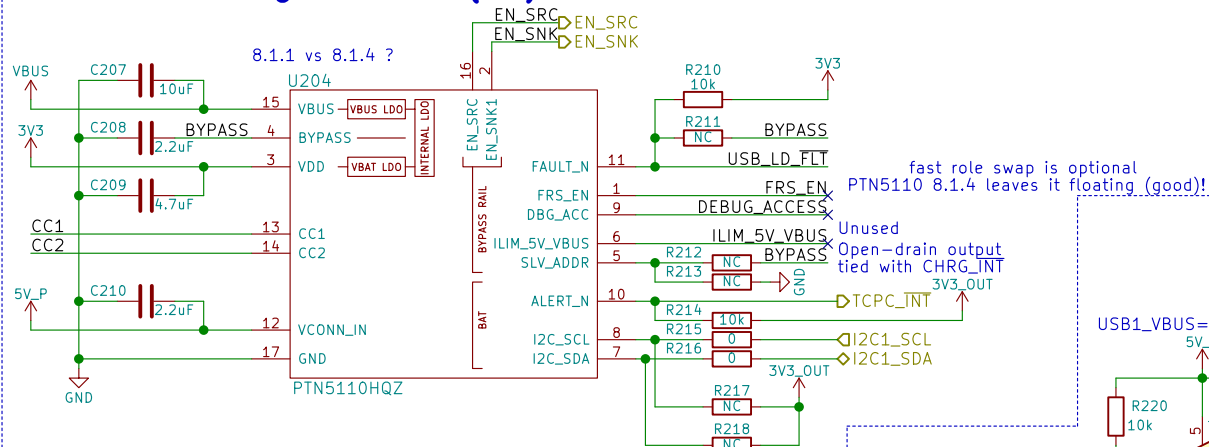
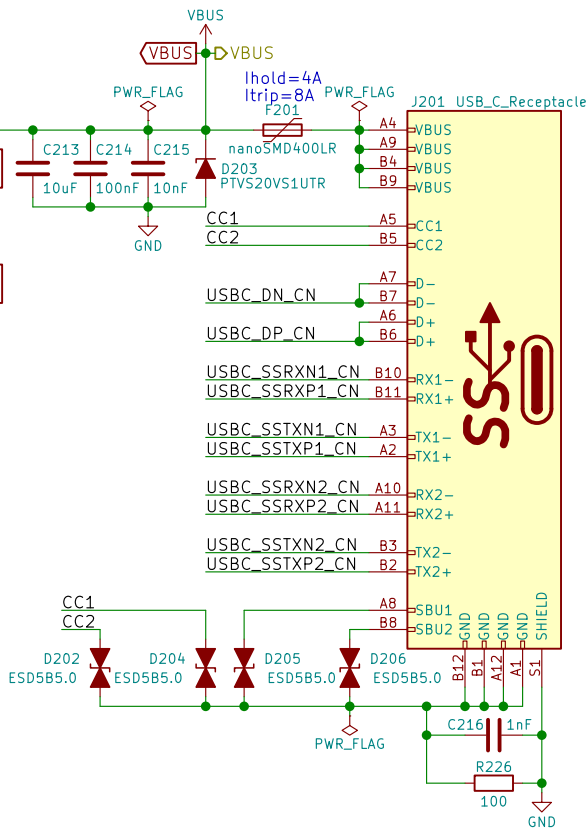
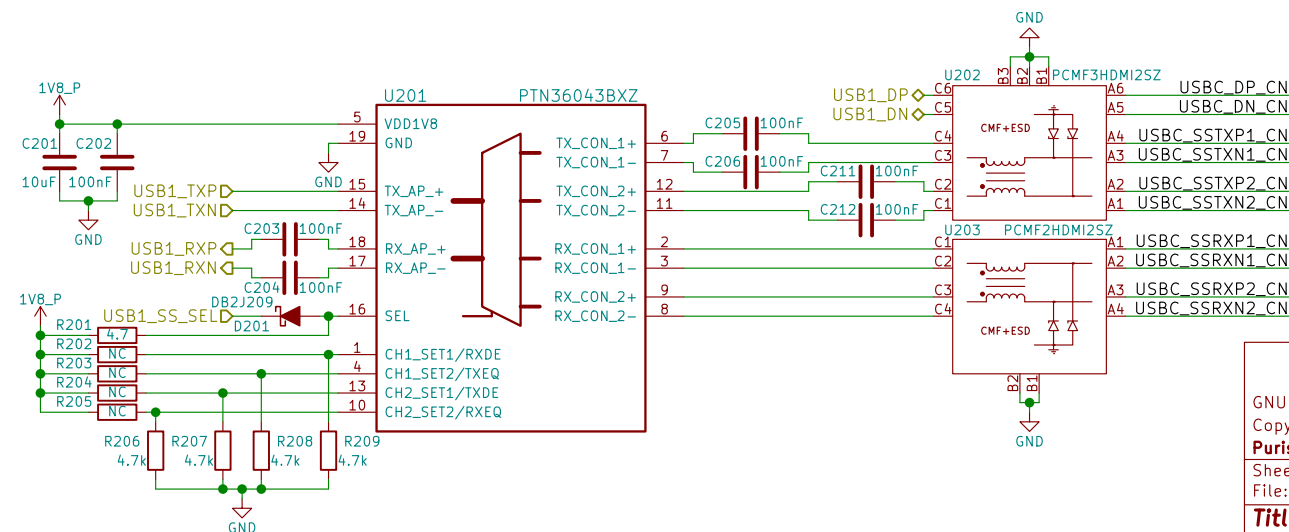


USB-C Config Channel (CC) and PD Role Controller



"Under dead battery operation, PTN5110 applies voltage clamps to both CC pins so that the system may receive power as a Sink. To support platforms with buck-boost configuration, PTN5110 asserts EN_SNK1 pin based on validity of VBUS voltage (facilitates 5 V VBUS sinking)."

Initialize as the UFP (device)
read CC_STATUS to determine role
use Host Negotiation Protocol (HNP)
to become an DFP (host)
∴ USB ID is effectively unused
⇒ Legacy devices would "wait" for this
⇒ If CC initializes as UFP then no HNP needed



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Sheet: /USB-C/

File: usb-c.sch

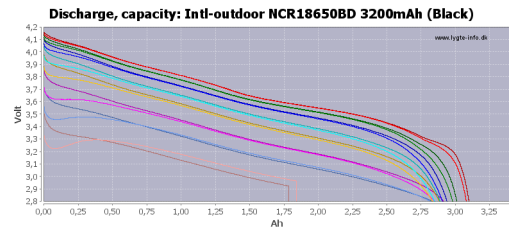
Title: USB Type C

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 2/23

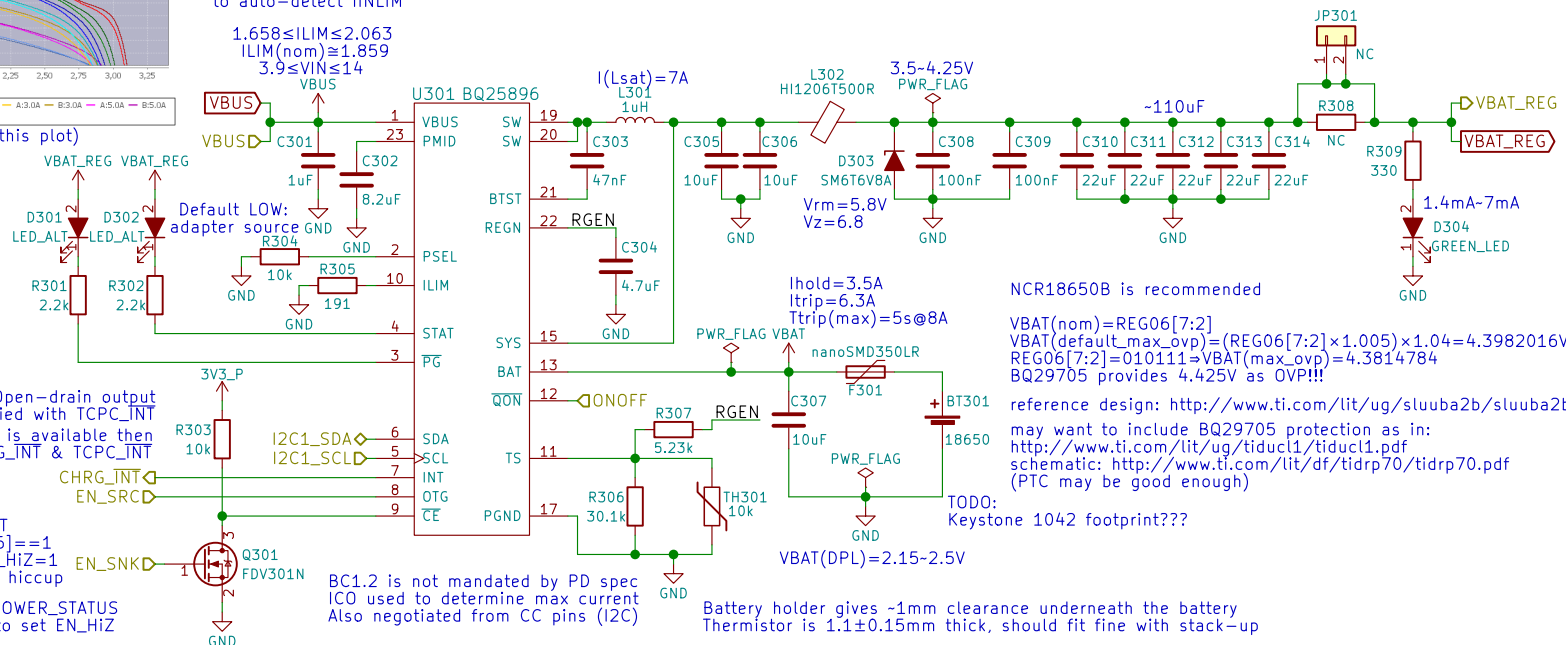


(interpret RSOC% based on this plot)

use AUTO_DPDM_EN
to auto-detect IINLIM

$1.658 \leq I_{LIM} \leq 2.063$
 $I_{LIM}(nom) \approx 1.859$
 $3.9 \leq V_{IN} \leq 14$

Battery Charge Controller



GNU GPLv3

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Purism SPC

Sheet: /Battery/

File: battery.sch

Title: Battery

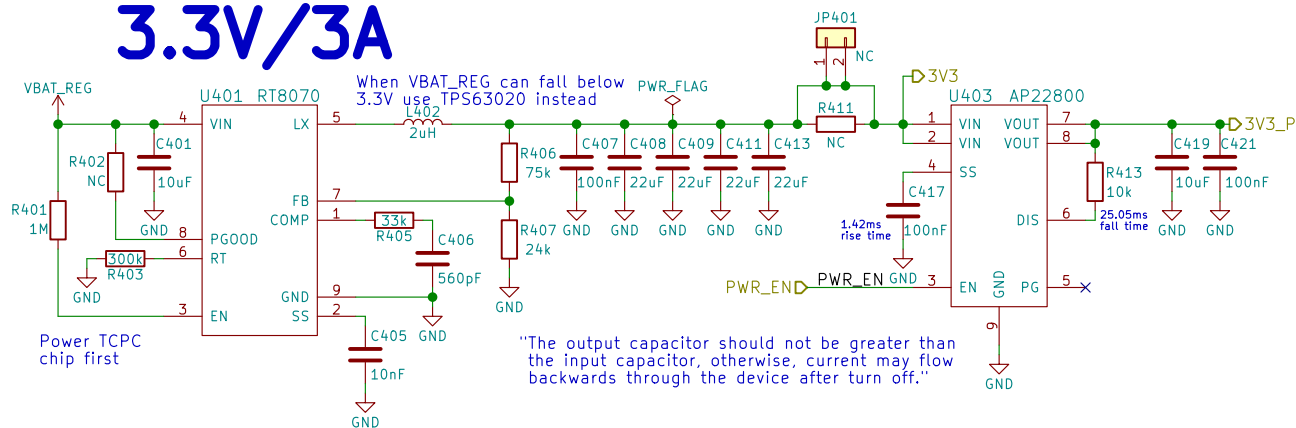
Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

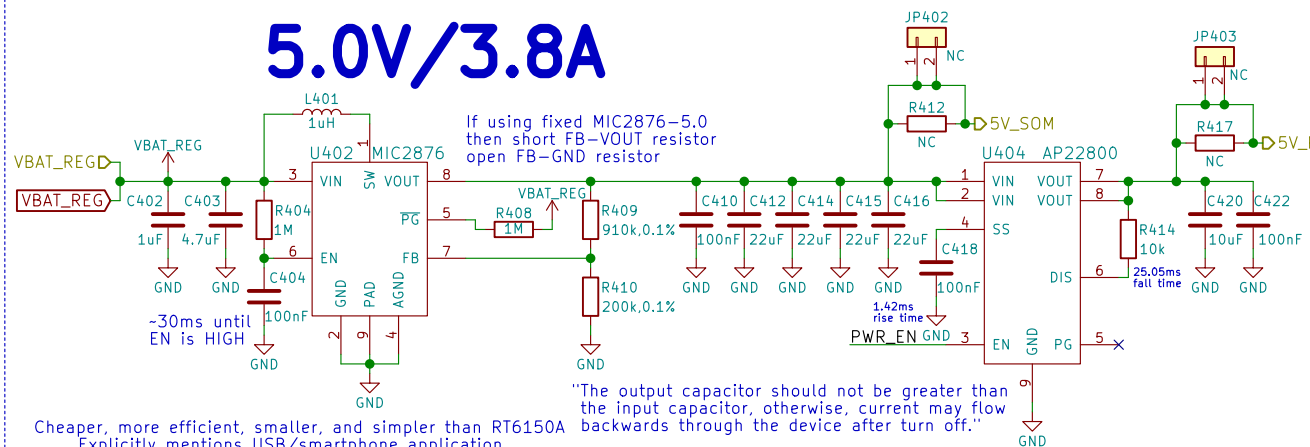
Rev: v0.1.0

Id: 3/23

3.3V/3A

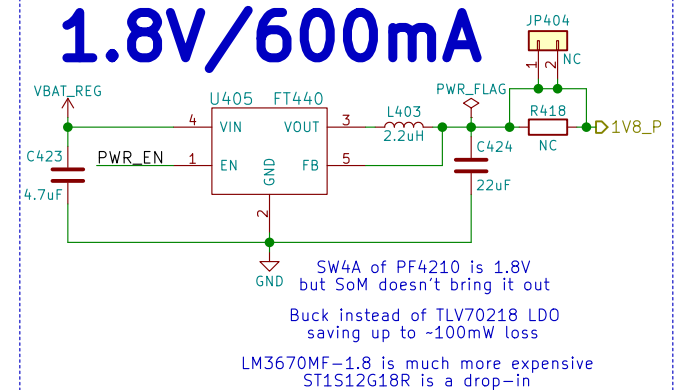


5.0V/3.8A



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

1.8V/600mA

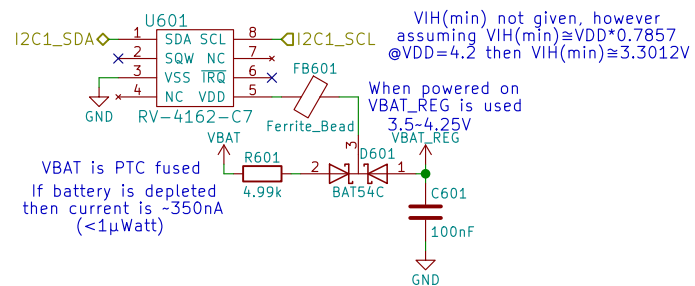


GNU GPLv3
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Purism SPC

Sheet: /Power/
File: power.sch

Title: Power	
Size: A4	Date: 2018-05-23
KiCad E.D.A. kicad 4.0.6	

Rev: v0.1.0
Id: 4/23



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Sheet: /RTC/
File: rtc.sch

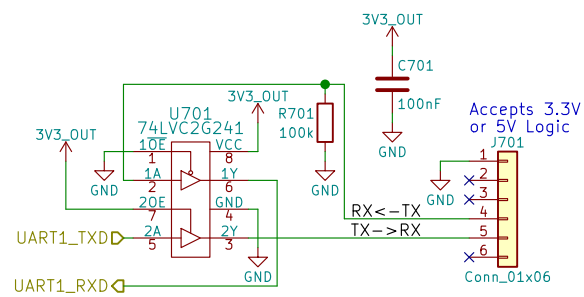
Title: RTC

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 6/23



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Sheet: /UART Debug/
File: uart.sch

Title: UART Debug

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 7/23



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Sheet: /JTAG/
File: jtag.sch

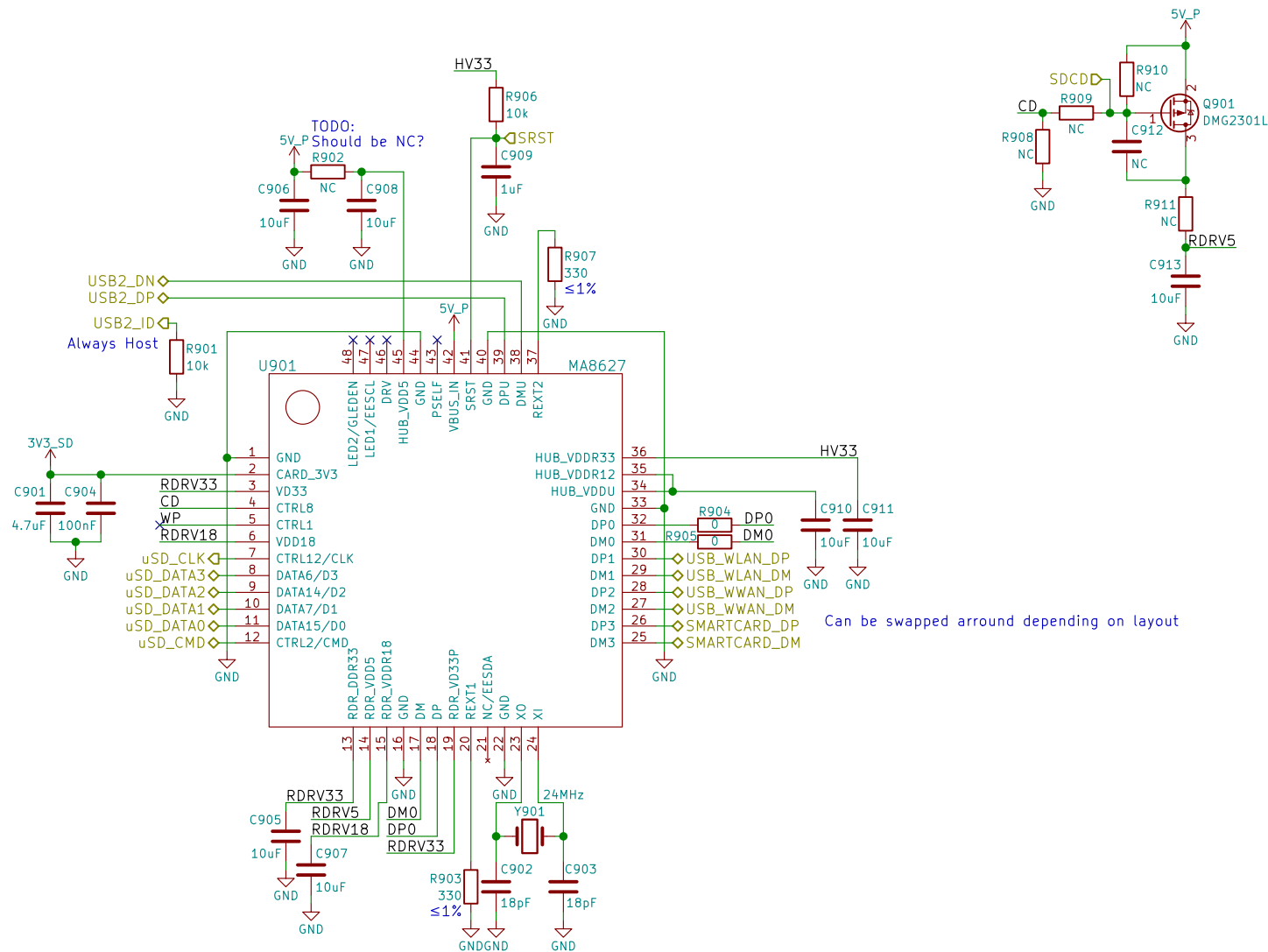
Title: JTAG

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 8/23



GNU GPLv3

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Sheet: /USB Hub + SDIO Bridge/

File: usb_hub_sdio.sch

Title:

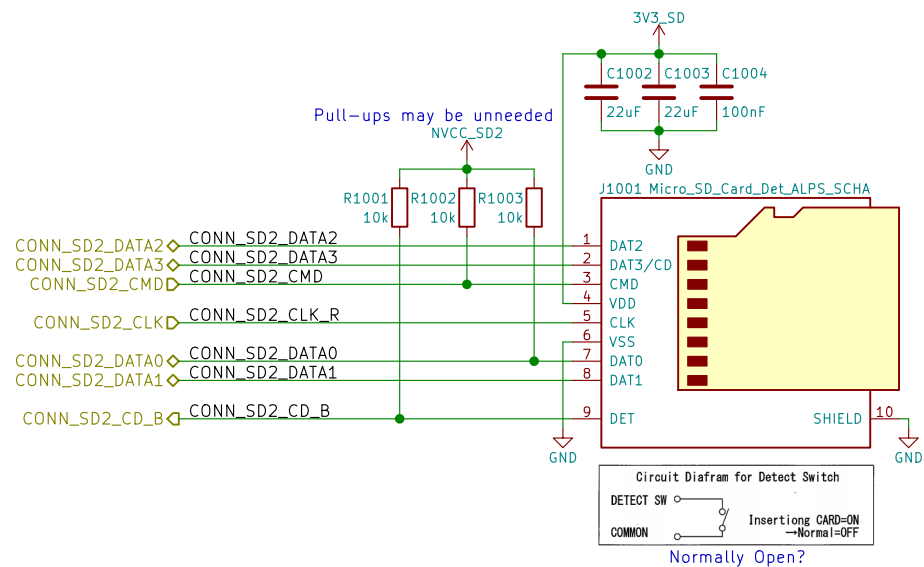
Size: A4

Date: 2018-05-23

Rev: v0.1.0

KiCad E.D.A. kicad 4.0.6

Id: 9/23



GNU GPLv3
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Purism SPC

Sheet: /uSD Card/
File: sd.sch

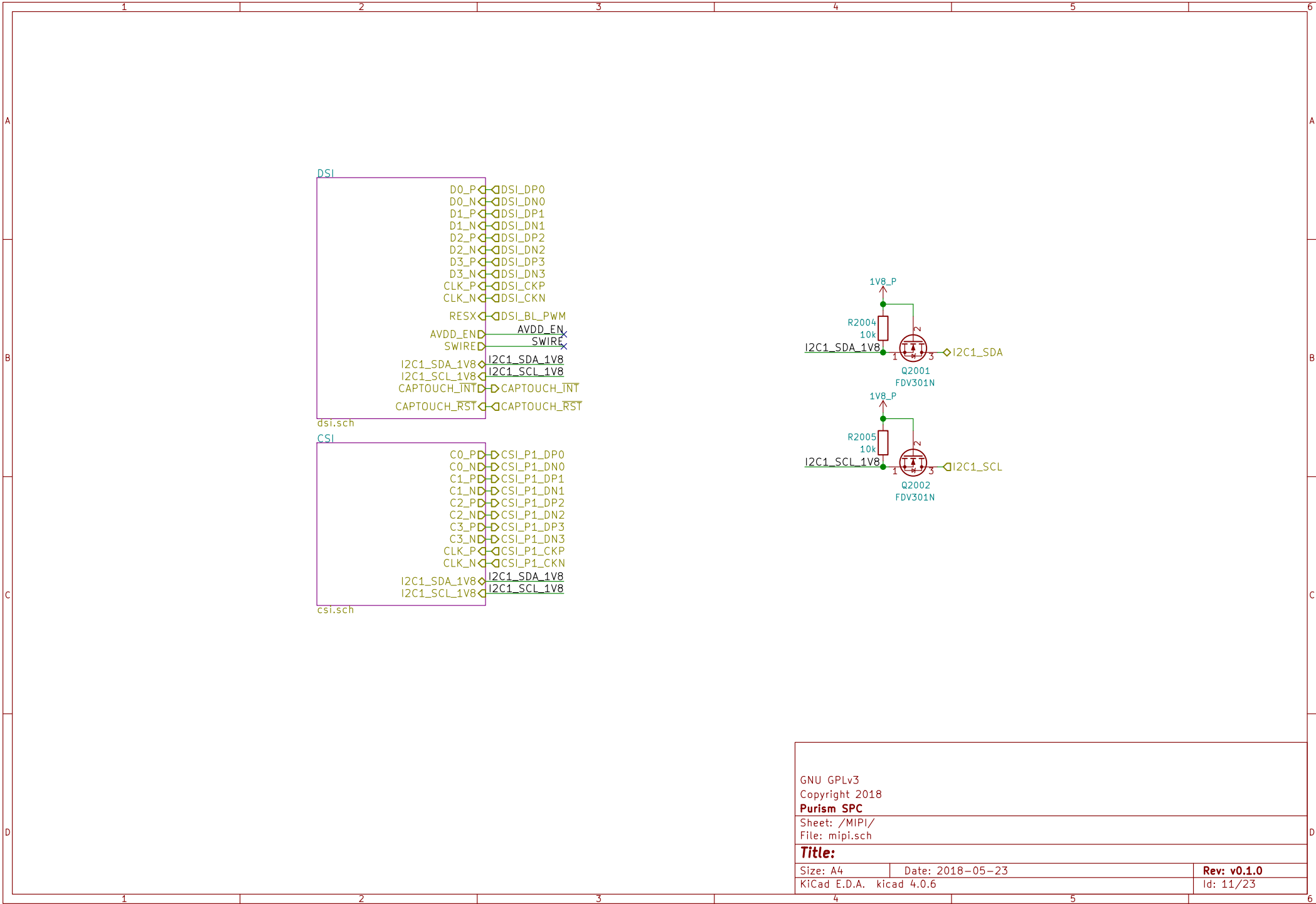
Title: uSD Card

Size: A4 Date: 2018-05-23

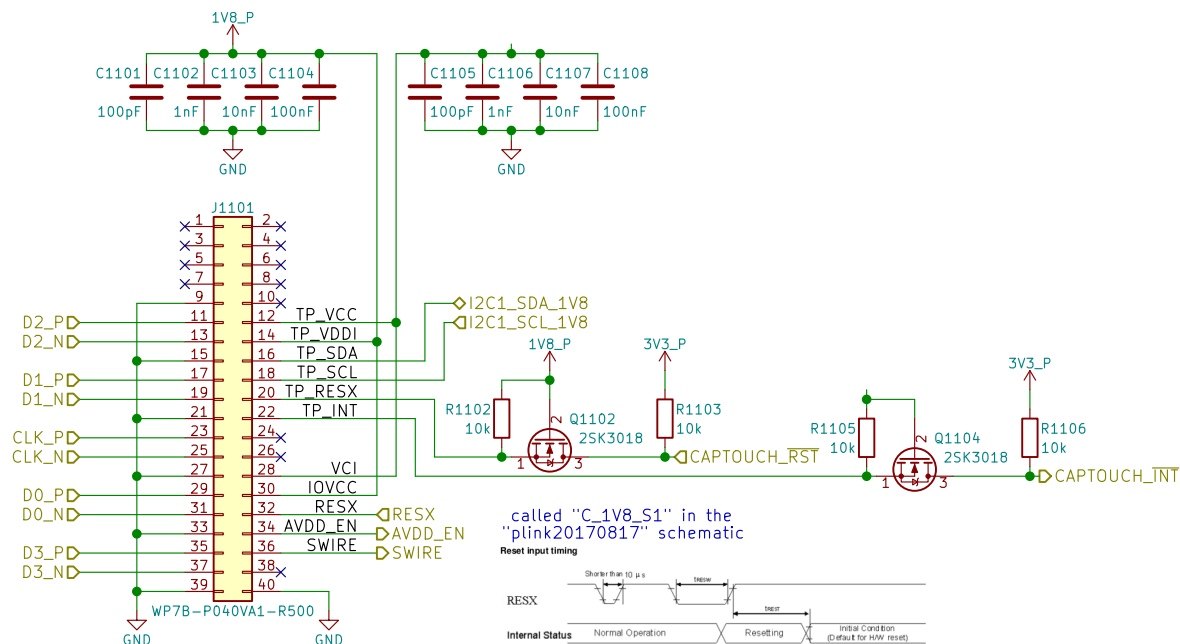
KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

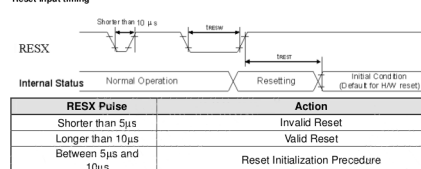
Id: 10/23



TODO:
ensure power sequence is satisfied
based on the display used



Reset input timing



TODO: low power state signal??

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Purism SPC

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

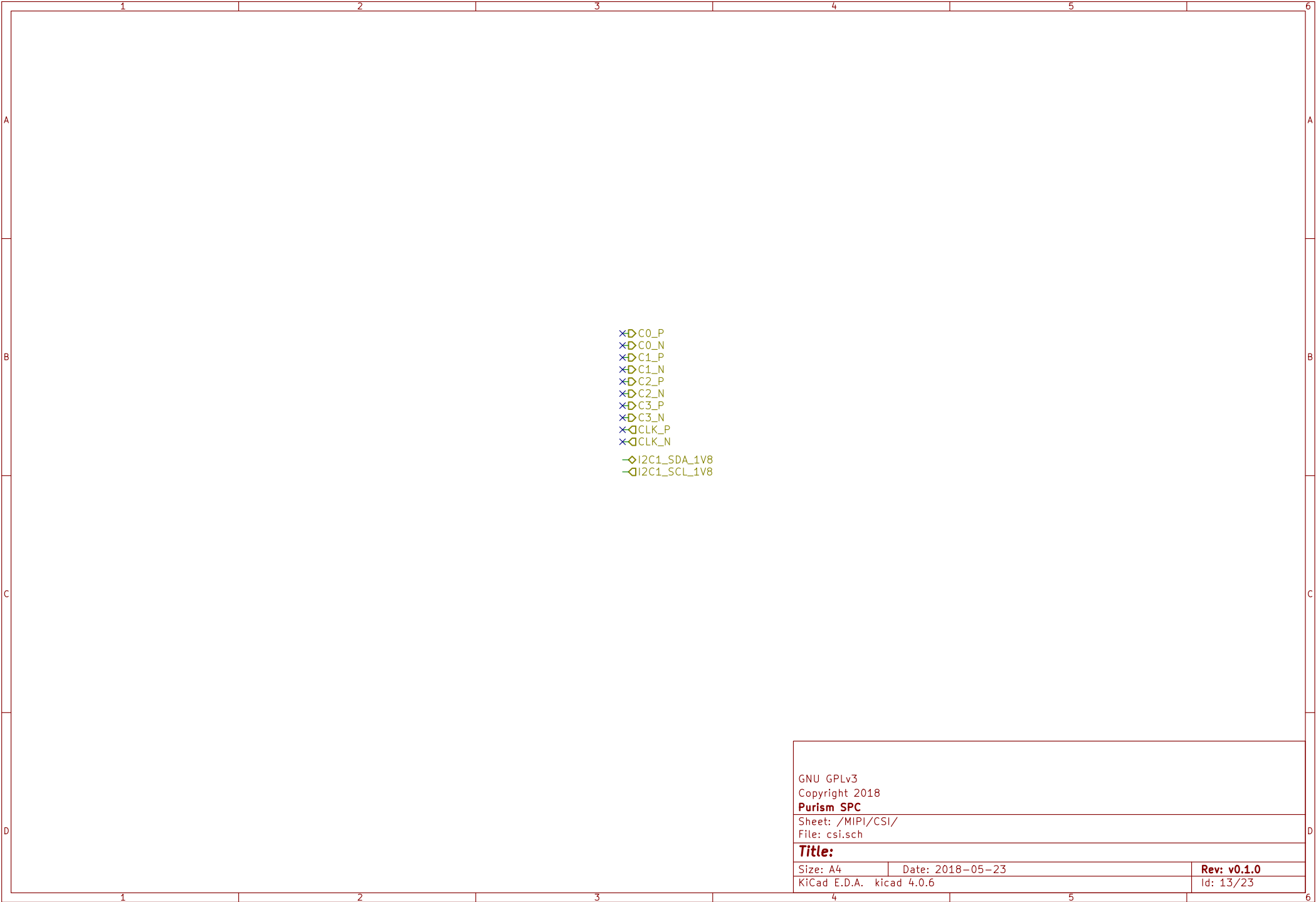
Title: MIPI DSI

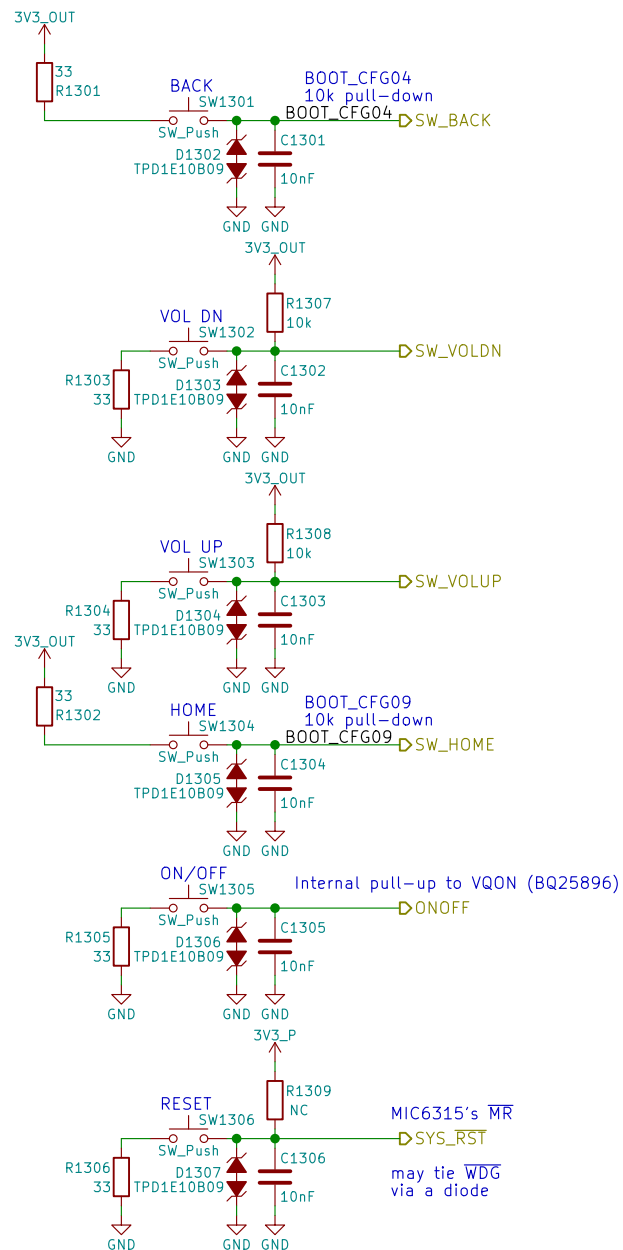
Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

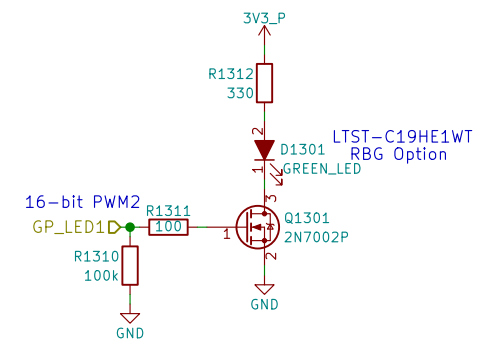
Rev: v0.1.0

Id: 12/23





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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Purism SPC

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

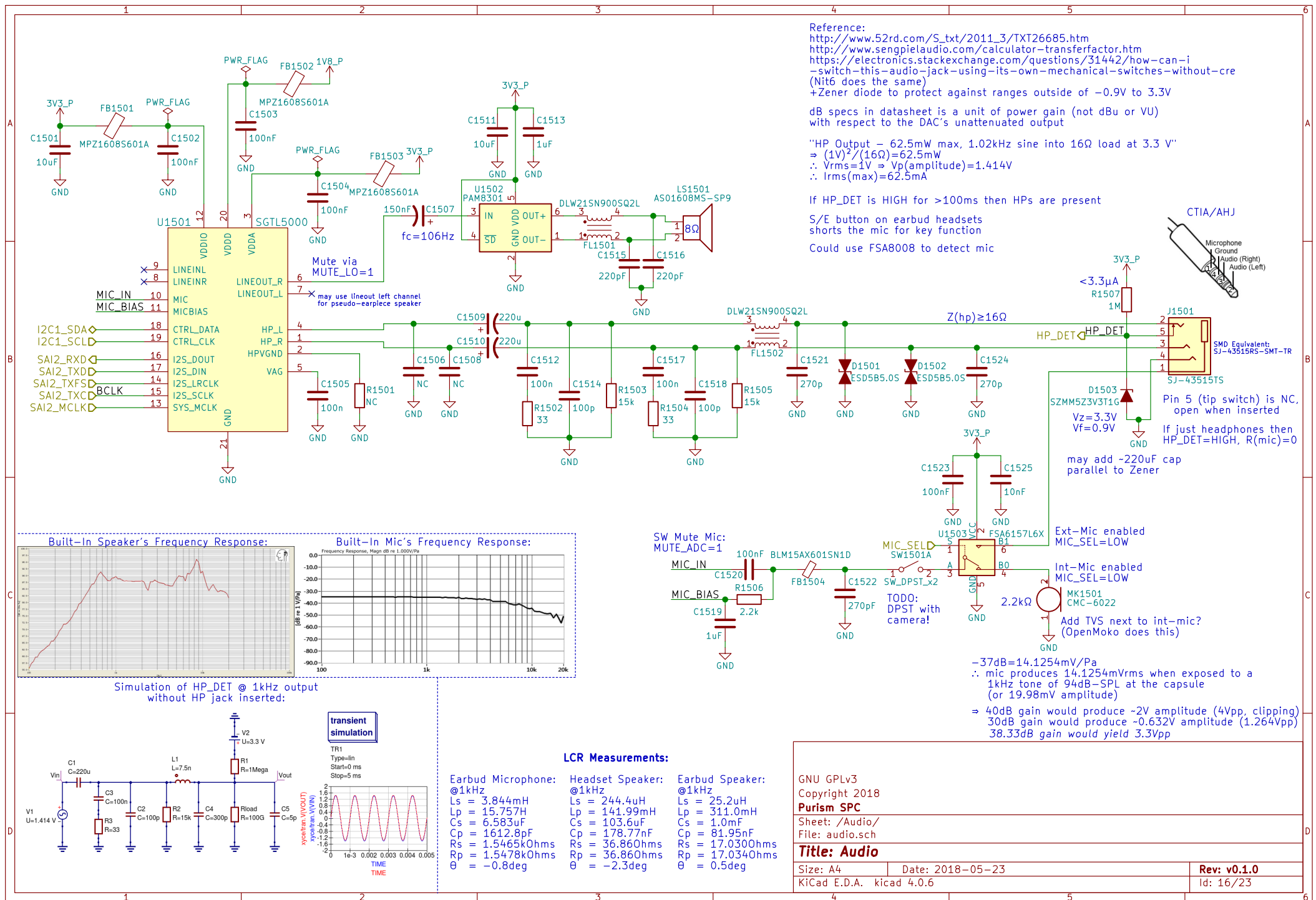
Title: Buttons & LED

Size: A4 Date: 2018-05-23

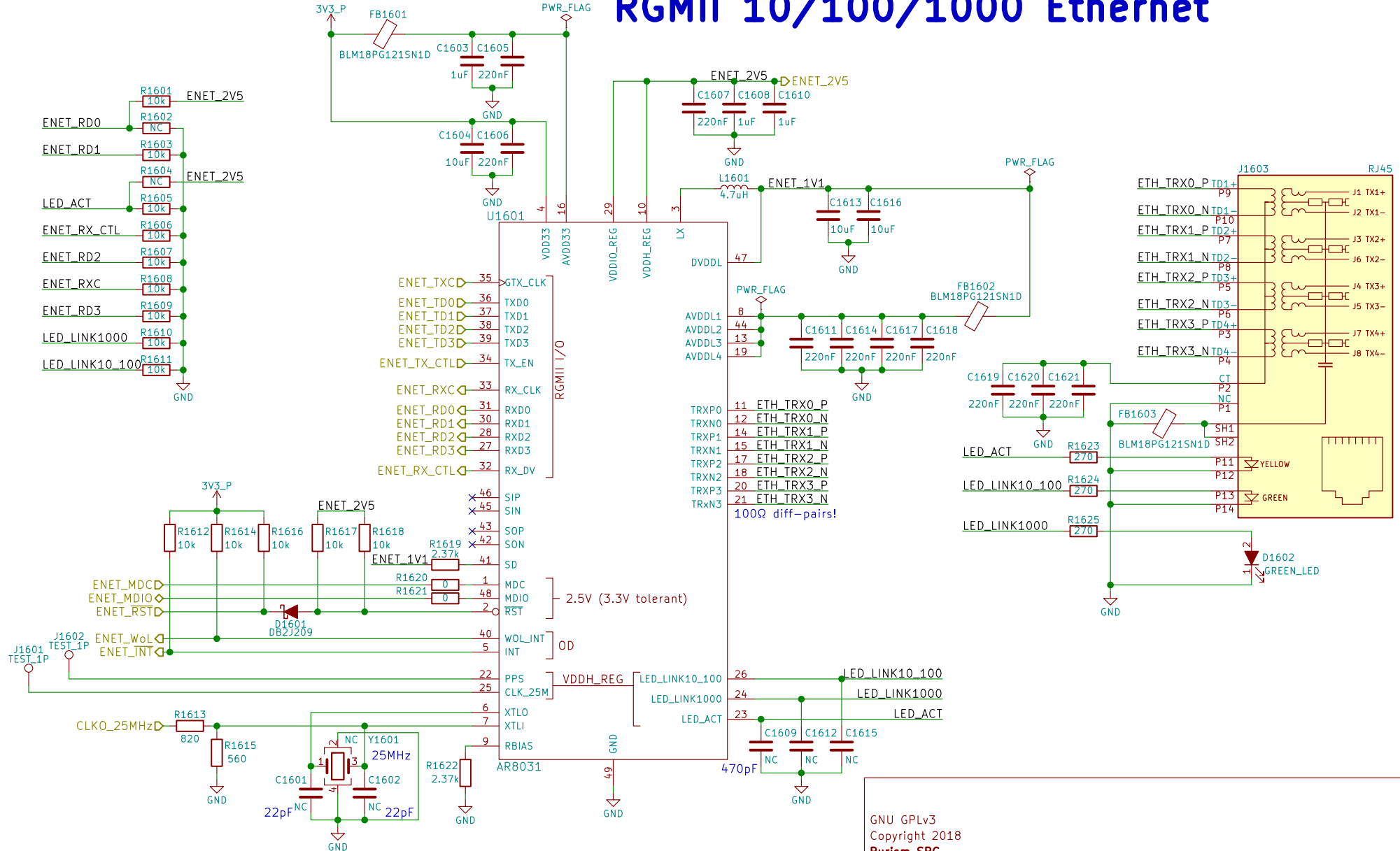
KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 14/23



RGMII 10/100/1000 Ethernet



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Purism SPC

Sheet: /Ethernet/

File: ethernet.sch

Title: Ethernet

Size: A4

Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 17/23

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!

USB_WLAN_DP
USB_WLAN_DN

Module: Table 23
Socket: Table 46

3V3_P

JP1701
1 NC
2 NC

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

RS9116 SUSCLK
is a GPIO (unused)
SUSCLK

W_DISABLE2

W_DISABLE1

M2_I2C_SDA

M2_I2C_SCL

M2_Key_E

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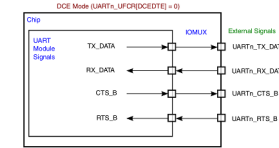
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GND

GND

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

Note:
Dual 2-input AND much more
available and cheaper than NOR

TODO:
Pin 54 on RS9116 is USB_VBUS Sink!!!

BT_DISABLE

WIFI_DISABLE

W_DISABLE2

W_DISABLE1

M2_I2C_SDA

M2_I2C_SCL

M2_Key_E

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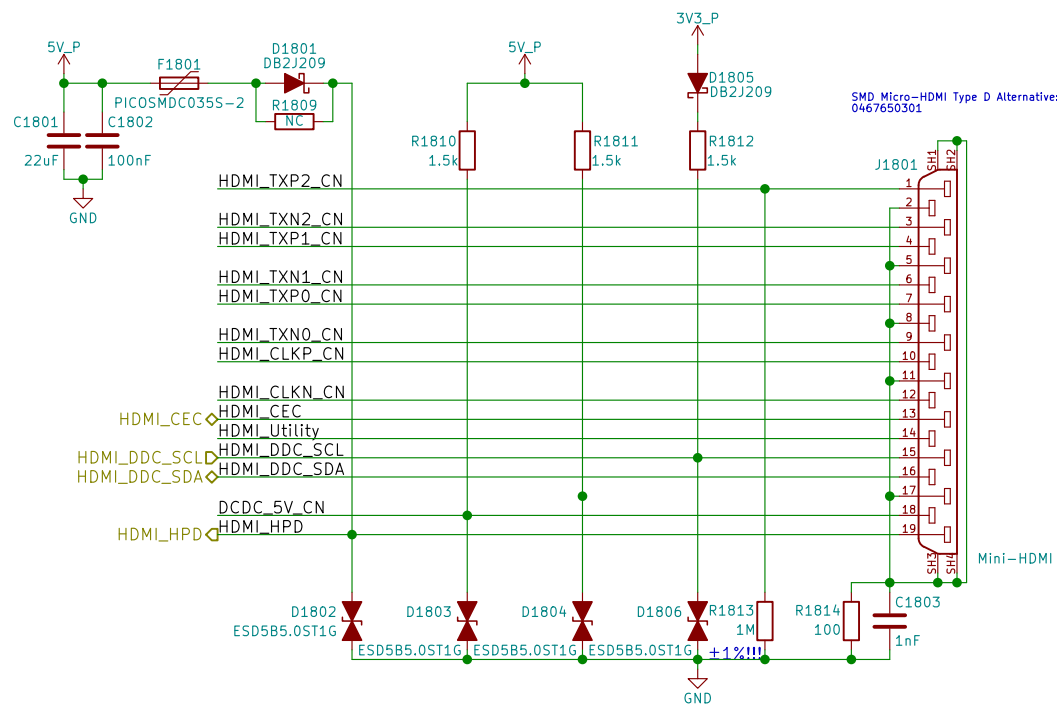
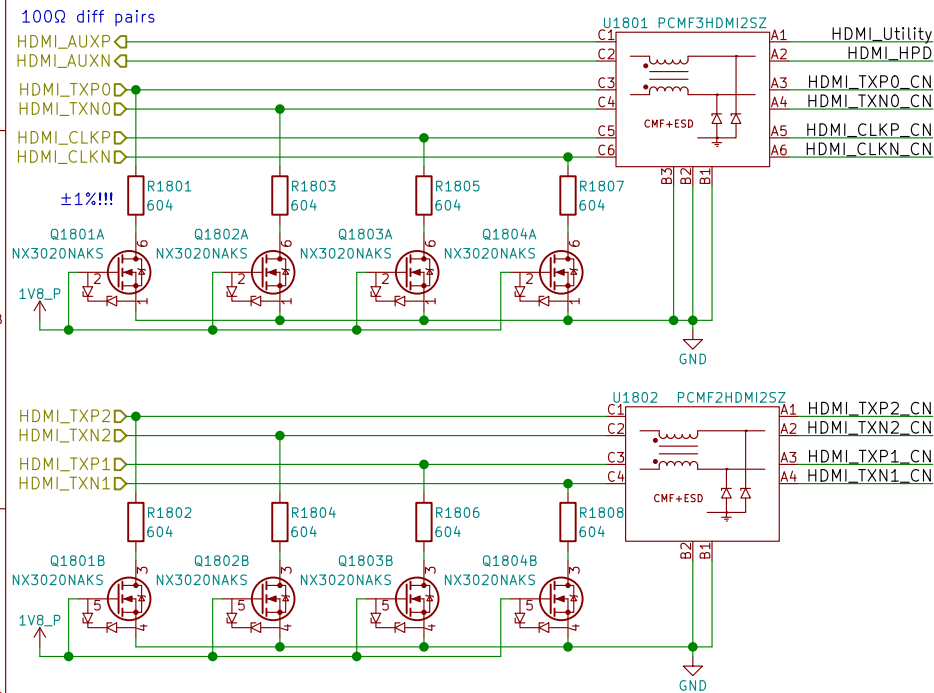
GND

GND

GND

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



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Purism SPC

Sheet: /HDMI/
File: hdmi.sch

Title: HDMI

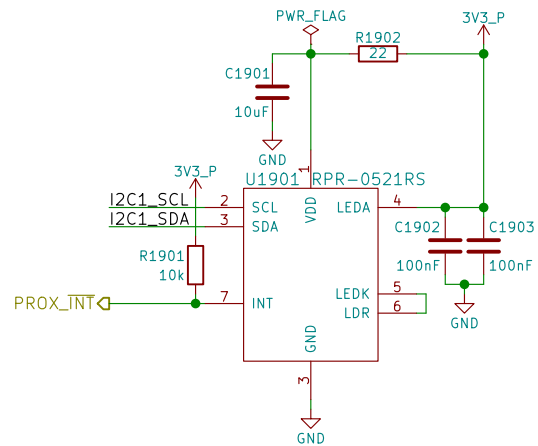
Size: A4	Date: 2018-05-23
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KiCad E.D.A.	kicad 4.0.6
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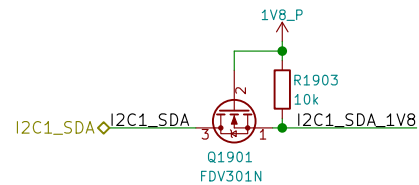
Rev: v0.1.0

Id: 19/23

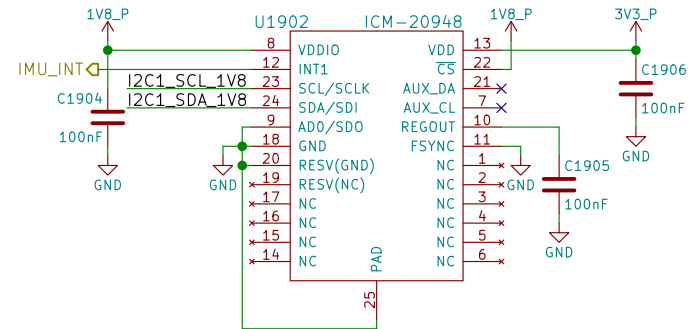
Proximity & Ambient Light



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

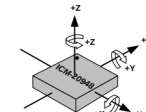


Figure 12. Orientation of Axes of Sensitivity and Polarity of Rotation

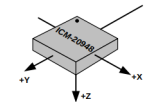


Figure 13. Orientation of Axes of Sensitivity for Magnetometer

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 Copyright 2018

Purism SPC

Sheet: /Sensors/
 File: sensors.sch

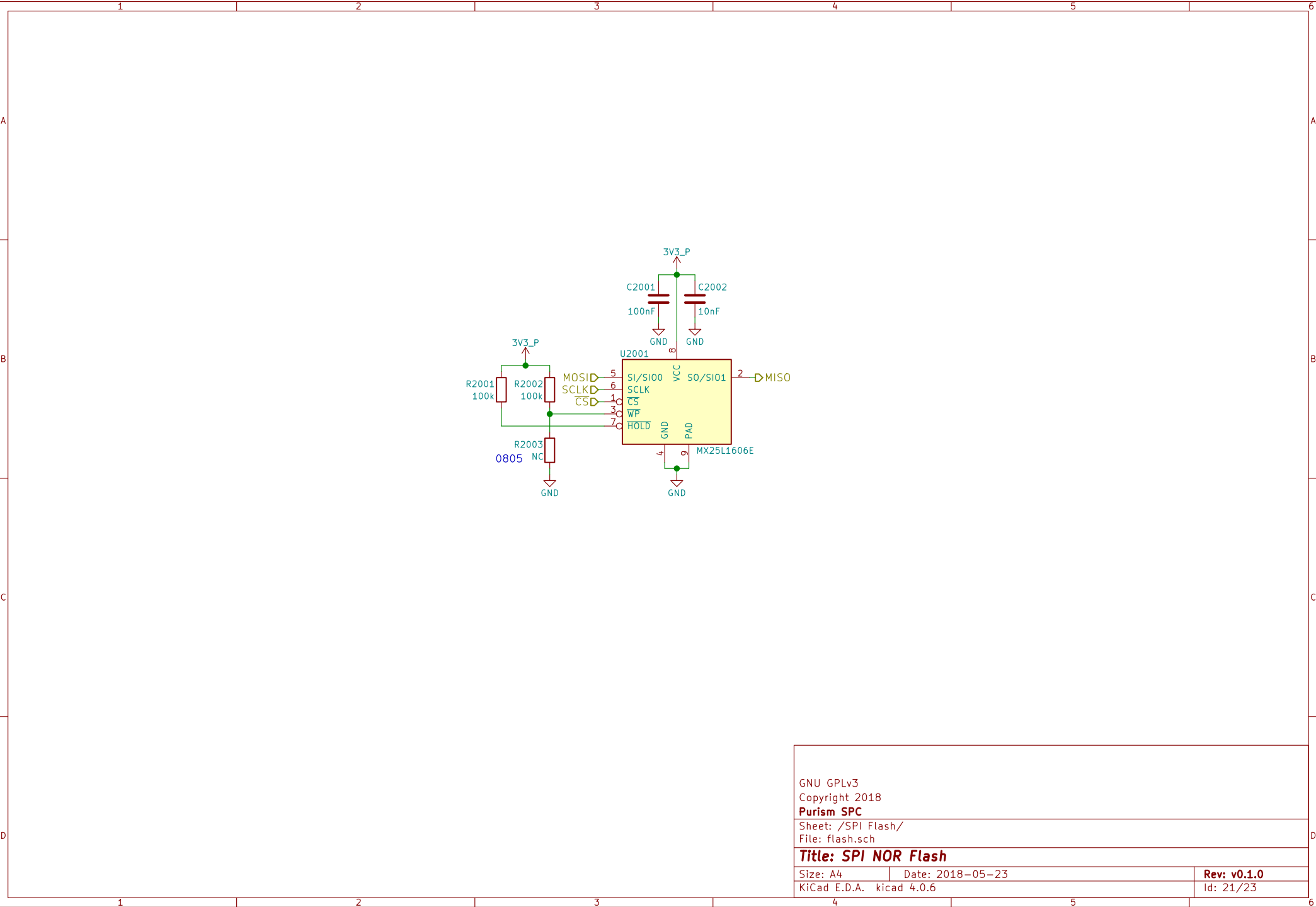
Title: Sensors

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 20/23



GNU GPLv3

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Purism SPC

Sheet: /SPI Flash/

File: flash.sch

Title: SPI NOR Flash

Size: A4

Date: 2018-05-23

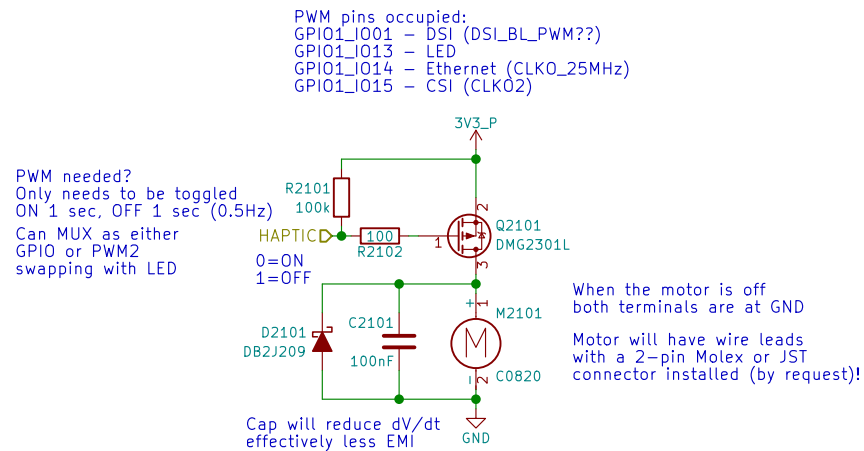
Rev: v0.1.0

KiCad E.D.A. kicad 4.0.6

Id: 21/23



Id: 22/23



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

Alibaba Alternative Motor:
https://www.alibaba.com/product-detail/Coin-motor-vibration-dc-motor-cellphone_1994583657.html?spm=a2700.8443308.0.0.5aa13e5f1wxHgs

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Purism SPC

Sheet: /Haptic Motor/
 File: haptic.sch

Title: Haptic/Vibration Motor

Size: A4 Date: 2018-05-23

KiCad E.D.A. kicad 4.0.6

Rev: v0.1.0

Id: 23/23