Spare GPIO:
GPIO1_IO05 (was CSI_P2_PWDN)
GPIO5_IO18 (PWM4/CLKO2/I2C3_SCL)

GPIO that can be swapped around:
GPIO1_IO05 (was CSI_P2_PWDN)
GPIO1_IO12 (was IR_CAP)
GPIO3_IO19 (was LED1)
GPIO3_IO20
GPIO3_IO25
GPIO5_IO03 (was PWM3)
GPIO5_IO05 (was PWM1)
GPIO5_IO18 (PWM4/CLKO2/I2C3_SCL)

Note:
Some I2C devices require SDA/SCL to be high before powering them

3V3_OUT is sourced from PMIC's 3A NVCC_3P3/BUCK6 and is supplying the SoC's H7 ball 'NVCC_I2C'

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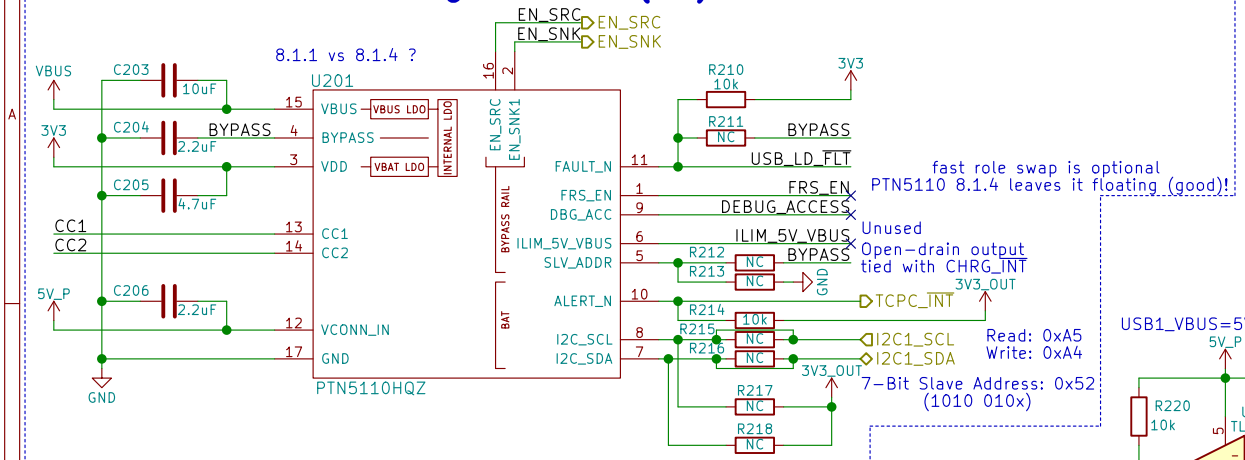
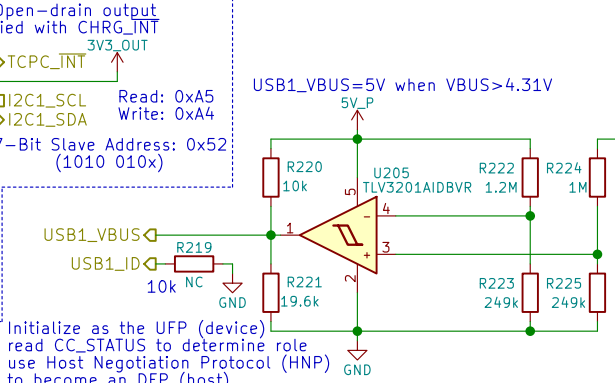
Sheet: /
File: dvk-mx8m-bsb.sch

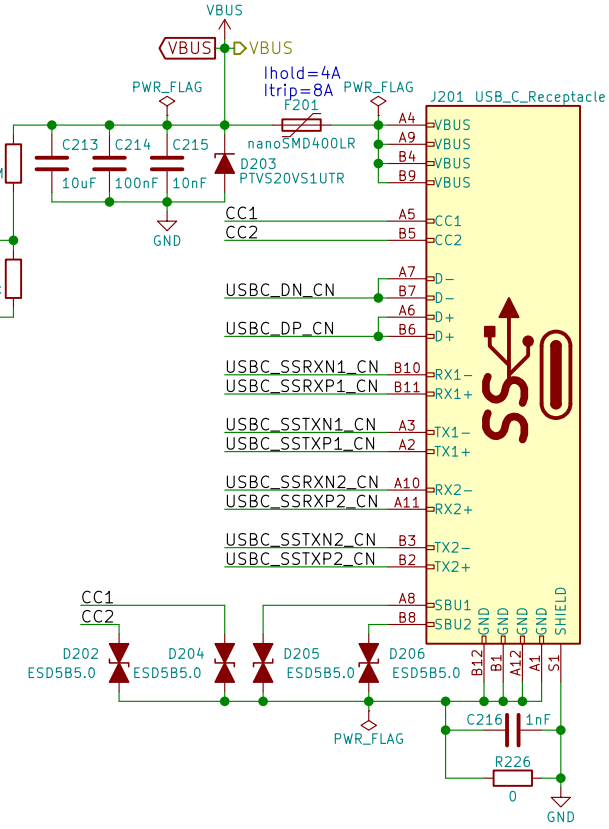
***Title: DVK-MX8M-BSB***

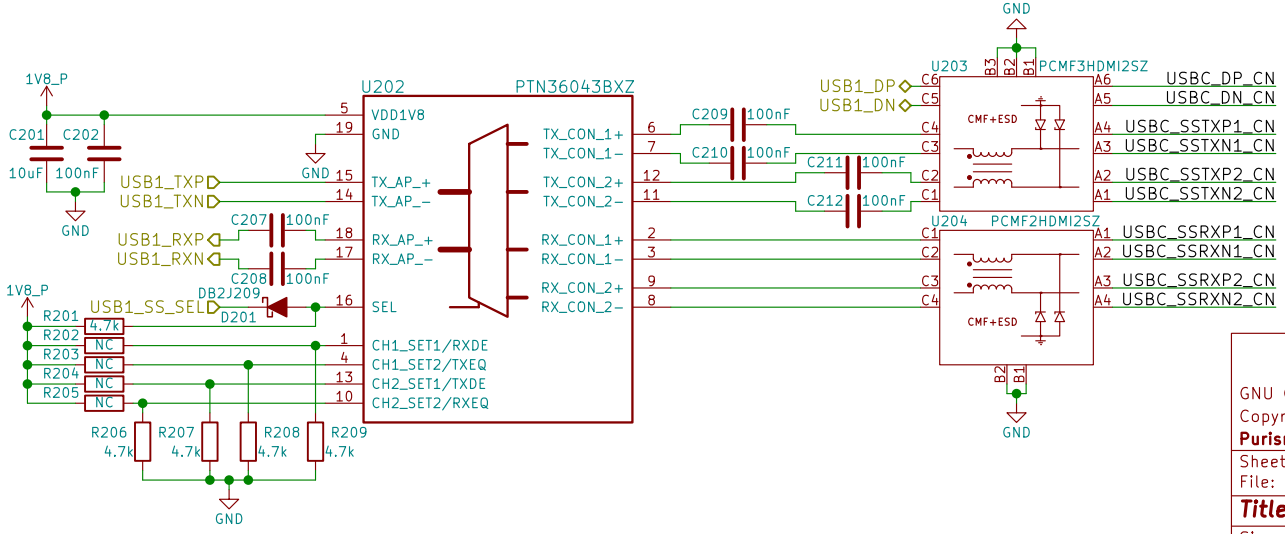
| Size: A2 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 1/24 |

# USB-C TCPC – Config Channel (CC) and PD Role Controller

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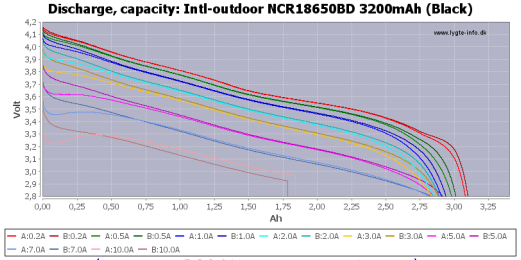
| | | |
|---|---|---|
| Sheet: /USB-C/ | | |
| File: usb-c.sch | | |
| ***Title: USB Type C*** | | |
| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
| KiCad E.D.A. kicad 4.0.7 | | Id: 2/24 |

# Battery Charge Controller




(interpret RSOC% based on this plot)

Drawing ~333.33mA, or consuming <1.2W, should give close to 10 hours going from 100% to 0% charge

use AUTO_DPDM_EN to auto-detect IINLIM

1.658≤ILIM≤2.063
ILIM(nom)≅1.859A
3.9≤VIN≤14

7-bit Slave Address: 0x6B (1101 011x)

U301 BQ25896

I(Lsat)=7A

Default LOW: adapter source

Read: 0xD7
Write: 0xD6

Ihold=3.5A
Itrip=6.3A
Ttrip(max)=5s@8A

NCR18650B meets requirements

VBAT(ovp_default)=REG06[7:2]=4.208V (reduce to 4.192V [010110])
Worst Case:
VBAT(default_max_ovp)=(REG06[7:2]×1.005)×1.04=4.3982016V
BQ29705 provides 4.425V as OVP!

ICHG(default)=REG[6:0]=2048mA (reduce to ~1.6A [0011001])

reference design: http://www.ti.com/lit/ug/sluuba2b/sluuba2b.pdf

may want to include BQ29705 protection as in:
http://www.ti.com/lit/ug/tiducl1/tiducl1.pdf
schematic: http://www.ti.com/lit/df/tidrp70/tidrp70.pdf
(PTC may be good enough)

This disables charging
but maybe not VBUS->VOUT
if PTN5110HQ's FAULT_STATUS[6]==1
(Force Off VBUS bit) then set EN_HiZ=1
EN_HiZ may be auto-set when in hiccup

Reading PTN5110HQ's CC_STATUS and POWER_STATUS registers will tell TCPM (i.MX8M) when to set EN_HiZ

Also, reading PTN5110HQ's CC_STATUS and POWER_STATUS registers will tell TCPM (i.MX8M) when to set OTG_CONFIG=1
(this will also happen when PTN5110HQ sets EN_SRC HIGH)

BC1.2 is not mandated by PD spec
ICO used to determine max current
Also negotiated from CC pins (I2C)

Battery holder gives ~1mm clearance underneath the battery
Thermistor is 1.1±0.15mm thick, should fit fine with stack-up

Battery holder seems to fit up to ~68.88mm long batteries
need to test 18650 protected cells which are ~69.35mm long

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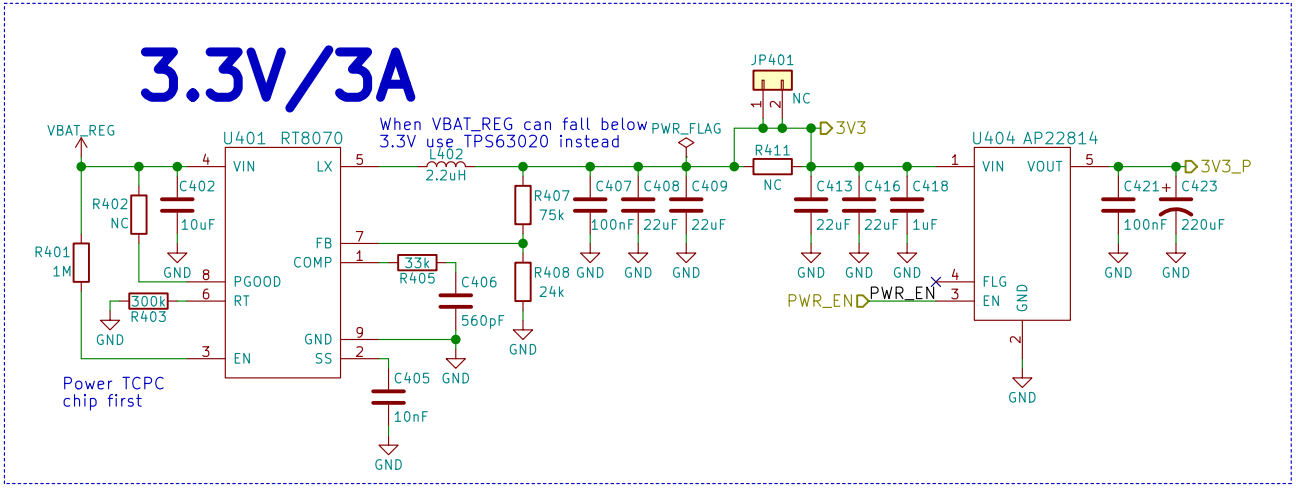
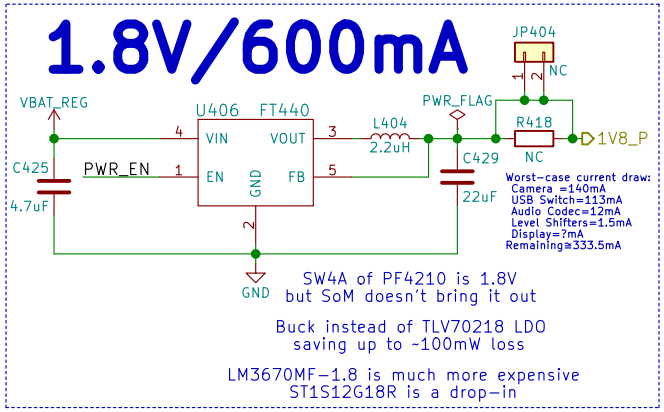
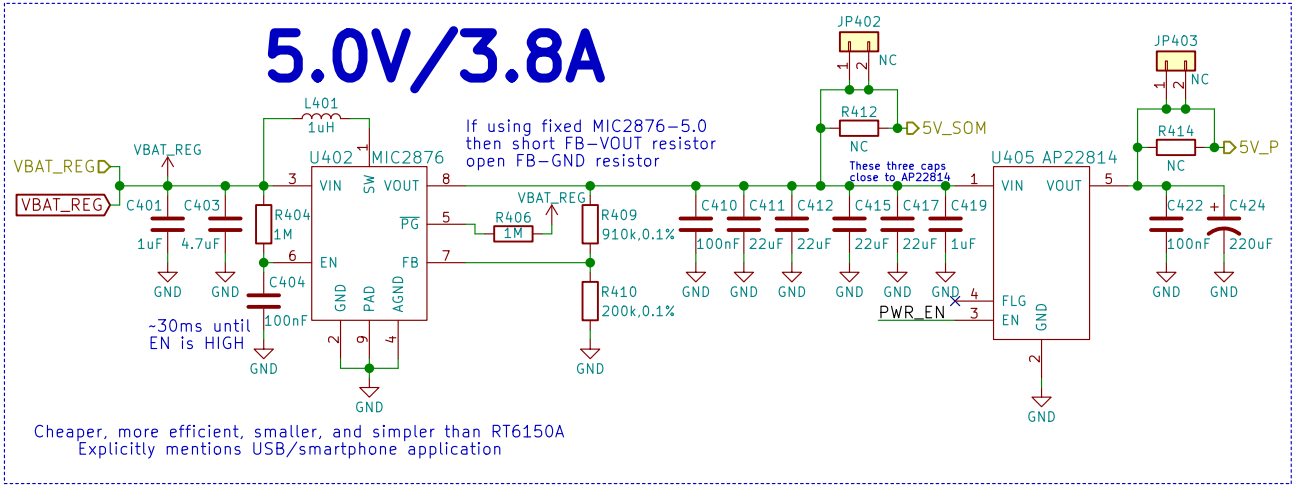
Sheet: /Battery/
File: battery.sch

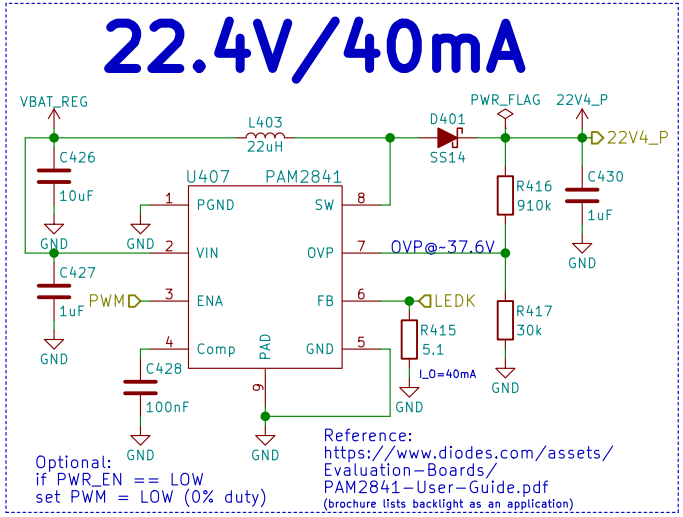
***Title: Battery***

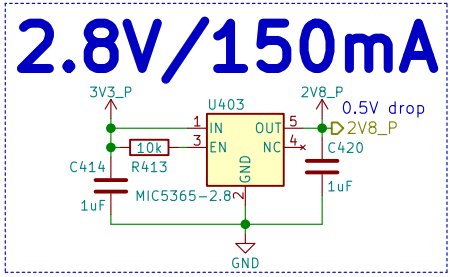
| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 3/24 |




TODO:
add parallel 100nF bulk caps!
& spread all over the power plane

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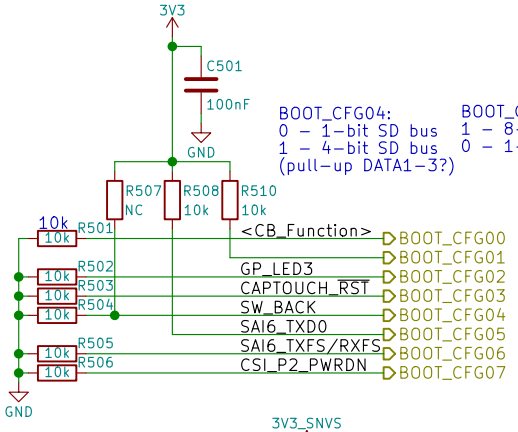
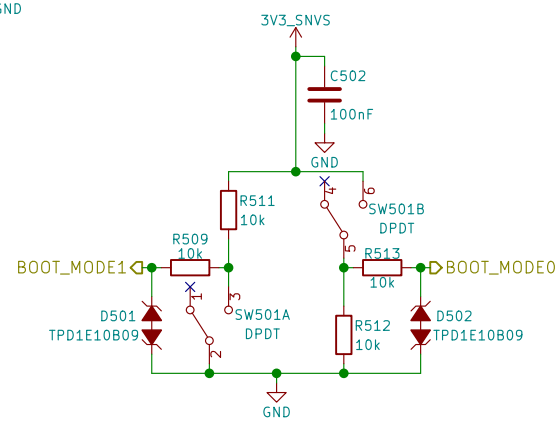
Sheet: /Power/
File: power.sch

***Title: Power***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 4/24 |



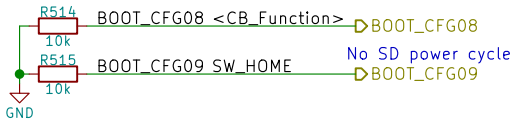

2–>1: eMMC
2–>3: USB (Serial Downloader)

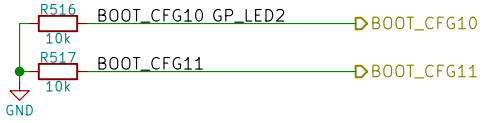
| BOOT_MODE[1:0] | Boot Type |
|---|---|
| 00 | Boot From Fuses |
| 01 | Serial Downloader |
| 10 | Internal Boot |
| 11 | Reserved |

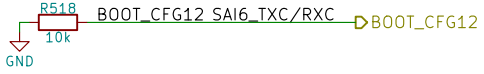
Only eMMC

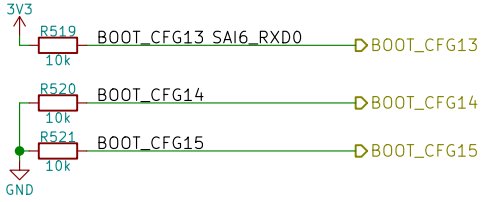
| BOOT_CFG[14:12] | Boot device |
|---|---|
| 001 | SD/eSD |
| 010 | MMC/eMMC |
| 011 | NAND |

| Fuse | Config | Definition | GPIO[1] | Shipped value | Settings |
|---|---|---|---|---|---|
| BOOT_CFG[11:10] | OEM | USDHC port selection | Yes | 00 | 00 - USDHC-1 |
| | | | | | 01 - USDHC-2 |
| | | | | | 10 - USDHC-3 |
| | | | | | else - reserved |

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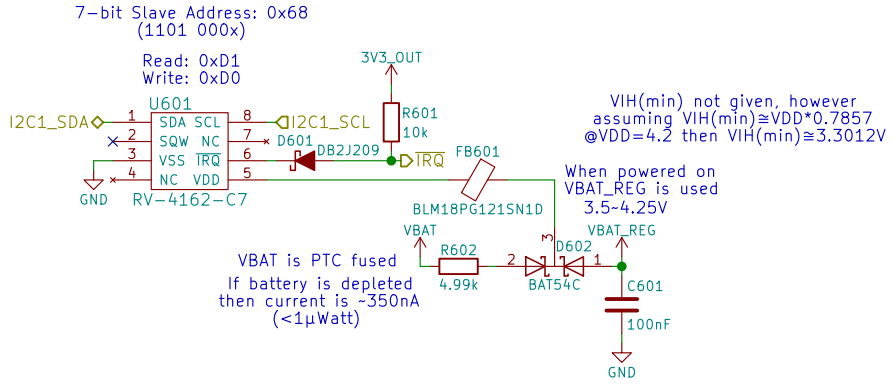
Sheet: /Boot Config/
File: boot.sch

**Title: Boot Configuration**

| Size: A4 | Date: 2018–06–01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 5/24 |




Note:
Datasheet says slave address is 0xD0
with a R/W bit appended, since 0xD must
be 4-bits wide the actual 7-bit address is
0x68 (110 1000), and becomes 0xD0 during a
write operation (1101 0000)

Reference:
https://github.com/HIO-Project/linux-imx6-nano-imx_3.10.17_1.0.1_ga/
blob/8848e94b2f889fe44f6736e2d4c98851a2282275/arch/arm/boot/dts/
imx6qdl-mtp.dtsi#L351

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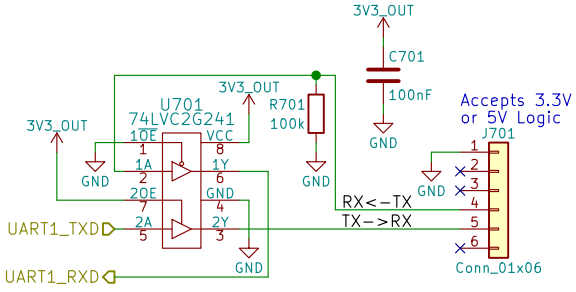
Sheet: /RTC/
File: rtc.sch

**Title: RTC**

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 6/24 |

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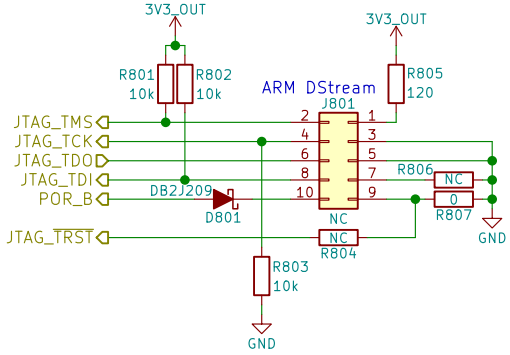
Sheet: /UART Debug/
File: uart.sch

***Title: UART Debug***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 7/24 |

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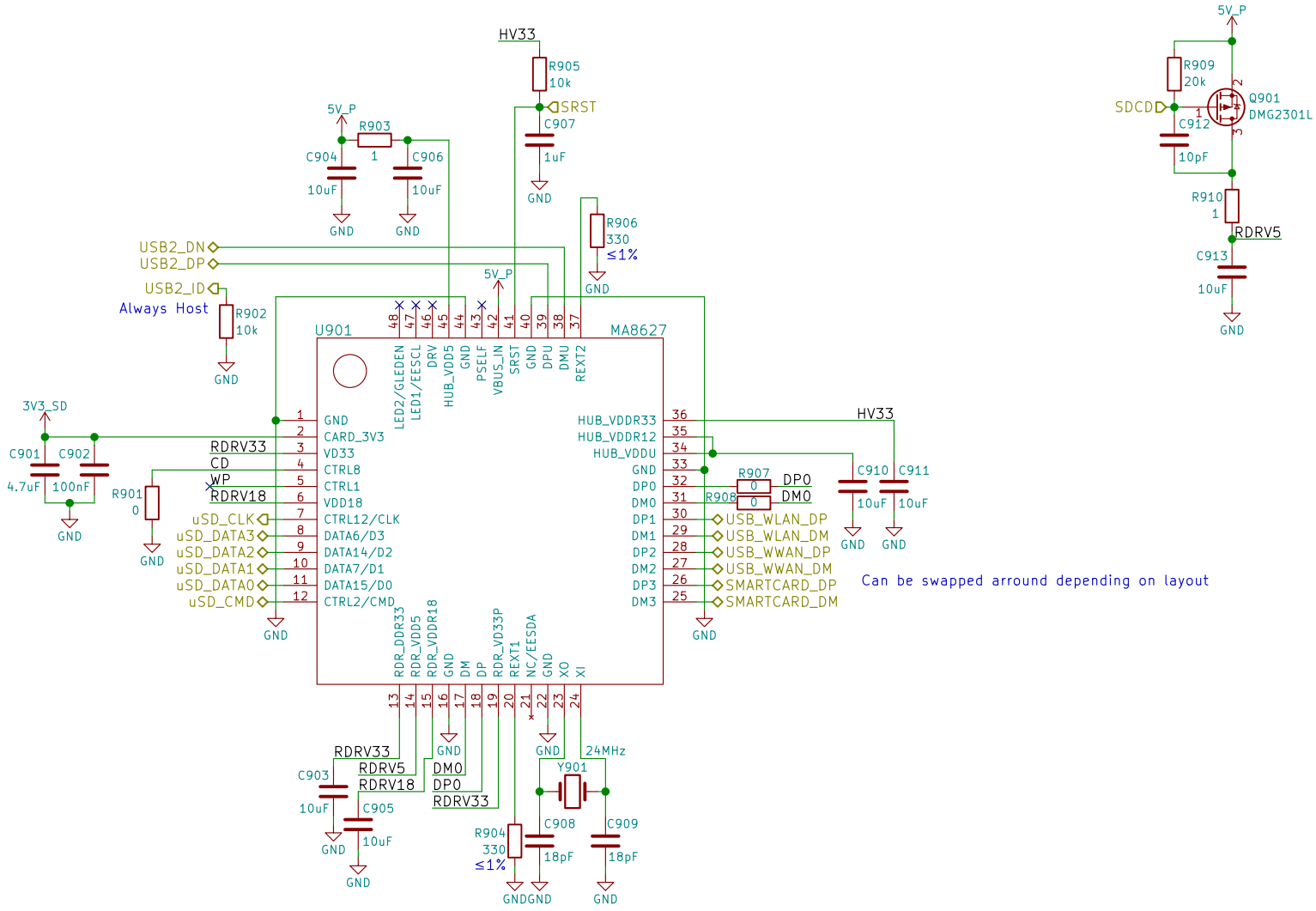
Sheet: /JTAG/
File: jtag.sch

***Title: JTAG***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 8/24 |

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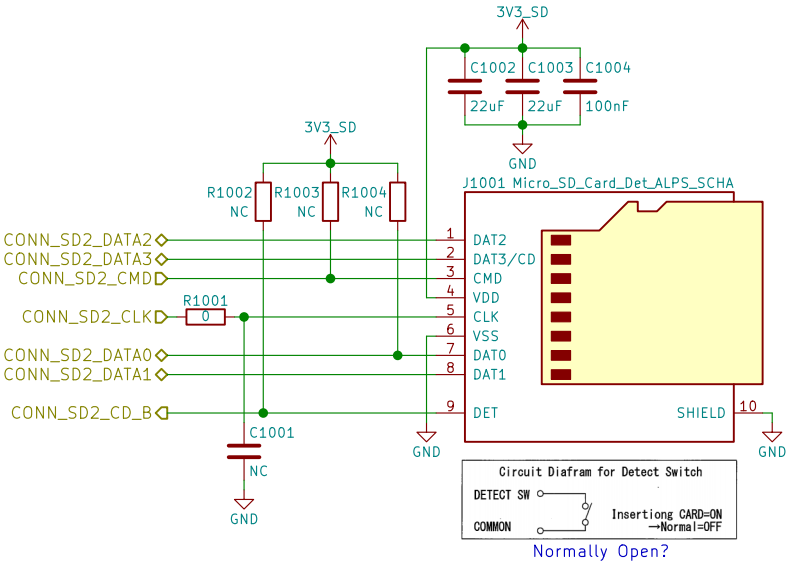
Sheet: /USB Hub + SDIO Bridge/
File: usb_hub_sdio.sch

***Title:***

| | | |
|---|---|---|
| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
| KiCad E.D.A. kicad 4.0.7 | | Id: 9/24 |

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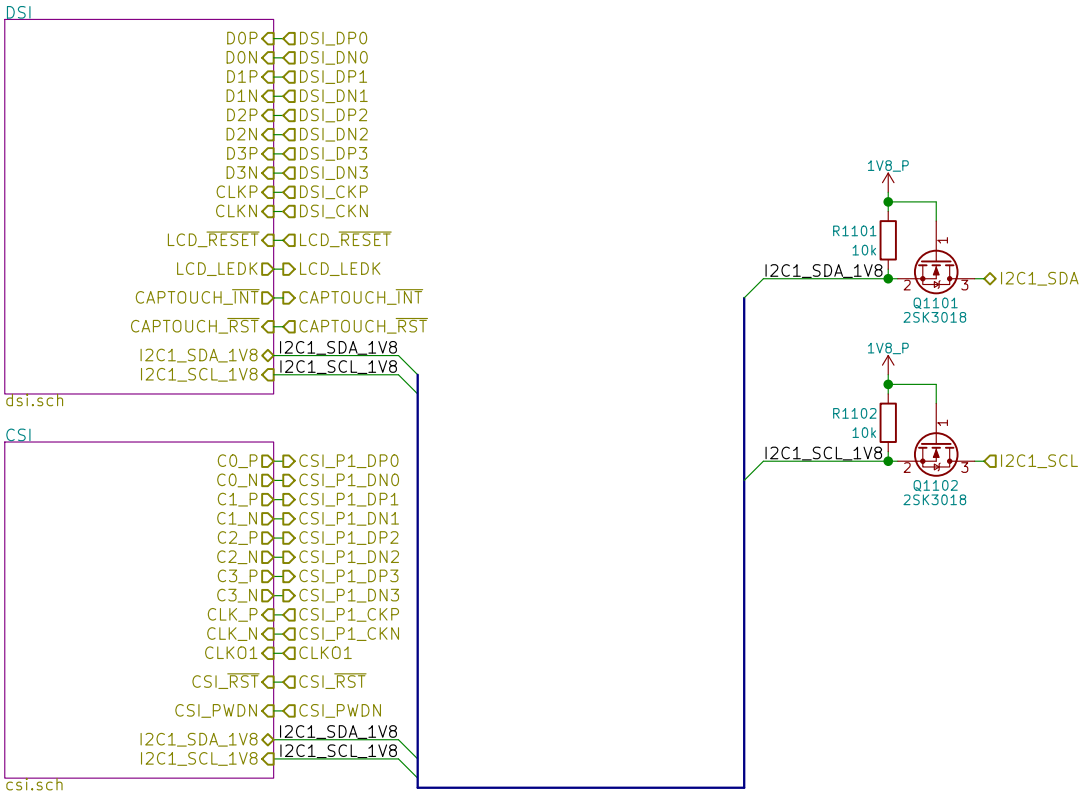
Sheet: /uSD Card/
File: sd.sch

***Title: uSD Card***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 10/24 |

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Sheet: /MIPI/
File: mipi.sch

***Title:***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 11/24 |

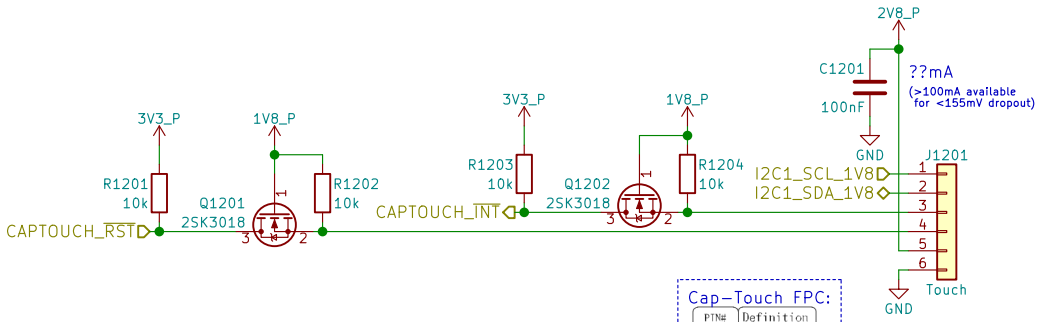
LCD PN:
Shenzhen Jinghong Electronics Co., Ltd.
JH057N00900

Note:
No power-up sequence is given in the spec sheet

7-bit Slave Address: 0x5D
(1011 101x)

Read: 0xBB
Write: 0xBA

Cap-Touch Controller IC PN:
Goodix GT5688




Cap-Touch FPC:

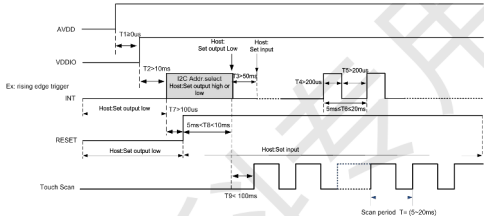
| PIN# | Definition |
|---|---|
| 1 | SCL |
| 2 | SDA |
| 3 | INT |
| 4 | RESET |
| 5 | VDD2.85 |
| 6 | GND |

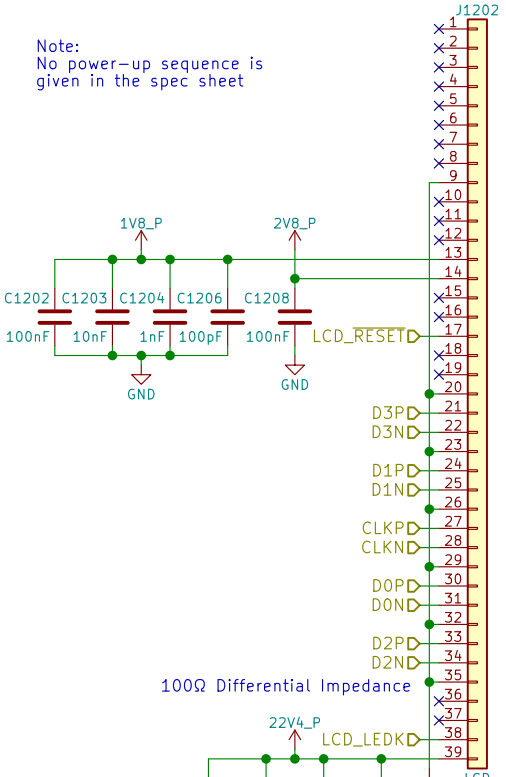
Front: Back:

The upper 7 bits are the address,
and bit 0 is used to select read or write.
GT5688 has two slave device addresses to choose from:

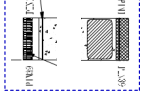
| INT | 7-Bit Address | 8-Bit Write Address | 8-Bit Read Address |
|---|---|---|---|
| LOW | 0x5D | 0xBA | 0xBB |
| HIGH | 0x14 | 0x28 | 0x29 |

Every time you power on or reset, you need to use the INT pin to set the I2C address:




DSI FPC:
Front: Back:



Backlight Array:

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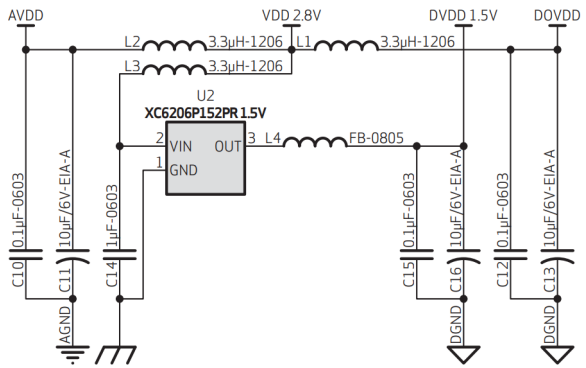
Sheet: /MIPI/DSI/
File: dsi.sch

**Title: MIPI DSI**

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 12/24 |

Using Internal DVDD 1.5V Regulator:




## 2.7 POWER UP SEQUENCE

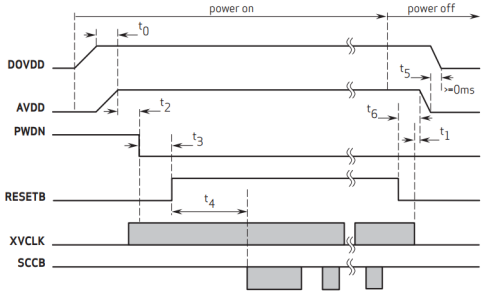
Based on the system power configuration (1.8V or 2.8V for I/O power, using external DVDD or internal DVDD, requiring access to the I2C during power up period or not), the power up sequence will differ. If 1.8V is used for I/O power, using the internal DVDD is preferred. If 2.8V is used for I/O power, due to a high voltage drop at the internal DVDD regulator, there is a potential heat issue. Hence, for a 2.8V power system, OmniVision recommends using an external DVDD source. Due to the higher power down current when using an external DVDD source, OmniVision strongly recommends cutting off all powers, including the external DVDD, when the sensor is not in use in the case of 2.8V I/O and external DVDD.

### 2.7.1 POWER UP WITH INTERNAL DVDD

For powering up with the internal DVDD and I2C access during the power ON period, the following conditions must occur:

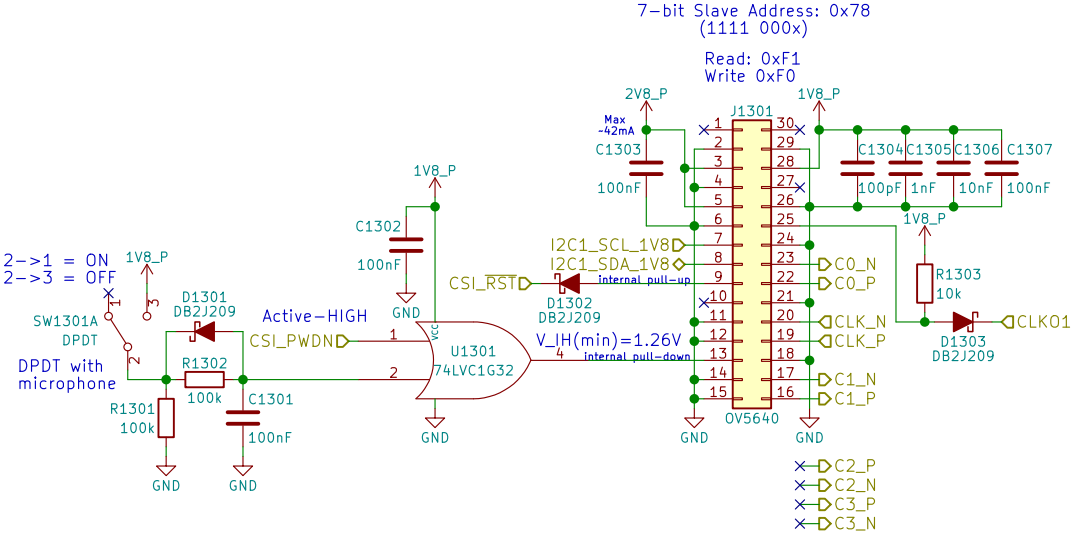
1. when DOVDD and AVDD are turned ON, make sure DOVDD becomes stable before AVDD becomes stable
2. PWDN is active high with an asynchronized design (does not need clock)
3. PWDN pin tied to digital ground if it is not controlled.
4. if PWDN pin is controlled as below, for PWDN to go low, power must first become stable (AVDD to PWDN ≥ 5 ms)
5. RESETB is active low with an asynchronized design
6. master clock XVCLK should provide at least 1 ms before host accesses the sensor's registers
7. host can access I2C bus (if shared) during entire period. 20ms after RESETB goes high, host can access the sensor's registers to initialize sensor

figure 2-3 power up timing with internal DVDD




**note**
- $t_0$ ≥ 0ms, delay from DOVDD stable to AVDD stable, it is recommended to power up AVDD shortly after DOVDD has been powered up
- $t_1$ ≥ 0ms, delay from XVCLK off to AVDD off
- $t_2$ ≥ 5ms, delay from AVDD stable to sensor power up stable, PWDN can be pulled low after this point, XVCLK can be turned on after power on
- $t_3$ ≥ 1ms, delay from sensor power up stable to RESETB pull up
- $t_4$ ≥ 20ms, delay from RESETB pull high to SCCB initialization
- $t_5$ ≥ 0ms, delay from AVDD off to DOVDD off
- $t_6$ ≥ 0ms, delay from RESETB pull low to AVDD off

S640_DS_2_2




OV5640 CMOS Image Sensor Datasheet:
https://cdn.sparkfun.com/datasheets/Sensors/LightImaging/OV5640_datasheet.pdf

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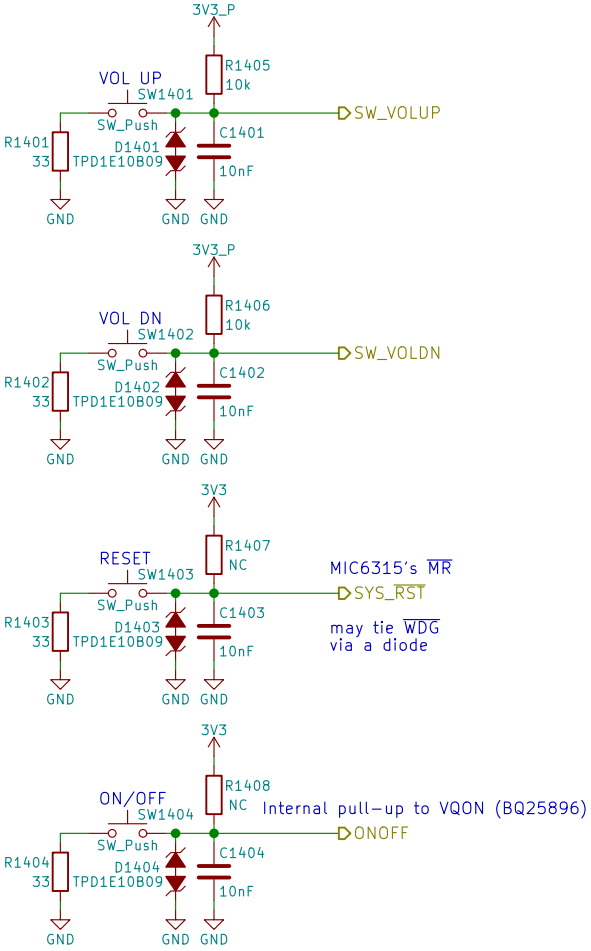
**Purism SPC**

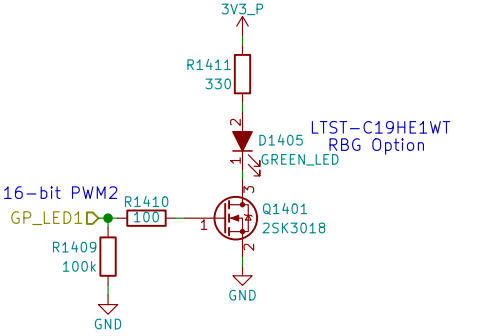
Sheet: /MIPI/CSI/
File: csi.sch

***Title:***

| | | |
|---|---|---|
| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
| KiCad E.D.A. kicad 4.0.7 | | Id: 13/24 |




Use PWM2_PWMSAR to set the compare value (duty cycle)
Use PWM2_PWMCR[15:4] to set the PRESCALER (frequency)
Use PWM2_PWMPR to set the top of the counter (frequency)

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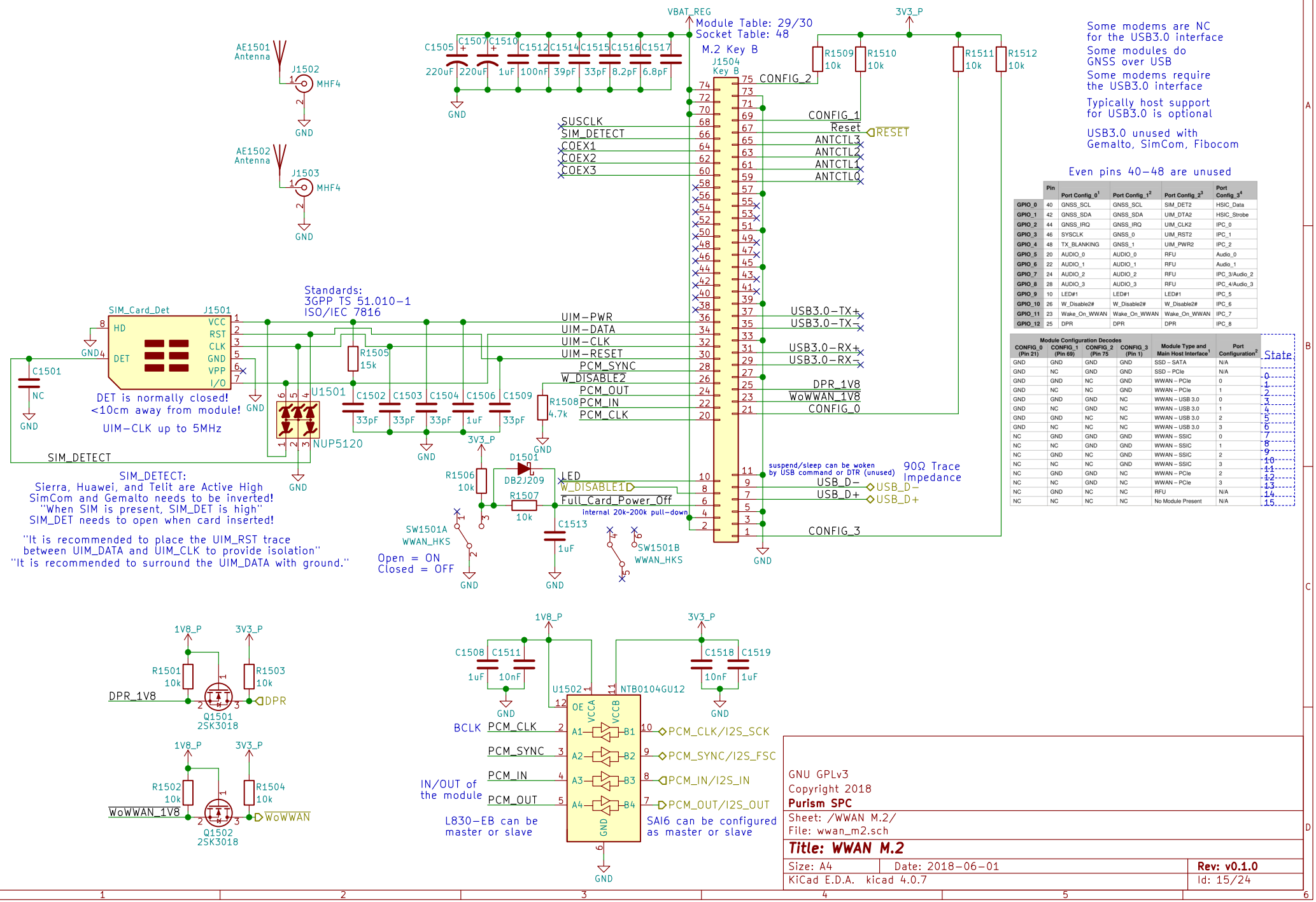
Sheet: /Buttons & LED/
File: buttons_led.sch

***Title: Buttons & LED***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 14/24 |




| | Pin | Port Config_0[1] | Port Config_1[2] | Port Config_2[3] | Port Config_3[4] |
|---|---|---|---|---|---|
| GPIO_0 | 40 | GNSS_SCL | GNSS_SCL | SIM_DET2 | HSIC_Data |
| GPIO_1 | 42 | GNSS_SDA | GNSS_SDA | UIM_DTA2 | HSIC_Strobe |
| GPIO_2 | 44 | GNSS_IRQ | GNSS_IRQ | UIM_CLK2 | IPC_0 |
| GPIO_3 | 46 | SYSCLK | GNSS_0 | UIM_RST2 | IPC_1 |
| GPIO_4 | 48 | TX_BLANKING | GNSS_1 | UIM_PWR2 | IPC_2 |
| GPIO_5 | 20 | AUDIO_0 | AUDIO_0 | RFU | Audio_0 |
| GPIO_6 | 22 | AUDIO_1 | AUDIO_1 | RFU | Audio_1 |
| GPIO_7 | 24 | AUDIO_2 | AUDIO_2 | RFU | IPC_3/Audio_2 |
| GPIO_8 | 28 | AUDIO_3 | AUDIO_3 | RFU | IPC_4/Audio_3 |
| GPIO_9 | 10 | LED#1 | LED#1 | LED#1 | IPC_5 |
| GPIO_10 | 26 | W_Disable2# | W_Disable2# | W_Disable2# | IPC_6 |
| GPIO_11 | 23 | Wake_On_WWAN | Wake_On_WWAN | Wake_On_WWAN | IPC_7 |
| GPIO_12 | 25 | DPR | DPR | DPR | IPC_8 |

| Module Configuration Decodes | | | | | | State |
|---|---|---|---|---|---|---|
| CONFIG_0 (Pin 21) | CONFIG_1 (Pin 69) | CONFIG_2 (Pin 75) | CONFIG_3 (Pin 1) | Module Type and Main Host Interface[1] | Port Configuration[2] | |
| GND | GND | GND | GND | SSD – SATA | N/A | |
| GND | NC | GND | GND | SSD – PCIe | N/A | |
| GND | GND | NC | GND | WWAN – PCIe | 0 | 0 |
| GND | NC | NC | GND | WWAN – PCIe | 1 | 1 |
| GND | GND | GND | NC | WWAN – USB 3.0 | 0 | 2 |
| GND | NC | GND | NC | WWAN – USB 3.0 | 1 | 3 |
| GND | GND | NC | NC | WWAN – USB 3.0 | 2 | 4 |
| GND | NC | NC | NC | WWAN – USB 3.0 | 3 | 5 |
| NC | GND | GND | GND | WWAN – SSIC | 0 | 6 |
| NC | NC | GND | GND | WWAN – SSIC | 1 | 7 |
| NC | GND | NC | GND | WWAN – SSIC | 2 | 8 |
| NC | NC | NC | GND | WWAN – SSIC | 3 | 9 |
| NC | GND | GND | NC | WWAN – PCIe | 2 | 10 |
| NC | NC | GND | NC | WWAN – PCIe | 3 | 11 |
| NC | GND | NC | NC | RFU | N/A | 12 |
| NC | NC | NC | NC | No Module Present | N/A | 13 |
| | | | | | | 14 |
| | | | | | | 15 |

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Sheet: /WWAN M.2/
File: wwan_m2.sch

**Title: WWAN M.2**

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 15/24 |

Reference:
http://www.52rd.com/S_txt/2011_3/TXT26685.htm
http://www.sengpielaudio.com/calculator-transferfactor.htm
https://electronics.stackexchange.com/questions/31442/how-can-i-switch-this-audio-jack-using-its-own-mechanical-switches-without-cre
(Nit6 does the same)
+Zener diode to protect against ranges outside of -0.9V to 3.3V

dB specs in datasheet is a unit of power gain (not dBu or VU)
with respect to the DAC's unattenuated output

"HP Output - 62.5mW max, 1.02kHz sine into 16Ω load at 3.3 V"
⇒ $(1V)^2/(16Ω)=62.5mW$
∴ Vrms=1V ⇒ Vp(amplitude)=1.414V
∴ Irms(max)=62.5mA

If HP_DET is HIGH for >100ms then HPs are present

S/E button on earbud headsets
shorts the mic for key function

Could use FSA8008 to detect mic

7-bit Slave Address: 0x0A
(0001 010x)
Read: 0x15
Write: 0x14

Mute via MUTE_LO=1

may use lineout left channel for pseudo-earpiece speaker

Z(hp)≥16Ω

CTIA/AHJ
Microphone
Ground
Audio (Right)
Audio (Left)

<3.3µA

Pin 5 (tip switch) is NC, open when inserted

If just headphones then HP_DET=HIGH, R(mic)=0

may add ~220uF cap parallel to Zener

SW Mute Mic:
MUTE_ADC=1

DPDT with camera
5->4 = ON
5->6 = OFF

Ext-Mic enabled
MIC_SEL=LOW

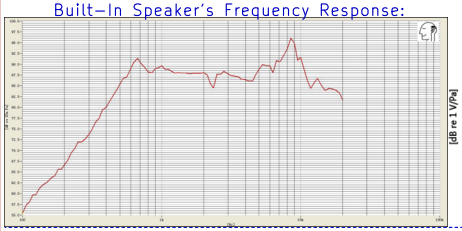
Int-Mic enabled
MIC_SEL=LOW

Add TVS next to int-mic?
(OpenMoko does this)

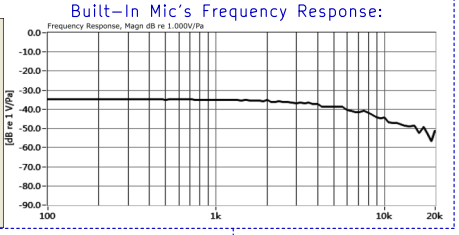
-37dB=14.1254mV/Pa
∴ mic produces 14.1254mVrms when exposed to a 1kHz tone of 94dB-SPL at the capsule
(or 19.98mV amplitude)

⇒ 40dB gain would produce ~2V amplitude (4Vpp, clipping)
30dB gain would produce ~0.632V amplitude (1.264Vpp)
*38.33dB gain would yield 3.3Vpp*

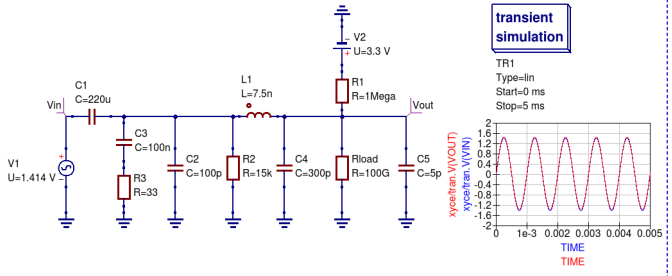
Built-In Speaker's Frequency Response:



Built-In Mic's Frequency Response:




Simulation of HP_DET @ 1kHz output
without HP jack inserted:




**LCR Measurements:**

| Earbud Microphone: @1kHz | Headset Speaker: @1kHz | Earbud Speaker: @1kHz |
|---|---|---|
| Ls = 3.844mH | Ls = 244.4uH | Ls = 25.2uH |
| Lp = 15.757H | Lp = 141.99mH | Lp = 311.0mH |
| Cs = 6.583uF | Cs = 103.6uF | Cs = 1.0mF |
| Cp = 1612.8pF | Cp = 178.77nF | Cp = 81.95nF |
| Rs = 1.5465kOhms | Rs = 36.860hms | Rs = 17.0300hms |
| Rp = 1.5478kOhms | Rp = 36.860hms | Rp = 17.0340hms |
| θ = -0.8deg | θ = -2.3deg | θ = 0.5deg |

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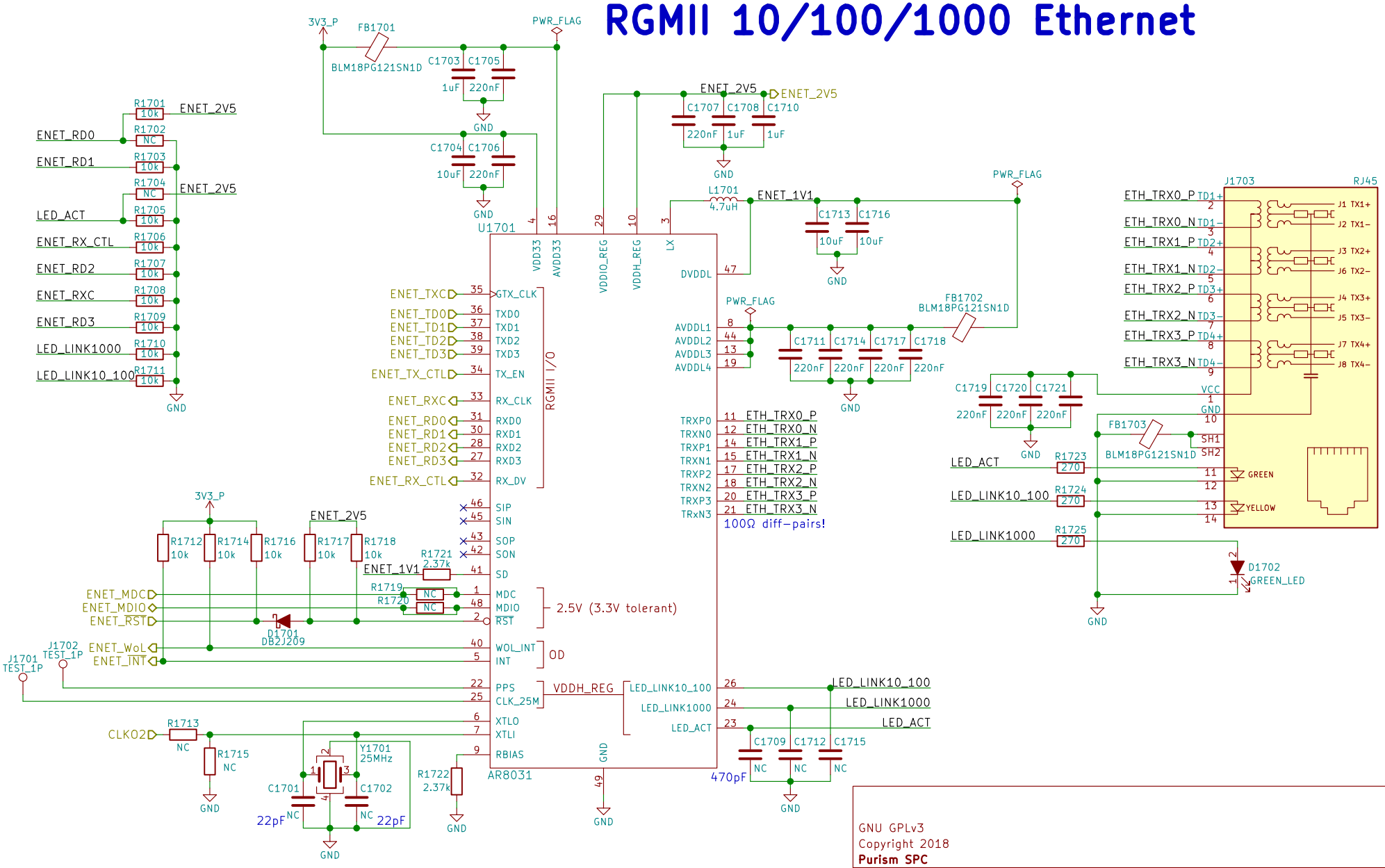
Sheet: /Audio/
File: audio.sch

***Title: Audio***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 16/24 |

# RGMII 10/100/1000 Ethernet

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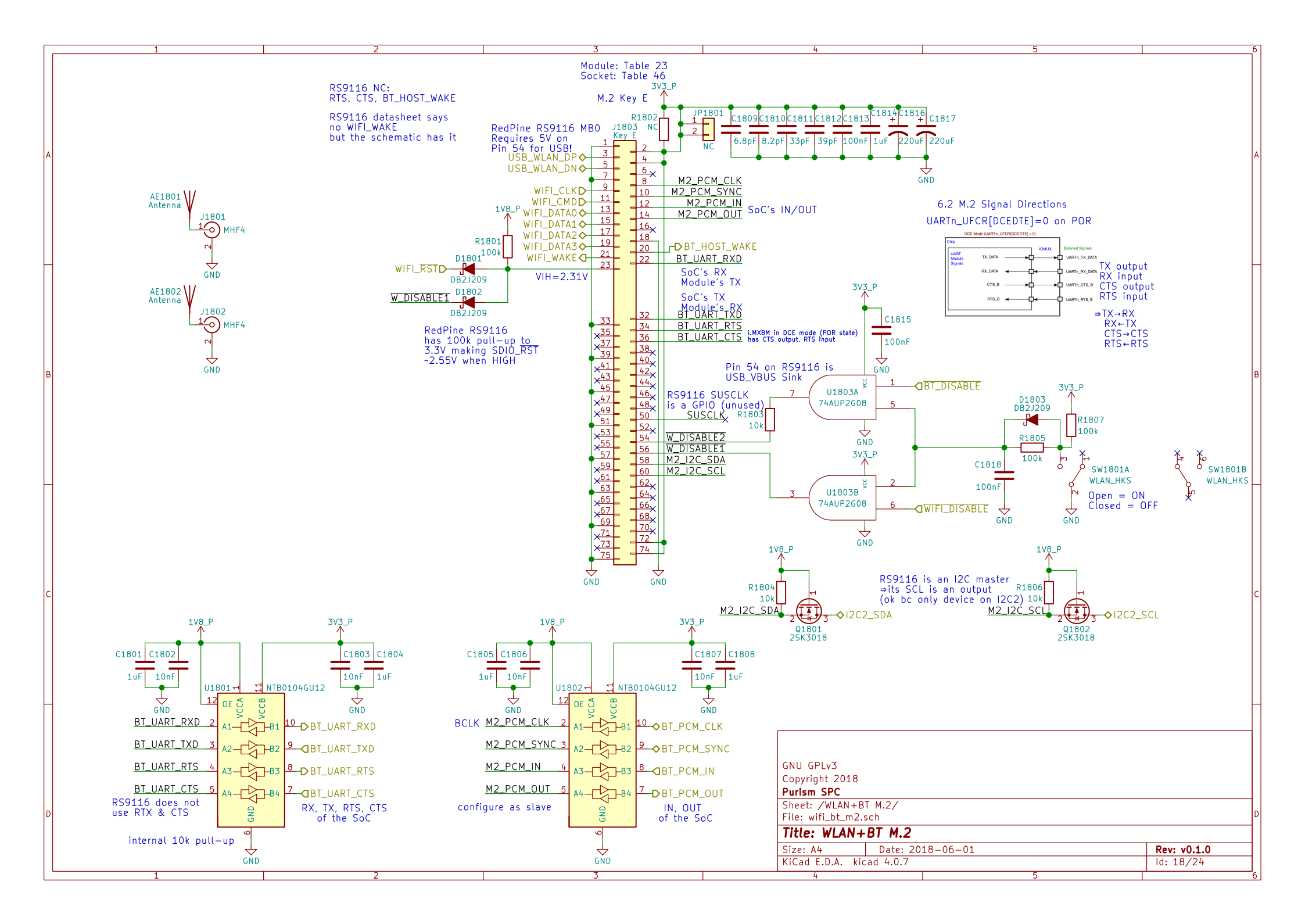
Sheet: /Ethernet/
File: ethernet.sch

**Title: Ethernet**

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 17/24 |


Module: Table 23
Socket: Table 46
M.2 Key E
RS9116 NC:
RTS, CTS, BT_HOST_WAKE
RS9116 datasheet says
no WIFI_WAKE
but the schematic has it
RedPine RS9116 MB0
Requires 5V on
Pin 54 for USB!
J1803
Key E
3V3_P
R1802
NC
JP1801
NC
C1809 6.8pF
C1810 8.2pF
C1811 33pF
C1812 39pF
C1813 100nF
C1814 1uF
C1816 220uF
C1817 220uF
GND
USB_WLAN_DP
USB_WLAN_DN
WIFI_CLK
WIFI_CMD
WIFI_DATA0
WIFI_DATA1
WIFI_DATA2
WIFI_DATA3
WIFI_WAKE
M2_PCM_CLK
M2_PCM_SYNC
M2_PCM_IN
M2_PCM_OUT
SoC's IN/OUT
BT_HOST_WAKE
BT_UART_RXD
SoC's RX
Module's TX
SoC's TX
Module's RX
BT_UART_TXD
BT_UART_RTS
BT_UART_CTS
i.MX8M in DCE mode (POR state)
has CTS output, RTS input
1V8_P
R1801
100k
D1801
DB2J209
WIFI_RST
D1802
DB2J209
W_DISABLE1
VIH=2.31V
RedPine RS9116
has 100k pull-up to
3.3V making SDIO_RST
~2.55V when HIGH
AE1801
Antenna
J1801
MHF4
AE1802
Antenna
J1802
MHF4
6.2 M.2 Signal Directions
UARTn_UFCR[DCEDTE]=0 on POR
TX output
RX input
CTS output
RTS input
⇒TX→RX
RX←TX
CTS→CTS
RTS←RTS
Pin 54 on RS9116 is
USB_VBUS Sink
C1815
100nF
RS9116 SUSCLK
is a GPIO (unused)
SUSCLK
R1803
10k
W_DISABLE2
W_DISABLE1
M2_I2C_SDA
M2_I2C_SCL
U1803A
74AUP2G08
BT_DISABLE
U1803B
74AUP2G08
WIFI_DISABLE
D1803
DB2J209
R1805
100k
R1807
100k
C1818
100nF
SW1801A
WLAN_HKS
Open = ON
Closed = OFF
SW1801B
WLAN_HKS
R1804
10k
M2_I2C_SDA
Q1801
2SK3018
I2C2_SDA
R1806
10k
M2_I2C_SCL
Q1802
2SK3018
I2C2_SCL
RS9116 is an I2C master
⇒its SCL is an output
(ok bc only device on I2C2)
U1801
NTB0104GU12
C1801 1uF
C1802 10nF
C1803 10nF
C1804 1uF
BT_UART_RXD
BT_UART_TXD
BT_UART_RTS
BT_UART_CTS
RS9116 does not
use RTX & CTS
internal 10k pull-up
RX, TX, RTS, CTS
of the SoC
U1802
NTB0104GU12
C1805 1uF
C1806 10nF
C1807 10nF
C1808 1uF
BCLK
M2_PCM_CLK
M2_PCM_SYNC
M2_PCM_IN
M2_PCM_OUT
BT_PCM_CLK
BT_PCM_SYNC
BT_PCM_IN
BT_PCM_OUT
configure as slave
IN, OUT
of the SoC
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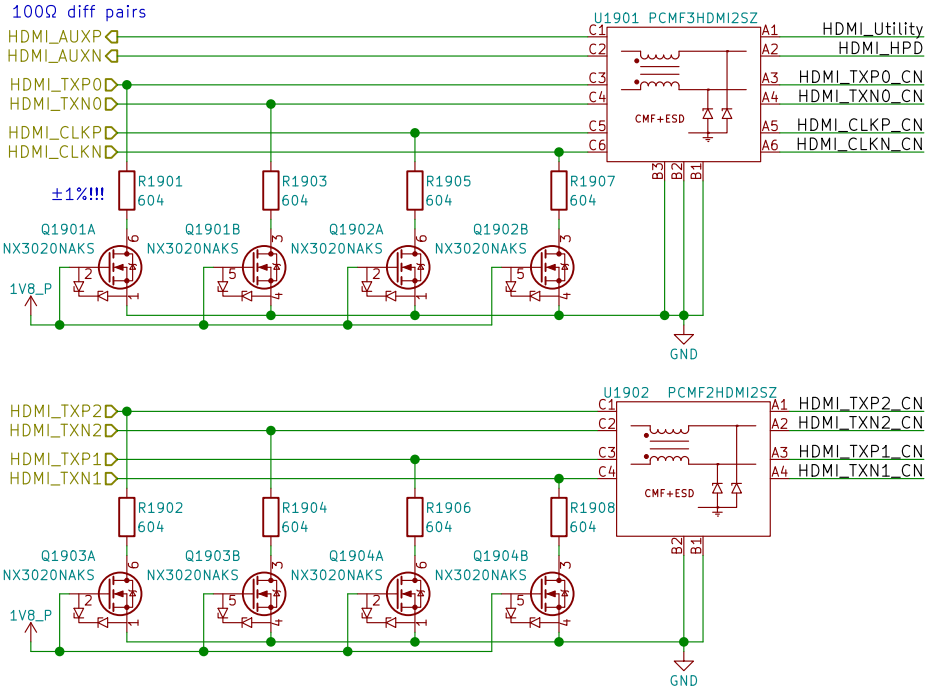
Purism SPC
Sheet: /WLAN+BT M.2/
File: wifi_bt_m2.sch
Title: WLAN+BT M.2
Size: A4
Date: 2018-06-01
Rev: v0.1.0
KiCad E.D.A. kicad 4.0.7
Id: 18/24

HD3SS460 can be used for DP over USB-C

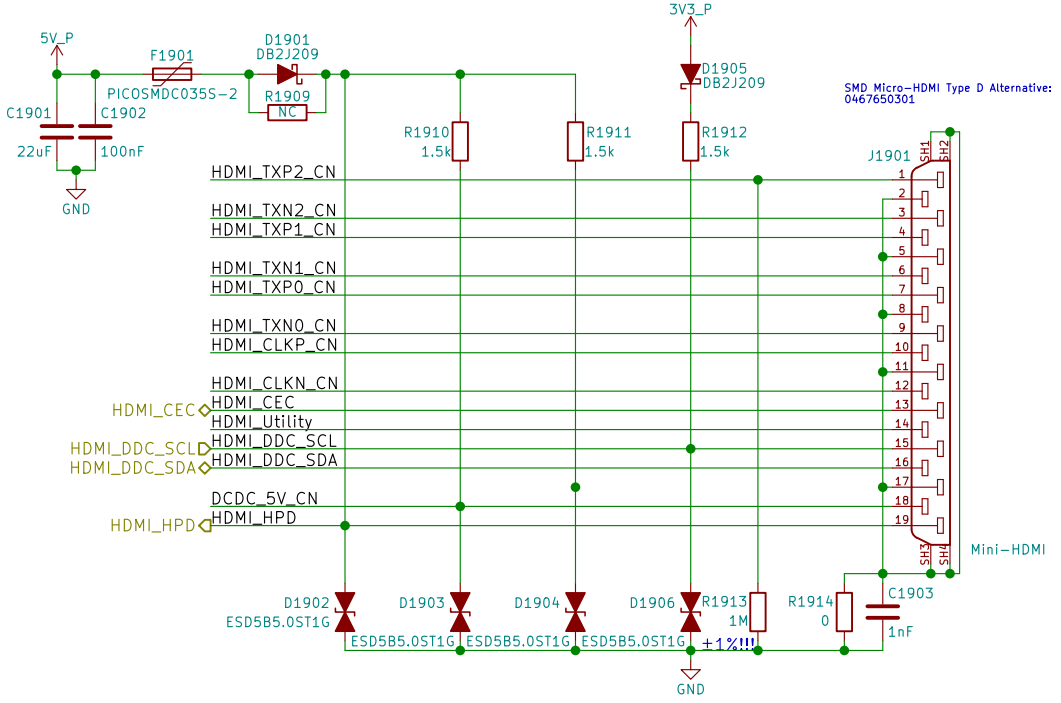
Layout Note:
May need swap some signals
due to micro-HDMI pinout diff
depending on pin location/routing

100Ω diff pairs







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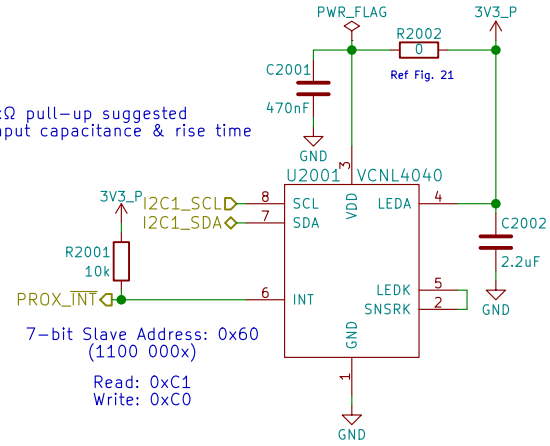
Sheet: /HDMI/
File: hdmi.sch

***Title: HDMI***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 19/24 |

# Proximity & Ambient Light



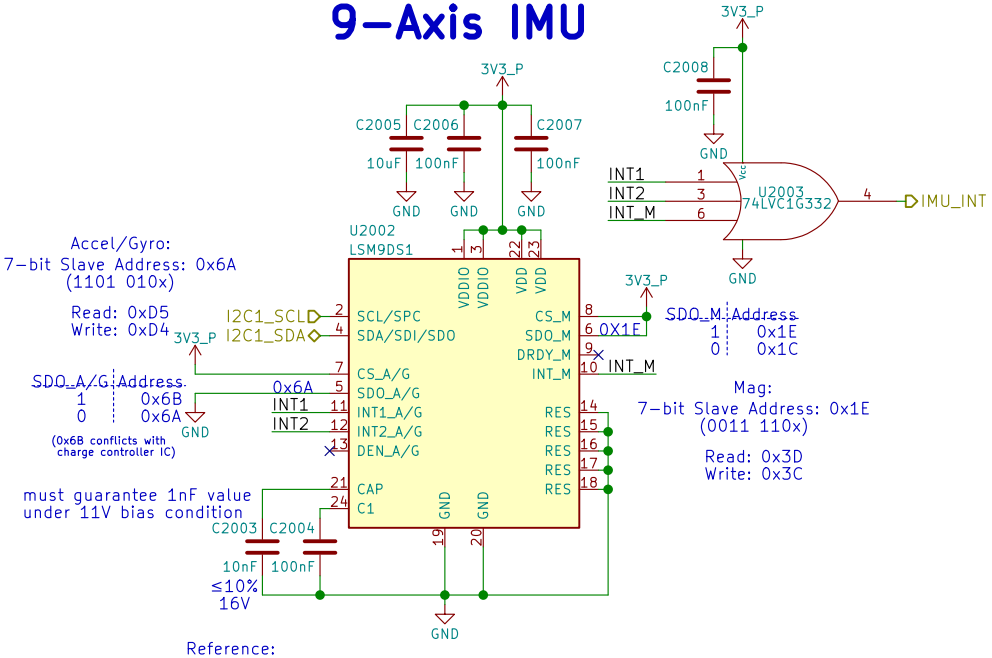

Note:
I2C 2.2kΩ pull-up suggested
check input capacitance & rise time

7-bit Slave Address: 0x60
(1100 000x)

Read: 0xC1
Write: 0xC0

Reference:
https://www.vishay.com/docs/84307/designingvcnl4040.pdf
http://www.vishay.com/docs/84931/vcnl4040sensorboardfiles.pdf

# 9-Axis IMU




Accel/Gyro:
7-bit Slave Address: 0x6A
(1101 010x)

Read: 0xD5
Write: 0xD4

| SDO_A/G | Address |
|---|---|
| 1 | 0x6B |
| 0 | 0x6A |

(0x6B conflicts with charge controller IC)

must guarantee 1nF value
under 11V bias condition

≤10%
16V

| SDO_M | Address |
|---|---|
| 1 | 0x1E |
| 0 | 0x1C |

Mag:
7-bit Slave Address: 0x1E
(0011 110x)

Read: 0x3D
Write: 0x3C

Reference:
http://www.st.com/en/evaluation-tools/steval-mki159v1.html

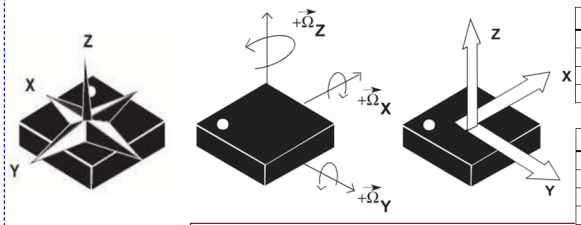



Table 19. Accelerometer and gyroscope SAD+Read/Write patterns

| Command | SAD[6:1] | SAD[0] = SA0 | R/W | SAD+R/W |
|---|---|---|---|---|
| Read | 110101 | 0 | 1 | 11010101 (D5h) |
| Write | 110101 | 0 | 0 | 11010100 (D4h) |
| Read | 110101 | 1 | 1 | 11010111 (D7h) |
| Write | 110101 | 1 | 0 | 11010110 (D6h) |

Table 20. Magnetic sensor SAD+Read/Write patterns

| Command | SAD[6:2] | SAD[1] = SDO/SA1 | SAD[0] | R/W | SAD+R/W |
|---|---|---|---|---|---|
| Read | 00111 | 0 | 0 | 1 | 00111001 (39h) |
| Write | 00111 | 0 | 0 | 0 | 00111000 (38h) |
| Read | 00111 | 1 | 0 | 1 | 00111101 (3Dh) |
| Write | 00111 | 1 | 0 | 0 | 00111100 (3Ch) |

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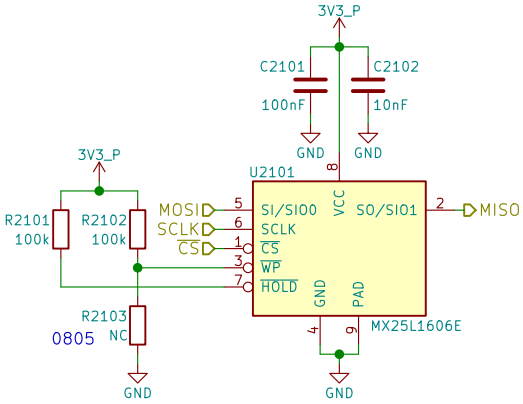
Sheet: /Sensors/
File: sensors.sch

**Title: Sensors**

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 20/24 |

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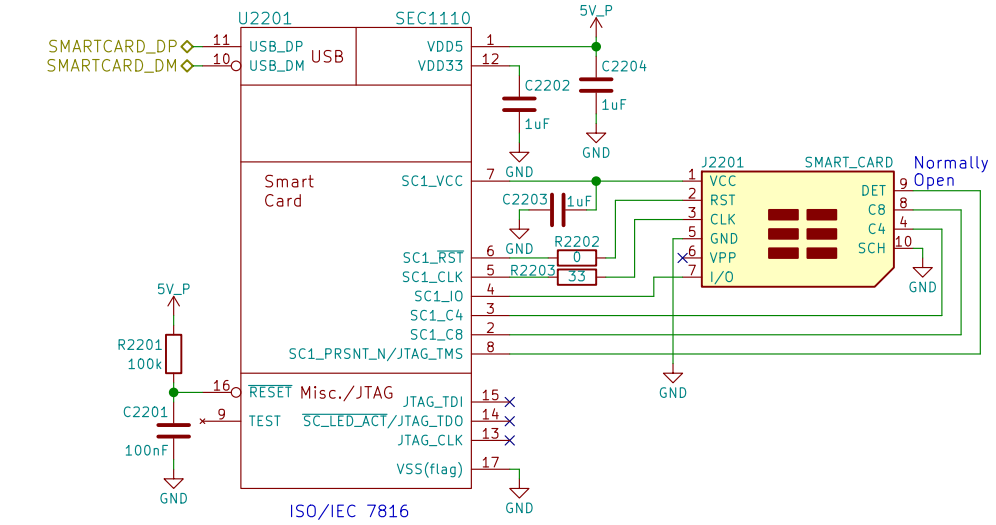
Sheet: /SPI Flash/
File: flash.sch

***Title: SPI NOR Flash***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 21/24 |




Reference:
http://www.microchip.com/DevelopmentTools/ProductDetails.aspx?PartNO=EVB-SEC1110

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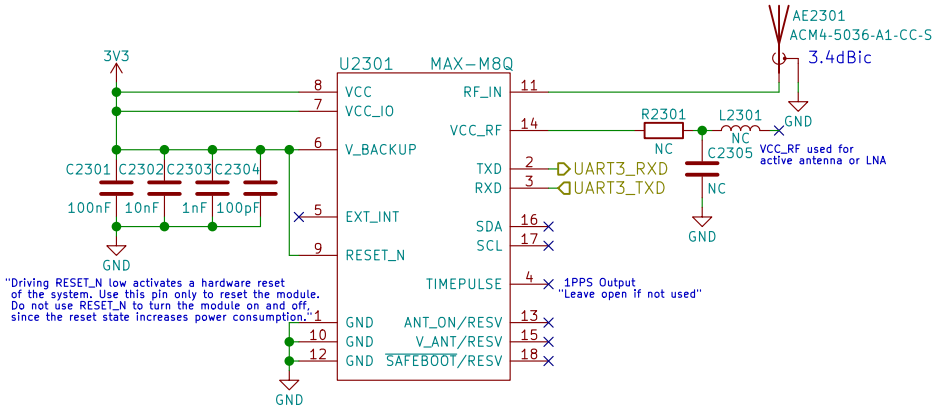
Sheet: /Smart Card/
File: smartcard.sch

***Title: Smart Card***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 22/24 |




Reference:
https://www.u-blox.com/sites/default/files/MAX-8-M8-FW3_HardwareIntegrationManual_%28UBX-15030059%29.pdf

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Sheet: /GNSS/
File: gnss.sch

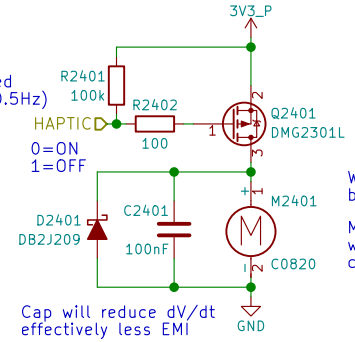
***Title: GNSS***

| | | |
|---|---|---|
| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
| KiCad E.D.A. kicad 4.0.7 | | Id: 23/24 |

PWM pins occupied:
GPIO1_IO01 – LCD Backlight
GPIO1_IO13 – LED
GPIO1_IO14 – Ethernet (CLKO_25MHz)
GPIO1_IO15 – CSI (CLKO2)

PWM needed?
Only needs to be toggled
ON 1 sec, OFF 1 sec (0.5Hz)

Can MUX as either
GPIO or PWM2
swapping with LED




When the motor is off
both terminals are at GND

Motor will have wire leads
with a 2-pin Molex or Boom Precision
connector installed (by request)!

Cap will reduce dV/dt
effectively less EMI

Cheaper Motor Connector:
https://lcsc.com/product-detail/1-25T-Connectors_1-25T-1-2AW_C10832.html

Motor Source:
https://www.alibaba.com/product-detail/Coin-motor-vibration-dc-motor
cellphone_1994583657.html?spm=a2700.8443308.0.0.5aa13e5f1wxHgs
Motor Datasheet:
https://cloud.puri.sm/s/z8JR6DJ4KrJYzoW

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Sheet: /Haptic Motor/
File: haptic.sch

***Title: Haptic/Vibration Motor***

| Size: A4 | Date: 2018-06-01 | **Rev: v0.1.0** |
|---|---|---|
| KiCad E.D.A. kicad 4.0.7 | | Id: 24/24 |