

Schematic sheets:

Block Diagram:



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-conn.s.kicad\\_sch](#)

Power Supply  
7  
File: [pwrsup.kicad\\_sch](#)

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

Sheet: /  
File: open65.kicad\_sch

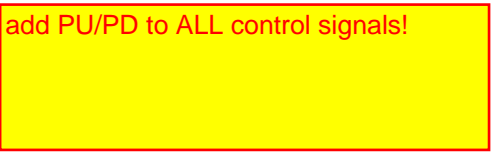
**Title:** OpenX65

Size: A4	Date: 2023-03-30
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Size: 17	Date: 20
KiCad E.D.A.	kicad (6.0.7)

Rev: rev01

Id: 1/7

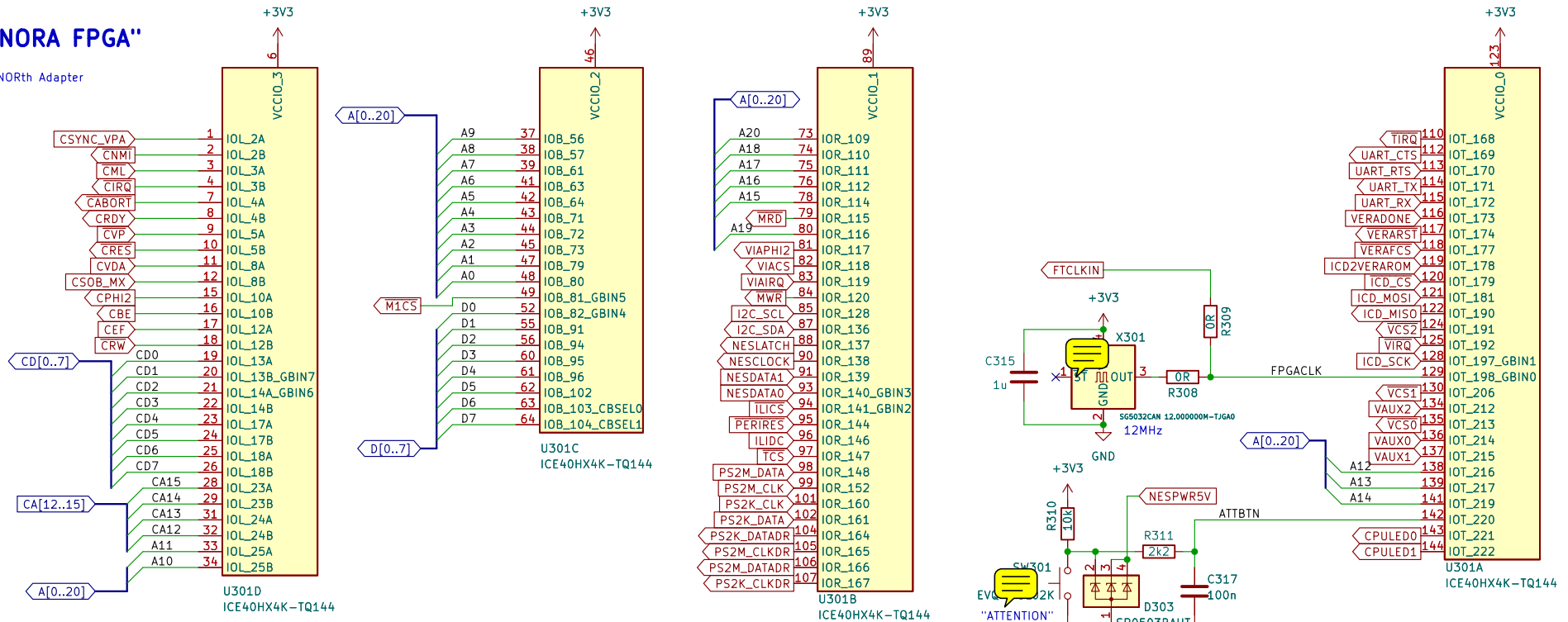


a) W65C02S6TQG-14 => 8-bit CPU  
=> do not populate R208, R210, R213

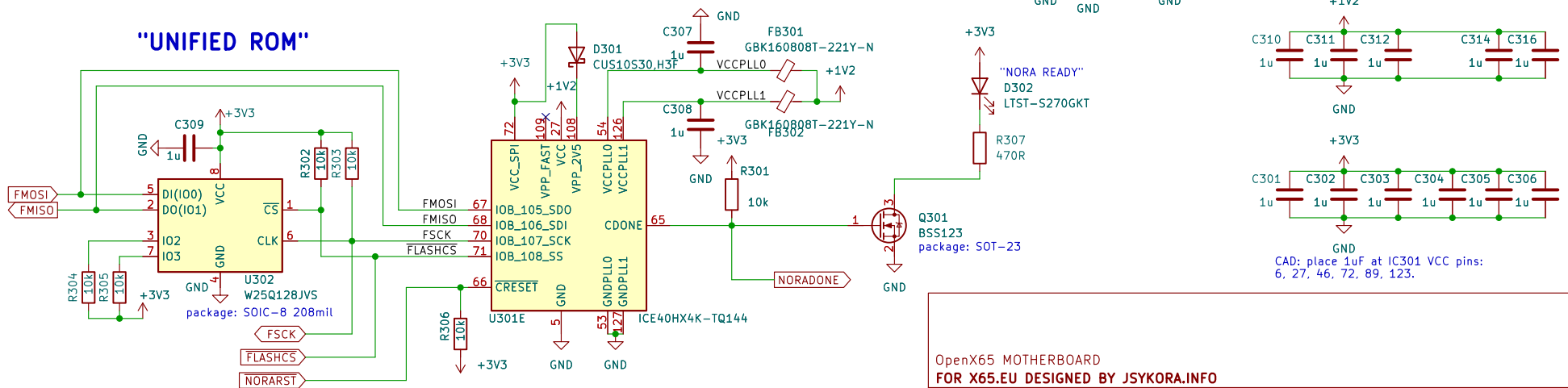
b) W65C816S6TQG-14 => 16-bit CPU (not 100% compatible with the 8-bit!!)  
=> R208=R210=R213=50ohm

## "NORA FPGA"

= NORTH Adapter



## "UNIFIED ROM"



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

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

CAD: place 1uF at IC301 VCC pins:  
6, 27, 46, 72, 89, 123.



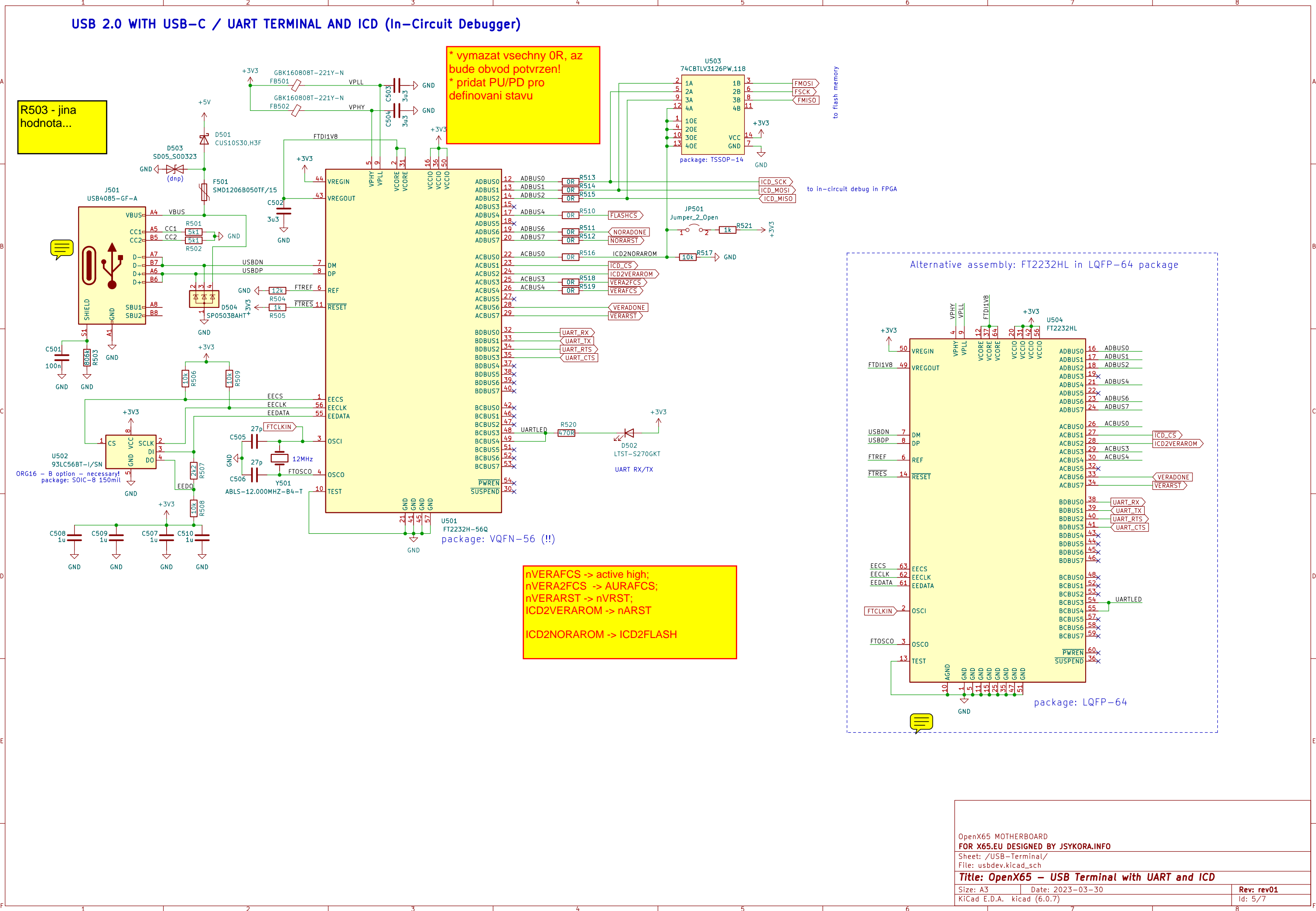
**USB 2.0 WITH USB-C / UART TERMINAL AND ICD (In-Circuit Debugger)**

**Callouts:**

- R503 - jina hodnota...**
- \* vymazat vsechny OR, az bude obvod potvrzen!  
\* pridat PU/PD pro definovani stavu**
- Alternative assembly: FT232HL in LQFP-64 package**
- nVERAFCS -> active high;  
nVERA2FCS -> AURAFCS;  
nVERARST -> nVRST;  
ICD2VERAROM -> nARST  
  
ICD2NORAROM -> ICD2FLASH**

**Components and Connections:**

- U501:** FT232HL-56Q, package: VQFN-56 (!!)
- U502:** 93LC56BT-I/SN, package: SOIC-8 150mil
- U503:** 74CBTLV3126PW.118, package: TSSOP-14
- U504:** FT232HL, package: LQFP-64
- J501:** USB4085-GF-A
- Resistors:** R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520
- Capacitors:** C501, C502, C503, C504, C505, C506, C507, C508, C509, C510
- Diodes:** D501, D502, D503
- Other:** FTDI1V8, F501, F502, F503, F504, F505, F506, F507, F508, F509, F510, F511, F512, F513, F514, F515, F516, F517, F518, F519, F520



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

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

**R503 - jina hodnota...**

**nVERAFCS -> active high;  
nVERA2FCS -> AURAFCS;  
nVERARST -> nVRST;  
ICD2VERAROM -> nARST  
  
ICD2NORAROM -> ICD2FLASH**

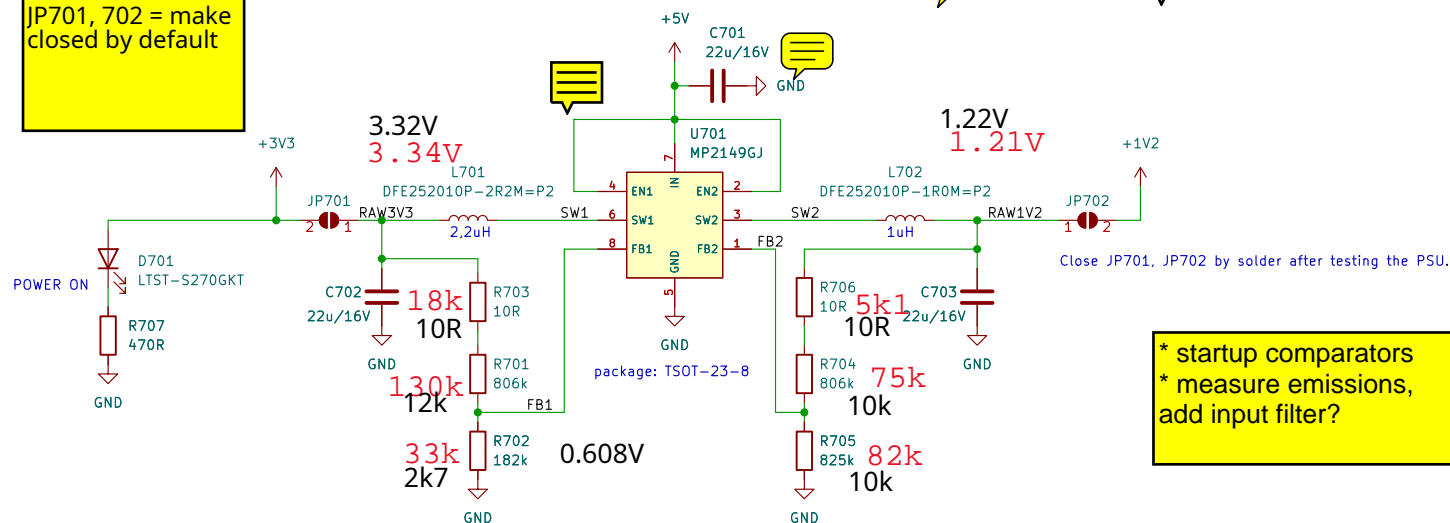
**Alternative assembly: FT232HL in LQFP-64 package**

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 Rev: rev01  
KiCad E.D.A. kicad (6.0.7) Id: 5/7



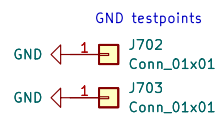
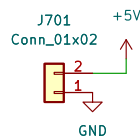
POWER SUPPLY  
5V -> 3.3V, 1.2V

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