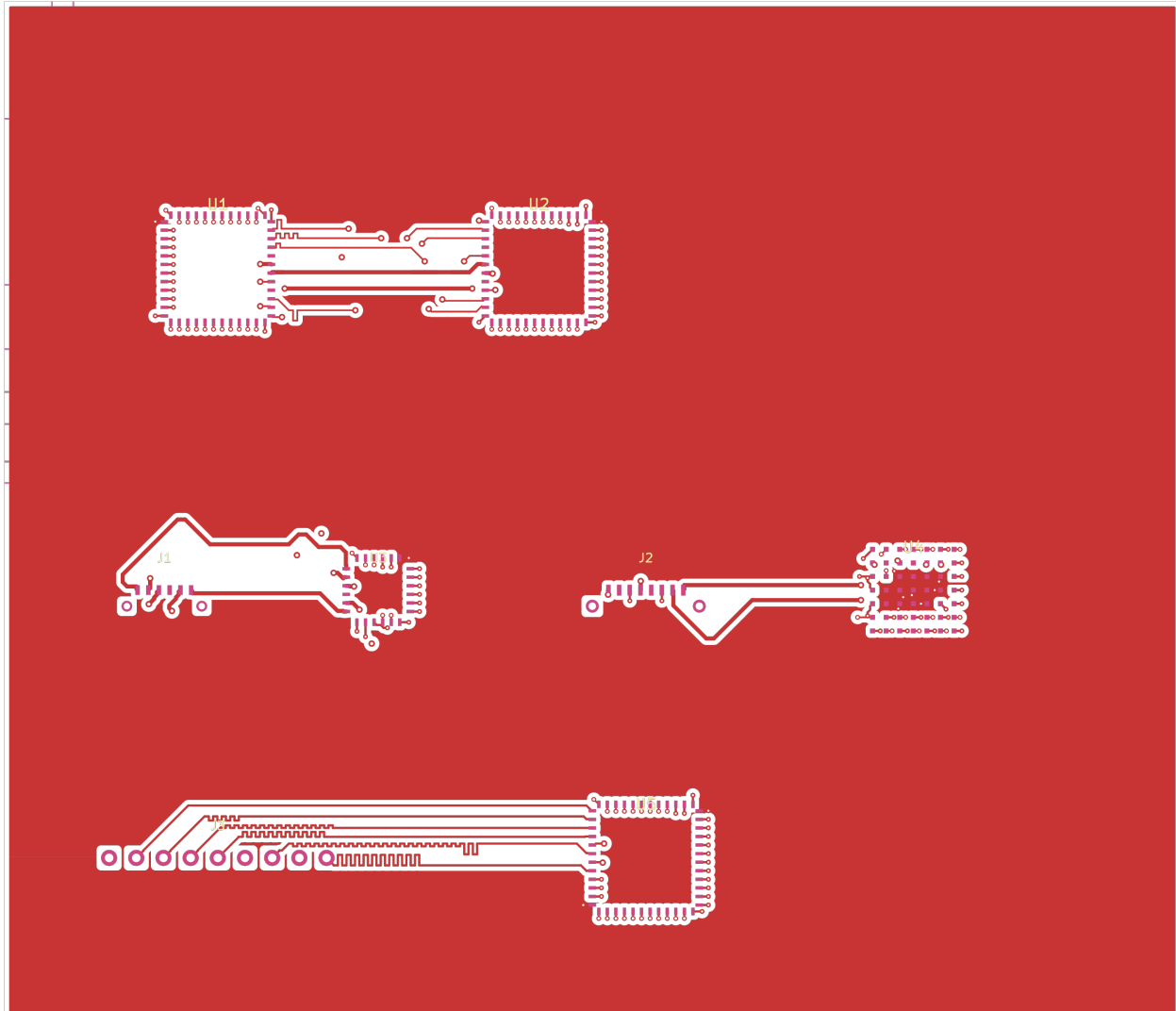


Figure 2: PCB Front

Copper Assembly

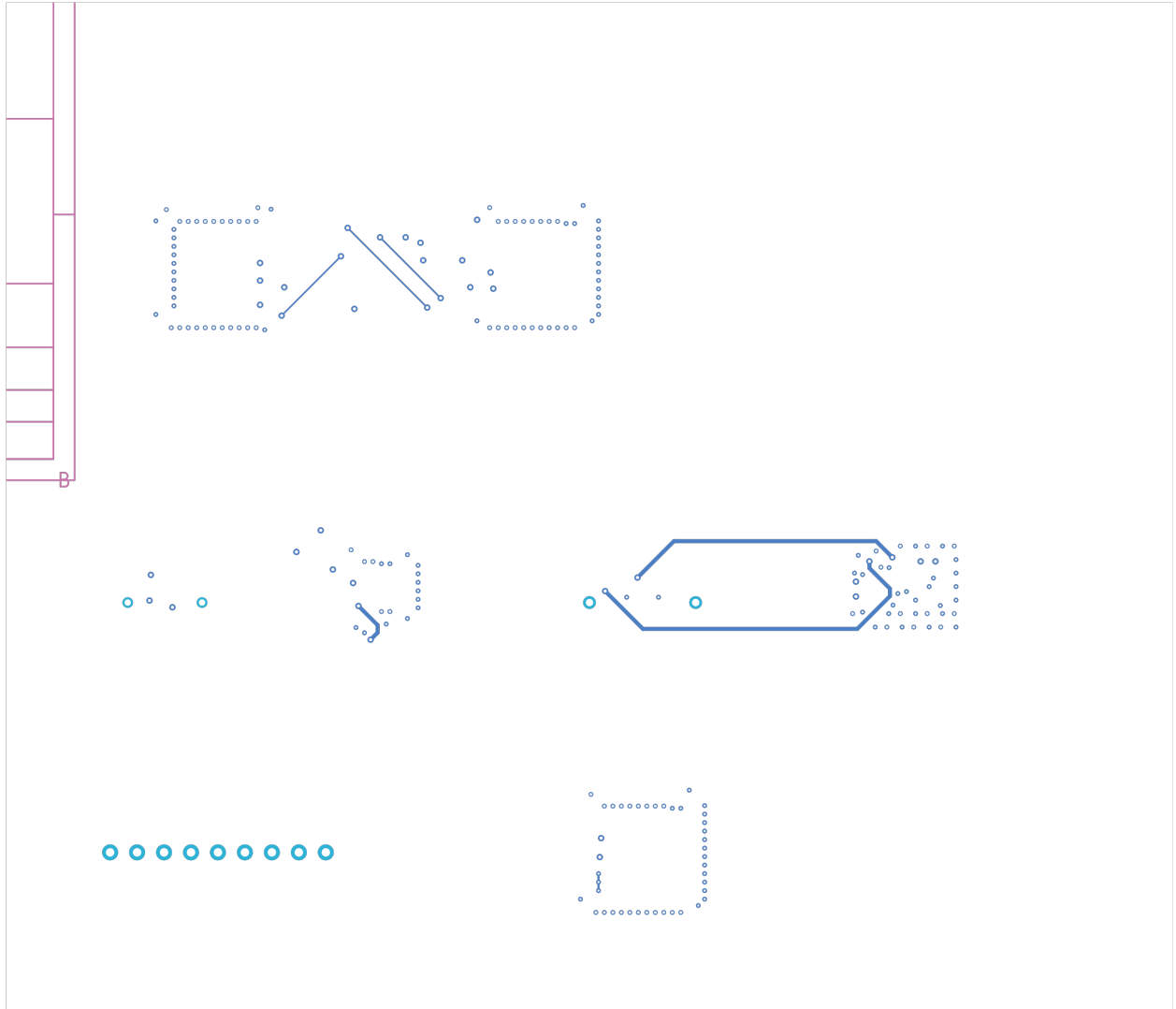


Figure 3: PCB Back

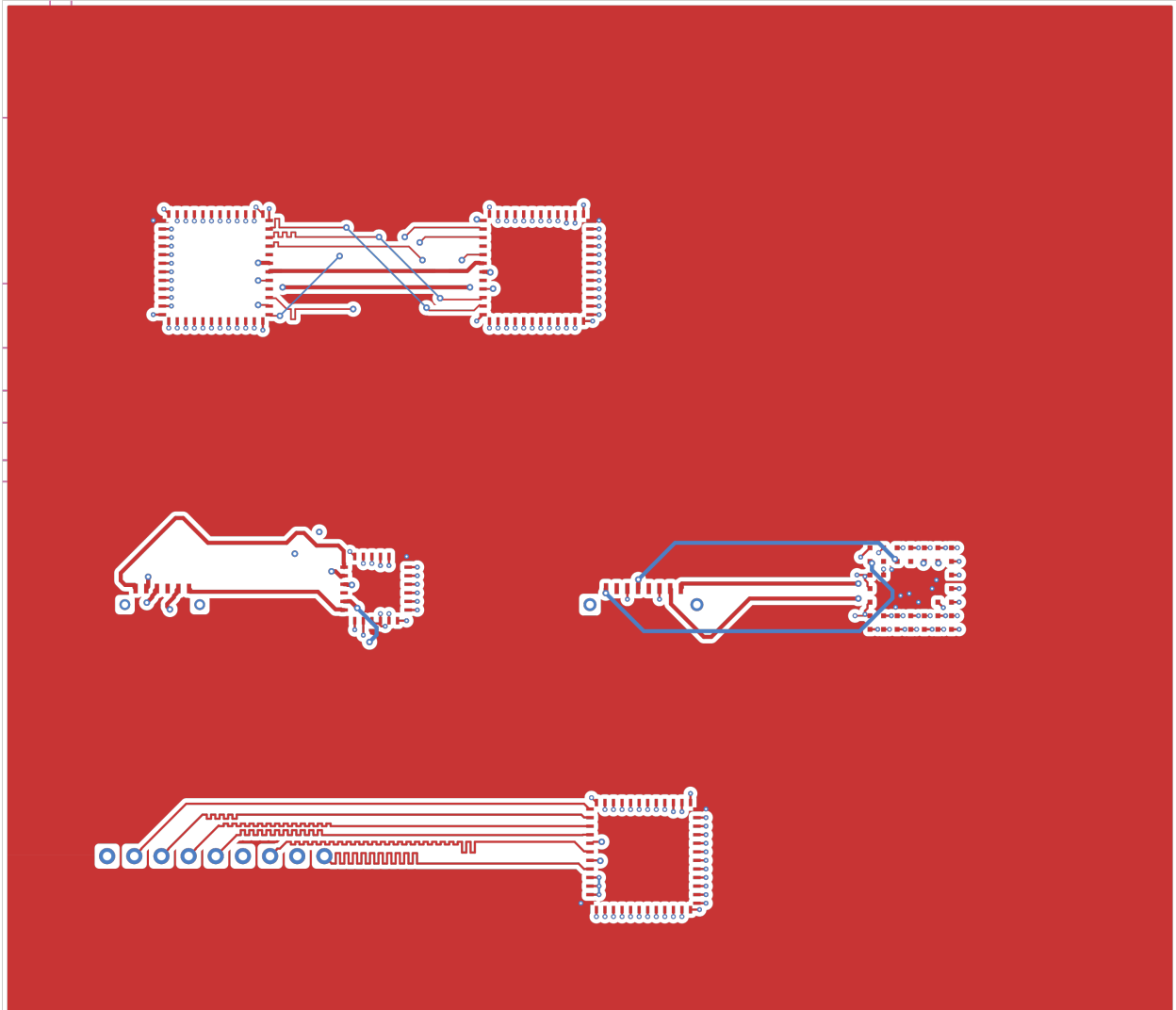


Figure 4: PCB Copper

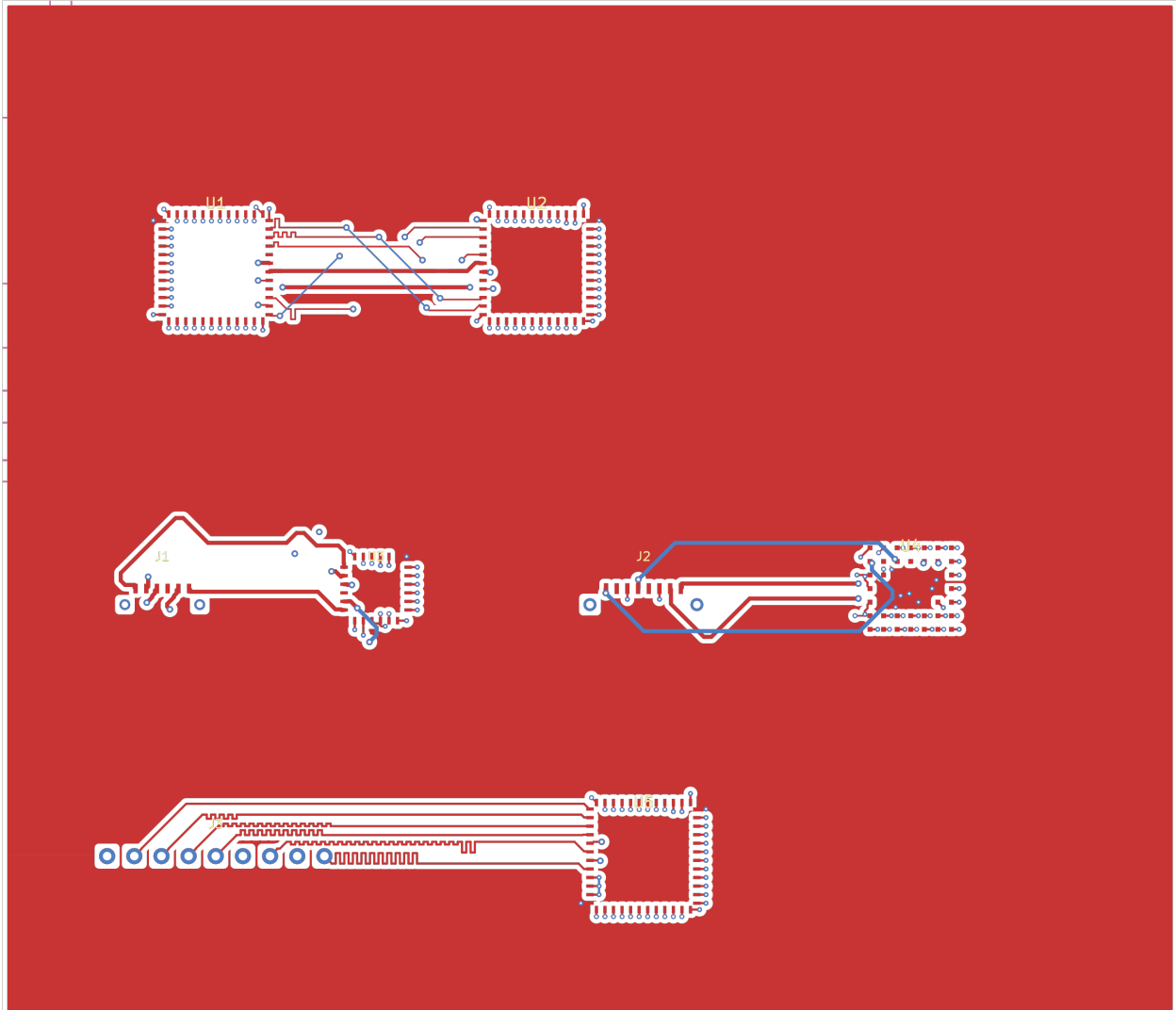


Figure 5: Assembly

Copper Layers

F.Cu

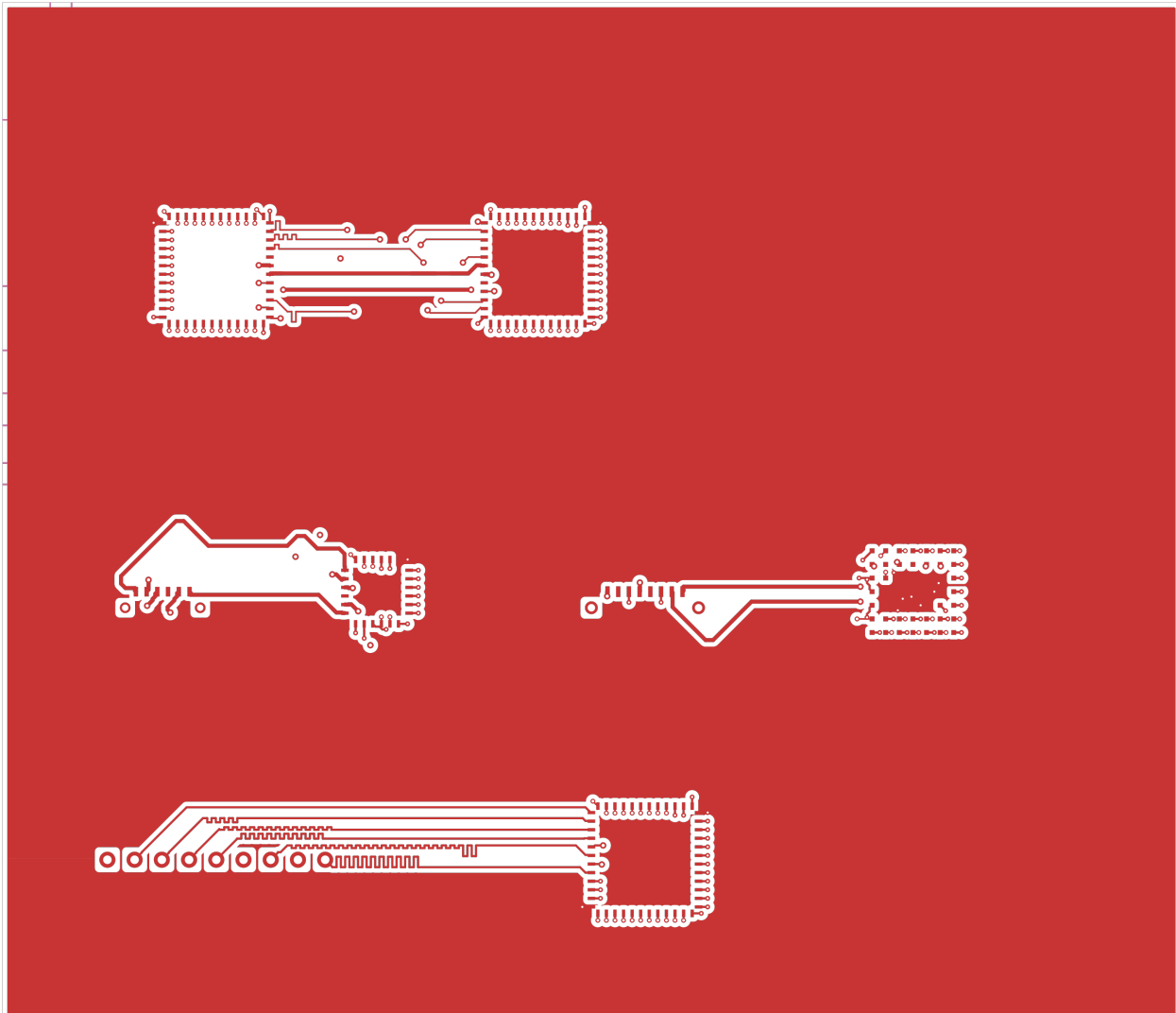


Figure 6: F.Cu

In1.Cu

In2.Cu

B.Cu

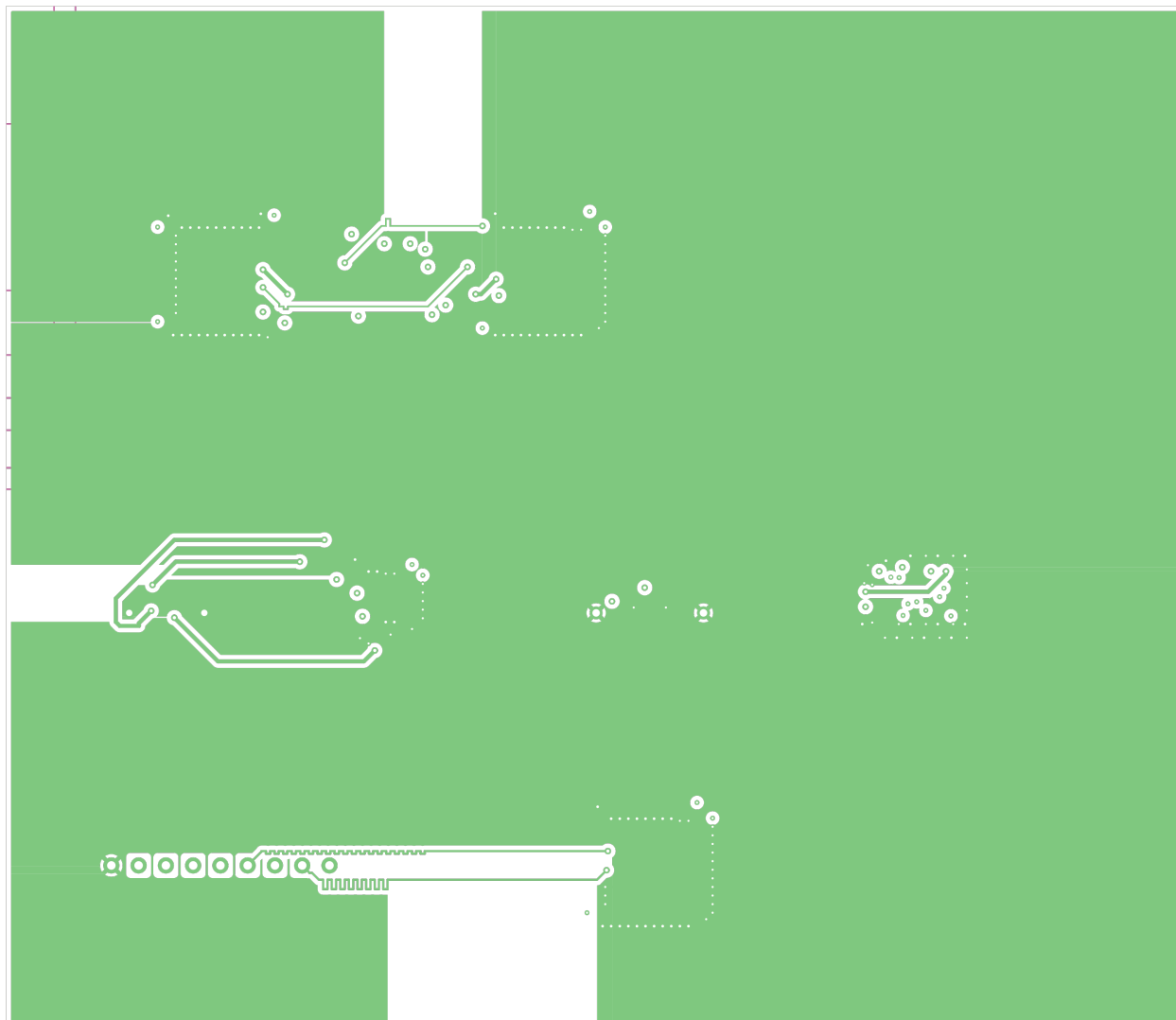


Figure 7: In1.Cu

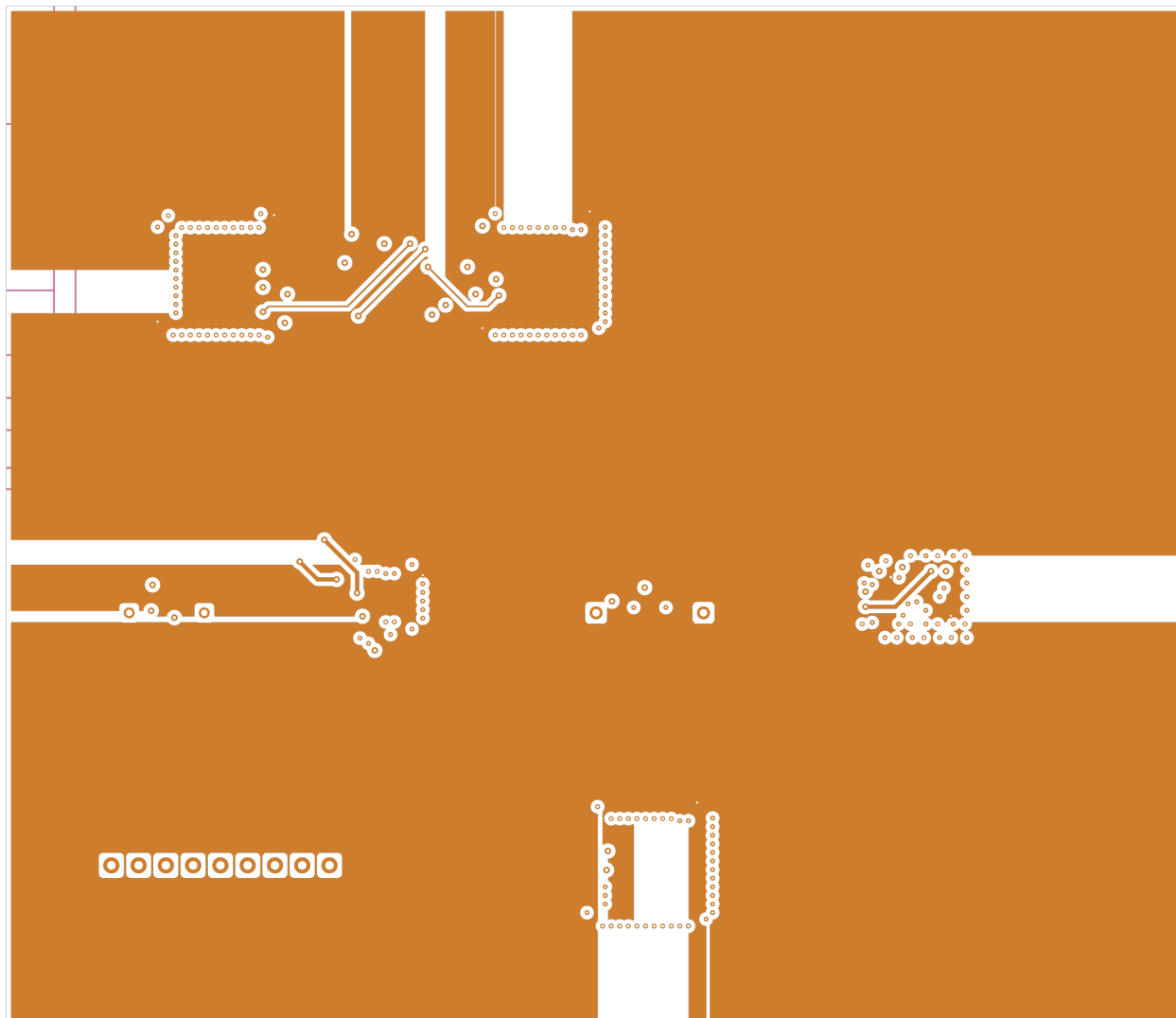


Figure 8: In2.Cu

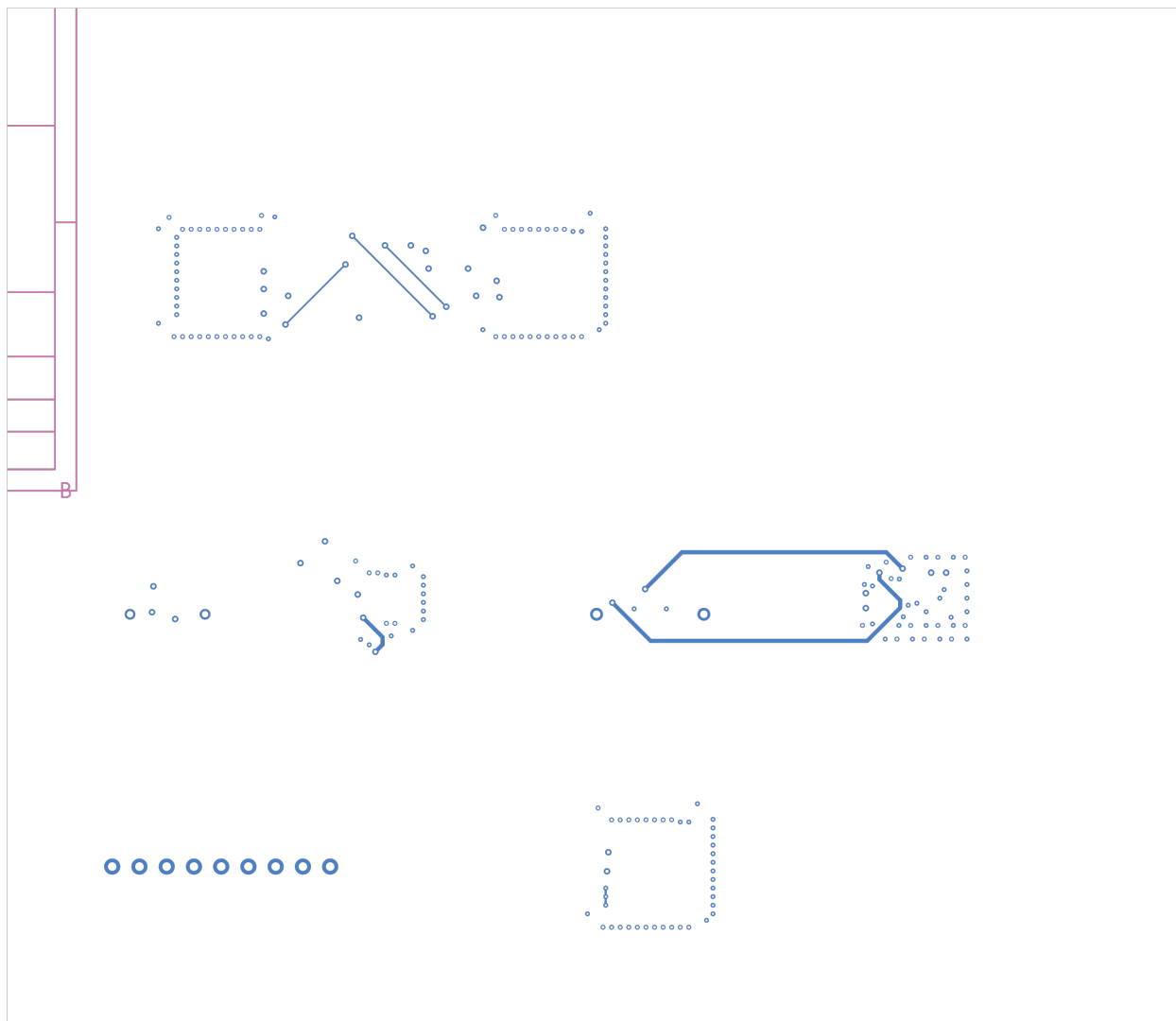


Figure 9: B.Cu

Bill of Materials

Value	Package	Qty	References
ADDR_HDR	PinHeader_1x09_P2.54mm_Vertical	1	J3
FFC6_MIPI	FFC_6P_1.0mm	1	J1
HDMI19	HDMI_A_Receptacle	1	J2
BGA49_HDMI	BGA-49_5.0x5.0mm_Layout7x7_P0.5mm	1	U4
QFN24_MIPI	QFN-24-1EP_4x4mm_P0.5mm	1	U3
QFN48_DDR_CTRL	QFN-48-1EP_7x7mm_P0.5mm	1	U1
QFN48_DRAM	QFN-48-1EP_7x7mm_P0.5mm	1	U2
QFP48_SRAM	LQFP-48_7x7mm_P0.5mm	1	U5

DRC Status

Metric	Count
Errors	0
Warnings	11
Blocking	0

Status: PASS ### Violations by Type

Violation Type	Count
connectivity	5
silkscreen_text_height	4
copper_sliver	3
silk_over_copper	3
silkscreen_over_pad	1

Manufacturing Readiness

Verdict: WARNING

Action Items

- **[OPTIONAL]** Verify zone fill in KiCad: 5 nets appear incomplete but may be connected via zone fills
- **[OPTIONAL]** Verify zone fill in KiCad for 3 zone-connected nets
- **[OPTIONAL]** Review 11 DRC warnings

Routing Status

Metric	Value
Signal Net Completion	83.9% (26/31)
Overall Completion	85.3%
Complete Nets	29 / 34
Zone-Connected Nets	3
Incomplete Nets	5
Unconnected Pads	5

Zone-Connected Nets

- +1V2
- +1V8
- GND

Unrouted Signal Nets

- DQ3
- DQ4
- MIPI_DAT0_N
- TMDS_D0_N
- TMDS_D1_N

Unrouted Signal Nets

- DQ3
- DQ4
- MIPI_DAT0_N
- TMDS_D0_N
- TMDS_D1_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