

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.

<https://www.mobile-manuals.com/>

# D21 MLB - DVT (OK2FAB)

LAST\_MODIFICATION= Tue Jun 6 18:57:04 2017

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
10	0008927012	ENGINEERING RELEASED		2017-06-06

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3	3	SYSTEM: BOM TABLES (2/2)	test_mlb	03/17/2017
4	4	SYSTEM:MECH COMPONENTS	sync	04/14/2017
5	5	SYSTEM: Testpoints	sync	04/14/2017
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29	38	CAMERA: PMU (2/2)	sync	04/14/2017
30	39	CAMERA: B2B Wide (KY)	sync	04/14/2017
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35	47	AUDIO: CODEC (1/2)	sync	04/14/2017
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43	58	CG: B2B ORB + MESA	sync	04/14/2017
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47	63	I/O: Hydra	sync	04/14/2017
48	64	I/O: B2B DOCK	sync	10/10/2016
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81	5	WiFiANTFeeds		11/28/2016

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-02159	1	SCH_MLB_D21	SCH	?
820-00846	1	PCBF_MLB_D21	PCB	?

## Sub Designs

SOURCE PROJECT	SUB-DESIGN NAME	VERSION	HARD/ SOFT	SYNC_DATE/TIME
D21	RADIO_MLB	0.122.0	S	2017_06_06_17:14:31
D20	NFC_MLB	0.50.0	S	2017_05_26_07:54:42
D21	WIFI_MLB	0.20.0	S	2017_05_16_02:56:32
D21	RADIO_MLB_FF	0.35.0	S	2017_06_02_14:56:02

DRAWING TITLE		DRAWING NUMBER		SIZE
SCH_MLB_D21		051-02159		D
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EEEE Codes

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
825-7691	1	EEEE FOR (MLB, 639-04441, JP, ULTRA)	EEEE_008R	CRITICAL	EEEE_ULTIMATE	D21x Specific
825-7691	1	EEEE FOR (MLB, 639-03377, JP, EXTREME)	EEEE_HNV8	CRITICAL	EEEE_EXTREME	D21x Specific
825-7691	1	EEEE FOR (MLB, 639-04442, ROM, ULTRA)	EEEE_008X	CRITICAL	EEEE_ULTIMATE_ROW	D21x Specific
825-7691	1	EEEE FOR (MLB, 639-03380, ROM, EXTREME)	EEEE_HNVF	CRITICAL	EEEE_EXTREME_ROW	D21x Specific

SOC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
339S00416	1	SoC, H, 3GB 21nm T30P, B1	U1000	CRITICAL	COMMON	D21x Specific

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00415	339S00416	BOM_TABLE_ALTS	U1000	SoC, M, 3GB 20nm DDR, B1
339S00417	339S00416	BOM_TABLE_ALTS	U1000	SoC, S, 3GB 20nm DDR, B1
339S00418	339S00416	BOM_TABLE_ALTS	U1000	SoC, S, 3GB 1xnm DDR, B1
339S00429	339S00416	BOM_TABLE_ALTS	U1000	SoC, H, 3GB 20nm DDR, B1
339S00430	339S00416	BOM_TABLE_ALTS	U1000	SoC, M, 3GB 20nm DDR, B1
339S00431	339S00416	BOM_TABLE_ALTS	U1000	SoC, S, 3GB 20nm DDR, B1
339S00432	339S00416	BOM_TABLE_ALTS	U1000	SoC, S, 3GB 18nm DDR, B1

SIPs

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339M00011	339M00010	BOM_TABLE_ALTS	M5500	NIKI, STATS SIP
339M00013	339M00012	BOM_TABLE_ALTS	M4100	HUNT, STATS SIP

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SOFT-TERM CAP SUB BOMS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
685-00152	685-00151	BOM_TABLE_ALTS	SUBBOM_CAP	SUBBOM_MLB_CAP_SOFT_D21
138S00049	138S0831	TYPICAL_CAP	ALL	CAP_0201_2_20P_6_3V_KYOCERA

To enable alt in SUBBOM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
685-00151	1	SUBBOM_MLB_SOFT-TERM_D21	SUBBOM_CAP			Default is typical
138S00159	9	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3910,C3911,C3912,C3913,C3914,C3915		SOFT_CAP	
138S0831	9	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3910,C3911,C3912,C3913,C3914,C3915		TYPICAL_CAP	
138S00159	15	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3901,C3902,C3903,C3904,C3905,C3906,C3907		SOFT_CAP	
138S0831	15	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3901,C3902,C3903,C3904,C3905,C3906,C3907		TYPICAL_CAP	
138S00159	10	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3916,C3917,C3918,C3919,C3920,C3921		SOFT_CAP	
138S0831	10	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3916,C3917,C3918,C3919,C3920,C3921		TYPICAL_CAP	
138S00159	2	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3351,C3352		SOFT_CAP	
138S0831	2	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3351,C3352		TYPICAL_CAP	
138S00159	3	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3602,C3611,C3622		SOFT_CAP	
138S0831	3	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3602,C3611,C3622		TYPICAL_CAP	
138S00159	5	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3791,C3795-C3798		SOFT_CAP	
138S0831	5	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3791,C3795-C3798		TYPICAL_CAP	
138S00159	3	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C3909,C3925,C3926		SOFT_CAP	
138S0831	3	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C3909,C3925,C3926		TYPICAL_CAP	
138S00159	2	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C4250,C4261		SOFT_CAP	
138S0831	2	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C4250,C4261		TYPICAL_CAP	
138S00159	1	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C4303		SOFT_CAP	
138S0831	1	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C4303		TYPICAL_CAP	
138S00159	5	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C4805,C4809,C4914,C4926,C4929		SOFT_CAP	
138S0831	5	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C4805,C4809,C4914,C4926,C4929		TYPICAL_CAP	
138S00159	5	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C5016,C5018,C5134,C5029,C5136		SOFT_CAP	
138S0831	5	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C5016,C5018,C5134,C5029,C5136		TYPICAL_CAP	
138S00159	1	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C5611		SOFT_CAP	
138S0831	1	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C5611		TYPICAL_CAP	
138S00159	4	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C5700,C5705,C5716,C5721		SOFT_CAP	
138S0831	4	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C5700,C5705,C5716,C5721		TYPICAL_CAP	
138S00159	5	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C5802,C5804,C5811,C5880		SOFT_CAP	
138S0831	5	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C5802,C5804,C5811,C5880		TYPICAL_CAP	
138S00159	1	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C5890		SOFT_CAP	
138S0831	1	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C5890		TYPICAL_CAP	
138S00159	5	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C6326,C6331,C6332,C6333,C6324		SOFT_CAP	
138S0831	5	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C6326,C6331,C6332,C6333,C6324		TYPICAL_CAP	
138S00160	4	CAP_SOFT-TERM_10uF_10V_0402_MUR_KYO	C4907,C4903,C4904,C4911		SOFT_CAP	
138S0979	4	CAP_TYPICAL_10uF_10V_0402_MUR_KYO	C4907,C4903,C4904,C4911		TYPICAL_CAP	
138S00160	5	CAP_SOFT-TERM_10uF_10V_0402_MURATA	C5600,C5602,C5603,C5702,C5703		SOFT_CAP	
138S0979	5	CAP_TYPICAL_10uF_10V_0402_MUR_KYO	C5600,C5602,C5603,C5702,C5703		TYPICAL_CAP	
138S00159	2	CAP_SOFT-TERM_2.2uF_6.3V_0201_KYOCERA	C4025,C4026		SOFT_CAP	D21x Specific
138S0831	2	CAP_TYPICAL_2.2uF_6.3V_0201_MURATA	C4025,C4026		TYPICAL_CAP	D21x Specific

IKTARA DIODES SUB BOMS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
685-00172	685-00171	BOM_TABLE_ALTS	SUBBOM_DS	SUBBOM_MLB_SHOTTEY DIODES_ONSEMI_D21

#3150972: Update Iktara Diodes APNs

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
685-00171	1	SUBBOM_MLB_SHOTTEY DIODES.DIODES.D21	SUBBOM_DS			Footprint is ONSEMI
371S00133	4	DIODES_SHOTTEY DIODE_30V_2A_0603	D3400,D3401,D3402,D3403		DIODES_DS	Primary is DIODES
371S00132	4	ONSEMI_SHOTTEY DIODE_30V_2A_0603	D3400,D3401,D3402,D3403		ONSEMI_DS	

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NAND BOM Options

Table with columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION. Rows include NAND\_H\_ULTRA\_TLC and NAND\_H\_EXTREME\_TLC.

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Rows include 335S00284, 335S00285, 335S00286, 335S00228, 335S00247, 335S00276.

Isolator Switch

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Row includes 311S00126.

Mamba LDO

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Row includes 353S00932.

Load Switch

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Rows include 353S00999 and 353S01007.

Crystal Alts

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Rows include 197S00118 and 197S00120.

PMID1 Zener Diode

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Row includes 371S00121.

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ZFB Caps

Table with columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION. Row includes 138S0683.

Table with columns: CRITICAL PART#, COMMENT. Rows include 138S00185 and 138S00186.

Global R/C Alternates

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Multiple rows listing various capacitor and resistor alternatives.

Global Ferrites Alternates

Table with columns: PART NUMBER, ALTERNATE FOR PART NUMBER, BOM OPTION, REF DES, COMMENTS. Multiple rows listing ferrite core alternatives.

Multi-Vendor Criticals

Table with columns: CRITICAL PART#, COMMENT. Multiple rows listing critical components from various vendors.

Table with columns: CRITICAL PART#, COMMENT. Rows include 118S0717 and 138S0652.

Table with columns: CRITICAL PART#, COMMENT. Rows include 138S00149 and 138S00144.

Table with columns: CRITICAL PART#, COMMENT. Row includes 138S00139.

Table with columns: CRITICAL PART#, COMMENT. Row includes 138S00146.

Table with columns: CRITICAL PART#, COMMENT. Row includes 138S00141.

Table with columns: CRITICAL PART#, COMMENT. Row includes 155S0610.

Table with columns: CRITICAL PART#, COMMENT. Multiple rows listing ferrite core alternatives.

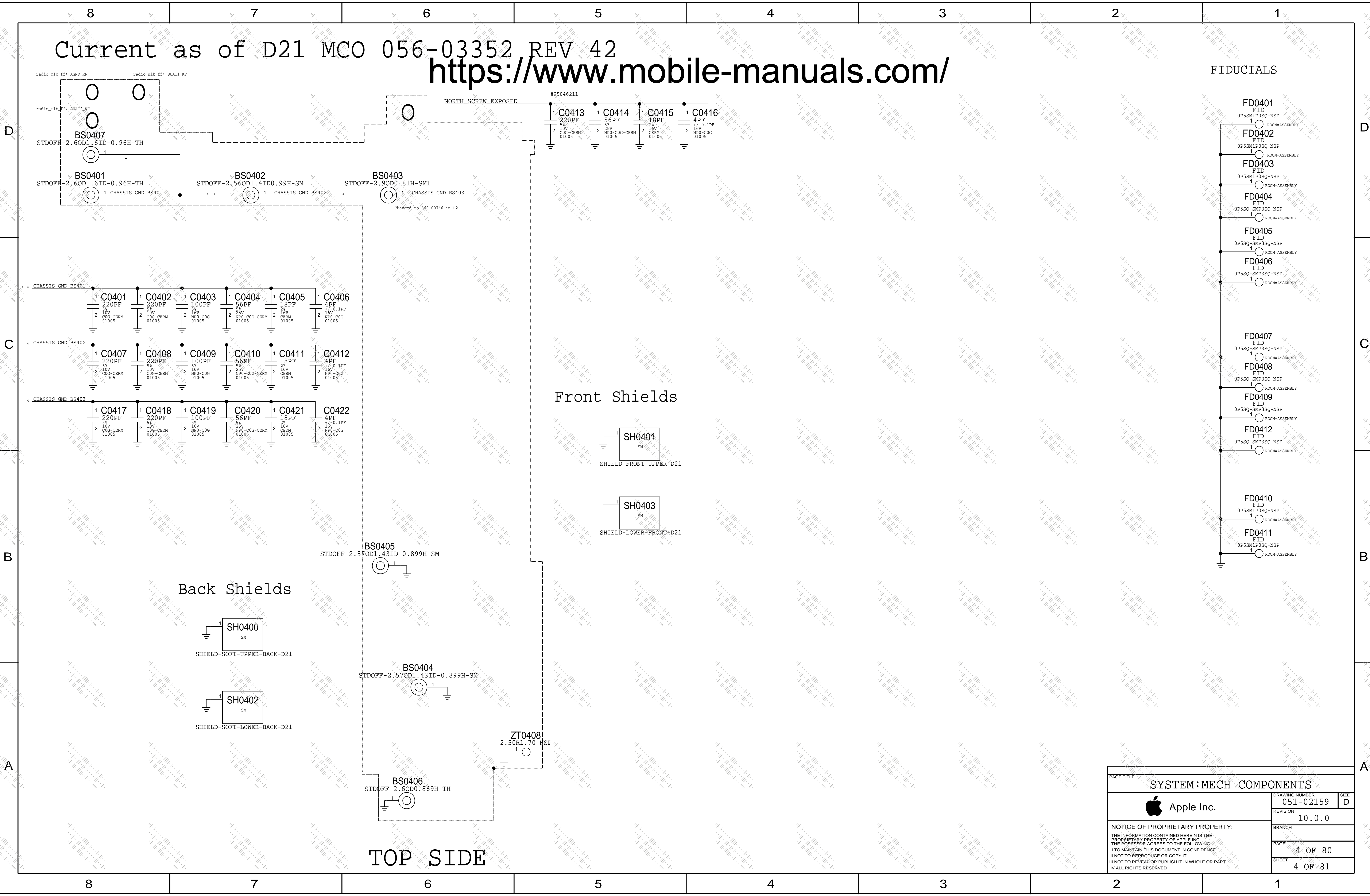
BUCK1 Slave  
BUCK1 Slave  
BUCK1/9/10  
Ansel 1  
BUCK2/4/11 Master  
BUCK5/7  
BUCK1 Slave  
BUCK6 Alt  
BUCK3 Master

PAGE TITLE: SYSTEM: BOM TABLES (2/2)  
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Current as of D21 MCO 056-03352 REV 42

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FIDUCIALS



Front Shields

Back Shields

TOP SIDE

PAGE TITLE			SYSTEM:MECH COMPONENTS		
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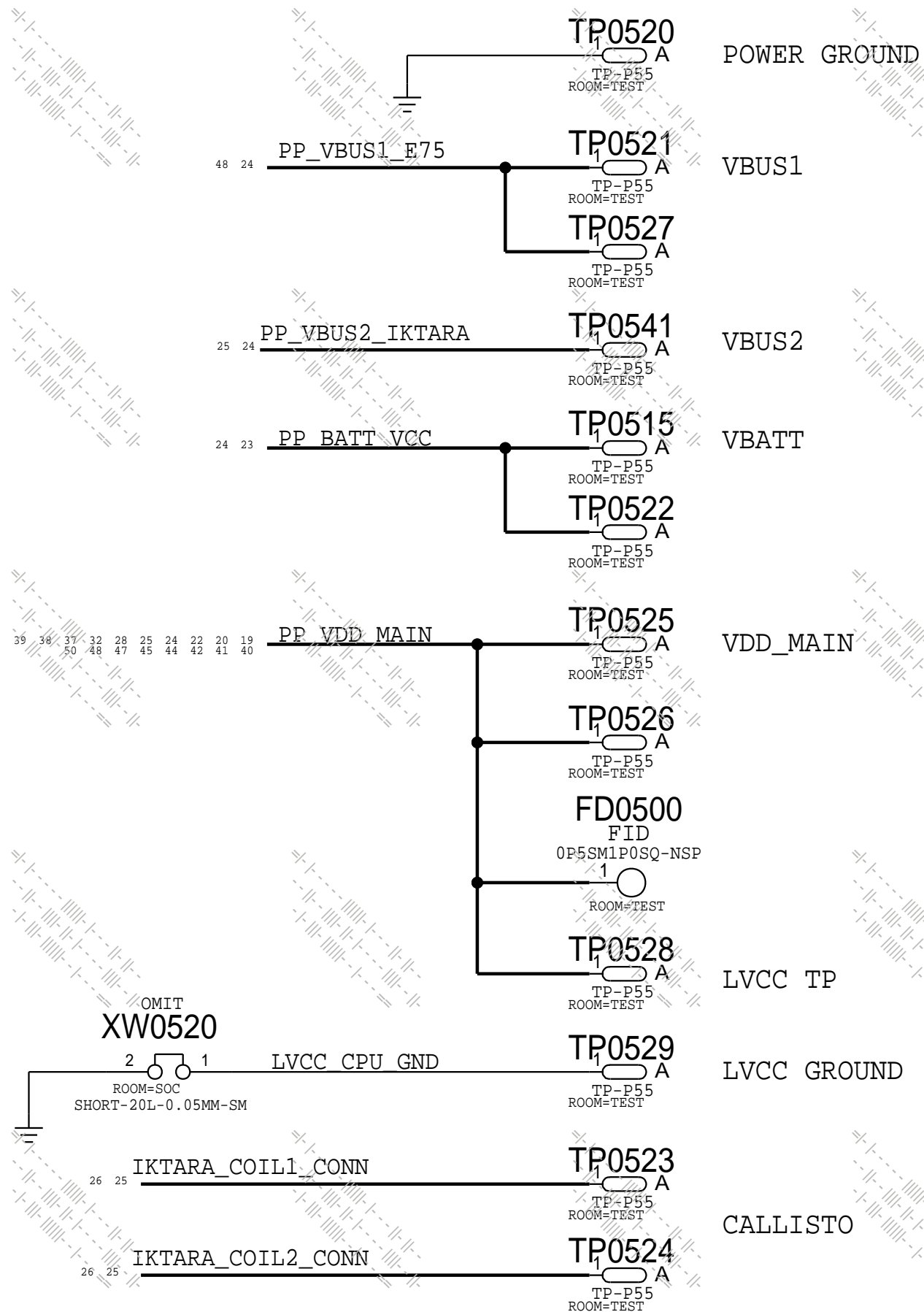


# Test Points

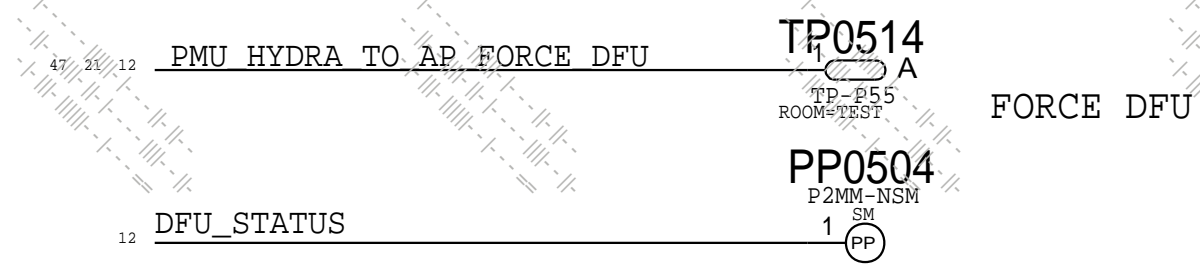
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# Probe Points

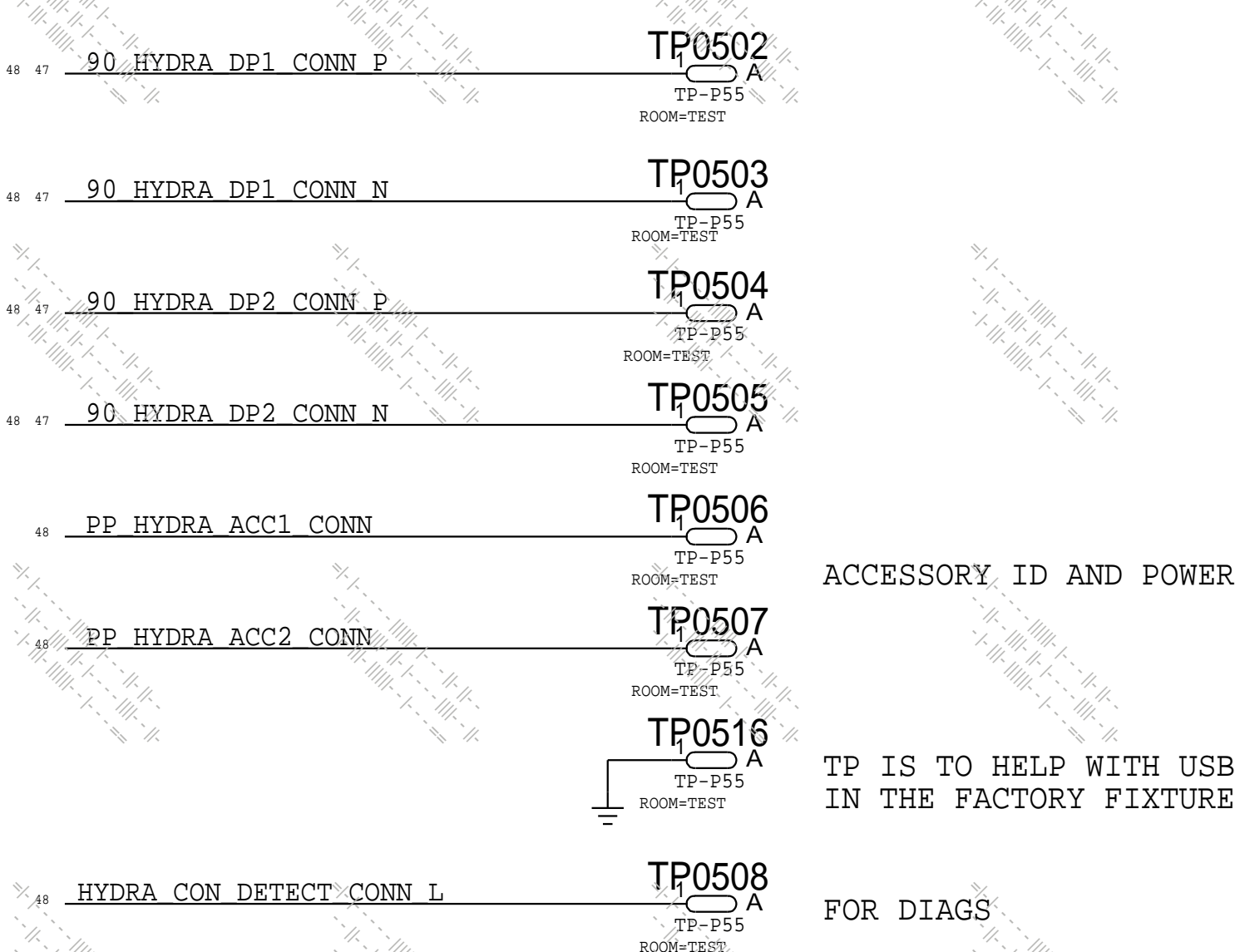
## POWER



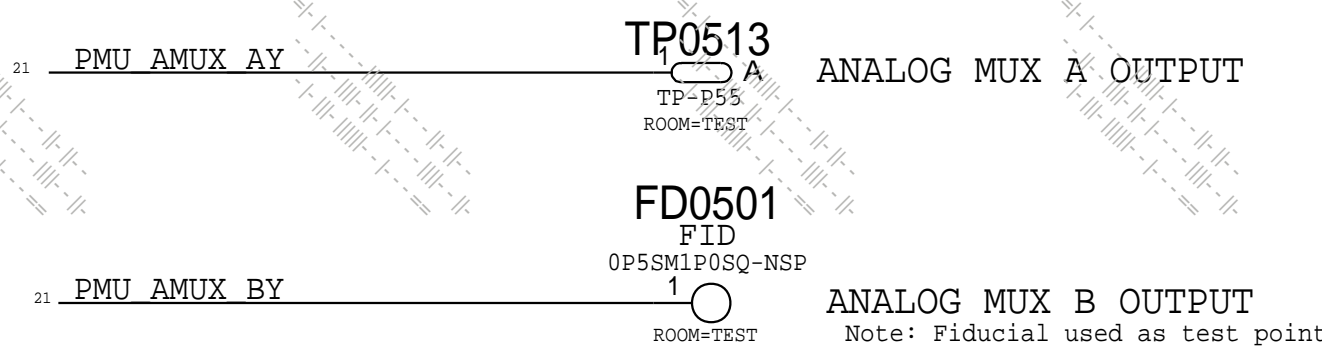
## DFU



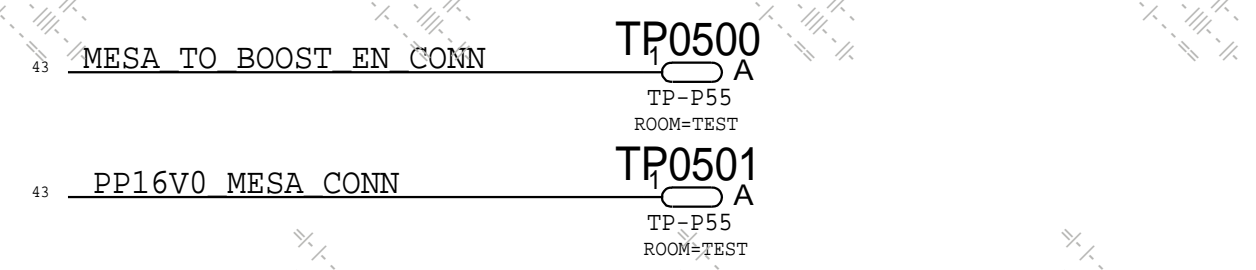
## E75



## AMUX



## MOJAVE



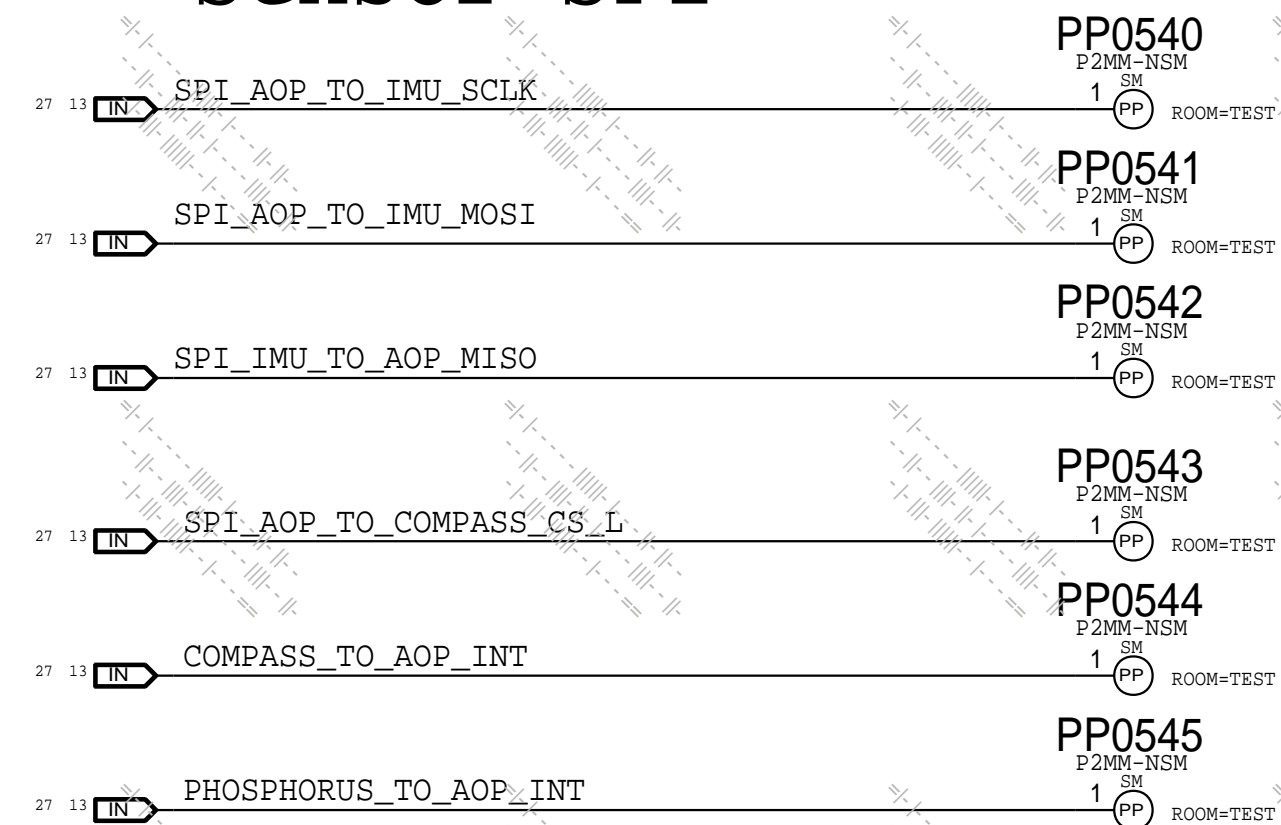
## LCM



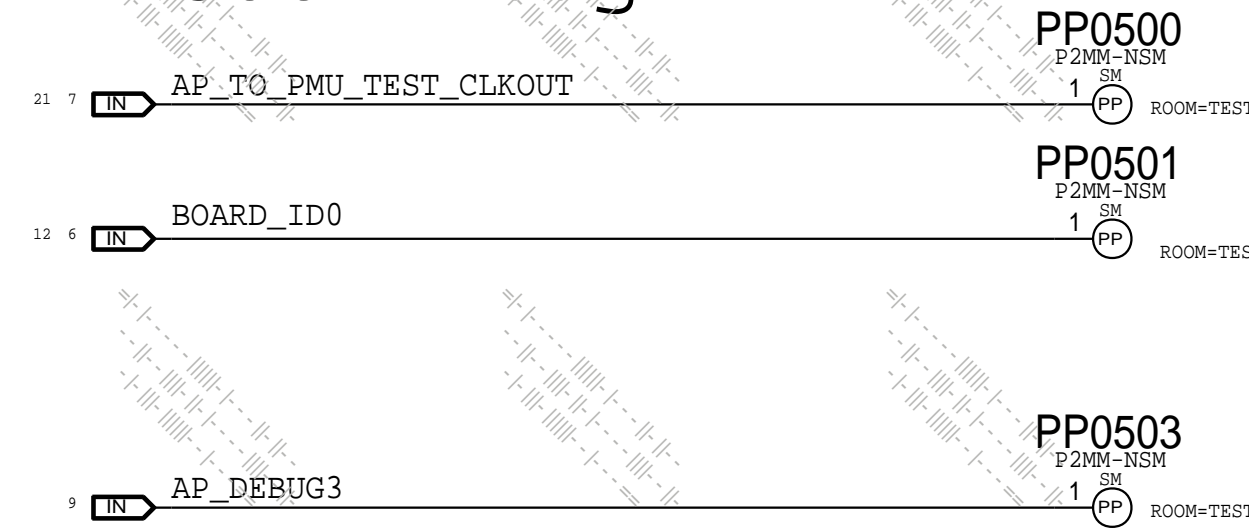
## SENSE TP



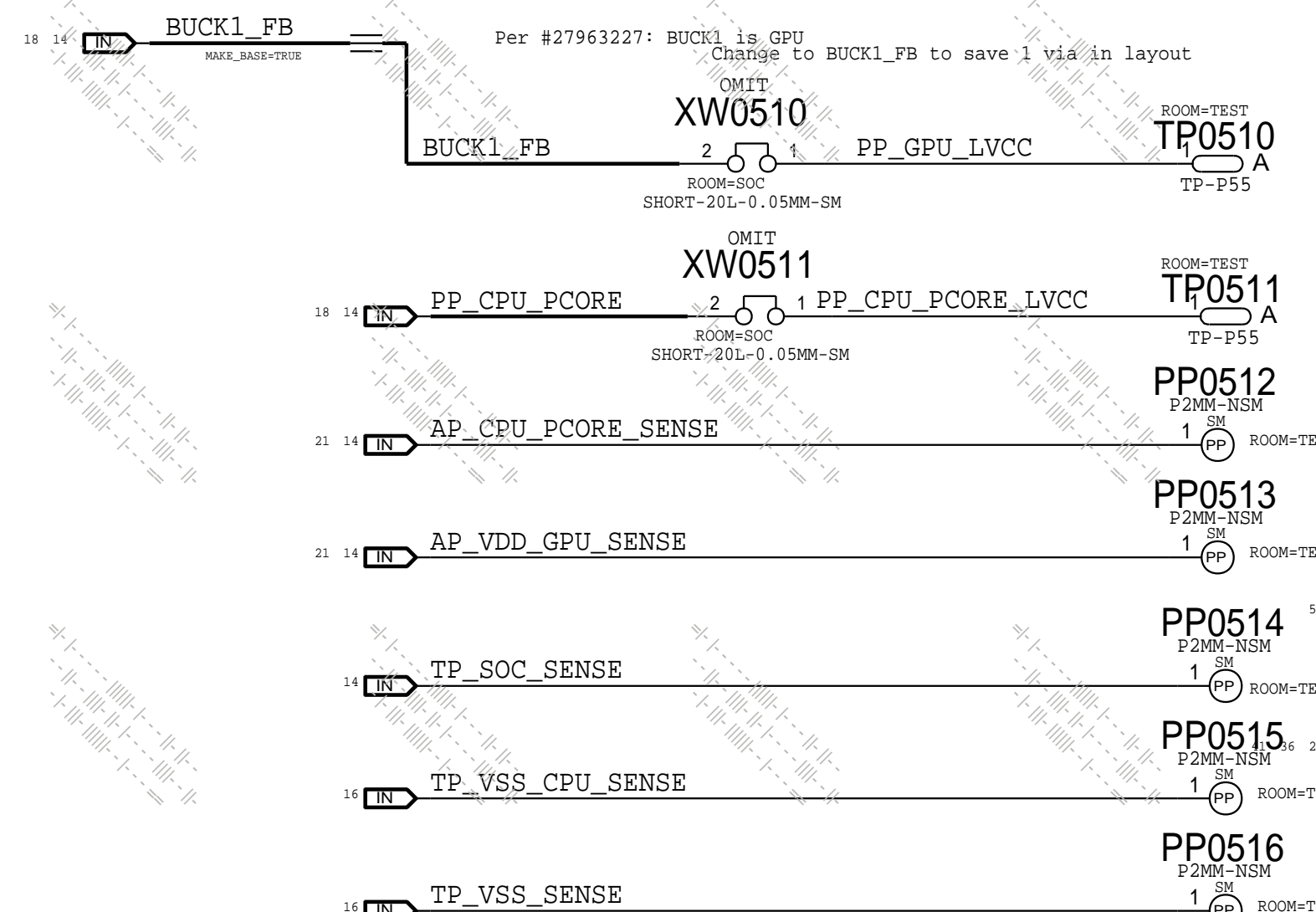
## Sensor SPI



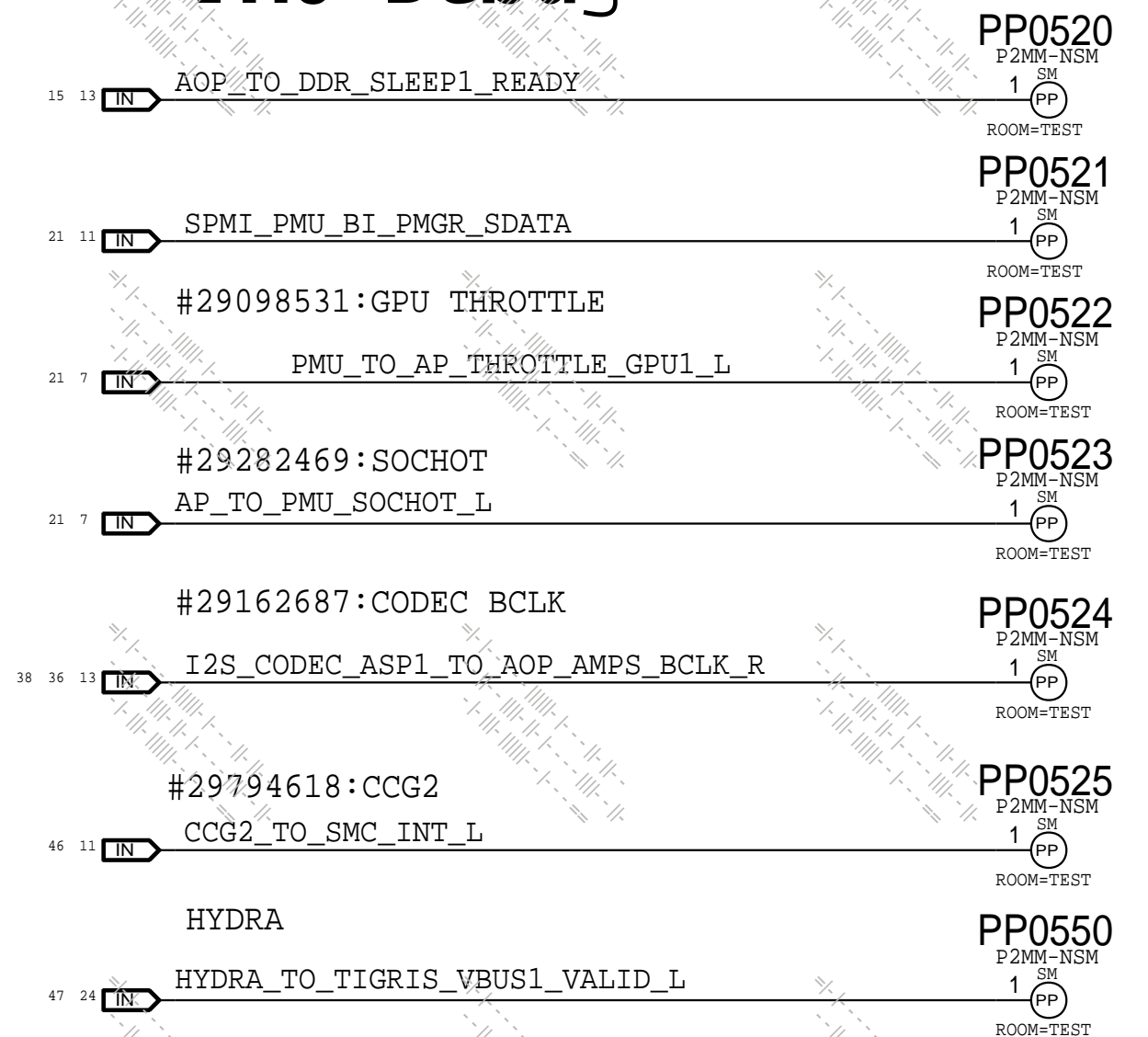
## SOC Debug



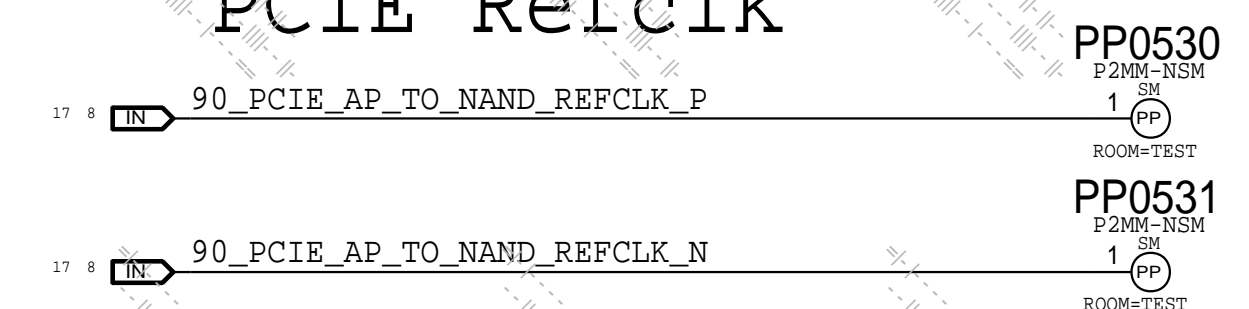
## SOC CPU/GPU



## PMU Debug



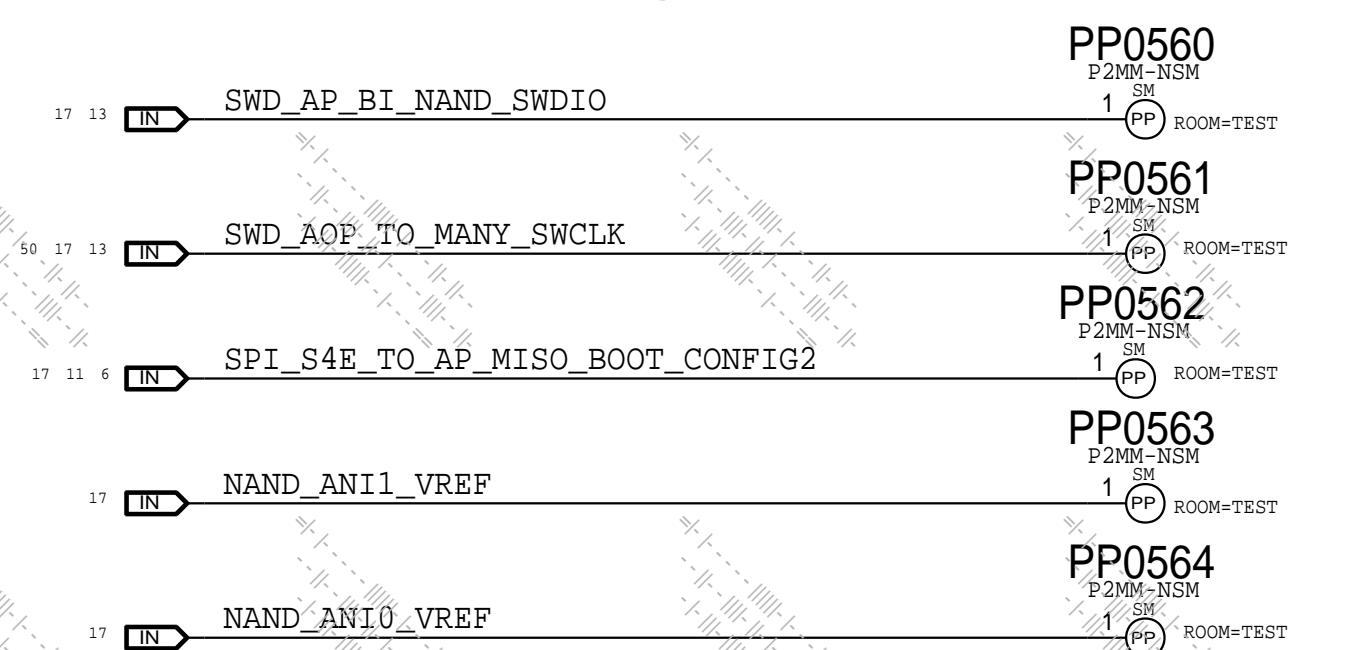
## PCIE Refclk



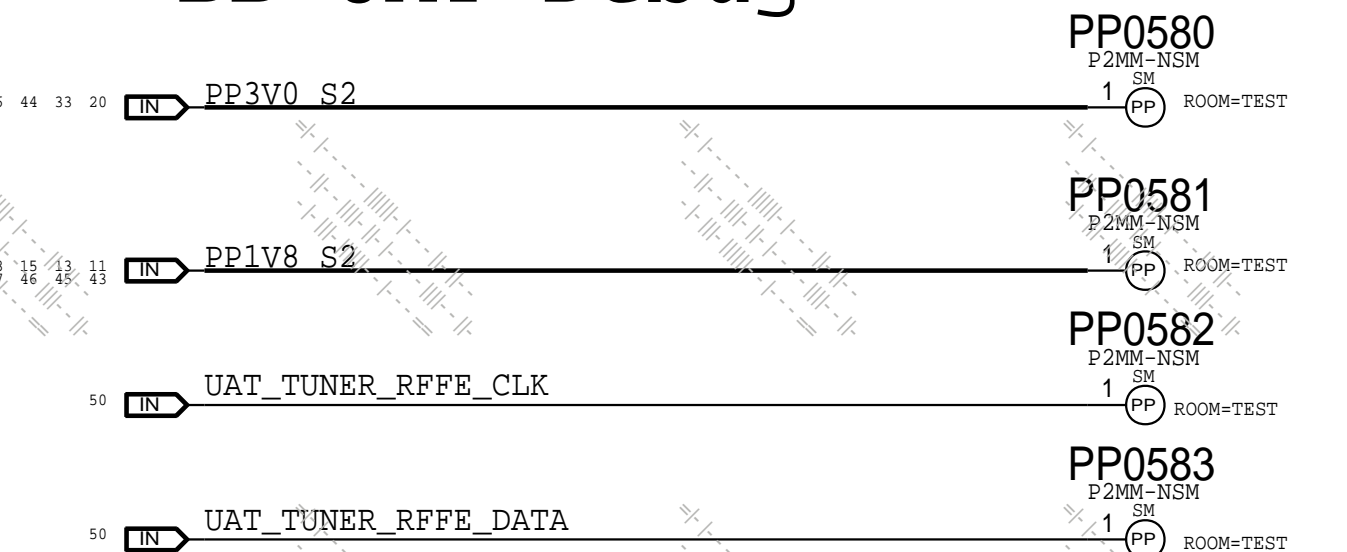
## SOC DDR



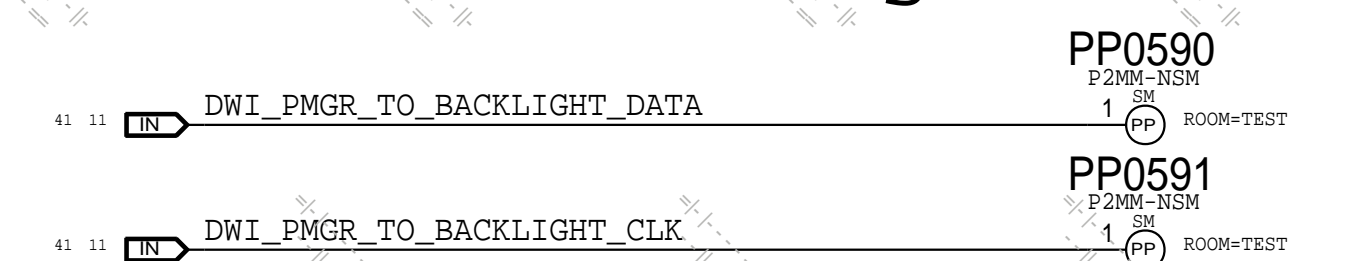
## NAND Debug



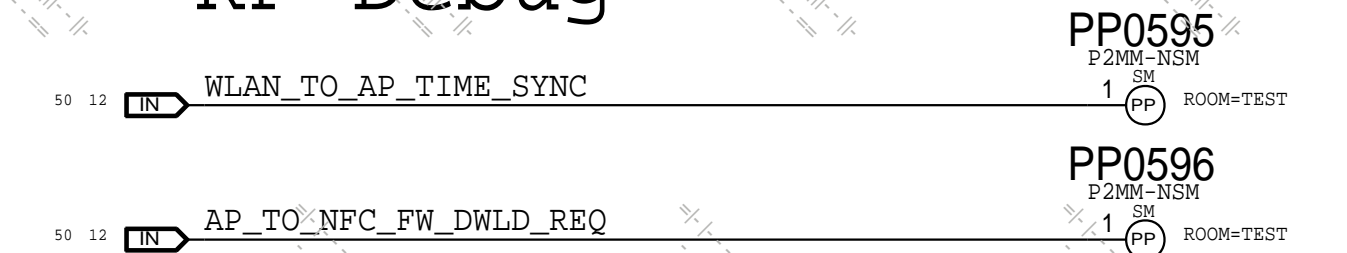
## BB UAT Debug



## BACKLIGHT Debug



## RF Debug



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BOOTSTRAPPING: BOARD REV  
BOARD ID  
BOOT CONFIG



BOARD\_REV[3:0]  
 FLOAT=LOW, PULLUP=HIGH  
 1111 Pre-Proto (Placeholder)  
 1110 PROTO1  
 1101 SPARE  
 1100 PROTO2  
 1011 PROTO2 (HALOGEN DOE)  
 1001 PROTO2v5  
 xxxx SPARES  
 1000 EVT  
 xxxx SPARES  
 0100 CARRIER  
 xxxx SPARE  
 0010 DVT  
 xxxx SPARE  
 0000 PVT

Note: Future board revs TBD

BOARD\_ID[4:0]  
 FLOAT=LOW, PULLUP=HIGH  
 00010 D20 MLB  
 00011 D20 DEV  
 00100 D21 MLB  
 00101 D21 DEV  
 01010 D201 MLB  
 01011 D201 DEV  
 01100 D211 MLB  
 01101 D211 DEV

0=MLB, 1=DEV  
 01=D20x, 10=D21x  
 0=EUREKA, 1=KAROO

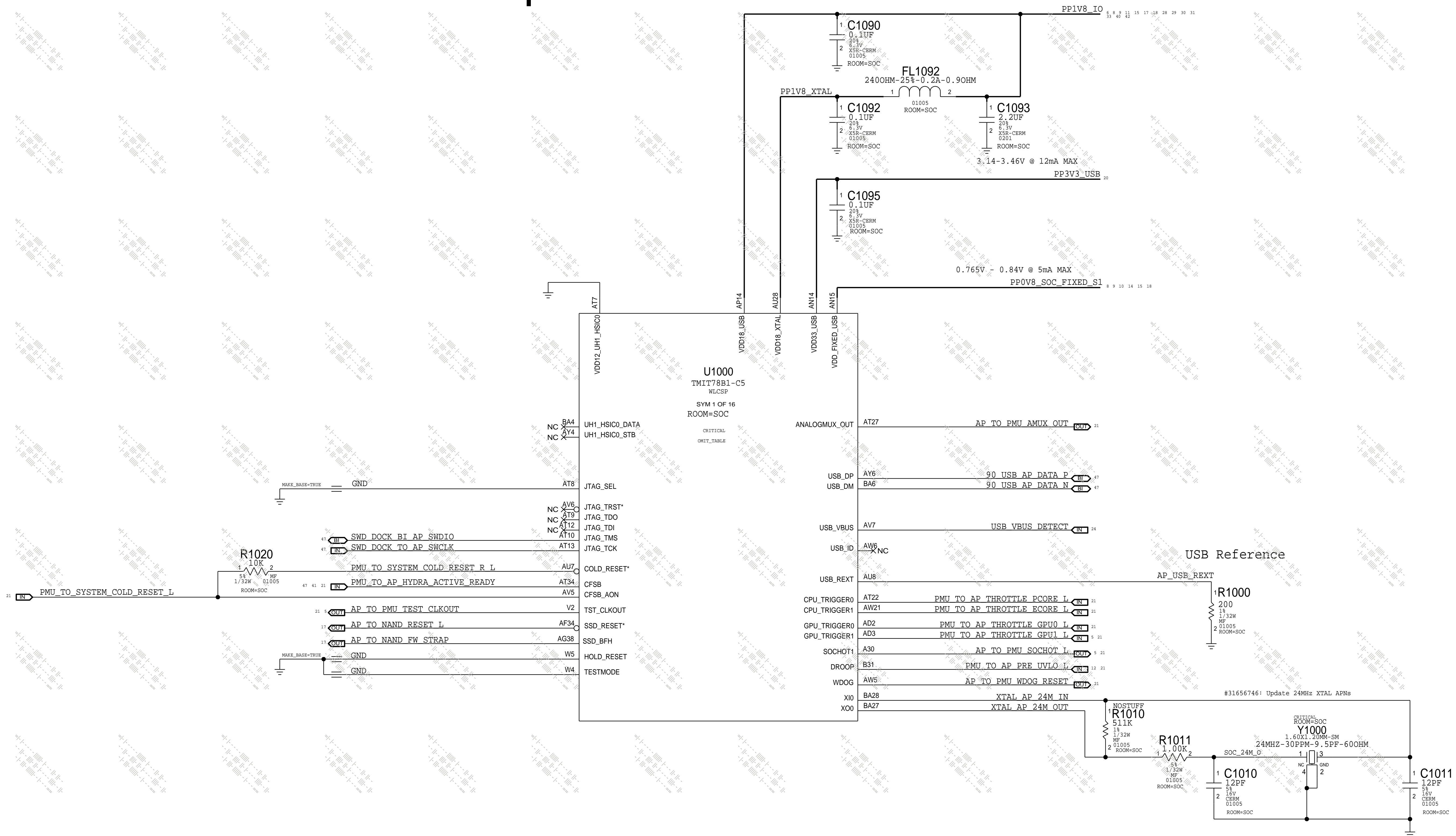
BOOT\_CONFIG[2:0]  
 FLOAT=LOW, PULLUP=HIGH  
 000 SPI0  
 001 SPI0 TEST MODE  
 010 SPI0 NAND  
 011 SPI0 NAND TEST  
 100 n/a  
 101 n/a  
 110 SLOW SPI0 TEST  
 111 FAST SPI0 TEST

#30903807:Nostuff R0600 to move to PoR BOOT\_CONFIG

DRAWING NUMBER 051-02159			SIZE D
REVISION 10.0.0			BRANCH
PAGE 6 OF 80			SHEET 6 OF 81

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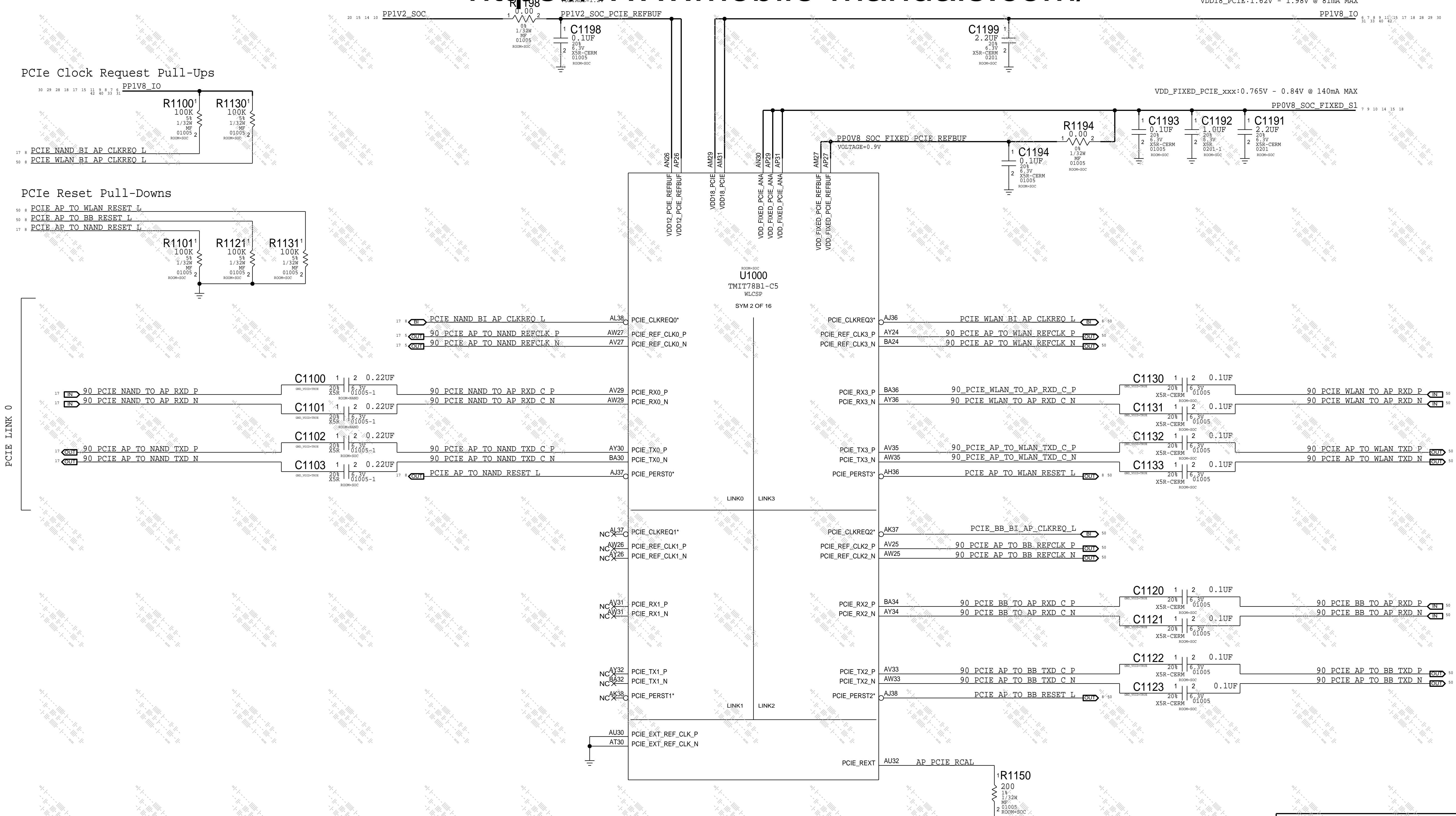


PAGE TITLE		
SOC: JTAG, USB, XTAL		
Apple Inc.	DRAWING NUMBER	051-02159
	REVISION	10.0.0
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	PAGE	10 OF 80
	SHEET	7 OF 81

# SOC - PCIE INTERFACES

<https://www.mobile-manuals.com/>

VDD18\_PCIE:1.62V - 1.98V @ 81mA MAX



PAGE TITLE			SOC: PCIE		
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		REVISION	10.0.0		
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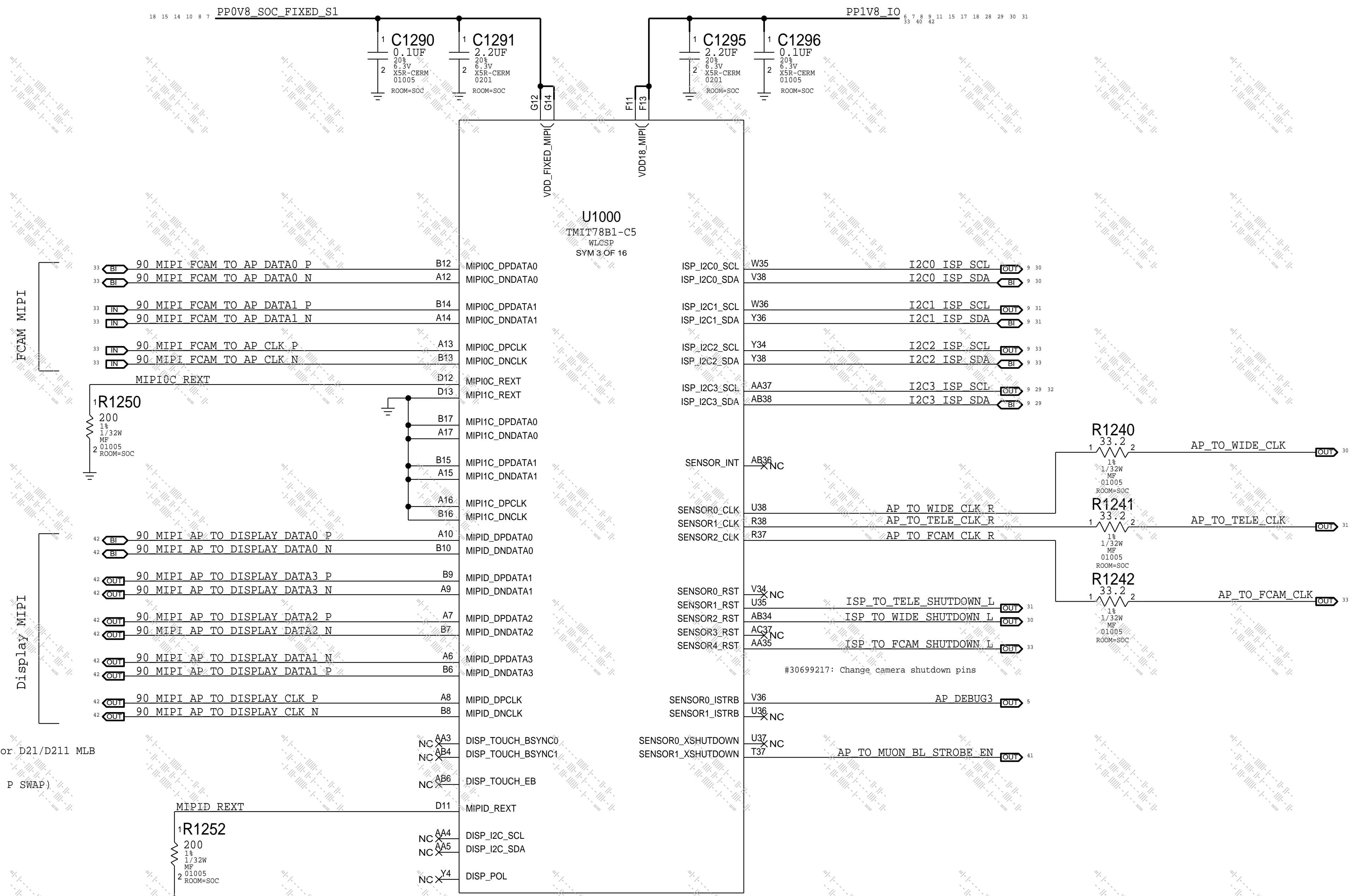


# SOC - MIPI & ISP INTERFACES

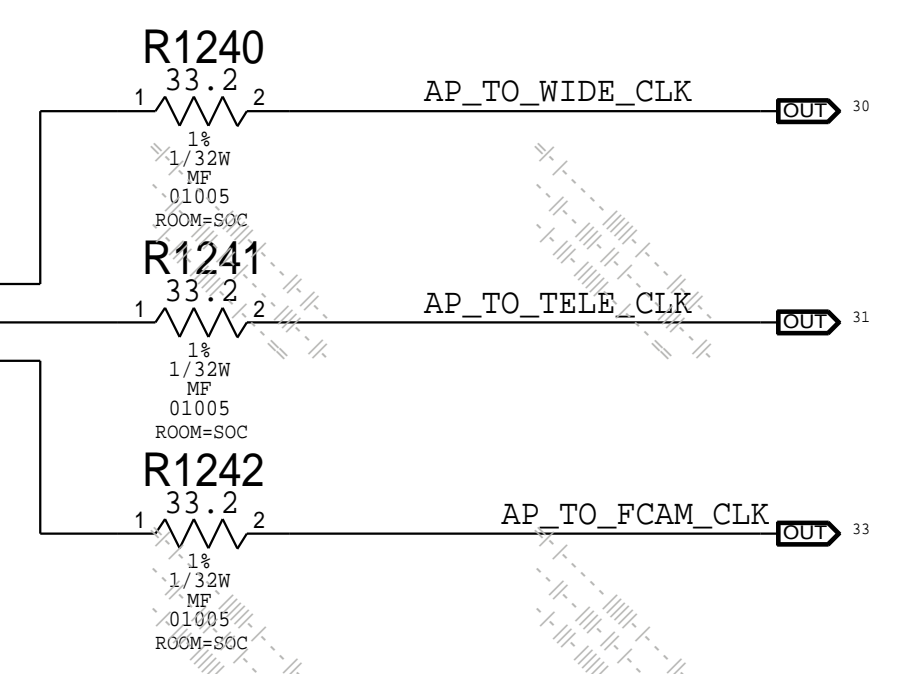
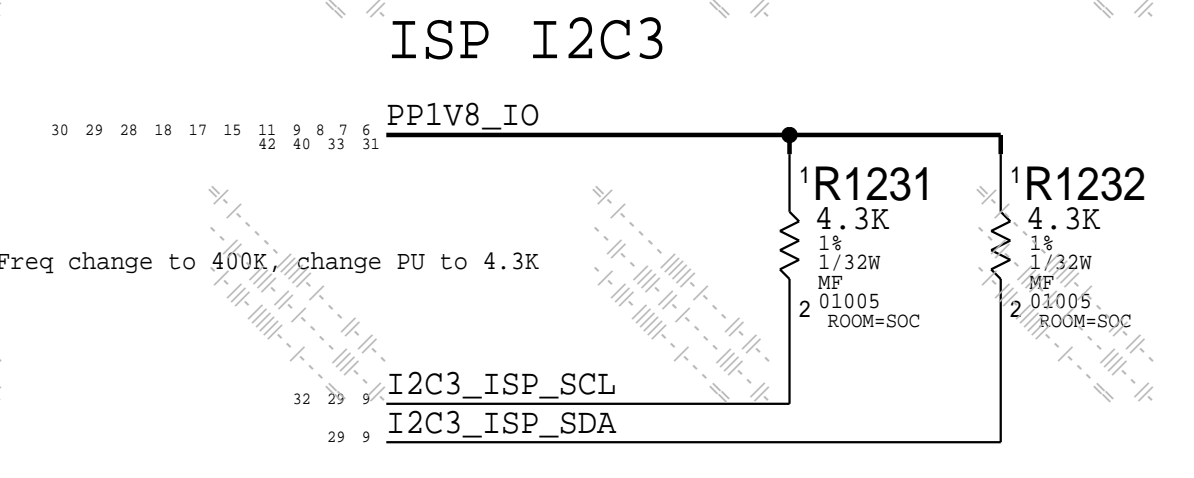
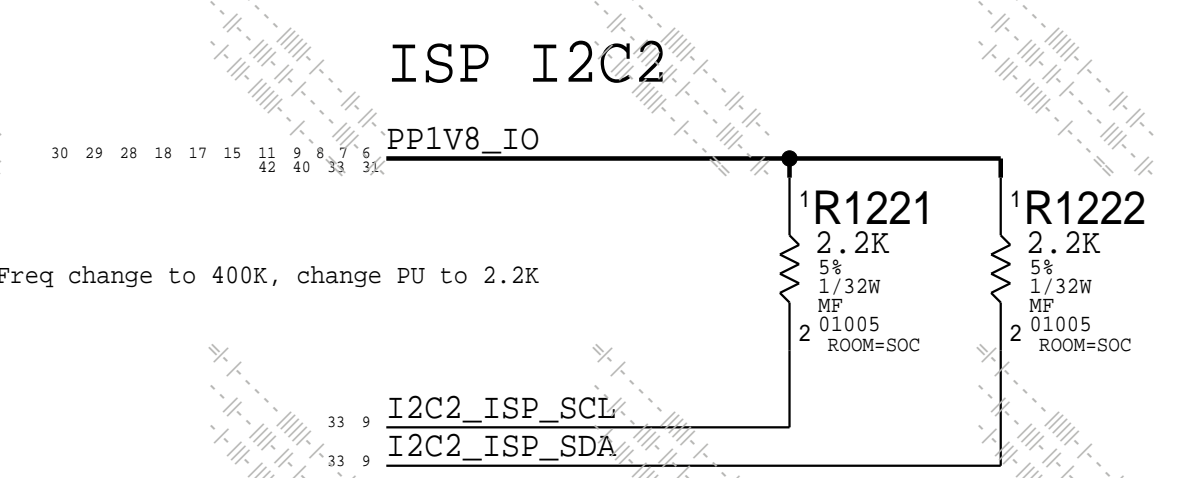
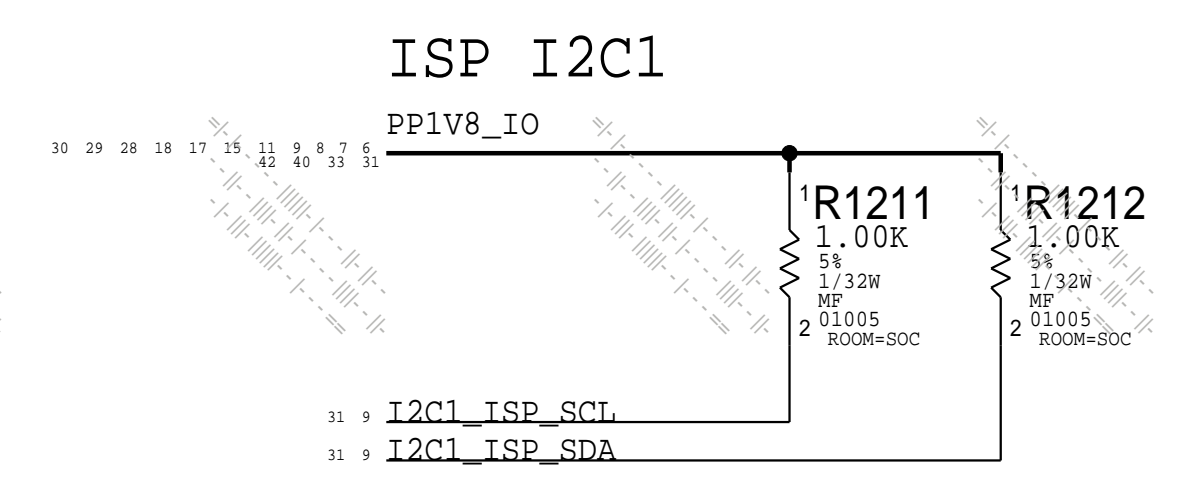
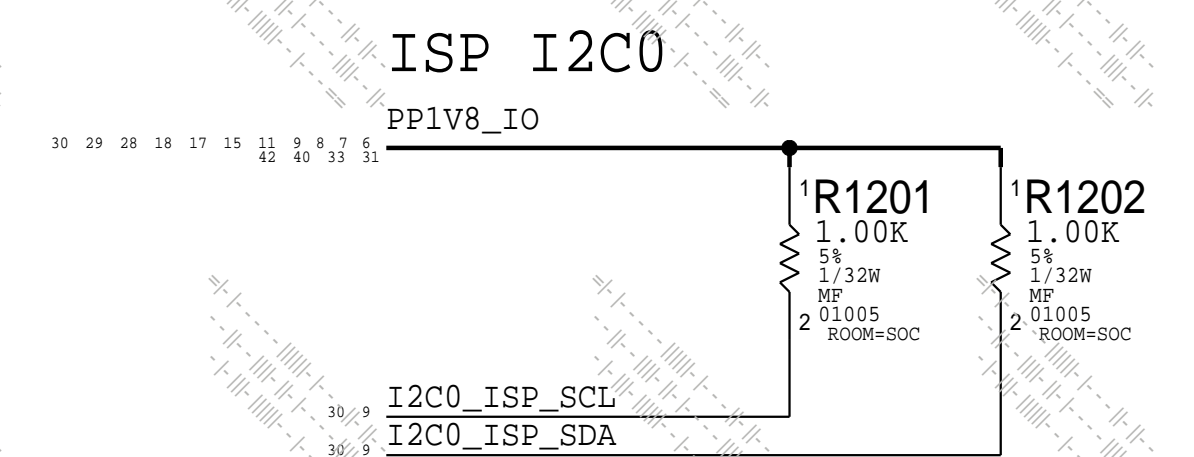
<https://www.mobile-manuals.com/>

VDD\_FIXED\_MIPI: 0.765V - 0.84V @ 40mA MAX

VDD18\_MIPI: 1.62V - 1.98V @ 10mA MAX



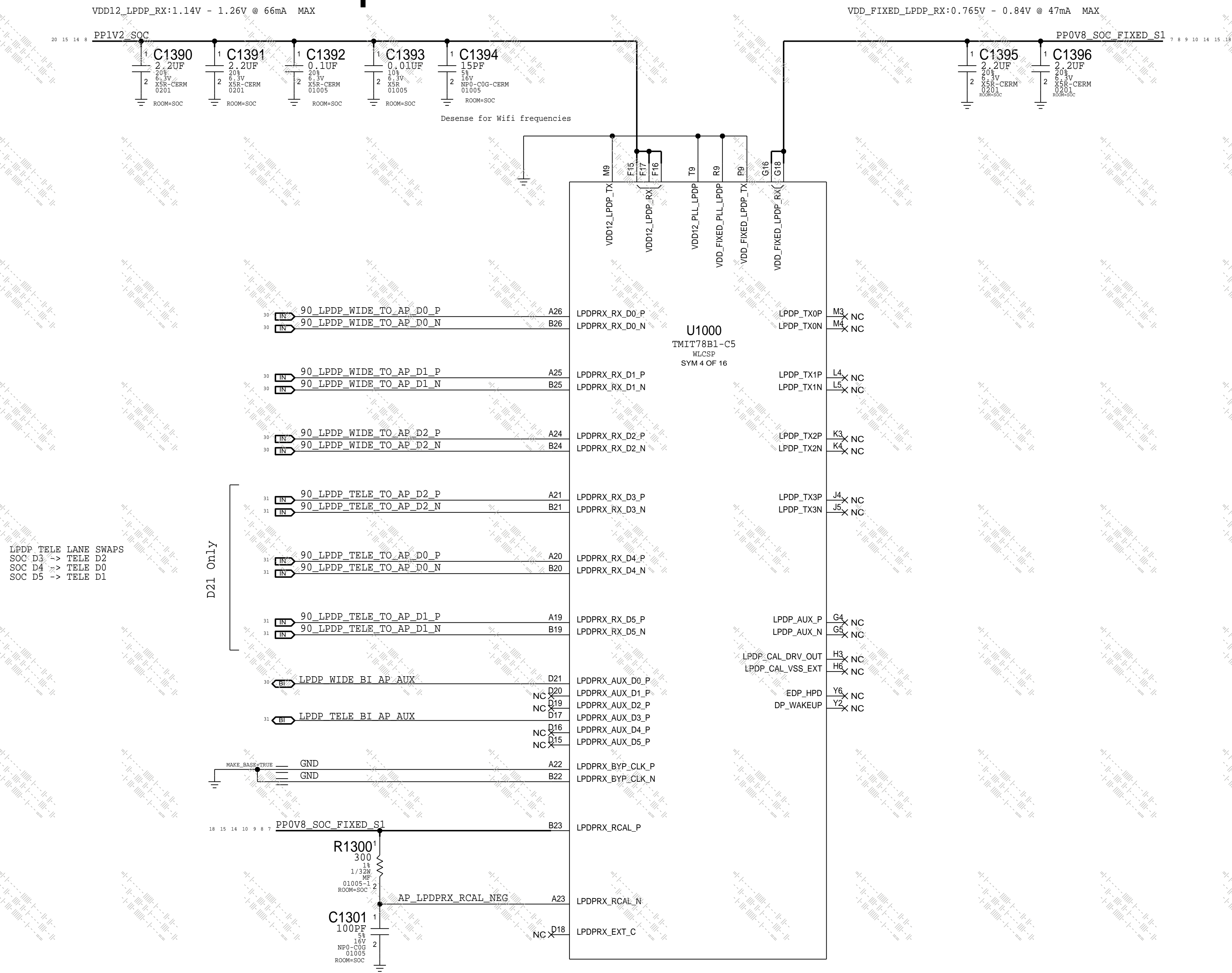
Pin assignment optimized for D21/D211 MLB  
 DISPLAY MIPI LANE SWAPS  
 SOC D1 -> DISPLAY D3  
 SOC D3 -> DISPLAY D1 (N & P SWAP)



PAGE TITLE			SOC: MIPI + ISP		
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# SOC - LPDP INTERFACES

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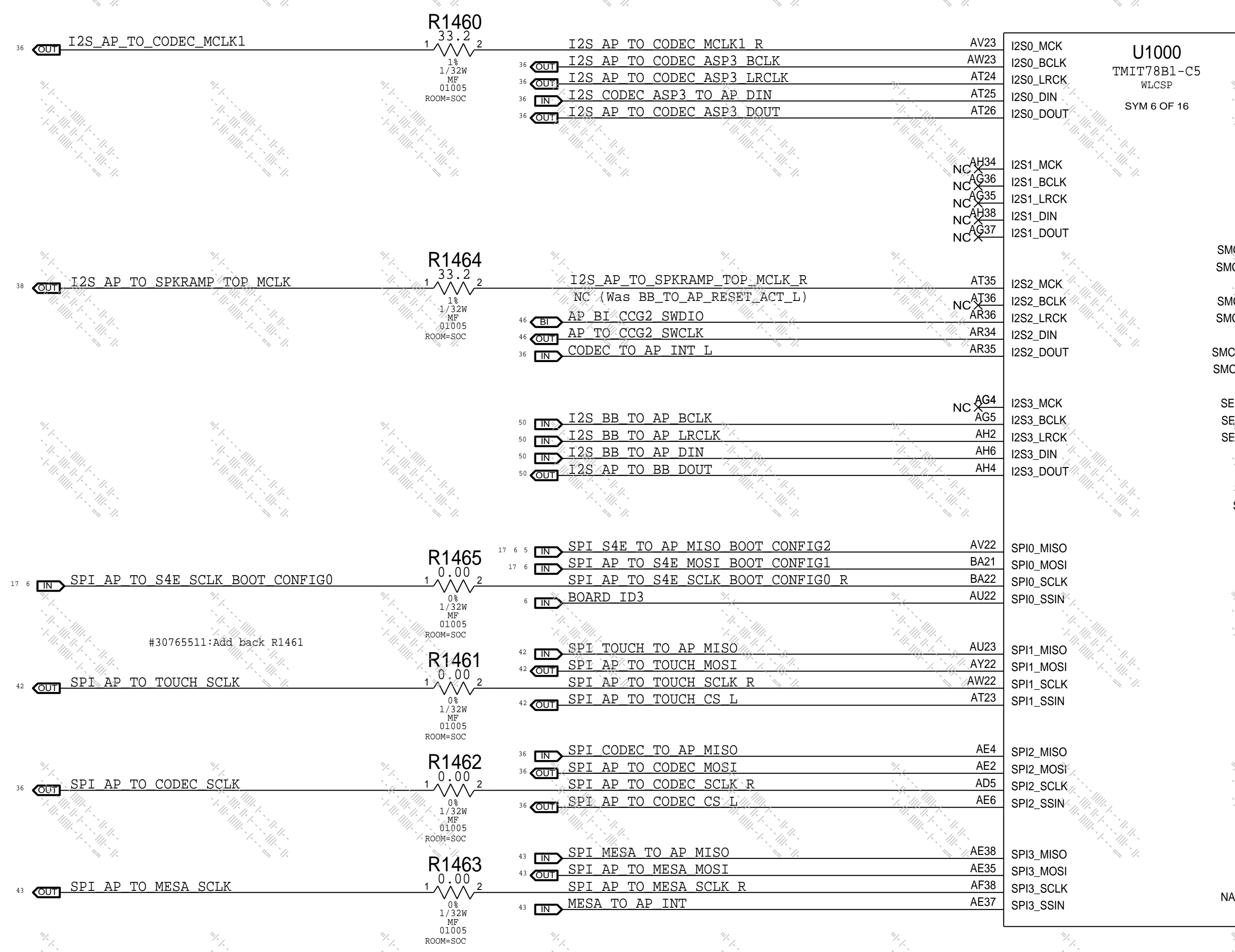


PAGE TITLE			SOC: LPDP		
		DRAWING NUMBER	051-02159	SIZE	D
		REVISION	10.0.0		
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			SHEET	10 OF 81	

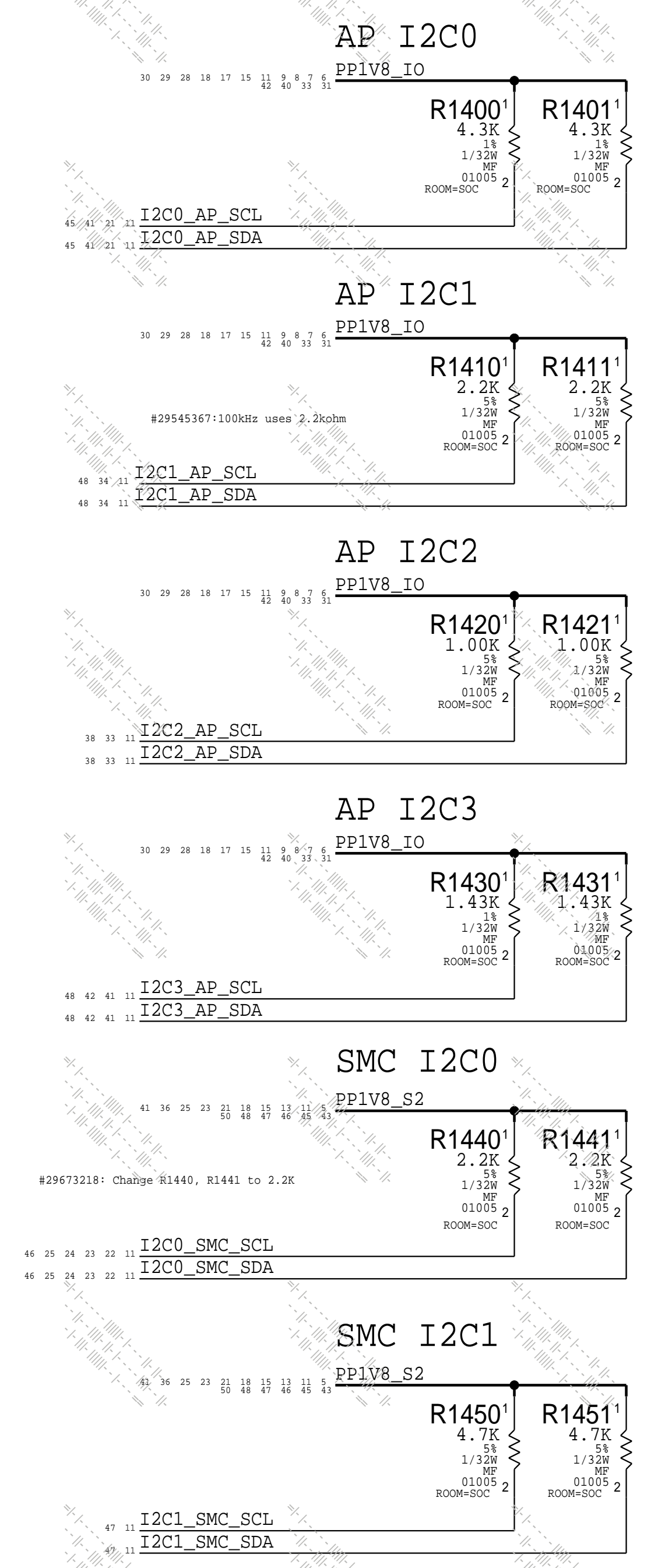
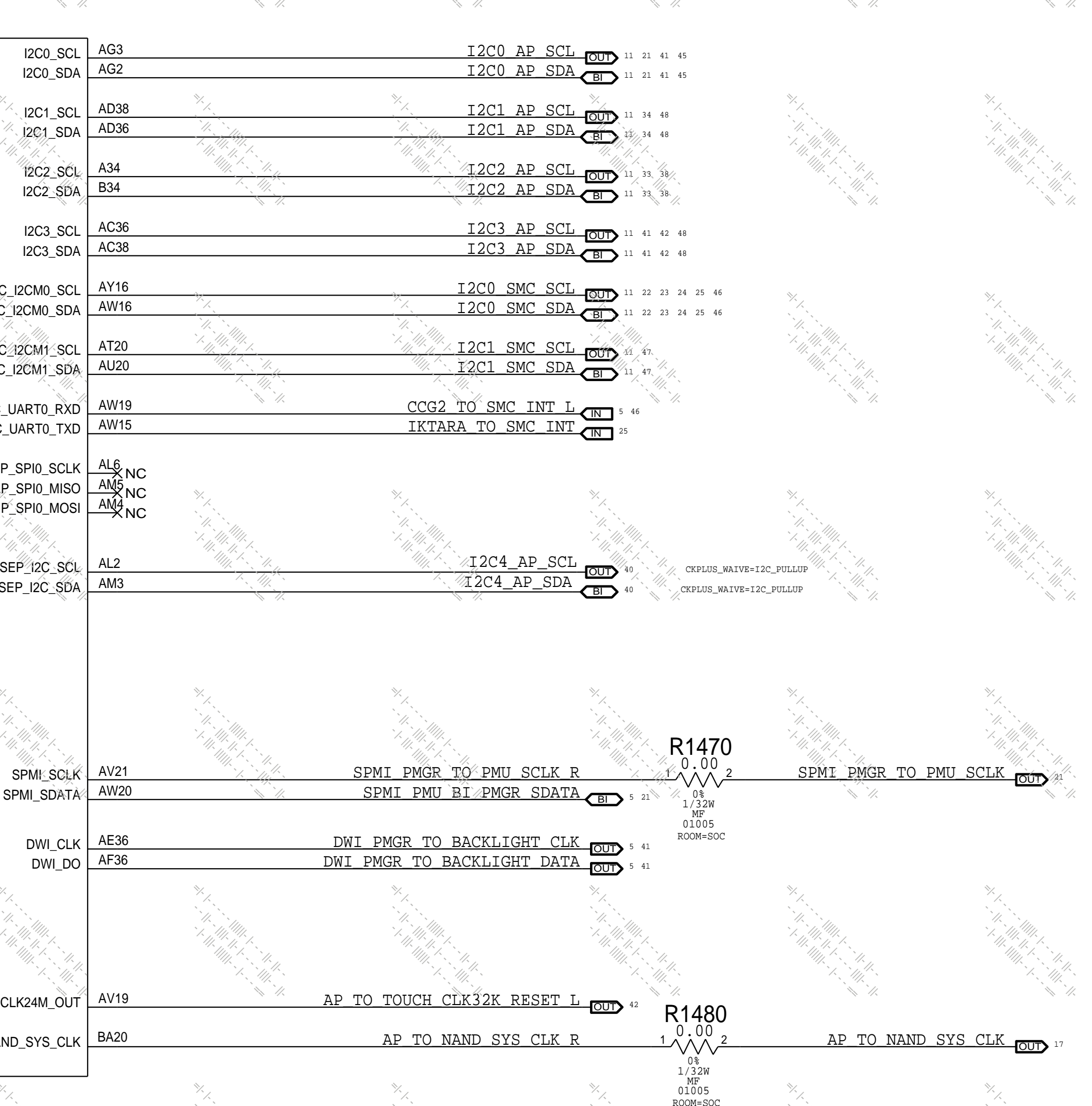


# SOC - SERIAL INTERFACES

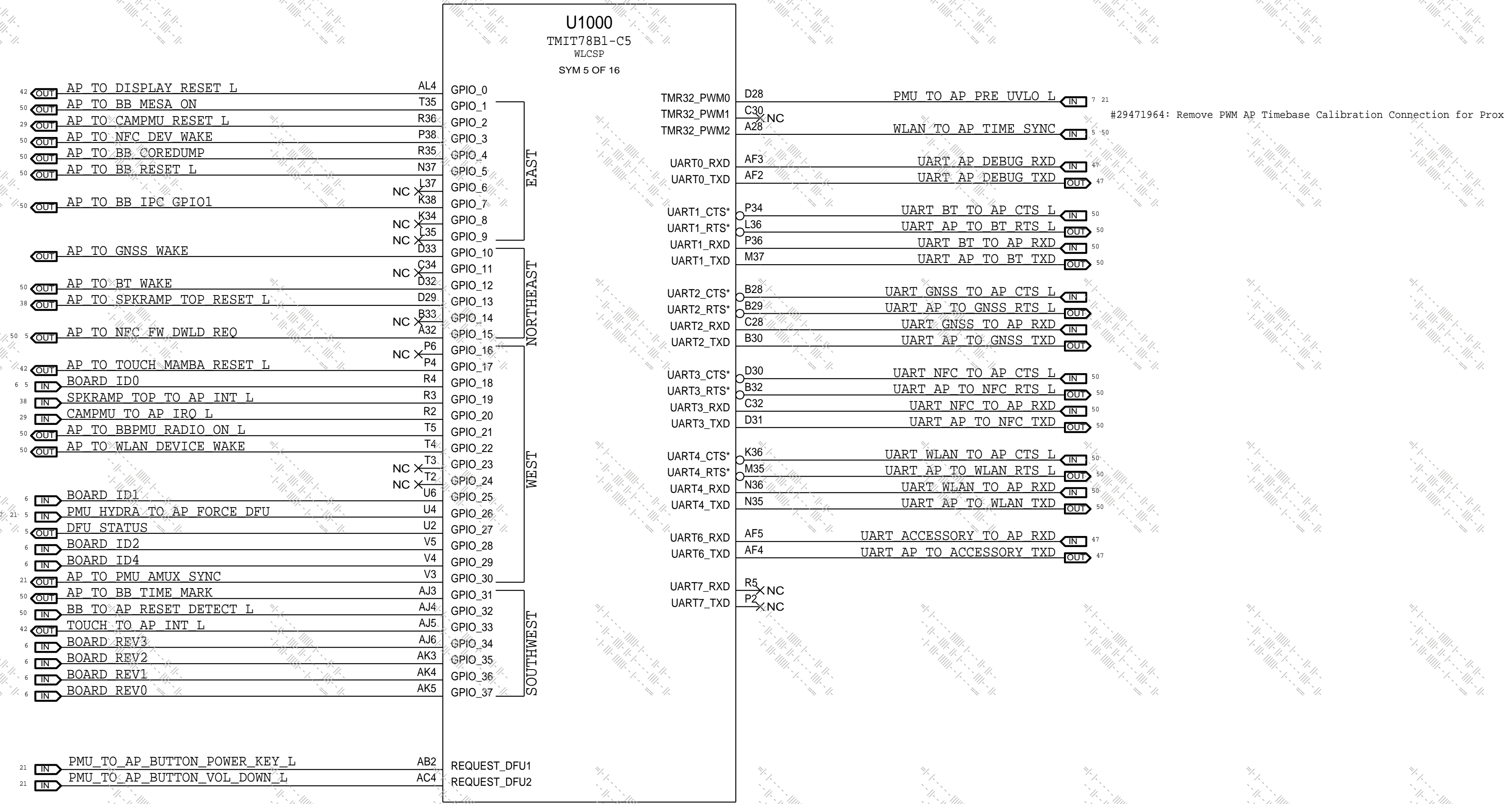
<https://www.mobile-manuals.com/>



SPI: Route as Daisy-Chain (No T's Allowed)



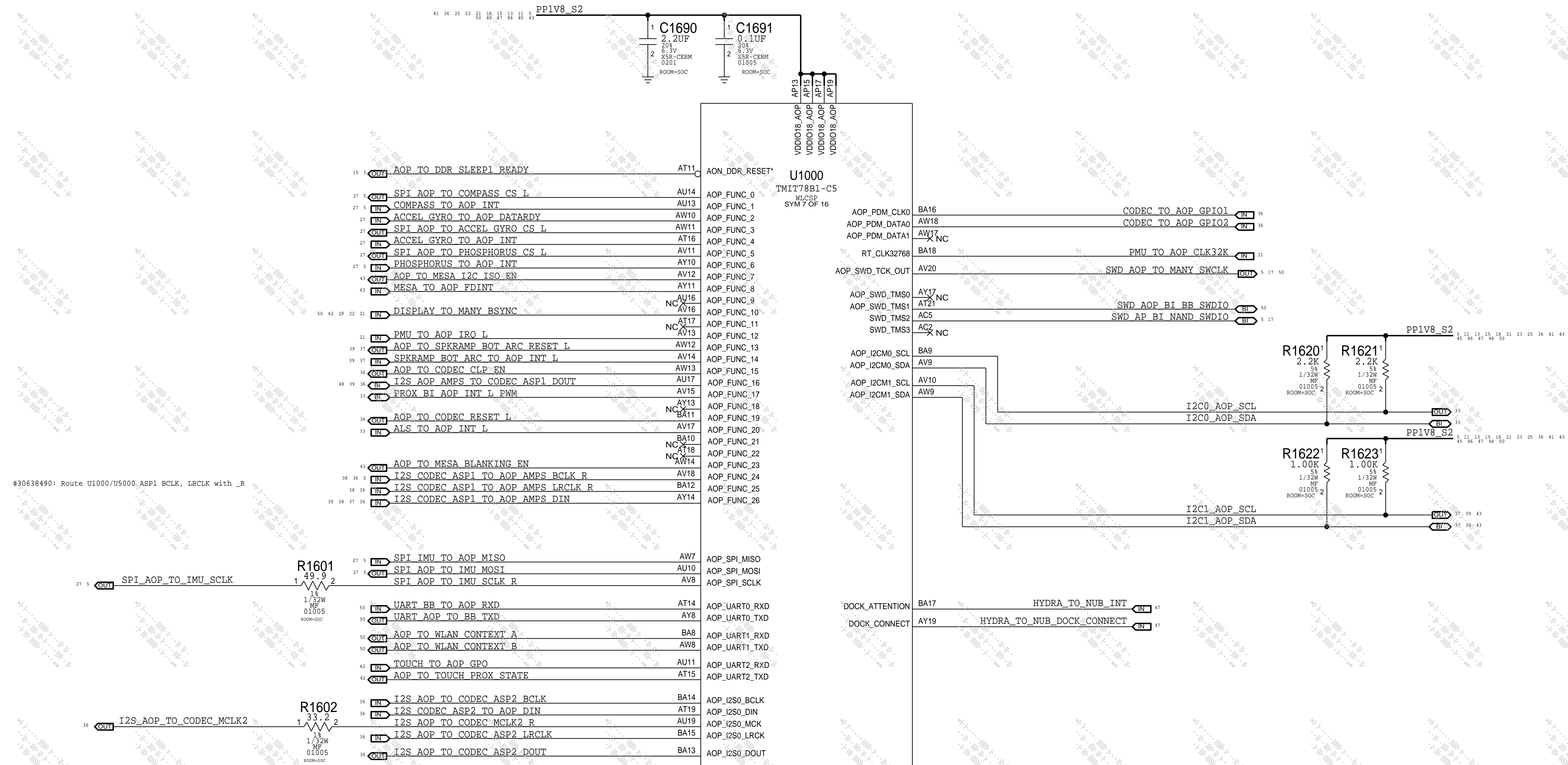
PAGE TITLE: SOC: SERIAL + SMC		
Apple Inc.	DRAWING NUMBER	051-02159
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VDDIO18\_AOP:1.8V @ 15mA MAX

PP1V8\_S2



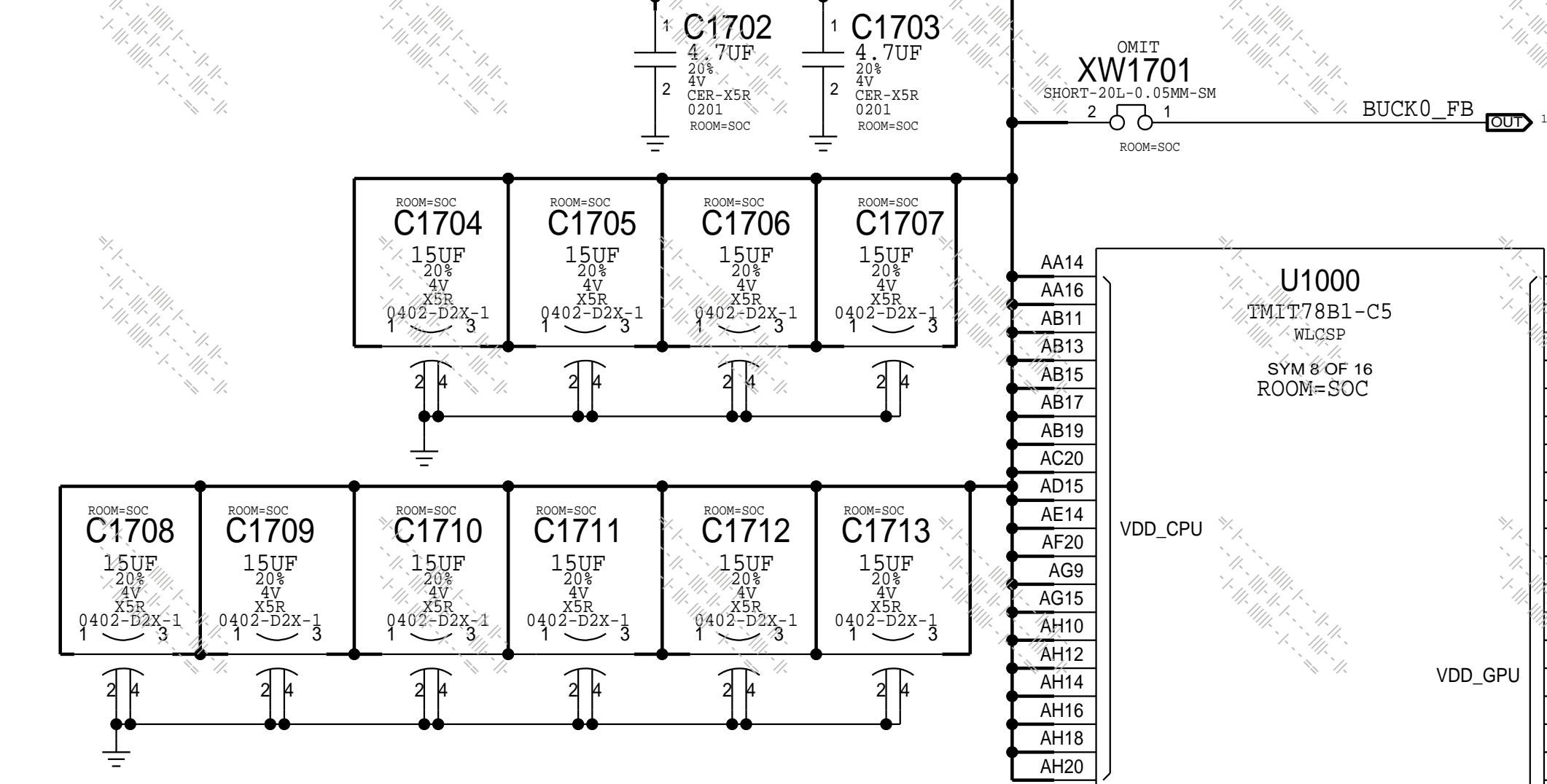
#30638490: Route U1000/U5000.ASP1 BCLK, LRCLK with \_R

PAGE TITLE		SOC: AOP	
Apple Inc.	DRAWING NUMBER	051-02159	SIZE
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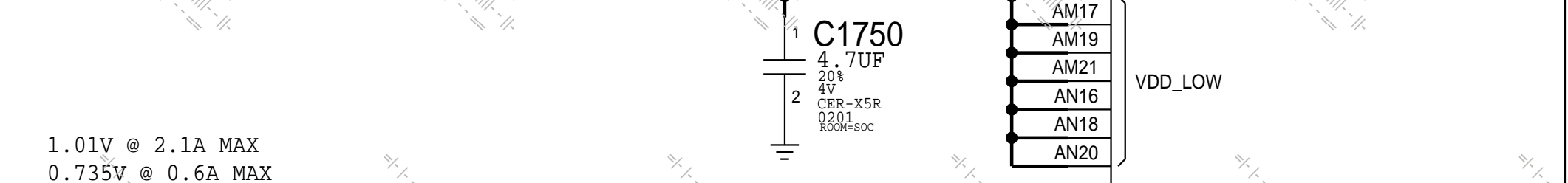
SOC - CPU, GPU & SOC RAILS

1.06V @ 11.0A MAX  
 0.8V @ 6A MAX  
 0.575V @ 2.7A MAX

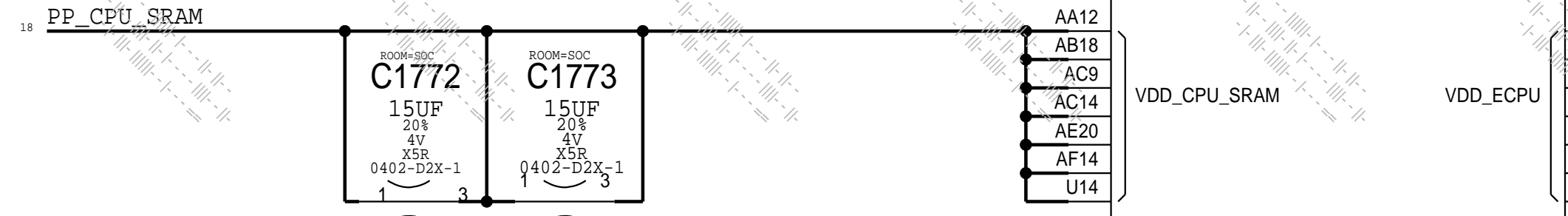
PP\_CPU\_PCORE



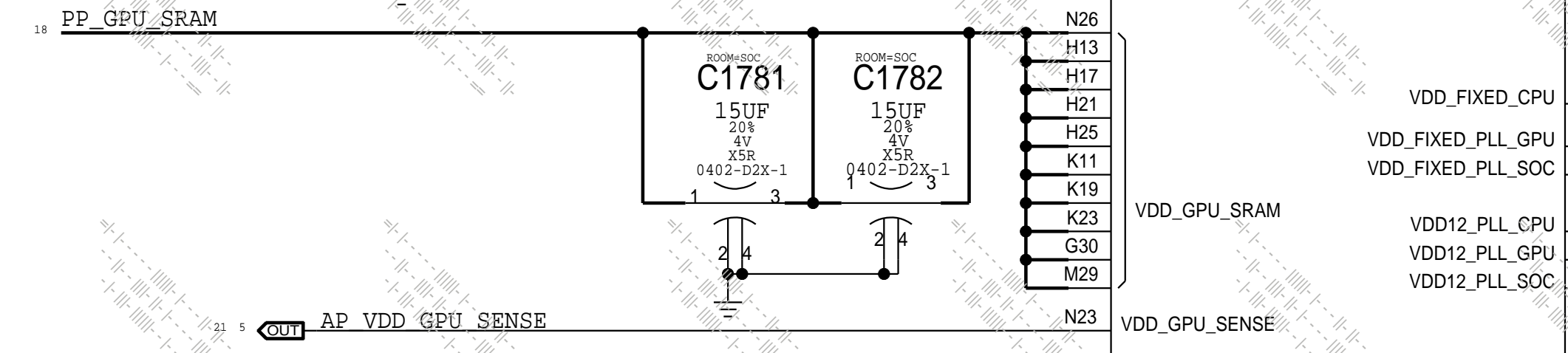
0.7V @ 75mA MAX  
 PP0V7\_VDD\_LOW\_S2



1.01V @ 2.1A MAX  
 0.735V @ 0.6A MAX  
 PP\_CPU\_SRAM



1.06V @ 1.1A MAX  
 0.80V @ 0.63A MAX  
 0.675V @ 0.19A MAX  
 PP\_GPU\_SRAM



1.06V @ 18.3A MAX  
 0.8V @ 10.6A MAX  
 0.575V @ 3.4A MAX  
 PP\_GPU



0.8V @ 6mA MAX  
 PP0V8\_SOC\_FIXED\_S1



0.8V @ 6+10=16mA MAX  
 PP1V2\_SOC



1.2V @ 7mA MAX (CPU)  
 1.2V @ 7mA MAX (GPU)  
 1.2V @ 20mA MAX (SOC)



0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



1.06V @ 18.3A MAX  
 0.8V @ 10.6A MAX  
 0.575V @ 3.4A MAX  
 PP\_GPU



0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



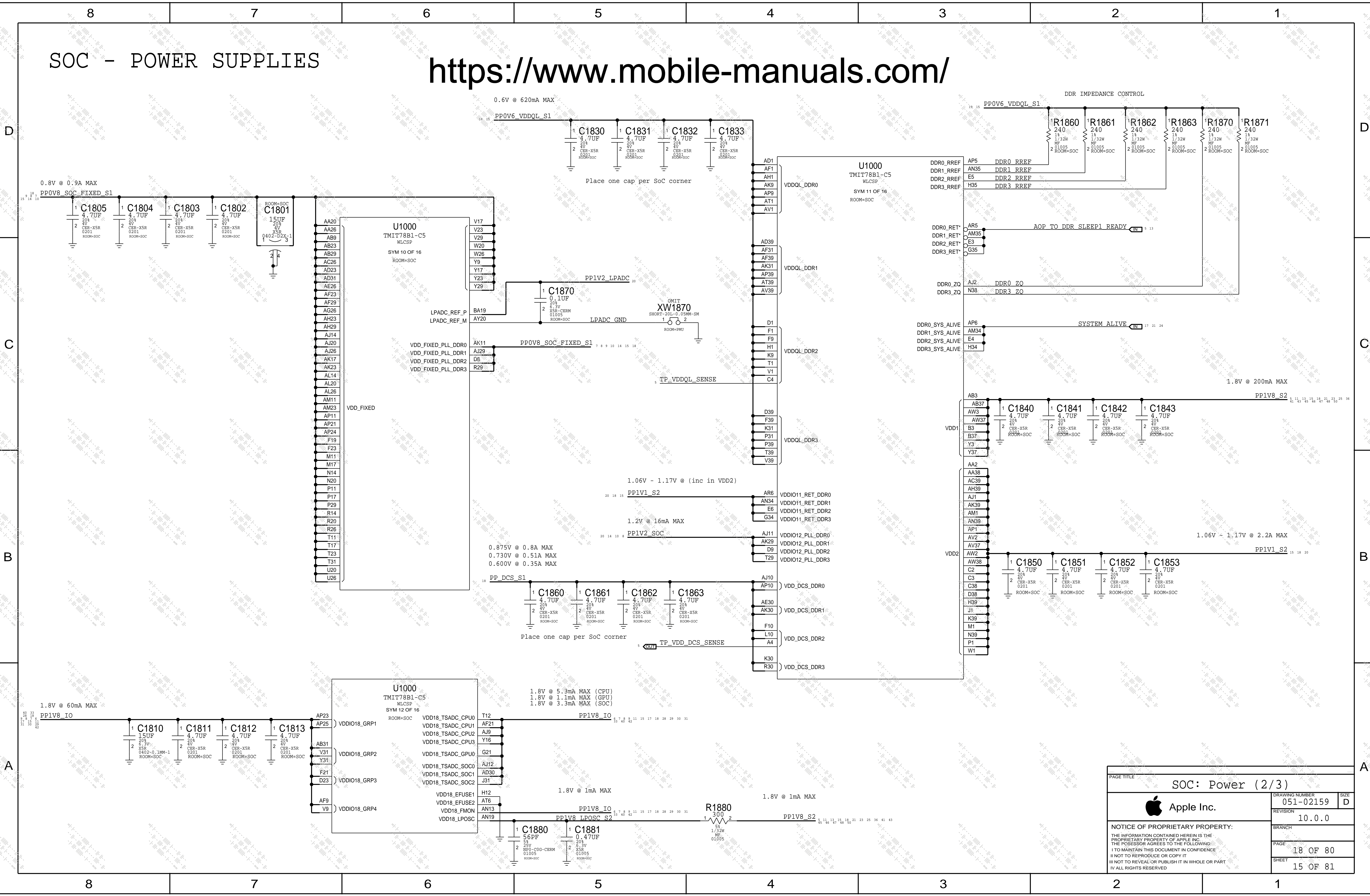
0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



0.765V @ 4.9A MAX  
 0.635V @ 2.6A MAX  
 PP\_SOC\_S1



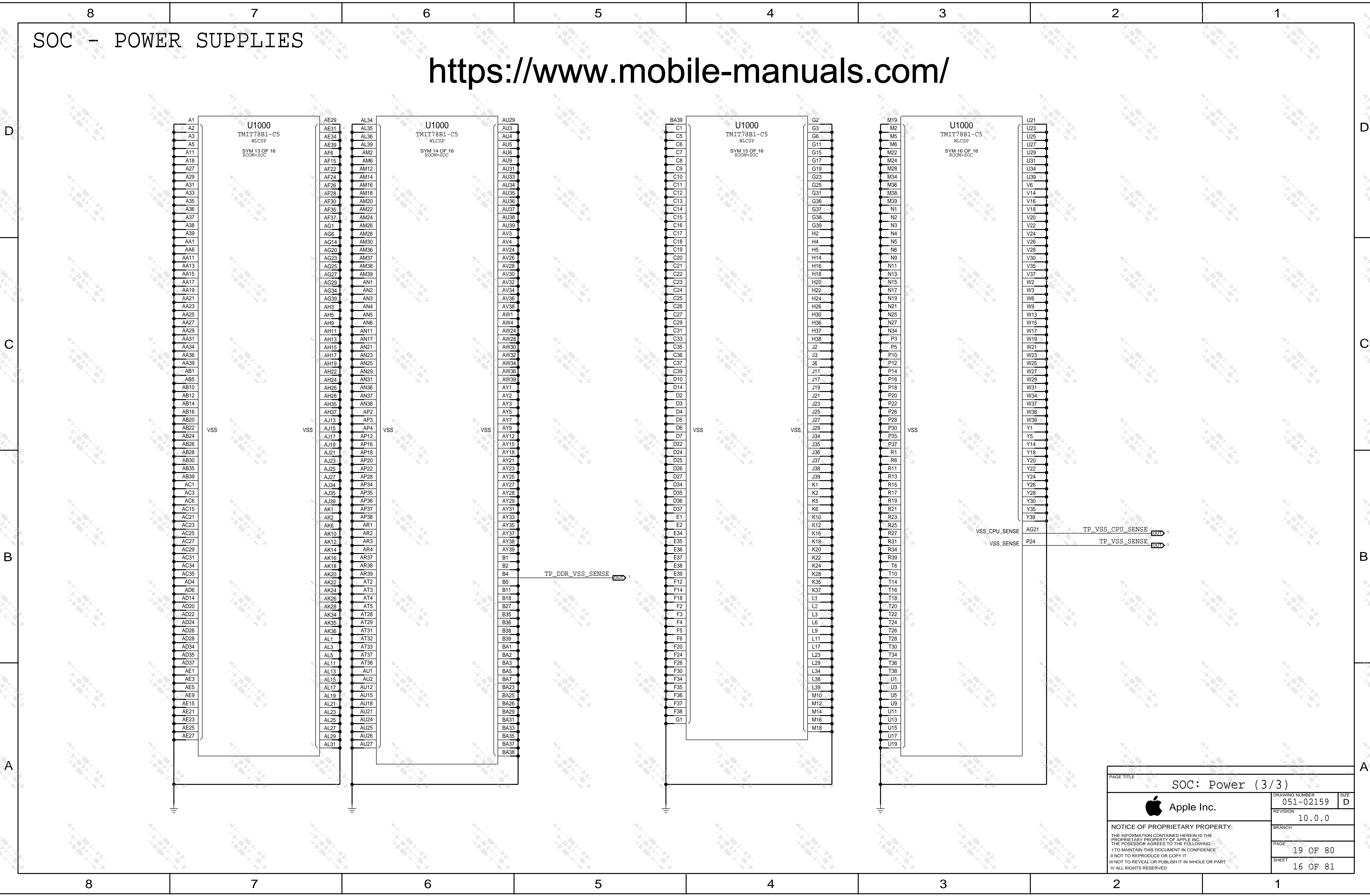
SOC - POWER SUPPLIES



PAGE TITLE		SOC: Power (2/3)	
		DRAWING NUMBER	051-02159
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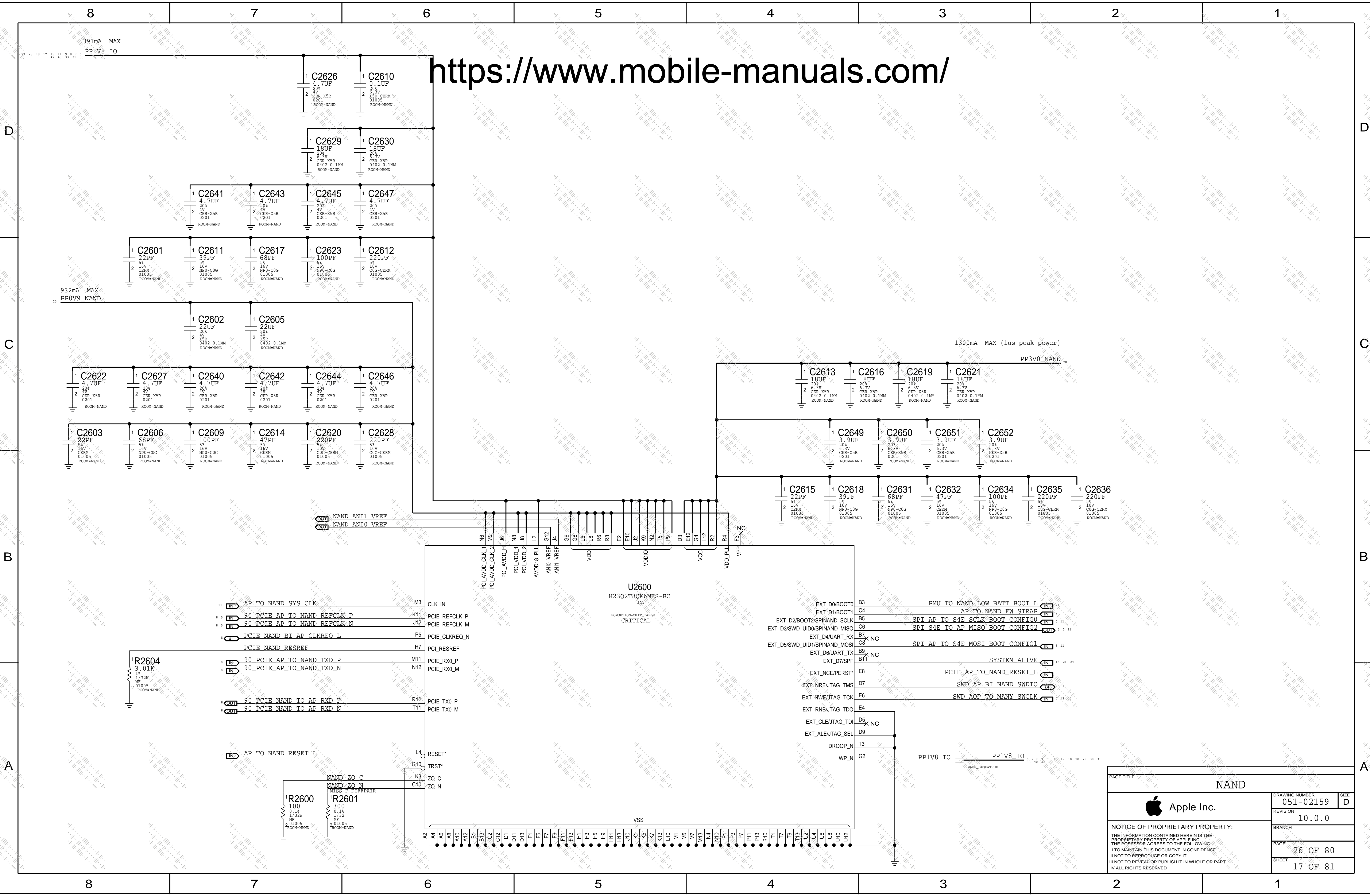
SOC - POWER SUPPLIES

<https://www.mobile-manuals.com/>



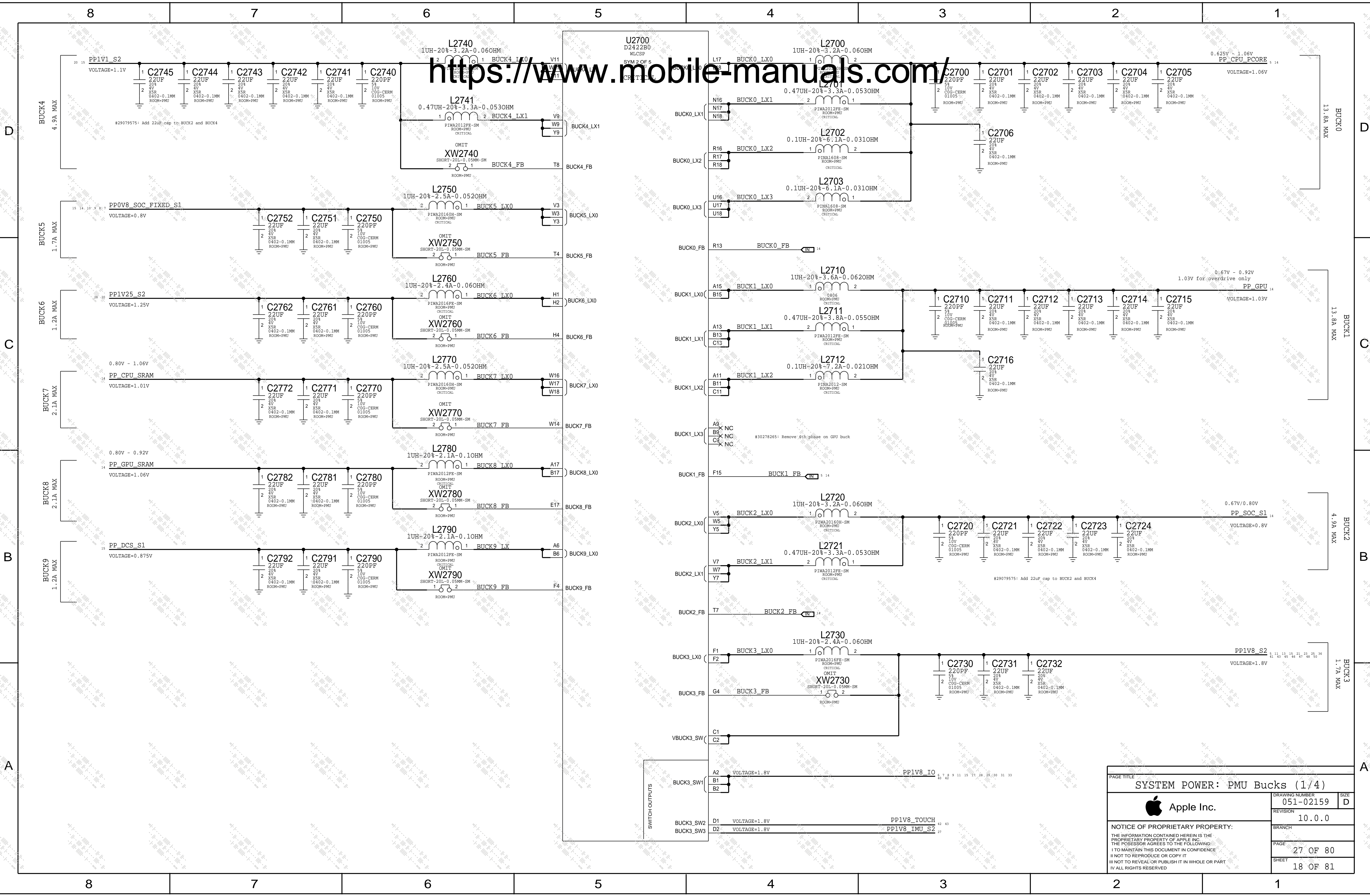


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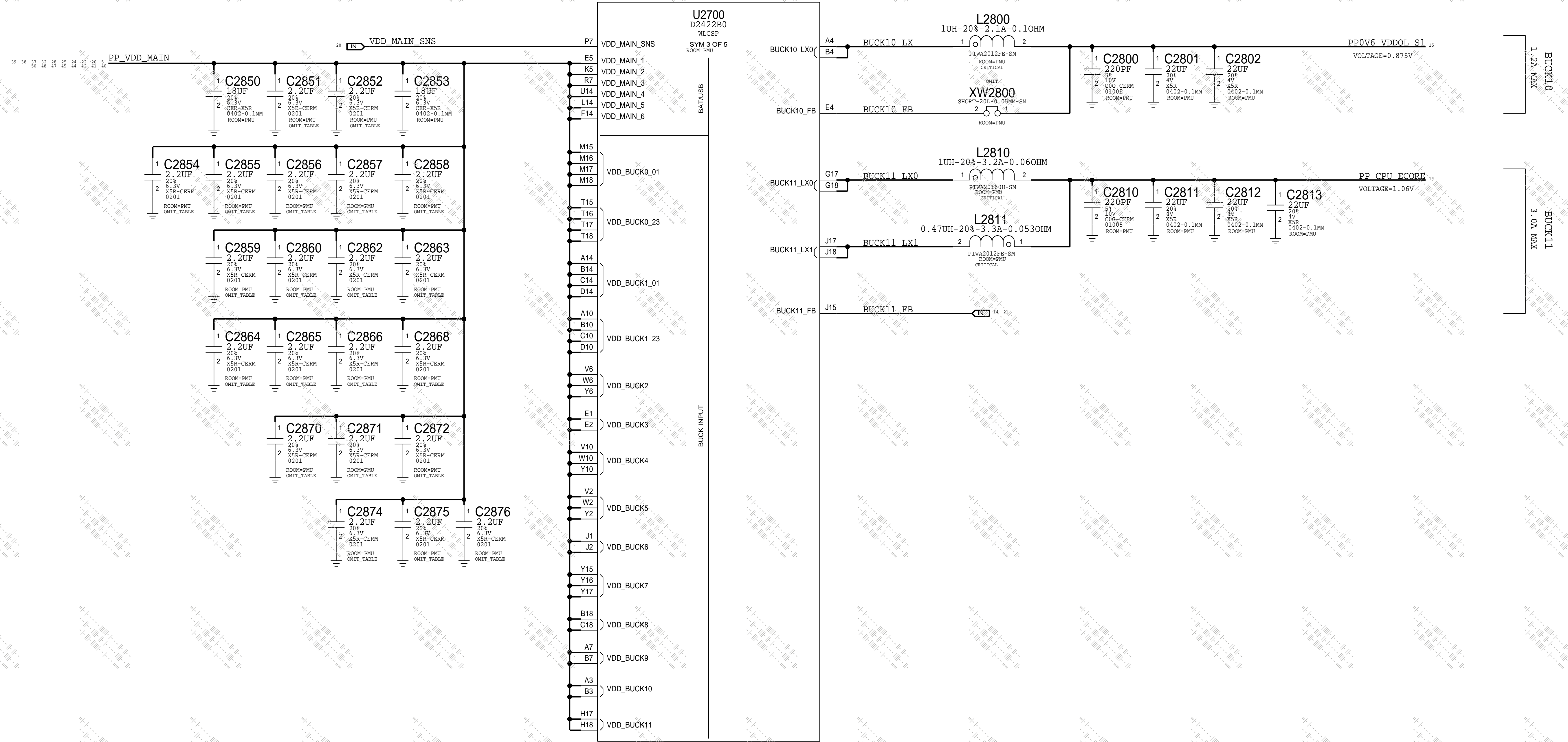
PAGE TITLE <b>NAND</b>		
	DRAWING NUMBER 051-02159	SIZE D
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BRANCH		
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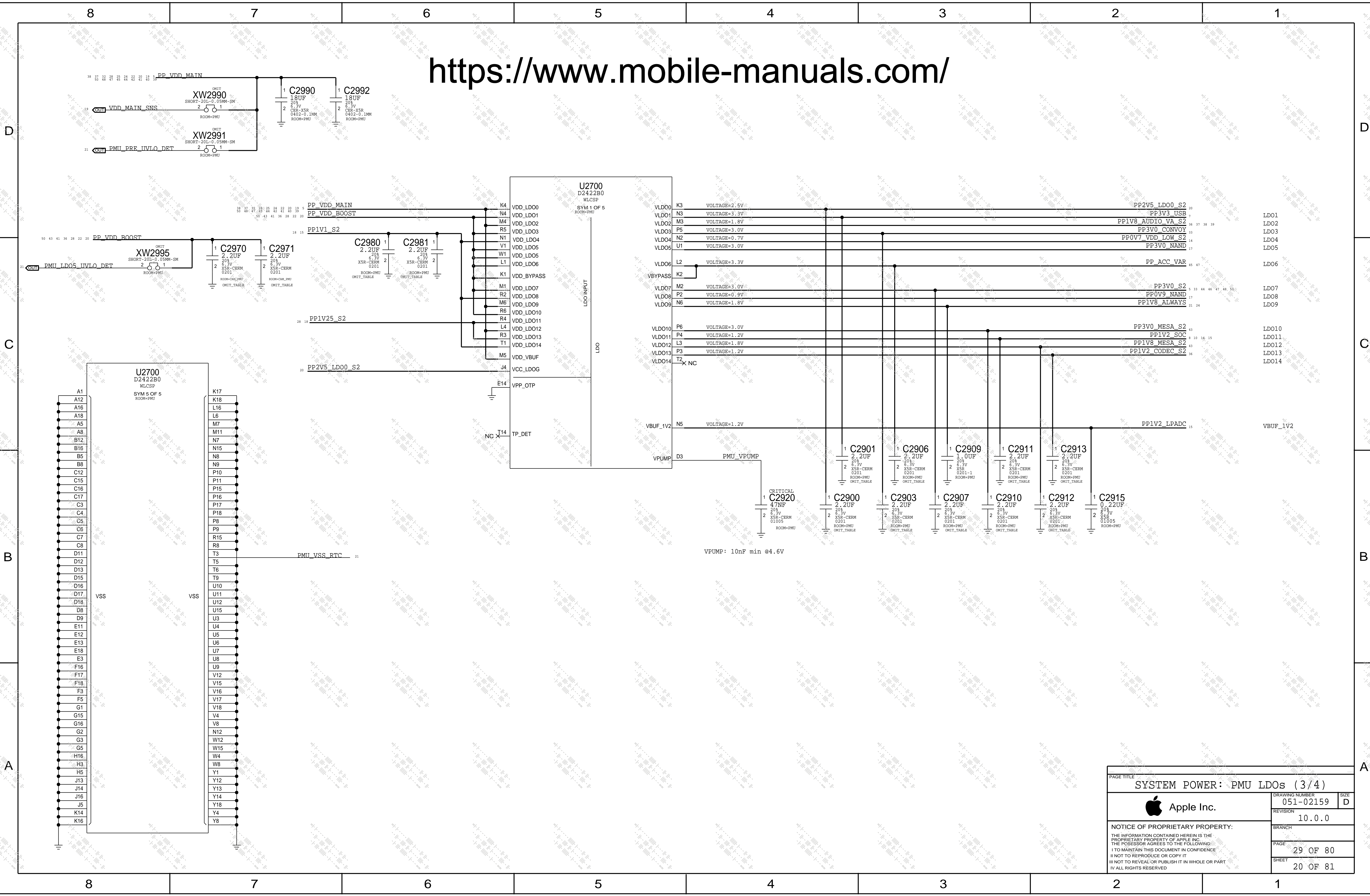


PAGE TITLE		
SYSTEM POWER: PMU Bucks (1/4)		
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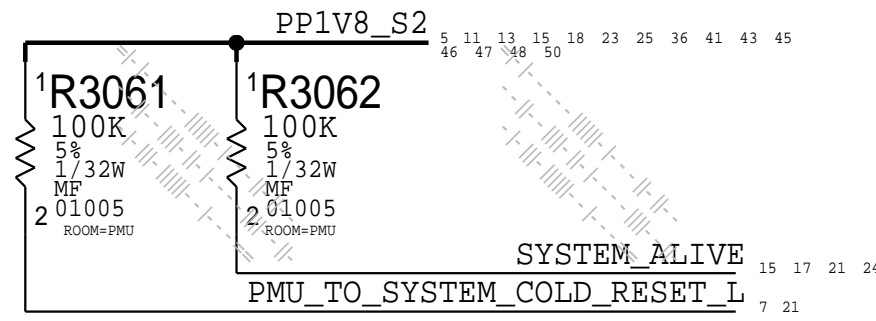


PAGE TITLE		
SYSTEM POWER: PMU Bucks (2/4)		
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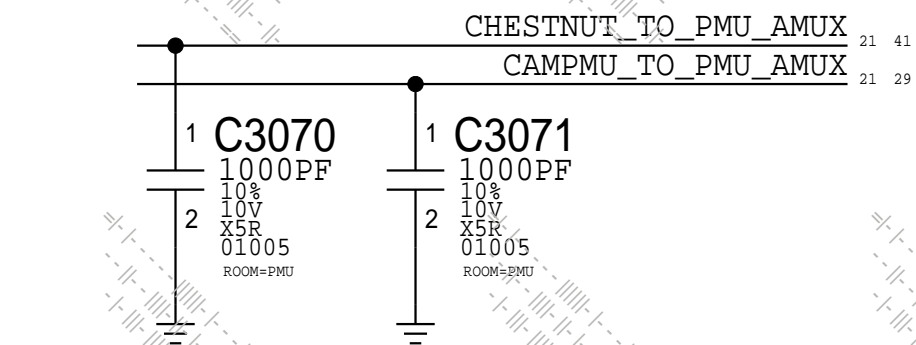




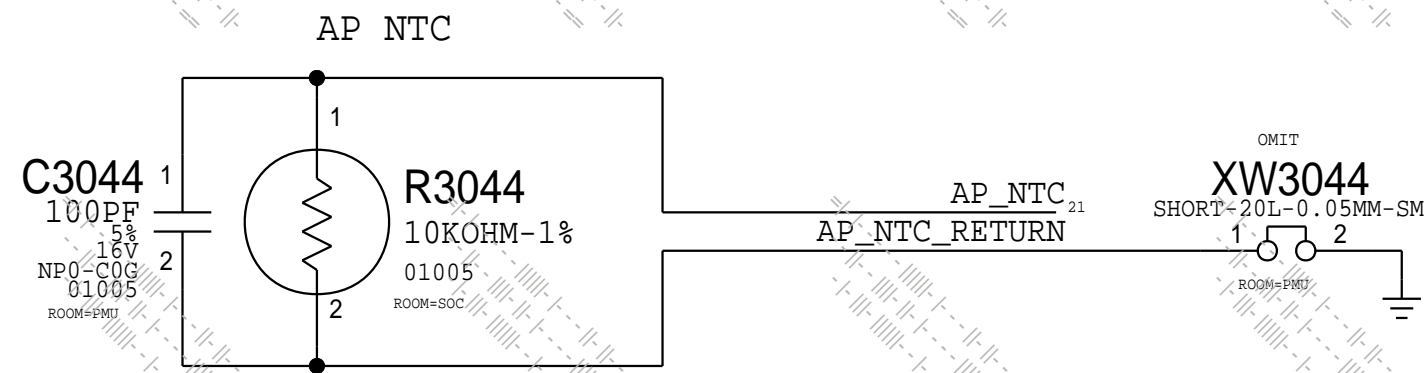
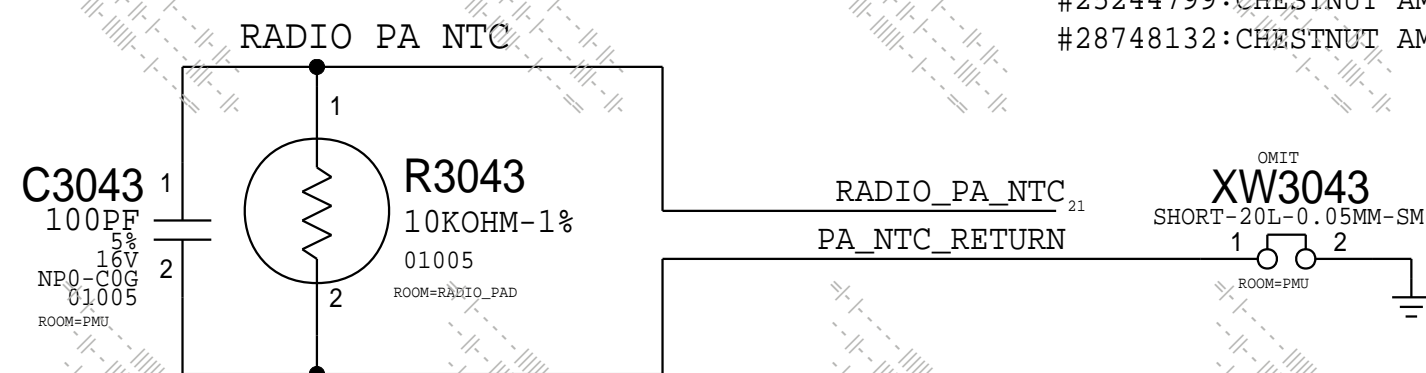
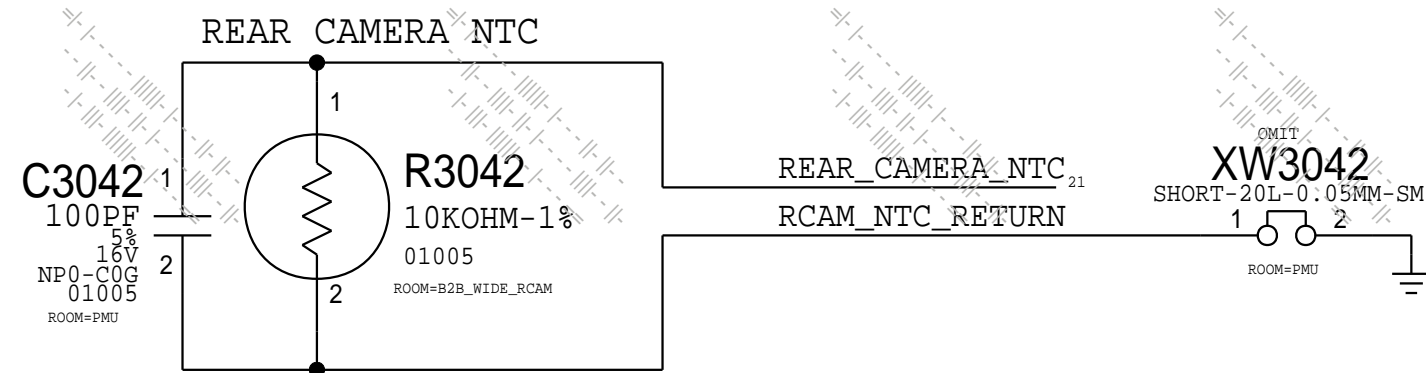
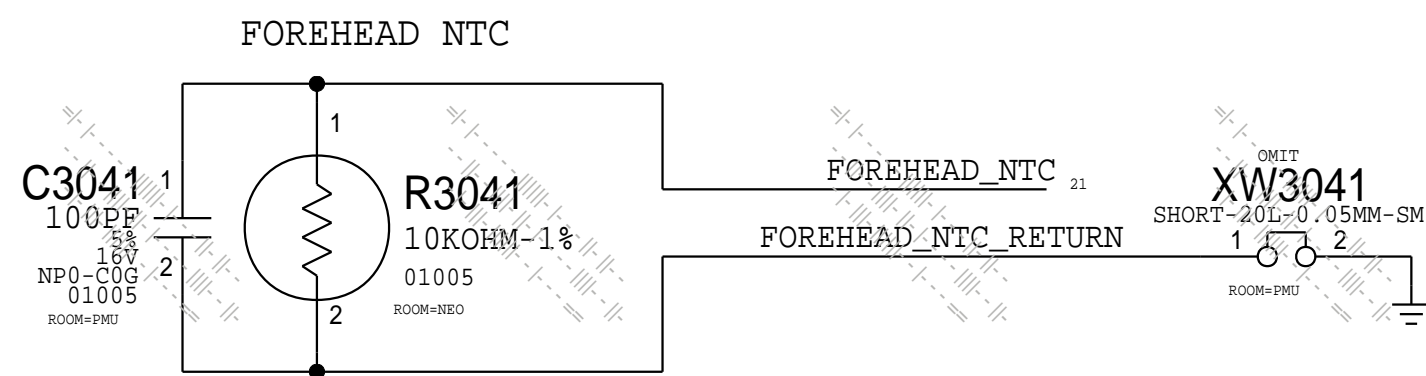
COLD\_RESET & SYSTEM\_ALIVE



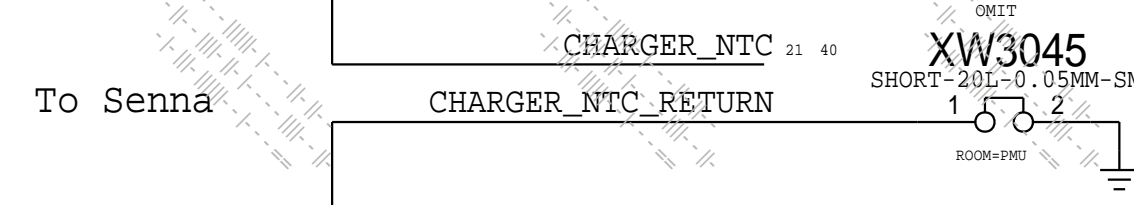
Chestnut / Ansel AMUX



NTCs



CHARGER NTC (IN SIP)



#29404057:Damping R for ACTIVE\_RDY

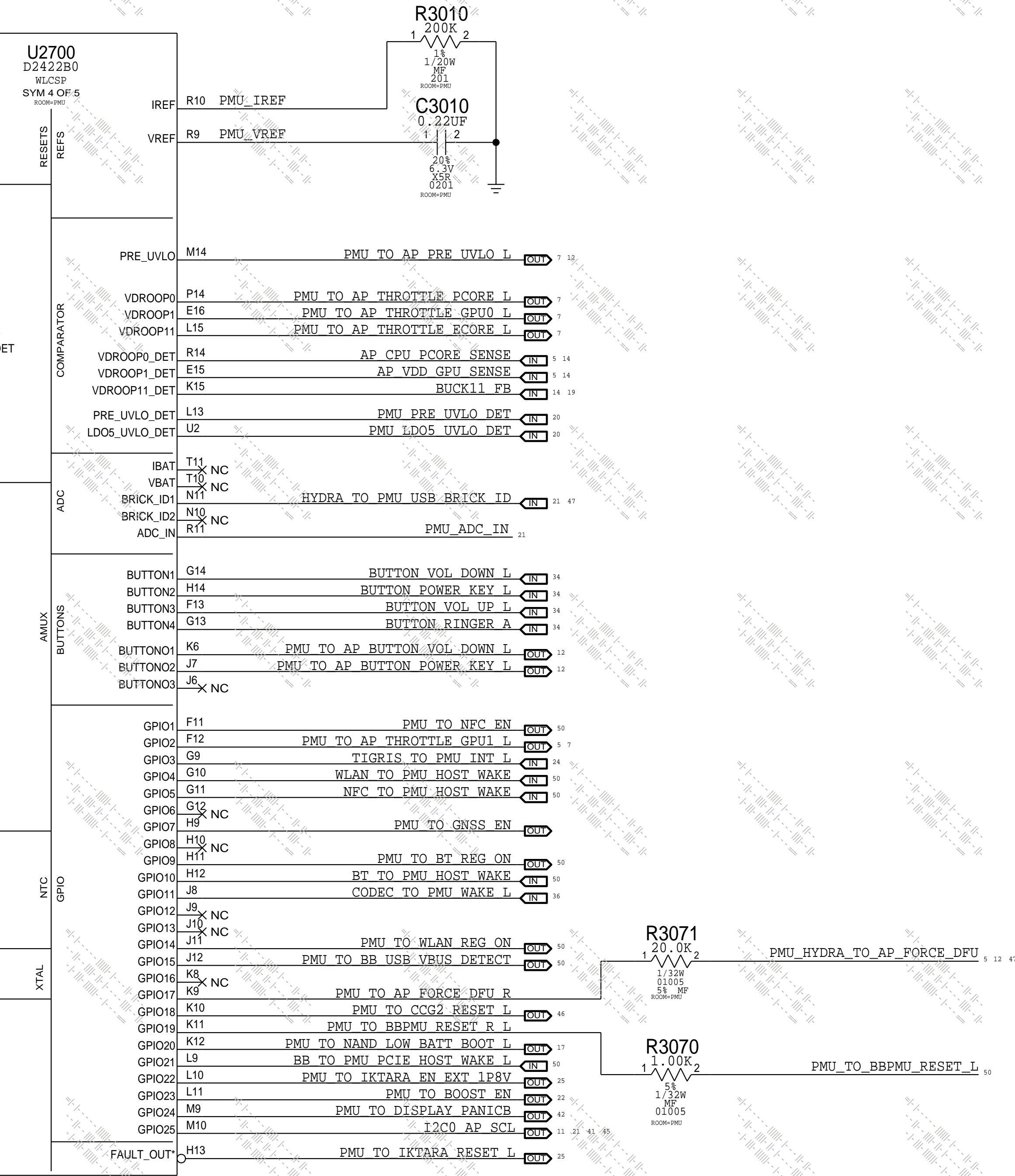
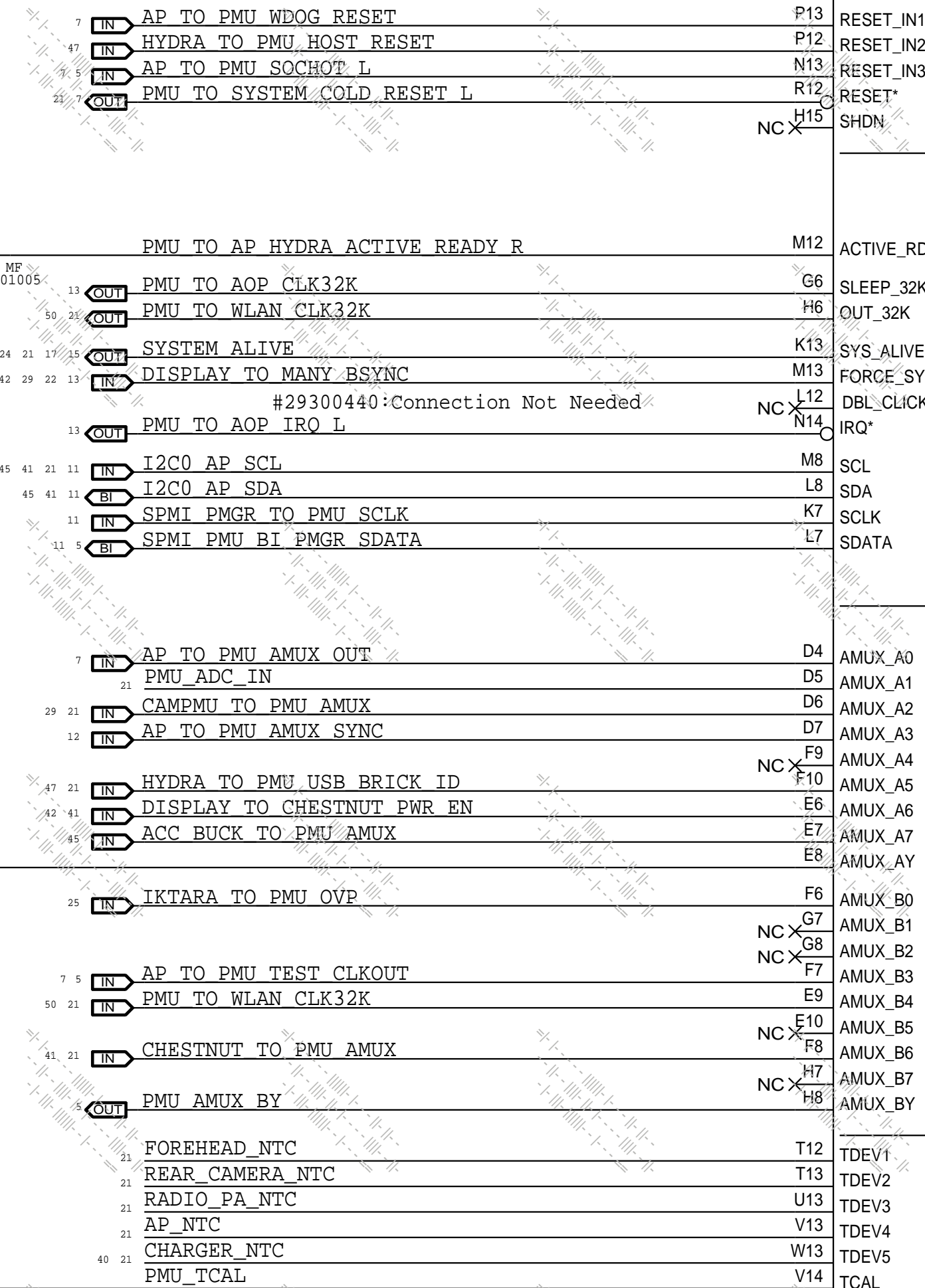
#29300440:Connect PMU crash to SoC

#27852679:No SDA R, PoR is SPMI

#25244799:CHESTNUT AMUX AND PWR\_EN ON SAME CHANNEL  
#28748132:CHESTNUT AMUX AND PWR\_EN SWAP BETWEEN A6/B6

#25244799:OTP-AJ Connects XTAL1 to GND

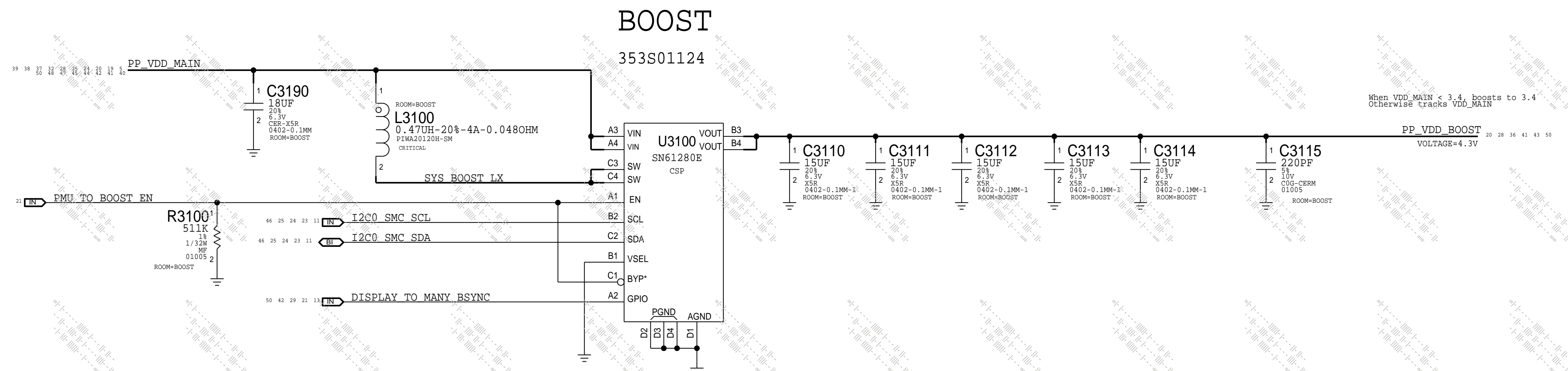
#29312542:REPLACE PMU XTAL WITH XO



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

PAGE TITLE <b>SYSTEM POWER: PMU (4/4)</b>		
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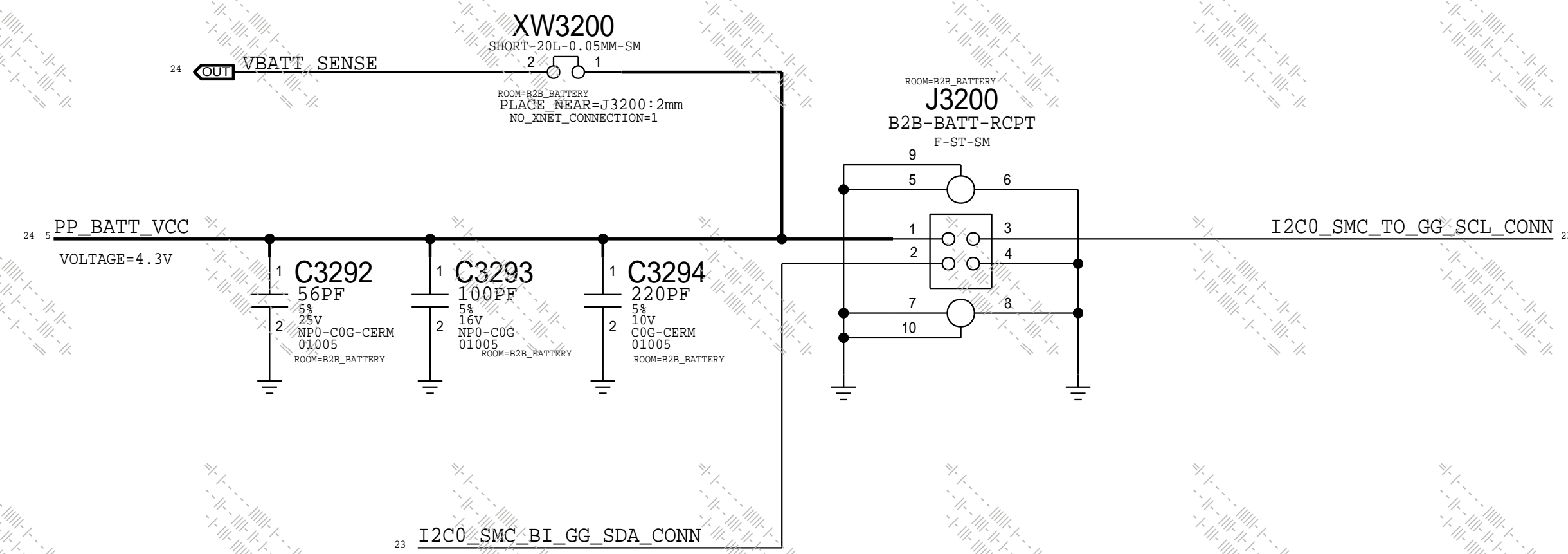
When VDD\_MAIN < 3.4, boosts to 3.4  
Otherwise tracks VDD\_MAIN

PAGE TITLE			SYSTEM POWER: Boost		
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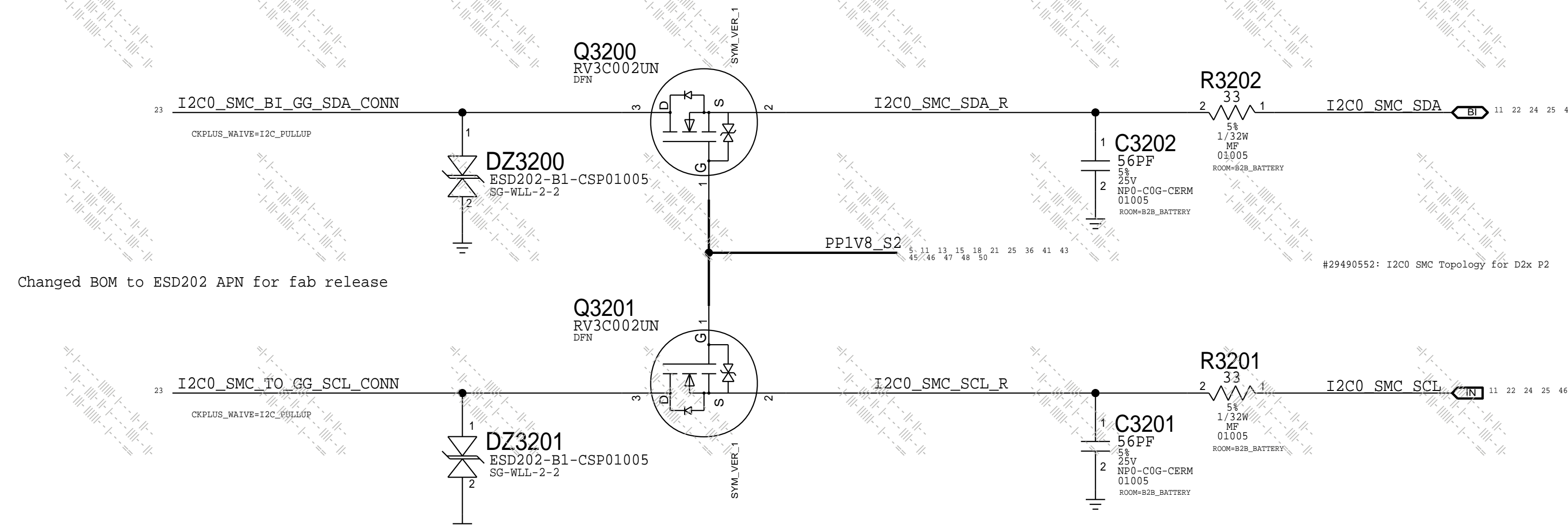


# Battery Connector

THIS ONE ON MLB ---> 516S00232



#32515053: Add DZ3200/DZ3201 on I2C CONN with 377S00001  
 #31734657: Replace battery I2C FETs with 376S00134  
 Gas gauge I2C level translator



Changed BOM to ESD202 APN for fab release

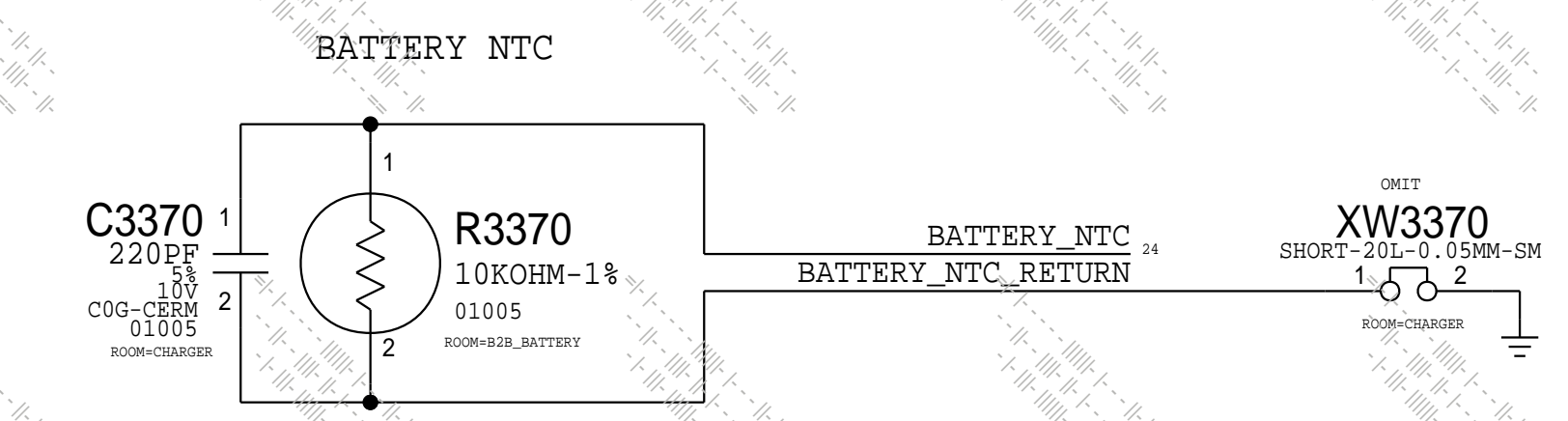
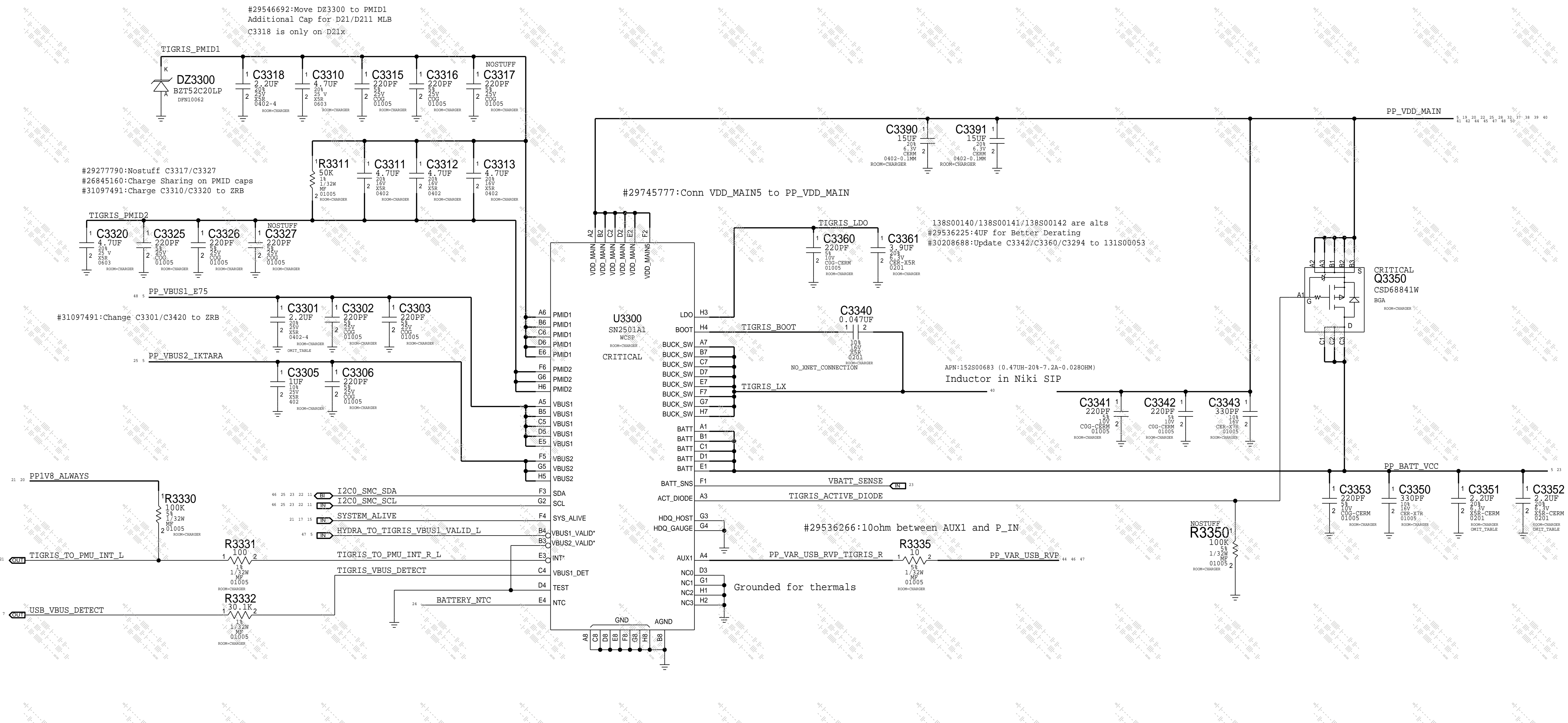
#29490552: I2C0 SMC Topology for D2x P2

PAGE TITLE		
SYSTEM POWER: B2B Battery		
	DRAWING NUMBER	051-02159
	REVISION	10.0.0
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# Tigris 2

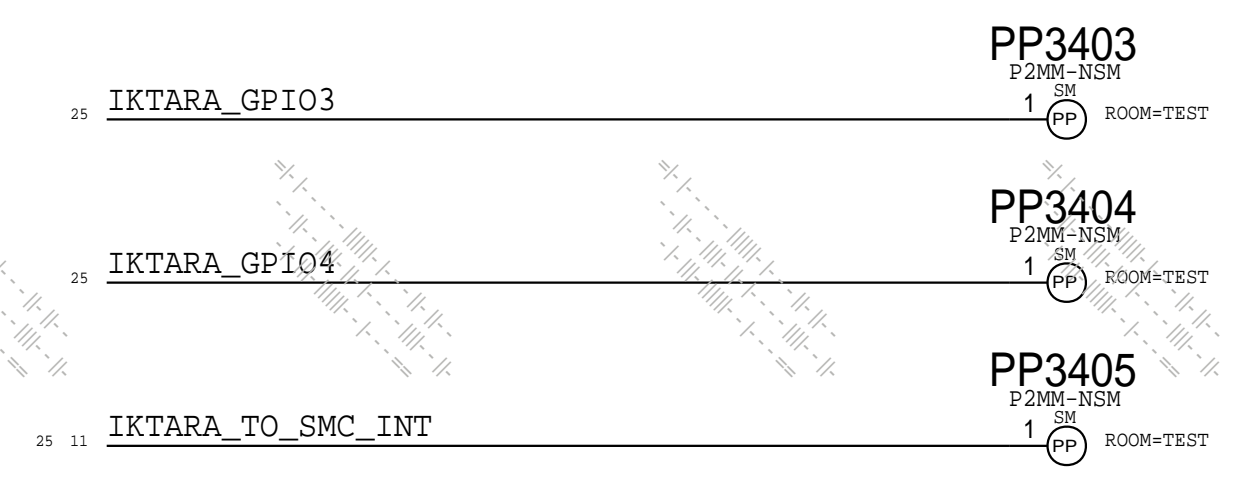
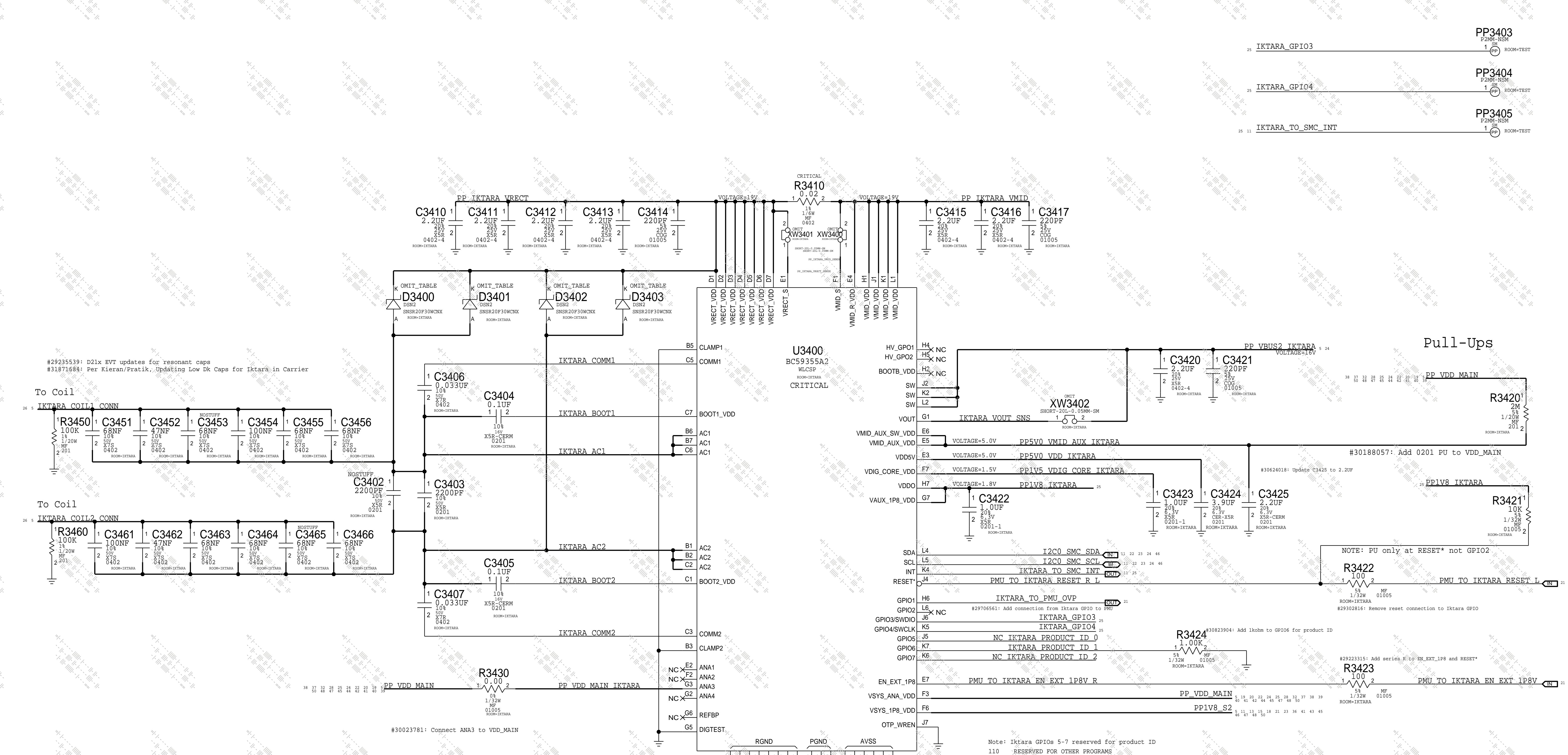
APN:343S00170

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PAGE TITLE		SYSTEM POWER: Charger	
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Pull-Ups

NOTE: PU only at RESET\* not GPIO2

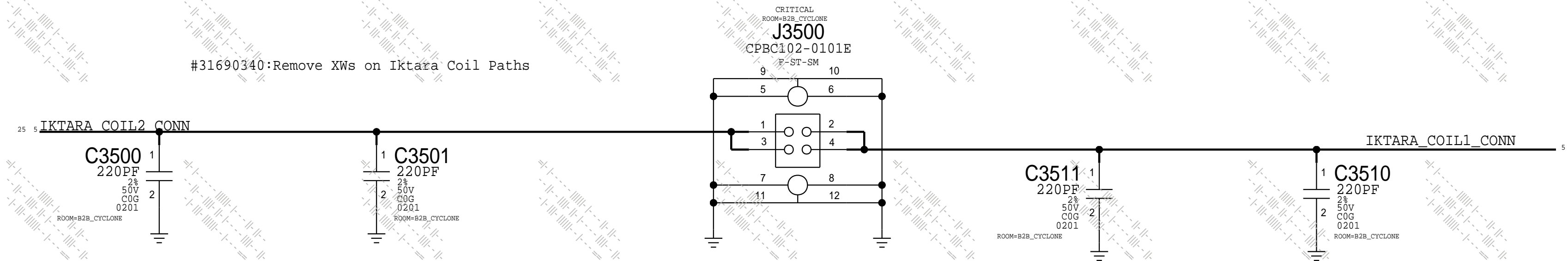
Note: Iktara GPIOs 5-7 reserved for product ID  
 110 RESERVED FOR OTHER PROGRAMS  
 101 <- SELECTED (D21x)  
 011 RESERVED FOR OTHER PROGRAMS

PAGE TITLE		
SYSTEM POWER: Iktara		
Apple Inc.	DRAWING NUMBER	051-02159
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# Cyclone connector

THIS ONE ON MLB ----> 516S00311

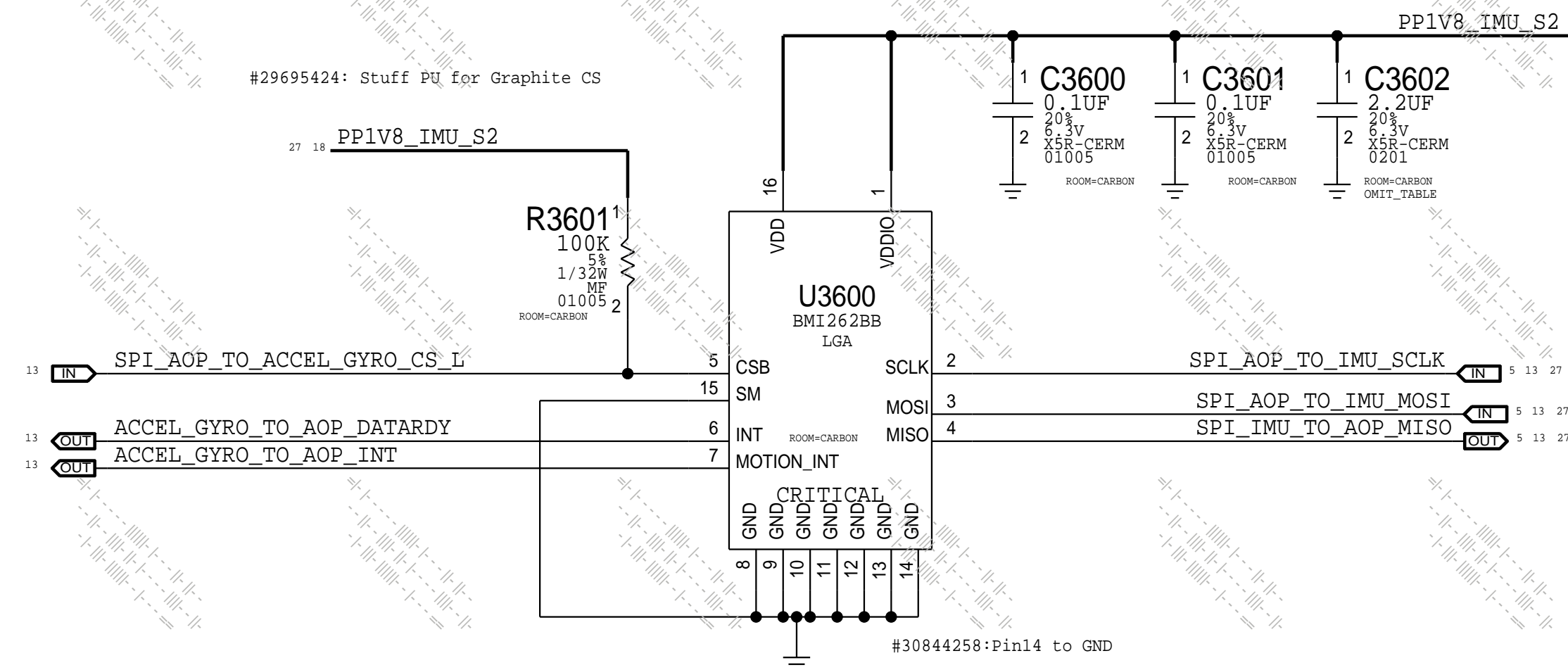


PAGE TITLE		
SYSTEM POWER: B2B Cyclone		
Apple Inc.	DRAWING NUMBER	051-02159
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### Graphite - Accel & Gyro

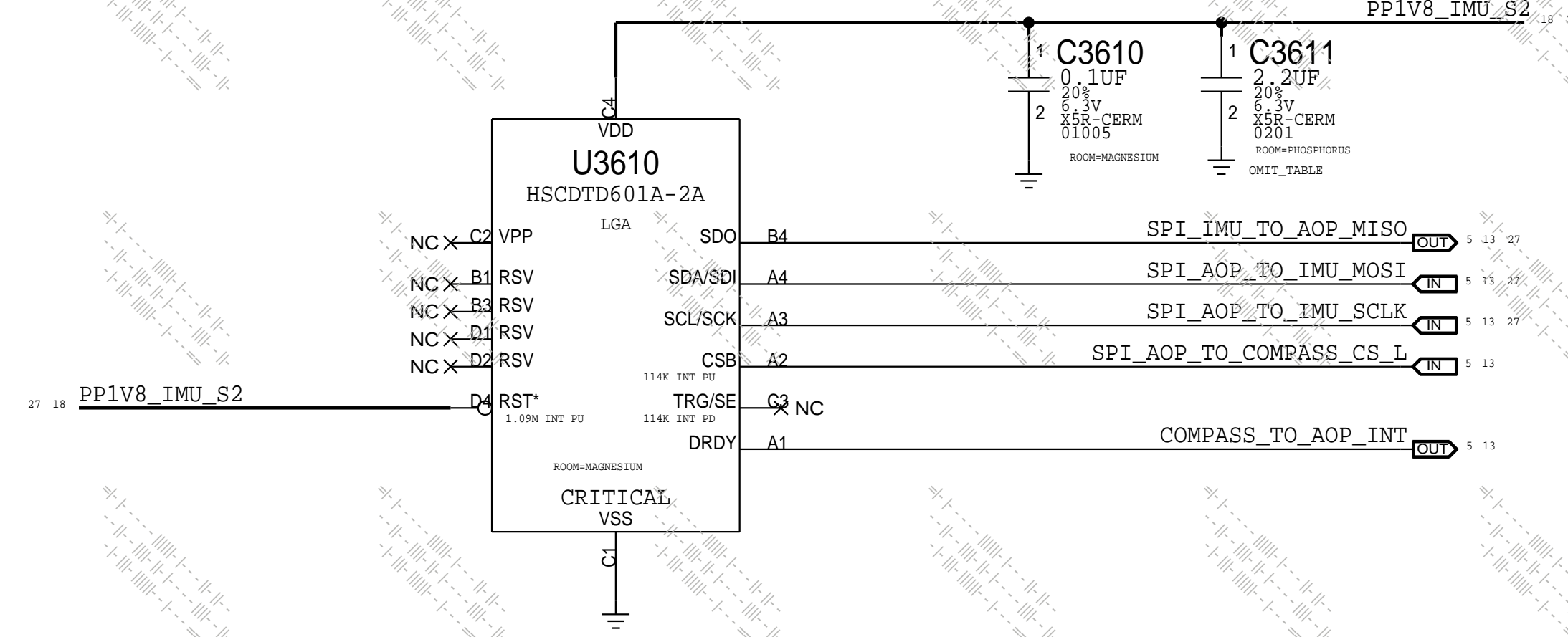
APN: 338S00304 (A1)



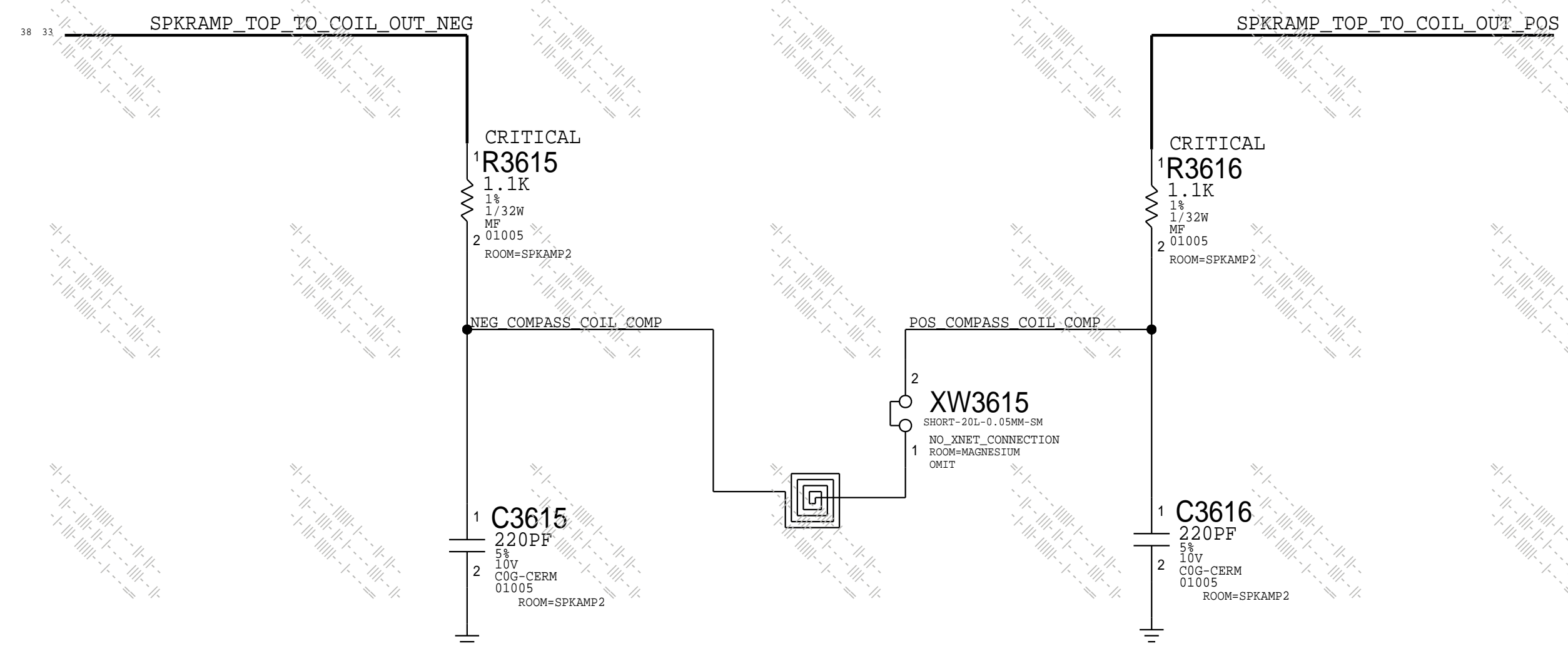
### Magnesium - Compass

APN: 338S00084

Shared decoupling with Phosphorus

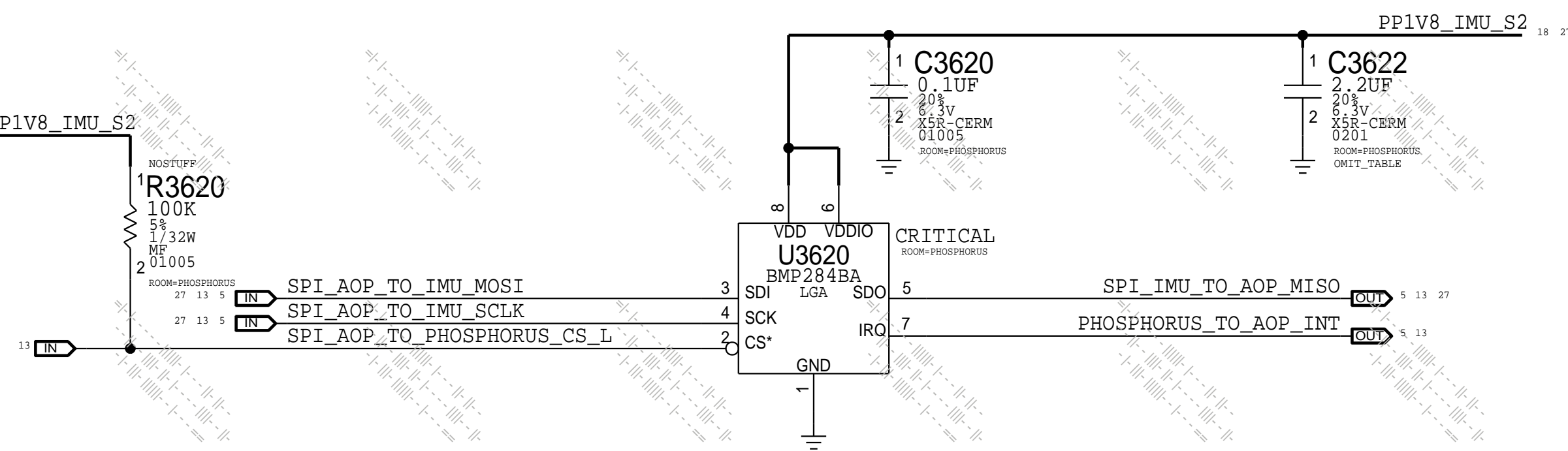


### North Speaker Compass Compensation Coil

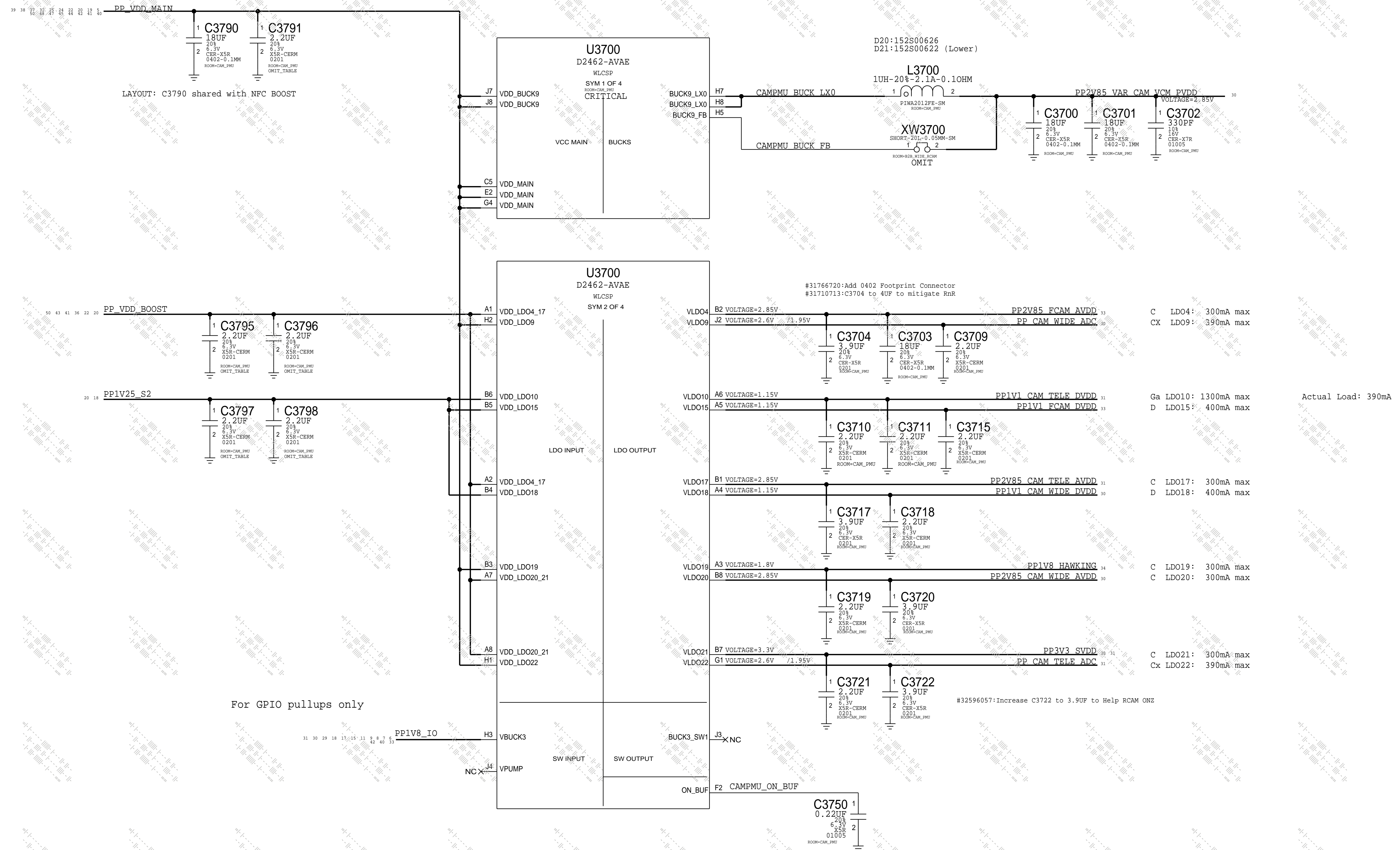


### Phosphorus

APN: 338S00334

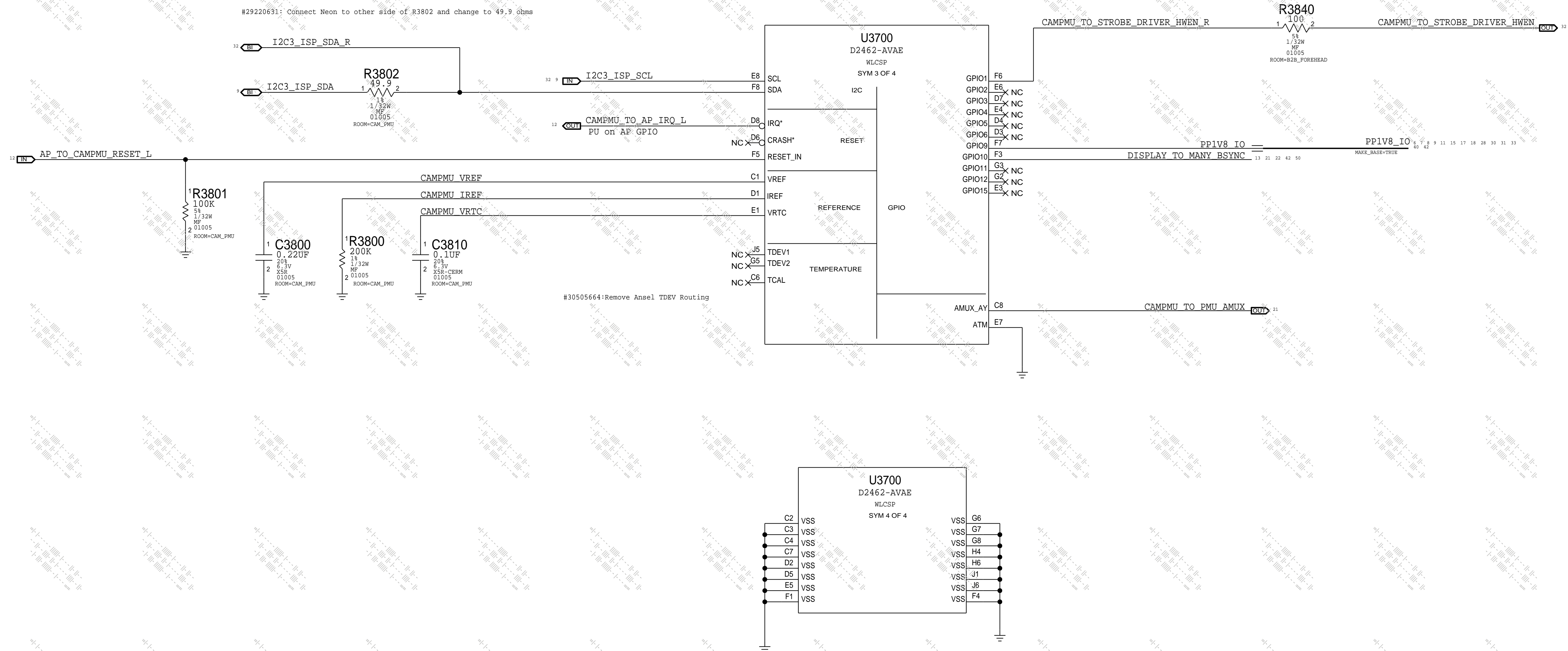


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Apple Inc.		DRAWING NUMBER	051-02159	SIZE	D
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PAGE TITLE <b>CAMERA: PMU (1/2)</b>		
	DRAWING NUMBER <b>051-02159</b>	SIZE <b>D</b>
	REVISION <b>10.0.0</b>	
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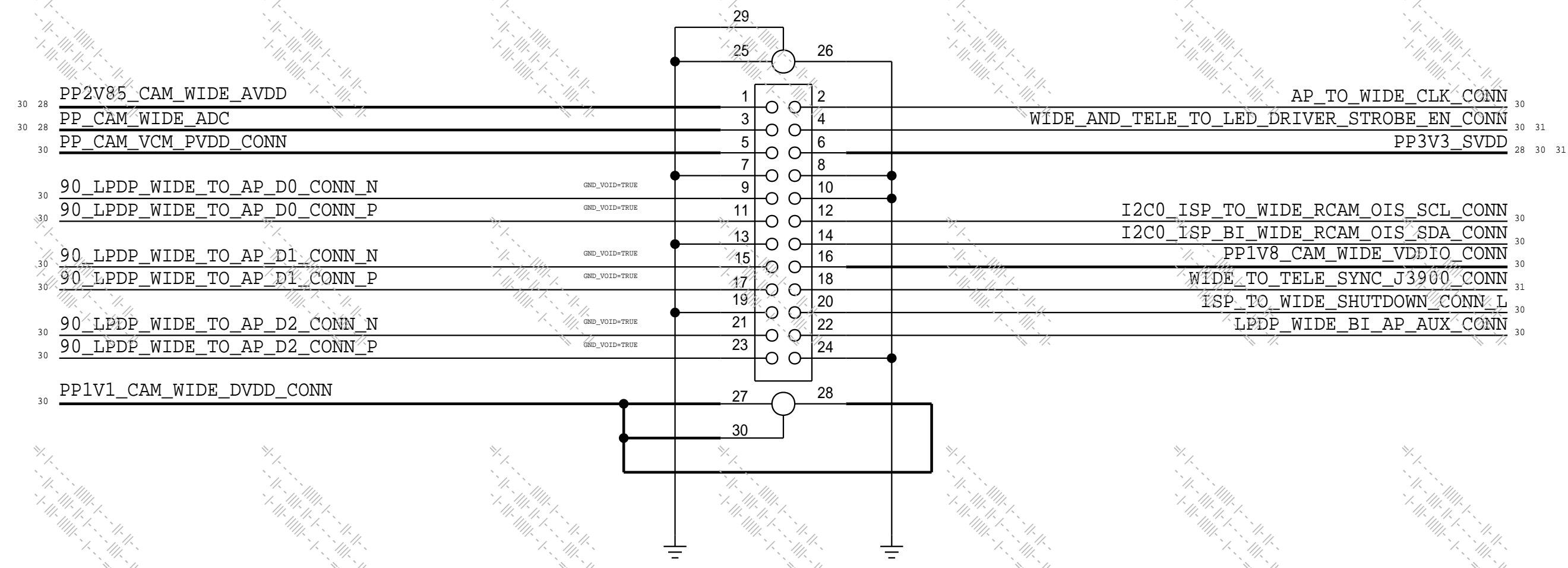


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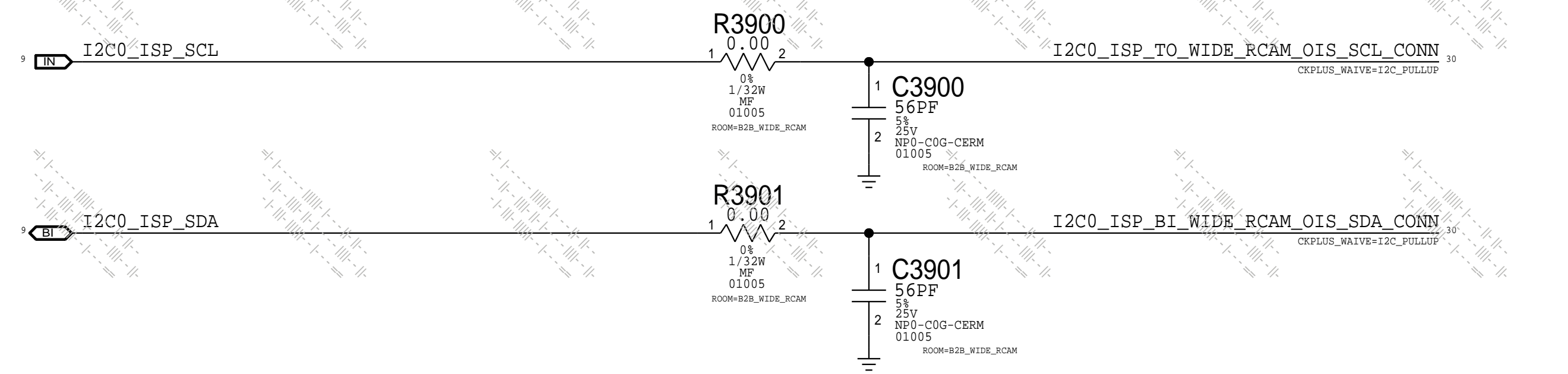
<https://www.mobile-manuals.com/>

### Wide Camera Connector

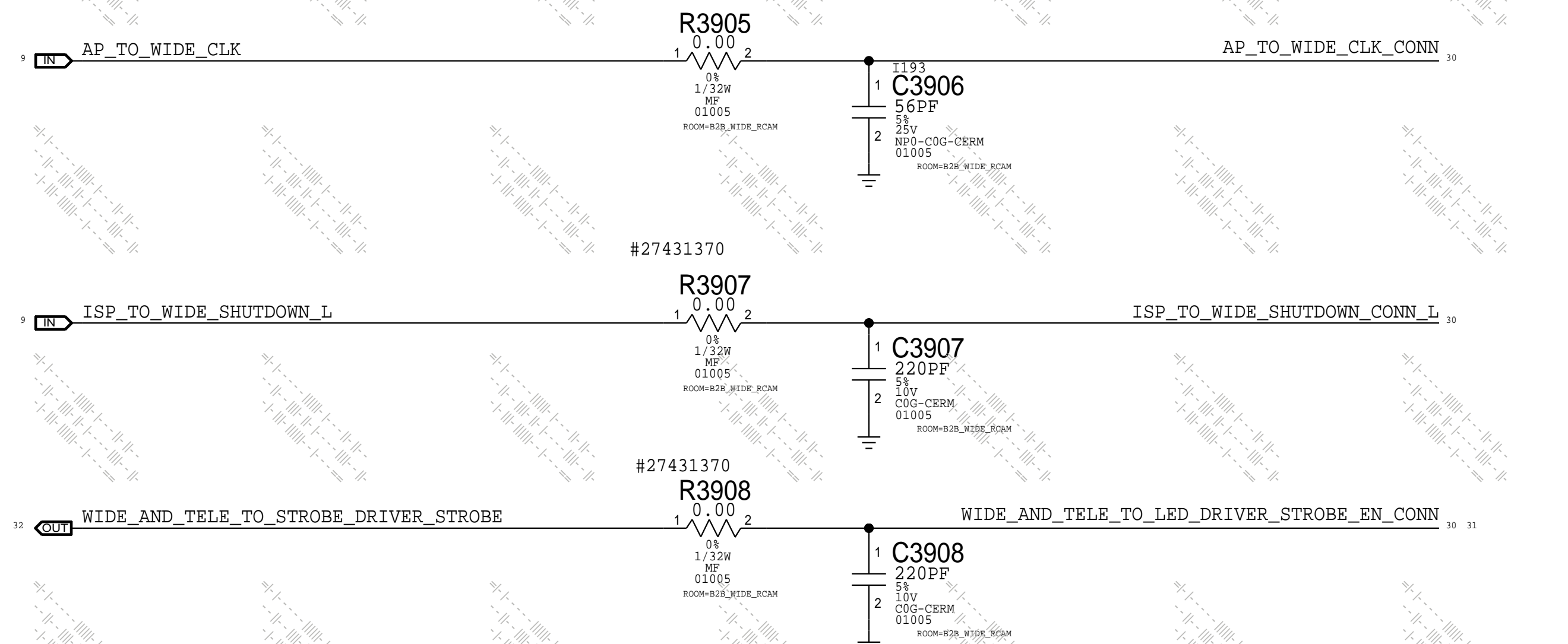
THIS ONE ----> 516S00310/P2 RCPT (USED ON MLB)  
516S00309/P2 PLUG (USED ON FLEX)  
J3900  
AA27DK-S024VA1  
F-ST-SM



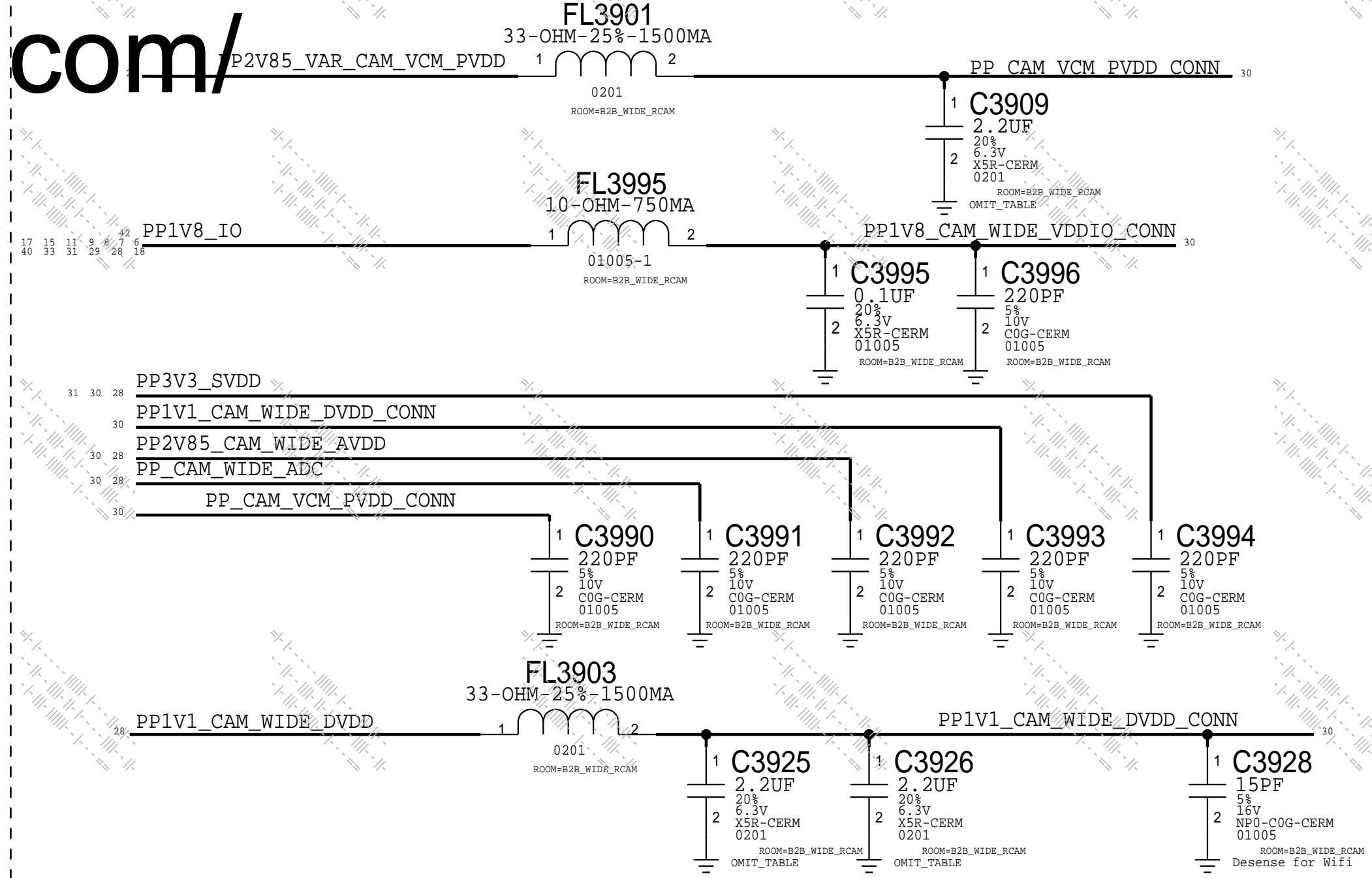
### ISP I2C



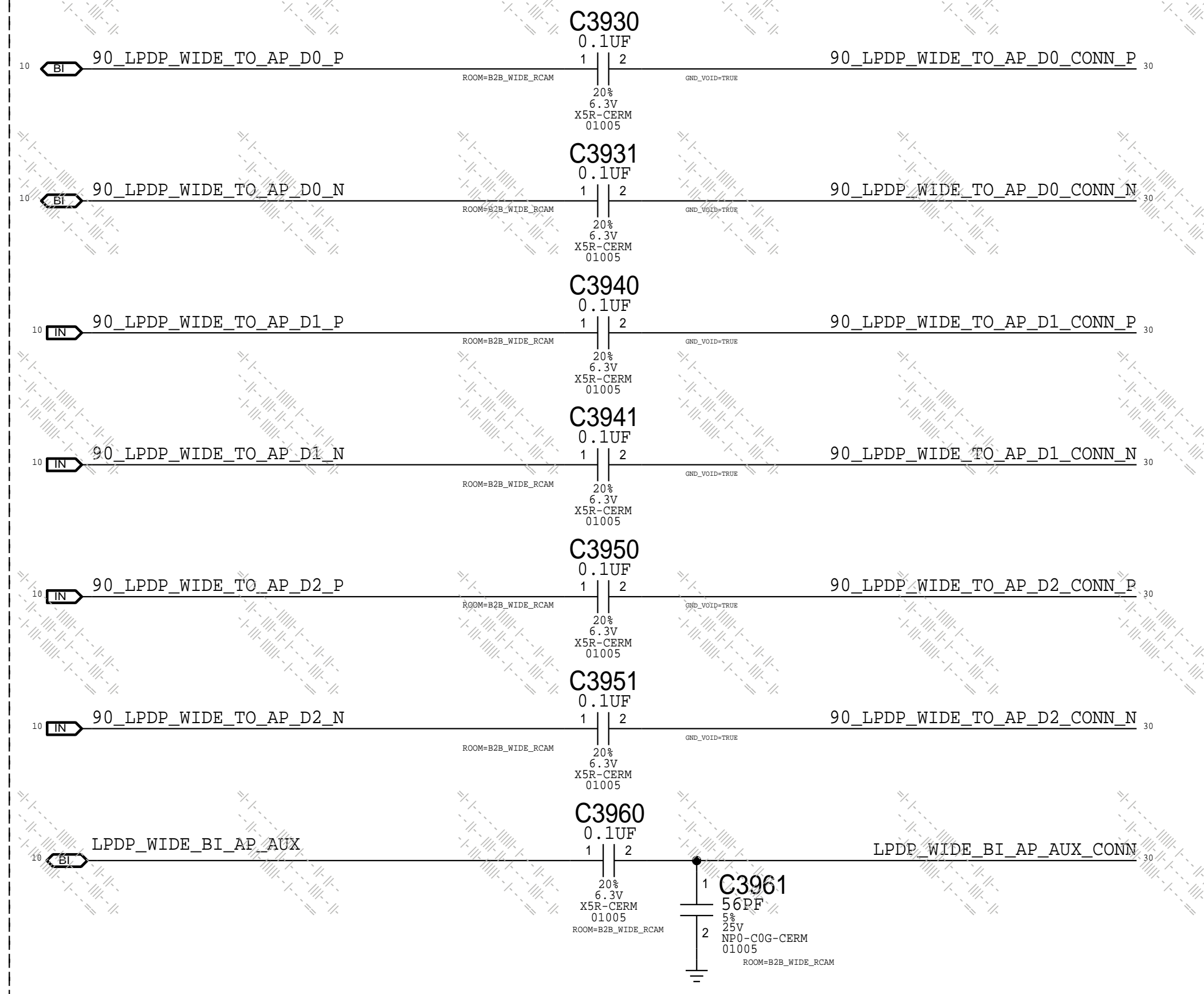
### IO Filters



### Power Filtering



### LPDP Filters



PAGE TITLE <b>CAMERA: B2B Wide (KY)</b>		
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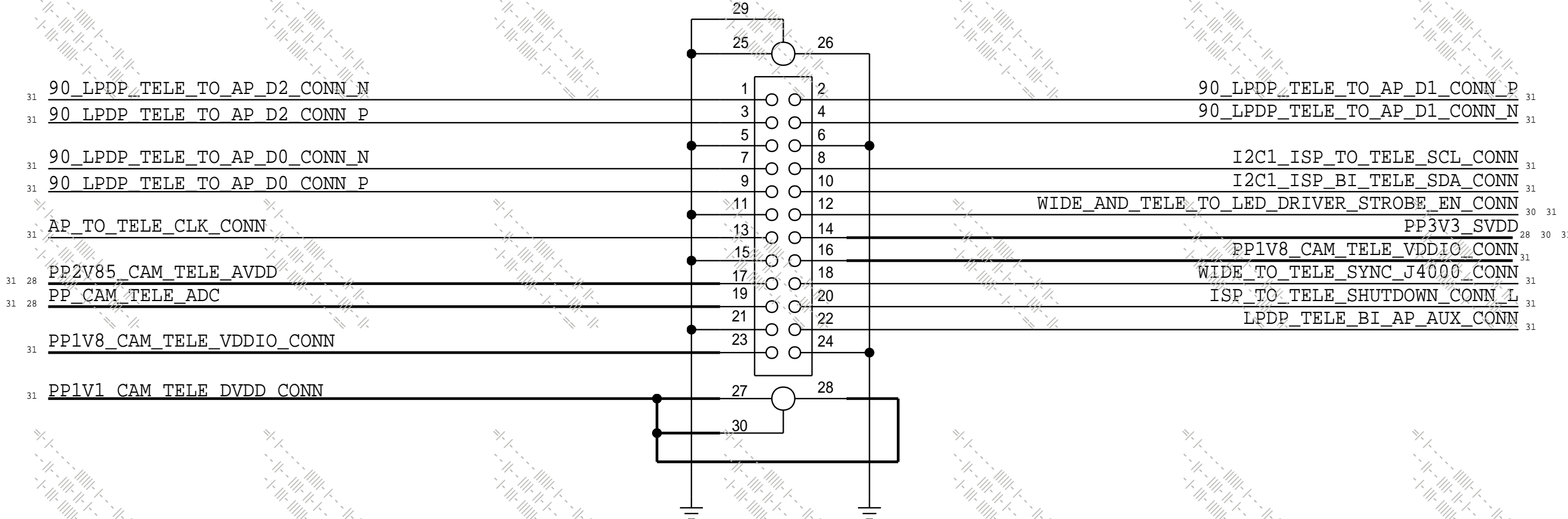


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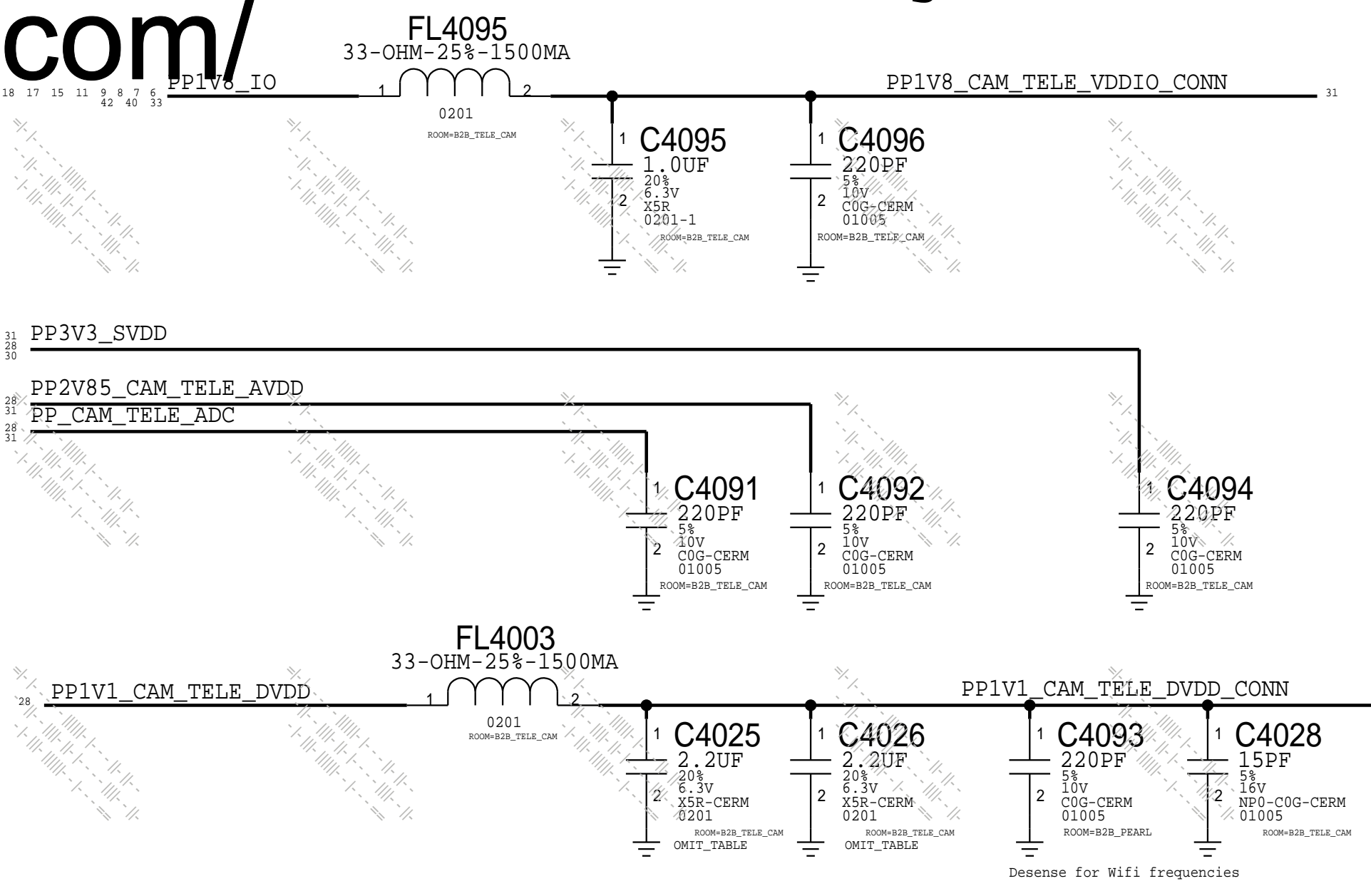
### Tele Camera Connector

THIS ONE ----> 516S00310/P2 RCPT (USED ON MLB)  
516S00309/P2 PLUG (USED ON FLEX)

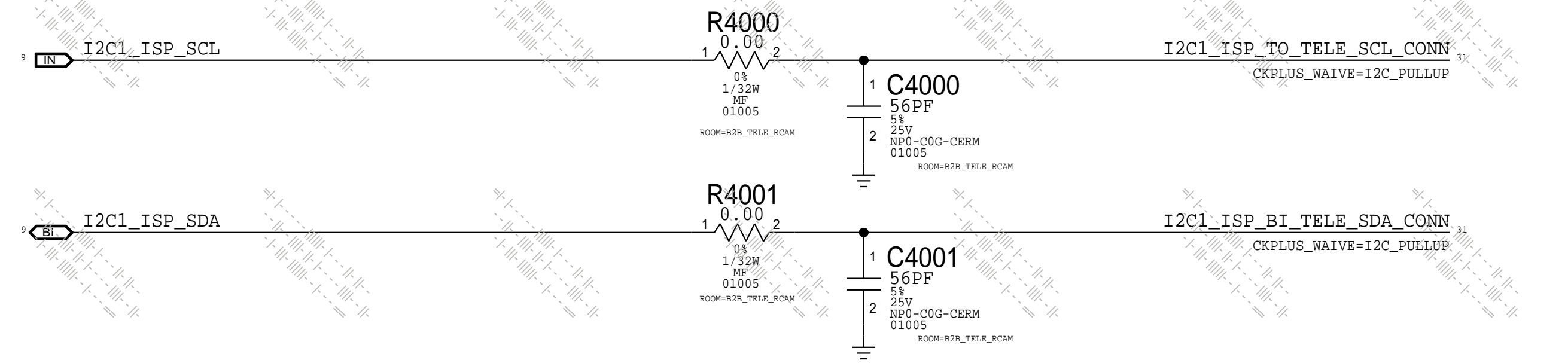
J4000  
AA27DR-S024VA1  
F-ST-SM



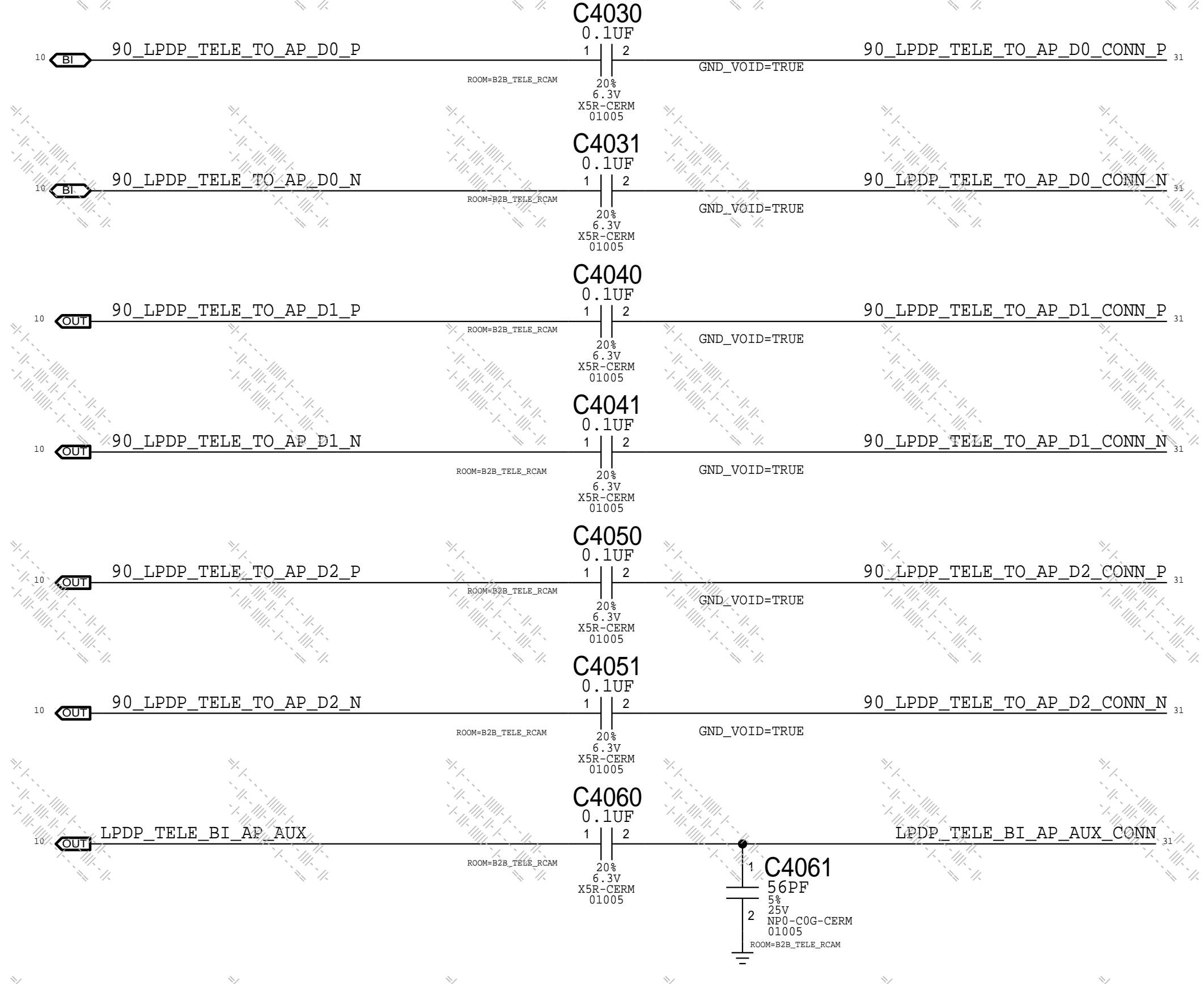
### Power Filtering



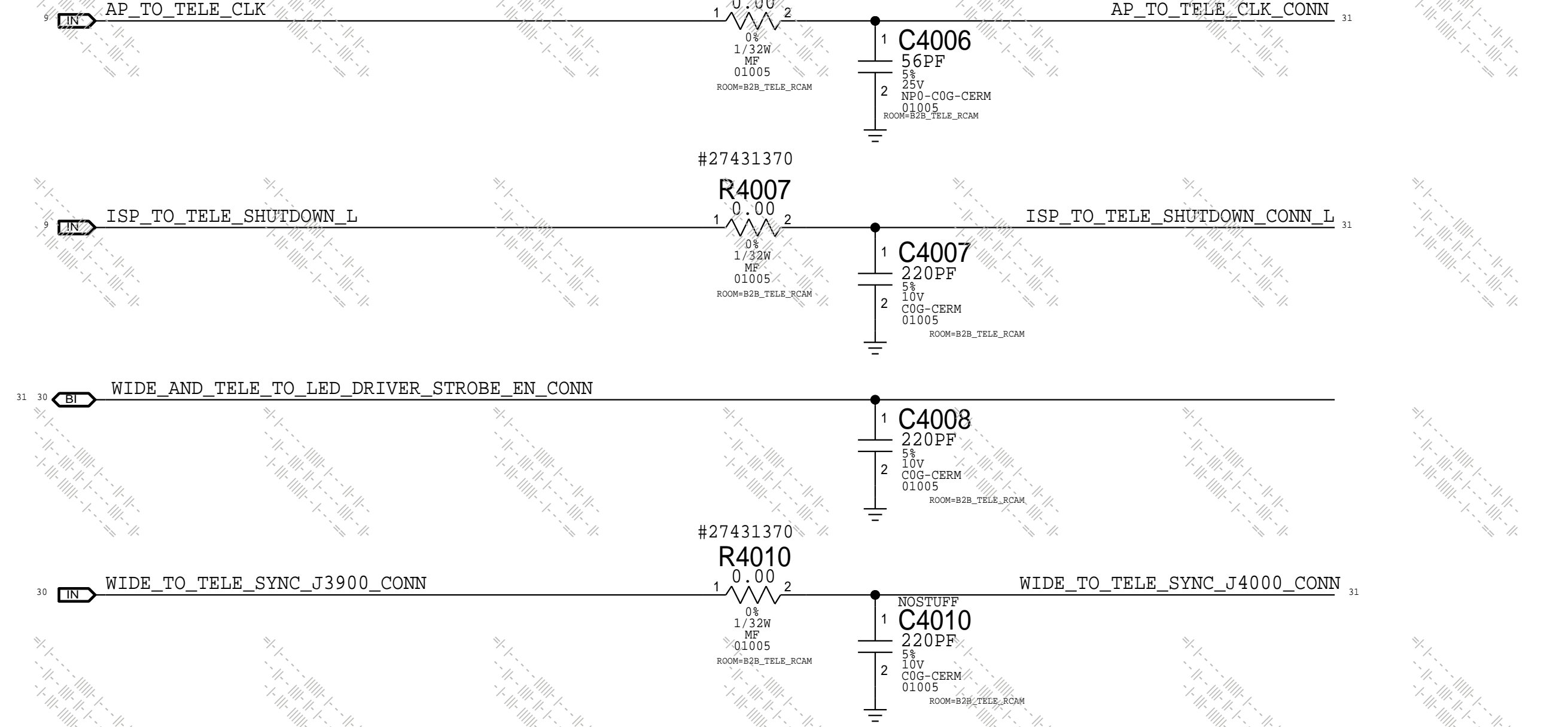
### ISP I2C



### LPDP

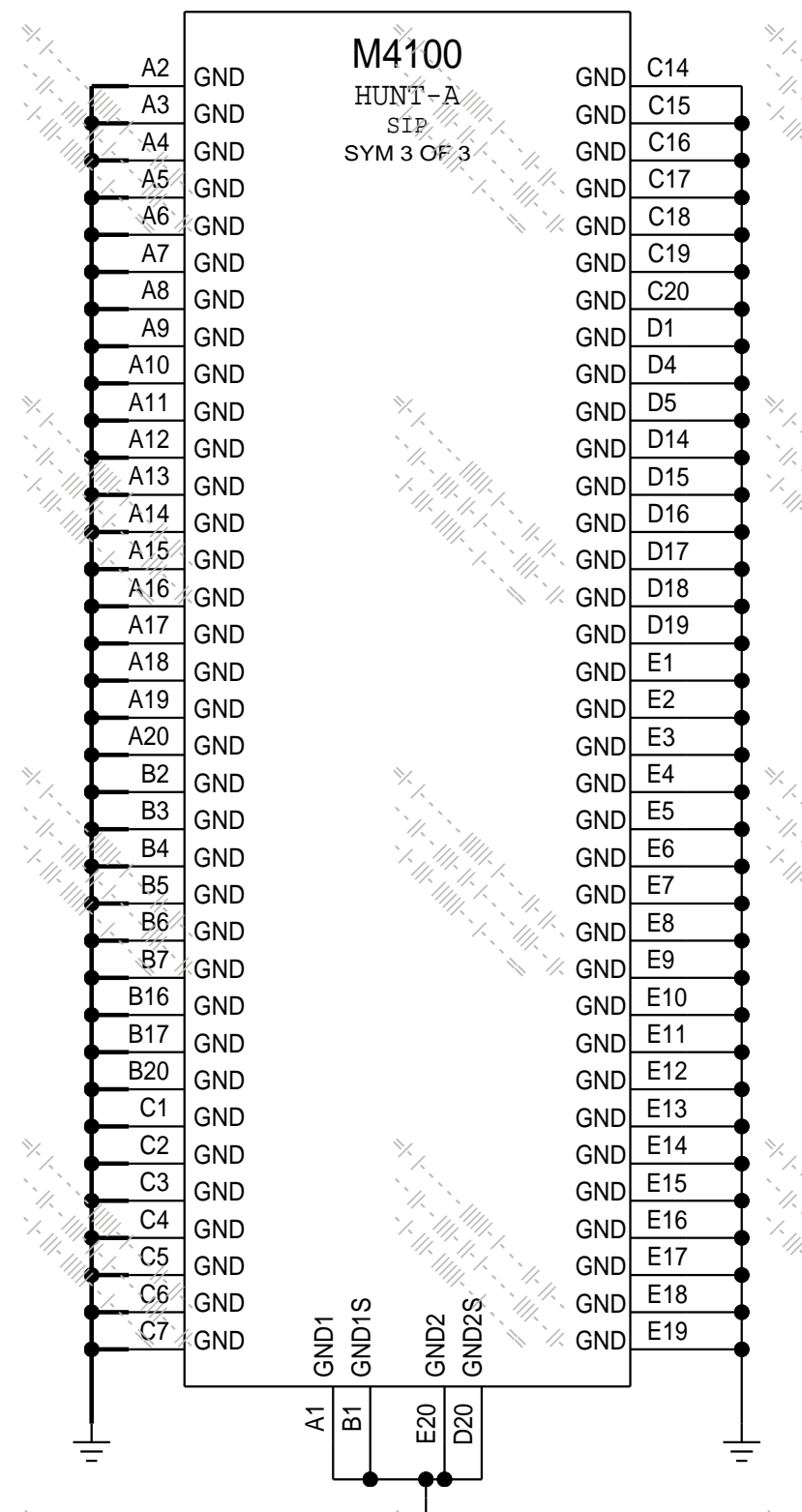
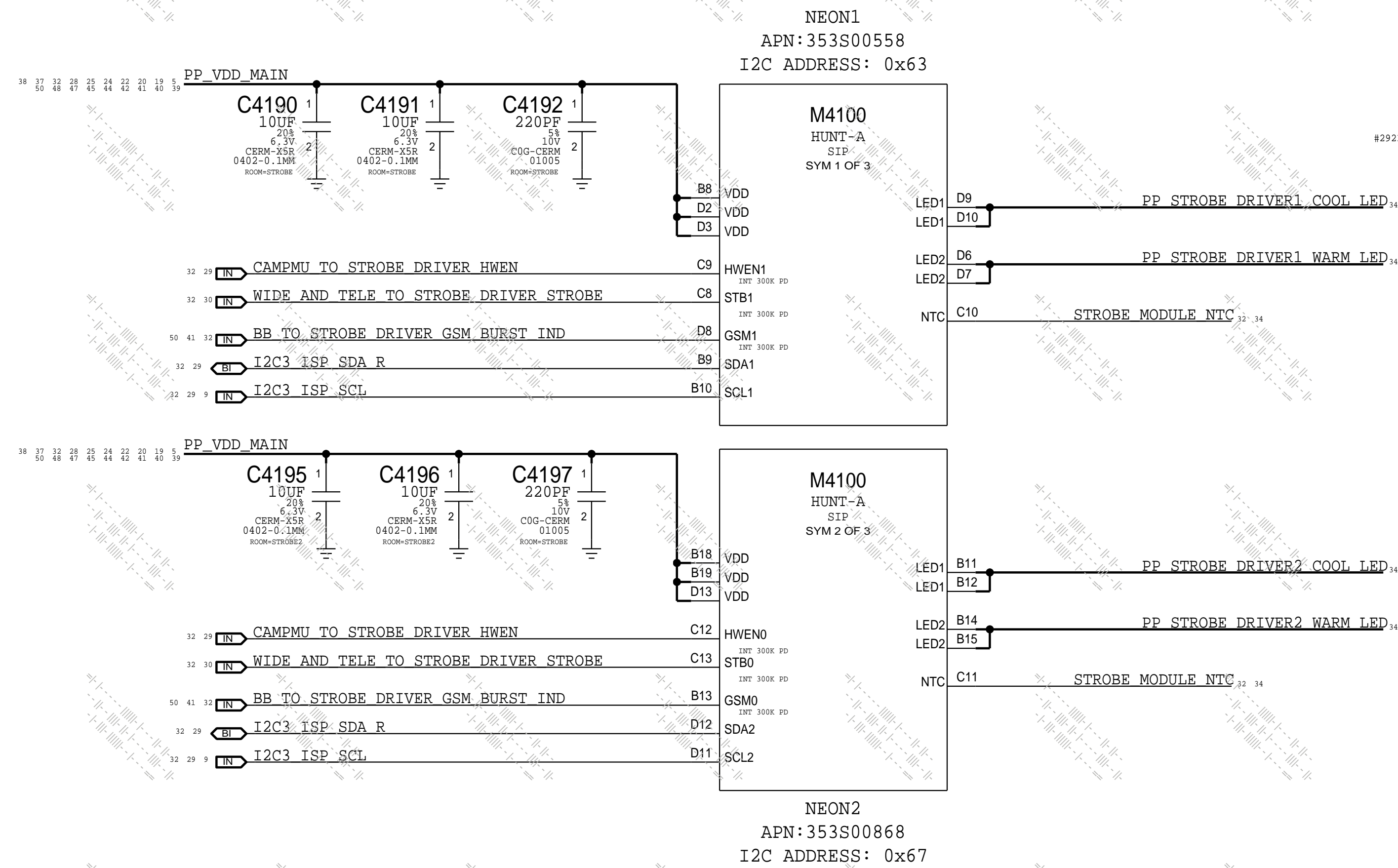


### IO Filters



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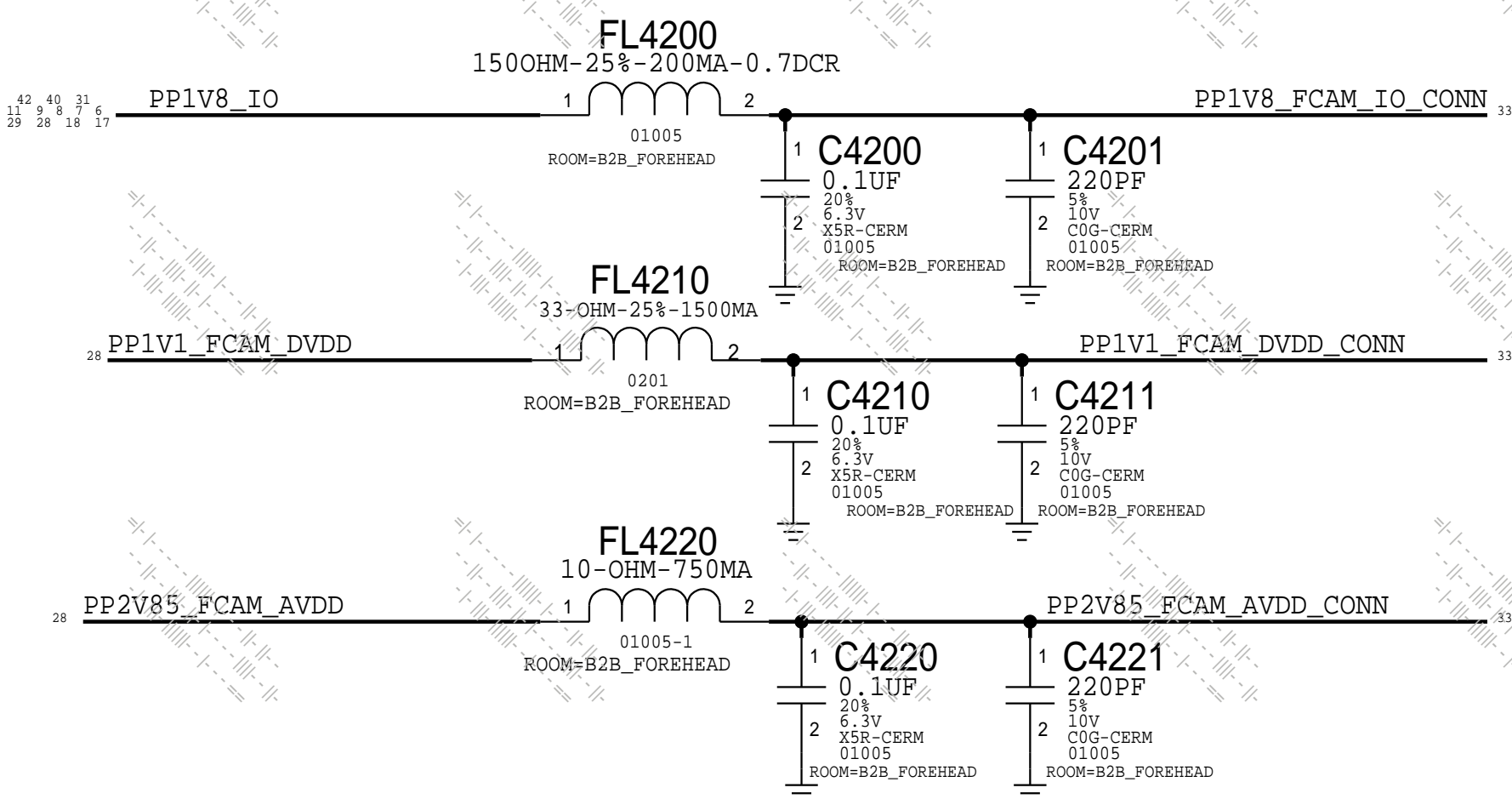
LED STROBE DRIVERS (NEON)



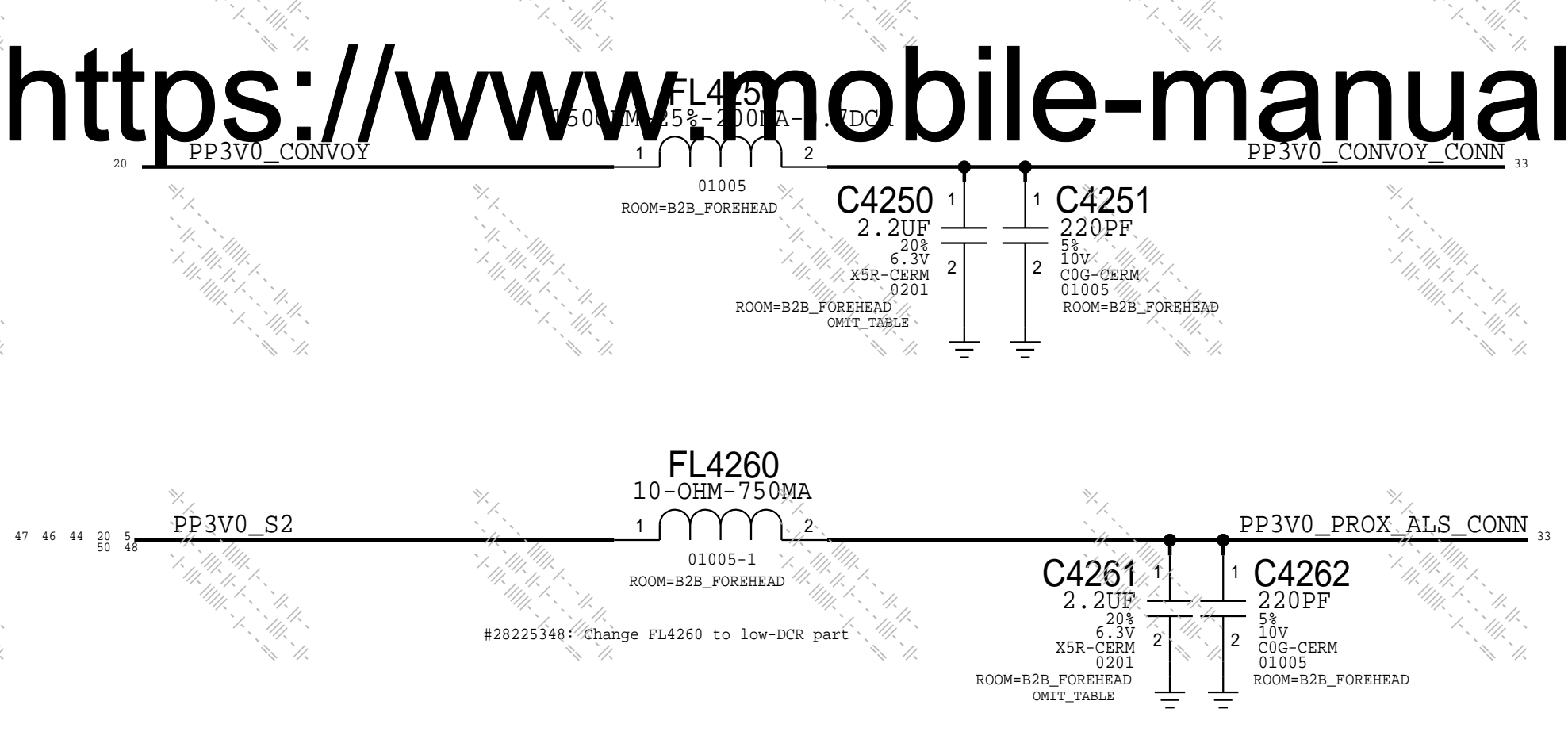


<https://www.mobile-manuals.com/>

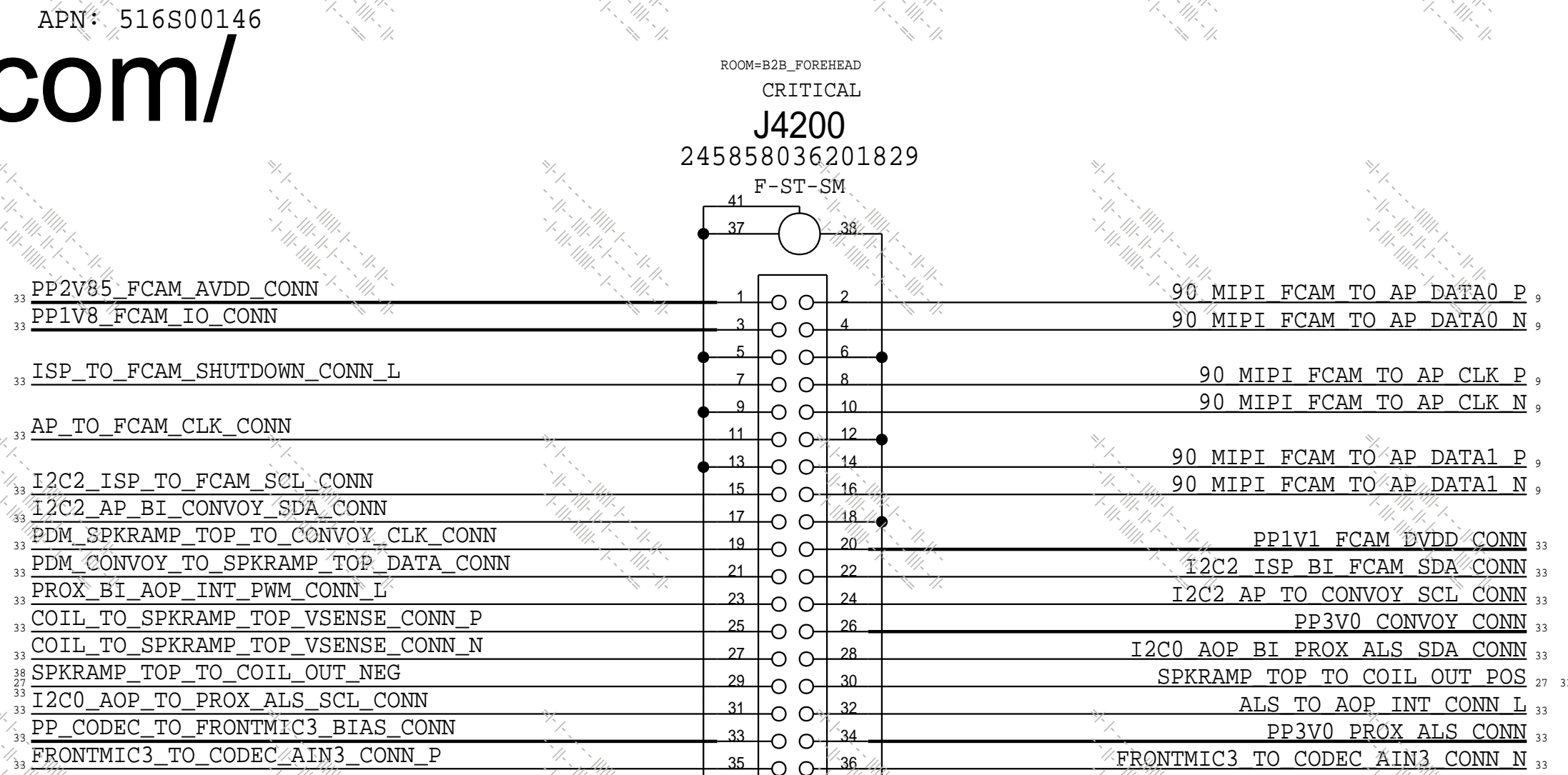
### FCAM POWER



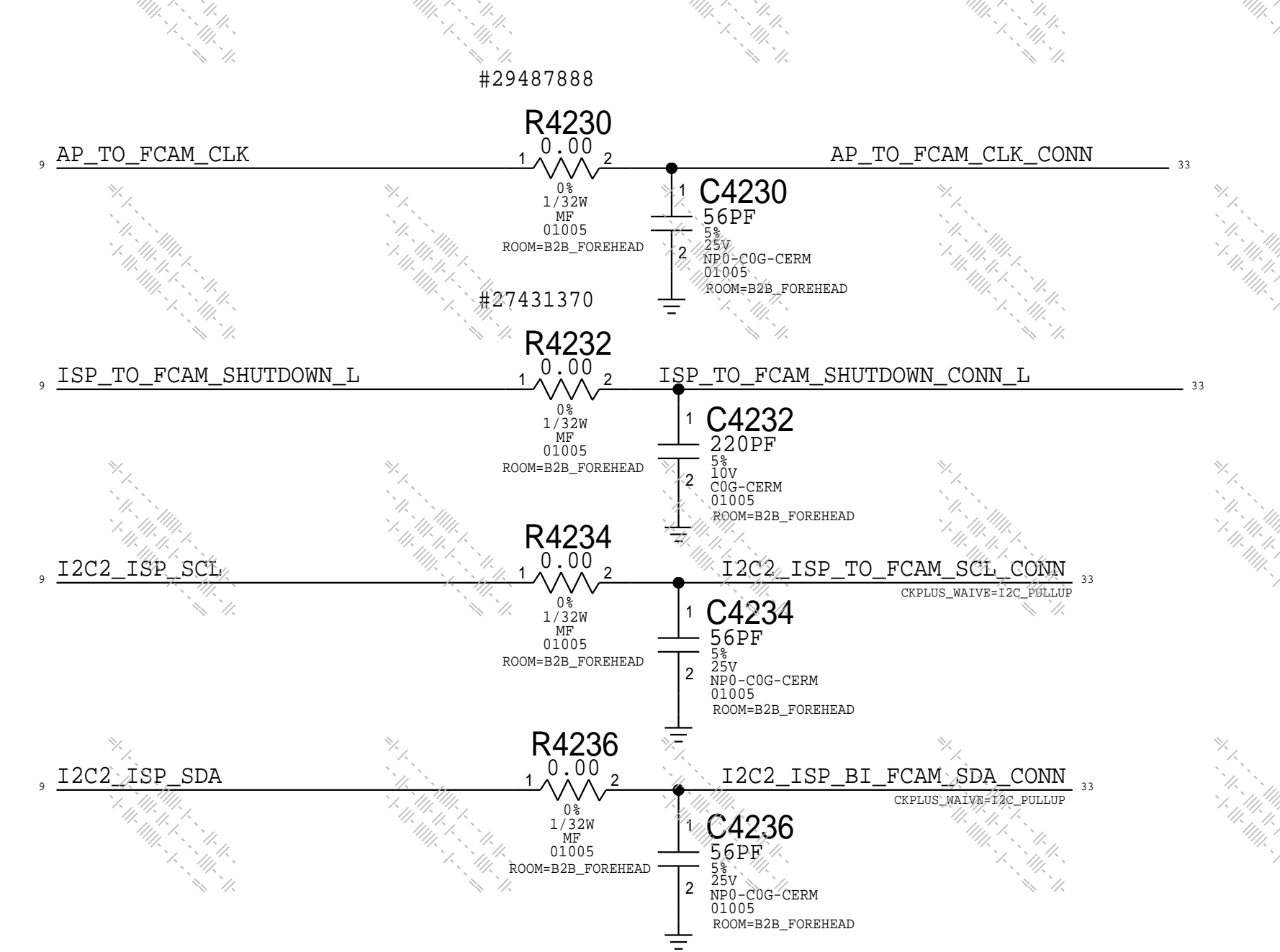
### PROX + ALS + CONVOY POWER



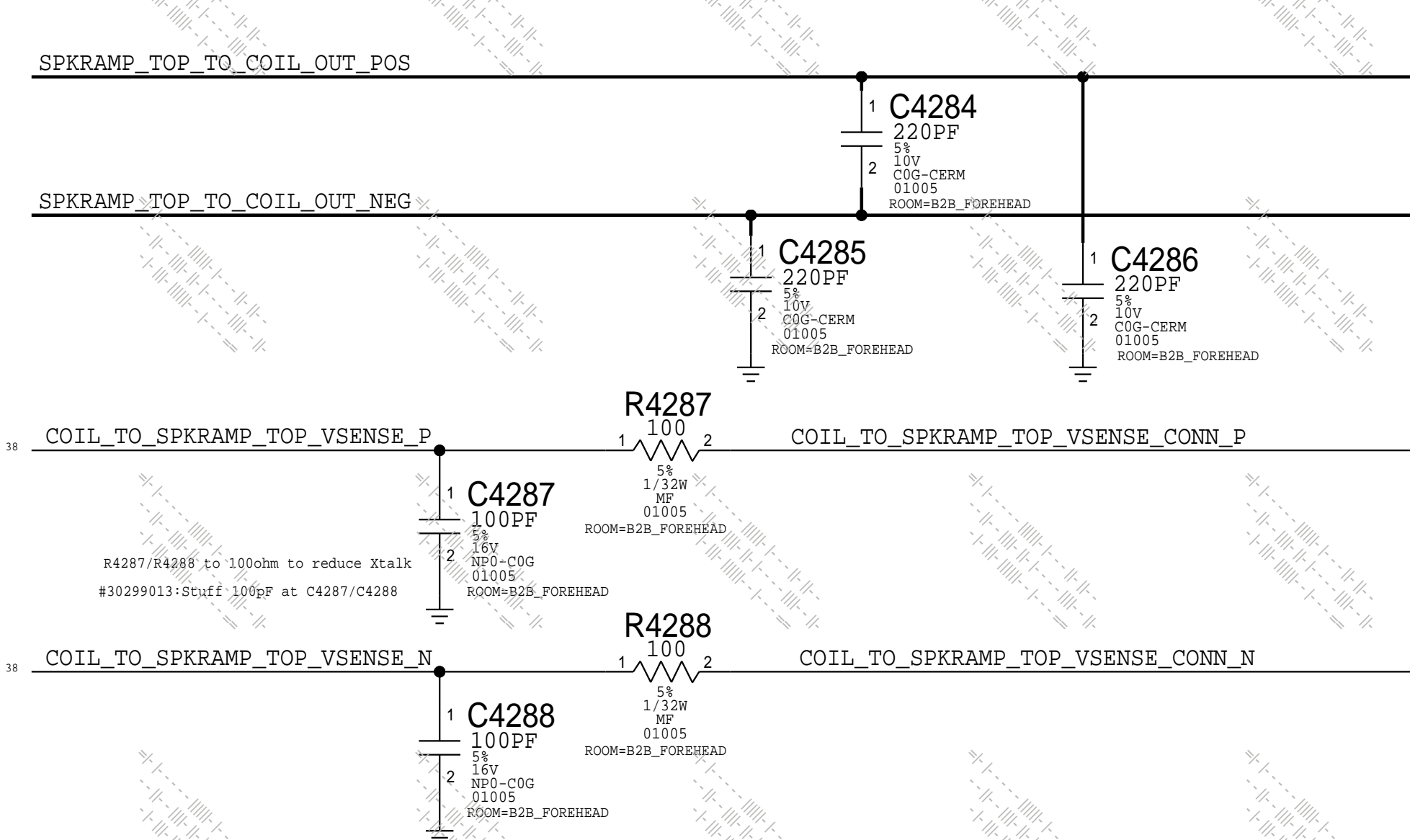
### FOREHEAD CONNECTOR



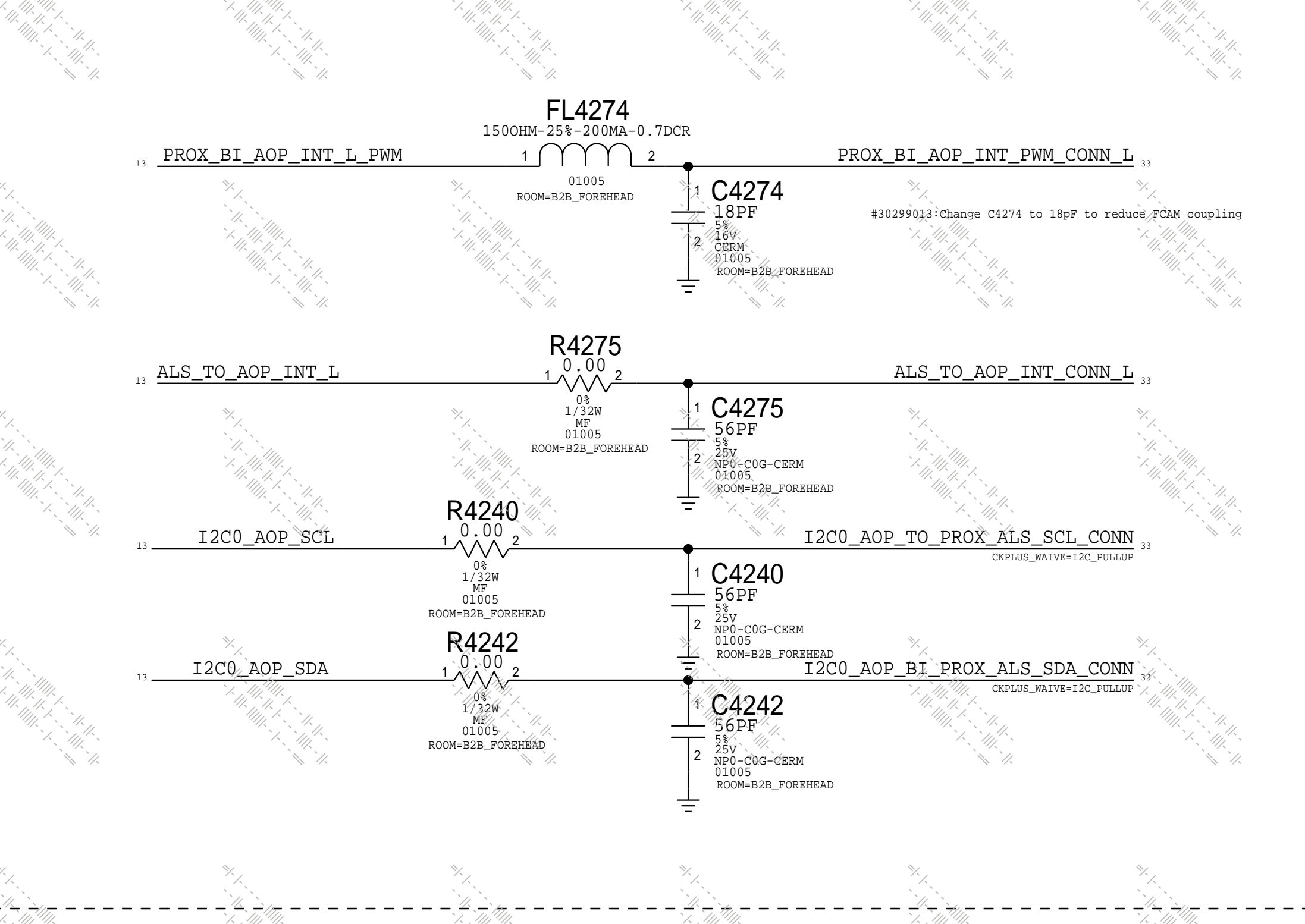
### FCAM I/O



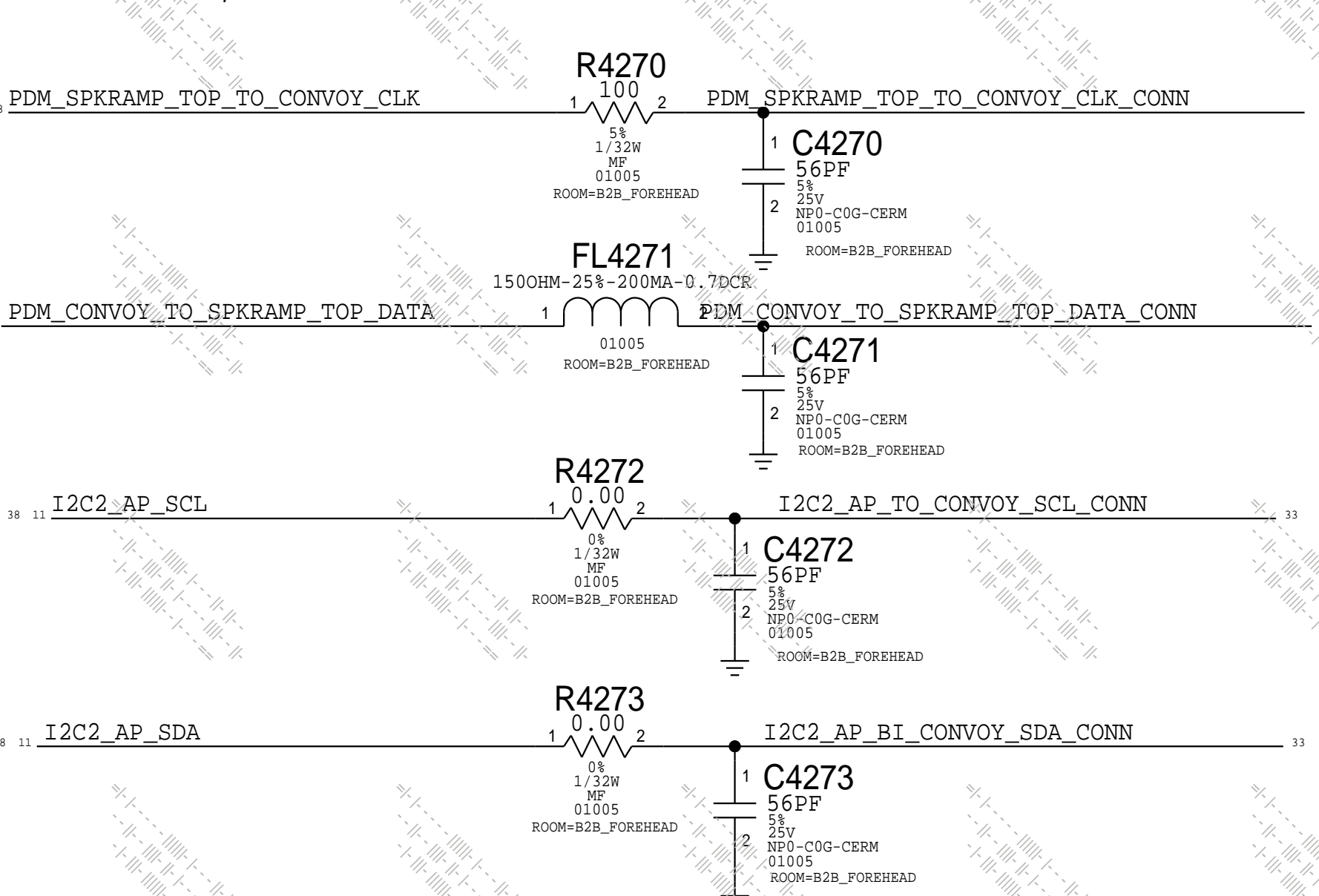
### NORTH SPEAKER



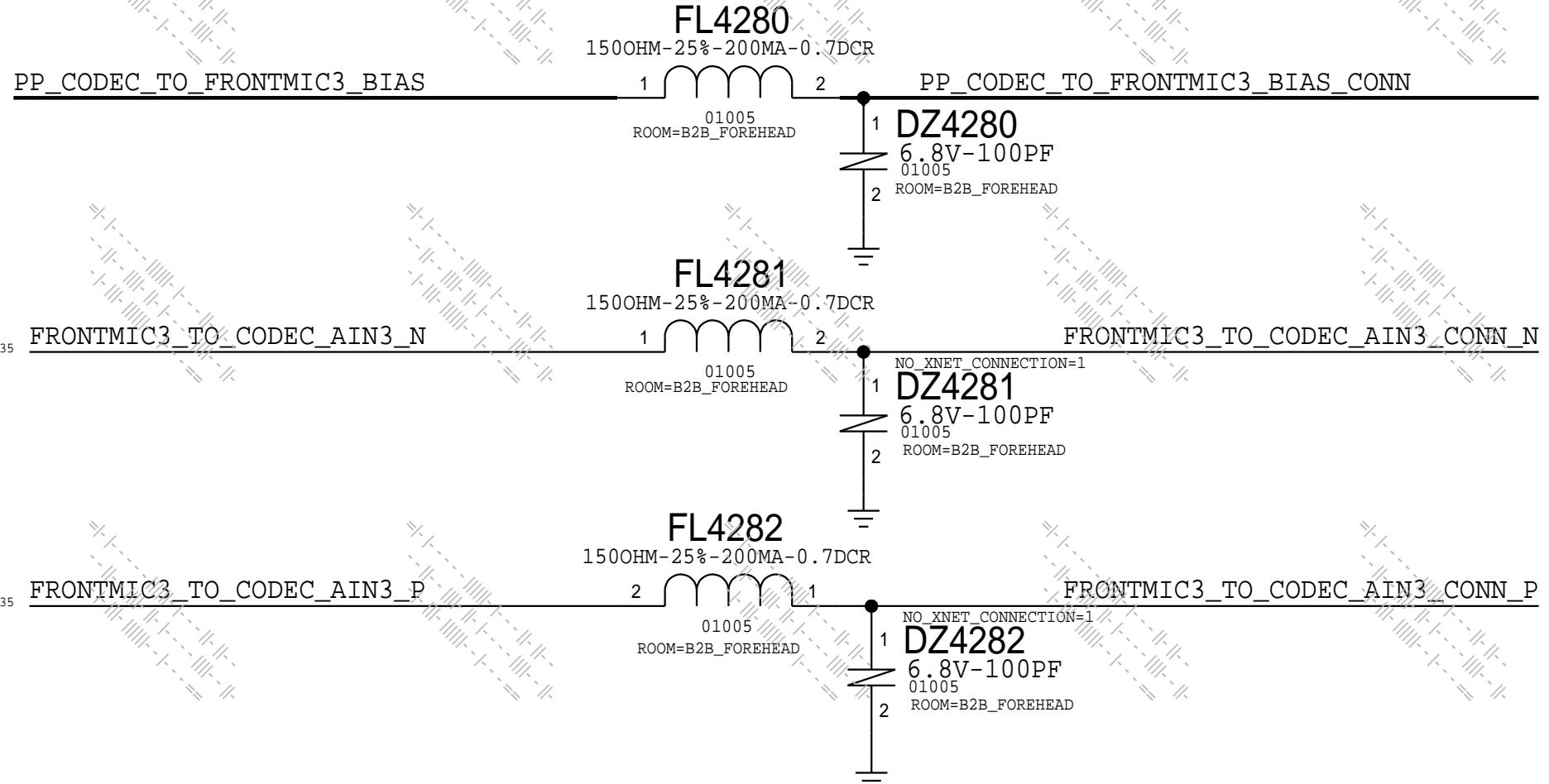
### PROX + ALS I/O



### CONVOY I/O



### MIC3



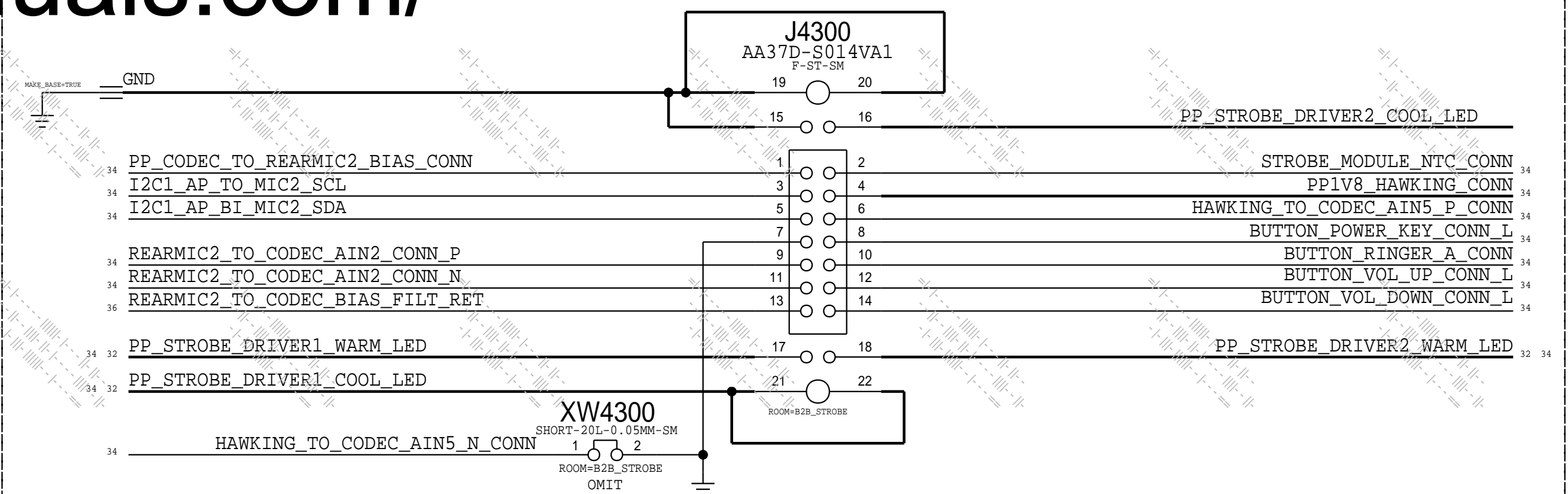
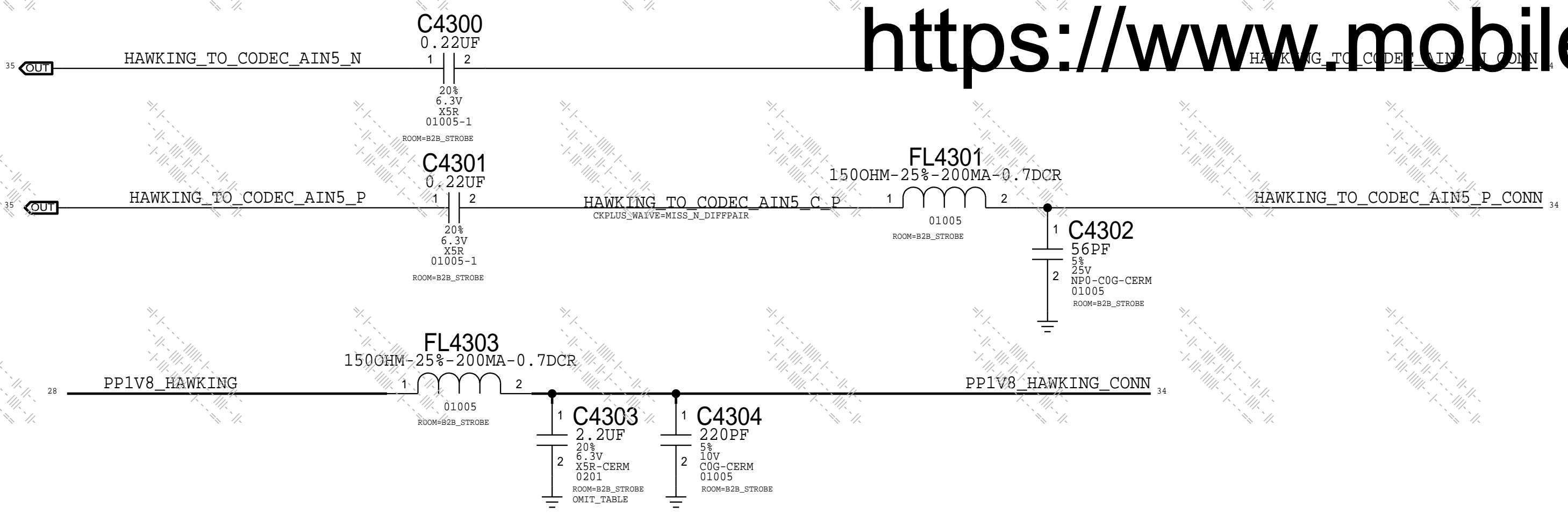
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	DRAWING NUMBER 051-02159	SIZE D
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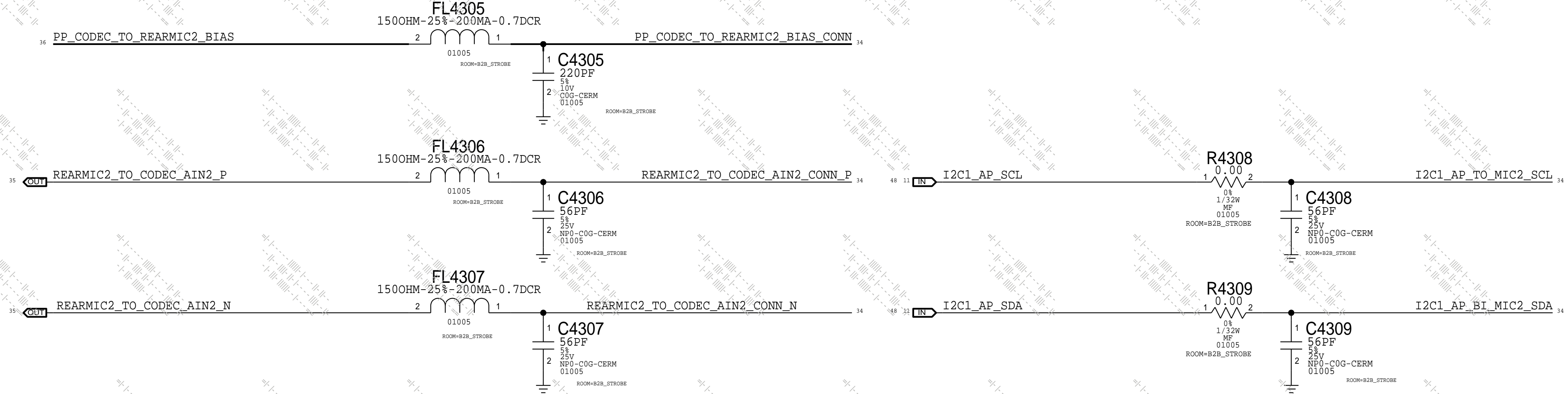


<https://www.mobile-manuals.com/> Strobe Connector

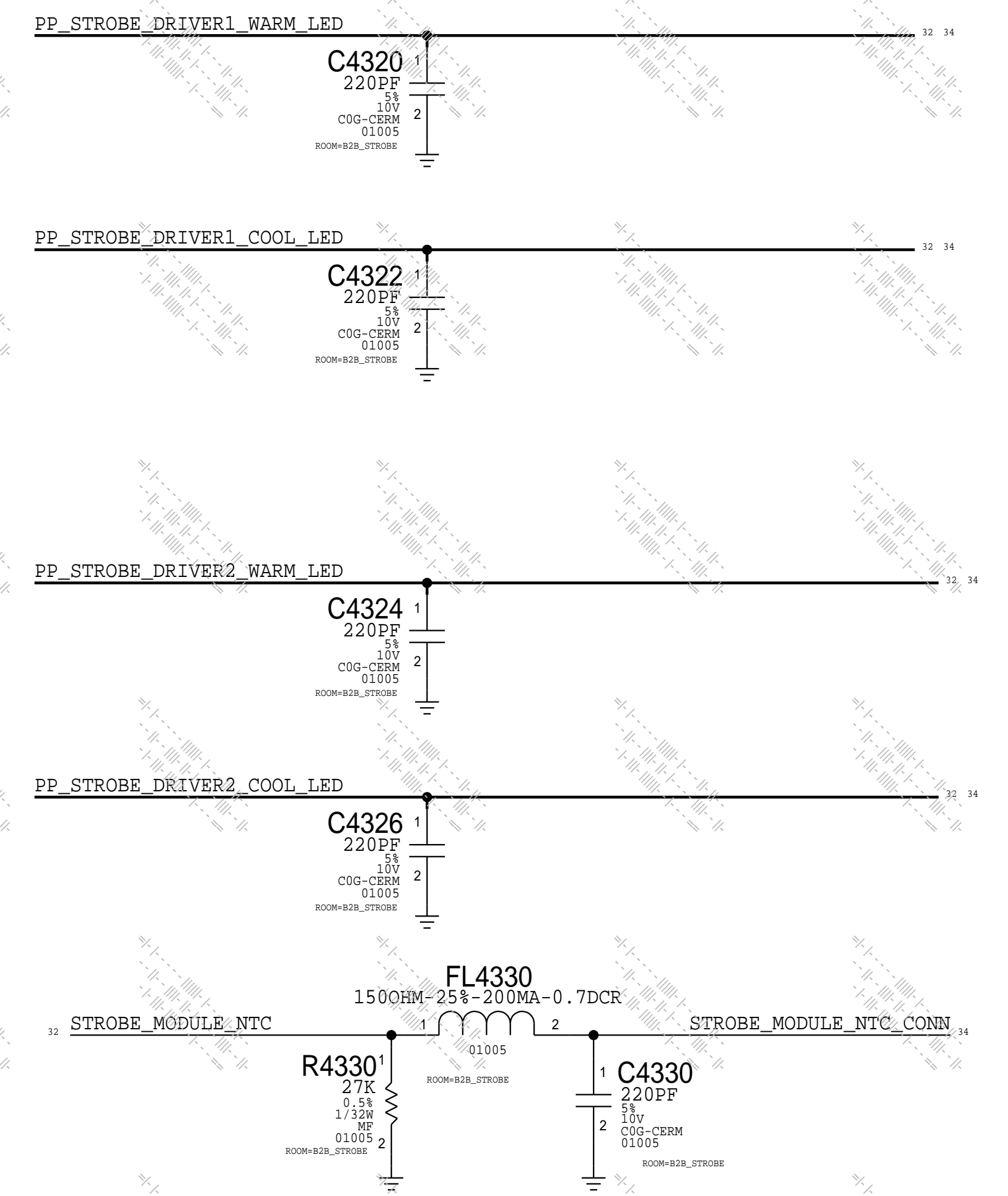
HAWKING



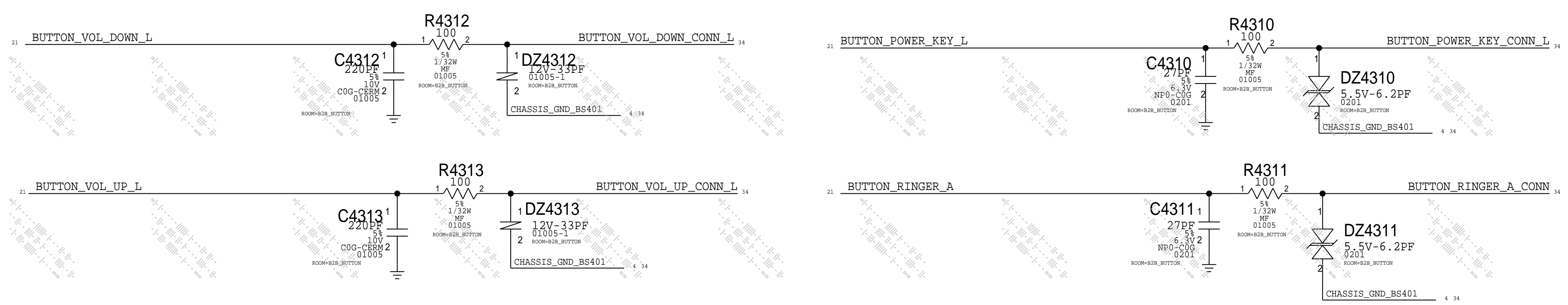
MIC2 (ANC REF)



Strobe Filtering



BUTTON

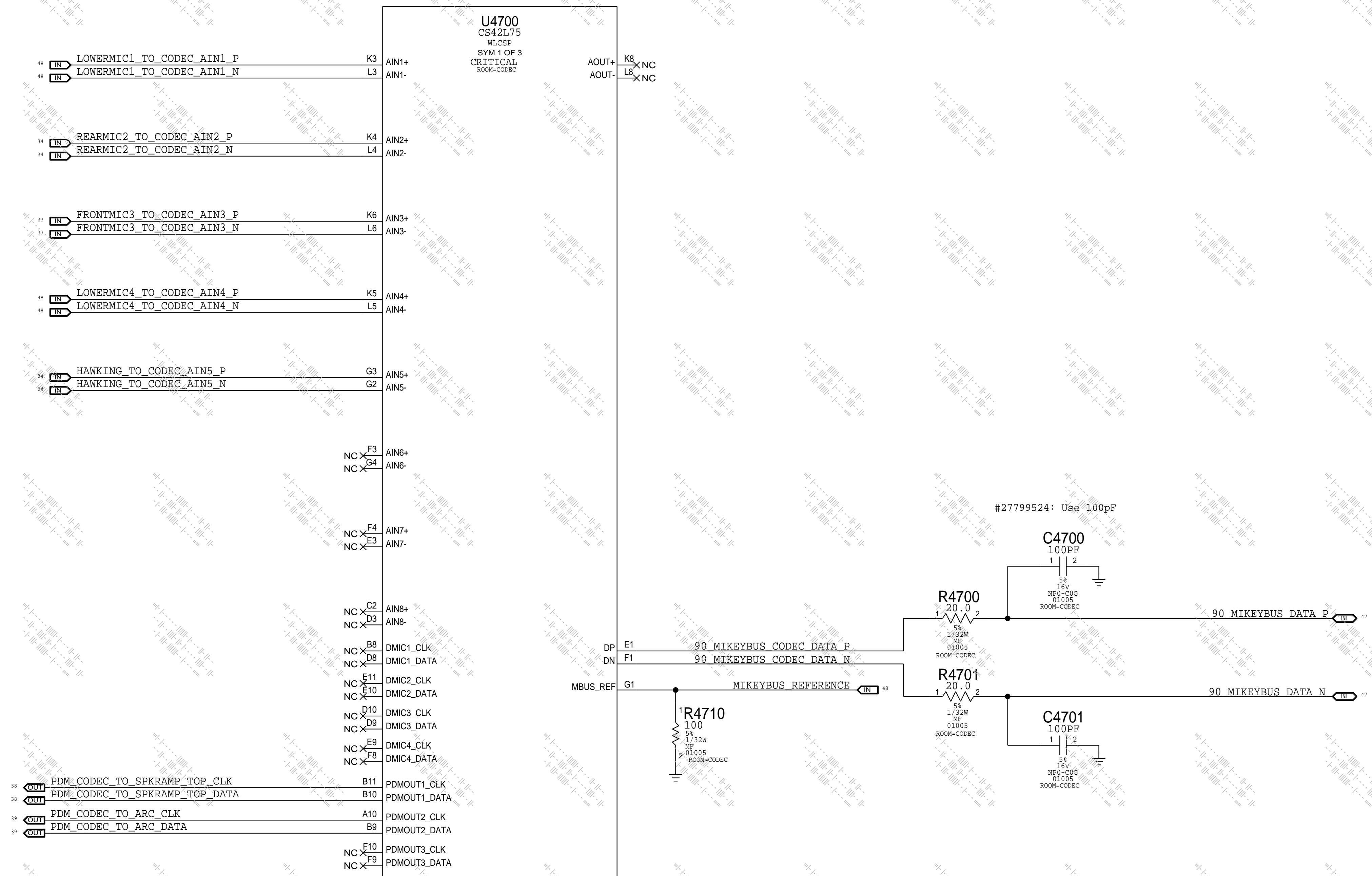


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# CALLAN AUDIO CODEC (ANALOG INPUTS & OUTPUTS)

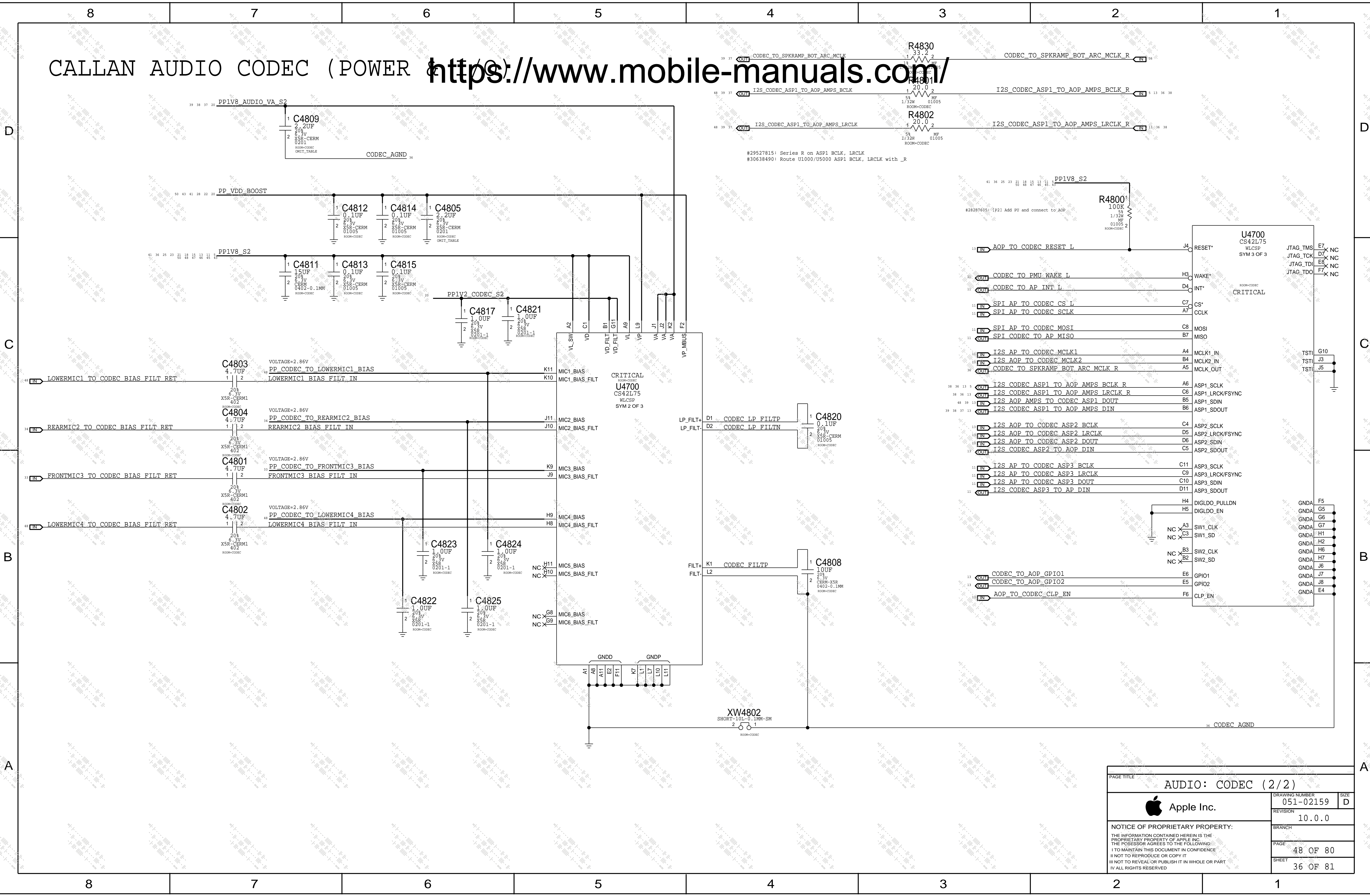
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PAGE TITLE		
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# CALLAN AUDIO CODEC (POWER)

<https://www.mobile-manuals.com/>



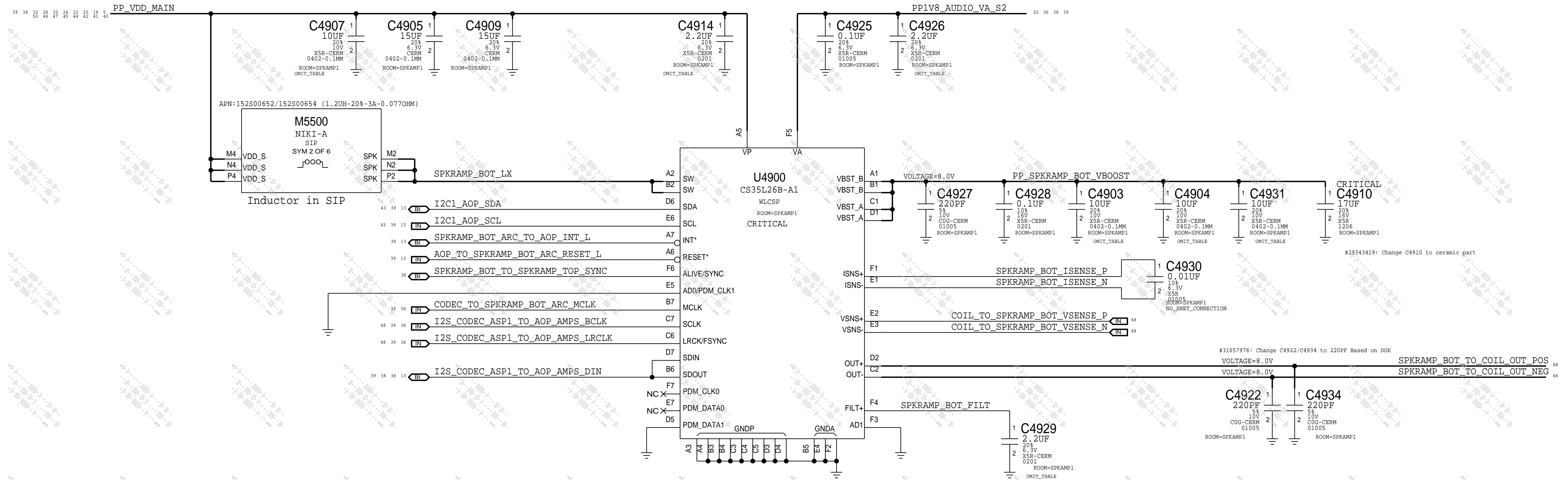
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# South Speaker Amplifier

APN: 338S00143  
I2C ADDRESS: 1000 000x  
0x80



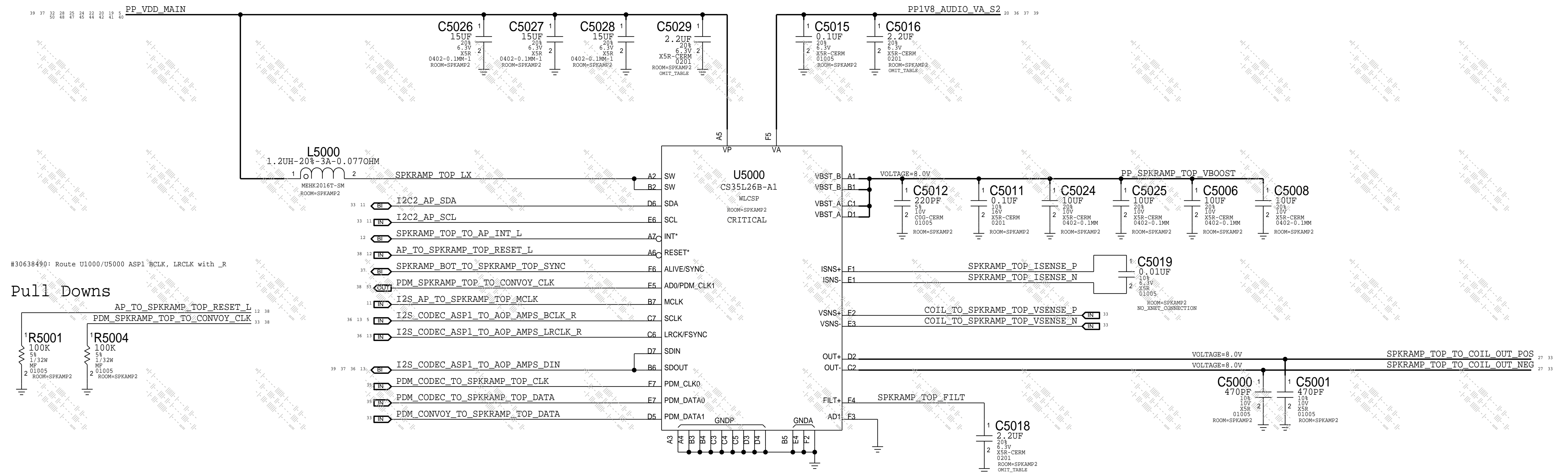
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AUDIO: Speaker Amp Bottom		
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# North Speaker Amplifier

APN: 338S00295

I2C ADDRESS: 1000 000x (0x80)



PAGE TITLE		
AUDIO: Speaker Amp Top		
Apple Inc.	DRAWING NUMBER	051-02159
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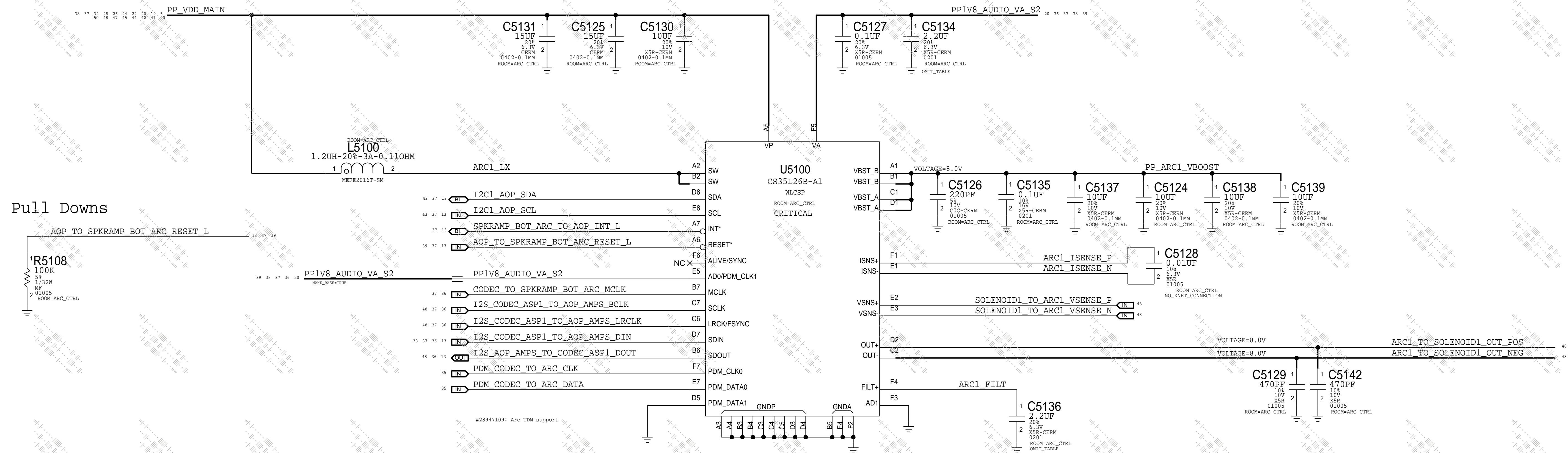


<https://www.mobile-manuals.com/>

# ARC DRIVER

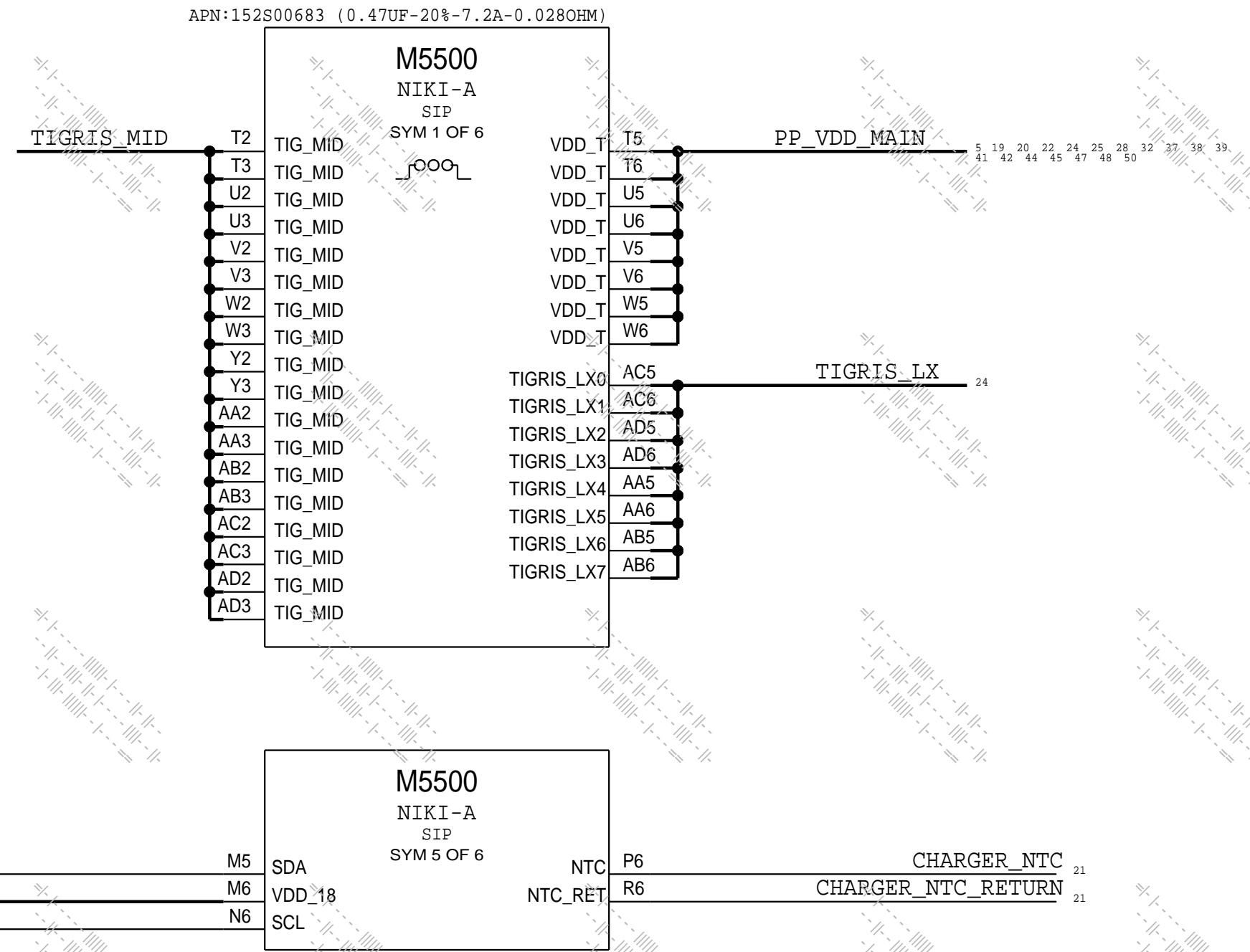
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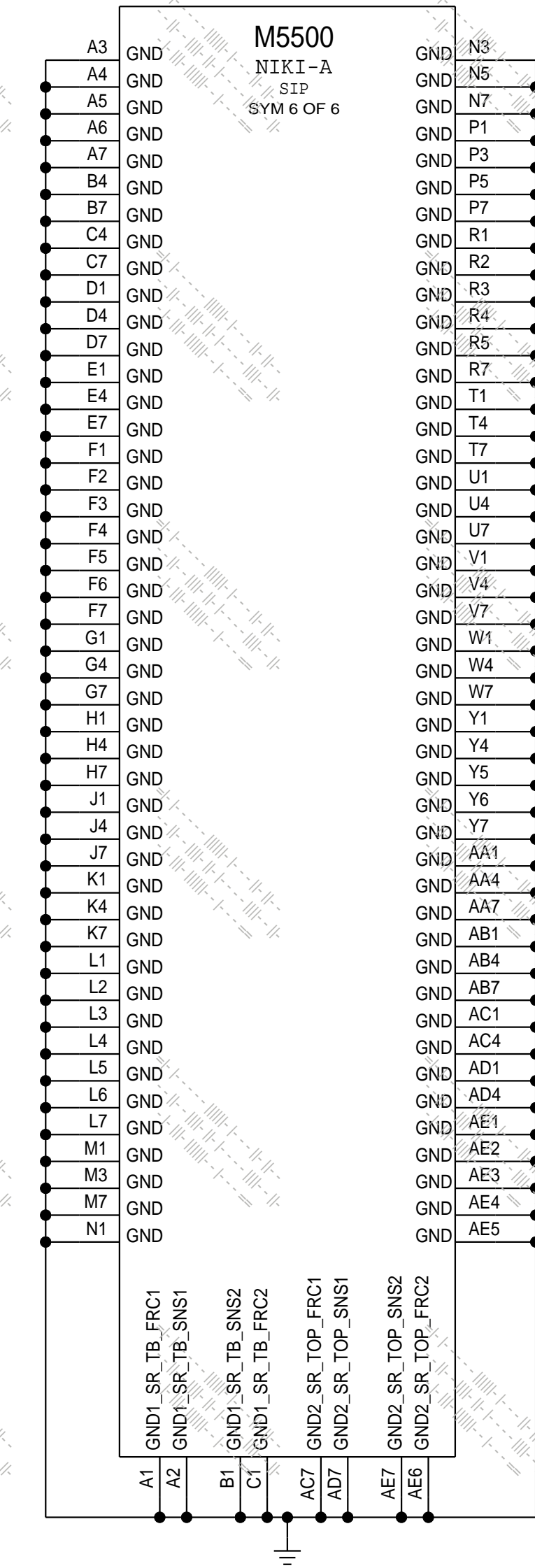


Pull Downs

PAGE TITLE		
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Apple Inc.	DRAWING NUMBER	051-02159
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Note: inductors in SIP used for bottom speaker amplifier and backlight  
See pages 49, and 56

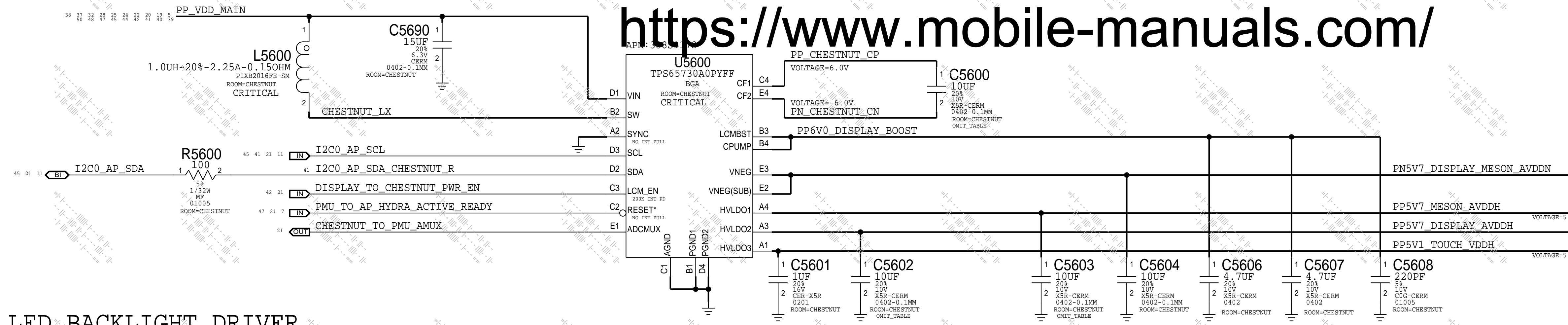


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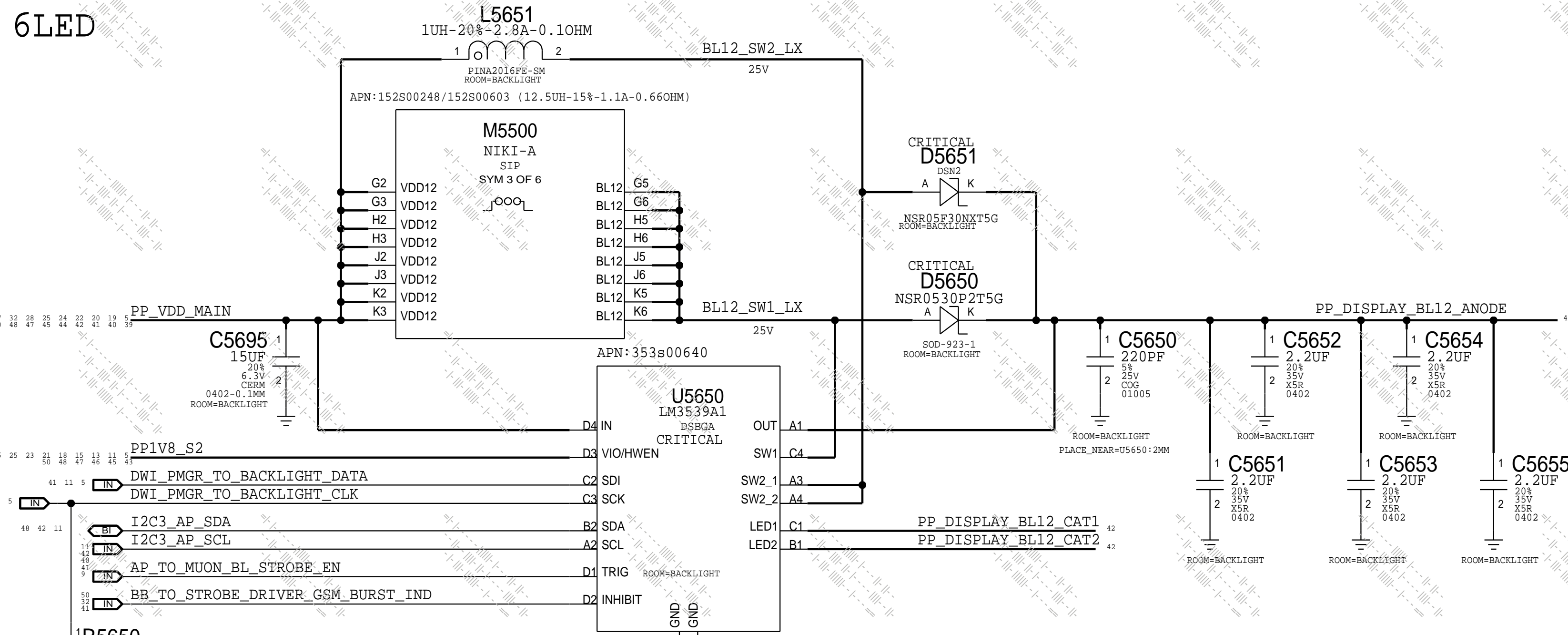
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CHESTNUT DISPLAY PMU

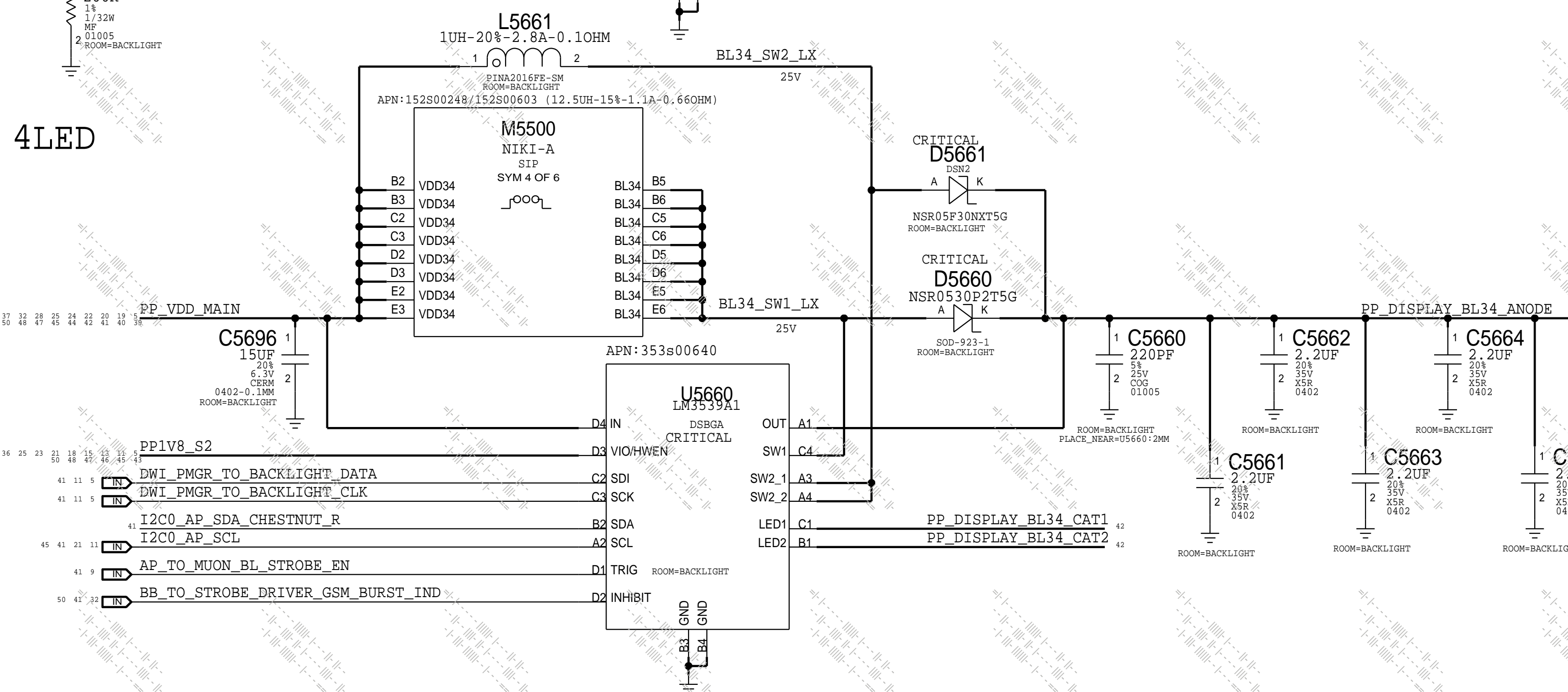


LED BACKLIGHT DRIVER

6LED

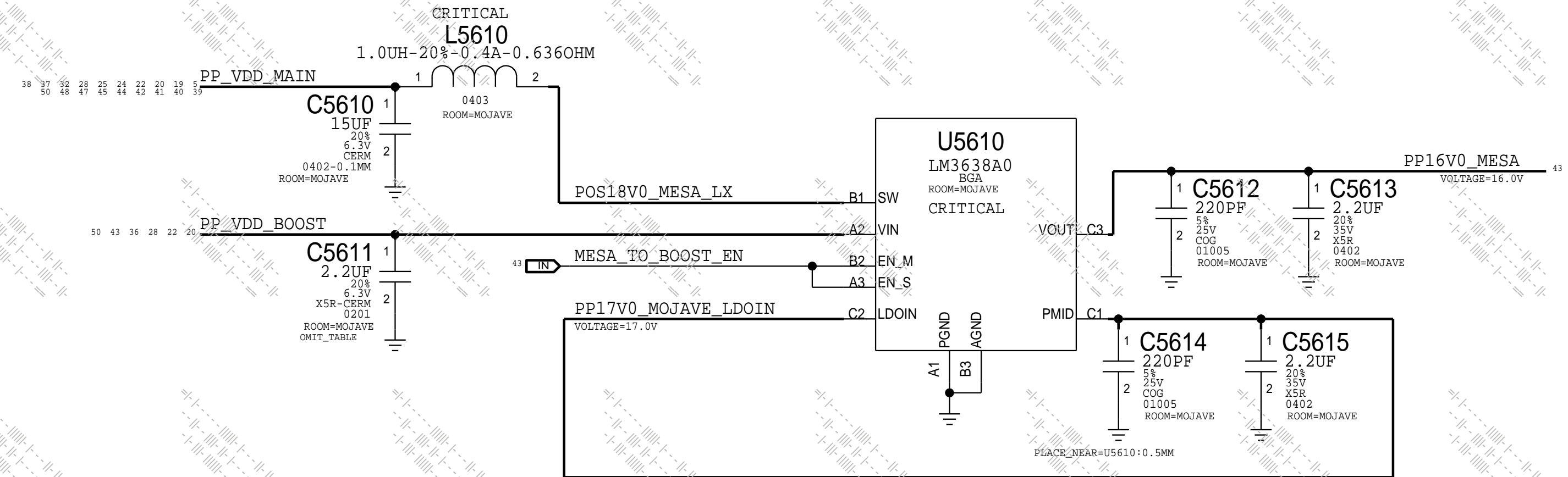


4LED



MOJAVE MESA BOOST

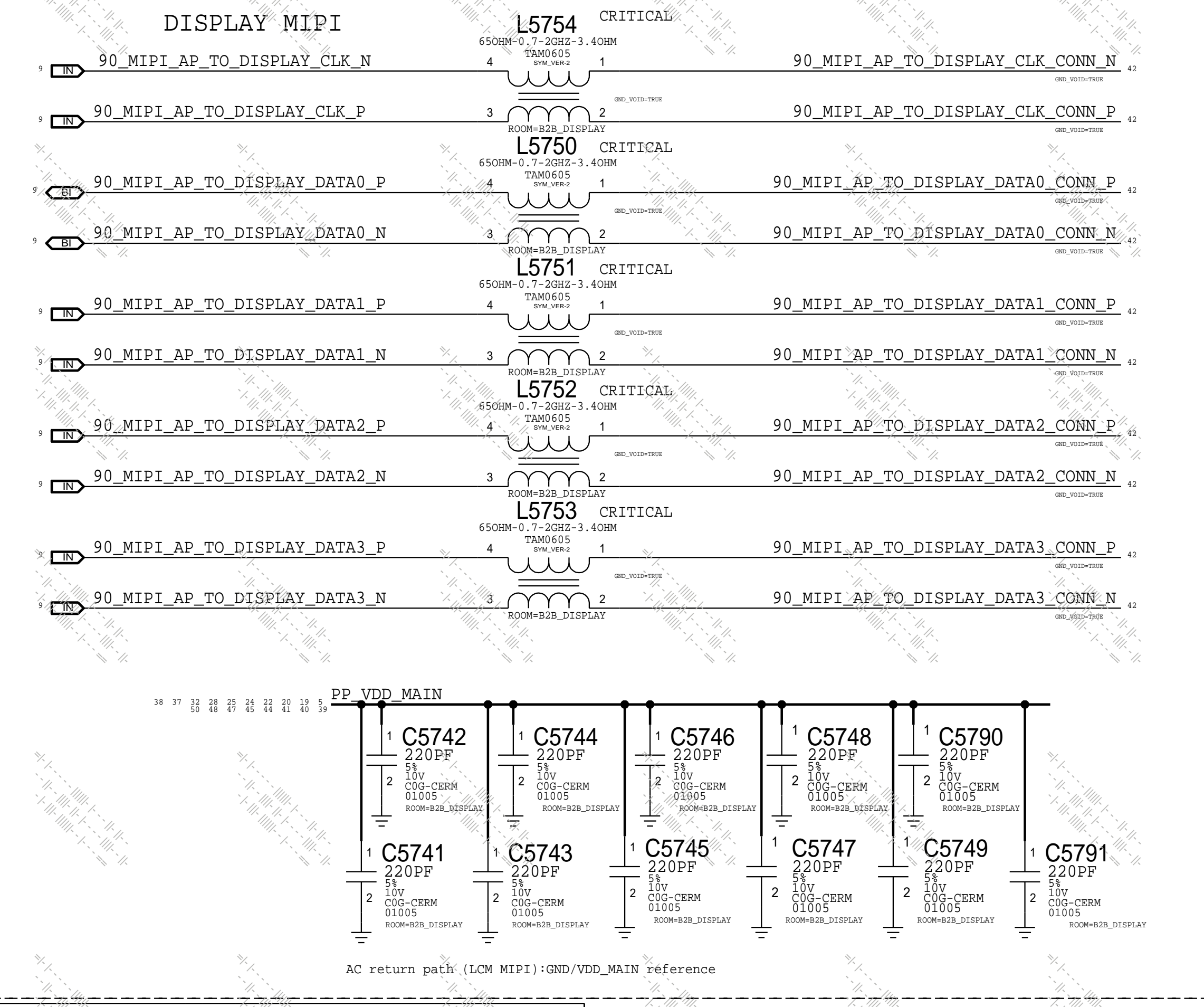
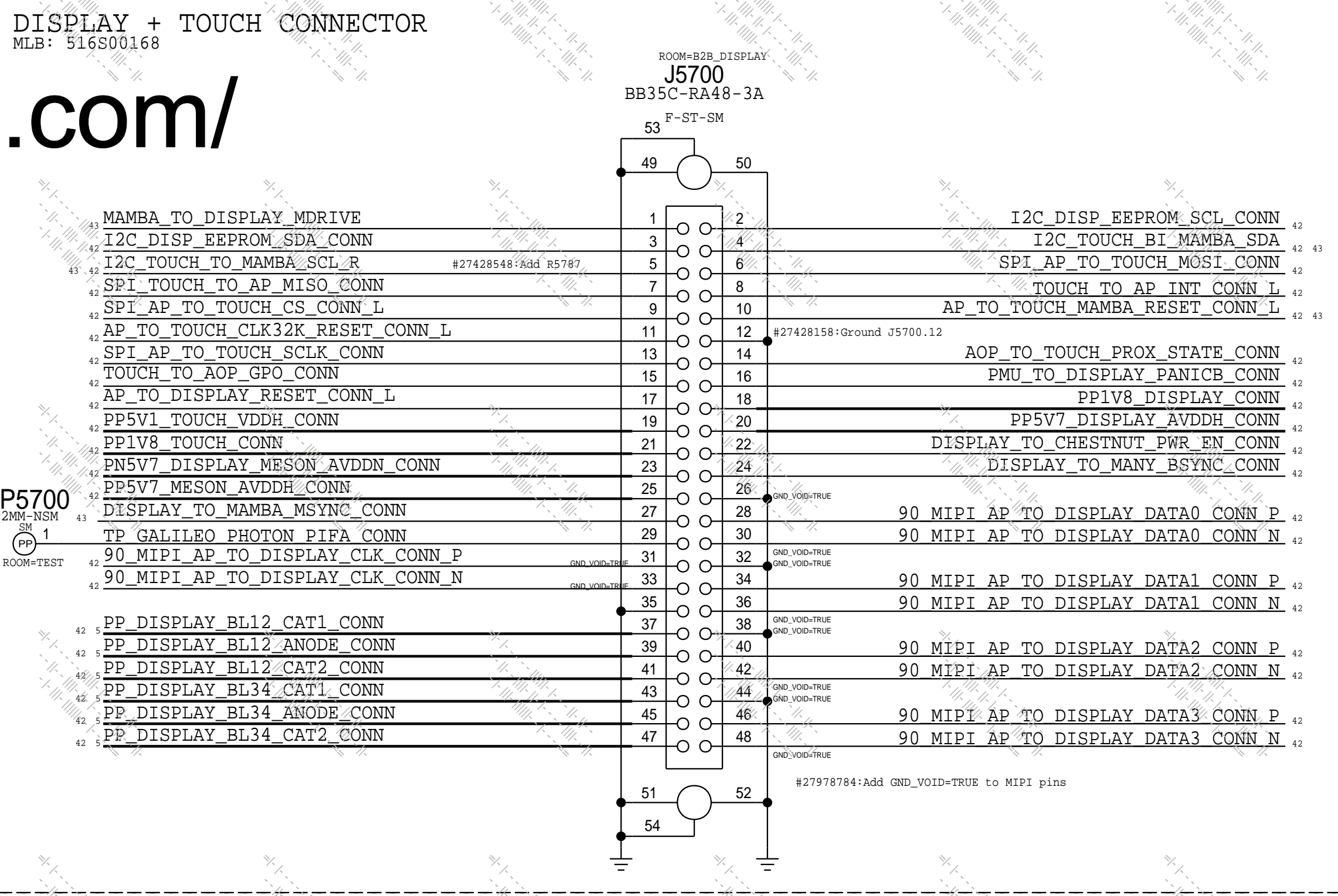
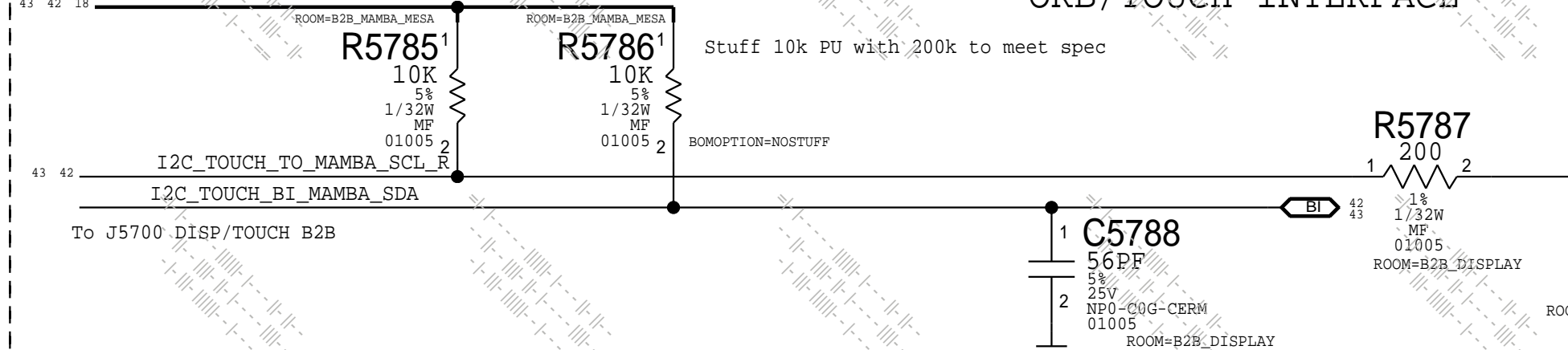
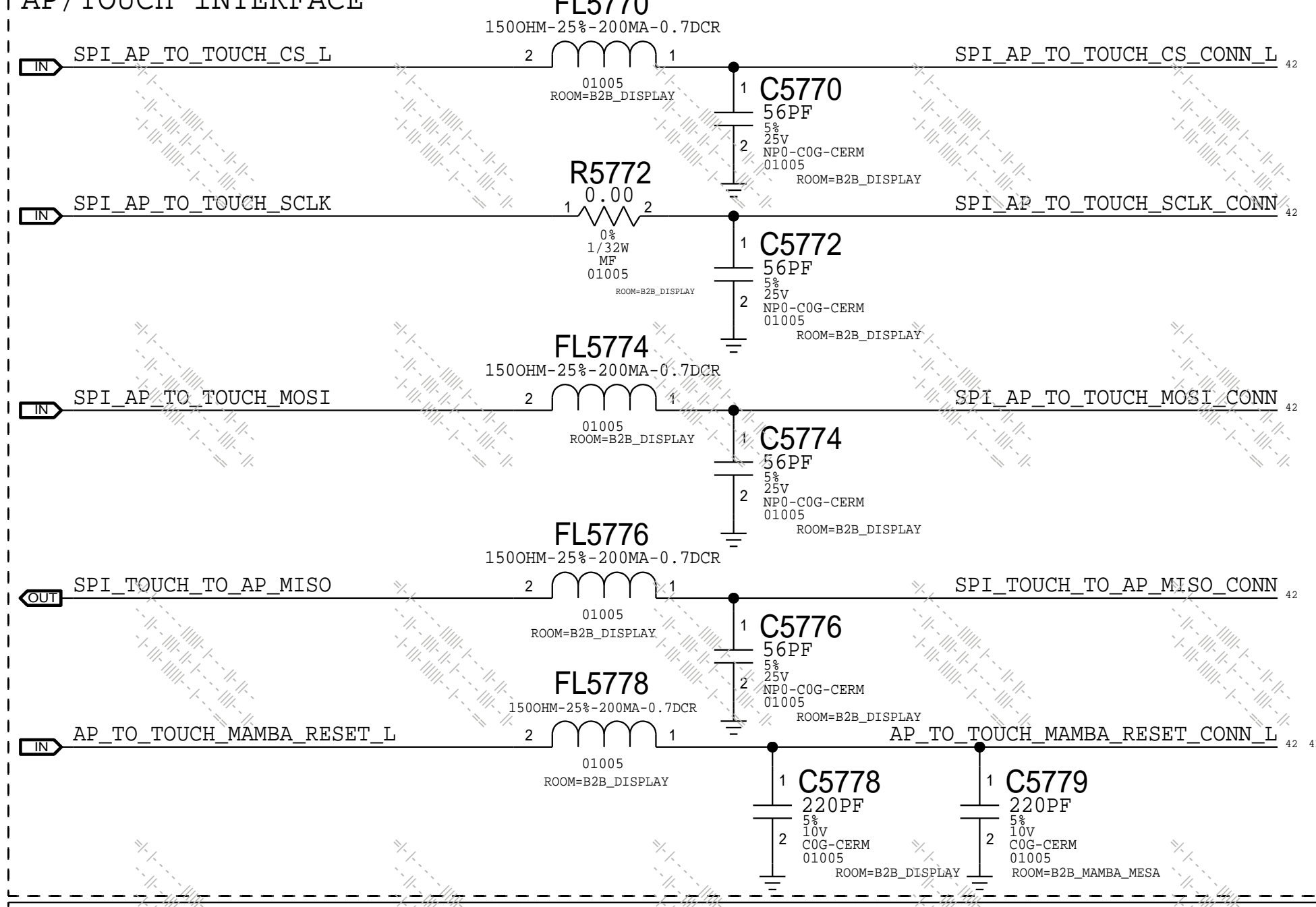
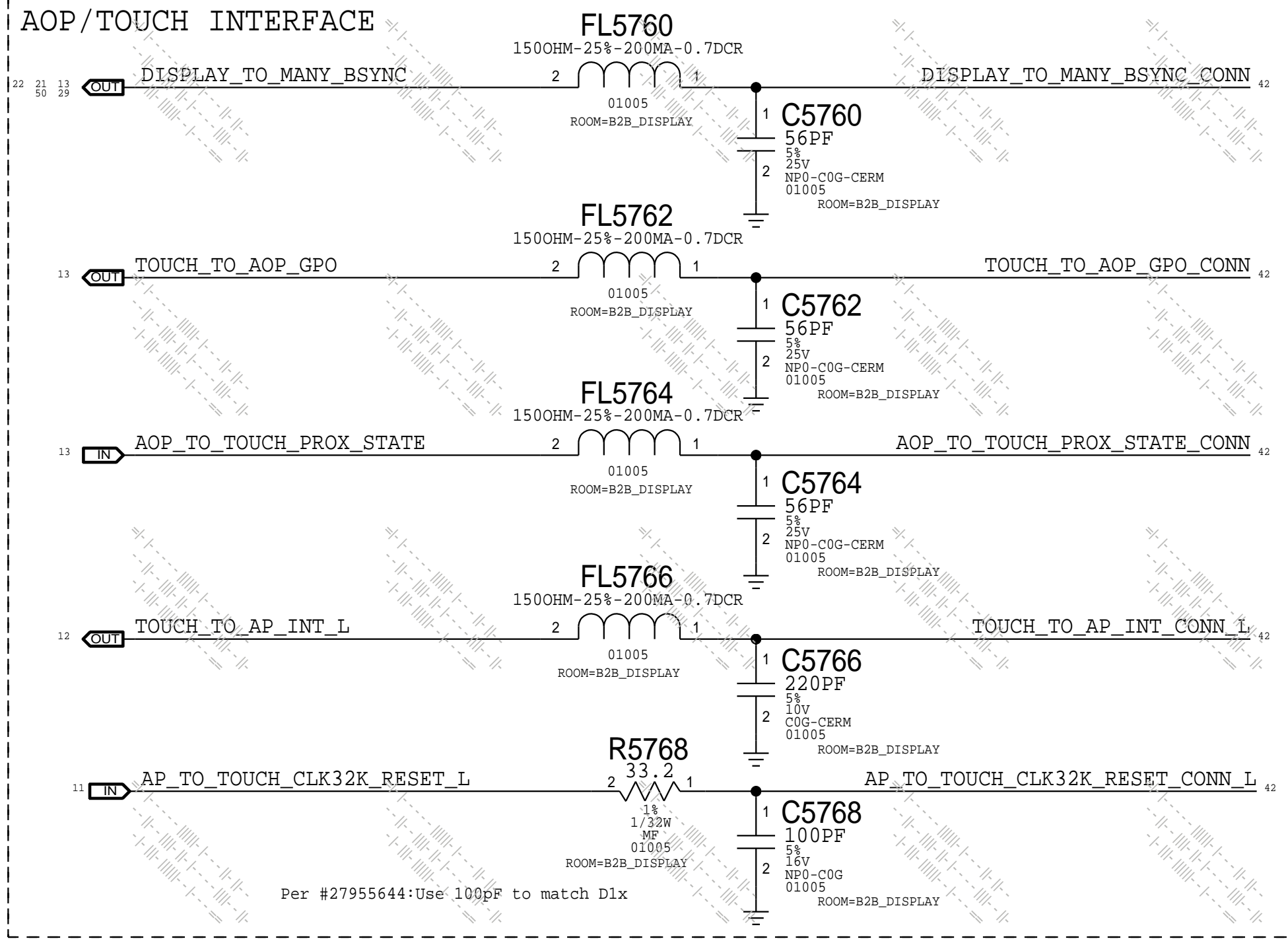
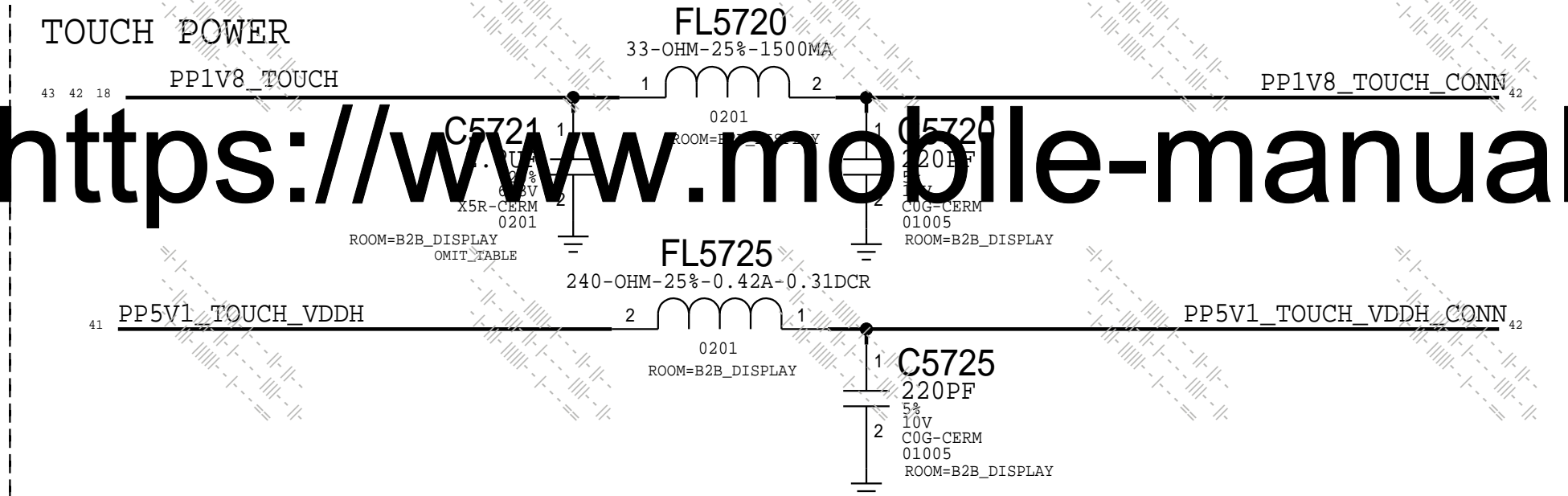
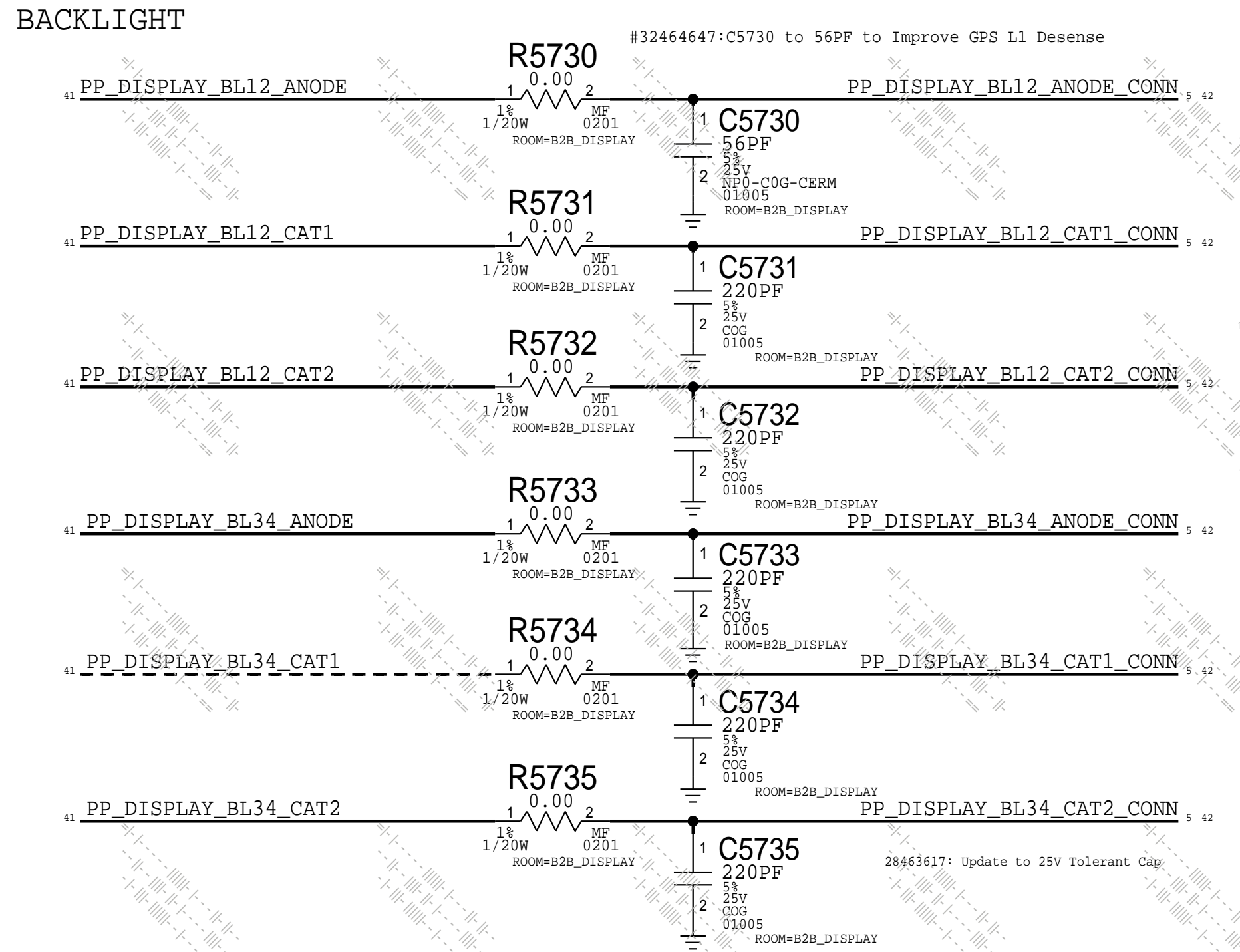
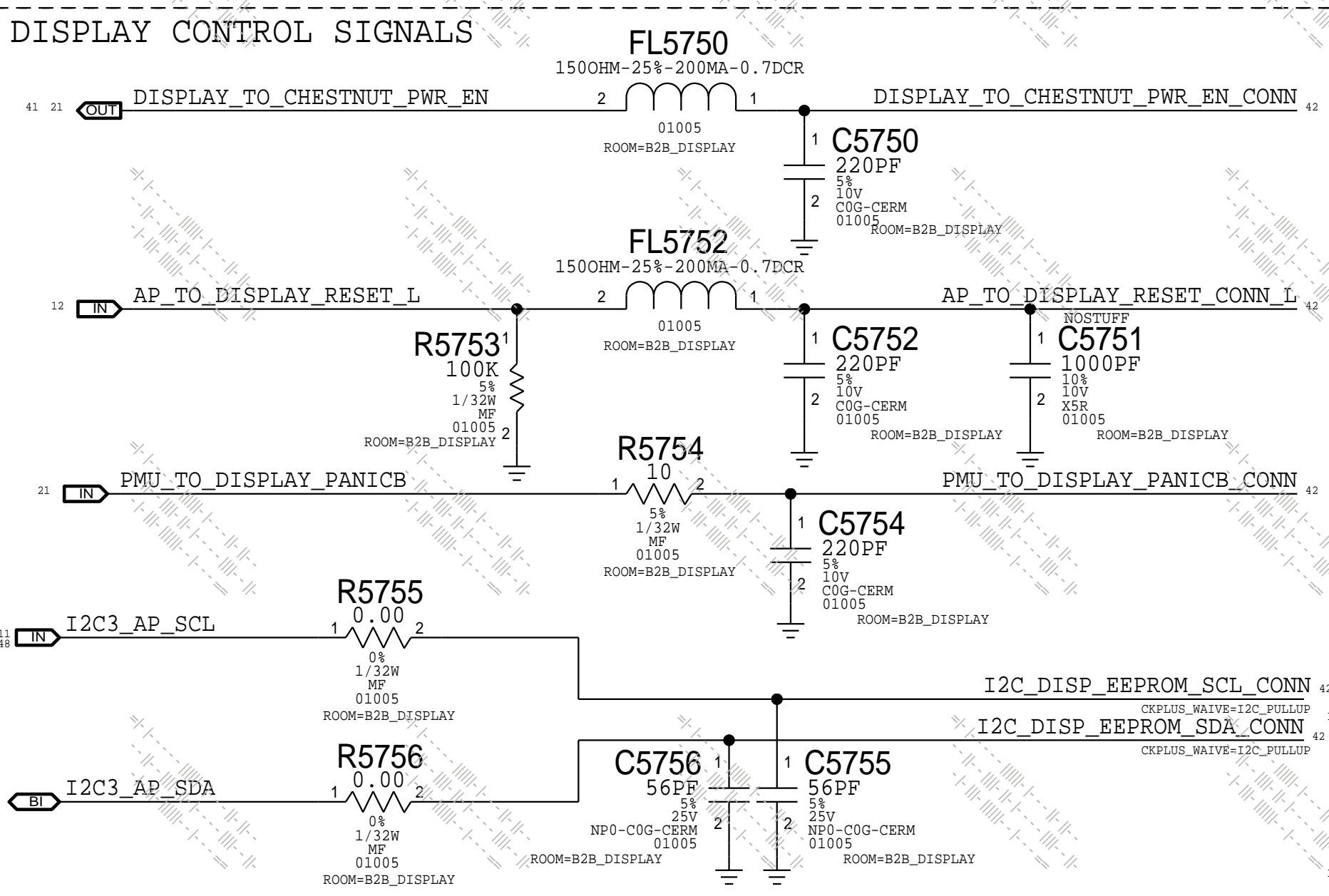
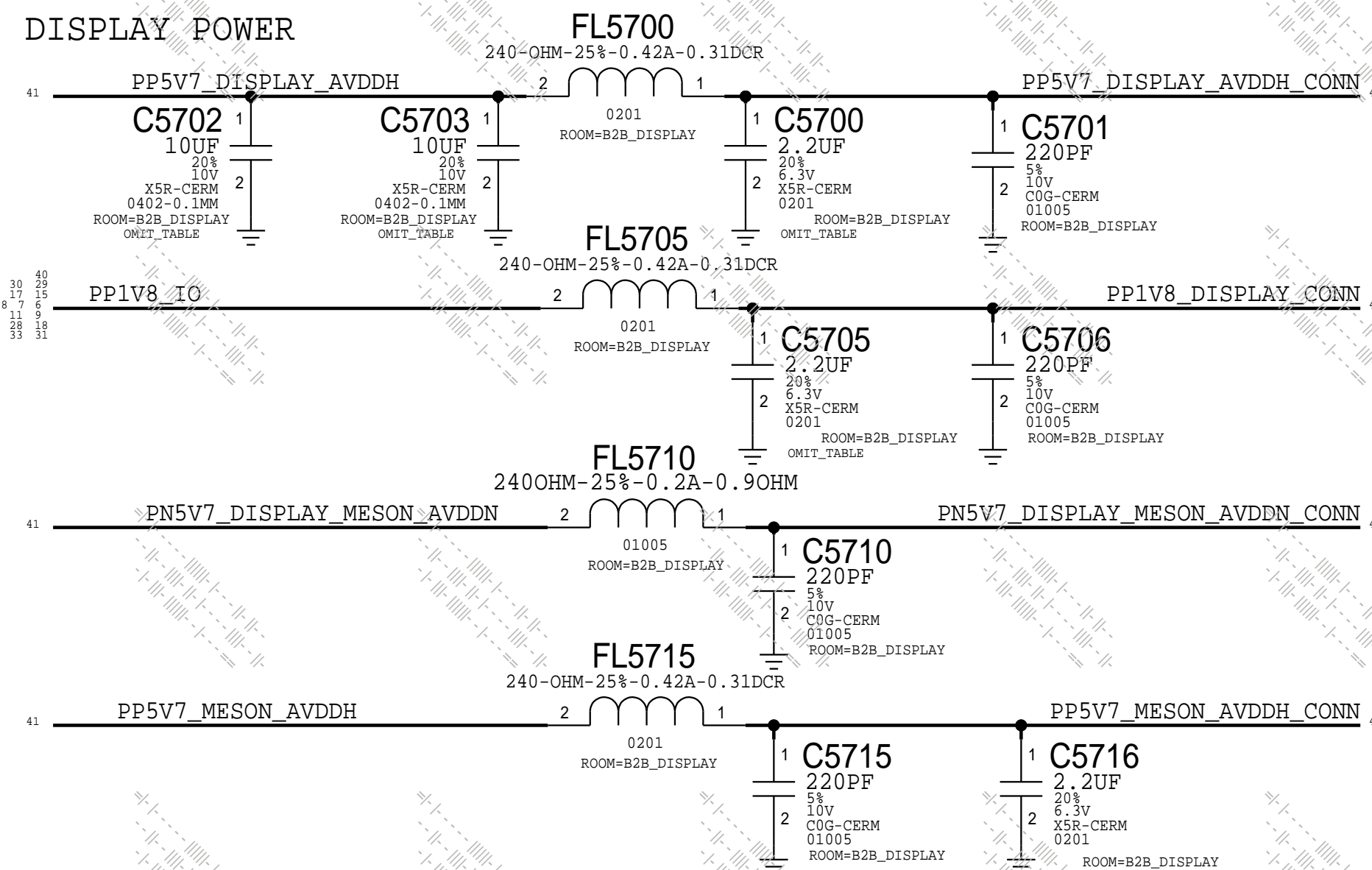
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CG: B2B DISPLAY + TOUCH

Apple Inc.

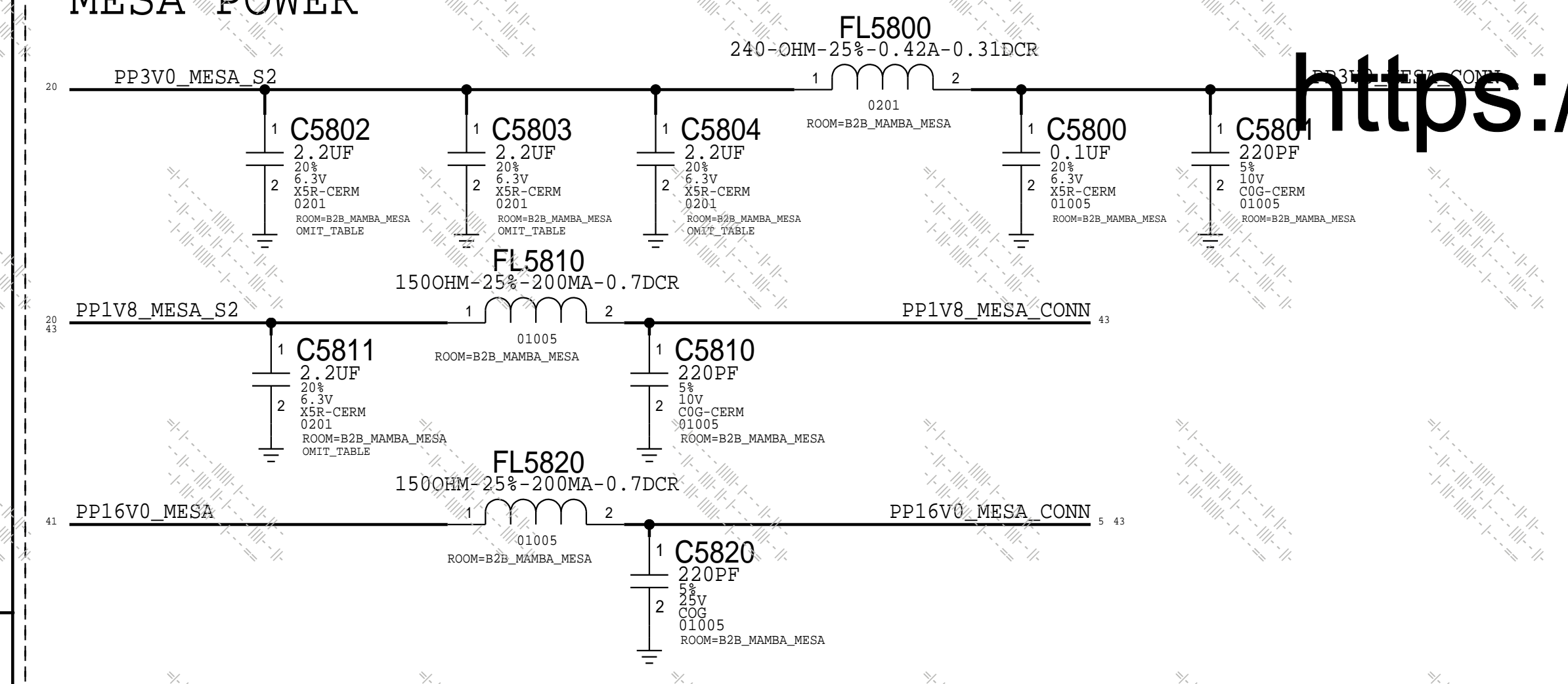
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PAGE TITLE	CG: B2B DISPLAY + TOUCH
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MESA POWER

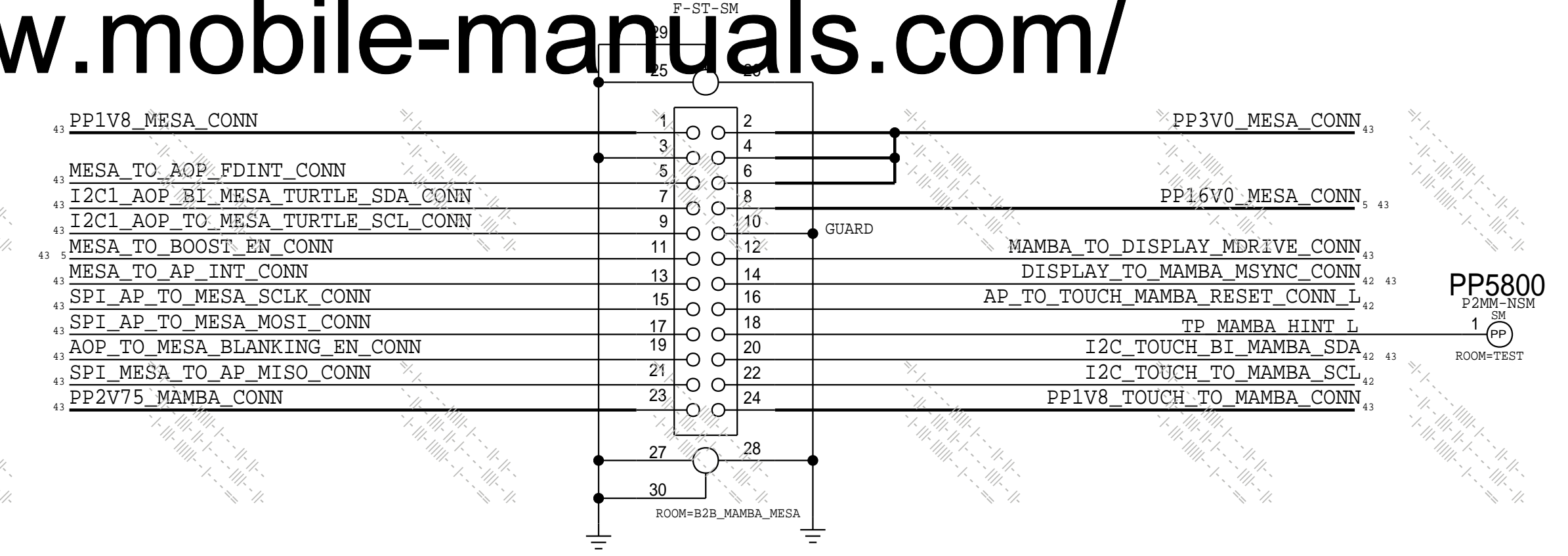
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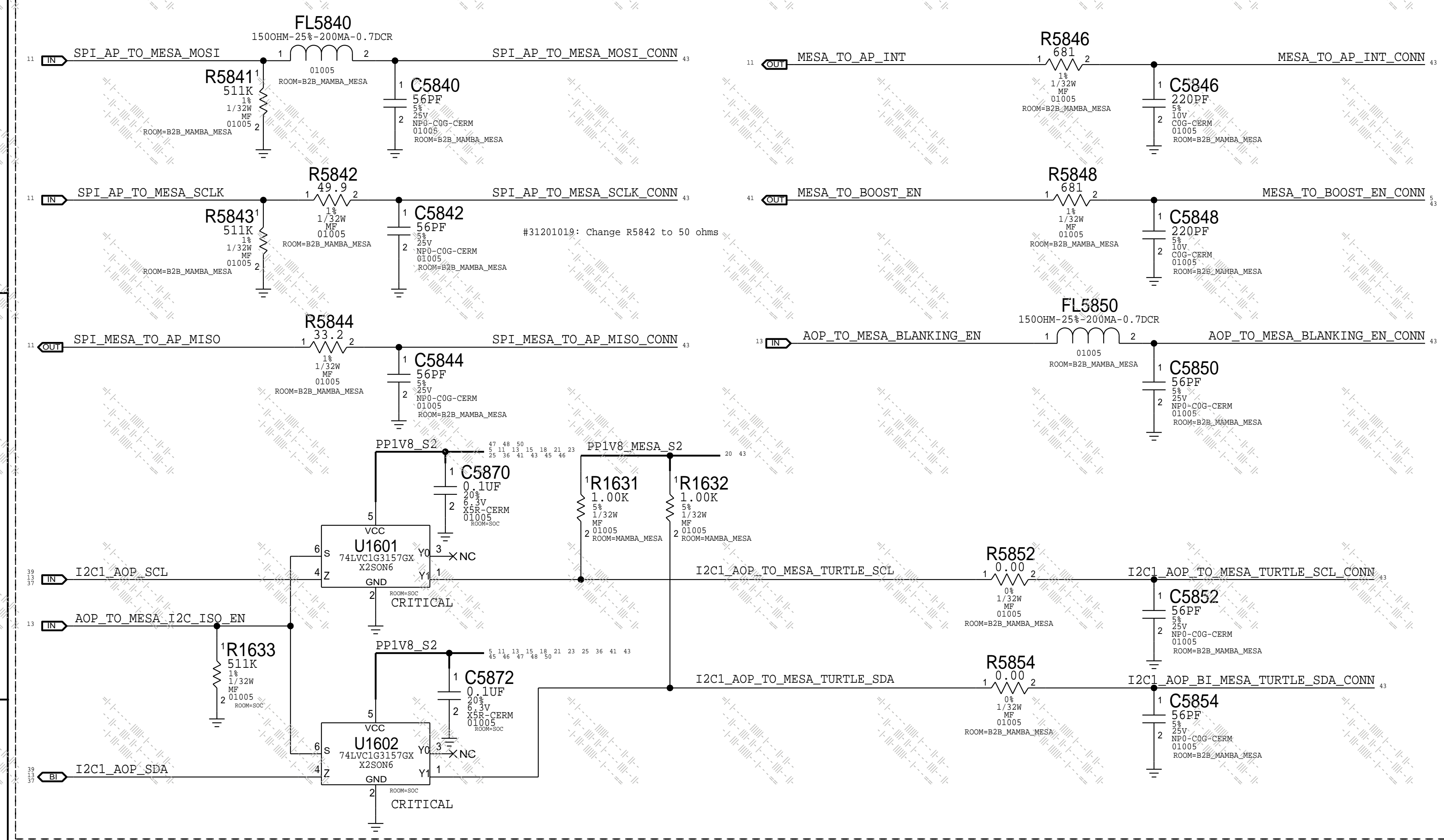
MAMBA AND MESA CONNECTOR

MLB: 516S00273

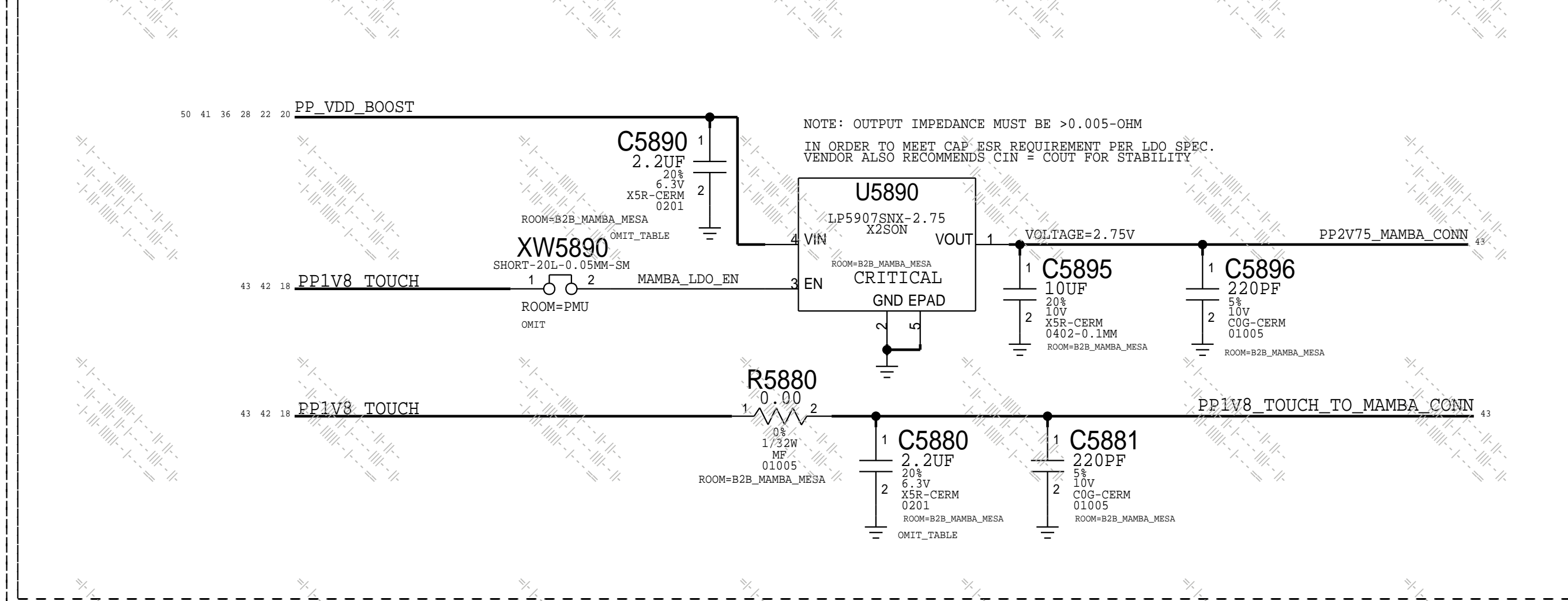
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BB35K-RB24-3A  
F-ST-SM



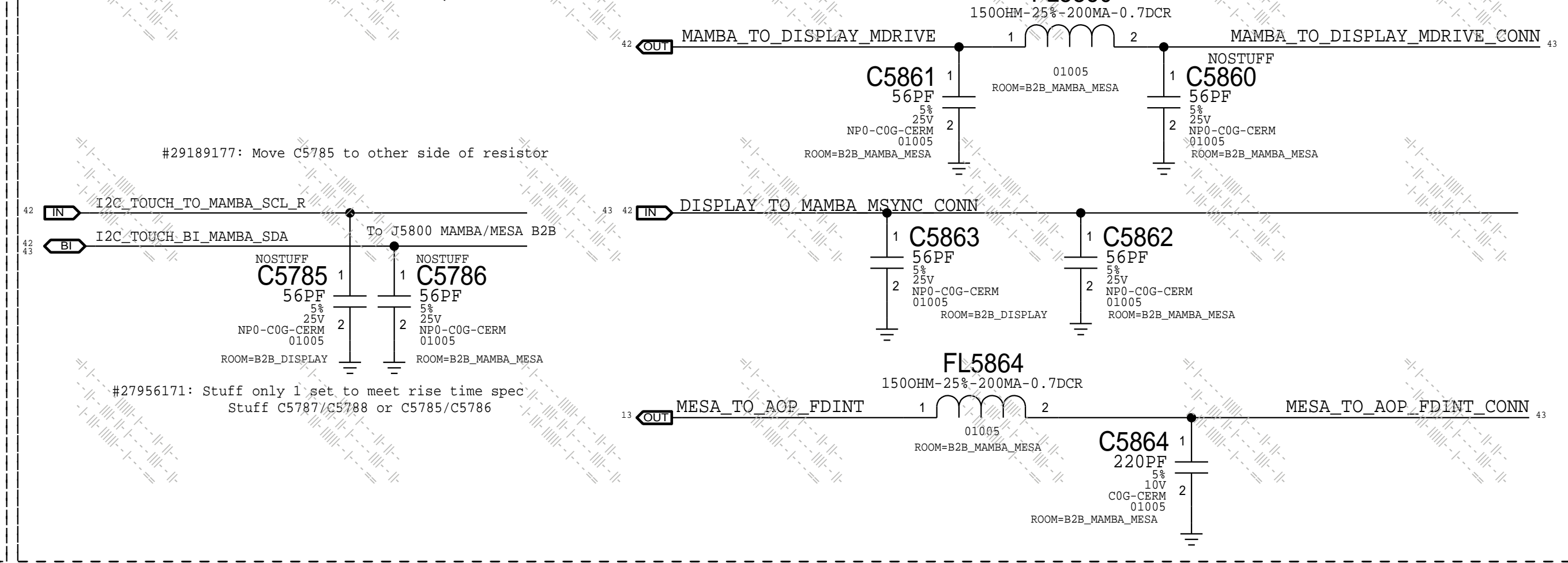
MESA DIGITAL I/O



MAMBA POWER

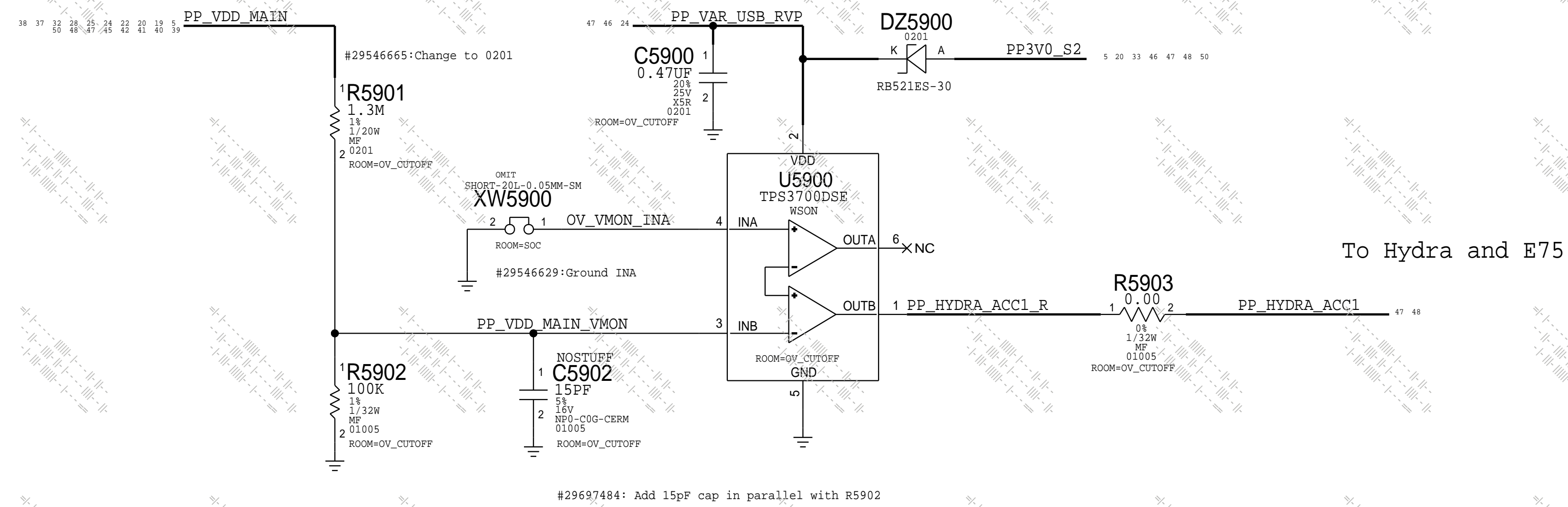


MAMBA DIGITAL I/O



PAGE TITLE		CG: B2B ORB + MESA	
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		PAGE	58 OF 80
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VDD\_MAIN OV CUT-OFF CIRCUIT

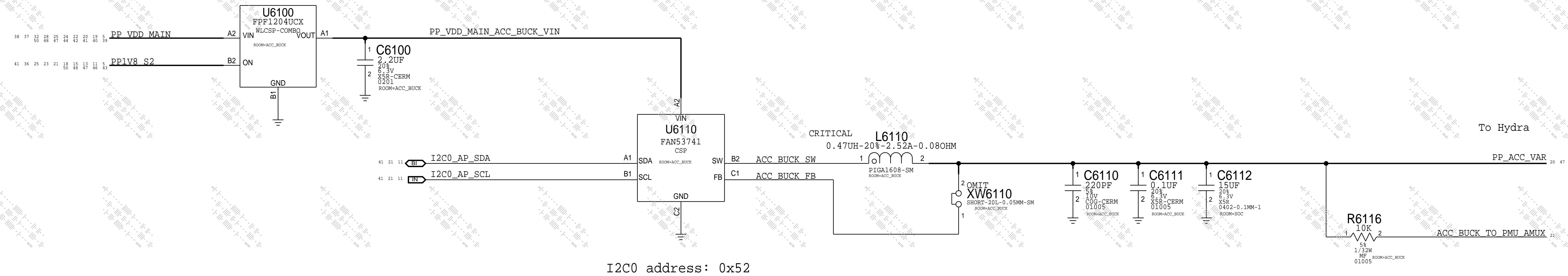


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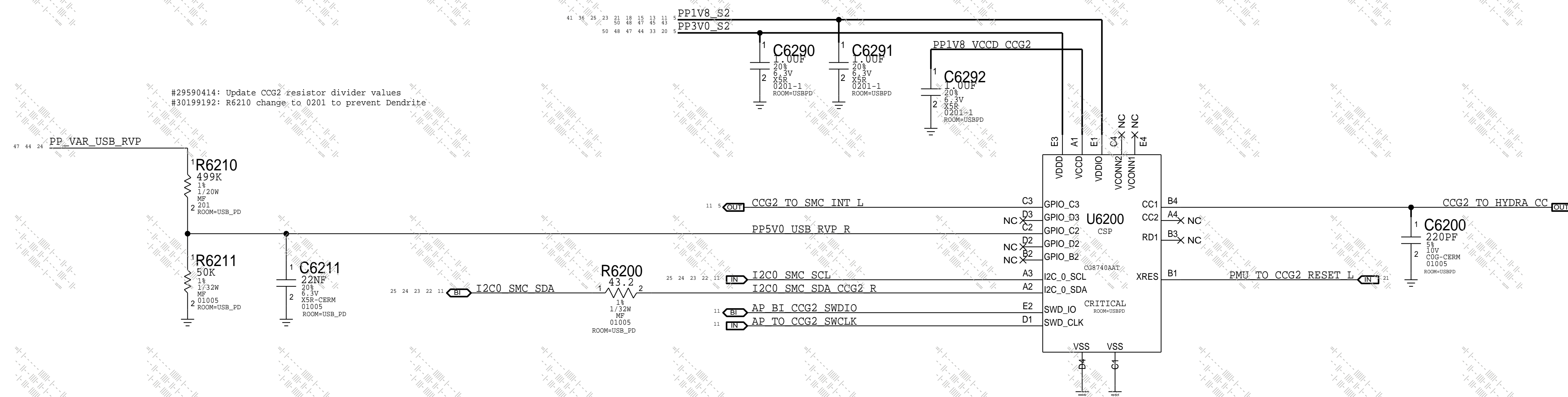
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ACCESSORY BUCK



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USB-PD

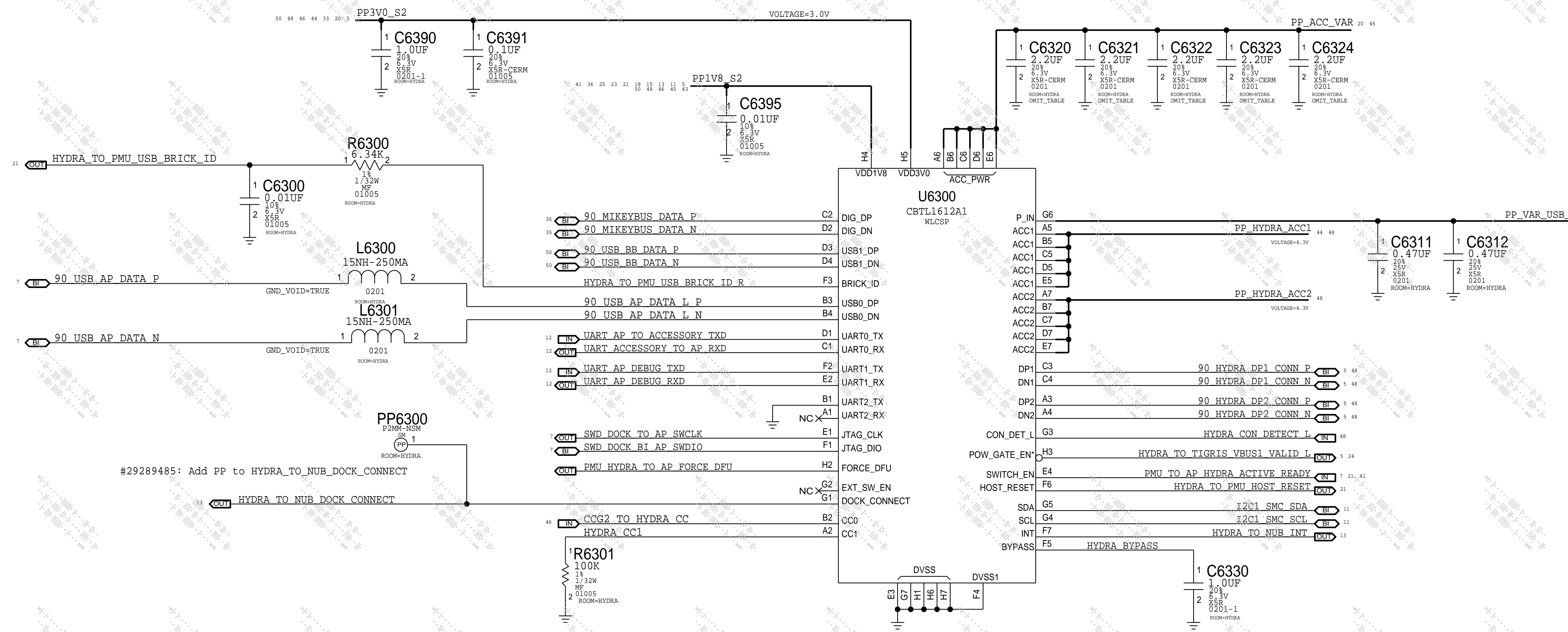


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		PAGE	62 OF 80		
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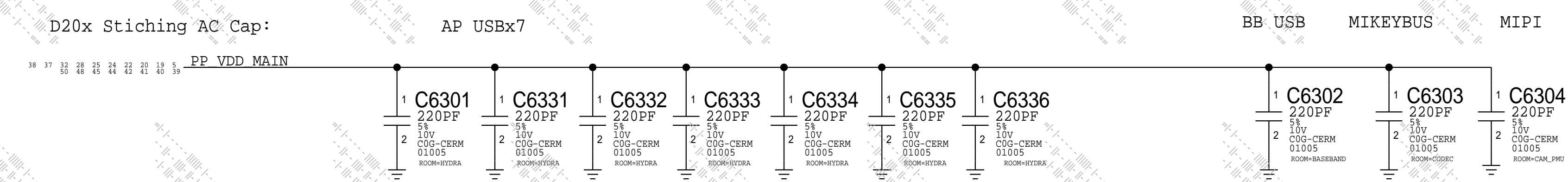


# HYDRA

I2C ADDRESS: 0011010X



UART TX/RX pin names on Hydra match signal names (i.e. TX pin is input and connects to TX signal)

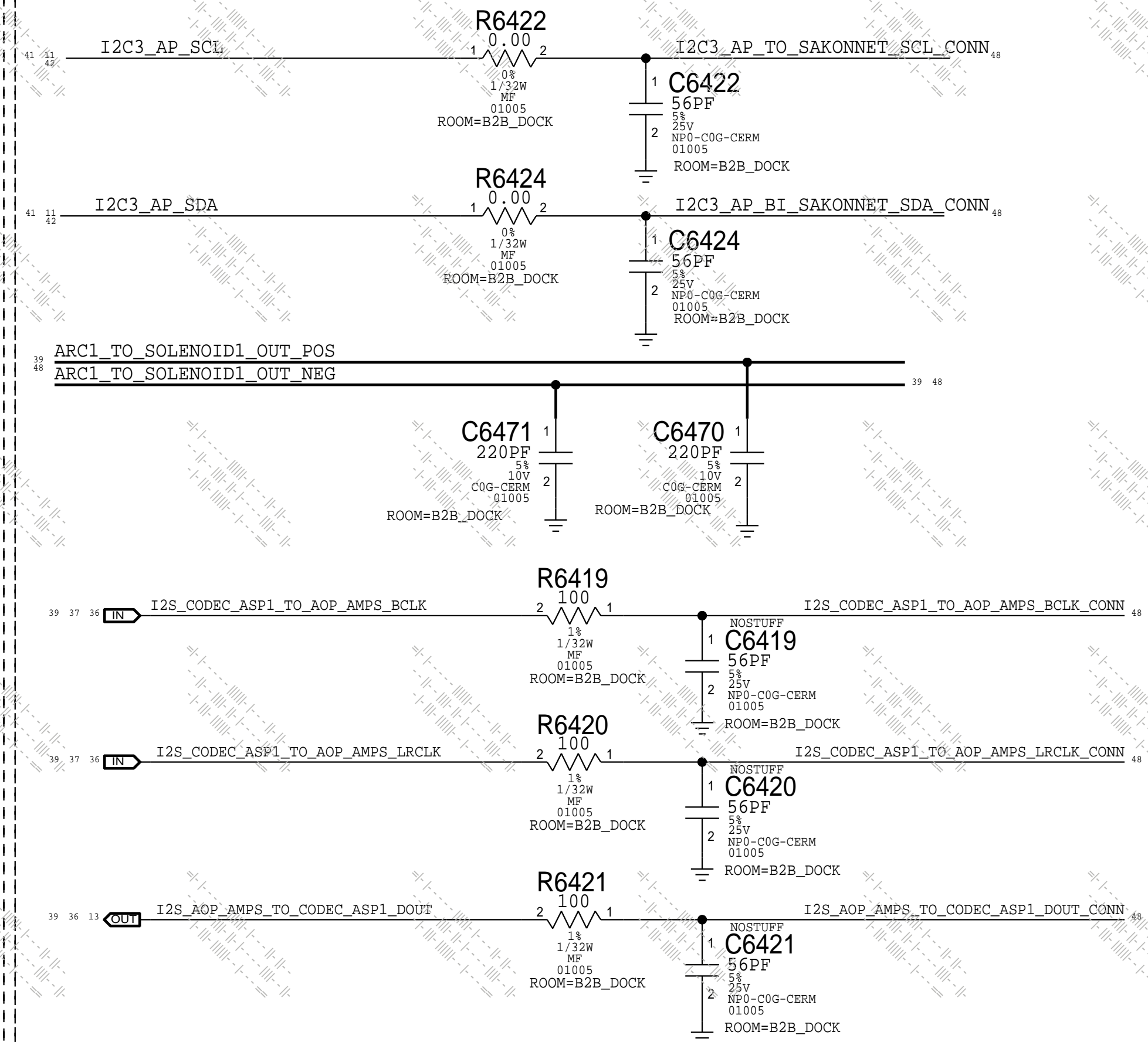


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Apple Inc.		DRAWING NUMBER	051-02159
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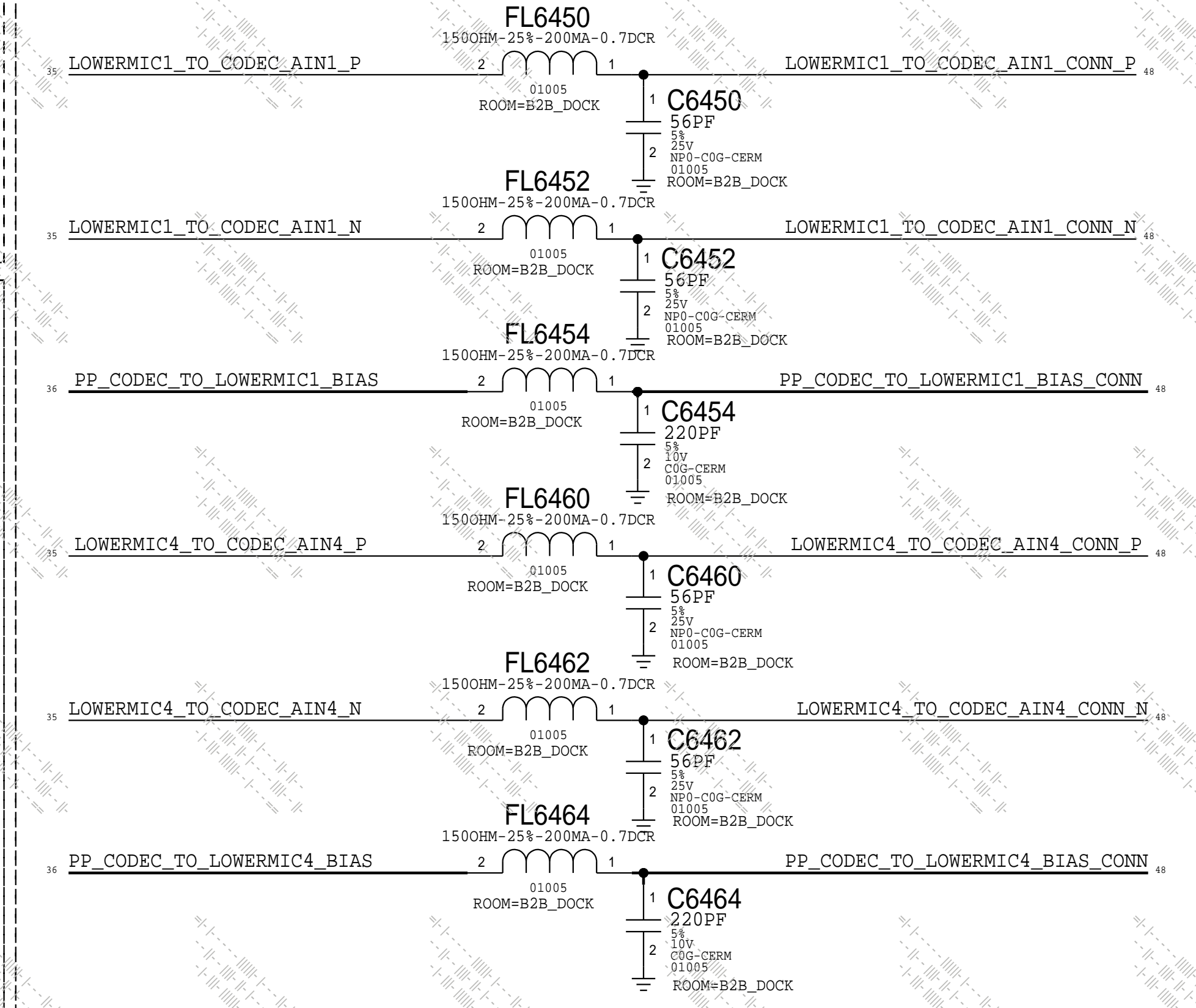


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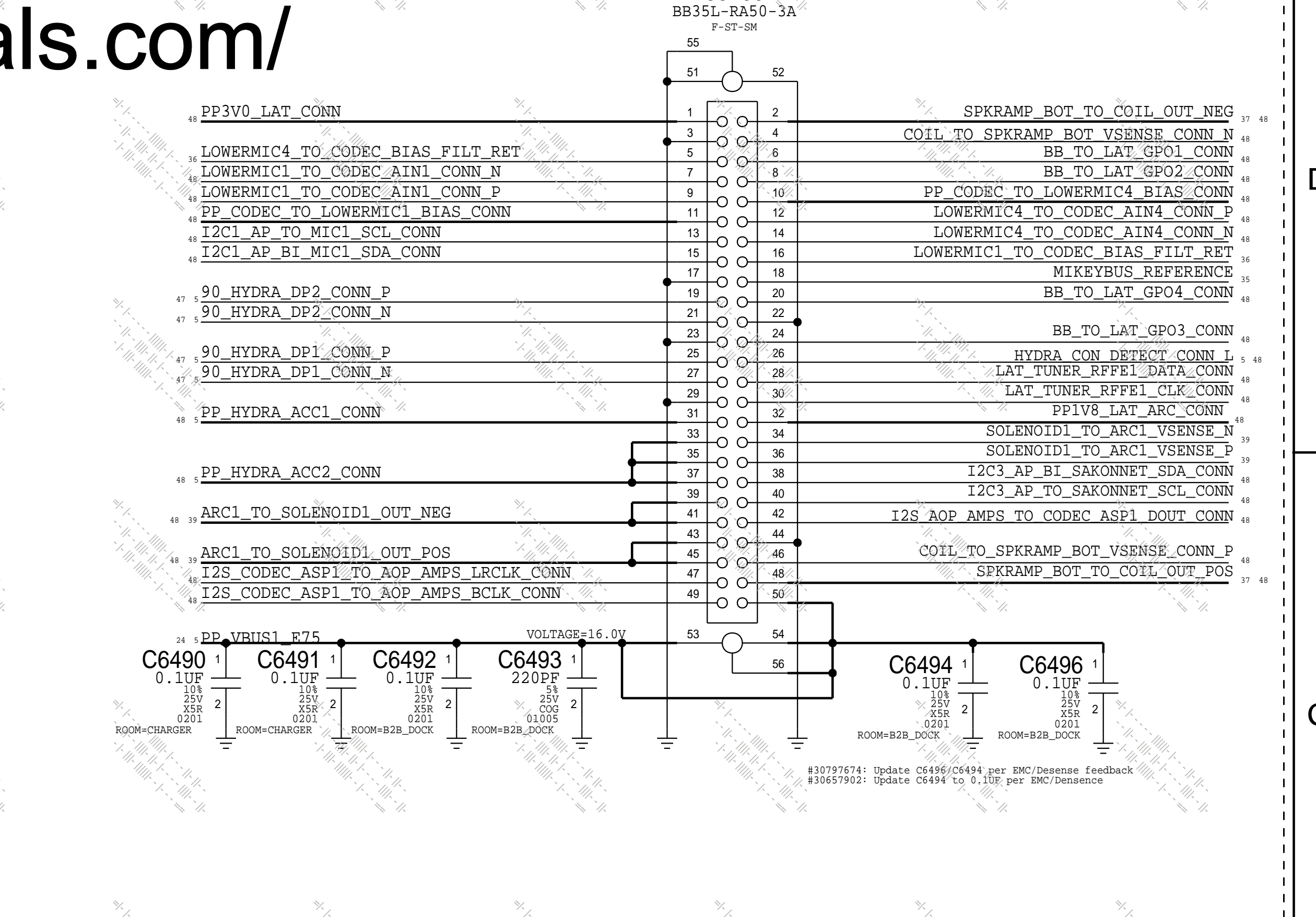
ARC



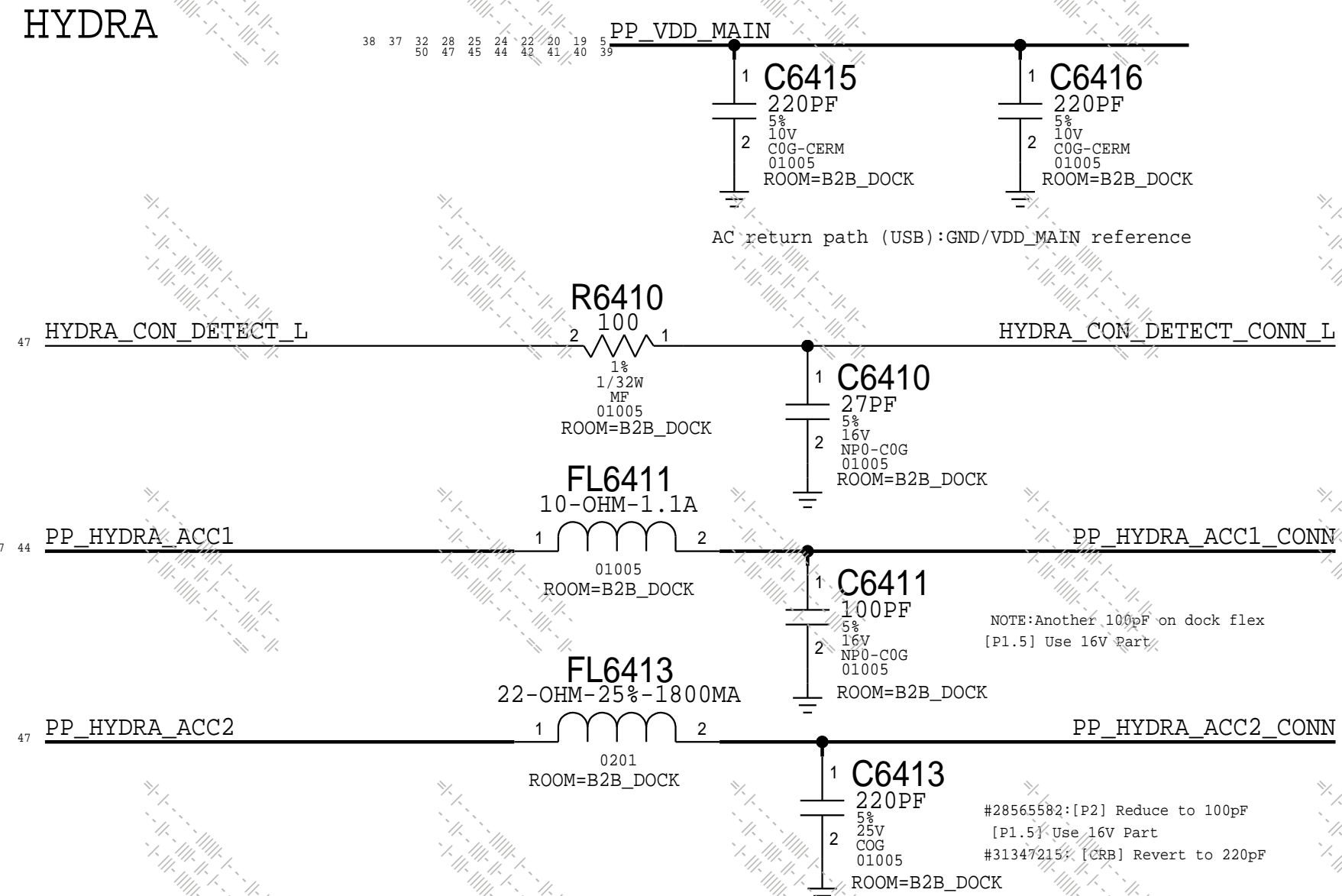
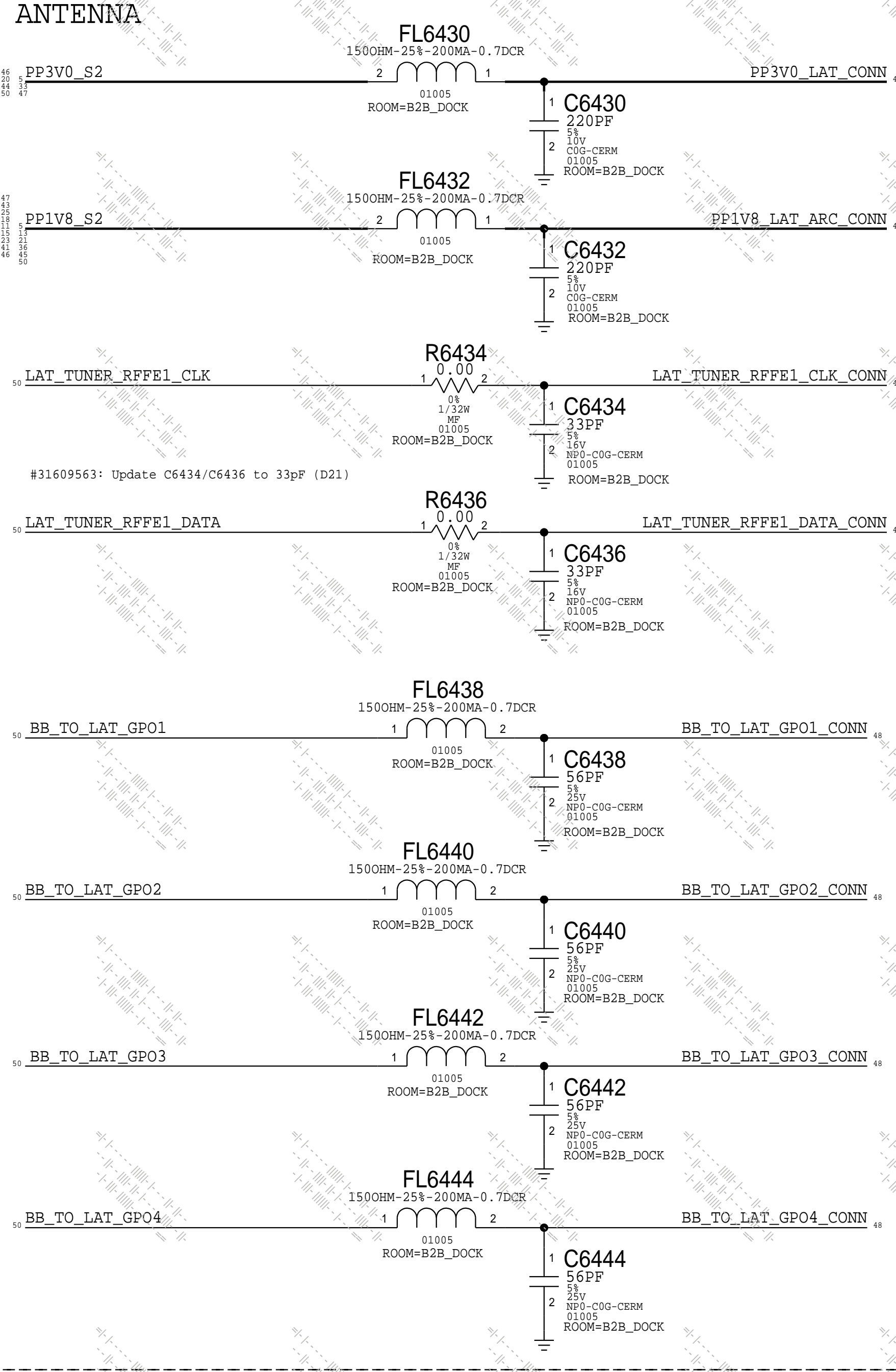
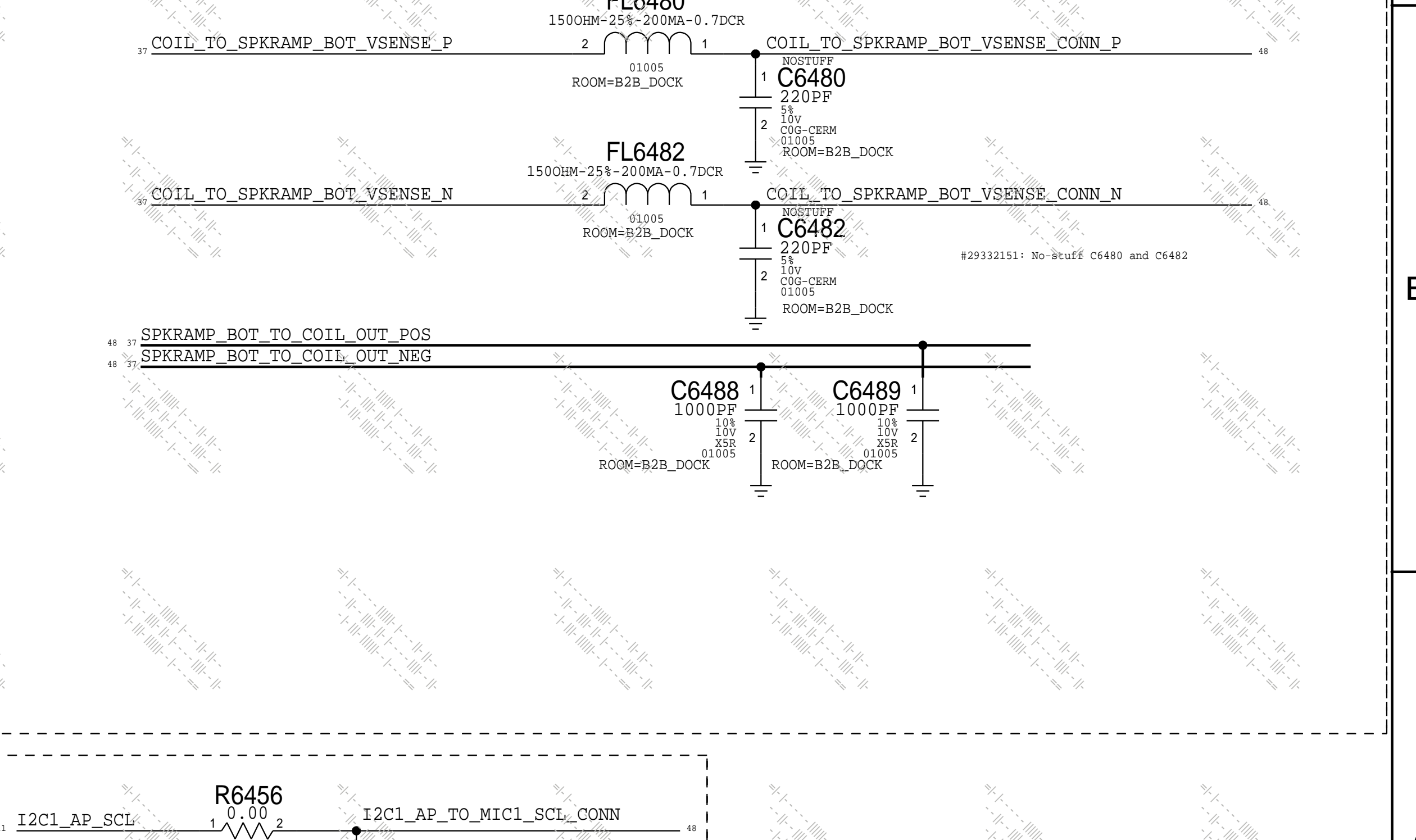
MICS



DOCK FLEX CONNECTOR



SOUTH SPEAKER



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# I2C MAP

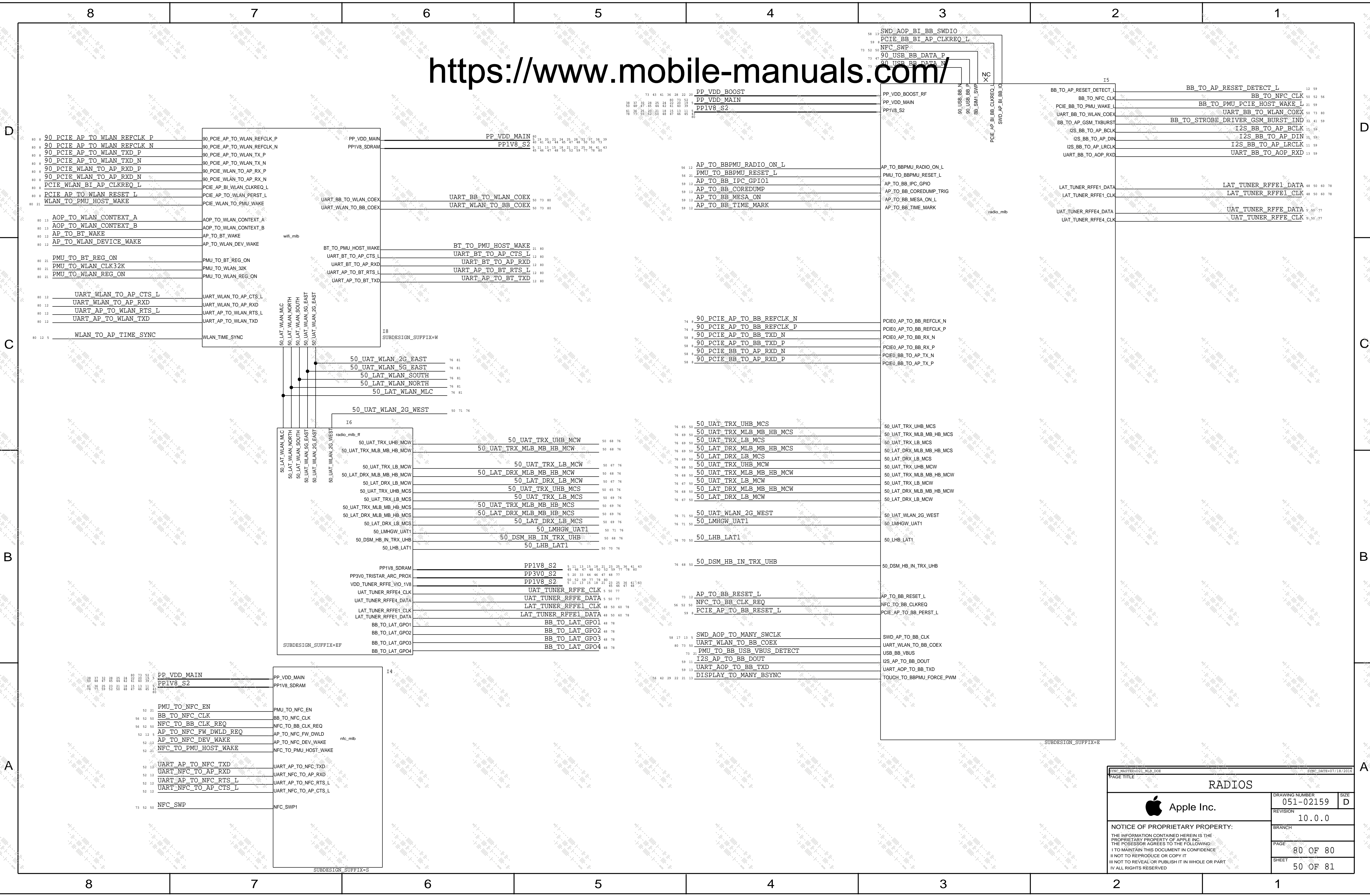
(see #28857723 updates)

<https://www.mobile-manuals.com/>

Diags ID	Bus	Device	7-Bit Address	8-Bit Address	Device Max Speed	Operating Speed	Net Name
0	AP I2C0	Agnes (System PMU)	0x74	0xE8	400 Kbps	400 Kbps	I2C0_AP
		Chestnut (Display PMU)	0x27	0x4E	400 Kbps		
		AccessoryBuck	0x52	0xA4	400 Kbps		
		Muon (Backlight Controller 2)	0x62	0xC4	1 Mbps		
1	AP I2C1	MIC1 Temp Sensor (South)	0x54	0xA8	1 Mbps	100 Kbps	I2C1_AP
		MIC2 Temp Sensor (North Rear)	0x56	0xAC	1 Mbps		
2	AP I2C2	Adare (Top Speaker Amp)	0x40	0x80	1 Mbps	1 Mbps	I2C2_AP
		Convoy (Top Speaker Cap Sense)	0x21	0x42	1 Mbps		
3	AP I2C3	EEPROM	0x51	0xA2	400 Kbps	400 Kbps	I2C3_AP
		Muon (Backlight Controller 1)	0x62	0xC4	400 Kbps		
		Sakonnet (Arc: Hall Effect Sensor)	0x08	0x10	1 Mbps		
		EEPROM	0x50	0xA0	400 Kbps		
ISP I2C0		Casper (Rear Wide Camera)	0x10	0x20	1 Mbps	1 Mbps	I2C0_ISP
		Grunberg+ (AF/OIS Wide Camera)	0x3C	0x78	1 Mbps		
ISP I2C1		Billings (Rear Tele Camera)	0x20	0x40	1 Mbps	1 Mbps	I2C1_ISP
		Edwin (AF Tele Camera)	0x0D	0x1A	1 Mbps		
ISP I2C2		Concord (Front Camera)	0x10	0x20	1 Mbps	400 Kbps	I2C2_ISP
ISP I2C3		Neon (Strobe - CW : LM3566)	0x63	0xC6	1 Mbps	400 Kbps	I2C3_ISP
		Ansel (Camera PMU)	0x40	0x80	1 Mbps		
		Neon (Strobe - AM : LM35662)	0x67	0xCE	1 Mbps		
SEP I2C		EEPROM	0x51	0xA2	400 Kbps	400 Kbps	I2C4_AP
4	AOP I2C0	Doppler (Prox Sensor)	0x58	0xB0	1 Mbps	400 Kbps	I2C0_AOP
		CT709 (ALS : Firefish)	0x29	0x52	400 Kbps		
5	AOP I2C1	Adare (Bottom Speaker Amp)	0x40	0x80	1 Mbps	1 Mbps	I2C1_AOP
		Adare (Arc: Driver)	0x41	0x82	1 Mbps		
		Apache3 (Mesa Power Supply)	0x61	0xC2	1 Mbps		I2C1_AOP_ISO
		Turtle	0x2C	0x58	1 Mbps		
6	SMC I2C0	Tigris2 (Charger)	0x71	0xE2	400 Kbps	400 Kbps	I2C0_SMC
		TPS61280 (VDD Boost)	0x75	0xEA	400 Kbps		
		CCG2 (USB PD)	0x12 (0x08)	0x24 (0x10)	1 Mbps		
		Iktara	0x39	0x72	400 Kbps		
		SN45546 (Gas Gauge)	0x55	0xAA	400 Kbps		
7	SMC I2C1	Hydra	0x1A	0x34	400 Kbps	400 Kbps	I2C1_SMC

SYSTEM: I2C MAP		
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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.

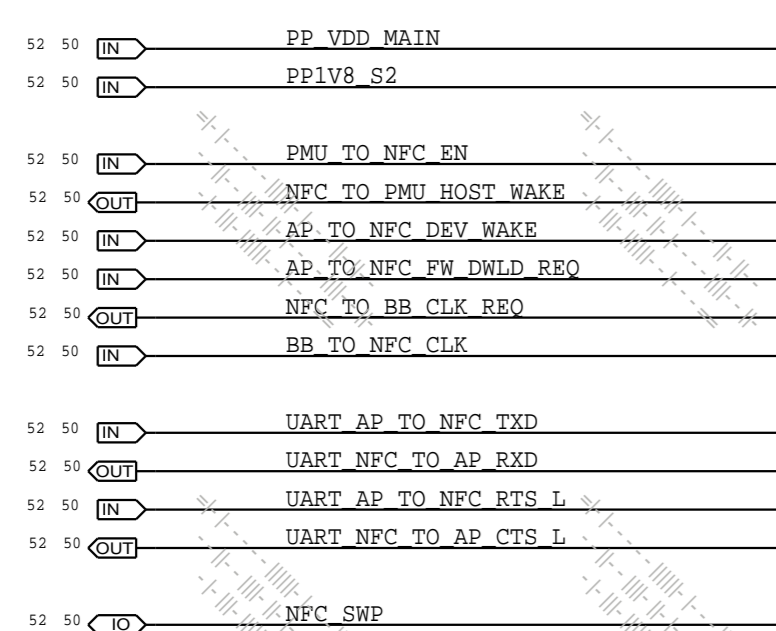
REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
10	0008927012	ENGINEERING RELEASED		2017-06-06

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# NFC\_MLB D20/D21

## MAY 15, 2017

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00159	3	CAP,SOFT TERM,2.2UF,6.3V,0201	C7500_S,C7502_S,C7505_S	CRITICAL	SOFT_CAP
138S00831	3	CAP,TYPICAL,2.2UF,6.3V,0201	C7500_S,C7502_S,C7505_S	CRITICAL	TYPICAL_CAP



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S00882	1	390PF, 0201, 2%, 25V	C7514_S	D20_JPN
131S00026	1	820PF, 0201, 2%, 25V	C7515_S	D20_JPN
131S00033	1	680PF, 0201, 2%, 25V	C7516_S	D20_JPN
131S00883	1	220PF, 0201, 2%, 50V	C7518_S	D20_JPN
131S00025	1	1000PF, 0201, 2%, 25V	C7510_S	D20_JPN
131S00025	1	1000PF, 0201, 2%, 25V	C7513_S	D20_JPN
157S00022	1	TDK, BALUN, 11T	T7500_S	D20_JPN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S00138	1	39PF, 0201, 2%, 50V	C7512_S	D21_JPN
131S00081	1	270PF, 0201, 2%, 25V	C7514_S	D21_JPN
131S00025	1	1000PF, 0201, 2%, 25V	C7515_S	D21_JPN
131S00033	1	680PF, 0201, 2%, 25V	C7516_S	D21_JPN
131S00019	1	150PF, 0201, 2%, 50V	C7518_S	D21_JPN
131S00033	1	680PF, 0201, 2%, 25V	C7510_S	D21_JPN
131S00033	1	680PF, 0201, 2%, 25V	C7513_S	D21_JPN
157S00023	1	MURATA, BALUN, 11T	T7500_S	D21_JPN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S00138	1	39PF, 0201, 2%, 50V	C7512_S	D20_ROW
131S00016	1	470PF, 0201, 2%, 25V	C7514_S	D20_ROW
131S00025	1	1000PF, 0201, 2%, 25V	C7515_S	D20_ROW
131S00825	1	560PF, 0201, 2%, 25V	C7516_S	D20_ROW
131S00883	1	220PF, 0201, 2%, 50V	C7518_S	D20_ROW
131S00026	1	820PF, 0201, 2%, 25V	C7510_S	D20_ROW
131S00026	1	820PF, 0201, 2%, 25V	C7513_S	D20_ROW
157S00022	1	TDK, BALUN, 11T	T7500_S	D20_ROW

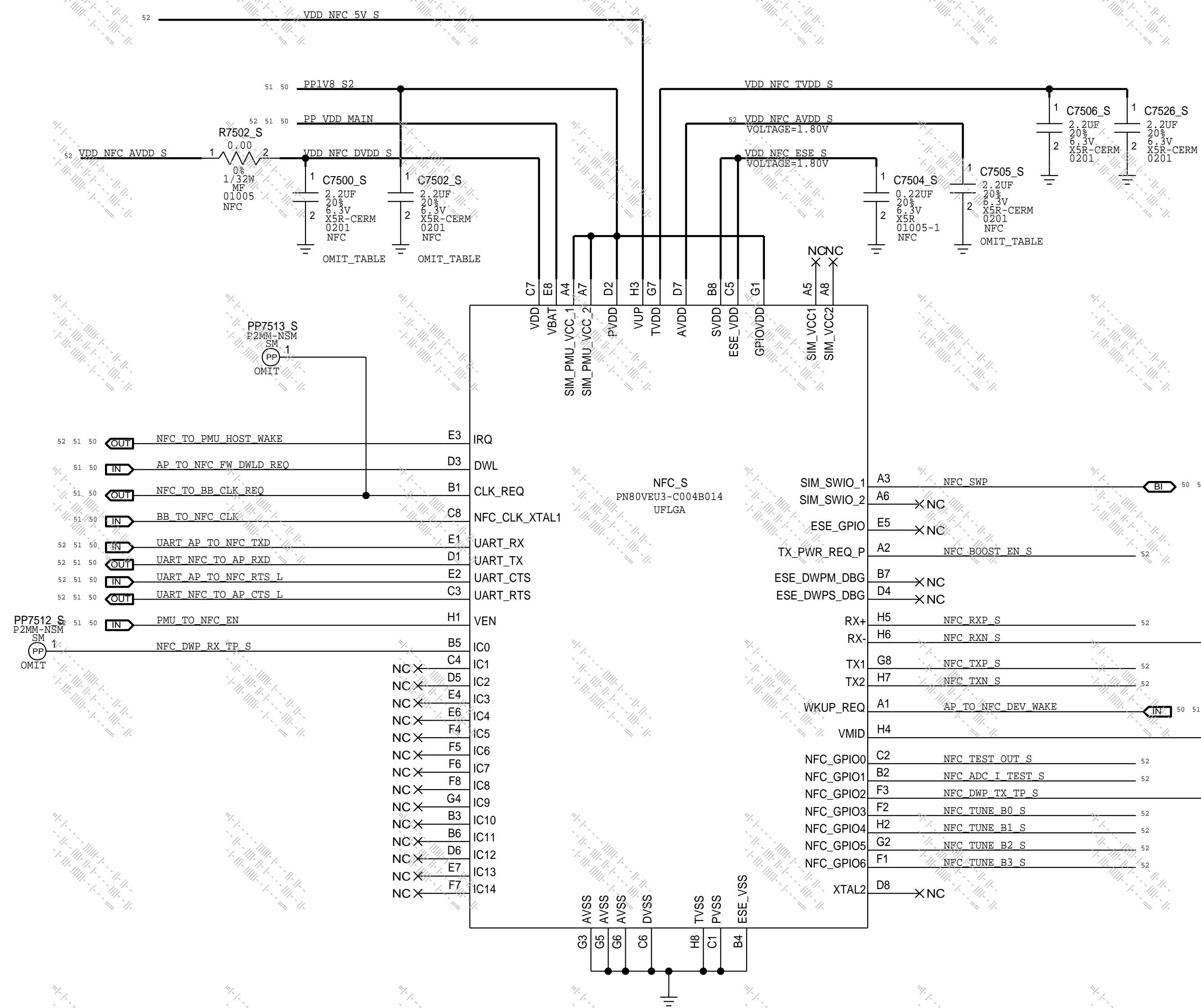
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131S00081	1	270PF, 0201, 2%, 25V	C7514_S	D21_ROW
131S00025	1	1000PF, 0201, 2%, 25V	C7515_S	D21_ROW
131S00033	1	680PF, 0201, 2%, 25V	C7516_S	D21_ROW
131S00019	1	150PF, 0201, 2%, 50V	C7518_S	D21_ROW
131S00033	1	680PF, 0201, 2%, 25V	C7510_S	D21_ROW
131S00033	1	680PF, 0201, 2%, 25V	C7513_S	D21_ROW
157S00023	1	MURATA, BALUN, 11T	T7500_S	D21_ROW

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
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131S00016	1	470PF, 0201, 2%, 25V	C7514_S	D201
131S00025	1	1000PF, 0201, 2%, 25V	C7515_S	D201
131S00825	1	560PF, 0201, 2%, 25V	C7516_S	D201
131S00883	1	220PF, 0201, 2%, 50V	C7518_S	D201
131S00026	1	820PF, 0201, 2%, 25V	C7510_S	D201
131S00026	1	820PF, 0201, 2%, 25V	C7513_S	D201
157S00022	1	TDK, BALUN, 11T	T7500_S	D201

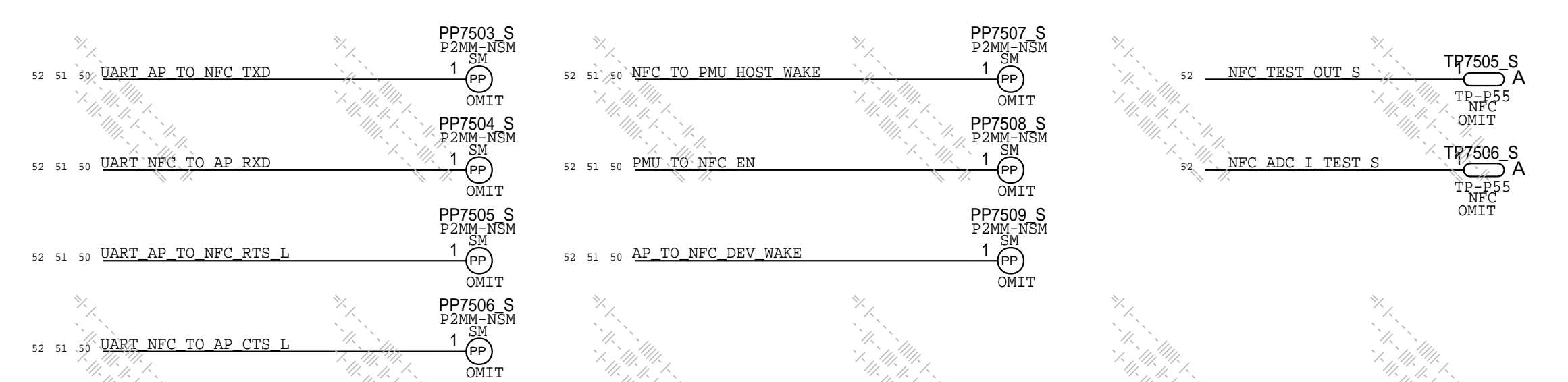
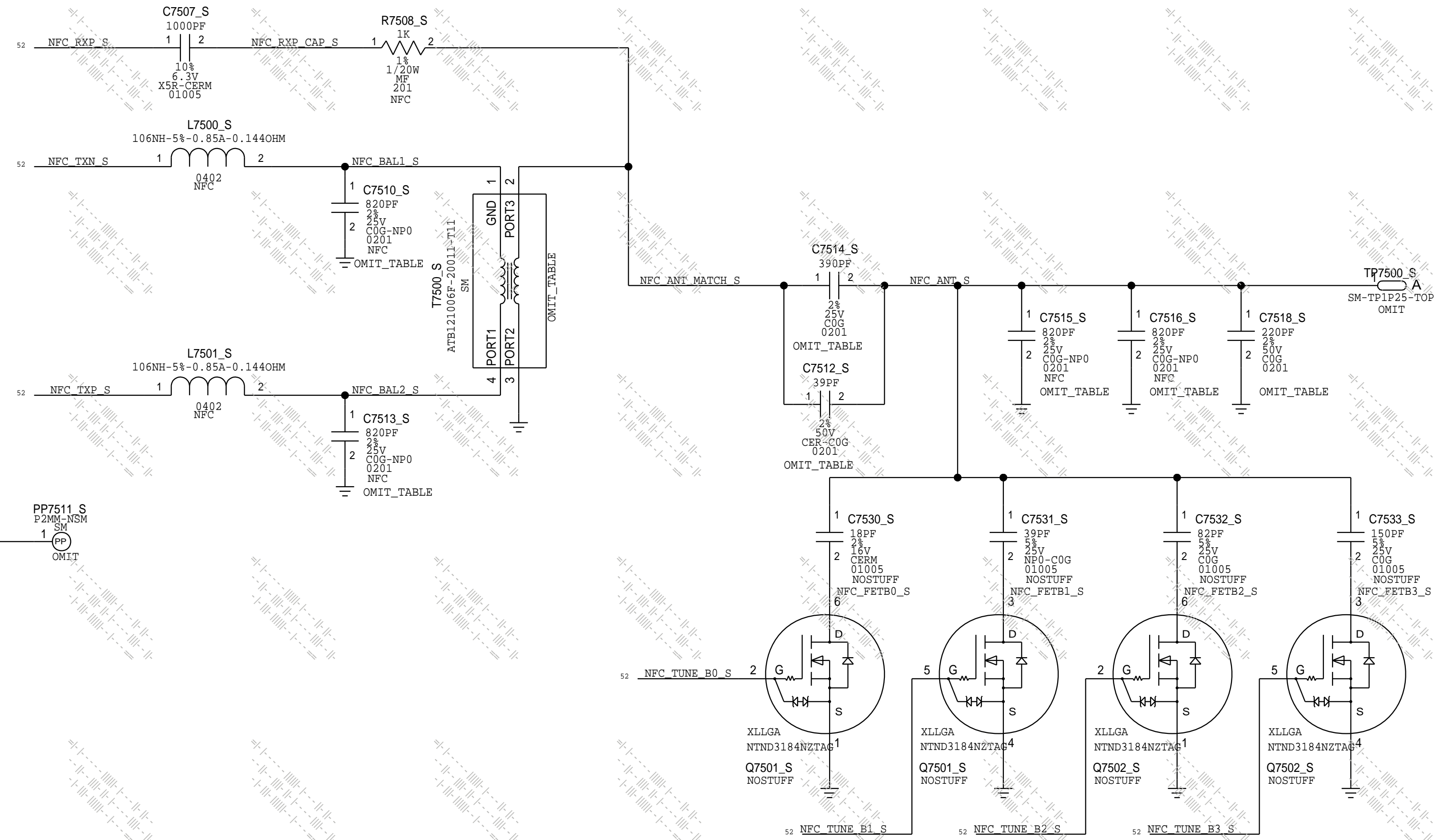
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131S00025	1	1000PF, 0201, 2%, 25V	C7515_S	D211
131S00033	1	680PF, 0201, 2%, 25V	C7516_S	D211
131S00019	1	150PF, 0201, 2%, 50V	C7518_S	D211
131S00033	1	680PF, 0201, 2%, 25V	C7510_S	D211
131S00033	1	680PF, 0201, 2%, 25V	C7513_S	D211
157S00023	1	MURATA, BALUN, 11T	T7500_S	D211

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## NFC CONTROLLER



## NFC FRONT END



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1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.  
 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.  
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REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
10	0008927012	ENGINEERING RELEASED		2017-06-06

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(MAV17.2/3)

# D21 RADIO\_MLB

06/06/2017

0.122.0

LAST\_MODIFICATION= Tue Jun 6 18:57:01 2017


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58	6	BB: CONTROL & HS PERIPHERALS [6]		
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72	20	GNSS		
73	21	SIM, DEBUG CONN		
74	22	TEST POINTS	PROBE POINTS	07/18/2016

## ALTERNATES

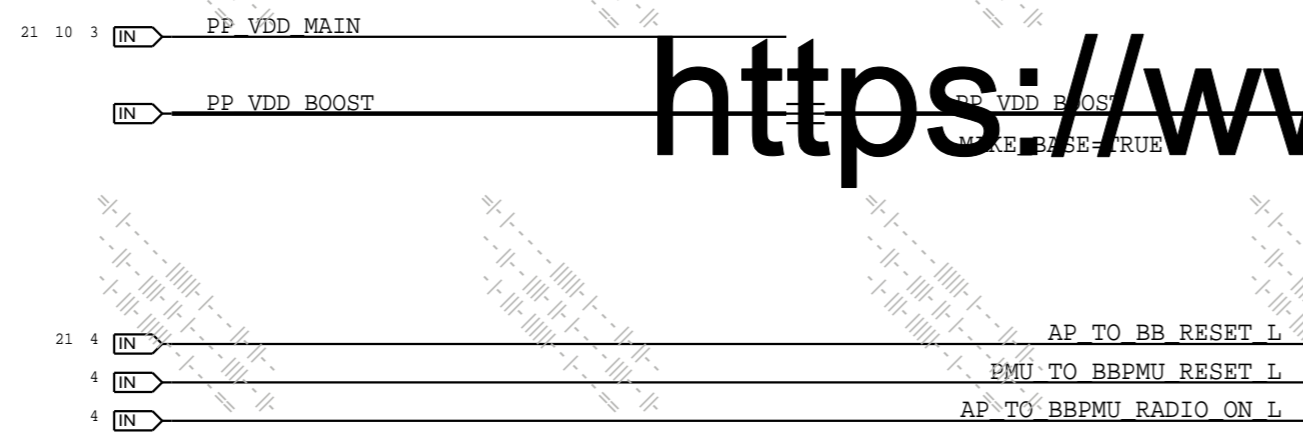
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335S00013	335S0894	U_EEPROM_E	IC, EEPROM	BOM_TABLE_ALTS
197S00093	197S00065	Y401_E	XTAL, 38P4MHZ	BOM_TABLE_ALTS
197S00067	197S00065	Y401_E	XTAL, 38P4MHZ	BOM_TABLE_ALTS
353S01287	353S01109	U_QET_E	ET MODULE, QPOET	BOM_TABLE_ALTS

SCH # : 951-03059  
 PCB # : 920-02293  
 BOM # : 939-02493

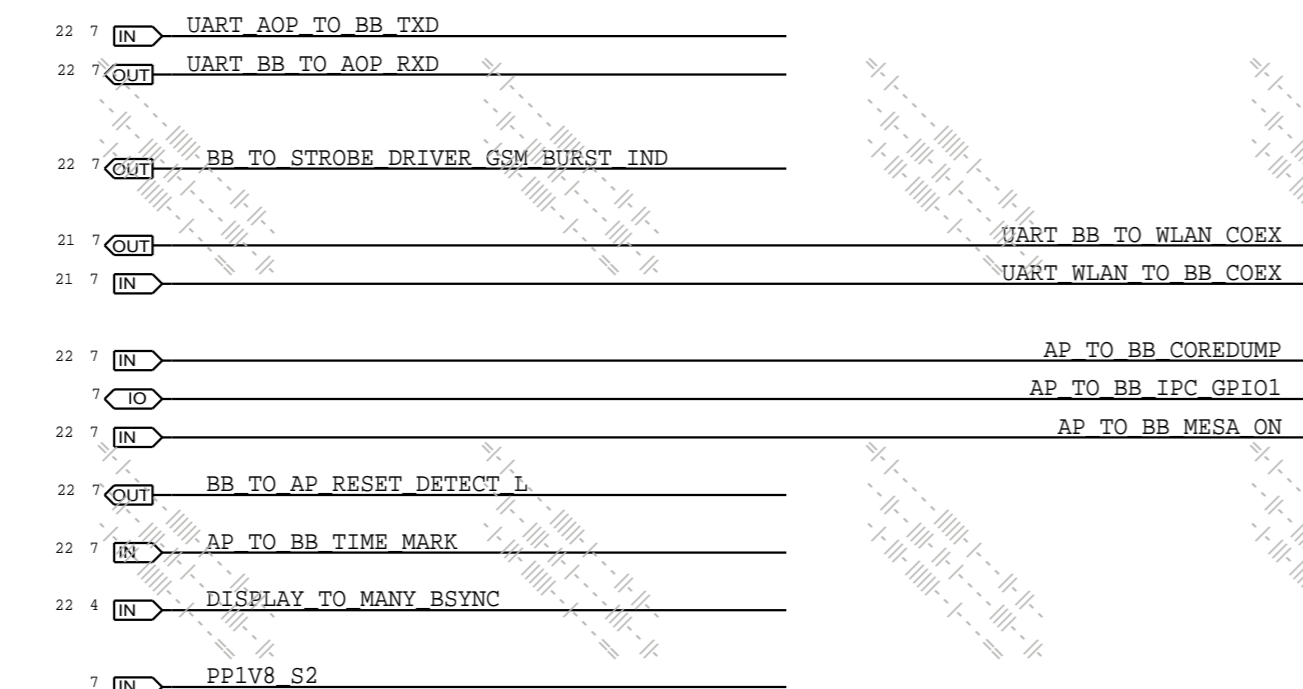
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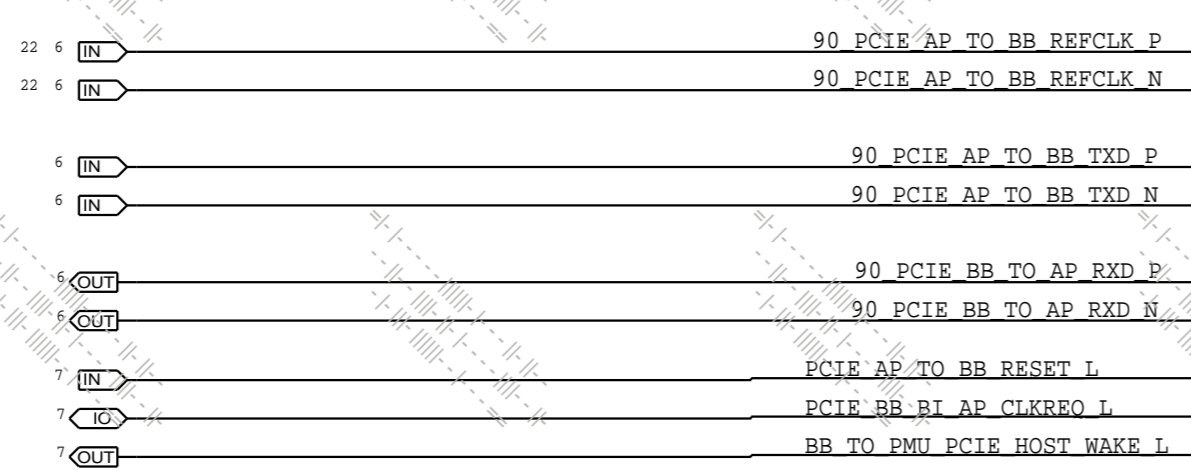
### POWER



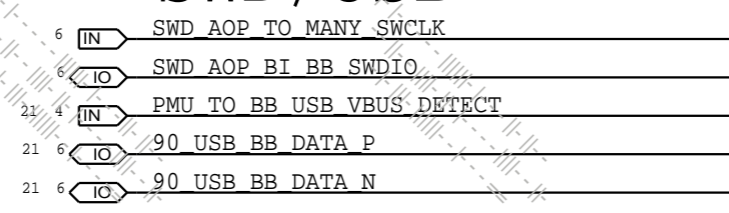
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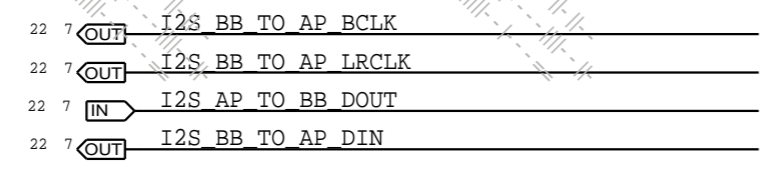
### PCIe



### SWD/USB

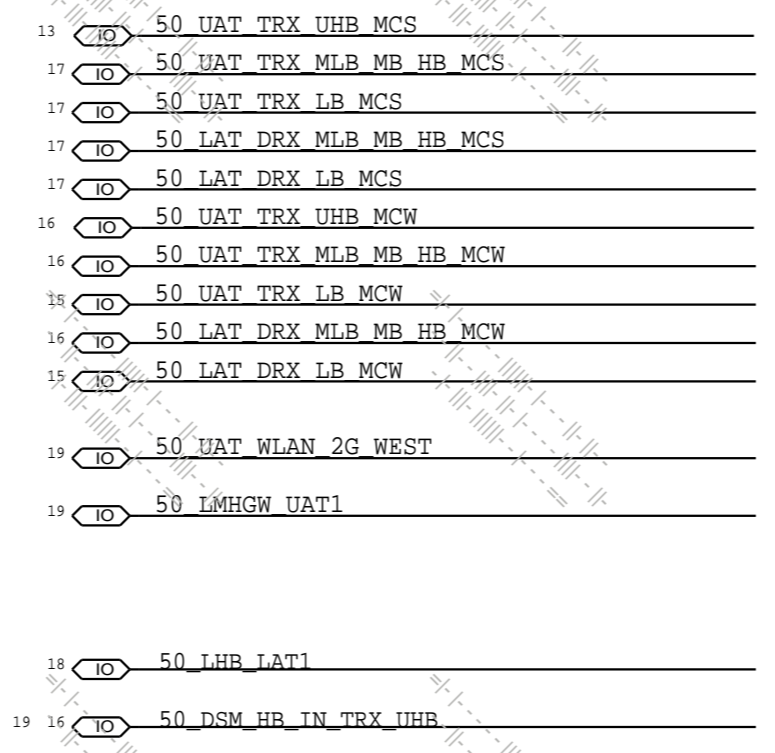


### AUDIO

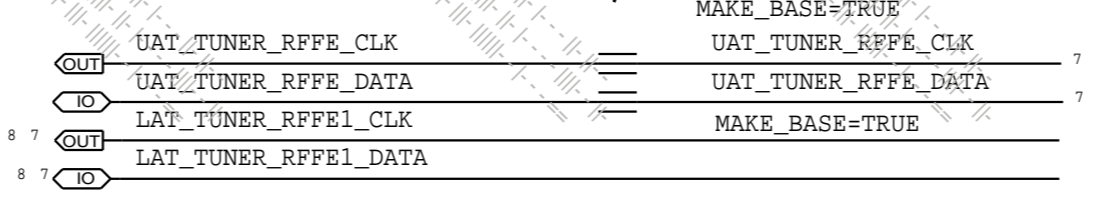


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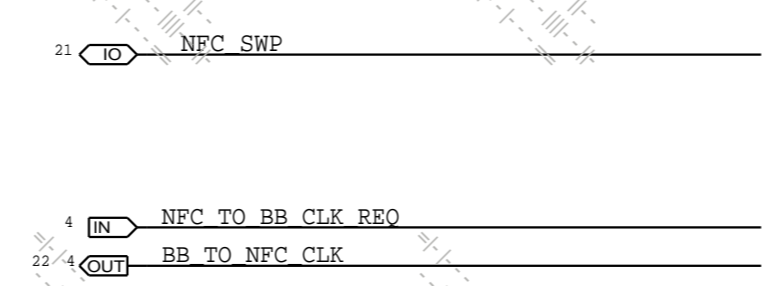
### RF SIGNALS



### TUNER/DOCK



### STOCKHOLM

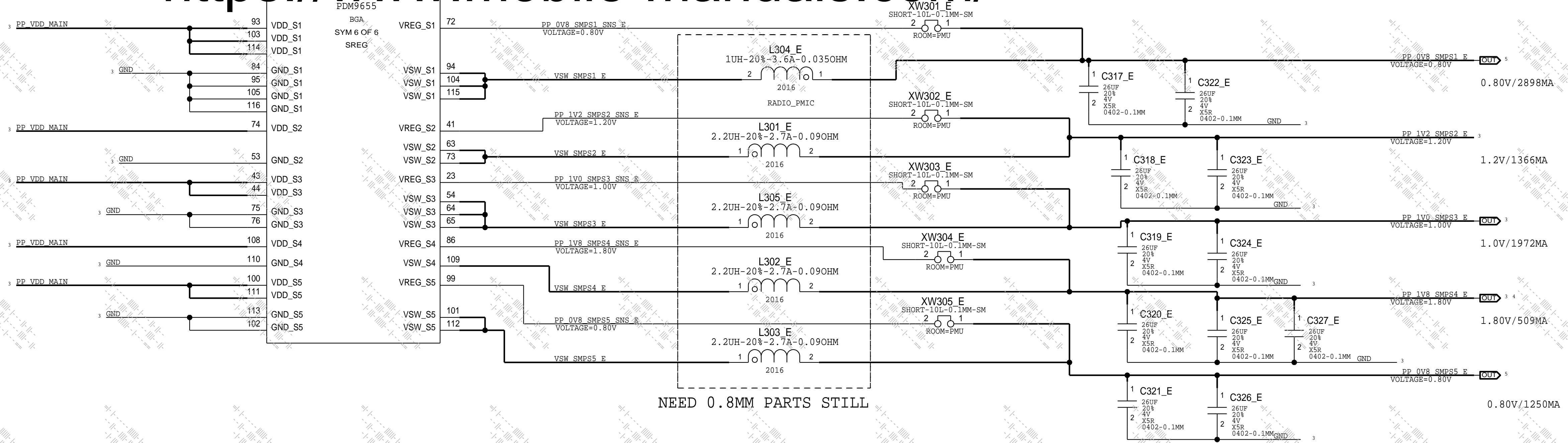
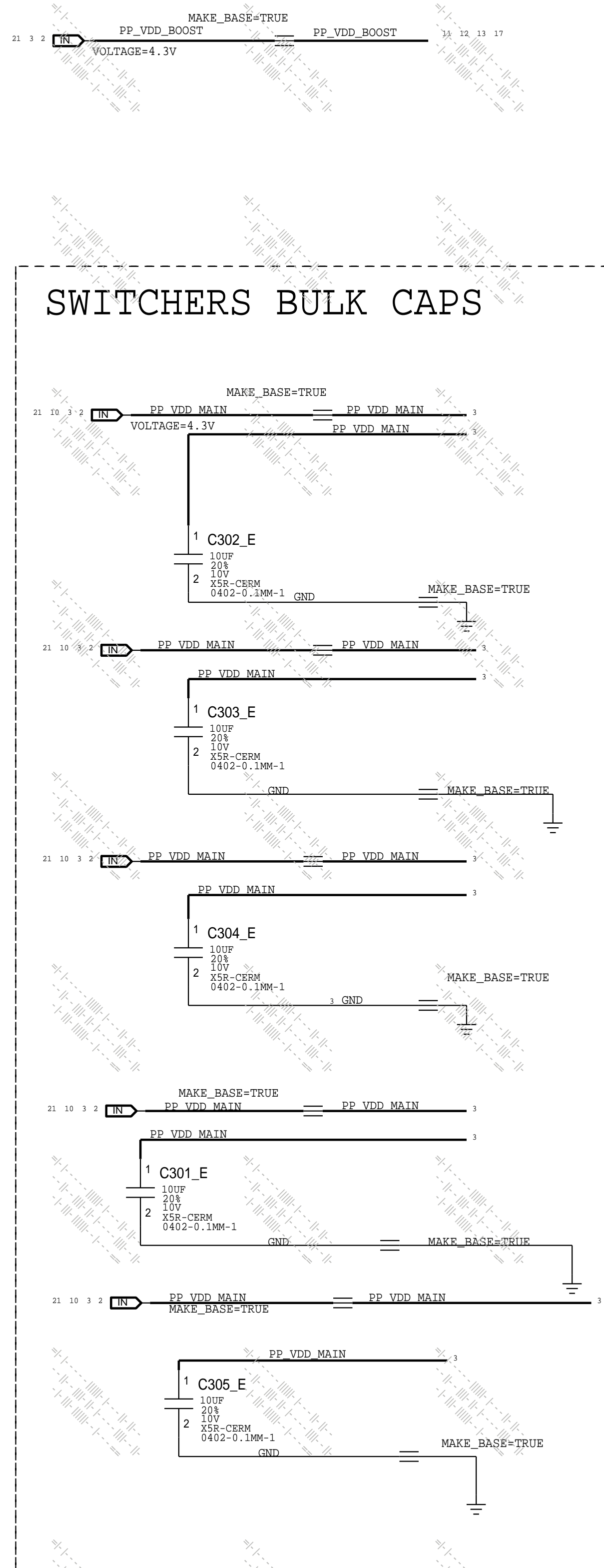




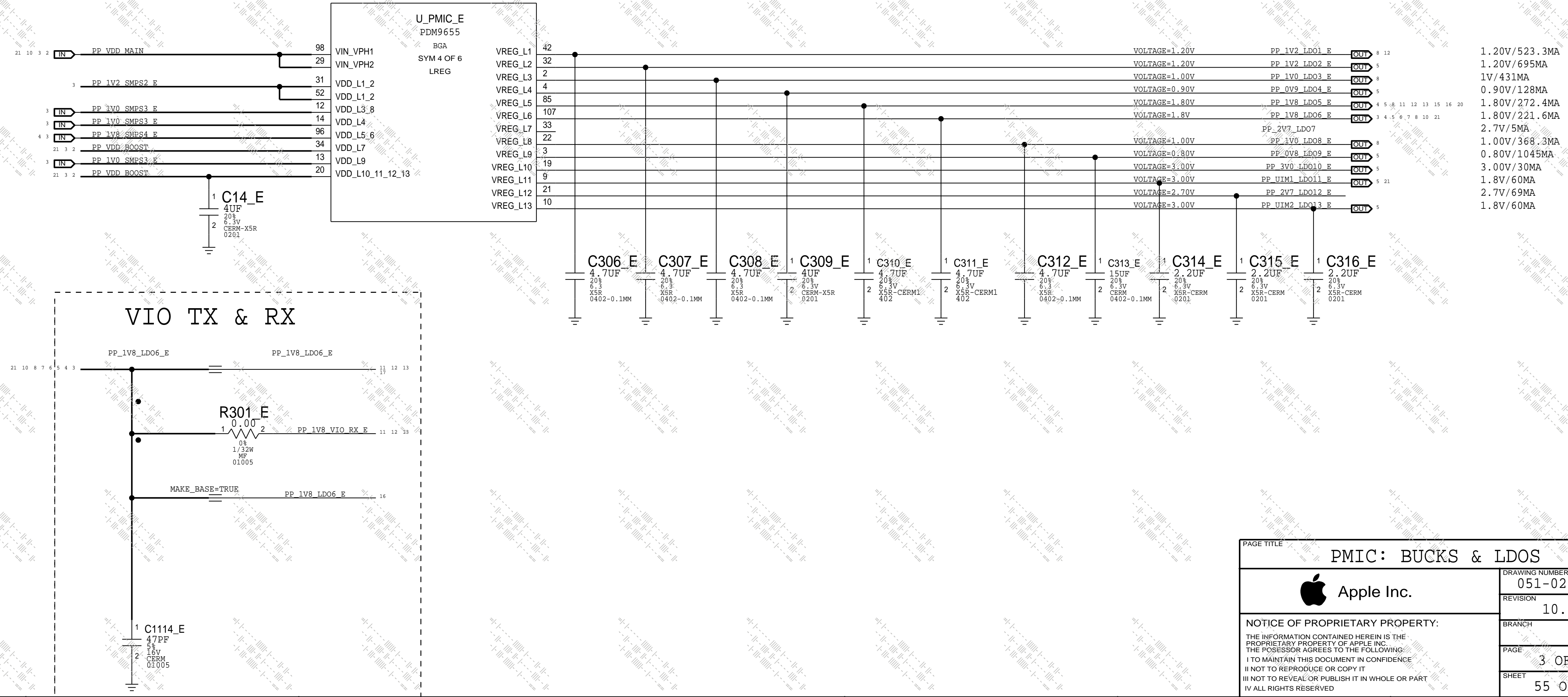
# RF PMIC: SWITCHERS & LDOS

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NEED 0.8MM PARTS STILL



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# RF PMIC: XTAL, CLOCKS AND MISCELLANEOUS

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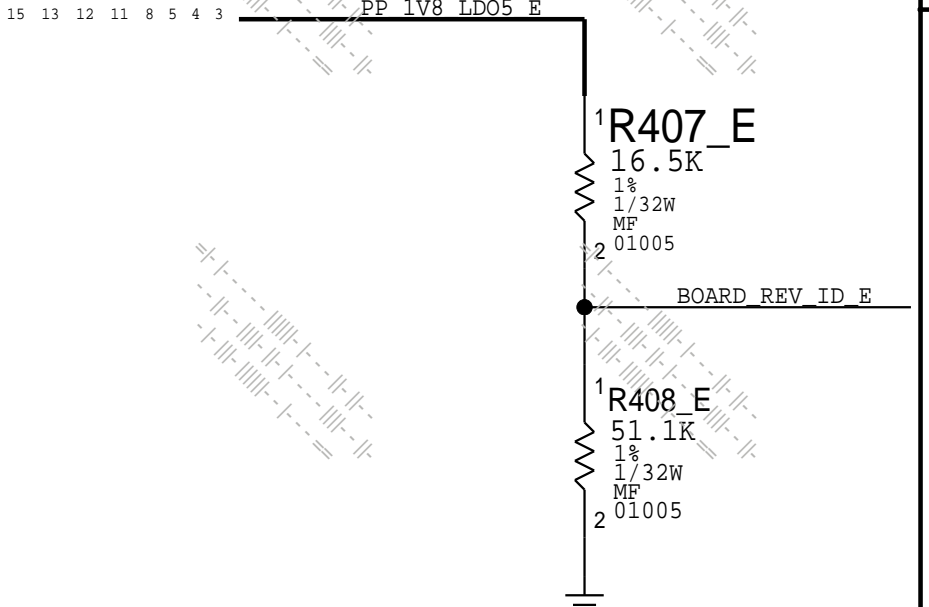
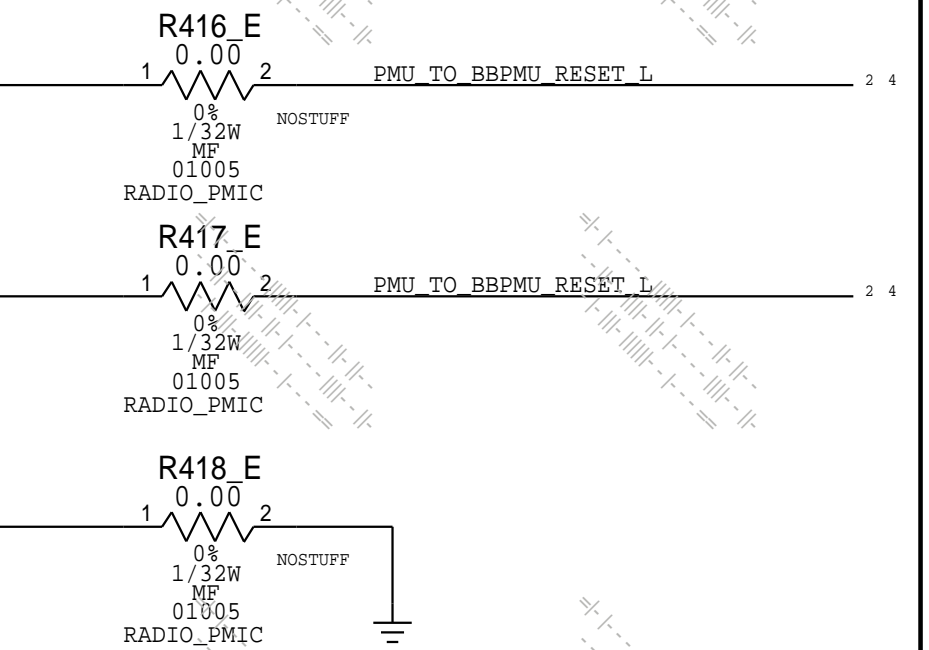
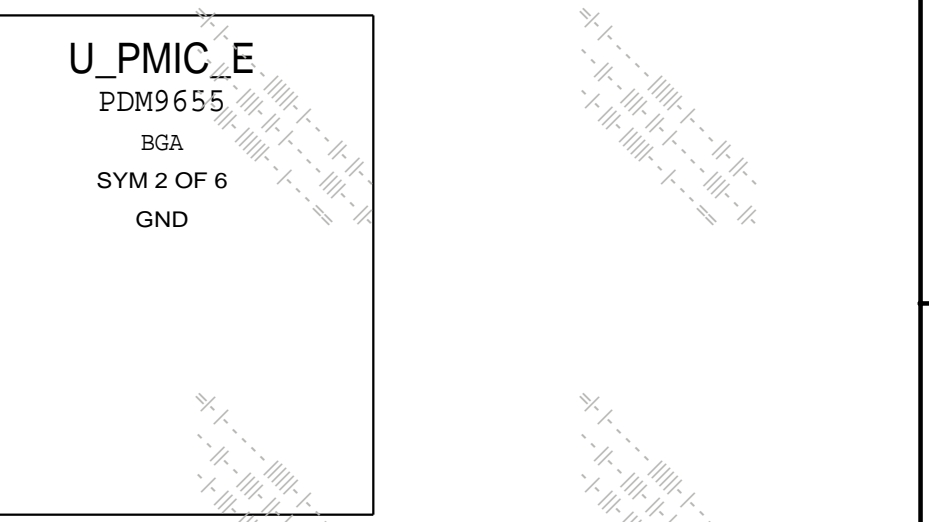
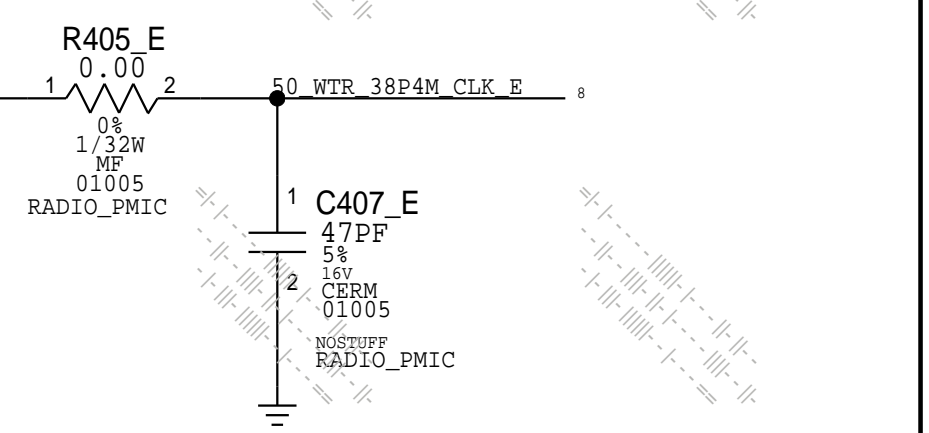
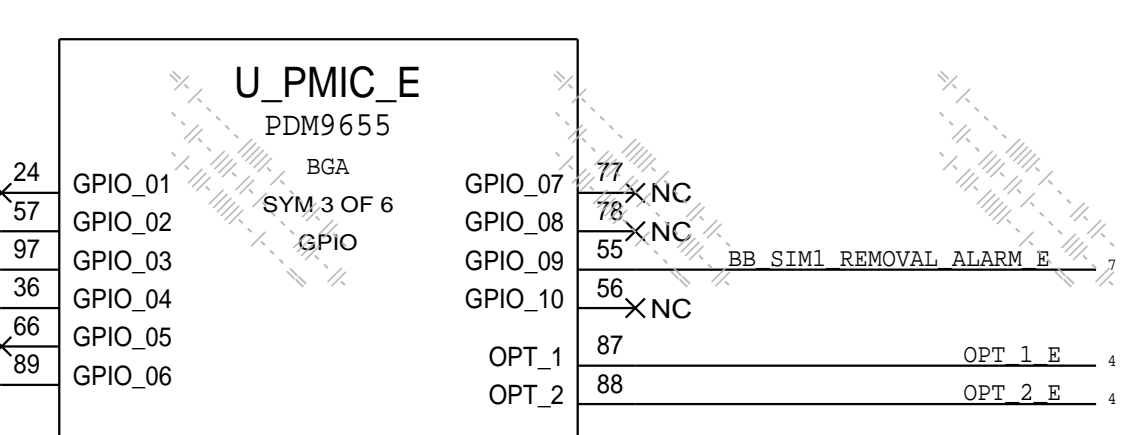
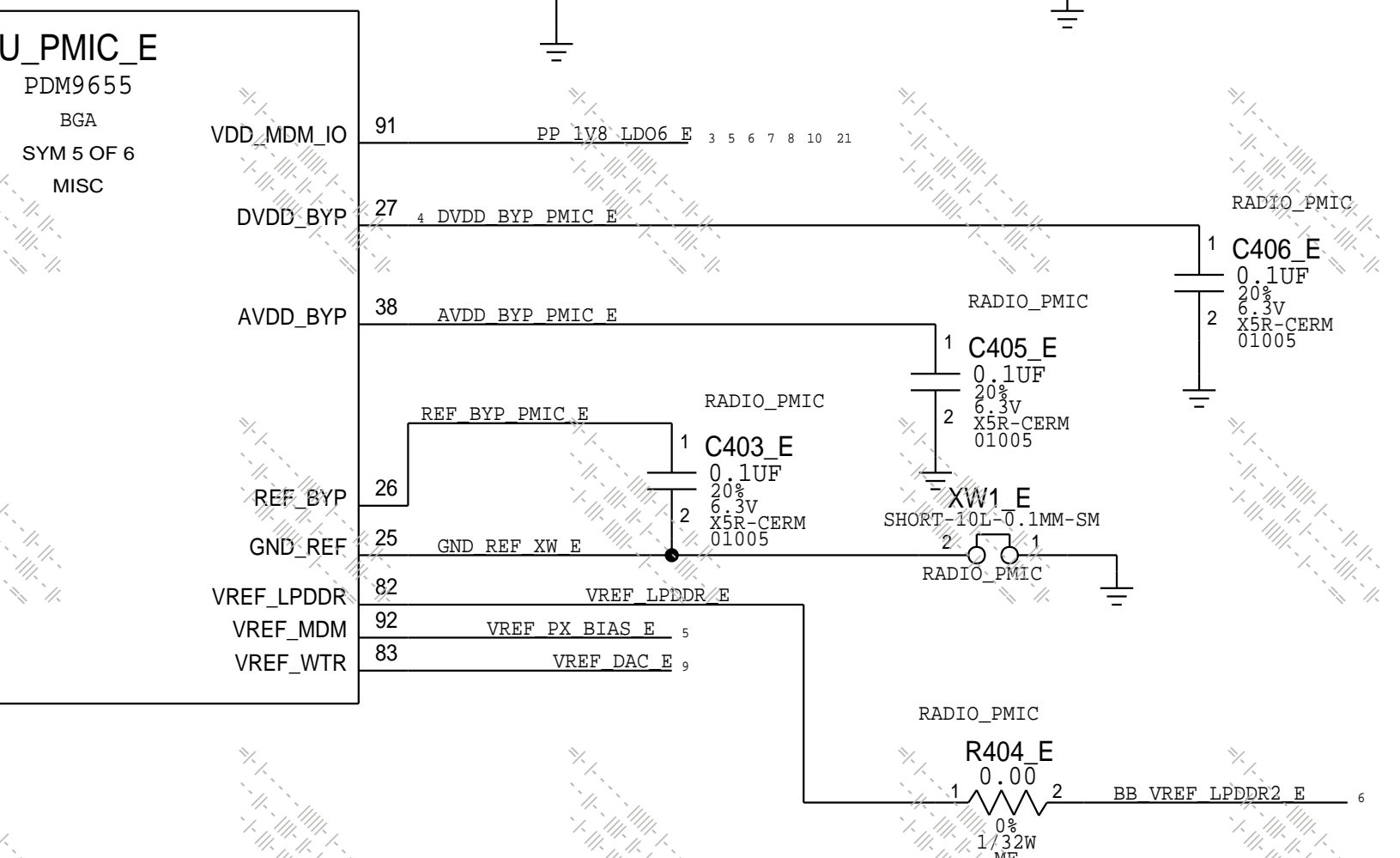
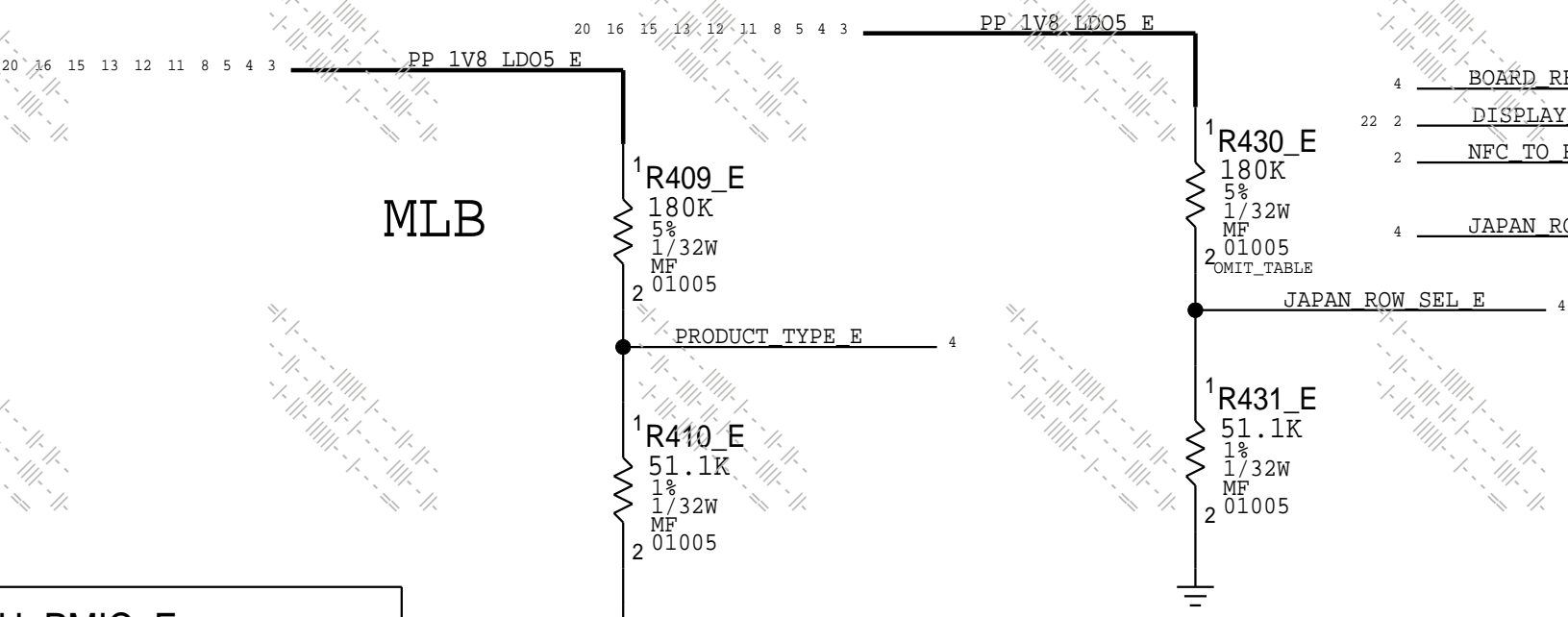
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<0.10V	NOSTUFF	51.1K	T500/DEV1
0.15V-0.25V	422K	51.1K	PROTO1.5
0.35V-0.45V	180K	51.1K	PROTO2.5/DEV2
0.55V-0.65V	105K	51.1K	PROTO1/DEV3
0.75V-0.85V	66.5K	51.1K	PROTO2/DEV4
0.95V-1.05V	44.2K	51.1K	EVT
1.15V-1.25V	28K	51.1K	CARRIER/DEV5
1.35V-1.45V	16.5K	51.1K	DVT/DEV6
1.55V-1.65V	7.87K	51.1K	PVT/DEV7
1.75V-1.85V	10K	NOSTUFF	SPARE

NOTE XTAL SYMBOL MIRRORED COMPARED TO PREVIOUS SCH

PA_THERM2	R409	R410	PRODUCT TYPE	Y
0.00V-0.10V	NOSTUFF	51.1K	RADIO DEV	1
0.15V-0.25V	422K	51.1K	3RD TYPE	2
0.35V-0.45V	180K	51.1K	POR MLB (FF)	3
0.55V-0.65V	105K	51.1K	SPARE	4
0.75V-0.85V	66.5K	51.1K	SPARE	5
0.95V-1.05V	44.2K	51.1K	SPARE	6
1.15V-1.25V	28K	51.1K	SPARE	7
1.35V-1.45V	16.5K	51.1K	SPARE	8
1.55V-1.65V	7.87K	51.1K	SPARE	9
1.75V-1.85V	10K	NOSTUFF	SPARE	A

JPN_ROW_SEL	R430	R431	MAV PLATFORM	Y	SKU
<0.10V	NOSTUFF	51.1K	MAV17.0	0	ROW
0.15V-0.25V	422K	51.1K	MAV17.1	1	JPN
0.35V-0.45V	180K	51.1K	MAV17.2	2	ROW
0.55V-0.65V	105K	51.1K	MAV17.3	3	JPN
0.75V-0.85V	66.5K	51.1K	MAV17.4	4	ROW
0.95V-1.05V	44.2K	51.1K	MAV17.5	5	JPN
1.15V-1.25V	28K	51.1K	MAV17.6	6	ROW
1.35V-1.45V	16.5K	51.1K	MAV17.7	7	JPN
1.55V-1.65V	7.87K	51.1K	MAV17.8	8	ROW
1.75V-1.85V	10K	NOSTUFF	MAV17.9	9	JPN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0686	1	RESISTOR, 01005, 105K OHMS	R430_E	CRITICAL	JPN
117S0197	1	RESISTOR, 01005, 180K OHMS	R430_E	CRITICAL	ROW



PAGE TITLE: **PMIC: CLOCKS & CONTROL**

Apple Inc.

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REVISION: 10.0.0

BRANCH:

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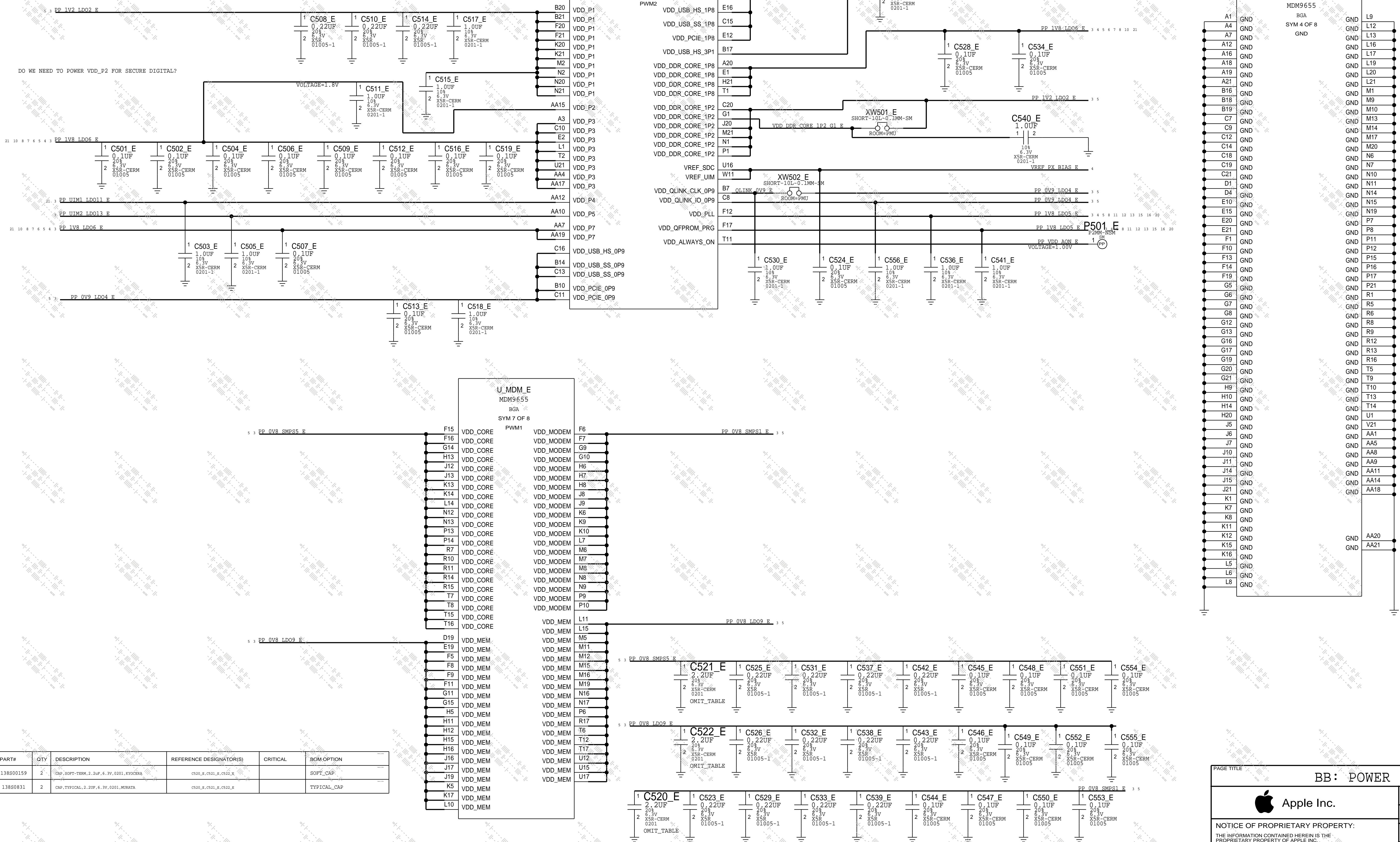
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# BB: POWER

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138800159	2	CAP, SOFT-TERM, 2.2UF, 6.3V, 0201, KYOCERA	C520_E, C521_E, C522_E		SOFT_CAP
13880831	2	CAP, TYPICAL, 2.2UF, 6.3V, 0201, MURATA	C520_E, C521_E, C522_E		TYPICAL_CAP

PAGE TITLE: **BB: POWER**

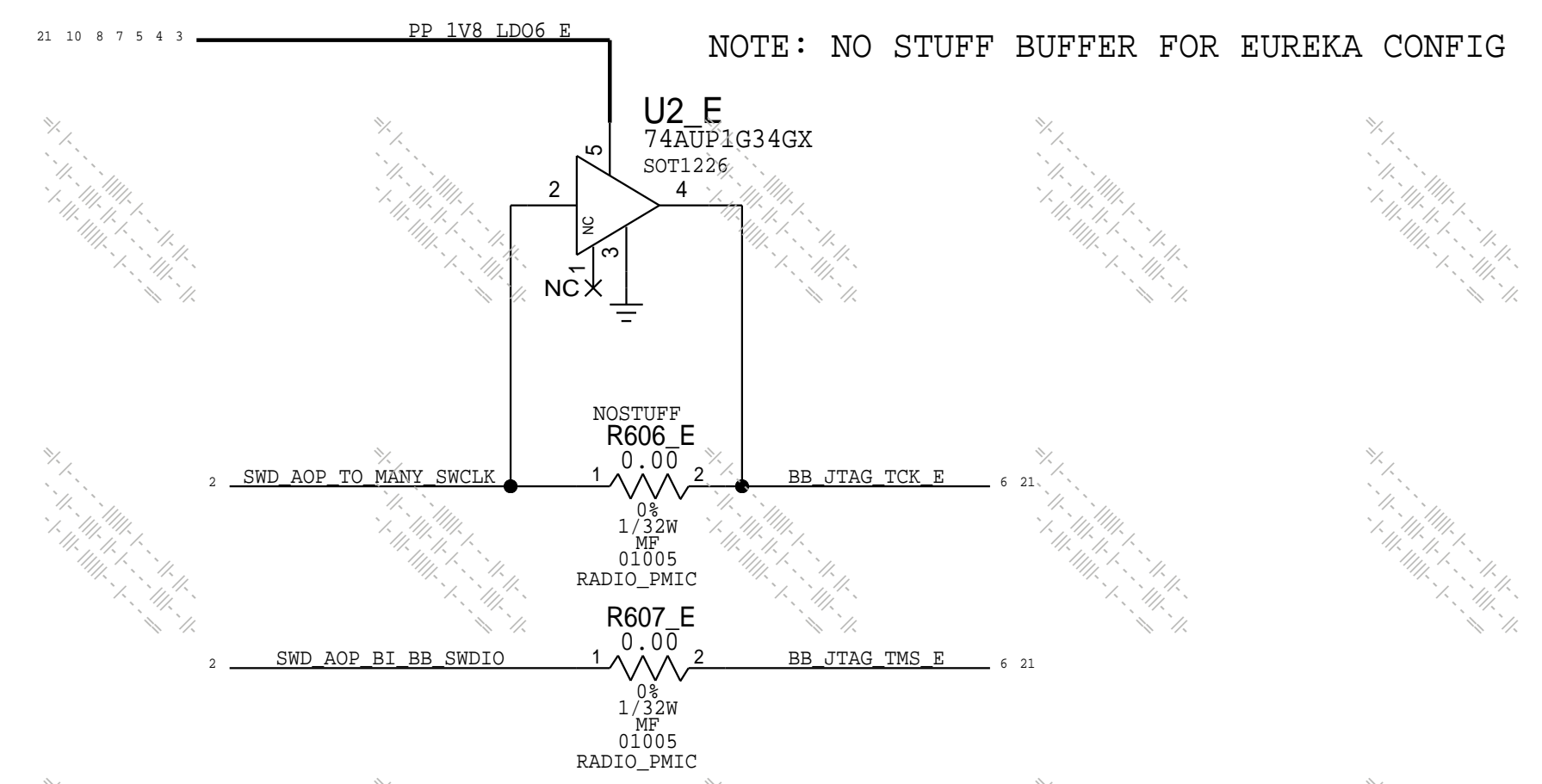
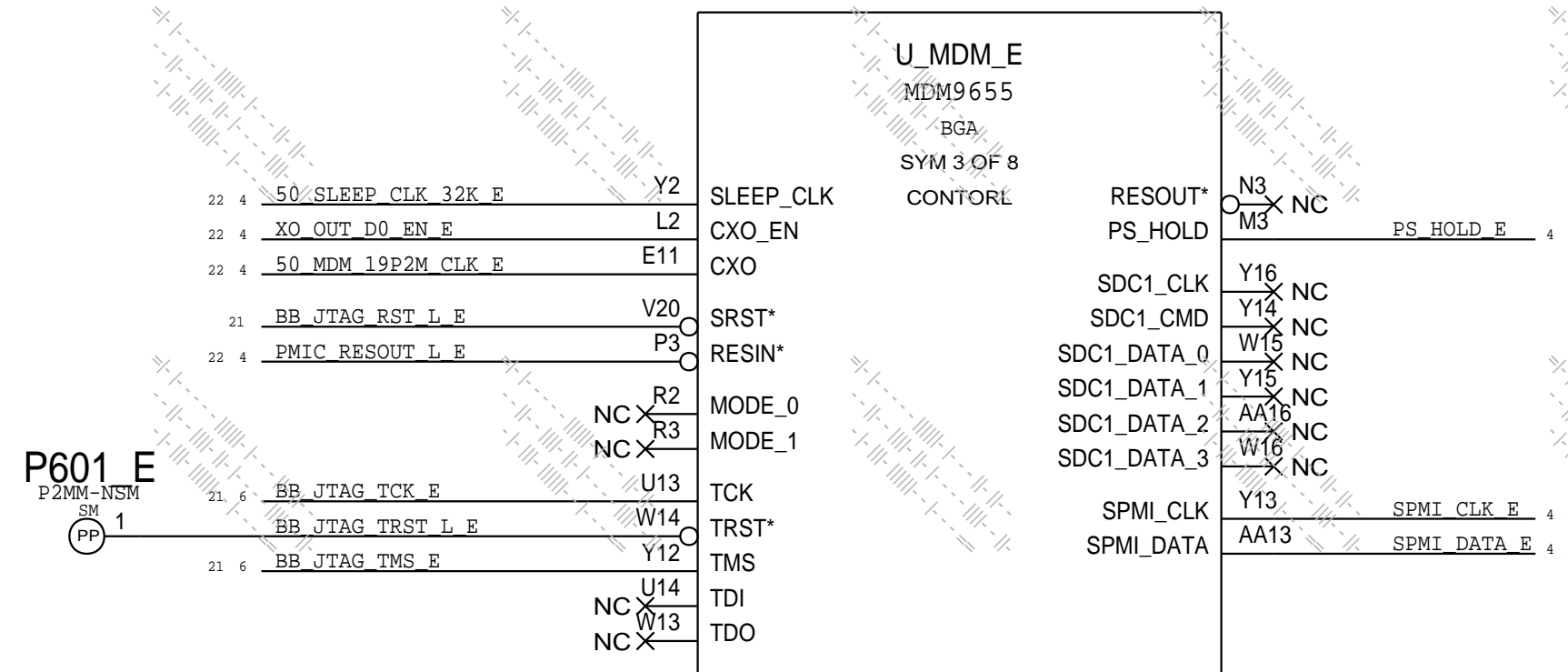
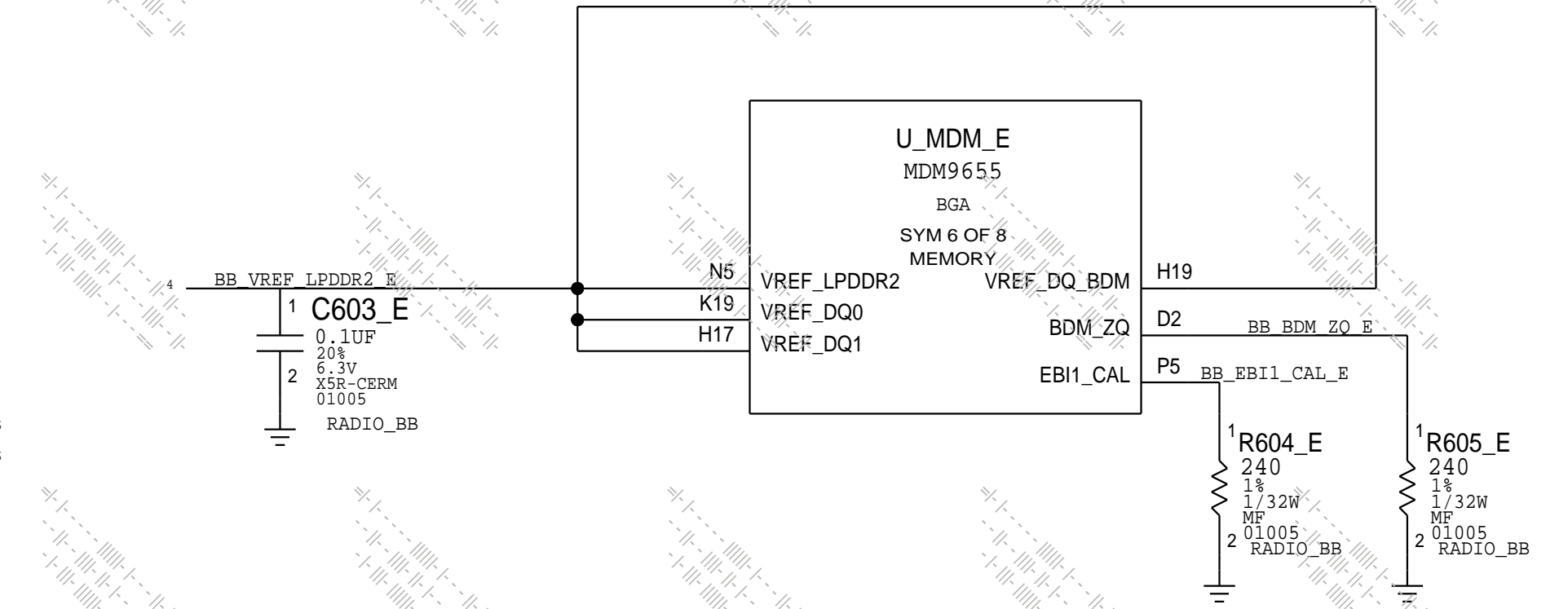
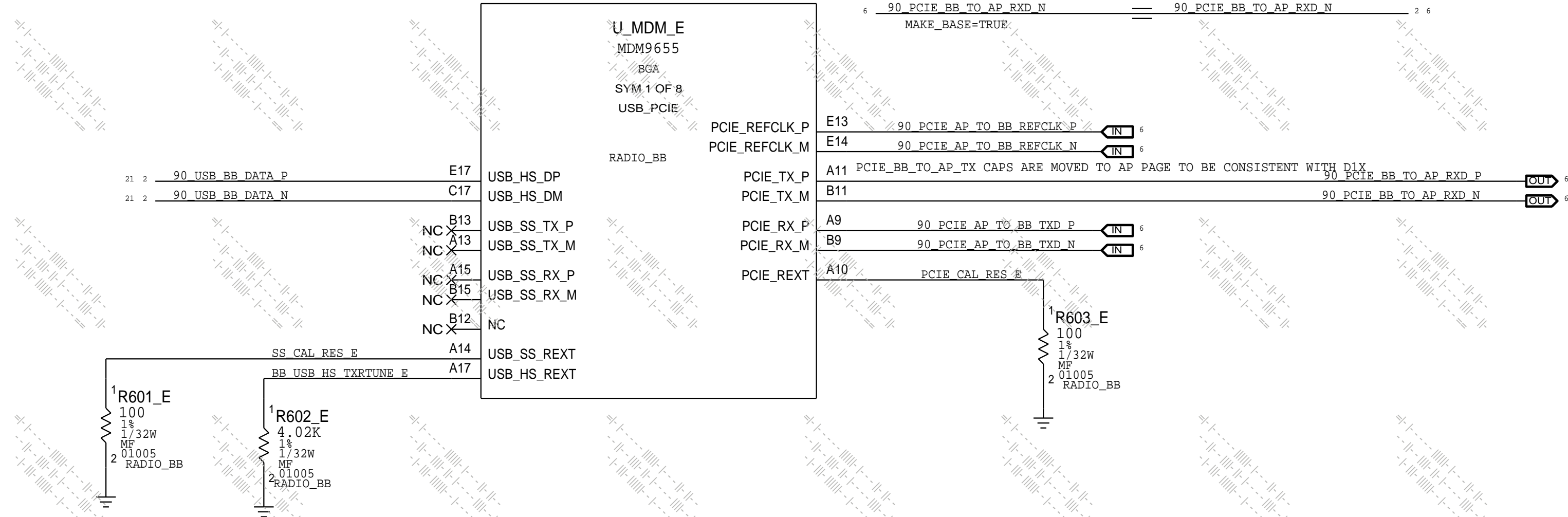
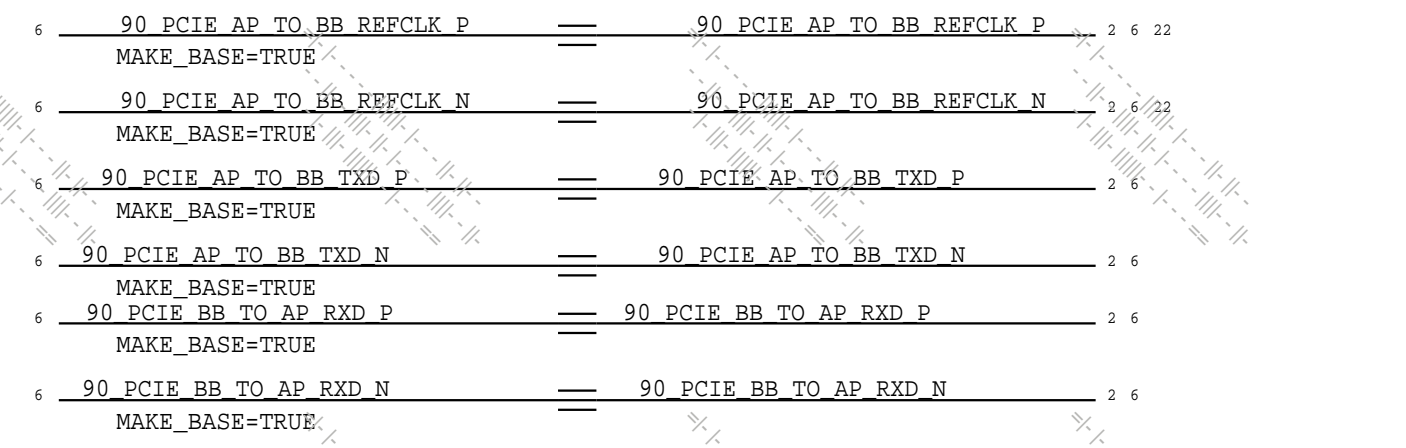
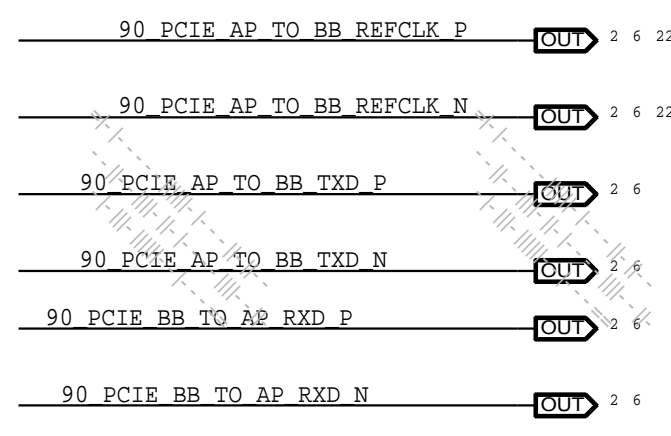
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# BB: CONTROL & HS PERIPHERALS

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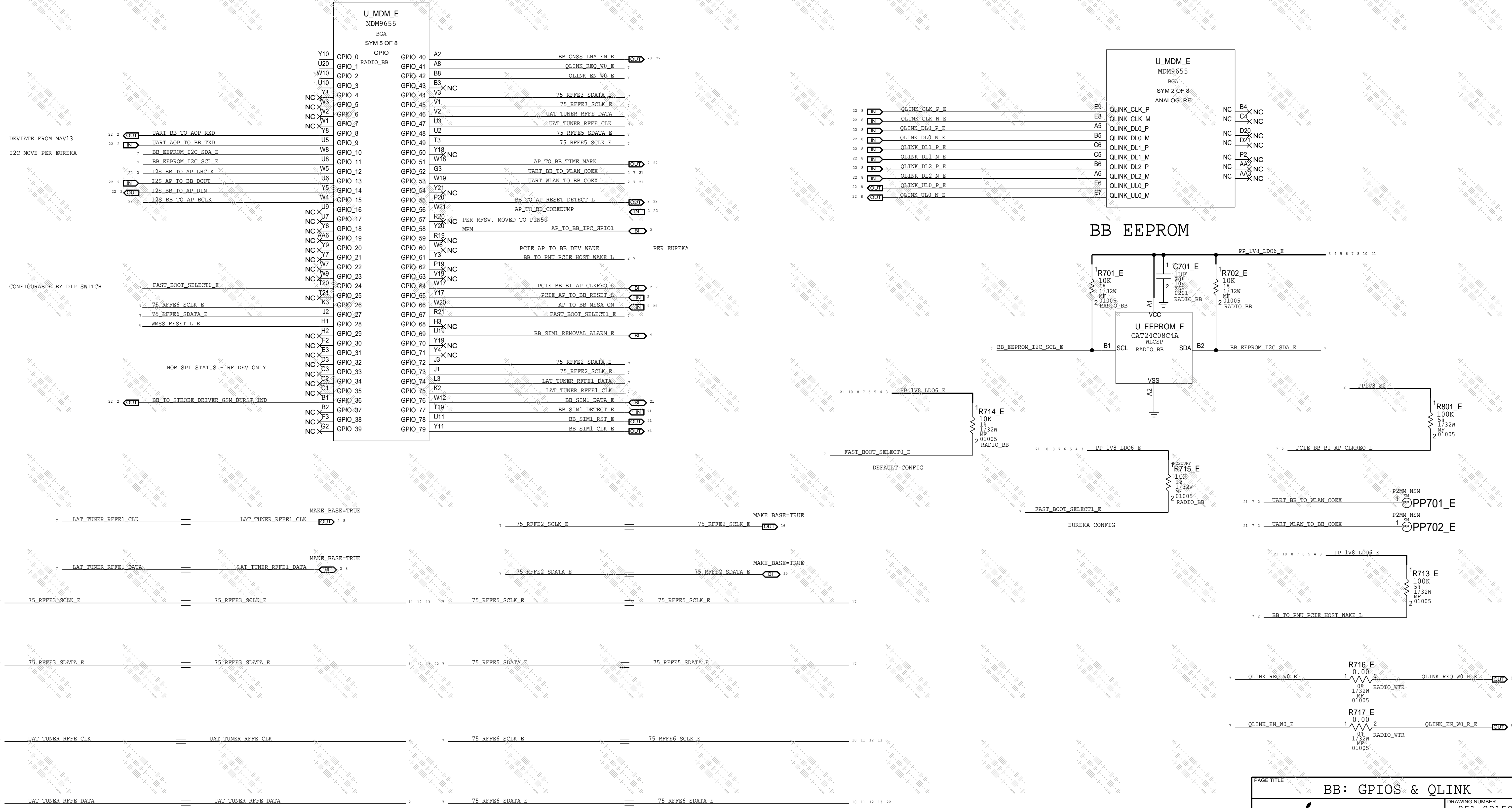
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# BB: GPIOs & QLINK

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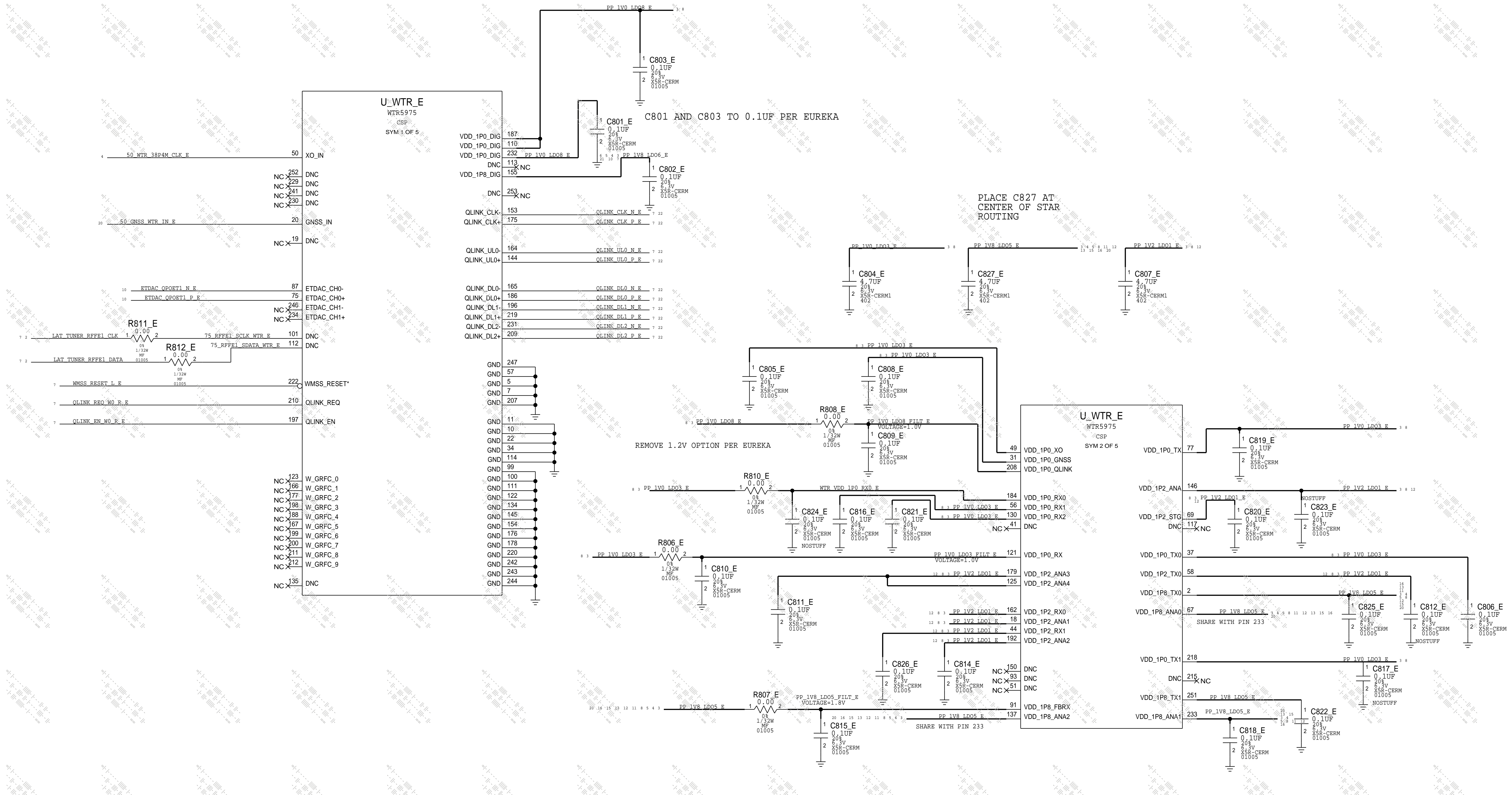


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# TRANSCEIVER: QLINK & POWER

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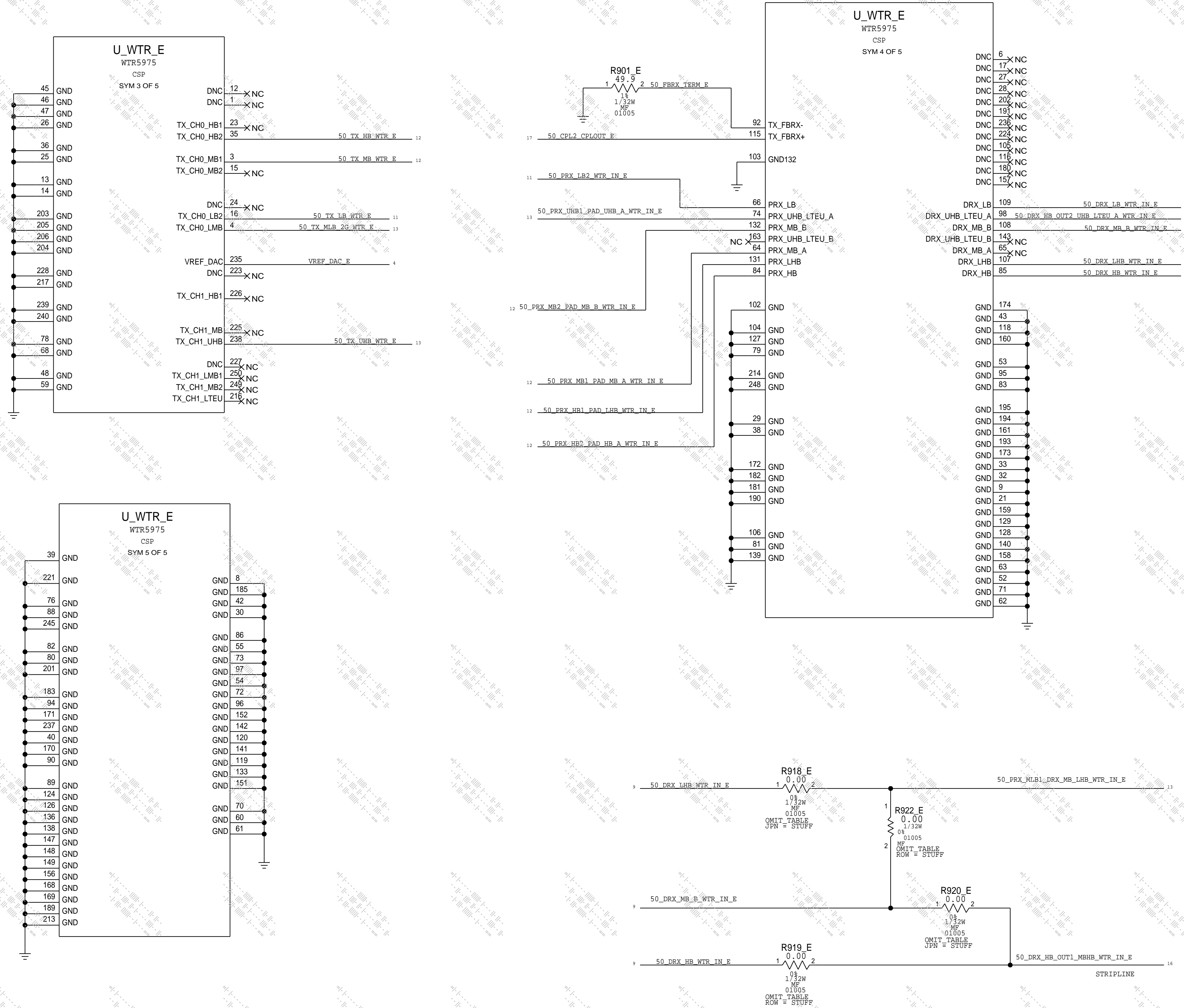
# TRANSCIVER: TX & RX

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
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11780161	1	01005 OR	R922_E	CRITICAL	ROW

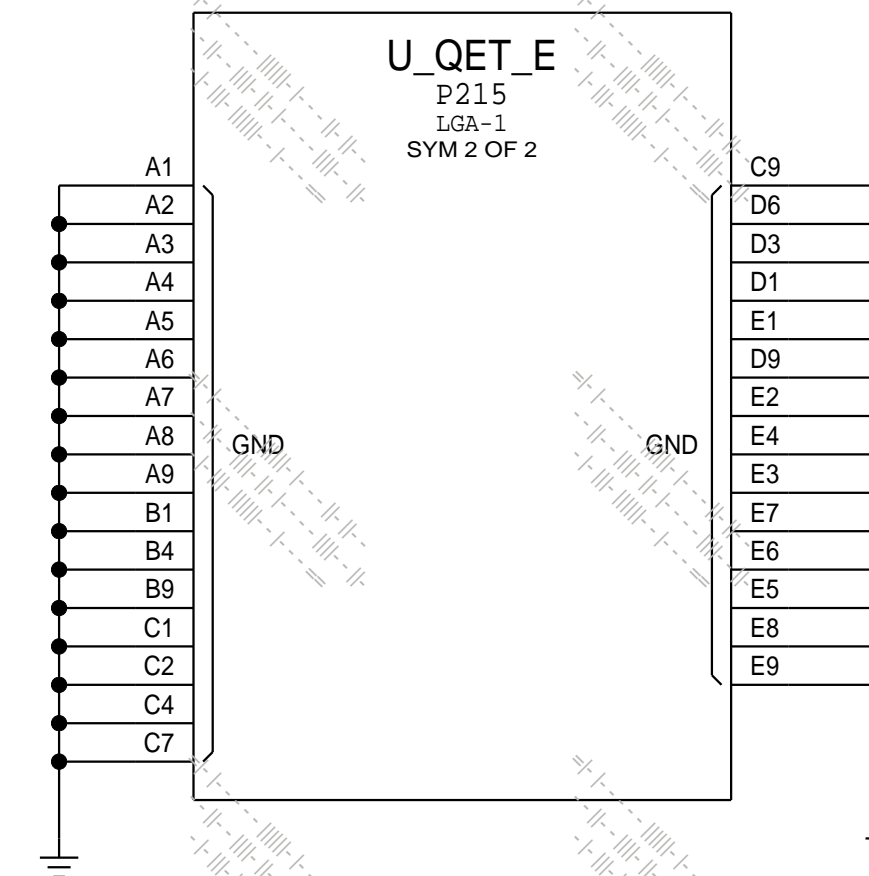
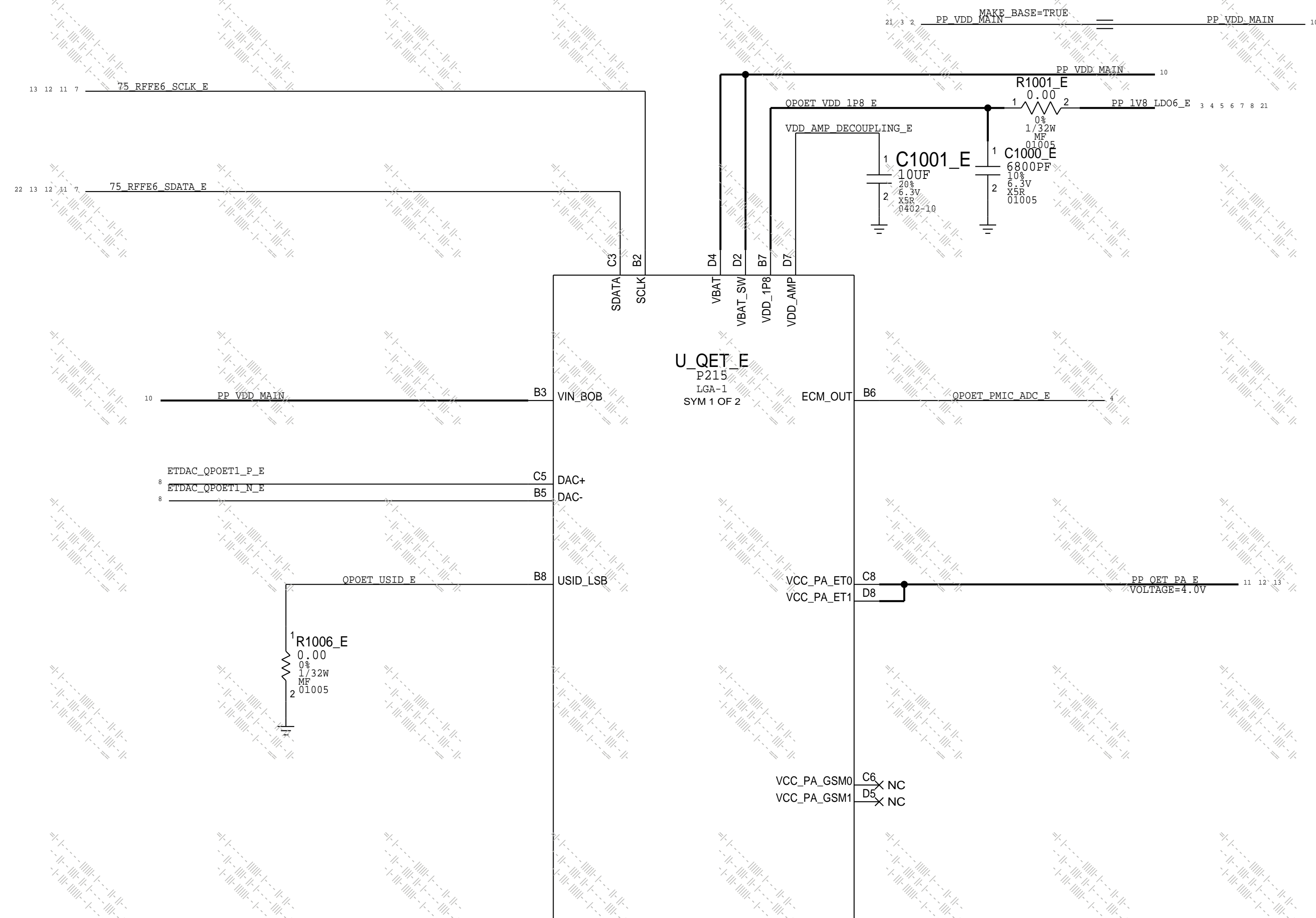
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
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11780161	1	01005 OR	R920_E	CRITICAL	JFN



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# QET:MODULE

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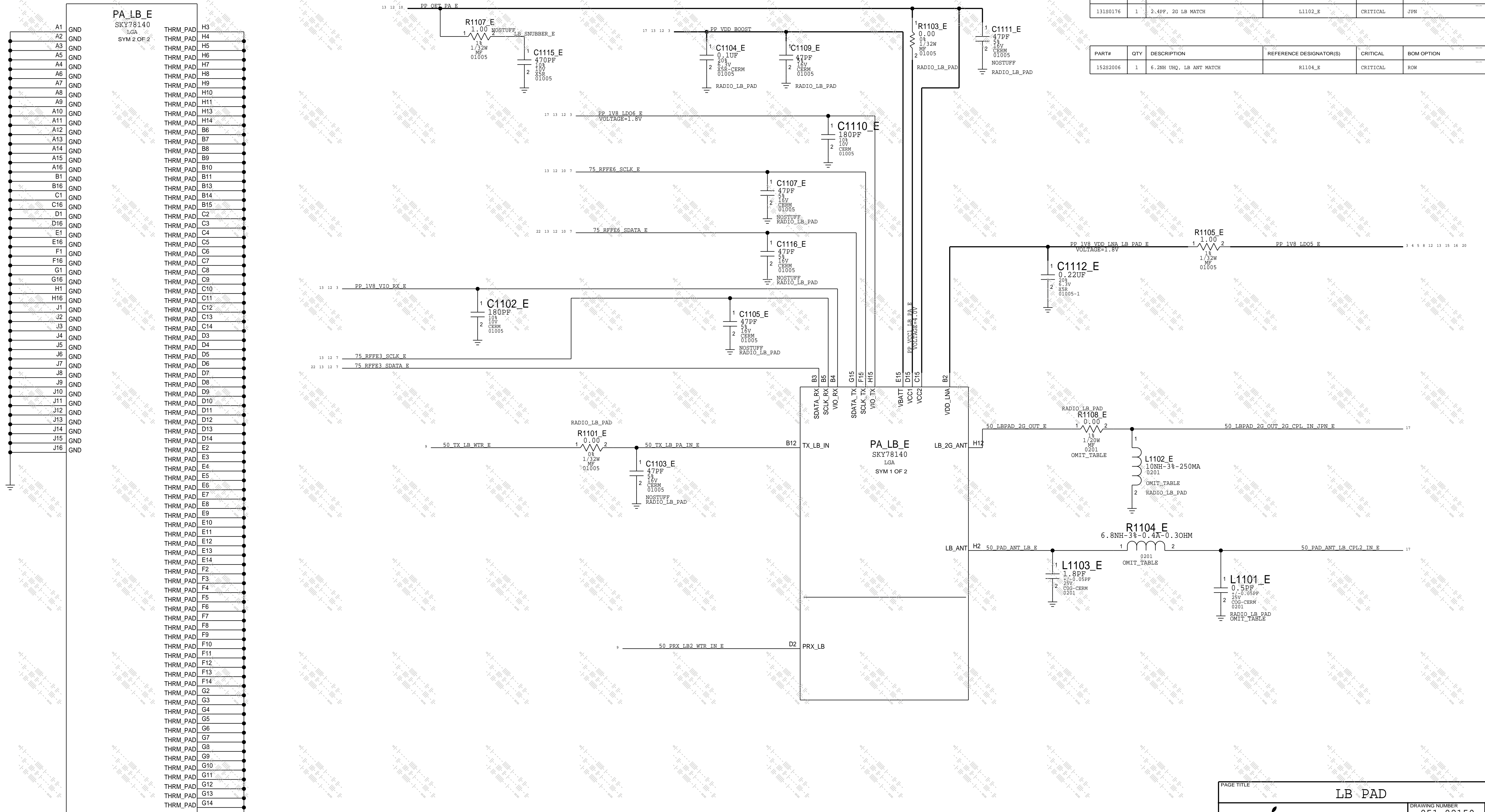
# LB PAD

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0724	1	2G LB MATCH, 0 OHMS	R1108_E	CRITICAL	JPN
152S00021	1	6.8NH UHQ, LB ANT MATCH	R1104_E	CRITICAL	JPN
131S0555	1	1PF, LB ANT MATCH	L1101_E	CRITICAL	JPN
131S0176	1	2.4PF, 2G LB MATCH	L1102_E	CRITICAL	JPN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
152S2006	1	6.2NH UHQ, LB ANT MATCH	R1104_E	CRITICAL	ROW

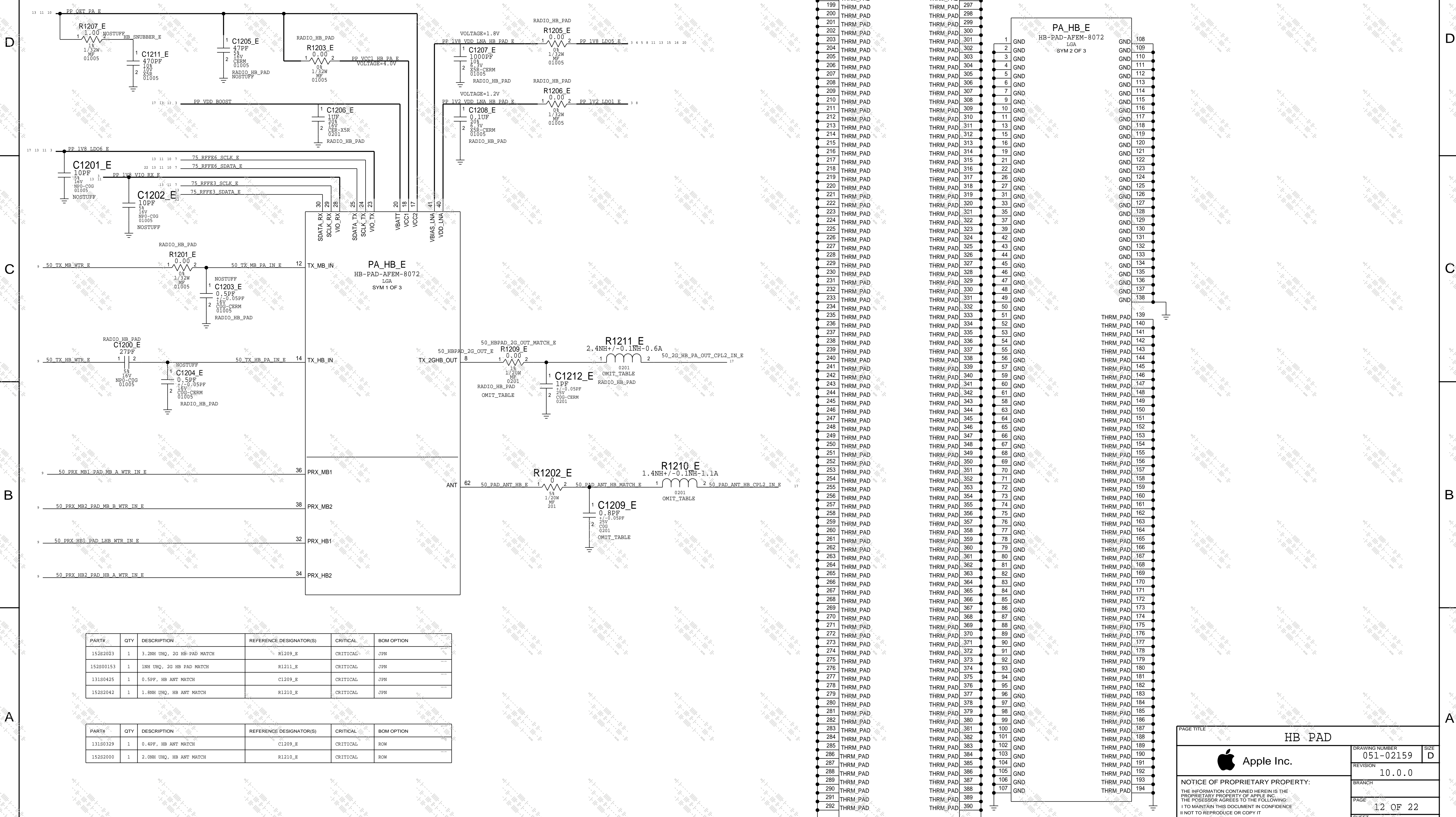


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# HB PAD

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
15282023	1	3.2NH UHQ, 2G HB-PAD MATCH	R1209_E	CRITICAL	JFN
152800153	1	1NH UHQ, 2G HB-PAD MATCH	R1211_E	CRITICAL	JFN
13180425	1	0.5PF, HB ANT MATCH	C1209_E	CRITICAL	JFN
15282042	1	1.8NH UHQ, HB ANT MATCH	R1210_E	CRITICAL	JFN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
13180329	1	0.4PF, HB ANT MATCH	C1209_E	CRITICAL	ROW
15282000	1	2.0NH UHQ, HB ANT MATCH	R1210_E	CRITICAL	ROW

PAGE TITLE: **HB PAD**

Apple Inc.

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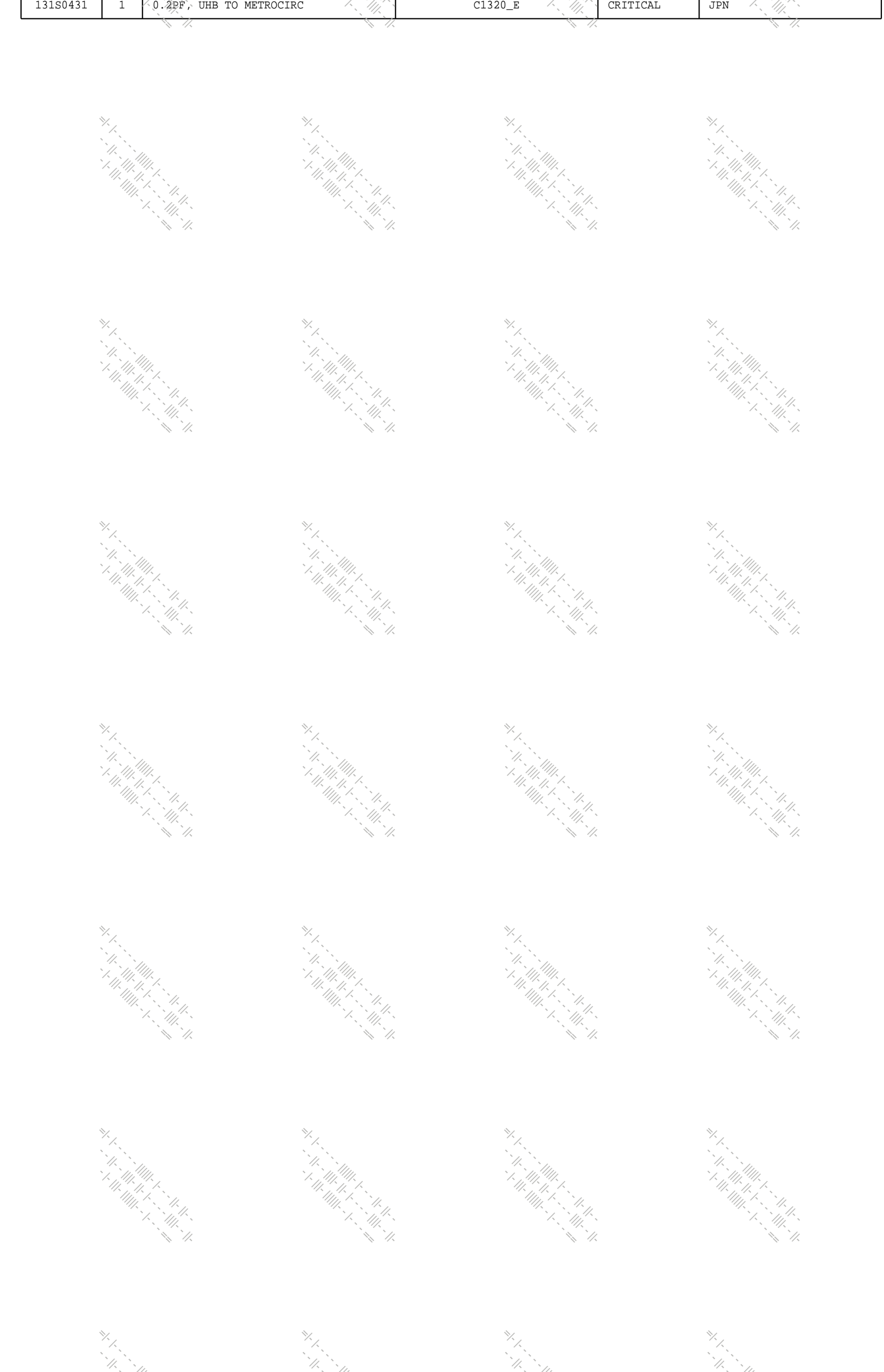
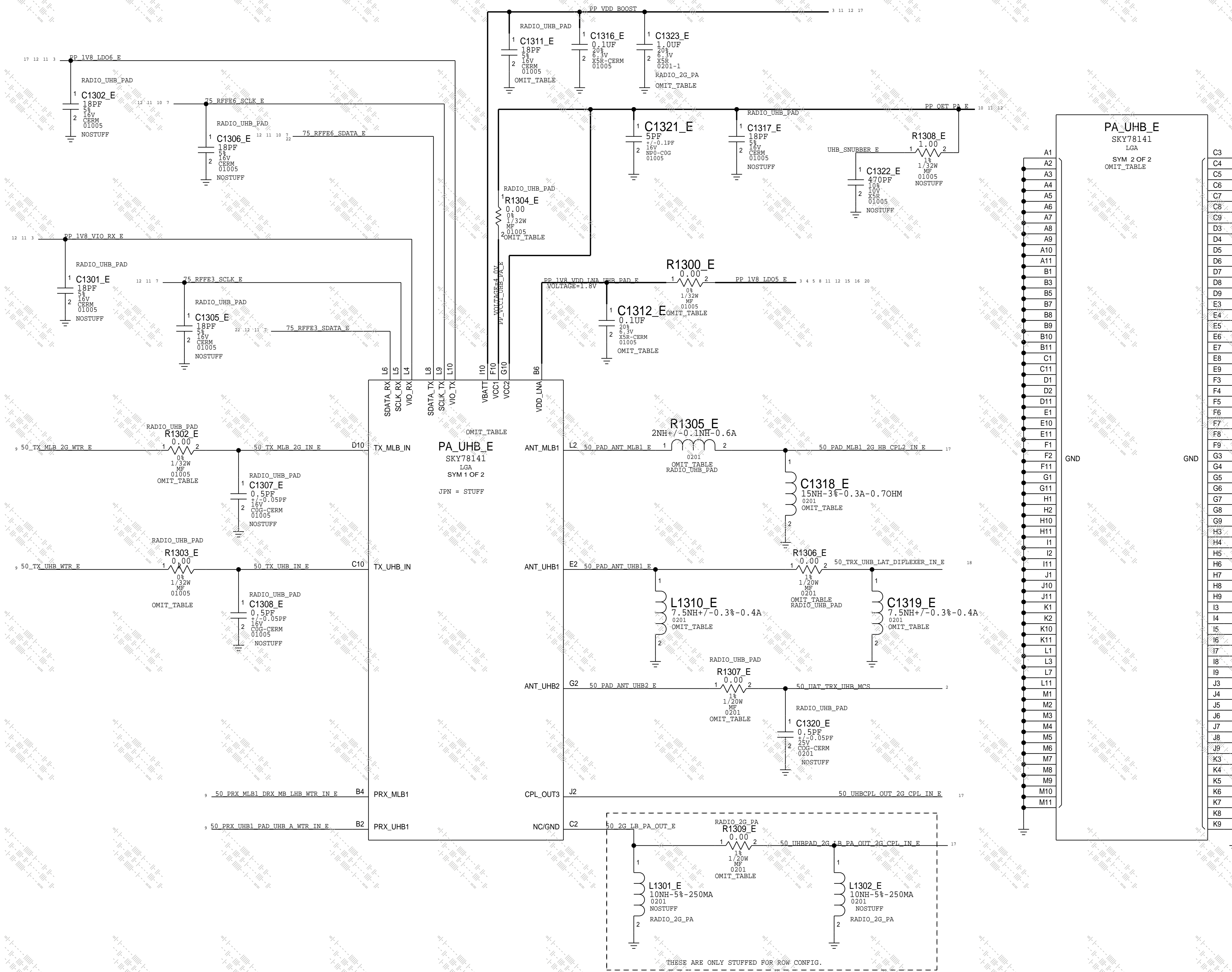
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# UHB / 2G PAD - JPN

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353801243	1	UHB PAD	PA_UHB_E	CRITICAL	JPN
11780161	1	MLB/2GTX IN MCH2, 0 OHMS	R1302_E	CRITICAL	JPN
11780161	1	UHB INPVT MCH1, 0 OHMS	R1303_E	CRITICAL	JPN
11780002	1	MLB/2G MB OUT MCH1, 0 OHMS	R1305_E	CRITICAL	JPN
13180552	1	2.7PF UHQ, UHB1 ANT MATCH	R1306_E	CRITICAL	JPN
11780002	1	0 OHMS UHB2 OUT/DRX BP MCH1	R1307_E	CRITICAL	JPN
13280316	1	UHB LNA DECOUPLING, 0.1UF	C1312_E	CRITICAL	JPN
11780161	1	UHB LNA SUPPLY FILTER, 0OHMS	R1300_E	CRITICAL	JPN
13180214	1	VBAT DECOUPLING,18PF	C1311_E	CRITICAL	JPN
13880692	1	VBAT DECOUPLING, 1UF	C1323_E	CRITICAL	JPN
11780161	1	VCC2/VCC1 RESISTOR OPTION, 0 OHM	R1304_E	CRITICAL	JPN
15281999	1	22NH, MLB1 ANT MATCH	C1318_E	CRITICAL	JPN
15281698	1	3.5NH, UHB1 ANT MATCH	L1310_E	CRITICAL	JPN
13180431	1	0.2PF, UHB TO METROCIRC	C1320_E	CRITICAL	JPN




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# 2G PA - ROW

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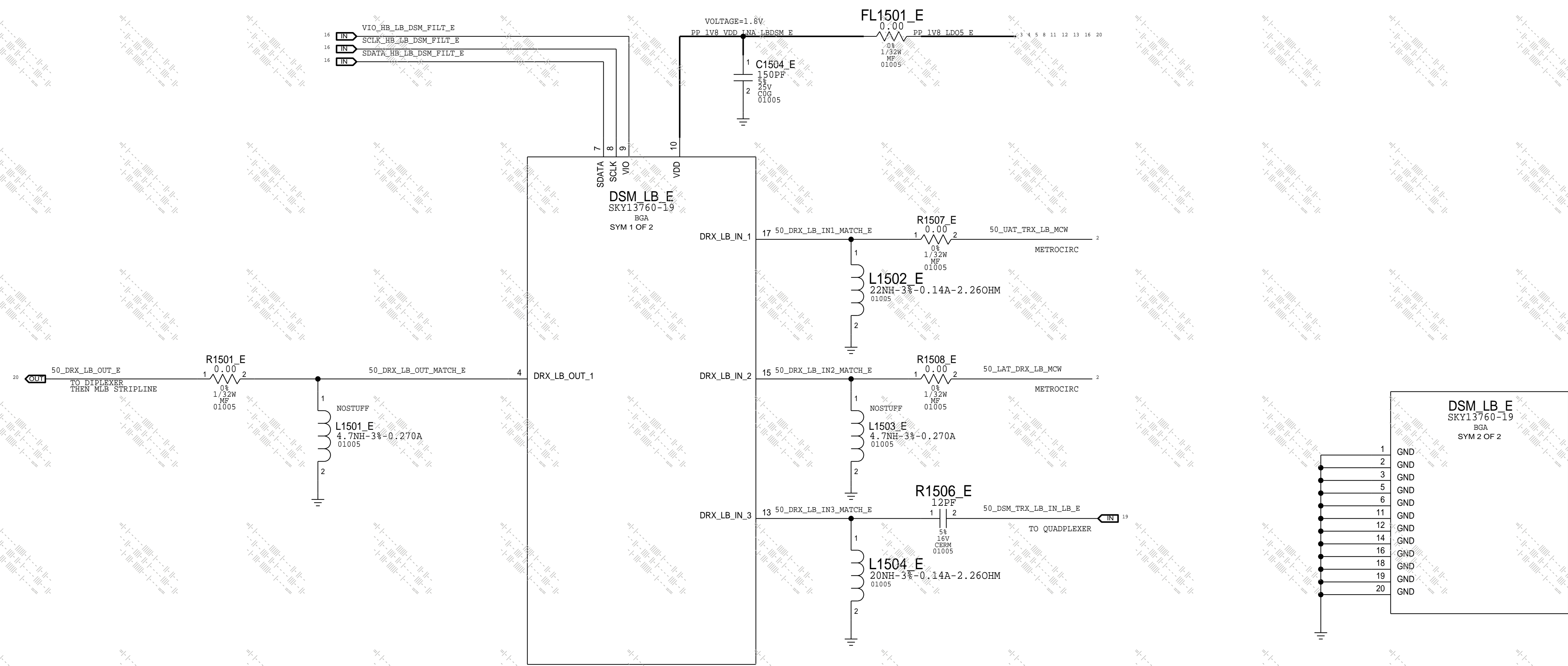
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11780161	1	MLB/2GTX IN MCH2, 0 OHMS	R1302_E	CRITICAL	ROW
11780161	1	UHB INPUT MCH1, 0 OHMS	R1303_E	CRITICAL	ROW
11880724	1	MLB/2G MB OUT MCH1, 0 OHMS	R1305_E	CRITICAL	ROW
11880724	1	UHB2 OUT/DRX SP MCH1, 0 OHMS	R1307_E	CRITICAL	ROW
15282053	1	4.7NH UHQ, 2G LB OUTPUT MCH2	R1309_E	CRITICAL	ROW
13180214	1	VBAT DECOUPLING, 18PF	C1311_E	CRITICAL	ROW
13880692	1	VBAT DECOUPLING, 1UF	C1323_E	CRITICAL	ROW
11780161	1	VCC2/VCC1 RESISTOR OPTION, 0 OHM	R1304_E	CRITICAL	ROW
103800089	1	50 OHM TERMINATION FOR ROW ONLY	C1319_E	CRITICAL	ROW

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LB DSM

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# HB DSM

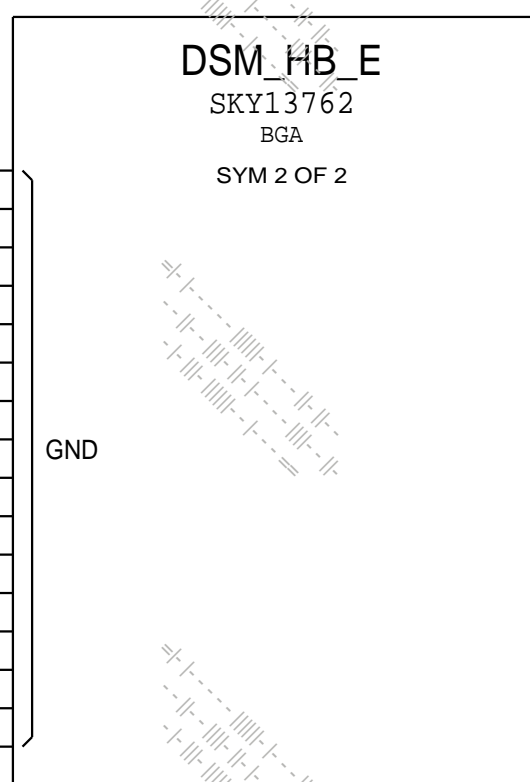
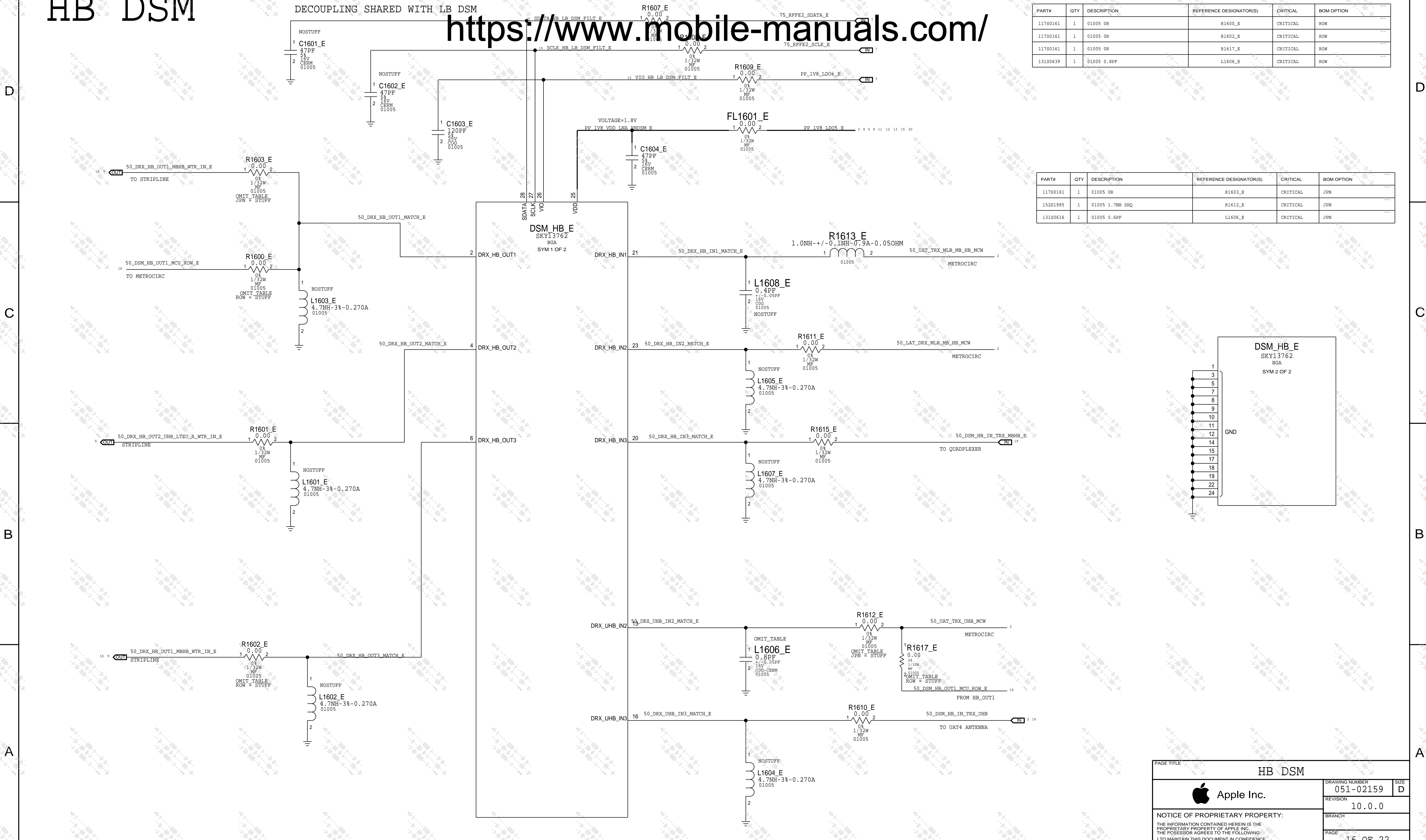
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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S0161	1	01005 0R	R1600_E	CRITICAL	ROW
117S0161	1	01005 0R	R1602_E	CRITICAL	ROW
117S0161	1	01005 0R	R1617_E	CRITICAL	ROW
131S0639	1	01005 0.8PF	L1606_E	CRITICAL	ROW

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S0161	1	01005 0R	R1603_E	CRITICAL	JPN
152S1985	1	01005 1.7NH SHQ	R1612_E	CRITICAL	JPN
131S0616	1	01005 0.6PF	L1606_E	CRITICAL	JPN

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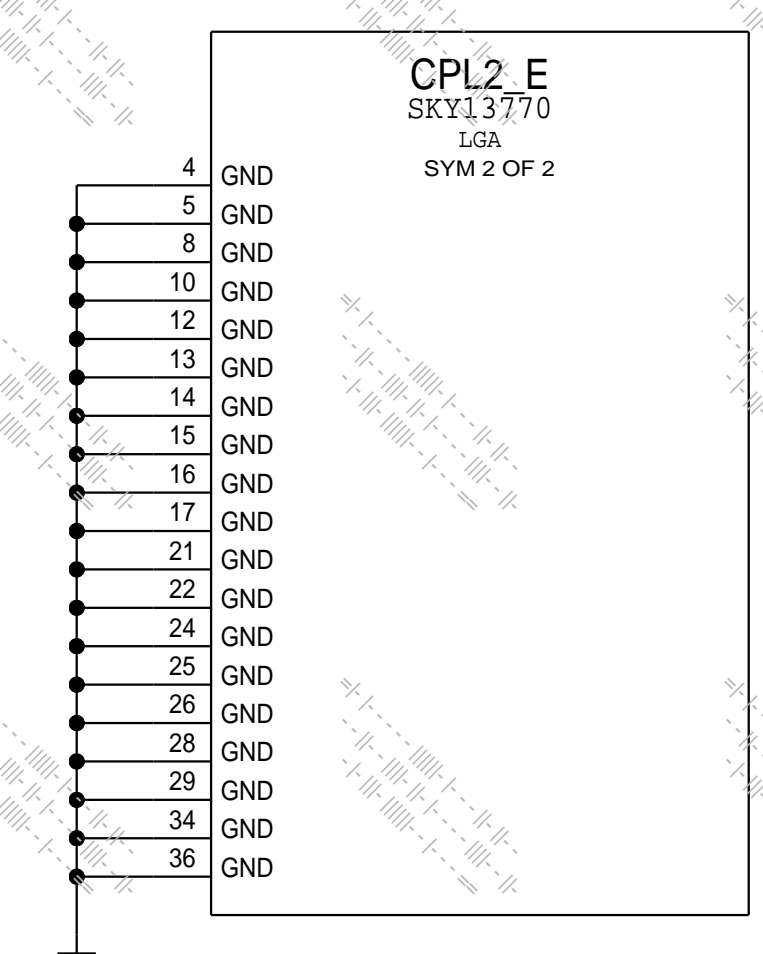
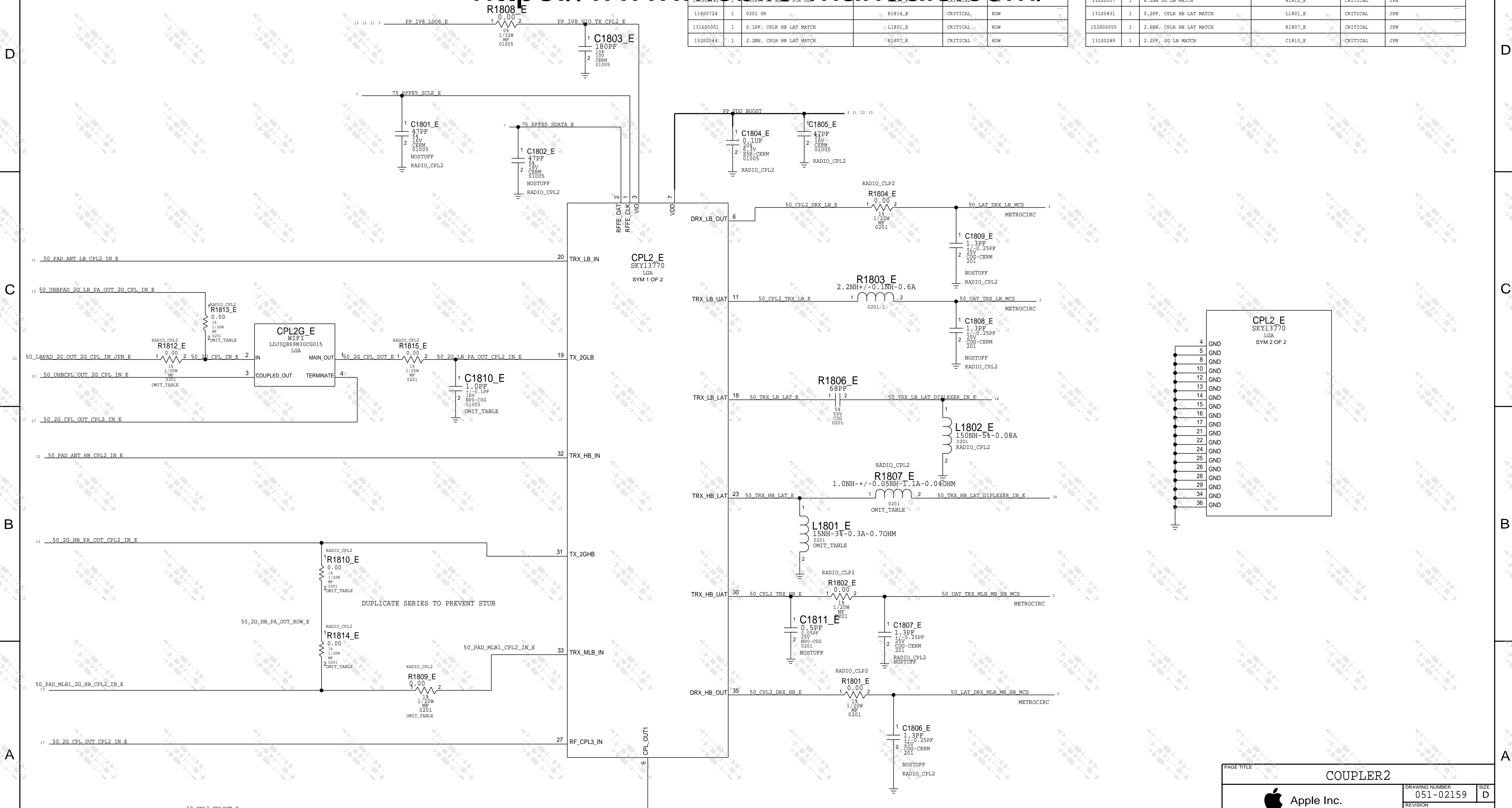
# COUPLER2

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11880724	1	0201 OR	R1809_E	CRITICAL	ROW
15282007	1	8.2NH 2G LB MATCH	R1812_E	CRITICAL	JFN
13180431	1	0.2PF, CPLR HB LAT MATCH	L1801_E	CRITICAL	JFN
152800055	1	2.6NH, CPLR HB LAT MATCH	L1807_E	CRITICAL	JFN
13180249	1	2.2PF, 2G LB MATCH	C1810_E	CRITICAL	JFN

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
11880724	1	0201 OR	R1809_E	CRITICAL	JFN
15282007	1	8.2NH 2G LB MATCH	R1812_E	CRITICAL	JFN
13180431	1	0.2PF, CPLR HB LAT MATCH	L1801_E	CRITICAL	JFN
152800055	1	2.6NH, CPLR HB LAT MATCH	L1807_E	CRITICAL	JFN
13180249	1	2.2PF, 2G LB MATCH	C1810_E	CRITICAL	JFN



PAGE TITLE: **COUPLER2**

Apple Inc.

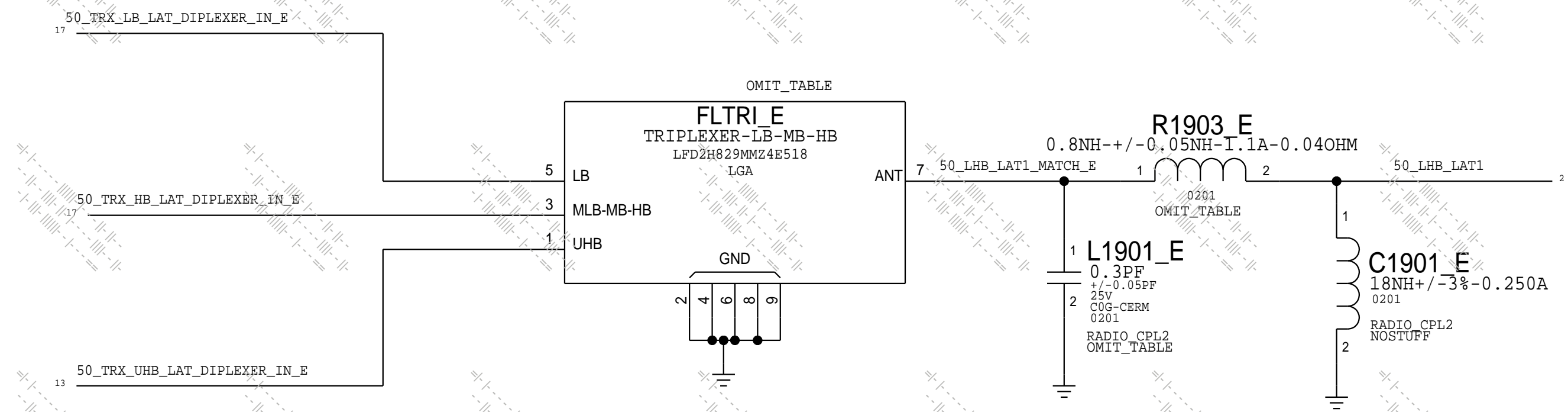
DRAWING NUMBER	051-02159	SIZE	D
REVISION	10.0.0		
BRANCH			
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# LOWER ANTENNA

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
155S00298	1	TRIPLEXER, L+MLBMB+UHB	FLTRI_E	CRITICAL	JFN
155S00297	1	DIPLEXER, L+MLBMB	FLTRI_E	CRITICAL	ROW
152S00147	1	0.6NH UHQ, TRI ANT MATCH	R1903_E	CRITICAL	JFN
152S00151	1	0.8NH UHQ, TRI ANT MATCH	R1903_E	CRITICAL	ROW
131S00001	1	0.1PF, TRI ANT MATCH	L1901_E	CRITICAL	ROW

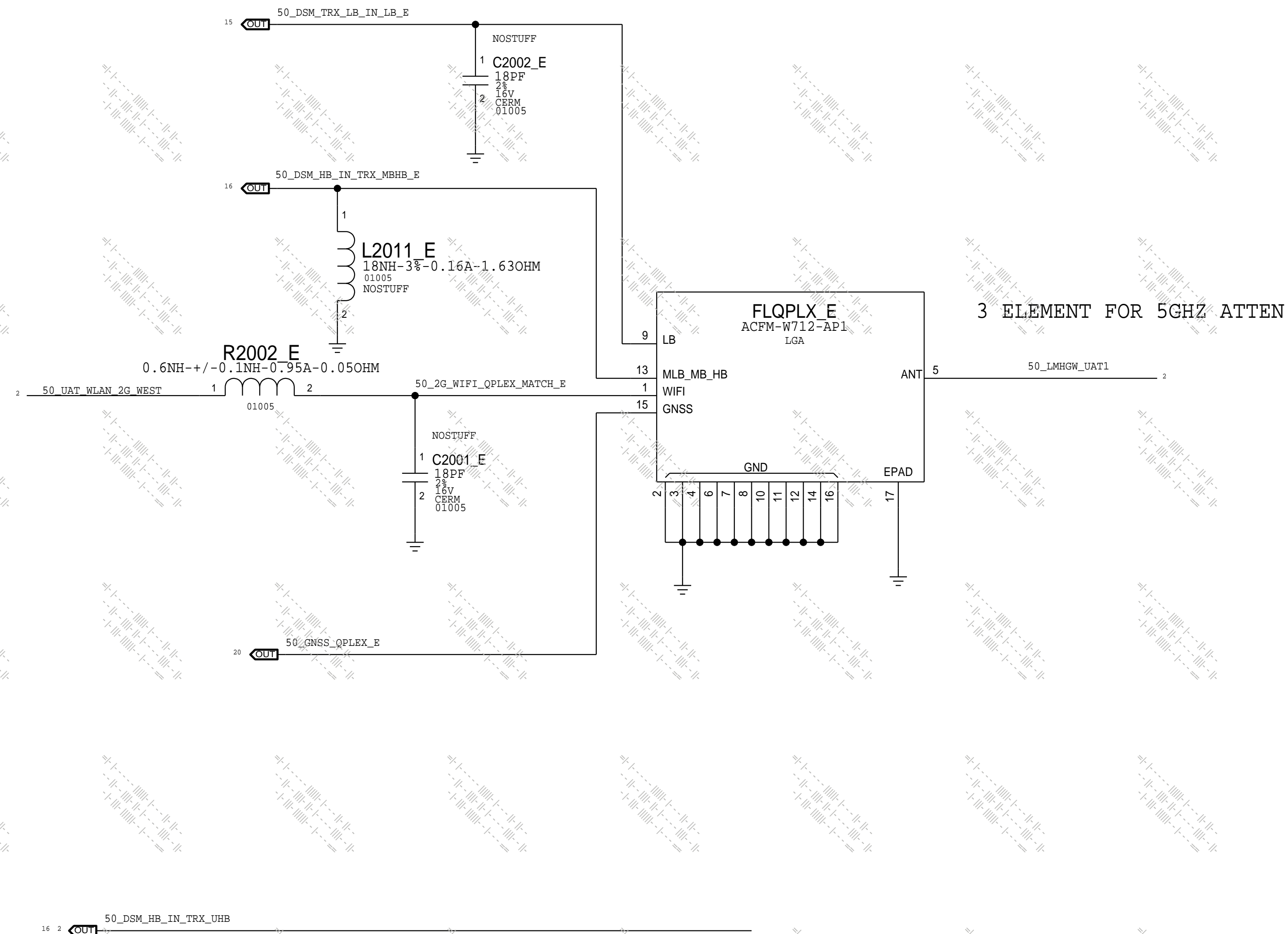
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# UAT & LB/UHB DIPLEXER

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			SHEET	71 OF 81

# GPS & GPS/LB DIPLXER

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8 7 6 5 4 3 2 1

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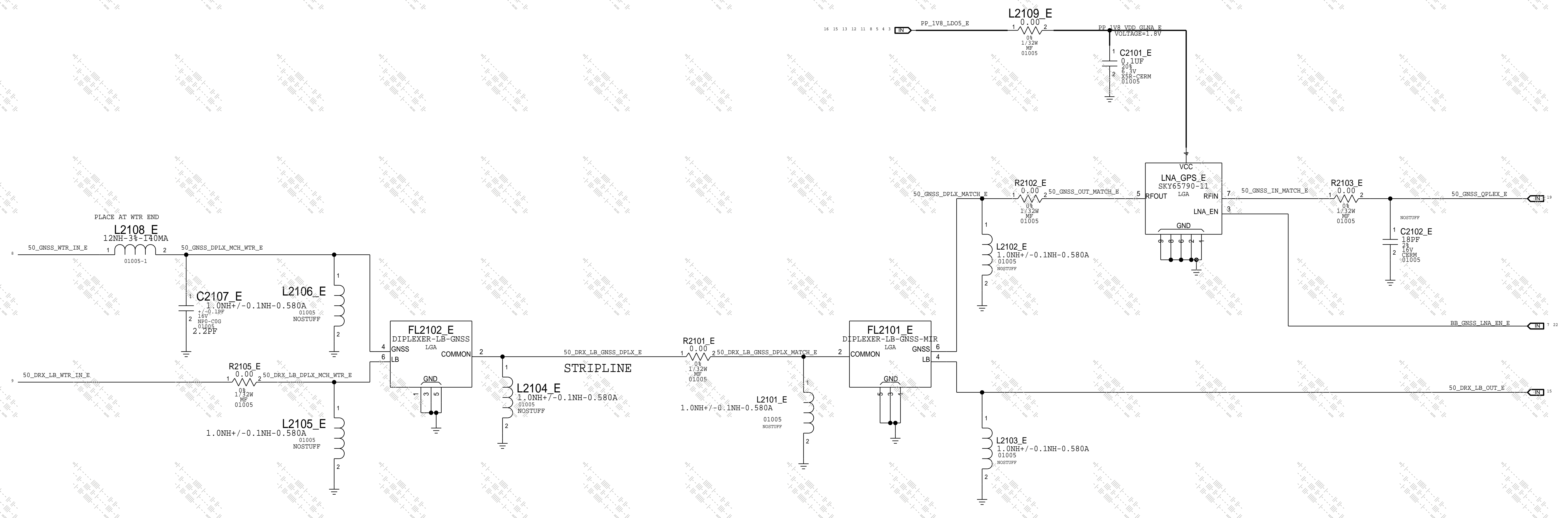
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			PAGE	20 OF 22
			SHEET	72 OF 81

8 7 6 5 4 3 2 1

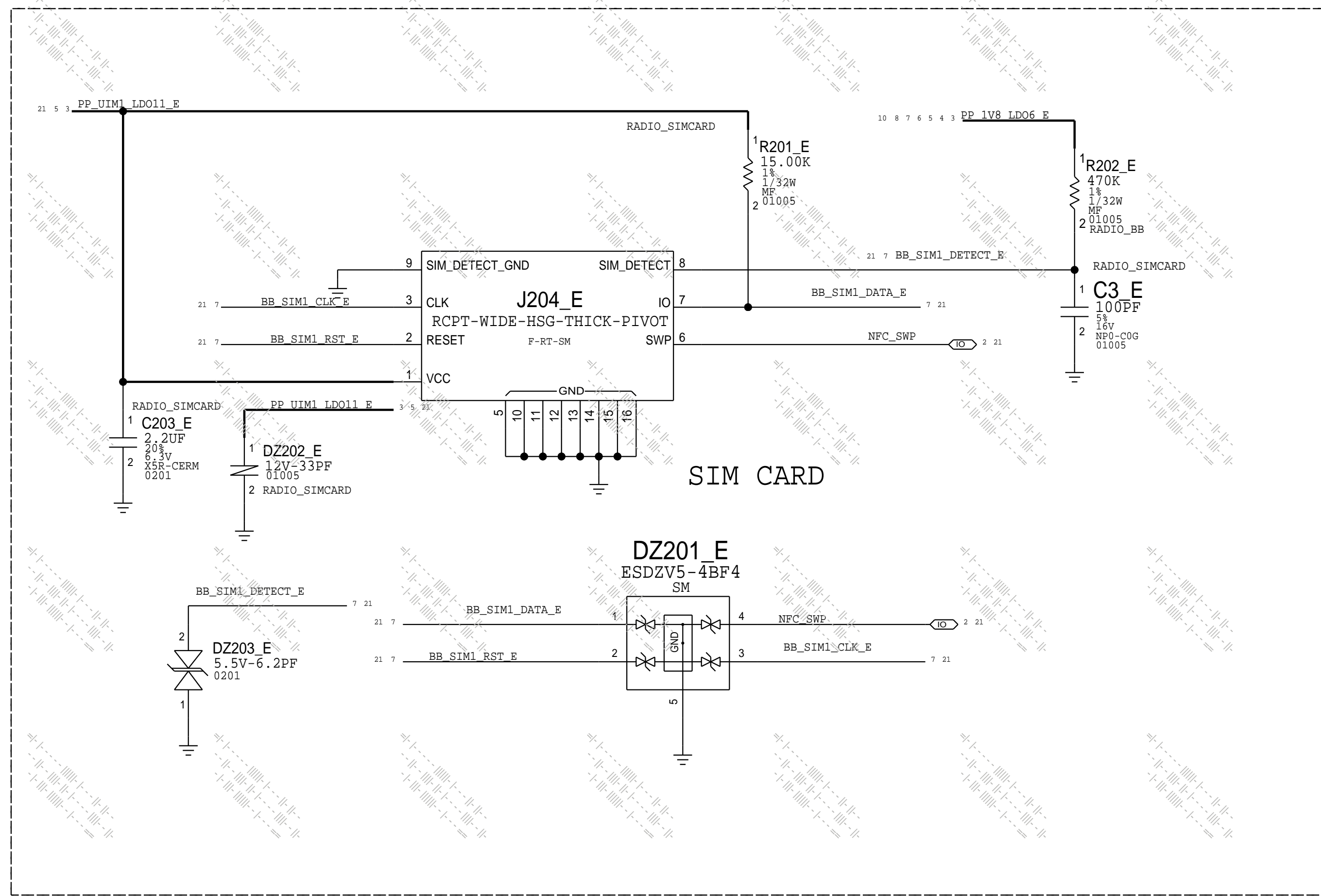


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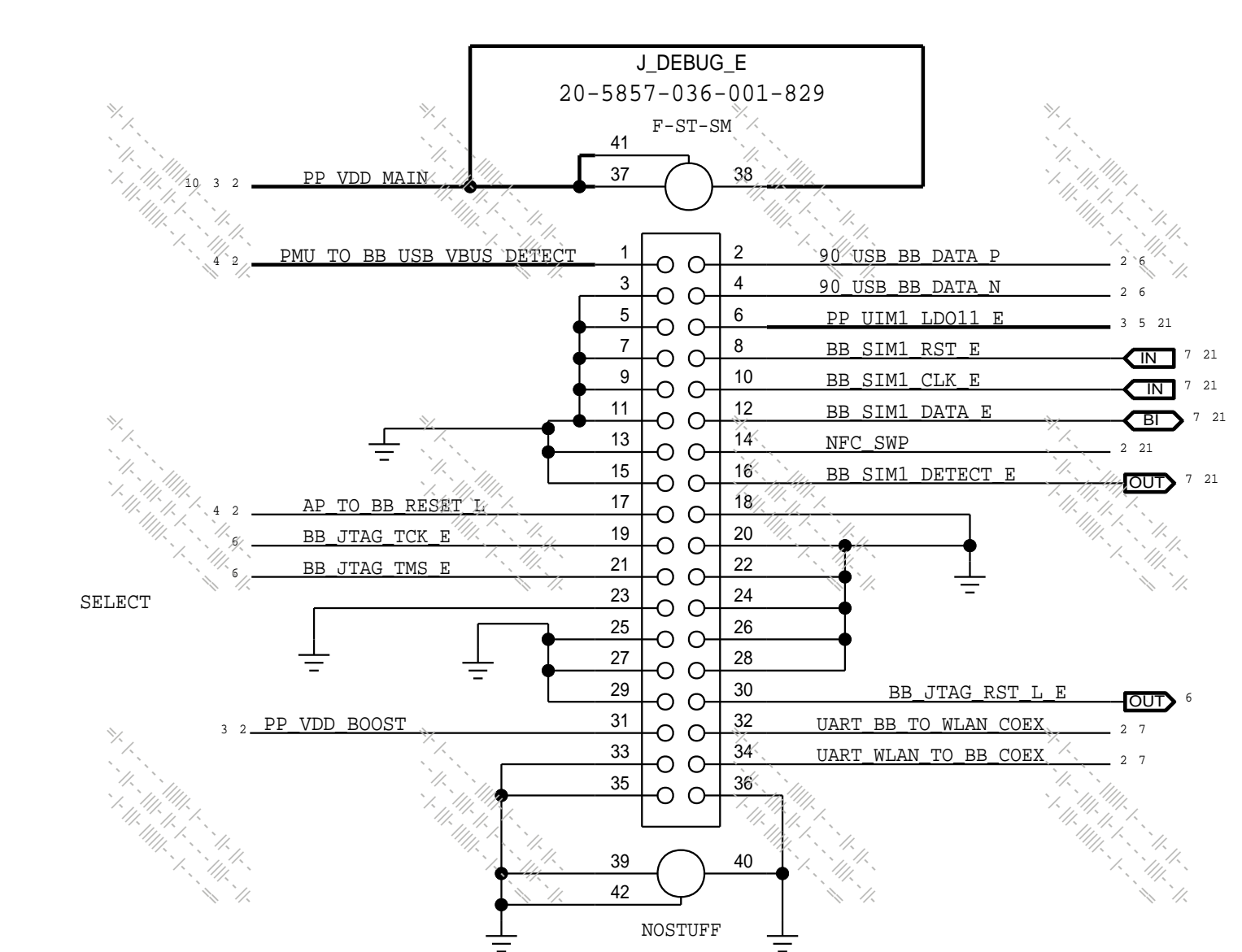
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PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
51280026	51280017	BOM_TABLE_ALTS	*2204_E	SIMCRD;KYOCERA



# DEBUG CONNECTOR



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# BB PROBE POINTS

# QLINK

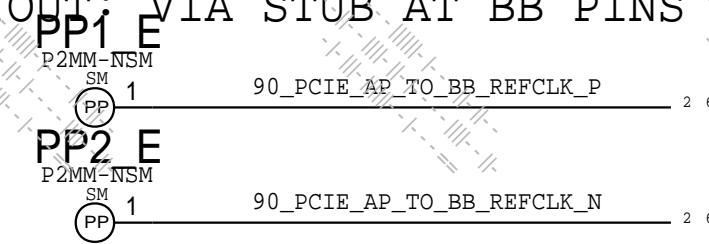
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## BASEBAND

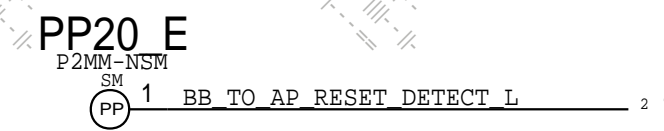
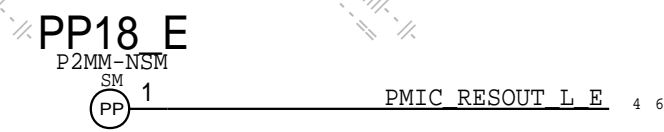
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## PCIE

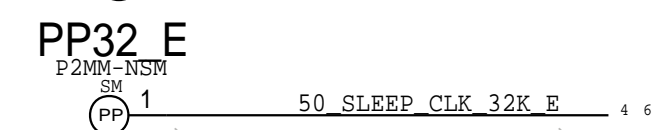
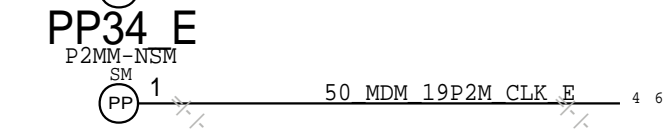
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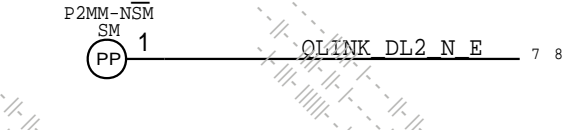
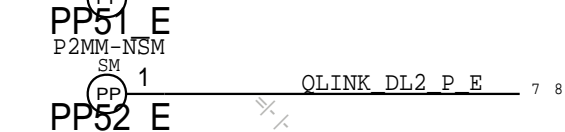
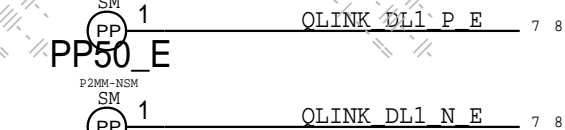
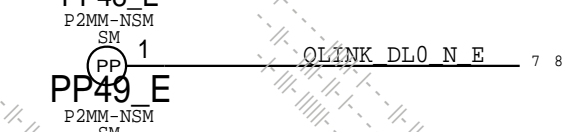
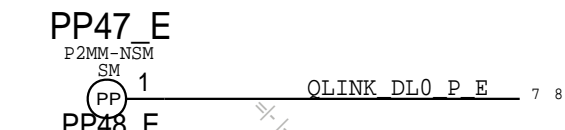
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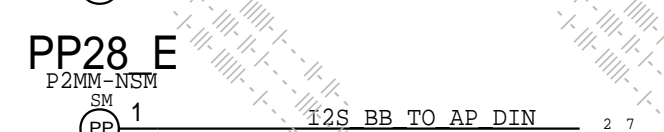
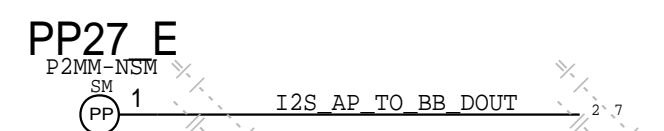
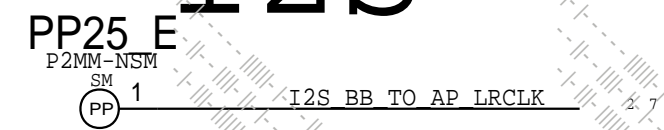
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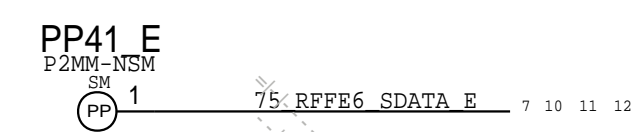
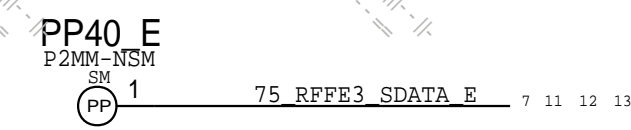
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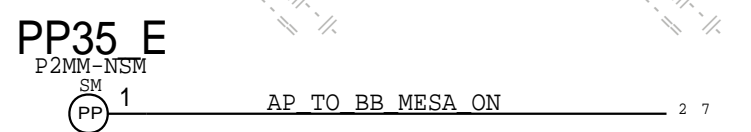
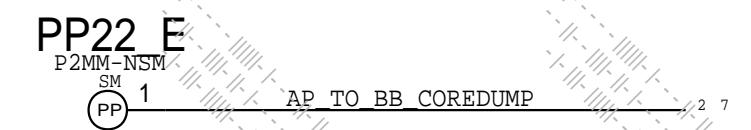
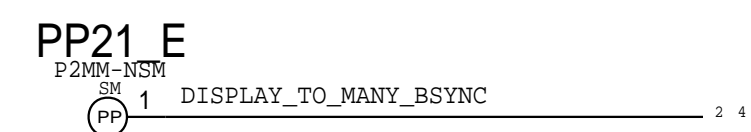
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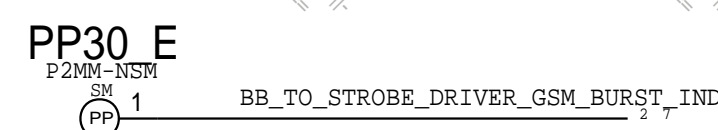
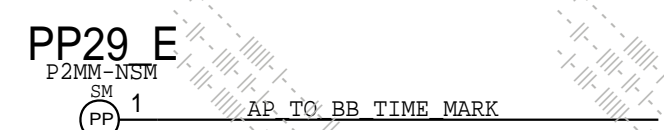
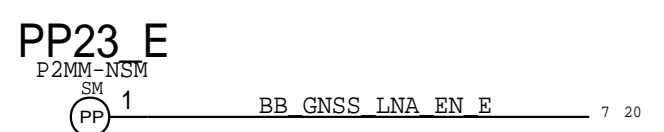
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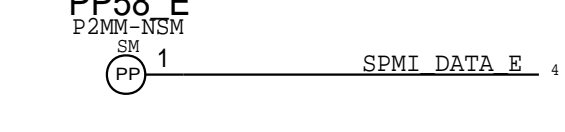
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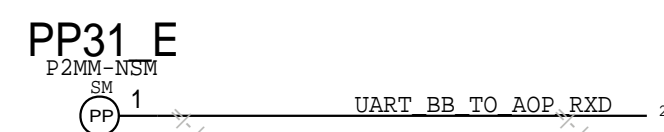
## CTRL



## SPMI



## UART



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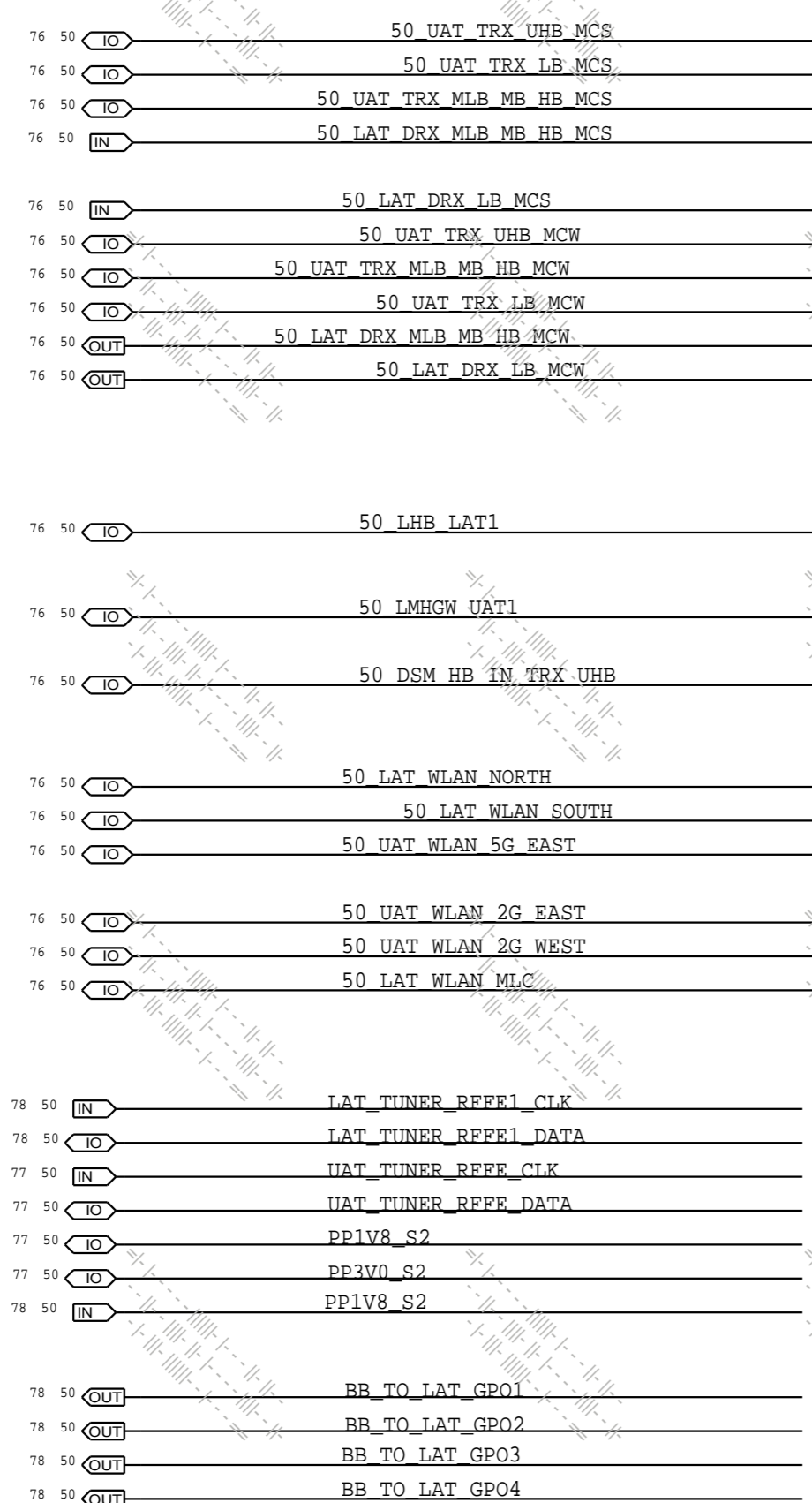
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10	0008927012	ENGINEERING RELEASED		2017-06-06

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# D21 RADIO\_MLB\_FF

## 5/22/2017



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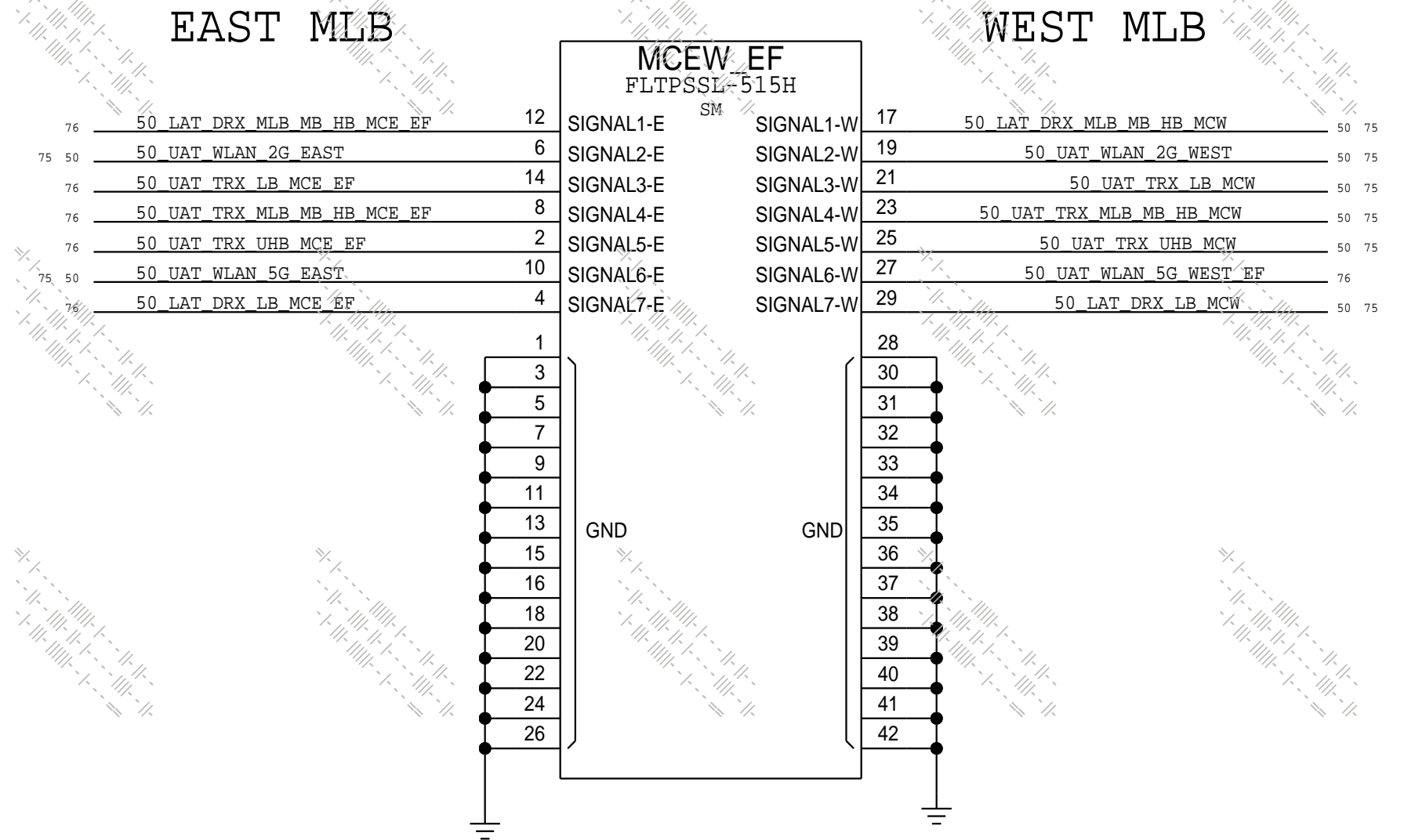
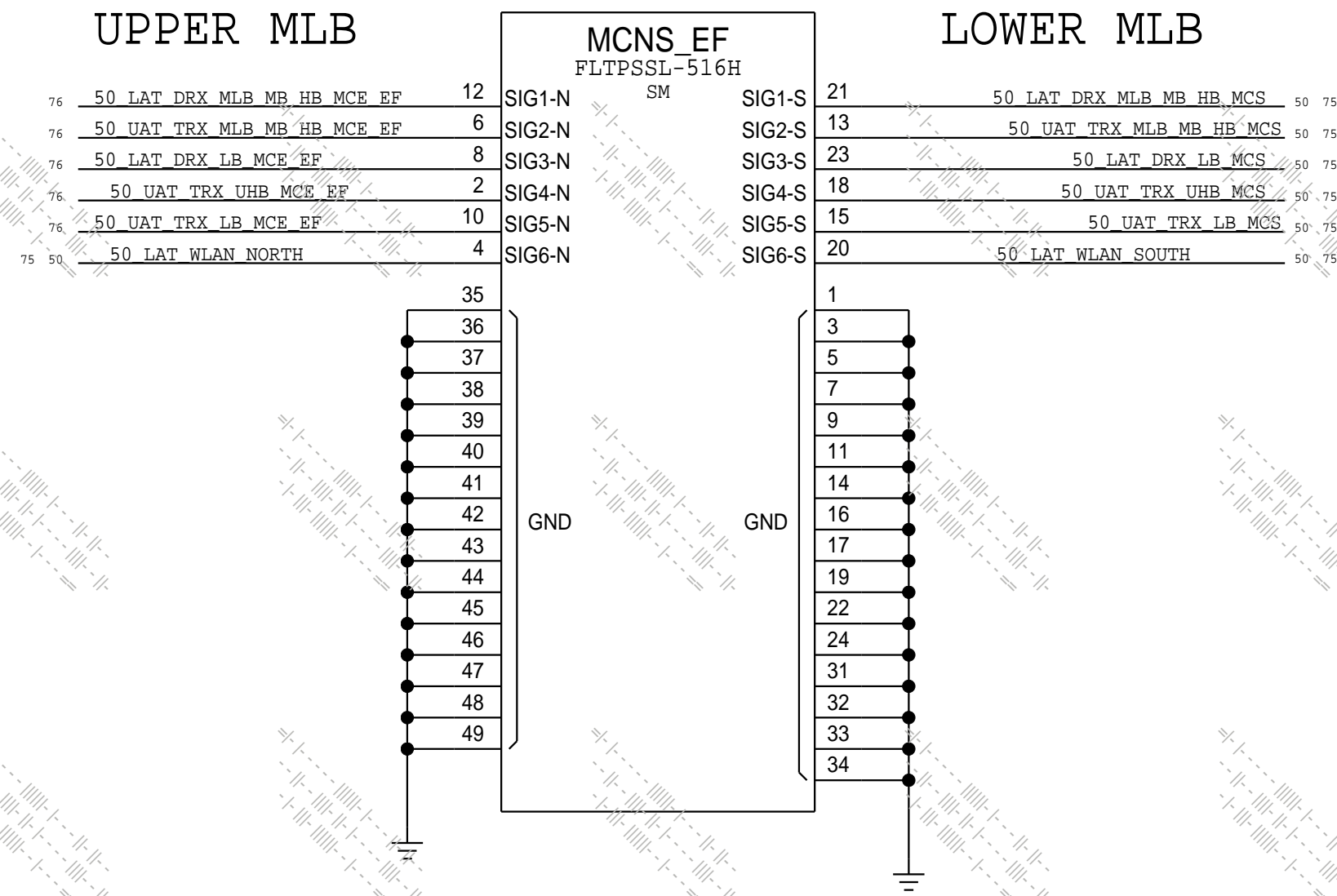
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# METROCIRC

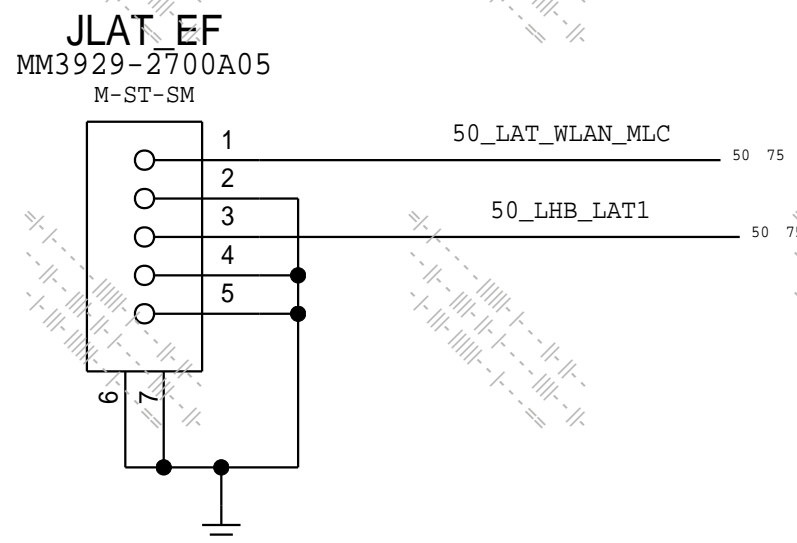
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NORTH-SOUTH METROCIRC  
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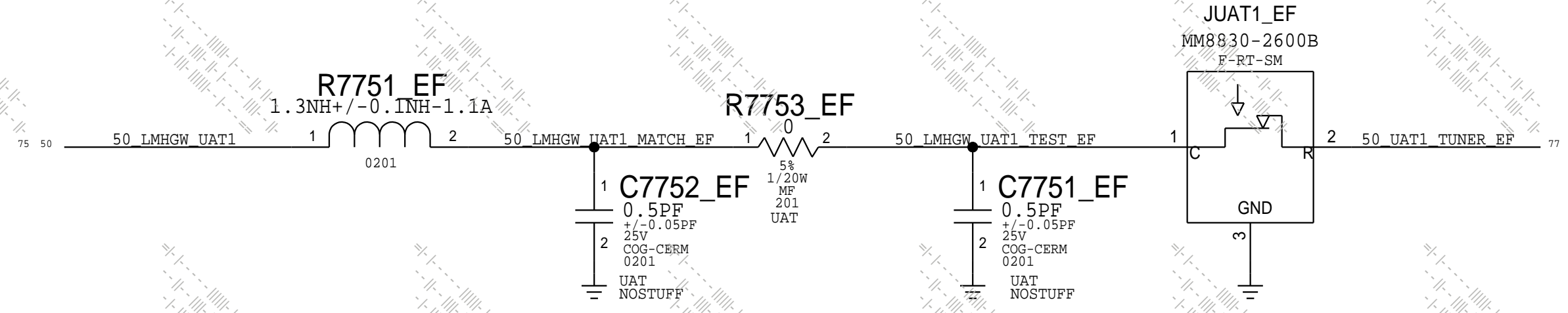
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339S00296



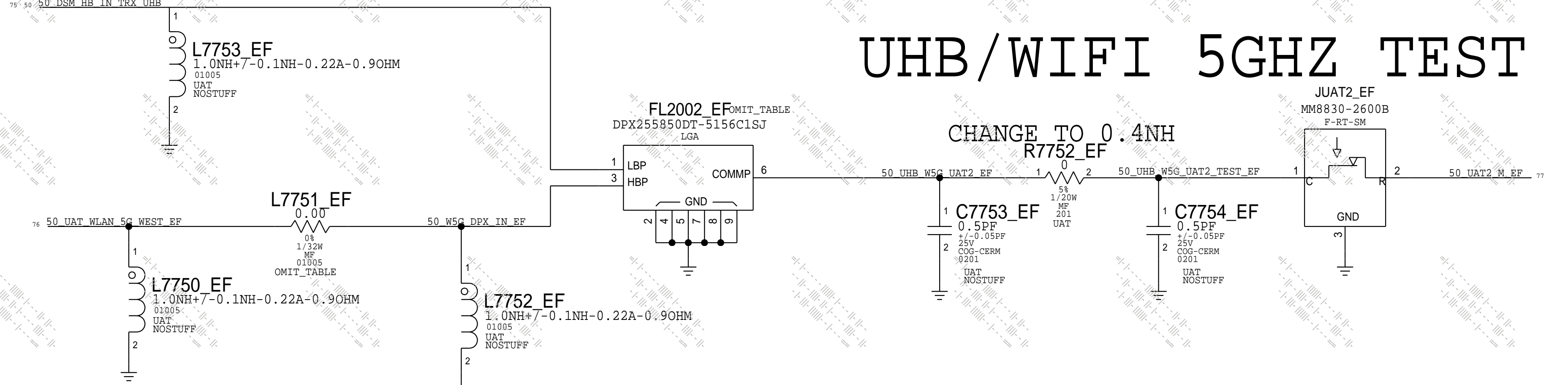
## LAT MLC



## LB/MLB/MB/HB WIFI 2.4GHZ TEST



## UHB/WIFI 5GHZ TEST



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
155800274	1	B42/5G DIPLEXER	FL2002_EF	CRITICAL	JPN
155800275	1	5G PASSTHROUGH	FL2002_EF	CRITICAL	ROW
13180598	1	B42/5G DIPLEXER 5G_IN MATCH	L7751_EF	CRITICAL	JPN
13180385	1	5G PASSTHROUGH INPUT MATCH	L7751_EF	CRITICAL	ROW

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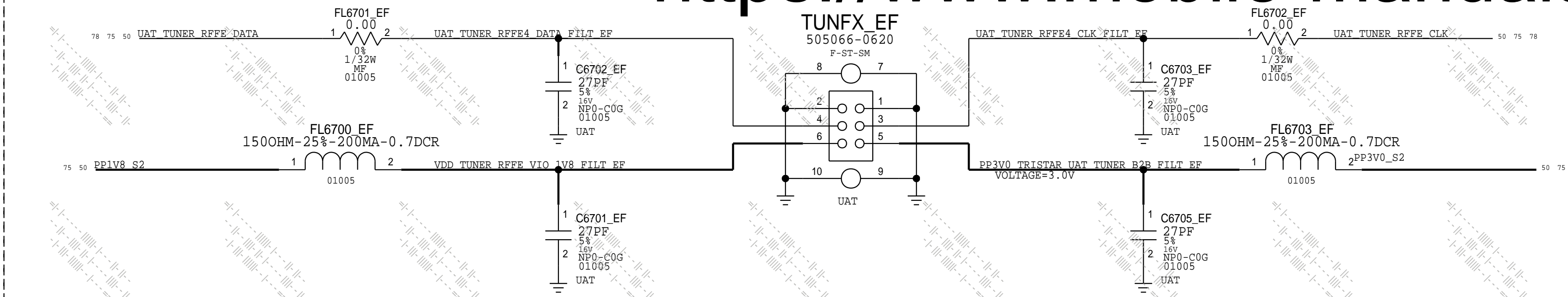


# UAT TUNER FLEX

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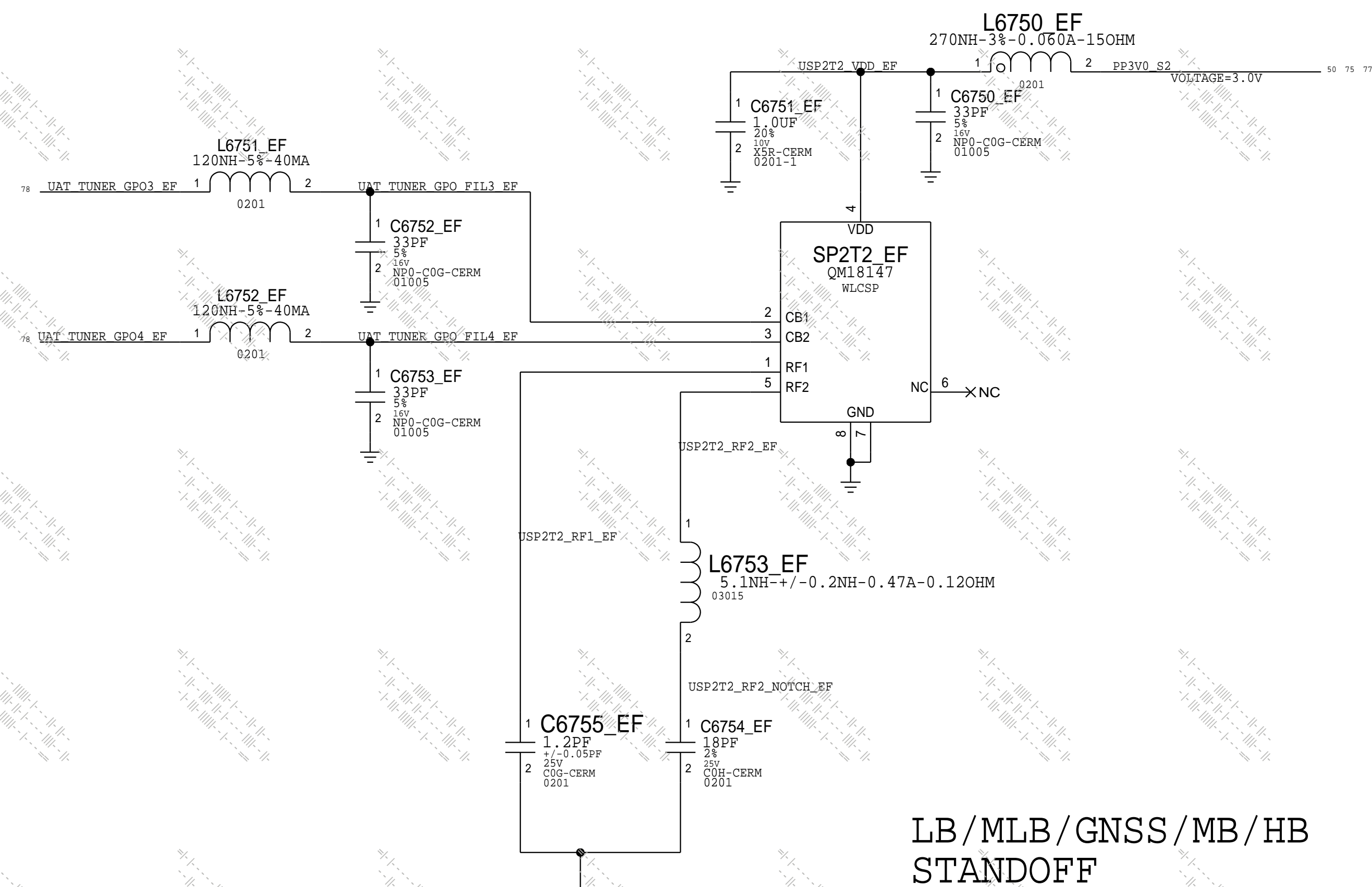
PLEASE CONTACT ANTENNA (MATT MOW)  
FOR ANY COMPONENT CHANGE.

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
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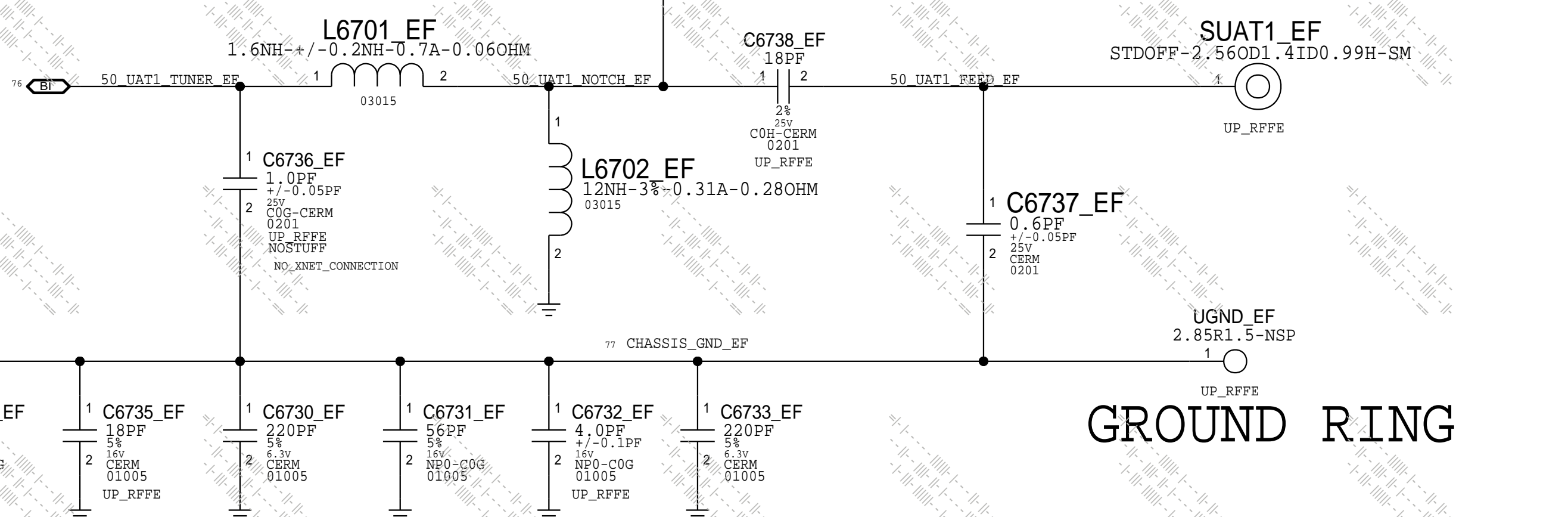


PINOUT IS ROTATED 180  
COMPARED TO D20 & D201

## UAT TUNER

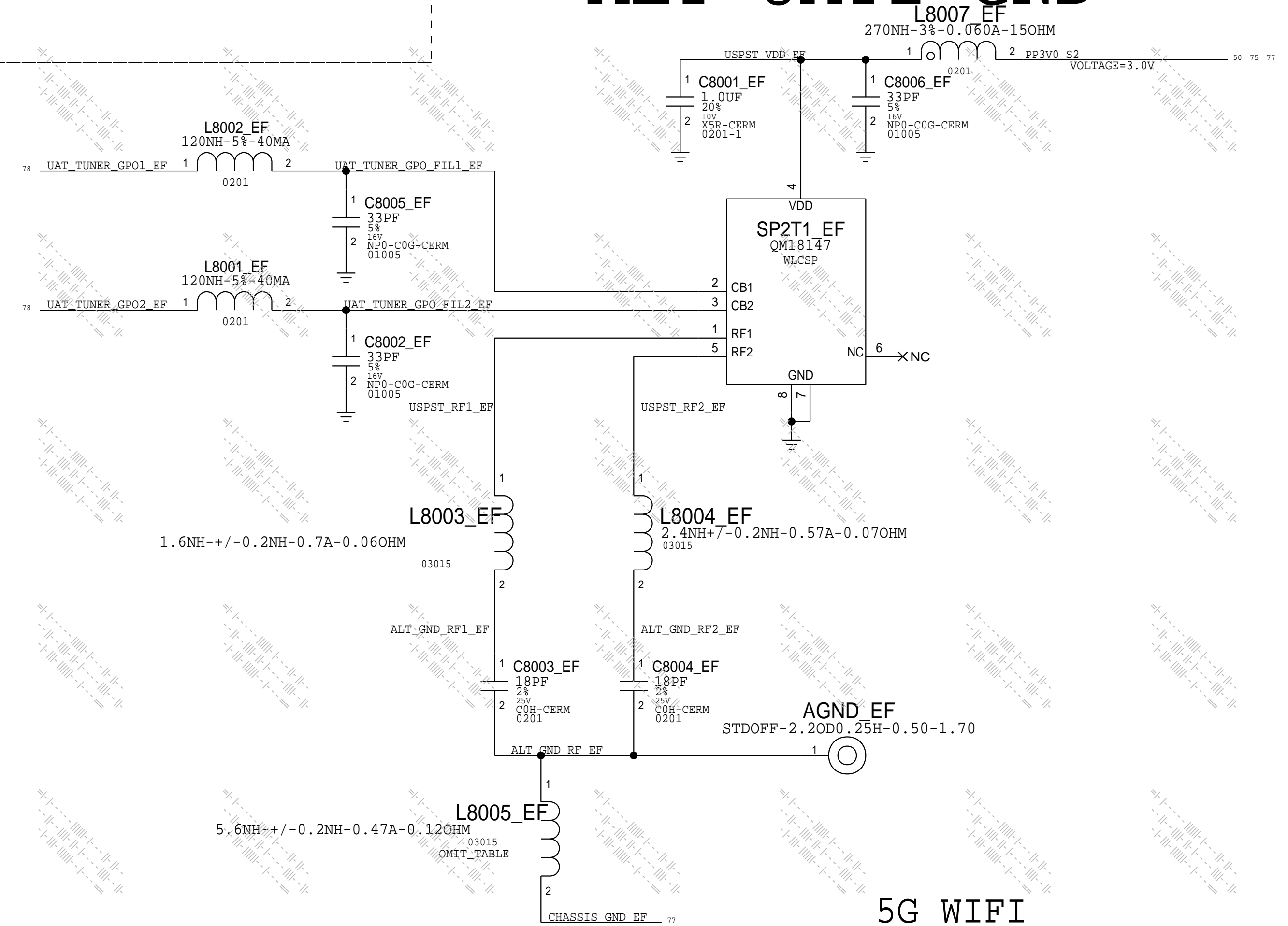


LB/MLB/GNSS/MB/HB  
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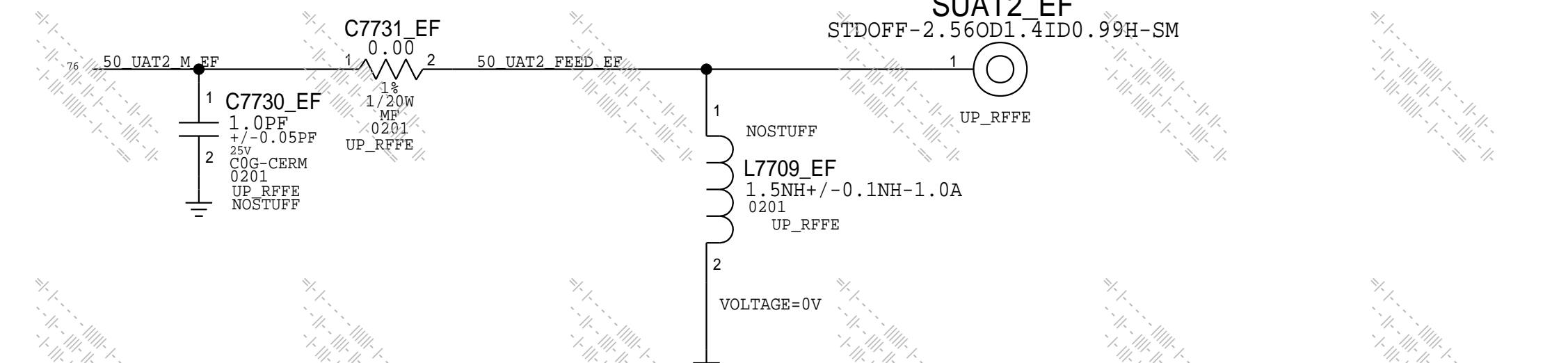


GROUND RING

## ALT UAT1 GND

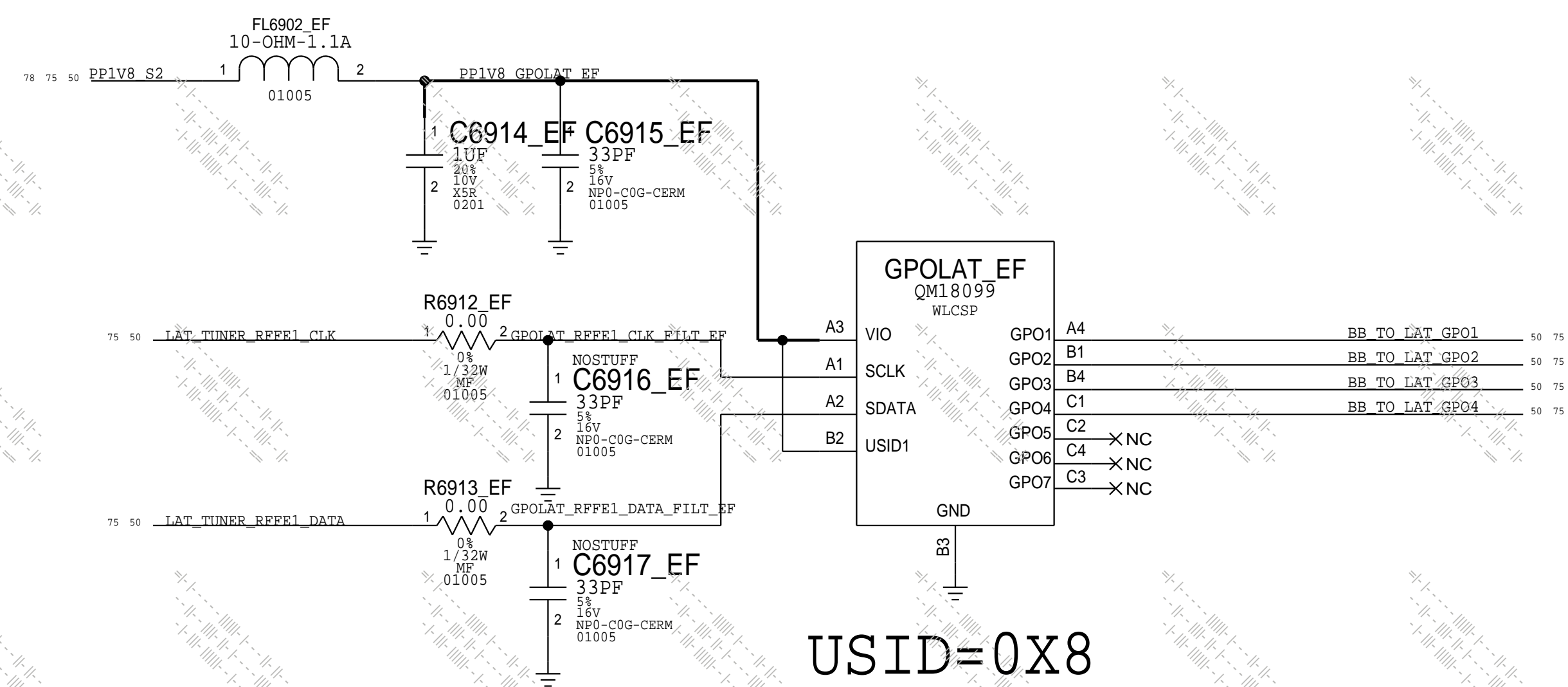
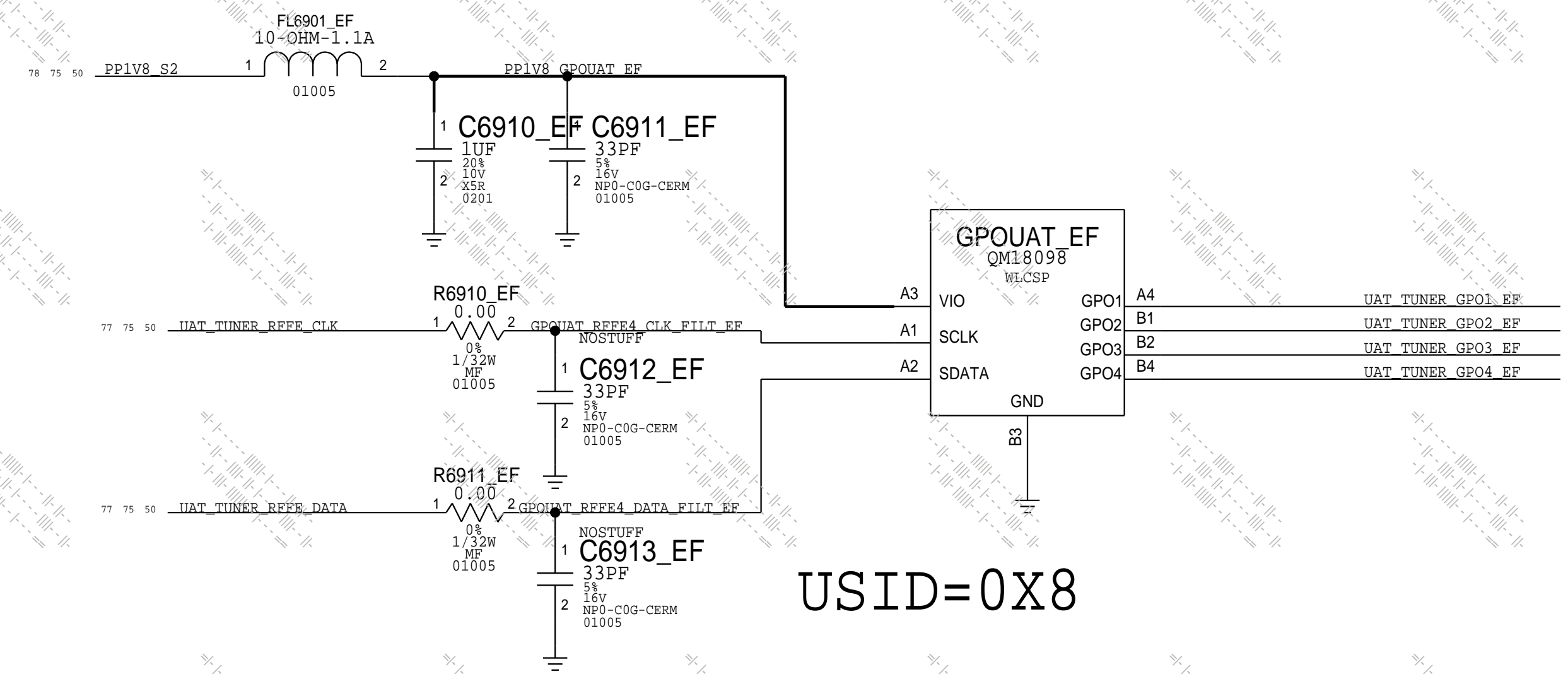


5G WIFI  
STANDOFF



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UAT MATCH AND TUNER		
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10	0008927012	ENGINEERING RELEASED		2017-06-06

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# D21X WIFI\_MLB (GUINNESS)

## NOV 28, 2016

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3	77	WIFI FRONT-END

### POWER

- 80 50 IN PP\_VDD\_MAIN
- 80 50 IN PE1V8\_S2

### CLOCKS

- 80 50 IN PMU\_TO\_WLAN\_CLK32K
- 80 50 OUT WLAN\_TO\_AP\_TIME\_SYNC

### CONTROL

- 80 50 IN PMU\_TO\_WLAN\_REG\_ON
- 80 50 IN PMU\_TO\_BT\_REG\_ON
- 80 50 OUT BT\_TO\_PMU\_HOST\_WAKE
- 80 50 IN AP\_TO\_BT\_WAKE

### WLAN PCIE

- 80 50 IN 90\_PCIE\_AP\_TO\_WLAN\_SFCLK\_P
- 80 50 IN 90\_PCIE\_AP\_TO\_WLAN\_SFCLK\_N
- 80 50 IN 90\_PCIE\_AP\_TO\_WLAN\_TXD\_P
- 80 50 IN 90\_PCIE\_AP\_TO\_WLAN\_TXD\_N
- 80 50 OUT 90\_PCIE\_WLAN\_TO\_AP\_RXD\_P
- 80 50 OUT 90\_PCIE\_WLAN\_TO\_AP\_RXD\_N
- 80 50 IN PCIE\_AP\_TO\_WLAN\_RESET\_L
- 80 50 TO PCIE\_WLAN\_BI\_AP\_CLKREQ\_L
- 80 50 OUT WLAN\_TO\_PMU\_HOST\_WAKE
- 80 50 IN AP\_TO\_WLAN\_DEVICE\_WAKE

### WLAN UART

- 80 50 OUT UART\_WLAN\_TO\_AP\_RXD
- 80 50 IN UART\_AP\_TO\_WLAN\_TXD
- 80 50 OUT UART\_WLAN\_TO\_AP\_CTS\_L
- 80 50 IN UART\_AP\_TO\_WLAN\_RTS\_L

### BLUETOOTH UART

- 80 50 IN UART\_AP\_TO\_BT\_TXD
- 80 50 OUT UART\_BT\_TO\_AP\_RXD
- 80 50 IN UART\_AP\_TO\_BT\_RTS\_L
- 80 50 OUT UART\_BT\_TO\_AP\_CTS\_L

### AOP

- 80 50 IN AOP\_TO\_WLAN\_CONTEXT\_A
- 80 50 IN AOP\_TO\_WLAN\_CONTEXT\_B


### COEX

- 80 50 IN UART\_BB\_TO\_WLAN\_COEX
- 80 50 OUT UART\_WLAN\_TO\_BB\_COEX

### ANTENNA

- 81 50 TO 50\_UAT\_WLAN\_2G\_EAST
- 81 50 TO 50\_UAT\_WLAN\_5G\_EAST
- 81 50 TO 50\_LAT\_WLAN\_NORTH
- 81 50 TO 50\_LAT\_WLAN\_SOUTH
- 81 50 TO 50\_LAT\_WLAN\_MLC

SymbolPorts

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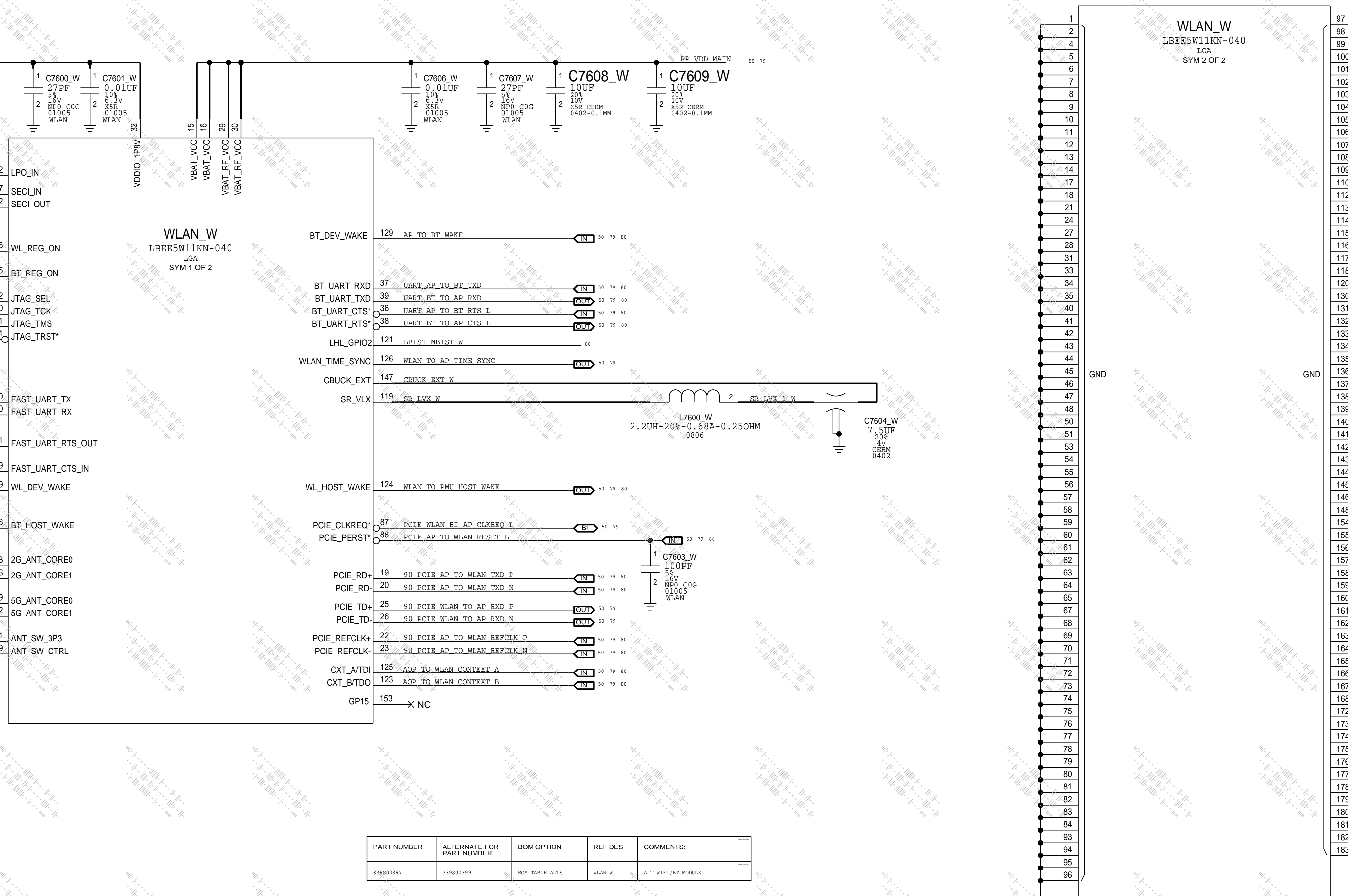
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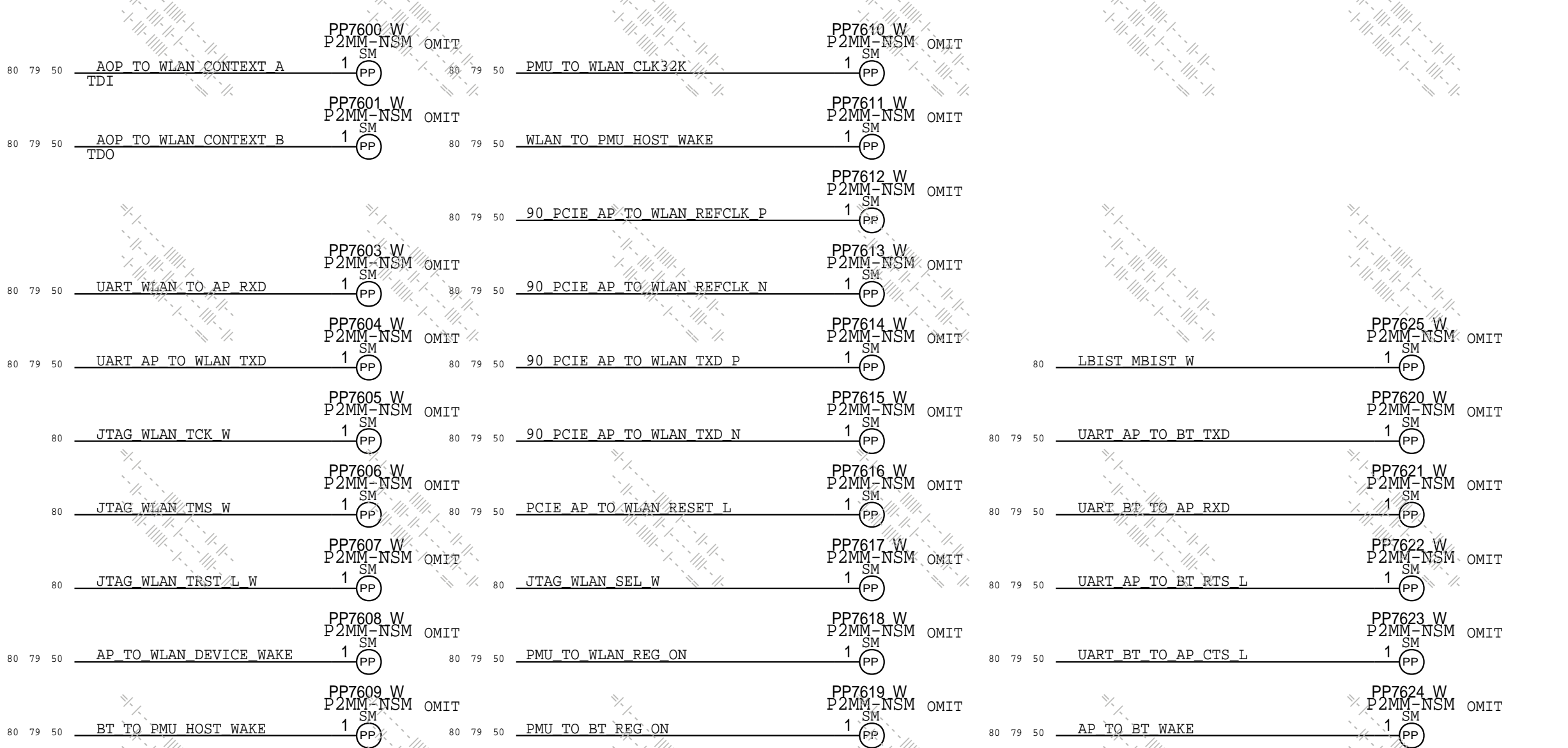
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PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
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SYNC\_MASTER=WIFI SYNC\_DATE=11/28/2016

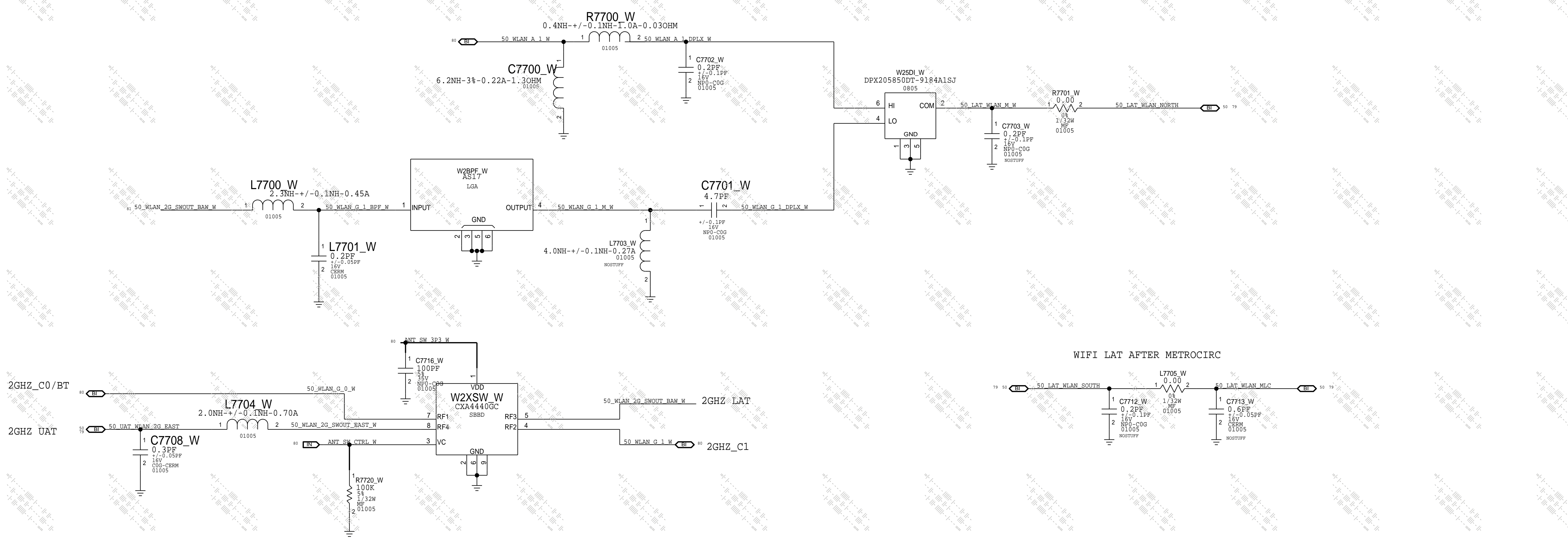
Guinness

Apple Inc.

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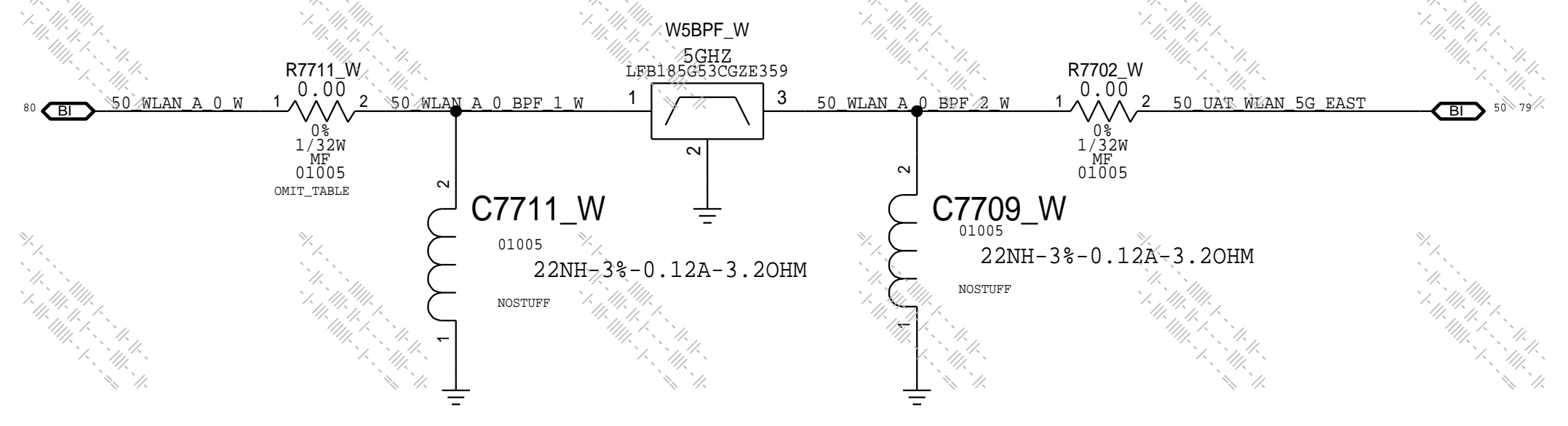
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## WIFI UPPER ANTENNA FEED

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
152800498	1	5G CORED BPF MATCH	R7711_W	CRITICAL	D211
11780161	1	5G CORED BPF MATCH	R7711_W	CRITICAL	JPN
11780161	1	5G CORED BPF MATCH	R7711_W	CRITICAL	ROW



SYNC\_DATE=11/28/2016

PAGE TITLE \$PAGE_TITLE=WiFiAntFeeds		
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