

Sheet: VeraModule

# VERA FPGA

File: vera-fpga.sch

Sheet: BusDecoder

# BUS DECODER

File: busdecoder.sch

Sheet: Vera FPGA flash

# VERA SPI FLASH SD CARD INTERFACE

File: vera-fpga-flash.sch

Sheet: CartridgeInterface

# CARTRIDGE INTERFACE

File: cartridgeInterface.sch

Sheet: PowerSupply

# POWER SUPPLY

File: powersupply.sch

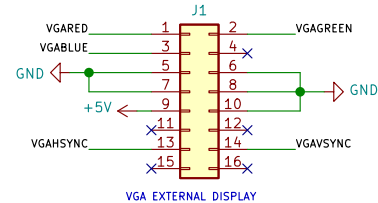
Gianluca Renzi  
**RetroBit Lab**

Sheet: /  
File: VERA-MODULE-RBL.sch

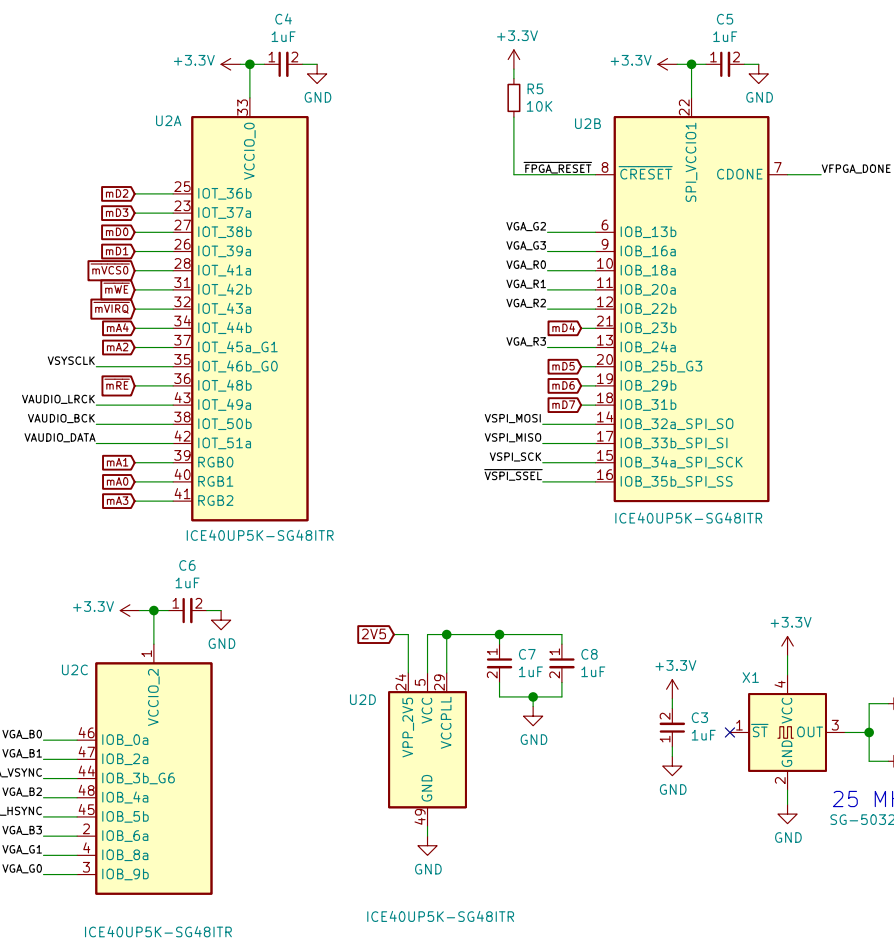
**Title: VERA FPGA Audio & Video Board**

Size: A4	Date: 2025-09-04	Rev: 1.0
KiCad E.D.A. kicad 5.1.9+dfsg1-1+deb11u1		Id: 1/6

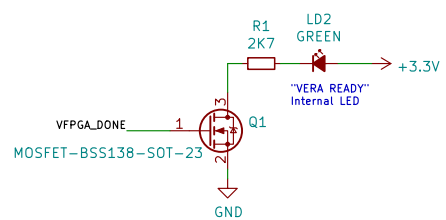
## EXTERNAL VIDEO CONNECTOR



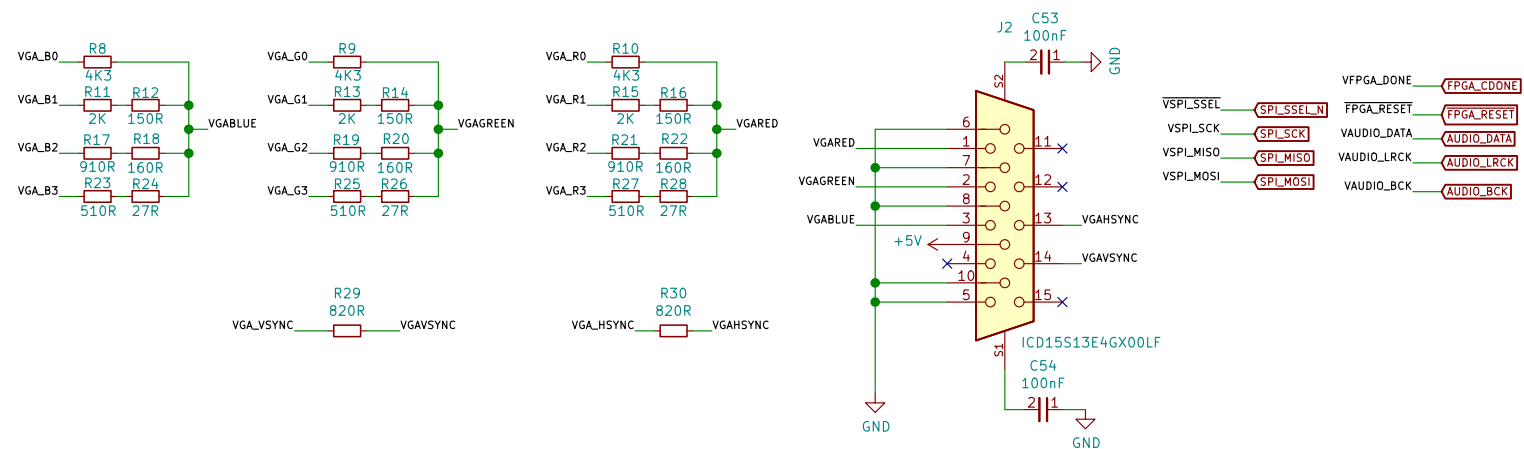
## FPGA VERA LOGIC VIDEO & AUDIO CARD



## VERA FPGA PROGRAMMED OK

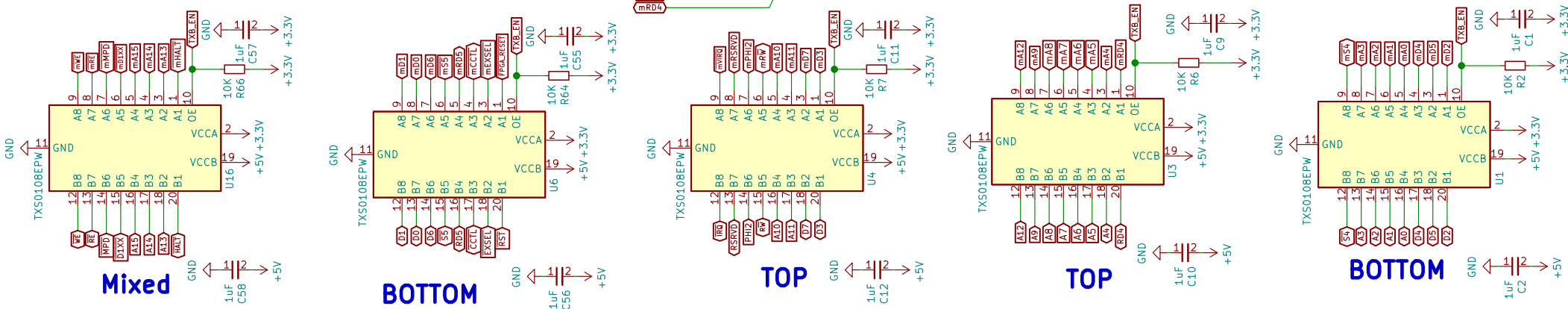


## ANALOG VGA SIGNALS



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

UNCONNECTED IN THIS PROJECT



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Sheet: /VeraModule/

File: vera-fpga.sch

Title:

Size: A2 Date: 2025-09-04

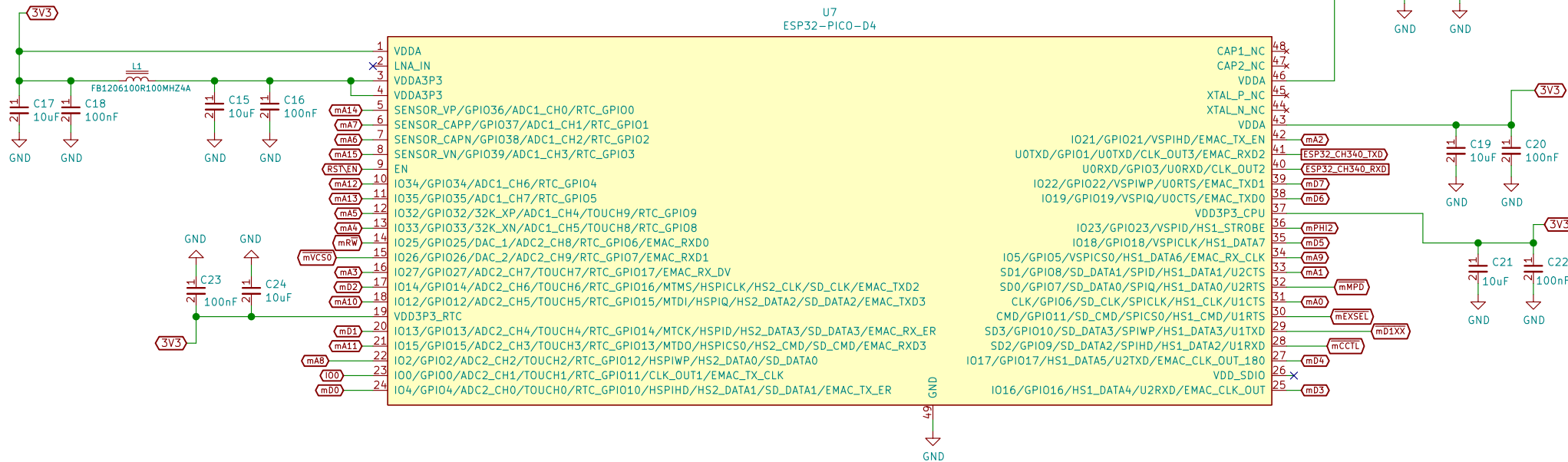
KiCad E.D.A. kicad 5.1.9+dfsg1-1+deb11u1

Rev: 1.0

Id: 2/6

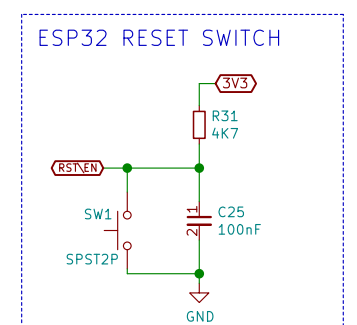
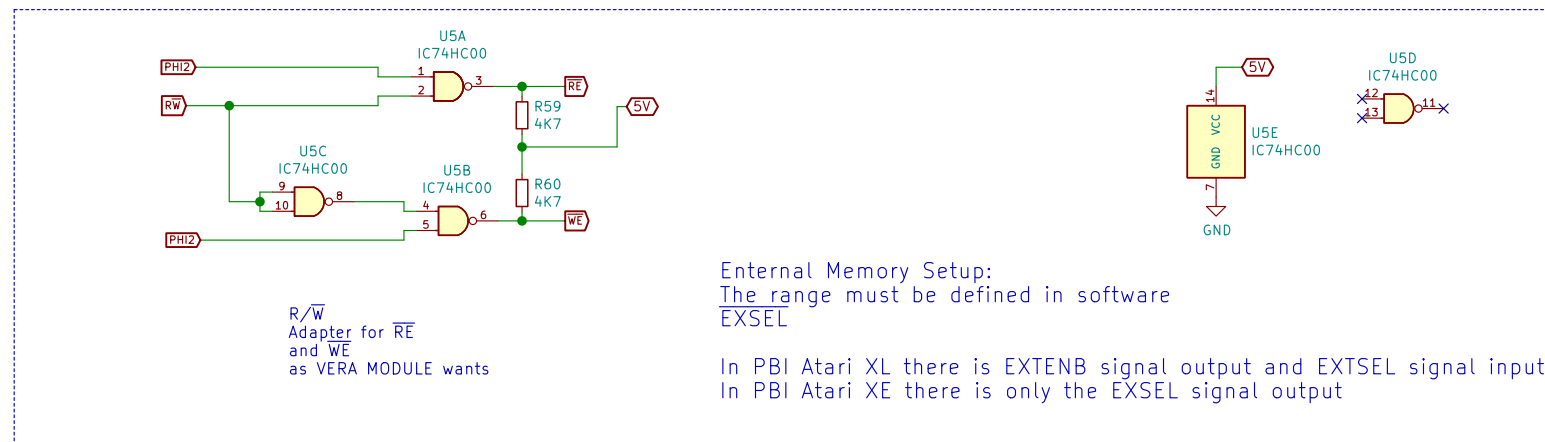
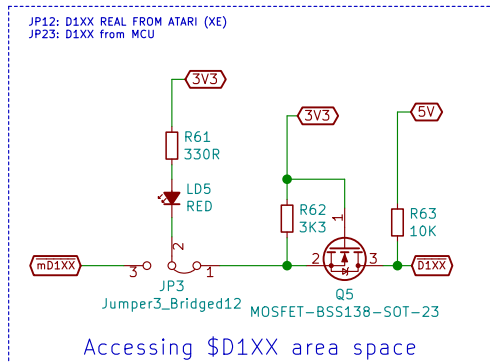
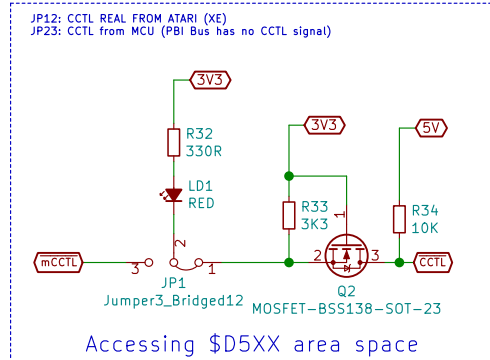
PBI Bus Interface Decoder:  
\$D1XX, \$D1FF, MPD, \$D8XX-\$DFXX, EX(T)SEL

PBI DEVICE ID: software selectable only

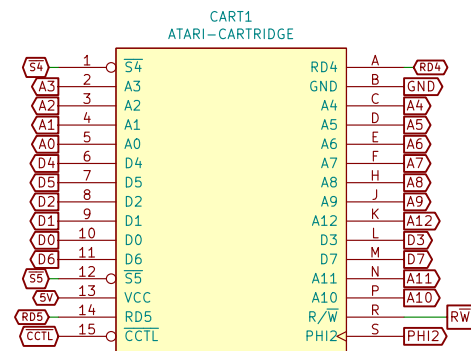
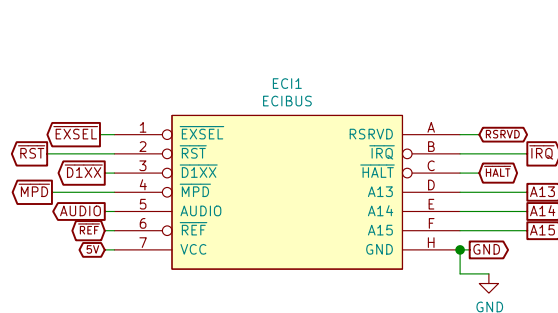


mVCS0 active & A15..A0 \$D8XX-\$DFXX -> MPD active (Internal 2K ROM)

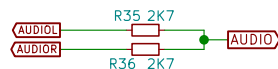
\$D1FF access & DATABUS = PBI DEVICE ID -> mVCS0 active/deactive



# ATARI 130XE ECI & CARTRIDGE INTERFACE



## AUDIO MIXER INSIDE ATARI



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Sheet: /CartridgeInterface/

File: cartridgeInterface.sch

**Title:**

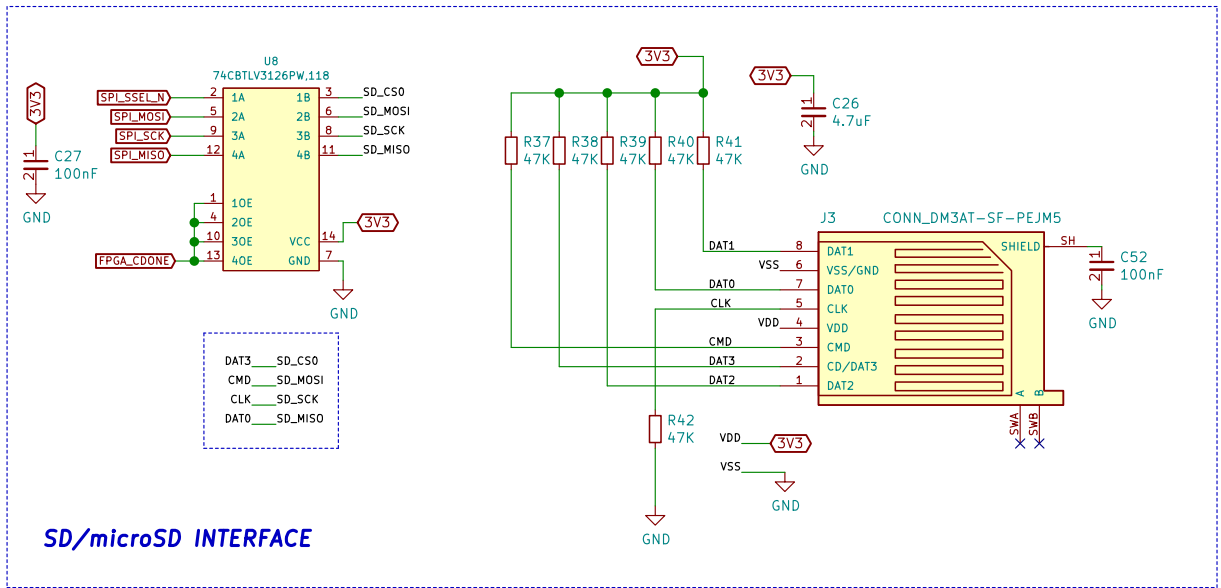
Size: A4

Date: 2025-09-04

**Rev: 1.0**

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Id: 4/6

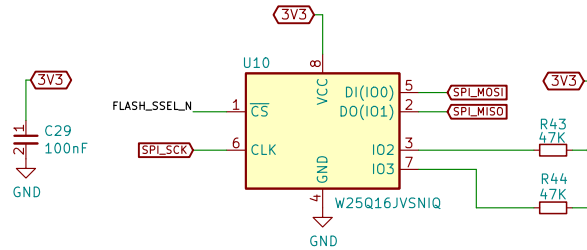


### SPI 16MB FLASH

The diagram shows the SPI 16MB FLASH (W25Q16JVSNIQ) connected to a 3V3 supply. The chip is labeled U10. The connections are as follows:

- Pin 1 (CS) is connected to FLASH\_SSSEL\_N.
- Pin 6 (CLK) is connected to SPI\_SCK.
- Pin 8 (VCC) is connected to 3V3.
- Pin 4 (GND) is connected to GND.
- Pin 5 (DI(100)) is connected to 3V3.
- Pin 2 (DO(101)) is connected to 3V3.
- Pin 3 (IO2) is connected to 3V3.
- Pin 7 (IO3) is connected to 3V3.
- Pin 10 (GND) is connected to GND.

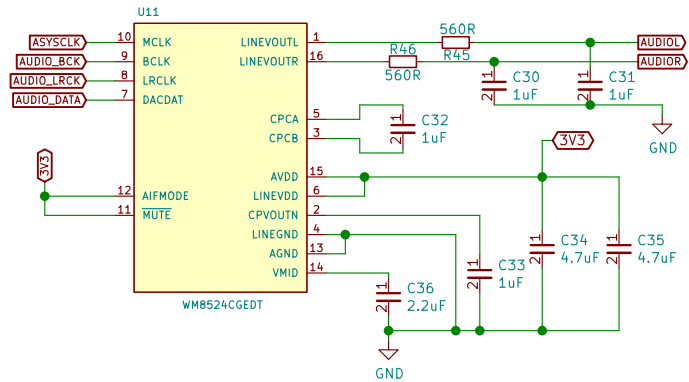
A 100nF capacitor (C29) is connected between 3V3 and GND. Two 47K resistors (R43, R44) are connected between 3V3 and GND.



**IC DAC/AUDIO 24BIT 192K 16TSSOP**

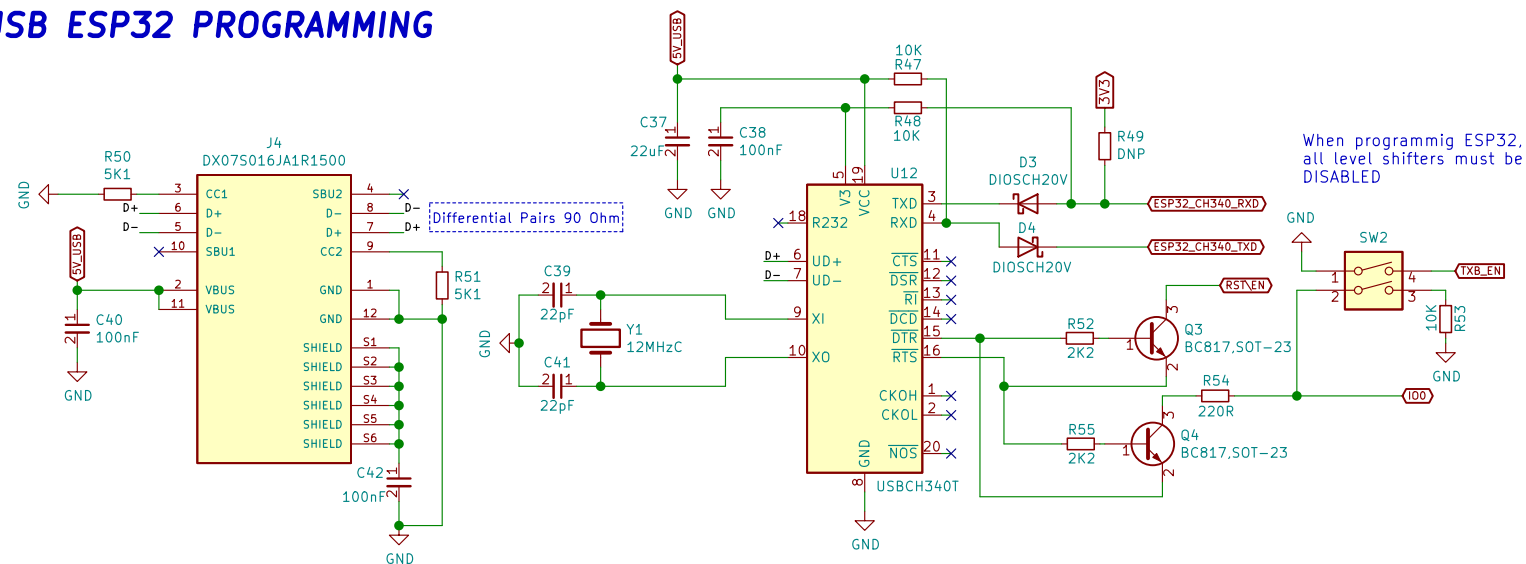
The diagram shows the WM8524CGEDT IC with the following connections:

- Inputs:**
  - 10: ASYSCLK
  - 9: AUDIO\_BCK
  - 8: AUDIO\_LRCK
  - 7: AUDIO\_DATA
- Outputs:**
  - 1: LINEVOUTL
  - 16: LINEVOUTR
- Control/Status:**
  - 5: CPCA
  - 3: CPCB
  - 15: AVDD
  - 6: LINEVDD
  - 2: CPVOUTN
  - 4: LINEGND
  - 13: AGND
  - 14: VMID
  - 12: AIFMODE
  - 11: MUTE
- Power/Reference:**
  - 3V3 supply connected to AVDD (pin 15) and AGND (pin 13).
  - Ground (GND) connected to VMID (pin 14) and the negative terminal of the output capacitors.
- Passive Components:**
  - Resistors: R45 (560R), R46 (560R), R47 (560R).
  - Capacitors: C30 (2uF), C31 (1uF), C32 (2uF), C33 (1uF), C34 (4.7uF), C35 (4.7uF).

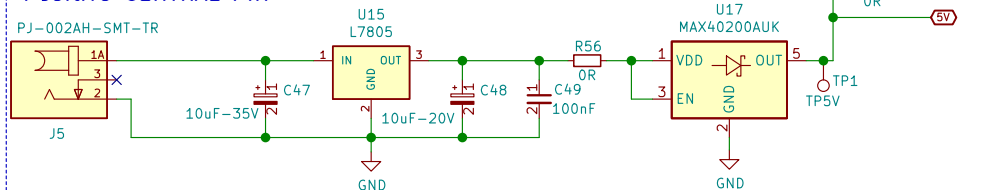


Rev: 1.0  
Id: 5/6

## USB ESP32 PROGRAMMING



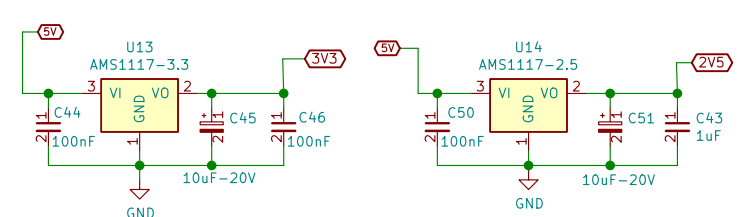
## POWER INPUT: from 5VDC...24VDC Positive CENTRAL PIN



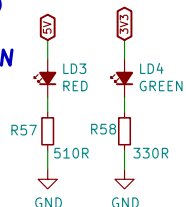
## Double Powering Protection Diode

U17  
MAX40200AUK

## POWER 3.3V & POWER 2.5V



## POWER LED 5V: RED 3.3V: GREEN



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RetroBit Lab

Sheet: /PowerSupply/  
File: powersupply.sch

Title: VERA-XE VGA BOARD

Size: A4 Date: 2025-09-04

KiCad E.D.A. kicad 5.1.9+dfsg1-1+deb11u1

Rev: 1.0

Id: 6/6