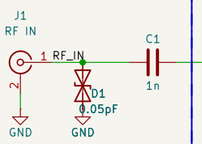
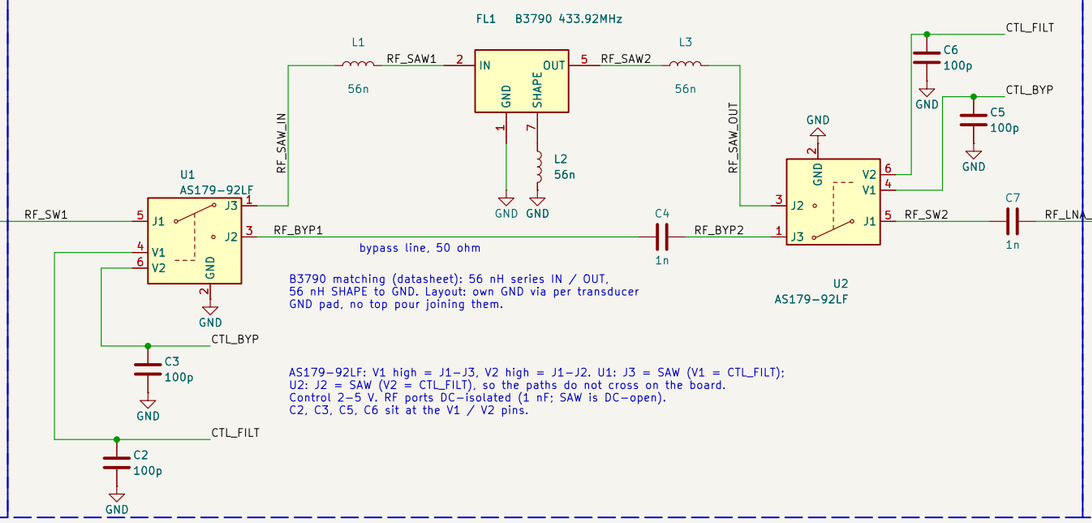
RF INPUT



ESD: 0.05 pF polymer suppressor at the connector.
DC blocks: 1 nF C0G 0402.

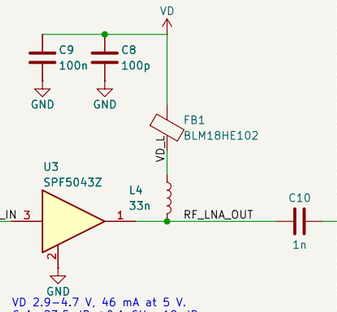
FILTER / BYPASS SELECT



B3790 matching (datasheet): 56 nH series IN / OUT, 56 nH SHAPE to GND. Layout: own GND via per transducer GND pad, no top pour joining them.

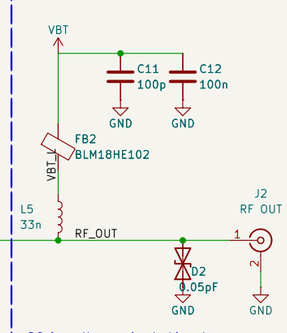
AS179-92LF: V1 high = J1–J3, V2 high = J1–J2. U1: J3 = SAW (V1 = CTL_FILT); U2: J2 = SAW (V2 = CTL_FILT), so the paths do not cross on the board.
Control 2–5 V. RF ports DC-isolated (1 nF; SAW is DC-open).
C2, C3, C5, C6 sit at the V1 / V2 pins.

LNA



VD 2.9–4.7 V, 46 mA at 5 V.
Gain 23.5 dB @0.1 GHz, 18 dB @0.9, ~10 dB @3 GHz;
NF 0.6–1.1 dB (datasheet).
No capacitor between L4 and FB1: it would short the feed below 1 GHz.

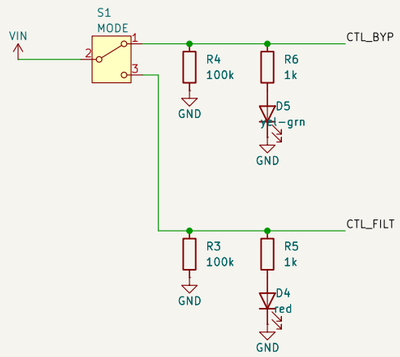
RF OUTPUT + BIAS-TEE



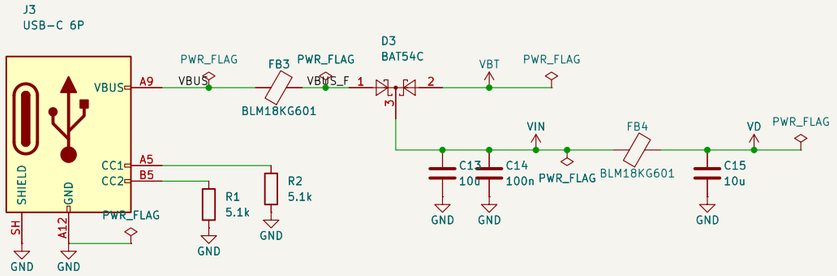
DC from the receiver's bias-tee (3.3–5 V) powers the board:
C10 keeps it off the LNA drain.

MODE SELECT

S1 to 1 = WIDEBAND: bypass, 0.1–3 GHz, yellow-green LED D5.
S1 to 3 = FILTER: SAW 433.92 MHz in front of the LNA (–0.4 MHz, NF ~5 dB), red LED D4.
100k pull-downs keep the unselected control line at 0 V.



POWER: USB-C 5 V or bias-tee on RF OUT



USB-C: power only, CC 5.1k = sink, 5 V. BAT54C ORs USB and the bias-tee (~0.35 V drop):
VIN 2.9–4.7 V. Worst case ~55 mA (LNA 46 mA, LED, switch control).



RF_* nets: 50-ohm CPWG 0.345 / 0.3 mm, no mask, L2 GND (JLC04161H-7628)
SPF5043Z LNA, B3790 SAW, 2 x AS179-92LF; USB-C or bias-tee power

Sheet: /
File: wideband_lna_saw433.kicad_sch

Title: Wideband LNA 0.1–3 GHz with switchable 433.92 MHz SAW filter

Size: A3	Date: 2026-11-02	**Rev: 2**
KiCad E.D.A. 10.0.4		Id: 1/1