SHPI.zero lite

Functional schematic / population overview

Functional net names and modular circuit groups

Populated circuit at the front / non-populated options at the back

Raspberry Pi Zero / DPI series / reset / touch

Sheet 02 | 28 components

Display / connector / charge pumps

Sheet 03 | 25 components

Display / copper bridges / PCB positions

Sheet 04 | 22 components

Supply / panel / protection

Sheet 05 | 19 components

AL3050 / backlight

Sheet 06 | 6 components

I2C level / AHT10 / climate / light

Sheet 07 | 15 components

PIR / sensitivity / infrared temperature

Sheet 08 | 9 components

Analog/ADC/gas options

Sheet 09 | 10 components

RGB LED / package options / data

Sheet 10 | 5 components

Fan / low-side switch / filter

Sheet 11 | 9 components

USB audio / HS100B / control contacts

Sheet 12 | 18 components

Audio power amplifier / speaker / microphone

Sheet 13 | 15 components

DNP / Raspberry Pi Zero / DPI series / reset / Touch

Sheet 14 | 1 component

DNP / I2C level shifter / AHT10 / climate / light

Sheet 15 | 2 components

DNP / Analog/ADC/gas options

Sheet 16 | 8 components

DNP / Audio power amplifier / speaker / microphone

Sheet 17 | 1 component

Identical global net names connect the functional sheets.

Non-populated options are marked with DNP and a cross.

SHPI

Sheet: /
File: SHPI-zero-lite.kicad_sch

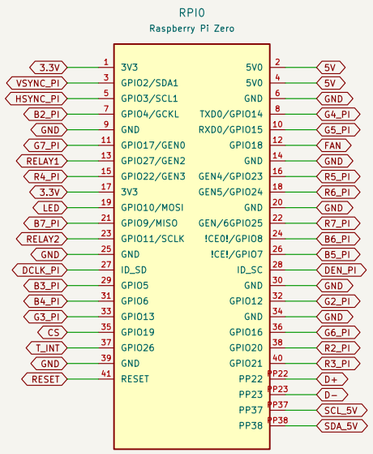
Title: SHPI.zero lite / Function overview

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 1/17

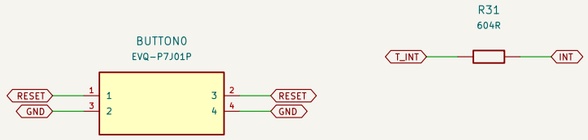
Raspberry Pi Zero / DPI series / reset / touch

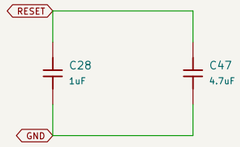
Raspberry Pi with DPI series resistors, control lines and reset.

Raspberry Pi Zero

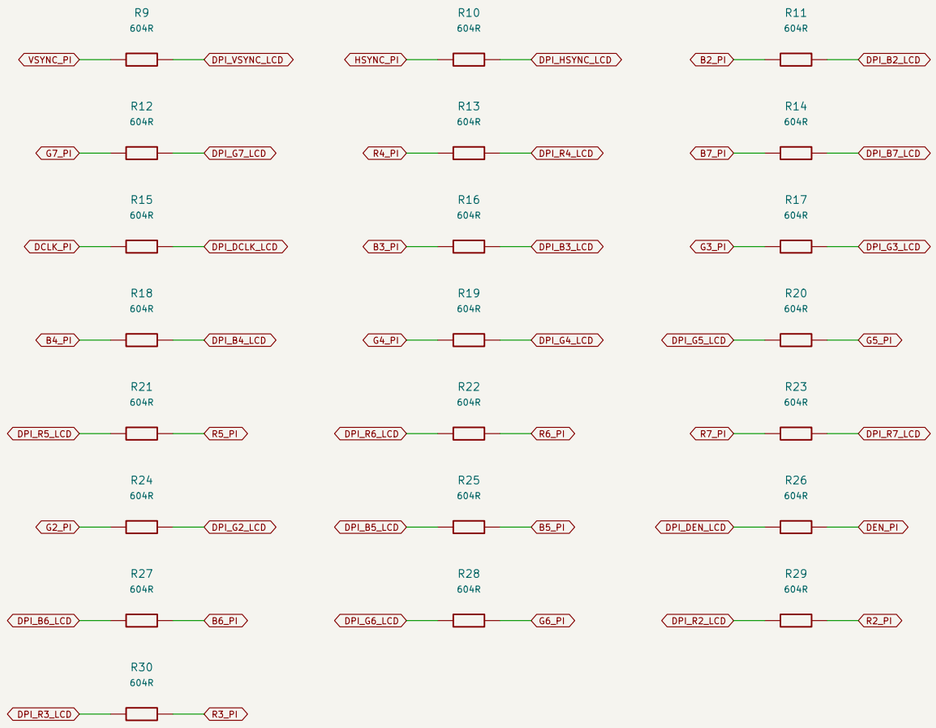


Touch interrupt / system reset





DPI series resistors R9–R30



DPI-DEN test contact



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Raspberry Pi Zero / DPI series / reset / touch/
File: 01_Raspberry_Pi.kicad_sch

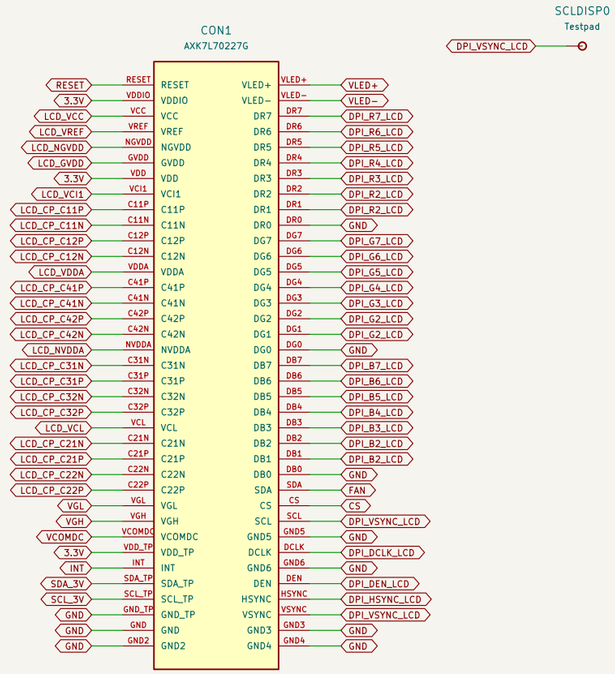
Title: SHPI.zero lite / Raspberry Pi

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 2/17

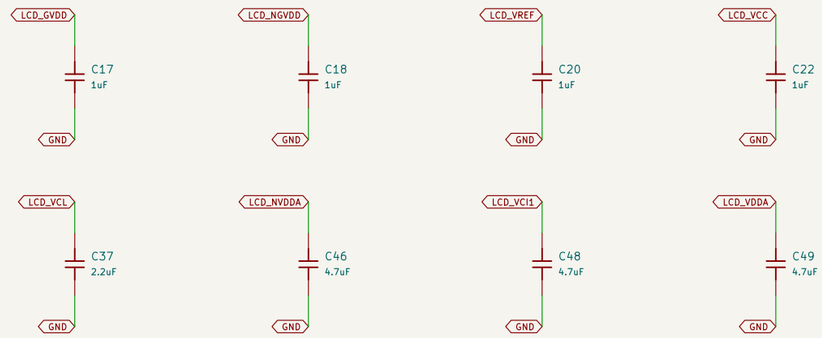
Display / connector / charge pumps

Display connector P4 with charge pumps and local supply nodes.

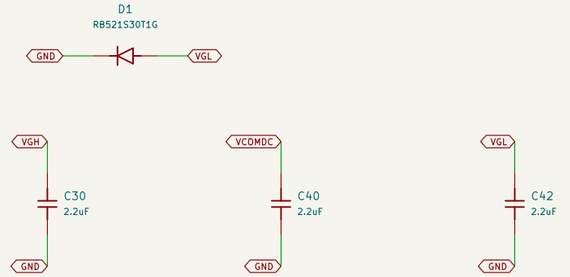
Display/touch connector



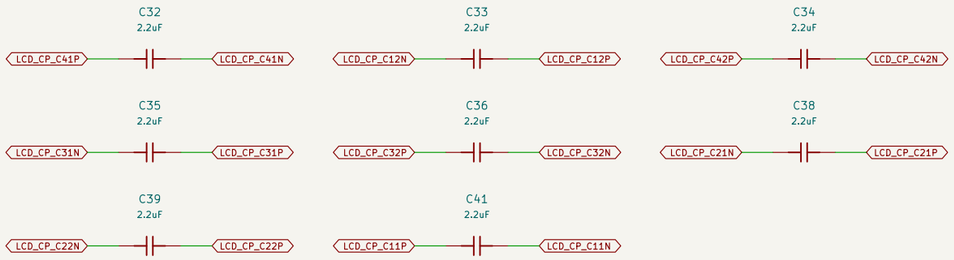
Local display supplies



VGH / VGL / VCOMDC



Display charge pumps



Display ground contacts



SHPI.zero lite | Functional schematic
SHPI

Sheet: /Display / connector / charge pumps/
File: 02_Display_Connector.kicad_sch

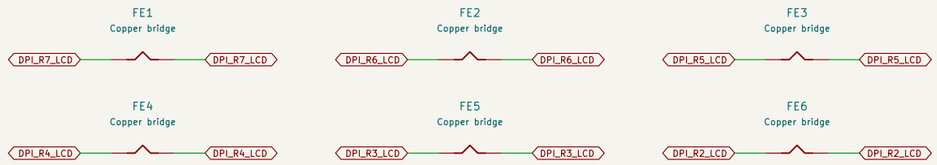
Title: SHPI.zero lite / Display Connector

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 3/17

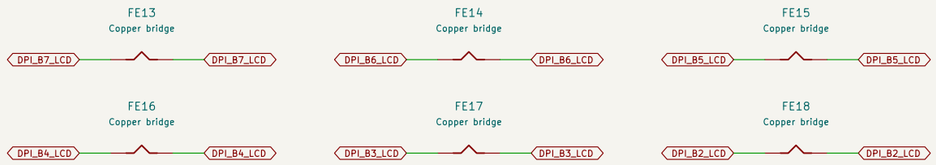
Display / copper bridges / PCB positions

Fixed copper connections of the RGB and timing lines.

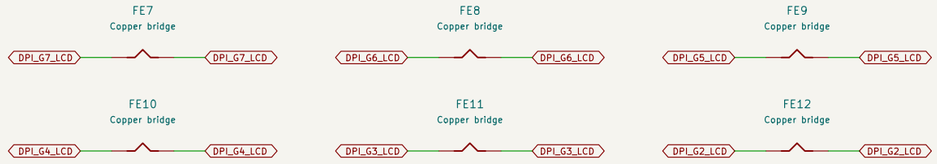
Red / FE copper bridges



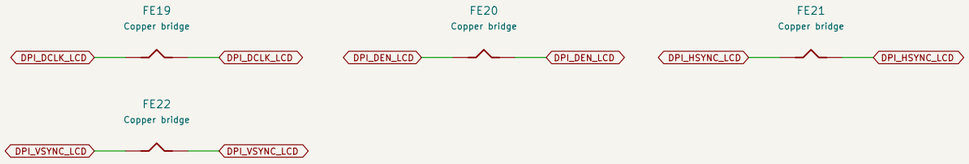
Blue / FE copper bridges



Green / FE copper bridges



Timing / FE copper bridges



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Display / copper bridges / PCB positions/
File: 03_Display_Filter.kicad_sch

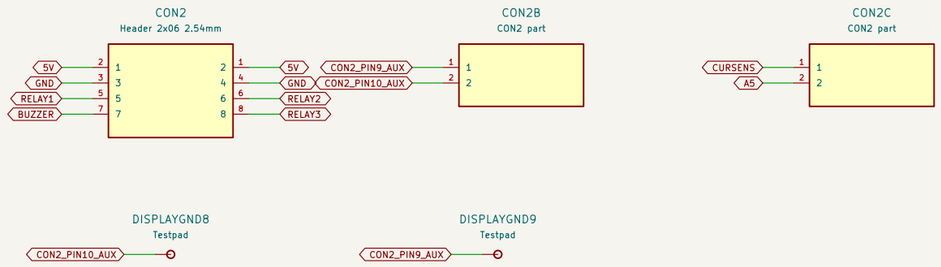
Title: SHPI.zero lite / Display Filter

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 4/17

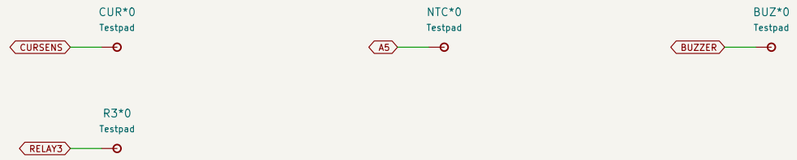
Supply / panel / protection

Supply, relay and signal connections with protection and decoupling.

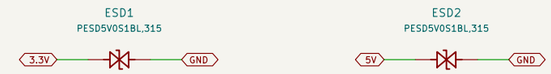
Common panel CON2 / CON2B / CON2C



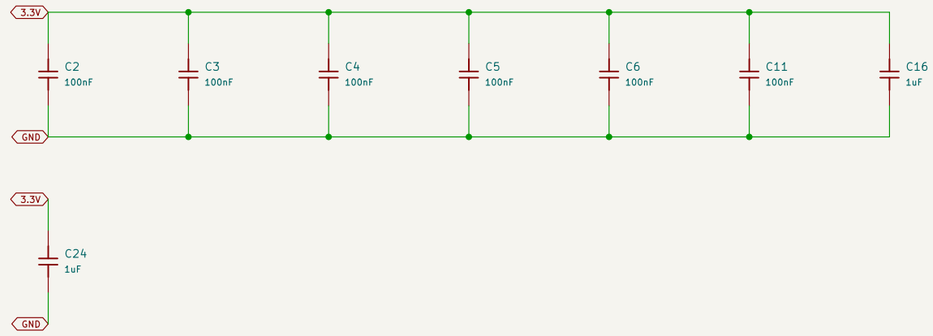
Panel test contacts



Supply protection



Common 3.3V decoupling



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Supply / panel / protection/
File: 04_Power_Panel.kicad_sch

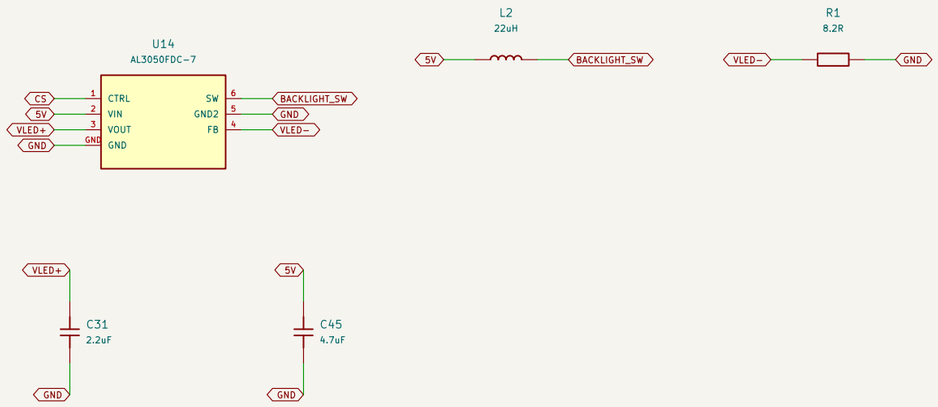
Title: SHPI.zero lite / Power Panel

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 5/17

AL3050 / backlight

AL3050 for the backlight with output and current feedback.

AL3050 switching branch



CS test contact



SHPI.zero lite | Functional schematic

SHPI

Sheet: /AL3050 / backlight/
File: 05_Backlight.kicad_sch

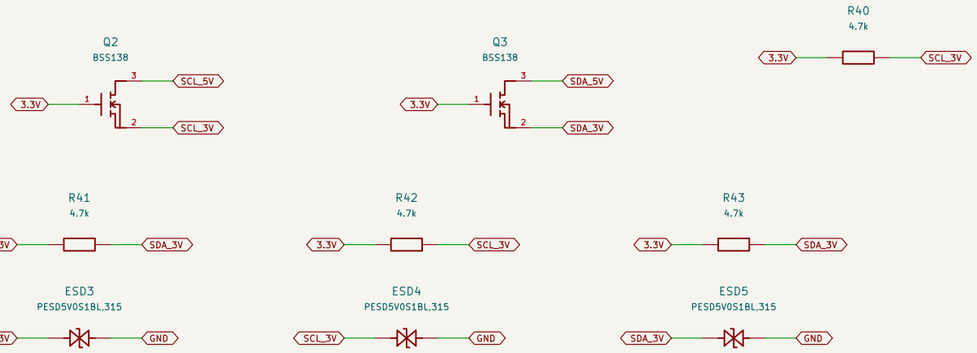
Title: SHPI.zero lite / Backlight

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 6/17

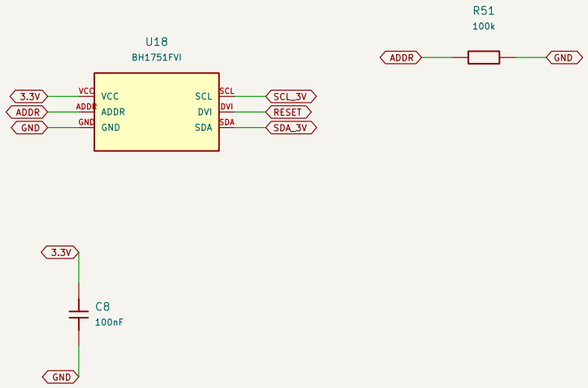
I2C level / AHT10 / climate / light

I²C level conversion as well as climate and light sensors.

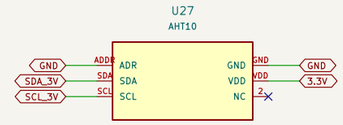
I2C 5V / 3.3V / protection



BH175x light / reset / address



AHT10 humidity / temperature



BMP/BME280 position



BME680 option



SHPI.zero lite | Functional schematic

SHPI

Sheet: /I2C level / AHT10 / climate / light/
File: 06_I2C_Climate_Light.kicad_sch

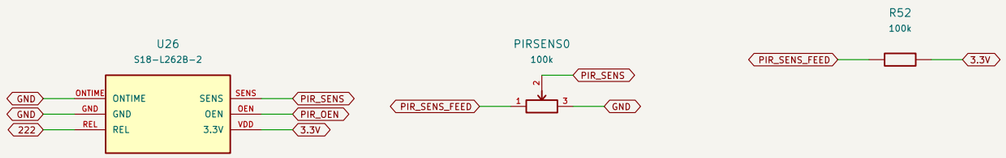
Title: SHPI.zero lite / I2C Climate Light

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 7/17

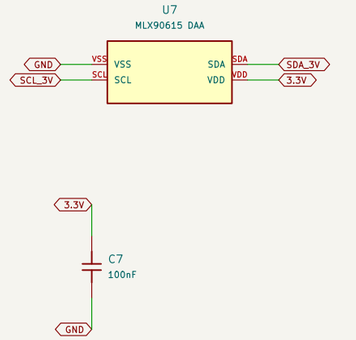
PIR / sensitivity / infrared temperature

PIR motion detection and contactless temperature measurement.

S18 PIR / sensitivity / output



MLX90615 temperature



SHPI.zero lite | Functional schematic

SHPI

Sheet: /PIR / sensitivity / infrared temperature/
File: 07_Motion_Temperature.kicad_sch

Title: SHPI.zero lite / Motion Temperature

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 8/17

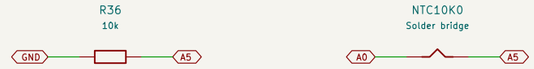
Analog/ADC/gas options

Optional analog measurement, NTC and gas sensor connections.

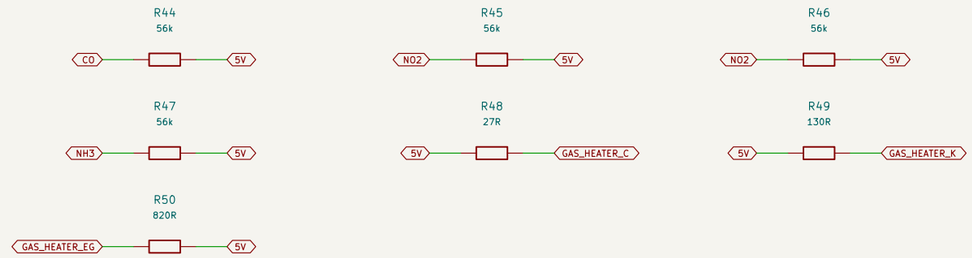
ADS1015 option / ALERT



NTC / ADC assignment jumpers



Multi-channel gas sensor option



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Analog/ADC/gas options/
File: 08_ADC_Gas_Options.kicad_sch

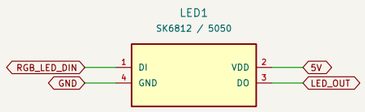
Title: SHPI.zero lite / ADC Gas Options

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 9/17

RGB LED / package options / data

One SK6812 in a 5050 package with two connected mounting pads.

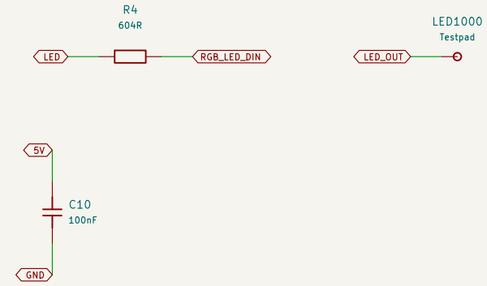
LED1: SK6812 / 5050



LED2: 5050 mounting pad of the same LED1



LED data / supply / test pad



SHPI.zero lite | Functional schematic

SHPI

Sheet: /RGB LED / package options / data/
File: 09_RGB_LED.kicad_sch

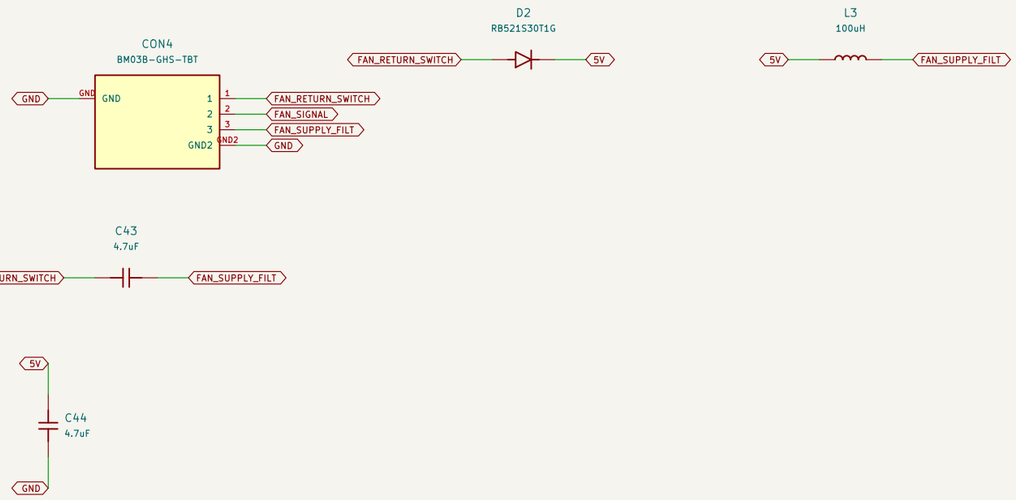
Title: SHPI.zero lite / RGB LED

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 10/17

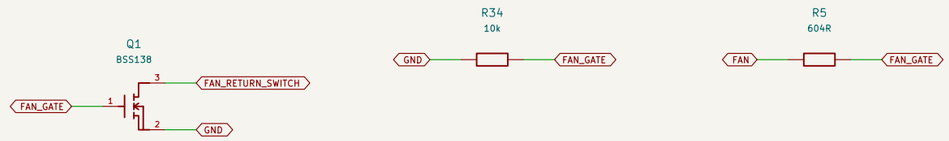
Fan / low-side switch / filter

Fan connector with filtered supply and switched return.

CON4 / freewheeling / output filter



Gate / switch



Fan signal test contact



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Fan / low-side switch / filter/
File: 10_Fan.kicad_sch

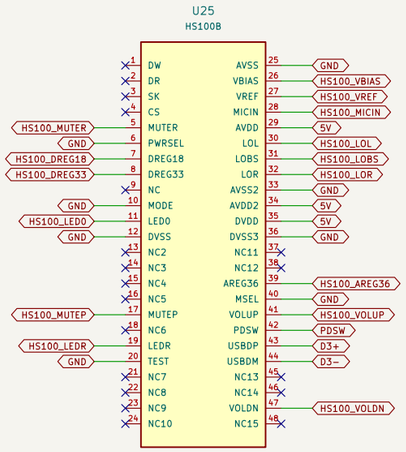
Title: SHPI.zero lite / Fan

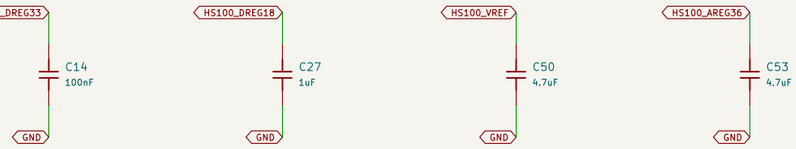
Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 11/17

USB audio / HS100B / control contacts

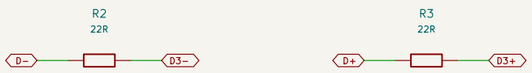
USB audio codec with supply and control/status contacts.

HS100B / local regulators / reference

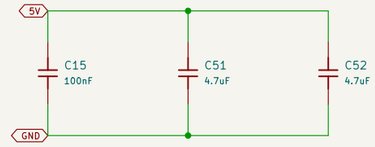




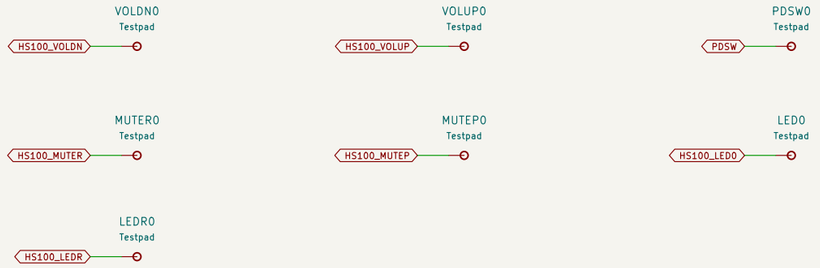
USB to Raspberry Pi



Codec supply



Control/status test contacts



LOR branch



SHPI.zero lite | Functional schematic
SHPI
Sheet: /USB audio / HS100B / control contacts/
File: 11_USB_Audio.kicad_sch

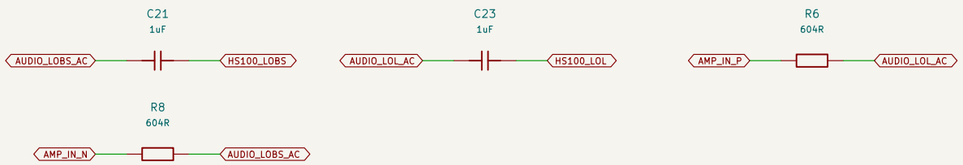
Title: SHPI.zero lite / USB Audio

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 12/17

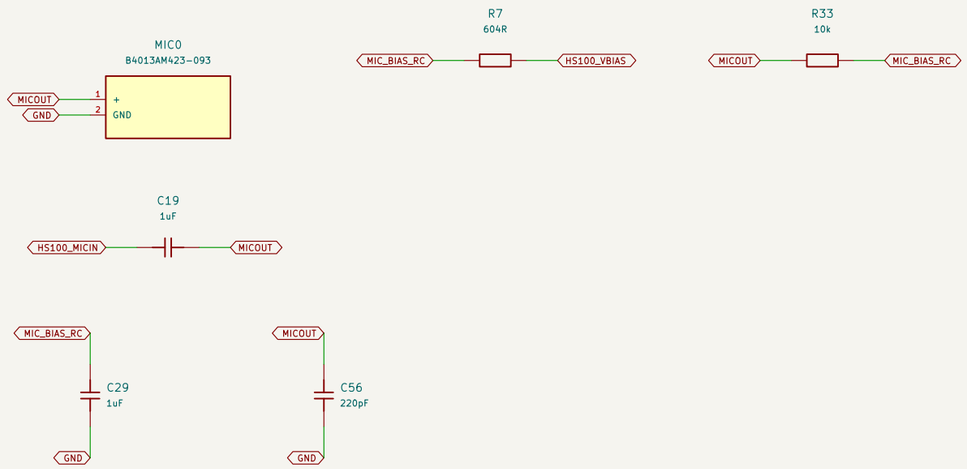
Audio power amplifier / speaker / microphone

Audio power amplifier, speaker and microphone with bias circuitry.

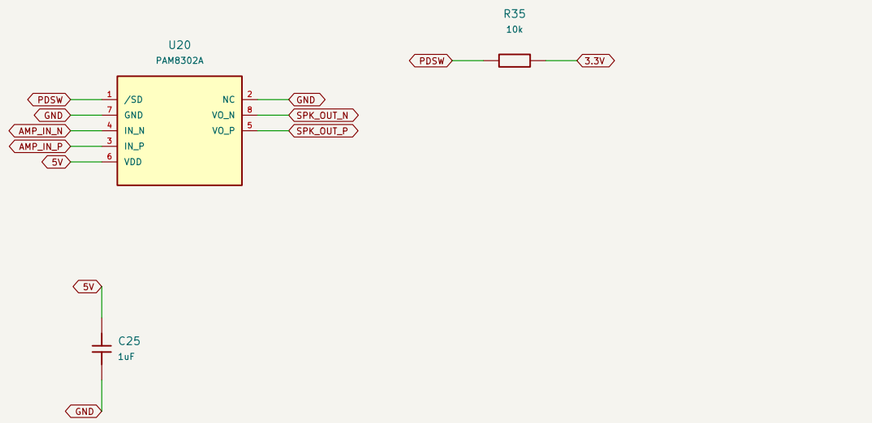
Codec output coupling



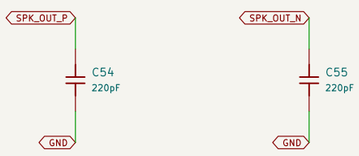
Goertek microphone / bias / coupling



PAM8302A / enable



Speaker / output capacitors



SHPI.zero lite | Functional schematic

SHPI

Sheet: /Audio power amplifier / speaker / microphone/
File: 12_Audio_Analog.kicad_sch

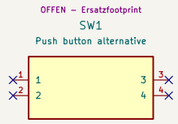
Title: SHPI.zero lite / Audio Analog

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 13/17

DNP / Options: Raspberry Pi Zero / DPI series / reset / touch

DNP = not populated (option).

Alternative push button pad



SHPI.zero lite | Functional schematic

SHPI

Sheet: /DNP / Options: Raspberry Pi Zero / DPI series / reset / touch/
File: DNP_01_Raspberry_Pi.kicad_sch

Title: SHPI.zero lite / DNP: Raspberry Pi

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 14/17

DNP / Options: I2C level shifter / AHT10 / climate / light

DNP = not populated (option).

BMP/BME280 position



BME680 option



SHPI.zero lite | Functional schematic

SHPI

Sheet: /DNP / Options: I2C level shifter / AHT10 / climate / light/
File: DNP_06_I2C_Climate_Light.kicad_sch

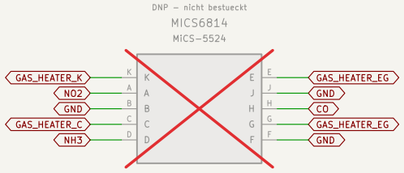
Title: SHPI.zero lite / DNP: I2C Climate Light

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 15/17

DNP / Options: Analog/ADC/gas options

DNP = not populated (option).

Multi-channel gas sensor option





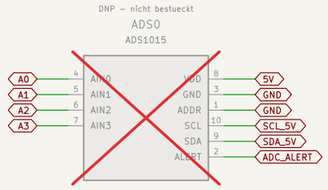




Four-pin sensor connection option VOC

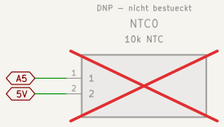


ADS1015 option / ALERT





NTC / ADC assignment jumpers



SHPI.zero lite | Functional schematic

SHPI

Sheet: /DNP / Options: Analog/ADC/gas options/
File: DNP_08_ADC_Gas_Options.kicad_sch

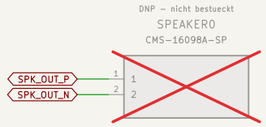
Title: SHPI.zero lite / DNP: ADC Gas Options

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 16/17

DNP / Options: Audio power amplifier / speaker / microphone

DNP = not populated (option).

Speaker / output capacitors



SHPI.zero lite | Functional schematic

SHPI

Sheet: /DNP / Options: Audio power amplifier / speaker / microphone/
File: DNP_12_Audio_Analog.kicad_sch

Title: SHPI.zero lite / DNP: Audio Analog

Size: A3	Date: 2026-11-08	**Rev: R1**
KiCad E.D.A. 10.0.6		Id: 17/17