

charlieplex_3x3_routed

Design Report

Rev 1 | 2026-09-10 | jlcpcb

kicad-tools 0.20.0

Board Summary

Property	Value
Layers	2 copper (F.Cu, B.Cu)
Footprints	19 (16 SMD, 3 THT, 0 other)
Nets	12
Traces	452 segments
Vias	28
Board Size	50.0 x 55.0 mm

Design Overview

Theory of Operation

ATtiny85 Charlieplex LED Grid

Power Architecture

Power Rails: PWR_FLAG

Assembly Notes

9 polarized components

- **Polarized components:** 9 -- 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
POWER	PinHeader_1x02_P2.54 mm_Vertical	1	J1
AVR-ISP	PinHeader_2x03_P2.54 mm_Vertical	1	J2
ATtiny85-20PU	DIP-8_W7.62mm	1	U1

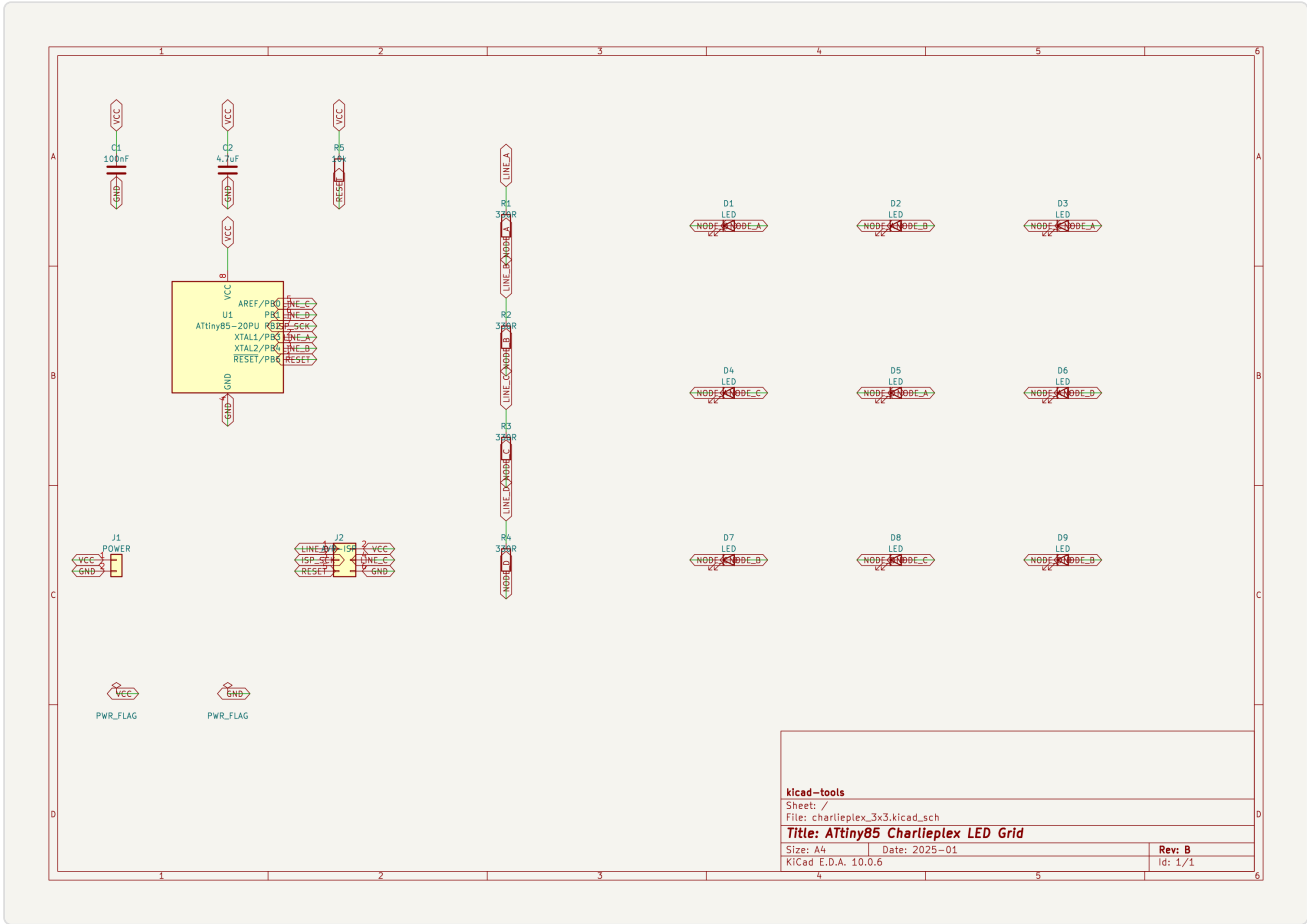
ERC Status

Metric	Count
Errors	0
Warnings	0

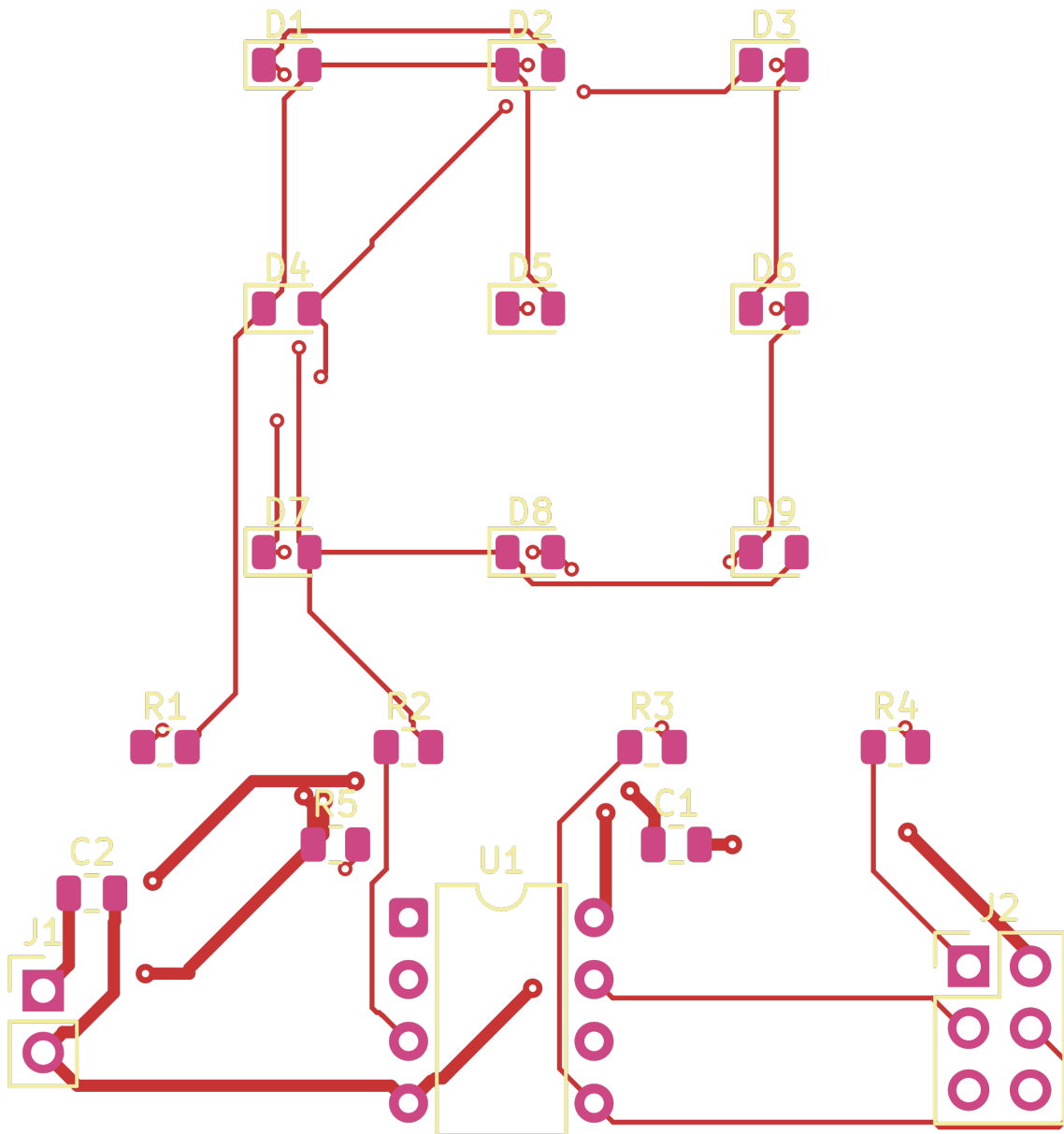
Status: SKIPPED -- ERC skipped by user request

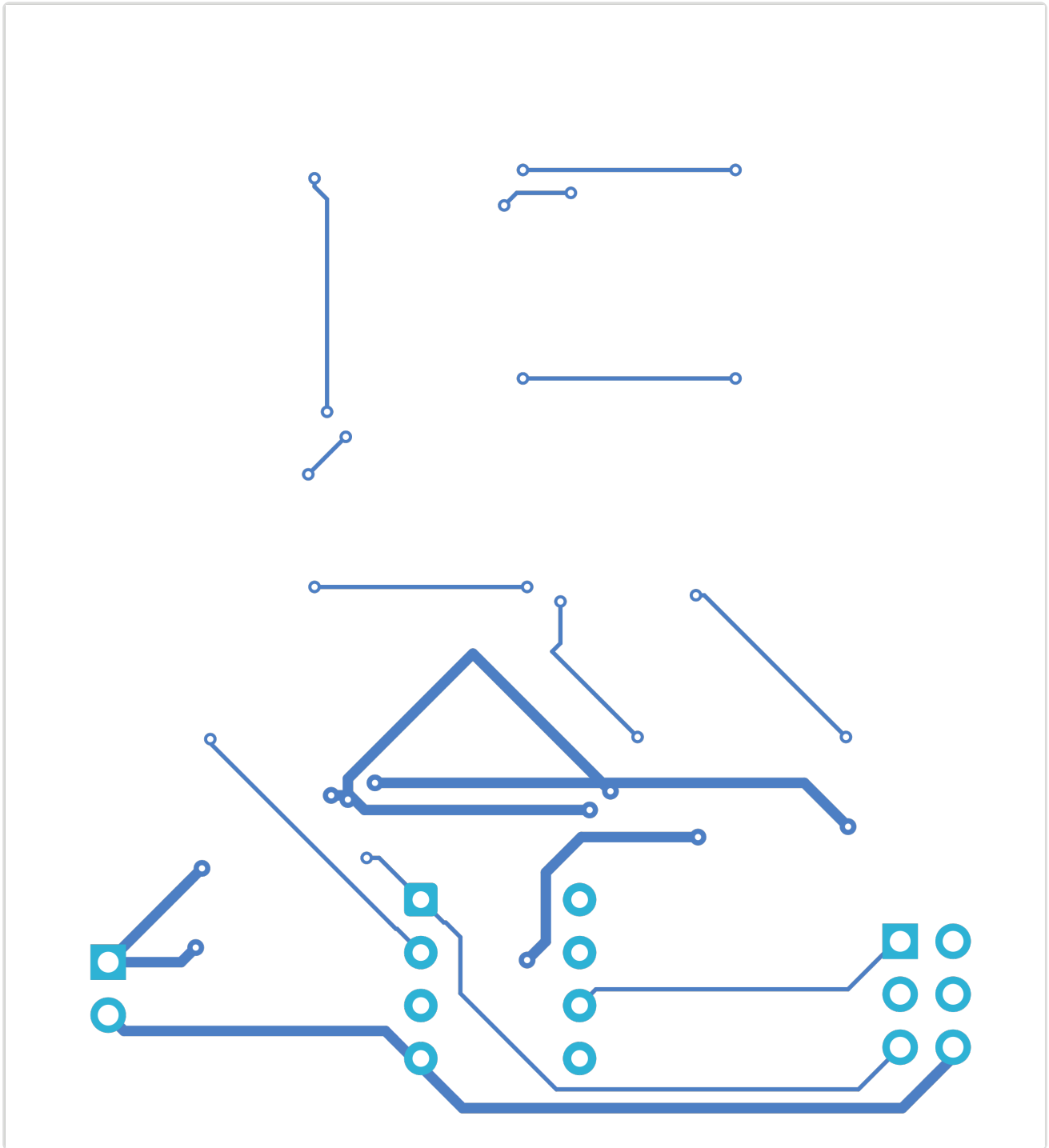
Schematic Overview

Schematic: charlieplex_3x3

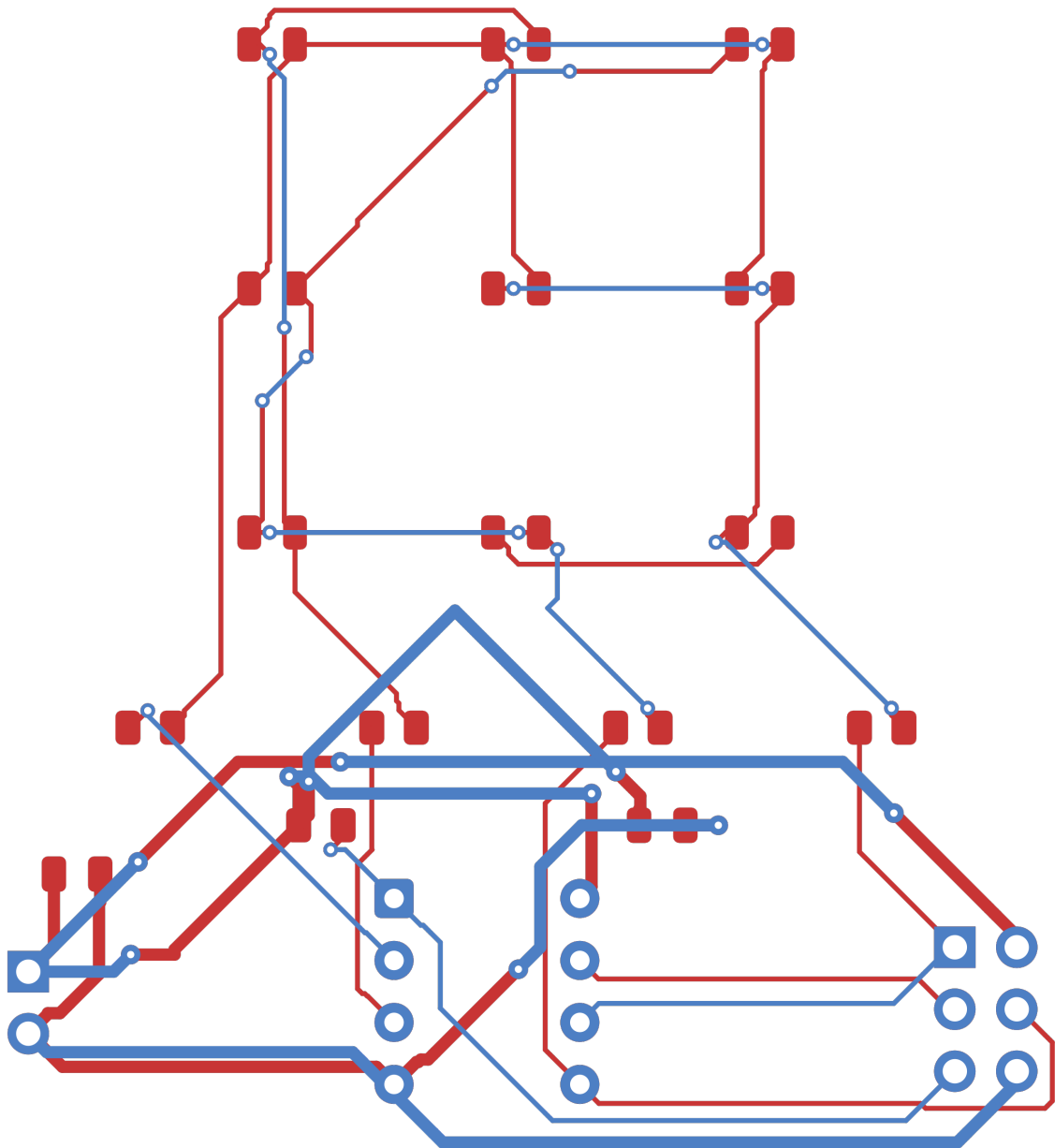


PCB Layout

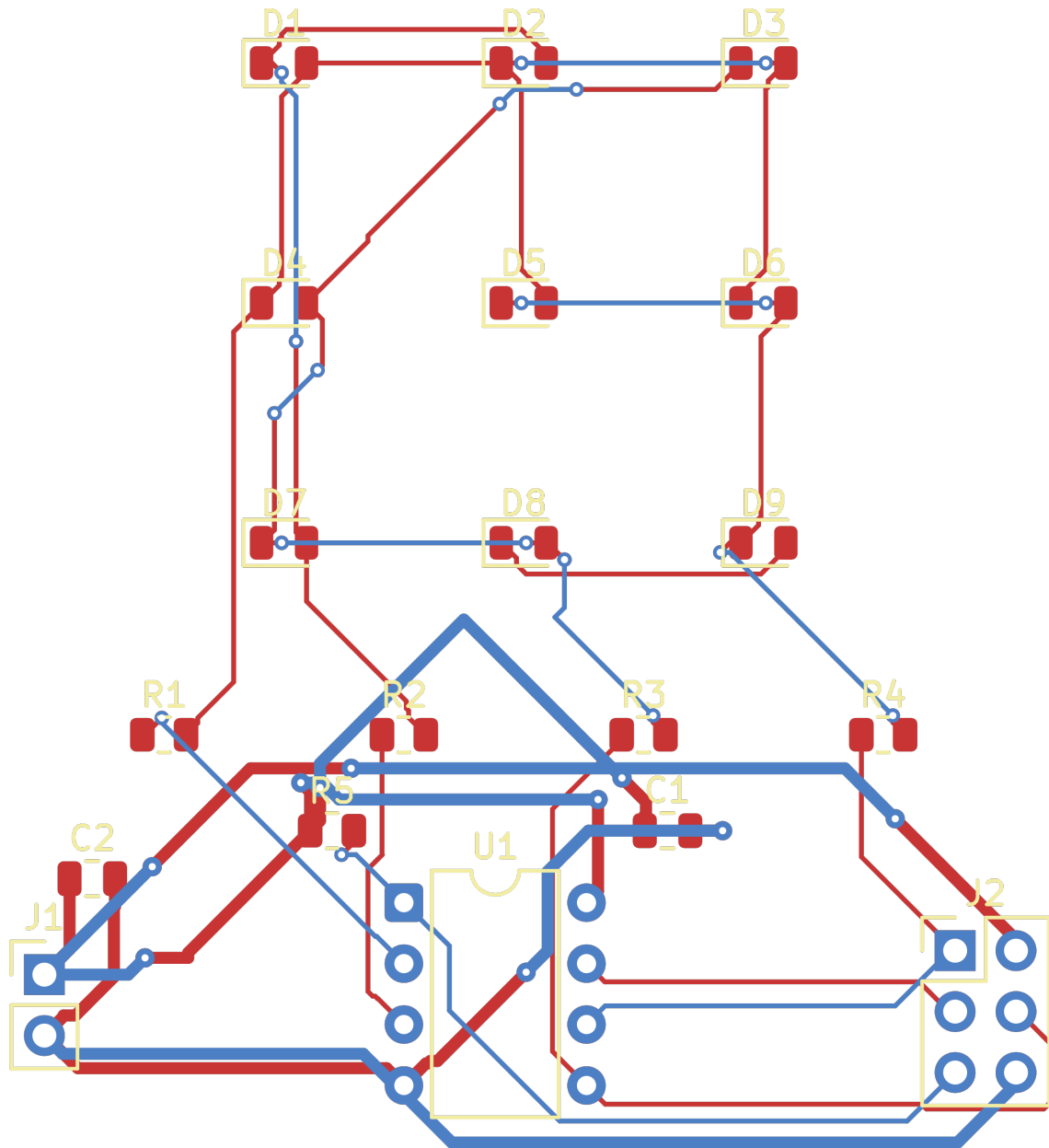




Copper

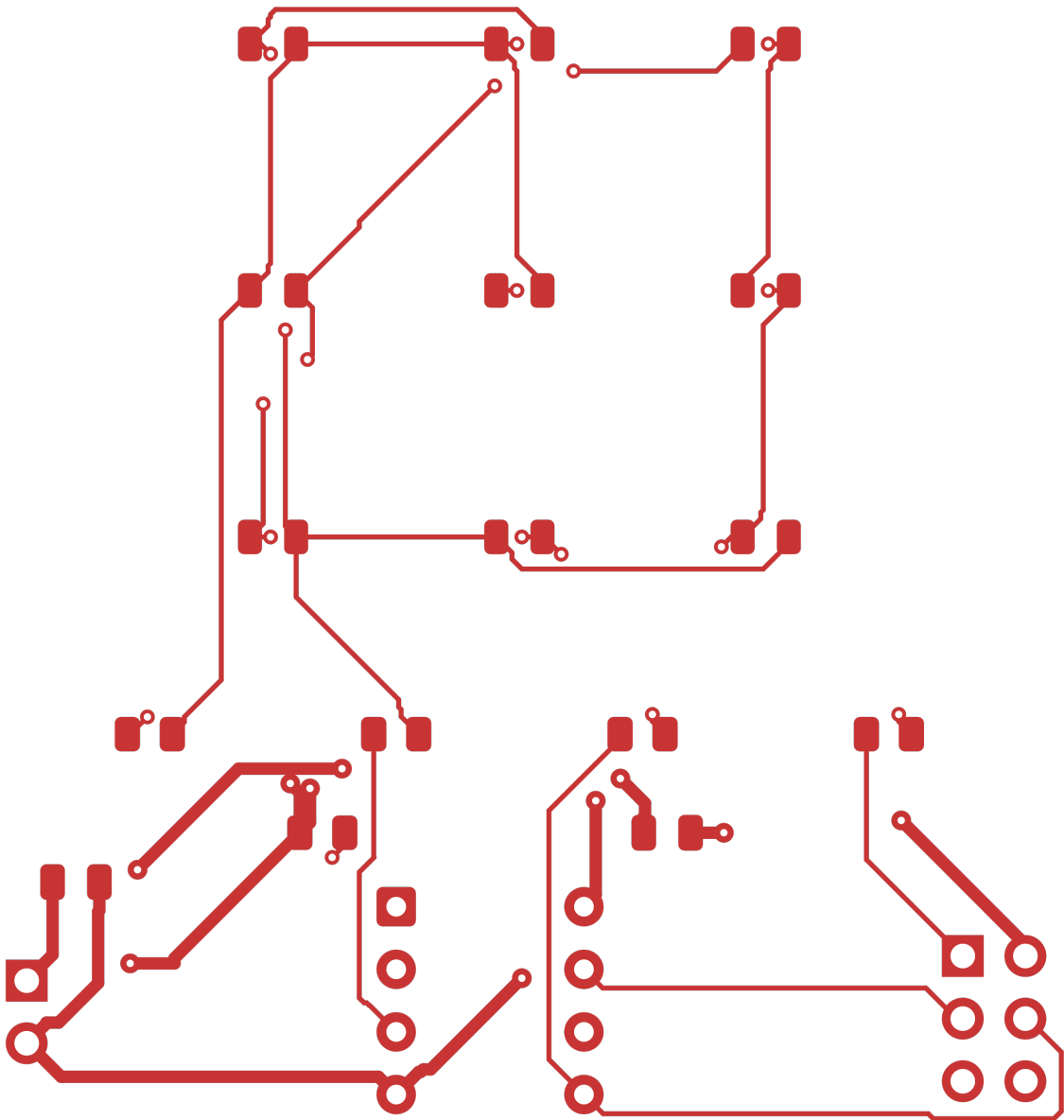


Assembly

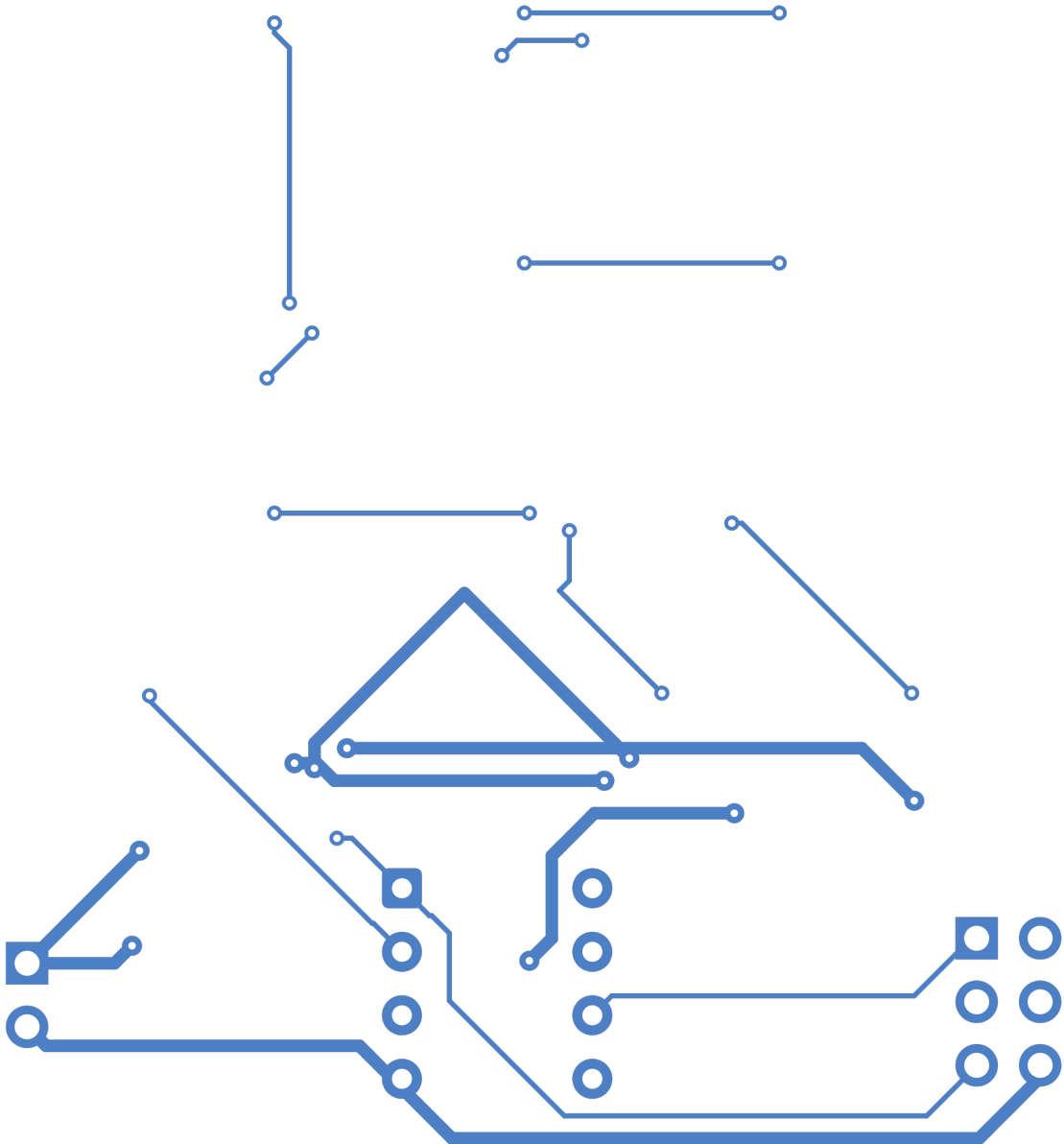


Copper Layers

F.Cu



B.Cu



Bill of Materials

Value	Package	Qty	References
100nF	C_0805_2012Metric	1	C1
4.7uF	C_0805_2012Metric	1	C2
LED	LED_0805_2012Metric	9	D1, D2, D3, D4, D5, D6, D7, D8, D9
AVR-ISP	PinHeader_2x03_P2.54 mm_Vertical	1	J2
POWER	PinHeader_1x02_P2.54 mm_Vertical	1	J1
10k	R_0805_2012Metric	1	R5
330R	R_0805_2012Metric	4	R1, R2, R3, R4
ATtiny85-20PU	DIP-8_W7.62mm	1	U1

DRC Status

Metric	Count
Errors	0
Warnings	0
Blocking	0

Status: PASS

Manufacturing Readiness

Verdict: READY

Action Items

- **[OPTIONAL]** Analog net: LINE_A — audio signal; keep short, away from digital/switching nets
- **[OPTIONAL]** Analog net: LINE_B — audio signal; keep short, away from digital/switching nets
- **[OPTIONAL]** Analog net: LINE_C — audio signal; keep short, away from digital/switching nets
- **[OPTIONAL]** Analog net: LINE_D — audio signal; keep short, away from digital/switching nets

Routing Status

Metric	Value
Signal Net Completion	100.0% (12/12)
Overall Completion	100.0%
Complete Nets	12 / 12
Incomplete Nets	0
Unconnected Pads	0

Cost Estimate

Metric	Per Board (estimated)
PCB Fabrication	~0.95 USD
Components (estimated)	~0.78 USD
Assembly (estimated)	~2.04 USD
Total (estimated)	~3.77 USD
Batch Quantity	5
Batch Total (estimated)	~18.86 USD