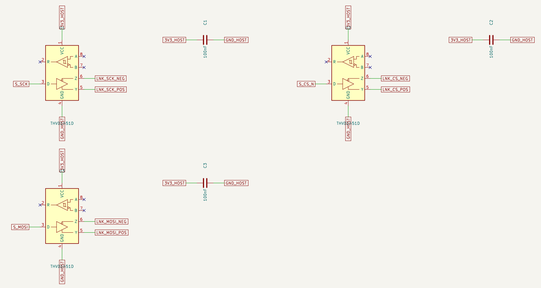
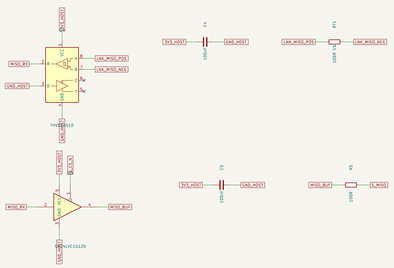
01 / GADGETEER S SOCKET FROM THE SMOOTHIEBOARD (J1), BIAS RESISTORS



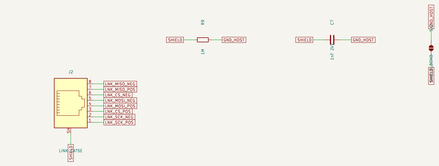
02 / LINK DRIVERS: SCK (U1), CS (U2), MOSI (U3), 100R-TERMINATED AT THE REMOTE



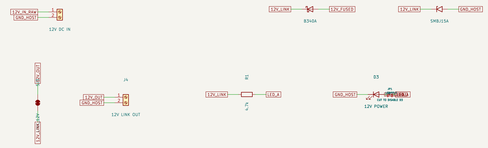
03 / MISO RECEIVER (U4) + CS-GATED MISO BUFFER (U5)



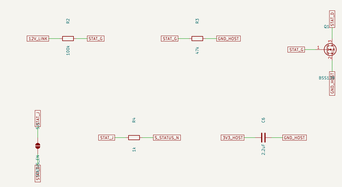
04 / RJ45 LINK JACK J2 AND SHIELD NETWORK



05 / 12 V ENTRY, PROTECTION AND LINK OUT (J3, F1, D1, D2, SJ3, J4)



06 / STATUS_N (BSS138 OPEN DRAIN, JUMPER SJ1 SHIPS OPEN) AND 3V3 ENTRY RESERVOIR

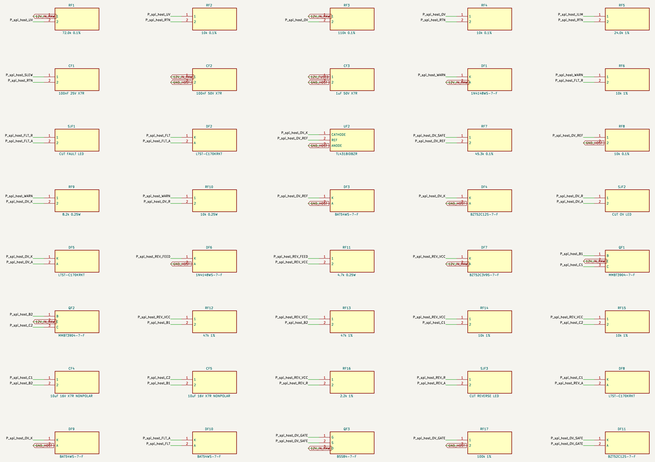


07 / TEST PADS (BOTTOM SIDE, OBSERVE ONLY)



PWR_FLAG nets (power_in pins without a power_out driver): 3V3_HOST, GND_HOST





HOST: Gadgeteer S socket cable from the Smoothieboard V2 Prime. Pin 1 3V3 (consumed), pin 2 +5V NOT CONNECTED, pin 3 STATUS_N (jumper SJ1, ships OPEN), pins 4/5 NC,
pin 6 CS, 7 MOSI, 8 MISO, 9 SCK, 10 GND (canonical CLAUDE.md map). Line = shielded straight-through CatSe, pairs SCK 1-2, CS 3-6, MOSI 4-5, MISO 7-8, NOT ETHERNET.
Polarity: POS = driver Y = receiver A, NEG = driver Z = receiver B. U1-U3 drive (3-->Y/Z), U4 receives (A/B-->R); RT1 150R terminates the MISO pair at its receiver.
U5 (74LVC1G125) releases MISO unless CS is low; R5 100R limits midwire current; R6 pulls CS inactive, R7/R8 pull SCK/MOSI low when the Smoothie pins float.
SJ1 = 3V3 --> F1 PPTC 0.5 A hold --> D1 B340A (reverse block) --> 12V_LINK (D2 SMBJ15A clamp, D5 power LED) --> SJ3 (closed) --> J4 line out. LED = POWER ONLY.
SHIELD net couples to GND_HOST through R9 1M || C7 1nF 2kV; SJ2 SHIELD_BOND ships OPEN. Exceptions: E1 no 5V source-select jumper, E2 no second 5 port, E3 no external ESD clamp.
STUDY v1k - generated from design-contract.json by tools/create_schematic.py. CERN-OHL-S-2.0. KiCad only. Not fabrication ready.

STUDY: first-cut v1k, not fabrication ready; CERN-OHL-S-2.0; KiCad only
Generated from design-contract.json by tools/create_schematic.py (v1k)
Smoothieware / CERN-OHL-S-2.0
Sheet: /
File: stat-host.kicad_sch
Title: Differential SPI extender HOST
Size: A1 | Date: 2026-10-01 | **Rev: v1k**
KiCad 10.0.X 0.8 | SHA: ?/?