Rethera

FB-04 Adat Interface

Schematics

Subschematics:

IO board

Sheetfile: io_board.kicad_sch

Power Supply

Sheetfile: power_supply.kicad_sch

MCU and USB

Sheetfile: main_board.kicad_sch

FPGA config and peripherals

File: peripherals.kicad_sch

FPGA and clock generators

Sheetfile: fpga.kicad_sch

IO main

Sheetfile: io.kicad_sch

Display board

Sheetfile: display_board.kicad_sch

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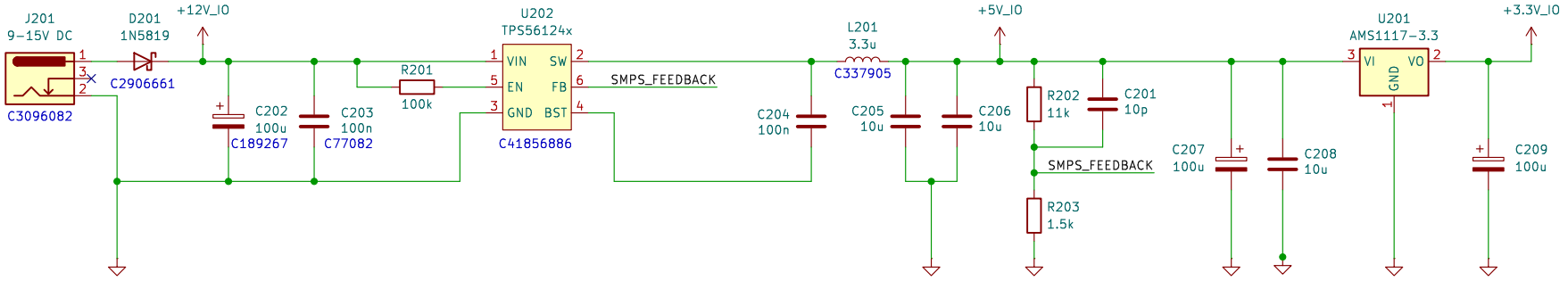
Sheet: /
File: adatv2.kicad_sch

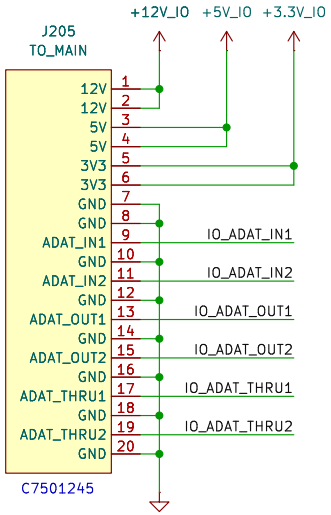
Title: 16-in, 16-out USB <-> ADAT interface

Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 1/8

Power Supply: 9–15V –SMPS–> 5V –LDO–> 3V3

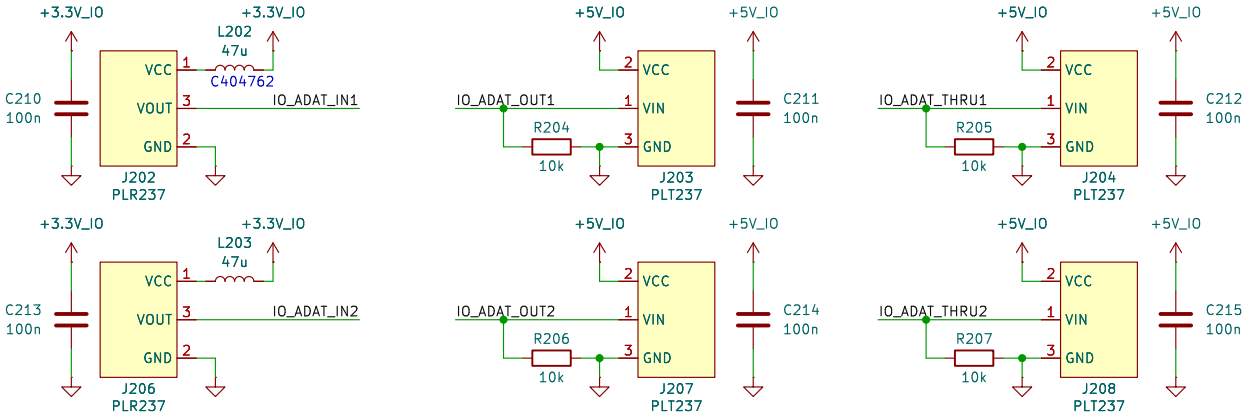


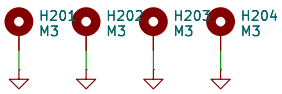
IDC Connector

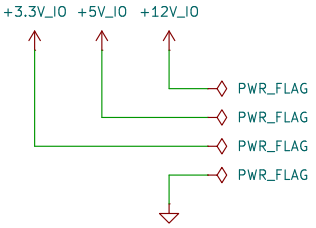


ADAT Terminals

VIN has Vh>2V, so logic level converter is not needed







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Rethera

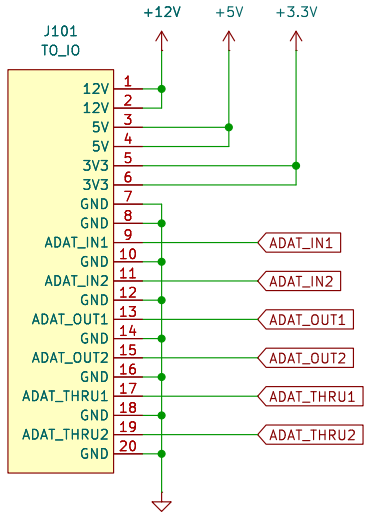
Sheet: /IO board/

File: io_board.kicad_sch

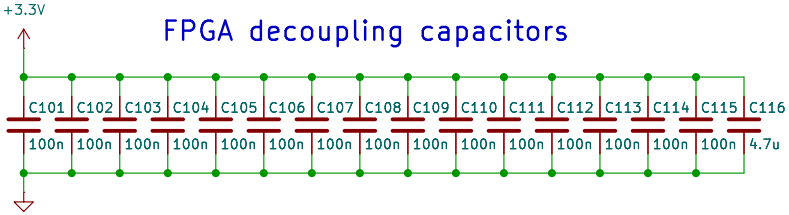
Title: 16–in, 16–out USB <–> ADAT interface

Size: A4	Date: 2025–09–29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 2/8

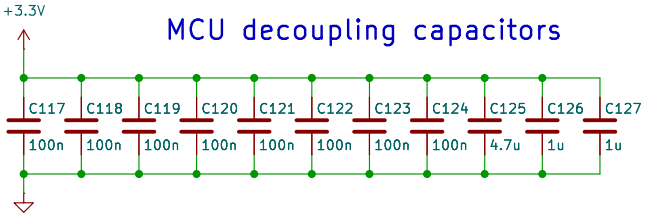
IDC Connector



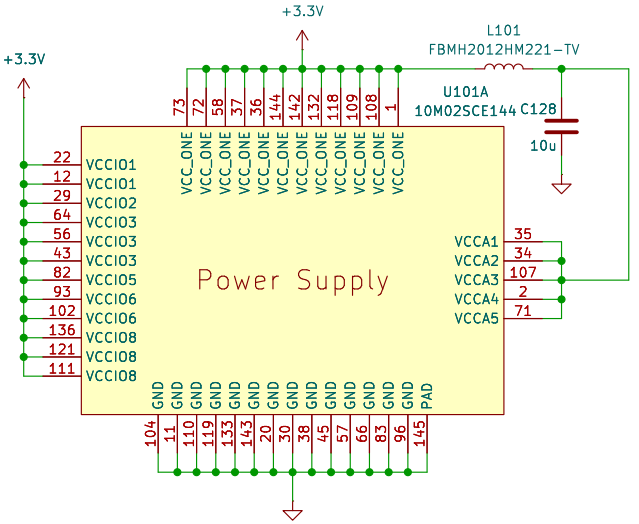
FPGA decoupling capacitors



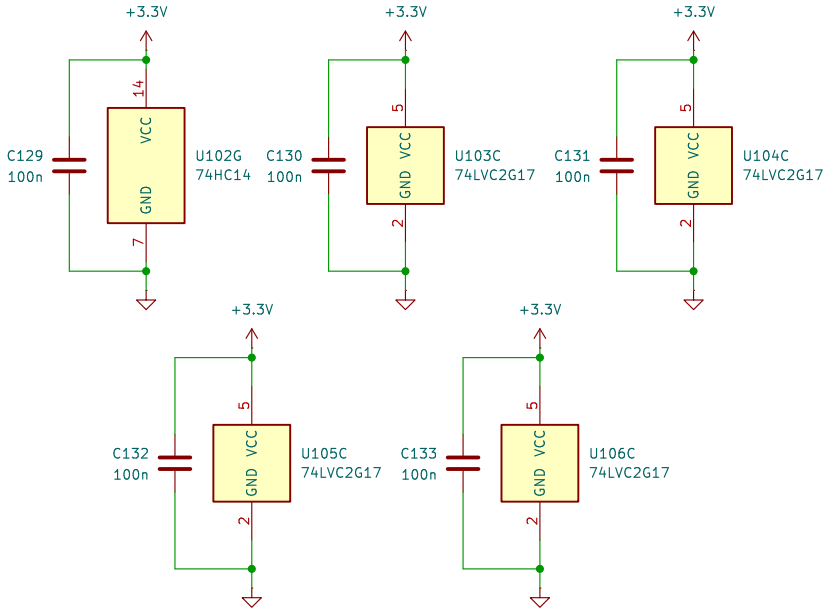
MCU decoupling capacitors

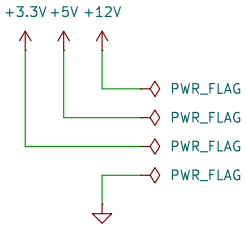


FPGA power supply



IC supplies





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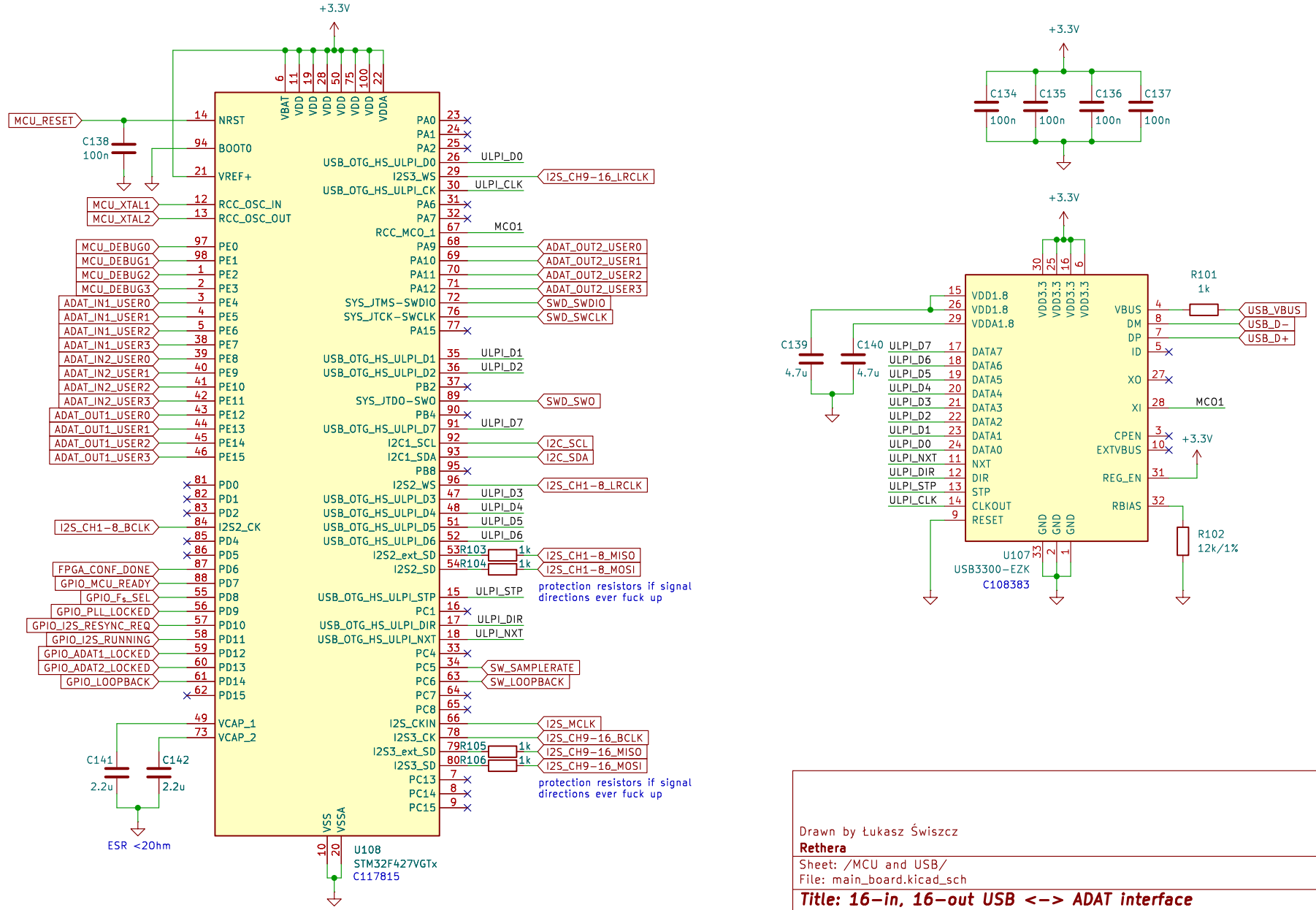
Rethera

Sheet: /Power Supply/

File: power_supply.kicad_sch

Title: 16-in, 16-out USB <-> ADAT interface

Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 3/8



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Rethera

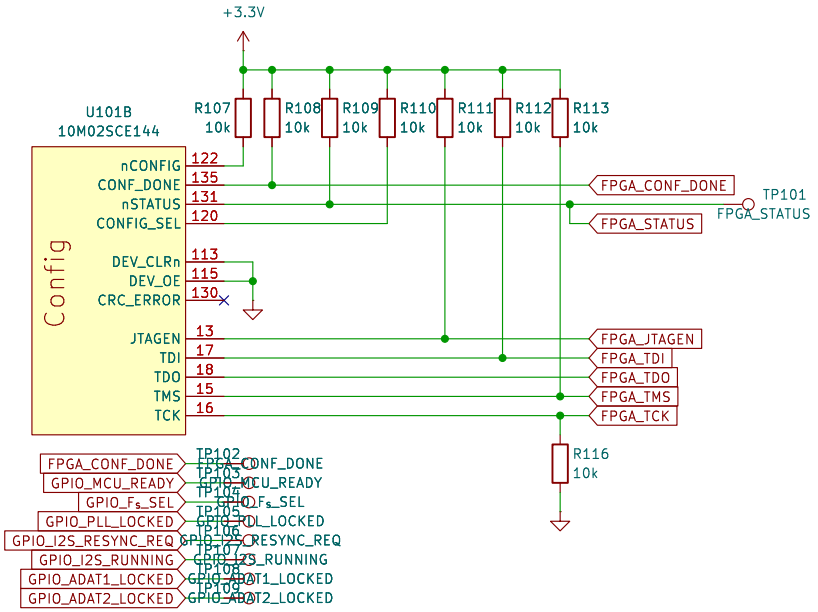
Sheet: /MCU and USB/

File: main_board.kicad_sch

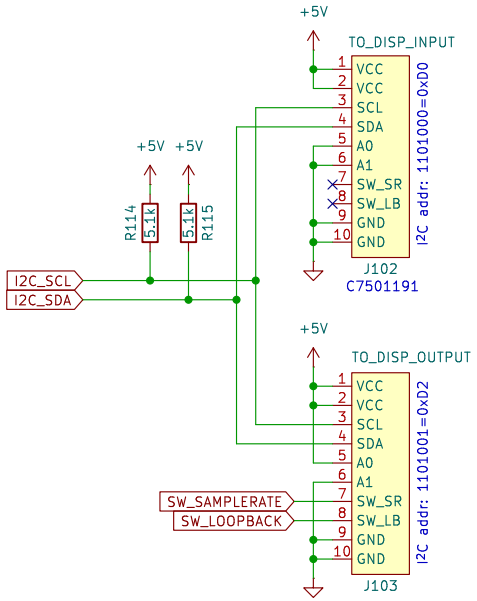
Title: 16-in, 16-out USB <-> ADAT interface

Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 4/8

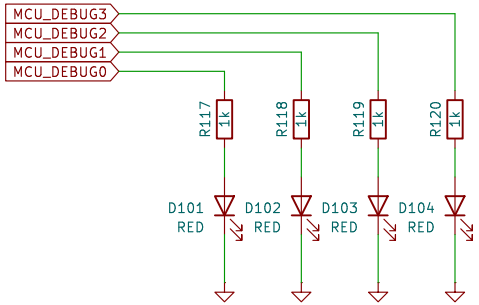
FPGA config



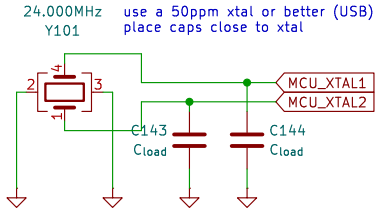
IDC connectors



Debug LEDs



MCU/USB XTAL



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Rethera

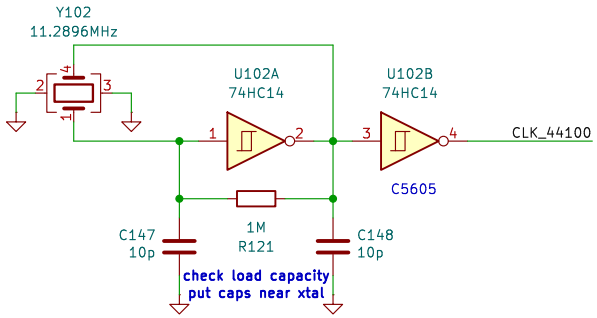
Sheet: /FPGA config and peripherals/

File: peripherals.kicad_sch

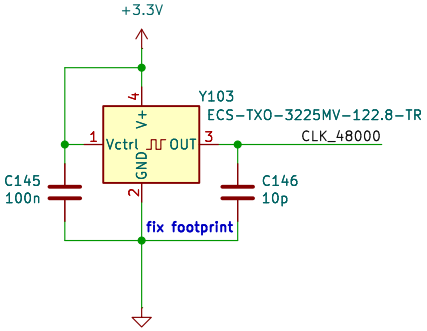
Title: 16-in, 16-out USB <-> ADAT interface

Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 5/8

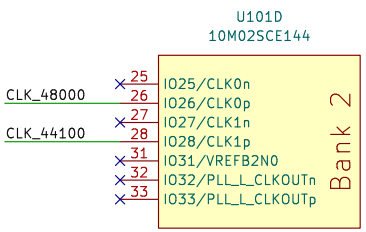
44.1kHz XTAL (11.2896MHz)



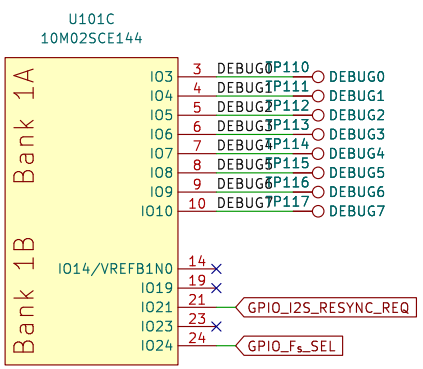
48kHz TCXO (12.288MHz)

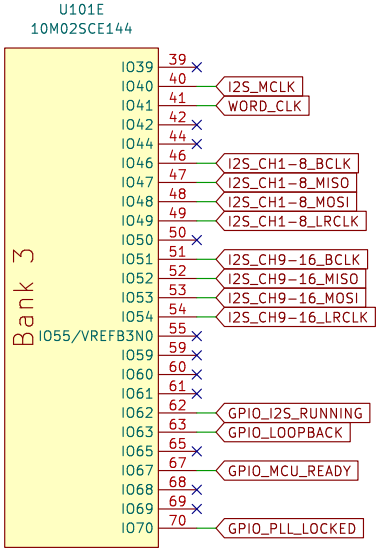


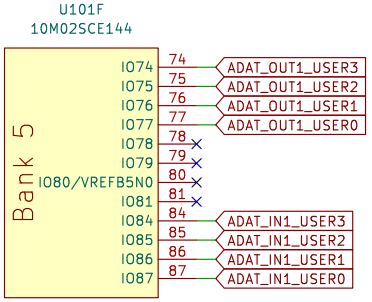
FPGA clock input

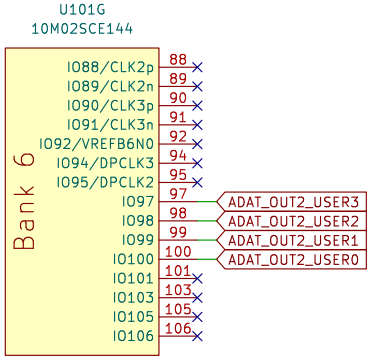


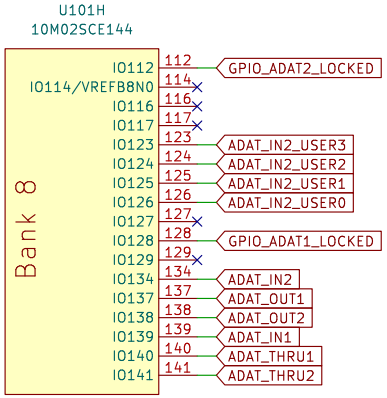
FPGA IO pins



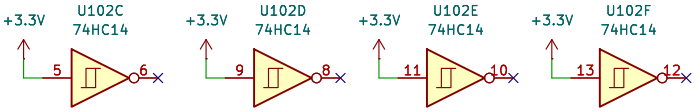








Unused inverters



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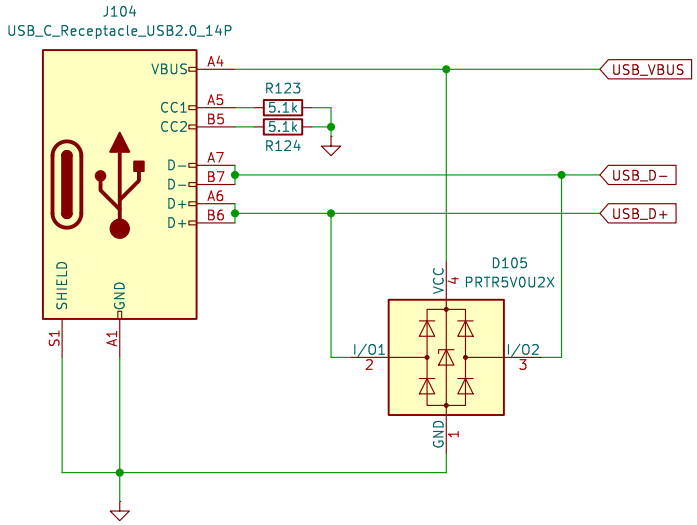
Sheet: /FPGA and clock generators/

File: fpga.kicad_sch

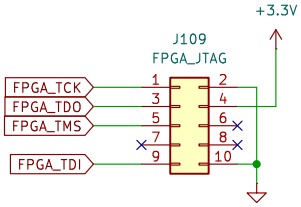
Title: 16-in, 16-out USB <-> ADAT interface

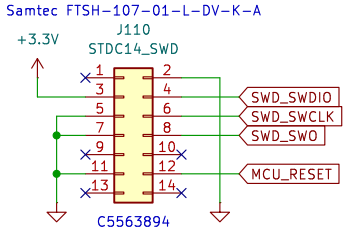
Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 6/8

USB receptacle

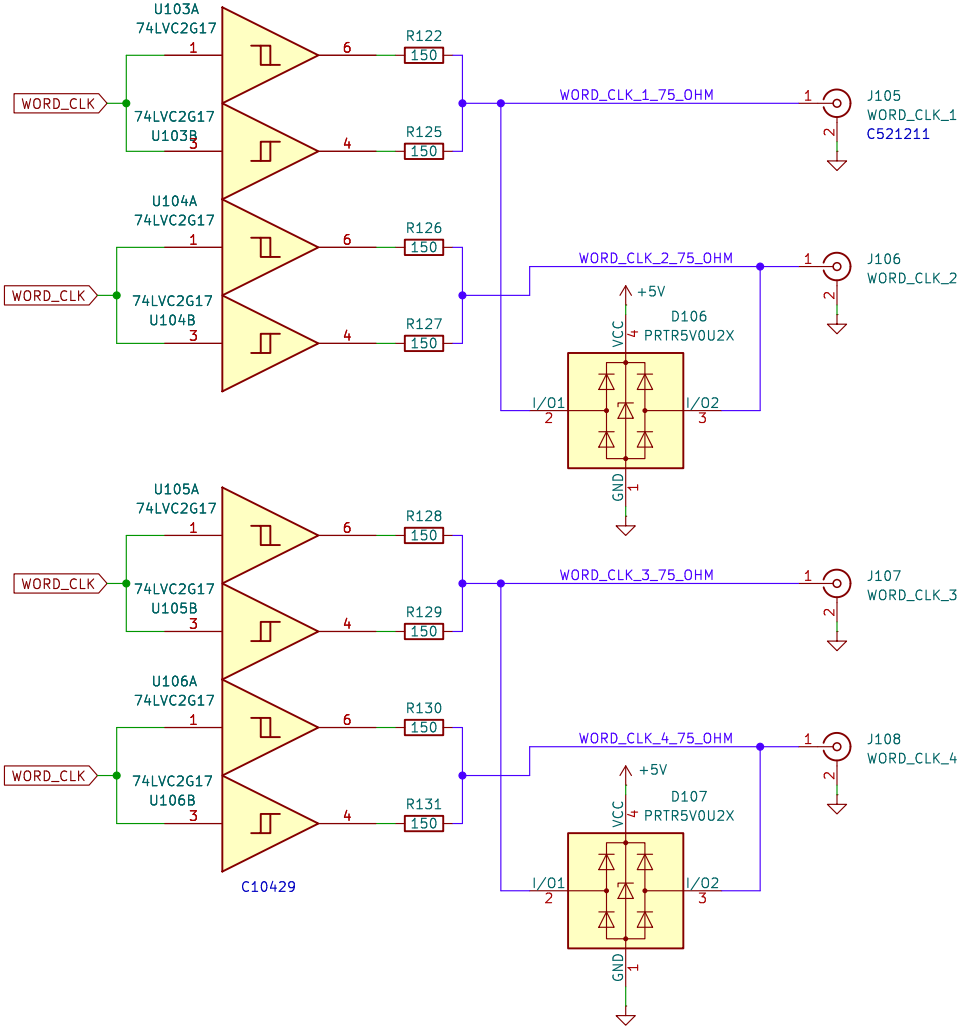


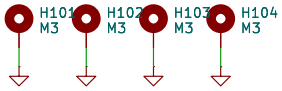
ISP connectors





Line drivers





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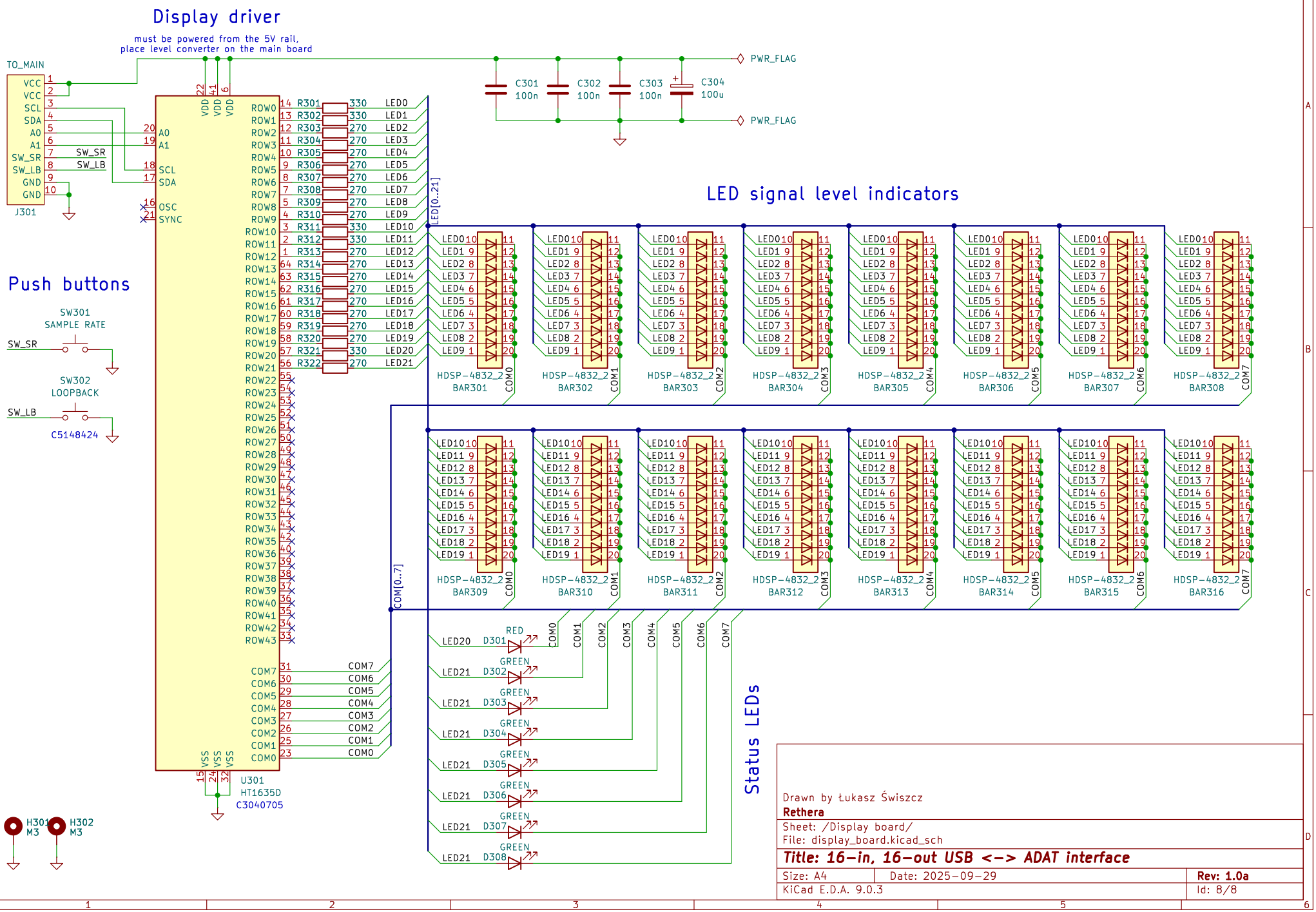
Rethera

Sheet: /IO main/

File: io.kicad_sch

Title: 16-in, 16-out USB <-> ADAT interface

Size: A4	Date: 2025-09-29	**Rev: 1.0a**
KiCad E.D.A. 9.0.3		Id: 7/8


Display driver
must be powered from the 5V rail,
place level converter on the main board
TO_MAIN
J301
U301
HT1635D
C3040705
C301 100n
C302 100n
C303 100n
C304 100u
PWR_FLAG
LED signal level indicators
HDSP-4832_2
Push buttons
SW301
SAMPLE RATE
SW302
LOOPBACK
C5148424
Status LEDs
H301 M3
H302 M3
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Rethera
Sheet: /Display board/
File: display_board.kicad_sch
Title: 16-in, 16-out USB <-> ADAT interface
Size: A4
Date: 2025-09-29
Rev: 1.0a
KiCad E.D.A. 9.0.3
Id: 8/8