

AMP44 Rev C portable dual-input 4.4 mm BTL headphone amplifier

Targets: 1 Vrms differential into 16 ohm LOW; 2 Vrms differential only for >=32 ohm HIGH.

Analog signal path, protected 1-cell Li-poly, USB input-limited charging, four-pole fail-safe disconnect.

WARNING: digitally checked but not physically measured. Use current-limited bring-up and dummy loads first.

Connectors, ESD, RF filtering, shield policy



File: 01_interfaces.kicad_sch

Analog input selection, volume, fixed gain, BTL output



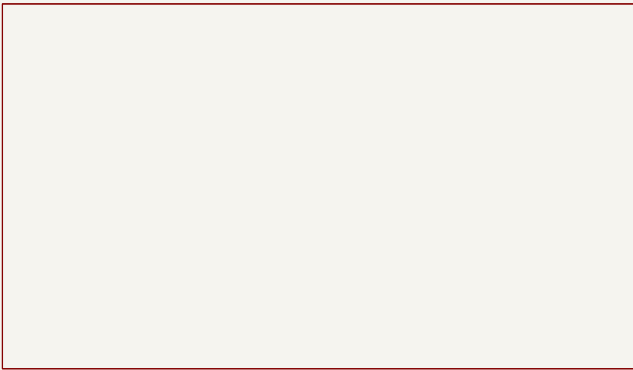
File: 02_audio.kicad_sch

USB-C current advertisement, charger, battery and NTC



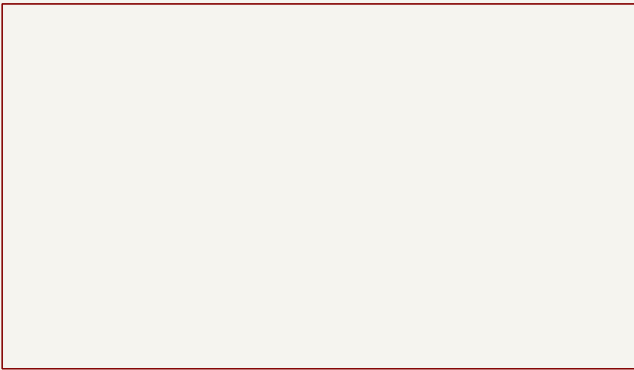
File: 03_usb_charger.kicad_sch

External UVLO, audio rails and independent relay rail



File: 04_power.kicad_sch

DC, rail and delayed relay protection



File: 05_protection.kicad_sch

Verification boundaries

Calculated: gains, currents, thresholds, power margins and component stress.

Simulated: behavioral DC-fault filtering and UVLO/protection timing.

Unmeasured: noise, THD, EMI, reactive-load stability, temperature and charger thermal behavior.

Stage 2a schematic only; PCB and physical validation follow
Native KiCad ERC evidence accompanies this design

Soulstream engineering review

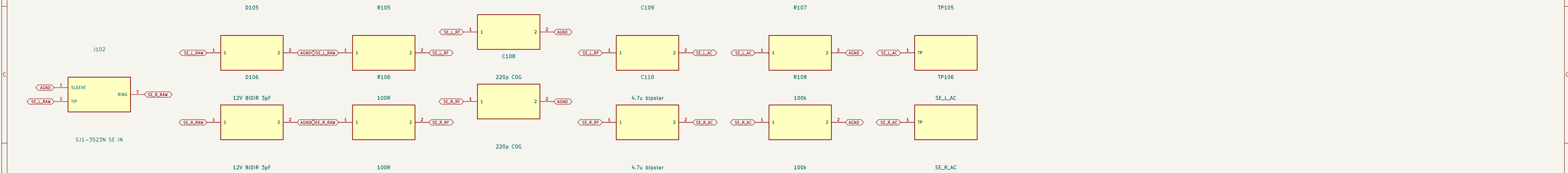
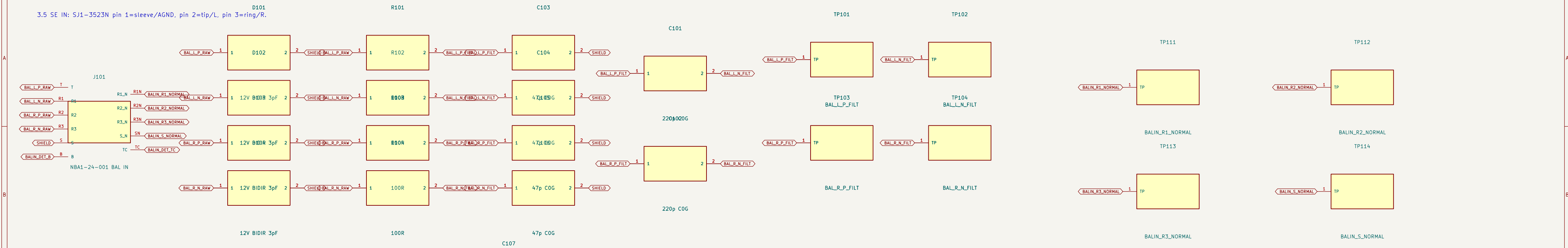
Sheet: /
File: amp44-revc.kicad_sch

Title: AMP44 Rev C – Product Schematic

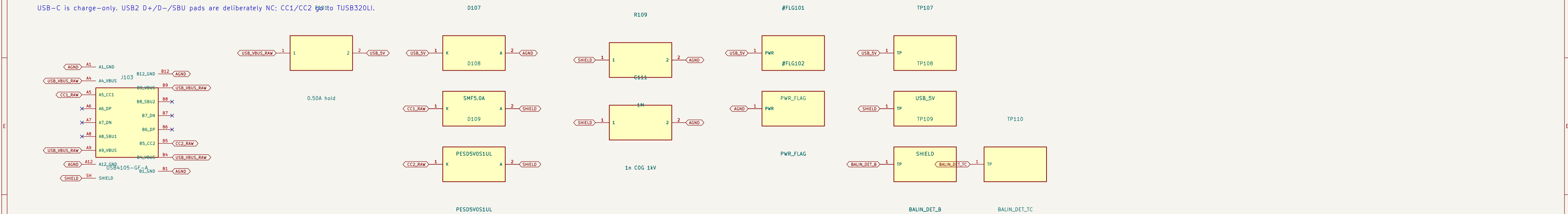
Size: A2	Date: 2026-09-11	Rev: C / Stage 2a
KiCad E.D.A. 10.0.6		Id: 1/6

4.4 BAL IN: T=L+, R1=L-, R2=R+, R3=R-, S=SHIELD. All normal contacts and B/TC retained.

3.5 SE IN: SJ1-3523N pin 1=sleeve/AGND, pin 2=tip/L, pin 3=ring/R.



USB-C is charge-only. USB2 D+/D-/SBU pads are deliberately NC; CC1/CC2 go to TUSB320LI.



Do not connect earphones before bring-up clearance
Calculated and simulated; not physically measured

Soulstream engineering review

Sheet: /Connectors, ESD, RF filtering, shield policy/
File: 01_interfaces.kicad.sch

Title: AMP44 Rev C – Connectors, ESD, RF filtering, shield policy

Size: A2	Date: 2026-09-11	Rev: C / Stage
----------	------------------	----------------

KICad E.D.A. 10.0.6		Id: 2/6
10	11	

