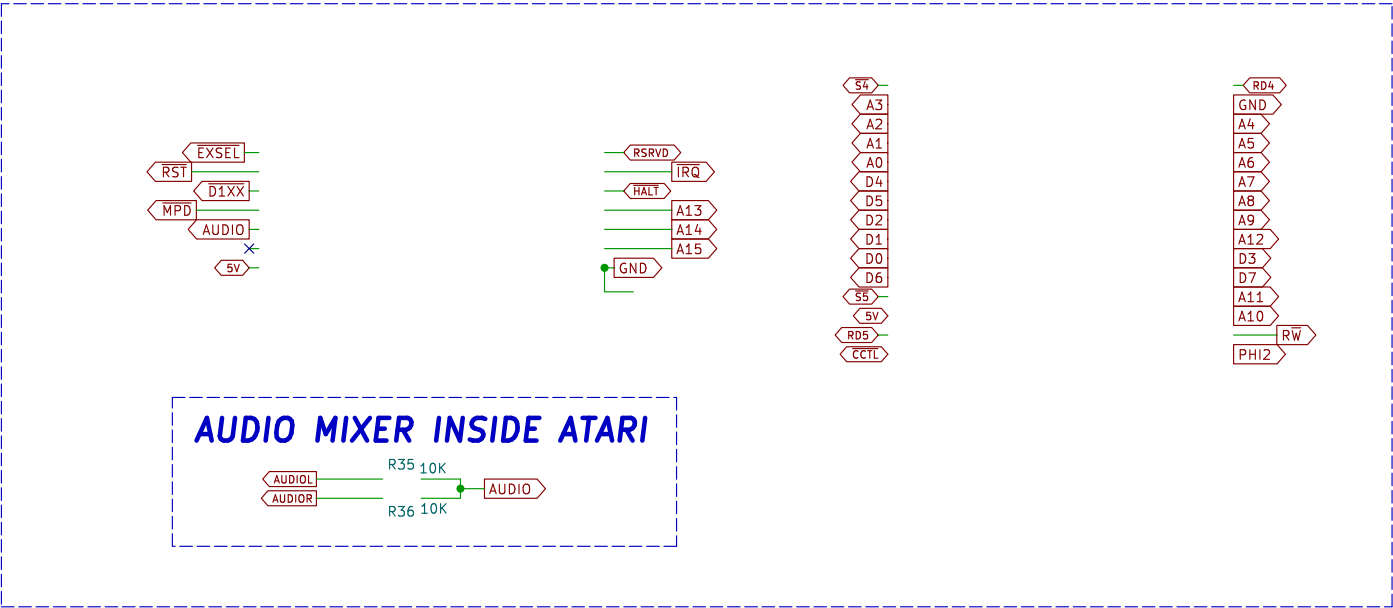
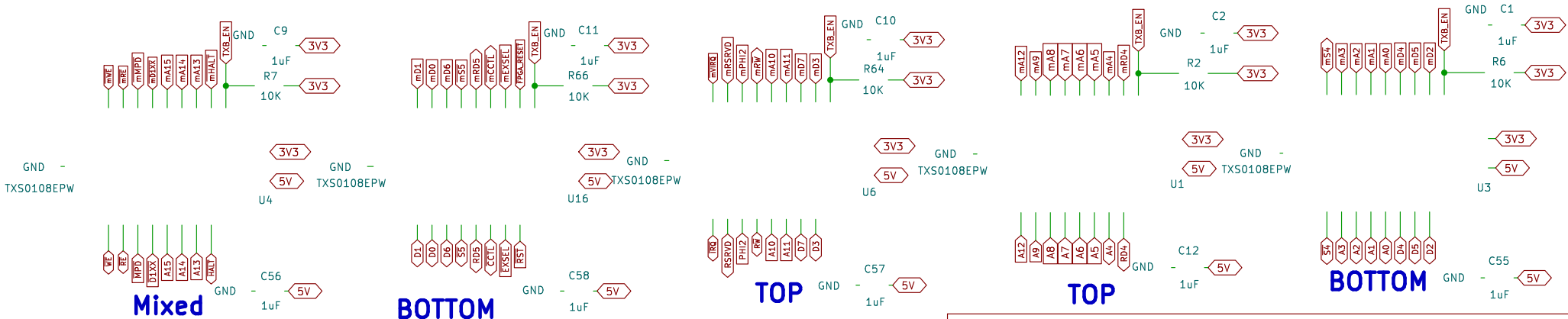
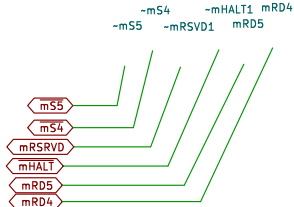


ATARI 130XE ECI & CARTRIDGE INTERFACE

All 8-Bit signals must be shifted from 5V to 3.3V and vice versa



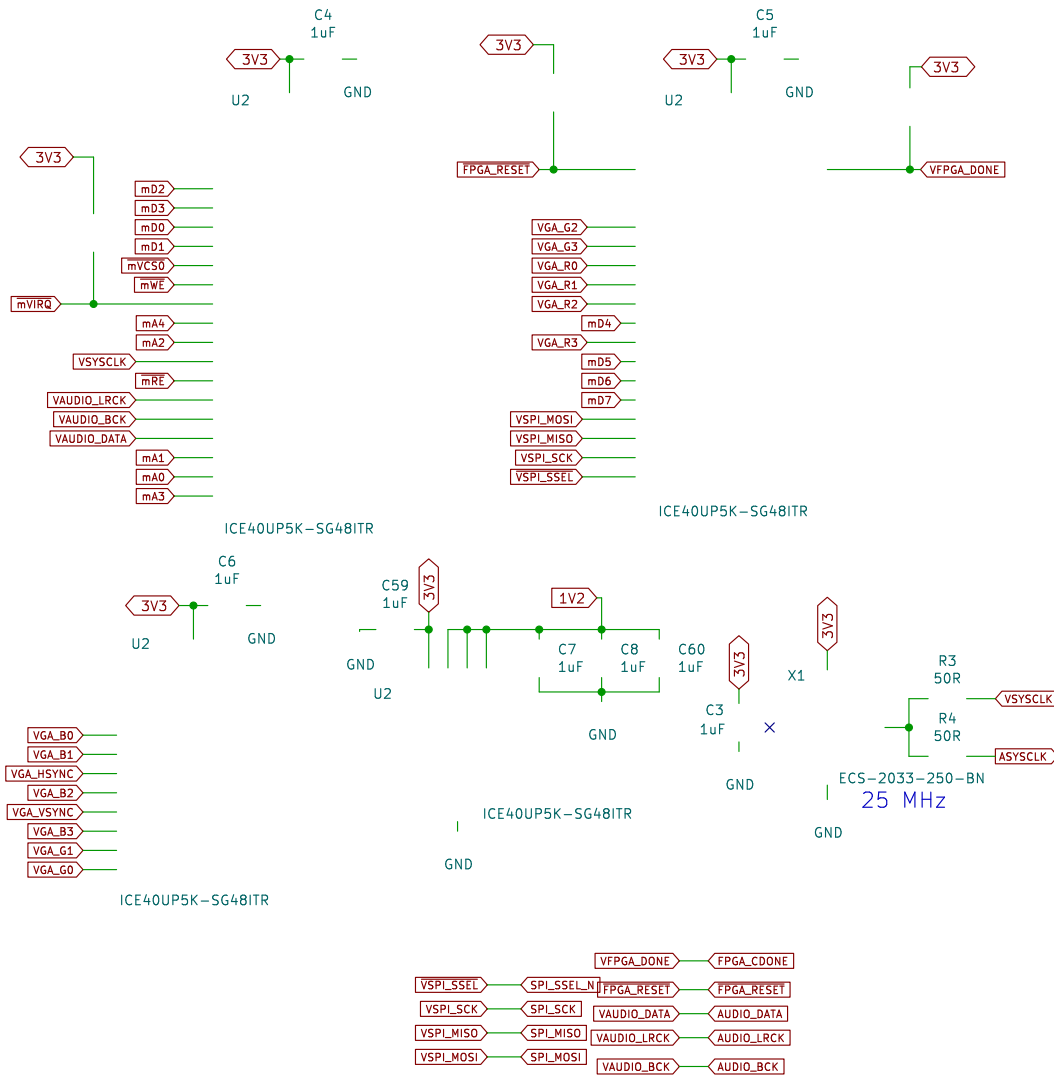
UNCONNECTED IN THIS PROJECT



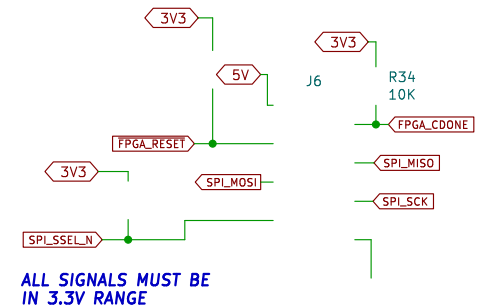
BUS LOGIC LEVEL SHIFTERS

Gianluca Renzi		
RetroBit Lab		
Sheet: /CartridgeInterface/		
File: cartridgeInterface.sch		
Title: CARTRIDGE INTEFACE AND BUS LEVEL SHIFTERS		
Size: A4	Date: 2025-10-27	Rev: 1.0
KiCad E.D.A. 9.0.5		Id: 2/7

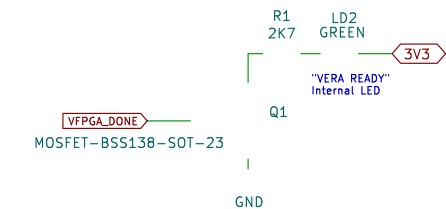
FPGA VERA LOGIC VIDEO & AUDIO CARD



iceprog programmer USB FTDI / SPI



VERA FPGA PROGRAMMED OK



Gianluca Renzi

RetroBit Lab

Sheet: /VeraModule/

File: vera-fpga.sch

Title: VERA MODULE AND PROGRAMMING CONNECTOR

Size: A4

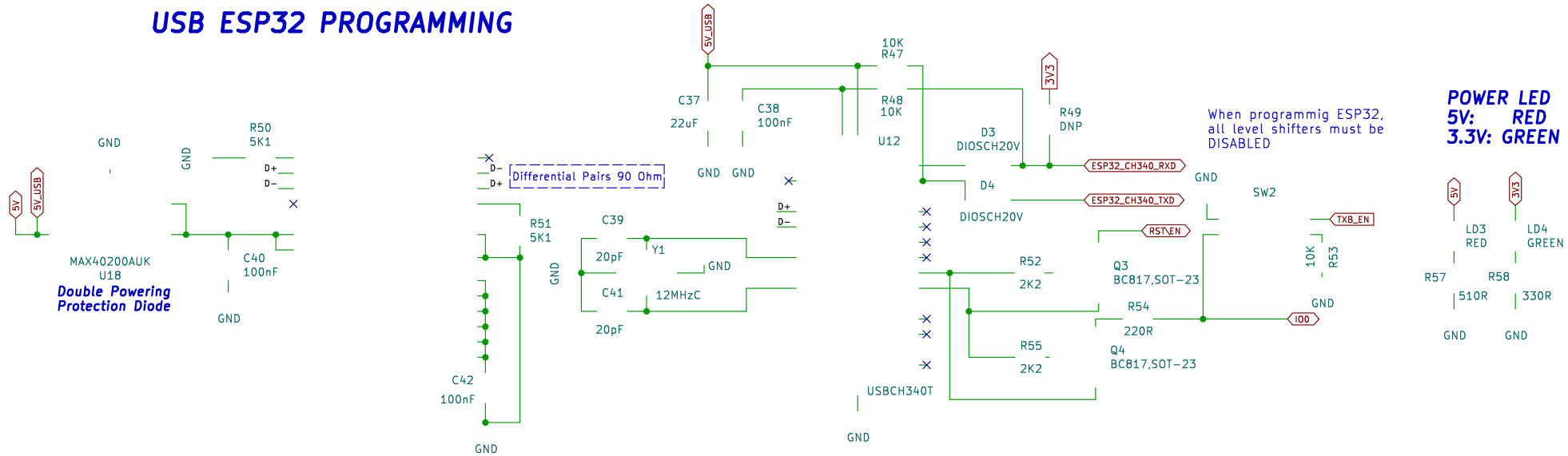
Date: 2025-10-27

Rev: 1.0

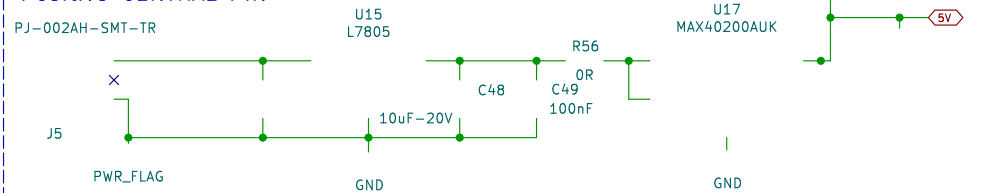
KiCad E.D.A. 9.0.5

Id: 3/7

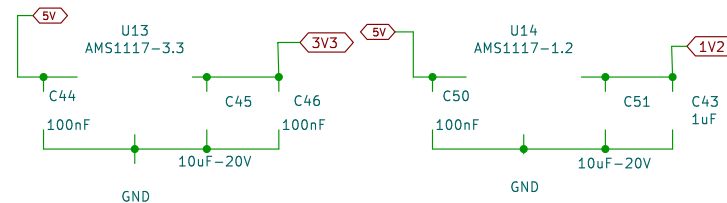
USB ESP32 PROGRAMMING



POWER INPUT: from 5VDC...24VDC
Positive CENTRAL PIN



POWER 3.3V & POWER 1.2V



RetroBit Lab

Sheet: /PowerSupply/

File: powersupply.sch

Title: POWERSUPPLY and USB

Size: A4

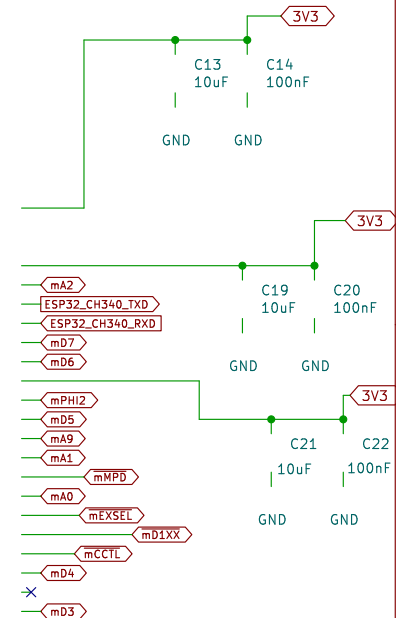
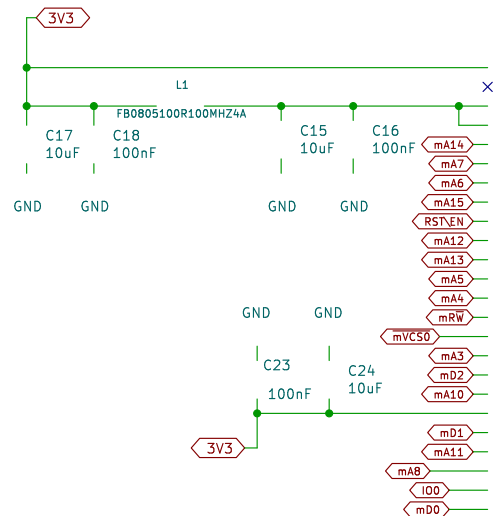
Date: 2025-10-27

Rev: 1.0

Id: 4/7

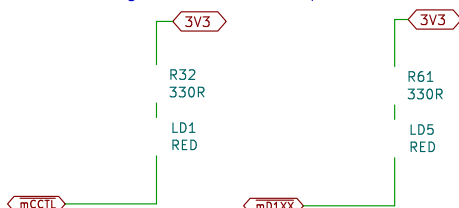
PBI Bus Interface Decoder: \$D1XX, \$D1FF, MPD, \$D8XX-\$DFXX, EX(T)SEL

PBI DEVICE ID: software selectable only

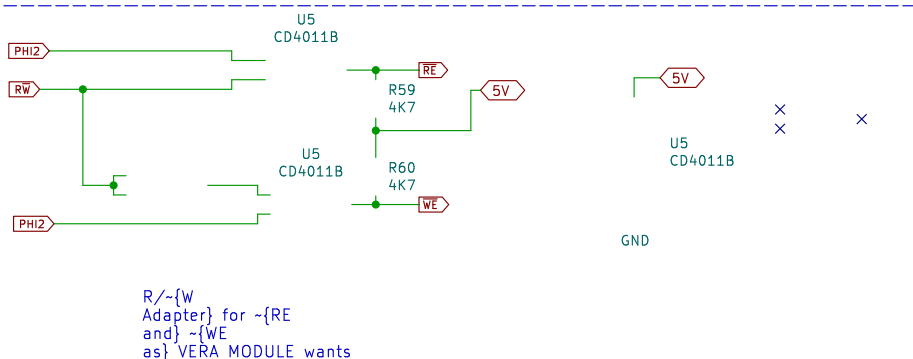


Those signals are valid in ATARI XE only

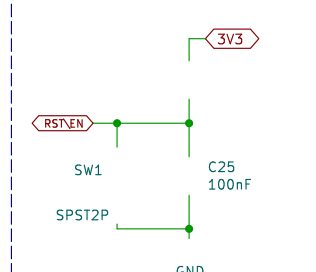
Accessing \$D5XX area space



Accessing \$D1XX area space



ESP32 RESET SWITCH



Internal Memory Setup:
The range must be defined in software
~{EXSEL

In} PBI Atari XL there is EXTENB signal output and EXTSEL signal input
In PBI Atari XE there is only the EXSEL signal output

mVCS0 active & A15..A0 \$D8XX-\$DFXX -> MPD active (Internal 2K ROM)

\$D1FF access & DATABUS = PBI DEVICE ID -> mVCS0 active/deactive

Gianluca Renzi

RetroBit Lab

Sheet: /BusDecoder/

File: busdecoder.sch

Title: BUS DECODER

Size: A4 Date: 2025-10-27

KiCad E.D.A. 9.0.5

Rev: 1.0

Id: 5/7

ANALOG VGA SIGNALS

The schematic diagram illustrates the signal conditioning for analog VGA signals. It is organized into three main sections for the red, green, and blue color channels, followed by sync signals.

- Red Channel:** Input signals **VGA_R0**, **VGA_R1**, **VGA_R2**, and **VGA_R3** are connected to resistors **R10**, **R15**, **R21**, and **R27** respectively. These resistors are in series with a 4K3 resistor and a 2K resistor. The signals then pass through a network of 150R and 160R resistors to produce the **VGARED** signal. A 5V supply is connected to the output line.
- Green Channel:** Input signals **VGA_G0**, **VGA_G1**, **VGA_G2**, and **VGA_G3** are connected to resistors **R9**, **R13**, **R19**, and **R25** respectively. These resistors are in series with a 4K3 resistor and a 2K resistor. The signals then pass through a network of 150R and 160R resistors to produce the **VGAGREEN** signal.
- Blue Channel:** Input signals **VGA_B0**, **VGA_B1**, **VGA_B2**, and **VGA_B3** are connected to resistors **R8**, **R11**, **R17**, and **R23** respectively. These resistors are in series with a 4K3 resistor and a 2K resistor. The signals then pass through a network of 150R and 160R resistors to produce the **VGABLUE** signal.
- Sync Signals:** **VGA_VSYNC** and **VGA_HSYNC** are connected to **VGAVSYNC** and **VGAHSYNC** respectively.
- Power and Timing:** A 5V supply is connected to the output lines. Capacitors **C53** and **C54** (100nF) are connected to ground (GND) at the output. A connector **J2** is also shown.

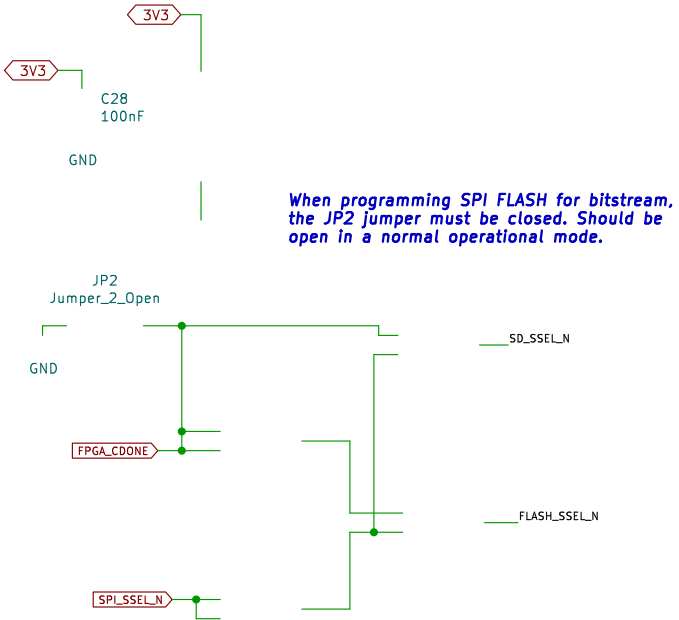
EXTERNAL VIDEO CONNECTOR

The diagram illustrates the pin connections for an external video connector with audio. It shows two sets of pins, each with a 5-pin D-sub connector. The left set of pins is labeled: VGARED, VGABLUE, 5V, AUDIOL, and VGAHSYNC. The right set of pins is labeled: VGAGREEN, 3V3, 5V, AUDIOR, and VGAVSYNC. The connections are as follows: VGARED is connected to VGAGREEN; VGABLUE is connected to VGABLUE; 5V is connected to 5V; AUDIOL is connected to AUDIOR; and VGAHSYNC is connected to VGAVSYNC. The 3V3 pin is connected to the 5V pin.

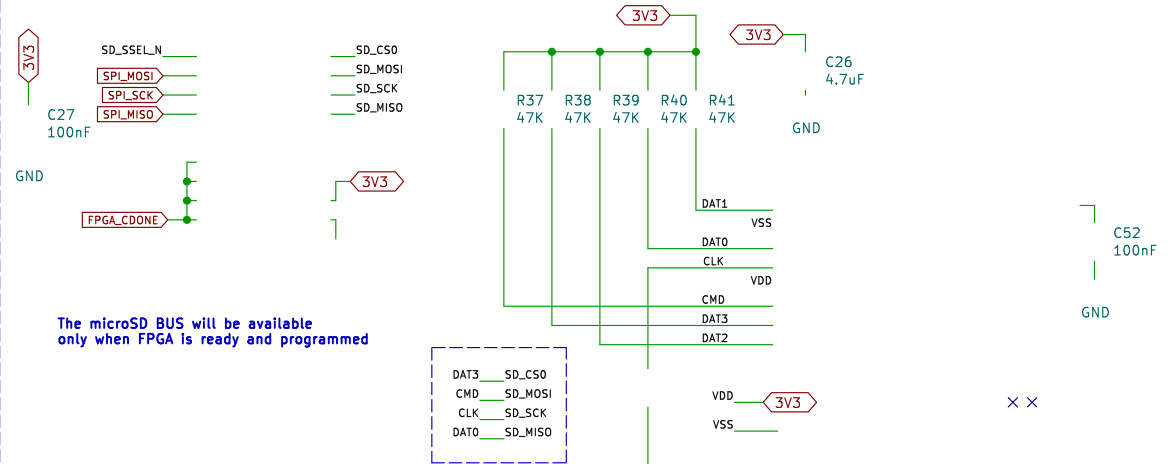
EXTERNAL DISPLAY WITH AUDIO

Id: 6/7

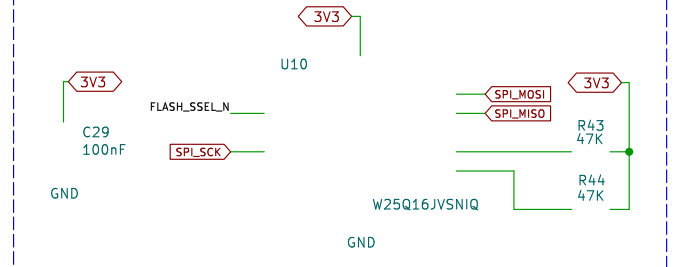
FPGA/SSD Flash Glue Logic



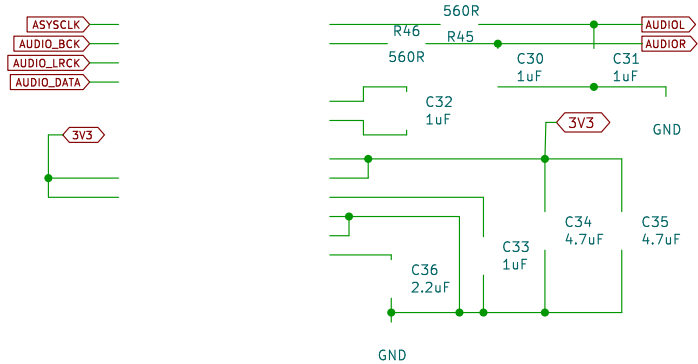
SD/microSD INTERFACE



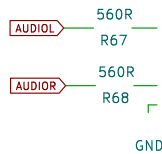
SPI 16MB FLASH



IC DAC/AUDIO 24BIT 192K 16TSSOP



AUDIO 3.5mm OUTPUT



AUDIO SECTION

Gianluca Renzi
RetroBit Lab

Sheet: /Vera FPGA flash/
File: vera-fpga-flash.sch

Title: uSD Card, FPGA FLASH and AUDIO SECTION

Size: A4 Date: 2025-10-27
KiCad E.D.A. 9.0.5

Rev: 1.0
Id: 7/7