

N90 SINGLE_BRD (MLB) PROTO_1 Mon Apr 13 17:09:40 2009

PAGE CONTENTS
02 RADIO AND AP SCHEMATIC INSTANTIATION

NAND BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-7921	1	N90_SCHEMATIC_TOP	SCH	Y	?
820-2548	1	N90_SINGLE_BOARD	PCB	Y	?

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0650	1	32GB TOSHIBA 43NM FLASH TLGA52	U1_AP	Y	FLASH_8GB
335S0642	1	16GB SAMSUNG 42NM FLASH TLGA52	U1_AP	Y	FLASH_16GB

WIFI/BT BOM OPTIONS

N90 EEE BOM LABELS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-2029	1	EEE FOR 630-9941 (16G)	EEE:6LU	Y	FLASH_16GB

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
339S0092	1	MURATA WIFI_BT MODULE	U2_RF	Y	MURATA
339S0091	1	USI WIFI_BT MODULE	U2_RF	Y	USI
117S0006	1	MURATA ID RESISTOR	R47_RF	Y	MURATA
117S0006	1	USI ID RESISTOR	R46_RF	Y	USI

BOARD - 820-2548
SCHEMATIC - 051-7921
BOM - 630-9941 (16GB)
MCO - 056-3008

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	1 OF	3
NONE			

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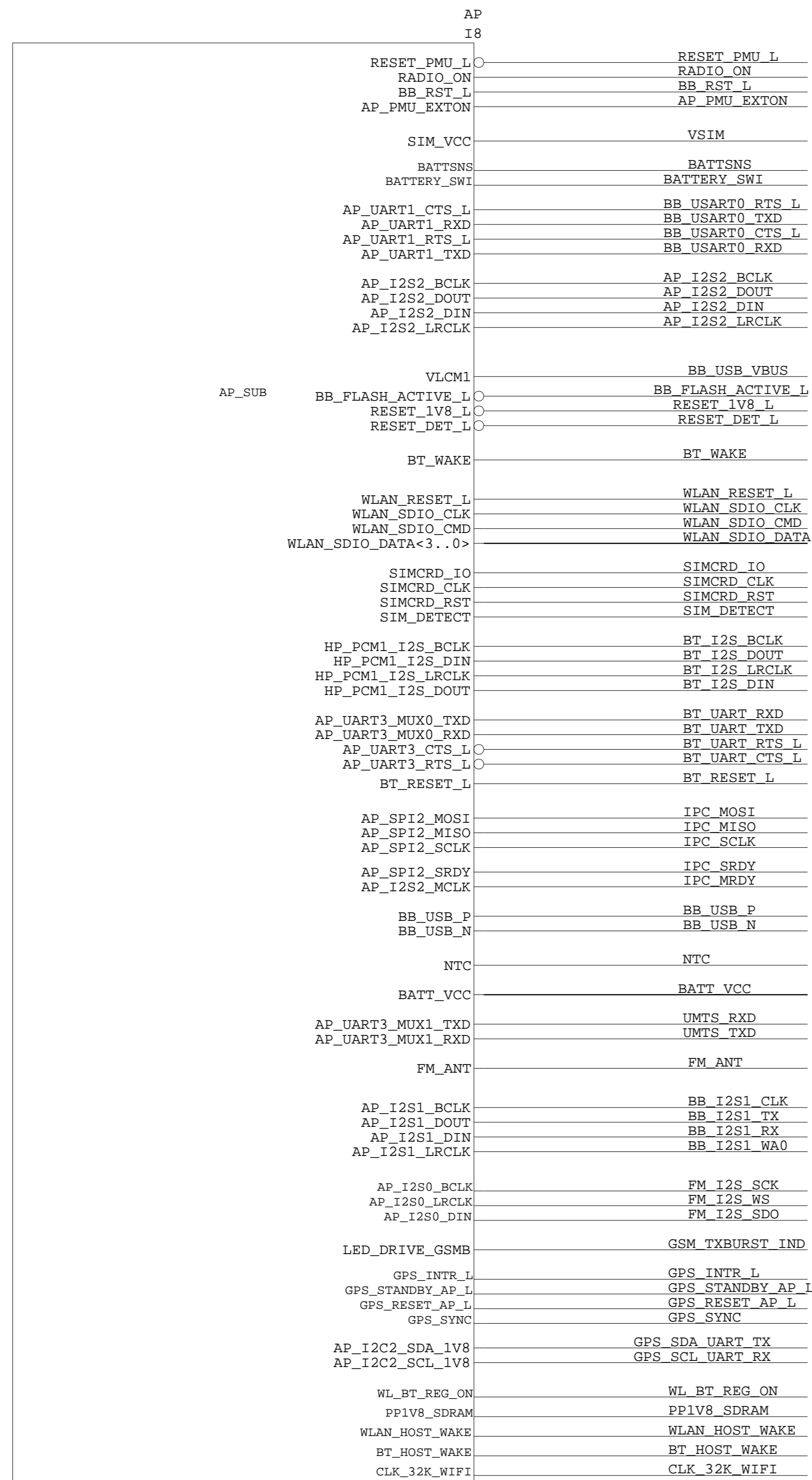
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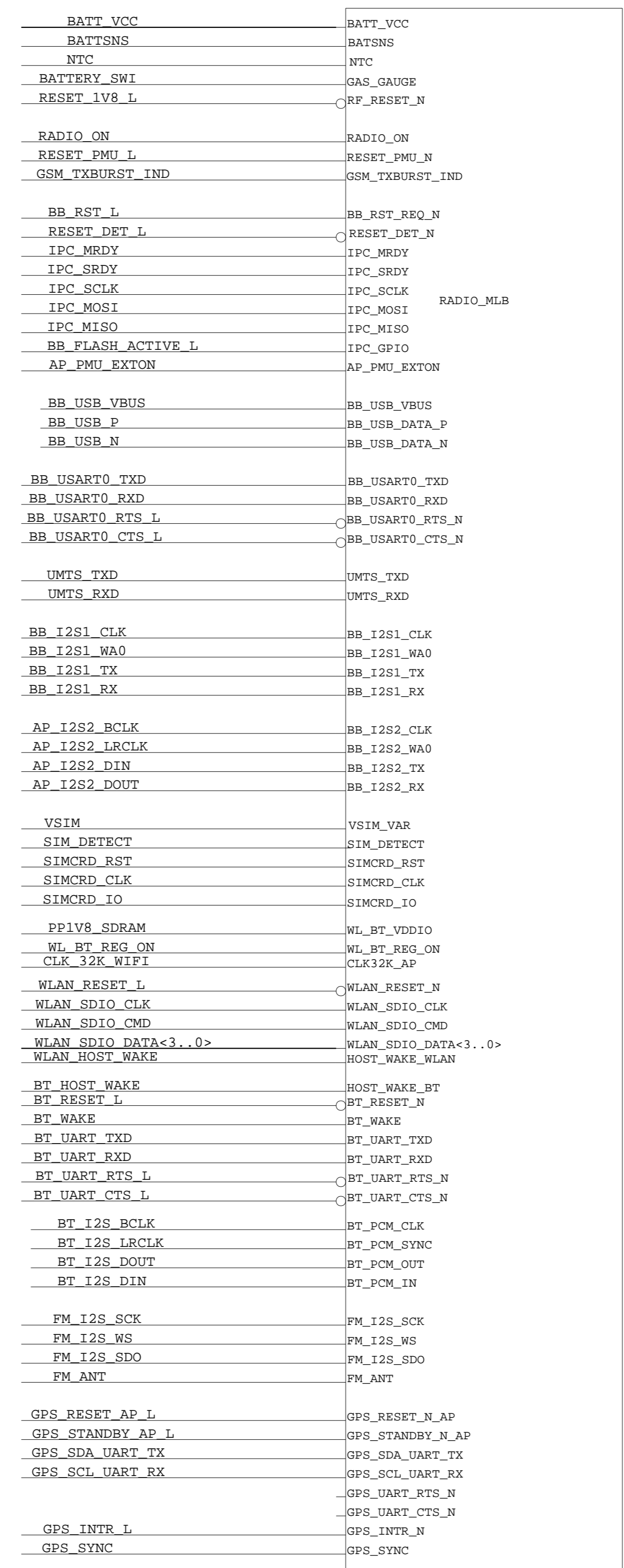
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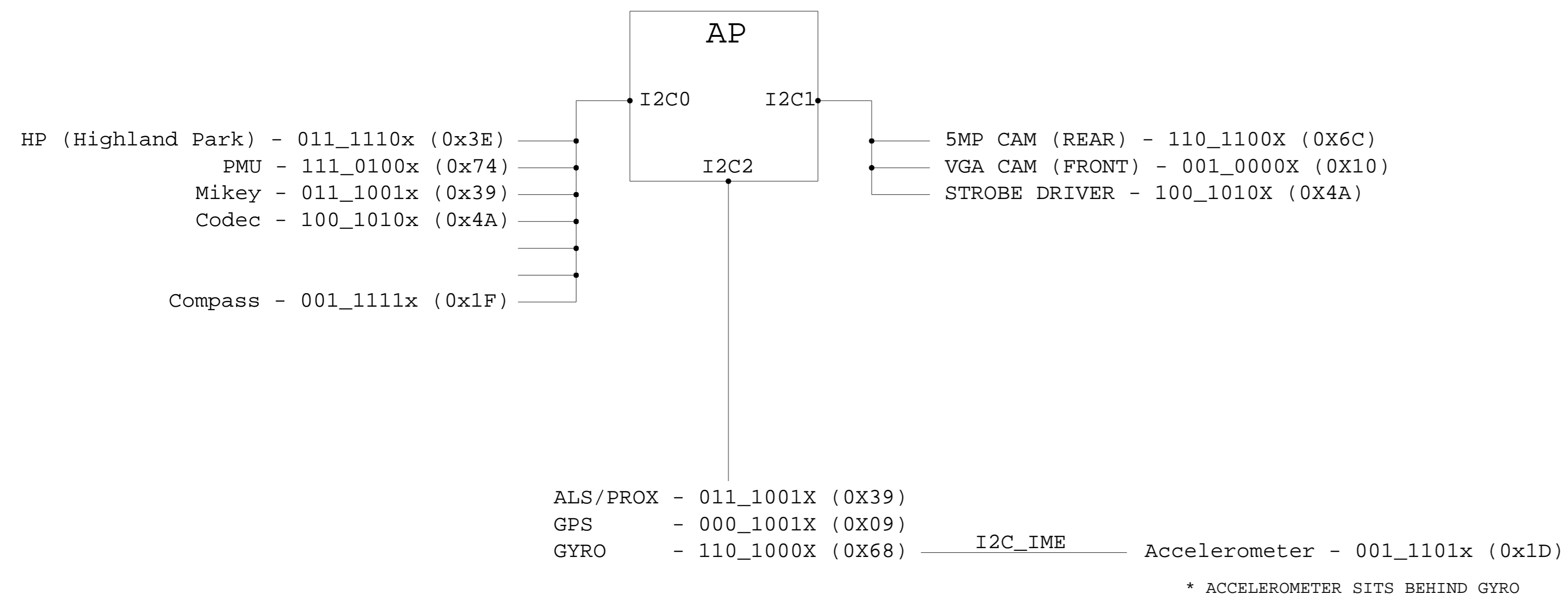
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3

2

1

I2C ADDRESS MAP



UART MAP

- UART0 - DOCK
- UART1 - BB UART0
- UART2 - HP
- UART3 - BT/UMTS
- UART4 - GAS GAUGE

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APPLE INC.

SIZE	DRAWING NUMBER		REV.
D	?		?
SCALE	SHT	OF	
NONE	3		30

8

7

6

5

4

3

2

1

N90 H2-BASED SUB-DESIGN

Mon Apr 13 17:09:51 2009


BOARD REV 01

PDF PAGE	CSA PAGE	CONTENTS	SYNC MASTER	DATE
1	1	Table of Contents	N/A	N/A
2	2	AP MAIN	N/A	N/A
3	3	AP PWR, AP BB&WIFI	N/A	N/A
4	4	AP NAND	N/A	N/A
5	5	AP RGB/CLCD	N/A	N/A
6	6	AP TVOUT	N/A	N/A
7	7	L61 AUDIO INTERFACE	N/A	N/A
8	8	L61 HP	N/A	N/A
9	9	ASHLEY PMU	N/A	N/A
10	10	SIM, ACCEL, VIBE, GYRO	N/A	N/A
11	11	INTERFACE ASSIGNMENTS	N/A	N/A
12	12	DOCK	N/A	N/A
13	13	NIMBUS, GRAPE, LCD CONN	N/A	N/A
14	14	CAMERA, STROBE, ALS, PRON	N/A	N/A
15	15	RADIO CONNECTIVITY	N/A	N/A
16	16	TEST POINTS	N/A	N/A

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-7921	1	N90_SINGLE_BRD_SCHEMATIC	SCH	Y	
820-2548	1	N90_SINGLE_BRD_PCB	PCB	Y	
825-2029	1	EEE	EEE:???	Y	

BOARD - 820-2548
 SCHEMATIC - 051-7921
 BOM - 630-9941

Table of Contents	
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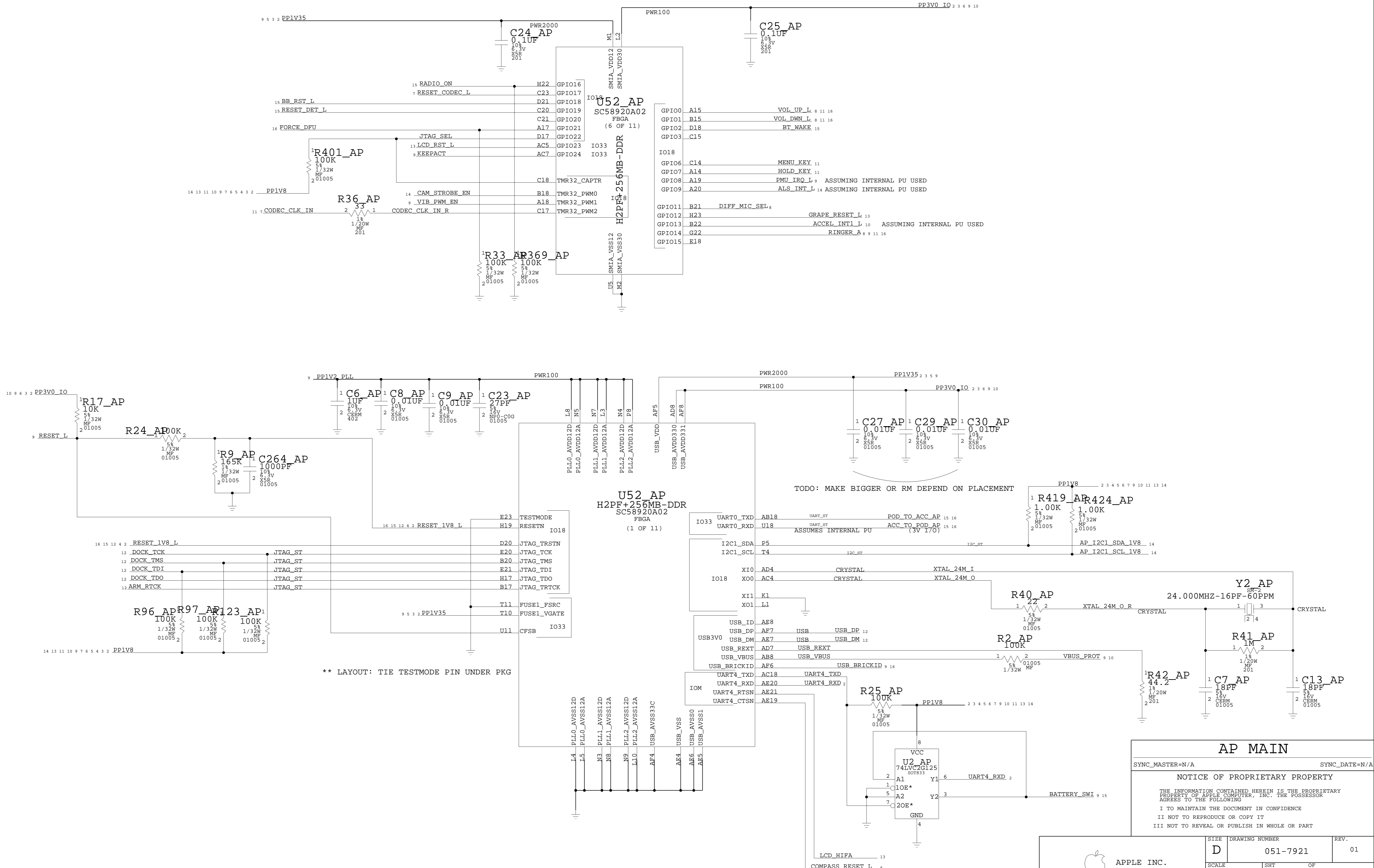
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AP MAIN

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NONE	2	OF	16

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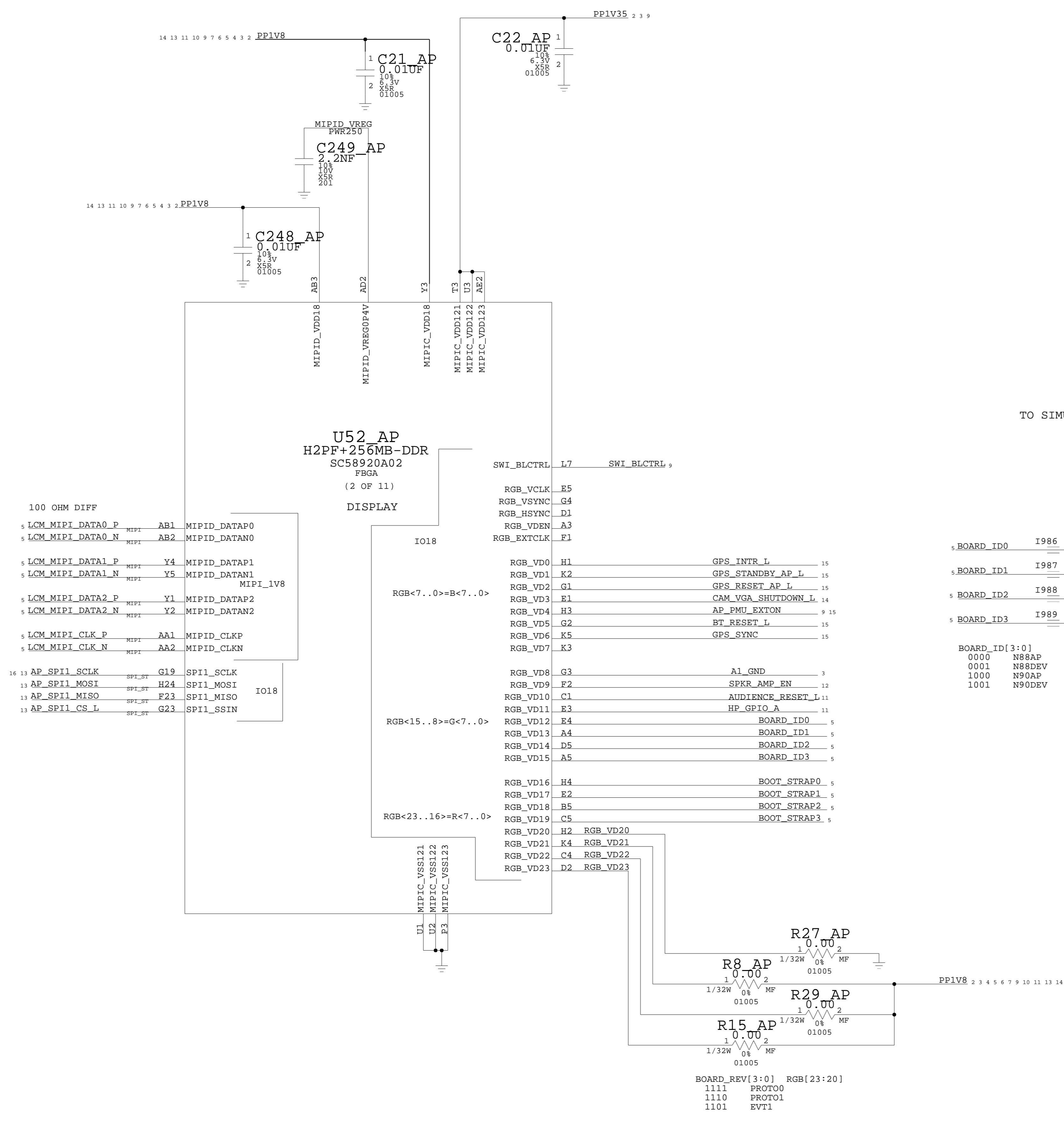
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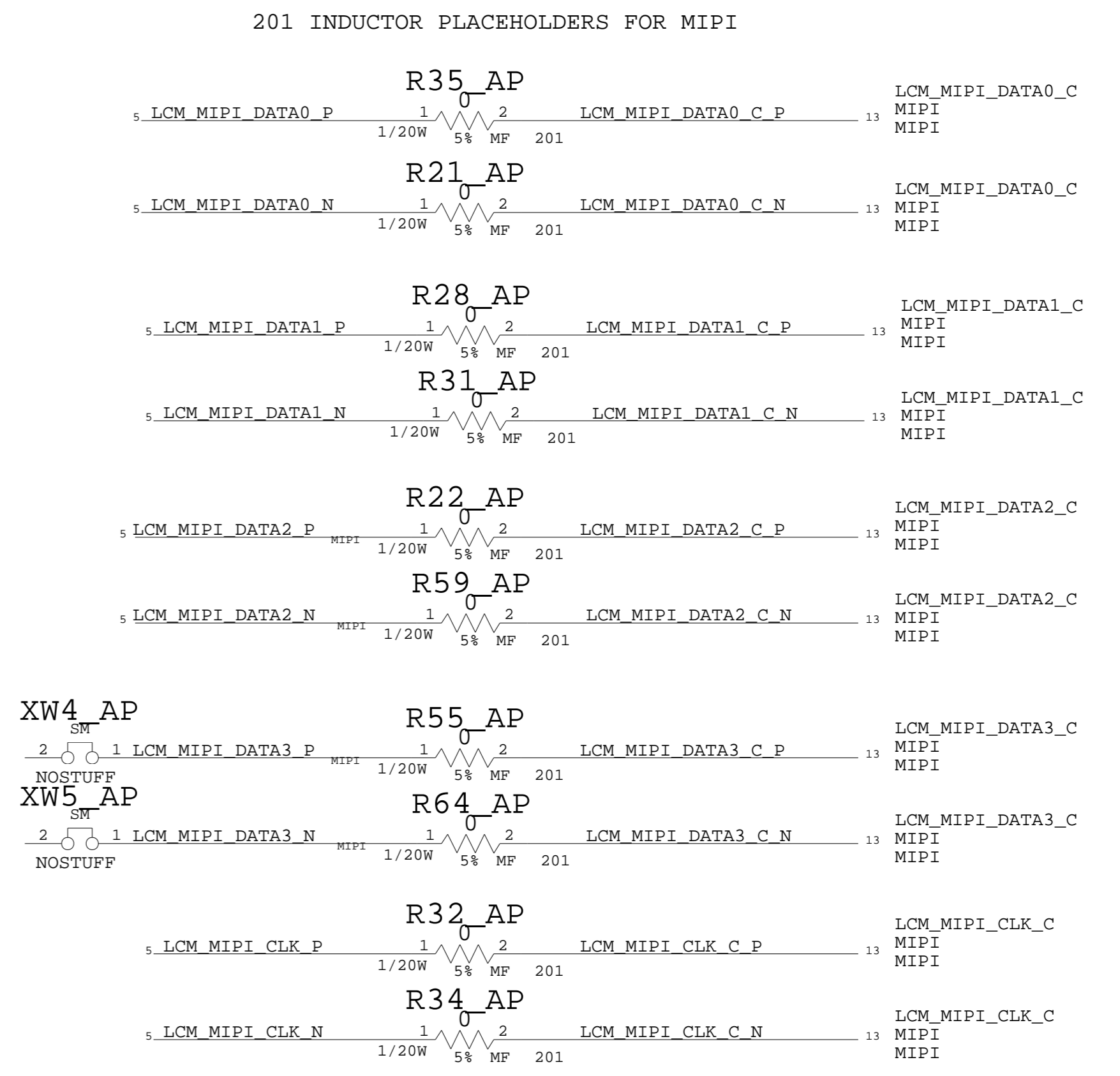
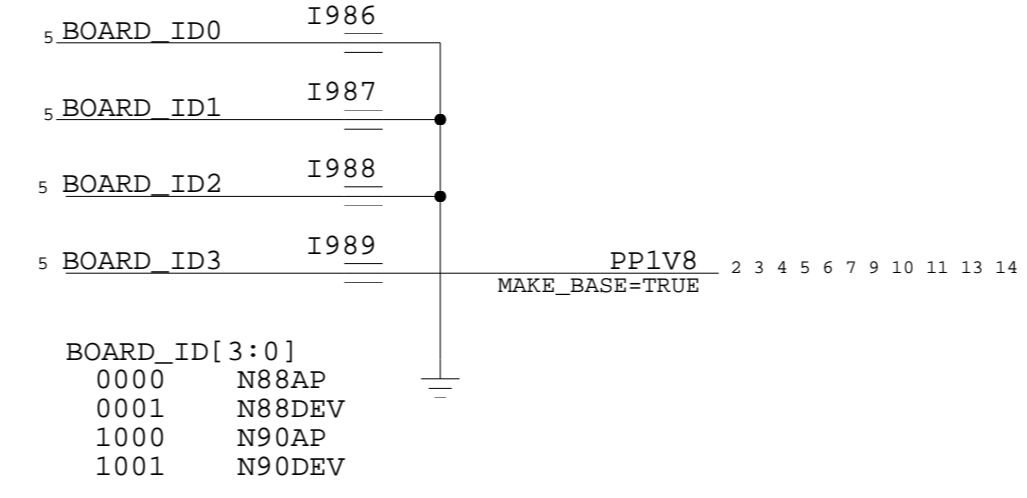
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LAYOUT: PLACE XW LINKS BY AP TO SIMULATE ROUTING OF 4TH MIPI LANE FOR H3



BOOT_CONFIG[3:0]
0000 SPI0
0001 SPI1
0010 SPI0 W/TEST
0011 SPI1 W/TEST
0100 FMIO 2CS
0101 FMIO 4CS
0110 FMIO 4CS W/TEST
0111 RESERVED
1000 FMIO 2 CS
1001 FMIO 4 CS
1010 FMIO 4CS W/TEST
1100 FMIO/1 2/2 CS
1101 FMIO/1 4/4 CS
1110 FMIO/1 4/4 CS W/TEST
1111 RESERVED

AP RGB/CLCD

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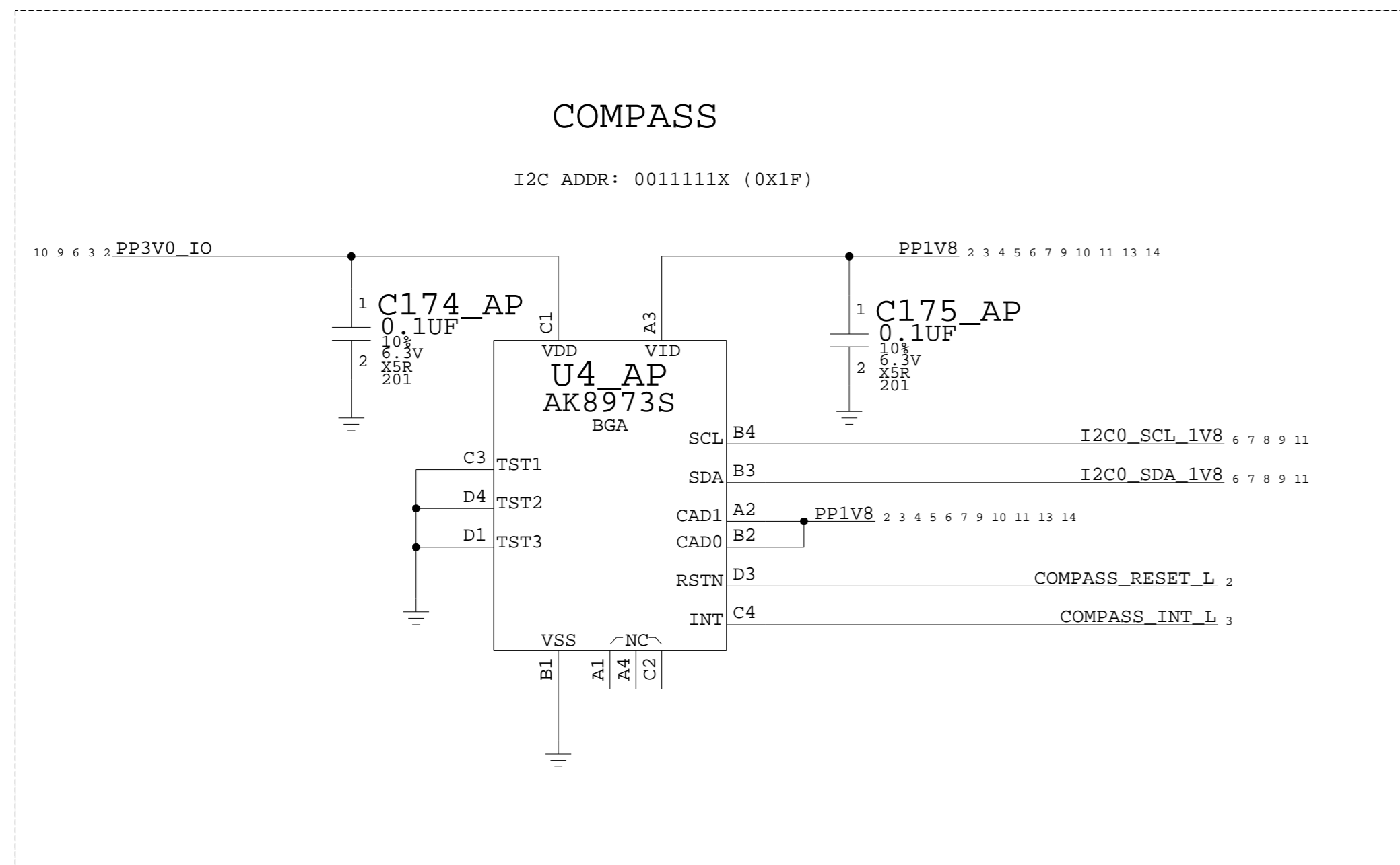
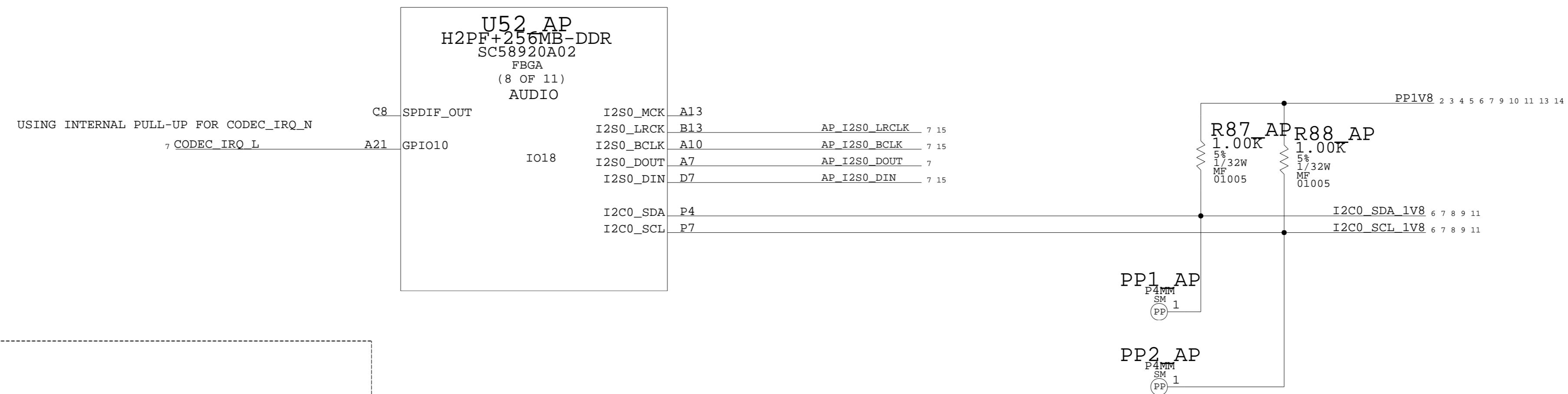
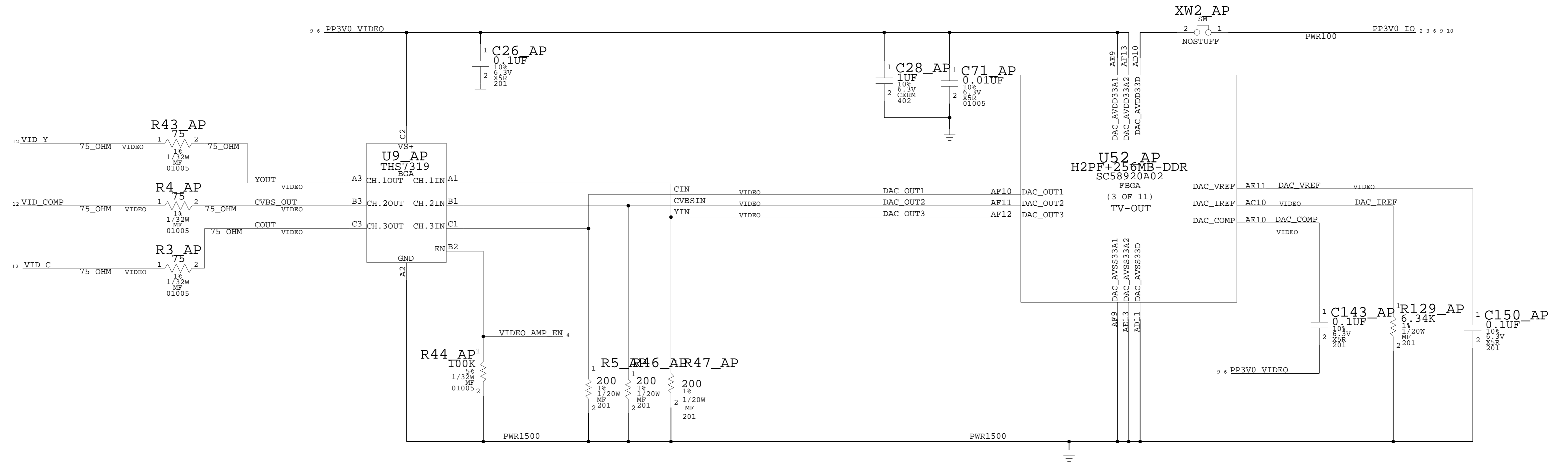
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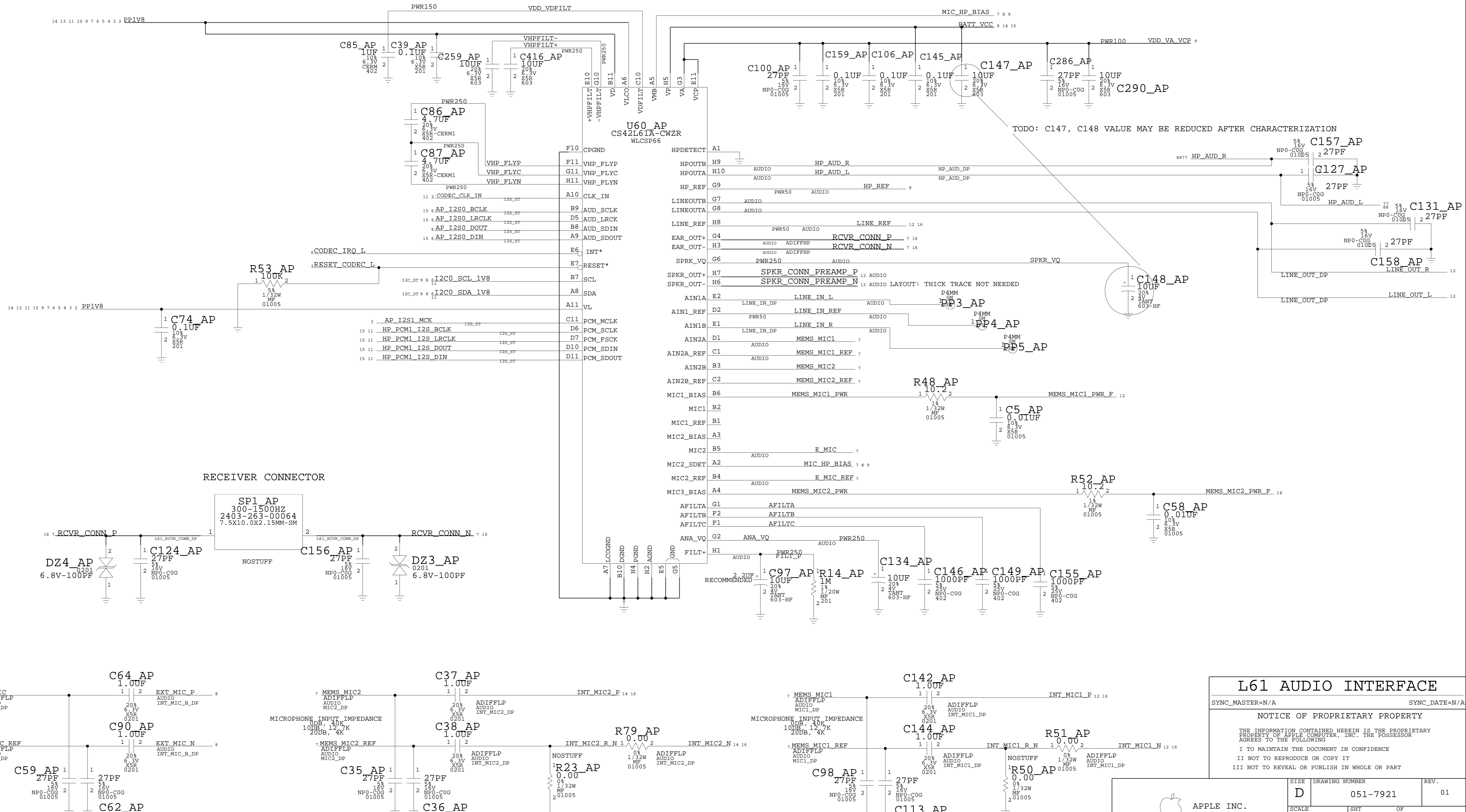
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L61 AUDIO INTERFACE

I2C ADDRESS: 1001010X



RESETER CONNECTOR

L61 AUDIO INTERFACE

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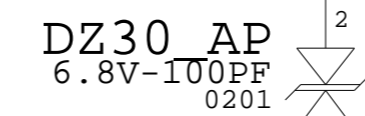
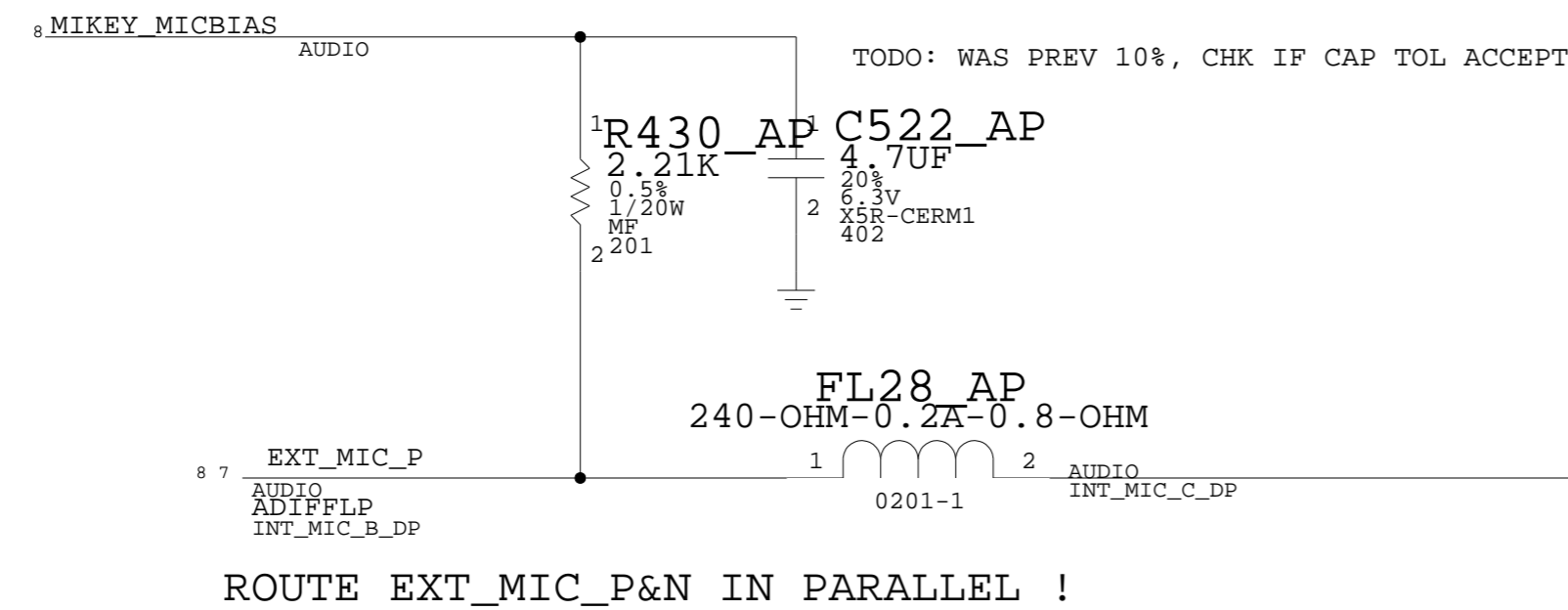
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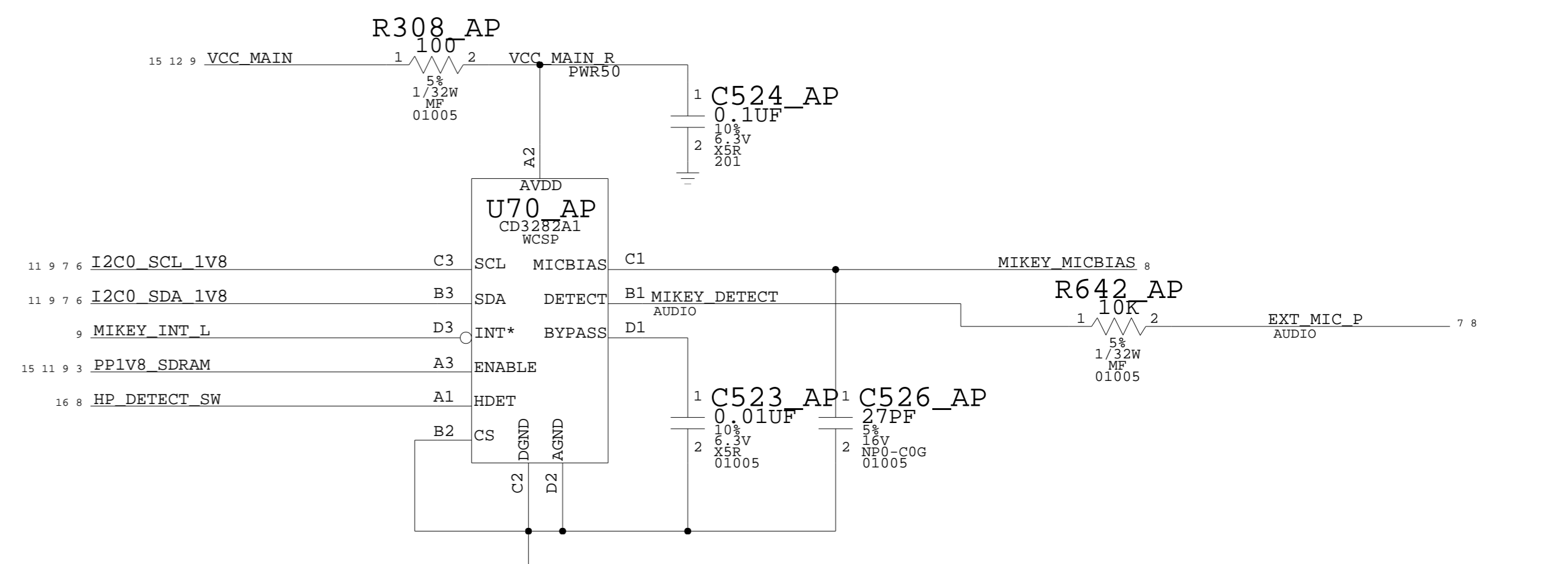
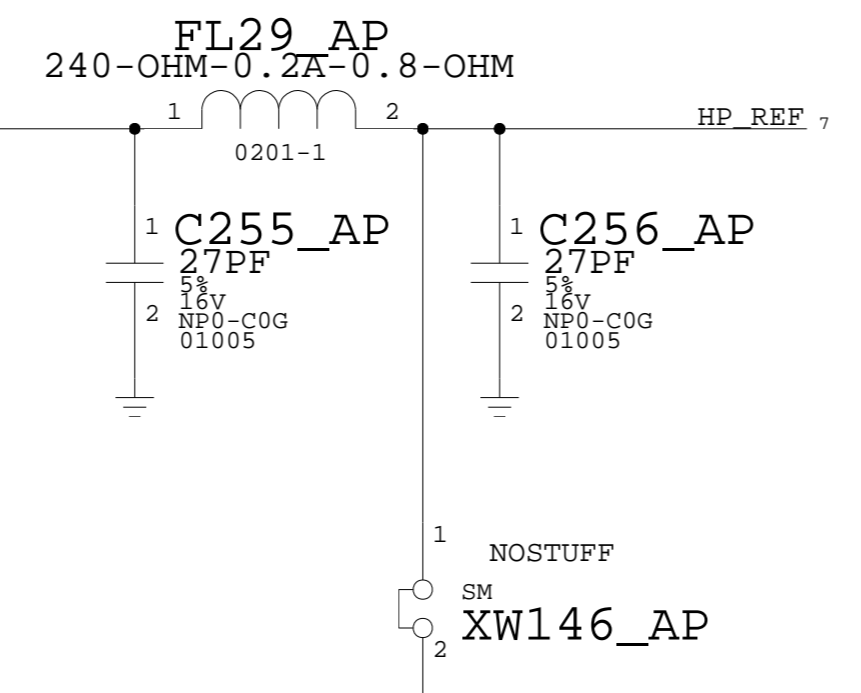
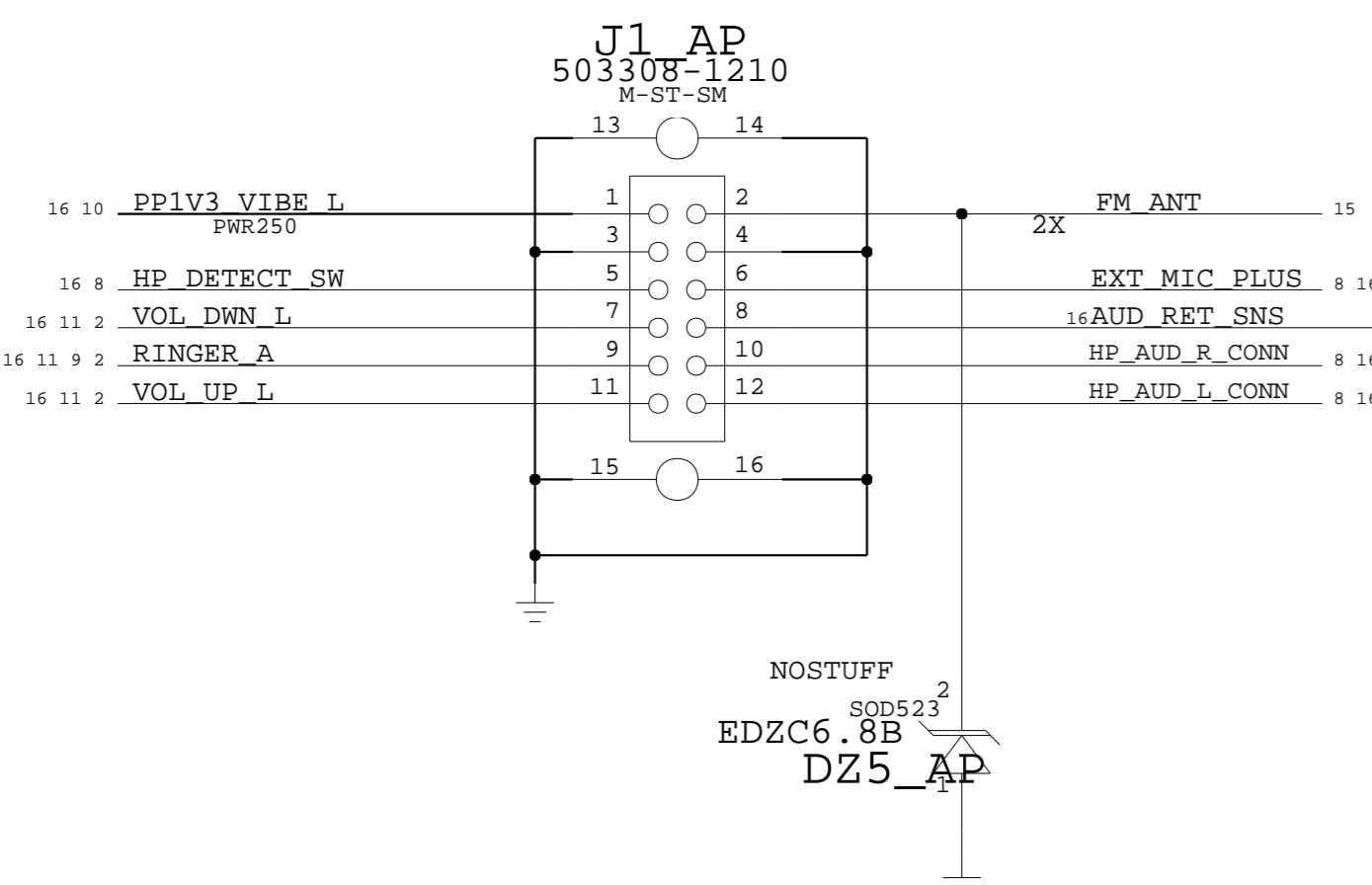
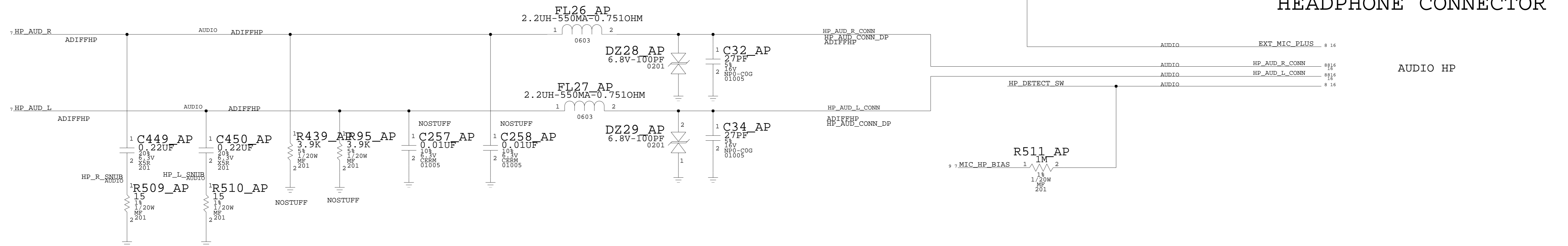


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SCALE	SHT	OF
NONE	7	16

L61 HEADPHONE CONNECTOR



HEADPHONE CONNECTOR

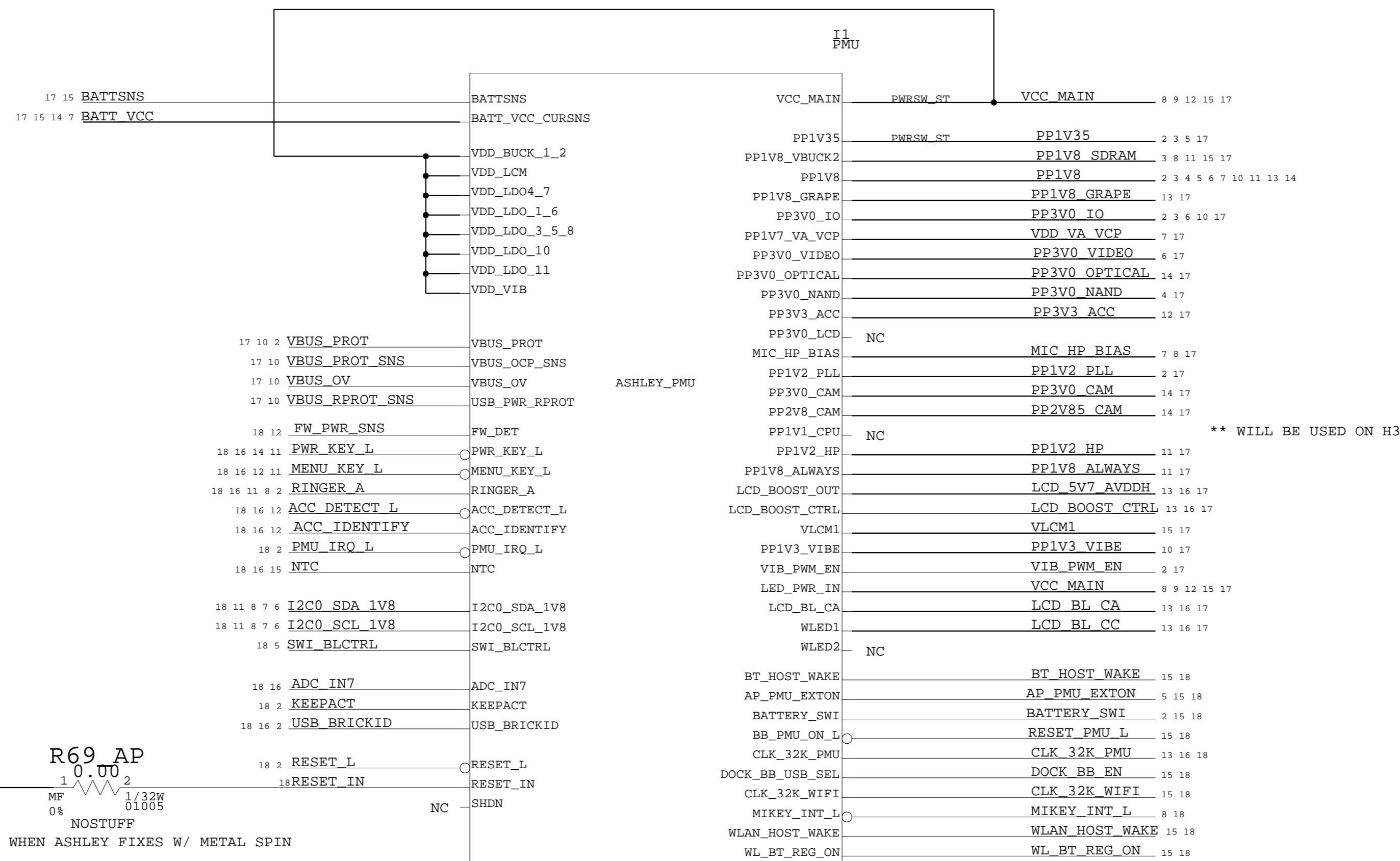


BUTTON FLEX CONNECTOR

L61 HP
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SCALE	NONE	SHT	8 OF 16

PP 17 - 18



ASHLEY PMU

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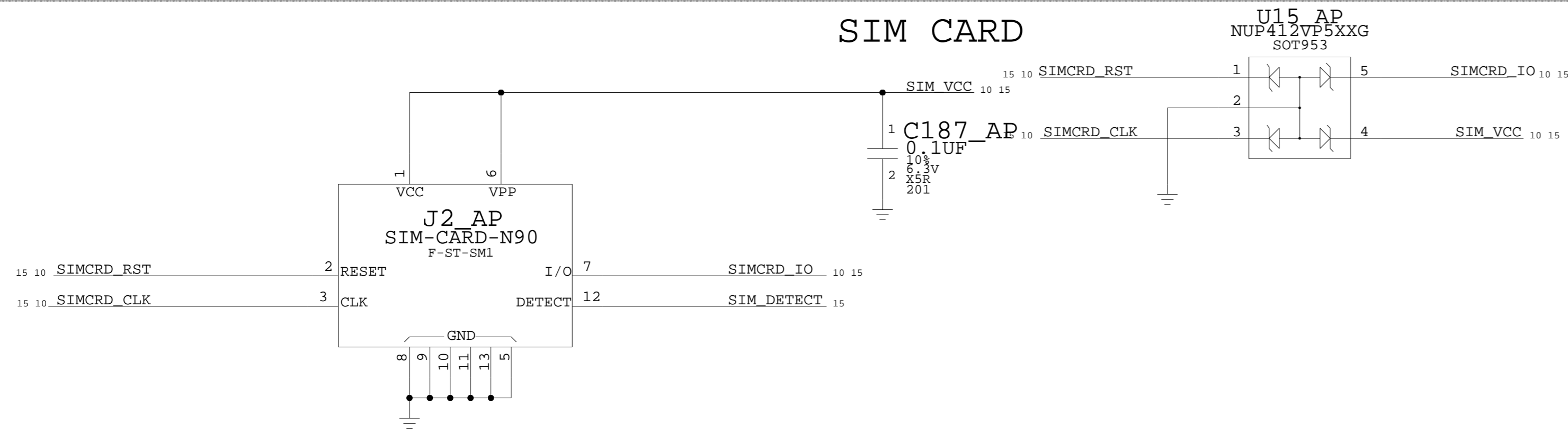
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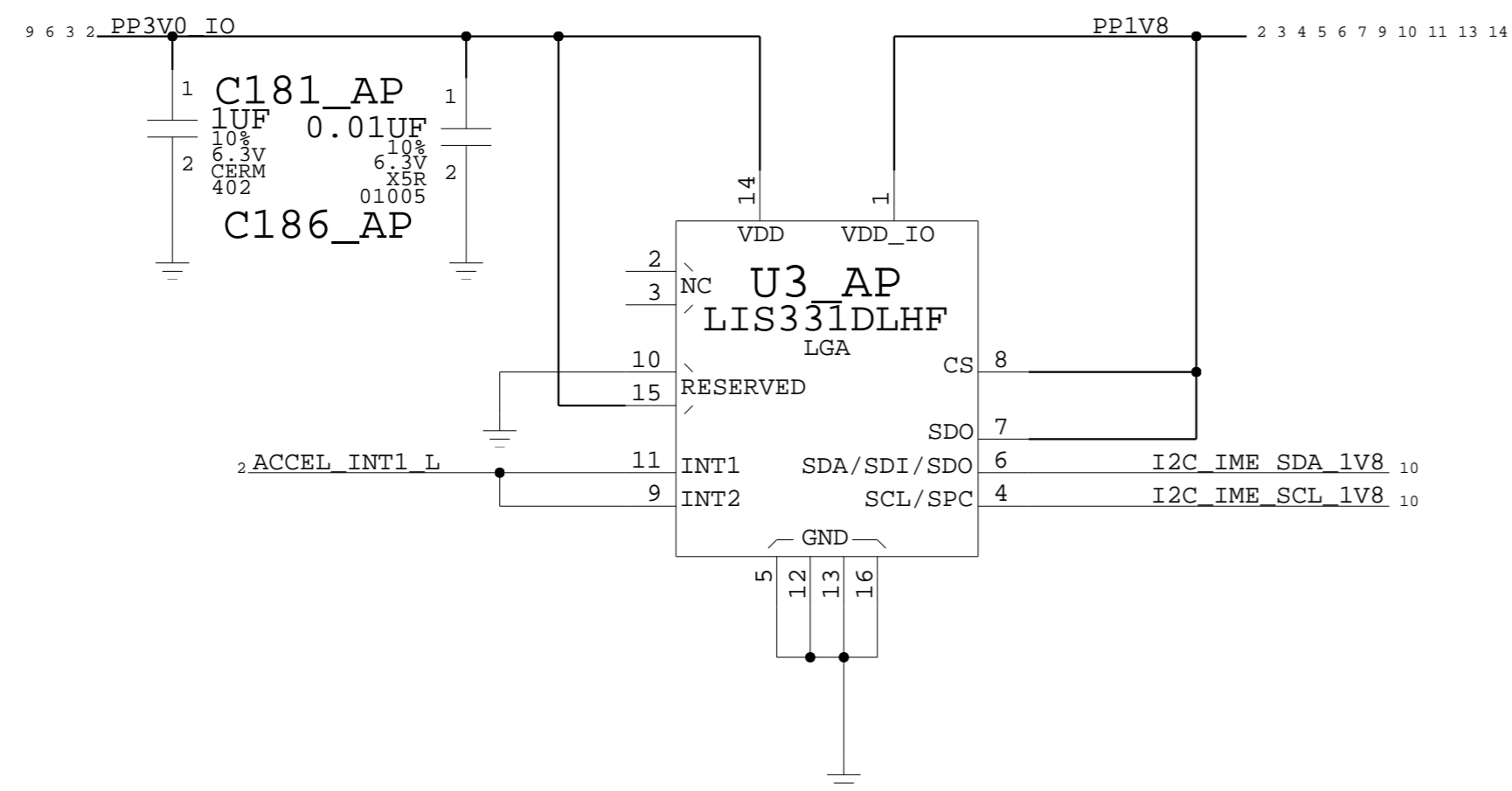
SIM CARD



TOD0: THIS CONN PINOUT HAS NOT BEEN VERIF'D!

ACCELEROMETER

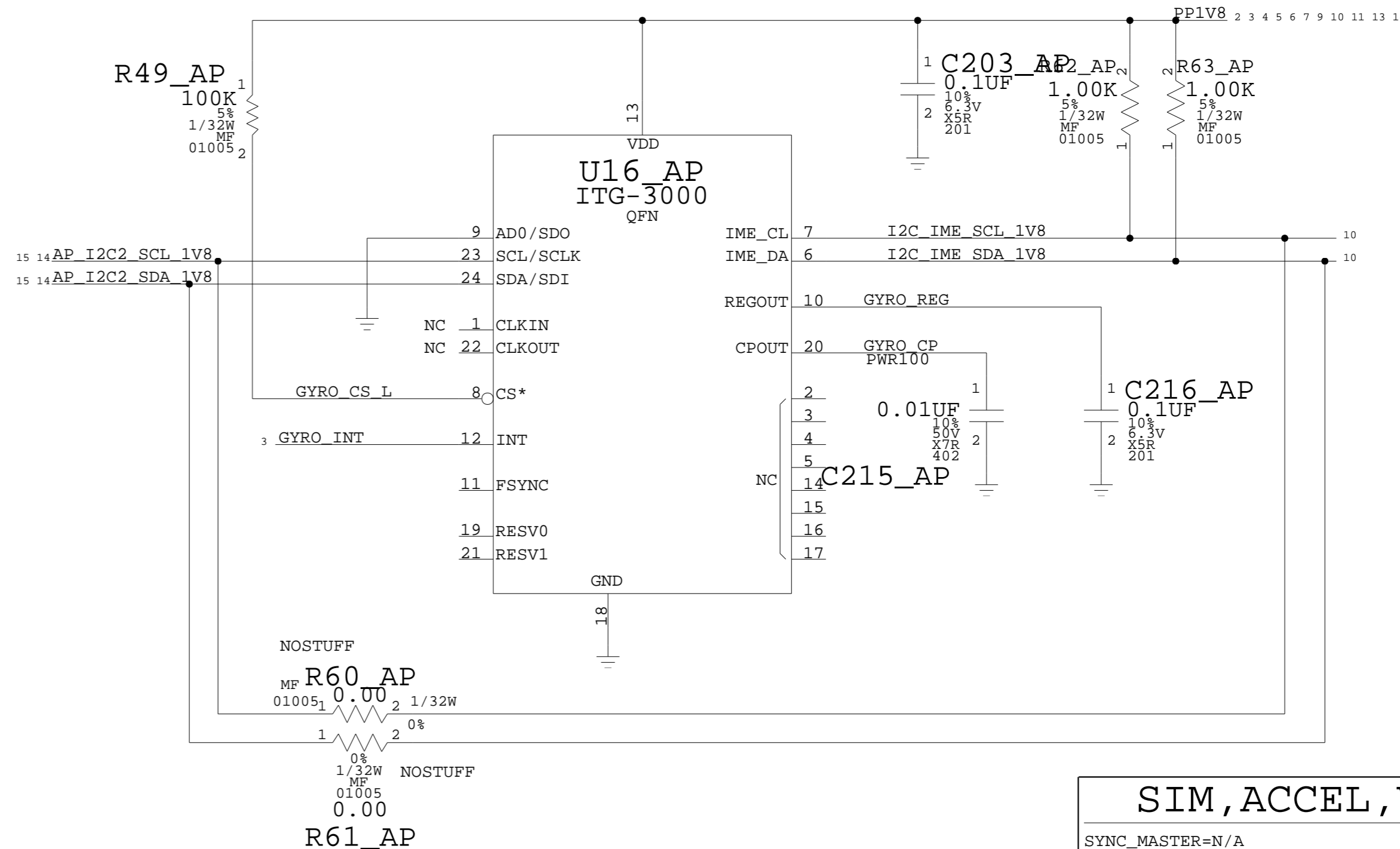
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TOD0: I2C NOT FINALIZED (FROM INVENSENSE)!

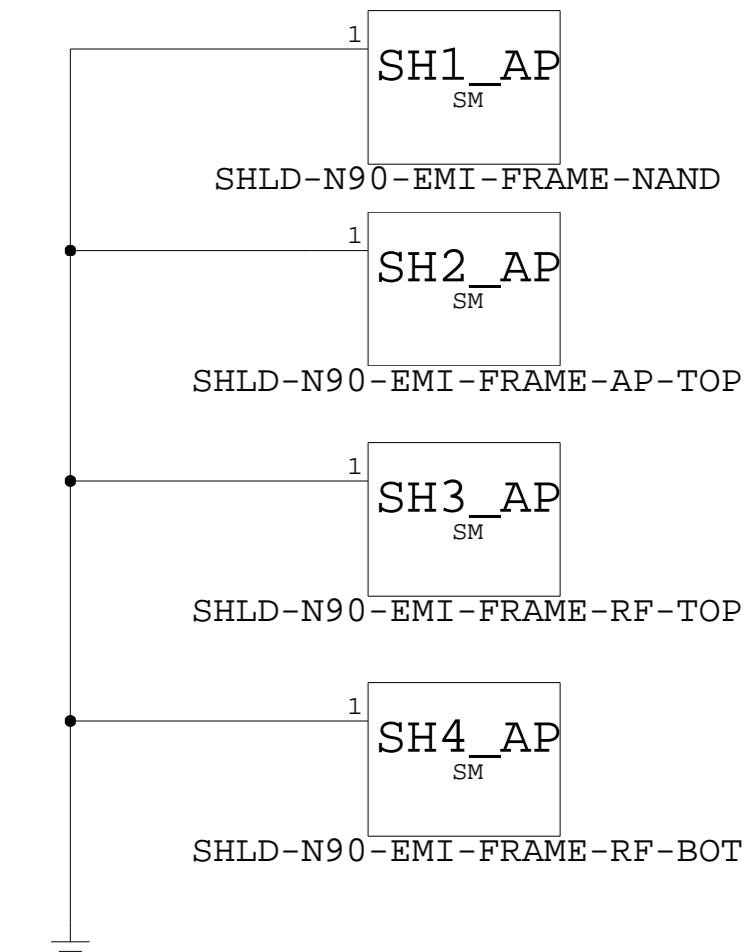
GYRO

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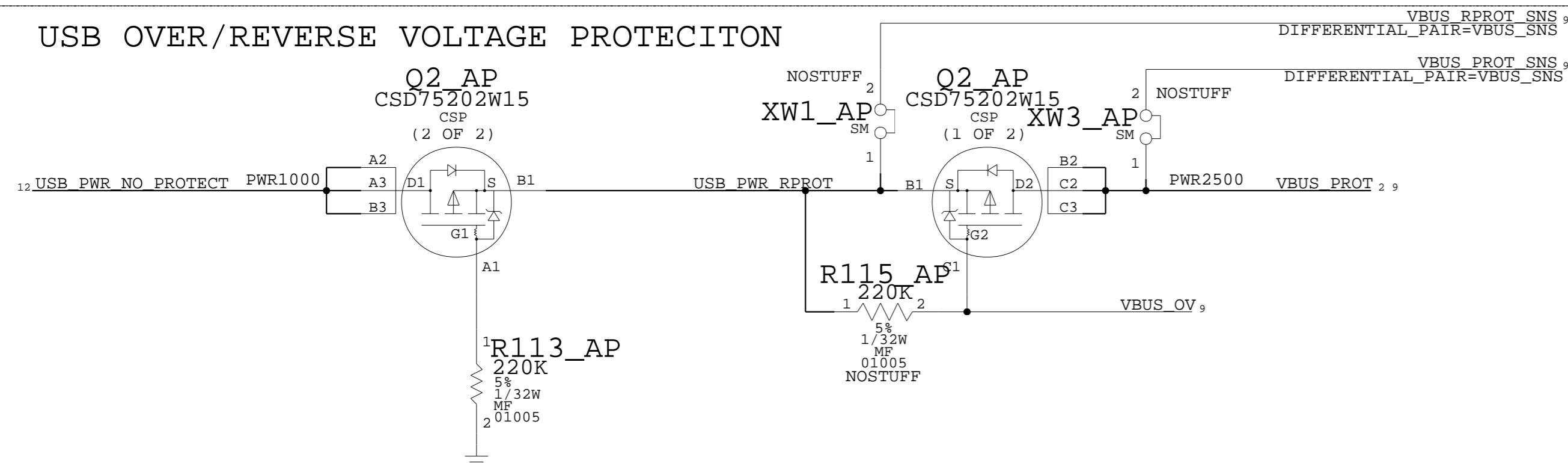


** STUFF OPTION IN CASE PASS-THRU DOESN'T WORK

SHIELDS



USB OVER/REVERSE VOLTAGE PROTECTITON



SIM, ACCEL, VIBE, GYRO

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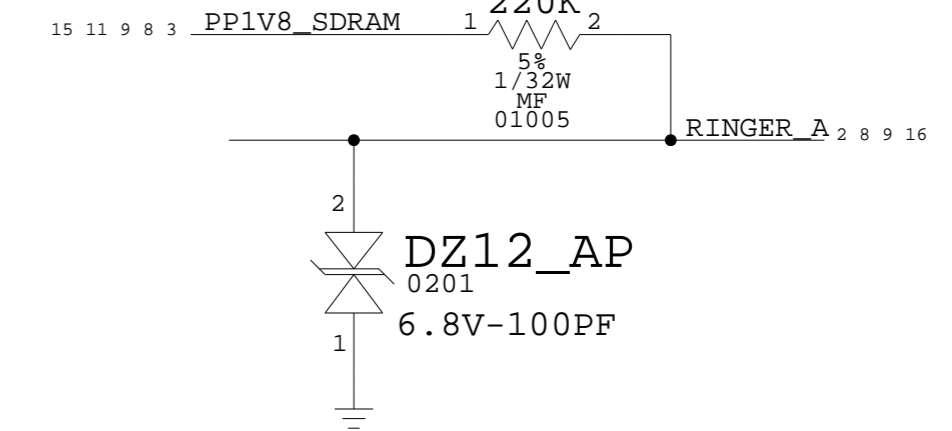
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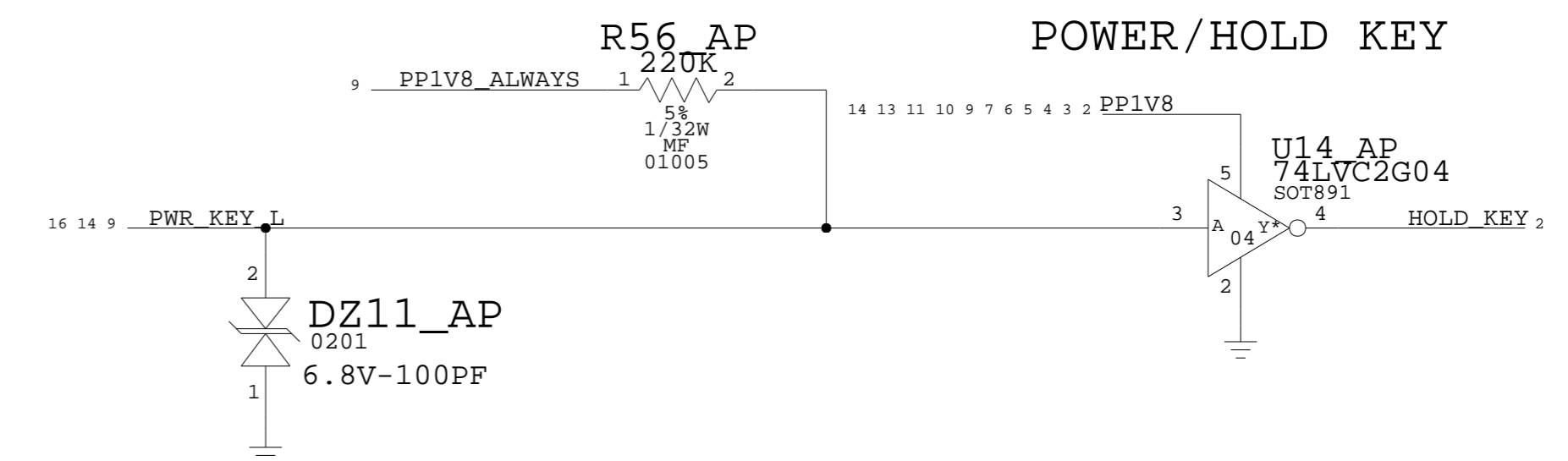
VOLUME SWITCHES



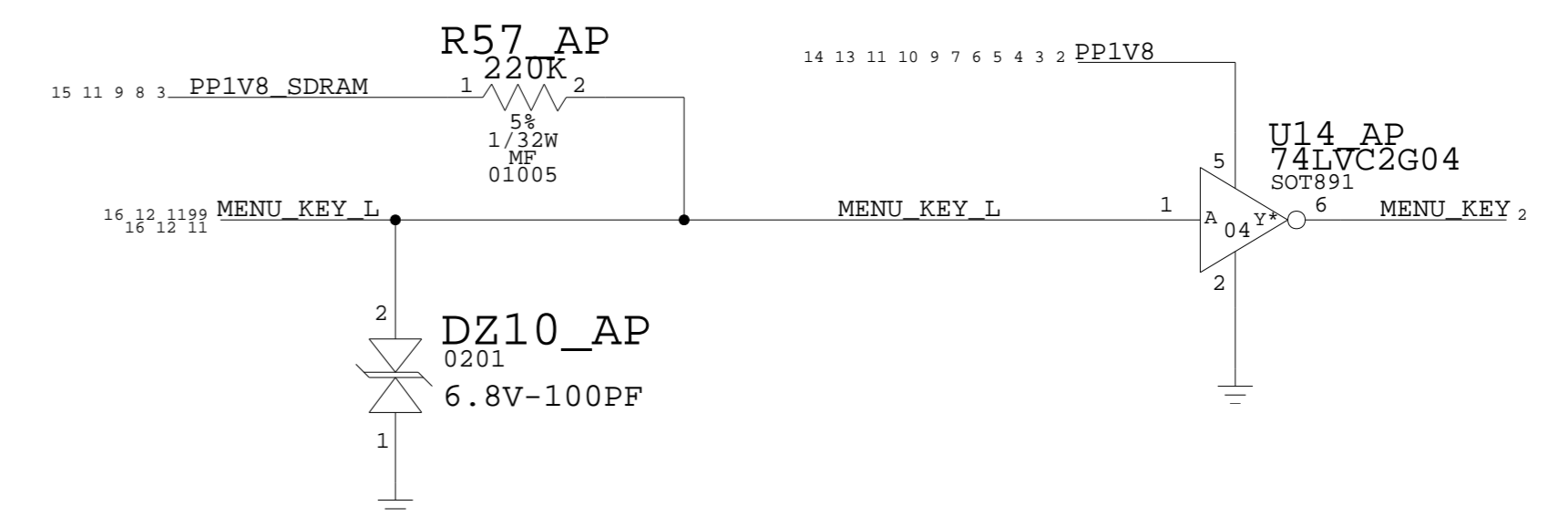
RINGER A/B SWITCH R58_AP



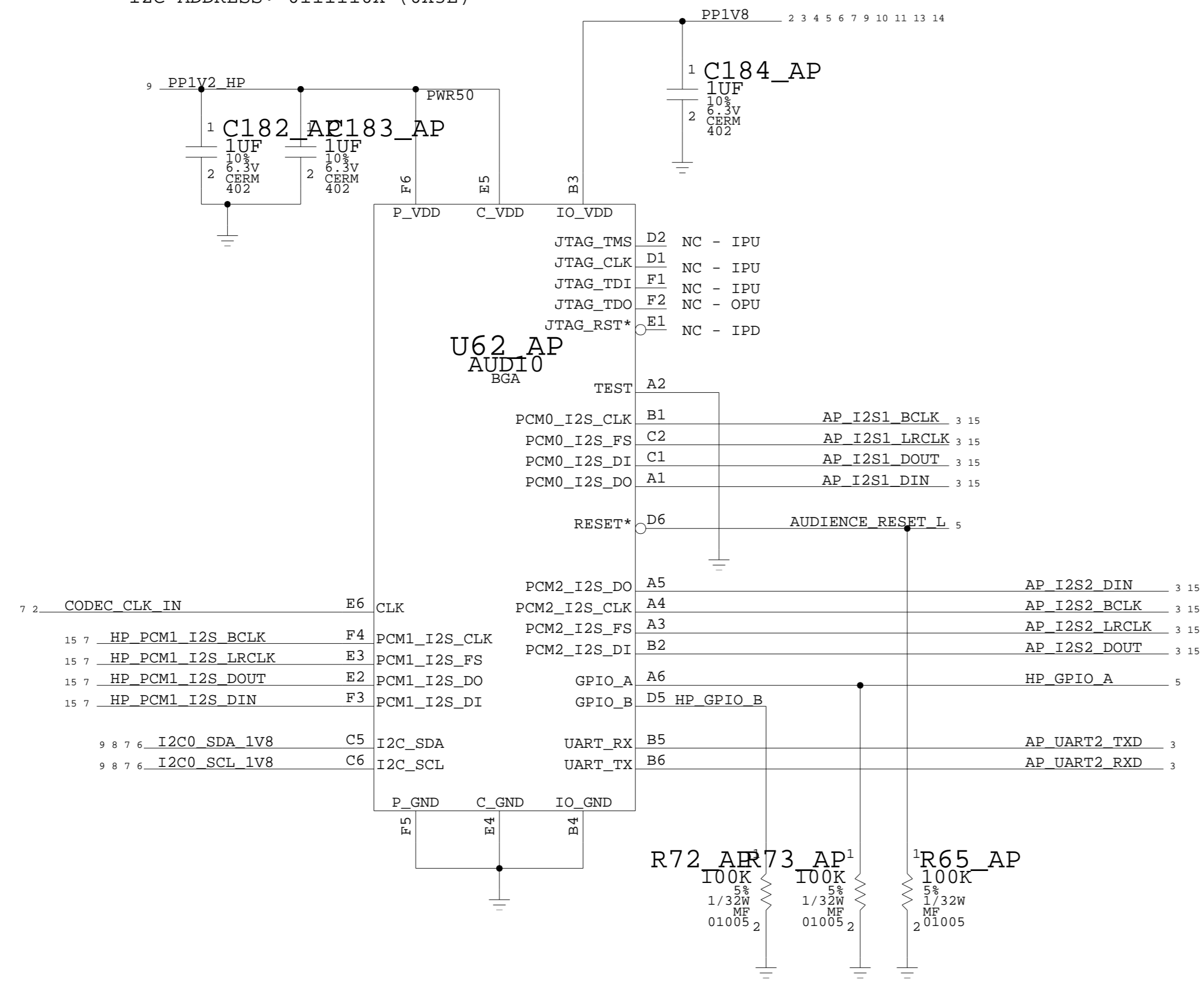
POWER/HOLD KEY



MENU KEY



I2C ADDRESS: 0111110X (0X3E)



HIGHLAND PARK, SWITCHES

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SCALE	NONE	SHT	11 OF 16

DOCK CONNECTOR

D

D

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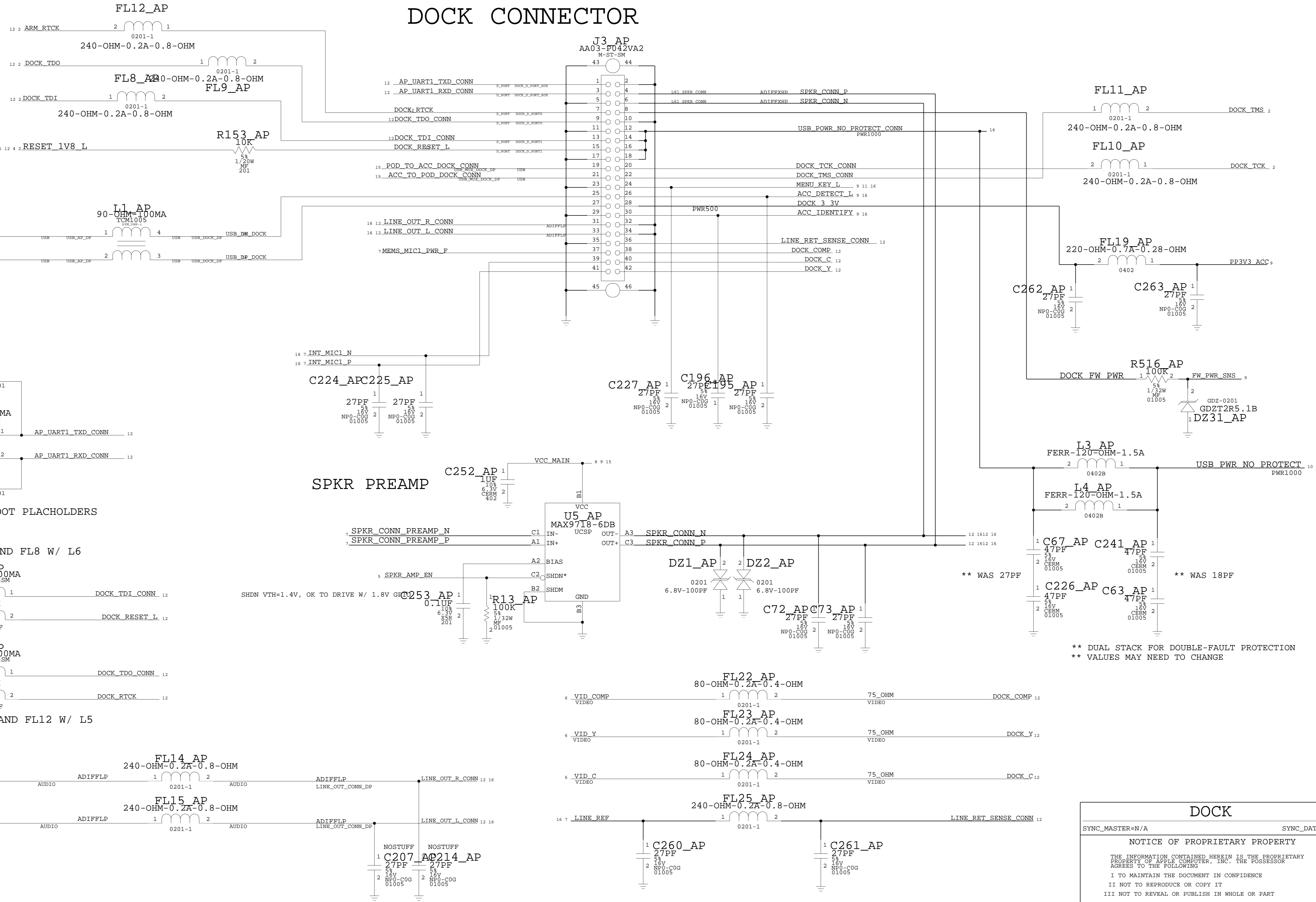
C

B

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* DISPLAYPORT, DUAL FOOT PLACHOLDERS

* LAYOUT: NEST R153 AND FL8 W/ L6

* LAYOUT: NEST FL9 AND FL12 W/ L5

** WAS 27PF

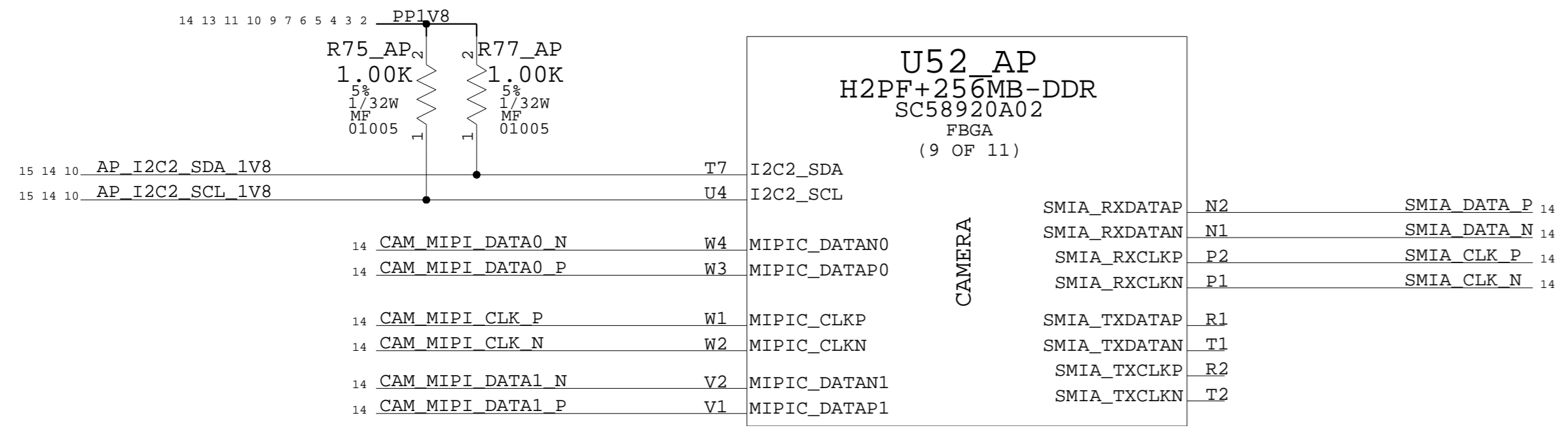
** WAS 18PF

** DUAL STACK FOR DOUBLE-FAULT PROTECTION
** VALUES MAY NEED TO CHANGE

DOCK	
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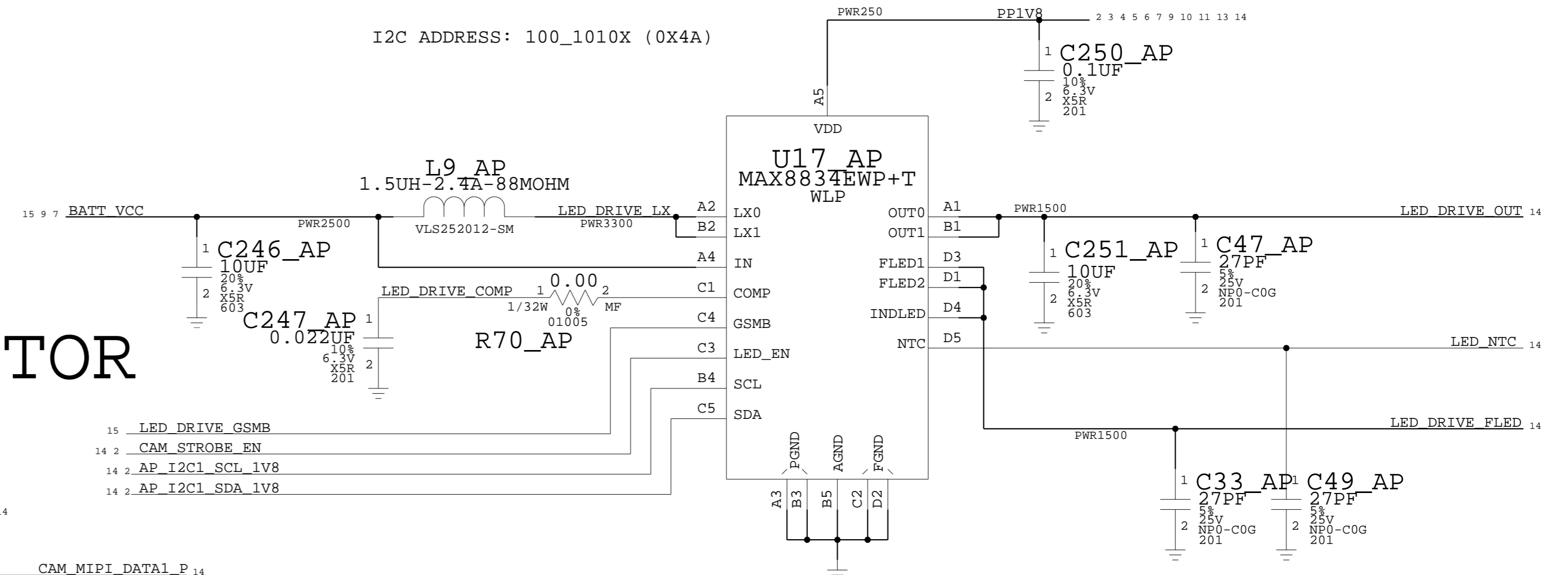
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SCALE		SHT	OF
NONE		12	16

CAMERA INTERFACE

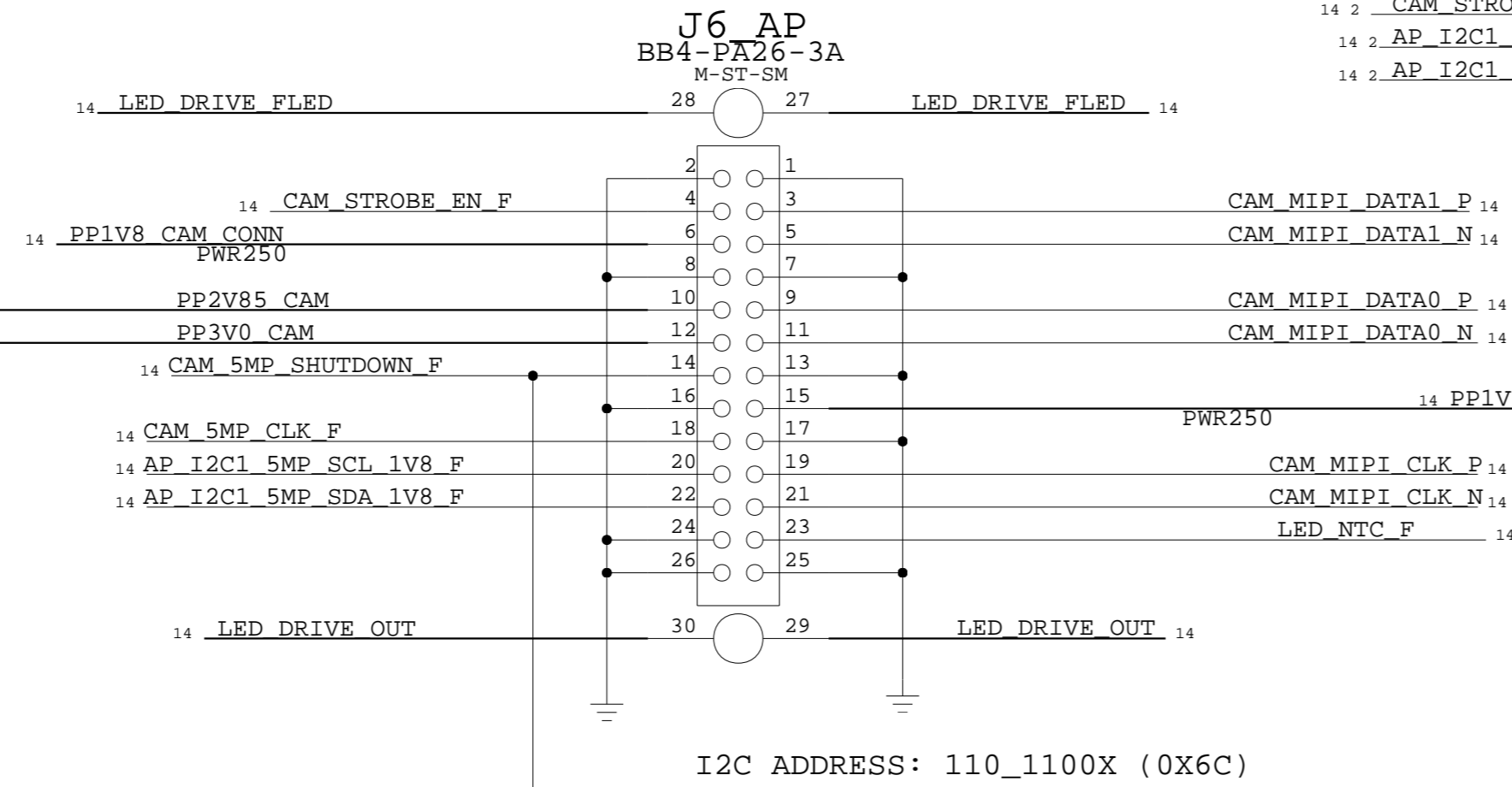
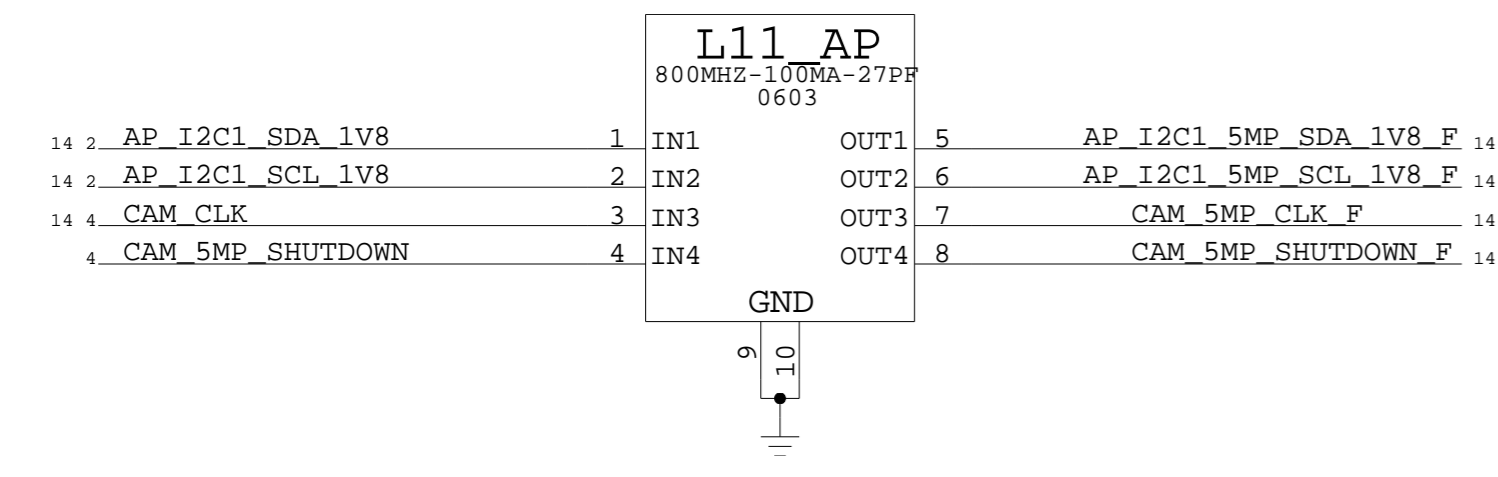


LED DRIVER

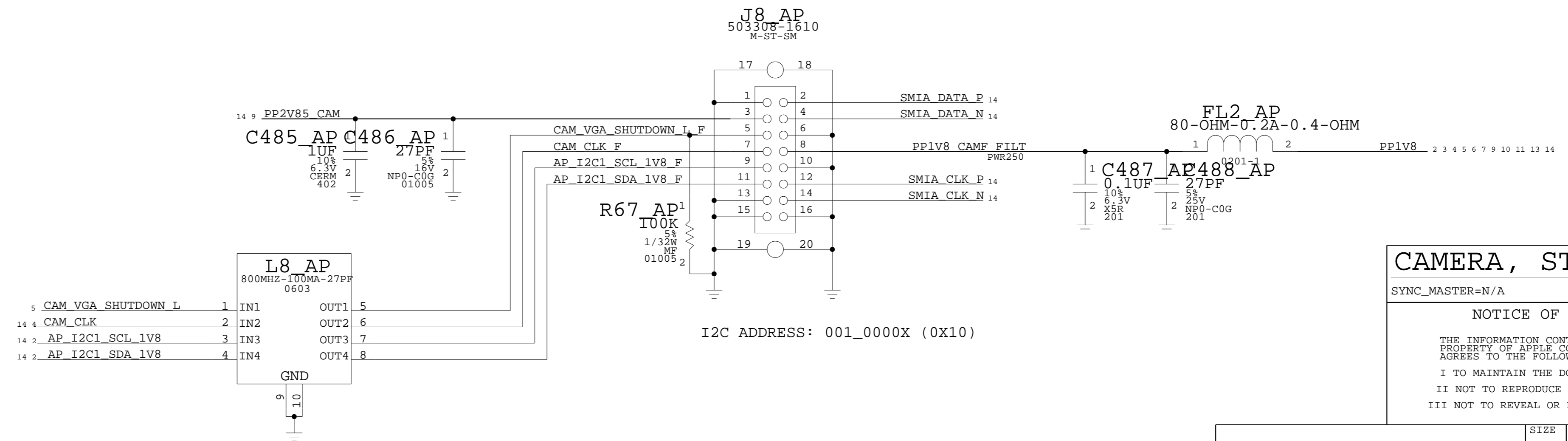
* PLACE CLOSE TO BATTERY *



5MP CAMERA CONNECTOR

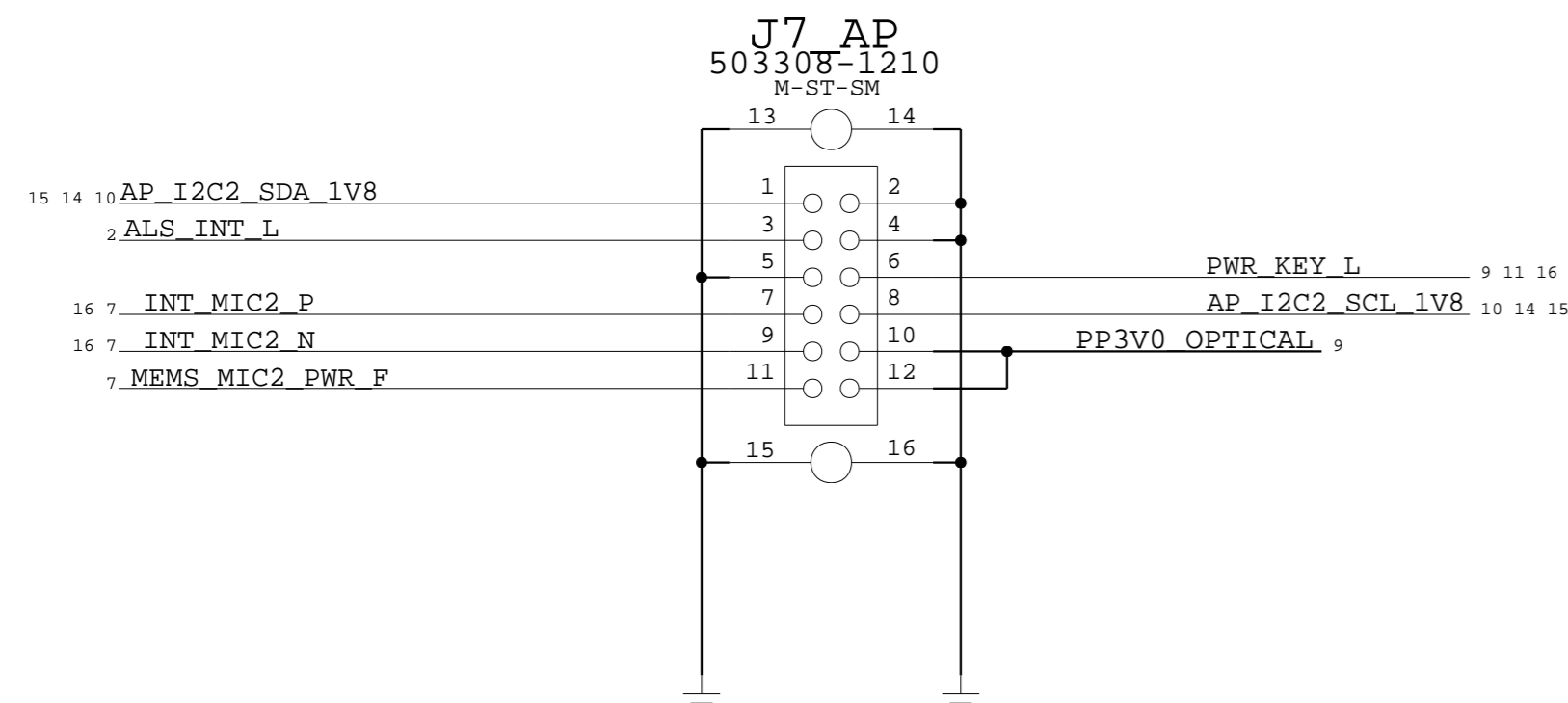


VGA CAMERA CONN



ALS/PROX

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CAMERA, STROBE, ALS, PROX

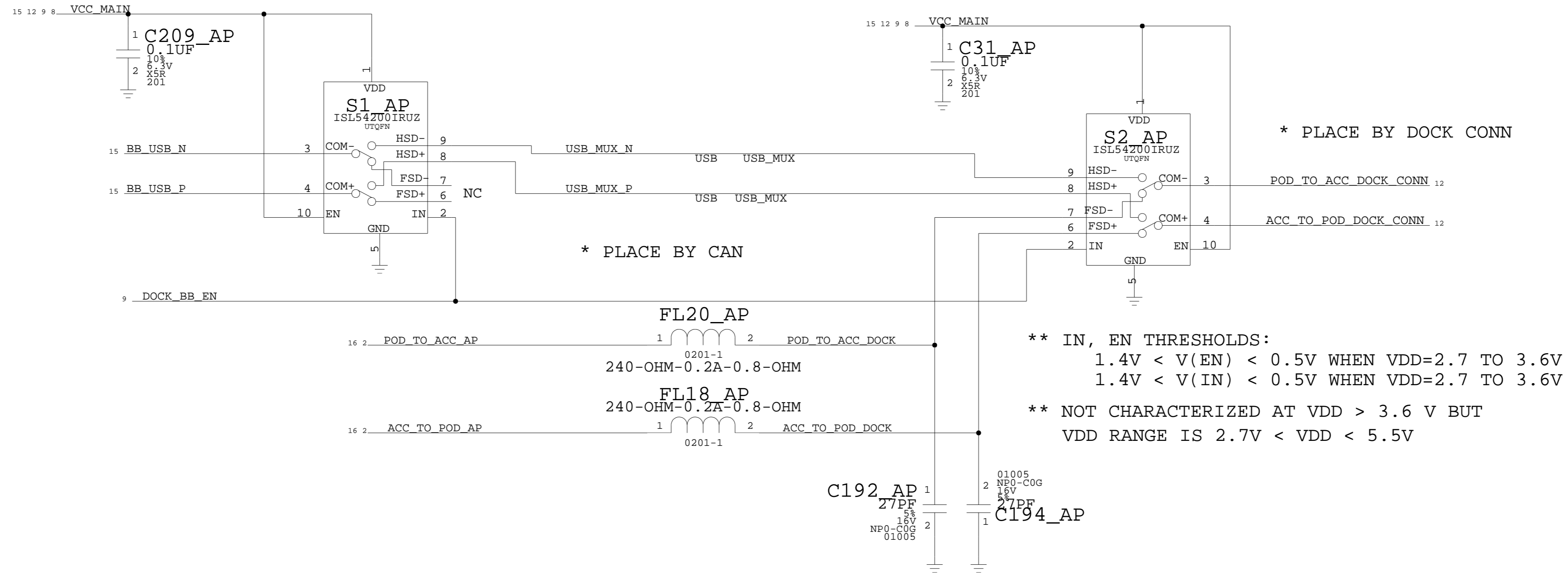
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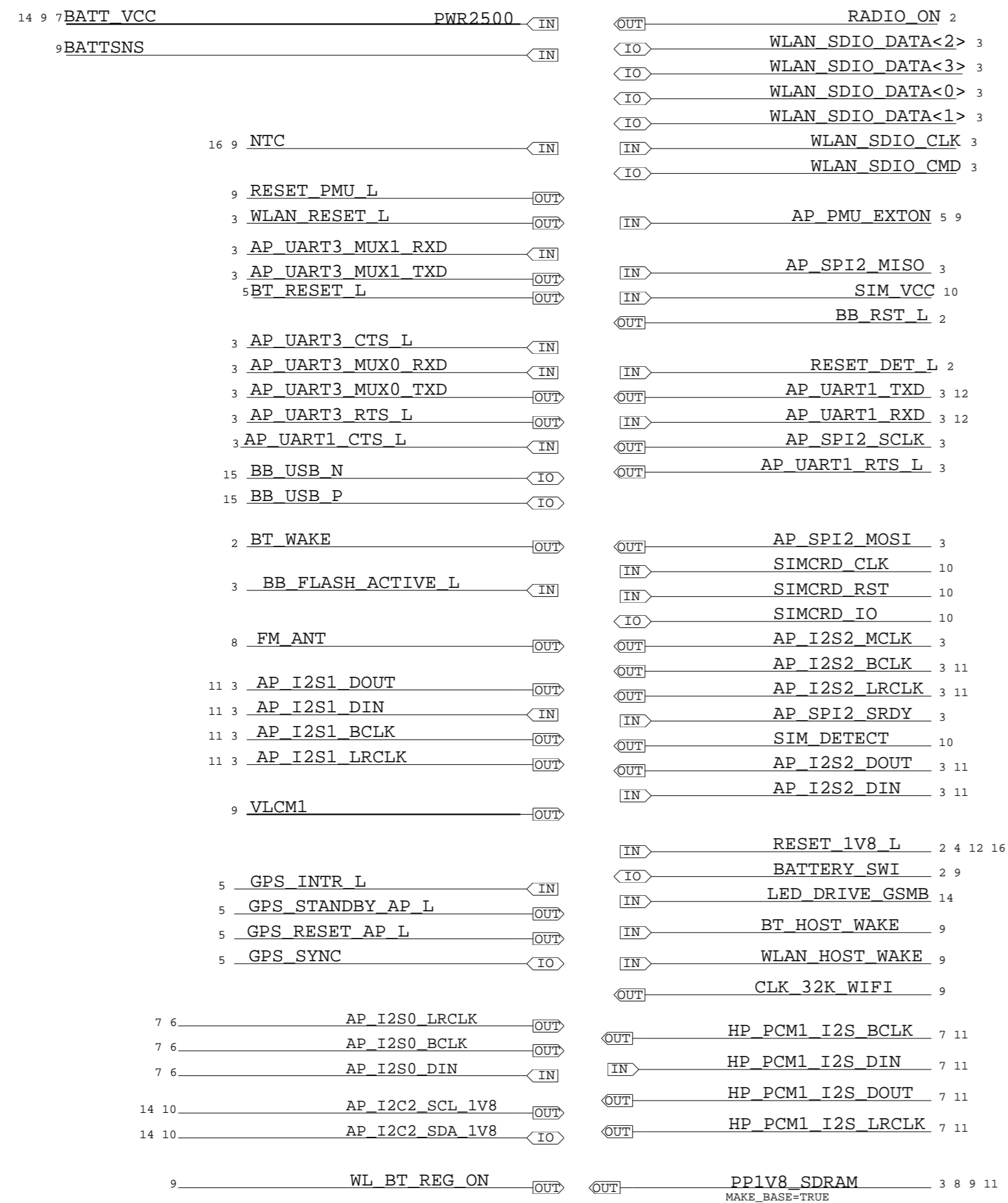
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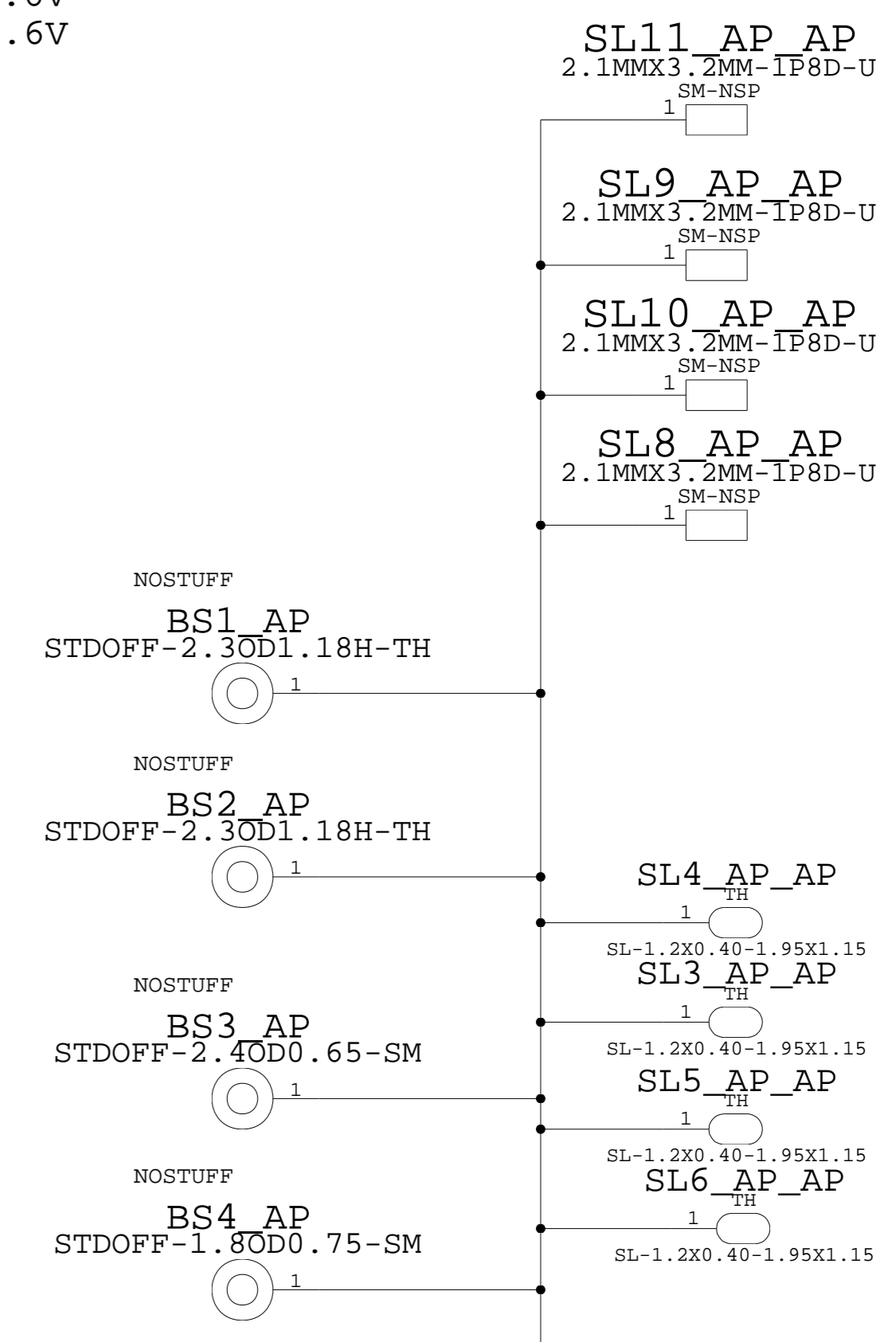


AP/RADIO INTERFACE



** IN, EN THRESHOLDS:
 1.4V < V(EN) < 0.5V WHEN VDD=2.7 TO 3.6V
 1.4V < V(IN) < 0.5V WHEN VDD=2.7 TO 3.6V

** NOT CHARACTERIZED AT VDD > 3.6 V BUT
 VDD RANGE IS 2.7V < VDD < 5.5V



RADIO CONNECTIVITY

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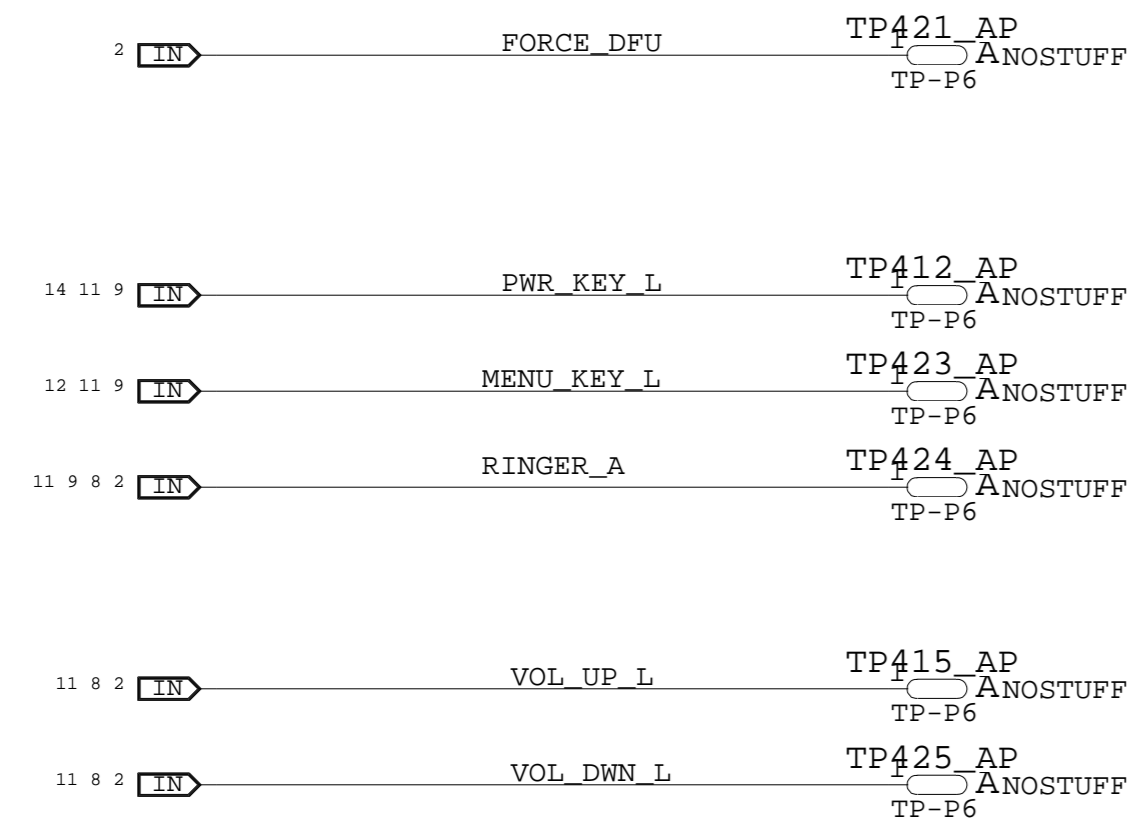
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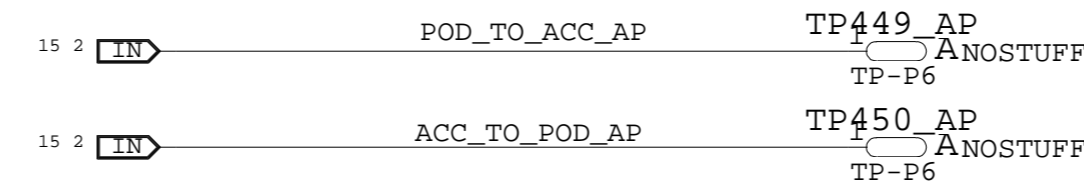
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GPIO

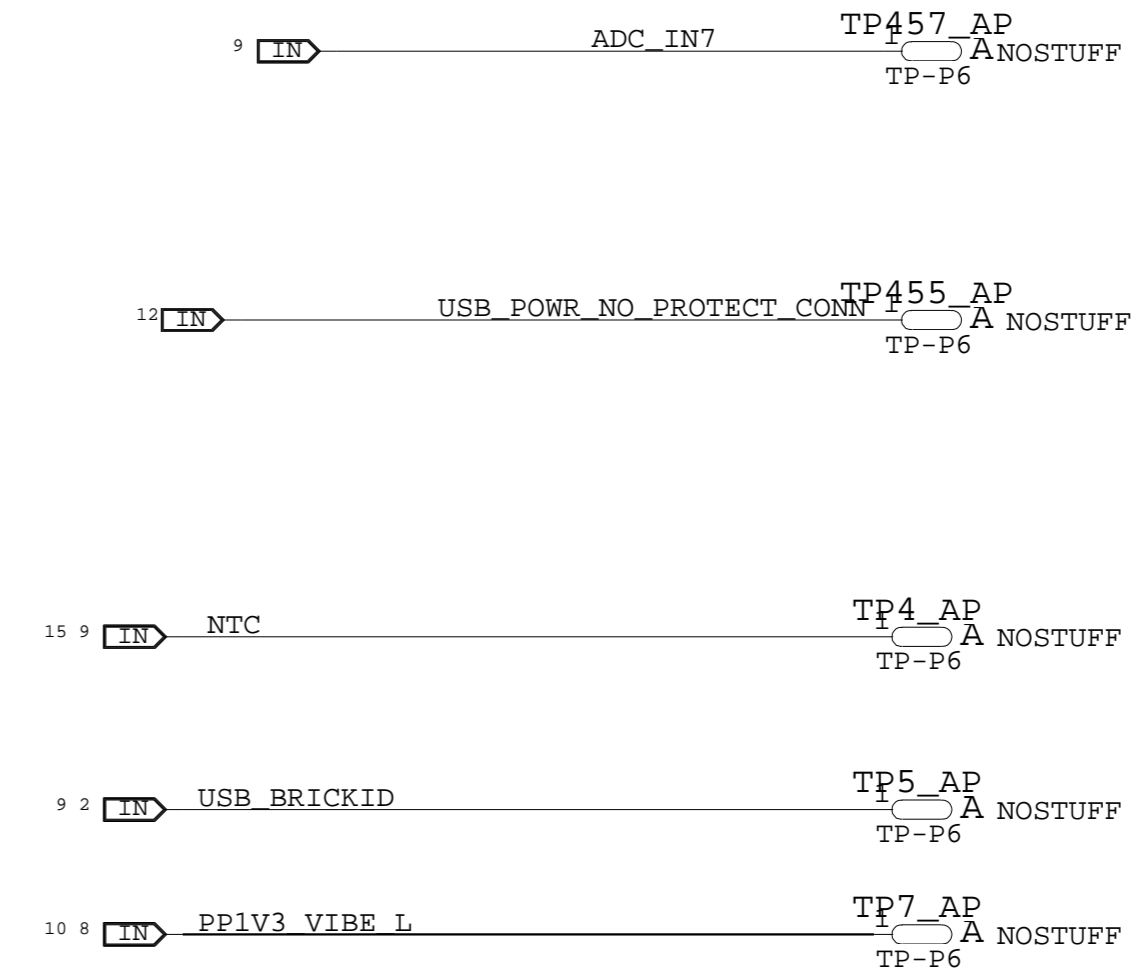


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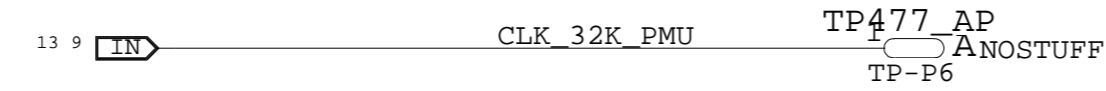
UART



POWER



CLOCK



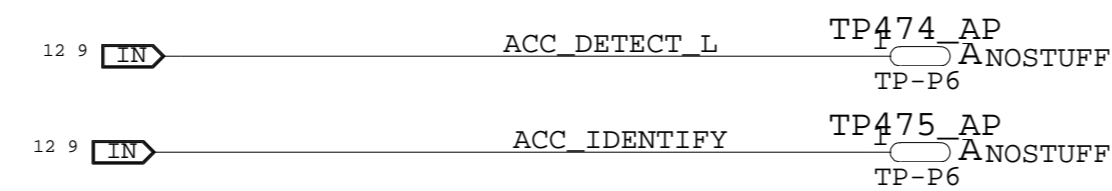
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RESET

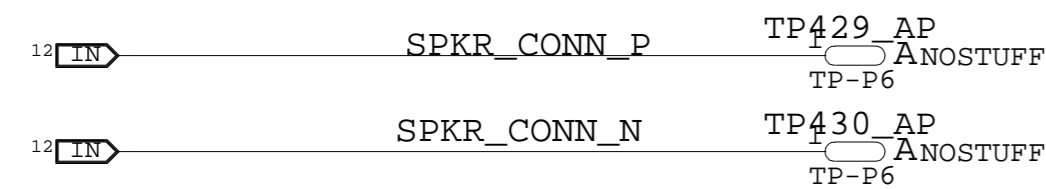


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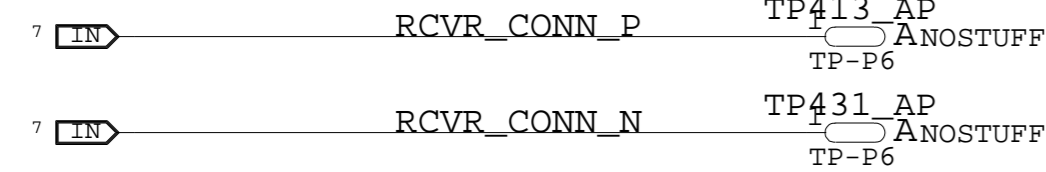


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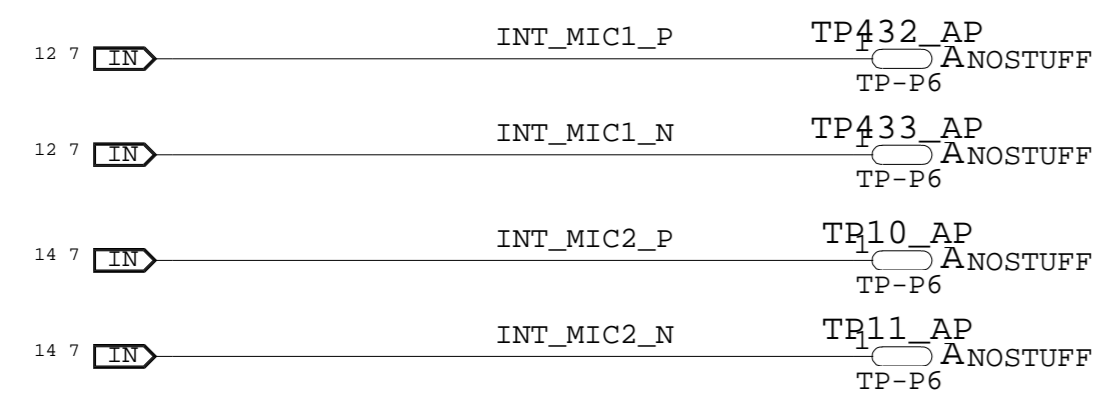
SPEAKER



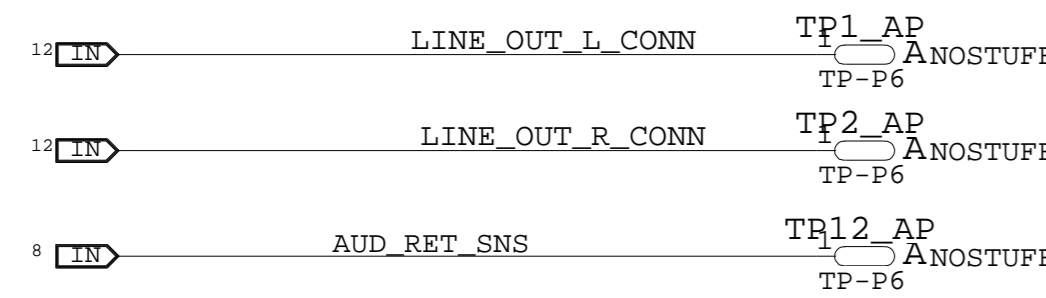
RECEIVER



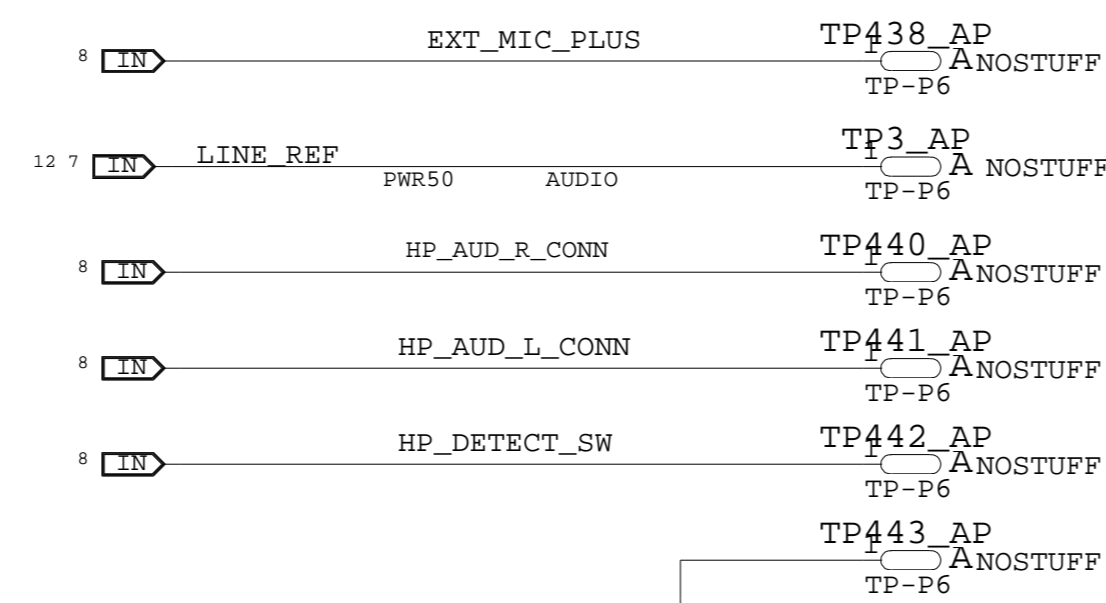
MIC



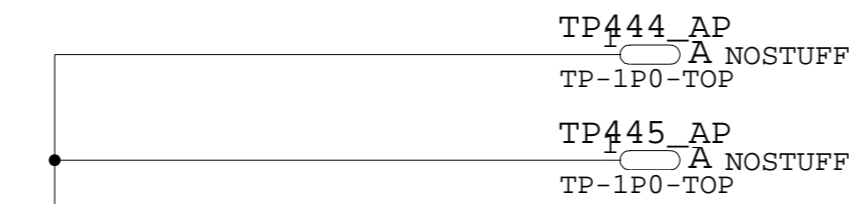
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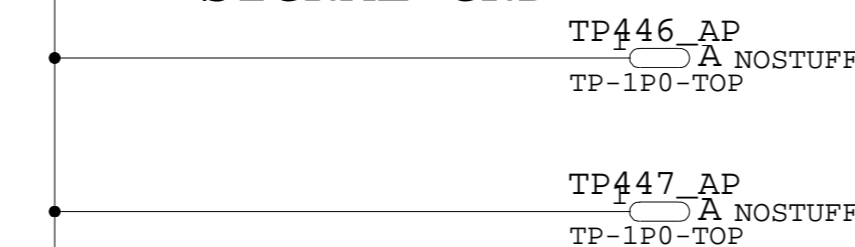
HEADPHONE



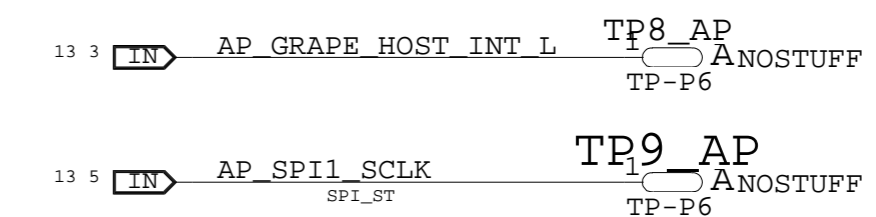
POWER GND



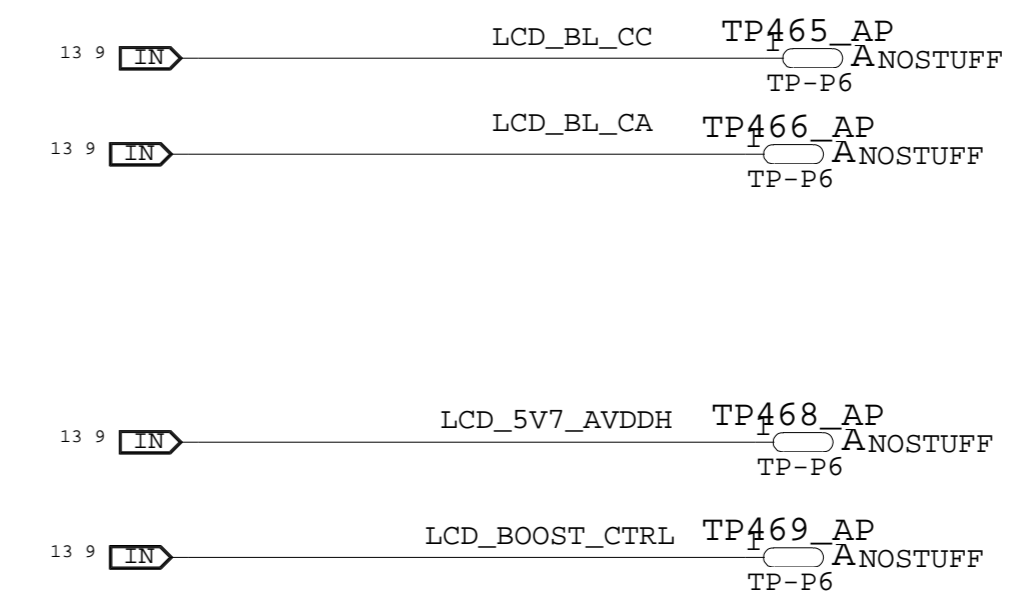
SIGNAL GND



GRAPE



LCM



TEST POINTS

SYNC_MASTER=N/A SYNC_DATE=N/A

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APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7921	01
SCALE	SHT	OF
NONE	16	16

D

2

C

B

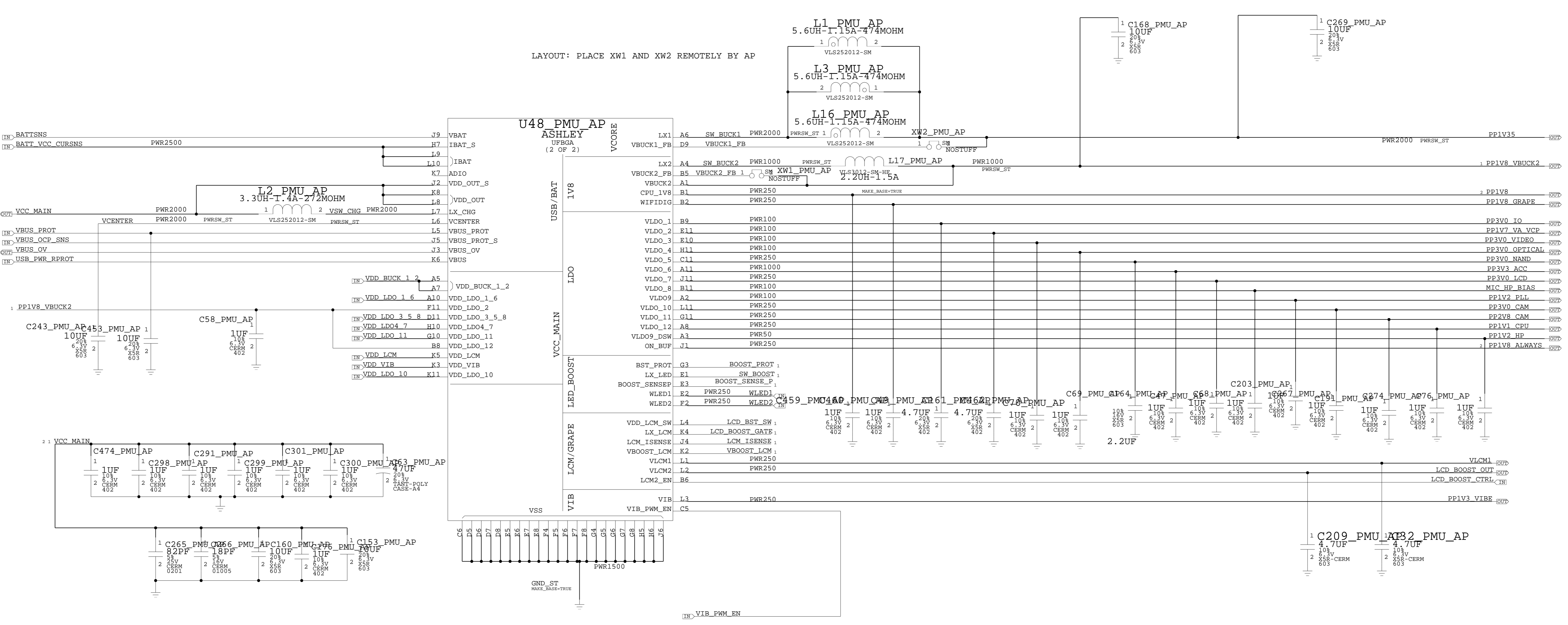
A

D

C

B

A



D

C

B

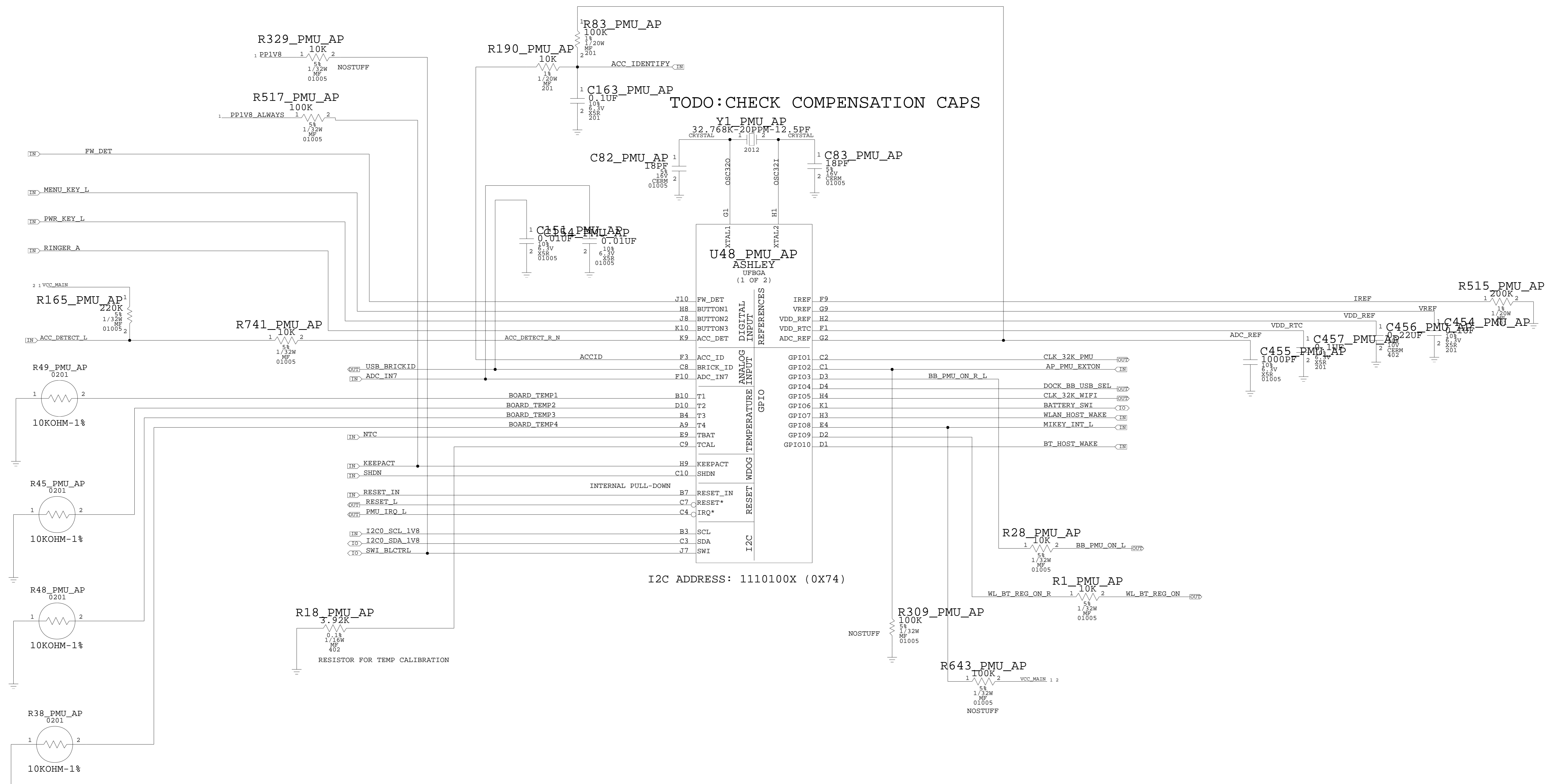
A

D

C

B

A



ASHLEY PMU

SYNC_MASTER=N/A SYNC_DATE=N/A

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	NONE	951-0719	1
SCALE		SHT	OF
		2	2

N90 (ICE3) HSPA RADIO


PROTO1 - 04/10/09:BRD REV2

PAGE	CONTENTS
02	BASEBAND AUDIO & I/O
03	BASEBAND + MEMORY
04	BASEBAND POWER SUPPLY
05	GSM & UMTS TRANSCEIVER
06	POWER AMPS AND RF FRONT END
07	SYSTEM CONNECTORS
08	A-GPS
09	WLAN/BLUETOOTH/FM RADIO

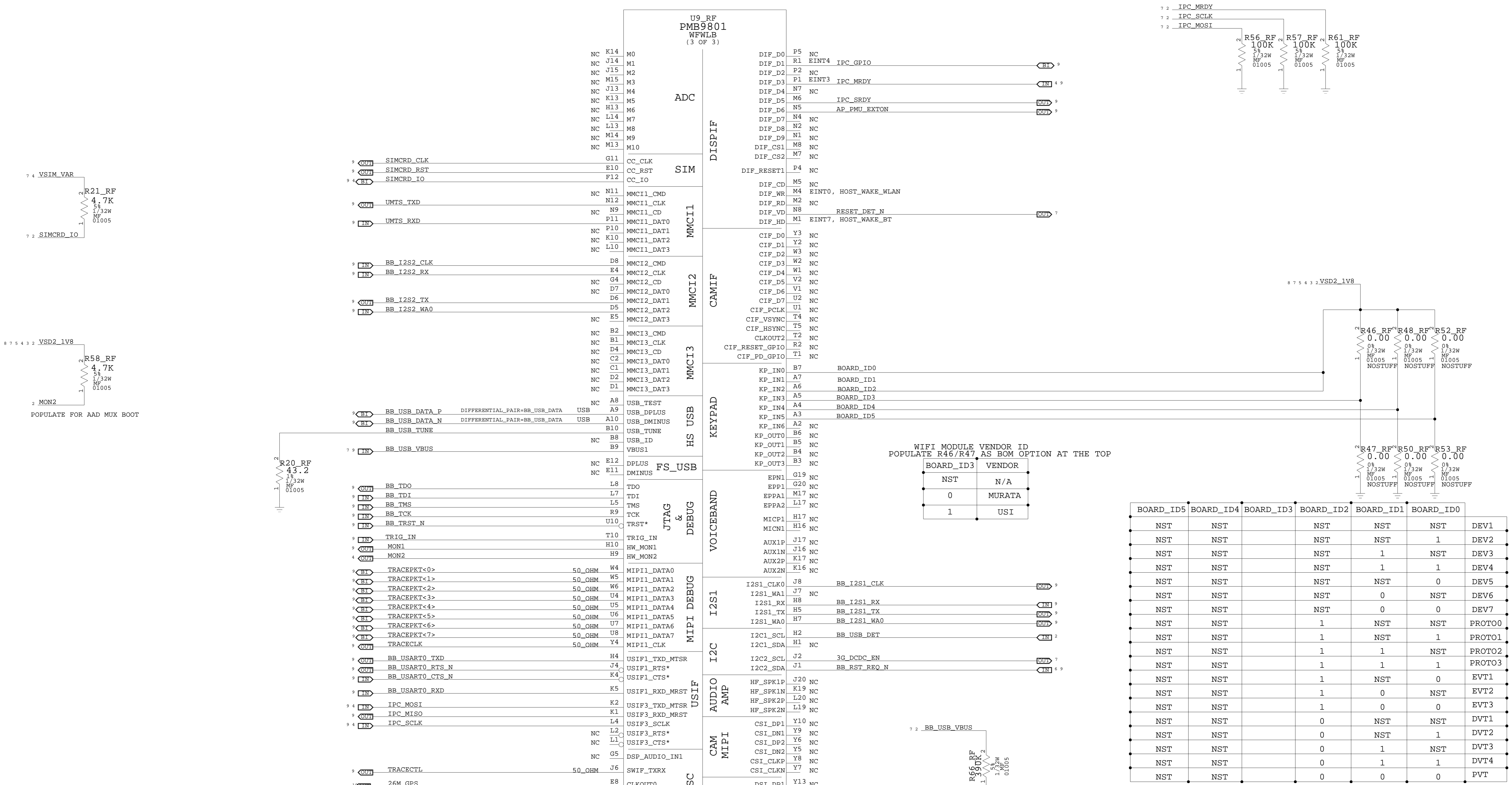
BOARD - 920-XXXX
 SCHEMATIC - 951-XXXX
 BOM - 630-XXXX

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
951-0716	1	N82_RF_AND_AP_SCHEMATIC	SCH	Y	
920-0593	1	N82_RF_AND_AP_PCB	PCB	Y	
825-2029	1	EEE: Y5K(8GB), YEU(16GB)	EEE:Y5K	Y	

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 APPLE INC.	SIZE D	DRAWING NUMBER 951-XXXX	REV. 01
	SCALE NONE	SHT 1 OF 9	

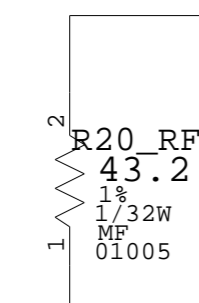
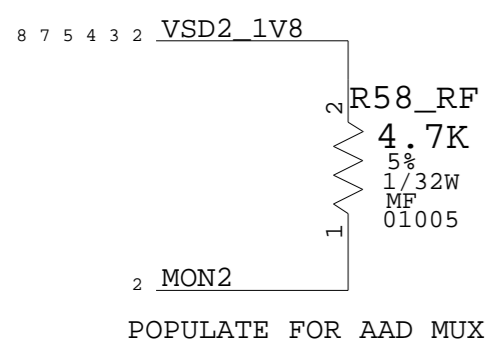
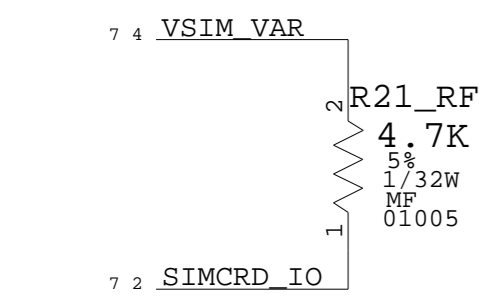
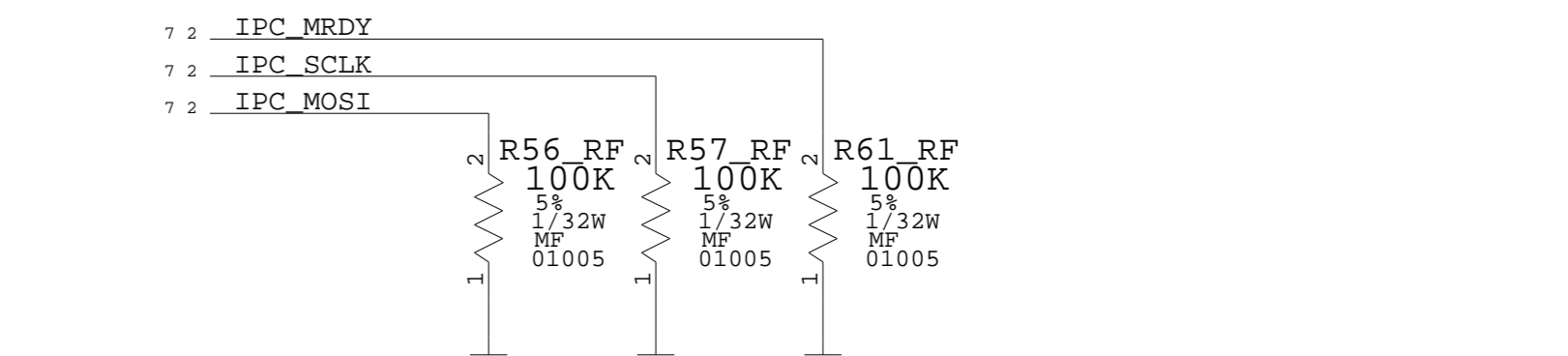
BASEBAND AUDIO & IO



BOOT CONFIG DESCRIPTION

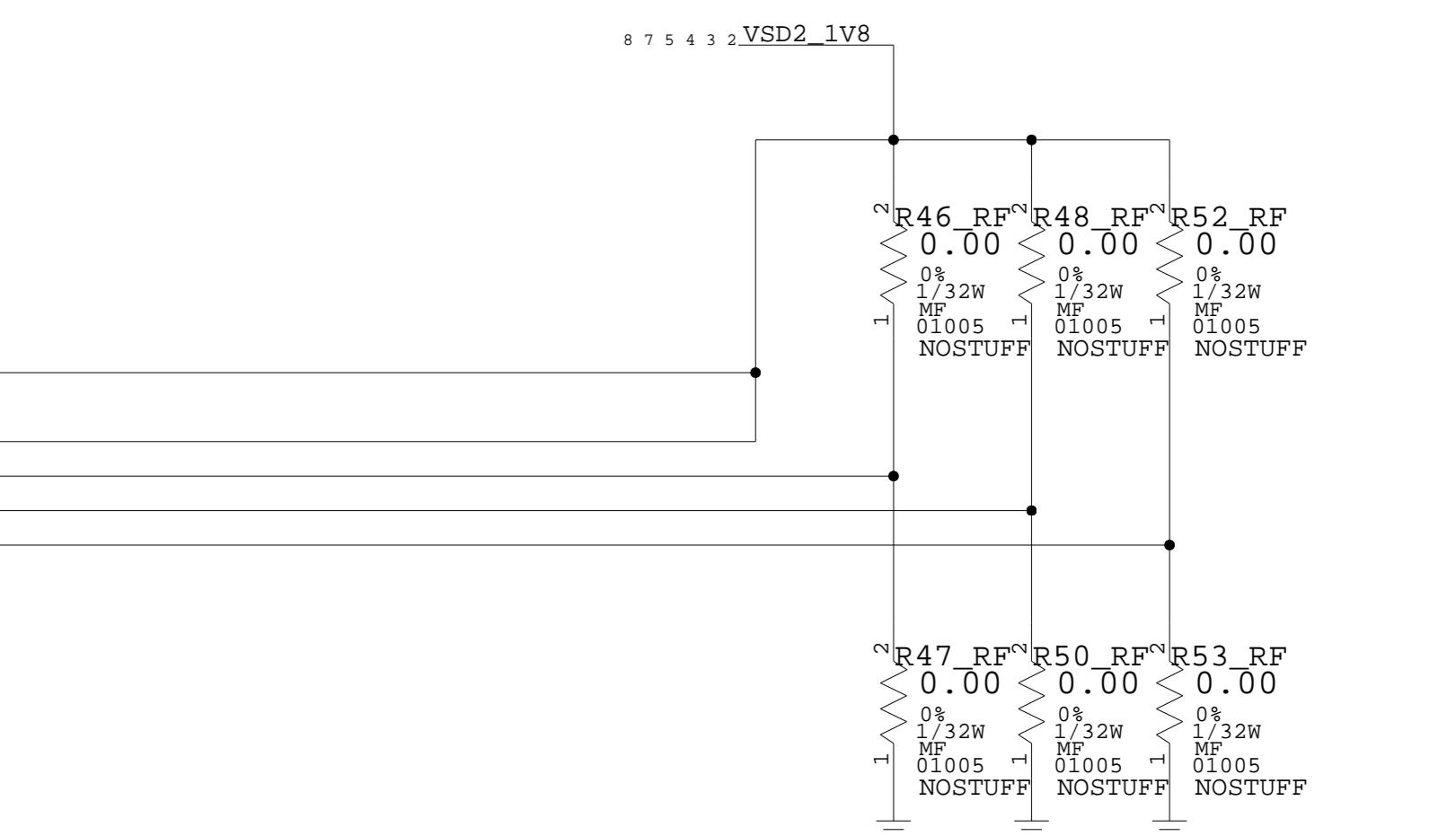
DSP_AUDIO_IN1, MON1 AND MON2 ARE ONLY ON TP AVAILABLE

DSP_AUDIO_IN1 HWCFG[3]	MON1 HWCFG[2]	MON2 HWCFG[1]	TRIG_IN HWCFG[0]	BOOT CONFIG DESCRIPTION
0	0	0	0	EXTERNAL BOOT VIA USB
0	0	0	1	NOR FLASH - EBU CONFIG: 16-BIT AD MUXED
0	0	1	0	NOR FLASH - EBU CONFIG: 16-BIT AAD MUXED



WIFI MODULE VENDOR ID
POPULATE R46/R47 AS BOM OPTION AT THE TOP

BOARD_ID3	VENDOR
NST	N/A
0	MURATA
1	USI



BOARD_ID5	BOARD_ID4	BOARD_ID3	BOARD_ID2	BOARD_ID1	BOARD_ID0	DEV1
NST	NST	NST	NST	NST	NST	DEV1
NST	NST	NST	NST	NST	1	DEV2
NST	NST	NST	NST	1	NST	DEV3
NST	NST	NST	NST	1	1	DEV4
NST	NST	NST	NST	NST	0	DEV5
NST	NST	NST	NST	0	NST	DEV6
NST	NST	NST	NST	0	0	DEV7
NST	NST	1	NST	NST	NST	PROTO0
NST	NST	1	NST	1	1	PROTO1
NST	NST	1	1	NST	NST	PROTO2
NST	NST	1	1	1	1	PROTO3
NST	NST	1	NST	0	0	EVT1
NST	NST	1	0	NST	NST	EVT2
NST	NST	1	0	0	0	EVT3
NST	NST	0	NST	NST	NST	DVT1
NST	NST	0	NST	1	1	DVT2
NST	NST	0	1	NST	NST	DVT3
NST	NST	0	1	1	1	DVT4
NST	NST	0	0	0	0	PVT

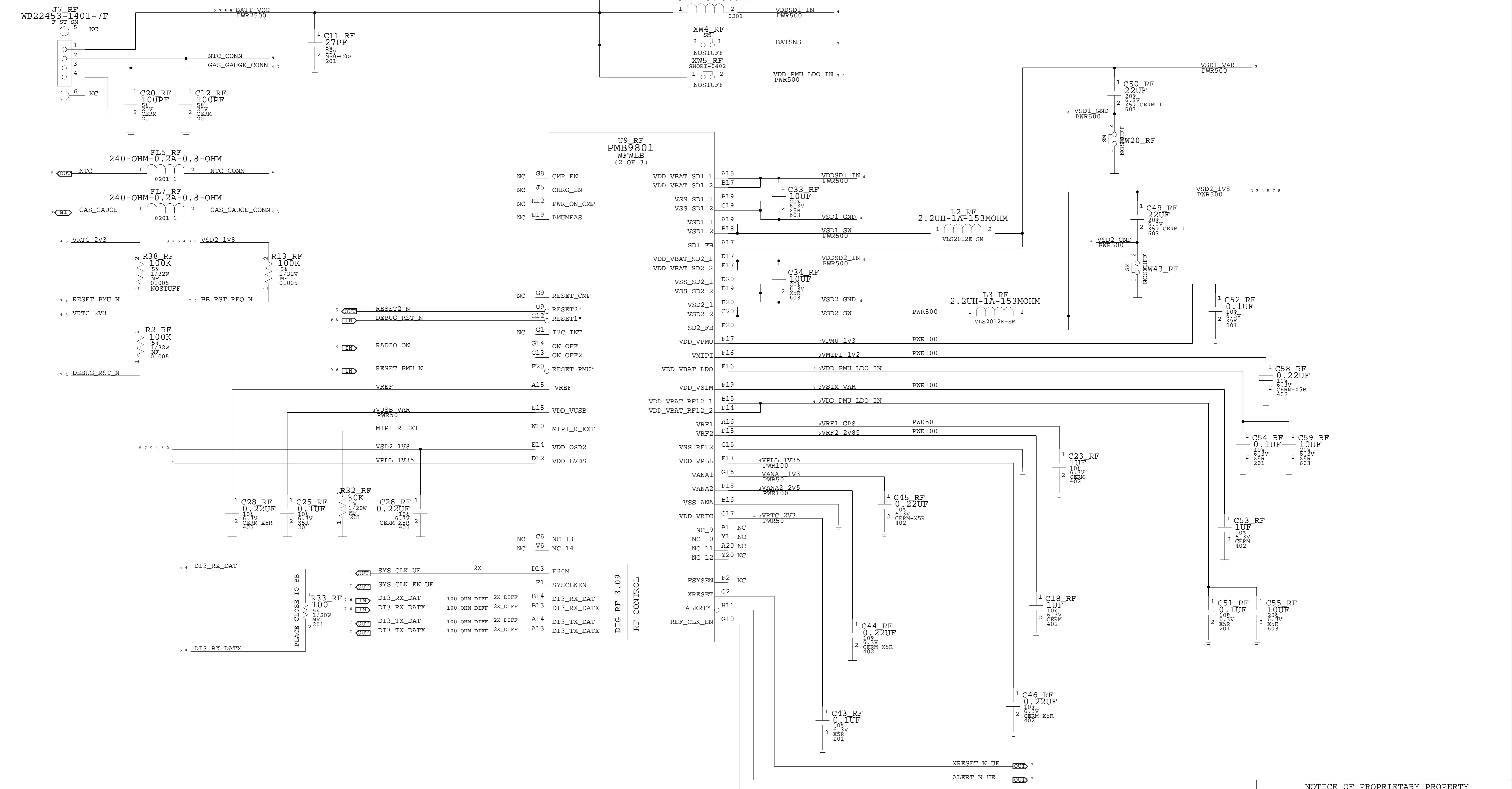
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APPLE INC.

SIZE	D	DRAWING NUMBER	951-XXXX	REV.	1
SCALE	NONE	SHT	2 OF 9		

BASEBAND POWER SUPPLY

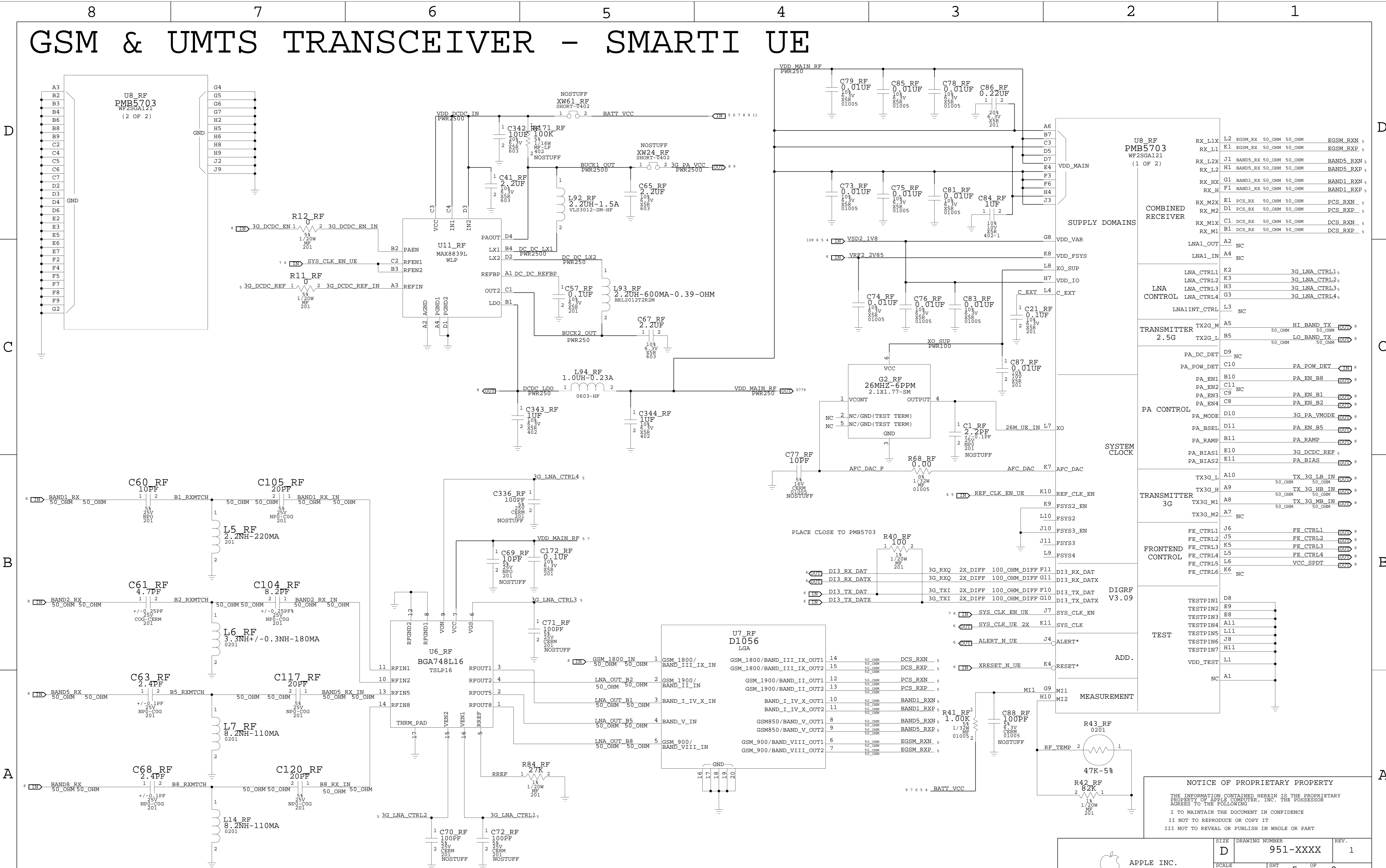
BATTERY CONNECTOR
 NEED TO UPDATE PIN ASSINGMENT




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	SCALE NONE	SHT 4 OF 9	

GSM & UMTS TRANSCIVER - SMARTI UE



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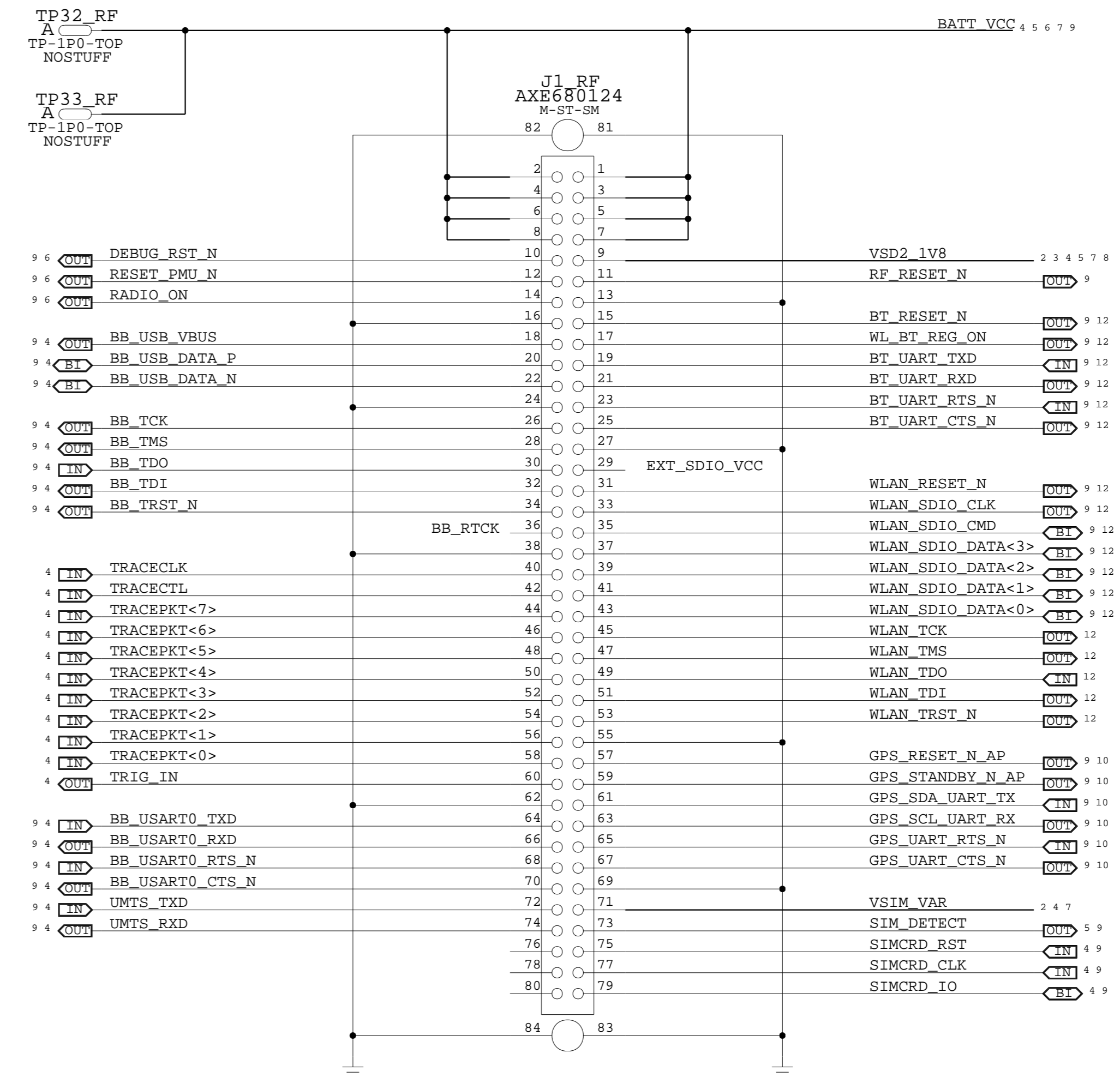
 APPLE INC.	SIZE	DRAWING NUMBER	REV.
	NONE	D 951-XXXX	1
SCALE		SHT	OF
NONE		5	9

SYSTEM CONNECTORS

AP CONNECTIONS

9 7 6 5 4	BATT_VCC	OUT
4	BATSNS	OUT
4	NTC	OUT
4	GAS_GAUGE	IO
7	RF_RESET_N	OUT
7 4	RADIO_ON	IN
7 4	RESET_PMU_N	IN
2	GSM_TXBURST_IND	OUT
7 4 2	BB_RST_REQ_N	IN
2	RESET_DET_N	OUT
2	IPC_MRDY	IN
2	IPC_SRDY	OUT
2	IPC_SCLK	IN
2	IPC_MOSI	IN
2	IPC_MISO	OUT
2	IPC_GPIO	OUT
2	AP_PMU_EXTON	OUT
7 2	BB_USB_VBUS	IN
7 2	BB_USB_DATA_P	IO
7 2	BB_USB_DATA_N	IO
7 2	BB_USART0_TXD	OUT
7 2	BB_USART0_RXD	IN
7 2	BB_USART0_RTS_N	OUT
7 2	BB_USART0_CTS_N	IN
7 2	UMTS_TXD	OUT
7 2	UMTS_RXD	IN
2	BB_I2S1_CLK	IN
2	BB_I2S1_WA0	IN
2	BB_I2S1_TX	OUT
2	BB_I2S1_RX	IN
2	BB_I2S2_CLK	IN
2	BB_I2S2_WA0	IN
2	BB_I2S2_TX	OUT
2	BB_I2S2_RX	IN
7 4 2	VSIM_VAR	OUT
7 3	SIM_DETECT	IN
7 2	SIMCRD_RST	OUT
7 2	SIMCRD_CLK	OUT
7 2	SIMCRD_IO	IO
9	WL_BT_VDDIO	IN
9 7	WL_BT_REG_ON	IN
9	CLK32K_AP_2X	IN
9 7	WLAN_RESET_N	IN
9 7	WLAN_SDIO_CLK	IO
9 7	WLAN_SDIO_CMD	IO
9 7	WLAN_SDIO_DATA<3..0>	IO
9	HOST_WAKE_WLAN	OUT
9	HOST_WAKE_BT	OUT
9 7	BT_RESET_N	IN
9	BT_WAKE	IN
9 7	BT_UART_TXD	OUT
9 7	BT_UART_RXD	IN
9 7	BT_UART_RTS_N	OUT
9 7	BT_UART_CTS_N	IN
9	BT_PCM_CLK	IO
9	BT_PCM_SYNC	IO
9	BT_PCM_OUT	IO
9	BT_PCM_IN	IO
9	FM_I2S_SCK	IN
9	FM_I2S_WS	IN
9	FM_I2S_SDO	OUT
9	FM_ANT	IN
8 7	GPS_RESET_N_AP	IN
8 7	GPS_STANDBY_N_AP	IN
8 7	GPS_SDA_UART_TX	IO
8 7	GPS_SCL_UART_RX	IO
8 7	GPS_UART_RTS_N	OUT
8 7	GPS_UART_CTS_N	IN
8	GPS_INTR_N	OUT
8	GPS_SYNC	IO

DEBUG CONNECTOR



POWER DOMAINS

TP3_RF	VSD2_1V8	2 3 4 5 7 8
TP24_RF	VDD_MAIN_RF	5
TP11_RF	3G_PA_VCC	5 6
TP8_RF	VPMU_1V3	4
TP65_RF	SIMCRD_IO	2 7
TP56_RF	SIMCRD_RST	2 7
TP59_RF	SIMCRD_CLK	2 7
TP12_RF	VSIM_VAR	2 4 7

USART0

TP82_RF	BB_USART0_TXD	2 7
TP89_RF	BB_USART0_RXD	2 7
TP28_RF	BB_USART0_RTS_N	2 7
TP29_RF	BB_USART0_CTS_N	2 7

FM

TP42_RF	FM_ANT_MATCH	9
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PLACEHOLDER FOR GPS/WLAN ANT PAD

TP9_RF	GPS_ISM_ANT_FEED	9
--------	------------------	---

GAS GAUGE

TP10_RF	GAS_GAUGE_CONN	4
---------	----------------	---

CONTROL

TP74_RF	RADIO_ON	4 7
TP22_RF	BB_RST_REQ_N	2 4 7
TP30_RF	DEBUG_RST_N	4 7
TP7_RF	RESET_PMU_N	4 7

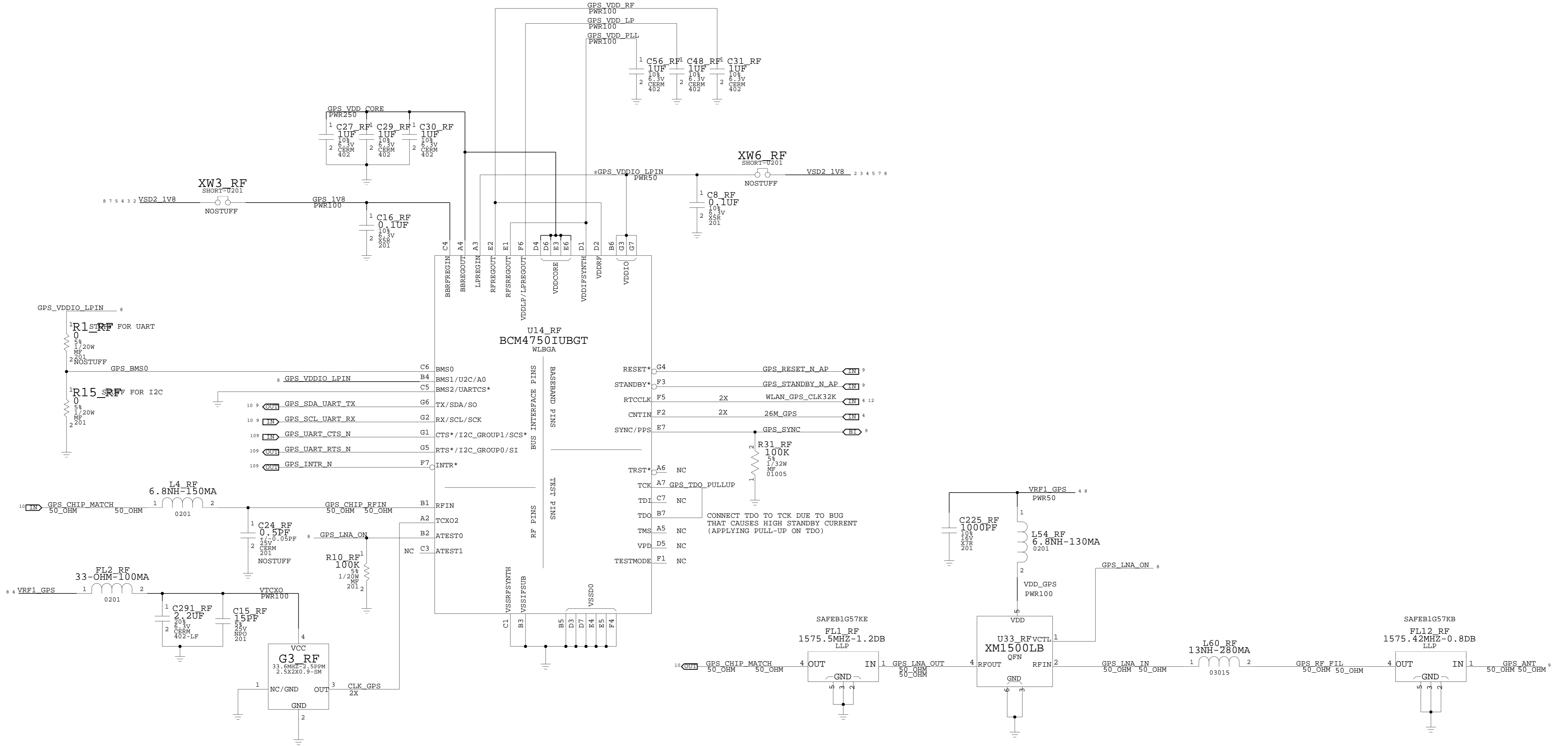
JTAG

TP1_RF	BB_TCK	2 7
TP2_RF	BB_TMS	2 7
TP4_RF	BB_TDO	2 7
TP5_RF	BB_TDI	2 7
TP6_RF	BB_TRST_N	2 7
TP68_RF	MON1	2

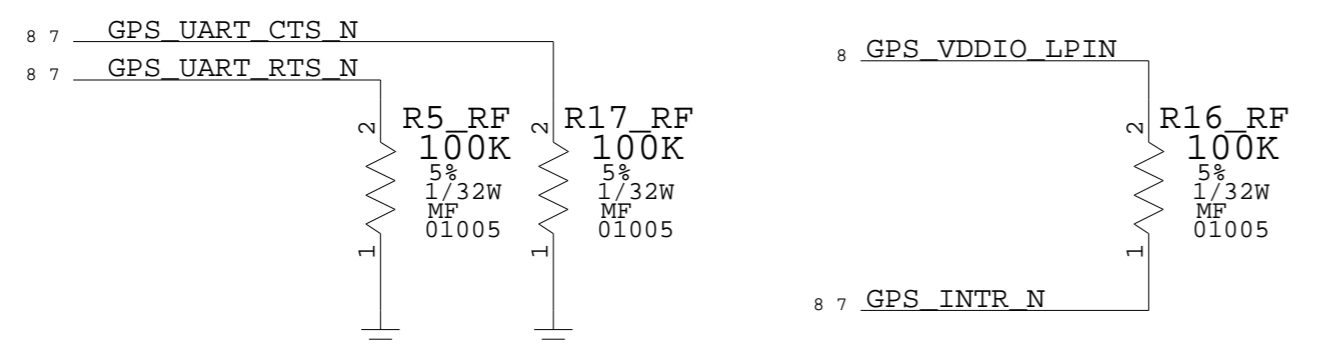
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APPLE INC.	SIZE D	DRAWING NUMBER 951-XXXX	REV. 01
	SCALE NONE	SHT 7 OF 9	

A-GPS



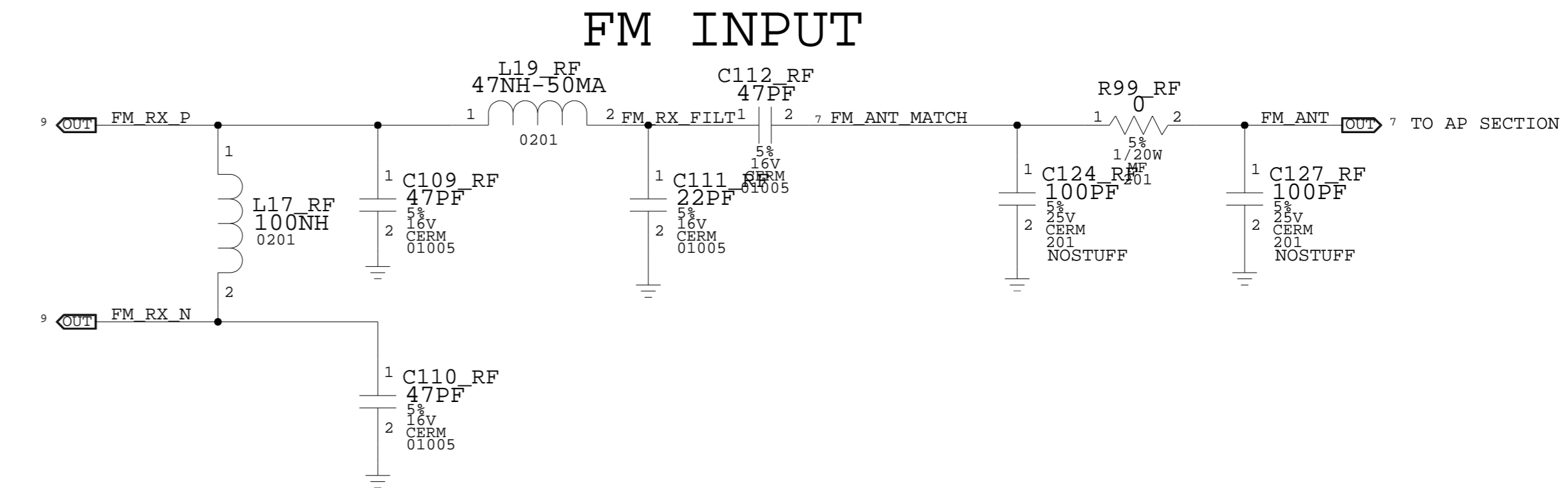
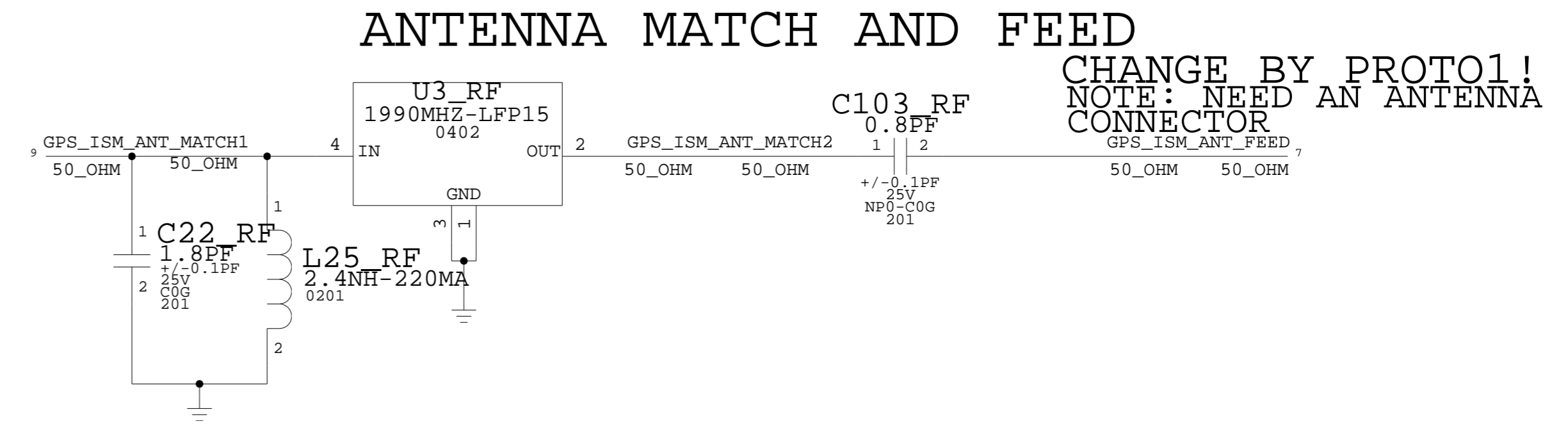
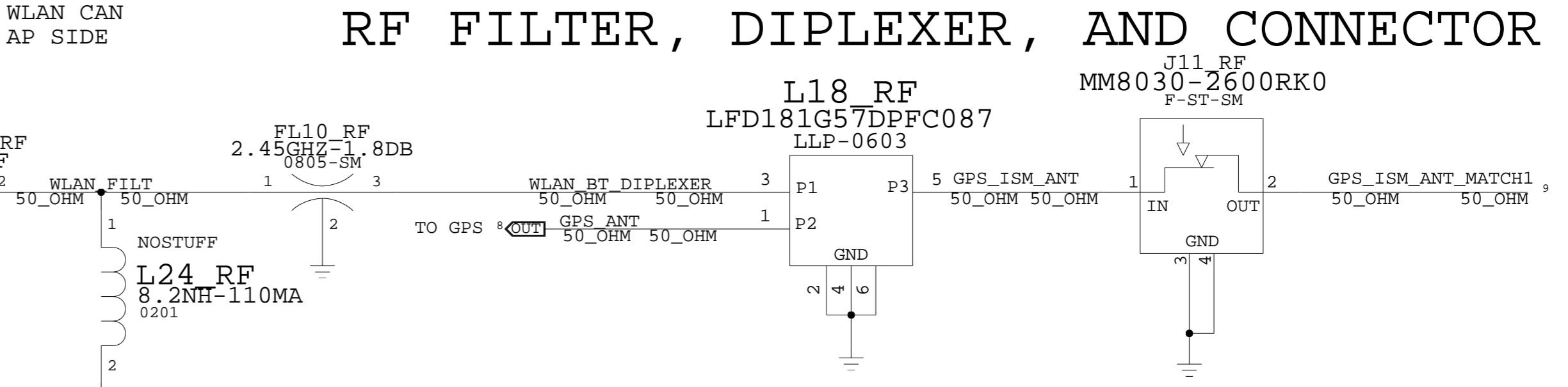
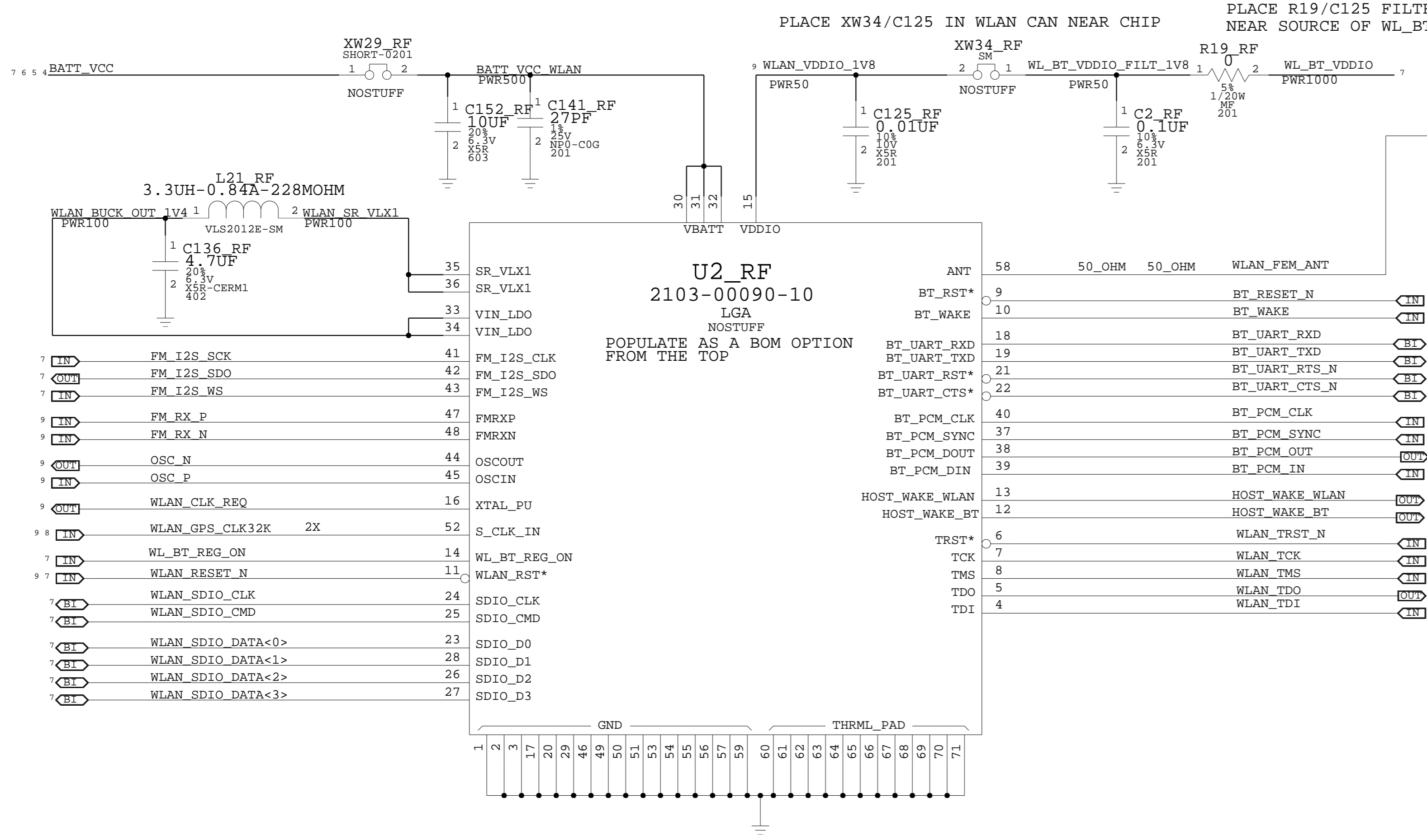
I2C SLAVE ADDRESS 0X12/0X13



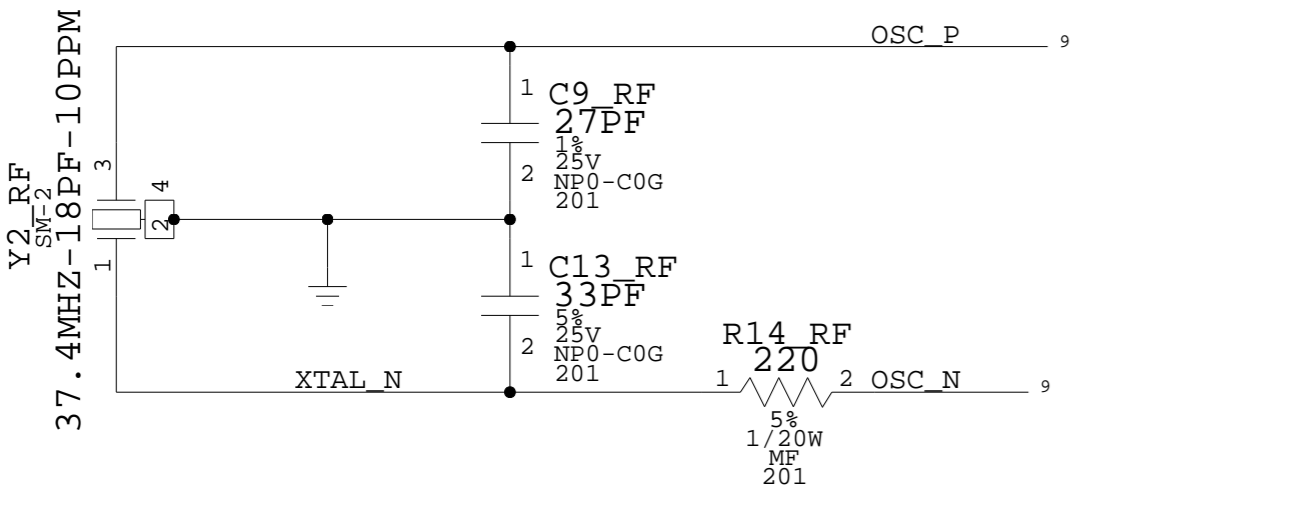
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SCALE		SHT	OF
		8	9

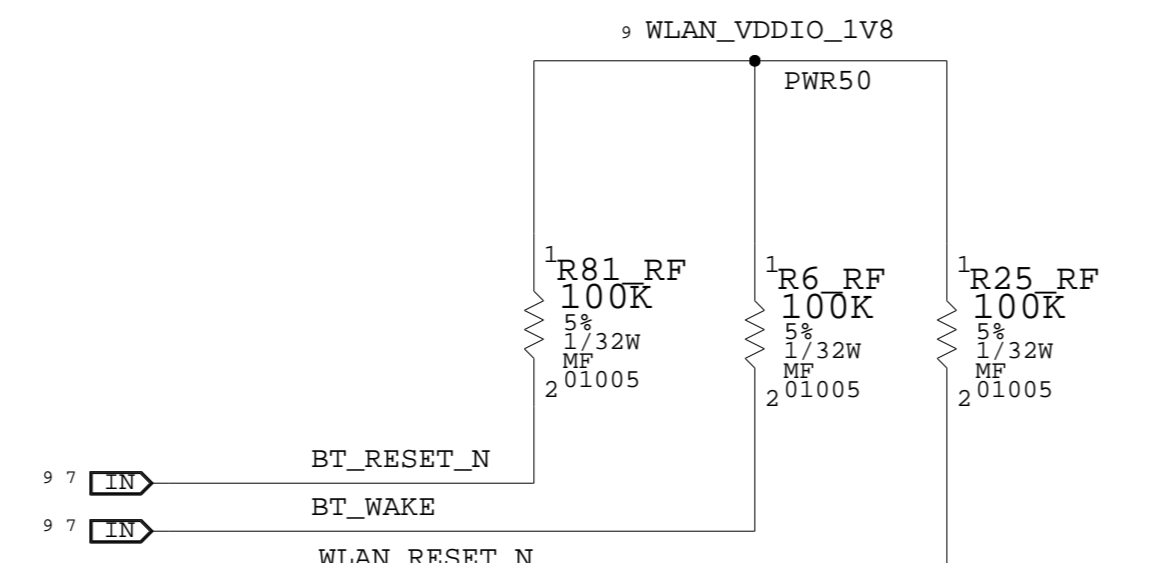
WLAN/BLUETOOTH/FM RADIO



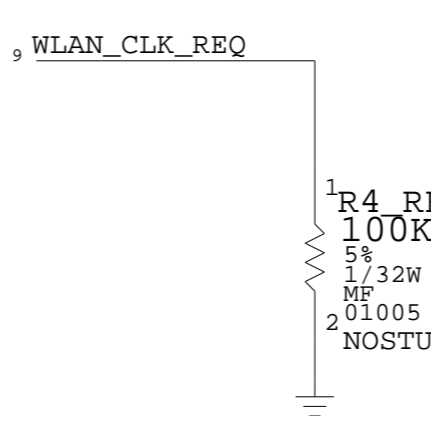
REFERENCE OSCILLATOR CRYSTAL



PULL UP RESISTORS



PULL DOWN RESISTORS



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	D	951-XXXX	01
SCALE	SHT	9 OF	9
NONE			