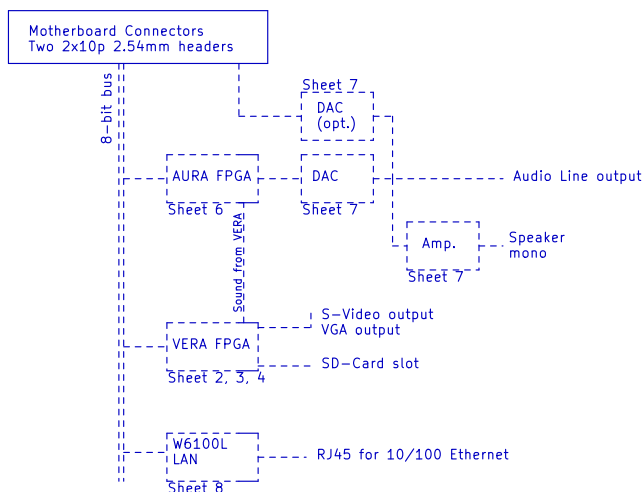


OpenX65 Video/Audio & Ethernet Board ("V/A-B0")

Block Diagram:



- FID101 Fiducial
- FID102 Fiducial
- FID103 Fiducial
- H101 MountingHole
- H102 MountingHole
- H103 MountingHole
- H104 MountingHole

This schematic contains portions of work done by Frank van den Hoe for the project VERA: <https://github.com/fvdhoef/vera-module>

Revision History:

Rev. / Date	Description
rev01 / 28.4.2023	Initial design, PCB 100x100mm 2-layers. VERA with VGA and S-Video outputs. AURA with line-out and amp/speaker, 2 DAC. LAN by W6100L

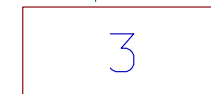
Sheets:

Video VERA FPGA



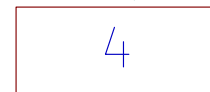
Soubor: vabo-sheet-02.kicad_sch

Video Outputs



Soubor: vabo-sheet-03.kicad_sch

VERA SPI-Flash, SDC



Soubor: vabo-sheet-04.kicad_sch

Motherboard Connectors



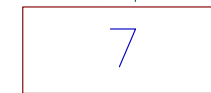
Soubor: vabo-sheet-05.kicad_sch

Audio AURA FPGA



Soubor: vabo-sheet-06.kicad_sch

Audio DAC, Output



Soubor: vabo-sheet-07.kicad_sch

Ethernet



Soubor: vabo-sheet-08.kicad_sch

Block Diagram

FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /

File: openX65-vabo.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

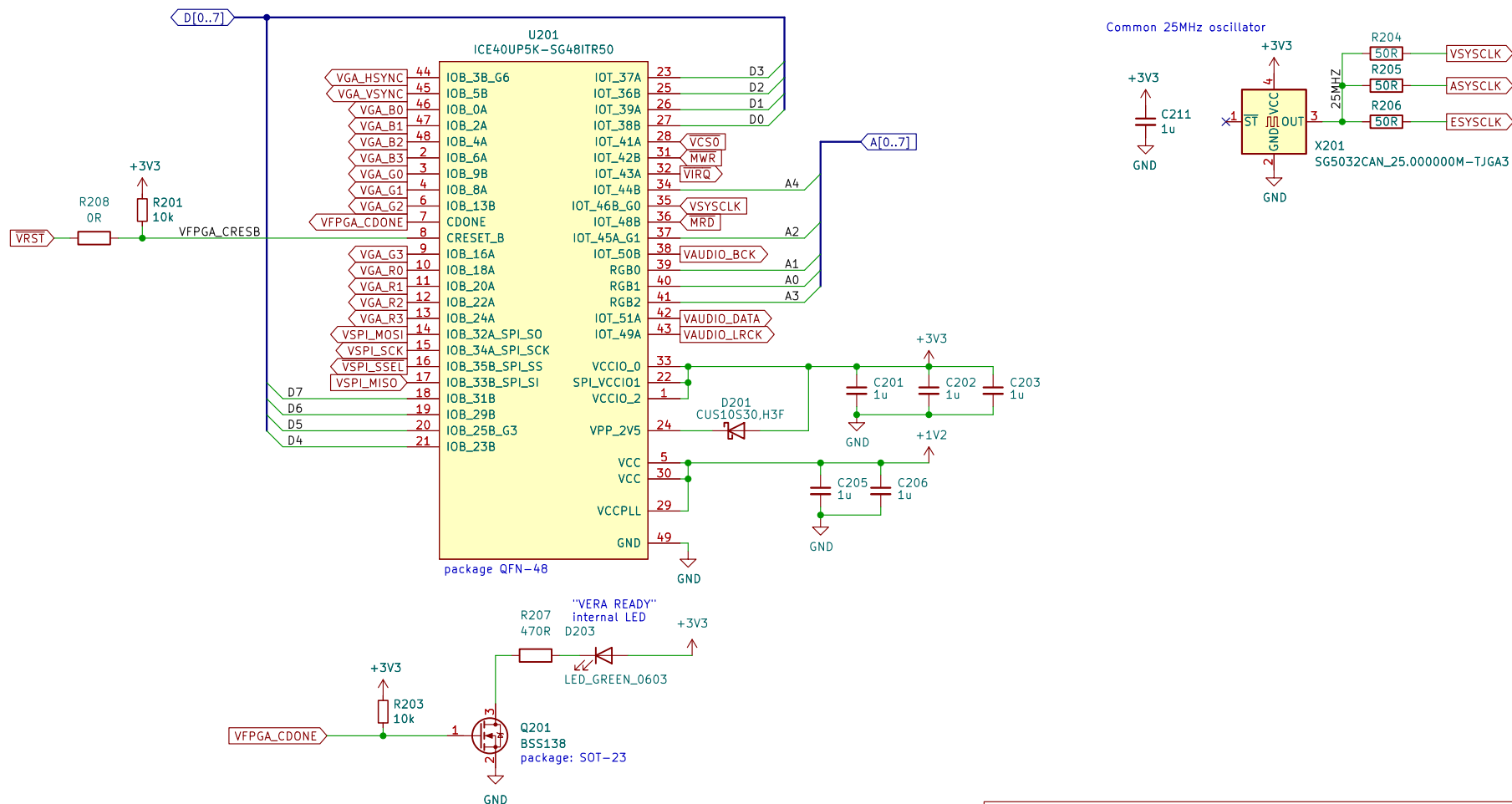
Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01

Id: 1/8

"VERA" FPGA – Video Embedded Retro Adapter



This schematic contains portions of work done by Frank van den Hoe for the project VERA: <https://github.com/fvdhoe/vera-module>

VERA FPGA design by Frank van den Hoe
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Video VERA FPGA/
File: vabo-sheet-02.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

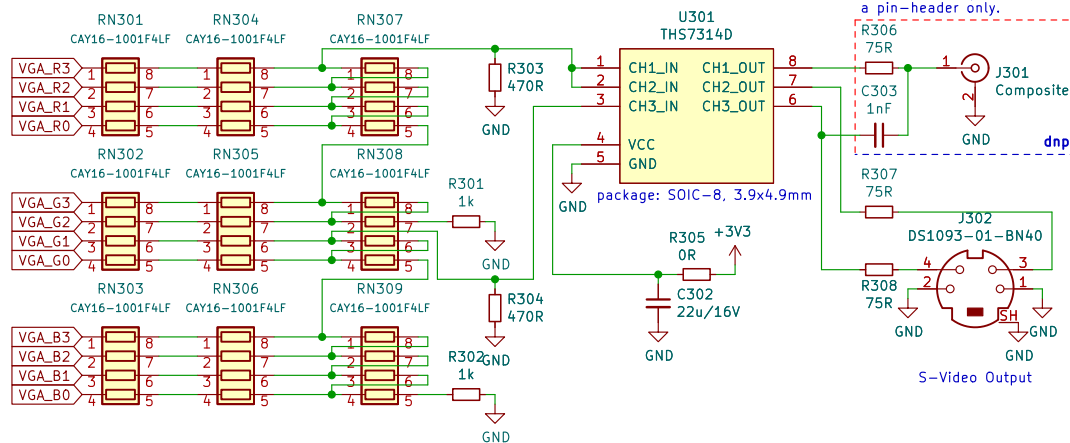
Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

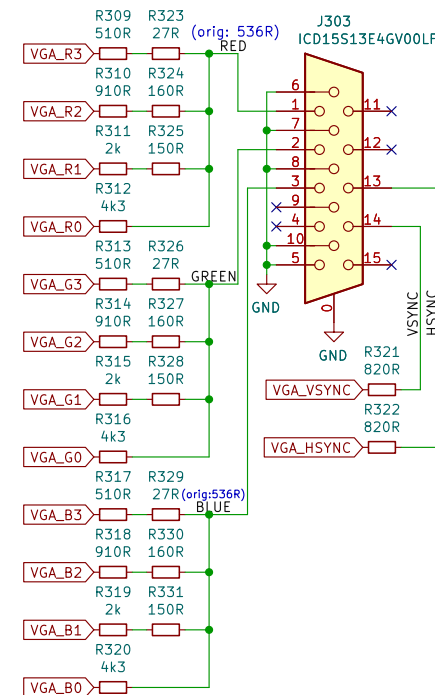
Rev: rev01

Id: 2/8

Composite / S-video interface



VGA interface



This schematic contains portions of work done by Frank van den Hoe for the project VERA: <https://github.com/fvdhoe/vera-module>

Video outputs from VERA

FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Video Outputs/

File: vabo-sheet-03.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

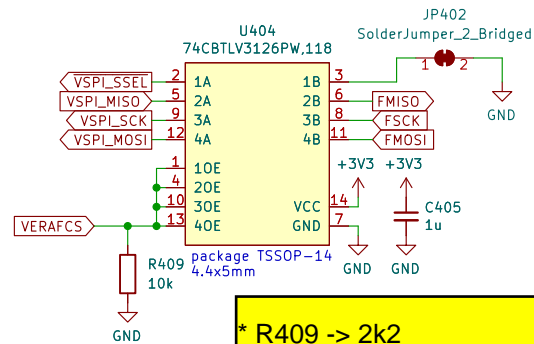
Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01

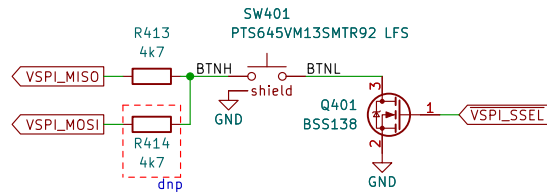
Id: 3/8

FTDI/ICD access multiplexer to VERA SPI flash memory

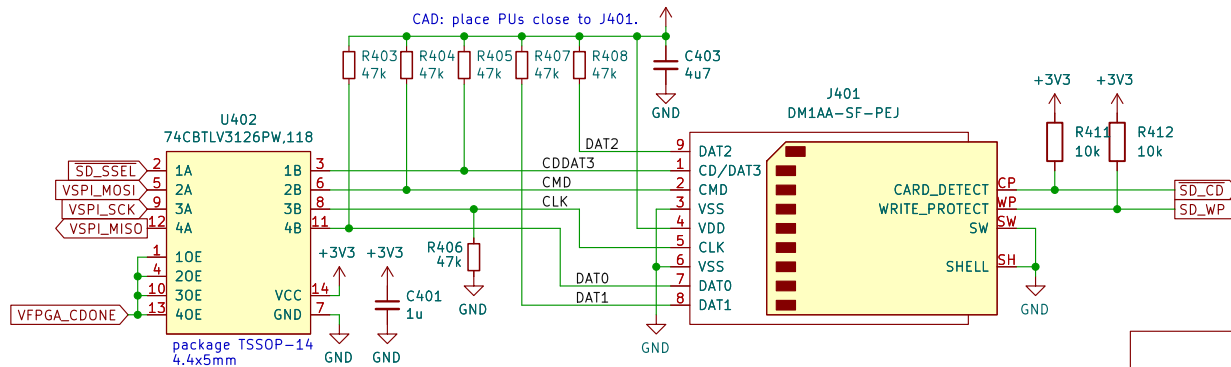


* R409 -> 2k2

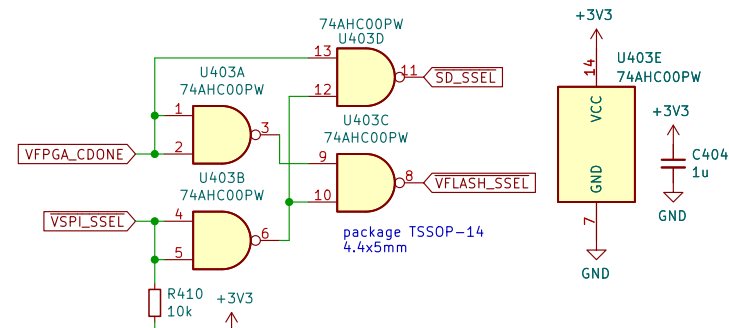
VERA push-button Piggy-back on MISO line



Secure Digital Interface – like an "FDD"

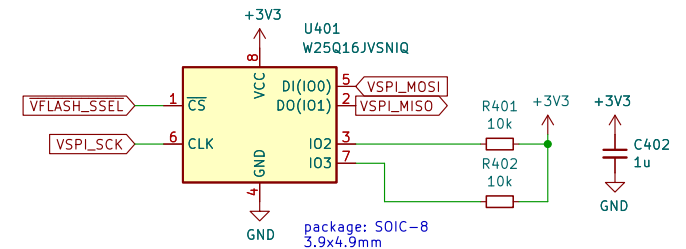


VERA SPI pins multiplexing



Inputs	Outputs	Description
VFPGA_CDONE	SD_SSEL	FPGA configuring from the SPI-Flash, or FTDI/ICD accessing.
VSPI_SSEL	VFLASH_SSEL	FPGA empty/in-reset
		FPGA loaded; User Design r/w to SDC
		FPGA loaded; idle

SPI flash for VERA Bitstream



* add PD to VSPI_SCK(strictly not neces

This schematic contains portions of work done by Frank van den Hoe for the project VERA: <https://github.com/fvdhoef/vera-module>

VERA SPI multiplexing, SDC interface
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /VERA SPI-Flash, SDC/
File: vabo-sheet-04.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

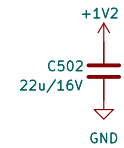
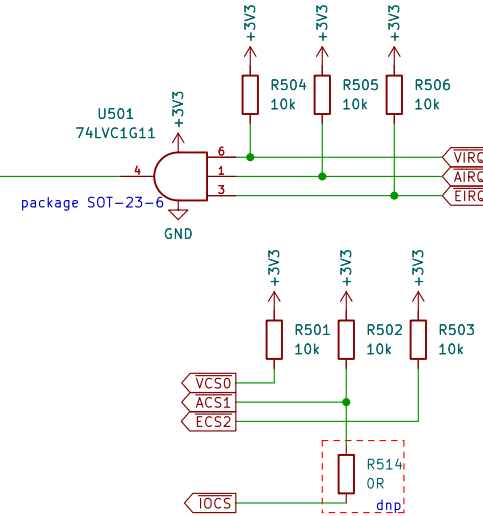
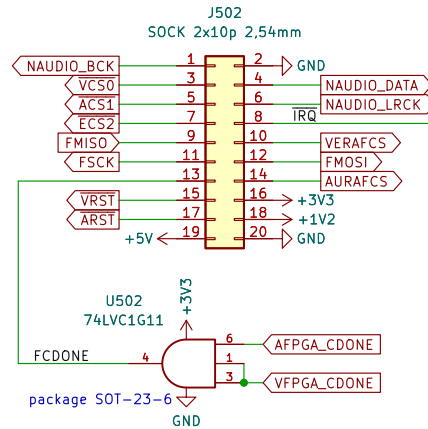
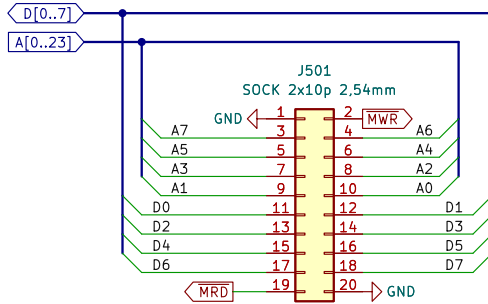
Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

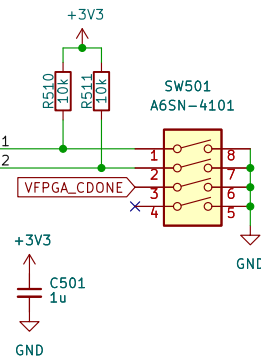
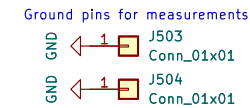
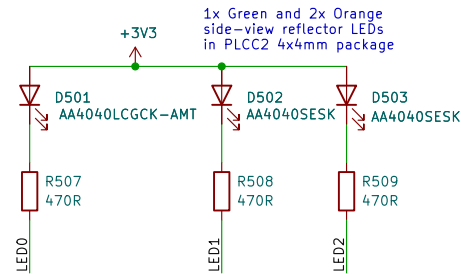
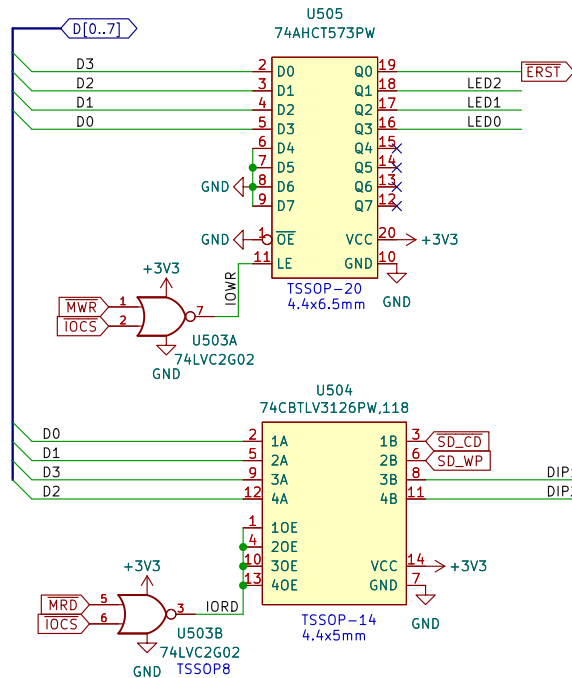
Rev: rev01

Id: 4/8

Connectors to the Motherboard



I/O: LEDs & DIP Switches



Motherboard Connectors, simple I/O
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Motherboard Connectors/
File: vabo-sheet-05.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

Size: A4 Date: 2023-04-28

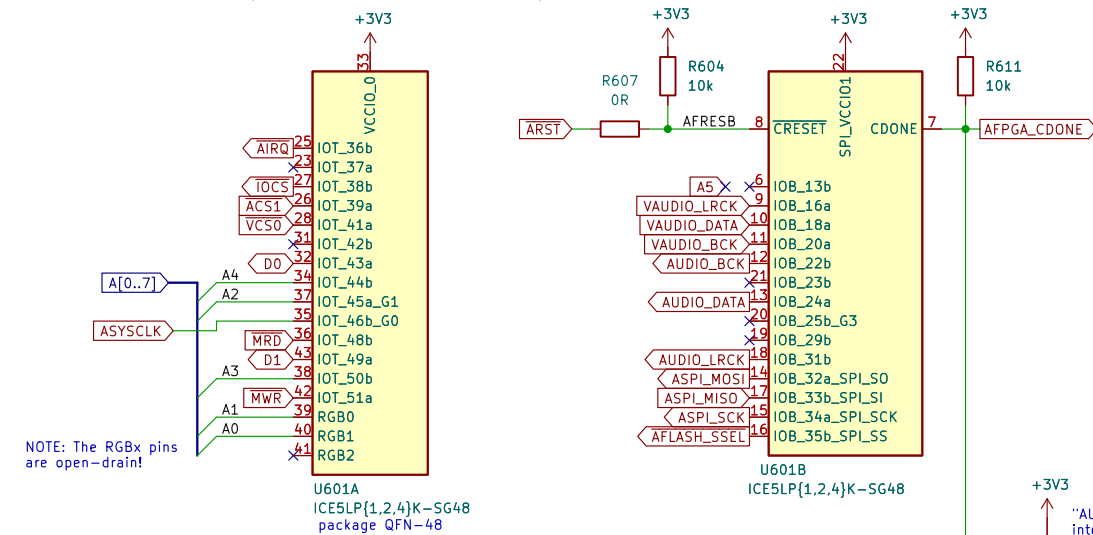
KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01

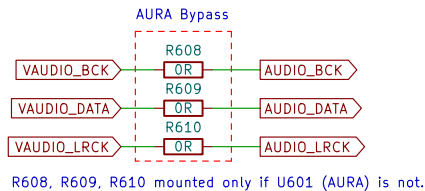
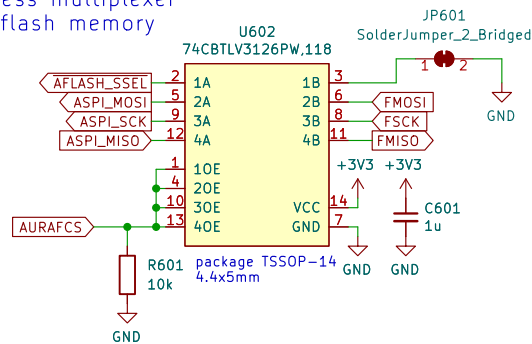
Id: 5/8

"AURA" FPGA – Audio Retro Adapter

For X16 compatibility, AURA will implement the YM2151 FM-Synthesis (the chip is long out of production).
One possible design is JT51 at <https://github.com/jotego/jt51>
which requires about 2K gates (i.e. ICE5LP2K-SG48 – to be validated)



FTDI/ICD access multiplexer
to AURA SPI flash memory



AURA FPGA
FOR X65.EU DESIGNED BY JSYKORA.INFO

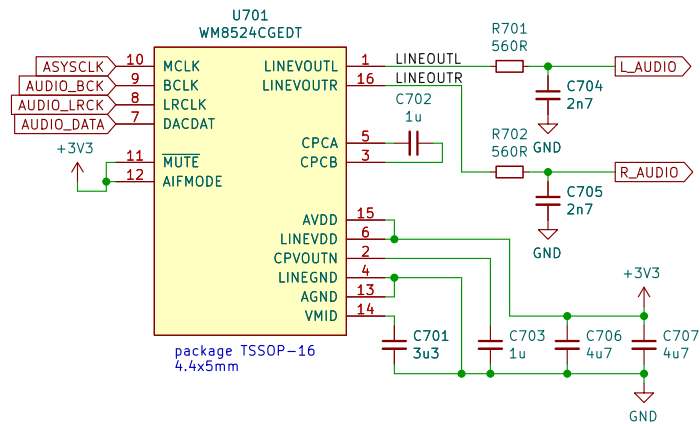
Sheet: /Audio AURA FPGA/
File: vabo-sheet-06.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

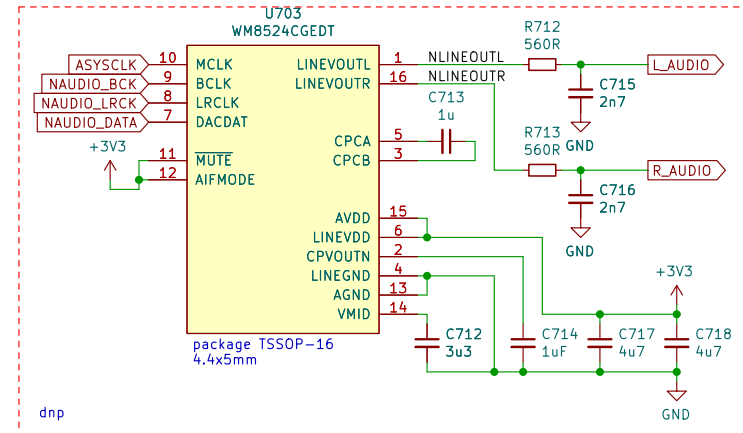
Size: A4 Date: 2023-04-28
KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01
Id: 6/8

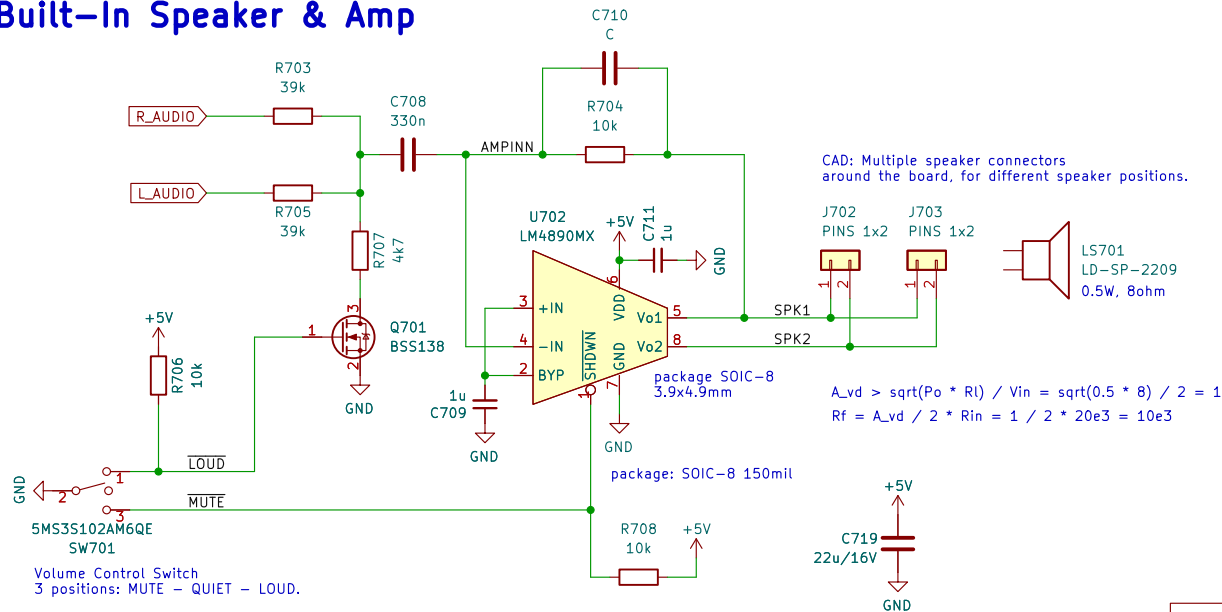
Audio DAC (PCM/PSG in VERA, FM in AURA)



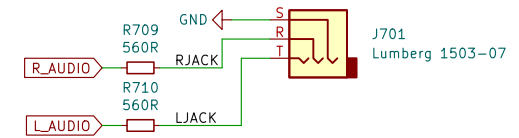
Audio DAC (Sound from NORA) – optional.



Built-In Speaker & Amp



3.5mm jack – AUDIO LINE output



This schematic contains portions of work done by Frank van den Hoe for the project VERA: <https://github.com/fvdhoef/vera-module>

Audio DAC, Speaker Amplifier, and Line Output
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Audio DAC, Output/
File: vabo-sheet-07.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

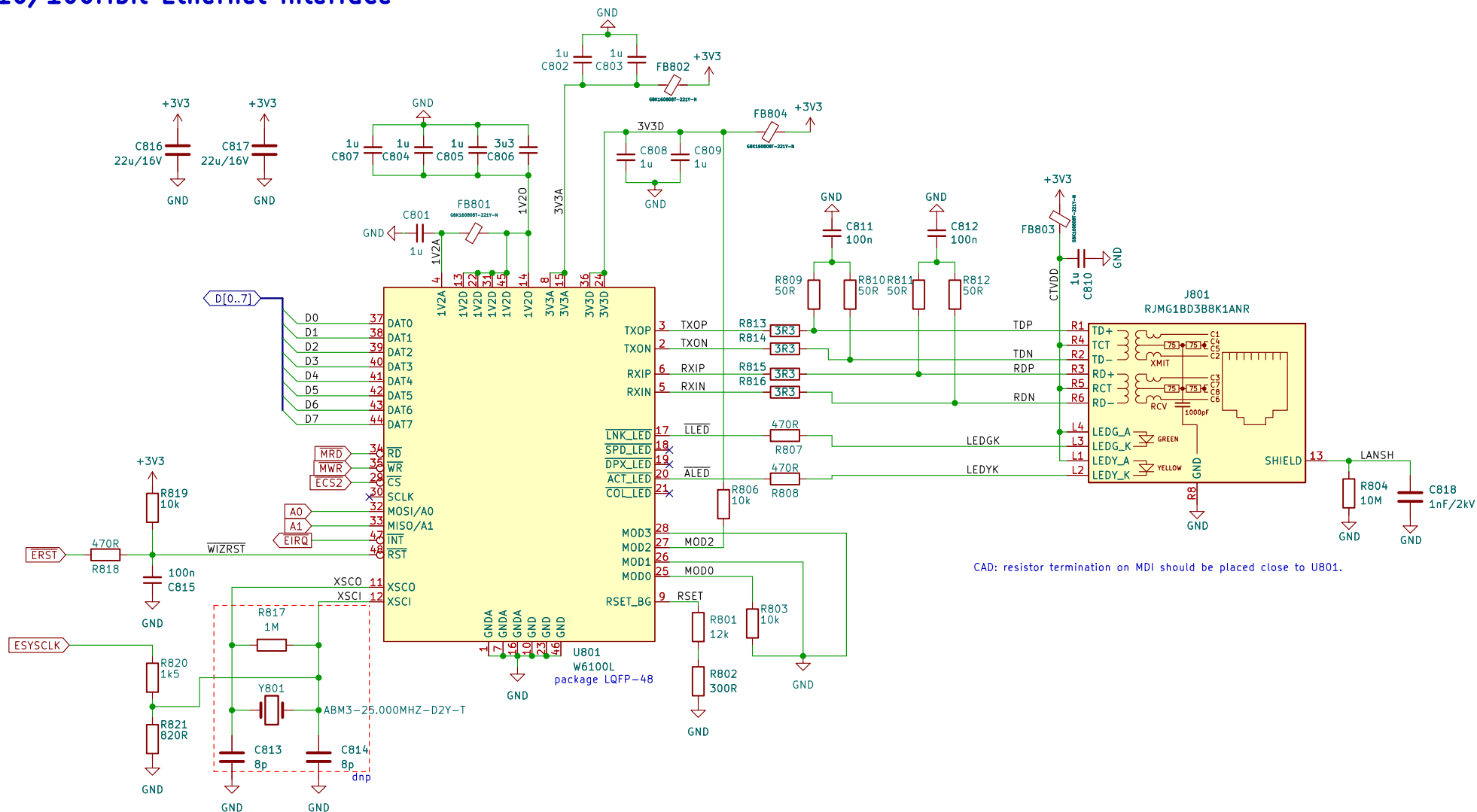
Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01

Id: 7/8

10/100Mbit Ethernet Interface



CAD: resistor termination on MDI should be placed close to U801.

XSCI requires 25MHz @ 1.2V levels, rise/fall time <8ns

Ethernet LAN Interface (Wiznet)
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Ethernet/
File: vabo-sheet-08.kicad_sch

Title: OpenX65 – Video/Audio & Ethernet Board

Size: A4 Date: 2023-04-28

KiCad E.D.A. kicad 6.0.11-3.fc36

Rev: rev01

Id: 8/8