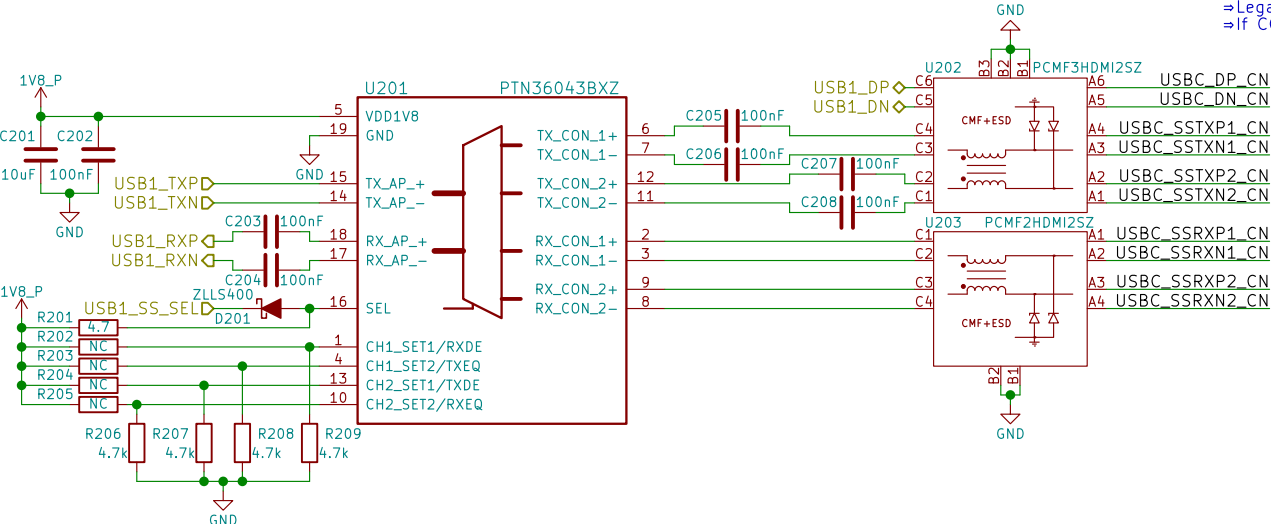
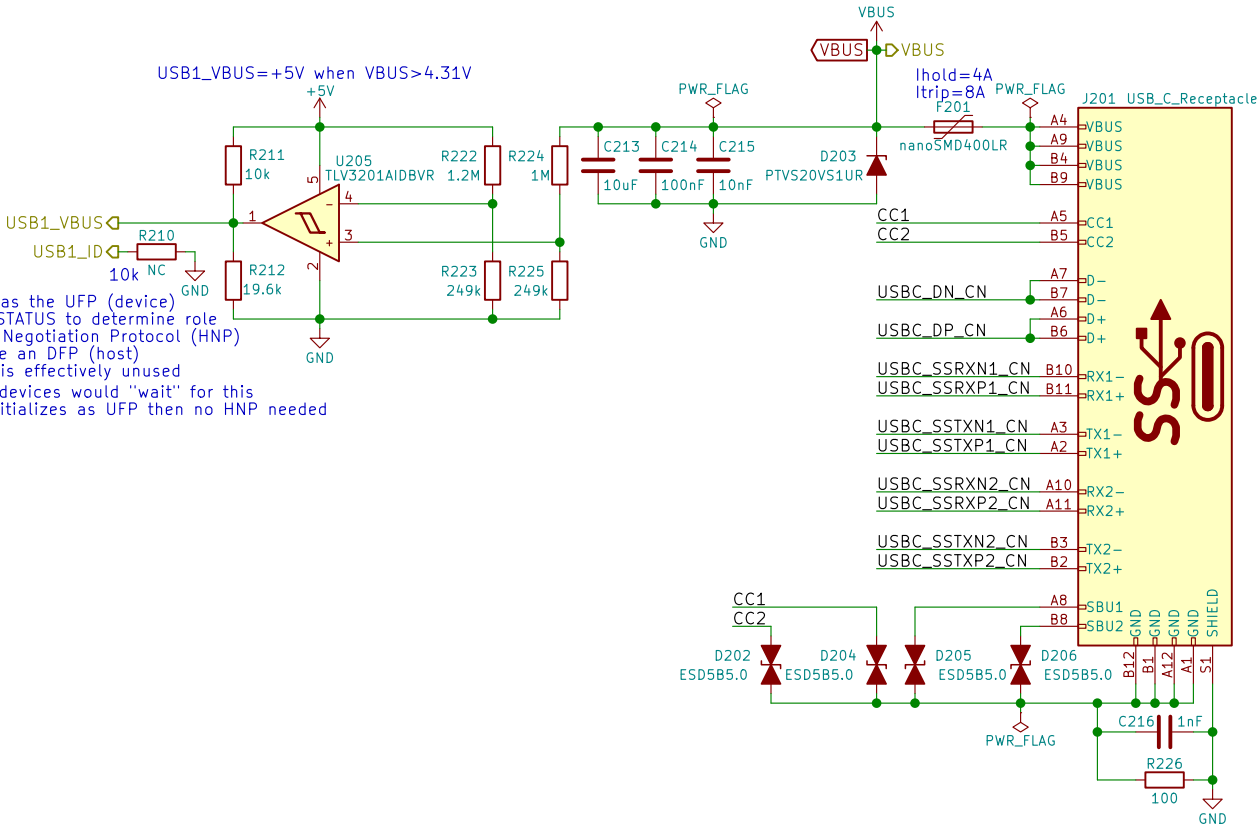
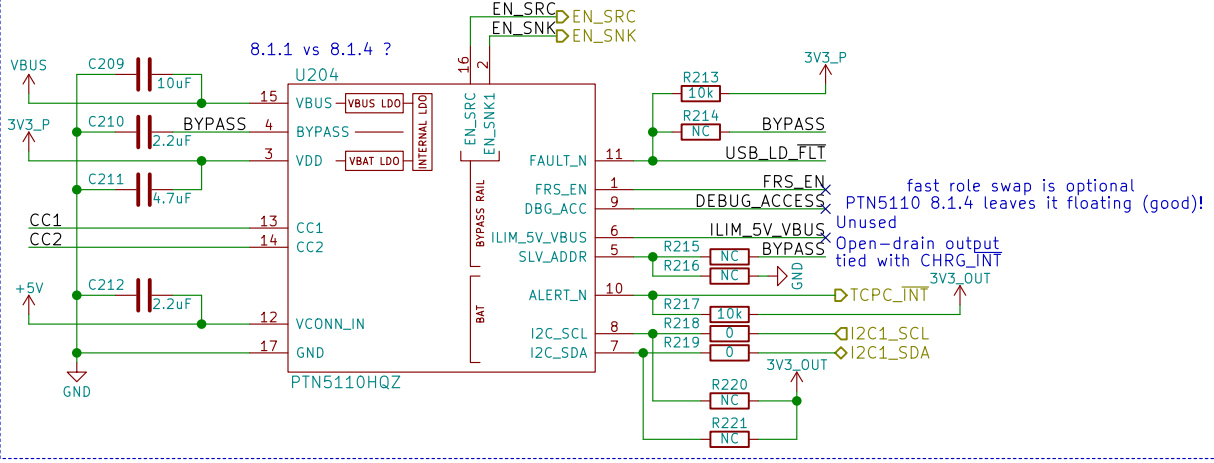


USB-C Config Channel (CC) and PD Role Controller



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Purism SPC
Sheet: /USB-C,
File: usb-c.sch

Title: USB Type C

Size: A3	Date: 2018-05-15
KiCad E.D.A. kicad 4.0.7	

Rev: v0.1.0
Id: 2/21

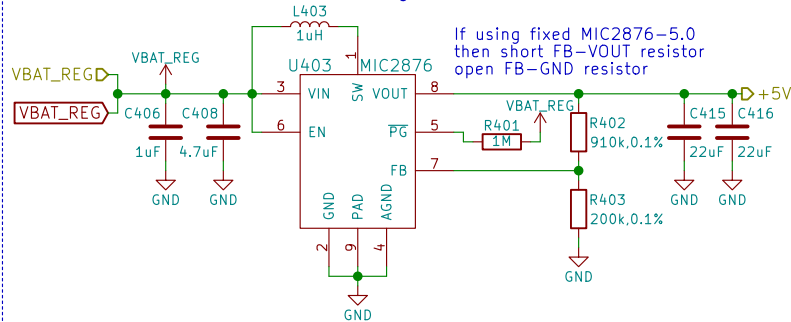

$$\begin{aligned} 1.658 \leq ILIM \leq 2.063 \\ ILIM(nom) \cong 1.859 \\ 3.9 \leq VIN \leq 14 \end{aligned}$$


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)

Rev: v0.1.0
Id: 3/21

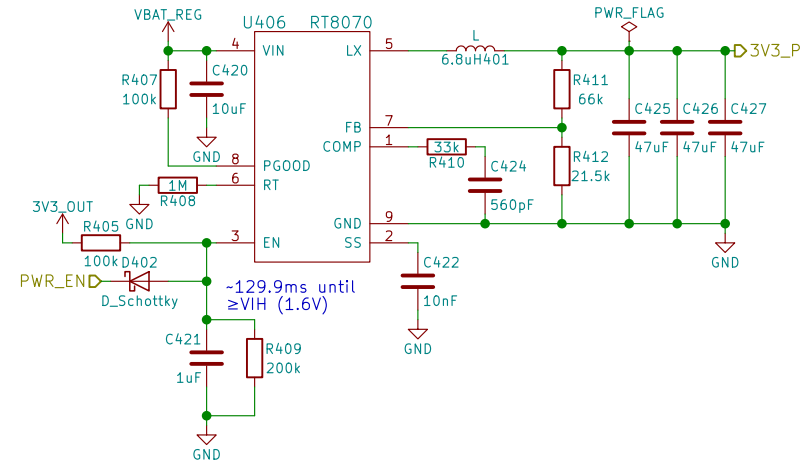
5.0V/3.8A



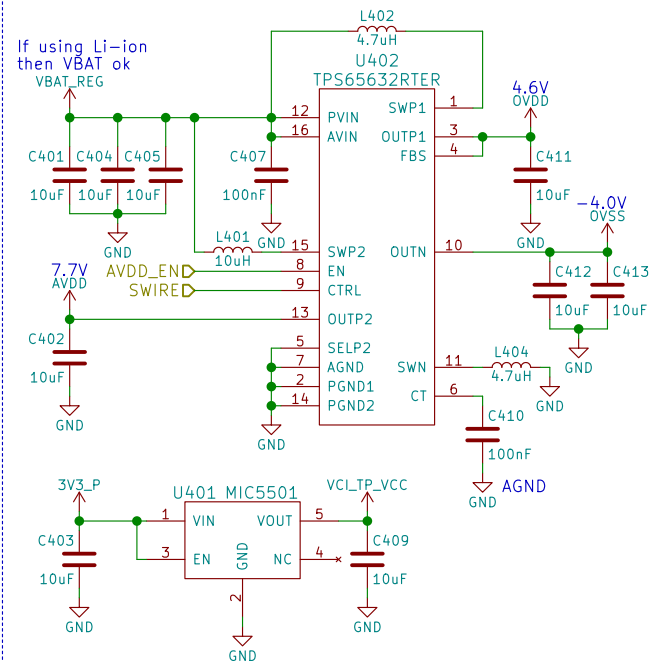
Cheaper, more efficient, smaller, and simpler than RT6150A
Explicitly mentions USB/smartphone application

3.3V/3A

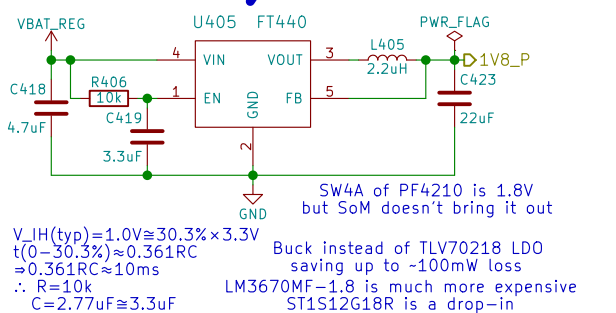
When VBAT can fall below 3.3V use TPS63020 instead!



AMOLED POWER



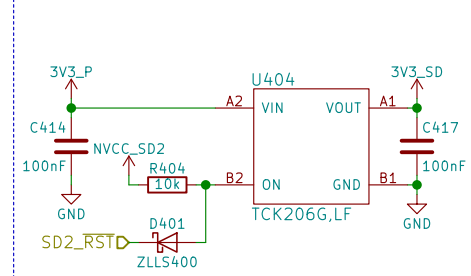
1.8V/600mA



$V_{IH}(typ) = 1.0V \approx 30.3\% \times 3.3V$
 $t(0-30.3\%) \approx 0.361RC$
 $\approx 0.361 \times 10k \times 3.3uF$
 $\therefore R = 10k$
 $C = 2.77uF \approx 3.3uF$

Buck instead of TLV70218 LDO
saving up to ~100mW loss
LM3670MF-1.8 is much more expensive
ST1S12G18R is a drop-in

SD POWER



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
KiCad E.D.A. kicad 4.0.7

Date: 2018-05-15

Rev: v0.1.0

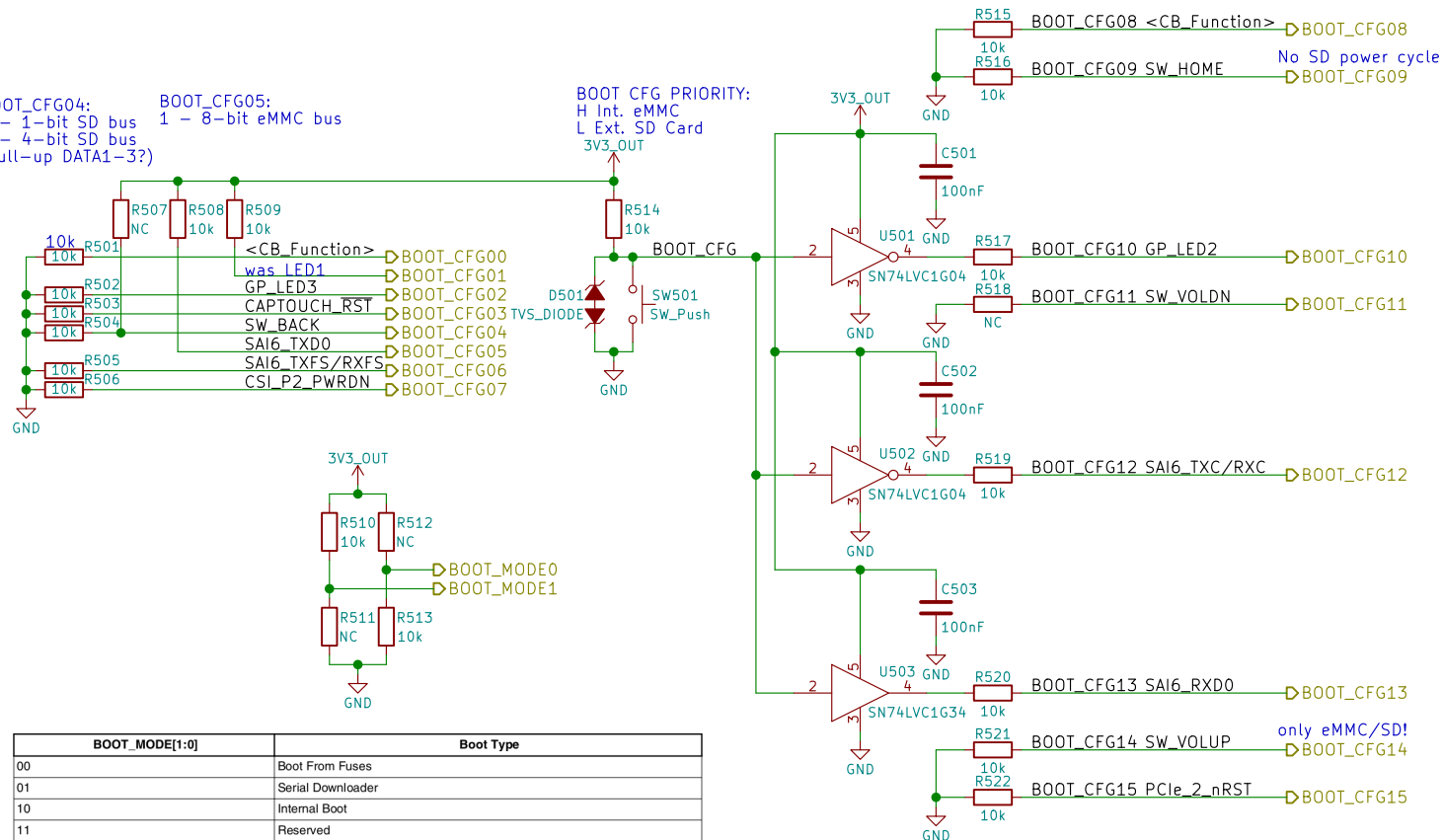
Id: 4/21

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

BOOT_CFG04:
0 - 1-bit SD bus
0 - 4-bit SD bus
(pull-up DATA1-3?)

BOOT_CFG05:
1 - 8-bit eMMC bus

BOOT CFG PRIORITY:
H Int. eMMC
L Ext. SD Card



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Purism SPC

Sheet: /Boot Config/
File: boot.sch

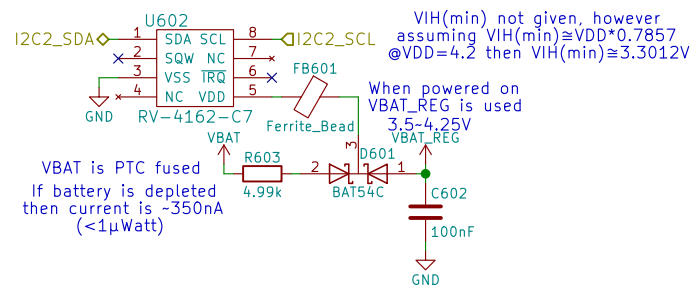
Title: Boot Configuration

Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 5/21



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Sheet: /RTC/
File: rtc.sch

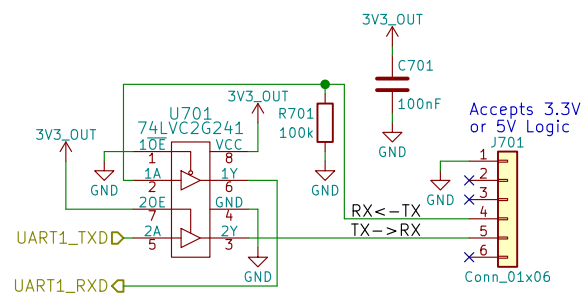
Title: RTC

Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 6/21



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Sheet: /UART Debug/
File: uart.sch

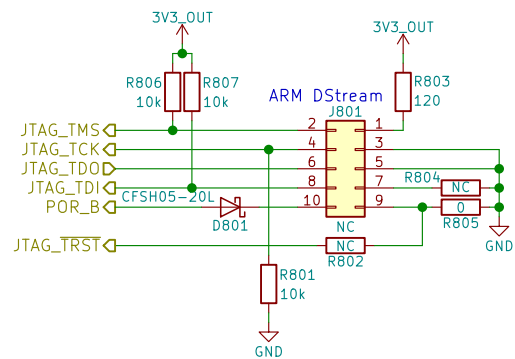
Title: UART Debug

Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 7/21



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Purism SPC

Sheet: /JTAG/
File: jtag.sch

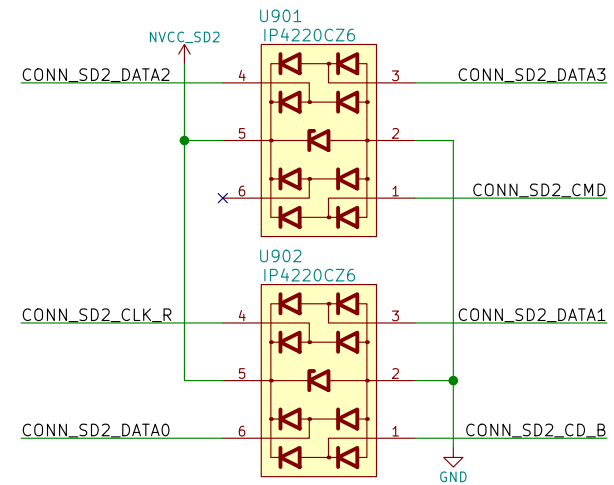
Title: JTAG

Size: A4
KiCad E.D.A. kicad 4.0.7

Date: 2018-05-15

Rev: v0.1.0

Id: 8/21



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Sheet: /uSD Card/
File: sd.sch

Title: uSD Card

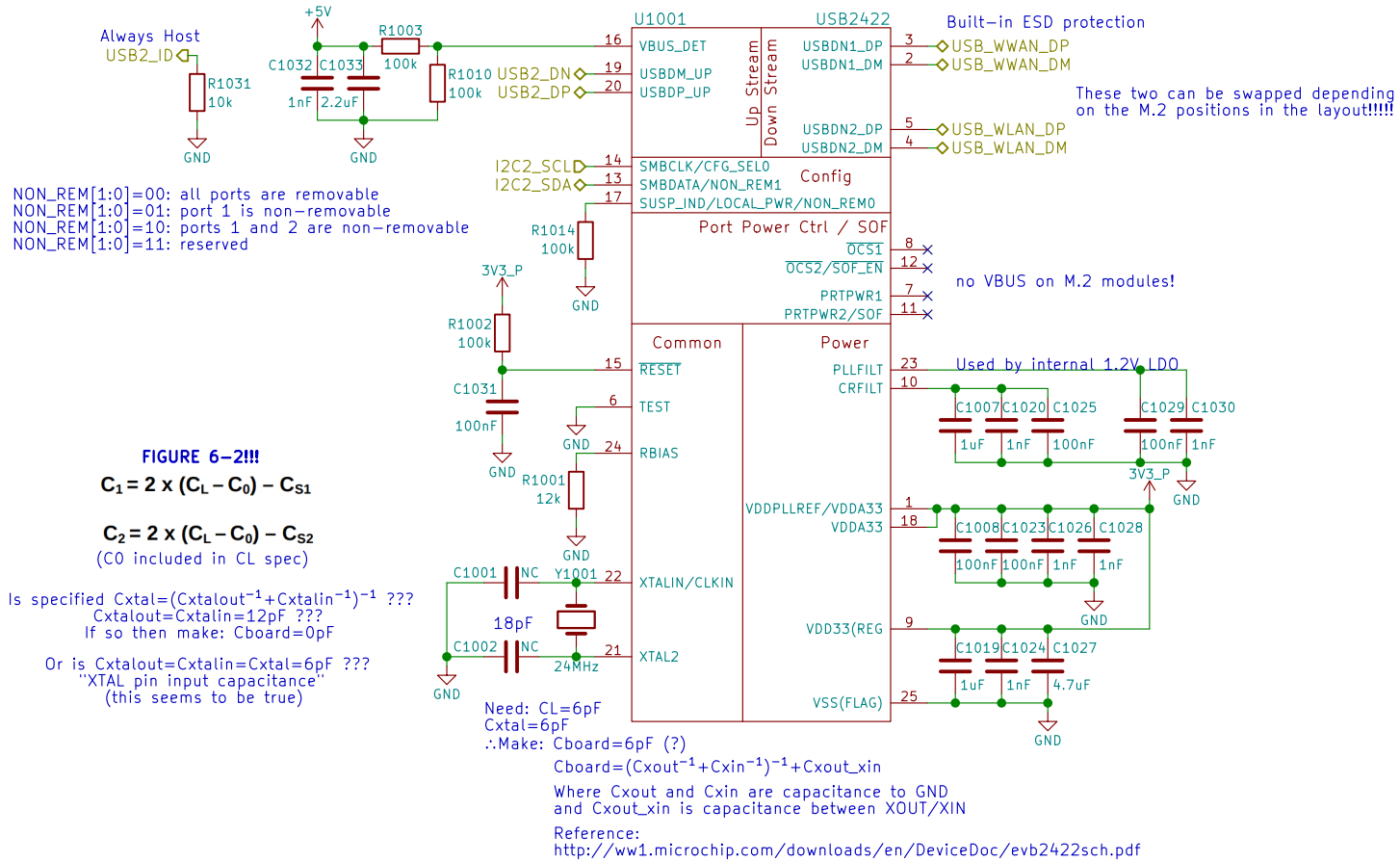
Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 9/21

TODO:
Use USB4640???



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Sheet: /USB Hub/

File: usb_hub.sch

Title:

Size: A4

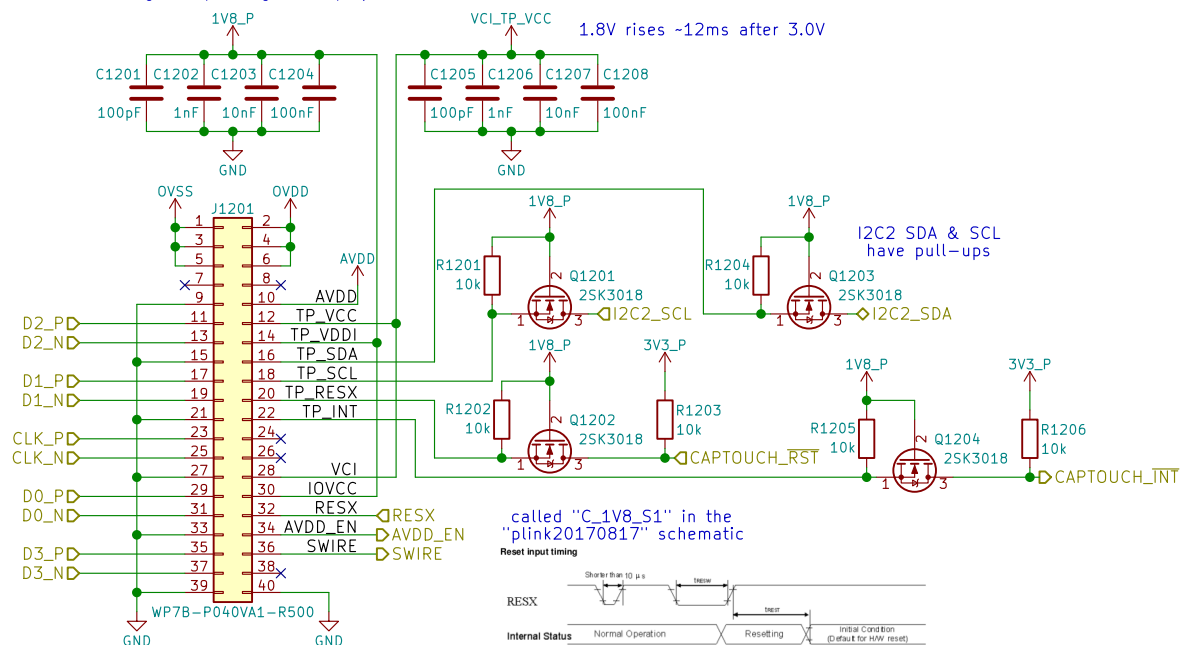
Date: 2018-05-15

Rev: v0.1.0

KiCad E.D.A. kicad 4.0.7

Id: 10/21

Using H546DLB01.1 pin assignment may need to be changed depending on display used



TODO: low power state signal??

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Sheet: /MIPI DSI/
File: mipi_dsi.sch

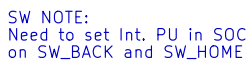
Title: MIPI DSI

Size: A4 Date: 2018-05-15

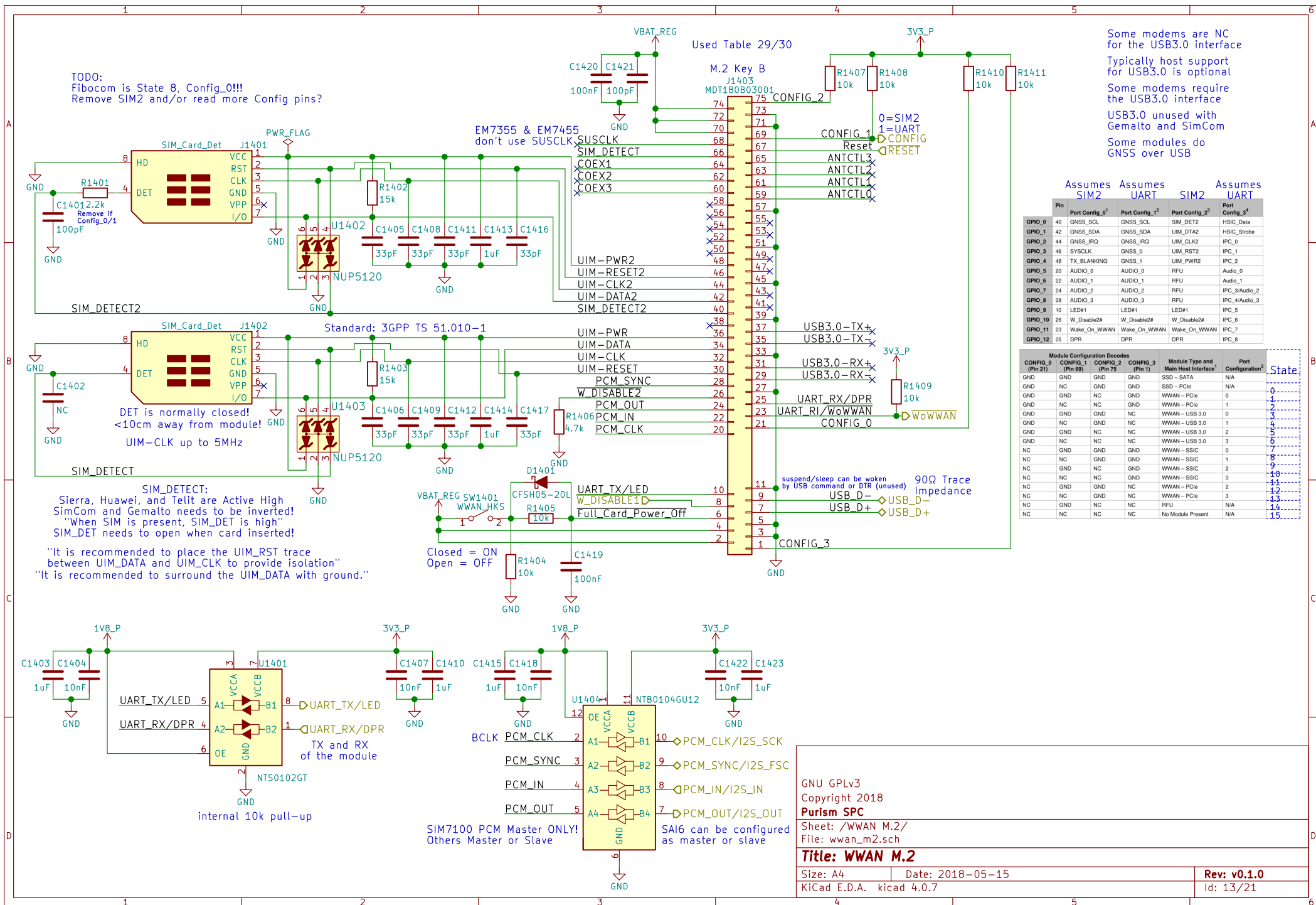
KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 11/21



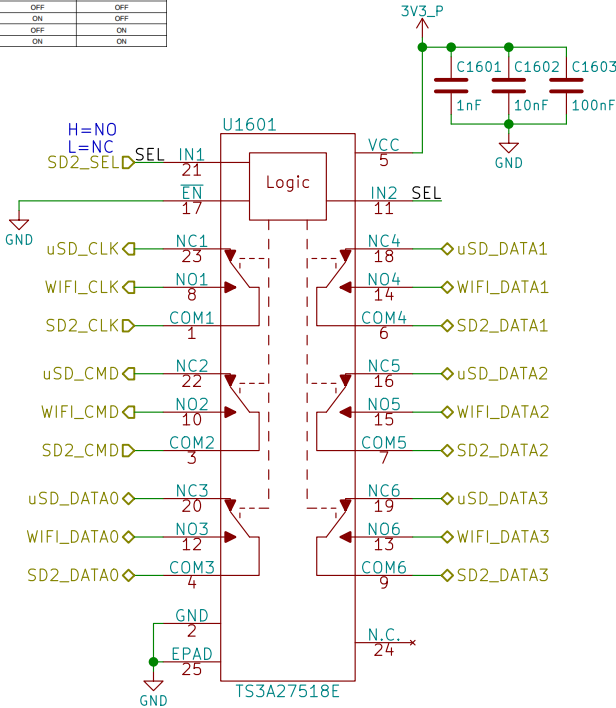
Id: 12/21





Can swap around signals in the layout:

EN	IN1	IN2	NC1023 TO COM1023, COM1023 TO NC1023	NC4056 TO COM4056, COM4056 TO NC4056	NC1023 TO COM1023, COM1023 TO NC1023	NC4056 TO COM4056, COM4056 TO NC4056
H	X	X	OFF	OFF	OFF	OFF
L	L	L	ON	ON	OFF	OFF
L	H	L	OFF	ON	ON	OFF
L	L	H	ON	OFF	OFF	ON
L	H	H	OFF	OFF	ON	ON



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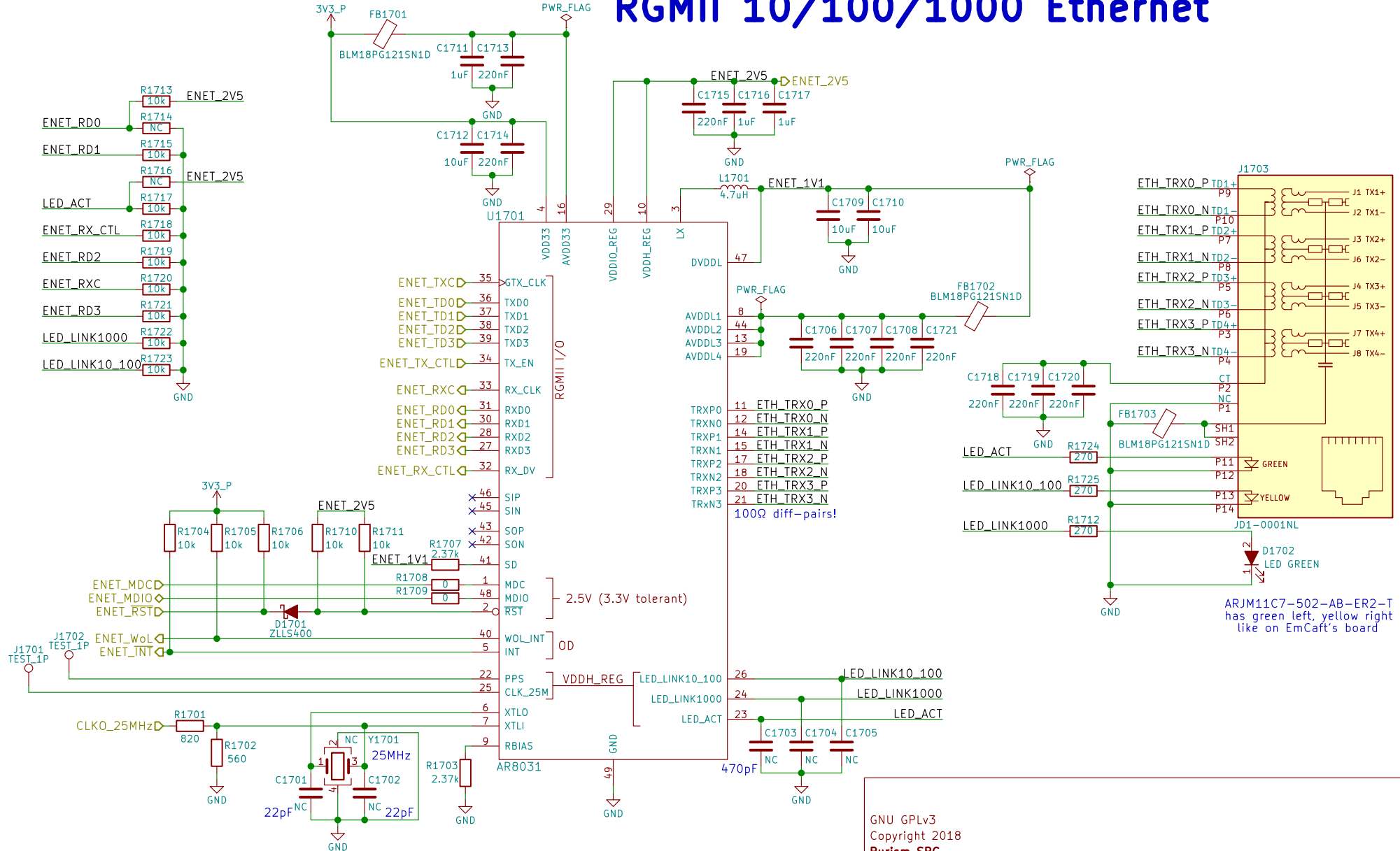
Sheet: /SDIO DEMUX/
File: sdio_demux.sch

Title: SDIO Demultiplexer

Size: A4 Date: 2018-05-15
KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0
Id: 15/21

RGMII 10/100/1000 Ethernet



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Sheet: /Ethernet/

File: ethernet.sch

Title: Ethernet

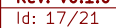
Size: A4

Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

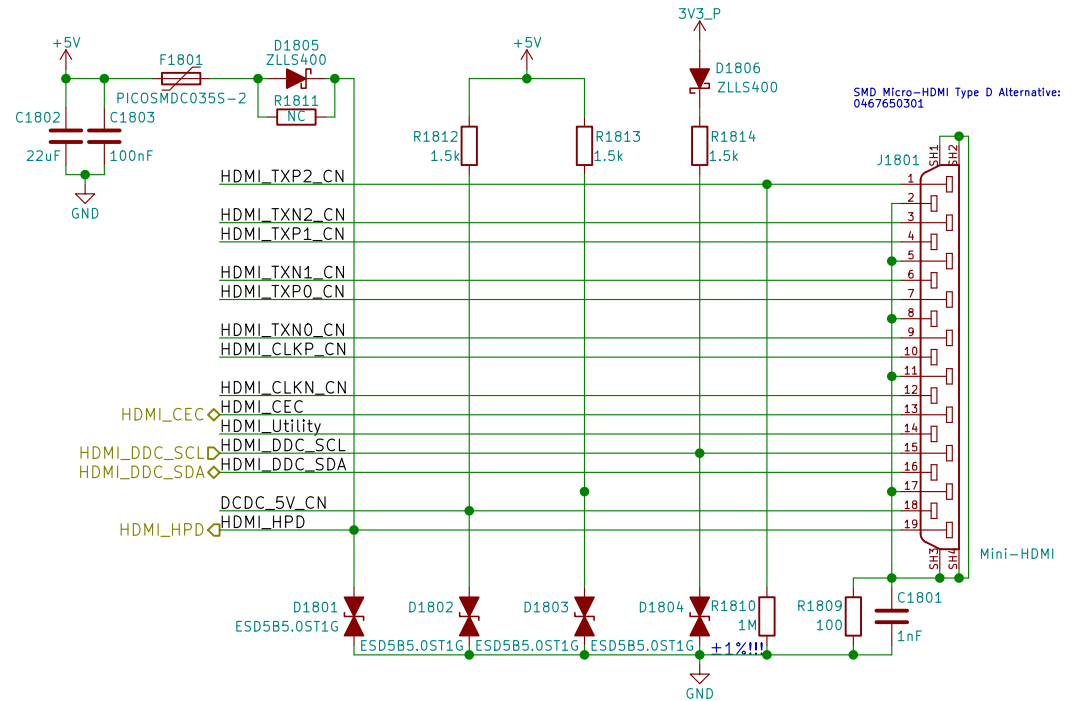
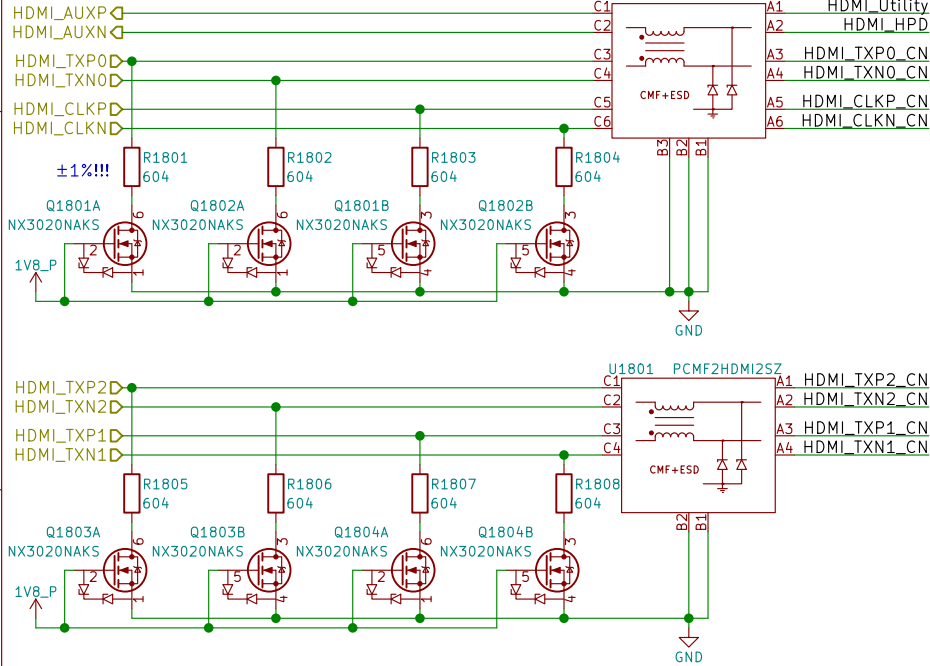
Id: 16/21



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

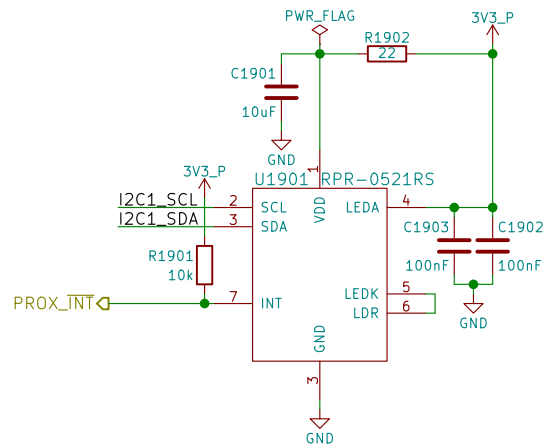
Title: HDMI

Size: A4
KiCad E.D.A. kicad 4.0.7

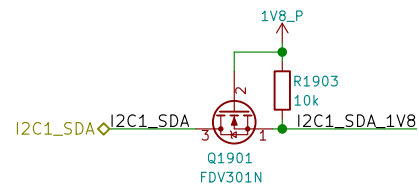
Date: 2018-05-15

Rev: v0.1.0
Id: 18/21

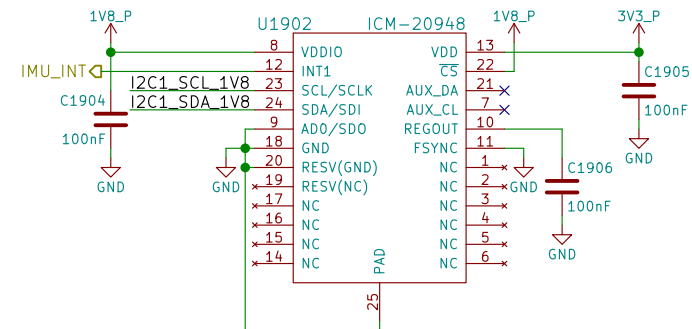
Proximity & Ambient Light



Reference:
<http://www.rohm.com/web/global/sensor-shield-support/ps-als-sensor>



9-Axis IMU



Reference:
<https://store.invensense.com/datasheets/invensense/AN-IVS-0001EVB-00%20v1%202.pdf>

AD0 sets the slave address's LSB (110100X)

INT1_ACTL sets if IMU_INT is active-high or active-low

"FSYNC - Connect to GND if unused"

I2C's VIH=1.8V

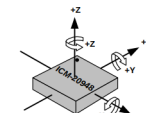


Figure 12. Orientation of Axes of Sensitivity and Polarity of Rotation

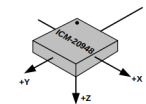


Figure 13. Orientation of Axes of Sensitivity for Magnetometer

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Purism SPC

Sheet: /Sensors/
 File: sensors.sch

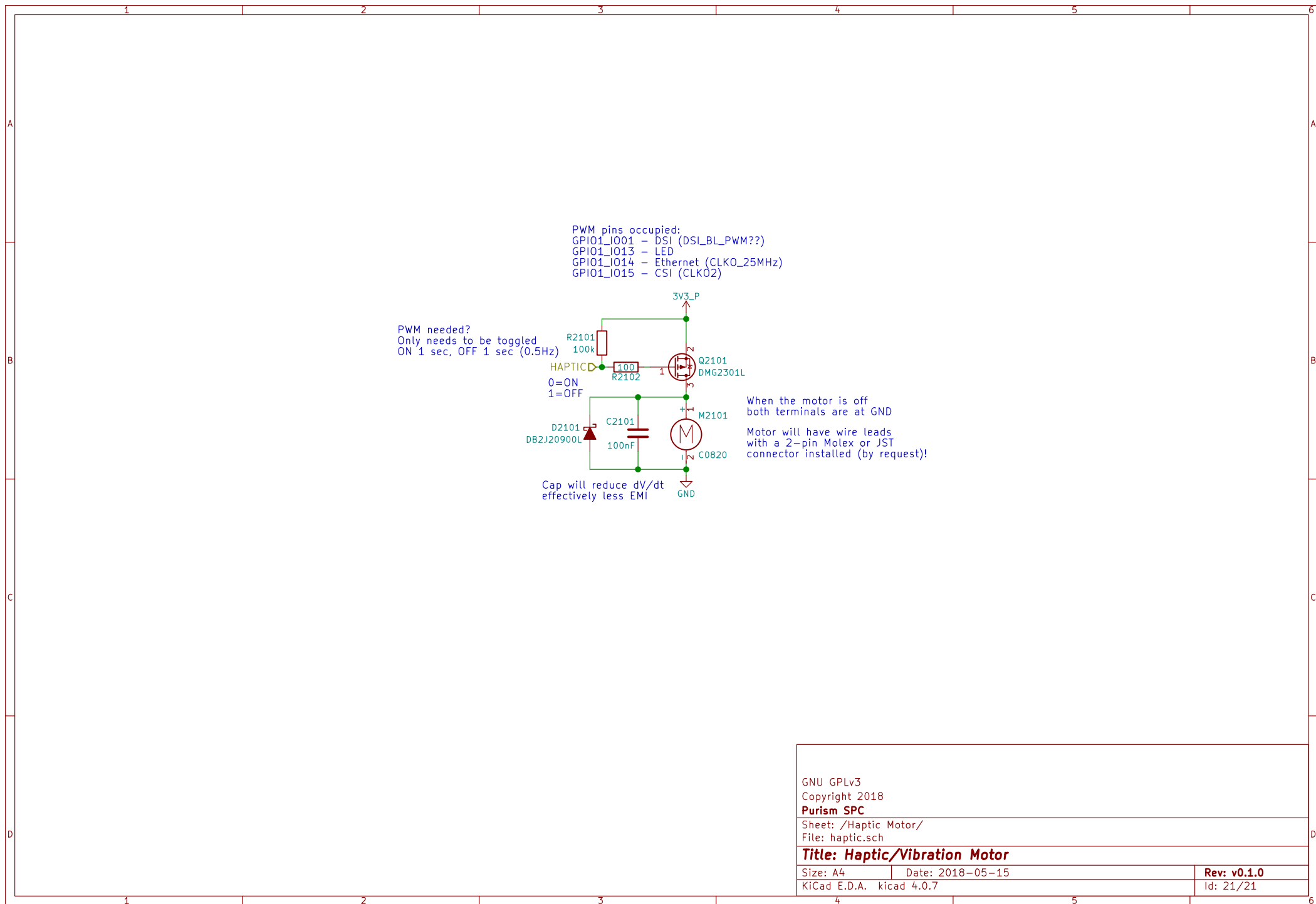
Title: Sensors

Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 19/21



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Purism SPC

Sheet: /Haptic Motor/
File: haptic.sch

Title: Haptic/Vibration Motor

Size: A4 Date: 2018-05-15

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 21/21