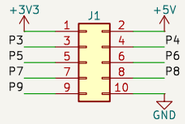
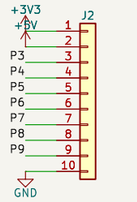
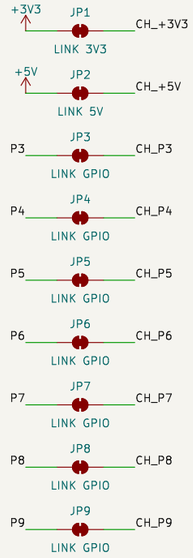
01 / Y IN J1



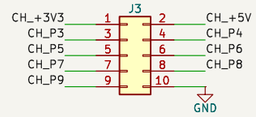
02 / RAW PINS J2



03 / JP1–JP9 CHAIN LINKS



04 / Y CHAIN J3



05 / GND PROBE PAD TP1 (and power flags)



PIN MAP (maintainer decision D1, CLAUDE.md Version 16, socket type Y). Pin 1 +3V3, pin 2 +5V, pin 3 GPIO! (P3), pins 4–9 GPIO (P4..P9), pin 10 GND. Same order on J1, J2 and J3.

CHAIN MAP (D2): every pin of J1 is forwarded. Pins 1–9 reach J3 through the solder links JP1..JP9 (J3 side nets CH_+3V3, CH_+5V, CH_P3..CH_P9). Pin 10 (GND) is hard-wired to J1, J2, J3 and TP1. Nothing is consumed or transformed.

J2 (RAW PINS) and J1 (IN) are never behind a link. A link cut isolates only the CHAIN segment of its own net; cutting JP1/JP2 leaves the downstream board without power.

LINK TABLE (all shipped BRIDGED by a copper strip, no solder needed; pad 1 = header/IN side, pad 2 = CHAIN side):

JP1 +3V3 / CH_+3V3 JP2 +5V / CH_+5V JP3 P3 / CH_P3 JP4 P4 / CH_P4 JP5 P5 / CH_P5 JP6 P6 / CH_P6 JP7 P7 / CH_P7 JP8 P8 / CH_P8 JP9 P9 / CH_P9

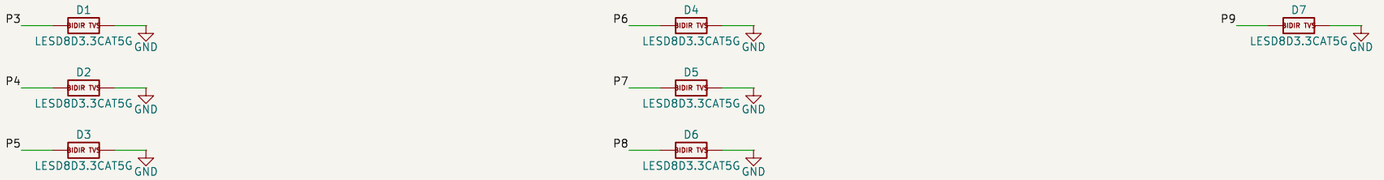
HOST LIMIT (D3): each rail is limited by the host to about 0.32 A (MT9700, R64 = R65 = 21.5 k, schematic note 6.8k/R) and is SHARED by all nine host expansion headers. TVS leakage sums to <=0.7 uA at 3.3 V, 25 C; signal loading and host allocation remain unqualified.

D1–D7 shunt P3–P9 to GND at J2; no pull-up, translation, filtering or termination. Host survival and unpowered behavior require qualification. Scope: socket type Y only, low-speed GPIO, cables <= 150 mm; high-speed buses UNQUALIFIED; no hot-plug claim.

VERIFICATION BOUNDARY: schematic is CAD-checked (ERC, netlist parity) only. Connector mating, cable ratings, speed, supplier capability and physical header mating are unverified. Study version v11, not fabrication-ready.

CERN-OHL-S-2.0 | KiCad only | black solder mask, white silkscreen | 2 layers, 1.6 mm FR4

06 / J2 GPIO ESD SHUNTS (CAD STUDY; HOST SURVIVAL UNQUALIFIED)



Y CHAIN pass-through; GND continuous
Y IN -> RAW PINS; seven TVS shunts; nine cuttable links
J2 GPIO shunts D1–D7; system ESD qualification open
Electrical source: v03 tools/create_schematic.py
Smoothieware / CERN-OHL-S-2.0

Sheet: /
File: raw-pins-breakout.kicad_sch

Title: Smoothie Raw Pins Breakout

Size: A3	Date: 2026-10-11	**Rev: v11**
KiCad E.D.A. 9.0.8		Id: 1/1