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V

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V

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

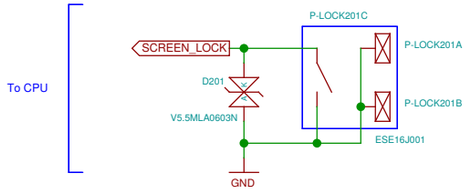
Sheet: /
File: neo900.sch

Title: Neo900

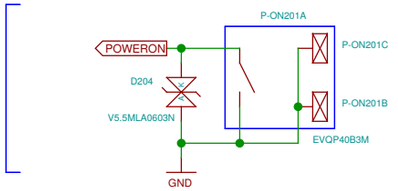
Size: A3 | Date: 1970-01-01 00:00:00 | Rev:

Plotted by eeshow 9ab7b3a+ 20161028-11:42Z | Id: 1/37

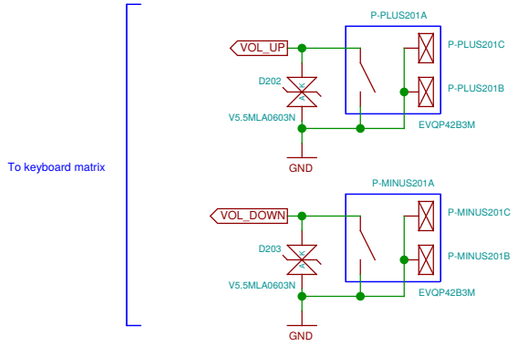
Lock switch



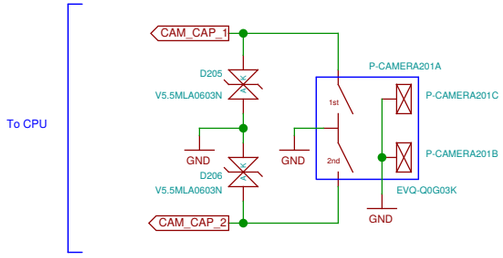
On-off



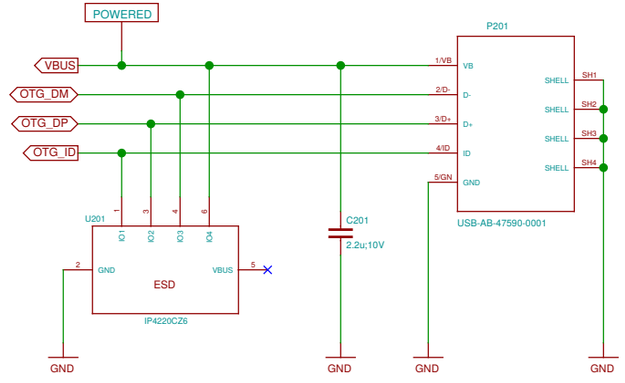
Volume



Camera trigger

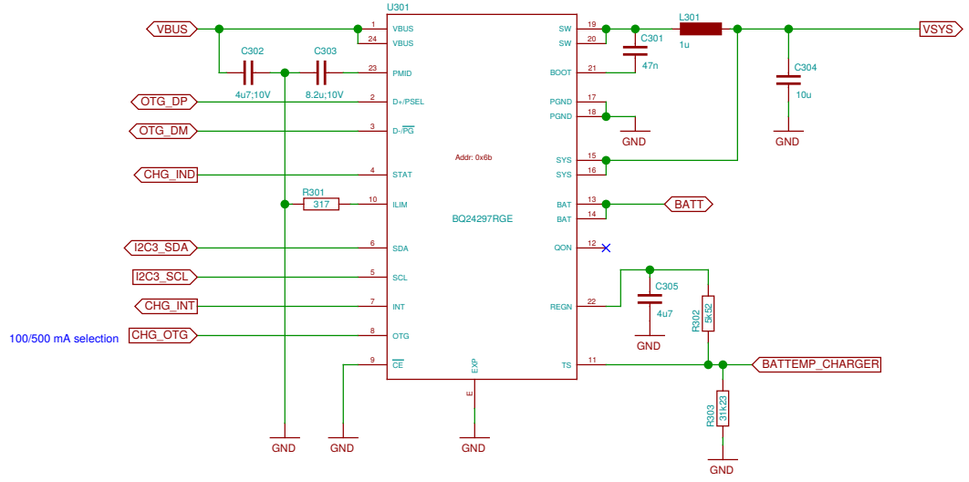


USB OTG connector



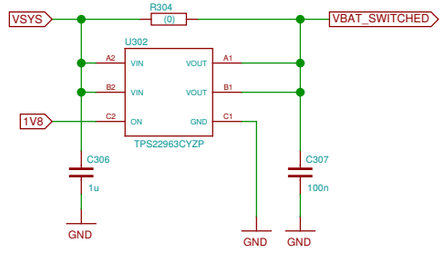
Sheet: /OTG/ File: neo900_SS_2.sch		
Title: OTG		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 2/37

Battery charger with USB OTG

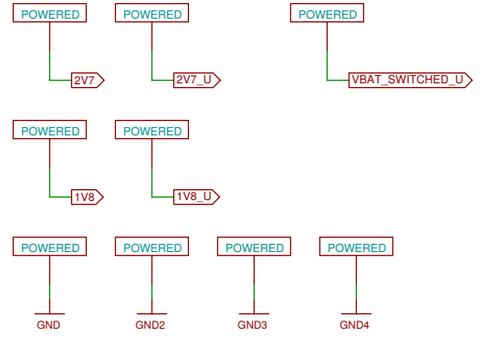


Power distribution and sequencing

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

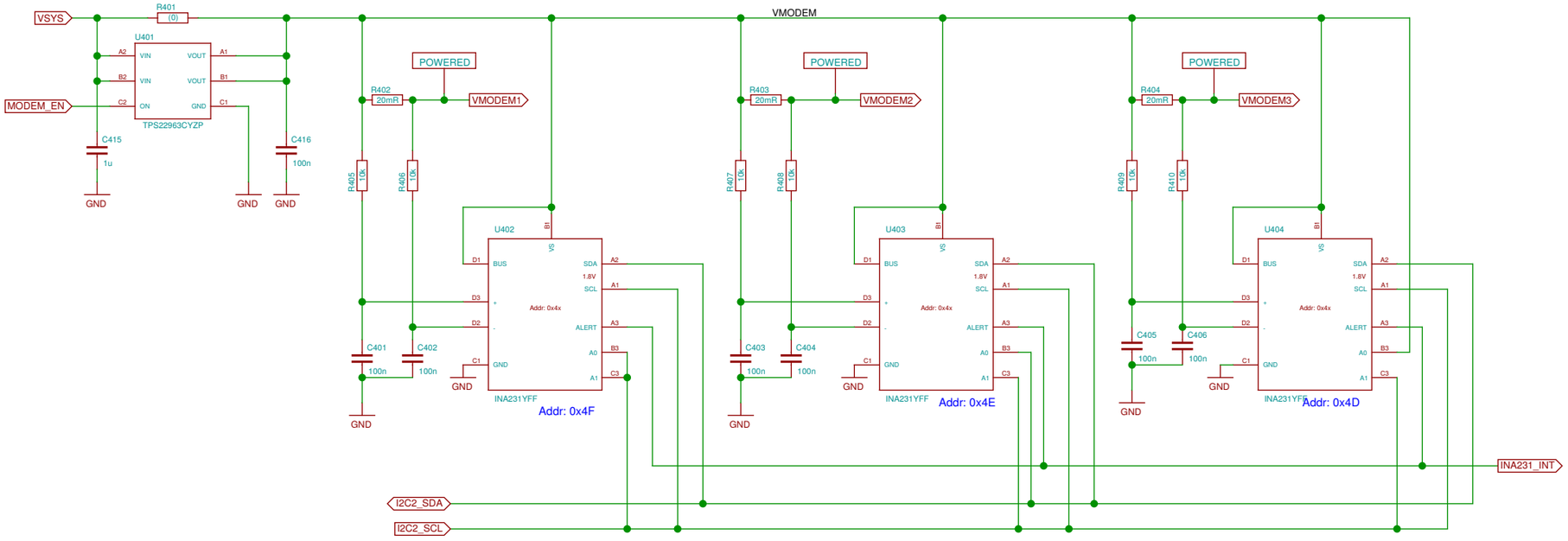


KiCad bureaucracy

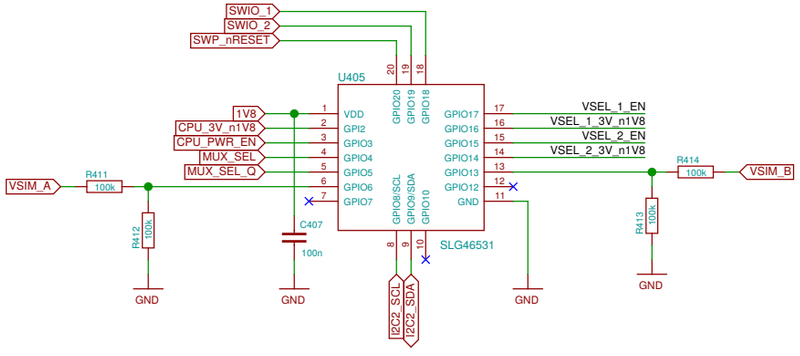


Sheet: /Charger/OTG-Booster/ File: neo900_SS_3.sch		
Title: Charger/OTG-Booster		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 3/37

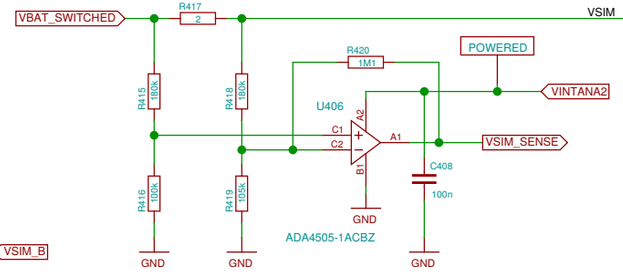
Modem current monitor



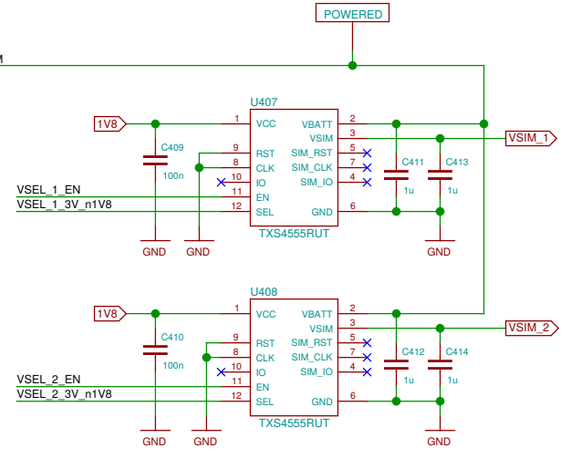
SIM power selection



SIM current sensing

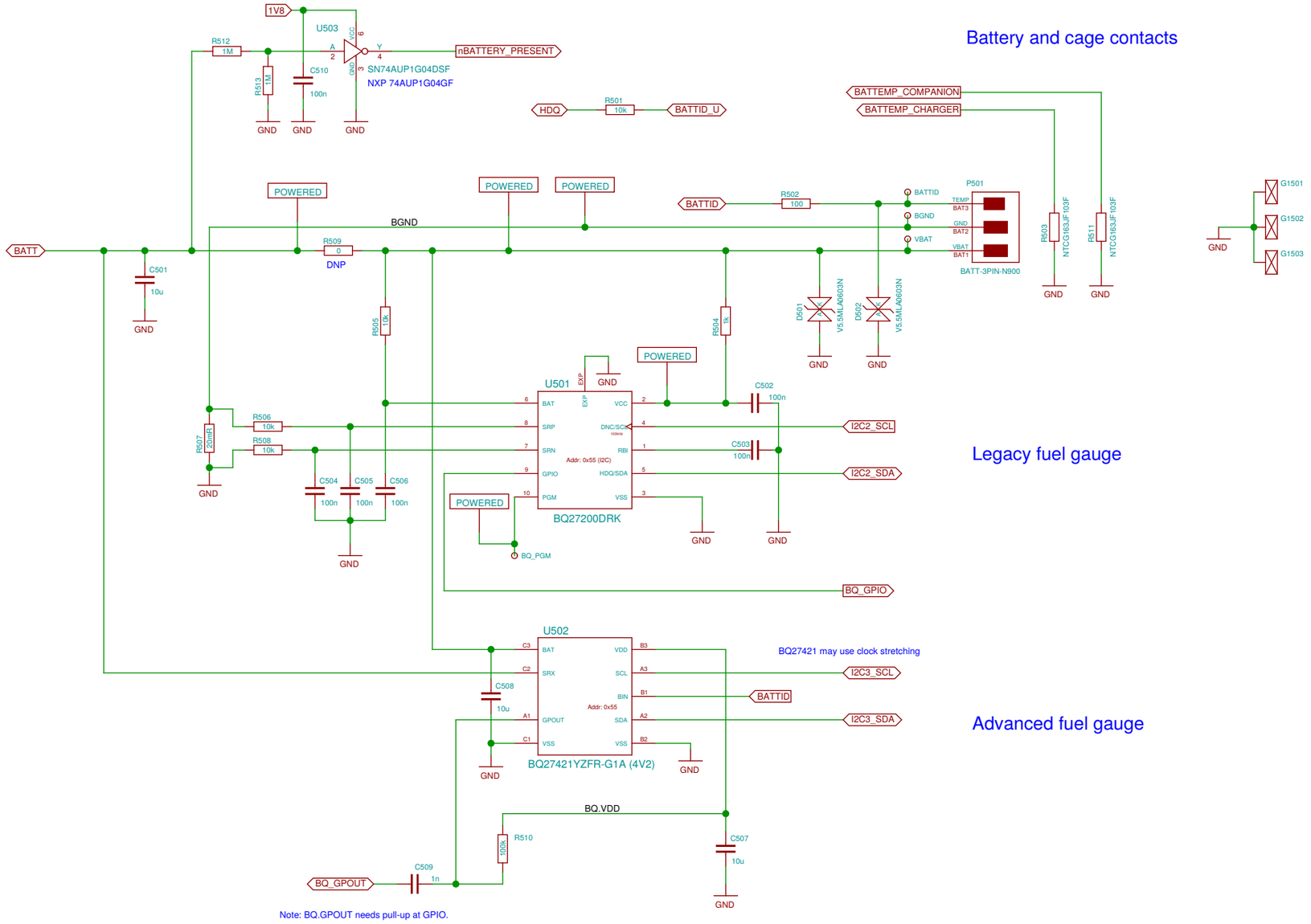


SIM power supply

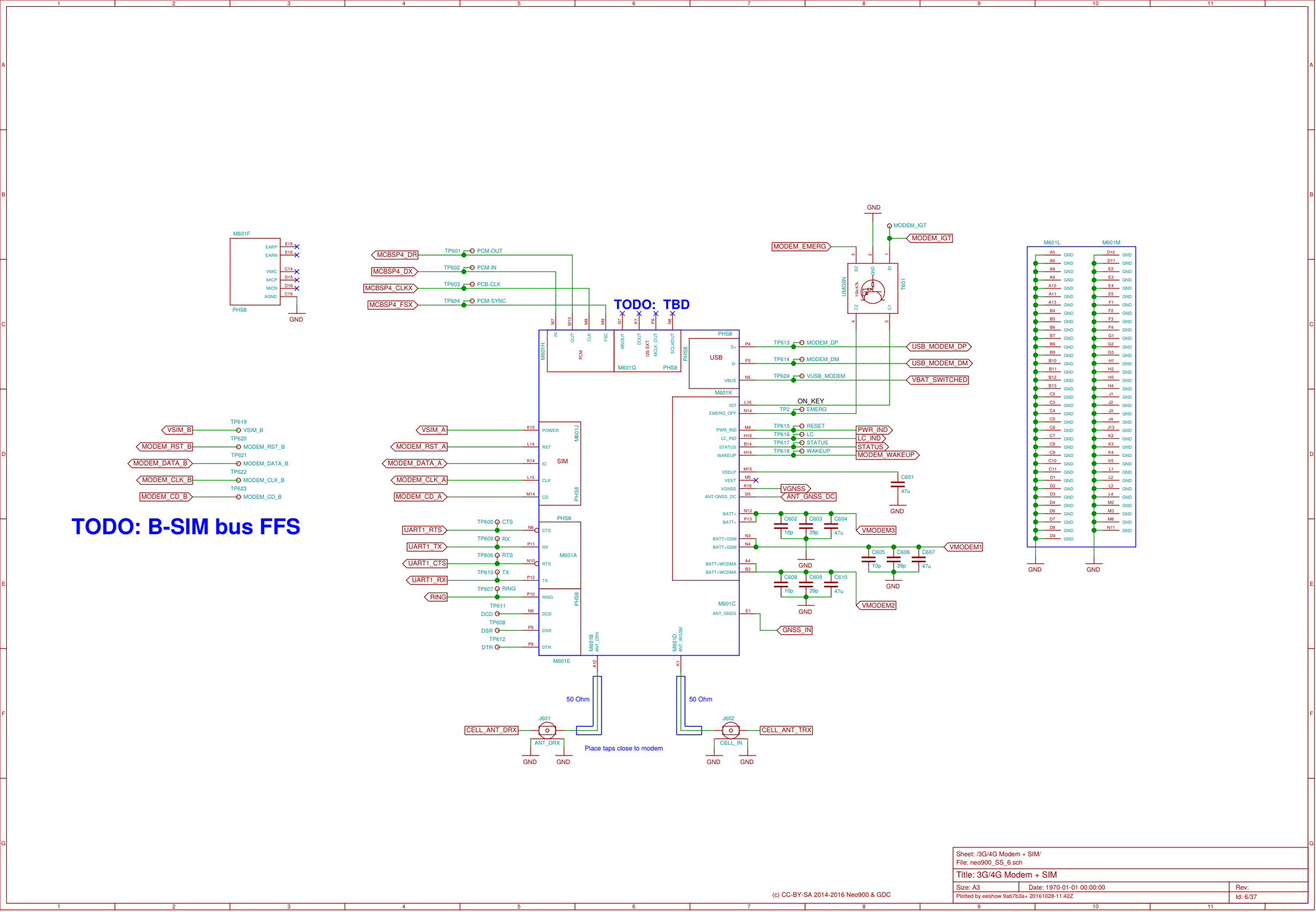


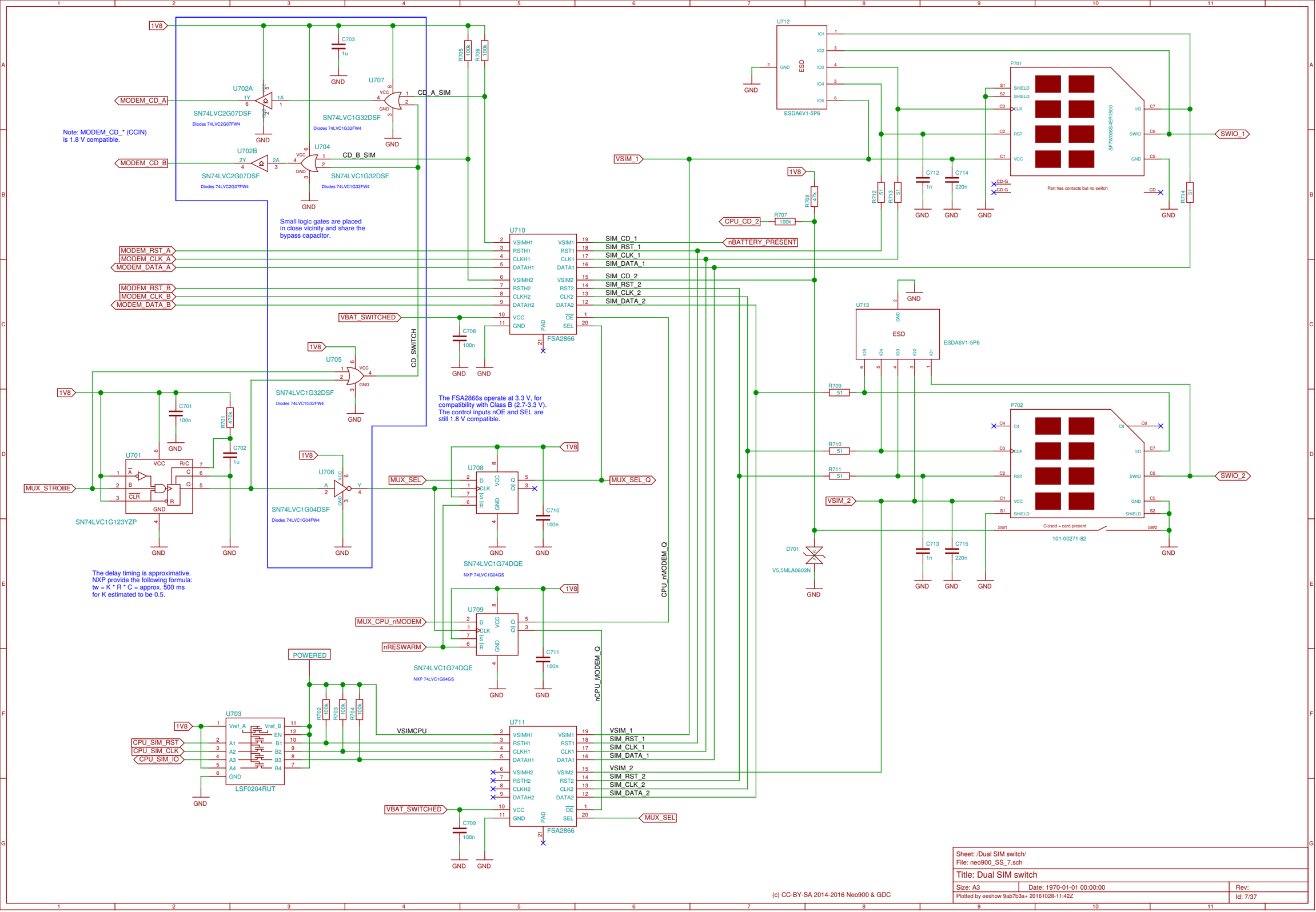
TODO: update SLG design for changed pins

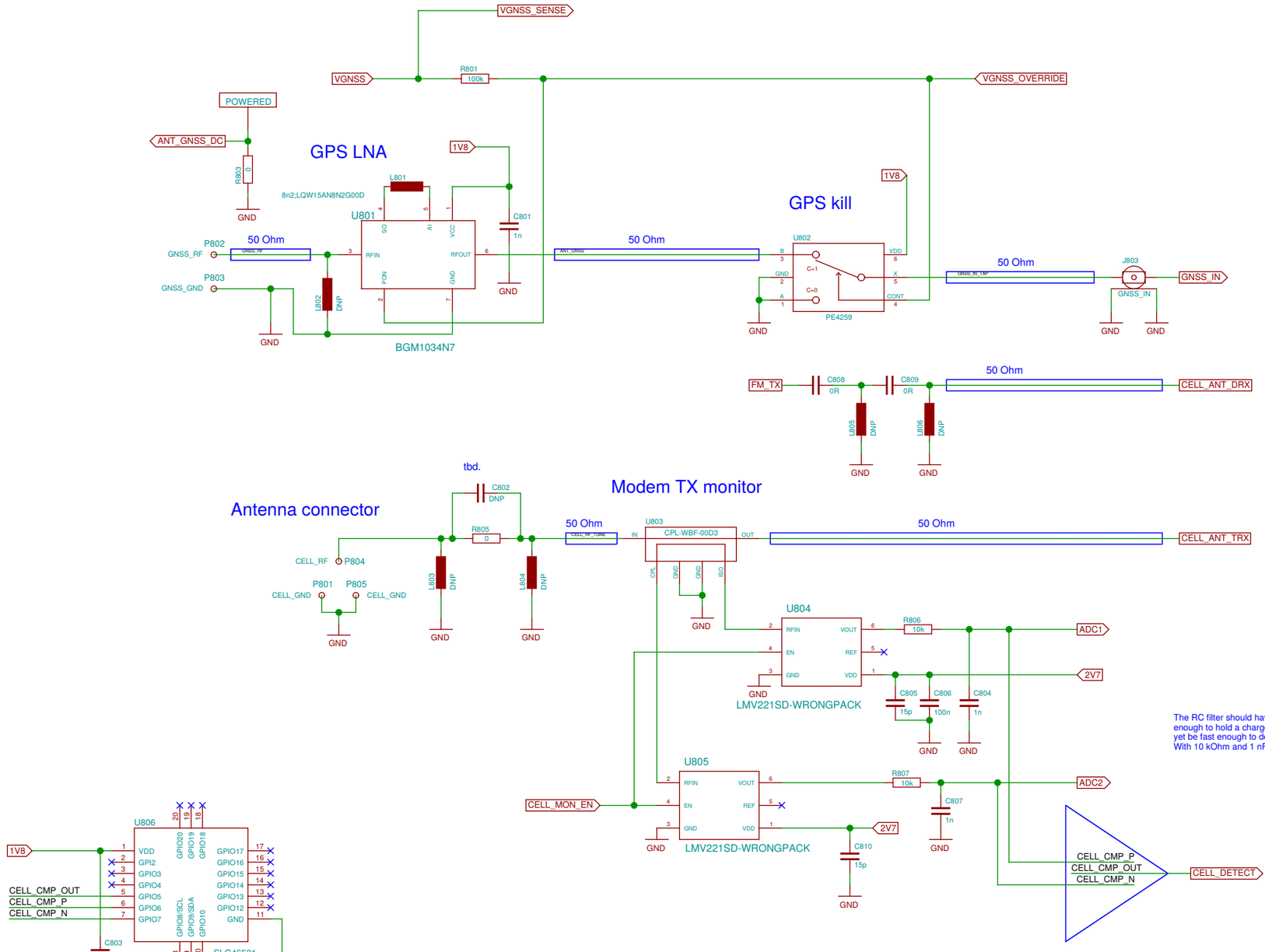
Sheet: /Modem Power/ File: neo900_SS_4.sch		
Title: Modem Power		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 4/37



Sheet: /Fuel Gauge/	
File: neo900_SS_5.sch	
Title: Fuel Gauge	
Size: A3	Date: 1970-01-01 00:00:00
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z	Rev:
	Id: 5/37


M601F
EARP
EARN
VMIC
MICP
MICN
AGND
PHS8
GND
MCBSP4_DR
MCBSP4_DX
MCBSP4_CLKX
MCBSP4_FSX
TP601 PCM-OUT
TP602 PCM-IN
TP603 PCB-CLK
TP604 PCM-SYNC
TODO: TBD
M601H
M601G
PCM
I2S-EXT
USB
D+
D-
VBUS
M601K
IGT
EMERG_OFF
PWR_IND
LC_IND
STATUS
WAKEUP
VDDLP
VEXT
VGNSS
ANT-GNSS_DC
BATT+
BATT+GSM
BATT+WCDMA
M601C
ANT_GNSS
M601J
SIM
POWER
RST
IO
CLK
CD
M601A
CTS
RX
RTS
TX
RING
DCD
DSR
DTR
M601E
M601B ANT_DRX
M601D ANT_WGSM
MODEM_IGT
MODEM_EMERG
UMG5N
T601
TP613 MODEM_DP
TP614 MODEM_DM
TP624 VUSB_MODEM
TP2 EMERG
TP615 RESET
TP616 LC
TP617 STATUS
TP618 WAKEUP
ON_KEY
USB_MODEM_DP
USB_MODEM_DM
VBAT_SWITCHED
PWR_IND
LC_IND
STATUS
MODEM_WAKEUP
VGNSS
ANT_GNSS_DC
VMODEM3
VMODEM1
VMODEM2
GNSS_IN
C601 47u
C602 10p
C603 39p
C604 47u
C605 10p
C606 39p
C607 47u
C608 10p
C609 39p
C610 47u
M601L
M601M
VSIM_A
MODEM_RST_A
MODEM_DATA_A
MODEM_CLK_A
MODEM_CD_A
VSIM_B
MODEM_RST_B
MODEM_DATA_B
MODEM_CLK_B
MODEM_CD_B
TP619 VSIM_B
TP620 MODEM_RST_B
TP621 MODEM_DATA_B
TP622 MODEM_CLK_B
TP623 MODEM_CD_B
UART1_RTS
UART1_TX
UART1_CTS
UART1_RX
RING
TP605 CTS
TP609 RX
TP606 RTS
TP610 TX
TP607 RING
TP611 DCD
TP608 DSR
TP612 DTR
50 Ohm
50 Ohm
J601
J602
CELL_ANT_DRX
CELL_ANT_TRX
ANT_DRX
CELL_IN
Place taps close to modem
TODO: B-SIM bus FFS
(c) CC-BY-SA 2014-2016 Neo900 & GDC
Sheet: /3G/4G Modem + SIM/
File: neo900_SS_6.sch
Title: 3G/4G Modem + SIM
Size: A3
Date: 1970-01-01 00:00:00
Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z
Id: 6/37


1V8
C703
1u
GND
R705
100k
R706
100k
U702A
MODEM_CD_A
SN74LVC2G07DSF
Diodes 74LVC2G07FW4
U707
CD_A_SIM
SN74LVC1G32DSF
Diodes 74LVC1G32FW4
Note: MODEM_CD_* (CCIN) is 1.8 V compatible.
U702B
MODEM_CD_B
U704
CD_B_SIM
Small logic gates are placed in close vicinity and share the bypass capacitor.
U710
VSIMH1
RSTH1
CLKH1
DATAH1
VSIMH2
RSTH2
CLKH2
DATAH2
VCC
GND
PAD
VSIM1
RST1
CLK1
DATA1
VSIM2
RST2
CLK2
DATA2
OE
SEL
FSA2866
SIM_CD_1
SIM_RST_1
SIM_CLK_1
SIM_DATA_1
SIM_CD_2
SIM_RST_2
SIM_CLK_2
SIM_DATA_2
MODEM_RST_A
MODEM_CLK_A
MODEM_DATA_A
MODEM_RST_B
MODEM_CLK_B
MODEM_DATA_B
VBAT_SWITCHED
C708
100n
CD_SWITCH
U705
SN74LVC1G32DSF
Diodes 74LVC1G32FW4
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.
U712
ESD
ESDA6V1-5P6
IO1
IO2
IO3
IO4
IO5
P701
SF7W006S-4ER1500
SHIELD
CLK
RST
I/O
SWIO
VSIM_1
CPU_CD_2
R707
100k
R708
47k
nBATTERY_PRESENT
R712
51
R713
51
C712
1n
C714
220n
CD-G
Part has contacts but no switch
CD
R714
51
SWIO_1
U713
ESD
ESDA6V1-5P6
R709
51
R710
51
R711
51
P702
SWIO_2
VSIM_2
C713
1n
C715
220n
SW1
SW2
Closed = card present
101-00271-82
D701
V5.5MLA0603N
C701
100n
R701
470k
C702
1u
U701
SN74LVC1G123YZP
MUX_STROBE
U706
SN74LVC1G04DSF
Diodes 74LVC1G04FW4
The delay timing is approximative. NXP provide the following formula: tw = K * R * C = approx. 500 ms for K estimated to be 0.5.
U708
MUX_SEL
MUX_SEL_Q
C710
100n
SN74LVC1G74DQE
NXP 74LVC1G04GS
U709
MUX_CPU_nMODEM
nRESWARM
C711
100n
CPU_nMODEM_Q
nCPU_MODEM_Q
POWERED
U703
LSF0204RUT
Vref_A
Vref_B
EN
A1
A2
A3
A4
B1
B2
B3
B4
R702
100k
R703
100k
R704
100k
CPU_SIM_RST
CPU_SIM_CLK
CPU_SIM_IO
VSIMCPU
U711
C709
100n
MUX_SEL
(c) CC-BY-SA 2014-2016 Neo900 & GDC
Sheet: /Dual SIM switch/
File: neo900_SS_7.sch
Title: Dual SIM switch
Size: A3
Date: 1970-01-01 00:00:00
Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z
Id: 7/37



TODO: complete comparator circuit

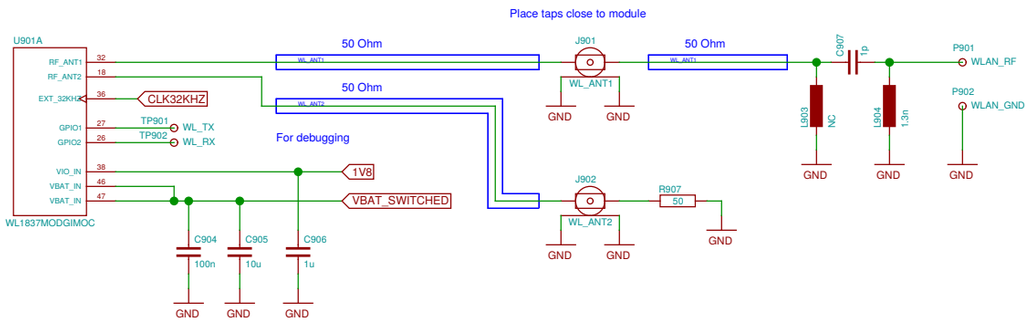
TODO: add silego i2c assignment

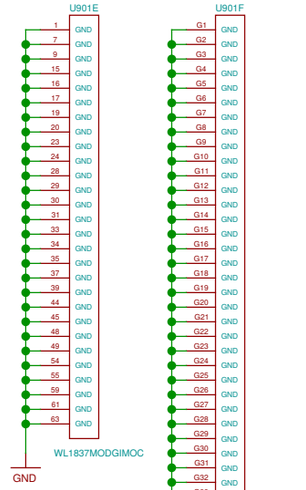
Sheet: /Antenna connections/ File: neo900_SS_8.sch		
Title: Antenna connections		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 8/37

WiLink8

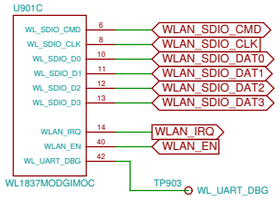
TODO: assign footprints for c-spring contacts

WLAN/BT antenna

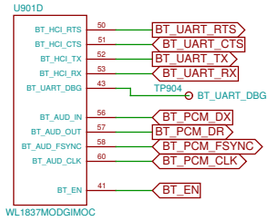




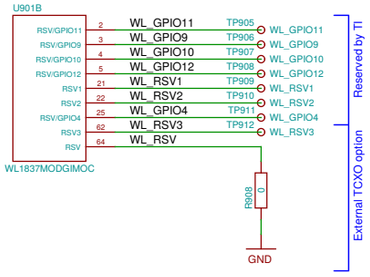
WLAN



Bluetooth

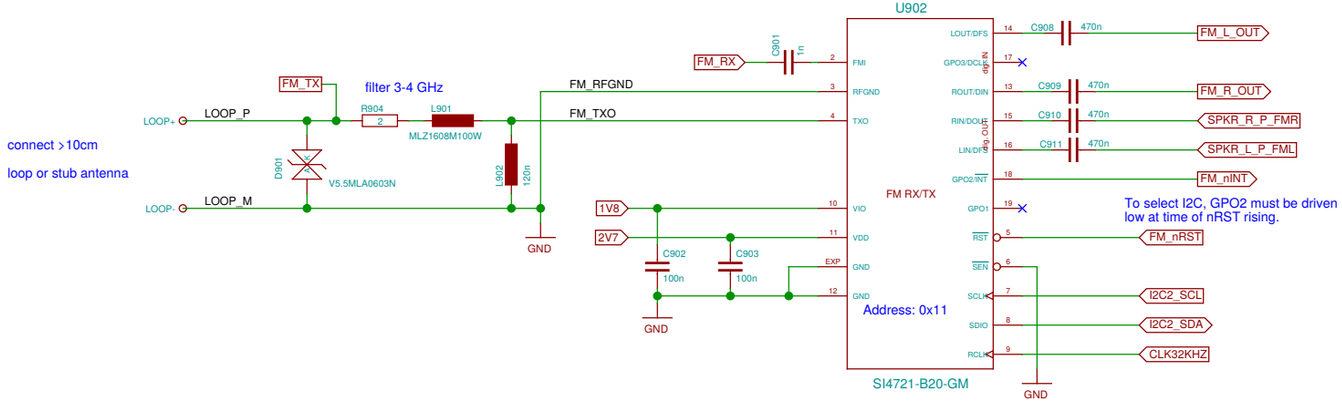


Reserved / Debugging



FM Radio (TX/RX)

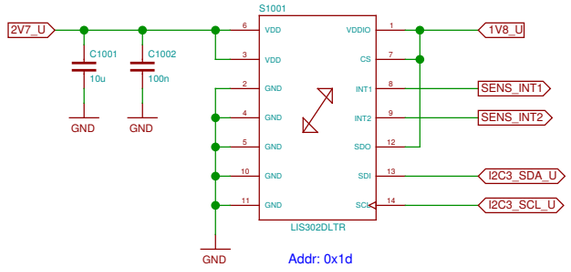
TODO: check caps



Si4705 is pin compatible (mostly) but RX-only

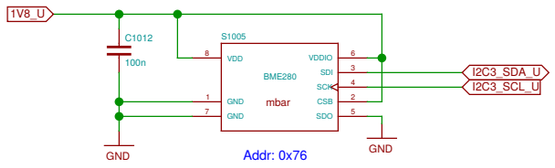
Sheet: /WLAN, Bluetooth, FM/ File: neo900_SS_9.sch		
Title: WLAN, Bluetooth, FM		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 9/37

Acceleration (legacy)



Addr: 0x1d

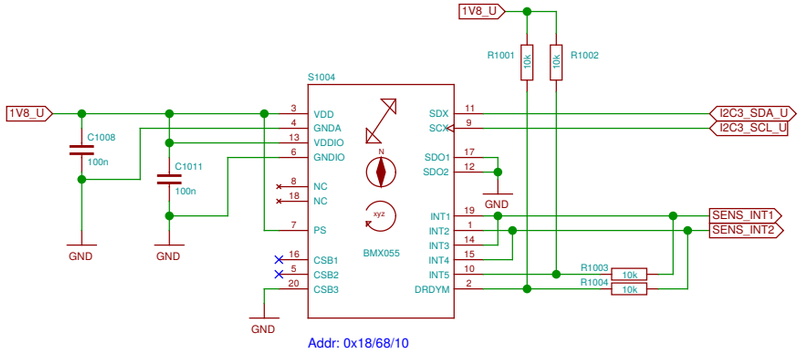
Pressure, humidity



Addr: 0x76

keep away from liquids and extreme temperatures

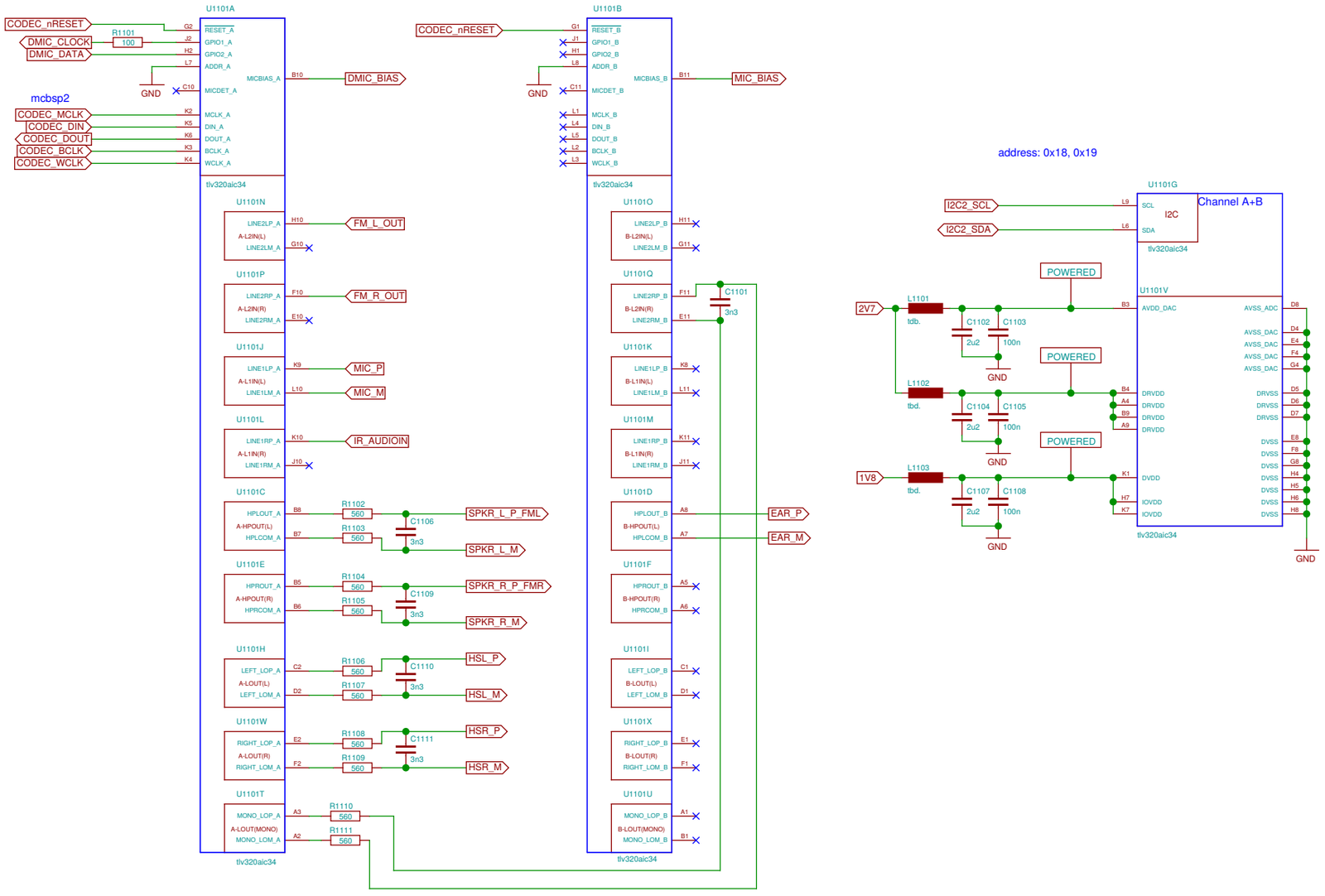
9-axis (acceleration, gyroscope, magnetometer)



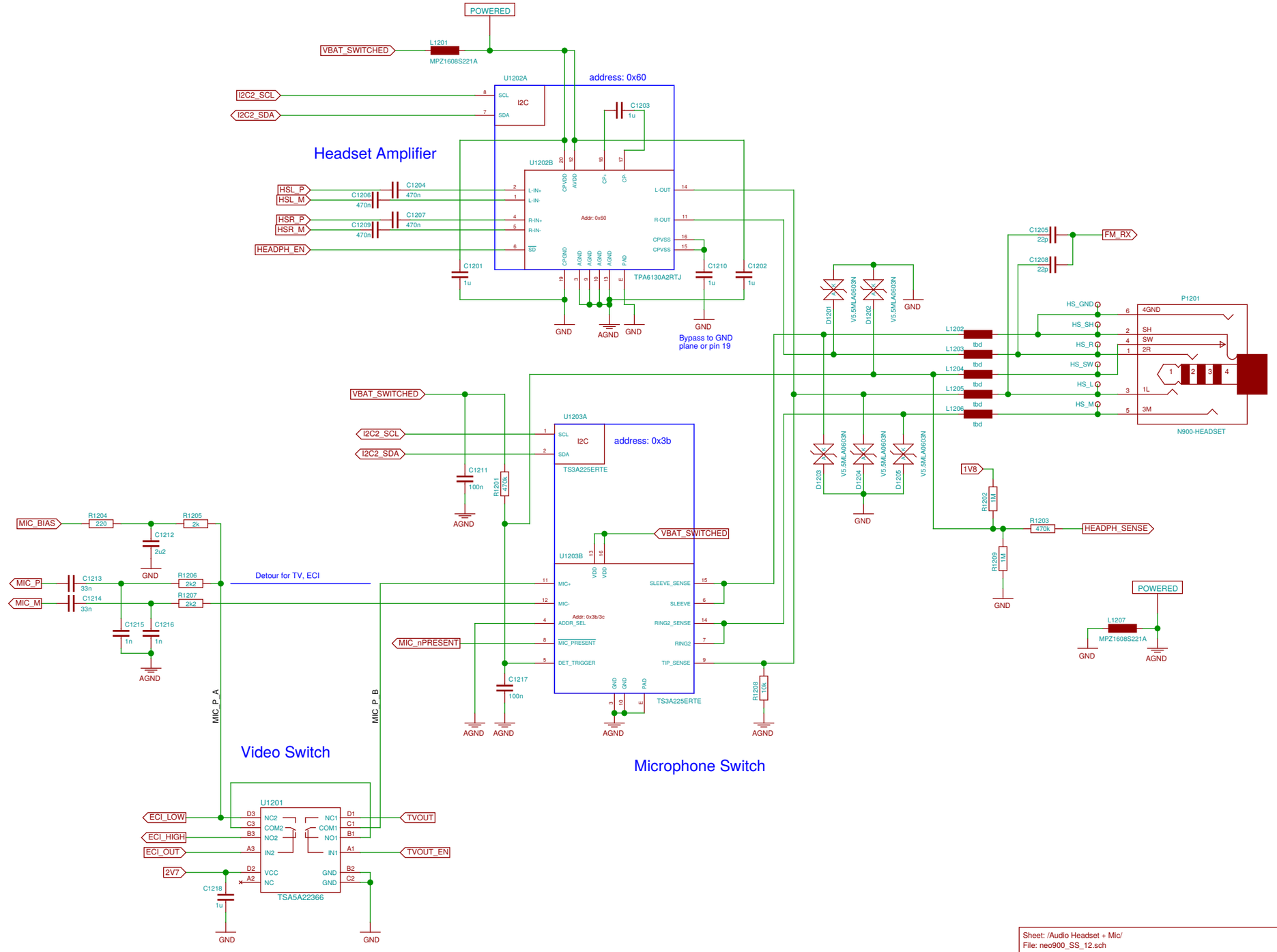
Addr: 0x18/68/10

keep away from magnets and metal

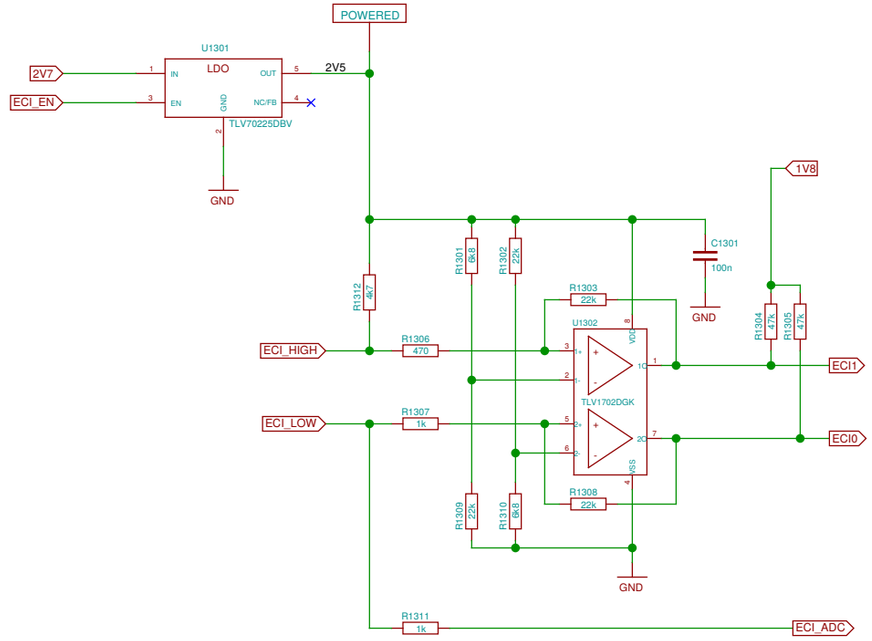
Sheet: /Sensors/ File: neo900_SS_10.sch		
Title: Sensors		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 10/37



Sheet: /Audio Codec/ File: neo900_SS_11.sch		
Title: Audio Codec		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 11/37

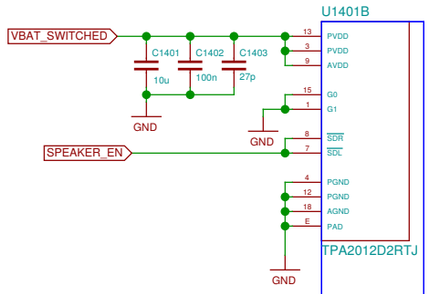


Sheet: /Audio Headset + Mic/ File: neo900_SS_12.sch		
Title: Audio Headset + Mic		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 12/37

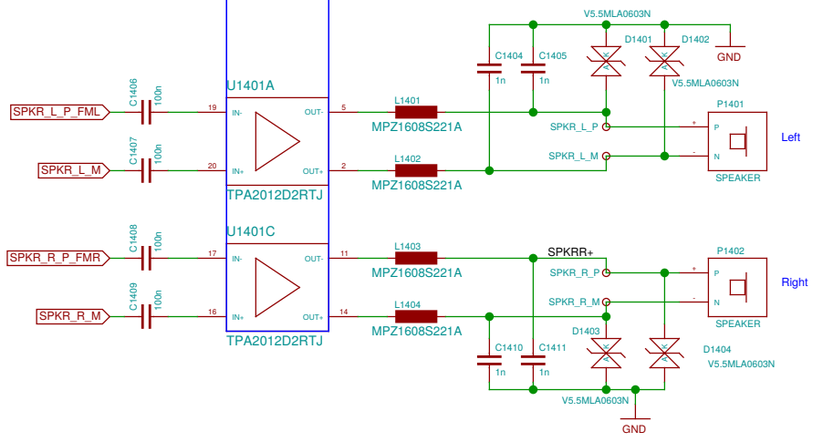


Sheet: /ECI/ File: neo900_SS_13.sch		
Title: ECI		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 13/37

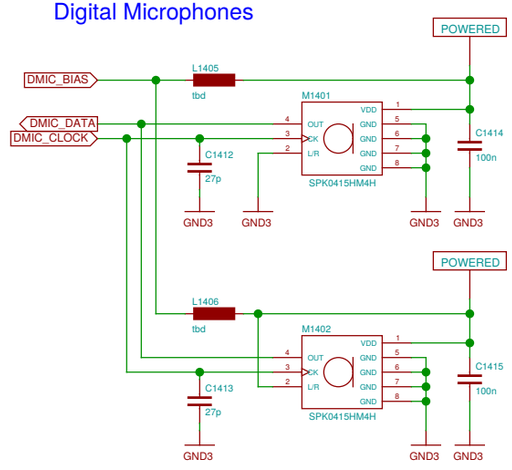
Hands-free



Speakers

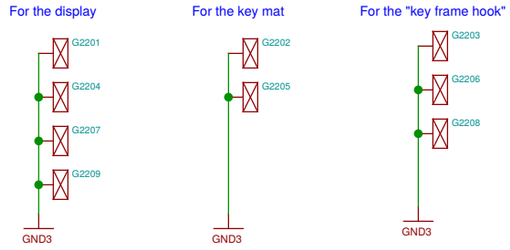


Digital Microphones

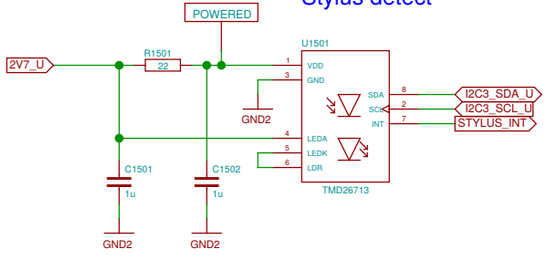


Sheet: /Audio Handsfree/ File: neo900_SS_14.sch		
Title: Audio Handsfree		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 14/37

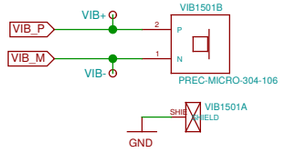
Shield Contacts on UPPER



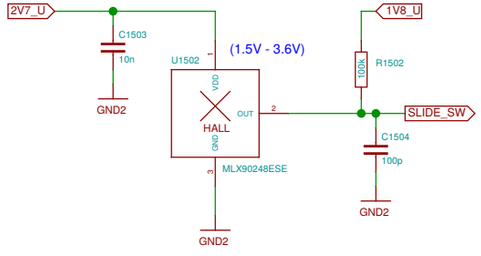
Stylus detect



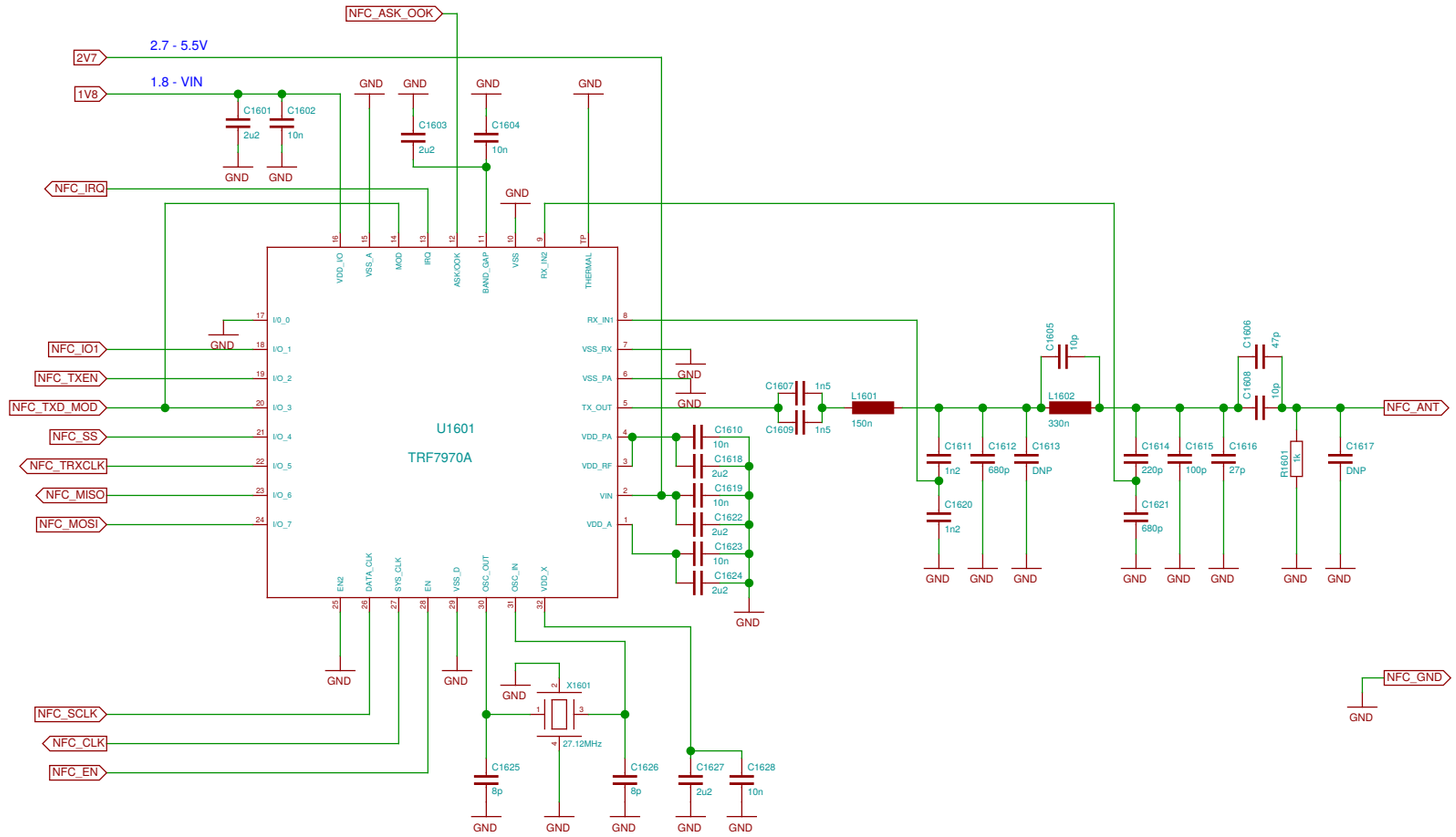
Vibramotor



Slide sensor

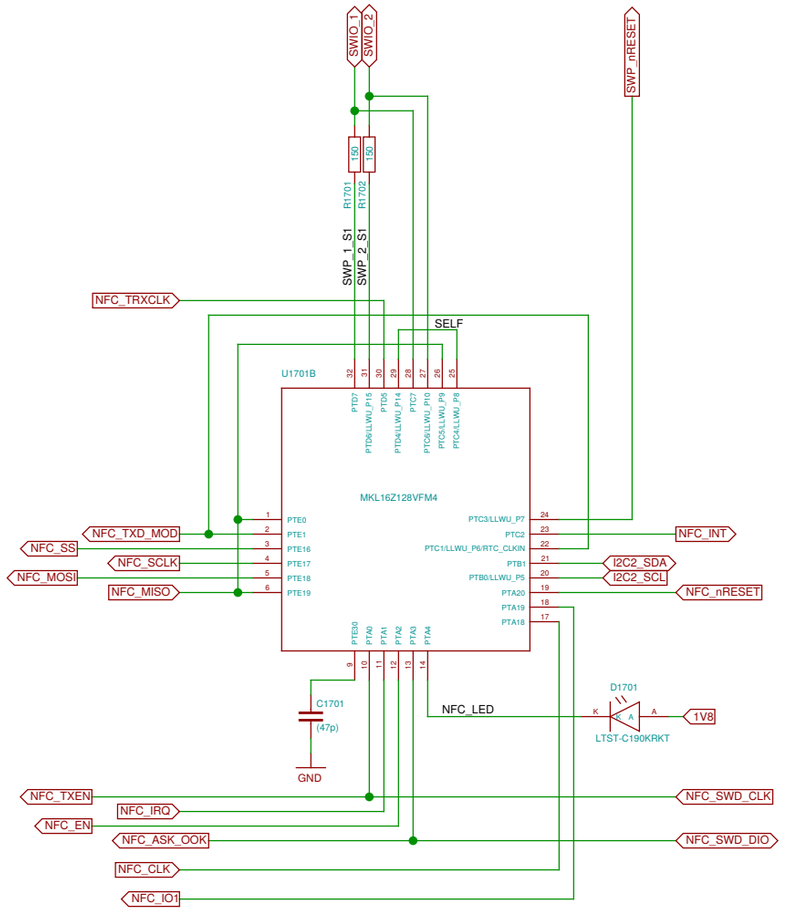


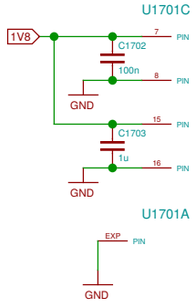
Sheet: /Misc/ File: neo900_SS_15.sch		
Title: Misc		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 15/37



Some choices, 3.2 x 2.6 mm, 8-10 pF:
NDK NX3225GA-27.12M-STD-CRG-2
NDK NX3225SA-27.12M-STD-CSR-3
Taitien XXCCEINANF-27.120000

Sheet: /RFID/NFC Reader/ File: neo900_SS_16.sch		
Title: RFID/NFC Reader		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 16/37





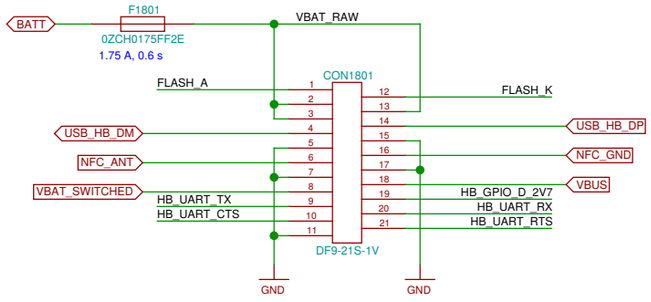
Sheet: /RFID/NFC Controller/
File: neo900_SS_17.sch

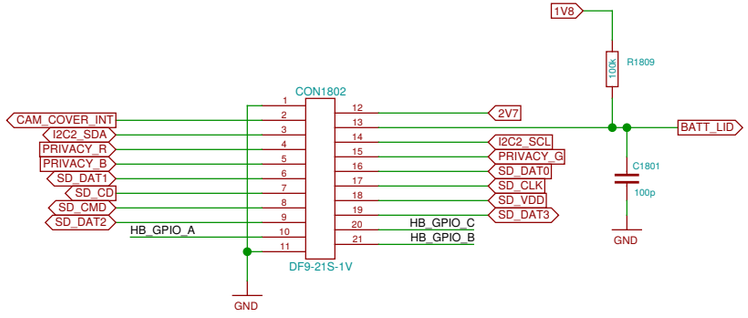
Title: RFID/NFC Controller

Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 17/37

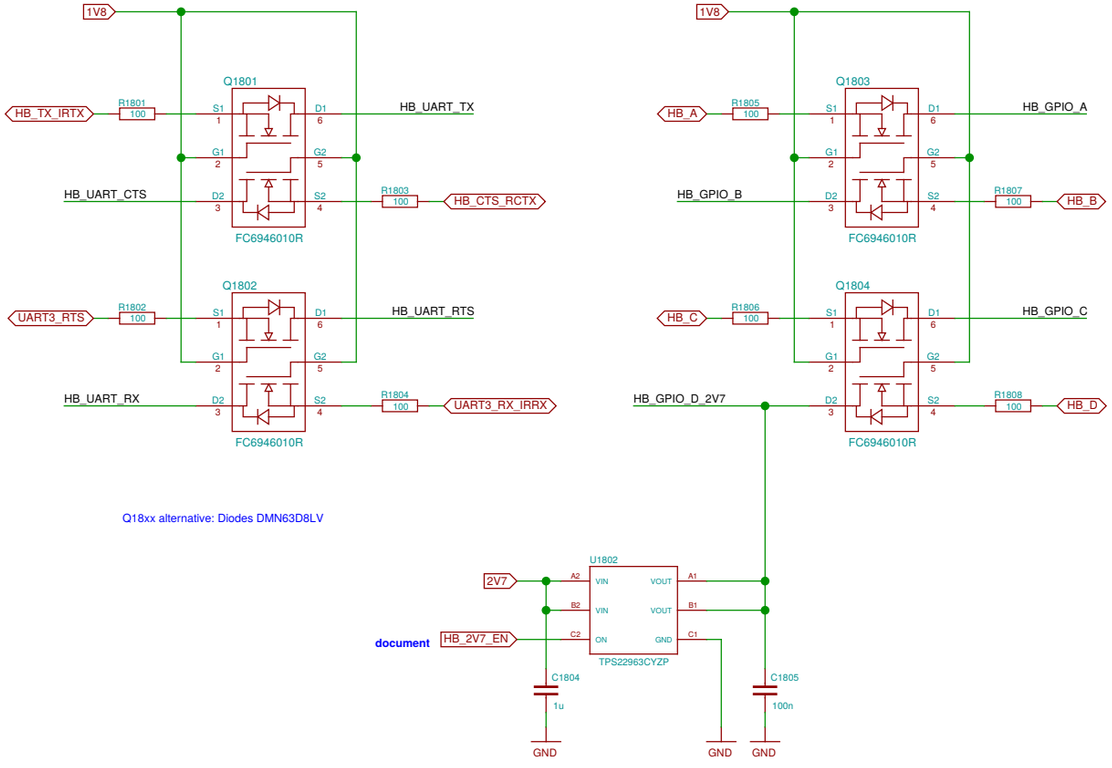
LOWER-BOB Interconnect (LOWER side)

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



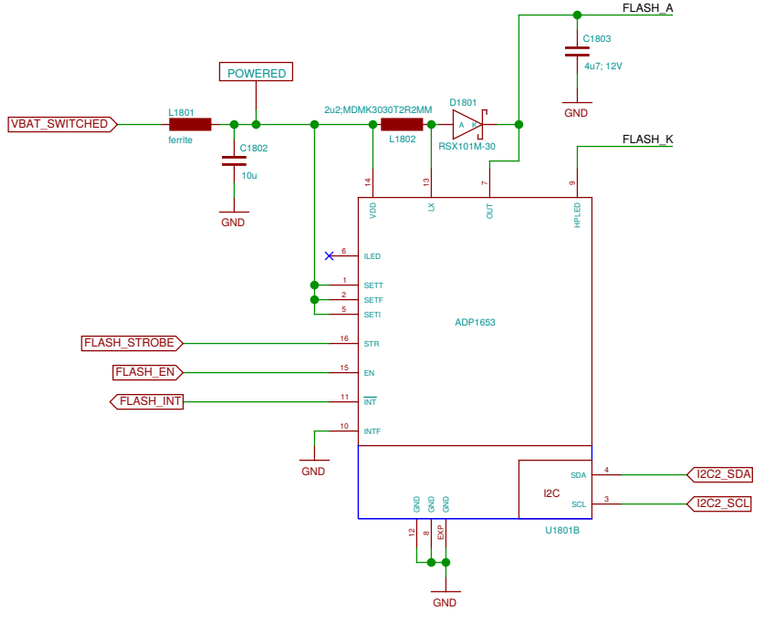


Level shifters for Hackerbus GPIO and UART



Q18xx alternative: Diodes DMN63D8LV

Flash/Torch



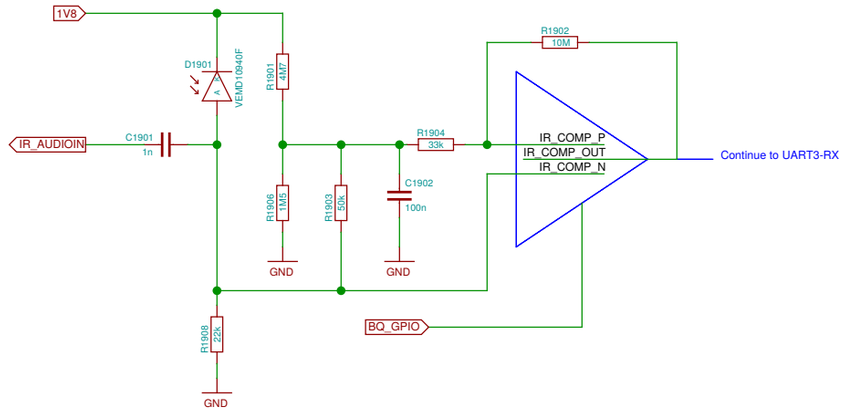
TODO: HB USB PHY may go here

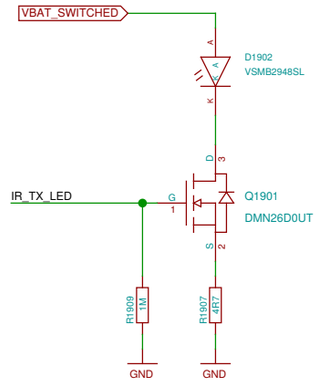
Missing 6x 2R for alternate function select (do we have the space for ca. 2.5 x 5mm?)

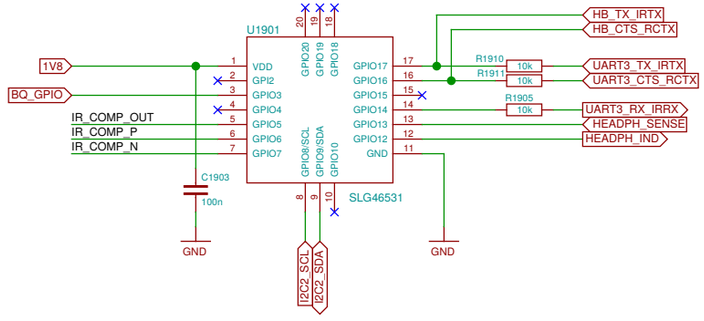
Sheet: /Hackerbus/ File: neo900_SS_18.sch		
Title: Hackerbus		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 18/37

TODO: update D1901 footprint

NOTE: 1V8 may be quite noisy

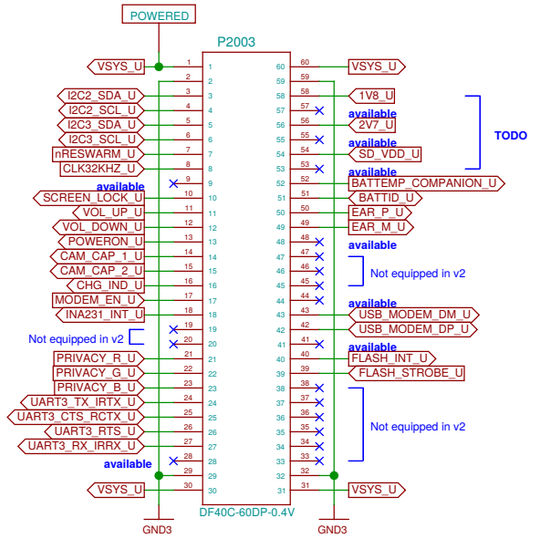


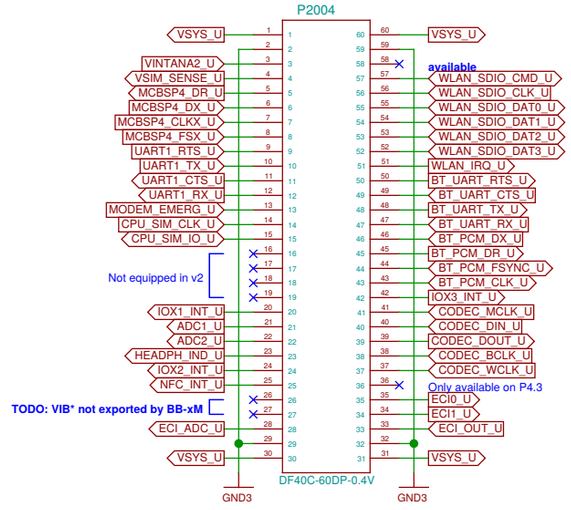


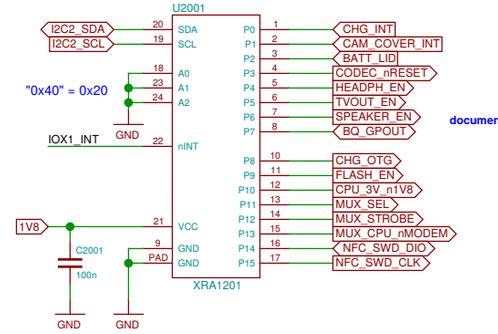


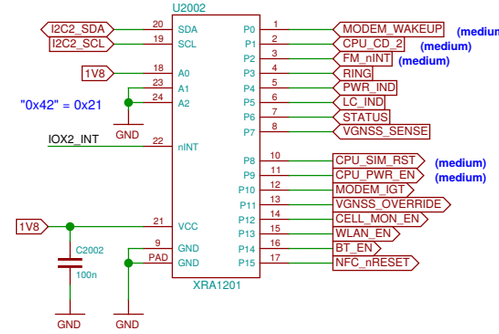
Sheet: /Infrared/ File: neo900_SS_19.sch		
Title: Infrared		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 19/37

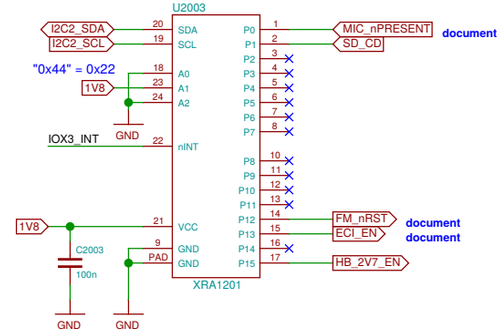
This is just the collection of signals we have.
Proper assignment still pending.





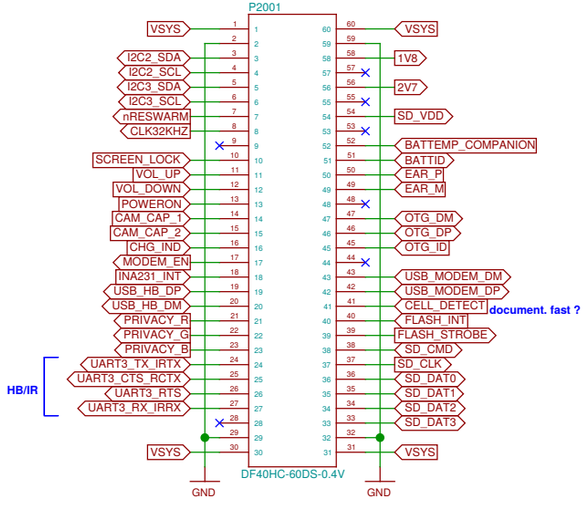


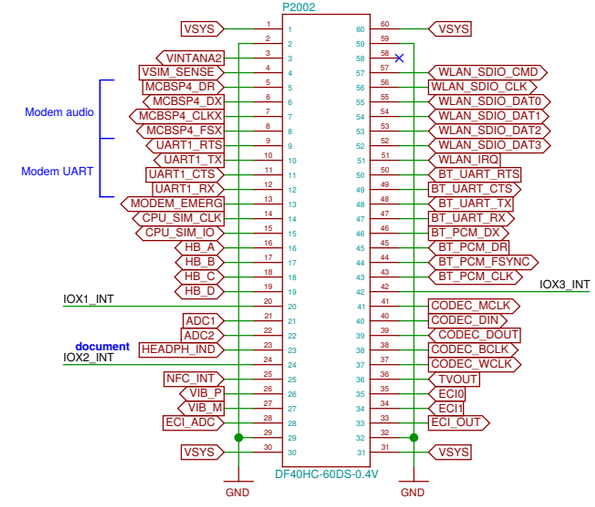




UPPER

LOWER





Current rating per contact: 0.3 A

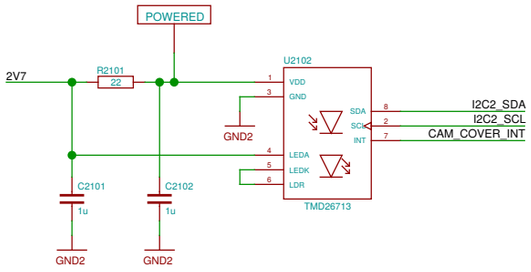
Sheet: /B2B LOWER-UPPER/
File: neo900_SS_20.sch

Title: B2B LOWER-UPPER

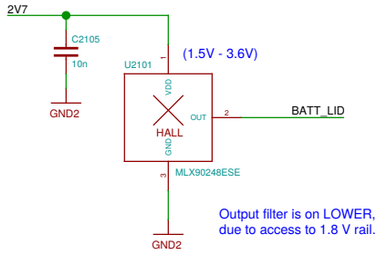
Size: A3 | Date: 1970-01-01 00:00:00 | Rev:

Plotted by eeshow 9ab7b3a+ 20161028-11:42Z | Id: 20/37

Camera Cover detect

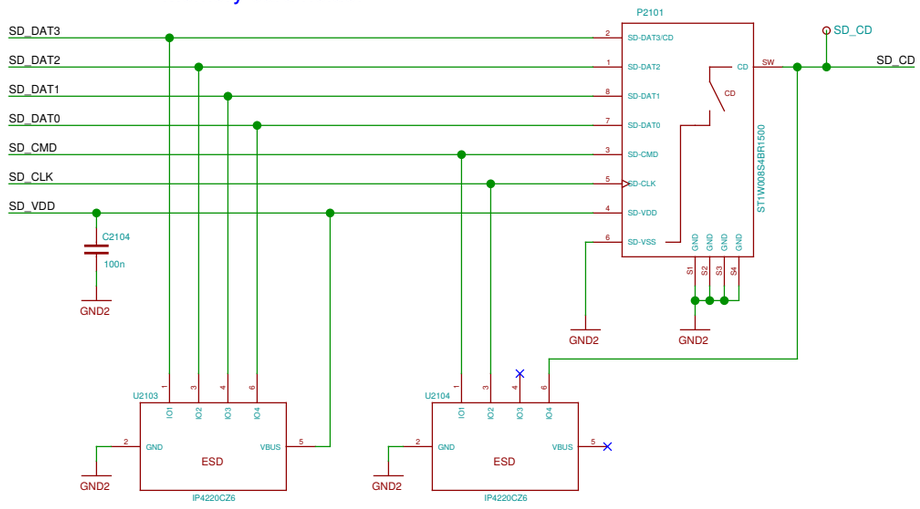


Battery Cover detect



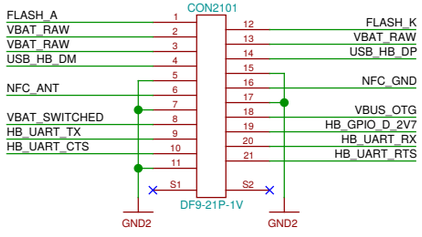
Output filter is on LOWER, due to access to 1.8 V rail.

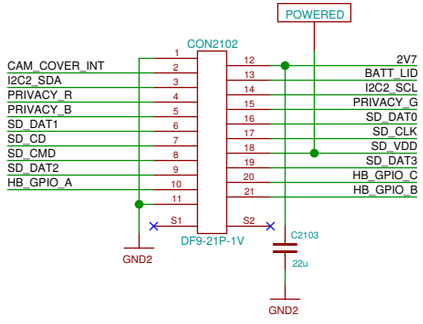
Memory card holder



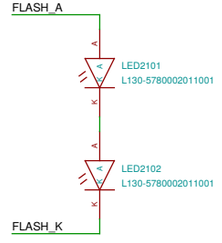
LOWER-BOB Interconnect (BOB side)

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

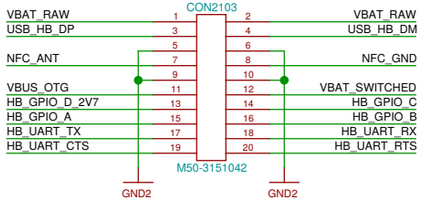




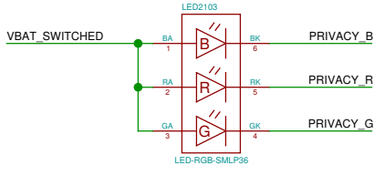
Camera flash



Hackerbus



Privacy LED



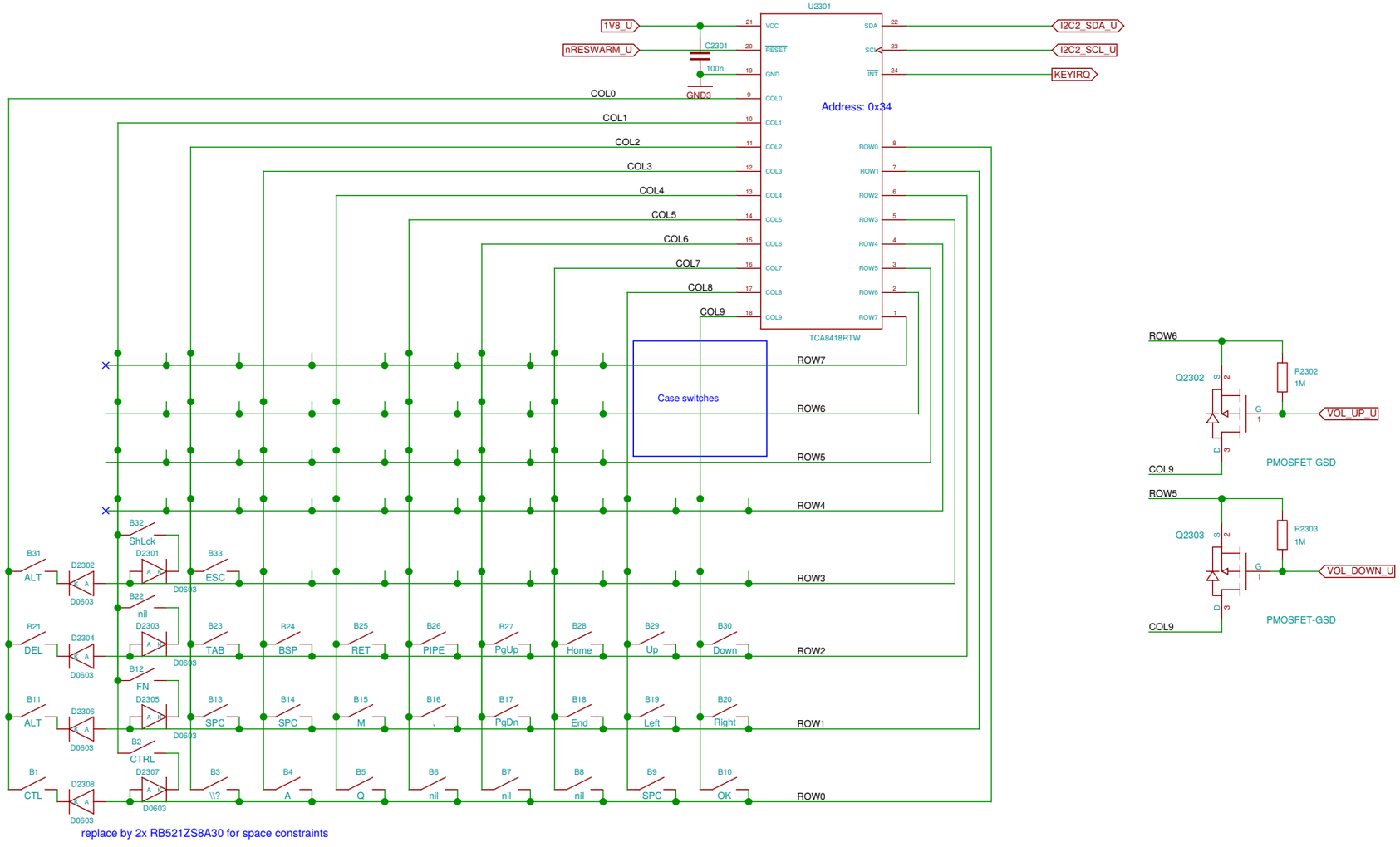
Sheet: /uSD Breakout Board/ File: neo900_SS_21.sch		
Title: uSD Breakout Board		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 21/37

TODO: consider sheet for deletion

Sheet: /empty/
File: neo900_SS_22.sch

Title: empty

Size: A3 | Date: 1970-01-01 00:00:00 | Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z | Id: 22/37



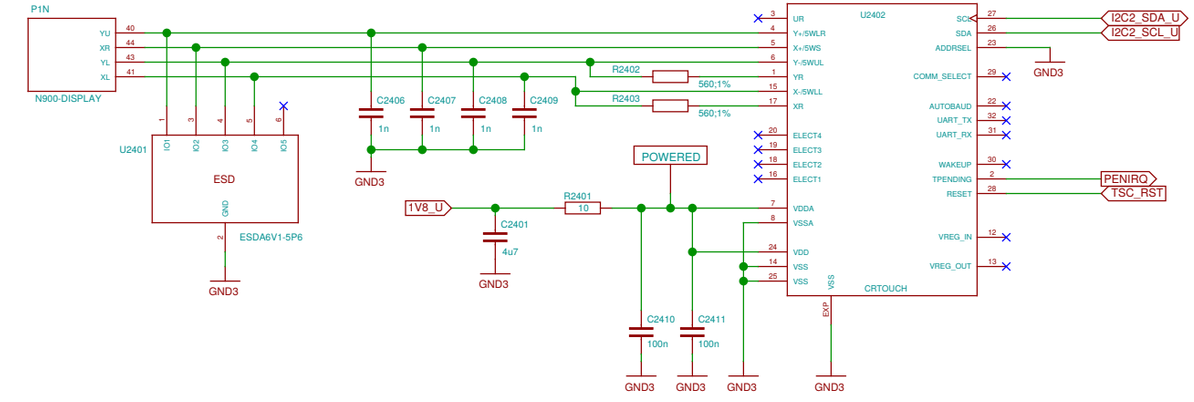
TODO: key names are nonsense

TODO: rearrange matrix to avoid diodes ?

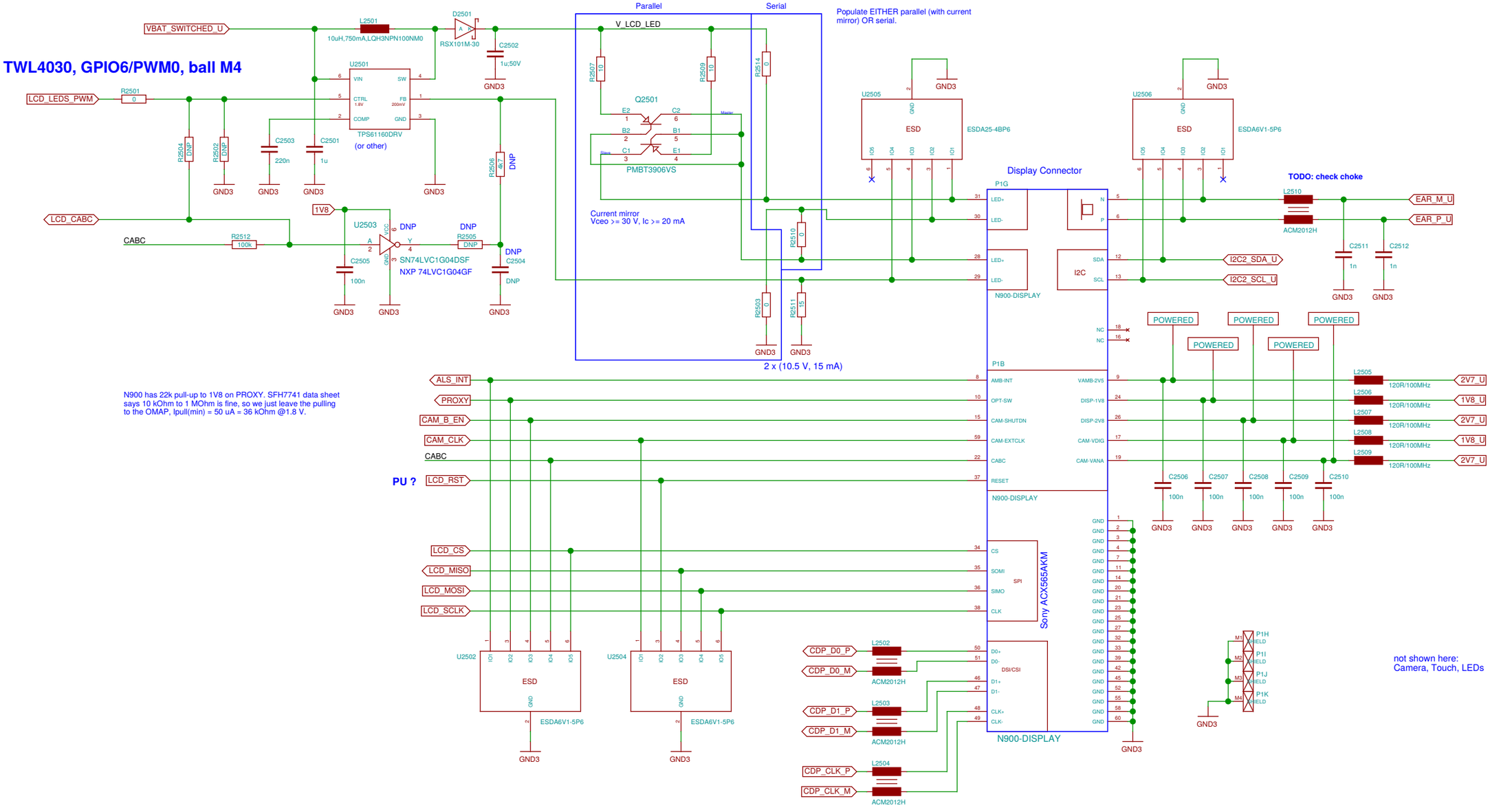
Sheet: /Keypad/ File: neo900_SS_23.sch		
Title: Keypad		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 23/37

Touch screen controller

Resistive Touch (display connector)



Sheet: /Display-Peripherals/ File: neo900_SS_24.sch		
Title: Display-Peripherals		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 24/37



Sheet: /Display-Panel&Power/ File: neo900_SS_25.sch		
Title: Display-Panel&Power		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		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: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 26/37

eMMC is not part of v2

Sheet: /eMMC/
File: neo900_SS_27.sch

Title: eMMC

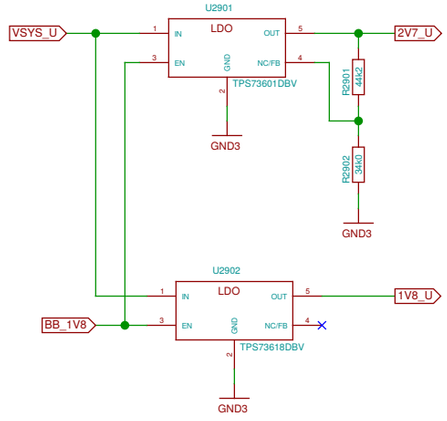
Size: A3 | Date: 1970-01-01 00:00:00 | Rev:

Plotted by eeshow 9ab7b3a+ 20161028-11:42Z | Id: 27/37

Companion chip (TPS65950) is not part of v2

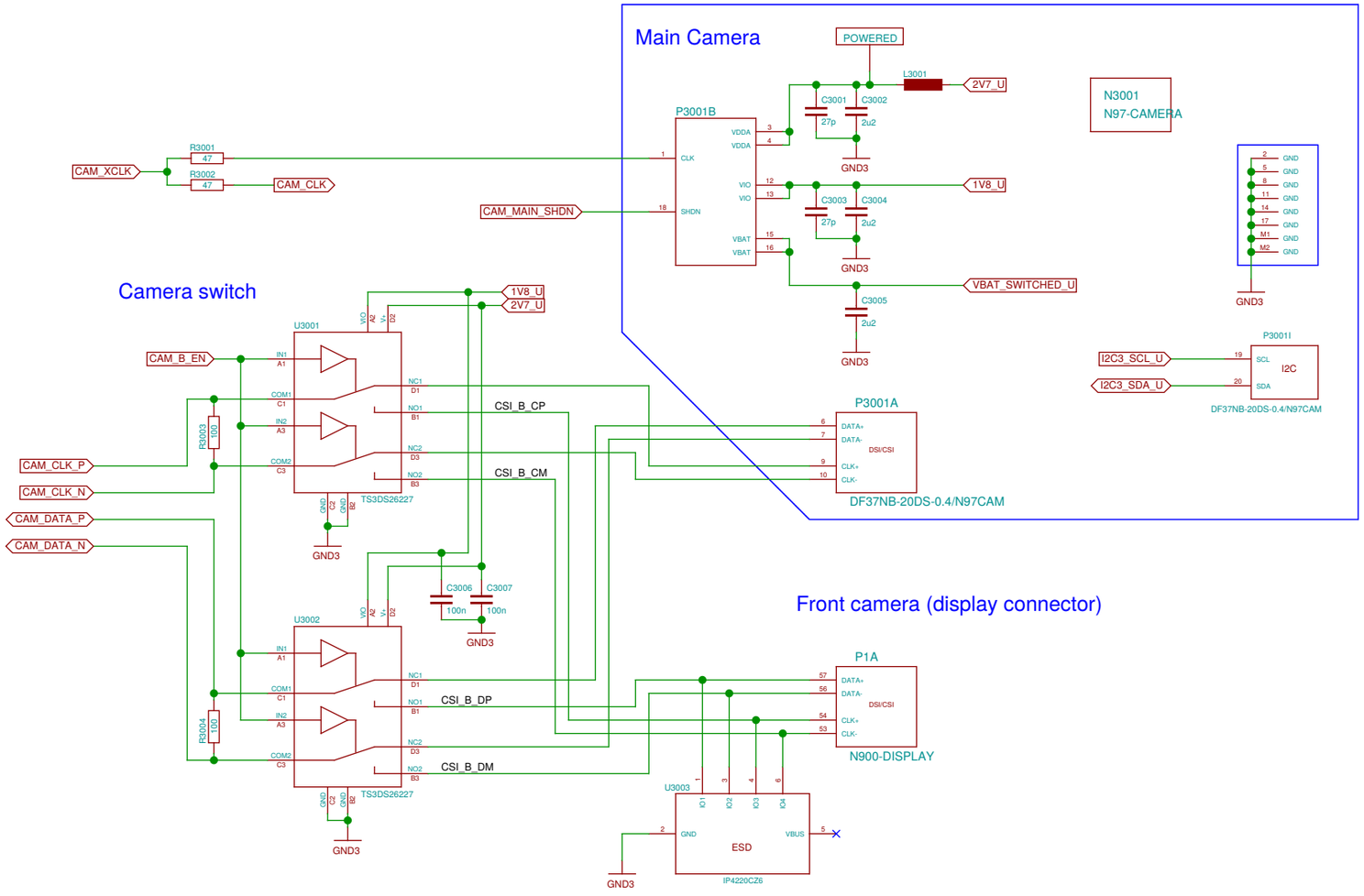
Sheet: /PMU+Codec/ File: neo900_SS_28.sch		
Title: PMU+Codec		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 28/37

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

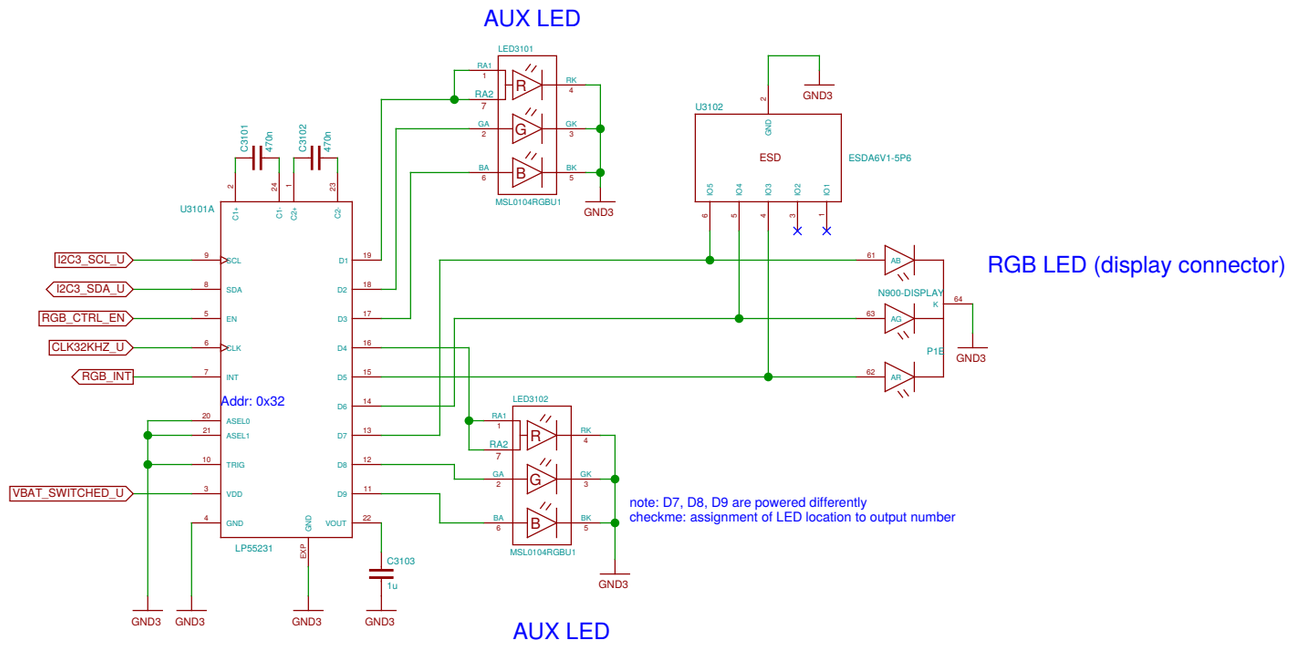


TODO: use REGEN ?

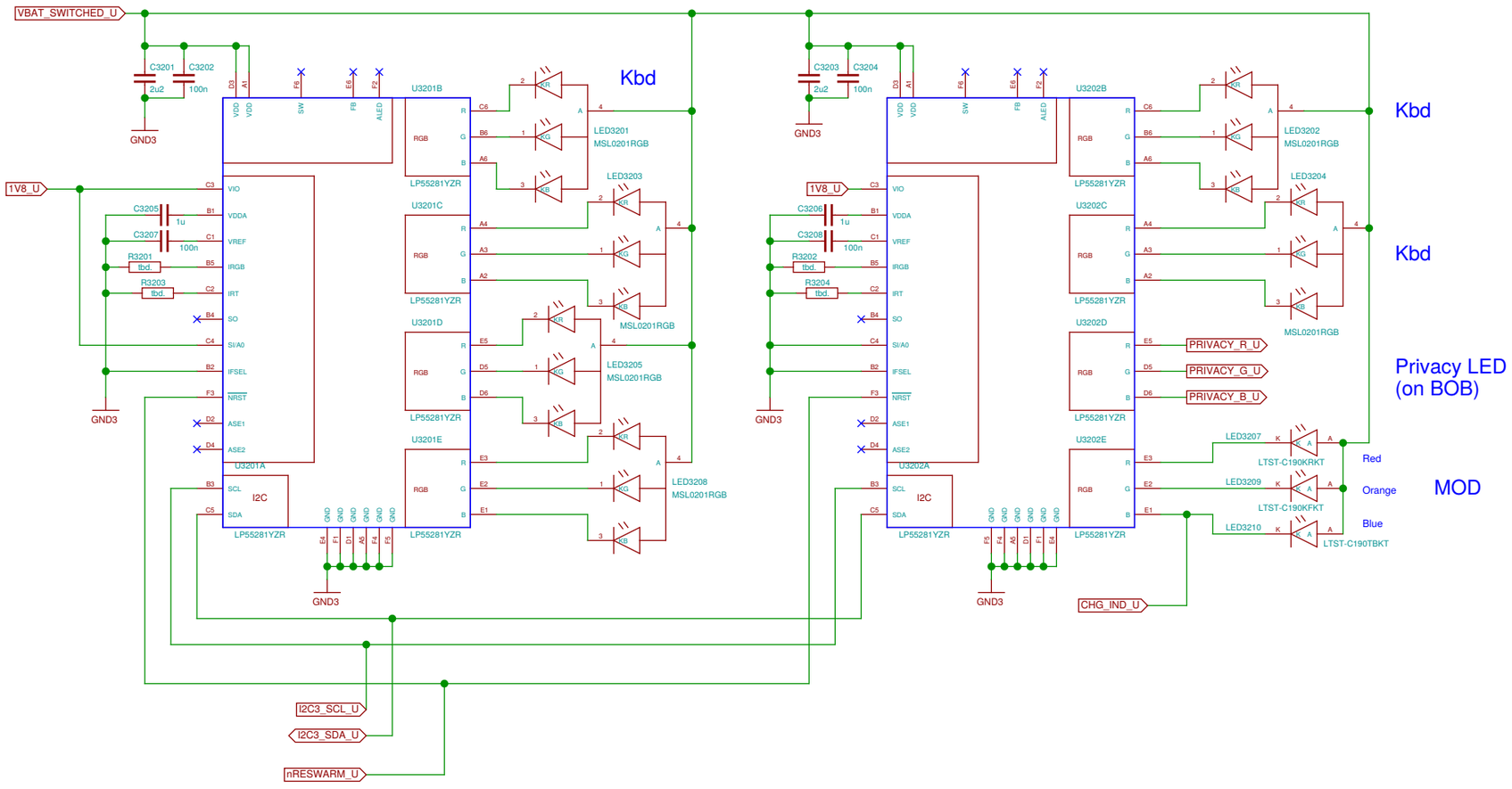
Sheet: /BB-XM Dummy (TWL4030)/ File: neo900_SS_29.sch		
Title: BB-XM Dummy (TWL4030)		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 29/37



Sheet: /Camera/ File: neo900_SS_30.sch		
Title: Camera		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 30/37



Sheet: /Fancy LEDs/ File: neo900_SS_31.sch		
Title: Fancy LEDs		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 31/37

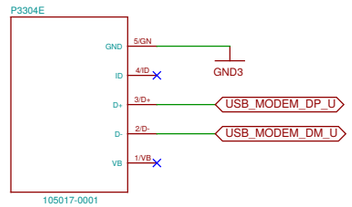


Sheet: /Basic LEDs/ File: neo900_SS_32.sch		
Title: Basic LEDs		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 32/37

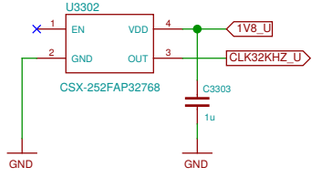
Cleaning up. The connections to BB-xM are on the next sheets.

connect to BB
by some Micro-USB cable

Modem USB



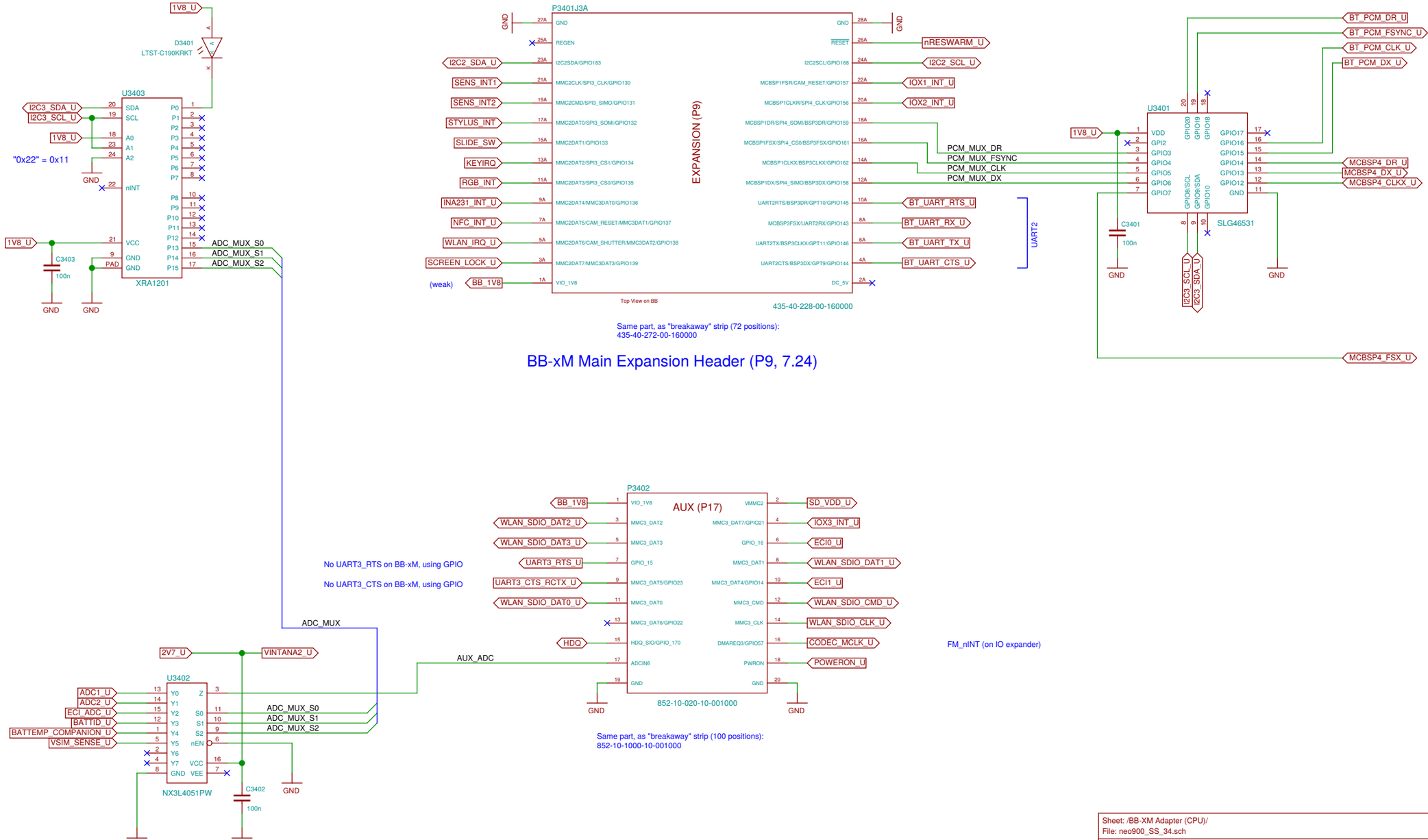
32 kHz clock



Alternative: OYKTGLJANF-0.032768

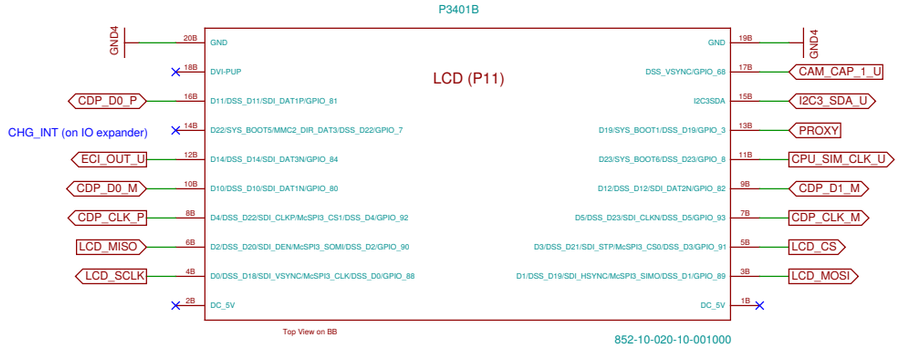
Sheet: /Connector to BB-XM/ File: neo900_SS_33.sch		
Title: Connector to BB-XM		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 33/37

TODO: update pin names in footprint



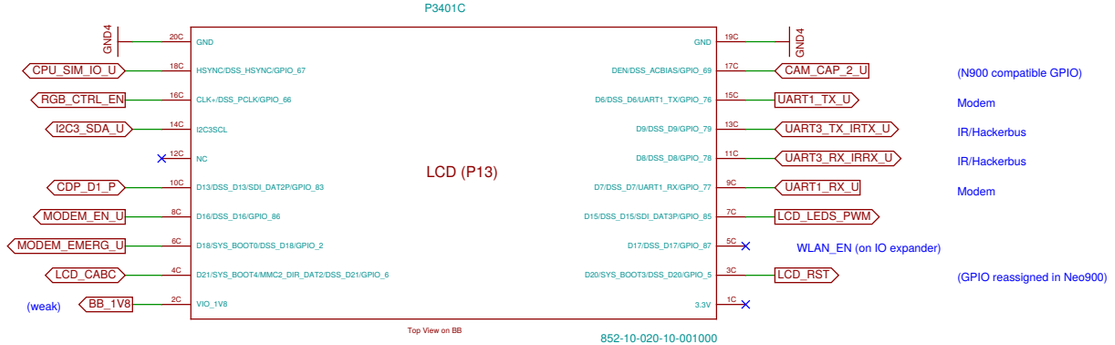
Sheet: /BB-XM Adapter (CPU)/		
File: neo900_SS_34.sch		
Title: BB-XM Adapter (CPU)		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 34/37

P11 (7.25)



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

P13 (7.25)

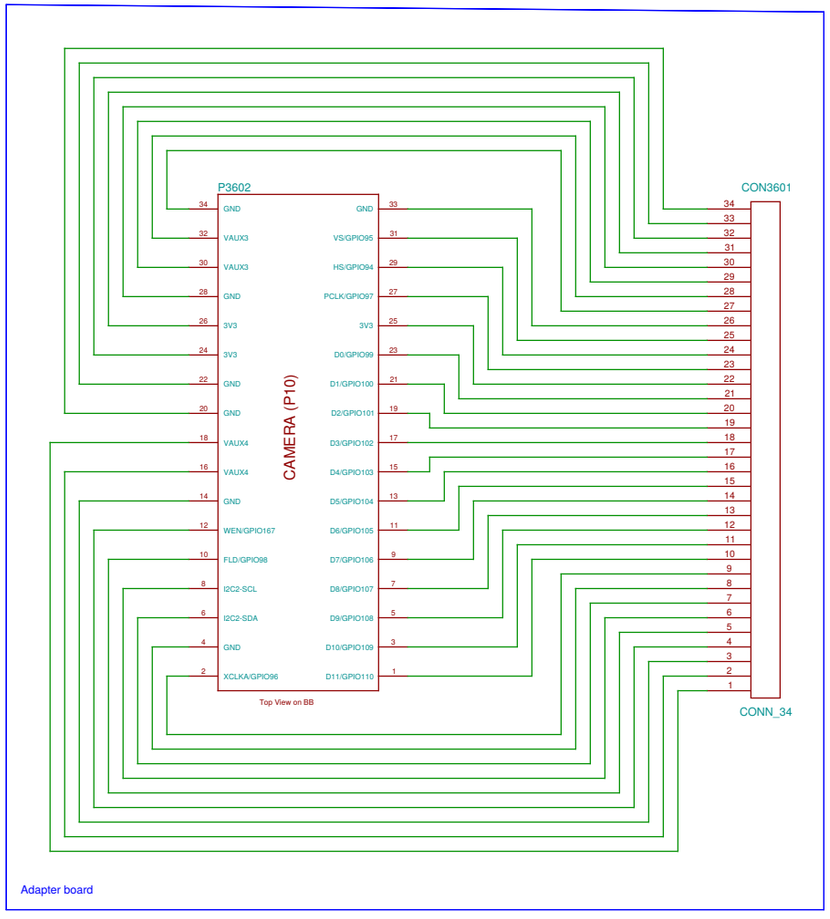


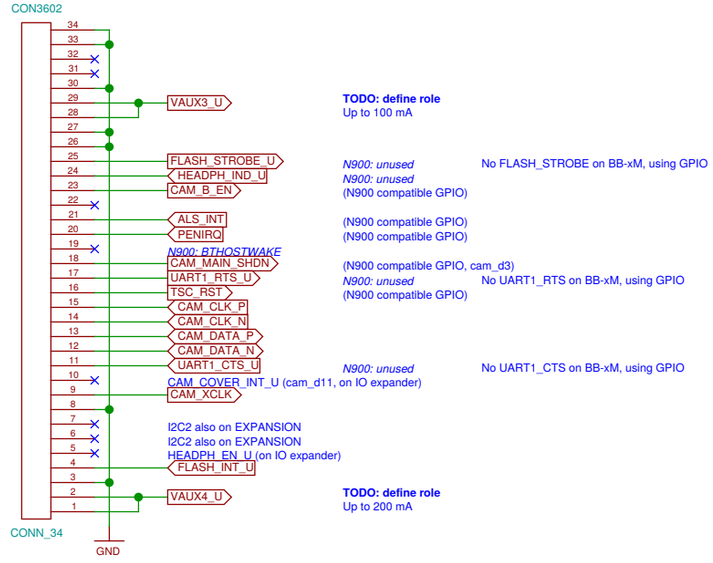
Same part, as "breakaway" strip (100 positions):
852-10-1000-10-001000

TODO: update pin names in footprint

Sheet: /BB-XM Adapter (DISP)/ File: neo900_SS_35.sch		
Title: BB-XM Adapter (DISP)		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 35/37

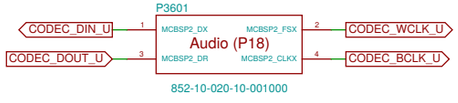
Processor Camera Port Interface (P10, 7.20.3)





34 x 1, 1.27 mm TH row (for ribbon cable)

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.

Sheet: /BB-XM Adapter (CAM)/		
File: neo900_SS_36.sch		
Title: BB-XM Adapter (CAM)		
Size: A3	Date: 1970-01-01 00:00:00	Rev:
Plotted by eeshow 9ab7b3a+ 20161028-11:42Z		Id: 36/37

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

Sheet: /No-Solder Components/
File: neo900_SS_37.sch

Title: No-Solder Components

Size: A3 | Date: 1970-01-01 00:00:00 | Rev:

Plotted by eeshow 9ab7b3a+ 20161028-11:42Z | Id: 37/37