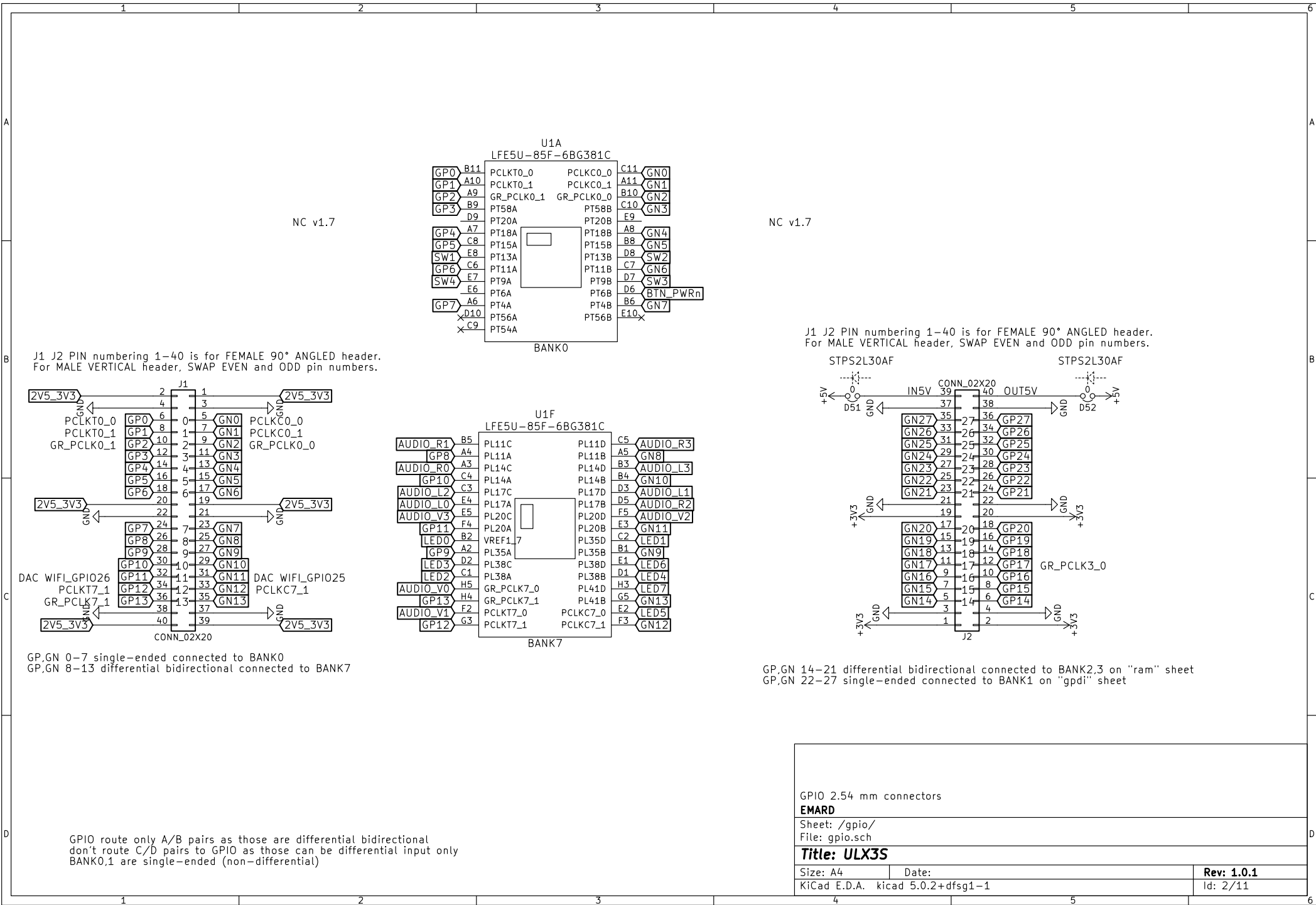


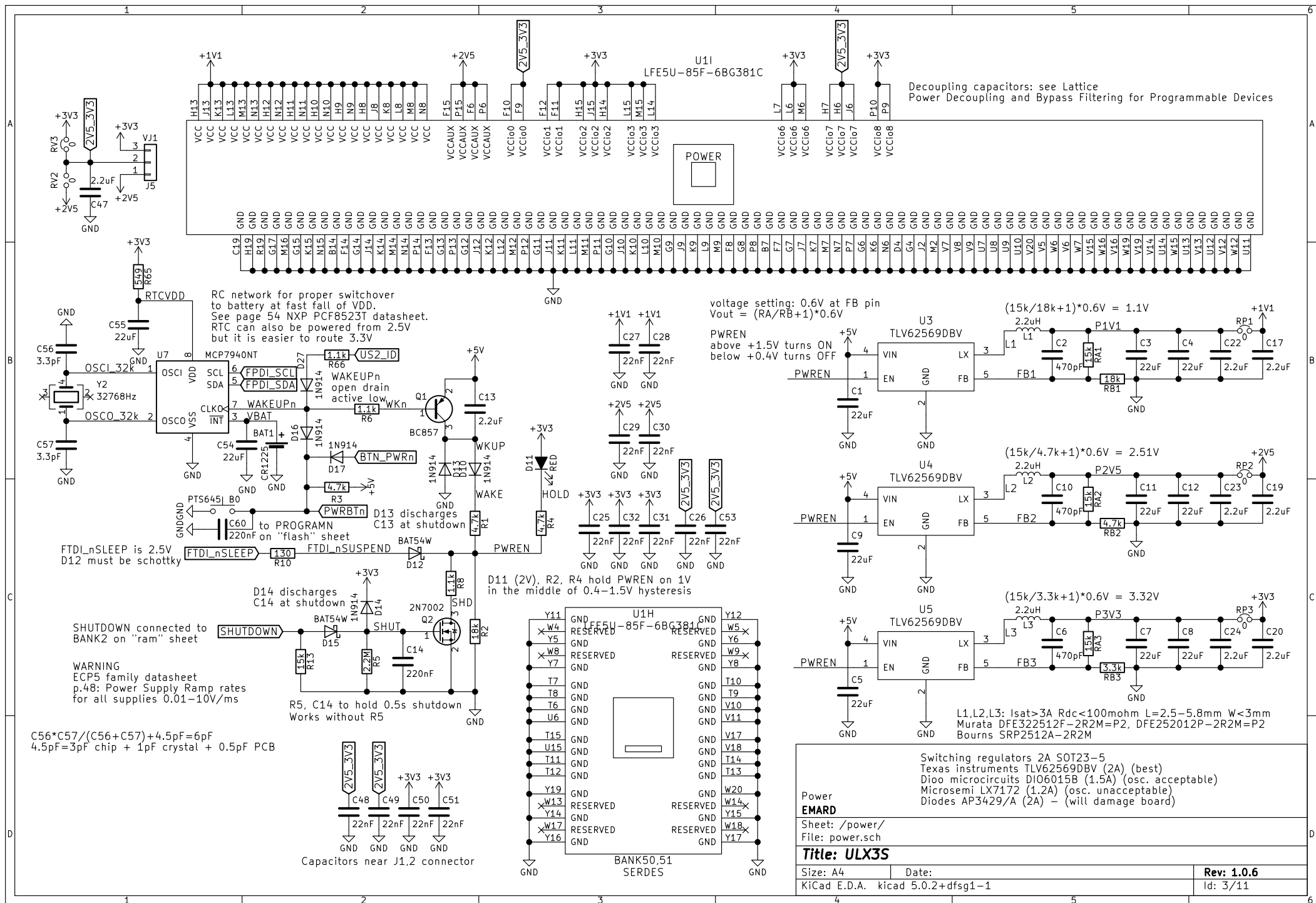
Sheet: /
File: ulx3s.sch

Title: *ULX3S*

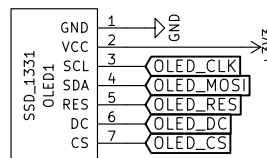
Size: A4	Date:
KiCad E.D.A. kicad 5.0.2+dfsg1-1	

Rev: 3.0.8
Id: 1/11

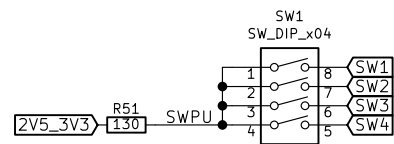
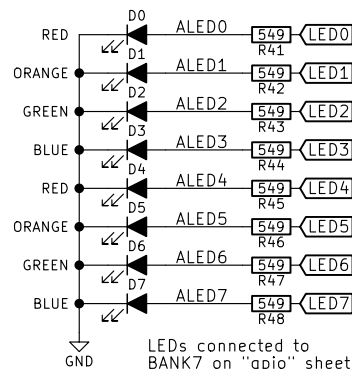
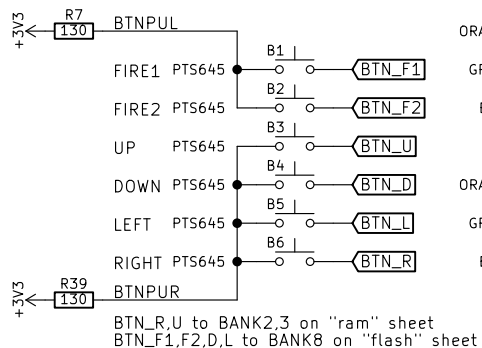
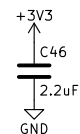




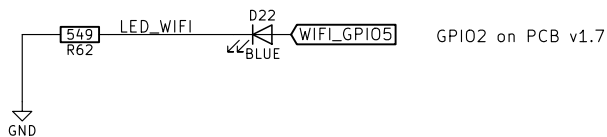
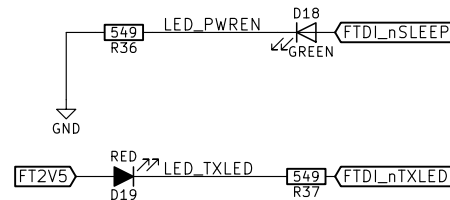
SSD1306 B/W or SSD1331 COLOR
compatible OLED 0.96" or 1.3" PCB
14x14 units
1 unit = 2.54 mm



OLED connected to
BANK6 on "usb" 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

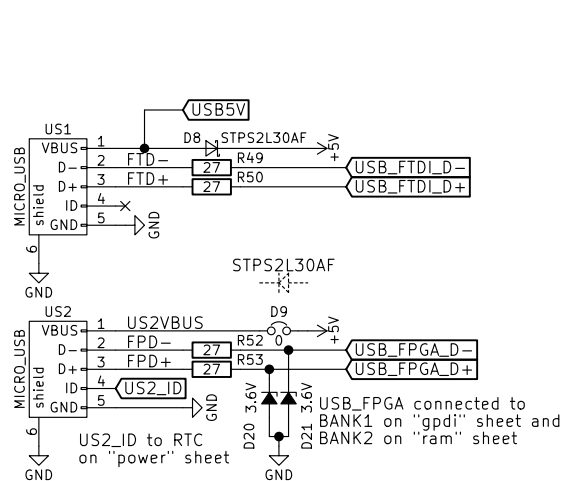
EMARD

Sheet: /blinky/
File: blinky.sch

Title: ULX3S

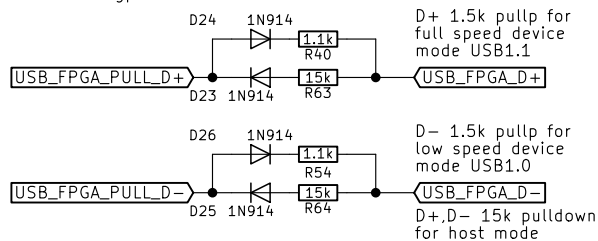
Size: A4 Date:
KiCad E.D.A. kicad 5.0.2+dfsg1-1

Rev: 1.0.0
Id: 4/11

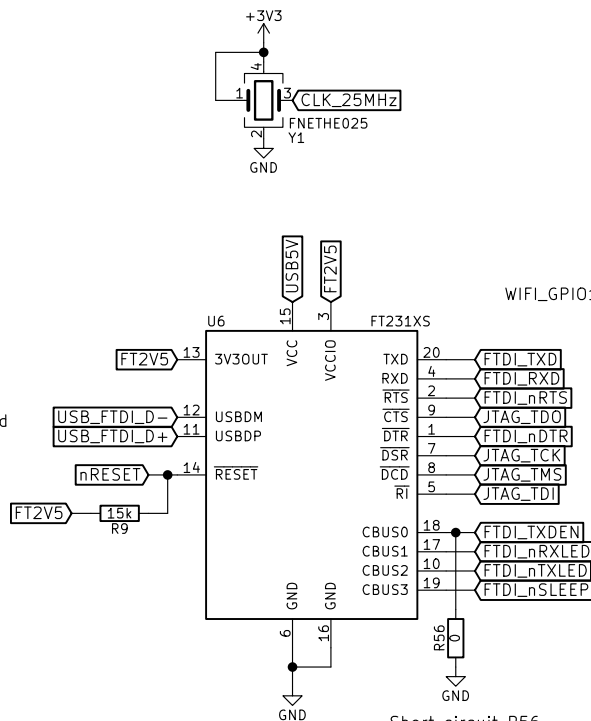


D8,D9: Schottky 2A/30V
Low drop V_{fmax}=0.375V
Parts reduction: Only D8 is required.
D9 D51 D52 can be 1206
1A polyfuses or 0-ohm/2A jumpers

USB pull lines connected to
BANK1 on "gpdi" sheet

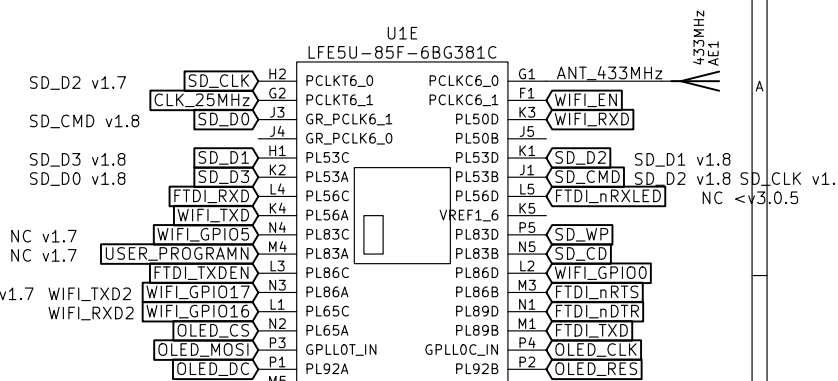


Deviation from USB specification in
pulldowns for BOM simplification.
With series diode, correct value R63 R64
should be 12k but 15k is used.

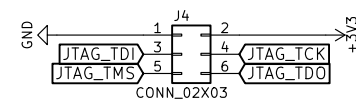
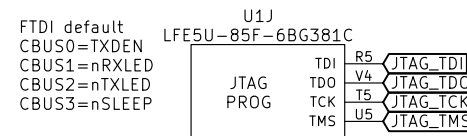


warning:
ULX35 has different pinout
for simpler PCB routing and
because FT230X has weak CTS
drive capability. (Undocumented,
FLEAfpga mail from 13-Nov-2015)
ULX25 pinout was:
TCK = DSR
TMS = RI
TDI = CTS
TDO = DCD

Short circuit R56
for chip rev A,B,C
workaround in
TN140_FT231X Errata



WiFi programming pins:
TXD RXD RTS DTR
VNC2 programming pins:
TXD RXD TXDEN



USB serial and JTAG

EMARD

Sheet: /usb/

File: usb.sch

Title: ULX35

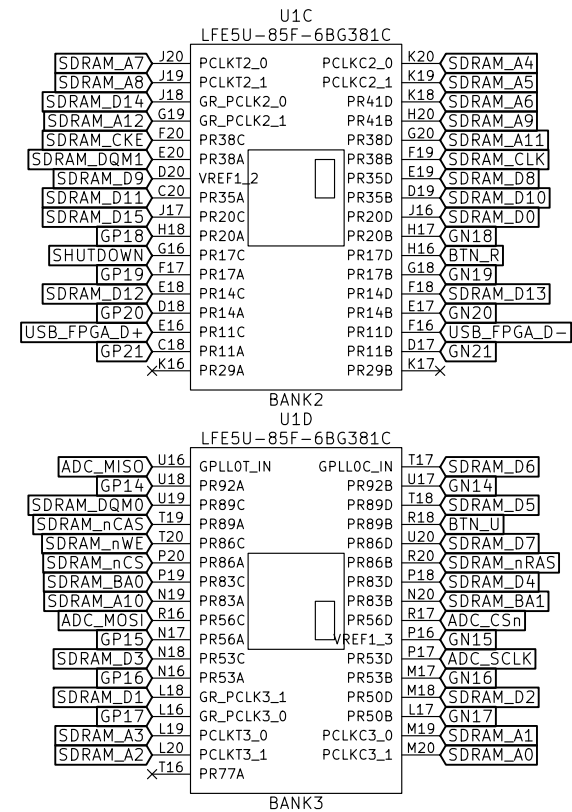
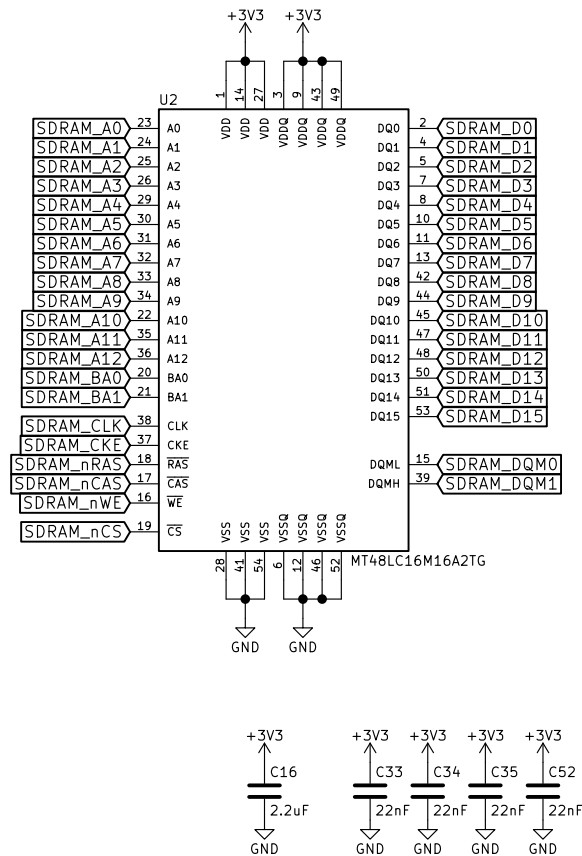
Size: A4

Date:

KiCad E.D.A. kicad 5.0.2+dfsg1-1

Rev: 1.0.3

Id: 6/11



SDRAM memory

EMARD

Sheet: /ram/

File: ram.sch

Title: ULX3S

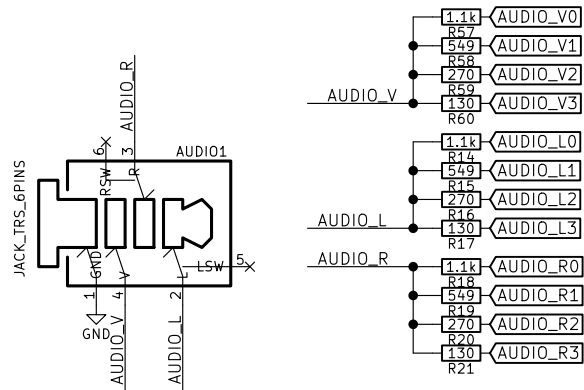
Size: A4

Date:

KiCad E.D.A. kicad 5.0.2+dfsg1-1

Rev: 1.0.0

Id: 8/11

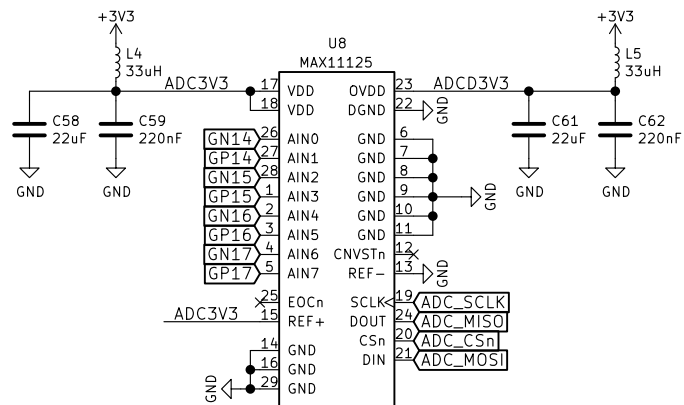


JACK pinout for SJ-43516-SMT-TR
<http://www.cui.com/product/resource/sj-4351x-smt-series.pdf>

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

Output resistance: 75 ohm
 Internal resistance of FPGA pin: 10 ohm
 $1/(1/(130+10)+1/(270+10)+1/(549+10)+1/(1100+10))=74.6$



ADC SPI connected to
 BANK3 of "ram" sheet

Analog audio and video

EMARD

Sheet: /analog/

File: analog.sch

Title: ULX3S

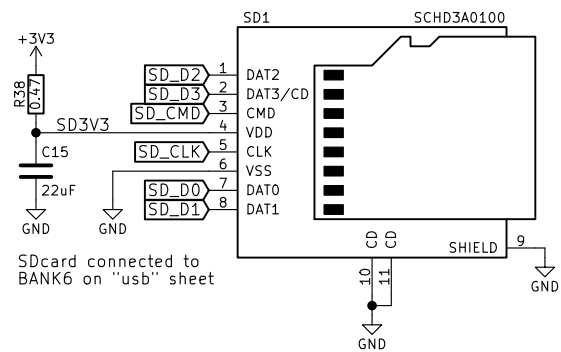
Size: A4

Date:

KiCad E.D.A. kicad 5.0.2+dfsg1-1

Rev: 1.0.4

Id: 9/11



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

SD card
EMARD

Sheet: /sdcard/
File: sdcard.sch

Title: ULX3S

Size: A4 Date:
KiCad E.D.A. kicad 5.0.2+dfsg1-1

Rev: 1.0.0
Id: 10/11

