

# iPhone 4 Schematic



Jailbreak By OM Tesla  
Big Thanks to Weaver &  
130877 from Mobile-files!





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
A	0000880153	PRODUCTION RELEASED		2010-03-23

# N90 SINGLE\_BRD PVT

Fri Apr 16 15:07:25 2010

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## H3P ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S0123	339S0108	?	U52	H3P + ELFIDA 512MB
339S0126	339S0108	?	U52	H3P + HYNIX 512MB

## L9 (STROBE) ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S1173	152S0979	?	L9	

## VIDEO BUFFER ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S2684	353S2493	?	U9	INTERSIL BUFFER

## G3\_RF ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0371	197S0349	?	G3_RF	
197S0364	197S0349	?	G3_RF	

## FL1\_RF ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S0452	155S0435	?	FL1_RF	

## G2\_RF ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0334	197S0292	?	G2_RF	

## Y1\_RF ALTERNATES

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0329	197S0299	?	Y1_RF	
197S0369	197S0299	?	Y1_RF	

## Y2\_RF ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0342	197S0297	?	Y2_PMU	

## L2\_PMU ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S1172	152S0928	?	L2_PMU	

## L7\_PMU ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S1051	152S0927	?	L7_PMU	

## LCD BL DRIVER ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0769	376S0768	?	Q1_PMU	LCD BL FET DRIVER

## Y1\_PMU ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0329	197S0299	?	Y1_PMU	
197S0369	197S0299	?	Y1_PMU	

## PMU POWER IND ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
607-6810	607-6809	?	L1_L3_L16_L18_PMU	CYNTEC INDUCTORS
197S0369	197S0299	?	Y1_PMU	

## SCH & PCB BOM CALLOUT

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	?

## H3P BOM CALLOUT

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
339S0108	1	H3P WITH 512MB SAMSUNG DDR	U52	Y	?

## BB MEMORY BOM CALLOUT

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S2509	1	BB_MEM_PROGRAMMED	U4_RF	Y	BB_MEM

## N90 EEE BOM LABELS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-2029	1	EEE FOR 630-9941 (16G)	EEE_6LU	Y	GOOD_MURATA
825-2029	1	EEE FOR 639-0609 (32G)	EEE_D7F	Y	BETTER_MURATA
825-2029	1	EEE FOR 639-0607 (64G)	EEE_D7D	Y	BEST_MURATA
825-2029	1	EEE FOR 639-0648 (16G)	EEE_DFM	Y	GOOD_USI
825-2029	1	EEE FOR 639-0437 (32G)	EEE_BA0	Y	BETTER_USI
825-2029	1	EEE FOR 639-0608 (64G)	EEE_D7E	Y	BEST_USI

## NAND BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0682	1	16GB SAMSUNG 35NM FLASH WLG52	U1	Y	GOOD_MURATA
335S0665	1	32GB SAMSUNG 35NM FLASH TLGA52	U1	Y	BETTER_MURATA
335S0707	1	64GB SAMSUNG 35NM FLASH LGA52	U1	Y	BEST_MURATA
117S0161	2	64GB NAND CE7 CE8 JUMPERS	R101, R102	Y	BEST_MURATA
335S0682	1	16GB SAMSUNG 35NM FLASH WLG52	U1	Y	GOOD_USI
335S0665	1	32GB SAMSUNG 35NM FLASH TLGA52	U1	Y	BETTER_USI
335S0707	1	64GB SAMSUNG 35NM FLASH LGA52	U1	Y	BEST_USI
117S0161	2	64GB NAND CE7 CE8 JUMPERS	R101, R102	Y	BEST_USI

## WIFI/BT BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
339S0092	1	MURATA WIFI_BT MODULE	U2_RF	Y	GOOD_MURATA
117S0161	1	MURATA ID RESISTOR	R47_RF	Y	GOOD_MURATA
339S0092	1	MURATA WIFI_BT MODULE	U2_RF	Y	BETTER_MURATA
117S0161	1	MURATA ID RESISTOR	R47_RF	Y	BETTER_MURATA
339S0092	1	MURATA WIFI_BT MODULE	U2_RF	Y	BEST_MURATA
117S0161	1	MURATA ID RESISTOR	R47_RF	Y	BEST_MURATA
339S0091	1	USI WIFI_BT MODULE	U2_RF	Y	GOOD_USI
117S0161	1	USI ID RESISTOR	R46_RF	Y	GOOD_USI
339S0091	1	USI WIFI_BT MODULE	U2_RF	Y	BETTER_USI
117S0161	1	USI ID RESISTOR	R46_RF	Y	BETTER_USI
339S0091	1	USI WIFI_BT MODULE	U2_RF	Y	BEST_USI
117S0161	1	USI ID RESISTOR	R46_RF	Y	BEST_USI

## PMU POWER IND CALLOUT

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
607-6809	1	POWER INDUCTORS	L1_L3_L16_L18_PMU	Y	?

MCO 056-3008  
 BRD 820-2548  
 SCH 051-7921  
 BOM 639-0648 (16GB, USI)  
 BOM 630-9941 (16GB, MURATA)  
 BOM 639-0437 (32GB, USI)  
 BOM 639-0609 (32GB, MURATA)  
 BOM 639-0608 (64GB, USI)  
 BOM 639-0607 (64GB, MURATA)

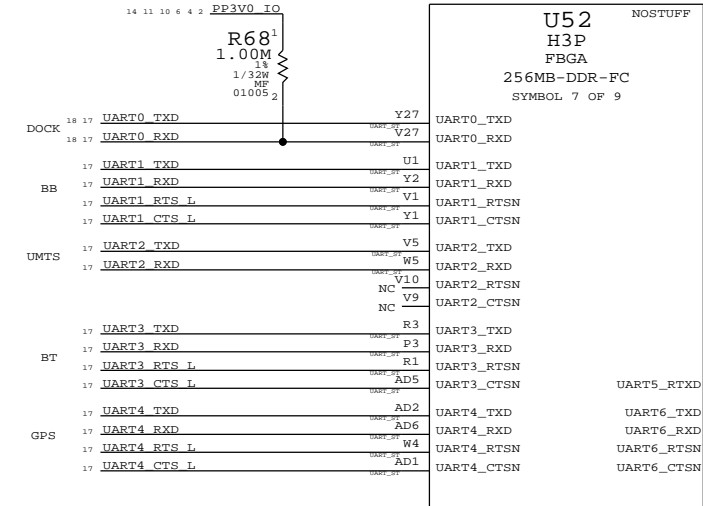
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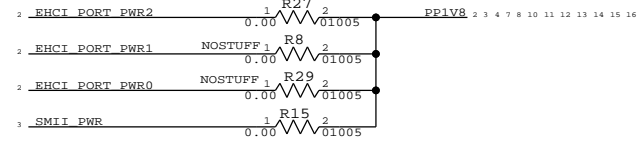
13 11	MENU KEY_BUFF_L	F6	GPIO0
18 16 13 11	HOLD KEY_L	B6	GPIO1
18 13 10	VOL_UP_L	B7	GPIO2
18 13 10	VOL_DWN_L	D9	GPIO3
18 13 11 10	RINGER_A	D5	GPIO4
12	GYRO_INT2	A6	GPIO5
17	WLAN_RESET_L	A7	GPIO6
17	BT_WAKE	B9	GPIO7
17	BT_RESET_L	E6	GPIO8
17 5	RADIO_ON	A9	GPIO9
17	BB_RESET_L	C5	GPIO10
17	BB_RESET_DET_L	C9	GPIO11
17	IPC_SRDY	C6	GPIO12
11	PMU_IRO_L	D6	GPIO13
9	CODEC_RESET_L	F5	GPIO14
	NC - DIF_MIC_SEL	E5	GPIO15
13	AUDIENCE_RESET_L	F9	GPIO16
9	JTAG_TRSTN_GPIO	F3	GPIO17
8	CODEC_INT_L	F4	GPIO18
11	KEEPACT	C10	GPIO19
15	GRAPE_RESET_L	F10	GPIO20
18 15	NIMBUS_INT_L	E10	GPIO21
15 13	LCD_RESET_L	A4	GPIO22
15	LCD_HFPA	B4	GPIO23
10	COMPASS_BRD_INT	E4	GPIO24
	NC - GPIO25_CONFIG1	E2	GPIO25
14	FORCE_DFU	D10	GPIO26
	NC - DFU_STATUS	E9	GPIO27
9	GPIO28_CONFIG2	L2	GPIO28
9	GPIO29_CONFIG3	G1	GPIO29
17	GPS_RESET_AP_L	G2	GPIO30
17	GPS_STANDBY_AP_L	F3	GPIO31
17	GPS_INTR_L	R3	GPIO32
12	GYRO_INT1	A3	GPIO33
16	CAM_VGA_SHUTDOWN_L	B2	GPIO34
		H2	GPIO35
12	ACCEL_INT1_L	L1	GPIO36
16	ALS_INT_L	H1	GPIO37
12	ACCEL_INT2_L	E1	GPIO38
6	VIDEO_AMP_EN_3V0	W24	GPIO_3V0
	NC - SEL_SECURE_BOOT_3V0	W25	GPIO_3V1

U52		NOSTUFF	
H3P		256MB-DDR-FC	
FBGA		SYMBOL 6 OF 9	
SENSOR_CLK	W20	CAM_CLK	14
SENSOR_RST	V21	CAM_5MP_SHUTDOWN	14
SPDIF	R18	NC	
TMR32_PWM0	AB25	L61HP_CLK_PWM	3 13
TMR32_PWM1	AB27	VIB_PWM_EN	11
TMR32_PWM2	AB26	CAM_STROBE_EN	12 14
SMII_CLKSEL0	K18	AP_PMU_EXTON	11 17
SMII_CLKSEL1	K19	GPS_SYNC	17
SMII_TXD	G18	A1_GND	4
SMII_RXD	J18	A27_GND	4
SMII_SYNC	G19	SPKR_AMP_EN	14
SMII_CLK	K21	AG1_GND	4
SMII_RRDY	K22	HP_GPIO_A	13
SMII_SRDY	K22	IPC_GPIO	17
SMII_WAKE	J19	AG27_GND	4
SMII_PWR	H19	SMII_PWR	3

TODO: DO WE NEED A SERIES R HERE (THERE IS ONE ON DEV2)



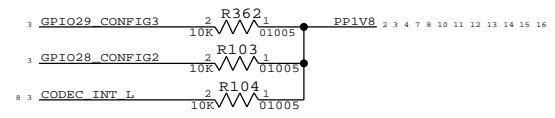
```
BOARD_REV[3:0] = {EHCI_PORT_PWR2, EHCI_PORT_PWR1, EHCI_PORT_PWR0, SMII_PWR}
1111 PROTO0
1110 PROTO1
1101 PROTO2
1100 EVT1
1011 EVT2
1010 EVT2_COMPBUTTON
1001 DVT <---SELECTED
```



```
BOARD_ID[0:2] = {SPI0_SCLK, SPI0_MOSI, SPI0_MISO}
000 N90_MLB <---SELECTED
100 N90_DEV
010 XXX_AP
110 XXX_DEV
001 XXX_AP
101 XXX_DEV
```

NOTE: NO COMPONENTS REQUIRED!

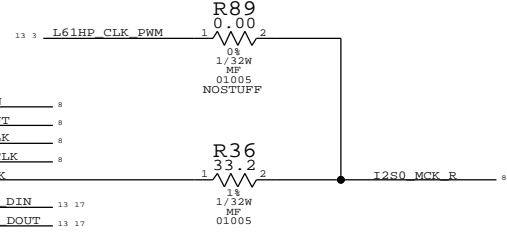
```
FLOAT=LOW, PULLUP=HIGH
BOOT_CONFIG[3:0] = {GPIO29_CONFIG3, GPIO28_CONFIG2, GPIO25_CONFIG1, CODEC_INT_L}
0000 SPI0
0001 SPI3
0010 SPI0_W/TEST
0011 SPI3_W/TEST
0100 FMIO_2CS
0101 FMIO_4CS
0110 FMIO_4CS_W/TEST
0111 RESERVED
1000 FM11_2CS
1001 FM11_4CS
1010 FM11_4CS_W/TEST
1100 FMIO1_2/2_CS
1101 FMIO1_4/4_CS <---SELECTED
1110 FMIO1_4/4_CS_W/TEST
1111 RESERVED
```



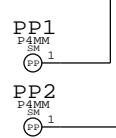
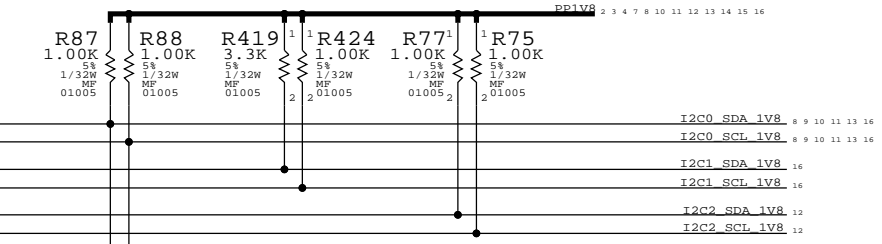
17	WLAN_SDIO_DATA<3:0>	J24	SDIO0_DATA0
1		J25	SDIO0_DATA1
2		J26	SDIO0_DATA2
3		J27	SDIO0_DATA3
17	WLAN_SDIO_CMD	K25	SDIO0_CMD
17	WLAN_SDIO_CLK	J21	SDIO0_CLK
		V4	SPI0_SCLK
		W7	SPI0_MOSI
		V6	SPI0_MISO
		W3	SPI0_SSIN
18 15	SPI1_SCLK	SPI1_ST V3	SPI1_SCLK
15	SPI1_MOSI	SPI1_ST W8	SPI1_MOSI
15	SPI1_MISO	SPI1_ST U2	SPI1_MISO
16	SPI1_CS_L	SPI1_ST V2	SPI1_SSIN
17	SPI2_SCLK	SPI1_ST AA2	SPI2_SCLK
17	SPI2_MOSI	SPI1_ST AA1	SPI2_MOSI
17	SPI2_MISO	SPI1_ST V7	SPI2_MISO
17	SPI2_MRDY	SPI1_ST W6	SPI2_SSIN

U52		NOSTUFF	
H3P		256MB-DDR-FC	
FBGA		SYMBOL 5 OF 9	
I2S0_DIN	W21	I2S0_DIN	8
I2S0_DOUT	W22	I2S0_DOUT	8
I2S0_BCLK	V23	I2S0_BCLK	8
I2S0_LRCK	V18	I2S0_LRCLK	8
I2S0_MCK	V20	I2S0_MCK	8
I2S1_DIN	V24	I2S1_DIN	13 17
I2S1_DOUT	W19	I2S1_DOUT	13 17
I2S1_BCLK	V25	I2S1_BCLK	13 17
I2S1_LRCK	V15	I2S1_LRCLK	13 17
I2S1_MCK	AB22	I2S1_MCK	8
I2S2_DIN	R17	I2S2_DIN	13 17
I2S2_DOUT	R16	I2S2_DOUT	13 17
I2S2_BCLK	V26	I2S2_BCLK	13 17
I2S2_LRCK	AB23	I2S2_LRCLK	13 17
I2S2_MCK	W23	I2S2_MCLK	13
I2C0_SDA	AB6	I2C0_SDA_I1V8	8 9 10 11 13 16
I2C0_SCL	AB5	I2C0_SCL_I1V8	8 9 10 11 13 16
I2C1_SDA	AB4	I2C1_SDA_I1V8	16
I2C1_SCL	AB3	I2C1_SCL_I1V8	16
I2C2_SDA	AD15	I2C2_SDA_I1V8	12
I2C2_SCL	AC15	I2C2_SCL_I1V8	12

\*\* BACKUP IN CASE I2S0\_MCK DOES NOT WORK



3K3 ON R419 REDUCES CAMERA NOISE



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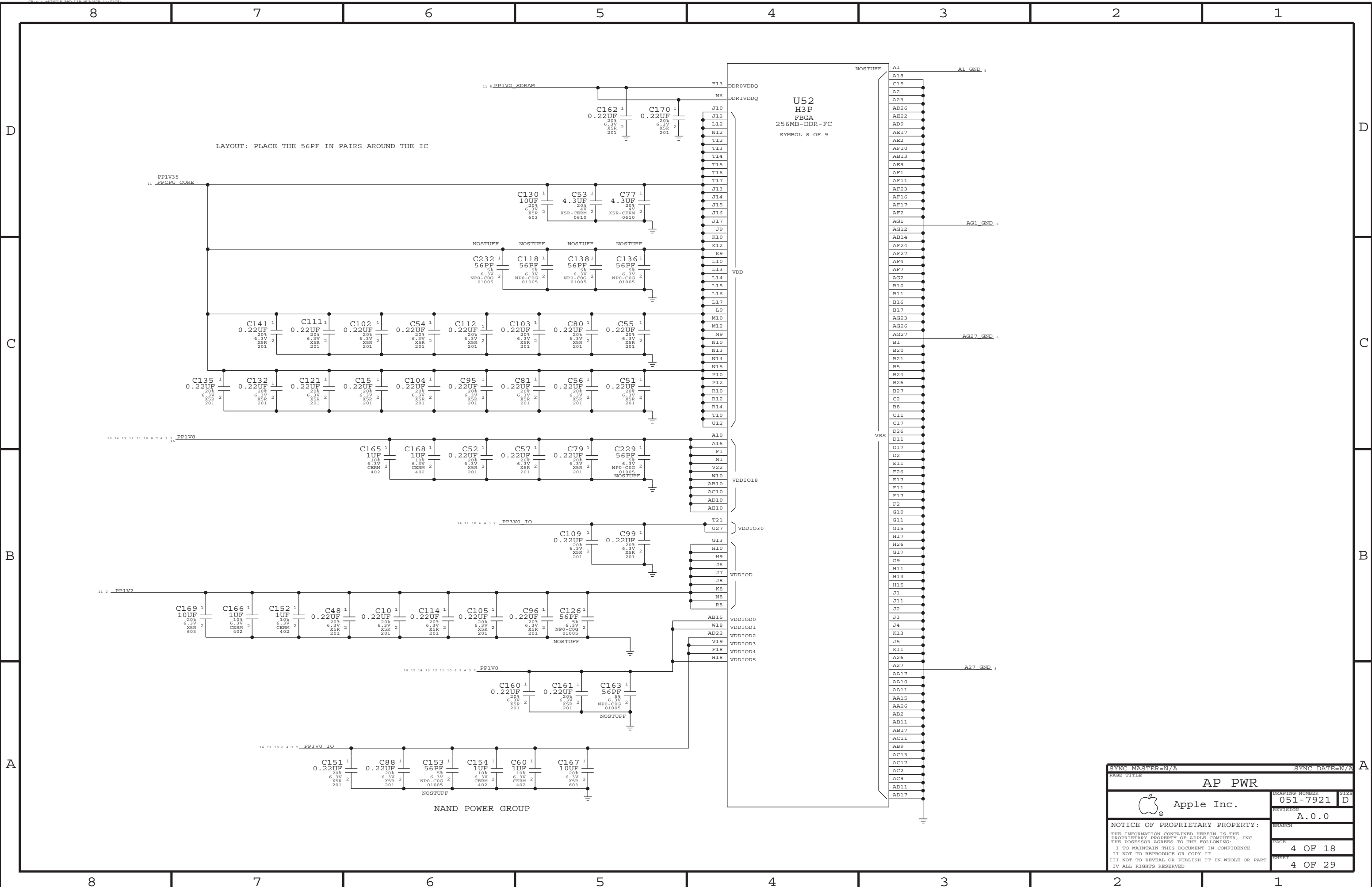
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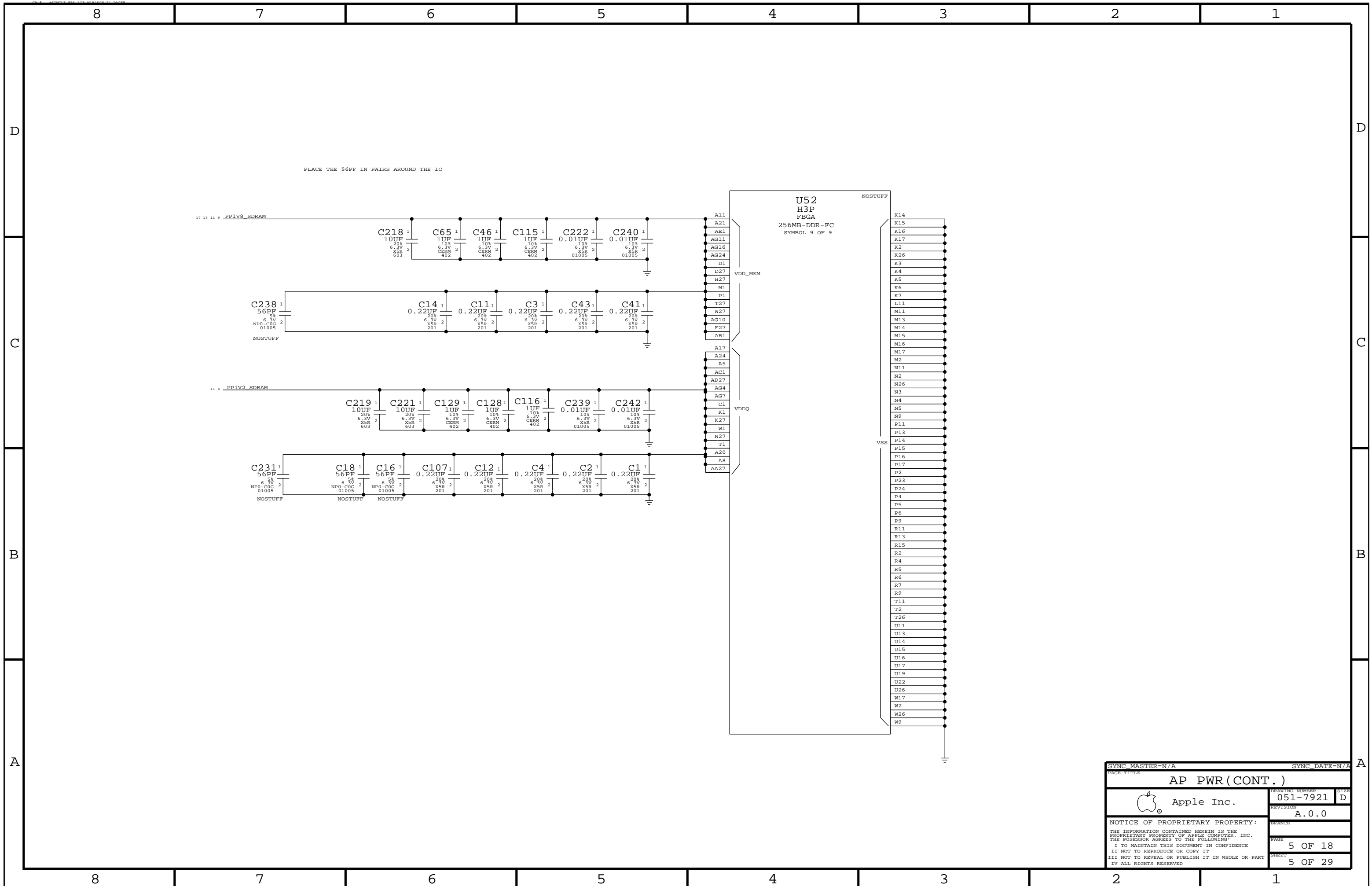
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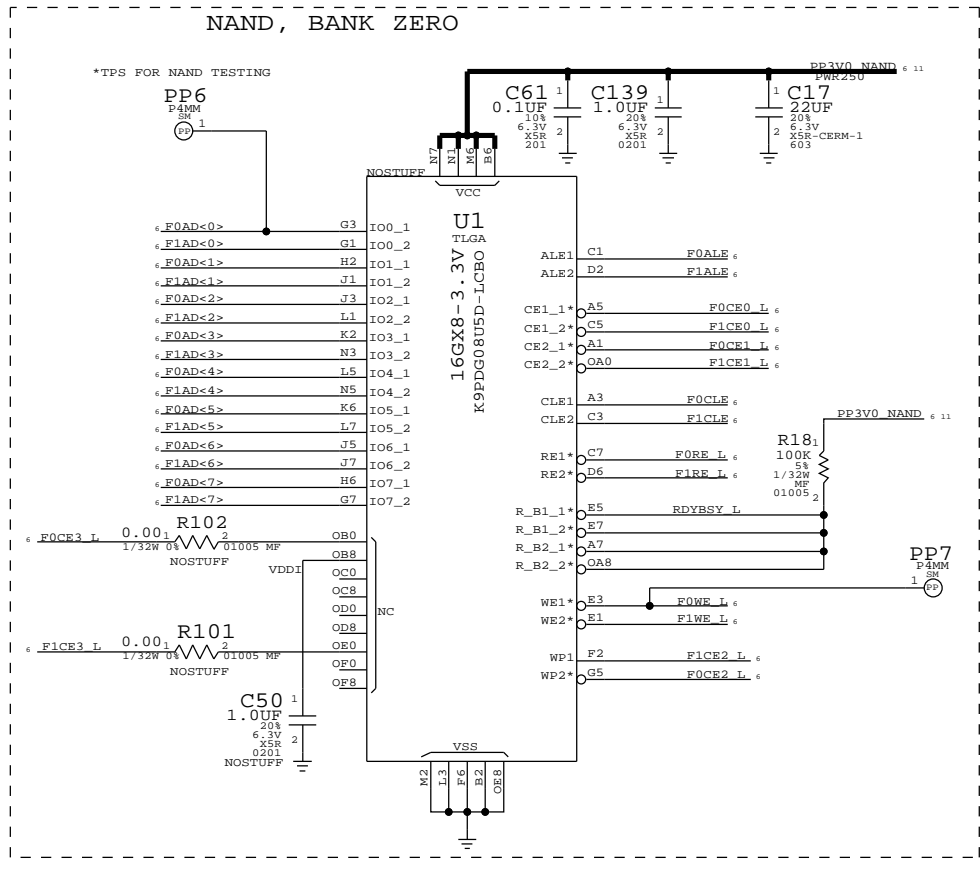
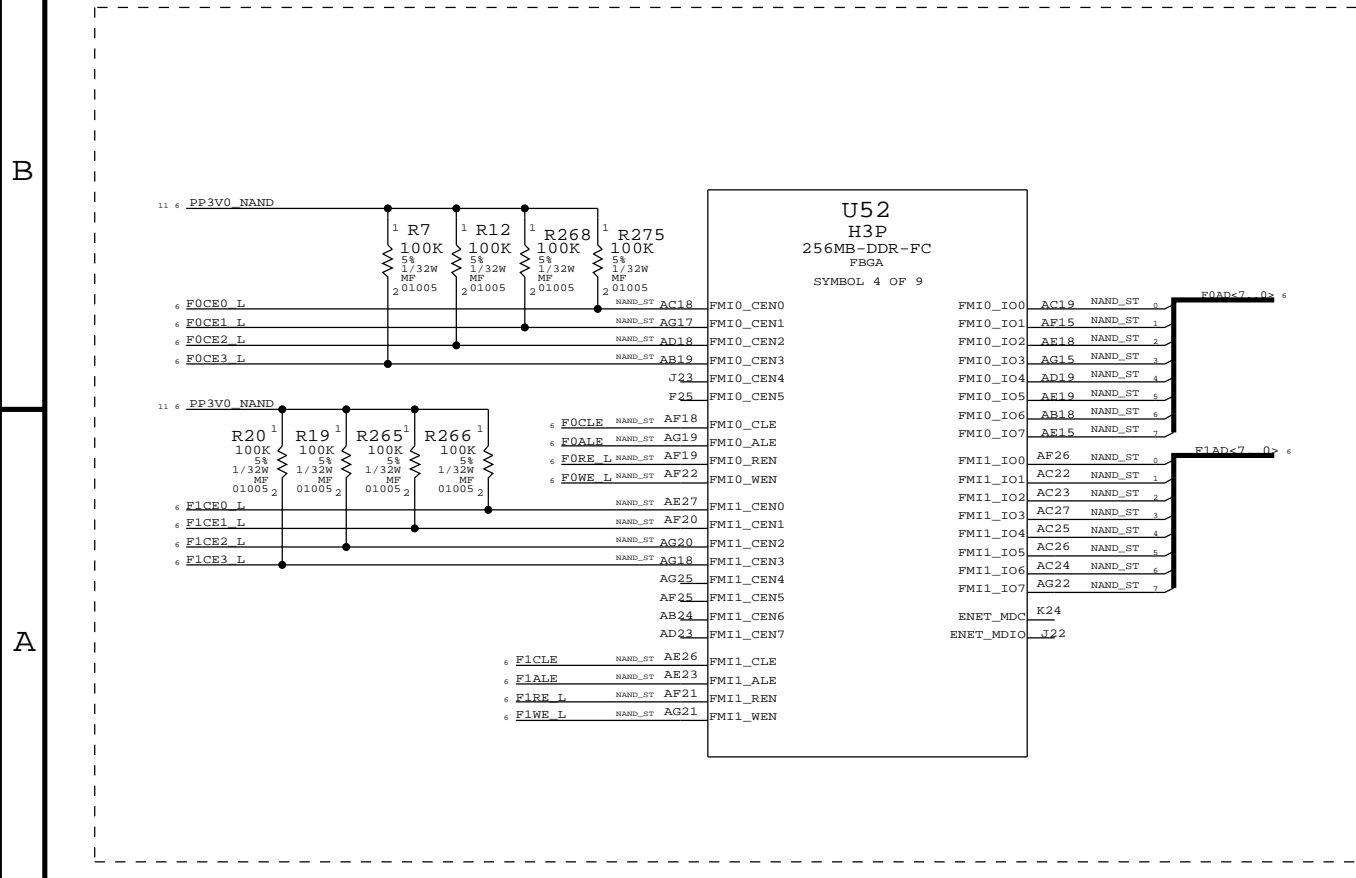
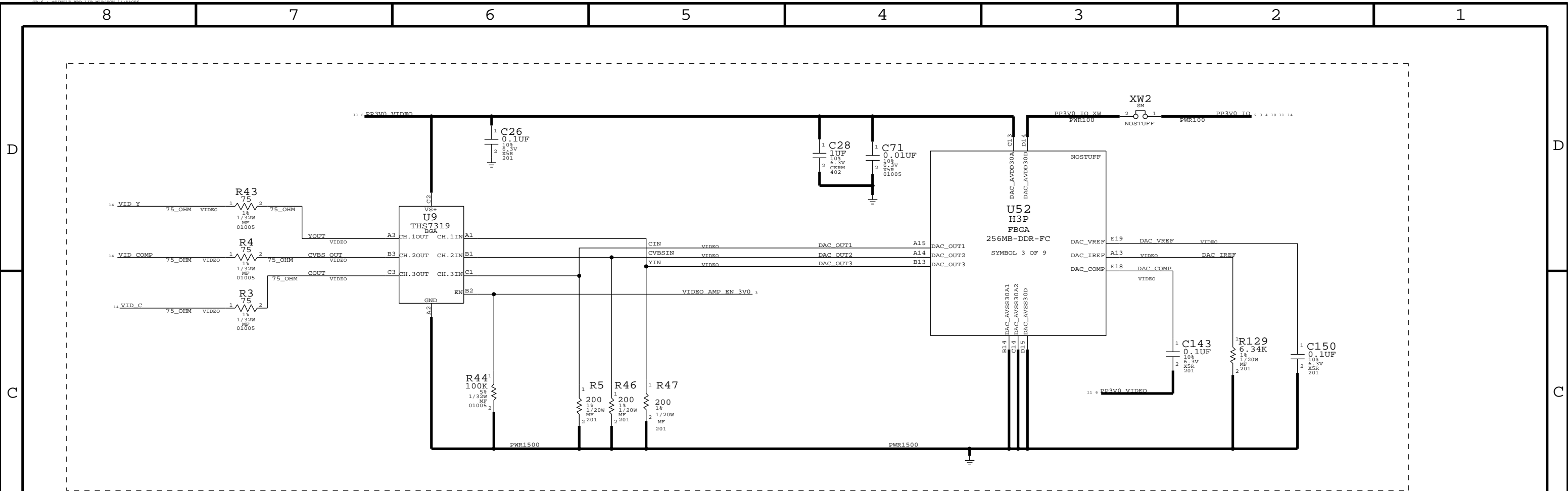


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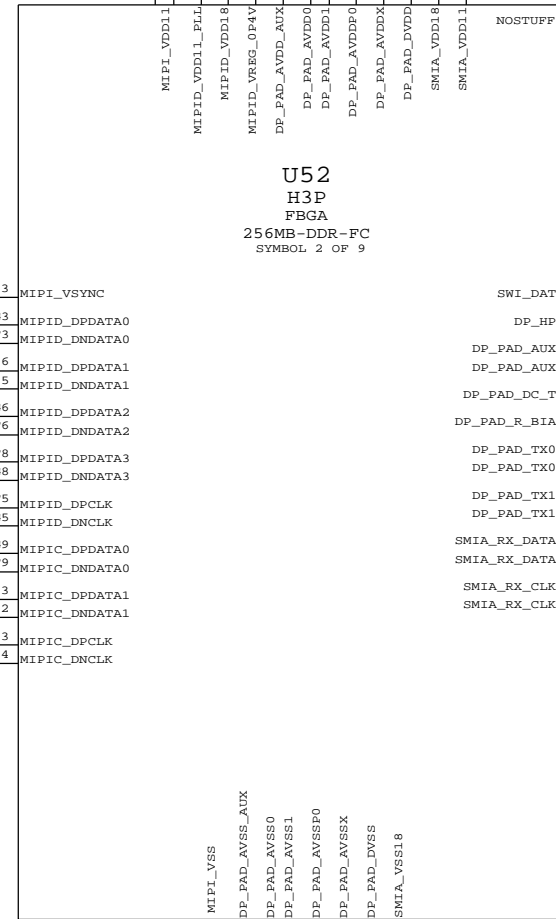
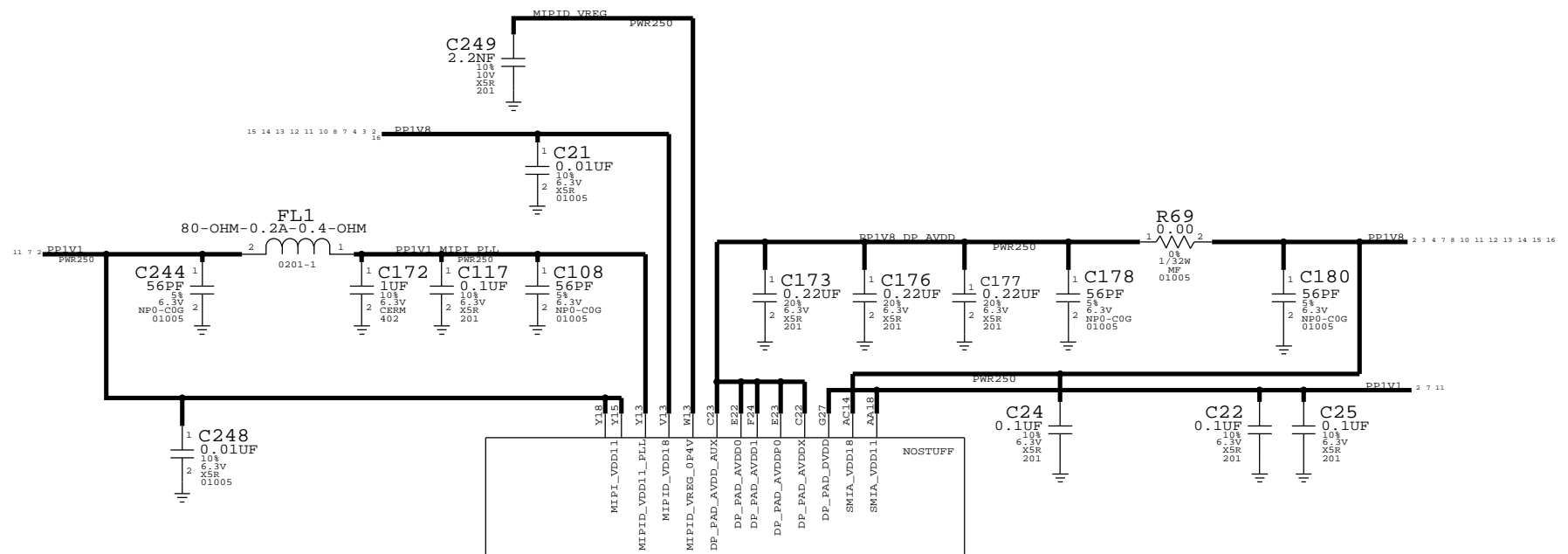
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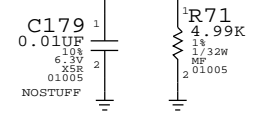
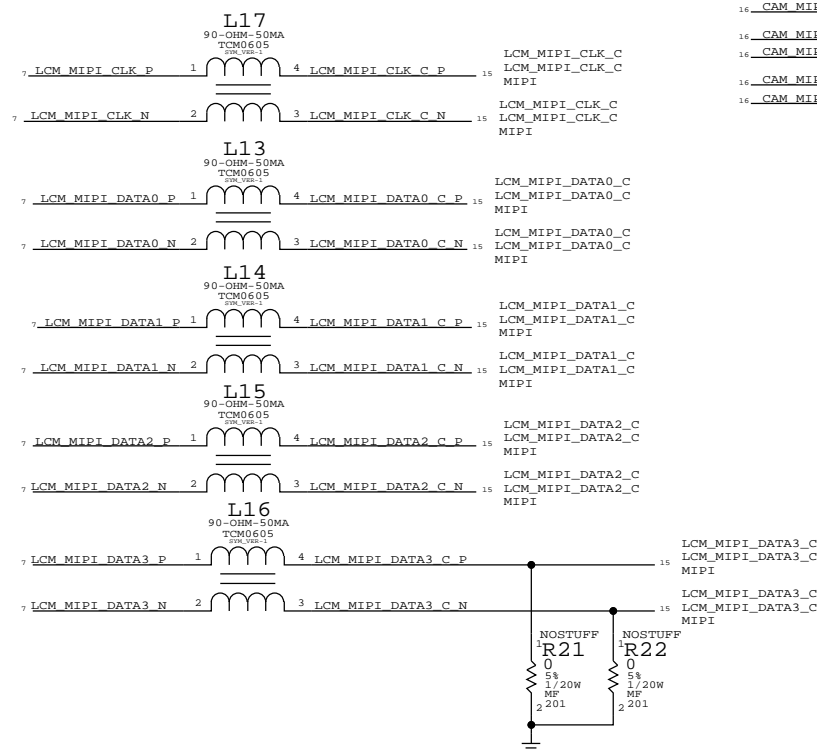
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A



NC	AG13	MIPI_VSYNC	SWI_DATA	AA19	SWI_BLCCTRL	11
7	LCM_MIPI_DATA0_P	LCM_MIPI_DATA0	LCM_MIPI_DATA0	MIPI	AG3	MIPI_DPDATA0
7	LCM_MIPI_DATA0_N	LCM_MIPI_DATA0	LCM_MIPI_DATA0	MIPI	AF3	MIPI_DNDATA0
7	LCM_MIPI_DATA1_P	LCM_MIPI_DATA1	LCM_MIPI_DATA1	MIPI	AE6	MIPI_DPDATA1
7	LCM_MIPI_DATA1_N	LCM_MIPI_DATA1	LCM_MIPI_DATA1	MIPI	AE5	MIPI_DNDATA1
7	LCM_MIPI_DATA2_P	LCM_MIPI_DATA2	LCM_MIPI_DATA2	MIPI	AG6	MIPI_DPDATA2
7	LCM_MIPI_DATA2_N	LCM_MIPI_DATA2	LCM_MIPI_DATA2	MIPI	AF6	MIPI_DNDATA2
7	LCM_MIPI_DATA3_P	LCM_MIPI_DATA3	LCM_MIPI_DATA3	MIPI	AF8	MIPI_DPDATA3
7	LCM_MIPI_DATA3_N	LCM_MIPI_DATA3	LCM_MIPI_DATA3	MIPI	AG8	MIPI_DNDATA3
7	LCM_MIPI_CLK_P	LCM_MIPI_CLK	LCM_MIPI_CLK	MIPI	AF5	MIPI_DPCLK
7	LCM_MIPI_CLK_N	LCM_MIPI_CLK	LCM_MIPI_CLK	MIPI	AG5	MIPI_DNCLK
16	CAM_MIPI_DATA0_P	CAM_MIPI_DATA0	CAM_MIPI_DATA0	MIPI	AG9	MIPI_DPDATA0
16	CAM_MIPI_DATA0_N	CAM_MIPI_DATA0	CAM_MIPI_DATA0	MIPI	AF9	MIPI_DNDATA0
16	CAM_MIPI_DATA1_P	CAM_MIPI_DATA1	CAM_MIPI_DATA1	MIPI	AF13	MIPI_DPDATA1
16	CAM_MIPI_DATA1_N	CAM_MIPI_DATA1	CAM_MIPI_DATA1	MIPI	AF12	MIPI_DNDATA1
16	CAM_MIPI_CLK_P	CAM_MIPI_CLK	CAM_MIPI_CLK	MIPI	AE13	MIPI_DPCLK
16	CAM_MIPI_CLK_N	CAM_MIPI_CLK	CAM_MIPI_CLK	MIPI	AE14	MIPI_DNCLK

DP_PAD_AUXN	E26	DPORT	DP_AUX	DP_AUX	DP_AUX_P	14
DP_PAD_AUXN	E26	DPORT	DP_AUX	DP_AUX	DP_AUX_N	14
DP_PAD_DC_TP	A22	NC				
DP_PAD_R_BIAS	E25	DP_R_BIAS				
DP_PAD_TX0+	C27	DPORT	DP_DATA0	DPORT_D0_ST	DP_DATA0_P	14
DP_PAD_TX0-	C26	DPORT	DP_DATA0	DPORT_D0_ST	DP_DATA0_N	14
DP_PAD_TX1+	A25	DPORT	DP_DATA1	DPORT_D1_ST	DP_DATA1_P	14
DP_PAD_TX1-	B25	DPORT	DP_DATA1	DPORT_D1_ST	DP_DATA1_N	14
SMIA_RX_DATA+	AD14	SMIA	SMIA_D	SMIA_D_ST	SMIA_DATA_P	16
SMIA_RX_DATA-	AD13	SMIA	SMIA_D	SMIA_D_ST	SMIA_DATA_N	16
SMIA_RX_CLK+	AF14	SMIA	SMIA_CLK	SMIA_CLK_ST	SMIA_CLK_P	16
SMIA_RX_CLK-	AG14	SMIA	SMIA_CLK	SMIA_CLK_ST	SMIA_CLK_N	16



DRAWING NUMBER		051-7921	SIZE	D
REVISION		A.0.0		
PAGE		7 OF 18		
SHEET		7 OF 29		

SYNC MASTER=N/A SYNC DATE=N/A

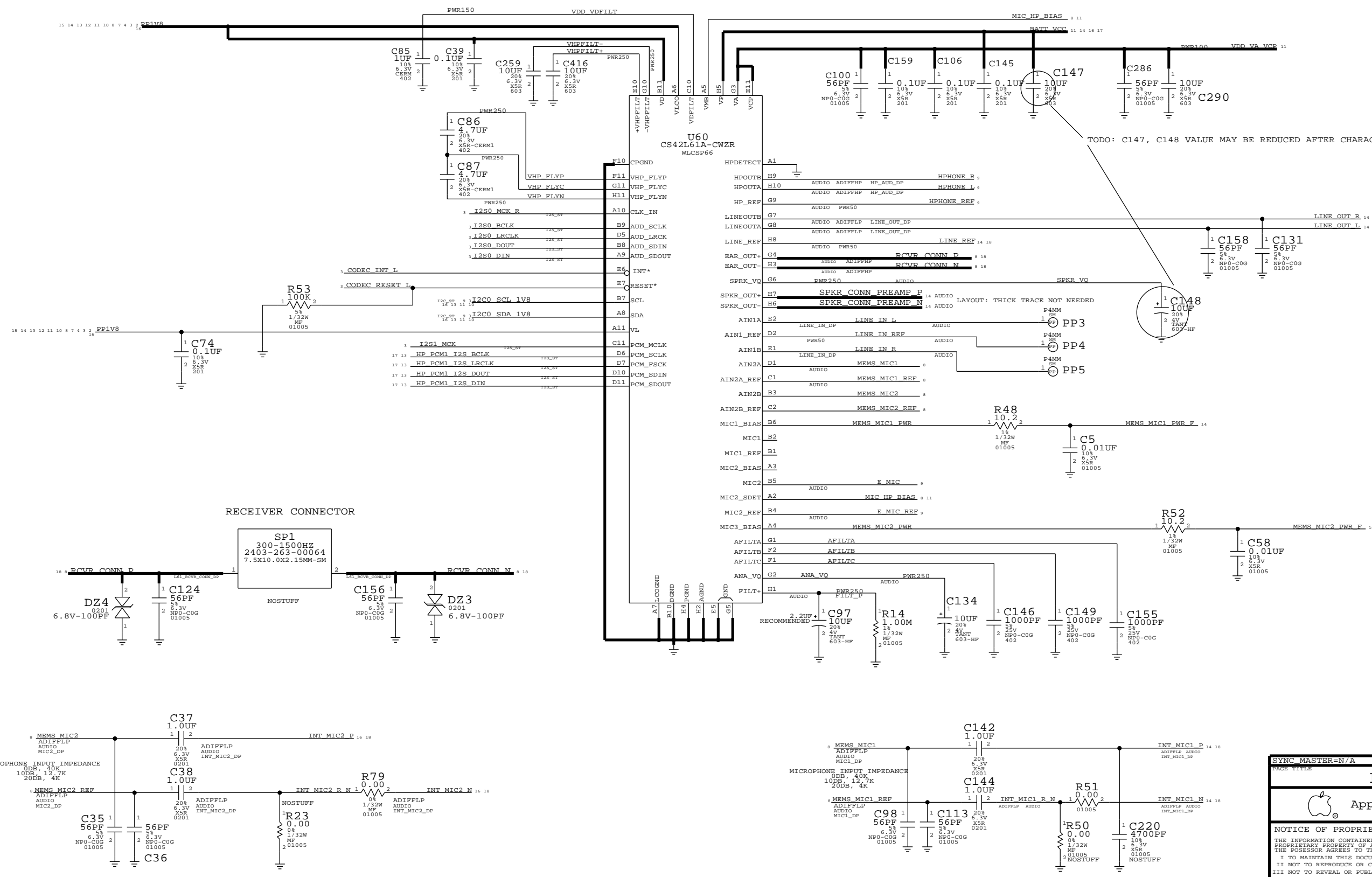
**H3 MIPI, DPORT, SMIA**

Apple Inc.

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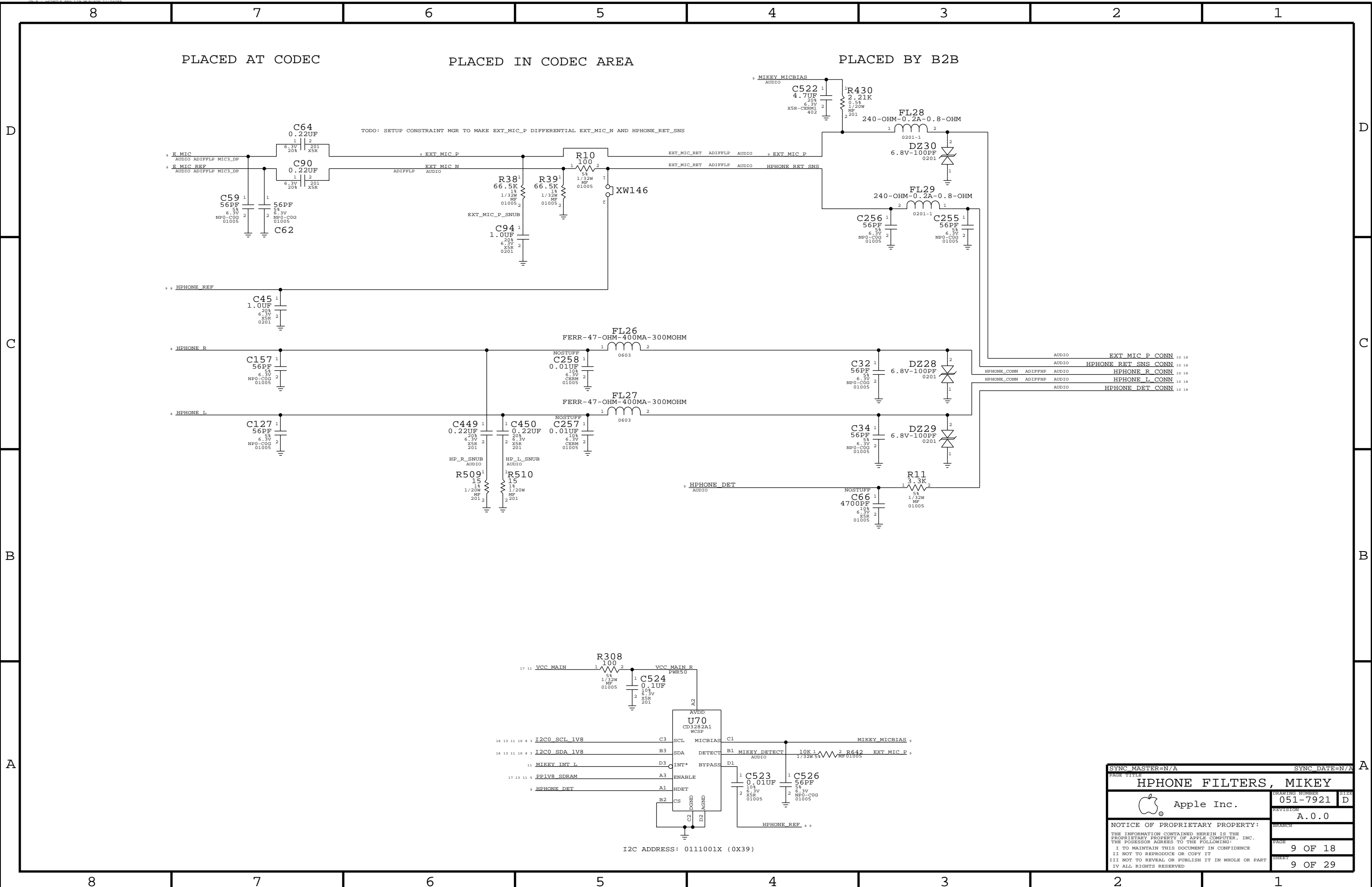
# L61 AUDIO INTERFACE

I2C ADDRESS: 1001010X



TODO: C147, C148 VALUE MAY BE REDUCED AFTER CHARACTERIZATION

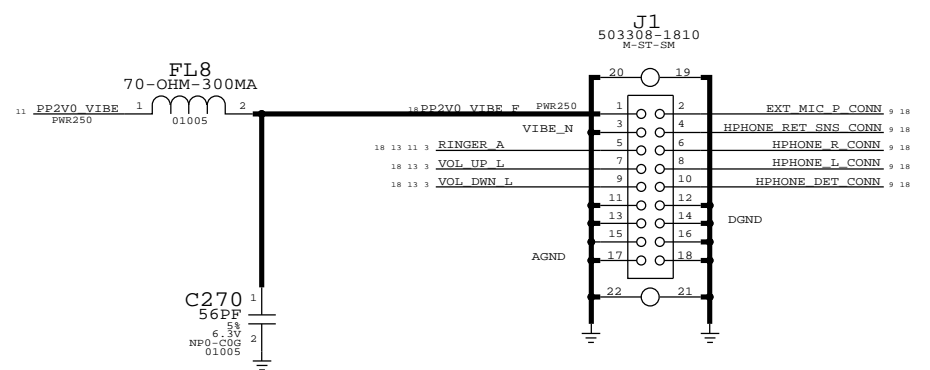
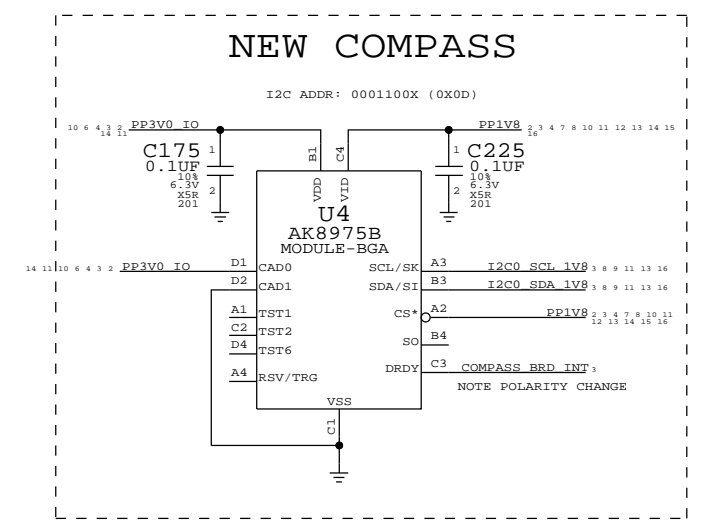
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<b>L61 CODEC</b>			
Apple Inc.		DRAWING NUMBER	051-7921
		REVISION	A.0.0
		PAGE	8 OF 18
		SHEET	8 OF 29
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REVISION		A.0.0	BRANCH	
PAGE		9 OF 18	SHEET	
PAGE		9 OF 29	SHEET	

SYNC MASTER=N/A      SYNC DATE=N/A  
**HPHONE FILTERS, MIKEY**  
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I2C ADDRESS: 0111001X (0X39)



BUTTON FLEX CONNECTOR

D  
C  
B  
A

D  
C  
B  
A

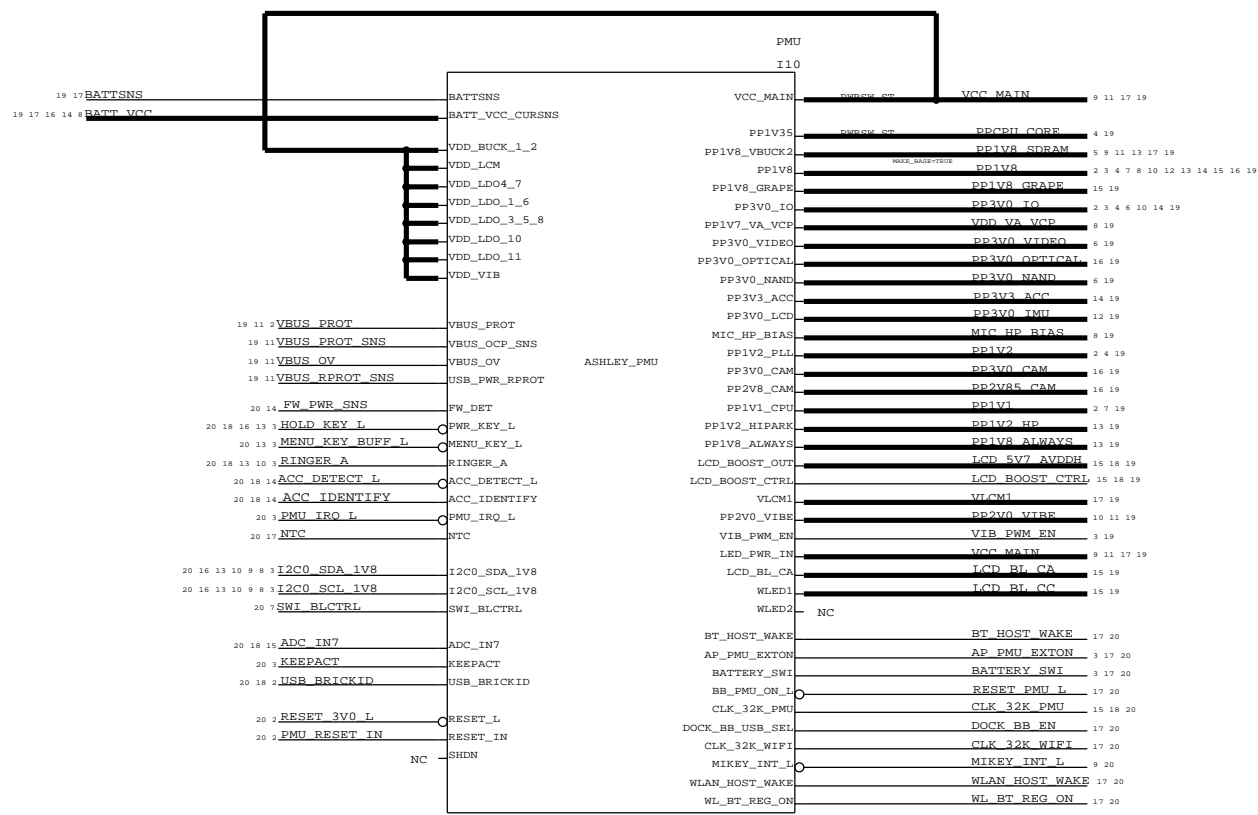
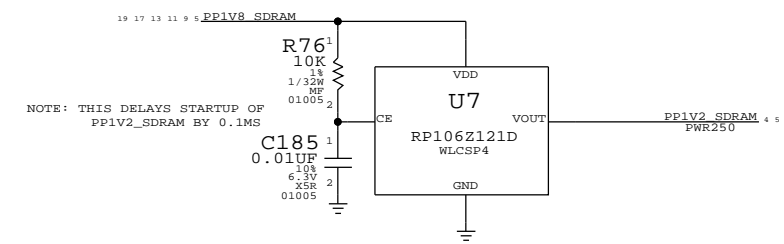
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PAGE TITLE: <b>BUTTON B2B, COMPASS</b>			
DRAWING NUMBER: 051-7921		SIZE: D	
REVISION: A.0.0		BRANCH:	
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PAGE: 10 OF 18		SHEET: 10 OF 29	

D

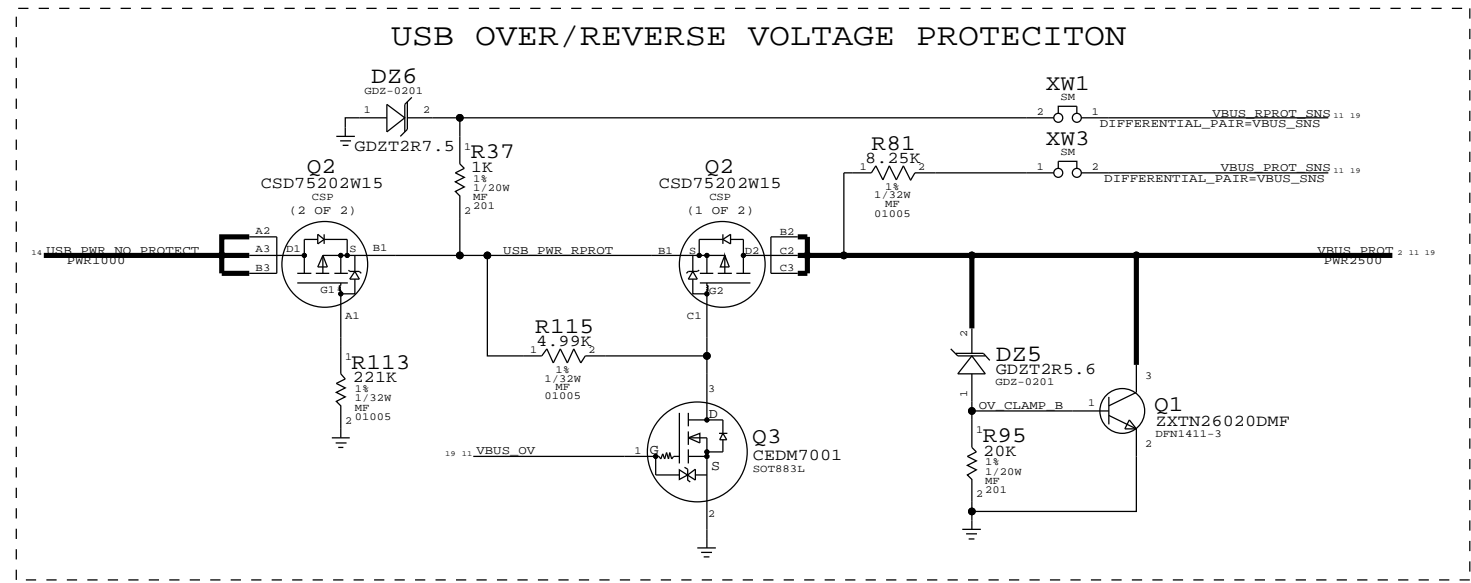
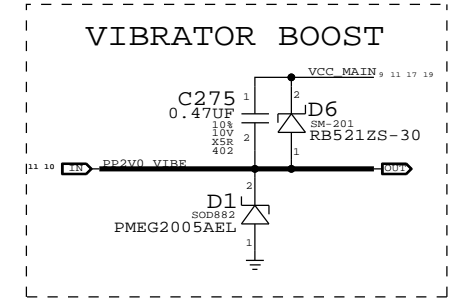
C

B

A



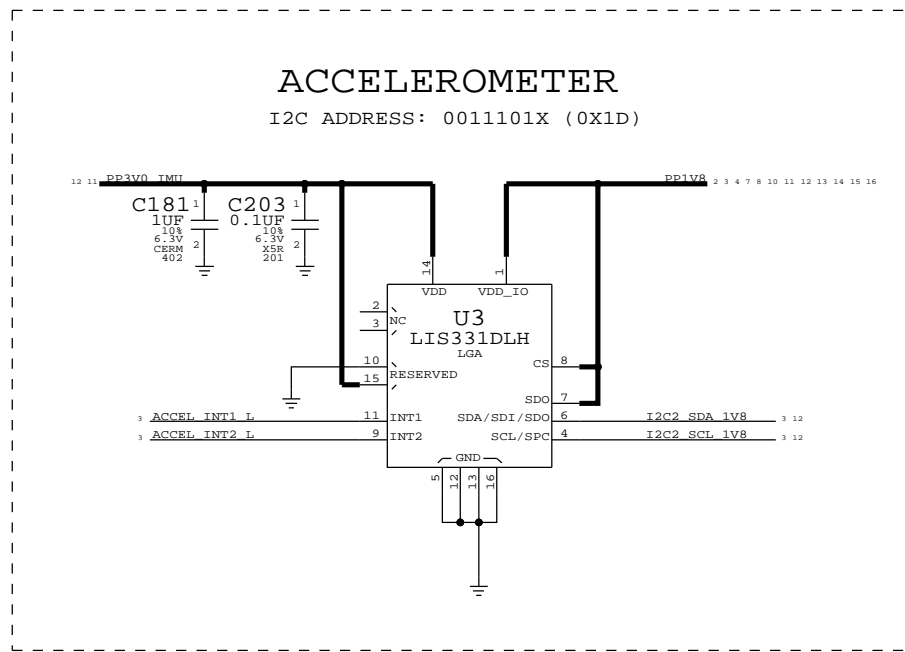
LOCATED ON PP 19 - 20



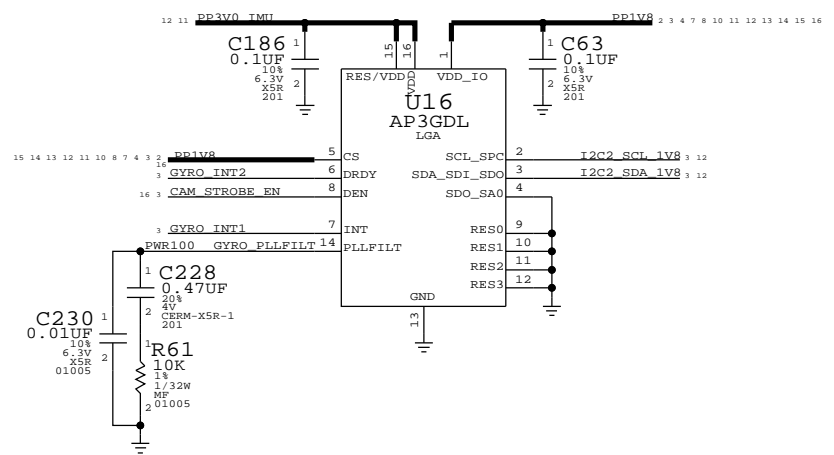
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<b>ASHLEY PMU</b>			
DRAWING NUMBER		SIZE	
051-7921		D	
REVISION		REVISION	
A.0.0		A.0.0	
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11 OF 18		11 OF 18	
SHEET		SHEET	
11 OF 29		11 OF 29	

### ACCELEROMETER

I2C ADDRESS: 0011101X (0X1D)



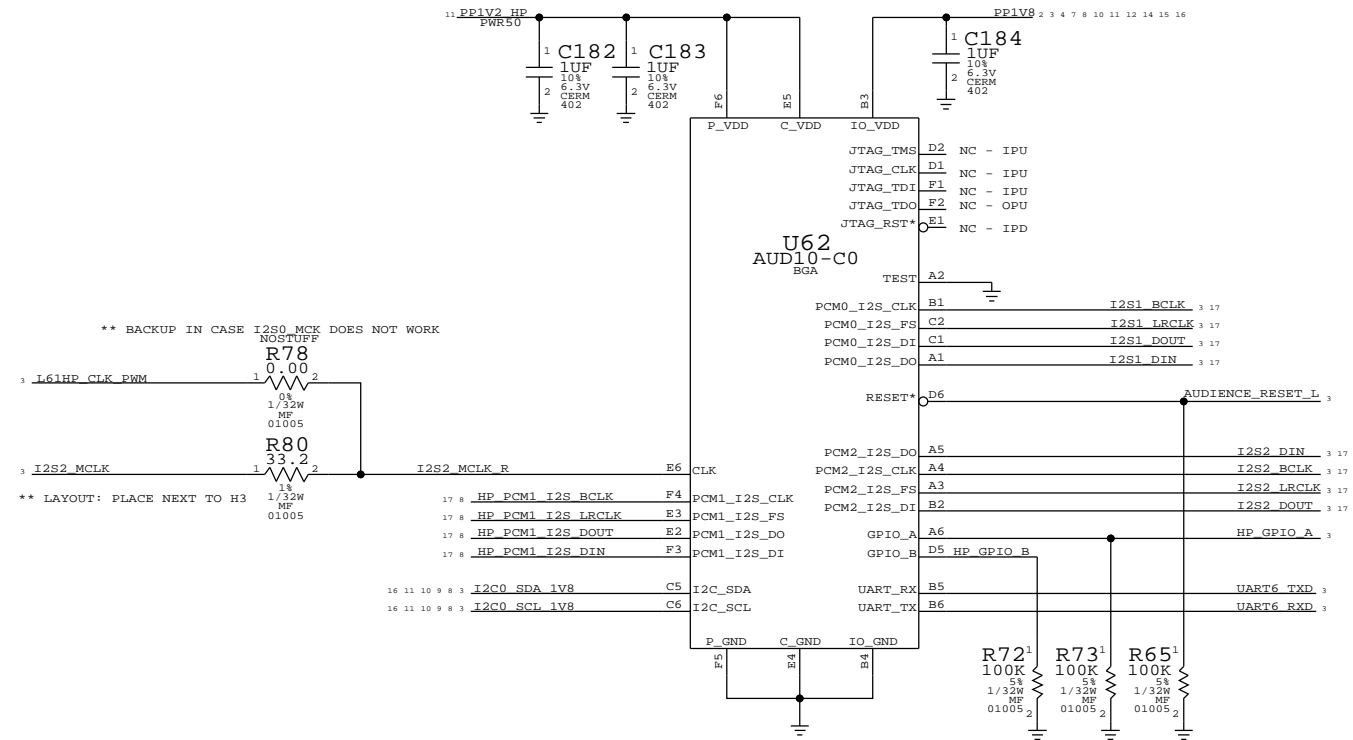
### GYRO



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PAGE TITLE			
<b>ACCEL, GYRO</b>			
DRAWING NUMBER		SIZE	
051-7921		D	
REVISION		BRANCH	
A.0.0			
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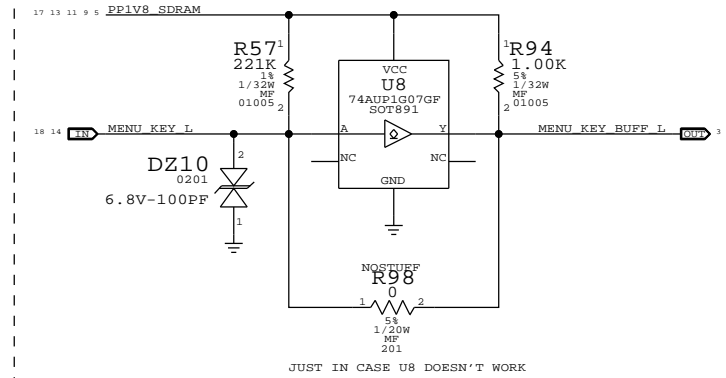
# HIGHLAND PARK

I2C ADDRESS: 0111110X (0X3E)

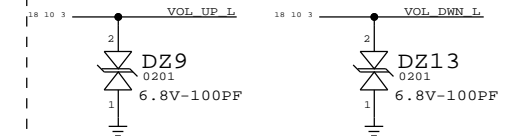


## MENU KEY PU, ESD AND BUFFER

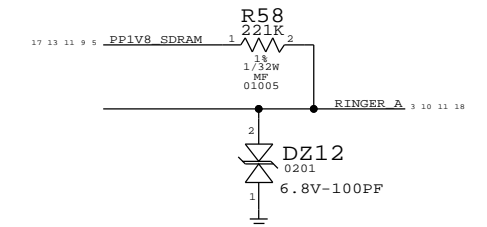
BUFFER IS NEEDED BECAUSE OF IT'S LOW V<sub>IH</sub> AND LEAKAGE  
IT MUST BE OPEN DRAIN SO THAT WHEN PPIV8\_SDRAM IS DOWN,  
MENU\_KEY\_BUFF\_L IS PULLED LOW THROUGH R94 AND INTERNAL  
PULLDOWN IN ASHLEY.



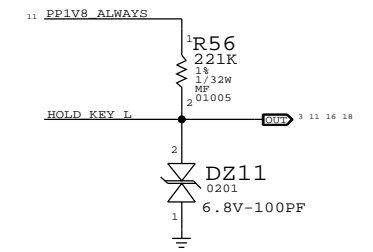
## VOLUME SWITCH ESD



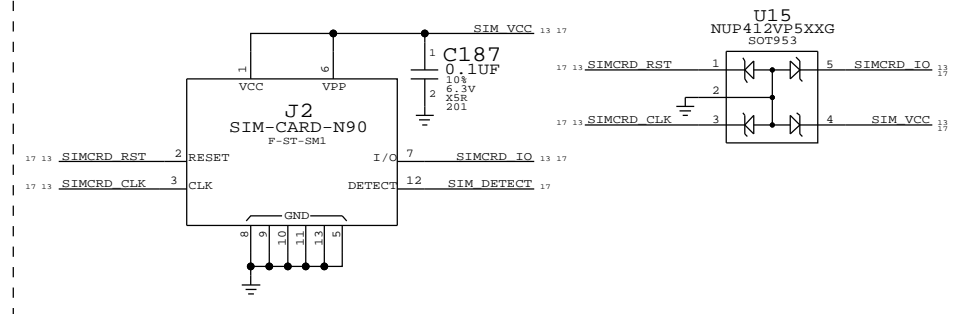
## RINGER A/B SWITCH PU AND ESD



## POWER/HOLD KEY PU AND ESD



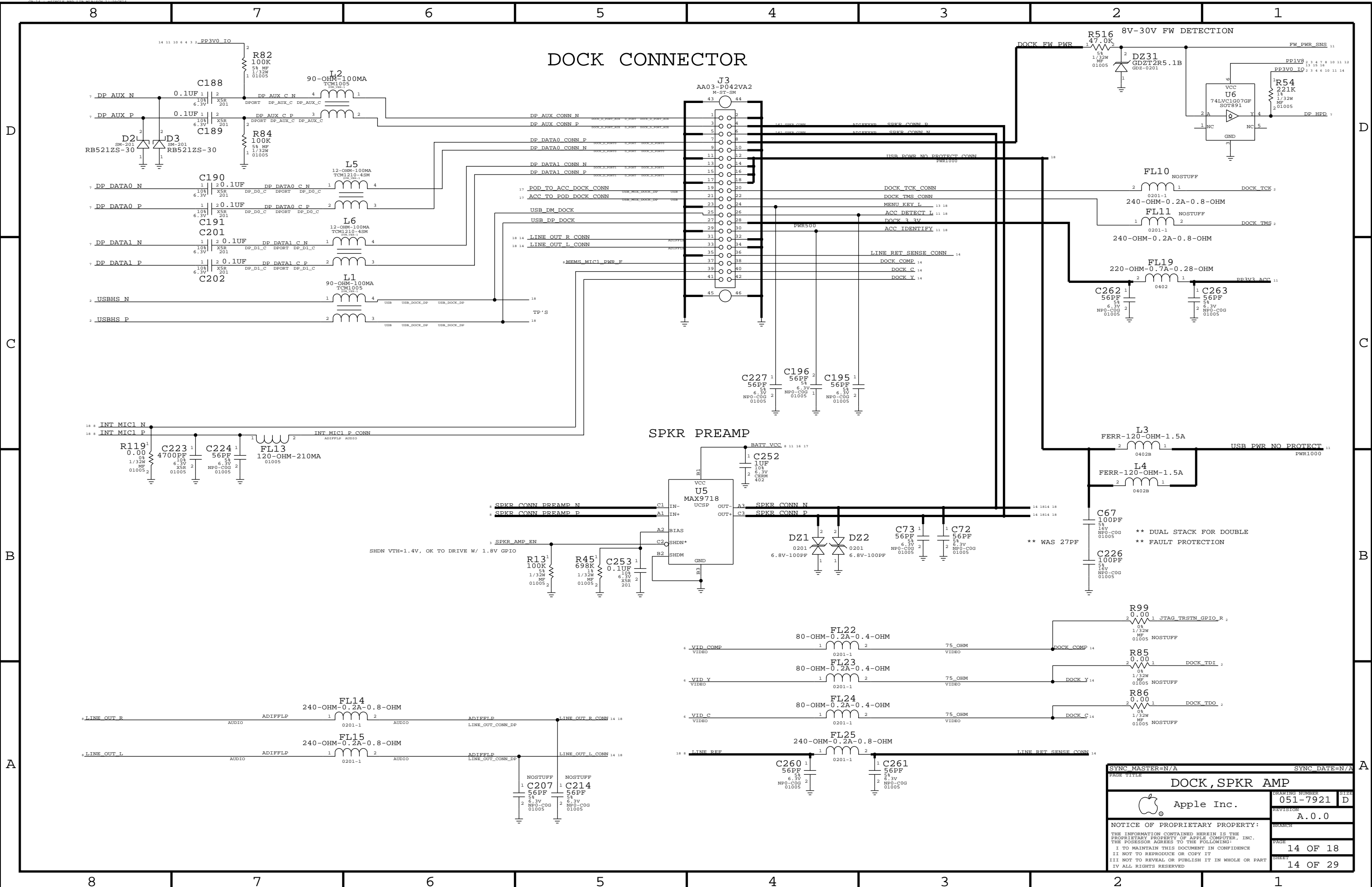
## SIM CARD SLOT AND ESD



SYNC MASTER=N/A	SYNC DATE=N/A
PAGE TITLE <b>HPARK, SWITCH ESD, SIM CARD</b>	
DRAWING NUMBER 051-7921	SIZE D
REVISION A.0.0	BRANCH
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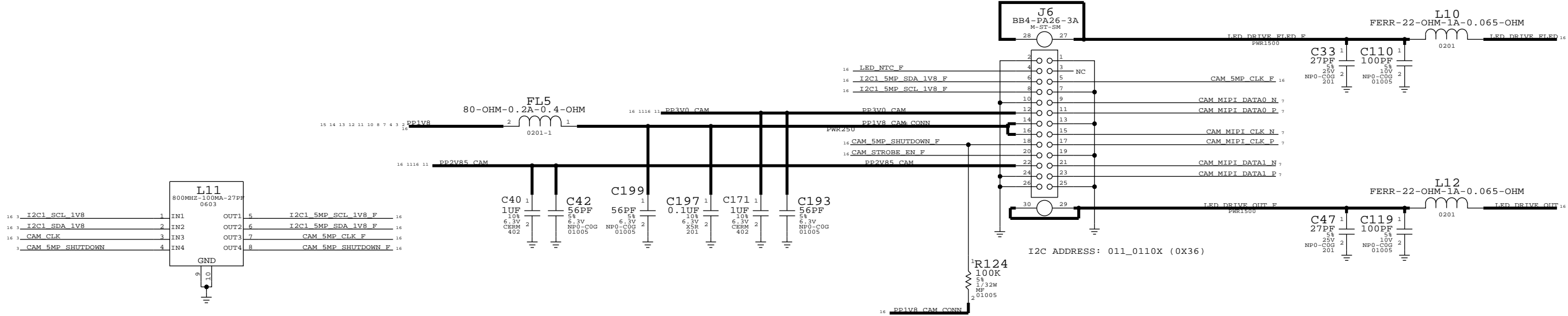
# DOCK CONNECTOR



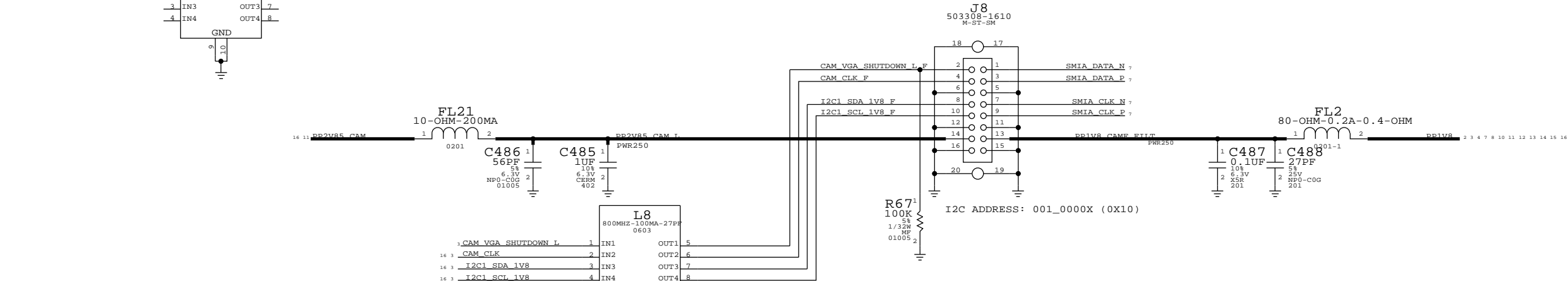
PAGE TITLE		SYNC DATE=N/A	
<b>DOCK, SPKR AMP</b>			
Apple Inc.		DRAWING NUMBER	051-7921
		REVISION	A.0.0
		PAGE	14 OF 18
		SHEET	14 OF 29
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# 5MP CAMERA CONNECTOR

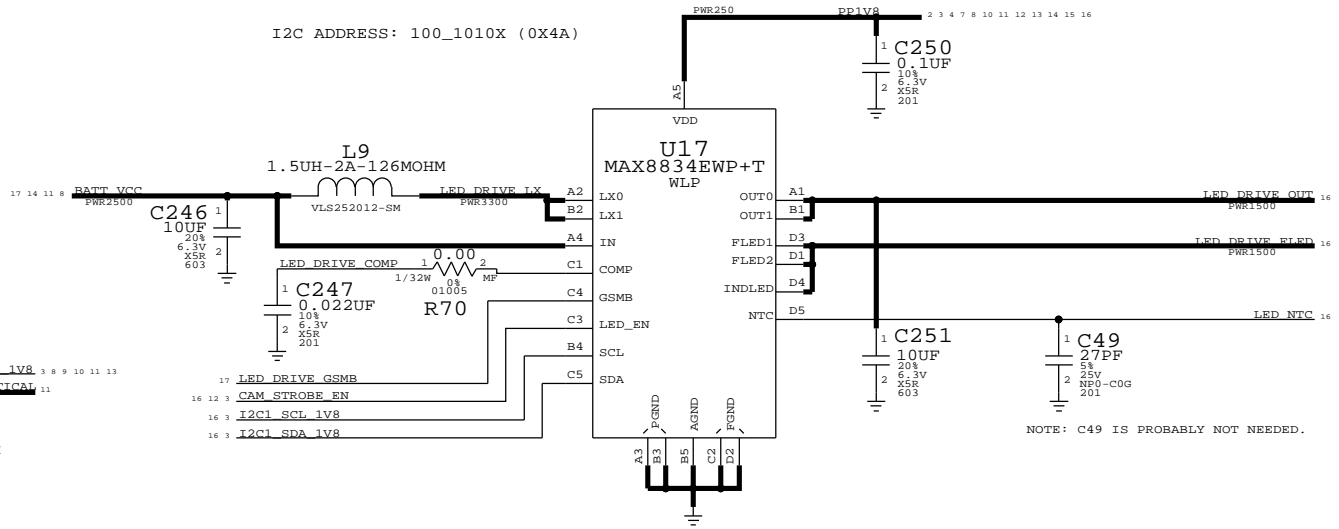


# VGA CAMERA CONN



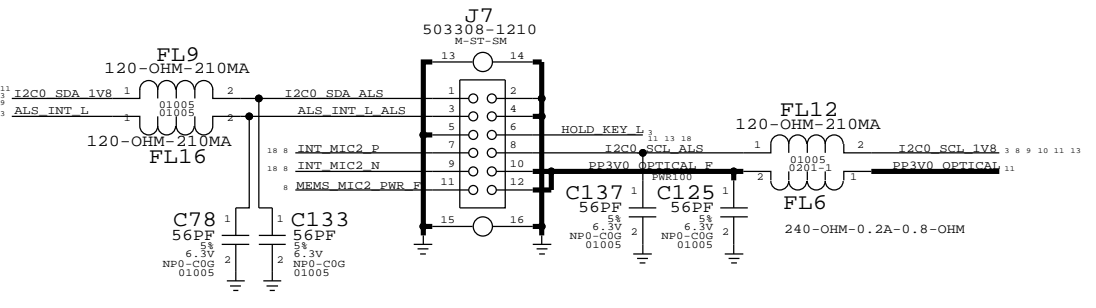
# LED DRIVER

\* PLACE CLOSE TO BATTERY \*

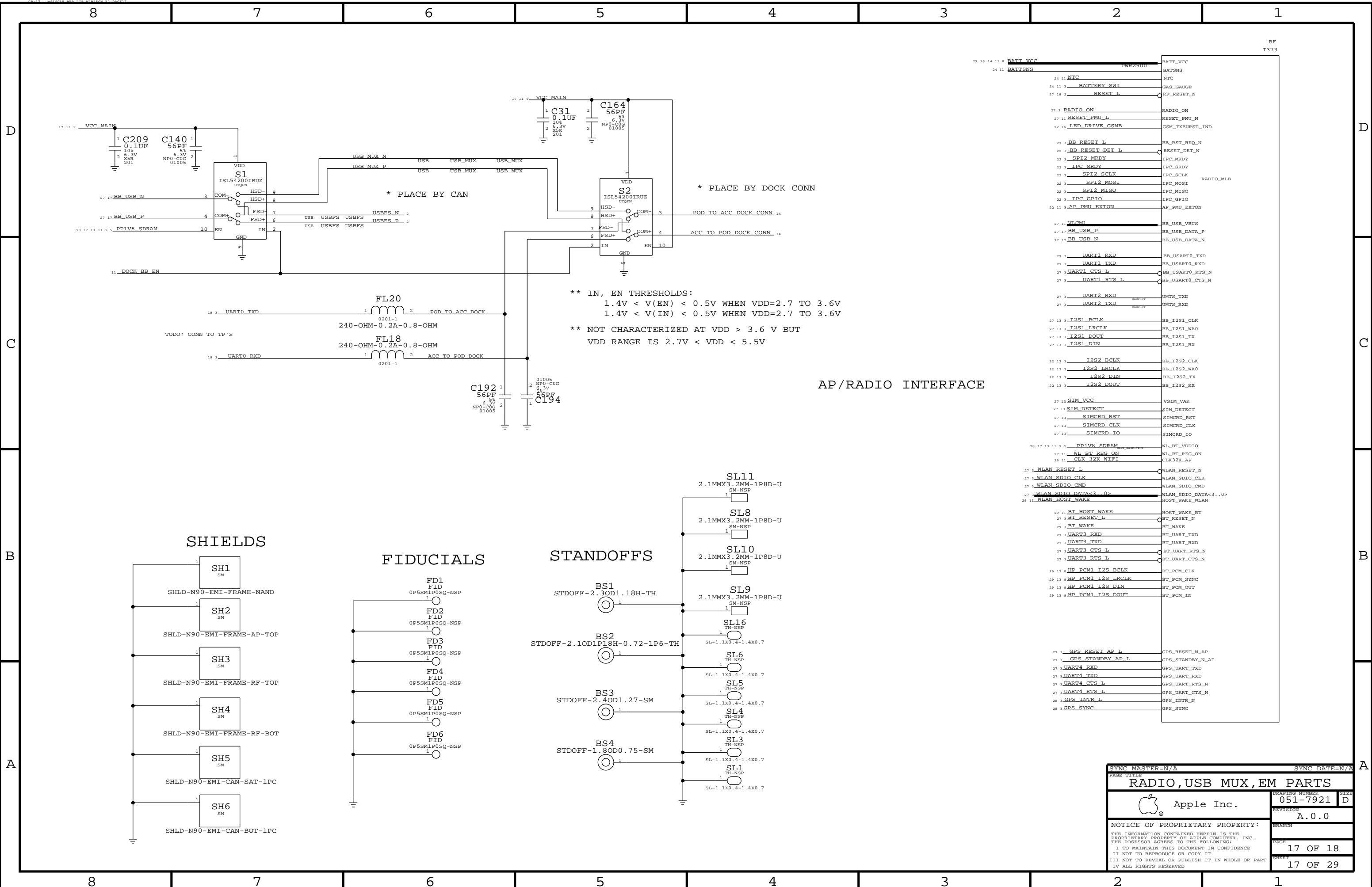


# ALS/PROX

I2C ADDRESS: 011\_1001X (0X39)



SYNC MASTER=N/A		SYNC DATE=N/A	
<b>CAMERA, STROBE, SENSOR B2B</b>			
Apple Inc.		DRAWING NUMBER	051-7921
		REVISION	A.0.0
		PAGE	16 OF 18
		SHEET	16 OF 29
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RF I373

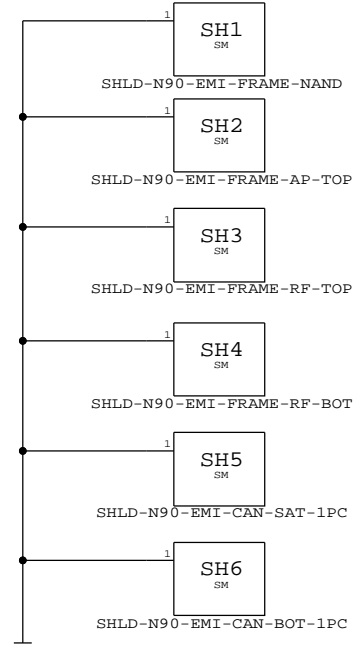
27 16 14 11 8	BATT_VCC	PWR2500	BATT_VCC
24 11	BATTSENS		BATTSENS
	NTC		NTC
24 11 3	BATTERY SWI		GAS_GAUGE
27 18 2	RESET L		RF_RESET_N
27 3	RADIO_ON		RADIO_ON
27 11	RESET_PMU_L		RESET_PMU_N
22 16	LED_DRIVE_GSM		GSM_TXBURST_IND
27 3	BB_RESET_L		BB_RST_REQ_N
22 3	BB_RESET_DET_L		RESET_DET_N
22 3	SPI2_MRDY		IPC_MRDY
22 3	SPI2_SRDY		IPC_SRDY
22 3	SPI2_SCLK		IPC_SCLK
22 3	SPI2_MOSI		IPC_MOSI
22 3	SPI2_MISO		IPC_MISO
22 3	IPC_GPIO		IPC_GPIO
22 11	AP_PMU_EXTON		AP_PMU_EXTON
27 11	WFCM1		BB_USB_VBUS
27 17	BB_USB_P		BB_USB_DATA_P
27 17	BB_USB_N		BB_USB_DATA_N
27 3	UART1_RXD		BB_USART0_TXD
27 3	UART1_TXD		BB_USART0_RXD
27 3	UART1_CTS_L		BB_USART0_RTS_N
27 3	UART1_RTS_L		BB_USART0_CTS_N
27 3	UART2_RXD		UMTS_TXD
27 3	UART2_TXD		UMTS_RXD
27 13 3	I2S1_BCLK		BB_I2S1_CLK
27 13 3	I2S1_LRCLK		BB_I2S1_MA0
27 13 3	I2S1_DOUT		BB_I2S1_TX
27 13 3	I2S1_DIN		BB_I2S1_RX
22 13 3	I2S2_BCLK		BB_I2S2_CLK
22 13 3	I2S2_LRCLK		BB_I2S2_MA0
22 13 3	I2S2_DIN		BB_I2S2_TX
22 13 3	I2S2_DOUT		BB_I2S2_RX
27 13	SIM_VCC		VSIM_VAR
27 13	SIM_DETECT		SIM_DETECT
27 13	SIMCRD_RST		SIMCRD_RST
27 13	SIMCRD_CLK		SIMCRD_CLK
27 13	SIMCRD_IO		SIMCRD_IO
28 17 13 11 9 5	PPIV8_SDRAM		WL_BT_VDDIO
27 11	WL_BT_REG_ON		WL_BT_REG_ON
29 11	CLK_32K_WIFI		CLK32K_AP
27 3	WLAN_RESET_L		WLAN_RESET_N
27 3	WLAN_SDIO_CLK		WLAN_SDIO_CLK
27 3	WLAN_SDIO_CMD		WLAN_SDIO_CMD
27 3	WLAN_SDIO_DATA<3..0>		WLAN_SDIO_DATA<3..0>
29 11	WLAN_HOST_WAKE		HOST_WAKE_WLAN
29 11	BT_HOST_WAKE		HOST_WAKE_BT
27 3	BT_RESET_L		BT_RESET_N
29 11	BT_WAKE		BT_WAKE
27 3	UART3_RXD		BT_UART_TXD
27 3	UART3_TXD		BT_UART_RXD
27 3	UART3_CTS_L		BT_UART_RTS_N
27 3	UART3_RTS_L		BT_UART_CTS_N
29 13 8	HP_PCM1_I2S_BCLK		BT_PCM_CLK
29 13 8	HP_PCM1_I2S_LRCLK		BT_PCM_SYNC
29 13 8	HP_PCM1_I2S_DIN		BT_PCM_OUT
29 13 8	HP_PCM1_I2S_DOUT		BT_PCM_IN
27 3	GPS_RESET_AP_L		GPS_RESET_N_AP
27 3	GPS_STANDBY_AP_L		GPS_STANDBY_N_AP
27 3	UART4_RXD		GPS_UART_TXD
27 3	UART4_TXD		GPS_UART_RXD
27 3	UART4_CTS_L		GPS_UART_RTS_N
27 3	UART4_RTS_L		GPS_UART_CTS_N
28 3	GPS_INTR_L		GPS_INTR_N
28 3	GPS_SYNC		GPS_SYNC

\*\* 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

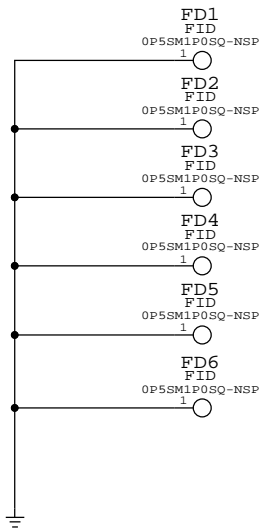
\*\* NOT CHARACTERIZED AT VDD > 3.6 V BUT  
 VDD RANGE IS 2.7V < VDD < 5.5V

AP/RADIO INTERFACE

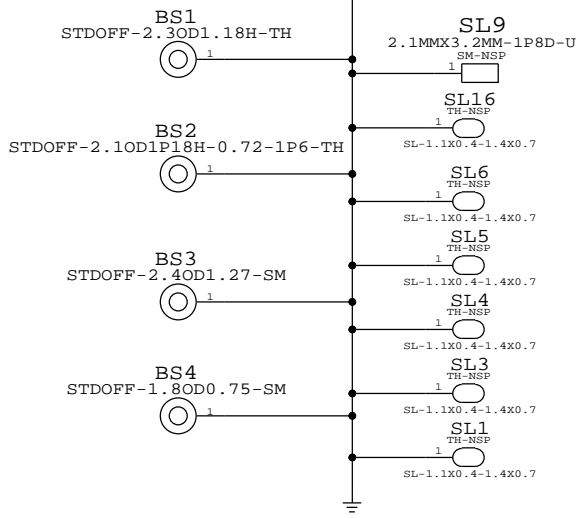
SHIELDS



FIDUCIALS

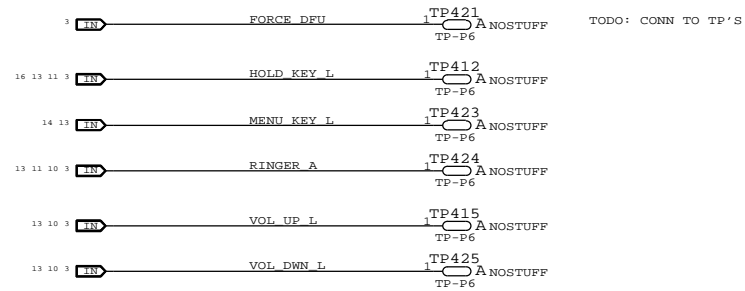


STANDOFFS



SYNC MASTER=N/A		SYNC DATE=N/A	
DRAWING TITLE			
RADIO, USB MUX, EM PARTS			
DRAWING NUMBER		051-7921	SIZE
REVISION		A.0.0	
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SHEET		17 OF 29	

### GPIO

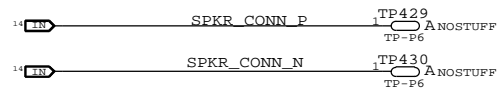


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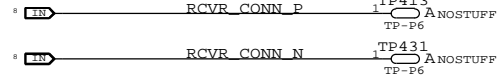


### AUDIO

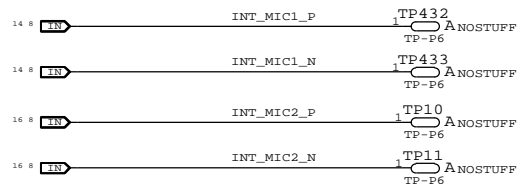
#### SPEAKER



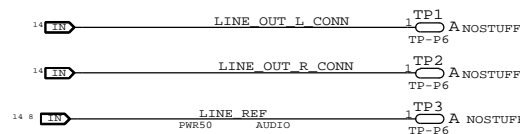
#### RECEIVER



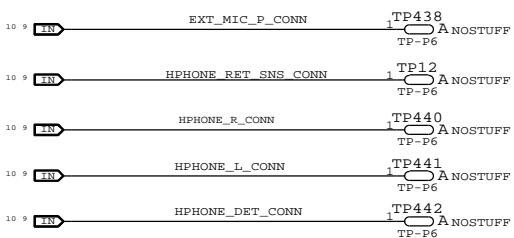
#### MIC



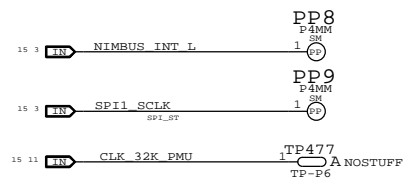
#### LINE OUT



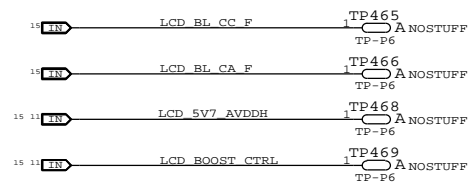
#### HEADPHONE



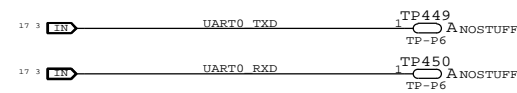
### GRAPE



### LCM



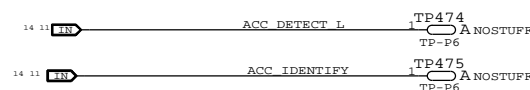
### UART



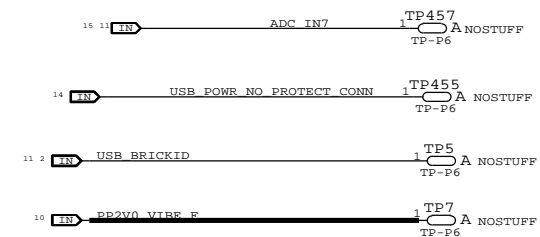
### USB



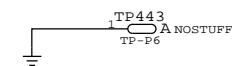
### ACCESSORY DETECT



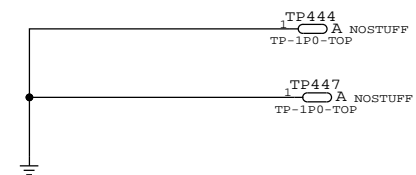
### POWER



### SIGNAL GND (SENSE)



### POWER GND



### RESET



SYNC MASTER=N/A		SYNC DATE=N/A	
PAGE TITLE			
<b>TEST POINTS</b>			
Apple Inc.		DRAWING NUMBER	SIZE
		051-7921	D
		REVISION	
		A.0.0	
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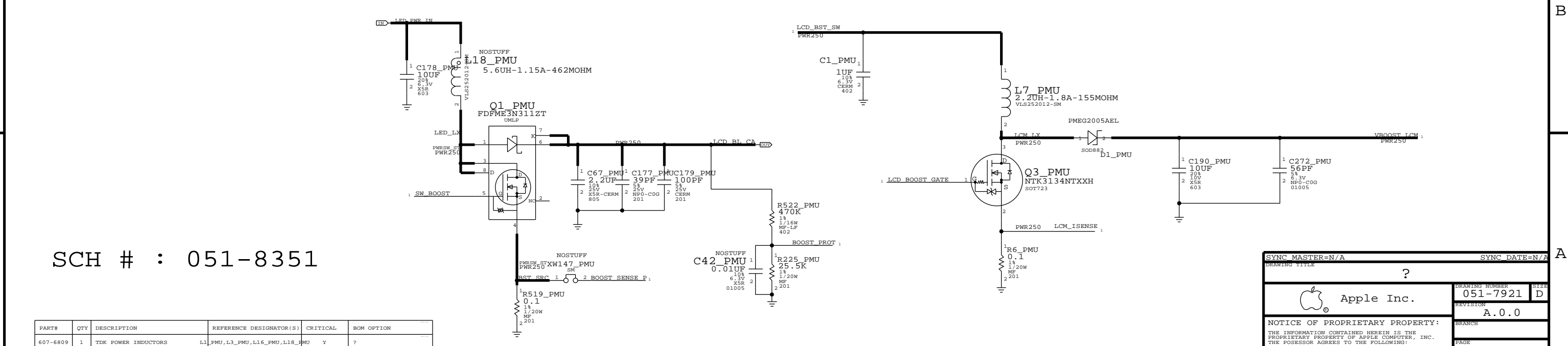
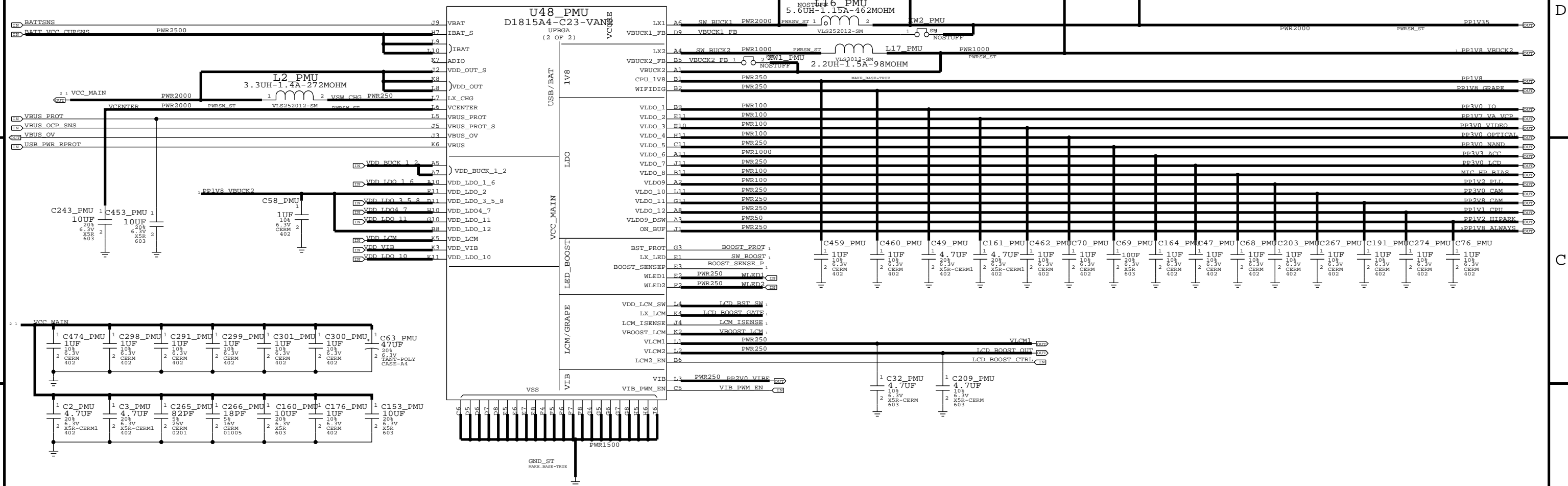
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

# N90 ASHLEY\_PMU SUB-DESIGN

Thu Mar 18 14:15:23 2010

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
A	0000880153	PRODUCTION RELEASED		2010-03-23

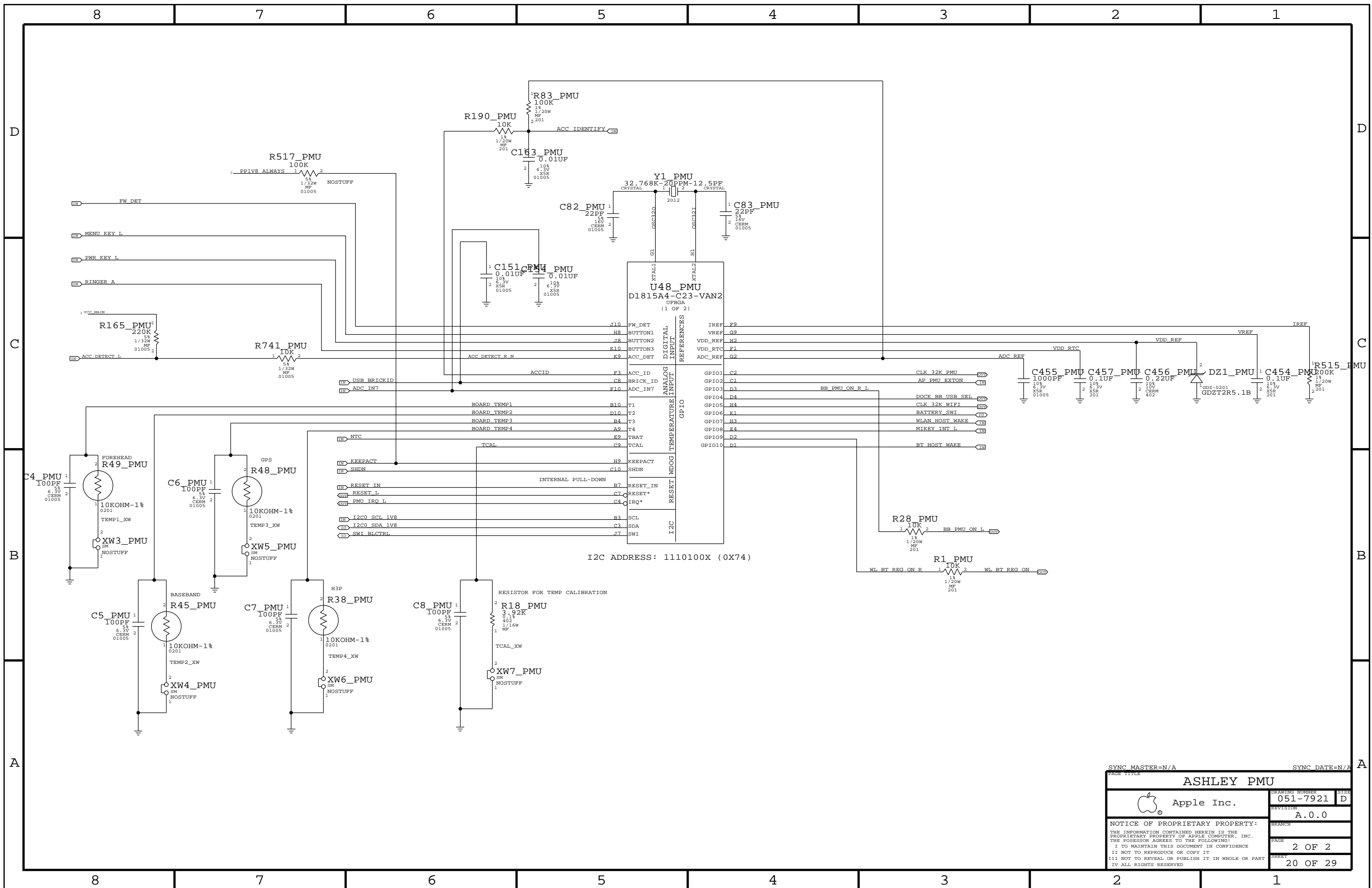
LAYOUT: PLACE XW1 AND XW2 REMOTELY BY AP



SCH # : 051-8351

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
607-6809	1	TDK POWER INDUCTORS	L1_PMU, L3_PMU, L6_PMU, L8_PMU	Y	?

SYNC MASTER=N/A		SYNC DATE=N/A	
DRAWING TITLE ?			
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		051-7921	D
		REVISION	
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		SHEET	20 OF 29

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.


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# N90 (ICE3) HSPA RADIO

## PVT - 04/15/10:BRD REV9

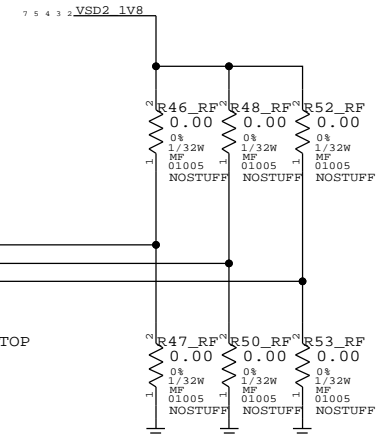
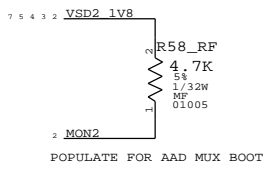
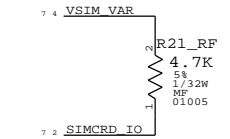
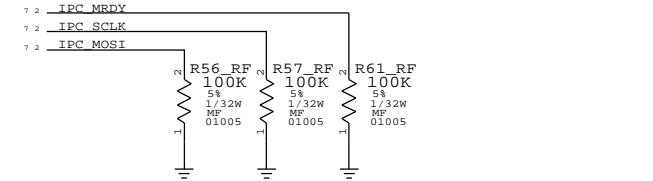
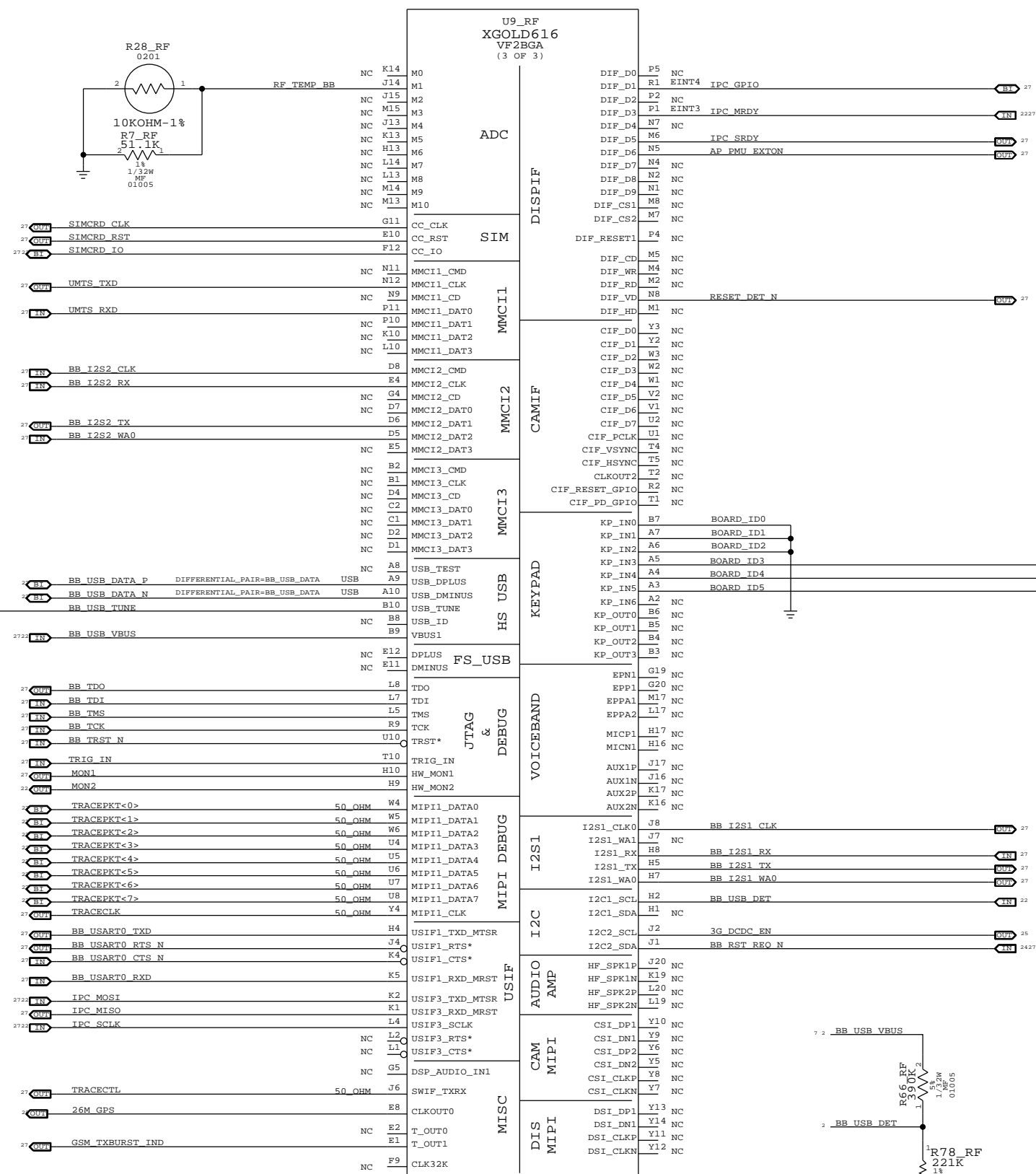
PAGE	CONTENTS
02	BASEBAND I/O
03	BASEBAND + MEMORY
04	BASEBAND POWER SUPPLY
05	GSM & UMTS TRANSCEIVER
06	POWER AMPS AND RF FRONT END
07	SYSTEM CONNECTORS
08	A-GPS
09	WLAN/BLEETOOTH RADIO

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

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# BASEBAND I/O



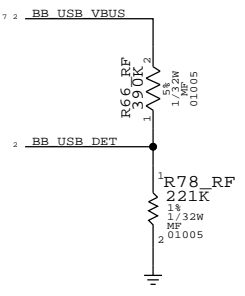
WIFI MODULE VENDOR ID  
POPULATE R46/R47 AS BOM OPTION AT THE TOP

BOARD_ID3	VENDOR
NST	N/A
0	MURATA
1	USI

BOARD_ID5	FAMILY
NST	ICE3
0	ICE4
1	RESERVED

BOARD_ID4	PROJECT
NST	N90
0	RESERVED
1	RESERVED

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



## 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

Apple Inc. BASEBAND I/O

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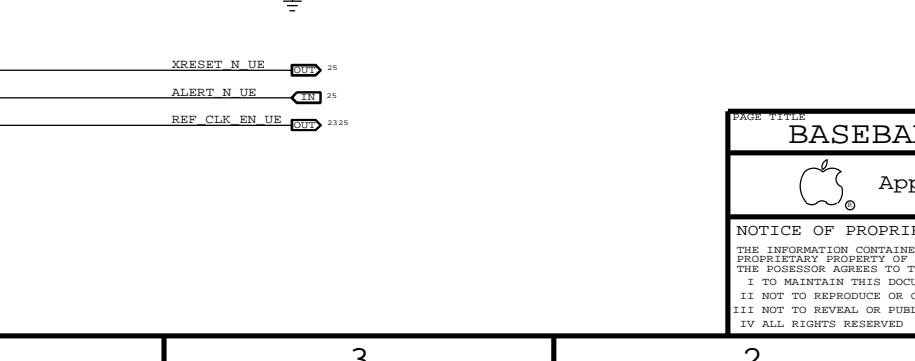
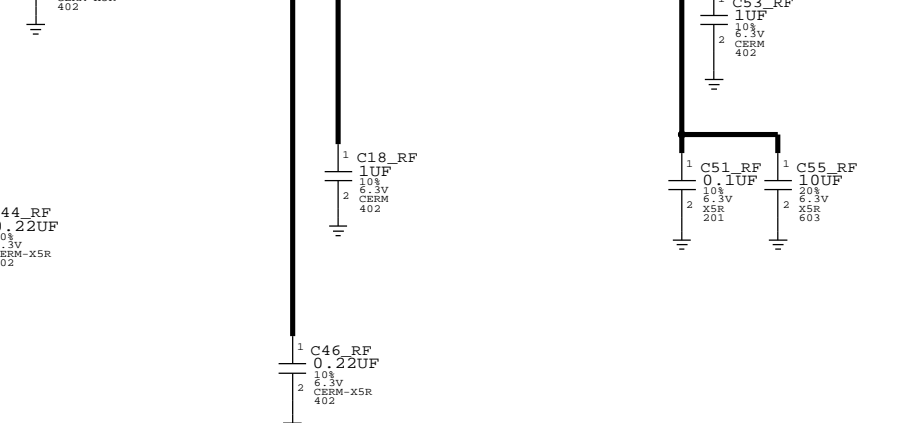
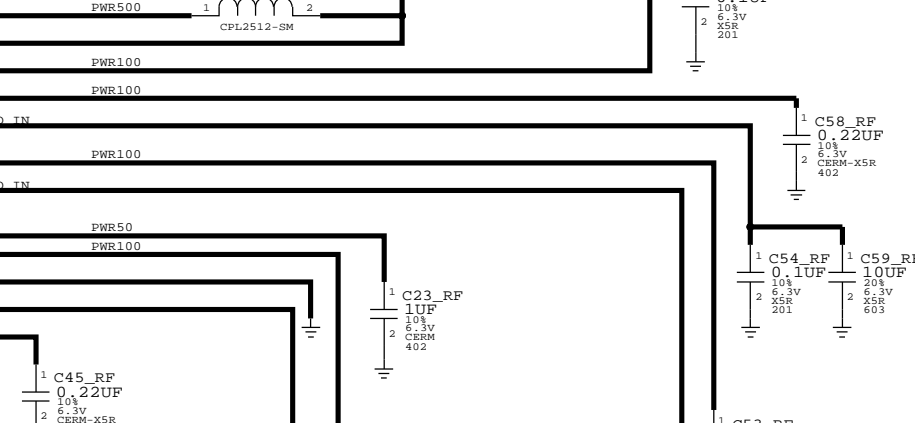
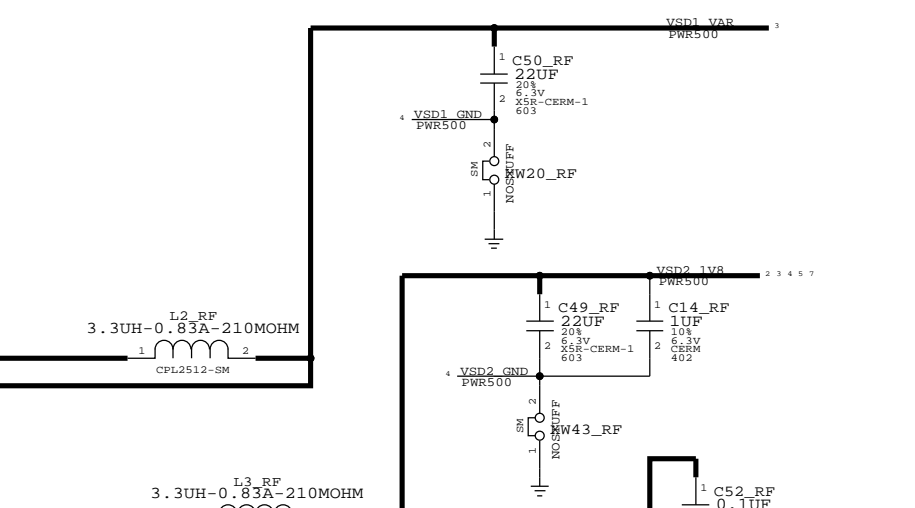
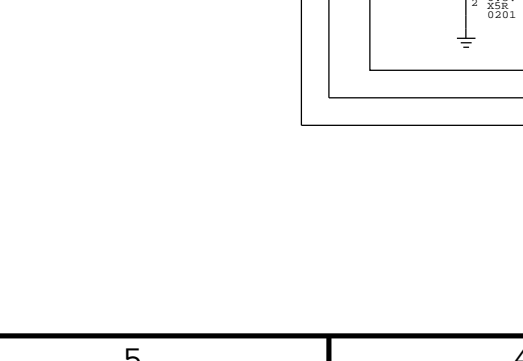
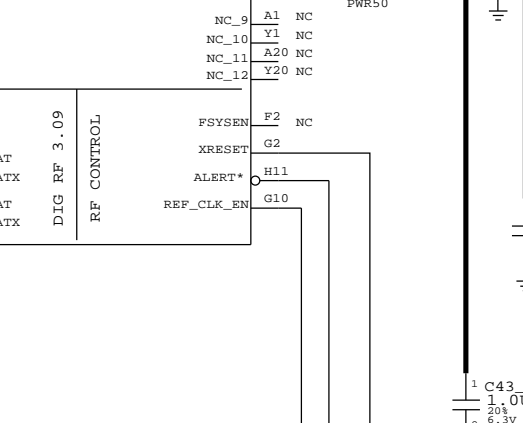
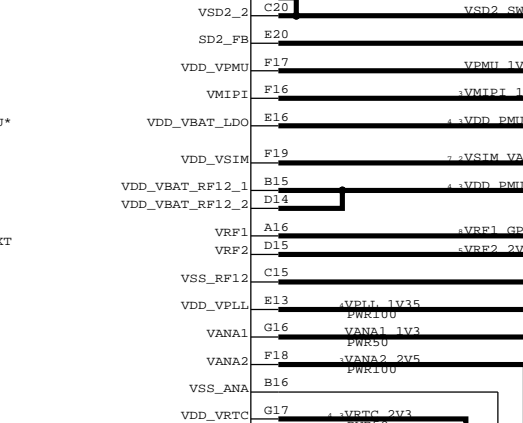
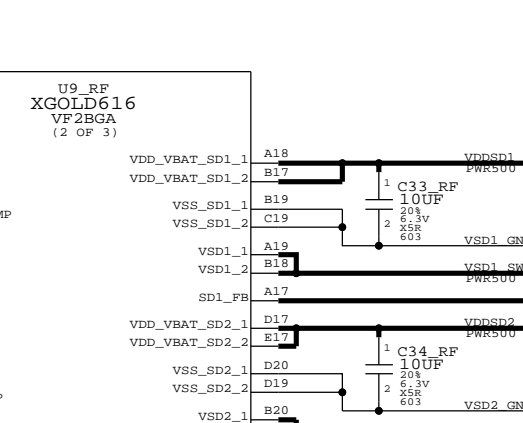
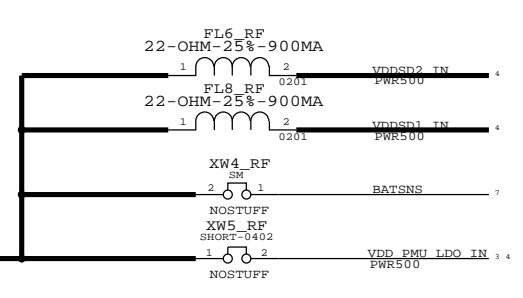
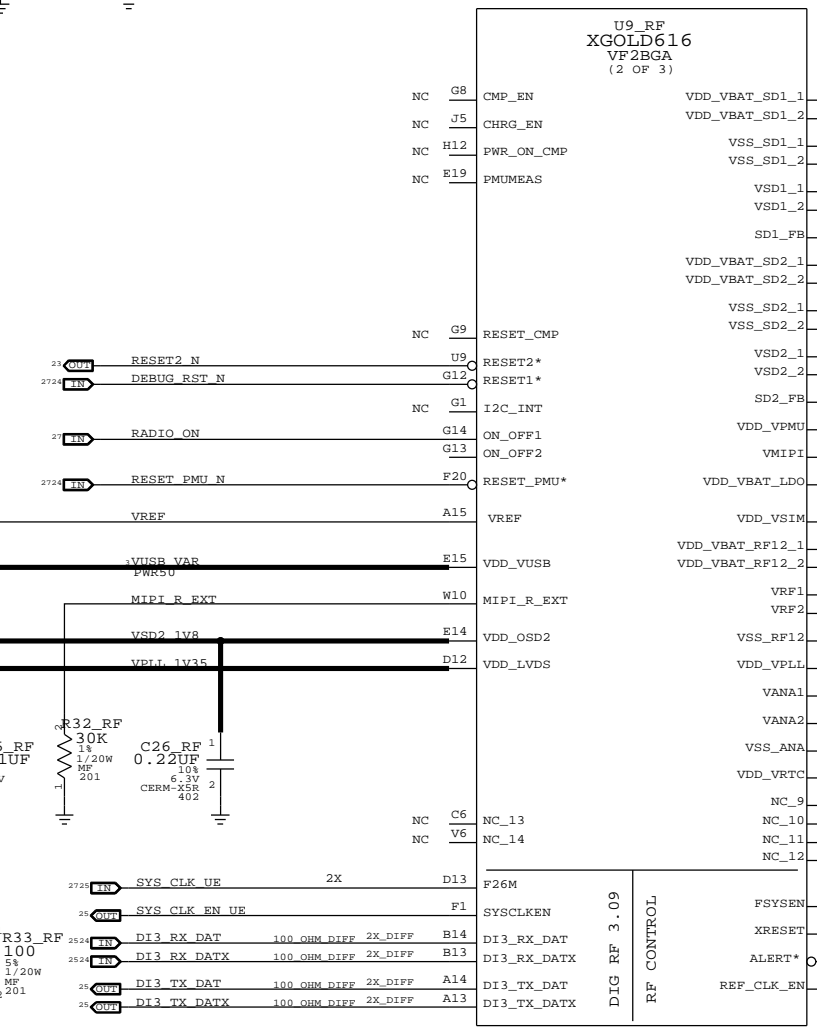
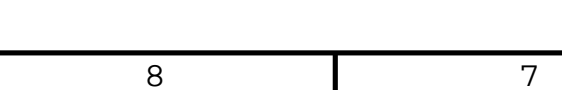
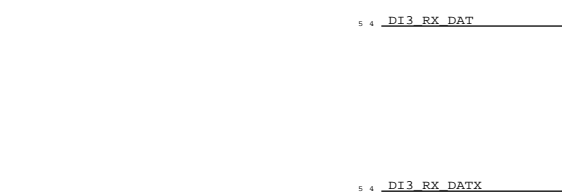
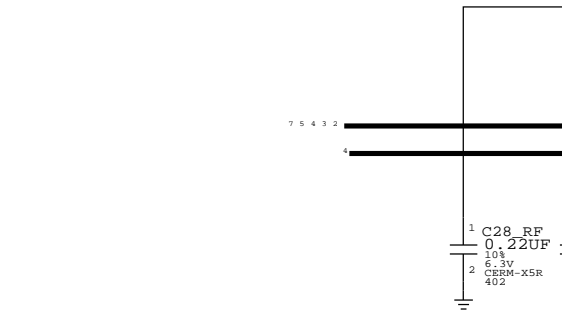
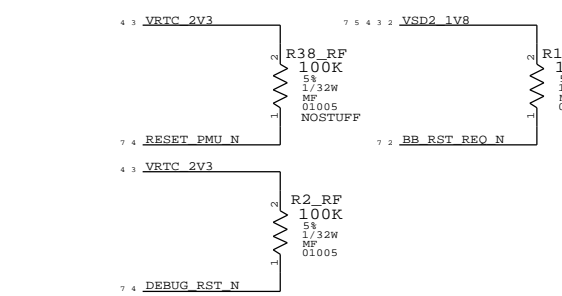
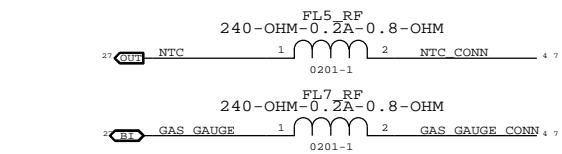
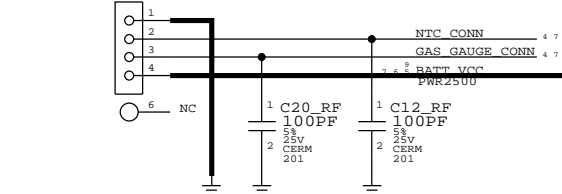
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# BASEBAND POWER SUPPLY

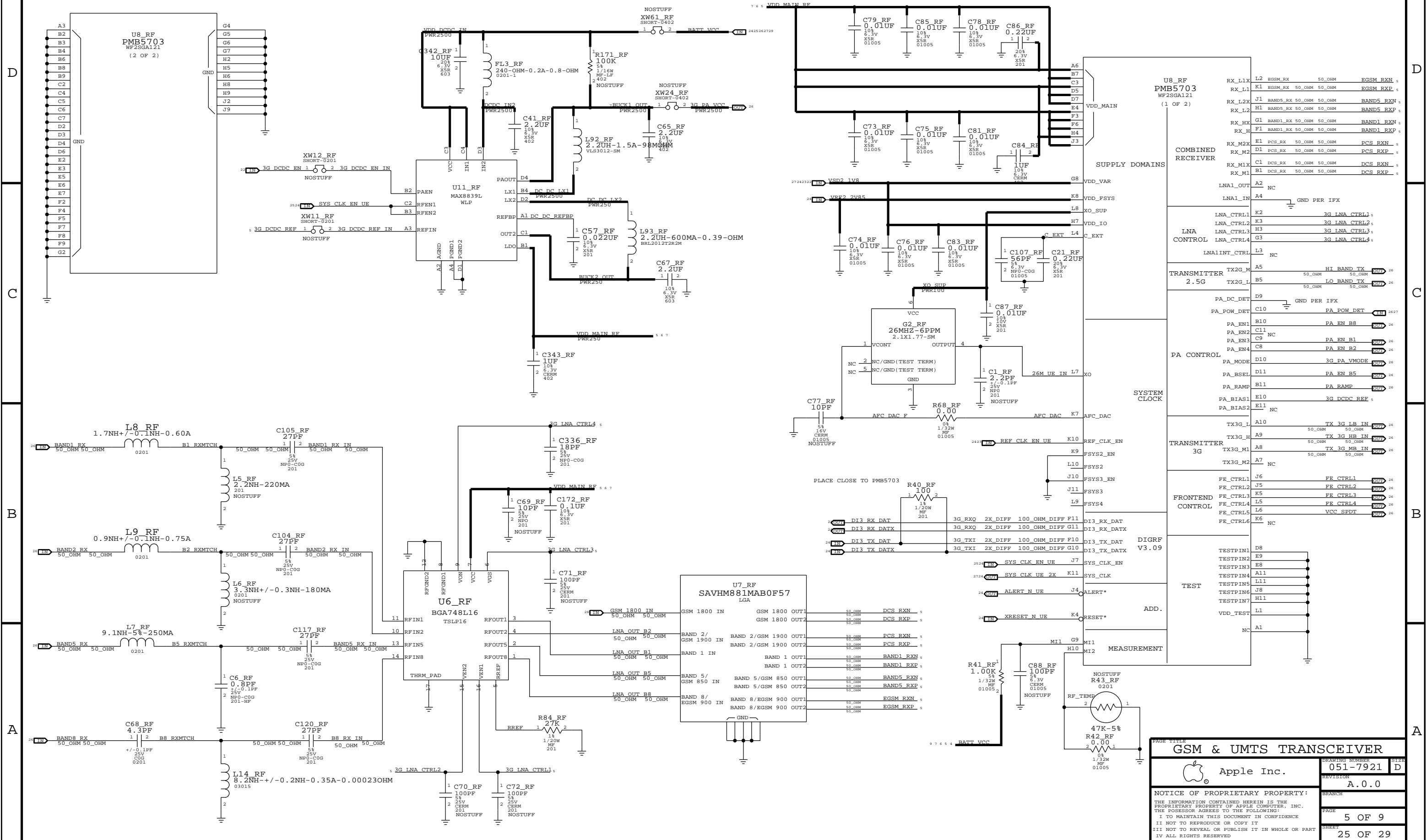
BATTERY CONNECTOR

J7\_RF  
WB22453-1401-7F  
F-ST-SM

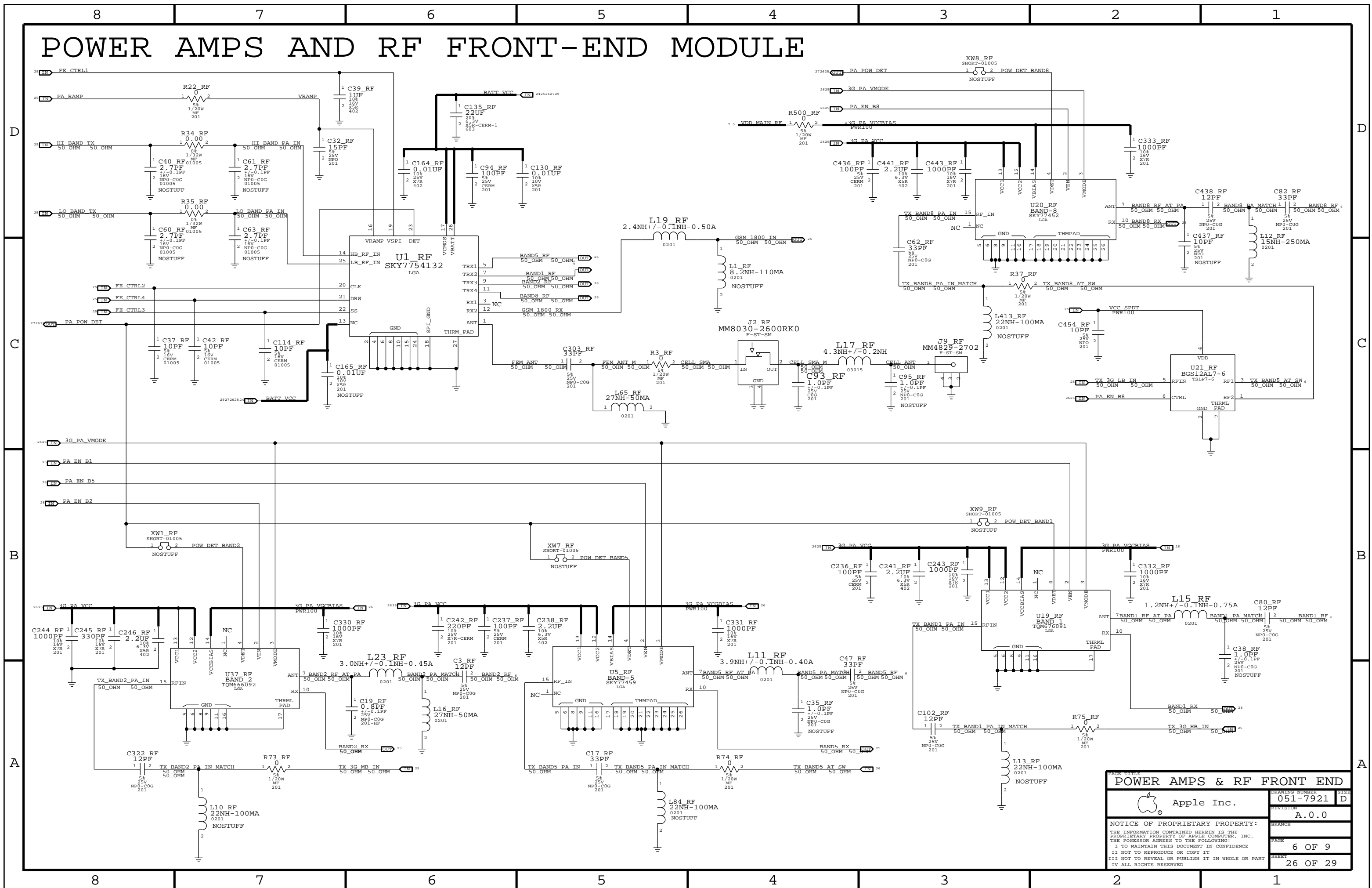


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# GSM & UMTS TRANSCEIVER - SMARTI UE



# POWER AMPS AND RF FRONT-END MODULE

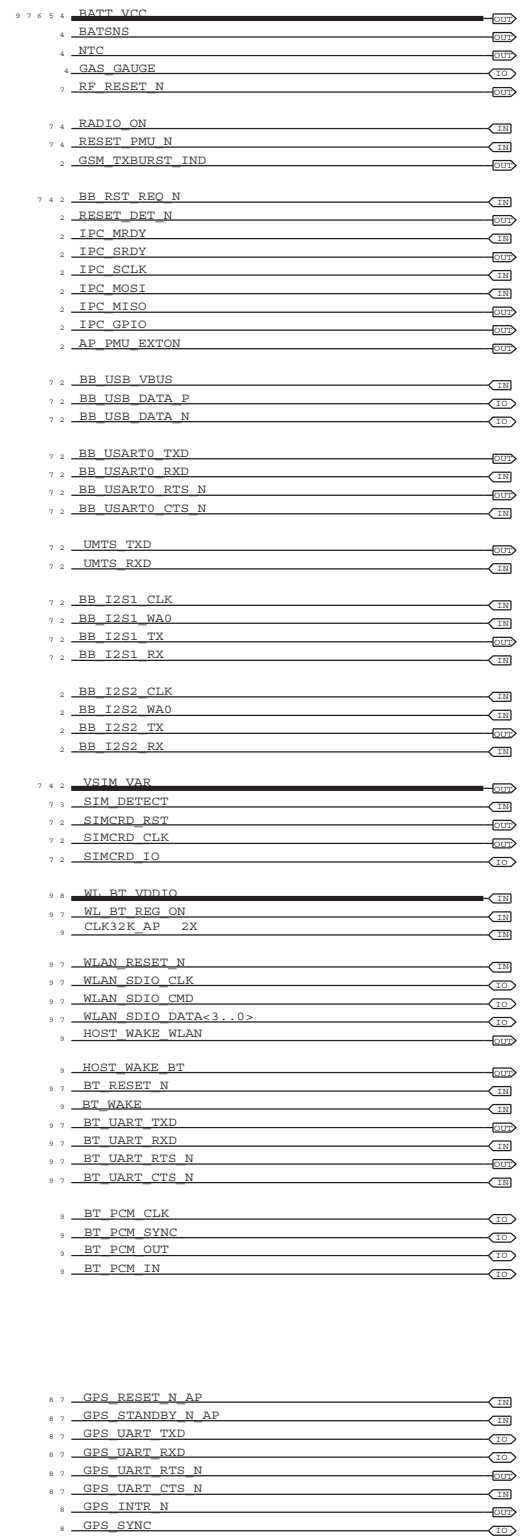


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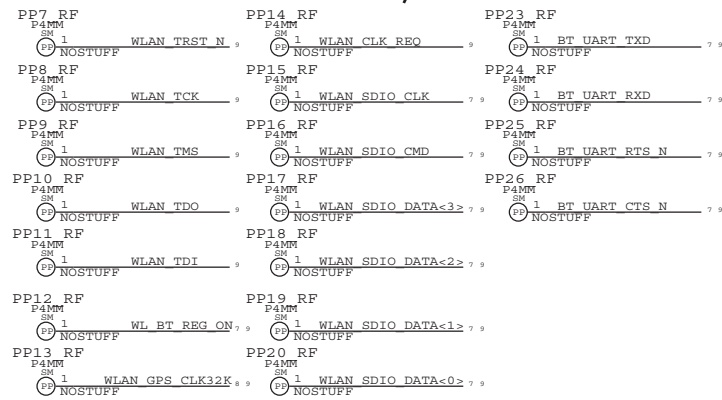
POWER AMPS & RF FRONT END  
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# SYSTEM CONNECTORS

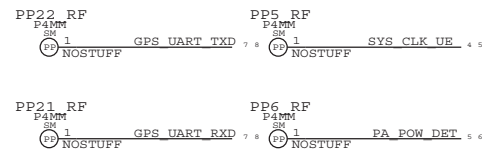
## AP CONNECTIONS



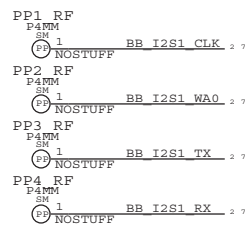
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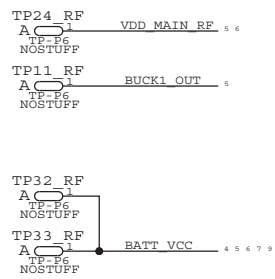
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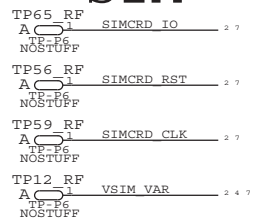
## DIGITAL AUDIO



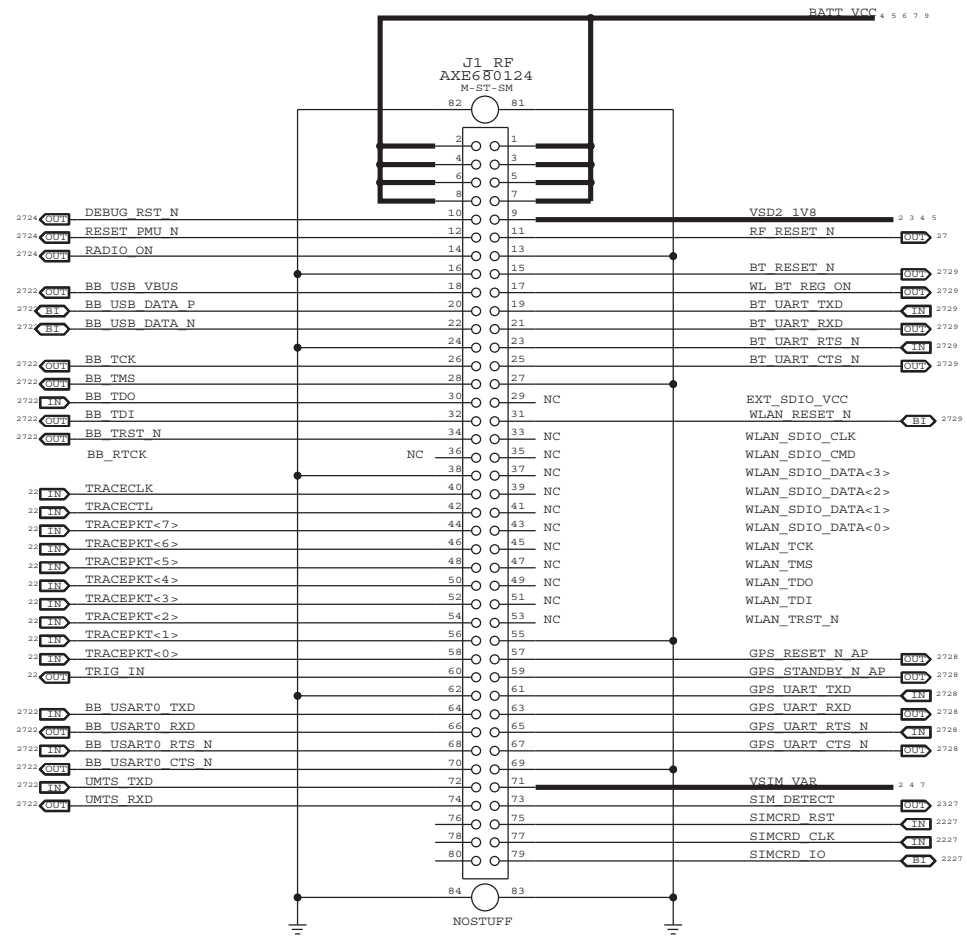
## POWER DOMAINS



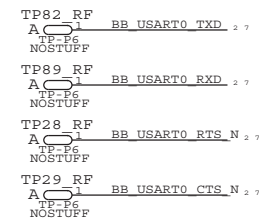
## SIM



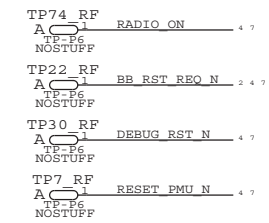
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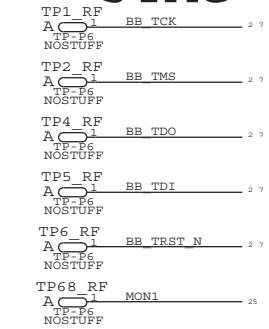
## USART0



## CONTROL



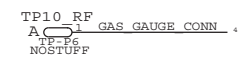
## JTAG



## NTC

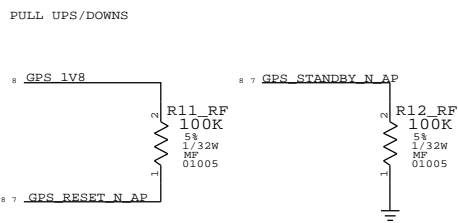
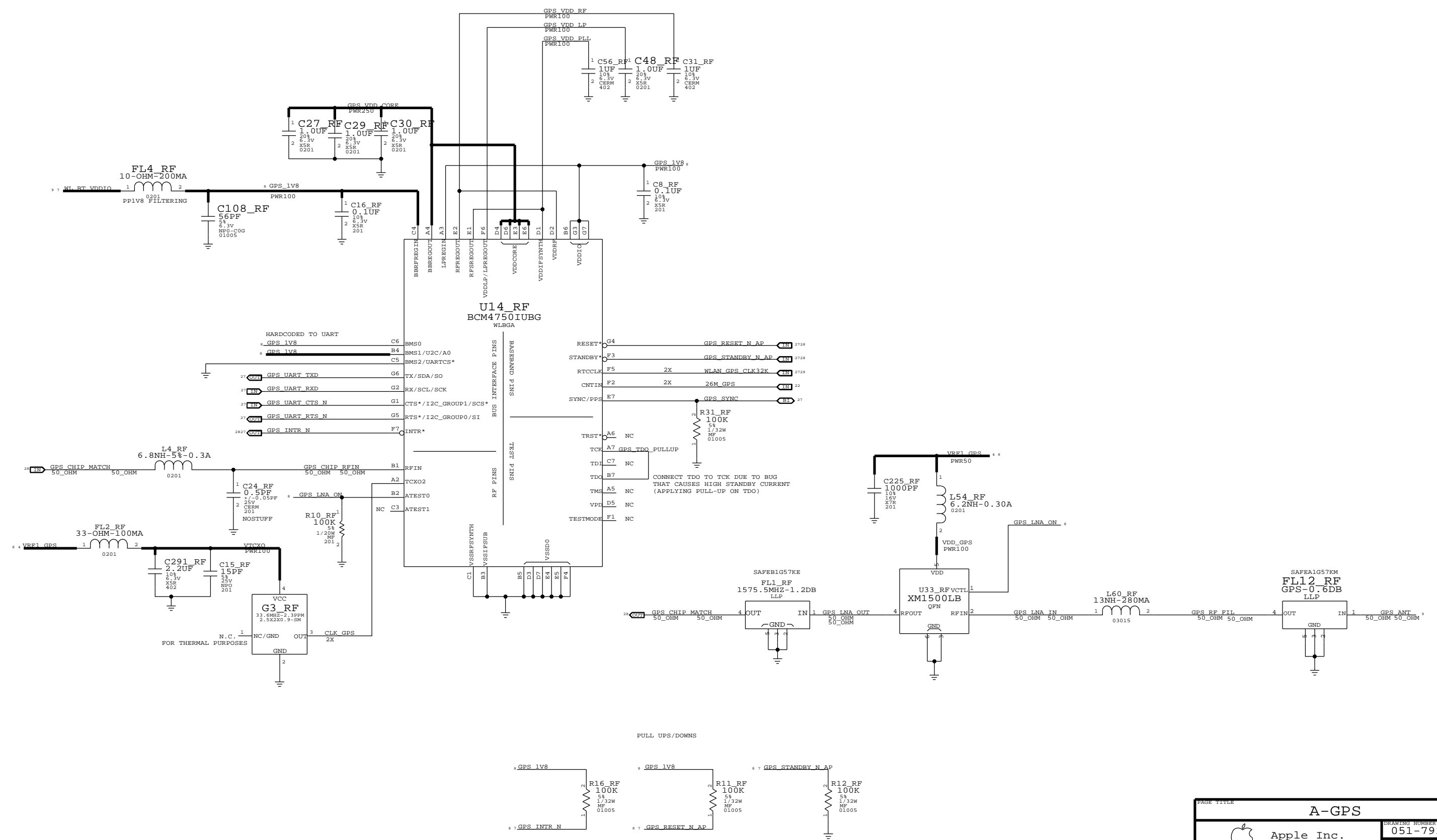


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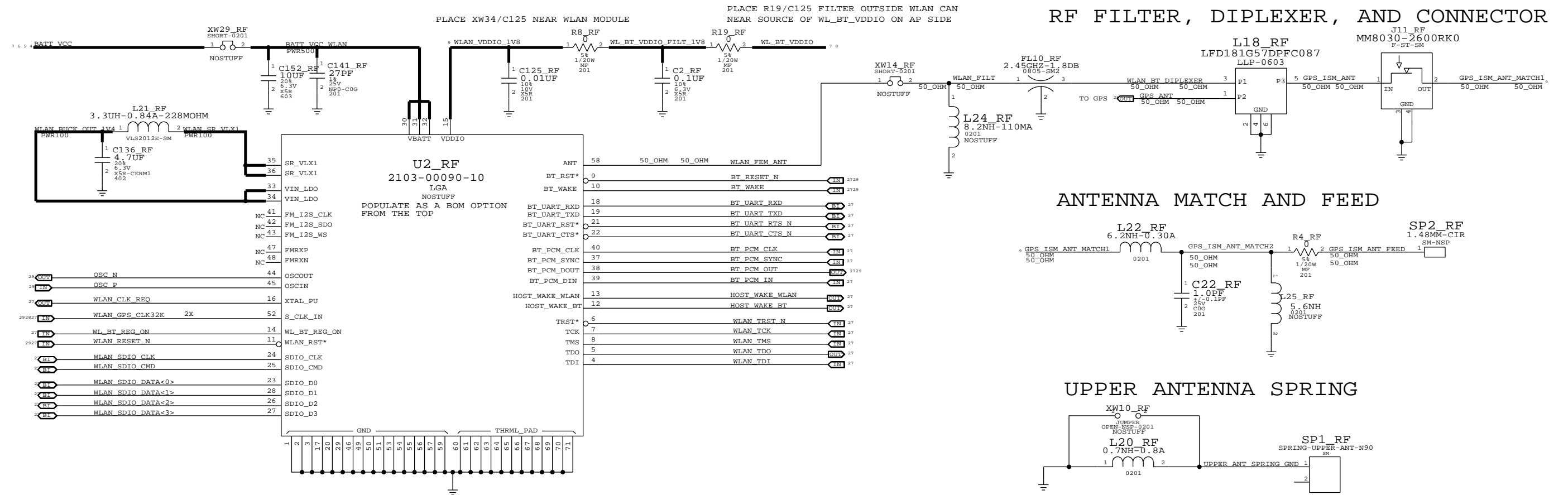
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# A-GPS



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# WLAN/BLUETOOTH/FM RADIO



## ANTENNA MATCH AND FEED

## UPPER ANTENNA SPRING

## 32K INTERFACE TO AP

## REFERENCE OSCILLATOR CRYSTAL

## PULL UP RESISTORS

## PULL DOWN RESISTORS

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