

Estimated remaining capacity					
Voltage	AW 18650 2600mAh (black)	Sanyo 18650 2600mAh (Red)	Panasonic CGR18650CH 2250mAh	Panasonic NCR18650A 3100mAh	Panasonic NCR18650B 3400mAh
4.2	100%	100%	100%	100%	100%
4.1	92%	92%	94%	94%	94%
4.0	78%	79%	85%	83%	84%
3.9	61%	61%	76%	73%	74%
3.8	43%	44%	66%	60%	62%
3.7	14%	15%	54%	52%	53%
3.6	3%	5%	26%	38%	39%
3.5	1%	2%	12%	20%	22%
3.4	0%	1%	5%	11%	13%
3.3	0%	0%	2%	1%	3%
3.2	0%	0%	0%	0%	0%

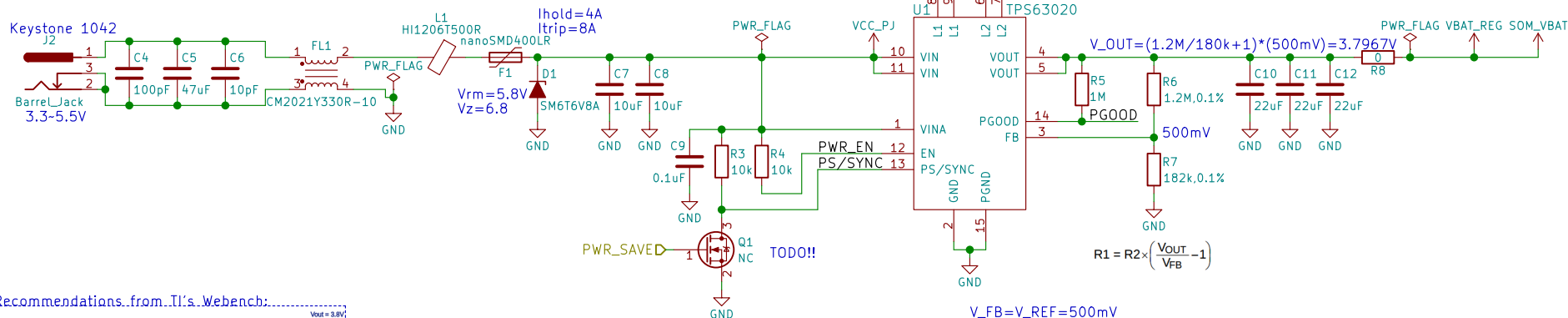
Measured 1 hour after discharge at 1A

⇒ 18650 batteries don't reach 3.3V until depleted

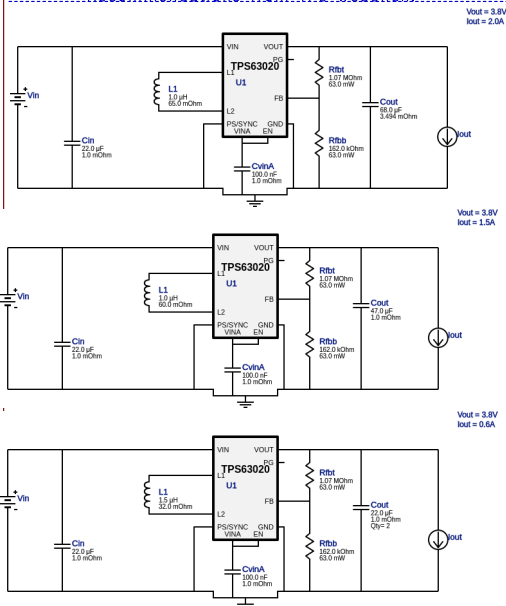
$$I_{PEAK} = \frac{I_{out}}{\eta \times (1 - D)} + \frac{V_{in} \times D}{2 \times f \times L}$$

$$= \frac{2A}{0.9 \times \left(1 - \frac{3.7967V - 3.0V}{3.7967V}\right)} + \frac{3.0V \times \left(\frac{3.7967V - 3.0V}{3.7967V}\right)}{2 \times 2.4MHz \times 1.5\mu H} = 2.899803756A$$

Calculated  $I_{peak} \approx 2.9A$   
 $I_L(sat) = 4.4A @ 20\%$  drop  
 $\Delta I_L \approx 0.17A$



Recommendations from TI's Webench:



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Purism SPC

Sheet: /Battery/

File: battery.sch

**Title: Battery**

Size: A4

Date: 2018-04-09

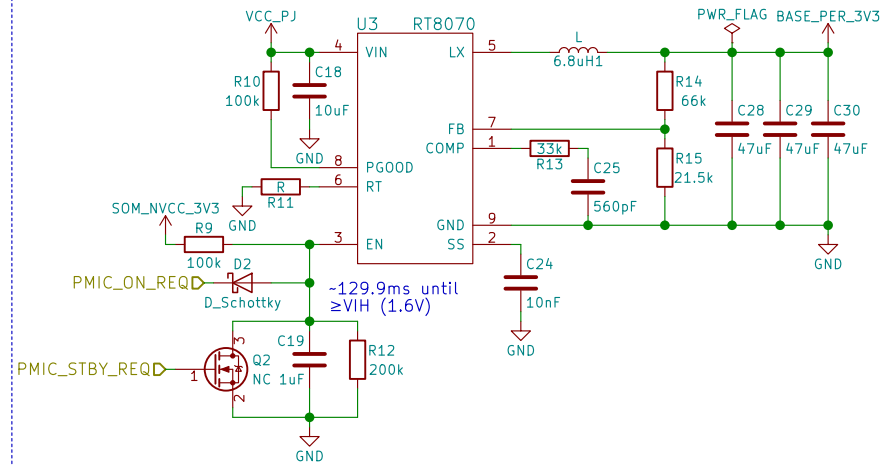
KiCad E.D.A. kicad 4.0.7

**Rev: v0.1.0**

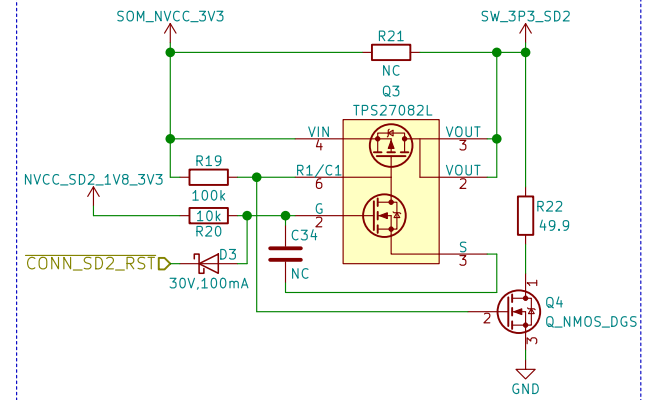
Id: 2/13

## 3.3V/3A

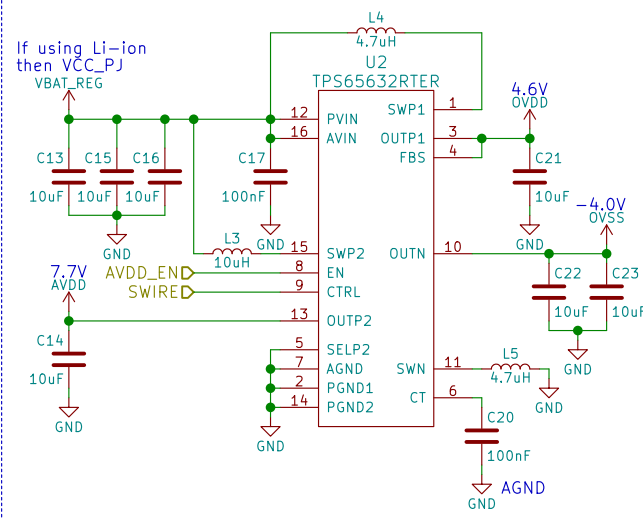
When VBAT can fall below 3.3V use TPS63020 instead!



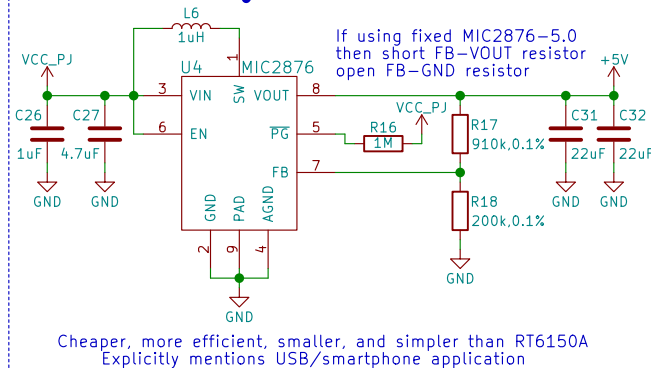
## SD POWER



## AMOLED POWER

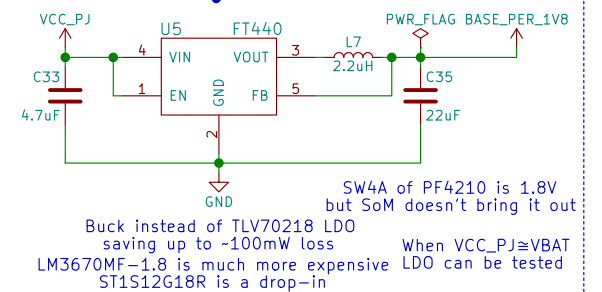


## 5.0V/800mA



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

## 1.8V/600mA



SW4A of PF4210 is 1.8V but SoM doesn't bring it out  
Buck instead of TLV70218 LDO saving up to ~100mW loss  
LM3670MF-1.8 is much more expensive LDO can be tested  
ST1S12G18R is a drop-in

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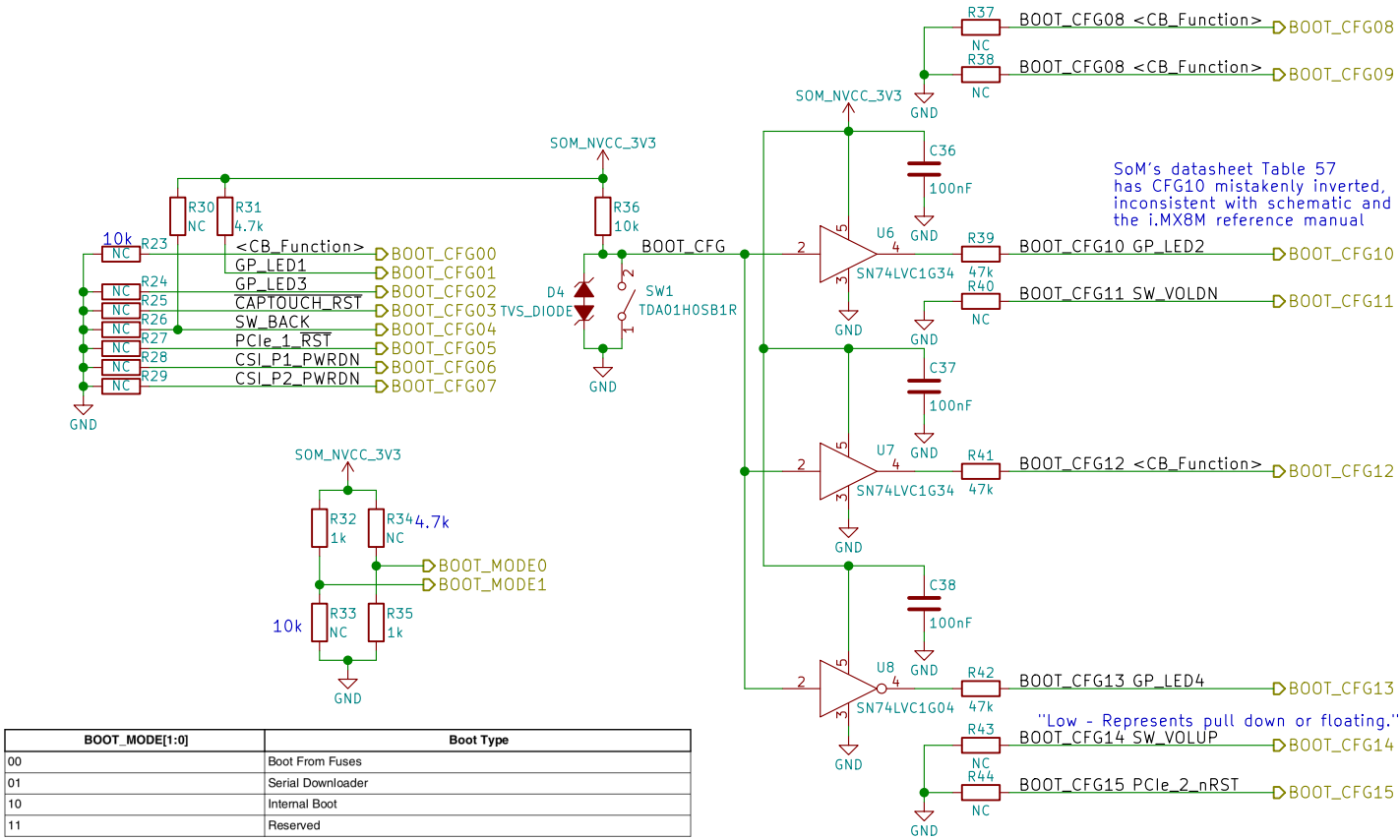
Sheet: /Power/  
File: power.sch

Title: Power

Size: A4 Date: 2018-04-09  
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Rev: v0.1.0  
Id: 3/13

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



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**Purism SPC**

Sheet: /Boot Config/  
File: boot.sch

**Title: Boot Configuration**

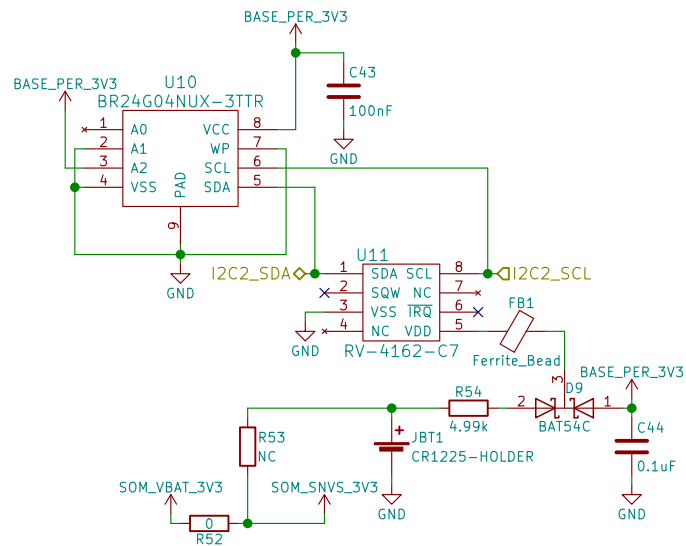
Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 4/13

Id: 5/13



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**Purism SPC**

Sheet: /RTC Battery/  
File: rtc.sch

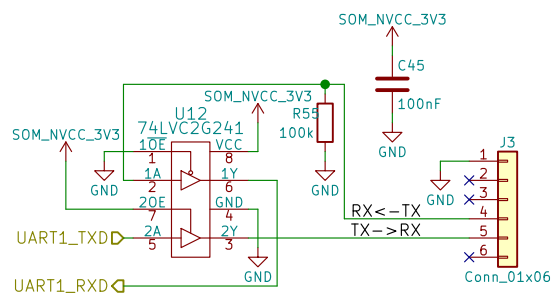
**Title: RTC Battery**

Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 6/13



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**Purism SPC**

Sheet: /UART Debug/  
File: uart.sch

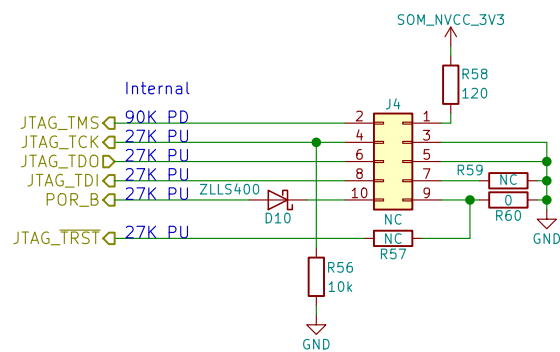
**Title: UART Debug**

Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 7/13



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**Purism SPC**

Sheet: /JTAG/

File: jtag.sch

**Title: JTAG**

Size: A4

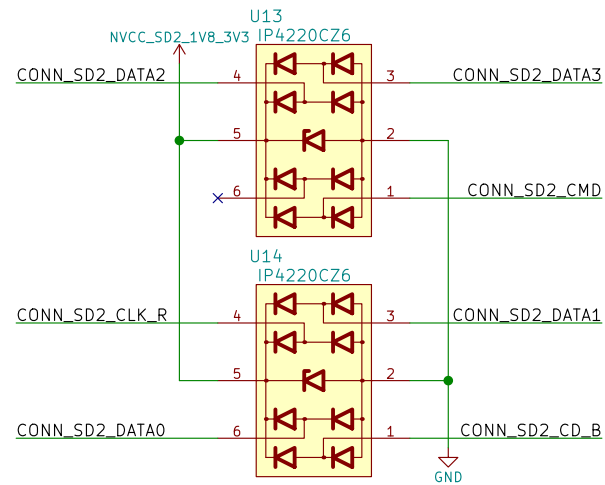
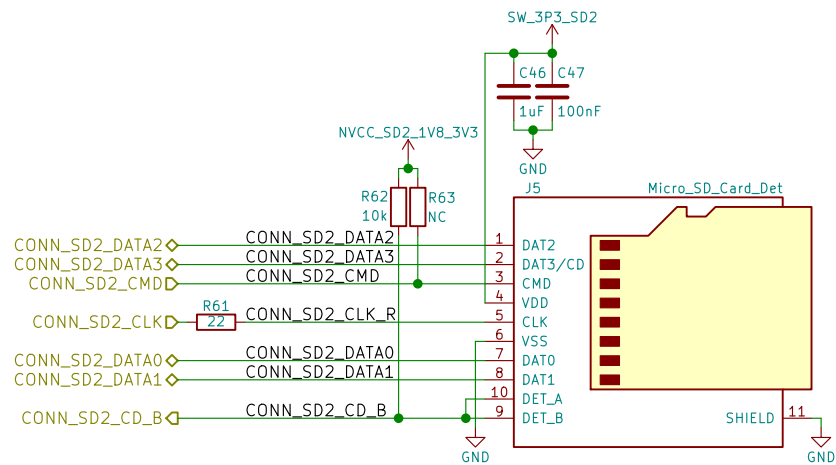
Date: 2018-04-09

**Rev: v0.1.0**

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Id: 8/13





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**Purism SPC**

Sheet: /uSD Card/

File: sd.sch

**Title: uSD Card**

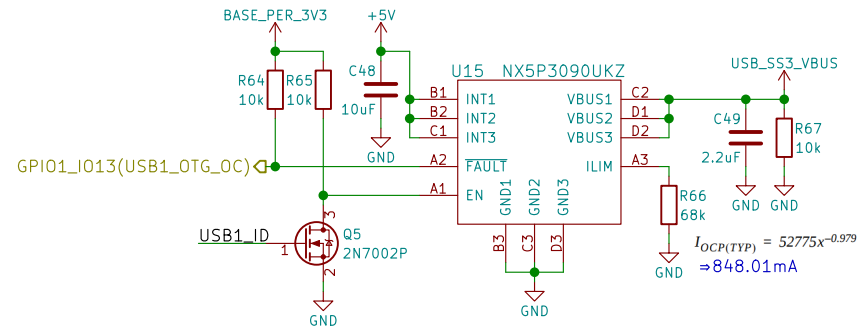
Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 9/13

USB1\_ID



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**Purism SPC**

Sheet: /USB/  
File: usb.sch

**Title: USB**

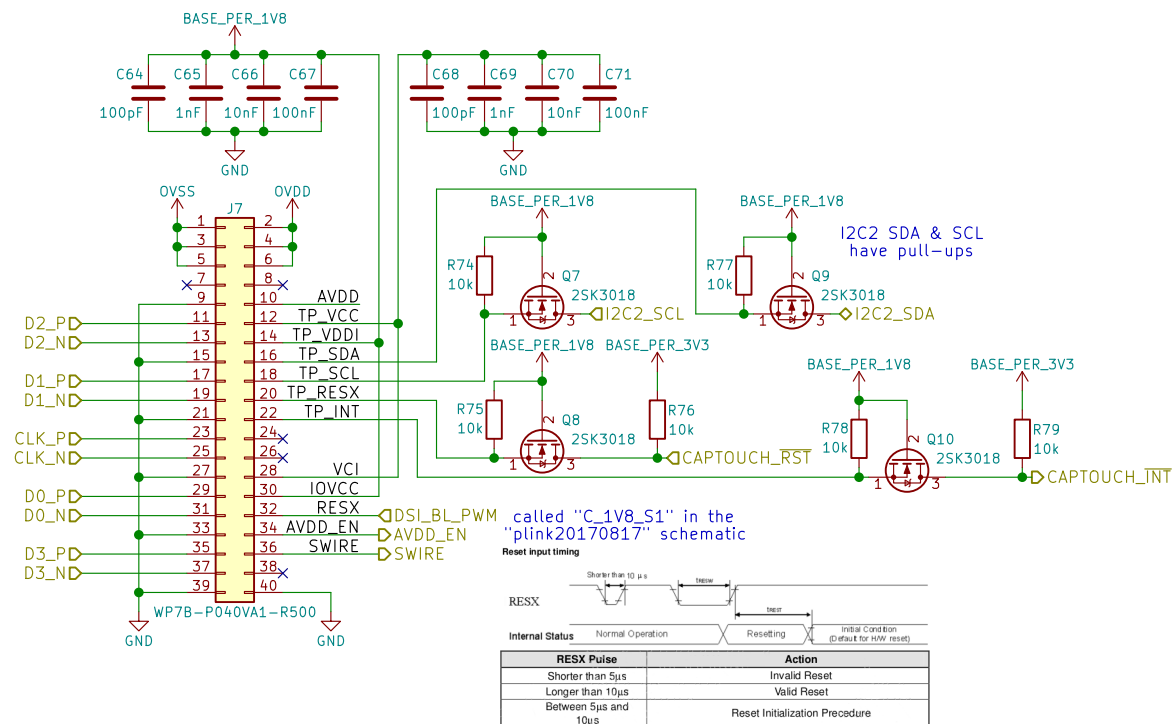
Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 10/13

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



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**Purism SPC**

Sheet: /MIPI DSI/  
File: mipi\_dsi.sch

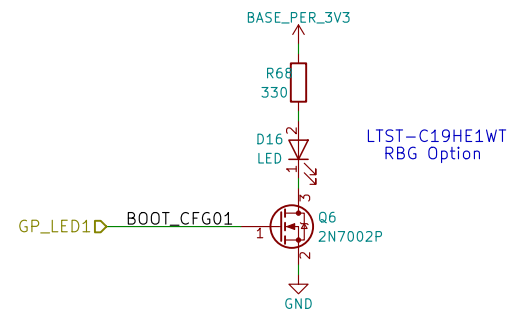
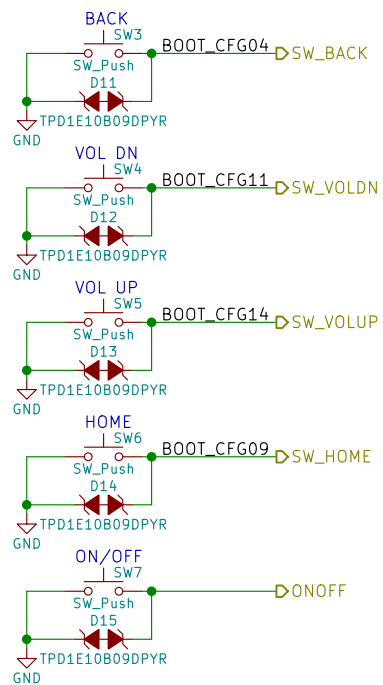
**Title: MIPI DSI**

Size: A4 Date: 2018-04-09

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**Rev: v0.1.0**

Id: 11/13



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**Purism SPC**

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

**Title: Buttons & LED**

Size: A4 Date: 2018-04-09

KiCad E.D.A. kicad 4.0.7

**Rev: v0.1.0**

Id: 12/13

Rev: v0.1.0  
Id: 13/13