MangoH Platform

Project Variants

	1600643		
DNI	N		
UFL_M_RF	Y		
SMA_RF	N		
MIC_OMTP	N		
MIC_CTIA	Y		

Variants description

DNI = Do Not Install
UFL_M_RF = Add U.FL conn. on Main CF3 (do not define SMA_RF)
SMA_RF = Add SMA conn. on Main CF3 (do not define UFL_M_RF)
MIC_OMTP = OMTP headphones config (do not define MIC_CTIA)
MIC_CTIA = CTIA/AHJ headphones config (do not define MIC_OMTP)

I2C address list

08h = 3503 USB hub
3Eh = I/O expander 1
3Fh = I/O expander 2
55h = Battery gauge
6Ah = Accelerometer sensor
6Bh = Buck+batt charger
70h = I/O expander 3
71h = I2C Hub

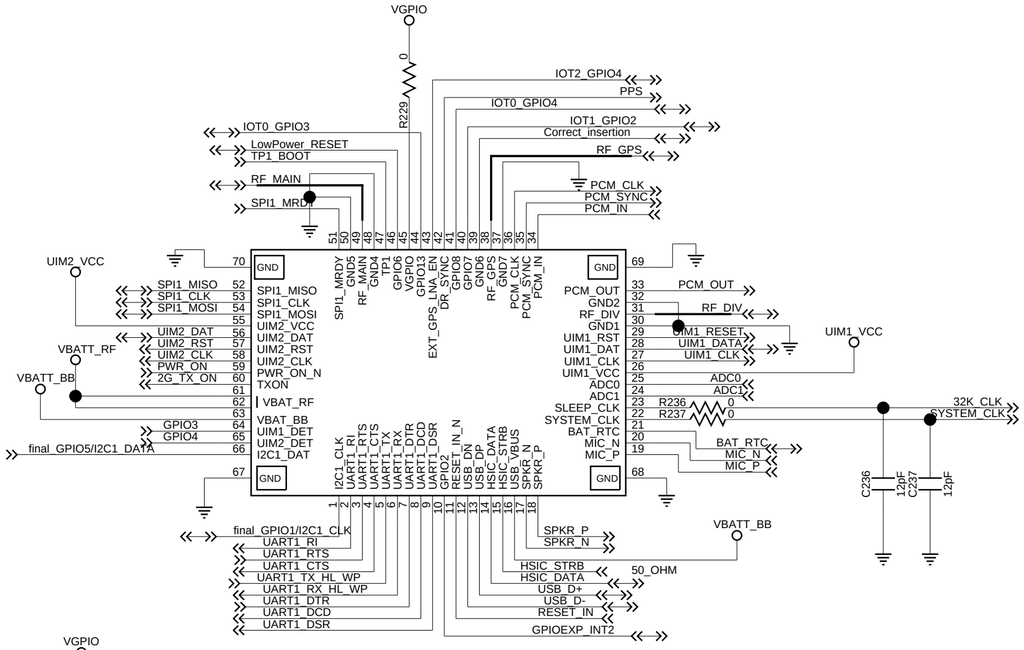
REFERENCE

1600643 PCA, MANGOH
1401063 PCB, MANGOH

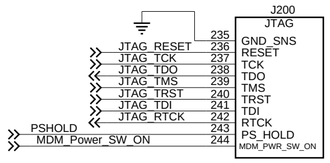
SIERRA WIRELESS™

SITE	<CTO Office>
LEAD ENGINEER	Ashish Syal
REV SCH	29
REV PCB	7
PROJECT	MANGOH
DATE/TIME	24-11-2015_14:23
SCHEMATIC	2500905
PAGE	1 OF 15

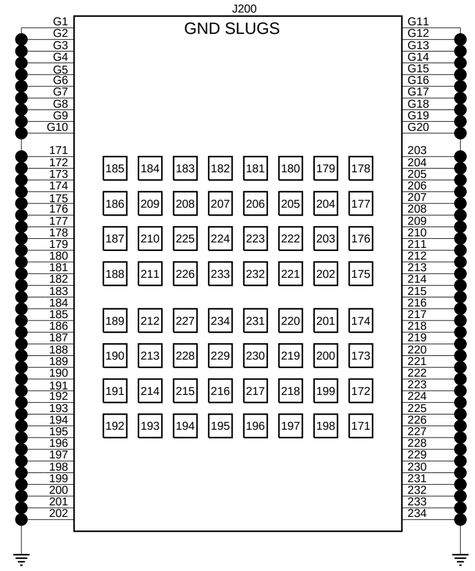
INNER RING

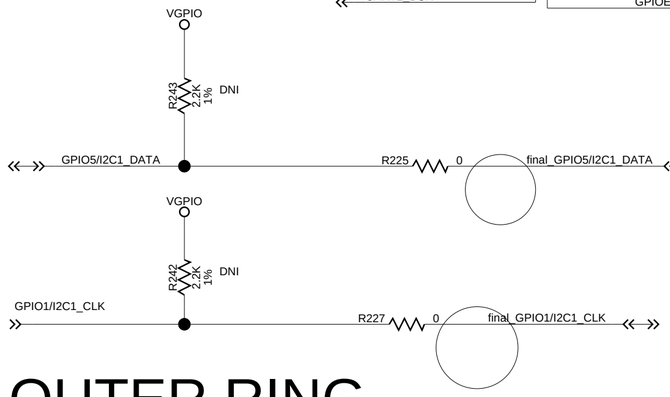


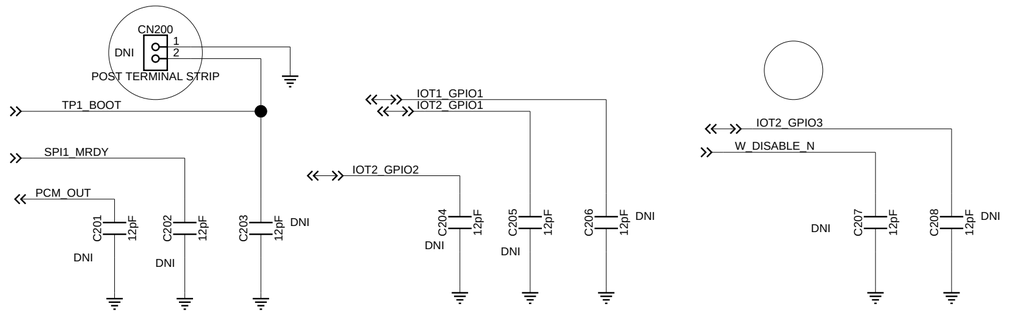
JTAG



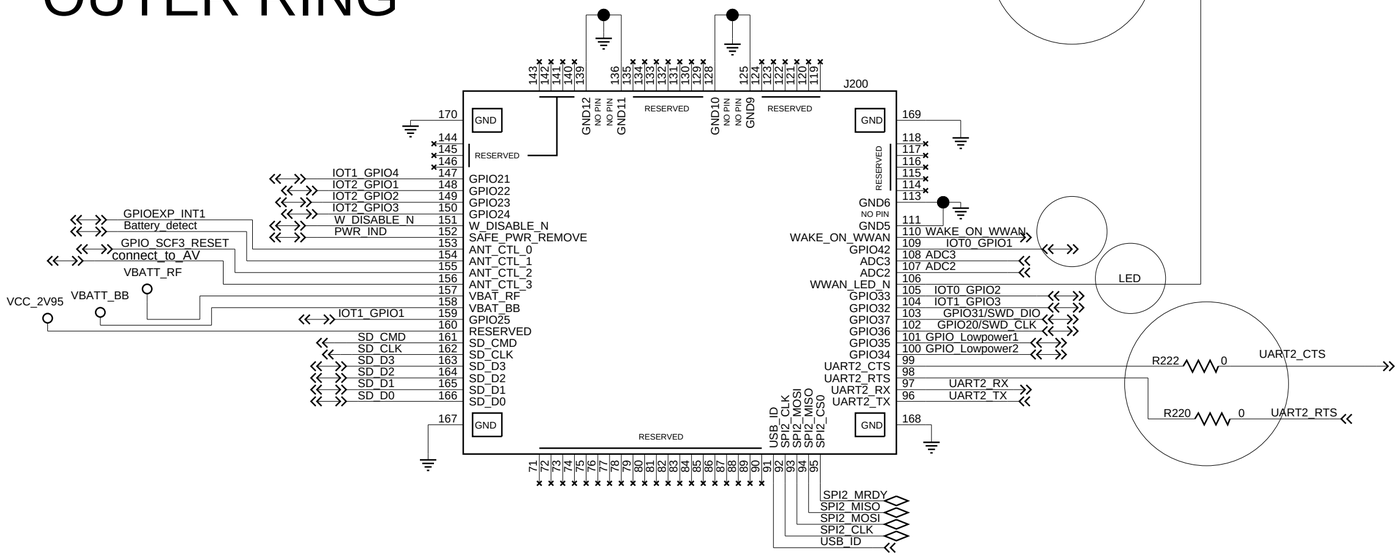
GROUND SLUG



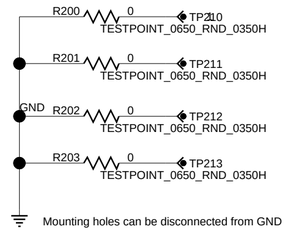


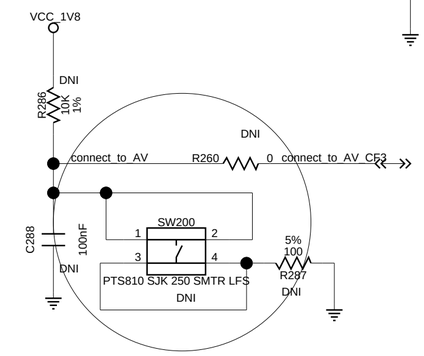


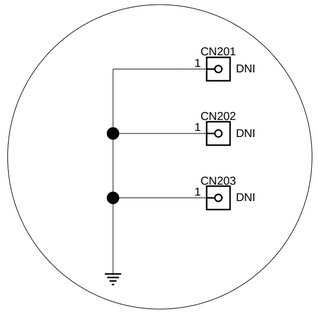
OUTER RING



Mounting Holes







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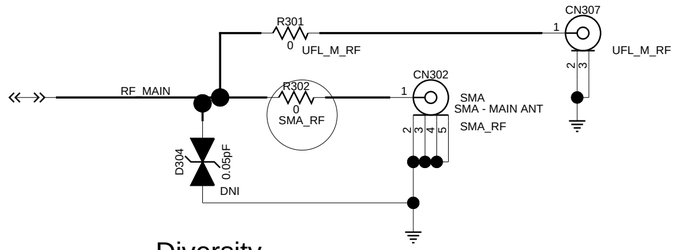
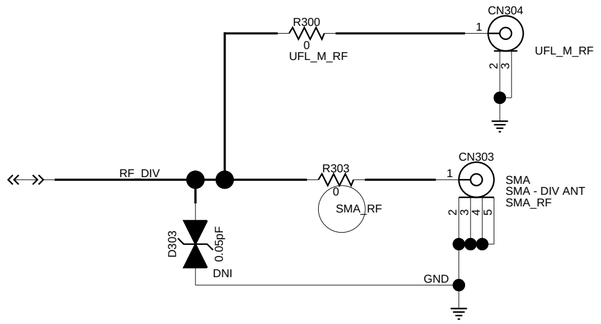
MAIN CF3 Socket

Main Antenna

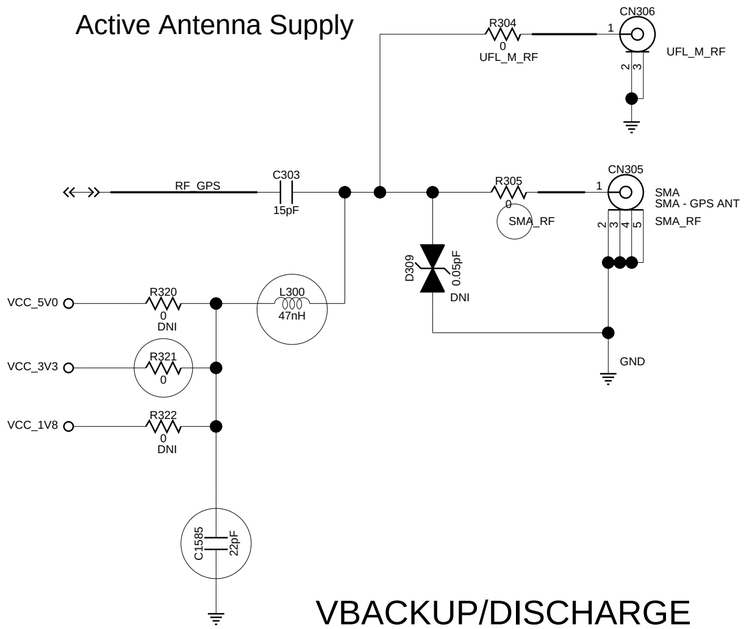


Diversity

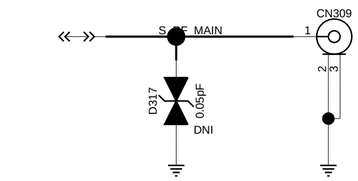


GPS

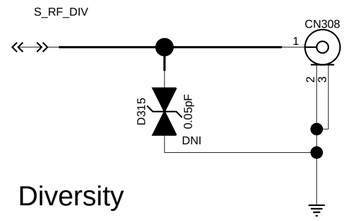
Active Antenna Supply



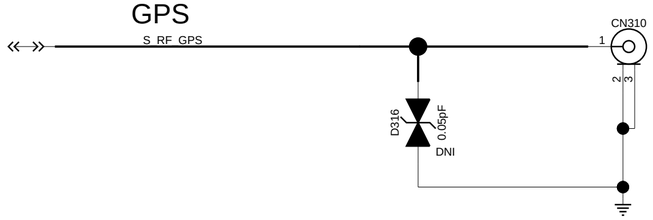
SECONDARY CF3 Socket



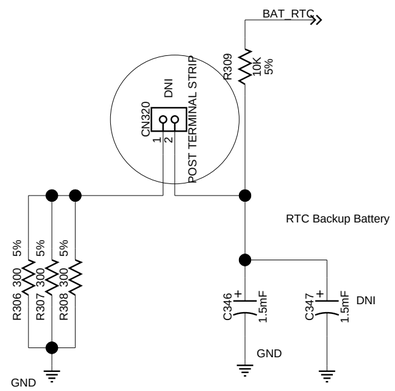
Main Antenna



Diversity

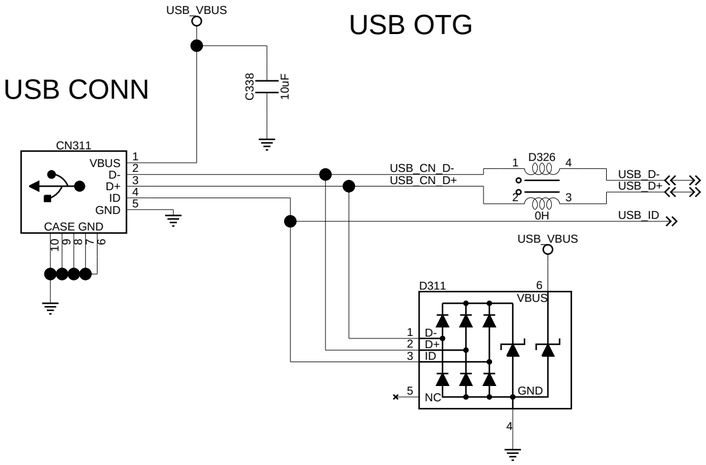


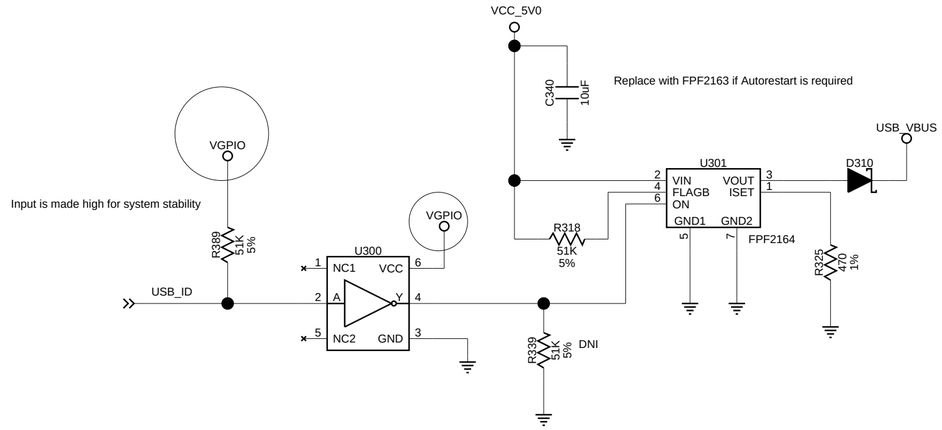
VBACKUP/DISCHARGE

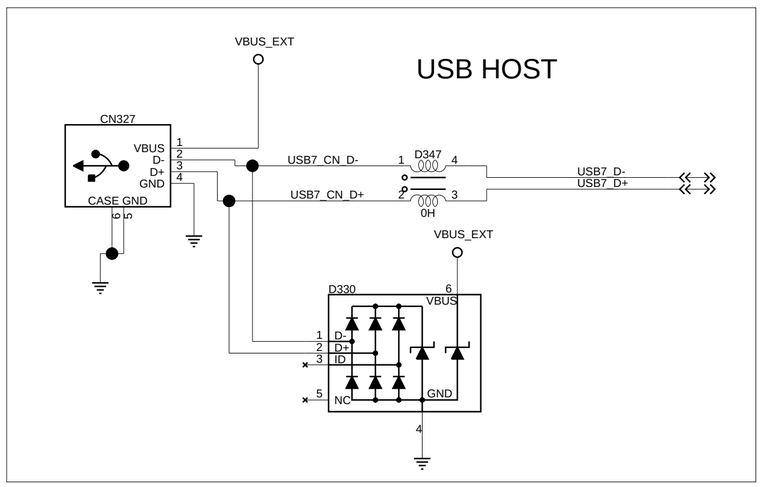


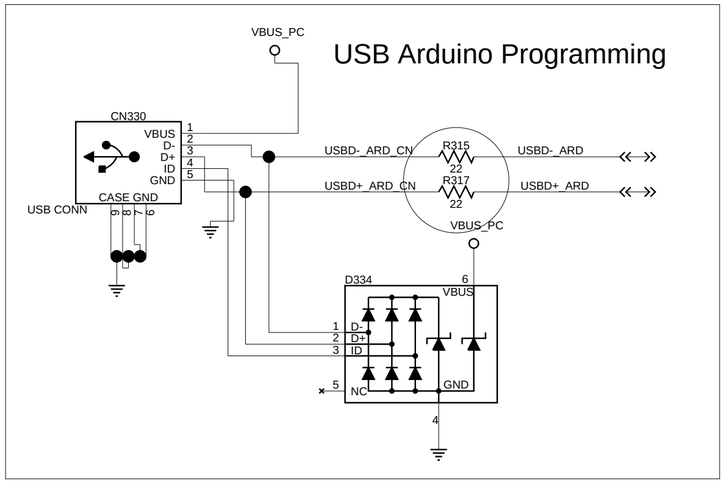
USB OTG

USB CONN









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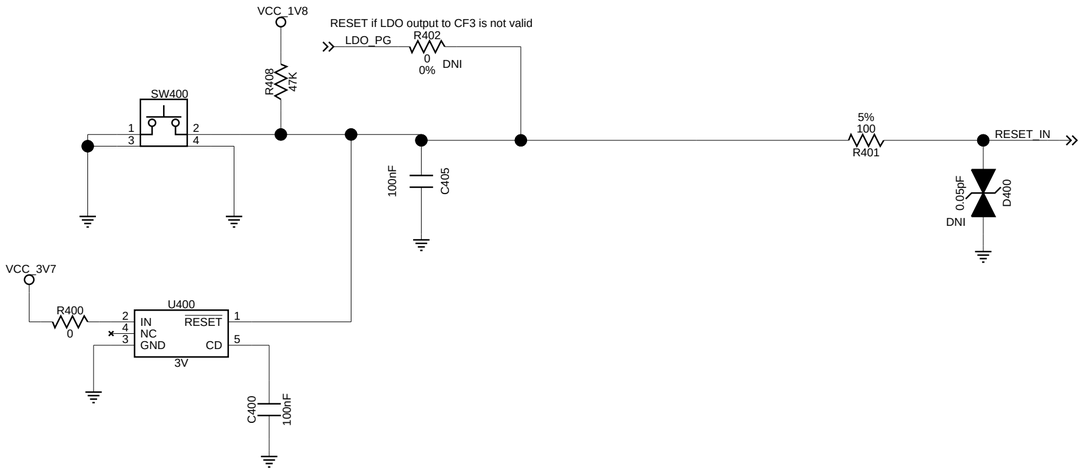
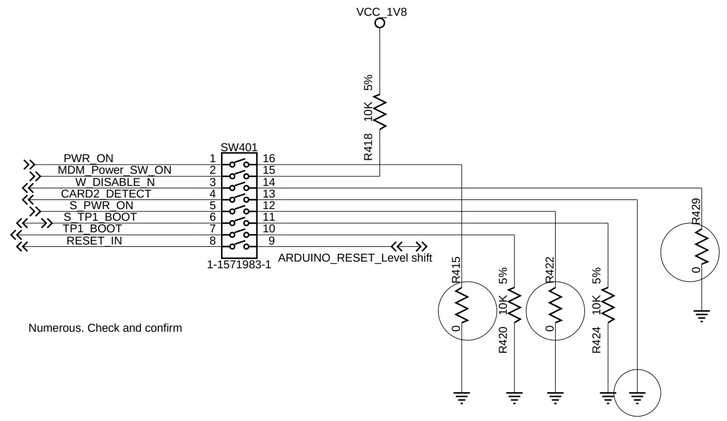
OPHW Platform RESET

Jumper for HL only. Allow Arduino reset button to reset HL

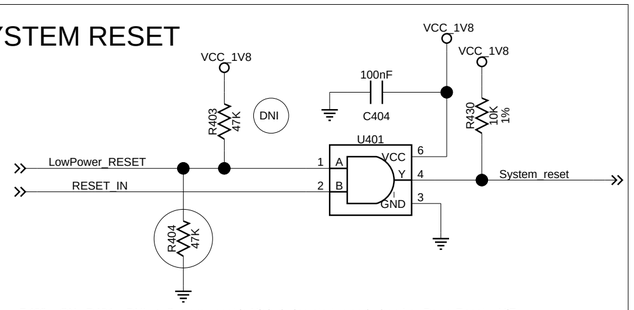


CONTRL SWITCH

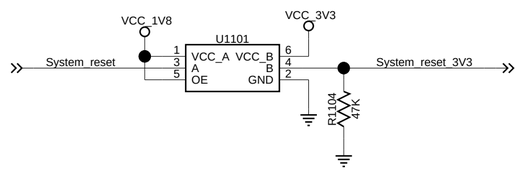


Numerous. Check and confirm

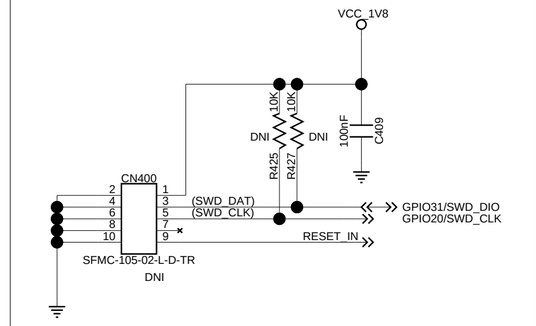
SYSTEM RESET



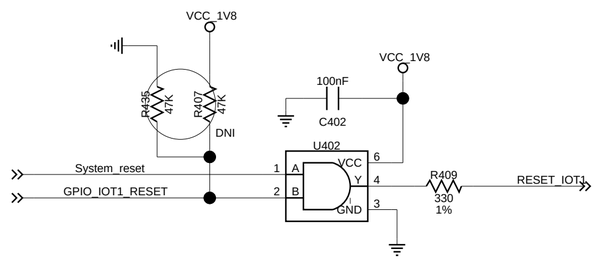
R403 = ON , R404 = DNI --> System_reset is High during startup and when LowPowerReset = HiZ
R403 = DNI , R404 = ON --> System_reset is Low during startup and when LowPowerReset = HiZ



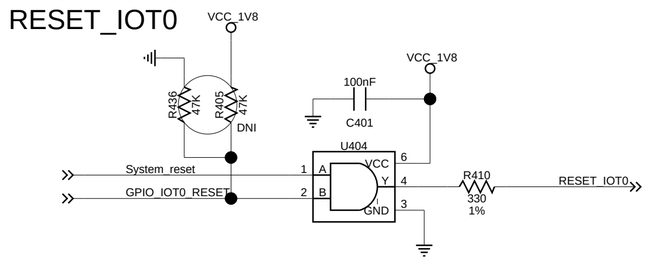
uC DEBUG

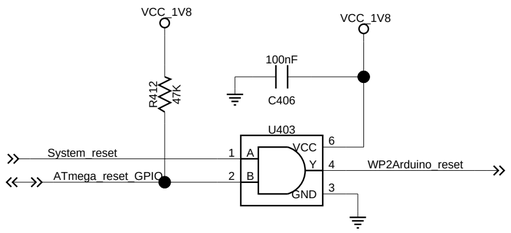


RESET_IOT1

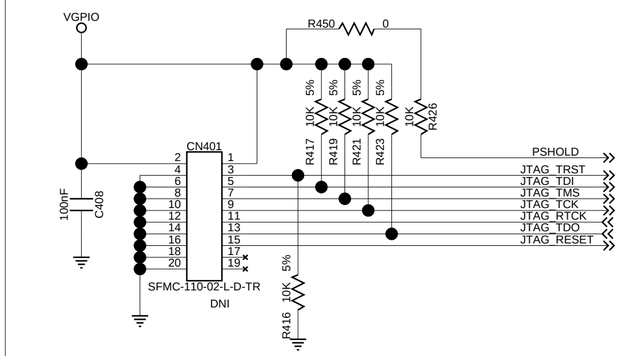


RESET_IOT0

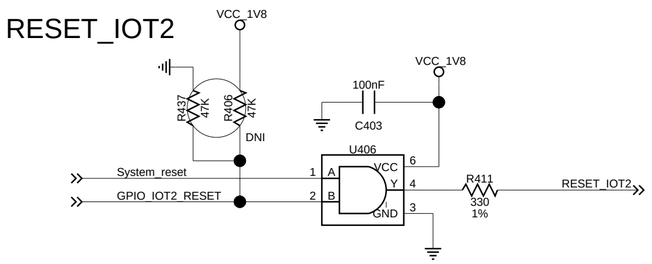




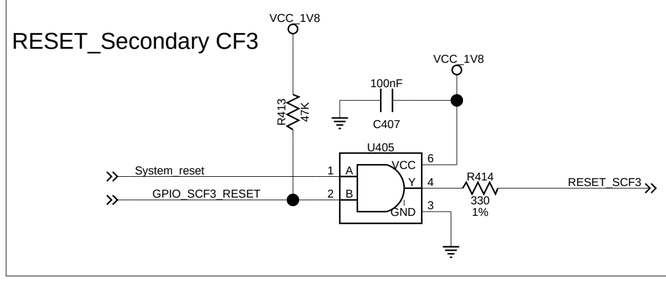
JTAG



RESET_IOT2



RESET_Secondary CF3



SIERRA WIRELESS™

SITE	see P1
LEAD ENGINEER	see P1
REV SCH	See P1
REV PCB	See P1
PROJECT	see P1
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SCHEMATIC	2500905
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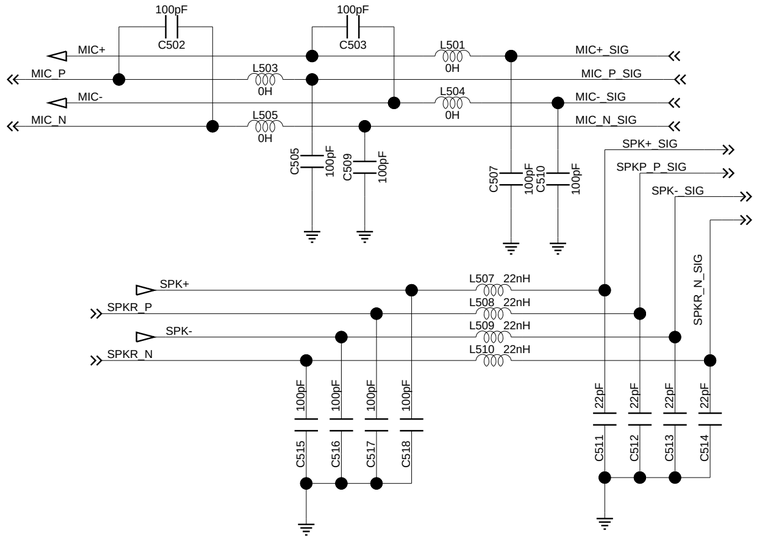
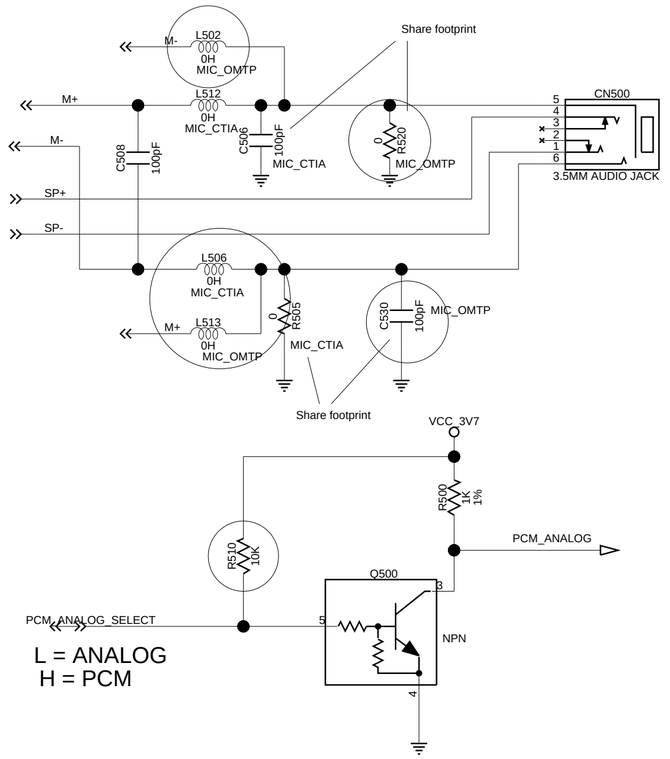
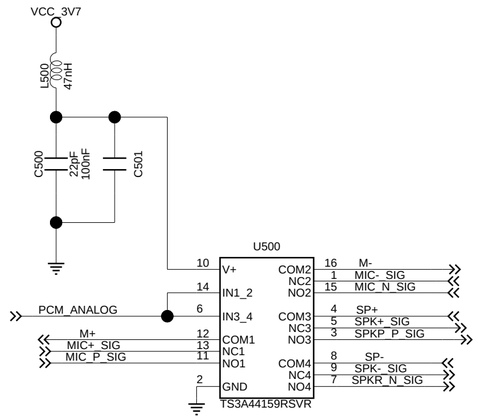
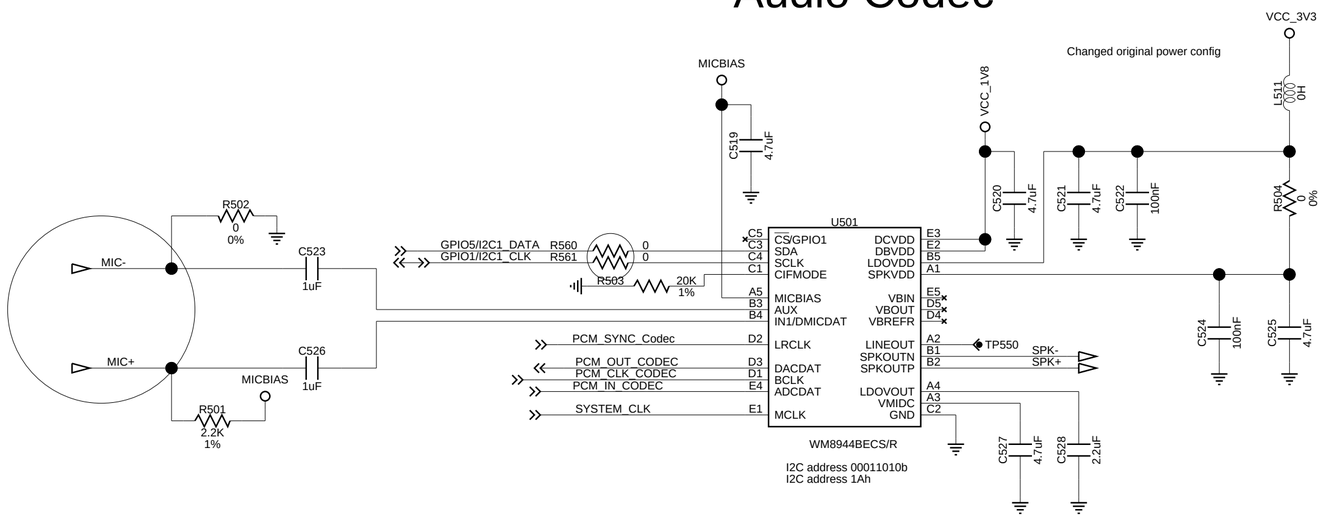
Audio Source Selection







Audio Codec



I2C address: 00110100

SIERRA WIRELESS™

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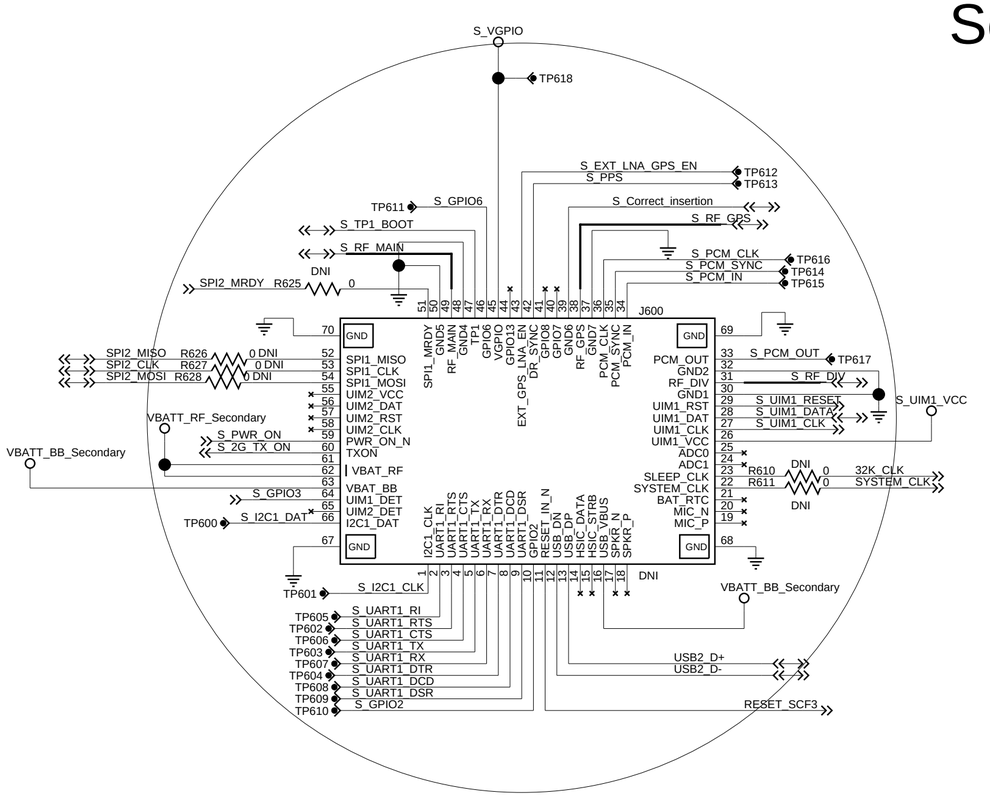
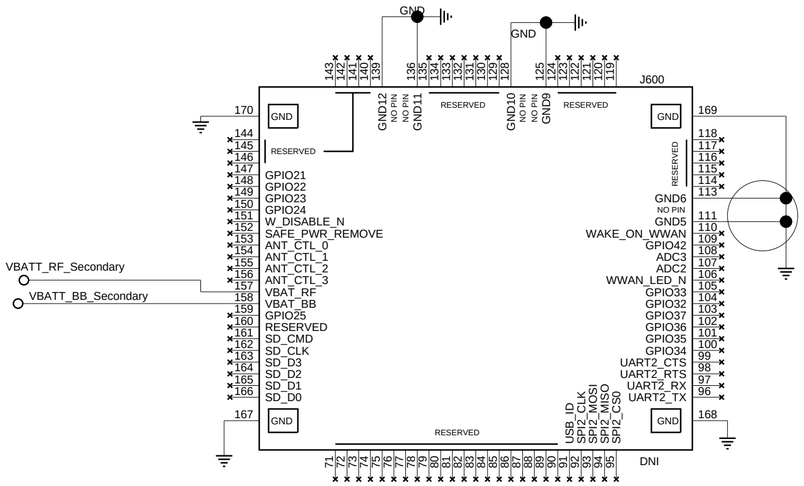
Secondary LGA SOCKET

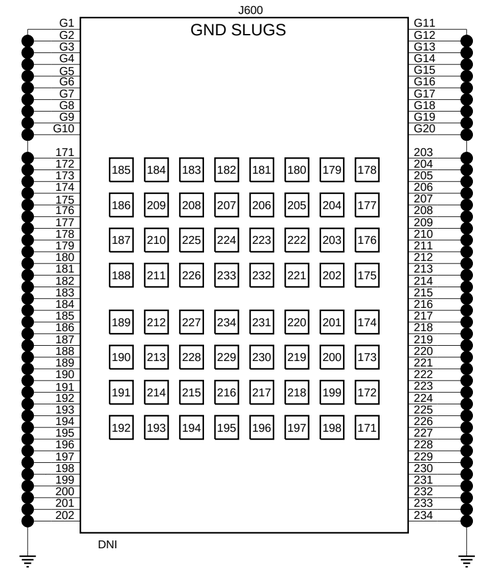


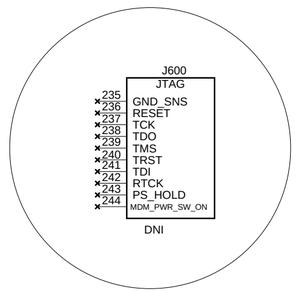


J601

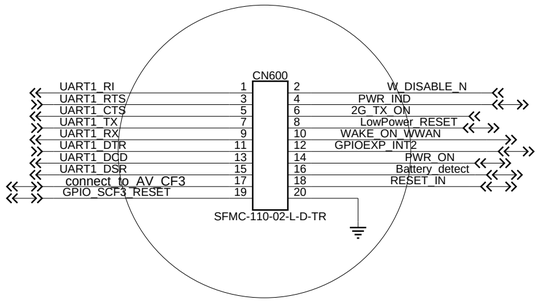
3900283

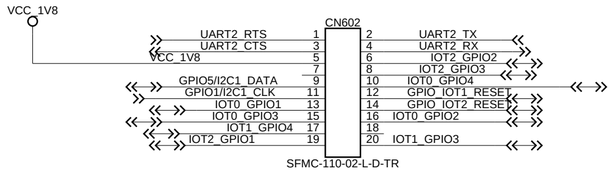
J601 is CF3 socket essential that ovelap J600

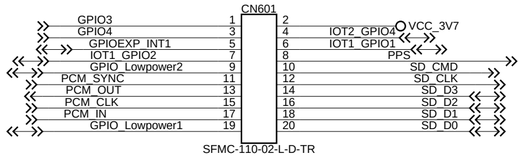




Additional Hardware Pins

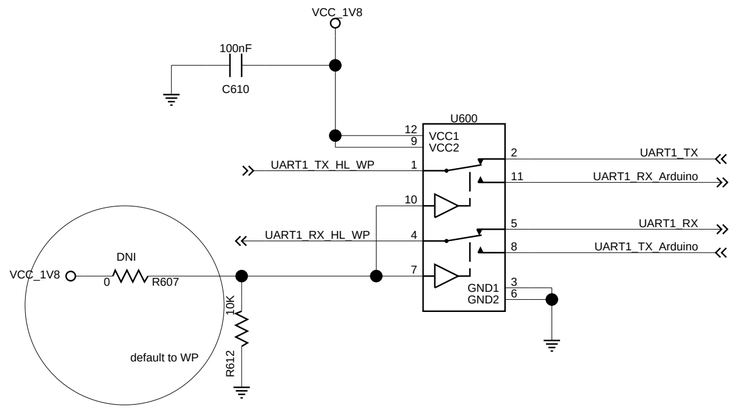


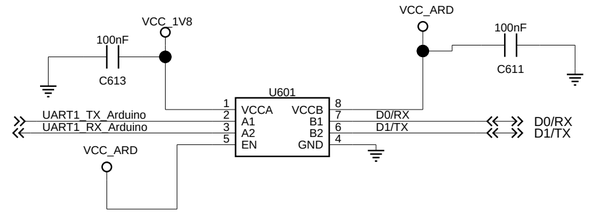




HL to ATmega through UART.

WP to Mux by default





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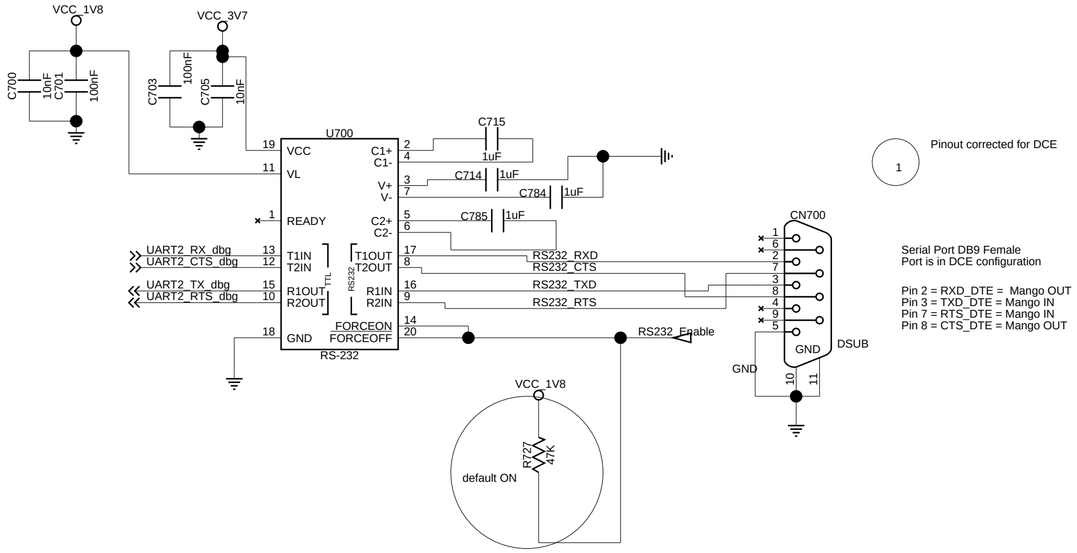
UART (MAX 1MBPS)

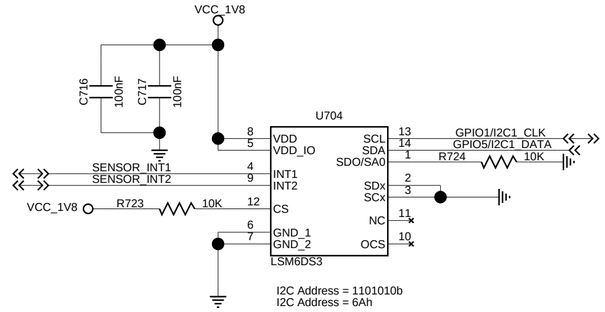


Pinout corrected for DCE

Serial Port DB9 Female
Port is in DCE configuration

Pin 2 = RXD_DTE = Mango OUT
Pin 3 = TXD_DTE = Mango IN
Pin 7 = RTS_DTE = Mango IN
Pin 8 = CTS_DTE = Mango OUT

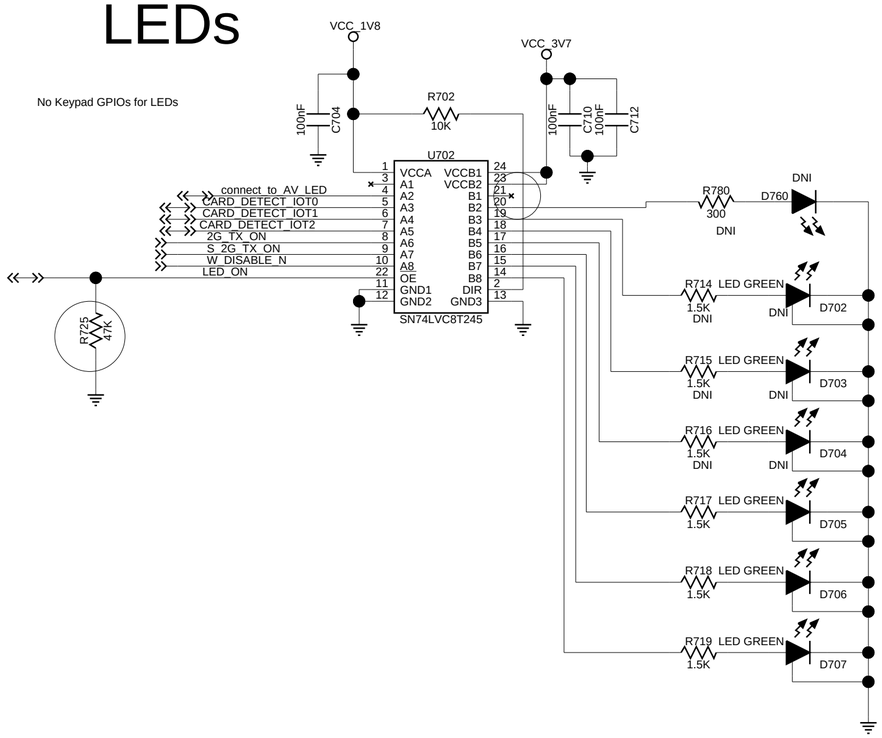
ACCELEROMETER AND GYROSCOPE



I2C Address = 1101010b
I2C Address = 6Ah

LEDs

No Keypad GPIOs for LEDs



I2C Address = 1110001b

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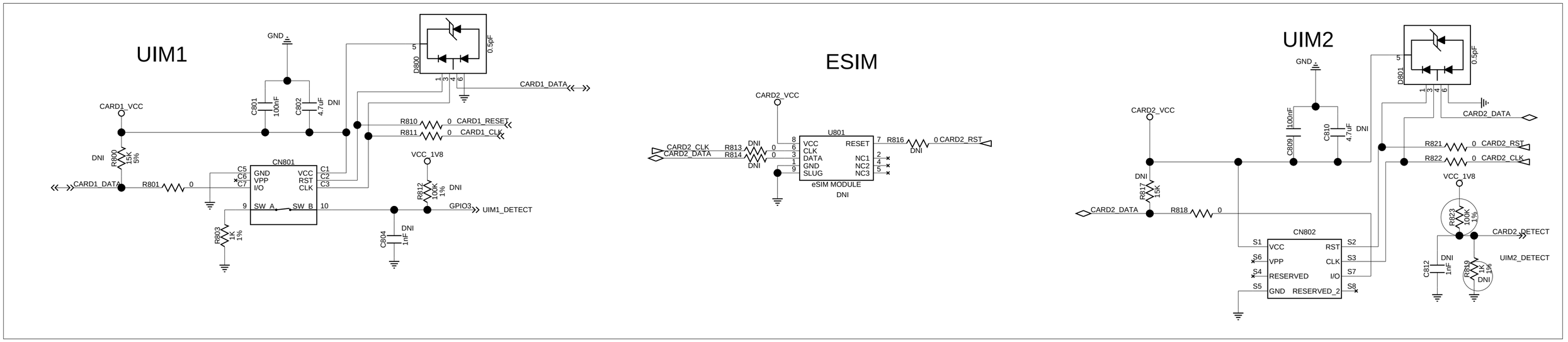

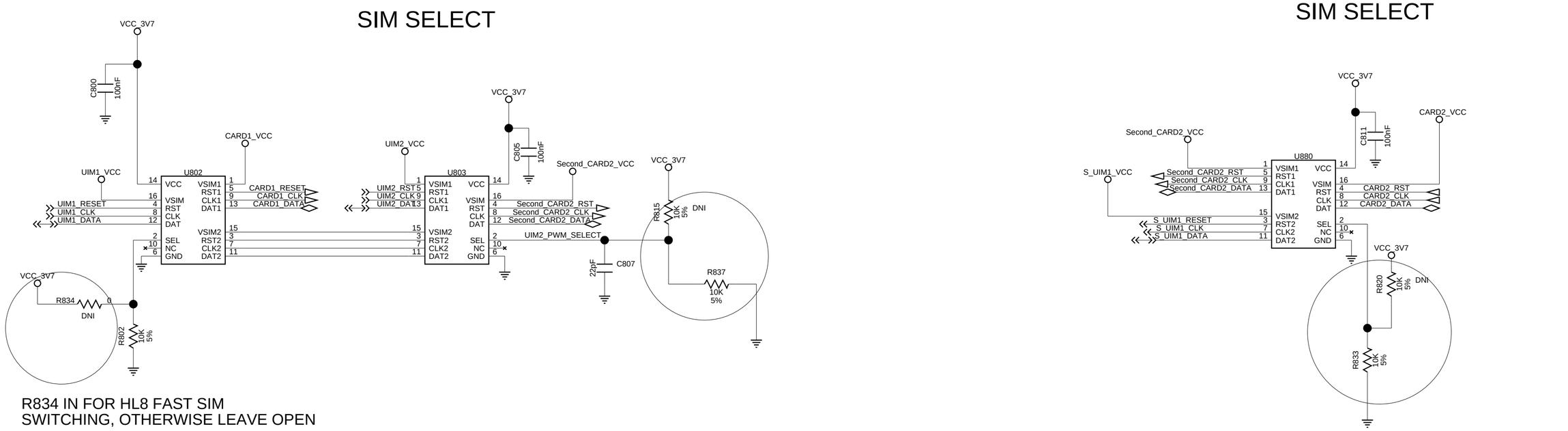

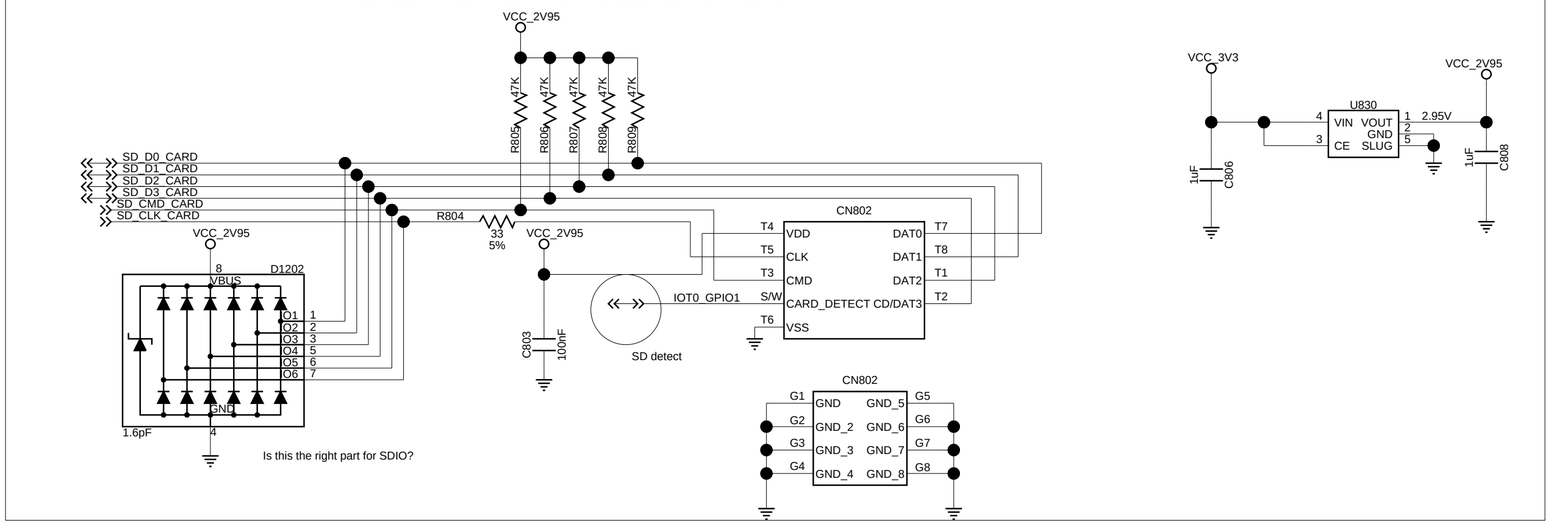

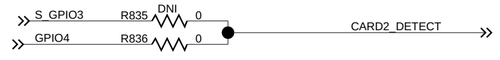

SCF3=0 (UIM1 --> CARD2)

MAINCF3=1 (UIM2 --> CARD2)

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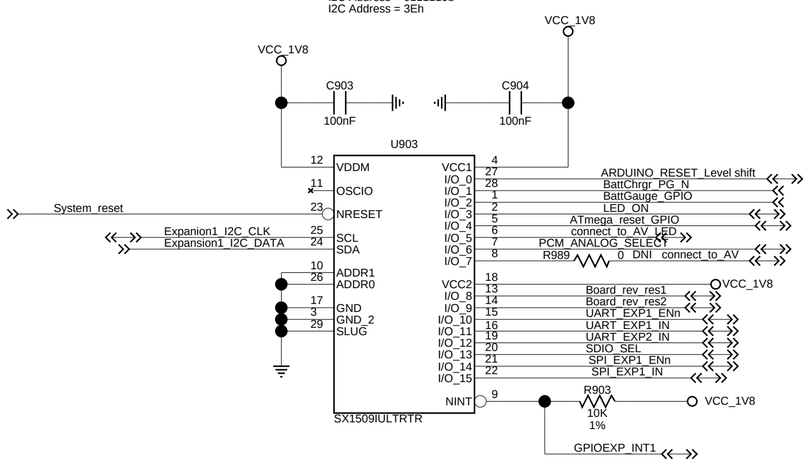
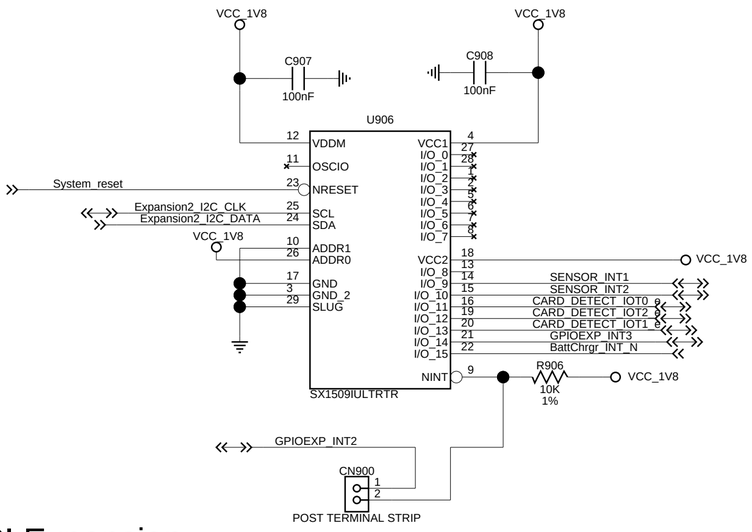
GPIO Expander#1

I2C Address = 0111110b
I2C Address = 3Eh



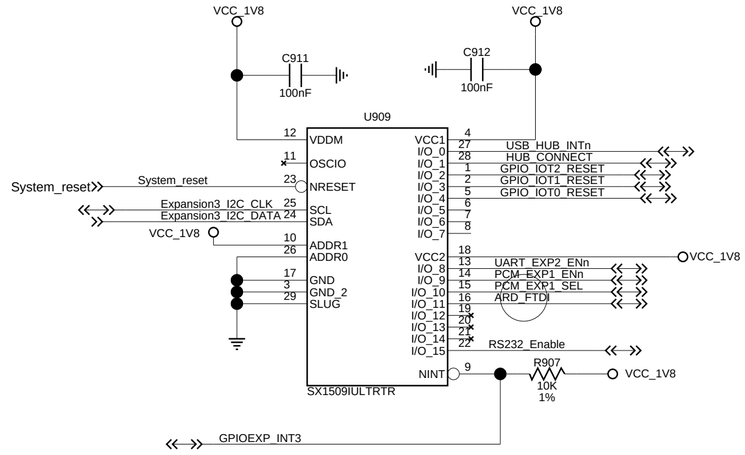
GPIO Expander#2

I2C Address = 0111111b
I2C Address = 3Fh



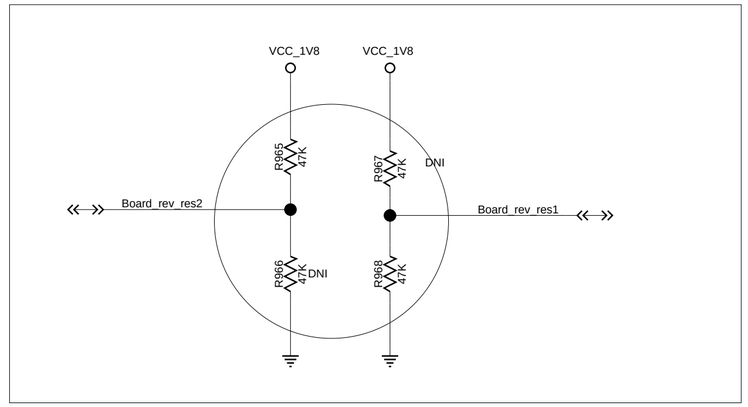
GPIO Expander#3

I2C Address = 1110000b
I2C Address = 70h



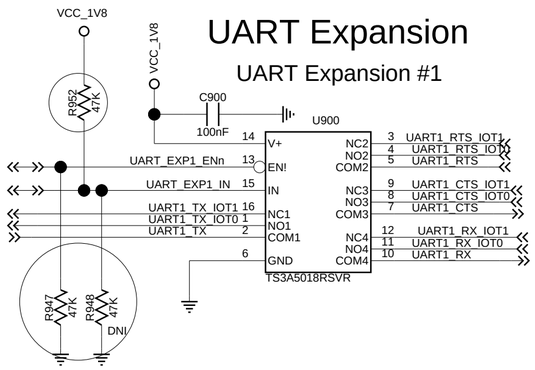
SPI Expansion

I2C address: 0100010

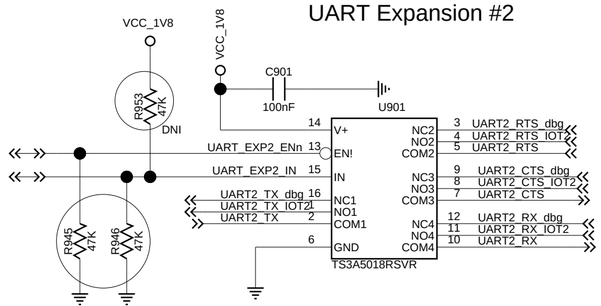


UART Expansion

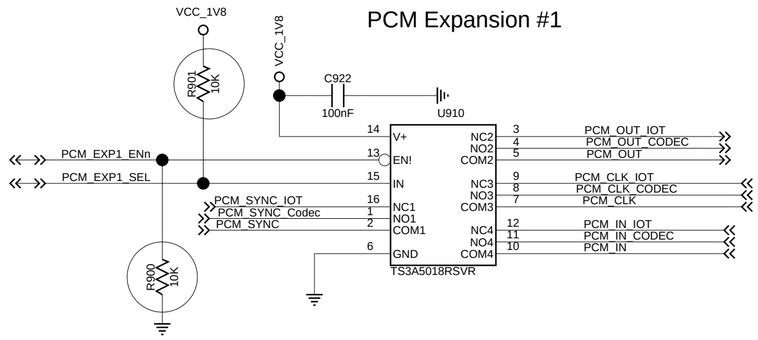
UART Expansion #1



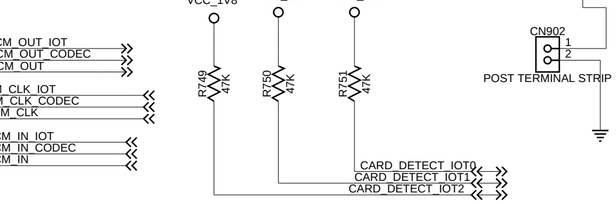
UART Expansion #2

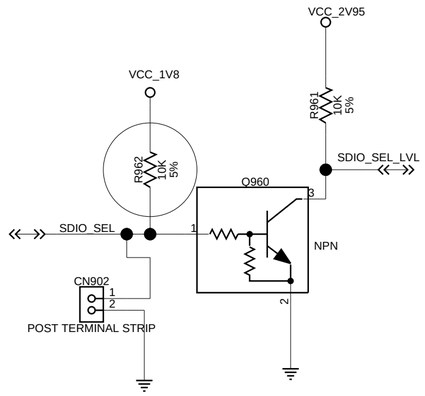


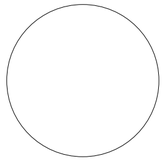
PCM Expansion #1



Default config = PCM to internal Codec

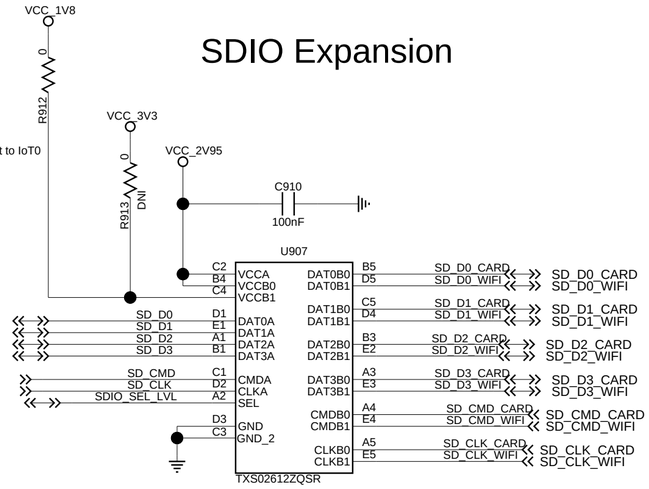






SD voltage select to IoT0

SDIO Expansion



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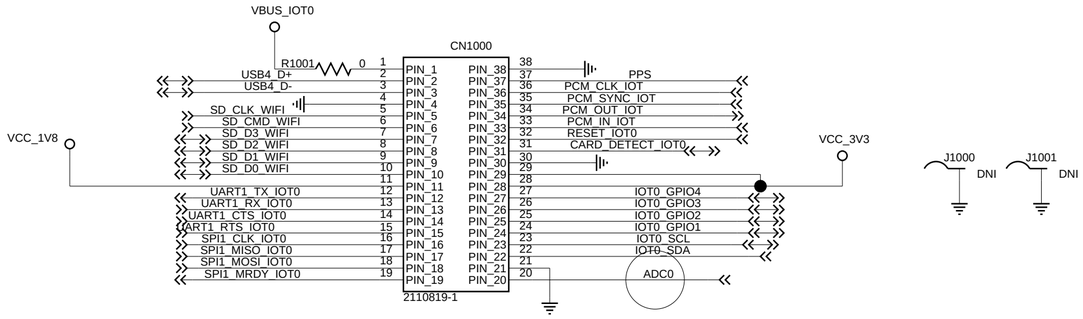
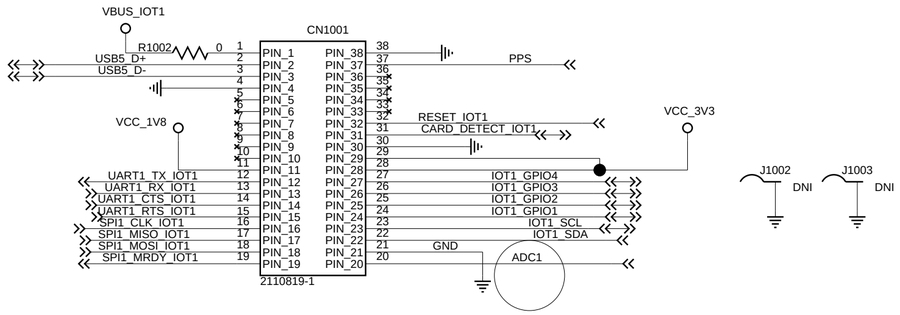
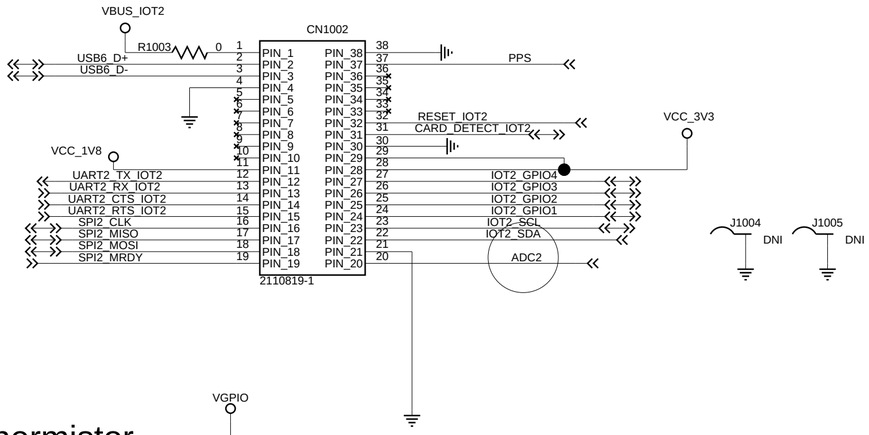
IOT#0



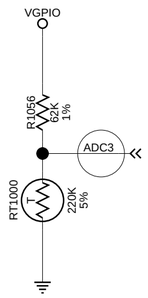
IOT#1



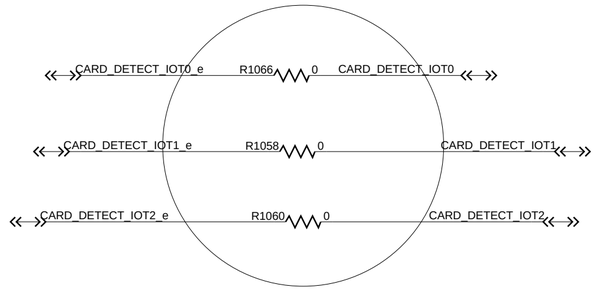
IOT#2

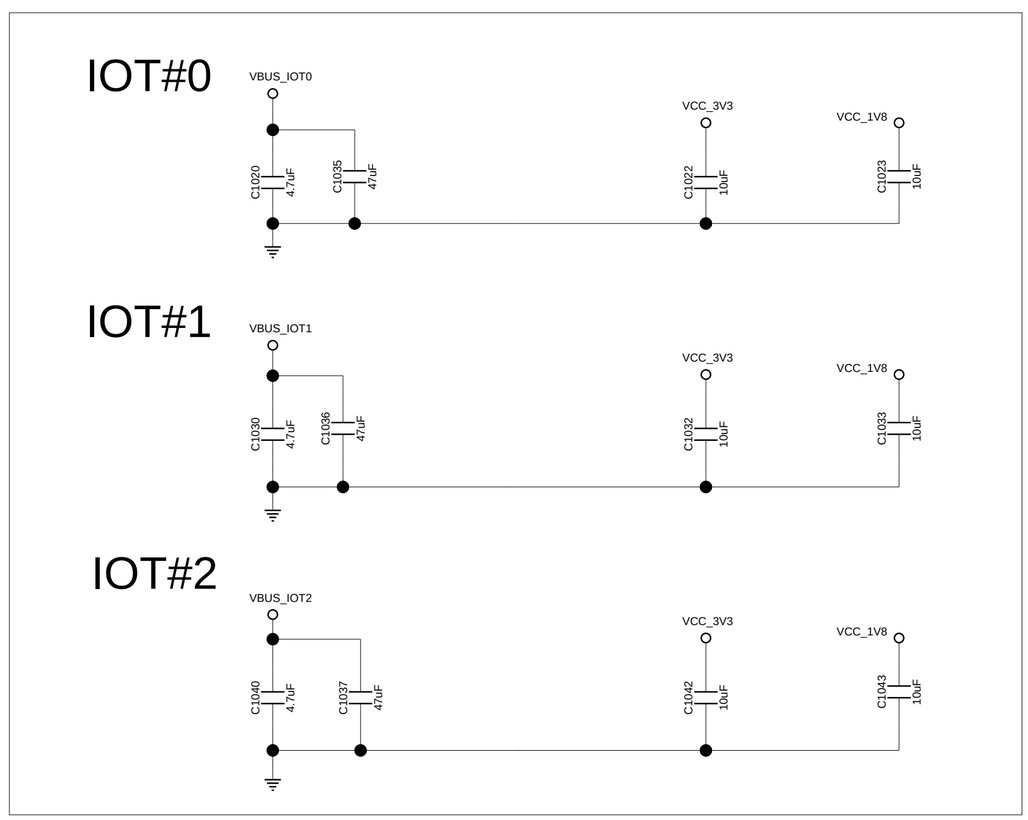


On Board Thermistor



Card detect is confirmed working on GPIO expander. No need for it on WP





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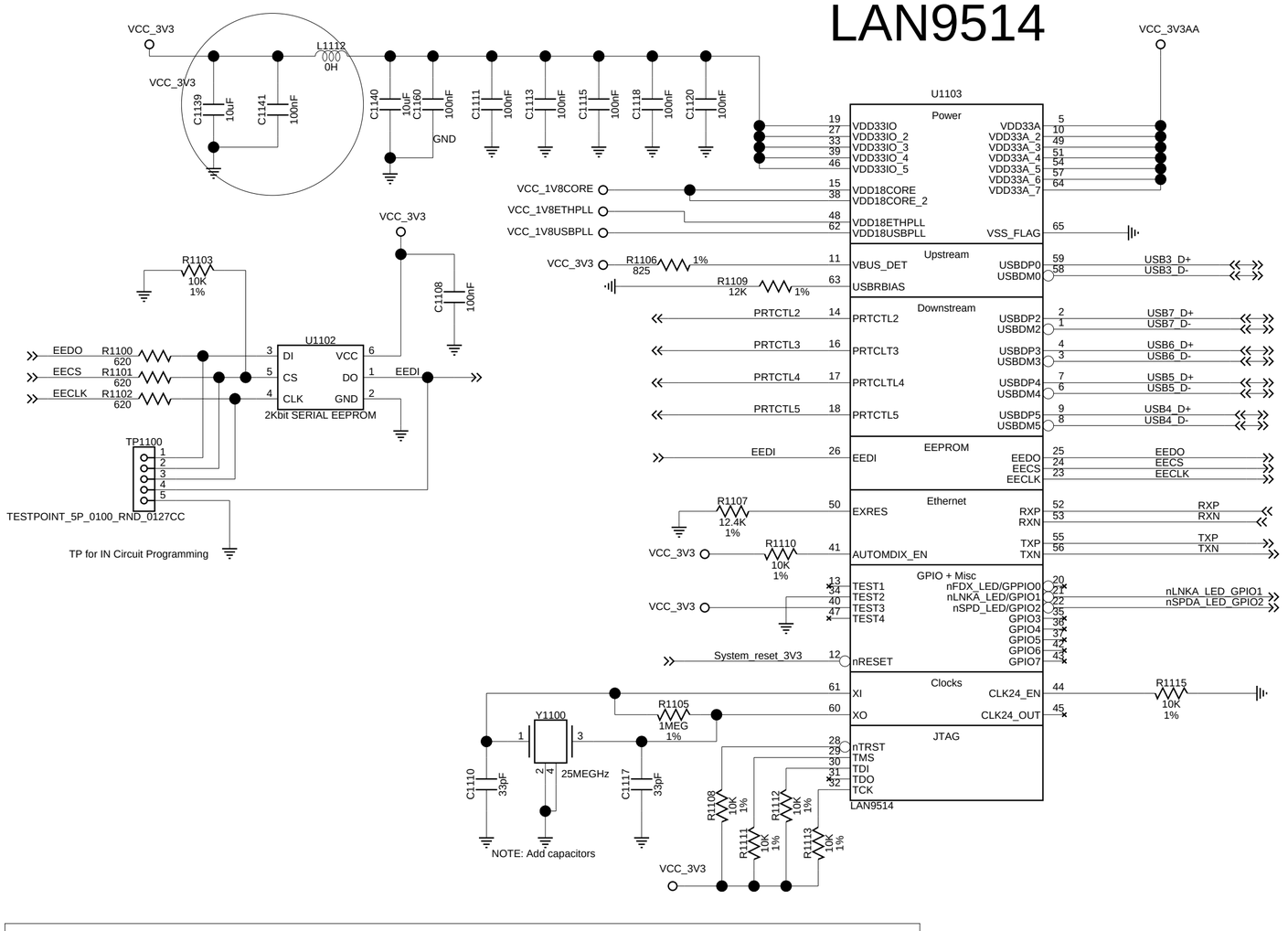
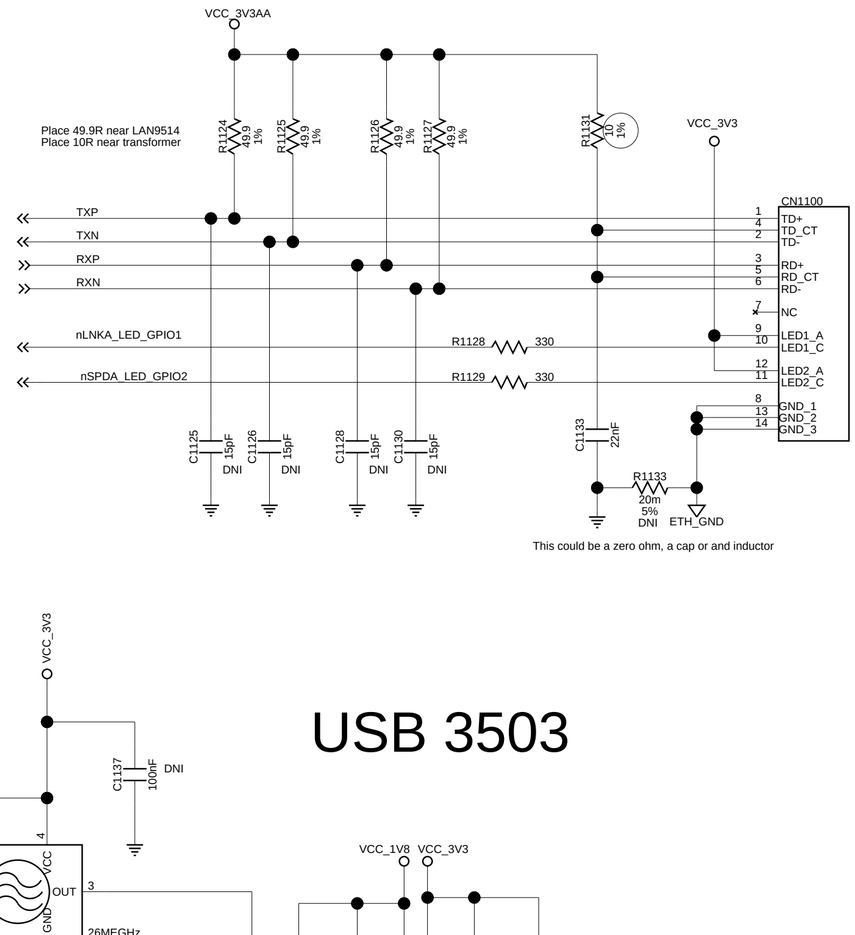
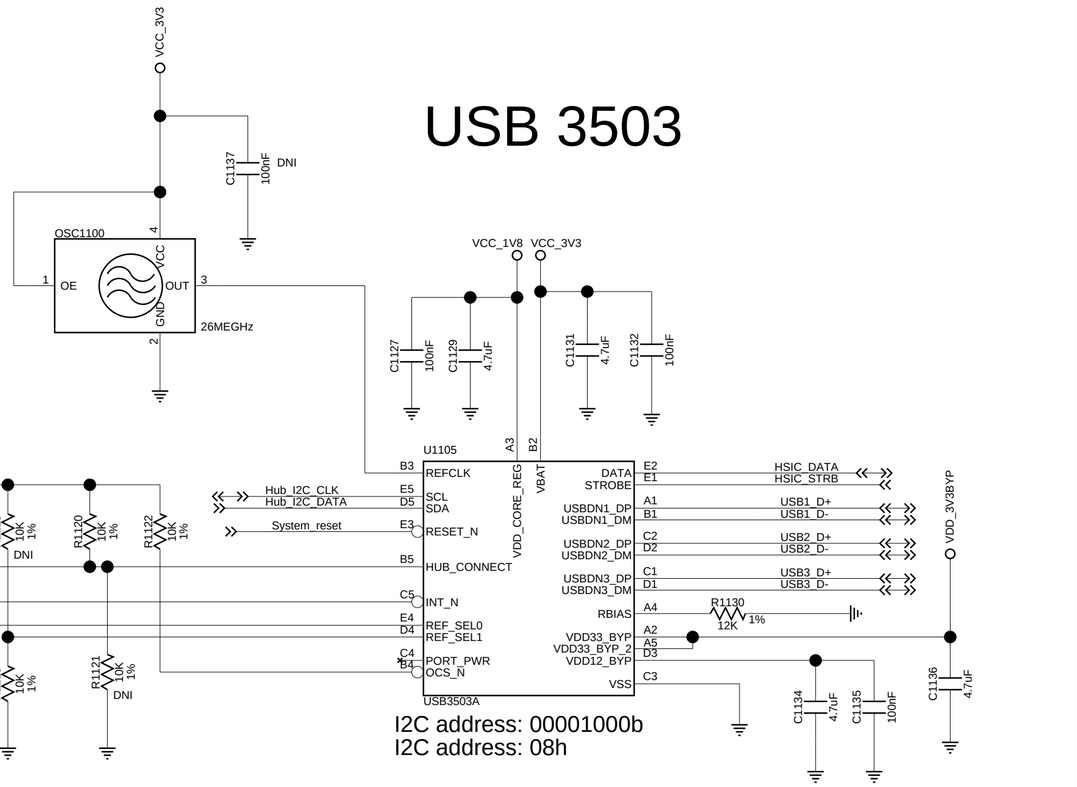
LAN9514



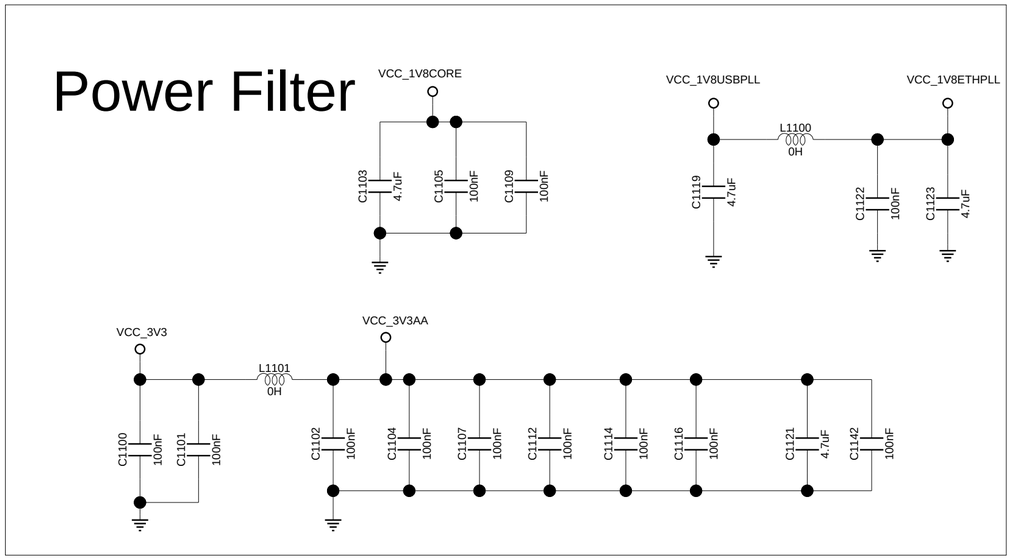
ETHERNET JACK



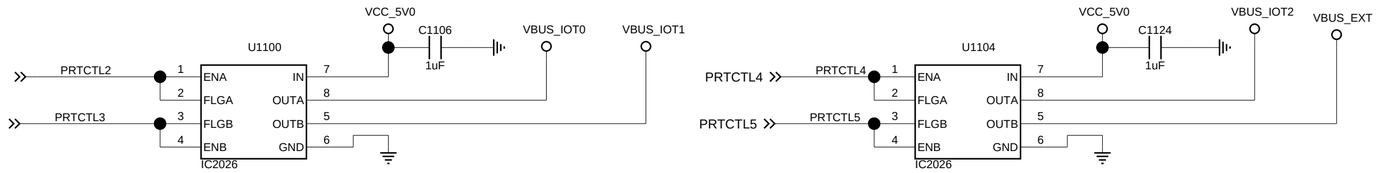
USB 3503



Power Filter



USB Downstream Power



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PSU Front End and 3.7V DC/DC converter

USB_VBUS

CN1204 — POST TERMINAL STRIP

MAX OPERATIVE INPUT VOLTAGE = 17V
MIN OPERATIVE INPUT VOLTAGE = 4.5V (3.9V with BATT)
(ABSOLUTE MAX INPUT VOLTAGE = 20V)

CN1200 — FC681465P

L1200 0H

C1202 220nF

C1203 220nF

D1200 SMAJ20CA

R1213 0 0% DNI

Q1200 MOSFET P-CHANNEL Imax= 3.8A

R1216 100K 5%

R1217 10K 1%

TP1200

V_IN

V_IN

V_SYS_BATT

R1210 10K 1%

R1211 300

D1201

R1212 47K

Notes:
* For High Reliability systems use the WD feature of BQ24292i
* Voltage on ILIM can be measured to monitor total input current on device

VCC_3V7

R1285 300

D1210

U1200 — BQ24192IRGER

1, 24	VBUS_1, VBUS_2	SW_1, SW_2	19, 20
23	PMID	BTST	21
3	PG_n	REGN	22
STAT_BATT4	STAT	SYS_1, SYS_2	15, 16
6	SDA	BAT_1, BAT_2	13, 14
5	SCL	ILIM	10
7	INT	TS1	11
8	OTG	TS2	12
9	CE_n	PGND_2, PGND_3	18, 25
2	PSEL		
17	PGND_1		

BattChrgr_PG_N
STAT_BATT4
charger_I2C_DATA
charger_I2C_CLK
BattChrgr_INT_N

I2C address 1010101b
I2C address 6BH

C1204 47nF

Default value 2.2uH
L1201 3.3uH

C1207 22uF
C1215 220nF
C1210 1uF
C1241 1uF DNI
C1200 10uF
V > 20V
Place as close as possible

R1202 10K 1%
R1203 10K 1% DNI
R1204 10K 1%
R1205 10K 1% DNI
R1206 10K 1%
R1207 10K 1% DNI
R1208 10K 1%

R1214 10K 1%
R1215 15K 1%

R1218 150 1%
I_lim_max = 3.5A

C1208 10uF
C1205 4.7uF

REGN_BATT
V_BATT
V_SYS_BATT

C1206 100nF
C1209 47uF

R1223 0 0%

1 Removed 2.2uF

U1201 — BQ27621YZFR-G1A

A3	SCL	BAT_1, BAT_2	C2, C3
A2	SDA	VDD	B3
A1	GPOUT	VSS_1, VSS_2	B2, C1
B1	BIN		

GPIO1/I2C1_CLK
GPIO5/I2C1_DATA
VGPIO
R1224 10K
R1222 10K DNI
BattGauge_GPIO

I2C address 1010101b
I2C address 55H

C1213 470nF
C1214 1uF

R1229 1MEG 1% DNI

TP1203
TP1202
V_BATT

CN1203 — POST TERMINAL STRIP

CN1202 — B2B-PH-K-S

R1228 0 DNI

R1220 5.23K 1%
R1221 10K 1%
R1219 30.1K 1%

TEMP_SENS

Ideal battery should have a 103-AT thermistor inside
If using battery with no thermistor then short Pin1 and Pin2 of CN1203

PWR_GND_BQ

PCB layout note
Connect PWR_GND_BQ and Main ground together using Pin 25 as connection point

2 Removed R1242 connection between PWR_GND_BQ and GND

VGPIO
R1209 10K 1%
V_BATT
Q1201 NPN
R985 33 DNI
Battery_detect

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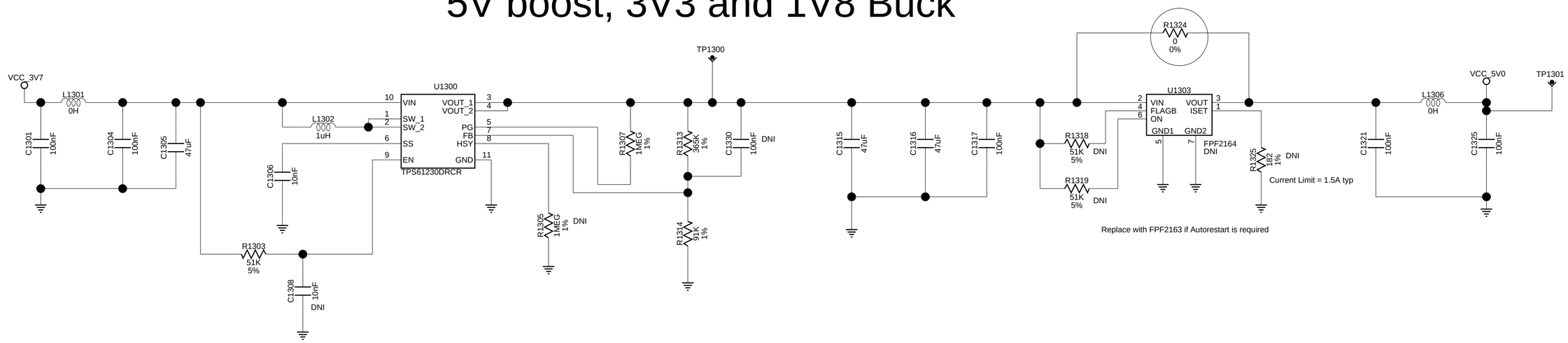
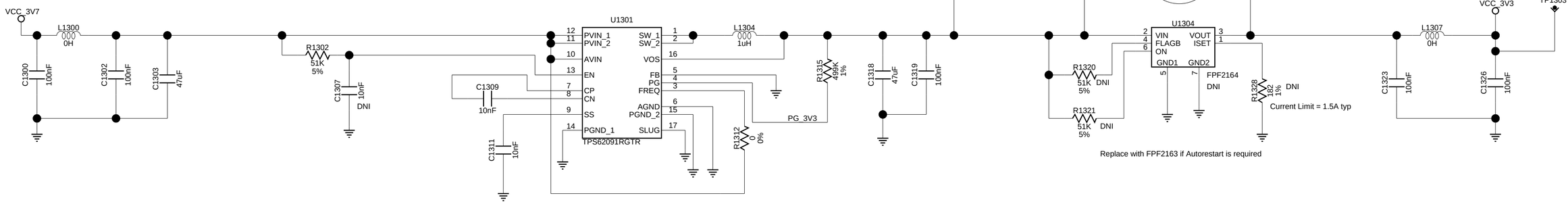
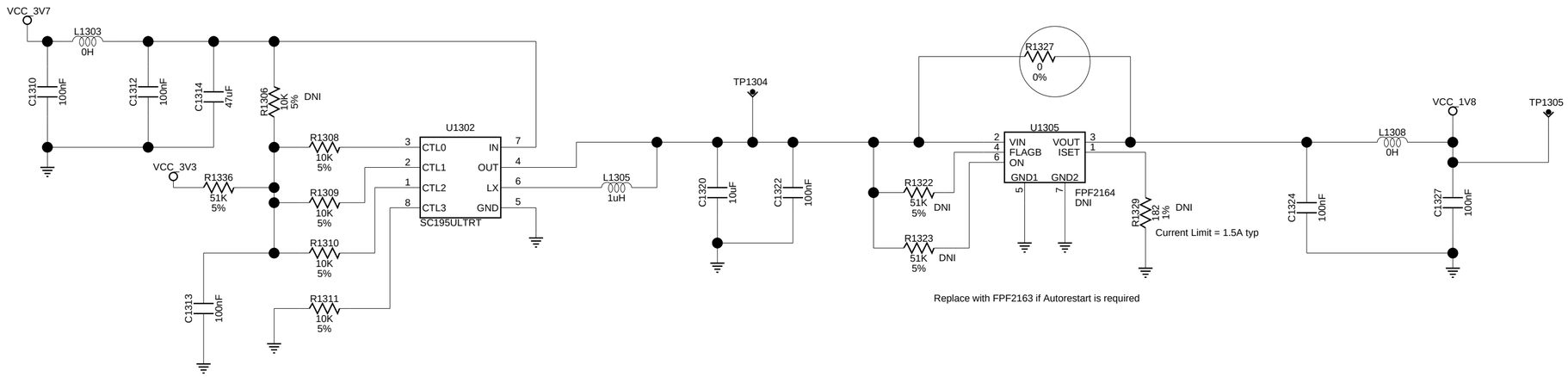
5V boost, 3V3 and 1V8 Buck







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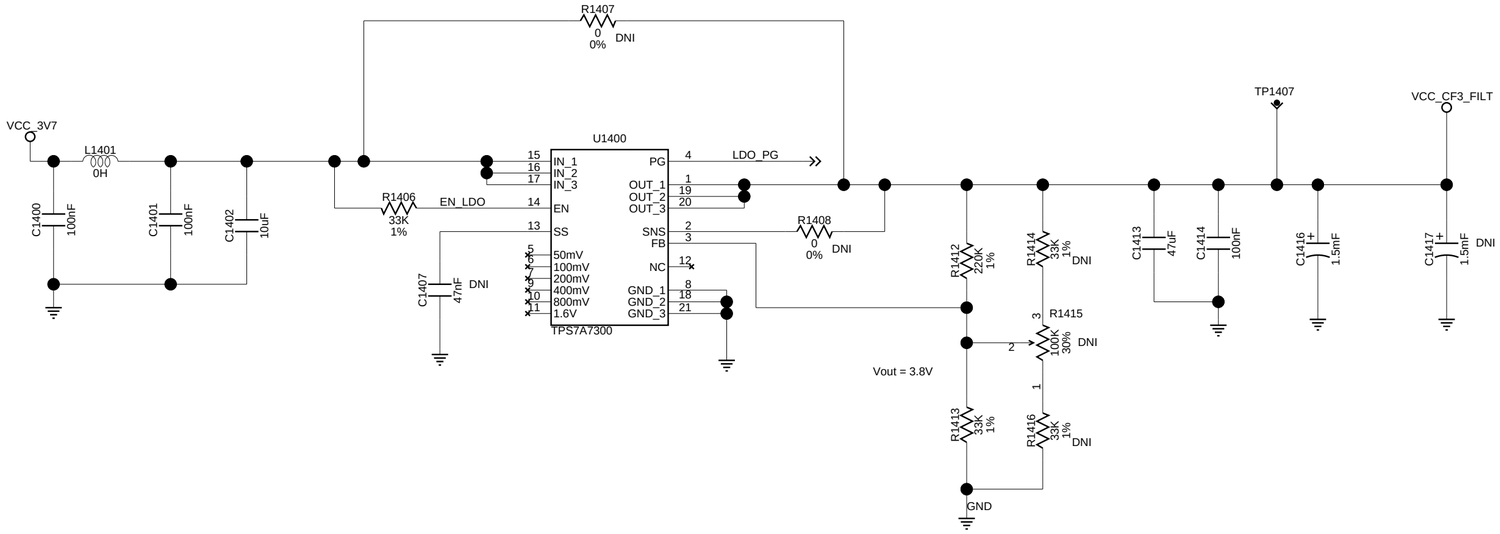
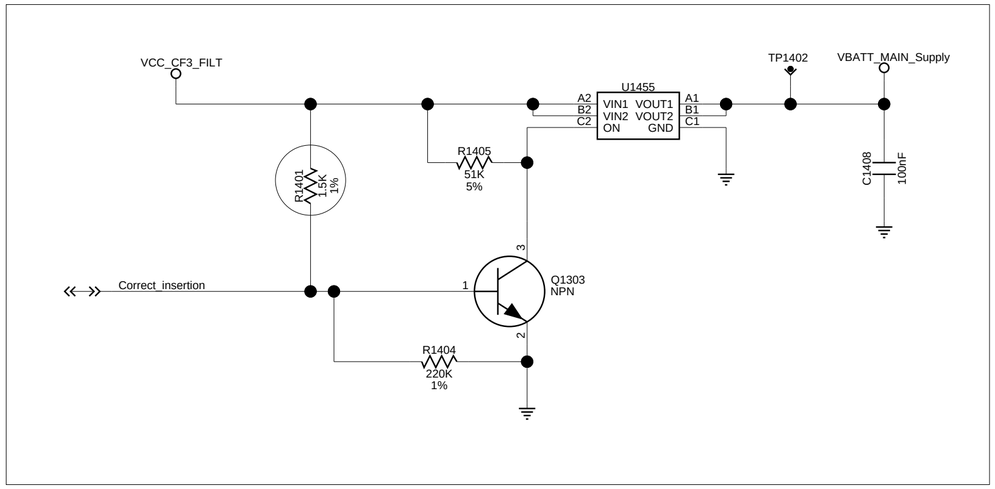
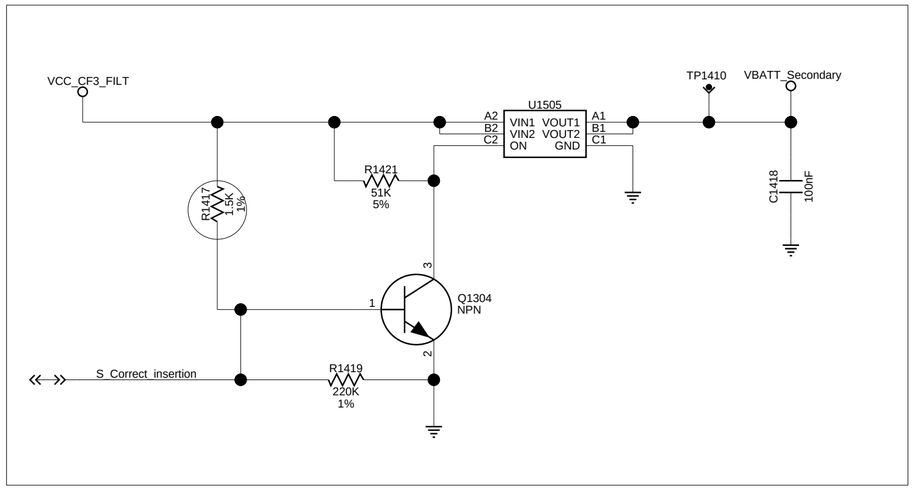
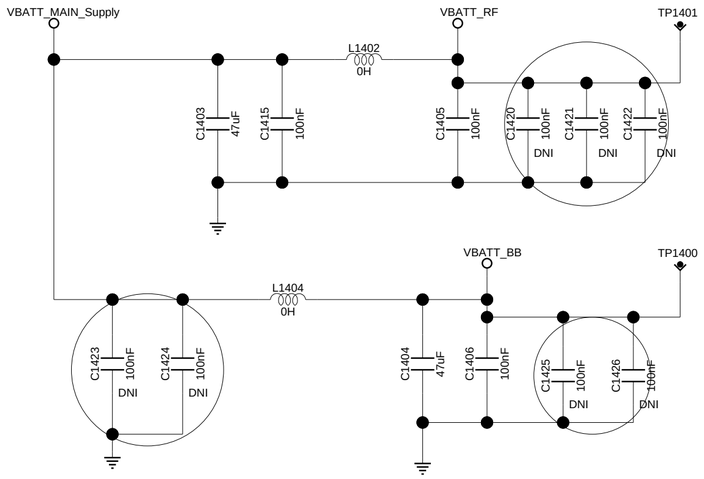
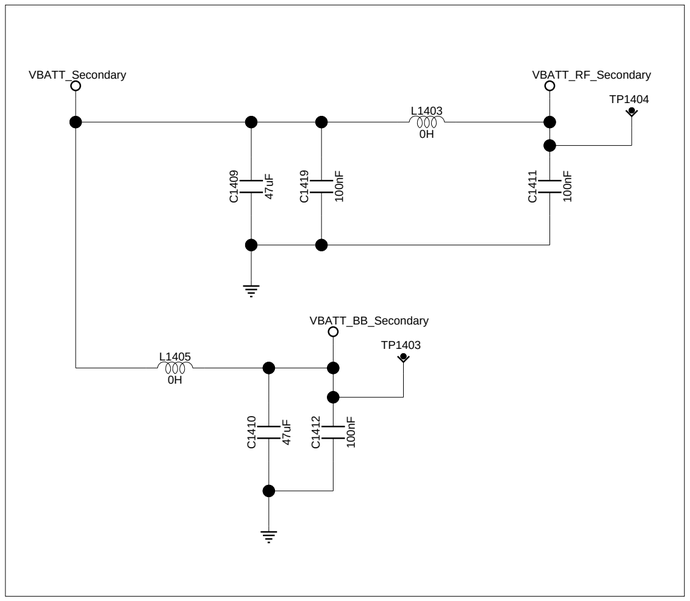
CF3 LDO

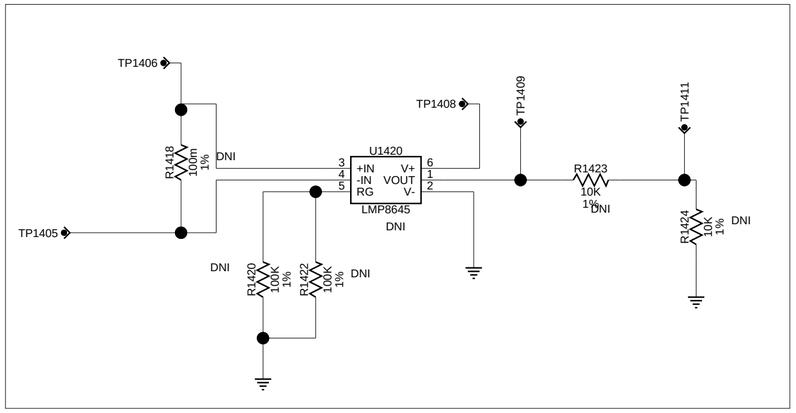












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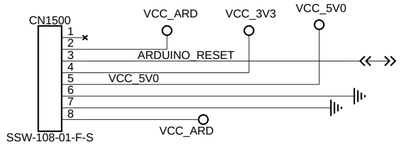
Make sure to line up Arduino connector orientation properly

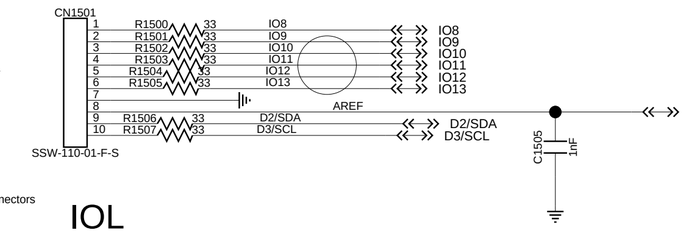
Arduino Connector

ARDUINO_RESET: Need to connect: use level shifter

Power

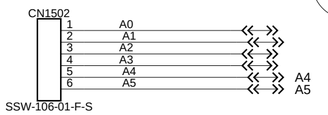


IOH

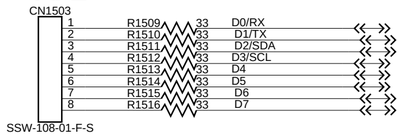


ADC

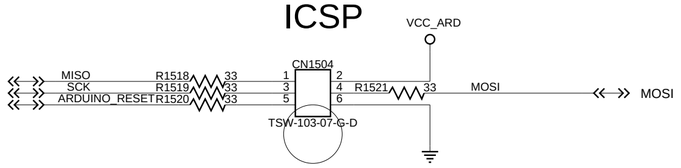
DNI removed from Arduino connectors



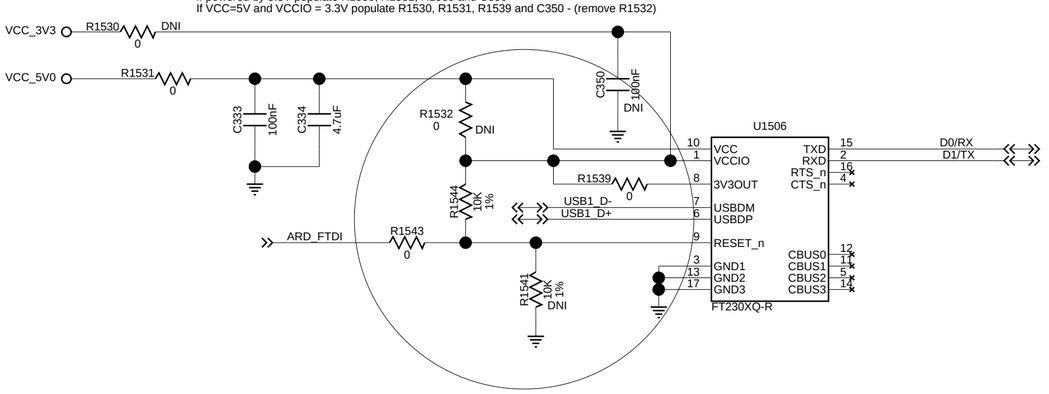
IOL



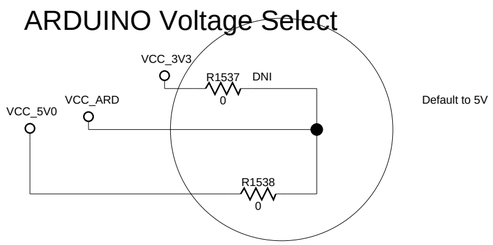
ICSP



If powered by 5V populate R1531 and R1539
If powered by 3.3V populate R1530, R1532, R1539 and C350
If VCC=5V and VCCIO = 3.3V populate R1530, R1531, R1539 and C350 - (remove R1532)

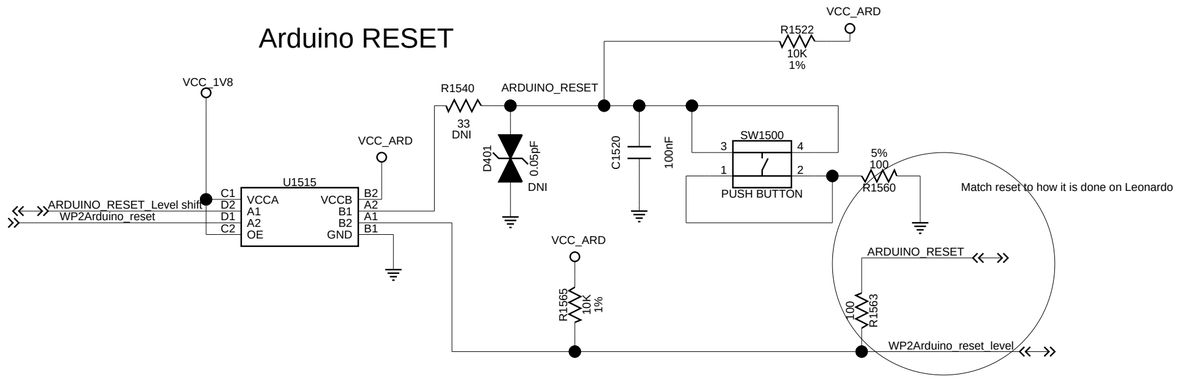


ARDUINO Voltage Select

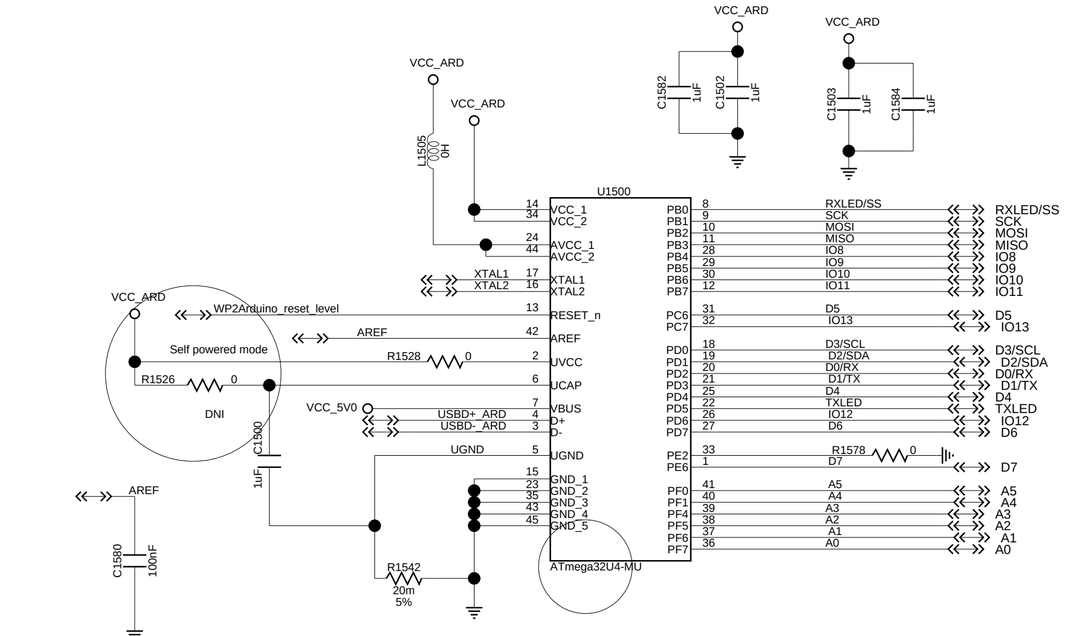


Default to 5V

Arduino RESET

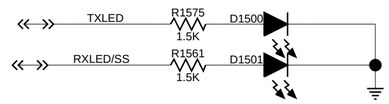


Match reset to how it is done on Leonardo



Need 22pf 0402. Create symbol

Removed signal mux



Removed USB switch

SIERRA WIRELESS™

SITE	See P1
LEAD ENGINEER	See P1
REV SCH	See P1
REV PCB	See P1
PROJECT	see P1
DATE/TIME	18-12-2015_15:58
SCHEMATIC	2500905
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