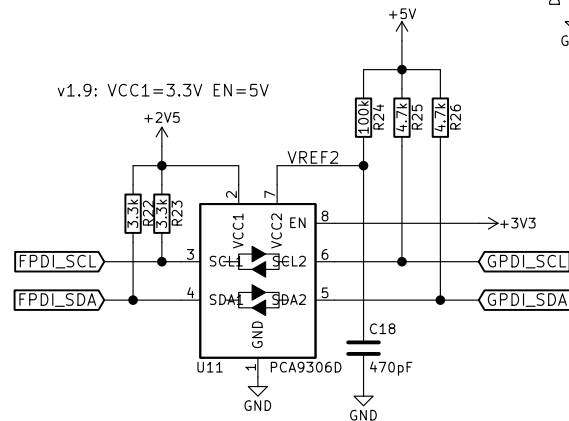
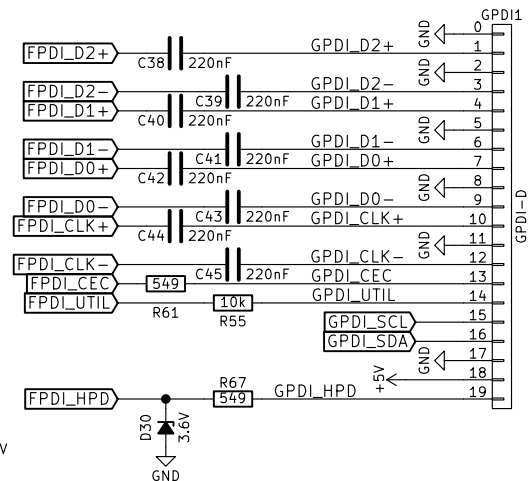
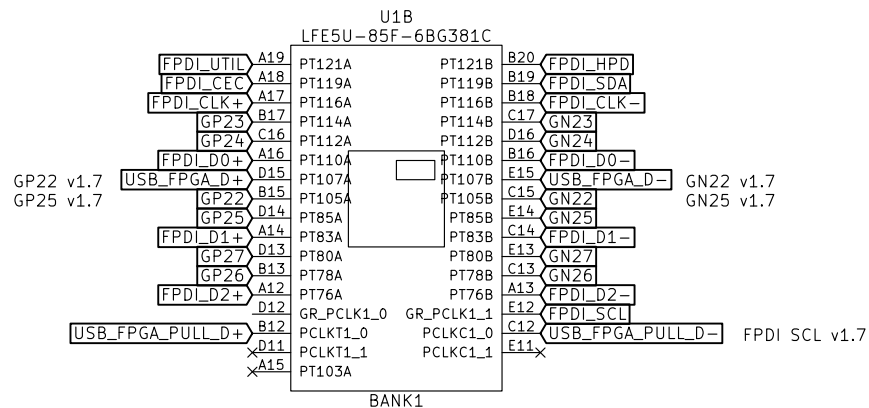


Id: 4/11



PCB v1.8.1 and higher accept FCI 10029449-111RLF
www.amphenol-icc.com
mouser PN: 649-10029449-111RLF
http://portal.fciconnect.com/Comergent/fci/drawing/10029449.pdf

PCB v1.7 and v1.8 accept
mouser PN: 538-47151-1001 (Molex)
https://www.molex.com/pdm_docs/sd/471511001_sd.pdf
mouser PN: 710-685119134923 (Würth)
https://catalog.we-online.com/em/datasheet/685119134923.pdf

i2c shared with RTC
on "power" sheet

Digital Video and Ethernet
General Purpose Differential Interface

EMARD

Sheet: /gpd1/

File: gpd1.sch

Title: ULX3S

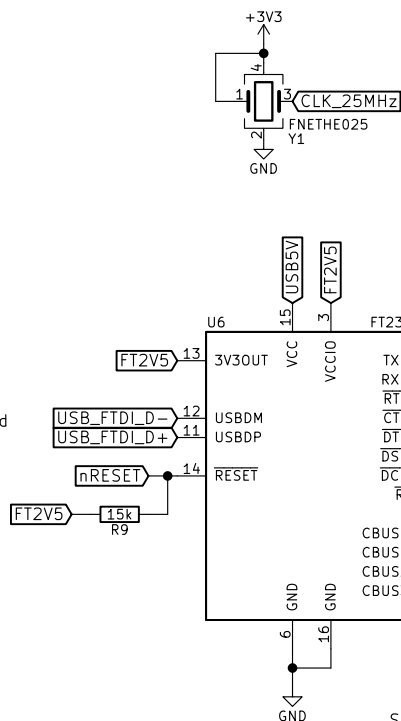
Size: A4

Date:

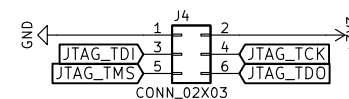
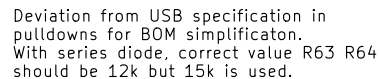
KiCad E.D.A. kicad 5.1.7+dfsg1-1

Rev: 1.0.3

Id: 5/11

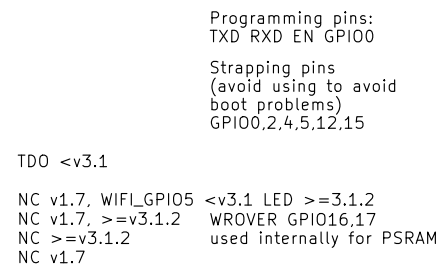


USB pull lines connected to
BANK1 on "qpdi" sheet

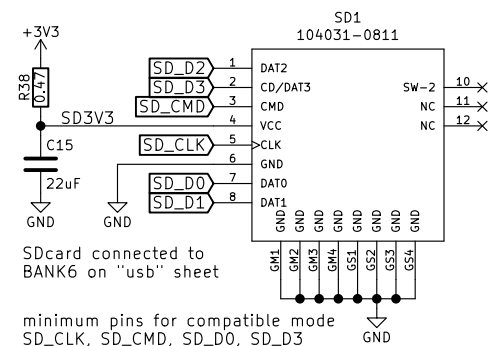


| | |
|----------------------------------|---------------------|
| warning: | workaround in |
| ULX3S has different pinout | TN140_FT231X Errata |
| for simpler PCB routing and | |
| because FT230X has weak CTS | |
| drive capability. (Undocumented, | |
| FLEAfpga mail from 13-Nov-2015) | |
| ULX2S pinout was: | |
| TCK = DSR | |
| TMS = RI | |
| TDI = CTS | |
| TDO = DCD | |

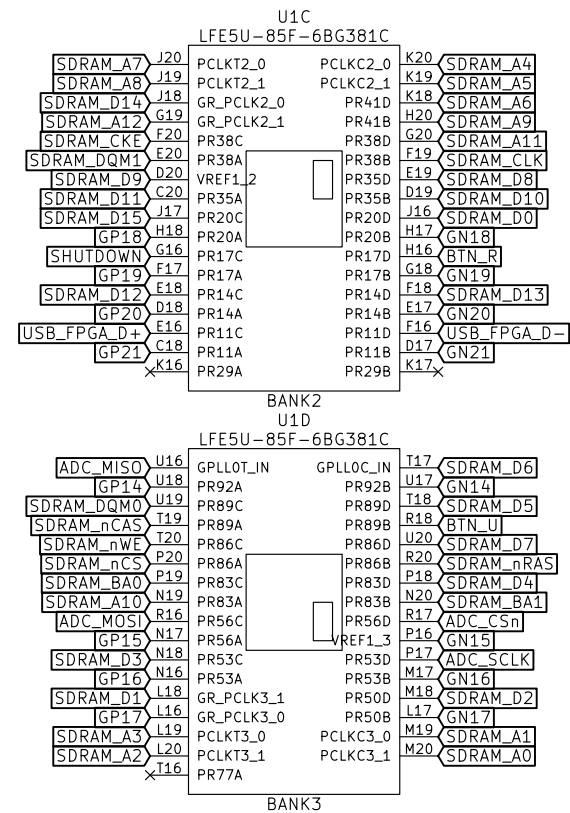
Id: 6/11



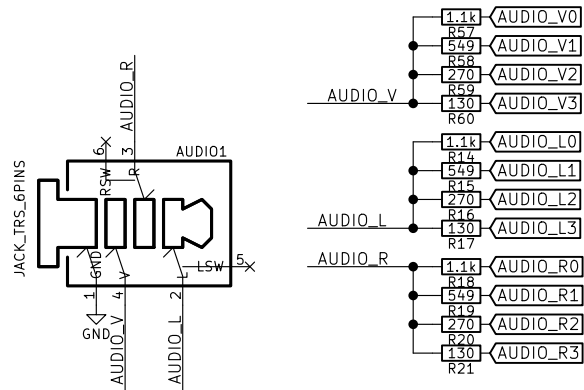
| | | |
|-----------------|-----------------|----------------------------|
| ESP32 VSPI pins | ESP32 HSPI pins | ESP32 JTAG slave interface |
| GPI05: SS | GPI012: MISO | EN: TRST_N |
| GPI018: SCK | GPI013: MOSI | GPI015: TDO |
| GPI019: MISO | GPI014: SCK | GPI012: TDI |
| GPI023: MOSI | GPI015: SS | GPI013: TCK |
| | | GPI014: TMS |
| | | FLASH over JTAG |
| | | not yet supported. |



| | | |
|---------------------------------|---------------------|-------------------|
| WIFI module ESP32 | | |
| EMARD | | |
| Sheet: /wifi/ File: wifi.sch | | |
| Title: ULX3S | | |
| Size: A4 | Date: | Rev: 1.0.8 |
| KiCad E.D.A. | kidad 5.1.7+dfsg1-1 | Id: 7/11 |



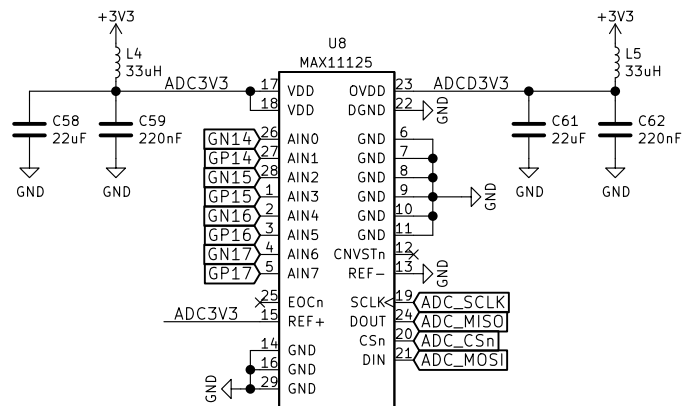
Id: 8/11



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

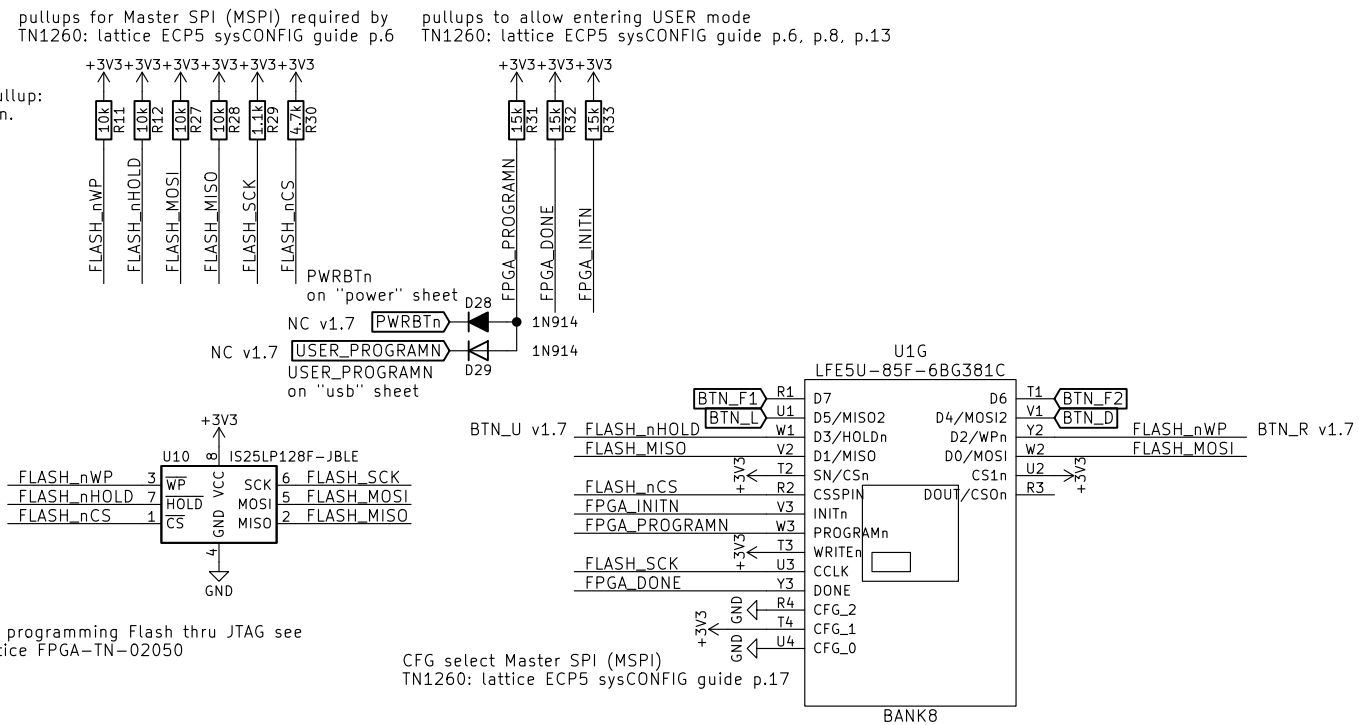
Sheet: /analog/
 File: analog.sch

Title: ULX3S

Size: A4 Date:
 KiCad E.D.A. kicad 5.1.7+dfsg1-1

Rev: 1.0.4
 Id: 9/11

Deviation from TN1260 in pullup:
values for BOM simplification.
Correct values should be 1k
but 1.1k is used.



| | |
|----------------------------------|------------|
| SPI flash | |
| EMARD | |
| Sheet: /flash/ | |
| File: flash.sch | |
| Title: ULX3S | |
| Size: A4 | Date: |
| KiCad E.D.A. kicad 5.1.7+dfsg1-1 | Rev: 1.0.6 |
| | Id: 10/11 |

Id: 11/11