

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

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
A	0004600844	PRODUCTION RELEASED		2015-07-30

N66 MLB - PVT


LAST_MODIFICATION=Thu Jul 30 15:54:57 2015

PAGE	<CSA>	CONTENTS	SYNC	DATE
1	1	TABLE OF CONTENTS		
2	3	SYSTEM:BOM TABLES		
3	4	SYSTEM:N66 SPECIFIC		
4	5	SYSTEM: MECHANICAL COMPONENTS		
5	6	SOC:JTAG,USB,XTAL		
6	7	SOC:PCIE		
7	8	SOC:CAMERA & DISPLAY		
8	9	SOC:SERIAL & GPIO		
9	10	SOC:OWL		
10	11	SOC:POWER (1/3)		
11	12	SOC:POWER (2/3)		
12	13	SOC:POWER (3/3)		
13	15	NAND		
14	20	SYSTEM POWER:PMU (1/3)		
15	21	SYSTEM POWER:PMU (2/3)		
16	22	SYSTEM POWER:PMU (3/3)		
17	23	SYSTEM POWER:CHARGER		
18	24	SYSTEM POWER:BATTERY CONN		
19	30	SENSORS:MOTION SENSORS		
20	31	CAMERA:FRONT CAMERA B2B		
21	32	CAMERA:REAR CAMERA B2B		
22	33	CAMERA:STROBE DRIVER		
23	34	CAMERA: SPHERE DRIVER		
24	35	AUDIO:CALTRA CODEC (1/2)		
25	36	AUDIO:CALTRA CODEC (2/2)		
26	37	AUDIO:SPEAKER DRIVER		
27	38	AUDIO:ARC DRIVER		
28	40	DISPLAY:POWER		
29	41	TOUCH:ORB & MESA B2B		
30	42	DISPLAY:LCM B2B		

PAGE	<CSA>	CONTENTS	SYNC	DATE
31	45	I/O:TRISTAR 2		
32	46	I/O:DOCK FLEX B2B		
33	47	I/O:BUTTON FLEX B2B		
34	49	BASEBAND:RADIO SYMBOL		
35		TABLE OF CONTENTS		
36		ELNA & UAT ANT FEED		
37		CELLULAR FRONT END: ANTENNA CONNECTORS AND FEEDS		
38		WLAN LAT 2.4GHZ BAW BPF		
39		DEBUG CONN & TEST POINTS		
40		CELLULAR BASEBAND: POWER1		
41		CELLULAR BASEBAND: POWER2		
42		CELLULAR BASEBAND: CONTROL AND INTERFACES		
43		CELLULAR BASEBAND: GPIOs		
44		CELLULAR PMU: CONTROL AND CLOCKS		
45		CELLULAR PMU: SWITCHERS AND LDOS		
46		CELLULAR PMU: ET MODULATOR		
47		CELLULAR TRANSCEIVER: POWER		
48		CELLULAR TRANSCEIVER: PRX PORTS		
49		CELLULAR TRANSCEIVER: DRX/GPS PORTS		
50		CELLULAR TRANSCEIVER: TX PORTS		
51		CELLULAR FRONT END: LB PAD		
52		CELLULAR FRONT END: MB PAD		
53		CELLULAR FRONT END: HB PAD		
54		CELLULAR FRONT END: 2G PA		
55		CELLULAR FRONT END: LB ASM		
56		CELLULAR FRONT END: MB-HB ASM		
57		CELLULAR FRONT END: DIVERSITY		
58		SIM		
59		WIFI/BT: WIFI/BT MODULE		
60		STOCKHOLM		

SCH 051-00094 BOM 639-00299 (BETTER, DB30)
 BRD 820-00040 BOM 639-00301 (ULTRA, DB30)
 MCO 056-00472 BOM 639-00302 (SUPREME, DB30)
 BOM 639-01063 (BETTER, B30)
 BOM 639-01064 (ULTRA, B30)
 BOM 639-01065 (SUPREME, B30)

TABLE OF CONTENTS

DRAWING TITLE		SCHEM, MLB, N66	
 Apple Inc.	DRAWING NUMBER	051-00094	SIZE
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		1 OF 49	
		SHEET	
		1 OF 60	

Active Diode Alternate

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

NAND BOM Options

Table with 6 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION.

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Carbon BOM Options

Table with 6 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION.

Power Inductor Alternates

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

DDR PLL Alternate

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

SEP EEPROM Alternate

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Low Noise Caps

Table with 5 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), BOM OPTION.

Schematic & PCB Callouts

Table with 6 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION.

Global Capacitor Alternates

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Global Ferrite Alternates

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Global Varistor Alternates

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Inductor Sub BOMs

Table with 5 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), BOM OPTION.

Table with 5 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), BOM OPTION.

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

SOC/PMU SUB BOMS

Table with 5 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), BOM OPTION.

Table with 5 columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), BOM OPTION.

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

AP Alternates

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Table with 5 columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS.

Shield Callouts

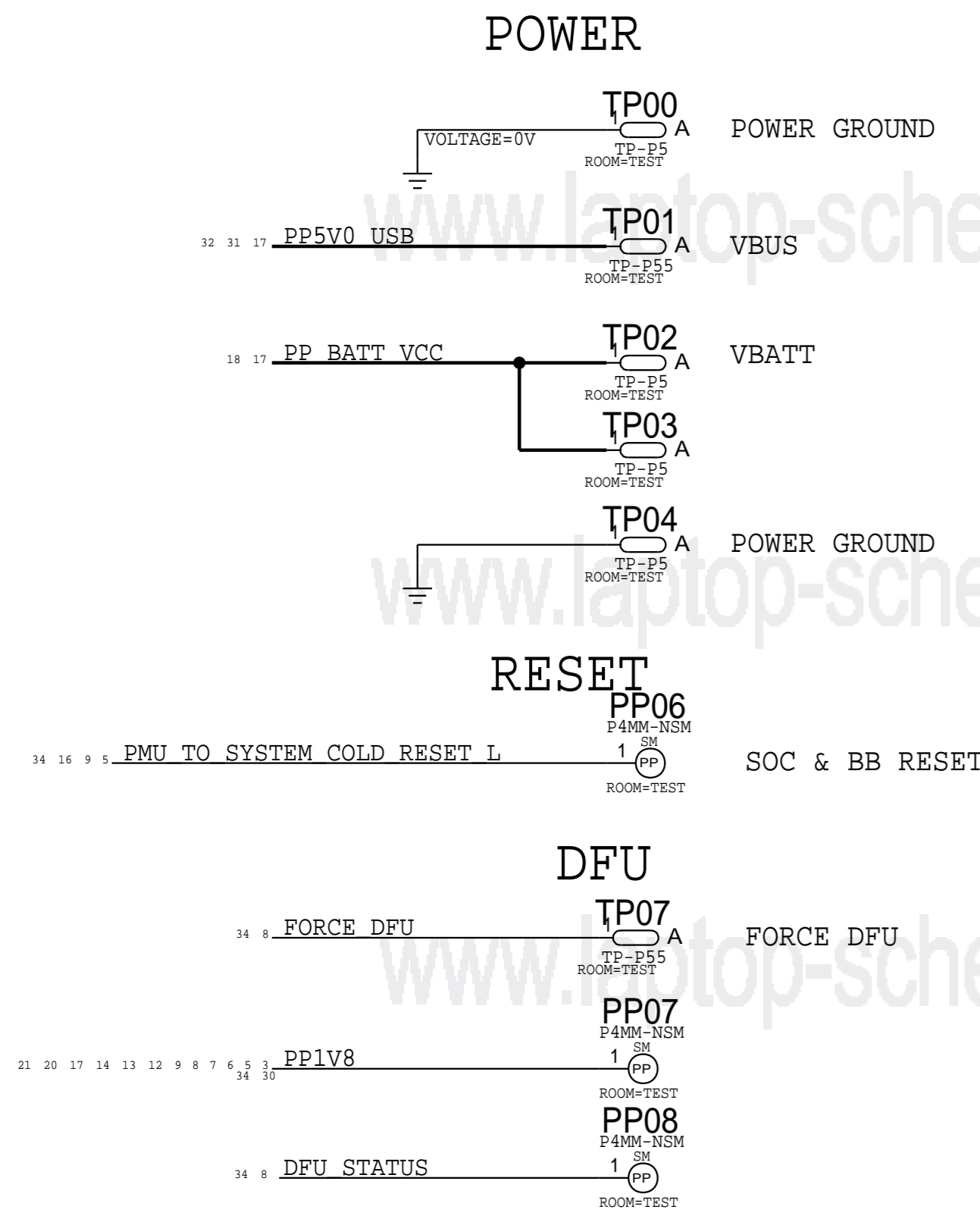
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SIM Callouts

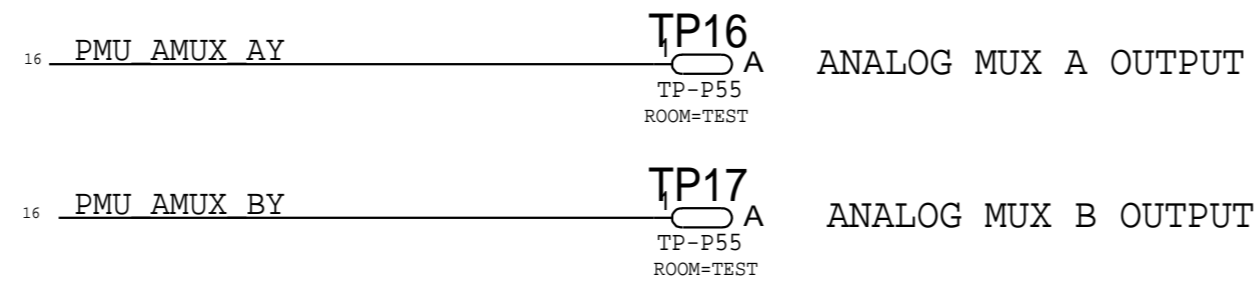
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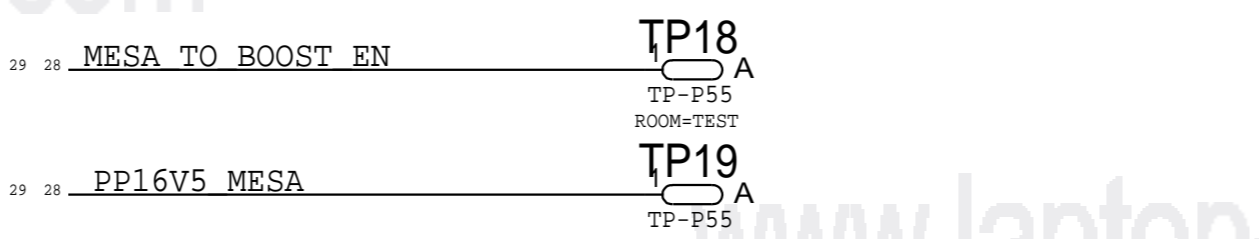
TESTPOINTS



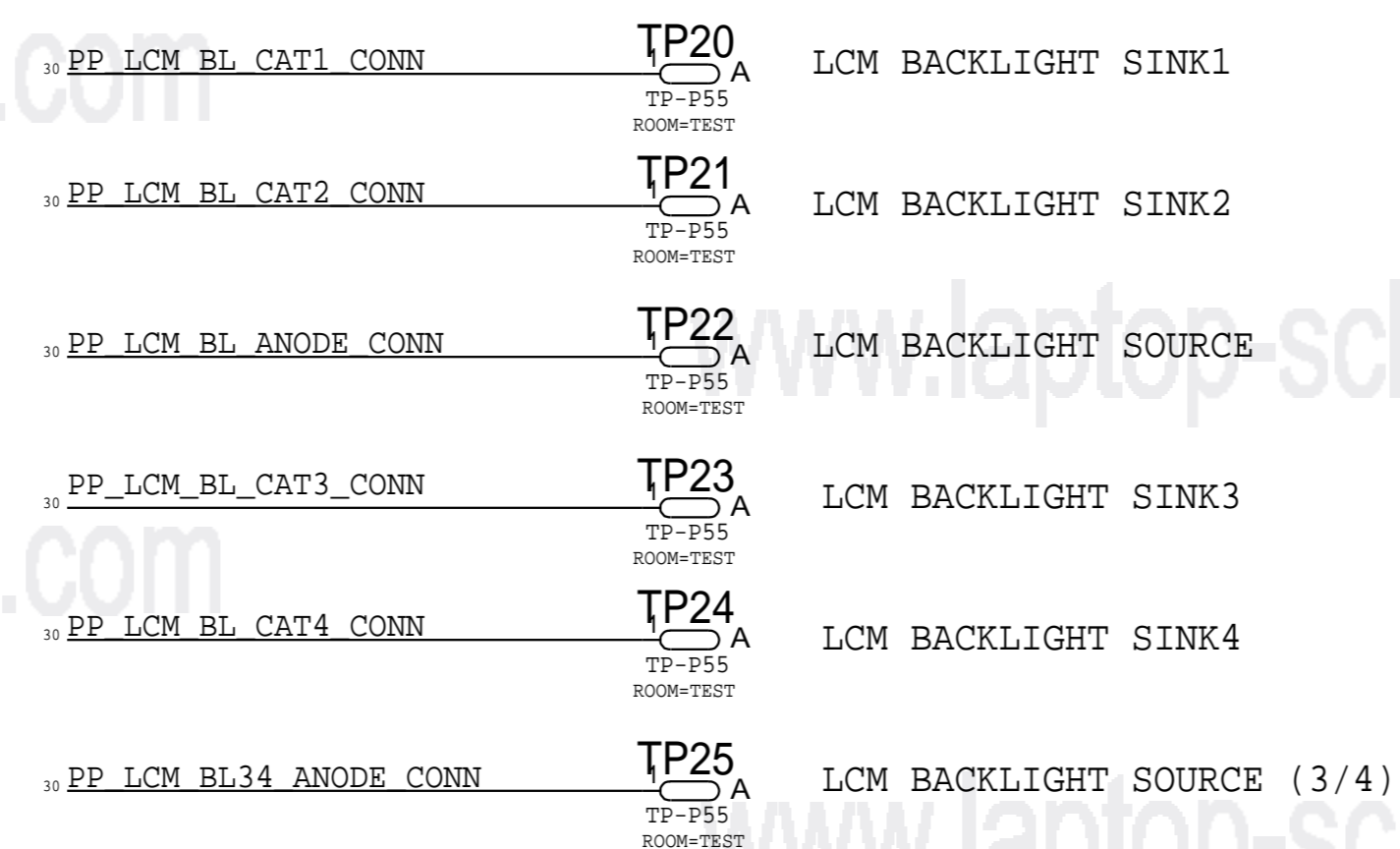
AMUX



MOJAVE



LCM



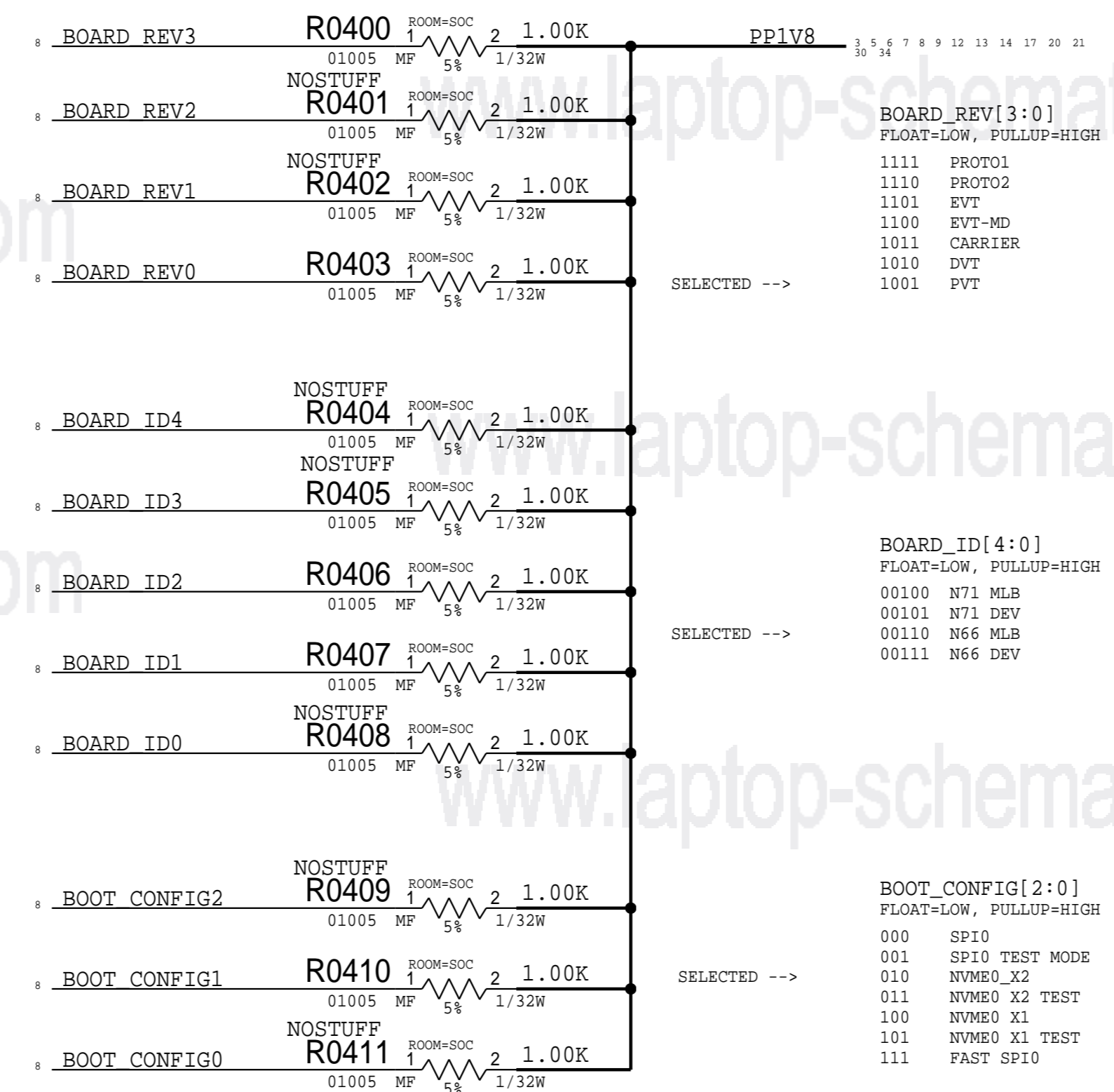
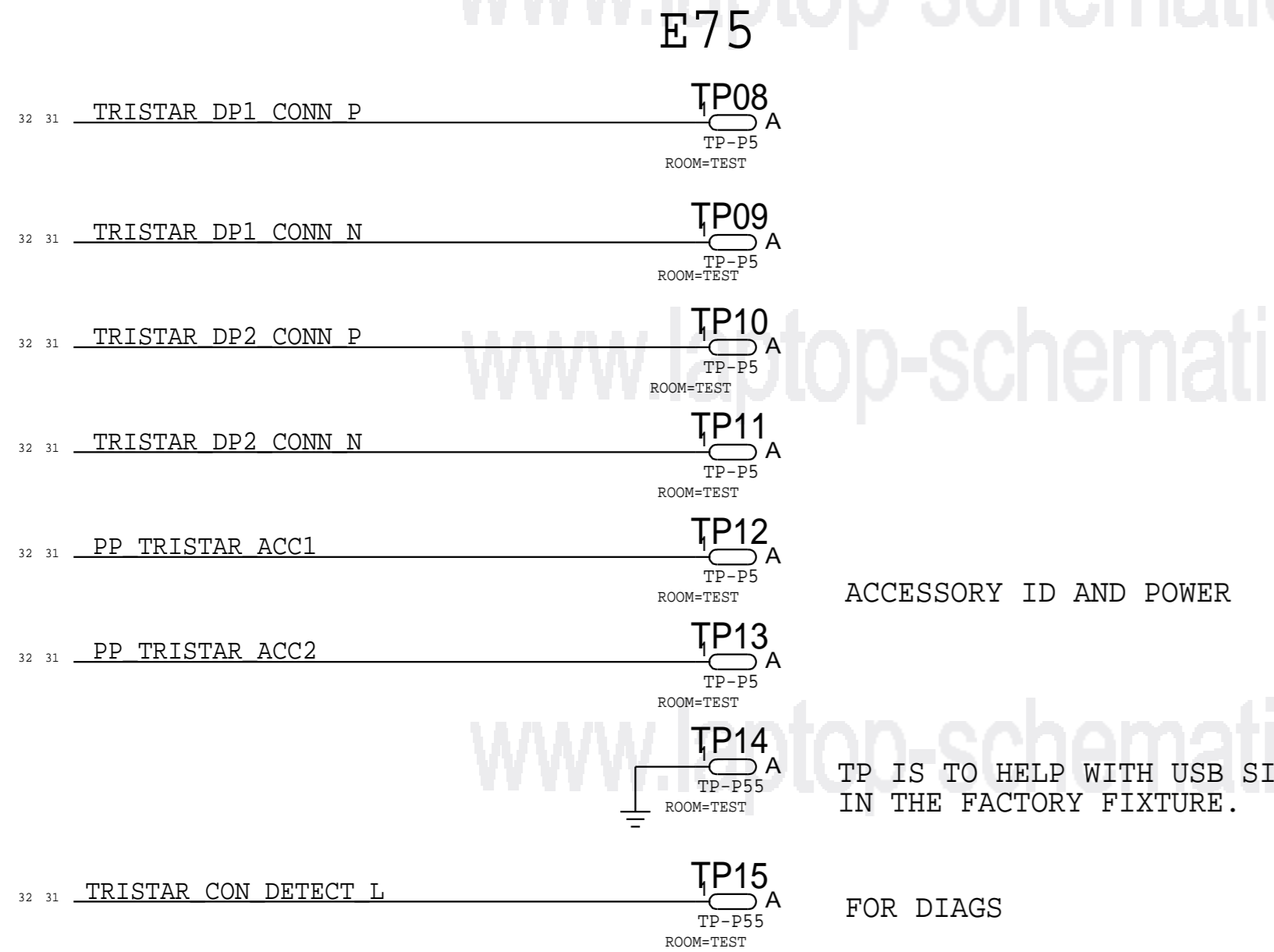
UAT GND Ring Opening



N66 I2C DEVICE MAP

I2C BUS	DEVICE	BINARY	7-BIT HEX	8-BIT HEX
I2C0	ANTIGUA PMU	1110100X	0X74	0XE8
	CHESTNUT	0100111X	0X27	0X4E
	BACKLIGHT 1	1100011X	0X62	0XC4
I2C1	TIGRIS	1110101X	0X75	0XE9
	ARC DRIVER	1000001X	0X41	0X82
	SPEAKER AMP	1000000X	0X40	0X80
	TRISTAR	0011010X	0X1A	0X34
I2C2	ALS	0101001X	0X29	0X52
	DISP EEPROM	1010001X	0X51	0XA2
	BACKLIGHT 2	1100011X	0X62	0XC4
OWL	UNUSED	N/A	N/A	N/A
ISP I2C0	REAR CAM	TBD	TBD	TBD
	LED DRIVER	1100011X	0X63	0XC6
ISP I2C1	FRONT CAM	0010000X	0X10	0X20
	TOUCH I2C	MESON	1000000X	0x40
TOUCH I2C	MAMBA	1100000X	0x60	0xc0
	DOPPLER	1011000X	0x58	0xb0
	SEP I2C	SEP EEPROM	1010001X	0x51

BOOTSTRAPPING: BOARD REV BOARD ID BOOT CONFIG



PP1V8

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

1111 PROTO1
 1110 PROTO2
 1101 EVT
 1100 EVT-MD
 1011 CARRIER
 1010 DVT
 1001 PVT

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

00100 N71 MLB
 00101 N71 DEV
 00110 N66 MLB
 00111 N66 DEV

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

000 SPI0
 001 SPI0 TEST MODE
 010 NVME0_X2
 011 NVME0_X2 TEST
 100 NVME0_X1
 101 NVME0_X1 TEST
 111 FAST SPI0

PAGE TITLE		SYSTEM:N66 SPECIFIC	
Apple Inc.	DRAWING NUMBER	051-00094	SIZE
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		PAGE	4 OF 49
		SHEET	3 OF 60

8

7

6

5

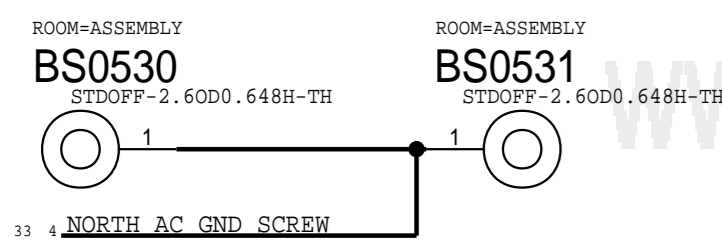
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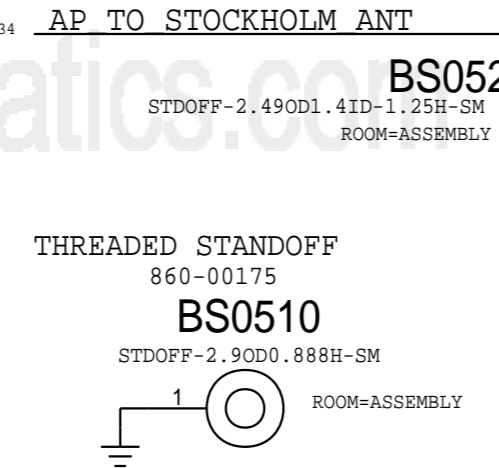
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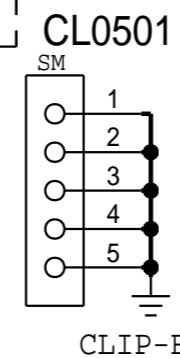
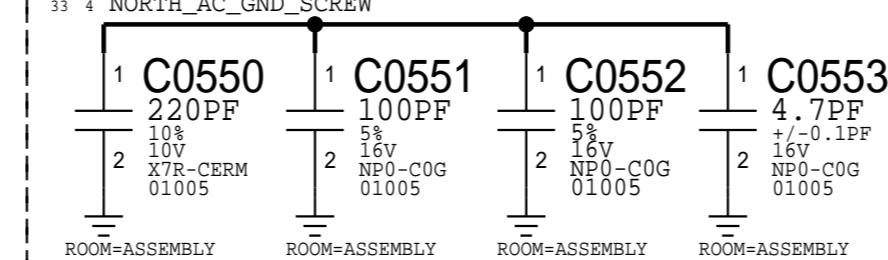
TUBE STANDOFF
860-00177



TUBE STANDOFF: STOCKHOLM FEED
860-5189

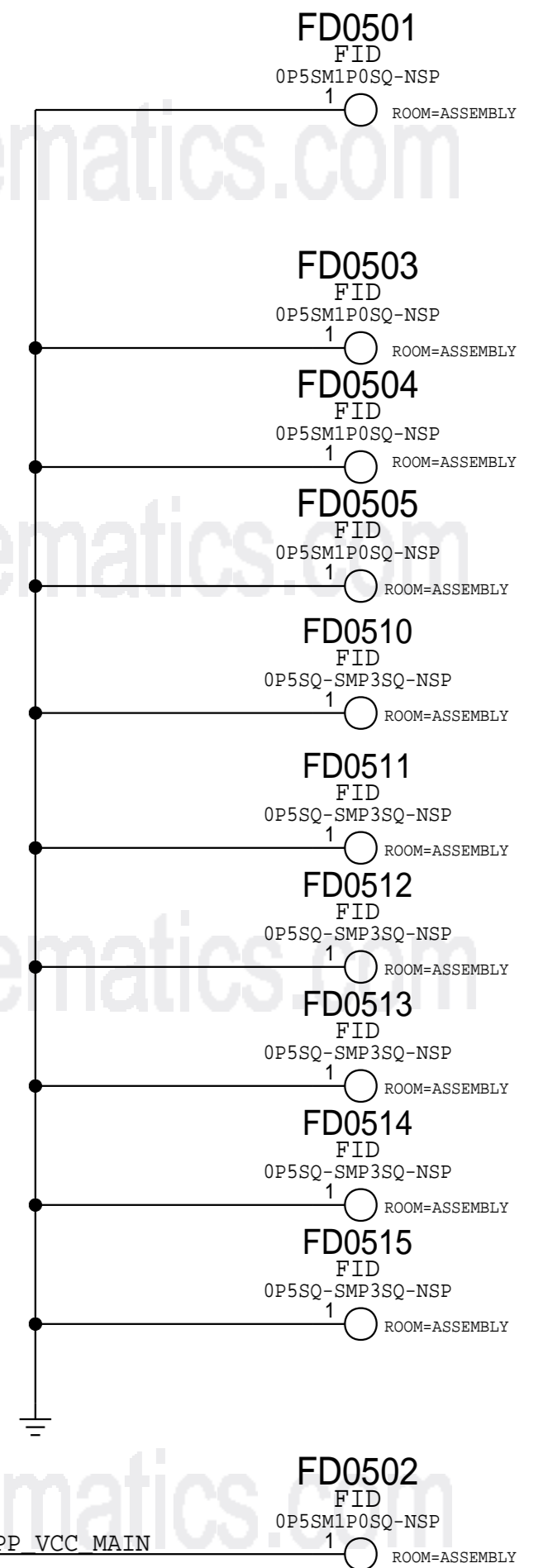


MLB NORTH PENINSULA AC CHASSIS SHORT
(BLOCKS DC CURRENT THROUGH COMPASS REGION)



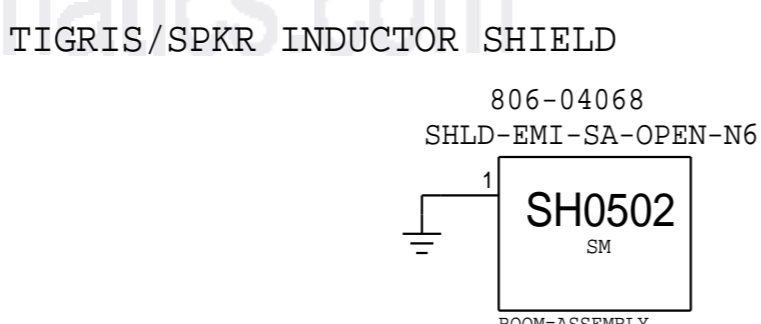
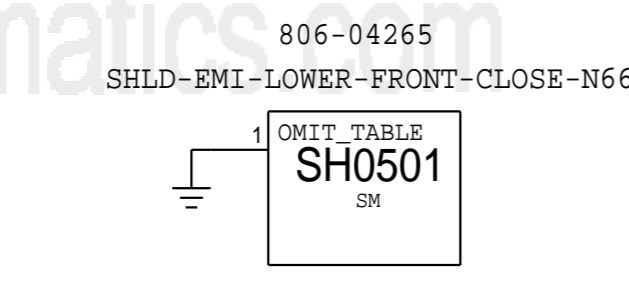
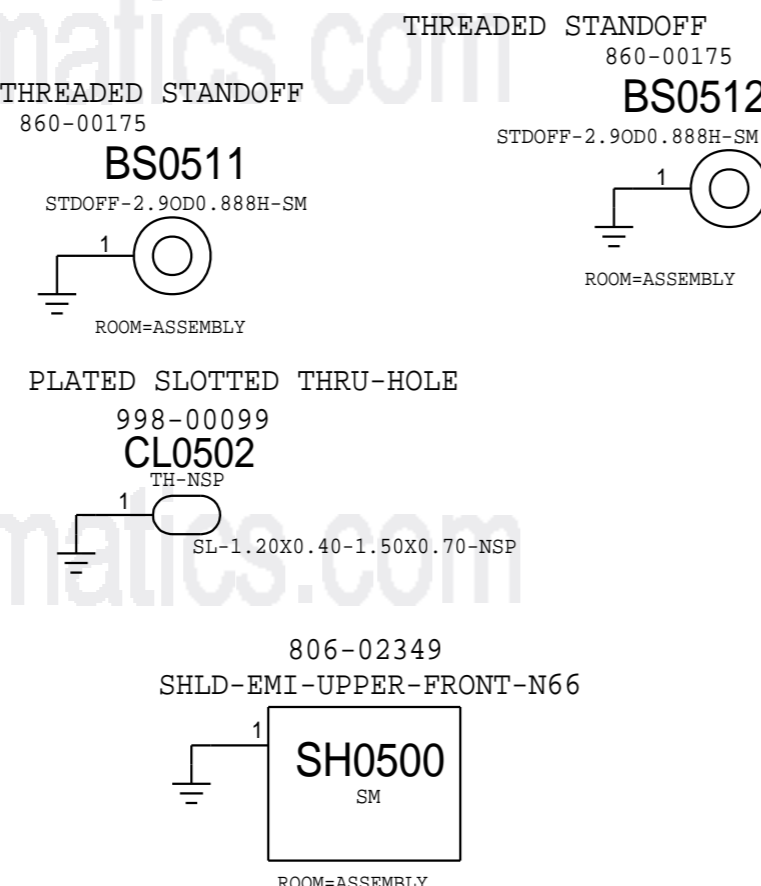
COAX CLIP BRACE
806-02354

FIDUCIALS

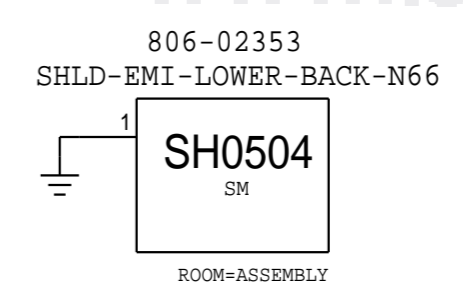
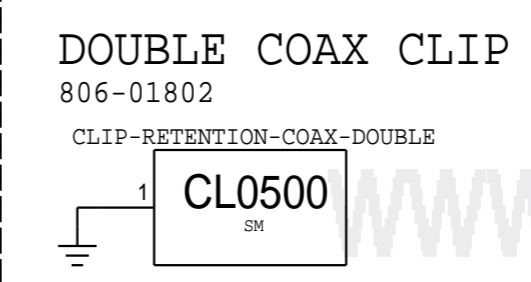
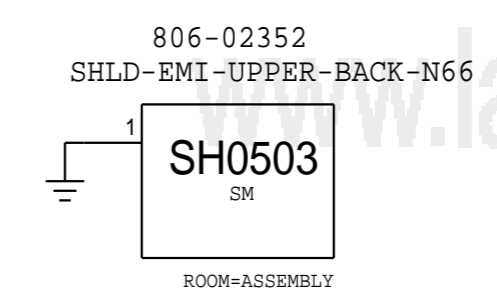
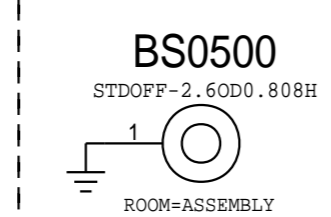


TOP SIDE

BOTTOM SIDE



SOUTH TUBE STANDOFF
860-00176



PAGE TITLE		SYSTEM: MECHANICAL COMPONENTS	
Apple Inc.	DRAWING NUMBER	051-00094	SIZE D
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		PAGE	5 OF 49
		SHEET	4 OF 60

8

7

6

5

4

3

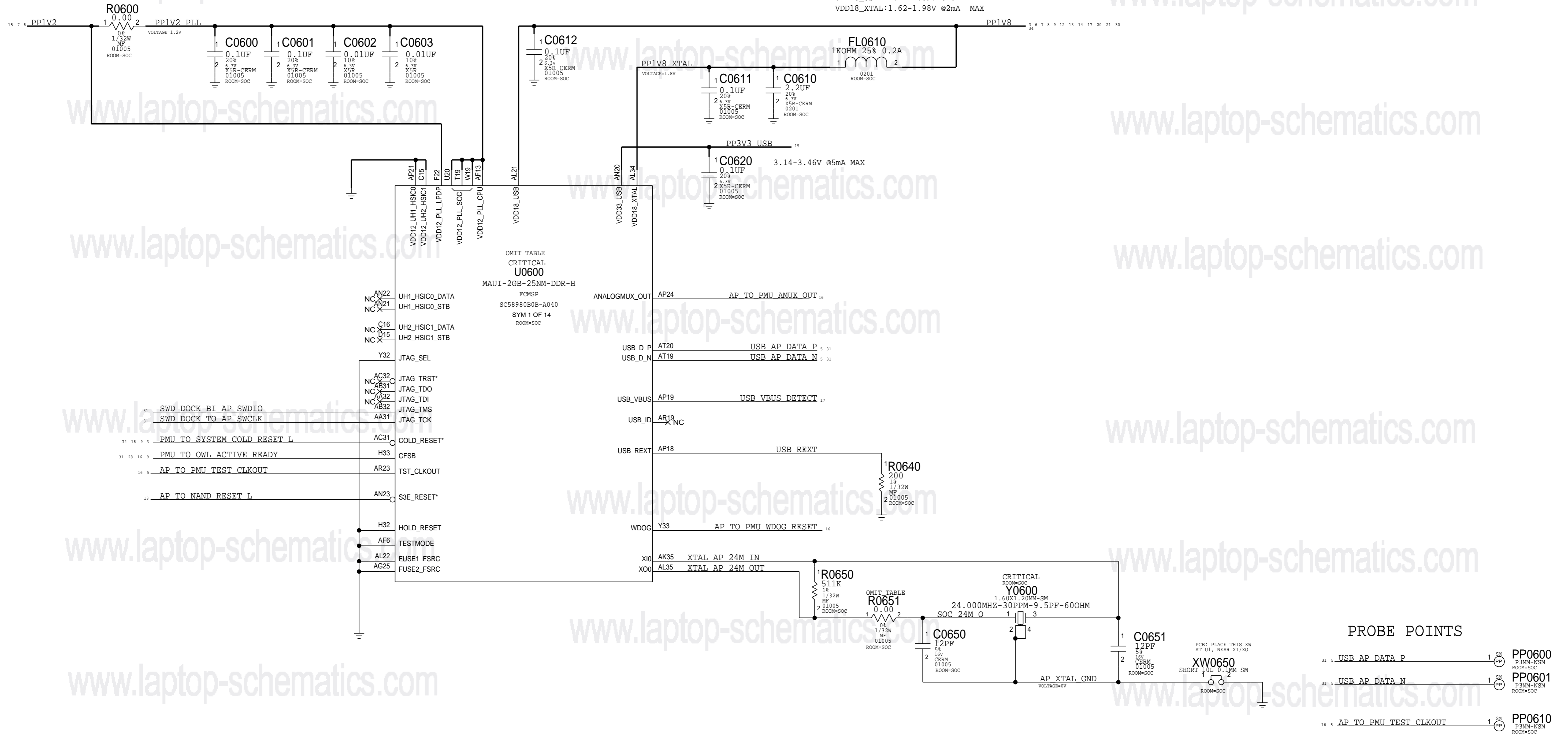
2

1

MAUI - USB, JTAG, XTAL

VDD12_PLL_LFDP: 1.14-1.26V @2mA MAX
 VDD12_PLL_SOC: 1.14-1.26V @12mA MAX
 VDD12_PLL_CPU: 1.14-1.26V @2mA MAX

VDD18_USB: 1.71-1.89V @20mA MAX
 VDD18_XTAL: 1.62-1.98V @2mA MAX



PROBE POINTS

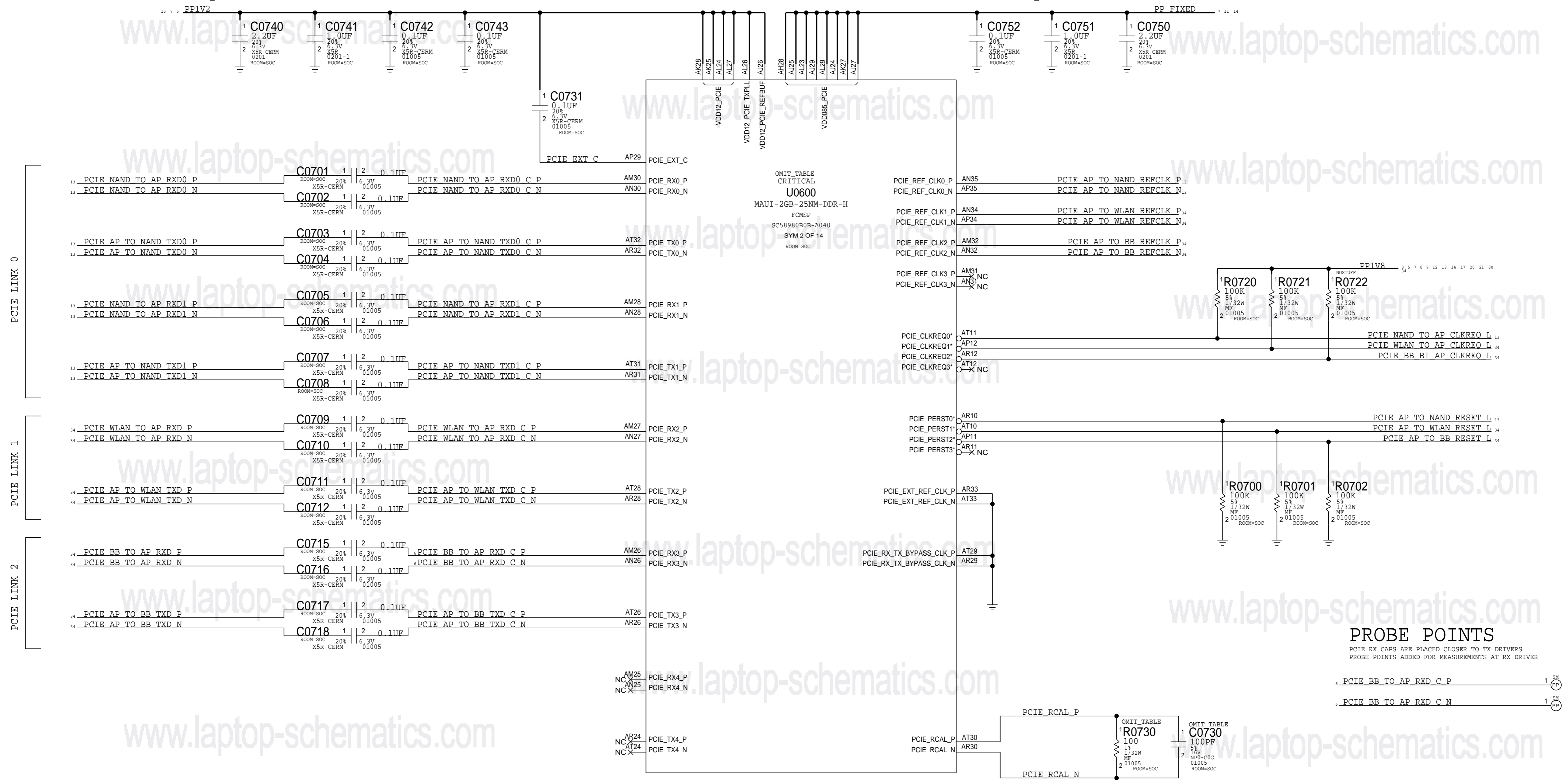
31	USB AP DATA P	1	SM	PP0600
31	USB AP DATA N	1	SM	PP0601
16	AP TO PMU TEST CLKOUT	1	SM	PP0610

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PAGE TITLE			
SOC : JTAG , USB , XTAL			
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	REVISION	A.0.0	D
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MAUI - 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

VDD085_PCIE: 0.802-TBDV @TBDmA MAX



PROBE POINTS
 PCIE RX CAPS ARE PLACED CLOSER TO TX DRIVERS
 PROBE POINTS ADDED FOR MEASUREMENTS AT RX DRIVER

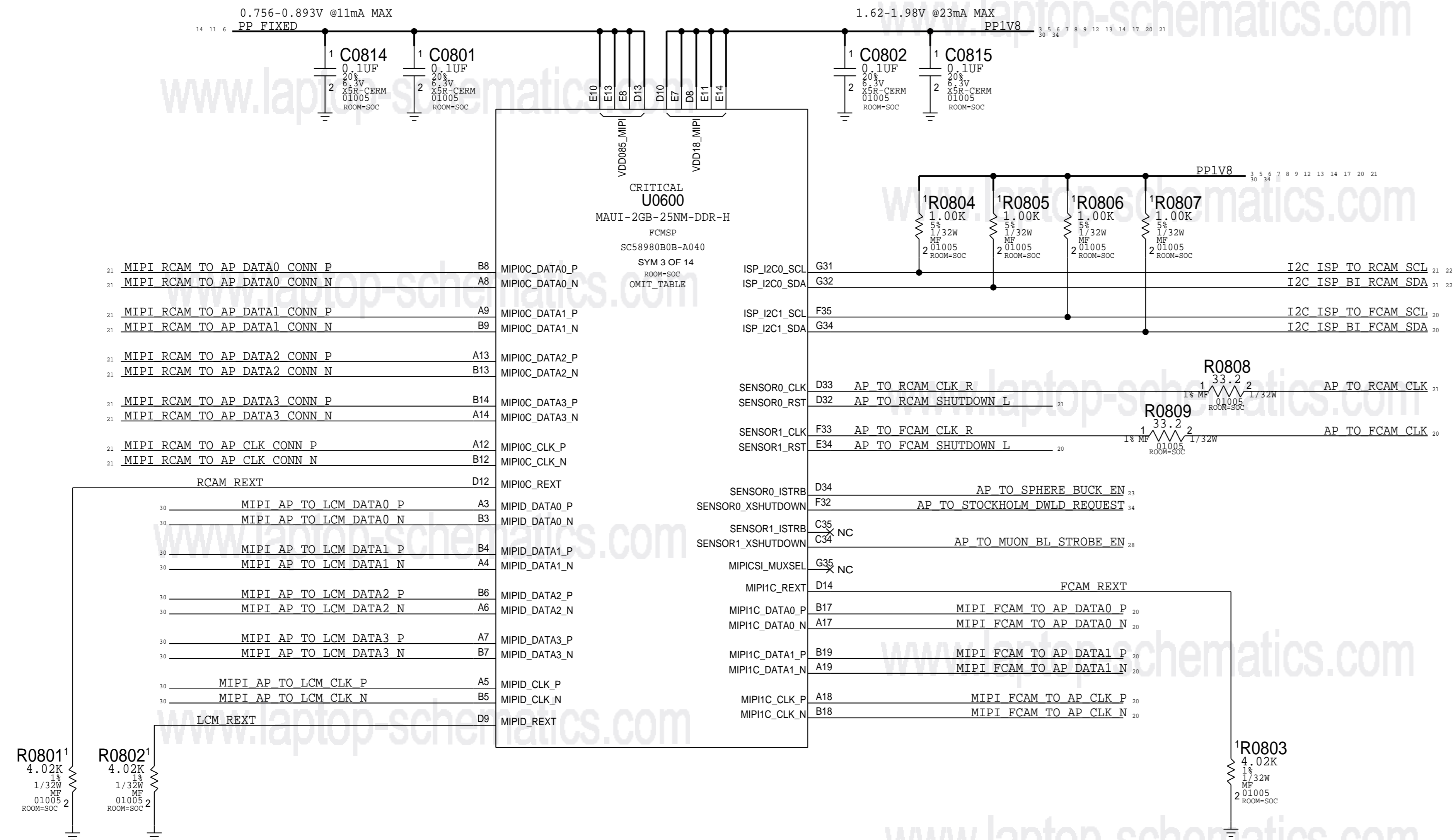
PCIE_BB_TO_AP_RXD_C_P 1 SM PP0706
 P3MM-NSM ROOM=SOC
 PCIE_BB_TO_AP_RXD_C_N 1 SM PP0707
 P3MM-NSM ROOM=SOC

SYNC MASTER=N71 SINGLE BRD		SYNC_DATE=05/29/2014	
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		PAGE	7 OF 49
		SHEET	6 OF 60

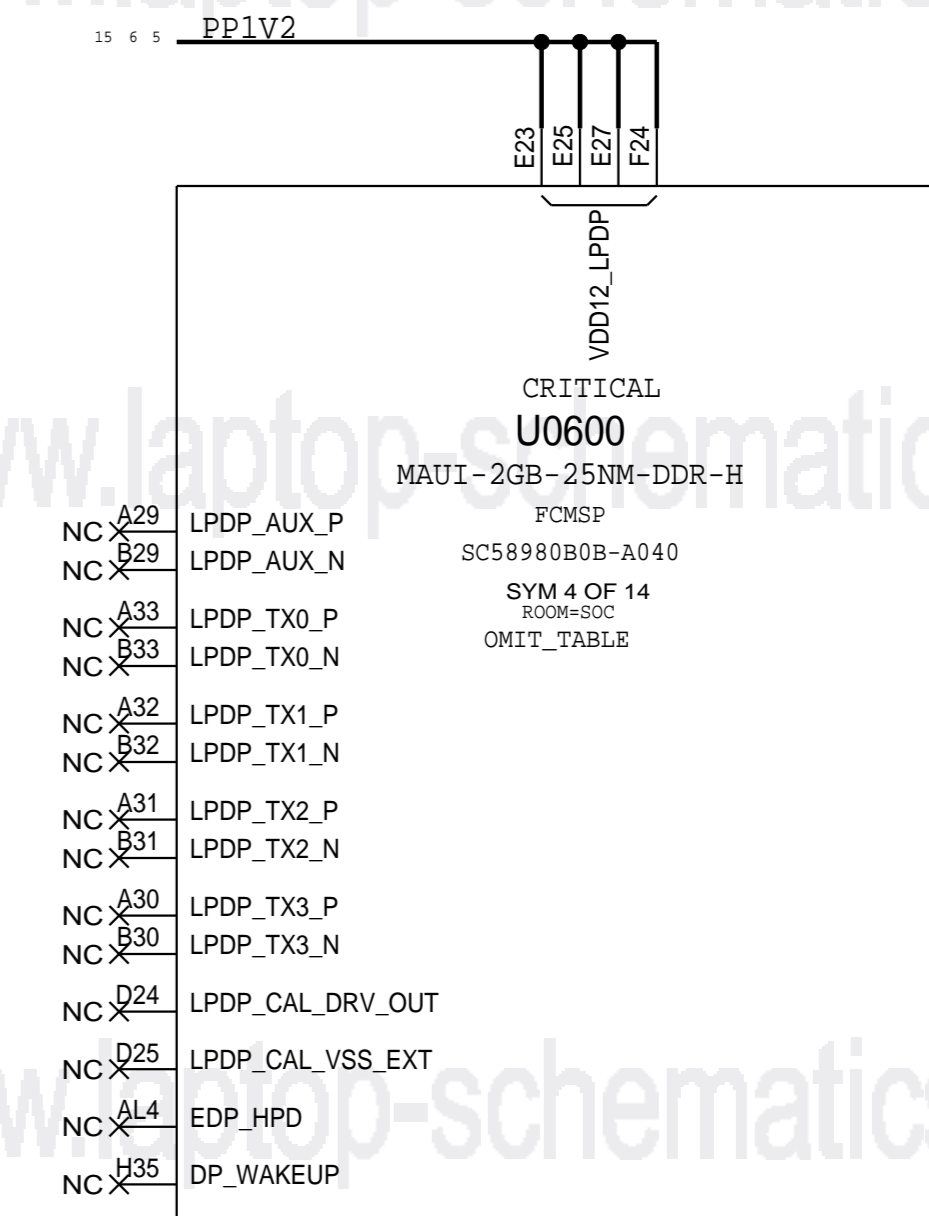
MAUI - CAMERA & DISPLAY INTERFACES

www.laptop-schematics.com

www.laptop-schematics.com



NOTE: VDD12_LPDP SHOULD BE POWERED
EVEN WHEN LPDP IS NOT USED



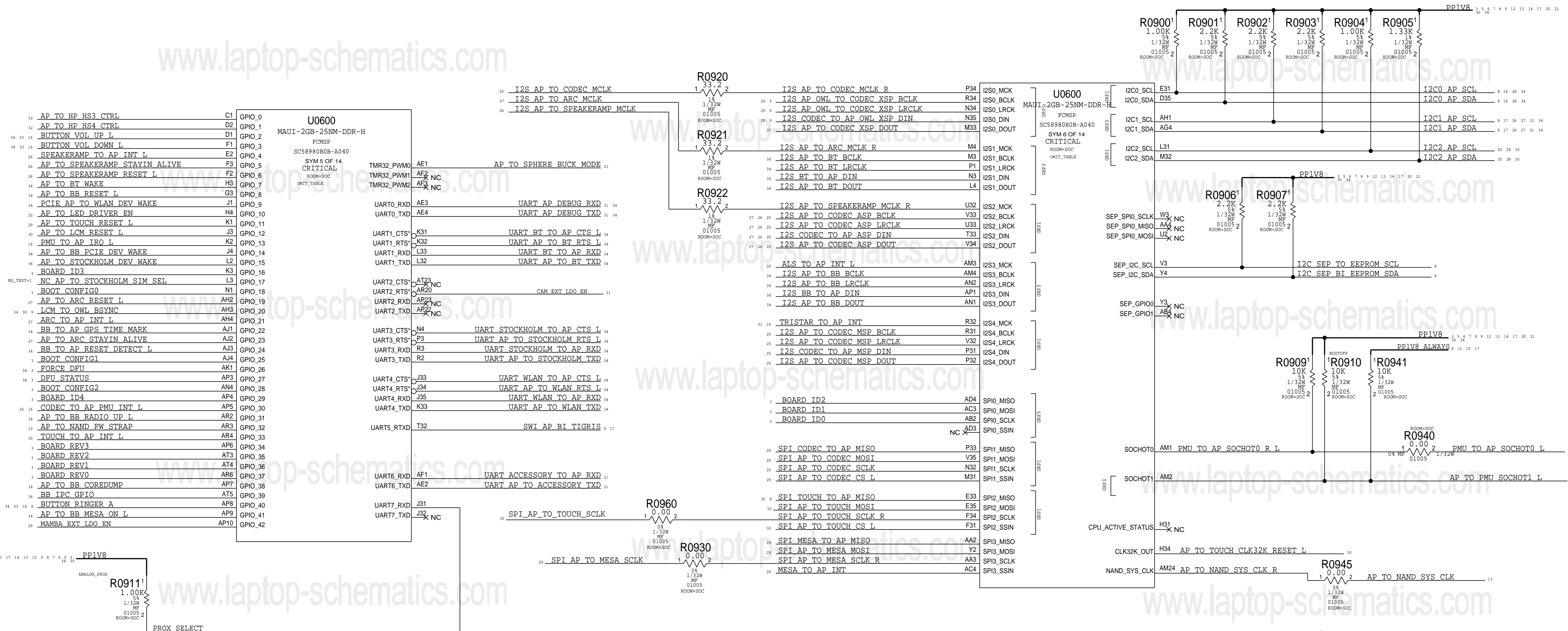
www.laptop-schematics.com

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SYNC_MASTER=N71_SINGLE_BRD		SYNC_DATE=05/29/2014	
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	DRAWING NUMBER	051-00094	SIZE D
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PAGE	8 OF 49		
SHEET	7 OF 60		

MAUI - GPIO & SERIAL INTERFACES



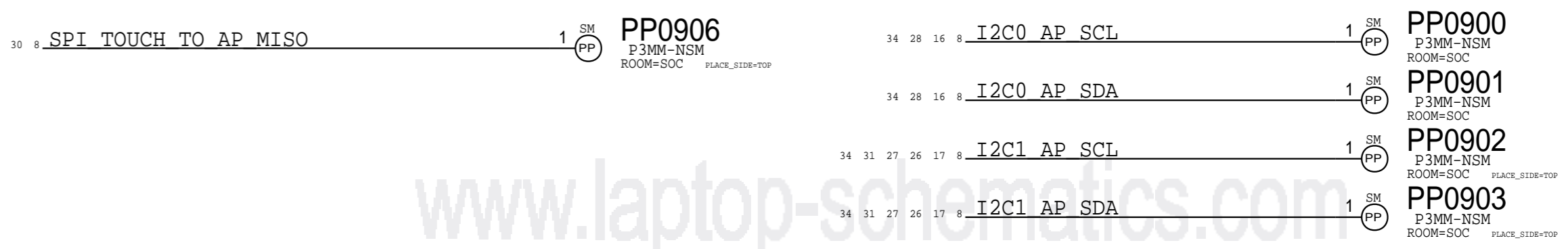
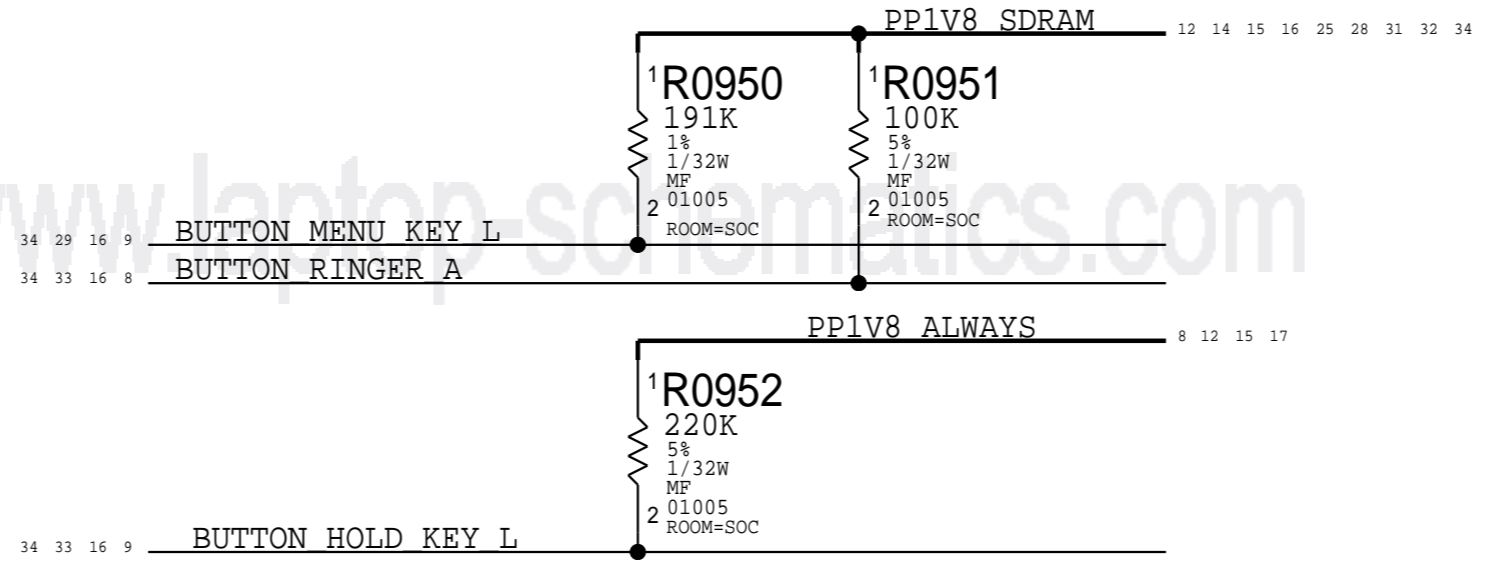
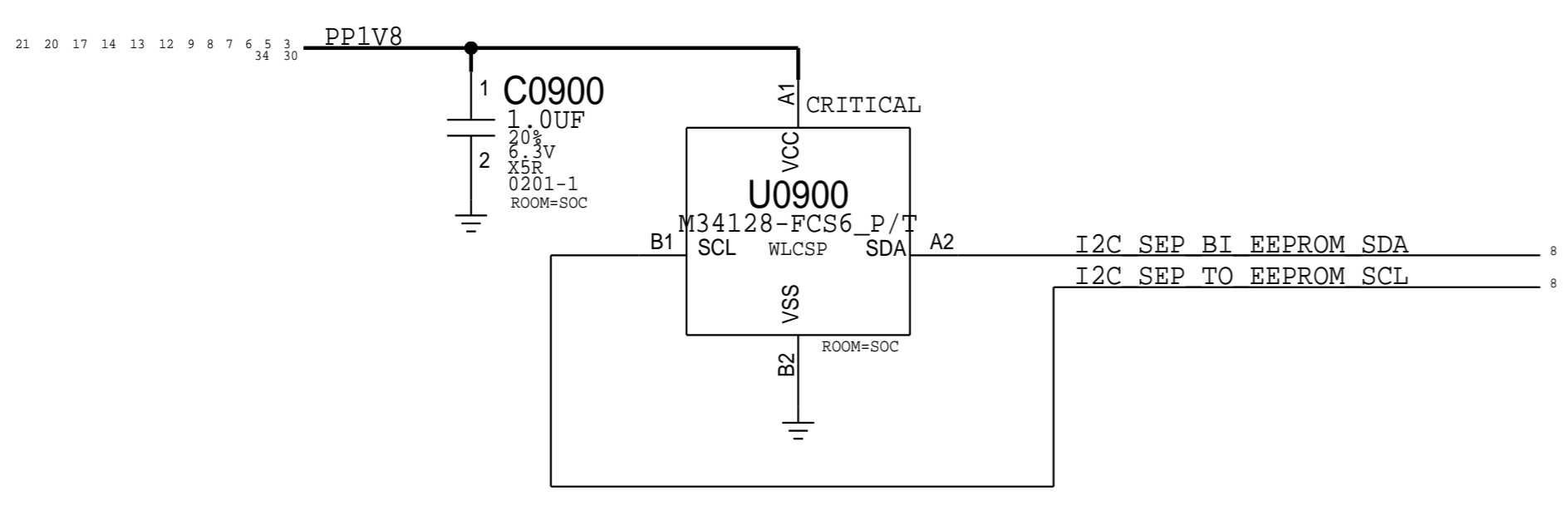
PIN J31 (UART7_RXD) SHOULD BE SET TO INTERNAL PULL-DOWN.
STUFF R0911 FOR ANALOG PROX.
NOSTUFF R0911 FOR DOPPLER PROX.

ANTI-ROLLBACK EEPROM
128kbit
APN: 335S0946

BUTTON PULL-UP RESISTORS

SPI PROBE POINTS

I2C PROBE POINTS

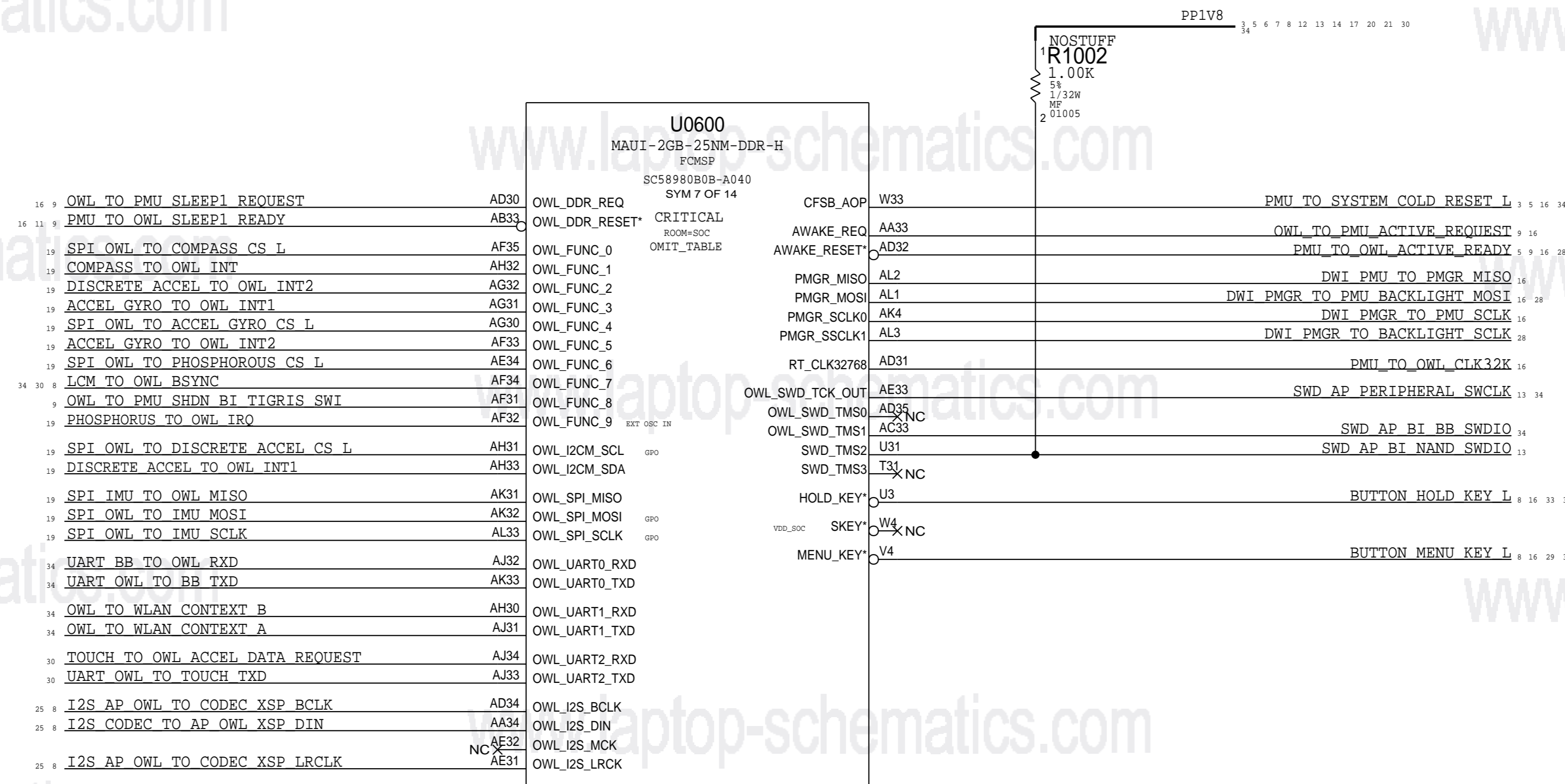
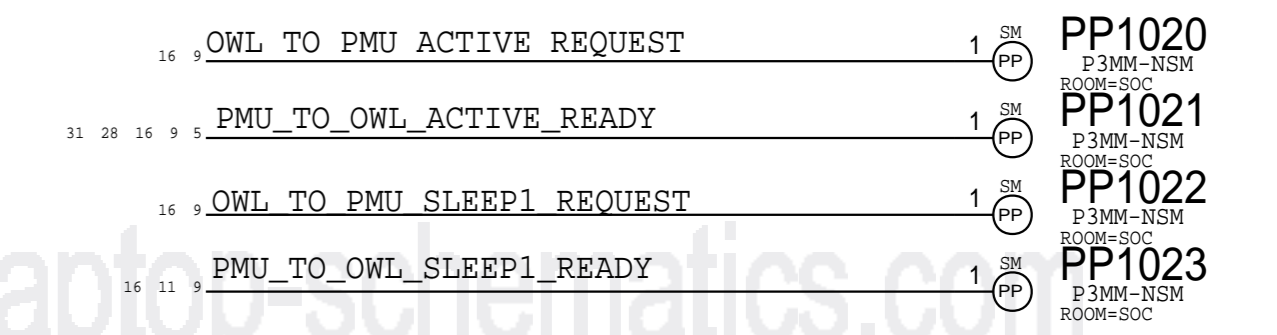


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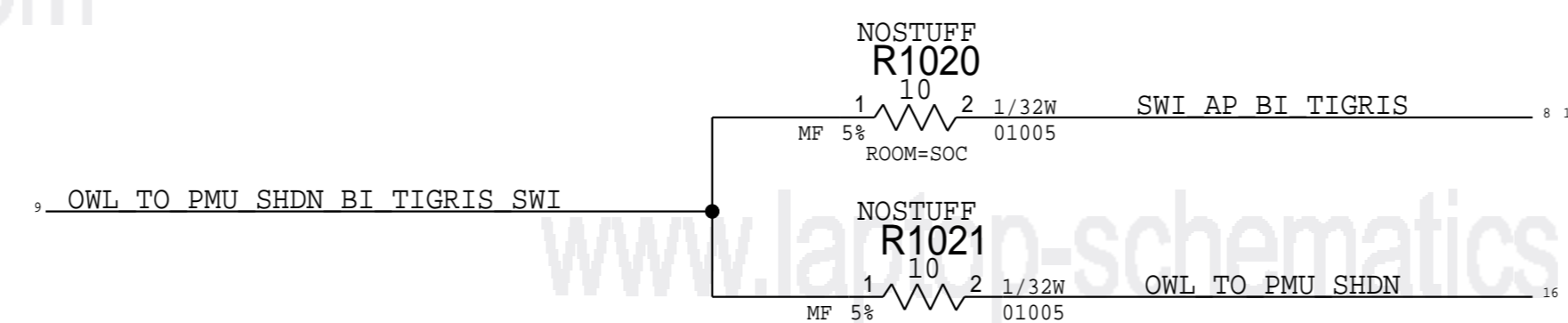
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	PAGE	9 OF 49		
	SHEET	8 OF 60		

MAUI - OWL

POWER STATE CONTROL PROBE POINTS

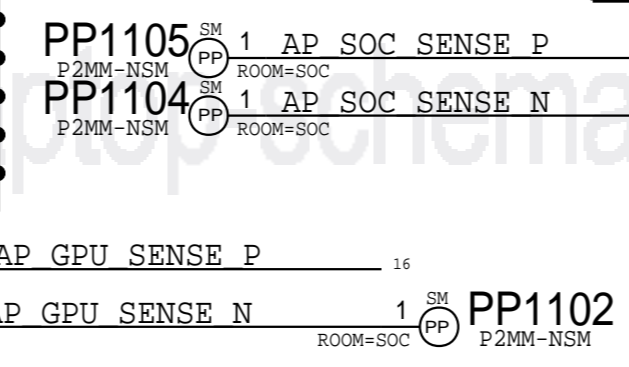
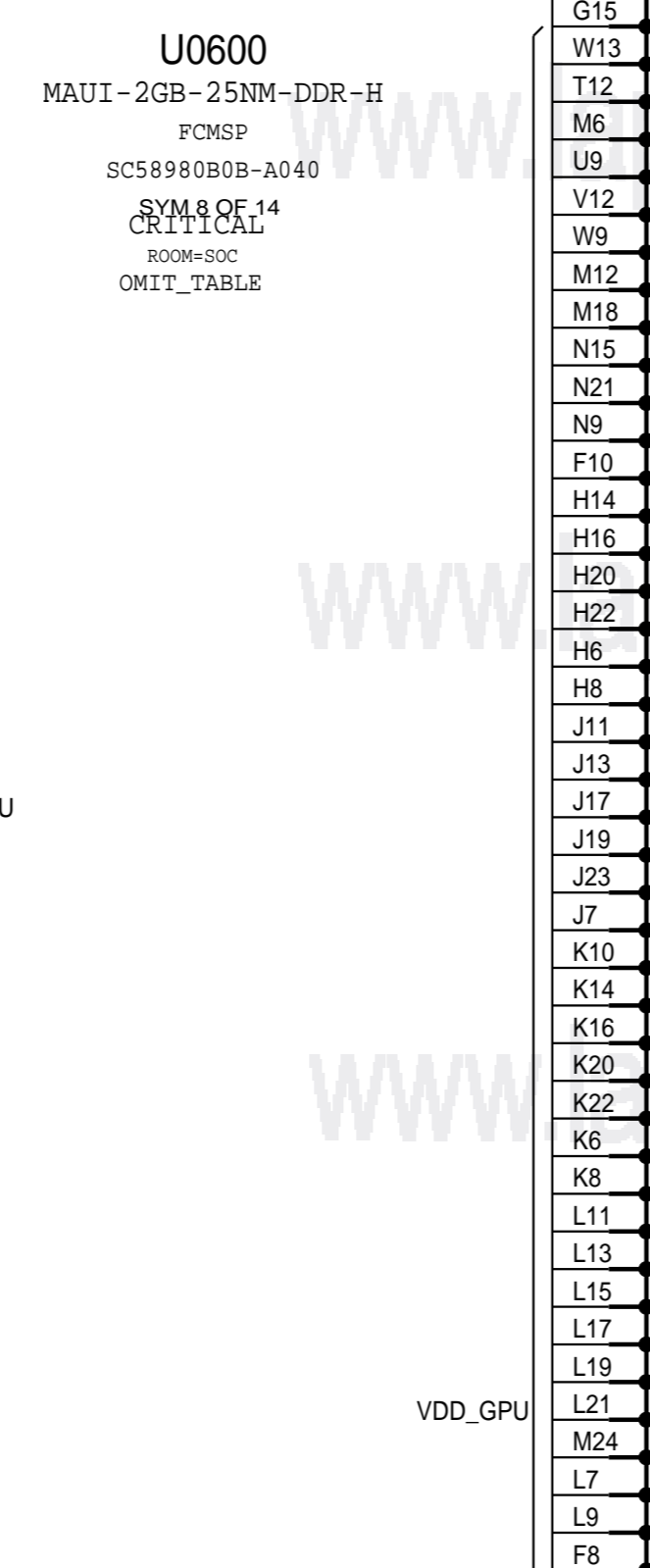
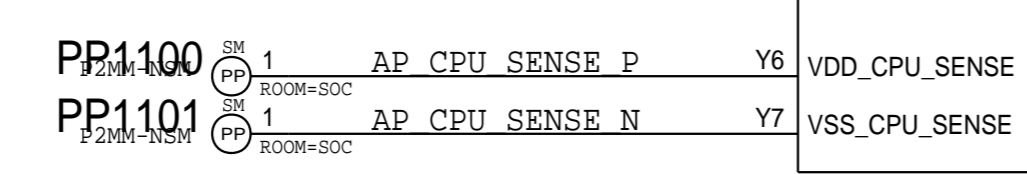
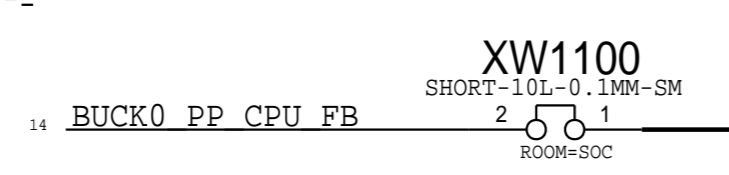
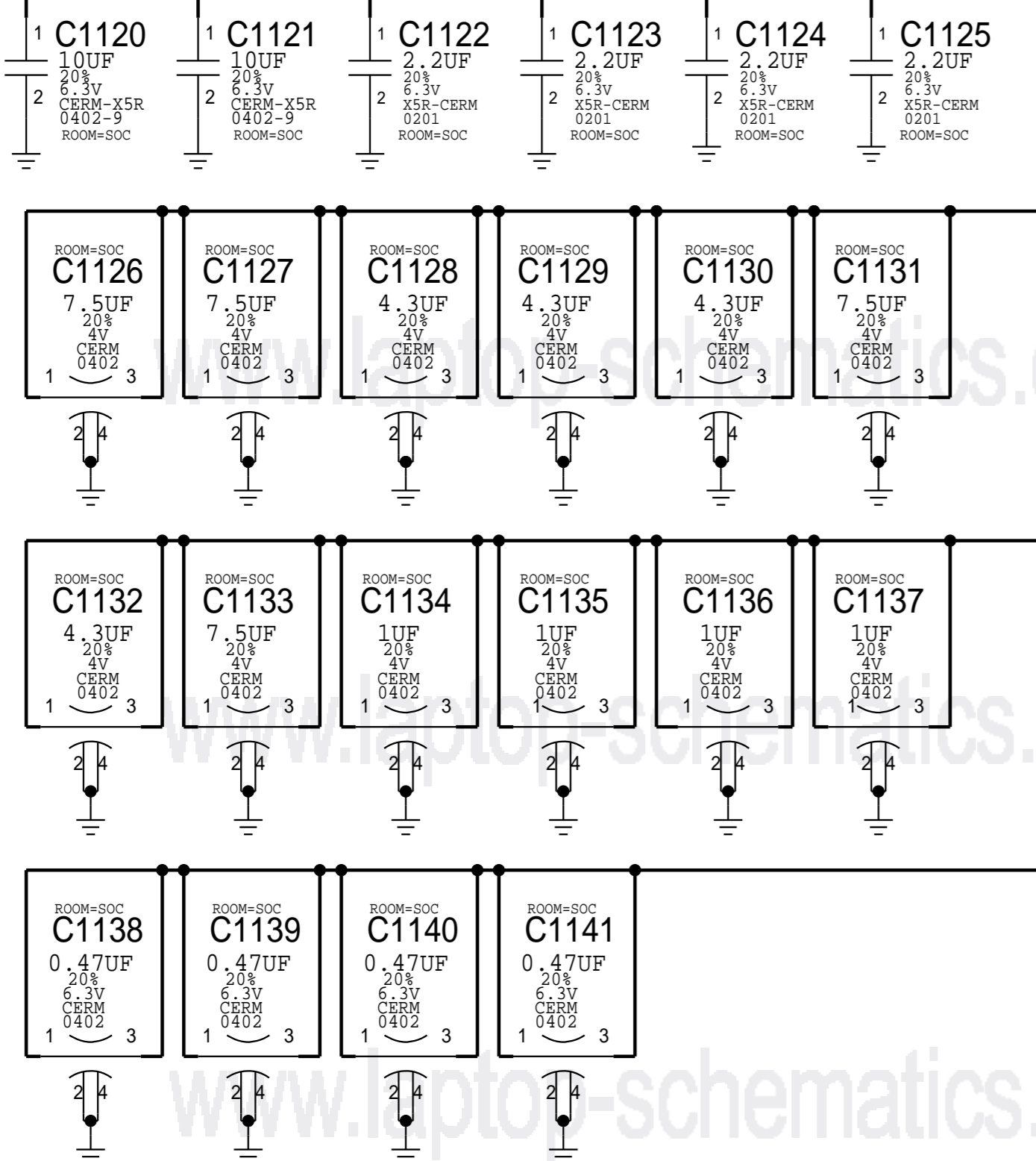
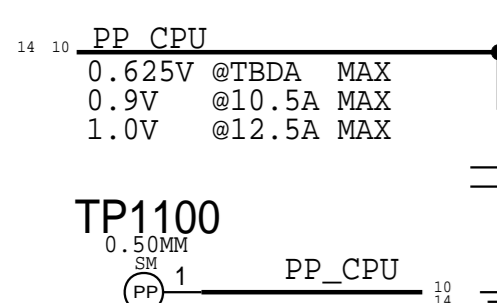
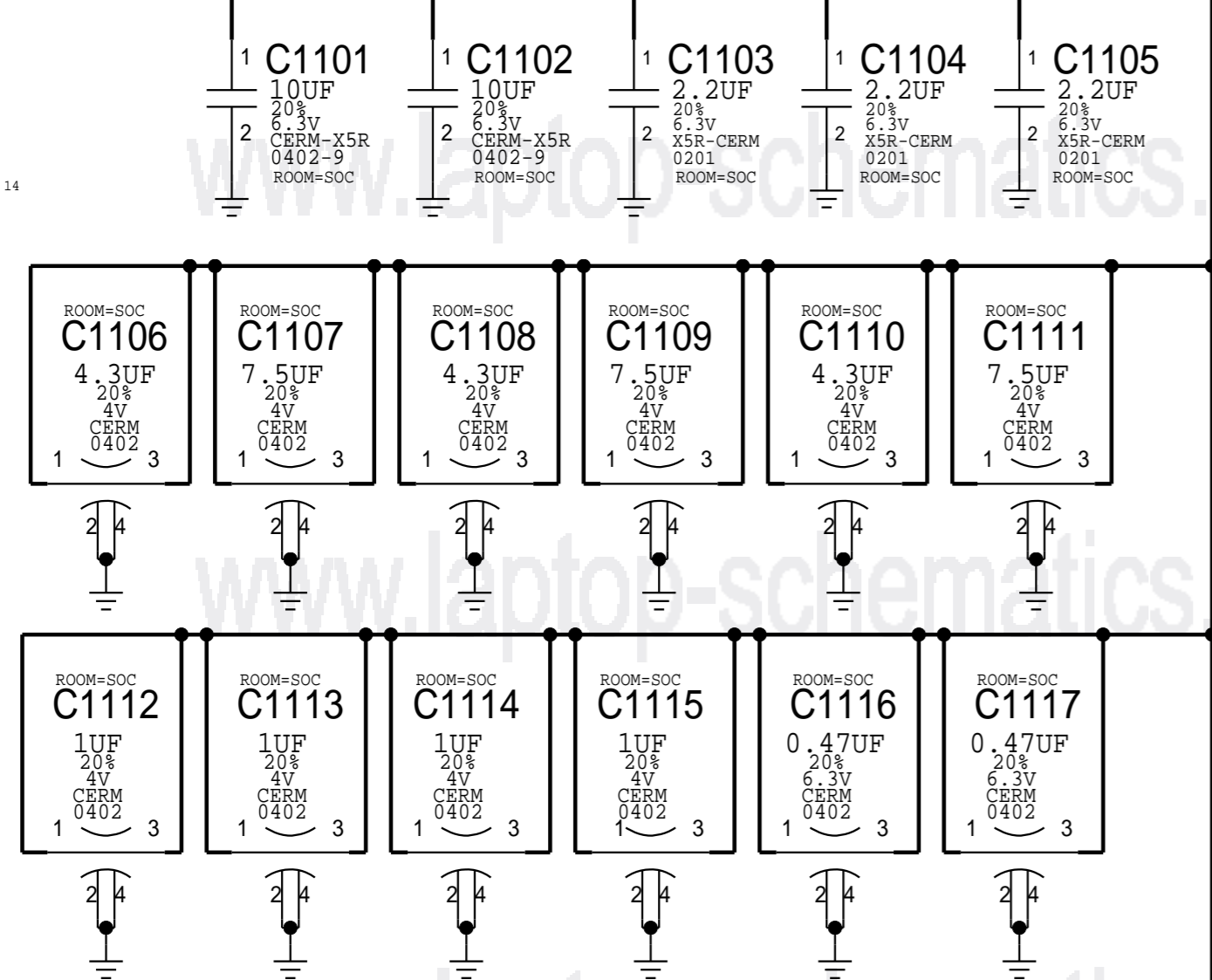
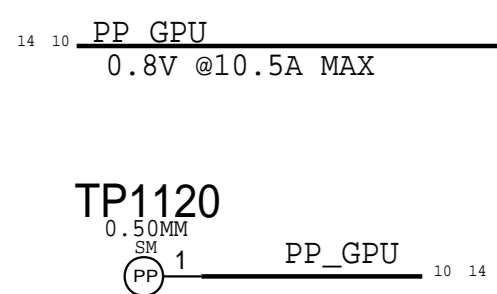


OWL SYSTEM SHUTDOWN OPTION

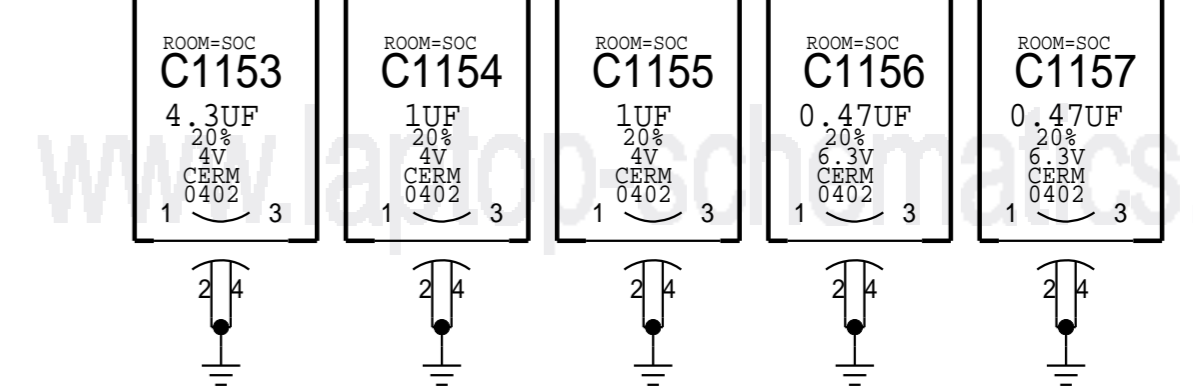
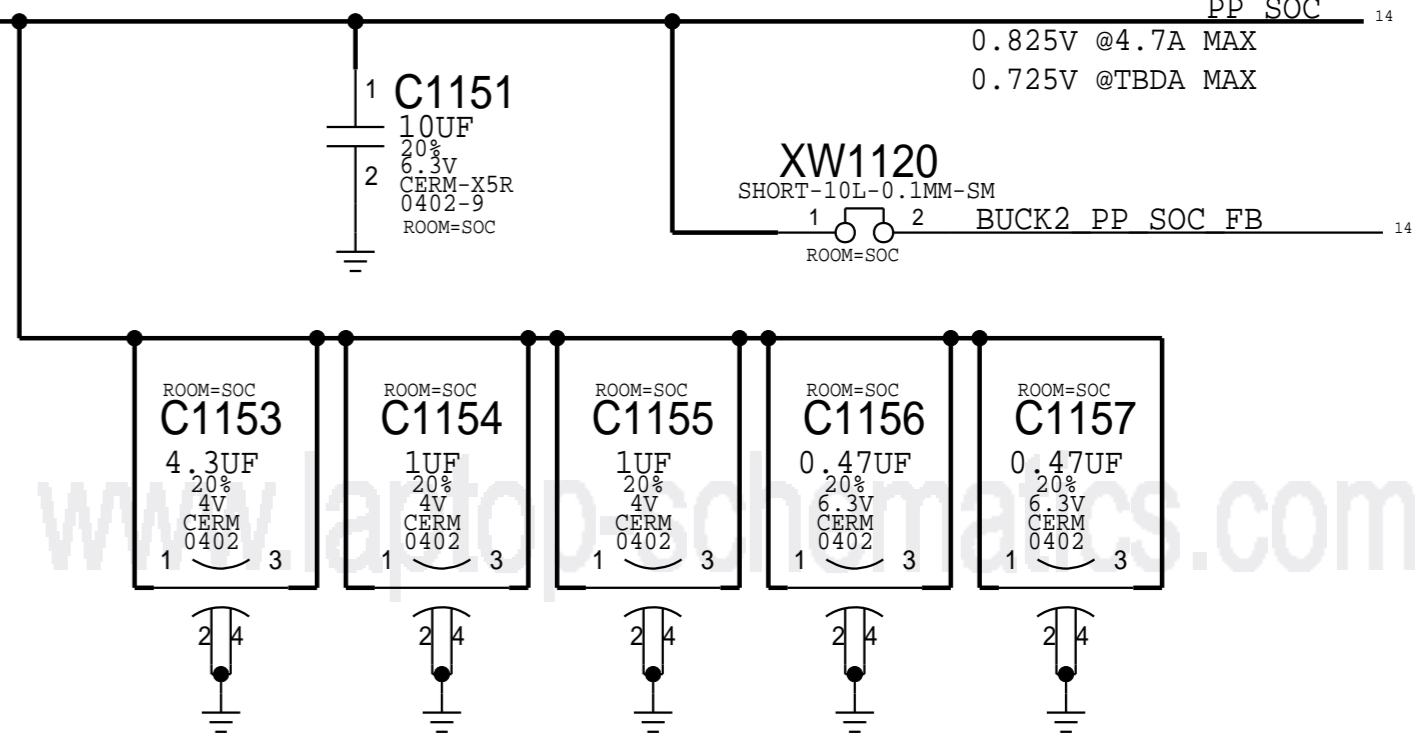
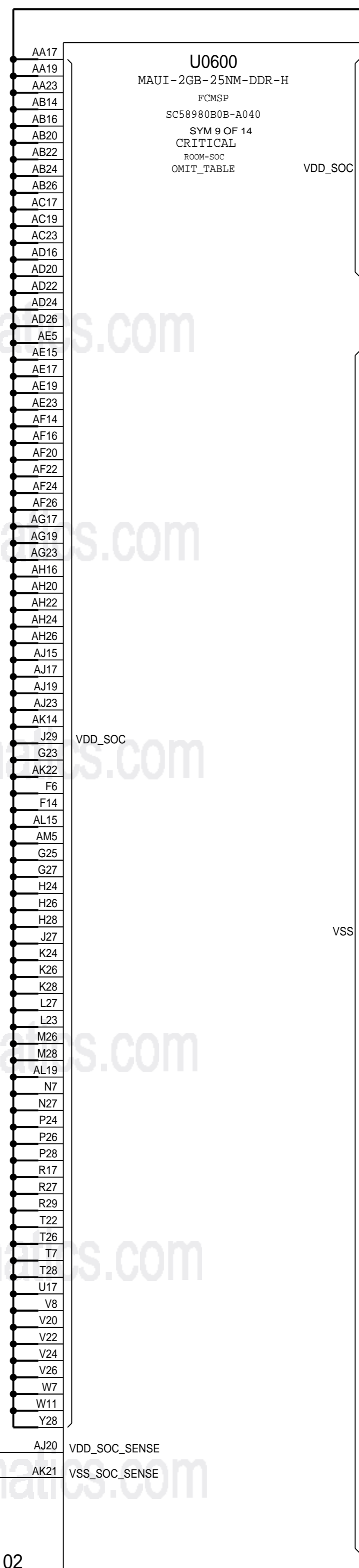


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SHEET	9 OF 60		

MAUI - CPU, GPU & SOC RAILS

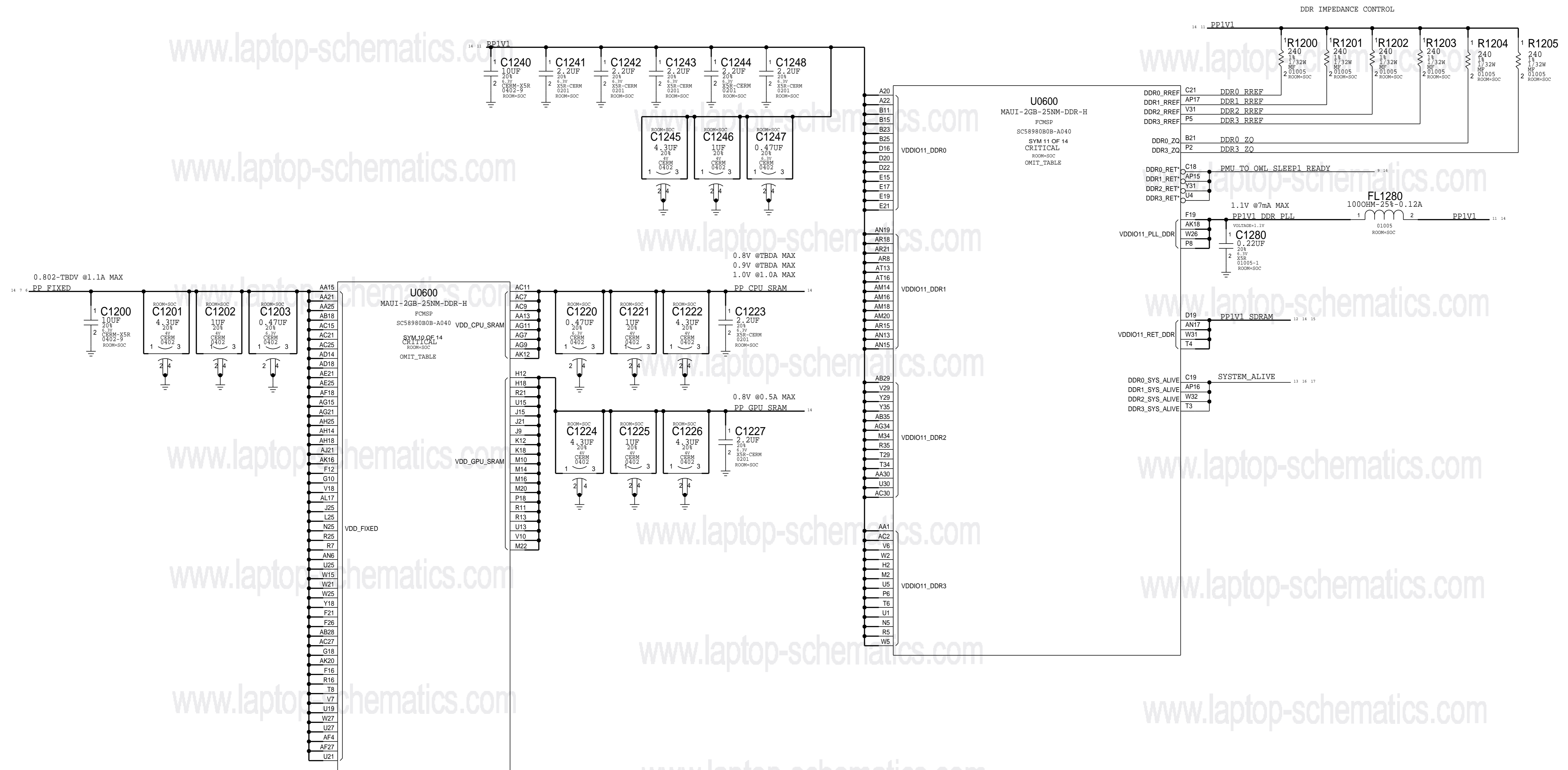


NOTE: AP_GPU_SENSE_P probe location @ R2205.2



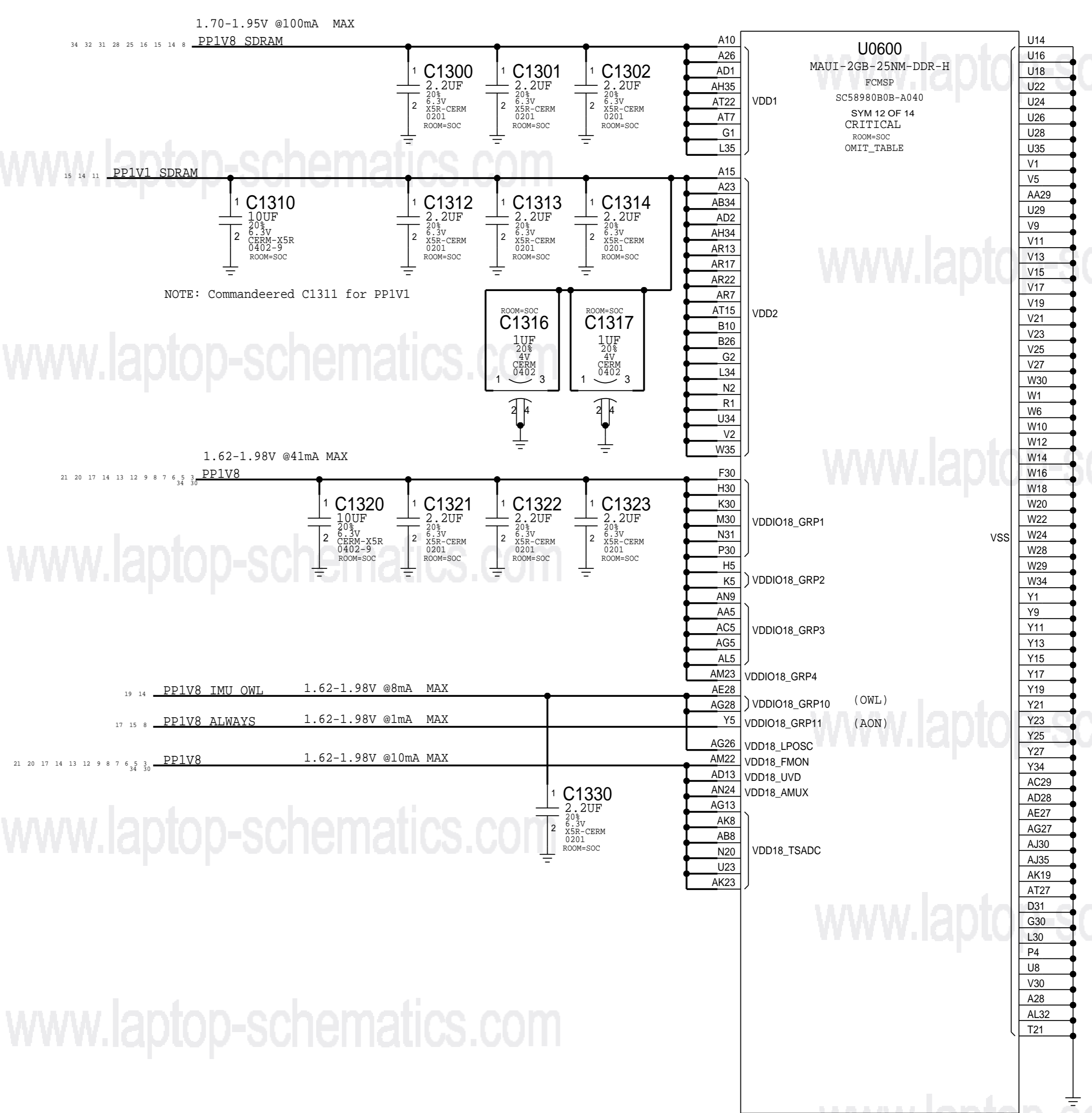
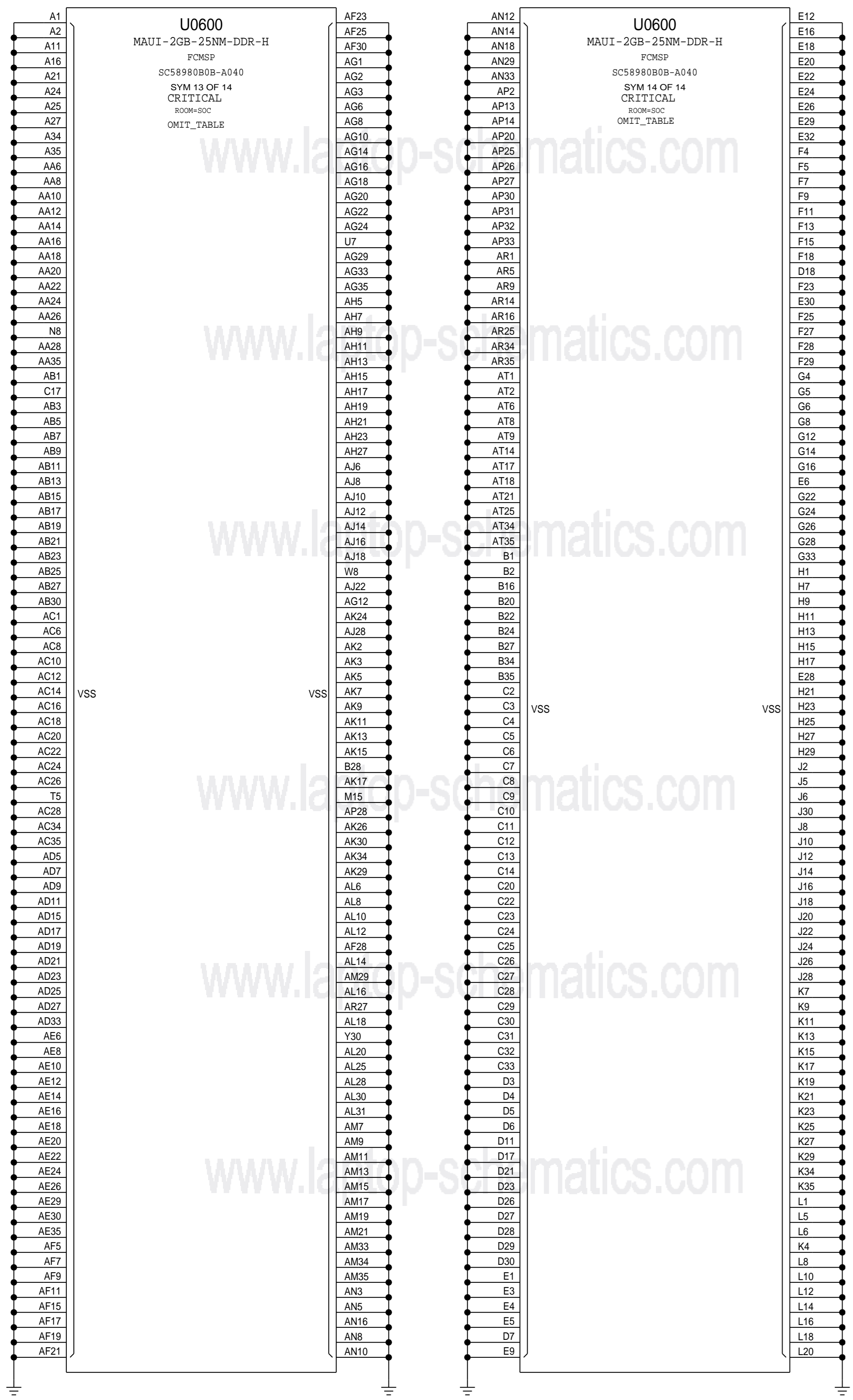
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MAUI - POWER SUPPLIES



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SHEET	11 OF 60		

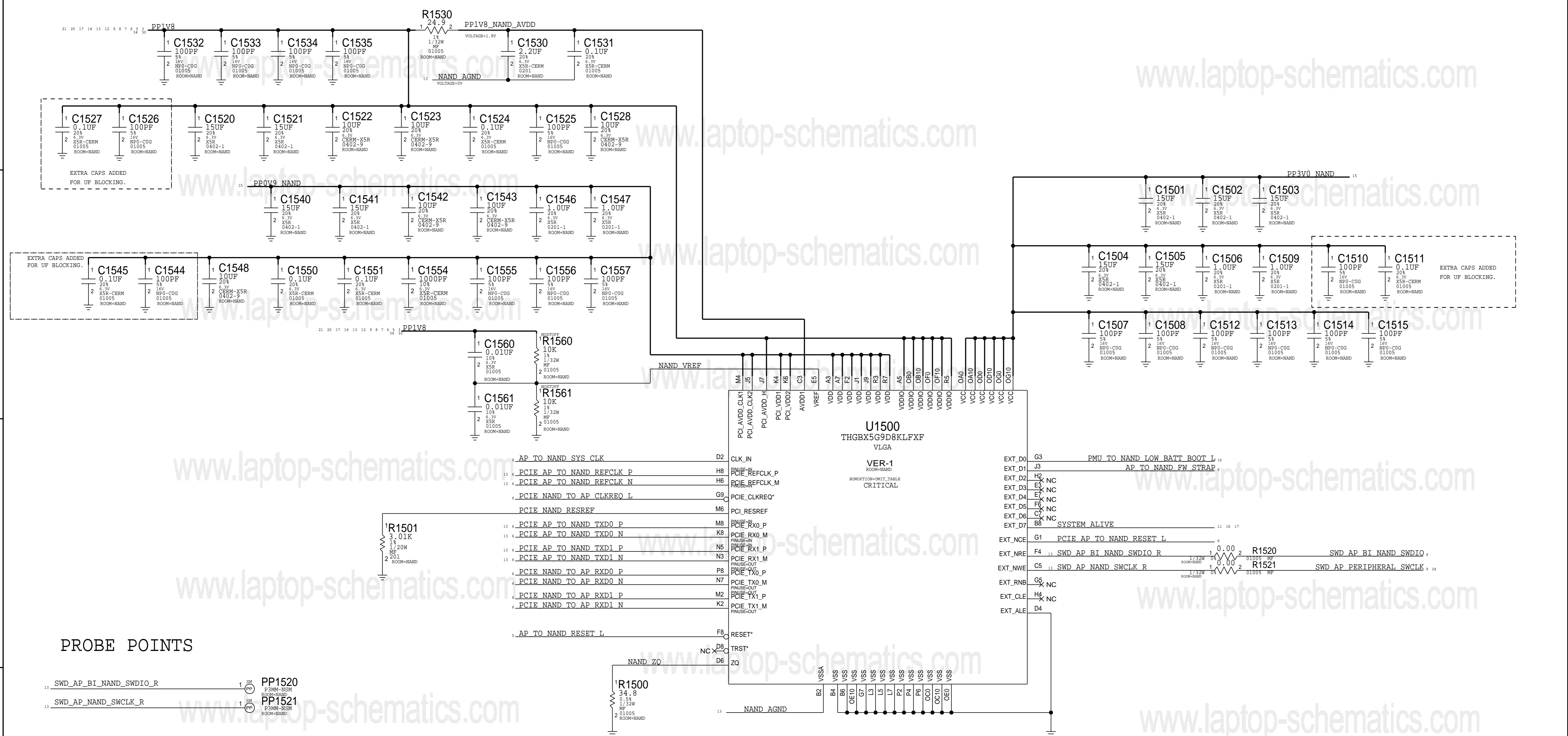
MAUI - POWER SUPPLIES



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PAGE			
13 OF 49			
SHEET			
12 OF 60			

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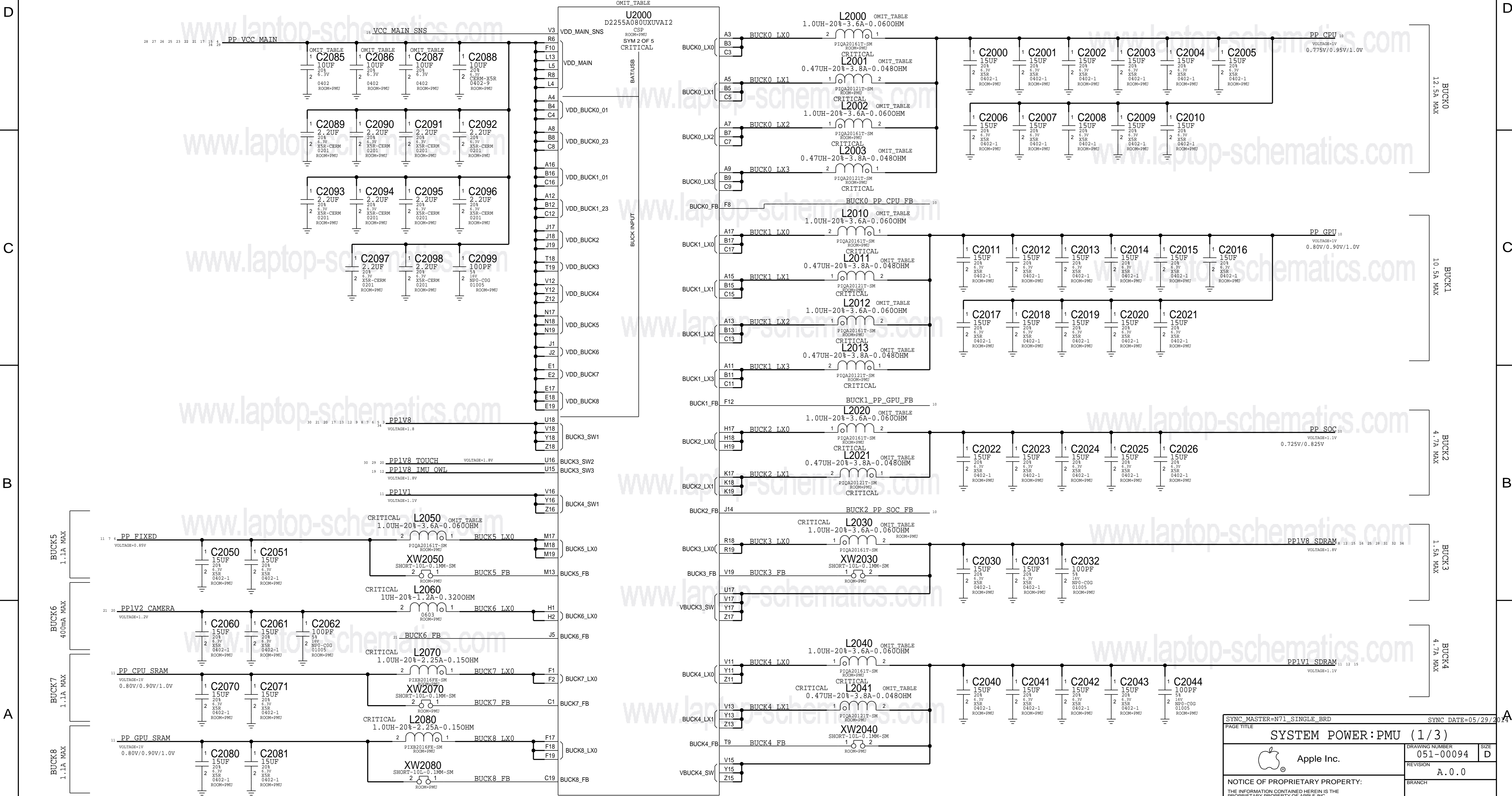
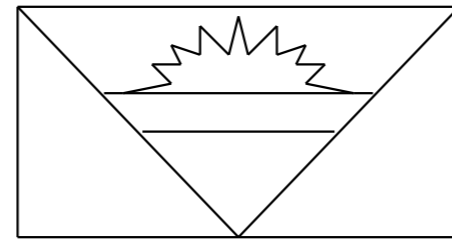


PROBE POINTS

- SWD_AP_BI_NAND_SWDIO_R (PP1520)
- SWD_AP_NAND_SWCLK_R (PP1521)
- PCIE_AP_TO_NAND_REFCLK_P (PP1500)
- PCIE_AP_TO_NAND_REFCLK_N (PP1501)
- PCIE_AP_TO_NAND_TXD0_P (PP1502)
- PCIE_AP_TO_NAND_TXD0_N (PP1503)
- PCIE_AP_TO_NAND_TXD1_P (PP1504)
- PCIE_AP_TO_NAND_TXD1_N (PP1505)

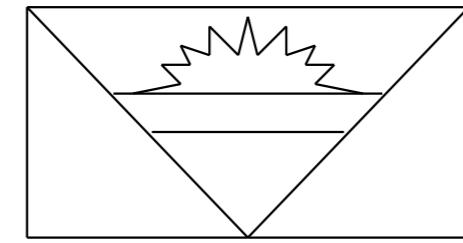
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ANTIGUA PMU - Buck Supplies



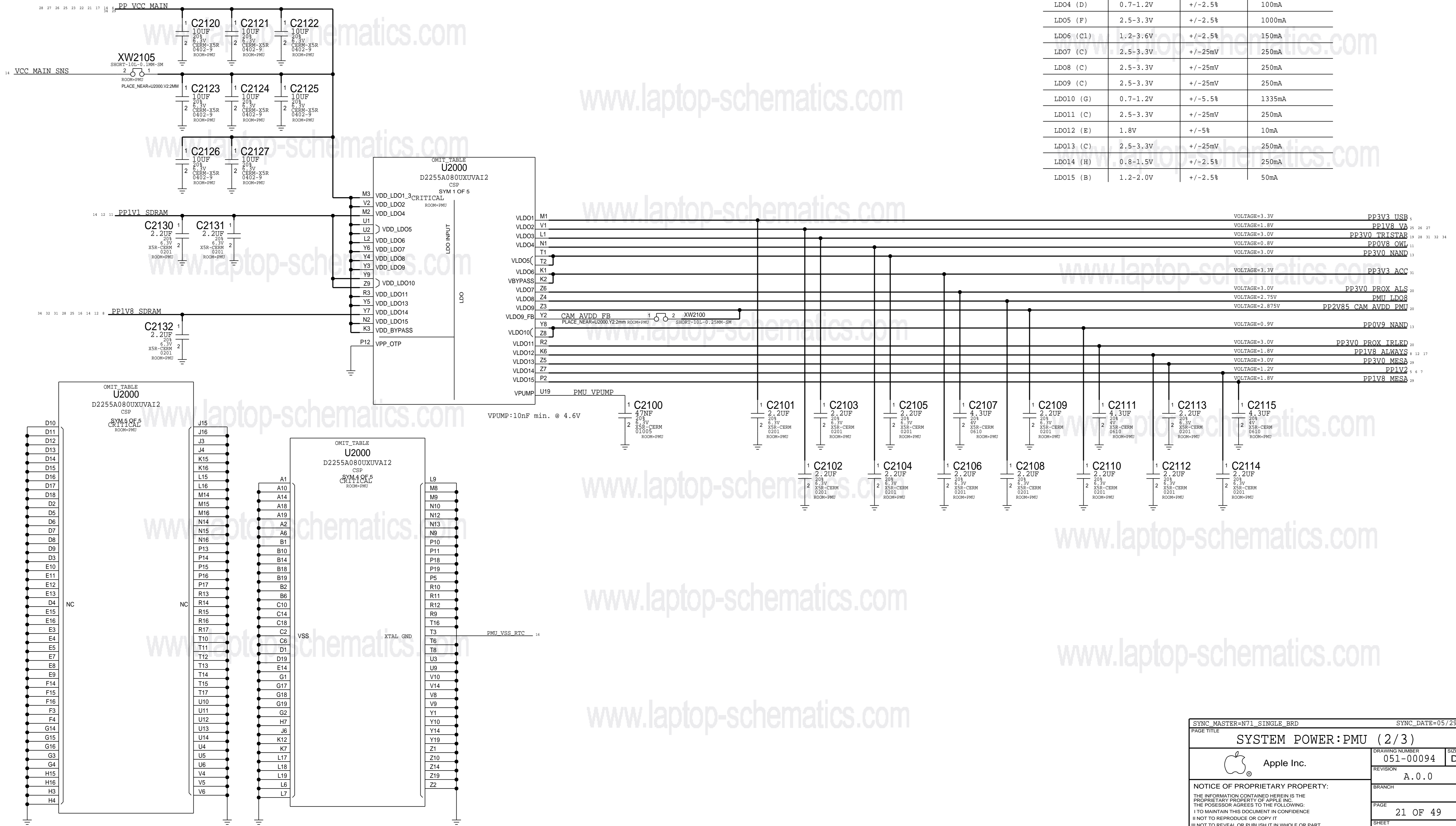
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ANTIGUA PMU - LDOs



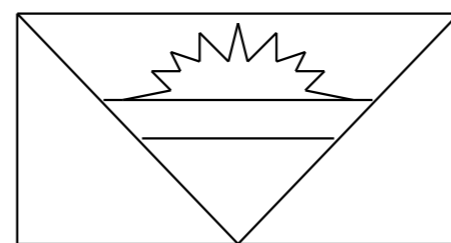
ANTIGUA LDO SPECS

LDO#	ADJ. RANGE	ACCURACY	MAX. CURRENT
LDO1 (A)	2.5-3.3V	+/-1.4%	50mA
LDO2 (B)	1.2-2.0V	+/-2.5%	50mA
LDO3 (A)	2.5-3.3V	+/-1.4%	50mA
LDO4 (D)	0.7-1.2V	+/-2.5%	100mA
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	250mA
LDO8 (C)	2.5-3.3V	+/-25mV	250mA
LDO9 (C)	2.5-3.3V	+/-25mV	250mA
LDO10 (G)	0.7-1.2V	+/-5.5%	1335mA
LDO11 (C)	2.5-3.3V	+/-25mV	250mA
LDO12 (E)	1.8V	+/-5%	10mA
LDO13 (C)	2.5-3.3V	+/-25mV	250mA
LDO14 (H)	0.8-1.5V	+/-2.5%	250mA
LDO15 (B)	1.2-2.0V	+/-2.5%	50mA



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		PAGE	21 OF 49
		SHEET	15 OF 60

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

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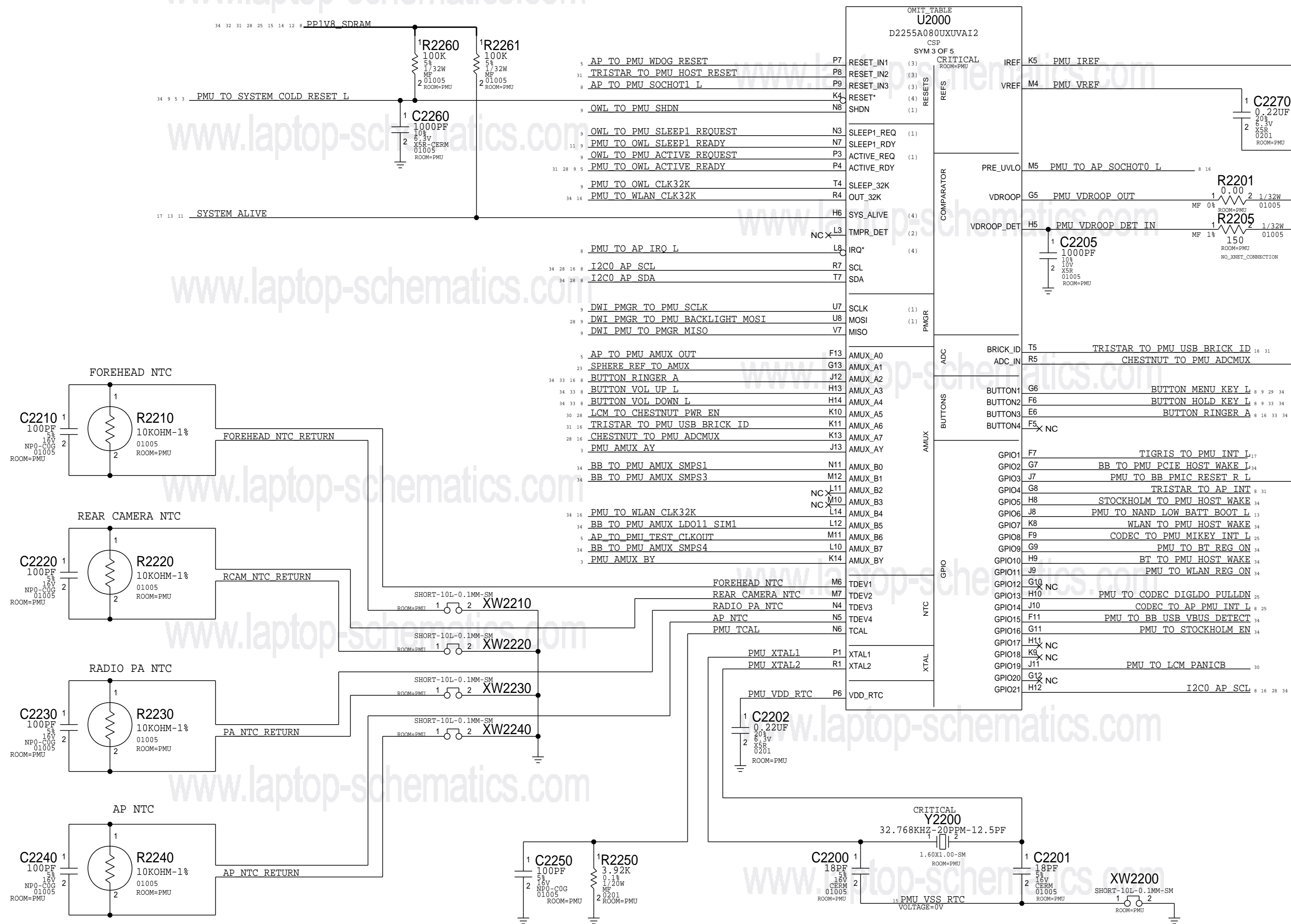
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NOTE: 100PF CAPS ARE THE SAMPLING CAPS FOR PMU ADC

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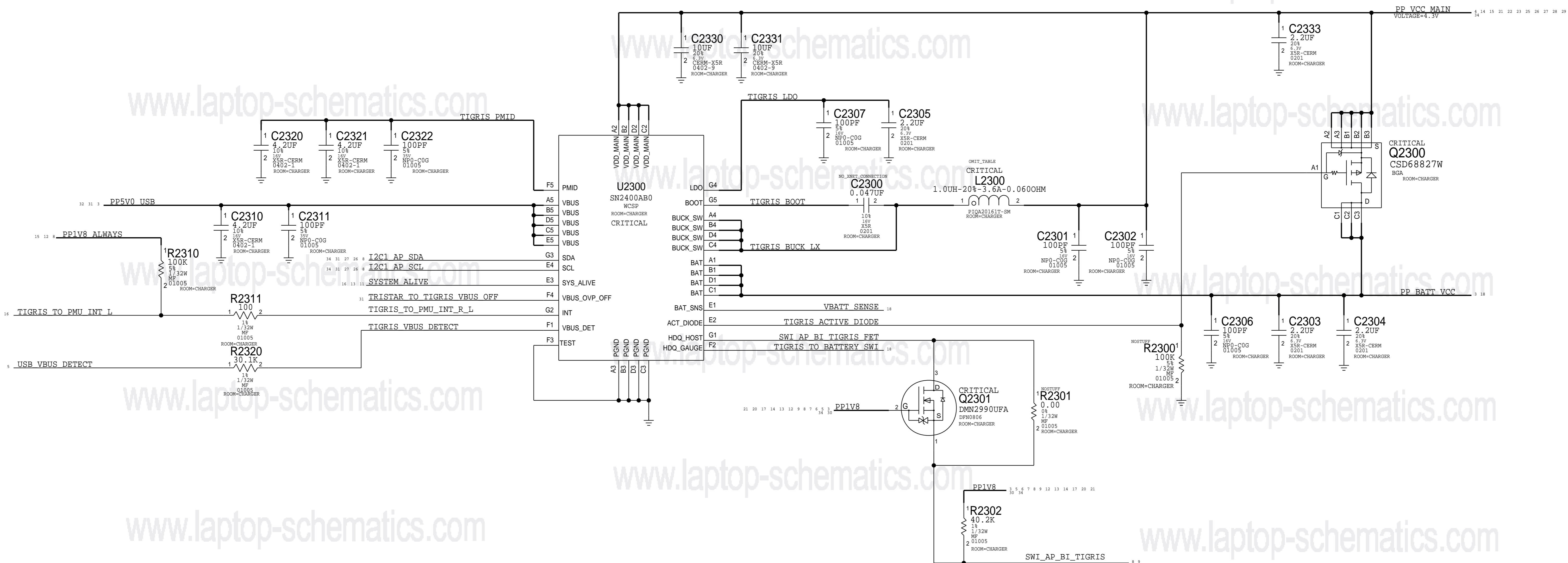
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		SHEET	17 OF 60

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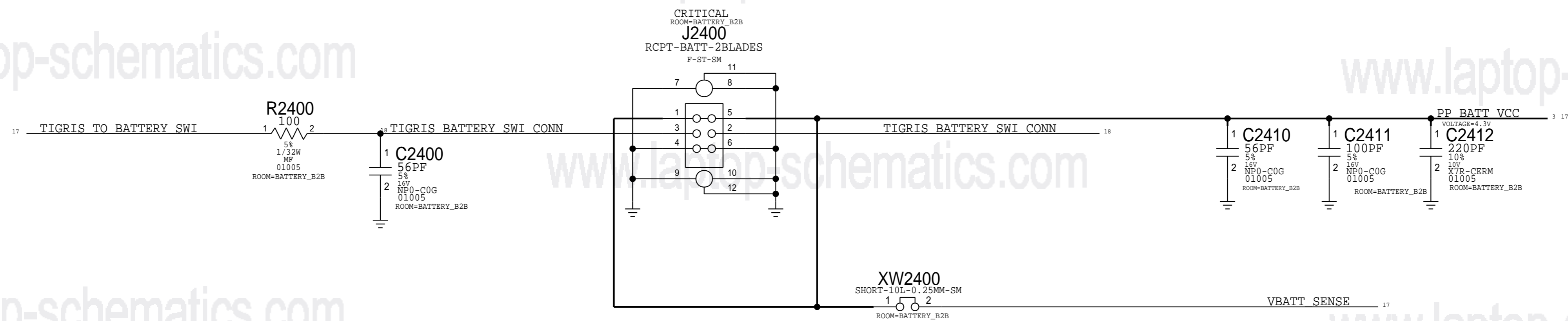
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BATTERY CONNECTOR

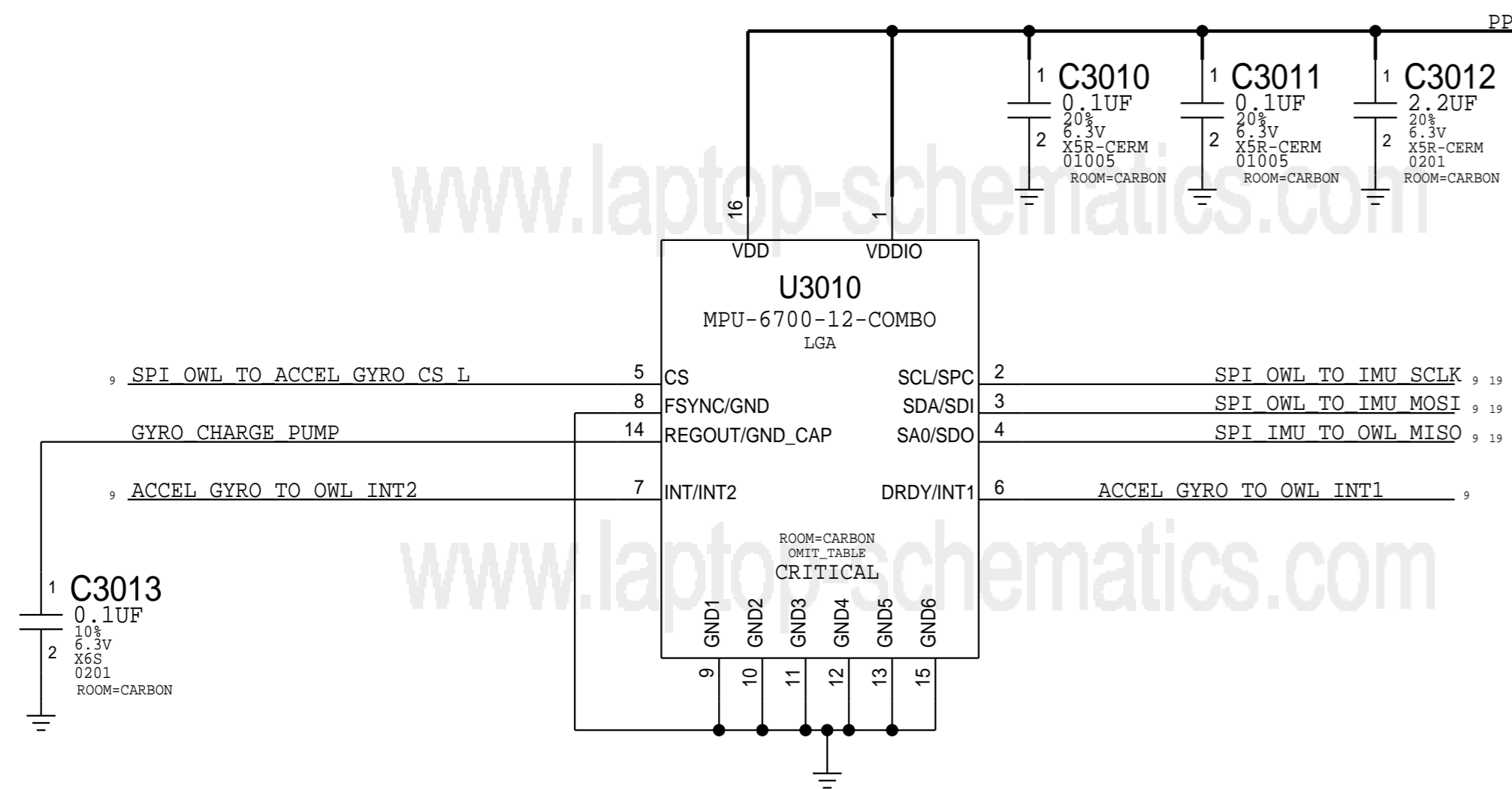
THIS ONE ON MLB ----> 516S00104 (RCPT)
516????? (PLUG)



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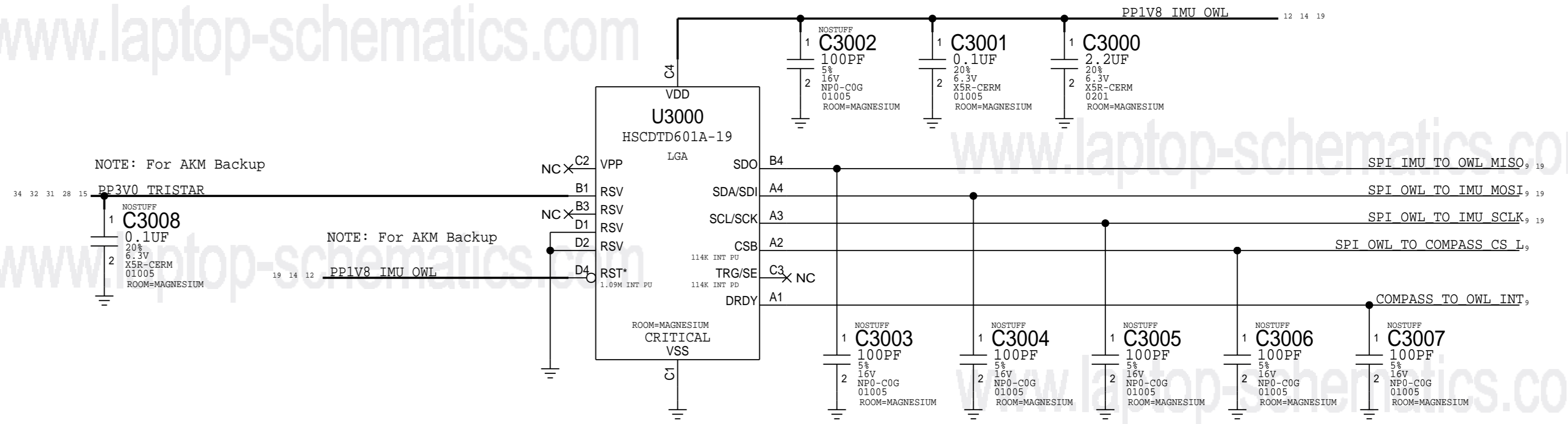
CARBON - ACCEL & GYRO

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INVENSENSE, MPU-6800 (APN 338S00087): C3013=0.1UF



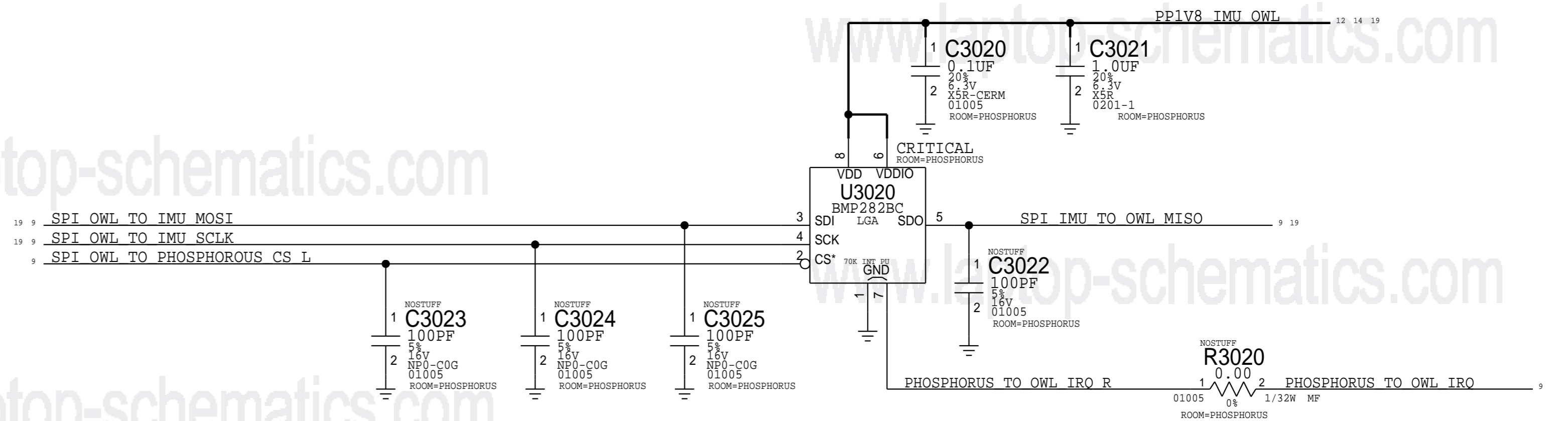
MAGNESIUM - COMPASS

APN: 338S00084



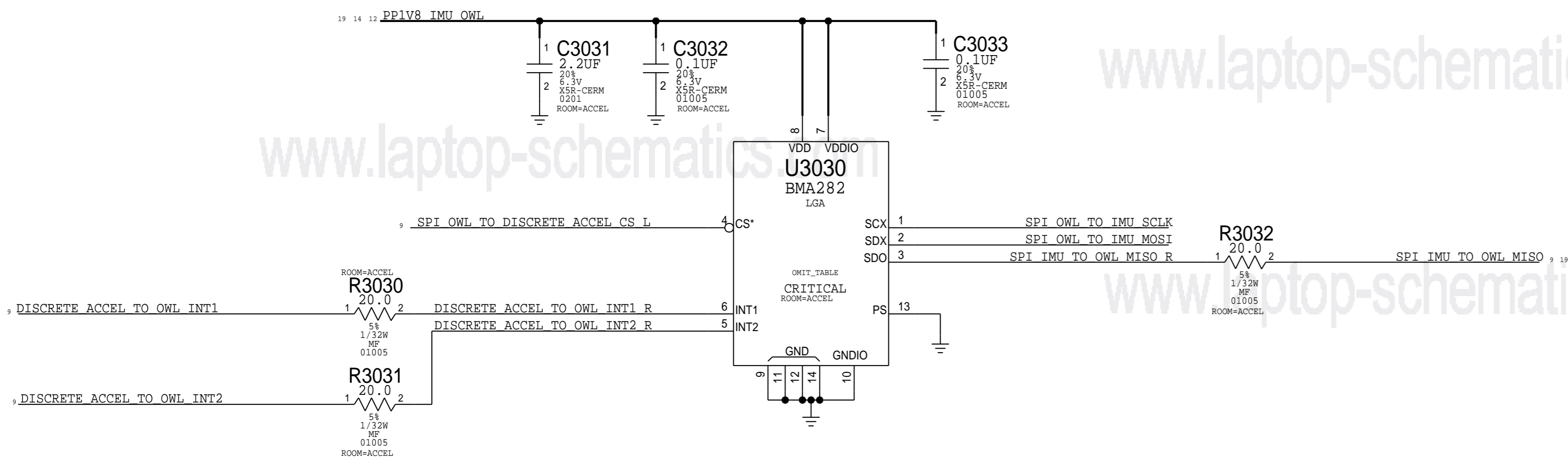
PHOSPHOROUS

BOSCH (APN:338S00044)



DISCRETE ACCEL

BOSCH APN 338S1163
NO-STUFF for Invensense DOE



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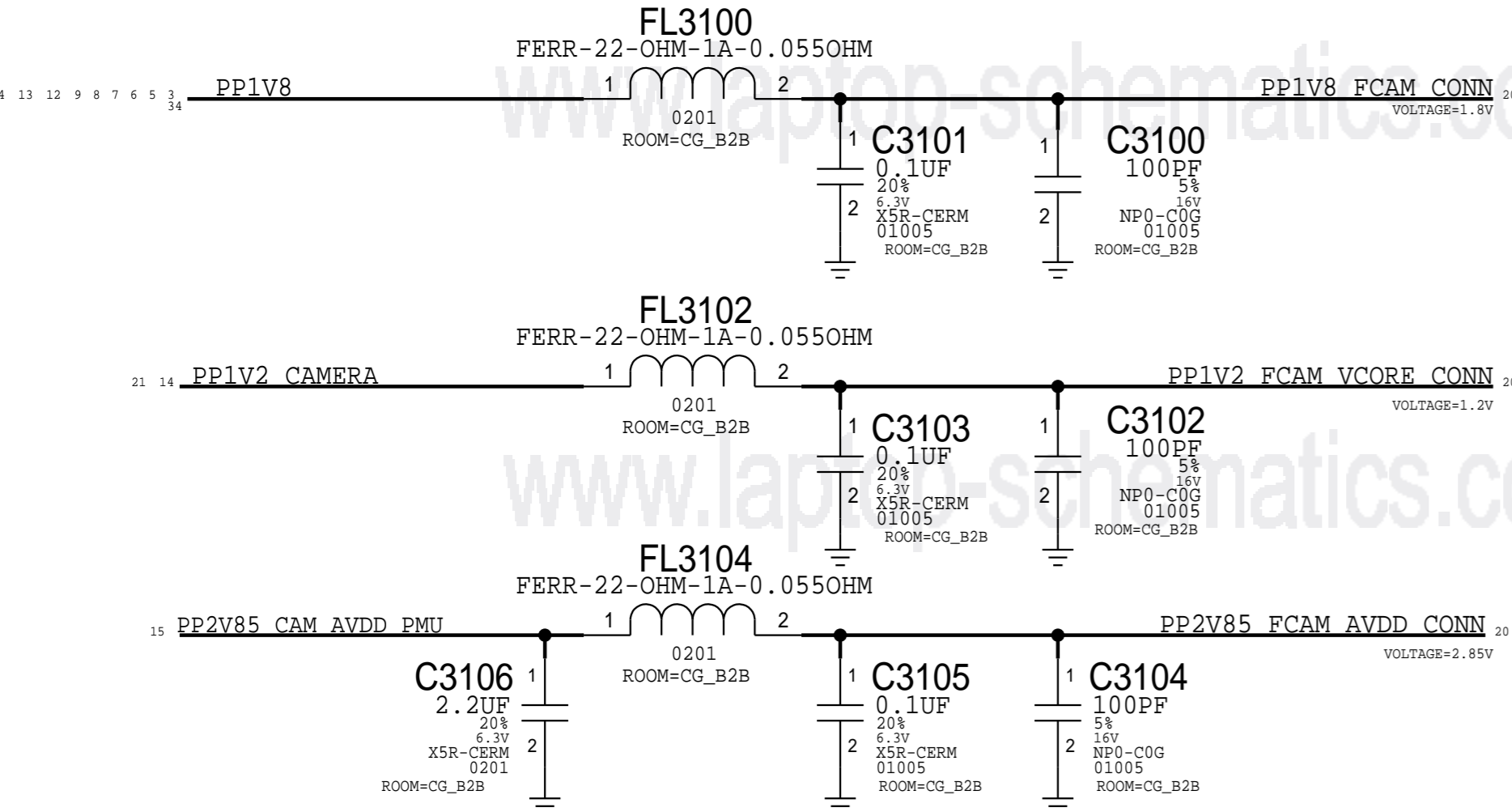
FRONT CAMERA FLEX

PROX & ALS POWER

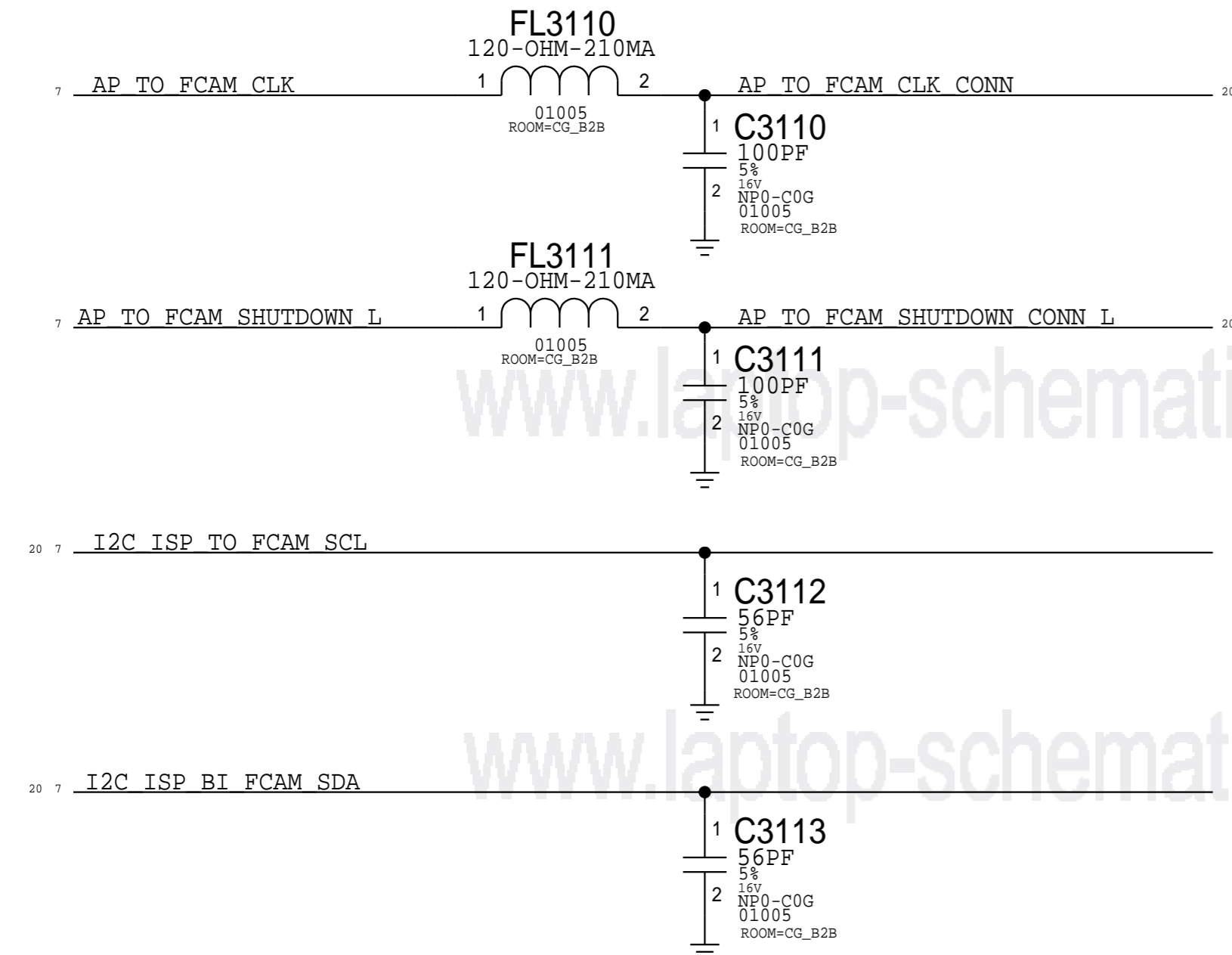
FCAM CONNECTOR

MLB: 516S1081 (RCPT)
FLEX: 516S1177 (PLUG)

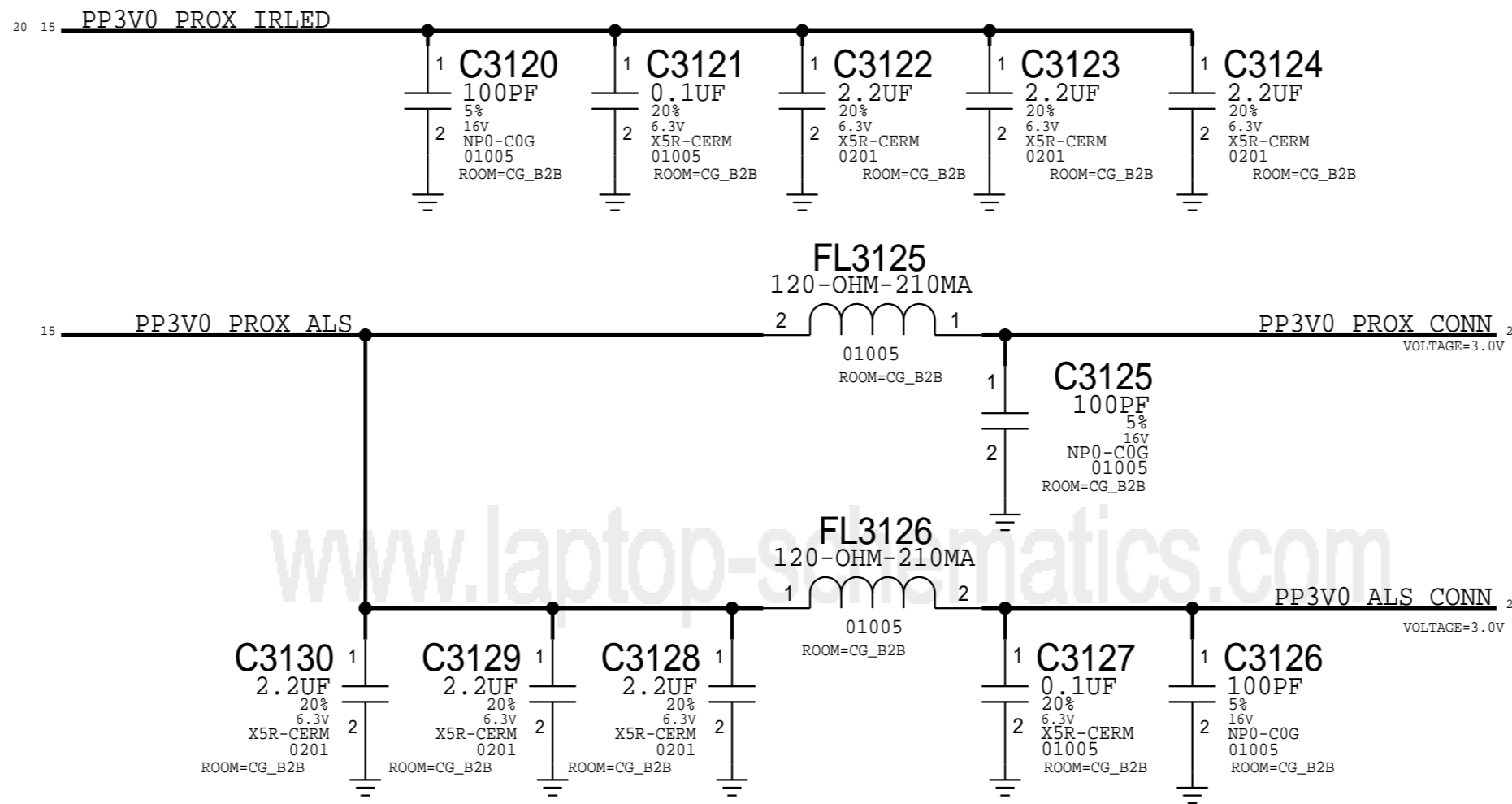
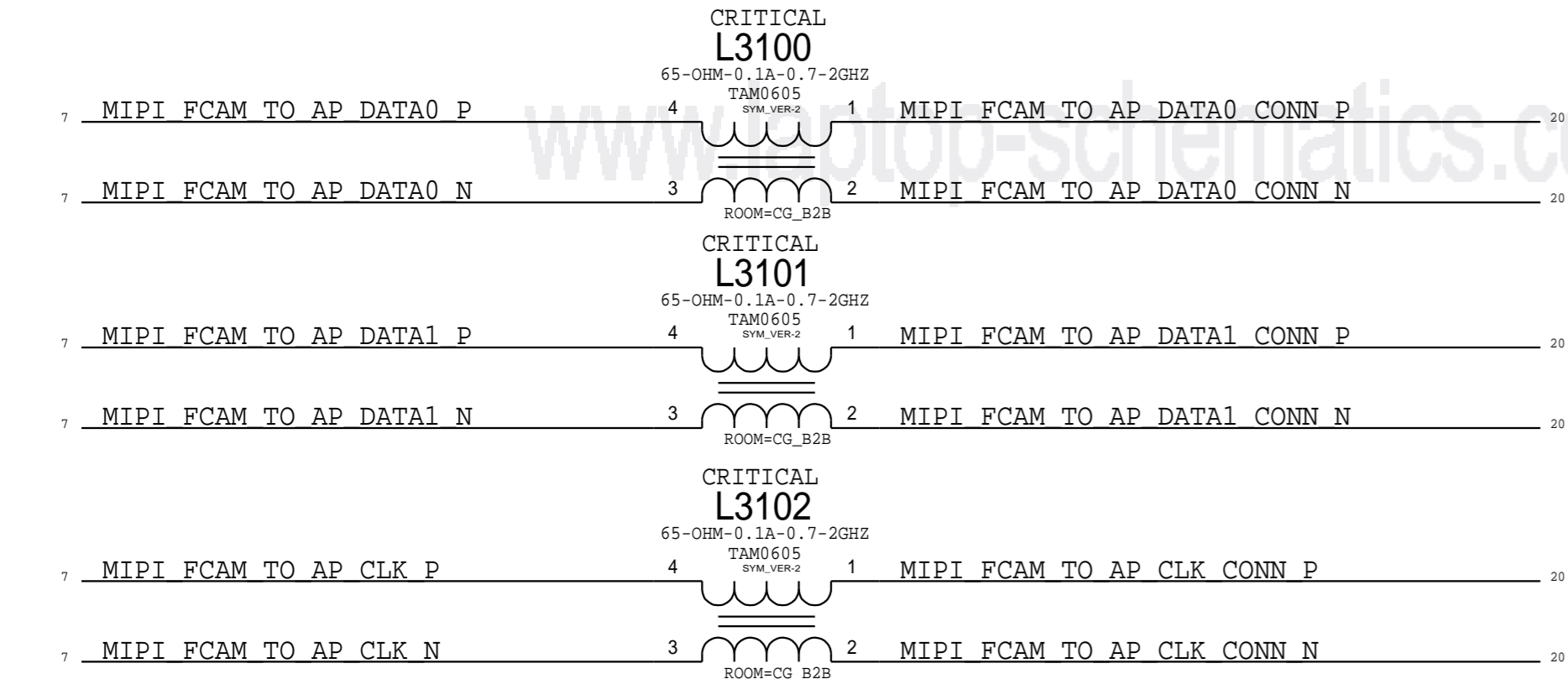
CAMERA POWER



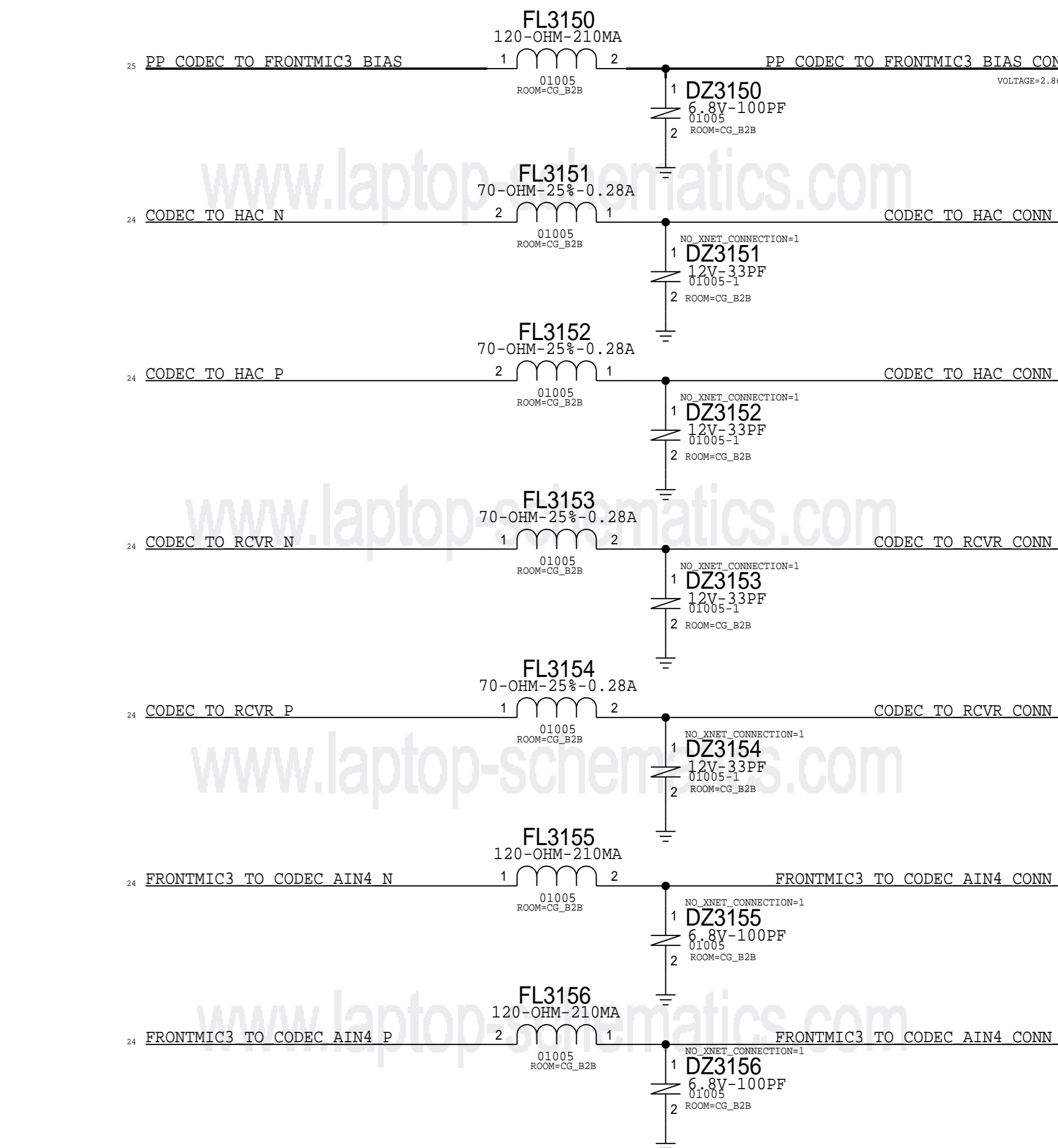
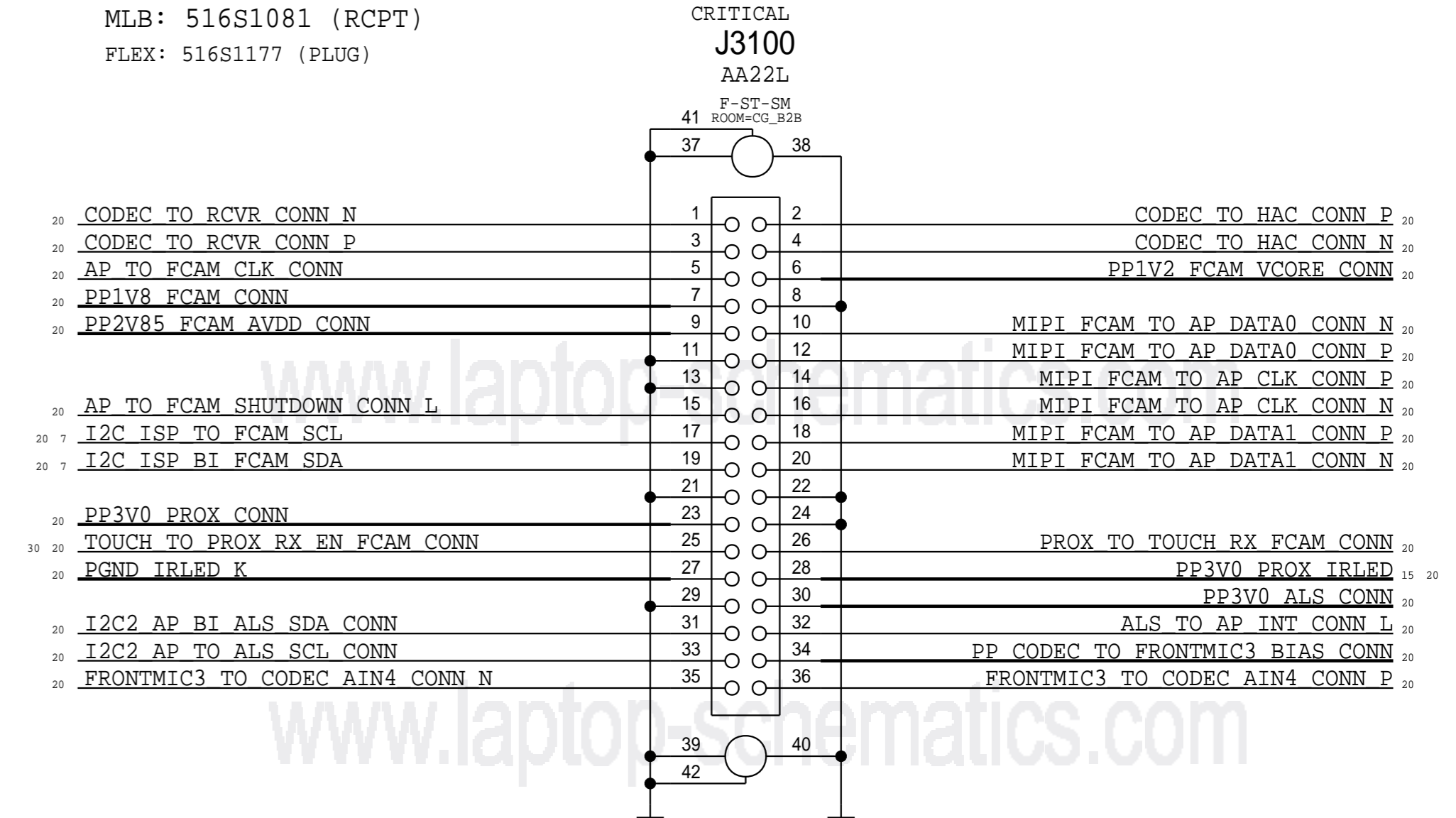
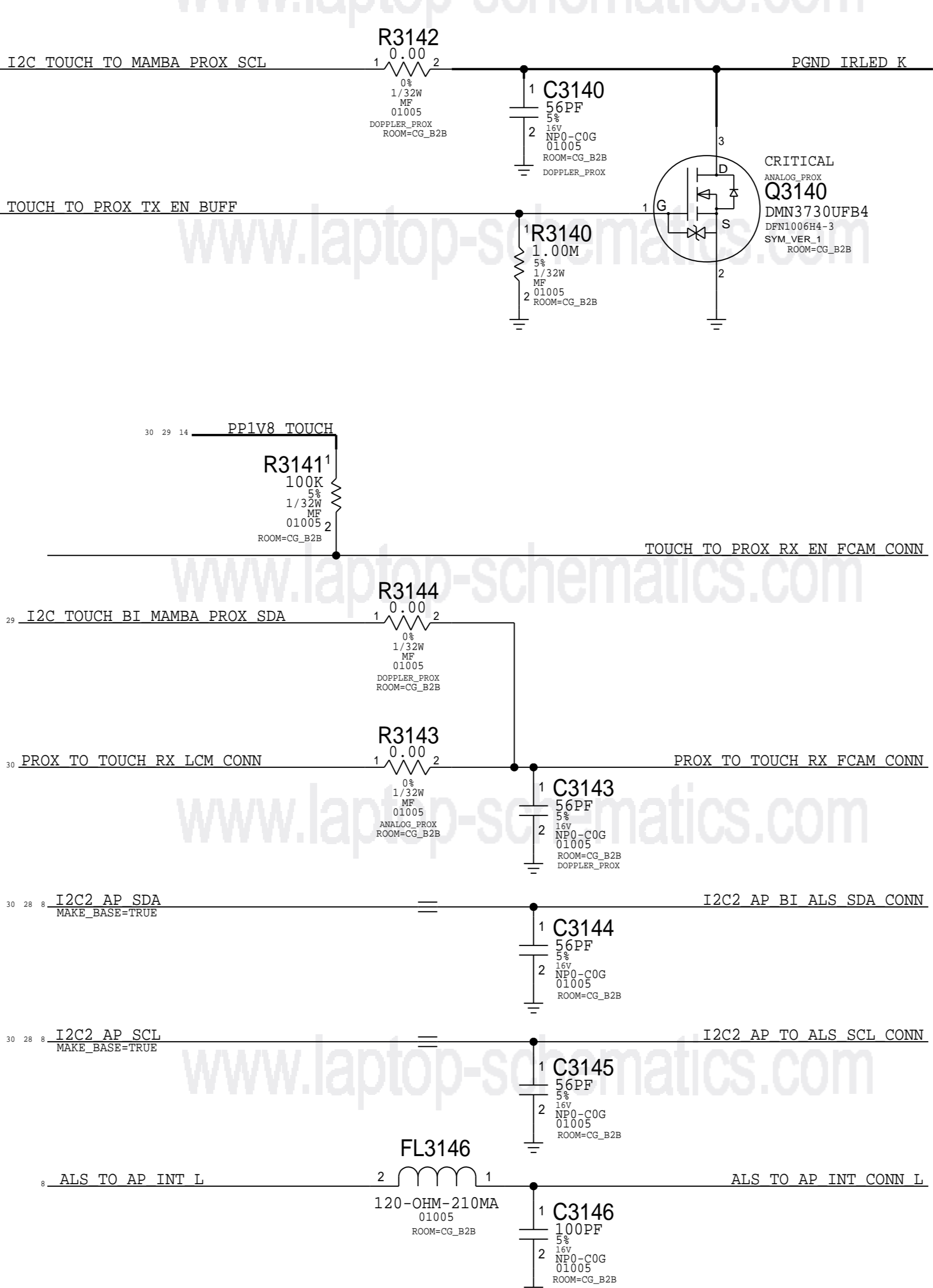
CAMERA I/O



CAMERA MIPI



PROX & ALS INTERFACE



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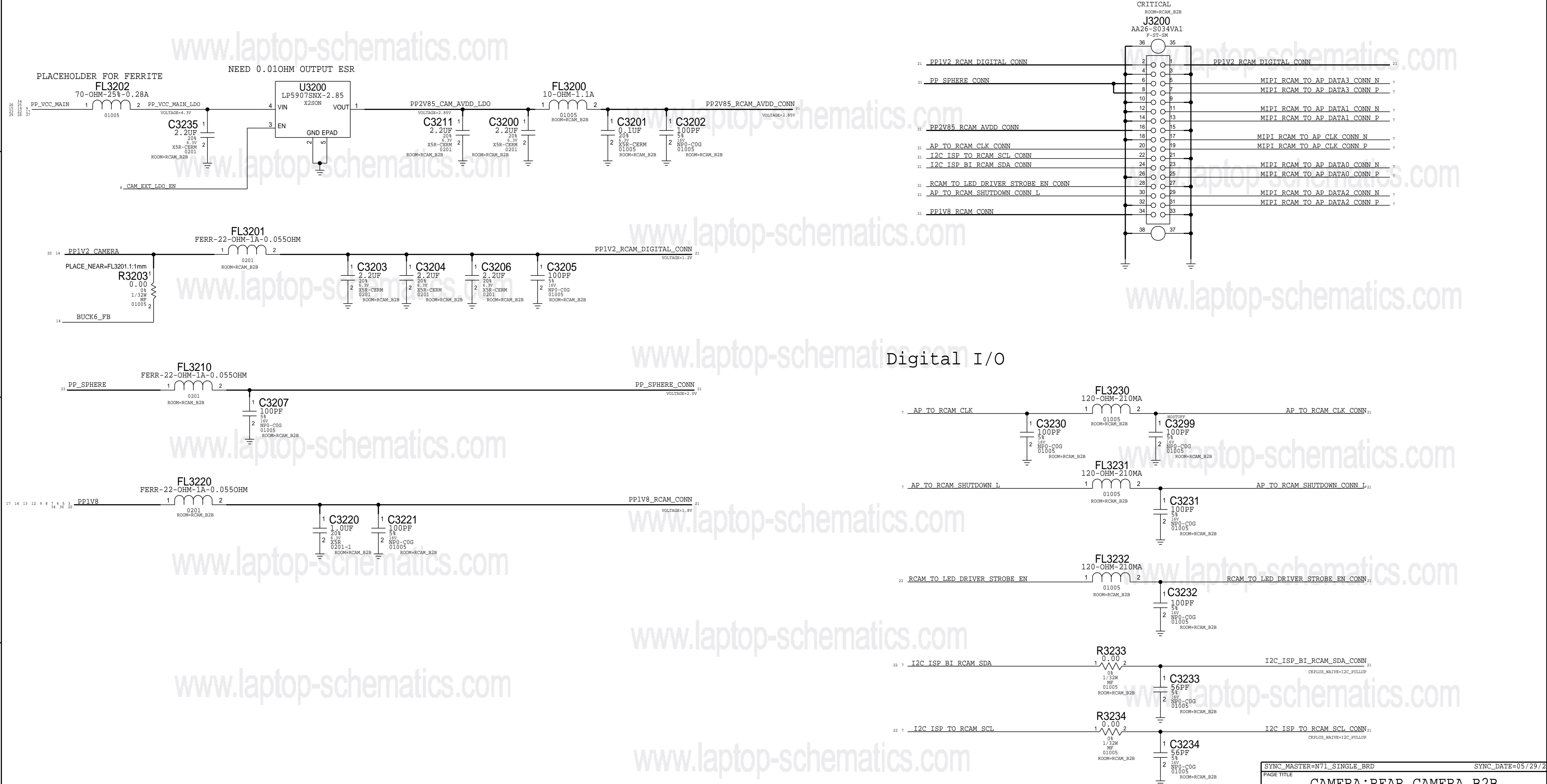
REAR CAMERA FLEX

CAMERA POWER/MAMBA LDO

RCAM CONNECTOR

MLB: 516S00043 (RCPT)

FLEX: 516S00042 (PLUG)



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PAGE			
32 OF 49			
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21 OF 60			

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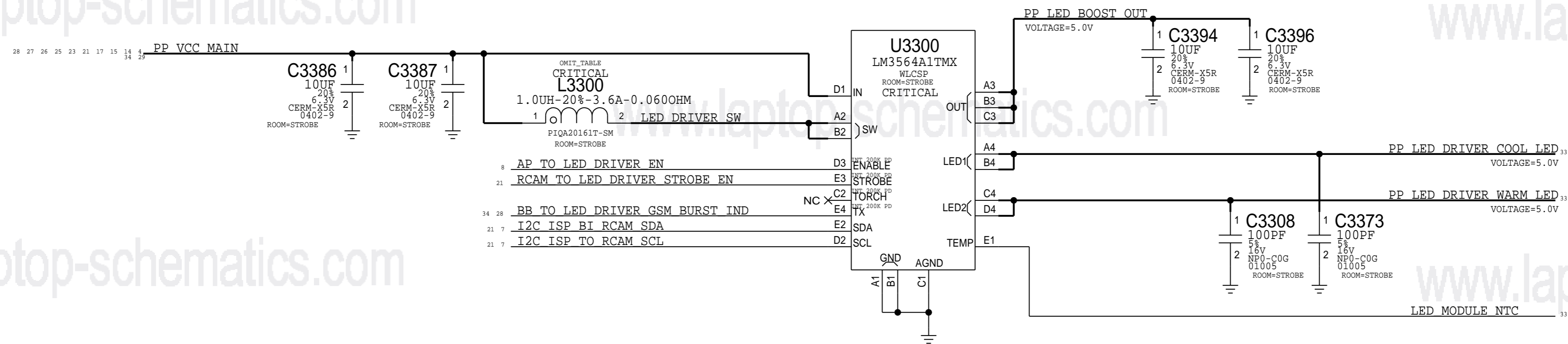
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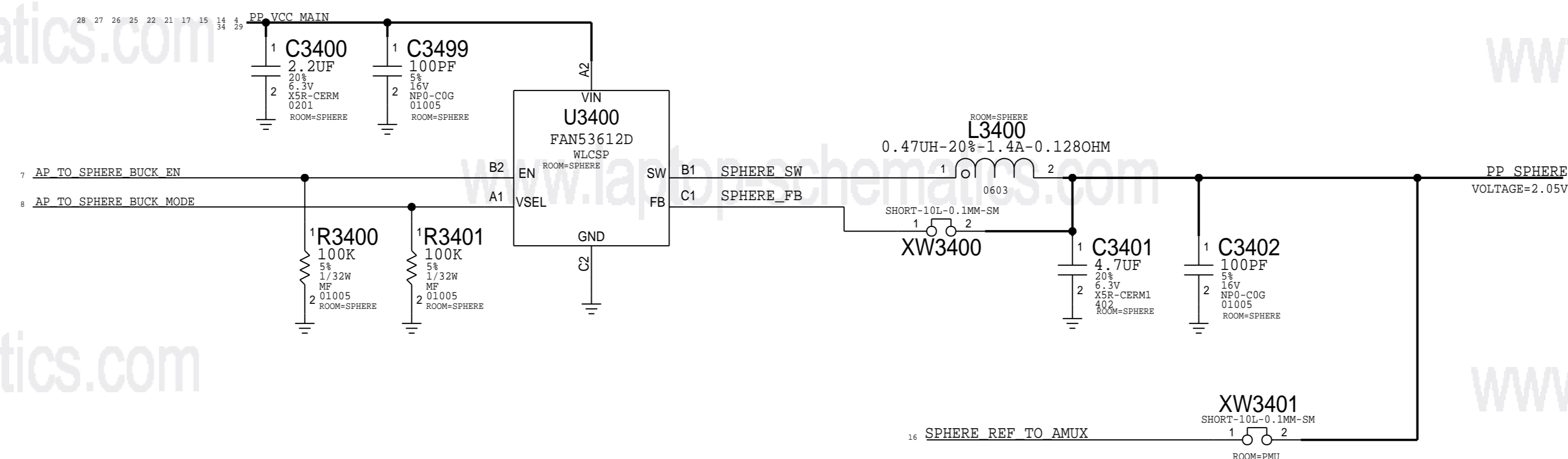
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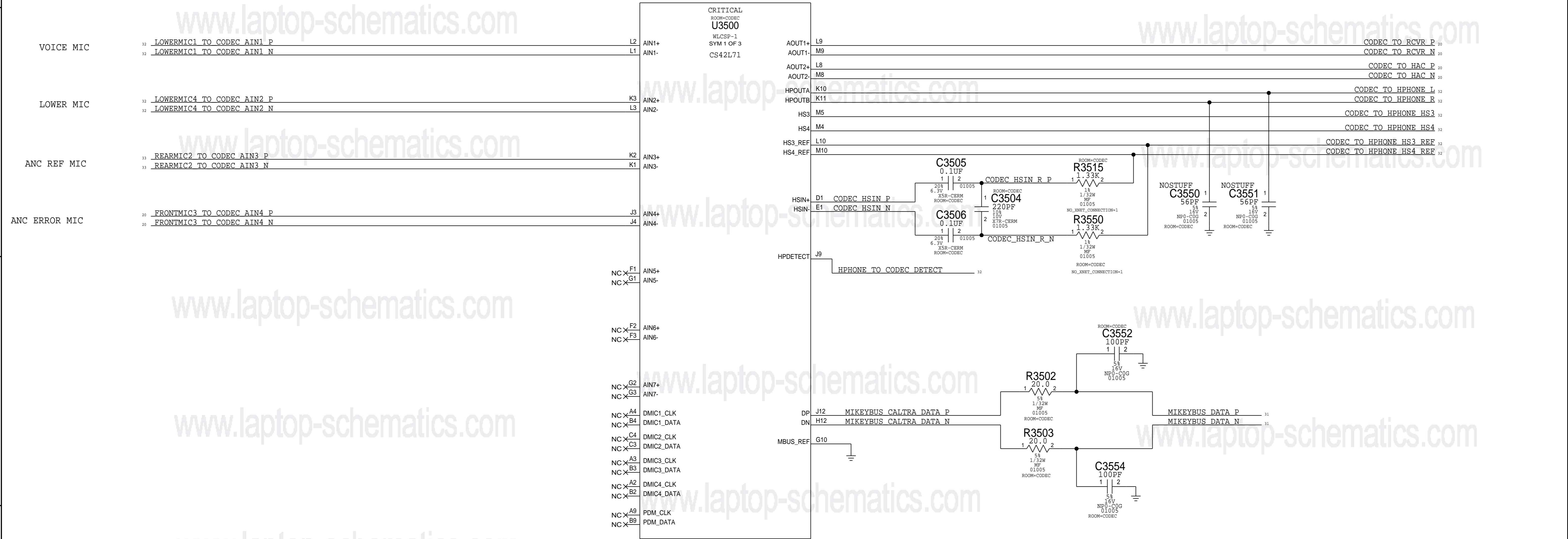
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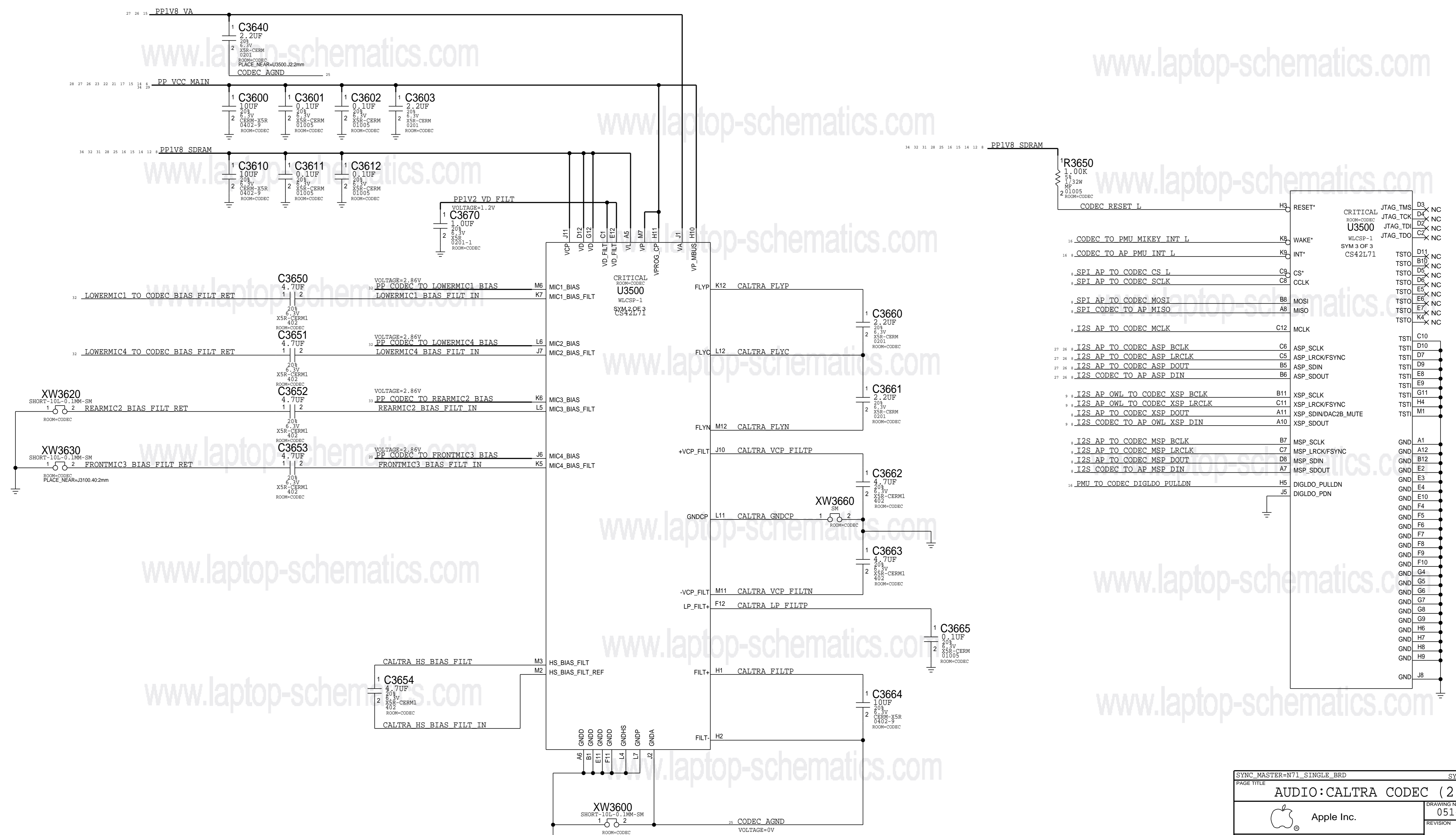
CALTRA AUDIO CODEC (ANALOG INPUTS & OUTPUTS)

APN: 338S00105



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PAGE	35 OF 49		SHEET
	24 OF 60		

CALTRA AUDIO CODEC (POWER & I/O)



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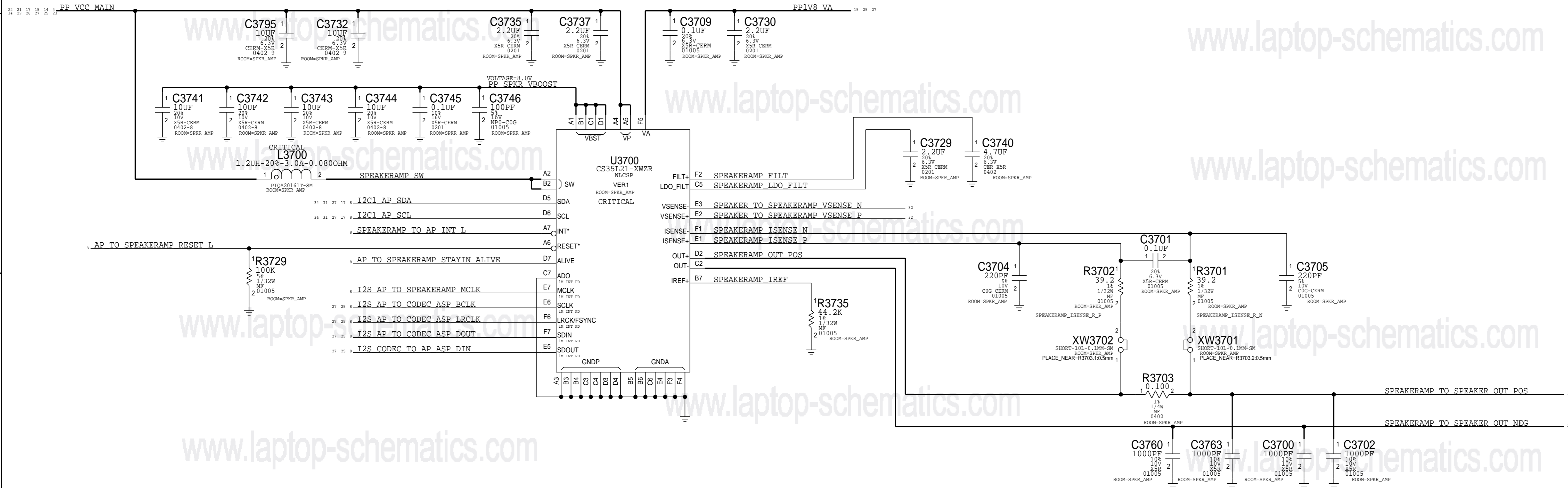
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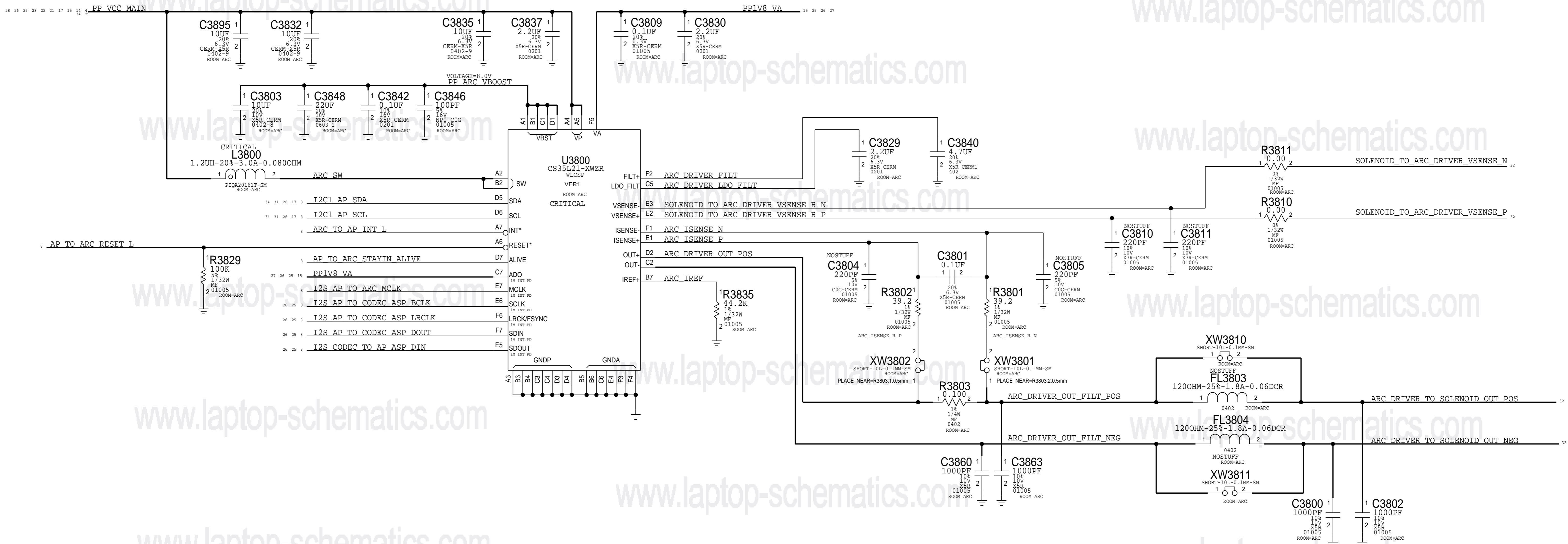
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		SHEET	26 OF 60

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ARC DRIVER

APN: 338S1285
I2C ADDRESS: 1000001



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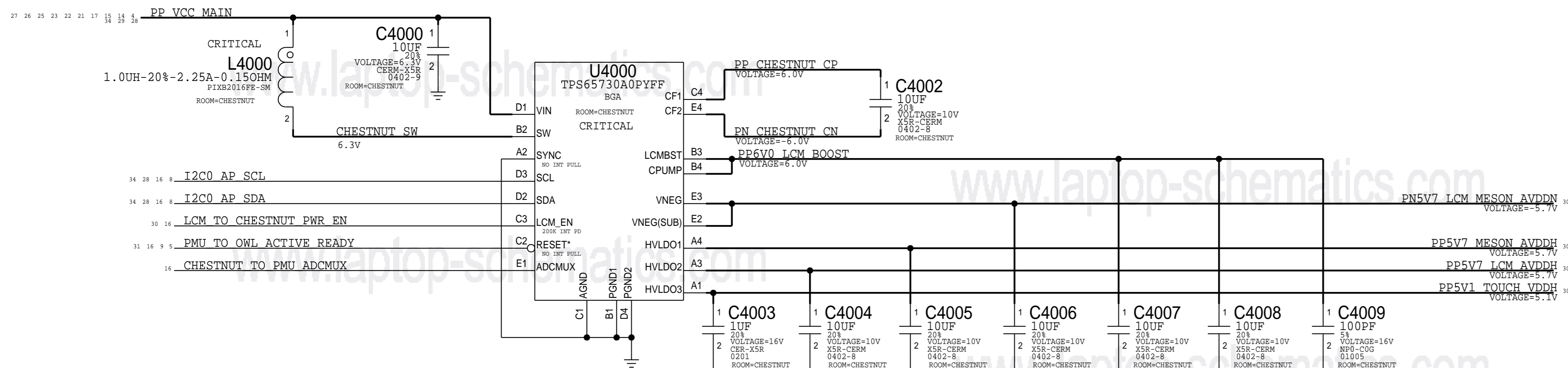
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Apple Inc.	DRAWING NUMBER	051-00094	SIZE D
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		SHEET	27 OF 60

DISPLAY & TOUCH - POWER SUPPLIES

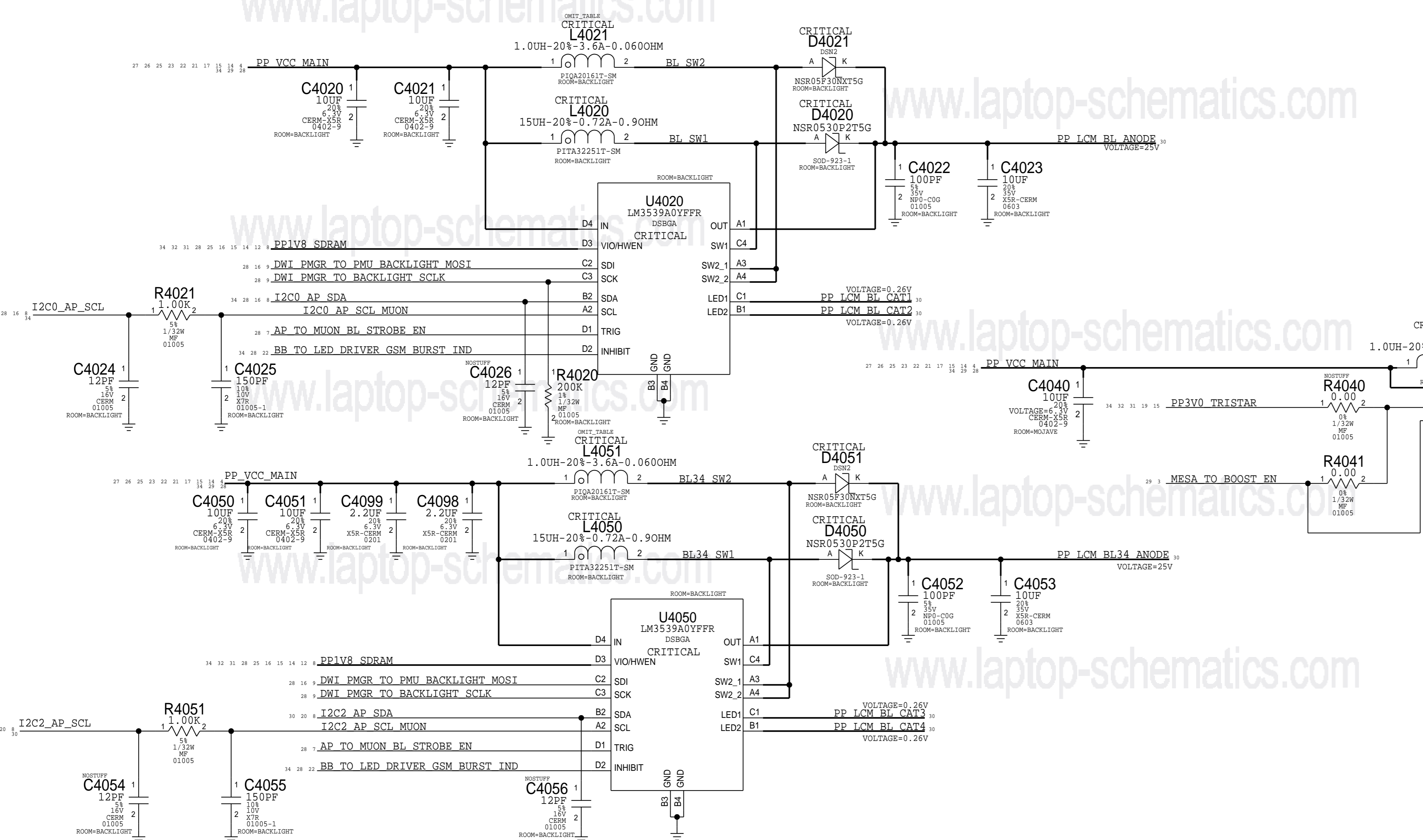
CHESTNUT DISPLAY PMU

APN: 338S1172



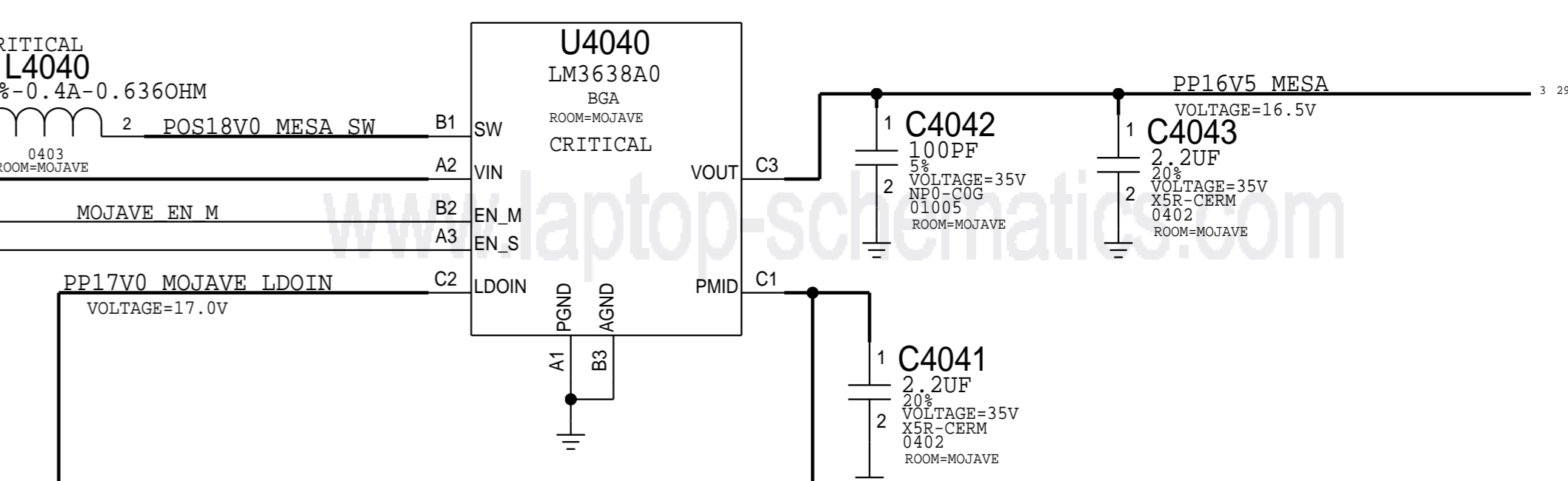
LED BACKLIGHT DRIVERS

APN: 353S00407



MOJAVE MESA BOOST

APN: 353S00671



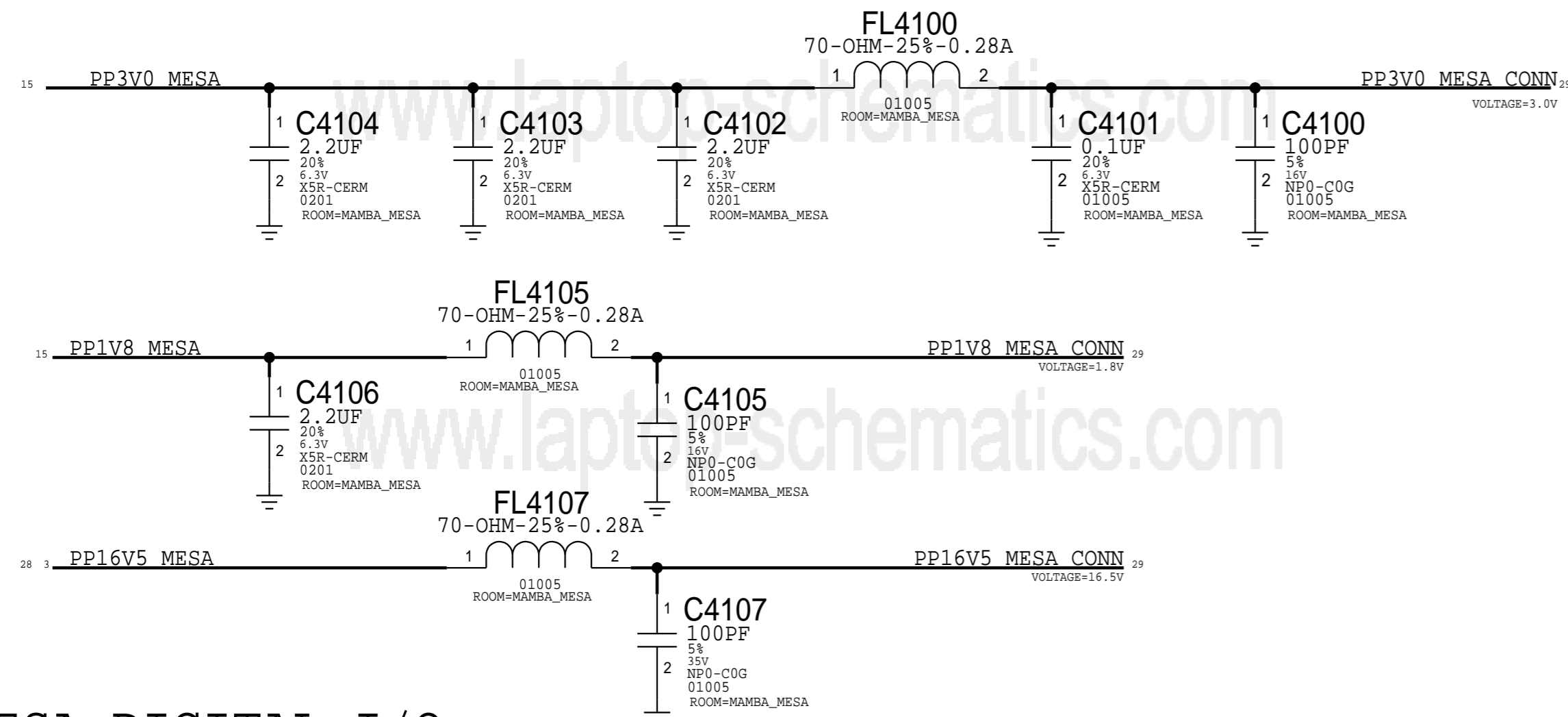
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MAMBA & MESA FLEX

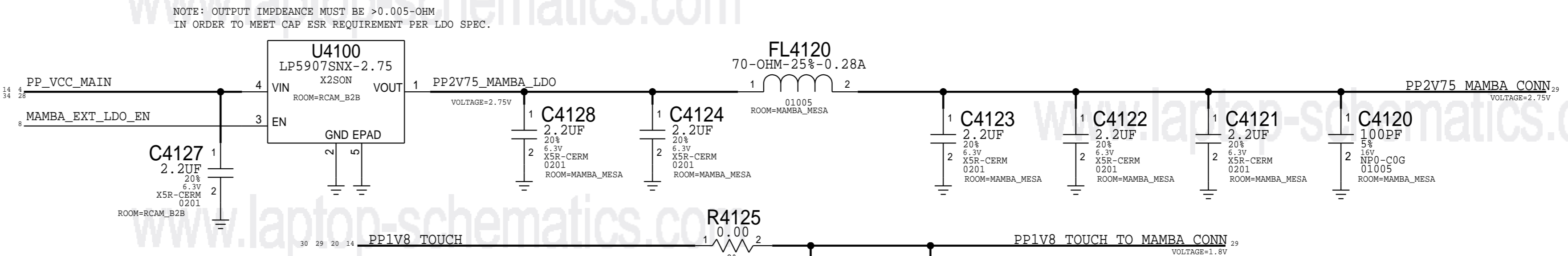
ORB & MESA CONNECTOR

MLB: 516S00056 (RCPT)

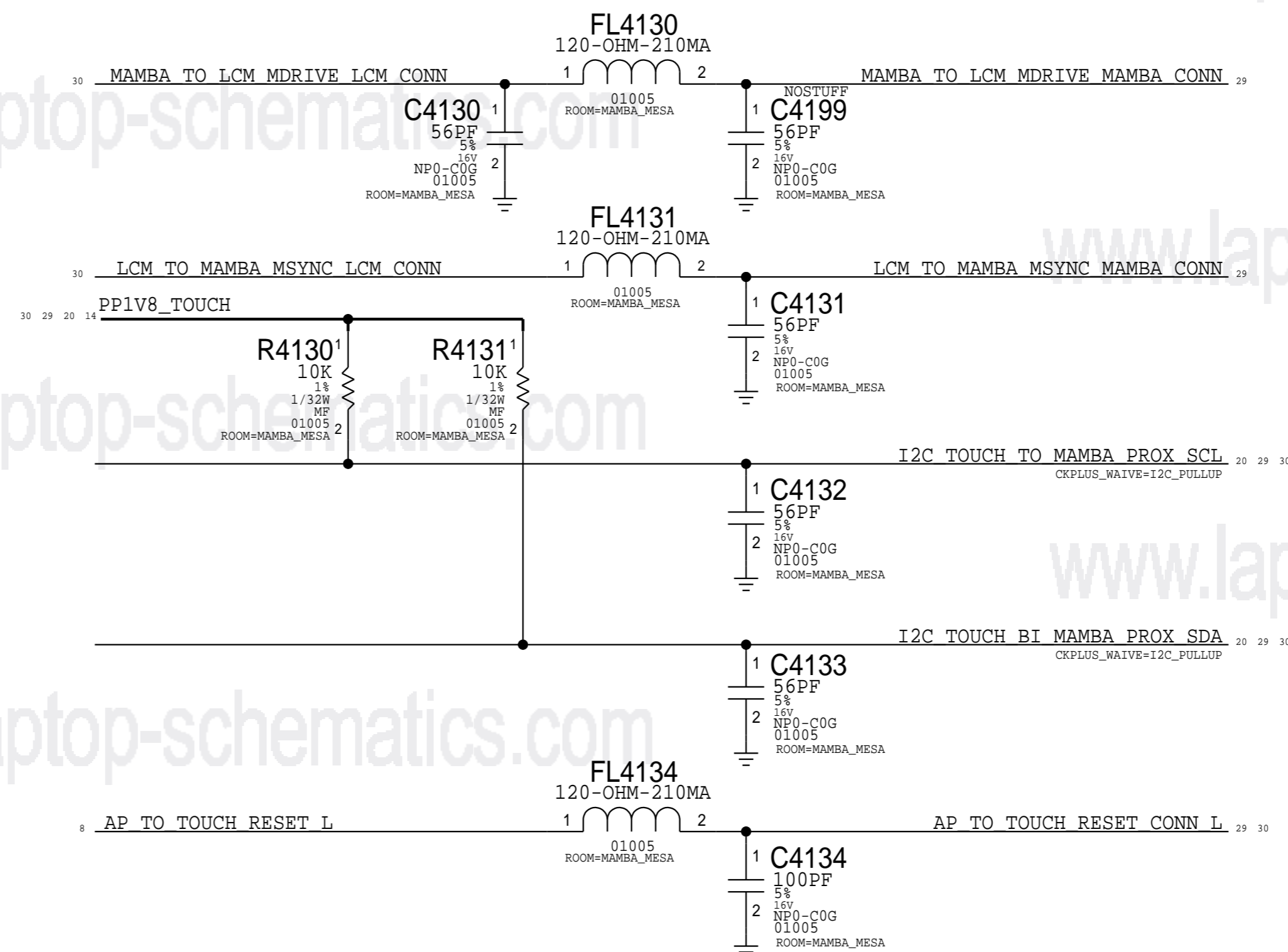
MESA POWER



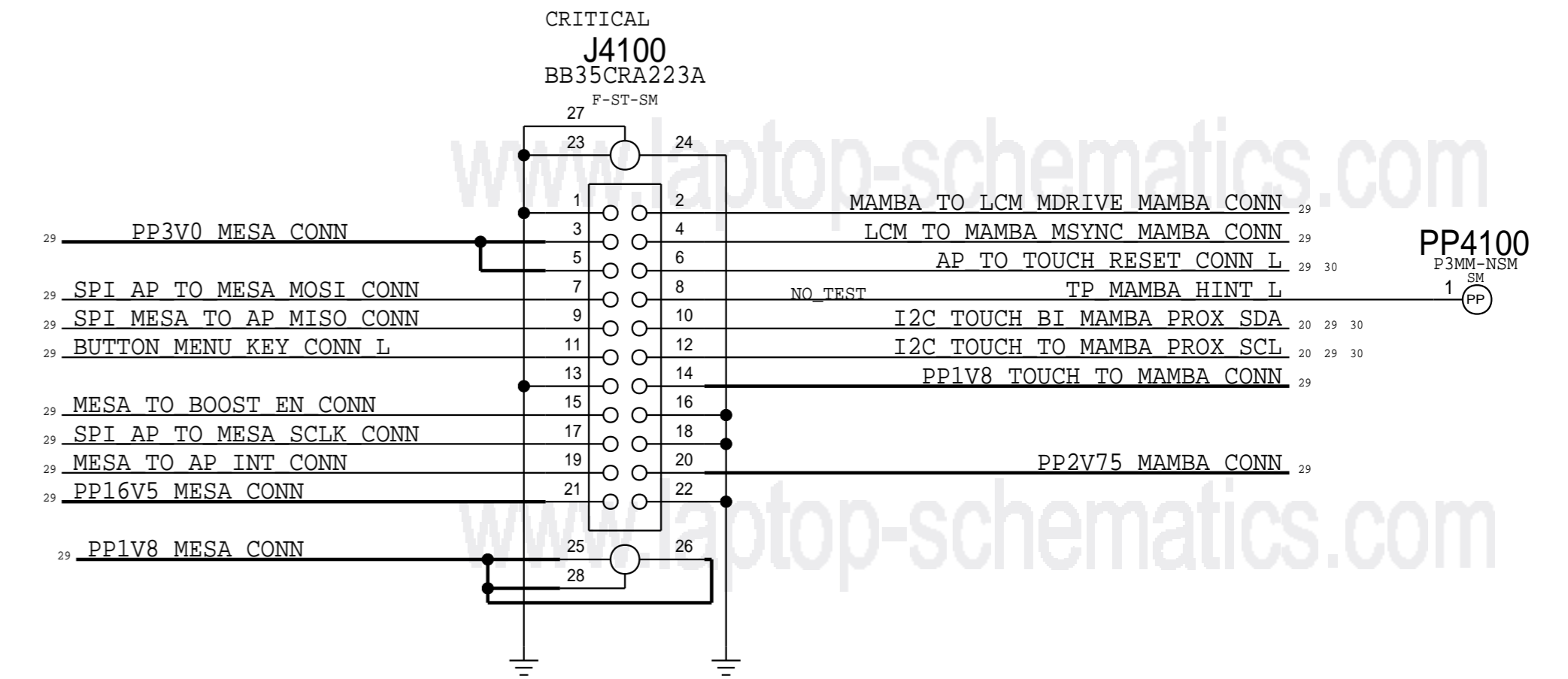
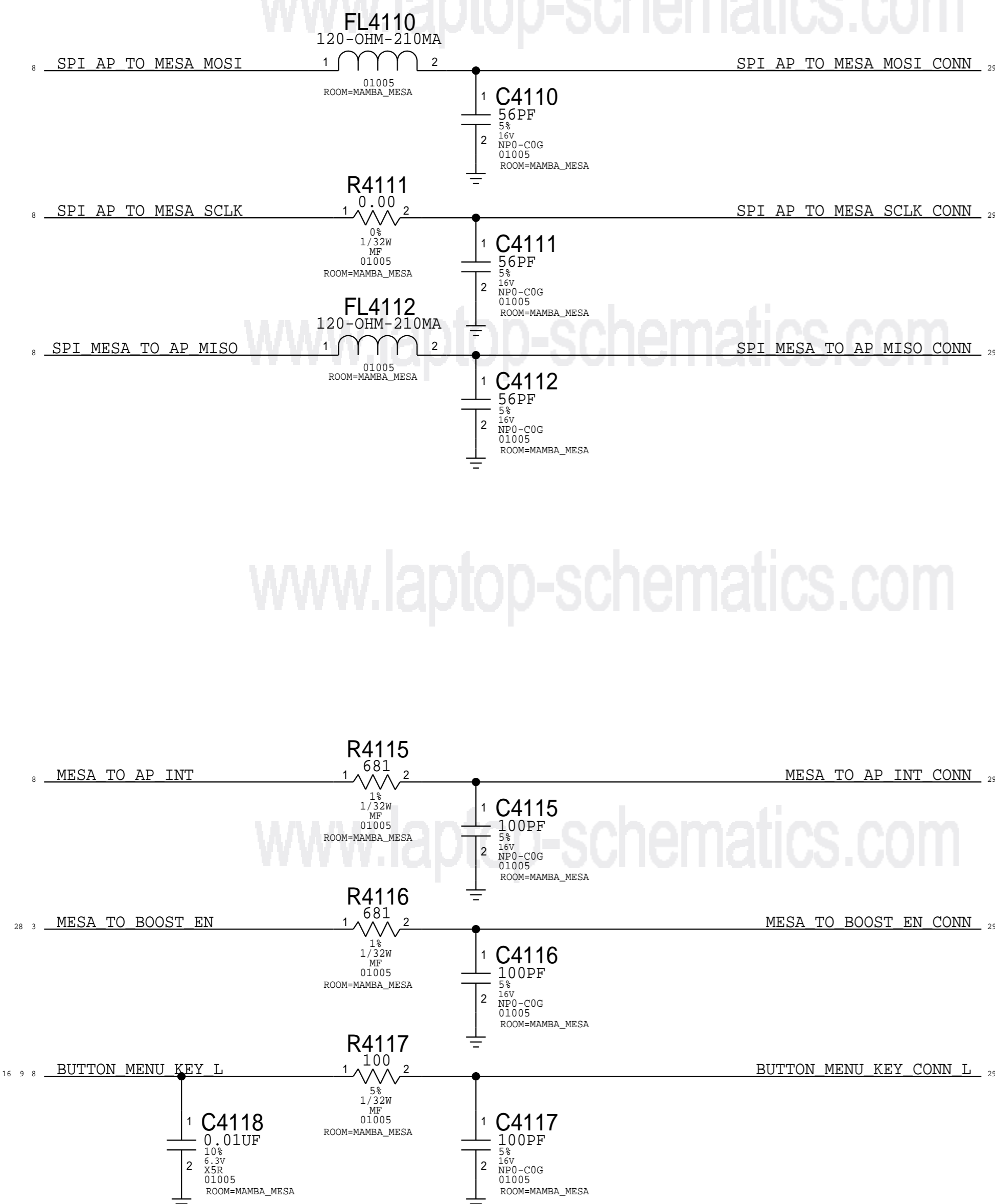
MAMBA POWER



MAMBA DIGITAL I/O

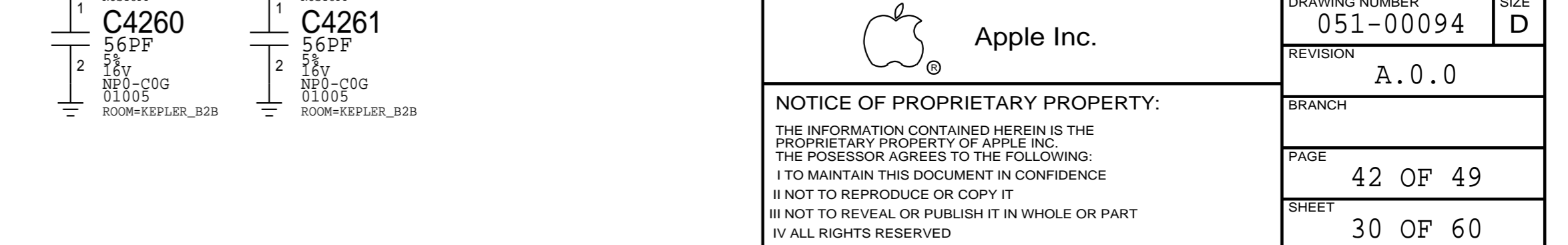
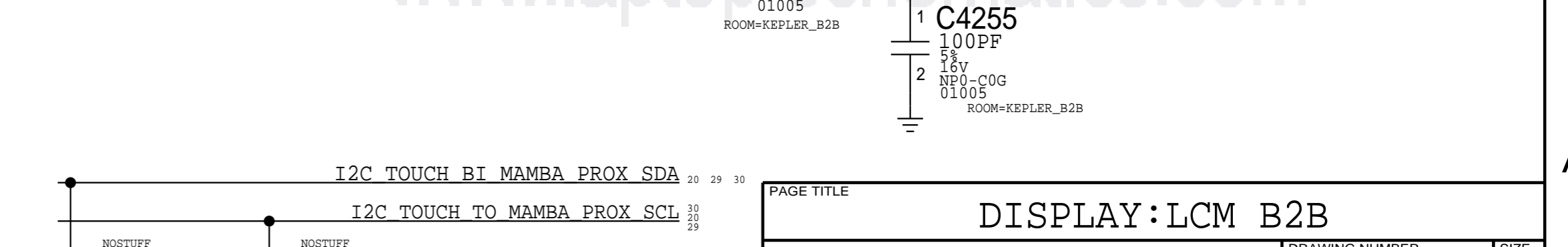
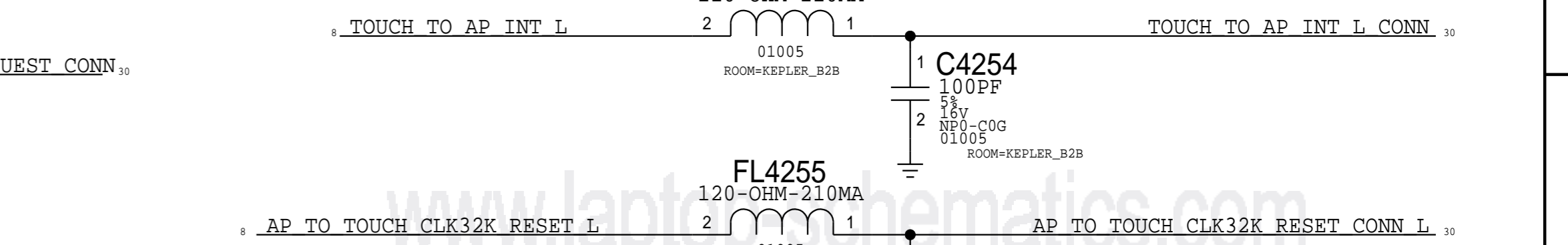
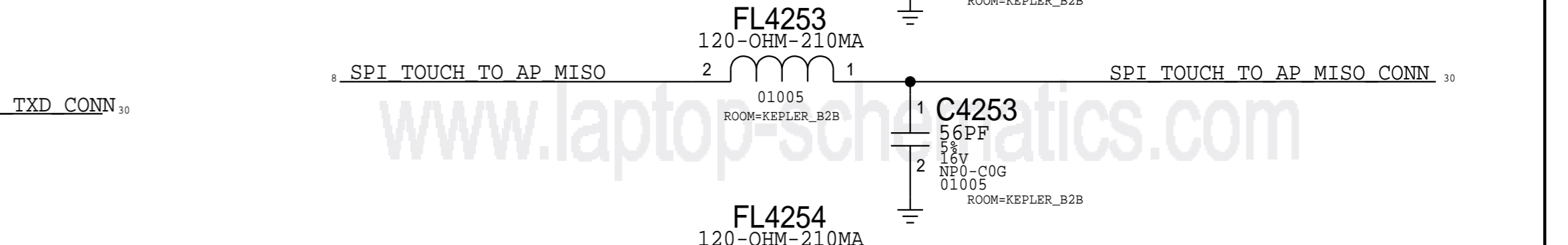
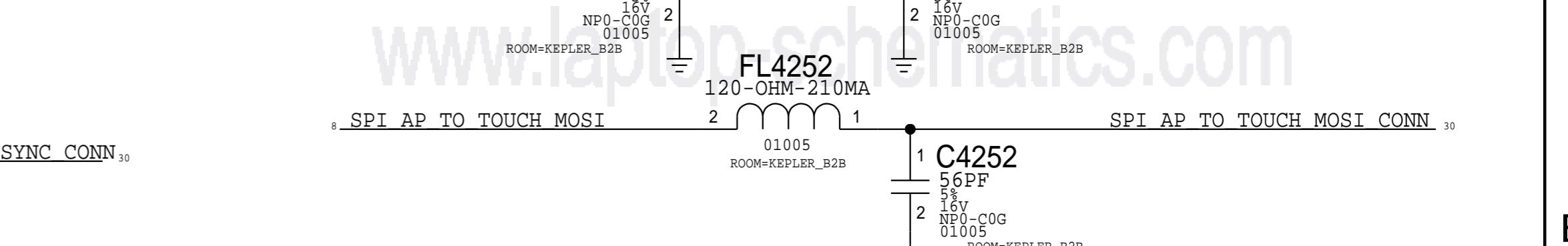
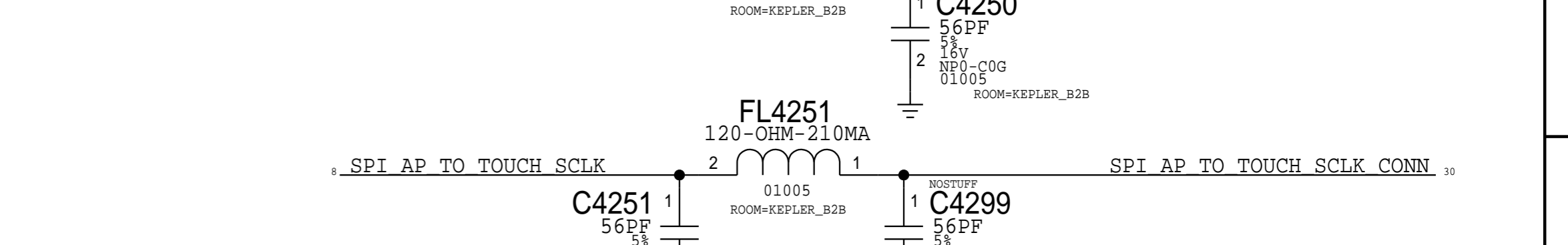
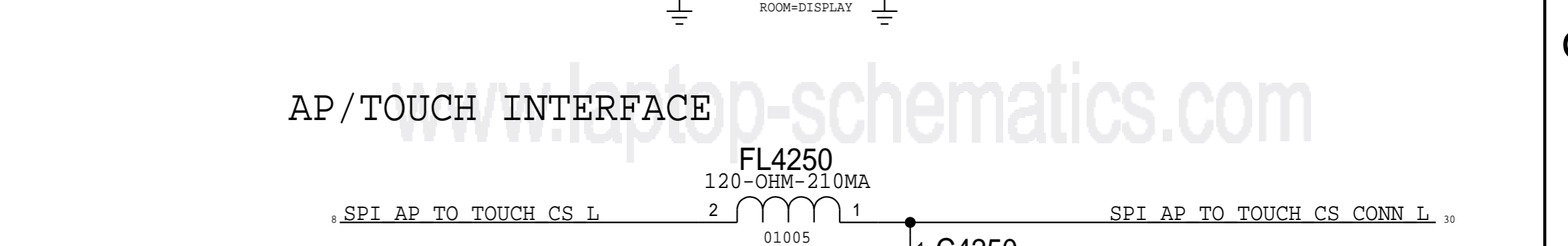
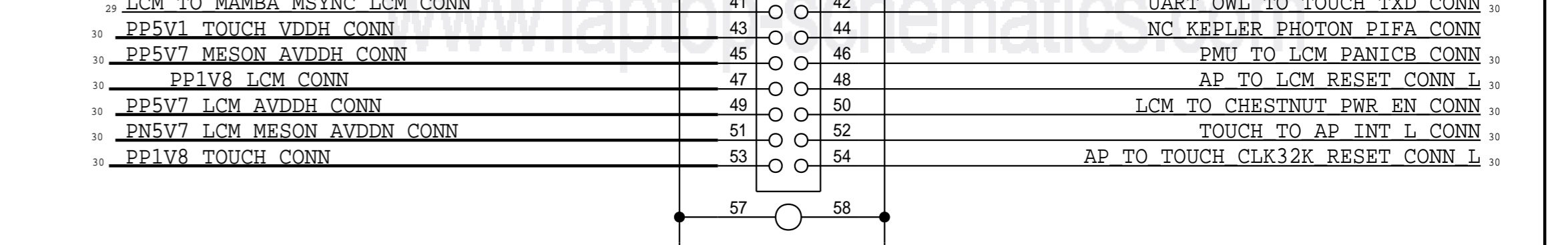
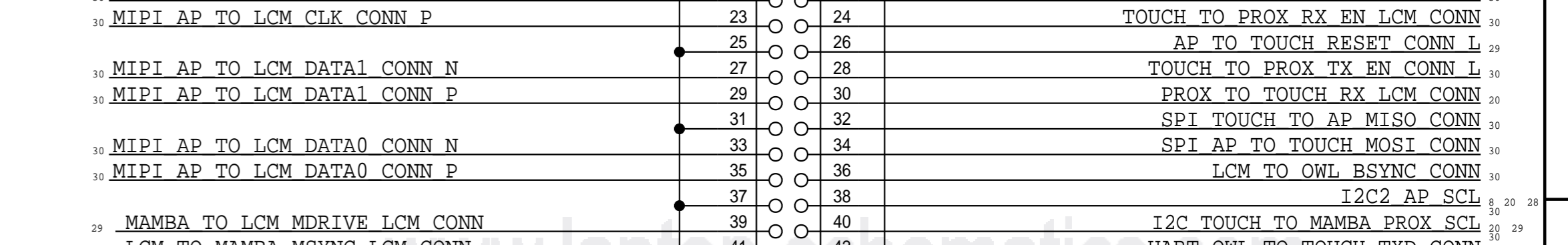
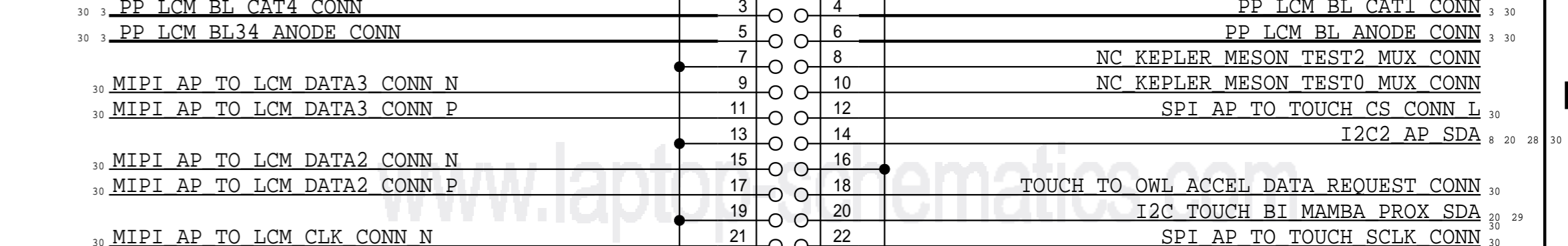
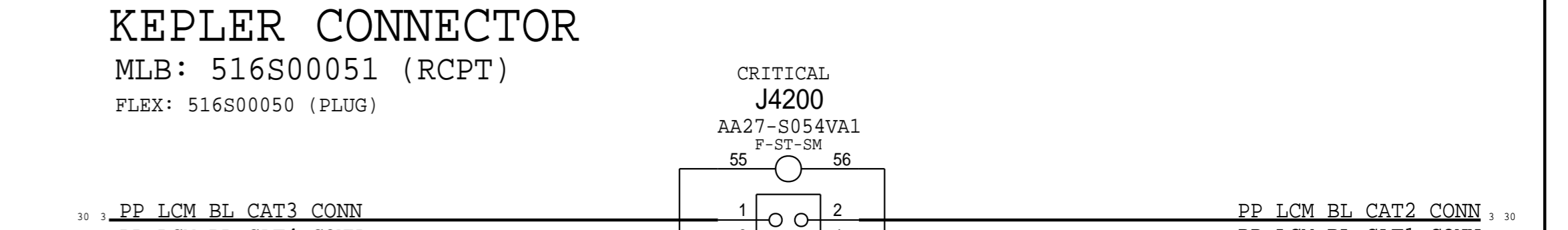
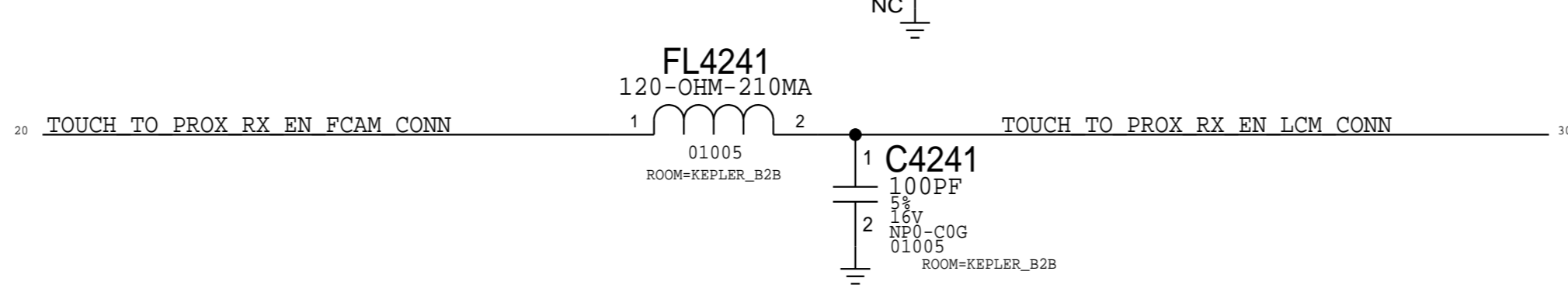
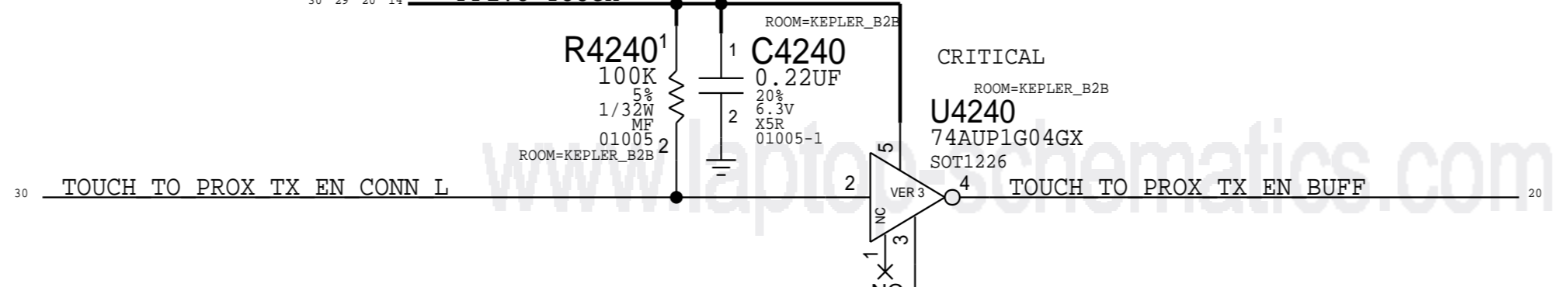
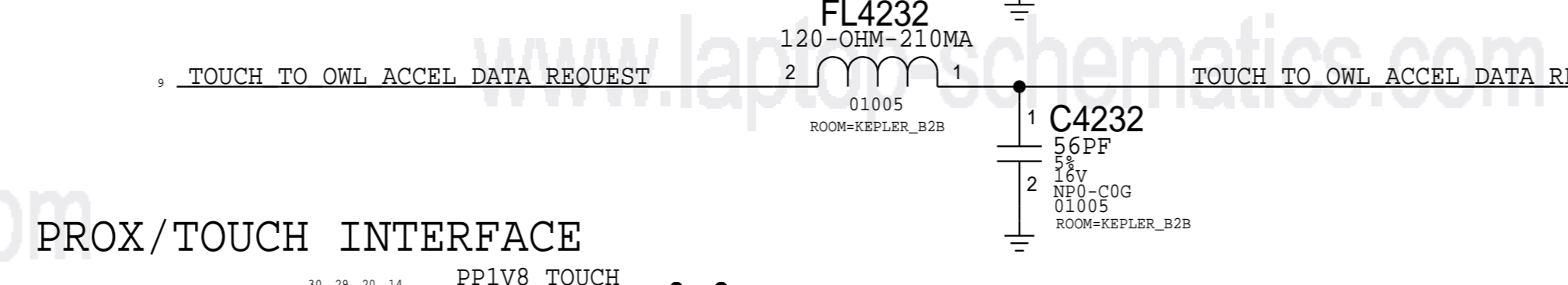
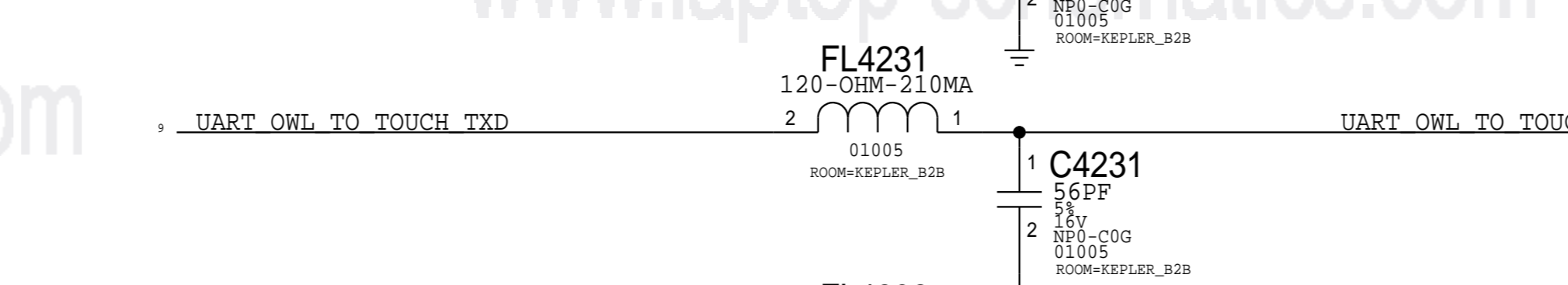
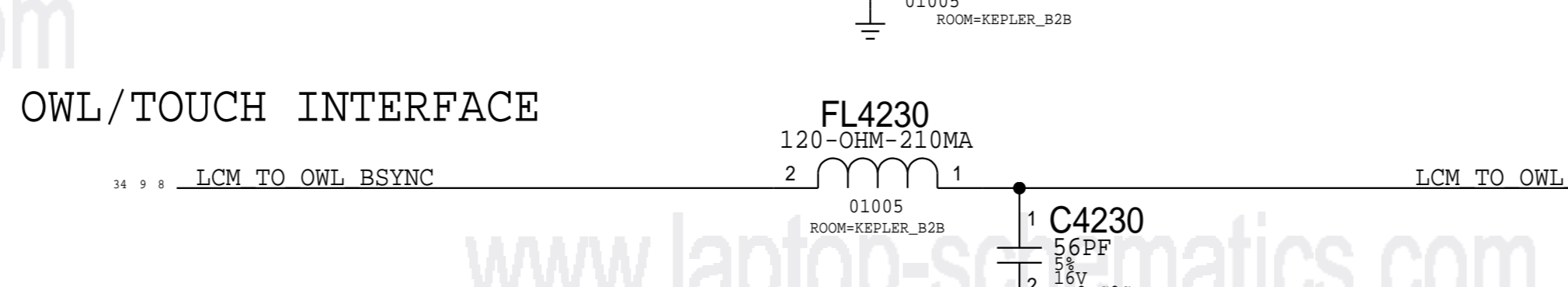
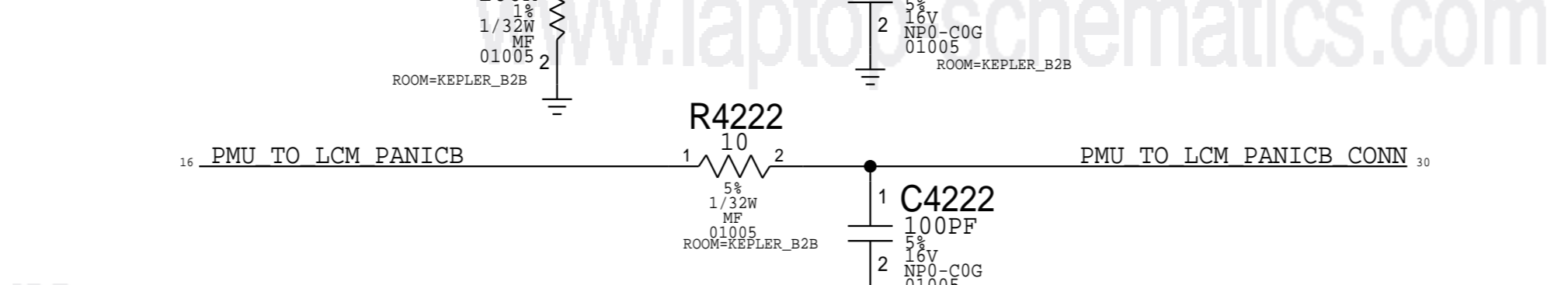
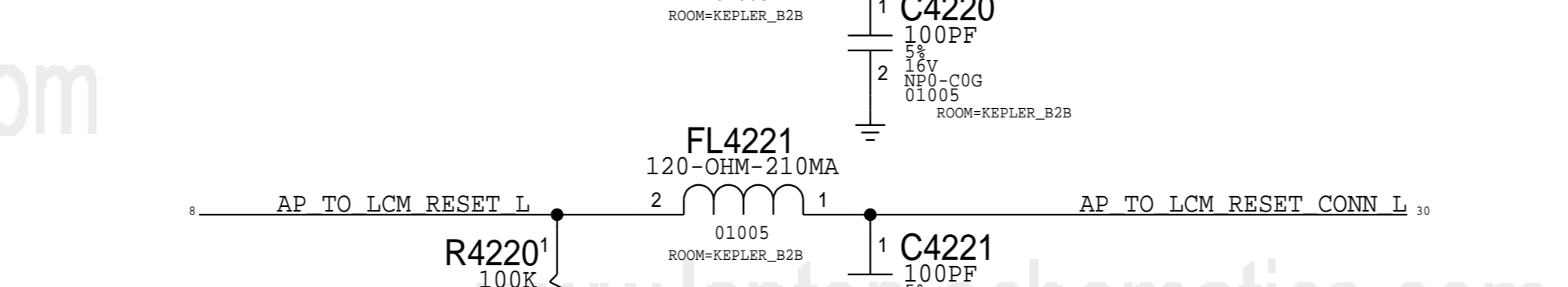
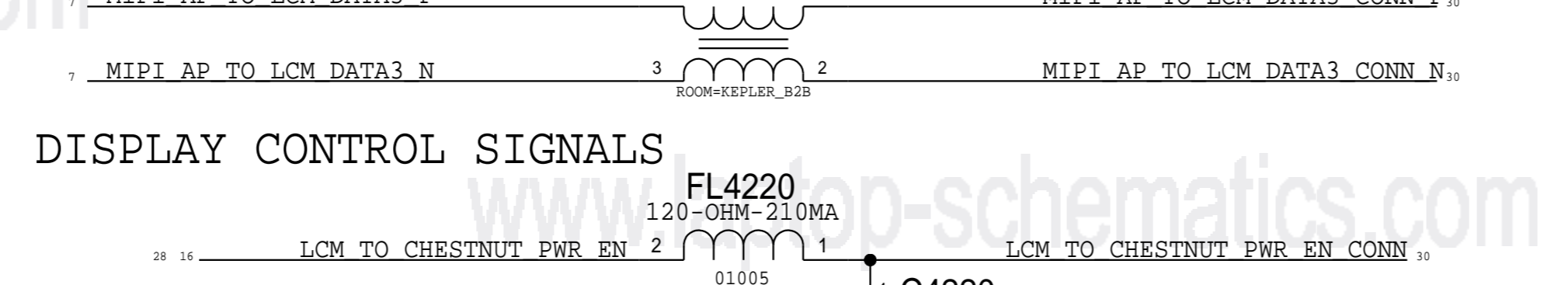
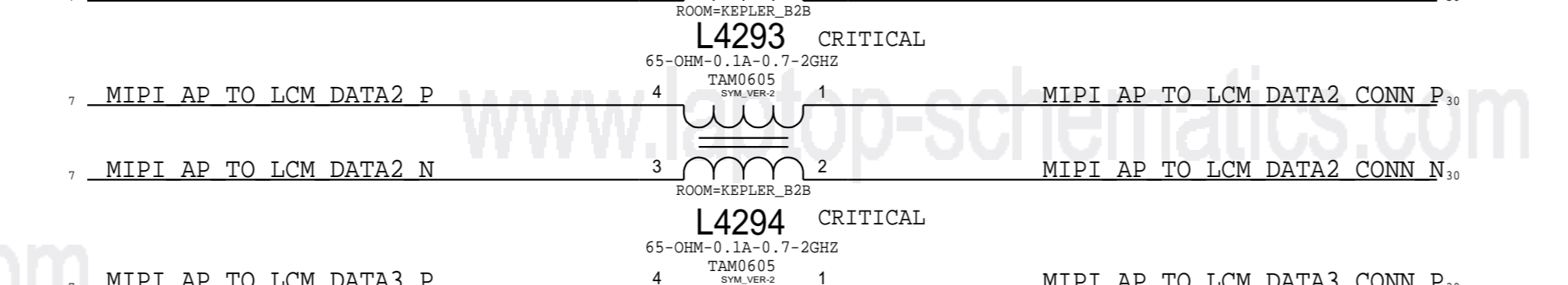
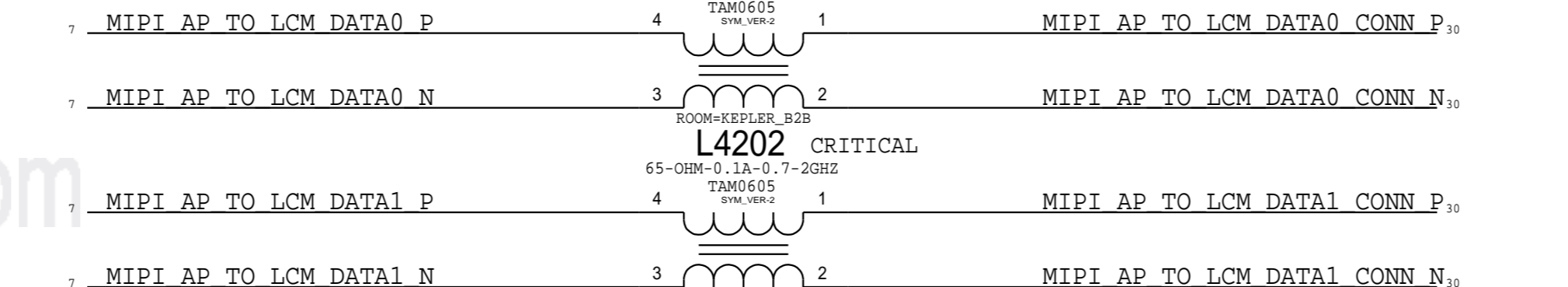
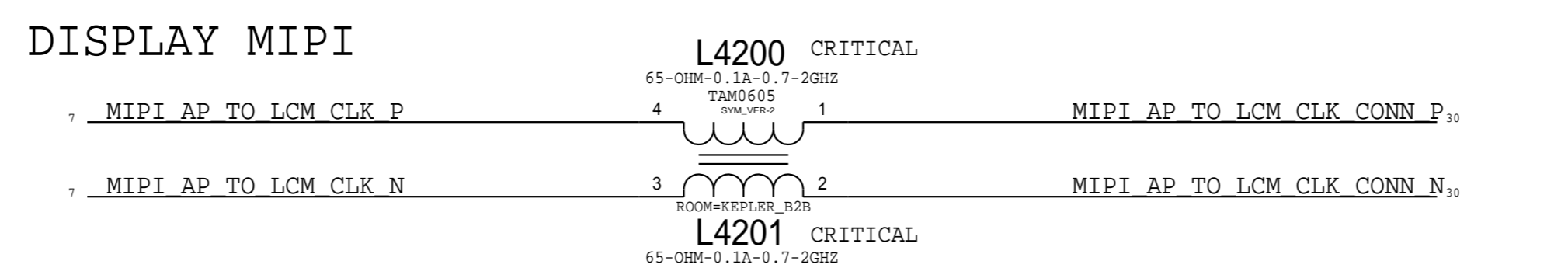
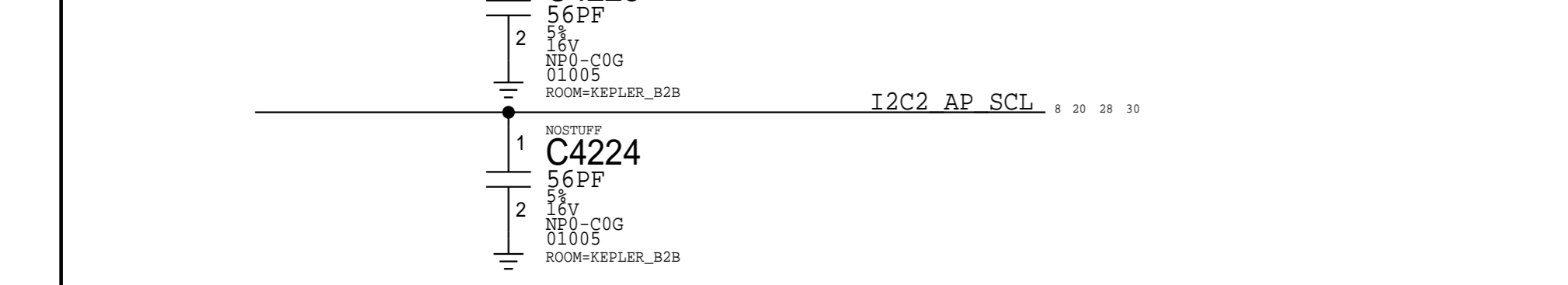
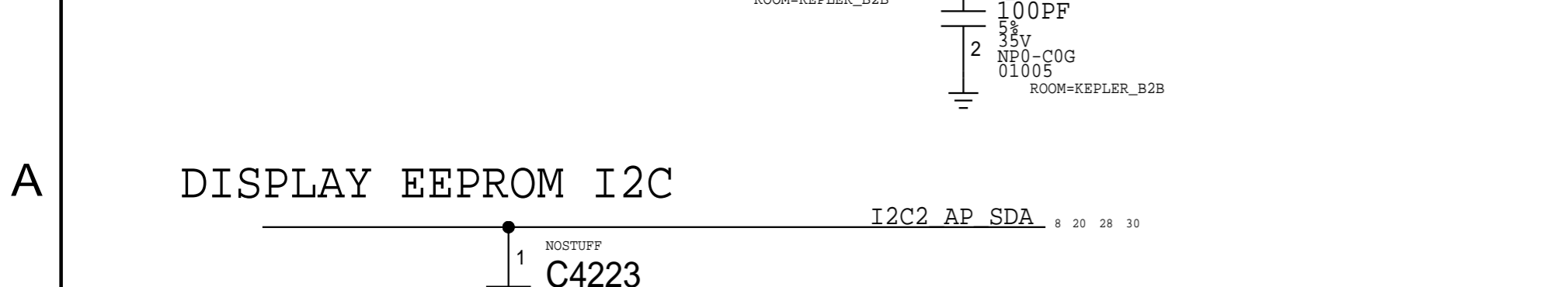
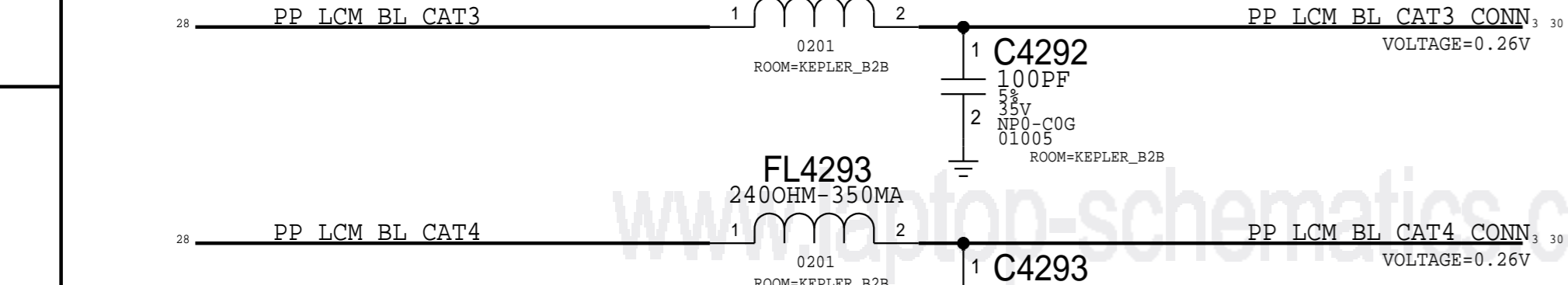
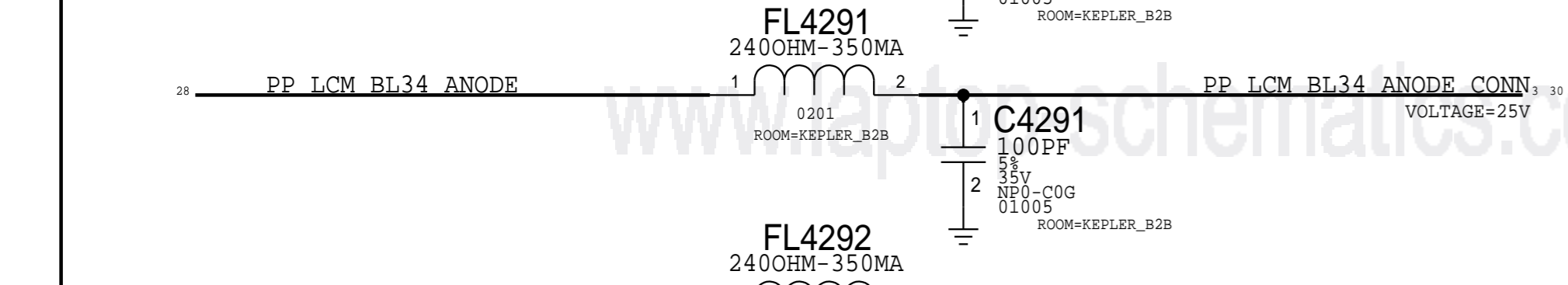
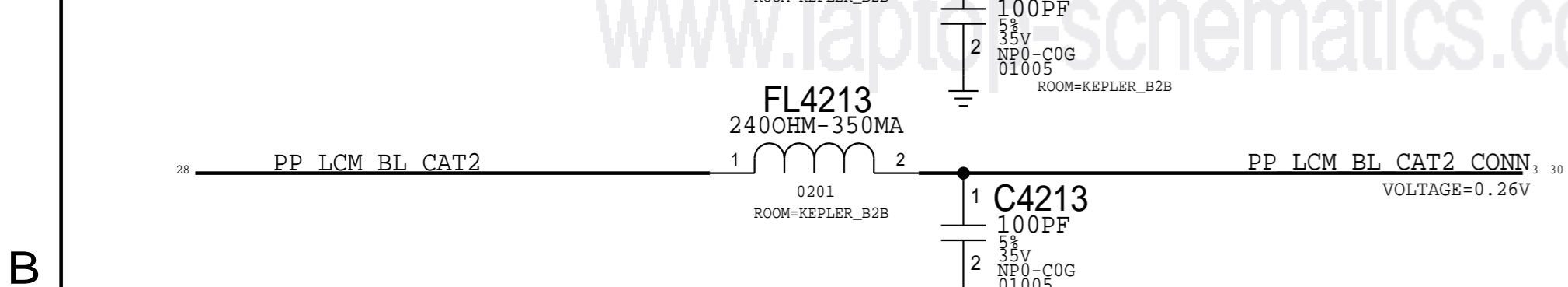
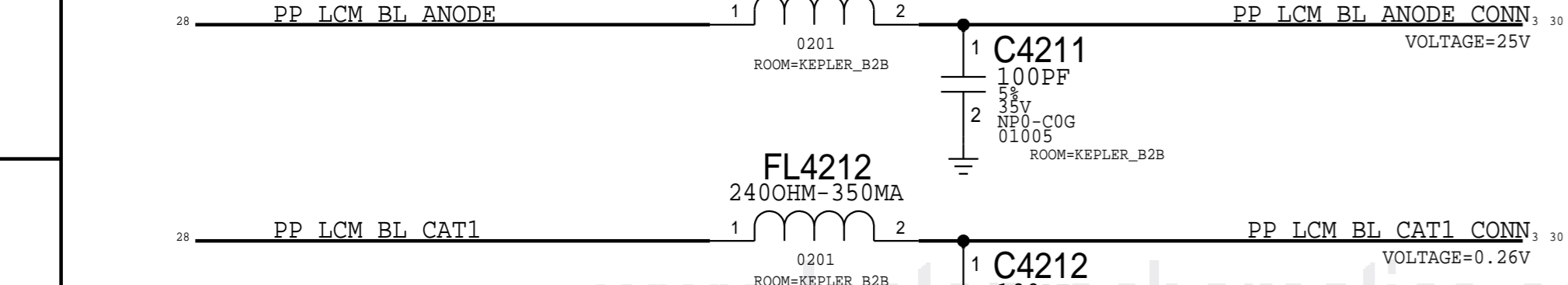
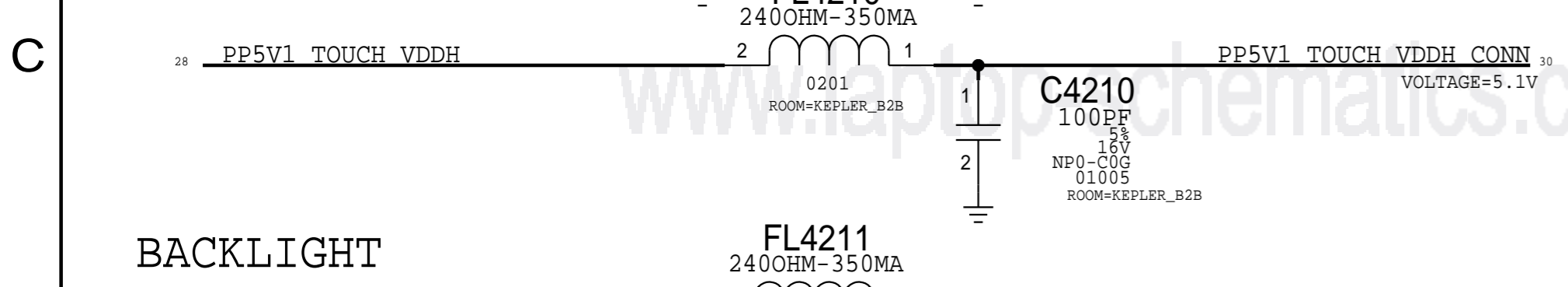
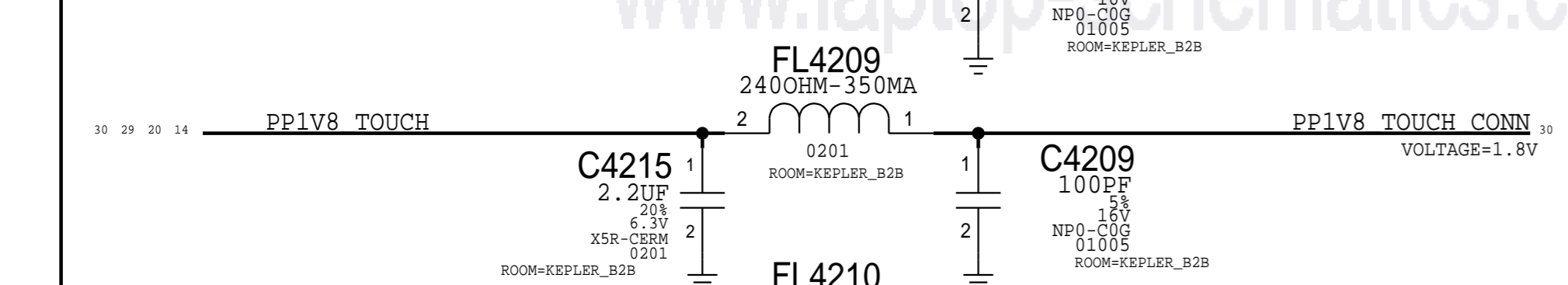
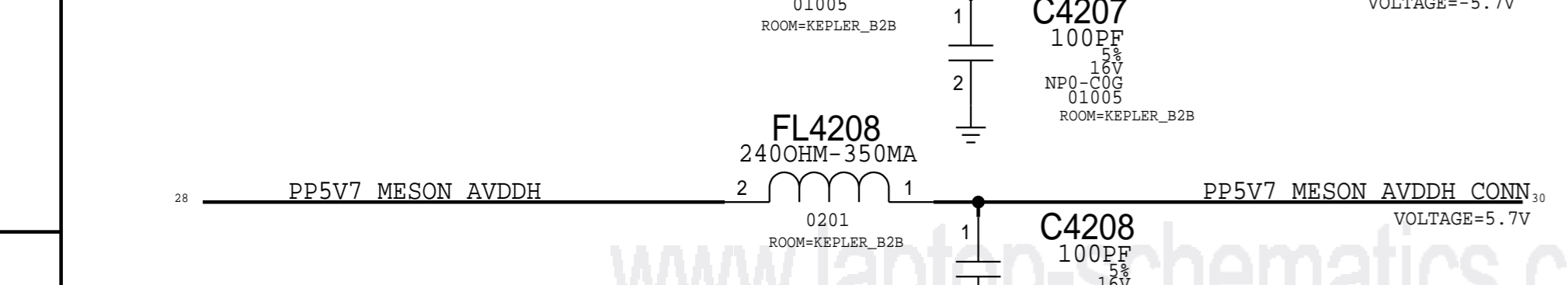
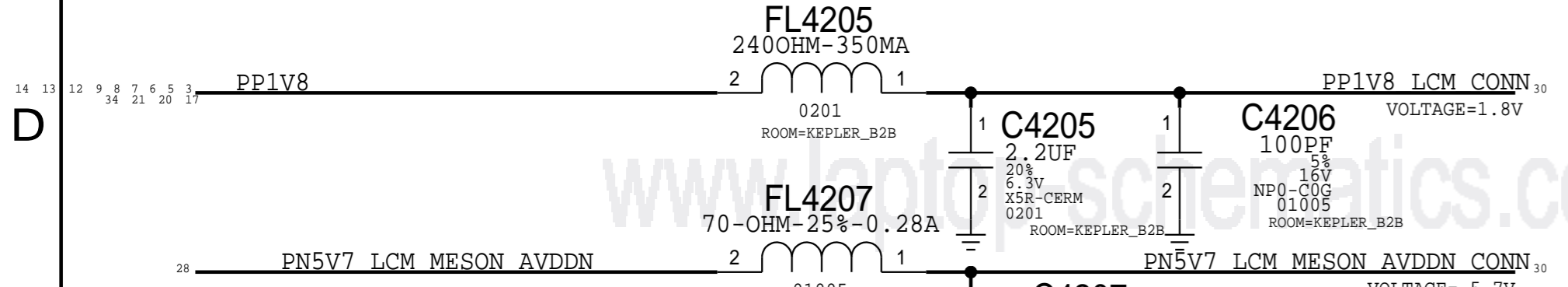
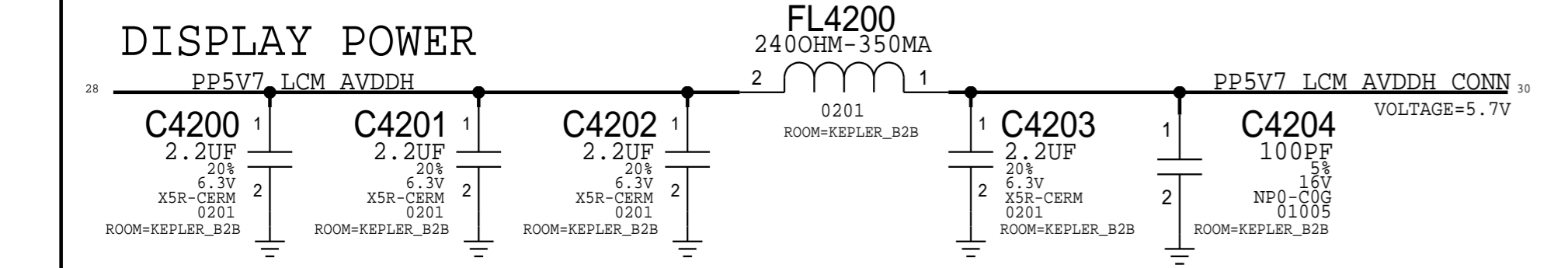


MESA DIGITAL I/O



NOTE:MAMBA I2C PULL-UPS TO PPIV8 TOUCH INSIDE KEPLER
 ADDING R4130, R4131 AS OPTION FOR TWEAKING VALUE

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		BRANCH	
PAGE	41 OF 49		
SHEET	29 OF 60		



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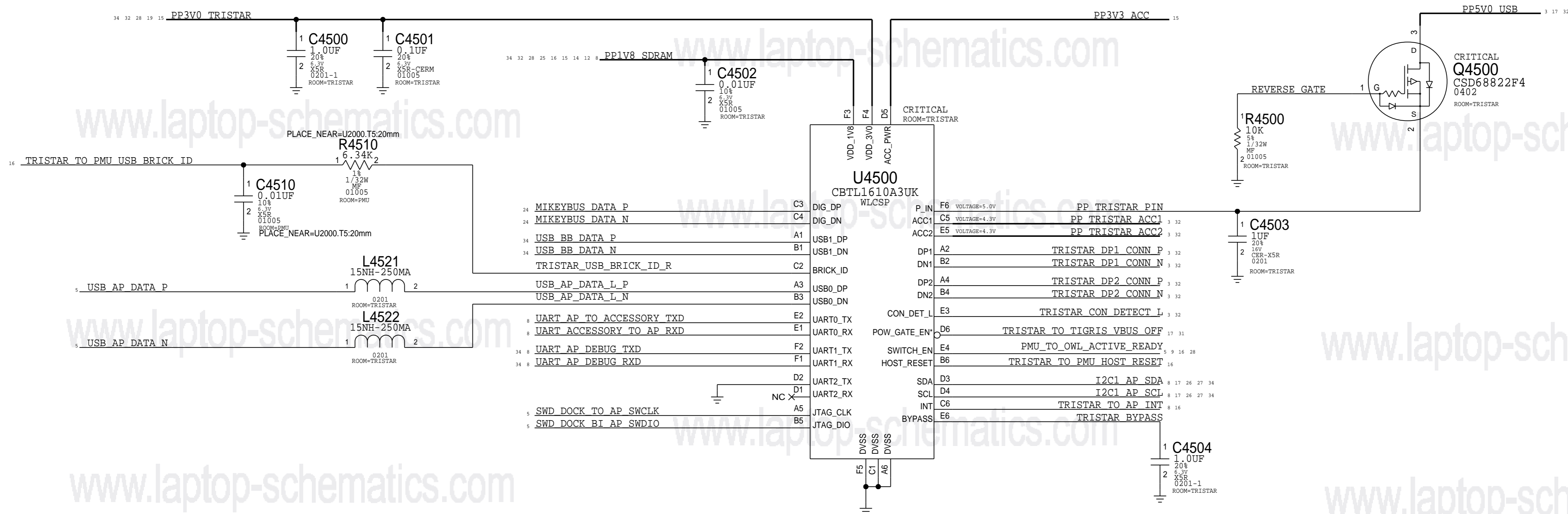
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TRISTAR 2

APN: 343S0695

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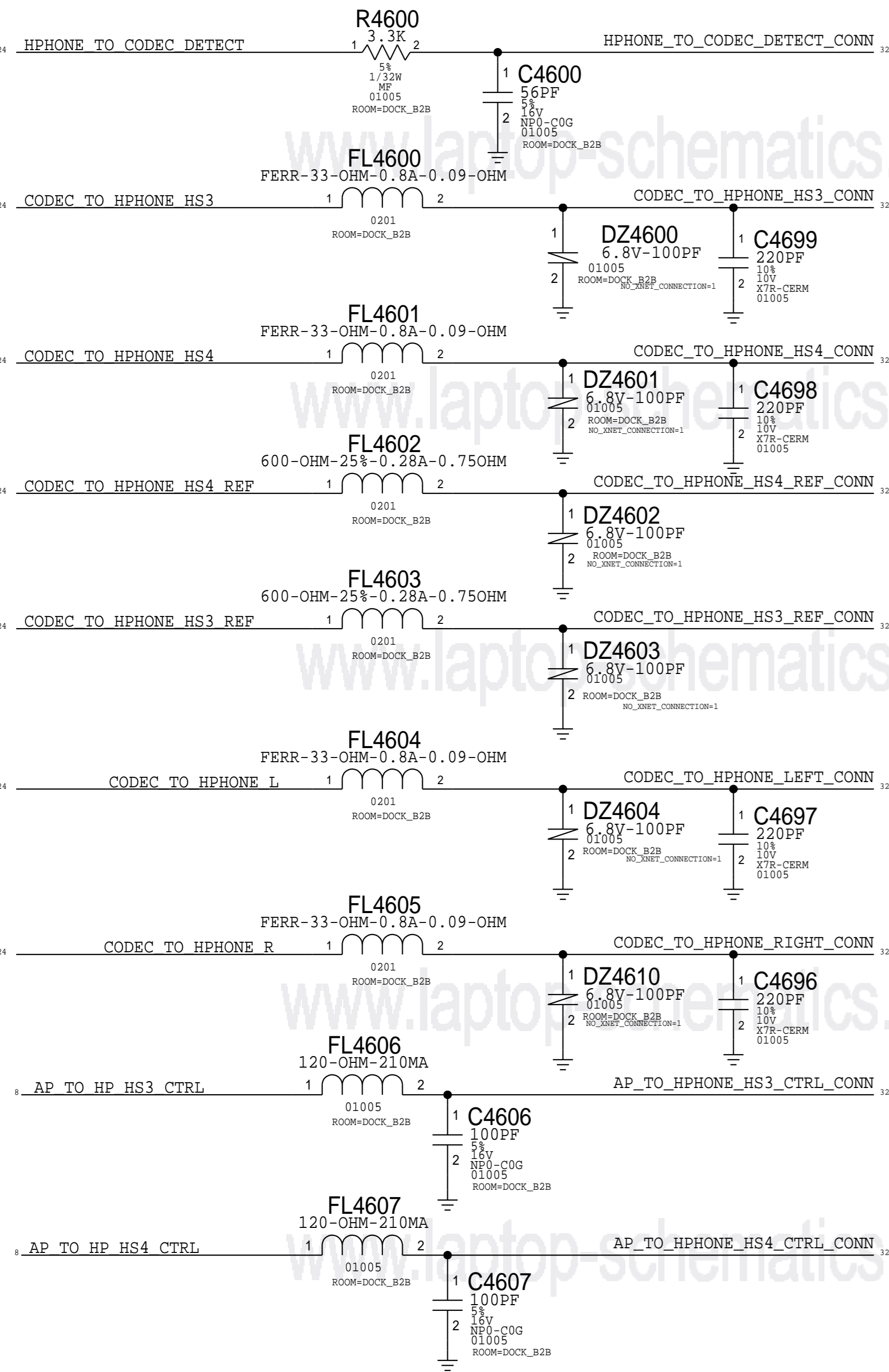
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31 17 TRISTAR TO TIGRIS VBUS OFF 1 PP4500

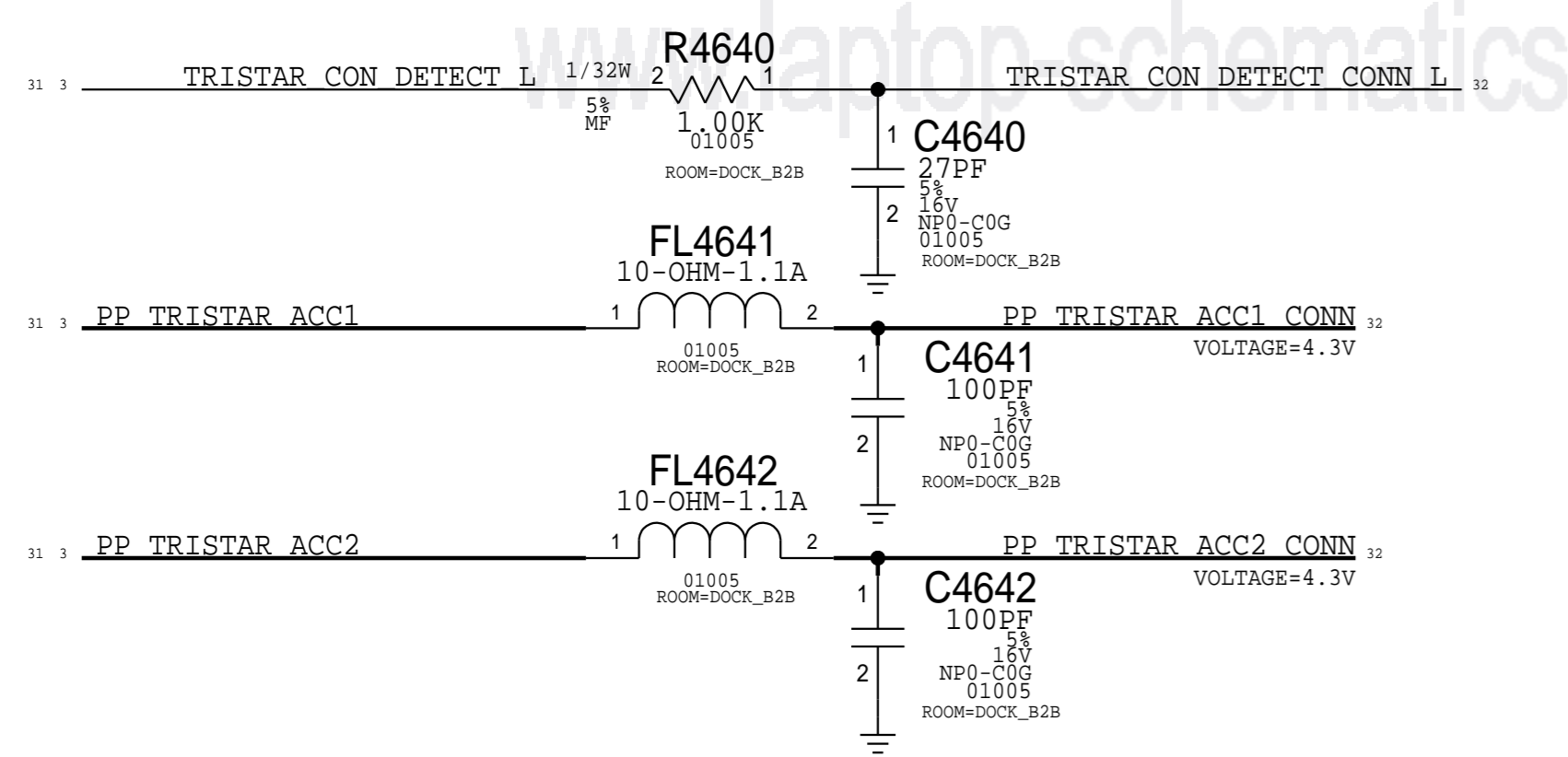
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		31 OF 60	

DOCK FLEX CONNECTOR

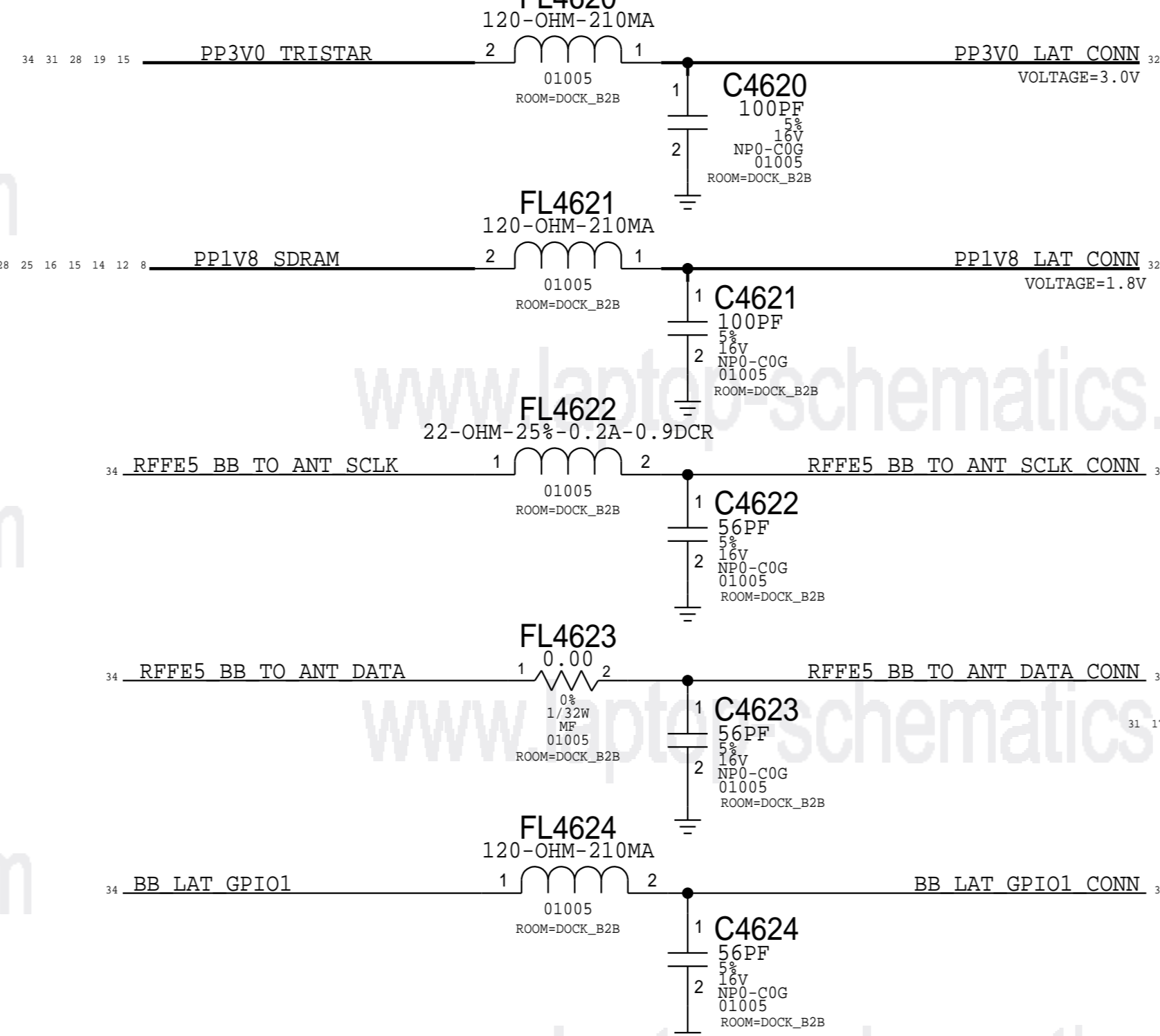
AUDIO JACK



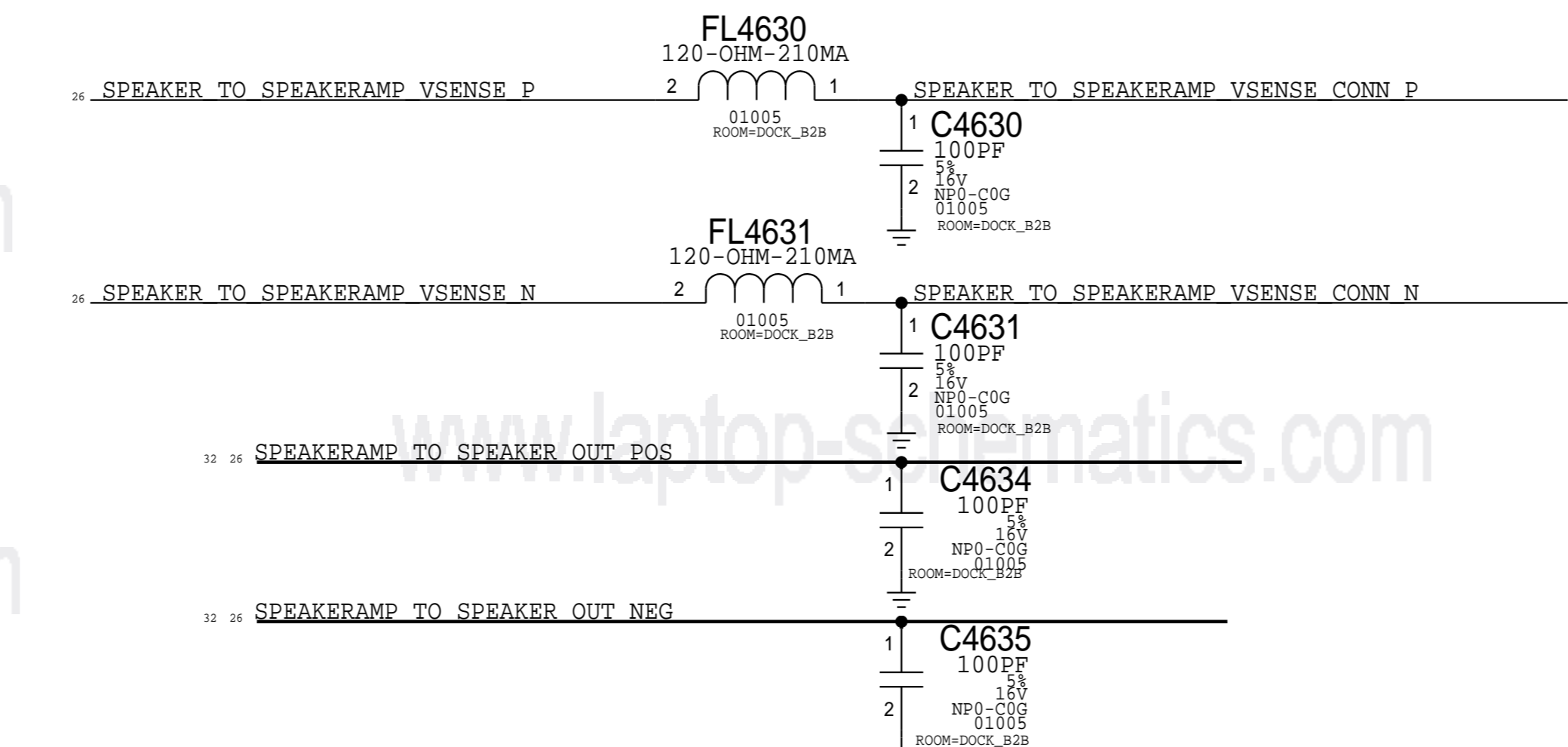
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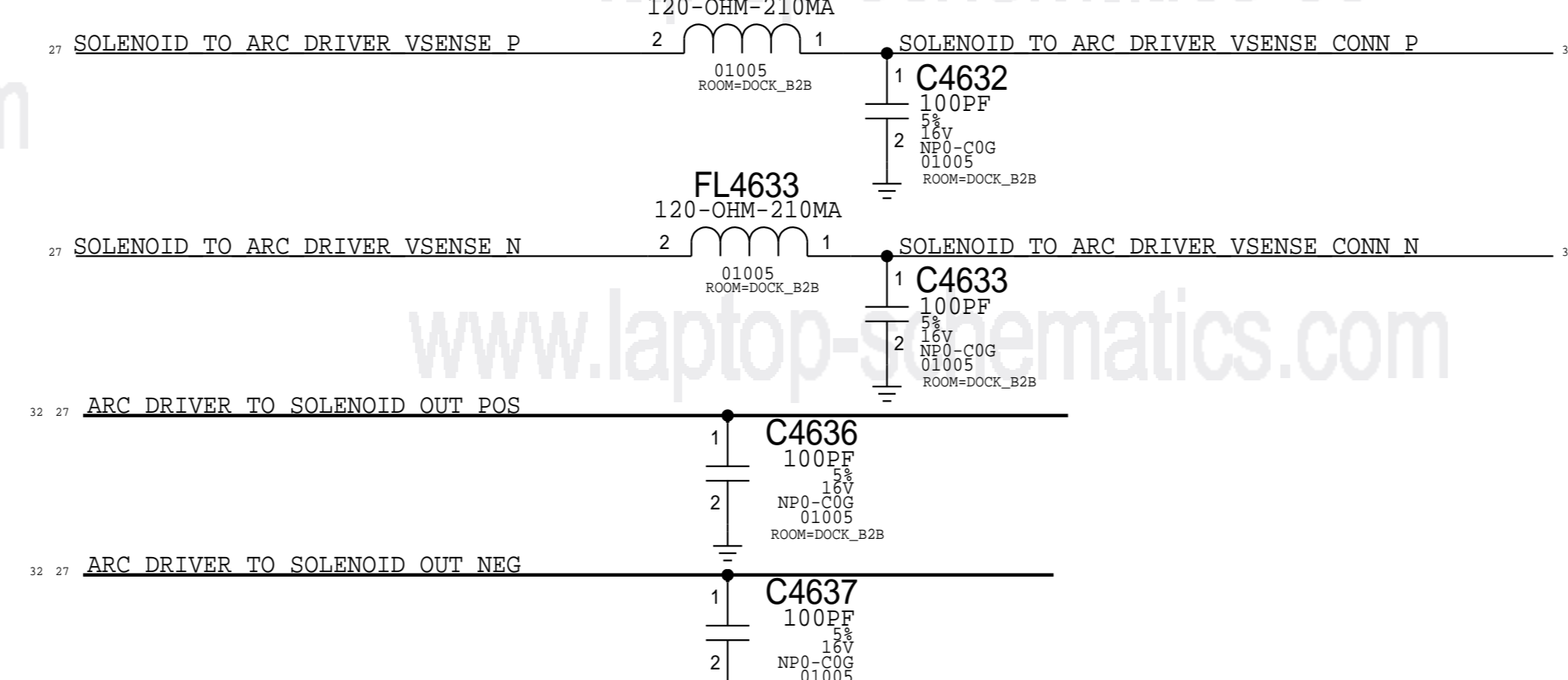
ANTENNA



SPEAKER



ARC



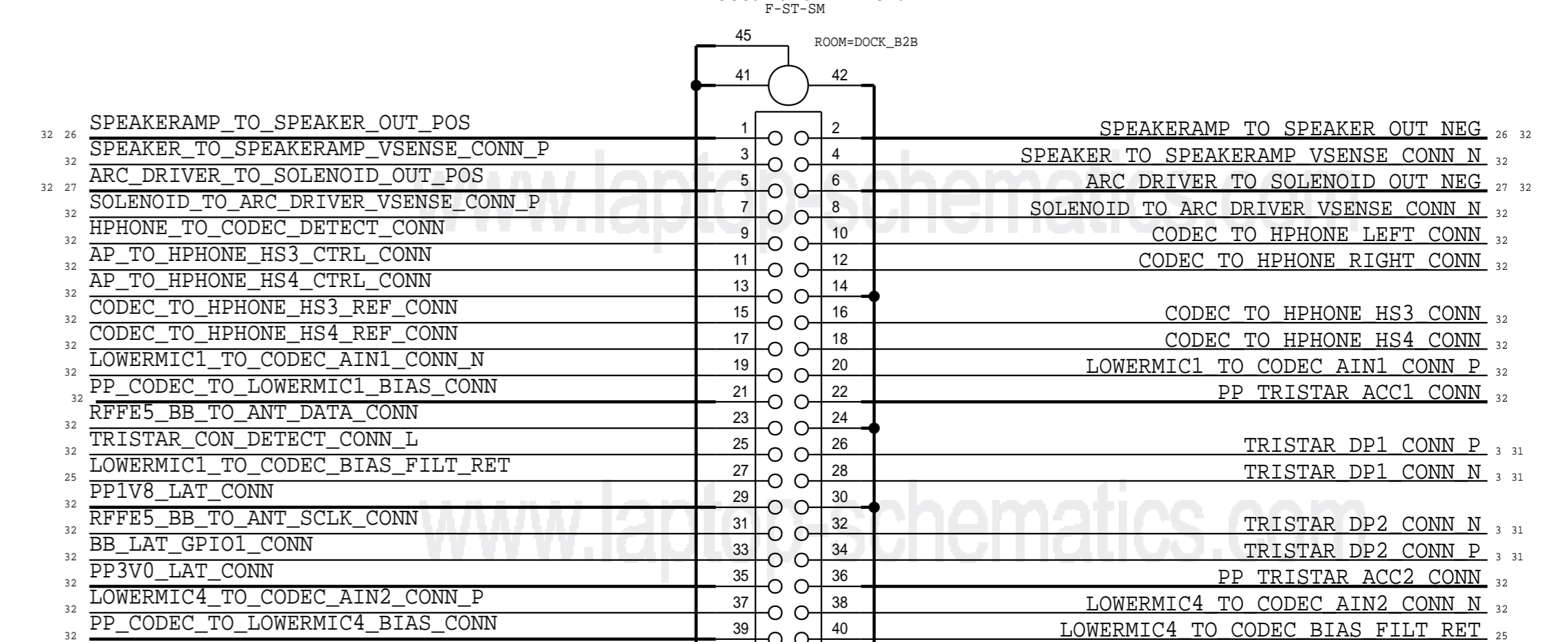
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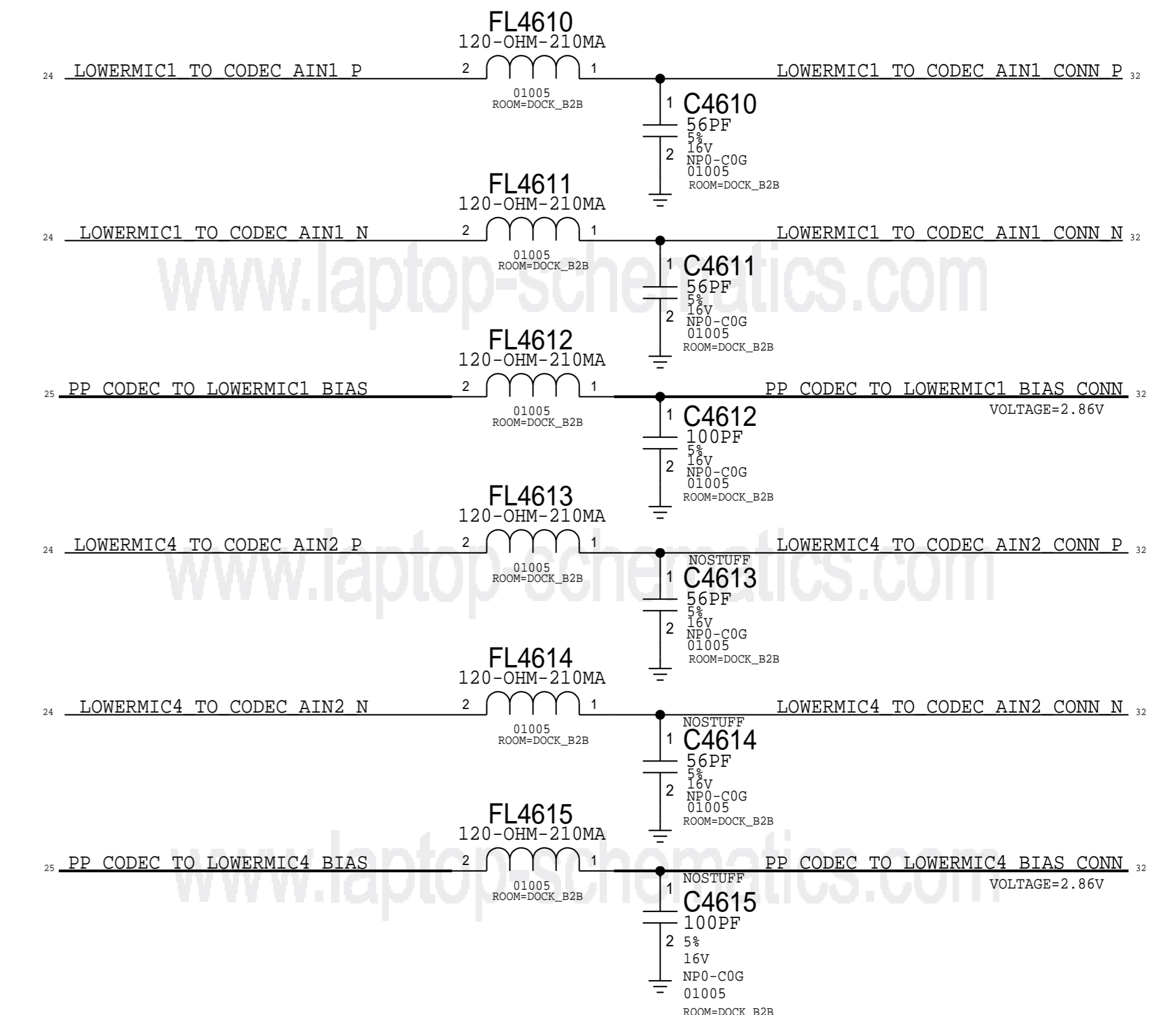
FLEX: 516S00034 (PLUG)

CRITICAL

J4600



LOWER MIC1/4

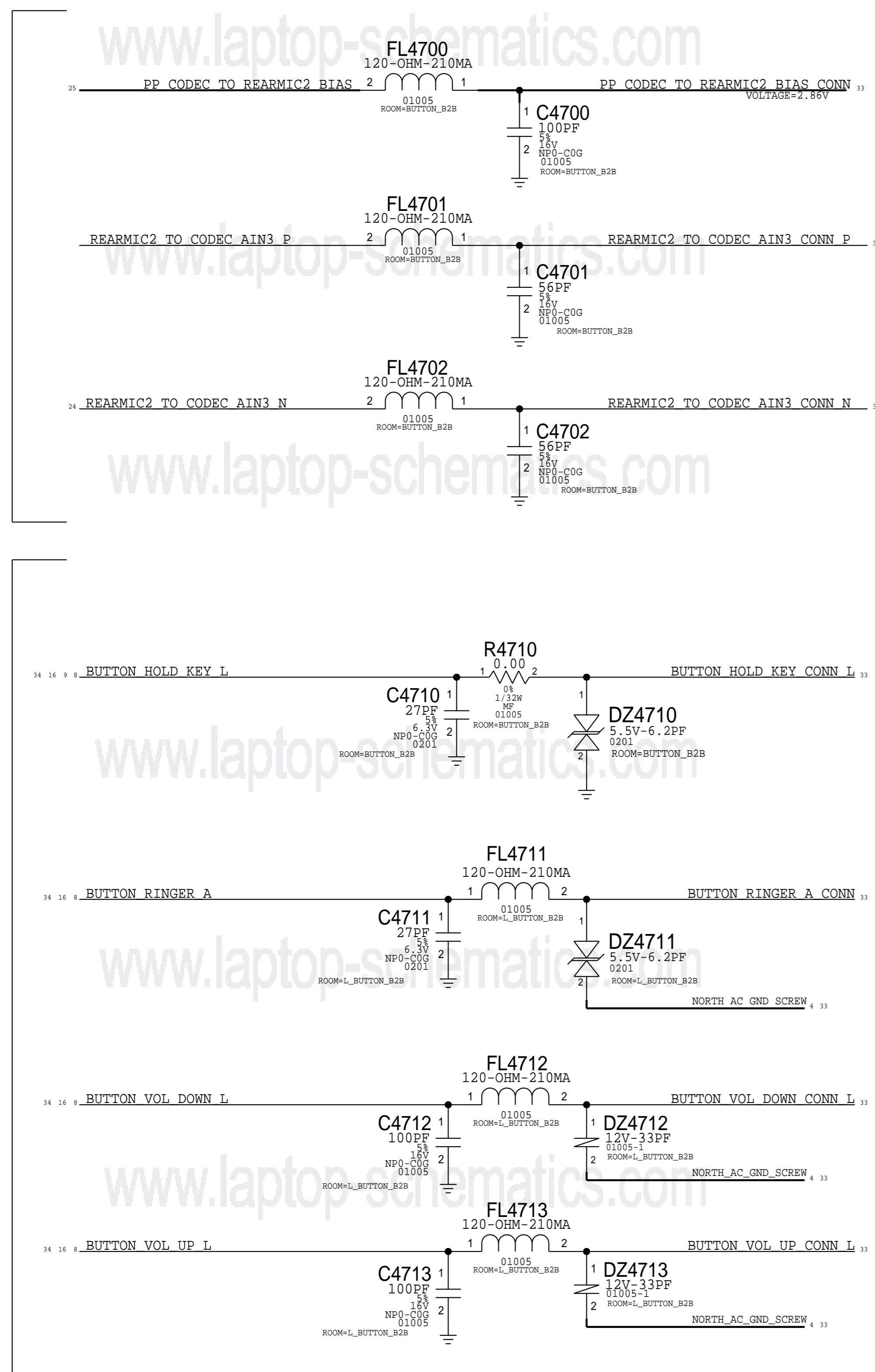


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	PAGE	46 OF 49	
	SHEET	32 OF 60	

BUTTON FLEX

MIC2
ANC REF MIC

BUTTONS:
HOLD
RINGER
VOL UP/DOWN



RIGHT BUTTON FLEX CONNECTOR

MLB: 516S00047 (RCPT)

FLEX: 516S00046 (PLUG)

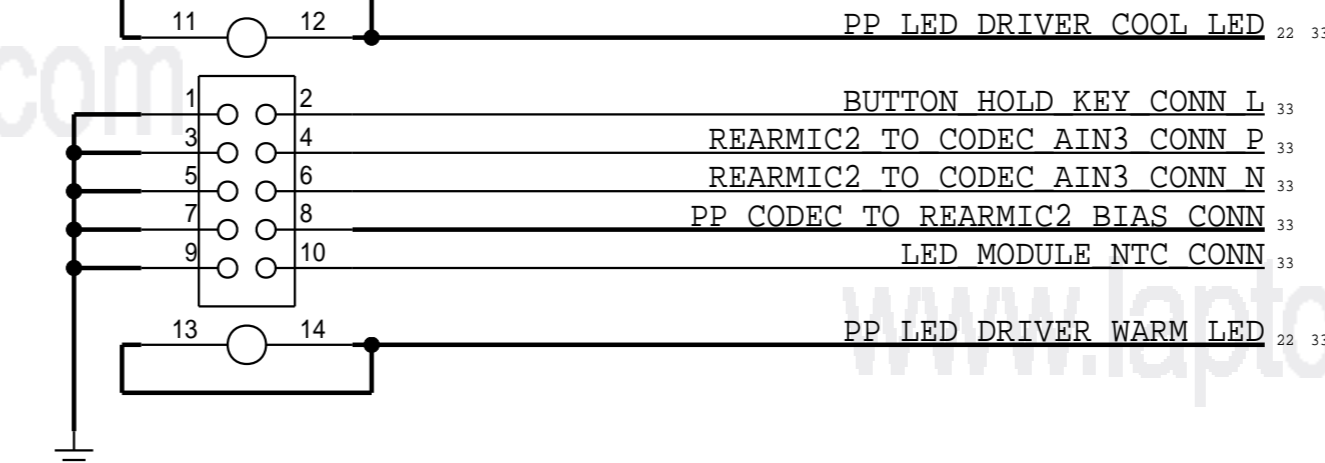
CRITICAL

ROOM=BUTTON_B2B

J4700

BM28P0.6-10DS-0.35V

F-ST-SM



LEFT BUTTON FLEX CONNECTOR

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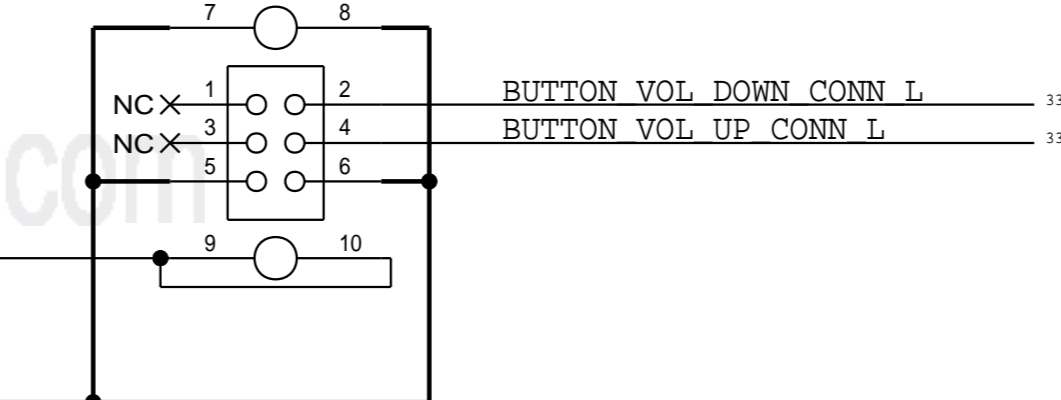
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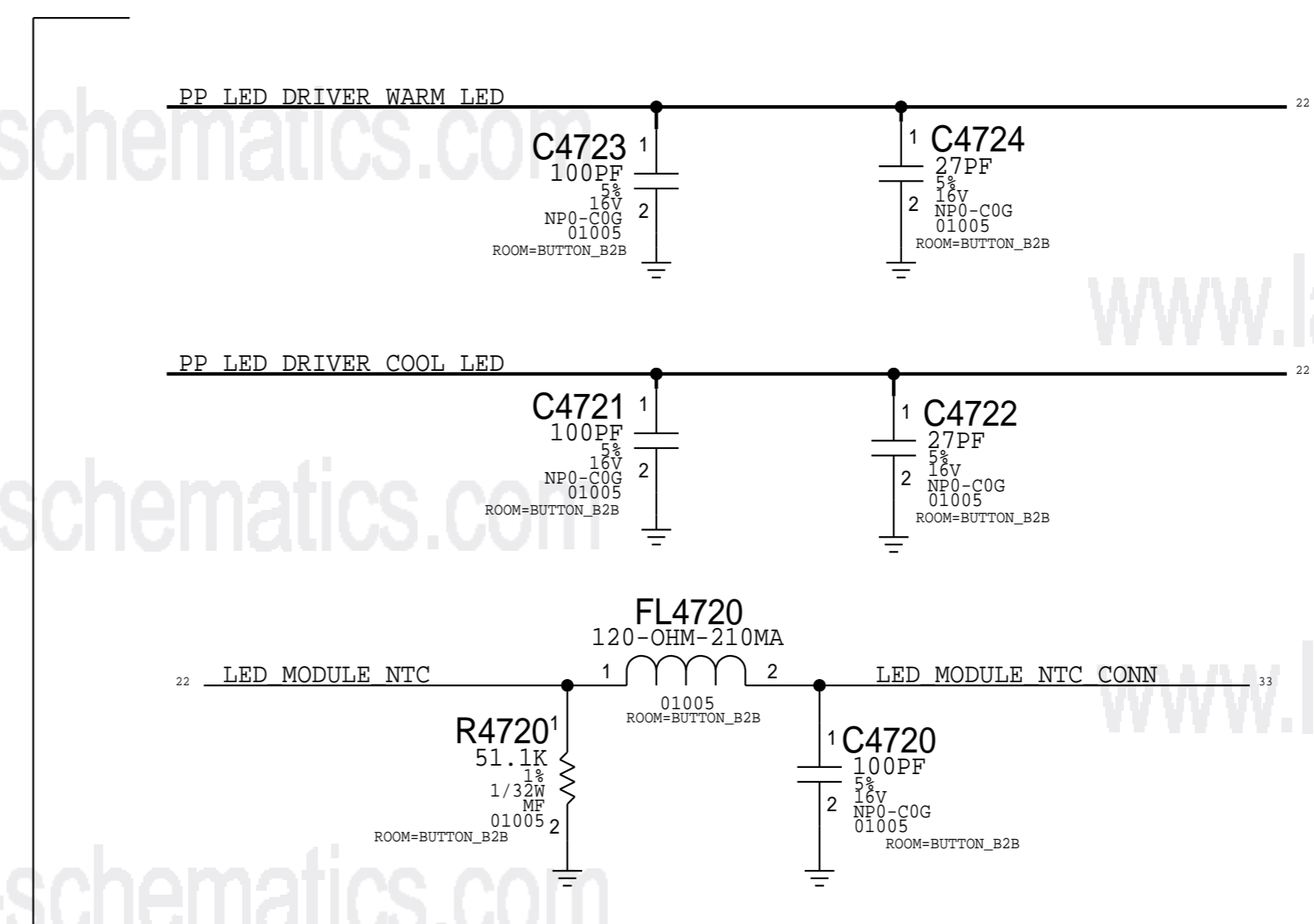
J4701

505066-0610

F-ST-SM



STROBE:
WARM LED
COOL LED
MODULE NTC




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I/O:BUTTON FLEX B2B			
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REVISION		A.0.0	
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PAGE		47 OF 49	
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BASEBAND, WLAN, BT & STOCKHOLM

SUBDESIGN_SUFFIX=RF

RADIO_MLB_MIMO	
SHARED POWER	
PP_VCC_MAIN	PP_VCC_MAIN
PP3V0_TRISTAR	PP3V0_TRISTAR
PP1V8_SDRAM	PP1V8_SDRAM
BASEBAND	
PCIE AP TO BB TXD P	PCIE0_AP_TO_BB_TX_P
PCIE AP TO BB TXD N	PCIE0_AP_TO_BB_TX_N
PCIE BB TO AP RXD P	PCIE0_BB_TO_AP_TX_P
PCIE BB TO AP RXD N	PCIE0_BB_TO_AP_TX_N
PCIE AP TO BB REFCLK P	PCIE0_AP_TO_BB_REFCLK_P
PCIE AP TO BB REFCLK N	PCIE0_AP_TO_BB_REFCLK_N
PCIE AP TO BB RESET L	PCIE0_AP_TO_BB_PERST_L
PCIE BB BI AP_CLKREQ L	PCIE0_AP_TO_BB_CLKREQ_L
BB TO PMU PCIE_HOST_WAKE L	PCIE0_BB_TO_PMU_HOST_WAKE_L
AP TO BB PCIE_DEV_WAKE	PCIE0_AP_TO_BB_DEV_WAKE
I2S AP TO BB LRCLK	I2S_AP_TO_BB_WS
I2S AP TO BB BCLK	I2S_AP_TO_BB_CLK
I2S AP TO BB DOUT	I2S_AP_TO_BB_TX
I2S BB TO AP DIN	I2S_BB_TO_AP_TX
AP TO BB RADIO_UP_L	AP_TO_BBPMU_RADIO_ON_L
PMU TO BB PMIC_RESET_L	PMU_TO_BBPMU_RESET_L
AP TO BB RESET_L	AP_TO_BB_RST_L
BB TO AP RESET_DETECT_L	BB_TO_AP_RESET_DET_L
BB TO LED_DRIVER_GSM_BURST_IND	BB_TO_AP_GSM_TXBURST_IND
AP TO BB MESA_ON_L	AP_TO_BB_MESA_ON_L
BB TO AP_GPS_TIME_MARK	BB_TO_AP_GPS_TIME_MARK
AP TO BB_COREDUMP	AP_TO_BB_COREDUMP_TRIG
BB_IPC_GPIO	AP_TO_BB_IPC_GPIO
LCM_TO_OWL_BSYNC	TOUCH_TO_BBPMU_FORCE_PWM
UART_OWL_TO_BB_TXD	UART0_OWL_TO_BB_TX
UART_BB_TO_OWL_RXD	UART0_BB_TO_OWL_TX
USB_BB_DATA_P	USB_BB_P
USB_BB_DATA_N	USB_BB_N
PMU_TO_BB_USB_VBUS_DETECT	USB_BB_VBUS_DETECT
SWD_AP_PERIPHERAL_SWCLK	SWD_CLK_BB_JTAG_TCK
SWD_AP_BI_BB_SWDIO	SWD_IO_BB_JTAG_TMS
RFFE5_BB_TO_ANT_SCLK	75_RFFE5_SCLK_BB
RFFE5_BB_TO_ANT_DATA	75_RFFE5_SDATA_BB
BB_LAT_GPIO1	RFFE_BUFFER_LAT_GPIO1
BB_TO_PMU_AMUX_LDO11_SIM1	BB_TO_PMU_AMUX_LDO11_SIM1
BB_TO_PMU_AMUX_SMP51	BB_TO_PMU_AMUX_SMP51
BB_TO_PMU_AMUX_SMP53	BB_TO_PMU_AMUX_SMP53
BB_TO_PMU_AMUX_SMP54	BB_TO_PMU_AMUX_SMP54
ANT	
AP TO STOCKHOLM_ANT	STOCKHOLM_ANT
AP DEBUG	
PP1V8	PP1V8
DFU_STATUS	DFU_STATUS
FORCE_DFU	FORCE_DFU
PMU_TO_SYSTEM_COLD_RESET_L	PMU_TO_SYSTEM_COLD_RESET_L
I2C0_AP_SCL	I2C0_AP_SCL
I2C0_AP_SDA	I2C0_AP_SDA
I2C1_AP_SCL	I2C1_AP_SCL
I2C1_AP_SDA	I2C1_AP_SDA
BUTTON_HOLD_KEY_L	BUTTON_HOLD_KEY_L
BUTTON_MENU_KEY_L	BUTTON_MENU_KEY_L
BUTTON_RINGER_A	BUTTON_RINGER_A
BUTTON_VOL_DOWN_L	BUTTON_VOL_DOWN_L
BUTTON_VOL_UP_L	BUTTON_VOL_UP_L
NC_PMU_GPIO20	PMU_GPIO20
NC_PMU_GPIO21	PMU_GPIO21
NC_OWL_FUNC2	OWL_FUNC2
NC_AP_RESERVED2	AP_RESERVED2
UART_AP_DEBUG_RXD	AP_RESERVED1
UART_AP_DEBUG_TXD	AP_RESERVED0
NC_PMU_AMUX_AY	PMU_AMUX_AY
NC_PMU_AMUX_BY	PMU_AMUX_BY

WLAN	
PCIE AP TO WLAN_TX_P	PCIE_AP_TO_WLAN_TXD_P
PCIE AP TO WLAN_TX_N	PCIE_AP_TO_WLAN_TXD_N
PCIE WLAN TO AP_RXD_P	PCIE_WLAN_TO_AP_RXD_P
PCIE WLAN TO AP_RXD_N	PCIE_WLAN_TO_AP_RXD_N
PCIE AP TO WLAN_REFCLK_P	PCIE_AP_TO_WLAN_REFCLK_P
PCIE AP TO WLAN_REFCLK_N	PCIE_AP_TO_WLAN_REFCLK_N
PCIE AP TO WLAN_RESET_L	PCIE_AP_TO_WLAN_RESET_L
PCIE AP TO WLAN_DEV_WAKE	PCIE_AP_TO_WLAN_DEV_WAKE
PCIE WLAN TO AP_CLKREQ_L	PCIE_WLAN_TO_AP_CLKREQ_L
UART4_AP_TO_WLAN_TX	UART_AP_TO_WLAN_TXD
UART4_AP_TO_WLAN_RTS_L	UART_AP_TO_WLAN_RTS_L
UART4_WLAN_TO_AP_TX	UART_WLAN_TO_AP_RXD
UART4_WLAN_TO_AP_RTS_L	UART_WLAN_TO_AP_CTS_L
PMU_TO_WLAN_CLK32K	PMU_TO_WLAN_CLK32K
PMU_TO_WLAN_REG_ON	PMU_TO_WLAN_REG_ON
WLAN_TO_PMU_HOST_WAKE	WLAN_TO_PMU_HOST_WAKE
OWL_TO_WLAN_CONTEXT_A	OWL_TO_WLAN_CONTEXT_A
OWL_TO_WLAN_CONTEXT_B	OWL_TO_WLAN_CONTEXT_B
BLUETOOTH	
I2S AP TO BT_LRCLK	I2S_AP_TO_BT_LRCLK
I2S AP TO BT_BCLK	I2S_AP_TO_BT_BCLK
I2S AP TO BT_DOUT	I2S_AP_TO_BT_DOUT
I2S BT TO AP_DIN	I2S_BT_TO_AP_DIN
UART1_AP_TO_BT_TX	UART_AP_TO_BT_TXD
UART1_AP_TO_BT_RTS_L	UART_AP_TO_BT_RTS_L
UART1_BT_TO_AP_TX	UART_BT_TO_AP_RXD
UART1_BT_TO_AP_RTS_L	UART_BT_TO_AP_CTS_L
PMU_TO_BT_REG_ON	PMU_TO_BT_REG_ON
BT_TO_PMU_HOST_WAKE	BT_TO_PMU_HOST_WAKE
AP_TO_BT_WAKE	AP_TO_BT_WAKE
STOCKHOLM	
UART3_AP_TO_STOCKHOLM_TXD	UART_AP_TO_STOCKHOLM_TXD
UART3_AP_TO_STOCKHOLM_RTS_L	UART_AP_TO_STOCKHOLM_RTS_L
UART3_STOCKHOLM_TO_AP_TXD	UART_STOCKHOLM_TO_AP_RXD
UART3_STOCKHOLM_TO_AP_RTS_L	UART_STOCKHOLM_TO_AP_CTS_L
PMU_TO_STOCKHOLM_EN	PMU_TO_STOCKHOLM_EN
STOCKHOLM_TO_PMU_HOST_WAKE	STOCKHOLM_TO_PMU_HOST_WAKE
AP_TO_STOCKHOLM_DEV_WAKE	AP_TO_STOCKHOLM_DEV_WAKE
AP_TO_STOCKHOLM_FW_DWLD_REQ	AP_TO_STOCKHOLM_DWLD_REQUEST

PAGE TITLE		BASEBAND:RADIO SYMBOL	
 Apple Inc.		DRAWING NUMBER	051-00094
		REVISION	A.0.0
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		PAGE	49 OF 49
		SHEET	34 OF 60

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

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
A	0004600844	PRODUCTION RELEASED		2015-07-30

N66 RADIO_MLB_MIMO - PVT

JULY 30, 2015

SIM ESD DIODE ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
19780565	19780593	ALTERNATE	Y_XO_RF	XTAL, 19.2MHZ
37780163	37780042	ALTERNATE	VR301_RF	ST ESD DIODE

19.2MHZ XTAL ALTERNATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
19780565	19780593	ALTERNATE	Y_XO_RF	XTAL, 19.2MHZ
19780598	19780593	ALTERNATE	Y_XO_RF	XTAL, 19.2MHZ

PDF PAGE	CSA PAGE	CONTENTS
2	2	ELNA & UAT ANT FEED
3	3	FE: ANT CONNECTORS AND UAT TUNER
4	30	DEBUG CONN & TEST POINTS
5	31	CELLULAR BASEBAND: POWER1
6	32	CELLULAR BASEBAND: POWER2
7	33	CELLULAR BASEBAND: CONTROL AND INTERFACES
8	34	CELLULAR BASEBAND: GPIOs
9	35	CELLULAR PMU: CONTROL AND CLOCKS
10	36	CELLULAR PMU: SWITCHERS AND LDOS
11	37	CELLULAR PMU: ET MODULATOR
12	38	CELLULAR TRANSCEIVER: POWER
13	39	CELLULAR TRANSCEIVER: PRX PORTS
14	40	CELLULAR TRANSCEIVER: DRX/GPS PORTS
15	41	CELLULAR TRANSCEIVER: TX PORTS
16	42	CELLULAR FRONT END: LB PAD
17	43	CELLULAR FRONT END: MB PAD
18	44	CELLULAR FRONT END: HB PAD
19	45	CELLULAR FRONT END: 2G PA
20	46	CELLULAR FRONT END: LB ASM
21	47	CELLULAR FRONT END: MB-HB ASM
22	48	CELLULAR FRONT END: DIVERSITY
23	49	SIM
24	50	WIFI/BT: WIFI/BT MODULE
25	51	STOCKHOLM

ROW HB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
15281907	1	3.3NH, INDUCTOR	L4105_RF	ROW
15282007	1	8.2NH, INDUCTOR	L4401_RF	ROW
13180426	1	22PF, CAPACITOR	C4405_RF	ROW
15282042	1	1.8NH, INDUCTOR	C4406_RF	ROW
13180425	1	0.5PF, CAPACITOR	L4407_RF	ROW
15282041	1	10.0NH, INDUCTOR	L4403_RF	ROW
13180071	1	33PF, CAPACITOR	C4407_RF	ROW
152800143	1	15NH, INDUCTOR	L4404_RF	ROW
13180071	1	33PF, CAPACITOR	C4408_RF	ROW
11780108	1	51 OHM, RESISTOR	L4410_RF	ROW
13180599	1	1.5PF, CAPACITOR	C3921_RF	ROW
152800052	1	3.4NH, INDUCTOR	L3910_RF	ROW
11780201	1	0 OHM, RESISTOR	L3911_RF	ROW
15282039	1	3.8NH, INDUCTOR	L3919_RF	ROW
13180414	1	5.0PF, CAPACITOR	C4410_RF	ROW

RF2 HB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
15281990	1	3.0NH, INDUCTOR	L4105_RF	RF2
13180377	1	1.2PF, CAPACITOR	C4108_RF	RF2
13180631	1	0.3PF, CAPACITOR	L4401_RF	RF2
15282042	1	1.8NH, INDUCTOR	C4405_RF	RF2
15282042	1	1.8NH, INDUCTOR	C4406_RF	RF2
13180631	1	0.3PF, CAPACITOR	L4407_RF	RF2
131800001	1	0.1PF, CAPACITOR	L4403_RF	RF2
15282051	1	1.3NH, INDUCTOR	C4407_RF	RF2
15282051	1	1.3NH, INDUCTOR	C4408_RF	RF2
13180805	1	100PF, CAPACITOR	C4409_RF	RF2
13180431	1	0.2PF, CAPACITOR	L4410_RF	RF2
13180381	1	1.6PF, CAPACITOR	C3921_RF	RF2
152800027	1	3.7NH, INDUCTOR	L3910_RF	RF2
11780201	1	0 OHM, RESISTOR	L3911_RF	RF2
15282045	1	3.0NH, INDUCTOR	L3919_RF	RF2
152800052	1	3.4NH, INDUCTOR	L3912_RF	RF2
13180599	1	1.5PF, CAPACITOR	C3922_RF	RF2
13180630	1	27PF, CAPACITOR	C3911_RF	RF2
13180414	1	5.0PF, CAPACITOR	C4410_RF	RF2

ROW LB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
13180555	1	1.0PF, CAPACITOR	L4203_RF	ROW
152800158	1	4.1NH, INDUCTOR	C4205_RF	ROW
13180425	1	0.5PF, CAPACITOR	L4204_RF	ROW
15282053	1	4.7NH, INDUCTOR	C4206_RF	ROW
13180555	1	1.0PF, CAPACITOR	L4205_RF	ROW
152800027	1	3.7NH, INDUCTOR	C4207_RF	ROW
13180557	1	0.7PF, CAPACITOR	L4206_RF	ROW
15282001	1	2.4NH, INDUCTOR	C4208_RF	ROW
13180351	1	0.4PF, CAPACITOR	L4207_RF	ROW
15282002	1	2.7NH, INDUCTOR	C4209_RF	ROW
15282002	1	2.7NH, INDUCTOR	C4211_RF	ROW
15282056	1	5.6NH, INDUCTOR	C4212_RF	ROW
13180340	1	2.0PF, CAPACITOR	L4219_RF	ROW
15282021	1	1.5NH, INDUCTOR	C4213_RF	ROW
11880724	1	0 OHM, RESISTOR	R4201_RF	ROW
13180551	1	1.2PF, CAPACITOR	L4601_RF	ROW
15281342	1	15NH, INDUCTOR	L3902_RF	ROW
13180630	1	27PF, CAPACITOR	C3902_RF	ROW

RF2 LB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
13180555	TRUE	1.0PF, CAPACITOR	L4203_RF	RF2
152800158	TRUE	4.1NH, INDUCTOR	C4205_RF	RF2
13180425	TRUE	0.5PF, CAPACITOR	L4204_RF	RF2
15282053	TRUE	4.7NH, INDUCTOR	C4206_RF	RF2
13180555	TRUE	1.0PF, CAPACITOR	L4205_RF	RF2
152800027	TRUE	3.7NH, INDUCTOR	C4207_RF	RF2
13180557	TRUE	0.7PF, CAPACITOR	L4206_RF	RF2
15282001	TRUE	2.4NH, INDUCTOR	C4208_RF	RF2
13180351	TRUE	0.4PF, CAPACITOR	L4207_RF	RF2
15282002	TRUE	2.7NH, INDUCTOR	C4209_RF	RF2
15282002	TRUE	2.7NH, INDUCTOR	C4211_RF	RF2
15282056	TRUE	5.6NH, INDUCTOR	C4212_RF	RF2
13180340	TRUE	2.0PF, CAPACITOR	L4219_RF	RF2
15282021	TRUE	1.5NH, INDUCTOR	C4213_RF	RF2
11880724	TRUE	0 OHM, RESISTOR	R4201_RF	RF2
13180551	TRUE	1.2PF, CAPACITOR	L4601_RF	RF2
15281342	TRUE	15NH, INDUCTOR	L3902_RF	RF2
13180630	1	27PF, CAPACITOR	C3902_RF	RF2

HB PAD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
353800376	1	IC, PWR AMP, HB_PAD, TQS	UHBPA_RF	ROW
35384494	1	IC, PWR AMP, HB_PAD, AVAGO	UHBPA_RF	RF2
353800478	1	IC, PWR AMP, HB_PAD, PT	UHBPA_RF	DARWIN

LB PAD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
353800461	1	IC, PWR AMP, LB_PAD, SKWS	ULBPA_RF	ROW
353800461	1	IC, PWR AMP, LB_PAD, SKWS	ULBPA_RF	RF2
353800541	1	IC, PWR AMP, LB_PAD, PT	ULBPA_RF	DARWIN

MB PAD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
35384495	1	IC, PWR AMP, MB_PAD	UMBPA_RF	ROW
35384495	1	IC, PWR AMP, MB_PAD	UMBPA_RF	RF2
353800477	1	IC, PWR AMP, MB_PAD, PT	UMBPA_RF	DARWIN

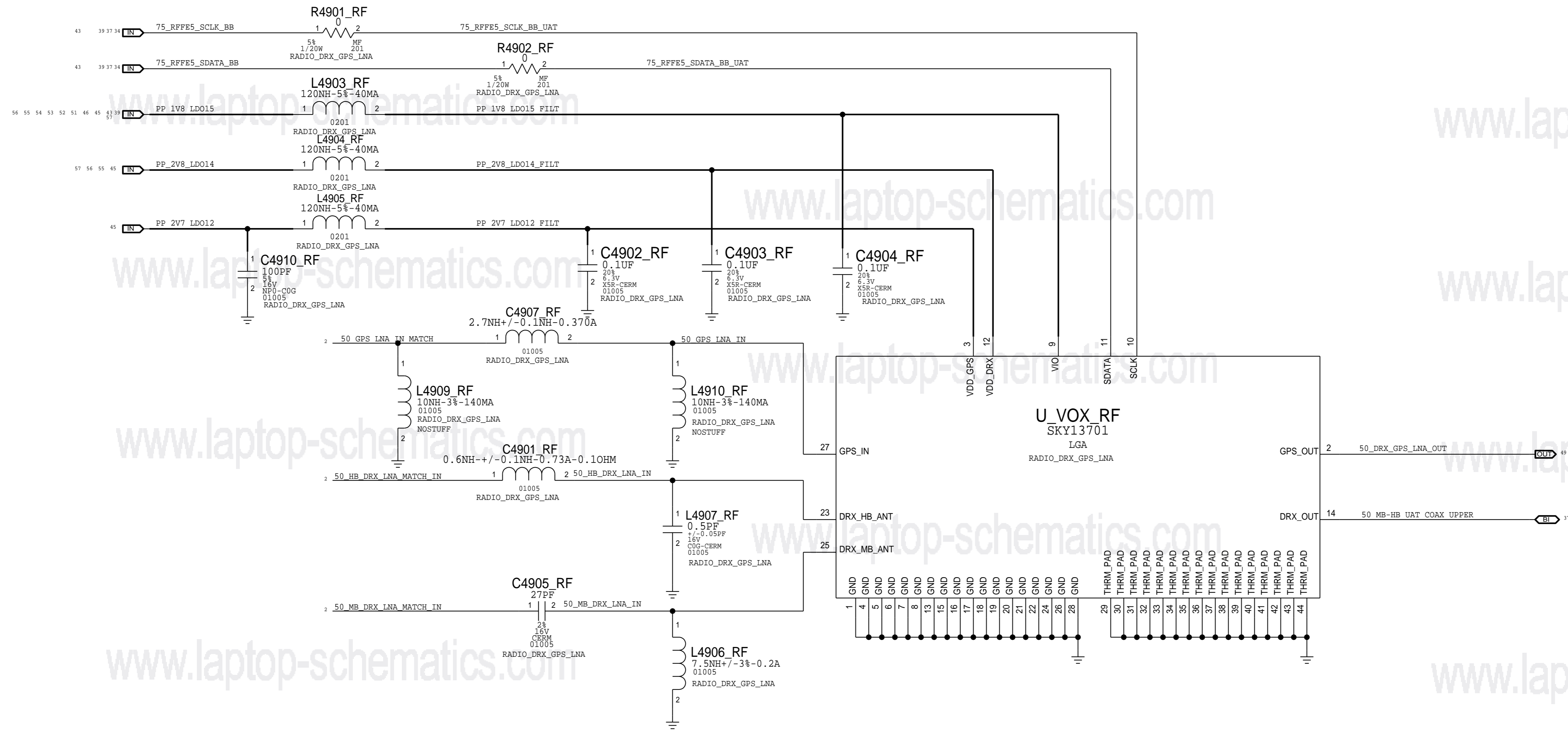
HW_REV1_ID RESISTOR

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
11880646	1	51.1 KOHM, RESISTOR	R3503_RF	DARWIN

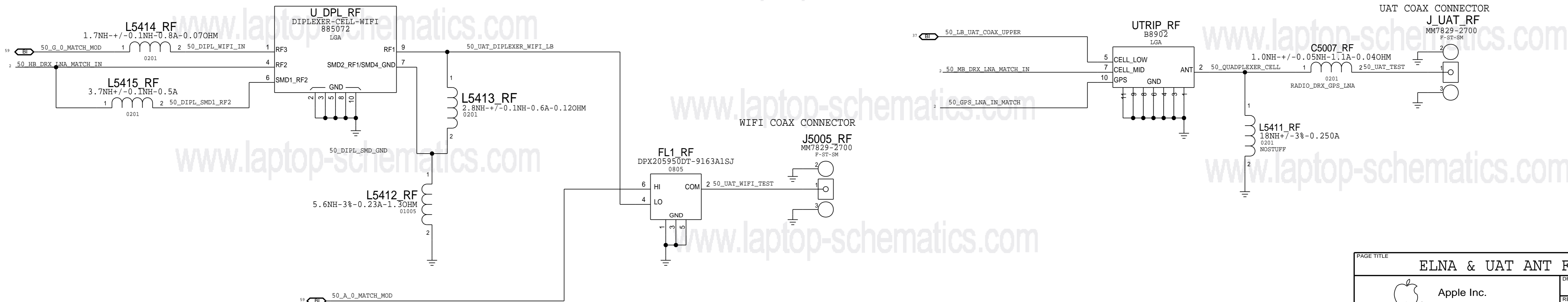
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N66-SPECIFIC RADIO PAGE 2

DIVERSITY LNA



UAT ANT FEED

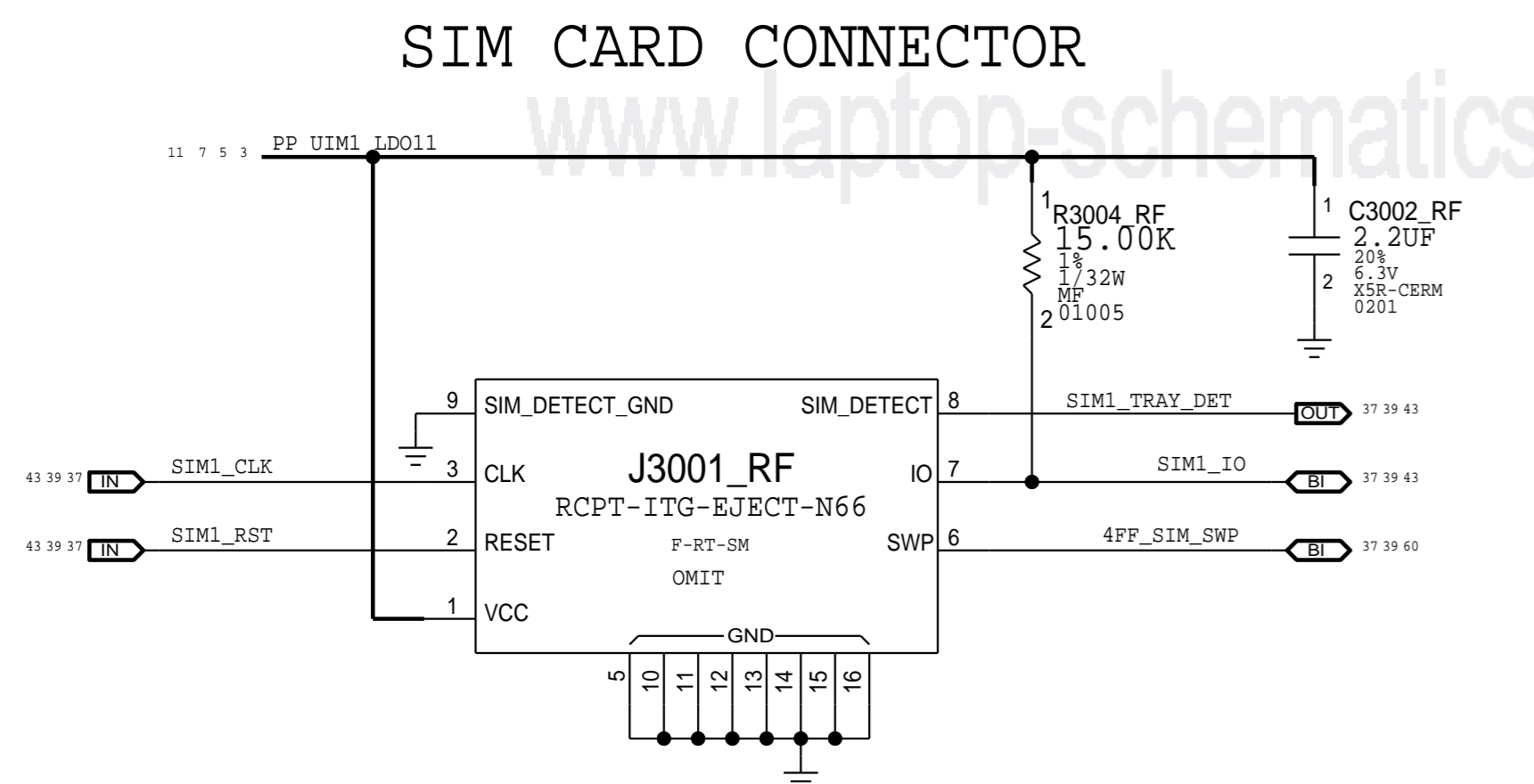
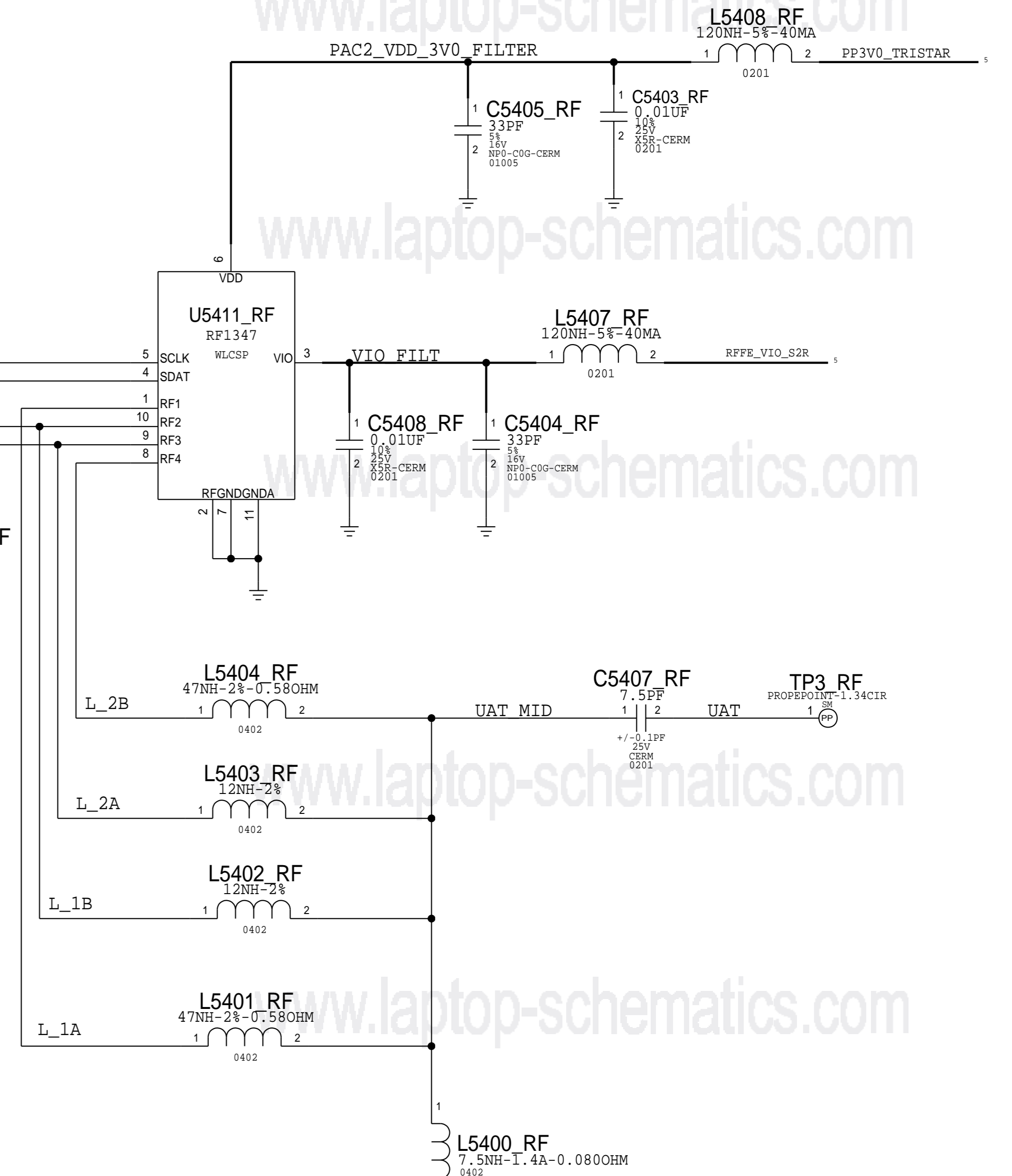
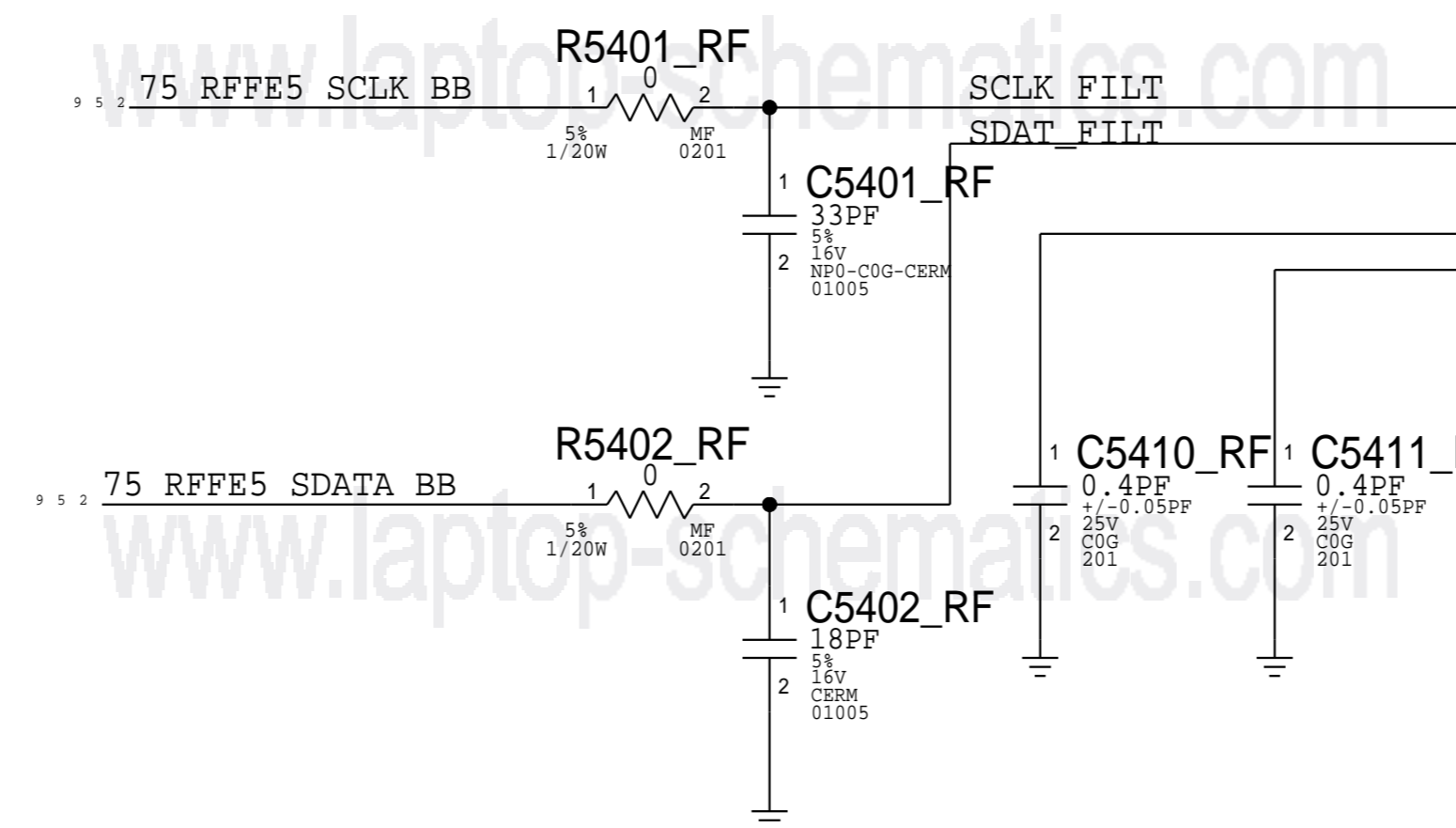
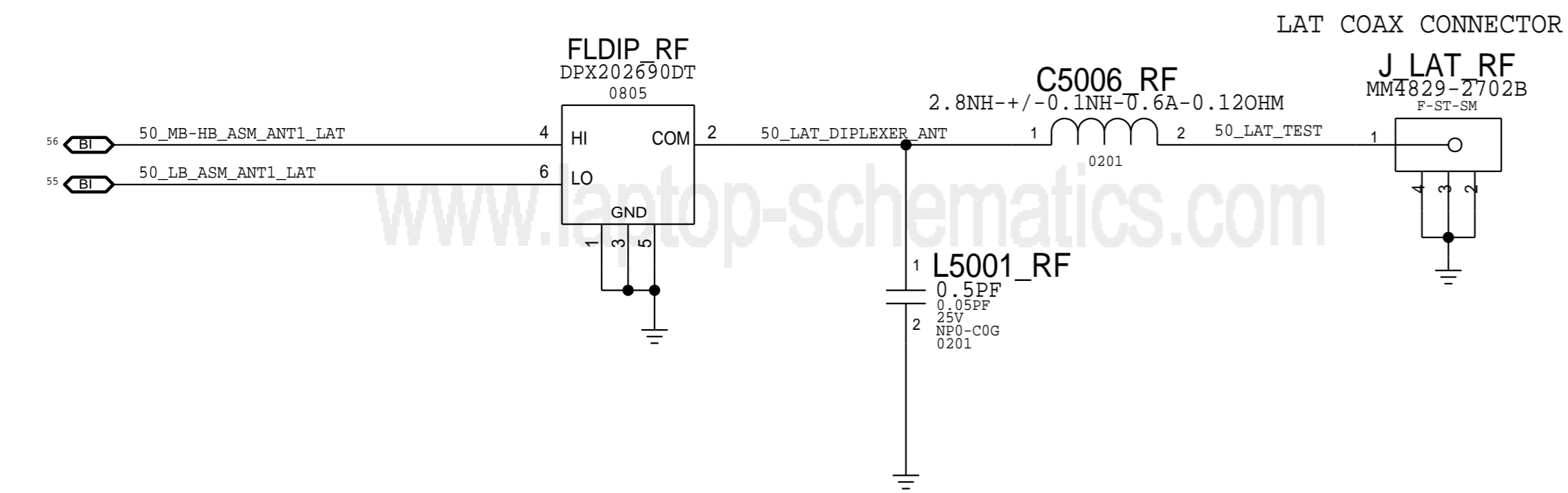
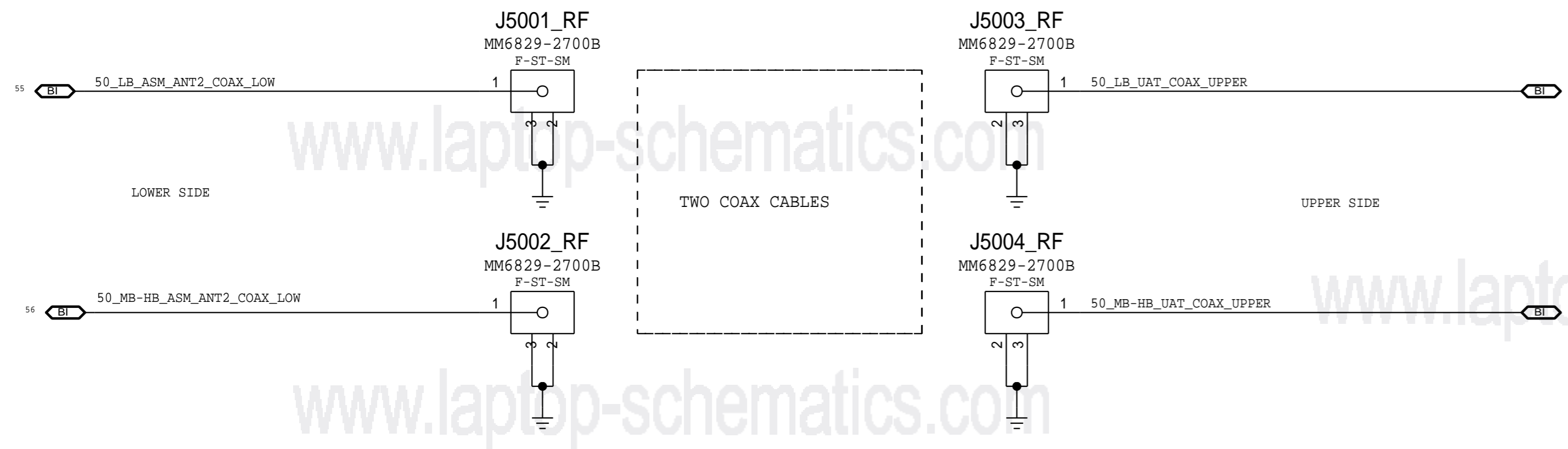


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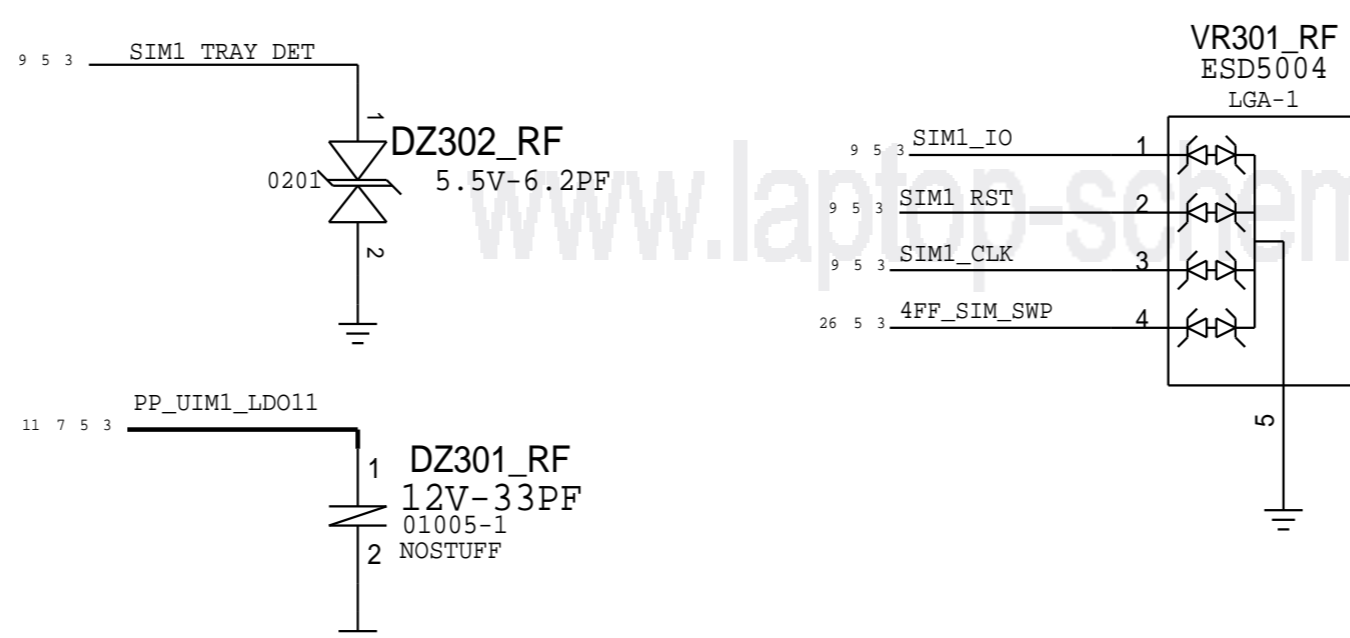
N66-SPECIFIC RADIO PAGE 3

ANTENNA FEEDS AND CONNECTORS

UAT TUNER



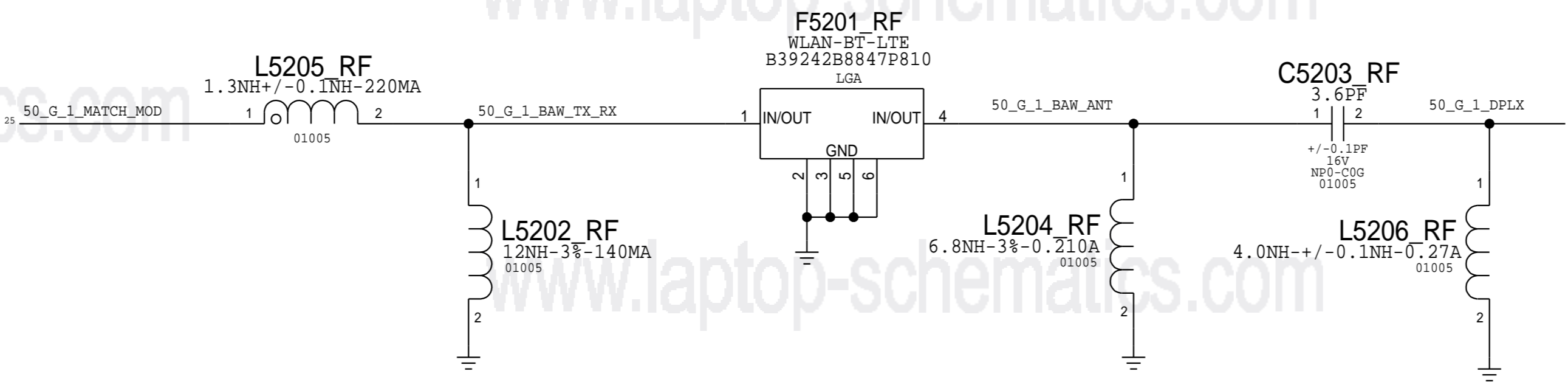
SIM CARD ESD PROTECTION



PAGE TITLE		CELLULAR FRONT END: ANTENNA CONNECTORS AND FEEDS	
DRAWING NUMBER		051-00094	SIZE
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PAGE		3 OF 51	
SHEET		37 OF 60	
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N66-SPECIFIC RADIO PAGE 4

WLAN LAT 2.4GHZ BAW BPF



DARWIN LB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S0555	1	1.0PF, CAPACITOR	L4203_RF	DARWIN
152S00158	1	4.1NH, INDUCTOR	C4205_RF	DARWIN
131S0425	1	0.5PF, CAPACITOR	L4204_RF	DARWIN
152S2053	1	4.7NH, INDUCTOR	C4206_RF	DARWIN
131S0555	1	1.0PF, CAPACITOR	L4205_RF	DARWIN
152S00027	1	3.7NH, INDUCTOR	C4207_RF	DARWIN
131S0557	1	0.7PF, CAPACITOR	L4206_RF	DARWIN
152S2001	1	2.4NH, INDUCTOR	C4208_RF	DARWIN
131S0351	1	0.4PF, CAPACITOR	L4207_RF	DARWIN
152S2002	1	2.7NH, INDUCTOR	C4209_RF	DARWIN
152S2002	1	2.7NH, INDUCTOR	C4211_RF	DARWIN
152S2056	1	5.6NH, INDUCTOR	C4212_RF	DARWIN
131S0340	1	2.0PF, CAPACITOR	L4219_RF	DARWIN
152S2021	1	1.5NH, INDUCTOR	C4213_RF	DARWIN
118S0724	1	0 OHM, RESISTOR	R4201_RF	DARWIN
131S0551	1	1.2PF, CAPACITOR	L4601_RF	DARWIN
152S1342	1	15NH, INDUCTOR	L3902_RF	DARWIN
131S0630	1	27PF, CAPACITOR	C3902_RF	DARWIN

DARWIN HB PAD MATCHING BOM OPTIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
152S1907	1	3.3NH, INDUCTOR	L4105_RF	DARWIN
152S2007	1	8.2NH, INDUCTOR	L4401_RF	DARWIN
131S0426	1	22PF, CAPACITOR	C4405_RF	DARWIN
152S2042	1	1.8NH, INDUCTOR	C4406_RF	DARWIN
131S0425	1	0.5PF, CAPACITOR	L4407_RF	DARWIN
152S2041	1	10.0NH, INDUCTOR	L4403_RF	DARWIN
131S00071	1	33PF, CAPACITOR	C4407_RF	DARWIN
152S00143	1	15NH, INDUCTOR	L4404_RF	DARWIN
131S00071	1	33PF, CAPACITOR	C4408_RF	DARWIN
117S0108	1	51 OHM, RESISTOR	L4410_RF	DARWIN
131S0599	1	1.5PF, CAPACITOR	C3921_RF	DARWIN
152S00052	1	3.4NH, INDUCTOR	L3910_RF	DARWIN
117S0201	1	0 OHM, RESISTOR	L3911_RF	DARWIN
152S2039	1	3.8NH, INDUCTOR	L3919_RF	DARWIN
131S0414	1	5.0PF, CAPACITOR	C4410_RF	DARWIN

PAGE TITLE		WLAN LAT 2.4GHZ BAW BPF	
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	REVISION	A.0.0	
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		PAGE	4 OF 51
		SHEET	38 OF 60

AP TO BB/WLAN/BT/SH CONNECTIONS

MLB PROBE POINTS

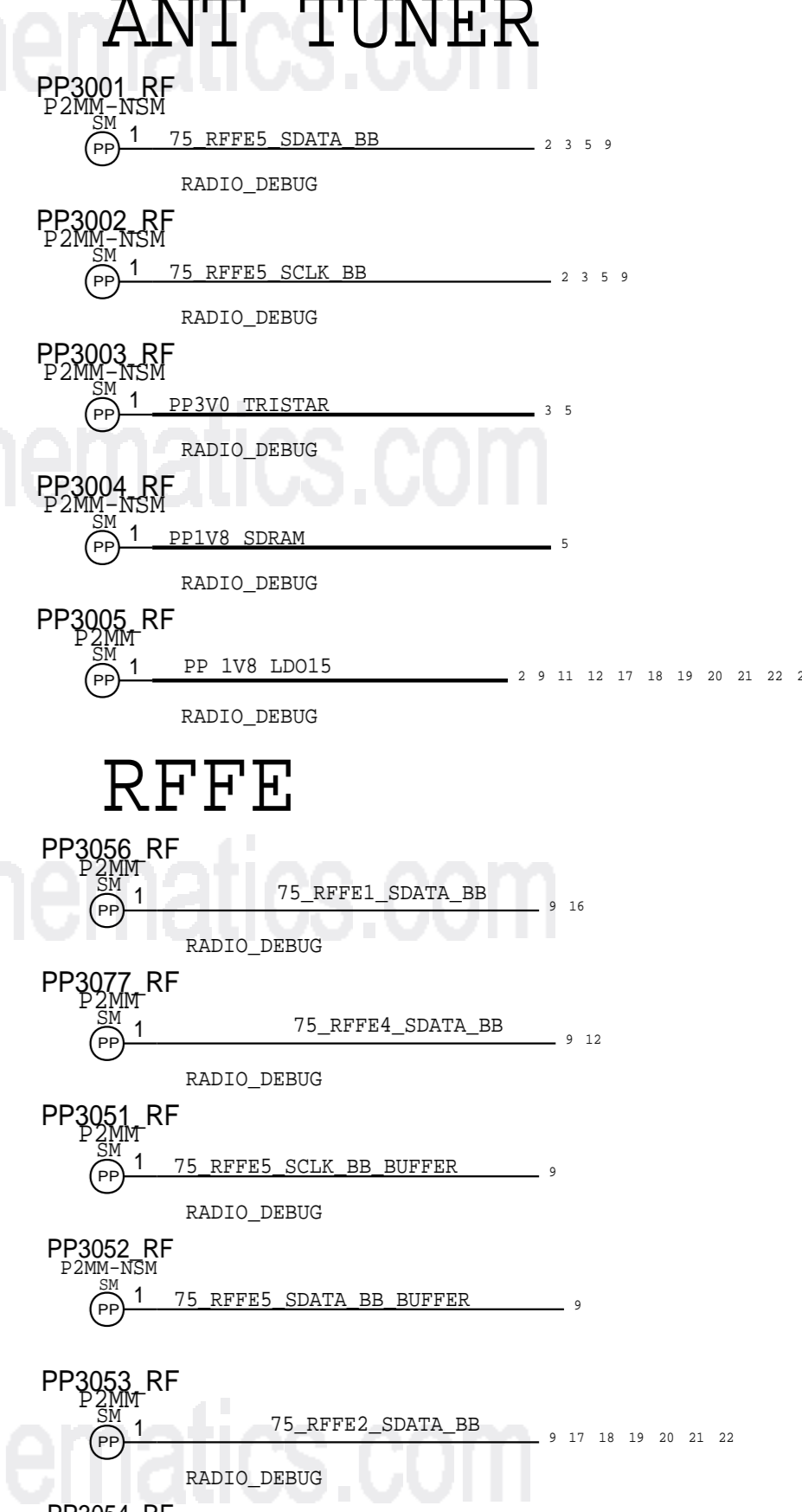
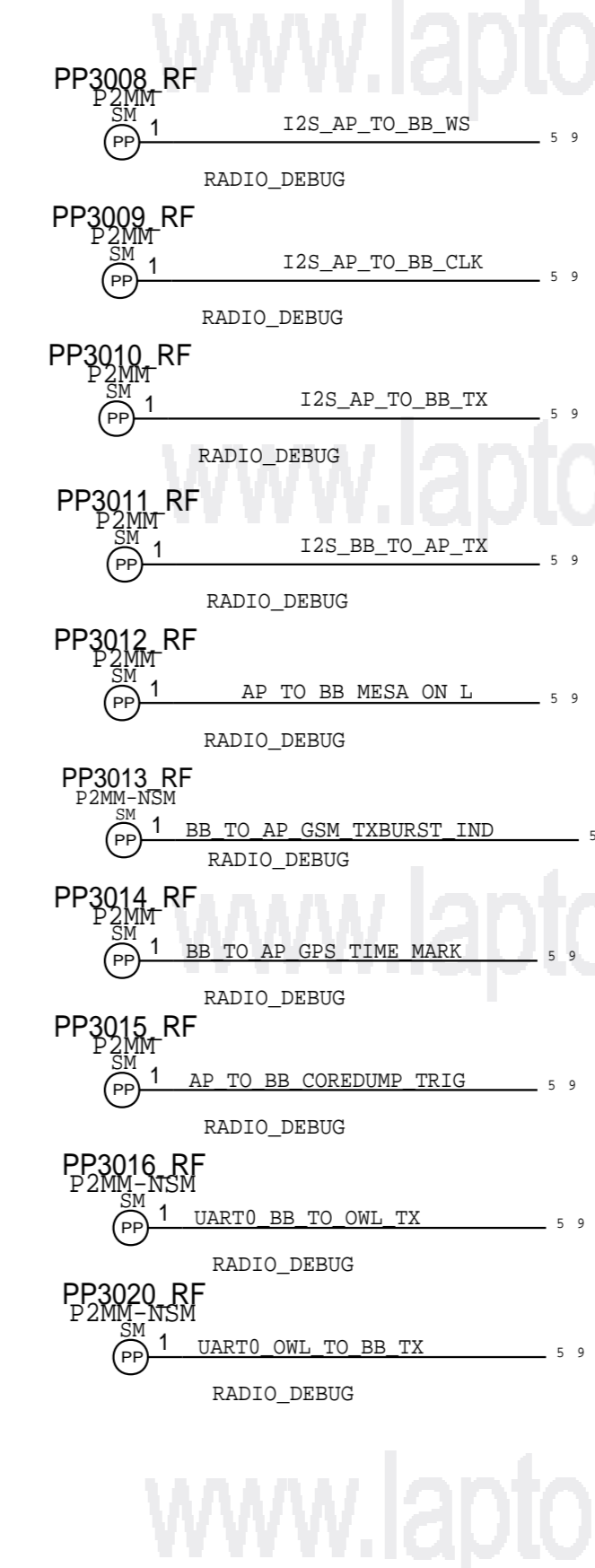
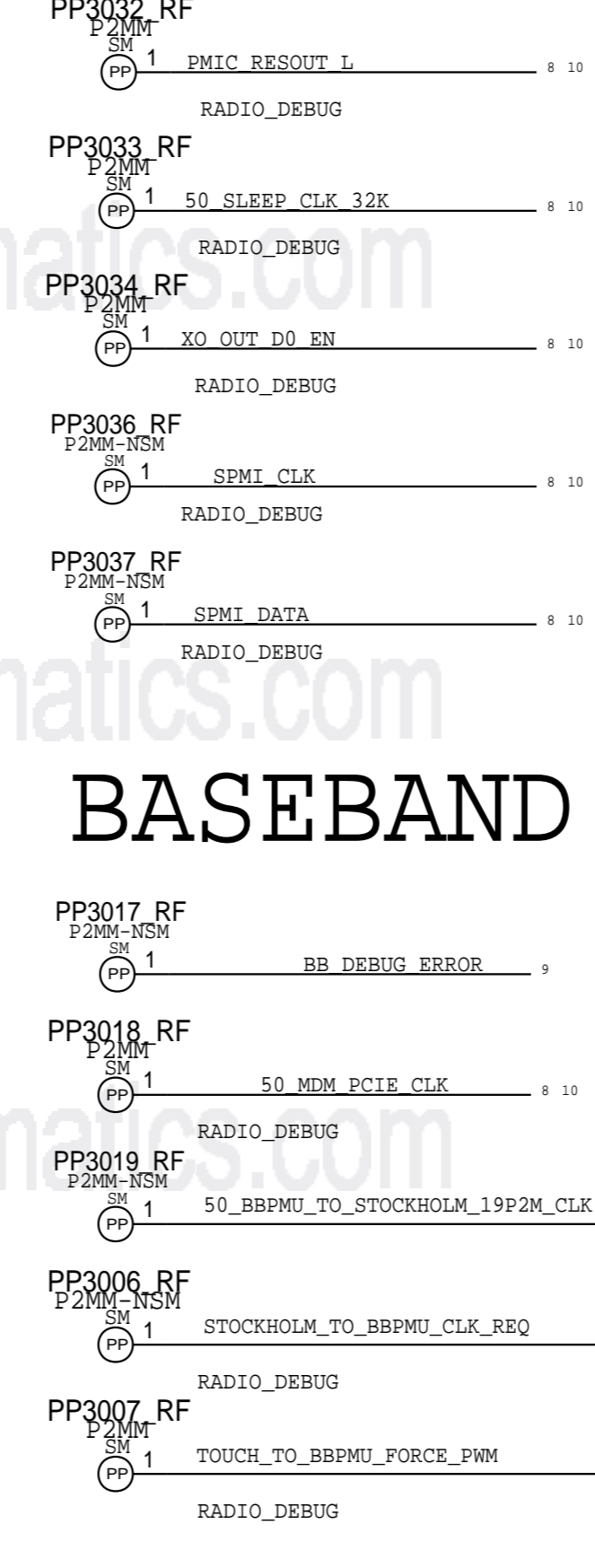
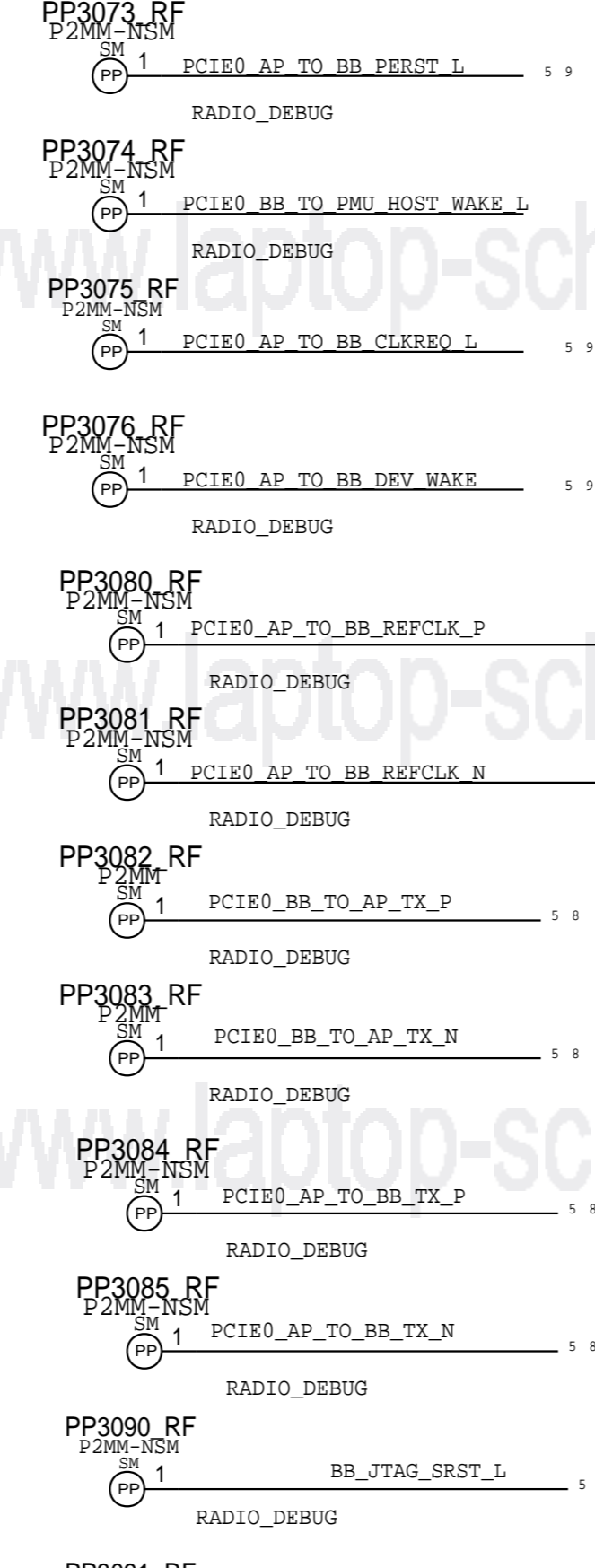
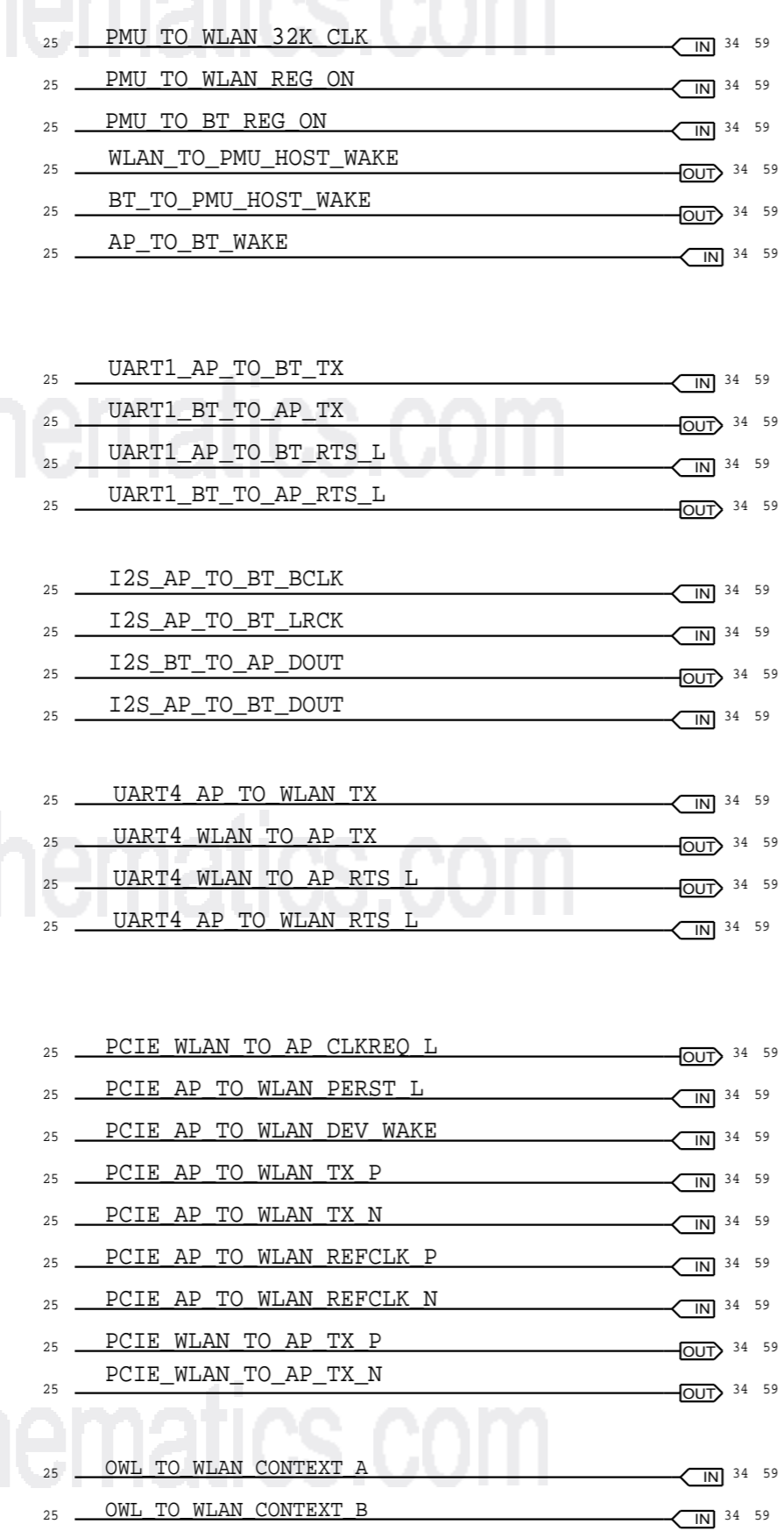
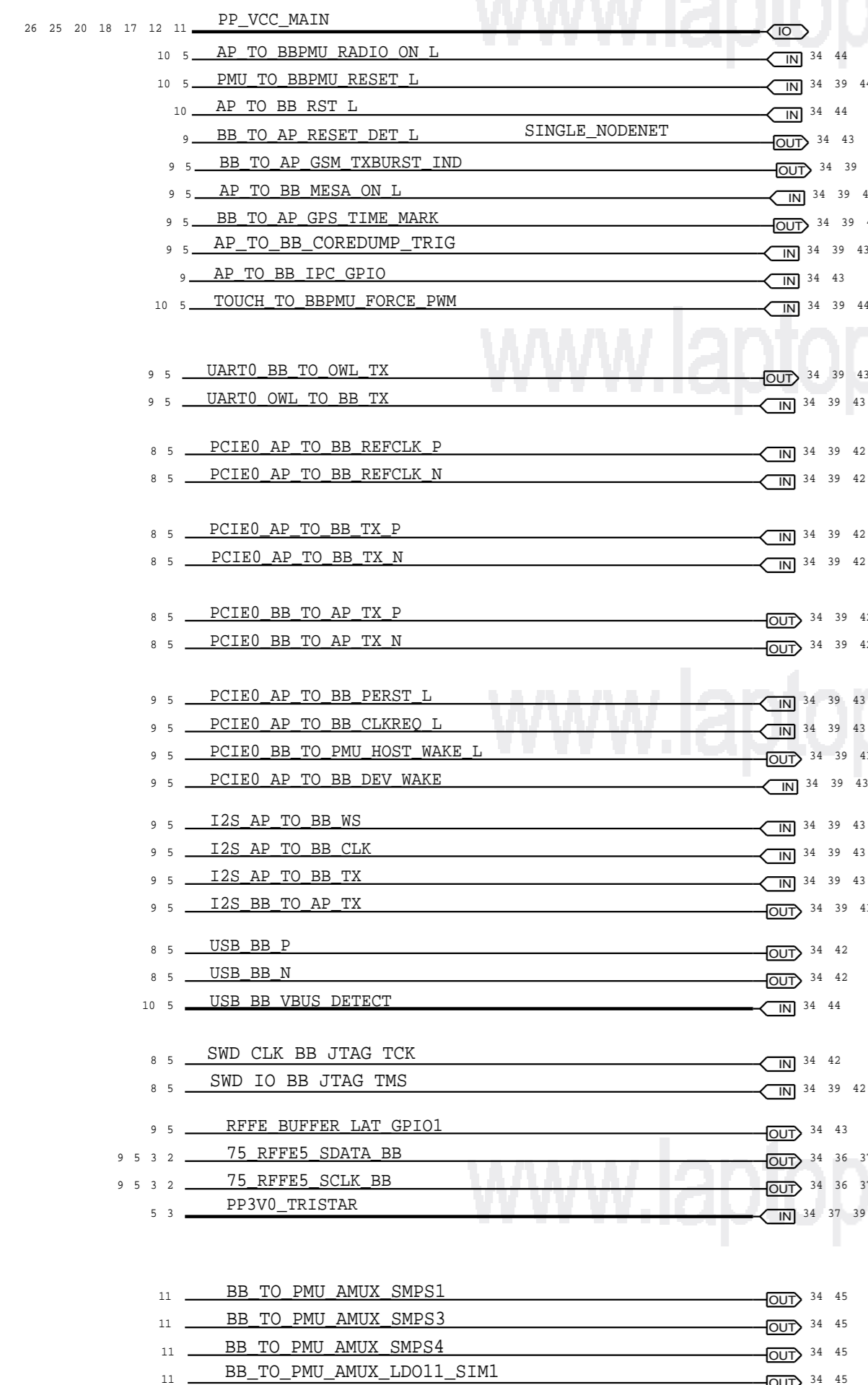
BASEBAND

WLAN/BT

PCIE

PMU

ANT TUNER

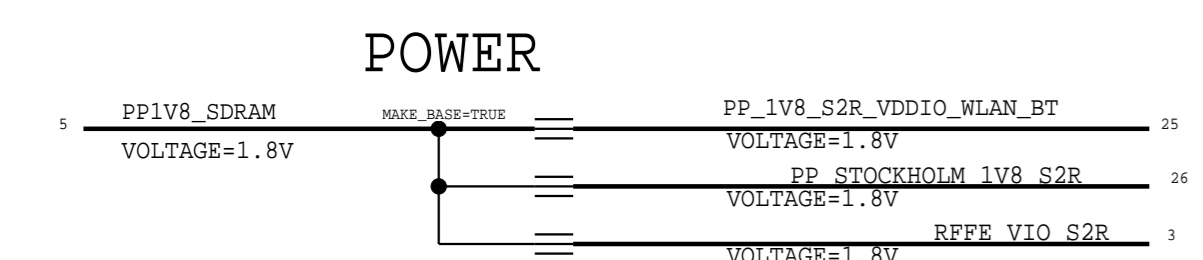
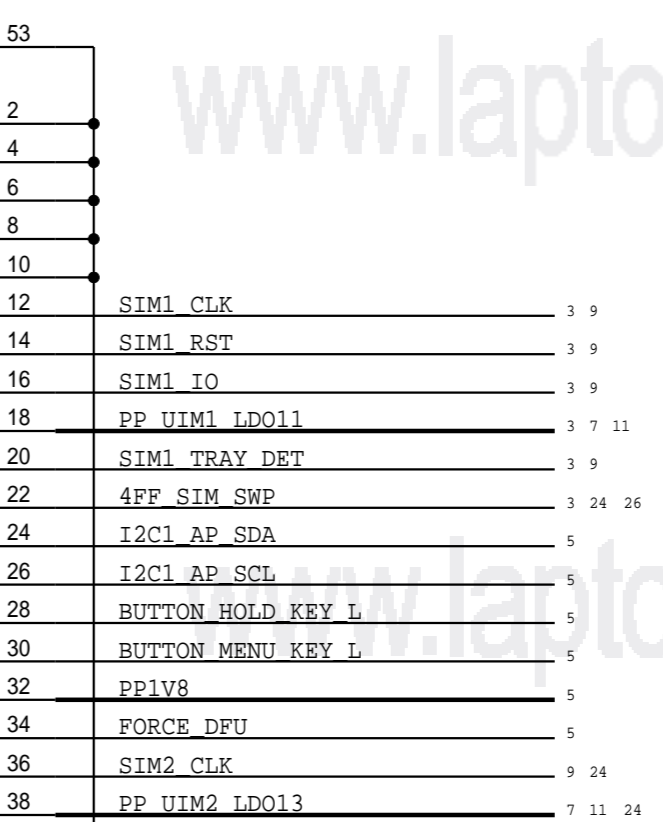
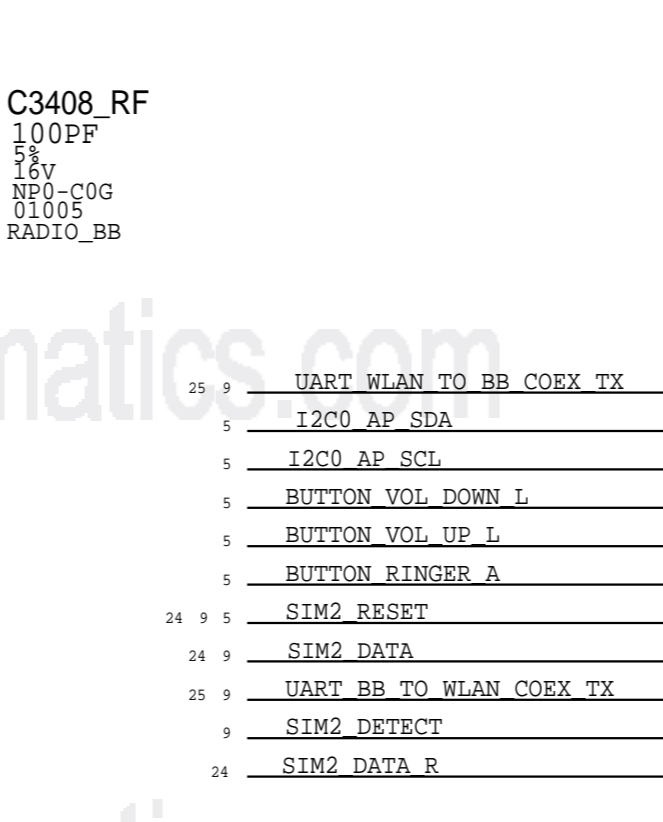
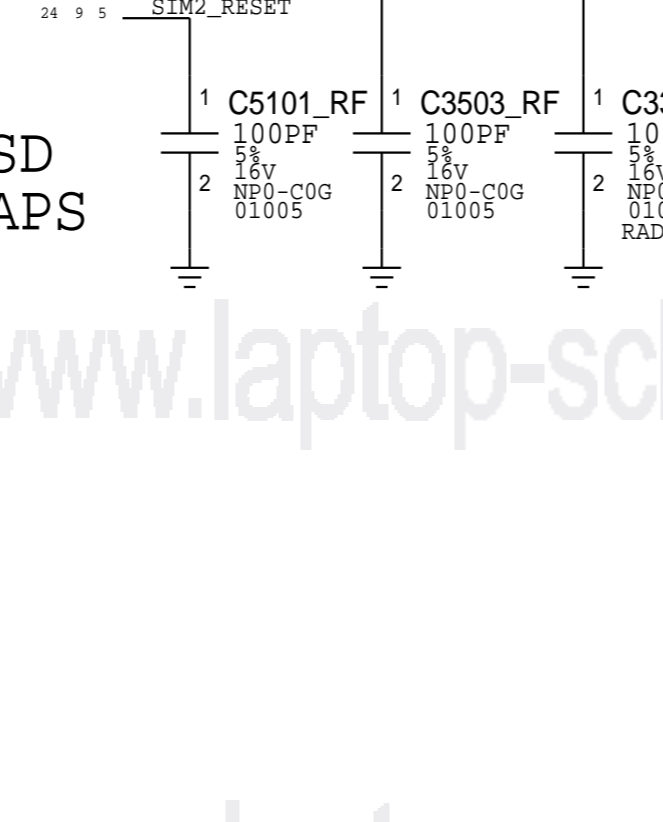
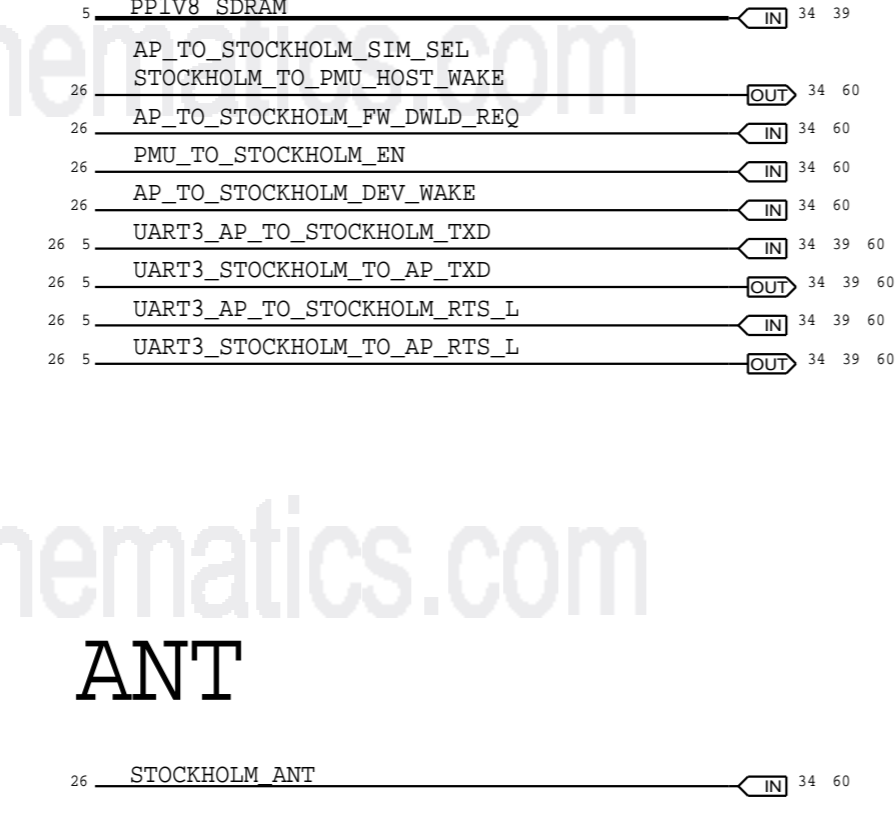
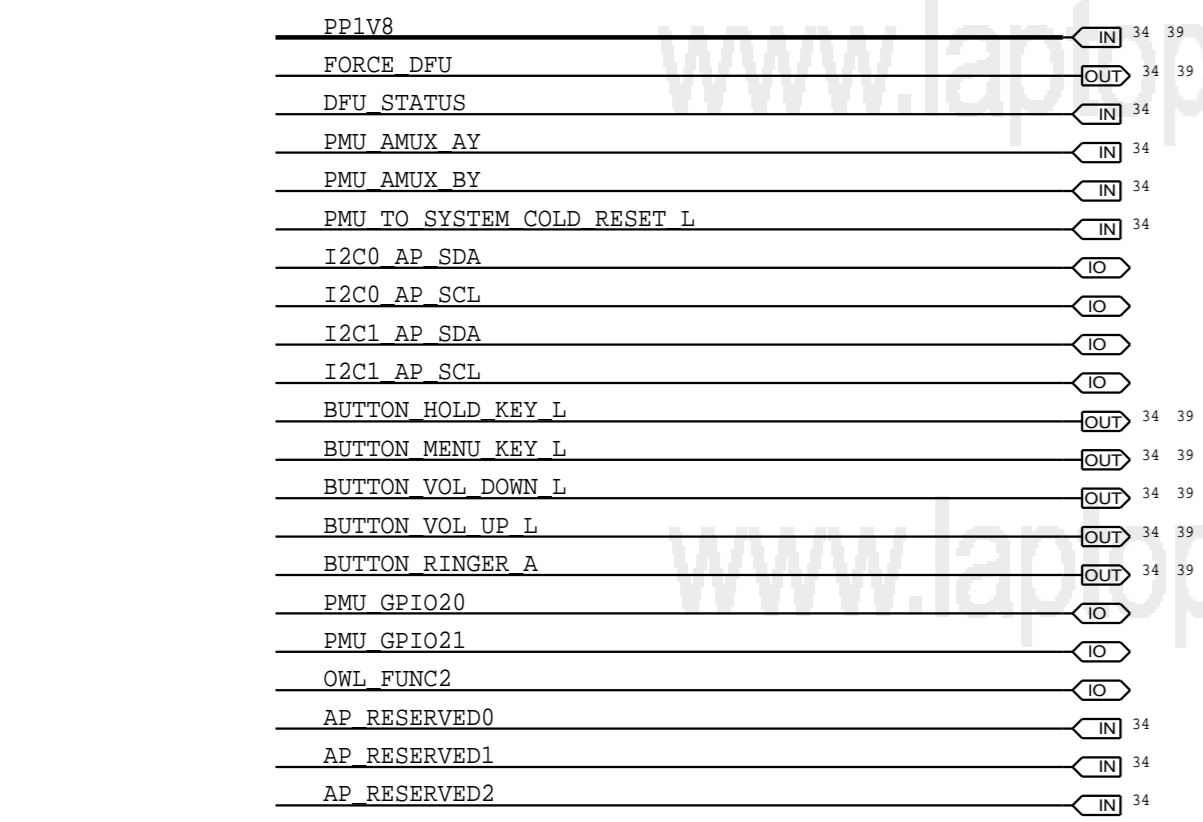


AP DEBUG

STOCKHOLM

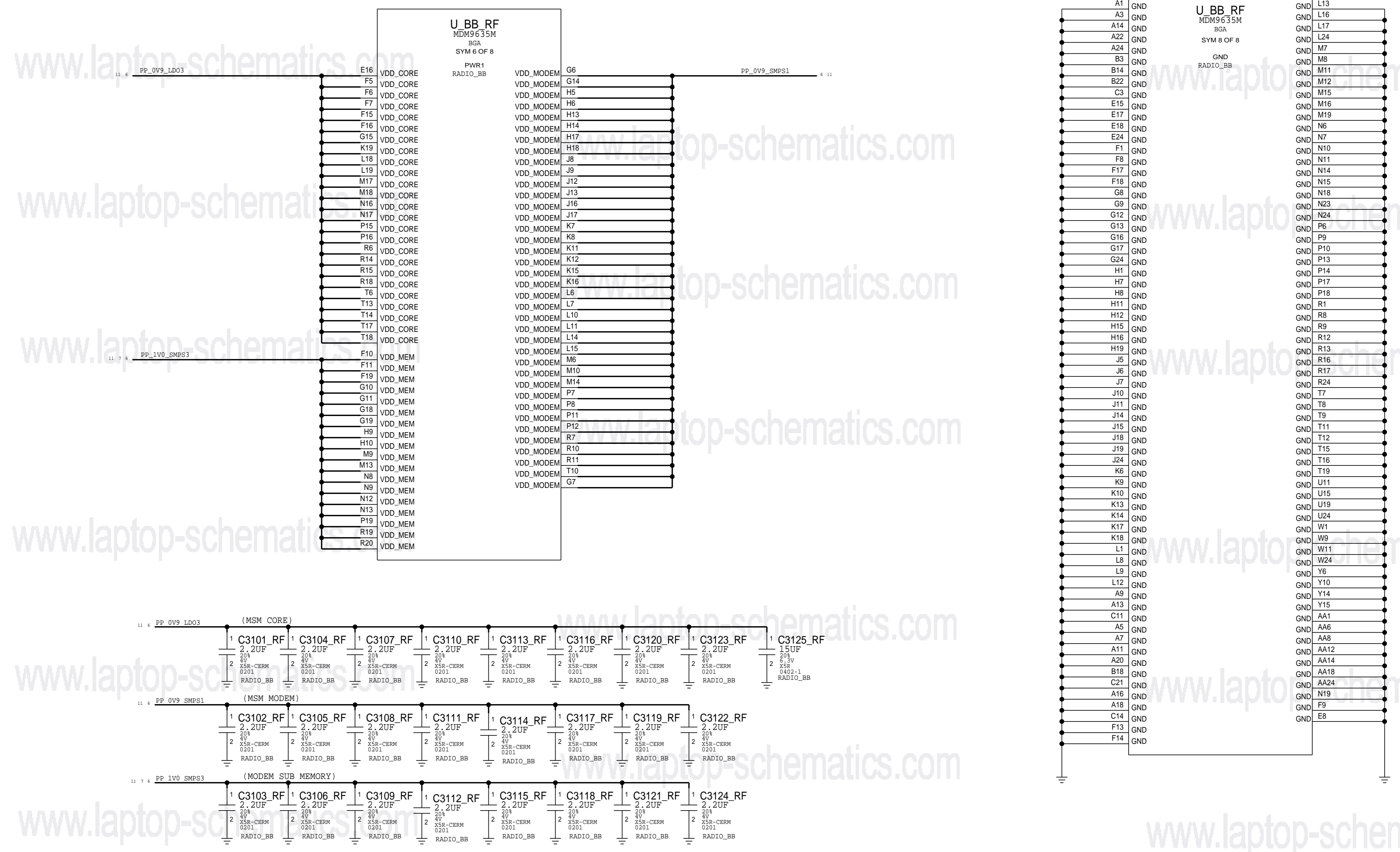
DEBUG CONNECTOR

STOCKHOLM



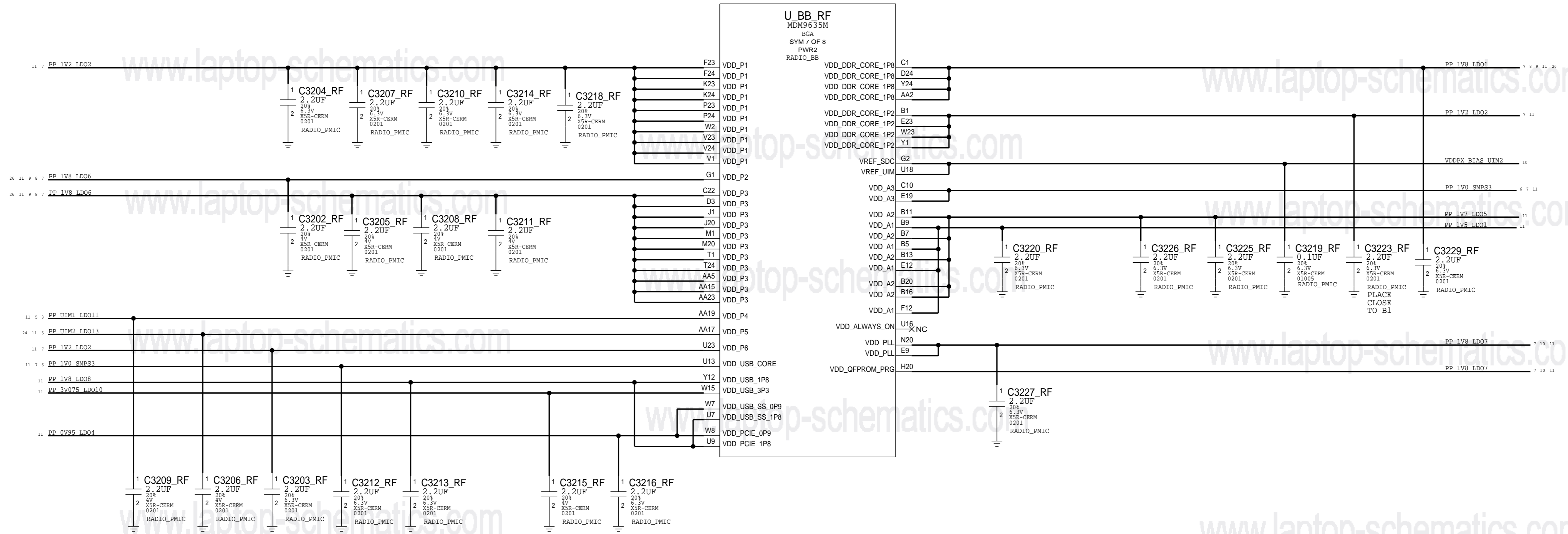
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BASEBAND: POWER 1



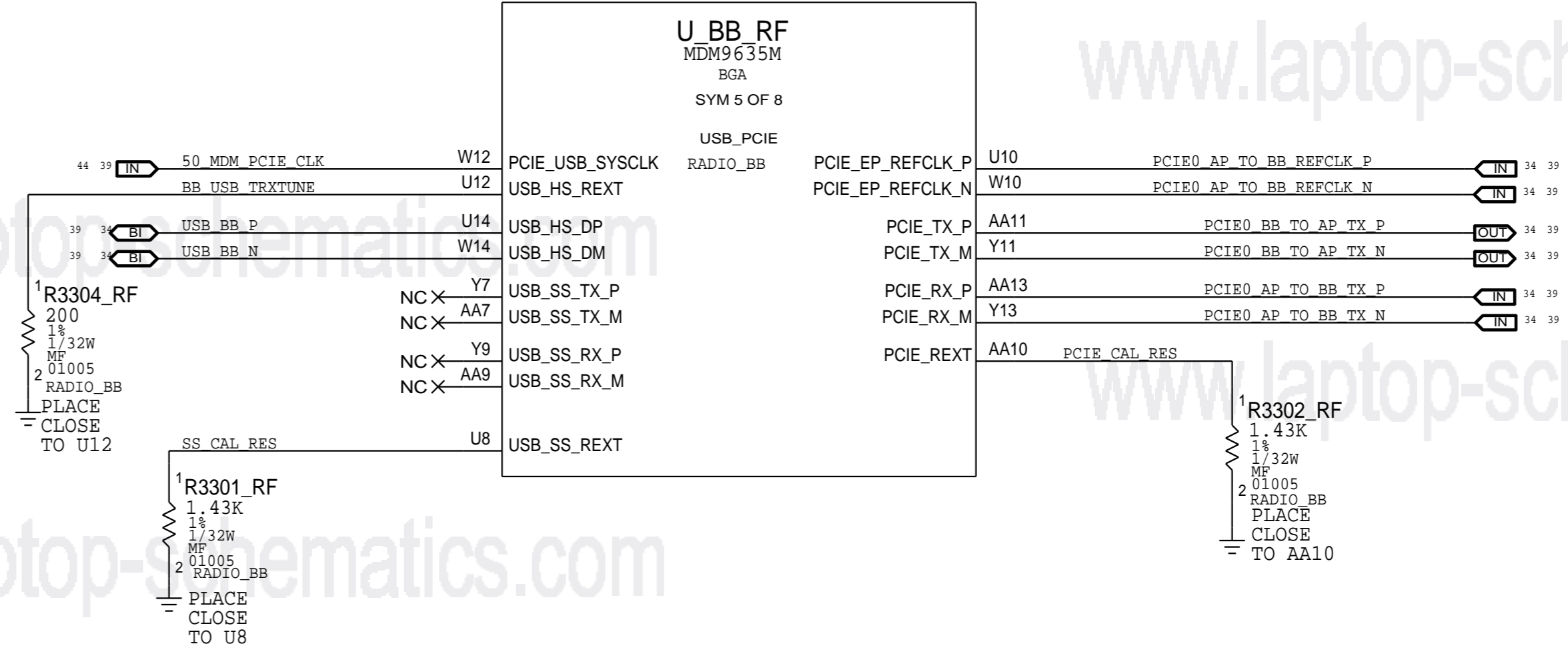
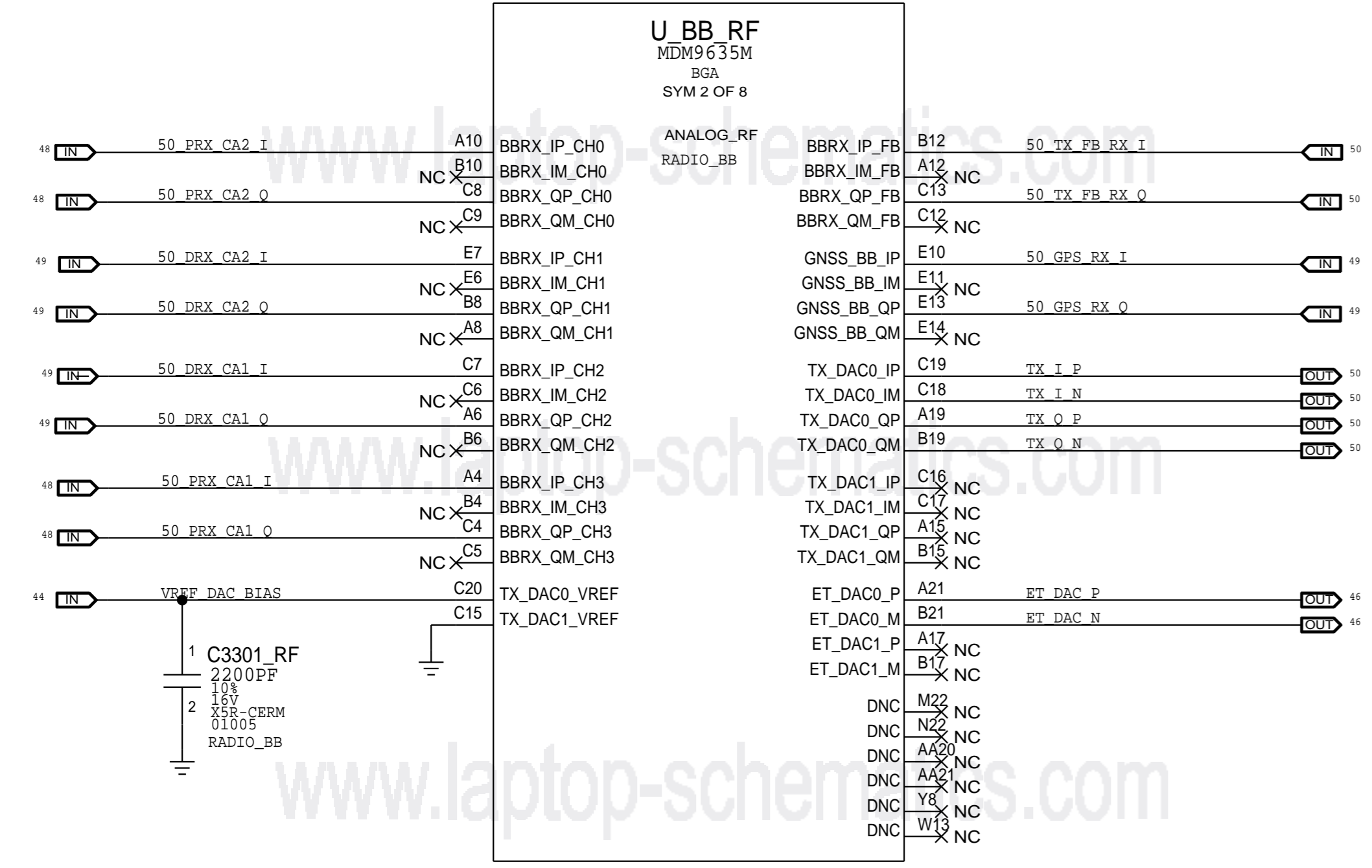
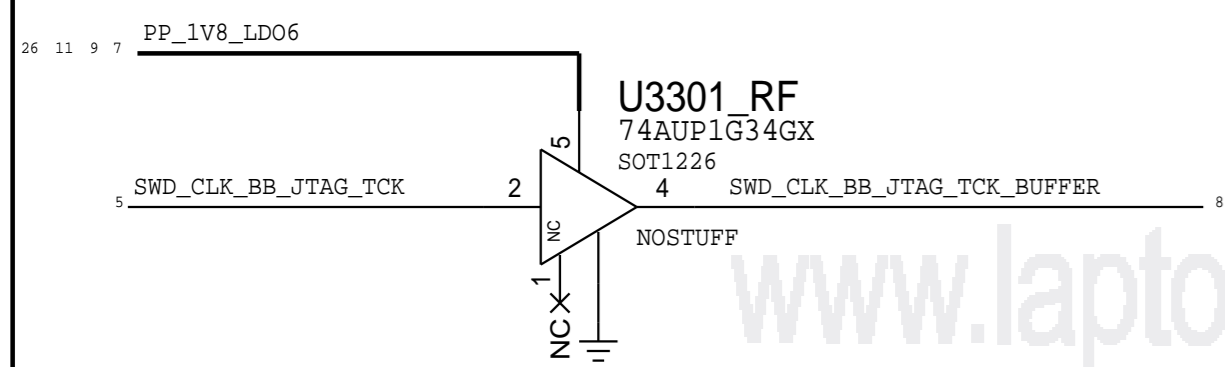
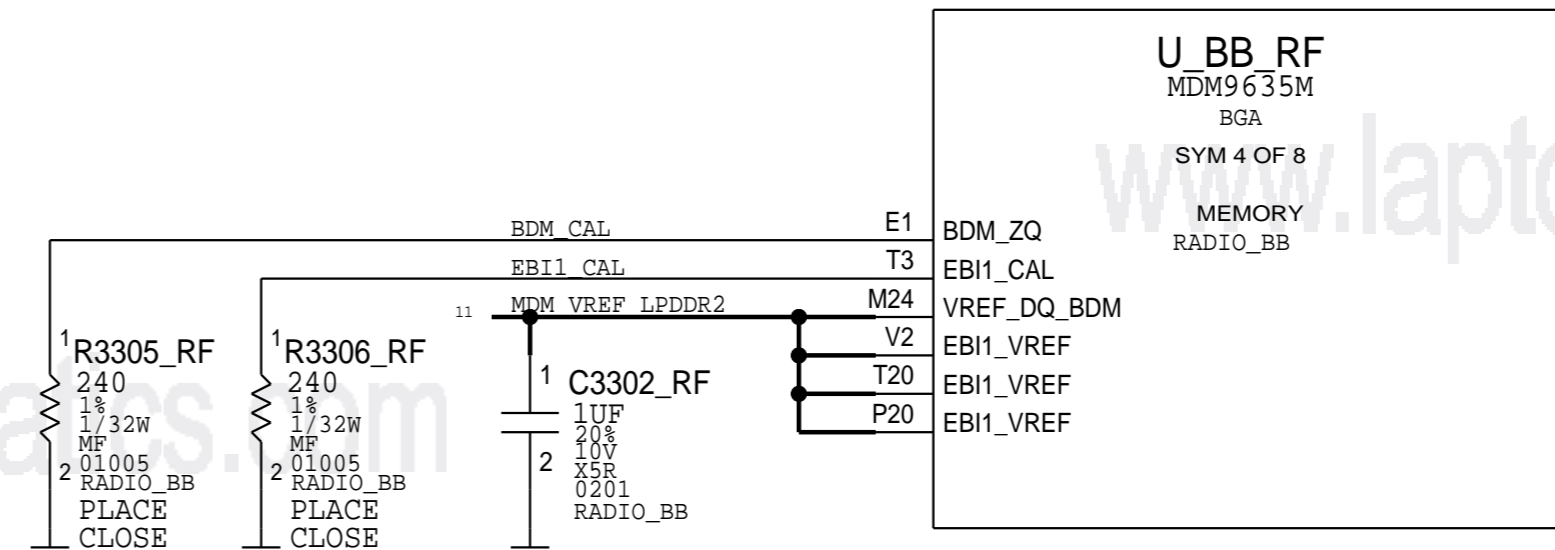
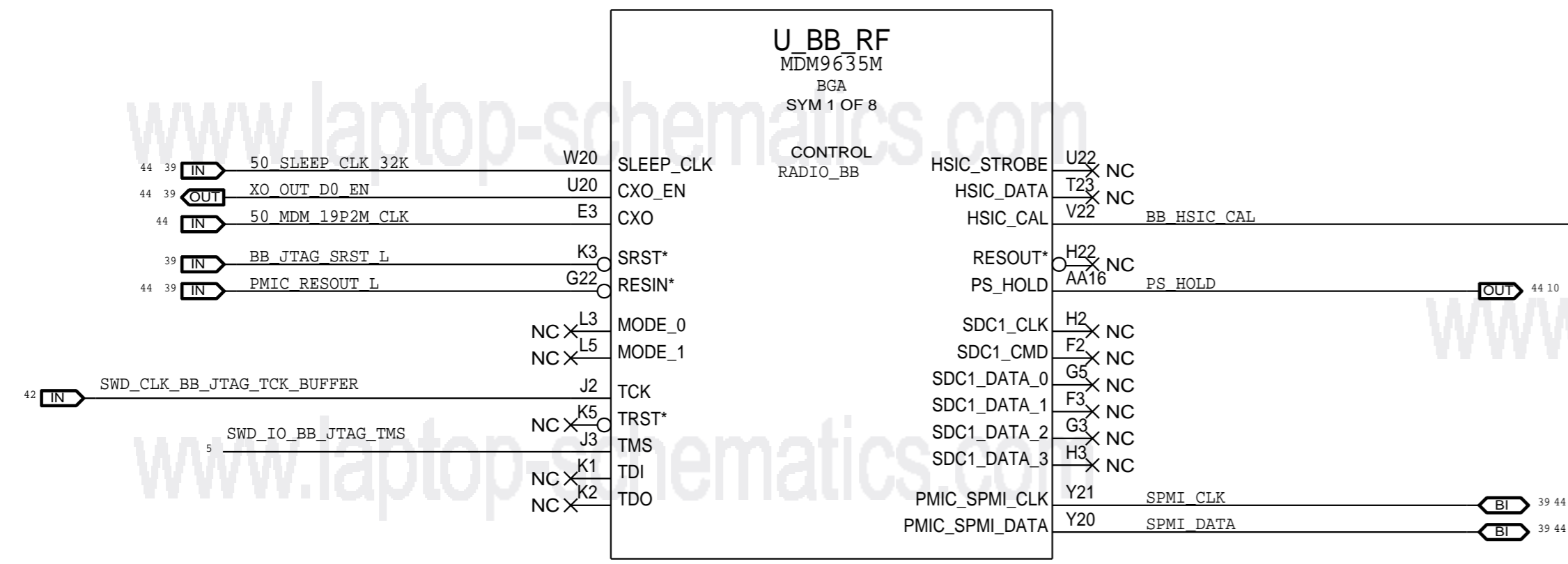
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		PAGE	31 OF 51
		SHEET	40 OF 60

BASEBAND: POWER 2



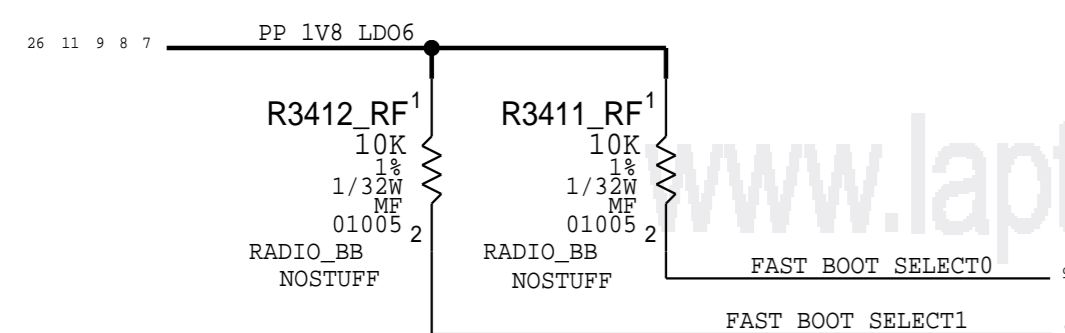
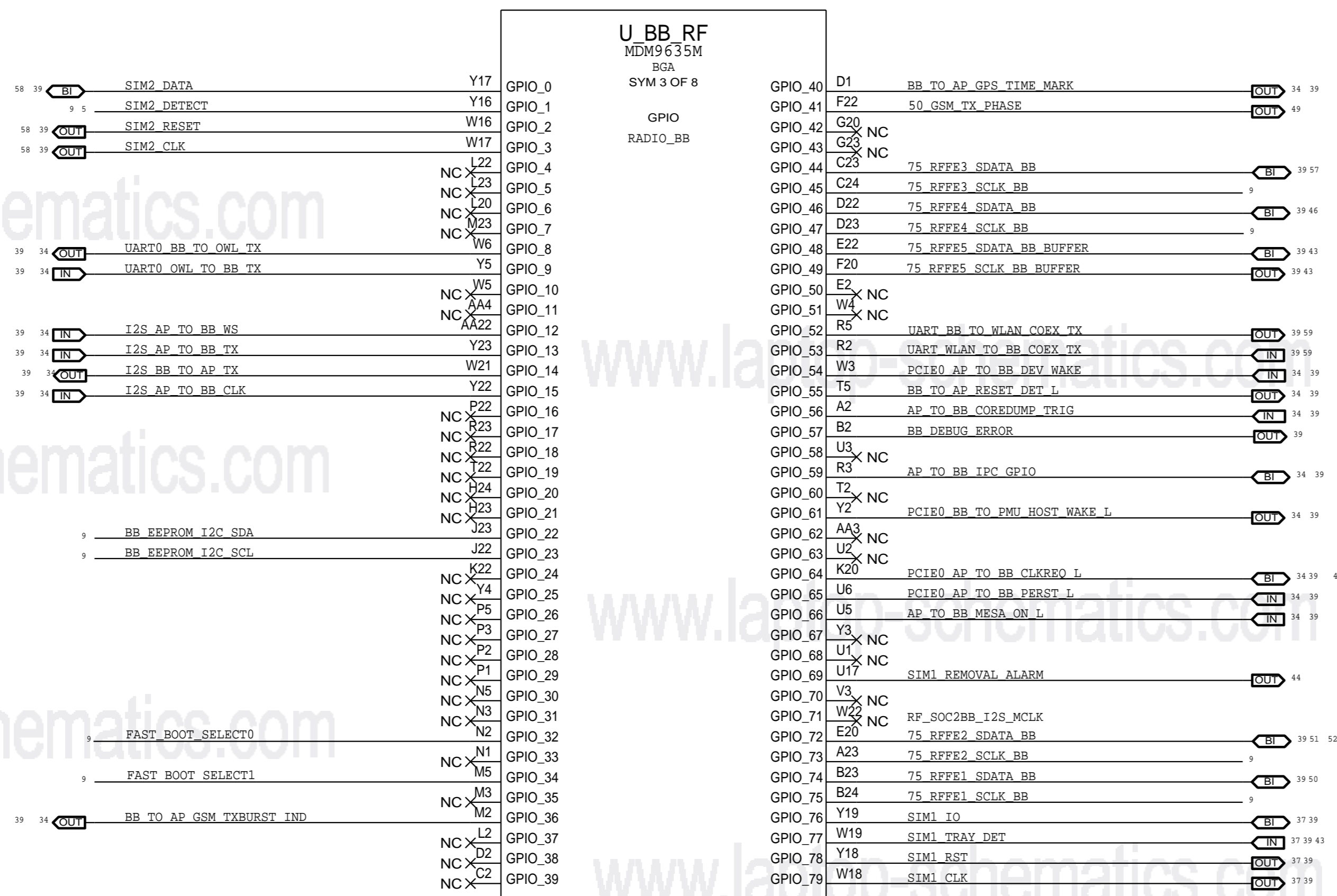
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BRANCH		PAGE 32 OF 51
SHEET		41 OF 60

BASEBAND: CONTROL AND INTERFACES



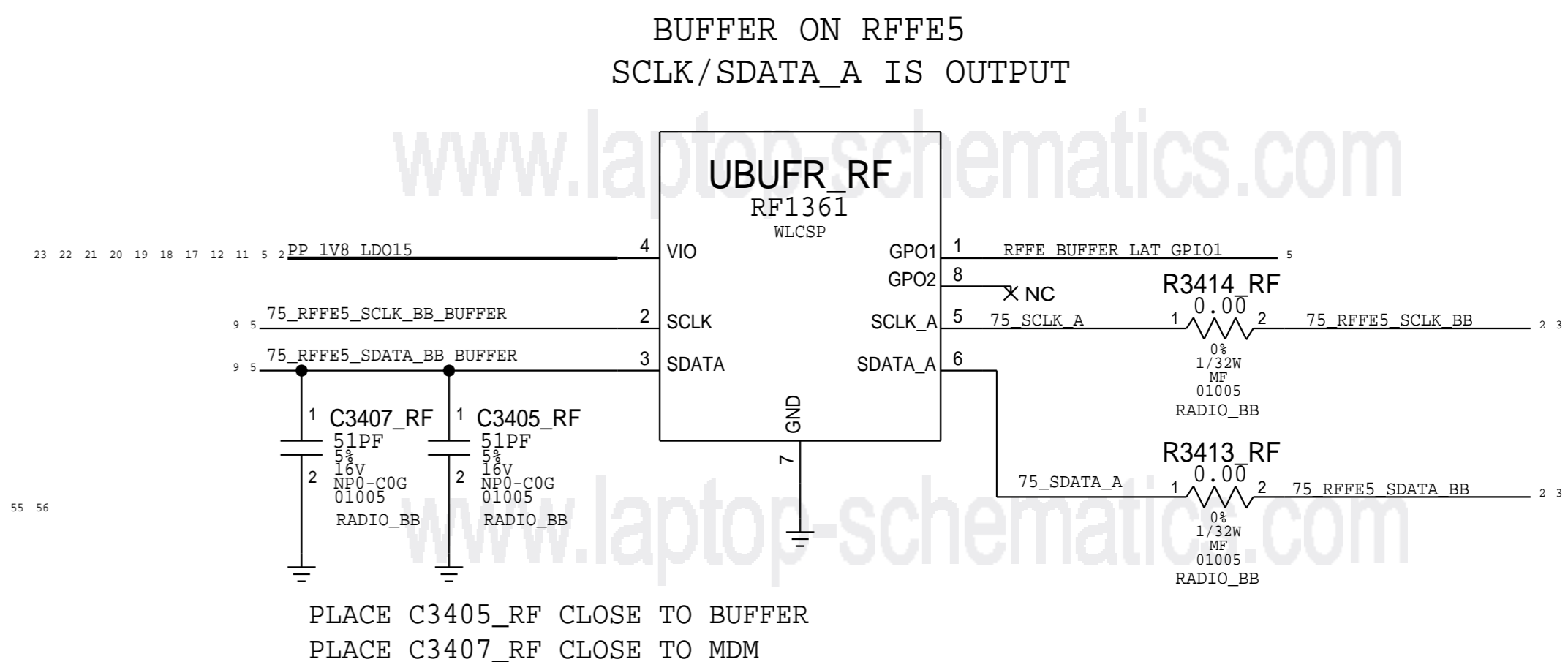
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BASEBAND: GPIOS

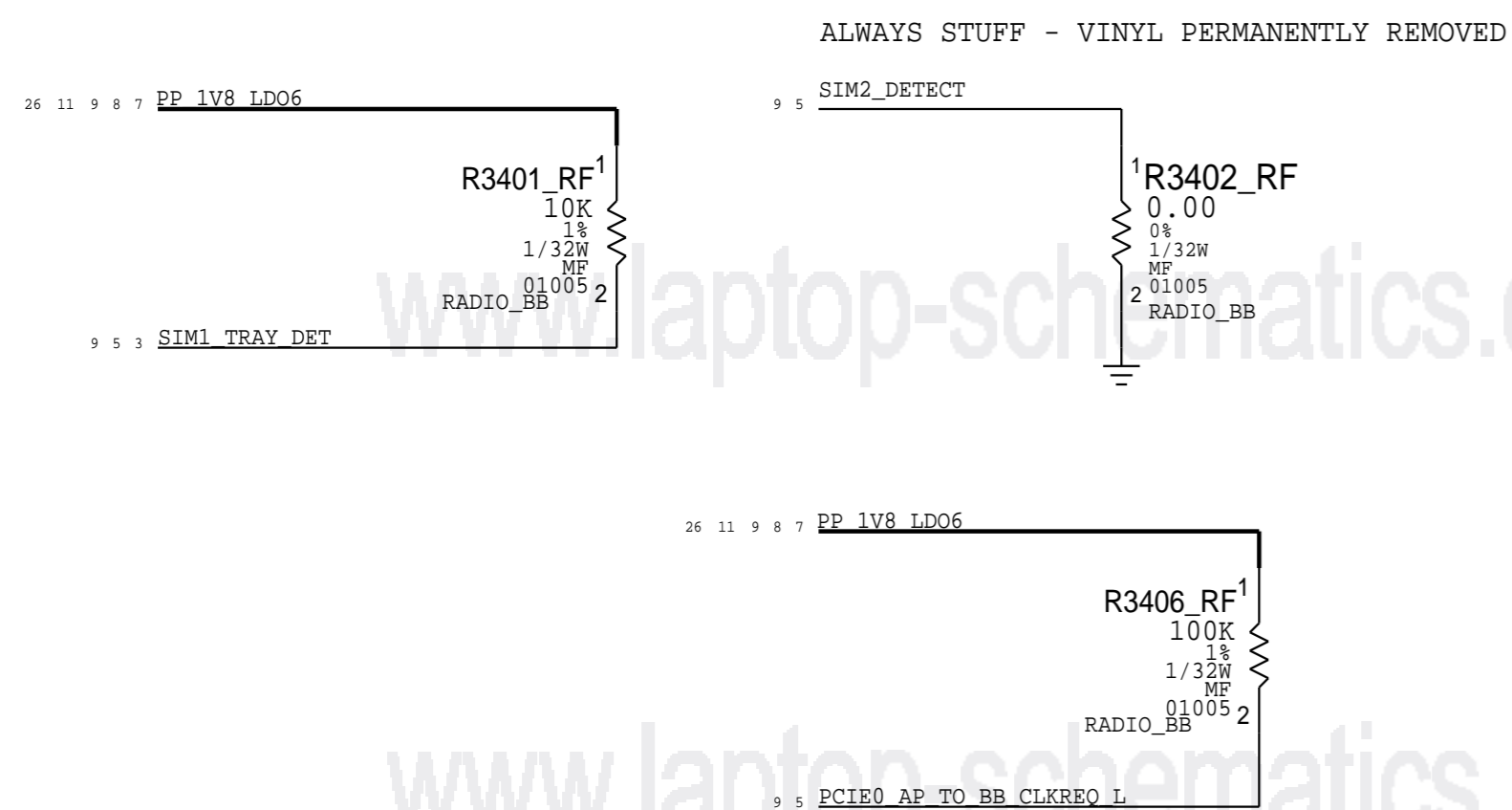


STUFF R3411 FOR PCIE BOOT (UNFUSED BB)
STUFF R3412 FOR USB BOOT (UNFUSED BB)

OPTION	SEL2	SEL1	SEL0
GPIO	35	34	32
PCIE	0	0	1
HSUSB	0	1	0
HSIC	0	1	1

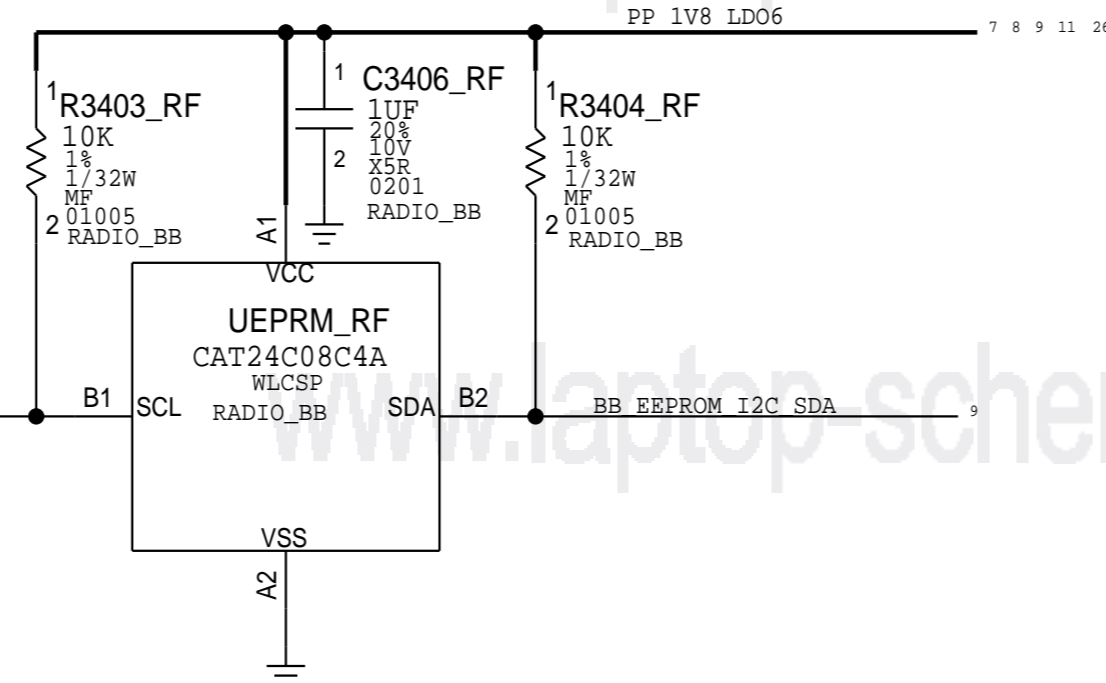


PLACE C3405_RF CLOSE TO BUFFER
PLACE C3407_RF CLOSE TO MDM

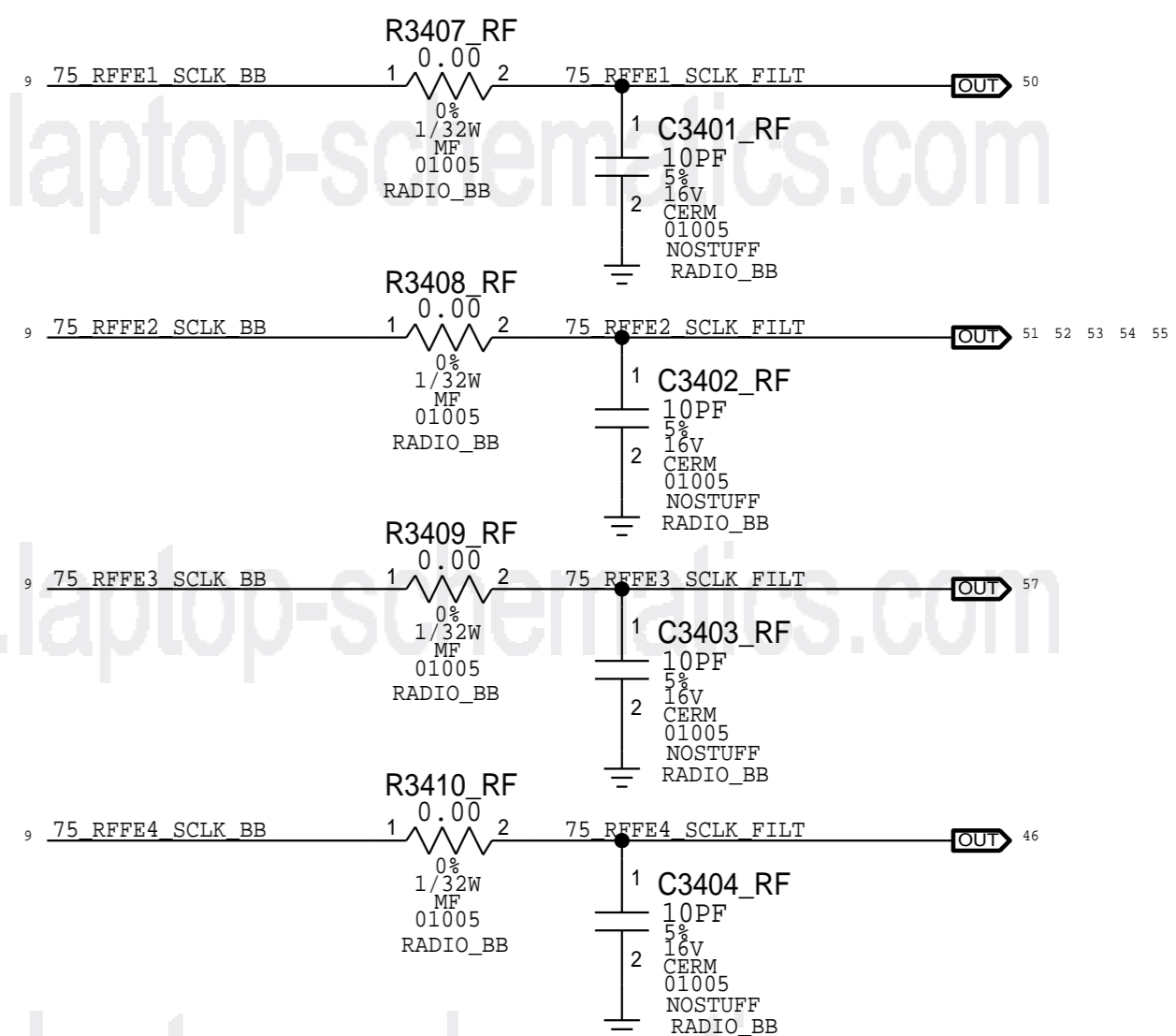


PCIE PULL-UPS TO BB RAIL

BB EEPROM



RFFE CLOCK FILTERS



RFFE USAGE TABLE

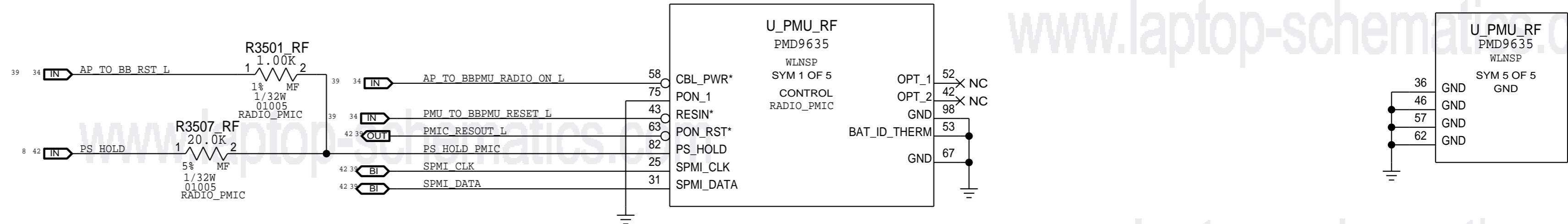
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- RFFE2 LB/MB/HB PAD, 2G PA, LB/MB/HB ASM
- RFFE3 DIV ASM
- RFFE4 QPOET
- RFFE5 DIV LNA, ANT TUNERS

PAGE TITLE		DRAWING NUMBER	SIZE
CELLULAR BASEBAND: GPIOS		051-00094	D
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PMU: CONTROL AND CLOCKS

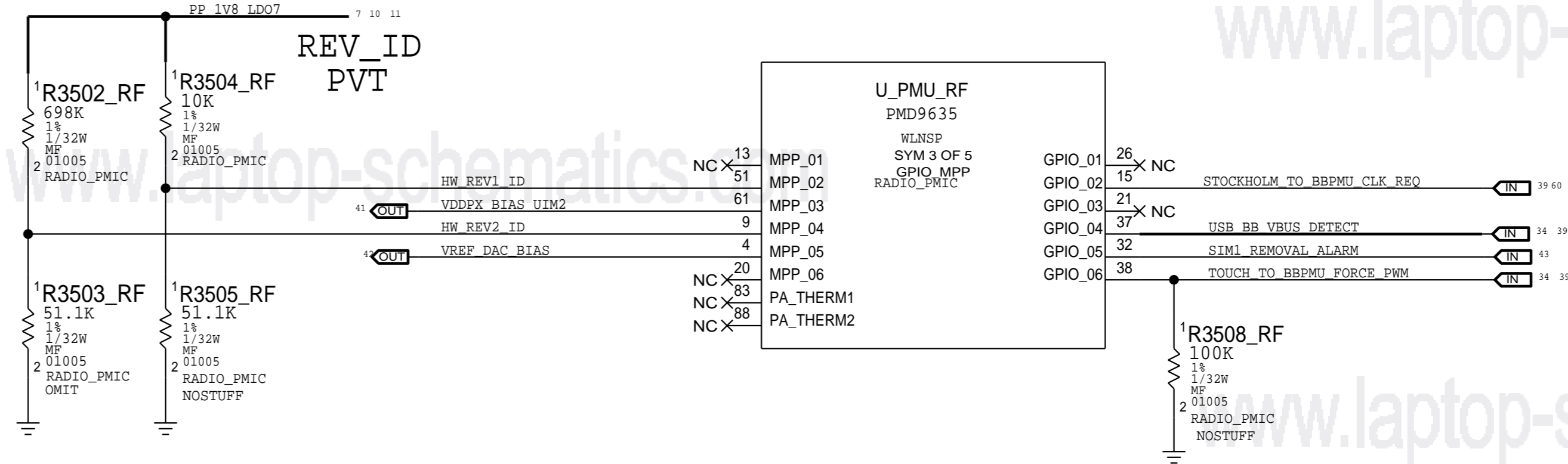
RESET AND CONTROL: PMU

HW REV1 ID	R3502	R3503	CONFIG
1.80V	698K	-	MLB
0.12V	698K	51.1K	SELF GEN

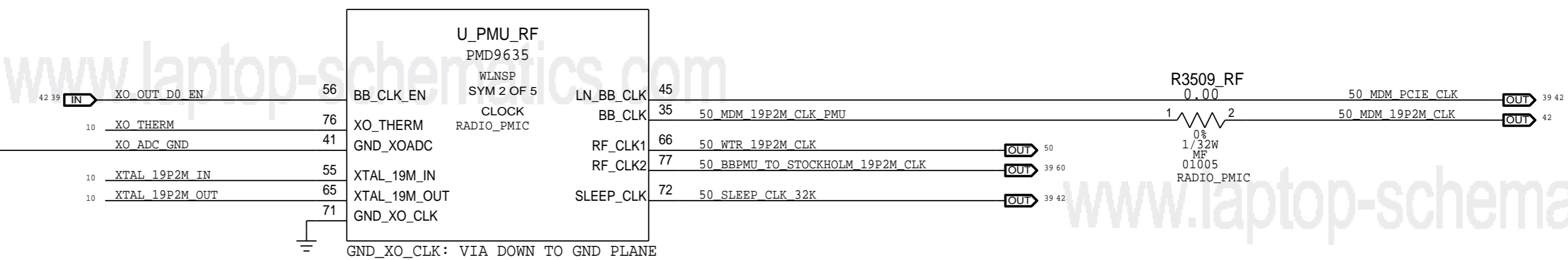
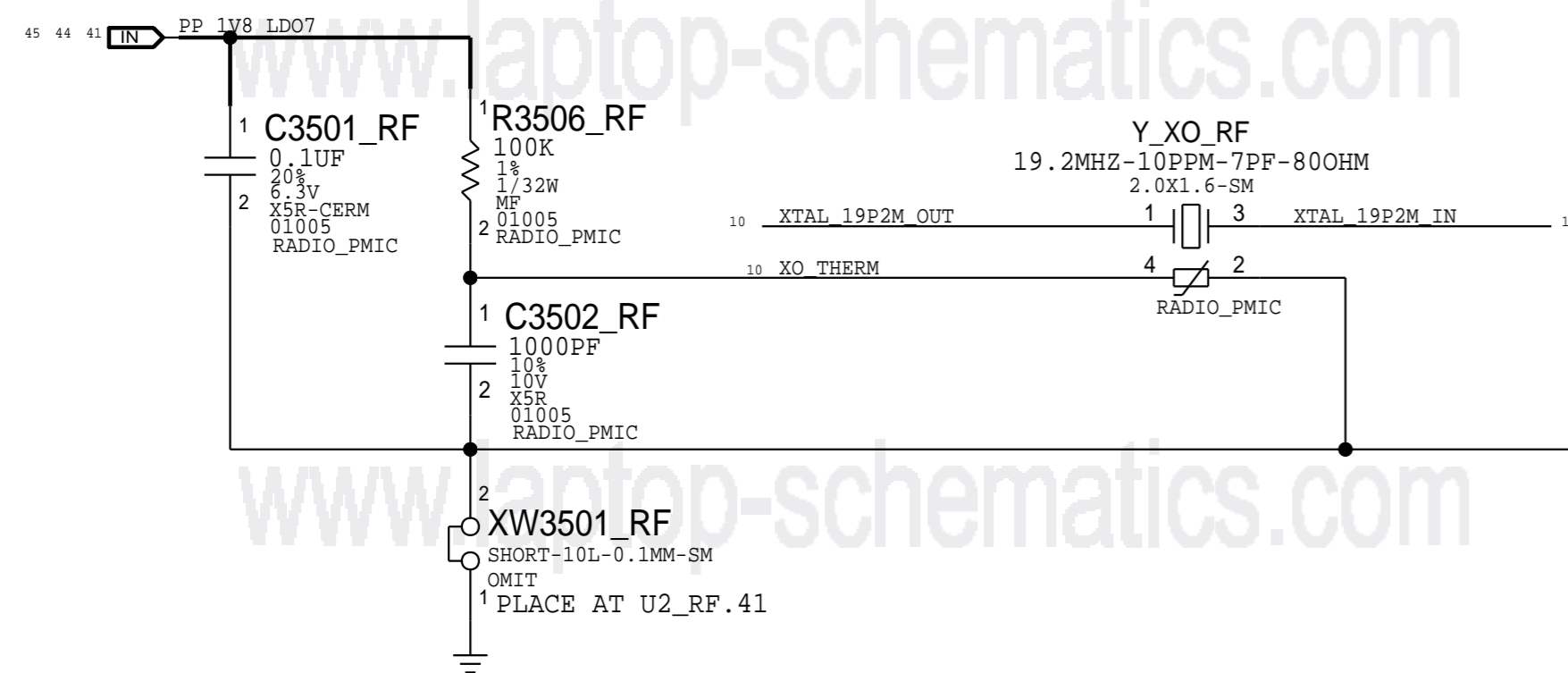


MPPS AND GPIOs: PMU

HW REV ID	R3504	R3505	REVISION
0.10V	887K	51.1K	DEV1
0.30V	255K	51.1K	DEV2
0.50V	124K	51.1K	DEV3
0.70V	82.5K	51.1K	DEV4/PROTOMLB1
0.90V	51.1K	51.1K	PROTOMLB2
1.10V	31.6K	51.1K	DEV5/PROTO1
1.20V	50K	100K	PROTO2
1.31V	39K	105K	EVT
1.43V	13.3K	51.1K	EVT ALT
1.55V	8.25K	51.1K	CARRIER BUILD
1.67V	3.92K	51.1K	DVT
1.80V	10K	-	PVT



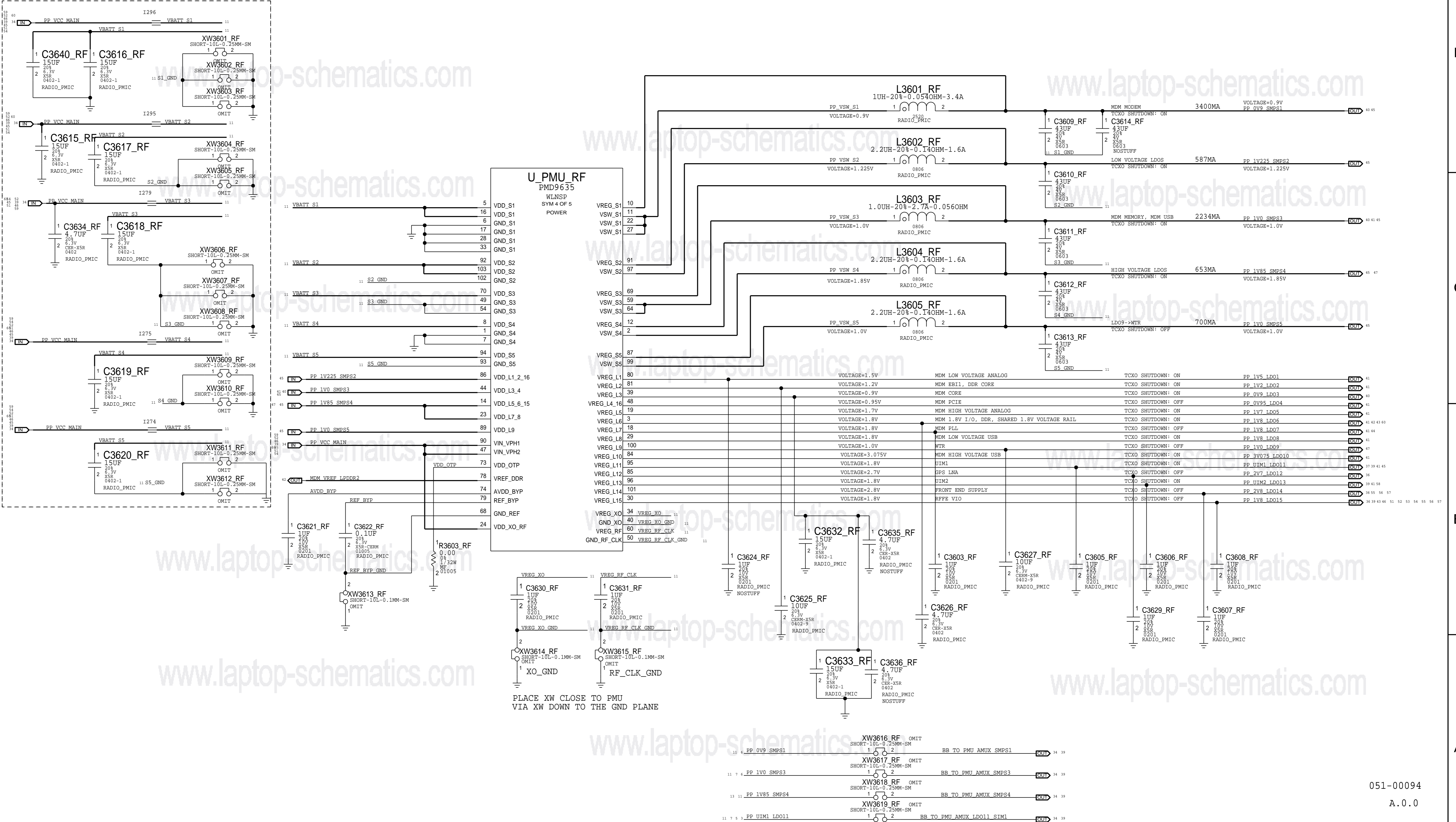
XTAL AND CLOCK: PMU



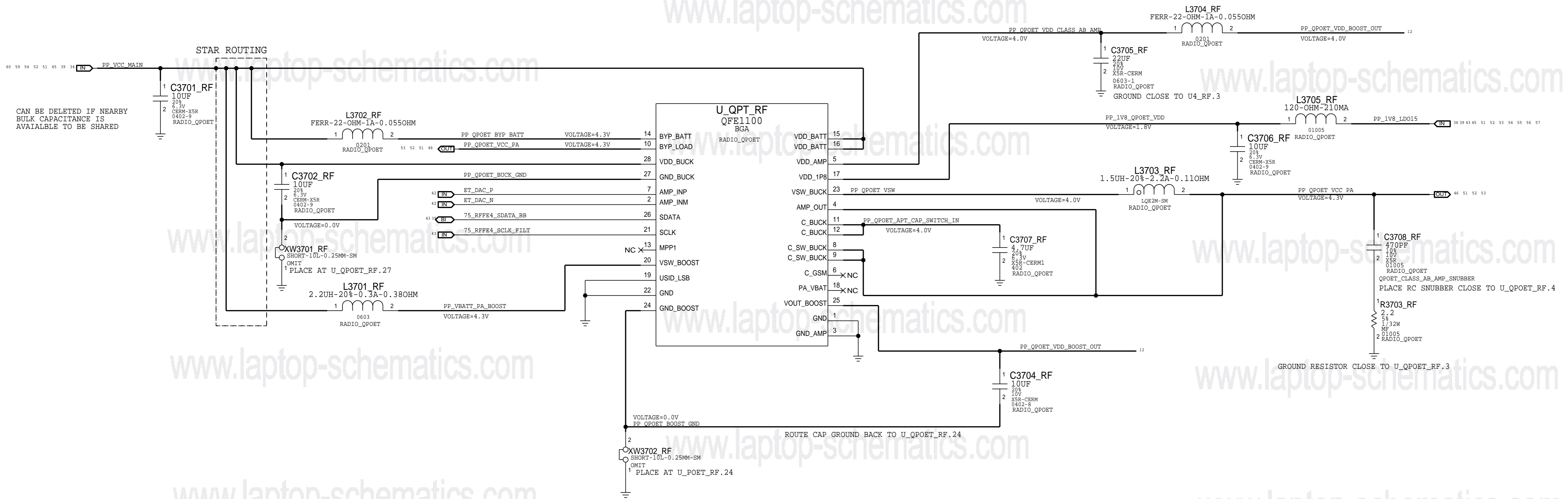
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		SHEET 44 OF 60

PMU: SWITCHERS AND LDOS

SWITCHERS BULK CAPS

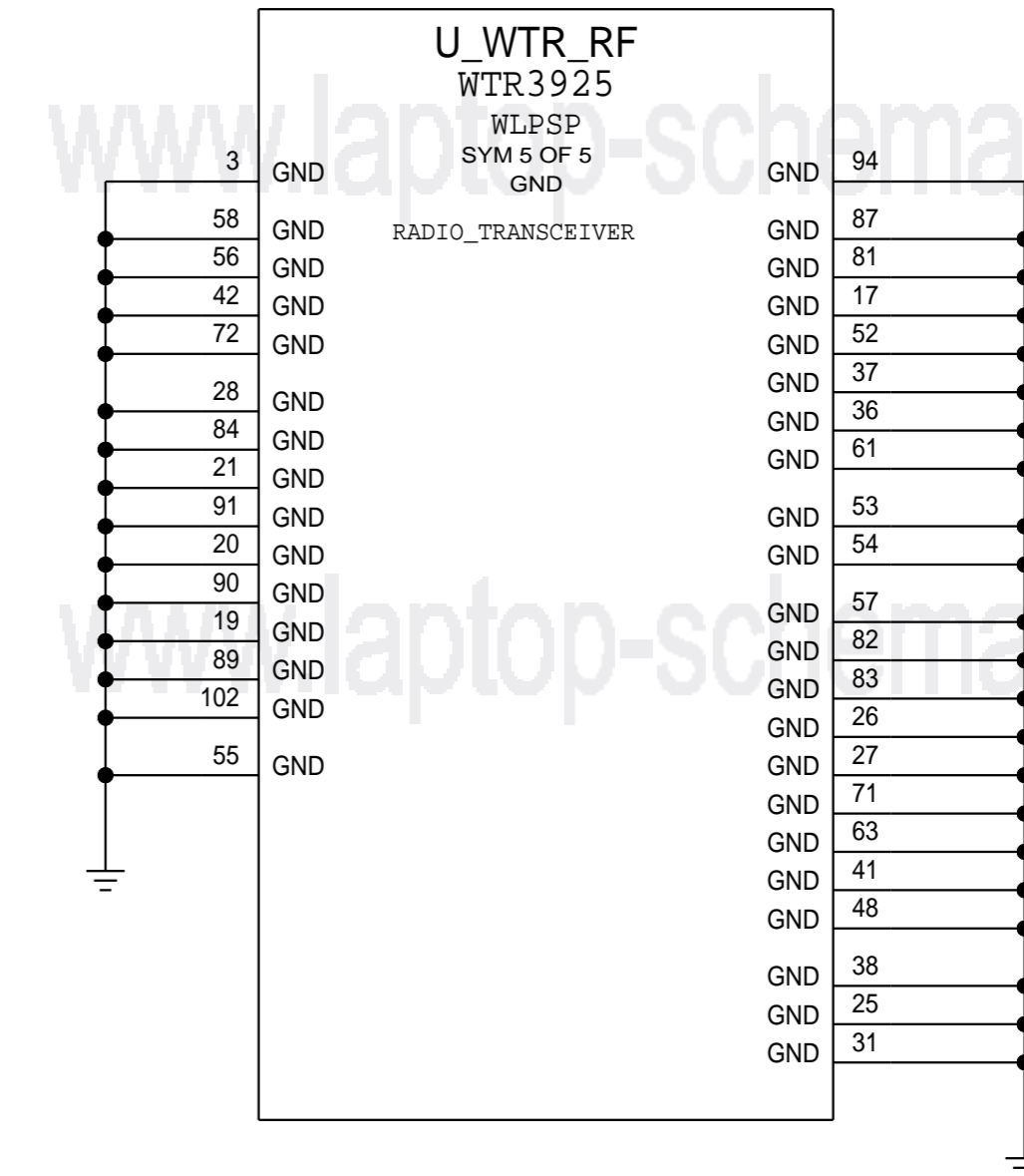
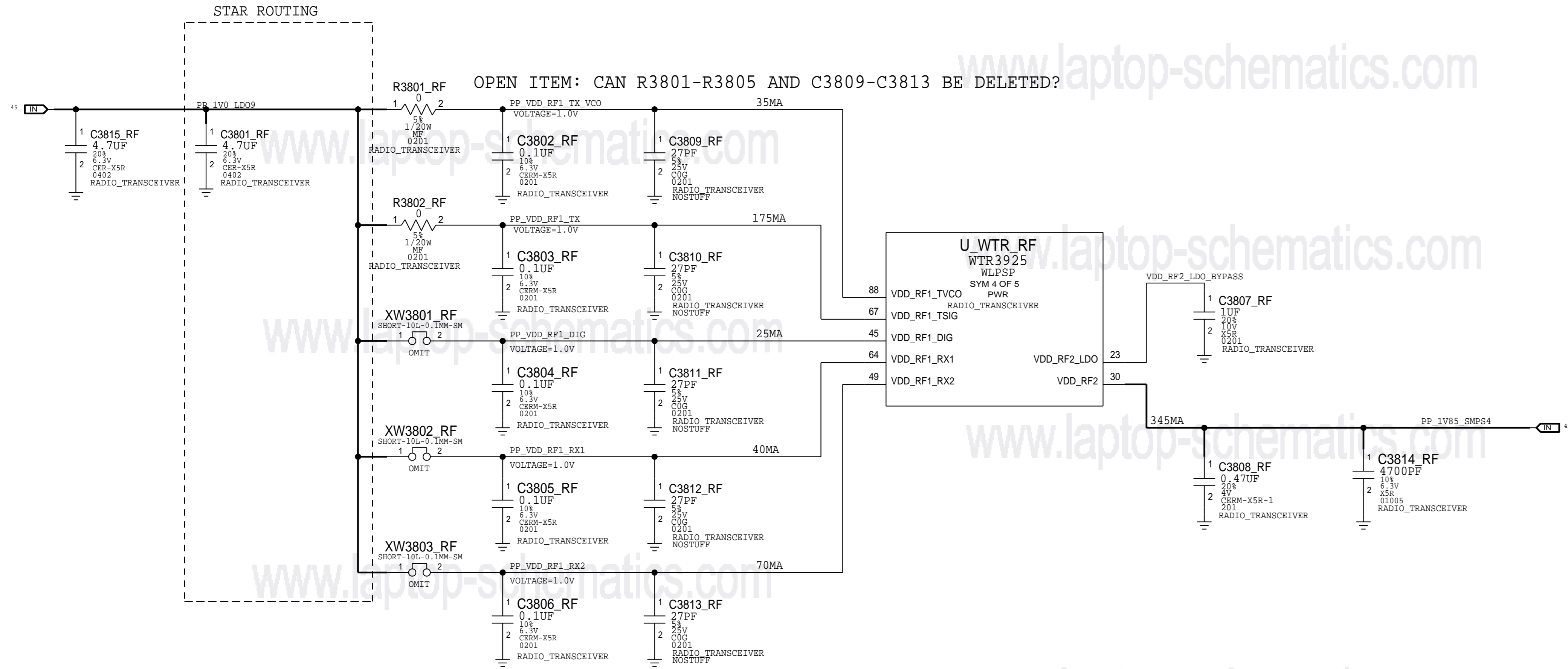


PMU: ET MODULATOR



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		PAGE	37 OF 51
		SHEET	46 OF 60

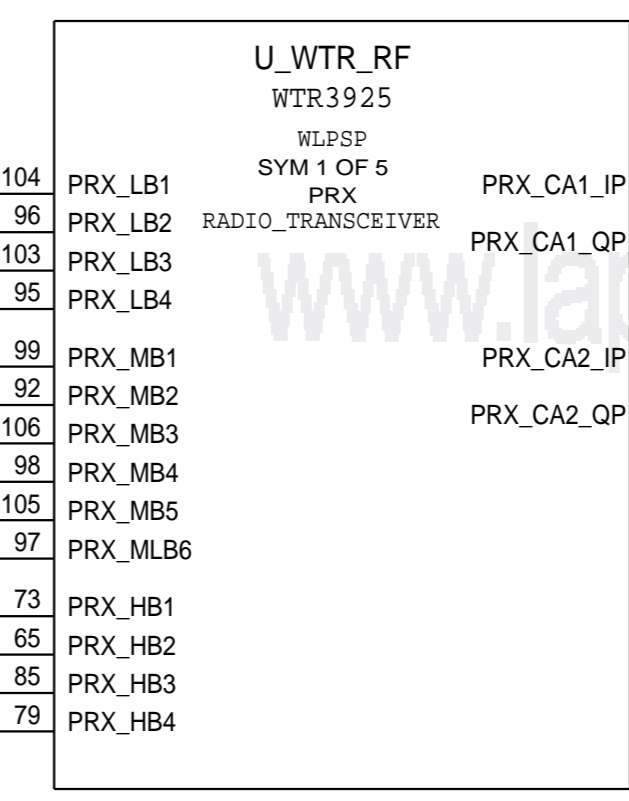
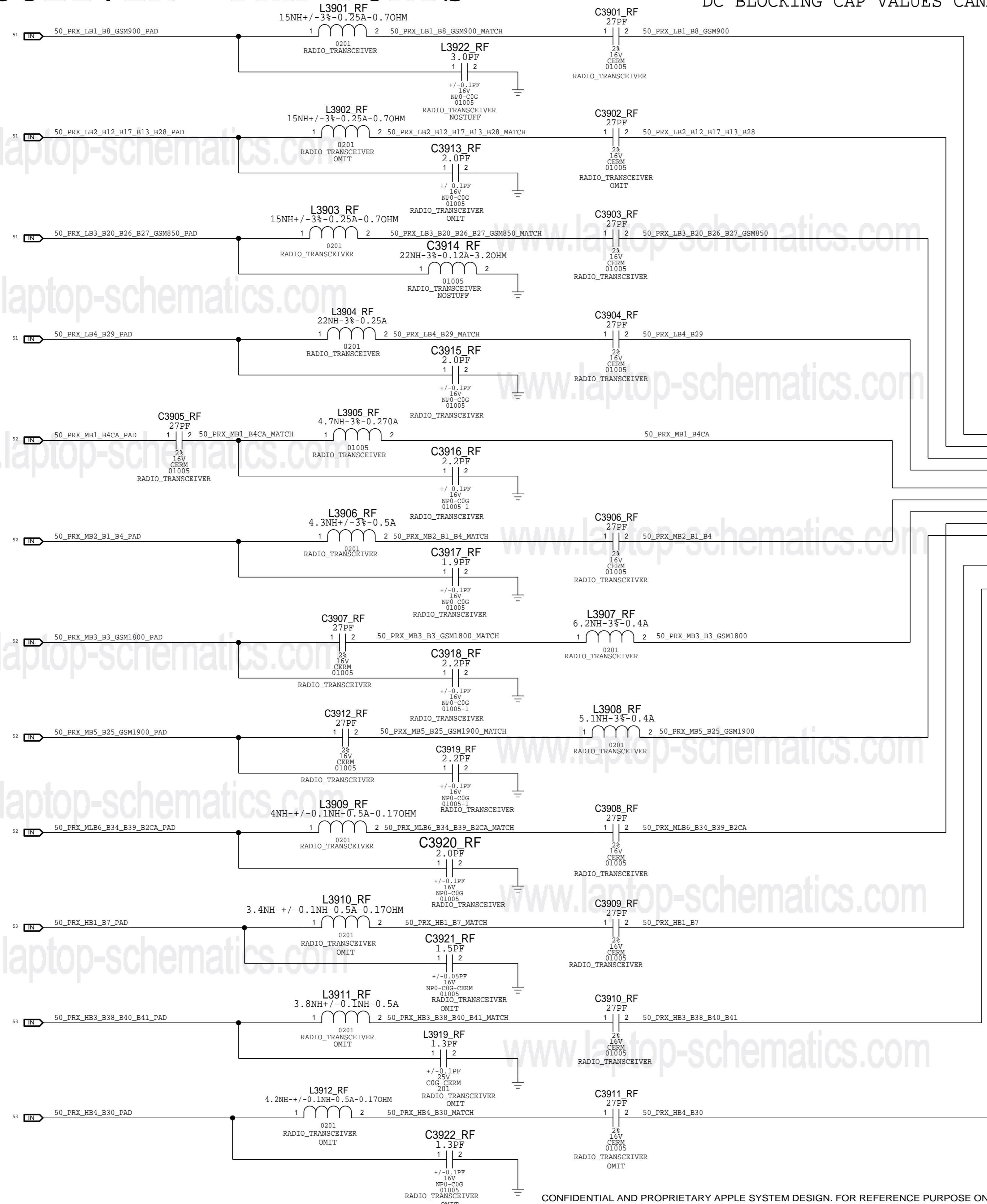
TRANSCEIVER: POWER



PAGE TITLE CELLULAR TRANSCEIVER: POWER		
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		SHEET 47 OF 60

TRANSCEIVER: PRX PORTS

DC BLOCKING CAP VALUES CANNOT BE MORE THAN 33PF

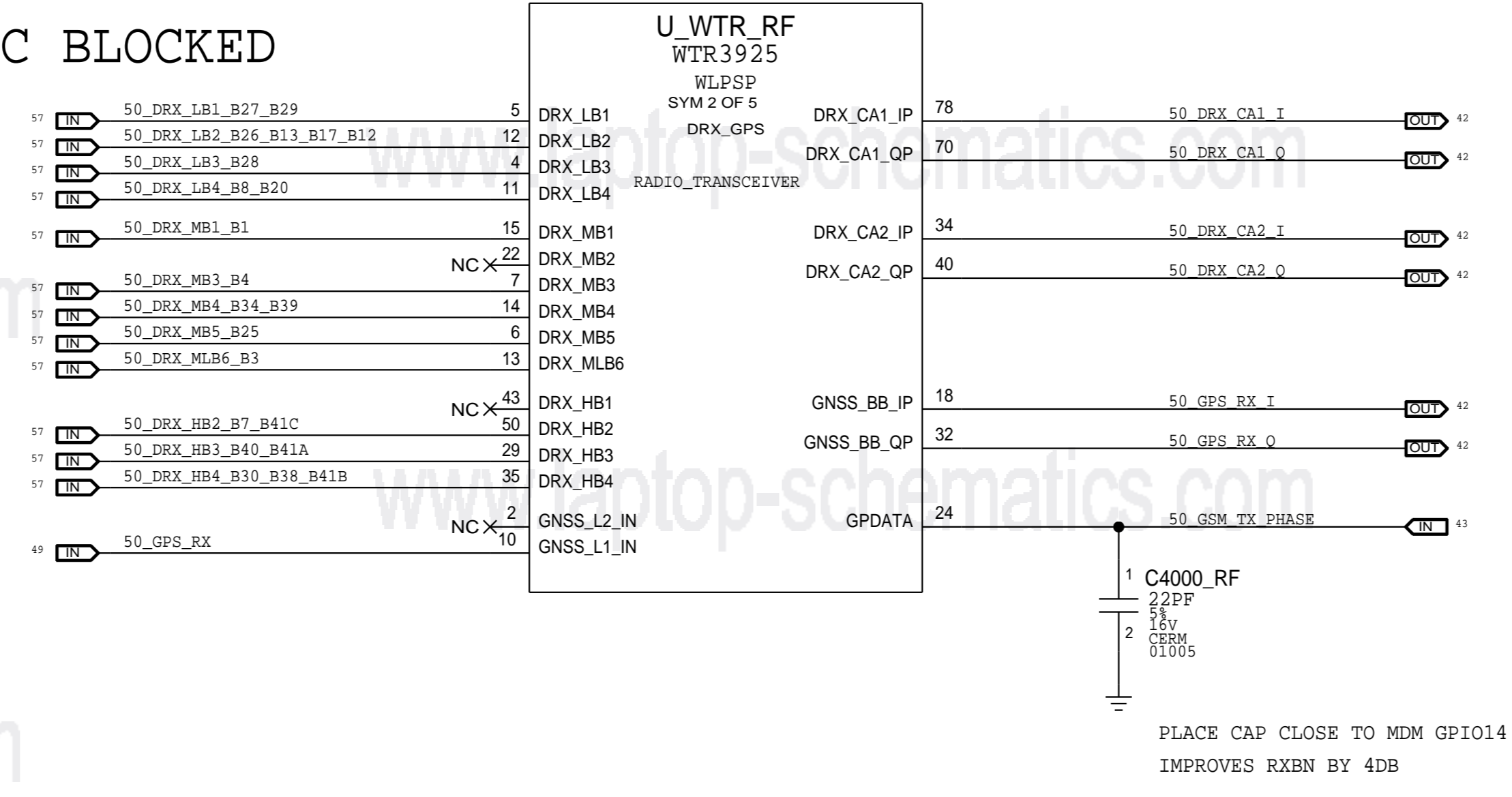


FOR EVT_MD:
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Apple Inc.		DRAWING NUMBER	051-00094
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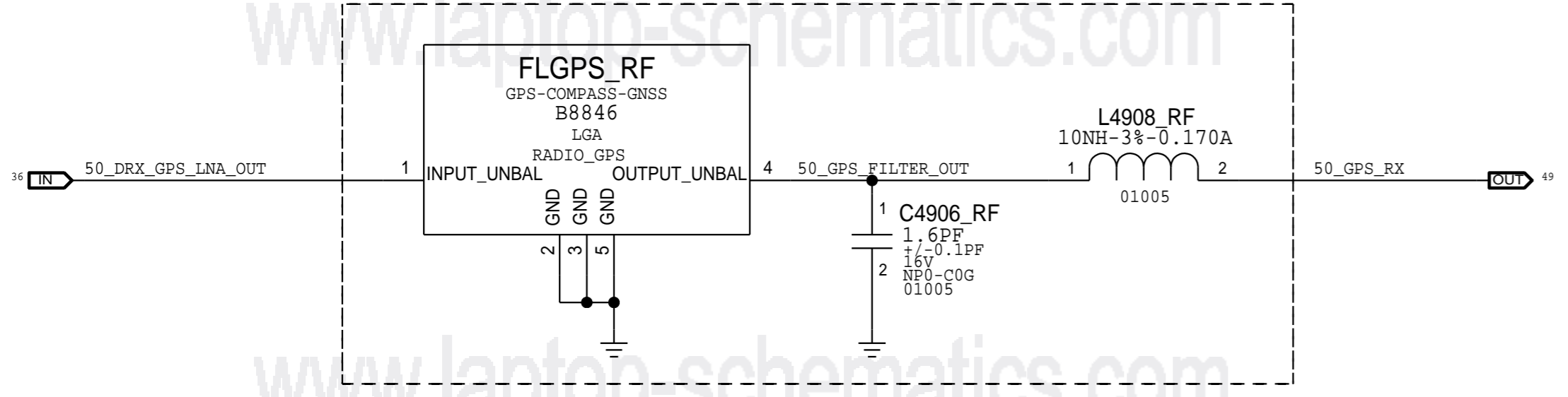
TRANSCEIVER: DRX/GPS PORTS

DRX MODULE PORTS ARE DC BLOCKED



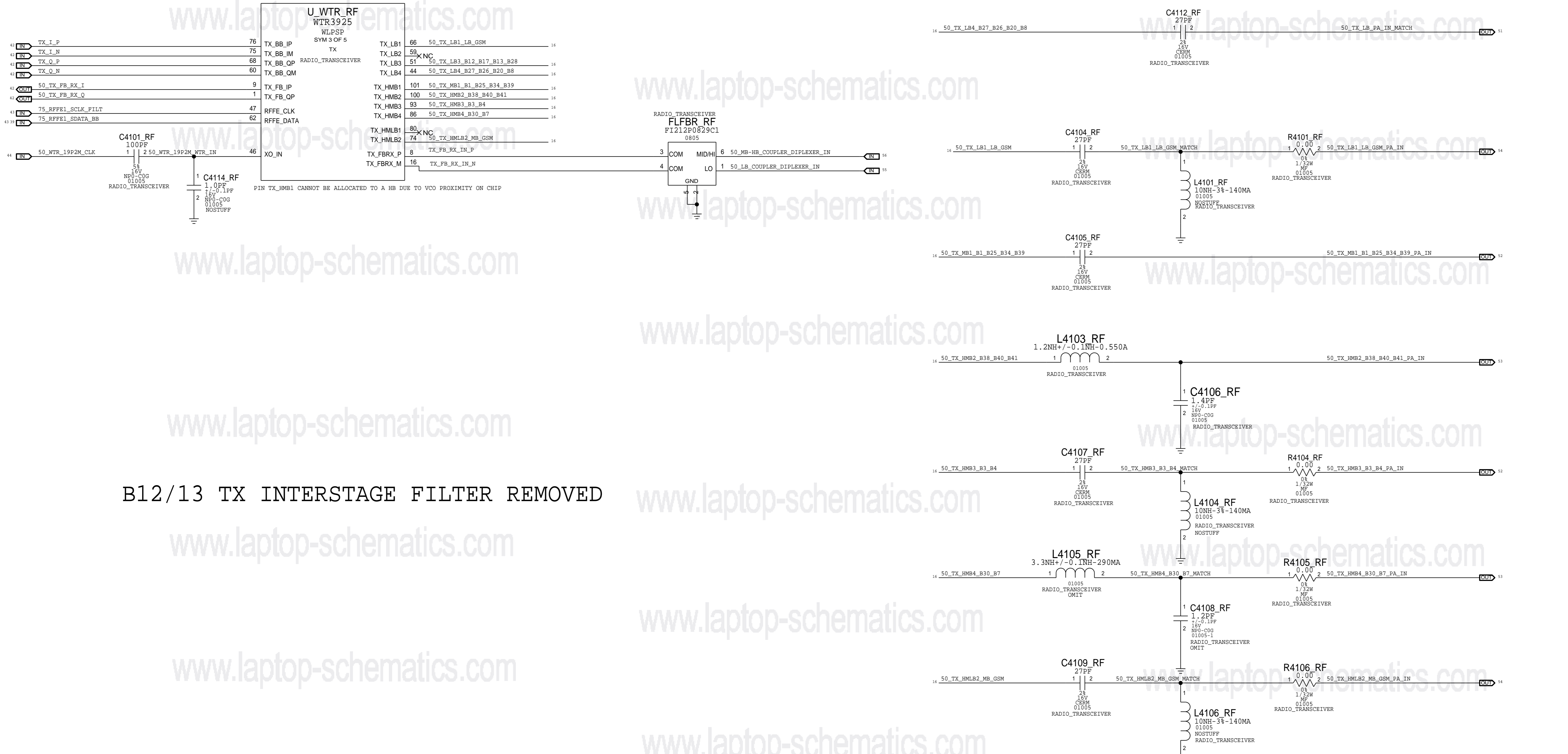
GPS FILTER

PLACE NEAR U_WTR



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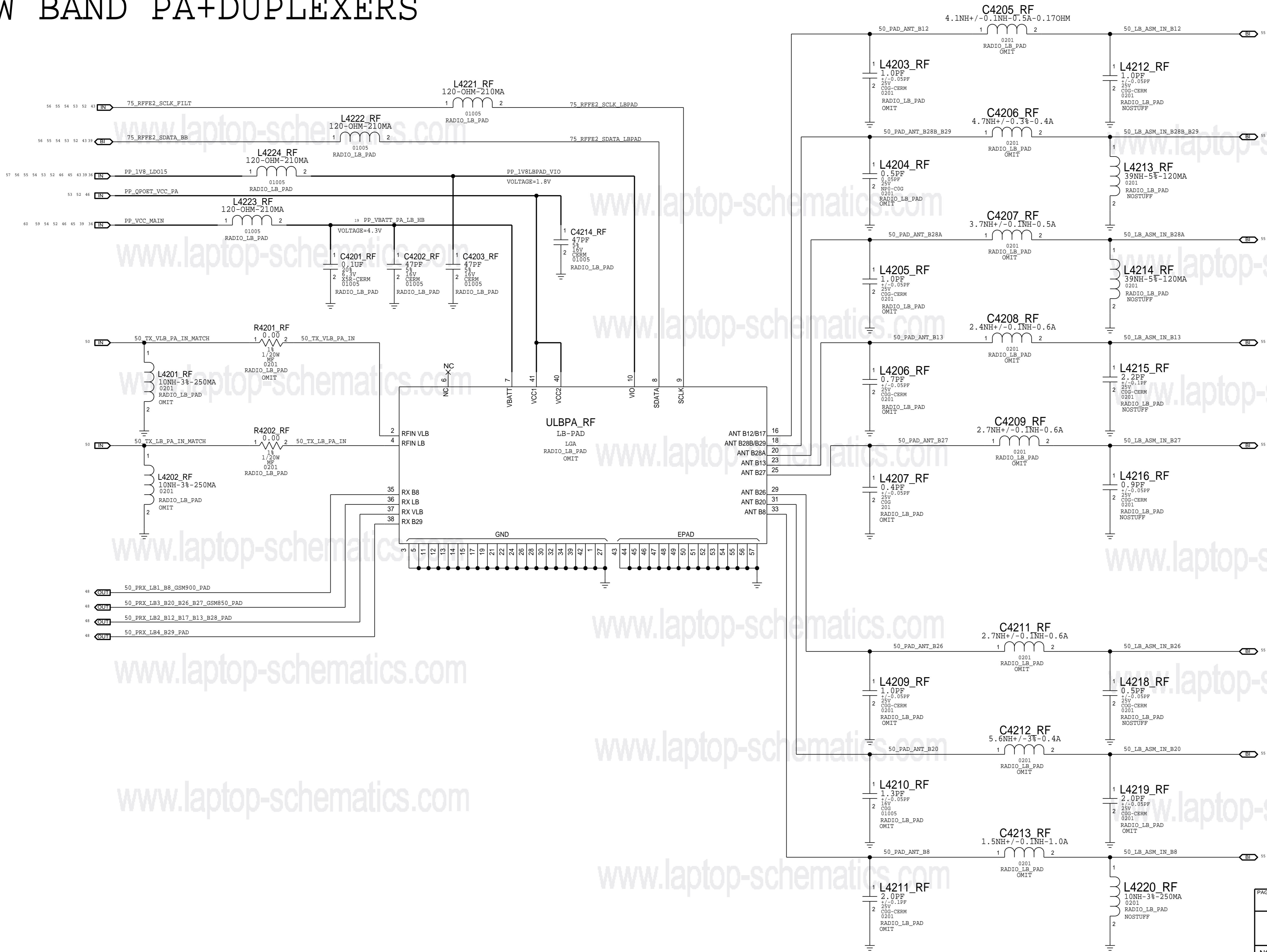
TRANSCEIVER: TX PORTS



B12/13 TX INTERSTAGE FILTER REMOVED

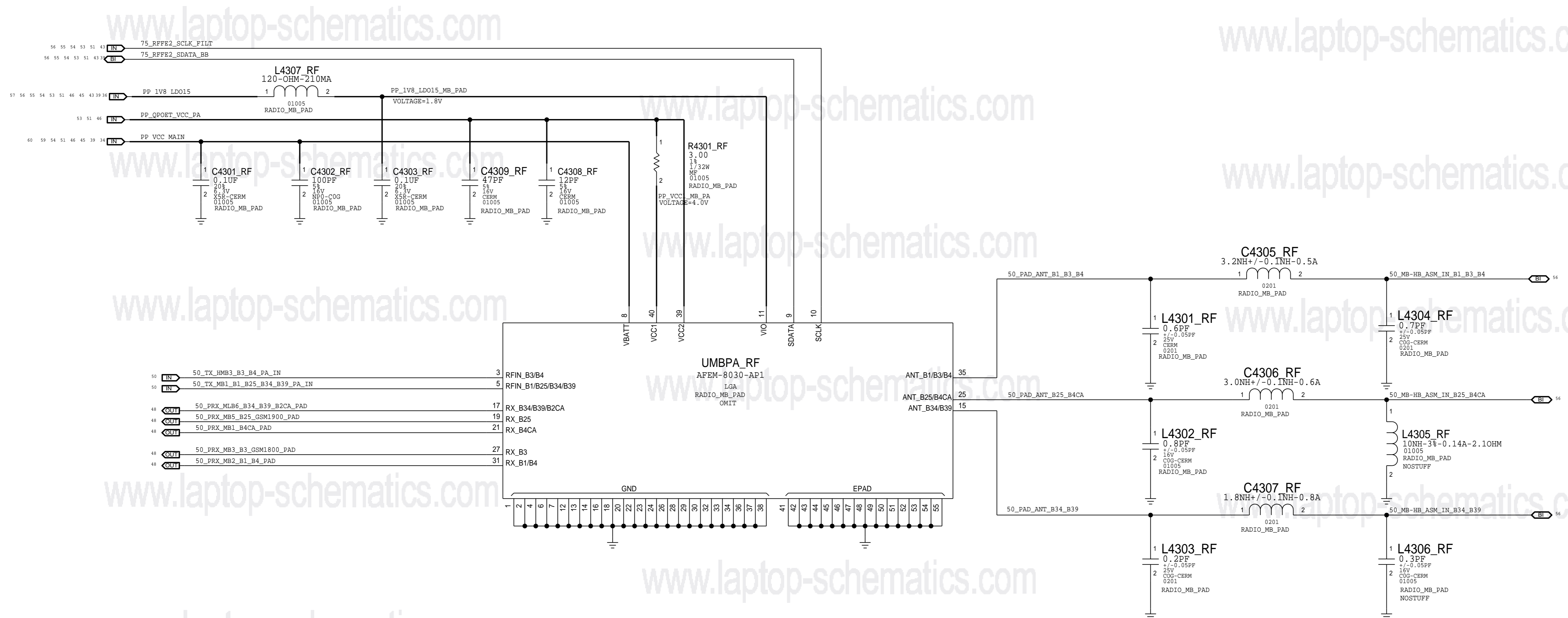
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BRANCH	PAGE	41 OF 51
SHEET	50 OF 60	

LOW BAND PA+DUPLEXERS



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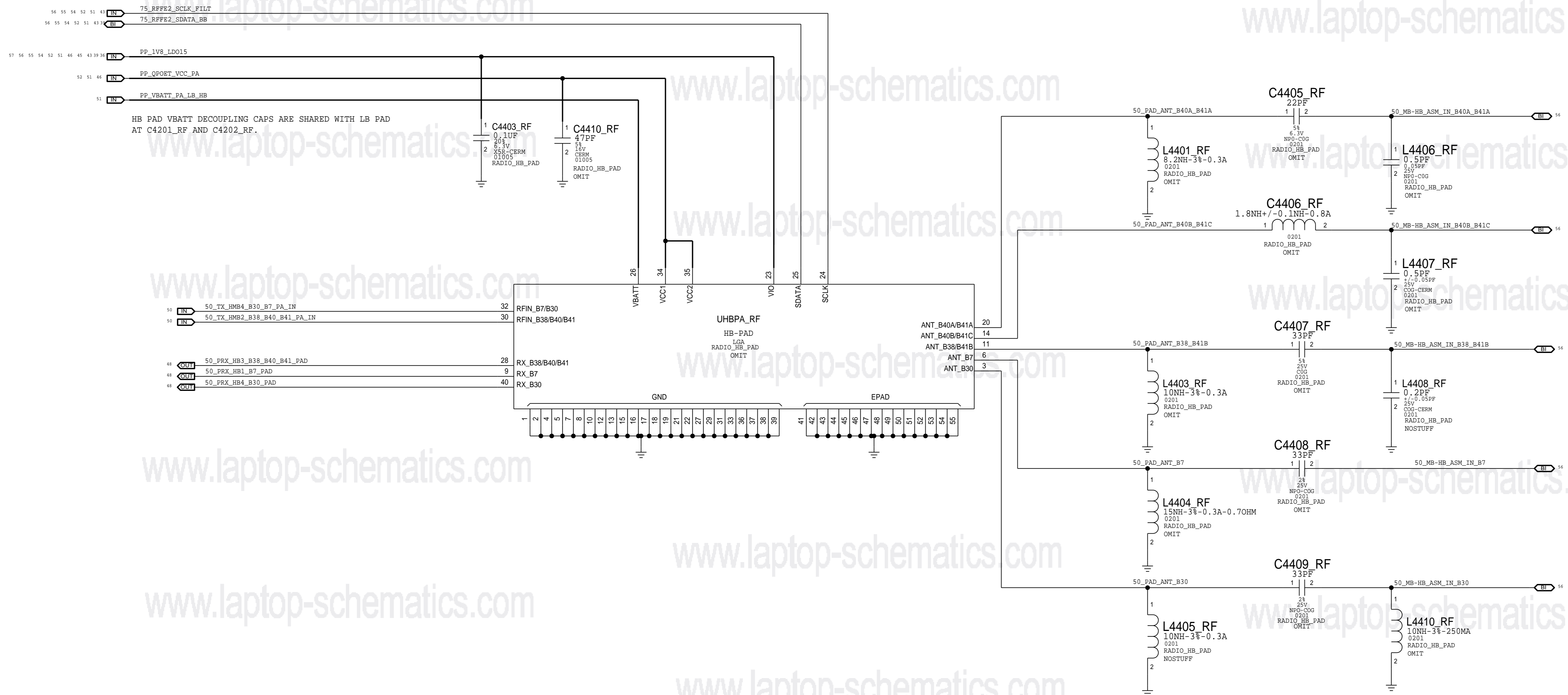
MID BAND PA+DUPLEXERS



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PAGE 43 OF 51	SHEET 52 OF 60	

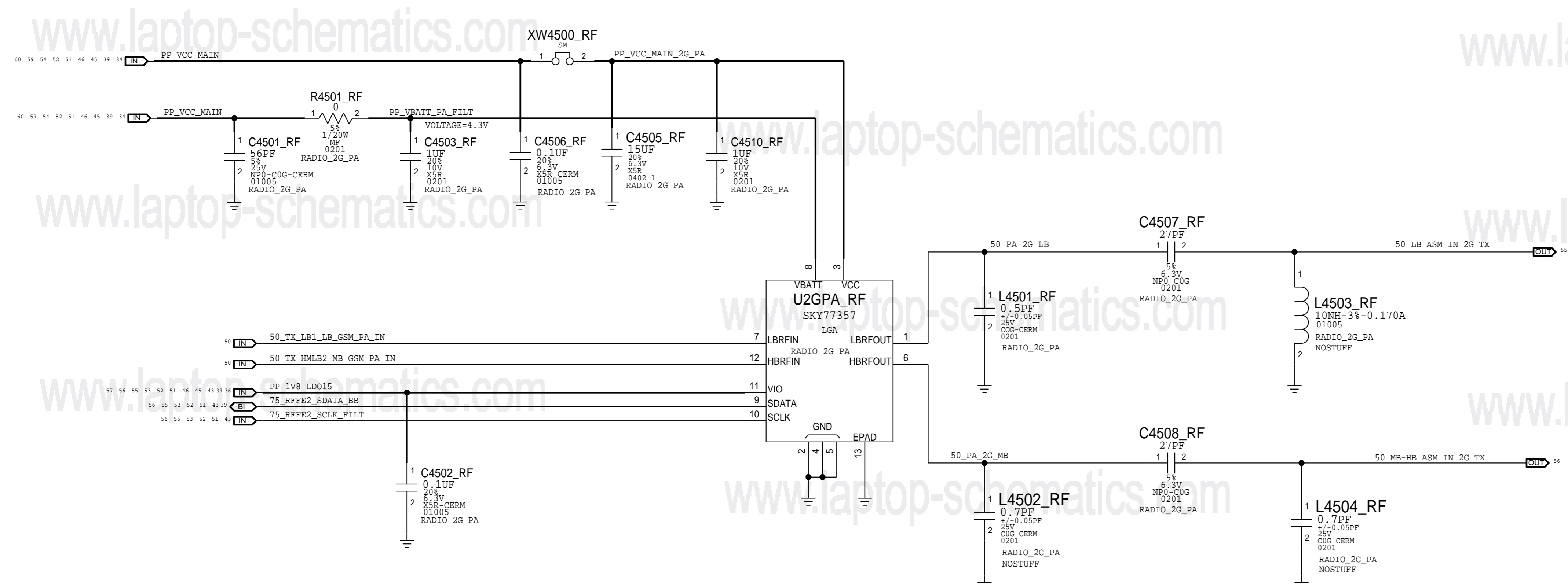
HIGH BAND PA+DUPLEXERS



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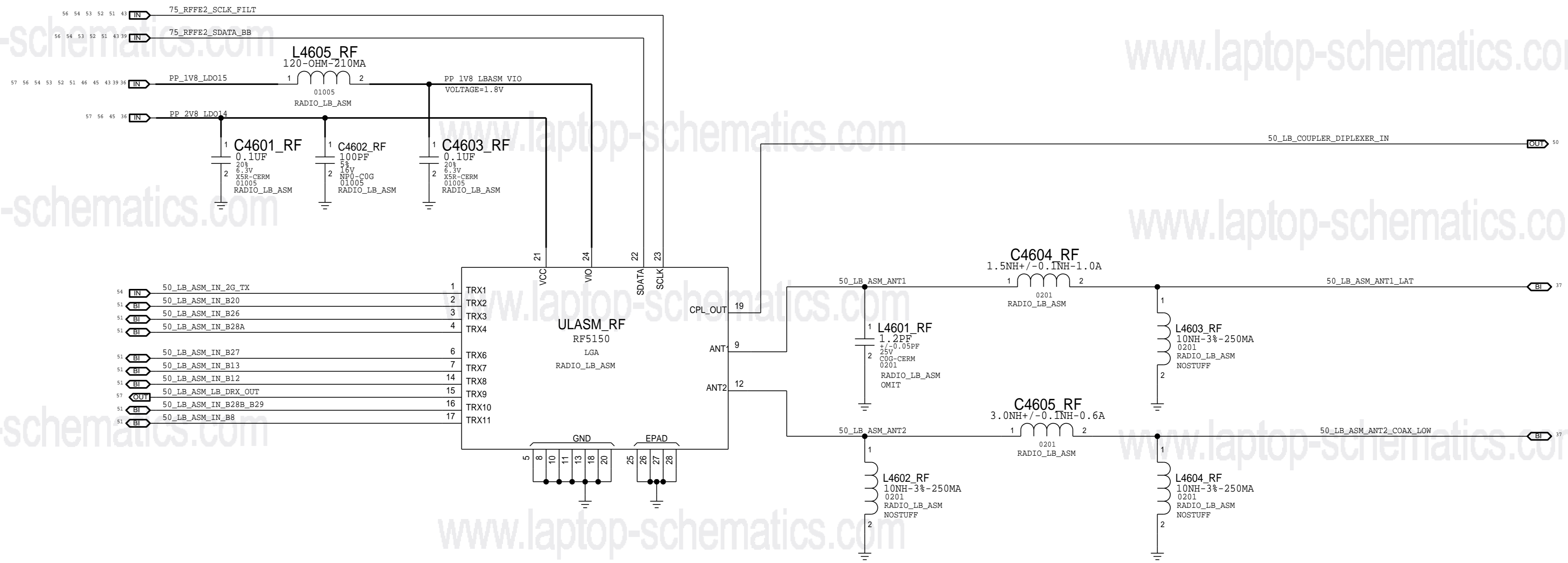
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BRANCH	PAGE	44 OF 51
SHEET	53 OF 60	

2G PA



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		PAGE	45 OF 51
		SHEET	54 OF 60

LOW BAND ANTENNA SWITCH MODULE



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		PAGE	46 OF 51
		SHEET	55 OF 60

MID-HIGH BAND ANTENNA SWITCH MODULE

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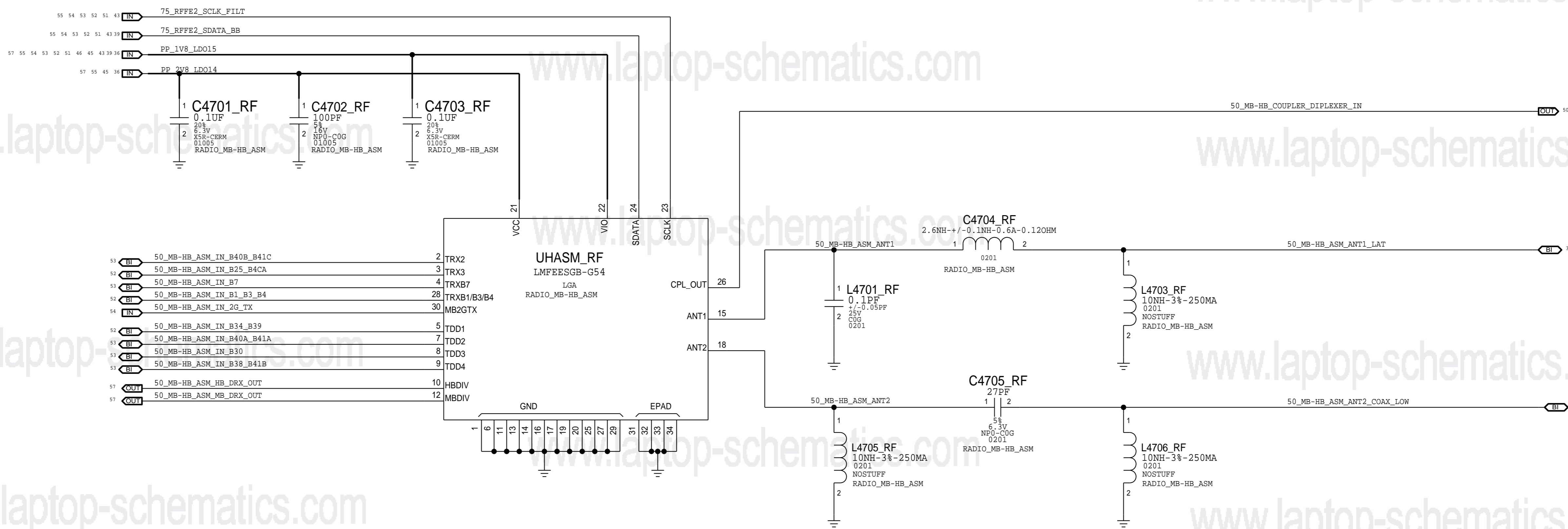
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EVT ASM ASSIGNMENT:
 B40B/B41C - TRX2
 B30 - TDD3



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DIVERSITY MODULE

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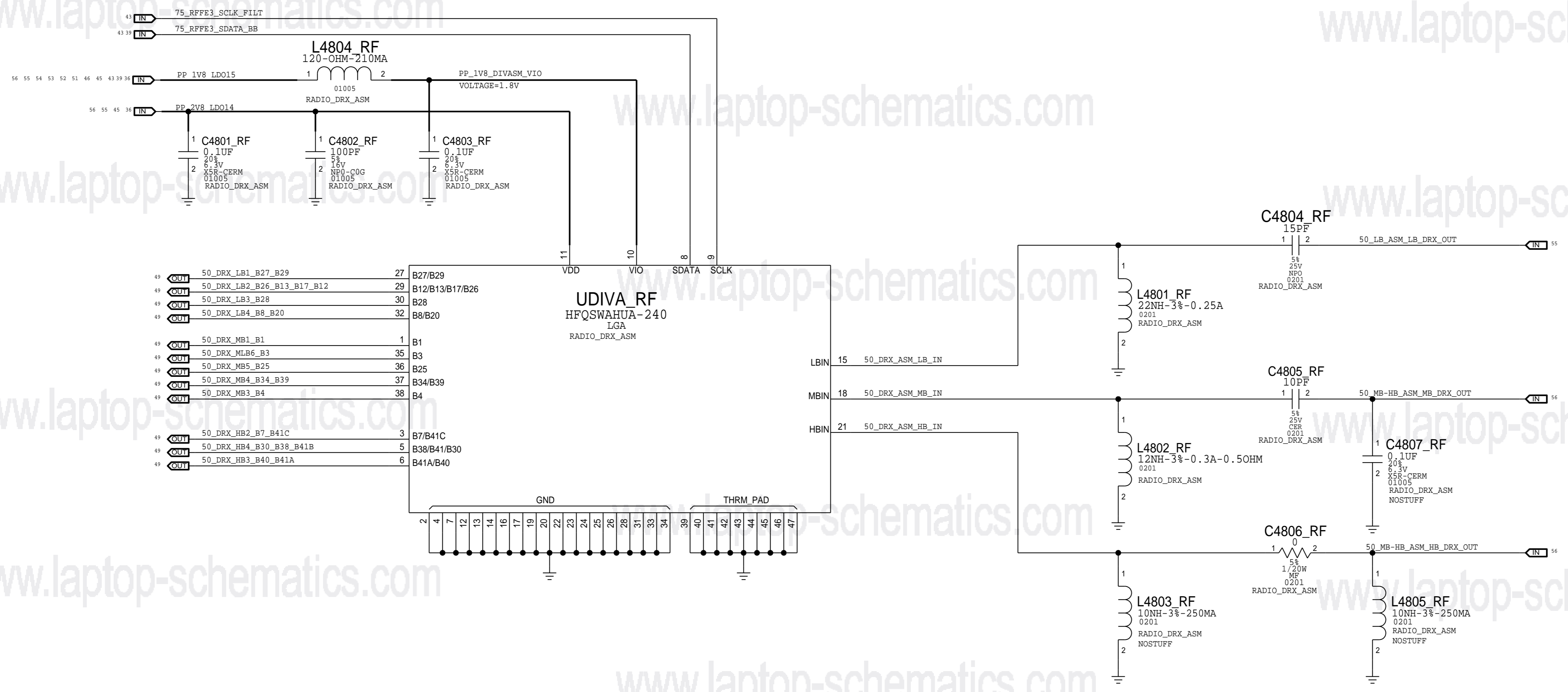
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Pin	Signal Name	Component
27	B27/B29	VDD
29	B12/B13/B17/B26	VIO
30	B28	SDATA
32	B8/B20	SCLK
1	B1	50_DRX_MB1_B1
35	B3	50_DRX_MLB6_B3
36	B25	50_DRX_MB5_B25
37	B34/B39	50_DRX_MB4_B34_B39
38	B4	50_DRX_MB3_B4
3	B7/B41C	50_DRX_HB2_B7_B41C
5	B38/B41/B30	50_DRX_HB4_B30_B38_B41B
6	B41A/B40	50_DRX_HB3_B40_B41A

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		PAGE	48 OF 51
		SHEET	57 OF 60

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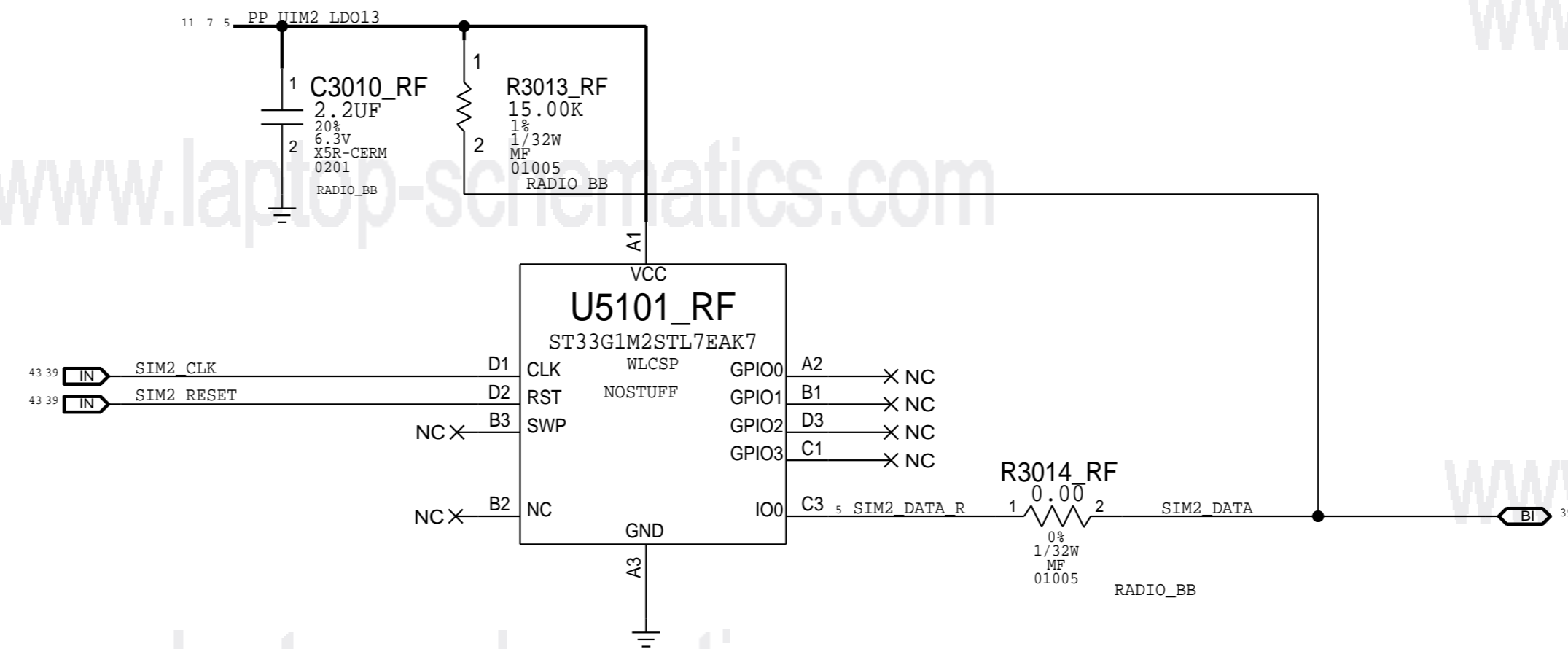
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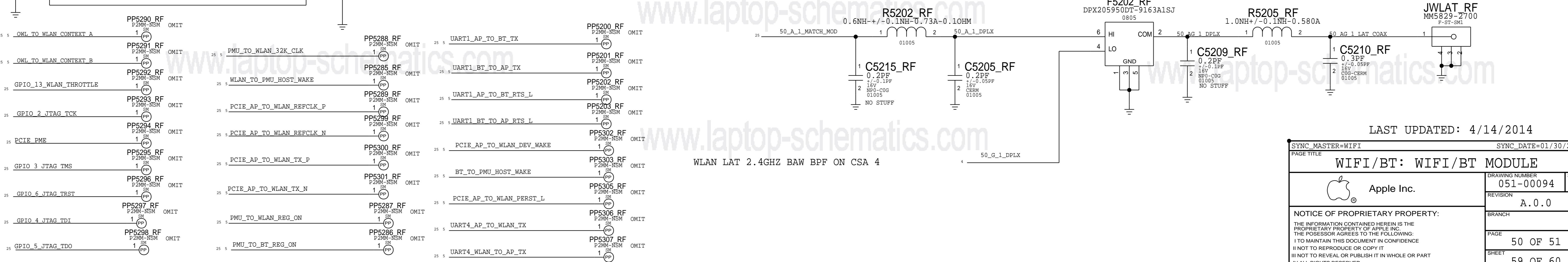
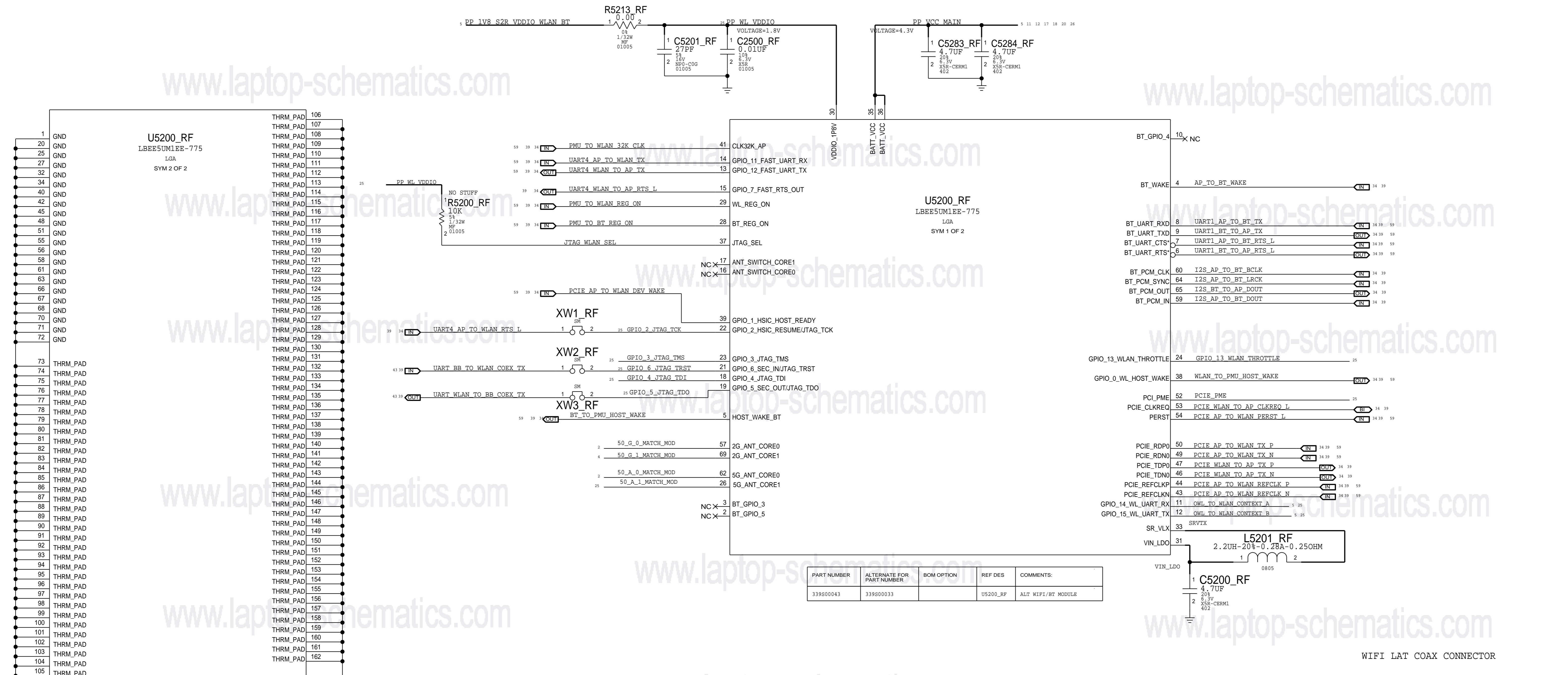
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		BRANCH	
		PAGE	49 OF 51
		SHEET	58 OF 60

WIFI/BT



LAST UPDATED: 4/14/2014

SYNC_MASTER=WIFI	SYNC_DATE=01/30/2014
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BRANCH	PAGE 50 OF 51
SHEET	59 OF 60

STOCKHOLM

ALL NETNAMES NEED TO BE CHECKED

D

D

C

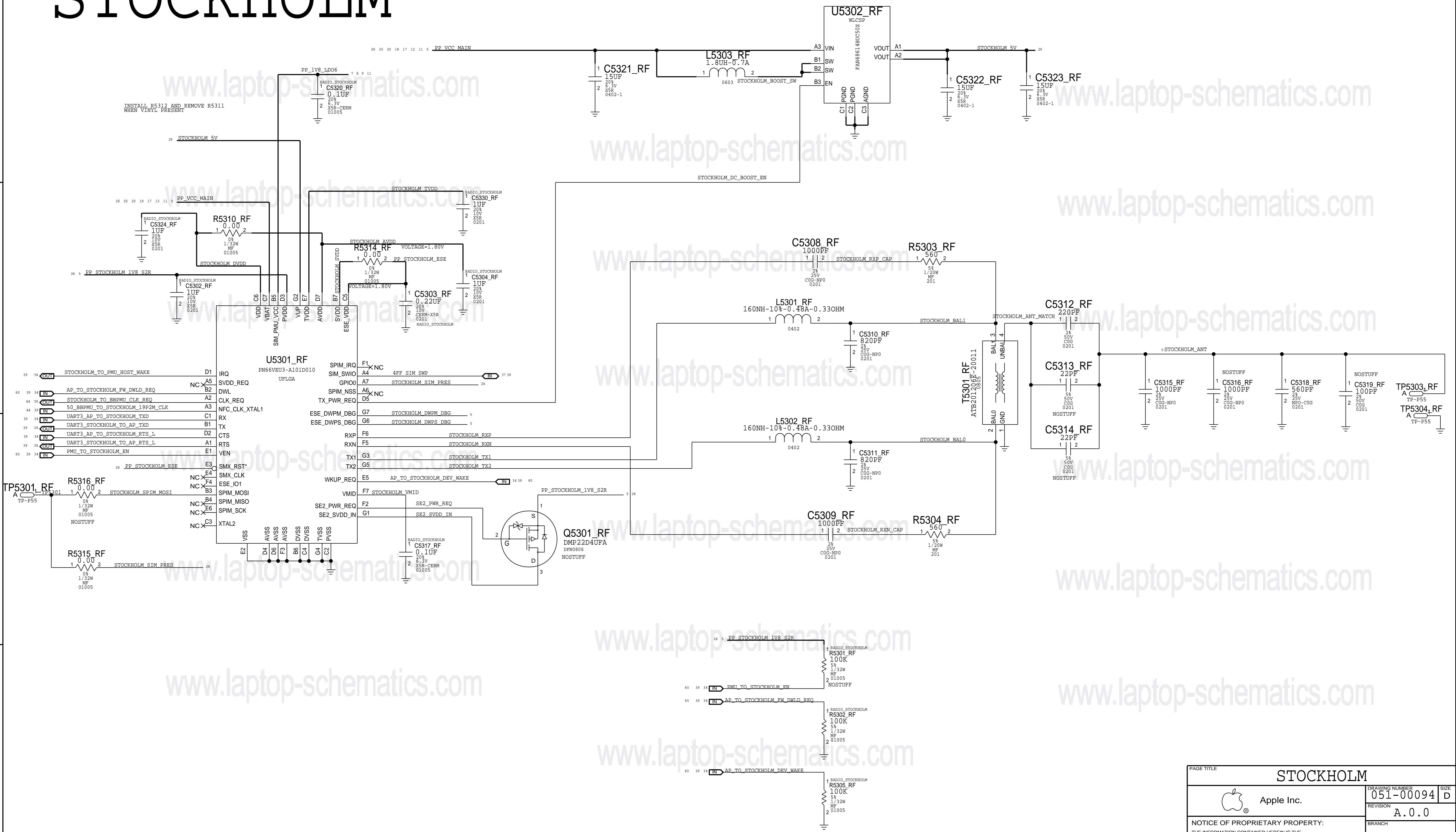
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PAGE TITLE	
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BRANCH	PAGE 51 OF 51
SHEET 60 OF 60	