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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.

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
4	0004752417	ENGINEERING RELEASED		2015-08-24

# N69 MLB - EVT

LAST\_MODIFICATION=Wed Aug 19 11:42:47 2015


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- SCH 051-00648
- BRD 820-00282
- MCO 056-01352
- BOM 639-00931 (N69 BETTER)
- BOM 639-01012 (N69H BETTER)
- BOM 639-01231 (N69 BEST)
- BOM 639-01232 (N69H BEST)
- BOM 639-01271 (N69 ULTRA)
- BOM 639-01272 (N69H ULTRA)

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DRAWING TITLE		SCH,MLB,N69	
 Apple Inc.	DRAWING NUMBER	051-00648	SIZE
	REVISION	4.0.0	D
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### SCHEMATIC & PCB BOM CALLOUTS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-00648	1	SCH_MLB_N69	SCH	CRITICAL	?
820-00282	1	PCBF_MLB_N69	PCB	CRITICAL	?
825-6838	1	EEEE CODE FOR 639-00931 16GB	EEEE_GH6K	CRITICAL	EEEE_16G
825-6838	1	EEEE CODE FOR 639-01012 16GB	EEEE_QJYD	CRITICAL	EEEE_16GH
825-6838	1	EEEE CODE FOR 639-01231 32GB	EEEE_GN7J	CRITICAL	EEEE_32G
825-6838	1	EEEE CODE FOR 639-01232 32GB	EEEE_GN7H	CRITICAL	EEEE_32GH
825-6838	1	EEEE CODE FOR 639-01271 64GB	EEEE_QP3V	CRITICAL	EEEE_64G
825-6838	1	EEEE CODE FOR 639-01272 64GB	EEEE_QP3W	CRITICAL	EEEE_64GH

### S3E NAND BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00054	1	NAND_1YNM_16GB_E3E_64G_T_SLGA70	U1500	CRITICAL	NAND_16G
335S00072	1	NAND_1YNM_32GB_E3E_64G_T_SLGA70	U1500	CRITICAL	NAND_32G
335S00076	1	NAND_1YNM_64GB_E3E_TLC_128G_H_SLGA70	U1500	CRITICAL	NAND_64G

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00071	335S00054	NAND_16G	U1500	HYNIX 16G SLGA70
335S00085	335S00072	NAND_32G	U1500	TOSHIBA 16G SLGA70

### CARBON BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
338S00017	1	IC_CARBON_MPU-6700-12_1GA16	U3010	INVENSENSE_CARBON
338S1163	1	IC_ACCBL_3-AXIS_D10_9MMx8.1_1GA16	U3020	INVENSENSE_CARBON
132S0316	1	CAP_CER_X5R_0.1UF_20%_6.3V_01005	C3020	INVENSENSE_CARBON
138S0692	1	CAP_CER_X5R_10UF_20%_6.3V_0201	C3021	INVENSENSE_CARBON
132S0316	1	CAP_CER_X5R_0.1UF_20%_6.3V_01005	C3022	INVENSENSE_CARBON
117S0202	1	RES_MF_2000M_5%_1/32W_01005	R3020	INVENSENSE_CARBON
117S0202	1	RES_MF_2000M_5%_1/32W_01005	R3021	INVENSENSE_CARBON
117S0202	1	RES_MF_2000M_5%_1/32W_01005	R3022	INVENSENSE_CARBON
338S00087	1	IC_CARBON_MPU-6800-00_1GA16	U3010	INVENSENSE_CARBON_1_1

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### COMPASS PART NUMBER

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
338S00084	1	IC_COMPASS_MAGNETOM_601A-19_F1GA16	U3000	COMMON

### SHIELD PART NUMBERS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
806-03629	1	SHIELD_BMI_UPPER_FRONT_N69	SH0500	COMMON
806-03630	1	SHIELD_BMI_LOWER_FRONT_N69	SH0501	COMMON
806-03556	1	SHIELD_BMI_BACK_N69	SH0503	COMMON

### POWER INDUCTOR ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S00117	152S00074	?	L2000	TAIYO 2016 1.0UH
152S00121	152S00081	?	L2001	TAIYO 2012 0.47UH
152S00120	152S00077	?	L2070	TAIYO 2016 1.0UH 0.65MM
152S00118	152S00075	?	L3700	TAIYO 2016 1.2UH
152S00123	152S1936	?	L4020	TAIYO 3225 15UH

### ALTERNATE BOM OPTIONS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
138S00032	138S0831	ALTERNATE	C0610	TY, 2.2UF, 0201
138S00049	138S0831	ALTERNATE	C0610	KYOCERA, 2.2UF, 0201
155S0660	155S0513	ALTERNATE	FL3100	MURATA, FERR, 22-OHM
138S00005	138S00003	ALTERNATE	C1500	TY, 15UF, 0402
138S00048	138S00003	ALTERNATE	C1500	KYOCERA, 15UF, 0402
118S0764	118S0717	ALTERNATE	R2250	PANASONIC, 3.92K-OHM, 0201
138S00006	138S0835	ALTERNATE	C1106	TY, 4.3UF, 0402
152S2052	152S1929	ALTERNATE	L2060	CYNTEC, LUH, 1608
155S0773	155S0453	ALTERNATE	FL3101	TY, FERR, 120-OHM, 01005
377S0168	377S0140	ALTERNATE	D23150	TKX, VARIATOR, 4.8V, 100PF, 01005
155S00067	155S0581	ALTERNATE	FL4200	TKX, FERR, 240-OHM, 0201
155S00012	155S00009	ALTERNATE	L3100	MURATA, CHOKE, 65-OHM, 0605
138S0706	138S0739	ALTERNATE	C5302_RF	ROCKWELL, CAP, 200_PPF, 20%_0201_0201
138S0945	138S0739	ALTERNATE	C5302_RF	ROCKWELL, CAP, 200_PPF, 20%_0201_0201
155S00095	155S00068	ALTERNATE	FL1280	FERR 80.110 OHM, 20%_100M, 0.4 OHM, 01005
138S0648	138S0652	ALTERNATE	C3650	TY, 4.7UF, 0402
132S0400	132S0436	ALTERNATE	C1280	CAP, CER, X5R, 0.1UF, 20%, 6.3V, 01005
155S0960	155S0941	ALTERNATE	FL3151	FERR 80.75 OHM, 20%_100M, 0.4 OHM, 01005
138S00024	138S0986	ALTERNATE	C5201_RF	CAP, CER, 3-TERMS, 1-10P, 20%, 01005
335S00066	335S0946	ALTERNATE	U0900	IC, 800KHZ, 1000K, 1.8V, 12V, 60504
376S00106	376S00047	ALTERNATE	Q2300	DIODES INC. ACT DIODE
343S0688	343S0638	ALTERNATE	U4301	CUMULUS 2ND FLOW
138S00022	138S0867	ALTERNATE	C1100	TY, 10UF, 0402
138S00020	138S0867	ALTERNATE	C1100	MURATA, 10UF, 0402

NOT ALL REFERENCE DESIGNATORS LISTED.  
 USED 91 TIMES IN DESIGN.  
 USED 91 TIMES IN DESIGN.  
 USED 5 TIMES IN DESIGN.  
 USED 61 TIMES IN DESIGN.  
 USED 61 TIMES IN DESIGN.  
 USED 1 TIME IN DESIGN.  
 USED 20 TIMES IN DESIGN.  
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 USED 9 TIMES IN DESIGN.  
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 USED 8 TIMES IN DESIGN.  
 USED 1 TIME IN DESIGN.  
 USED 1 TIME IN DESIGN.  
 USED 1 TIME IN DESIGN.  
 USED 51 TIMES IN DESIGN.  
 USED 51 TIMES IN DESIGN.

### PMU/SOC BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
339S00121	1	POP_MALTA+2GB 25NM DDR.AL.M.DEV	U0600	MALTA
118S00009	1	RES_MF_3.01KOHM, 1%, 1/32W, 01005	R0730	MALTA
131S0307	1	CAP_CER_NPO/COG, 100PF, 5%, 16V, 01005	C0730	NOSTUFF
118S00025	1	RES_MF_3300HM, 1%, 1/32W, 01005	R0651	MALTA
132S0316	1	CAP_CER_X5R_0.1UF, 20%, 6.3V, 01005	C0731	NOSTUFF
338S00170	1	IC_PMU_ANTIQUA, D2255A1_OTP-BG	U2000	MALTA

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
339S00096	1	POP_MAUI+2GB 25NM DDR.CO.H.DEV	U0600	MAUI
118S0631	1	RES_MF_1000HM, 1%, 1/32W, 01005	R0730	MAUI
131S0307	1	CAP_CER_NPO/COG, 100PF, 5%, 16V, 01005	C0730	MAUI
117S0161	1	RES_MF_50HM, 1/32W, 01005	R0651	MAUI
132S0316	1	CAP_CER_X5R_0.1UF, 20%, 6.3V, 01005	C0731	MAUI
338S00171	1	IC_PMU_ANTIQUA, D2255A1_OTP-BG	U2000	MAUI

### SOC ALTERNATES

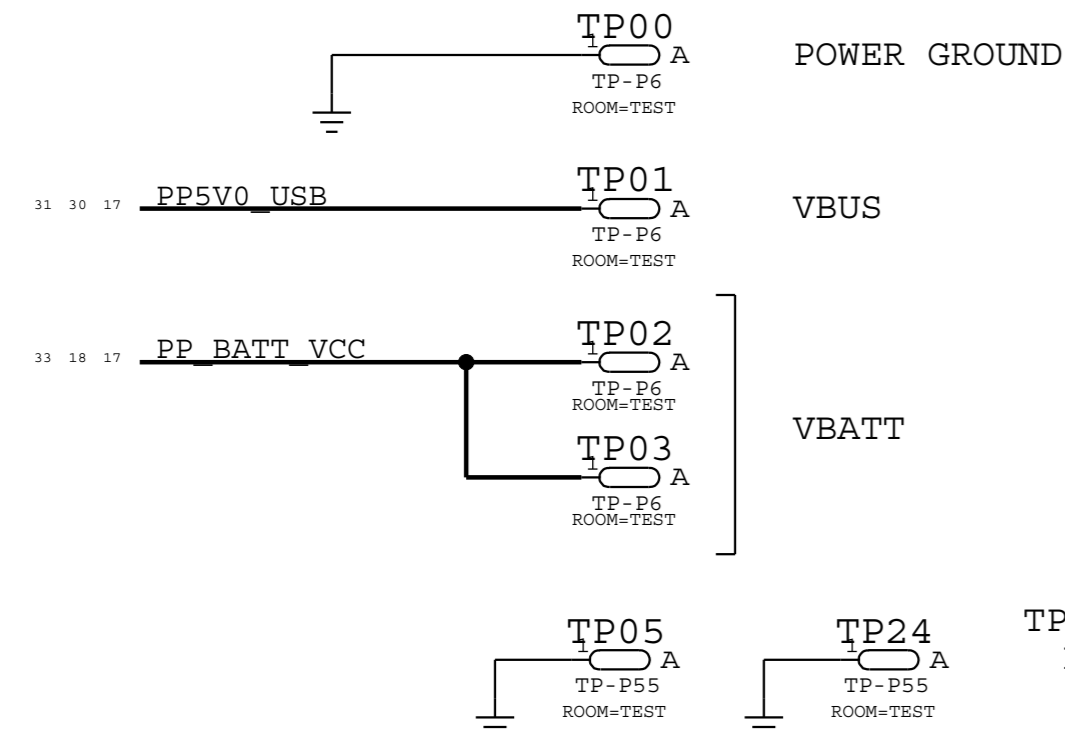
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00122	339S00121	ALTERNATE	U0600	MALTA DEV, H DRAM
339S00123	339S00121			

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00097	339S00096	ALTERNATE	U0600	MAUI DEV, M DRAM
339S00098	339S00096	ALTERNATE	U0600	MAUI DEV, S DRAM

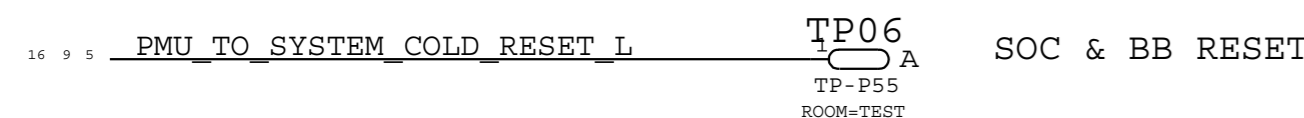
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# TESTPOINTS

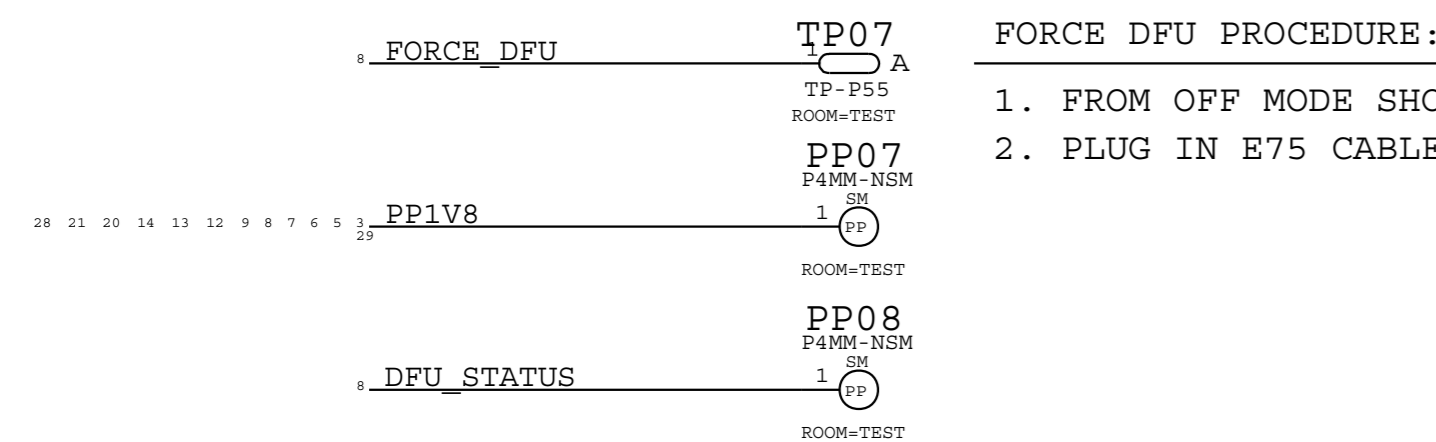
## POWER



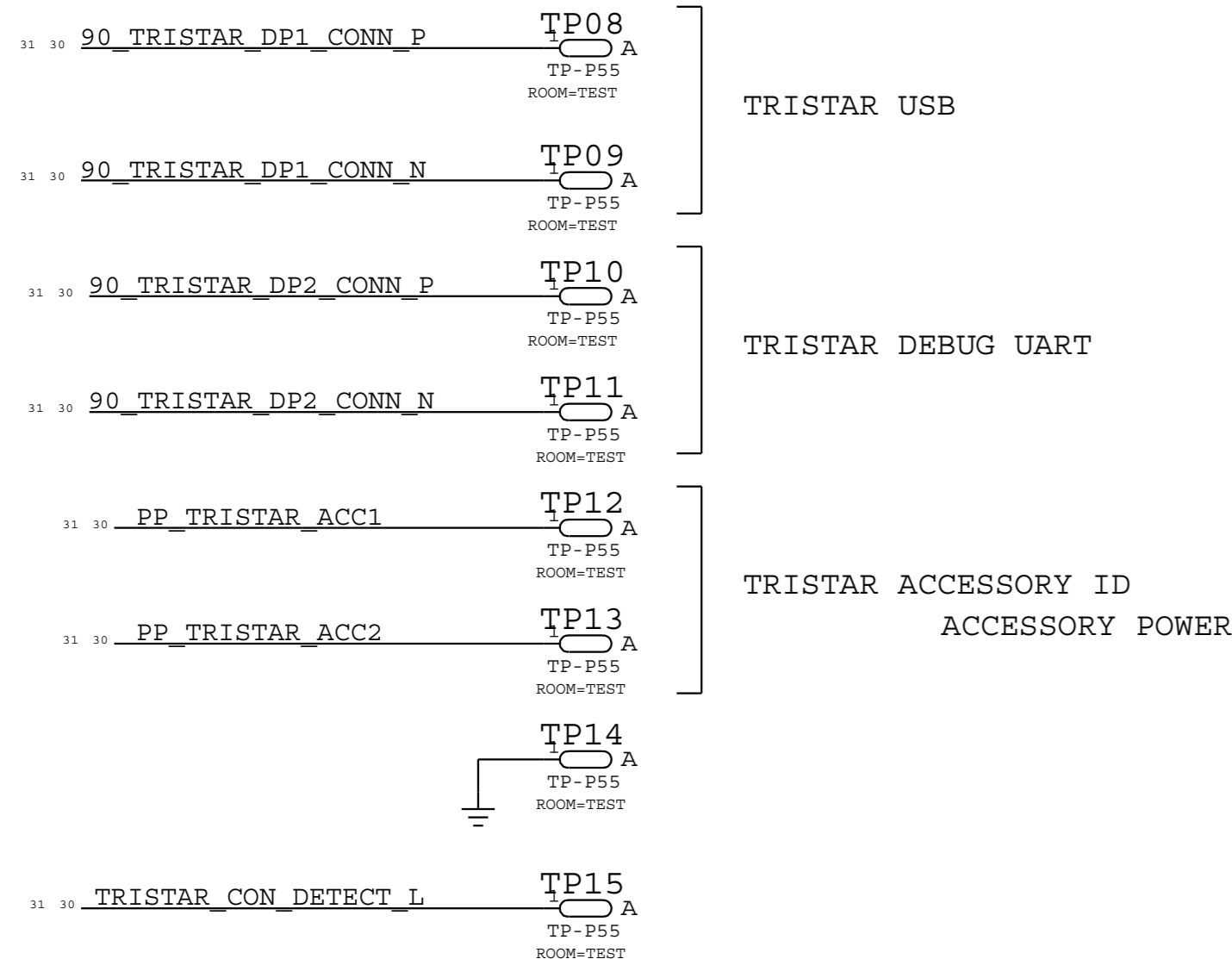
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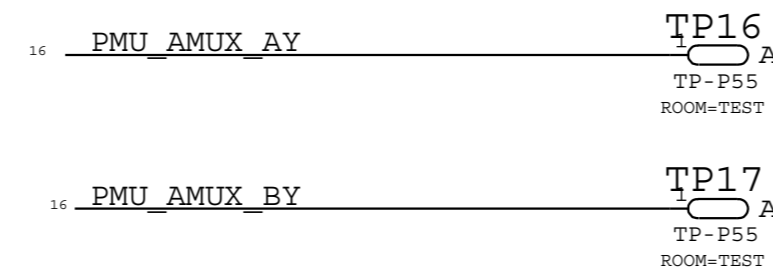
## DFU



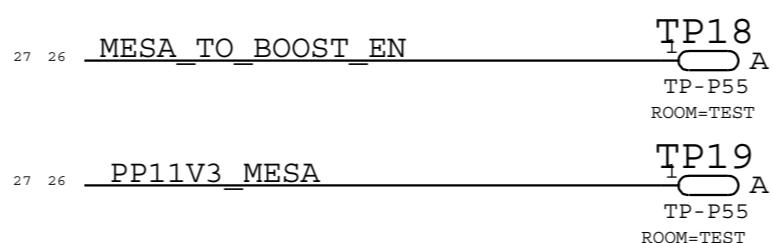
## E75



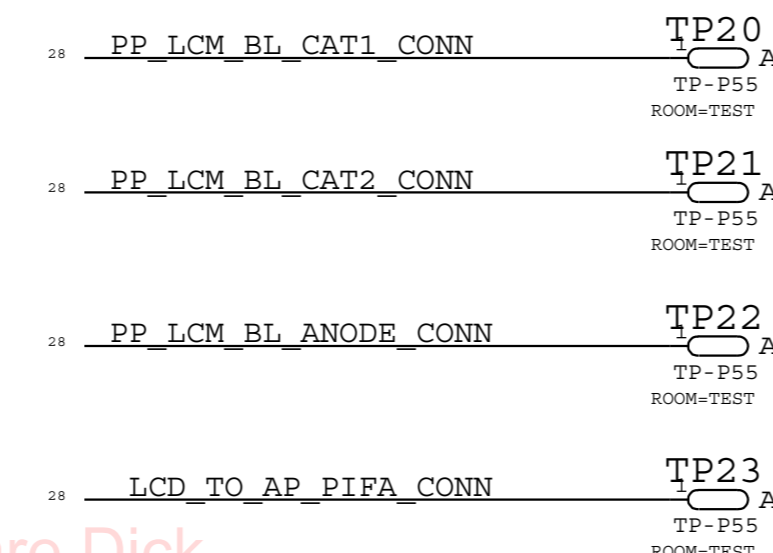
## AMUX



## MOJAVE



## LCM



# N69 I2C DEVICE MAP

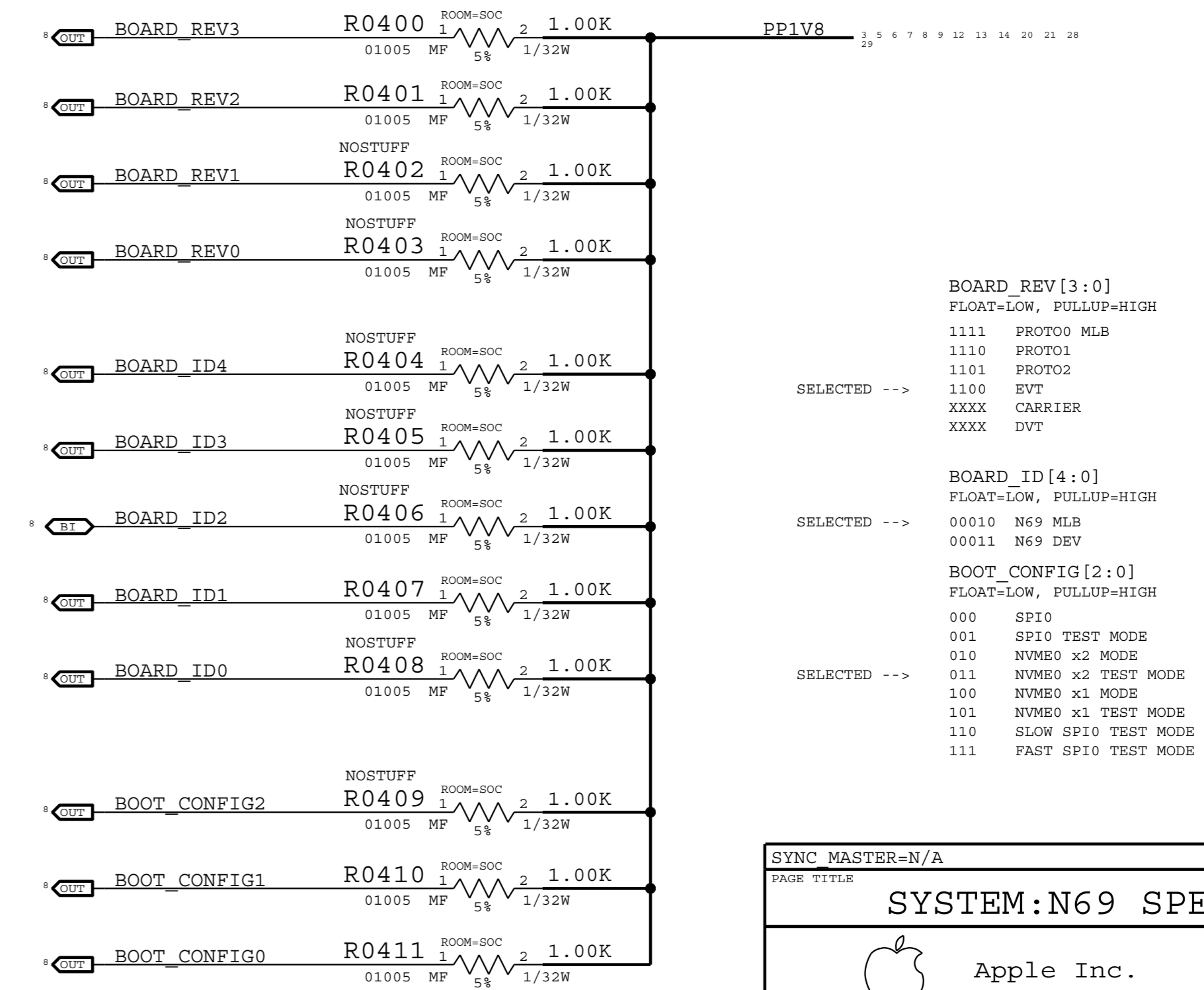
I2C BUS	DEVICE	BINARY	7-BIT HEX	8-BIT HEX
I2C0	ANTIGUA PMU	1110100X	0X74	0XE8
	CHESTNUT	0100111X	0X27	0X4E
	BACKLIGHT	1100010X	0X62	0XC4
I2C1	TIGRIS	1110101X	0X75	0XEA
	SPEAKER AMP	1000000X	0X40	0X80
	TRISTAR	0011010X	0X1A	0X34
I2C2	ALS	0101001X	0X29	0X52
OWL	UNUSED	N/A	N/A	N/A
ISP I2C0	REAR CAM	TBD	TBD	TBD
	LED DRIVER	1100011X	0X63	0XC6
ISP I2C1	FRONT CAM	0110110X	0X36	0X6C
TOUCH I2C	UNUSED	N/A	N/A	N/A
SEP I2C	SEP EEPROM	1010001X	0x51	0xA2

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## BOOTSTRAPPING: BOARD REV

## BOARD ID

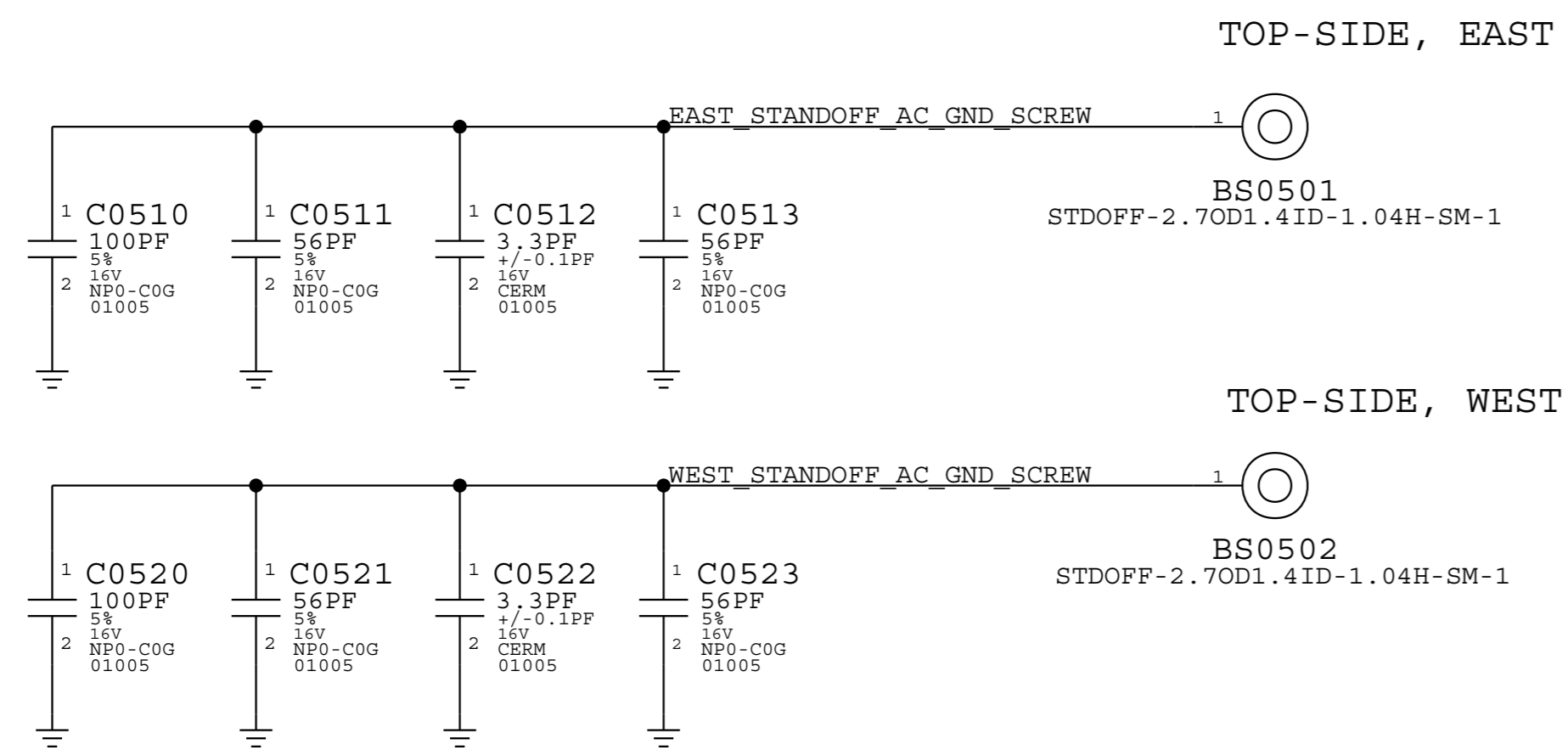
## BOOT CONFIG



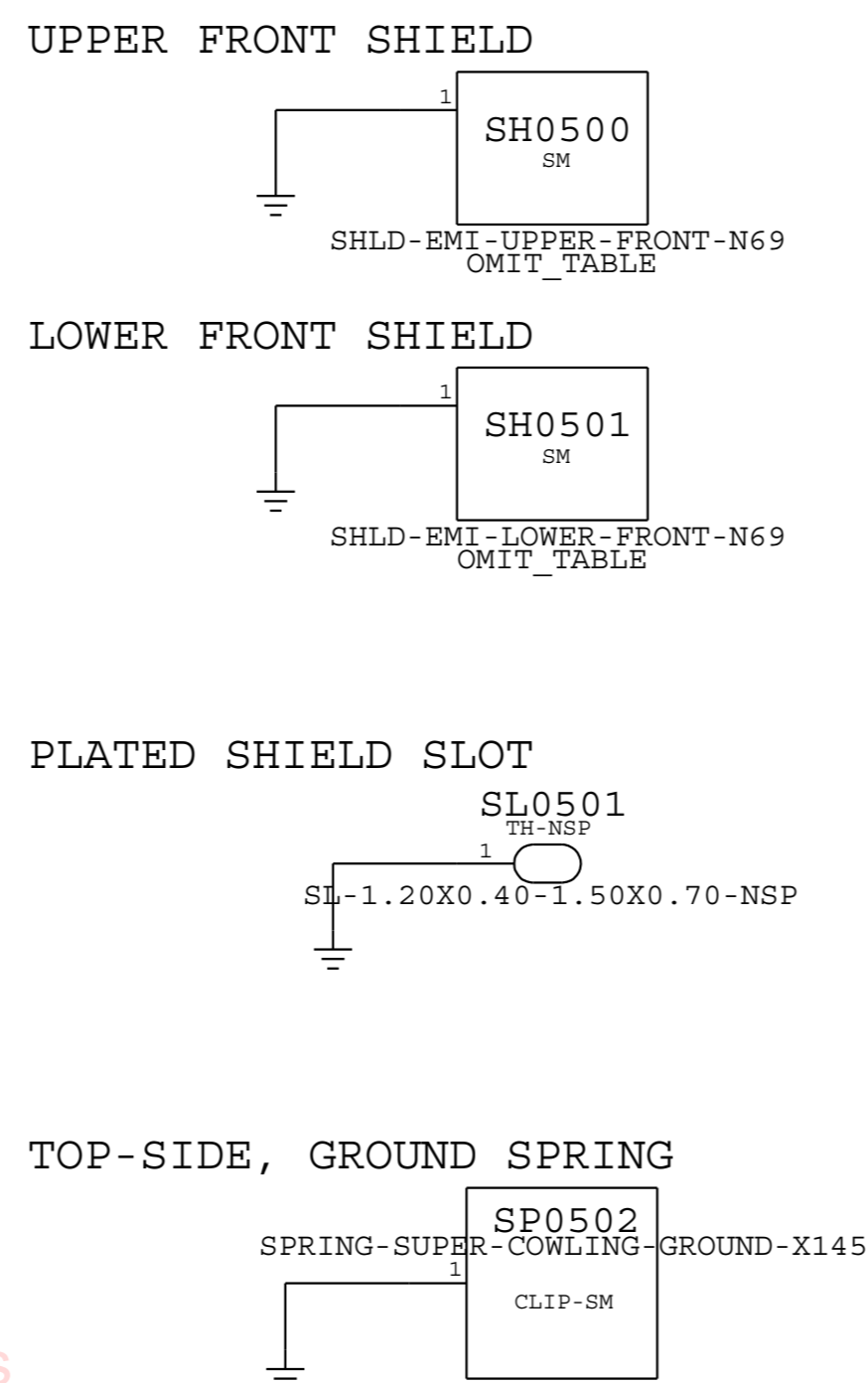
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RESISTOR NOSTUFF = LOW '0'

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Apple Inc.	DRAWING NUMBER	051-00648	SIZE
	REVISION	4.0.0	D
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I1V ALL RIGHTS RESERVED			

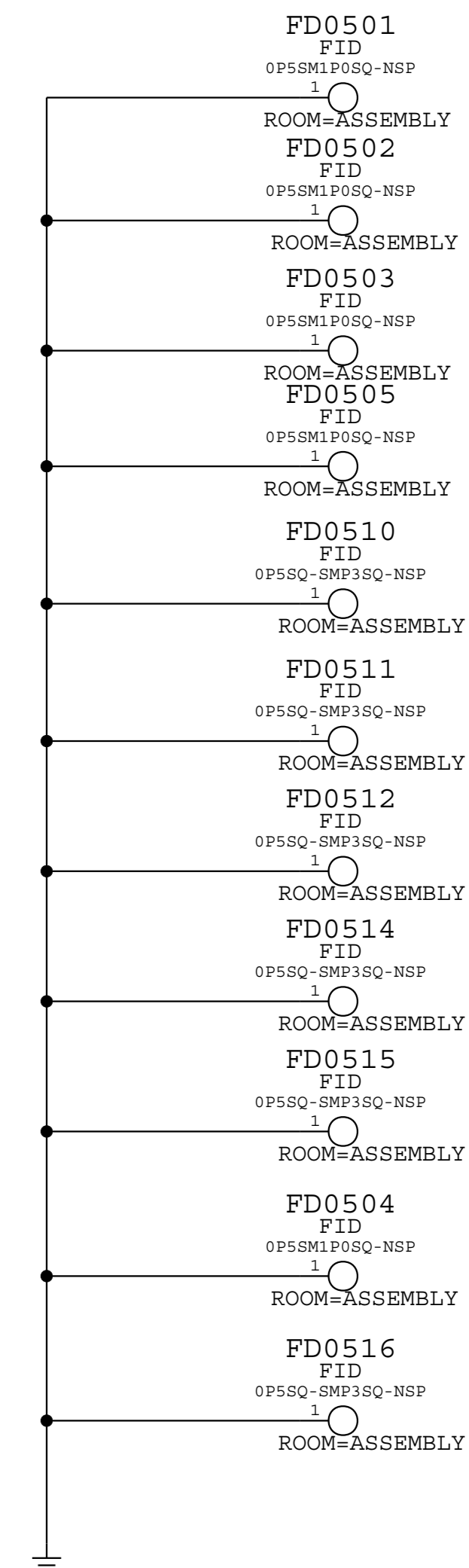
**BOARD STANDOFFS  
AND AC COUPLING CAPS FOR  
COMPASS RETURN CURRENTS**



**SHIELDS**

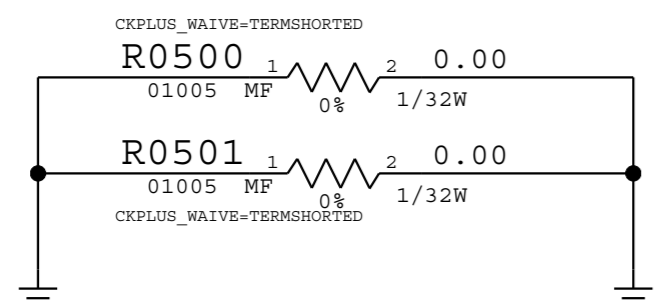


**FIDUCIALS**

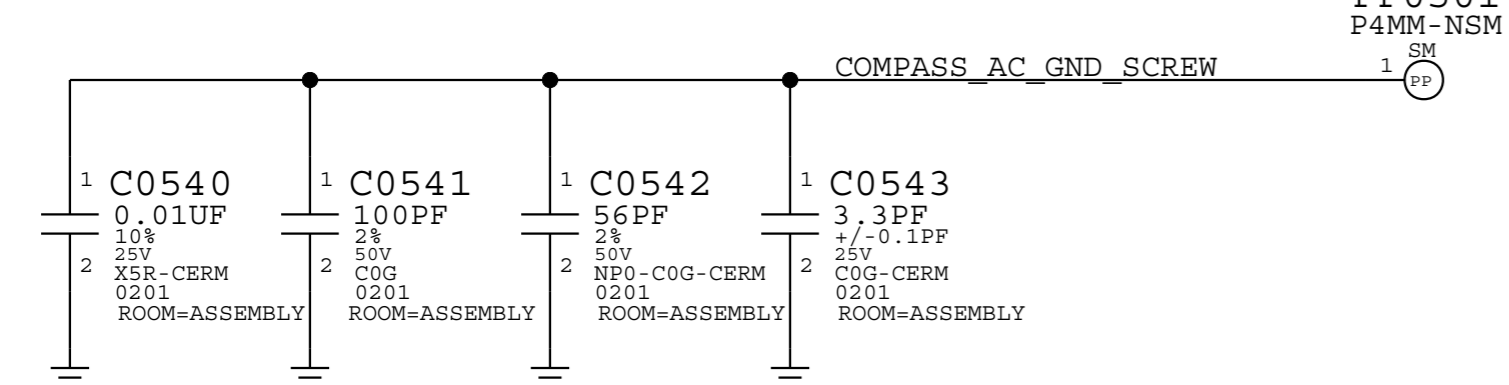


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**NORTH WIFI UNDERFILL BLOCKING**

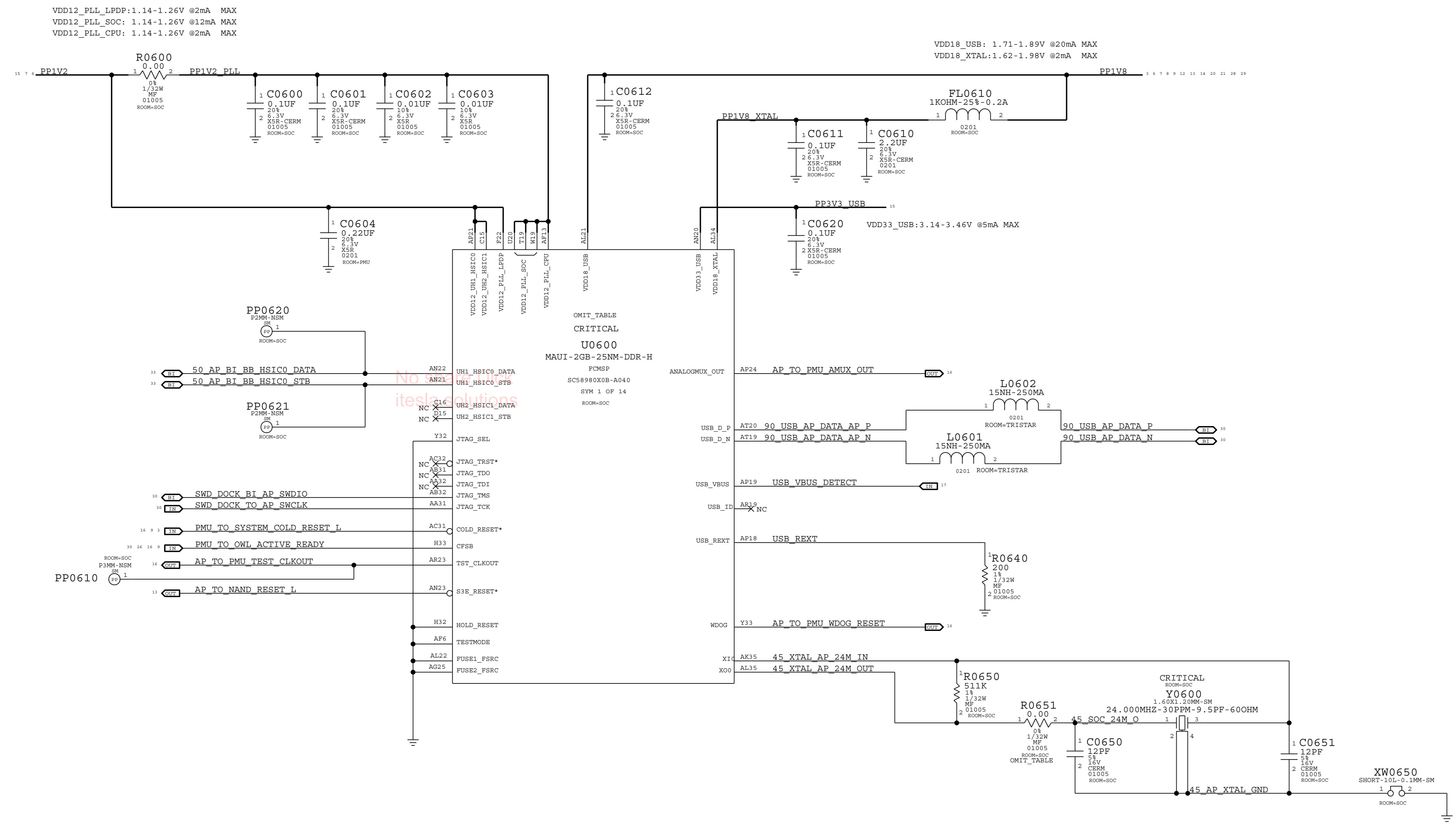


**COMPASS AC GROUNDING CAPS**



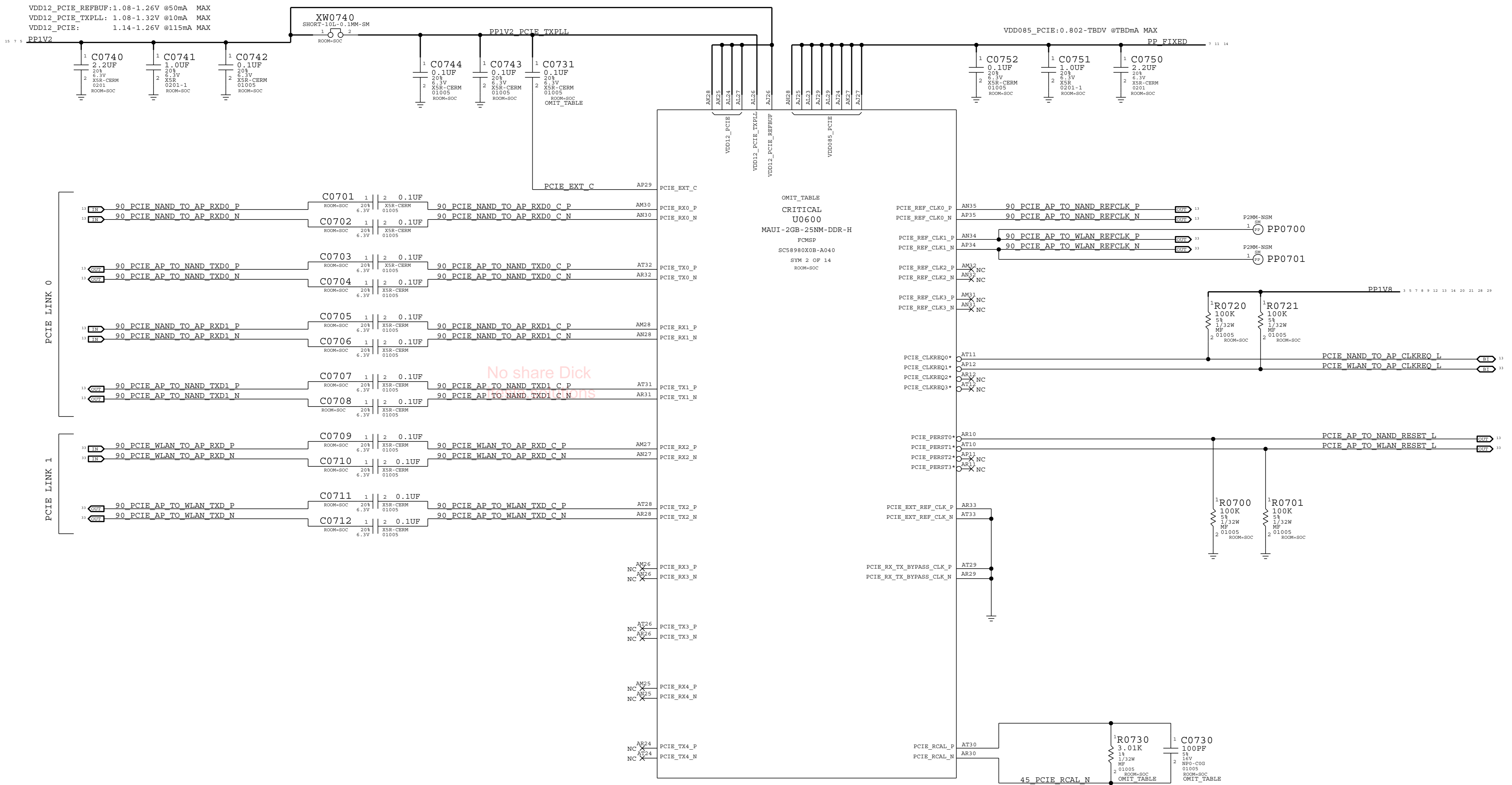
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# SOC - USB, JTAG, XTAL



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# SOC - PCIE INTERFACES



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# SOC - CAMERA & DISPLAY INTERFACES

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7

6

5

4

3

2

1

D

D

C

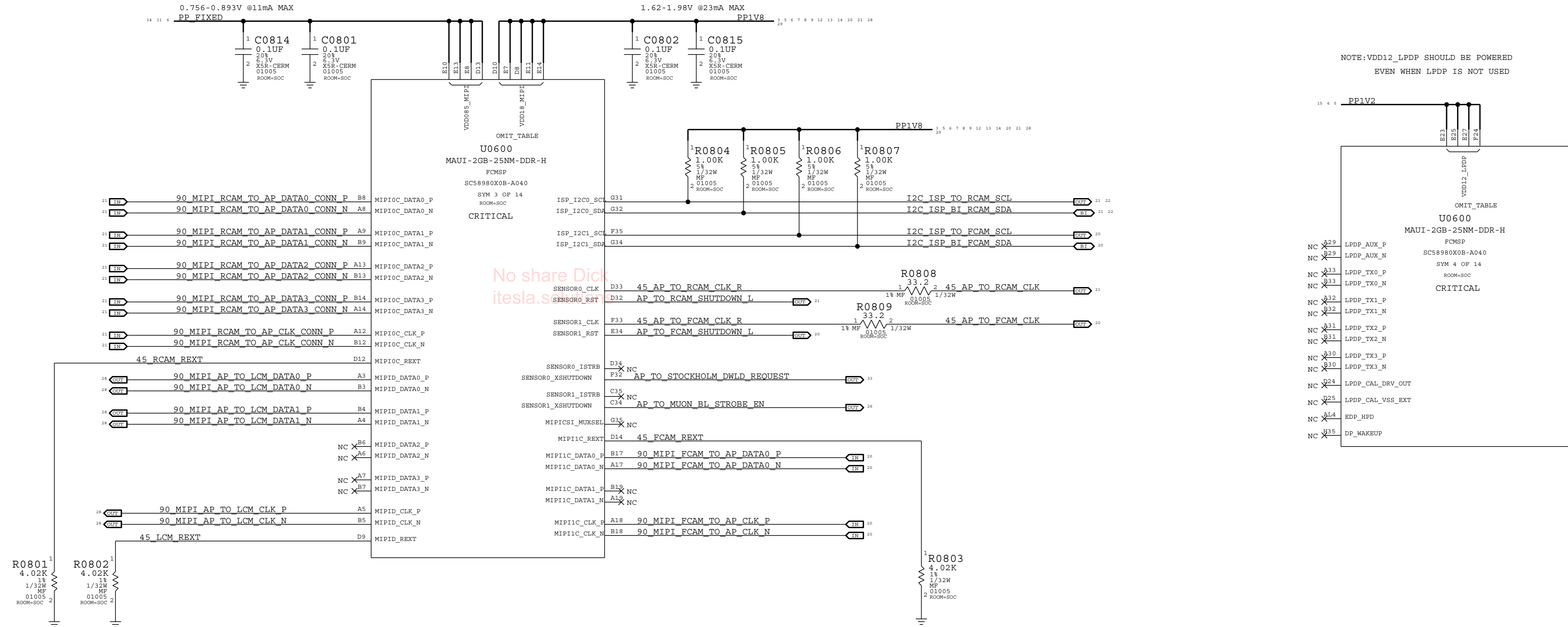
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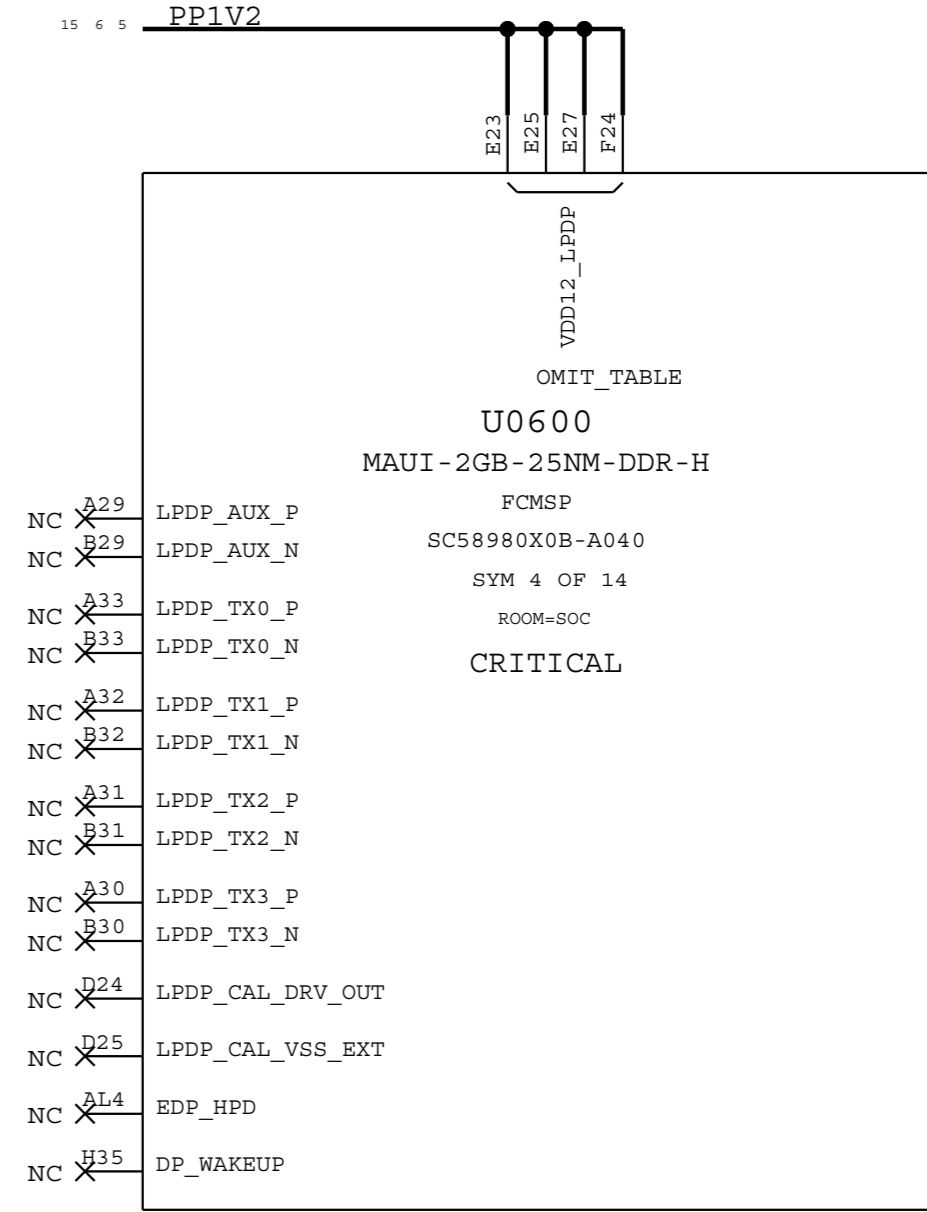
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A

A



NOTE: VDD12\_LPDP SHOULD BE POWERED  
EVEN WHEN LPDP IS NOT USED



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<b>SOC:CAMERA &amp; DISPLAY</b>			
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8

7

6

5

4

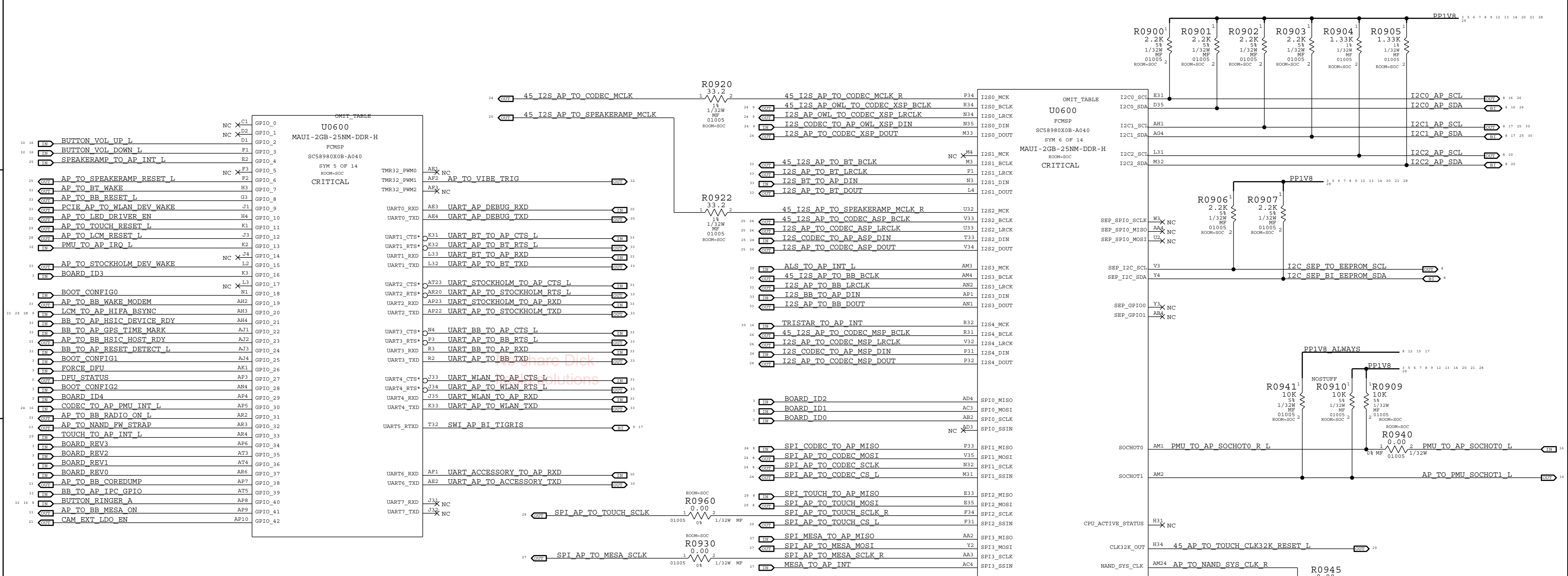
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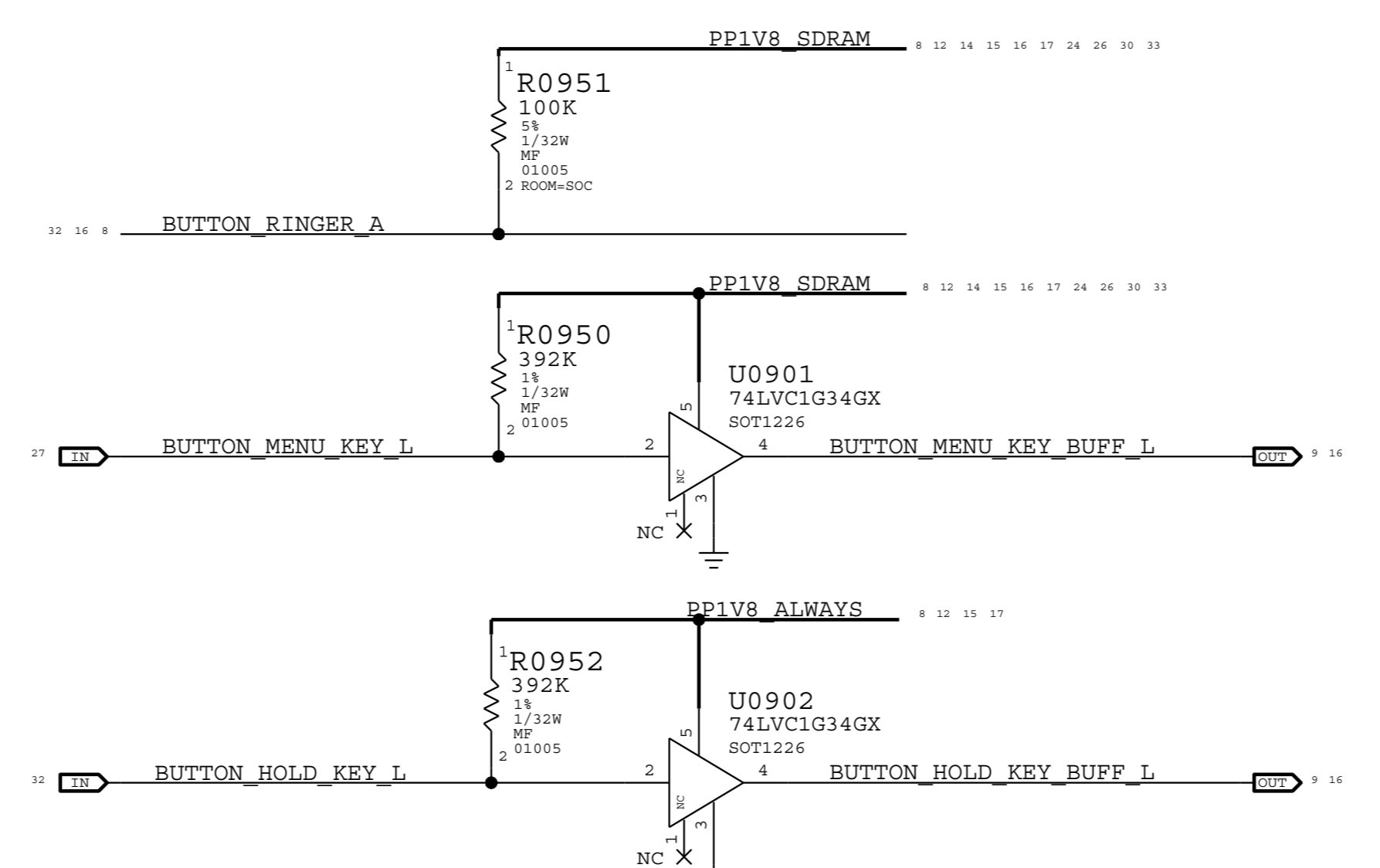
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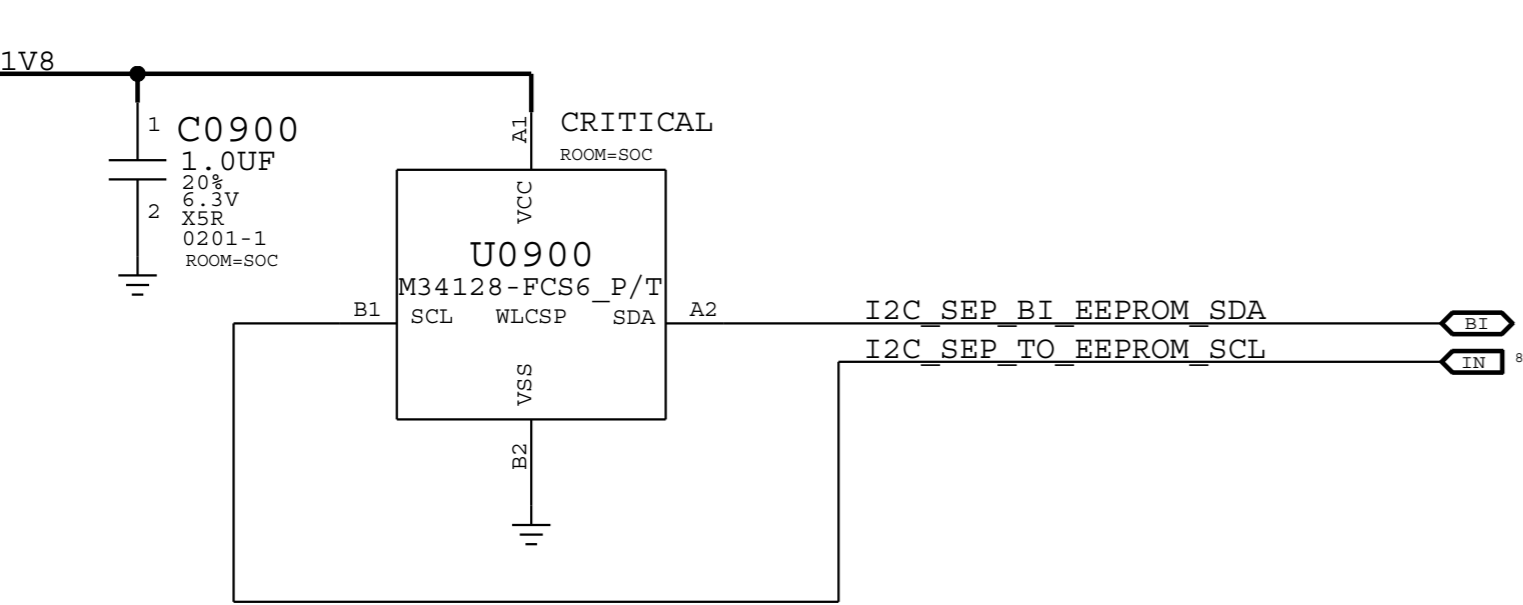
# SOC - GPIO & SERIAL INTERFACES



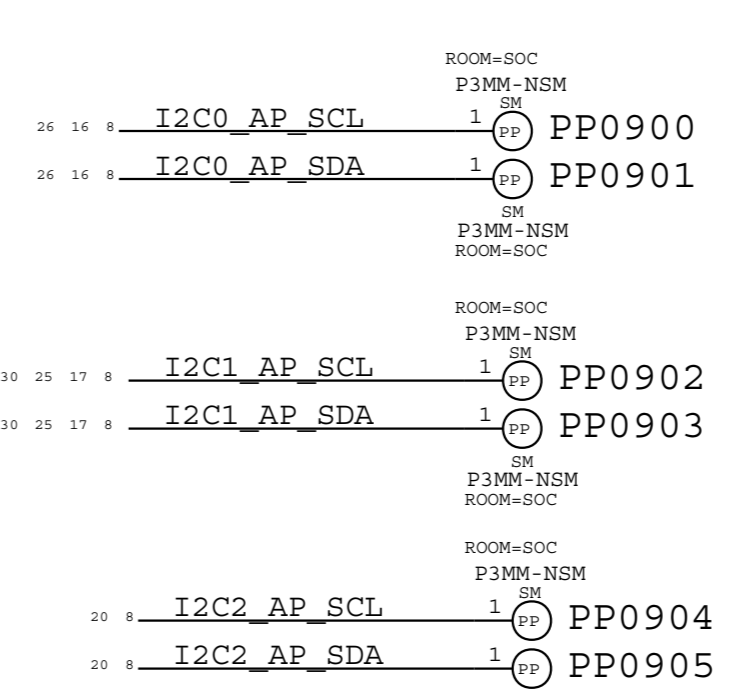
## BUTTON PULL-UP RESISTORS AND BUFFERS



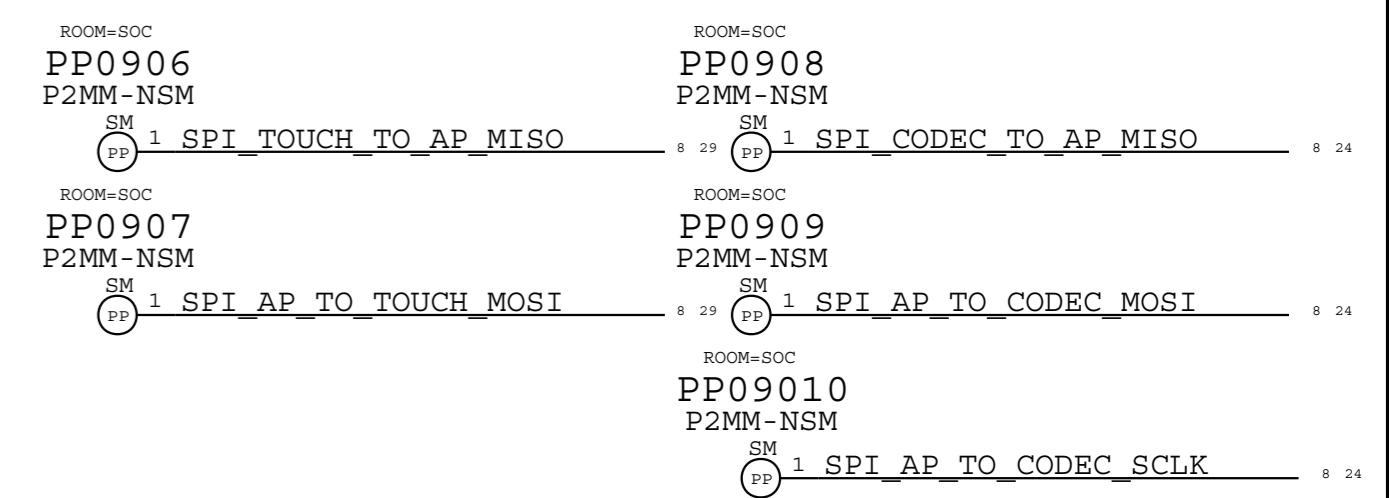
## ANTI-ROLLBACK EEPROM 128kbit APN:335S0946



## I2C PROBE POINTS

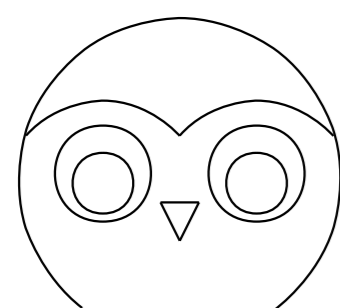


## SPI PROBE POINTS

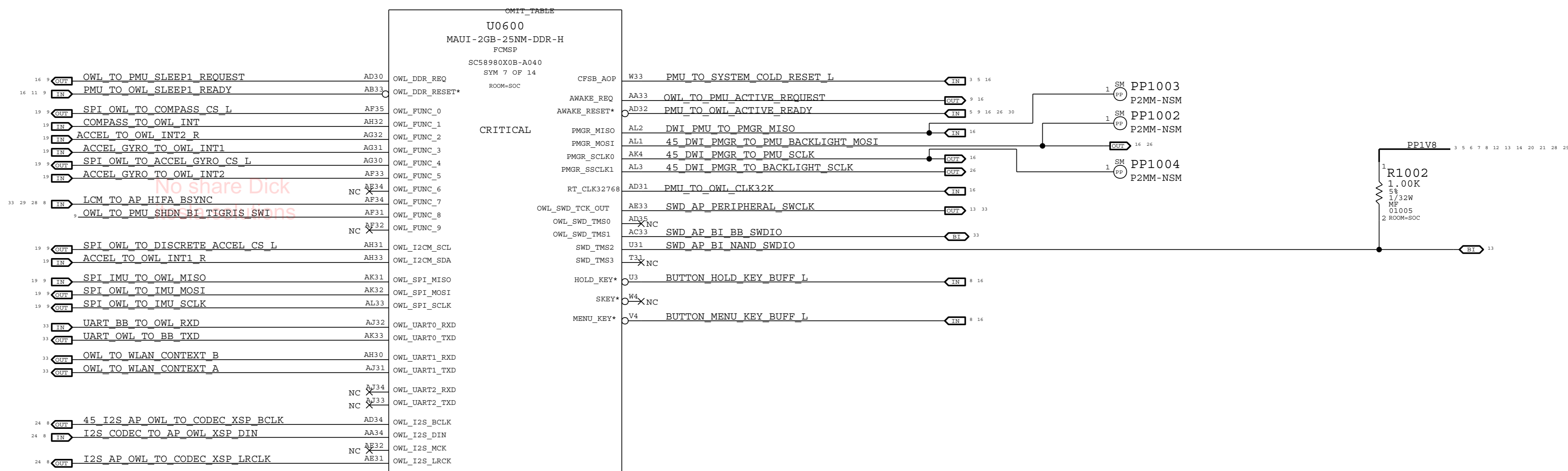
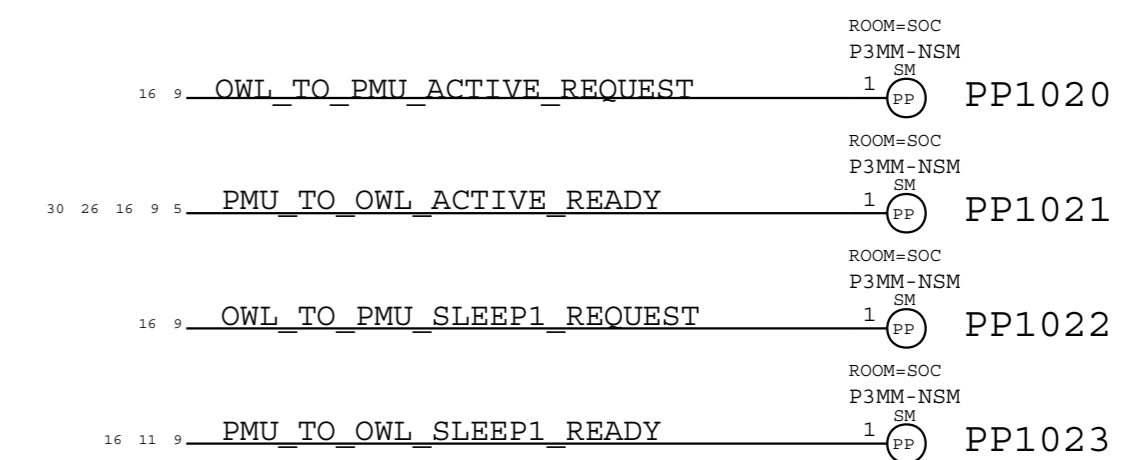


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Apple Inc.		051-00648	D
REVISION		4.0.0	
BRANCH			
PAGE		9 OF 49	
SHEET		8 OF 60	
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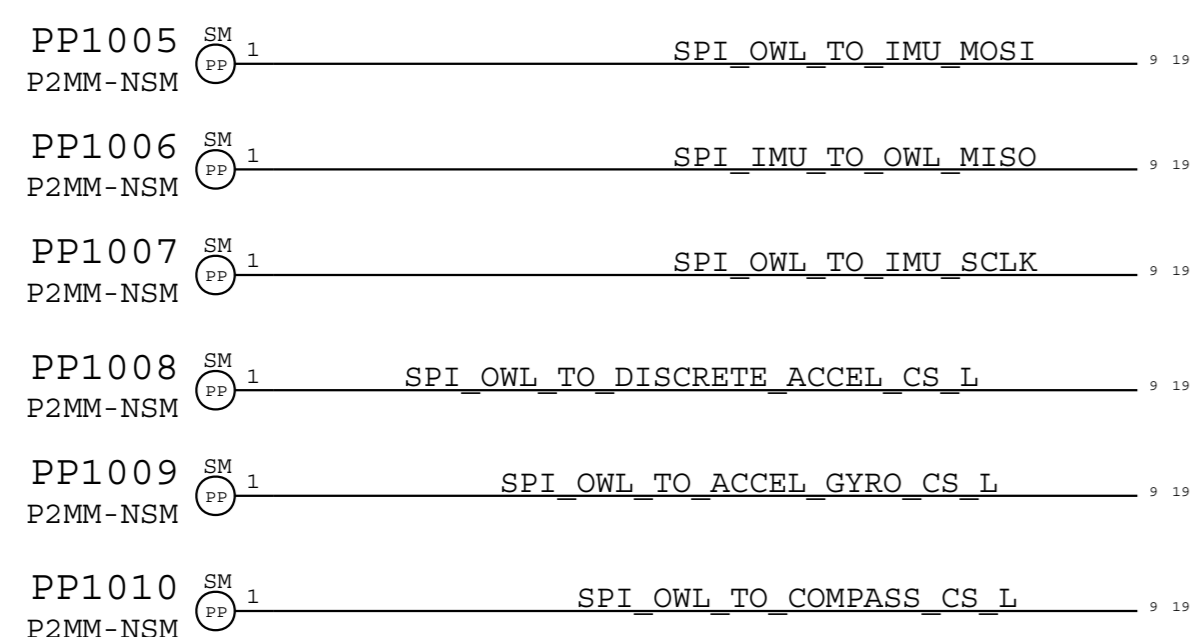
# SOC - OWL



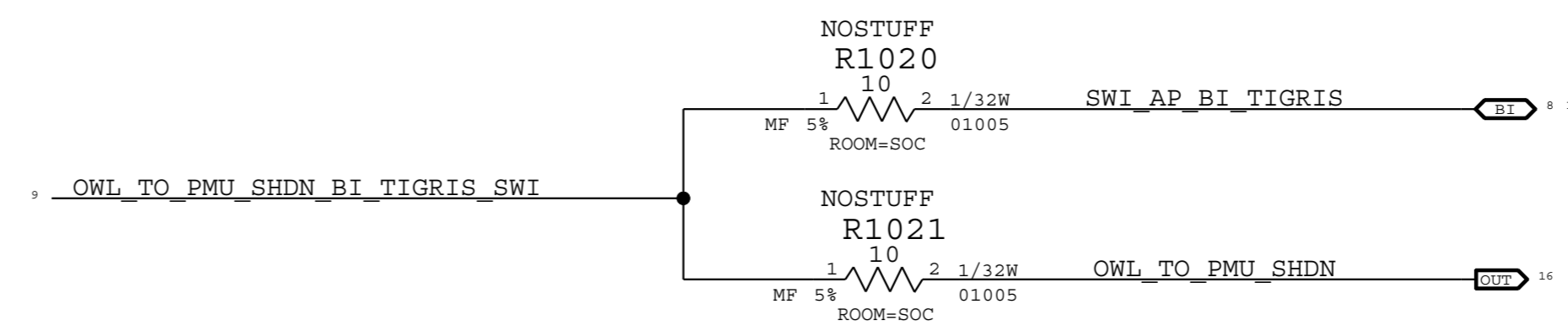
## POWER STATE CONTROL PROBE POINTS



No share Dick

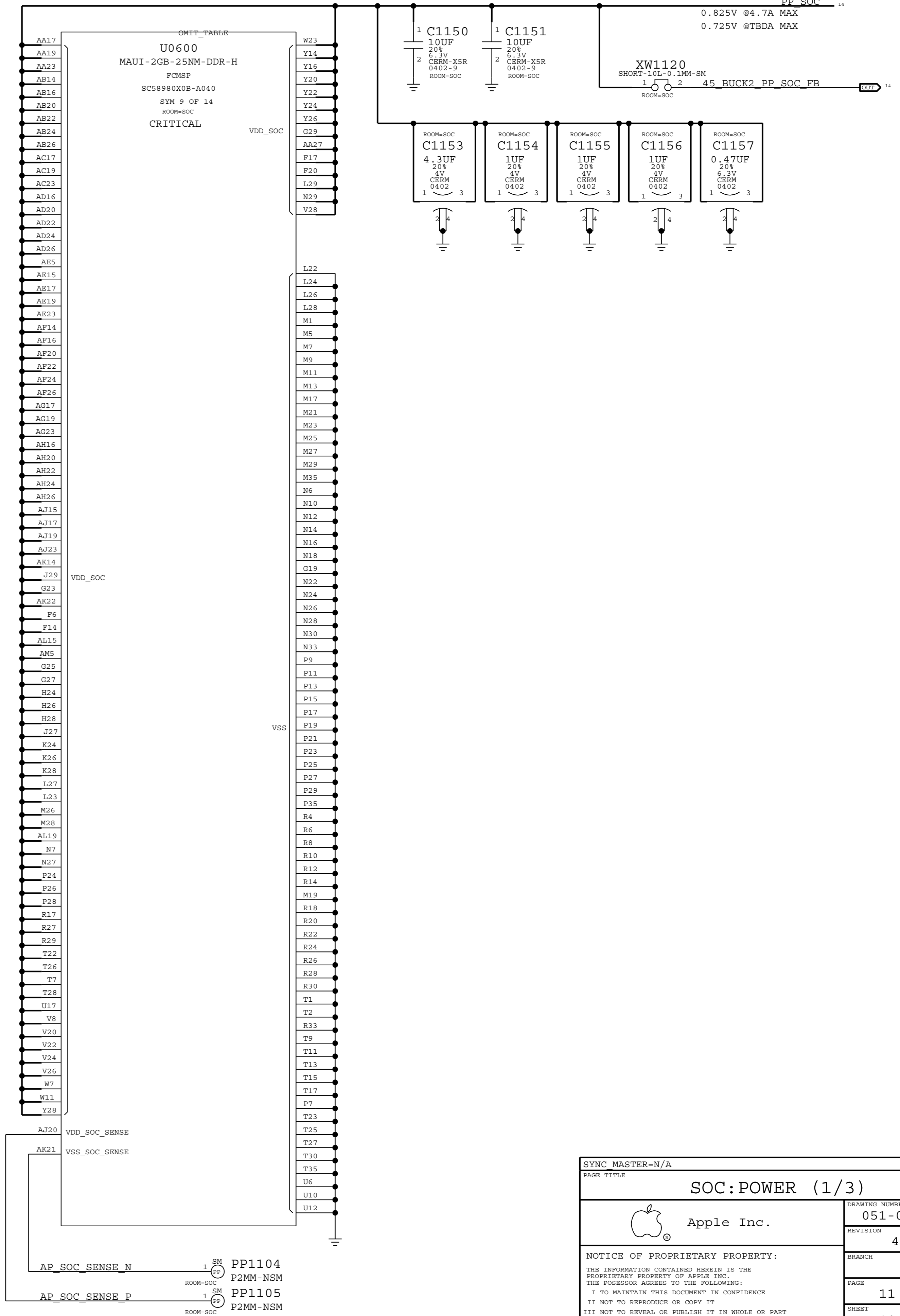
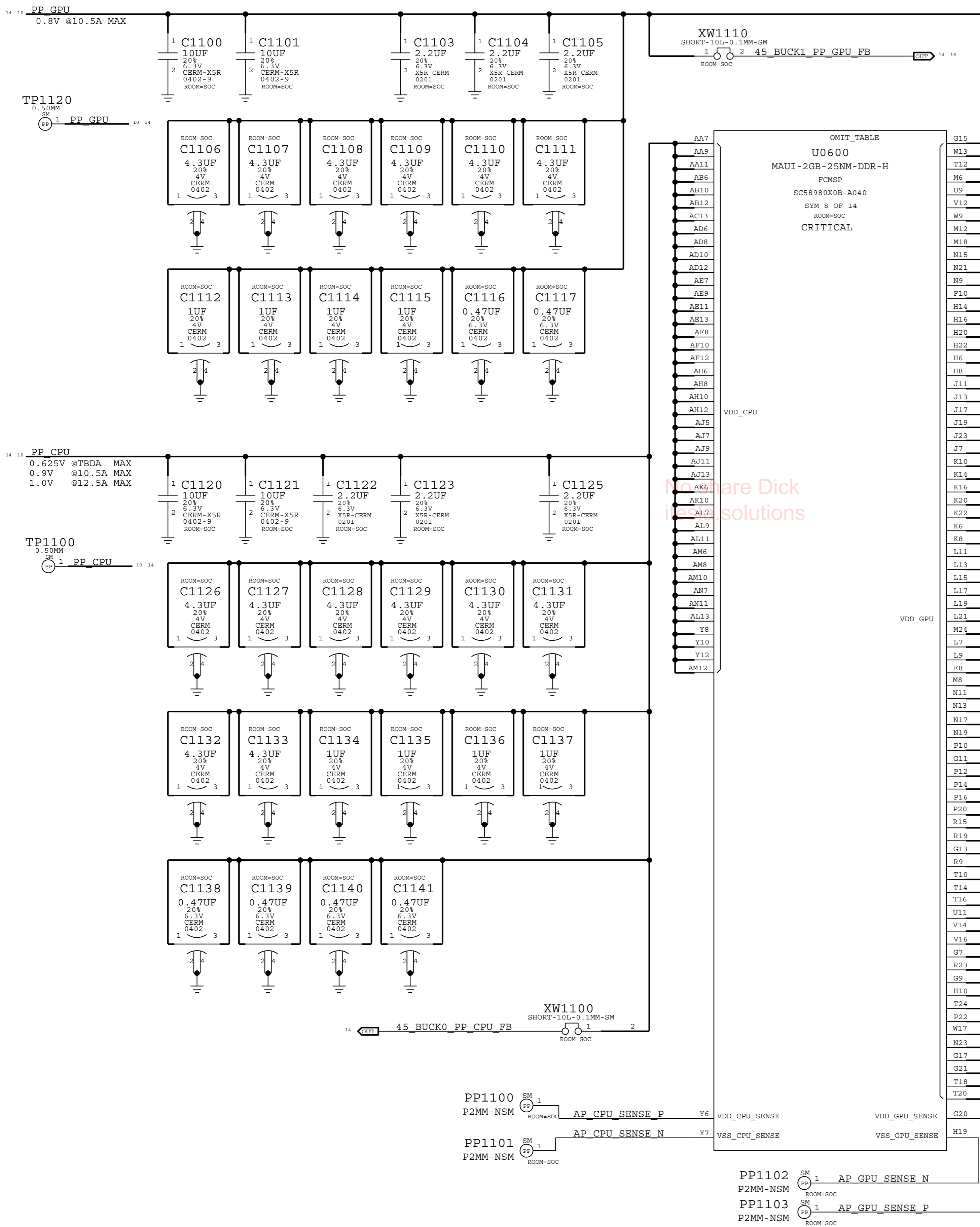


## OWL SYSTEM SHUTDOWN OPTION



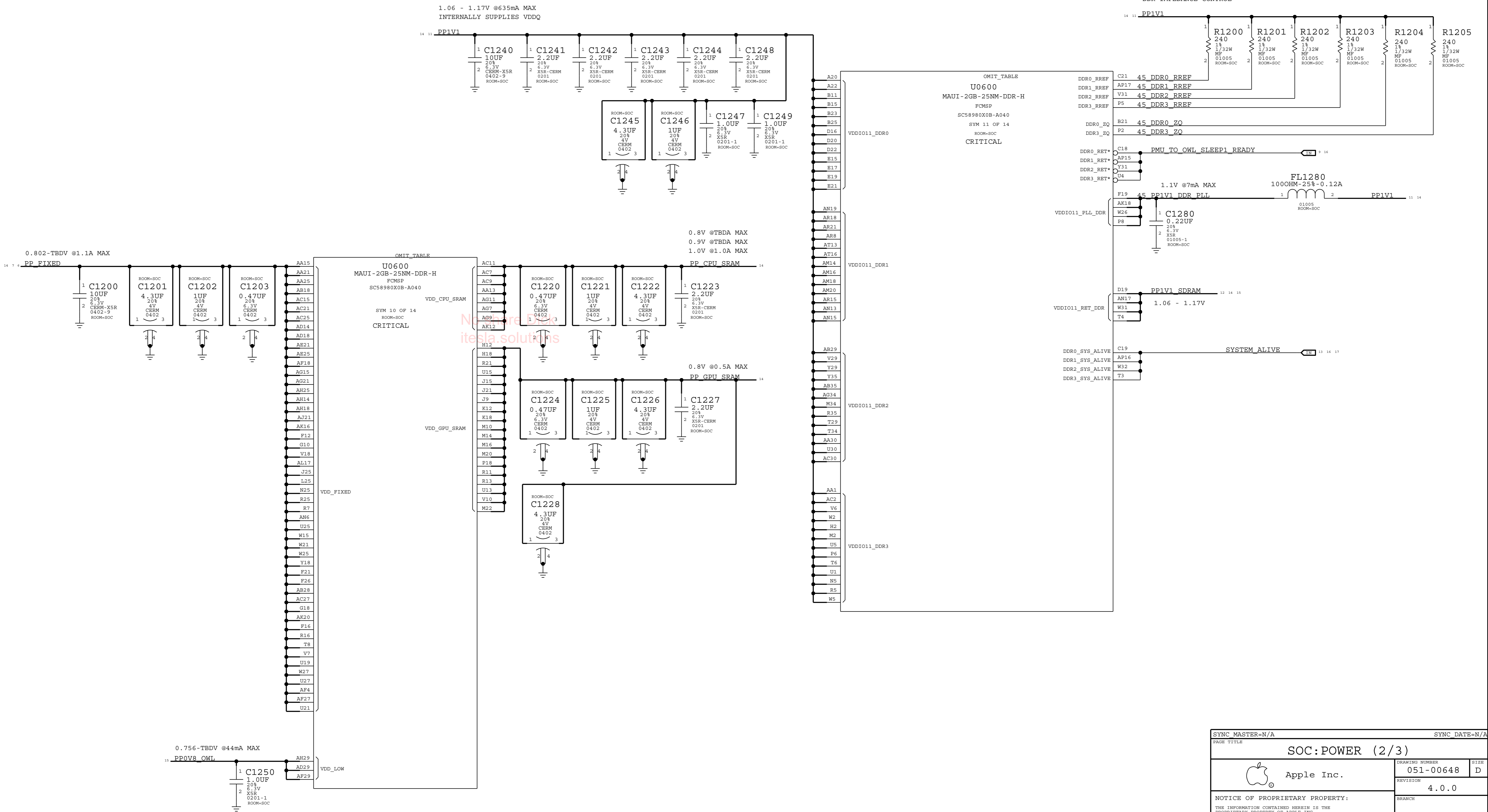
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# SOC - CPU, GPU & SOC RAILS



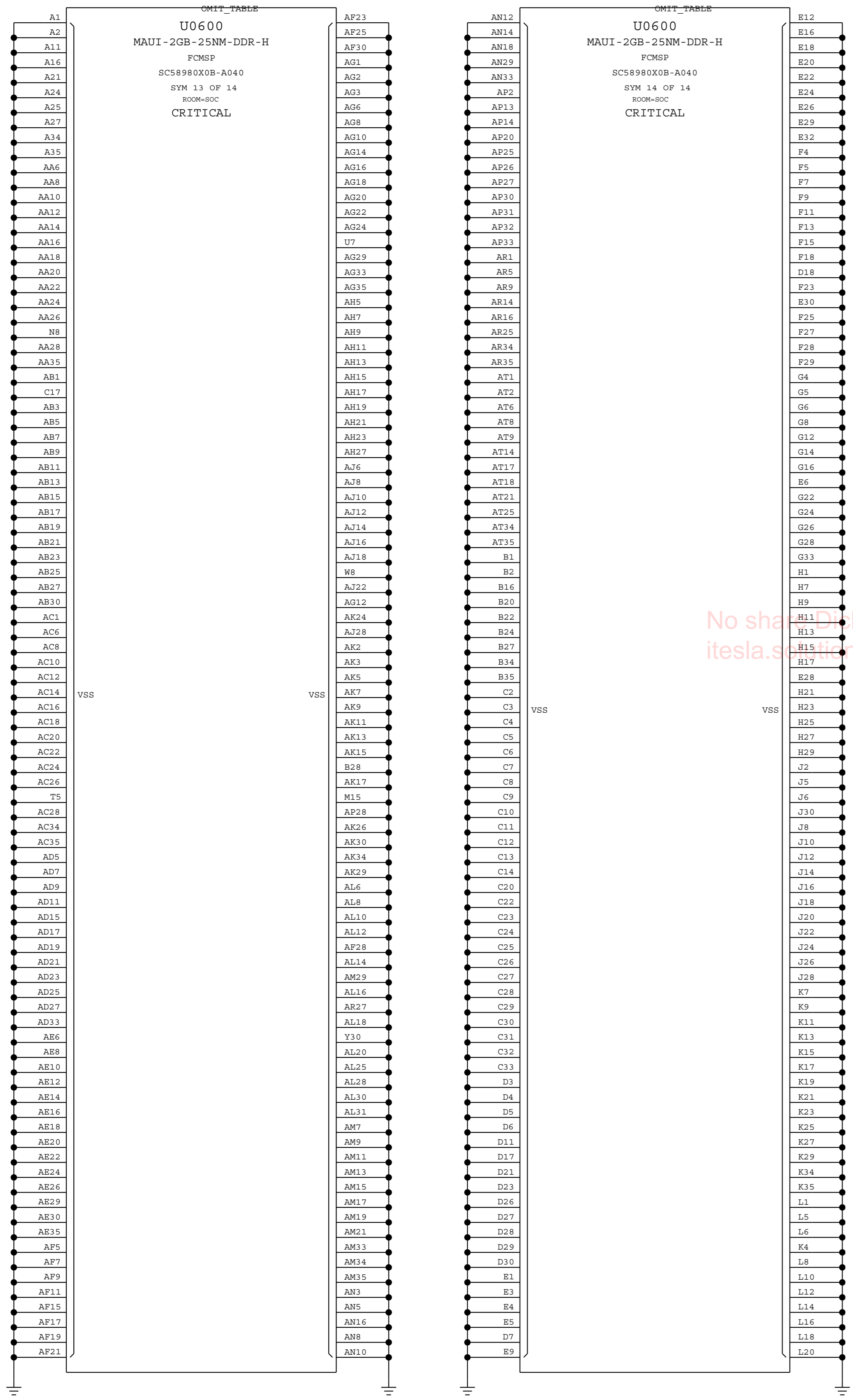
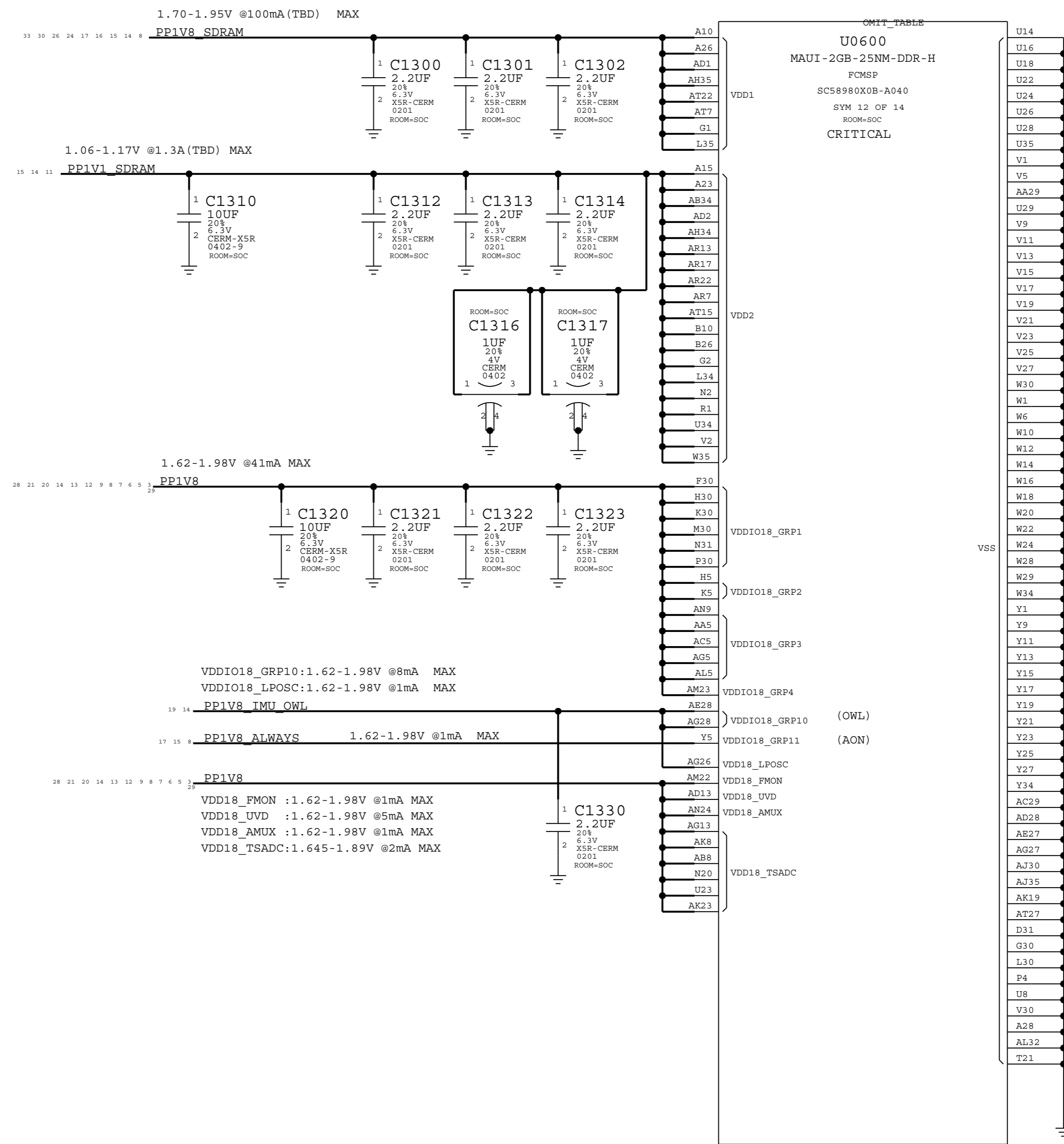
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PAGE		11 OF 49	
SHEET		10 OF 60	

# SOC - POWER SUPPLIES



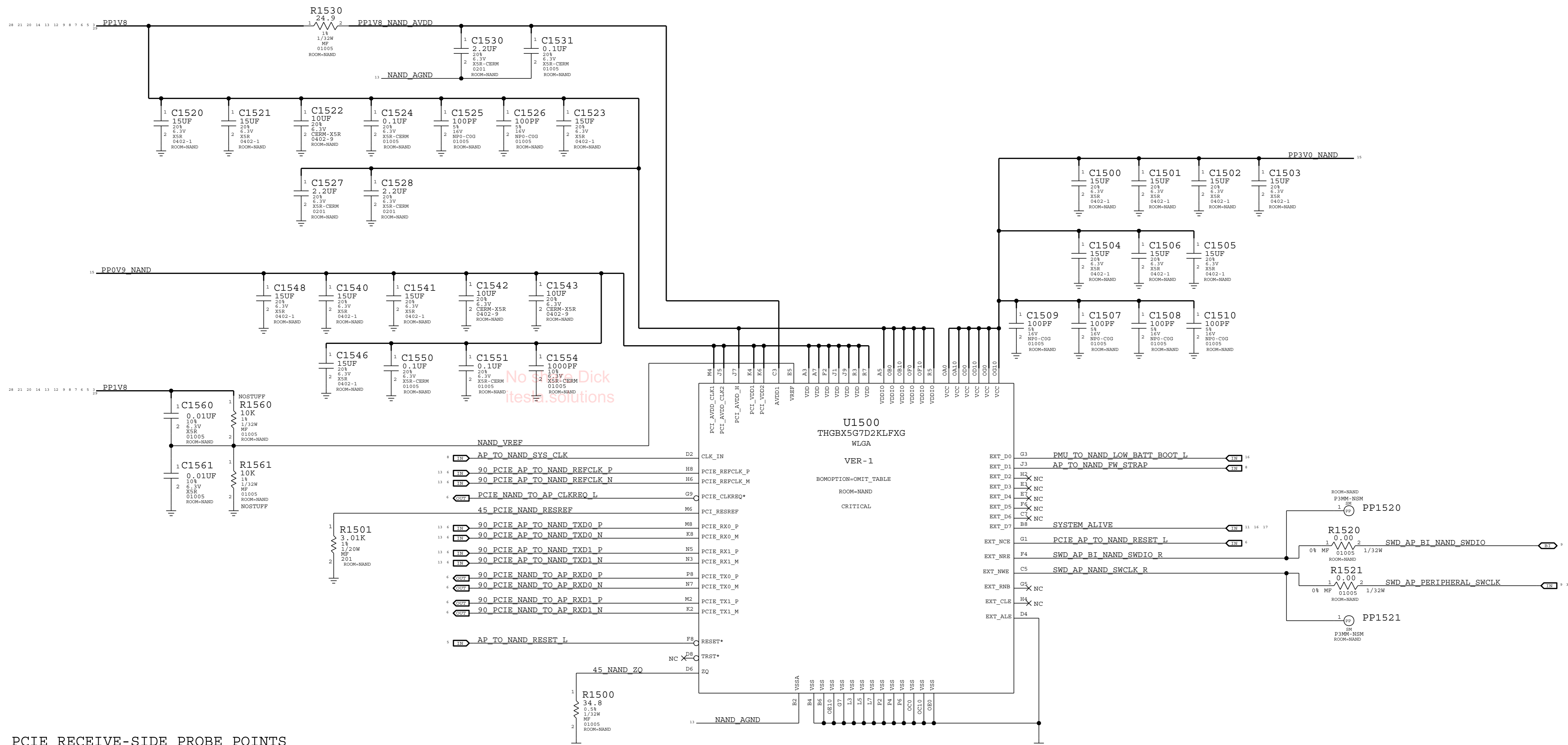
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# SOC - POWER SUPPLIES



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		SHEET	12 OF 60

# S3E NAND

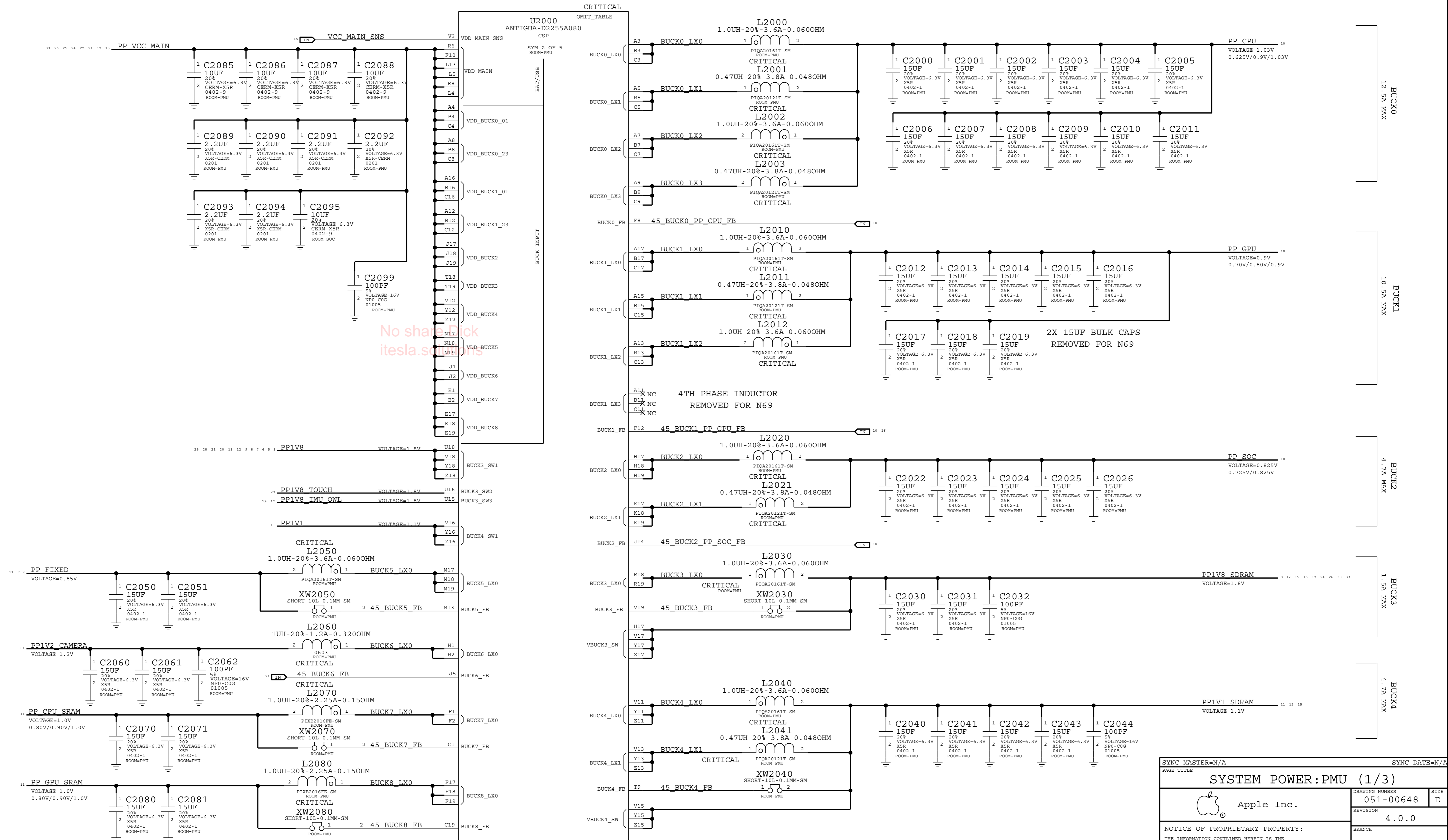
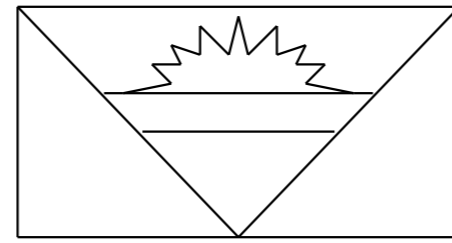


## PCIE RECEIVE-SIDE PROBE POINTS

Signal	Probe Point
90_PCIE_AP_TO_NAND_REFCLK_P	PP1500
90_PCIE_AP_TO_NAND_REFCLK_N	PP1501
90_PCIE_AP_TO_NAND_TXD0_P	PP1502
90_PCIE_AP_TO_NAND_TXD0_N	PP1503
90_PCIE_AP_TO_NAND_TXD1_P	PP1504
90_PCIE_AP_TO_NAND_TXD1_N	PP1505

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		PAGE	15 OF 49
		SHEET	13 OF 60

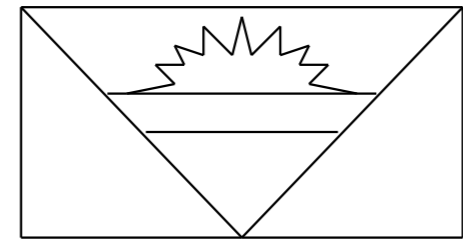
# ANTIGUA PMU - Buck Supplies



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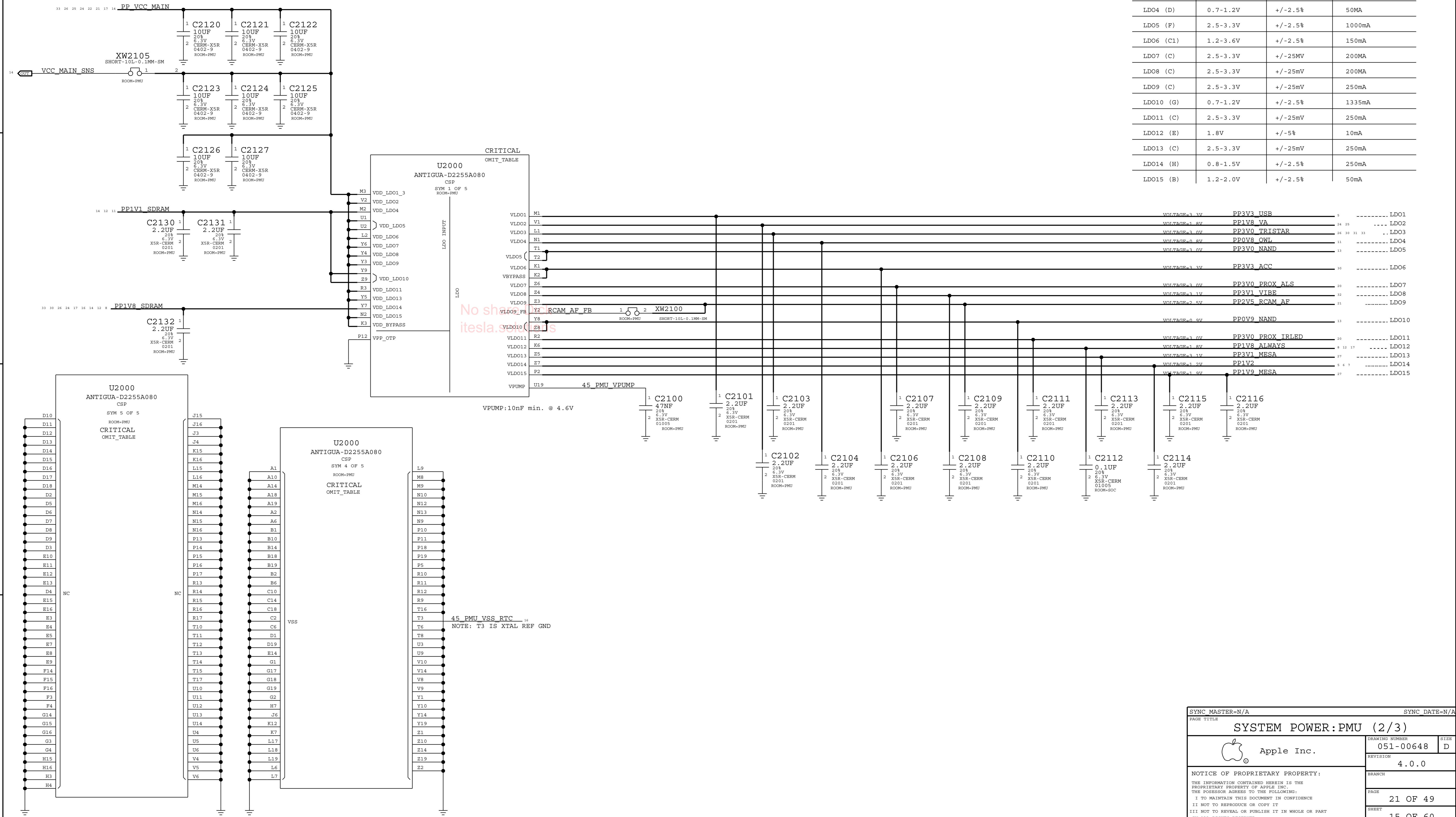
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PAGE	20 OF 49		SHEET
	14 OF 60		

# ANTIGUA PMU - LDOs



## ANTIGUA LDO SPECS

LDO#	ADJ. RANGE	ACCURACY	MAX. CURRENT
LDO1 (A)	2.5-3.3V	+/-2.5%	50mA
LDO2 (B)	1.2-1.9V	+/-2.5%	50mA
LDO3 (A)	2.5-3.3V	+/-2.5%	50mA
LDO4 (D)	0.7-1.2V	+/-2.5%	50mA
LDO5 (F)	2.5-3.3V	+/-2.5%	1000mA
LDO6 (C1)	1.2-3.6V	+/-2.5%	150mA
LDO7 (C)	2.5-3.3V	+/-25mV	200mA
LDO8 (C)	2.5-3.3V	+/-25mV	200mA
LDO9 (C)	2.5-3.3V	+/-25mV	250mA
LDO10 (G)	0.7-1.2V	+/-2.5%	1335mA
LDO11 (C)	2.5-3.3V	+/-25mV	250mA
LDO12 (E)	1.8V	+/-5%	10mA
LDO13 (C)	2.5-3.3V	+/-25mV	250mA
LDO14 (H)	0.8-1.5V	+/-2.5%	250mA
LDO15 (B)	1.2-2.0V	+/-2.5%	50mA



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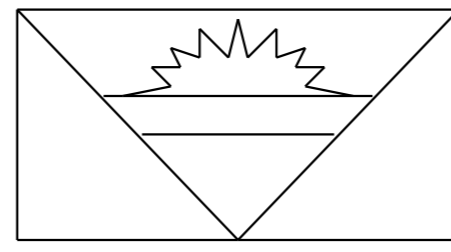
VPUMP:10nF min. @ 4.6V

45 PMU VSS\_RTC  
NOTE: T3 IS XTAL REF GND

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		PAGE	21 OF 49
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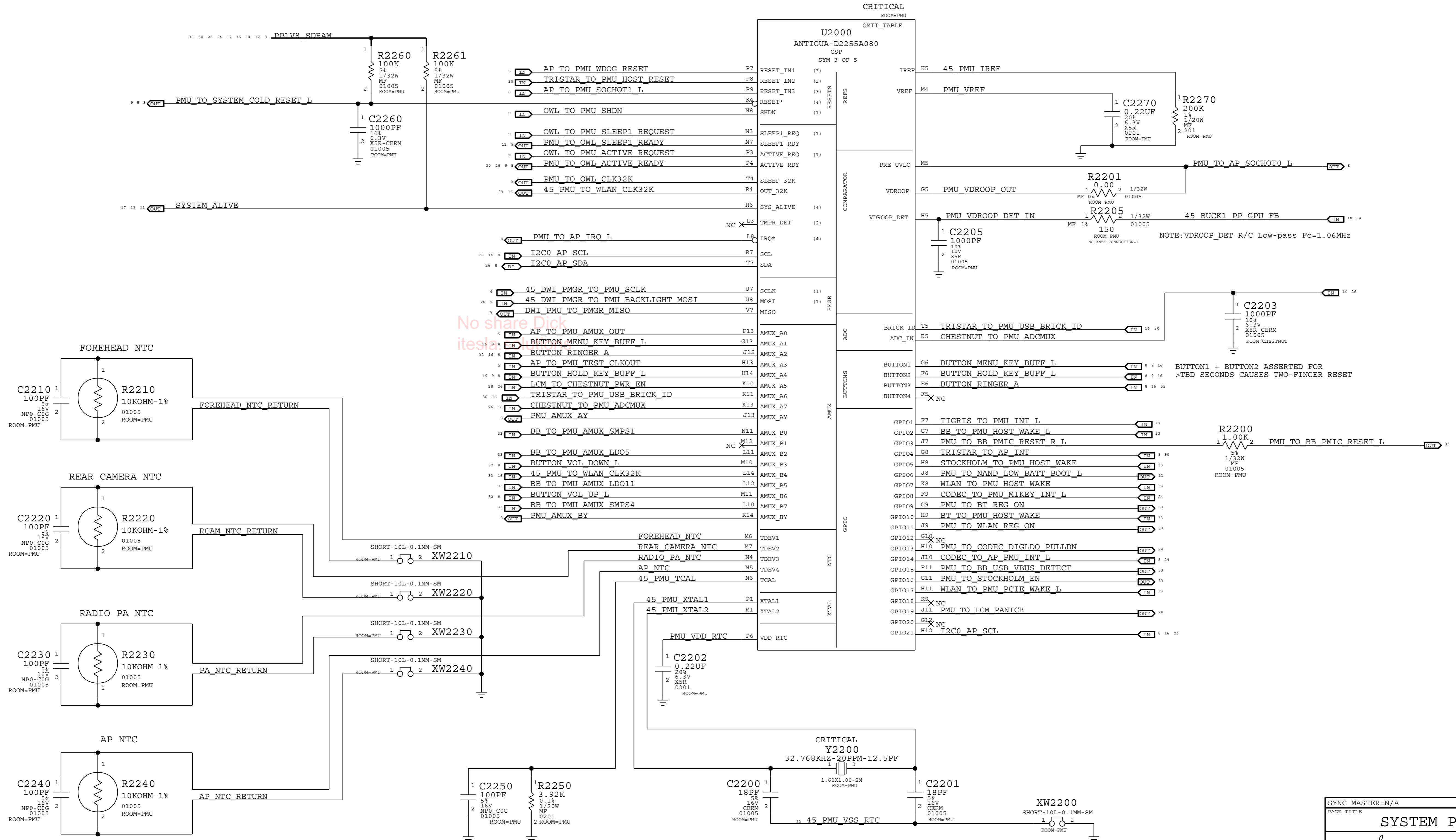


# ANTIGUA PMU - GPIOs, NTCs



## CONTROL PIN NOTES:

- NOTE (1): INPUT PULL-DOWN 100-300k
- NOTE (2): INPUT PULL-DOWN 1M
- NOTE (3): INPUT PULL-UP OR DOWN 100k-300k
- NOTE (4): OUTPUT OPEN-DRAIN, REQUIRES PULL-UP

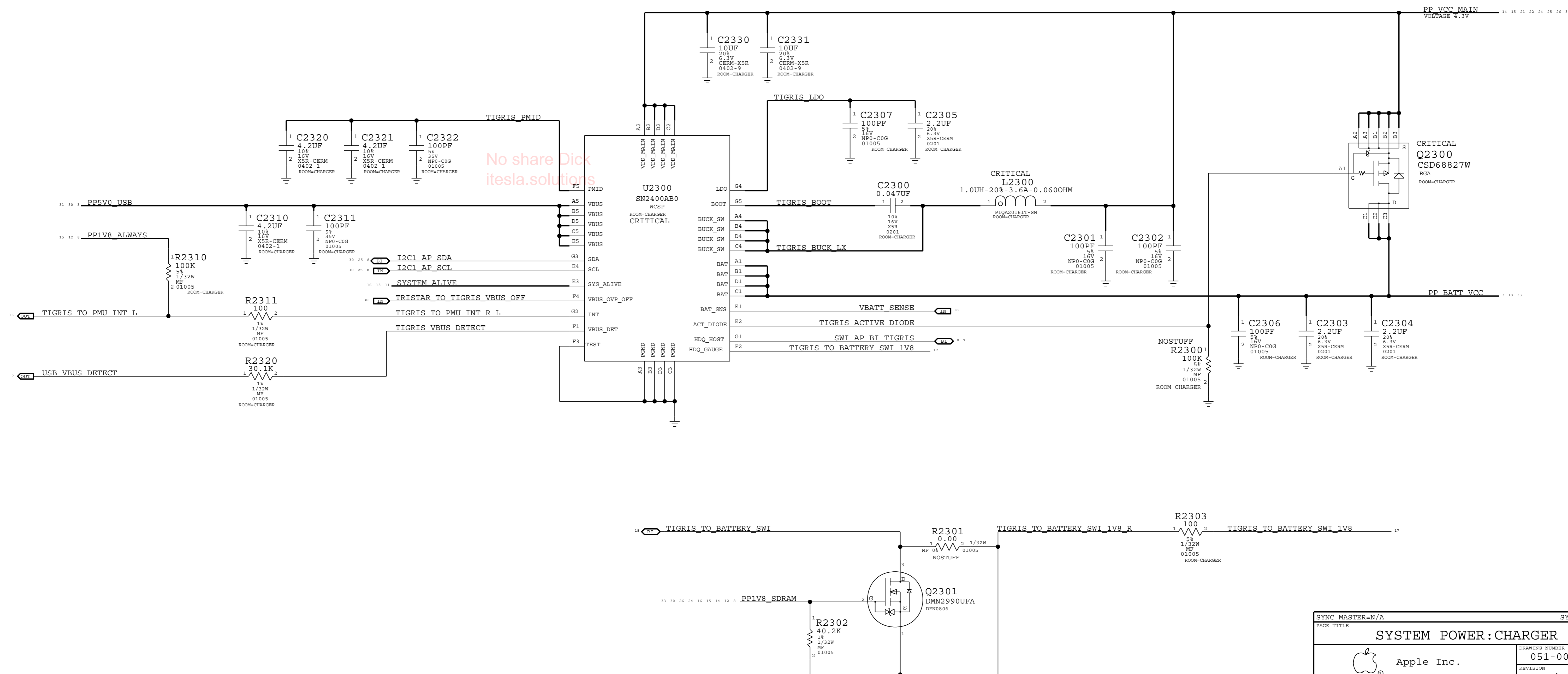


NOTE:100PF CAPS ARE THE SAMPLING CAPS FOR PMU ADC

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# TIGRIS CHARGER

APN: 343S00033



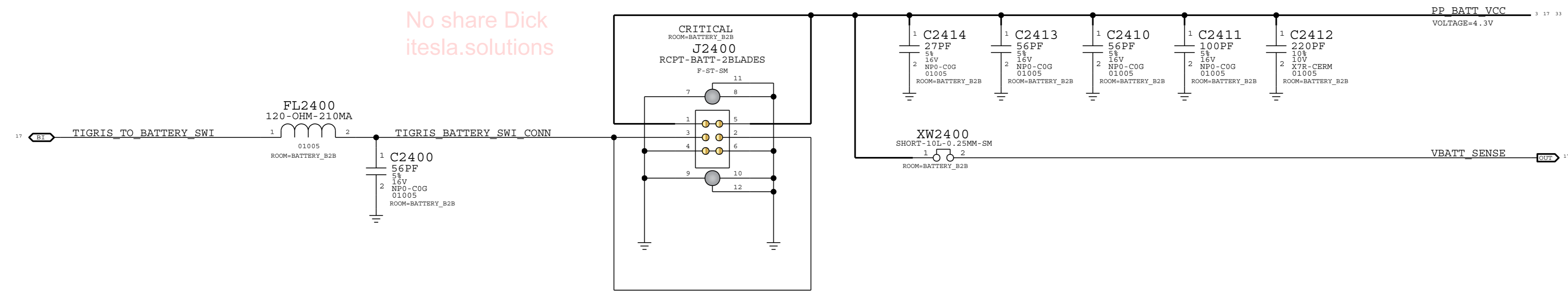
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# BATTERY CONNECTOR

THIS ONE ON MLB ----> 516S00104 (RCPT)  
516S00105 (PLUG)

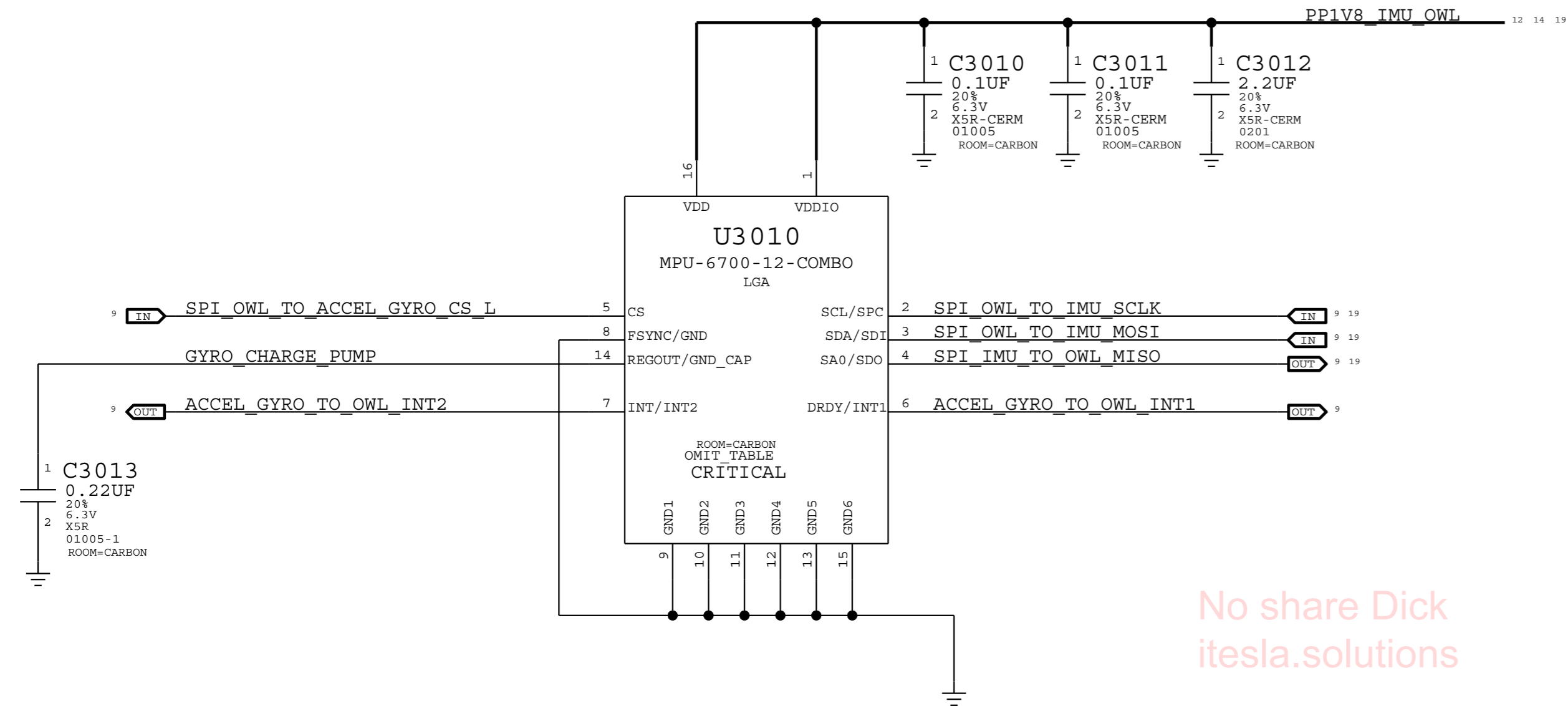
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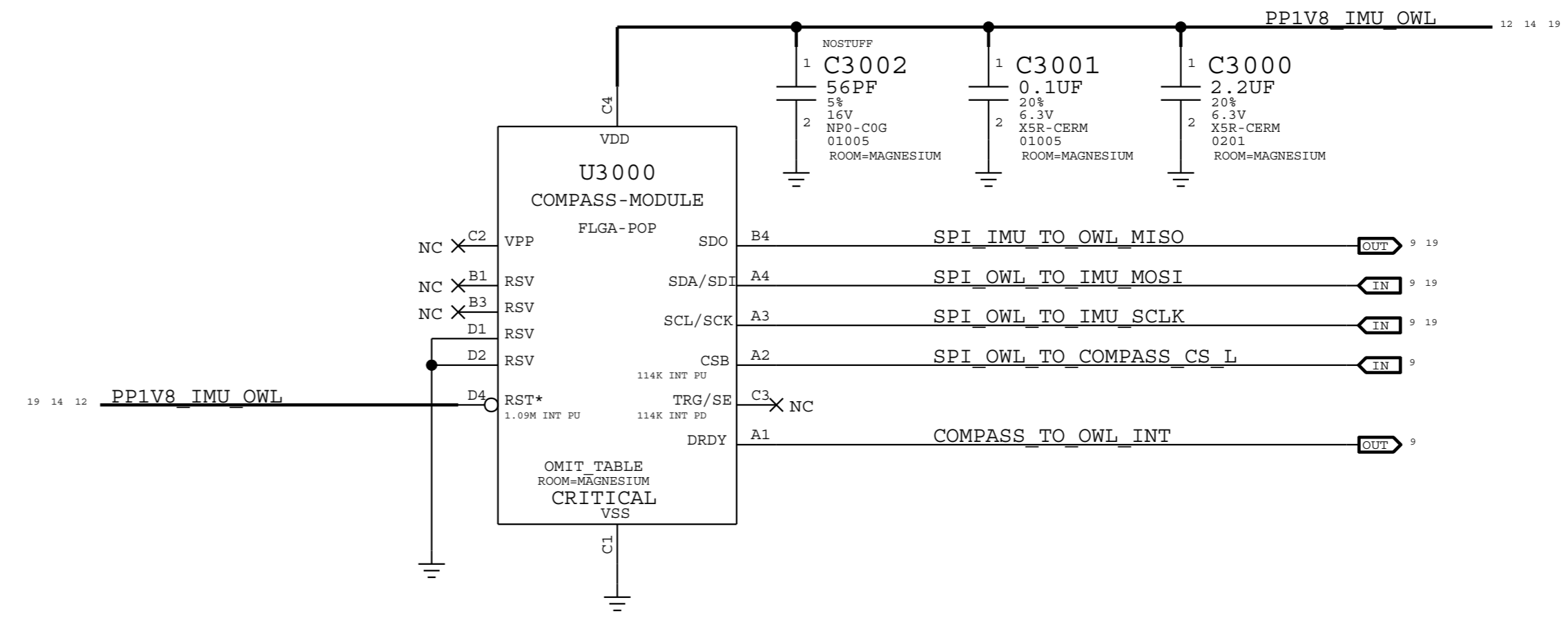
# CARBON - ACCEL & GYRO

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 INVENSENSE 1.1 (APN 338S00087): C3013=0.22UF



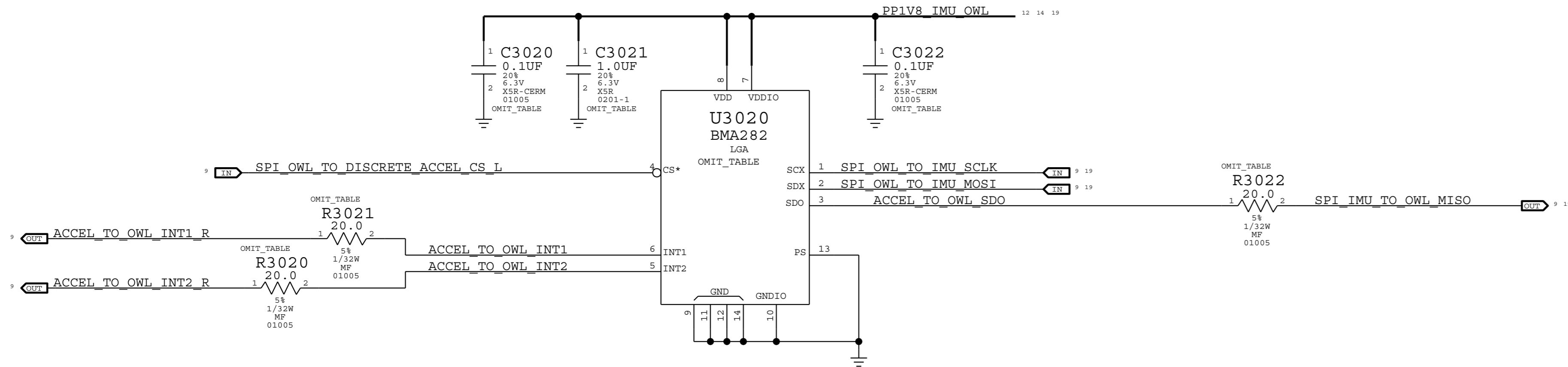
# MAGNESIUM - COMPASS

ALPS (APN:338S00084)



# DISCRETE ACCEL

BOSCH (APN:338S1163)



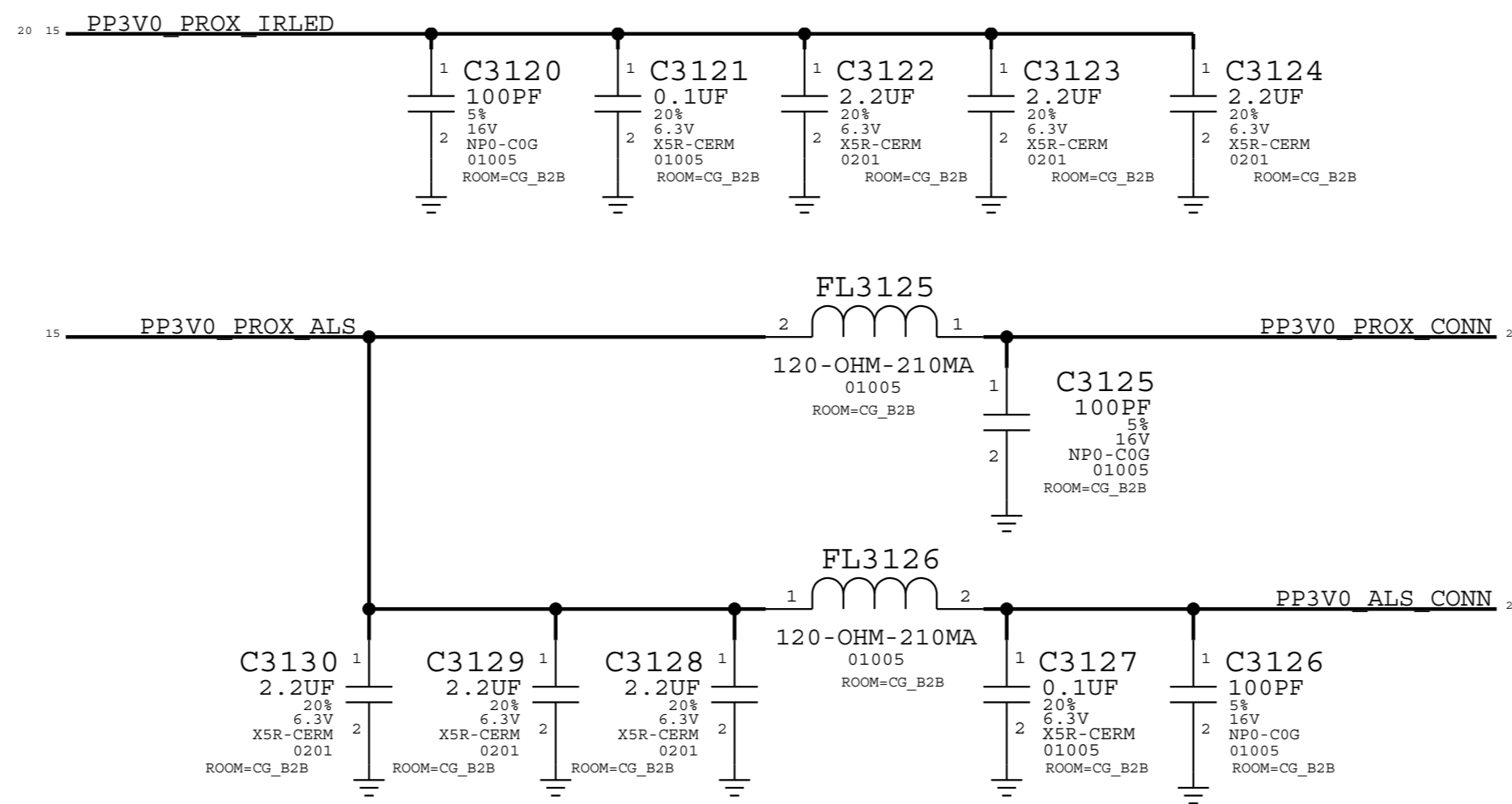
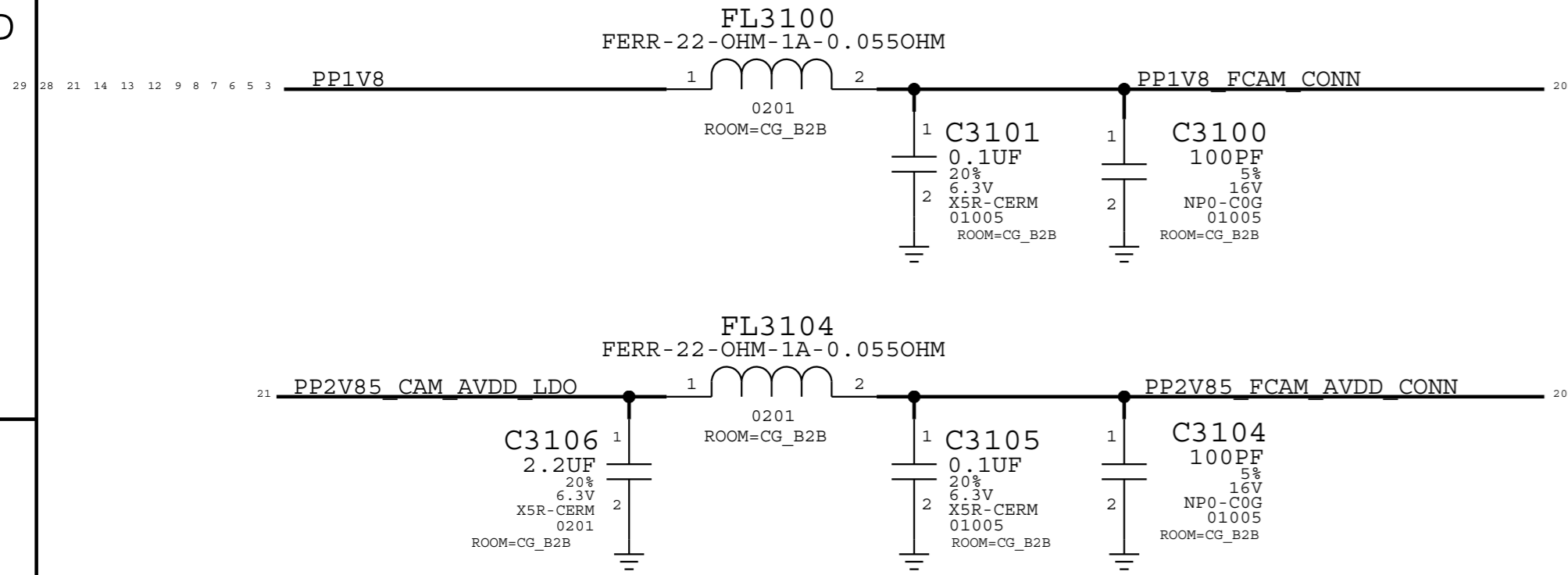
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# FOREHEAD FLEX (FCAM)

## PROX & ALS POWER

## FOREHEAD CONNECTOR

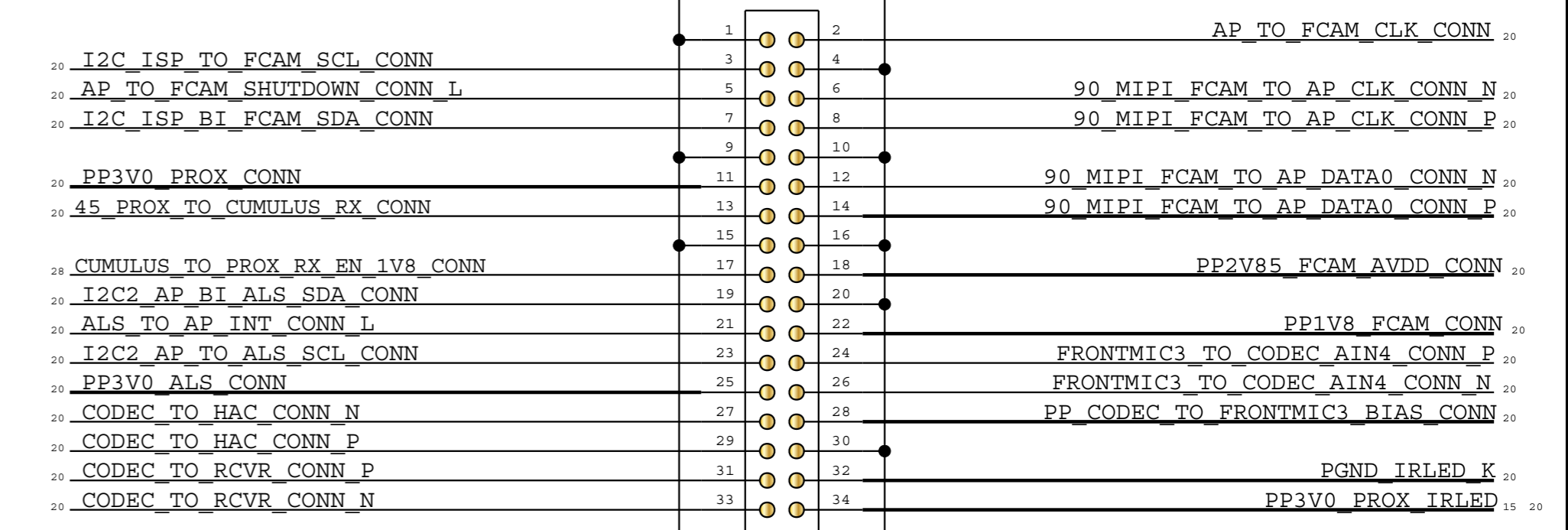
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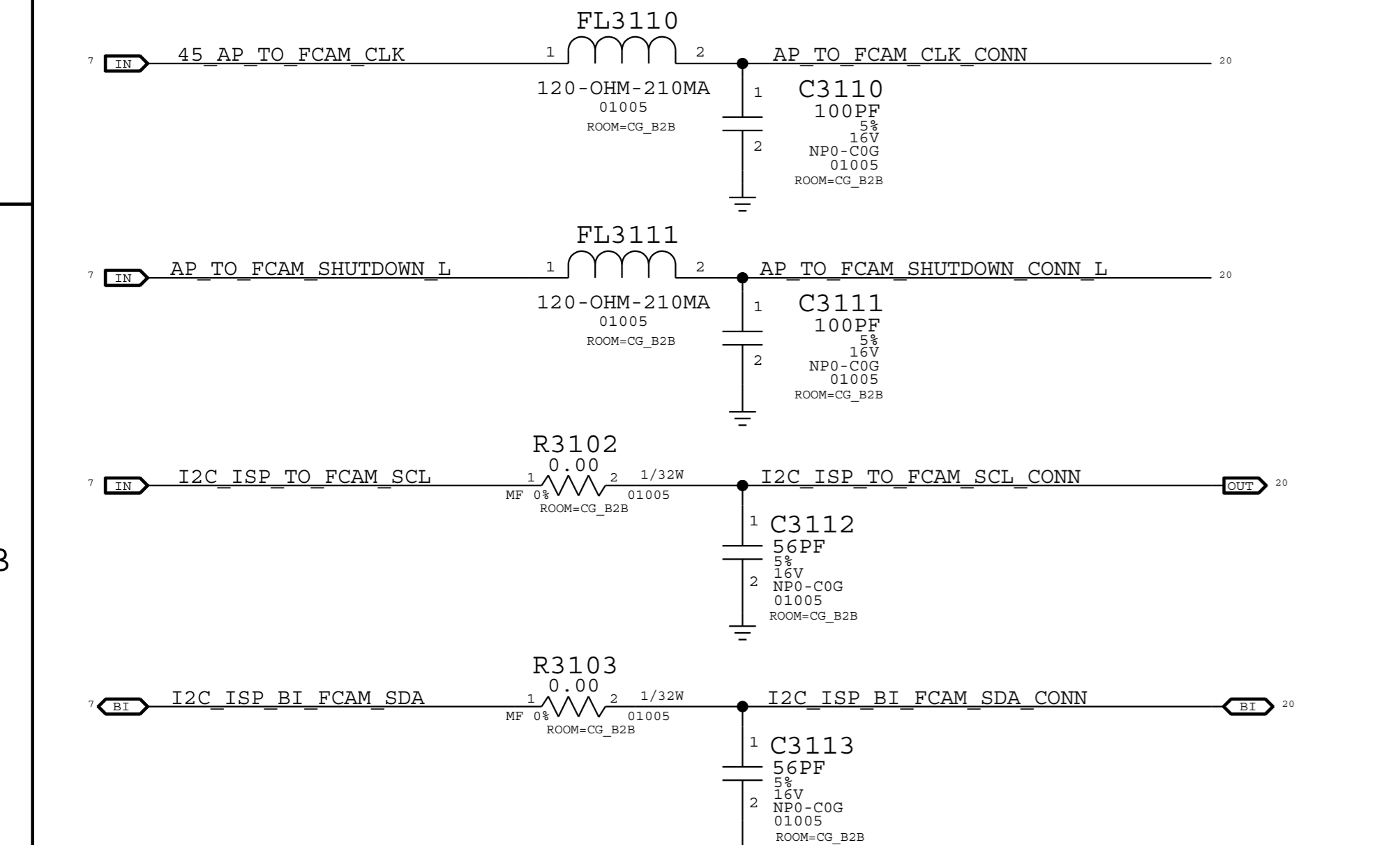
THIS ONE ON MLB --->

516S0986 (RCPT)  
516S0987 (PLUG)

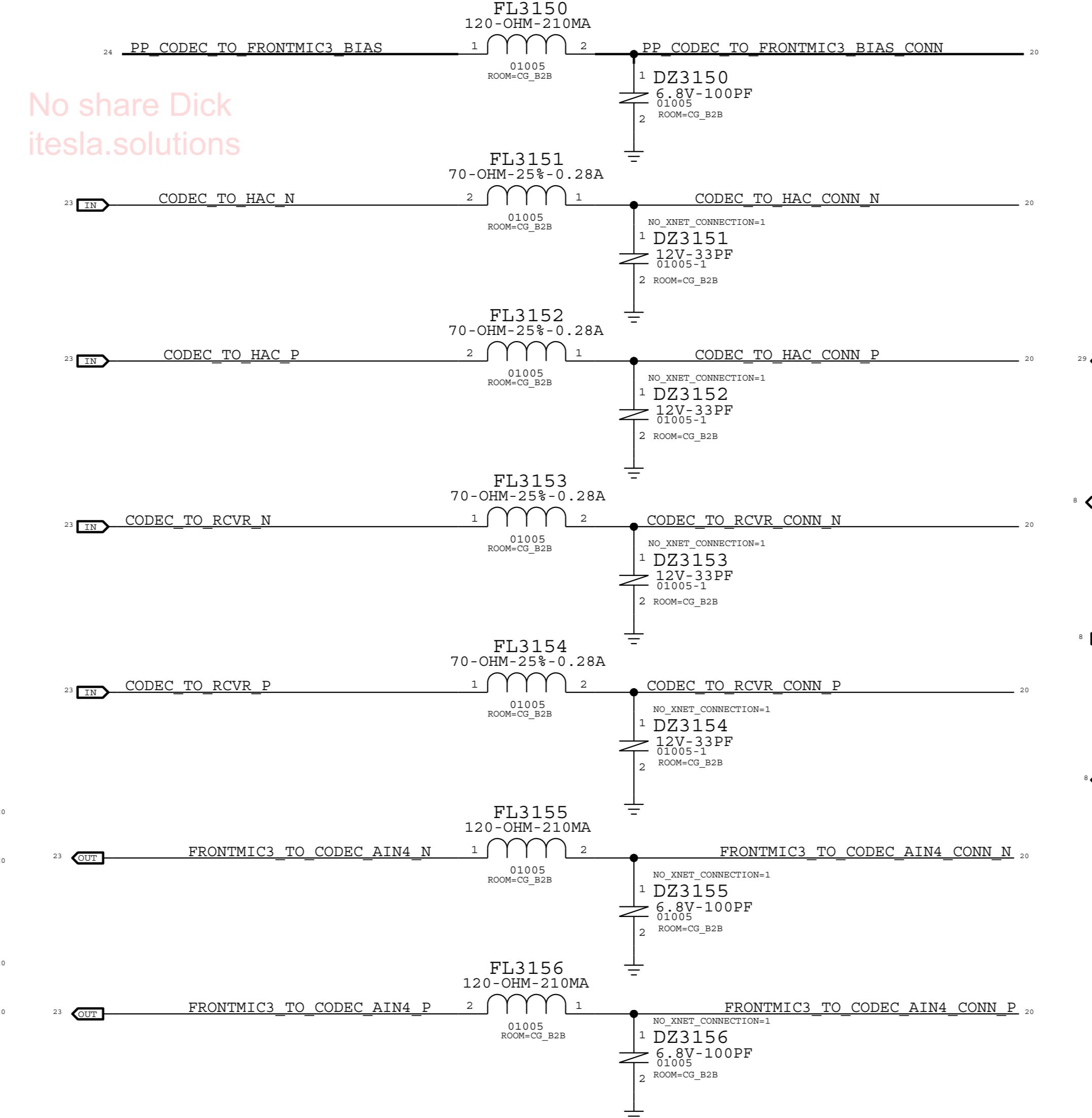
J3100  
AA22L-S034VA1  
F-ST-SM



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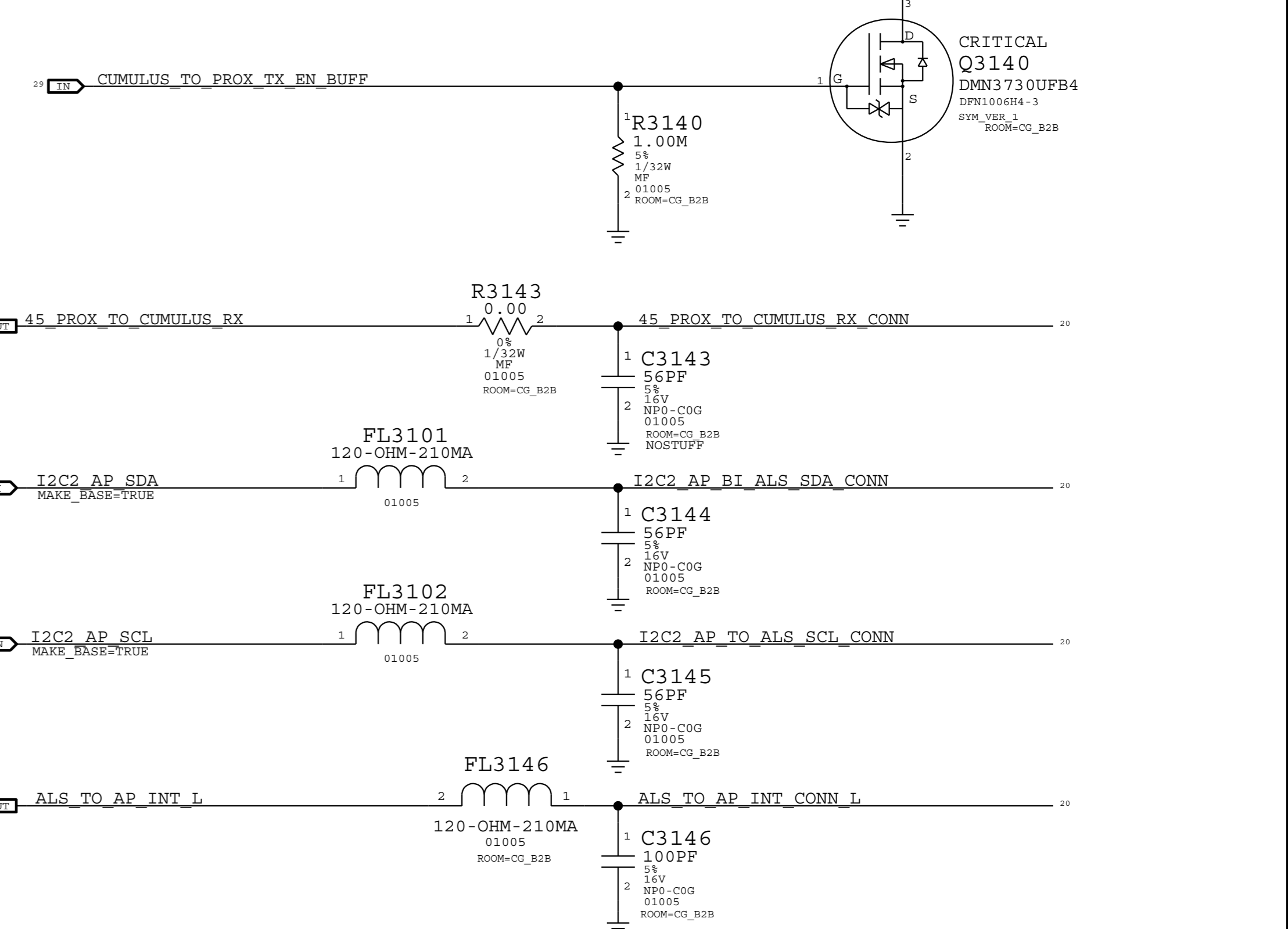


## MIC3/HAC/RCVR INTERFACE

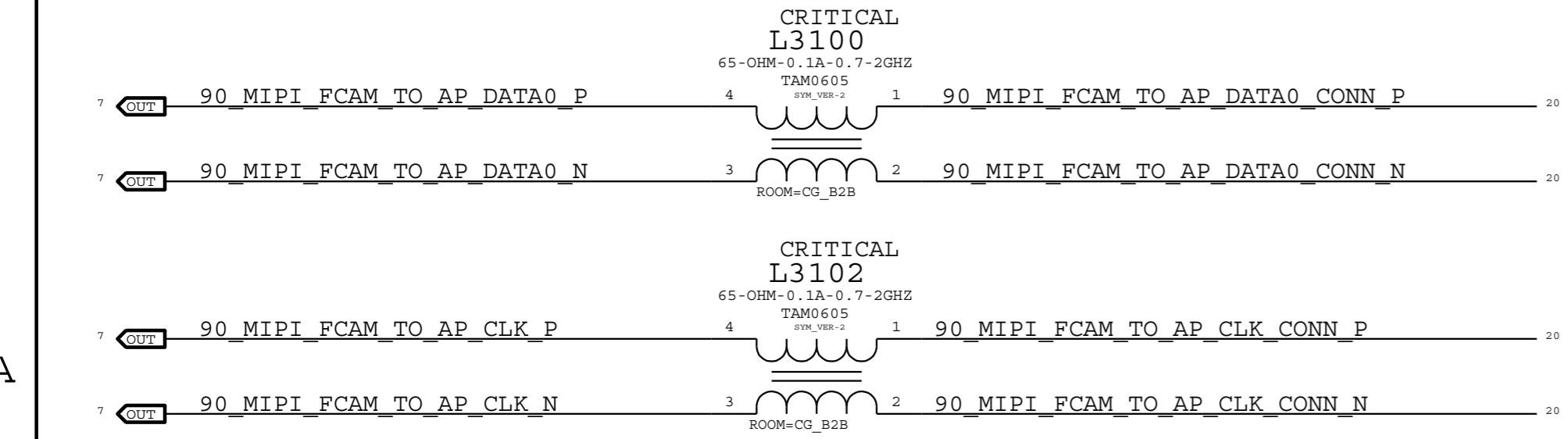


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## PROX & ALS INTERFACE



### CAMERA MIPI

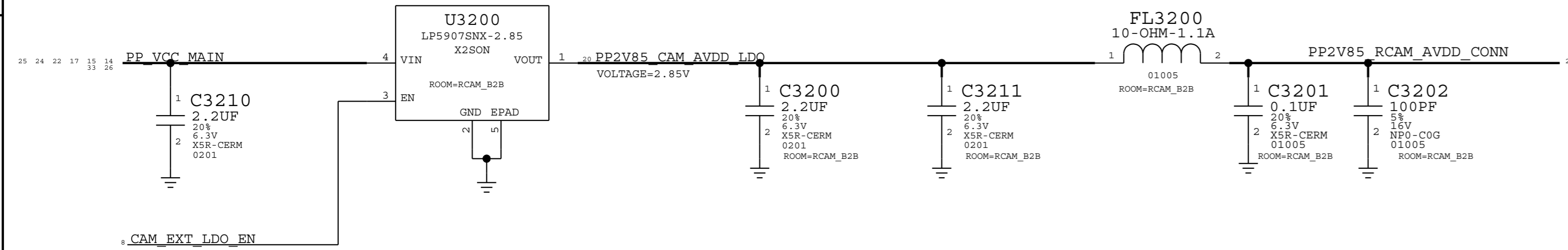


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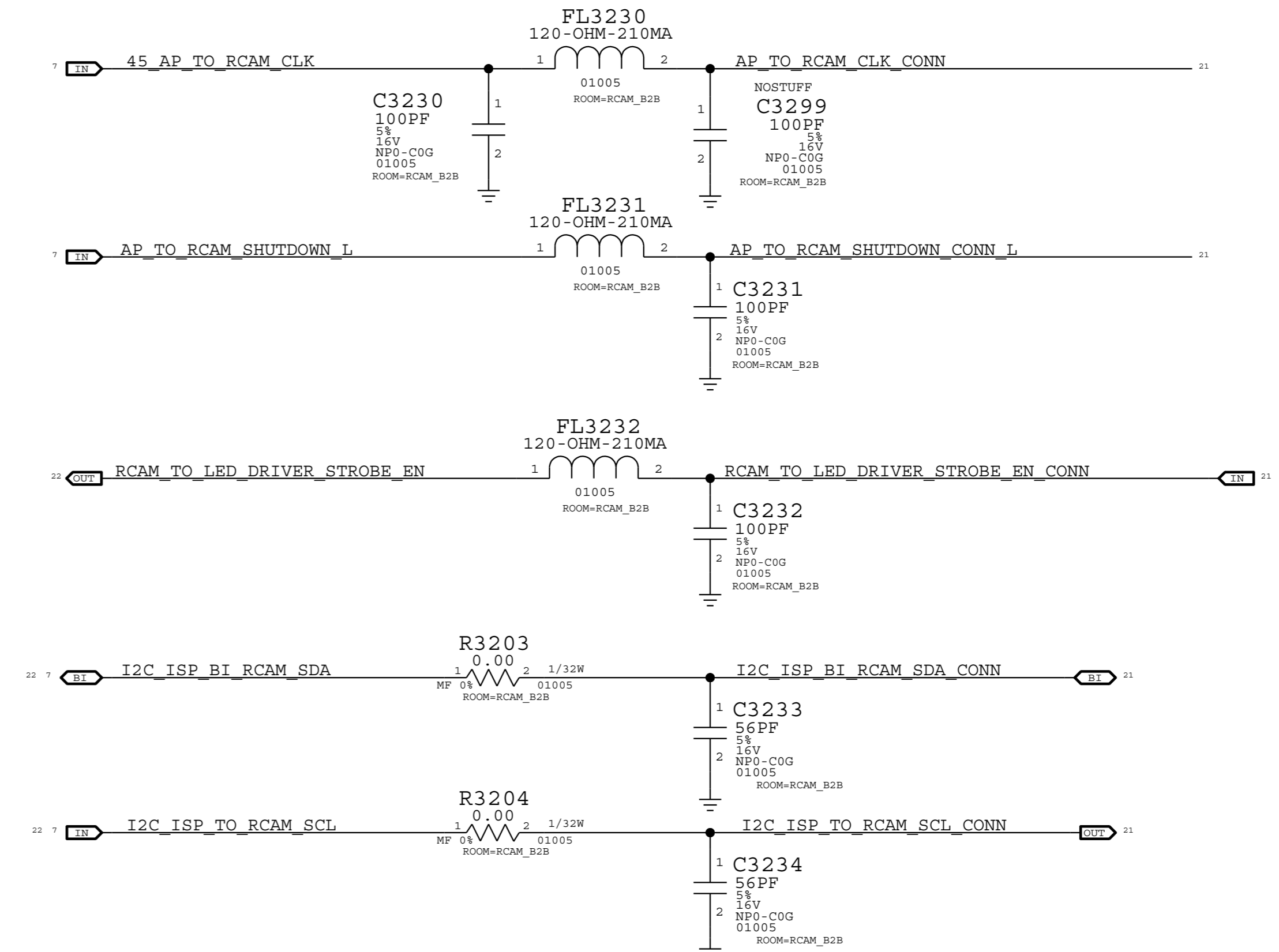
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# RCAM CONNECTOR

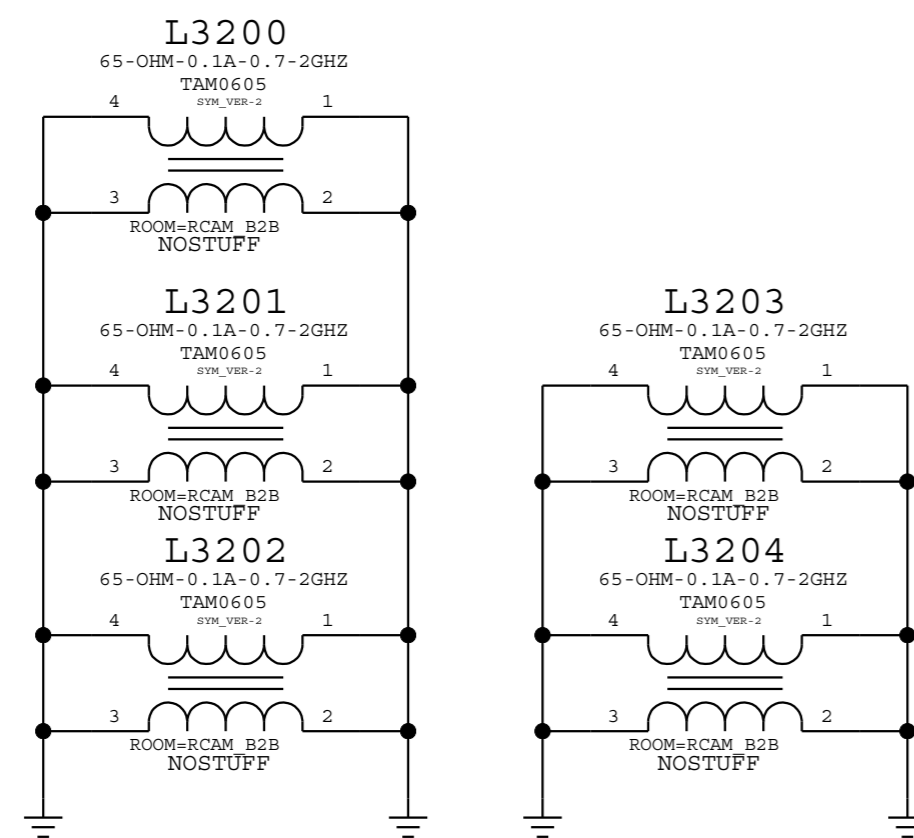
## CAMERA POWER



## DIGITAL I/O



## MIPI COMMON-MODE CHOKES

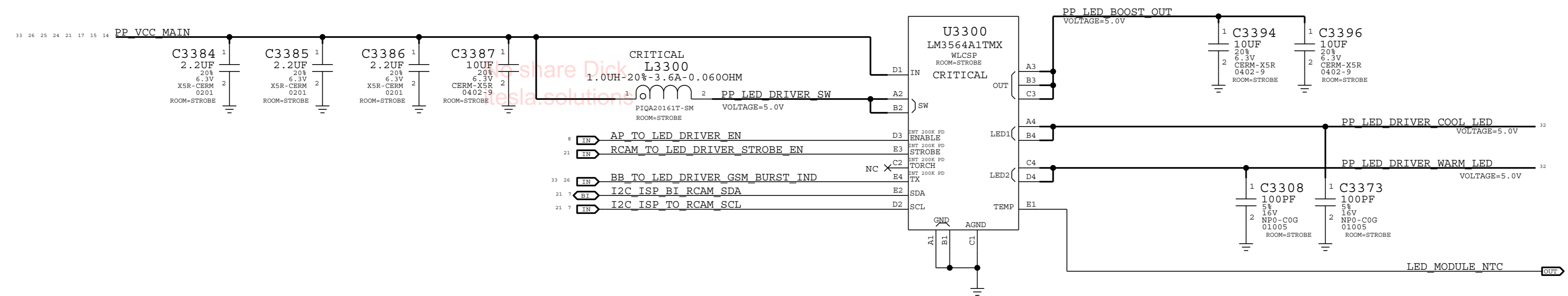


## PLACEHOLDER FOOTPRINTS

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Apple Inc.	DRAWING NUMBER	051-00648	SIZE
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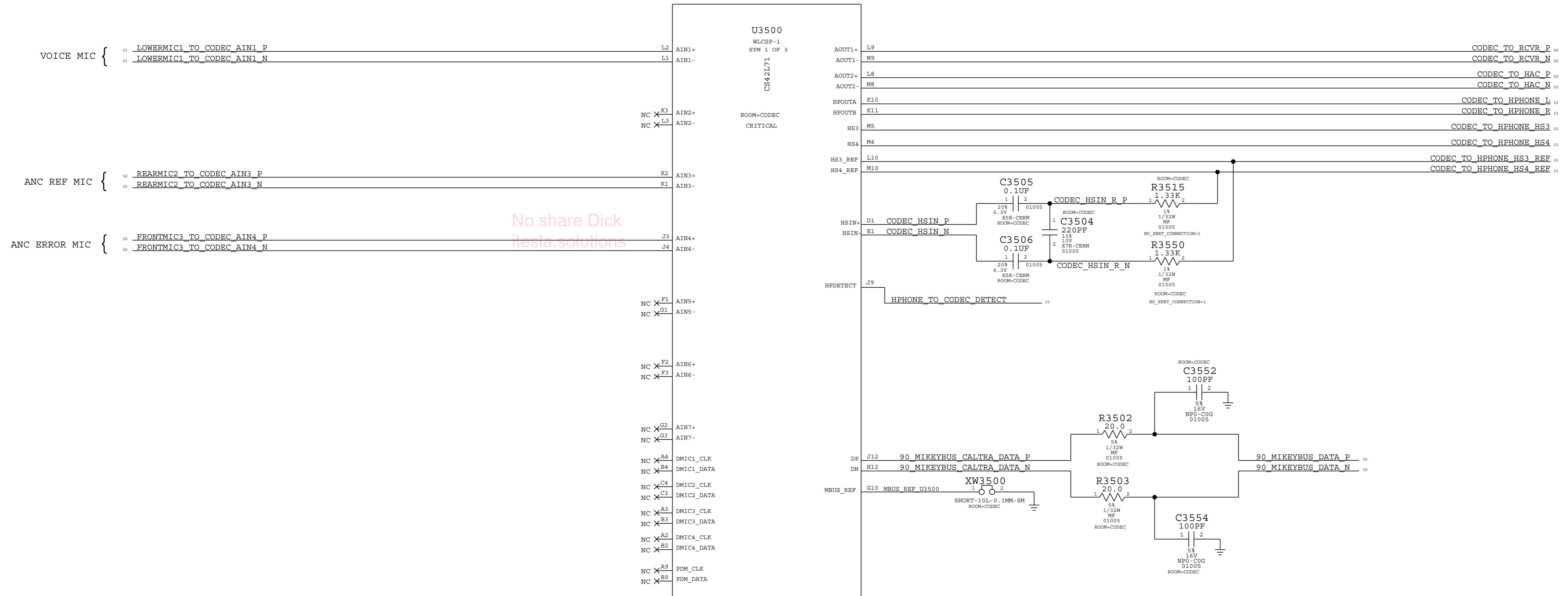
# DUAL LED STROBE DRIVER

APN: 353S3899



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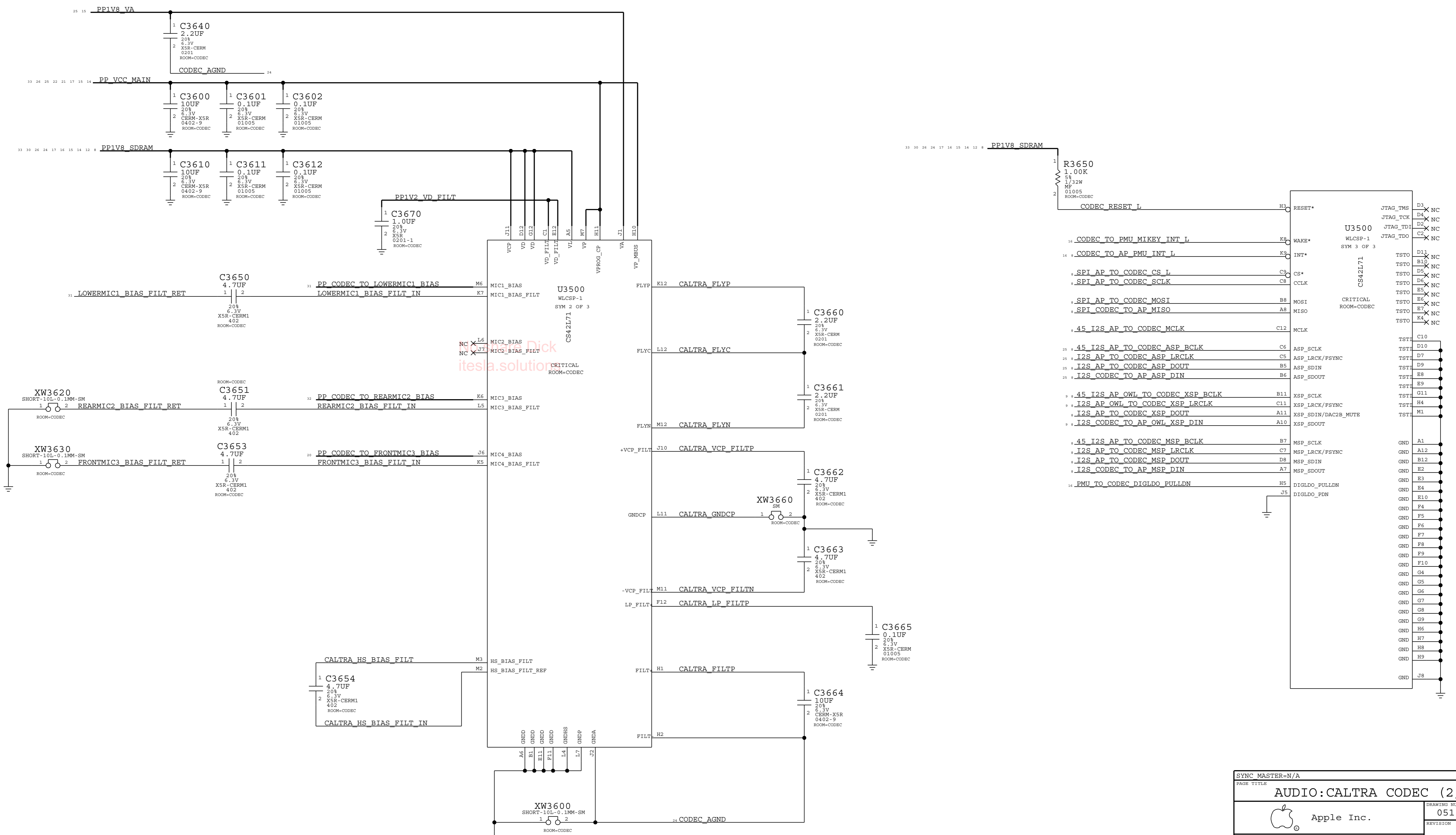
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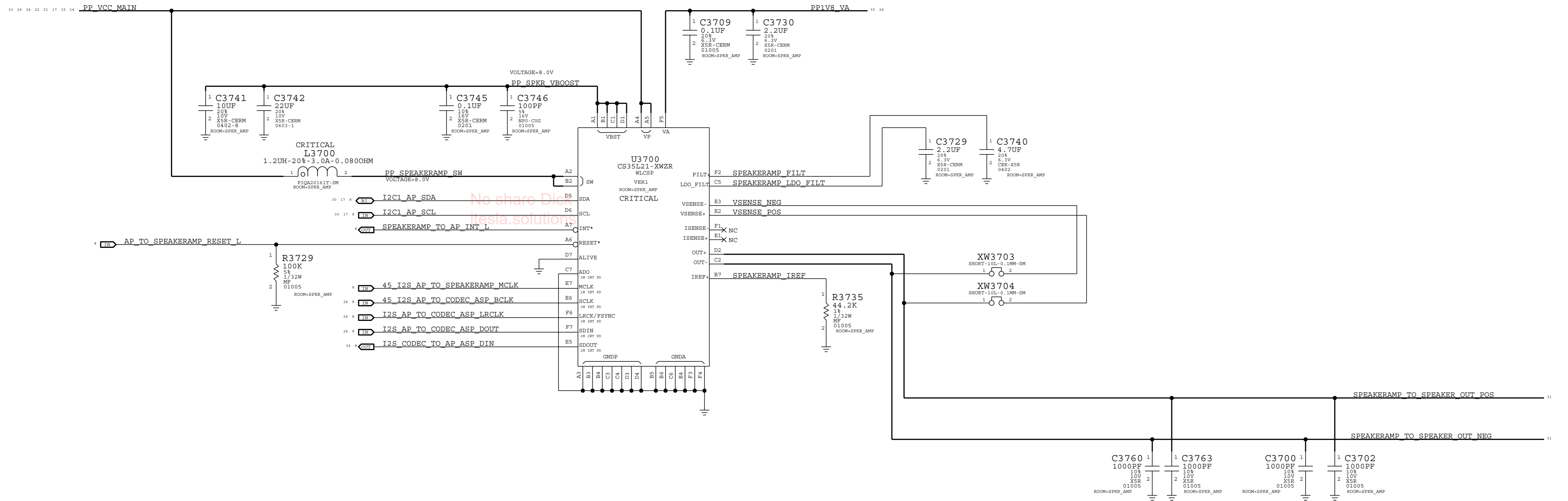
# CALTRA AUDIO CODEC (POWER & I/O)



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		PAGE	36 OF 49
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# SPEAKER AMPLIFIER

APN: 338S1285

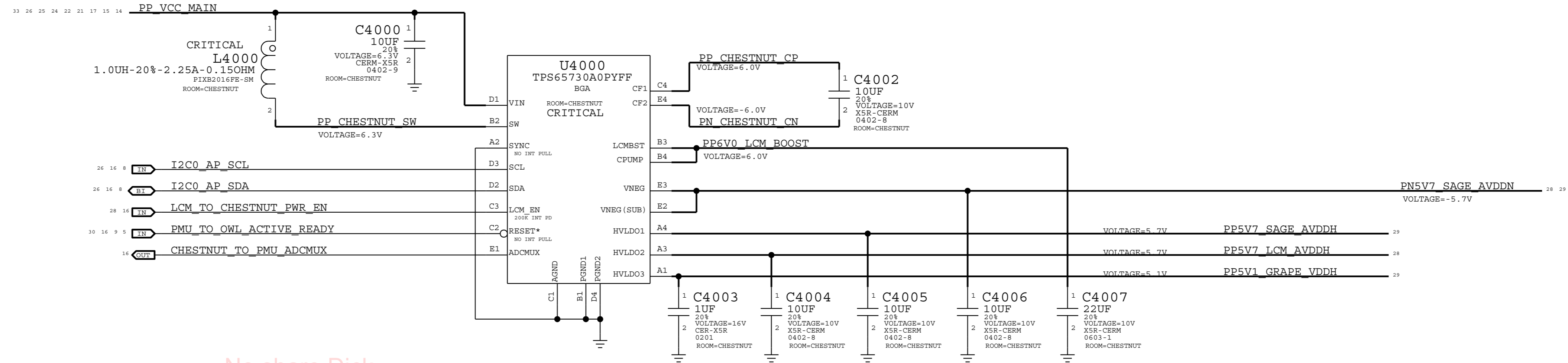


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		PAGE	37 OF 49
		SHEET	25 OF 60

# DISPLAY & TOUCH - POWER SUPPLIES

## CHESTNUT DISPLAY PMU

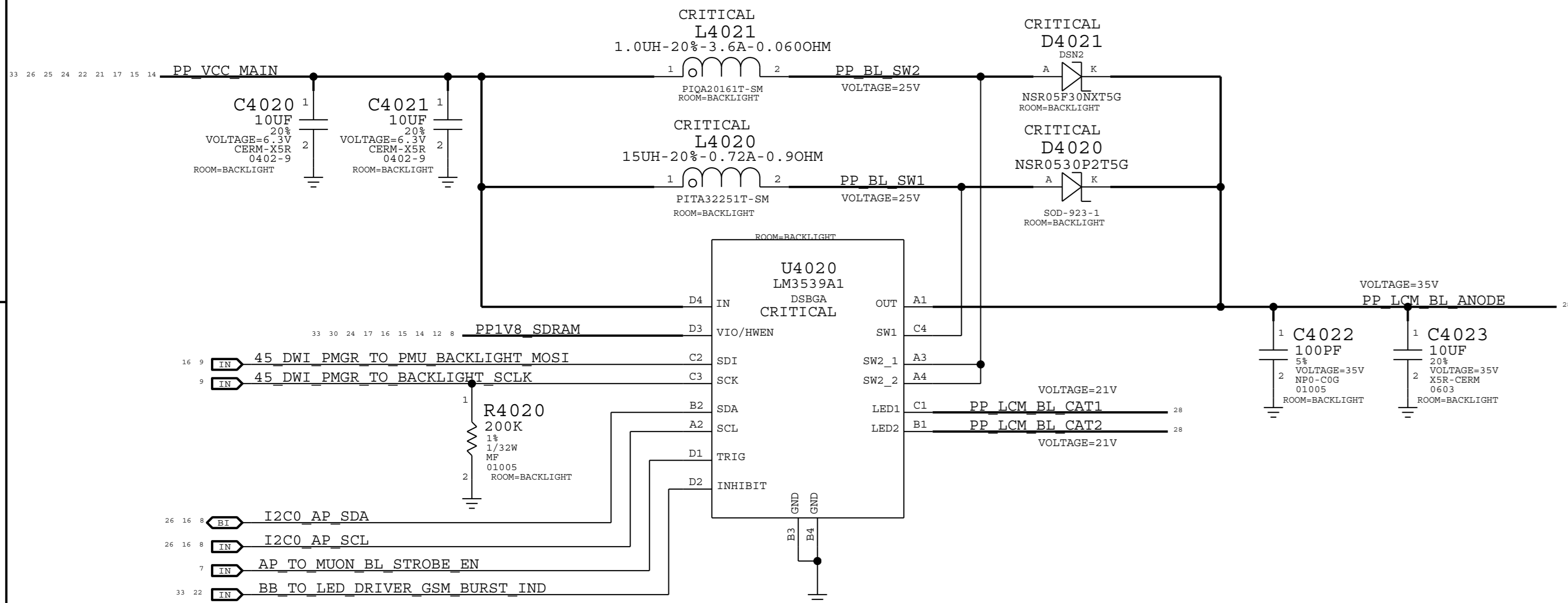
APN:338S1172



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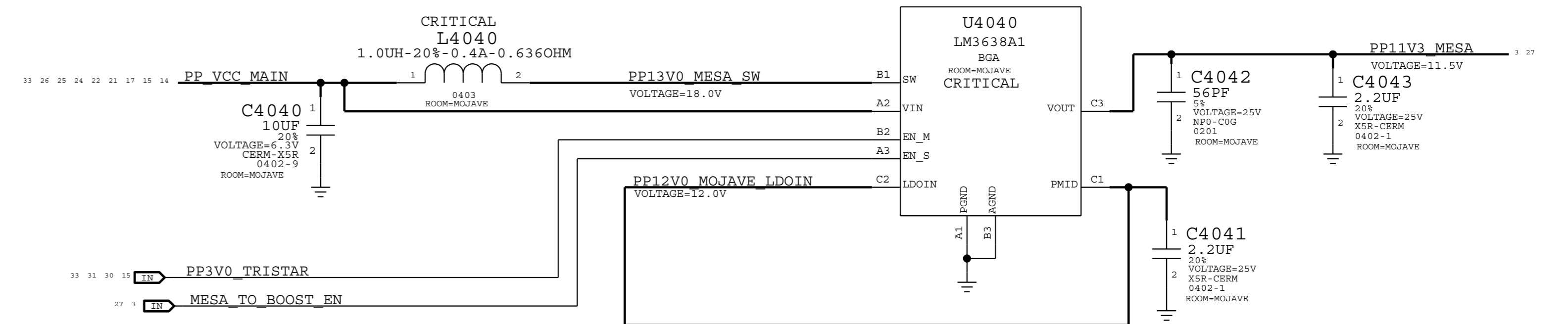
## LED BACKLIGHT DRIVER

APN:353S00640



## MOJAVE MESA BOOST

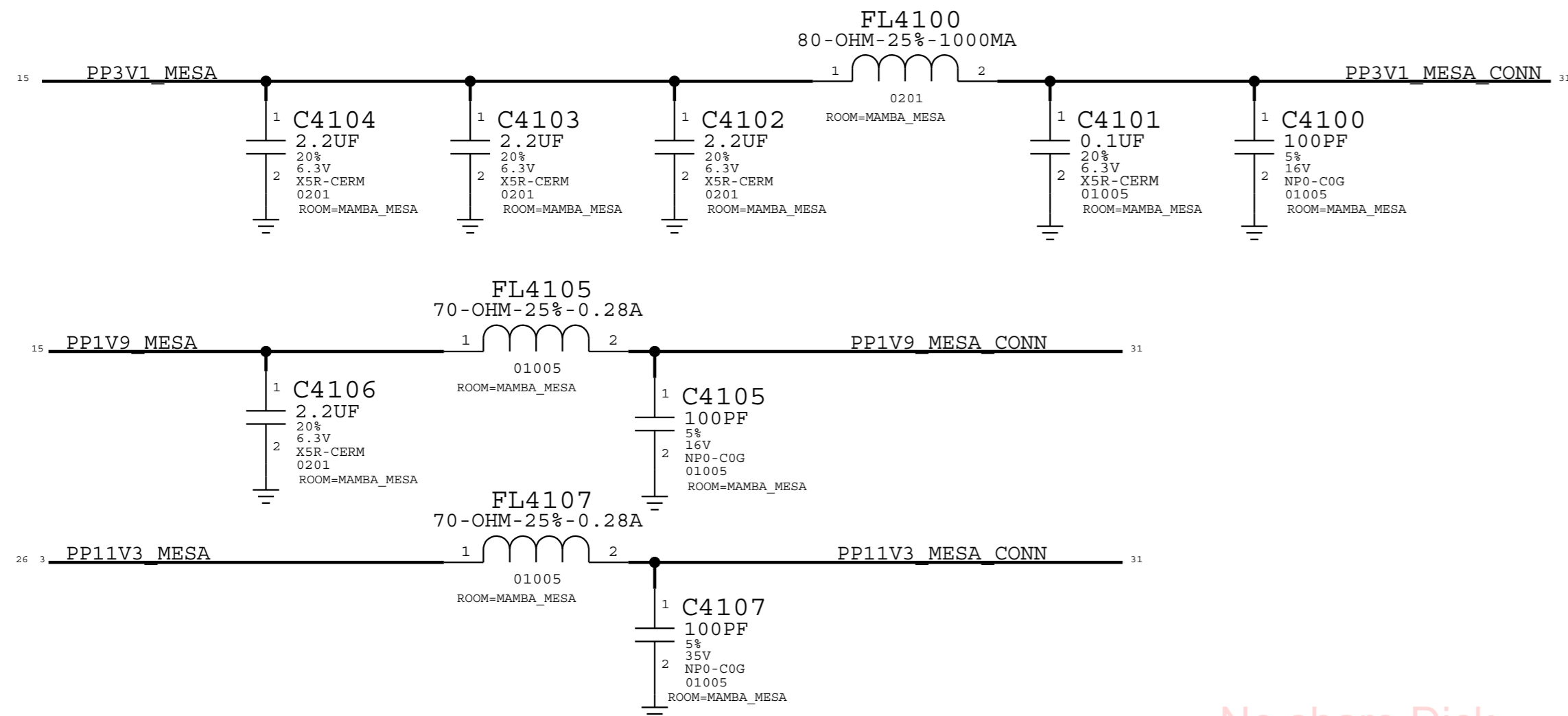
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	REVISION	4.0.0		
BRANCH				
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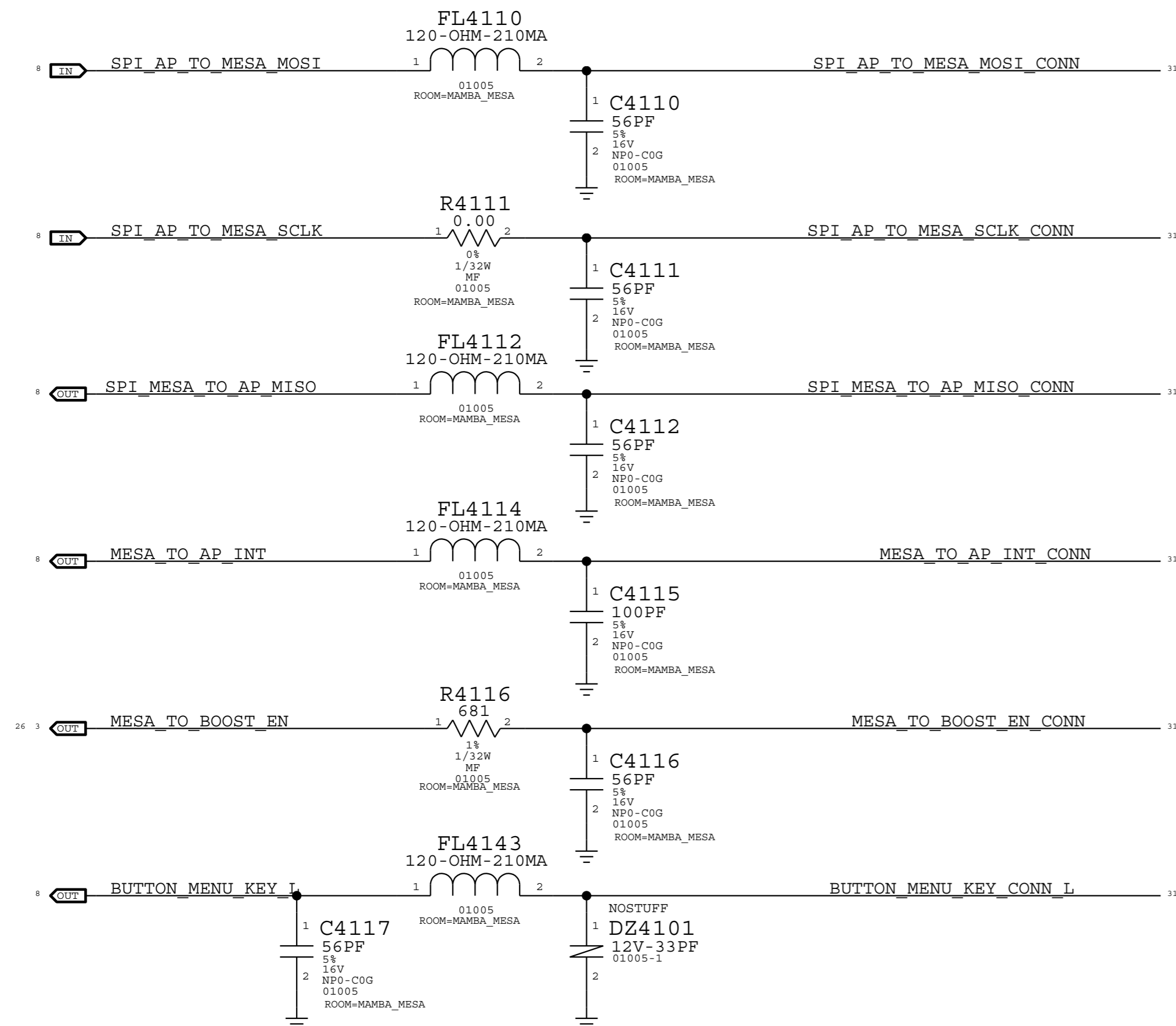
# MESA POWER AND IO FILTERS

## MESA POWER



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## MESA DIGITAL I/O



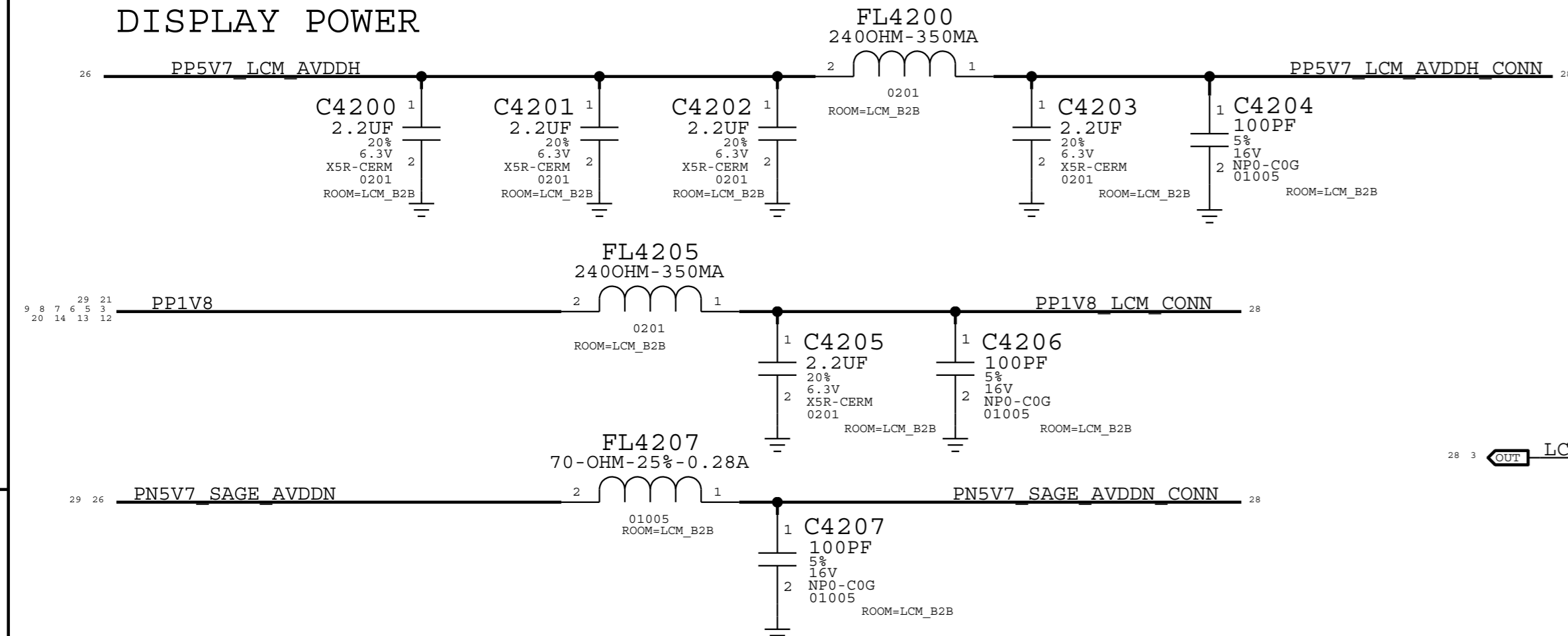
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		PAGE	41 OF 49
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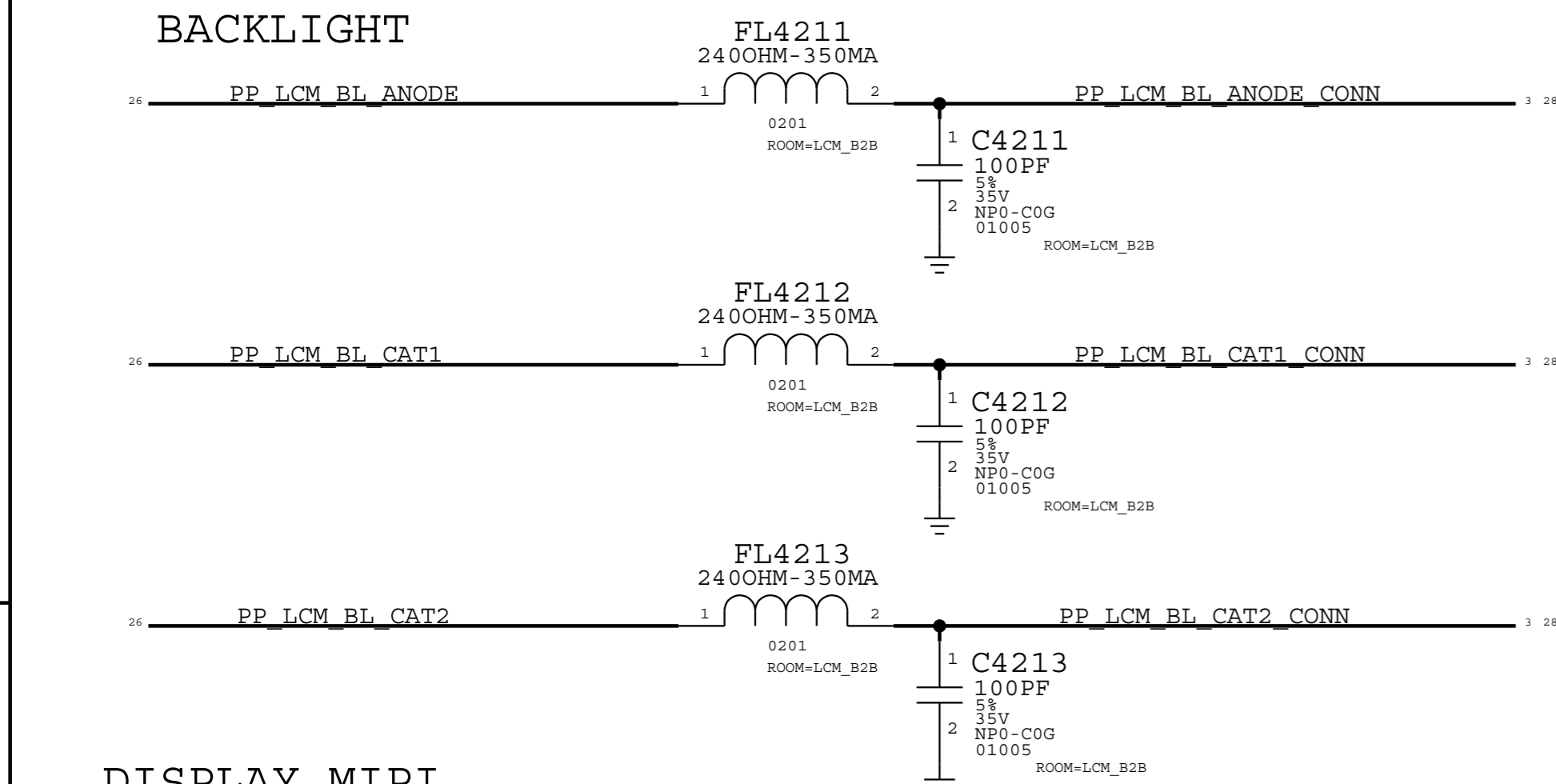
# DISPLAY FLEX

# DISPLAY CONNECTOR

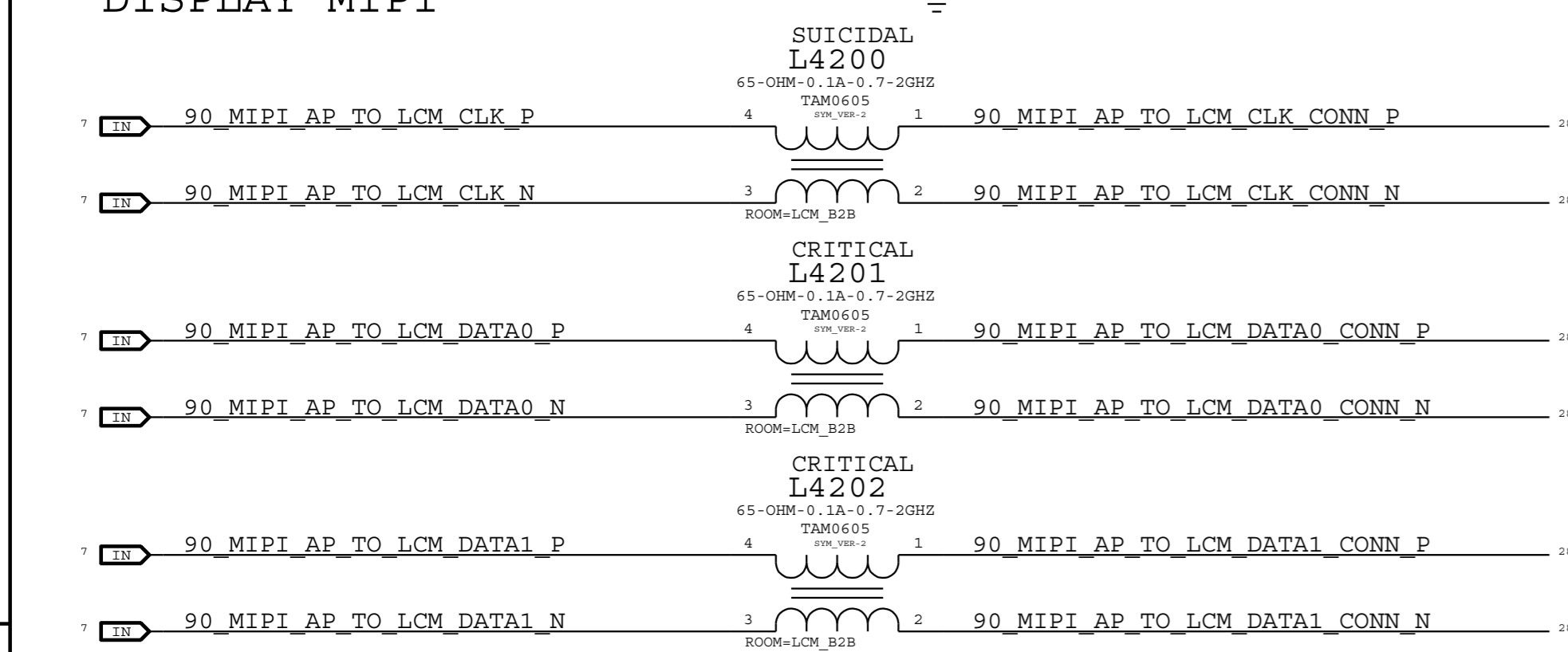
## DISPLAY POWER



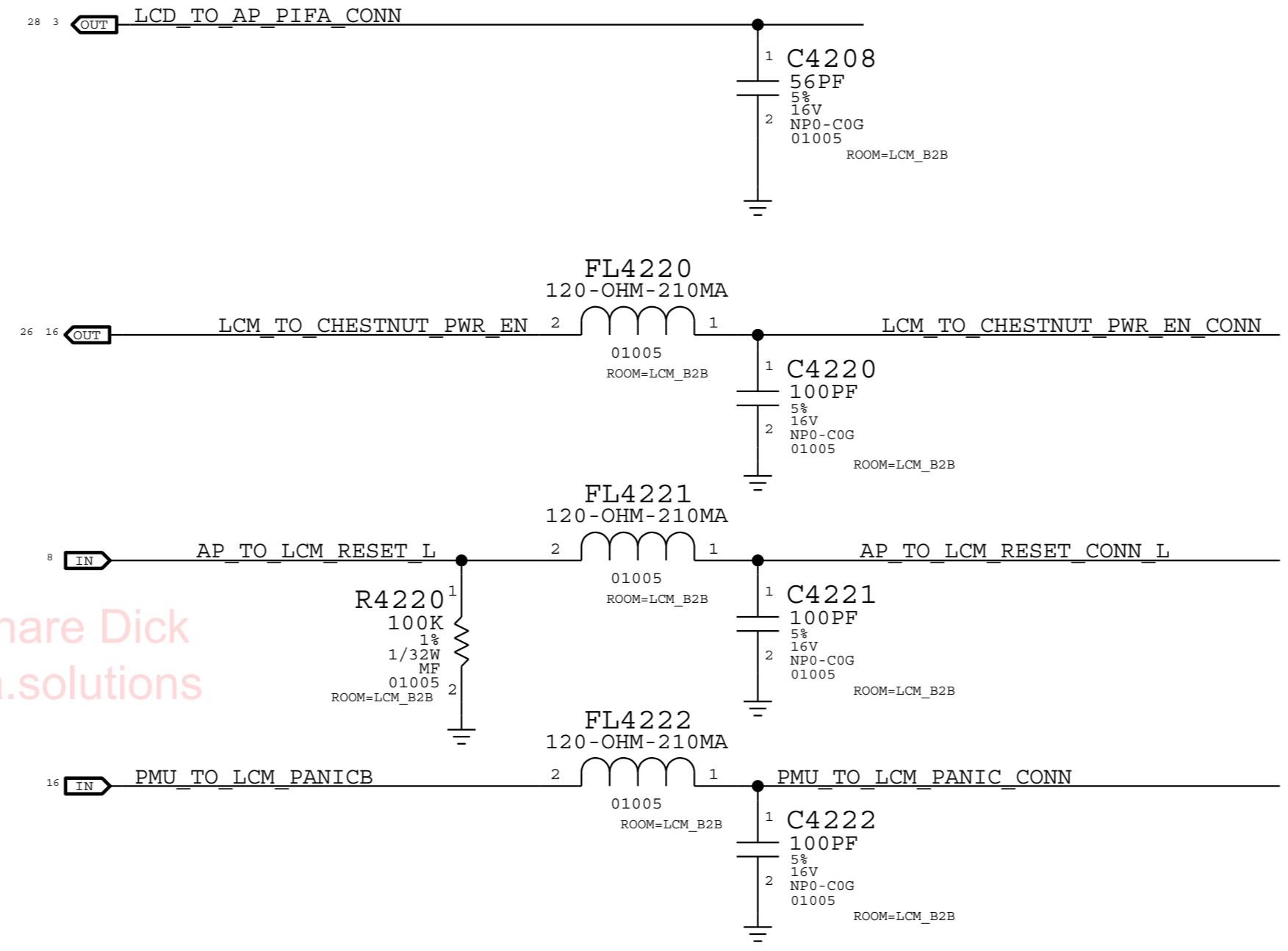
## BACKLIGHT



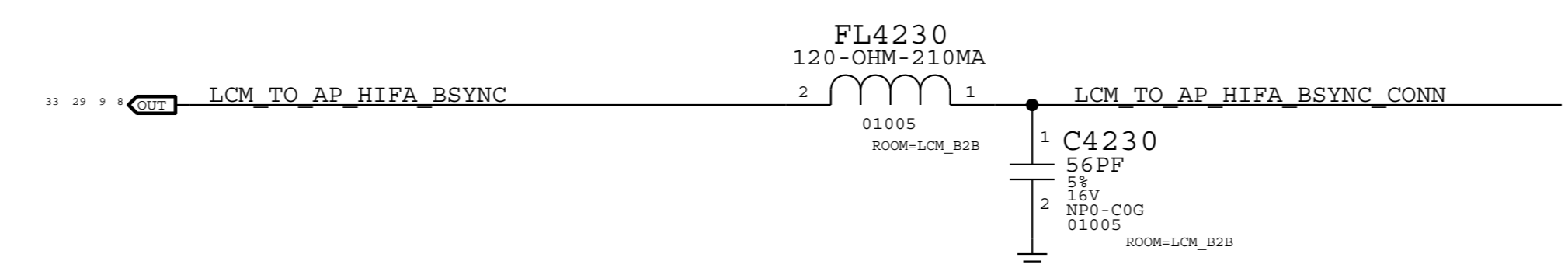
## DISPLAY MIPI



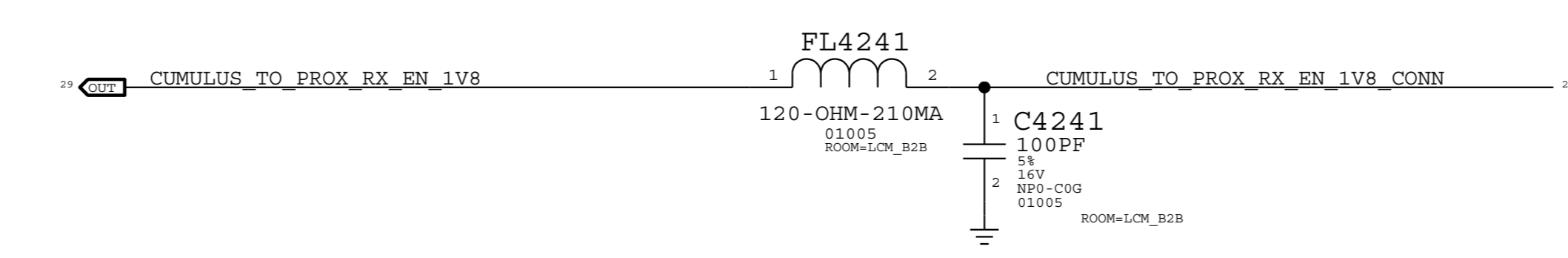
## DISPLAY CONTROL SIGNALS



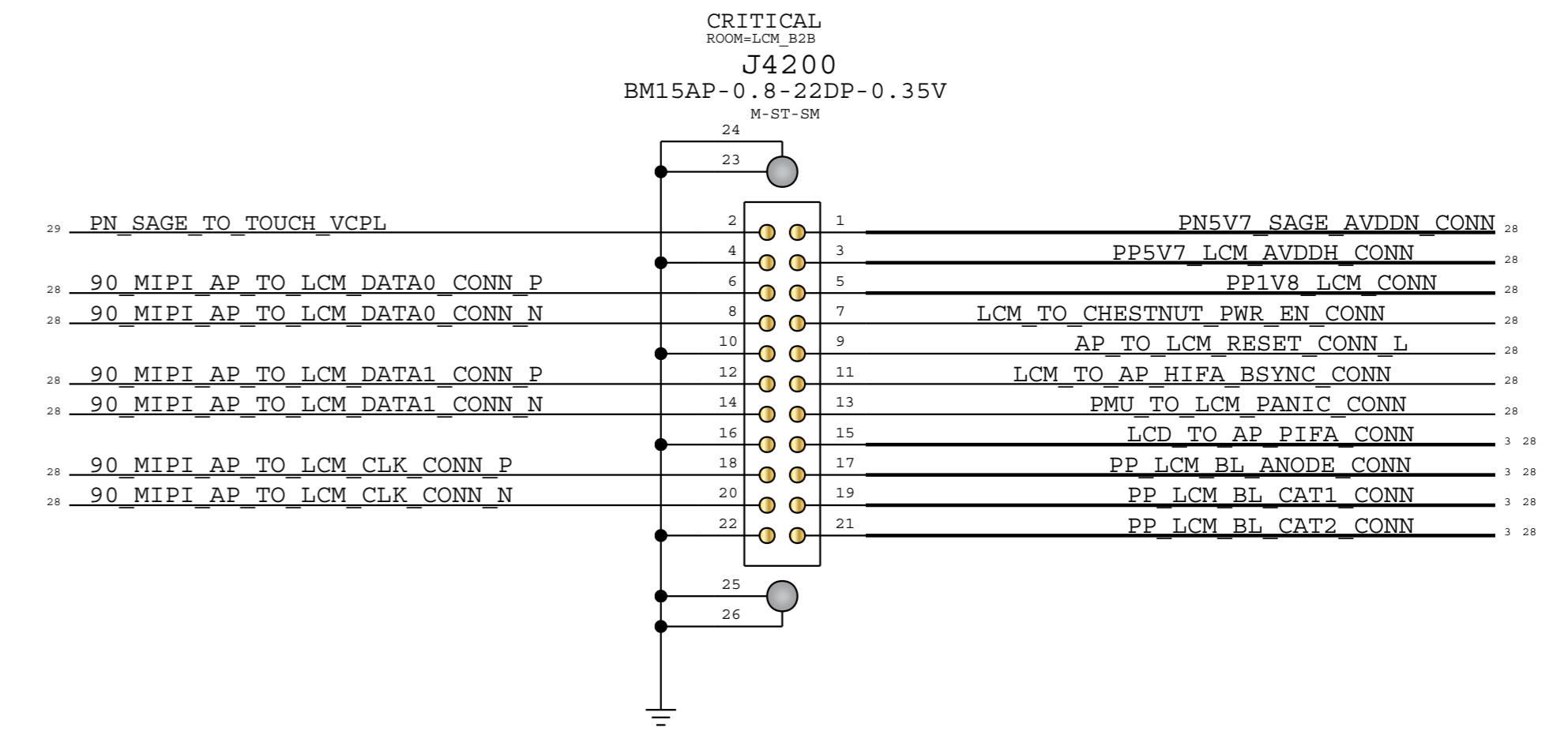
## OWL TO TOUCH INTERFACE



## PROX TO TOUCH INTERFACE



THIS ONE ON MLB ----> 516S1051 (RCPT)  
516S1050 (PLUG)



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PAGE TITLE			
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		CHSET	SHEET 28 OF 60

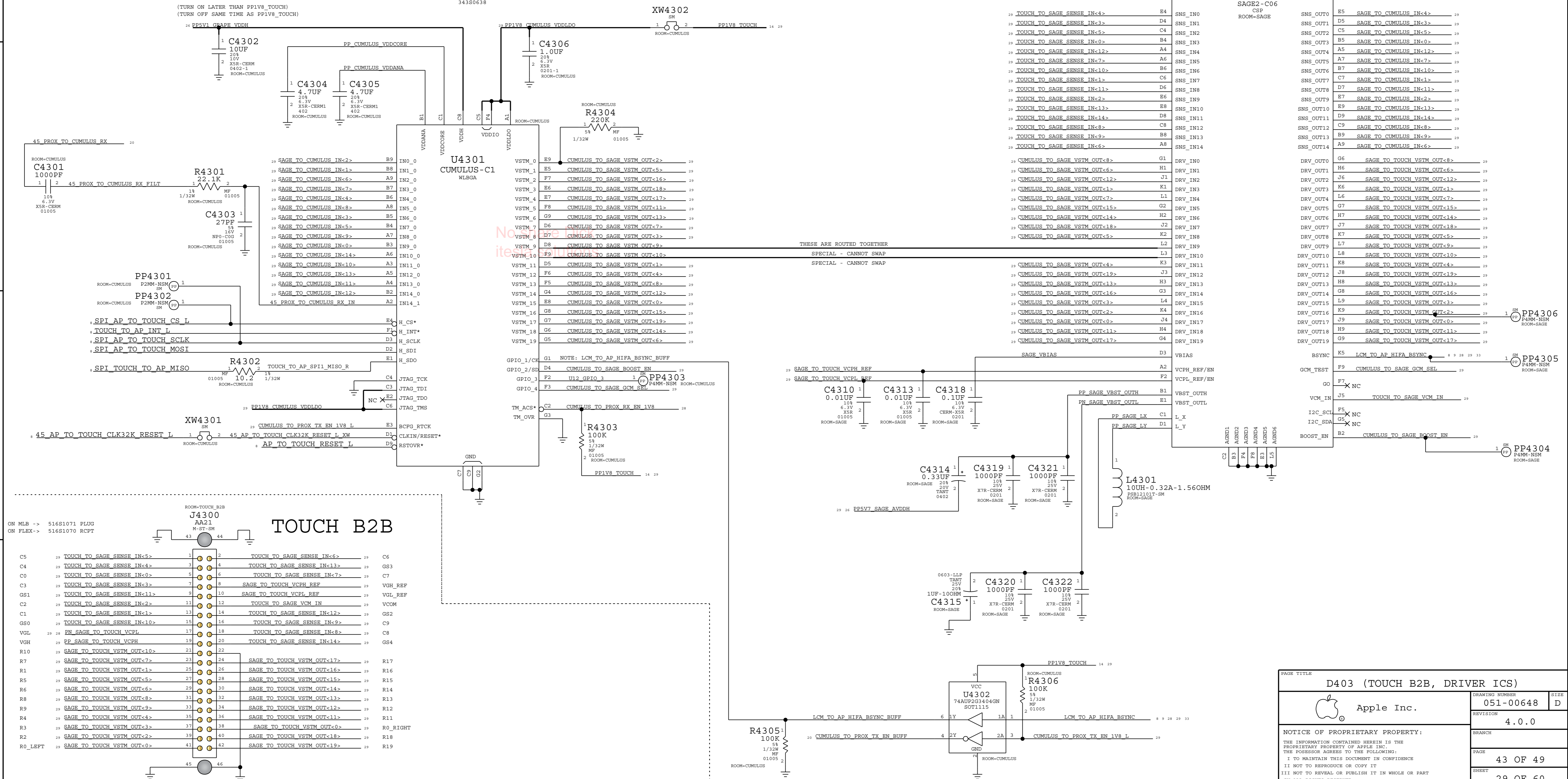
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# SAGE2 C0

APN: 34350645 (CD3246C0, T6)

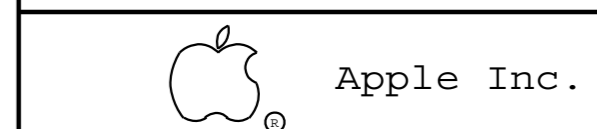
## CUMULUS C1

34350638



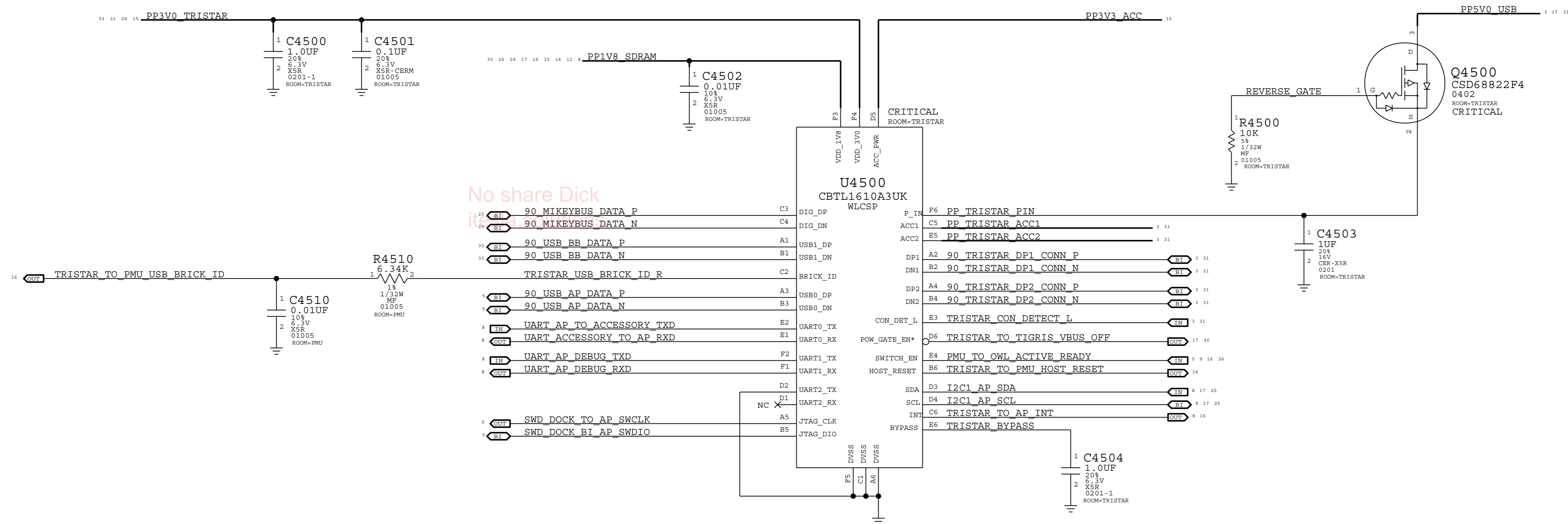
PAGE TITLE		D403 (TOUCH B2B, DRIVER ICS)	
DRAWING NUMBER		051-00648	STR
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# TRISTAR 2 (A3)

APN: 343S0695



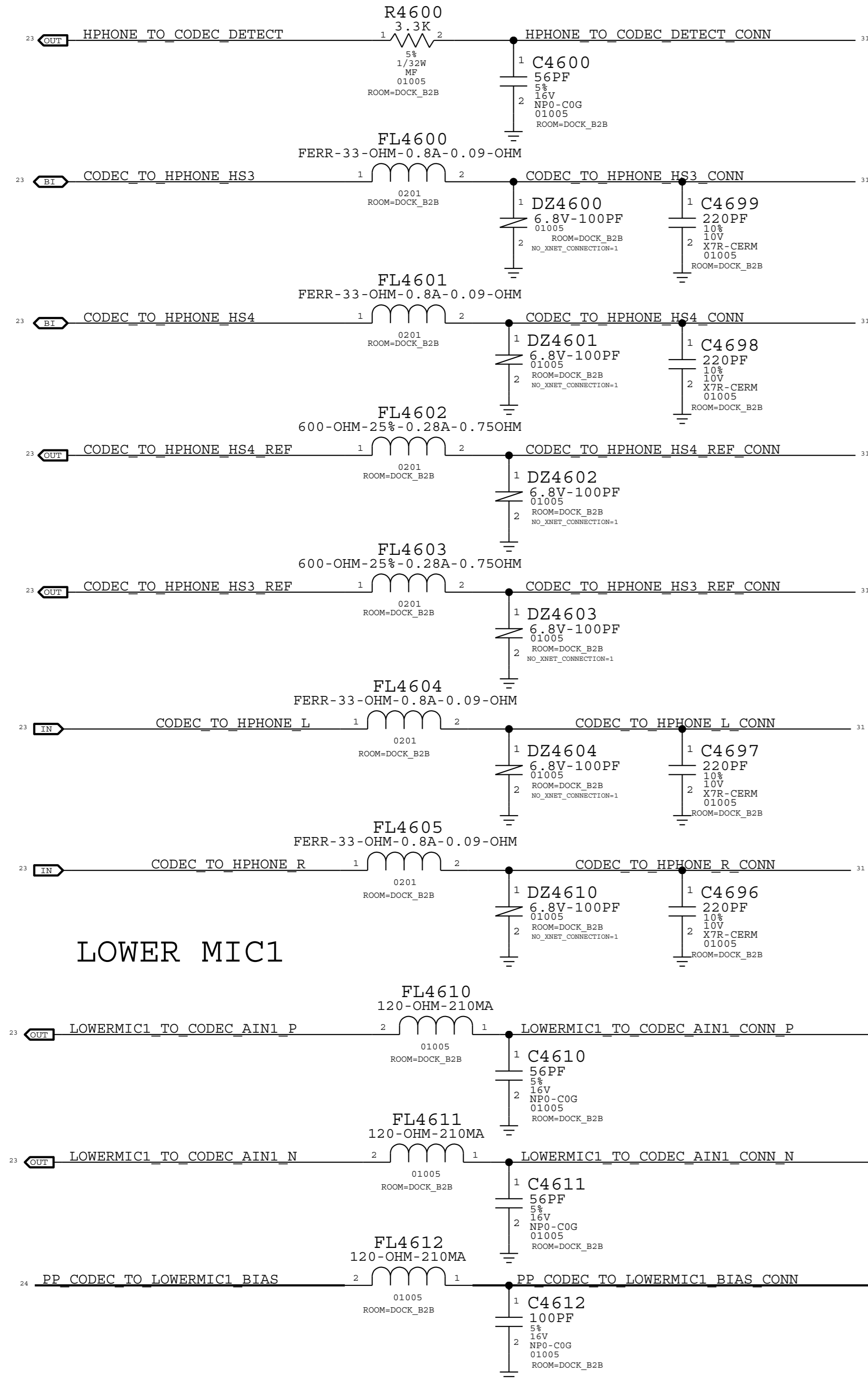
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PP4500  
P3MM-NSM  
TRISTAR\_TO\_TIGRIS\_VBUS\_OFF  
ROOM-TRISTAR

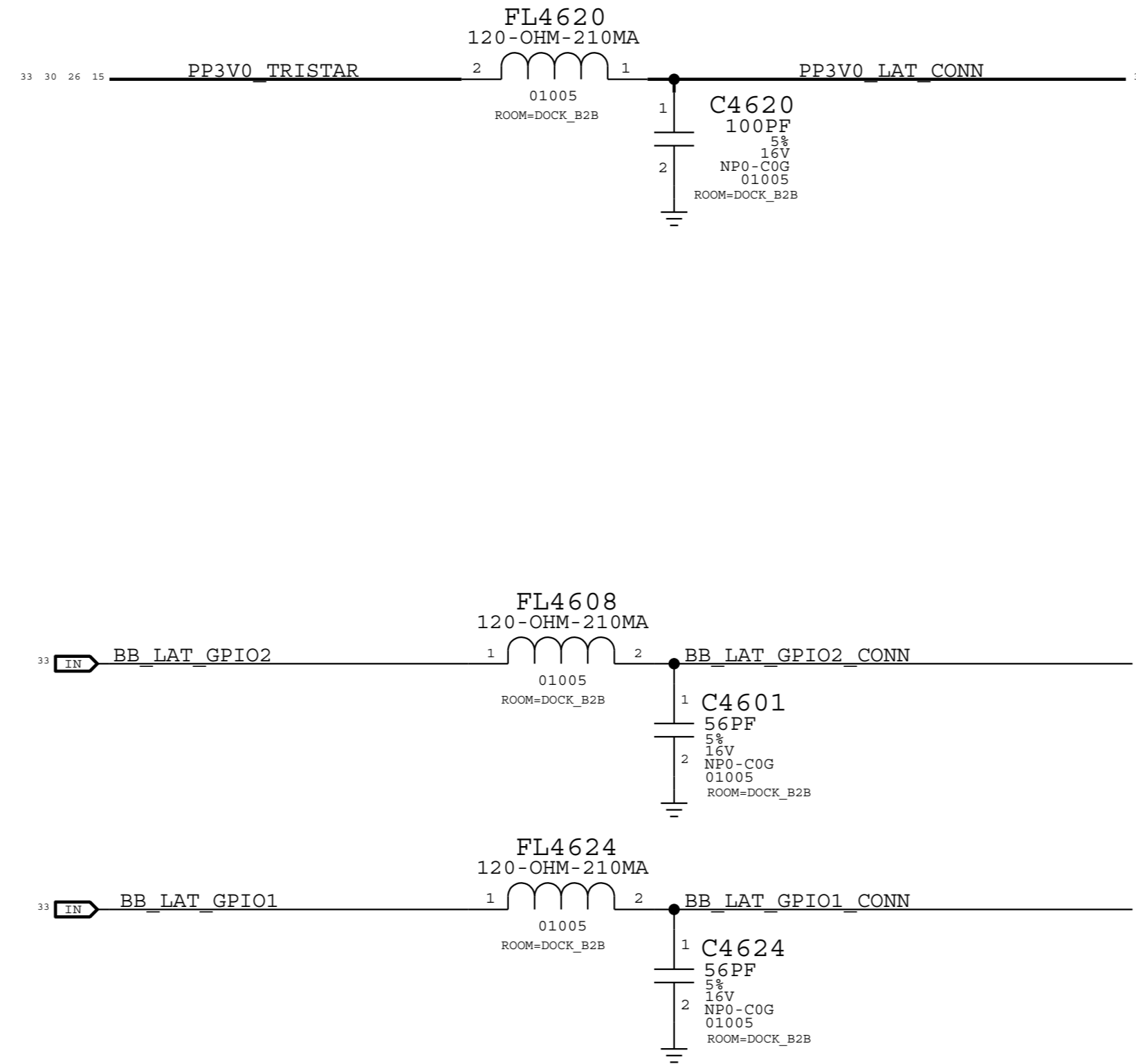
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	DRAWING NUMBER	SIZE	
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# DOCK FLEX CONNECTOR

## AUDIO JACK

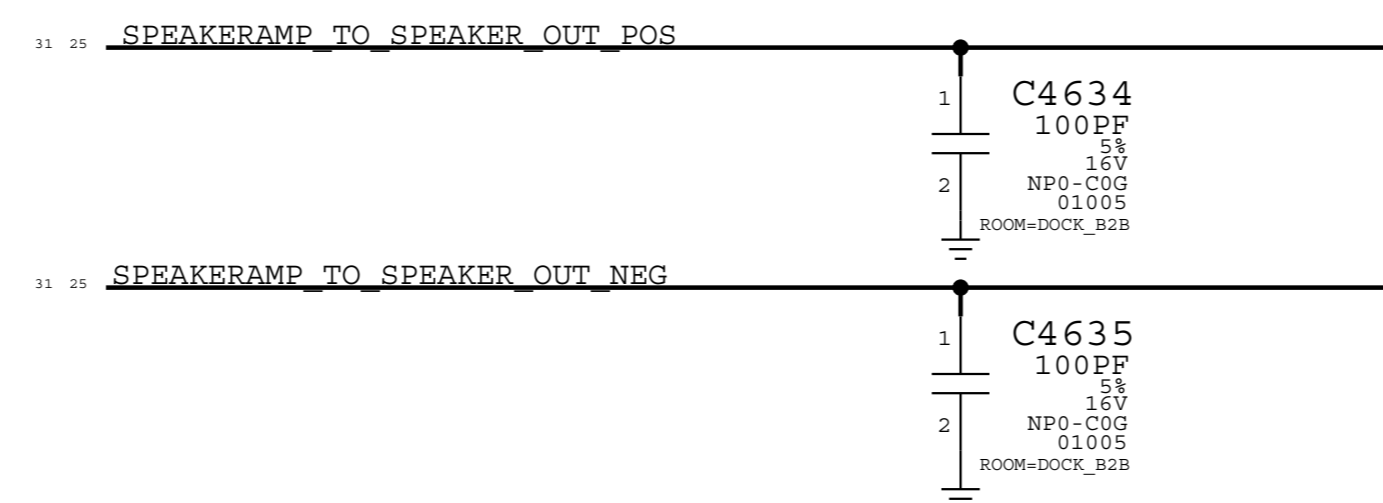


## ANTENNA



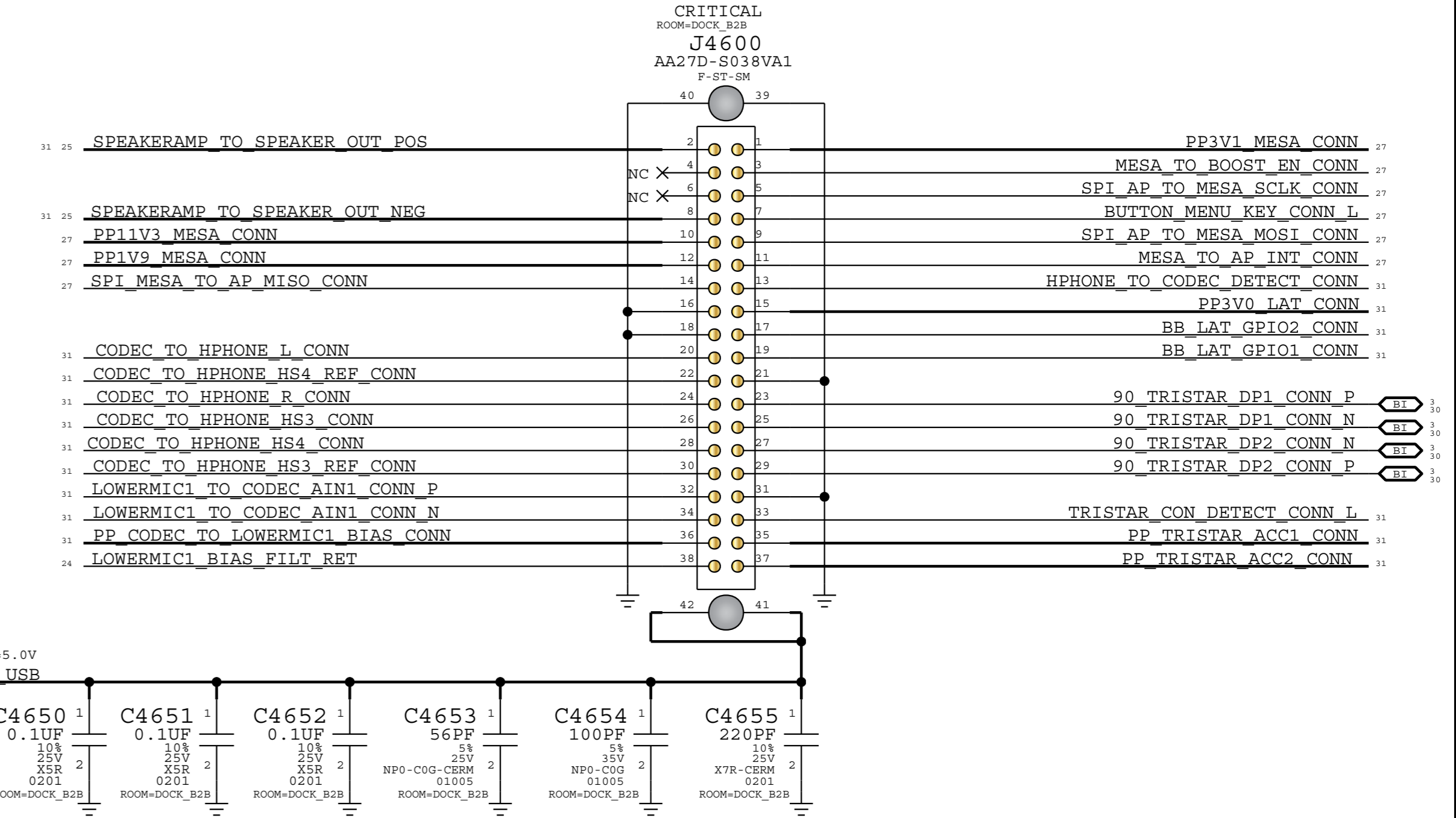
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## SPEAKER

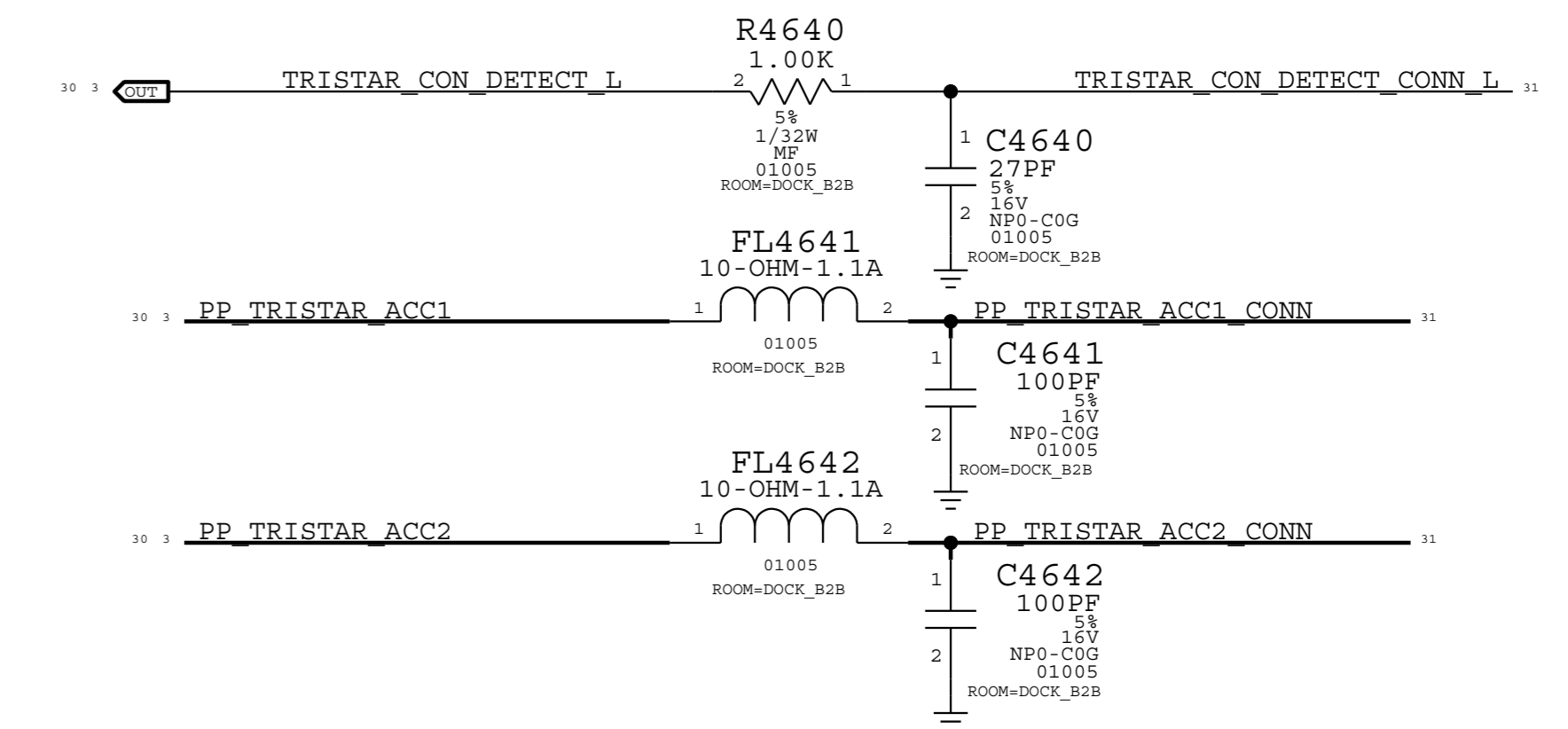


# DOCK FLEX CONNECTOR

THIS ONE ON MLB ---> 516S00116 (RCPT)  
516S00117 (PLUG)



## TRISTAR



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<b>I/O:DOCK FLEX B2B</b>				
	DRAWING NUMBER	516-00648	STEP	D
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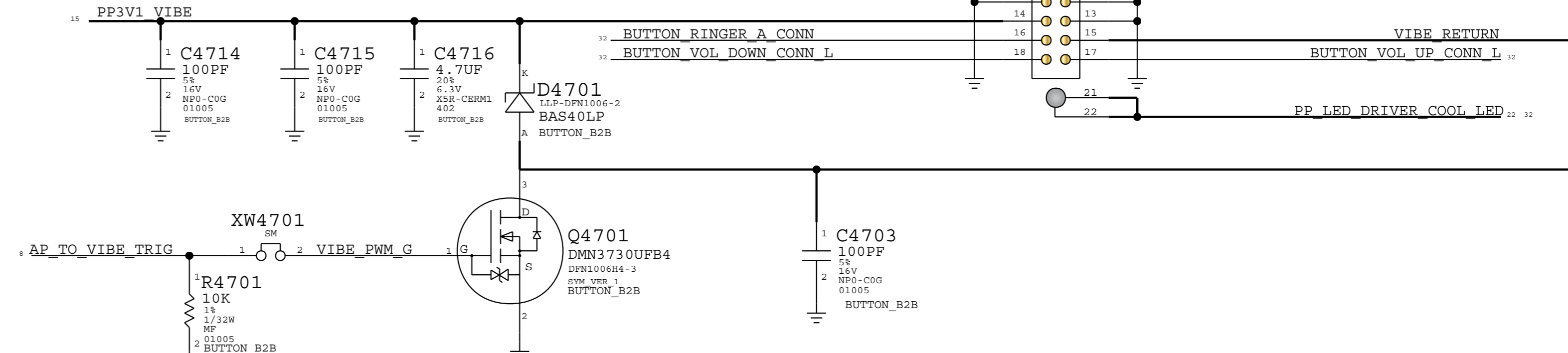
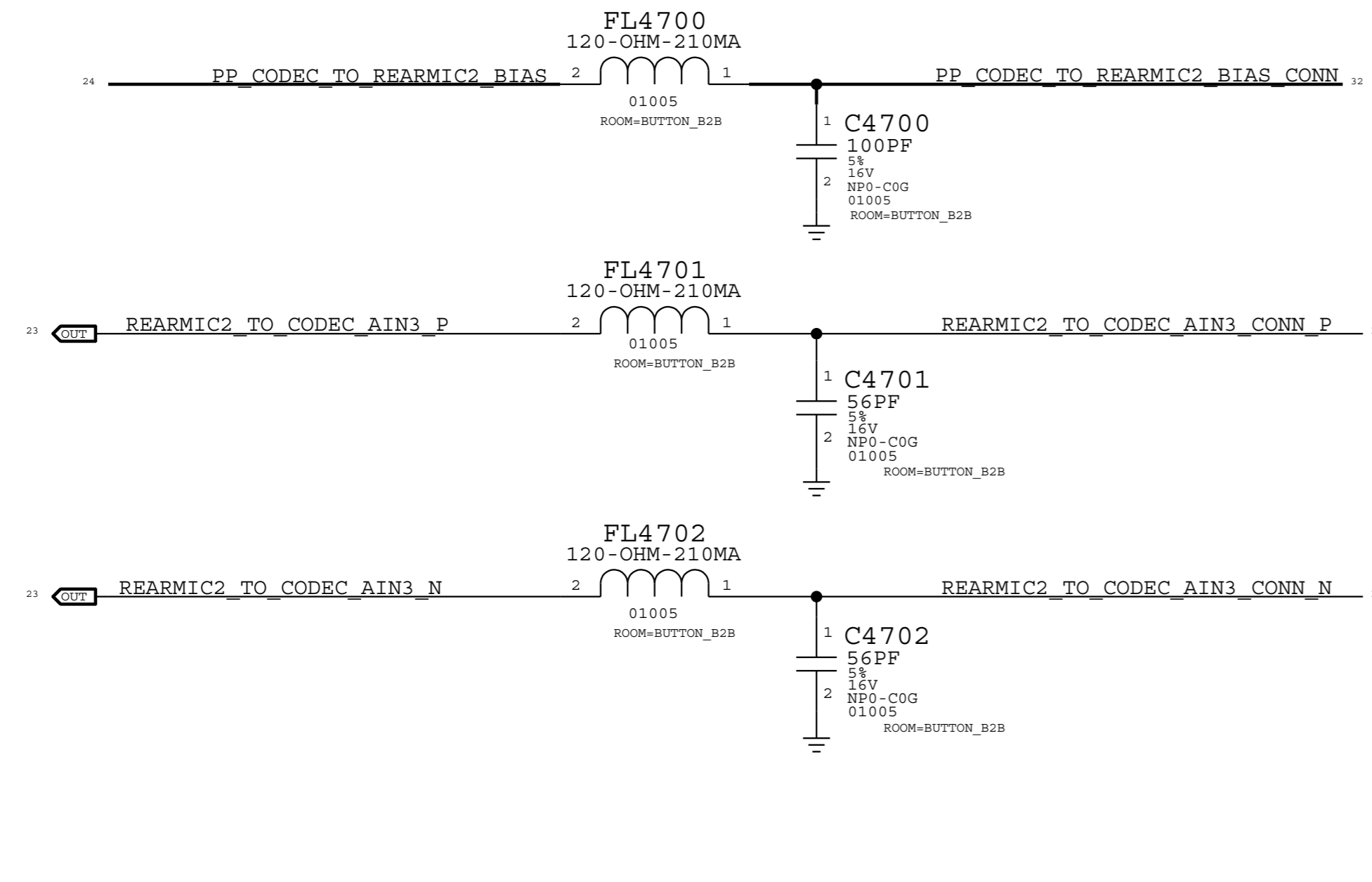
# BUTTON FLEX

# BUTTON FLEX CONNECTOR

516S1040 (PLUG)  
516S1041 (RCPT)

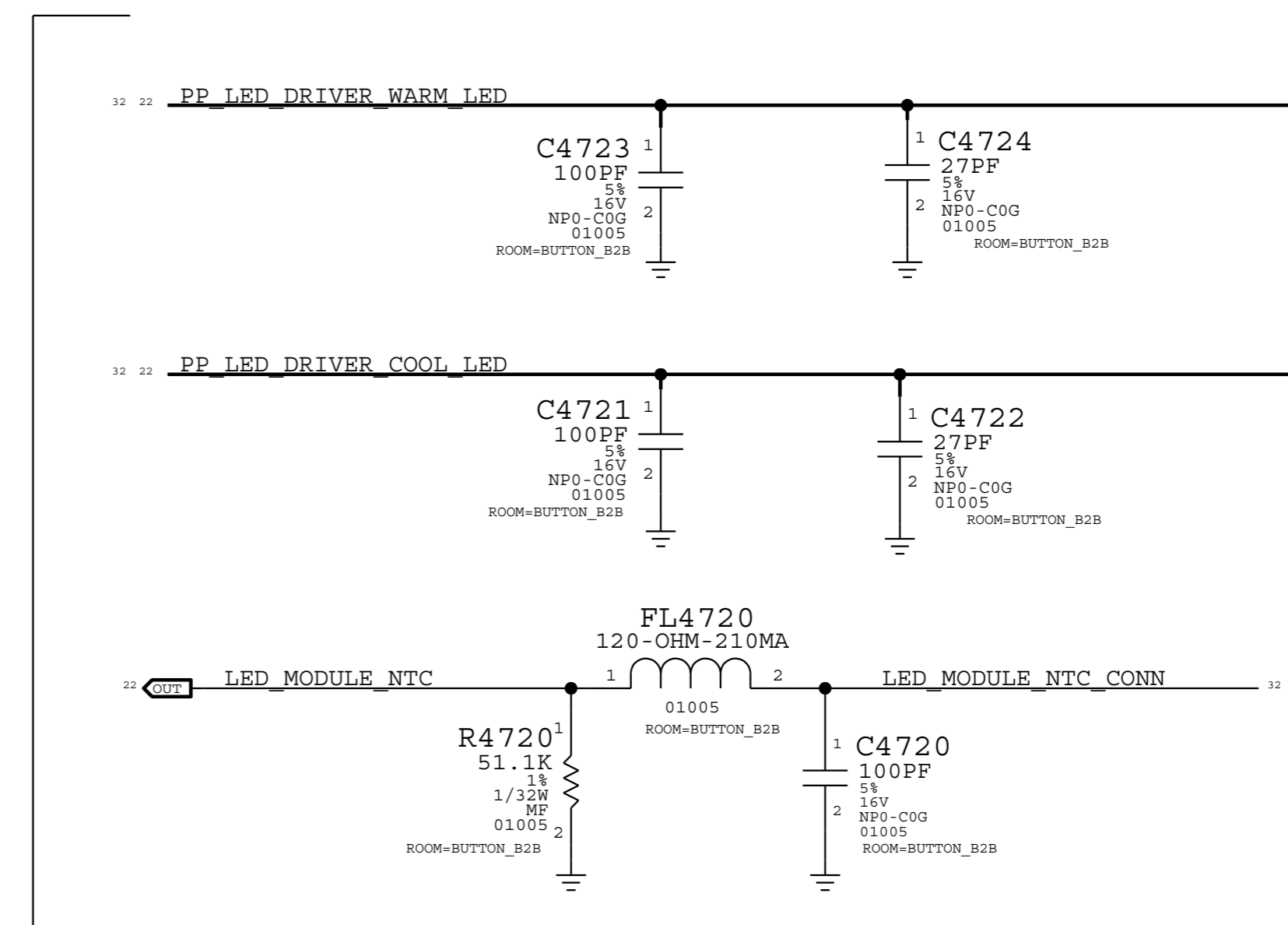
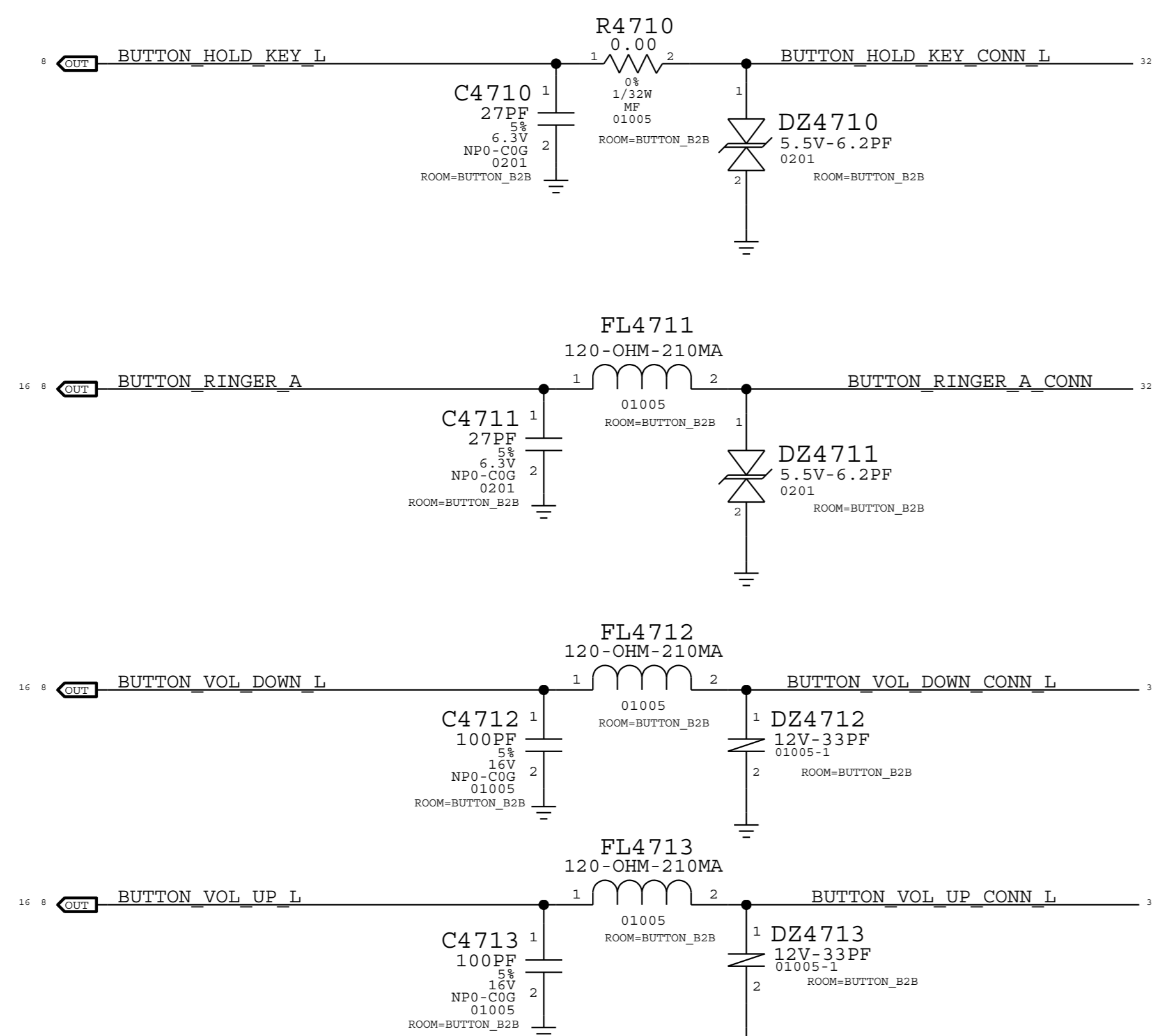
THIS ONE ON MLB --->

MIC2  
ANC REF MIC



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STROBE:  
WARM LED  
COOL LED  
MODULE NTC



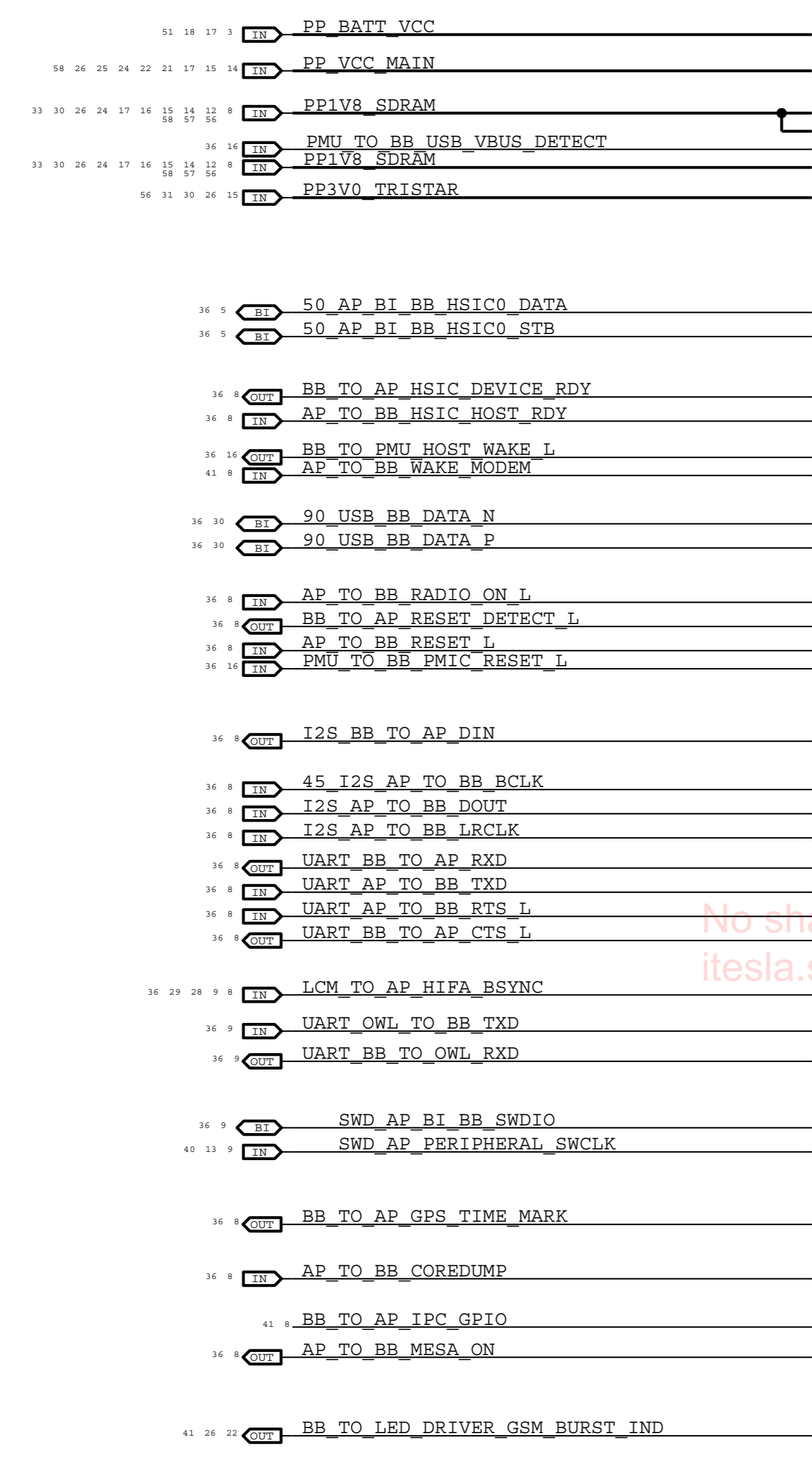
BUTTONS:  
HOLD  
RINGER  
VOL UP/DOWN

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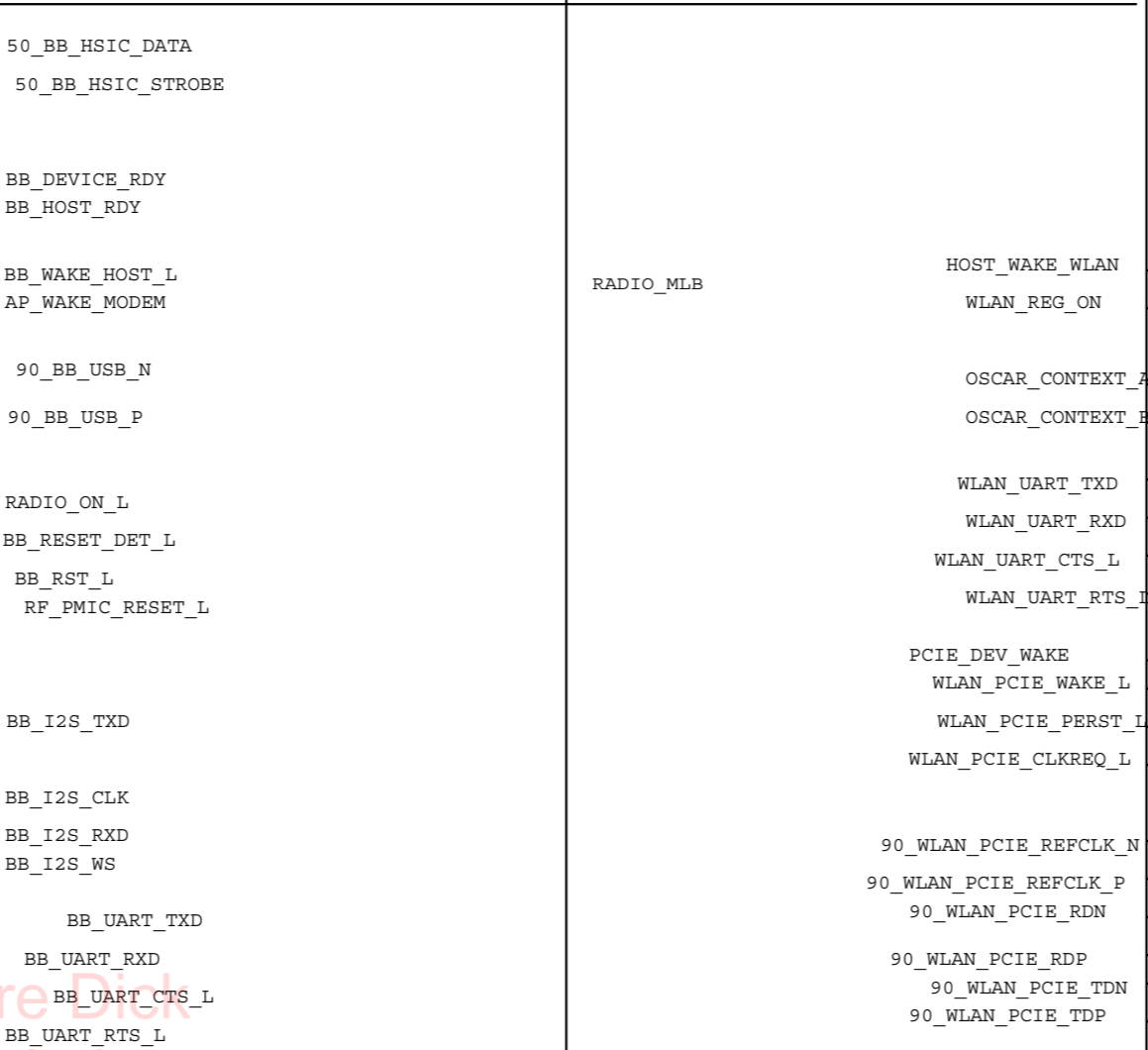
# BASEBAND, WLAN, BT & STOCKHOLM

RF  
I566

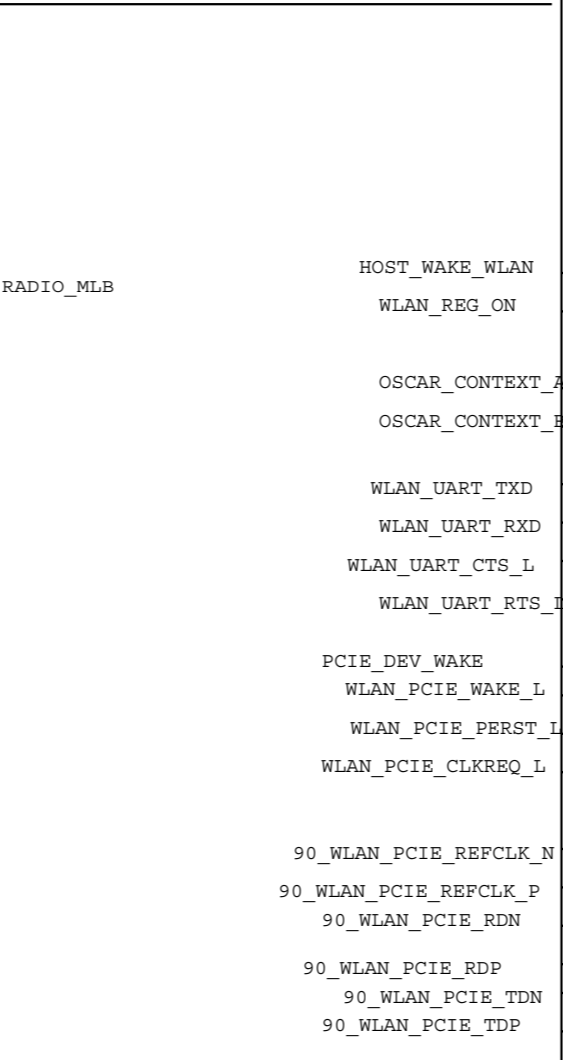
## N69 CELLULAR/WLAN/BT/STOCKHOLM SUBDESIGN SYMBOL



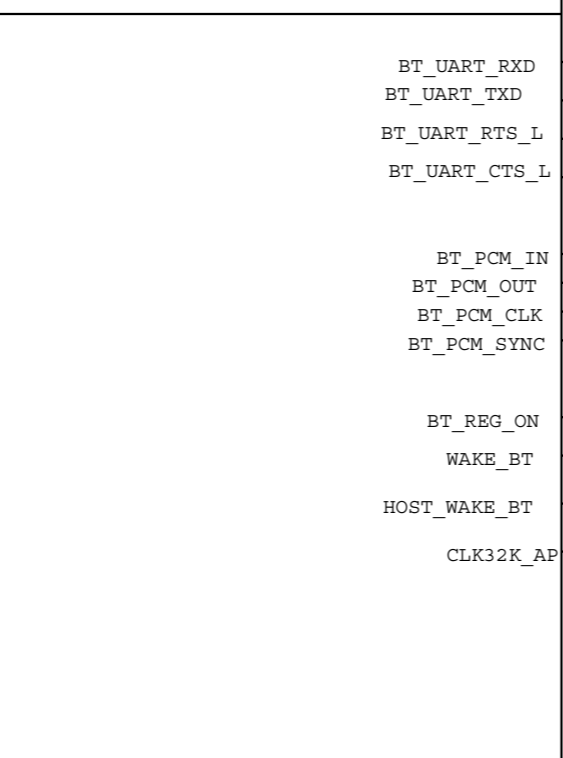
### BASEBAND



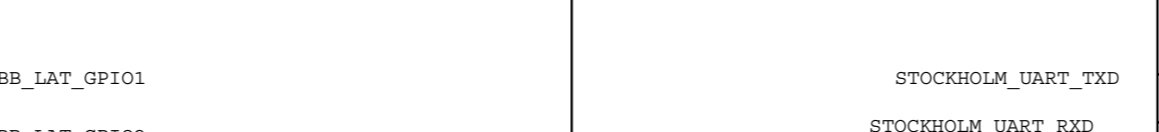
### WLAN



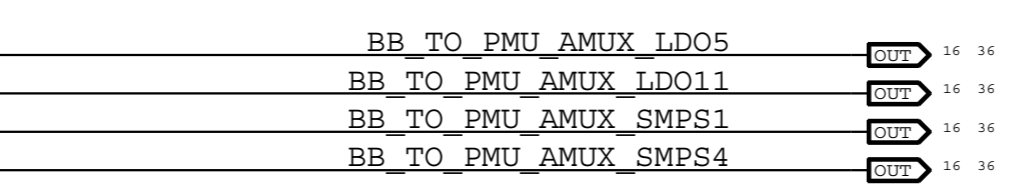
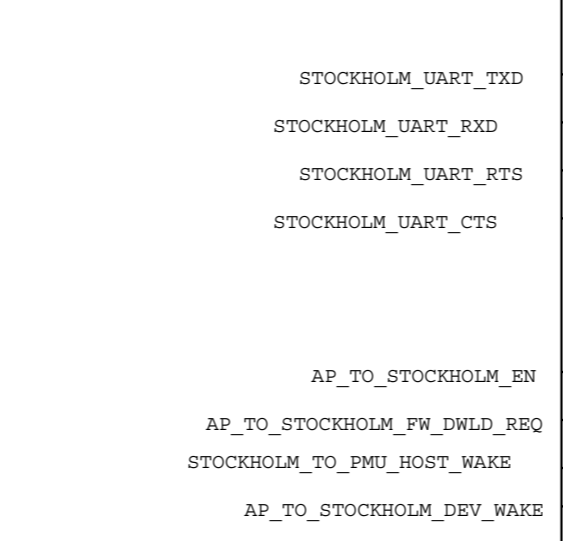
### BLUETOOTH



### ANTENNA



### STOCKHOLM



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		PAGE 49 OF 49	
		SHEET 33 OF 60	

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.

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
4	0004752417	ENGINEERING RELEASED		2015-08-24

# N69 RADIO MLB SUBDESIGN - EVT


## 8/19/2015

LAST\_MODIFICATION=Wed Aug 19 10:34:24 2015

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 Apple Inc.	DRAWING NUMBER	051-00648	SIZE
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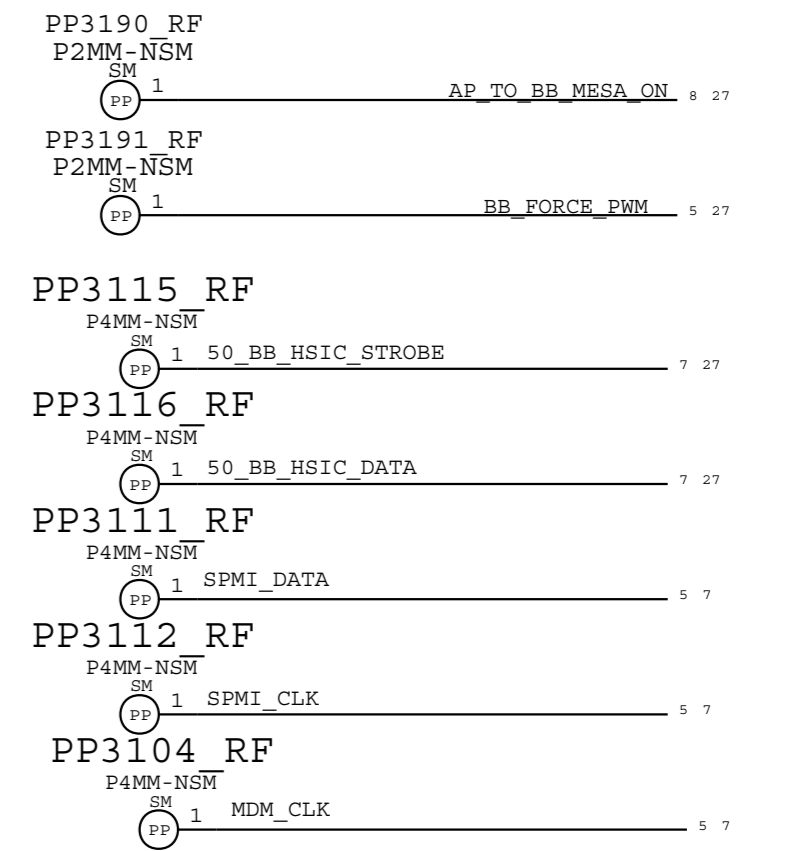
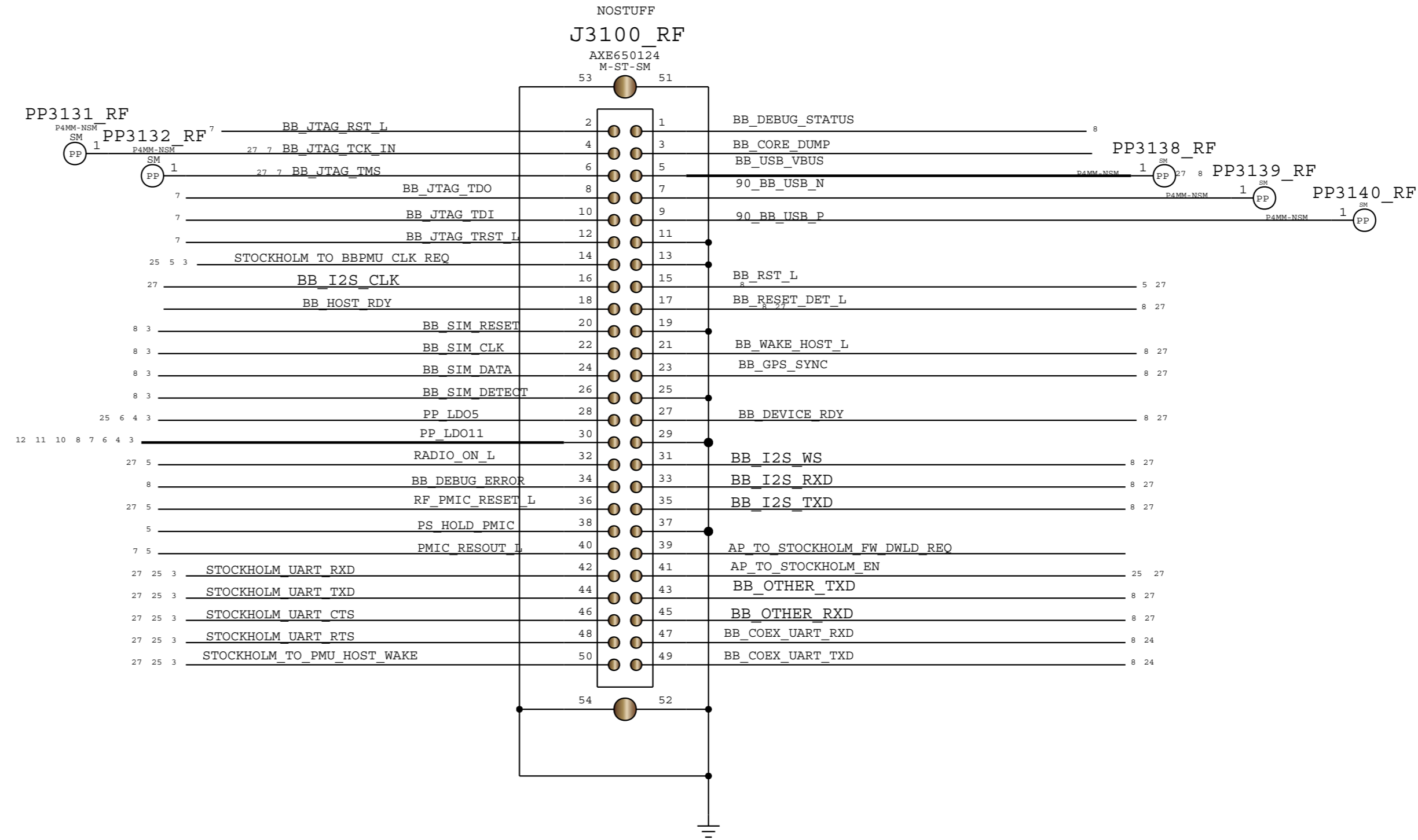
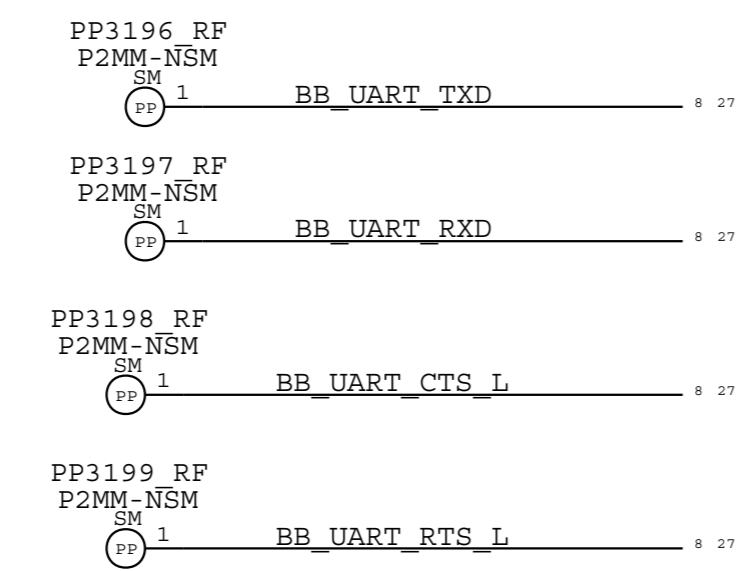
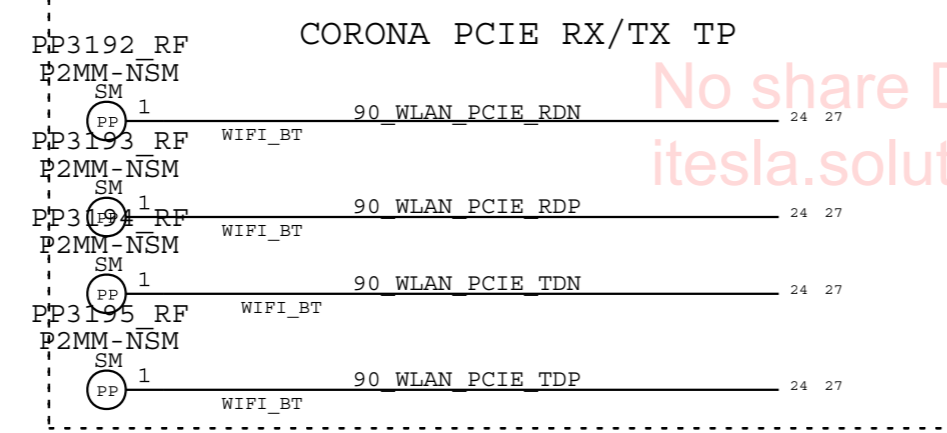
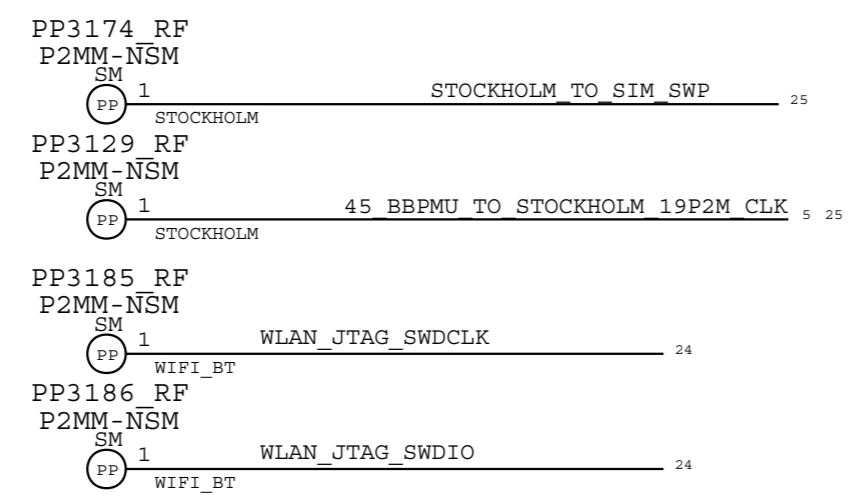
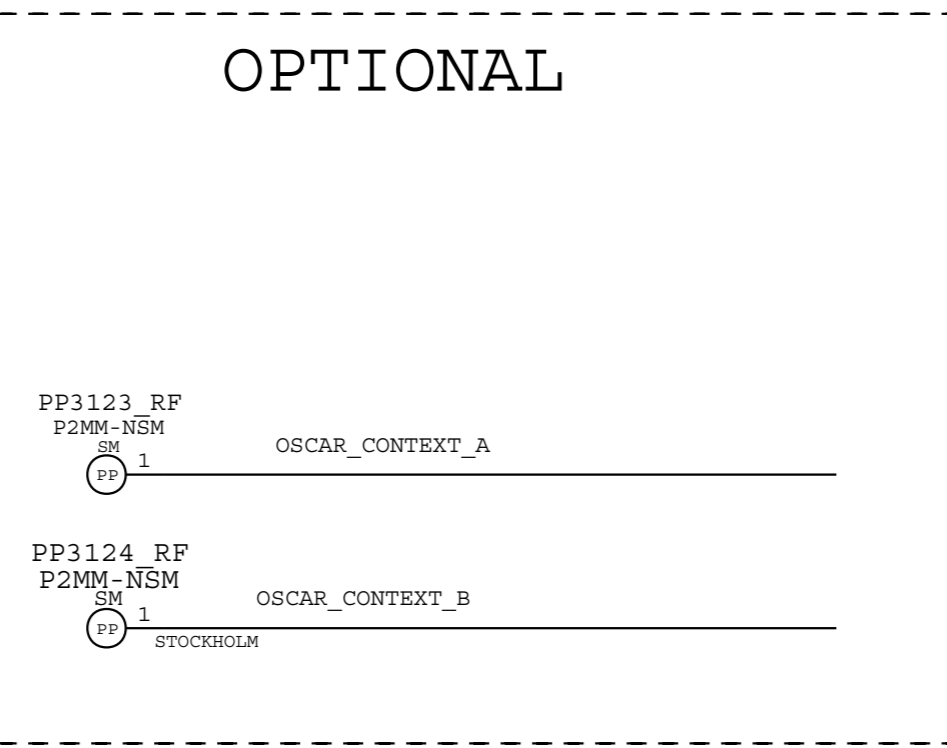
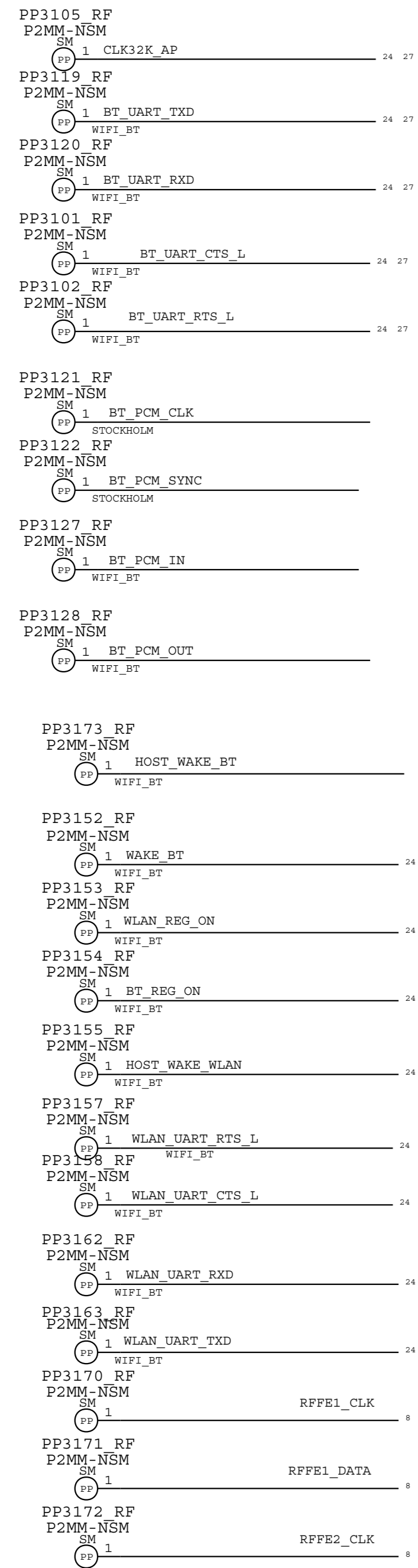
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# AP INTERFACE & DEBUG CONNECTORS

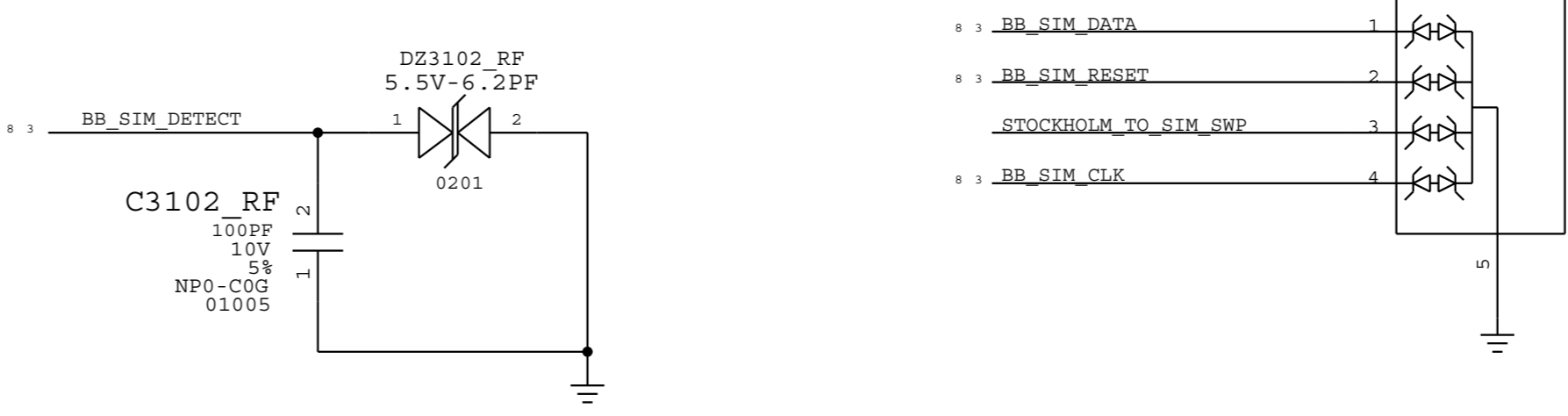
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UNDER THE SIM

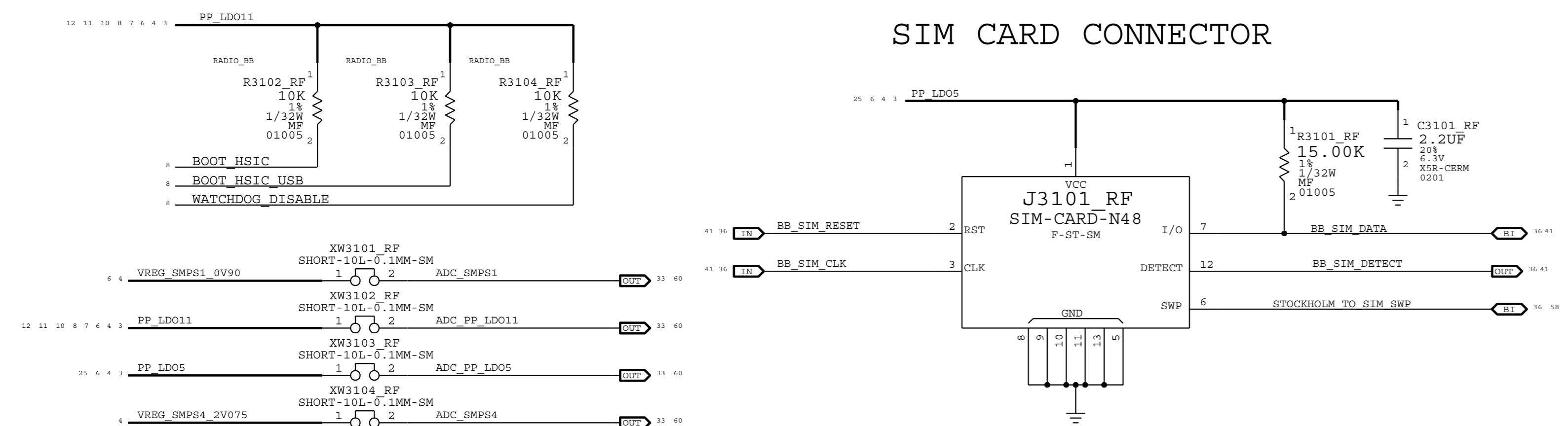
OPTIONAL



## SIM CARD ESD PROTECTION



## SIM CARD CONNECTOR



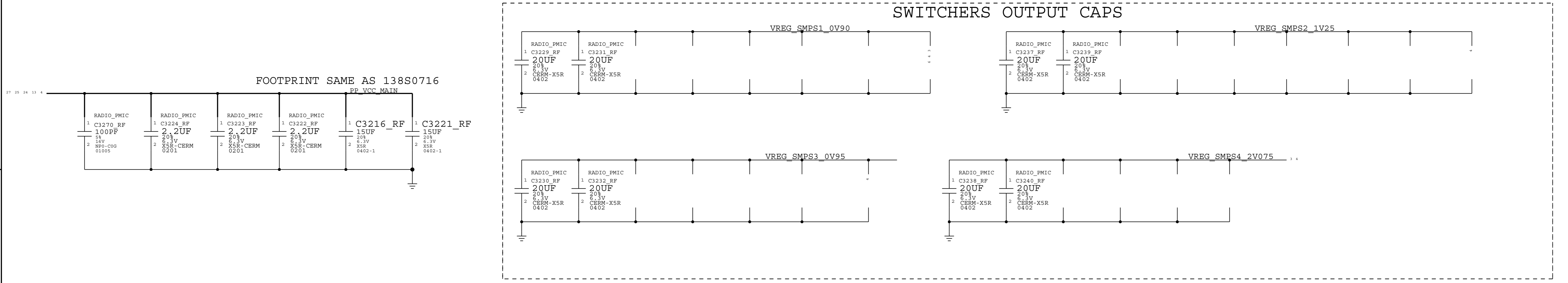
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# BASEBAND PMU (1 OF 2)

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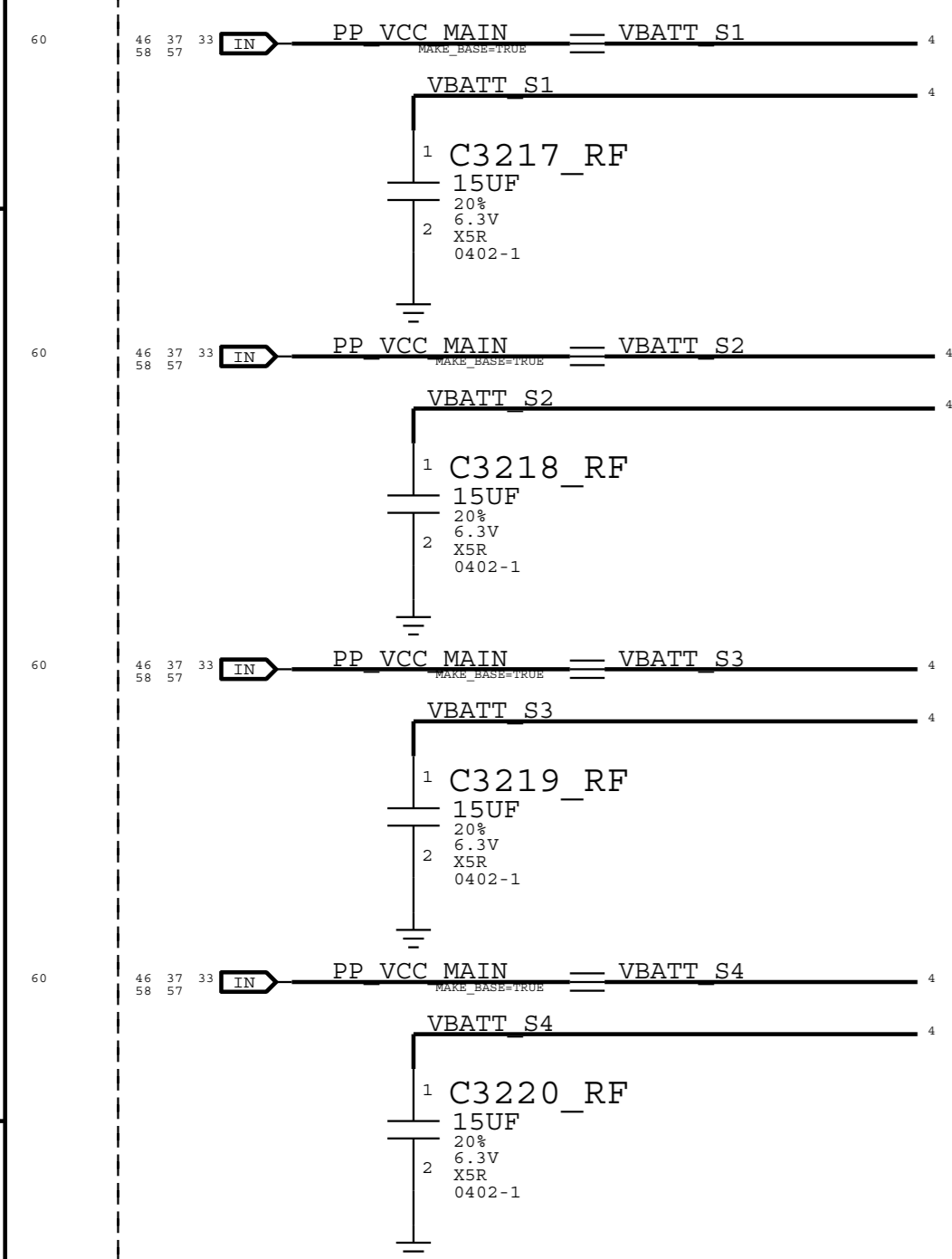
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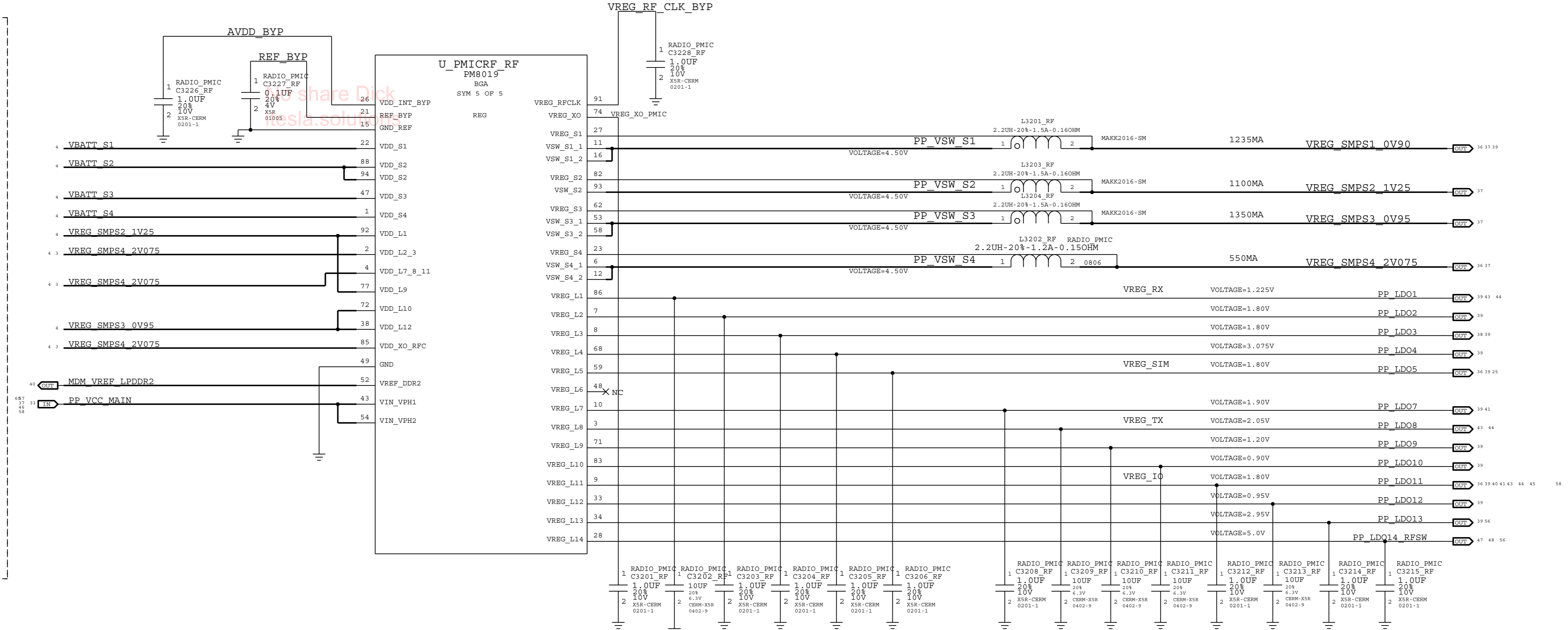
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## SWITCHERS BULK CAPS

FOOTPRINT SAME AS 138S0716



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PAGE TITLE		BASEBAND PMU (1 OF 2)	
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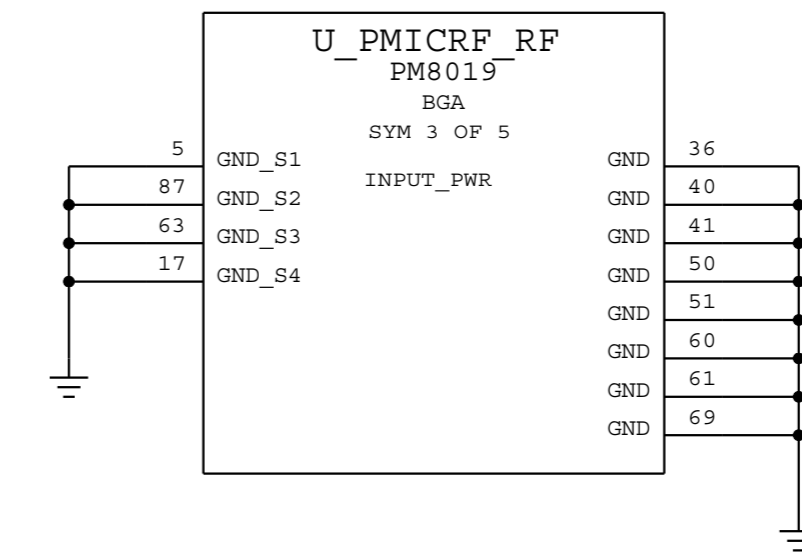
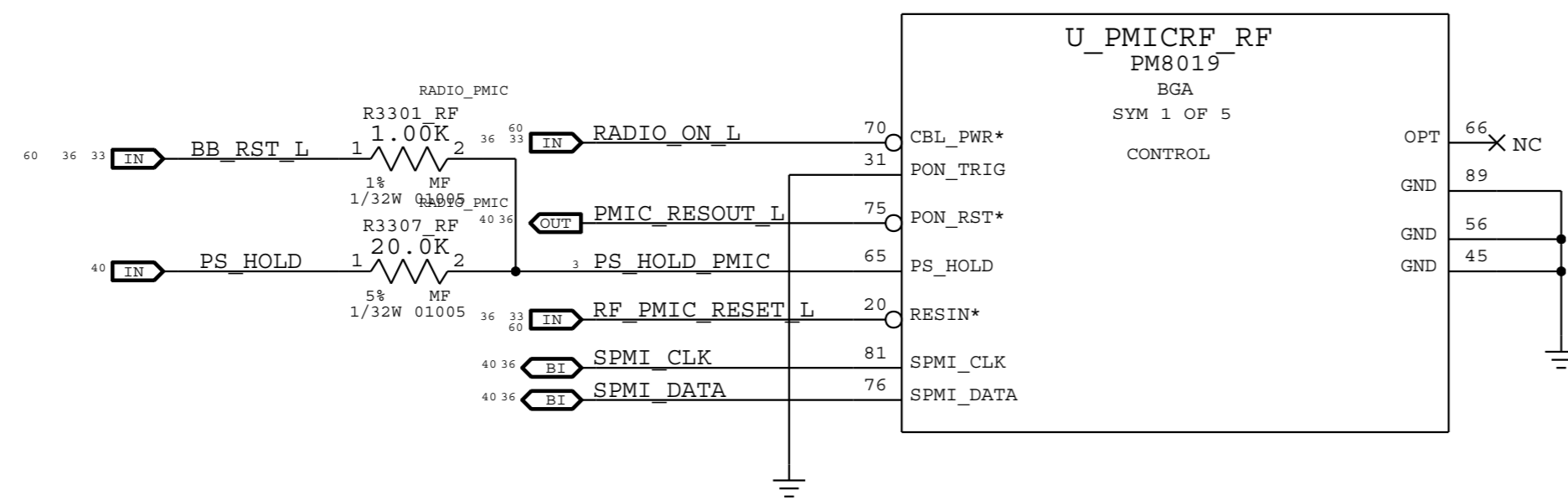
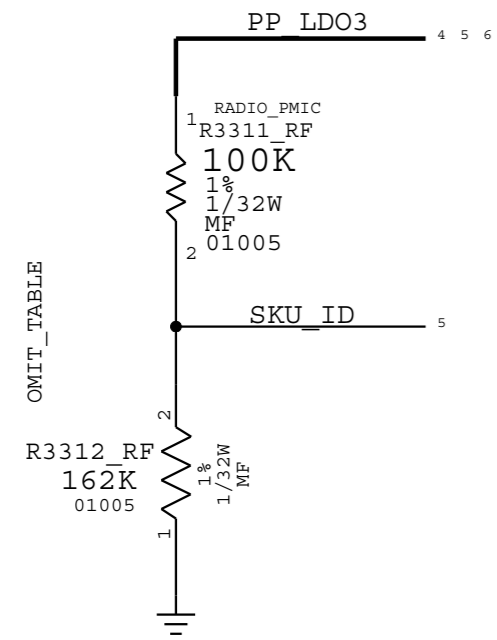
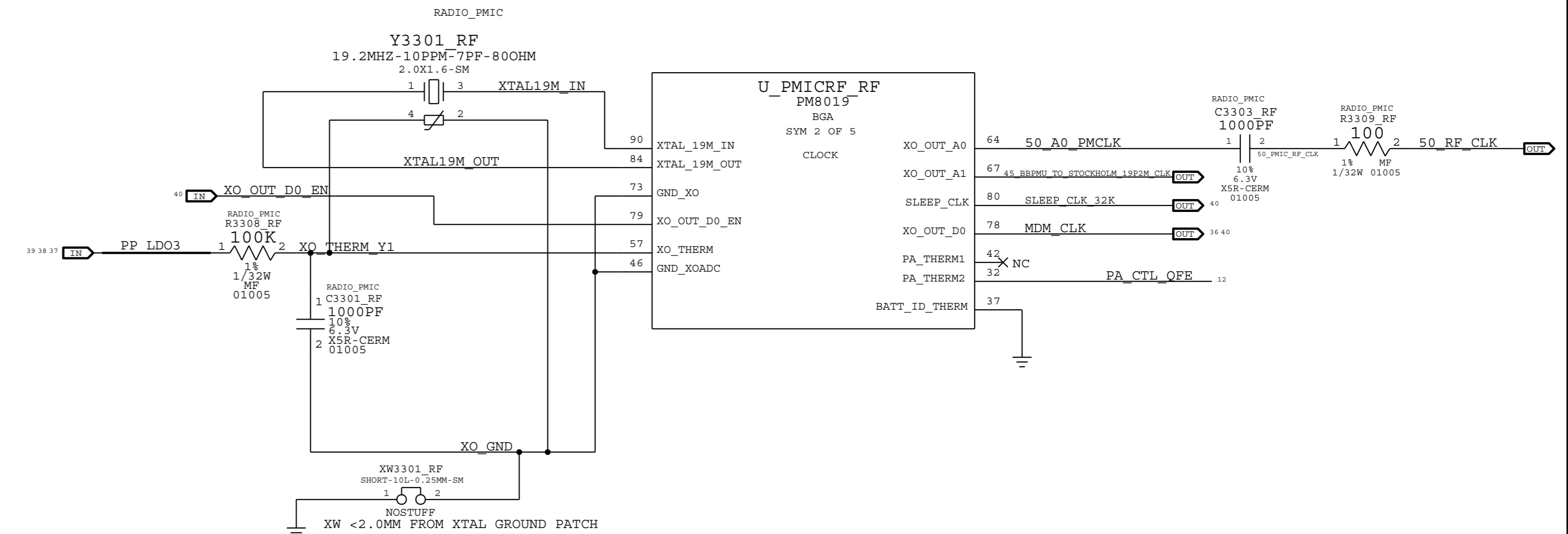
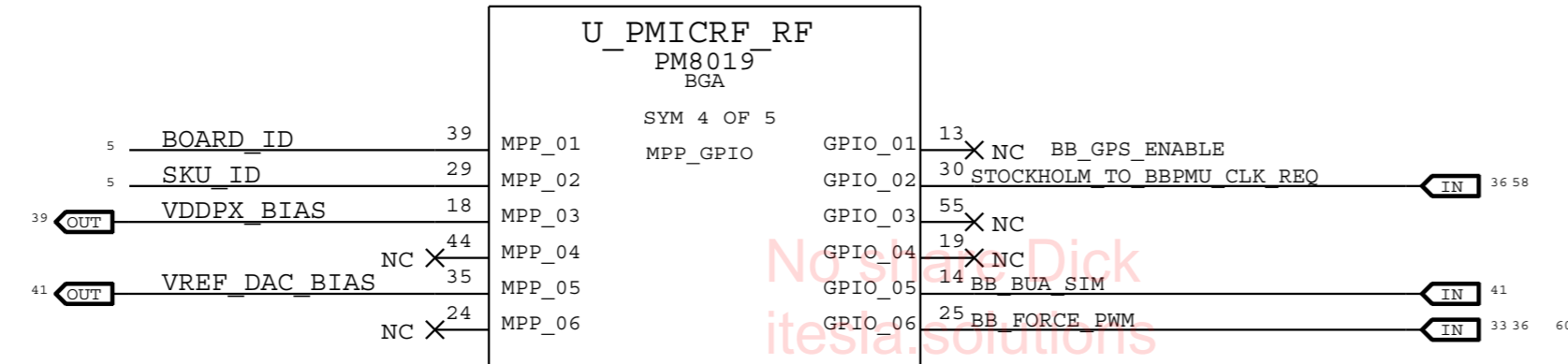
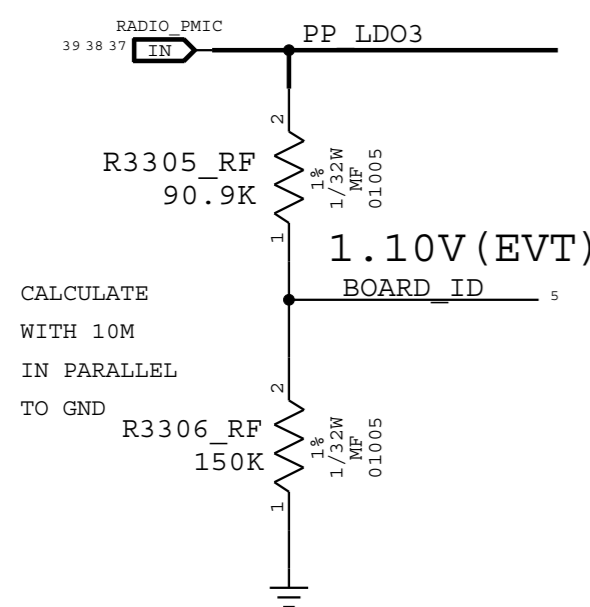
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C401  
R411  
L400  
U404

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0.70V	N69/69H PROTO1
0.90V	N69/69H PROTO2
1.10V	N69/69H EVT1
1.30V	N69/69H EVT2
1.40V	SPARE
1.50V	N69/69H DVT
1.60V	SPARE
1.70V	N69/69H PVT

SKU_ID	REVISION
0.5V	N69
1.1V	N69H

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
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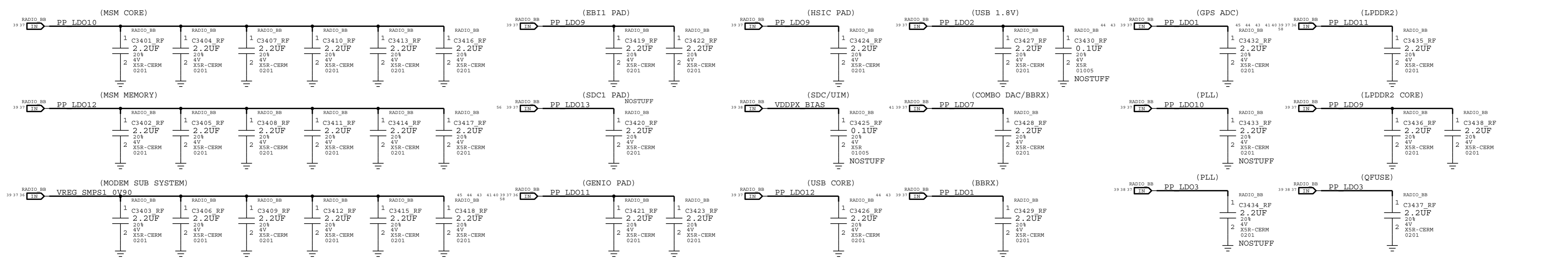
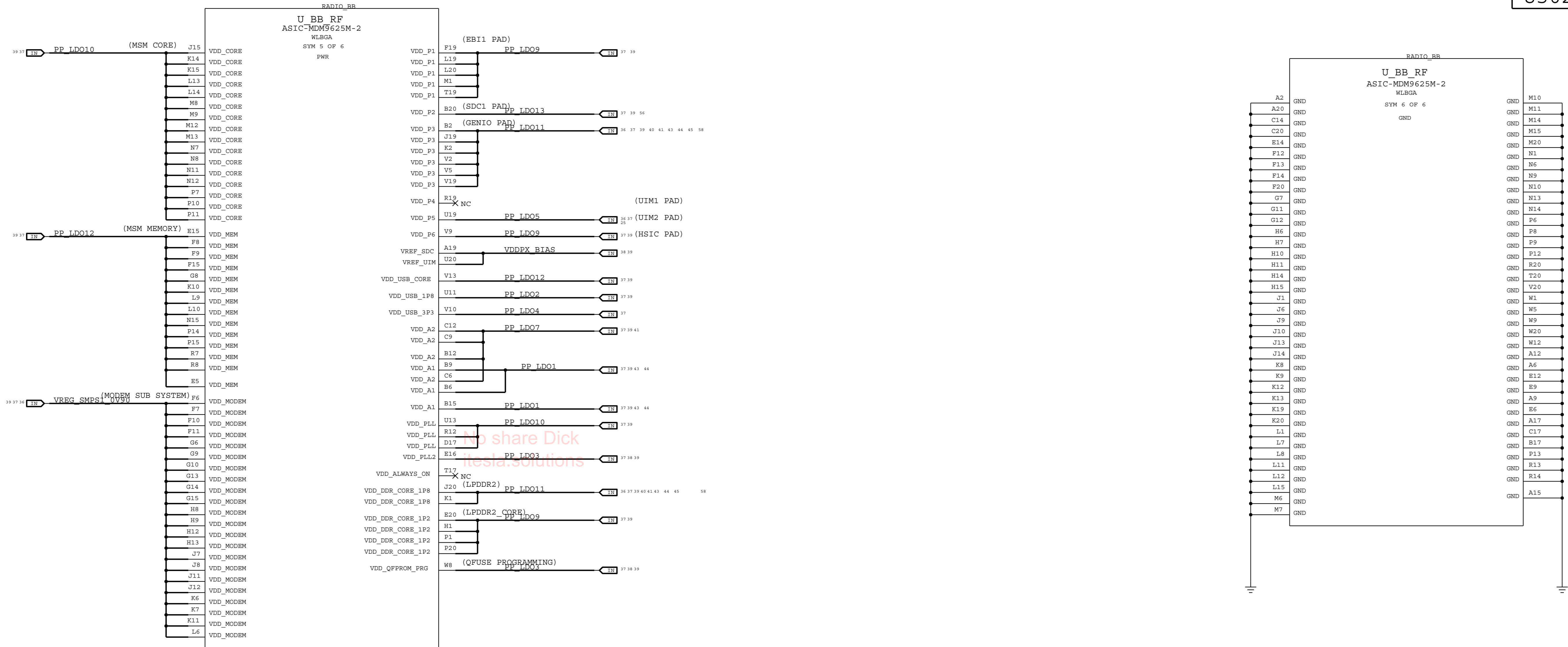


PAGE TITLE		BASEBAND PMU (2 OF 2)	
Apple Inc.		DRAWING NUMBER	051-00648
		REVISION	4.0.0
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# BASEBAND (1 OF 3)

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C538  
R500  
L500  
U502



PAGE TITLE <b>BASEBAND (1 OF 2)</b>	
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BRANCH	PAGE 34 OF 55
SHEET	39 OF 60



# BASEBAND (2 OF 3)

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C600  
R606  
L600  
U602

D

D

C

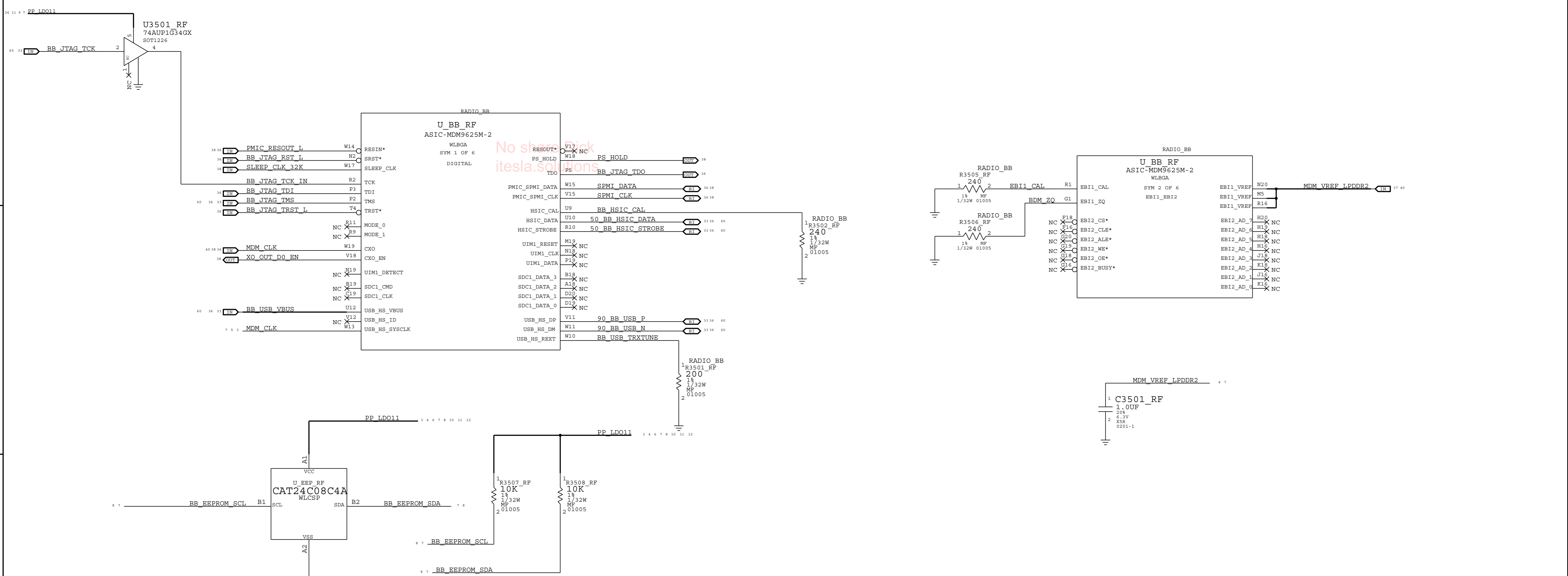
C

B

B

A

A

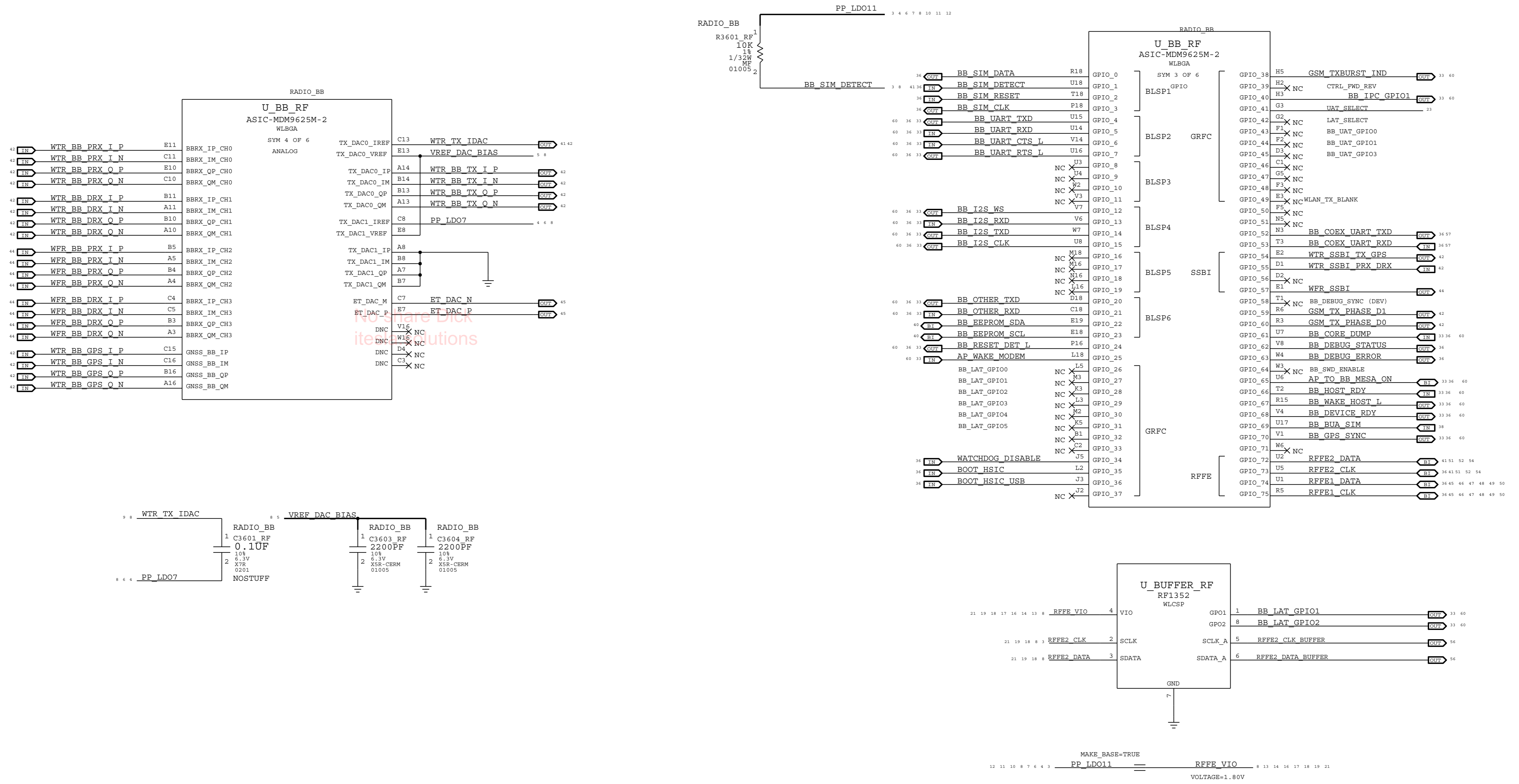


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		PAGE	35 OF 55
		SHEET	40 OF 60

# BASEBAND (3 OF 3)

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C704  
R700  
L700  
U702

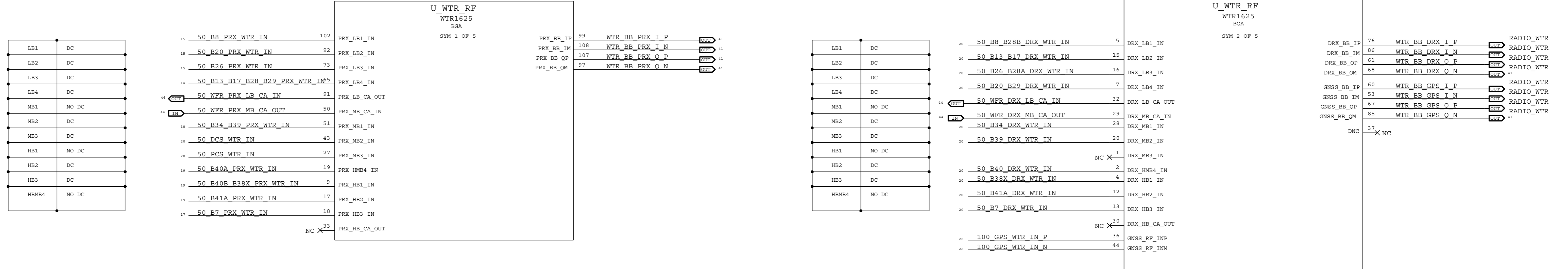


PAGE TITLE		MOBILE DATA MODEM (2 OF 2)	
Apple Inc.	DRAWING NUMBER	051-00648	SIZE D
	REVISION	4.0.0	
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		PAGE	36 OF 55
		SHEET	41 OF 60

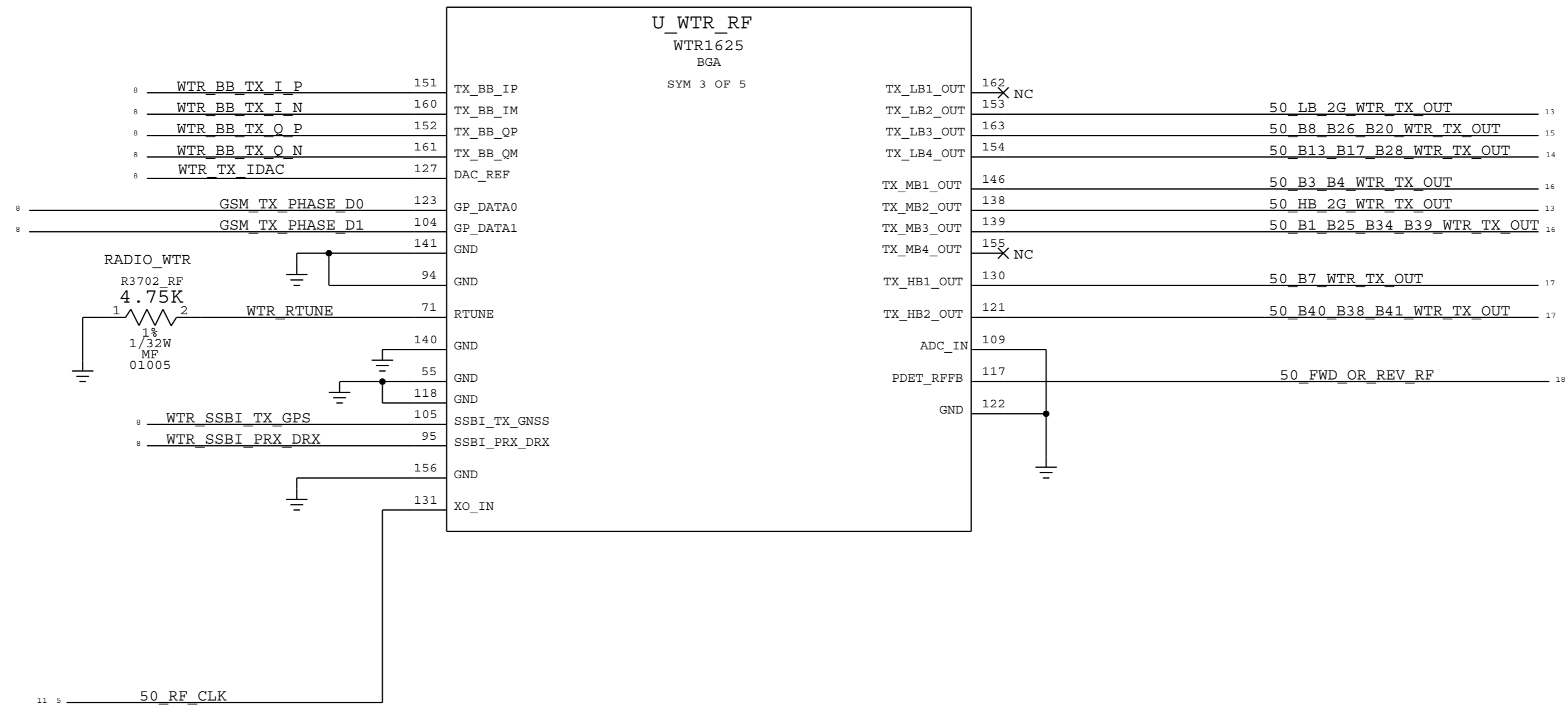
# WTR TRANSCEIVER (1 OF 2)

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C802  
R802  
L800  
U803



No share Dick  
itesla.solutions



RF\_CLK IS SHARED BETWEEN WTR AND WFR. LENGTH DIFFERENCE BETWEEN THE TWO SHOULD BE < 5MM.

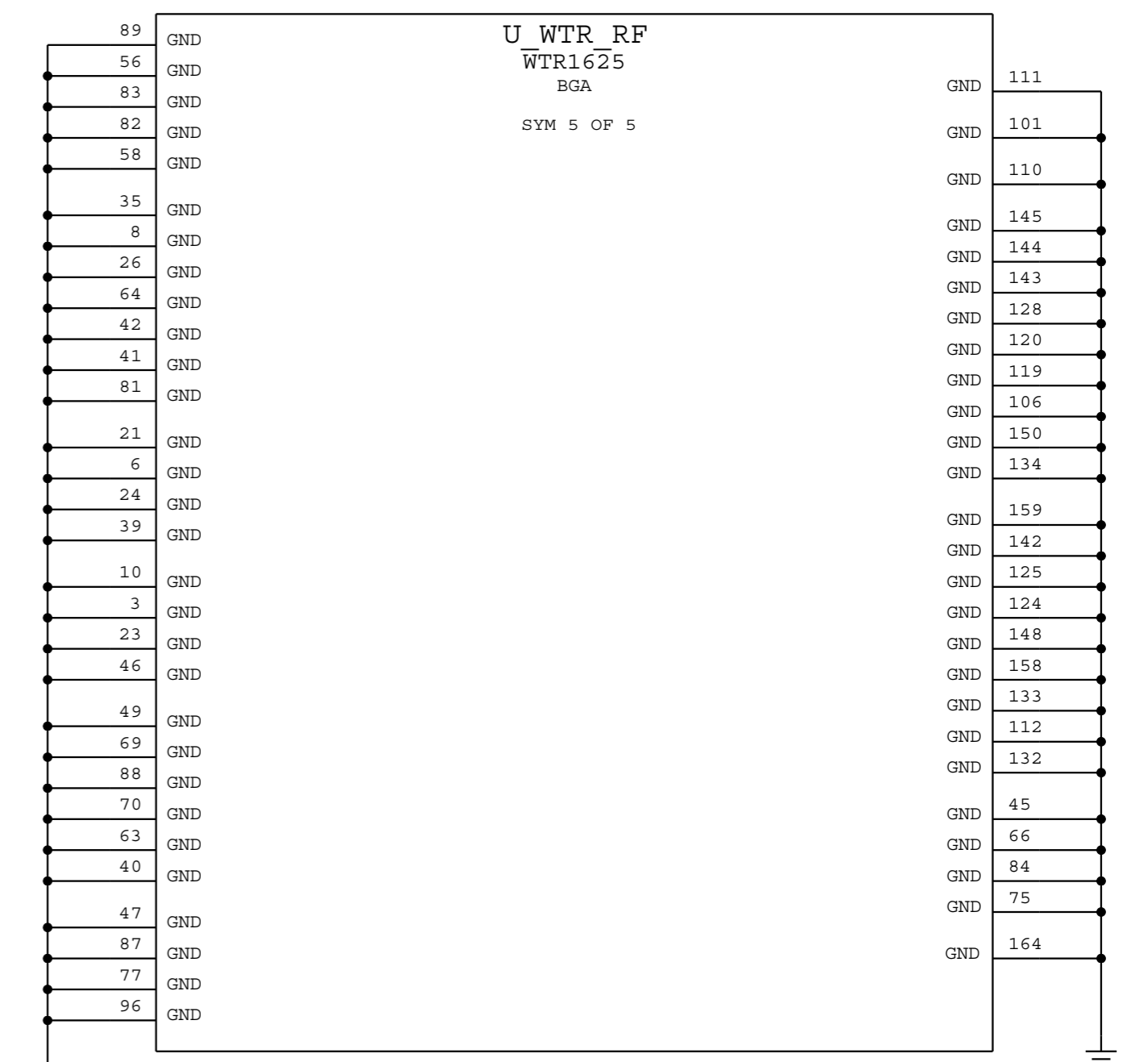
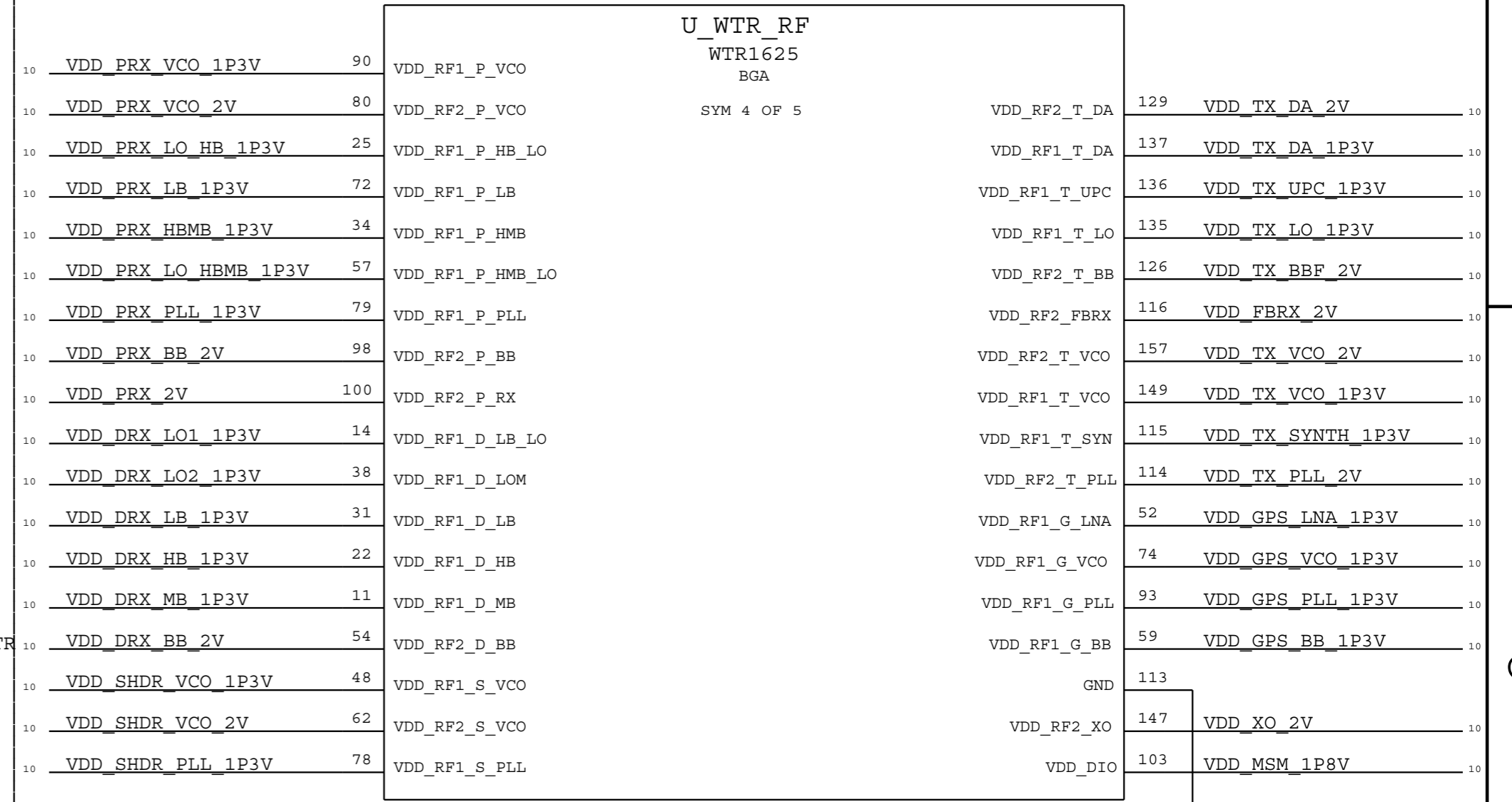
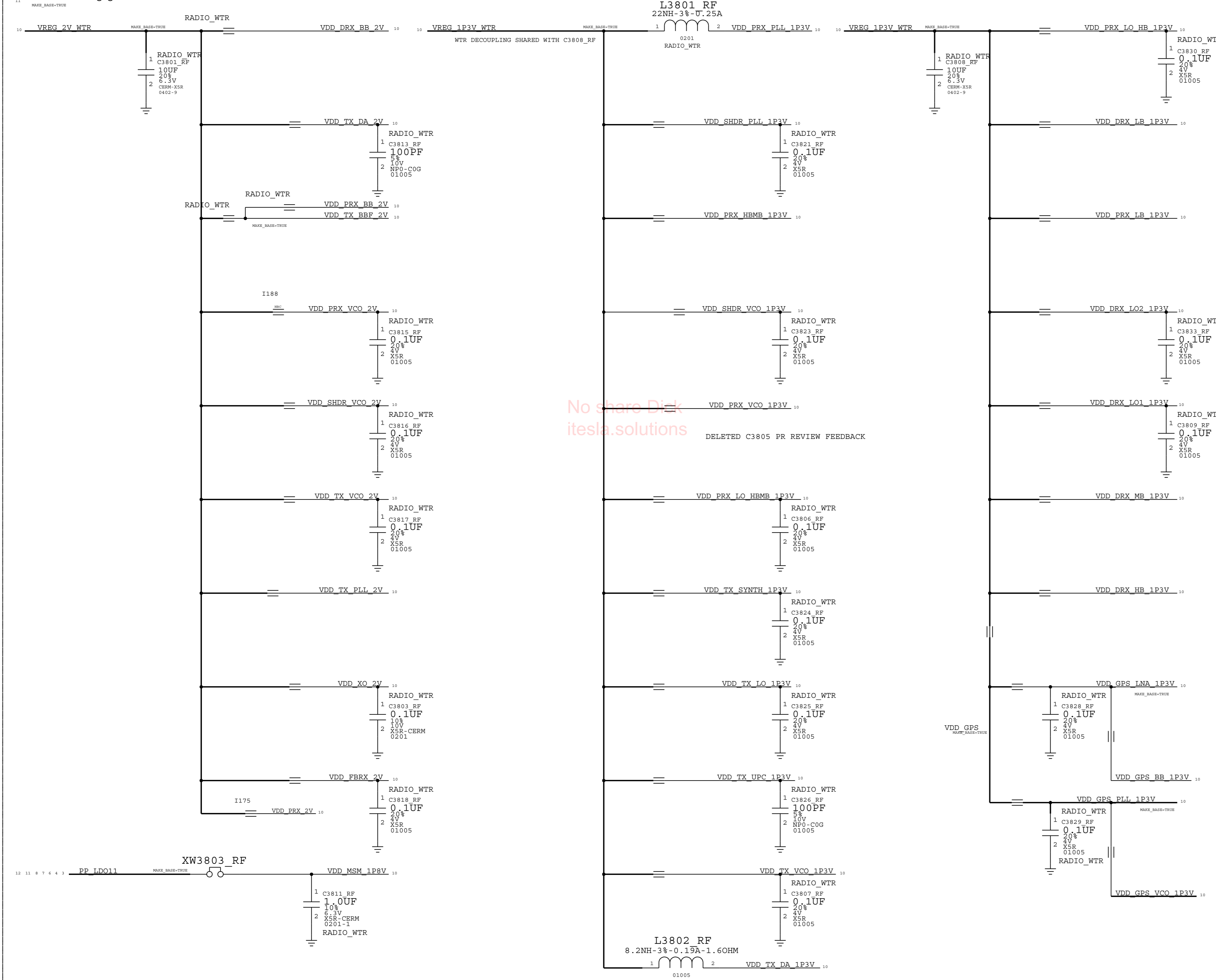
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Apple Inc.	DRAWING NUMBER	051-00648	SIZE D
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		PAGE	37 OF 55
		SHEET	42 OF 60

# WTR TRANSCEIVER (2 OF 2)

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C934  
R926  
L3802 RF  
U902

## WTR DECOUPLING CAPS



No share Disk  
itesla.solutions

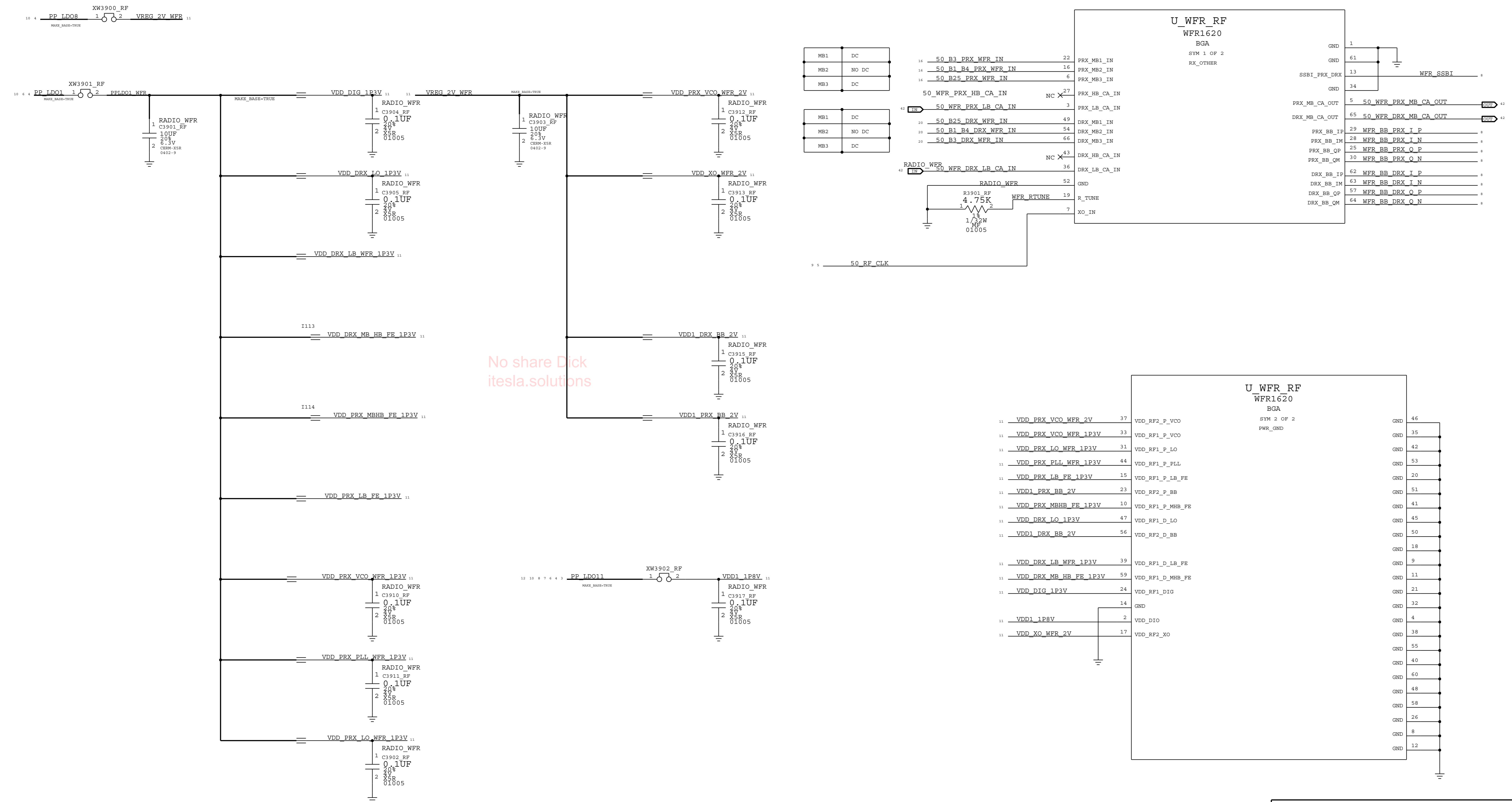
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PAGE TITLE		RF TRANSCEIVER (2 OF 3)	
Apple Inc.		DRAWING NUMBER	051-00648
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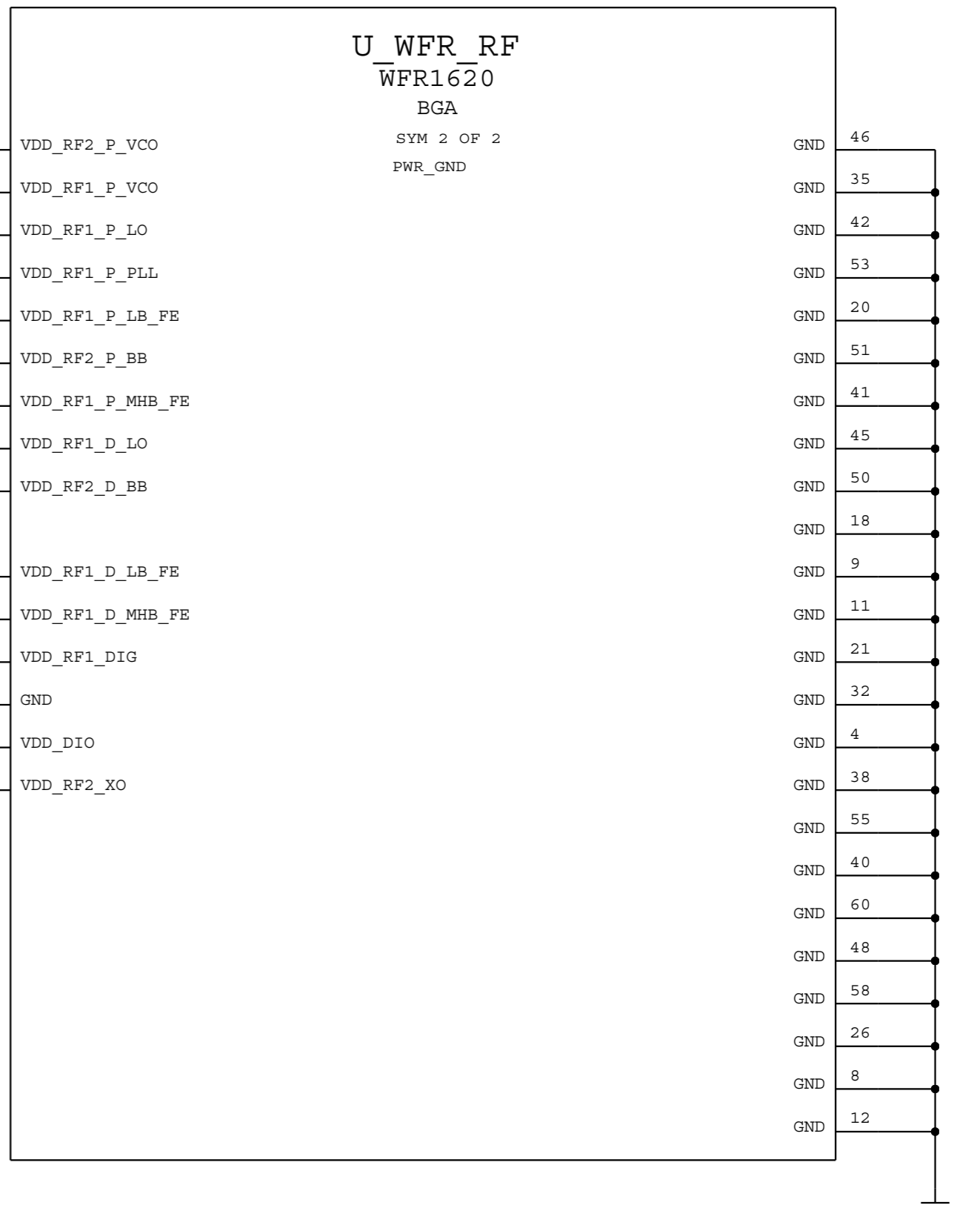
# WFR TRANSCEIVER

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C1019  
R1016  
L1000  
U1002



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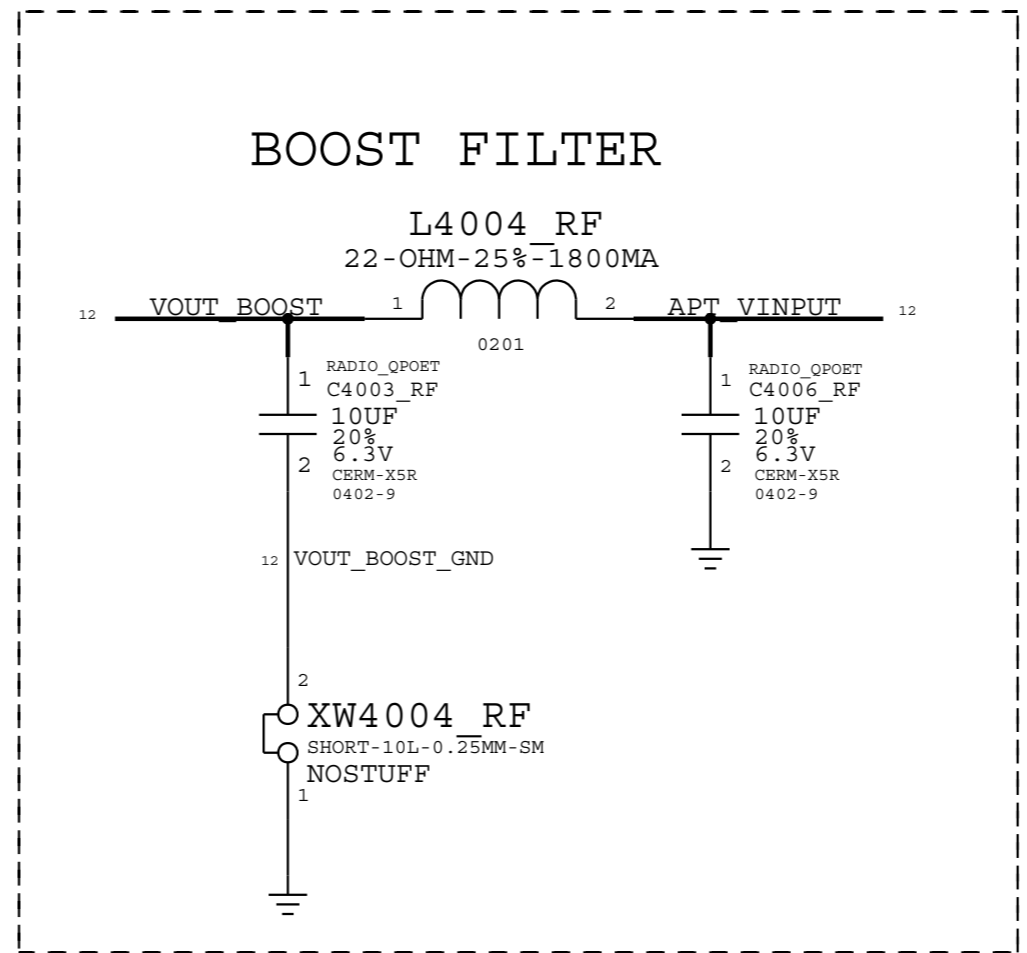
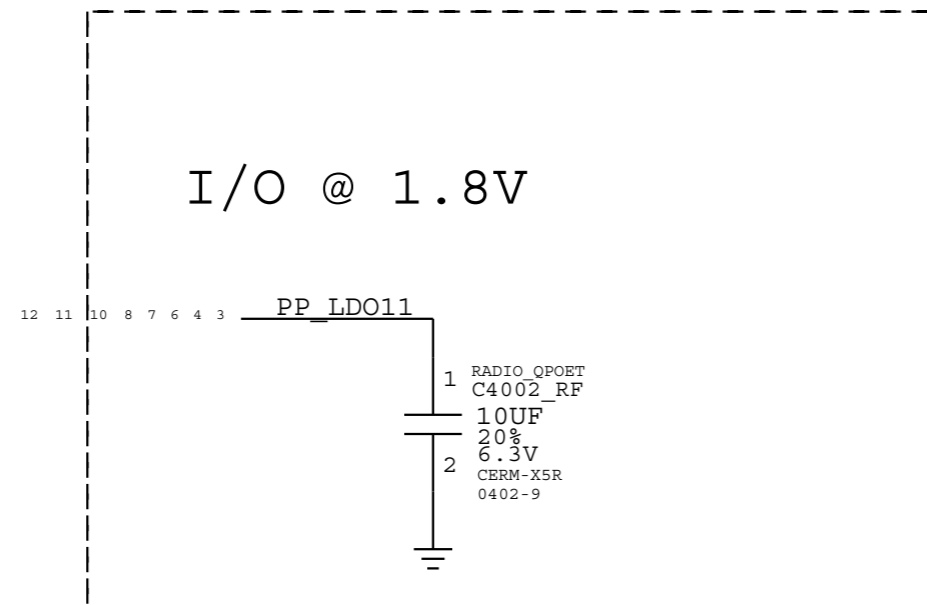
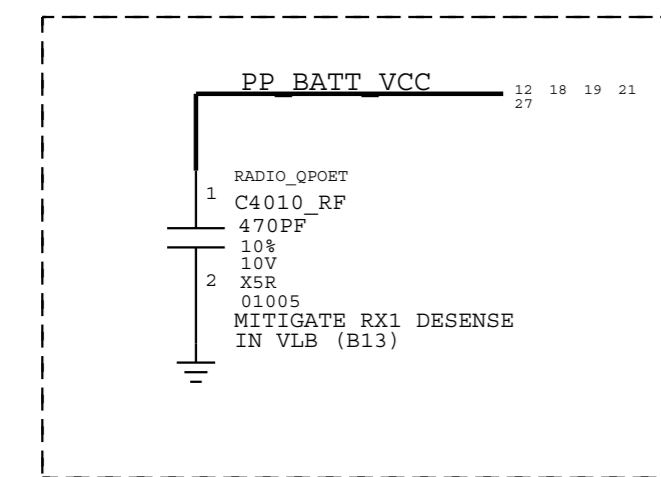
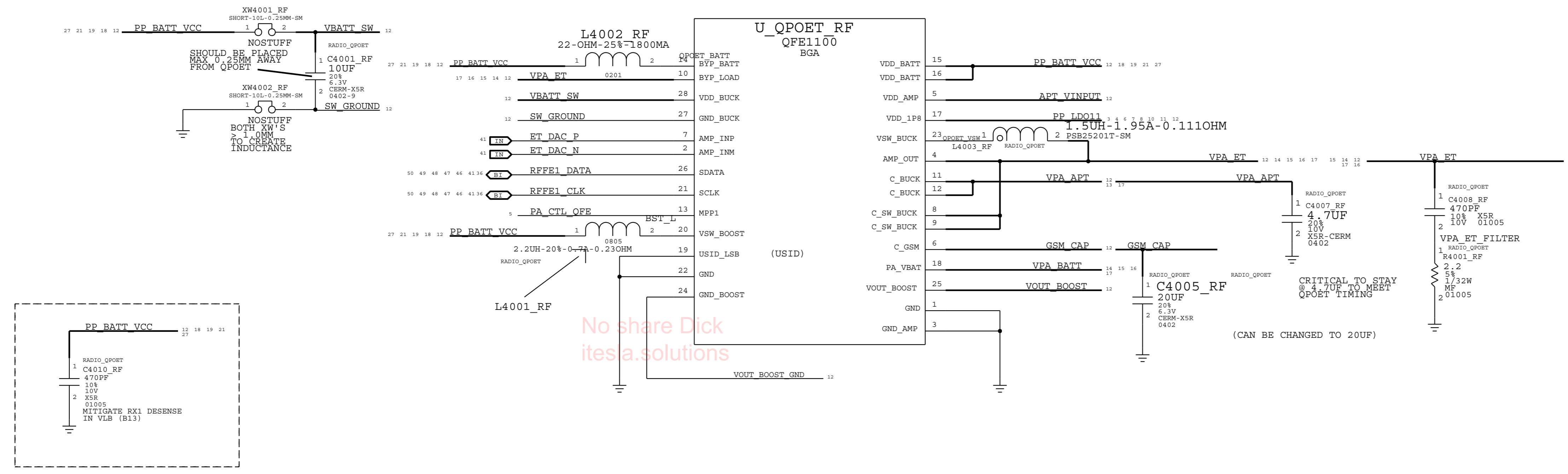


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DRAWING NUMBER		051-00648	SIZE D
REVISION		4.0.0	BRANCH
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		SHEET	44 OF 60

# QFE DCDC

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C1110  
R1102  
L1104  
U1101



No share Dick  
itesa.solutions

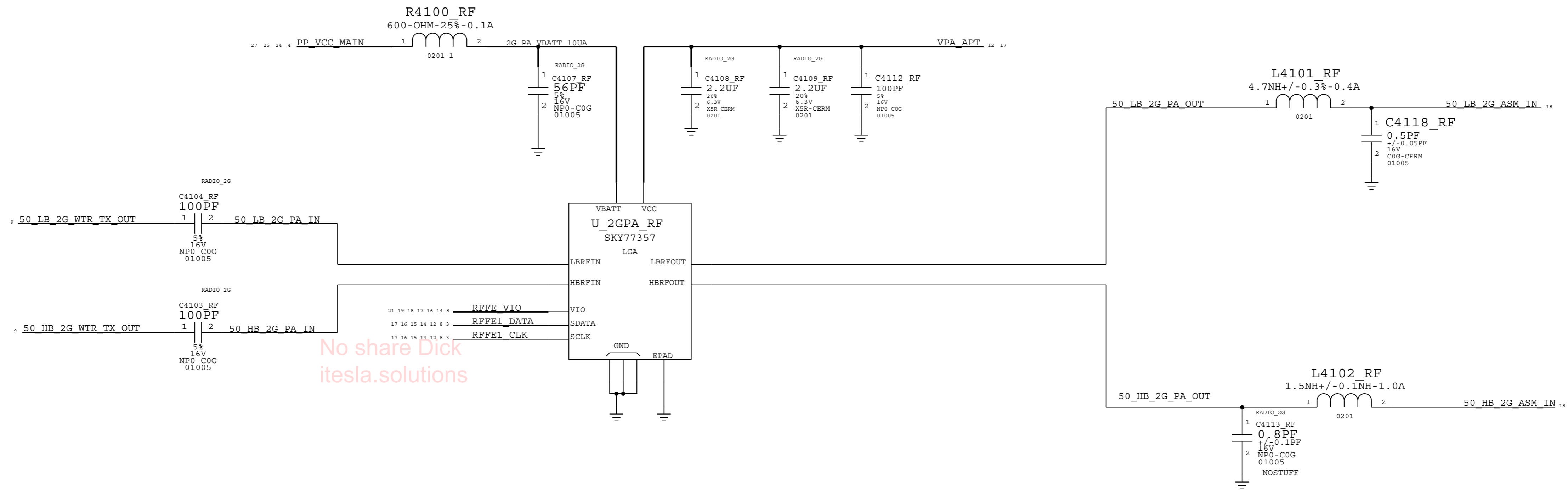
CRITICAL TO STAY  
@ 4.7UF TO MEET  
QPOET TIMING  
(CAN BE CHANGED TO 20UF)


PAGE TITLE		QFE DCDC	
	DRAWING NUMBER	051-00648	SIZE
	REVISION	4.0.0	D
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		SHEET	45 OF 60

# 2G PA

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C1208  
R1200  
L1204  
U1201

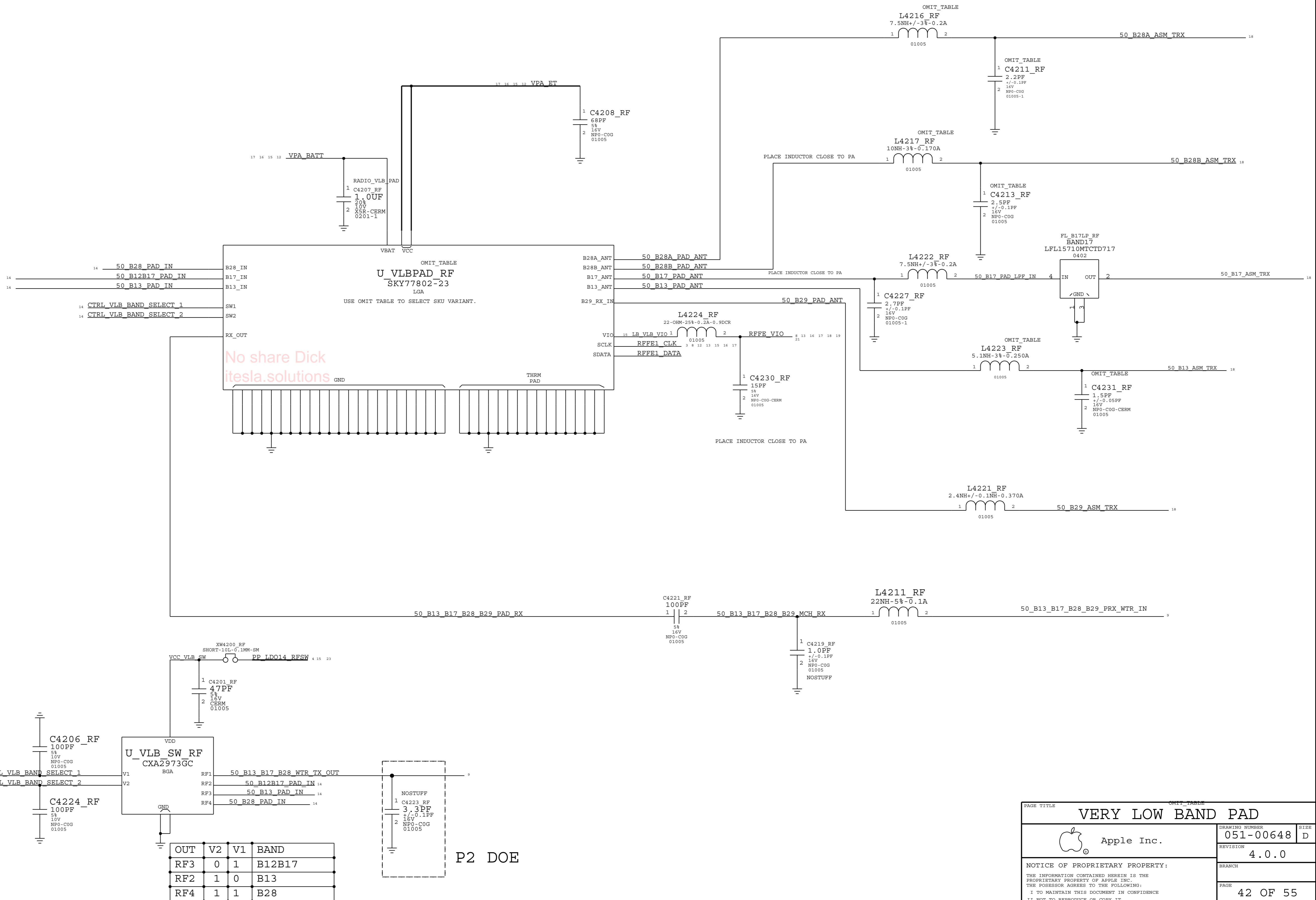


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	PAGE	41 OF 55	
	SHEET	46 OF 60	

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

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C1332  
R1300  
L4215 RF  
U1304



PAGE TITLE: VERY LOW BAND PAD

Apple Inc.

DRIVING NUMBER: 051-00648

REVISION: 4.0.0

BRANCH:

PAGE: 42 OF 55

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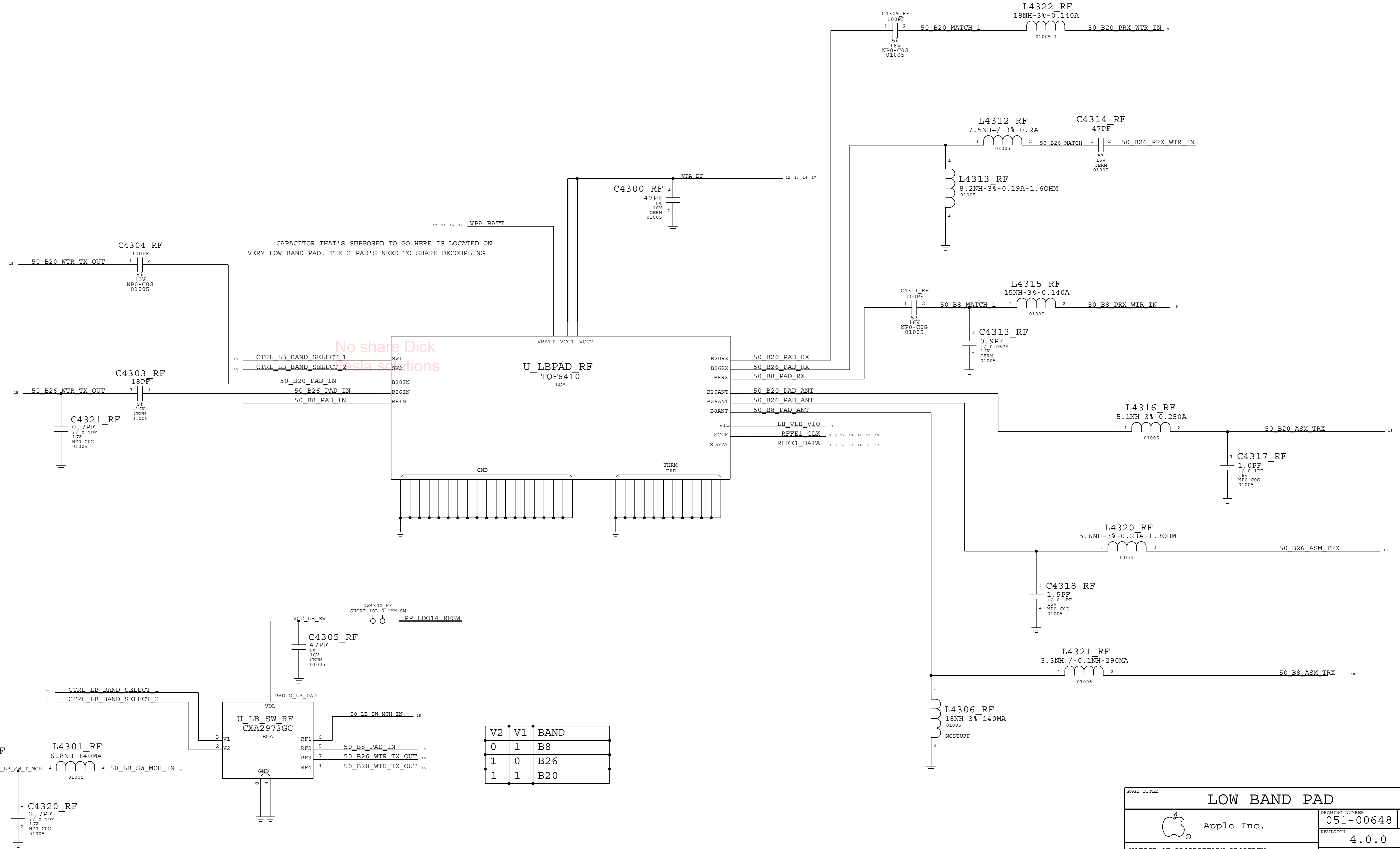
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# LOW BAND PAD (B8, B26, B20)

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C4318 RF  
R1400  
L4322 RF  
U1402



No share Dick  
asla solutions

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

WTR OUTPUT HAS DC FIRST SHUNT MUST BE A CAPACITOR.

PAGE TITLE: **LOW BAND PAD**

Apple Inc.

DRAWING NUMBER: 051-00648  
REVISION: 4.0.0

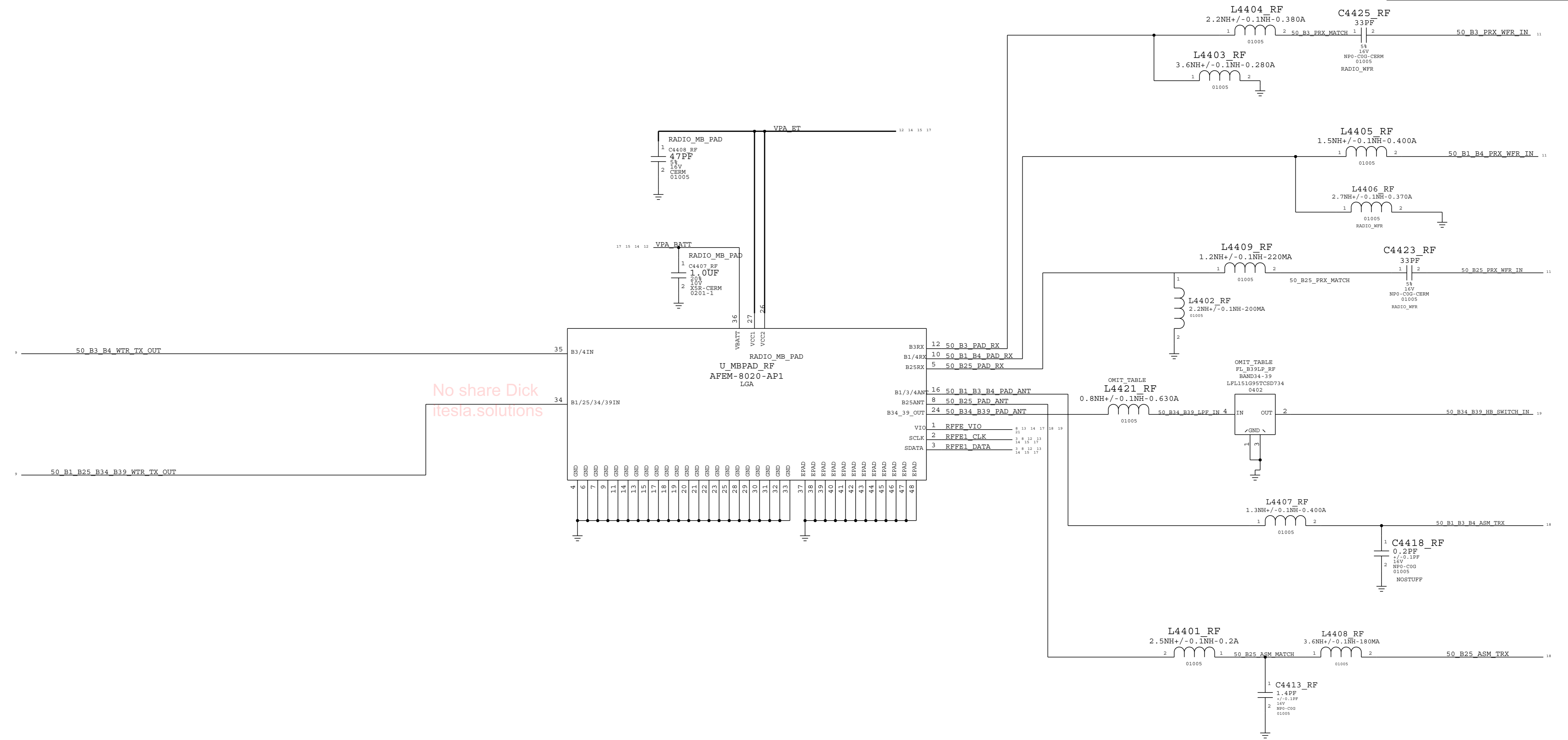
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PAGE: 43 OF 55  
SHEET: 48 OF 60

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

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C4426 RF  
R1500  
L4409 RF  
U1501

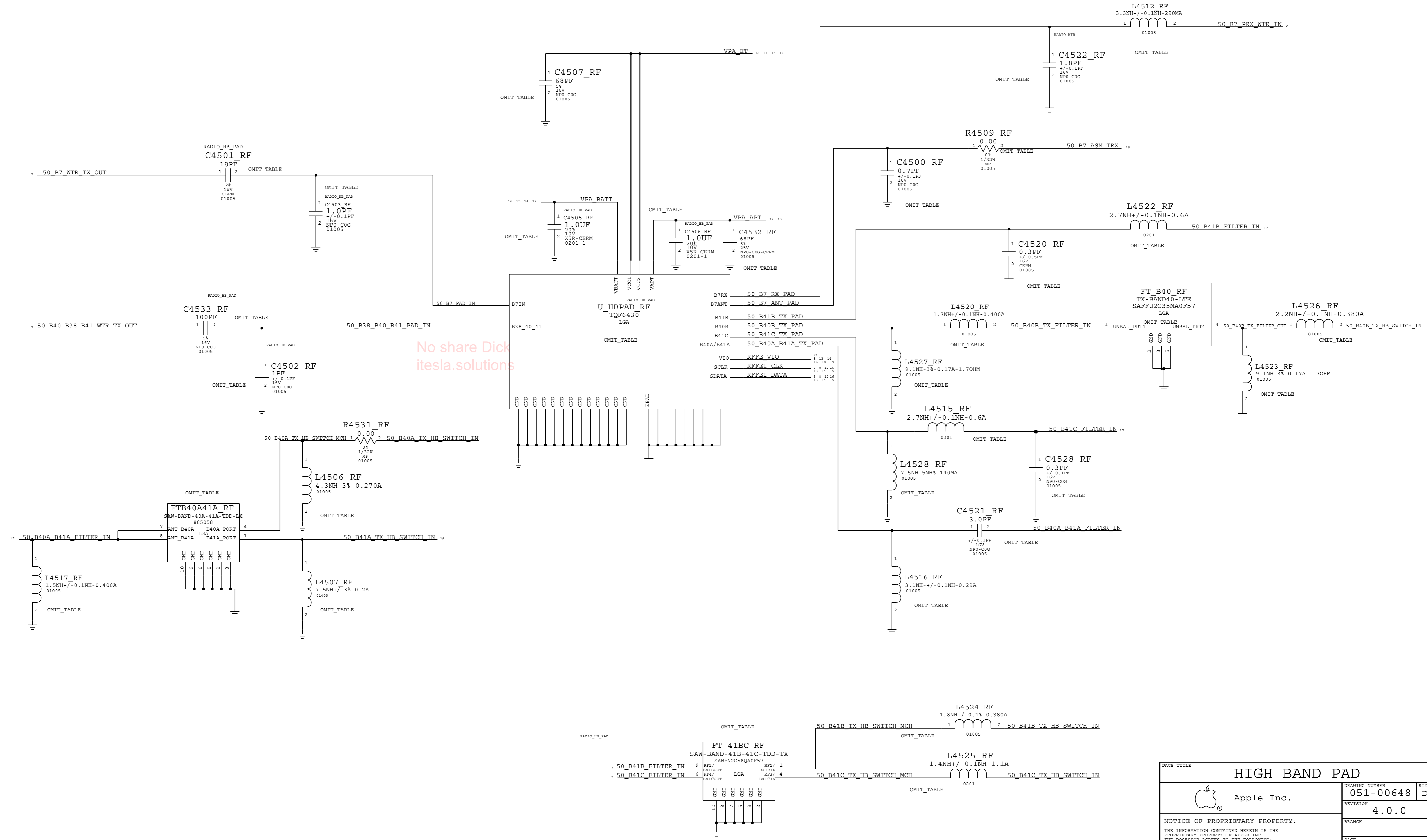


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		PAGE	44 OF 55
		SHEET	49 OF 60

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

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C4533 RF
R1600
L1616
U1601

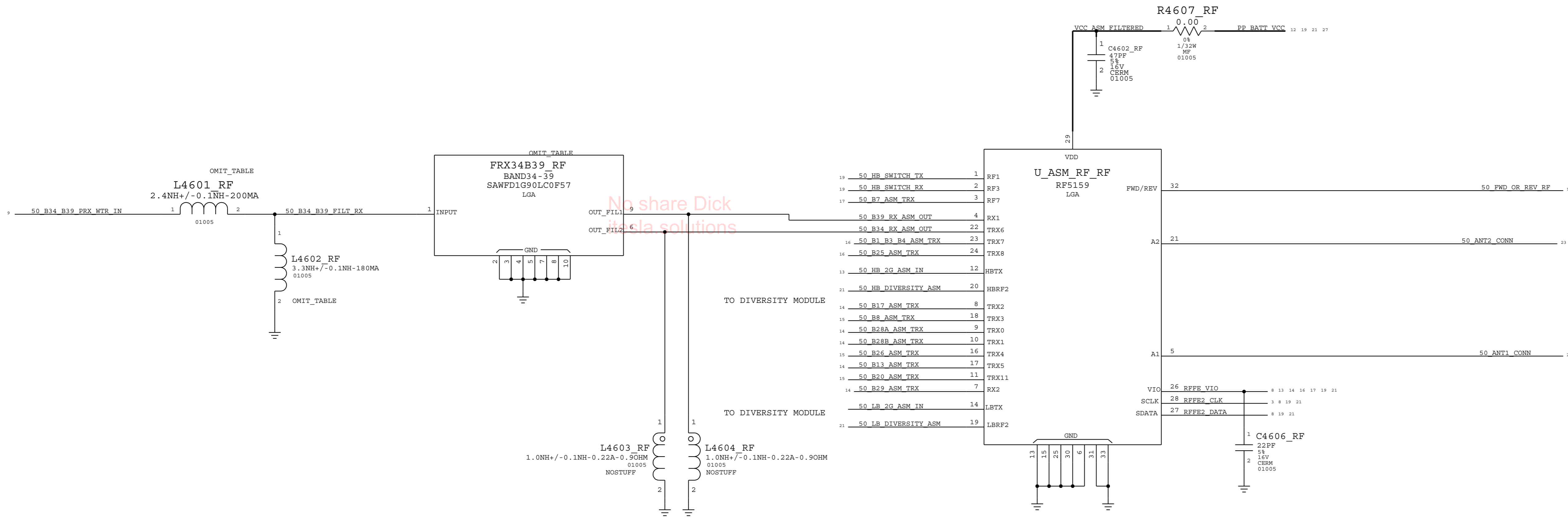


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# ANTENNA SWITCH

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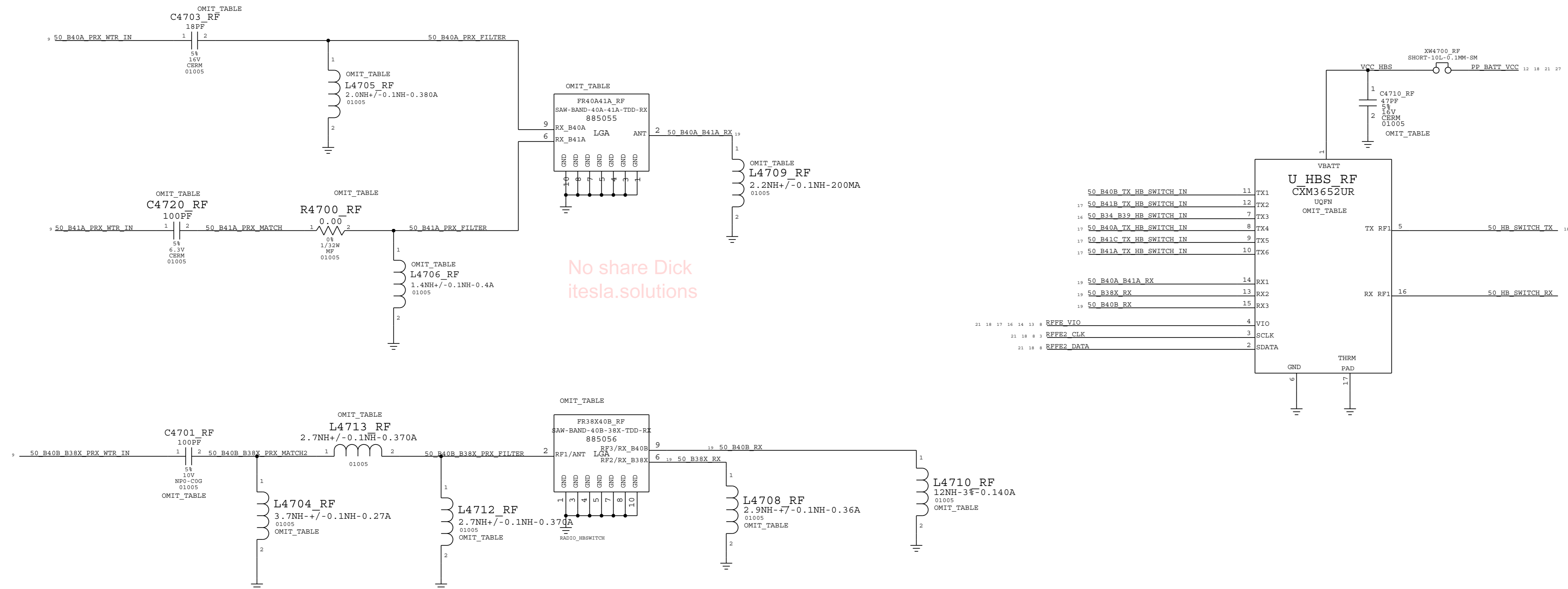
C1702  
R1700  
L4608 RF  
U1702



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Apple Inc.	DRAWING NUMBER	051-00648	SIZE
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		SHEET	51 OF 60

# HIGH BAND SWITCH

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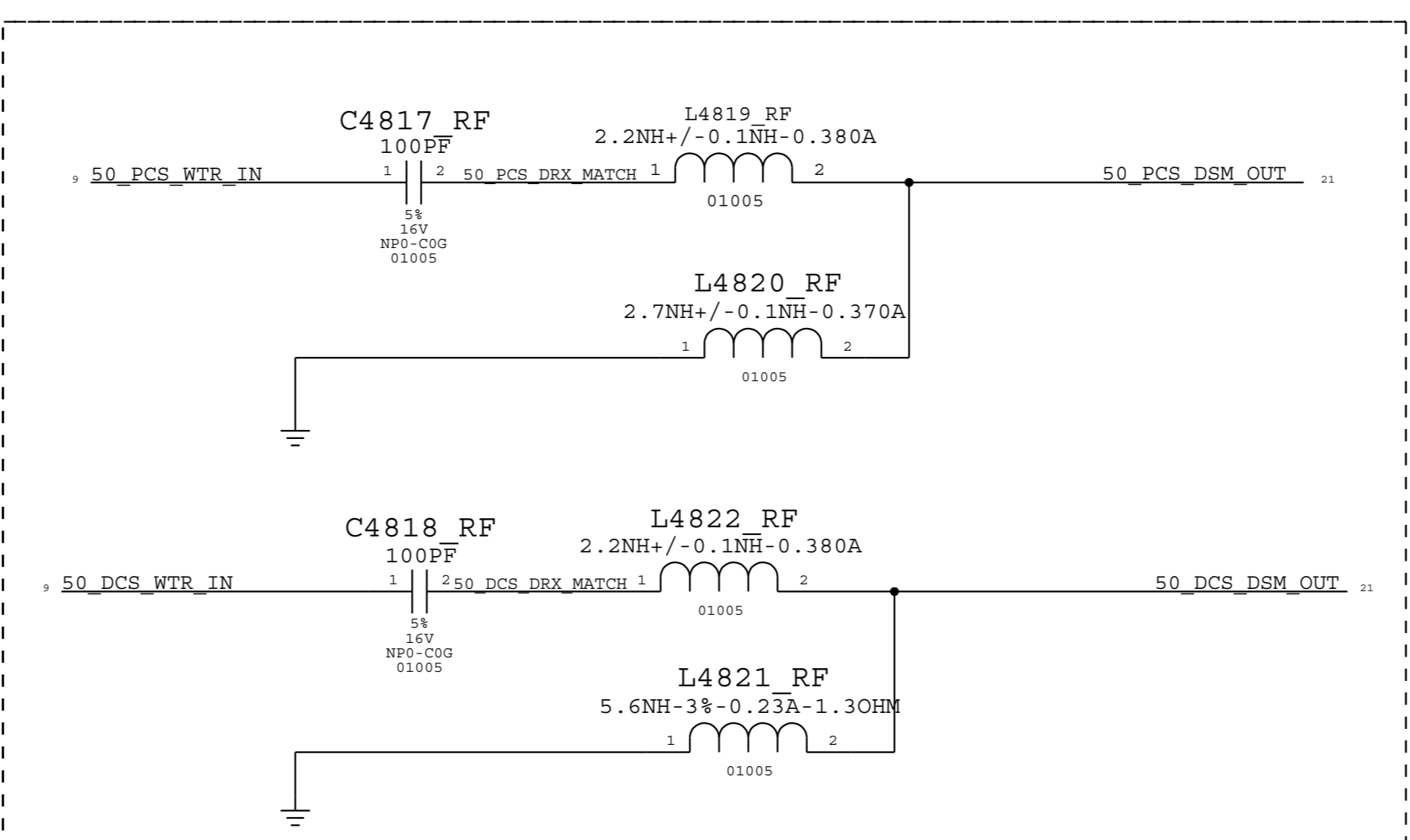
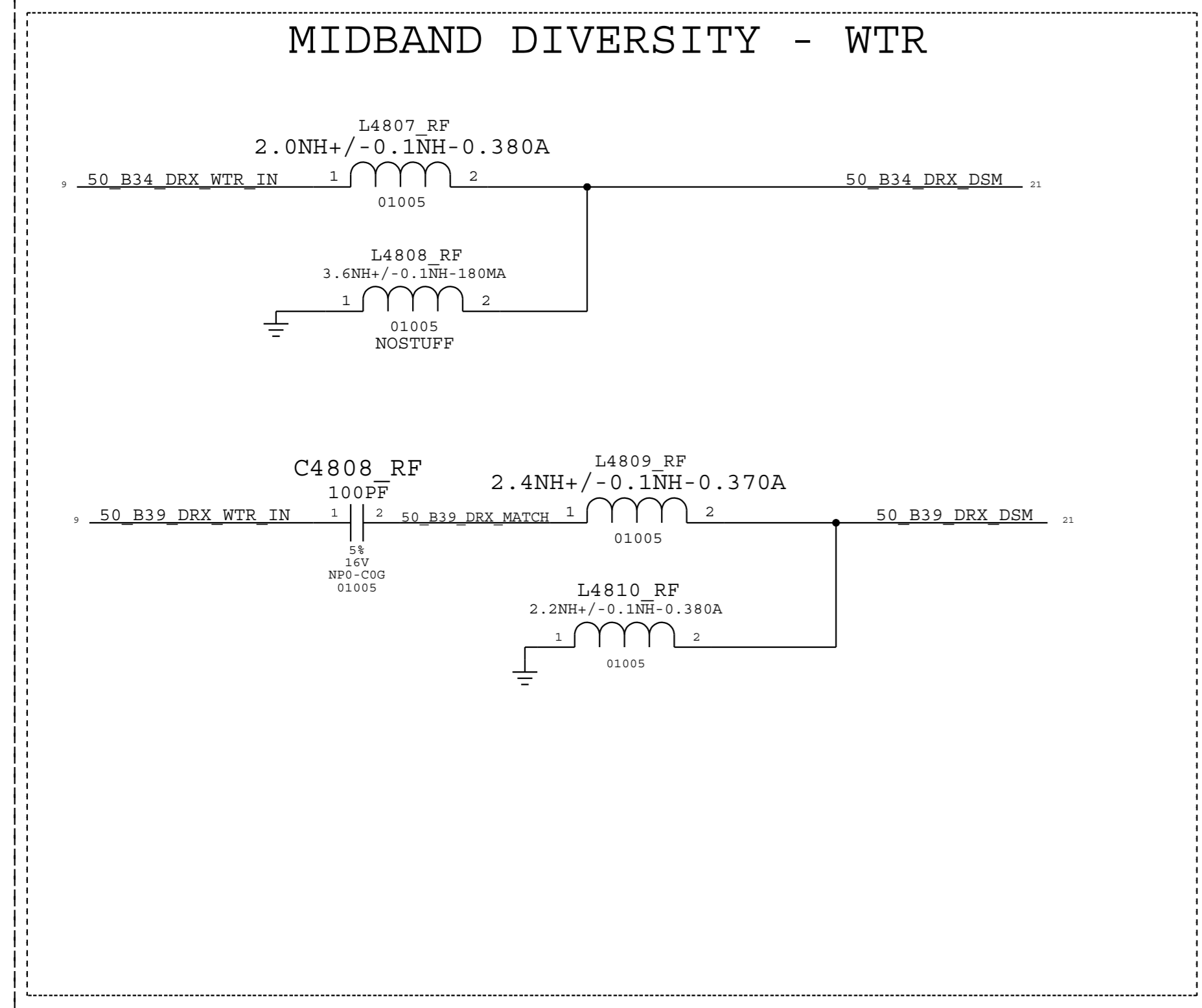
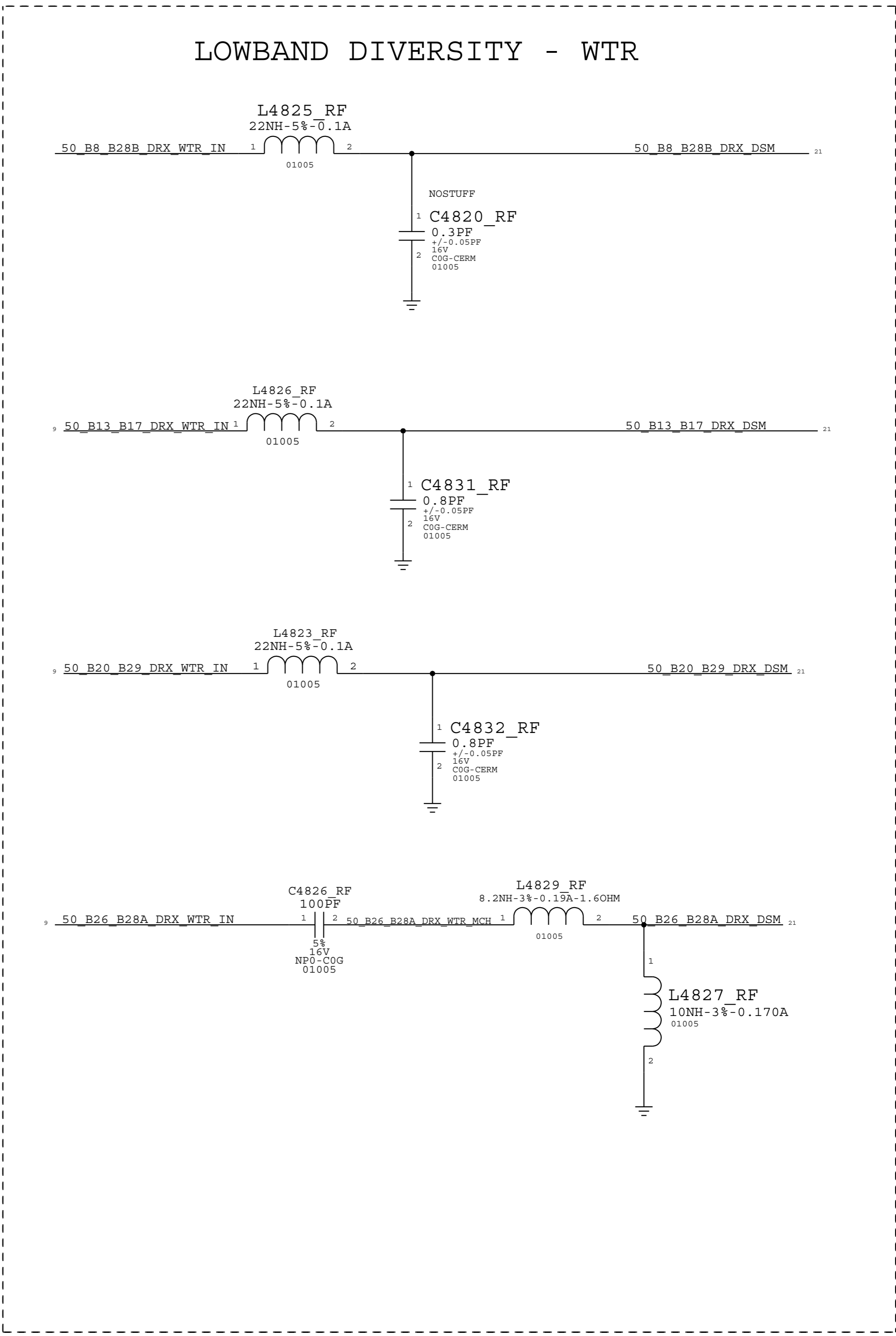
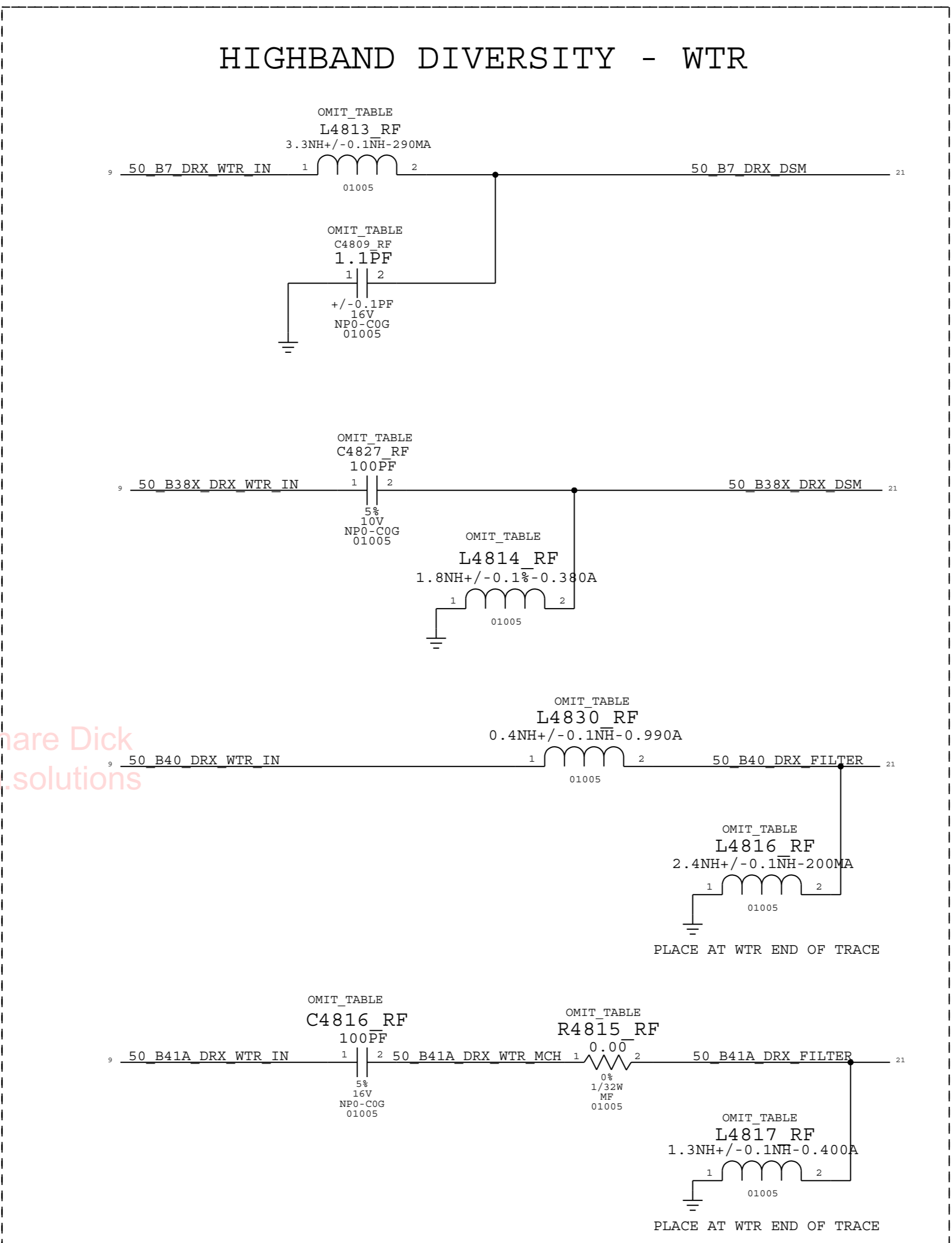
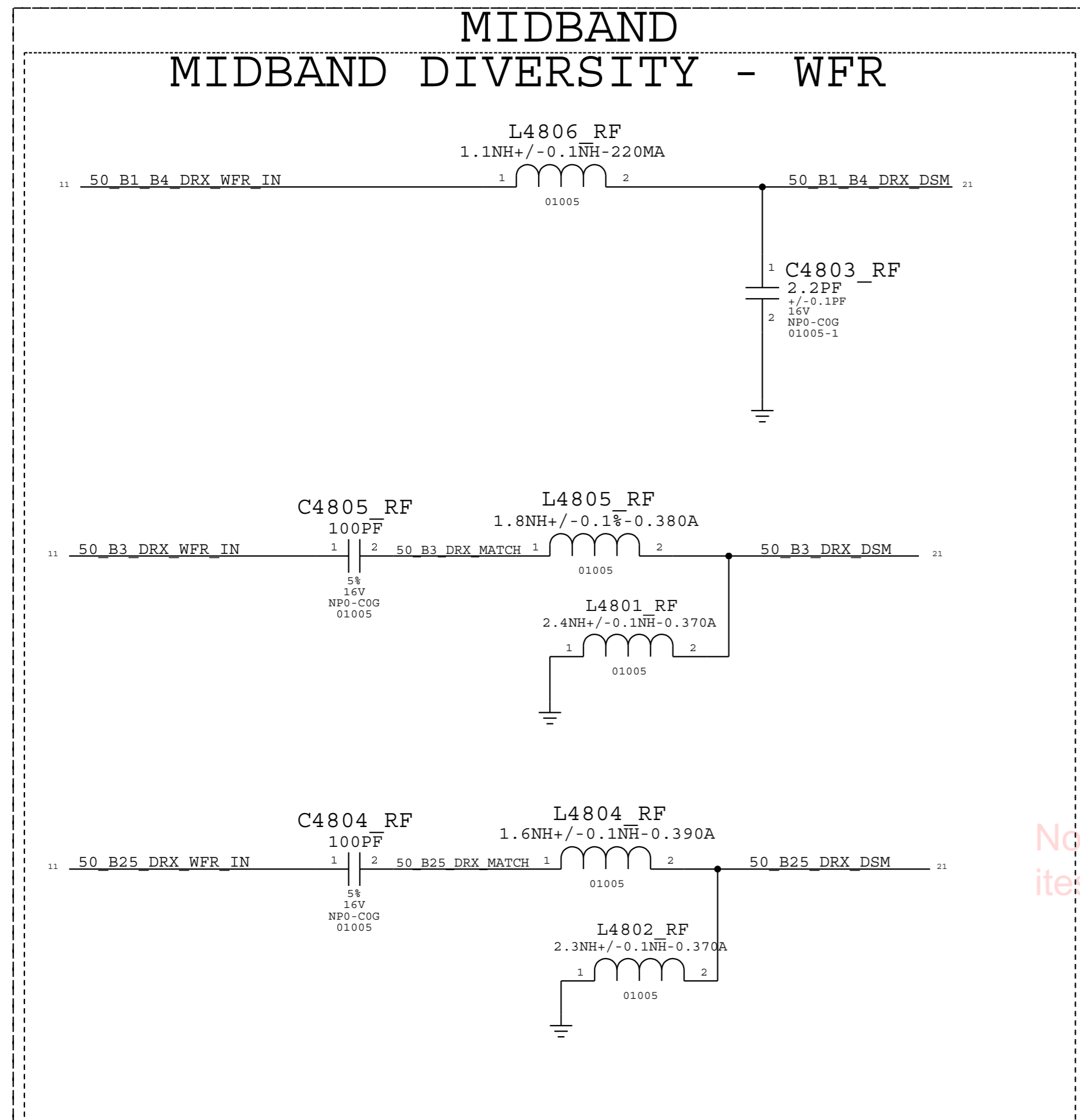


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BRANCH	PAGE	47 OF 55
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# RX DIVERSITY (1)

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C4826 RF  
R1800  
L1829  
U1801



No share Dick ite solutions

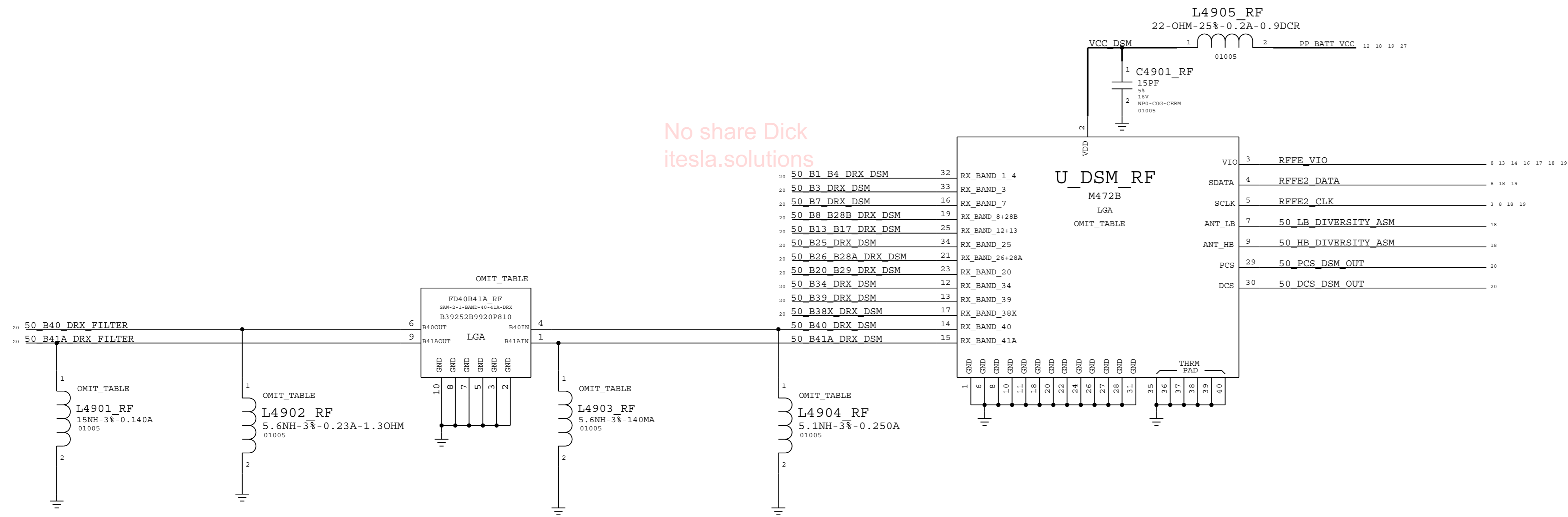
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# RX DIVERSITY (2)

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C1900  
R1900  
L1900  
U1901

No share Dick  
itesla.solutions



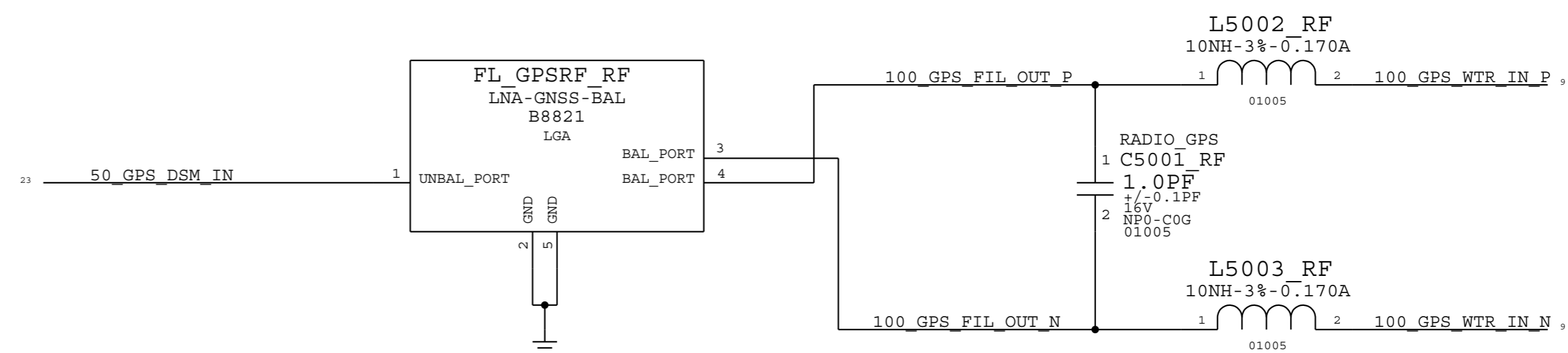
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# GPS

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C1900  
R1900  
L1900  
U1901

No share Dick  
itesla.solutions



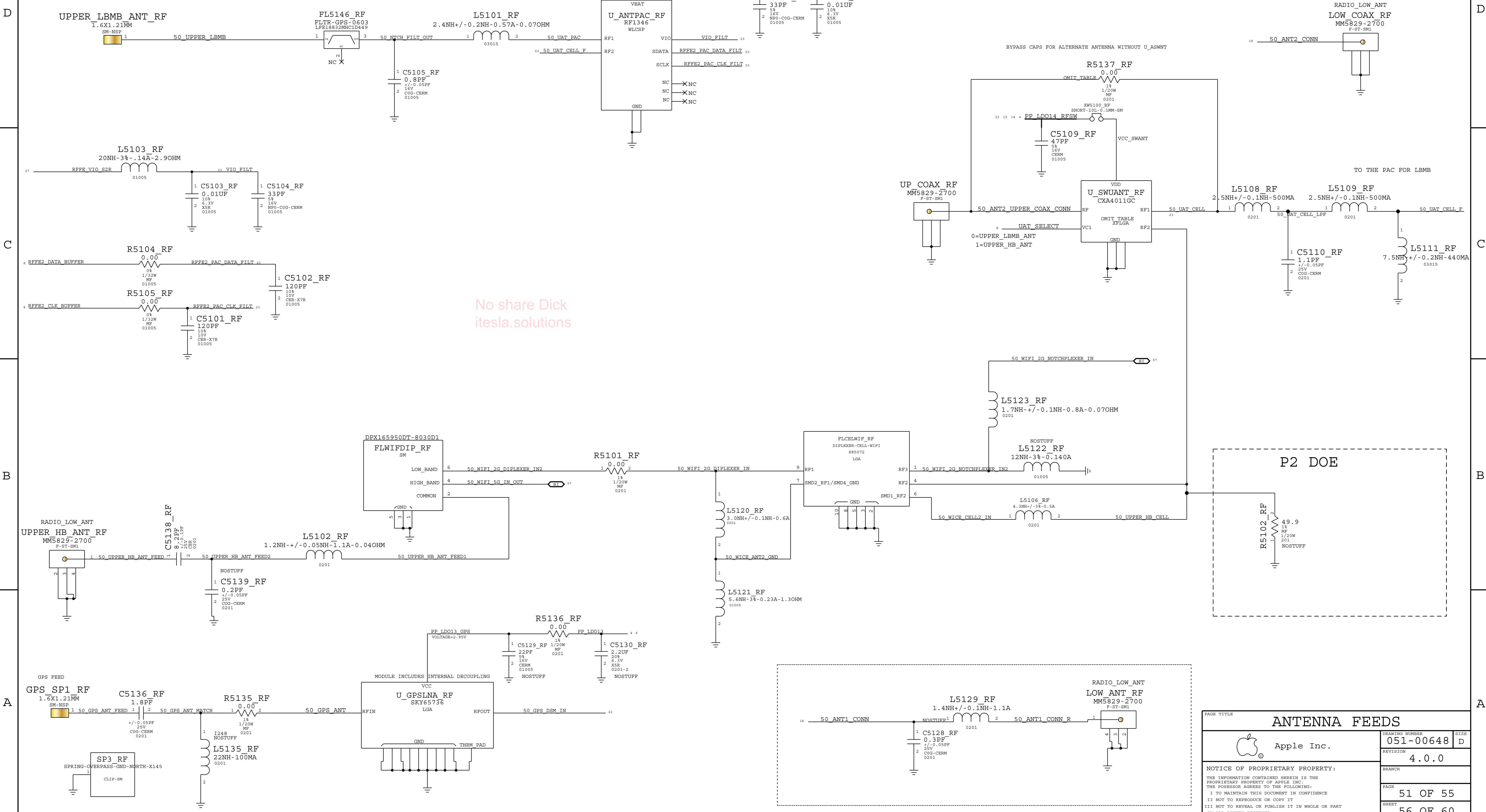
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# ANTENNA FEEDS

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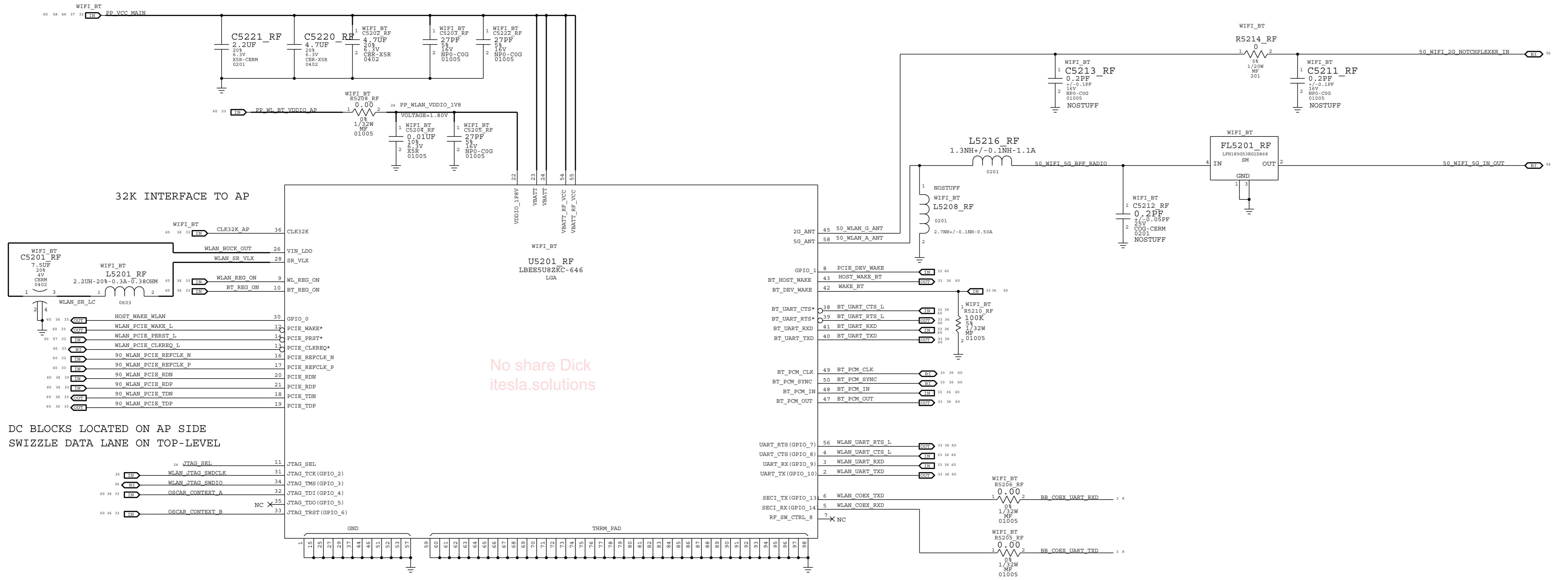
ANT & COAX CONNECTOR FOR LOWER & UPPER SECTION OF MLB



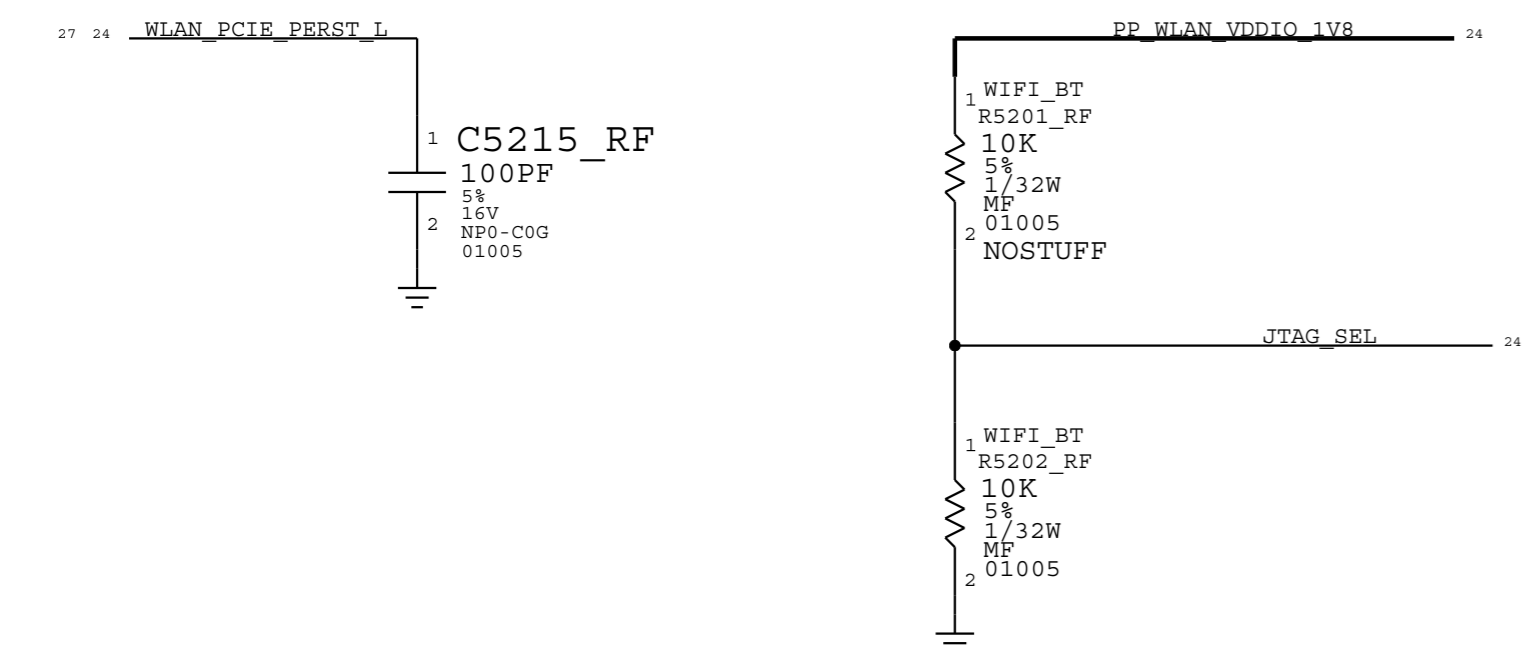
No share Dick  
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# WLAN/BT



No share Dick  
itesla.solutions



MODULE BOOT-STRAPPED TO PCIE INTERNALLY  
MODULE BOOT-STRAPPED TO HSIIC BY GPIO6/SDIO2/SDIO1=110

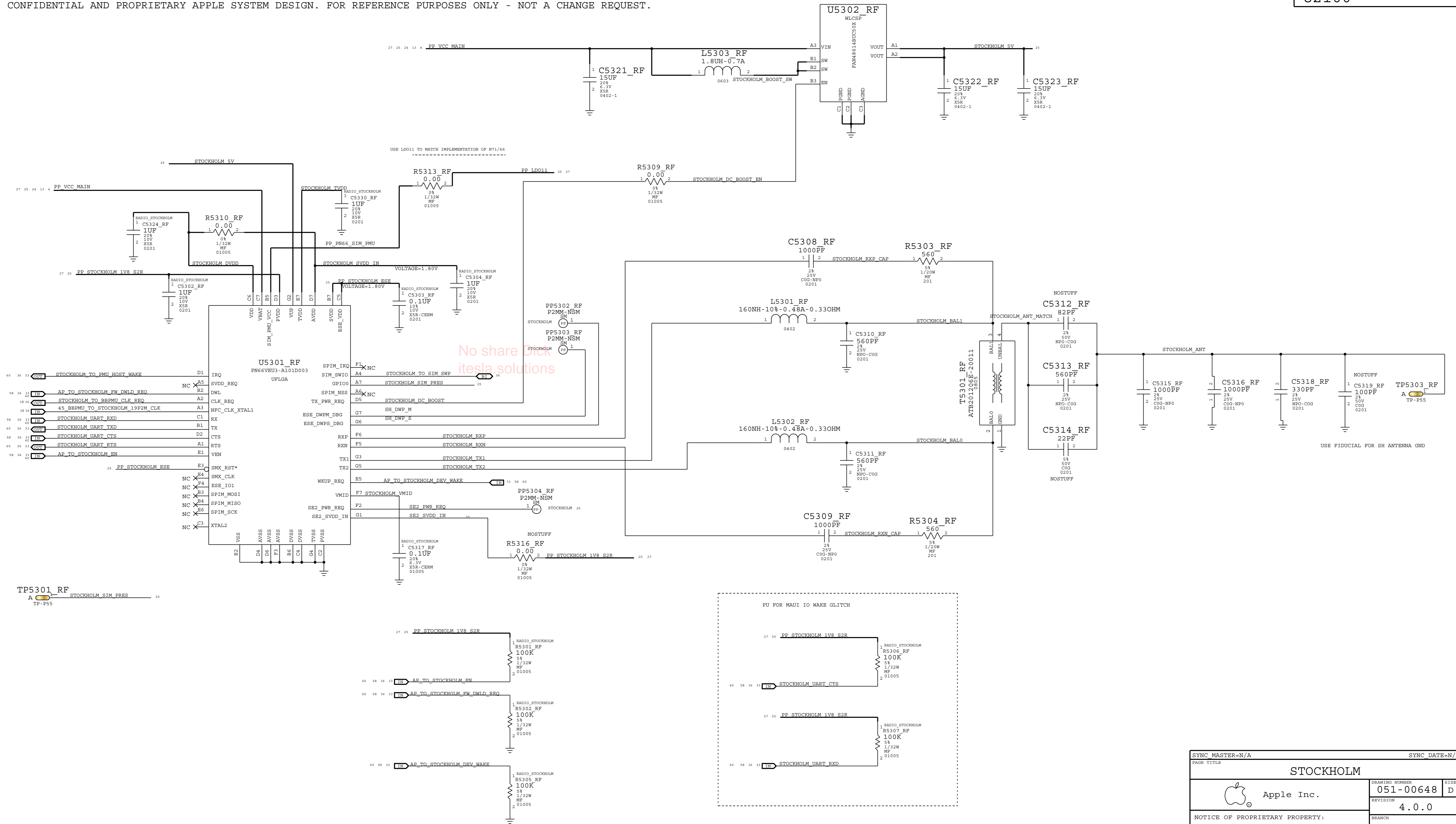
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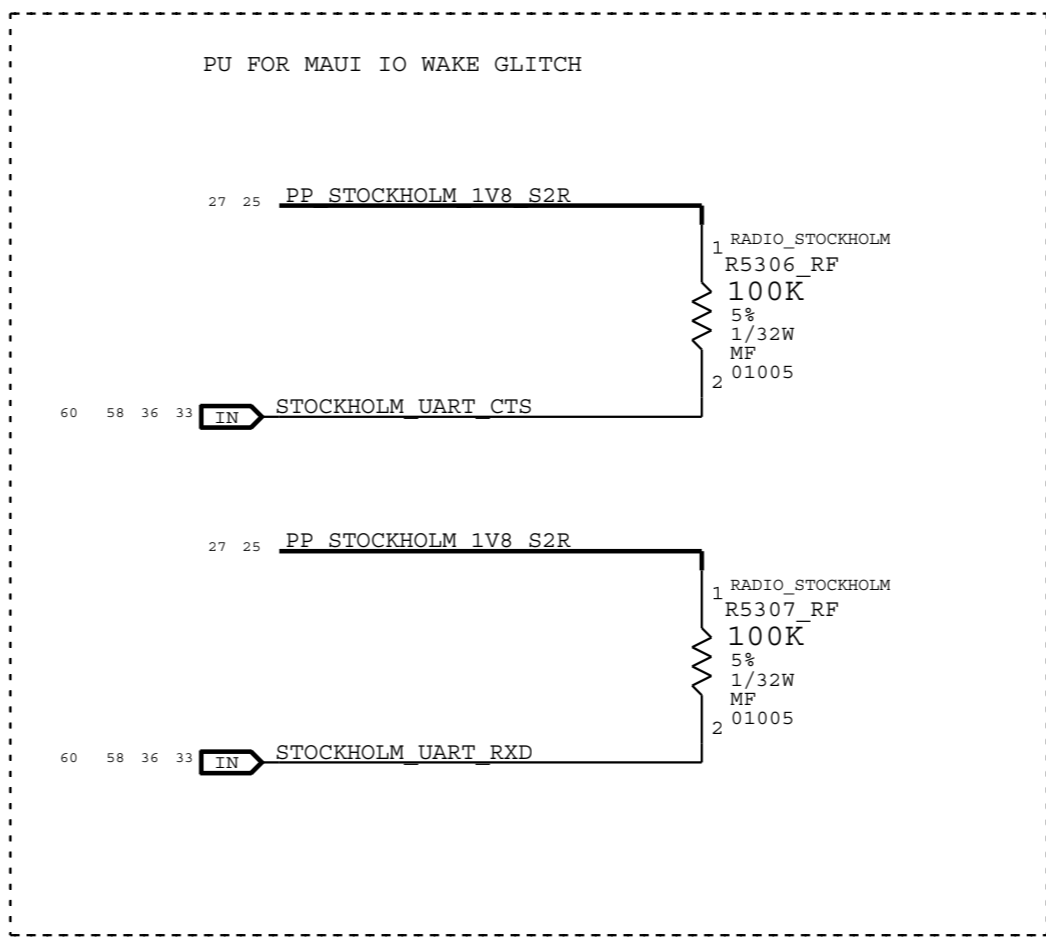
# STOCKHOLM

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C2101  
R2100  
L2102  
U2100



No share for itesla solutions



SYNC_MASTER=N/A	SYNC_DATE=N/A
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STOCKHOLM	
	051-00648
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# N69 SKU BOM OPTION TABLE

## N69H N69H TDD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
35384180	1	RADIO HIGH BAND PAD	U_HBPAD_RF	CRITICAL	N69H
131S0417	1	18PF 01005 16V	C4501_RF	CRITICAL	N69H
131S0375	1	1.0PF 01005 16V	C4503_RF	CRITICAL	N69H
131S0635	1	68PF 01005 16V	C4507_RF	CRITICAL	N69H
138S0706	1	LUF 0201 10V	C4505_RF	CRITICAL	N69H
152S1907	1	3.3NH 01005 +/-0.1NH	L4512_RF	CRITICAL	N69H
131S0247	1	1.8PF 01005 16V	C4522_RF	CRITICAL	N69H

353S00374	1	TDK MODULE M472A NO B12/B13/B17	U_DSM_RF	CRITICAL	N69H
152S1998	1	IND 0.8NH 630MA 01005	L4421_RF	CRITICAL	N69H
353S00390	1	SKY77827	U_VLBPAD_RF	CRITICAL	N69H
131S0387	1	2.2PF 0.1PF 01005 COG	C4211_RF	CRITICAL	N69H
152S1567	1	3.3NH 01005	L4813_RF	CRITICAL	N69H
131S0376	1	1.1PF 01005	C4809_RF	CRITICAL	N69H
152S1977	1	10NH 01005 170MA	L4217_RF	CRITICAL	N69H
131S0390	1	2.5PF 0.1PF 01005 COG	C4213_RF	CRITICAL	N69H
152S1853	1	7.5NH 3% 01005 200MA	L4216_RF	CRITICAL	N69H
118S0726	1	162K 1% 01005	R3312_RF	CRITICAL	N69H
353S3876	1	SWTICH SPDT 1.1X1.1	U_SWUANT_RF	CRITICAL	N69H
152S2045	1	3.0NH 0201	L5120_RF	CRITICAL	N69H
152S1851	1	5.6NH 01005	L5121_RF	CRITICAL	N69H

118S0652	1	01005 49.9R	C4231_RF	CRITICAL	N69H
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131S0307	1	100PF 01005	C4827_RF	CRITICAL	N69H
152S1720	1	1.8NH 01005	L4814_RF	CRITICAL	N69H
152S1544	1	0.4NH 01005	L4830_RF	CRITICAL	N69H
152S1564	1	2.4NH 01005	L4816_RF	CRITICAL	N69H
131S0307	1	100PF 01005	C4816_RF	CRITICAL	N69H
117S0161	1	0R 01005	R4815_RF	CRITICAL	N69H
152S1900	1	1.3NH 01005	L4817_RF	CRITICAL	N69H

152S1996	1	15NH 01005	L4901_RF	CRITICAL	N69H
152S1571	1	5.6NH 01005	L4902_RF	CRITICAL	N69H
152S1571	1	5.6NH 01005	L4903_RF	CRITICAL	N69H
152S1623	1	5.1NH 01005	L4904_RF	CRITICAL	N69H
155S0908	1	SAW DRX B40B41A	FD40B41A_RF	CRITICAL	N69H
117S0161	1	0R 01005	R4509_RF	CRITICAL	N69H
152S1907	1	3.3NH 01005 290MA	L4602_RF	CRITICAL	N69H
155S0981	1	FLTR SAW DUAL FILTER B34B39	FRX34B39_RF	CRITICAL	N69H
152S1988	1	2.4NH 01005 370MA	L4601_RF	CRITICAL	N69H
155S0906	1	SAW FILTER B40A B41A	FTB40A41A_RF	CRITICAL	N69H
152S1983	1	4.5NH 01005 +/-0.1NH	L4517_RF	CRITICAL	N69H
152S2061	1	7.5NH 01005 3%	L4507_RF	CRITICAL	N69H
117S0161	1	0R 01005	R4531_RF	CRITICAL	N69H


152S2046	1	4.3NH 01005 3%	L4506_RF	CRITICAL	N69H
131S00042	1	0.3PF +/-0.05PF 01005 16V	C4528_RF	CRITICAL	N69H
131S0307	1	100PF 01005 16V	C4533_RF	CRITICAL	N69H
131S0244	1	1PF 01005 16V	C4502_RF	CRITICAL	N69H
138S0706	1	LUF 0201 10V	C4506_RF	CRITICAL	N69H
131S0644	1	68PF 01005 25V	C4532_RF	CRITICAL	N69H
131S00042	1	0.3PF 01005 16V	C4520_RF	CRITICAL	N69H
152S2002	1	2.7NH 0201 +/-0.1NH	L4522_RF	CRITICAL	N69H
152S1982	1	1.3NH 01005 +/-0.1NH	L4520_RF	CRITICAL	N69H
155S0982	1	FILTER B40	FT_B40_RF	CRITICAL	N69H
152S1986	1	2.2NH 01005 +/-0.1NH	L4526_RF	CRITICAL	N69H
152S1853	1	9.1NH 01005 3%	L4523_RF	CRITICAL	N69H
152S2002	1	2.7NH 0201 +/-0.1NH	L4515_RF	CRITICAL	N69H
152S1408	1	7.5NH 01005 5%	L4528_RF	CRITICAL	N69H
152S00035	1	3.1NH 01005 +/-0.1NH	L4516_RF	CRITICAL	N69H
131S0395	1	3.0PF 01005 +/-0.1PF	C4521_RF	CRITICAL	N69H
152S1853	1	9.1NH 01005 3%	L4527_RF	CRITICAL	N69H
155S0900	1	FILTER SAW BAND 41B 41C	FT_41BC_RF	CRITICAL	N69H
152S1965	1	1.8NH 01005 380MA	L4524_RF	CRITICAL	N69H
152S2024	1	1.4NH 0201 1.1A	L4525_RF	CRITICAL	N69H
35384167	1	SWITCH IC LGA16	U_HBS_RF	CRITICAL	N69H
155S0903	1	FILTER SAW B40B 38X	FR38X40B_RF	CRITICAL	N69H
155S0881	1	FILTER LOW PASS B39	FL_B39LP_RF	CRITICAL	N69H
131S0214	1	18PF 01005	C4703_RF	CRITICAL	N69H
152S1917	1	2.0NH 01005 380MA	L4705_RF	CRITICAL	N69H
117S0161	1	00HM 01005	R4700_RF	CRITICAL	N69H
131S0307	1	100PF 01005	C4720_RF	CRITICAL	N69H
155S0902	1	FILTER SAW BAND 40A B41A	FR40A41A_RF	CRITICAL	N69H
152S1619	1	2.2NH 01005 200MA	L4709_RF	CRITICAL	N69H
131S0214	1	18PF 01005	C4701_RF	CRITICAL	N69H
152S00036	1	3.7NH 01005 270MA	L4704_RF	CRITICAL	N69H
152S1989	1	2.7NH 01005 370MA	L4713_RF	CRITICAL	N69H
152S1989	1	2.7NH 01005 370MA	L4712_RF	CRITICAL	N69H
152S00034	1	2.9NH 01005 360MA	L4708_RF	CRITICAL	N69H
152S1576	1	12NH 01005 140MA	L4710_RF	CRITICAL	N69H
131S0216	1	47PF 01005	C4710_RF	CRITICAL	N69H

152S1946	1	1.4NH 01005 220MA	L4706_RF	CRITICAL	N69H
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# N69

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S00373	1	DSM M471A NO B7	U_DSM_RF	CRITICAL	N69
353S00331	1	SKY77826	U_VLBPAD_RF	CRITICAL	N69
118S0729	1	39K 1% 01005	R3312_RF	CRITICAL	N69
118S0724	1	0R 0201	R5137_RF	CRITICAL	N69
152S1993	1	5.1NH 0.1NH 01005 250MA	L4223_RF	CRITICAL	N69
131S0599	1	01005 1.5PF	C4231_RF	CRITICAL	N69

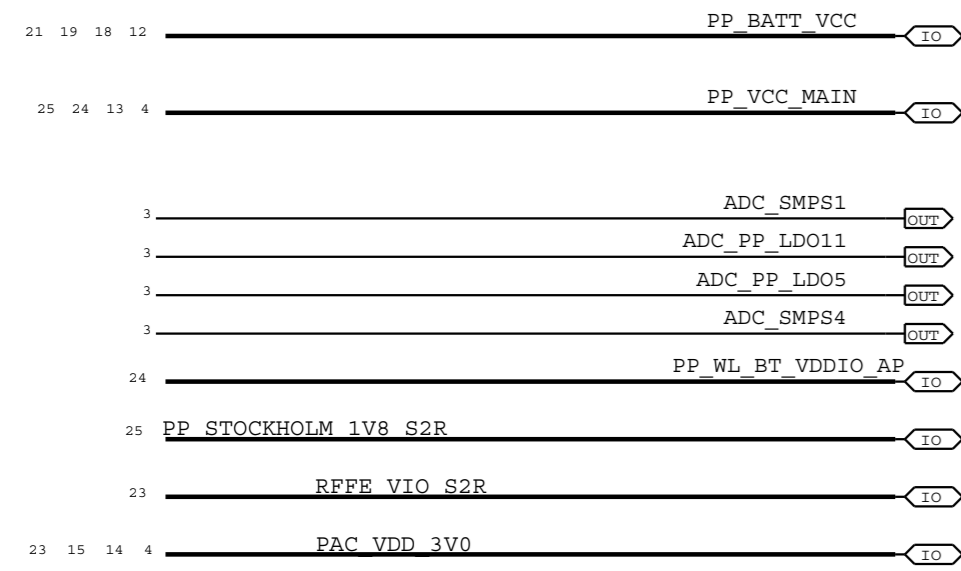
118S0652	1	01005 49.9R	C4211_RF	CRITICAL	N69
118S0652	1	01005 49.9R	C4213_RF	CRITICAL	N69
118S0652	1	01005 49.9R	C4500_RF	CRITICAL	N69
117S0161	1	0R 01005	R4509_RF	CRITICAL	N69

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 Apple Inc.		REVISION		4.0.0
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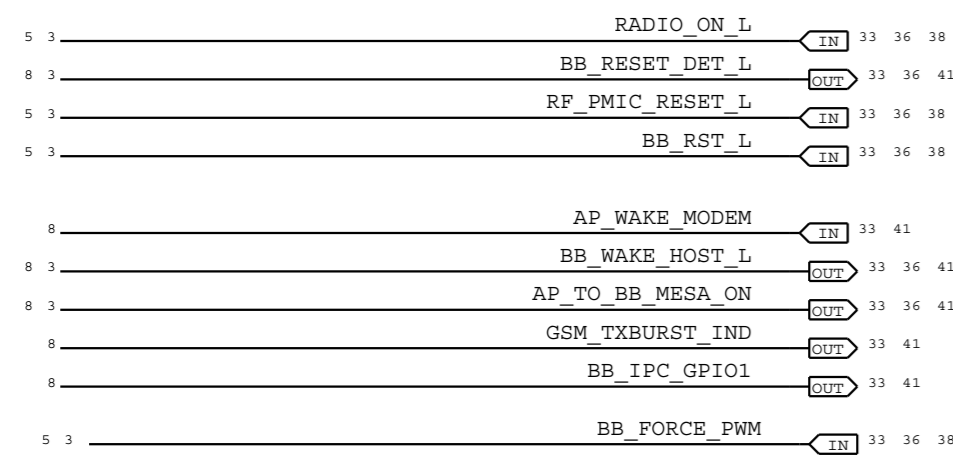
# RADIO SYMBOL (HEIARCHY)

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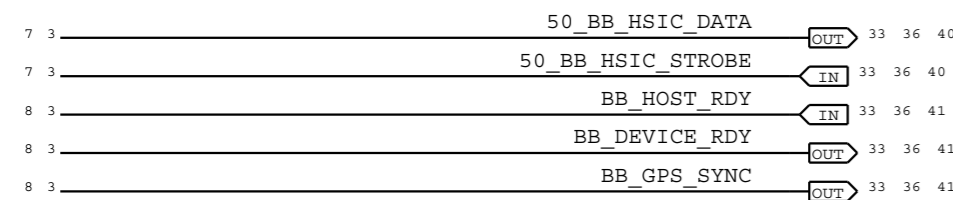
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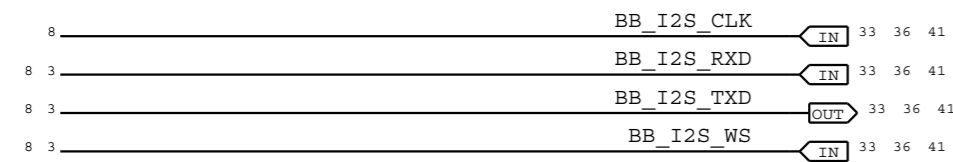
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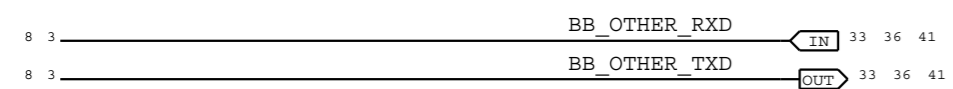
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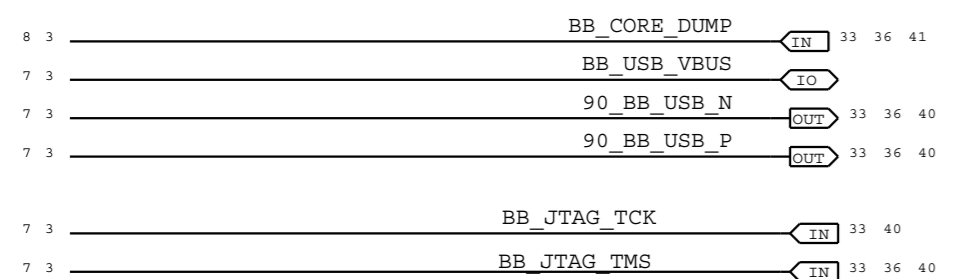
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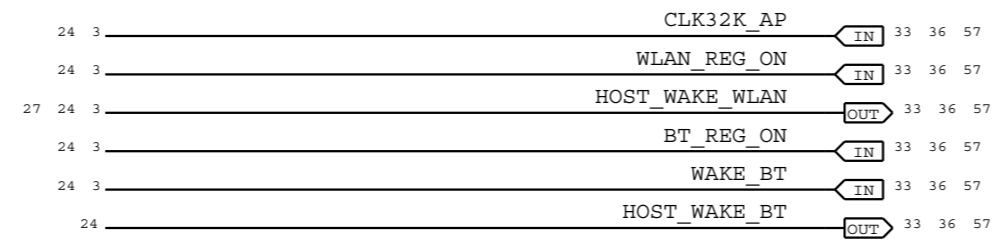
## OSCAR UART



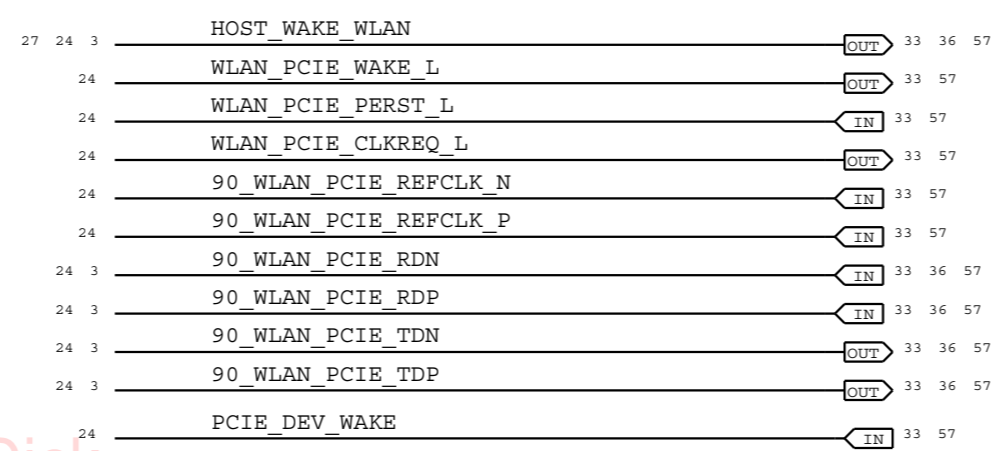
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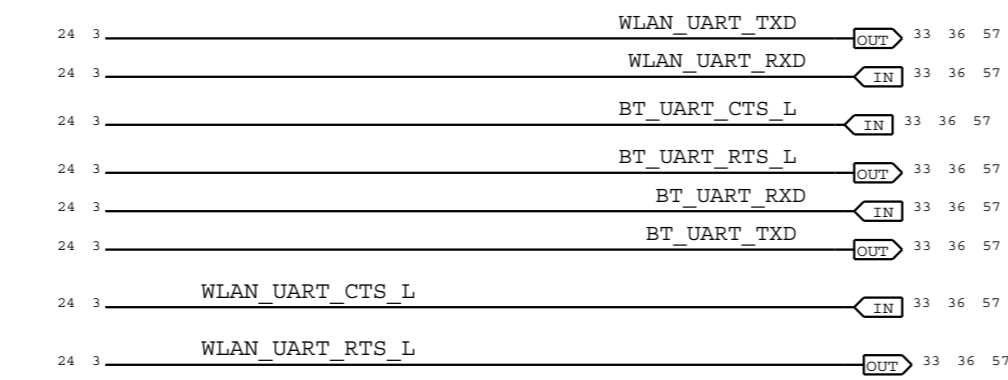
## WLAN/BT HOUSE KEEPING



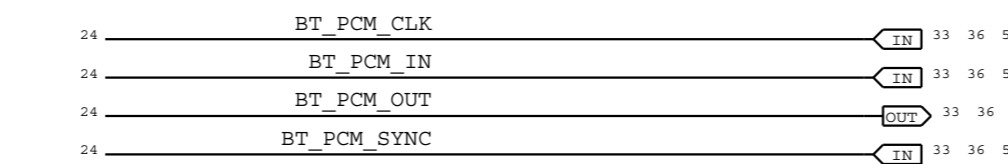
## WLAN PCIE IPC



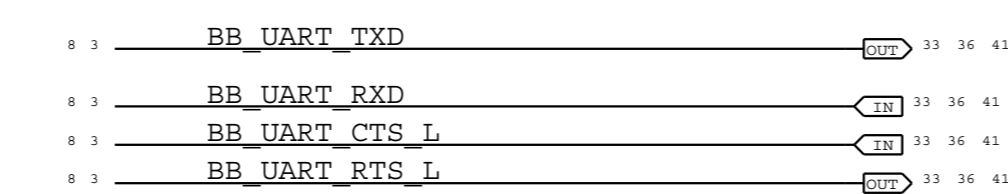
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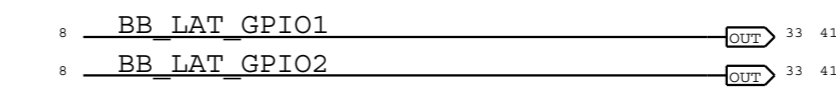
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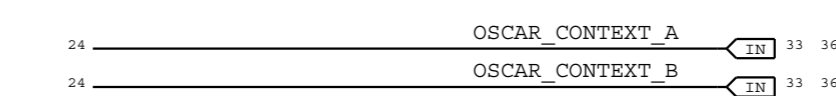
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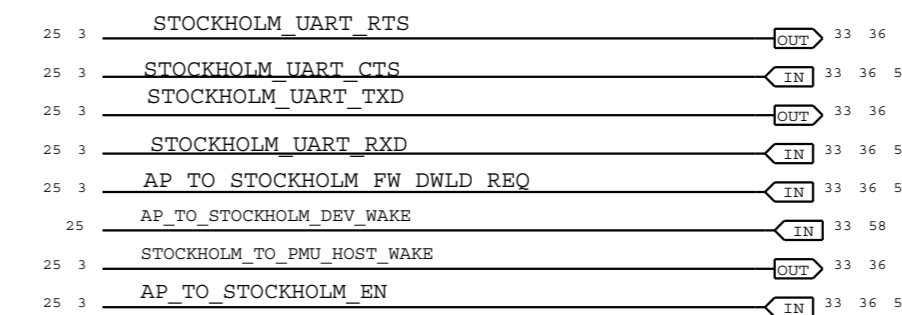
## ANTENNA CONTROL



## WLAN/OWL UART



## STOCKHOLM INTERFACES



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