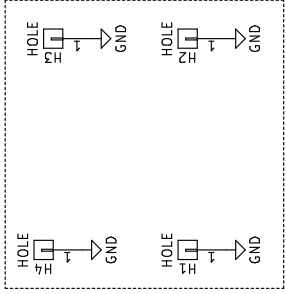
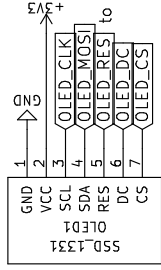
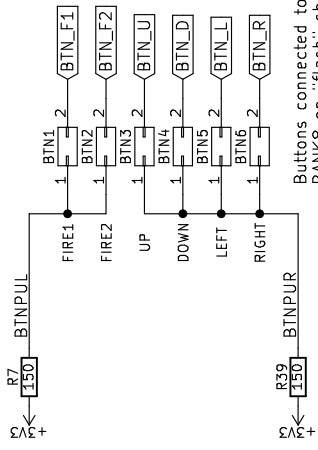


A	A	B	C	D																								
1			<p>click on mouse pointer arrow on top of right toolbar and double-click on sheet to open</p> <table border="1"> <tr> <td>Sheet: power</td> <td>Sheet: usb</td> <td>Sheet: blinky</td> <td>Sheet: ram</td> <td>Sheet: sdcard</td> </tr> <tr> <td>File: power.sch</td> <td>File: usb.sch</td> <td>File: blinky.sch</td> <td>File: ram.sch</td> <td>File: sdcard.sch</td> </tr> <tr> <td>Sheet: gpio</td> <td>Sheet: gpd</td> <td>Sheet: analog</td> <td>Sheet: wifi</td> <td>Sheet: flash</td> </tr> <tr> <td></td> <td>File: gpd.sch</td> <td>File: analog.sch</td> <td>File: wifi.sch</td> <td>File: flash.sch</td> </tr> </table>	Sheet: power	Sheet: usb	Sheet: blinky	Sheet: ram	Sheet: sdcard	File: power.sch	File: usb.sch	File: blinky.sch	File: ram.sch	File: sdcard.sch	Sheet: gpio	Sheet: gpd	Sheet: analog	Sheet: wifi	Sheet: flash		File: gpd.sch	File: analog.sch	File: wifi.sch	File: flash.sch	<p>Root sheet FER+RIZ+RADIONA Sheet: / File: ulx3s.sch Title: ULX3S</p> <table border="1"> <tr> <td>Size: A4</td> <td>Date:</td> </tr> <tr> <td>KiCad E.D.A.</td> <td>kicad 4.0.7+dfsg1-1</td> </tr> </table> <p>Rev: 1.7.2 Id: 1/11</p>	Size: A4	Date:	KiCad E.D.A.	kicad 4.0.7+dfsg1-1
Sheet: power	Sheet: usb	Sheet: blinky	Sheet: ram	Sheet: sdcard																								
File: power.sch	File: usb.sch	File: blinky.sch	File: ram.sch	File: sdcard.sch																								
Sheet: gpio	Sheet: gpd	Sheet: analog	Sheet: wifi	Sheet: flash																								
	File: gpd.sch	File: analog.sch	File: wifi.sch	File: flash.sch																								
Size: A4	Date:																											
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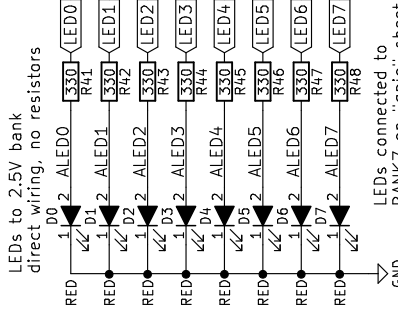
SSD1306 B/W or SSD1331 COLOR
 compatible OLED 0.96" or 1.3" PCB
 14x14 units
 1 unit = 2.54 mm



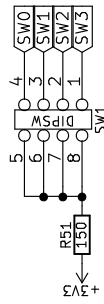
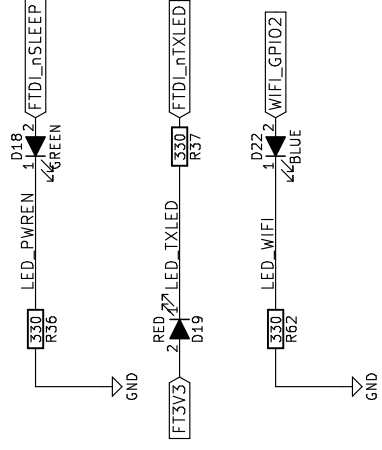
to global onboard reset?



Buttons connected to BANK8 on "flash" sheet



LEDs connected to BANK7 on "gpio" sheet



DIP switch connected to BANK0 on 'gpio' sheet

To fix issues with FT231XS rev A,B,C Short-circuit D18 LED, but then board cannot keep awake by USB. chip rev D works properly See TN140_FT231X Errata

Buttons, LEDs, OLED display

FER+RIZ+RADIONA

Sheet: /blinky/

File: blinky.sch

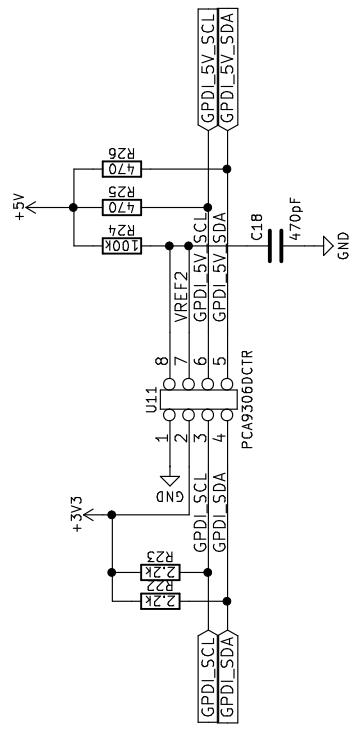
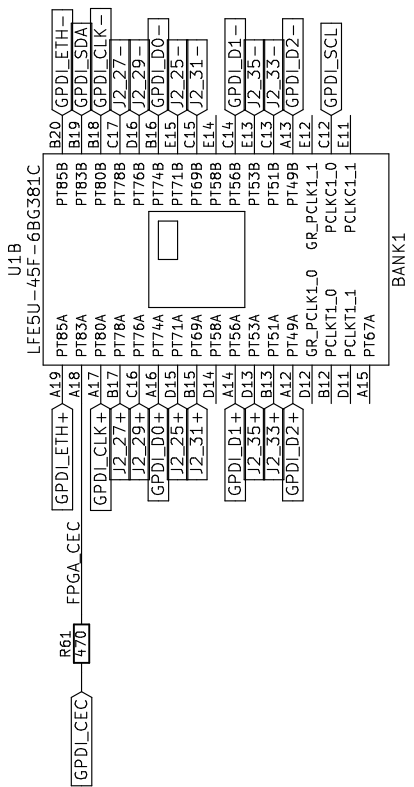
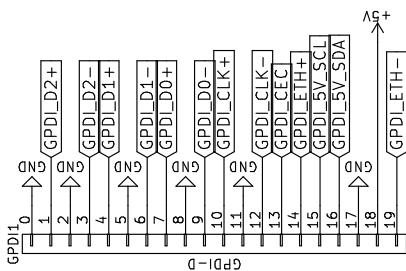
Title: ULX3S

Size: A4 Date:

KiCad E.D.A. kicad 4.0.7+dfsg1-1

Rev: 0.0.1

Id: 4/11

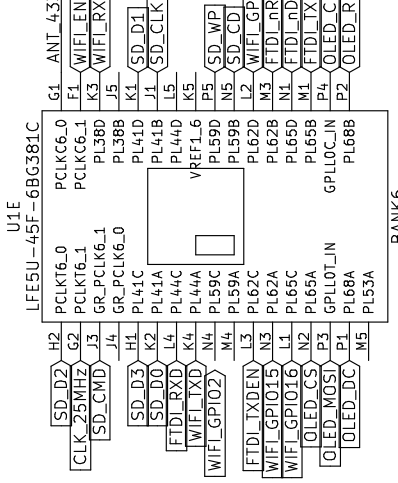
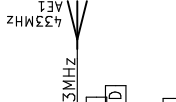


Digital Video and Ethernet
 General Purpose Differential Interface
FER+RIZ+RADIONA

Sheet: /gpd/
 File: gpd1.sch

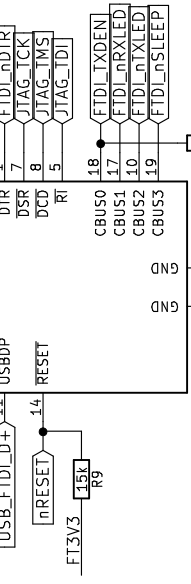
Title: ULX3S

Size: A4 Date:
 KiCad E.D.A. kicad 4.0.7+dfsg1-1
Rev. 0.0.1
 Id: 5/11



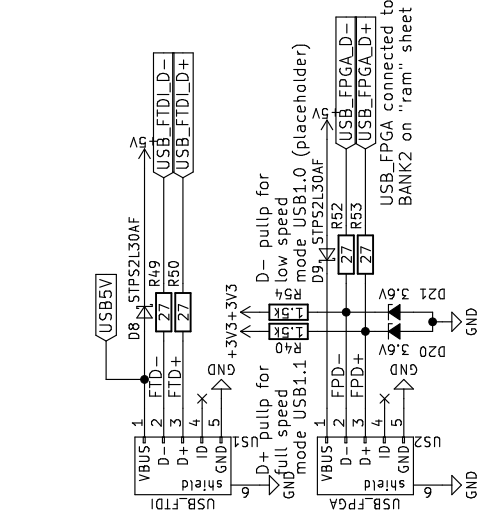
WiFi programming pins:
TXD RXD RTS DIR

VNC2 programming pins:
TXD RXD TXDEN

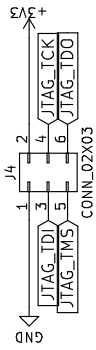


FTDI default
CBUS0=TXDEN
CBUS1=nRXLED
CBUS2=nTXLED
CBUS3=nSLEEP

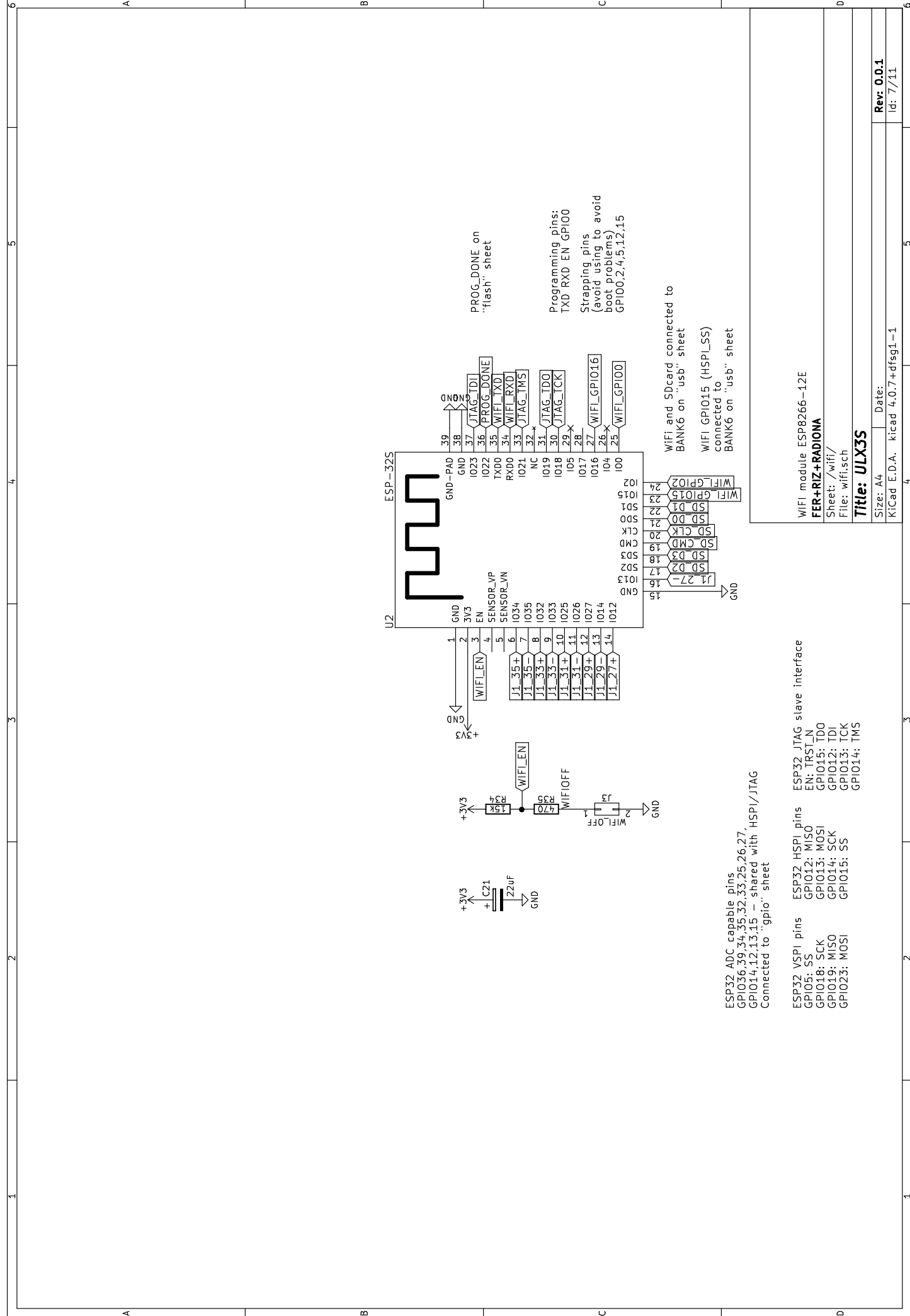
warning:
ULX35 has different pinout for simpler PCB routing and because FT230X has weak CTS drive capability. (Undocumented, FLEAPga mail from 13-Nov-2015)
TCK = DSR
TMS = RI
TDI = CTS
TDO = DCD



D8,D9: Schottky 2A/30V
Low drop V_{fmax}=0.375V



Root sheet
FER+RIZ+RADIONA
Sheet: /usb/
File: usb.sch
Title: ULX35
Size: A4 Date:
KiCad E.D.A. kicad 4.0.7+dfsg1-1
Rev: 0.0.1
Id: 6/11

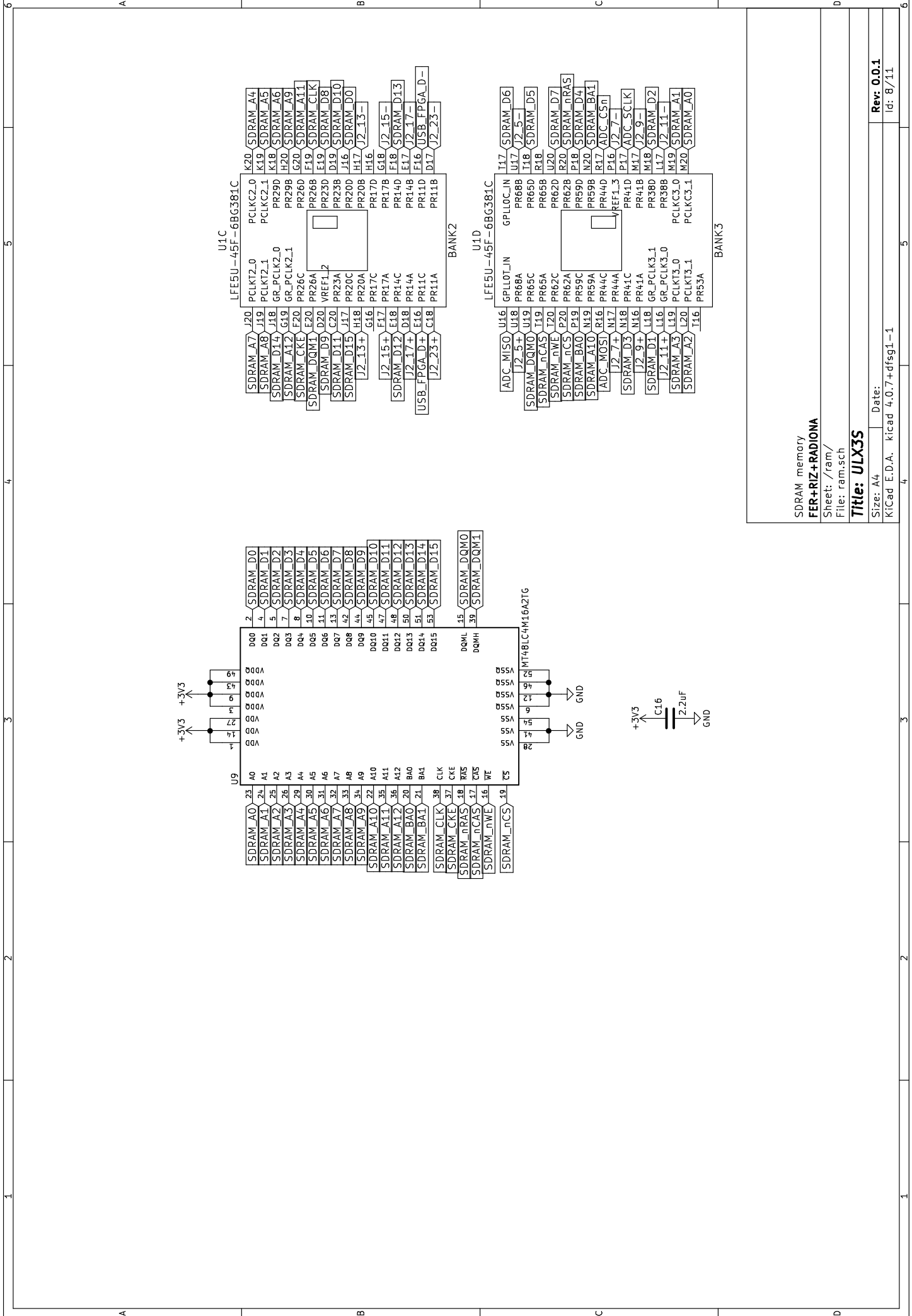


1 2 3 4 5 6

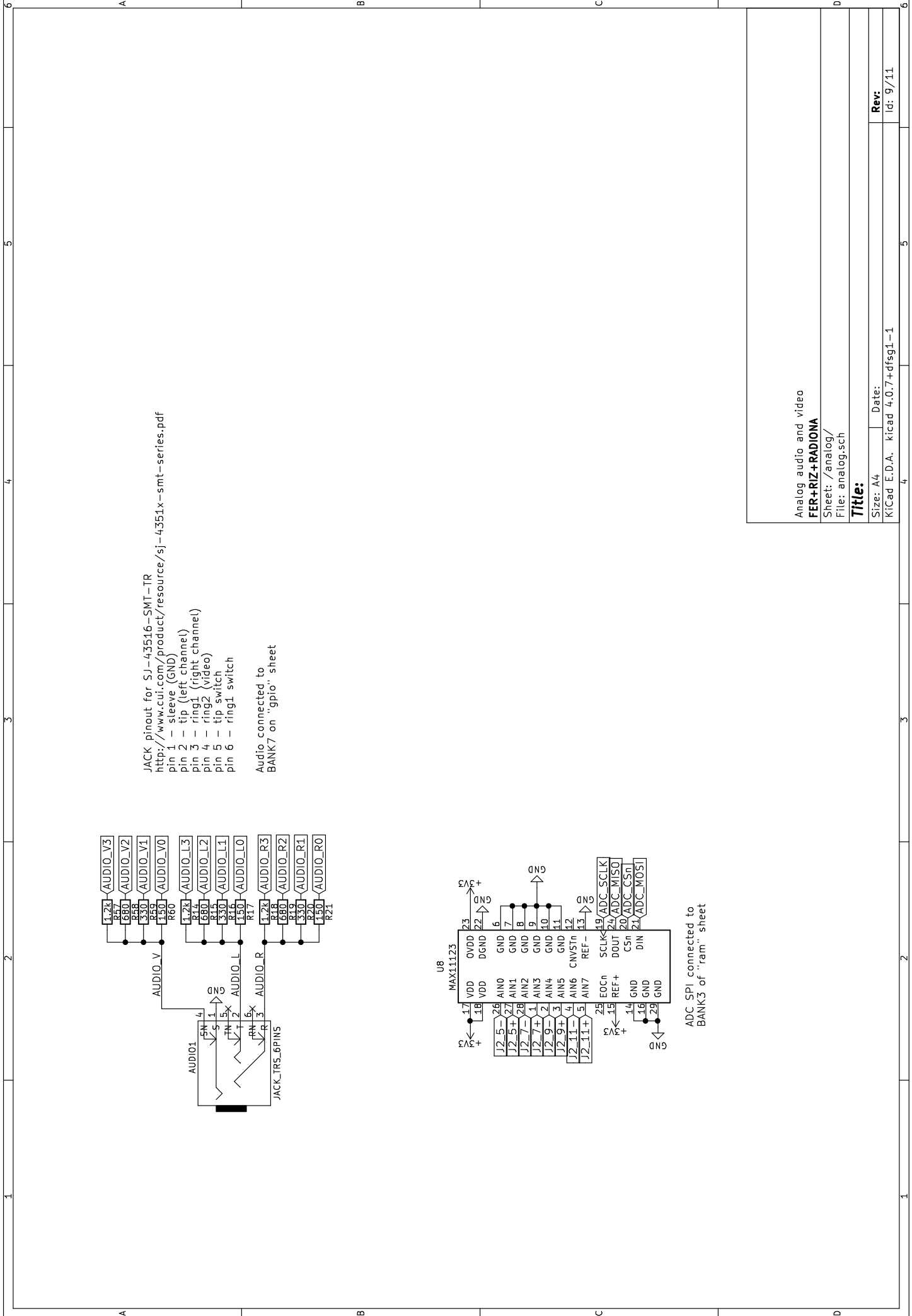
A B C D

A B C D

1 2 3 4 5 6



SDRAM memory
FER+RIZ+RADIONA
 Sheet: /ram/
 File: ram.sch
Title: ULX3S
 Size: A4 Date:
 KiCad E.D.A. kicad 4.0.7+dfsg1-1
 Rev: 0.0.1
 Id: 8/11



JACK pinout for SJ-43516-SMT-TR
<http://www.cui.com/product/resource/sj-4351x-smt-series.pdf>
 pin 1 - sleeve (GND)
 pin 2 - tip (left channel)
 pin 3 - ring1 (right channel)
 pin 4 - ring2 (video)
 pin 5 - tip switch
 pin 6 - ring1 switch

Audio connected to
 BANK7 on "gpio" sheet

ADC SPI connected to
 BANK3 of "ram" sheet

Analog audio and video
FER+RIZ+RADIONA

Sheet: /analog/
 File: analog.sch

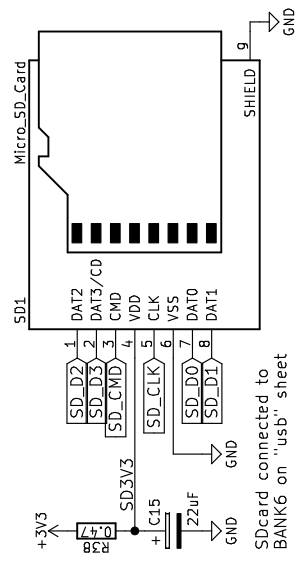
Title:

Size: A4 Date:

KiCad E.D.A. kicad 4.0.7+dfsg1-1

Rev:

Id: 9/11

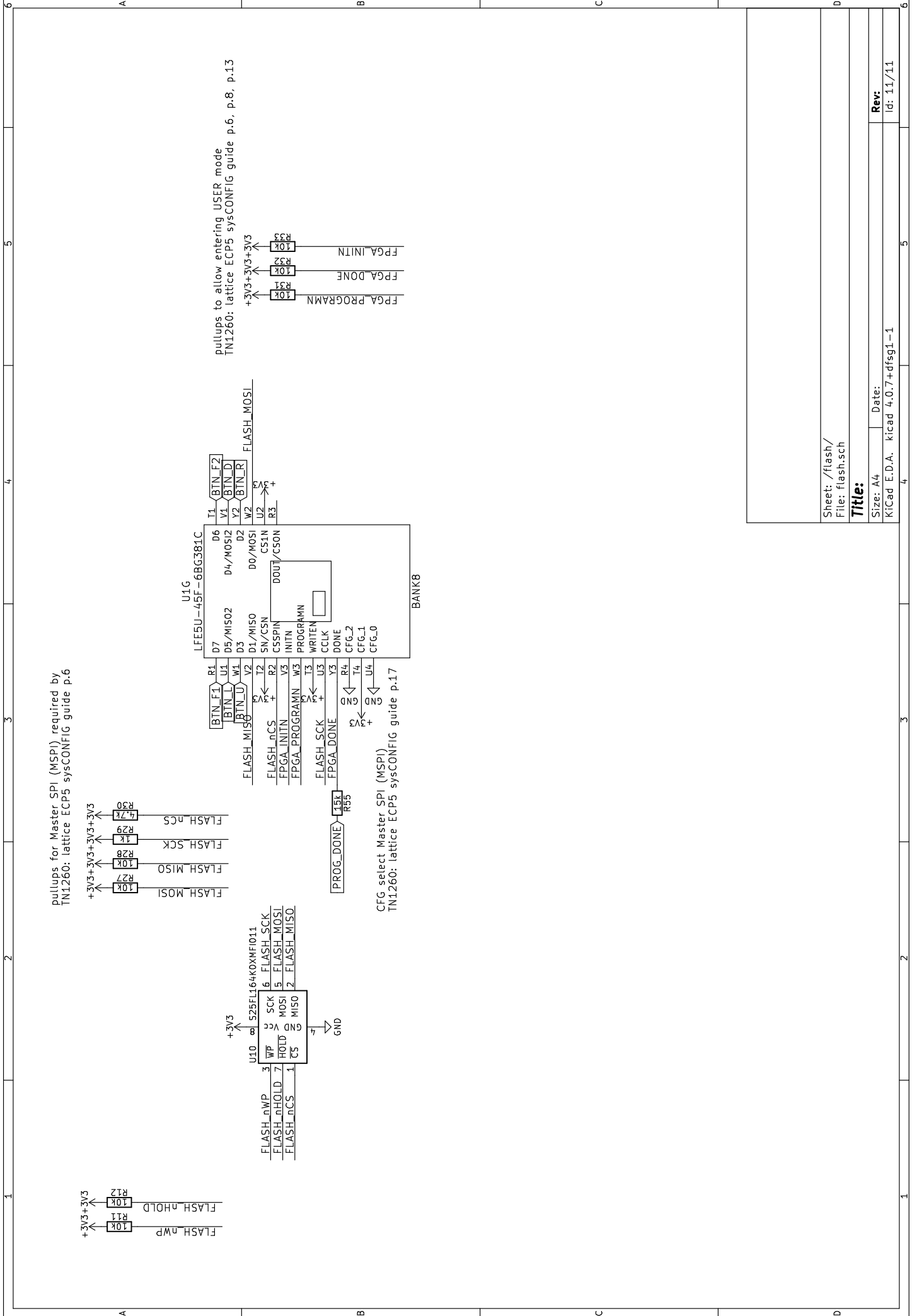


SDcard connected to
BANK6 on "usb" sheet

minimum pins for compatible mode
SD_CLK, SD_CMD, SD_D0, SD_D3

SD card
FER+RIZ+RADIONA
Sheet: /sdcard/
File: sdcard.sch
Title: ULX3S

Size: A4 Date:
KICad E.D.A. kicad 4.0.7+dfsg1-1
Rev: 0.0.1
Id: 10/11



pullups for Master SPI (MSPi) required by TN1260: lattice ECP5 sysCONFIG guide p.6

+3V3+3V3+3V3+3V3
 FLASH_MOSI
 FLASH_MISO
 FLASH_SCK
 FLASH_nCS

+3V3+3V3
 FLASH_nW/P
 FLASH_nHOLD

U10 525FL164K0XMF011
 3 WP
 4 HOLD
 5 CS
 6 SCK
 7 MISO
 8 MOSI
 9 GND

U1G LFE5U-45F-68G381C
 D0 D1 D2 D3 D4 D5 D6 D7
 D0/MOSI D1/MISO D2/MOSI D3/MISO D4/MOSI D5/MISO D6/MOSI D7/MISO
 INITN PROGRAMN PROGRAMM
 FLASH_SCK FLASH_DONE
 FLASH_MISO FLASH_MOSI
 BANK8

pullups to allow entering USER mode TN1260: lattice ECP5 sysCONFIG guide p.6, p.8, p.13

+3V3+3V3+3V3
 FPGA_PROGRAMN
 FPGA_DONE
 FPGA_INITN

CFG select Master SPI (MSPi) TN1260: lattice ECP5 sysCONFIG guide p.17

Sheet: /flash/
File: flash.sch
Title:
Size: A4
Date:
KiCad E.D.A. kicad 4.0.7+dfsg1-1
Rev:
Id: 11/11