

Estimated remaining capacity					
Voltage	AW 18650 2600mAh (black)	Sanyo 18650 2600mAh (Red)	Panasonic CCR18650CH 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%

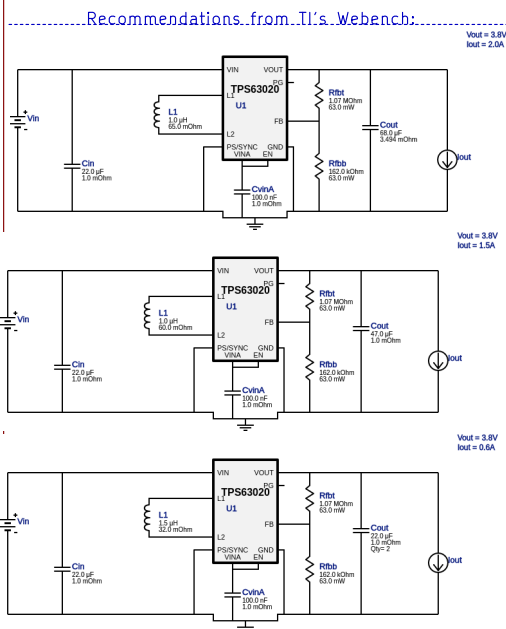
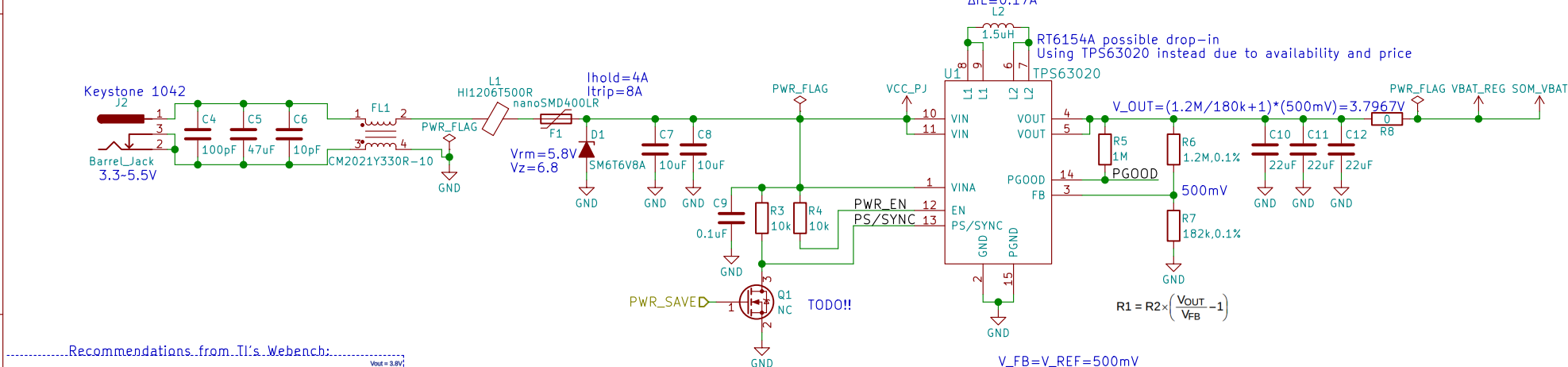
Measured 1 hour after discharge at 1A

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



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Purism SPC

Sheet: /Battery/

File: battery.sch

Title: Battery

Size: A4 Date: 2018-04-11

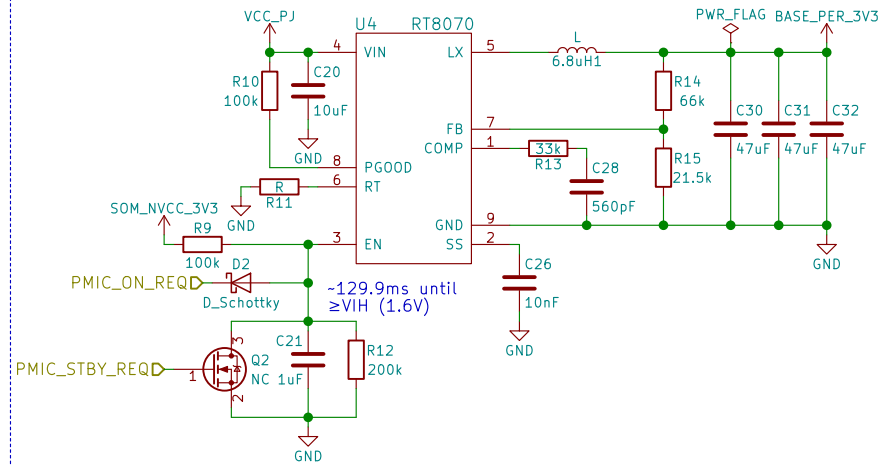
KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

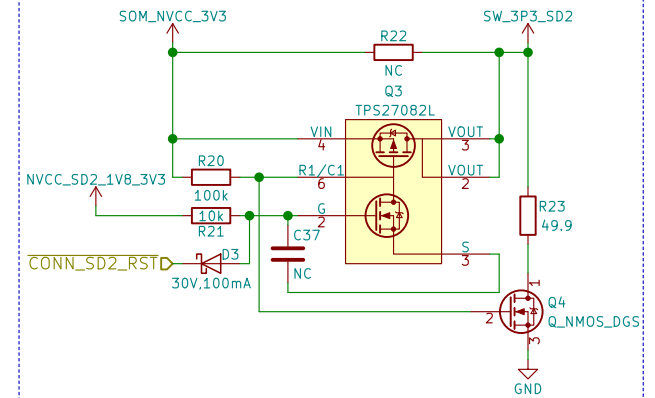
Id: 2/14

3.3V/3A

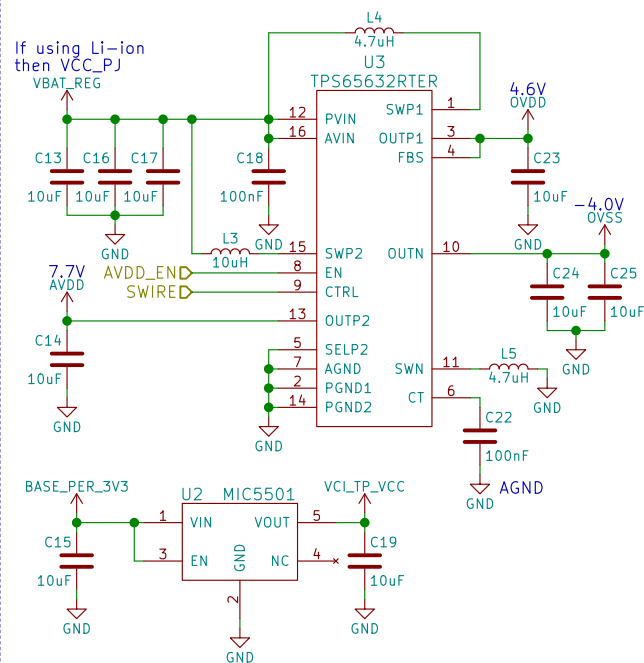
When VBAT can fall below 3.3V use TPS63020 instead!



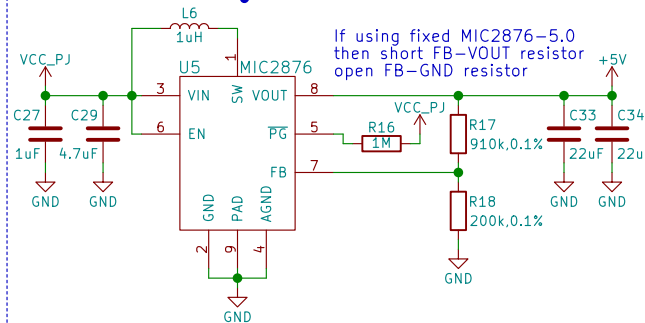
SD POWER



AMOLED POWER

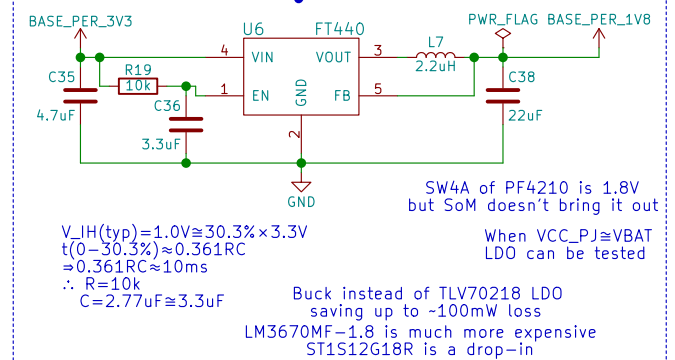


5.0V/800mA



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

1.8V/600mA



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

SW4A of PF4210 is 1.8V
but SoM doesn't bring it out
When VCC_PJ \approx VBAT
LDO can be tested

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

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Purism SPC

Sheet: /Power/
File: power.sch

Title: Power

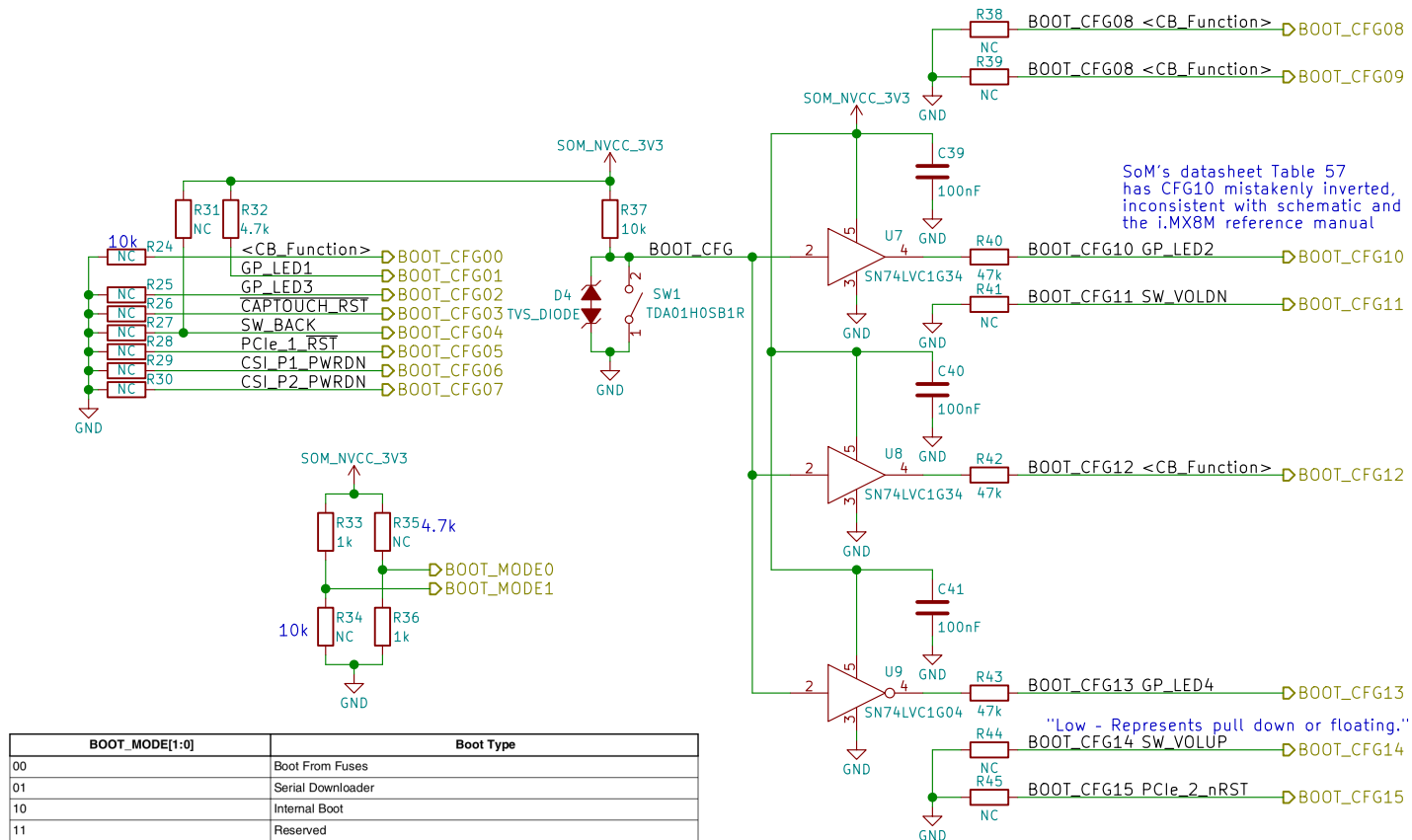
Size: A4
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Date: 2018-04-11

Rev: v0.1.0

Id: 3/14

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

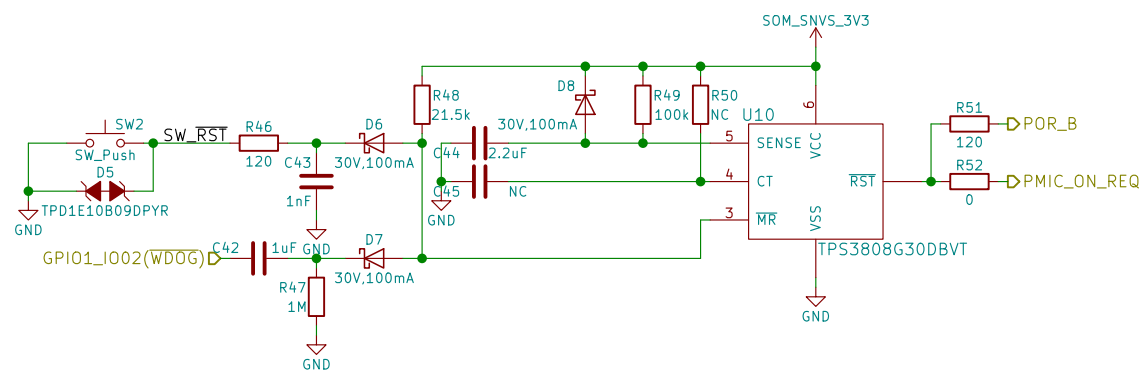
Title: Boot Configuration

Size: A4 Date: 2018-04-11

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Rev: v0.1.0

Id: 4/14



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Sheet: /Reset & Watchdog/
File: watchdog.sch

Title: Reset & Watchdog

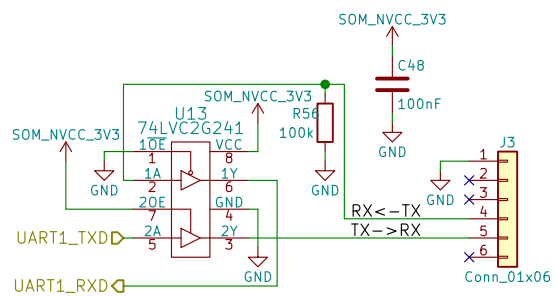
Size: A4 Date: 2018-04-11

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 5/14

Id: 6/14



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Sheet: /UART Debug/
File: uart.sch

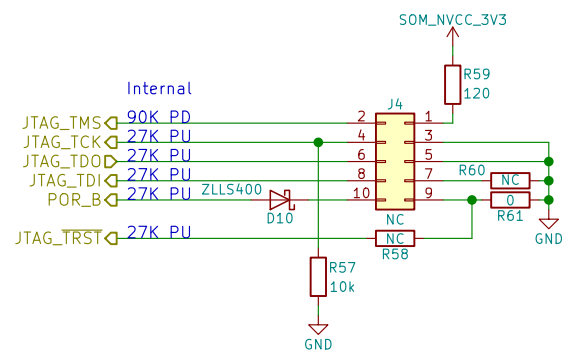
Title: UART Debug

Size: A4 Date: 2018-04-11

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 7/14

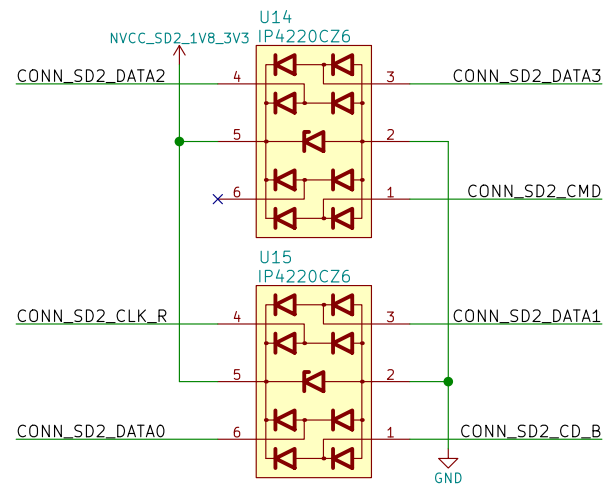
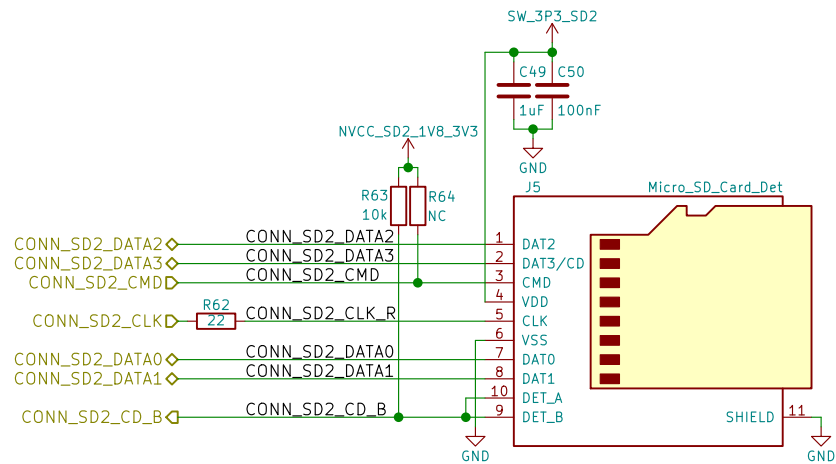


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Purism SPC
 Sheet: /JTAG/
 File: jtag.sch

Title: JTAG

Size: A4 Date: 2018-04-11
 KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0
 Id: 8/14



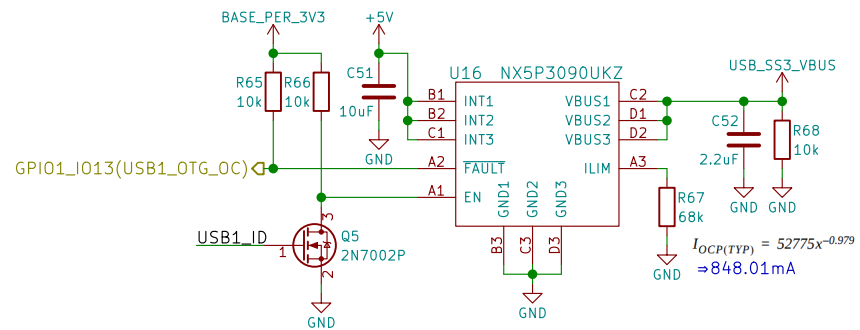
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Sheet: /uSD Card/
File: sd.sch

Title: uSD Card

Size: A4 Date: 2018-04-11
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Rev: v0.1.0
Id: 9/14

USB1_ID



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Sheet: /USB/
File: usb.sch

Title: USB

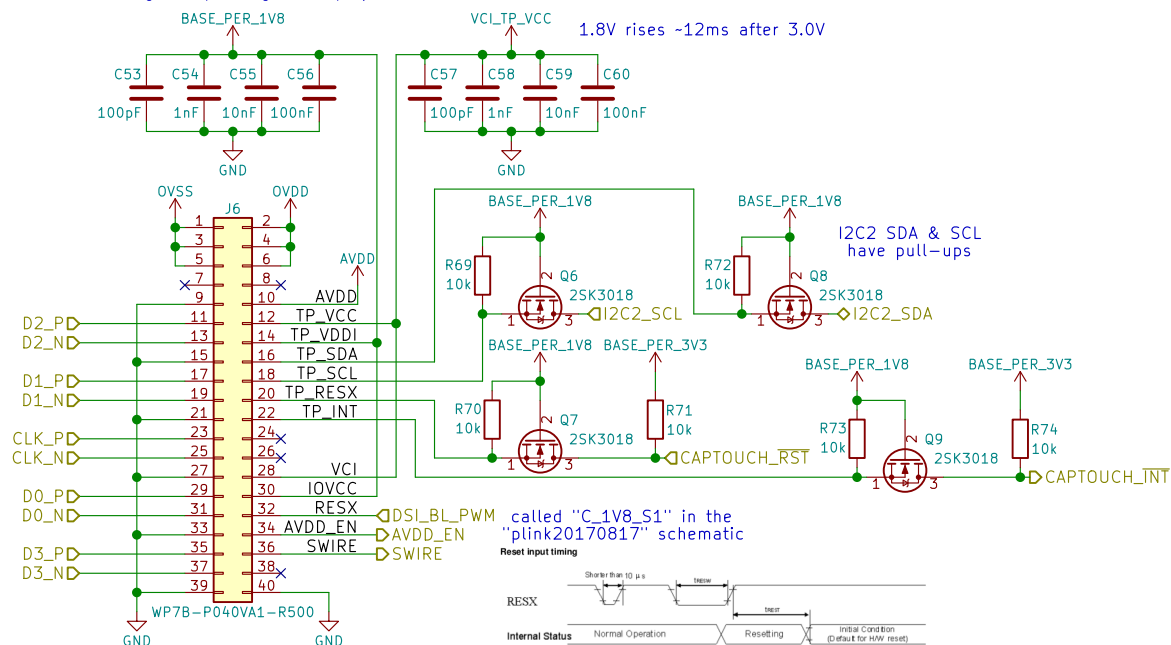
Size: A4 Date: 2018-04-11

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Rev: v0.1.0

Id: 10/14

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



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Sheet: /MIPI DSI/
File: mipi_dsi.sch

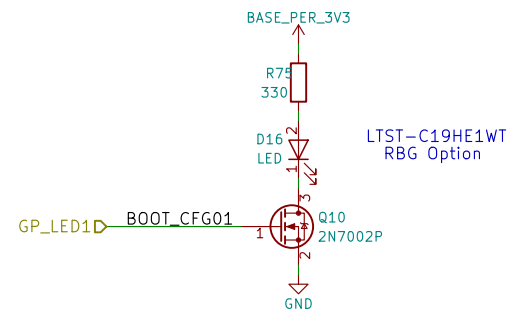
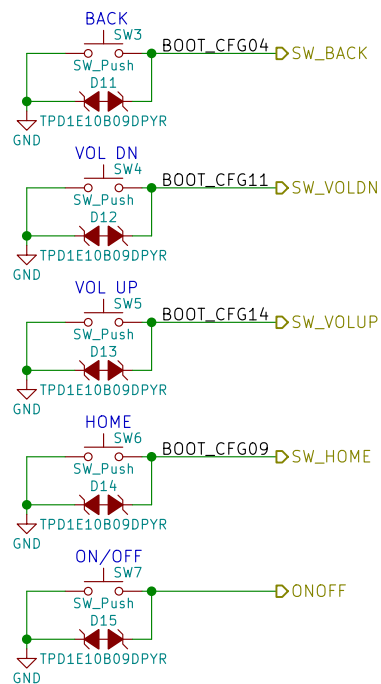
Title: MIPI DSI

Size: A4 Date: 2018-04-11

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Rev: v0.1.0

Id: 11/14



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Purism SPC

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

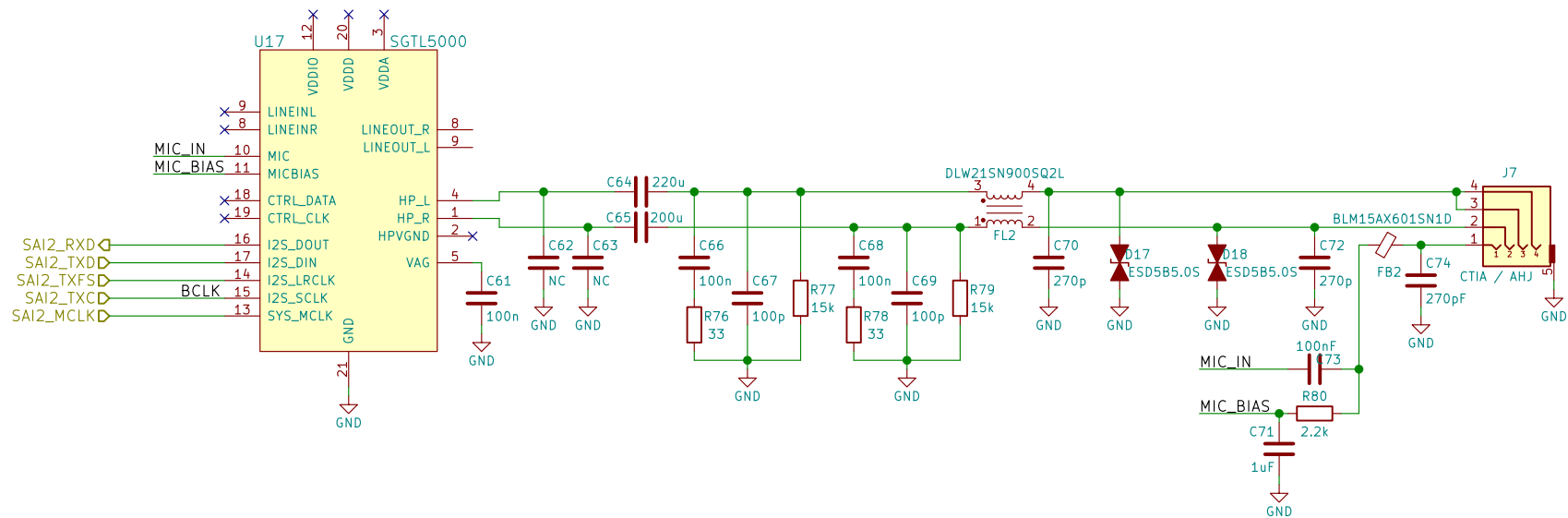
Title: Buttons & LED

Size: A4 Date: 2018-04-11

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 12/14



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Purism SPC

Sheet: /Audio/
File: audio.sch

Title: Audio

Size: A4 Date: 2018-04-11

KiCad E.D.A. kicad 4.0.7

Rev: v0.1.0

Id: 13/14

SIM_DETECT:
Sierra, Huawei, and Telit are Active High
SimCom and Gemalto needs to be inverted!
"When SIM is present, SIM_DET is high"
SIM_DET needs to open when card inserted!

