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Click  Here

CPU + PoP RAM/NAND

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File: neo900_SS_37.sch	

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

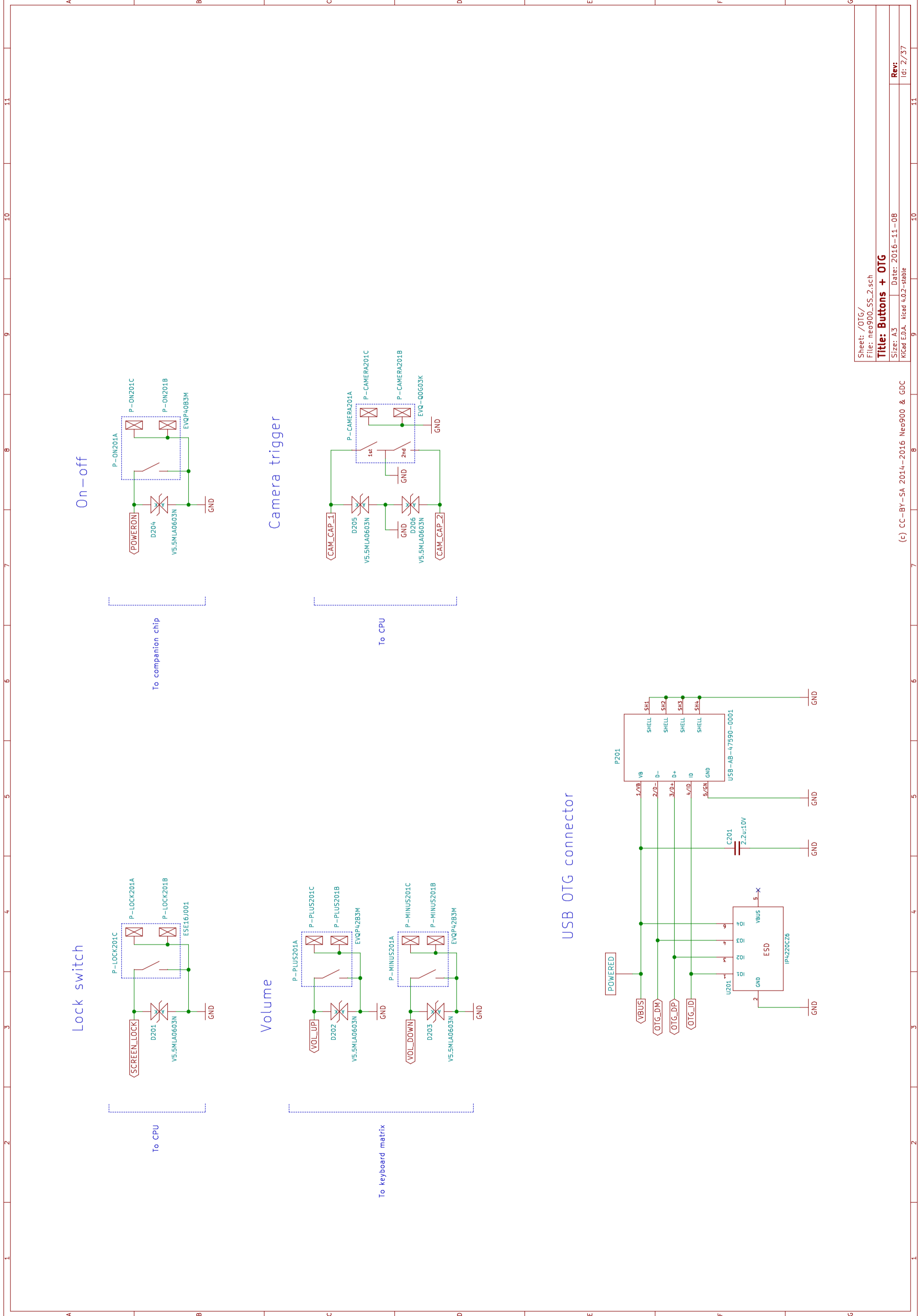
Sheet: / neo900.sch
File: neo900.sch
Title: Neo900

Size: A3
KICad EDA. Kicad 4.0.2-stable

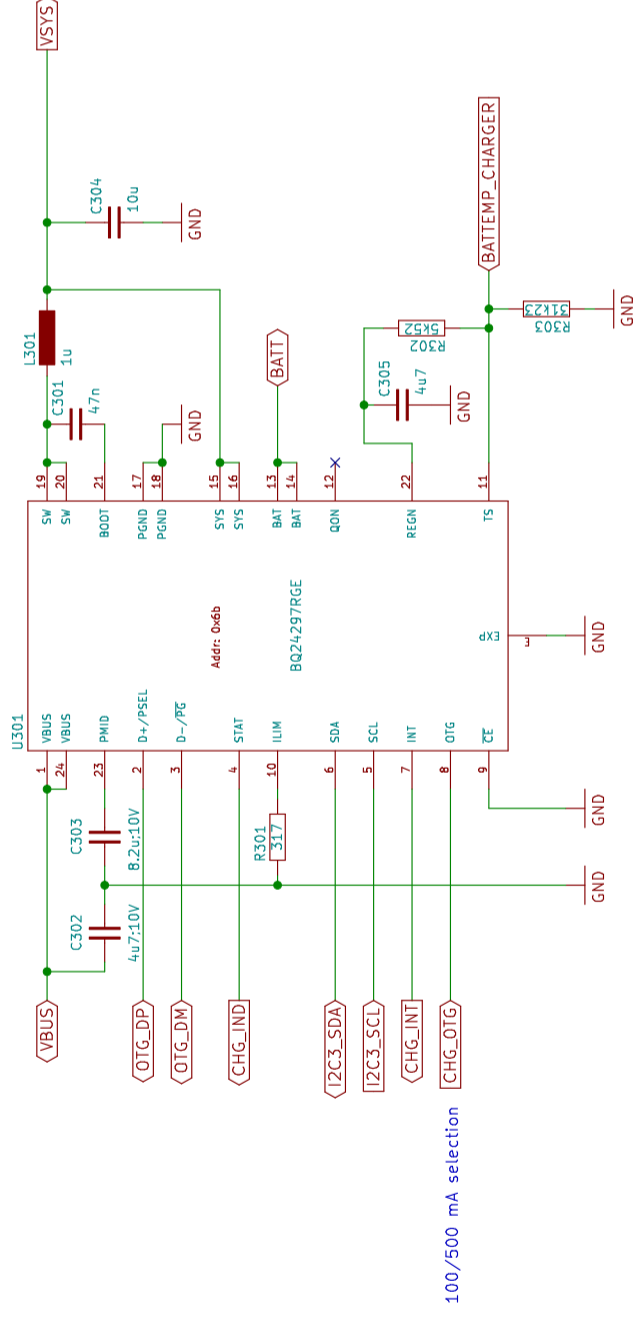
Date: 2016-11-08

Rev: 1

Id: 1/37

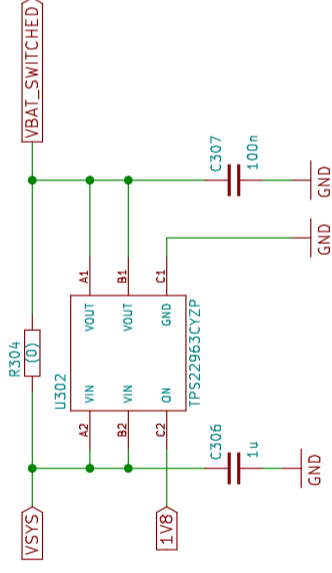


Battery charger with USB OTG

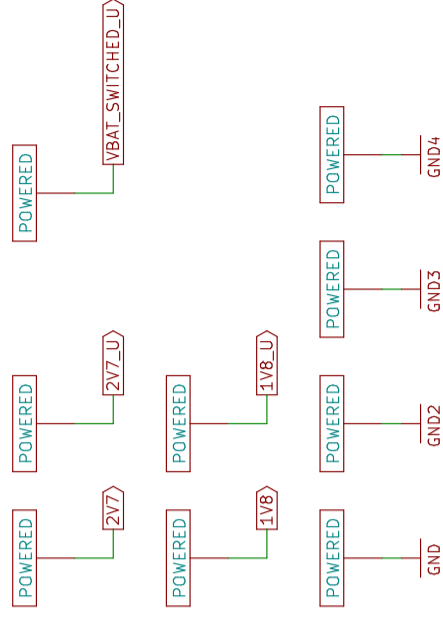


Power distribution and sequencing

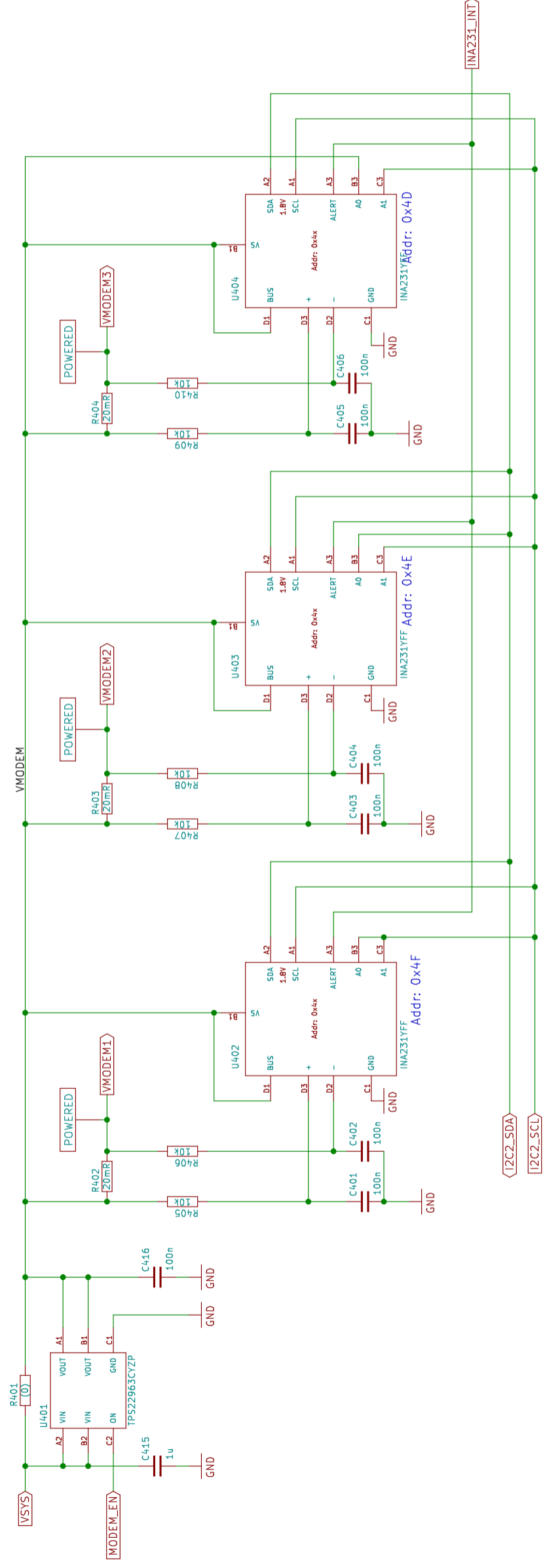
Most high-current consumers are on VBAT_SWITCHED.
1V8 signals that the regulators on UPPER are operational.



KiCad bureaucracy

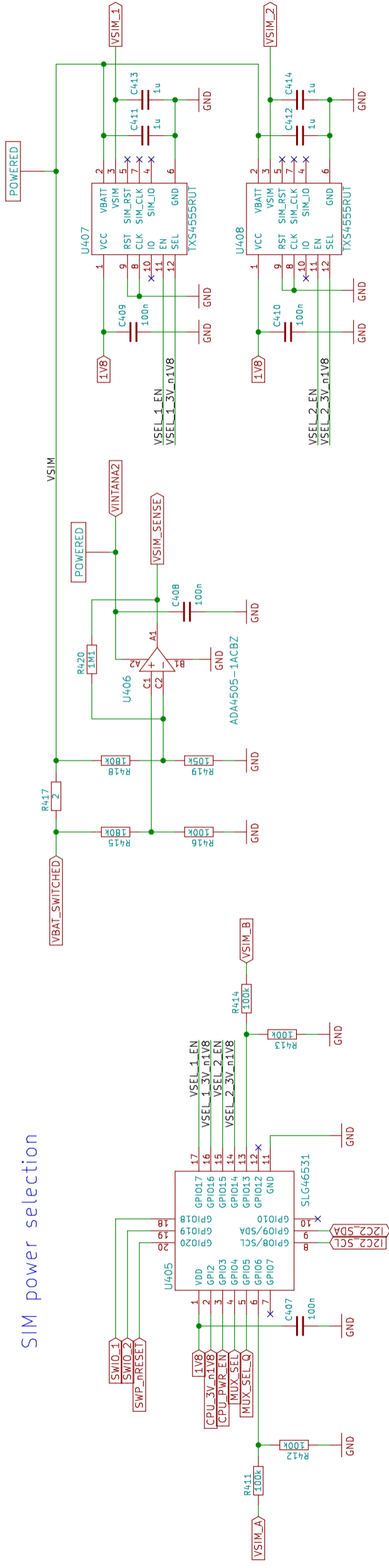


Modem current monitor

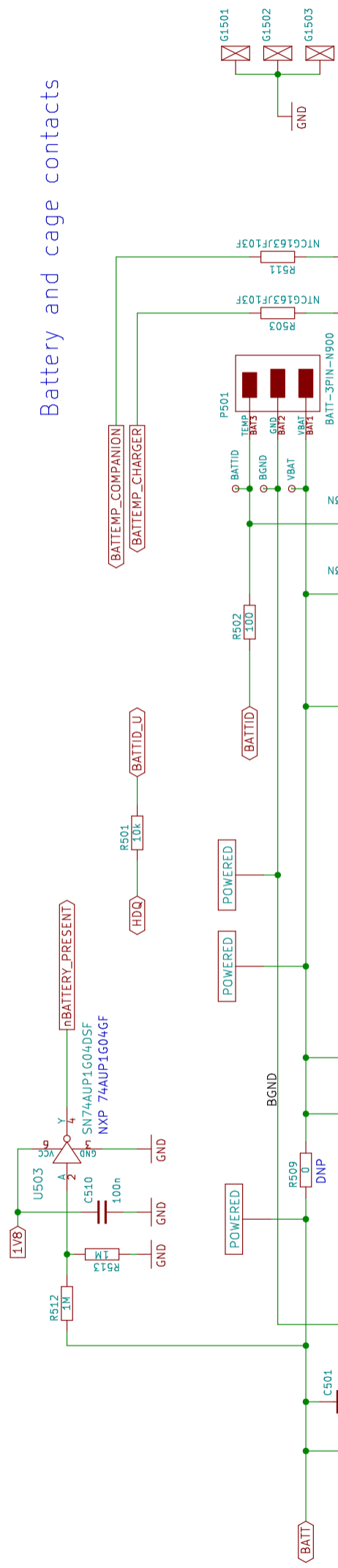


SIM current sensing

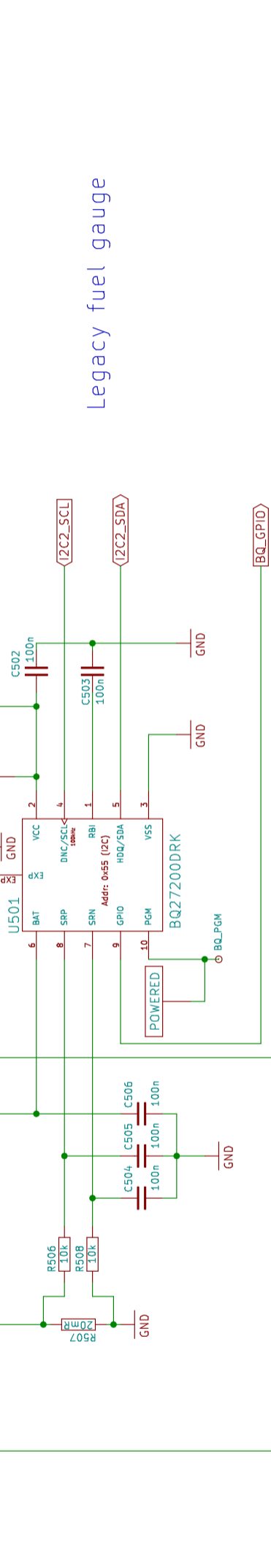
SIM power supply



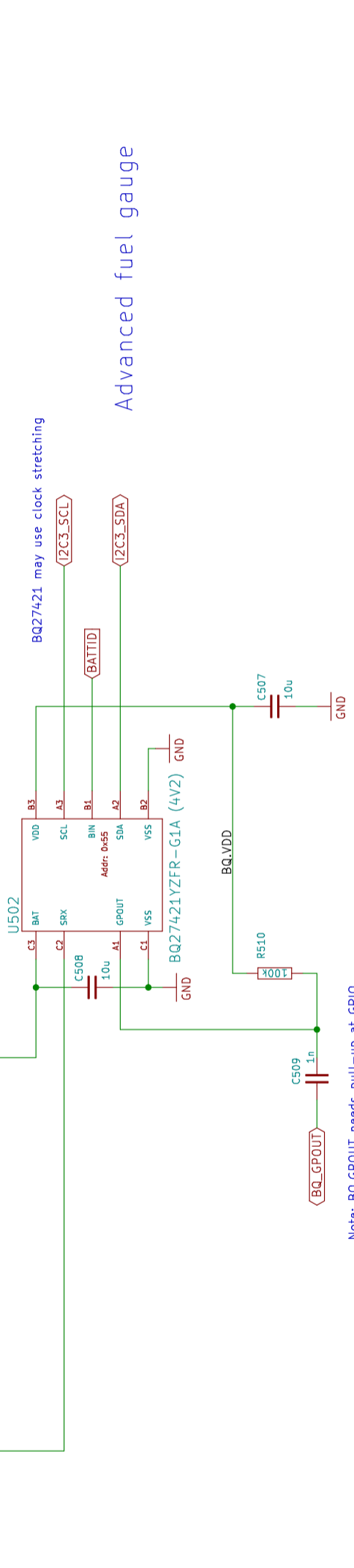
TODO: update SLG design for changed pins



Battery and cage contacts



Legacy fuel gauge



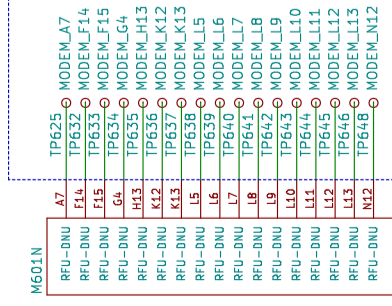
Advanced fuel gauge

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

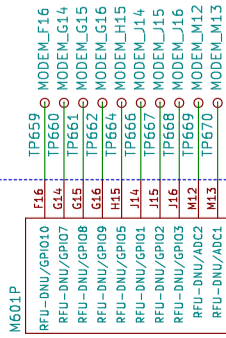
SIM B bus



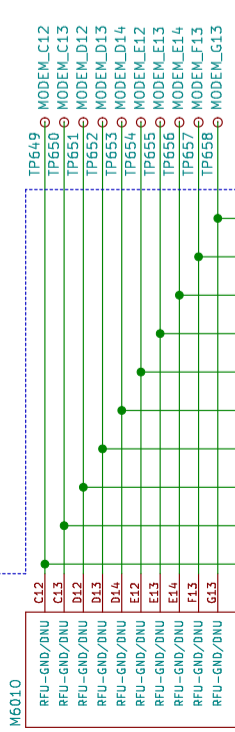
17+10+10 = 37 test points. PCB space permitting, to be arranged in a 6 x 6 + 1 grid with 1.0 mm pitch. This patchfield is to be placed adjacent to the SIM B bus test points.



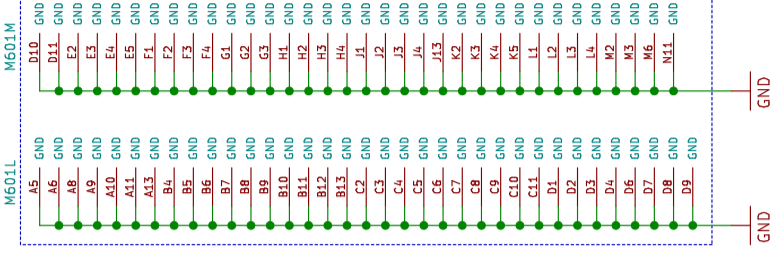
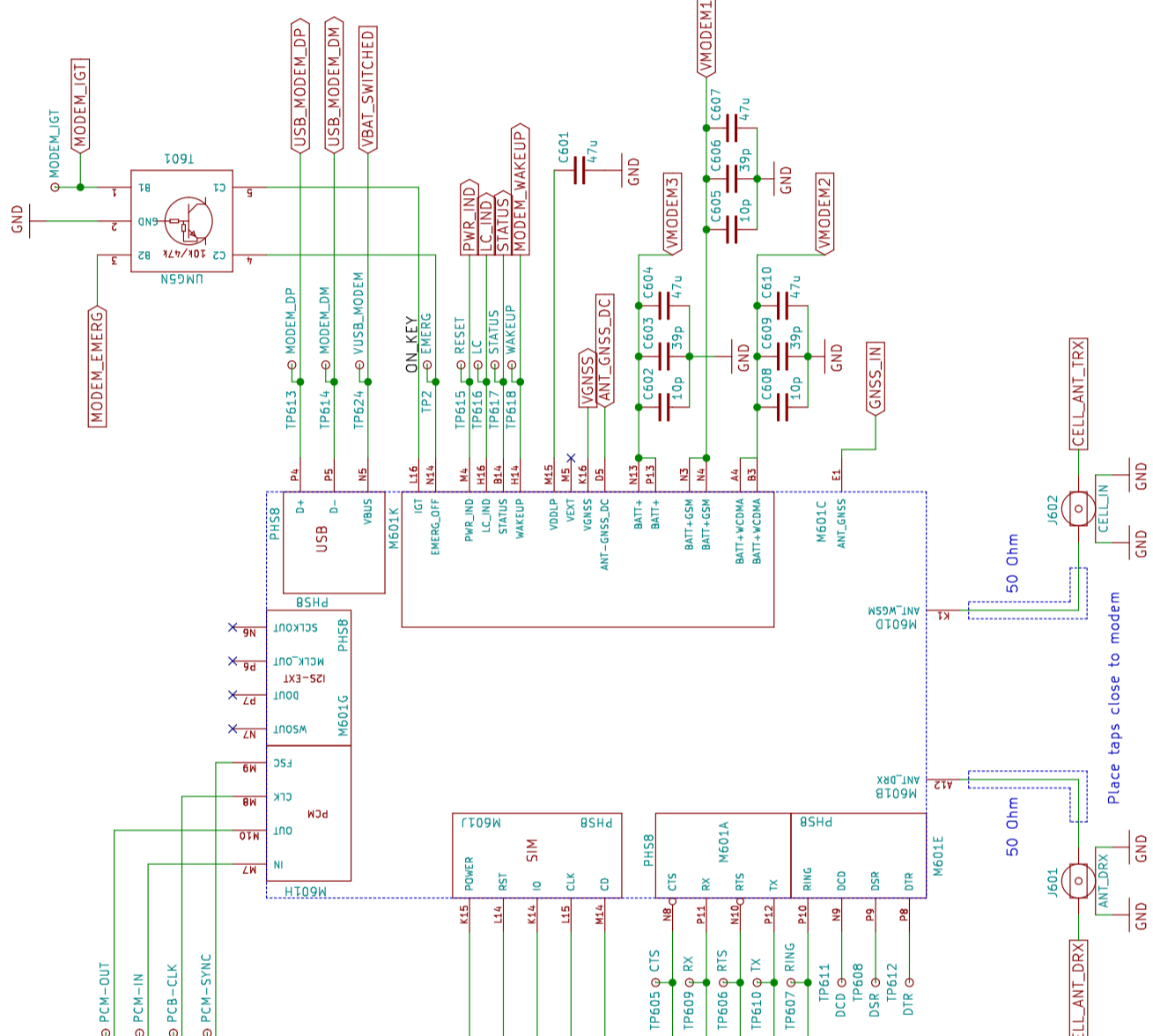
Pads that are DNU in PHS8 and PLS8.



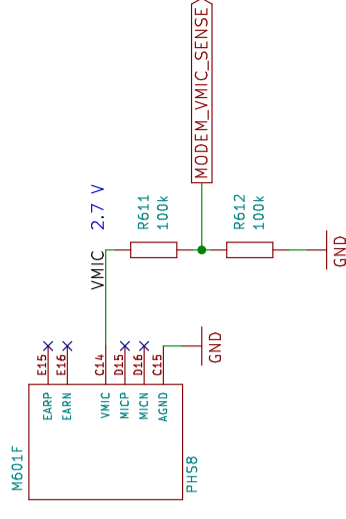
Pads that are DNU in PHS8 but have a GPIO or ADC function assigned to them in PLS8.

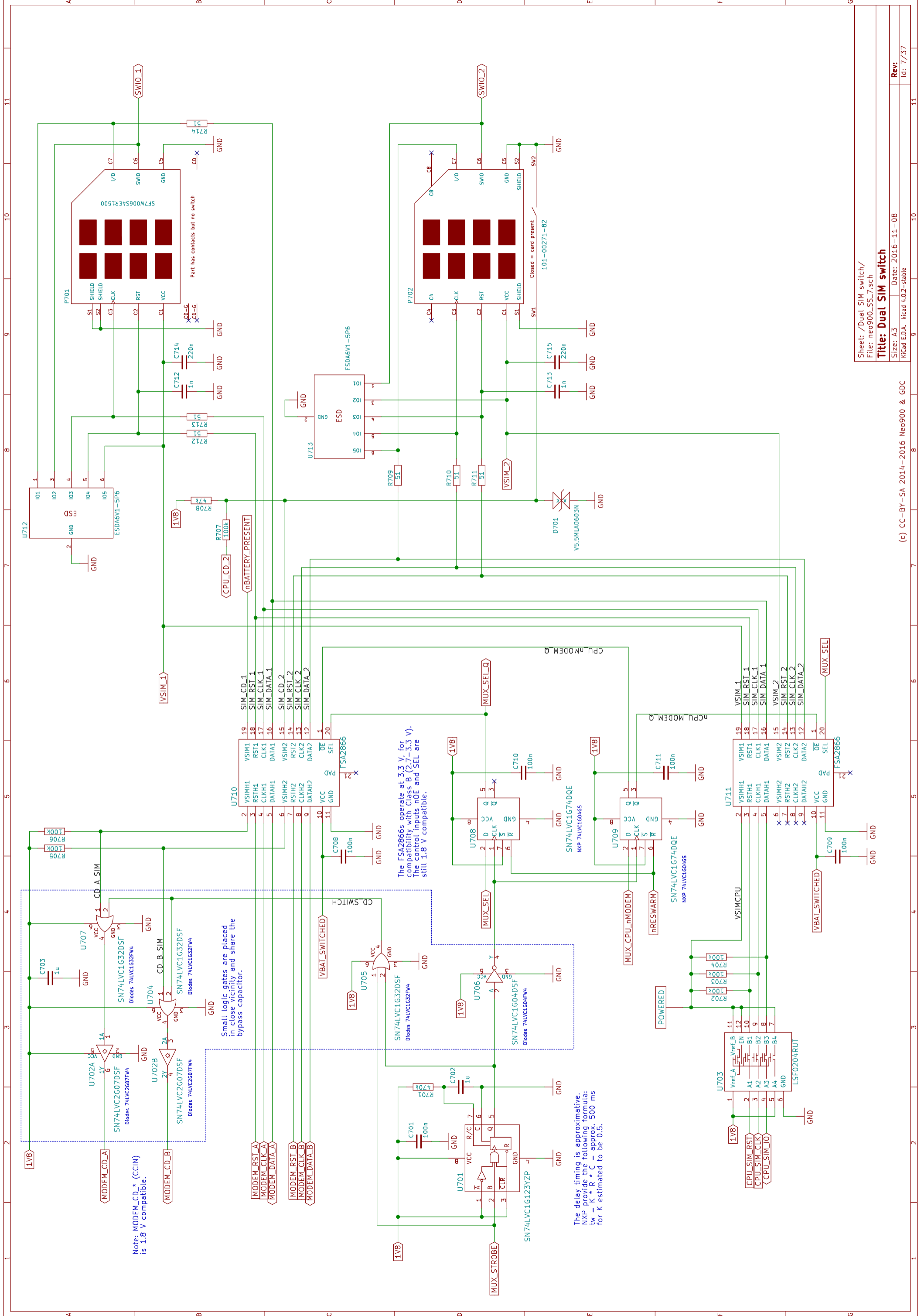


Pads RFU (GND) in PHS8 and RFU (DNU) in PLS8. The resistors indicate cuttable traces.



Anti-eavesdropping



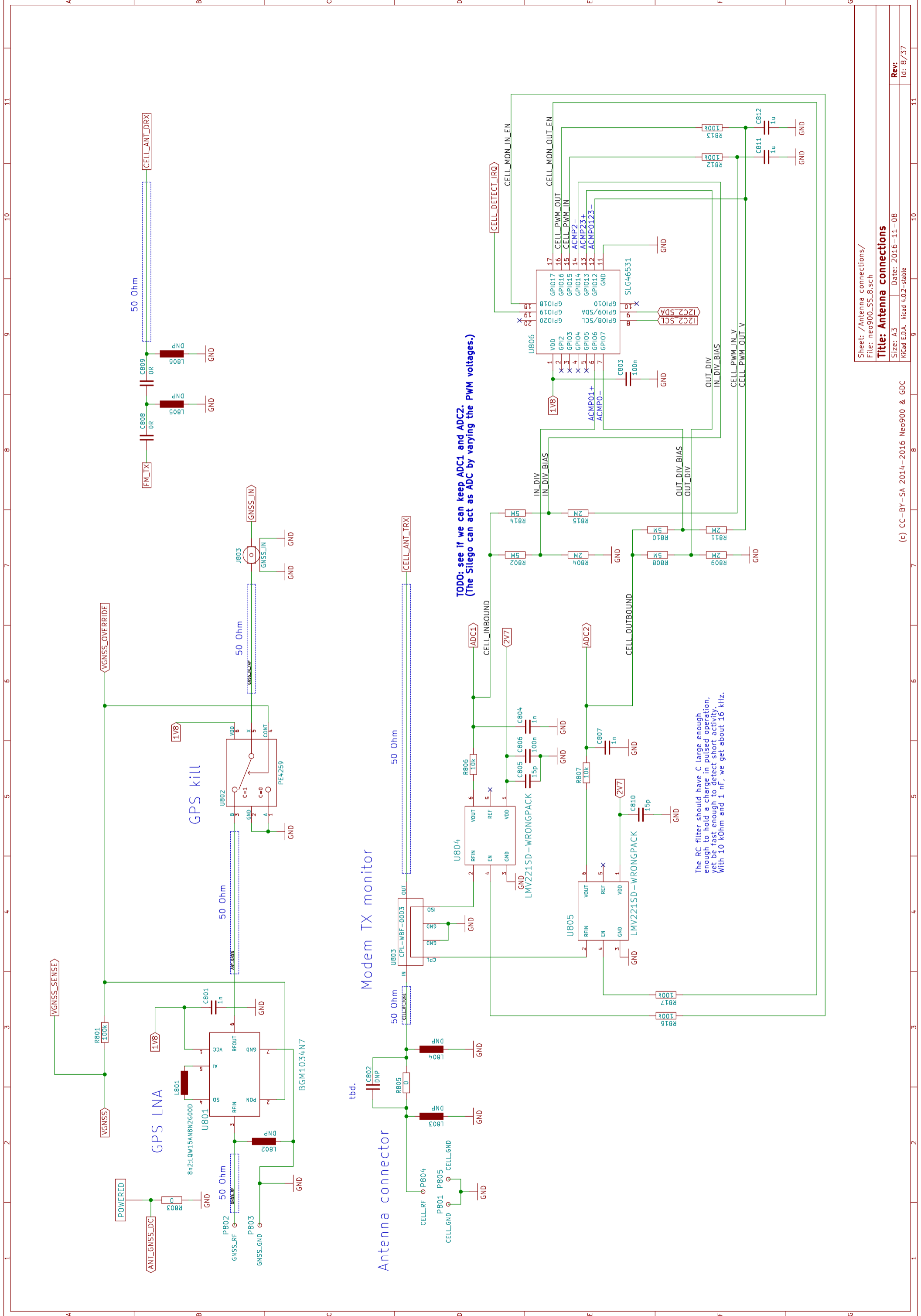


Note: MODEM_CD_* (CCIN) is 1.8 V compatible.

Small logic gates are placed in close vicinity and share the bypass capacitor.

The FSA2866s operate at 3.3 V, for compatibility with Class B (2.7-3.3 V). The control inputs nOE and SEL are still 1.8 V compatible.

The delay timing is approximative. NXP provide the following formula: $t_w = K * R * C$ = approx. 500 ns for K estimated to be 0.5.

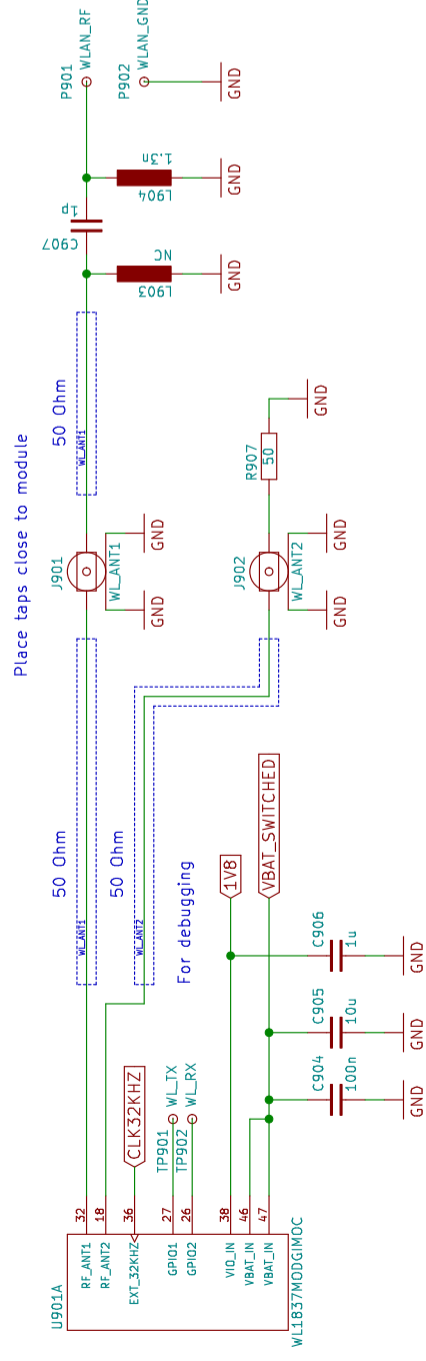


TODO: see if we can keep ADC1 and ADC2.
(The Sitego can act as ADC by varying the PWM voltages.)

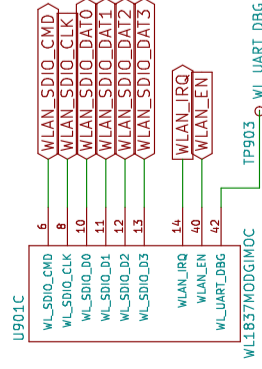
The RC filter should have C large enough enough to hold a charge in pulsed operation, yet be fast enough to detect short activity. With 10 kOhm and 1 nF, we get about 16 kHz.

TODO: assign footprints for c-spring contacts

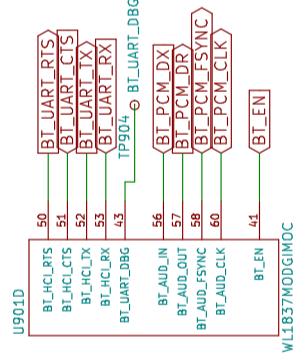
WLAN/BT antenna



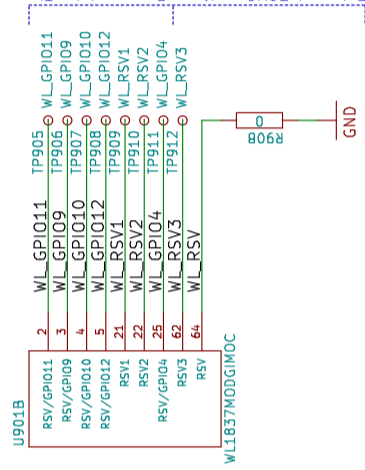
WLAN



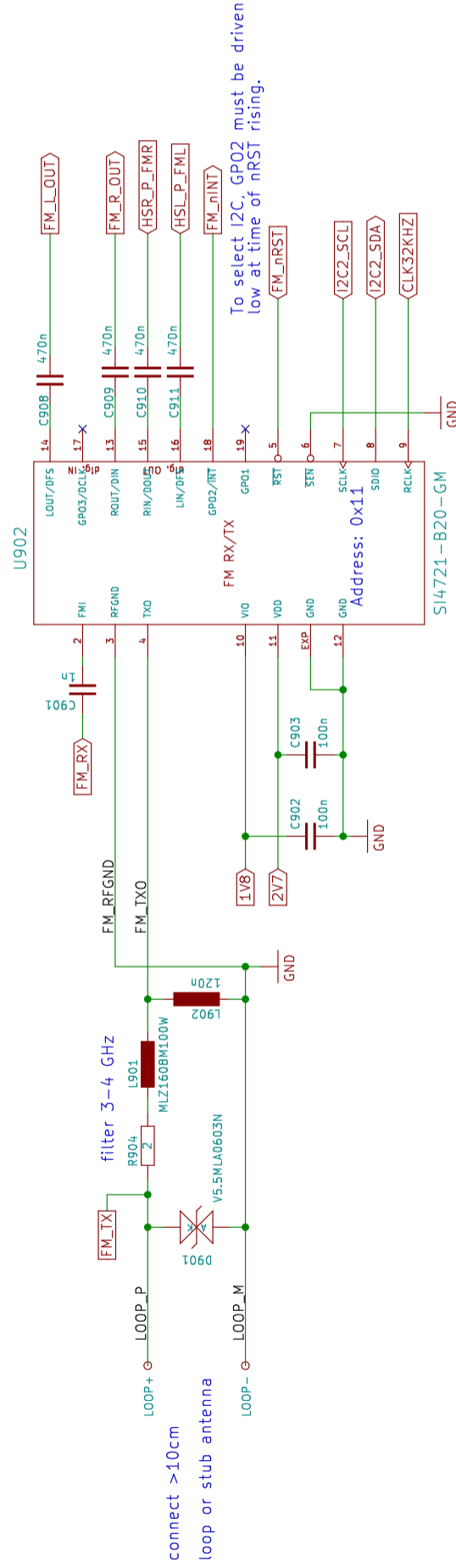
Bluetooth



Reserved / Debugging

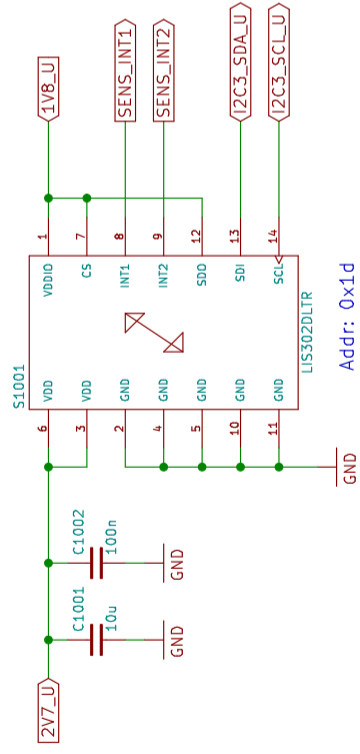


FM Radio (TX/RX)

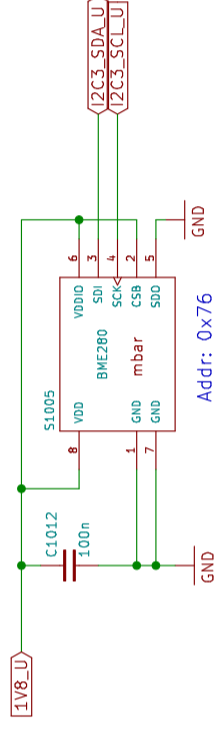


SI4705 is pin compatible (mostly) but RX-only

Acceleration (legacy)

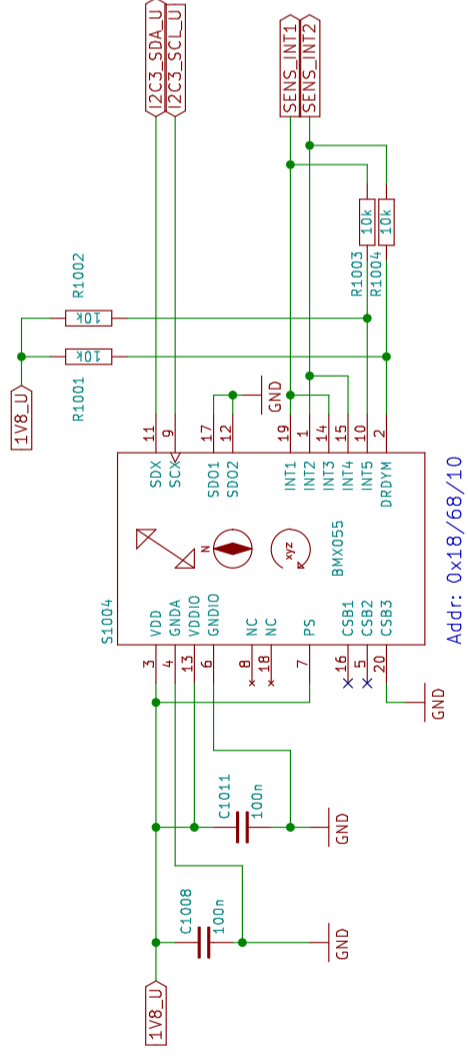


Pressure, humidity

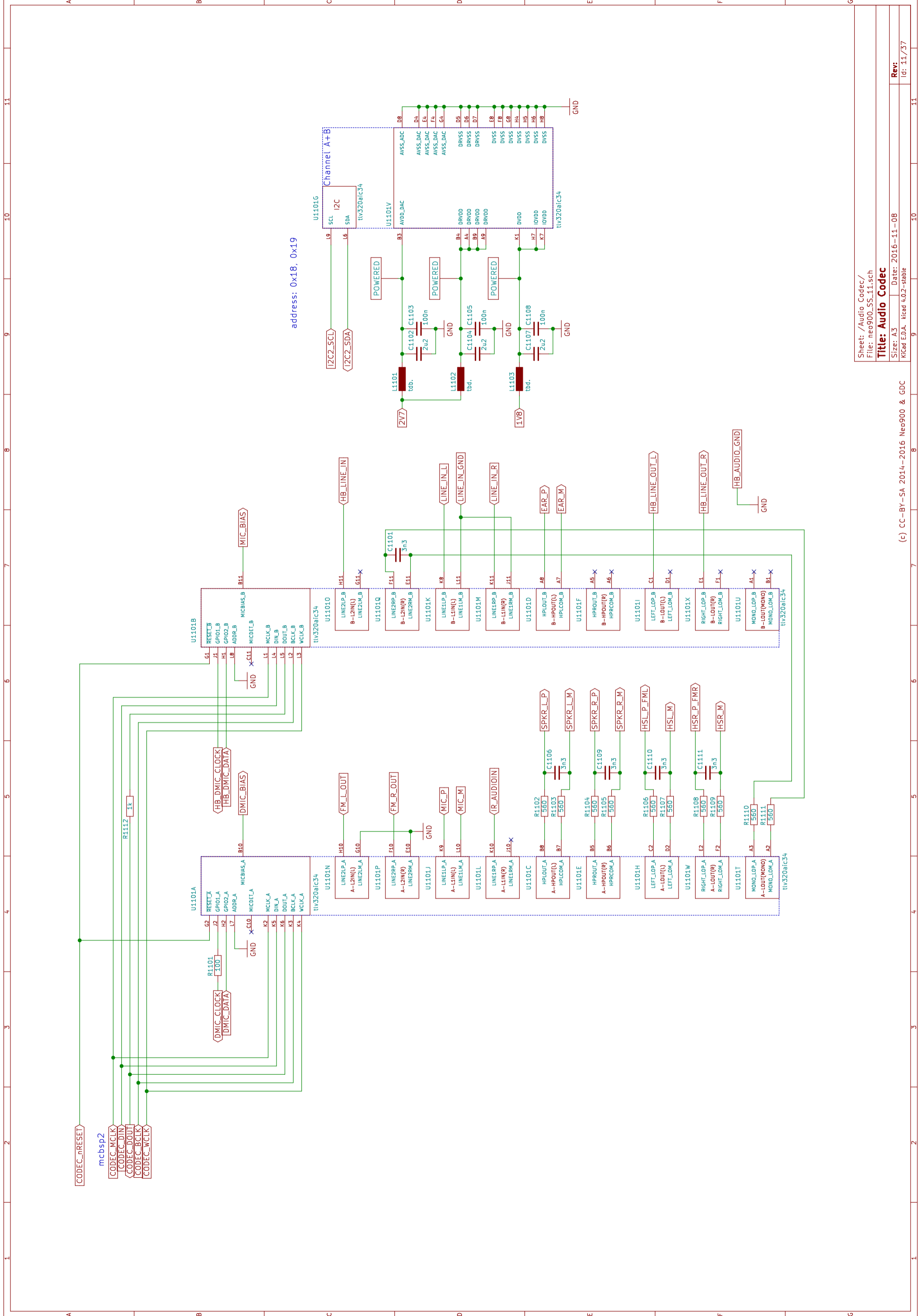


keep away from liquids and extreme temperatures

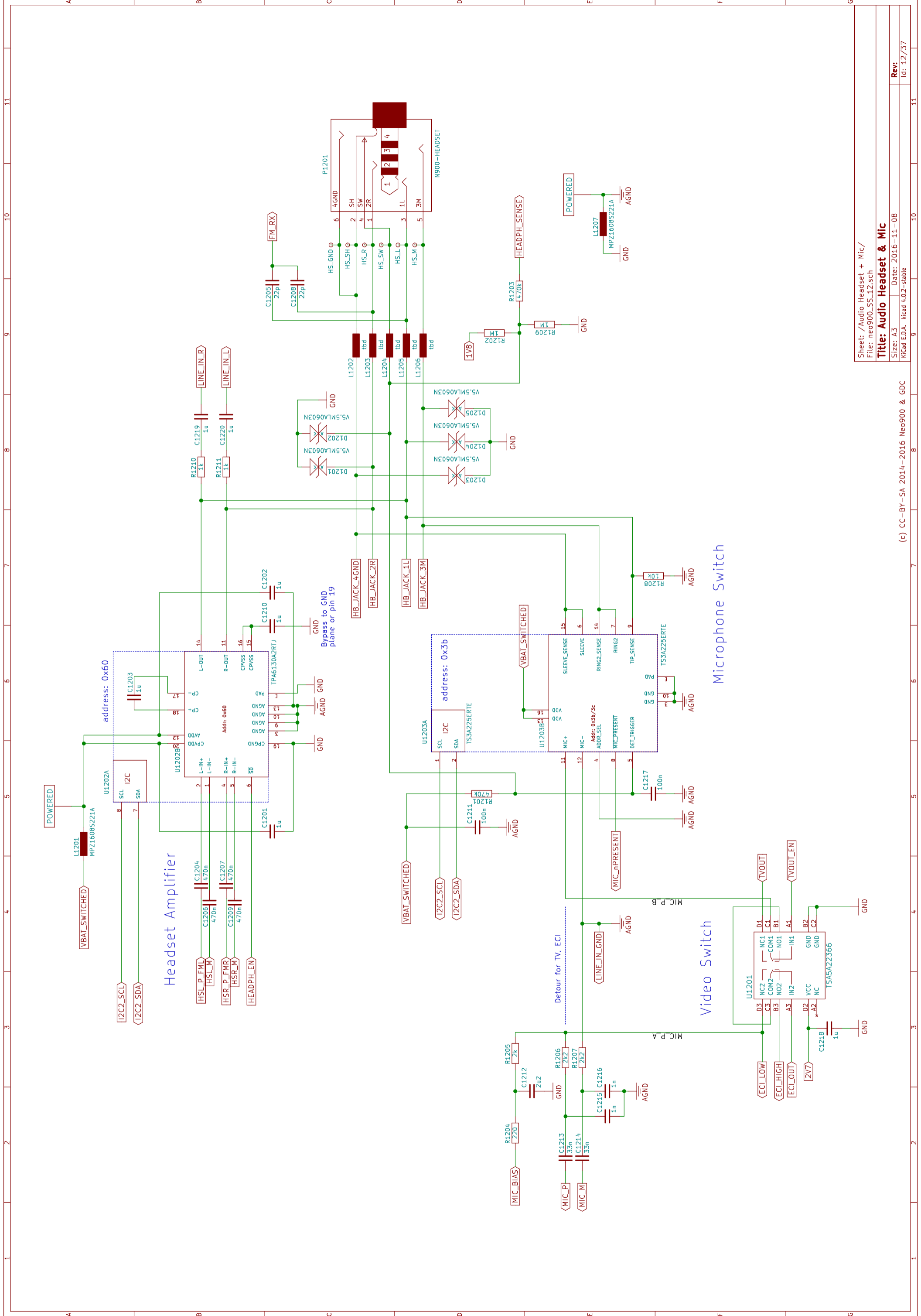
9-axis (acceleration, gyroscope, magnetometer)

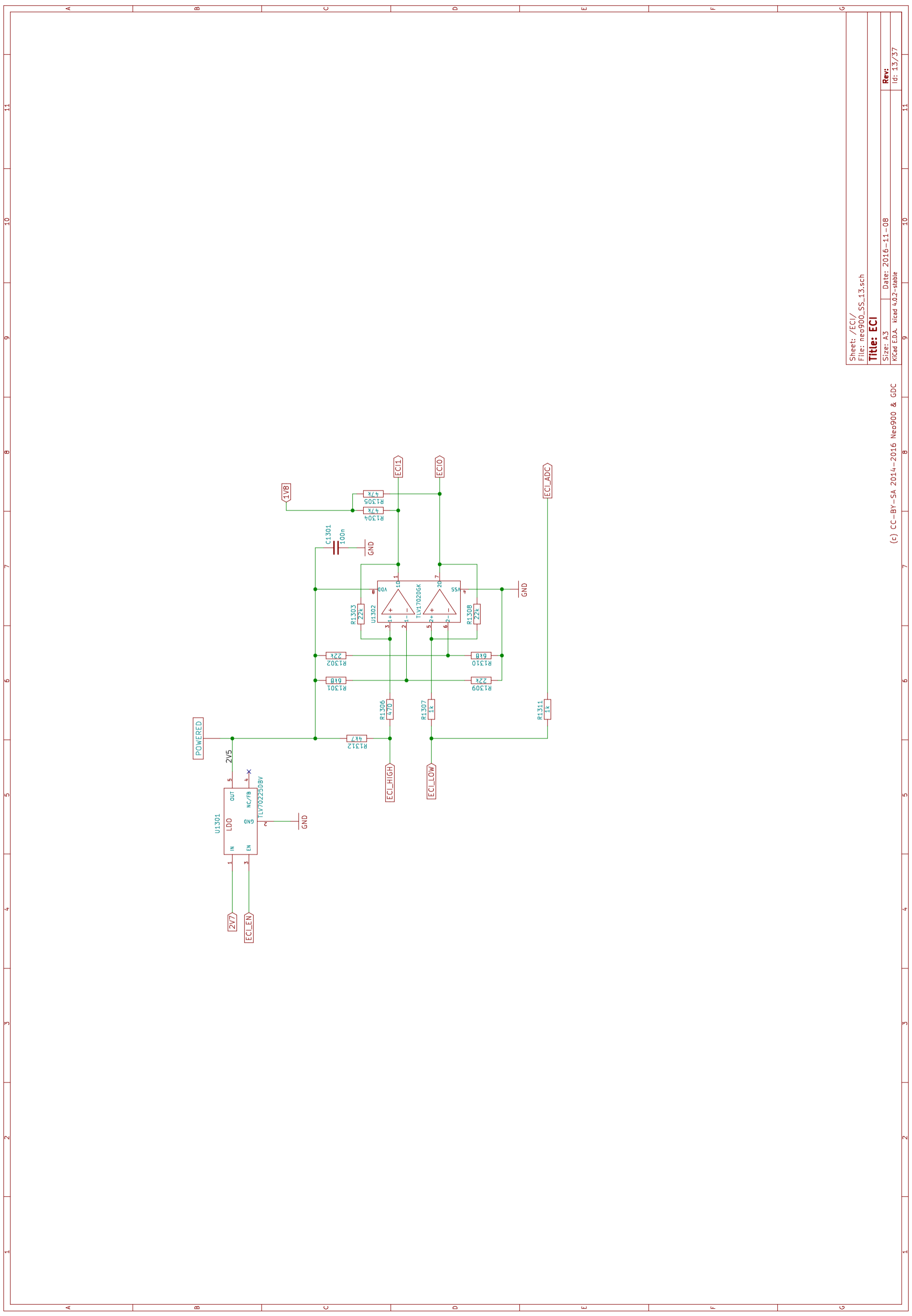
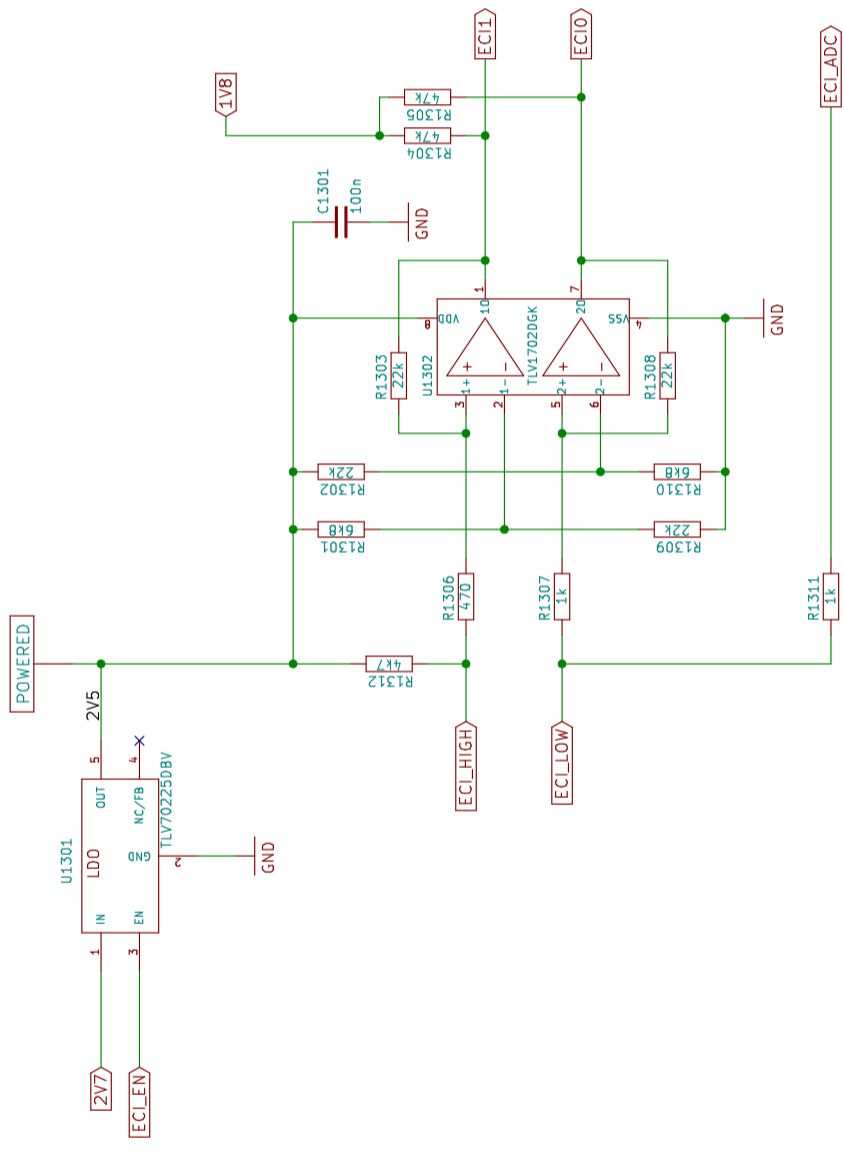


keep away from magnets and metal

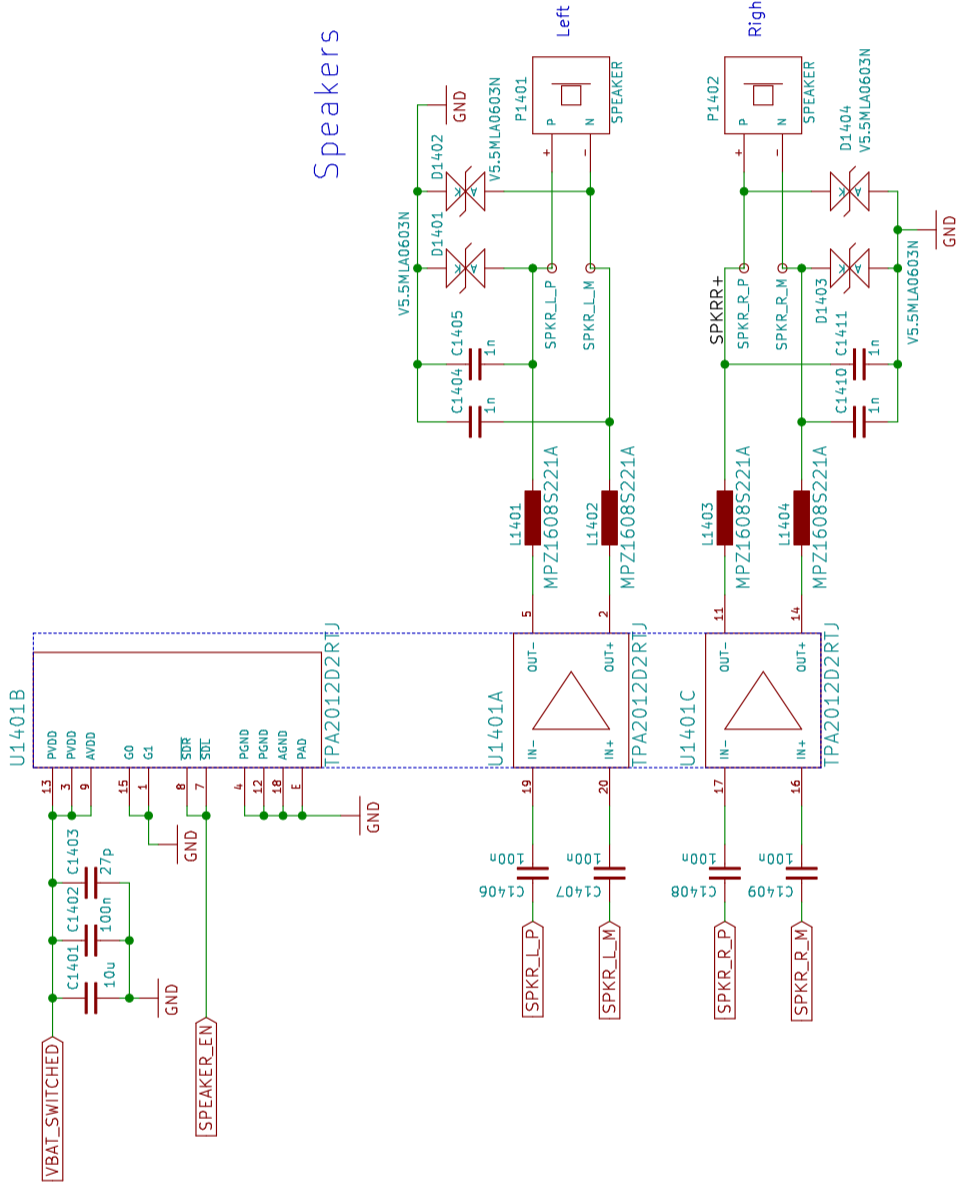


address: 0x18, 0x19



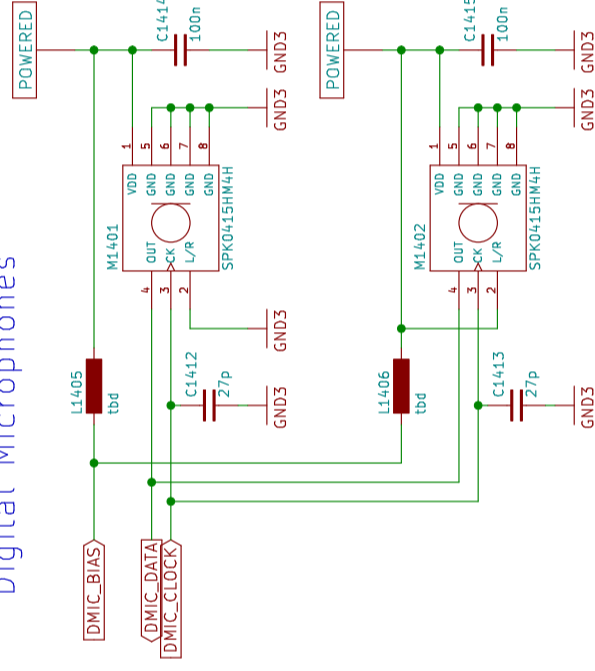


Hands-free

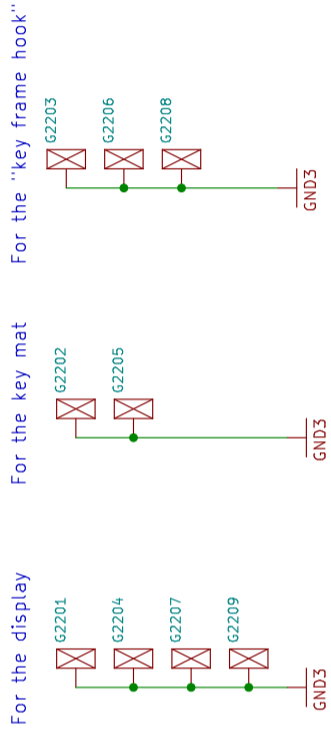


Speakers

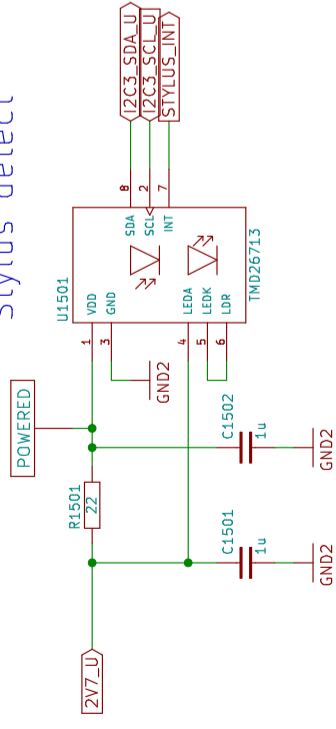
Digital Microphones



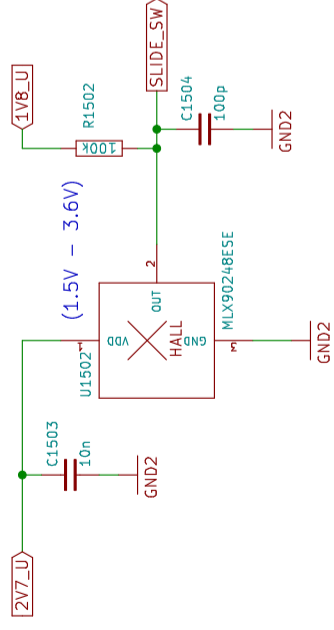
Shield Contacts on UPPER



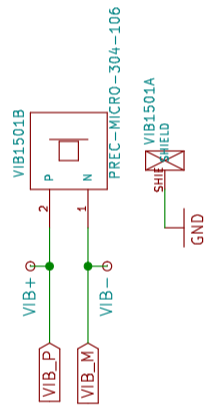
Stylus detect

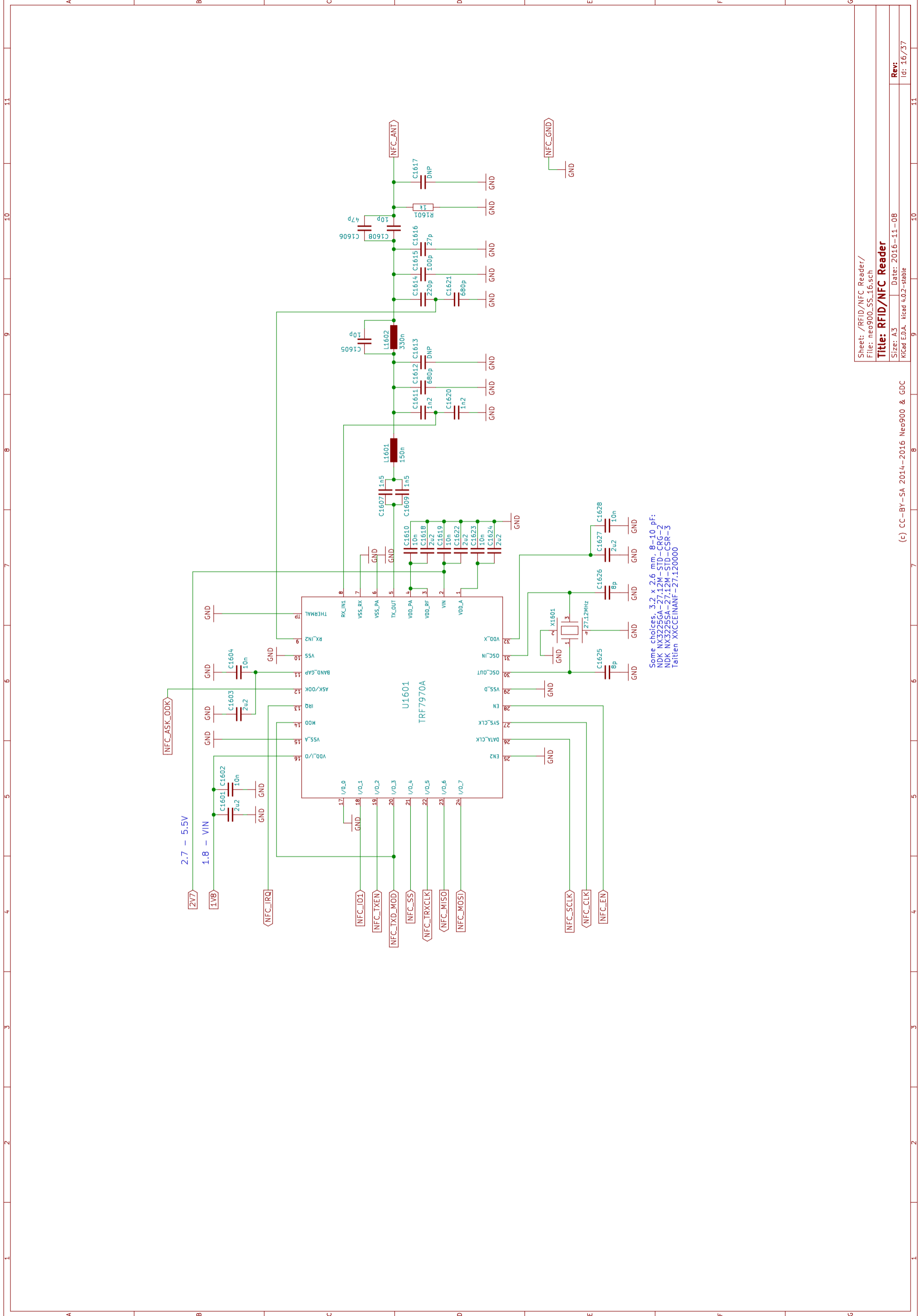


Slide sensor

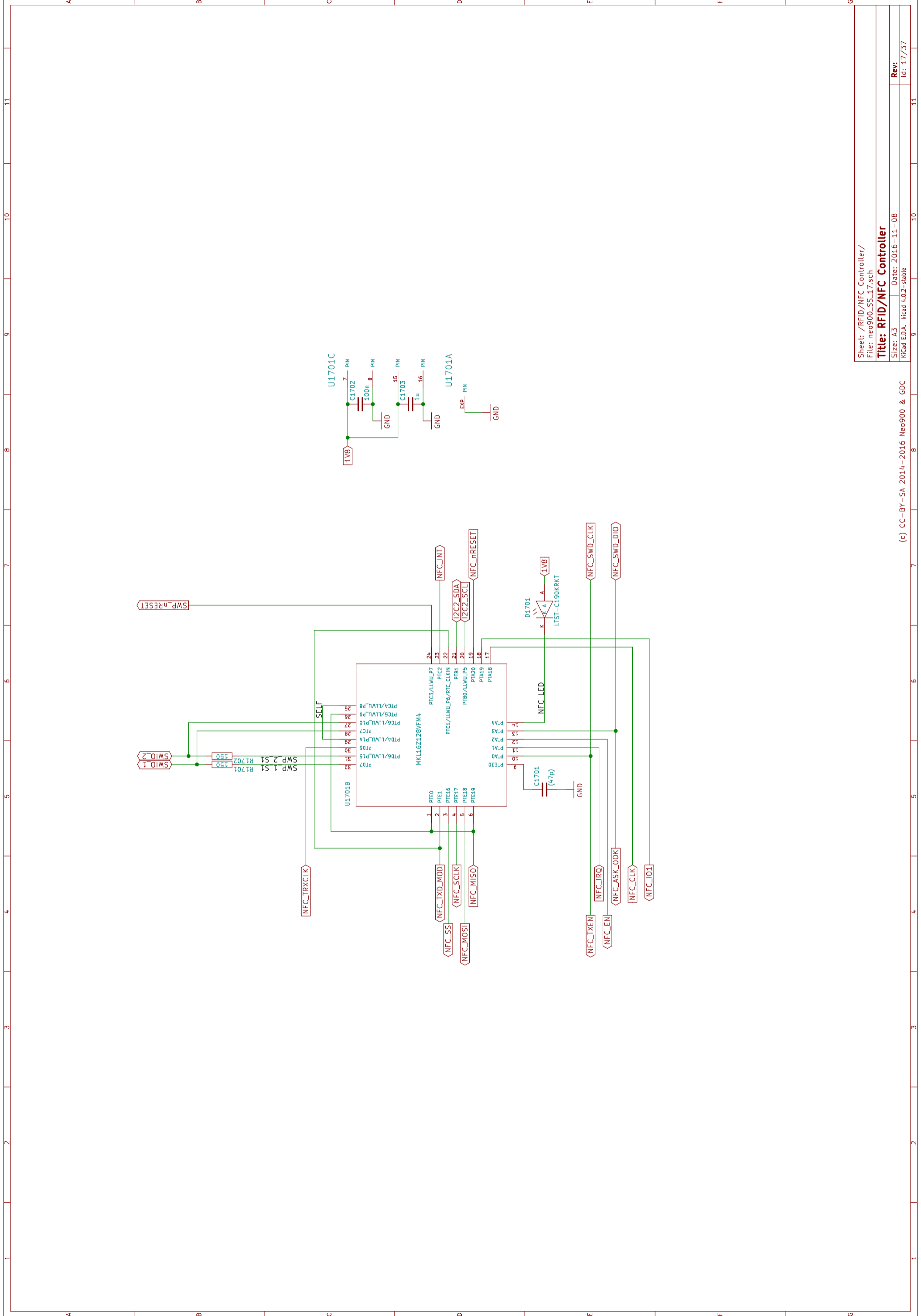


Vibramotor





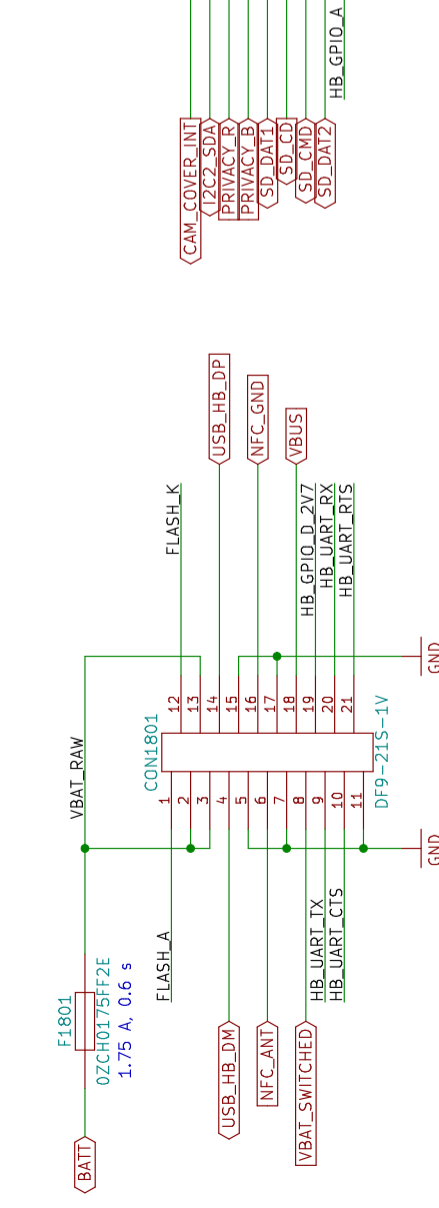
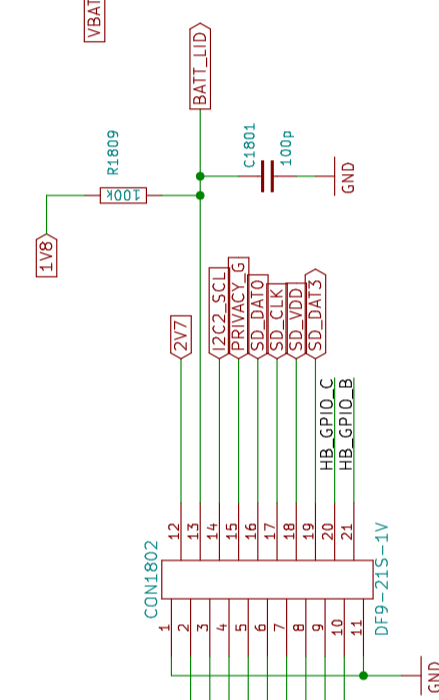
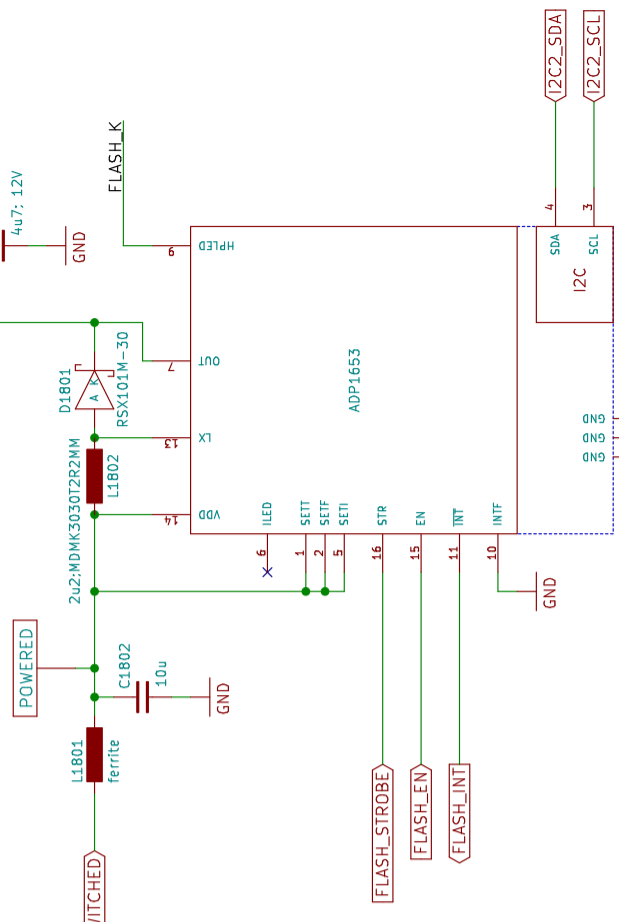
Some choices: 3,2 x 2,6 mm, 8-10 pF:
 NDK NX3225GA-27.12M-S1D-CRG-2
 NDK NX3225SA-27.12M-S1D-CRG-3
 Taitien XXCEINANF-27.120000



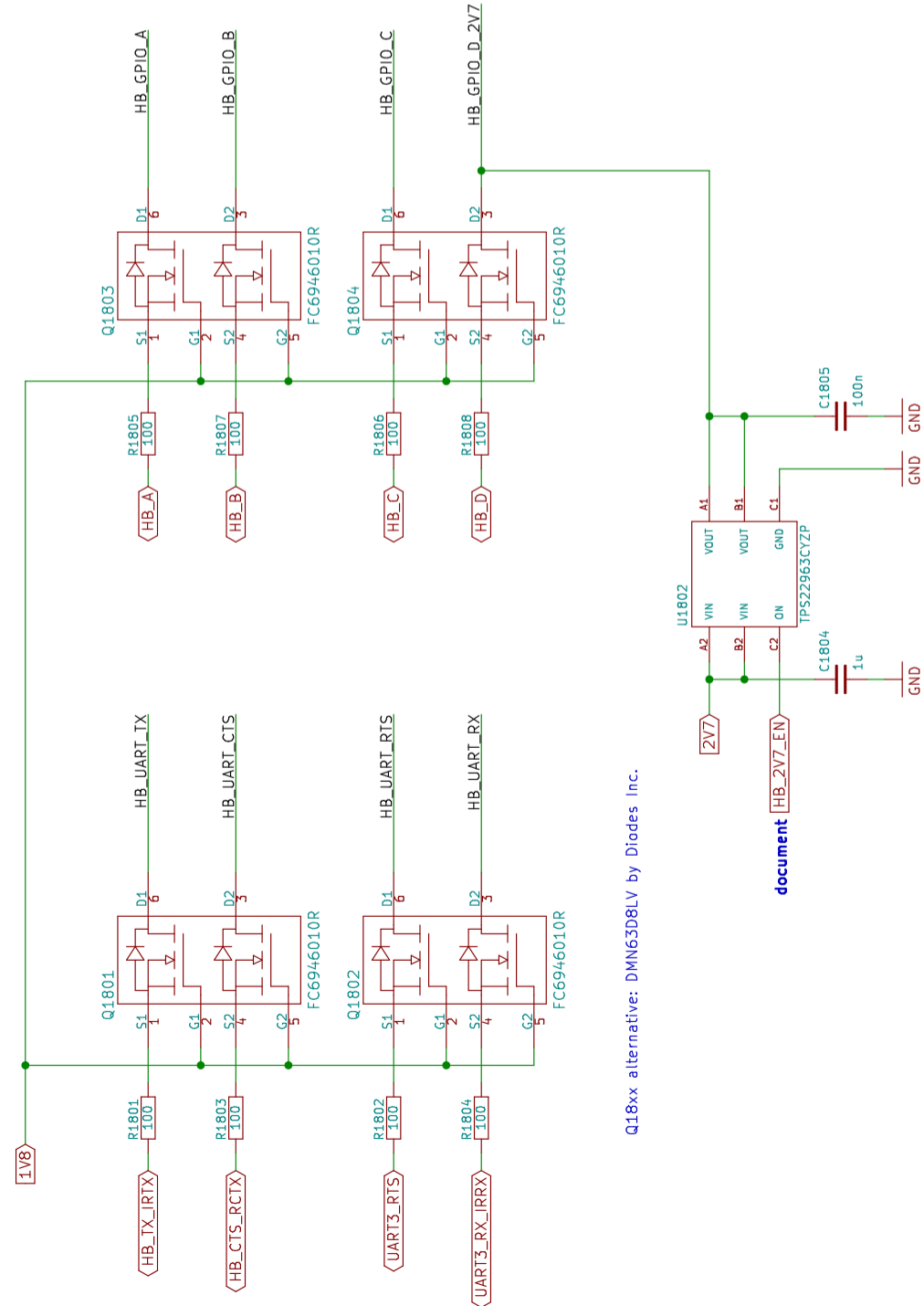
LOWER-B0B Interconnect (LOWER side)

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

Flash/Torch

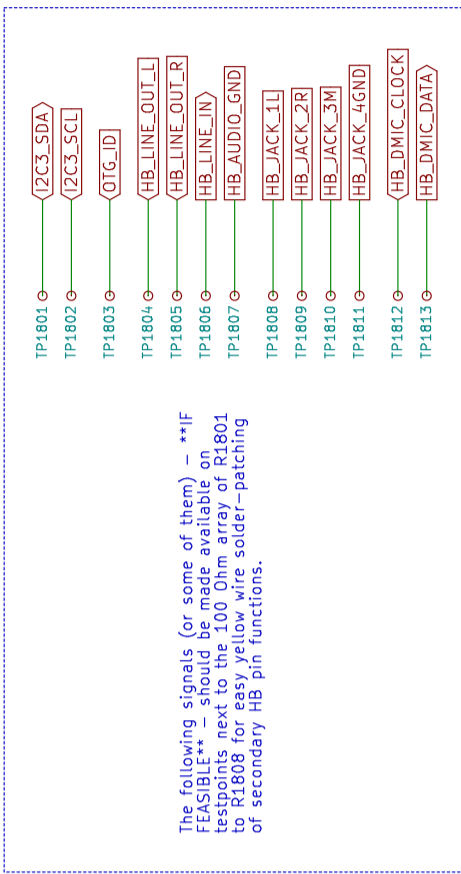


Level shifters for Hackerbus GPIO and UART



Q18xx alternative: DMN63D8LV by Diodes Inc.

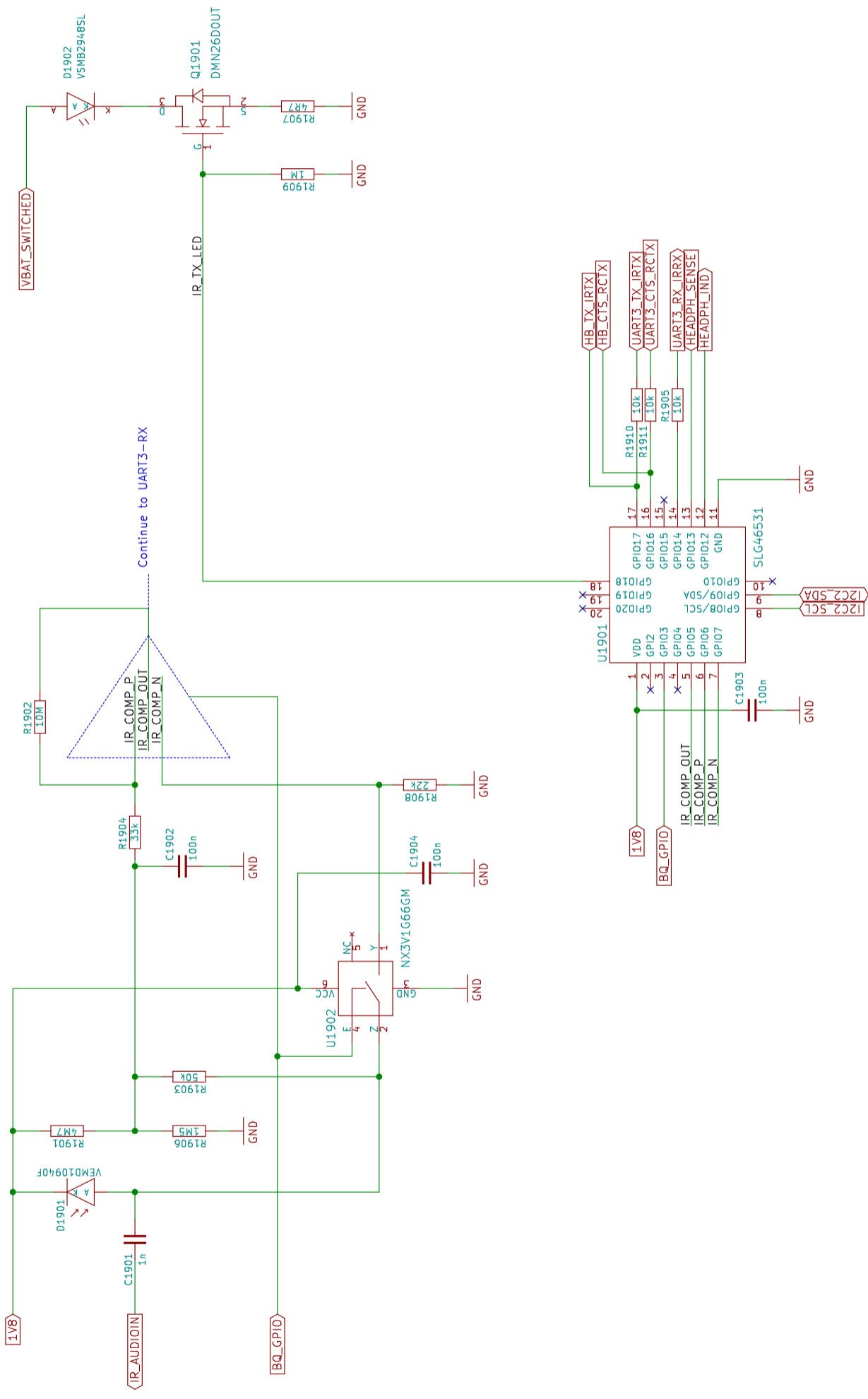
Patchfield



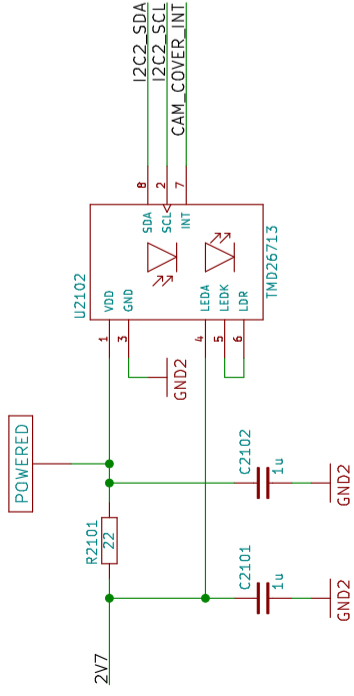
The following signals (or some of them) -- **IF FEASIBLE** -- should be made available on testpoints next to the 100 Ohm array of R1801 to R1808 for easy yellow wire solder-patching of secondary HB pin functions.

TODO: update D1901 footprint

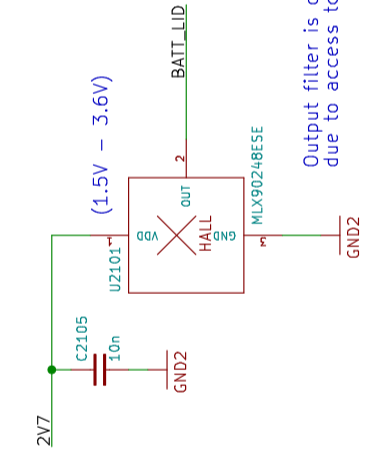
NOTE: 1V8 may be quite noisy



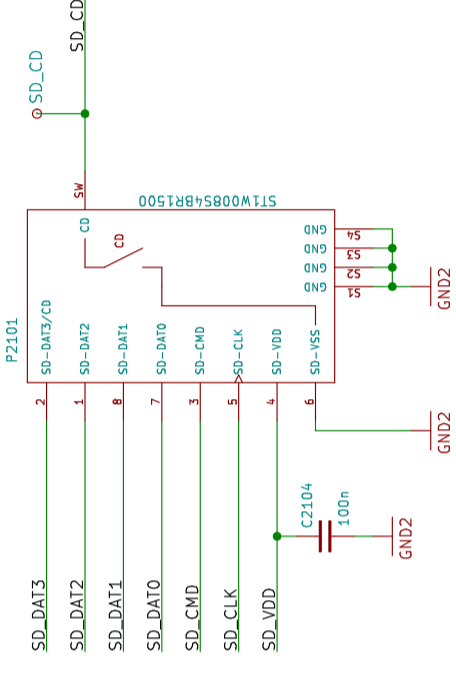
Camera Cover detect



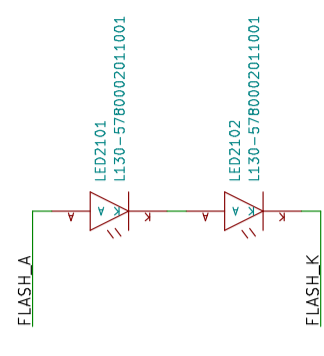
Battery Cover detect



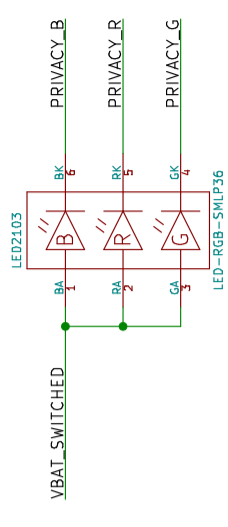
Memory card holder



Camera flash

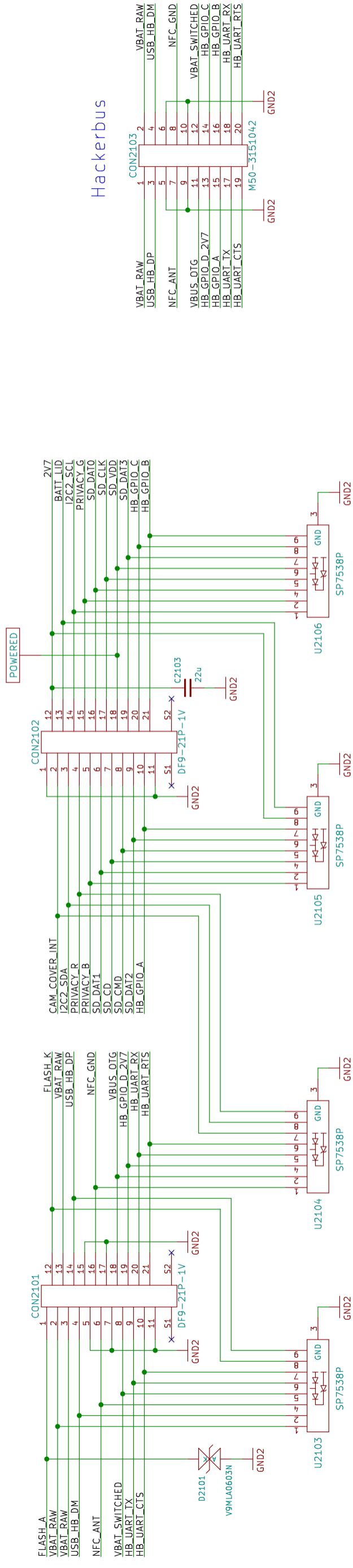


Privacy LED



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.

TODO: consider sheet for deletion

Sheet: /empty/
File: neo900_SS_22.sch

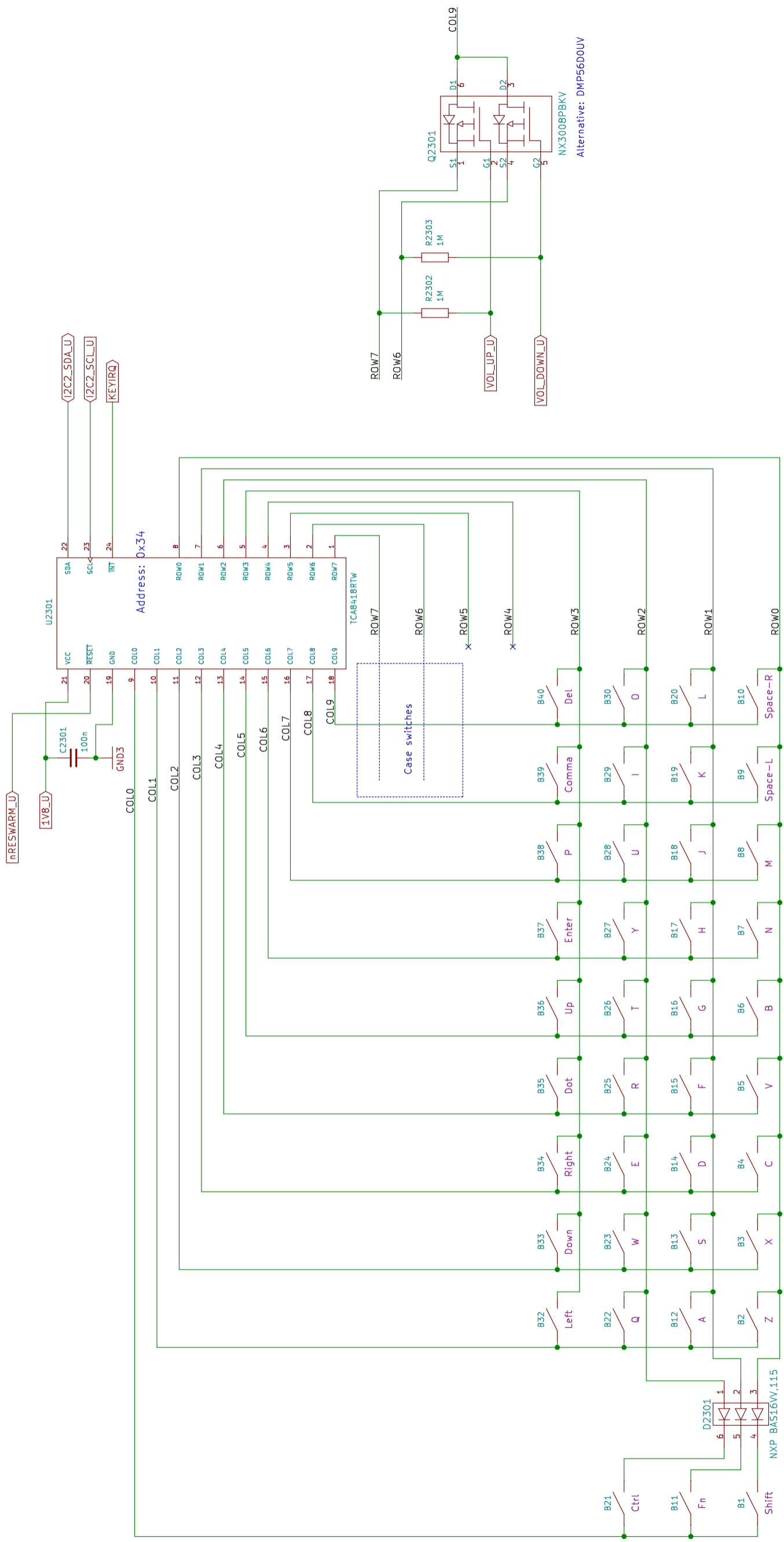
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Size: A3
Kicad EDA: Kicad 4.0.2-stable

Date: 2016-11-08

Rev:
Id: 22/37

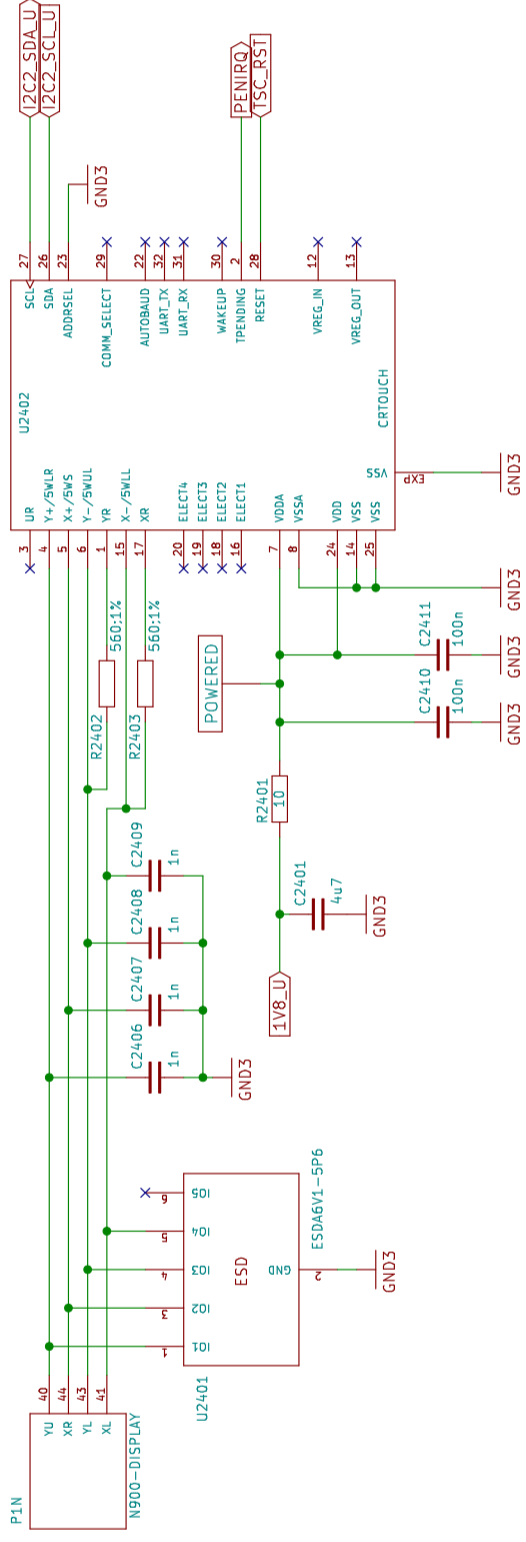
(c) CC-BY-SA 2014-2016 Neo900 & GDC



Alternative: Diodes Inc. BAS16VW-7
 Warning: Diodes Inc. have cathodes on pin 1 side, NXP anodes !

Touch screen controller

Resistive Touch (display connector)



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
Kicad EDA: kicad 4.0.2-stable Rev: Id: 26/37

(c) CC-BY-SA 2014-2016 Neo900 & GDC

eMMC is not part of v2

Sheet: /eMMC/
File: neo900_SS_27.sch

Title: eMMC

Size: A3

Date: 2016-11-08

Rev:

KiCad EDA: KiCad 4.0.2-stable

Id: 27/37

(c) CC-BY-SA 2014-2016 Neo900 & GDC

Companion chip (TPS65950) is not part of v2

Sheet: /PMU+Codec/
File: neo900_SS_2B.sch

Title: PMU+Codec

Size: A3

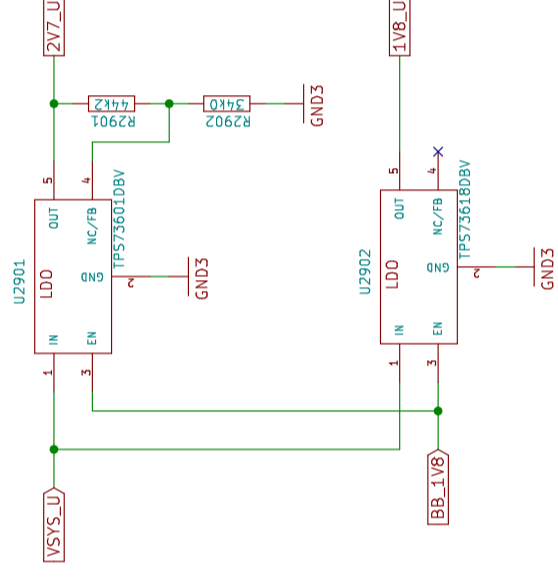
KiCad EDA: kicad 4.0.2-stable

Date: 2016-11-08

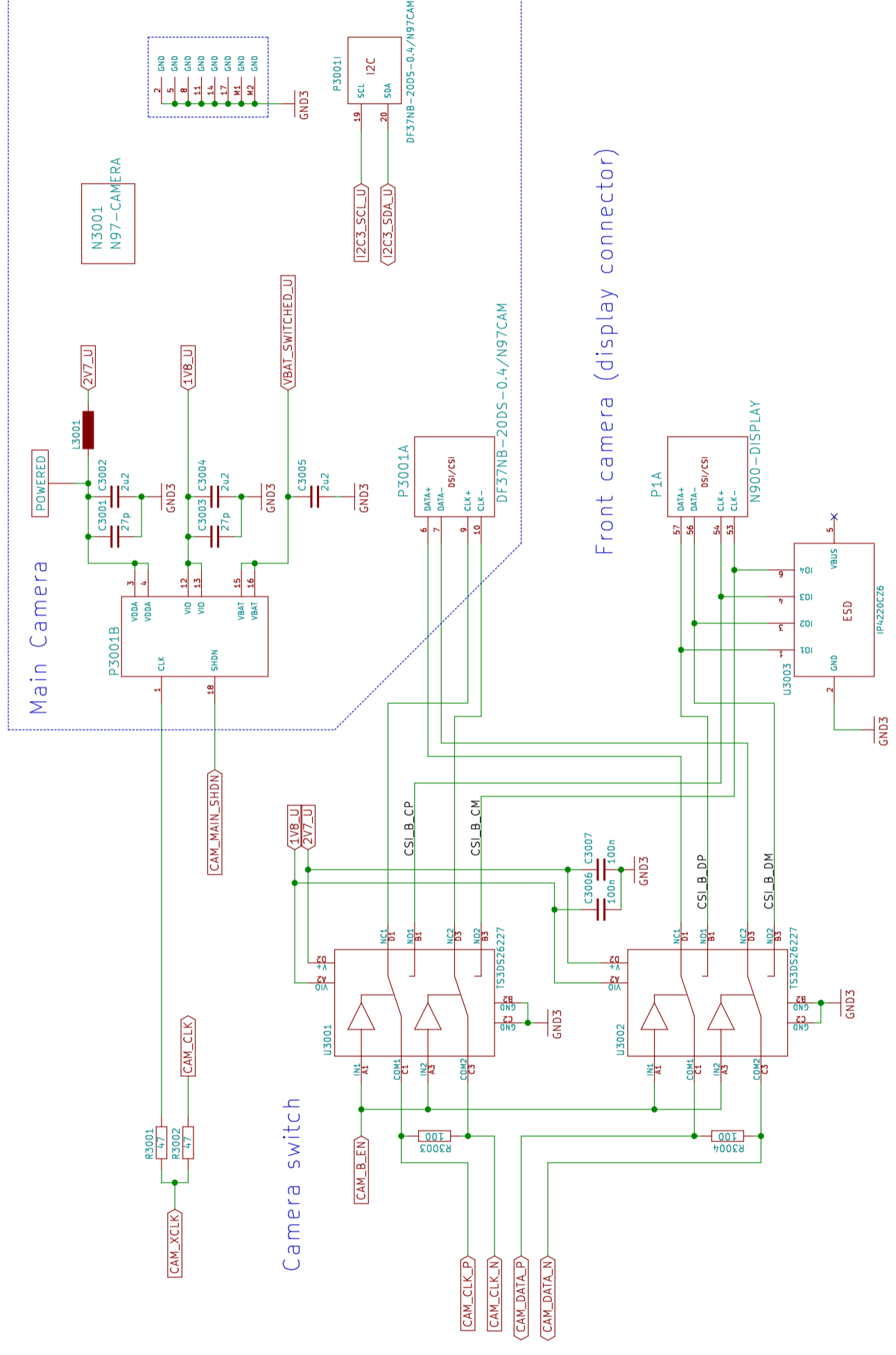
Rev:

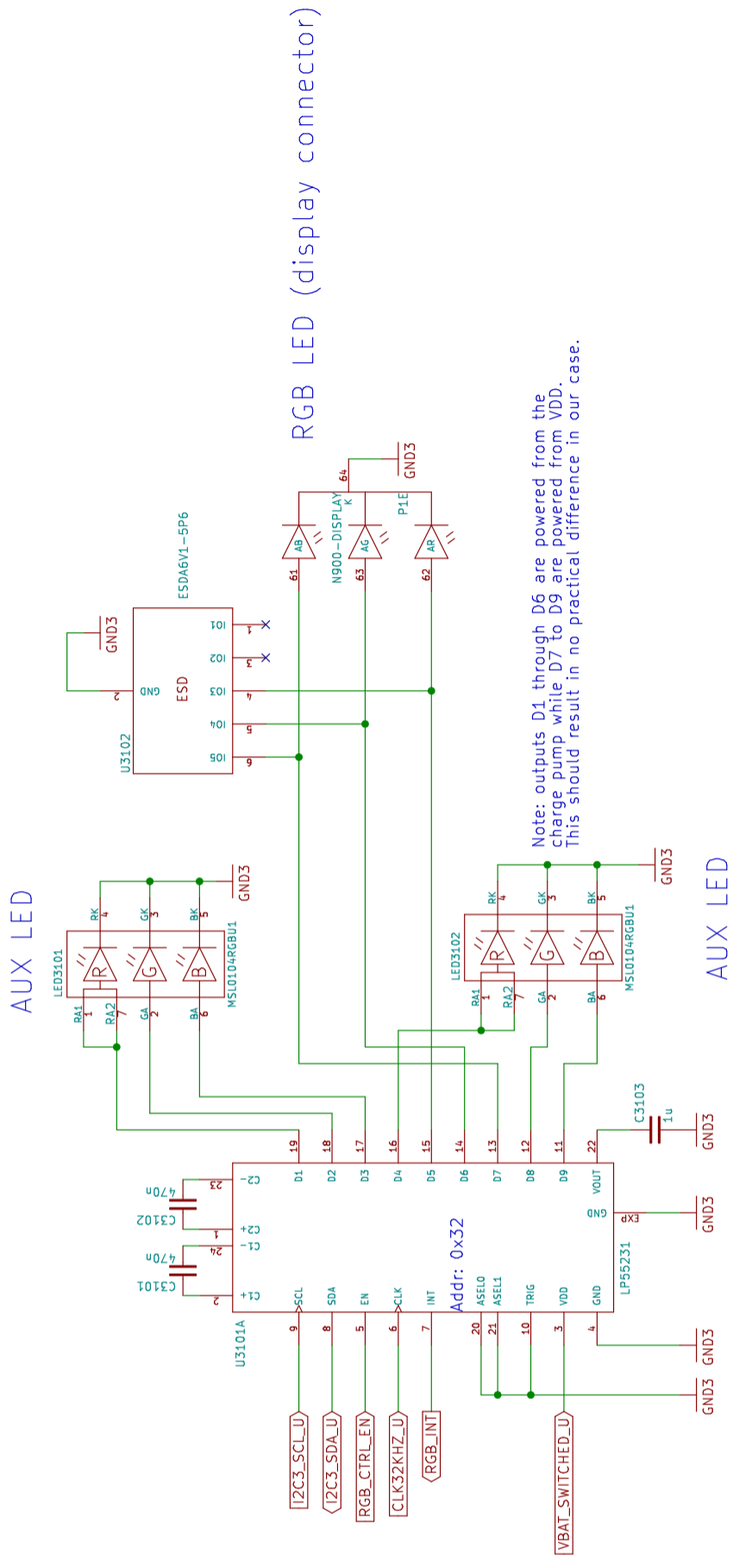
Id: 28/37

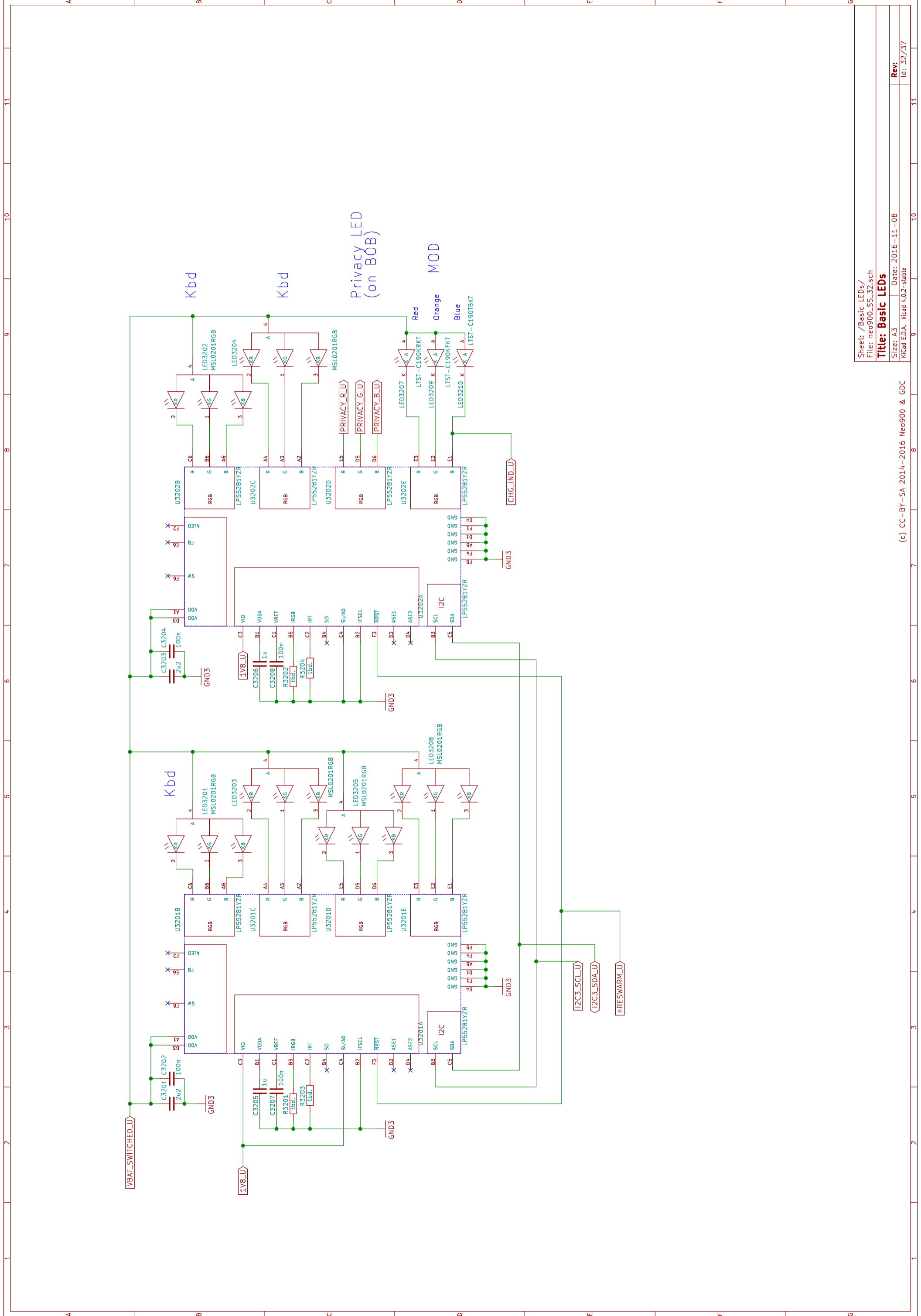
simple, capless 400mA LDO for TPS65950 substitute
(only for prototype)



TODO: use REGEN ?







Sheet: /Basic LEDs/
File: neo900_SS_3Z.sch

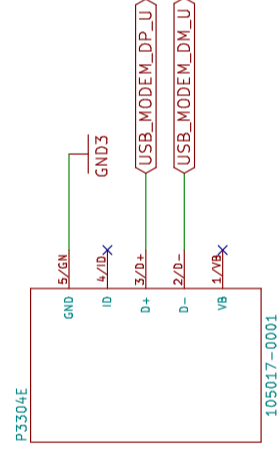
Title: Basic LEDs

Size: A3 Date: 2016-11-08
KiCad EDA. Kicad 4.0.2-stable

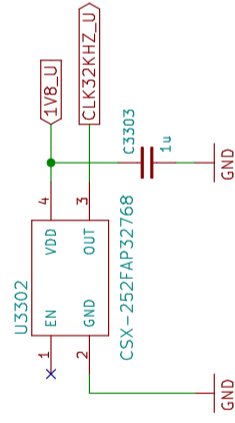
Cleaning up. The connections to BB-xM are on the next sheets.

connect to BB by some Micro-USB cable

Modem USB

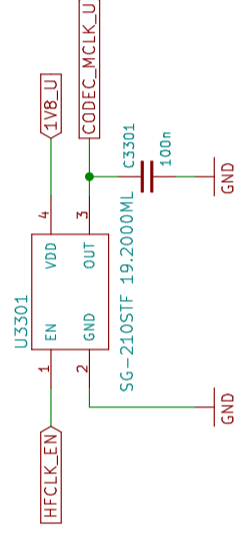


32 kHz clock



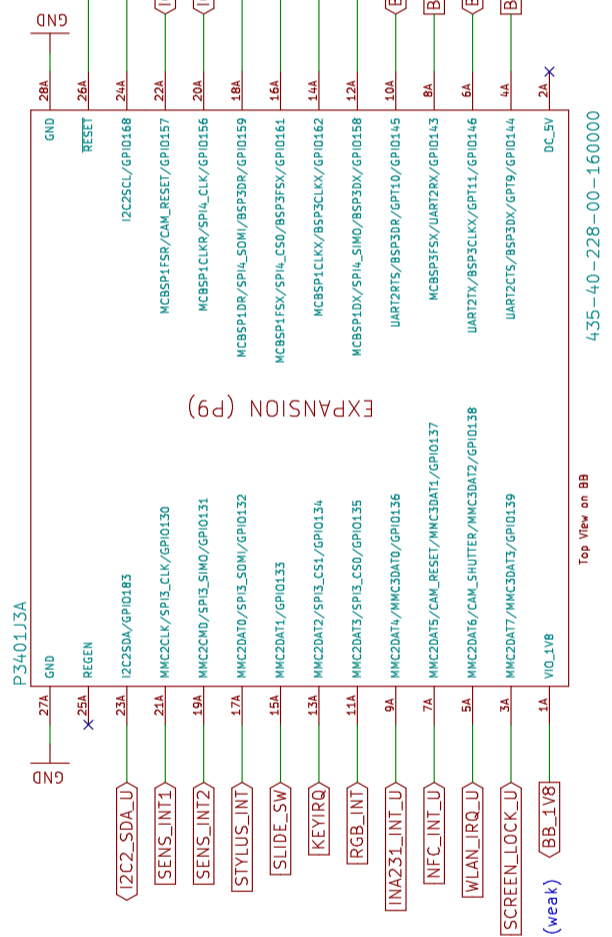
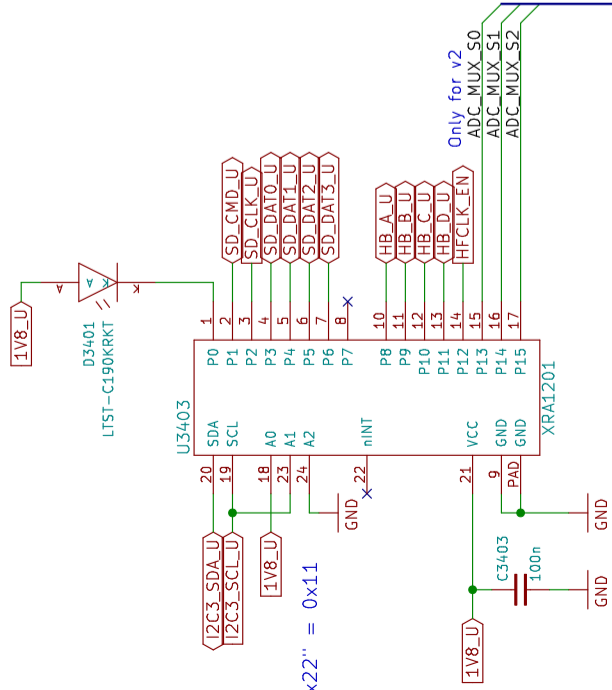
Alternative: OYKTGLJANF-0.032768

19.2 MHz clock



Alternative: KC2520B19.2000C1GF00

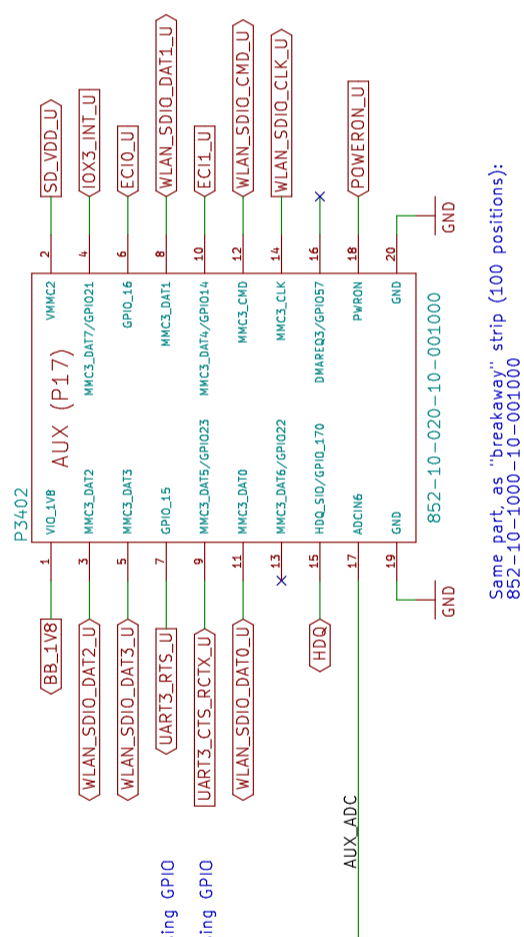
TODO: update pin names in footprint



435-40-228-00-160000
Same part as "breakaway" strip (72 positions):
435-40-272-00-160000

BB-xM Main Expansion Header (P9, 7.24)

Auxiliary Expansion Header (P17, 7.26)



852-10-020-10-001000
Same part as "breakaway" strip (100 positions):
852-10-1000-10-001000

FM_nINT (on IO expander)

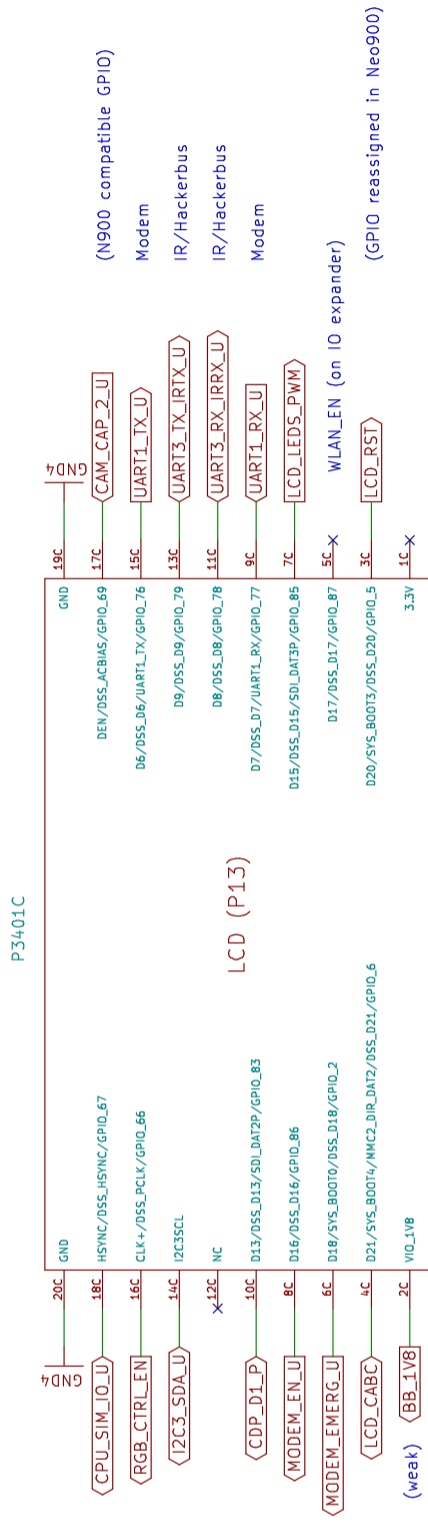
TODO: update pin names in footprint

P11 (7.25)



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

P13 (7.25)

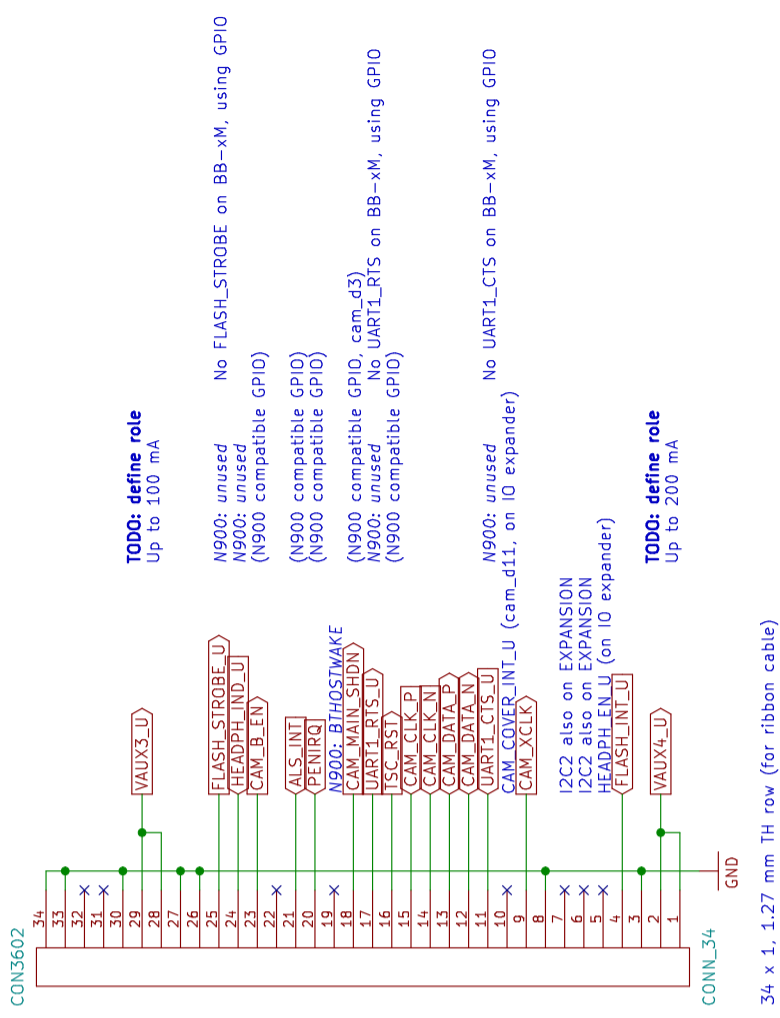
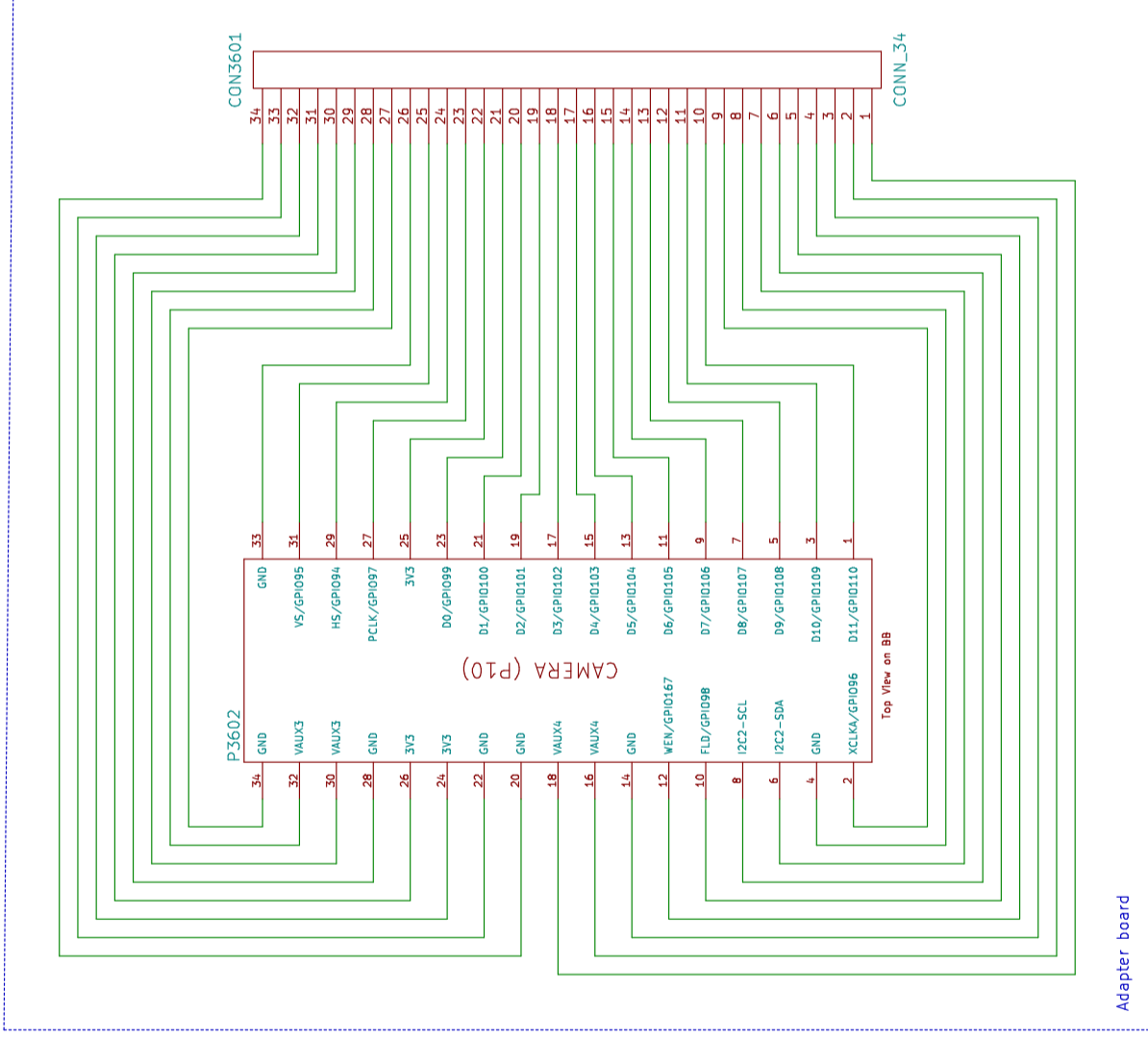


Same part, as "breakaway" strip (100 positions):
852-10-1000-10-001000

P4 (7.19)



Processor Camera Port Interface (P10, 7.20.3)



TODO: define role
Up to 100 mA

N900: unused No FLASH_STROBE on BB-xM, using GPIO
N900: unused (N900 compatible GPIO)

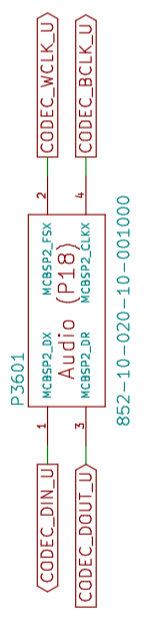
(N900 compatible GPIO)
(N900 compatible GPIO)

N900 compatible GPIO, cam_d13
N900: unused No UART1_RTS on BB-xM, using GPIO
(N900 compatible GPIO)

N900: unused No UART1_CTS on BB-xM, using GPIO
(N900 compatible GPIO)

TODO: define role
Up to 200 mA

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

CPU

N3702
15015-0439

DISP

N3703
15015-0439

CAM

N3704
N900 case assembly

N3705
N97-CAMERA-HOLE

N3706
headset jack

N3707
STENCIL-TOP

N3708
STENCIL-BOTTOM