

1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.  
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.  
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

Fri May 9 13:11:49 2014

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
6	0002780389	ENGINEERING RELEASED		2014-05-09

# N56 MLB: CARRIER BUILD

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55	JUMPER	N56_RADIO_MLB	05/07/2014

## N56 BOM CALLOUTS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-0517	1	SCH,MLB,N56	SCH	CRITICAL	?
820-3675	1	PCBF,MLB,N56	PCB	CRITICAL	?
825-6838	1	EEEE FOR 639-4924 16GB	EEEE_FKVB	CRITICAL	EEEE_16G
825-6838	1	EEEE FOR 639-6157 32GB	EEEE_FRR9	CRITICAL	EEEE_32G
825-6838	1	EEEE FOR 639-6158 64GB	EEEE_FRRC	CRITICAL	EEEE_64G
825-6838	1	EEEE FOR 639-00150 128GB	EEEE_G05J	CRITICAL	EEEE_128G
825-6838	1	EEEE FOR 639-00196 16GB NON-TDD-LTE	EEEE_G166	CRITICAL	EEEE_16G_DTD
825-6838	1	EEEE FOR 639-00194 32GB NON-TDD-LTE	EEEE_G163	CRITICAL	EEEE_32G_DTD
825-6838	1	EEEE FOR 639-00195 64GB NON-TDD-LTE	EEEE_G165	CRITICAL	EEEE_64G_DTD
825-6838	1	EEEE FOR 639-00197 128GB NON-TDD-LTE	EEEE_G164	CRITICAL	EEEE_128G_DTD

## NAND BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0992	1	NAND,17NM,16GBX8,MLC,PPN1.5,64G,ORG260	U0604	CRITICAL	NAND_16G
335S0993	1	NAND,17NM,32GBX8,MLC,PPN1.5,64G,ORG260	U0604	CRITICAL	NAND_32G
335S1000	1	NAND,19NM,64GBX8,MLC,PPN1.5	U0604	CRITICAL	NAND_64G
335S00010	1	NAND,19NM,128GBX8,TLC,PPN1.5	U0604	CRITICAL	NAND_128G
138S00003	1	CAP,XSR,10UF,20V,6.3V,0.65MM,HEMTL,0402	C0614,C0633	CRITICAL	NOSTUFF
138S0867	1	CAP,XSR,10UF,20V,6.3V,0.65MM,HEMTL,0402	C0610,C0611,C0613,C0626	CRITICAL	NAND_16G
138S0867	1	CAP,XSR,10UF,20V,6.3V,0.65MM,HEMTL,0402	C0610,C0611,C0613,C0626,C0614,C0633	CRITICAL	NAND_32G
138S0867	1	CAP,XSR,10UF,20V,6.3V,0.65MM,HEMTL,0402	C0610,C0611,C0613,C0626,C0614,C0633	CRITICAL	NAND_64G
138S00003	1	CAP,XSR,10UF,20V,6.3V,0.65MM,HEMTL,0402	C0610,C0611,C0613,C0626,C0614,C0633	CRITICAL	NAND_128G

## INVENSENSE ACCEL/GYRO

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00017	1	IC,CARBON,MPU-6700-12,LGA16	U2203	CRITICAL	INVSNS_GYRO
132S0395	1	CAP,CER,0.1UF,10V,6.3V,X6G,0201	C2211	CRITICAL	INVSNS_GYRO

## BOSCH ACCEL/GYRO

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00028	1	IC,CARBON,BMI162BC,LGA16	U2203	CRITICAL	BOSCH_GYRO
132S0395	1	CAP,CER,0.1UF,10V,6.3V,X6G,0201	C2211	CRITICAL	BOSCH_GYRO

## ST ACCEL/GYRO

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00029	1	IC,CARBON,AP6DS2AA,LGA16	U2203	CRITICAL	ST_GYRO
132S0391	1	CAP,CER,0.01UF,10V,25V,X5R,0201	C2211	CRITICAL	ST_GYRO

## ALTERNATE BOM OPTIONS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S1844	152S1836	ALTERNATE	L1604	TY ALT INDUCTOR
152S1802	152S1849	ALTERNATE	L1519	CYNTEC ALT INDUCTOR
152S1842	152S1849	ALTERNATE	L1519	TY ALT INDUCTOR
197S0392	197S0369	ALTERNATE	Y1200	ESPOX ALT XTAL
197S0399	197S0369	ALTERNATE	Y1200	NDK ALT XTAL
338S1285	338S1202	ALTERNATE	U1601	L21 B0
152S2034	152S2033	ALTERNATE	L1605	CYNTEC 1.0UH 1.2MM
152S2034	152S2033	ALTERNATE	L1605	CYNTEC 1.0UH 1.2MM
152S00004	152S2049	ALTERNATE	L1605	CYNTEC 0.47UH 1.2MM
343S0688	343S0638	ALTERNATE	U2401	CUMULUS C1, FAB14
155S00012	155S00009	ALTERNATE	F10802,F11803	MURATA, 65OHM CHOKE
118S0764	118S0717	ALTERNATE	R1309	3.92KOHM, 01005
155S0773	155S0453	ALTERNATE	F10801	TY,120OHM,FERRITE
155S0885	155S0610	ALTERNATE	F10802,F11803	TY,150OHM,FERRITE
377S0168	377S0140	ALTERNATE	D21113	AMOTECH,6.8V,100PF
138S0648	138S0652	ALTERNATE	C1018	TY,4.7UF,0402
138S0657	138S0702	ALTERNATE	C1018	SAMSUNG,4.3UF,0610
138S00005	138S00003	ALTERNATE	C0605	TY,15UF,HEMTL,0402
152S2031	152S1800	ALTERNATE	L1401	MURATA,1UH,2520
152S1840	152S1801	ALTERNATE	L1215	TY,1UH,2016
335S00013	335S0894	ALTERNATE	U0201,U,KEPROM	ST 8K KEPR0M
339S0247	339S0246	ALTERNATE	U0201	FIJI 1GB HYNIX B0
339S00006	339S0246	ALTERNATE	U0201	FIJI,B1,E
339S00007	339S0246	ALTERNATE	U0201	FIJI,B1,H
339S00008	339S0246	ALTERNATE	U0201	FIJI,B1,S

138S0917 WILL NOT BE USED AT THE CARRIER BUILD AND WILL BE REPLACED BY 138S0831 AT DVT.

138S0831	138S0917	ALTERNATE	C0204	MURATA,2.2UF,0201
138S00019	138S0917	ALTERNATE	C0204	KYOCERA,2.2UF,0201

## ALTERNATE NAND BOM OPTIONS

335S1038	335S0992	ALTERNATE	U0604	NAND HYNIX 16GB
335S0994	335S1000	ALTERNATE	U0604	NAND TOSHIBA 64GB
335S1040	335S1000	ALTERNATE	U0604	NAND HYNIX 64GB
335S00009	335S1000	ALTERNATE	U0604	NAND SANDISK 64GB TLC
335S00014	335S1000	ALTERNATE	U0604	NAND TOSHIBA 64GB TLC
335S00015	335S00010	ALTERNATE	U0604	NAND TOSHIBA 128GB

## BOM DEVIATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
604-00416	1	ASSY,SHIELD,LOWER BACK,1P,N56	SH2501	CRITICAL	COMMON
604-8159	1	ASSY,SHIELD,LOWER FRONT,N56	SH2502	CRITICAL	COMMON
806-00401	1	SHIELD,BMI,UPPER BACK,EXTENDED FOOT,N56	SH2503	CRITICAL	COMMON
604-8158	1	ASSY,SHIELD,UPPER FRONT,N56	SH2504	CRITICAL	COMMON
604-00244	1	SUBASSY,SHIELD,SA	SH2505	CRITICAL	COMMON

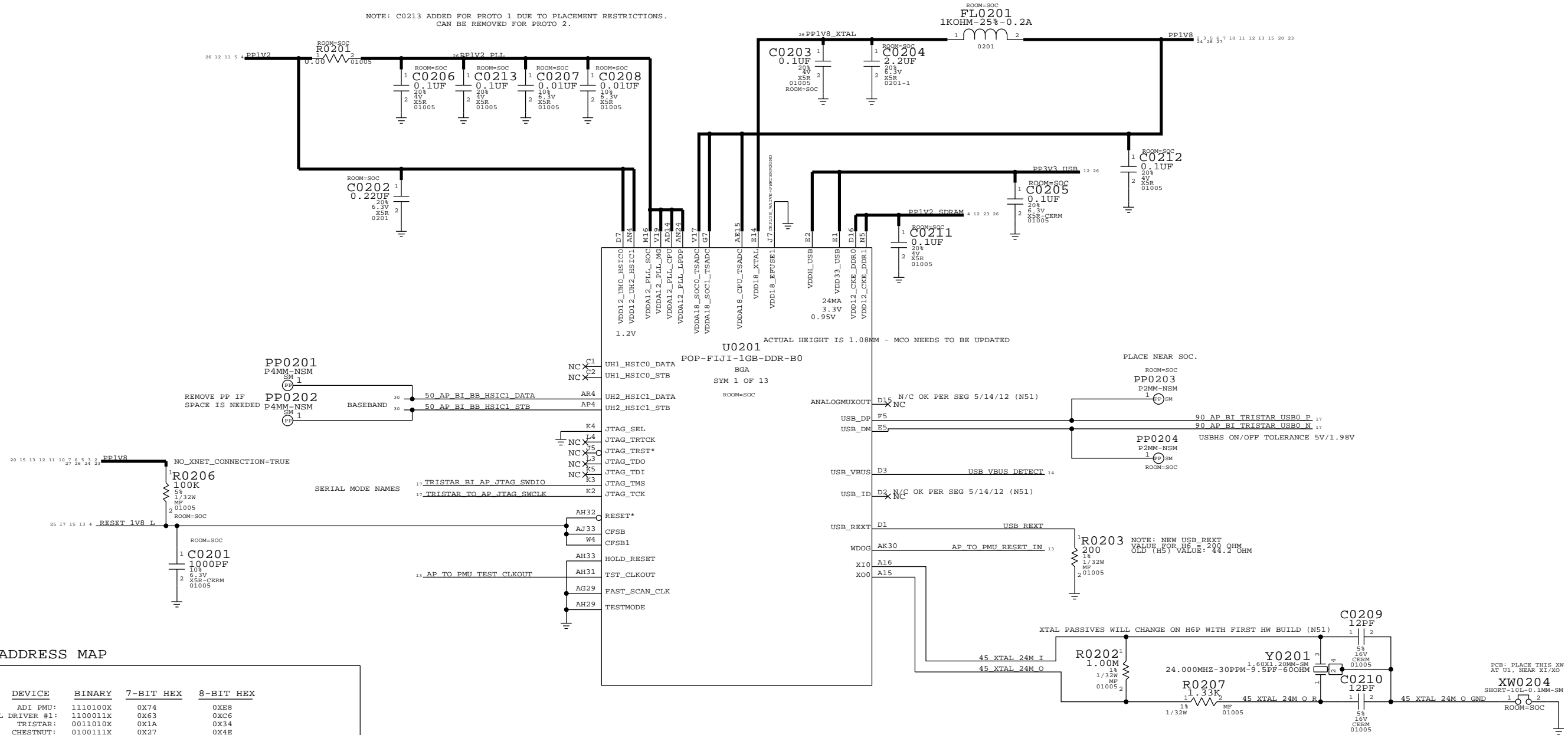
SCH 051-0517  
BRD 820-3675  
MCO 056-6398

BOM 639-4924 (16GB)      BOM 639-00196 (16GB,DTD)  
 BOM 639-6157 (32GB)      BOM 639-00194 (32GB,DTD)  
 BOM 639-6158 (64GB)      BOM 639-00195 (64GB,DTD)  
 BOM 639-00150 (128GB)    BOM 639-00197 (128GB,DTD)

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# FIJI: JTAG, USB, HSIC, XTAL

NOTE: C0213 ADDED FOR PROTO 1 DUE TO PLACEMENT RESTRICTIONS.  
CAN BE REMOVED FOR PROTO 2.



## I2C ADDRESS MAP

I2C0	DEVICE	BINARY	7-BIT HEX	8-BIT HEX
I2C0	ADI PMU:	1110100X	0X74	0XE8
	LM3534 BL DRIVER #1:	1100011X	0X63	0XC6
	TRISTAR:	0011010X	0X1A	0X34
	CHESTNUT:	0100111X	0X27	0X4E
I2C1	TIGRIS CHARGER:	1110101X	0X75	0XEA
	LINEAR VIBE:	1011010X	0X5A	0XB4
	CS3519B AMP:	1000000X	0X40	0X80
	LM3534 BL DRIVER #2:	1100011X	0X63	0XC6
	MESA EEPROM (MEMORY):	1010110X	0X56	0XAC
MESA EEPROM (ID):	1011110X	0X5E	0XBC	
I2C2	DISPLAY EEPROM:	1010001X	0X51	0XA2
	CT814 ALS:	0101001X	0X29	0X52
RCAM I2C	OPTEL STROBE DRIVER:	1100011X	0X63	0XC6
	REAR FACING CAM:	0010000X	0X10	0X20
	VCM AF DRIVER:	0001110X	0X0E	0X1C
	VCM AF DRIVER:	0001111X	0X0F	0X1E
FCAM I2C	FRONT FACING CAM:	0010000X	0X10	0X20

NOTE: ACCEL, GYRO, COMPASS ALL USING SPI (VIA OSCAR) FOR AP COMMUNICATION.

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PAGE TITLE: SOC:MAIN

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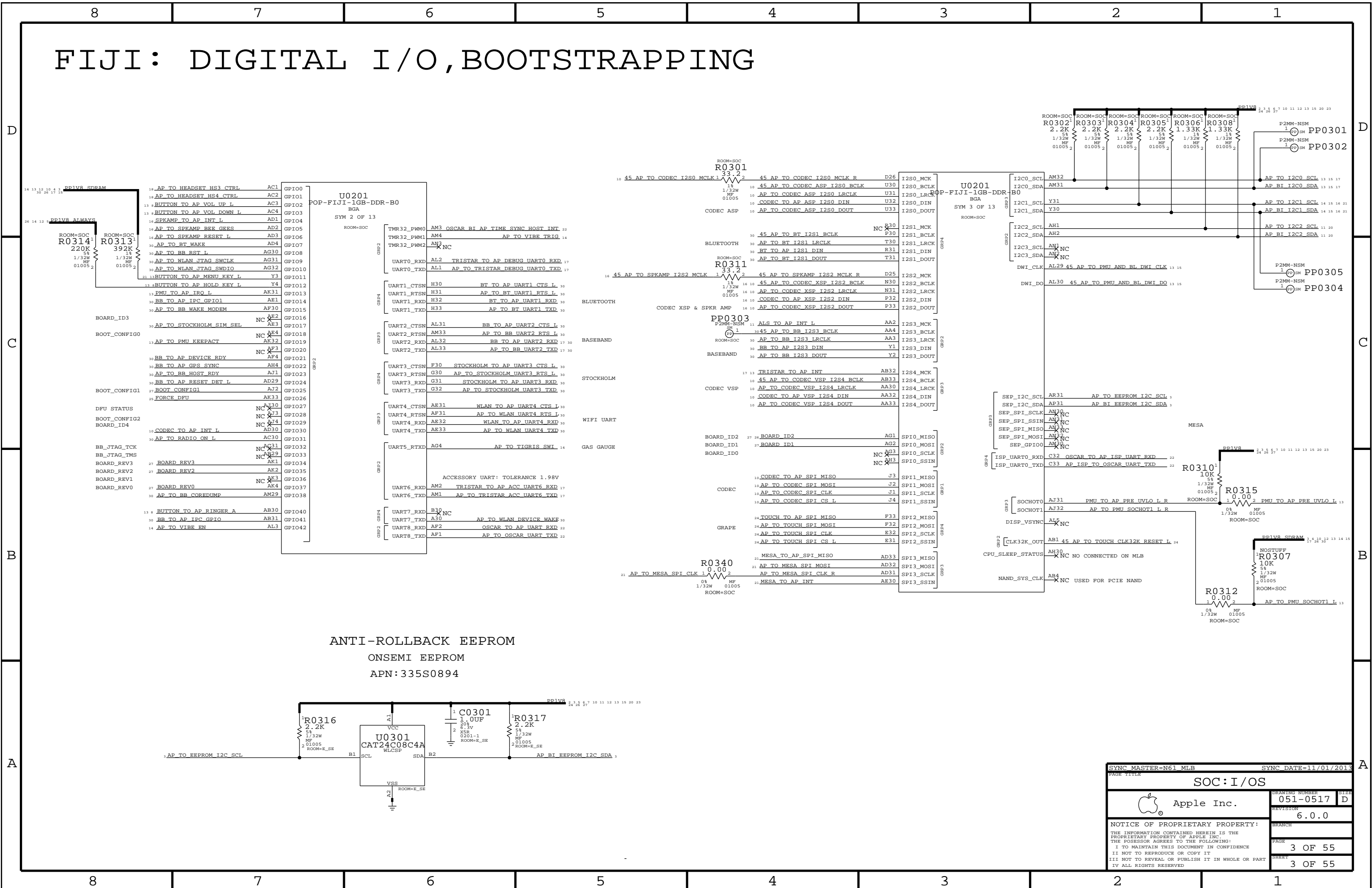
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# FIJI: DIGITAL I/O, BOOTSTRAPPING



ANTI-ROLLBACK EEPROM  
 ONSEMI EEPROM  
 APN: 335S0894

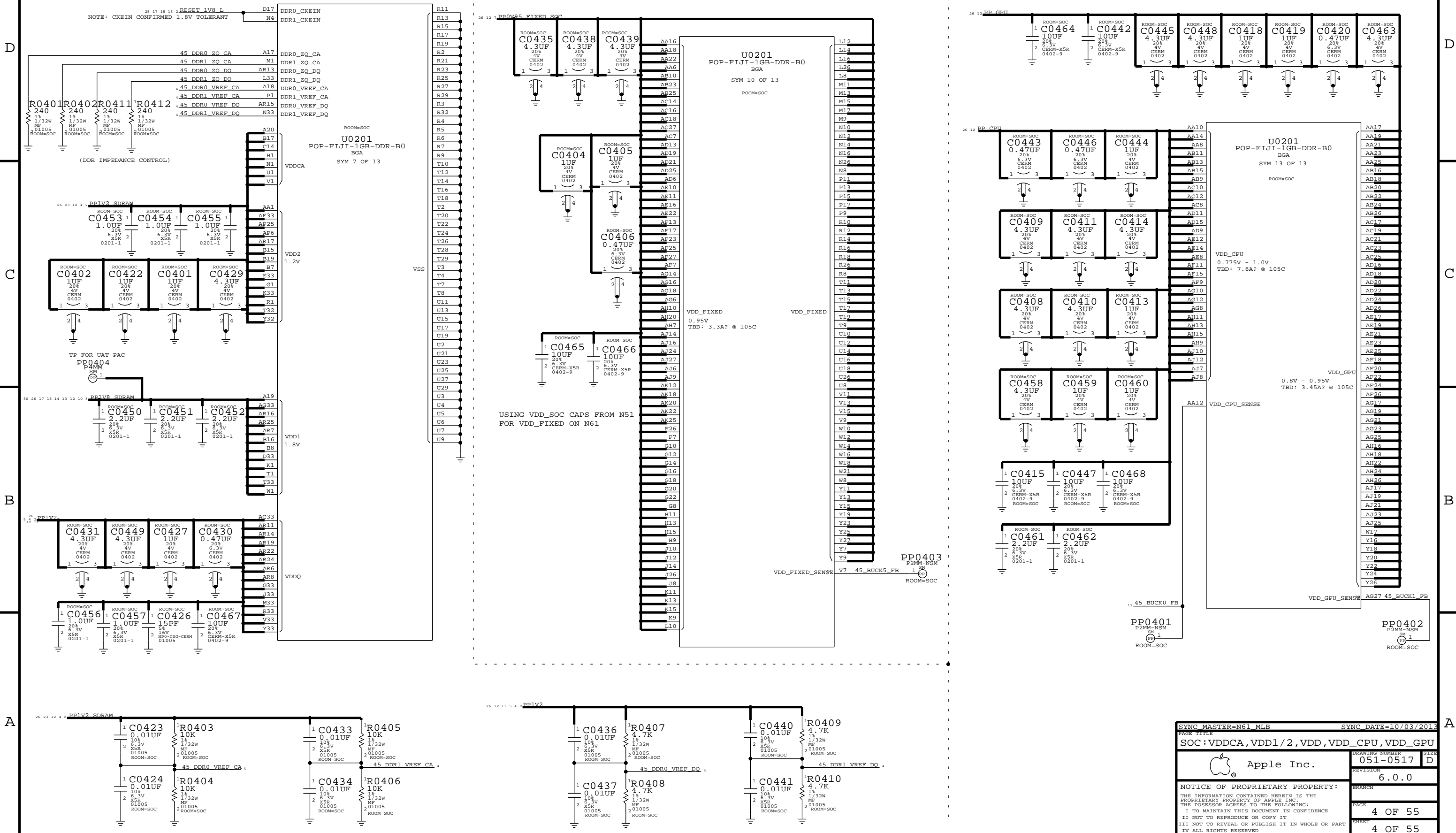
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# FIJI: VDDCA, VDD1/2, VDDQ, VDD, VDD\_FIXED, VDD\_CPU, VDD\_GPU

VDDCA, VDD1/2, VDDQ

VDD

VDD\_CPU, VDD\_GPU

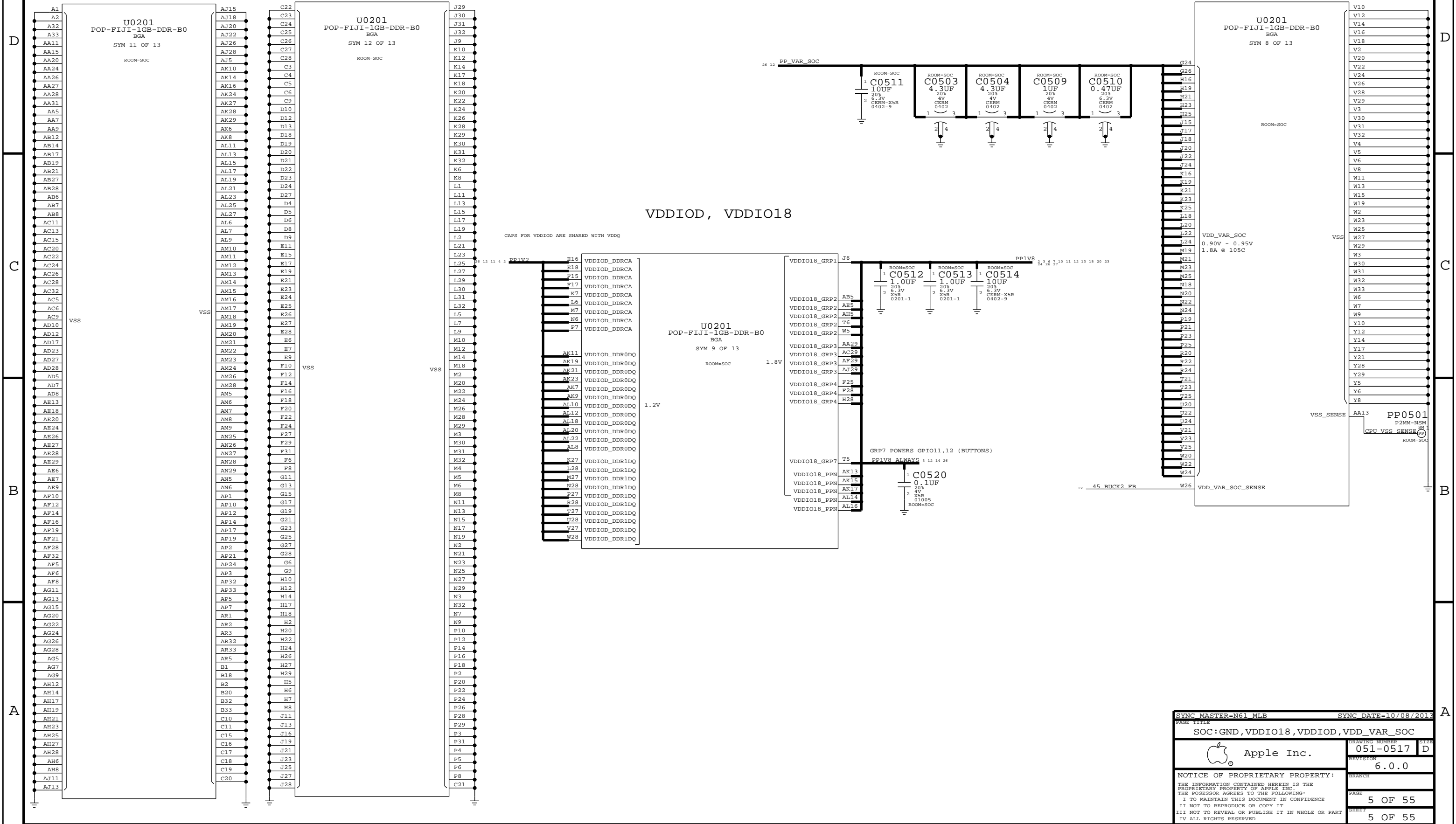


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 SOC: VDDCA, VDD1/2, VDD, VDD\_CPU, VDD\_GPU  
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# FIJI: VDDIOD, VDDIO18, VDD\_VAR\_SOC

JUST A FEW GNDS

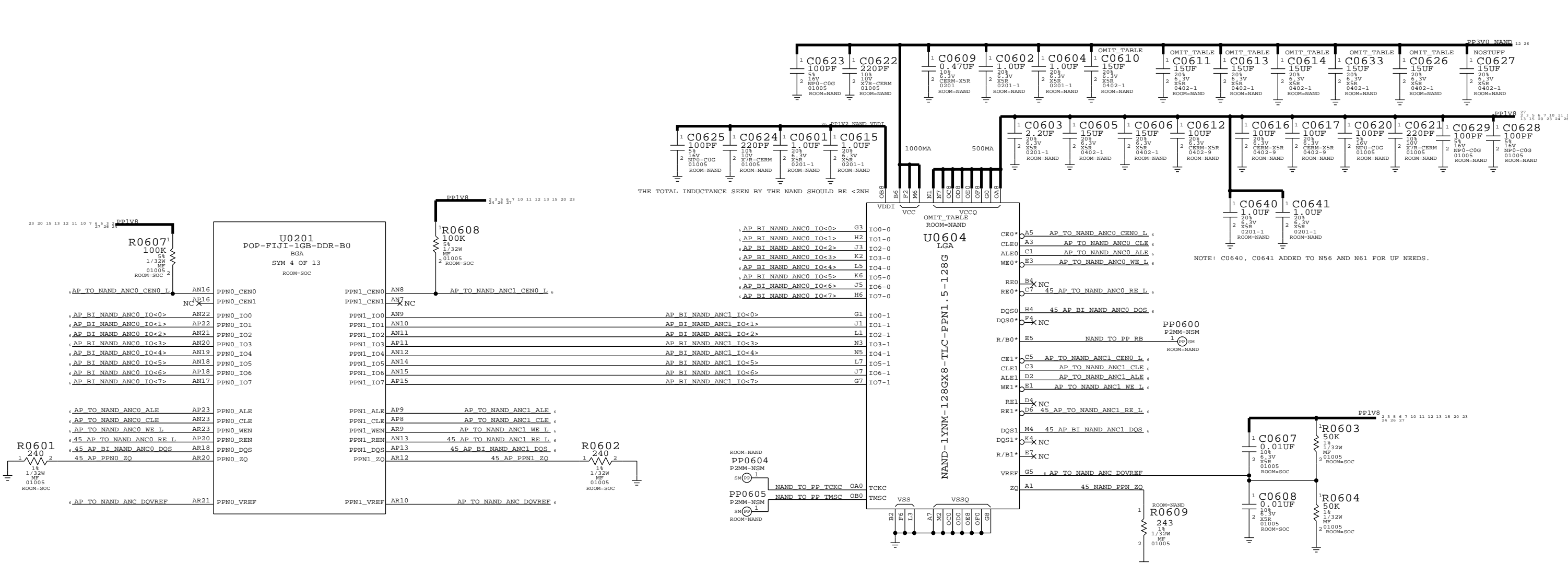
VDD\_SRAM, VDD\_SOC



SYNC MASTER=N61 MLB		SYNC DATE=10/08/2013	
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# FIJI: NAND + 12X17 NAND PKG

SUPPORT FOR PPN1.5 (1.8V IO) ONLY



THE TOTAL INDUCTANCE SEEN BY THE NAND SHOULD BE <2NH

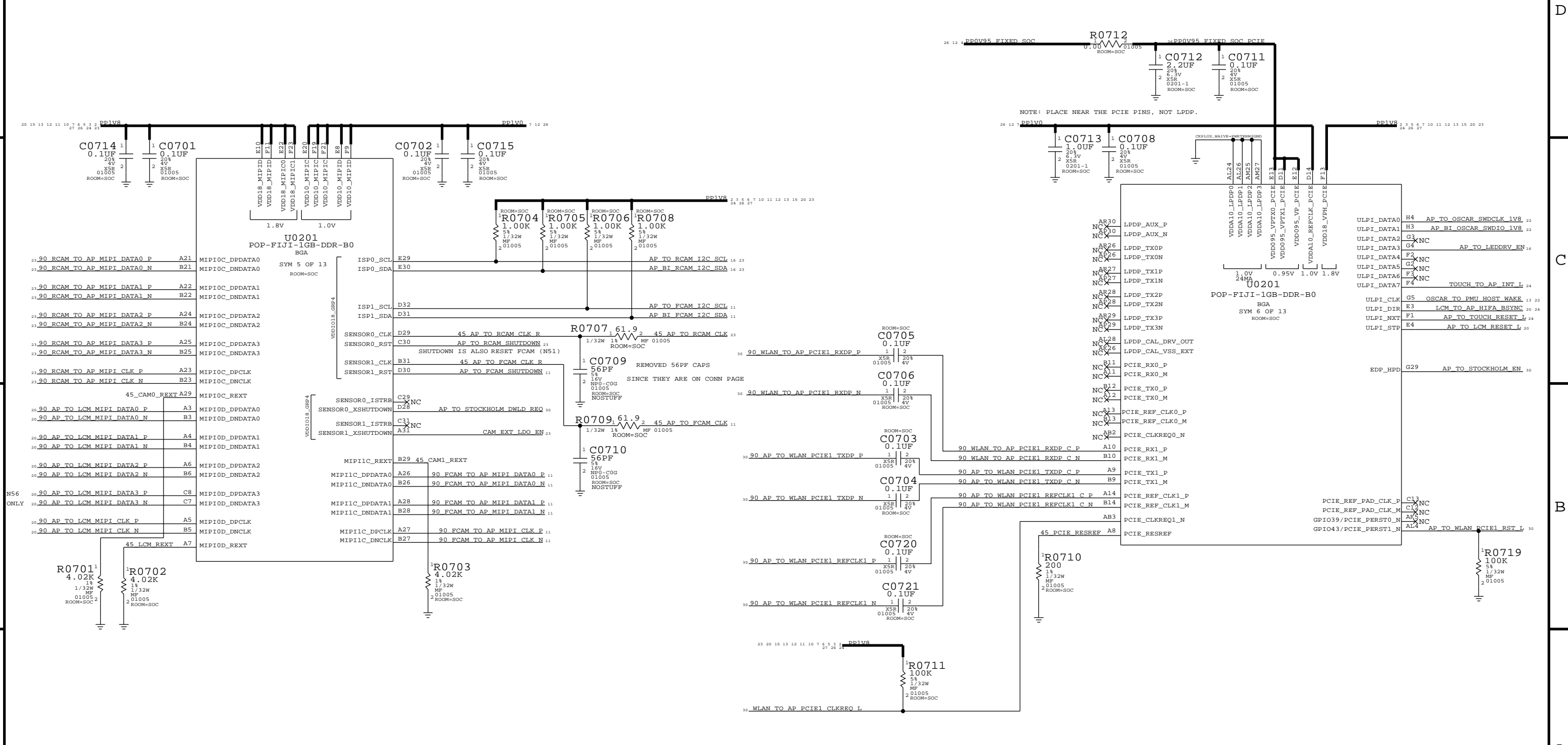
NOTE: C0640, C0641 ADDED TO N56 AND N61 FOR UF NEEDS.

NOTE: NAND PADS SHOULD BE SHIELDED FROM TRACES WITH A GROUND PLANE

- PP0601 P4MM-NSM NOTE: IO<6> PREFERRED BY MATT BYOM (N51) (IS A STATUS READY BIT)  
ROOM=SOC 1 AP BI NAND ANCO IO<6>
- PP0602 P4MM-NSM  
ROOM=SOC 1 45 AP TO NAND ANCO RE L
- PP0603 P4MM-NSM  
ROOM=SOC 1 45 AP BI NAND ANCO DOS

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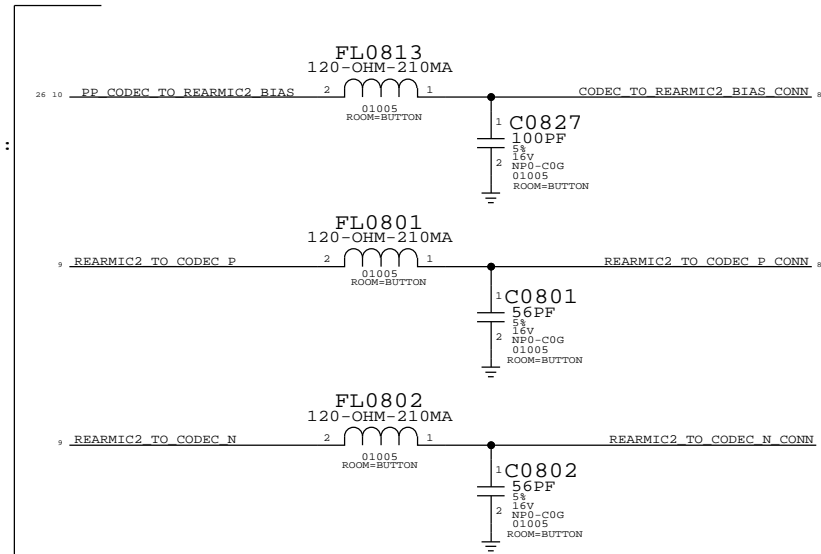
# FIJI: HIGH SPEED DIG (CAM, LCD, LPDP, PCIE)



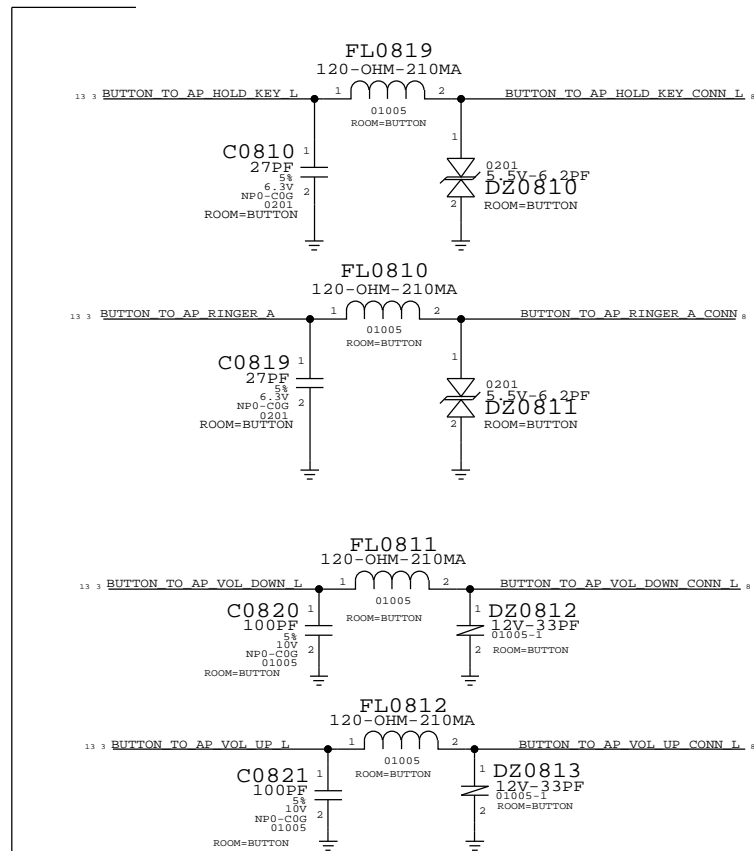
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# BUTTON FLEX (BUTTONS, ANC REF MIC, STROBE, STROBE\_NTC, WIFI FLEX PAC)

MIC2 (ANC REF MIC):  
MIC2/4 BIAS,  
MIC2\_P,\_N

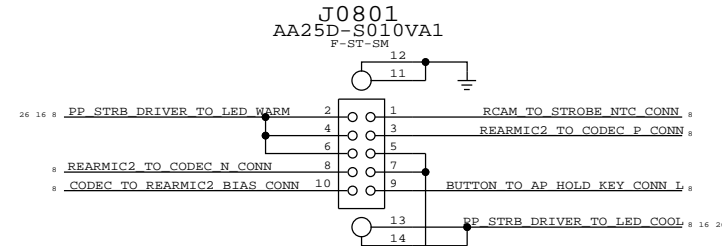


BUTTONS:  
RINGER, HOLD,  
VOL\_UP/DOWN,



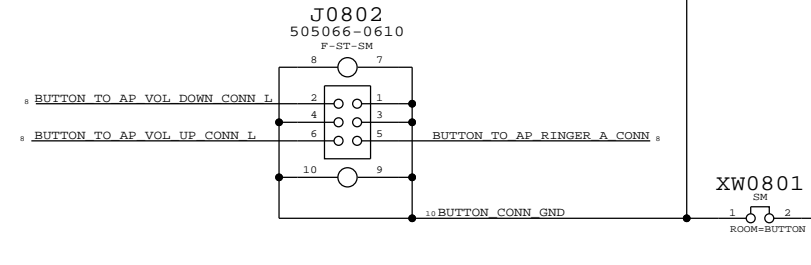
## RIGHT BUTTON FLEX B2B

APN: 516S1187 (RCPT)

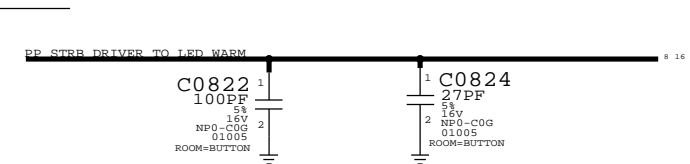


## LEFT BUTTON FLEX B2B

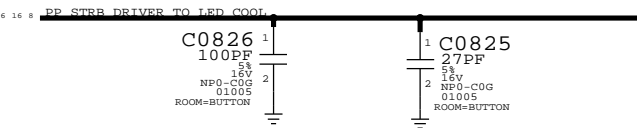
APN: 516S1317 (RCPT)



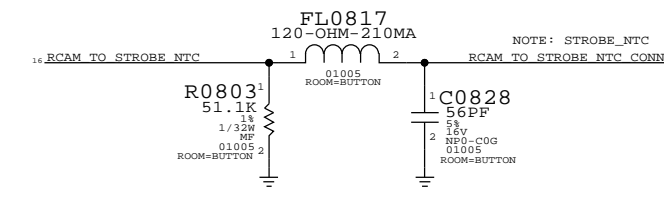
STROBE:  
LED WARM



STROBE:  
LED COOL



STROBE:  
NTC



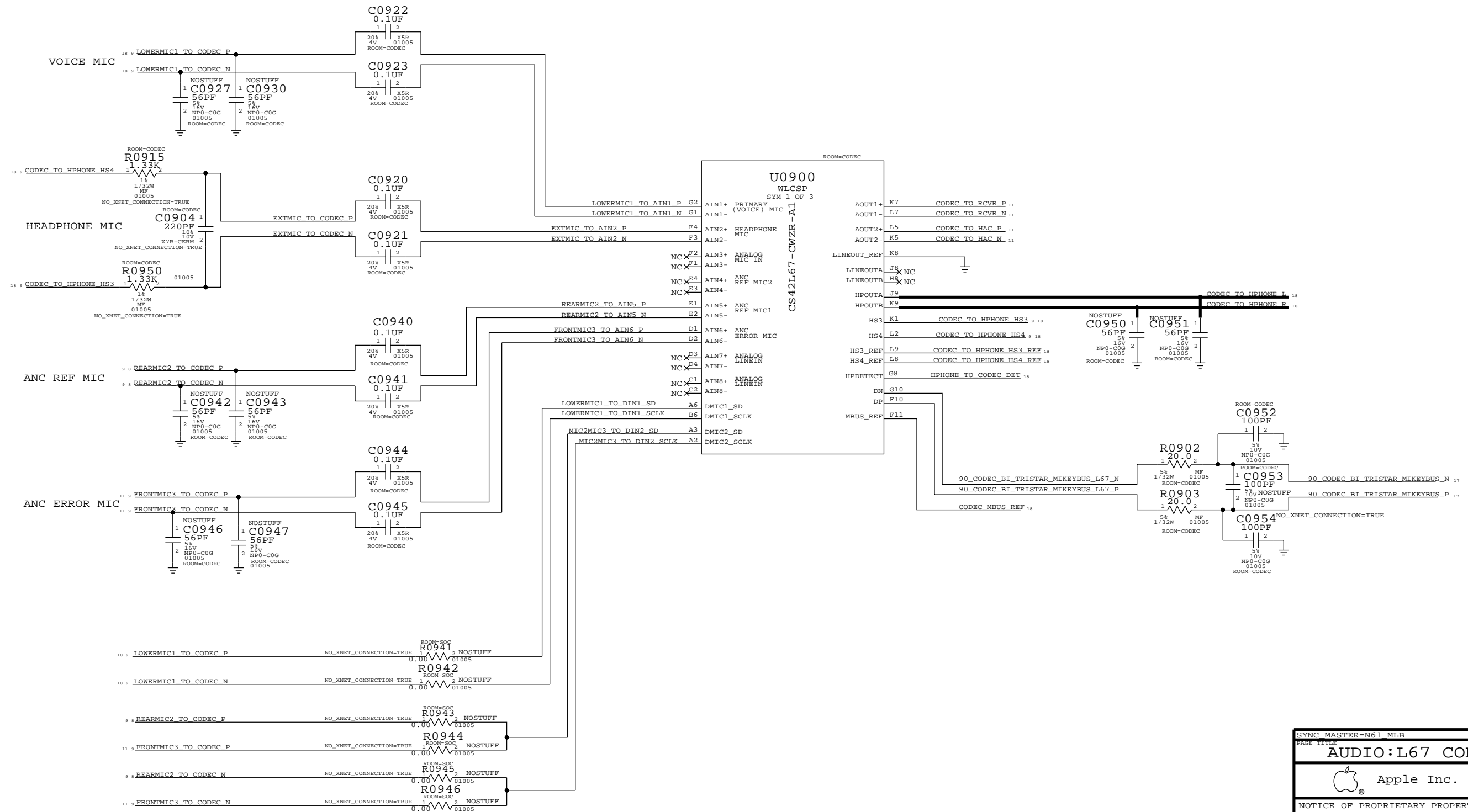
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<b>IO:BUTTON FLEX CONN</b>			
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# L67 AUDIO CODEC

## AUDIO I/O

(ANALOG MIC IN, DIG MIC IN, HPOUT, LINEOUT, RECEIVER OUT, MIKEYBUS)



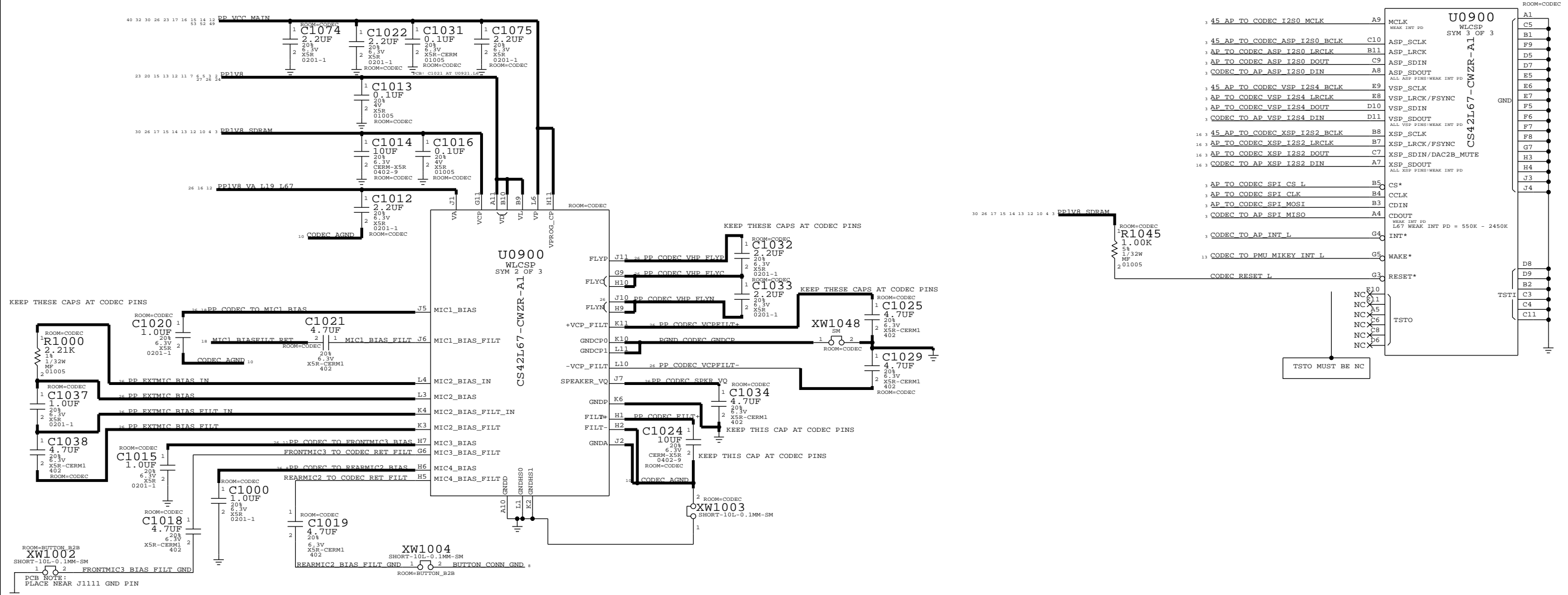
SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
PAGE TITLE			
AUDIO:L67 CODEC (1/2)			
Apple Inc.	DRAWING NUMBER	051-0517	SIZE
	REVISION	6.0.0	
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# L67 AUDIO CODEC

## POWER, MICBIAS

## DIGITAL SYSTEM I/O

NOTE: C1022 WAS REDUCED TO 2.2UF BECAUSE OF ADDITIONAL NEARBY VCC MAIN CAPS



SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
PAGE TITLE <b>AUDIO:L67 CODEC (2/2)</b>			
DRAWING NUMBER 051-0517		SIZE D	
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# FRONT CAM FLEX B2B

(FCAM, PROX, ALS, RECEIVER, ANC ERROR MIC)

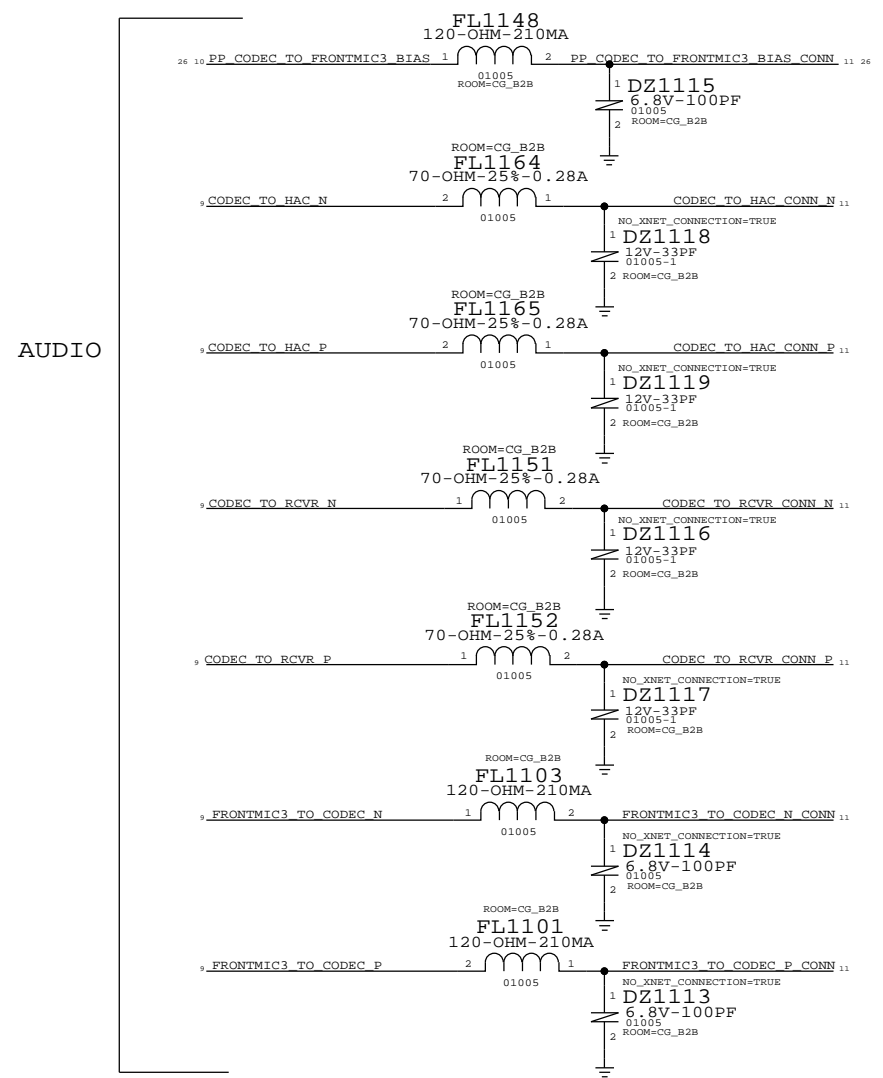
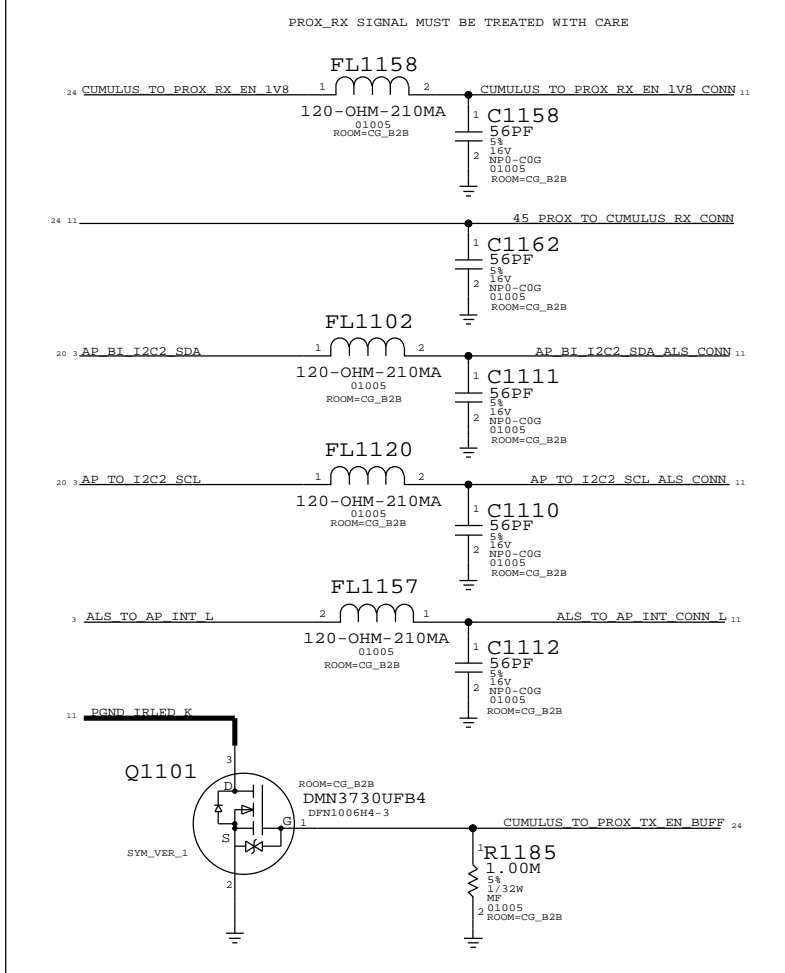
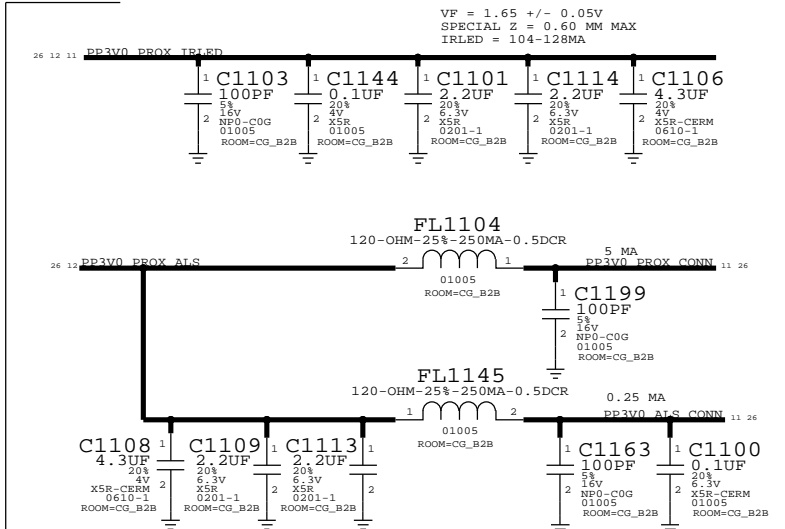
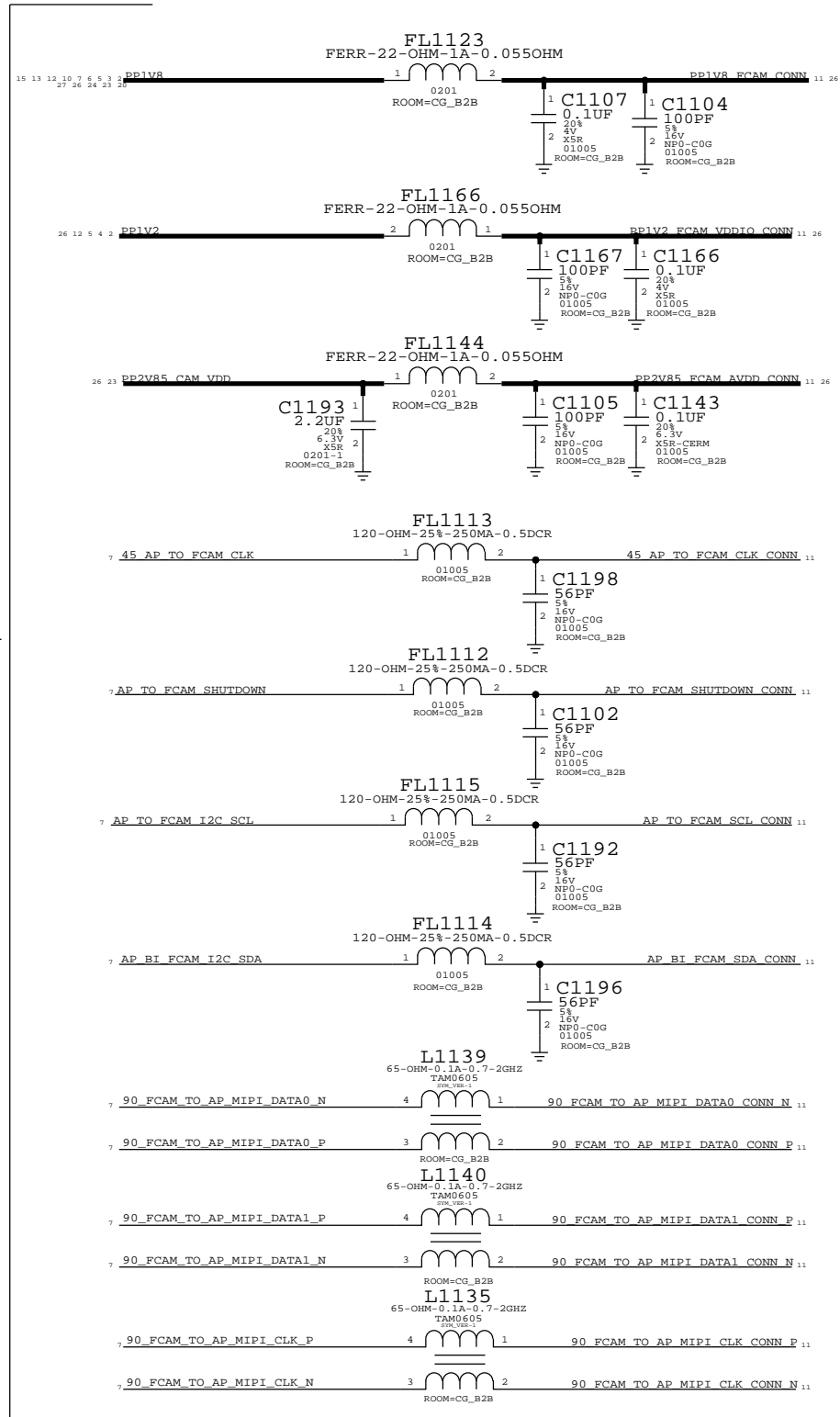
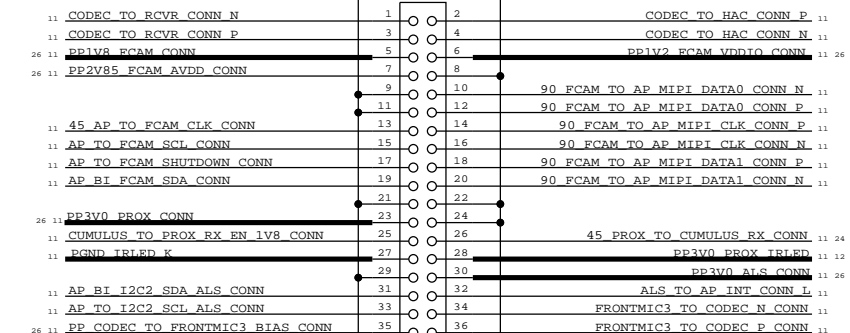
MLB: 516S1081 (RCPT)

J1111

AA22L

F-ST-SM

41 ROOM=CG\_B2B



SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
CAMERA: FRONT FLEX CONN			
Apple Inc.		DRAWING NUMBER	051-0517
		REVISION	6.0.0
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# ADI PMU

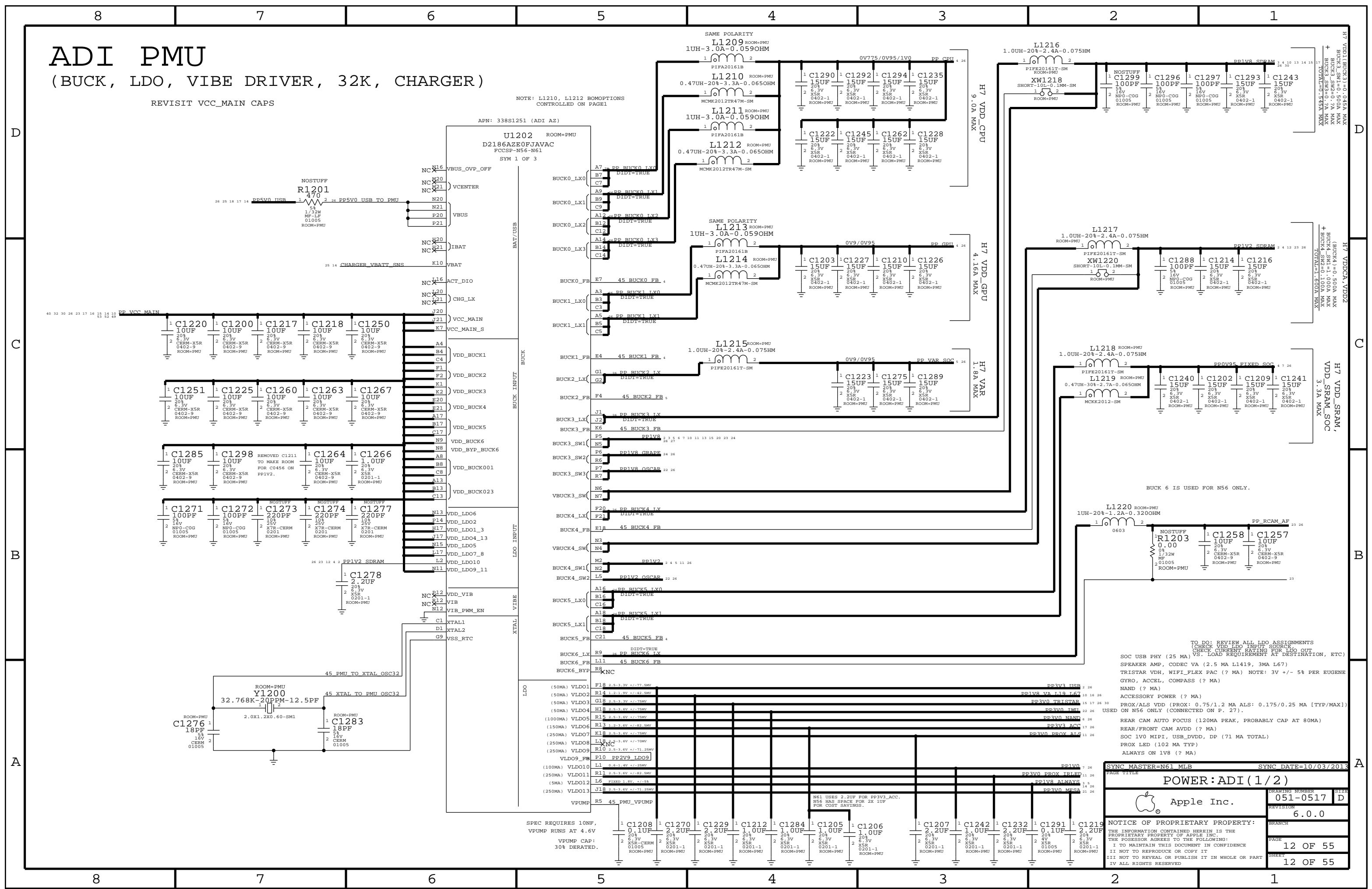
(BUCK, LDO, VIBE DRIVER, 32K, CHARGER)

REVISIT VCC\_MAIN CAPS

NOTE: L1210, L1212 BOMOPTIONS CONTROLLED ON PAGE1

APN: 338S1251 (ADI AZ)

U1202 ROOM=PMU  
D2186AZE0FJAVAC  
FCCSP-N56-N61  
SYM 1 OF 3



TO DO: REVIEW ALL LDO ASSIGNMENTS (CHECK VDD LDO INPUT SOURCE, CHECK CURRENT SINKING FOR LDO OUT, CHECK CURRENT SINKING FOR LDO OUT, TRISTAR VDH, CODEC VA (2.5 MA L1419, 3MA L67), TRISTAR VDH, WIFI\_FLEX PAC (? MA) NOTE: 3V +/- 5% PER EUGENE GYRO, ACCEL, COMPASS (? MA), NAND (? MA), ACCESSORY POWER (? MA), PROX/ALS VDD (PROX: 0.75/1.2 MA ALS: 0.175/0.25 MA [TYP/MAX]) USED ON N56 ONLY (CONNECTED ON P. 27), REAR CAM AUTO FOCUS (120MA PEAK, PROBABLY CAP AT 80MA), REAR/FRONT CAM AVDD (? MA), PP3V3\_ACC, PP3V3\_PROX\_ALS, PROX LED (102 MA TYP), ALWAYS ON LV8 (? MA)

SYNC MASTER=N61 MLB SYNC DATE=10/03/2013

Apple Inc.

POWER:ADI (1 / 2)

DRAWING NUMBER: 051-0517 SIZE: D

REVISION: 6.0.0

BRANCH:

PAGE: 12 OF 55

SHEET: 12 OF 55

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SPEC REQUIRES 10NF, VPUMP RUNS AT 4.6V, VPUMP CAP: 30% DERATED.

N61 USES 2.2UF FOR PP3V3\_ACC, N56 HAS SPACE FOR 2X 1UF FOR COST SAVINGS.

# ADI PMU

(AMUX, GPIO, BUTTONS, ADC, THERMISTORS, SYSTEM I/F, GND)

D

D

C

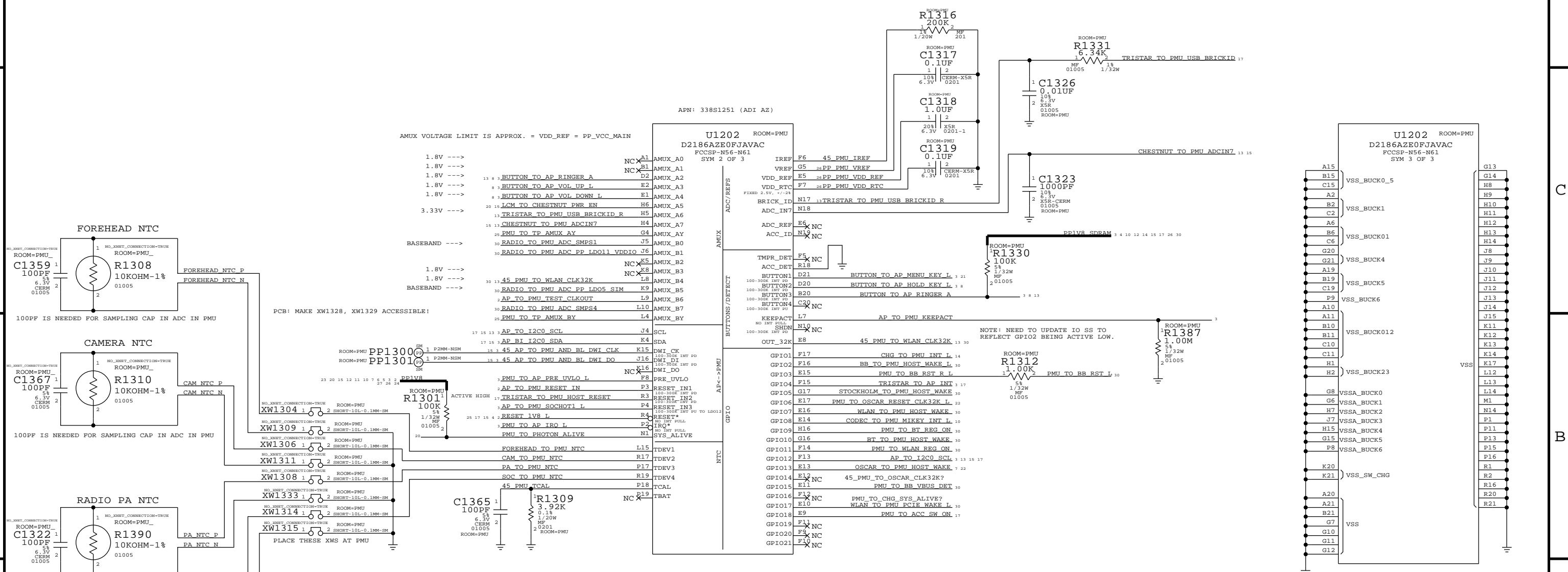
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B

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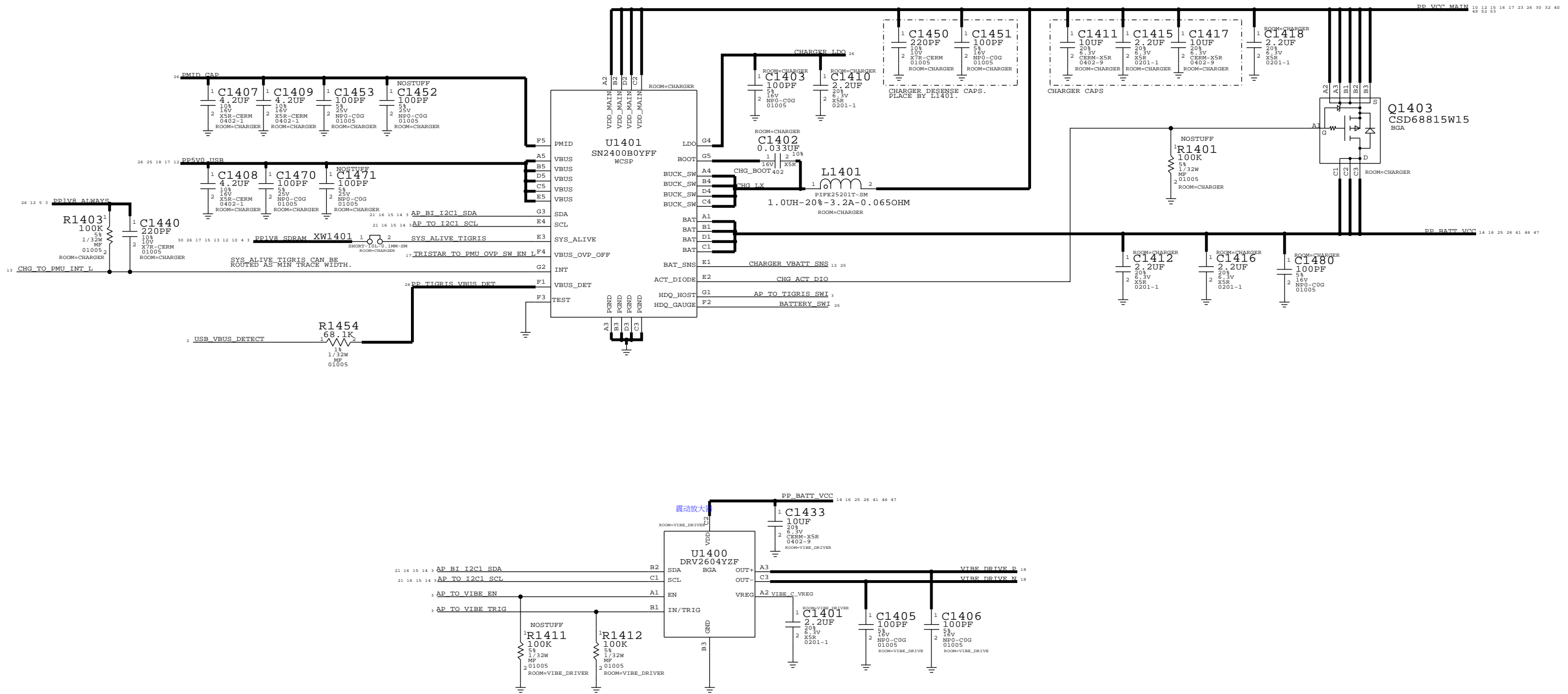
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ADI OTP:  
SEE RADAR 14032884

SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
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POWER:ADI ( 2 / 2 )			
Apple Inc.	DRAWING NUMBER	051-0517	SIZE
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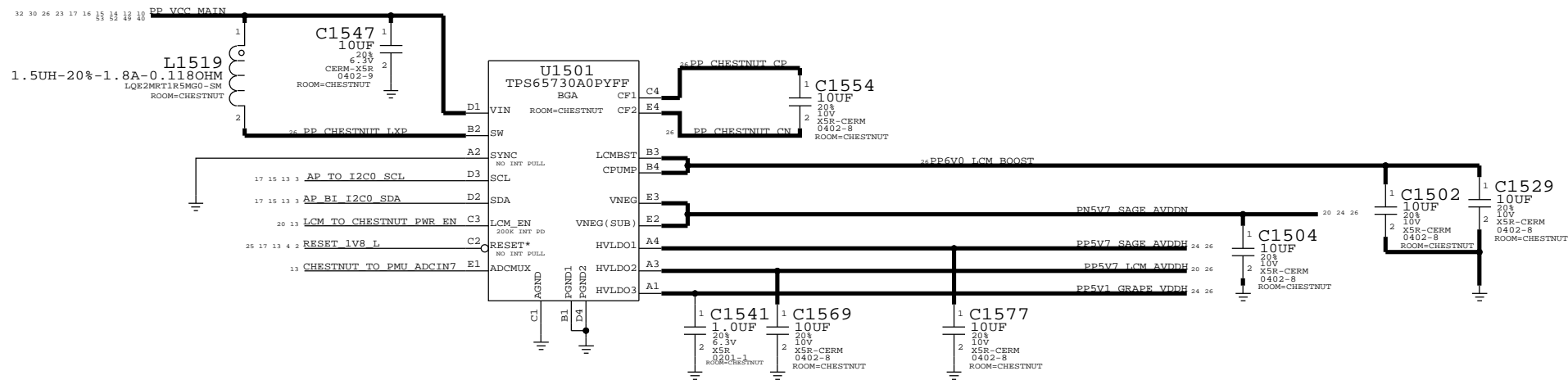
# TIGRIS CHARGER & VIBE DRIVER



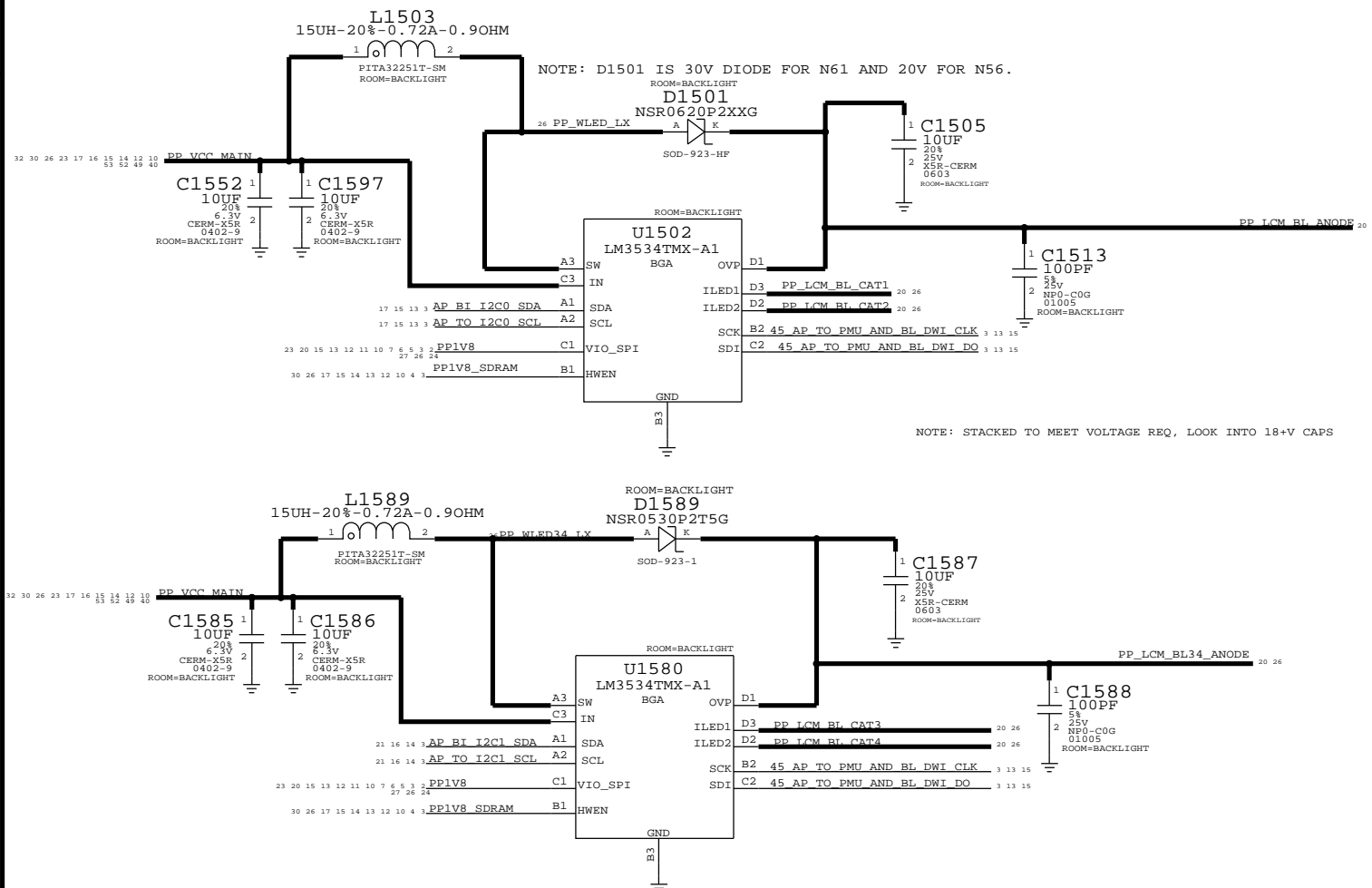
PAGE TITLE <b>POWER:TIGRISR,VIBE DRIVER</b>		
Apple Inc.	DRAWING NUMBER	051-0517
	REVISION	6.0.0
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		SHEET 14 OF 55

# CHESTNUT, BACKLIGHT DRIVER, MESA BOOST

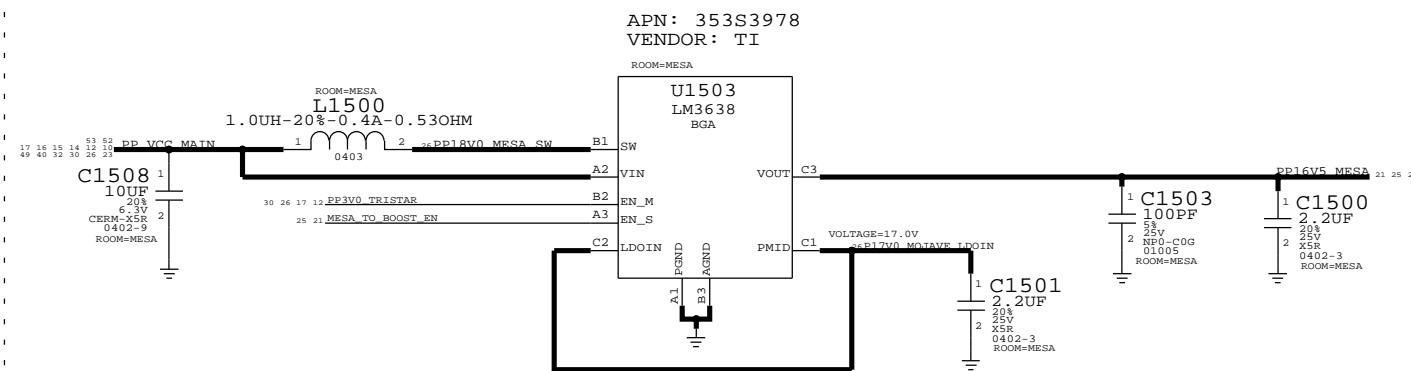
## DISPLAY PMU (TI CHESTNUT, 338S1149)



## BACKLIGHT DRIVERS



## MESA BOOST

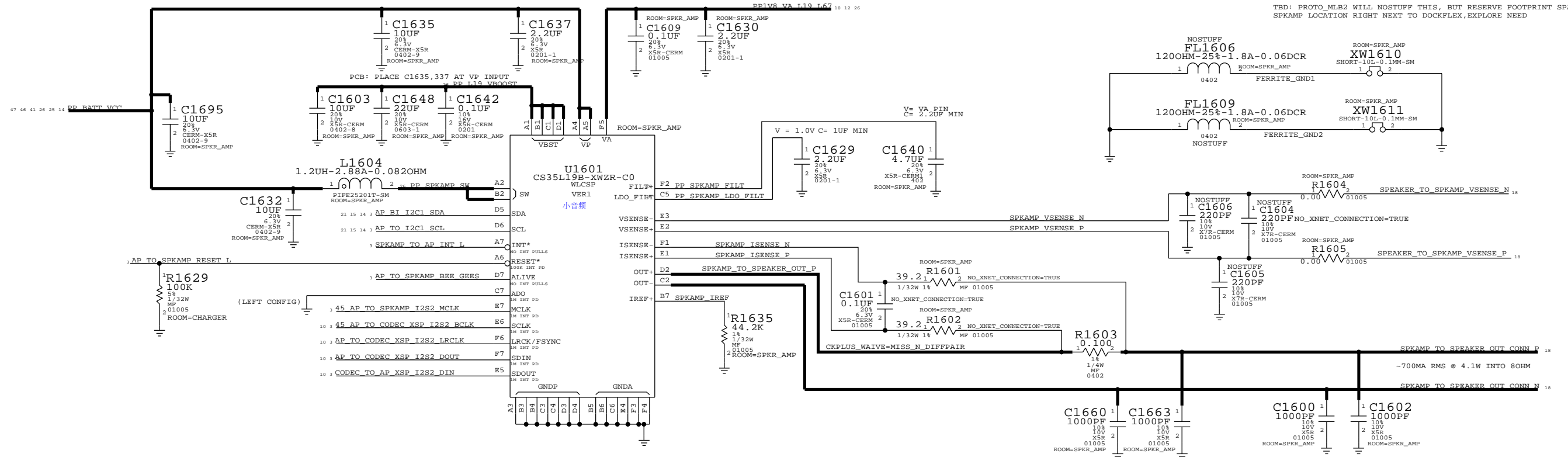


PAGE TITLE		SYNC DATE=11/01/2013	
DISPLAY:CHESTNUT, BACKLIGHT DRIVER			
Apple Inc.	DRAWING NUMBER	051-0517	SIZE D
	REVISION	6.0.0	
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# SPEAKER AMP, LED DRIVER

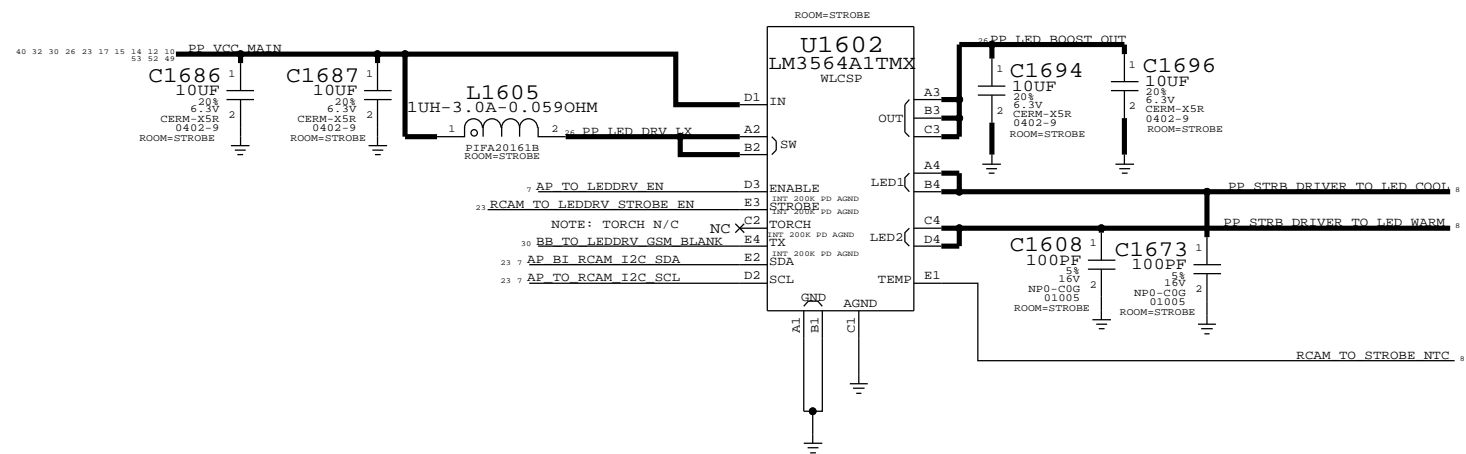
## SPEAKER AMP

I2C ADDRESS: 1000000X



## STROBE DRIVER

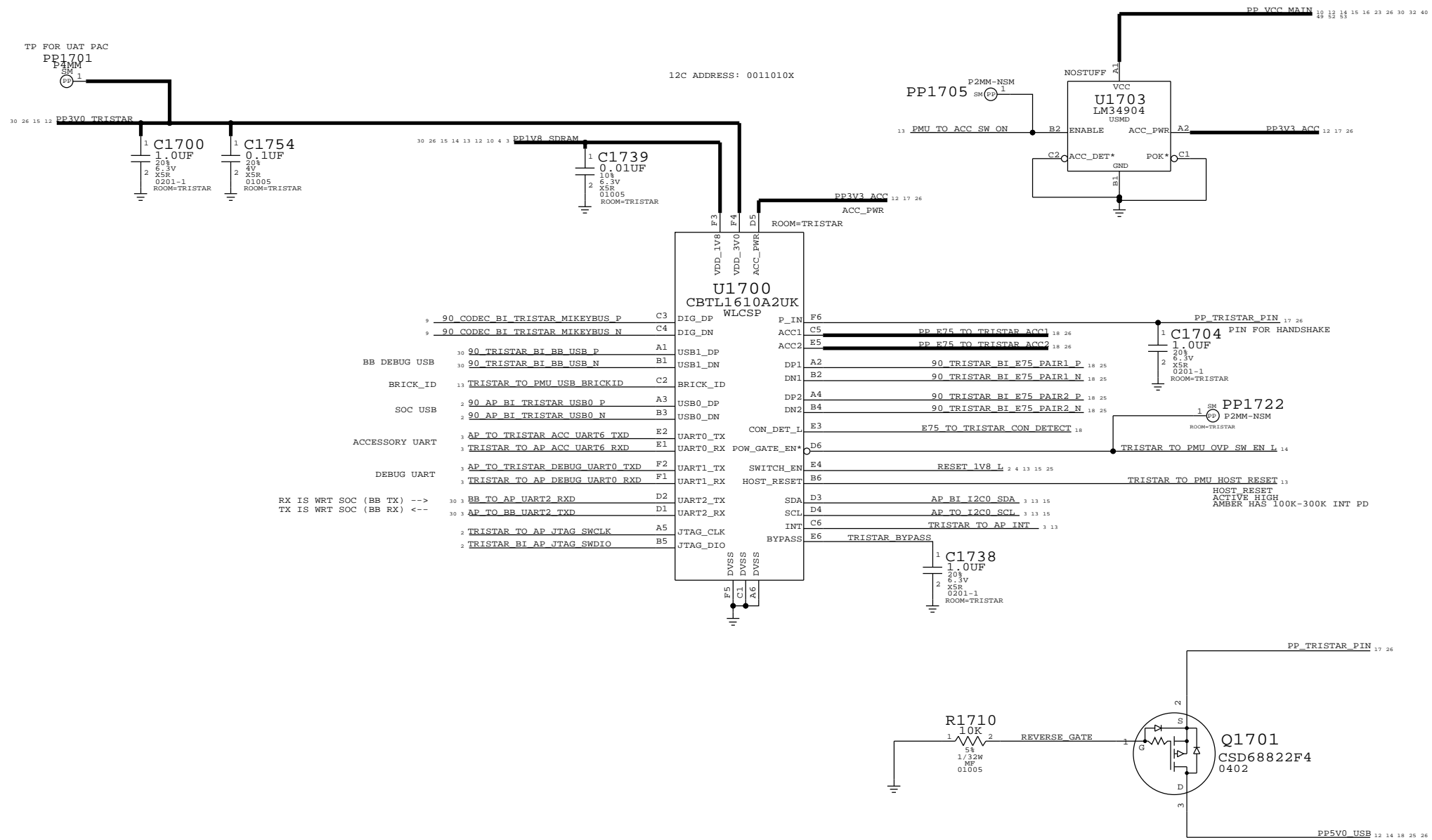
TI: APN 353S3899



SYNC MASTER=N61_MLB		SYNC DATE=11/01/2013	
PAGE TITLE			
AUDIO:SPKR AMP,STROBE			
DRAWING NUMBER		051-0517	
REVISION		6.0.0	
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# TRISTAR2



SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
<b>IO:TRISTAR2</b>			
Apple Inc.		DRAWING NUMBER	051-0517
		REVISION	6.0.0
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		PAGE	17 OF 55
		SHEET	17 OF 55

# DOCKFLEX B2B (USB VBUS, SPEAKER, ANTENNA LAT SW CTRL, MIC1 (PRIMARY MIC), ACC DET/ID/PWR, E75 DIFFPAIRS)

LOWER MIC1 (PRIMARY VOICE MIC)

ACCESSORY: VIBE DRIVE

USB VBUS

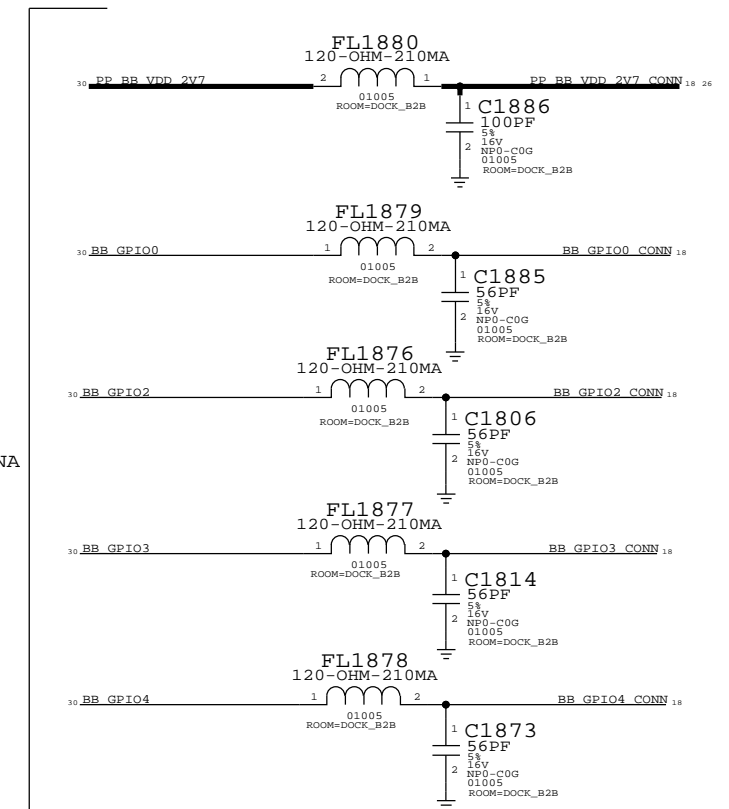
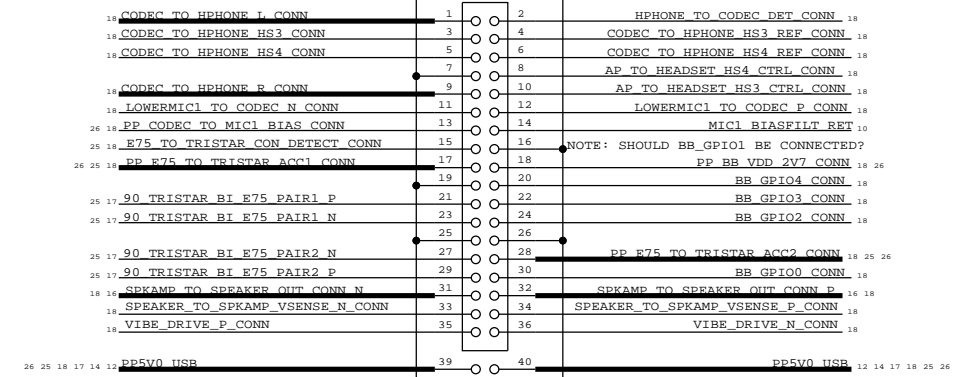
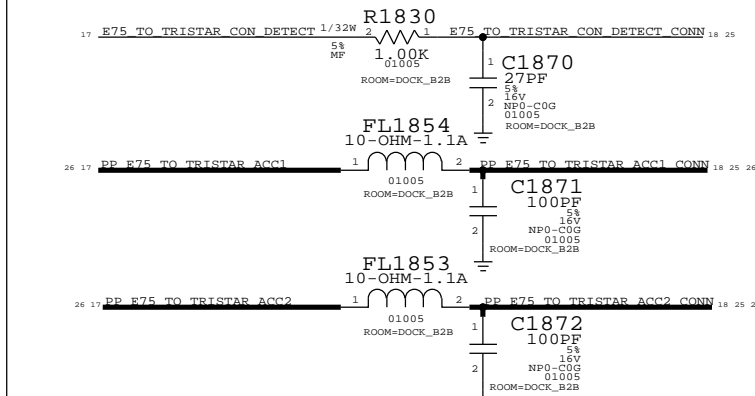
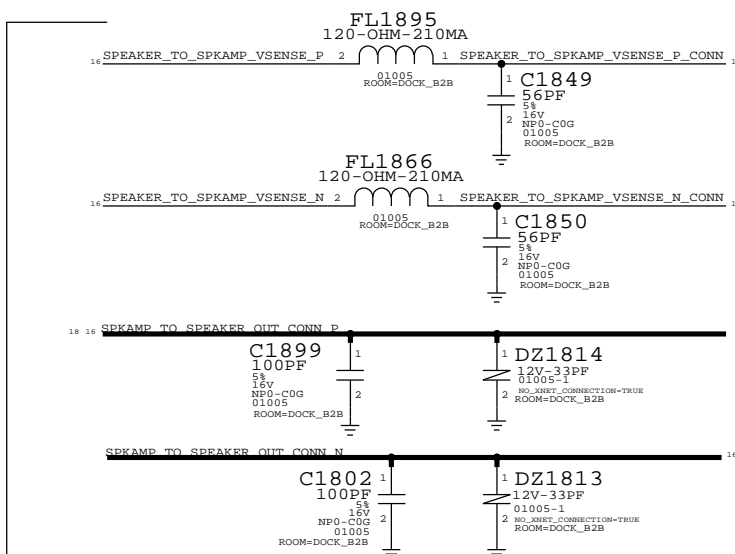
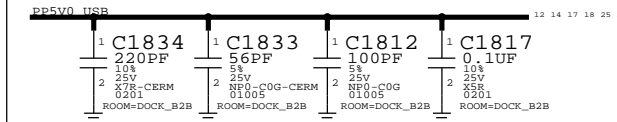
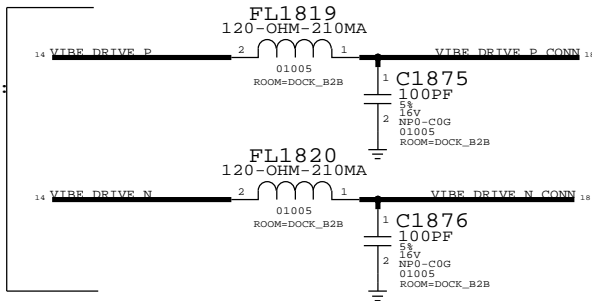
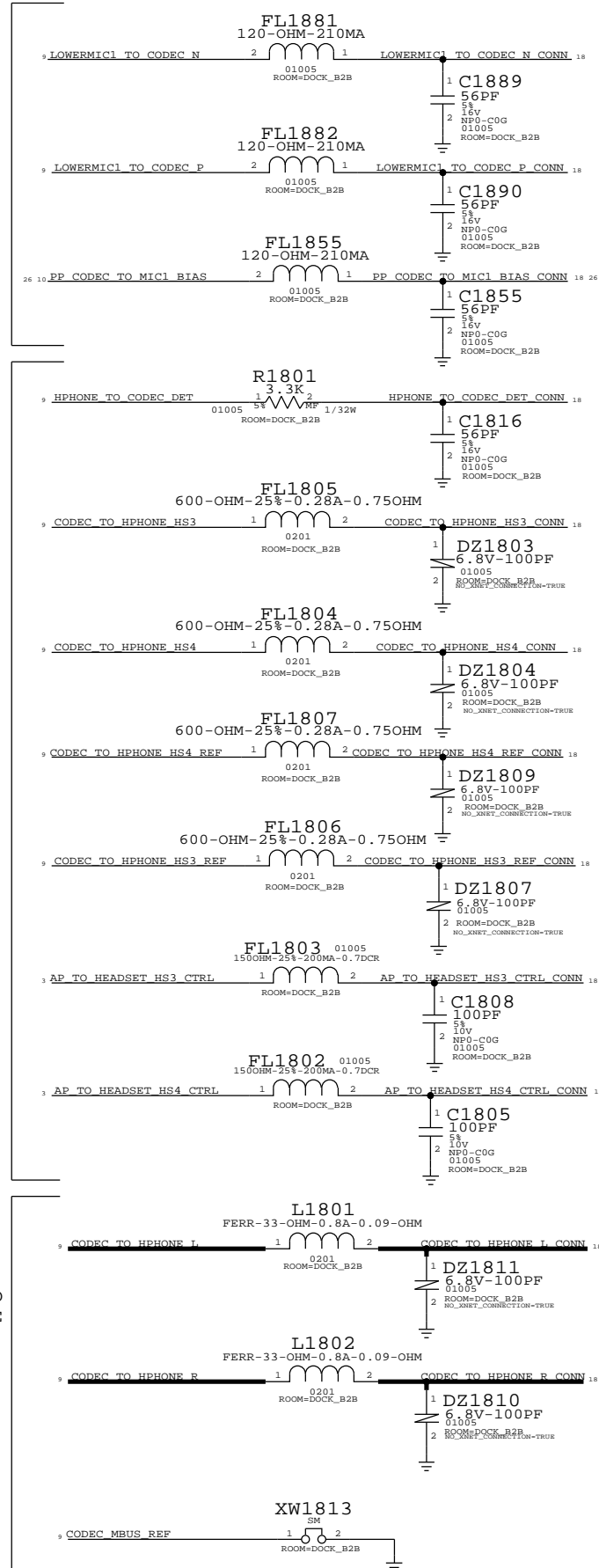
SPEAKER: LEADS, VSENSE

TRISTAR

ANTENNA

MLB: 516S1282 (PLUG)

J1817  
14-5859-036-201-829  
37M-ST-SM38



SYNC MASTER=N61 MLB		SYNC DATE=10/08/2013	
PAGE TITLE <b>IO:DOCK FLEX CONN</b>			
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		SHEET	18 OF 55

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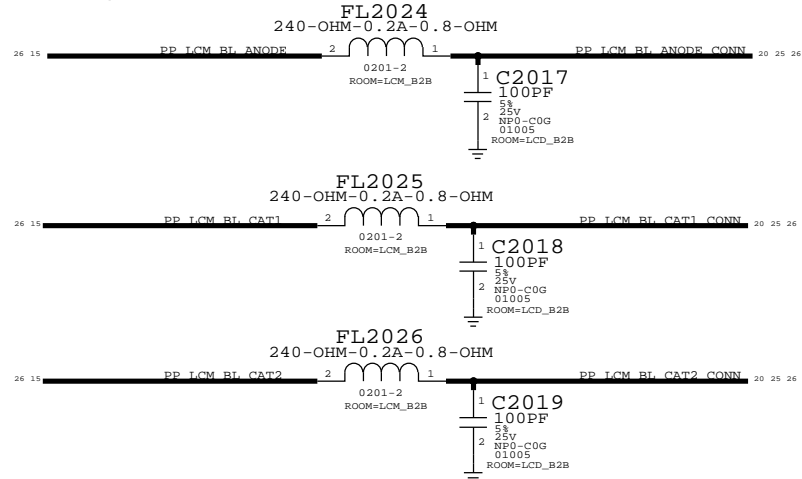
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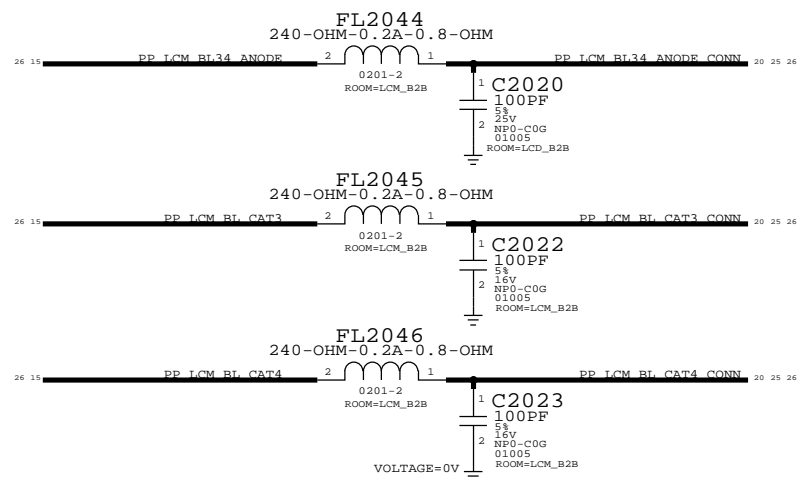
# LCD B2B

MLB: 516S1185 (RCPT)  
 (516S1184 ON FLEX)  
**J2019**  
 20-5857-036-001-829  
 F-ST-SM

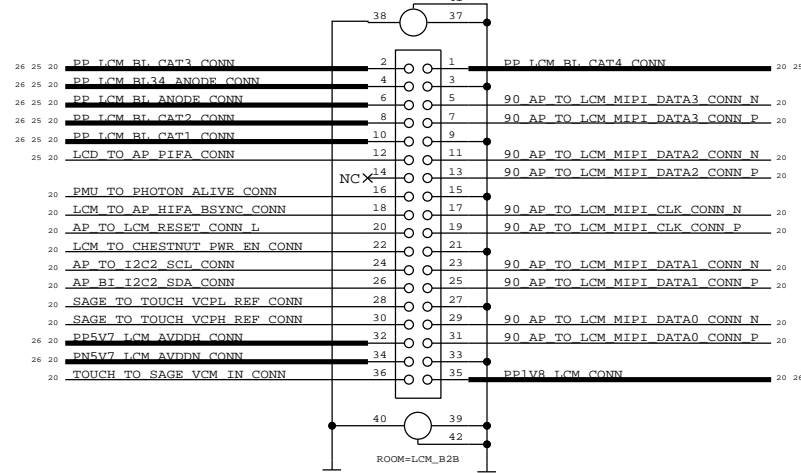
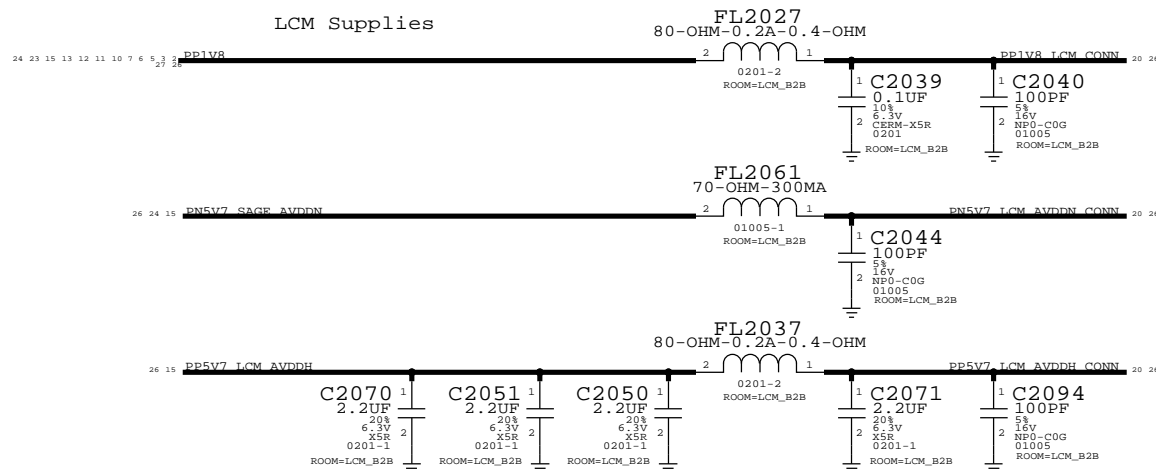
## Backlight



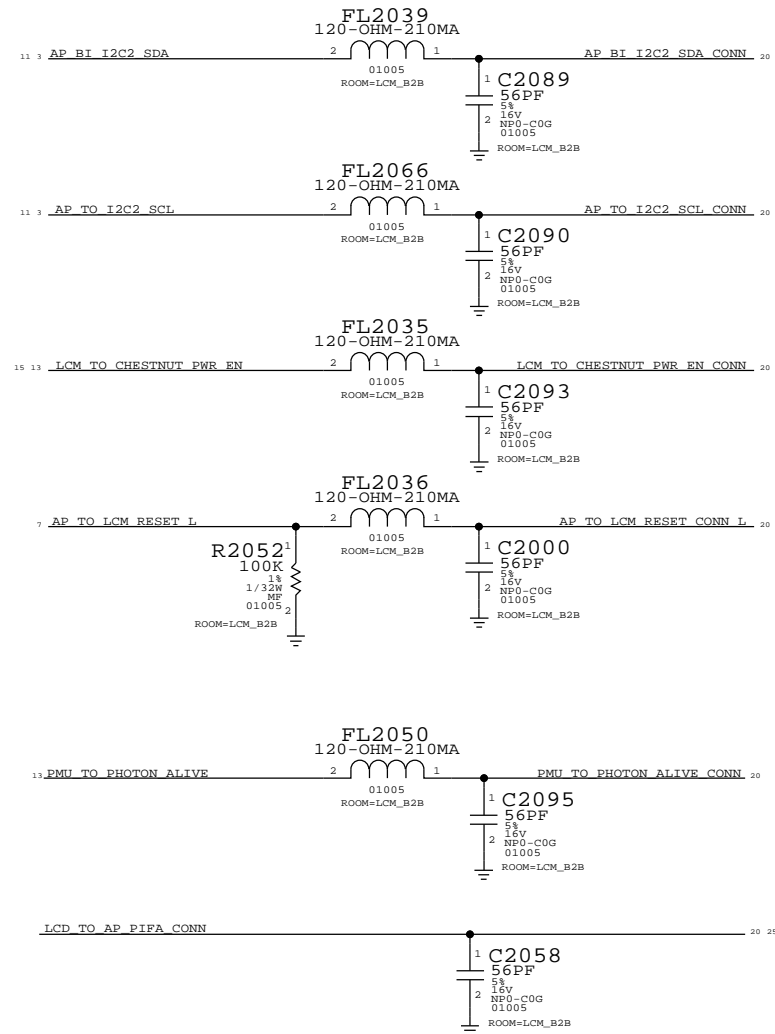
## BACKLIGHT 2 (N56 ONLY)



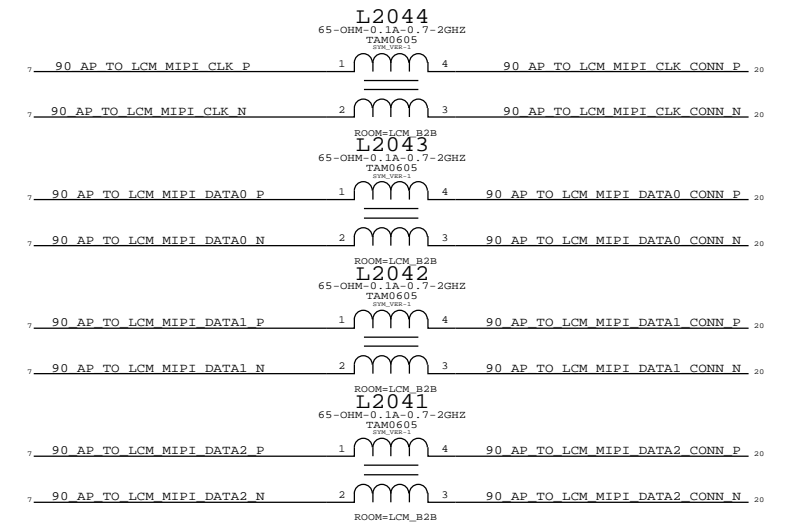
## LCM Supplies



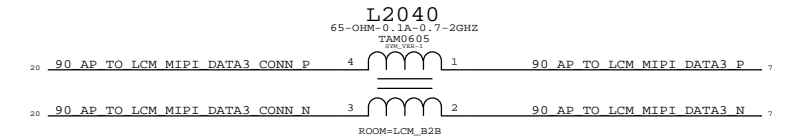
## Digital Interfaces



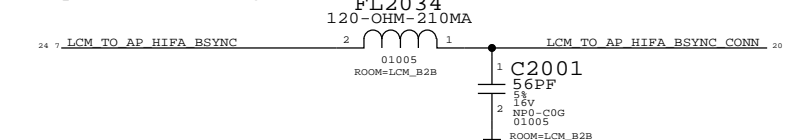
## MIPI Common Mode Chokes



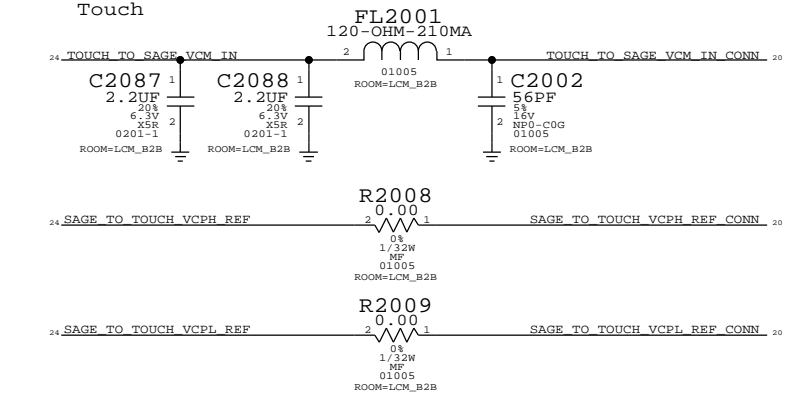
## MIPI LANE 3 (N56 ONLY)



## Sync/Reset/Debug



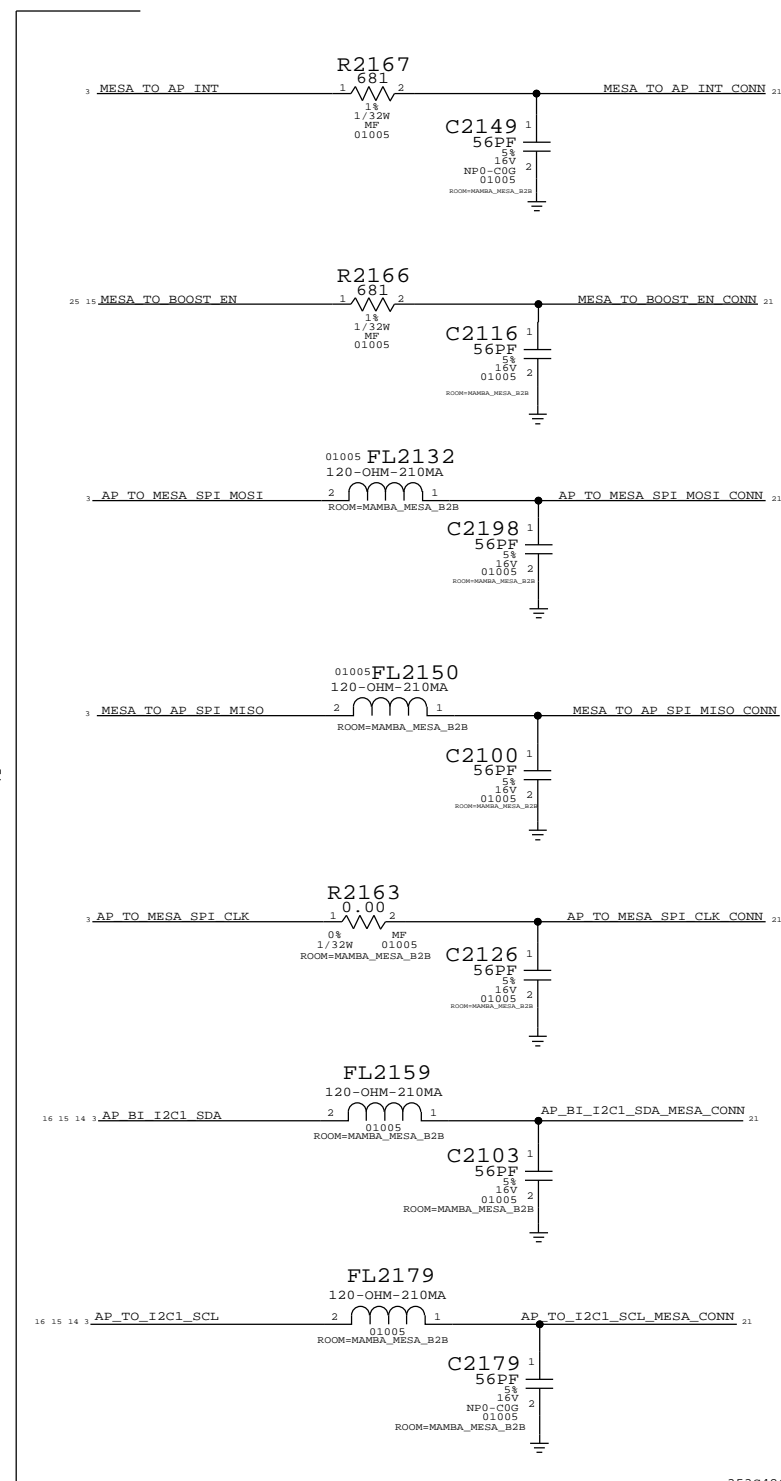
## Touch



SYNC MASTER=N61 MLB		SYNC DATE=11/01/2013	
PAGE TITLE			
<b>DISPLAY: FLEX CONN</b>			
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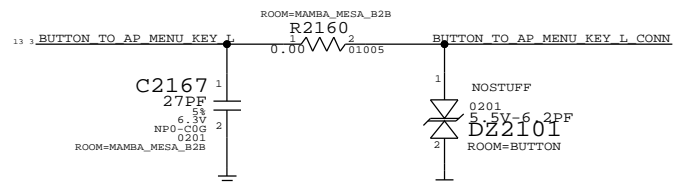
# MESA CONNECTOR

MESA:  
INT, EN, SPI, I2C

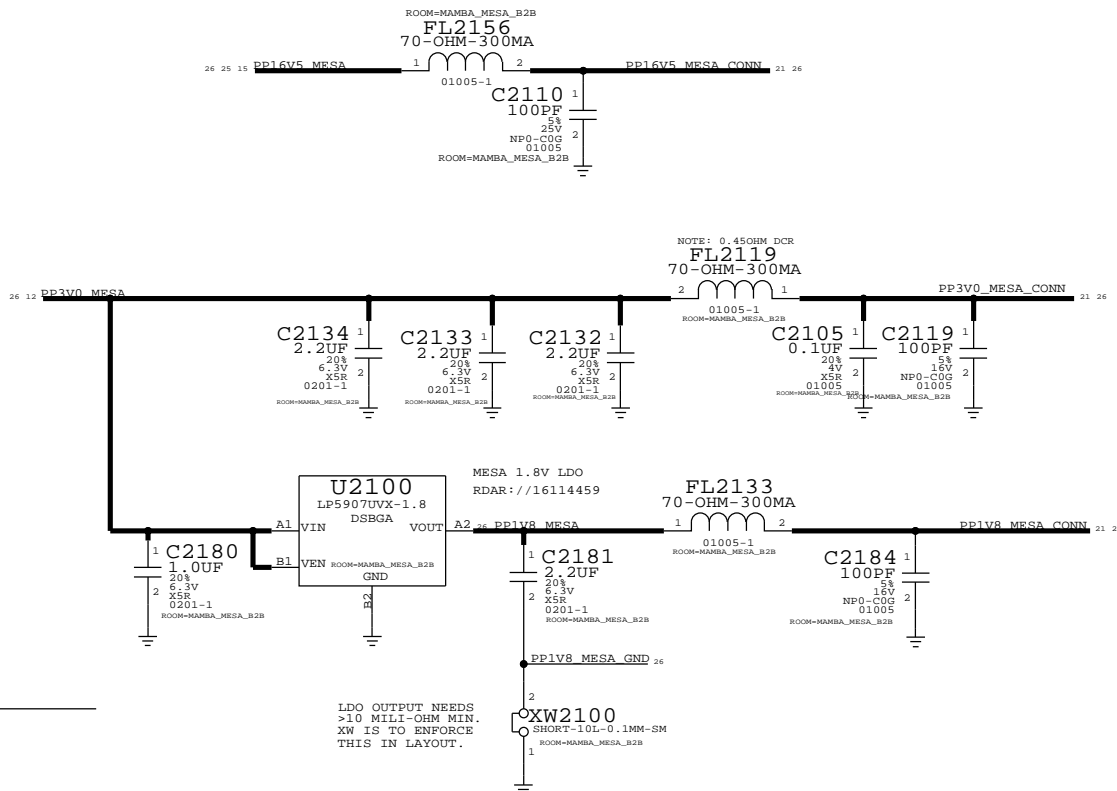


35384262

MENU  
BUTTON

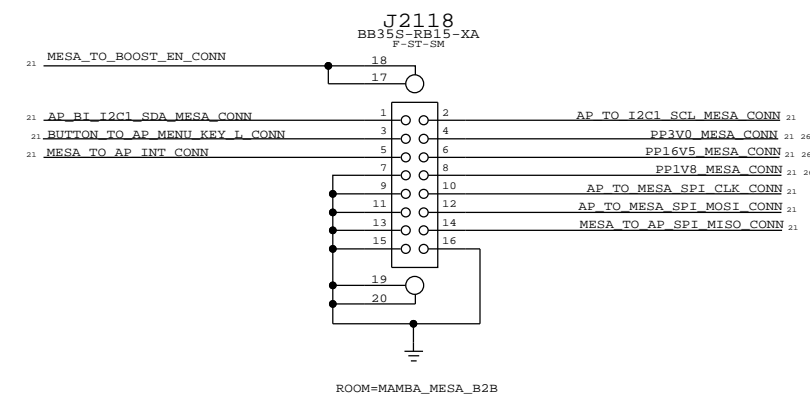


MESA:  
POWER



LDO OUTPUT NEEDS  
>10 MILLI-OHM MIN.  
XW IS TO ENFORCE  
THIS IN LAYOUT.

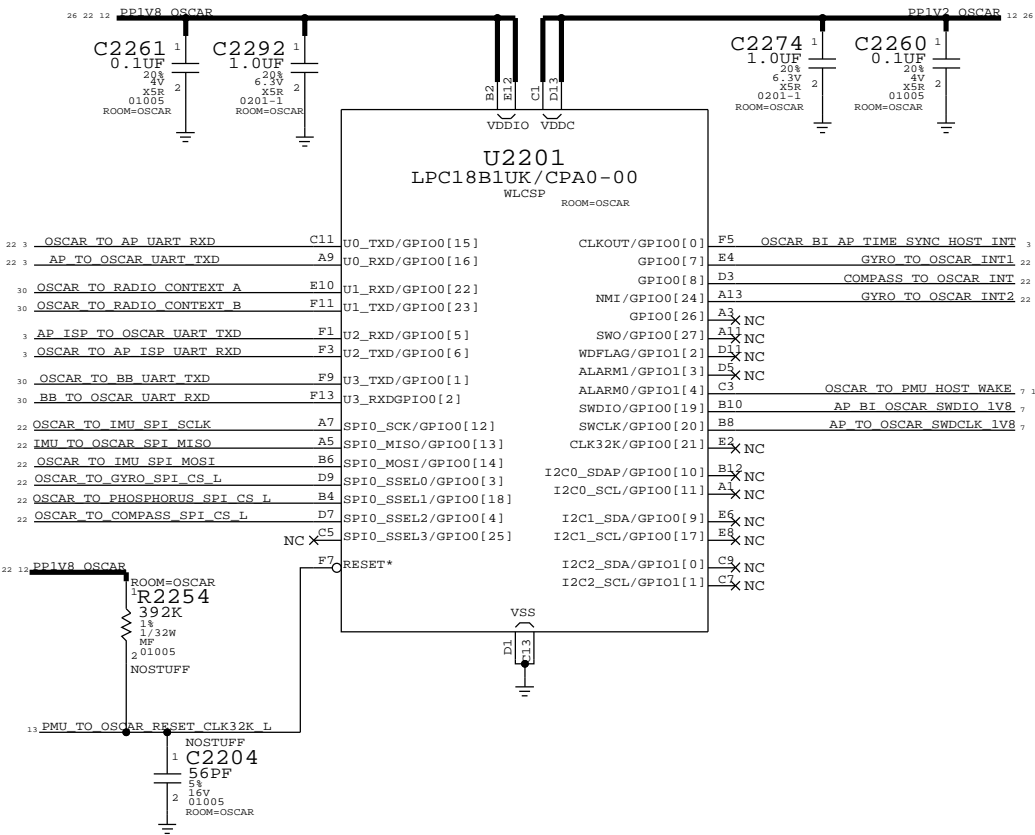
指纹座子  
516S1319 (RECEPTACLE)



PAGE TITLE		
SENSORS:MESA FLEX CONN		
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	REVISION	6.0.0
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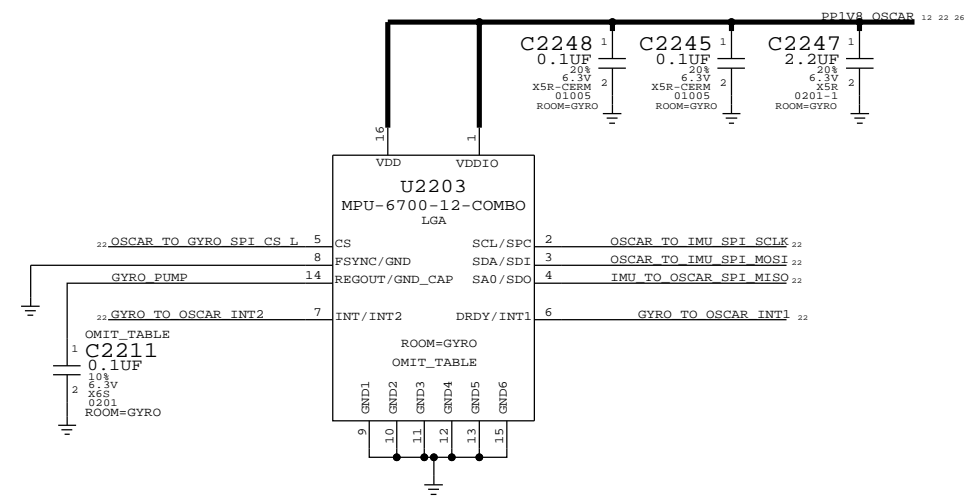
# OSCAR + SENSORS

OSCAR VDDIO = 1.8V ALWAYS ON (NEED TO MAKE HOST & RUN PLL)  
OSCAR CORE = 1.2V ALWAYS ON (NEED TO RUN IN SDRAM)



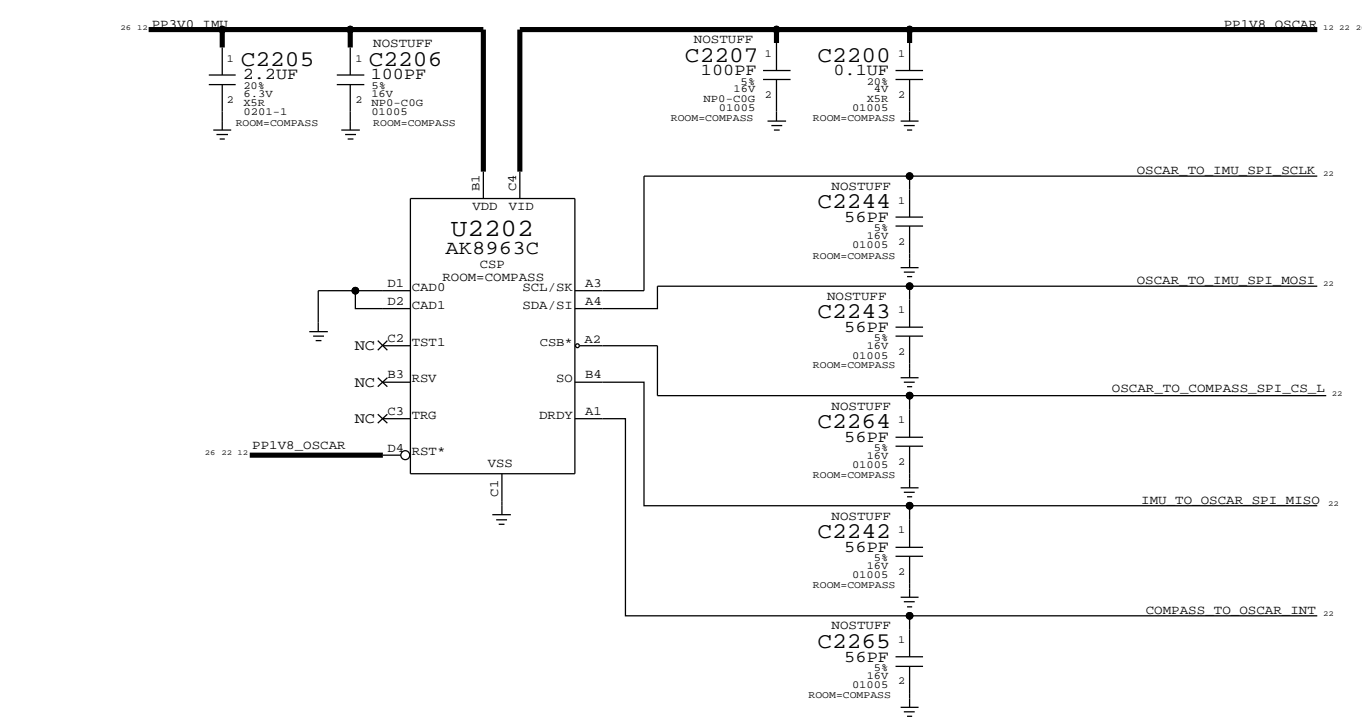
# CARBON (ACCEL GYRO COMBO)

INVENSENSE, APN 338S00017, C2211=0.1uF (132S0395)  
BOSCH, APN 338S00028, C2211=0.1uF (132S0395)  
ST, APN 338S00029, C2211=0.1uF, 25V (132S0391)



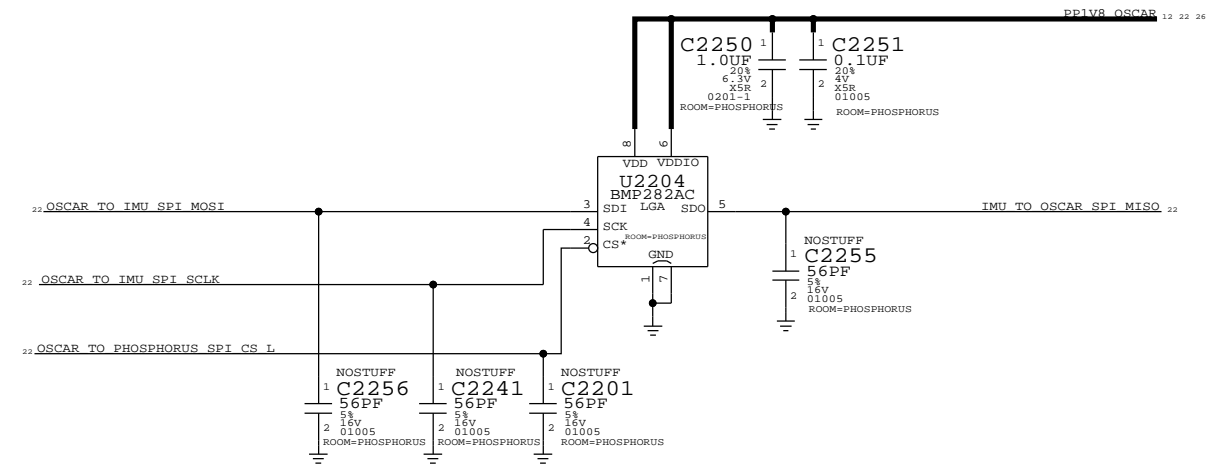
THIS PART OUTSIDE OF SHIELD ON THE PENINSULA

# COMPASS



THIS IS OUTSIDE OF SHIELD IN TO THE RIGHT OF THE NAND

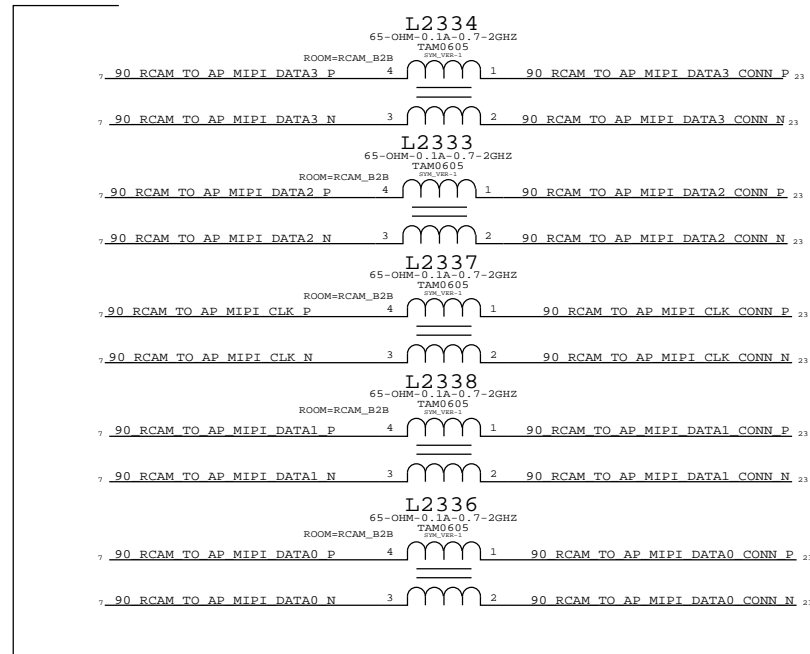
# PHOSPHORUS



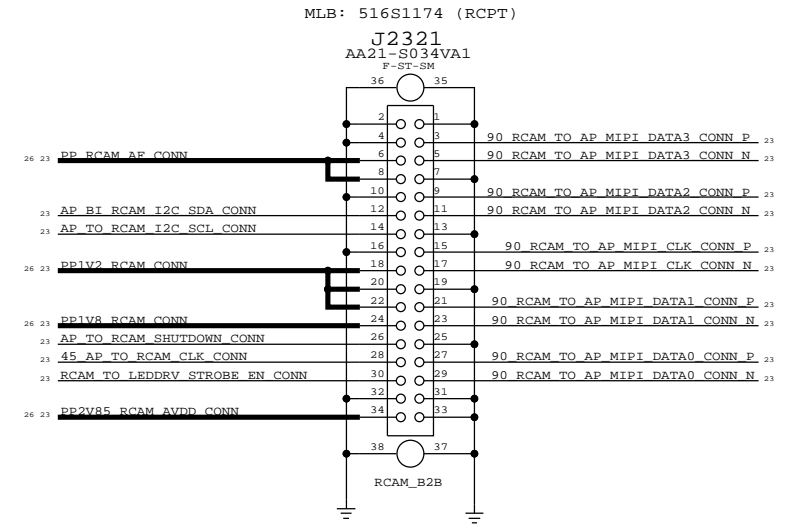
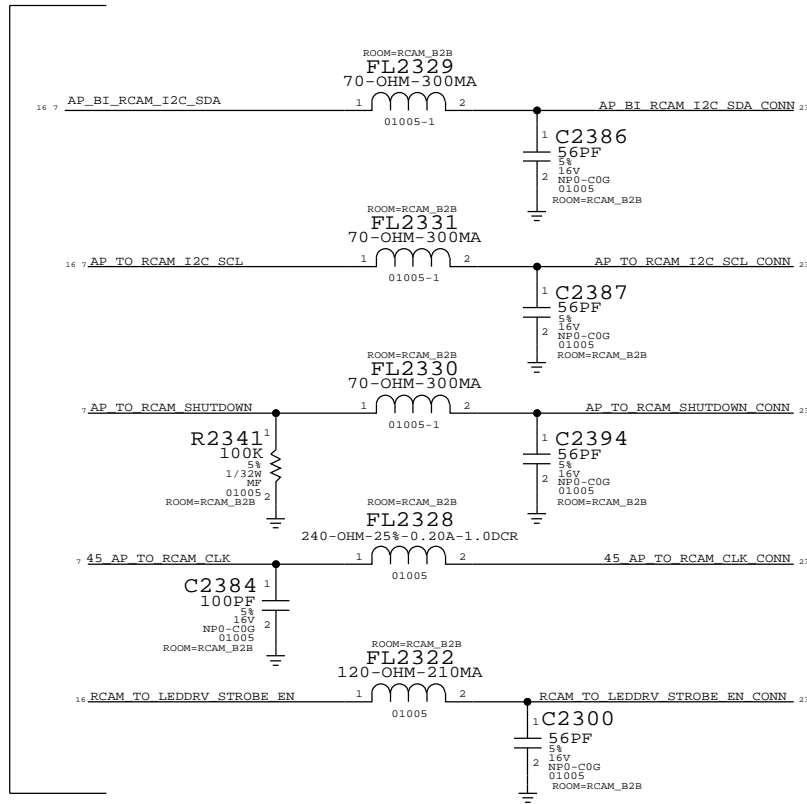
SYNC MASTER=N61 MLB		SYNC DATE=10/08/2013	
SENSORS: OSCAR, CARBON, PHOS, MAGNESIUM			
Apple Inc.		DRAWING NUMBER	051-0517
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# RCAM B2B (REAR CAMERA CONNECTOR)

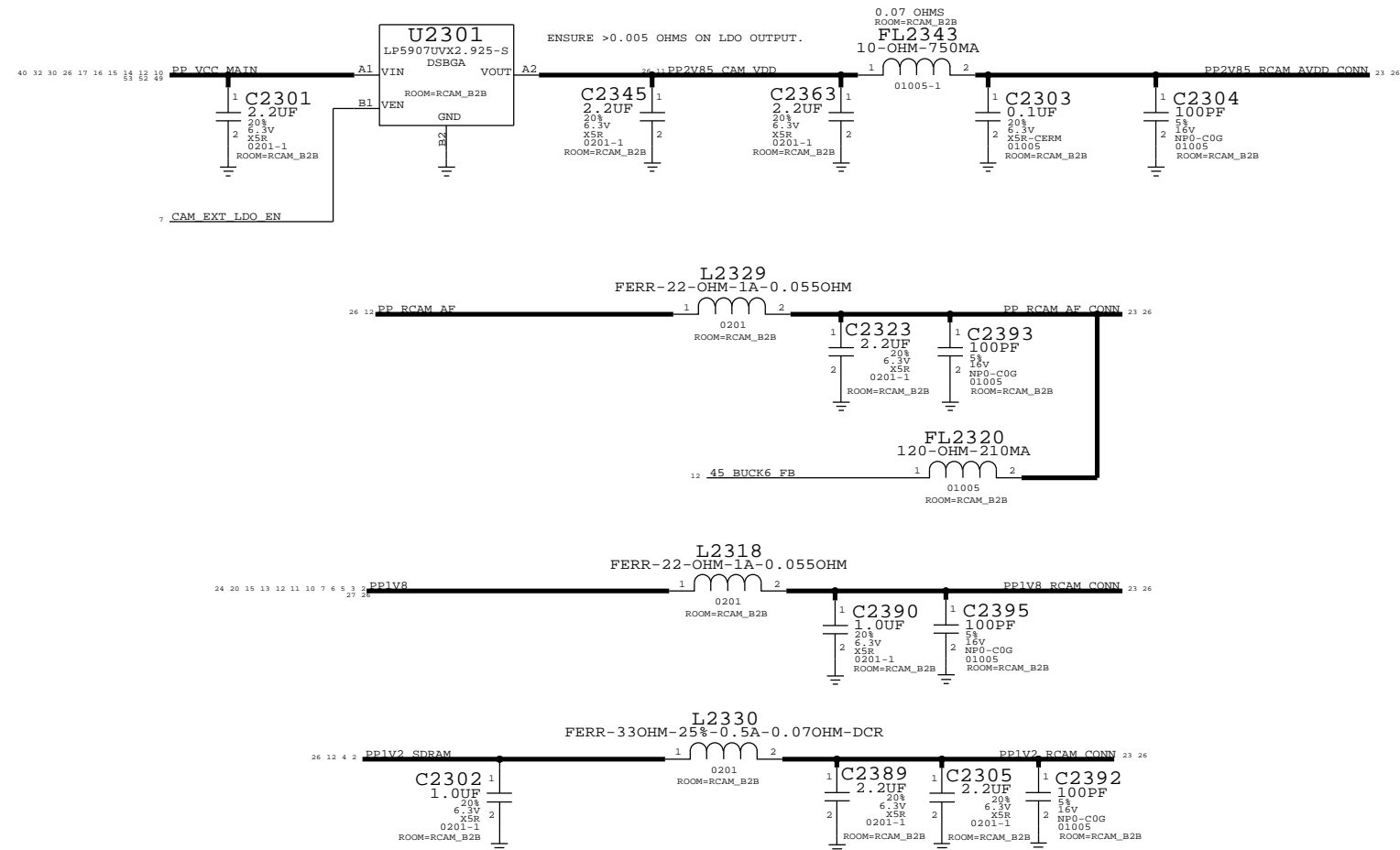
RCAM:  
4-LANE MIPI



RCAM:  
DIGITAL I/F  
(I2C, CTRL, CLK)



RCAM:  
POWER:  
(1.8V DOVDD)  
(2.9V AVDD)  
(1.2V DVDD)  
(2V AF)



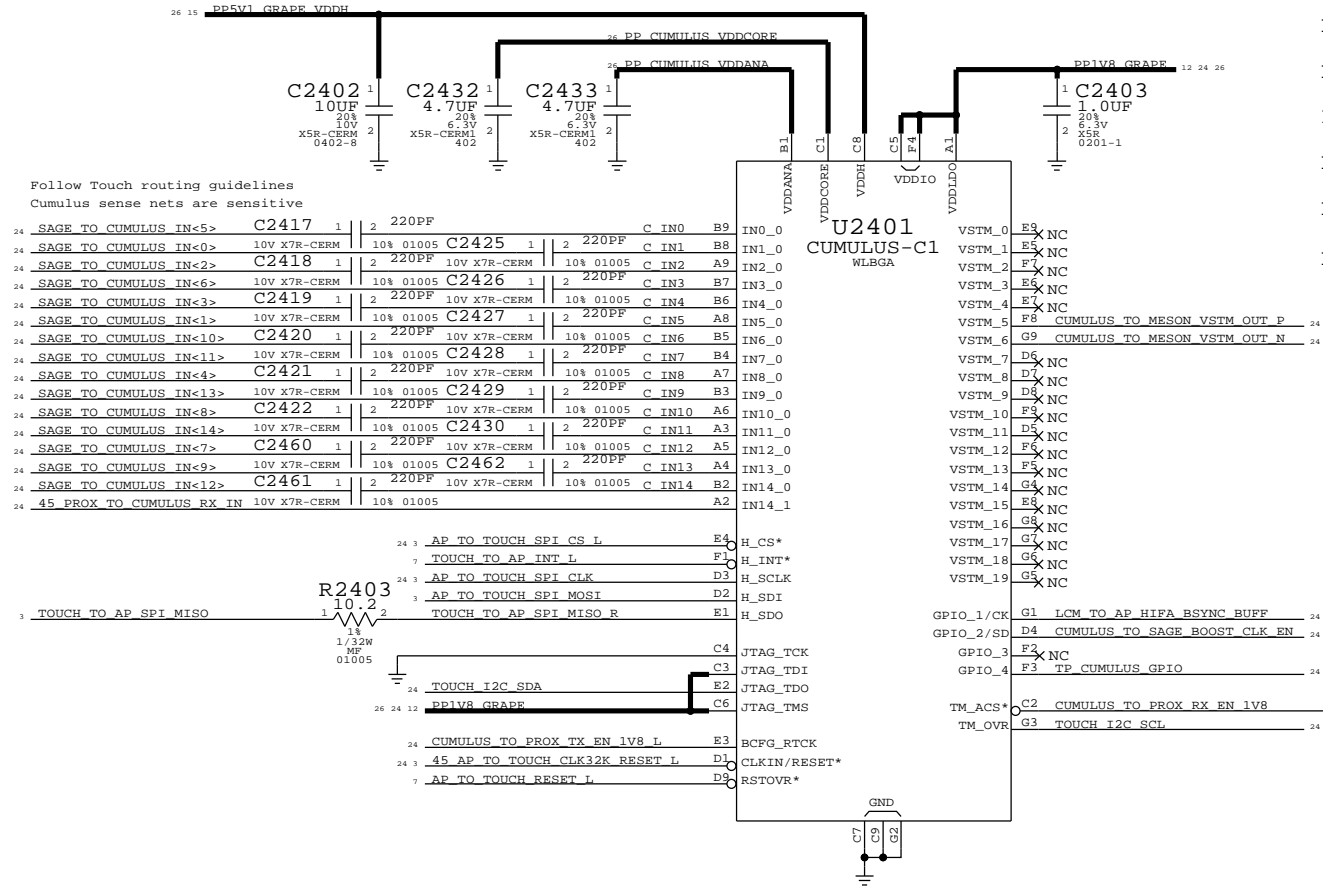
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CAMERA: REAR FLEX CONN			
Apple Inc.		DRAWING NUMBER	051-0517
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# Touch (B2B, Driver ICs)

## Cumulus

APN: 34350638

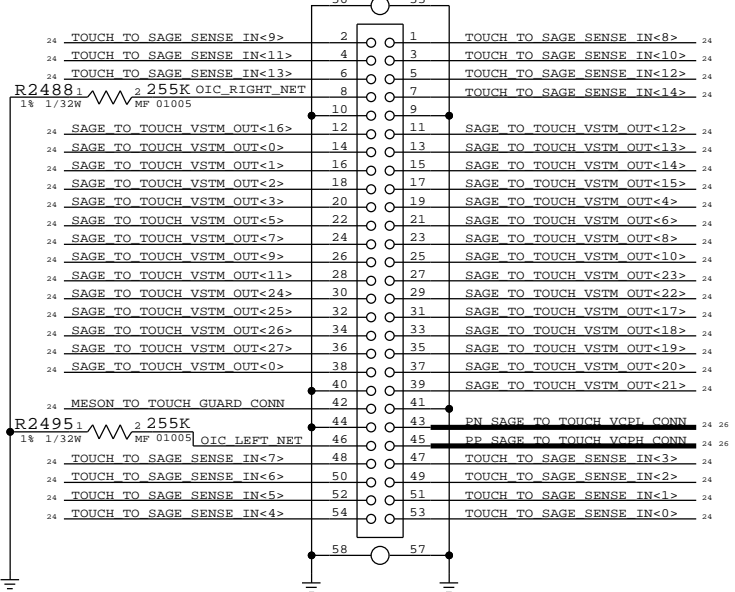
Turn on is later than PPIV8\_GRAPE  
Turn off is same time as PPIV8\_GRAPE



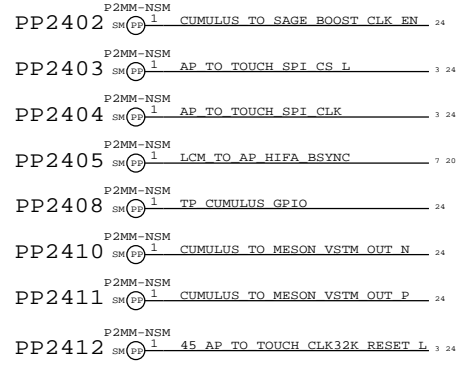
## Touch B2B

MLB APN : 516S1183 (Receptacle)  
Flex APN: 516S1182 (Plug)

J2401  
AA21-S054VA1  
F-ST-SM

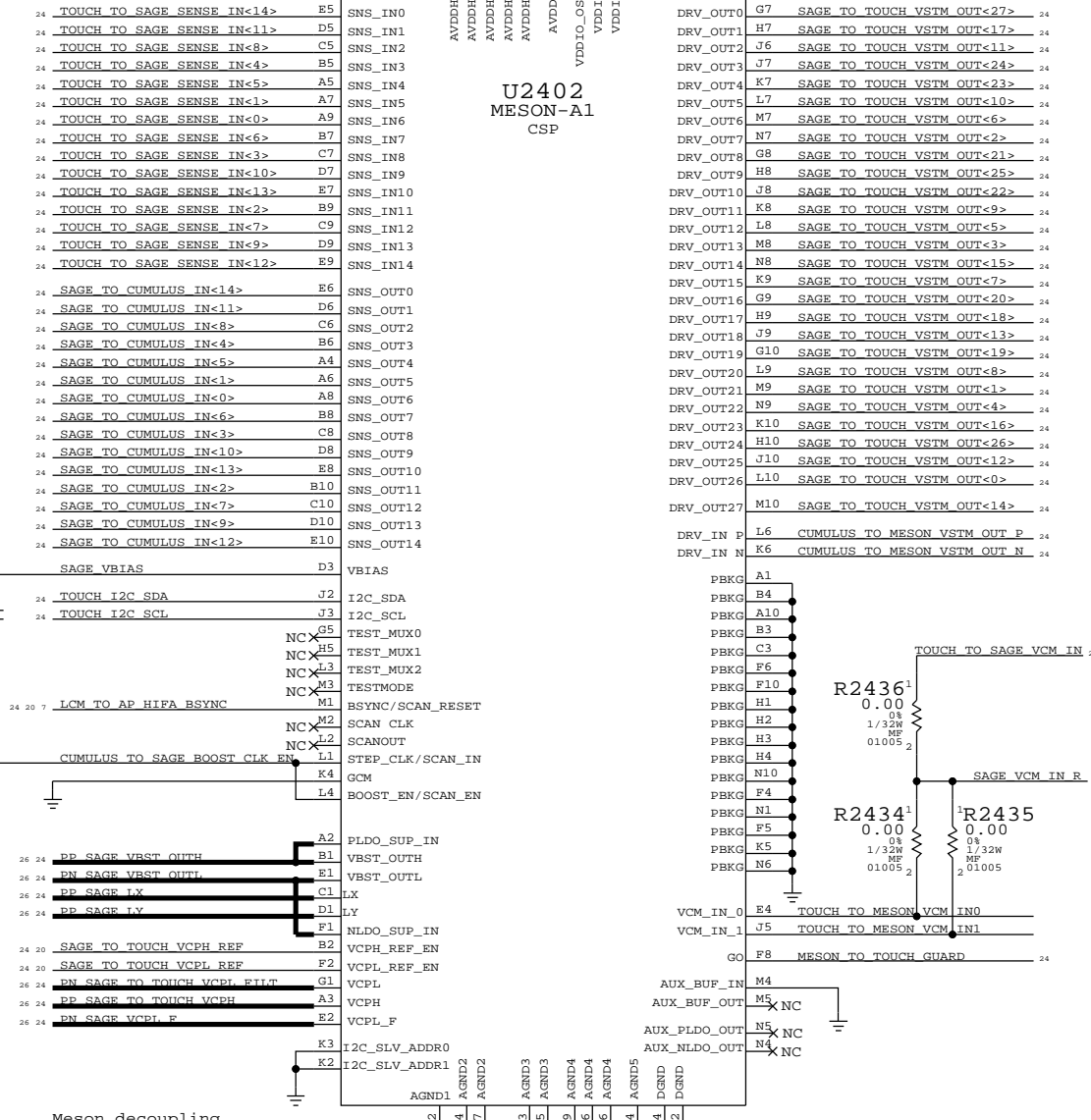


## Touch probe points



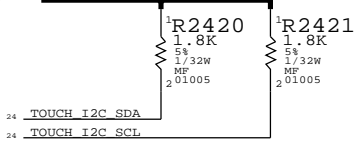
## Meson

APN: 34350694

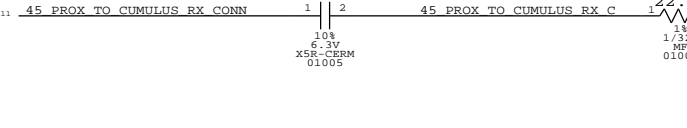


Tantalums solved singing caps issue. Validate issue is resolved with Meson and replace with 0402 ceramics.

## I2C pull-ups



## Optical prox filter



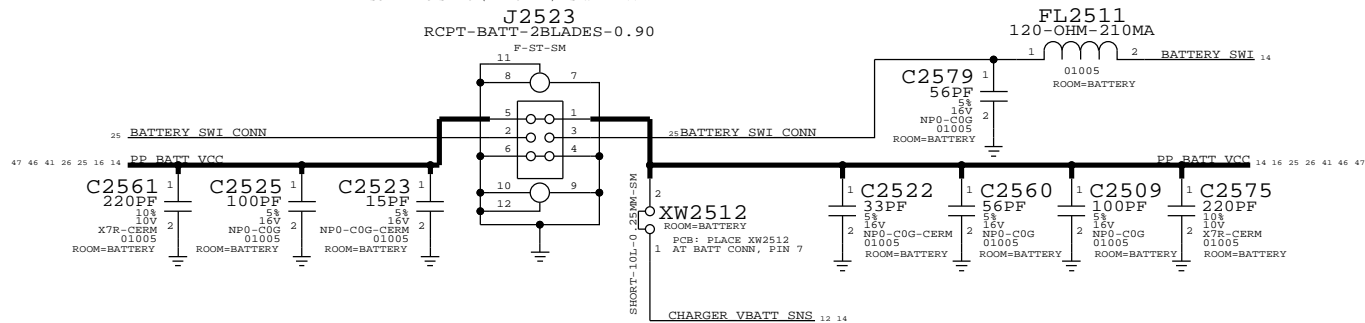
PAGE TITLE		SYNC MASTER=N/A		SYNC DATE=N/A	
TOUCH : CUMULUS, MESON					
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# BATT CONN, TPS, STANDOFFS / SHIELDS / FIDUCIALS

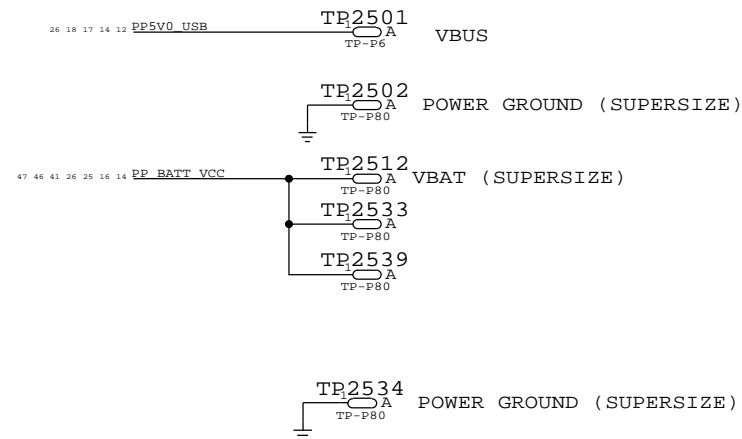
## BATTERY CONN

THIS ONE ON MLB ---> 516S1080 RCPT  
SCHEMATIC SYMBOL (PIN ORDER) IS WIERD !!

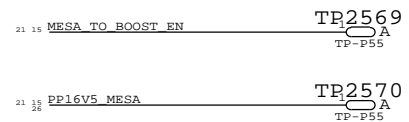


## TESTPOINTS

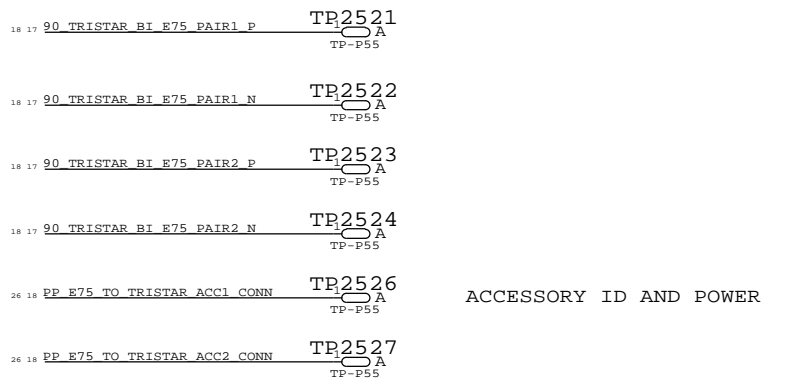
### POWER TP



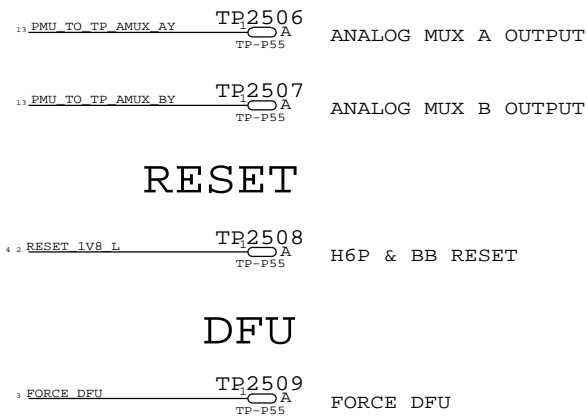
### MOJAVE TP



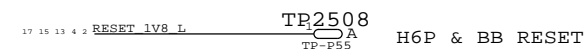
### E75 - USB/UART/ID/POWER



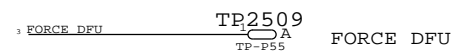
### SUPER TP



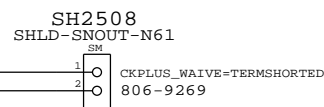
### RESET



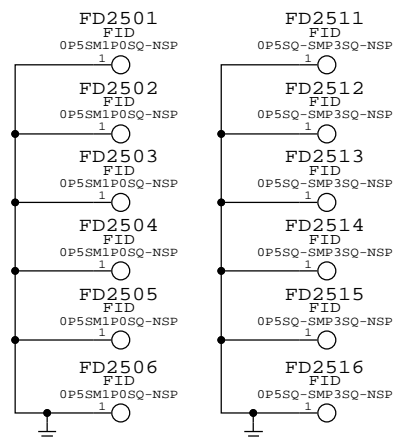
### DFU



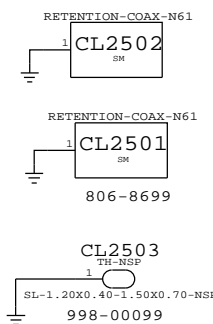
## SHIELDS



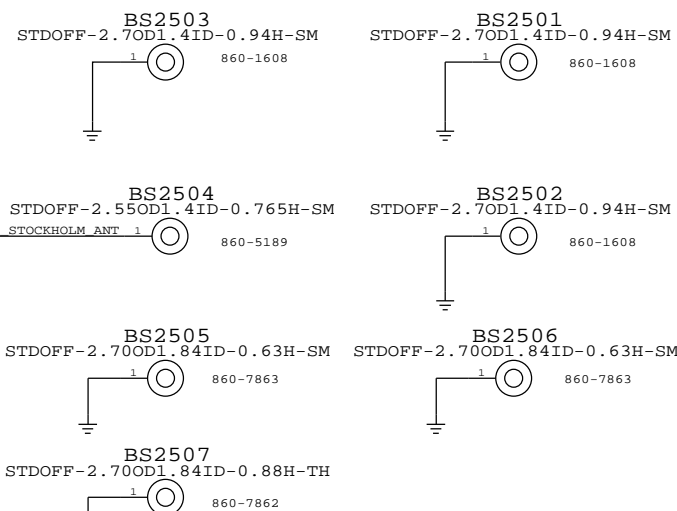
## FIDUCIALS



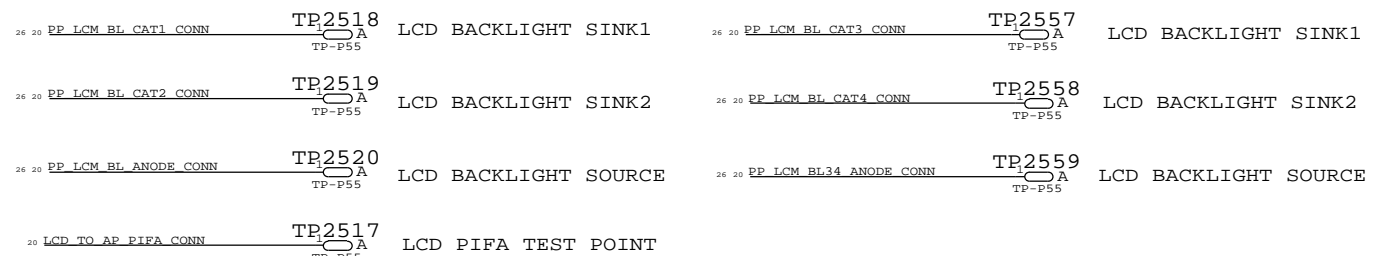
## RF CLIPS



## STANDOFFS

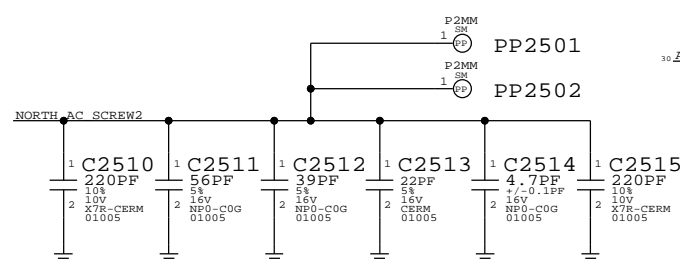


## LCM BACKLIGHT



## SCREW HOLES + STANDOFFS

PROBE POINTS TO BE PLACED NEAR THROUGH-HOLE IN UPPER LEFT OF BOARD. ONE FOR TOP, ONE FOR BOTTOM.




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POWER: BATT CONN, TPS, PD FEATURES			
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# VOLTAGE PROPERTIES

PP3V3 USB	VOLTAGE=3.3V	2 12
PP1V8 VA I19 I67	VOLTAGE=1.8V	10 12 16
PP3V0 TRISTAR	VOLTAGE=3.0V	12 15 17 30
PP3V0 TMI	VOLTAGE=3.0V	12 22
PP3V0 NAND	VOLTAGE=3.0V	6 12
PP3V3 ACC	VOLTAGE=3.0V	12 17
PP3V0 PROX ALS	VOLTAGE=3.0V	11 12
PP2V9 LDO9	VOLTAGE=3.0V	12
PP VCC MAIN	VOLTAGE=4.6V	10 12 14 15 16 17 23 30 32
PP1V0	VOLTAGE=1.0V	7 12
PP3V0 PROX TRIPD	VOLTAGE=3.0V	11 12
PP1V8 ALWAYS	VOLTAGE=1.8V	3 5 12 14
PP3V0 MESA	VOLTAGE=3.0V	12 21
PP CPU	VOLTAGE=1.1V	4 12
PP GPU	VOLTAGE=1.1V	4 12
PP1V2 SDRAM	VOLTAGE=1.2V	2 4 12 23
PP1V8 SDRAM	VOLTAGE=1.8V	3 4 10 12 13 14 15 17 30
PP1V8	VOLTAGE=1.8V	2 3 5 6 7 10 11 12 13 15 20 23
PP1V8 GRAPE	VOLTAGE=1.8V	12 24
PP1V8 OSCAR	VOLTAGE=1.8V	12 22
PP1V2 NAND VDDT	VOLTAGE=1.2V	6
PP EXTMIC BIAS FILT IN	VOLTAGE=1.8V	10
BOARD ID2	VOLTAGE=1.8V	3 27
PP1V2	VOLTAGE=1.2V	3 4 5 11 12
PP E75 TO TRISTAR ACC1 CONN	VOLTAGE=5.0V	18 25
PP E75 TO TRISTAR ACC1	VOLTAGE=5.0V	17 18
PP LCM BL ANODE	VOLTAGE=22.0V	15 20
PP LCM BL CAT2	VOLTAGE=0.2V	15 20
PP LCM BL CAT1	VOLTAGE=0.2V	15 20
PP LCM BL CAT2 CONN	VOLTAGE=0.2V	20 25
PP LCM BL CAT1 CONN	VOLTAGE=0.2V	20 25
PP5V7 SAGE AVDDN	VOLTAGE=-5.7V	15 20 24
PP1V2 OSCAR	VOLTAGE=1.2V	12 22
PP3V0 MESA CONN	VOLTAGE=3.0V	21
PP6V0 LCM BOOST	VOLTAGE=6V	15
PP STRB DRIVER TO LED WARM	VOLTAGE=5.0V	8 16
PP STRB DRIVER TO LED COOL	VOLTAGE=5.0V	8 16
PP CODEC TO MIC1 BIAS	VOLTAGE=1.8V	10 18
PP EXTMIC BIAS IN	VOLTAGE=1.8V	10
PP EXTMIC BIAS FILT	VOLTAGE=1.8V	10
PP CODEC TO FRONTMIC2 BIAS	VOLTAGE=1.8V	10 11
PP CODEC TO REARMIC2 BIAS	VOLTAGE=1.8V	8 10
PP CODEC FILT+	VOLTAGE=1.8V	10
PP CODEC SPKR VO	VOLTAGE=2.2V	10
PP CODEC VCPBLT-	VOLTAGE=2.5V	10
PP CODEC VCPBLT+	VOLTAGE=2.5V	10
PP CODEC VHP FLN-	VOLTAGE=2.5V	10
PP CODEC VHP FLN+	VOLTAGE=0.2V	10
PP CODEC VHP FLV-	VOLTAGE=2.5V	10
PP CODEC VHP FLV+	VOLTAGE=2.5V	10
PP1V8 ECAM CONN	VOLTAGE=1.8V	11
PP2V85 ECAM AVDD CONN	VOLTAGE=3.0V	11
PP CODEC TO FRONTMIC1 BIAS CONN	VOLTAGE=1.8V	11
PP3V0 ALS CONN	VOLTAGE=3.0V	11
PP1V2 ECAM VDDIO CONN	VOLTAGE=1.2V	11
PP5V0 USB	VOLTAGE=5.0V	12 14 17 18 25
PP5V0 USB TO PMU	VOLTAGE=5.0V	12
PP_BUCK5 LX	VOLTAGE=4.6V	12
PP_BUCK3 LX	VOLTAGE=4.6V	12
PP_BUCK4 LX	VOLTAGE=4.6V	12
PP_BUCK2 LX	VOLTAGE=4.6V	12
PP_BUCK1 LX	VOLTAGE=4.6V	12
PP_BUCK1 LX0	VOLTAGE=4.6V	12
PP_BUCK0 LX3	VOLTAGE=4.6V	12
PP_BUCK0 LX2	VOLTAGE=4.6V	12
PP_BUCK0 LX1	VOLTAGE=4.6V	12
PP_BUCK0 LX0	VOLTAGE=4.6V	12
PP_CHESTNUT LXP	VOLTAGE=6.0V	15
PP_CHESTNUT CP	VOLTAGE=6.0V	15
PP_CHESTNUT CN	VOLTAGE=6.0V	15
PP5V7 SAGE AVDDH	VOLTAGE=5.7V	15 24
PP5V7 LCM AVDDH	VOLTAGE=5.7V	15 20
PP5V1 GRAPE VDDH	VOLTAGE=5.1V	15 24
PP WLED LX	VOLTAGE=22.0V	15
PP18V0 MESA SW	VOLTAGE=18.0V	15
PP17V0 MESA SW	VOLTAGE=17.0V	15
PP16V5 MESA	VOLTAGE=16.5V	15 21 25
PP_SPKAMP_SW	VOLTAGE=8.0V	16
PP I19 VBOOST	VOLTAGE=8.0V	16
PP_SPKAMP FILT	VOLTAGE=1.8V	16
PP_SPKAMP LDO FILT	VOLTAGE=1.8V	16
PP LED DRV LX	VOLTAGE=5.0V	16
PP LED BOOST OUT	VOLTAGE=5.0V	16
PP BB VDD 2V7 CONN	VOLTAGE=2.7V	18
PP CODEC TO MIC1 BIAS CONN	VOLTAGE=1.8V	18
PP E75 TO TRISTAR ACC2	VOLTAGE=4.6V	17 18
PP E75 TO TRISTAR ACC2 CONN	VOLTAGE=4.6V	18 25
PP1V8 LCM CONN	VOLTAGE=1.8V	20
PP LCM BL ANODE CONN	VOLTAGE=22.0V	20 25
PP5V7 LCM AVDDN CONN	VOLTAGE=-5.7V	20
PP5V7 LCM AVDDH CONN	VOLTAGE=5.7V	20
PP I1D013 GPS	VOLTAGE=2.95V	51
PP1V8 MESA	VOLTAGE=1.8V	21
PP16V5 MESA CONN	VOLTAGE=16.5V	21
PP TRISTAR PIN	VOLTAGE=5.0V	17
PP1V2 ECAM CONN	VOLTAGE=1.2V	23
PP1V8 ECAM CONN	VOLTAGE=1.8V	23
PP2V85 CAM VDD	VOLTAGE=3.0V	23 25
PP2V85 ECAM AVDD CONN	VOLTAGE=1.8V	23
PP CUMULUS VDDCORE	VOLTAGE=1.8V	24
PP CUMULUS VDDANA	VOLTAGE=1.2V	24
PP SAGE TO TOUCH VCPH CONN	VOLTAGE=13.5V	24
PP SAGE TO TOUCH VCPH CONN	VOLTAGE=-12V	24
PP SAGE TO TOUCH VCPH CONN	VOLTAGE=13.5V	24
PP SAGE TO TOUCH VCPH	VOLTAGE=-12V	24
PP SAGE VCPH F	VOLTAGE=-12V	24
PP SAGE LX	VOLTAGE=5.7V	24
PP SAGE LX	VOLTAGE=17.0V	24
PP EMU VREF	VOLTAGE=1.8V	13
PP SAGE_VBST_OUTH	VOLTAGE=14V	24
PP TIGRIS_VBIAS_DET	VOLTAGE=5.0V	14
PP EMU VDD_BEE	VOLTAGE=2.5V	13
PP EXTMIC BIAS	VOLTAGE=1.8V	10
PP1V8 XTAL	VOLTAGE=1.8V	2
PP EMU VDD_RTC	VOLTAGE=1.8V	13
PP_BATT_VCC	VOLTAGE=3.80V	14 16 25 41 46 47
PP1V8 MESA CONN	VOLTAGE=1.8V	21
PP3V0 PROX CONN	VOLTAGE=3.0V	11
PP0V95 FIXED SOC	VOLTAGE=1.0V	4 7 12
PP0V95 FIXED SOC PCIE	VOLTAGE=1.0V	7
PP1V2 PLL	VOLTAGE=1.2V	2
PP_BUCK5 LX1	VOLTAGE=1.0V	12
PP VAR SOC	VOLTAGE=1.0V	5 12
PP EN65 SIM PMU	VOLTAGE=3.00V	53 55
PP1V8 HALL CONN	VOLTAGE=1.8V	
PP1V8 MESA GND	VOLTAGE=1.8V	21
CHARGER LDO	VOLTAGE=5.0V	14
PMID_CAP	VOLTAGE=5.0V	14

## N56 SPECIFIC VOLTAGE PROPERTIES

PP WLED14 LX	VOLTAGE=22.0V	15
PP LCM BL34 ANODE	VOLTAGE=22.0V	15 20
PP LCM BL34 ANODE CONN	VOLTAGE=22.0V	20 25
PP LCM BL CAT3	VOLTAGE=0.2V	15 20
PP LCM BL CAT4	VOLTAGE=0.2V	15 20
PP LCM BL CAT3 CONN	VOLTAGE=0.2V	20 25
PP LCM BL CAT4 CONN	VOLTAGE=0.2V	20 25
PP SAGE TO TOUCH VCPH FILT	VOLTAGE=-12V	24
PP RCAM AF	VOLTAGE=2.0V	12 23
PP RCAM AF CONN	VOLTAGE=2.0V	23
PP SAGE_VBST_OUTH	VOLTAGE=-14.0V	24
PP5V7 SAGE AVDDN FILT	VOLTAGE=-5.7V	
PP_BUCK6 LX	VOLTAGE=2.0V	12

PAGE TITLE <b>SYSTEM:VOLTAGE PROPERTIES</b>		
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# N56 SPECIFIC

## BOOTSTRAPPING (BOARD\_REV, BOARD\_ID, BOOT\_CFG, DISPLAY ID)

```
BOARD_REV[3:0]={GPIO34, GPIO35, GPIO36, GPIO37}
```

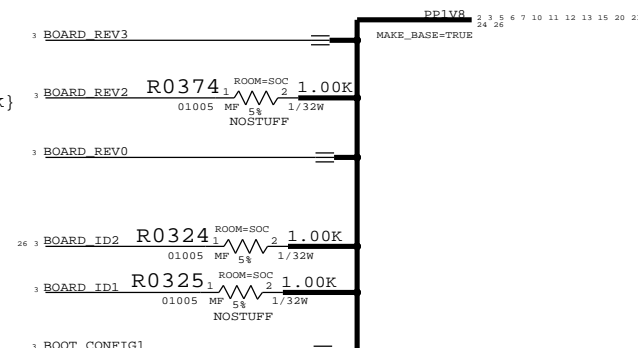
```
FLOAT=LOW, PULLUP=HIGH
1111  PROT01
1110  PROT01, ALTERNATE
1100  PROT02
1011  EVT
1001  CARRIER BUILD <--- SELECTED
```

```
BOARD_ID[4:0]={GPIO29, GPIO16, SPI00_MISO, SPI0_MOSI, SPI0_SCLK}
```

```
FLOAT=LOW, PULLUP=HIGH
00100  N56, T133 MLB <--- SELECTED
00101  N56 DEV
00110  FIJI N61 MLB
```

```
BOOT_CONFIG[2:0]={GPIO28, GPIO25, GPIO18}
```

```
FLOAT=LOW, PULLUP=HIGH
000  SPI0
001  SPI0 TEST MODE
010  NAND <--- SELECTED
011  NAND TEST MODE
100  NVME
101  NVME TEST MODE
111  FAST SPI
```



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# RADIO\_MLB HIERARCHICAL SYMBOL

## POWER

32	30	26	23	17	16	15	14	12	10	PP_VCC_MAIN	MAKE_BASE+TRISE	PP_VCC_MAIN	10	19	18	15	16	17	23	26	30	32
												PP_VCC_MAIN_WLAN										

## CELLULAR HOUSE KEEPING

3	AP_TO_RADIO_ON_L	MAKE_BASE+TRISE	144	RADIO_ON_L	31	33
3	BB_TO_AP_RESET_DET_L	MAKE_BASE+TRISE	140	BB_RESET_DET_L	31	36
13	PMU_TO_BB_RST_L	MAKE_BASE+TRISE	149	RF_PMIC_RESET_L	31	33
3	AP_TO_BB_RST_L	MAKE_BASE+TRISE	148	BB_RST_L	31	33
			190			
3	AP_TO_BB_WAKE_MODEM	MAKE_BASE+TRISE	150	AP_WAKE_MODEM	36	
13	BB_TO_PMU_HOST_WAKE_L	MAKE_BASE+TRISE	144	BB_WAKE_HOST_L	31	36
3	BB_TO_AP_IPC_GPIO	MAKE_BASE+TRISE	142	BB_IPC_GPIO	36	
16	BB_TO_LEDDR_VSM_BLANK	MAKE_BASE+TRISE	153	GSM_TXBURST_IND	36	
3	BB_TO_AP_IPC_GPIO1	MAKE_BASE+TRISE	141	BB_IPC_GPIO1	36	

## HSIC IPC

2	50_AP_BI_BB_HSIC1_DATA	MAKE_BASE+TRISE	154	50_BB_HSIC_DATA	31	35
2	50_AP_BI_BB_HSIC1_STB	MAKE_BASE+TRISE	156	50_BB_HSIC_STROBE	31	35
3	AP_TO_BB_HOST_RDY	MAKE_BASE+TRISE	159	BB_HOST_RDY	31	36
3	BB_TO_AP_DEVICE_RDY	MAKE_BASE+TRISE	158	BB_DEVICE_RDY	31	36
3	BB_TO_AP_GPS_SYNC	MAKE_BASE+TRISE	157	BB_GPS_SYNC	31	36

## UART IPC

3	AP_TO_BB_UART2_RTS_L	MAKE_BASE+TRISE	159	BB_UART_CTS_L	31	36
3	BB_TO_AP_UART2_CTS_L	MAKE_BASE+TRISE	162	BB_UART_RTS_L	31	36
17	AP_TO_BB_UART2_TXD	MAKE_BASE+TRISE	163	BB_UART_RXD	31	36
17	BB_TO_AP_UART2_RXD	MAKE_BASE+TRISE	161	BB_UART_TXD	31	36

## AUDIO I2S

3	45_AP_TO_BB_I2S3_BCLK	MAKE_BASE+TRISE	164	BB_I2S_CLK	36	
3	AP_TO_BB_I2S3_DOUT	MAKE_BASE+TRISE	165	BB_I2S_RXD	31	36
3	BB_TO_AP_I2S3_DIN	MAKE_BASE+TRISE	166	BB_I2S_TXD	31	36
3	AP_TO_BB_I2S3_LRCLK	MAKE_BASE+TRISE	167	BB_I2S_WS	31	36

## OSCAR UART

22	OSCAR_TO_BB_UART_TXD	MAKE_BASE+TRISE	168	BB_OTHER_RXD	31	36
22	BB_TO_OSCAR_UART_RXD	MAKE_BASE+TRISE	169	BB_OTHER_TXD	31	36

## BB DEBUG INTERFACES

3	AP_TO_BB_COREDUMP	MAKE_BASE+TRISE	170	BB_CORE_DUMP	31	36
13	PMU_TO_BB_VBUS_DET	MAKE_BASE+TRISE	174	BB_USB_VBUS	31	35
17	90_TRISTAR_BI_BB_USB_N	MAKE_BASE+TRISE	173	90_BB_USB_N	31	35
17	90_TRISTAR_BI_BB_USB_P	MAKE_BASE+TRISE	172	90_BB_USB_P	31	35

## RADIO ANTENNA CONTROL

18	PP_BB_VDD_2V7	MAKE_BASE+TRISE	175	PP_LDO14_BFSW	32	42
					43	51
18	BB_GPIO0	MAKE_BASE+TRISE	176	BB_LAT_GPIO0	36	
18	BB_GPIO2	MAKE_BASE+TRISE	178	BB_LAT_GPIO2	36	
18	BB_GPIO3	MAKE_BASE+TRISE	180	BB_LAT_GPIO3	36	
18	BB_GPIO4	MAKE_BASE+TRISE	179	BB_LAT_GPIO4	36	

## FCT TESTING

13	RADIO_TO_PMU_ADC_SMPS1	MAKE_BASE+TRISE	182	ADC_SMPS1	31	
13	RADIO_TO_PMU_ADC_PP_LDO11_VDDIO	MAKE_BASE+TRISE	184	ADC_PP_LDO11	31	
13	RADIO_TO_PMU_ADC_PP_LDO5_SIM	MAKE_BASE+TRISE	185	ADC_PP_LDO5	31	
13	RADIO_TO_PMU_ADC_SMPS4	MAKE_BASE+TRISE	183	ADC_SMPS4	31	

## UPPER RADIO ANTENNA CONTROL

30	26	17	15	12	PP3V0_TRISTAR	MAKE_BASE+TRISE	PAC_VDD_3V0	54
----	----	----	----	----	---------------	-----------------	-------------	----

## POWER

26	17	15	14	13	12	10	4	3	PP1V8_SDRAM	MAKE_BASE+TRISE	I2	PP_WL_BT_VDDIO_AP	52
												PP_STOCKHOLM_IV8_S2R	53
												PPREF_VIO_S2R	54

## WLAN/BT HOUSE KEEPING

13	45_PMU_TO_WLAN_CLK32K	MAKE_BASE+TRISE	177	CLK32K_AP	31	52
13	PMU_TO_WLAN_REG_ON	MAKE_BASE+TRISE	178	WLAN_REG_ON	31	52
13	WLAN_TO_PMU_HOST_WAKE	MAKE_BASE+TRISE	179	HOST_WAKE_WLAN	31	52
13	PMU_TO_BT_REG_ON	MAKE_BASE+TRISE	178	BT_REG_ON	31	52
3	AP_TO_BT_WAKE	MAKE_BASE+TRISE	177	WAKE_BT	31	52
13	BT_TO_PMU_HOST_WAKE	MAKE_BASE+TRISE	178	HOST_WAKE_BT	52	

## I9

3	AP_TO_WLAN_JTAG_SWCLK	MAKE_BASE+TRISE	171	WLAN_JTAG_SWCLK	31	52
3	AP_TO_WLAN_JTAG_SWDIO	MAKE_BASE+TRISE	170	WLAN_JTAG_SWDIO	31	52
13	WLAN_TO_PMU_PCIE_WAKE_L	MAKE_BASE+TRISE	174	WLAN_PCIE_WAKE_L	31	52
3	AP_TO_WLAN_DEVICE_WAKE	MAKE_BASE+TRISE	173	PCIE_DEV_WAKE	31	52
7	90_WLAN_TO_AP_PCIE1_RXDP_P	MAKE_BASE+TRISE	172	90_WLAN_PCIE_TDP	31	52
7	90_WLAN_TO_AP_PCIE1_RXDP_N	MAKE_BASE+TRISE	176	90_WLAN_PCIE_TDN	31	52
7	90_AP_TO_WLAN_PCIE1_TXDP_P	MAKE_BASE+TRISE	175	90_WLAN_PCIE_RDP	31	52
7	90_AP_TO_WLAN_PCIE1_TXDP_N	MAKE_BASE+TRISE	179	90_WLAN_PCIE_RDN	31	52
7	90_AP_TO_WLAN_PCIE1_REFCLK1_P	MAKE_BASE+TRISE	179	90_WLAN_PCIE_REFCLK_P	52	
7	90_AP_TO_WLAN_PCIE1_REFCLK1_N	MAKE_BASE+TRISE	183	90_WLAN_PCIE_REFCLK_N	52	
7	WLAN_TO_AP_PCIE1_CLKREQ_L	MAKE_BASE+TRISE	180	WLAN_PCIE_CLKREQ_L	31	52
7	AP_TO_WLAN_PCIE1_RST_L	MAKE_BASE+TRISE	179	WLAN_PCIE_PERST_L	31	52

## WLAN HSIC IPC

3	WLAN_TO_AP_UART4_RXD	MAKE_BASE+TRISE	121	WLAN_UART_TXD	31	52
3	AP_TO_WLAN_UART4_TXD	MAKE_BASE+TRISE	120	WLAN_UART_RXD	31	52
3	WLAN_TO_AP_UART4_CTS_L	MAKE_BASE+TRISE	122	WLAN_UART_RTS_L	31	52
3	AP_TO_WLAN_UART4_RTS_L	MAKE_BASE+TRISE	121	WLAN_UART_CTS_L	31	52

## BT UART IPC

3	AP_TO_BT_UART1_RTS_L	MAKE_BASE+TRISE	126	BT_UART_CTS_L	52	
3	BT_TO_AP_UART1_CTS_L	MAKE_BASE+TRISE	125	BT_UART_RTS_L	52	
3	AP_TO_BT_UART1_TXD	MAKE_BASE+TRISE	128	BT_UART_RXD	31	52
3	BT_TO_AP_UART1_RXD	MAKE_BASE+TRISE	127	BT_UART_TXD	31	52

## BT AUDIO PCM


3	45_AP_TO_BT_I2S1_BCLK	MAKE_BASE+TRISE	129	BT_PCM_CLK	52	
3	AP_TO_BT_I2S1_DOUT	MAKE_BASE+TRISE	130	BT_PCM_IN	52	
3	BT_TO_AP_I2S1_DIN	MAKE_BASE+TRISE	132	BT_PCM_OUT	52	
3	AP_TO_BT_I2S1_LRCLK	MAKE_BASE+TRISE	131	BT_PCM_SYNC	52	

## OSCAR STATES

22	OSCAR_TO_RADIO_CONTEXT_A	MAKE_BASE+TRISE	134	OSCAR_CONTEXT_A	52	
22	OSCAR_TO_RADIO_CONTEXT_B	MAKE_BASE+TRISE	133	OSCAR_CONTEXT_B	52	

## STOCKHOLM

3	STOCKHOLM_TO_AP_UART3_CTS_L	MAKE_BASE+TRISE	136	STOCKHOLM_RTS_L	31	53		
3	AP_TO_STOCKHOLM_UART3_RTS_L	MAKE_BASE+TRISE	137	STOCKHOLM_CTS_L	31	53		
3	STOCKHOLM_TO_AP_UART3_RXD	MAKE_BASE+TRISE	138	STOCKHOLM_UART_TXD	31	53		
3	AP_TO_STOCKHOLM_UART3_TXD	MAKE_BASE+TRISE	139	STOCKHOLM_UART_RXD	31	53		
7	AP_TO_STOCKHOLM_DWLD_REQ	MAKE_BASE+TRISE	141	STOCKHOLM_FR_DWLD_REQ	53			
13	STOCKHOLM_TO_PMU_HOST_WAKE	MAKE_BASE+TRISE	140	STOCKHOLM_HOST_WAKE	31	53		
7	AP_TO_STOCKHOLM_EN	MAKE_BASE+TRISE	142	STOCKHOLM_ENABLE	53			
30	26	17	15	12	PP3V0_TRISTAR	MAKE_BASE+TRISE	STOCKHOLM_VDD_MIX_3V0	53
3	AP_TO_STOCKHOLM_SIM_SEL	MAKE_BASE+TRISE	143	STOCKHOLM_SIM_SEL	55			
26	AP_TO_STOCKHOLM_ANT	MAKE_BASE+TRISE	144	STOCKHOLM_ANT	53			

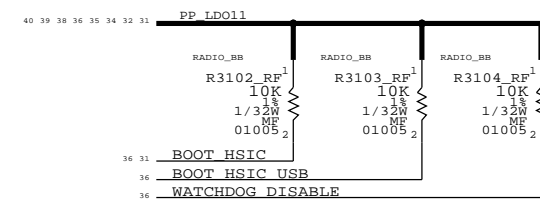
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# AP INTERFACE & DEBUG CONNECTORS

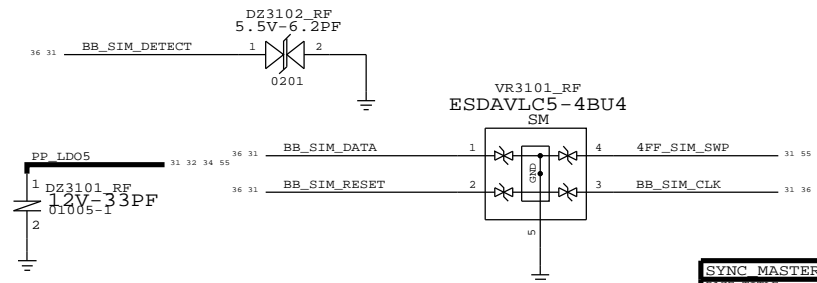
## PROBE POINTS

PP3105_RF P2MM-NSM SM 1 CLK32K_AP 30 52	PP3121_RF P2MM-NSM SM 1 STOCKHOLM_HOST_WAKE 30 53	PP3115_RF P4MM-NSM SM 1 50_BB_HSIC_STROBE 30 35	PP3130_RF P4MM-NSM SM 1 BB_JTAG_RST_L 30 35	PP3141_RF P4MM-NSM SM 1 BB_UART_TXD 30 36	PP3170_RF P4MM-NSM SM 1 RFFE1_CLK 36 40 41 42 43 44 45
PP3113_RF P4MM-NSM SM 1 BB_COEX_UART_RXD 36 52	PP3122_RF P4MM-NSM SM 1 BB_REQUEST_XO_CLK 33 53	PP3116_RF P4MM-NSM SM 1 50_BB_HSIC_DATA 30 35	PP3131_RF P4MM-NSM SM 1 BB_JTAG_TCK 30 35	PP3142_RF P4MM-NSM SM 1 BB_UART_RXD 30 36	PP3171_RF P4MM-NSM SM 1 RFFE1_DATA 36 40 41 42 43 44 45
PP3114_RF P4MM-NSM SM 1 BB_COEX_UART_TXD 36 52	PP3123_RF P2MM-NSM SM 1 STOCKHOLM_UART_RXD 30 53	PP3101_RF P4MM-NSM SM 1 BB_DEBUG_ERROR 36	PP3132_RF P4MM-NSM SM 1 BB_JTAG_TMS 30 35	PP3143_RF P4MM-NSM SM 1 BB_UART_RTS_L 30 36	PP3172_RF P4MM-NSM SM 1 RFFE2_CLK 36 46 47 49
PP3119_RF P2MM-NSM SM 1 BT_UART_TXD 30 52	PP3124_RF P2MM-NSM SM 1 STOCKHOLM_UART_TXD 30 53	PP3102_RF P4MM-NSM SM 1 RF_PMIC_RESET_L 30 33	PP3133_RF P4MM-NSM SM 1 BB_JTAG_TDO 30 35	PP3144_RF P4MM-NSM SM 1 BB_UART_CTS_L 30 36	PP3173_RF P4MM-NSM SM 1 RFFE2_DATA 36 46 47 49
PP3120_RF P2MM-NSM SM 1 BT_UART_RXD 30 52	PP3125_RF P2MM-NSM SM 1 STOCKHOLM_CTS_L 30 53	PP3103_RF P4MM-NSM SM 1 PS_HOLD_PMIC 33	PP3134_RF P4MM-NSM SM 1 BB_JTAG_TDI 30 35	PP3145_RF P4MM-NSM SM 1 BB_HOST_RDY 30 36	PP3175_RF P4MM-NSM SM 1 BB_I2S_WS 30 36
PP3152_RF P2MM-NSM SM 1 WAKE_BT 30 52	PP3126_RF P2MM-NSM SM 1 STOCKHOLM_RTS_L 30 53	PP3127_RF P4MM-NSM SM 1 PMIC_RESOUT_L 33 35	PP3135_RF P4MM-NSM SM 1 BB_JTAG_TRST_L 30 35	PP3146_RF P4MM-NSM SM 1 BB_DEVICE_RDY 30 36	PP3176_RF P4MM-NSM SM 1 BB_I2S_RXD 30 36
PP3153_RF P2MM-NSM SM 1 WLAN_REG_ON 30 52	PP3128_RF P4MM-NSM SM 1 PP_PN65_VCC_SIM 53	PP3104_RF P4MM-NSM SM 1 MDM_CLK 33 35	PP3136_RF P4MM-NSM SM 1 BB_DEBUG_STATUS 30 36	PP3147_RF P4MM-NSM SM 1 BB_GPS_SYNC 30 36	PP3177_RF P4MM-NSM SM 1 BB_I2S_TXD 30 36
PP3154_RF P4MM-NSM SM 1 BT_REG_ON 30 52	PP3174_RF P4MM-NSM SM 1 STOCKHOLM_SIM_SWP 53 55	PP3109_RF P4MM-NSM SM 1 PP_LD011 31 32 34 35 36 38 39	PP3137_RF P4MM-NSM SM 1 BB_CORE_DUMP 30 36	PP3148_RF P4MM-NSM SM 1 BB_WAKE_HOST_L 30 36	PP3178_RF P4MM-NSM SM 1 BB_OTHER_TXD 30 36
PP3155_RF P2MM-NSM SM 1 HOST_WAKE_WLAN 30 52	PP3129_RF P4MM-NSM SM 1 REF_CLK_FROM_BB 33 53	PP3110_RF P4MM-NSM SM 1 RADIO_ON_L 30 33	PP3138_RF P4MM-NSM SM 1 BB_USB_VBUS 30 35	PP3149_RF P4MM-NSM SM 1 BB_RESET_DET_L 30 36	PP3179_RF P4MM-NSM SM 1 BB_OTHER_RXD 30 36
PP3156_RF P2MM-NSM SM 1 WLAN_PCIE_WAKE_L 30 52	PP3165_RF P4MM-NSM SM 1 DSDS_SIM_CLK 35 55	PP3111_RF P4MM-NSM SM 1 SPMI_DATA 33 35	PP3139_RF P4MM-NSM SM 1 90_BB_USB_N 30 35	PP3150_RF P4MM-NSM SM 1 BB_RST_L 30 33	PP3182_RF P4MM-NSM SM 1 RFFE2_CLK_BUFFER 36 54
PP3157_RF P2MM-NSM SM 1 WLAN_PCIE_PERST_L 30 52	PP3183_RF P4MM-NSM SM 1 DSDS_SIM_RESET 35 55	PP3112_RF P4MM-NSM SM 1 SPMI_CLK 33 35	PP3140_RF P4MM-NSM SM 1 90_BB_USB_P 30 35	PP3151_RF P4MM-NSM SM 1 BOOT_HSIC 31 36	PP3185_RF P4MM-NSM SM 1 RFFE2_DATA_BUFFER 36 54
PP3158_RF P4MM-NSM SM 1 WLAN_PCIE_CLKREQ_L 30 52	PP3184_RF P4MM-NSM SM 1 DSDS_SIM_DATA 35 55				
PP3159_RF P4MM-NSM SM 1 PCIE_DEV_WAKE 30 52	PP3188_RF P4MM-NSM SM 1 DSDS_SIM_DETECT 35				
PP3160_RF P2MM-NSM SM 1 WLAN_UART_RTS_L 30 52	PP3187_RF P4MM-NSM SM 1 PP_LD06 32 34 55				
PP3161_RF P4MM-NSM SM 1 WLAN_UART_CTS_L 30 52	PP3188_RF P4MM-NSM SM 1 DSDS_SIM_SWP 55				
PP3162_RF P2MM-NSM SM 1 WLAN_UART_RXD 30 52	PP3189_RF P4MM-NSM SM 1 DSDS_SIM_DATA_R 55				
PP3163_RF P4MM-NSM SM 1 WLAN_UART_TXD 30 52	PP 3178_RF P2MM-NSM SM 1 BB_SIM_RESET 31 36				
PP3190_RF P4MM-NSM SM 1 WLAN_JTAG_SWCLK 30 52	PP 3179_RF P2MM-NSM SM 1 BB_SIM_CLK 31 36				
PP3191_RF P4MM-NSM SM 1 WLAN_JTAG_SWDIO 30 52	PP 3180_RF P2MM-NSM SM 1 BB_SIM_DATA 31 36				
	PP 3183_RF P2MM-NSM SM 1 BB_SIM_DETECT 31 36				
	PP 3184_RF P2MM-NSM SM 1 PP_LD05 31 32 34 55				

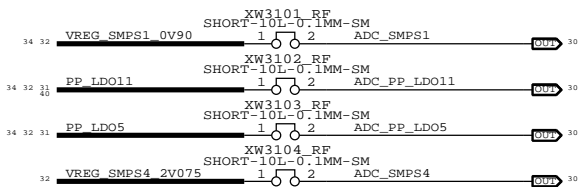
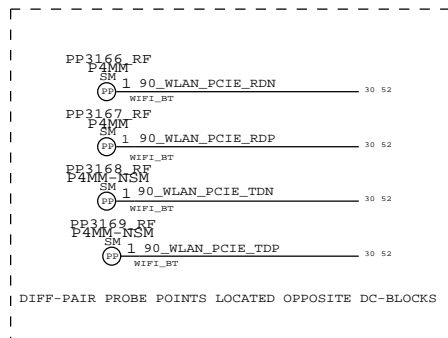
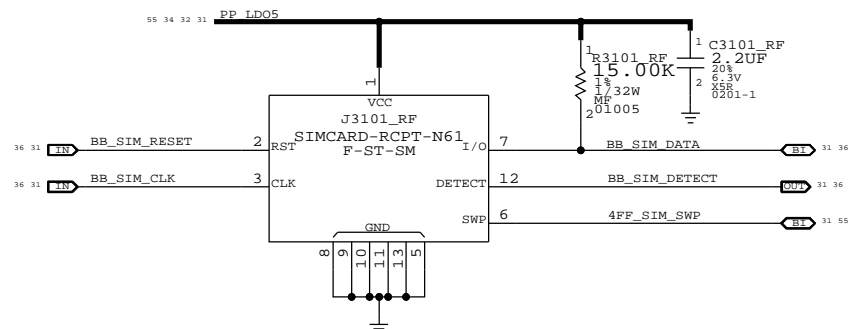
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197S0565	197S0593	ALTERNATE	Y3301_RF	KDS 19.2MHZ XTAL
197S0598	197S0593	ALTERNATE	Y3301_RF	AVX 19.2MHZ XTAL
138S00005	138S00003	ALTERNATE	C3216_RF	15UF CAPACITOR
138S0739	138S0706	ALTERNATE	C4207_RF	1.0UF CAPACITOR
138S0945	138S0706	ALTERNATE	C4207_RF	1.0UF CAPACITOR
138S1103	138S0719	ALTERNATE	C4007_RF	4.7UF CAPACITOR
339S0231	339S0228	ALTERNATE	U5201_RF	CORONA MODULE USI
339S0242	339S0228	ALTERNATE	U5201_RF	CORONA MODULE TDK
155S00024	155S0950	ALTERNATE	F_TRI_RF	TRIPLEXER BIN2



## SIM CARD ESD PROTECTION



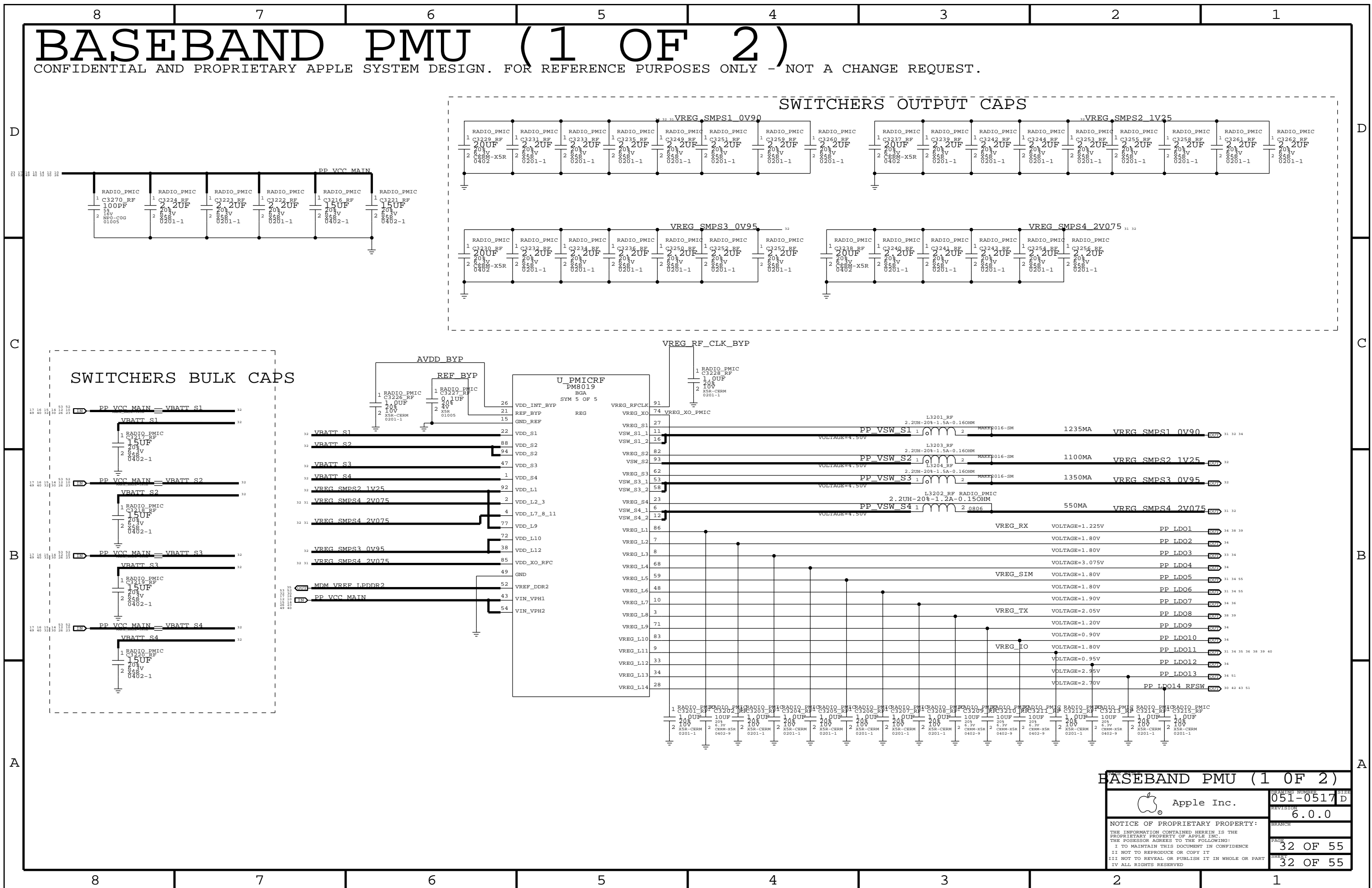
## SIM CARD CONNECTOR




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C401  
R411  
L400  
U404

BOARD ID	REVISION
0.00V	N61 PROTO_MLB1
0.50V	N61 DEV3
0.70V	N61 DEV4
0.90V	N61 PROTO_MLB2
1.10V	N61/N56 PROTO1
1.30V	N61/N56 PROTO2
1.40V	N61/N56 EVT1
1.50V	N61/N56 EVT2 (CARRIER)
1.60V	N61/N56 DVT
1.70V	N61/N56 PVT

D

D

C

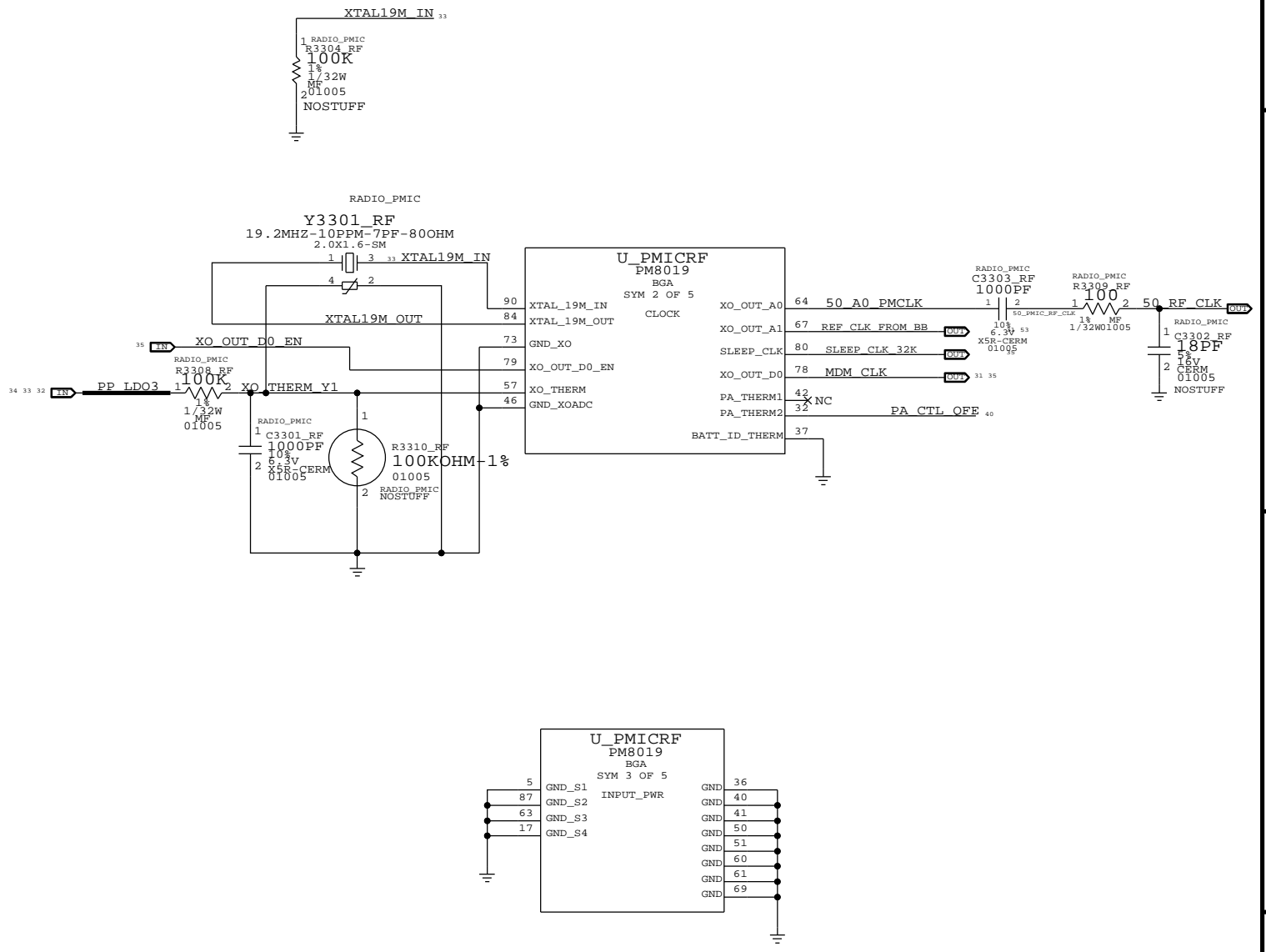
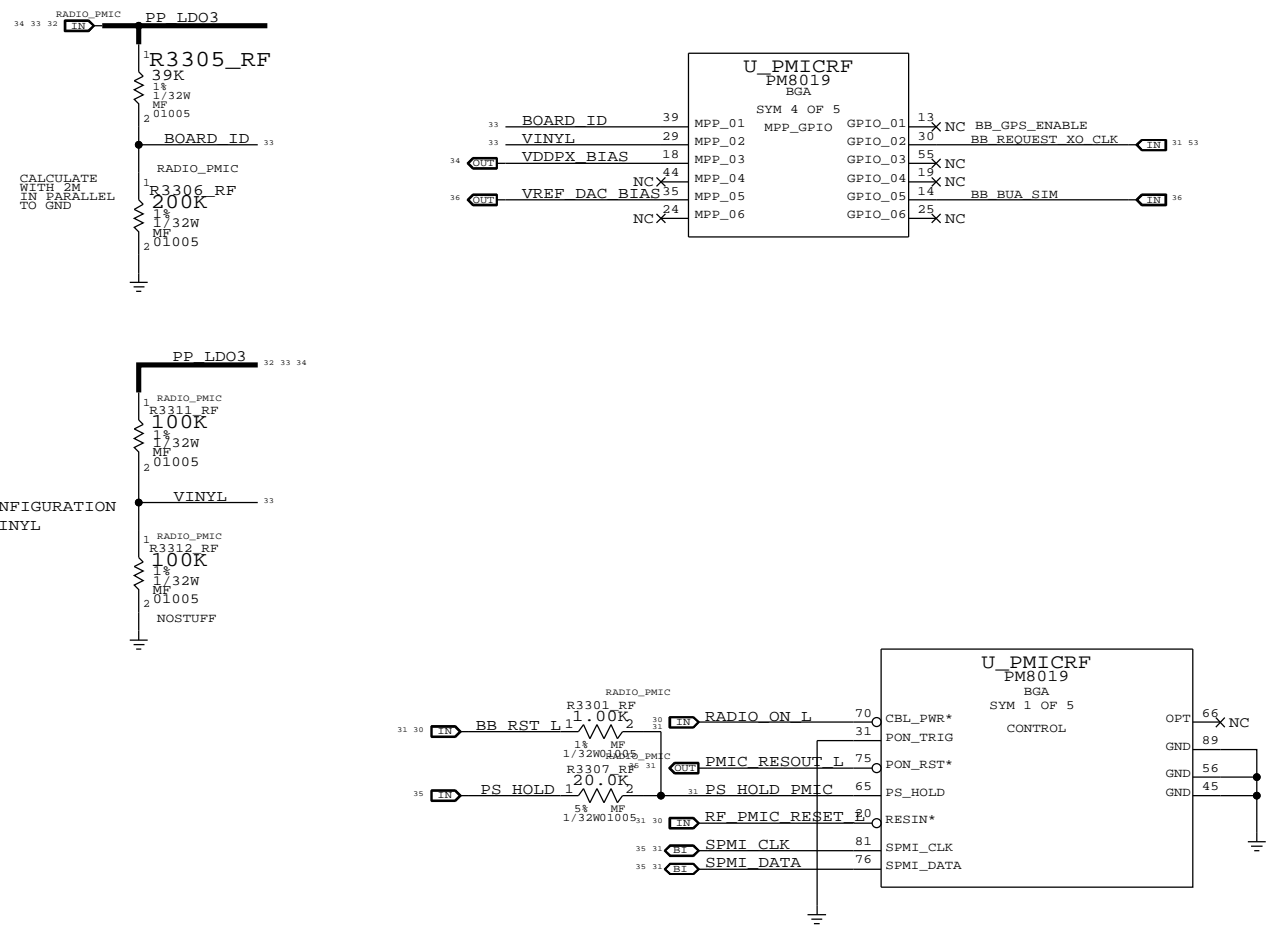
C

B

B

A

A

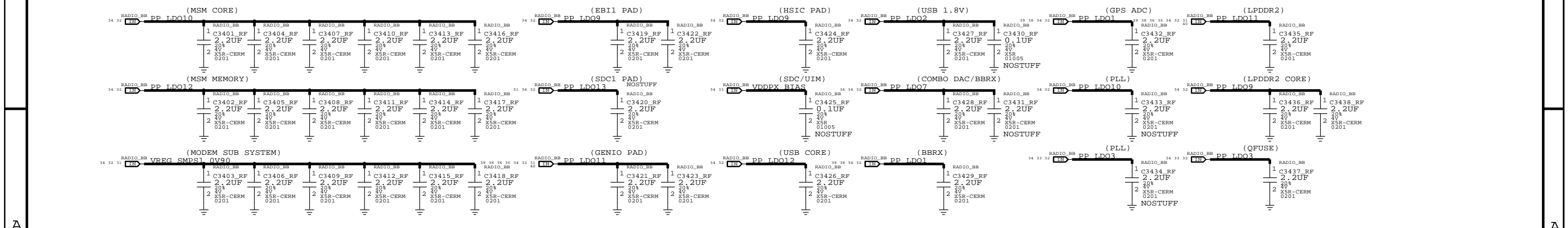
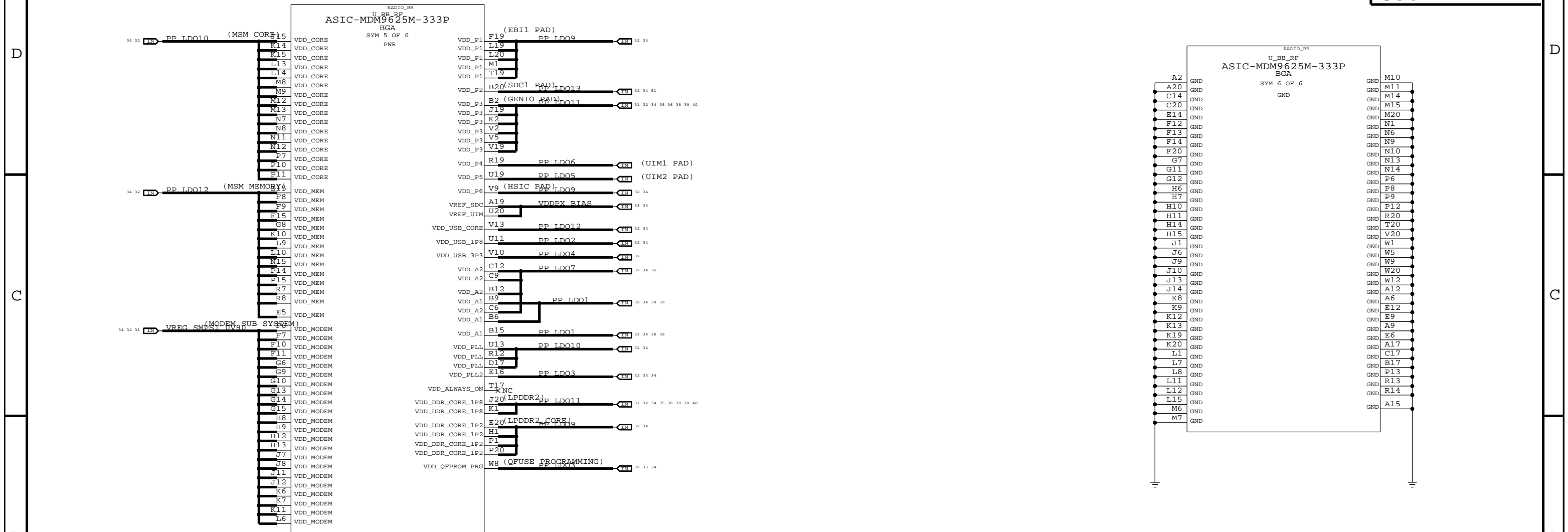


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C538  
R500  
L500  
U502

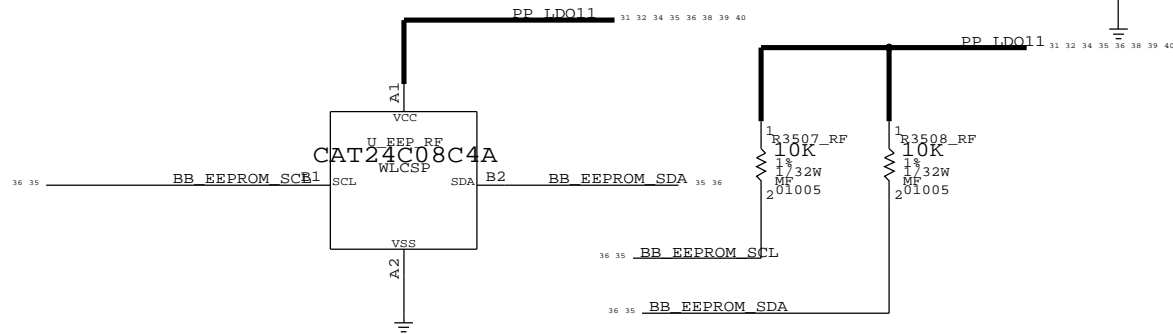
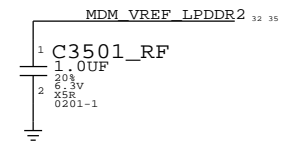
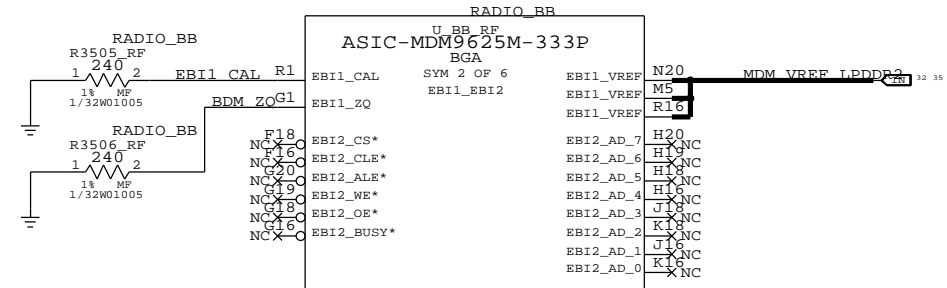
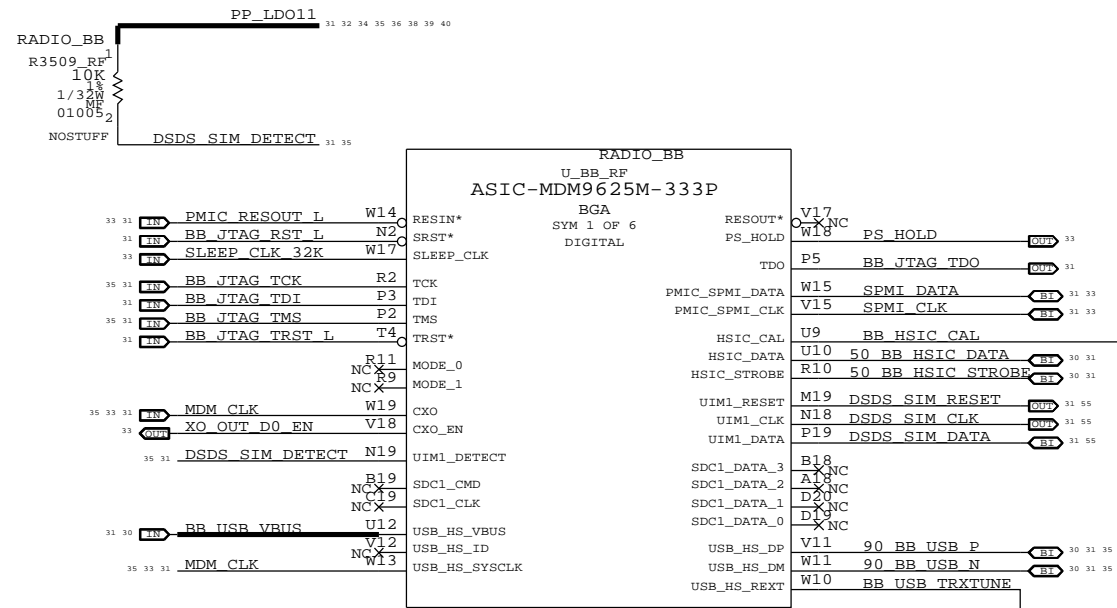
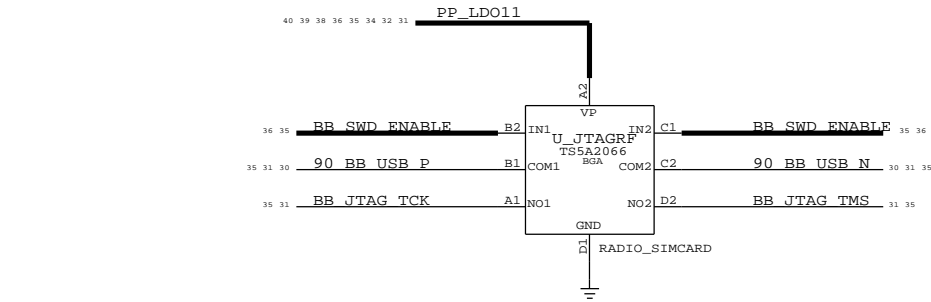


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C600  
R606  
L600  
U602

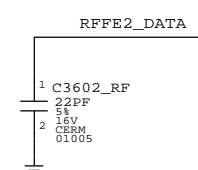
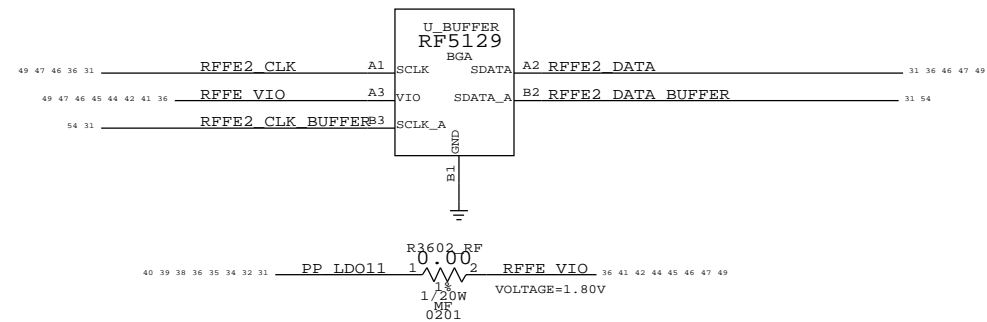
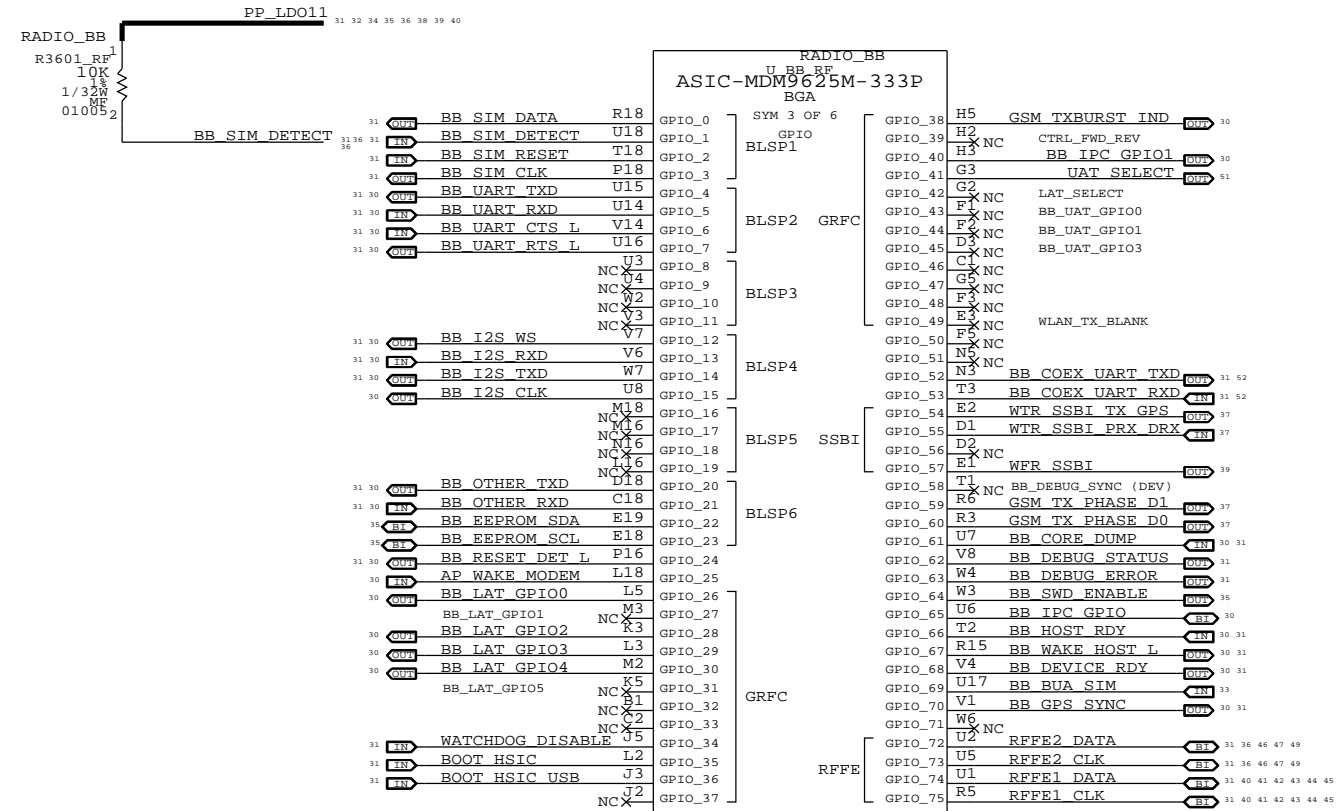
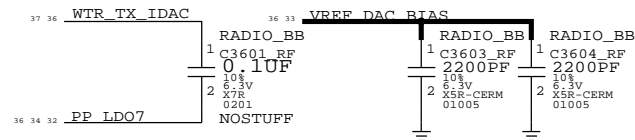
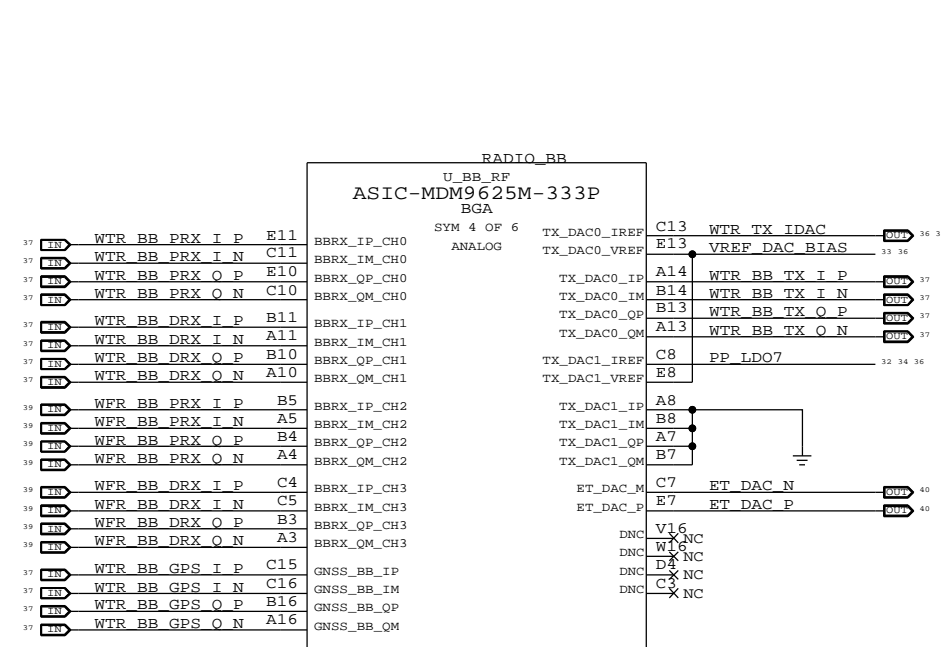


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C704  
R700  
L700  
U702



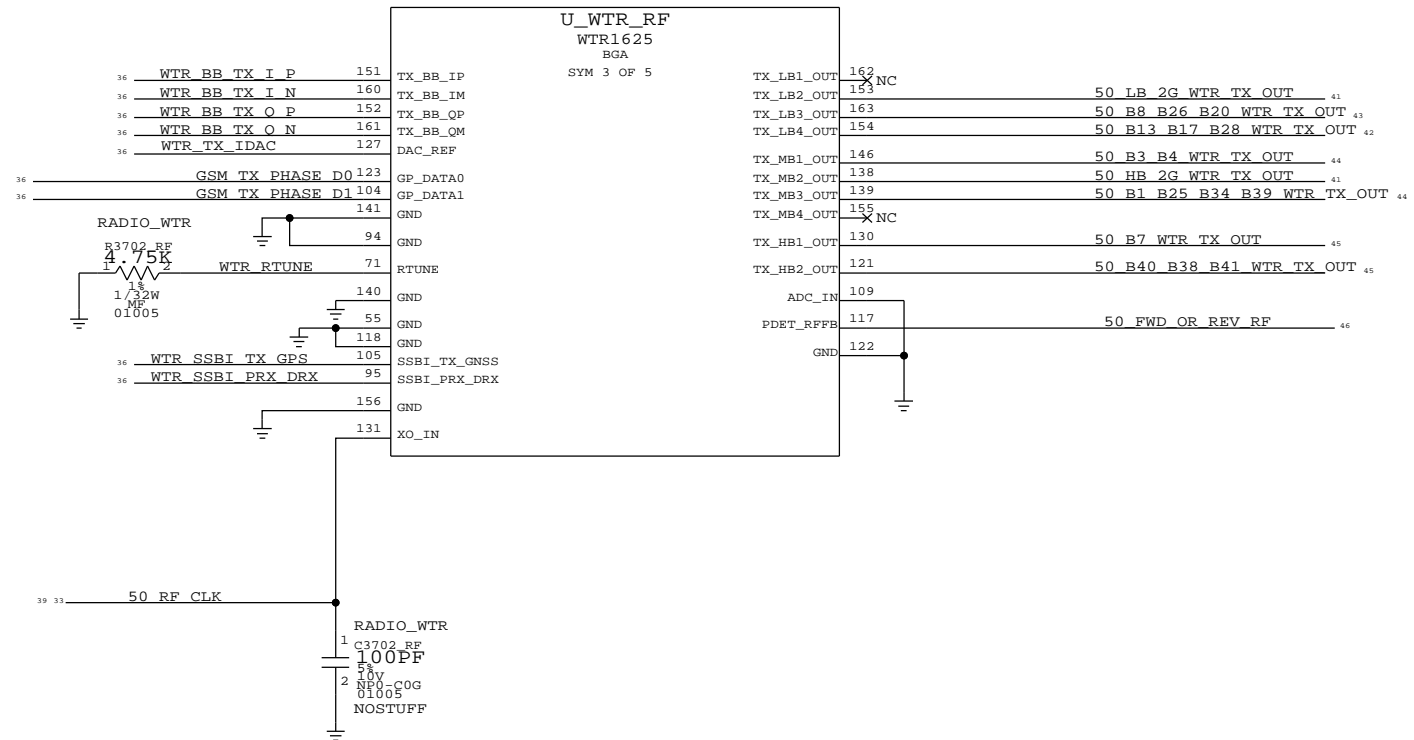
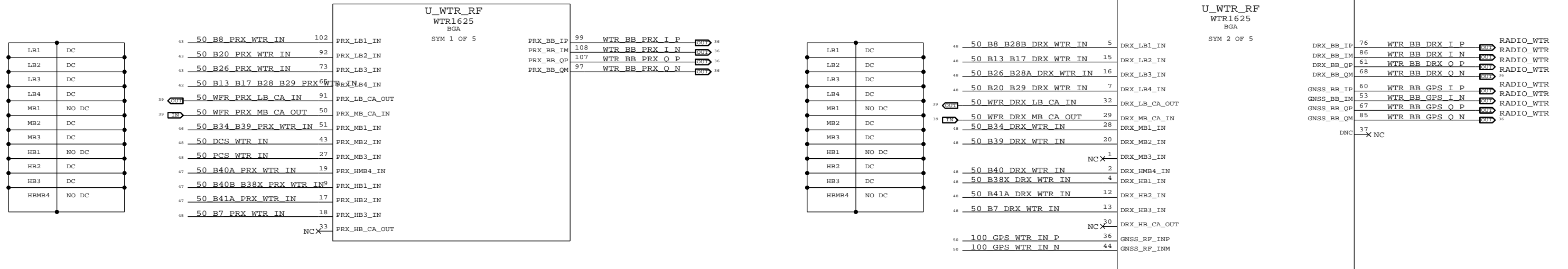
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C802  
R802  
L800  
U803



RF TRANSCEIVER (1 OF 3)

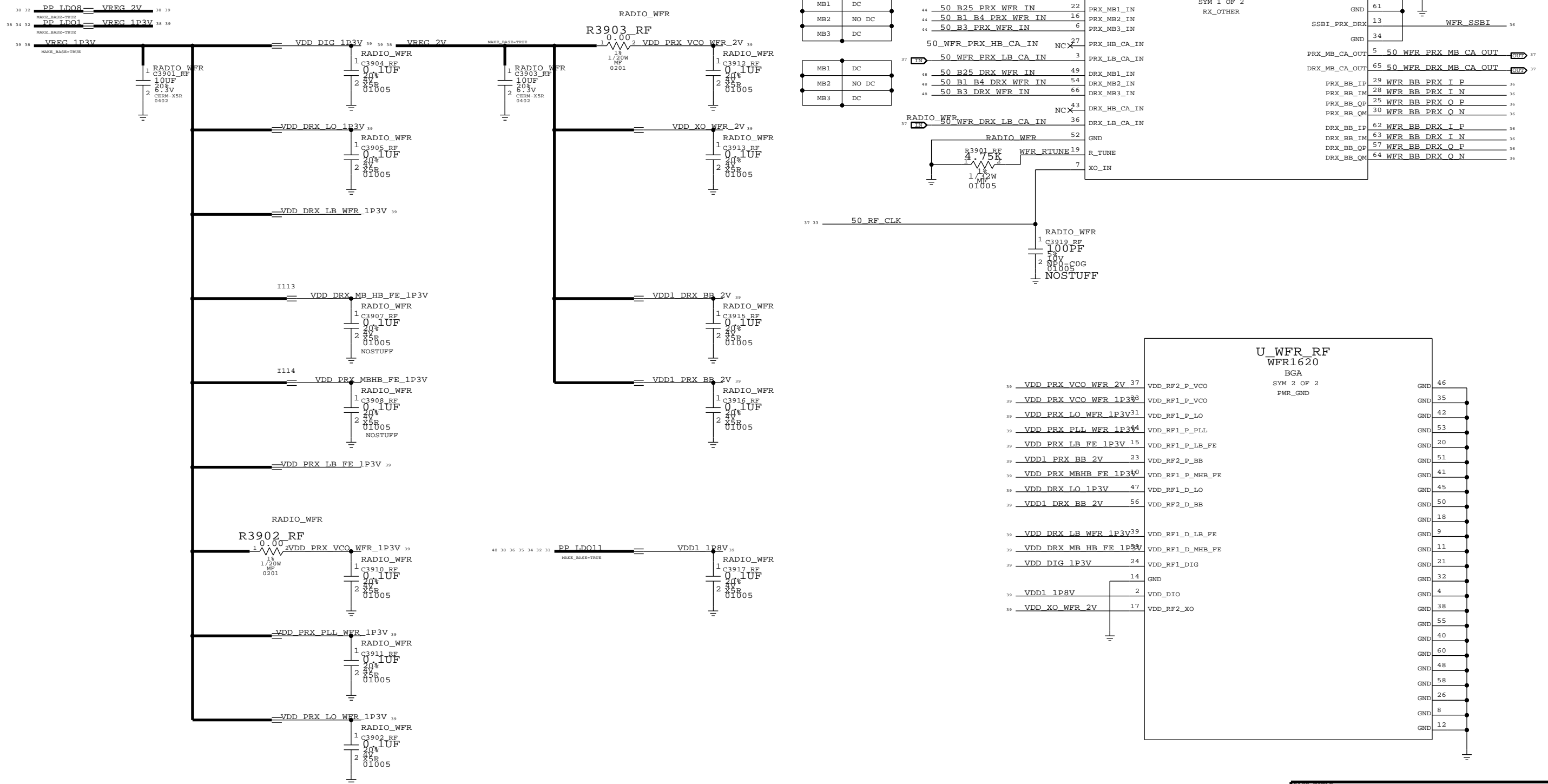
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# WFR TRANSCEIVER

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C1019  
R1016  
L1000  
U1002



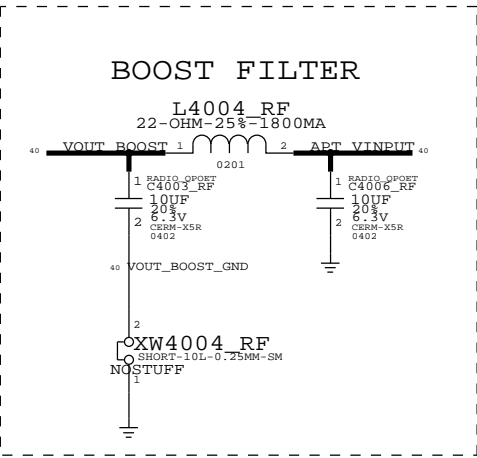
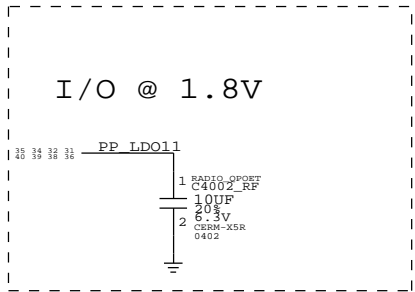
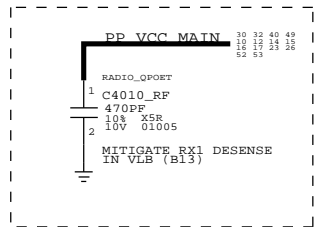
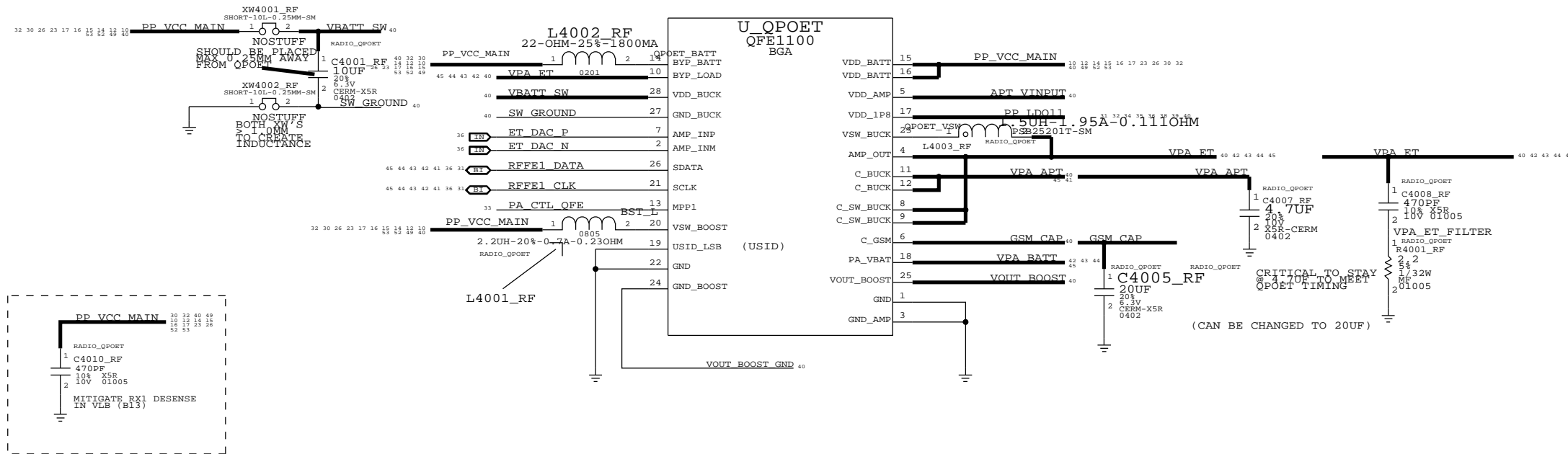
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# QFE DCDC

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C1110  
R1102  
L1104  
U1101



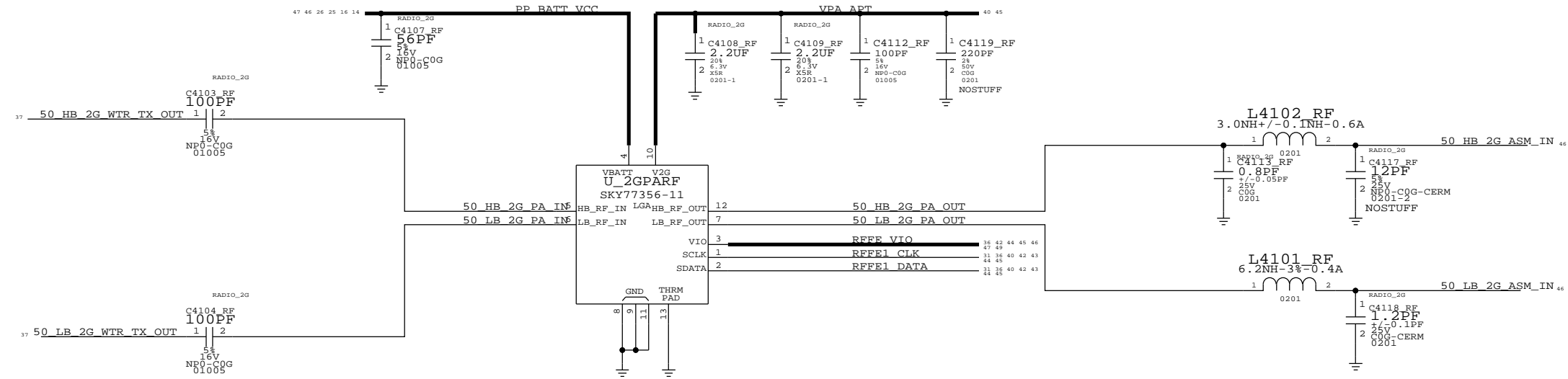
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# 2G PA

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C1208  
R1200  
L1204  
U1201



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# VERY LOW BAND PAD (B13, B17, B28)

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C1332  
R1300  
L4215\_RF  
U1304

D

D

C

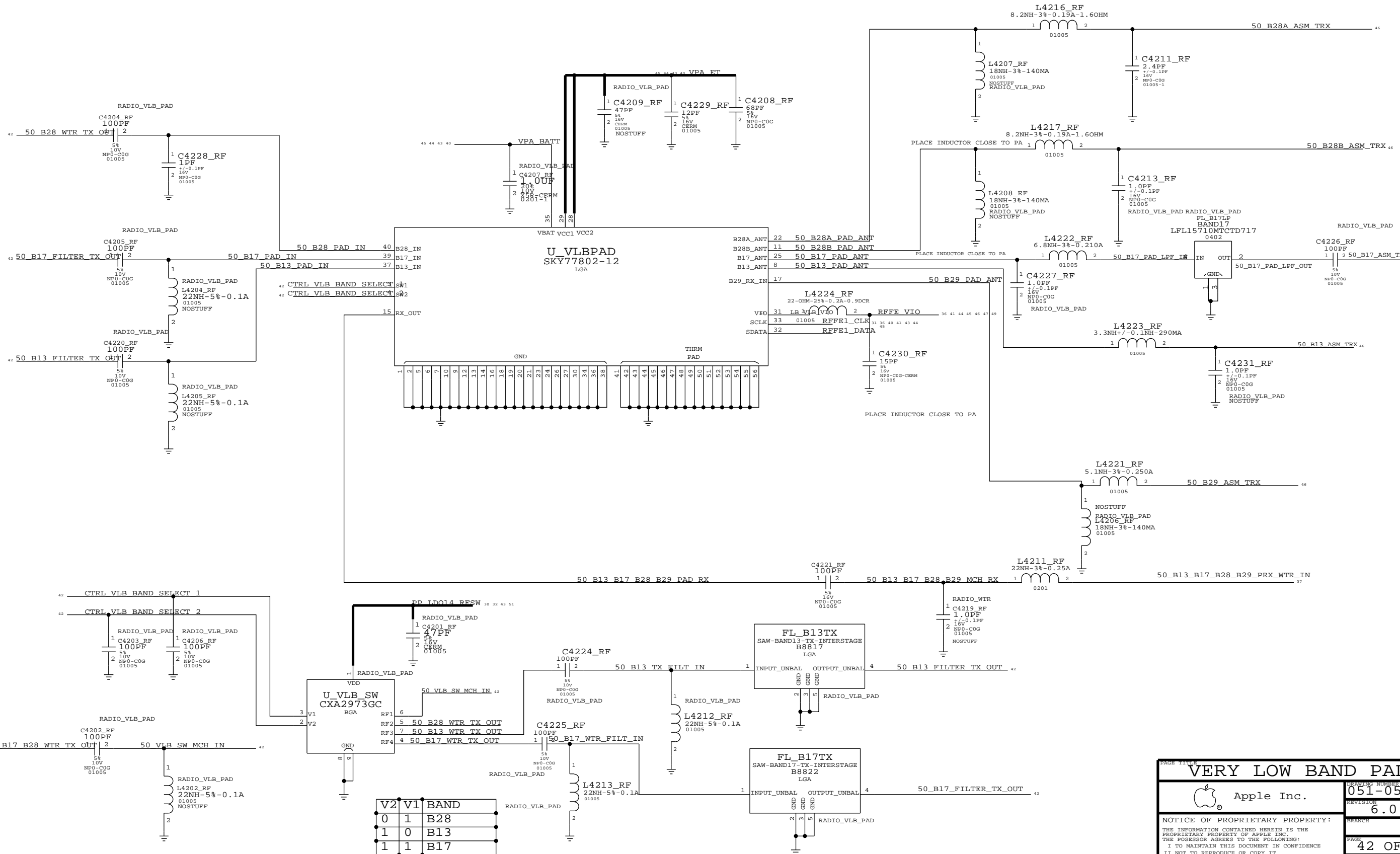
C

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**VERY LOW BAND PAD**

Apple Inc.

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SHEET: 42 OF 55

# LOW BAND PAD (B8, B26, B20)

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C4318\_RF  
R1400  
L4322\_RF  
U1402

D

C

B

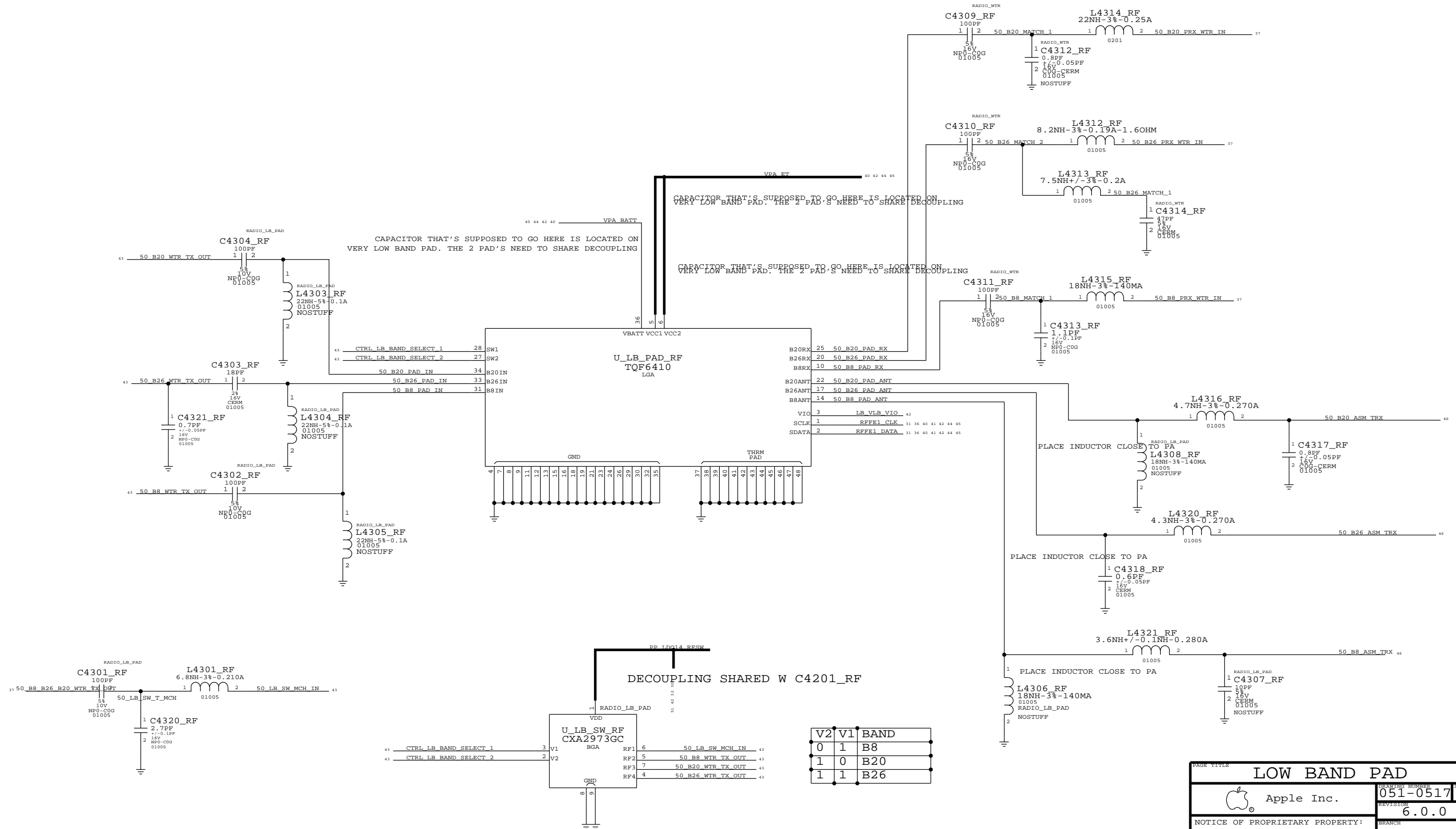
A

D

C

B

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CAPACITOR THAT'S SUPPOSED TO GO HERE IS LOCATED ON VERY LOW BAND PAD. THE 2 PAD'S NEED TO SHARE DECOUPLING

CAPACITOR THAT'S SUPPOSED TO GO HERE IS LOCATED ON VERY LOW BAND PAD. THE 2 PAD'S NEED TO SHARE DECOUPLING

DECOUPLING SHARED W C4201\_RF

PLACE INDUCTOR CLOSE TO PA

PLACE INDUCTOR CLOSE TO PA

PLACE INDUCTOR CLOSE TO PA

**LOW BAND PAD**

Apple Inc.

DRAWING NUMBER: 051-0517  
REVISION: 6.0.0

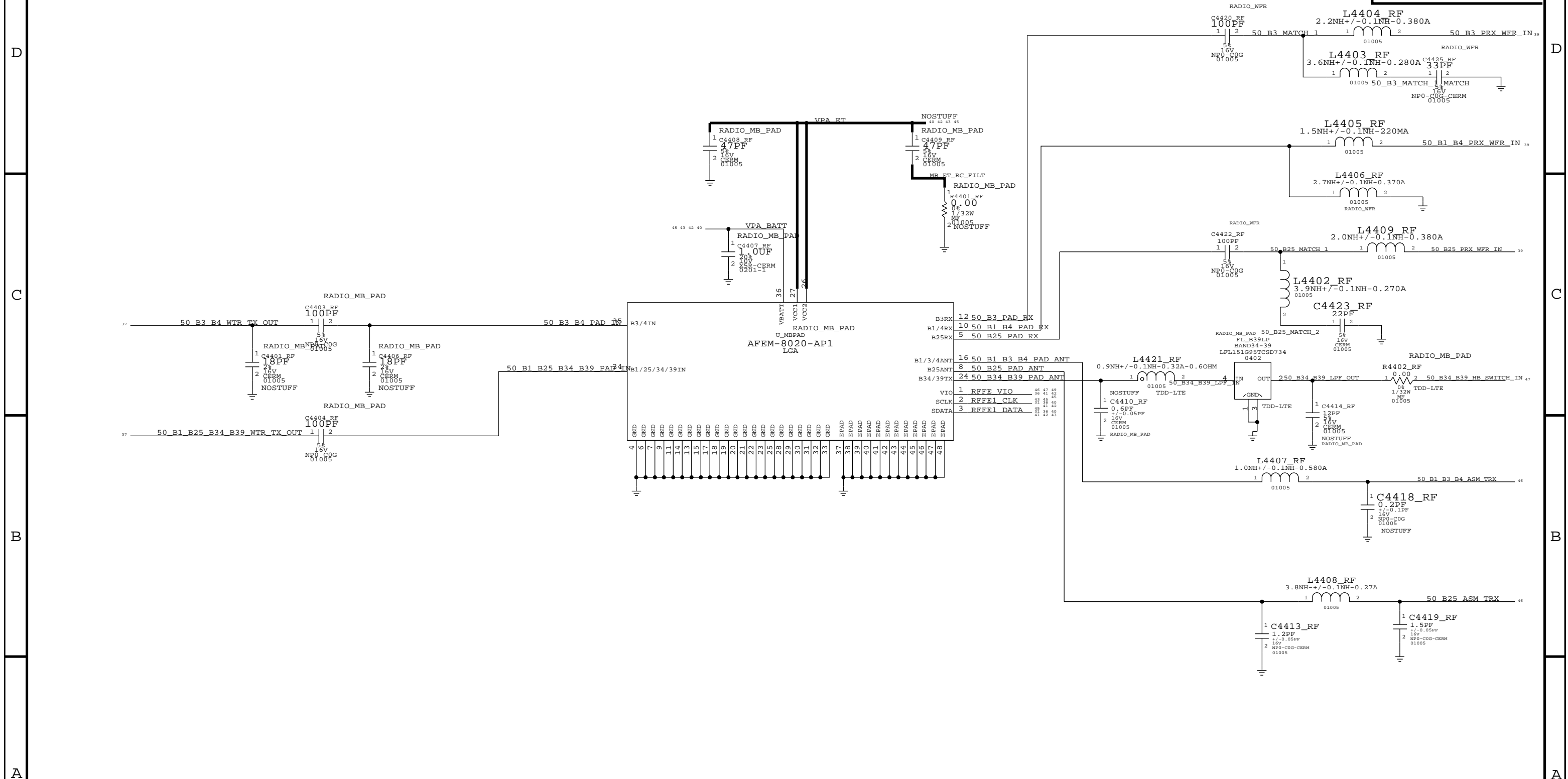
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# MID BAND PAD (B1, B25, B3, B4, B34, B39)

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C4426\_RF  
R1500  
L4409\_RF  
U1501

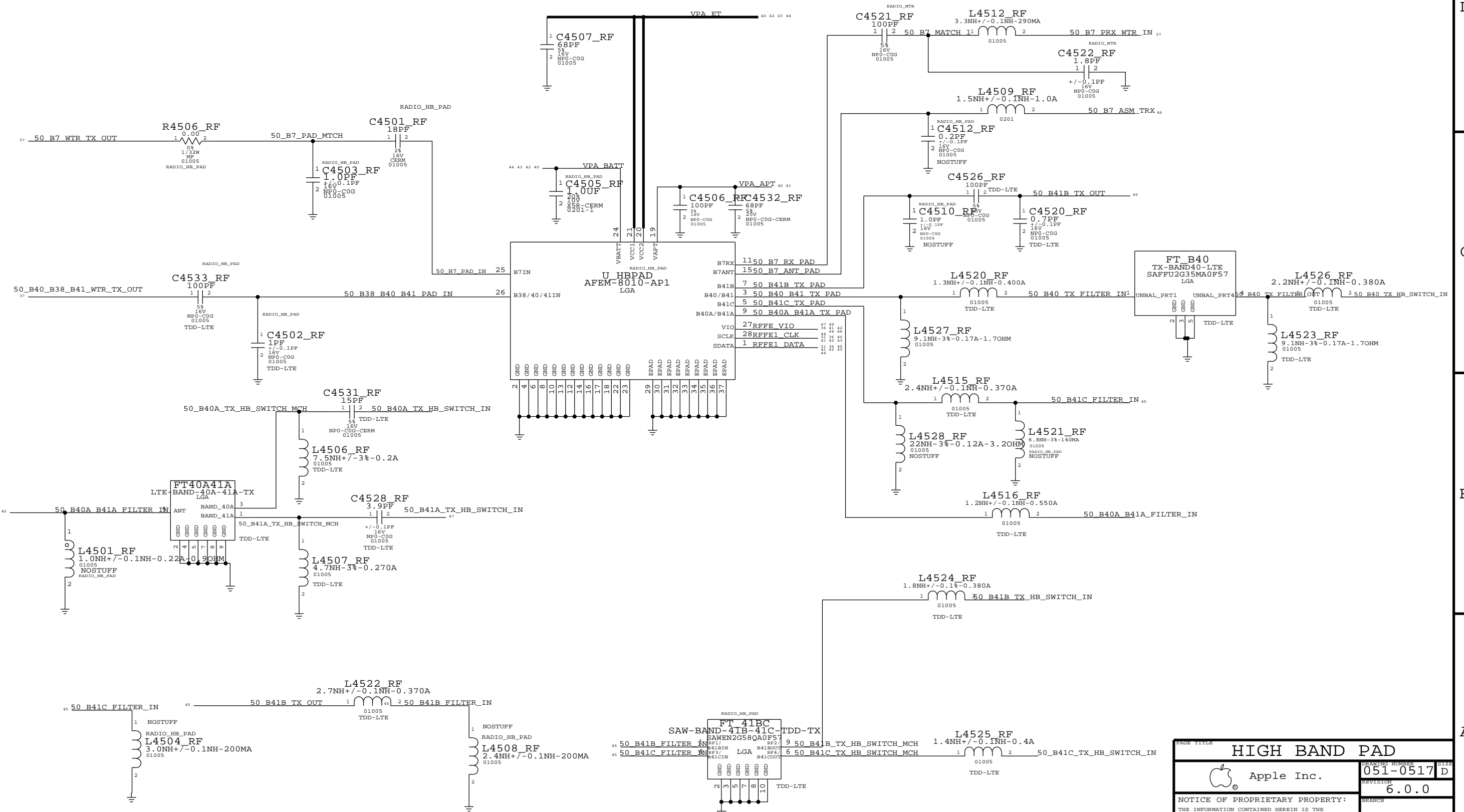


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# HIGH BAND PAD (B7, B38, B40, B41, XGP)

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C4533\_RF  
R1600  
L1616  
U1601

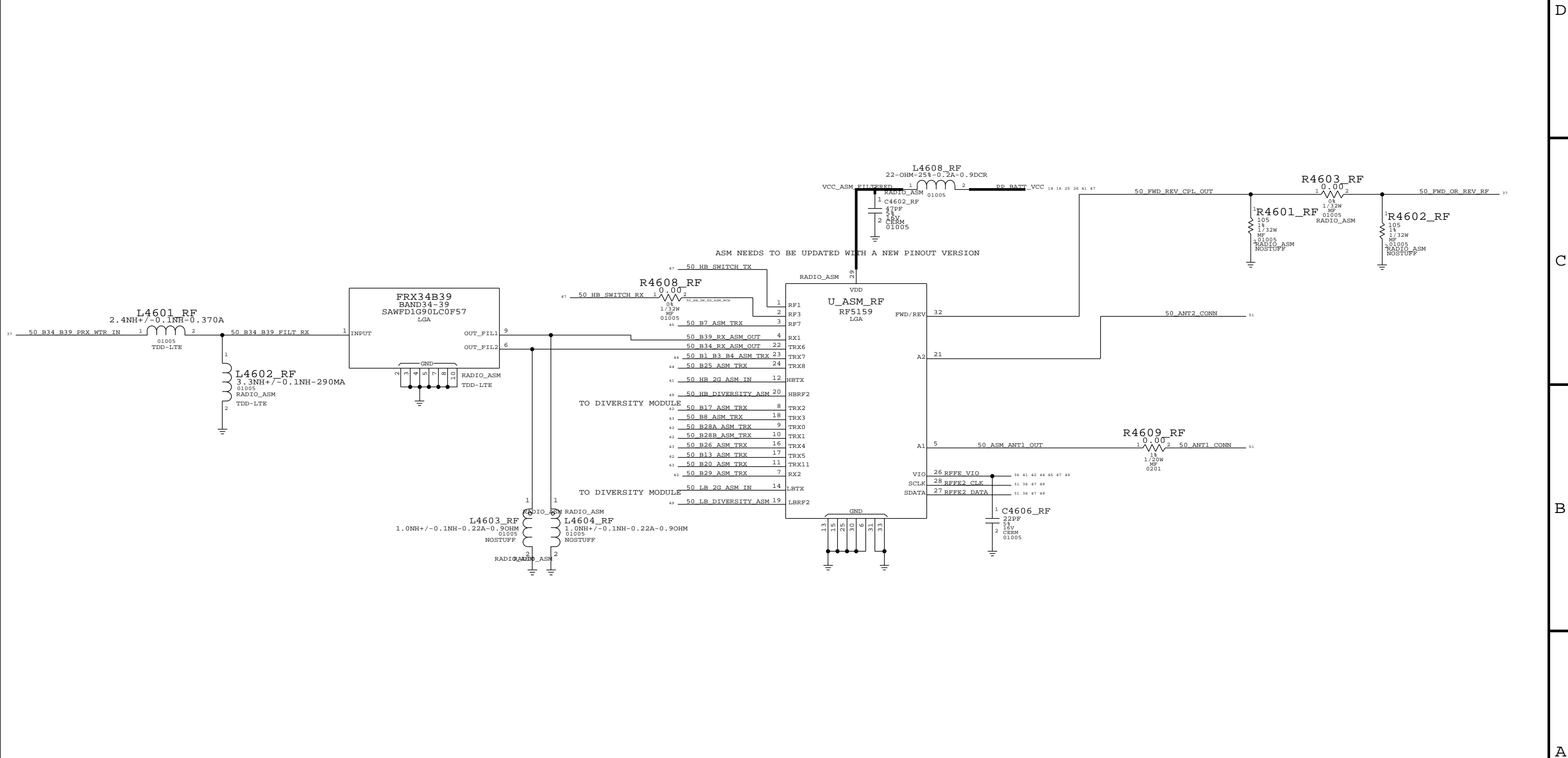


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# ANTENNA SWITCH

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C1702
R1700
L4608_RF
U1702



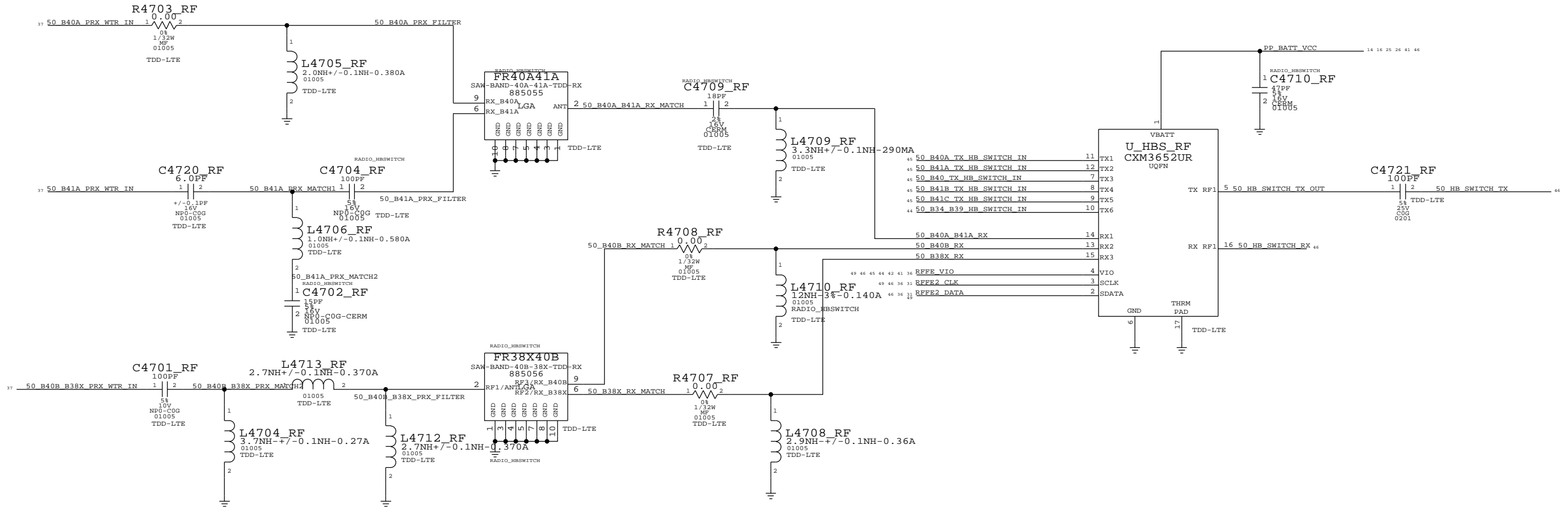
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D  
C  
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A

D  
C  
B  
A

# HIGH BAND SWITCH

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		SHEET 47 OF 55

# RX DIVERSITY (1)

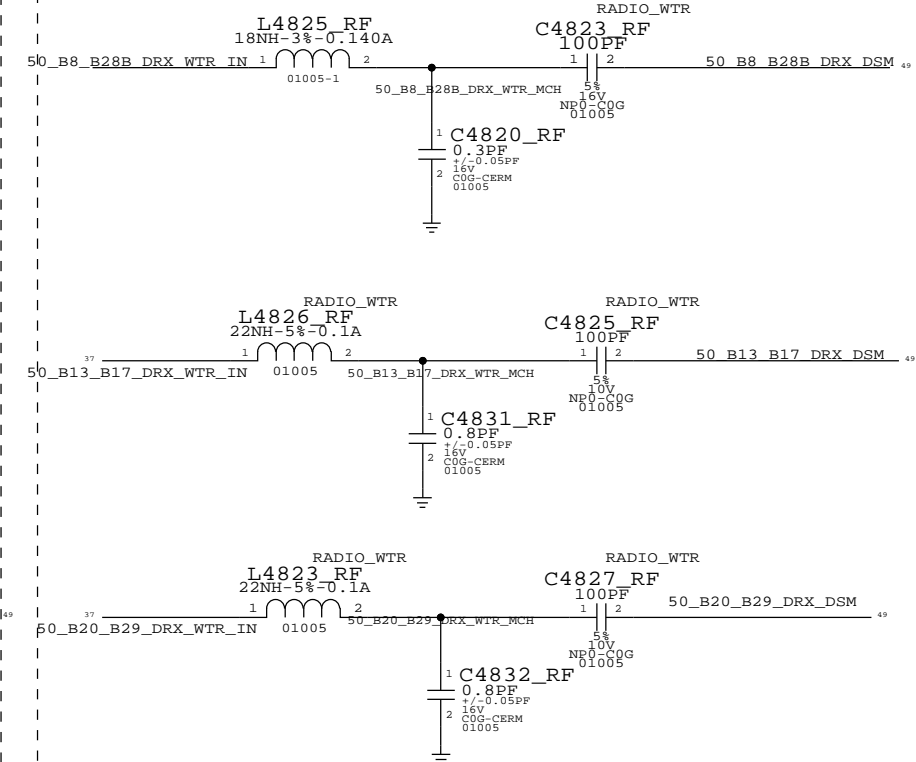
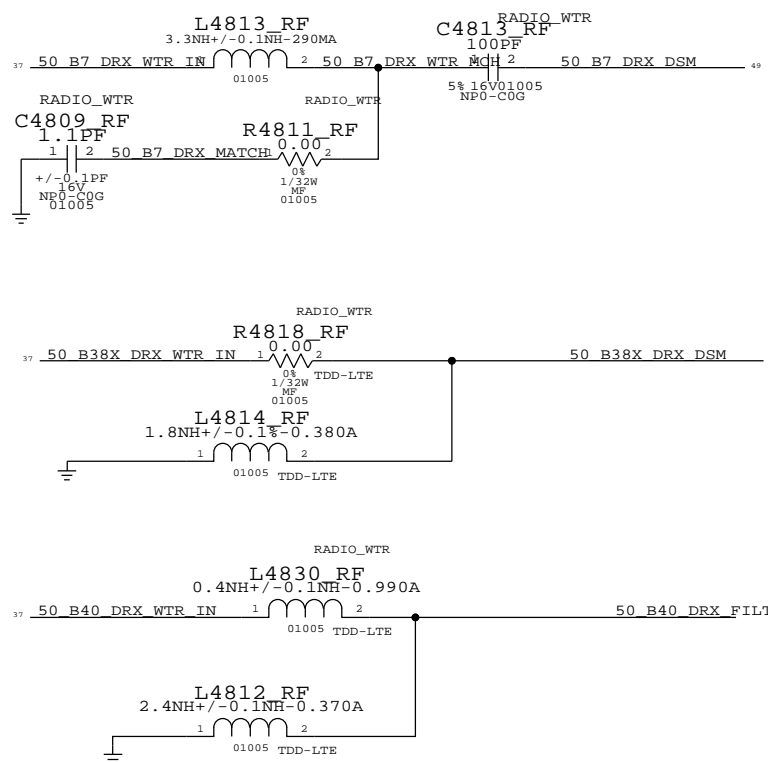
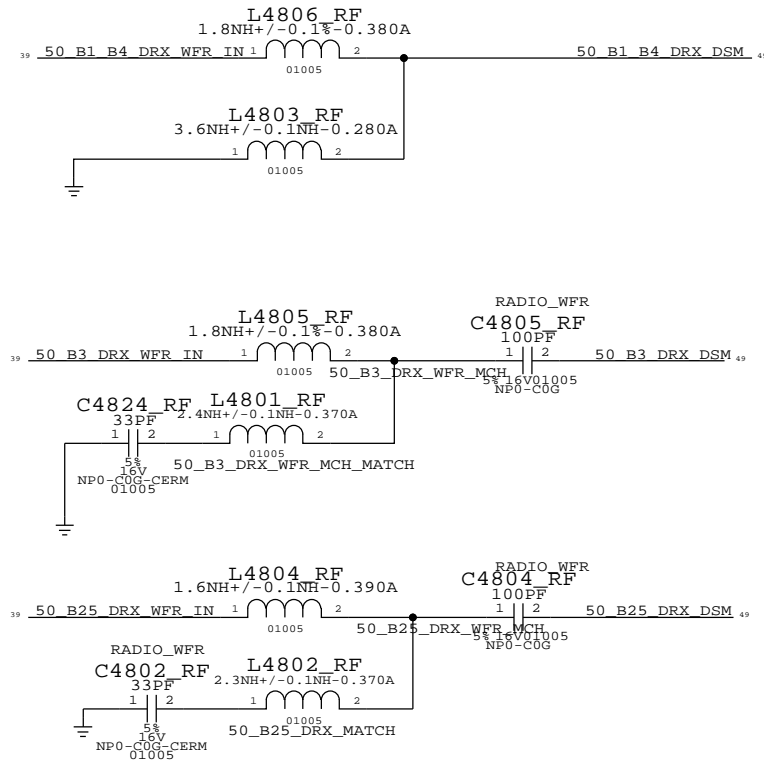
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C4826\_RF  
R1800  
L1829  
U1801

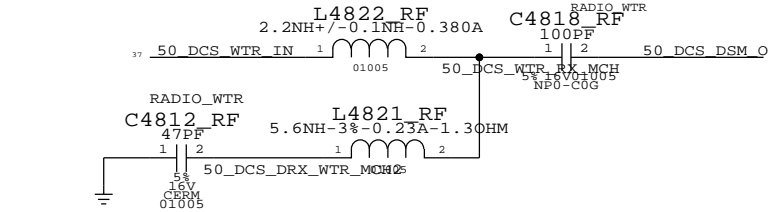
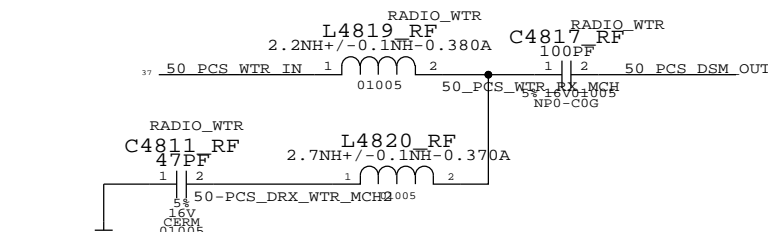
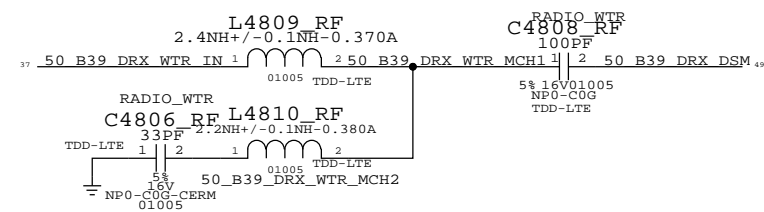
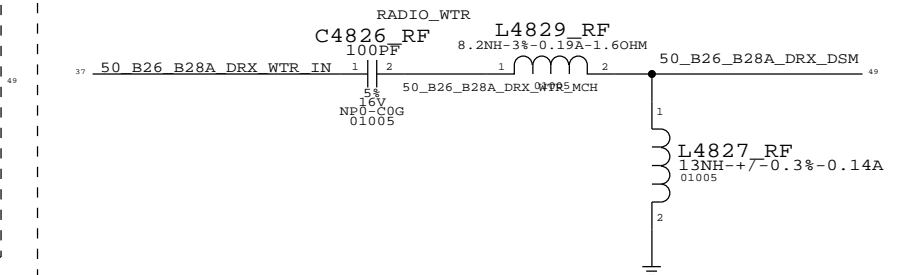
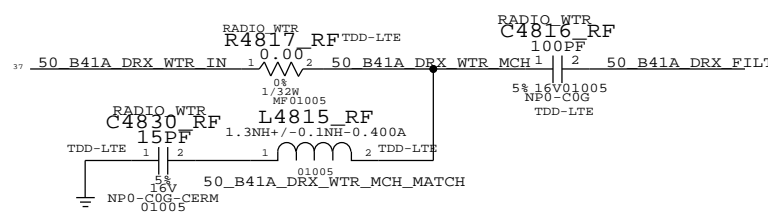
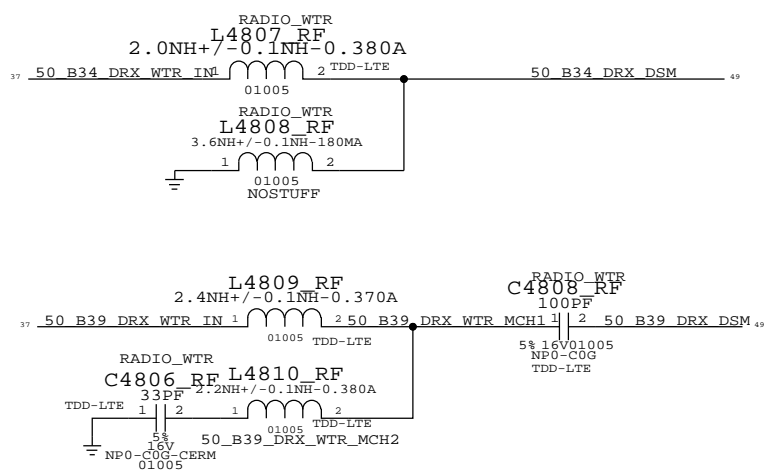
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## HIGHBAND DIVERSITY - WTR

## LOWBAND DIVERSITY - WTR



## MIDBAND DIVERSITY - WTR



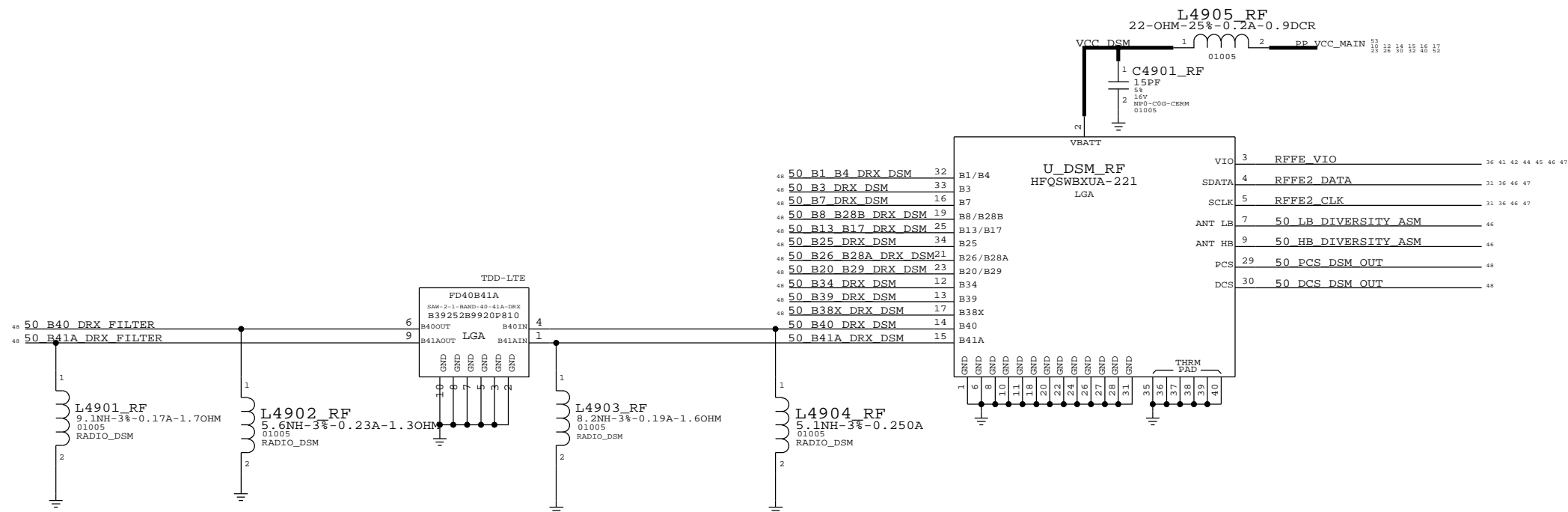
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# RX DIVERSITY (2)

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C1900  
R1900  
L1900  
U1901

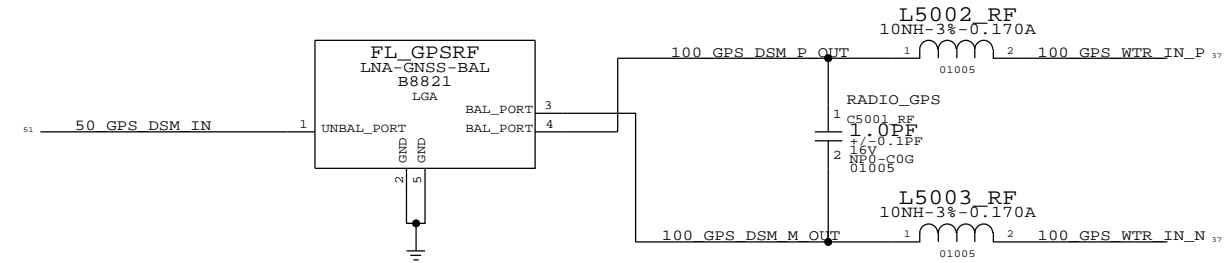


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# GPS

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C1900
R1900
L1900
U1901

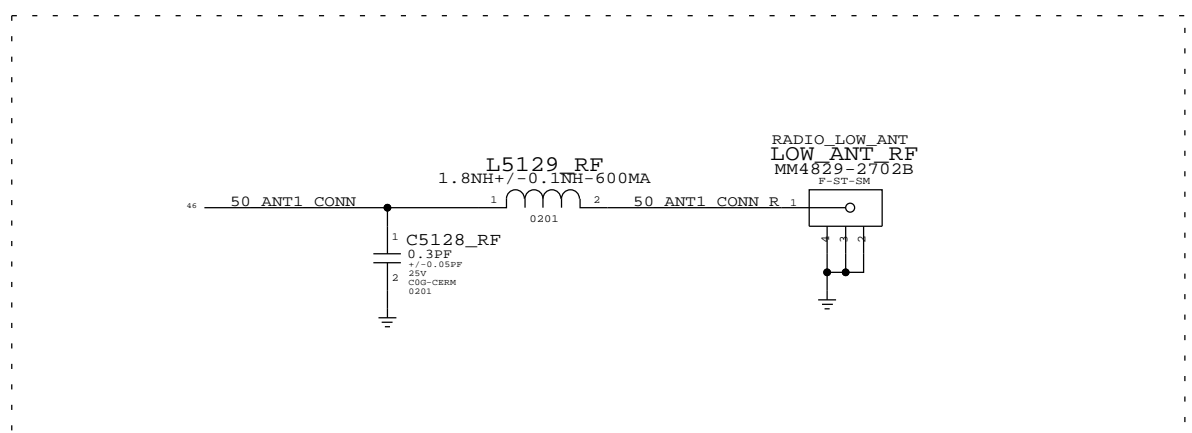
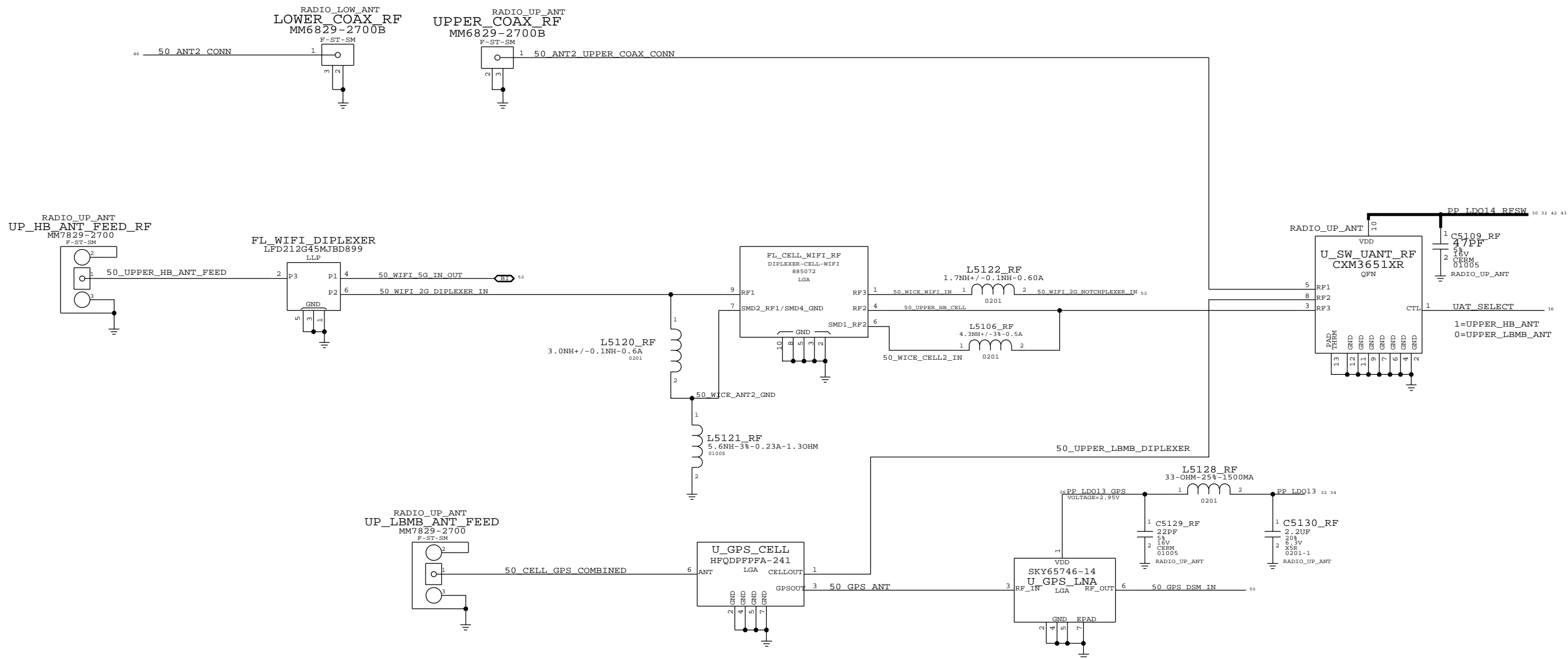


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# ANTENNA FEED'S

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TEST & COAX CONNECTOR FOR LOWER SECTION OF MLB



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# WLAN/BT

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D

D

C

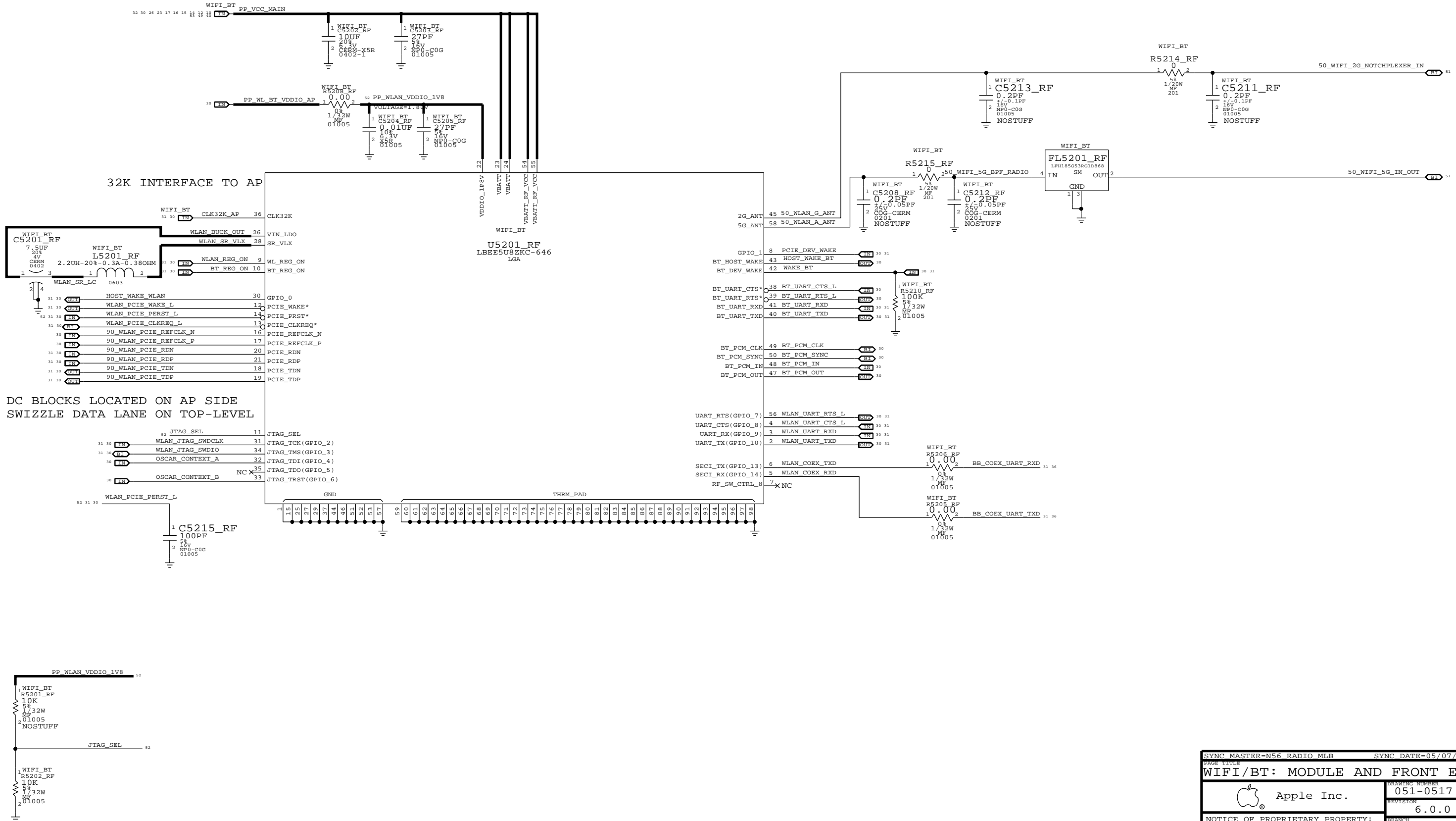
C

B

B

A

A



DC BLOCKS LOCATED ON AP SIDE  
SWIZZLE DATA LANE ON TOP-LEVEL

MODULE BOOT-STRAPPED TO PCIe INTERNALLY

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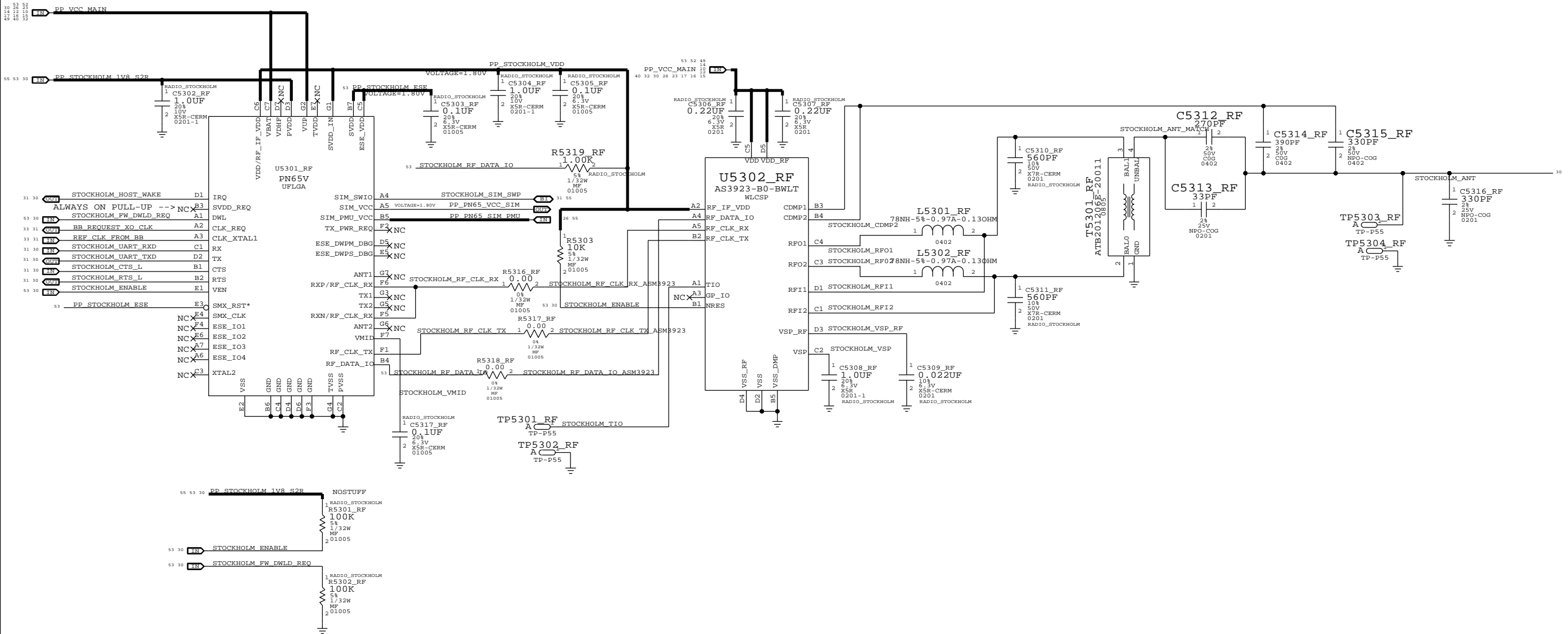
SYNC MASTER=N56 RADIO MLB		SYNC DATE=05/07/2014	
PAGE TITLE WIFI/BT: MODULE AND FRONT END			
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# STOCKHOLM

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C2101  
R2100  
L2102  
U2100

REMOVING BULK CAP 4.7UF 0402 -->  
BECAUSE OF OTHER BULK CAPS IN LAYOUT

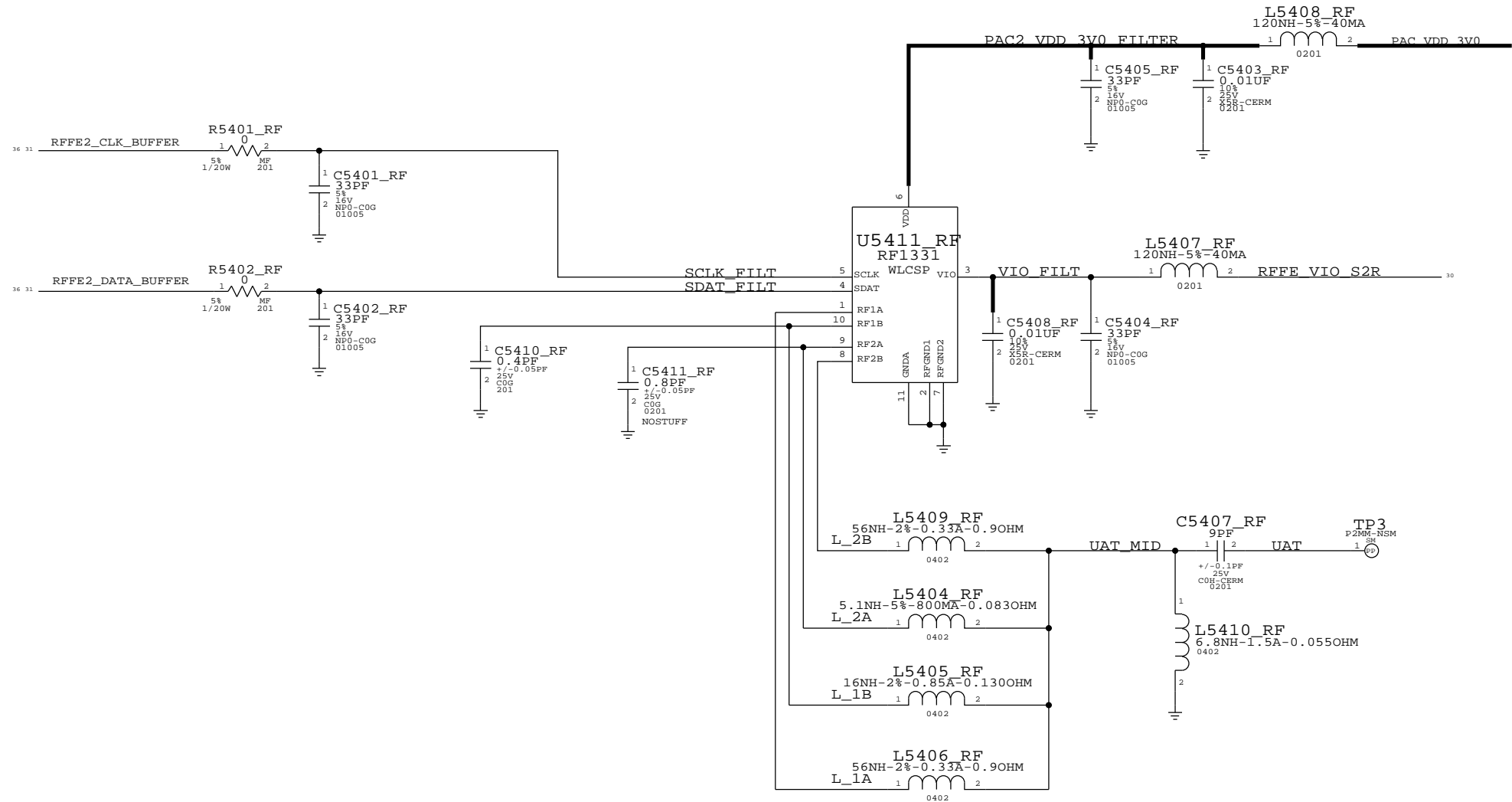



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		53 OF 55		53 OF 55		53 OF 55	

# ON-BOARD JUMPER FLEX

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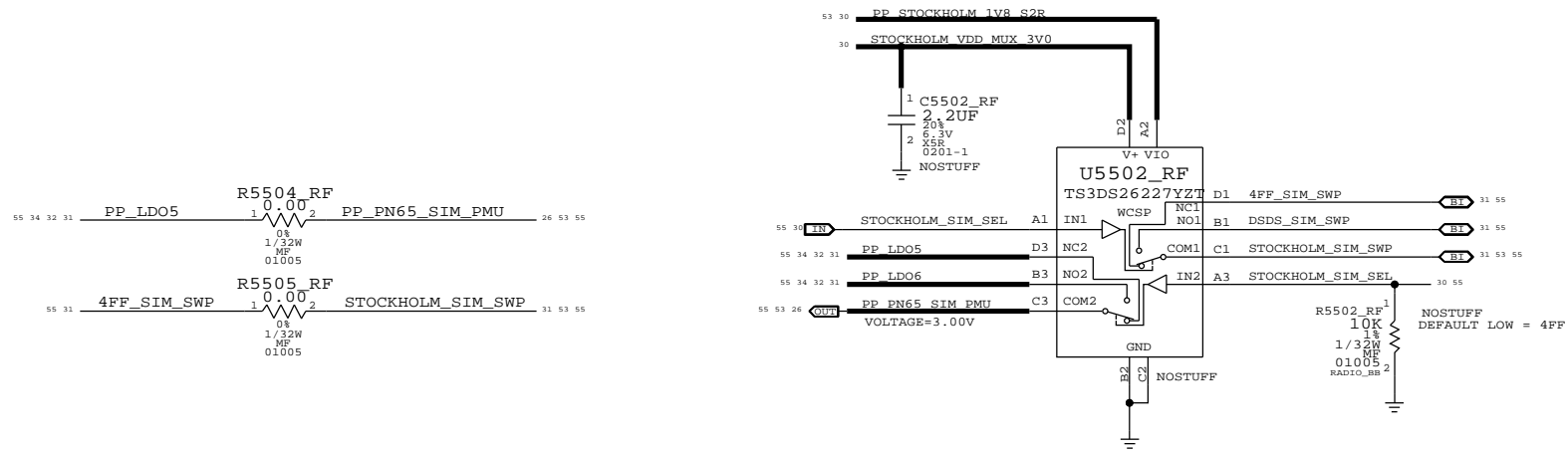
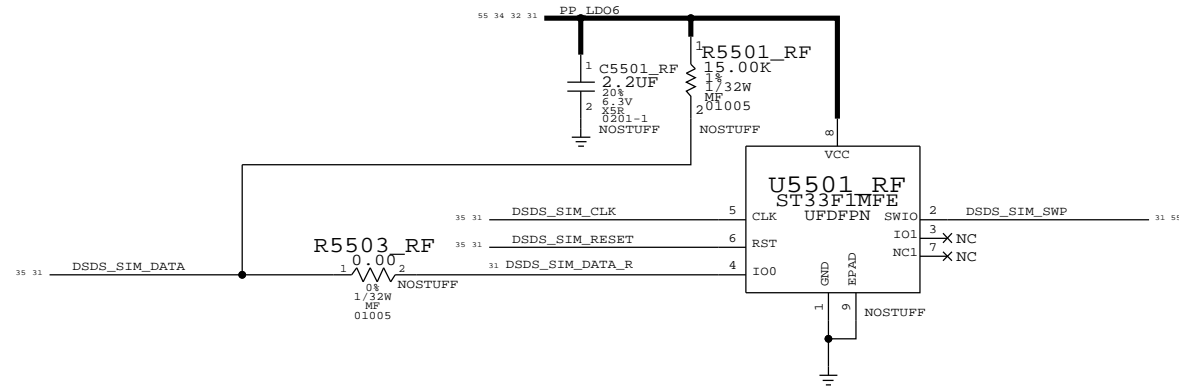
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