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[BB-XM Adapter \(CPU\)](#)

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File: neo900_SS_35.sch

[BB-XM Adapter \(DISP\)](#)

Sheet: BB-XM Adapter (CAM)

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[BB-XM Adapter \(CAM\)](#)

Sheet: No-Solder Components

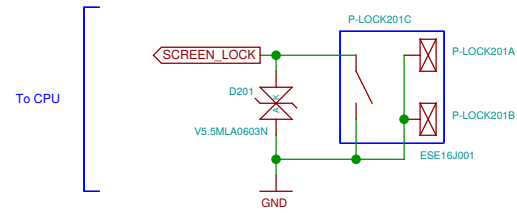
File: neo900_SS_37.sch

[No-Solder Components](#)

Note regarding I2C addresses:
Addresses in the schematics are provided for convenience.
The authoritative source is
<https://neo900.org/git/misc/tree/i2c>

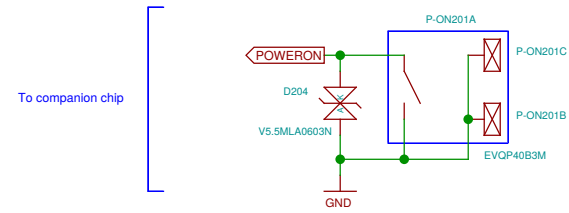
Sheet: /		
File: neo900.sch		
Title: Neo900		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 1/37

Lock switch



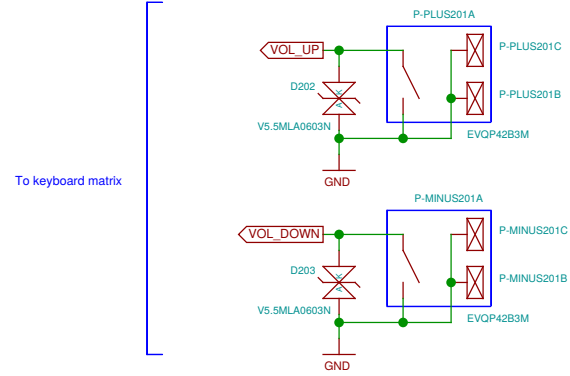
To CPU

On-off



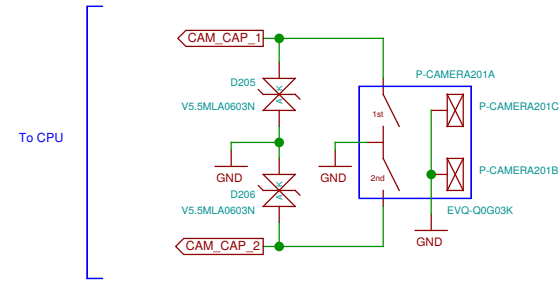
To companion chip

Volume



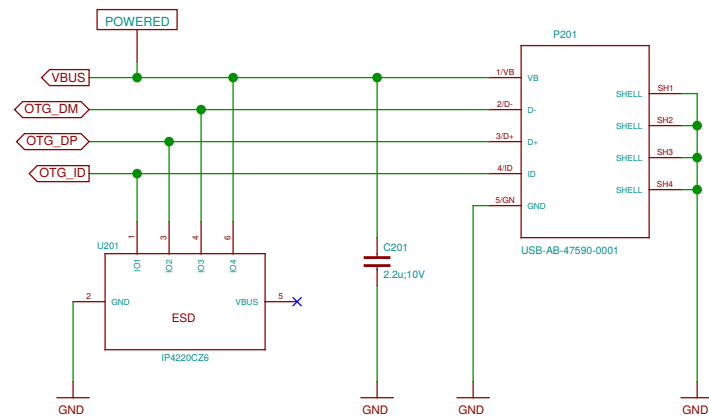
To keyboard matrix

Camera trigger



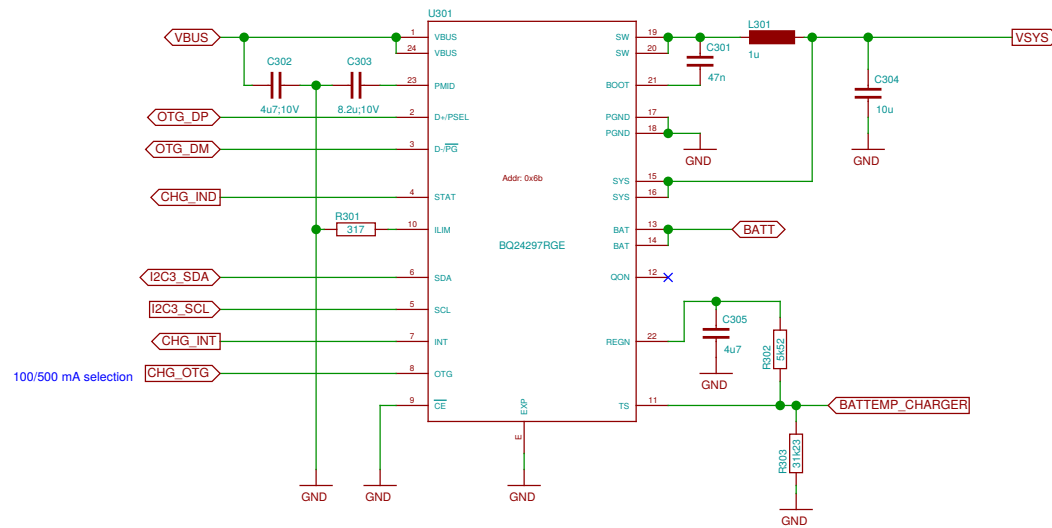
To CPU

USB OTG connector



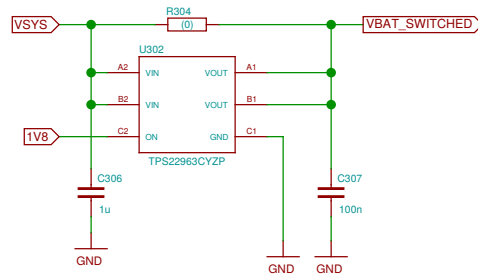
Sheet: /OTG/		
File: neo900_SS_2.sch		
Title: OTG		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 2/37

Battery charger with USB OTG

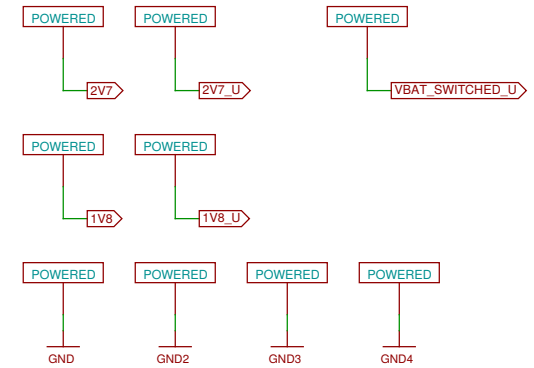


Power distribution and sequencing

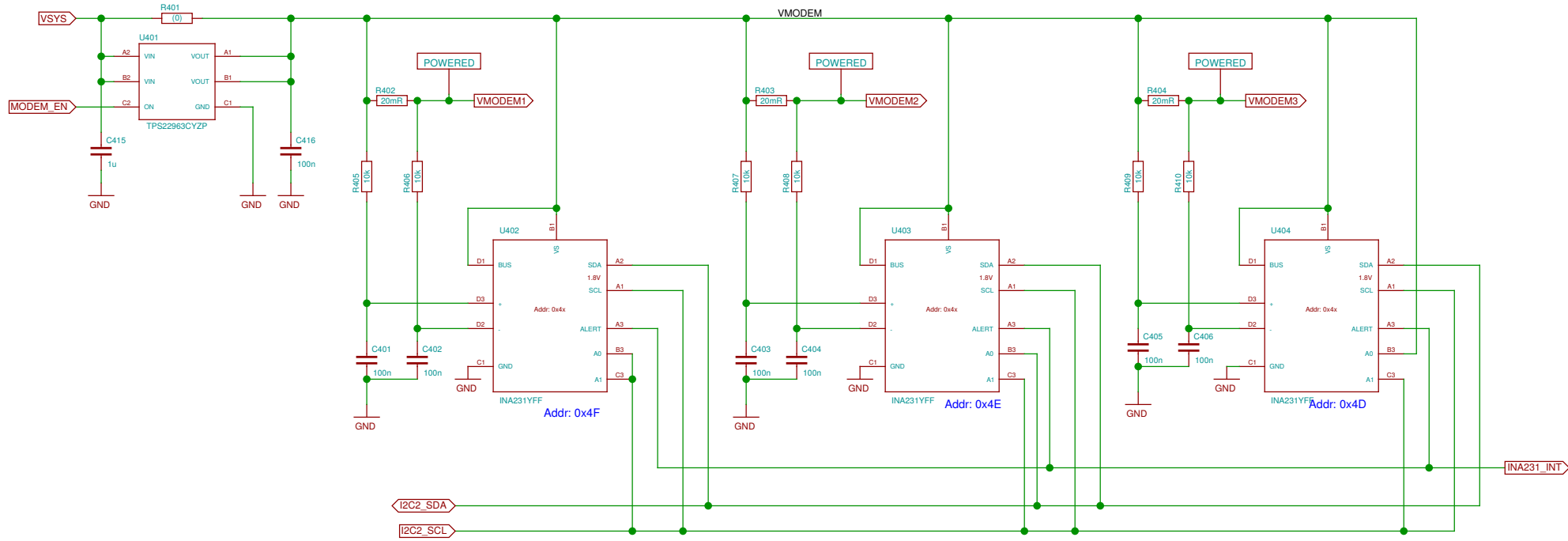
Most high-current consumers are on VBAT_SWITCHED.
1V8 signals that the regulators on UPPER are operational.



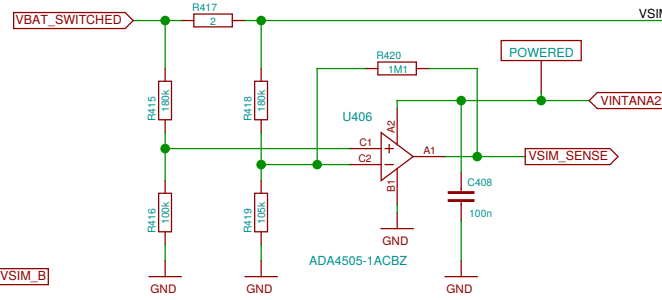
KiCad bureaucracy



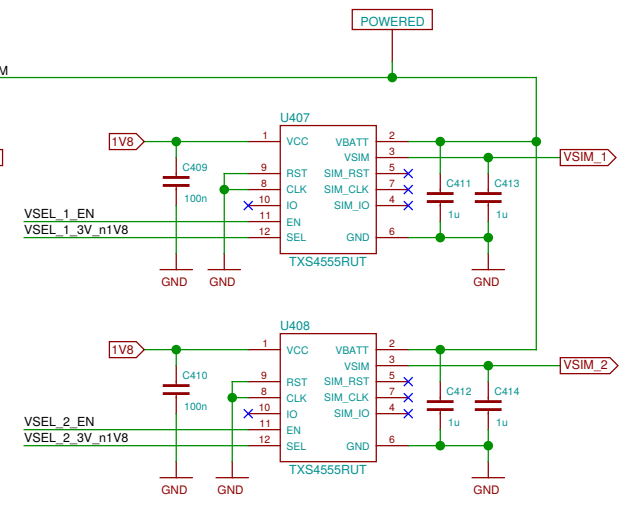
Modem current monitor



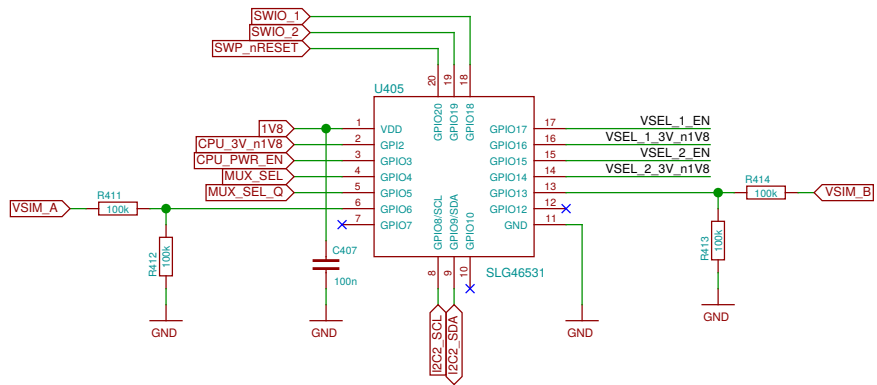
SIM current sensing



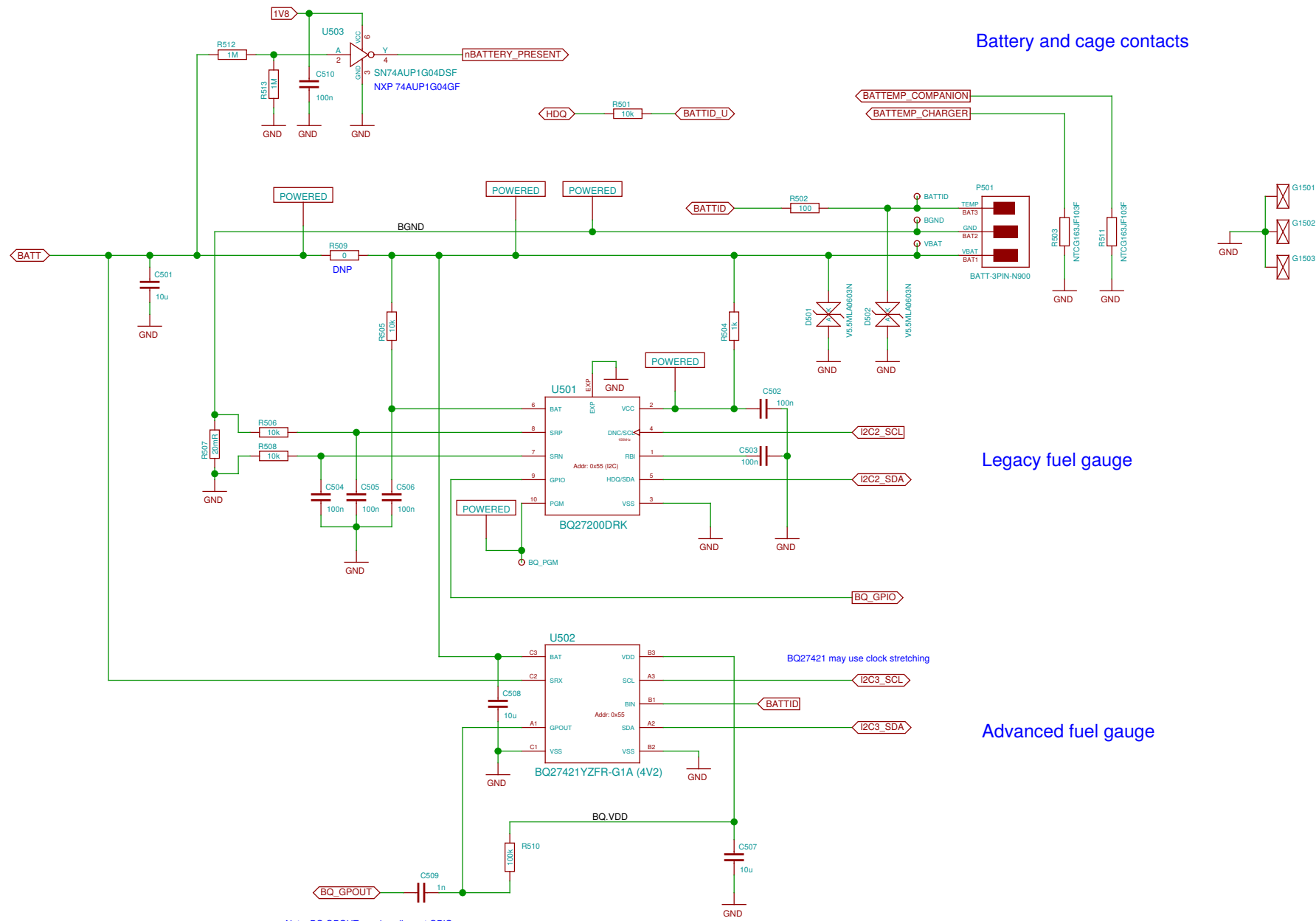
SIM power supply



SIM power selection



TODO: update SLG design for changed pins



Battery and cage contacts

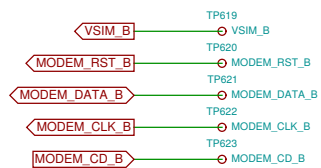
Legacy fuel gauge

Advanced fuel gauge

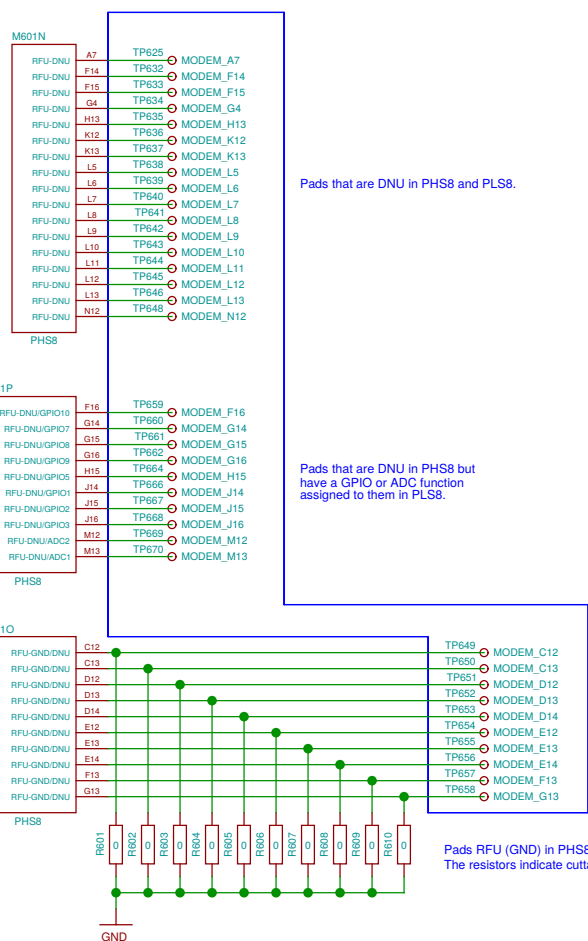
Note: BQ.GPOUT needs pull-up at GPIO.

Sheet: /Fuel Gauge/		
File: neo900_SS_5.sch		
Title: Fuel Gauge		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 5/37

SIM B bus



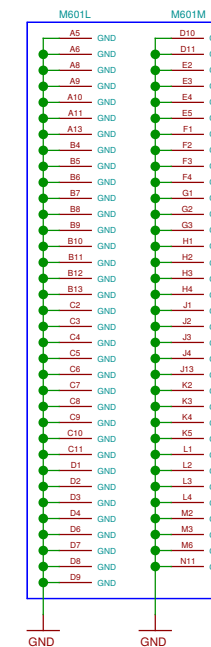
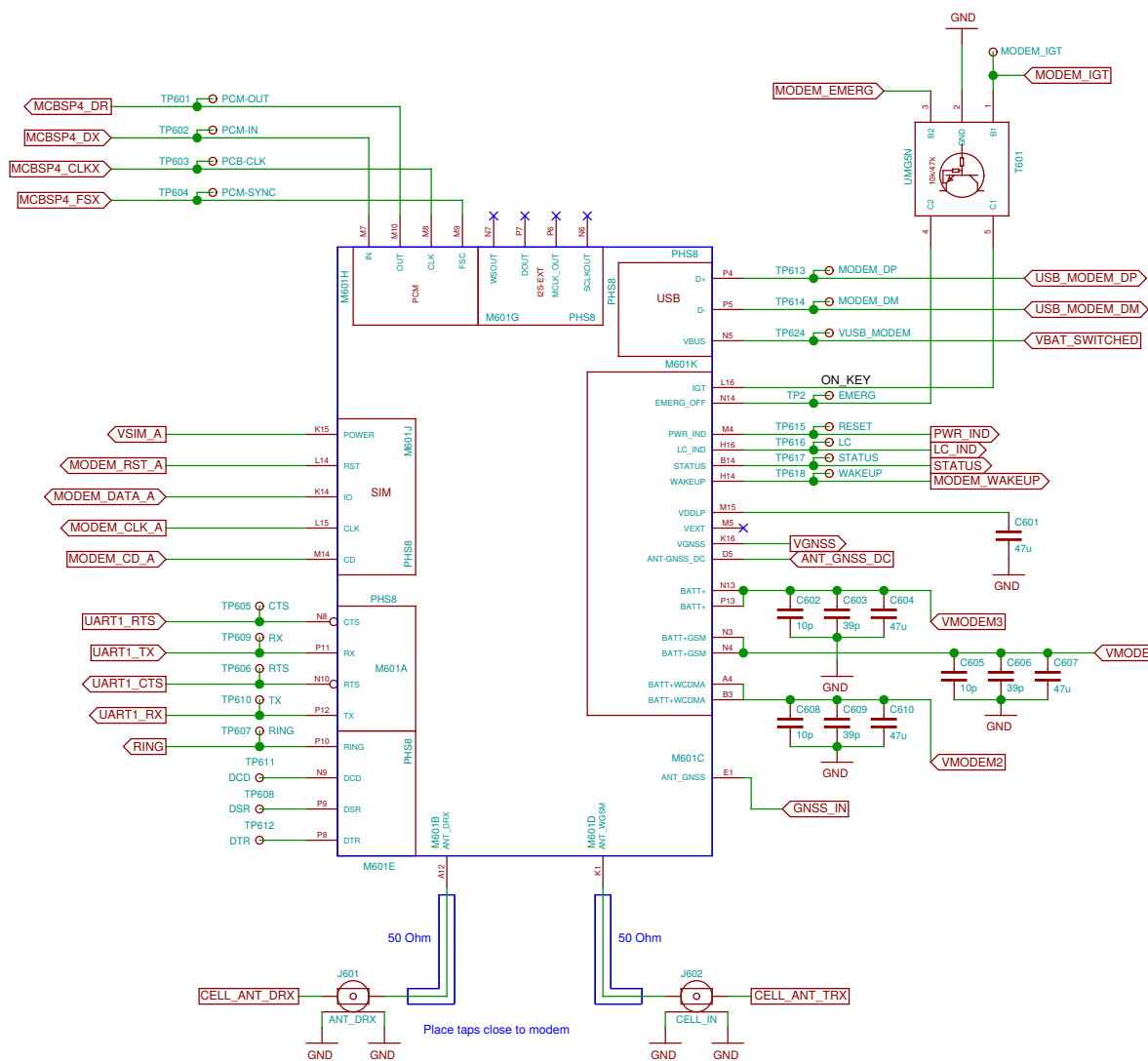
17+10+10 = 37 test points. PCB space permitting, to be in arranged a 6 x 6 + 1 grid with 1.0 mm pitch. This patchfield is to be placed adjacent to the SIM B bus test points.



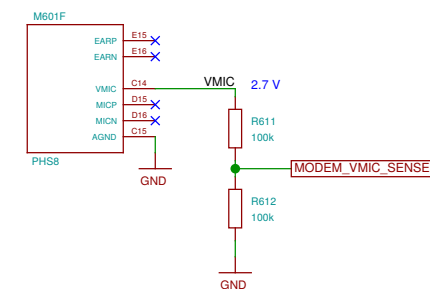
Pads that are DNU in PHS8 and PLS8.

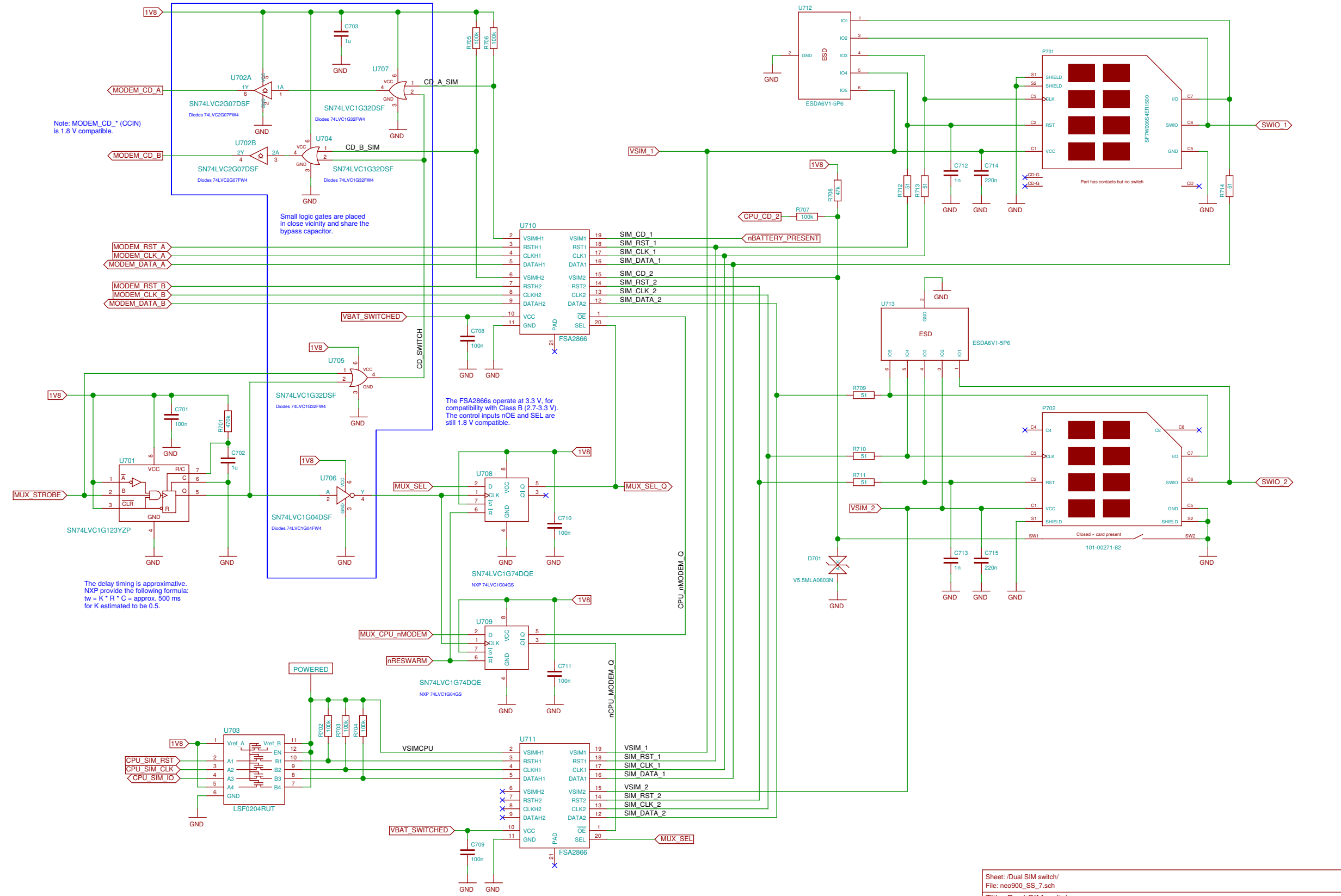
Pads that are DNU in PHS8 but have a GPIO or ADC function assigned to them in PLS8.

Pads RFU (GND) in PHS8 and RFU (DNU) in PLS8. The resistors indicate cuttable traces.

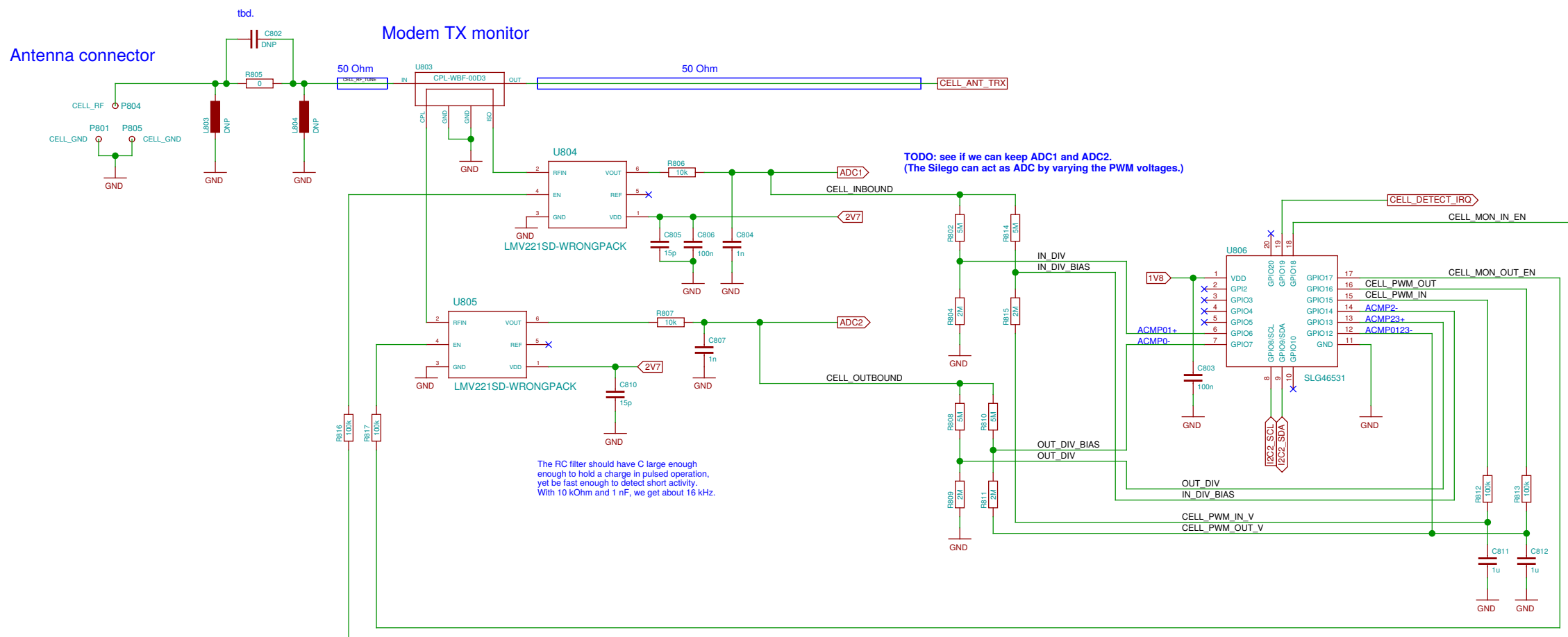
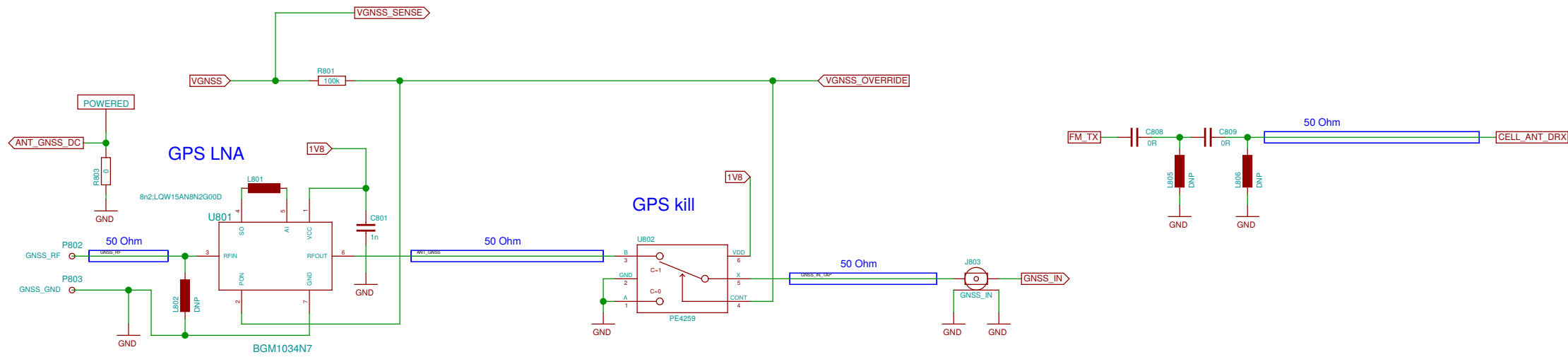


Anti-eavesdropping





Sheet: ./Dual SIM switch/
 File: neo900_SS_7.sch
 Title: Dual SIM switch
 Size: A3 Date: 2016-11-08 15:02:23 Rev:
 Plotted by eeshow 8d7d7ce 20161108-15:12Z Id: 7/37

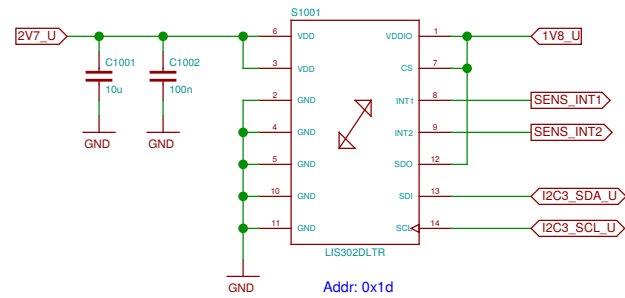


TODO: see if we can keep ADC1 and ADC2.
(The Silego can act as ADC by varying the PWM voltages.)

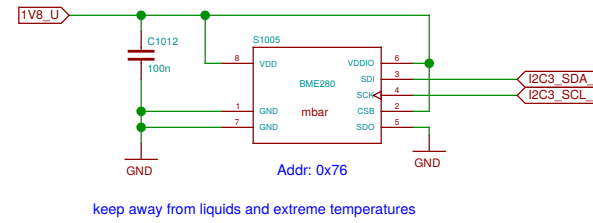
The RC filter should have C large enough enough to hold a charge in pulsed operation, yet be fast enough to detect short activity. With 10 kOhm and 1 nF, we get about 16 kHz.

Sheet: /Antenna connections/ File: neo900_SS_8.sch		
Title: Antenna connections		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 8/37

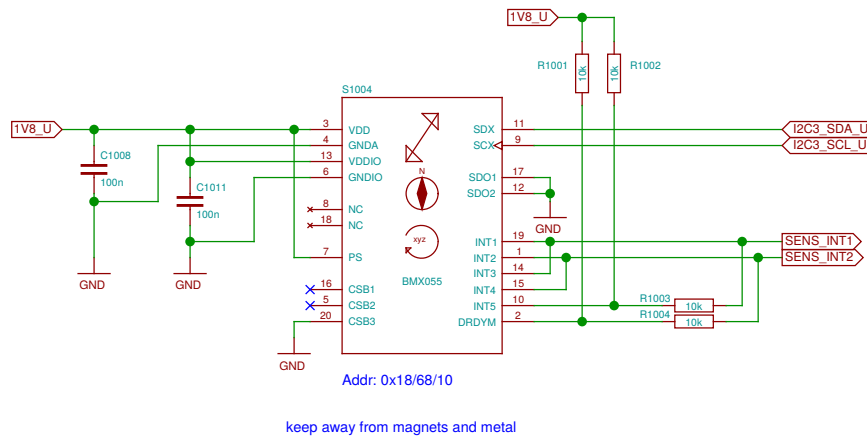
Acceleration (legacy)



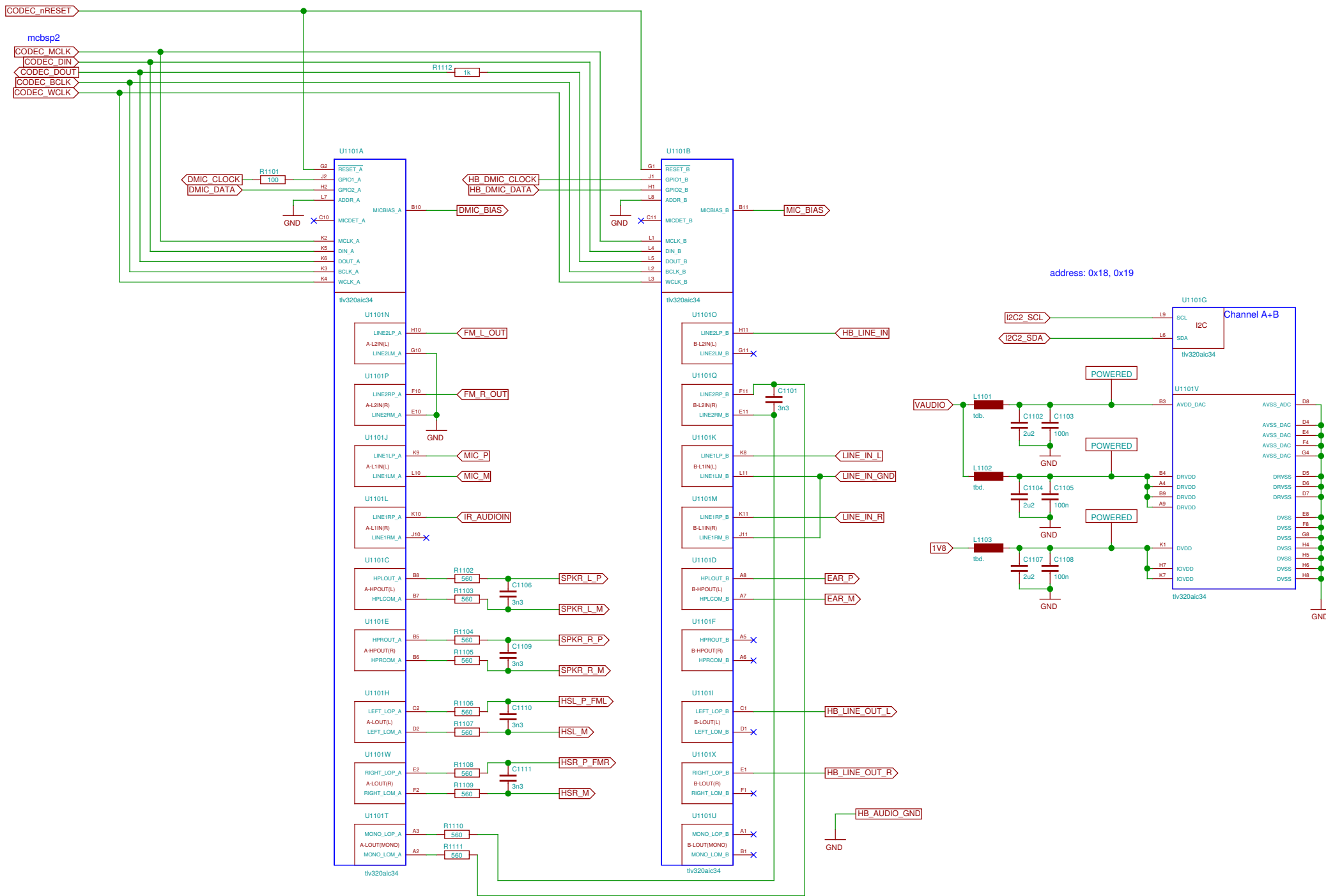
Pressure, humidity



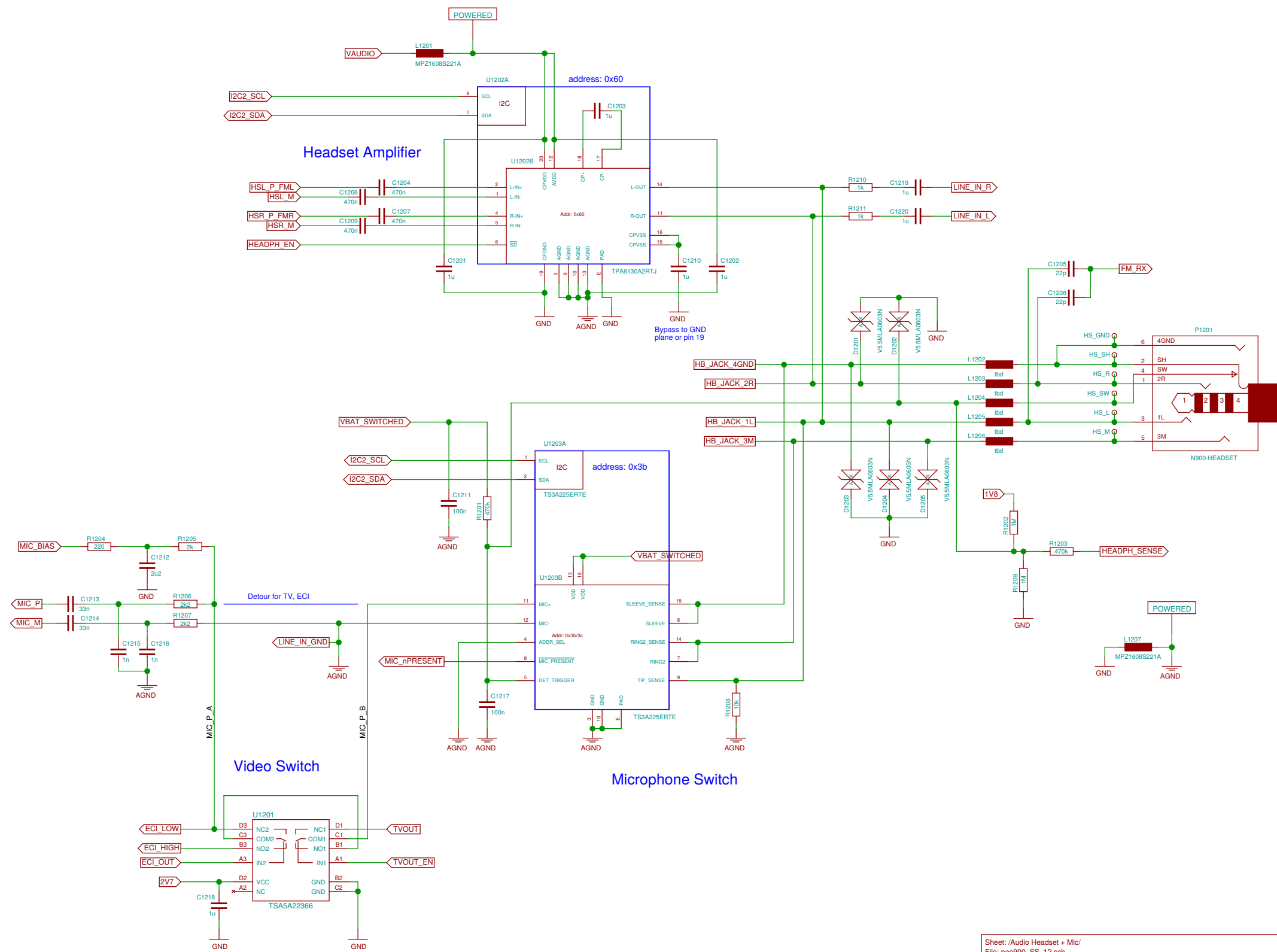
9-axis (acceleration, gyroscope, magnetometer)



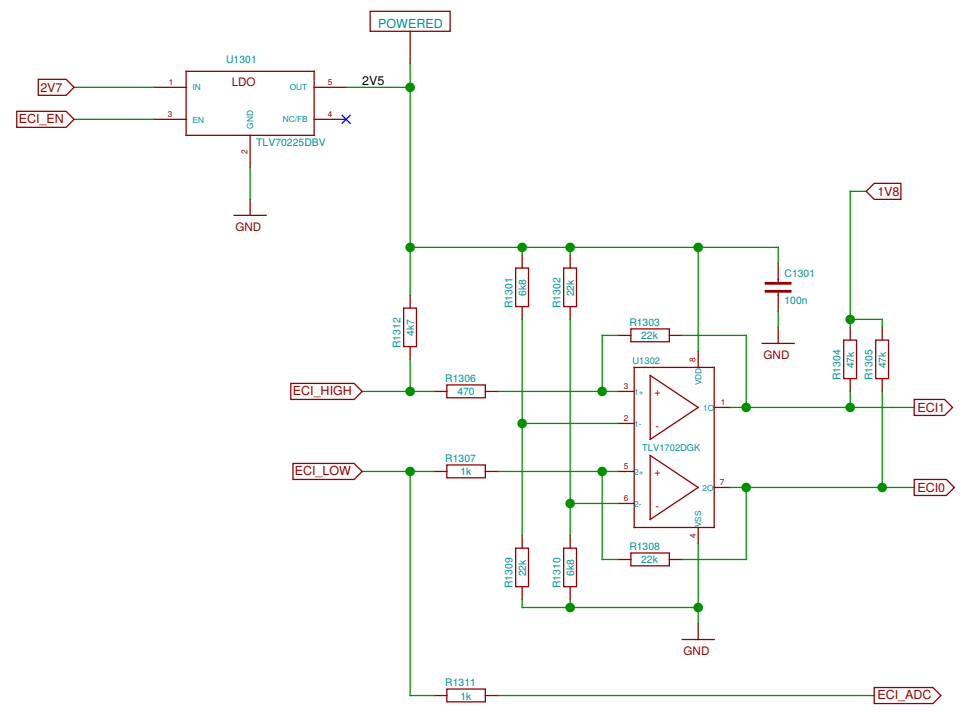
Sheet: /Sensors/		
File: neo900_SS_10.sch		
Title: Sensors		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 10/37



Sheet: /Audio Codec/		
File: neo900_SS_11.sch		
Title: Audio Codec		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 11/37

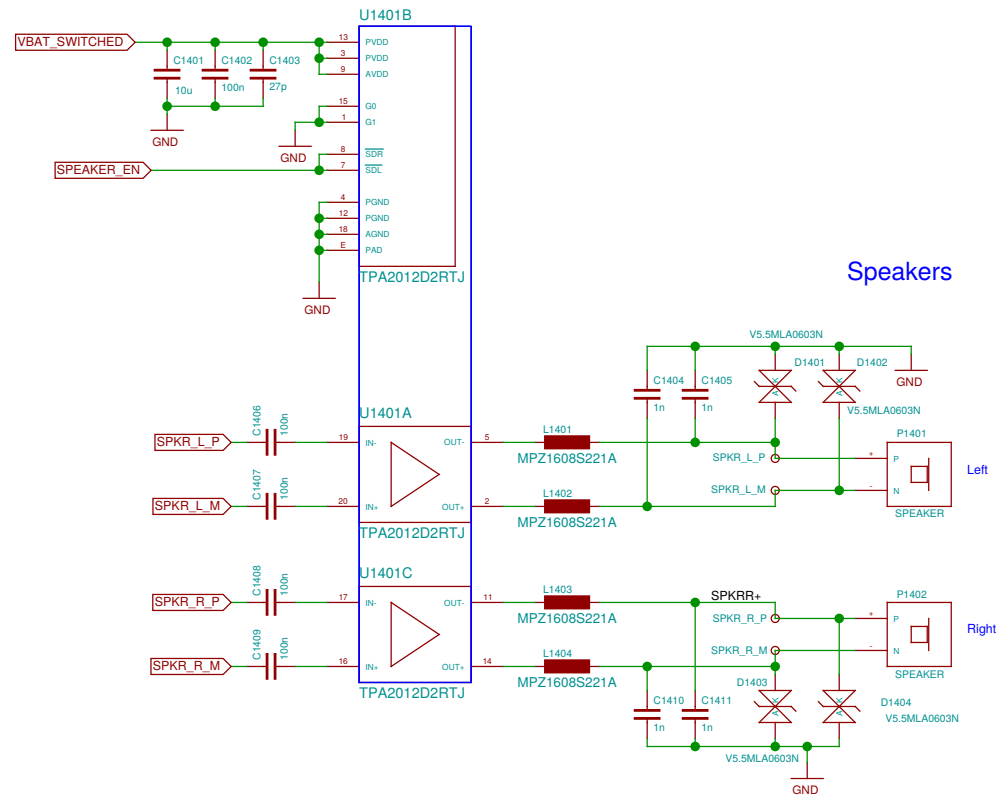


Sheet: /Audio Headset + Mic/		
File: neo900_SS_12.sch		
Title: Audio Headset + Mic		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 12/37

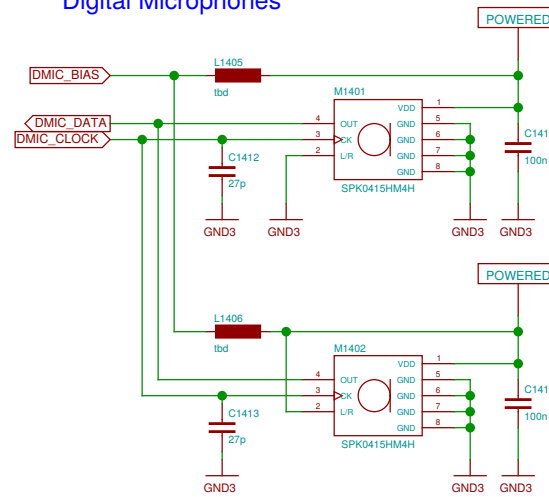


Sheet: /ECI/		
File: neo900_SS_13.sch		
Title: ECI		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 13/37

Hands-free



Digital Microphones



Sheet: /Audio Handsfree/
File: neo900_SS_14.sch

Title: Audio Handsfree

Size: A3

Date: 2016-11-08 15:02:23

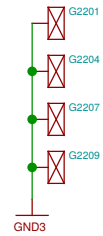
Rev:

Plotted by eeshow 8d7d7ce 20161108-15:12Z

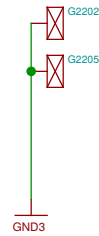
Id: 14/37

Shield Contacts on UPPER

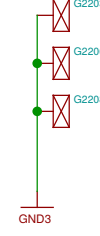
For the display



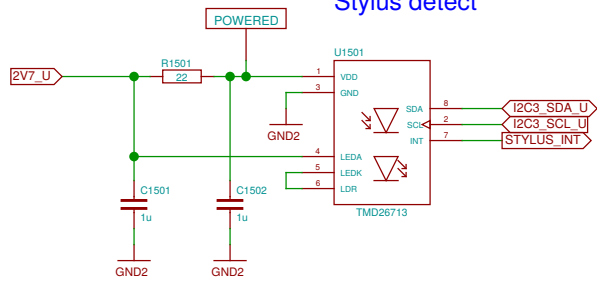
For the key mat



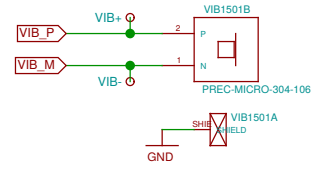
For the "key frame hook"



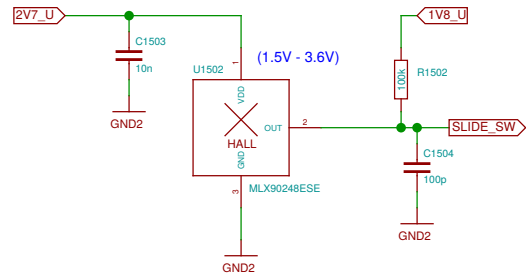
Stylus detect



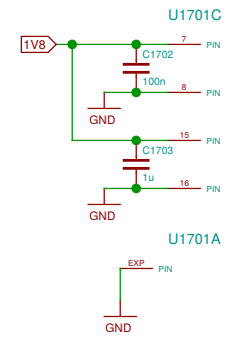
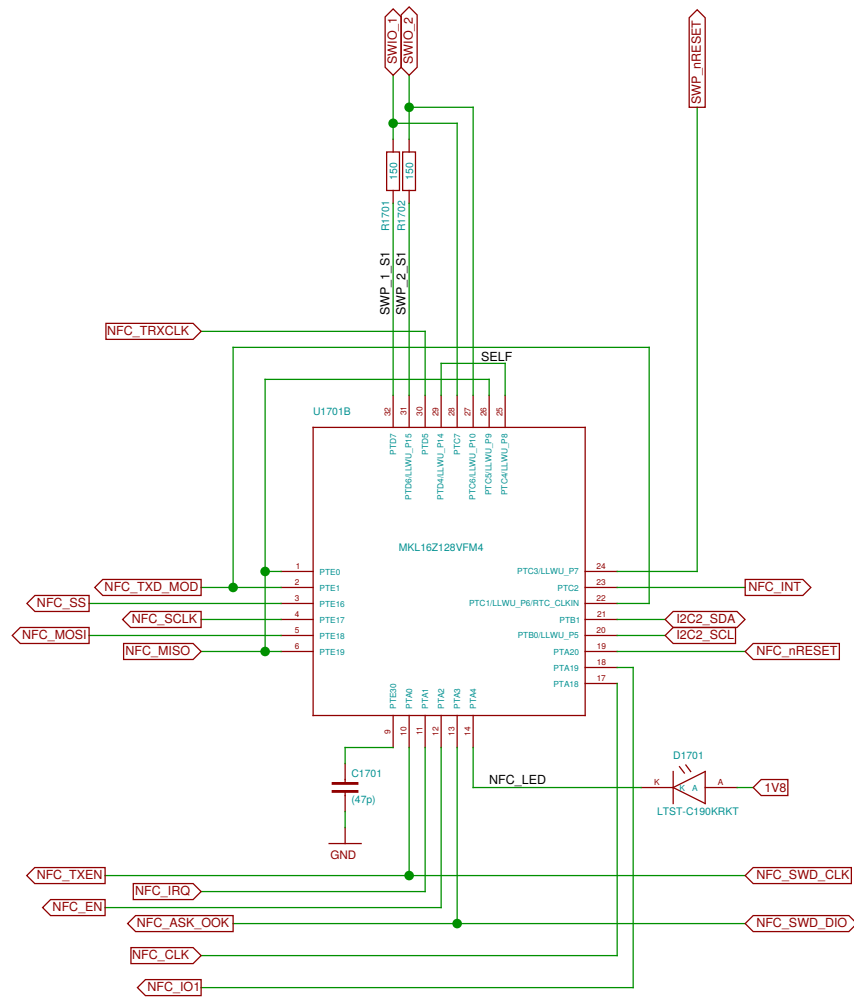
Vibramotor



Slide sensor



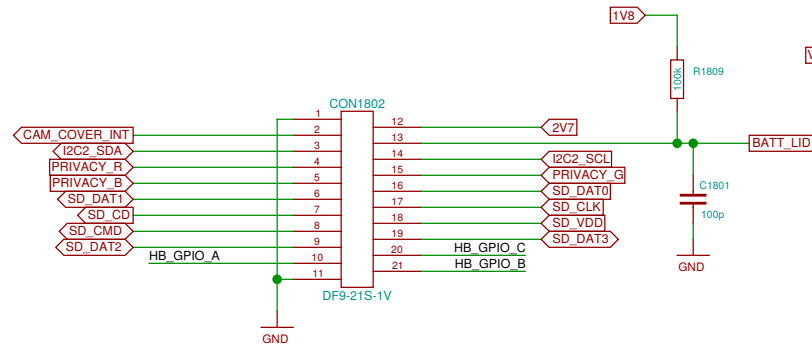
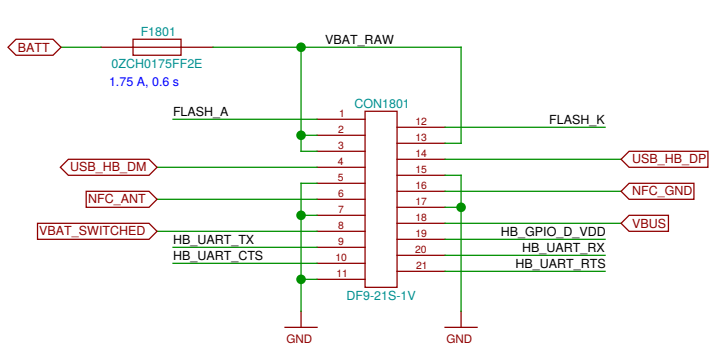
Sheet: /Misc/		
File: neo900_SS_15.sch		
Title: Misc		
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Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 15/37



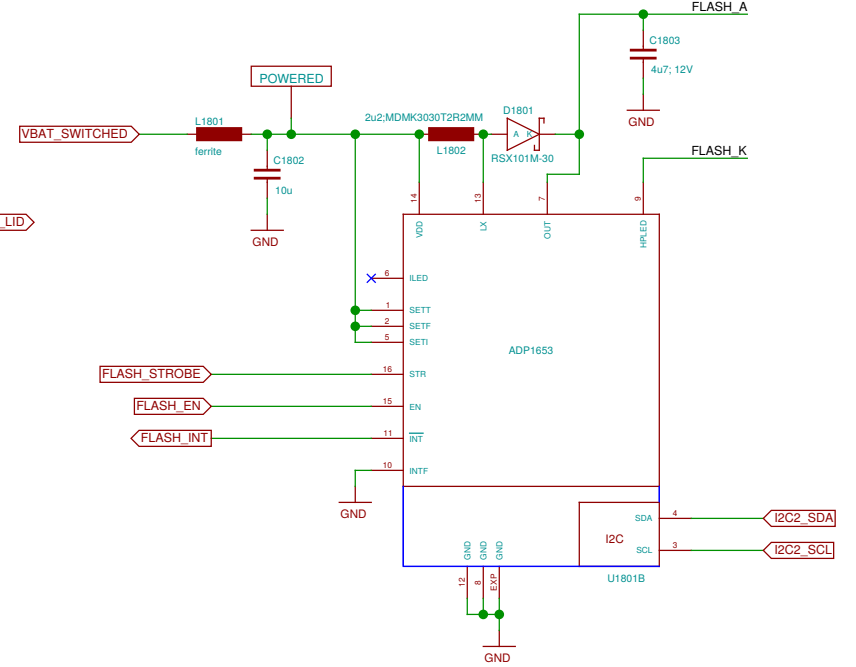
Sheet: ./RFID/NFC Controller/ File: neo900_SS_17.sch		
Title: RFID/NFC Controller		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 17/37

LOWER-BOB Interconnect (LOWER side)

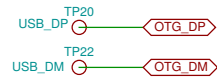
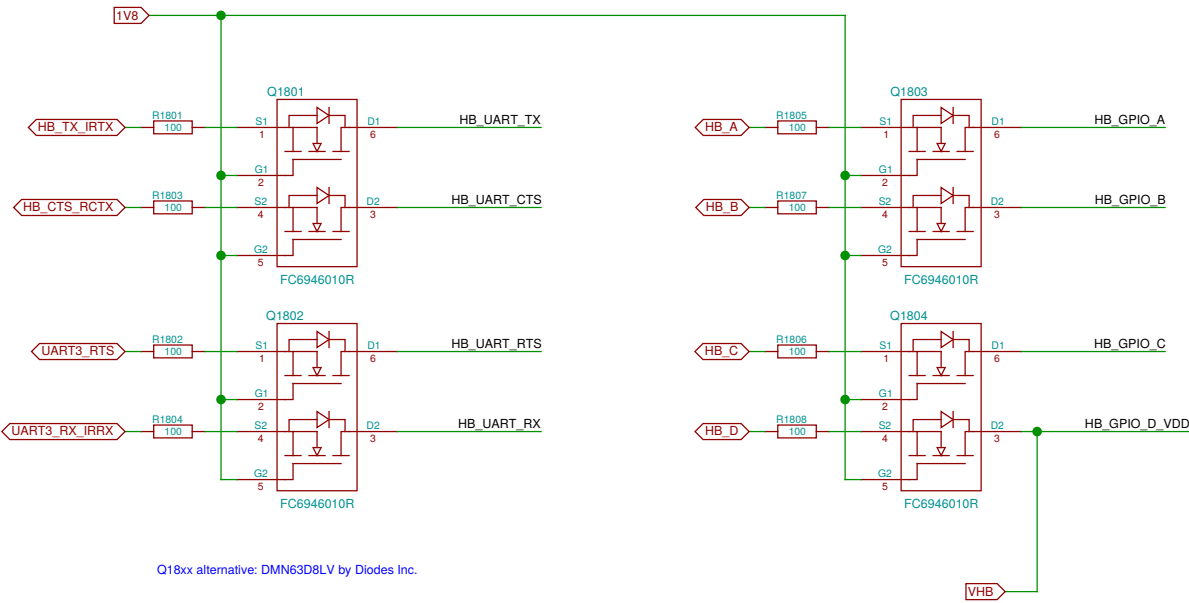
Defined in the Hackerbus specification, <http://neo900.org/stuff/papers/hb.pdf>



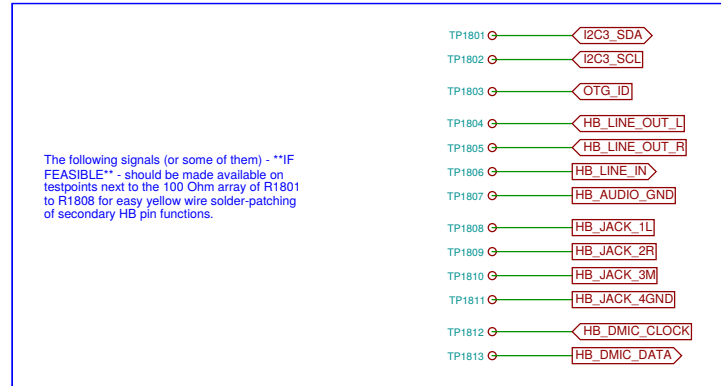
Flash/Torch



Level shifters for Hackerbus GPIO and UART



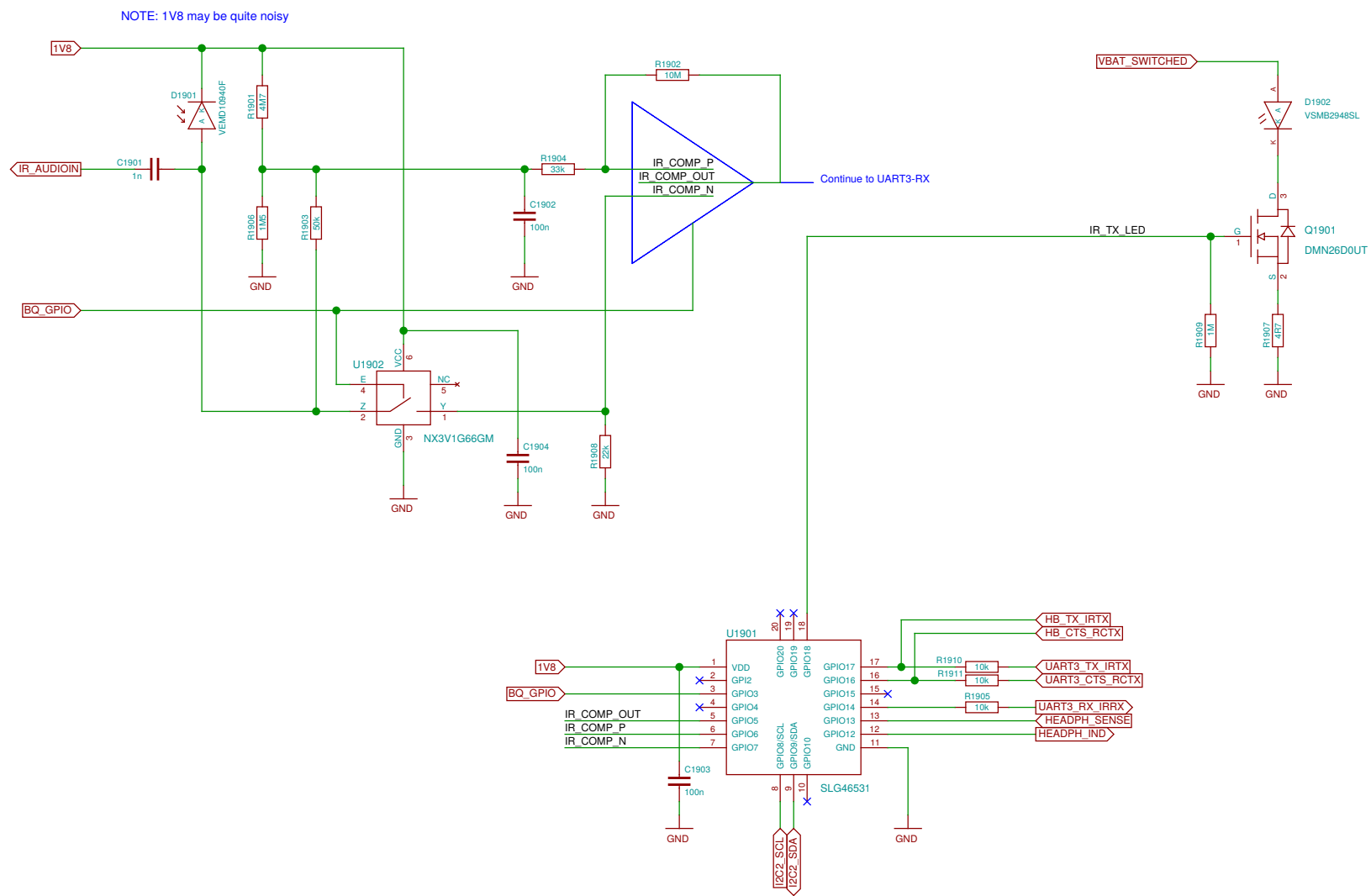
Patchfield



Sheet: /Hackerbus/ File: neo900_SS_18.sch	
Title: Hackerbus	
Size: A3	Date: 2016-11-08 15:02:23
Plotted by: eeshow 8d7d7ce 20161108-15:12Z	Rev: Id: 18/37

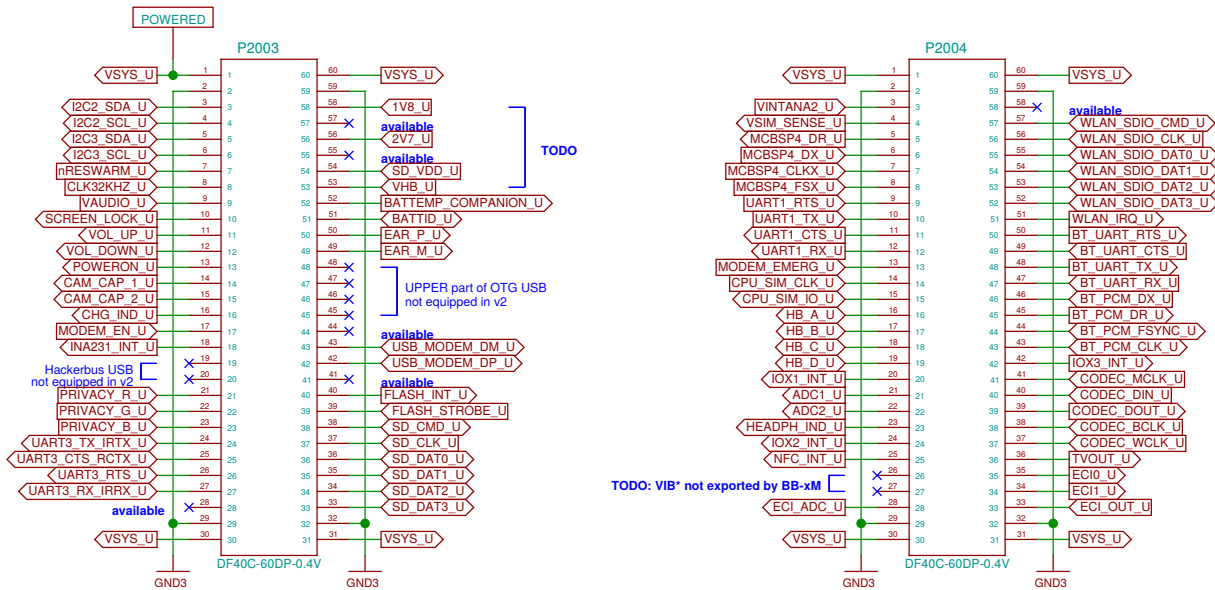
Missing 6x 2R for alternate function select (do we have the space for ca. 2.5 x 5mm?)

TODO: update D1901 footprint

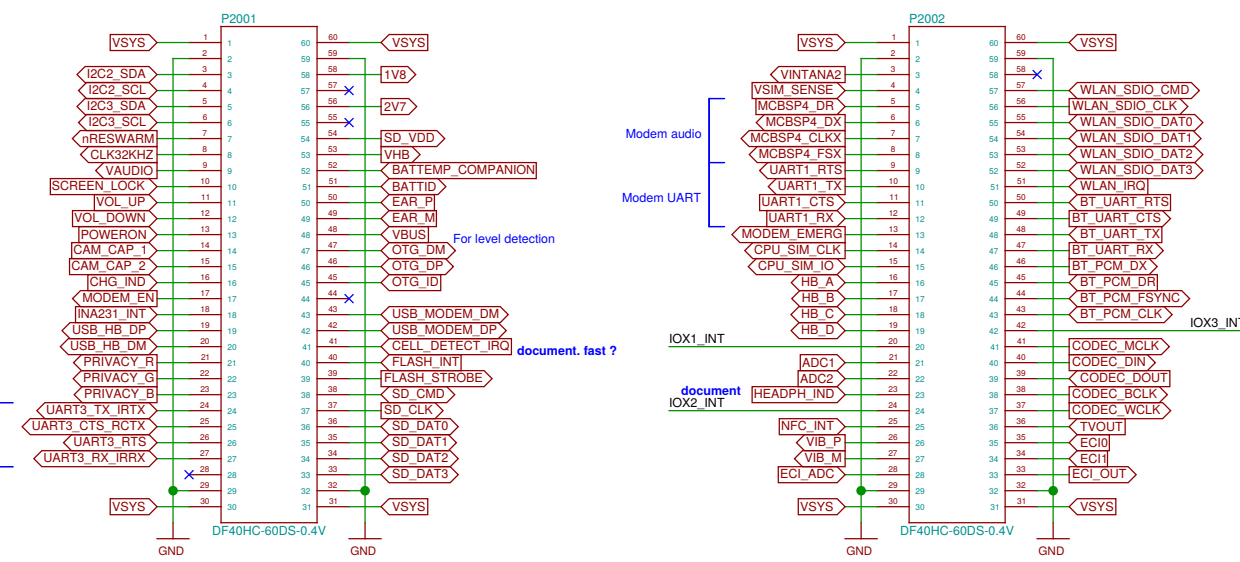


Sheet: /Infrared/		
File: neo900_SS_19.sch		
Title: Infrared		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 19/37

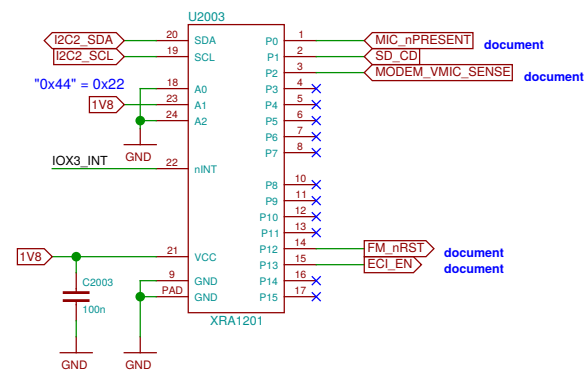
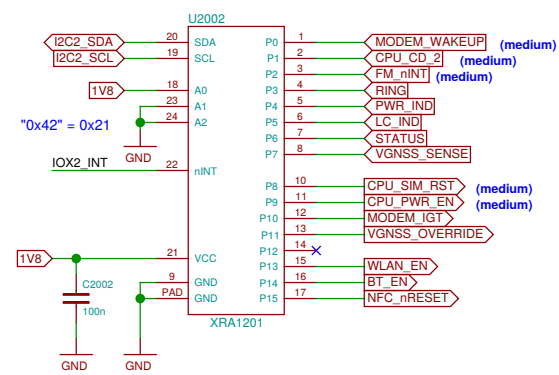
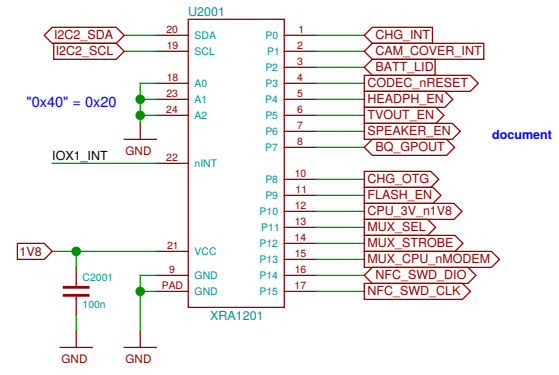
This is just the collection of signals we have. Proper assignment still pending.



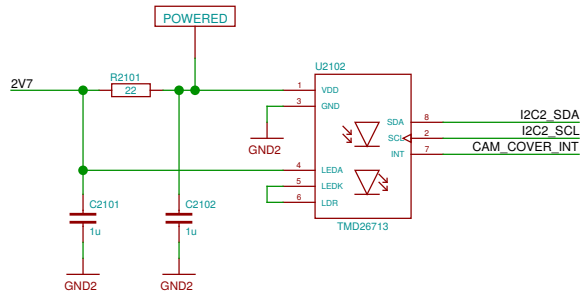
UPPER
LOWER



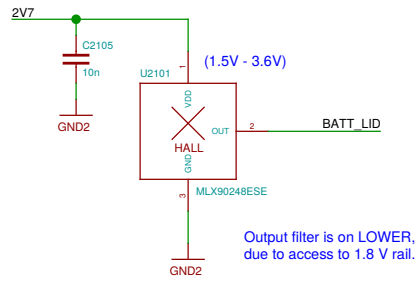
Current rating per contact: 0.3 A



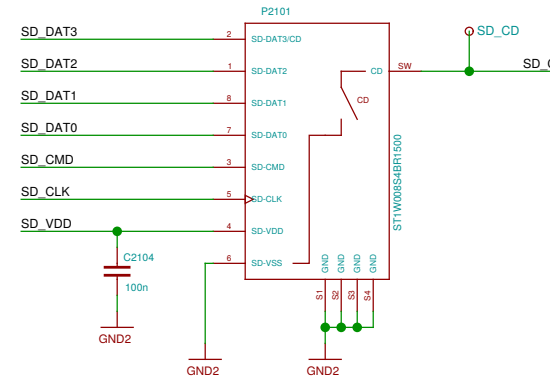
Camera Cover detect



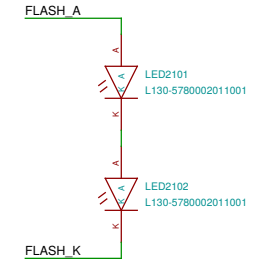
Battery Cover detect



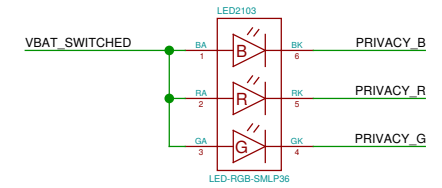
Memory card holder



Camera flash

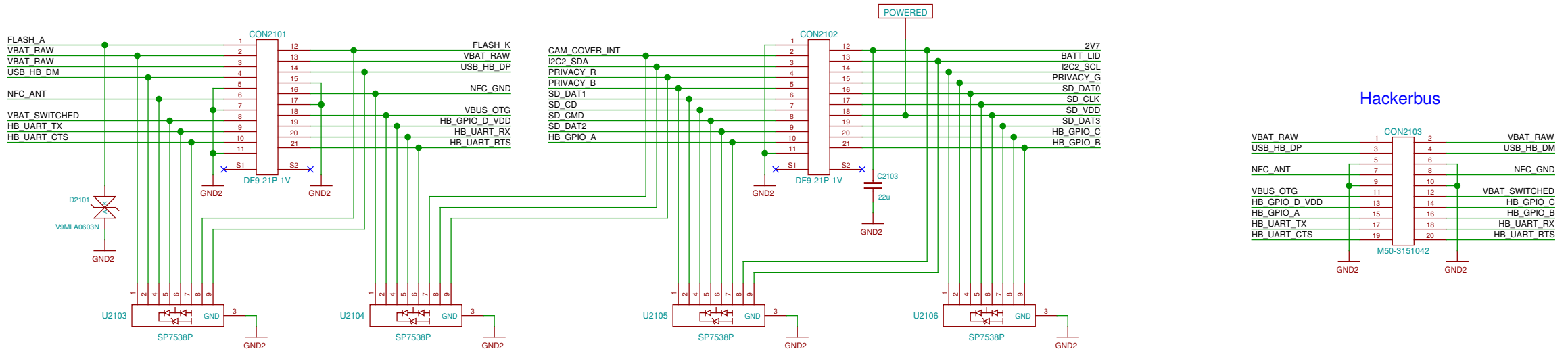


Privacy LED



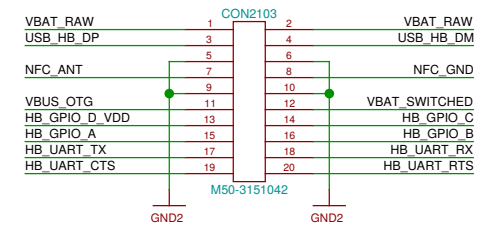
LOWER-BOB Interconnect (BOB side)

Defined in the Hackerbus specification, <http://neo900.org/stuff/papers/hb.pdf>



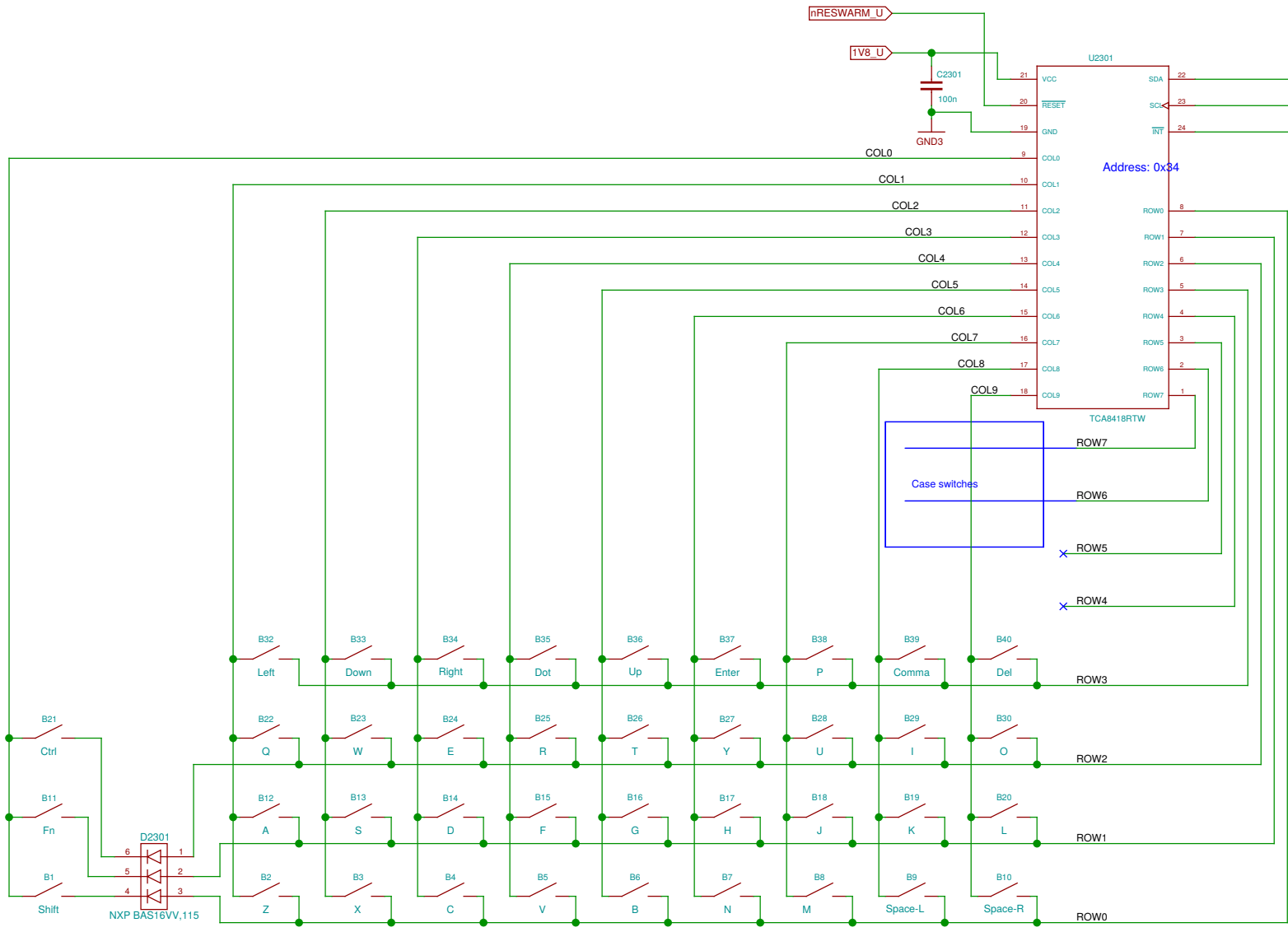
ESD pin assignment is only indicative.
Actual assignment to be defined by layout.

Hackerbus

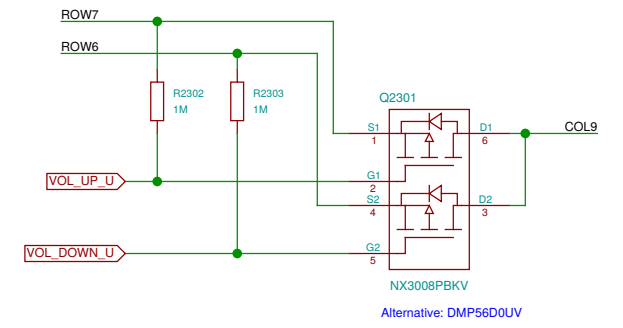
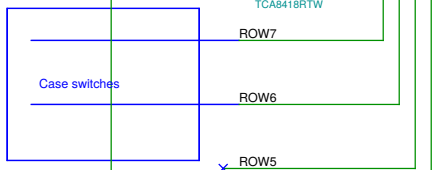


TODO: consider sheet for deletion

Sheet: /empty/		
File: neo900_SS_22.sch		
Title: empty		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 22/37



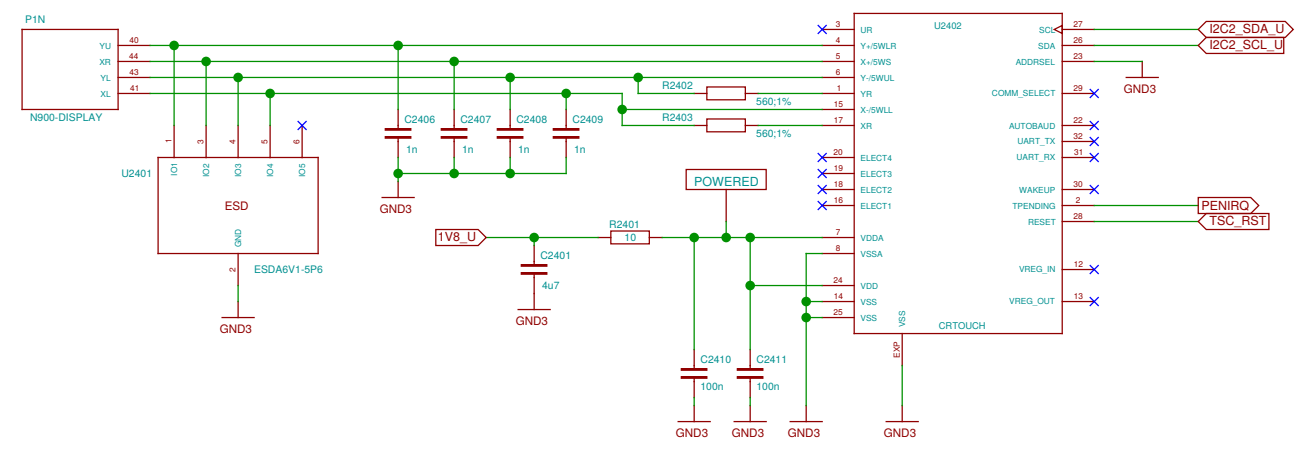
Alternative: Diodes Inc. BAS16VV-7
 Warning: Diodes Inc. have cathodes on pin 1 side, NXP anodes !

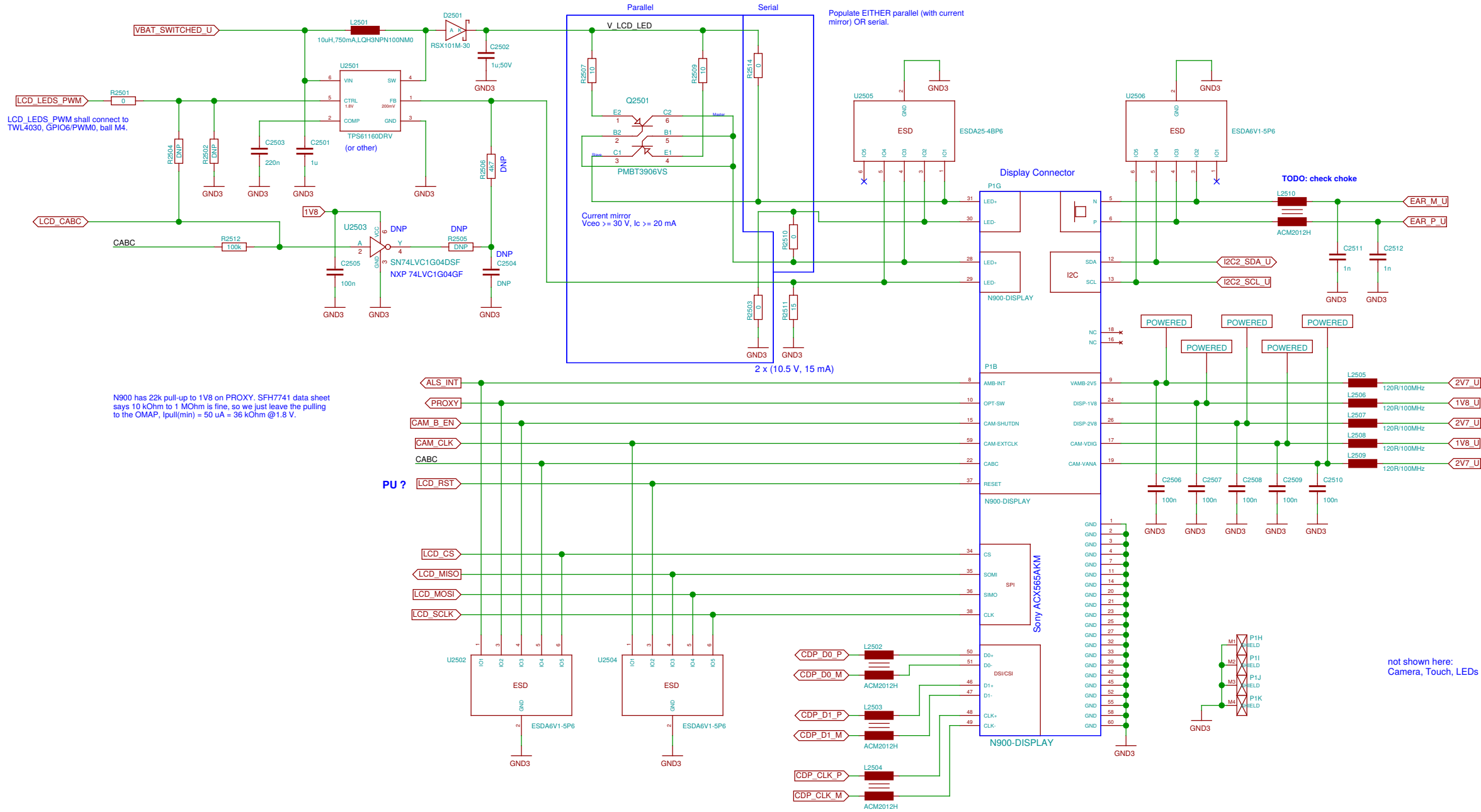


Sheet: /Keypad/		
File: neo900_SS_23.sch		
Title: Keypad		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 23/37

Touch screen controller

Resistive Touch (display connector)





LCD_LEDS_PWM shall connect to TWL4030, GPIO6/PWM0, ball M4.

N900 has 22k pull-up to 1V8 on PROXY. SFH7741 data sheet says 10 kOhm to 1 MOhm is fine, so we just leave the pulling to the OMAP, I_{pull(min)} = 50 uA = 36 kOhm @ 1.8 V.

TODO: check choke

Sheet: /Display-Panel&Power/		
File: neo900_SS_25.sch		
Title: Display-Panel&Power		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 25/37

OMAP is not part of v2

Sheet: ./CPU + PoP RAM/NAND/ File: neo900_SS_26.sch		
Title: CPU + PoP RAM/NAND		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 26/37

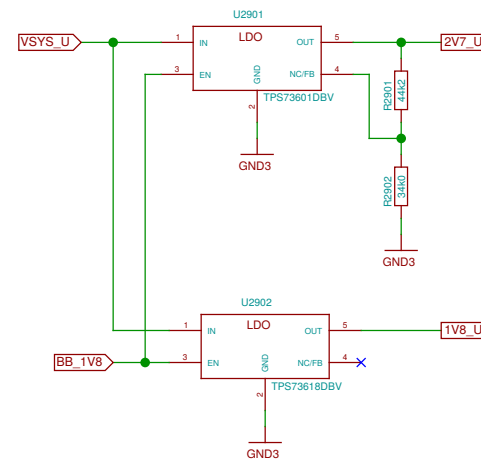
eMMC is not part of v2

Sheet: /eMMC/ File: neo900_SS_27.sch		
Title: eMMC		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 27/37

Companion chip (TPS65950) is not part of v2

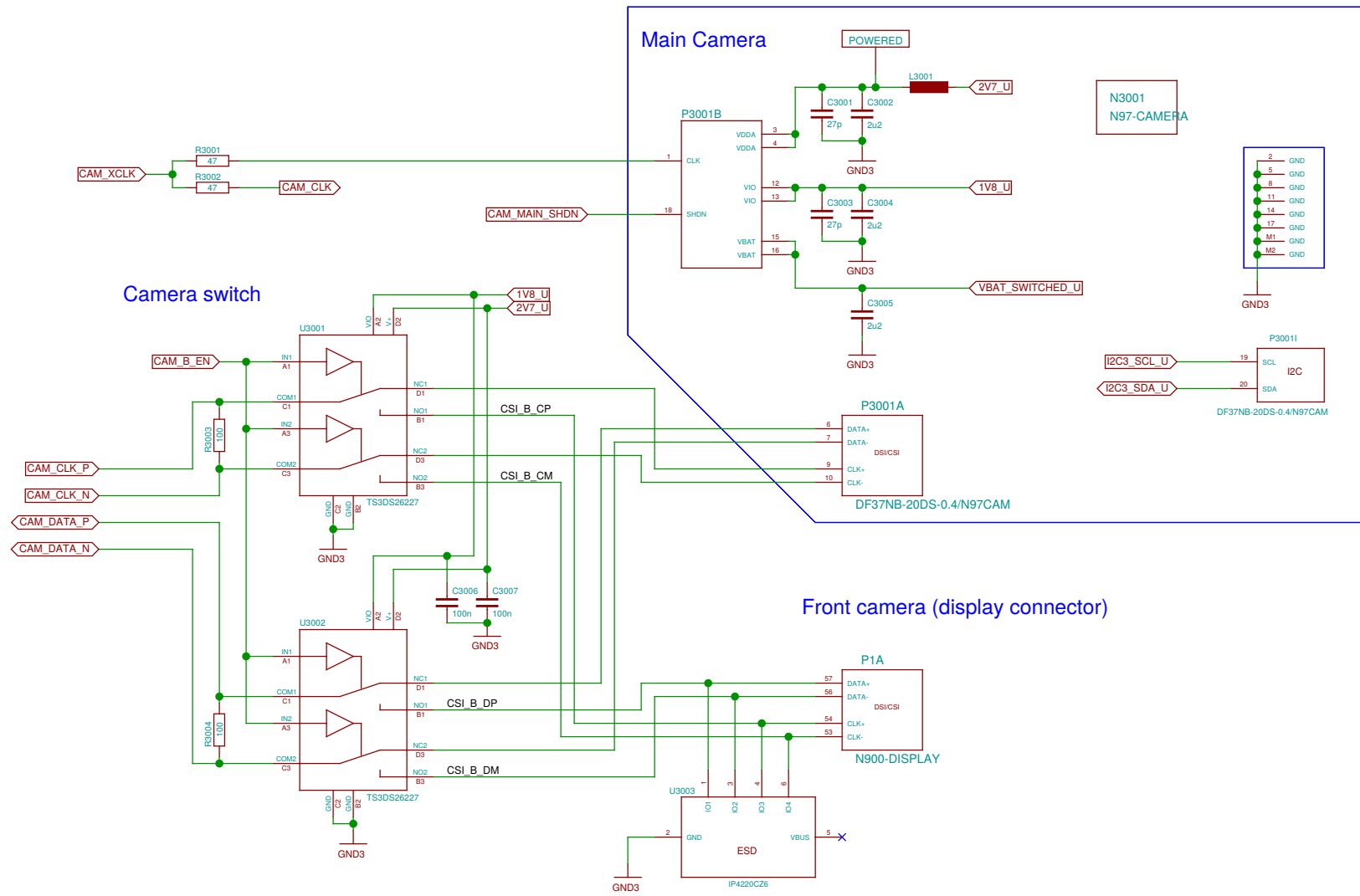
Sheet: /PMU+Codec/		
File: neo900_SS_28.sch		
Title: PMU+Codec		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 28/37

simple capless 400mA LDO for TPS65950 substitute
(only for prototype)

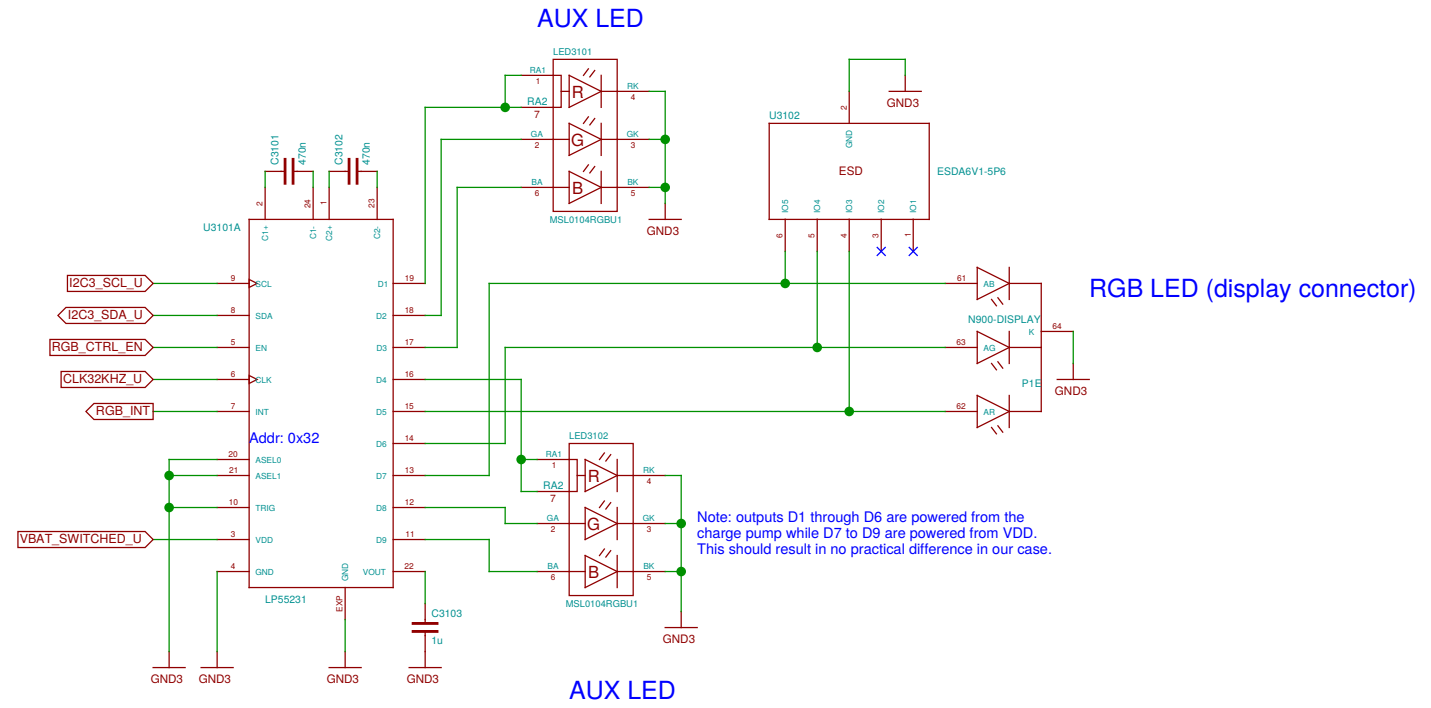


TODO: use REGEN ?

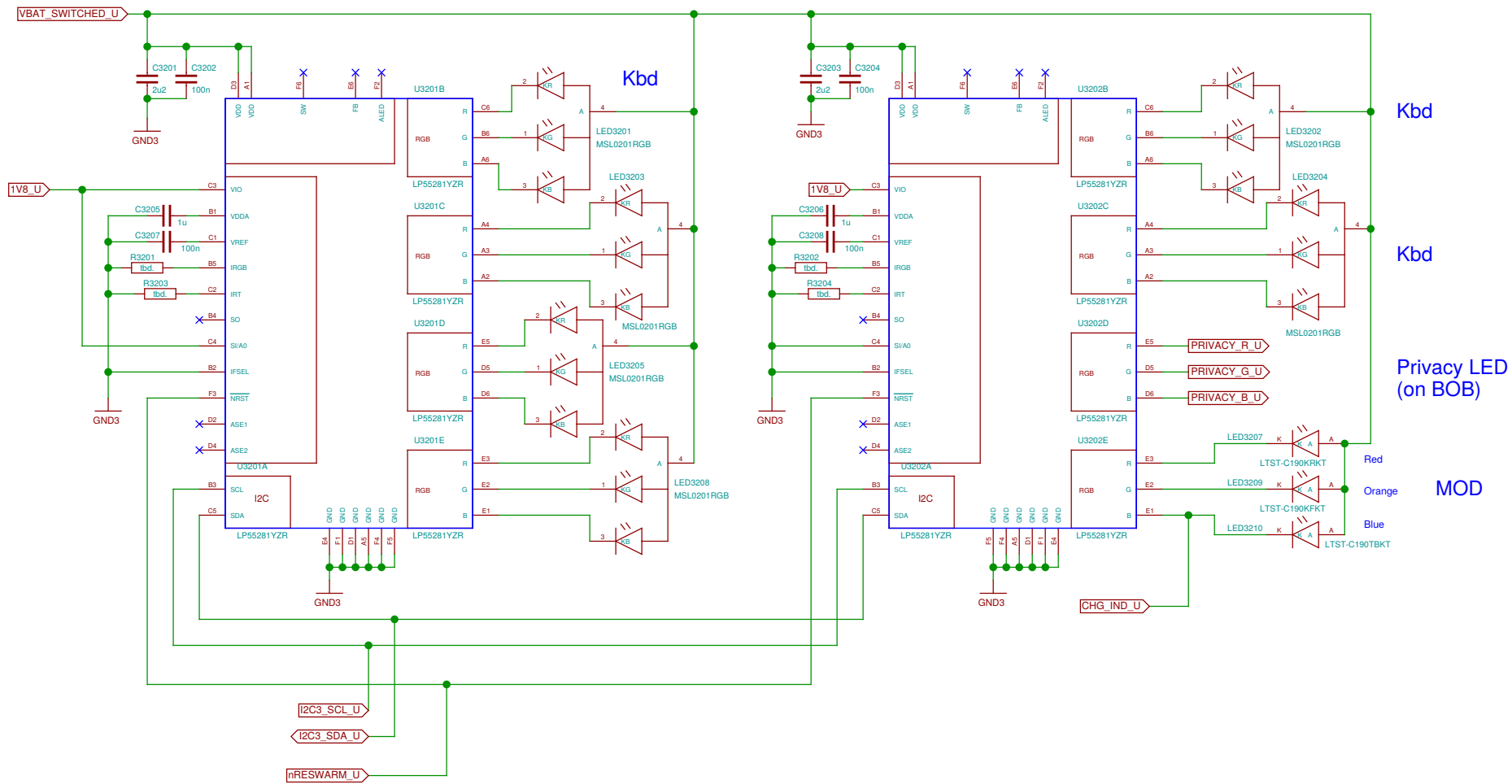
Sheet: /BB-XM Dummy (TWL4030/		
File: neo900_SS_29.sch		
Title: BB-XM Dummy (TWL4030)		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 29/37



Sheet: ./Camera/		
File: neo900_SS_30.sch		
Title: Camera		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 30/37



Sheet: /Fancy LEDs/		
File: neo900_SS_31.sch		
Title: Fancy LEDs		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 31/37

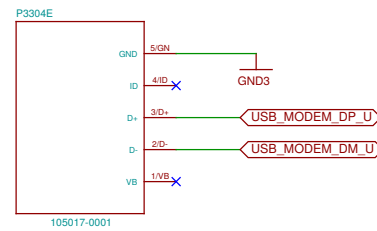


Sheet: /Basic LEDs/ File: neo900_SS_32.sch		
Title: Basic LEDs		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 32/37

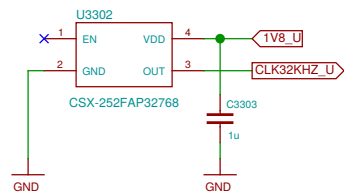
Cleaning up. The connections to BB-xM are on the next sheets.

connect to BB
by some Micro-USB cable

Modem USB

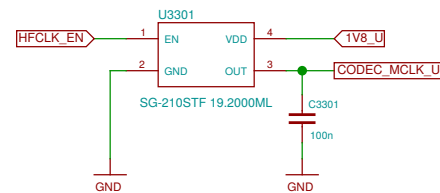


32 kHz clock



Alternative: OYKTGLJANF-0.032768

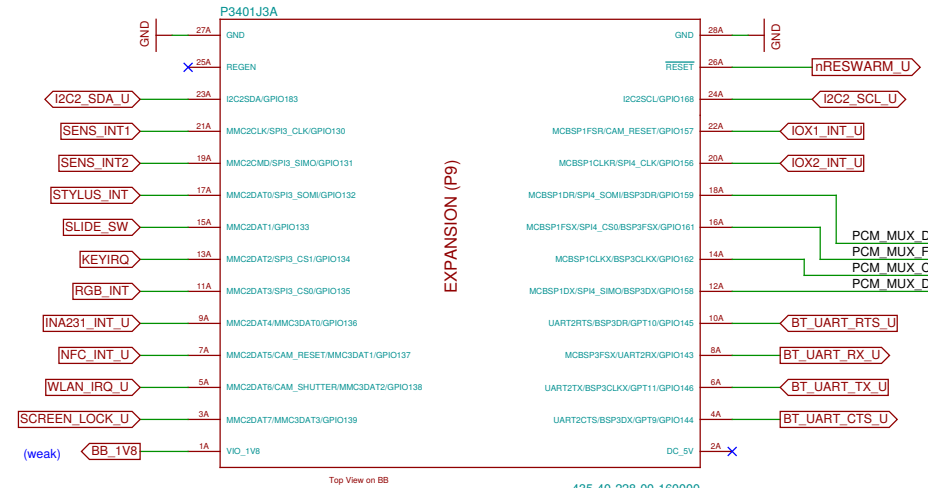
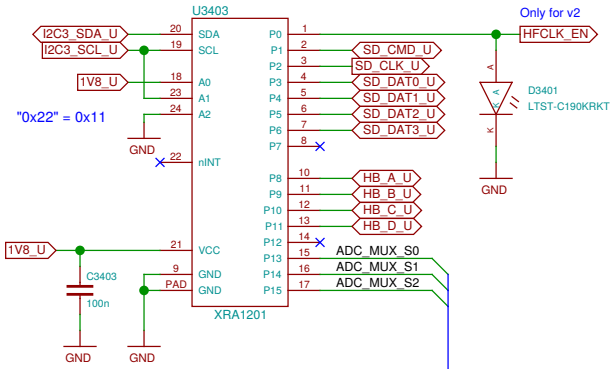
19.2 MHz clock



Alternative: KC2520B19.2000C1GE00

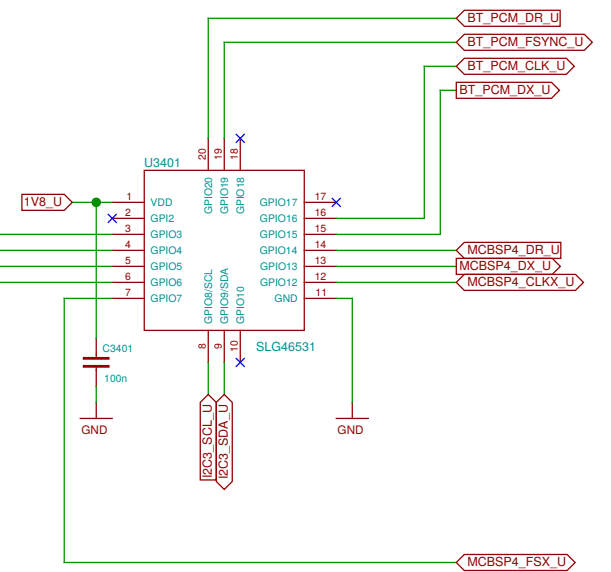
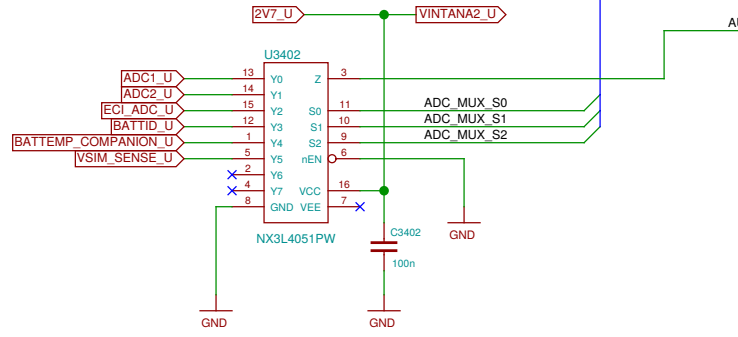
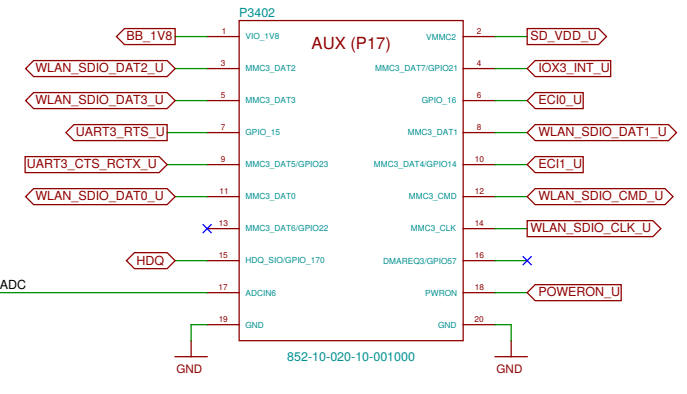
Sheet: ./Connector to BB-XM/		
File: neo900_SS_33.sch		
Title: Connector to BB-XM		
Size: A3	Date: 2016-11-08 13:41:27	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 33/37

TODO: update pin names in footprint



BB-xM Main Expansion Header (P9, 7.24)

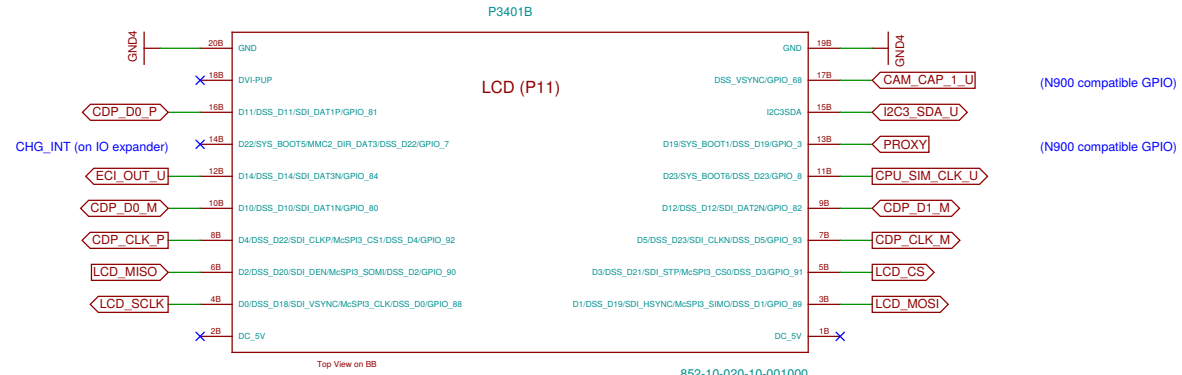
Auxiliary Expansion Header (P17, 7.26)



Sheet: /BB-XM Adapter (CPU)		
File: neo900_SS_34.sch		
Title: BB-XM Adapter (CPU)		
Size: A3	Date: 2016-11-08 15:02:23	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 34/37

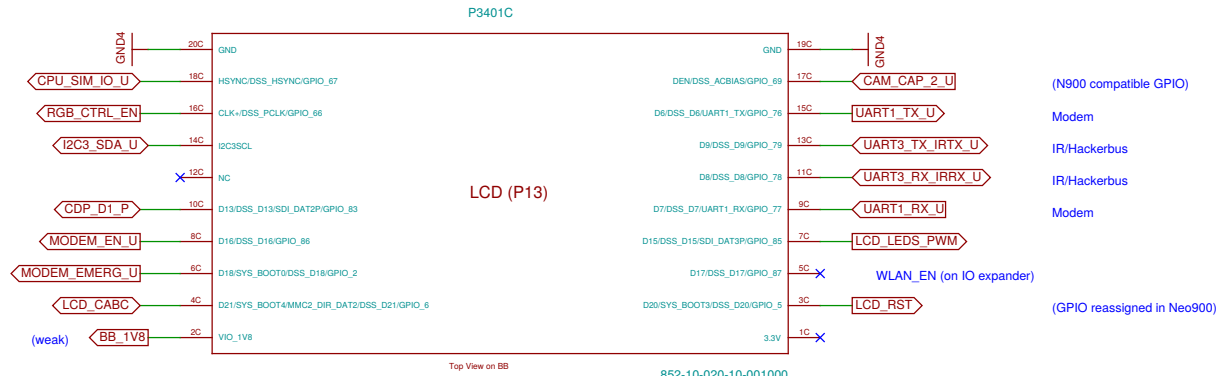
TODO: update pin names in footprint

P11 (7.25)



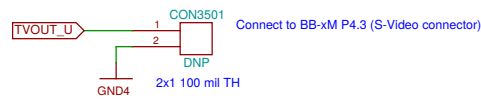
Same part, as "breakaway" strip (100 positions):
852-10-1000-10-001000

P13 (7.25)



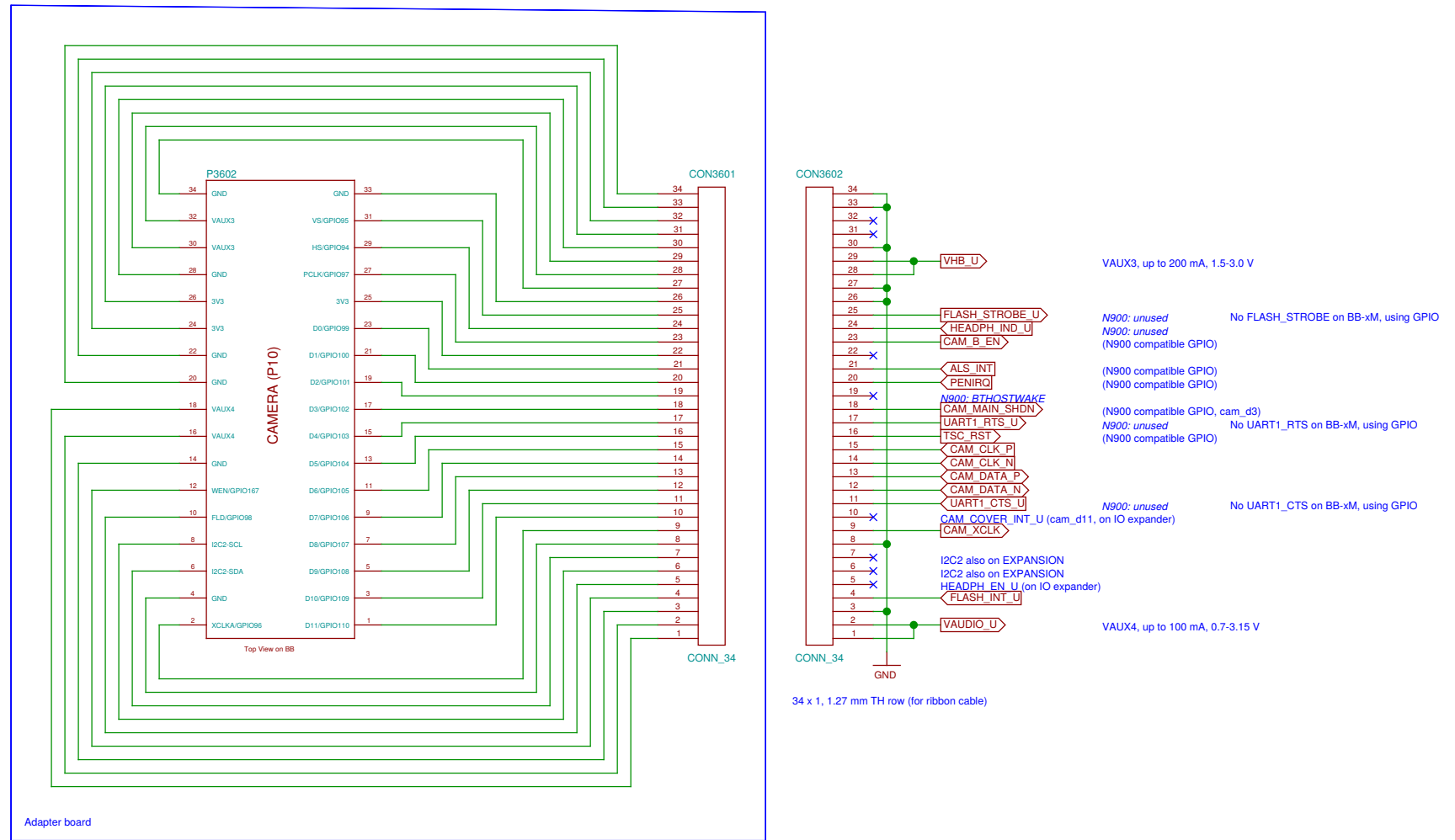
Same part, as "breakaway" strip (100 positions):
852-10-1000-10-001000

P4 (7.19)

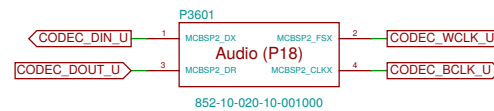


Sheet: /BB-XM Adapter (DISP)/		
File: neo900_SS_35.sch		
Title: BB-XM Adapter (DISP)		
Size: A3	Date: 2016-11-08 13:41:27	Rev:
Plotted by eeshow 8d7d7ce 20161108-15:12Z		Id: 35/37

Processor Camera Port Interface (P10, 7.20.3)



TODO: update pin names in footprint



This part is a "breakaway" strip (20 positions) and needs to be customized (cut) before assembly.
Alternatively, 852-10-100-10-001000 (100 positions) could be used.

Molex Jumper cables to connect BB-XM-Adapter to Uppwer board

N3701 15015-0439	N3702 15015-0439	N3703 15015-0439
CPU	DISP	CAM

N3704 N900 case assembly

N3705 N97-CAMERA-HOLE

N3706 headset jack

N3707 STENCIL-TOP

N3708 STENCIL-BOTTOM
