

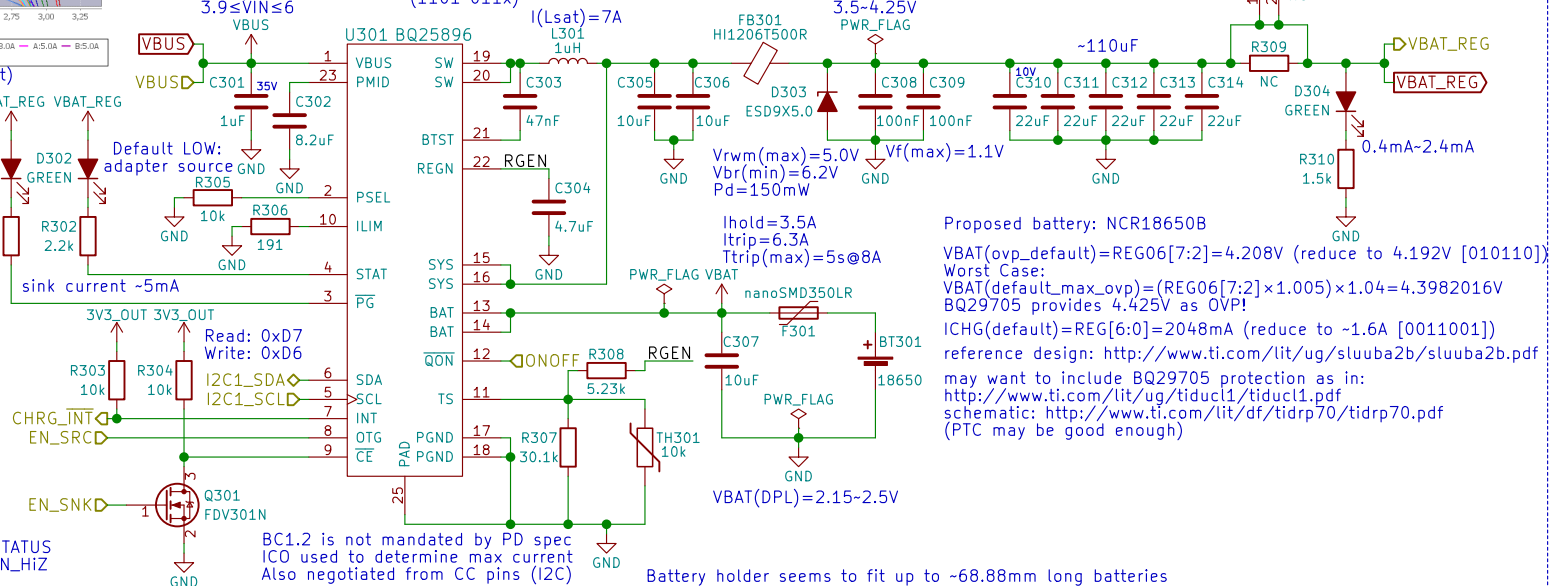
(interpret RSOC% based on this plot)

Drawing ~320mA, or consuming  $\leq 1.152W$ , should give close to 10 hours going from 100% to 0% charge

VBAT\_REG VBAT\_REG  
 D301 GREEN D302 GREEN  
 R301 2.2k R302 2.2k  
 sink current ~5mA

use AUTO\_DPDM\_EN to auto-detect IINLIM

$1.658 \leq ILIM \leq 2.063$   
 $ILIM(nom) \approx 1.859A$   
 $3.9 \leq VIN \leq 6$   
 7-bit Slave Address: 0x6B (1101 011x)



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)

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

Battery

**Purism**

Copyright 2018 GNU GPLv3

Sheet: /Battery/  
 File: battery.sch

Size: A4 Date: 2018-07-17  
 KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm

angus.ainslie@puri.sm

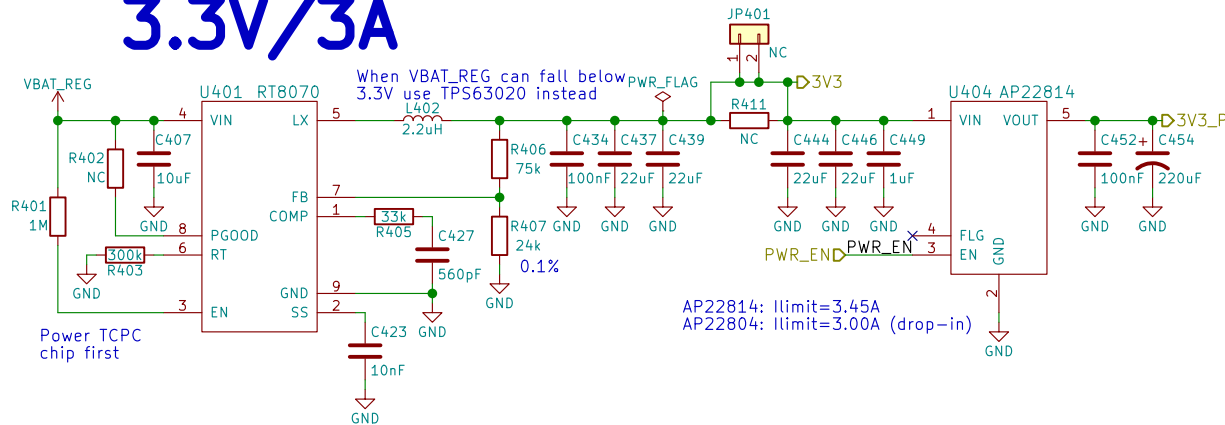
nicole.farber@puri.sm

christian.schilmoeller@puri.sm

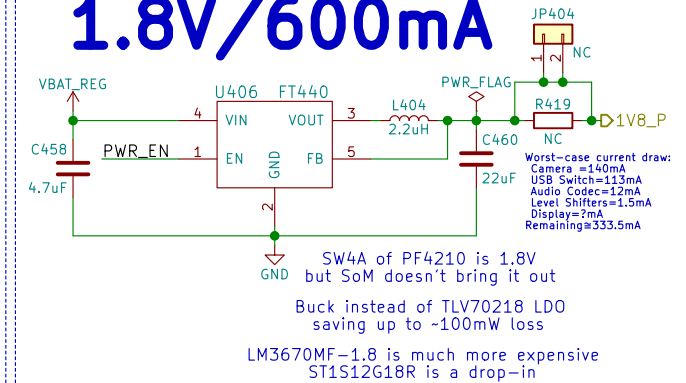
Rev: v0.1.0

Id: 3/24

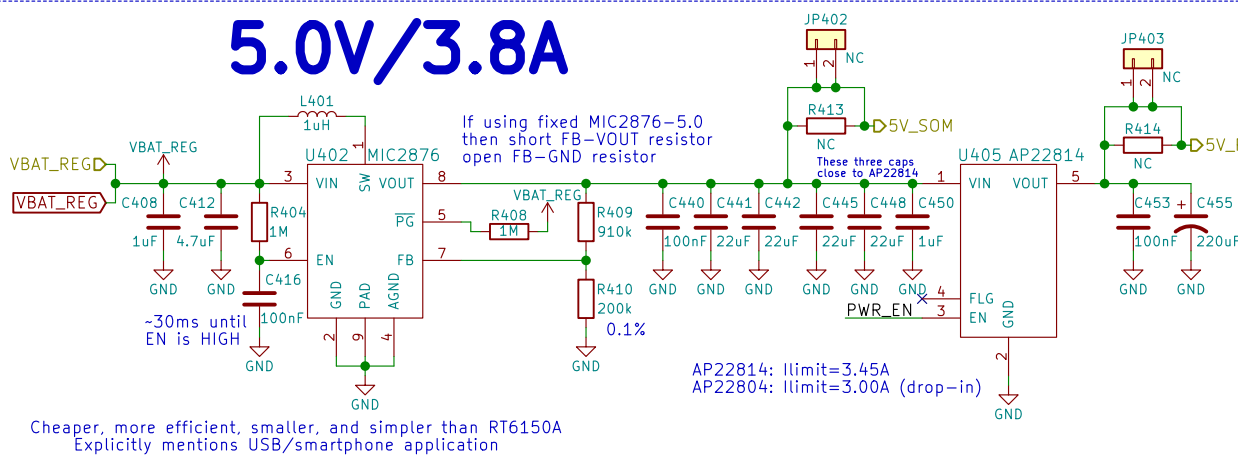
## 3.3V/3A



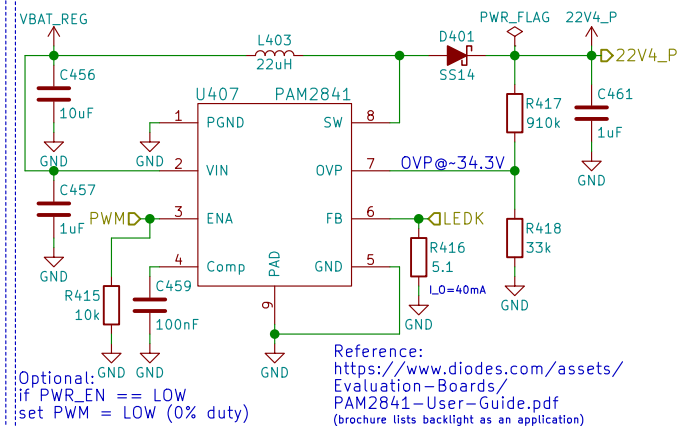
## 1.8V/600mA



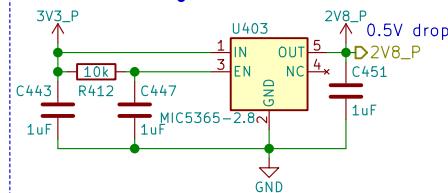
## 5.0V/3.8A



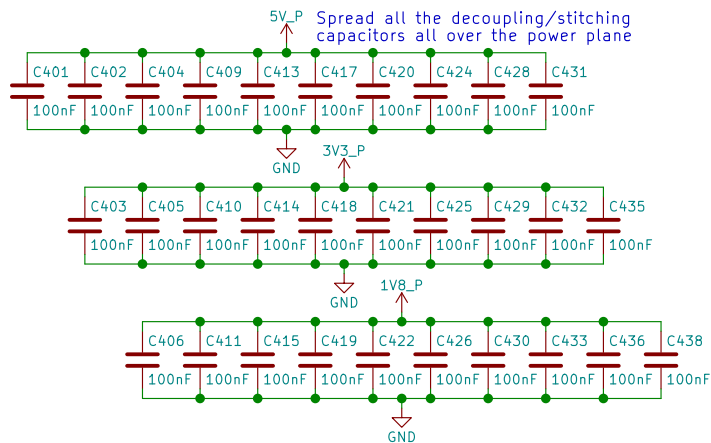
## 22.4V/40mA



## 2.8V/150mA



## Power



Power

**Purism**

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Sheet: /Power/  
File: power.sch

Size: A4 Date: 2018-07-17  
KiCad E.D.A. kicad 5.0.0

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christian.schilmoeller@puri.sm

Rev: v0.1.0

Id: 4/24

# Boot Config



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 <sup>1</sup>	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 Configuration



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Sheet: /Boot Config/  
File: boot.sch

Size: A4  
KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm

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nicole.farber@puri.sm

christian.schilmoeller@puri.sm

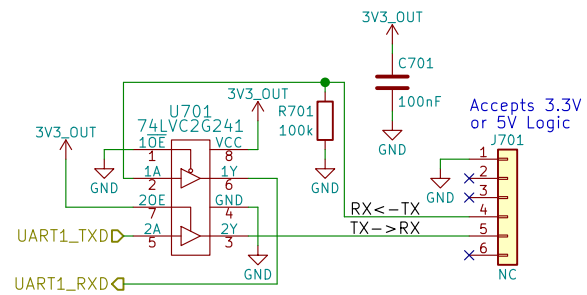
Rev: v0.1.0

Id: 5/24

[illegible]

<div> <div> <div>RTC</div> <div>  <div>Purism</div> </div> </div> <div> <div>eric.kuzmenko@puri.sm</div> <div>angus.ainslie@puri.sm</div> <div>nicole.faeber@puri.sm</div> <div>christian.schilmoeller@puri.sm</div> </div> </div>	
Copyright 2018 GNU GPLv3	
Sheet: /RTC/	
File: rtc.sch	
Size: A4	Date: 2018-07-17
KiCad E.D.A.    kicad 5.0.0	Rev: v0.1.0 Id: 6/24

# UART Debug



## UART Debug



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Sheet: /UART Debug/

File: uart.sch

Size: A4

Date: 2018-07-17

KiCad E.D.A. kicad 5.0.0

Rev: v0.1.0

Id: 7/24

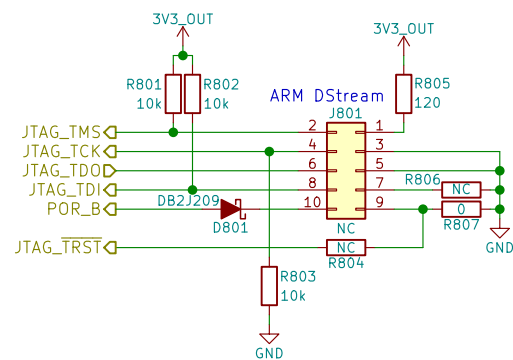
eric.kuzmenko@puri.sm

angus.ainstlie@puri.sm

nicole.farber@puri.sm

christian.schilmoeller@puri.sm

# JTAG



JTAG



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nicole.faerber@puri.sm

christian.schilmoeller@puri.sm

Sheet: /JTAG/

File: jtag.sch

Size: A4	Date: 2018-07-17
----------	------------------

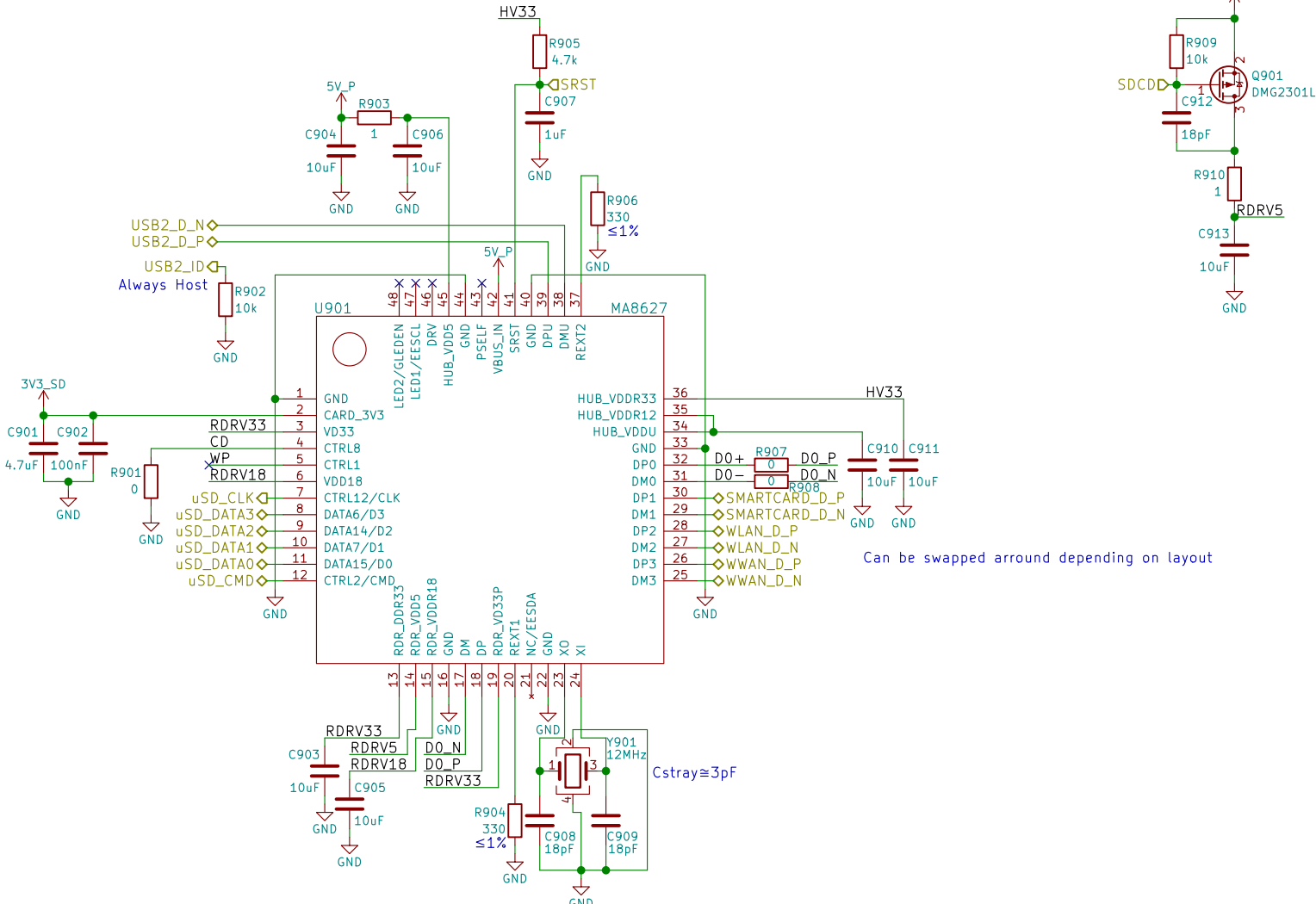
Size: A1	Date: 2
KiCad E.D.A.	kiCad 5.0.0

Rev: v0.1.0

Id: 8/24



# USB Hub + SDIO Bridge



## USB Hub + SDIO Bridge



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Sheet: /USB Hub + SDIO Bridge/

Size: A4

Date: 2018-07-17

KiCad E.D.A.	kicad 5.0.0
--------------	-------------

eric.kuzmenko@puri.sm

angus.ainslie@puri.sm

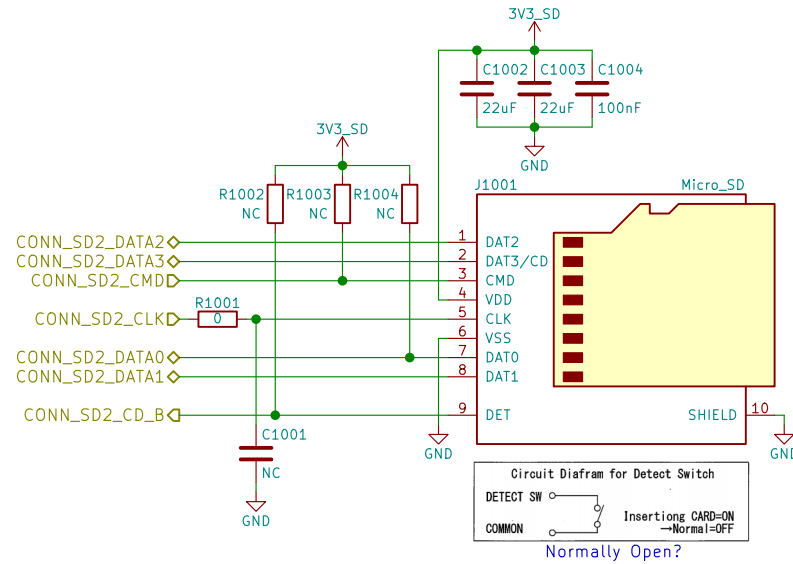
nicole.faerber@puri.sm

christian.schilmoeller@puri.sm

Rev: v0.1.0

Id: 9/24

# μSD



uSD Card



**Purism**

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Sheet: /uSD Card/

File: sd.sch

Size: A4 Date: 2018-07-17

KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm

angus.ainstlie@puri.sm

nicole.farber@puri.sm

christian.schilmoeller@puri.sm

Rev: v0.1.0

Id: 10/24

# MIPI



MIPI



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Sheet: /MIPI/  
File: mipi.sch

Size: A4 Date: 2018-07-17  
KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm  
angus.ainstlie@puri.sm  
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christian.schilmoeller@puri.sm

Rev: v0.1.0  
Id: 11/24



Id: 13/24

# Buttons & LED



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)



## Buttons & LED



Copyright 2018 GNU GPLv3

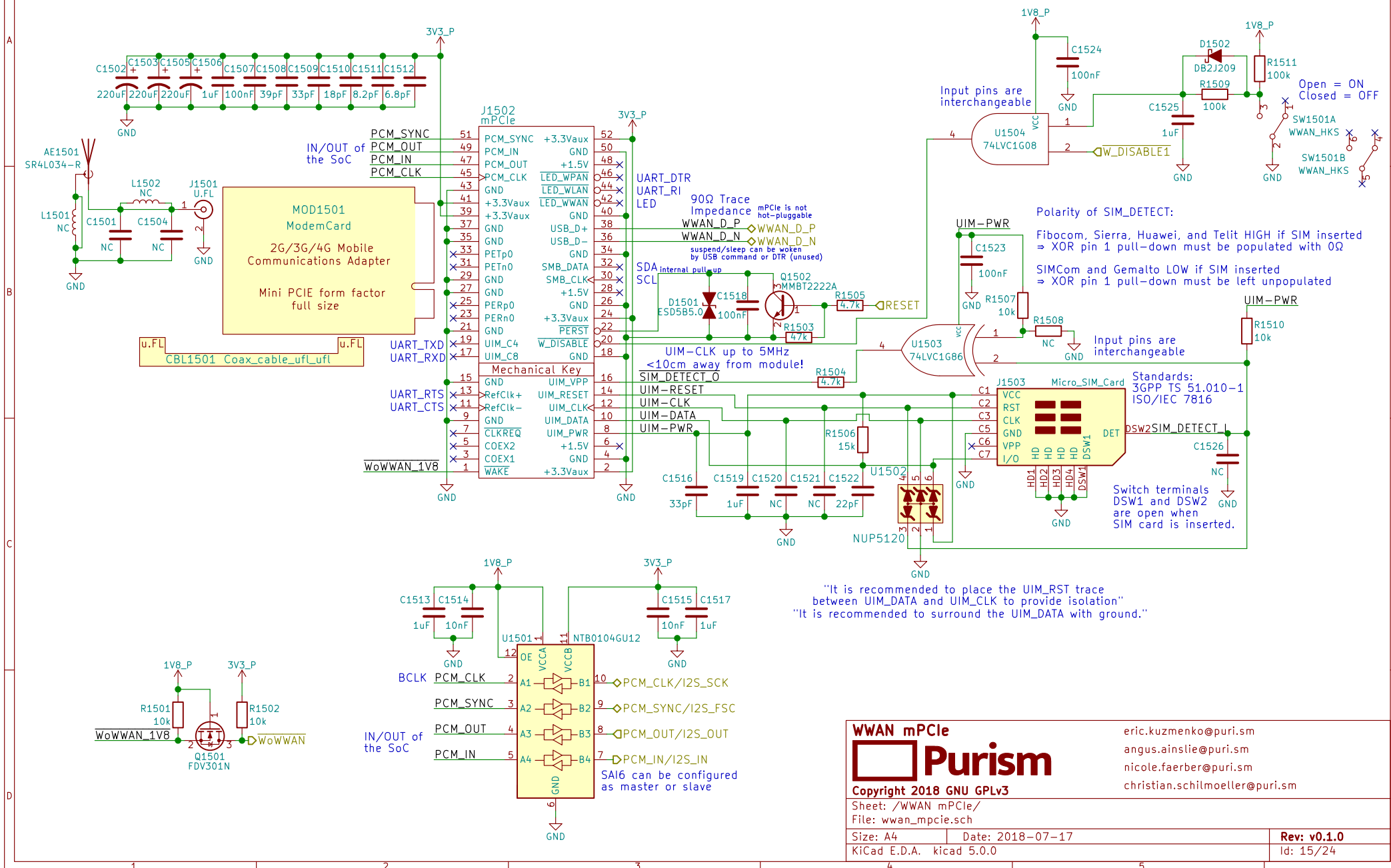
Sheet: /Buttons & LED/  
File: buttons\_led.sch

Size: A4 Date: 2018-07-17  
KiCad E.D.A. kicad 5.0.0

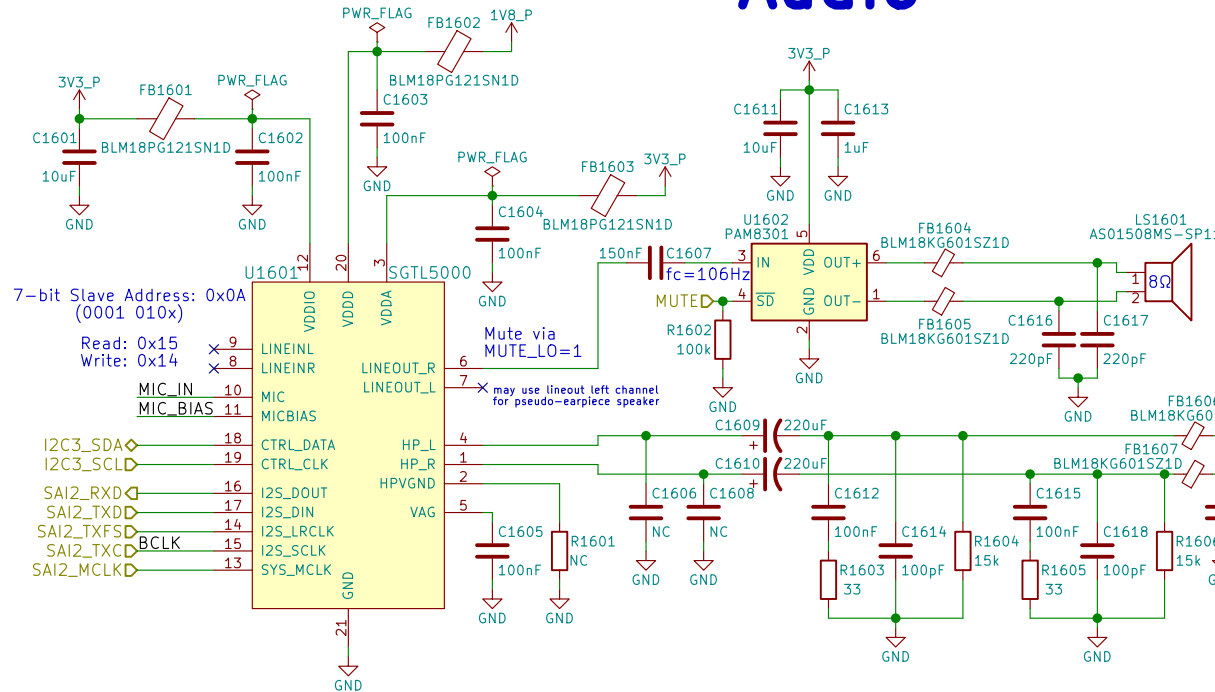
eric.kuzmenko@puri.sm  
angus.ainstie@puri.sm  
nicole.farber@puri.sm  
christian.schilmoeller@puri.sm

Rev: v0.1.0  
Id: 14/24

# WWAN mPCIe

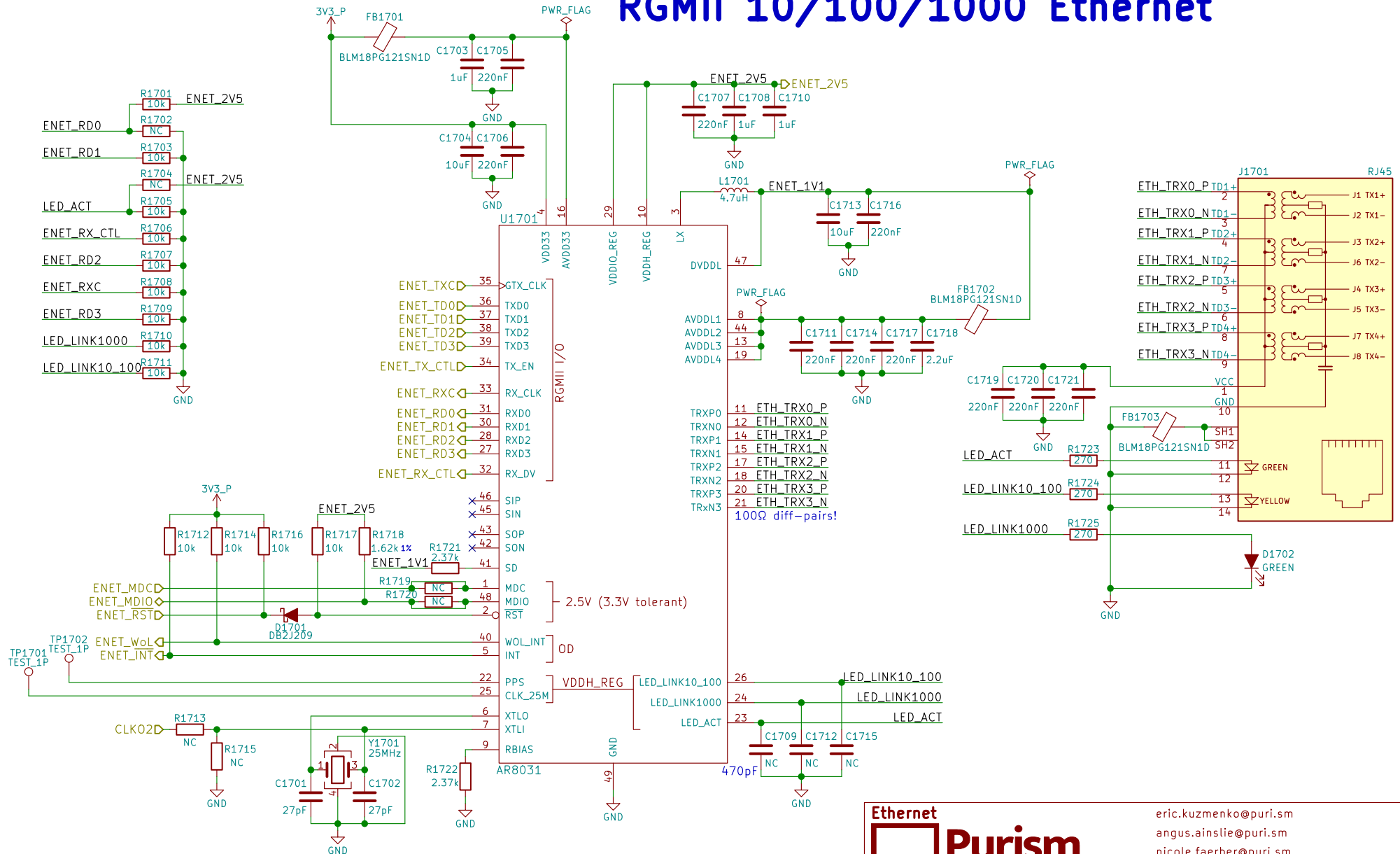


# Audio





# RGMII 10/100/1000 Ethernet



Ethernet

**Purism**

Copyright 2018 GNU GPLv3

Sheet: /Ethernet/  
File: ethernet.sch

Size: A4 Date: 2018-07-17  
KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm  
angus.ainslie@puri.sm  
nicole.farber@puri.sm  
christian.schilmoeller@puri.sm

Rev: v0.1.0  
Id: 17/24

# WLAN+BT M.2

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 if USB used

WLAN\_D\_P  
WLAN\_D\_N  
WIFI\_CLK  
WIFI\_CMD  
WIFI\_DATA0  
WIFI\_DATA1  
WIFI\_DATA2  
WIFI\_DATA3  
WIFI\_WAKE

1V8\_P  
VIH=2.31V

WIFI\_RST

W\_DISABLE1

RedPine RS9116  
has 100k pull-up to  
3.3V making SDIO\_RST  
~2.55V when HIGH

MOD1801  
WifiBTCard

WiFi + Bluetooth

M.2 Form Factor

Key ID "E"

width: 22 mm

length: 30 mm

W\_DISABLE2

W\_DISABLE1

M2\_I2C\_SDA

M2\_I2C\_SCL

WIFI\_DISABLE

BT\_DISABLE

WIFI\_DISABLE

BT\_DISABLE

WIFI\_DISABLE

BT\_DISABLE

WIFI\_DISABLE

BT\_DISABLE

WIFI\_DISABLE

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BT\_DISABLE

WIFI\_DISABLE

BT\_DISABLE

Socket: Table 46  
Module: Table 23

3V3\_P

M.2 Key E

R1802

J1803

NC

Key E

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Socket: Table 46  
Module: Table 23

3V3\_P

M.2 Key E

R1802

J1803

NC

Key E

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Socket: Table 46  
Module: Table 23

3V3\_P

M.2 Key E

R1802

J1803

NC

Key E

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Socket: Table 46  
Module: Table 23

3V3\_P

M.2 Key E

R1802

J1803

NC

Key E

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54

Socket: Table 46  
Module: Table 23

3V3\_P

M.2 Key E

R1802

J1803

NC

Key E

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4

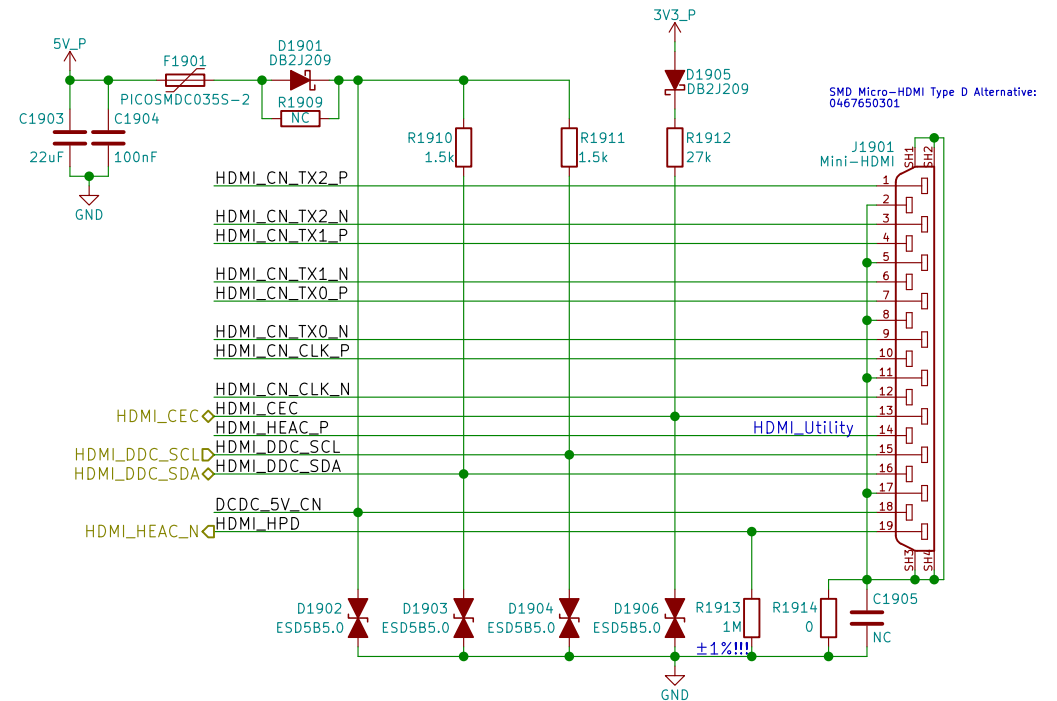
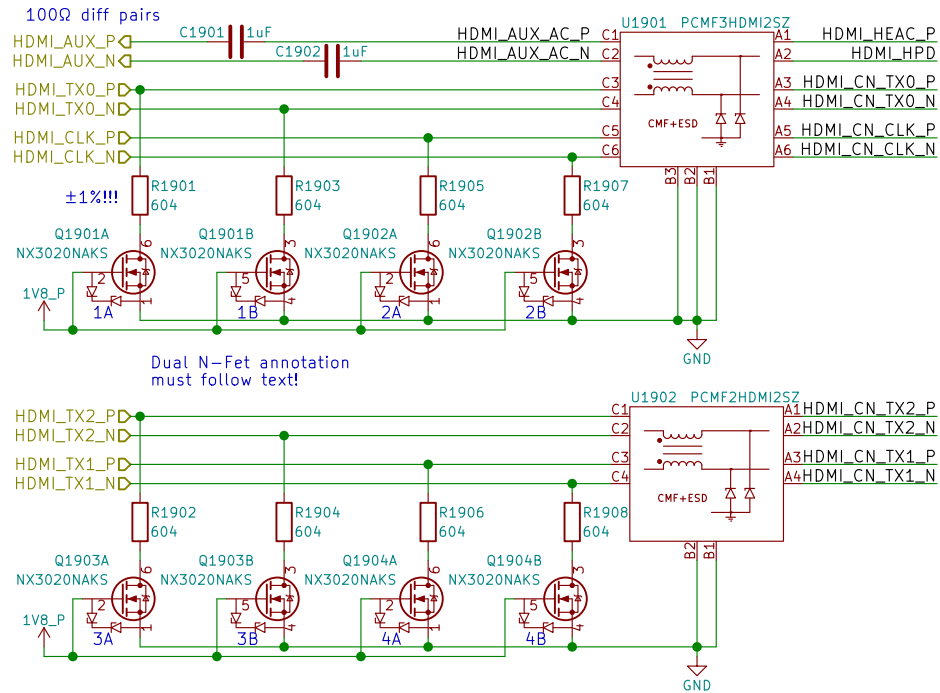
5

6

7</

TUSB1046 can be used for DP over USB-C

# HDMI



HDMI



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Sheet: /HDMI/  
File: hdmi.sch

Size: A4 Date: 2018-07-17  
KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm  
angus.ainstie@puri.sm  
nicole.farber@puri.sm  
christian.schilmoeller@puri.sm

Rev: v0.1.0  
Id: 19/24

1

## B



C

D

## 1

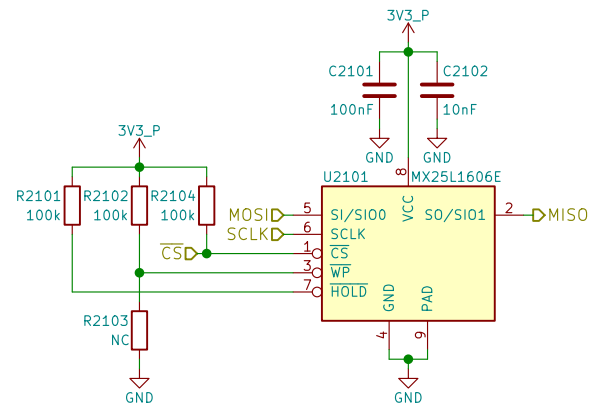


1



## Id: 20/24

# SPI NOR Flash



## SPI NOR Flash



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Sheet: /SPI Flash/  
File: flash.sch

Size: A4 Date: 2018-07-17

KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm

angus.ainstlie@puri.sm

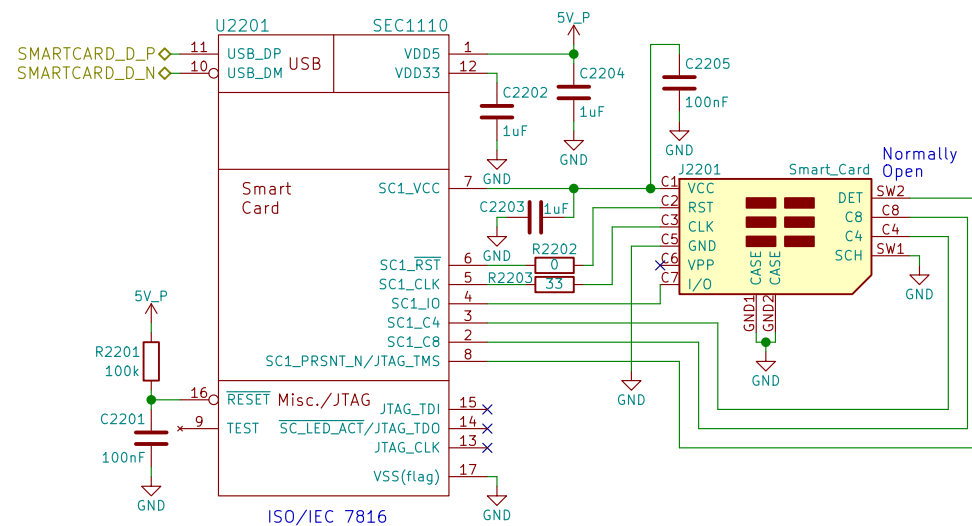
nicole.farber@puri.sm

christian.schilmoeller@puri.sm

Rev: v0.1.0

Id: 21/24

# Smart Card



Smart Card



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Sheet: /Smart Card/

File: smartcard.sch

Size: A4 Date: 2018-07-17

KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm

angus.ainstlie@puri.sm

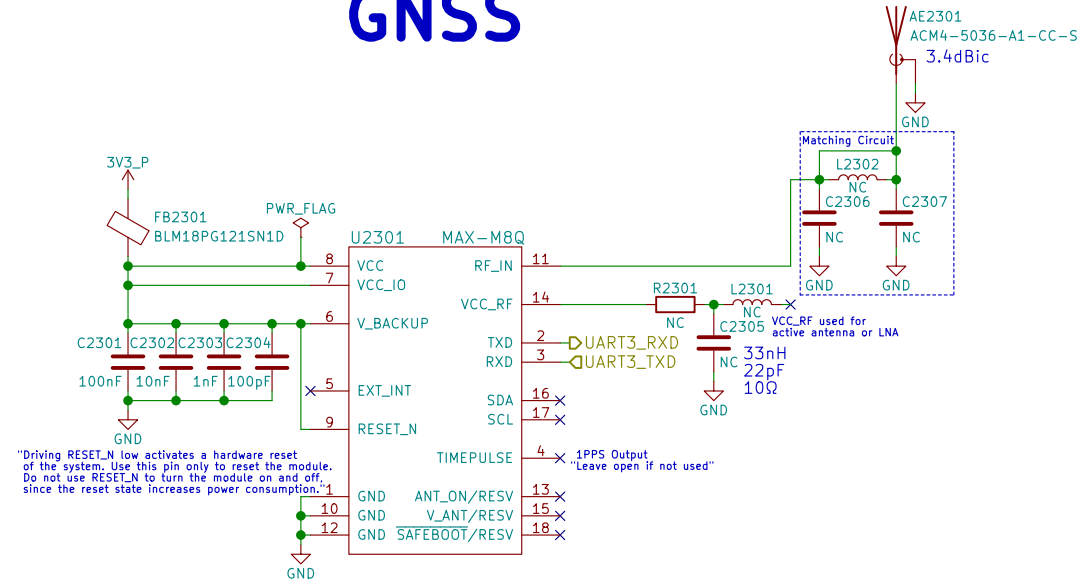
nicole.farber@puri.sm

christian.schilmoeller@puri.sm

Rev: v0.1.0

Id: 22/24

# GNSS



References:  
[https://www.u-blox.com/sites/default/files/MAX-M8\\_HardwareIntegrationManual\\_L%28UBX-13004876%29.pdf](https://www.u-blox.com/sites/default/files/MAX-M8_HardwareIntegrationManual_L%28UBX-13004876%29.pdf)  
[https://www.u-blox.com/sites/default/files/MAX-8-M8-FW3\\_HardwareIntegrationManual\\_L%28UBX-15030059%29.pdf](https://www.u-blox.com/sites/default/files/MAX-8-M8-FW3_HardwareIntegrationManual_L%28UBX-15030059%29.pdf)

GNSS



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Sheet: /GNSS/  
 File: gnss.sch

Size: A4 Date: 2018-07-17  
 KiCad E.D.A. kicad 5.0.0

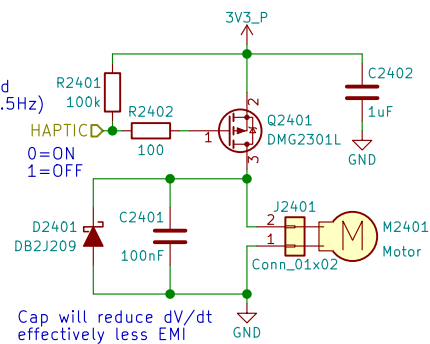
eric.kuzmenko@puri.sm  
 angus.ainstlie@puri.sm  
 nicole.ferber@puri.sm  
 christian.schilmoeller@puri.sm

Rev: v0.1.0  
 Id: 23/24

# Haptic Motor

PWM pins occupied:  
 GPIO1\_I001 - LCD Backlight  
 GPIO1\_I013 - LED  
 GPIO1\_I014 - Ethernet (CLKO\_25MHz)  
 GPIO1\_I015 - 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)  
 Metal housing is floating  
 thick adhesive layer underneath  
 (not connected to either pin)

Haptic/Vibration Motor



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Sheet: /Haptic Motor/  
 File: haptic.sch

Size: A4 Date: 2018-07-17  
 KiCad E.D.A. kicad 5.0.0

eric.kuzmenko@puri.sm  
 angus.ainslie@puri.sm  
 nicole.farber@puri.sm  
 christian.schilmoeller@puri.sm

Rev: v0.1.0  
 Id: 24/24