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

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: 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_GJYD	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_GP3V	CRITICAL	EEEE_64G
825-6838	1	EEEE CODE FOR 639-01272 64GB	EEEE_GP3W	CRITICAL	EEEE_64GH

S3E NAND BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00054	1	NAND,1YNM,16GX8,S3E,64G,T,SLGA70	U1500	CRITICAL	NAND_16G
335S00072	1	NAND,1YNM,32GX8,S3E,64G,T,SLGA70	U1500	CRITICAL	NAND_32G
335S00076	1	NAND,1YNM,64GX8,S3E,TLC,128G,H,ULGA70	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,LGA16	U3010	INVENSENSE_CARBON
338S1163	1	IC,ACCEL,3-AXIS,DIG,BMA282,LGA14	U3020	INVENSENSE_CARBON
132S0316	1	CAP,CER,X5R,0.1UF,20%,6.3V,01005	C3020	INVENSENSE_CARBON
138S0692	1	CAP,CER,X5R,1UF,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,20OHM,5%,1/32W,01005	R3020	INVENSENSE_CARBON
117S0202	1	RES,MF,20OHM,5%,1/32W,01005	R3021	INVENSENSE_CARBON
117S0202	1	RES,MF,20OHM,5%,1/32W,01005	R3022	INVENSENSE_CARBON
338S00087	1	IC,CARBON,MPU-6800-00,LGA16	U3010	INVENSENSE_CARBON_1_1

COMPASS PART NUMBER

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
338S00084	1	IC,COMPASS,MAGNESIUM,601A-19,FLGA14	U3000	COMMON

SHIELD PART NUMBERS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
806-03629	1	SHIELD,EMI,UPPER FRONT,N69	SH0500	COMMON
806-03630	1	SHIELD,EMI,LOWER FRONT,N69	SH0501	COMMON
806-03556	1	SHIELD,EMI,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 1.8UH 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,1UH,1608
155S0773	155S0453	ALTERNATE	FL3101	TY,FERR,120-OHM,01005
377S0168	377S0140	ALTERNATE	DZ3150	TDK,VARISTOR,6.8V,100PF,01005
155S00067	155S0581	ALTERNATE	FL4200	TDK,FERR,240-OHM,0201
155S00012	155S00009	ALTERNATE	L3100	MURATA,CHOKE,65-OHM,0605
138S0706	138S0739	ALTERNATE	C5302_RF	MURATA,CAP,CER,1UF,20%,10V,X5R,0201
138S0945	138S0739	ALTERNATE	C5302_RF	KYOCERA,CAP,CER,1UF,20%,10V,X5R,0201
155S00095	155S00068	ALTERNATE	FL1280	FERR 8D,100 OHM,25%,300MA,2 OHM,01005
138S0648	138S0652	ALTERNATE	C3650	TY,4.7UF,0402
132S0400	132S0436	ALTERNATE	C1280	CAP,CER,X5R,0.22UF,20%,6.3V,01005
155S0960	155S0941	ALTERNATE	FL3151	FERR 8D,70 OHM,25%,300MA,0.4 DCR,01005
138S00024	138S0986	ALTERNATE	C5201_RF	CAP,CER,3-TERM,7.5UF,20%,4V,0402
335S00066	335S0946	ALTERNATE	U0900	IC,EEPROM,16KX8,1.8V,I2C,WLCSP4
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.

USED 1 TIME IN DESIGN.

USED 35 TIMES IN DESIGN.

USED 9 TIMES IN DESIGN.

USED 5 TIMES IN DESIGN.

USED 10 TIMES IN DESIGN.

USED 4 TIMES IN DESIGN.

USED 4 TIMES IN DESIGN.

USED 1 TIME IN DESIGN.

USED 9 TIMES IN DESIGN.

USED 1 TIME IN DESIGN.

USED 8 TIMES IN DESIGN.

USED 1 TIME 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,A1,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,330OHM,1%,1/32W,01005	R0651	MALTA
132S0316	1	CAP,CER,X5R,0.1UF,20%,6.3V,01005	C0731	NOSTUFF
338S00170	1	IC,PMU,ANTIGUA,D2255A1,OTP-BG	U2000	MALTA

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
339S00096	1	POP,MAUI+2GB 25NM DDR,C0,M,DEV	U0600	MAUI
118S0631	1	RES,MF,100OHM,1%,1/32W,01005	R0730	MAUI
131S0307	1	CAP,CER,NPO/COG,100PF,5%,16V,01005	C0730	MAUI
117S0161	1	RES,MF,0OHM,1/32W,01005	R0651	MAUI
132S0316	1	CAP,CER,X5R,0.1UF,20%,6.3V,01005	C0731	MAUI
338S00171	1	IC,PMU,ANTIGUA,D2255A1,OTP-YG	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

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
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TESTPOINTS

POWER

TP00 — TP-P6 — ROOM=TEST — POWER GROUND

31 30 17 PP5V0_USB — TP01 — TP-P6 — ROOM=TEST — VBUS

33 18 17 PP_BATT_VCC — TP02 — TP-P6 — ROOM=TEST; TP03 — TP-P6 — ROOM=TEST — VBATT

TP05 — TP-P55 — ROOM=TEST

TP24 — TP-P55 — ROOM=TEST — TP 24 FOR USB FIXTURE SI

RESET

16 9 5 PMU_TO_SYSTEM_COLD_RESET_L — TP06 — TP-P55 — ROOM=TEST — SOC & BB RESET

DFU

8 FORCE_DFU — TP07 — TP-P55 — ROOM=TEST

FORCE DFU PROCEDURE:

1. FROM OFF MODE SHORT TP07 TO PP07
2. PLUG IN E75 CABLE TO FORCE DFU

28 21 20 14 13 12 9 8 7 6 5 3 2d PP1V8 — PP07 P4MM-NSM SM — ROOM=TEST

8 DFU_STATUS — PP08 P4MM-NSM SM — ROOM=TEST

E75

31 30 90_TRISTAR_DP1_CONN_P — TP08 — TP-P55 — ROOM=TEST; 31 30 90_TRISTAR_DP1_CONN_N — TP09 — TP-P55 — ROOM=TEST — TRISTAR USB

31 30 90_TRISTAR_DP2_CONN_P — TP10 — TP-P55 — ROOM=TEST; 31 30 90_TRISTAR_DP2_CONN_N — TP11 — TP-P55 — ROOM=TEST — TRISTAR DEBUG UART

31 30 PP_TRISTAR_ACC1 — TP12 — TP-P55 — ROOM=TEST; 31 30 PP_TRISTAR_ACC2 — TP13 — TP-P55 — ROOM=TEST — TRISTAR ACCESSORY ID / ACCESSORY POWER

TP14 — TP-P55 — ROOM=TEST

31 30 TRISTAR_CON_DETECT_L — TP15 — TP-P55 — ROOM=TEST

AMUX

16 PMU_AMUX_AY — TP16 — TP-P55 — ROOM=TEST

16 PMU_AMUX_BY — TP17 — TP-P55 — ROOM=TEST

MOJAVE

27 26 MESA_TO_BOOST_EN — TP18 — TP-P55 — ROOM=TEST

27 26 PP11V3_MESA — TP19 — TP-P55 — ROOM=TEST

LCM

28 PP_LCM_BL_CAT1_CONN — TP20 — TP-P55 — ROOM=TEST

28 PP_LCM_BL_CAT2_CONN — TP21 — TP-P55 — ROOM=TEST

28 PP_LCM_BL_ANODE_CONN — TP22 — TP-P55 — ROOM=TEST

28 LCD_TO_AP_PIFA_CONN — TP23 — TP-P55 — ROOM=TEST

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

BOOTSTRAPPING: BOARD REV / BOARD ID / BOOT CONFIG

8 OUT BOARD_REV3 — R0400 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOARD_REV2 — R0401 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOARD_REV1 — NOSTUFF R0402 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOARD_REV0 — NOSTUFF R0403 01005 MF 5% 1/32W 1.00K ROOM=SOC

8 OUT BOARD_ID4 — NOSTUFF R0404 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOARD_ID3 — NOSTUFF R0405 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 BI BOARD_ID2 — NOSTUFF R0406 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 R0407 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOARD_ID0 — NOSTUFF R0408 01005 MF 5% 1/32W 1.00K ROOM=SOC

8 OUT BOOT_CONFIG2 — NOSTUFF R0409 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 OUT BOOT_CONFIG1 — R0410 01005 MF 5% 1/32W 1.00K ROOM=SOC
8 BOOT_CONFIG0 — R0411 01005 MF 5% 1/32W 1.00K ROOM=SOC

PP1V8 — 1 5 6 7 8 9 12 13 14 20 21 28; 2d

RESISTOR STUFF = HIGH '1'
RESISTOR NOSTUFF = LOW '0'

BOARD_REV[3:0]
FLOAT=LOW, PULLUP=HIGH

	1111	PROTO0 MLB
	1110	PROTO1
	1101	PROTO2
SELECTED -->	1100	EVT
	XXXX	CARRIER
	XXXX	DVT

BOARD_ID[4:0]
FLOAT=LOW, PULLUP=HIGH

SELECTED -->	00010	N69 MLB
	00011	N69 DEV

BOOT_CONFIG[2:0]
FLOAT=LOW, PULLUP=HIGH

	000	SPI0
	001	SPI0 TEST MODE
	010	NVME0 x2 MODE
SELECTED -->	011	NVME0 x2 TEST MODE
	100	NVME0 x1 MODE
	101	NVME0 x1 TEST MODE
	110	SLOW SPI0 TEST MODE
	111	FAST SPI0 TEST MODE

SYNC_MASTER=N/A — SYNC_DATE=N/A

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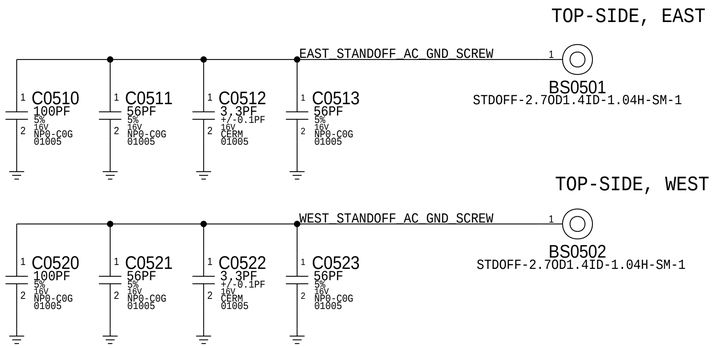
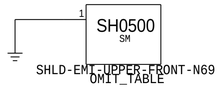
BOARD STANDOFFS AND AC COUPLING CAPS FOR COMPASS RETURN CURRENTS

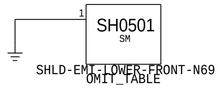


SHIELDS

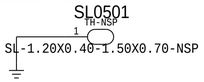
UPPER FRONT SHIELD



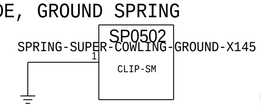
LOWER FRONT SHIELD



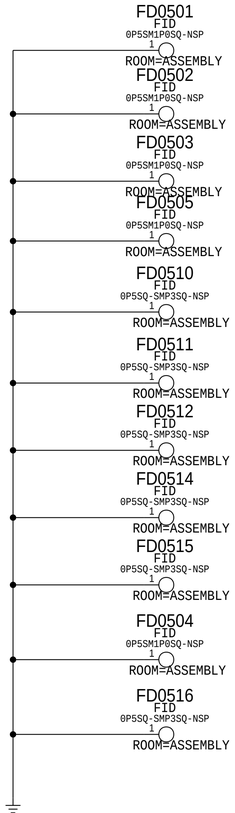
PLATED SHIELD SLOT



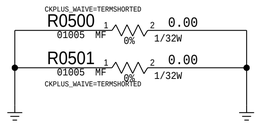
TOP-SIDE, GROUND SPRING



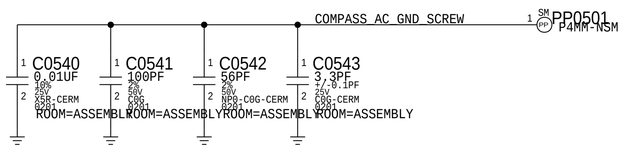
FIDUCIALS



NORTH WIFI UNDERFILL BLOCKING



COMPASS AC GROUNDING CAPS



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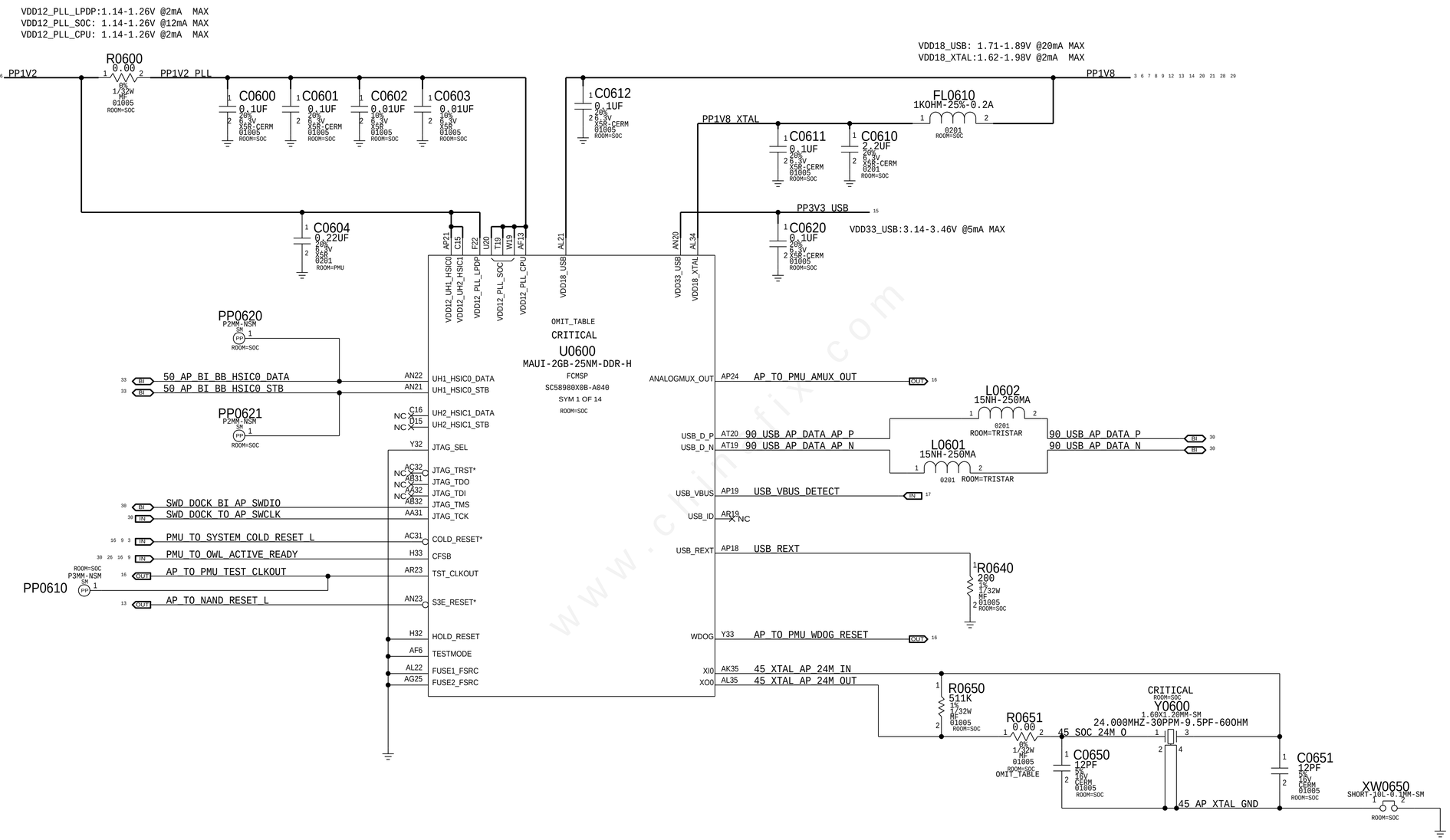
SOC - USB, JTAG, XTAL



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SOC - PCIE INTERFACES

VDD12_PCIE_REFBUF:1.08-1.26V @50mA MAX
VDD12_PCIE_TXPLL: 1.08-1.32V @10mA MAX
VDD12_PCIE: 1.14-1.26V @115mA MAX
PP1V2

XW0740 SHORT-10L-0.1MM-SM ROOM=SOC

PP1V2_PCIE_TXPLL

C0740 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C0741 1.0UF 20% 6.3V X5R 0201-1 ROOM=SOC
C0742 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0744 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0743 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0731 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC OMIT_TABLE

VDD085_PCIE:0.802-TBDV @TBDmA MAX
PP_FIXED

C0752 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0751 1.0UF 20% 6.3V X5R 0201-1 ROOM=SOC
C0750 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC

AK28 AK25 AL24 AL27 AL26 AJ26 — VDD12_PCIE, VDD12_PCIE_TXPLL, VDD12_PCIE_REFBUF
AH28 AJ25 AL23 AL29 AL29 AJ24 AK27 AJ27 — VDD085_PCIE

PCIE EXT C — AP29 PCIE_EXT_C

OMIT_TABLE
CRITICAL
U0600
MAUI-2GB-25NM-DDR-H
FCMSP
SC58980X0B-A040
SYM 2 OF 14
ROOM=SOC

PCIE LINK 0

90 PCIE NAND TO AP RXD0 P	C0701 0.1UF	90 PCIE NAND TO AP RXD0 C P	AM30	PCIE_RX0_P
90 PCIE NAND TO AP RXD0 N	C0702 0.1UF	90 PCIE NAND TO AP RXD0 C N	AN30	PCIE_RX0_N
90 PCIE AP TO NAND TXD0 P	C0703 0.1UF	90 PCIE AP TO NAND TXD0 C P	AT32	PCIE_TX0_P
90 PCIE AP TO NAND TXD0 N	C0704 0.1UF	90 PCIE AP TO NAND TXD0 C N	AR32	PCIE_TX0_N
90 PCIE NAND TO AP RXD1 P	C0705 0.1UF	90 PCIE NAND TO AP RXD1 C P	AM28	PCIE_RX1_P
90 PCIE NAND TO AP RXD1 N	C0706 0.1UF	90 PCIE NAND TO AP RXD1 C N	AN28	PCIE_RX1_N
90 PCIE AP TO NAND TXD1 P	C0707 0.1UF	90 PCIE AP TO NAND TXD1 C P	AT31	PCIE_TX1_P
90 PCIE AP TO NAND TXD1 N	C0708 0.1UF	90 PCIE AP TO NAND TXD1 C N	AR31	PCIE_TX1_N

PCIE LINK 1

90 PCIE WLAN TO AP RXD P	C0709 0.1UF	90 PCIE WLAN TO AP RXD C P	AM27	PCIE_RX2_P
90 PCIE WLAN TO AP RXD N	C0710 0.1UF	90 PCIE WLAN TO AP RXD C N	AN27	PCIE_RX2_N
90 PCIE AP TO WLAN TXD P	C0711 0.1UF	90 PCIE AP TO WLAN TXD C P	AT28	PCIE_TX2_P
90 PCIE AP TO WLAN TXD N	C0712 0.1UF	90 PCIE AP TO WLAN TXD C N	AR28	PCIE_TX2_N
			AM26 NC	PCIE_RX3_P
			AN26 NC	PCIE_RX3_N
			AT26 NC	PCIE_TX3_P
			AR26 NC	PCIE_TX3_N
			AM25 NC	PCIE_RX4_P
			AN25 NC	PCIE_RX4_N
			AR24 NC	PCIE_TX4_P
			AT24 NC	PCIE_TX4_N

PCIE_REF_CLK0_P	AN35	90 PCIE AP TO NAND REFCLK P	OUT 13
PCIE_REF_CLK0_N	AP35	90 PCIE AP TO NAND REFCLK N	OUT 13
PCIE_REF_CLK1_P	AN34	90 PCIE AP TO WLAN REFCLK P	OUT 33
PCIE_REF_CLK1_N	AP34	90 PCIE AP TO WLAN REFCLK N	OUT 33
PCIE_REF_CLK2_P	AM32	NC	
PCIE_REF_CLK2_N	AN32	NC	
PCIE_REF_CLK3_P	AM31	NC	
PCIE_REF_CLK3_N	AN31	NC	

P2MM-NSM SM PP0700, PP0701

PP1V8

R0720 100K 5% 1/32W MF 01005 ROOM=SOC
R0721 100K 5% 1/32W MF 01005 ROOM=SOC

PCIE_CLKREQ0*	AT11	PCIE NAND TO AP CLKREQ L	BI 13
PCIE_CLKREQ1*	AP12	PCIE WLAN TO AP CLKREQ L	BI 33
PCIE_CLKREQ2*	AR12	NC	
PCIE_CLKREQ3*	AT12	NC	

PCIE_PERST0*	AR10	PCIE AP TO NAND RESET L	OUT 13
PCIE_PERST1*	AT10	PCIE AP TO WLAN RESET L	OUT 33
PCIE_PERST2*	AP11	NC	
PCIE_PERST3*	AR11	NC	

R0700 100K 5% 1/32W MF 01005 ROOM=SOC
R0701 100K 5% 1/32W MF 01005 ROOM=SOC

PCIE_EXT_REF_CLK_P	AR33	
PCIE_EXT_REF_CLK_N	AT33	
PCIE_RX_TX_BYPASS_CLK_P	AT29	
PCIE_RX_TX_BYPASS_CLK_N	AR29	

PCIE_RCAL_P	AT30	R0730 3.01K 1% 1/32W MF 01005 ROOM=SOC OMIT_TABLE	C0730 100PF 5% 16V NP0-C0G 01005 ROOM=SOC OMIT_TABLE
PCIE_RCAL_N	AR30	45 PCIE RCAL N	

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE: SOC:PCIE

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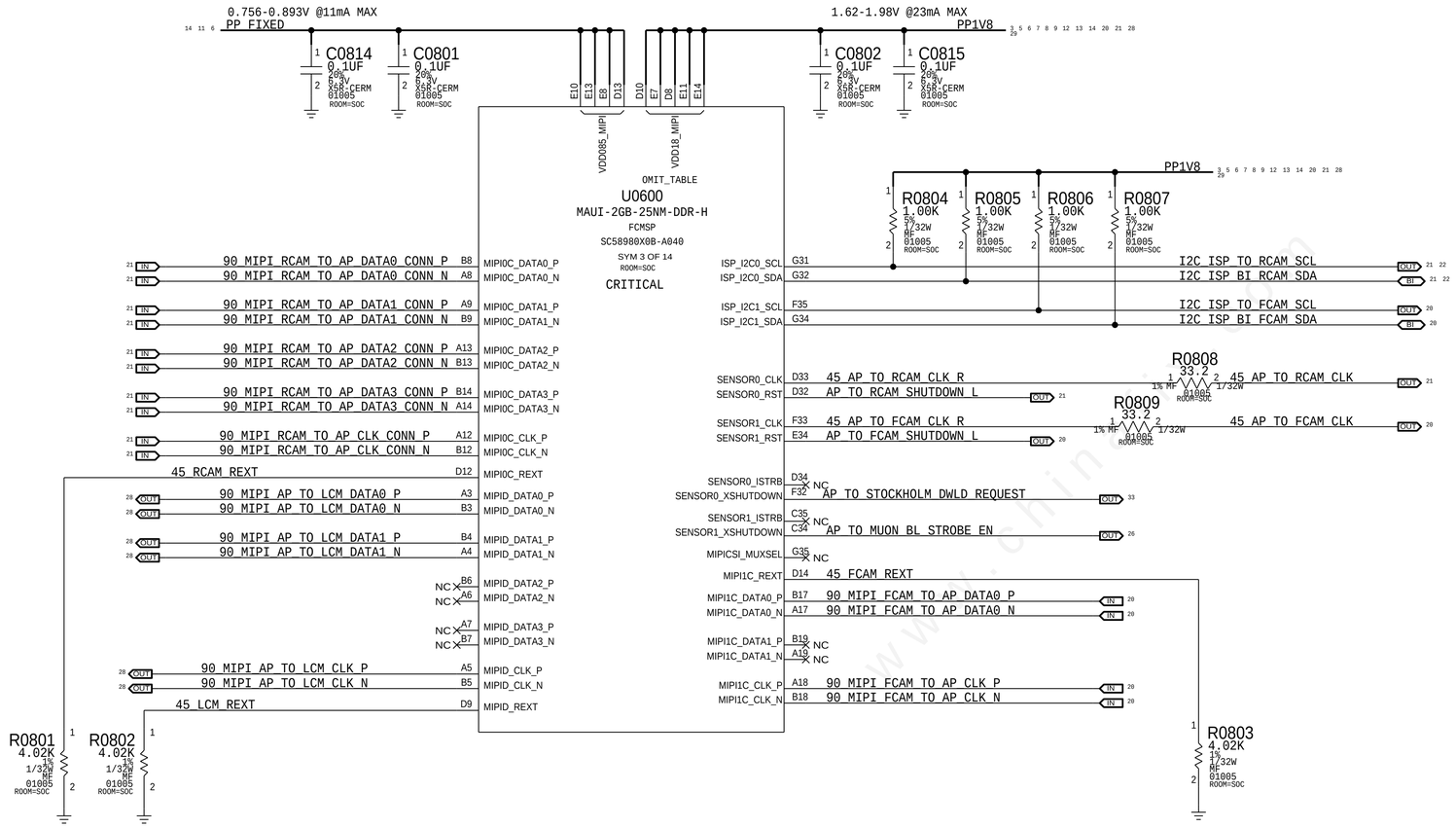
SOC - CAMERA & DISPLAY INTERFACES



SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SOC:CAMERA & DISPLAY

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SOC - GPIO & SERIAL INTERFACES

U0600 MAUI-2GB-25NM-DDR-H FCMSP SC58980X0B-A040 SYM 5 OF 14 ROOM=SOC CRITICAL (OMIT_TABLE)

	BUTTON_VOL_UP_L	D1	GPIO_0
	BUTTON_VOL_DOWN_L	F1	GPIO_1
	SPEAKERAMP_TO_AP_INT_L	E2	GPIO_2
		F3	GPIO_3
	AP_TO_SPEAKERAMP_RESET_L	F2	GPIO_4
	AP_TO_BT_WAKE	H3	GPIO_5
	AP_TO_BB_RESET_L	G3	GPIO_6
	PCIE_AP_TO_WLAN_DEV_WAKE	J1	GPIO_7
	AP_TO_LED_DRIVER_EN	H4	GPIO_8
	AP_TO_TOUCH_RESET_L	K1	GPIO_9
	AP_TO_LCM_RESET_L	J3	GPIO_10
	PMU_TO_AP_IRQ_L	K2	GPIO_11
		J4	GPIO_12
	AP_TO_STOCKHOLM_DEV_WAKE	L2	GPIO_13
	BOARD_ID3	K3	GPIO_14
		L3	GPIO_15
	BOOT_CONFIG0	N1	GPIO_16
	AP_TO_BB_WAKE_MODEM	AH2	GPIO_17
	LCM_TO_AP_HIFA_BSYNC	AH3	GPIO_18
	BB_TO_AP_HSIC_DEVICE_RDY	AH4	GPIO_19
	BB_TO_AP_GPS_TIME_MARK	AJ1	GPIO_20
	AP_TO_BB_HSIC_HOST_RDY	AJ2	GPIO_21
	BB_TO_AP_RESET_DETECT_L	AJ3	GPIO_22
	BOOT_CONFIG1	AJ4	GPIO_23
	FORCE_DFU	AK1	GPIO_24
	DFU_STATUS	AP3	GPIO_25
	BOOT_CONFIG2	AN4	GPIO_26
	BOARD_ID4	AP4	GPIO_27
	CODEC_TO_AP_PMU_INT_L	AP5	GPIO_28
	AP_TO_BB_RADIO_ON_L	AR2	GPIO_29
	AP_TO_NAND_FW_STRAP	AR3	GPIO_30
	TOUCH_TO_AP_INT_L	AR4	GPIO_31
	BOARD_REV3	AP6	GPIO_32
	BOARD_REV2	AT3	GPIO_33
	BOARD_REV1	AT4	GPIO_34
	BOARD_REV0	AR6	GPIO_35
	AP_TO_BB_COREDUMP	AP7	GPIO_36
	BB_TO_AP_IPC_GPIO	AT5	GPIO_37
	BUTTON_RINGER_A	AP8	GPIO_38
	AP_TO_BB_MESA_ON	AP9	GPIO_39
	CAM_EXT_LDO_EN	AP10	GPIO_40
			GPIO_41
			GPIO_42

TMR32_PWM0	AE1	NC	
TMR32_PWM1	AF2	AP_TO_VIBE_TRIG	OUT 32
TMR32_PWM2	AF3	NC	
UART0_RXD	AE3	UART_AP_DEBUG_RXD	IN 30
UART0_TXD	AE4	UART_AP_DEBUG_TXD	OUT 30
UART1_CTS*	K31	UART_BT_TO_AP_CTS_L	IN 33
UART1_RTS*	K32	UART_AP_TO_BT_RTS_L	OUT 33
UART1_RXD	L33	UART_BT_TO_AP_RXD	IN 33
UART1_TXD	L32	UART_AP_TO_BT_TXD	OUT 33
UART2_CTS*	AT23	UART_STOCKHOLM_TO_AP_CTS_L	IN 33
UART2_RTS*	AR20	UART_AP_TO_STOCKHOLM_RTS_L	OUT 33
UART2_RXD	AP23	UART_STOCKHOLM_TO_AP_RXD	IN 33
UART2_TXD	AP22	UART_AP_TO_STOCKHOLM_TXD	OUT 33
UART3_CTS*	N4	UART_BB_TO_AP_CTS_L	IN 33
UART3_RTS*	P3	UART_AP_TO_BB_RTS_L	OUT 33
UART3_RXD	R3	UART_BB_TO_AP_RXD	IN 33
UART3_TXD	R2	UART_AP_TO_BB_TXD	OUT 33
UART4_CTS*	J33	UART_WLAN_TO_AP_CTS_L	IN 33
UART4_RTS*	J34	UART_AP_TO_WLAN_RTS_L	OUT 33
UART4_RXD	J35	UART_WLAN_TO_AP_RXD	IN 33
UART4_TXD	K33	UART_AP_TO_WLAN_TXD	OUT 33
UART5_RTXD	T32	SWI_AP_BI_TIGRIS	BI 9 17
UART6_RXD	AF1	UART_ACCESSORY_TO_AP_RXD	IN 30
UART6_TXD	AE2	UART_AP_TO_ACCESSORY_TXD	OUT 30
UART7_RXD	J31	NC	
UART7_TXD	J32	NC	

	45_I2S_AP_TO_CODEC_MCLK	R0920 33.2 1% 1/32W MF 01005 ROOM=SOC	45_I2S_AP_TO_CODEC_MCLK_R
	45_I2S_AP_TO_SPEAKERAMP_MCLK	R0922 33.2 1% 1/32W MF 01005 ROOM=SOC	45_I2S_AP_TO_SPEAKERAMP_MCLK_R

	45_I2S_AP_OWL_TO_CODEC_XSP_BCLK	P34	I2S0_MCK
	I2S_AP_OWL_TO_CODEC_XSP_LRCLK	R34	I2S0_BCLK
	I2S_CODEC_TO_AP_OWL_XSP_DIN	N34	I2S0_LRCK
	I2S_AP_TO_CODEC_XSP_DOUT	N35	I2S0_DIN
		M33	I2S0_DOUT
	45_I2S_AP_TO_BT_BCLK	M4 NC	I2S1_MCK
	I2S_AP_TO_BT_LRCLK	M3	I2S1_BCLK
	I2S_BT_TO_AP_DIN	P1	I2S1_LRCK
	I2S_AP_TO_BT_DOUT	N3	I2S1_DIN
		L4	I2S1_DOUT
	45_I2S_AP_TO_CODEC_ASP_BCLK	U32	I2S2_MCK
	I2S_AP_TO_CODEC_ASP_LRCLK	V33	I2S2_BCLK
	I2S_CODEC_TO_AP_ASP_DIN	U33	I2S2_LRCK
	I2S_AP_TO_CODEC_ASP_DOUT	T33	I2S2_DIN
		V34	I2S2_DOUT
	ALS_TO_AP_INT_L	AM3	I2S3_MCK
	45_I2S_AP_TO_BB_BCLK	AM4	I2S3_BCLK
	I2S_AP_TO_BB_LRCLK	AN2	I2S3_LRCK
	I2S_BB_TO_AP_DIN	AP1	I2S3_DIN
	I2S_AP_TO_BB_DOUT	AN1	I2S3_DOUT
	TRISTAR_TO_AP_INT	R32	I2S4_MCK
	45_I2S_AP_TO_CODEC_MSP_BCLK	R31	I2S4_BCLK
	I2S_AP_TO_CODEC_MSP_LRCLK	V32	I2S4_LRCK
	I2S_CODEC_TO_AP_MSP_DIN	P31	I2S4_DIN
	I2S_AP_TO_CODEC_MSP_DOUT	P32	I2S4_DOUT
	BOARD_ID2	AD4	SPI0_MISO
	BOARD_ID1	AC3	SPI0_MOSI
	BOARD_ID0	AB2	SPI0_SCLK
		AD3 NC	SPI0_SSIN
	SPI_CODEC_TO_AP_MISO	P33	SPI1_MISO
	SPI_AP_TO_CODEC_MOSI	V35	SPI1_MOSI
	SPI_AP_TO_CODEC_SCLK	N32	SPI1_SCLK
	SPI_AP_TO_CODEC_CS_L	M31	SPI1_SSIN
	SPI_TOUCH_TO_AP_MISO	E33	SPI2_MISO
	SPI_AP_TO_TOUCH_MOSI	E35	SPI2_MOSI
	SPI_AP_TO_TOUCH_SCLK_R	F34	SPI2_SCLK
	SPI_AP_TO_TOUCH_CS_L	F31	SPI2_SSIN
	SPI_MESA_TO_AP_MISO	AA2	SPI3_MISO
	SPI_AP_TO_MESA_MOSI	Y2	SPI3_MOSI
	SPI_AP_TO_MESA_SCLK_R	AA3	SPI3_SCLK
	MESA_TO_AP_INT	AC4	SPI3_SSIN

SPI_AP_TO_TOUCH_SCLK → R0960 0.00 1/32W MF 01005 ROOM=SOC 0% → SPI_TOUCH_TO_AP_MISO

SPI_AP_TO_MESA_SCLK → R0930 0.00 1/32W MF 01005 ROOM=SOC 0% → SPI_MESA_TO_AP_MISO

U0600 MAUI-2GB-25NM-DDR-H FCMSP SC58980X0B-A040 SYM 6 OF 14 ROOM=SOC CRITICAL (OMIT_TABLE)

I2C0_SCL	E31	I2C0_AP_SCL	OUT 8 16 26
I2C0_SDA	D35	I2C0_AP_SDA	BI 8 16 26
I2C1_SCL	AH1	I2C1_AP_SCL	OUT 8 17 25 30
I2C1_SDA	AG4	I2C1_AP_SDA	BI 8 17 25 30
I2C2_SCL	L31	I2C2_AP_SCL	OUT 8 20
I2C2_SDA	M32	I2C2_AP_SDA	BI 8 20
SEP_SPI0_SCLK	W3	NC	
SEP_SPI0_MISO	AA4	NC	
SEP_SPI0_MOSI	U2	NC	
SEP_I2C_SCL	V3	I2C_SEP_TO_EEPROM_SCL	OUT 8
SEP_I2C_SDA	Y4	I2C_SEP_BI_EEPROM_SDA	BI 8
SEP_GPIO0	Y3	NC	
SEP_GPIO1	AB4	NC	
SOCHOT0	AM1	PMU_TO_AP_SOCHOT0_R_L	
SOCHOT1	AM2	AP_TO_PMU_SOCHOT1_L	OUT 16
CPU_ACTIVE_STATUS	H31	NC	
CLK32K_OUT	H34	45_AP_TO_TOUCH_CLK32K_RESET_L	OUT 29
NAND_SYS_CLK	AM24	AP_TO_NAND_SYS_CLK_R	

PP1V8 3 5 6 7 8 9 12 13 14 20 21 28

R0900 2.2K 5% 1/32W MF 01005 ROOM=SOC
R0901 2.2K 5% 1/32W MF 01005 ROOM=SOC
R0902 2.2K 5% 1/32W MF 01005 ROOM=SOC
R0903 2.2K 5% 1/32W MF 01005 ROOM=SOC
R0904 1.33K 1% 1/32W MF 01005 ROOM=SOC
R0905 1.33K 1% 1/32W MF 01005 ROOM=SOC

PP1V8 3 5 6 7 8 9 12 13 14 20 21 28

R0906 2.2K 5% 1/32W MF 01005 ROOM=SOC
R0907 2.2K 5% 1/32W MF 01005 ROOM=SOC

PP1V8_ALWAYS 8 12 15 17

PP1V8 3 5 6 7 8 9 12 13 14 20 21 28

R0941 10K 5% 1/32W MF 01005 ROOM=SOC NOSTUFF
R0910 10K 5% 1/32W MF 01005 ROOM=SOC
R0909 10K 5% 1/32W MF 01005 ROOM=SOC

R0940 0.00 0% MF 1/32W 01005 ROOM=SOC

R0945 0.00 0% 1/32W MF 01005 ROOM=SOC

BUTTON PULL-UP RESISTORS AND BUFFERS

PP1V8_SDRAM 8 12 14 15 16 17 24 26 30 33

R0951 100K 5% 1/32W MF 01005 ROOM=SOC
BUTTON_RINGER_A (32 16 8)

PP1V8_SDRAM 8 12 14 15 16 17 24 26 30 33

R0950 392K 1% 1/32W MF 01005
U0901 74LVC1G34GX SOT1226
BUTTON_MENU_KEY_L (27 IN) → BUTTON_MENU_KEY_BUFF_L (OUT 9 16)

PP1V8_ALWAYS 8 12 15 17

R0952 392K 1% 1/32W MF 01005
U0902 74LVC1G34GX SOT1226
BUTTON_HOLD_KEY_L (32 IN) → BUTTON_HOLD_KEY_BUFF_L (OUT 9 16)

ANTI-ROLLBACK EEPROM

128kbit
APN:335S0946

PP1V8 28 21 20 14 13 12 9 8 7 6 5 3 29

C0900 1.0UF 20% 6.3V X5R 0201-1 ROOM=SOC

U0900 M34128-FCS6_P/T WLCSP CRITICAL ROOM=SOC
A1 VCC · B1 SCL · SDA A2 · B2 VSS

I2C_SEP_BI_EEPROM_SDA (BI 8)
I2C_SEP_TO_EEPROM_SCL (IN 8)

I2C PROBE POINTS

I2C0_AP_SCL (26 16 8)	P3MM-NSM ROOM=SOC	PP0900
I2C0_AP_SDA (26 16 8)	P3MM-NSM ROOM=SOC	PP0901
I2C1_AP_SCL (30 25 17 8)	P3MM-NSM ROOM=SOC	PP0902
I2C1_AP_SDA (30 25 17 8)	P3MM-NSM ROOM=SOC	PP0903
I2C2_AP_SCL (20 8)	P3MM-NSM ROOM=SOC	PP0904
I2C2_AP_SDA (20 8)	P3MM-NSM ROOM=SOC	PP0905

SPI PROBE POINTS

PP0906 P2MM-NSM ROOM=SOC	SPI_TOUCH_TO_AP_MISO (8 29)	PP0908 P2MM-NSM ROOM=SOC SPI_CODEC_TO_AP_MISO (8 24)
PP0907 P2MM-NSM ROOM=SOC	SPI_AP_TO_TOUCH_MOSI (8 29)	PP0909 P2MM-NSM ROOM=SOC SPI_AP_TO_CODEC_MOSI (8 24)
		PP09010 P2MM-NSM ROOM=SOC SPI_AP_TO_CODEC_SCLK (8 24)

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE: SOC:SERIAL & GPIO

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SOC - OWL

POWER STATE CONTROL PROBE POINTS

16 9 OWL_TO_PMU_ACTIVE_REQUEST — ROOM=SOC, P3MM-NSM, SM, PP1020
30 26 16 9 5 PMU_TO_OWL_ACTIVE_READY — ROOM=SOC, P3MM-NSM, SM, PP1021
16 9 OWL_TO_PMU_SLEEP1_REQUEST — ROOM=SOC, P3MM-NSM, SM, PP1022
16 11 9 PMU_TO_OWL_SLEEP1_READY — ROOM=SOC, P3MM-NSM, SM, PP1023

OMIT_TABLE

U0600
MAUI-2GB-25NM-DDR-H
FCMSP
SC58980X0B-A040
SYM 7 OF 14
ROOM=SOC

CRITICAL

16 9 OUT	OWL_TO_PMU_SLEEP1_REQUEST	AD30	OWL_DDR_REQ
16 11 9 IN	PMU_TO_OWL_SLEEP1_READY	AB33	OWL_DDR_RESET*
19 9 OUT	SPI_OWL_TO_COMPASS_CS_L	AF35	OWL_FUNC_0
19 IN	COMPASS_TO_OWL_INT	AH32	OWL_FUNC_1
19 IN	ACCEL_TO_OWL_INT2_R	AG32	OWL_FUNC_2
19 IN	ACCEL_GYRO_TO_OWL_INT1	AG31	OWL_FUNC_3
19 9 OUT	SPI_OWL_TO_ACCEL_GYRO_CS_L	AG30	OWL_FUNC_4
19 IN	ACCEL_GYRO_TO_OWL_INT2	AF33	OWL_FUNC_5
NC		AF34	OWL_FUNC_6
33 29 28 8 IN	LCM_TO_AP_HIFA_BSYNC	AF34	OWL_FUNC_7
9	OWL_TO_PMU_SHDN_BI_TIGRIS_SWI	AF31	OWL_FUNC_8
NC		AF32	OWL_FUNC_9
19 9 OUT	SPI_OWL_TO_DISCRETE_ACCEL_CS_L	AH31	OWL_I2CM_SCL
19 IN	ACCEL_TO_OWL_INT1_R	AH33	OWL_I2CM_SDA
19 9 IN	SPI_IMU_TO_OWL_MISO	AK31	OWL_SPI_MISO
19 9 OUT	SPI_OWL_TO_IMU_MOSI	AK32	OWL_SPI_MOSI
19 9 OUT	SPI_OWL_TO_IMU_SCLK	AL33	OWL_SPI_SCLK
33 IN	UART_BB_TO_OWL_RXD	AJ32	OWL_UART0_RXD
33 OUT	UART_OWL_TO_BB_TXD	AK33	OWL_UART0_TXD
33 OUT	OWL_TO_WLAN_CONTEXT_B	AH30	OWL_UART1_RXD
33 OUT	OWL_TO_WLAN_CONTEXT_A	AJ31	OWL_UART1_TXD
NC		AJ34	OWL_UART2_RXD
NC		AJ33	OWL_UART2_TXD
24 8 OUT	45_I2S_AP_OWL_TO_CODEC_XSP_BCLK	AD34	OWL_I2S_BCLK
24 8 IN	I2S_CODEC_TO_AP_OWL_XSP_DIN	AA34	OWL_I2S_DIN
NC		AE32	OWL_I2S_MCK
24 8 OUT	I2S_AP_OWL_TO_CODEC_XSP_LRCLK	AE31	OWL_I2S_LRCK

CFSB_AOP	W33	PMU_TO_SYSTEM_COLD_RESET_L	3 5 16 IN
AWAKE_REQ	AA33	OWL_TO_PMU_ACTIVE_REQUEST	9 16 OUT
AWAKE_RESET*	AD32	PMU_TO_OWL_ACTIVE_READY	5 9 16 26 30 IN
PMGR_MISO	AL2	DWI_PMU_TO_PMGR_MISO	16 IN
PMGR_MOSI	AL1	45_DWI_PMGR_TO_PMU_BACKLIGHT_MOSI	16 26 OUT
PMGR_SCLK0	AK4	45_DWI_PMGR_TO_PMU_SCLK	16 OUT
PMGR_SSCLK1	AL3	45_DWI_PMGR_TO_BACKLIGHT_SCLK	26 OUT
RT_CLK32768	AD31	PMU_TO_OWL_CLK32K	16 IN
OWL_SWD_TCK_OUT	AE33	SWD_AP_PERIPHERAL_SWCLK	13 33 OUT
OWL_SWD_TMS0	AD35	NC	
OWL_SWD_TMS1	AC33	SWD_AP_BI_BB_SWDIO	33 BI
SWD_TMS2	U31	SWD_AP_BI_NAND_SWDIO	13 BI
SWD_TMS3	T31	NC	
HOLD_KEY*	U3	BUTTON_HOLD_KEY_BUFF_L	8 16 IN
SKEY*	W4	NC	
MENU_KEY*	V4	BUTTON_MENU_KEY_BUFF_L	8 16 IN

PP1003 P2MM-NSM
PP1002 P2MM-NSM
PP1004 P2MM-NSM

PP1V8 — 3 5 6 7 8 12 13 14 20 21 28 29
R1002 1.00K 5% 1/32W MF 01005 ROOM=SOC — 1 2 — BI 13

PP1005 P2MM-NSM — SPI_OWL_TO_IMU_MOSI — 9 19
PP1006 P2MM-NSM — SPI_IMU_TO_OWL_MISO — 9 19
PP1007 P2MM-NSM — SPI_OWL_TO_IMU_SCLK — 9 19
PP1008 P2MM-NSM — SPI_OWL_TO_DISCRETE_ACCEL_CS_L — 9 19
PP1009 P2MM-NSM — SPI_OWL_TO_ACCEL_GYRO_CS_L — 9 19
PP1010 P2MM-NSM — SPI_OWL_TO_COMPASS_CS_L — 9 19

OWL SYSTEM SHUTDOWN OPTION

9 OWL_TO_PMU_SHDN_BI_TIGRIS_SWI

NOSTUFF R1020 10 MF 5% 1/32W 01005 ROOM=SOC — SWI_AP_BI_TIGRIS — 8 17 BI
NOSTUFF R1021 10 MF 5% 1/32W 01005 ROOM=SOC — OWL_TO_PMU_SHDN — 16 OUT

SYNC_MASTER=N/A SYNC_DATE=N/A
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SOC - CPU, GPU & SOC RAILS

PP_GPU
0.8V @10.5A MAX

C1100 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC
C1101 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC
C1103 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C1104 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C1105 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC

XW1110 SHORT-10L-0.1MM-SM ROOM=SOC
45_BUCK1_PP_GPU_FB → OUT

TP1120 0.5MM SM
PP_GPU

C1106 4.3UF 20% 4V CERM 0402
C1107 4.3UF 20% 4V CERM 0402
C1108 4.3UF 20% 4V CERM 0402
C1109 4.3UF 20% 4V CERM 0402
C1110 4.3UF 20% 4V CERM 0402
C1111 4.3UF 20% 4V CERM 0402

C1112 1UF 20% 4V CERM 0402
C1113 1UF 20% 4V CERM 0402
C1114 1UF 20% 4V CERM 0402
C1115 1UF 20% 4V CERM 0402
C1116 0.47UF 20% 6.3V CERM 0402
C1117 0.47UF 20% 6.3V CERM 0402

PP_CPU
0.625V @TBDA MAX
0.9V @10.5A MAX
1.0V @12.5A MAX

C1120 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC
C1121 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC
C1122 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C1123 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C1125 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC

TP1100 0.5MM SM
PP_CPU

C1126 4.3UF 20% 4V CERM 0402
C1127 4.3UF 20% 4V CERM 0402
C1128 4.3UF 20% 4V CERM 0402
C1129 4.3UF 20% 4V CERM 0402
C1130 4.3UF 20% 4V CERM 0402
C1131 4.3UF 20% 4V CERM 0402

C1132 4.3UF 20% 4V CERM 0402
C1133 4.3UF 20% 4V CERM 0402
C1134 1UF 20% 4V CERM 0402
C1135 1UF 20% 4V CERM 0402
C1136 1UF 20% 4V CERM 0402
C1137 1UF 20% 4V CERM 0402

C1138 0.47UF 20% 6.3V CERM 0402
C1139 0.47UF 20% 6.3V CERM 0402
C1140 0.47UF 20% 6.3V CERM 0402
C1141 0.47UF 20% 6.3V CERM 0402

XW1100 SHORT-10L-0.1MM-SM ROOM=SOC
45_BUCK0_PP_CPU_FB → OUT

OMIT_TABLE
U0600
MAUI-2GB-25NM-DDR-H
FCMSP
SC58980X0B-A040
SYM 8 OF 14
ROOM=SOC
CRITICAL

VDD_CPU: AA7 AA9 AA11 AB6 AB10 AB12 AC13 AD6 AD8 AD10 AD12 AE7 AE9 AE11 AE13 AF8 AF10 AF12 AH6 AH8 AH10 AH12 AJ5 AJ7 AJ9 AJ11 AJ13 AK6 AK10 AL7 AL9 AL11 AM6 AM8 AM10 AN7 AN11 AL13 Y8 Y10 Y12 AM12

VDD_GPU: G15 W13 T12 M6 U9 V12 W9 M12 M18 N15 N21 N9 F10 H14 H16 H20 H22 H6 H8 J11 J13 J17 J19 J23 J7 K10 K14 K16 K20 K22 K6 K8 L11 L13 L15 L17 L19 L21 M24 L7 L9 F8 M8 N11 N13 N17 N19 P10 G11 P12 P14 P16 P20 R15 R19 G13 R9 T10 T14 T16 U11 V14 V16 G7 R23 G9 H10 T24 P22 W17 N23 G17 G21 T18 T20 G20 H19

PP1100 P2MM-NSM SM PP ROOM=SOC — AP_CPU_SENSE_P → Y6 VDD_CPU_SENSE
PP1101 P2MM-NSM SM PP ROOM=SOC — AP_CPU_SENSE_N → Y7 VSS_CPU_SENSE

PP1102 P2MM-NSM SM PP ROOM=SOC — AP_GPU_SENSE_N → VDD_GPU_SENSE
PP1103 P2MM-NSM SM PP ROOM=SOC — AP_GPU_SENSE_P → VSS_GPU_SENSE

OMIT_TABLE
U0600
MAUI-2GB-25NM-DDR-H
FCMSP
SC58980X0B-A040
SYM 9 OF 14
ROOM=SOC
CRITICAL

VDD_SOC: AA17 AA19 AA23 AB14 AB16 AB20 AB22 AB24 AB26 AC17 AC19 AC23 AD16 AD20 AD22 AD24 AD26 AE5 AE15 AE17 AE19 AE23 AF14 AF16 AF20 AF22 AF24 AF26 AG17 AG19 AG23 AH16 AH20 AH22 AH24 AH26 AJ15 AJ17 AJ19 AJ23 AK14 J29 G23 AK22 F6 F14 AL15 AM5 G25 G27 H24 H26 H28 J27 K24 K26 K28 L27 L23 M26 M28 AL19 N7 N27 P24 P26 P28 R17 R27 R29 T22 T26 T7 T28 U17 V8 V20 V22 V24 V26 W7 W11 Y28

VSS: W23 Y14 Y16 Y20 Y22 Y24 Y26 G29 AA27 F17 F20 L29 N29 V28 L22 L24 L26 L28 M1 M5 M7 M9 M11 M13 M17 M21 M23 M25 M27 M29 M35 N6 N10 N12 N14 N16 N18 G19 N22 N24 N26 N28 N30 N33 P9 P11 P13 P15 P17 P19 P21 P23 P25 P27 P29 P35 R4 R6 R8 R10 R12 R14 M19 R18 R20 R22 R24 R26 R28 R30 T1 T2 R33 T9 T11 T13 T15 T17 P7 T23 T25 T27 T30 T35 U6 U10 U12

C1150 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC
C1151 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=SOC

PP_SOC
0.825V @4.7A MAX
0.725V @TBDA MAX

XW1120 SHORT-10L-0.1MM-SM ROOM=SOC
45_BUCK2_PP_SOC_FB → OUT

C1153 4.3UF 20% 4V CERM 0402
C1154 1UF 20% 4V CERM 0402
C1155 1UF 20% 4V CERM 0402
C1156 1UF 20% 4V CERM 0402
C1157 0.47UF 20% 6.3V CERM 0402

AJ20 VDD_SOC_SENSE
AK21 VSS_SOC_SENSE

PP1104 P2MM-NSM SM PP ROOM=SOC — AP_SOC_SENSE_N
PP1105 P2MM-NSM SM PP ROOM=SOC — AP_SOC_SENSE_P

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SOC:POWER (1/3)

Apple Inc.

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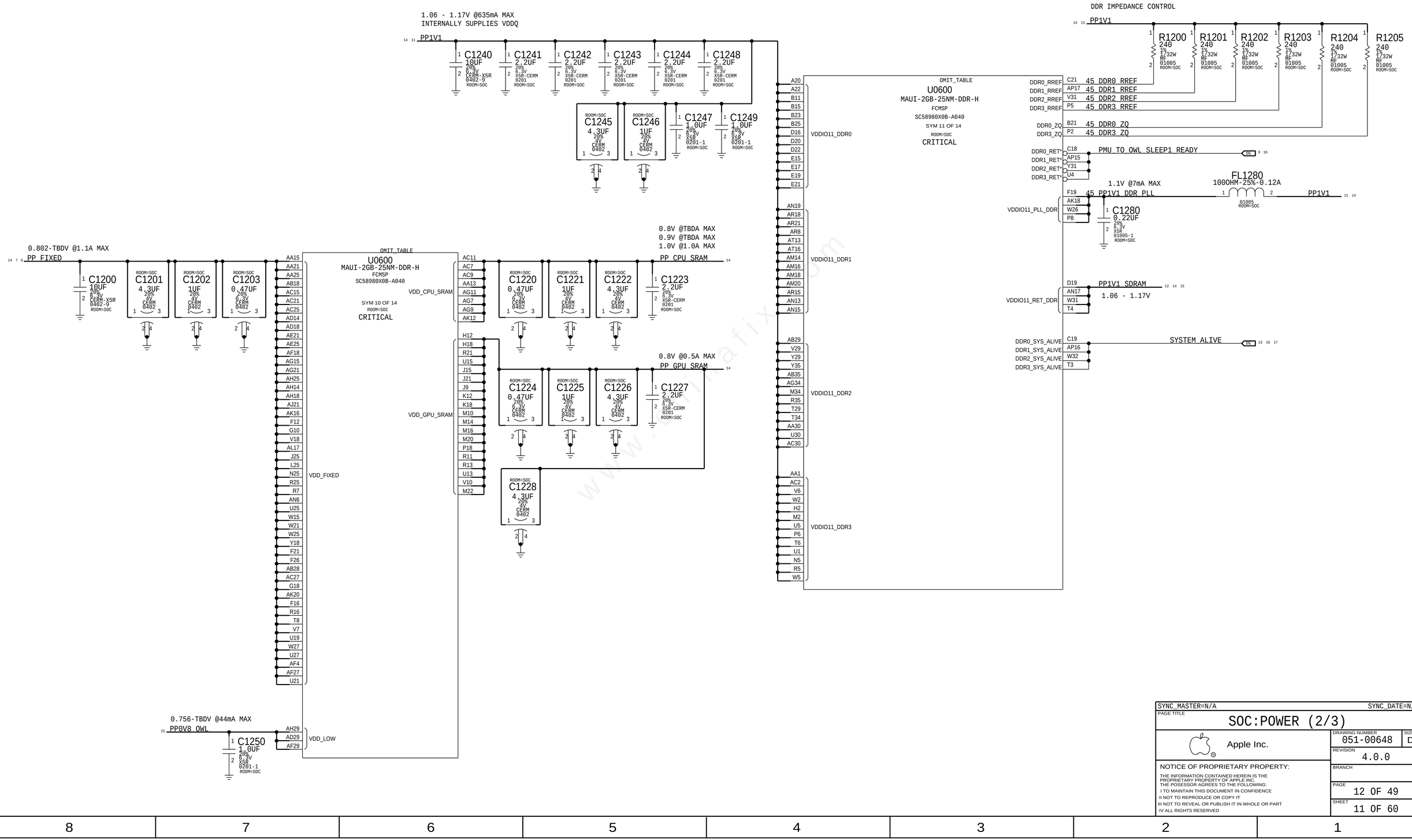
SOC - POWER SUPPLIES



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PAGE TITLE	SOC:POWER (2/3)
Apple Inc.	DRAWING NUMBER 051-00648
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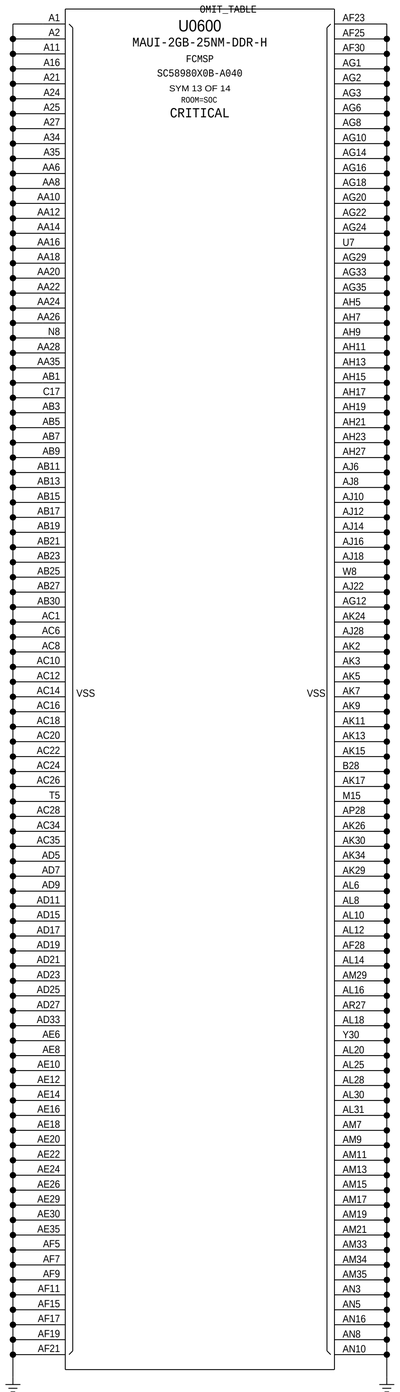
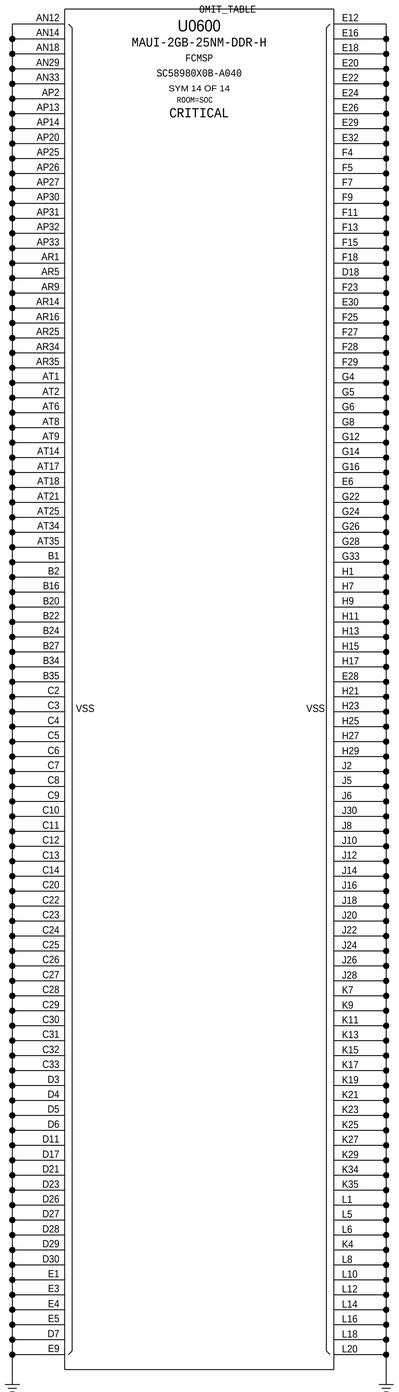
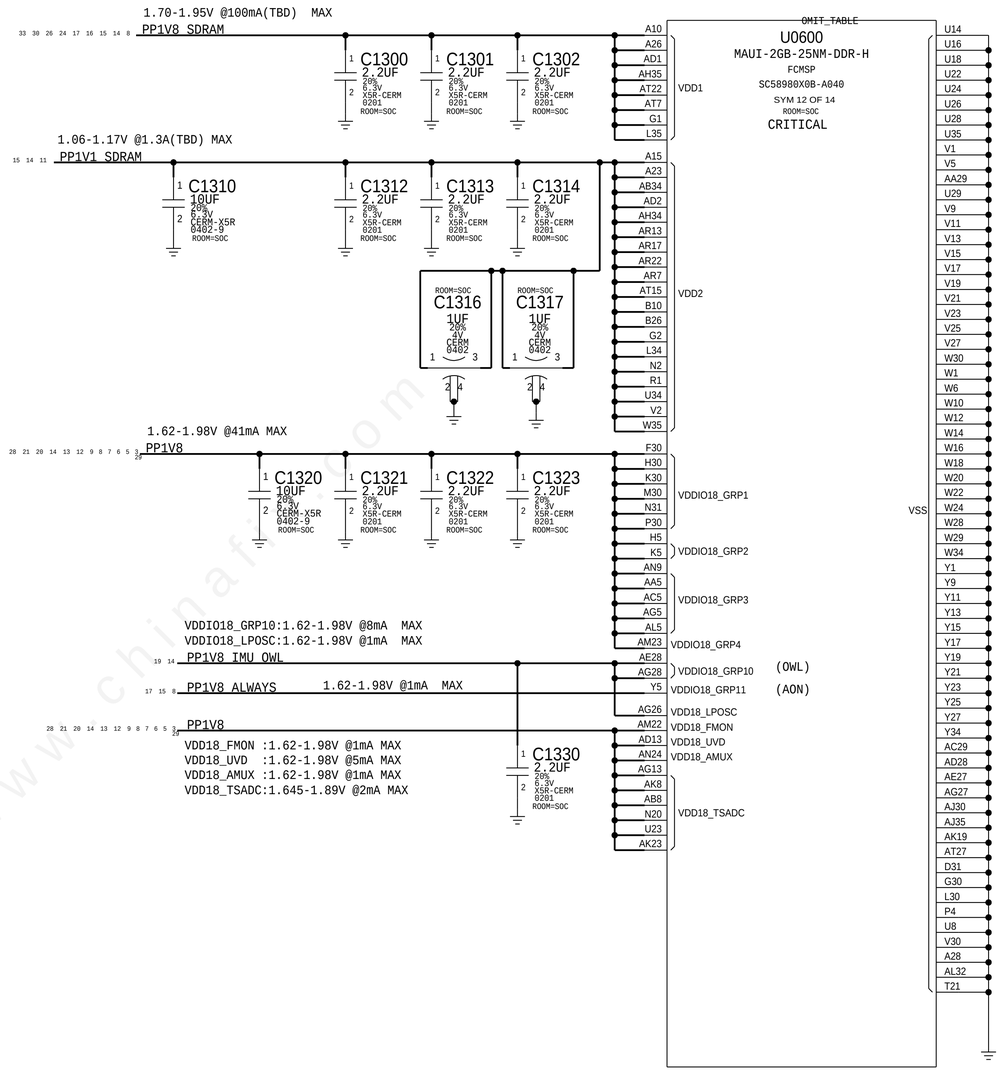
SOC - POWER SUPPLIES







SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SOC:POWER (3/3)

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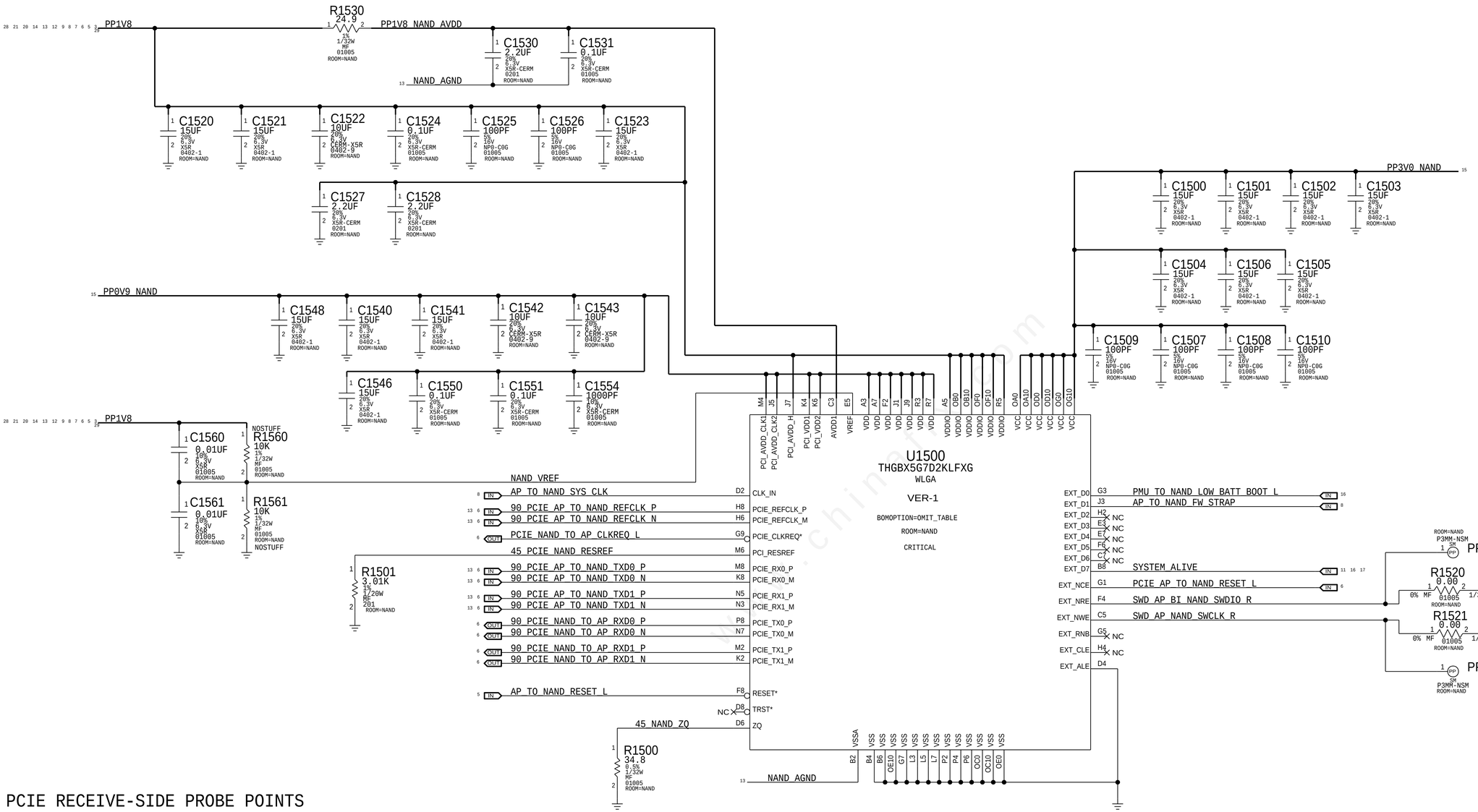
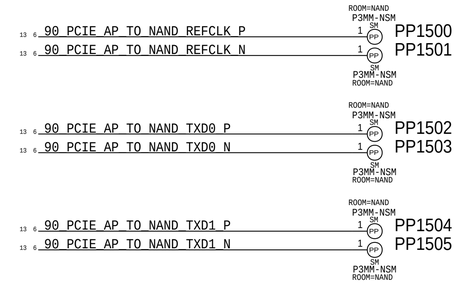
S3E NAND



PCIE RECEIVE-SIDE PROBE POINTS



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PAGE TITLE	NAND
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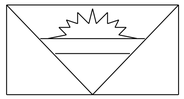
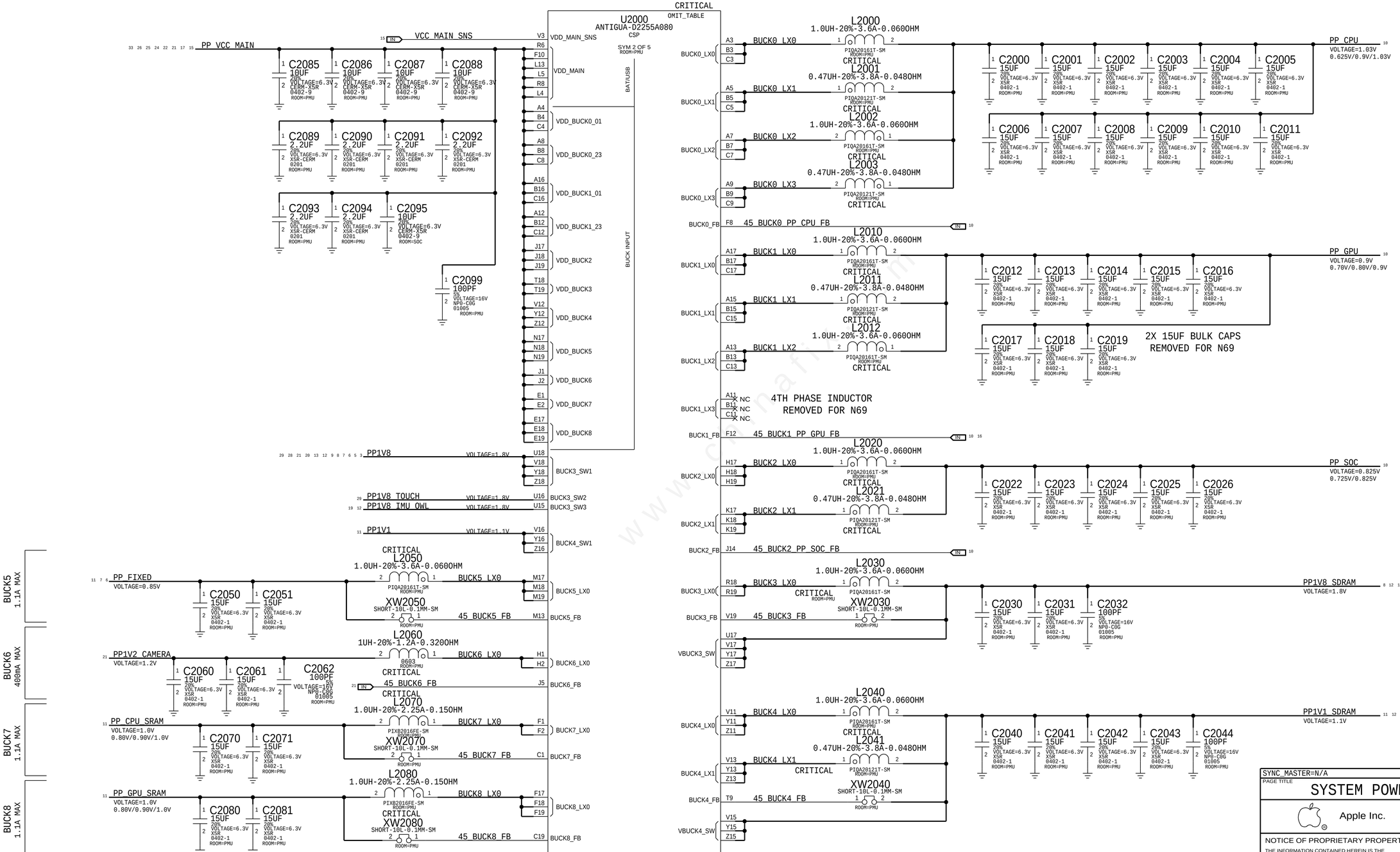
ANTIGUA PMU - Buck Supplies





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PAGE TITLE

SYSTEM POWER:PMU (1/3)

Apple Inc.

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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

PP VCC MAIN
XW2105 SHORT-10L-0.1MM-SM
VCC MAIN SNS
C2120 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2121 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2122 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2123 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2124 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2125 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2126 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU
C2127 10UF 20% 6.3V CERM-X5R 0402-9 ROOM=PMU

PP1V1 SDRAM
C2130 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2131 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU

PP1V8 SDRAM
C2132 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU

U2000 ANTIGUA-D2255A080 CSP SYM 1 OF 5 ROOM=PMU CRITICAL OMIT_TABLE

LDO INPUT
M3 VDD_LDO1_3
V2 VDD_LDO2
M2 VDD_LDO4
U1, U2 VDD_LDO5
L2 VDD_LDO6
Y6 VDD_LDO7
Y4 VDD_LDO8
Y3 VDD_LDO9
Y9, Z9 VDD_LDO10
R3 VDD_LDO11
Y5 VDD_LDO13
Y7 VDD_LDO14
N2 VDD_LDO15
K3 VDD_BYPASS
P12 VPP_OTP

LDO
VLDO1 M1
VLDO2 V1
VLDO3 L1
VLDO4 N1
VLDO5 T1, T2
VLDO6 K1, K2
VBYPASS
VLDO7 Z6
VLDO8 Z4
VLDO9 Z3
VLDO9_FB Y2 — RCAM AF FB — XW2100 SHORT-10L-0.1MM-SM ROOM=PMU
VLDO10 Y8, Z8
VLDO11 R2
VLDO12 K6
VLDO13 Z5
VLDO14 Z7
VLDO15 P2
VPUMP U19 — 45_PMU_VPUMP

VPUMP:10nF min. @ 4.6V
C2100 47NF 20% 6.3V X5R-CERM 01005 ROOM=PMU
C2101 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2102 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2103 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2104 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2106 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2107 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2108 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2109 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2110 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2111 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2112 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C2113 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2114 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2115 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU
C2116 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=PMU

VOLTAGE=3.3V PP3V3_USB — LDO1
VOLTAGE=1.8V PP1V8_VA — LDO2
VOLTAGE=3.0V PP3V0_TRISTAR — LDO3
VOLTAGE=0.8V PP0V8_OWL — LDO4
VOLTAGE=3.0V PP3V0_NAND — LDO5
VOLTAGE=3.3V PP3V3_ACC — LDO6
VOLTAGE=3.0V PP3V0_PROX_ALS — LDO7
VOLTAGE=3.1V PP3V1_VIBE — LDO8
VOLTAGE=2.5V PP2V5_RCAM_AF — LDO9
VOLTAGE=0.9V PP0V9_NAND — LDO10
VOLTAGE=3.0V PP3V0_PROX_IRLED — LDO11
VOLTAGE=1.8V PP1V8_ALWAYS — LDO12
VOLTAGE=3.1V PP3V1_MESA — LDO13
VOLTAGE=1.2V PP1V2 — LDO14
VOLTAGE=1.9V PP1V9_MESA — LDO15

U2000 ANTIGUA-D2255A080 CSP SYM 5 OF 5 ROOM=PMU CRITICAL OMIT_TABLE
NC, NC

U2000 ANTIGUA-D2255A080 CSP SYM 4 OF 5 ROOM=PMU CRITICAL OMIT_TABLE
VSS — 45_PMU_VSS_RTC
NOTE: T3 IS XTAL REF GND

SYNC_MASTER=N/A SYNC_DATE=N/A
PAGE TITLE: SYSTEM POWER:PMU (2/3)
Apple Inc.
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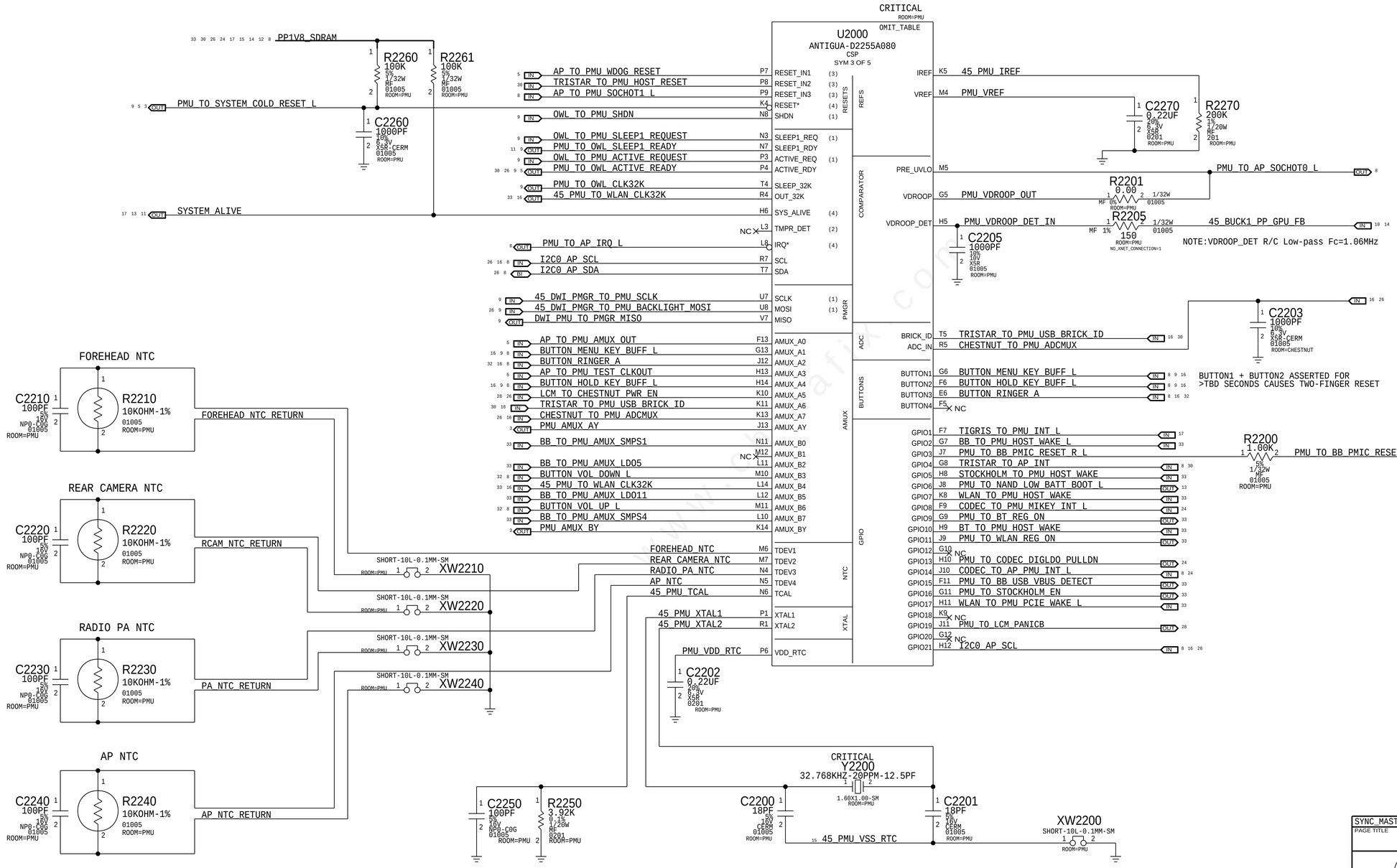
ANTIGUA PMU - GPIOs, NTCs

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

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SYSTEM POWER:PMU (3/3)

Apple Inc.

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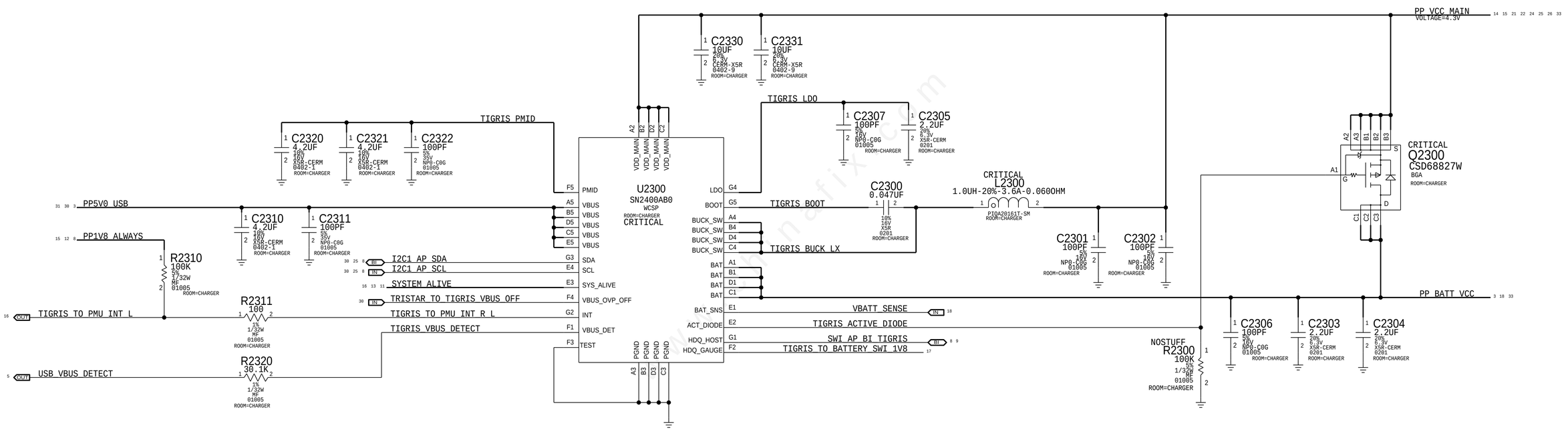
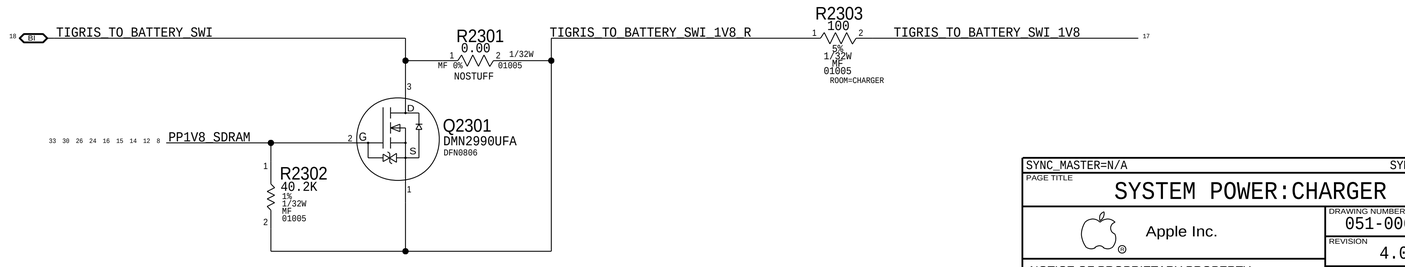
TIGRIS CHARGER

APN:343S00033





SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE

SYSTEM POWER:CHARGER

Apple Inc.

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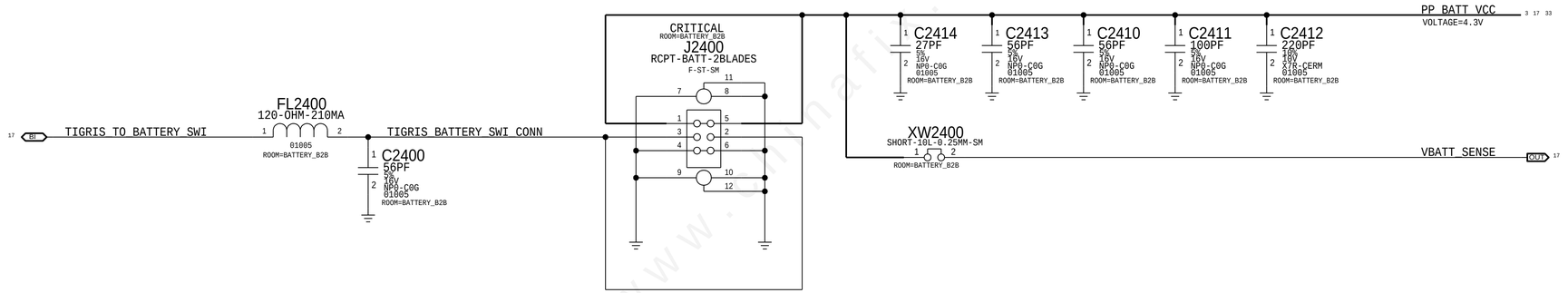
BATTERY CONNECTOR

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



SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SYSTEM POWER:BATTERY CONN

Apple Inc.

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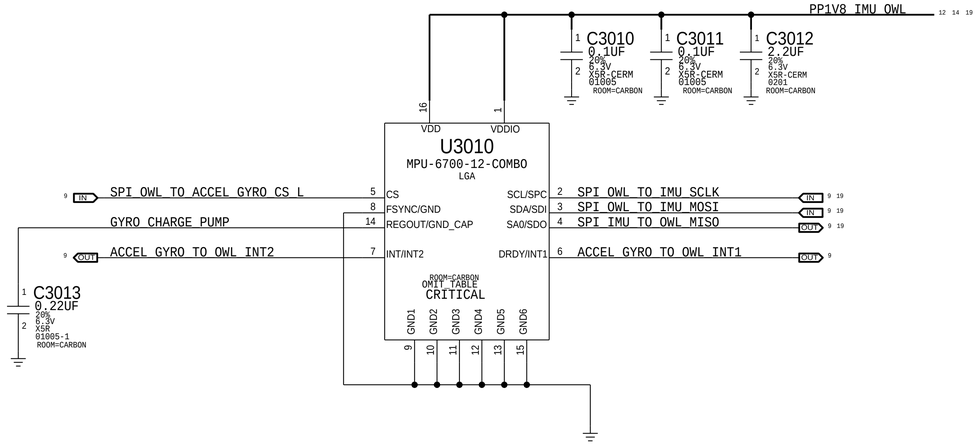
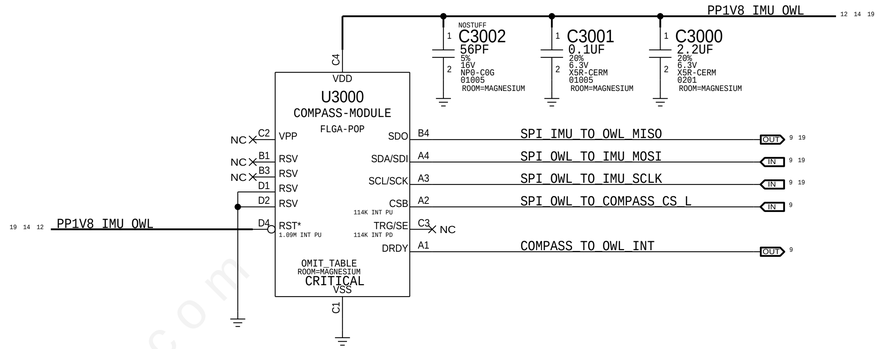
CARBON - ACCEL & GYRO

INVENSENSE (APN 338S00017): C3013=0.22UF
INVENSENSE 1.1 (APN 338S00087): C3013=0.22UF



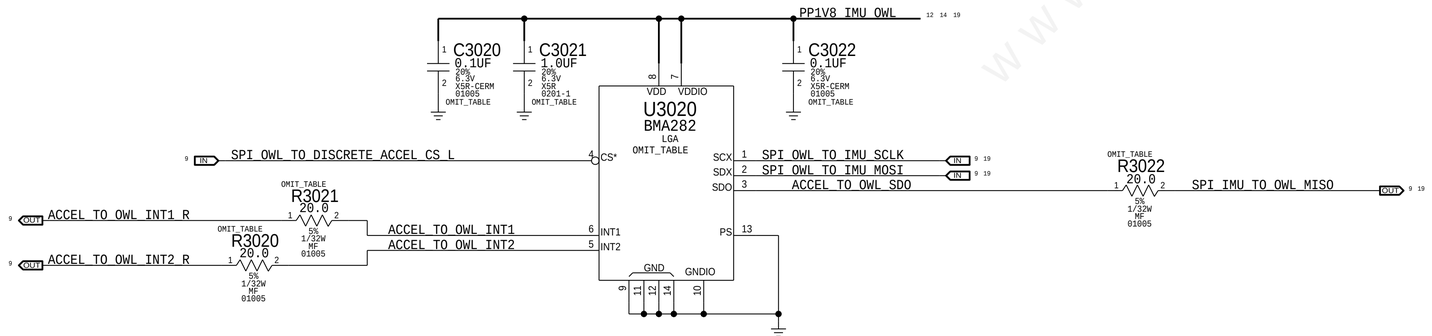
MAGNESIUM - COMPASS

ALPS (APN:338S00084)



DISCRETE ACCEL

BOSCH (APN:338S1163)



SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
SENSORS:MOTION SENSORS

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FOREHEAD FLEX (FCAM)

CAMERA POWER

FL3100
FERR-22-OHM-1A-0.055OHM
0201
ROOM=CG_B2B

PP1V8 → PP1V8_FCAM_CONN

C3101 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=CG_B2B
C3100 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

FL3104
FERR-22-OHM-1A-0.055OHM
0201
ROOM=CG_B2B

PP2V85_CAM_AVDD_LDO → PP2V85_FCAM_AVDD_CONN

C3106 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3105 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=CG_B2B
C3104 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

CAMERA I/O

FL3110
120-OHM-210MA
01005
ROOM=CG_B2B

45_AP_TO_FCAM_CLK → AP_TO_FCAM_CLK_CONN

C3110 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

FL3111
120-OHM-210MA
01005
ROOM=CG_B2B

AP_TO_FCAM_SHUTDOWN_L → AP_TO_FCAM_SHUTDOWN_CONN_L

C3111 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

R3102 0.00 MF 0% 1/32W 01005 ROOM=CG_B2B

I2C_ISP_TO_FCAM_SCL → I2C_ISP_TO_FCAM_SCL_CONN

C3112 56PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

R3103 0.00 MF 0% 1/32W 01005 ROOM=CG_B2B

I2C_ISP_BI_FCAM_SDA → I2C_ISP_BI_FCAM_SDA_CONN

C3113 56PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

CAMERA MIPI

CRITICAL
L3100
65-OHM-0.1A-0.7-2GHZ
TAM0605
SYM_VER=1
ROOM=CG_B2B

90_MIPI_FCAM_TO_AP_DATA0_P → 90_MIPI_FCAM_TO_AP_DATA0_CONN_P
90_MIPI_FCAM_TO_AP_DATA0_N → 90_MIPI_FCAM_TO_AP_DATA0_CONN_N

CRITICAL
L3102
65-OHM-0.1A-0.7-2GHZ
TAM0605
SYM_VER=2
ROOM=CG_B2B

90_MIPI_FCAM_TO_AP_CLK_P → 90_MIPI_FCAM_TO_AP_CLK_CONN_P
90_MIPI_FCAM_TO_AP_CLK_N → 90_MIPI_FCAM_TO_AP_CLK_CONN_N

PROX & ALS POWER

PP3V0_PROX_IRLED

C3120 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B
C3121 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=CG_B2B
C3122 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3123 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3124 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B

PP3V0_PROX_ALS

FL3125
120-OHM-210MA
01005
ROOM=CG_B2B

→ PP3V0_PROX_CONN

C3125 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

FL3126
120-OHM-210MA
01005
ROOM=CG_B2B

→ PP3V0_ALS_CONN

C3130 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3129 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3128 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=CG_B2B
C3127 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=CG_B2B
C3126 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

MIC3/HAC/RCVR INTERFACE

FL3150
120-OHM-210MA
01005
ROOM=CG_B2B

PP_CODEC_TO_FRONTMIC3_BIAS → PP_CODEC_TO_FRONTMIC3_BIAS_CONN

DZ3150 6.8V-100PF 01005 ROOM=CG_B2B

FL3151
70-OHM-25%-0.28A
01005
ROOM=CG_B2B

CODEC_TO_HAC_N → CODEC_TO_HAC_CONN_N

NO_XNET_CONNECTION=1
DZ3151 12V-33PF 01005-1 ROOM=CG_B2B

FL3152
70-OHM-25%-0.28A
01005
ROOM=CG_B2B

CODEC_TO_HAC_P → CODEC_TO_HAC_CONN_P

NO_XNET_CONNECTION=1
DZ3152 12V-33PF 01005-1 ROOM=CG_B2B

FL3153
70-OHM-25%-0.28A
01005
ROOM=CG_B2B

CODEC_TO_RCVR_N → CODEC_TO_RCVR_CONN_N

NO_XNET_CONNECTION=1
DZ3153 12V-33PF 01005-1 ROOM=CG_B2B

FL3154
70-OHM-25%-0.28A
01005
ROOM=CG_B2B

CODEC_TO_RCVR_P → CODEC_TO_RCVR_CONN_P

NO_XNET_CONNECTION=1
DZ3154 12V-33PF 01005-1 ROOM=CG_B2B

FL3155
120-OHM-210MA
01005
ROOM=CG_B2B

FRONTMIC3_TO_CODEC_AIN4_N → FRONTMIC3_TO_CODEC_AIN4_CONN_N

NO_XNET_CONNECTION=1
DZ3155 6.8V-100PF 01005 ROOM=CG_B2B

FL3156
120-OHM-210MA
01005
ROOM=CG_B2B

FRONTMIC3_TO_CODEC_AIN4_P → FRONTMIC3_TO_CODEC_AIN4_CONN_P

NO_XNET_CONNECTION=1
DZ3156 6.8V-100PF 01005 ROOM=CG_B2B

FOREHEAD CONNECTOR

THIS ONE ON MLB ---> 516S0986 (RCPT)
516S0987 (PLUG)

J3100
AA22L-S034VA1
F-ST-SM

		1	AP_TO_FCAM_CLK_CONN
I2C_ISP_TO_FCAM_SCL_CONN	3	4	
AP_TO_FCAM_SHUTDOWN_CONN_L	5	6	90_MIPI_FCAM_TO_AP_CLK_CONN_N
I2C_ISP_BI_FCAM_SDA_CONN	7	8	90_MIPI_FCAM_TO_AP_CLK_CONN_P
	9	10	
PP3V0_PROX_CONN	11	12	90_MIPI_FCAM_TO_AP_DATA0_CONN_N
45_PROX_TO_CUMULUS_RX_CONN	13	14	90_MIPI_FCAM_TO_AP_DATA0_CONN_P
	15	16	
CUMULUS_TO_PROX_RX_EN_1V8_CONN	17	18	PP2V85_FCAM_AVDD_CONN
I2C2_AP_BI_ALS_SDA_CONN	19	20	
ALS_TO_AP_INT_CONN_L	21	22	PP1V8_FCAM_CONN
I2C2_AP_TO_ALS_SCL_CONN	23	24	FRONTMIC3_TO_CODEC_AIN4_CONN_P
PP3V0_ALS_CONN	25	26	FRONTMIC3_TO_CODEC_AIN4_CONN_N
CODEC_TO_HAC_CONN_N	27	28	PP_CODEC_TO_FRONTMIC3_BIAS_CONN
CODEC_TO_HAC_CONN_P	29	30	
CODEC_TO_RCVR_CONN_P	31	32	PGND_IRLED_K
CODEC_TO_RCVR_CONN_N	33	34	PP3V0_PROX_IRLED
	35	36	
	37	38	
	39	40	

PROX & ALS INTERFACE

PGND_IRLED_K

R3101 11.5 1% 1/20W MF 0201

PGND_IRLED_D

CUMULUS_TO_PROX_TX_EN_BUFF

R3140 1.00M 5% 1/32W MF 01005 ROOM=CG_B2B

CRITICAL
Q3140
DMN3730UFB4
DFN1006H4-3
SYM_VER_1
ROOM=CG_B2B

R3143 0.00 0% 1/32W MF 01005 ROOM=CG_B2B

45_PROX_TO_CUMULUS_RX → 45_PROX_TO_CUMULUS_RX_CONN

C3143 56PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B NOSTUFF

FL3101
120-OHM-210MA
01005

I2C2_AP_SDA (MAKE_BASE=TRUE) → I2C2_AP_BI_ALS_SDA_CONN

C3144 56PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

FL3102
120-OHM-210MA
01005

I2C2_AP_SCL (MAKE_BASE=TRUE) → I2C2_AP_TO_ALS_SCL_CONN

C3145 56PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

FL3146
120-OHM-210MA
01005
ROOM=CG_B2B

ALS_TO_AP_INT_L → ALS_TO_AP_INT_CONN_L

C3146 100PF 5% 16V NP0-C0G 01005 ROOM=CG_B2B

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE
CAMERA:FOREHEAD FLEX B2B

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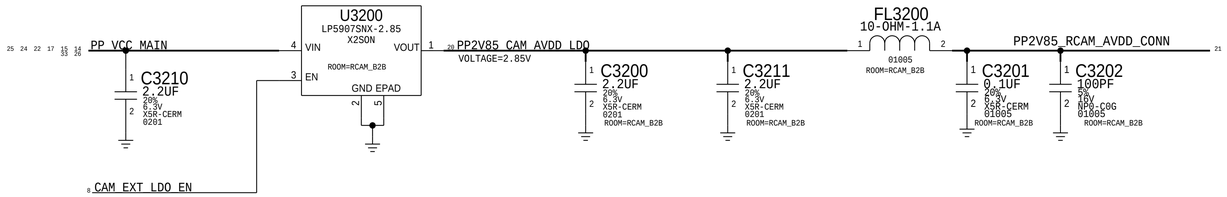
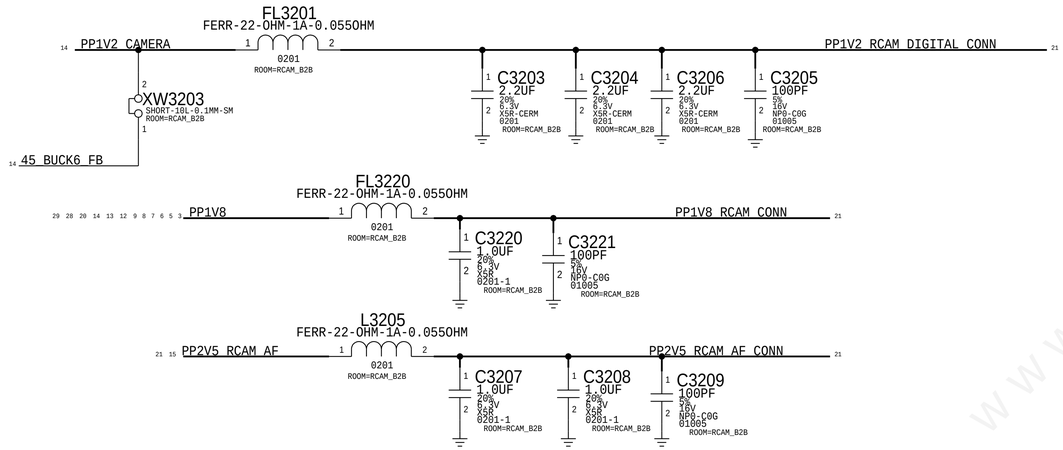
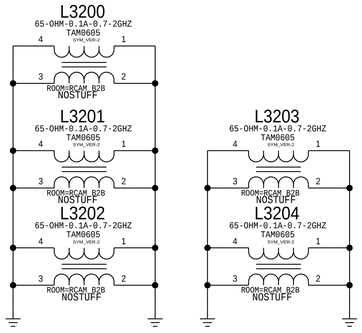
REAR CAMERA FLEX

CAMERA POWER



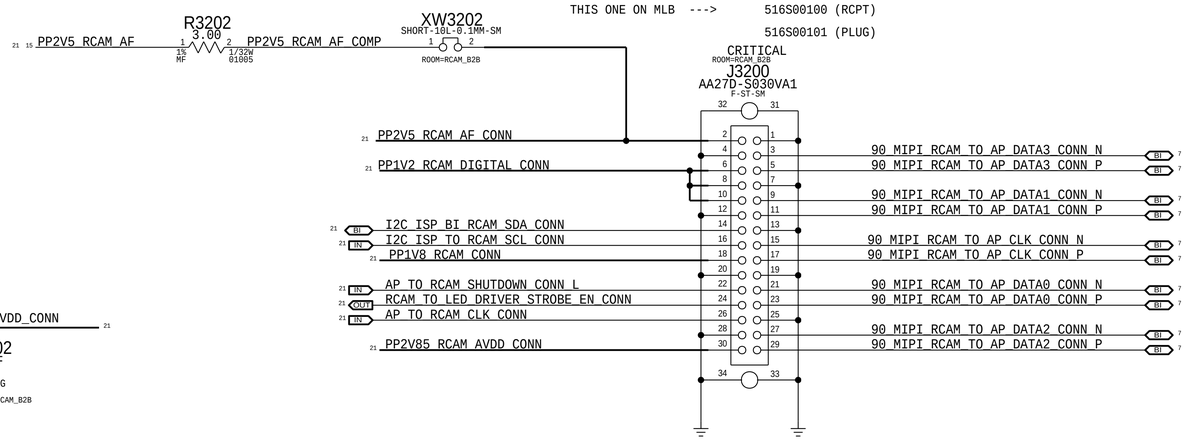


MIPI COMMON-MODE CHOKES

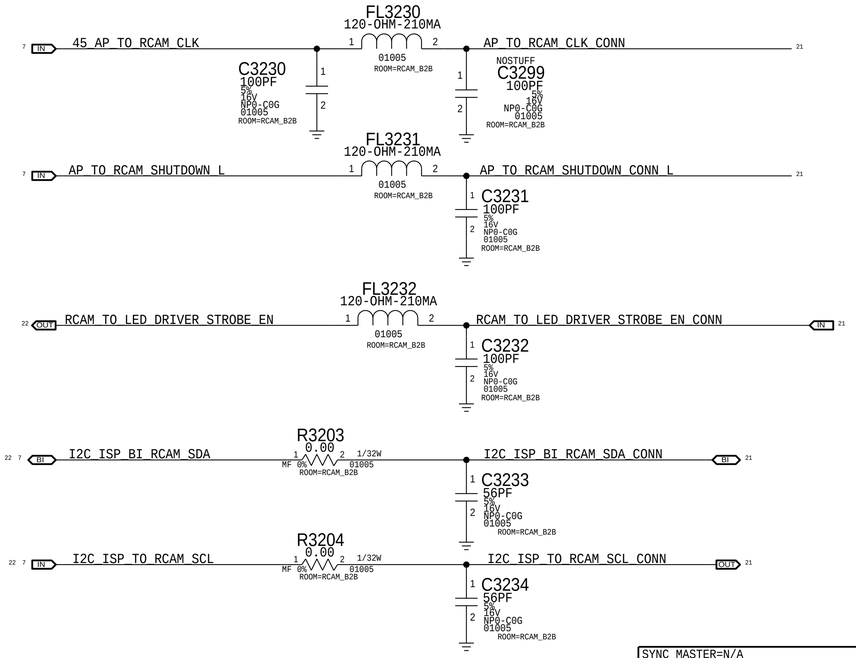


PLACEHOLDER FOOTPRINTS

RCAM CONNECTOR



DIGITAL I/O



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PAGE TITLE
CAMERA:REAR CAMERA B2B

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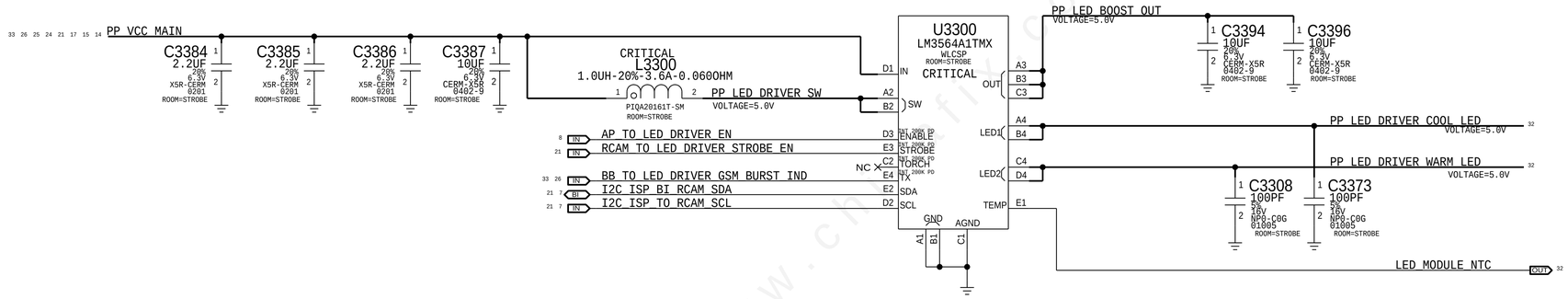
DUAL LED STROBE DRIVER

APN:353S3899



SYNC_MASTER=N/A	SYNC_DATE=N/A
PAGE TITLE	CAMERA:STROBE DRIVER
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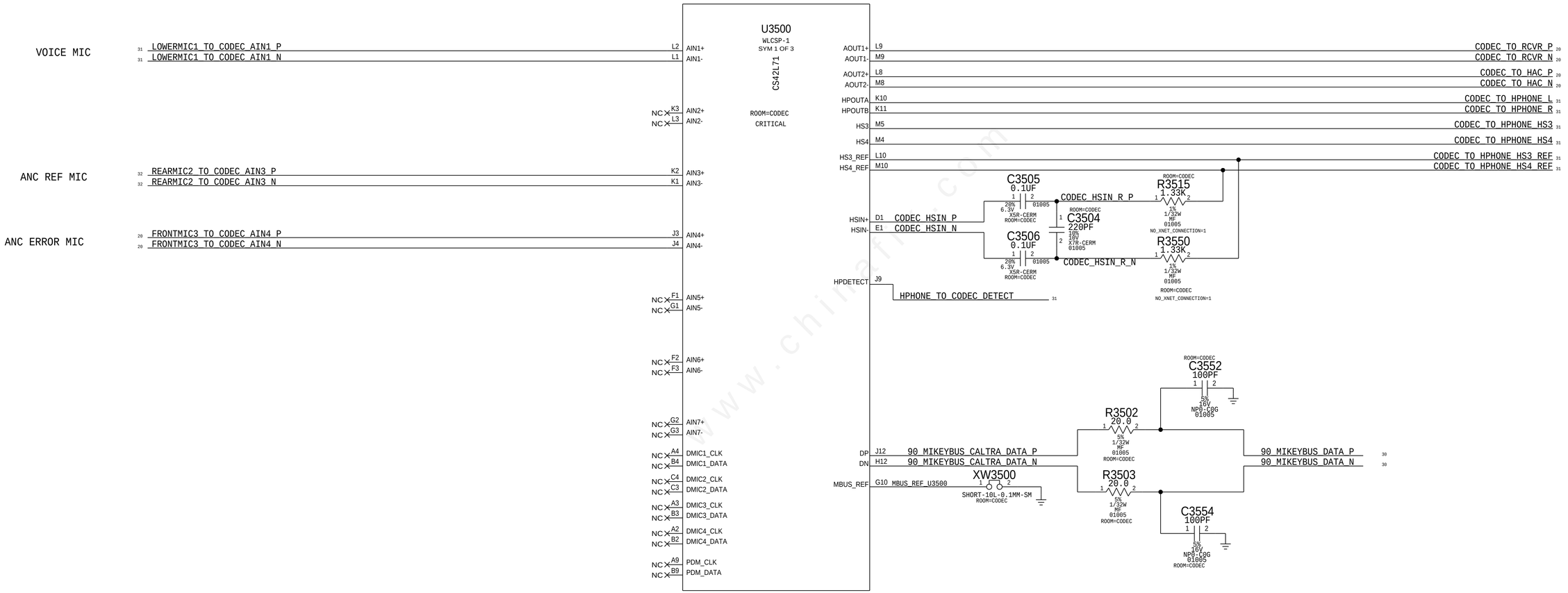
CALTRA AUDIO CODEC (ANALOG INPUTS & OUTPUTS)



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PAGE TITLE
AUDIO:CALTRA CODEC (1/2)

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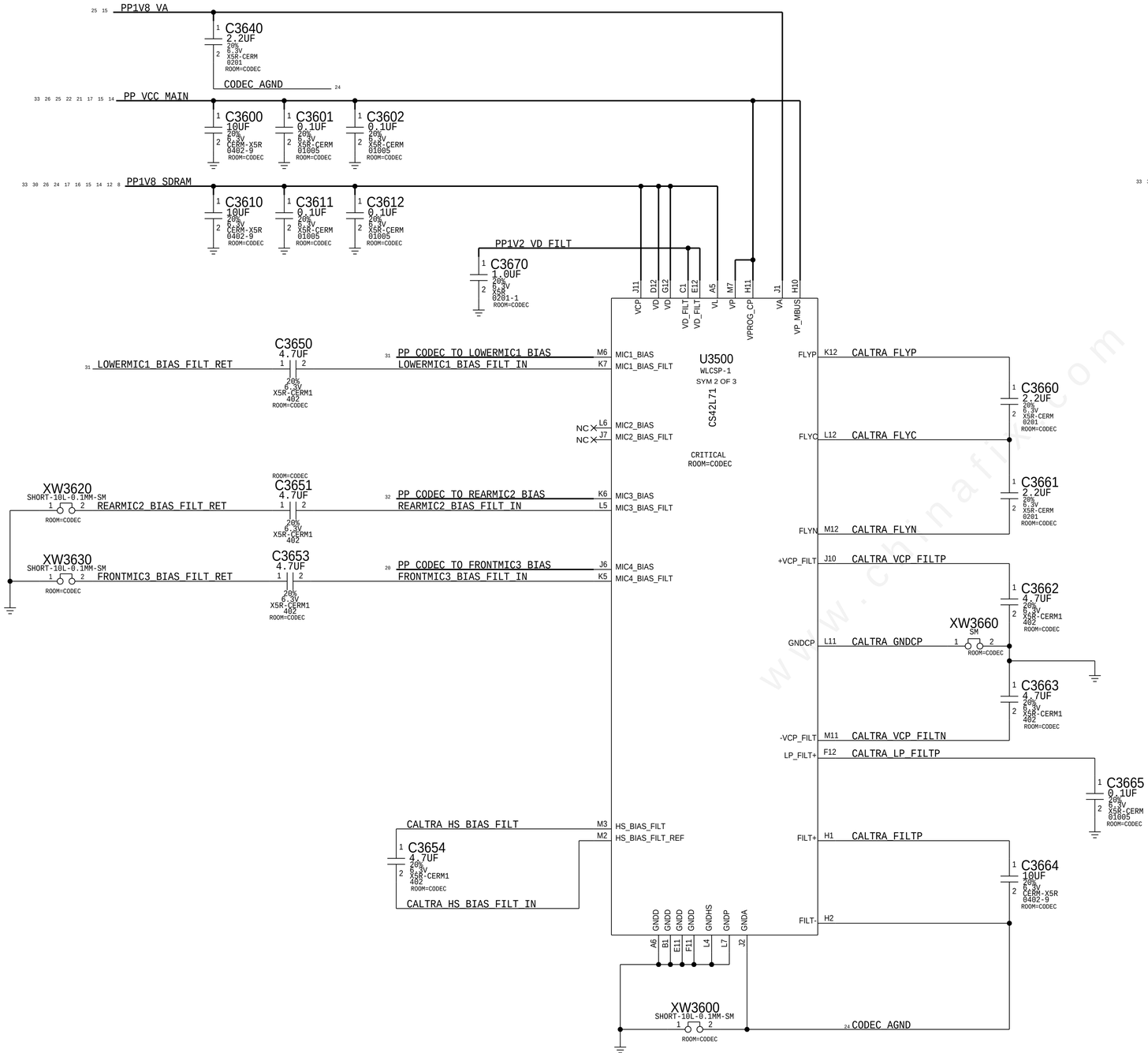
CALTRA AUDIO CODEC (POWER & I/O)



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PAGE TITLE
AUDIO:CALTRA CODEC (2/2)

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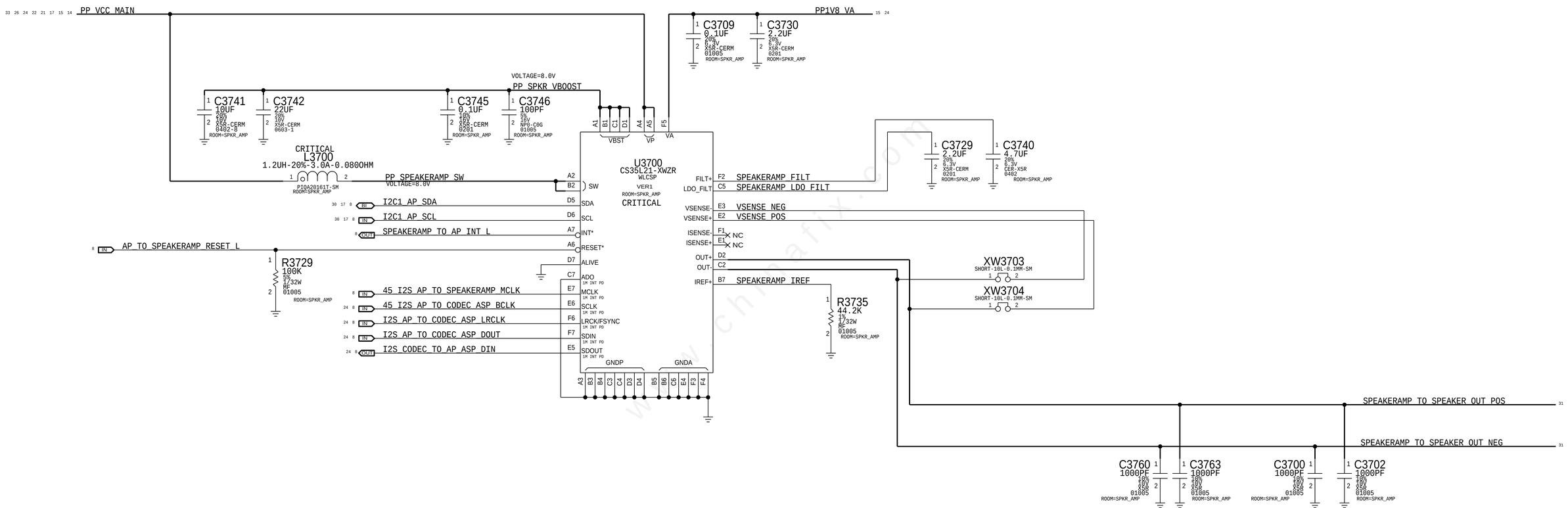
SPEAKER AMPLIFIER

APN: 338S1285



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PAGE TITLE

AUDIO:SPEAKER DRIVER

Apple Inc.

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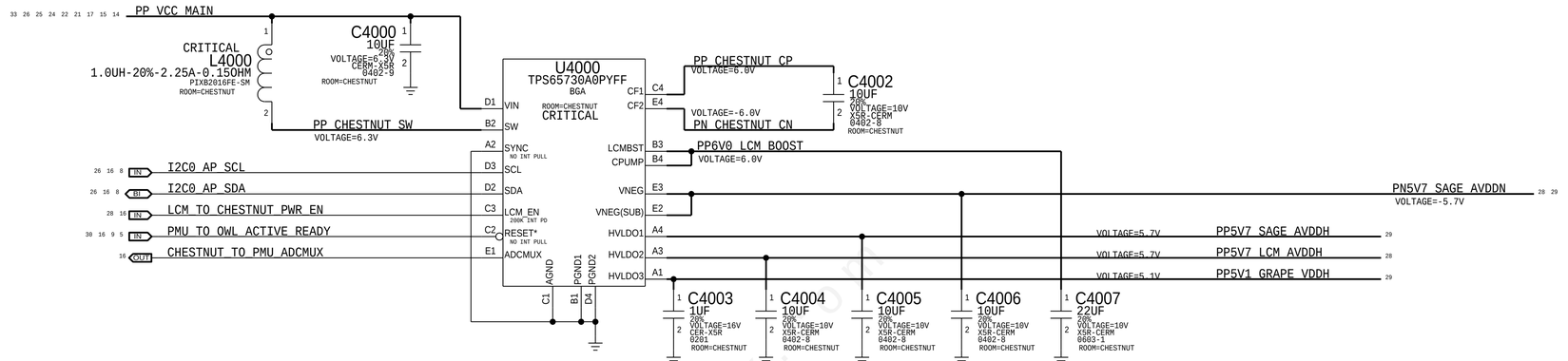
DISPLAY & TOUCH - POWER SUPPLIES

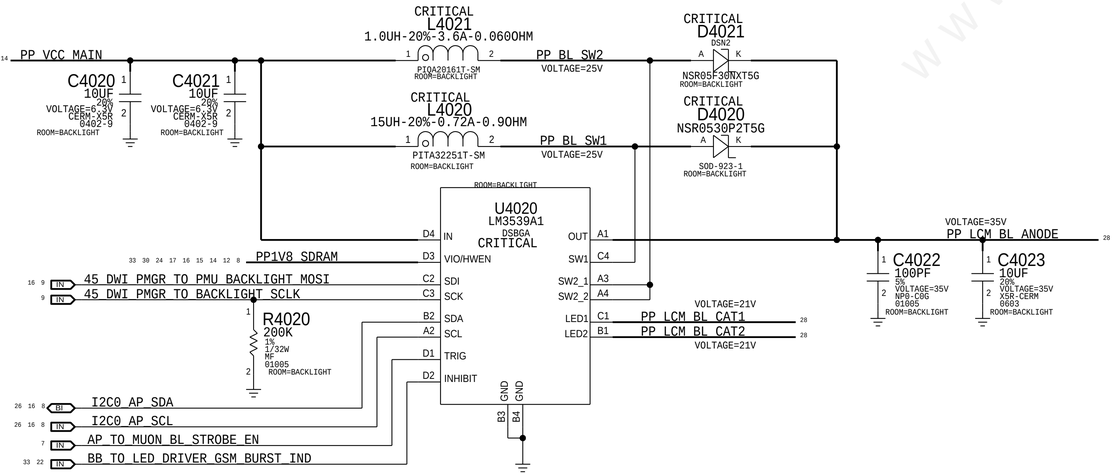
CHESTNUT DISPLAY PMU

APN:338S1172



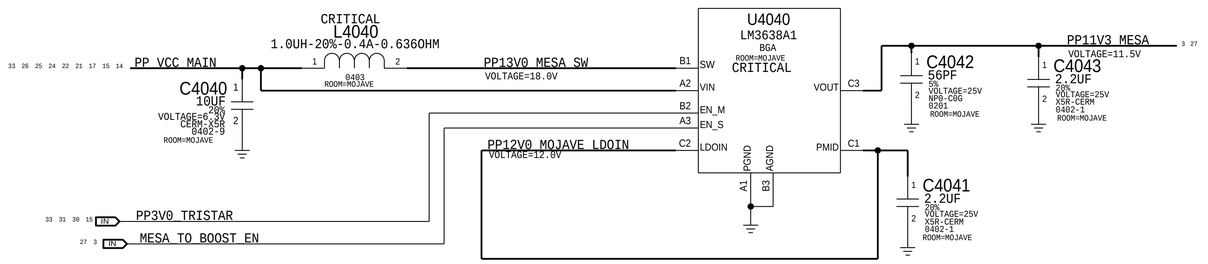
LED BACKLIGHT DRIVER

APN:353S00640



MOJAVE MESA BOOST

APN:353S4207 (A1)



SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE

DISPLAY:POWER

Apple Inc.

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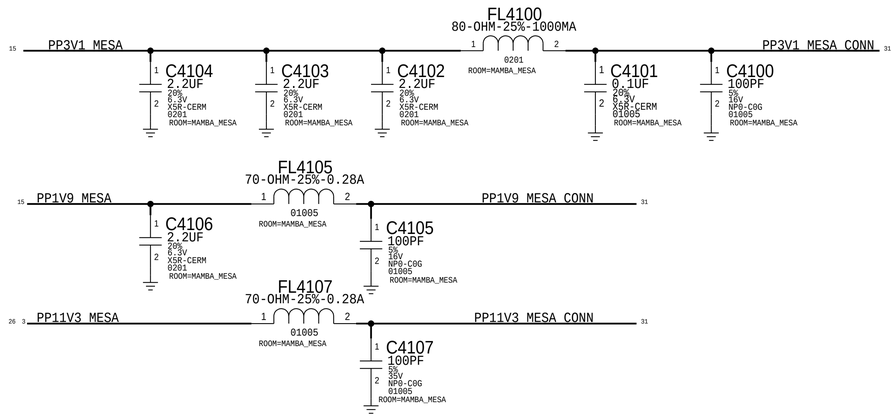
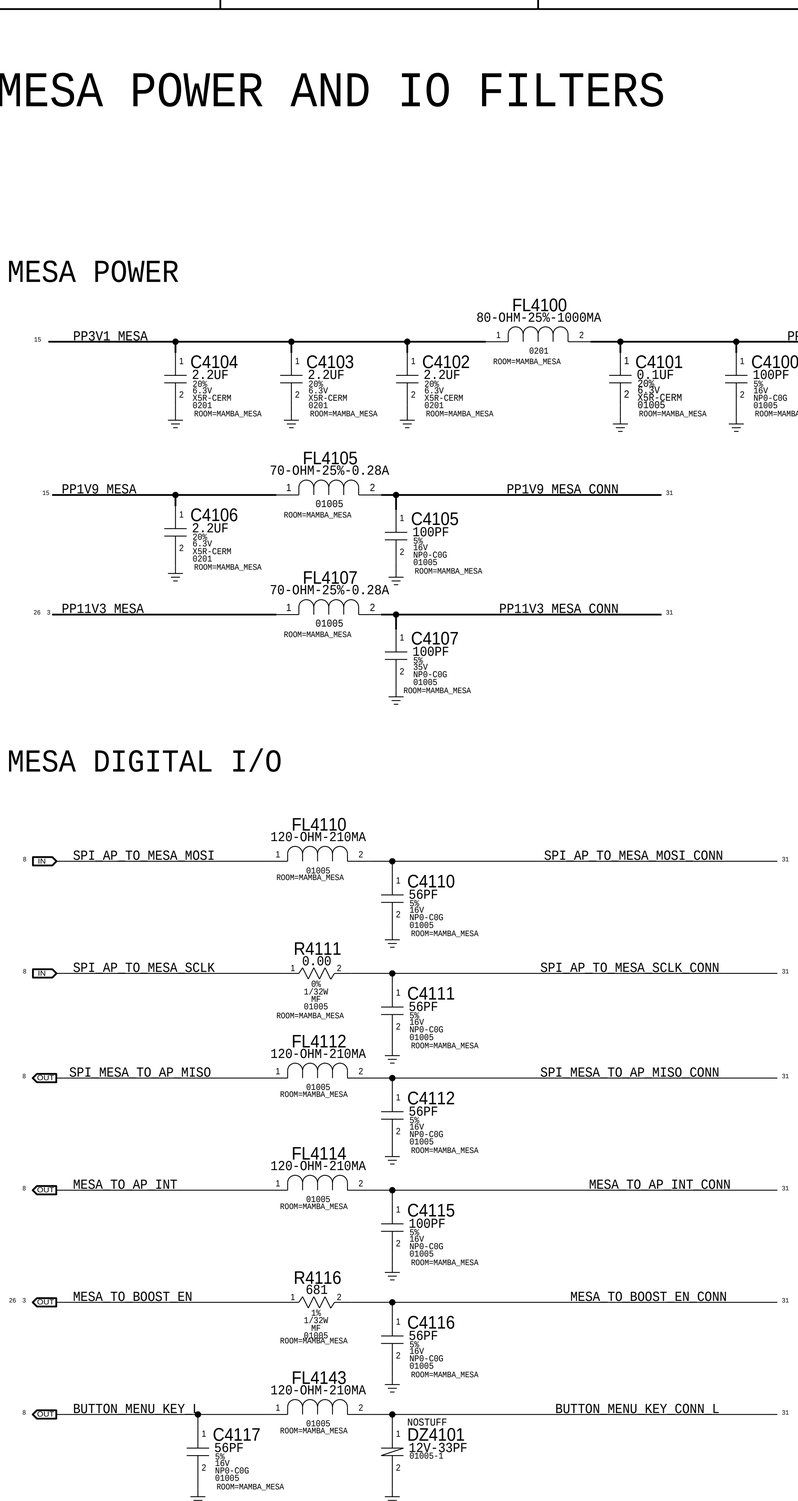
MESA POWER AND IO FILTERS

MESA POWER



MESA DIGITAL I/O



SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE: MESA POWER AND IO FILTERS

Apple Inc.

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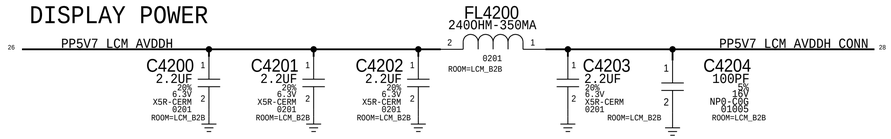
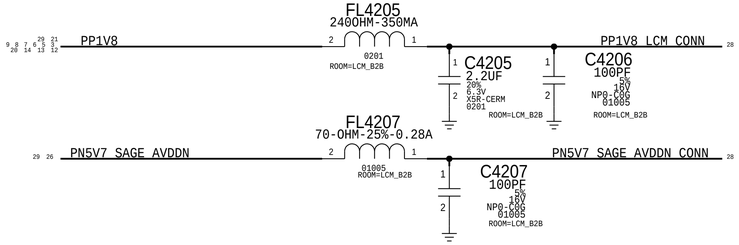
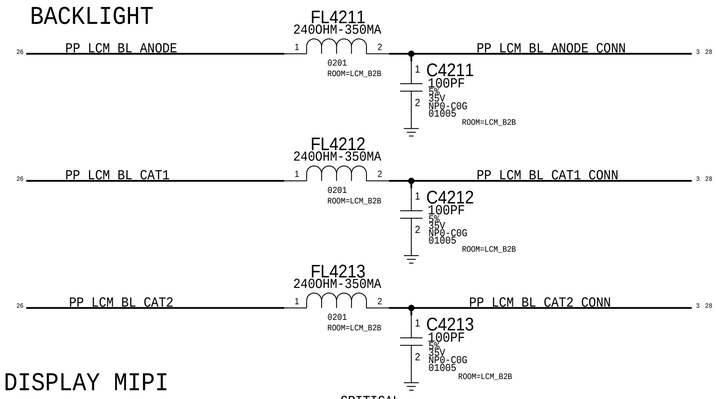
DISPLAY FLEX

DISPLAY POWER

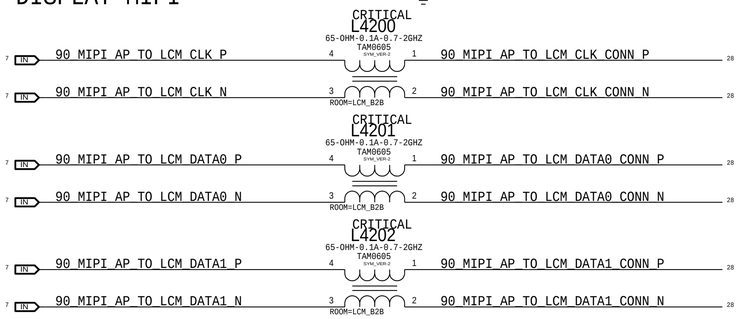




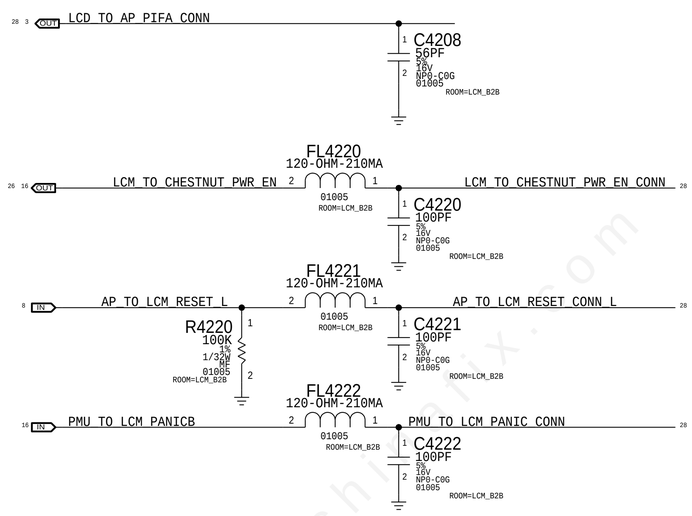
BACKLIGHT



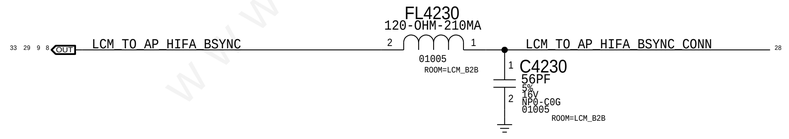
DISPLAY MIPI



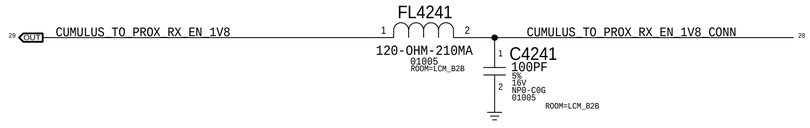
DISPLAY CONTROL SIGNALS



OWL TO TOUCH INTERFACE

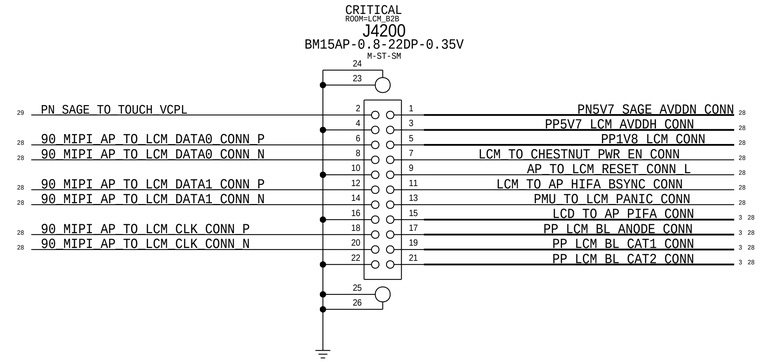


PROX TO TOUCH INTERFACE



DISPLAY CONNECTOR

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



SYNC_MASTER=N/A	SYNC_DATE=N/A
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D403 (B2B,DRIVER ICS)

CUMULUS C1

343S0638

(TURN ON LATER THAN PP1V8_TOUCH)
(TURN OFF SAME TIME AS PP1V8_TOUCH)

PP5V1_GBAPE_VDDH → C4302 10UF 20% 10V X5R-CERM 0402-1 ROOM=CUMULUS

PP_CUMULUS_VDDCORE → C4304 4.7UF 20% 6.3V X5R-CERM1 402 ROOM=CUMULUS

PP_CUMULUS_VDDANA → C4305 4.7UF 20% 6.3V X5R-CERM1 402 ROOM=CUMULUS

PP1V8_CUMULUS_VDDLDO → C4306 1.0UF 20% 6.3V X5R 0201-1 ROOM=CUMULUS

XW4302 SM ROOM=CUMULUS: PP1V8_CUMULUS_VDDLDO → PP1V8_TOUCH

R4304 220K 5% 1/32W MF 01005 ROOM=CUMULUS: VDDIO → PP1V8_TOUCH

45_PROX_TO_CUMULUS_RX → C4301 1000PF 10% 6.3V X5R-CERM 01005 → 45_PROX_TO_CUMULUS_RX_FILT → R4301 22.1K 1% 1/32W MF 01005 ROOM=CUMULUS → C4303 27PF 5% 16V NP0-C0G 01005 ROOM=CUMULUS

U4301 CUMULUS-C1 WLBGA

SAGE_TO_CUMULUS_IN<2>	B9	IN0_0	
SAGE_TO_CUMULUS_IN<1>	B8	IN1_0	
SAGE_TO_CUMULUS_IN<6>	A9	IN2_0	
SAGE_TO_CUMULUS_IN<7>	B7	IN3_0	
SAGE_TO_CUMULUS_IN<4>	B6	IN4_0	
SAGE_TO_CUMULUS_IN<8>	A8	IN5_0	
SAGE_TO_CUMULUS_IN<3>	B5	IN6_0	
SAGE_TO_CUMULUS_IN<5>	B4	IN7_0	
SAGE_TO_CUMULUS_IN<9>	A7	IN8_0	
SAGE_TO_CUMULUS_IN<0>	B3	IN9_0	
SAGE_TO_CUMULUS_IN<14>	A6	IN10_0	
SAGE_TO_CUMULUS_IN<10>	A3	IN11_0	
SAGE_TO_CUMULUS_IN<13>	A5	IN12_0	
SAGE_TO_CUMULUS_IN<11>	A4	IN13_0	
SAGE_TO_CUMULUS_IN<12>	B2	IN14_0	
45_PROX_TO_CUMULUS_RX_IN	A2	IN14_1	
SPI_AP_TO_TOUCH_CS_L	E4	H_CS*	
TOUCH_TO_AP_INT_L	F1	H_INT*	
SPI_AP_TO_TOUCH_SCLK	D3	H_SCLK	
SPI_AP_TO_TOUCH_MOSI	D2	H_SDI	
SPI_TOUCH_TO_AP_MISO	E1	H_SDO	
	C4	JTAG_TCK	
	C3	JTAG_TDI	
	E2	JTAG_TDO	
PP1V8_CUMULUS_VDDLDO	C6	JTAG_TMS	
CUMULUS_TO_PROX_TX_EN_1V8_L	E3	BCFG_RTCK	
45_AP_TO_TOUCH_CLK32K_RESET_L_XW	D1	CLKIN/RESET*	
AP_TO_TOUCH_RESET_L	D5	RSTOVR*	
	E9	VSTM_0	CUMULUS_TO_SAGE_VSTM_OUT<2>
	E5	VSTM_1	CUMULUS_TO_SAGE_VSTM_OUT<5>
	F7	VSTM_2	CUMULUS_TO_SAGE_VSTM_OUT<16>
	E6	VSTM_3	CUMULUS_TO_SAGE_VSTM_OUT<18>
	E7	VSTM_4	CUMULUS_TO_SAGE_VSTM_OUT<17>
	F8	VSTM_5	CUMULUS_TO_SAGE_VSTM_OUT<11>
	G9	VSTM_6	CUMULUS_TO_SAGE_VSTM_OUT<13>
	D6	VSTM_7	CUMULUS_TO_SAGE_VSTM_OUT<7>
	D7	VSTM_8	CUMULUS_TO_SAGE_VSTM_OUT<3>
	D8	VSTM_9	CUMULUS_TO_SAGE_VSTM_OUT<9>
	F9	VSTM_10	CUMULUS_TO_SAGE_VSTM_OUT<10>
	D5	VSTM_11	CUMULUS_TO_SAGE_VSTM_OUT<1>
	F6	VSTM_12	CUMULUS_TO_SAGE_VSTM_OUT<4>
	F5	VSTM_13	CUMULUS_TO_SAGE_VSTM_OUT<8>
	G4	VSTM_14	CUMULUS_TO_SAGE_VSTM_OUT<12>
	E8	VSTM_15	CUMULUS_TO_SAGE_VSTM_OUT<0>
	G8	VSTM_16	CUMULUS_TO_SAGE_VSTM_OUT<15>
	G7	VSTM_17	CUMULUS_TO_SAGE_VSTM_OUT<19>
	G6	VSTM_18	CUMULUS_TO_SAGE_VSTM_OUT<14>
	G5	VSTM_19	CUMULUS_TO_SAGE_VSTM_OUT<6>
	G1	GPIO_1/CK	NOTE: LCM_TO_AP_HIFA_BSYNC_BUFF
	D4	GPIO_2/SD	CUMULUS_TO_SAGE_BOOST_EN
	F2	GPIO_3	U12_GPIO_3
	F3	GPIO_4	CUMULUS_TO_SAGE_GCM_SEL
	C2	TM_ACS*	CUMULUS_TO_PROX_RX_EN_1V8
	G3	TM_OVR	

THESE ARE ROUTED TOGETHER
SPECIAL - CANNOT SWAP
SPECIAL - CANNOT SWAP

R4302 10 1% 1/32W MF 01005 ROOM=CUMULUS: TOUCH_TO_AP_SPI1_MISO_R

R4303 100K 5% 1/32W MF 01005 ROOM=CUMULUS: PP1V8_TOUCH

PP4303 P4MM-NSM ROOM=CUMULUS: U12_GPIO_3

PP4301 P4MM-NSM ROOM=CUMULUS

PP4302 P4MM-NSM ROOM=CUMULUS

XW4301 SM: 45_AP_TO_TOUCH_CLK32K_RESET_L → 45_AP_TO_TOUCH_CLK32K_RESET_L_XW

GND: C7 C9 C22

SAGE2 C0

APN: 343S0645 (CD3246C0, T6)

PN_SAGE_TO_TOUCH_VCPL → C4307 0.1UF 10% 16V X5R-CERM 0201 ROOM=SAGE; C4308 0.1UF 10% 16V X5R-CERM 0201 ROOM=SAGE; C4309 1UF 10% 16V X6S-CERM 0402 ROOM=SAGE; C4311 1UF 10% 16V X6S-CERM 0402 ROOM=SAGE; C4316 1UF 10% 16V X6S-CERM 0402 ROOM=SAGE

PN5V7_SAGE_AVDDN → R4307 4.7 1% 1/32W MF 01005 ROOM=SAGE → PN5V7_SAGE_AVDDN_INT → C4312 10UF 20% 10V X5R-CERM 0402-1 ROOM=SAGE; C4317 10UF 20% 10V X5R-CERM 0402-1 ROOM=SAGE; DZ4301 GDZT2R6.2B 0402-0202 ROOM=SAGE (TO CLAMP THE NEGATIVE RAIL)

-12V

PP_SAGE_TO_TOUCH_VCPH 13.5V → C4324 0.1UF 10% 16V X5R-CERM 0201 ROOM=SAGE; C4325 0.1UF 10% 16V X5R-CERM 0201 ROOM=SAGE

PP5V7_SAGE_AVDDH 5.45-5.98V → C4323 10UF 20% 10V X5R-CERM 0402-4 ROOM=SAGE

PP_SAGE_VCPL_F 3.5V → C4326 0.01UF 10% 16V X5R-CERM 0201 ROOM=SAGE

PP1V8 → C4327 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SAGE

U4300 SAGE2-C06 CSP ROOM=SAGE

TOUCH_TO_SAGE_SENSE_IN<4>	E4	SNS_IN0	
TOUCH_TO_SAGE_SENSE_IN<3>	D4	SNS_IN1	
TOUCH_TO_SAGE_SENSE_IN<5>	C4	SNS_IN2	
TOUCH_TO_SAGE_SENSE_IN<0>	B4	SNS_IN3	
TOUCH_TO_SAGE_SENSE_IN<12>	A4	SNS_IN4	
TOUCH_TO_SAGE_SENSE_IN<7>	A6	SNS_IN5	
TOUCH_TO_SAGE_SENSE_IN<10>	B6	SNS_IN6	
TOUCH_TO_SAGE_SENSE_IN<1>	C6	SNS_IN7	
TOUCH_TO_SAGE_SENSE_IN<11>	D6	SNS_IN8	
TOUCH_TO_SAGE_SENSE_IN<2>	E6	SNS_IN9	
TOUCH_TO_SAGE_SENSE_IN<13>	E8	SNS_IN10	
TOUCH_TO_SAGE_SENSE_IN<14>	D8	SNS_IN11	
TOUCH_TO_SAGE_SENSE_IN<8>	C8	SNS_IN12	
TOUCH_TO_SAGE_SENSE_IN<9>	B8	SNS_IN13	
TOUCH_TO_SAGE_SENSE_IN<6>	A8	SNS_IN14	
CUMULUS_TO_SAGE_VSTM_OUT<8>	G1	DRV_IN0	
CUMULUS_TO_SAGE_VSTM_OUT<6>	H1	DRV_IN1	
CUMULUS_TO_SAGE_VSTM_OUT<12>	J1	DRV_IN2	
CUMULUS_TO_SAGE_VSTM_OUT<1>	K1	DRV_IN3	
CUMULUS_TO_SAGE_VSTM_OUT<7>	L1	DRV_IN4	
CUMULUS_TO_SAGE_VSTM_OUT<15>	G2	DRV_IN5	
CUMULUS_TO_SAGE_VSTM_OUT<14>	H2	DRV_IN6	
CUMULUS_TO_SAGE_VSTM_OUT<18>	J2	DRV_IN7	
CUMULUS_TO_SAGE_VSTM_OUT<5>	K2	DRV_IN8	
	L2	DRV_IN9	
	L3	DRV_IN10	
CUMULUS_TO_SAGE_VSTM_OUT<4>	K3	DRV_IN11	
CUMULUS_TO_SAGE_VSTM_OUT<19>	J3	DRV_IN12	
CUMULUS_TO_SAGE_VSTM_OUT<13>	H3	DRV_IN13	
CUMULUS_TO_SAGE_VSTM_OUT<16>	G3	DRV_IN14	
CUMULUS_TO_SAGE_VSTM_OUT<3>	L4	DRV_IN15	
CUMULUS_TO_SAGE_VSTM_OUT<2>	K4	DRV_IN16	
CUMULUS_TO_SAGE_VSTM_OUT<0>	J4	DRV_IN17	
CUMULUS_TO_SAGE_VSTM_OUT<11>	H4	DRV_IN18	
CUMULUS_TO_SAGE_VSTM_OUT<17>	G4	DRV_IN19	
SAGE_VBIAS	D3	VBIAS	
SAGE_TO_TOUCH_VCPH_REF	A2	VCPH_REF/EN	
SAGE_TO_TOUCH_VCPL_REF	F2	VCPL_REF/EN	
PP_SAGE_VBST_OUTH	B1	VBST_OUTH	
PN_SAGE_VBST_OUTL	E1	VBST_OUTL	
PP_SAGE_LX	C1	L_X	
PP_SAGE_LY	D1	L_Y	

SNS_OUT0	E5	SAGE_TO_CUMULUS_IN<4>	
SNS_OUT1	D5	SAGE_TO_CUMULUS_IN<3>	
SNS_OUT2	C5	SAGE_TO_CUMULUS_IN<5>	
SNS_OUT3	B5	SAGE_TO_CUMULUS_IN<0>	
SNS_OUT4	A5	SAGE_TO_CUMULUS_IN<12>	
SNS_OUT5	A7	SAGE_TO_CUMULUS_IN<7>	
SNS_OUT6	B7	SAGE_TO_CUMULUS_IN<10>	
SNS_OUT7	C7	SAGE_TO_CUMULUS_IN<1>	
SNS_OUT8	D7	SAGE_TO_CUMULUS_IN<11>	
SNS_OUT9	E7	SAGE_TO_CUMULUS_IN<2>	
SNS_OUT10	E9	SAGE_TO_CUMULUS_IN<13>	
SNS_OUT11	D9	SAGE_TO_CUMULUS_IN<14>	
SNS_OUT12	C9	SAGE_TO_CUMULUS_IN<8>	
SNS_OUT13	B9	SAGE_TO_CUMULUS_IN<9>	
SNS_OUT14	A9	SAGE_TO_CUMULUS_IN<6>	
DRV_OUT0	G6	SAGE_TO_TOUCH_VSTM_OUT<8>	
DRV_OUT1	H6	SAGE_TO_TOUCH_VSTM_OUT<6>	
DRV_OUT2	J6	SAGE_TO_TOUCH_VSTM_OUT<12>	
DRV_OUT3	K6	SAGE_TO_TOUCH_VSTM_OUT<1>	
DRV_OUT4	L6	SAGE_TO_TOUCH_VSTM_OUT<7>	
DRV_OUT5	G7	SAGE_TO_TOUCH_VSTM_OUT<15>	
DRV_OUT6	H7	SAGE_TO_TOUCH_VSTM_OUT<14>	
DRV_OUT7	J7	SAGE_TO_TOUCH_VSTM_OUT<18>	
DRV_OUT8	K7	SAGE_TO_TOUCH_VSTM_OUT<5>	
DRV_OUT9	L7	SAGE_TO_TOUCH_VSTM_OUT<9>	
DRV_OUT10	L8	SAGE_TO_TOUCH_VSTM_OUT<10>	
DRV_OUT11	K8	SAGE_TO_TOUCH_VSTM_OUT<4>	
DRV_OUT12	J8	SAGE_TO_TOUCH_VSTM_OUT<19>	
DRV_OUT13	H8	SAGE_TO_TOUCH_VSTM_OUT<13>	
DRV_OUT14	G8	SAGE_TO_TOUCH_VSTM_OUT<16>	
DRV_OUT15	L9	SAGE_TO_TOUCH_VSTM_OUT<3>	
DRV_OUT16	K9	SAGE_TO_TOUCH_VSTM_OUT<2>	
DRV_OUT17	J9	SAGE_TO_TOUCH_VSTM_OUT<0>	
DRV_OUT18	H9	SAGE_TO_TOUCH_VSTM_OUT<11>	
DRV_OUT19	G9	SAGE_TO_TOUCH_VSTM_OUT<17>	
BSYNC	K5	LCM_TO_AP_HIFA_BSYNC	
GCM_TEST	F9	CUMULUS_TO_SAGE_GCM_SEL	
GO	F7	NC	
VCM_IN	J5	TOUCH_TO_SAGE_VCM_IN	
I2C_SCL	F5	NC	
I2C_SDA	G5	NC	
BOOST_EN	B2	CUMULUS_TO_SAGE_BOOST_EN	

PP4306 P4MM-NSM ROOM=SAGE

PP4305 P4MM-NSM ROOM=SAGE

PP4304 P4MM-NSM ROOM=SAGE

C4310 0.01UF 10% 6.3V X5R 01005 ROOM=SAGE
C4313 0.01UF 10% 6.3V X5R 01005 ROOM=SAGE
C4318 0.1UF 10% 6.3V CERM-X5R 0201 ROOM=SAGE

C4314 0.33UF 20% 25V TANT 0402 ROOM=SAGE
C4319 1000PF 10% 25V X7R-CERM 0201 ROOM=SAGE
C4321 1000PF 10% 25V X7R-CERM 0201 ROOM=SAGE

L4301 10UH-0.32A-1.560HM PSB121017-SM ROOM=SAGE

C4315 1UF-10OHM 0603-LLP TANT 25V 20% ROOM=SAGE
C4320 1000PF 10% 25V X7R-CERM 0201 ROOM=SAGE
C4322 1000PF 10% 25V X7R-CERM 0201 ROOM=SAGE

PP1V8_TOUCH → R4306 100K 5% 1/32W MF 01005 ROOM=CUMULUS

R4305 100K 5% 1/32W MF 01005 ROOM=CUMULUS

U4302 74AUP2G3404GN SOT1115: LCM_TO_AP_HIFA_BSYNC_BUFF → LCM_TO_AP_HIFA_BSYNC; CUMULUS_TO_PROX_TX_EN_BUFF → CUMULUS_TO_PROX_TX_EN_1V8_L

TOUCH B2B

ON MLB -> 516S1071 PLUG
ON FLEX-> 516S1070 RCPT

J4300 AA21 M-ST-SM ROOM=TOUCH_B2B

C5	TOUCH_TO_SAGE_SENSE_IN<5>	1	2	TOUCH_TO_SAGE_SENSE_IN<6>	C6
C4	TOUCH_TO_SAGE_SENSE_IN<4>	3	4	TOUCH_TO_SAGE_SENSE_IN<13>	GS3
C0	TOUCH_TO_SAGE_SENSE_IN<0>	5	6	TOUCH_TO_SAGE_SENSE_IN<7>	C7
C3	TOUCH_TO_SAGE_SENSE_IN<3>	7	8	SAGE_TO_TOUCH_VCPH_REF	VGH_REF
GS1	TOUCH_TO_SAGE_SENSE_IN<11>	9	10	SAGE_TO_TOUCH_VCPL_REF	VGL_REF
C2	TOUCH_TO_SAGE_SENSE_IN<2>	11	12	TOUCH_TO_SAGE_VCM_IN	VCOM
C1	TOUCH_TO_SAGE_SENSE_IN<1>	13	14	TOUCH_TO_SAGE_SENSE_IN<12>	GS2
GS0	TOUCH_TO_SAGE_SENSE_IN<10>	15	16	TOUCH_TO_SAGE_SENSE_IN<9>	C9
VGL	PN_SAGE_TO_TOUCH_VCPL	17	18	TOUCH_TO_SAGE_SENSE_IN<8>	C8
VGH	PP_SAGE_TO_TOUCH_VCPH	19	20	TOUCH_TO_SAGE_SENSE_IN<14>	GS4
R10	SAGE_TO_TOUCH_VSTM_OUT<10>	21	22		
R7	SAGE_TO_TOUCH_VSTM_OUT<7>	23	24	SAGE_TO_TOUCH_VSTM_OUT<17>	R17
R1	SAGE_TO_TOUCH_VSTM_OUT<1>	25	26	SAGE_TO_TOUCH_VSTM_OUT<16>	R16
R5	SAGE_TO_TOUCH_VSTM_OUT<5>	27	28	SAGE_TO_TOUCH_VSTM_OUT<15>	R15
R6	SAGE_TO_TOUCH_VSTM_OUT<6>	29	30	SAGE_TO_TOUCH_VSTM_OUT<14>	R14
R8	SAGE_TO_TOUCH_VSTM_OUT<8>	31	32	SAGE_TO_TOUCH_VSTM_OUT<13>	R13
R9	SAGE_TO_TOUCH_VSTM_OUT<9>	33	34	SAGE_TO_TOUCH_VSTM_OUT<12>	R12
R4	SAGE_TO_TOUCH_VSTM_OUT<4>	35	36	SAGE_TO_TOUCH_VSTM_OUT<11>	R11
R3	SAGE_TO_TOUCH_VSTM_OUT<3>	37	38	SAGE_TO_TOUCH_VSTM_OUT<0>	R0_RIGHT
R2	SAGE_TO_TOUCH_VSTM_OUT<2>	39	40	SAGE_TO_TOUCH_VSTM_OUT<18>	R18
R0_LEFT	SAGE_TO_TOUCH_VSTM_OUT<0>	41	42	SAGE_TO_TOUCH_VSTM_OUT<19>	R19
		45	46		

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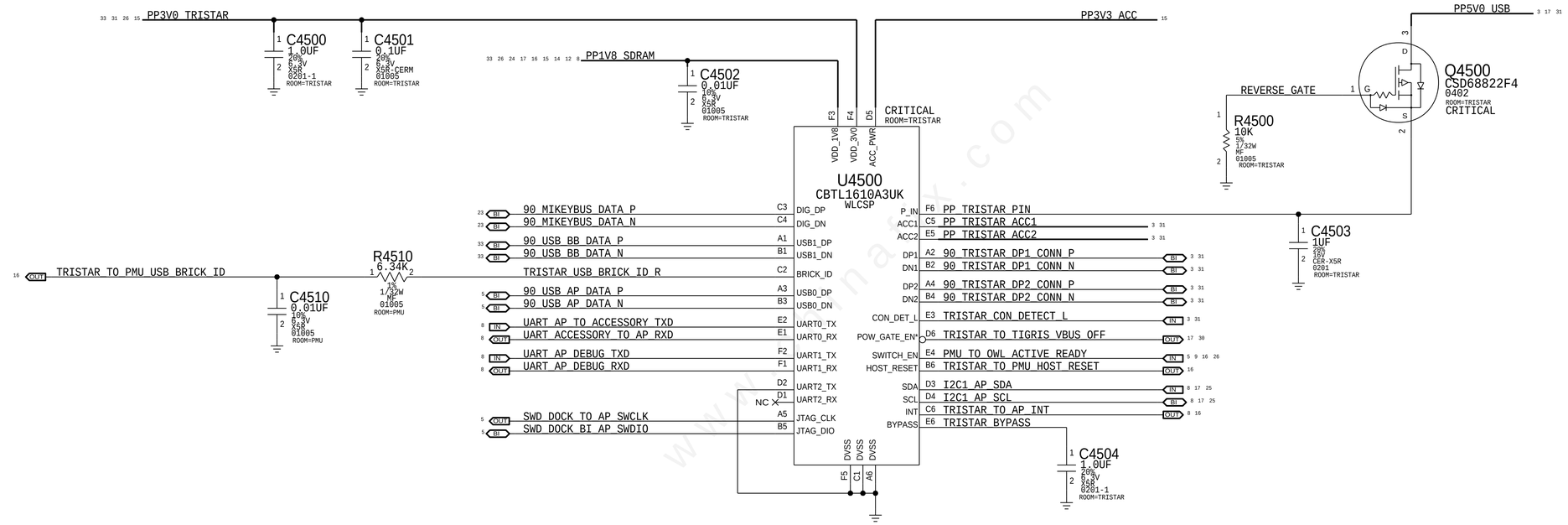
TRISTAR 2 (A3)

APN:343S0695



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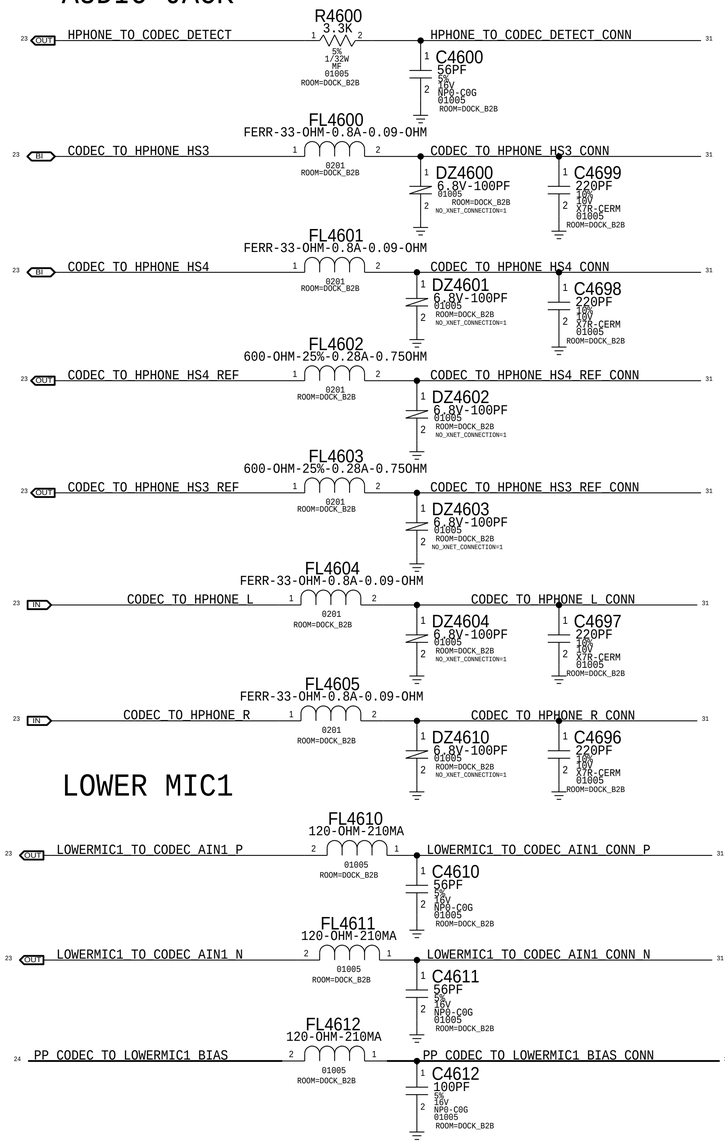
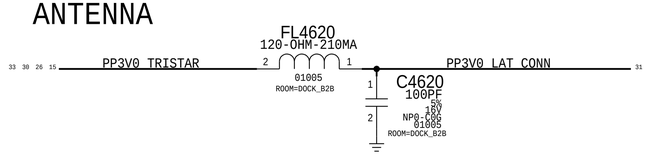
DOCK FLEX CONNECTOR

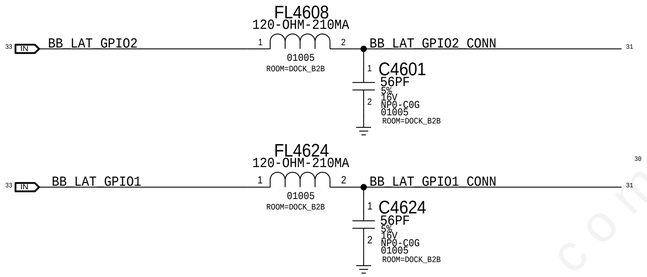
AUDIO JACK



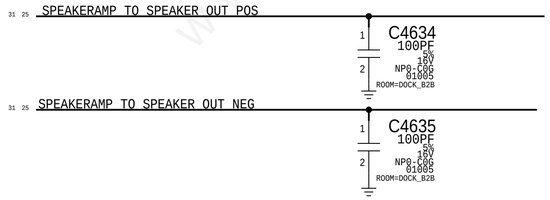
LOWER MIC1

ANTENNA



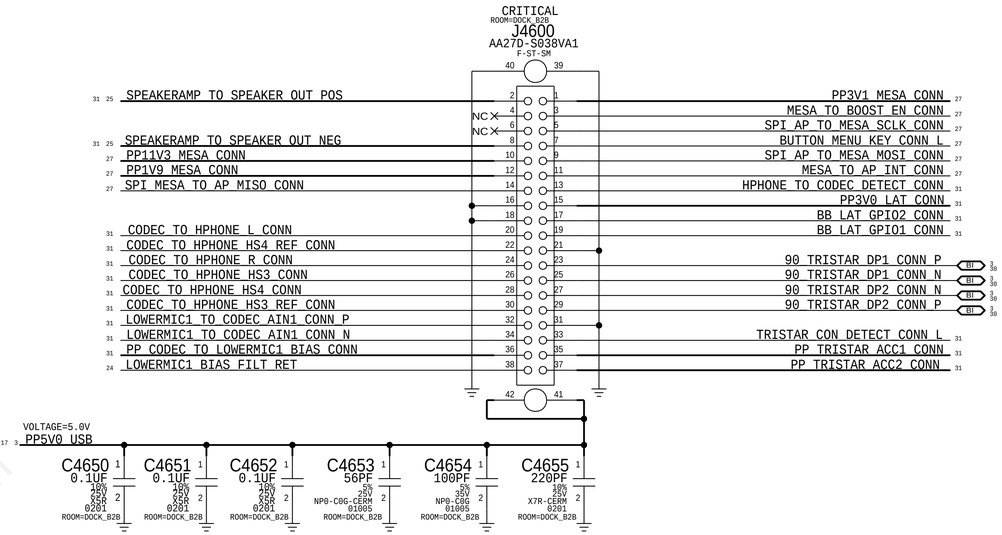


SPEAKER



DOCK FLEX CONNECTOR

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



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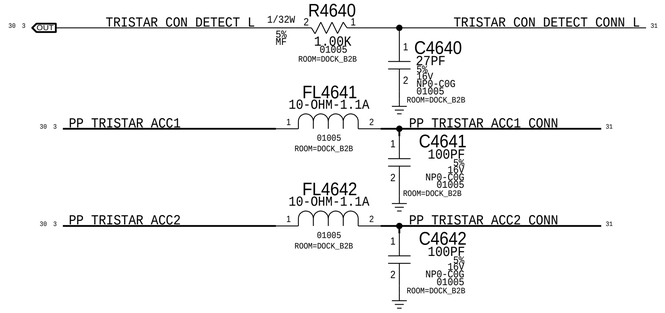

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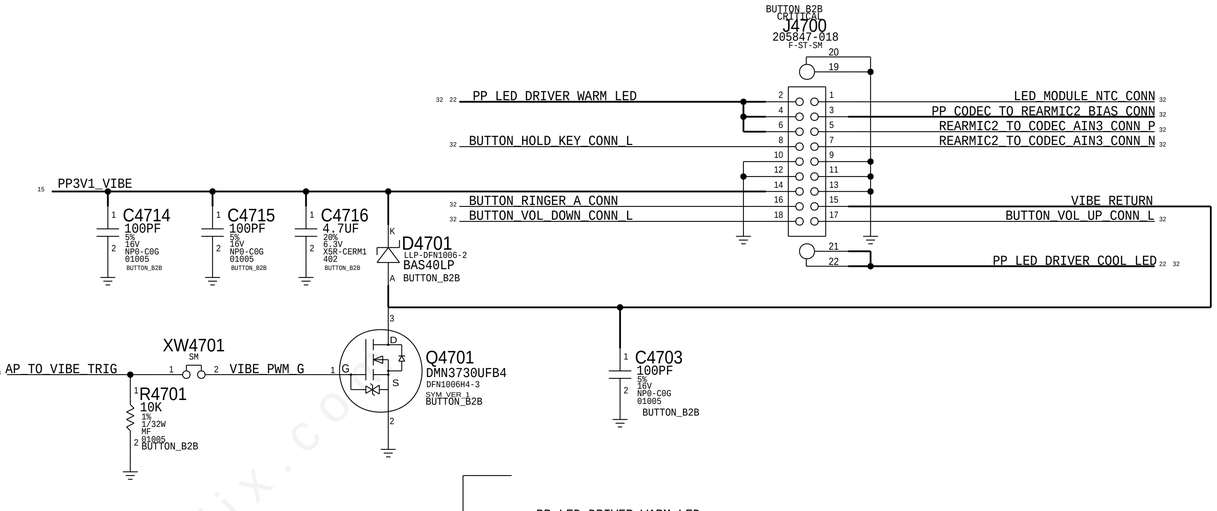
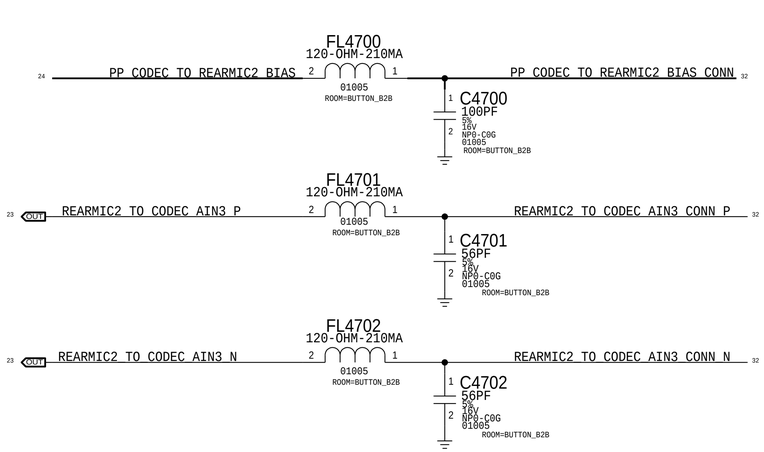
BUTTON FLEX

BUTTON FLEX CONNECTOR

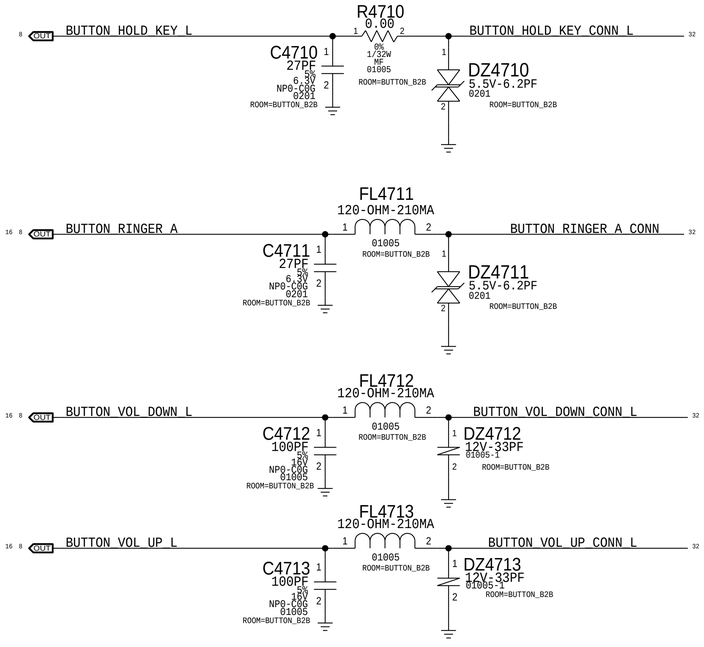
516S1040 (PLUG)
THIS ONE ON MLB ---> 516S1041 (RCPT)



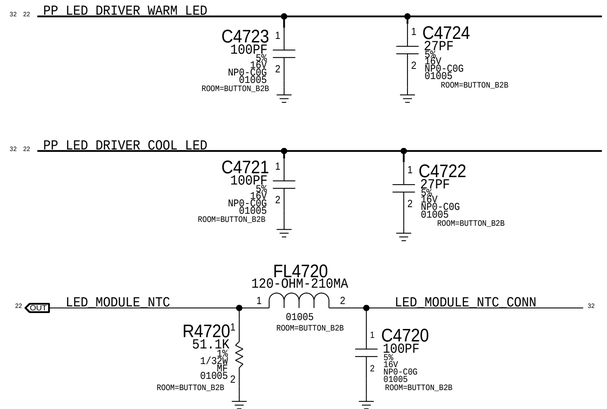
MIC2
ANC REF MIC



BUTTONS:
HOLD
RINGER
VOL UP/DOWN



STROBE:
WARM LED
COOL LED
MODULE NTC



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PAGE TITLE
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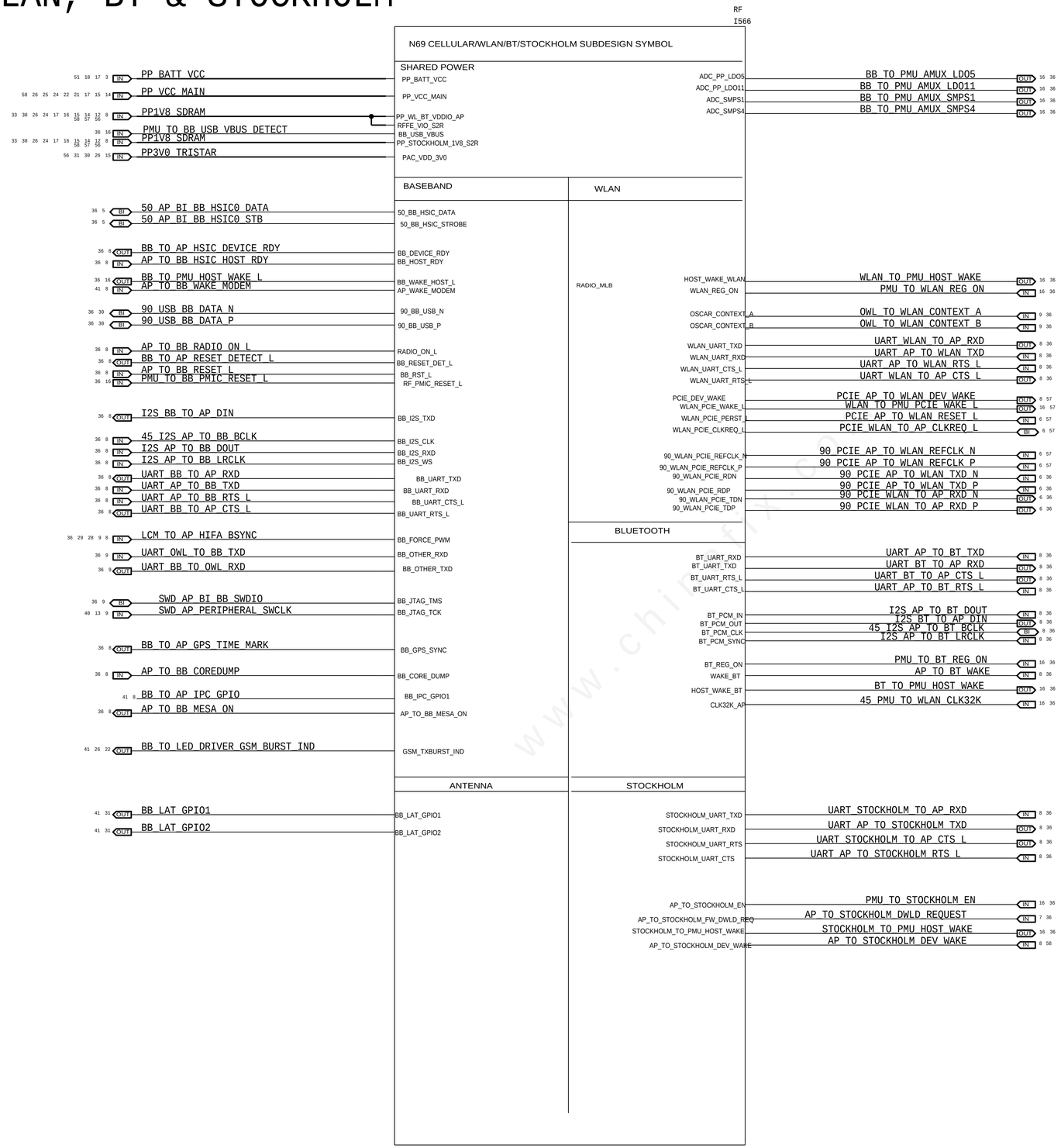
BASEBAND, WLAN, BT & STOCKHOLM



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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 RADIO_MLB SUBDESIGN - EVT 8/19/2015

LAST_MODIFICATION=Wed Aug 19 10:34:24 2015

?

DRAWING TITLE: SCH,MLB,N69

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REVISION: 4.0.0

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CELL:ALIASES

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AP INTERFACE & DEBUG CONNECTORS

NOT UNDER SIM

PP3105_RF P2MM-NSM 1 CLK32K_AP — 24 27
PP3119_RF P2MM-NSM 1 BT_UART_TXD — 24 27 — WIFI_BT
PP3120_RF P2MM-NSM 1 BT_UART_RXD — 24 27 — WIFI_BT
PP3101_RF P2MM-NSM 1 BT_UART_CTS_L — 24 27 — WIFI_BT
PP3102_RF P2MM-NSM 1 BT_UART_RTS_L — 24 27 — WIFI_BT
PP3121_RF P2MM-NSM 1 BT_PCM_CLK — STOCKHOLM
PP3122_RF P2MM-NSM 1 BT_PCM_SYNC — STOCKHOLM
PP3127_RF P2MM-NSM 1 BT_PCM_IN — WIFI_BT
PP3128_RF P2MM-NSM 1 BT_PCM_OUT — WIFI_BT

PP3173_RF P2MM-NSM 1 HOST_WAKE_BT — WIFI_BT
PP3152_RF P2MM-NSM 1 WAKE_BT — 24 27 — WIFI_BT
PP3153_RF P2MM-NSM 1 WLAN_REG_ON — 24 27 — WIFI_BT
PP3154_RF P2MM-NSM 1 BT_REG_ON — 24 27 — WIFI_BT
PP3155_RF P2MM-NSM 1 HOST_WAKE_WLAN — 24 27 — WIFI_BT
PP3157_RF P2MM-NSM 1 WLAN_UART_RTS_L — 24 27 — WIFI_BT
PP3158_RF P2MM-NSM 1 WLAN_UART_CTS_L — 24 27 — WIFI_BT
PP3162_RF P2MM-NSM 1 WLAN_UART_RXD — 24 27 — WIFI_BT
PP3163_RF P2MM-NSM 1 WLAN_UART_TXD — 24 27 — WIFI_BT
PP3170_RF P2MM-NSM 1 RFFE1_CLK — 8 12 13 14 15 16 17
PP3171_RF P2MM-NSM 1 RFFE1_DATA — 8 12 13 14 15 16 17
PP3172_RF P2MM-NSM 1 RFFE2_CLK — 8 18 19 21

OPTIONAL

PP3123_RF P2MM-NSM 1 OSCAR_CONTEXT_A
PP3124_RF P2MM-NSM 1 OSCAR_CONTEXT_B — STOCKHOLM

PP3174_RF P2MM-NSM 1 STOCKHOLM_TO_SIM_SWP — STOCKHOLM — 25
PP3129_RF P2MM-NSM 1 45_BBPMU_TO_STOCKHOLM_19P2M_CLK — STOCKHOLM — 5 25
PP3185_RF P2MM-NSM 1 WLAN_JTAG_SWDCLK — WIFI_BT — 24
PP3186_RF P2MM-NSM 1 WLAN_JTAG_SWDIO — WIFI_BT — 24

CORONA PCIE RX/TX TP

PP3192_RF P2MM-NSM 1 90_WLAN_PCIE_RDN — WIFI_BT — 24 27
PP3193_RF P2MM-NSM 1 90_WLAN_PCIE_RDP — WIFI_BT — 24 27
PP3194_RF P2MM-NSM 1 90_WLAN_PCIE_TDN — WIFI_BT — 24 27
PP3195_RF P2MM-NSM 1 90_WLAN_PCIE_TDP — WIFI_BT — 24 27

PP3196_RF P2MM-NSM 1 BB_UART_TXD — 8 27
PP3197_RF P2MM-NSM 1 BB_UART_RXD — 8 27
PP3198_RF P2MM-NSM 1 BB_UART_CTS_L — 8 27
PP3199_RF P2MM-NSM 1 BB_UART_RTS_L — 8 27

NOSTUFF
J3100_RF
AXE650124
M-ST-SM

BB_JTAG_RST_L	2	1	BB_DEBUG_STATUS
BB_JTAG_TCK_IN (27 7)	4	3	BB_CORE_DUMP
BB_JTAG_TMS (27 7)	6	5	BB_USB_VBUS
BB_JTAG_TDO (7)	8	7	90_BB_USB_N
BB_JTAG_TDI (7)	10	9	90_BB_USB_P
BB_JTAG_TRST_L (7)	12	11	
STOCKHOLM_TO_BBPMU_CLK_REQ (25 5 3)	14	13	
BB_I2S_CLK (27)	16	15	BB_RST_L (5 27)
BB_HOST_RDY	18	17	BB_RESET_DET_L (8 27)
BB_SIM_RESET (8 3)	20	19	
BB_SIM_CLK (8 3)	22	21	BB_WAKE_HOST_L (8 27)
BB_SIM_DATA (8 3)	24	23	BB_GPS_SYNC (8 27)
BB_SIM_DETECT (8 3)	26	25	
PP_LDO5 (25 6 4 3)	28	27	BB_DEVICE_RDY (8 27)
PP_LDO11 (12 11 10 8 7 6 4 3)	30	29	
RADIO_ON_L (27 5)	32	31	BB_I2S_WS (8 27)
BB_DEBUG_ERROR (8)	34	33	BB_I2S_RXD (8 27)
RF_PMIC_RESET_L (27 5)	36	35	BB_I2S_TXD (8 27)
PS_HOLD_PMIC (5)	38	37	
PMIC_RESOUT_L (7 5)	40	39	AP_TO_STOCKHOLM_FW_DWLD_REQ
STOCKHOLM_UART_RXD (27 25 3)	42	41	AP_TO_STOCKHOLM_EN (25 22)
STOCKHOLM_UART_TXD (27 25 3)	44	43	BB_OTHER_TXD (8 27)
STOCKHOLM_UART_CTS (27 25 3)	46	45	BB_OTHER_RXD (8 27)
STOCKHOLM_UART_RTS (27 25 3)	48	47	BB_COEX_UART_RXD (8 24)
STOCKHOLM_TO_PMU_HOST_WAKE (27 25 3)	50	49	BB_COEX_UART_TXD (8 24)
	54	52	
	53	51	

PP3131_RF P4MM-NSH 1
PP3132_RF P4MM-NSH 1
PP3138_RF P4MM-NSH 1 (PP 7 8)
PP3139_RF P4MM-NSH 1 (PP 7 8)
PP3140_RF P4MM-NSH 1 (PP 7 8)

UNDER THE SIM

PP3190_RF P2MM-NSH 1 AP_TO_BB_MESA_ON — 8 27
PP3191_RF P2MM-NSH 1 BB_FORCE_PWM — 5 27
PP3115_RF P4MM-NSH 1 50_BB_HSIC_STROBE — 7 27
PP3116_RF P4MM-NSH 1 50_BB_HSIC_DATA — 7 27
PP3111_RF P4MM-NSH 1 SPMI_DATA — 5 7
PP3112_RF P4MM-NSH 1 SPMI_CLK — 5 7
PP3104_RF P4MM-NSH 1 MDM_CLK — 5 7

SIM CARD ESD PROTECTION

DZ3102_RF 5.5V-6.2PF 0201
BB_SIM_DETECT (8 3) — 1 — 2
C3102_RF 100PF 5% 10V NP0-C0G 01005

VR3101_RF ESD5004 LGA-1
BB_SIM_DATA (8 3) — 1
BB_SIM_RESET (8 3) — 2
STOCKHOLM_TO_SIM_SWP — 3
BB_SIM_CLK (8 3) — 4
5

PP_LDO11 (12 11 10 8 7 6 4 3)
R3102_RF 10K 1/32W 01005 — BOOT_HSIC (8)
R3103_RF 10K 1/32W 01005 — BOOT_HSIC_USB (8)
R3104_RF 10K 1/32W 01005 — WATCHDOG_DISABLE (8)

XW3101_RF SHORT-10L-0.1MM-SM — VREG_SMPS1_0V90 (6 4) — ADC_SMPS1 — OUT — 33 60
XW3102_RF SHORT-10L-0.1MM-SM — PP_LDO11 (12 11 10 8 7 6 4 3) — ADC_PP_LDO11 — OUT — 33 60
XW3103_RF SHORT-10L-0.1MM-SM — PP_LDO5 (25 6 4 3) — ADC_PP_LDO5 — OUT — 33 60
XW3104_RF SHORT-10L-0.1MM-SM — VREG_SMPS4_2V075 (4) — ADC_SMPS4 — OUT — 33 60

SIM CARD CONNECTOR

PP_LDO5 (25 6 4 3)
R3101_RF 15.00K 1% 1/32W 01005
C3101_RF 2.2UF 20% 6.3V X5R-CERM 0201
J3101_RF SIM-CARD-N48 F-ST-SM

VCC	1				
BB_SIM_RESET (41 36) IN	2	RST	I/O	7	BB_SIM_DATA BI (36 41)
BB_SIM_CLK (41 36) IN	3	CLK	DETECT	12	BB_SIM_DETECT OUT (36 41)
			SWP	6	STOCKHOLM_TO_SIM_SWP BI (36 58)
GND	8 9 10 11 13 5				

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
377S0163	371S00044	ALTERNATE	VR3101	ESD ALTERNATIVE

SYNC_MASTER=N/A SYNC_DATE=N/A
PAGE TITLE: AP INTERFACE & DEBUG CONNECTORS
Apple Inc.
DRAWING NUMBER: 051-00648 SIZE: D
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BASEBAND PMU (1 OF 2)

FOOTPRINT SAME AS 138S0716

PP_VCC_MAIN

RADIO_PMIC C3270_RF 100PF 5% 16V NP0-C0G 01005
RADIO_PMIC C3224_RF 2.2UF 20% 6.3V X5R-CERM 0201
RADIO_PMIC C3223_RF 2.2UF 20% 6.3V X5R-CERM 0201
RADIO_PMIC C3222_RF 2.2UF 20% 6.3V X5R-CERM 0201
C3216_RF 15UF 20% 6.3V X5R 0402-1
C3221_RF 15UF 20% 6.3V X5R 0402-1

SWITCHERS OUTPUT CAPS

VREG_SMPS1_0V90: RADIO_PMIC C3229_RF, C3231_RF 20UF 20% 6.3V CERM-X5R 0402
VREG_SMPS2_1V25: RADIO_PMIC C3237_RF, C3239_RF 20UF 20% 6.3V CERM-X5R 0402
VREG_SMPS3_0V95: RADIO_PMIC C3230_RF, C3232_RF 20UF 20% 6.3V CERM-X5R 0402
VREG_SMPS4_2V075: RADIO_PMIC C3238_RF, C3240_RF 20UF 20% 6.3V CERM-X5R 0402

SWITCHERS BULK CAPS

FOOTPRINT SAME AS 138S0716

PP_VCC_MAIN (IN) — VBATT_S1: C3217_RF 15UF 20% 6.3V X5R 0402-1
PP_VCC_MAIN (IN) — VBATT_S2: C3218_RF 15UF 20% 6.3V X5R 0402-1
PP_VCC_MAIN (IN) — VBATT_S3: C3219_RF 15UF 20% 6.3V X5R 0402-1
PP_VCC_MAIN (IN) — VBATT_S4: C3220_RF 15UF 20% 6.3V X5R 0402-1

AVDD_BYP: RADIO_PMIC C3226_RF 1.0UF 20% 10V X5R-CERM 0201-1
REF_BYP: RADIO_PMIC C3227_RF 0.1UF 20% 4V X5R 01005
VREG_RF_CLK_BYP: RADIO_PMIC C3228_RF 1.0UF 20% 10V X5R-CERM 0201-1

U_PMICRF_RF PM8019 BGA SYM 5 OF 5 REG

	26	VDD_INT_BYP	
	21	REF_BYP	
	15	GND_REF	
VBATT_S1	22	VDD_S1	
VBATT_S2	88, 94	VDD_S2	
VBATT_S3	47	VDD_S3	
VBATT_S4	1	VDD_S4	
VREG_SMPS2_1V25	92	VDD_L1	
VREG_SMPS4_2V075	2	VDD_L2_3	
VREG_SMPS4_2V075	4	VDD_L7_8_11	
	77	VDD_L9	
	72	VDD_L10	
VREG_SMPS3_0V95	38	VDD_L12	
VREG_SMPS4_2V075	85	VDD_XO_RFC	
	49	GND	
MDM_VREF_LPDDR2 (OUT)	52	VREF_DDR2	
PP_VCC_MAIN (IN)	43	VIN_VPH1	
	54	VIN_VPH2	
	91	VREG_RFCLK	
	74	VREG_XO	VREG_XO_PMIC
	27	VREG_S1	
	11	VSW_S1_1	PP_VSW_S1 — L3201_RF 2.2UH-20%-1.5A-0.160HM — MAKK2016-SM — 1235MA — VREG_SMPS1_0V90 (OUT) — VOLTAGE=4.50V
	16	VSW_S1_2	
	82	VREG_S2	
	93	VSW_S2	PP_VSW_S2 — L3203_RF 2.2UH-20%-1.5A-0.160HM — MAKK2016-SM — 1100MA — VREG_SMPS2_1V25 (OUT) — VOLTAGE=4.50V
	62	VREG_S3	
	53	VSW_S3_1	PP_VSW_S3 — L3204_RF 2.2UH-20%-1.5A-0.160HM — MAKK2016-SM — 1350MA — VREG_SMPS3_0V95 (OUT) — VOLTAGE=4.50V
	58	VSW_S3_2	
	23	VREG_S4	
	6	VSW_S4_1	PP_VSW_S4 — L3202_RF 2.2UH-20%-1.2A-0.150HM — RADIO_PMIC 0806 — 550MA — VREG_SMPS4_2V075 (OUT) — VOLTAGE=4.50V
	12	VSW_S4_2	
	86	VREG_L1	VREG_RX — VOLTAGE=1.225V — PP_LDO1 (OUT)
	7	VREG_L2	VOLTAGE=1.80V — PP_LDO2 (OUT)
	8	VREG_L3	VOLTAGE=1.80V — PP_LDO3 (OUT)
	68	VREG_L4	VOLTAGE=3.075V — PP_LDO4 (OUT)
	59	VREG_L5	VREG_SIM — VOLTAGE=1.80V — PP_LDO5 (OUT)
	48	VREG_L6	NC
	10	VREG_L7	VOLTAGE=1.90V — PP_LDO7 (OUT)
	3	VREG_L8	VREG_TX — VOLTAGE=2.05V — PP_LDO8 (OUT)
	71	VREG_L9	VOLTAGE=1.20V — PP_LDO9 (OUT)
	83	VREG_L10	VOLTAGE=0.90V — PP_LDO10 (OUT)
	9	VREG_L11	VREG_IO — VOLTAGE=1.80V — PP_LDO11 (OUT)
	33	VREG_L12	VOLTAGE=0.95V — PP_LDO12 (OUT)
	34	VREG_L13	VOLTAGE=2.95V — PP_LDO13 (OUT)
	28	VREG_L14	VOLTAGE=5.0V — PP_LDO14_RFSW (OUT)

RADIO_PMIC C3201_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3202_RF 10UF 20% 6.3V CERM-X5R 0402-9
RADIO_PMIC C3203_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3204_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3205_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3206_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3208_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3209_RF 10UF 20% 6.3V CERM-X5R 0402-9
RADIO_PMIC C3210_RF 10UF 20% 6.3V CERM-X5R 0402-9
RADIO_PMIC C3211_RF 10UF 20% 6.3V CERM-X5R 0402-9
RADIO_PMIC C3212_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3213_RF 10UF 20% 6.3V CERM-X5R 0402-9
RADIO_PMIC C3214_RF 1.0UF 20% 10V X5R-CERM 0201-1
RADIO_PMIC C3215_RF 1.0UF 20% 10V X5R-CERM 0201-1

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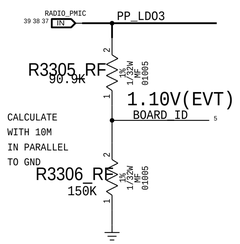
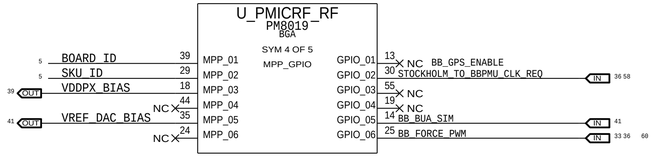
C401
R411
L400
U404

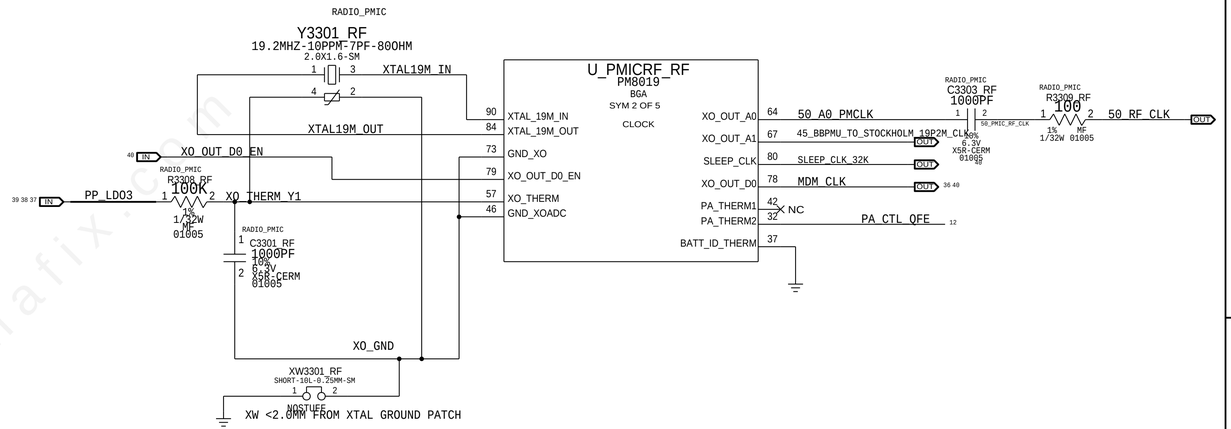
BOARD_ID	REVISION
0.00V	N69/69H PRE-PROTO
0.50V	SPARE
0.70V	N69/69H PROTO1
0.90V	N69/69H PROTO2
1.10V	N69/69H EVT1
1.30V	N69/69H EVT2
1.40V	SPARE
1.50V	N69/69H DVT
1.60V	SPARE
1.70V	N69/69H PVT

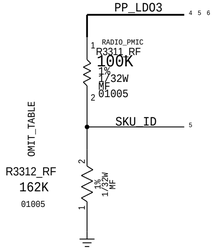
SKU_ID	REVISION
0.5V	N69
1.1V	N69H

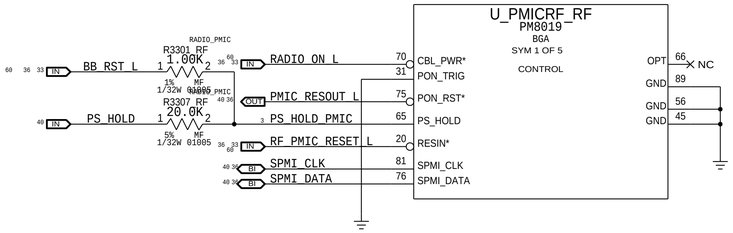
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0565	197S0593	ALTERNATE	Y3301_RF	XTAL 19MHZ
197S0598	197S0593	ALTERNATE	Y3301_RF	XTAL 19MHZ

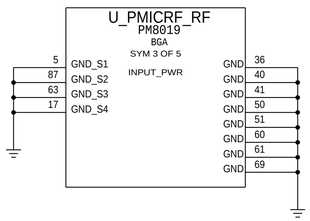












PAGE TITLE: BASEBAND PMU (2 OF 2)

Apple Inc.

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BASEBAND (1 OF 3)

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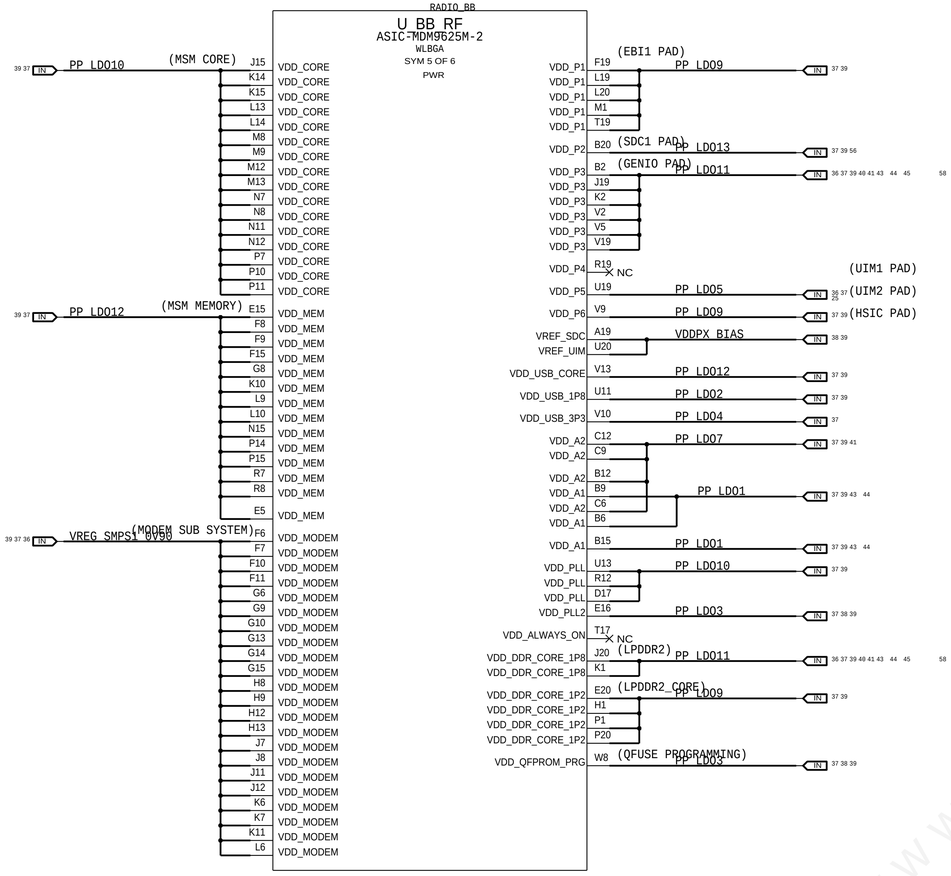
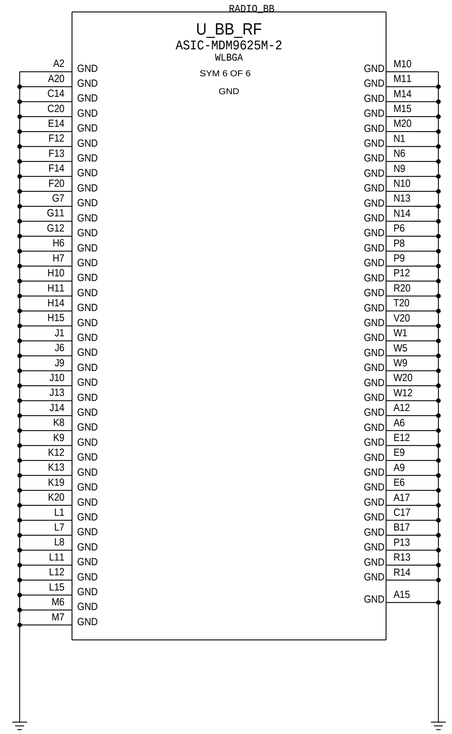
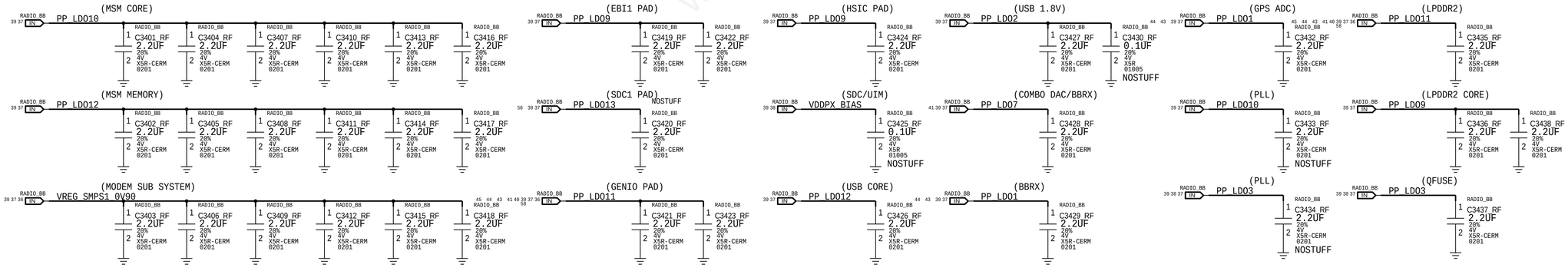
C538
R500
L500
U502







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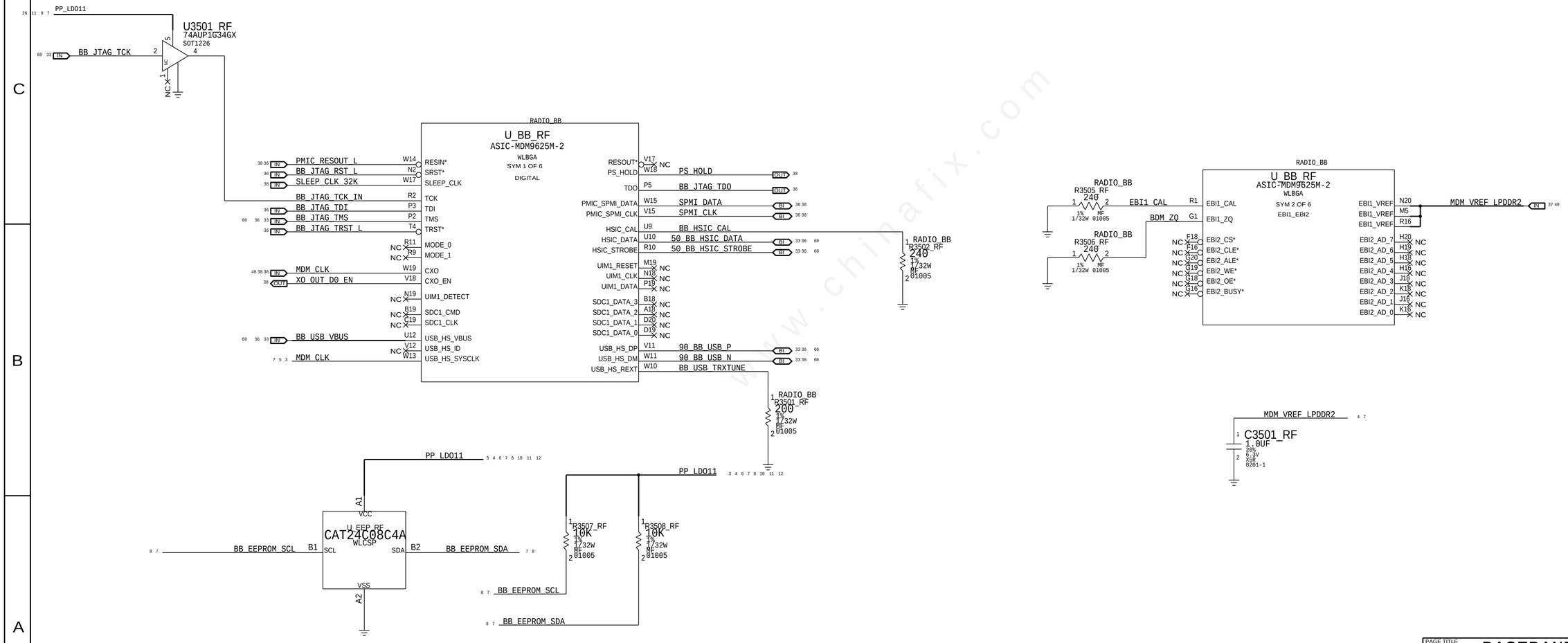
C600
R606
L600
U602



PAGE TITLE	BASEBAND (1 OF 2)
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BASEBAND (3 OF 3)

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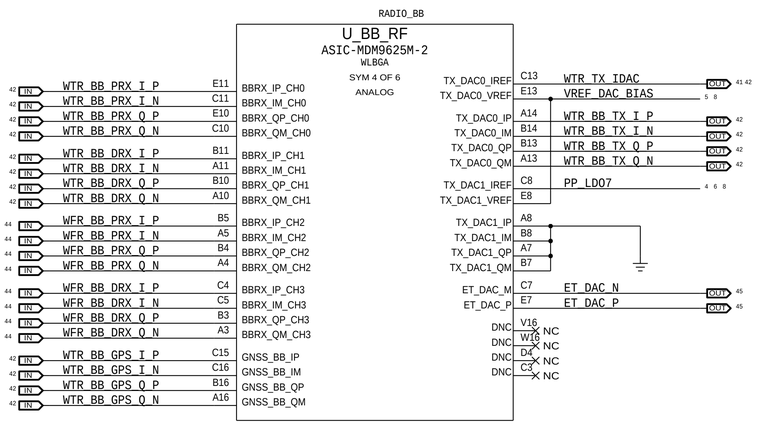
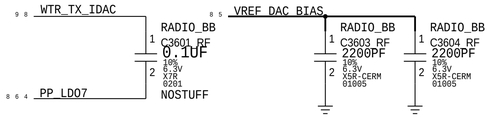
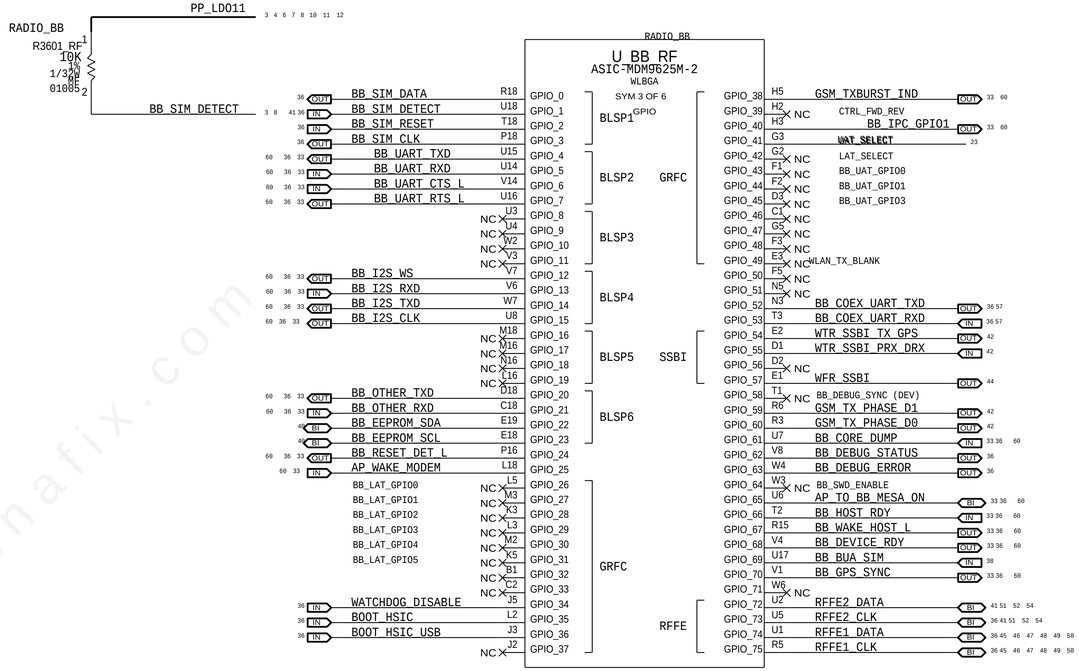
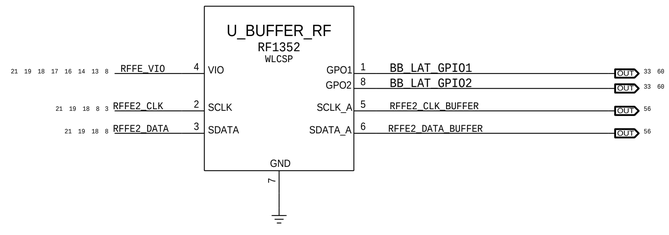
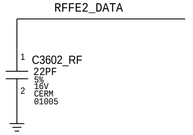
C704
R700
L700
U702











PAGE TITLE
MOBILE DATA MODEM (2 OF 2)

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WTR TRANSCEIVER (1 OF 2)

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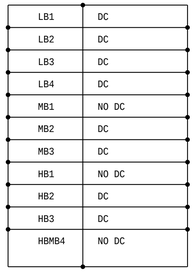
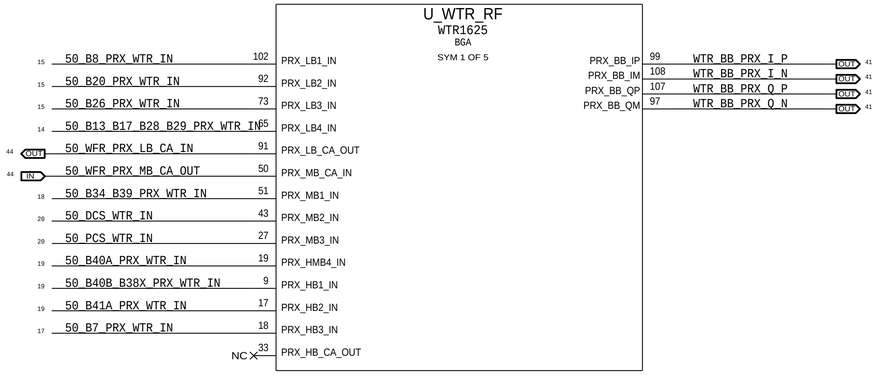
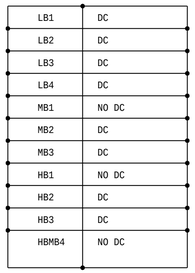
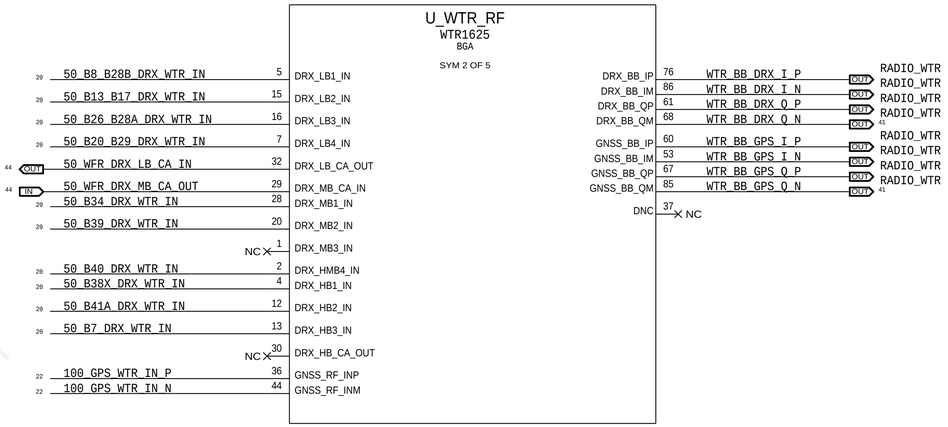
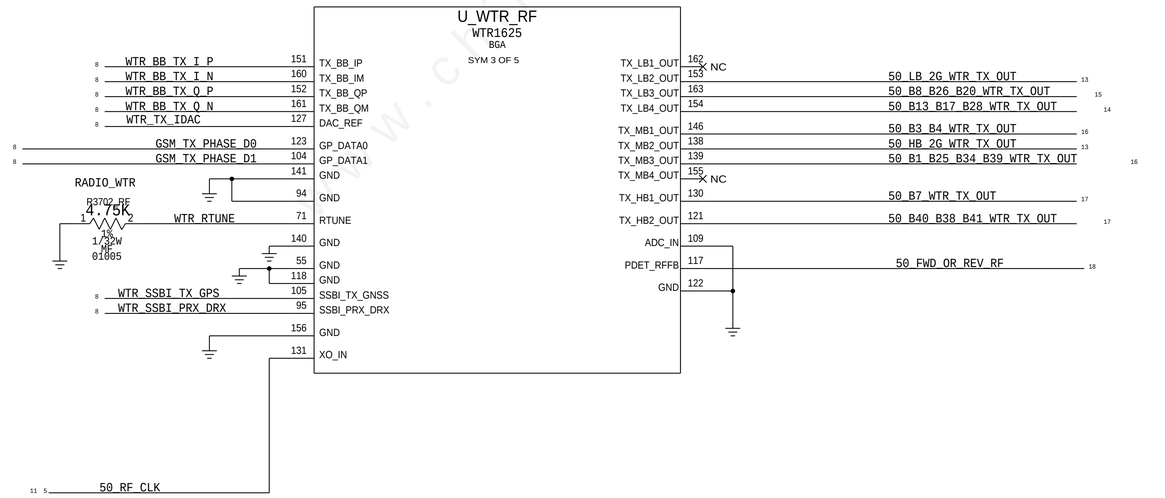
C802
R802
L800
U803











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

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Apple Inc.

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WTR TRANSCEIVER (2 OF 2)

C934
R926
L3802_RF
U902

WTR DECOUPLING CAPS

XW3801_RF
XW3802_RF
PP_LDO8 — MAKE_BASE=TRUE — VREG_2V_WTR
PP_LDO1 — MAKE_BASE=TRUE — VREG_1P3V_WTR

L3801_RF
22NH-3%-0.25A
0201
RADIO_WTR

VREG_2V_WTR — MAKE_BASE=TRUE — VDD_DRX_BB_2V
VREG_1P3V_WTR — MAKE_BASE=TRUE — VDD_PRX_PLL_1P3V
WTR DECOUPLING SHARED WITH C3808_RF
VREG_1P3V_WTR — MAKE_BASE=TRUE — VDD_PRX_LO_HB_1P3V

C3801_RF 10UF 20% 6.3V CERM-X5R 0402-9
C3808_RF 10UF 20% 6.3V CERM-X5R 0402-9
C3830_RE 0.1UF 20% 4V X5R 01005

VDD_TX_DA_2V — C3813_RE 100PF 5% 10V NP0-C0G 01005
VDD_SHDR_PLL_1P3V — C3821_RE 0.1UF 20% 4V X5R 01005
VDD_PRX_LB_1P3V — C3828_RE 0.1UF 20% 4V X5R 01005

RADIO_WTR — MAKE_BASE=TRUE — VDD_PRX_BB_2V / VDD_TX_BBF_2V
VDD_PRX_HBMB_1P3V
VDD_PRX_LB_1P3V

I188
NRC — VDD_PRX_VCO_2V — C3815_RE 0.1UF 20% 4V X5R 01005
VDD_SHDR_VCO_1P3V — C3823_RE 0.1UF 20% 4V X5R 01005
VDD_DRX_LO2_1P3V — C3833_RE 0.1UF 20% 4V X5R 01005

VDD_SHDR_VCO_2V — C3816_RE 0.1UF 20% 4V X5R 01005
VDD_PRX_VCO_1P3V
DELETED C3805 PR REVIEW FEEDBACK
VDD_DRX_LO1_1P3V — C3809_RE 0.1UF 20% 4V X5R 01005

VDD_TX_VCO_2V — C3817_RE 0.1UF 20% 4V X5R 01005
VDD_PRX_LO_HBMB_1P3V — C3806_RE 0.1UF 20% 4V X5R 01005
VDD_DRX_MB_1P3V

VDD_TX_PLL_2V
VDD_TX_SYNTH_1P3V — C3824_RE 0.1UF 20% 4V X5R 01005
VDD_DRX_HB_1P3V

VDD_XO_2V — C3803_RE 0.1UF 10% 16V X5R-CERM 0201
VDD_TX_LO_1P3V — C3825_RE 0.1UF 20% 4V X5R 01005
VDD_GPS — MAKE_BASE=TRUE — VDD_GPS_LNA_1P3V — C3828_RE 0.1UF 20% 4V X5R 01005 — MAKE_BASE=TRUE — VDD_GPS_BB_1P3V

VDD_FBRX_2V — C3818_RE 0.1UF 20% 4V X5R 01005
I175 — VDD_PRX_2V
VDD_TX_UPC_1P3V — C3826_RE 100PF 5% 10V NP0-C0G 01005
VDD_GPS_PLL_1P3V — MAKE_BASE=TRUE — C3829_RE 0.1UF 20% 4V X5R 01005 — VDD_GPS_VCO_1P3V

XW3803_RF
PP_LDO11 — MAKE_BASE=TRUE — VDD_MSM_1P8V — C3811_RE 1.0UF 10% 6.3V X5R-CERM 0201-1 RADIO_WTR

VDD_TX_VCO_1P3V — C3807_RE 0.1UF 20% 4V X5R 01005

L3802_RF
8.2NH-3%-0.19A-1.6OHM
01005
VDD_TX_DA_1P3V

U_WTR_RF
WTR1625
BGA
SYM 4 OF 5

VDD_PRX_VCO_1P3V	90 VDD_RF1_P_VCO	VDD_RF2_T_DA	129 VDD_TX_DA_2V
VDD_PRX_VCO_2V	80 VDD_RF2_P_VCO	VDD_RF1_T_DA	137 VDD_TX_DA_1P3V
VDD_PRX_LO_HB_1P3V	25 VDD_RF1_P_HB_LO	VDD_RF1_T_UPC	136 VDD_TX_UPC_1P3V
VDD_PRX_LB_1P3V	72 VDD_RF1_P_LB	VDD_RF1_T_LO	135 VDD_TX_LO_1P3V
VDD_PRX_HBMB_1P3V	34 VDD_RF1_P_HMB	VDD_RF2_T_BB	126 VDD_TX_BBF_2V
VDD_PRX_LO_HBMB_1P3V	57 VDD_RF1_P_HMB_LO	VDD_RF2_FBRX	116 VDD_FBRX_2V
VDD_PRX_PLL_1P3V	79 VDD_RF1_P_PLL	VDD_RF2_T_VCO	157 VDD_TX_VCO_2V
VDD_PRX_BB_2V	98 VDD_RF2_P_BB	VDD_RF1_T_VCO	149 VDD_TX_VCO_1P3V
VDD_PRX_2V	100 VDD_RF2_P_RX	VDD_RF1_T_SYN	115 VDD_TX_SYNTH_1P3V
VDD_DRX_LO1_1P3V	14 VDD_RF1_D_LB_LO	VDD_RF2_T_PLL	114 VDD_TX_PLL_2V
VDD_DRX_LO2_1P3V	38 VDD_RF1_D_LOM	VDD_RF1_G_LNA	52 VDD_GPS_LNA_1P3V
VDD_DRX_LB_1P3V	31 VDD_RF1_D_LB	VDD_RF1_G_VCO	74 VDD_GPS_VCO_1P3V
VDD_DRX_HB_1P3V	22 VDD_RF1_D_HB	VDD_RF1_G_PLL	93 VDD_GPS_PLL_1P3V
VDD_DRX_MB_1P3V	11 VDD_RF1_D_MB	VDD_RF1_G_BB	59 VDD_GPS_BB_1P3V
VDD_DRX_BB_2V	54 VDD_RF2_D_BB	GND	113
VDD_SHDR_VCO_1P3V	48 VDD_RF1_S_VCO	VDD_RF2_XO	147 VDD_XO_2V
VDD_SHDR_VCO_2V	62 VDD_RF2_S_VCO	VDD_DIO	103 VDD_MSM_1P8V
VDD_SHDR_PLL_1P3V	78 VDD_RF1_S_PLL		

U_WTR_RF
WTR1625
BGA
SYM 5 OF 5

89 GND	GND	111 GND
56 GND	GND	101 GND
83 GND	GND	110 GND
82 GND	GND	35 GND
58 GND	GND	145 GND
GND	GND	144 GND
8 GND	GND	143 GND
26 GND	GND	128 GND
64 GND	GND	120 GND
42 GND	GND	119 GND
41 GND	GND	106 GND
81 GND	GND	150 GND
GND	GND	134 GND
21 GND	GND	159 GND
6 GND	GND	142 GND
24 GND	GND	125 GND
39 GND	GND	124 GND
GND	GND	148 GND
10 GND	GND	158 GND
3 GND	GND	133 GND
23 GND	GND	112 GND
46 GND	GND	132 GND
GND	GND	45 GND
49 GND	GND	66 GND
69 GND	GND	84 GND
88 GND	GND	75 GND
70 GND	GND	164 GND
63 GND		
40 GND		
GND		
47 GND		
87 GND		
77 GND		
96 GND		

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WFR TRANSCEIVER

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C1019
R1016
L1000
U1002

CHINAFIX

XW3900_RF
PP_LDO8 — VREG_2V_WFR
MAKE_BASE=TRUE

XW3901_RF
PP_LDO1 — PPLDO1_WFR
MAKE_BASE=TRUE

C3901_RF 10UF 20% 6.3V CERM-X5R 0402-9

VDD_DIG_1P3V — C3904_RF 0.1UF 20% 10V X5R 01005

VREG_2V_WFR — C3903_RF 10UF 20% 6.3V CERM-X5R 0402-9

VDD_PRX_VCO_WFR_2V — C3912_RF 0.1UF 20% 10V X5R 01005

VDD_DRX_LO_1P3V — C3905_RF 0.1UF 20% 10V X5R 01005

VDD_XO_WFR_2V — C3913_RF 0.1UF 20% 10V X5R 01005

VDD_DRX_LB_WFR_1P3V

I113 VDD_DRX_MB_HB_FE_1P3V — C3915_RF 0.1UF 20% 10V X5R 01005

VDD1_DRX_BB_2V — C3916_RF 0.1UF 20% 10V X5R 01005

I114 VDD_PRX_MBHB_FE_1P3V

VDD_PRX_LB_FE_1P3V

VDD_PRX_VCO_WFR_1P3V — C3910_RF 0.1UF 20% 10V X5R 01005

VDD_PRX_PLL_WFR_1P3V — C3911_RF 0.1UF 20% 10V X5R 01005

VDD_PRX_LO_WFR_1P3V — C3902_RF 0.1UF 20% 10V X5R 01005

XW3902_RF
PP_LDO11 — VDD1_1P8V
MAKE_BASE=TRUE

C3917_RF 0.1UF 20% 10V X5R 01005

MB1	DC
MB2	NO DC
MB3	DC

MB1	DC
MB2	NO DC
MB3	DC

50_RF_CLK

U_WFR_RF
WFR1620
BGA
SYM 1 OF 2
RX_OTHER

50_B3_PRX_WFR_IN	22	PRX_MB1_IN
50_B1_B4_PRX_WFR_IN	16	PRX_MB2_IN
50_B25_PRX_WFR_IN	6	PRX_MB3_IN
50_WFR_PRX_HB_CA_IN	NC	PRX_HB_CA_IN
50_WFR_PRX_LB_CA_IN	3	PRX_LB_CA_IN
50_B25_DRX_WFR_IN	49	DRX_MB1_IN
50_B1_B4_DRX_WFR_IN	54	DRX_MB2_IN
50_B3_DRX_WFR_IN	66	DRX_MB3_IN
	NC	DRX_HB_CA_IN
50_WFR_DRX_LB_CA_IN	36	DRX_LB_CA_IN
	52	GND
WFR_RTUNE	19	R_TUNE
	7	XO_IN

R3901_RF 4.75K 1% 1/32W MF 01005

GND	1	
GND	61	
SSBI_PRX_DRX	13	WFR_SSBI
GND	34	
PRX_MB_CA_OUT	5	50_WFR_PRX_MB_CA_OUT (OUT)
DRX_MB_CA_OUT	65	50_WFR_DRX_MB_CA_OUT (OUT)
PRX_BB_IP	29	WFR_BB_PRX_I_P
PRX_BB_IM	28	WFR_BB_PRX_I_N
PRX_BB_QP	25	WFR_BB_PRX_Q_P
PRX_BB_QM	30	WFR_BB_PRX_Q_N
DRX_BB_IP	62	WFR_BB_DRX_I_P
DRX_BB_IM	63	WFR_BB_DRX_I_N
DRX_BB_QP	57	WFR_BB_DRX_Q_P
DRX_BB_QM	64	WFR_BB_DRX_Q_N

U_WFR_RF
WFR1620
BGA
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PWR_GND

VDD_PRX_VCO_WFR_2V	37	VDD_RF2_P_VCO
VDD_PRX_VCO_WFR_1P3V	33	VDD_RF1_P_VCO
VDD_PRX_LO_WFR_1P3V	31	VDD_RF1_P_LO
VDD_PRX_PLL_WFR_1P3V	44	VDD_RF1_P_PLL
VDD_PRX_LB_FE_1P3V	15	VDD_RF1_P_LB_FE
VDD1_PRX_BB_2V	23	VDD_RF2_P_BB
VDD_PRX_MBHB_FE_1P3V	10	VDD_RF1_P_MHB_FE
VDD_DRX_LO_1P3V	47	VDD_RF1_D_LO
VDD1_DRX_BB_2V	56	VDD_RF2_D_BB
VDD_DRX_LB_WFR_1P3V	39	VDD_RF1_D_LB_FE
VDD_DRX_MB_HB_FE_1P3V	59	VDD_RF1_D_MHB_FE
VDD_DIG_1P3V	24	VDD_RF1_DIG
	14	GND
VDD1_1P8V	2	VDD_DIO
VDD_XO_WFR_2V	17	VDD_RF2_XO

GND	46	
GND	35	
GND	42	
GND	53	
GND	20	
GND	51	
GND	41	
GND	45	
GND	50	
GND	18	
GND	9	
GND	11	
GND	21	
GND	32	
GND	4	
GND	38	
GND	55	
GND	40	
GND	60	
GND	48	
GND	58	
GND	26	
GND	8	
GND	12	

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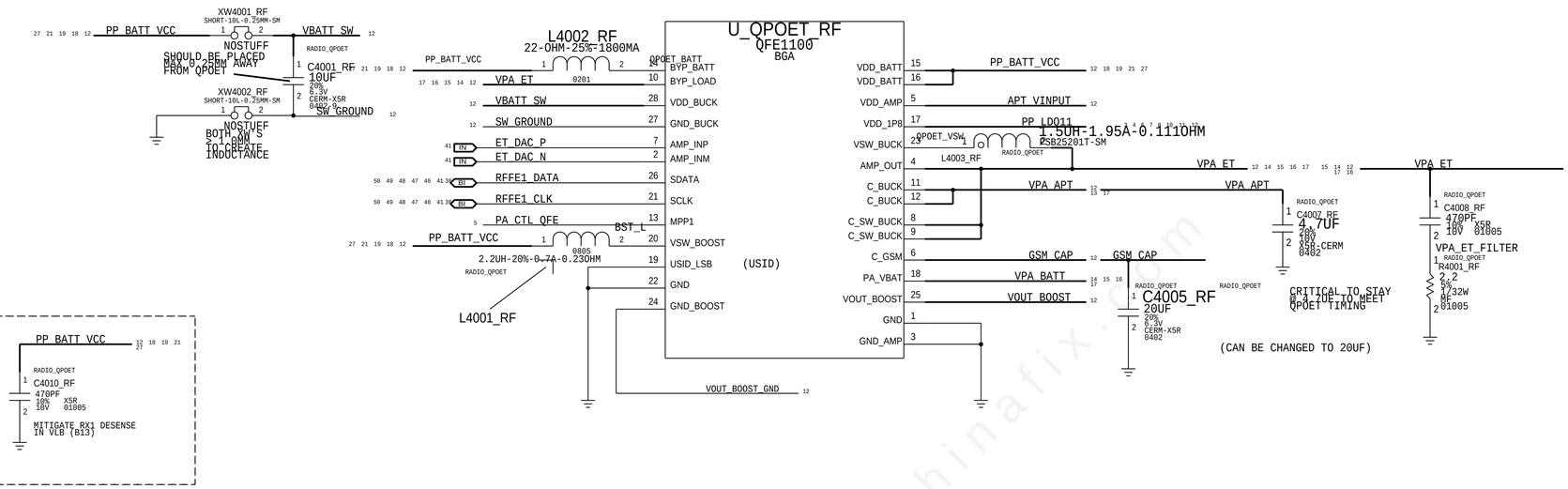
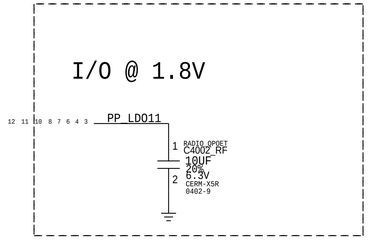
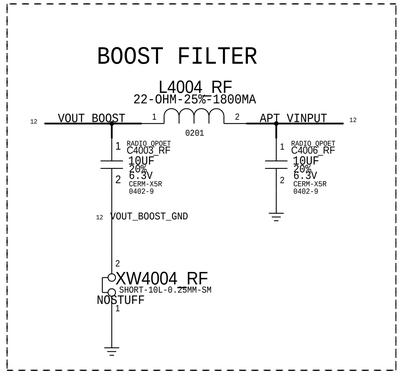
QFE DCDC

C1110
R1102
L1104
U1101







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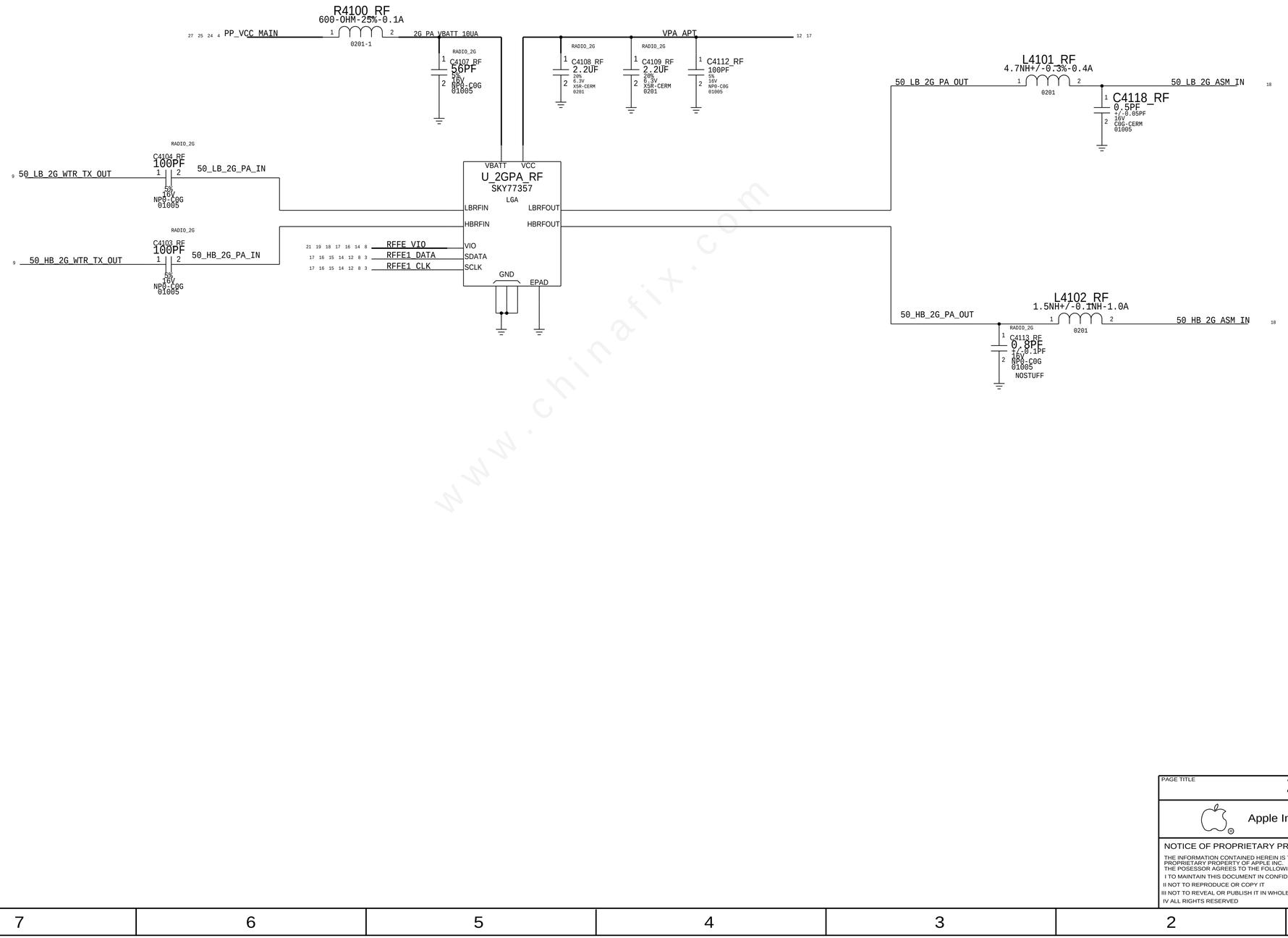
2G PA

C1208
R1200
L1204
U1201



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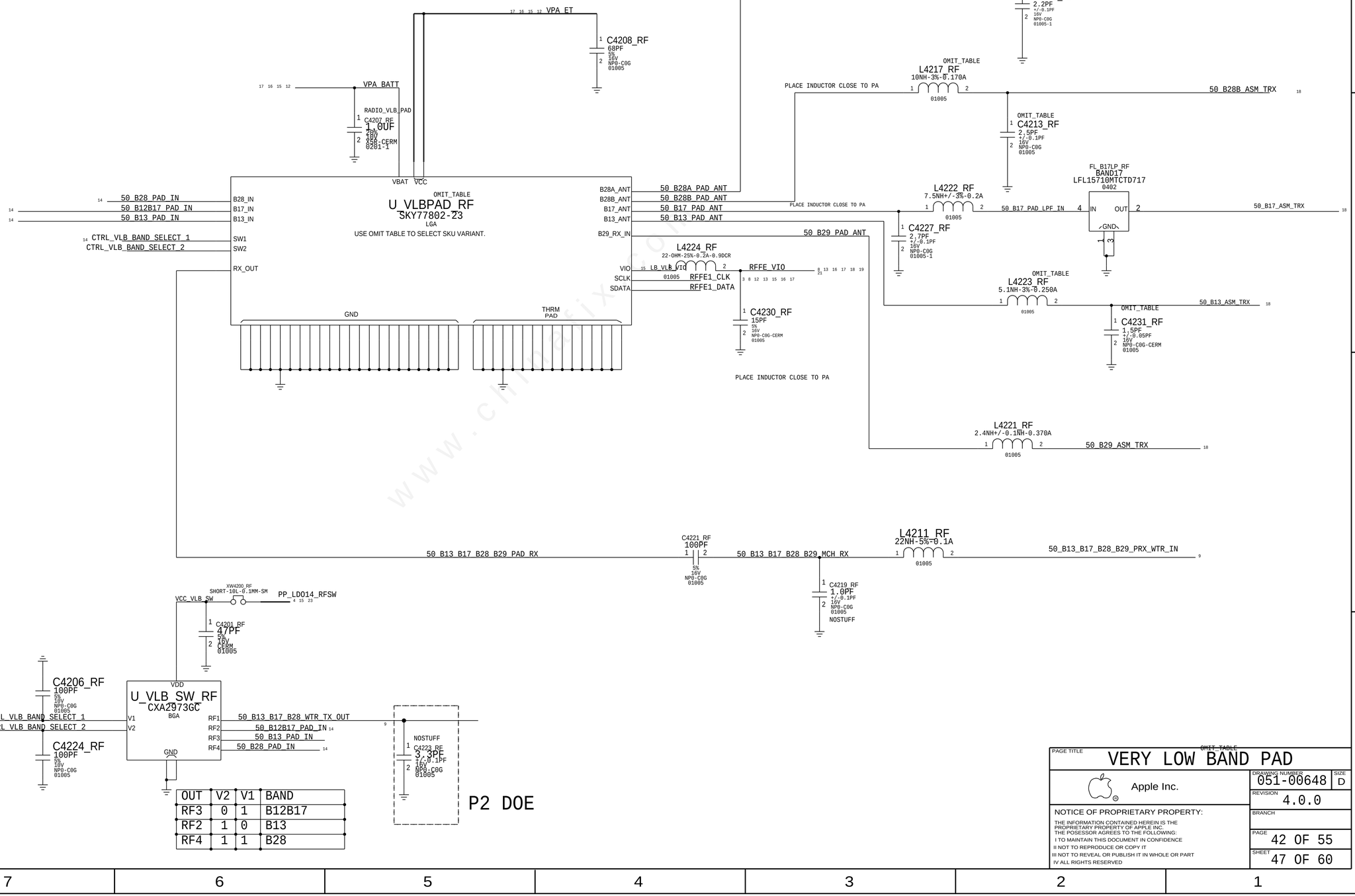
VERY LOW BAND PAD (B13, B17, B28)

C1332
R1300
L4215_RF
U1304



OUT	V2	V1	BAND
RF3	0	1	B12B17
RF2	1	0	B13
RF4	1	1	B28

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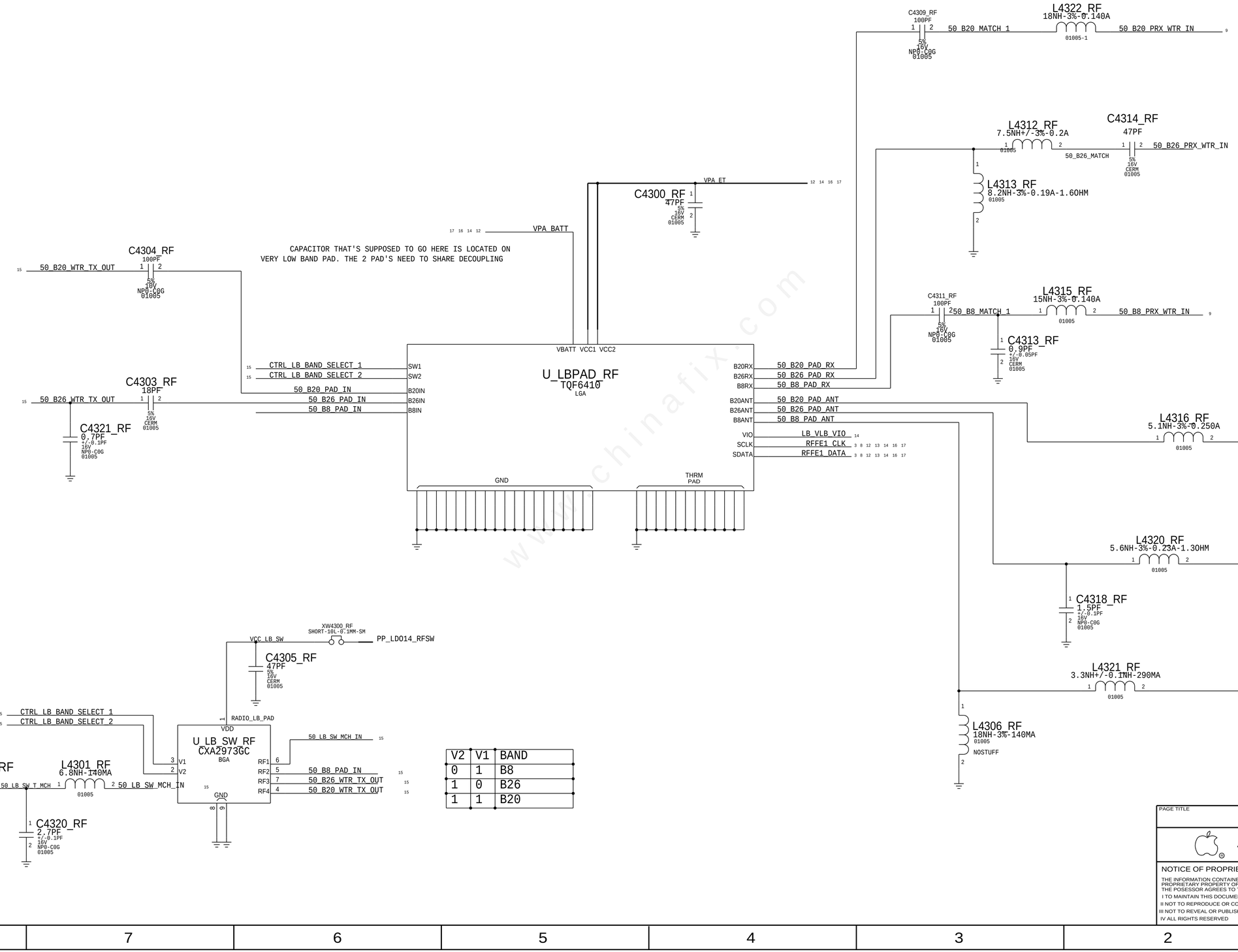
LOW BAND PAD (B8, B26, B20)

C4318_RF
R1400
L4322_RF
U1402



PAGE TITLE: LOW BAND PAD

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

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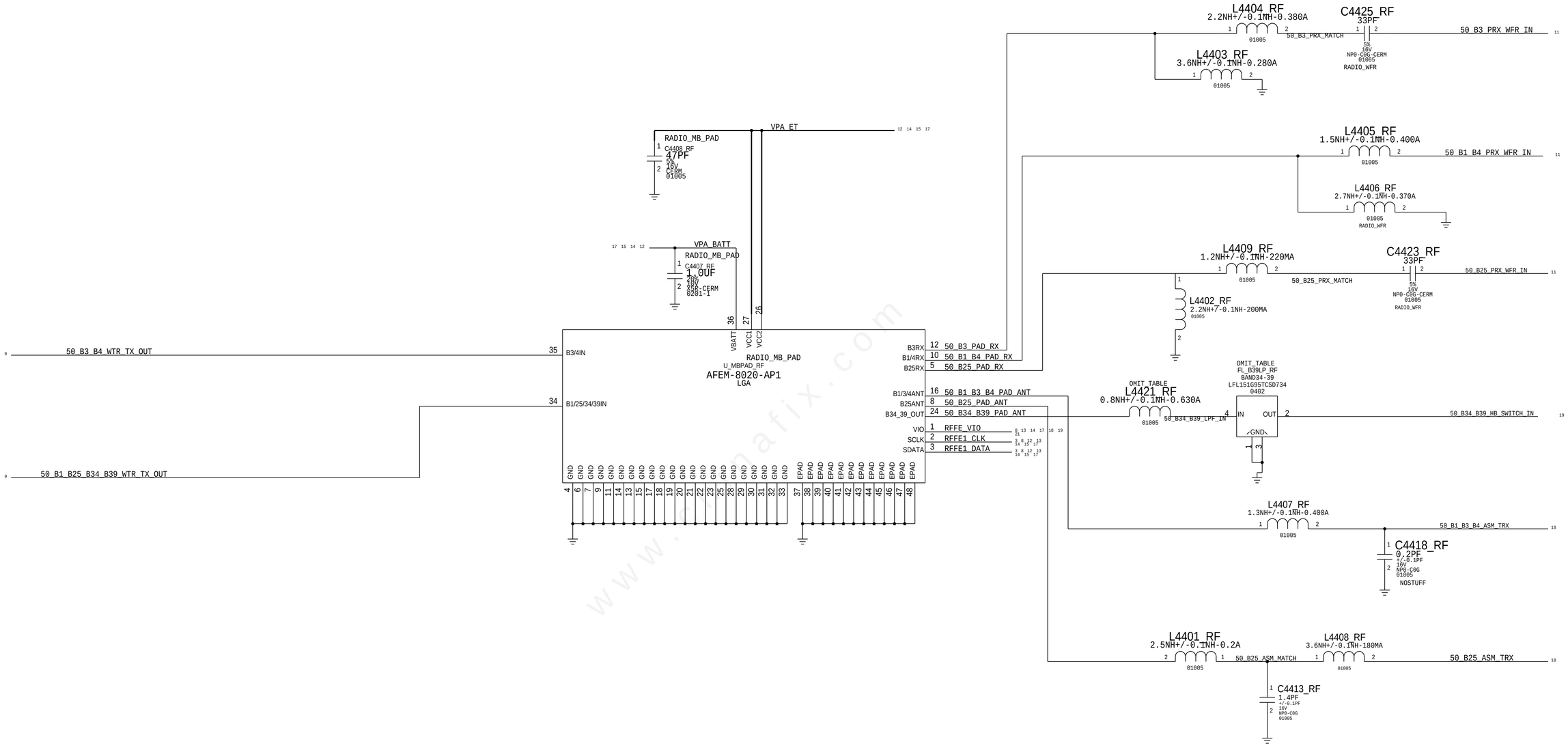
C4426_RF
R1500
L4409_RF
U1501



PAGE TITLE
MID BAND PAD

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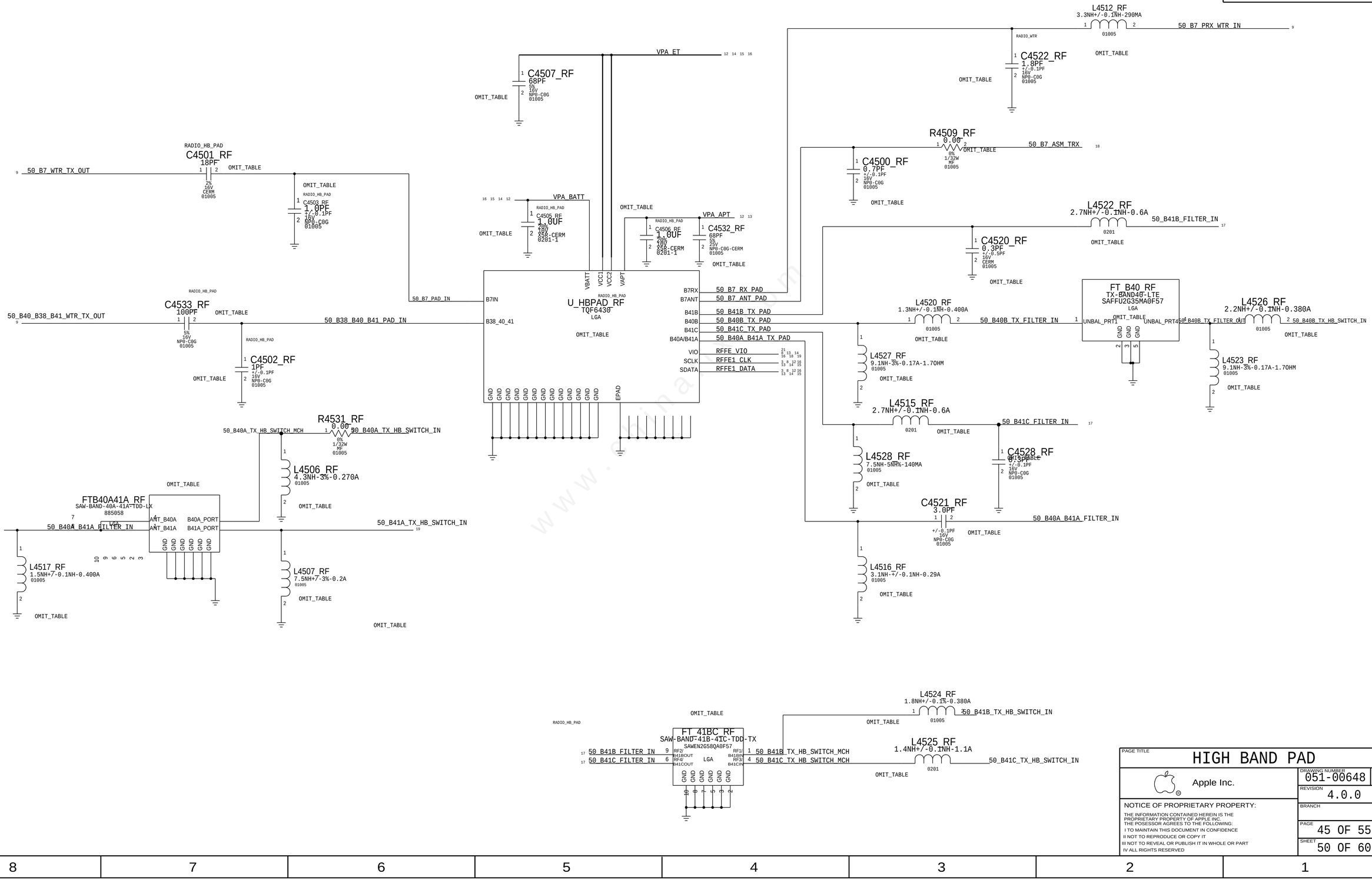
HIGH BAND PAD (B7, B38, B40, B41, XGP)

C4533_RF
R1600
L1616
U1601



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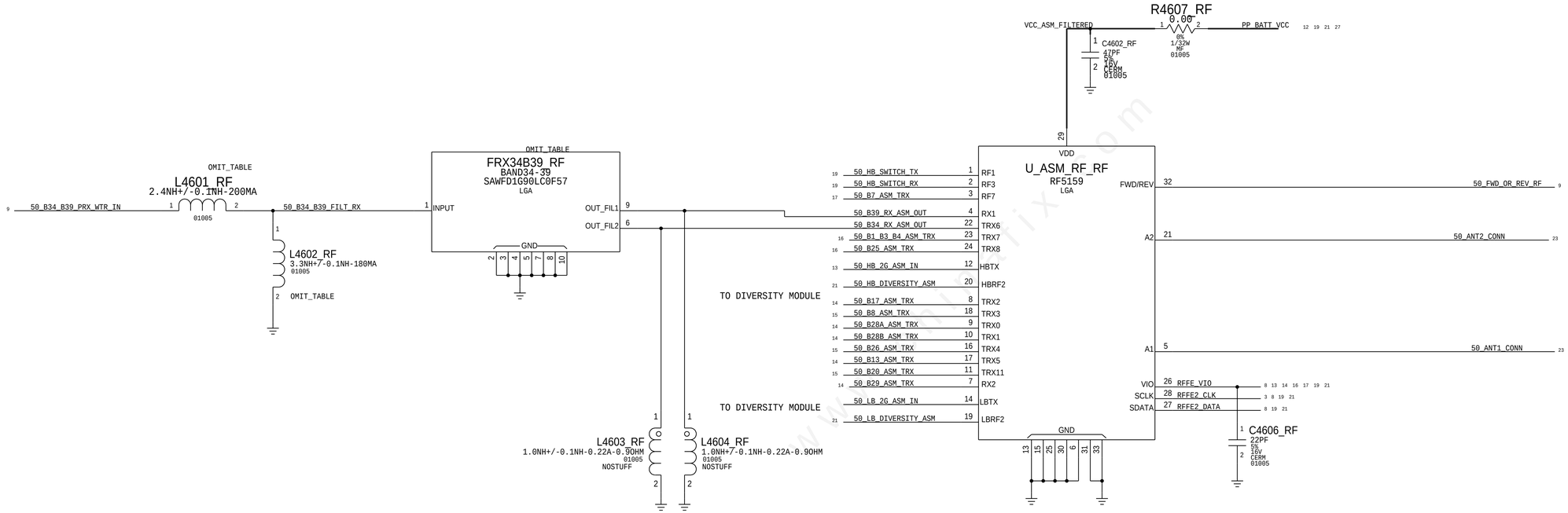
ANTENNA SWITCH

C1702
R1700
L4608_RF
U1702



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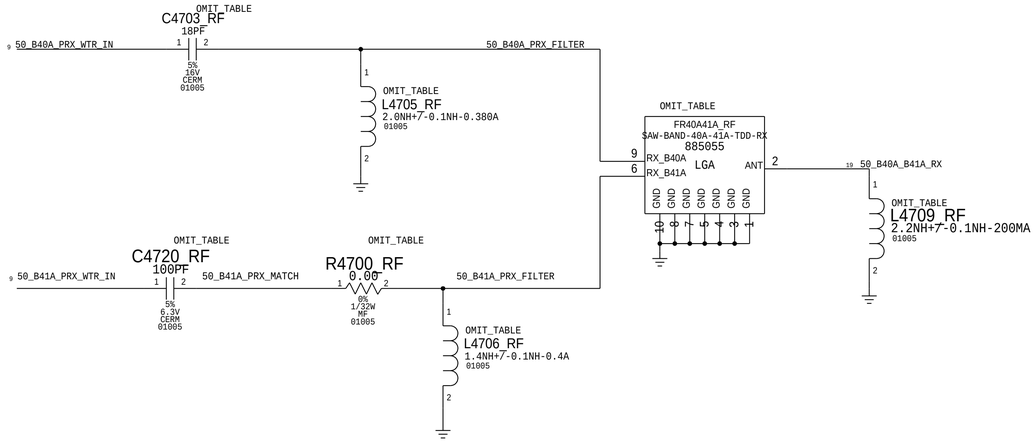
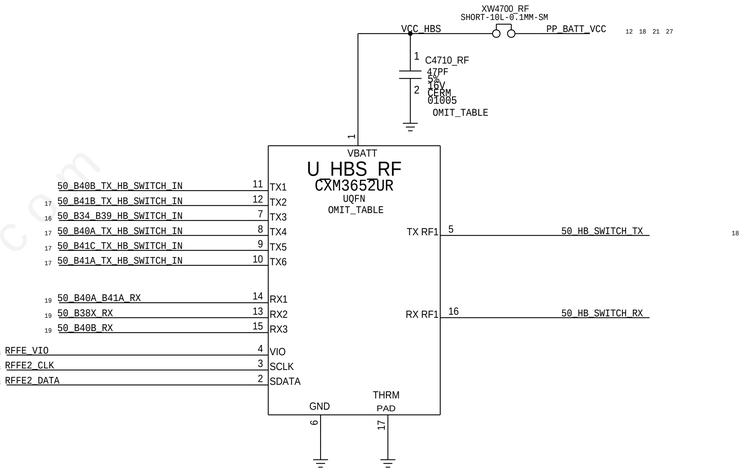
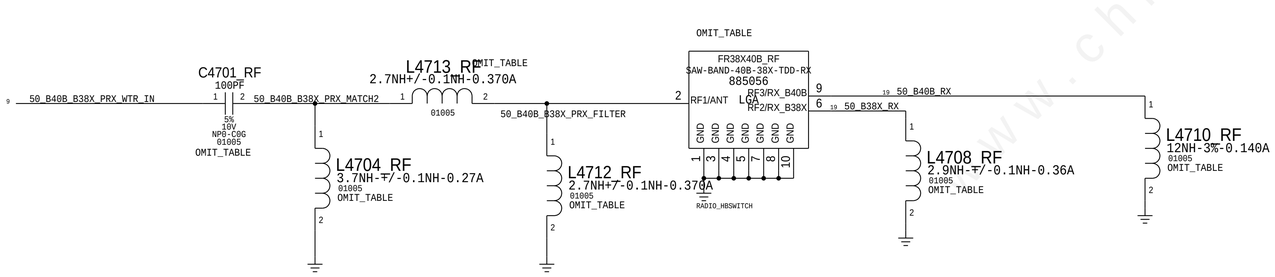
HIGH BAND SWITCH







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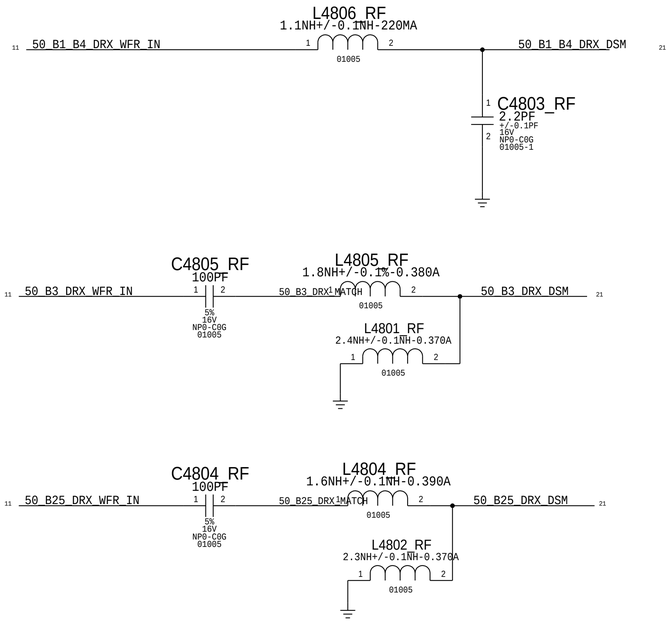
RX DIVERSITY (1)

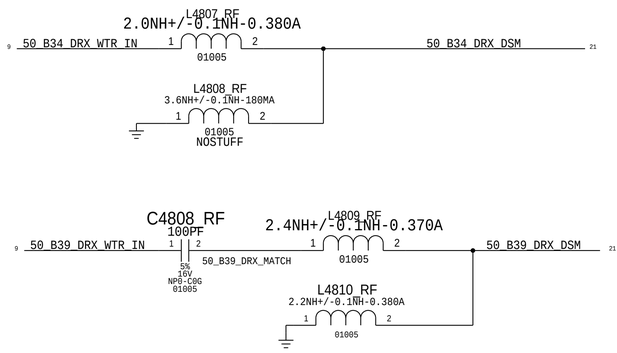
C4826_RF
R1800
L1829
U1801

MIDBAND

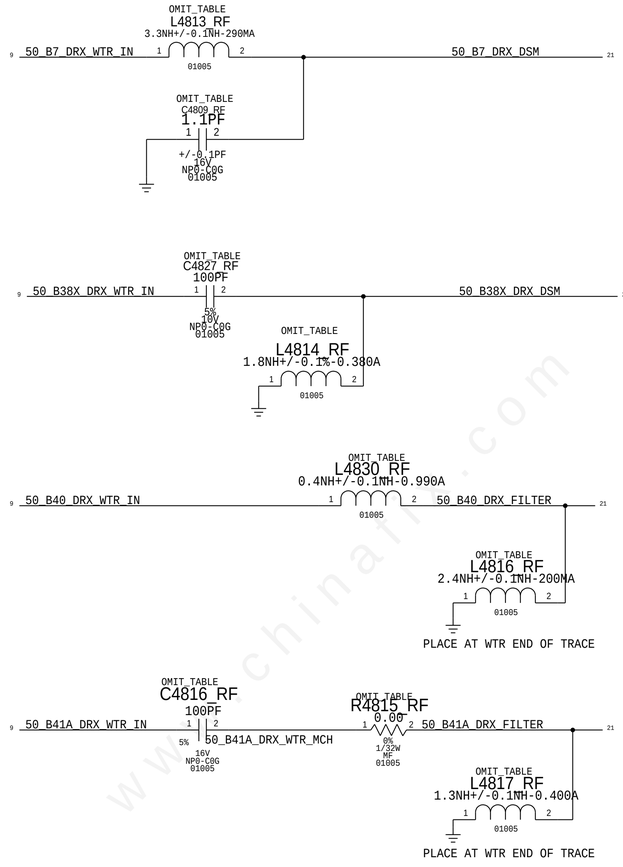
MIDBAND DIVERSITY - WFR

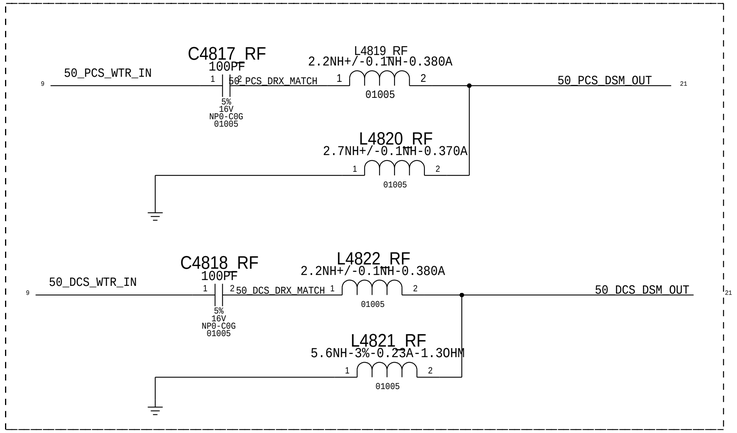


MIDBAND DIVERSITY - WTR

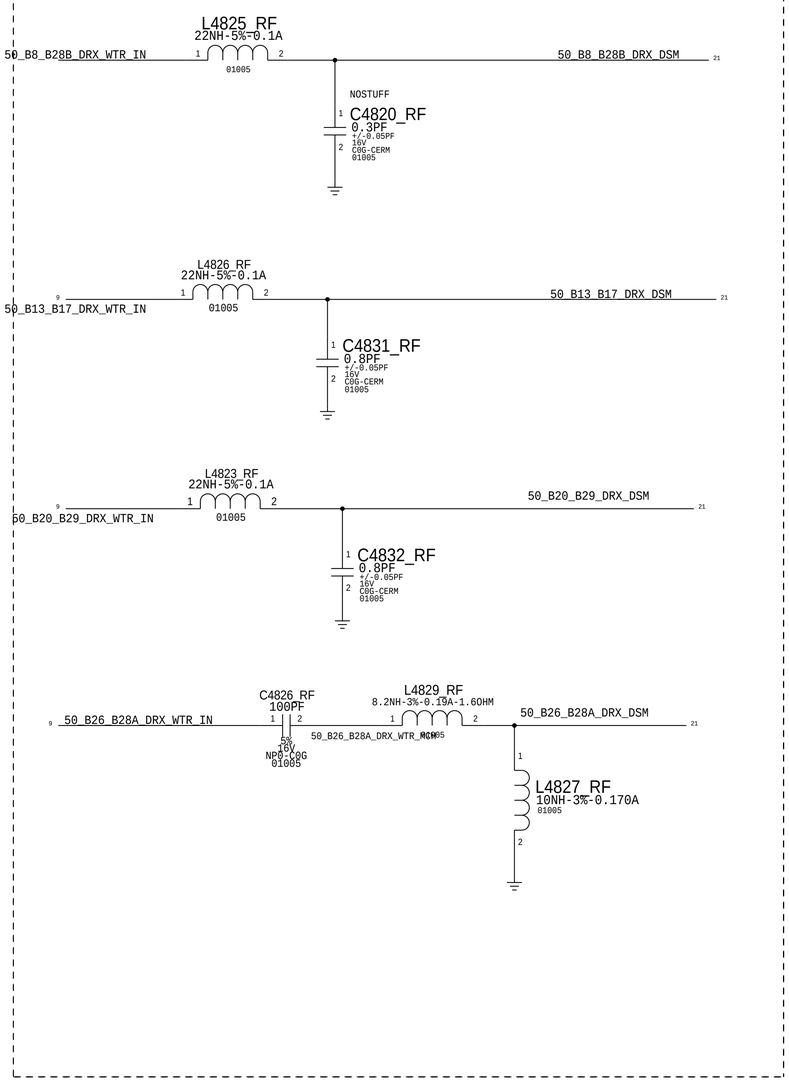


HIGHBAND DIVERSITY - WTR





LOWBAND DIVERSITY - WTR



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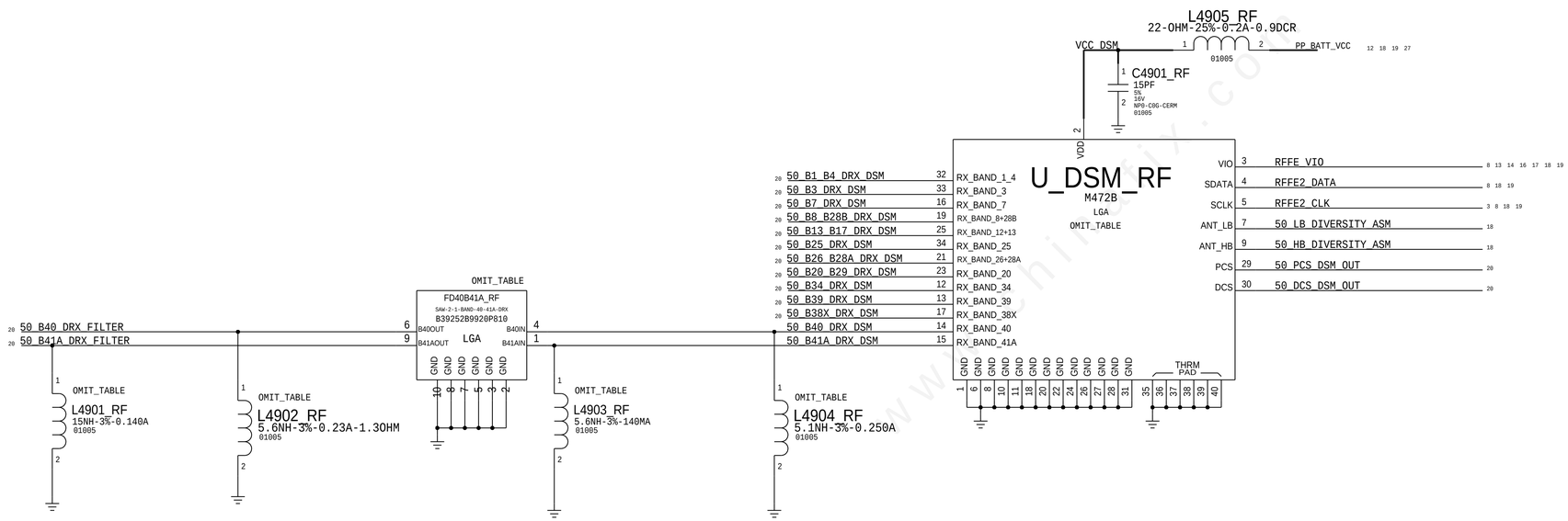
RX DIVERSITY (2)

C1900
R1900
L1900
U1901



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GPS

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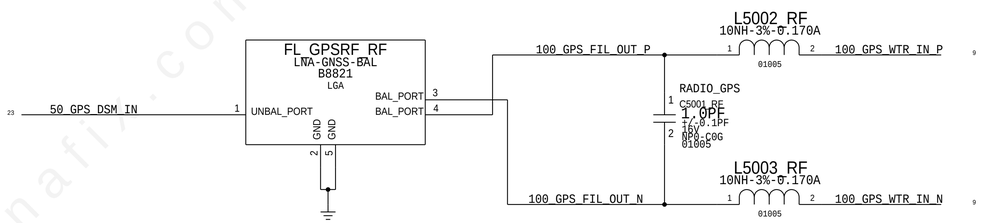
C1900
R1900
L1900
U1901



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ANTENNA FEEDS

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ANT & COAX CONNECTOR FOR LOWER & UPPER SECTION OF MLB

UPPER_LBMB_ANT_RF
1.6X1.21MM
SM-NSP
50_UPPER_LBMB
FL5146_RF
FLTR-GPS-0603
LFE18832MHC1D449
50_NTCH_FILT_OUT
L5101_RF
2.4NH+/-0.2NH-0.57A-0.07OHM
02015
50_UAT_PAC
50_UAT_CELL_F
C5105_RF
0.8PF
+/-0.05PF
16V
C0G-CERM
01005
U_ANTPAC_RF
RF1346
WLCSP
VBAT
RF1
RF2
VIO
SDATA
SCLK
NC
GND
VIO_FILT
RFFE2_PAC_DATA_FILT
RFFE2_PAC_CLK_FILT
PAC_VDD_3V0_IN
C5106_RF
33PF
5%
16V
NP0-C0G-CERM
01005
C5107_RF
0.01UF
10%
6.3V
X5R
01005
L5107_RF
20NH-3%-.14A-2.90HM
01005
PAC_VDD_3V0
L5103_RF
20NH-3%-.14A-2.90HM
RFFE_VIO_S2R
VIO_FILT
01005
C5103_RF
0.01UF
C5104_RF
33PF
R5104_RF
0.00
RFFE2_DATA_BUFFER
RFFE2_PAC_DATA_FILT
C5102_RF
120PF
10%
10V
CER-X7R
01005
R5105_RF
0.00
RFFE2_CLK_BUFFER
RFFE2_PAC_CLK_FILT
C5101_RF
120PF
RADIO_LOW_ANT
UPPER_HB_ANT_RF
MM5829-2700
F-ST-SM1
50_UPPER_HB_ANT_FEED
C5138_RF
0.2PF
+/-0.05PF
25V
C0G-CERM
0201
50_UPPER_HB_ANT_FEED2
L5102_RF
1.2NH+/-0.05NH-1.1A-0.04OHM
0201
50_UPPER_HB_ANT_FEED1
NOSTUFF
C5139_RF
0.2PF
DPX165950DT-8030D1
FLWIFDIP_RF
SM
LOW_BAND
HIGH_BAND
COMMON
GND
50_WIFI_2G_DIPLEXER_IN2
50_WIFI_5G_IN_OUT
R5101_RF
0.00
50_WIFI_2G_DIPLEXER_IN
L5120_RF
3.0NH+/-0.1NH-0.6A
0201
50_WICE_ANT2_GND
L5121_RF
5.6NH-3%-0.23A-1.30HM
01005
FLCELWIF_RF
DIPLEXER-CELL-WIFI
885072
LGA
RF1
RF3
RF2
SMD2_RF1/SMD4_GND
SMD1_RF2
GND
50_WIFI_2G_NOTCHPLEXER_IN2
50_WICE_CELL2_IN
L5106_RF
4.3NH+/-3%-0.5A
50_UPPER_HB_CELL
50_WIFI_2G_NOTCHPLEXER_IN
L5123_RF
1.7NH-+/-0.1NH-0.8A-0.07OHM
0201
NOSTUFF
L5122_RF
12NH-3%-0.140A
01005
BYPASS CAPS FOR ALTERNATE ANTENNA WITHOUT U_ASWNT
R5137_RF
0.00
OMIT_TABLE
1/20W
MF
0201
SHORT-10L-0.1MM-SM
XW5100_RF
PP_LDO14_RFSW
C5109_RF
47PF
5%
16V
CERM
01005
VCC_SWANT
UP_COAX_RF
MM5829-2700
F-ST-SM1
50_ANT2_UPPER_COAX_CONN
U_SWUANT_RF
CXA4011GC
VDD
RF
RF1
VC1
RF2
GND
OMIT_TABLE
XFLGA
UAT_SELECT
0=UPPER_LBMB_ANT
1=UPPER_HB_ANT
50_UAT_CELL
L5108_RF
2.5NH+/-0.1NH-500MA
0201
50_UAT_CELL_LPF
C5110_RF
1.1PF
+/-0.05PF
25V
C0G-CERM
0201
TO THE PAC FOR LBMB
L5109_RF
2.5NH+/-0.1NH-500MA
50_UAT_CELL_F
L5111_RF
7.5NH-+/-0.2NH-440MA
03015
RADIO_LOW_ANT
LOW_COAX_RF
MM5829-2700
F-ST-SM1
50_ANT2_CONN
P2 DOE
R5102_RF
NOSTUFF
1%
MF
1/20W
201
49.9
R5136_RF
0.00
PP_LDO13_GPS
VOLTAGE=2.95V
PP_LDO13
C5129_RF
22PF
5%
16V
CERM
01005
NOSTUFF
C5130_RF
2.2UF
20%
6.3V
X5R
0201-2
NOSTUFF
GPS FEED
GPS_SP1_RF
1.6X1.21MM
SM-NSP
50_GPS_ANT_FEED
C5136_RF
1.8PF
+/-0.05PF
25V
C0G-CERM
0201
50_GPS_ANT_MATCH
R5135_RF
0.00
50_GPS_ANT
T248
NOSTUFF
L5135_RF
22NH-100MA
0201
SP3_RF
SPRING-OVERPASS-GND-NORTH-X145
CLIP-SM
MODULE INCLUDES INTERNAL DECOUPLING
VCC
U_GPSLNA_RF
SKY65736
LGA
RFIN
RFOUT
GND
THRM_PAD
50_GPS_DSM_IN
L5129_RF
1.4NH+/-0.1NH-1.1A
0201
50_ANT1_CONN
C5128_RF
0.3PF
+/-0.05PF
25V
C0G-CERM
0201
50_ANT1_CONN_R
RADIO_LOW_ANT
LOW_ANT_RF
MM5829-2700
F-ST-SM1

PAGE TITLE	ANTENNA FEEDS
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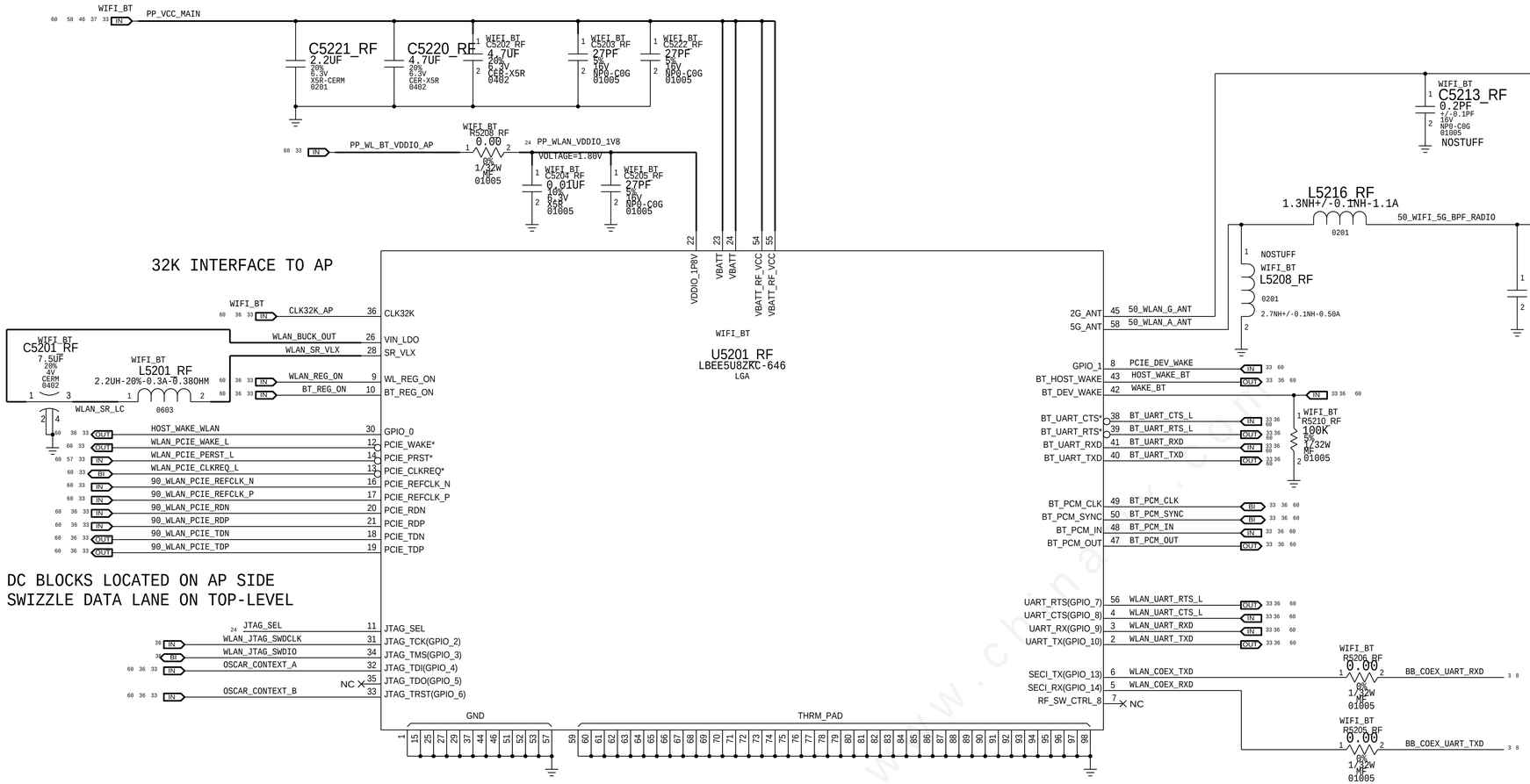
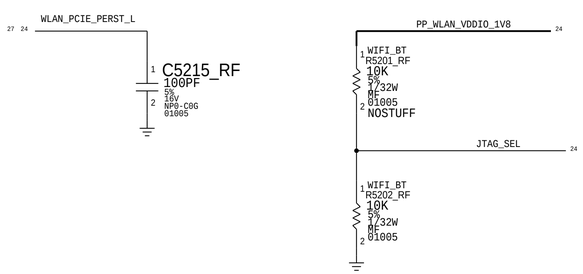
WLAN/BT





MODULE BOOT-STRAPPED TO PCIE INTERFACE/SDIO2/SDIO1=110

SYNC_MASTER=N/A SYNC_DATE=N/A

PAGE TITLE: WIFI/BT: MODULE AND FRONT END

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STOCKHOLM

CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.

C2101
R2100
L2102
U2100

U5302_RF
WLCSP
FAN48614BUC50X
PP_VCC_MAIN
L5303_RF 1.8UH-0.7A 0603 STOCKHOLM_BOOST_SW
C5321_RF 15UF 20% 6.3V X5R 0402-1
VIN VOUT SW SW EN PGND PGND AGND
STOCKHOLM 5V
C5322_RF 15UF 20% 6.3V X5R 0402-1
C5323_RF 15UF 20% 6.3V X5R 0402-1

USE LDO11 TO MATCH IMPLEMENTATION OF N71/66
STOCKHOLM 5V
R5313_RF 0.00 0% 1/32W MF 01005
PP_LDO11
R5309_RF 0.00 0% 1/32W MF 01005
STOCKHOLM_DC_BOOST_EN
PP_VCC_MAIN
STOCKHOLM_TVDD
C5330_RF 1UF 20% 10V X5R 0201
R5310_RF 0.00 0% 1/32W MF 01005
C5324_RF 1UF 20% 10V X5R 0201
PP_PN66_SIM_PMU
PP_STOCKHOLM_1V8_S2R
STOCKHOLM_DVDD
C5302_RF 1UF 20% 10V X5R 0201
STOCKHOLM_SVDD_IN
VOLTAGE=1.80V
PP_STOCKHOLM_ESE
C5303_RF 0.1UF 10% 10V X5R-CERM 0201
C5304_RF 1UF 20% 10V X5R 0201

U5301_RF
PN66VEU3-A101D003
UFLGA
VDD VBAT SIM_PMU_VCC PVDD VUP TVDD AVDD SVDD ESE_VDD
C6 C7 B5 D3 C2 E7 D7 B7 C5

STOCKHOLM_TO_PMU_HOST_WAKE D1 IRQ
AP_TO_STOCKHOLM_FW_DWLD_REQ NC A5 SVDD_REQ
STOCKHOLM_TO_BBPMU_CLK_REQ B2 DWL
45_BBPMU_TO_STOCKHOLM_19P2M_CLK A2 CLK_REQ
STOCKHOLM_UART_RXD A3 NFC_CLK_XTAL1
STOCKHOLM_UART_TXD C1 RX
STOCKHOLM_UART_CTS B1 TX
STOCKHOLM_UART_RTS D2 CTS
AP_TO_STOCKHOLM_EN A1 RTS
PP_STOCKHOLM_ESE E1 VEN
E3 SMX_RST*
NC E4 SMX_CLK
NC F4 ESE_IO1
NC B3 SPIM_MOSI
NC B4 SPIM_MISO
NC E6 SPIM_SCK
NC C3 XTAL2
VSS E2 AVSS D4 AVSS D6 AVSS F3 DVSS B6 DVSS C4 TVSS G4 PVSS C2

SPIM_IRQ F1 NC
SIM_SWIO A4 STOCKHOLM_TO_SIM_SWP
GPIO0 A7 STOCKHOLM_SIM_PRES
SPIM_NSS A6 NC
TX_PWR_REQ D5 STOCKHOLM_DC_BOOST
ESE_DWPM_DBG G7 SH_DWP_M
ESE_DWPS_DBG G6 SH_DWP_S
RXP F6 STOCKHOLM_RXP
RXN F5 STOCKHOLM_RXN
TX1 G3 STOCKHOLM_TX1
TX2 G5 STOCKHOLM_TX2
WKUP_REQ E5 AP_TO_STOCKHOLM_DEV_WAKE
VMID F7 STOCKHOLM_VMID
SE2_PWR_REQ F2 SE2_PWR_REQ
SE2_SVDD_IN G1 SE2_SVDD_IN

PP5302_RF P2MM-NSM SM STOCKHOLM
PP5303_RF P2MM-NSM SM STOCKHOLM
P2MM-NSM SM PP5304_RF STOCKHOLM
C5317_RF 0.1UF 10% 10V X5R-CERM 01005
NOSTUFF R5316_RF 0.00 0% 1/32W MF 01005
PP_STOCKHOLM_1V8_S2R

C5308_RF 1000PF 2% 25V C0G-NP0 0201
STOCKHOLM_RXP_CAP
R5303_RF 560 5% 1/20W MF 201
L5301_RF 160NH-10%-0.48A-0.33OHM 0402
STOCKHOLM_BAL1
C5310_RF 560PF 2% 25V NPO-C0G 0201
T5301_RF ATB2012DF-20011 0805
BAL1 UNBAL BAL0 GND
STOCKHOLM_ANT_MATCH
NOSTUFF C5312_RF 82PF 2% 50V NPO-C0G 0201
C5313_RF 560PF 2% 25V NPO-C0G 0201
C5314_RF 22PF 5% 50V C0G 0201 NOSTUFF
STOCKHOLM_ANT
C5315_RF 1000PF 2% 25V C0G-NP0 0201
C5316_RF 1000PF 2% 25V C0G-NP0 0201
C5318_RF 330PF 2% 25V NPO-C0G 0201
NOSTUFF C5319_RF 100PF 2% 50V C0G 0201
TP5303_RF A TP-P55
USE FIDUCIAL FOR SH ANTENNA GND

L5302_RF 160NH-10%-0.48A-0.33OHM 0402
STOCKHOLM_BAL0
C5311_RF 560PF 2% 25V NPO-C0G 0201
C5309_RF 1000PF 2% 25V C0G-NP0 0201
STOCKHOLM_RXN_CAP
R5304_RF 560 5% 1/20W MF 201

TP5301_RF A TP-P55 STOCKHOLM_SIM_PRES

PU FOR MAUI IO WAKE GLITCH
PP_STOCKHOLM_1V8_S2R
R5301_RF 100K 5% 1/32W MF 01005
AP_TO_STOCKHOLM_EN
R5302_RF 100K 5% 1/32W MF 01005
AP_TO_STOCKHOLM_FW_DWLD_REQ
R5305_RF 100K 5% 1/32W MF 01005
AP_TO_STOCKHOLM_DEV_WAKE
R5306_RF 100K 5% 1/32W MF 01005
STOCKHOLM_UART_CTS
R5307_RF 100K 5% 1/32W MF 01005
STOCKHOLM_UART_RXD

SYNC_MASTER=N/A SYNC_DATE=N/A
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N69 SKU BOM OPTION TABLE

N69H

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S4180	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	6BPF 01005 16V	C4507_RF	CRITICAL	N69H
138S0706	1	1UF 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

N69H TDD

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	1.5NH 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
152S2040	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	1UF 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
353S4167	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	2.6NH 01005 380MA	L4705_RF	CRITICAL	N69H
117S0161	1	0OHM 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

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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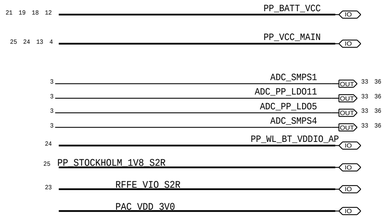
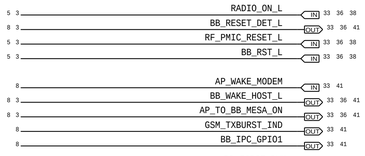
RADIO SYMBOL(HEIARCHY)

FCT TESTING



CELLULAR HOUSE KEEPING



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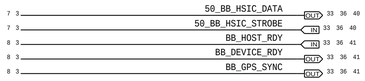
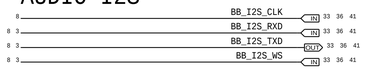


AUDIO I2S



OSCAR UART

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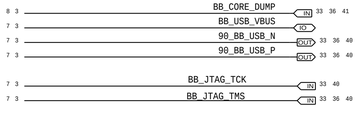
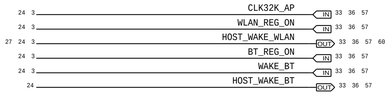
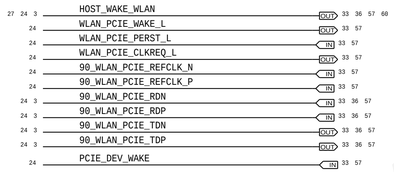


WLAN/BT HOUSE KEEPING



WLAN PCIE IPC



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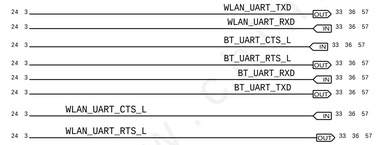
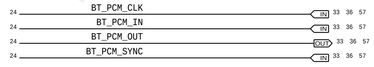


BT AUDIO PCM



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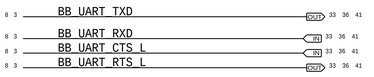
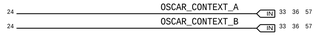
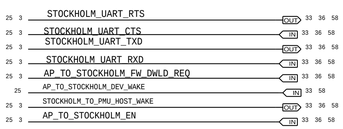


ANTENNA CONTROL

WLAN/OWL UART



STOCKHOLM INTERFACES



PAGE TITLE

Radio Subdesign Ports

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