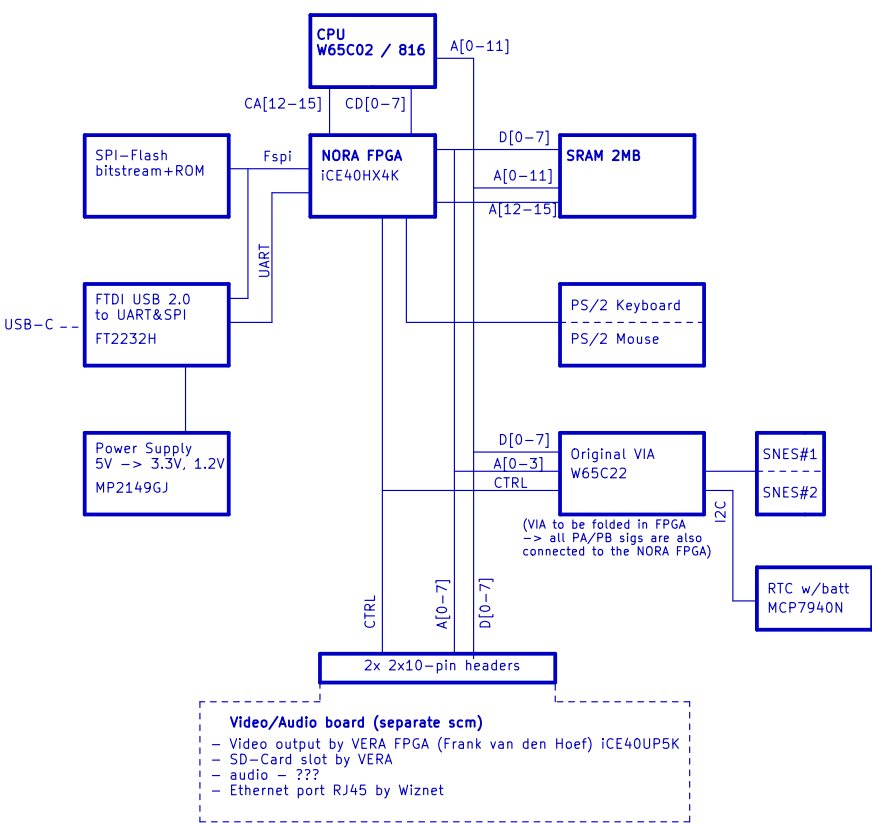


Computer OpenX65 by X65.EU

MOTHERBOARD (MO-BO) WITH THE CPU W65Cxx

Schematic sheets:

Block Diagram:



Revision History:

rev01 / 30.3.2023	Initial design. PCB 100x100mm, 2-L. First PCB production: PCBWAY on 29.3.2023 file: openx65-mobo-rev01b-grb.zip
-------------------	---

CPU+SRAM	2	File: cpu_sram.kicad_sch
FPGA	3	File: fpga.kicad_sch
VIA, RTC, SNES	4	File: via_rtc.kicad_sch
USB-Terminal	5	File: usbdev.kicad_sch
VA-Board, PS2	6	File: b2b-conns.kicad_sch
Power Supply	7	File: pwrsup.kicad_sch

- FID101 Fiducial
- FID102 Fiducial
- FID103 Fiducial
- FID104 Fiducial
- H101 MountingHole
- H102 MountingHole
- H103 MountingHole
- H104 MountingHole

connect holes to GND

OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /
File: open65.kicad_sch

Title: OpenX65

Size: A4 Date: 2023-03-30

KiCad E.D.A. kicad (6.0.7)

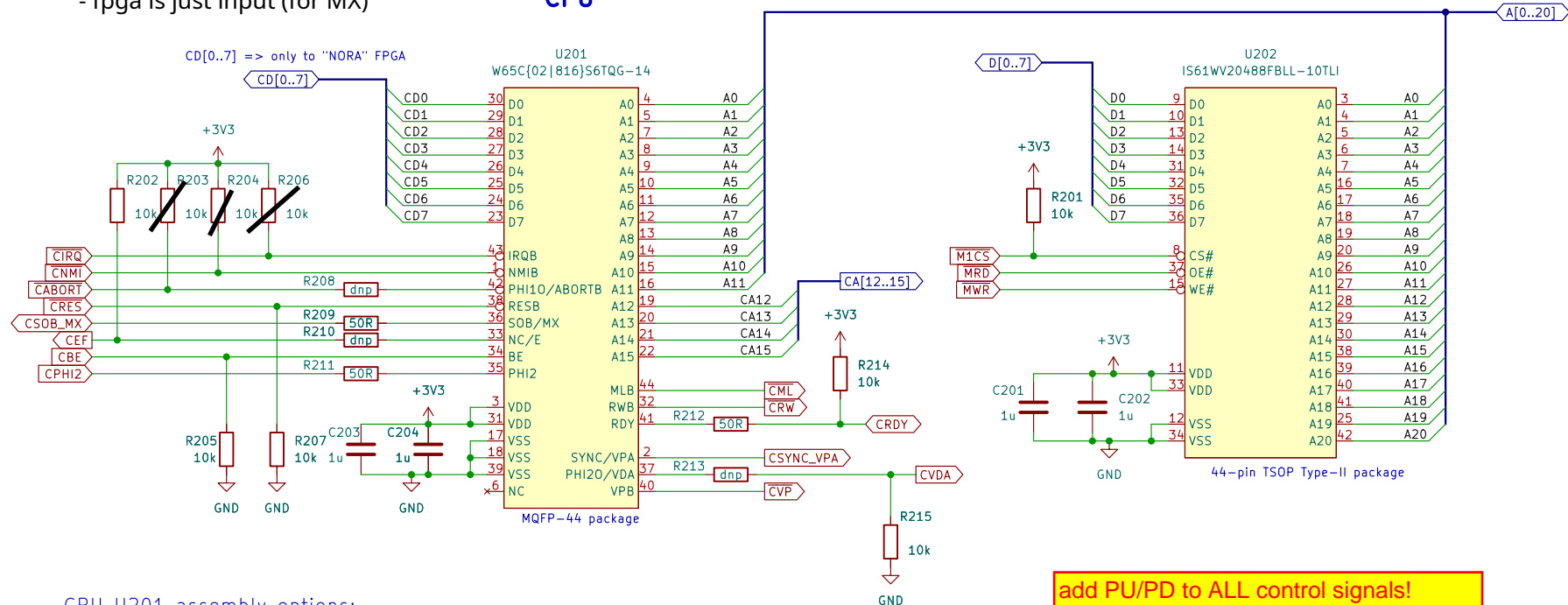
Rev: rev01

Id: 1/7

CSOB_MX needs pull-up
- for case of 6502
- fpga is just input (for MX)

"CPU"

"RAM"



CPU U201 assembly options:

- W65C02S6TQG-14 => 8-bit CPU
=> do not populate R208, R210, R213
- W65C816S6TQG-14 => 16-bit CPU (not 100% compatible with the 8-bit!!)
=> R208=R210=R213=50ohm

OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /CPU+SRAM/
File: cpu_sram.kicad_sch

Title: OpenX65 – CPU and SRAM

Size: A4 Date: 2023-03-30

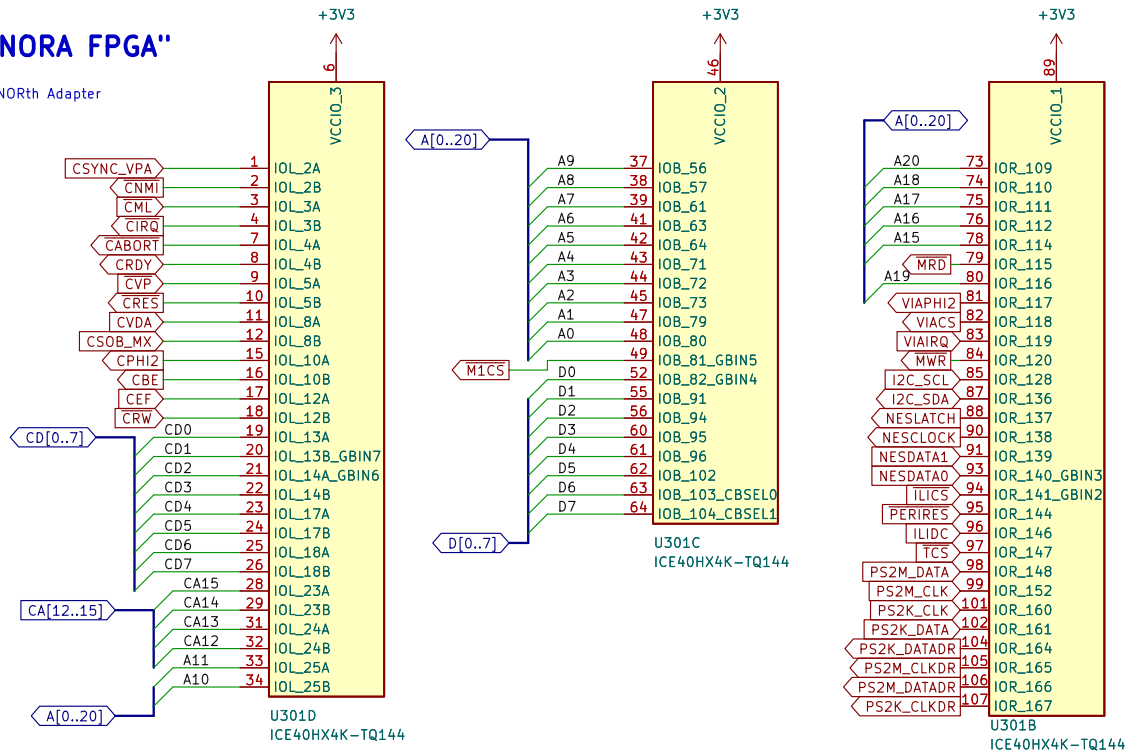
KiCad E.D.A. kicad (6.0.7)

Rev: rev01

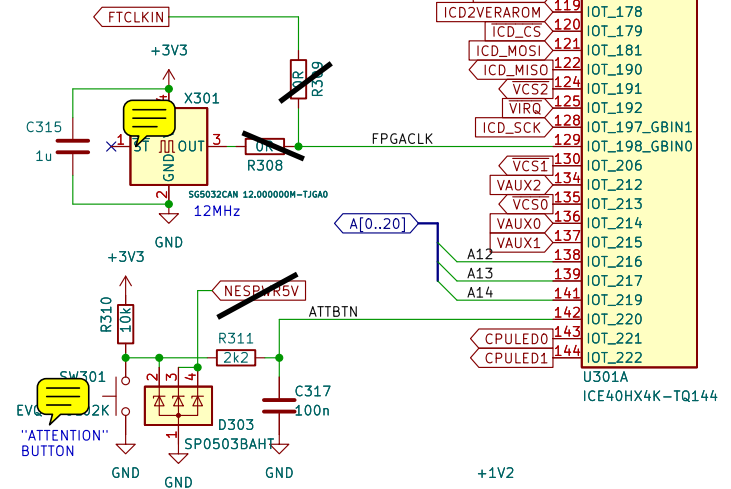
Id: 2/7

"NORA FPGA"

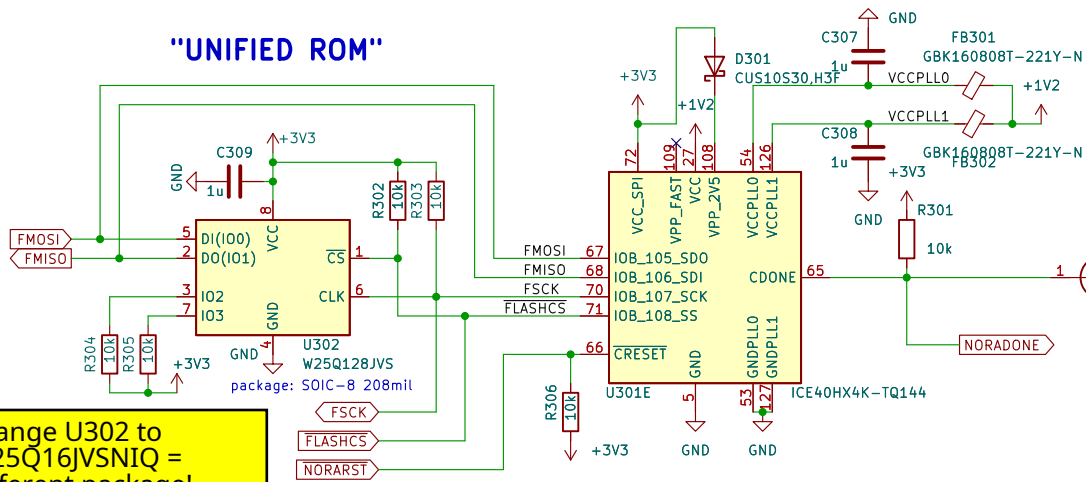
= NORTH Adapter



TIRQ => CPUTYPE02.

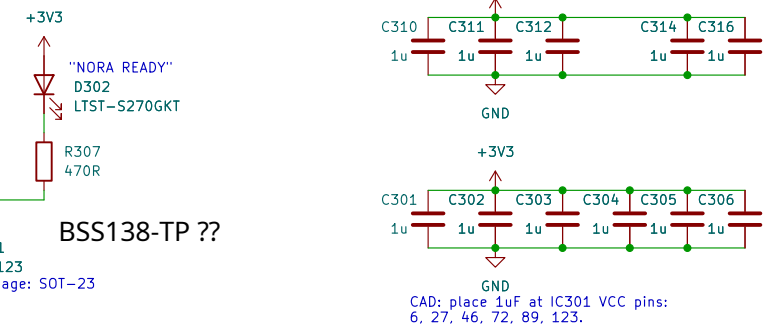


"UNIFIED ROM"



change U302 to
W25Q16JVSNIQ =
different package!

ICE40HX DS: VPP_FAST, used only for fast production programming.
must be left floating or unconnected in applications.



OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /FPGA/
File: fpga.kicad_sch

Title: OpenX65 - NORA FPGA

Size: A4 Date: 2023-03-30

KiCad E.D.A. kicad (6.0.7)

Rev: rev01

Id: 3/7

USB 2.0 WITH USB-C / UART TERMINAL AND ICD (In-Circuit Debugger)

R503 - 0R, resp.
usb shield to
gnd

fuse F501 =
remove

* vymazat vsechny 0R, az
bude obvod potvrzen!
* pridat PU/PD pro
definovani stavu

add TYPE02 strapping:
65C02 => pull-up 10k
65C816 => pull-down 1k

nVERAFCS -> active high;
nVERA2FCS -> AURAFCS;
nVERARST -> nVRST;
ICD2VERAROM -> nARST

ICD2NORAROM -> ICD2FLASH

Alternative assembly: FT232HL in LQFP-64 package

package: LQFP-64

OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO
Sheet: /USB-Terminal/
File: usbdev.kicad_sch

Title: OpenX65 - USB Terminal with UART and ICD

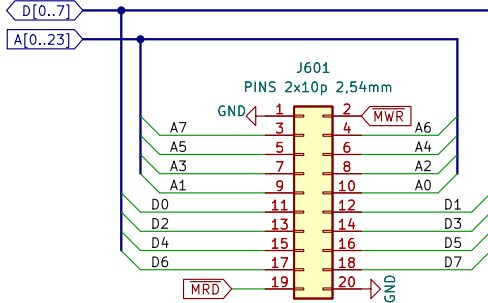
Size: A3 Date: 2023-03-30
KiCad E.D.A. kicad (6.0.7)

Rev: rev01
Id: 5/7

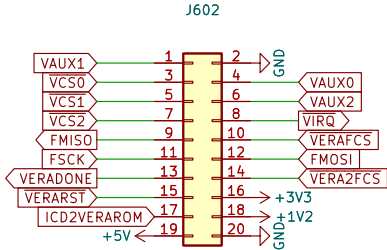
B-2-B CONNECTOR TO THE MULTIMEDIA BOARD "VA-BO"

J601: A5,6,7 not used in VABO.

poor signal quality (under/over shoots!)

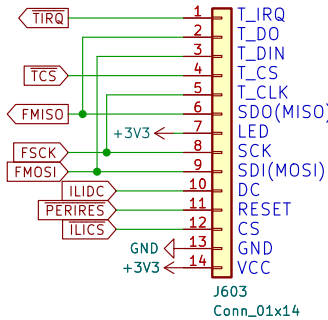
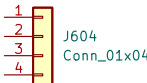


PINS 2x10p 2,54mm

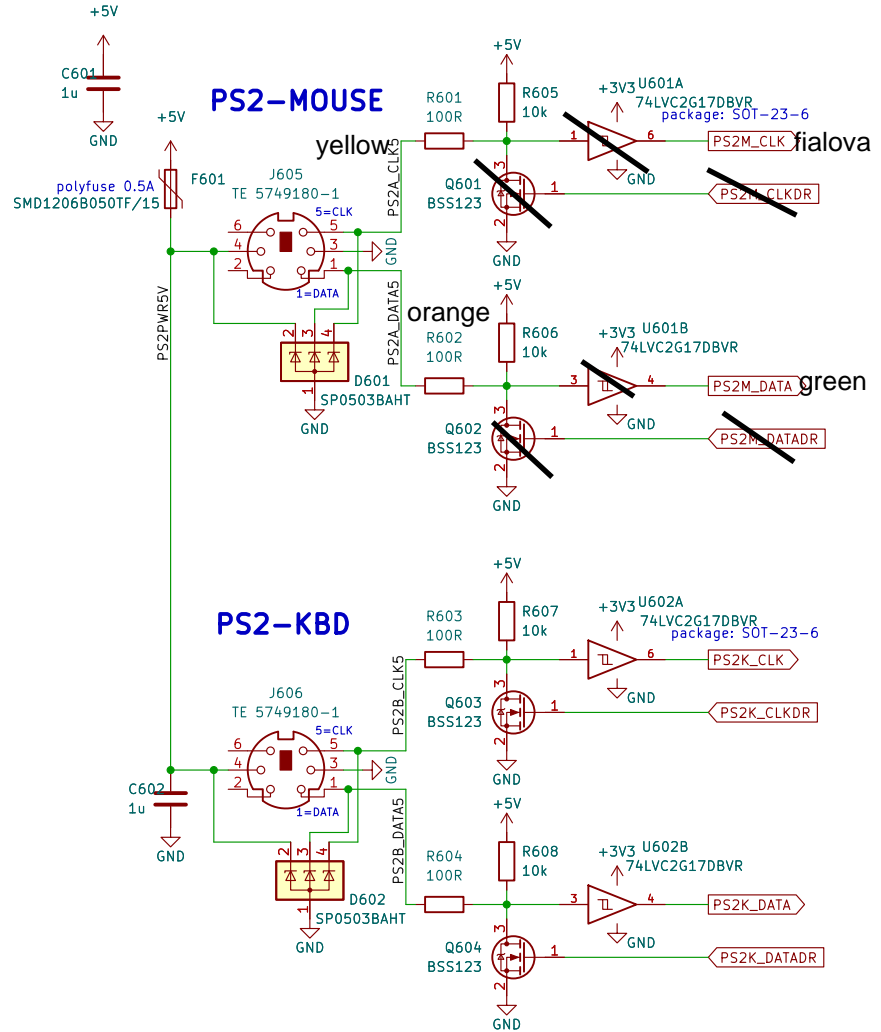
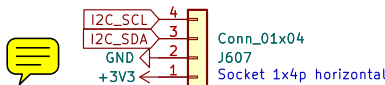


```
nVERAFCS -> active high;  
nVERA2FCS -> AURAFCS;  
nVERARST -> nVRST;  
ICD2VERAROM -> nARST
```

TFT LCD (ILI9341)



PMOD I2C



OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /VA-Board, PS2/
File: b2b-conns.kicad_sch

Title: OpenX65 – PS/2 and Multimedia Connector

Size: A4	Date: 2023-03-30
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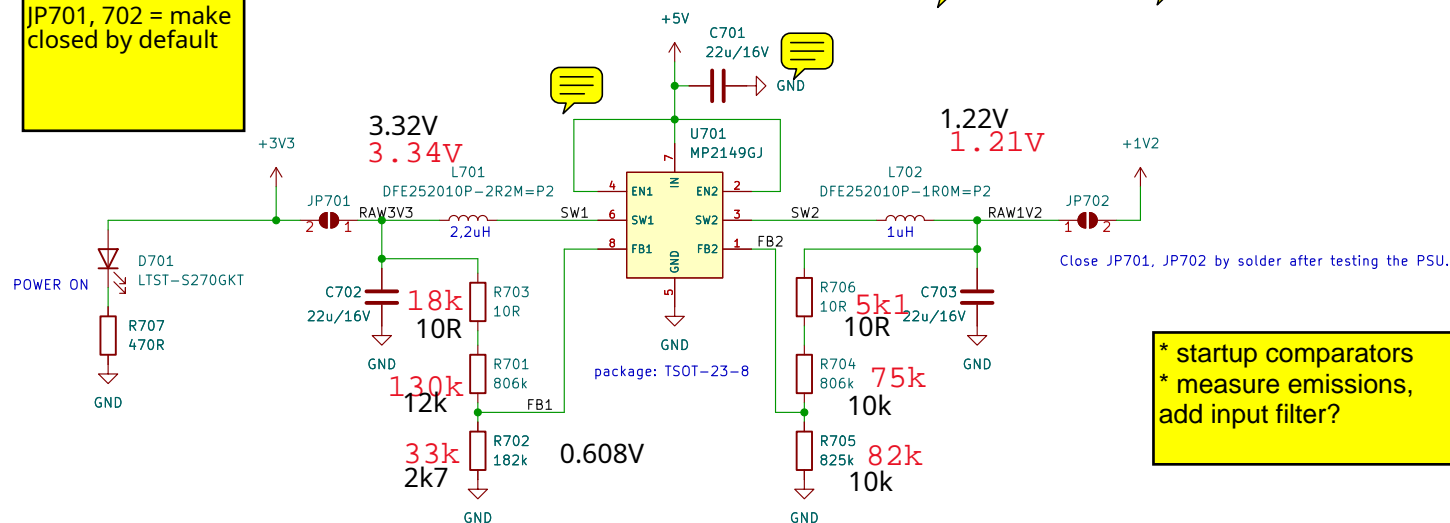
KiCad E.D.A.	kicad (6.0.7)
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Rev: rev01

Id: 6/7

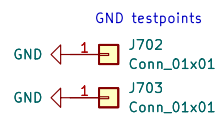
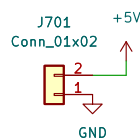
POWER SUPPLY
5V -> 3.3V, 1.2V

JP701, 702 = make
closed by default



* startup comparators
* measure emissions,
add input filter?

Alternative power input connector



Consumption:
@3V3: mobo alone = 80mA,
whole computer = 170-200mA (VGA, CX16 rom
runs), with LAN = 230mA, +calliope=250mA
@1V2: 17mA

OpenX65 MOTHERBOARD
FOR X65.EU DESIGNED BY JSYKORA.INFO

Sheet: /Power Supply/
File: pwrsup.kicad_sch

Title: OpenX65 - Power Supply

Size: A4 Date: 2023-03-30

KiCad E.D.A. kicad (6.0.7)

Rev: rev01

Id: 7/7