


8		7		6		5		4		3		2		1	
<div>1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.</div> <div>2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.</div> <div>3. ALL CRYSTALS &amp; OSCILLATOR VALUES ARE IN HERTZ.</div>												REV	ECN	DESCRIPTION OF REVISION	CK APPD DATE
												4	0047306732	ENGINEERING RELEASED	2023-09-07
LAST_MODIFICATION=Wed Sep 6 15:45:48 2023												LAST_MODIFICATION=Wed Sep 6 15:45:48 2023			
D	PAGE	CSA	CONTENTS	SYNC	DATE	PAGE	CSA	CONTENTS	SYNC	DATE					
	1	1	Table of Contents	eli	10/12/2020	61	140	SENSORS: POWER SUPPORT	X2818						
	2	2	Reference Design Sync Tables			62	141	SENSORS: THERMAL	X2818						
	3	3	BOM Configuration			63	144	SENSORS: MOTION	T585_REF_IMU_SOVEREIGN_0.16.0						
	4	4	PD Parts		02/02/2023	64	147	USB-C: Connector(s)	X2818						
	5	5	SOC: CONFIG STRAPS	T585_REF_SOC_H15G_0.0.27		65	150	USB-C: High Speed ATC0	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	6	6	SOC: MISC	T585_REF_SOC_H15G_0.0.27		66	151	USB-C: High Speed ATC1	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	7	7	SOC: RESETS,CLOCKS,DEBUG	T585_REF_SOC_H15G_0.0.27		67	152	USB-C: Support 1 ATC01	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	8	8	SOC: GPIOs,NAND,MTP,UART	T585_REF_SOC_H15G_0.0.27		68	153	USB-C: Support 2 ATC01	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.006/05/2023						
	9	9	SOC: I2S,I2C,SPI,THROT,CFG	T585_REF_SOC_H15G_0.0.27		69	154	USB-C: Port Controller ATC0	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	10	10	SOC: ISP, MIPI	T585_REF_SOC_H15G_0.0.27		70	155	USB-C: Port Controller ATC1	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
C	11	11	SOC: LPDP	T585_REF_SOC_H15G_0.0.27		71	156	USB-C: USB2 RPT	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	12	12	SOC: PCIE	T585_REF_SOC_H15G_0.0.27		72	157	USB-C: Support 3 ATC01	T585_REF_USBC_LFKA_3PRT_ACE3_0.46.0						
	13	14	SOC: CIO	T585_REF_SOC_H15G_0.0.27		73	159	USB-C: ATC01 REGULATORS	T585_REF_VR_RT13_PORTABLES_X5R_0.3.0						
	14	19	SOC: SPI NOR, SEP ROM	T585_REF_SOC_H15G_0.0.27		74	162	USB-C: PROJECT SUPPORT	X2818						
	15	20	SOC: SOURCE TERMS		08/25/2023	75	200	WIFI/BT: MODULE	T585_REF_WIRELESS_WILLAMETTE_0.37.0						
	16	21	SOC: SOURCE TERMS	X2818		76	201	WIFI/BT: ANTENNA and GND	T585_REF_WIRELESS_WILLAMETTE_0.37.0						
	17	22	SOC: DUMMY DAM	X2818		77	220	STORAGE: SSD0 S5E MK2 <0>	T585_REF_STORAGE_S5E_MARK2_0.28.0						
	18	23	SOC: POWER PCPU	T585_REF_SOC_H15G_0.0.27		78	221	STORAGE: SSD0 S5E MK2 <1>	T585_REF_STORAGE_S5E_MARK2_0.28.0						
	19	24	SOC: POWER ECPU	T585_REF_SOC_H15G_0.0.27		79	230	STORAGE: SSD Support	X2818						
	20	25	SOC: POWER SRAM	T585_REF_SOC_H15G_0.0.27		80	234	CAMERA: FLEX CONNECTOR	X2818						
	21	26	SOC: POWER GRAPHICS	T585_REF_SOC_H15G_0.0.27		81	236	eDP Display Connector	X2818						
	22	27	SOC: POWER MEMORY	T585_REF_SOC_H15G_0.0.27		82	237	DISPLAY POWER SEQUENCER	T585_REF_PANELPWR_BNM_0.9.0						
B	23	28	SOC: POWER FIXED	T585_REF_SOC_H15G_0.0.27		83	238	BEN: CONTROLLER	T585_REF_BLC_BEN_0.29.0						
	24	29	SOC: POWER VDD12	T585_REF_SOC_H15G_0.0.27		84	239	BEN: PBUS E-Fuse	X2818						
	25	30	SOC: POWER VDDIO, LOW, CIO	T585_REF_SOC_H15G_0.0.27		85	240	----		01/30/2023					
	26	40	SOC: GND (1 OF 2)	T585_REF_SOC_H15G_0.0.27		86	241	----		01/30/2023					
	27	41	SOC: GND (2 OF 2)	T585_REF_SOC_H15G_0.0.27		87	243	SECDIS: SAK, AMR+LAS		08/18/2023					
	28	50	Secure Element	SecureElement	06/05/2023	88	246	AUDIO AMPLIFIERS (1/2)	T585_REF_SPKRAMP_SN012776_3.10.0						
	29	51	Battery Connector	X2818		89	247	AUDIO AMPLIFIERS (2/2)	T585_REF_SPKRAMP_SN012776_3.10.0						
	30	52	PBUS SUPPLY & BATTERY CHARGER	T585_REF_CHARGER_MANDOLA_MP_THIN_0.9.0		90	248	Audio Connectors	X2818						
	31	53	BATTERY CHARGER SUPPORT	T585_REF_CHARGER_MANDOLA_MP_THIN_0.9.0		91	250	BLC: KEYBOARD BACKLIGHT	T585_REF_BLC_BEN_KBD_ONLY_0.15.0						
	32	54	MAGSAFE: CONNECTOR			92	251	Keyboard Support	X2818						
	33	55	MAGSAFE: PORT CONTROLLER	T585_REF_MAGSAFE_ACE3_0.4.8		93	252	Keyboard Connector	X2818						
	34	56	MAGSAFE: CONTROLLER SUPPORT	T585_REF_MAGSAFE_ACE3_0.4.8	05/12/2023	94	253	TRACKPAD SUPPORT	T585_REF_TPAD_IF_PKG_SMALL_0.17.0						
A	35	57	POWER: 3V8 AON (1/2)	T585_REF_VR_ICEMAN_1.59.0		95	254	Trackpad Connector		08/25/2023					
	36	58	POWER: 3V8 AON (2/2)	T585_REF_VR_ICEMAN_1.59.0		96	259	----	X2818						
	37	59	POWER: 3V8 AON SUPPORT	T585_REF_VR_ICEMAN_1.59.0		97	270	DEBUG	X2818						
	38	77	SPMU: INPUT PWR, BULK, BSTLQ	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		98	281	Desense 1	X2818						
	39	78	SPMU: LDO, SW	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		99	282	Desense 2	X2818_MLB						
	40	79	SPMU: GPIO, VSS	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		100	283	Desense 3	X2818						
	41	80	SPMU: ALIASES, SUPPORT	X2818		101	400	POWER ALIASES 1	X2818						
	42	81	MPMU: INPUT PWR, BUCK 0, 1, 2	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		102	401	POWER ALIASES 2	X2818						
	43	82	MPMU: BUCK 3, 4, 7, 9, 11, 13, SW	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		103	402	POWER ALIASES 3	X2818						
	44	83	MPMU: LDO	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		104	403	POWER ALIASES 4	X2818						
	45	84	MPMU: MISC CKT, VSS	T585_REF_PMU_STOWE_VALE_H15G_0.37.0		105	405	Signal Aliases 1		08/18/2023					
	46	85	MPMU: GPIO	T585_REF_PMU_STOWE_VALE_H15G_0.37.0	03/03/2023	106	406	Signal Aliases 2	X2818						
47	86	MPMU: ALIAS, PULLS	X2818		107	420	SOC: ALIASES GPIO	X2818							
48	87	MPMU: SUPPORT	X2818		108	421	SOC: ALIASES SPI, I2S	X2818							
49	88	PMU: SUPPORT - FF	X2818		109	423	SOC: ALIASES LPDP RX	X2818							
50	121	----	X2818		110	424	SOC: ALIASES PCIE, LPDP TX	X2818							
51	123	POWER: 5V S2	T585_REF_VR_5V_LT8642_1_LP_0.2.0		111	425	SOC: ALIASES CAMERA, USB, MISC	X2818							
52	126	POWER: 5V, 3V3 Support	X2818		112	501	17.4 PHYSICAL CSETS	X2818							
53	127	POWER: 3V3 S2	T585_REF_VR_3V3_DISPLAY_0.5.0		113	502	17.4 SPACING CSETS, ISO	X2818							
54	128	Power: Load Switches	X2818		114	503	17.4 SPACING CSETS, CLASS-CLASS	X2818							
55	130	I2C: AP, DISP	X2818		115	601	BOM: SOC	X2818							
56	131	I2C: ISP, AOP, SEP	X2818		116	602	BOM: NAND	X2818							
57	132	I2C: SMC	X2818		117	603	BOM: Prog and Module Parts	X2818							
58	135	SENSORS: POWER HIGH SIDE (1/2)	X2818		118	604	BOM: PMU	X2818							
59	136	SENSORS: POWER HIGH SIDE (2/2)	X2818		119	610	BOM: Alternates	X2818							
60	138	SENSORS: POWER LOW SIDE	X2818		120	611	BOM: Variants	X2818_MLB							
8		7		6		5		4		3					2
												www.repairlap.com			

Table of Contents			SYMC_MASTER=111	SYMC_DATE=12/12/2020
DRAWING TITLE				
SCHEM,MLB,X2819				
 Apple Inc.			DRAWING NUMBER	051-09344
			REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED			BRANCH	
			PAGE	1 OF 801
			SHEET	1 OF 121


# Reference Design Sync Tables

SOURCE PROJECT	SUB-DESIGN NAME	SUB-DESIGN PAGES	VERSION	HARD/ SOFT	SYNC_DATE/TIME
T585	REF_SOC_H15G	5-12,14,19,23-30,40-41	0.0.27	H	2023_05_24_20:37:36
T585	REF_SE_JUNO	50	0.1.3	H	2023_05_24_20:37:44
T585	REF_CHARGER_MANDOLA_MP_THIN	52,53	0.9.0	H	2023_06_05_12:54:45
T585	REF_MAGSAFE_ACE3	55	0.4.8	H	2023_06_14_21:29:17
T585	REF_USBC_LFKA_3PRT_ACE3	150-157	0.47.0	H	2023_06_05_12:55:03
T585	REF_VR_ICEMAN	57,58,59	1.59.0	H	2023_05_24_20:37:08
T585	REF_FMU_STOWE_VALE_H15G	77-79,81-85	0.37.0	H	2022_12_01_12:59:11
T585	REF_VR_5V_LT8642_1_LP	123	0.2.0	H	2023_01_26_17:00:45
T585	REF_VR_3V3_DISPLAY	127	0.5.0	S	2023_08_18_09:38:11
T585	REF_IMU_SOVEREIGN	144	0.17.0	H	2022_10_24_11:04:03
T585	REF_STORAGE_S5E_MARK2	220,221	0.28.0	S	2023_08_18_09:38:39
T585	REF_PANELPWR_BNM	237	0.9.0	H	2023_01_26_17:01:05
T585	REF_BLC_BEN	238	0.29.0	S	2023_08_18_09:38:24
Intentionally Blank					
T585	REF_SECDIS_AMR_LAS_H15G	243	0.11.0	S	2023_08_18_09:36:49
T585	REF_SPKRAMP_SN012776	246,247	3.10.0	H	2023_05_24_20:38:34
T585	REF_VR_RT13_PORTABLES_X5R	159	0.3.0	H	2023_02_16_10:03:39
T585	REF_WIRELESS_WILLAMETTE	200,201	0.37.0	S	2023_08_18_09:37:55
T585	REF_TPAD_IP_PKG_SMALL	253	0.17.0	H	2023_06_05_12:56:44
T585	REF_BLC_BEN_KBD_ONLY	250	0.15.0	S	2023_08_18_09:37:44
X2818	MLB		4.10.0	S	2023_08_18_09:37:36

PIN DELAY MAPPING FILE	
REFERENCE DESIGNATOR	PIN DELAY CSV FILE NAME
U0600	2023_01_20_1812A_BALLMAP_SFRC_OV15_PINDELAY_X38.csv

PART SWAP CONFIGURATION			
REPLACE APN/REFDES	WITH APN	PAGES	DELETE PROPERTY
117S00090	117S00064	54,55,150-157	?
117S00095	117S00065	54,55,57,150-157	?
117S00122	117S00084	54,55,150-157	?
117S00129	117S00068	54,55,57,150-157	?
117S0105	117S00068	54,55,57,150-157	?
117S00081	118S00339	54,55,150-157	?
117S00115	118S00257	54,55,150-157	?
117S00096	117S00066	54,55,57,150-157	?
117S00130	117S00100	54,55,150-157	?
117S00124	118S00329	54,55,150-157	?
118S00334	118S00259	54,55,150-157	?
131S00003	131S00333	54,55,57,150-157	?
117S00123	117S00101	54,55,150-157	?
117S00111	118S00292	54,55,150-157	?
117S00112	118S00332	152	?
131S00464	131S00170	58	?
118S00397	118S00263	58	?
118S00367	118S00306	57	?
R5762,R5763	117000067,117000067	57	?
R5760,R5761	117000063,117000063	57	?

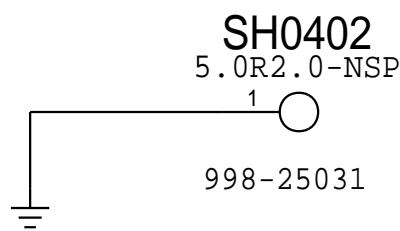
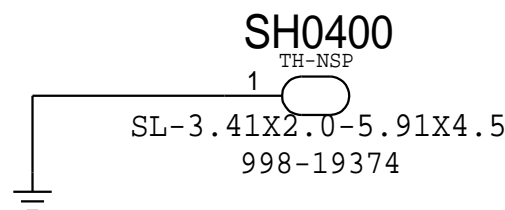
10k 0201 -> 01005  
100k 0201 -> 01005  
33 0201 -> 01005  
47k 0201 5% -> 47k 01005 5%  
47k 0201 5% -> 47k 01005 5%  
5.1k 0201 5% -> 4.99k 01005 1%  
200k 0201 5% -> 200k 01005 1%  
1M 0201 5% -> 1M 01005 1%  
470k 0201 5% -> 470k 01005 5%  
33k 0201 5% -> 33k 01005 1%  
200 0201 1% -> 200 01005 1%  
10pF 0201 -> 10pF 01005 2%  
3.3k 5% 0201 -> 3.3k 5% 01005  
15 5% 0201 -> 15 1% 01005  
1.5k 5% 0201 -> 1.5k 1% 01005  
220pF 0201 -> 220pF 01005  
1 1% 0201 -> 1 1% 01005  
2.21k 1% 0201 -> 2.21k 1% 01005  
0 0201 -> 0 01005

PAGE TITLE			SYNC_DATE=
Reference Design Sync Tables			
 Apple Inc.	DRAWING NUMBER	051-09344	SIZE D
	REVISION	4.0.1	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH		
	PAGE	2	OF 801
	SHEET	2	OF 121

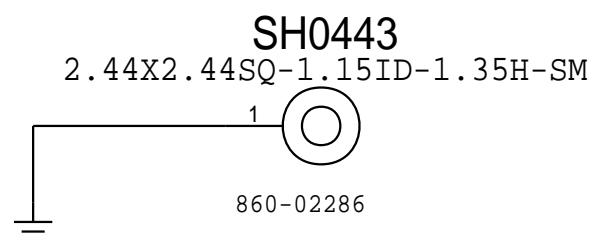
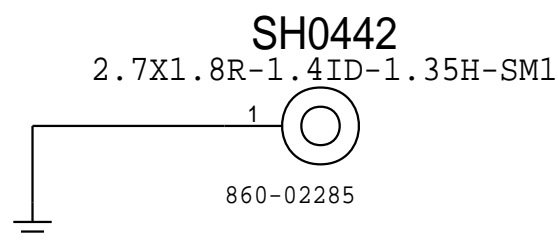
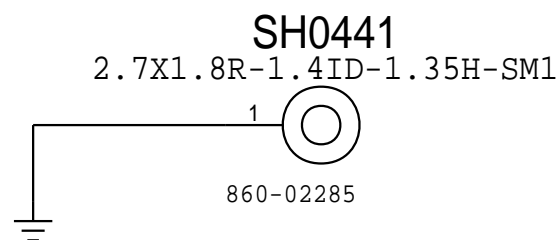
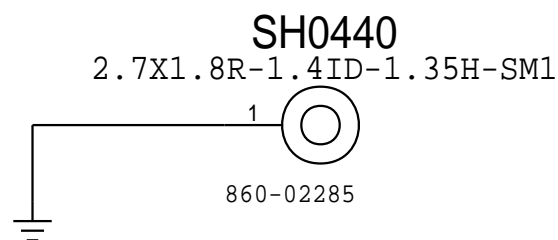




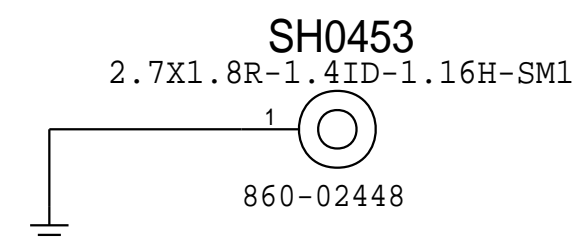
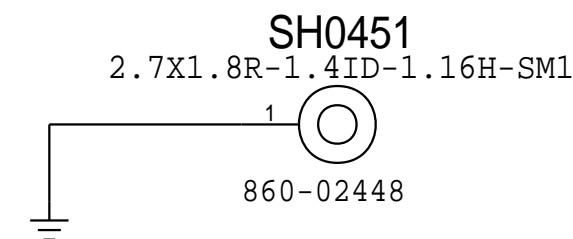
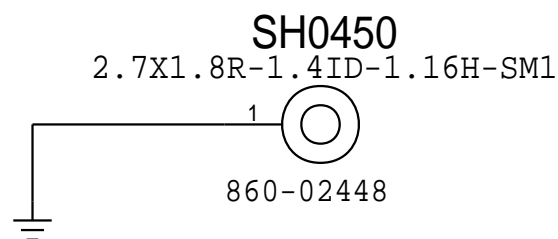
## A Mounting Holes



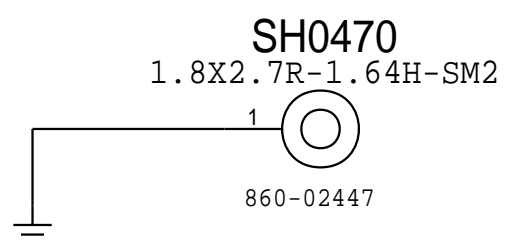
## B MDB Cowling Bosses



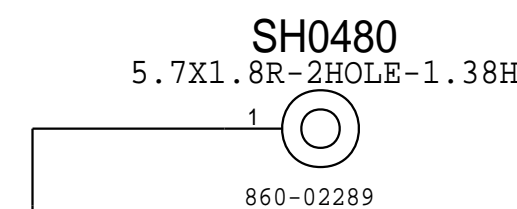
## C MagSafe/USB-C Cowling Bosses



## D WiFi Module Cowling Boss



## E Right Speaker Cowling Boss

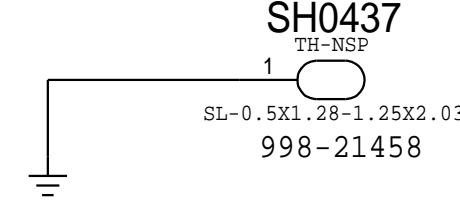
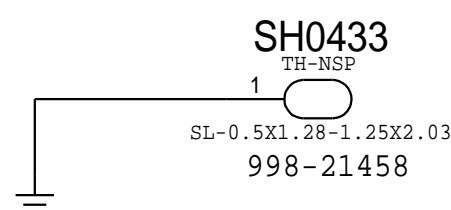
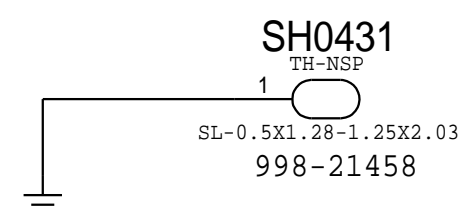
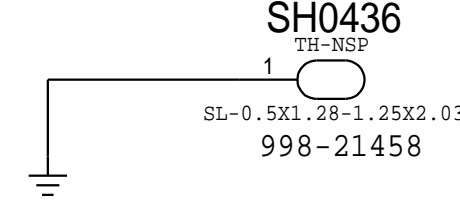
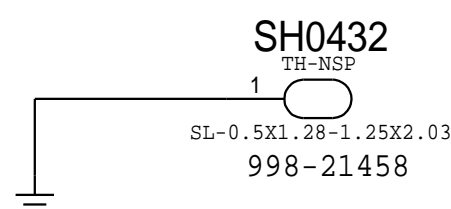
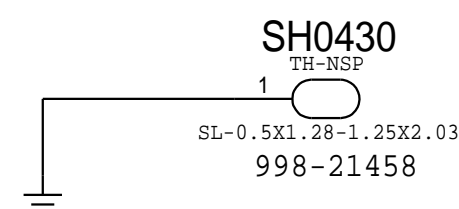


## F Thermal Module Boss

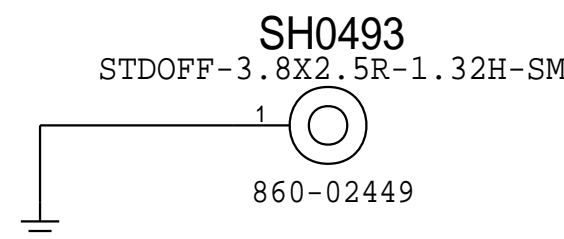
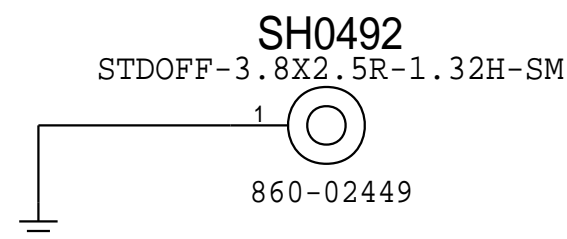
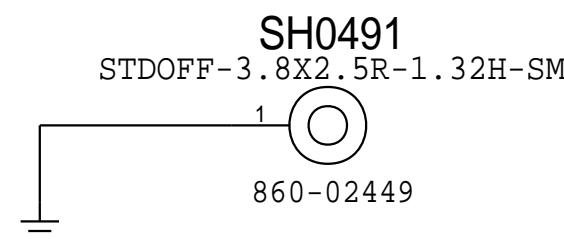
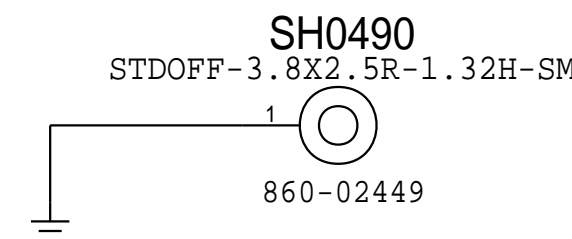
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
860-02297	1	BOSS,ROUND,MLB,X2392	SH0481	CRITICAL	

## G MLB Shield Fence

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
806-42537	1	SHIELD,FENCE,MLB,X2966	SHLD1	CRITICAL	



## H SOC Thermal Module Bosses



## I Spacers

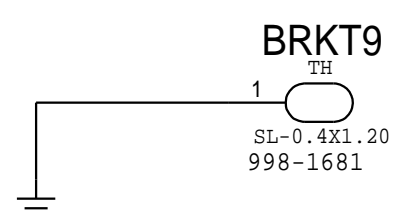
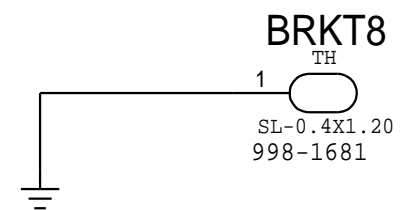
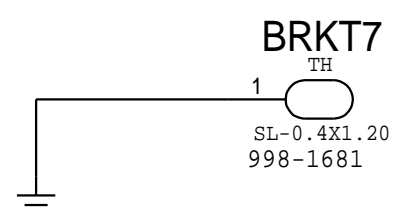
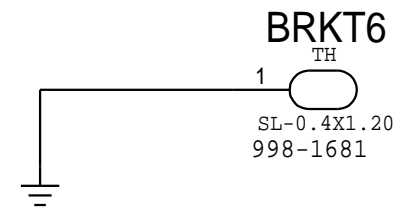
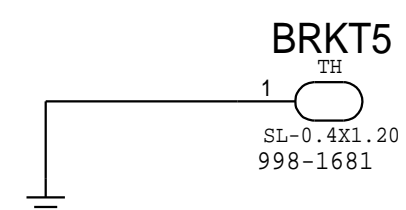
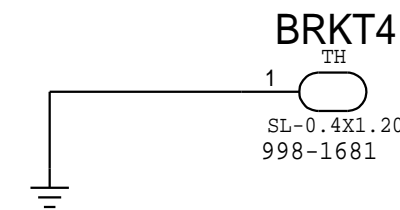
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
806-31119	1	SPACER,MLB,SMT,X2147	SH04B1		
806-31120	1	SPACER,MLB,SMT,SML SLOT,X2147	SH04B2		
806-31121	1	SPACER,MLB,SMT,LRG SLOT,X2147	SH04B3		

## J MLB Mounting Bracket and SOC Stiffener

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
806-41608	1	BRKT,MLB,SMT,R,X2392	BRKT1	CRITICAL	
806-42466	1	BRKT,MLB,LL,X2966	BRKT2	CRITICAL	
806-41609	1	BRKT,MLB,UL,X2392	BRKT3	CRITICAL	

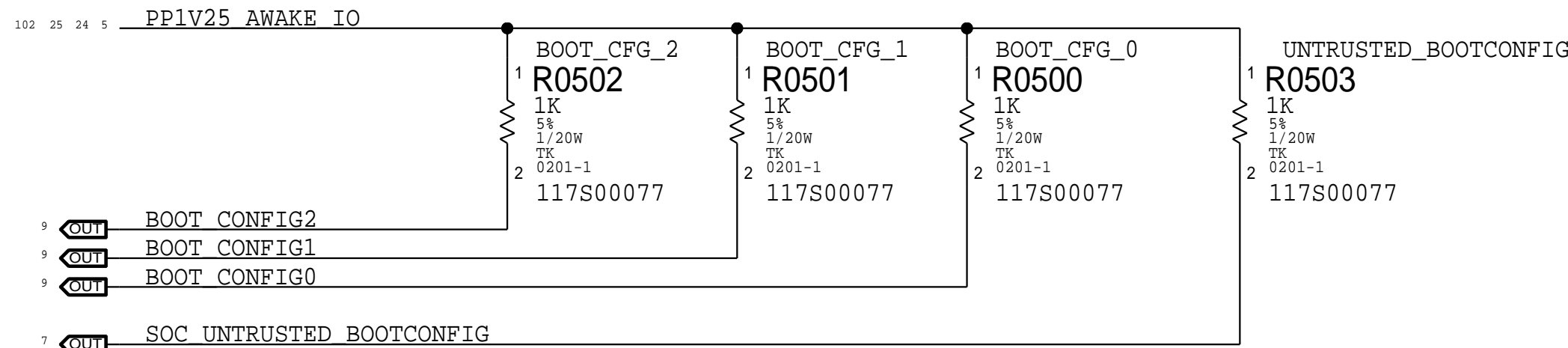
## K MLB Bracket Slot

2x per bracket



D

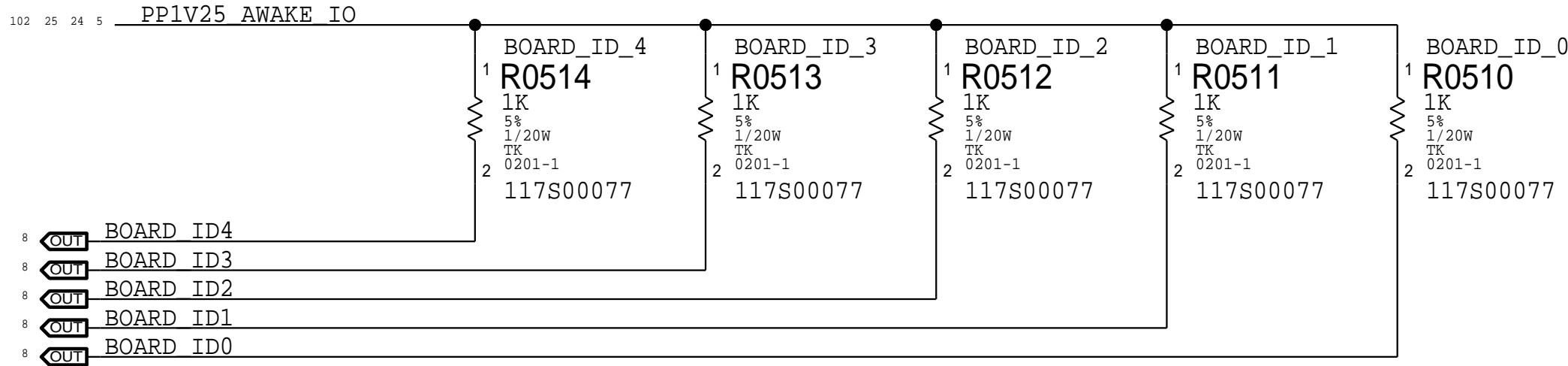
## A BOOT CONFIG ID



BOOT_CFG[2:0]	MODE	V	BUS	FREQ	USAGE
000	NAND,	1.2V	SPI0,	12MHZ,	PRODUCTION
001	NAND,	1.2V	SPI0,	40MHZ,	PRODUCTION
010	QUADNOR,	1.2V	SPI1,	24MHZ,	BACKUP PRODUCTION
011	RESERVED,	1.2V	NA,	NA,	M ONLY
100	NOR,	1.2V	SPI1,	6MHZ,	BRINGUP
101	NOR,	1.2V	SPI1,	12MHZ,	MANUFACTURING/SIVAL
110	QUADNOR,	1.2V	SPI1,	40MHZ,	PRODUCTION
111	NOR,	1.2V	SPI1,	40MHZ,	LEGACY PRODUCTION

SOC BOOT AND POWER ARCH SPEC 1.0.4 TABLE 2.4  
STUFF R0503 FOR UNTRUSTED\_BOOTCONFIG

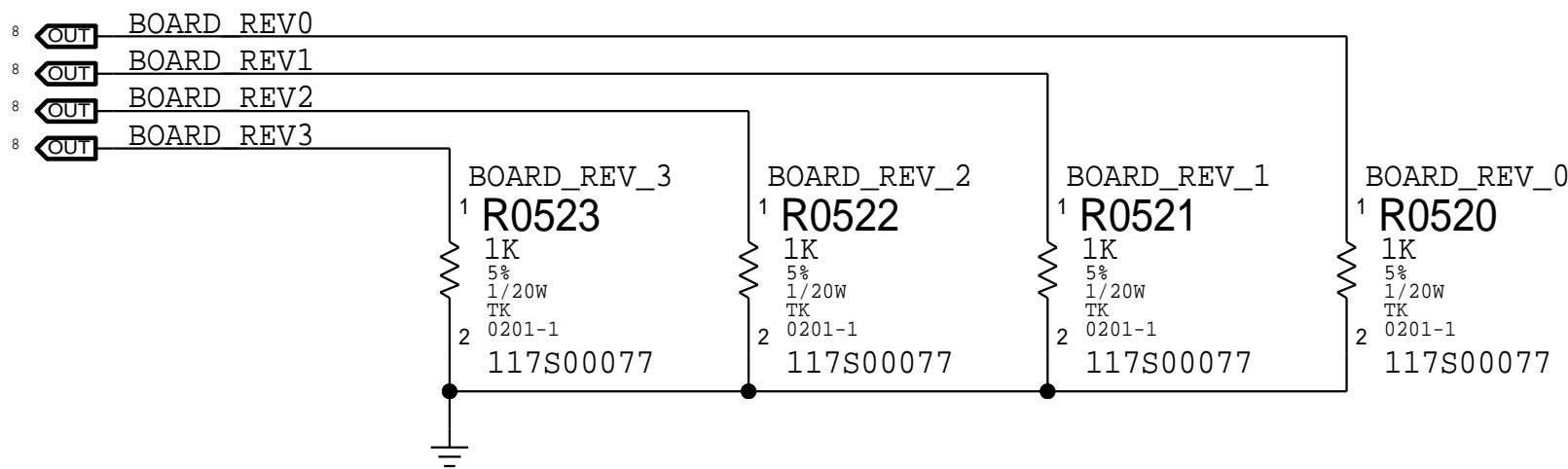
## B BOARD ID



MLB BOARD\_ID[7:0]:  
BOARD\_ID[7:5] COMES FROM SOC INTERNALLY  
BOARD\_ID[4:0] ARE THE STRAPS ON MLB, SAMPLED 100US AFTER COLD RESET DEASSERT

C

## C BOARD REV



STUFFING RESISTOR MEANS BIT=0, START AT REV 0000 AND COUNT UP TO 1111

0000:  
0001: P1BU  
0010: Proto1  
0011: Proto1A  
0100: EVT  
0101: DVT  
0110:  
0111:  
1000:  
1001:  
1010:  
1011:  
1100:  
1101:  
1110:  
1111:

B

A

D

C

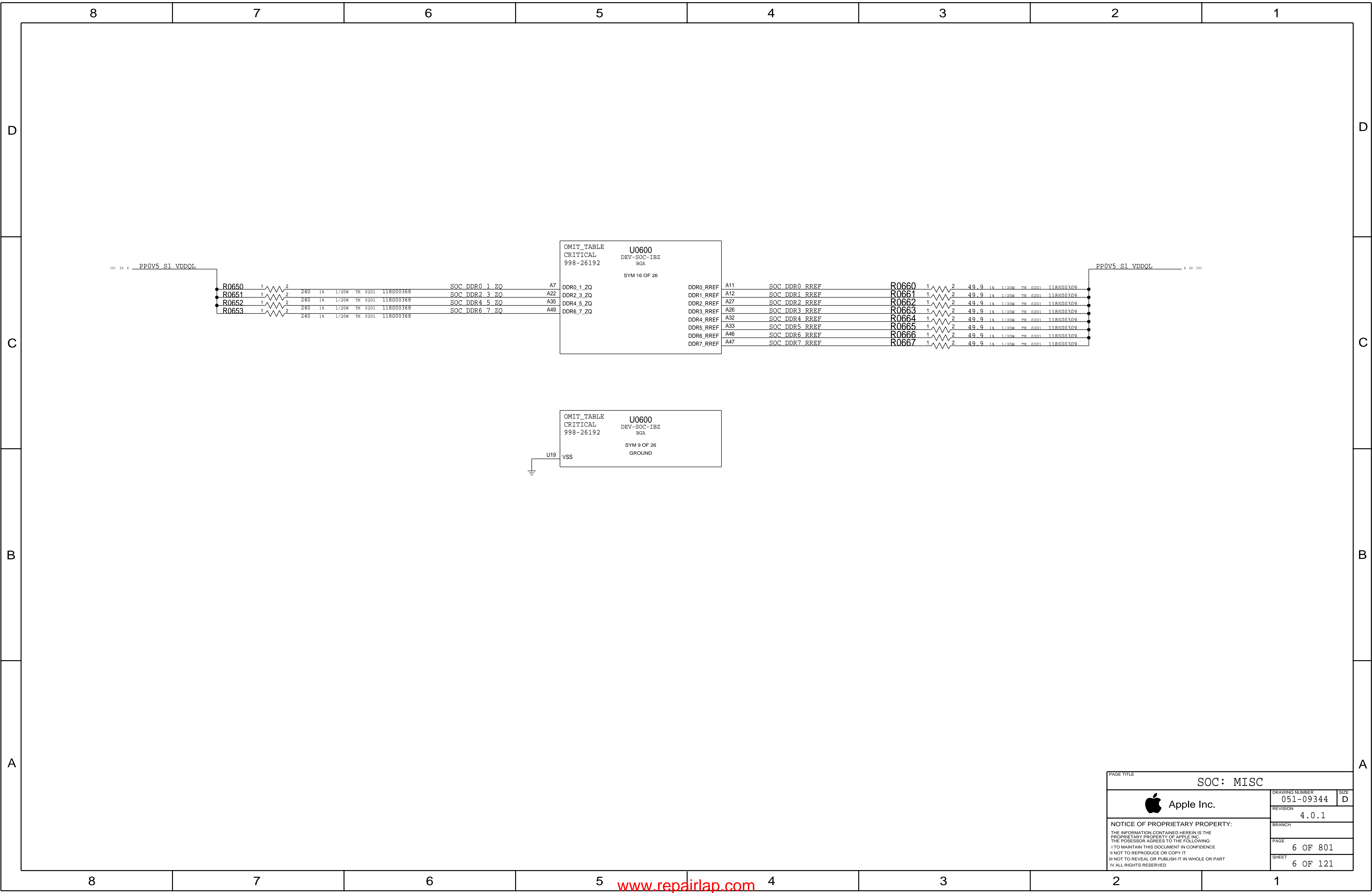
B

A

BOM\_COST\_GROUP=SOC

PAGE TITLE		
SOC: CONFIG STRAPS		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	5 OF 801
	SHEET	5 OF 121





D

C

B

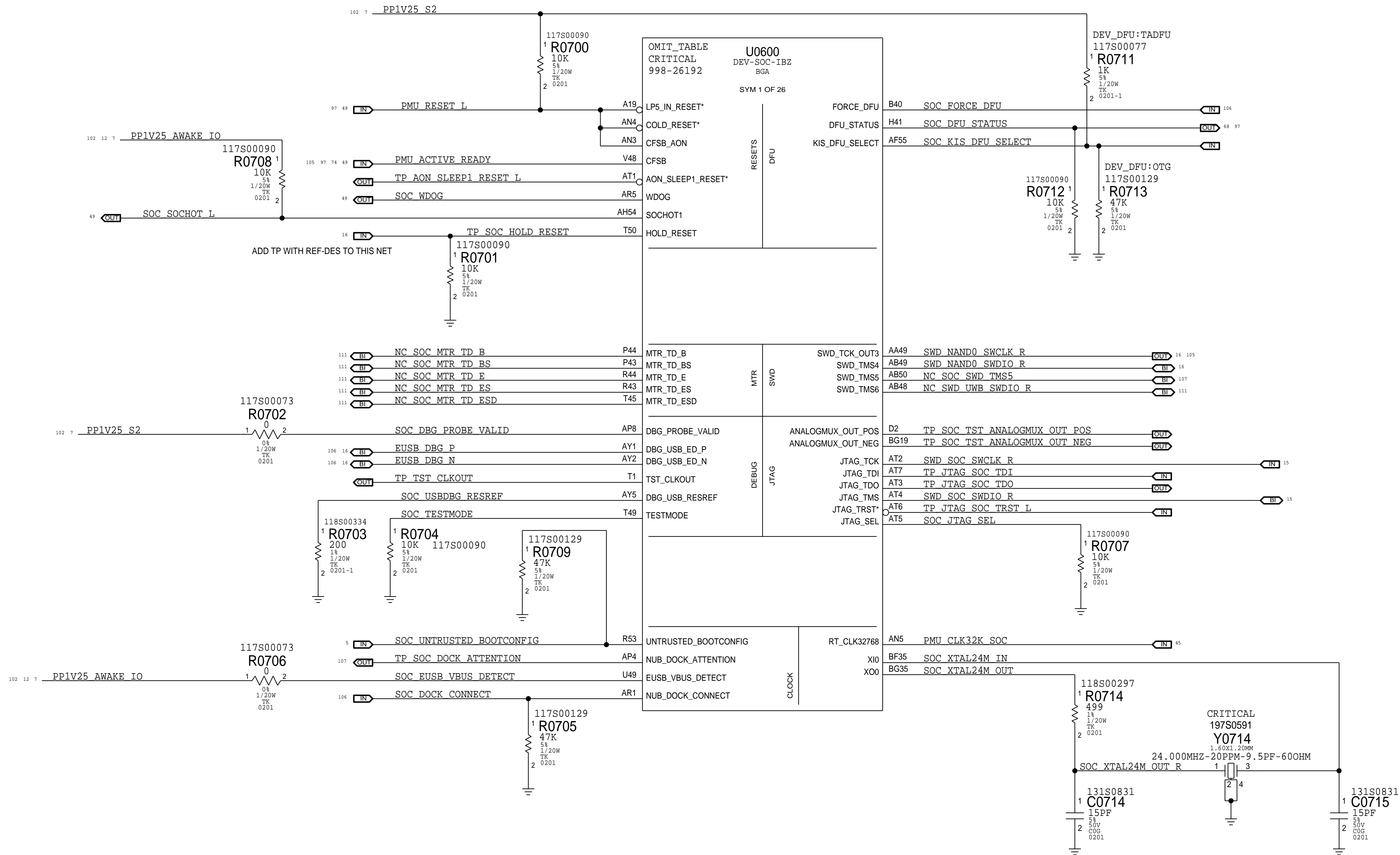
A

D


C

B

A



BOM\_COST\_GROUP=SOC

PAGE TITLE		
SOC: RESETS, CLOCKS, DEBUG		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
II NOT TO REPRODUCE OR COPY IT		
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		
BRANCH		
PAGE		
7 OF 801		
SHEET		
7 OF 121		



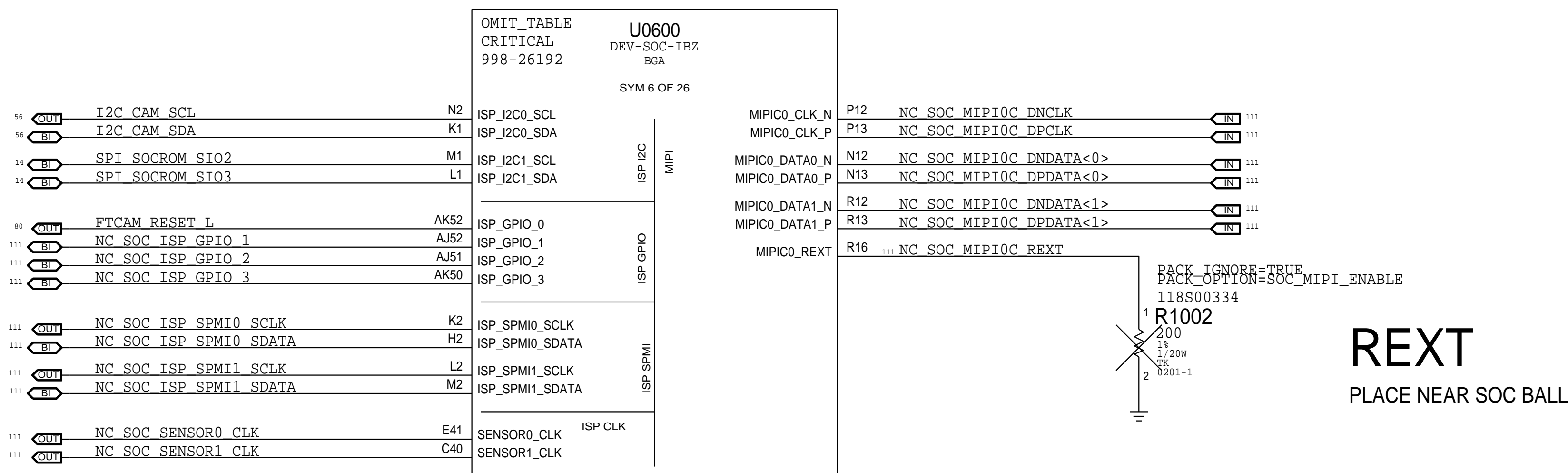



BOM\_COST\_GROUP=SOC



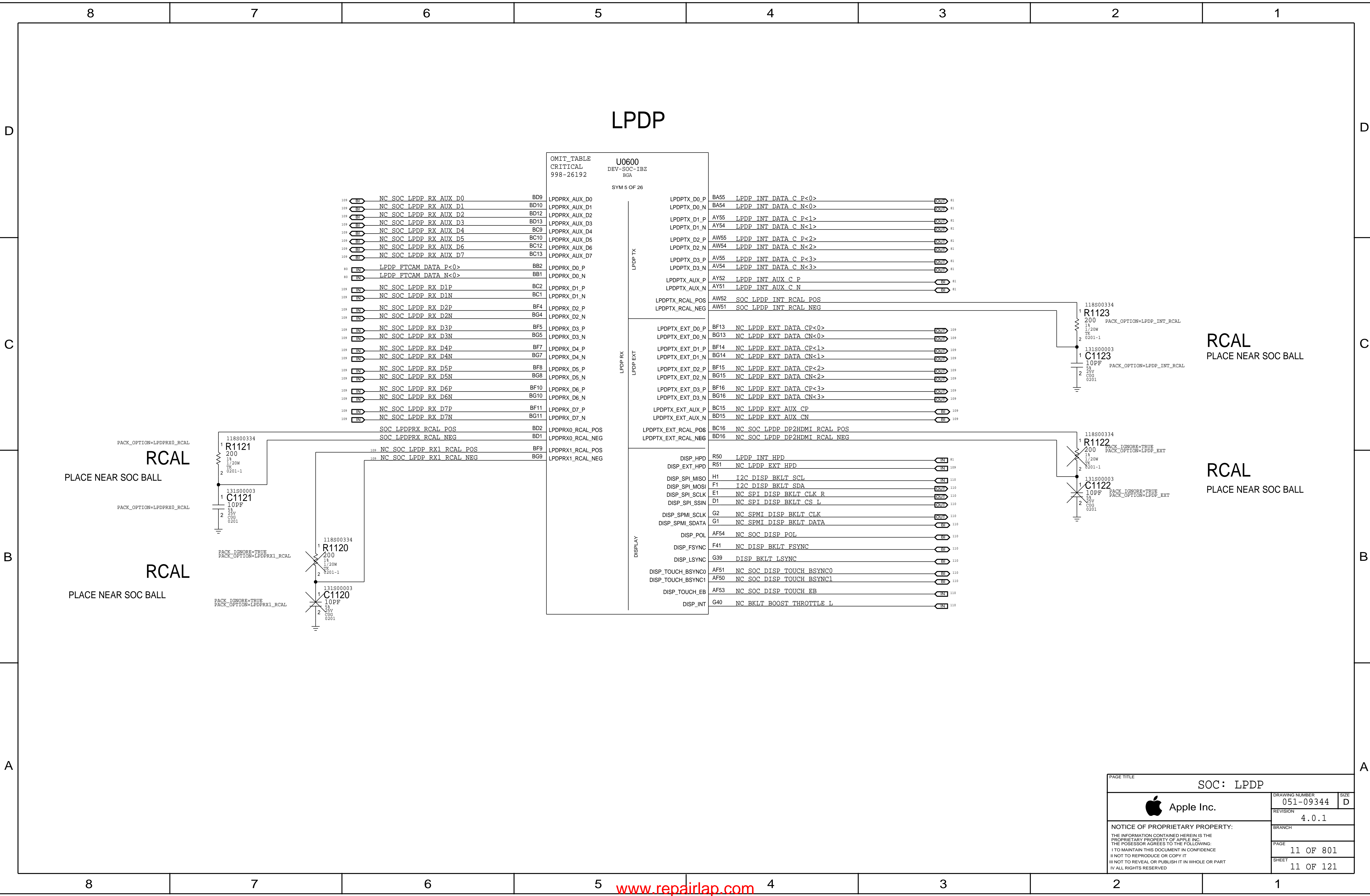


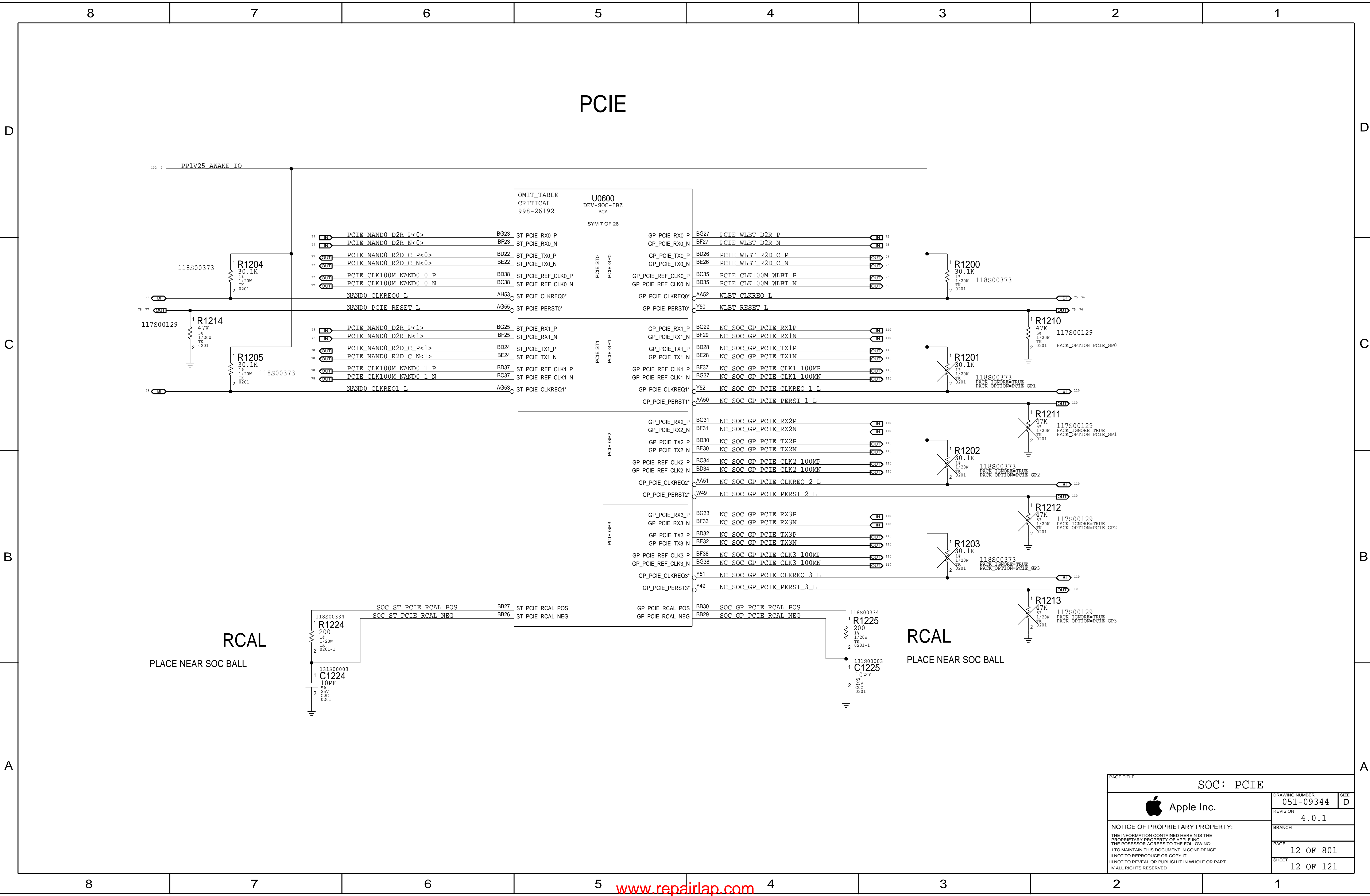
## ISP / MIPI



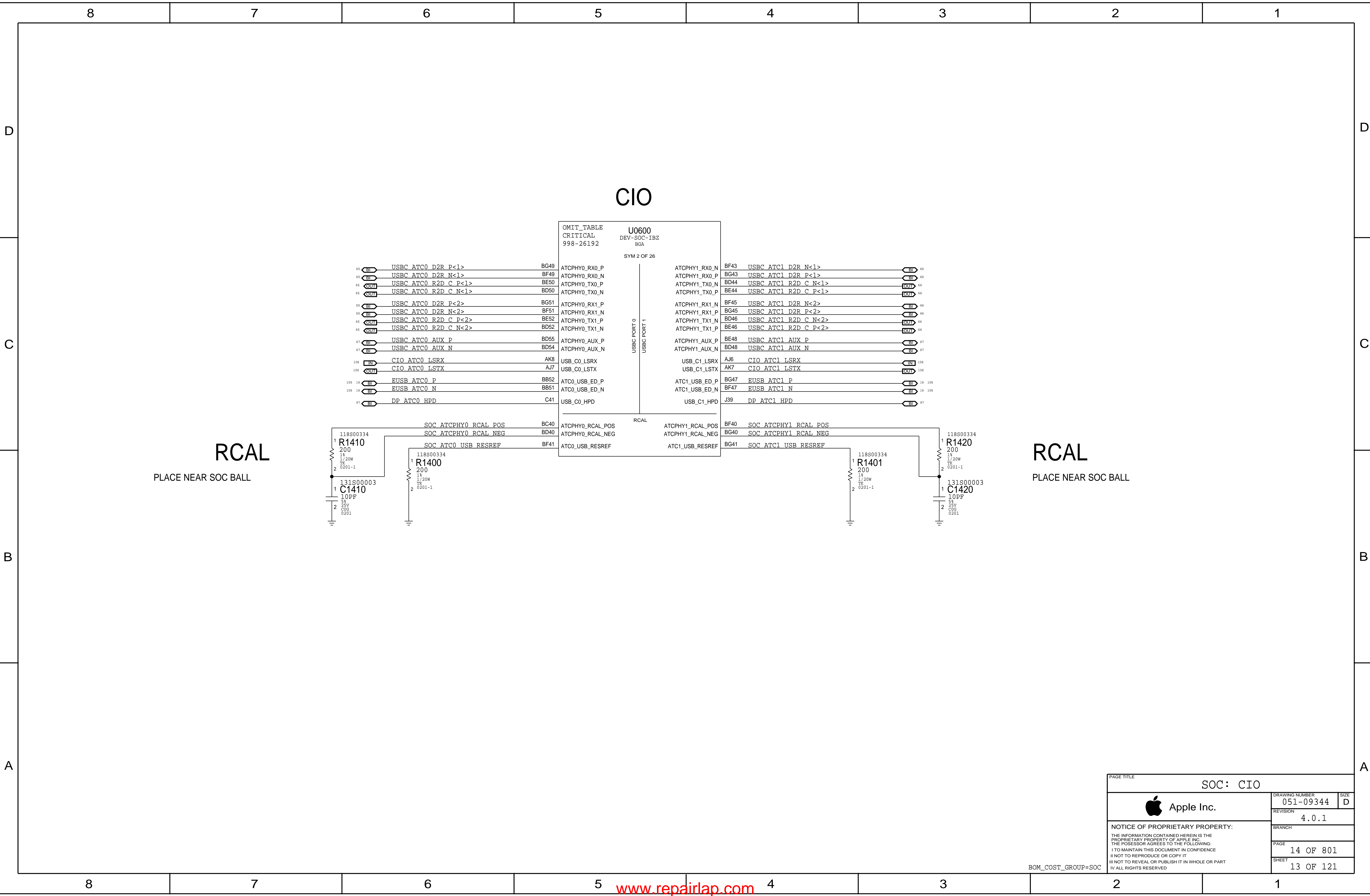
PAGE TITLE			
SOC: ISP, MIPI			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		4.0.1	
		BRANCH	
		PAGE	10 OF 801
		SHEET	10 OF 121






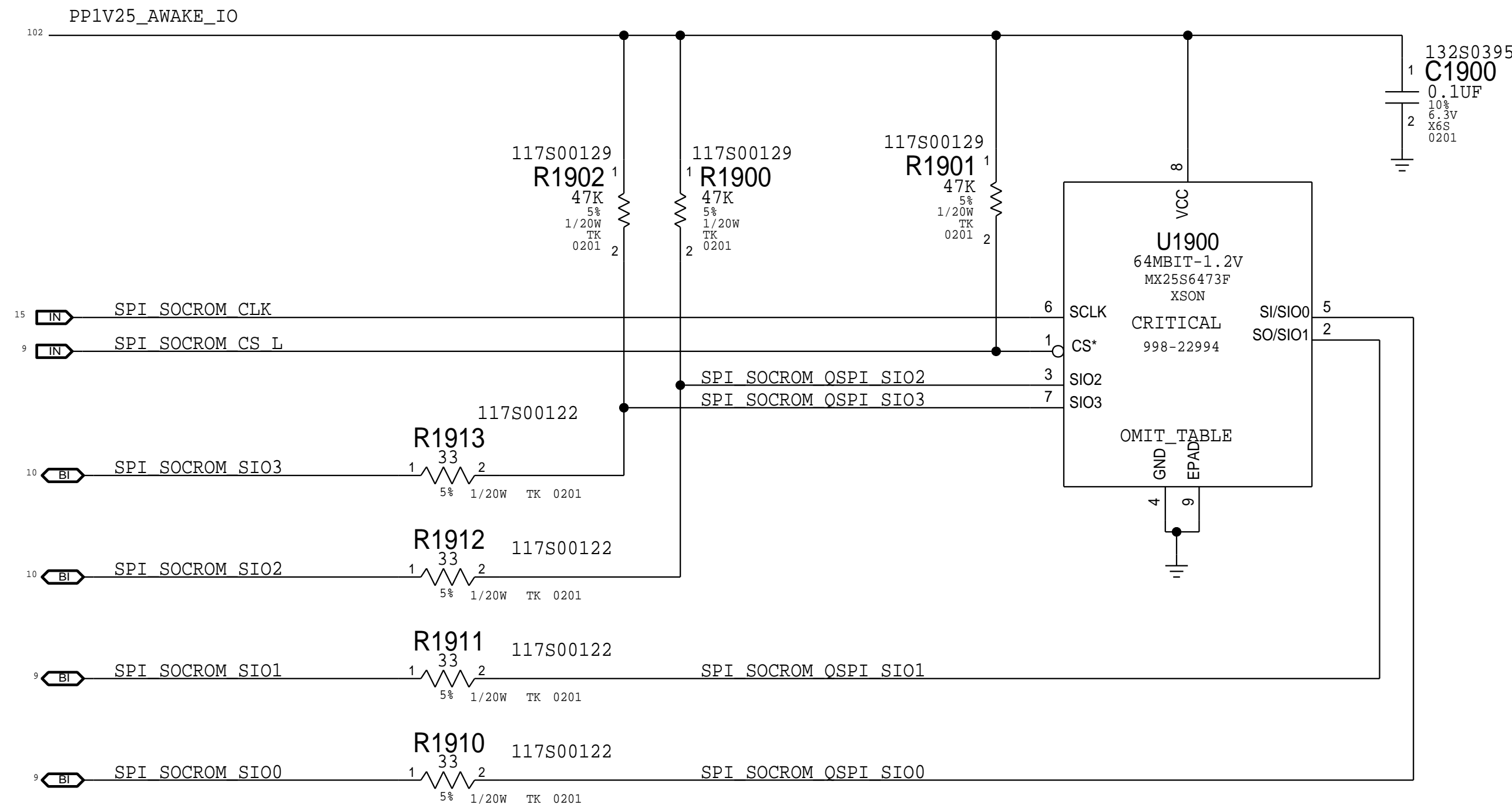




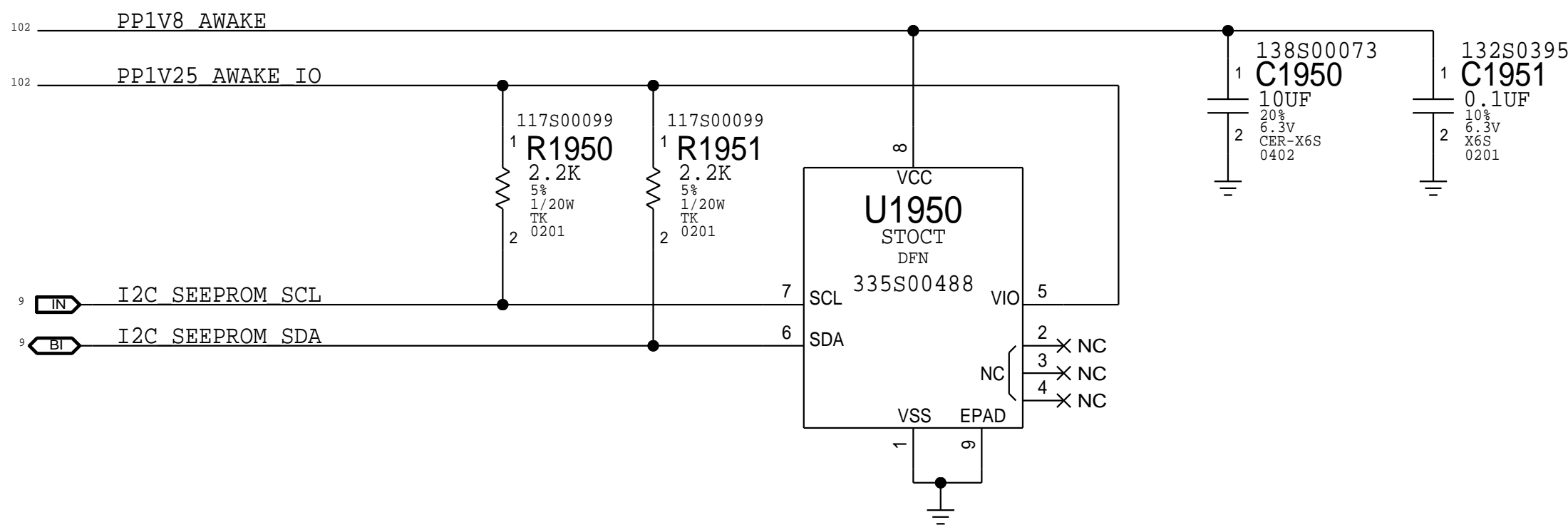


PAGE TITLE			SOC: CIO		
 Apple Inc.		DRAWING NUMBER		SIZE	
		051-09344		D	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		REVISION		4.0.1	
		BRANCH			
		PAGE		14 OF 801	
		SHEET		13 OF 121	

A SPI ROM



B SEP EEPROM

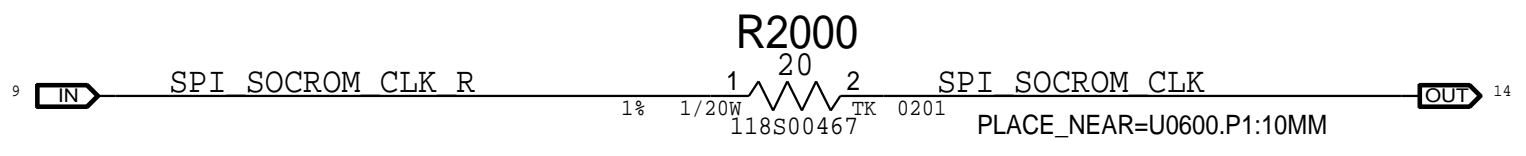


PAGE TITLE		
SOC: SPI NOR, SEP ROM		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
II NOT TO REPRODUCE OR COPY IT		
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		
PAGE		
19 OF 801		
SHEET		
14 OF 121		

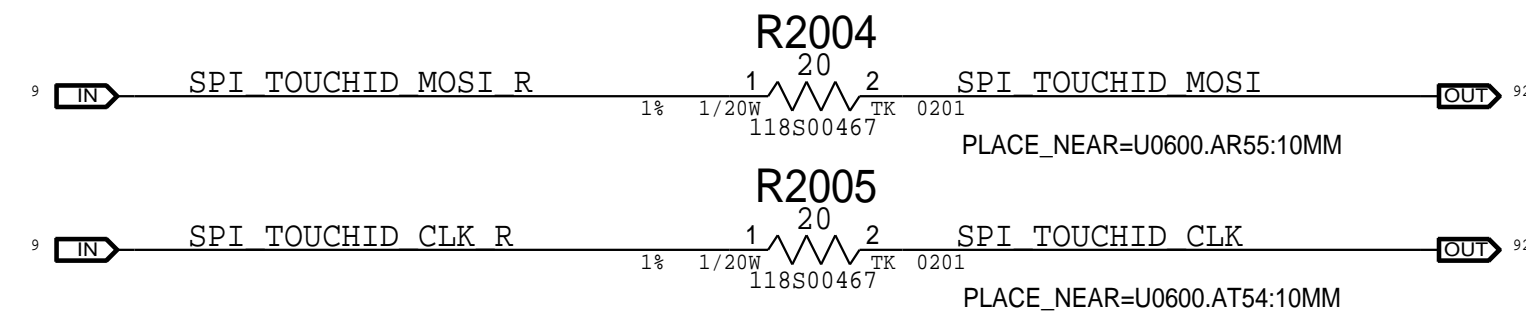
BOM\_COST\_GROUP=SOC



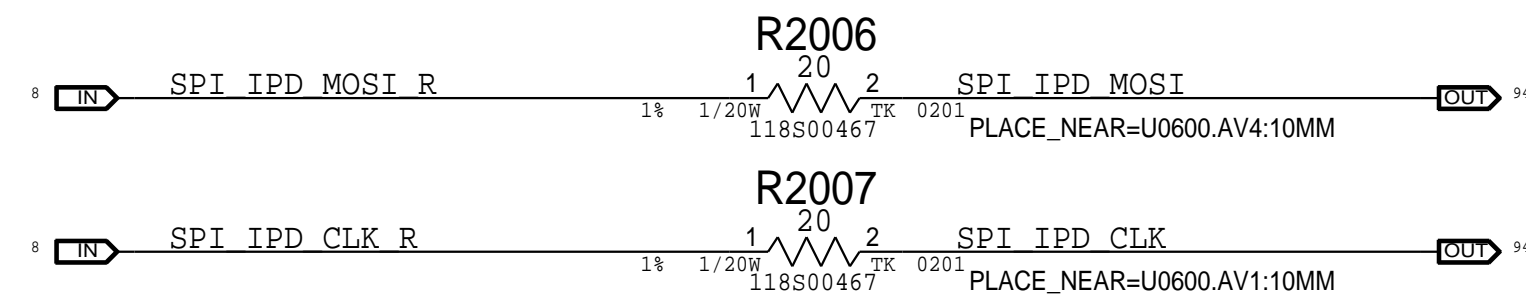
## A SOC ROM Source Terminations



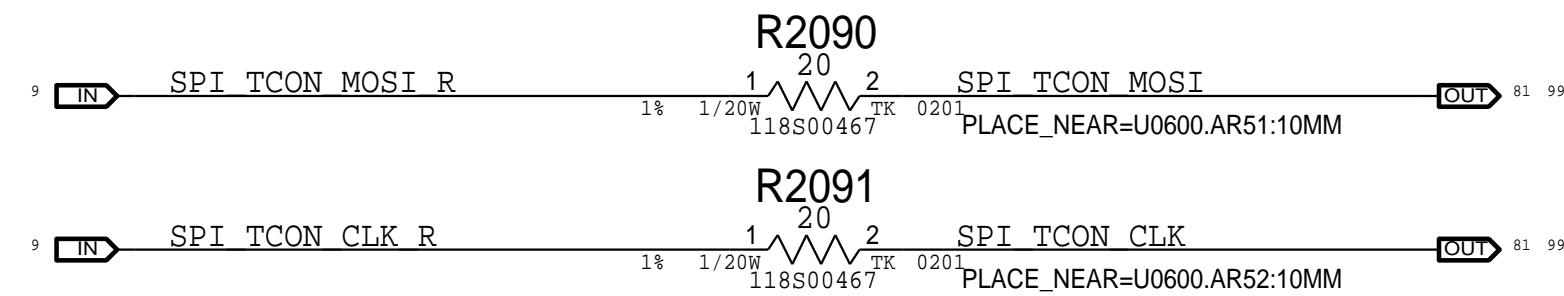
## B TOUCHID Source Terminations



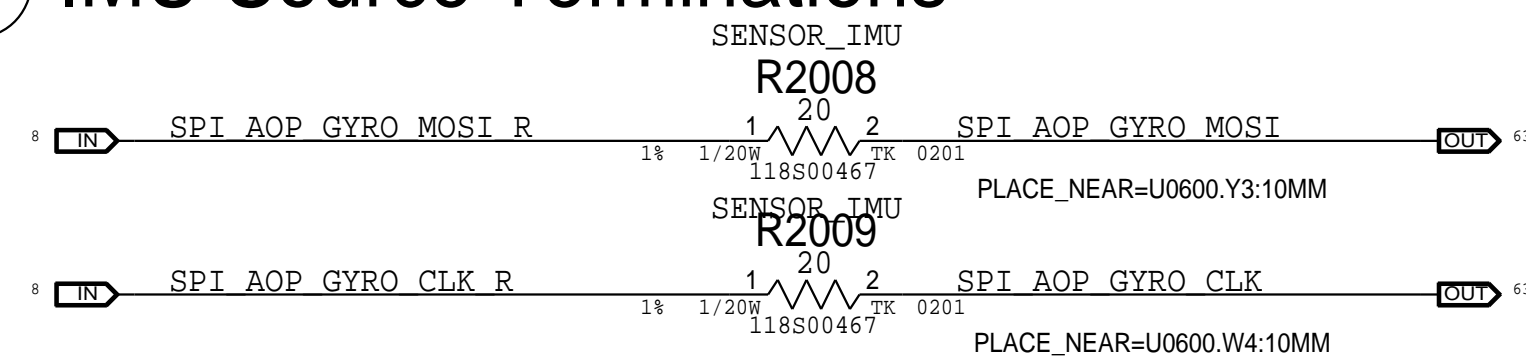
## C IPD Source Terminations



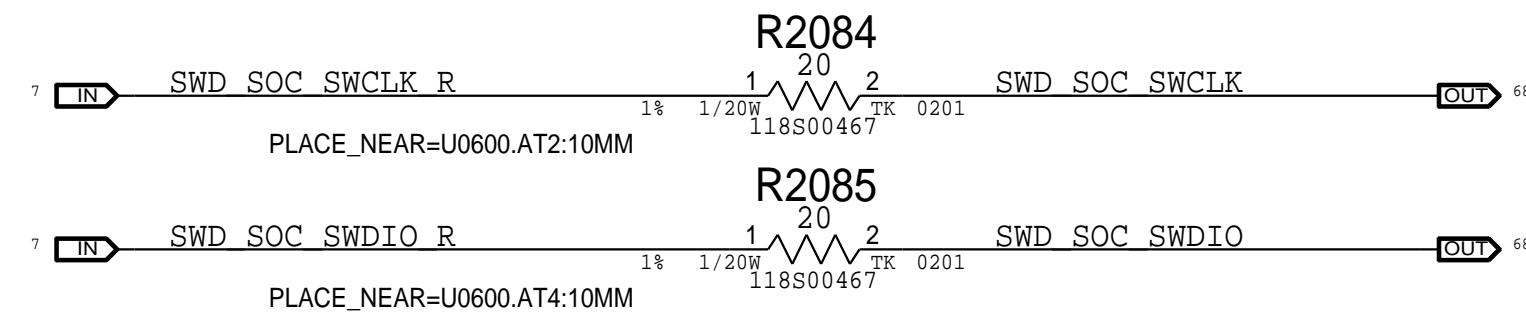
## D TCON Source Terminations



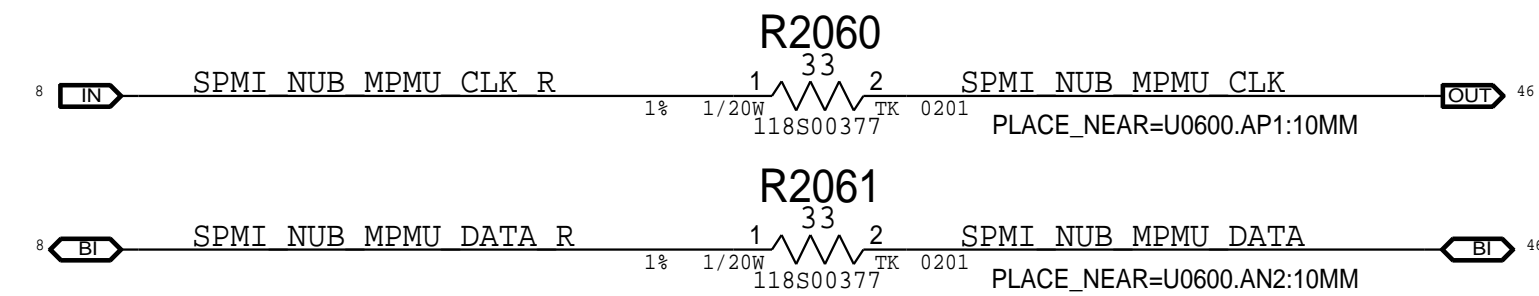
## E IMU Source Terminations



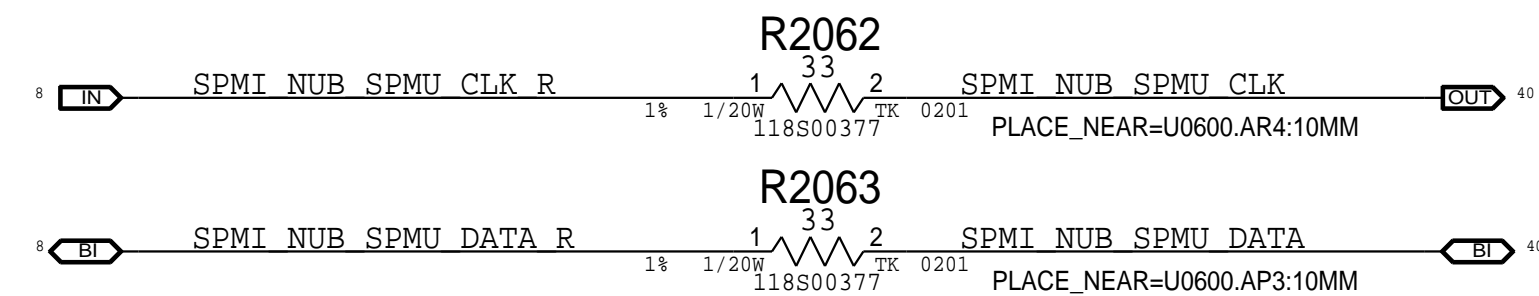
## F SOC SWD Source Terminations



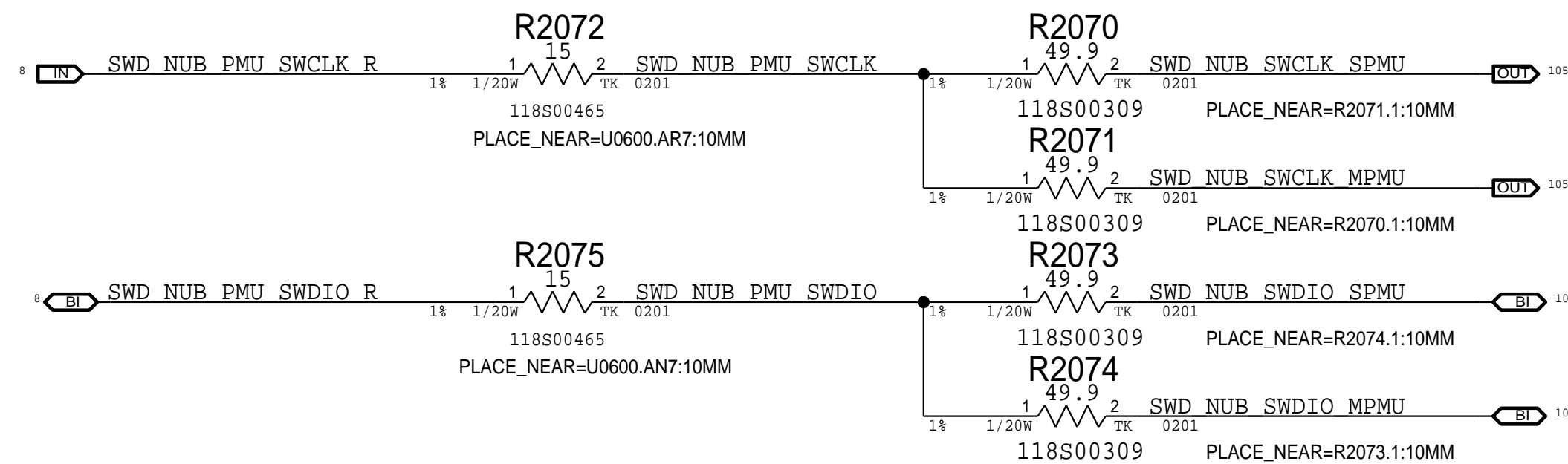
## G SOC SPMI MPMU Source Terminations



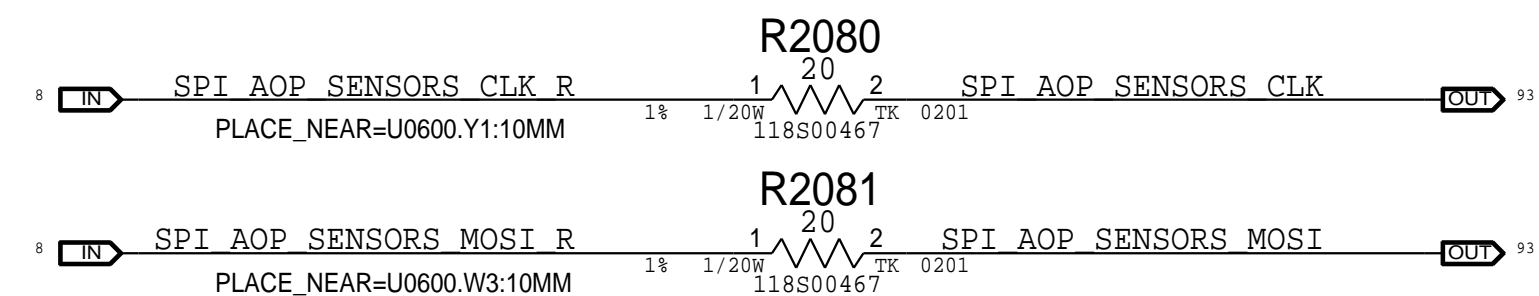
## H SOC SPMI SPMU Source Terminations



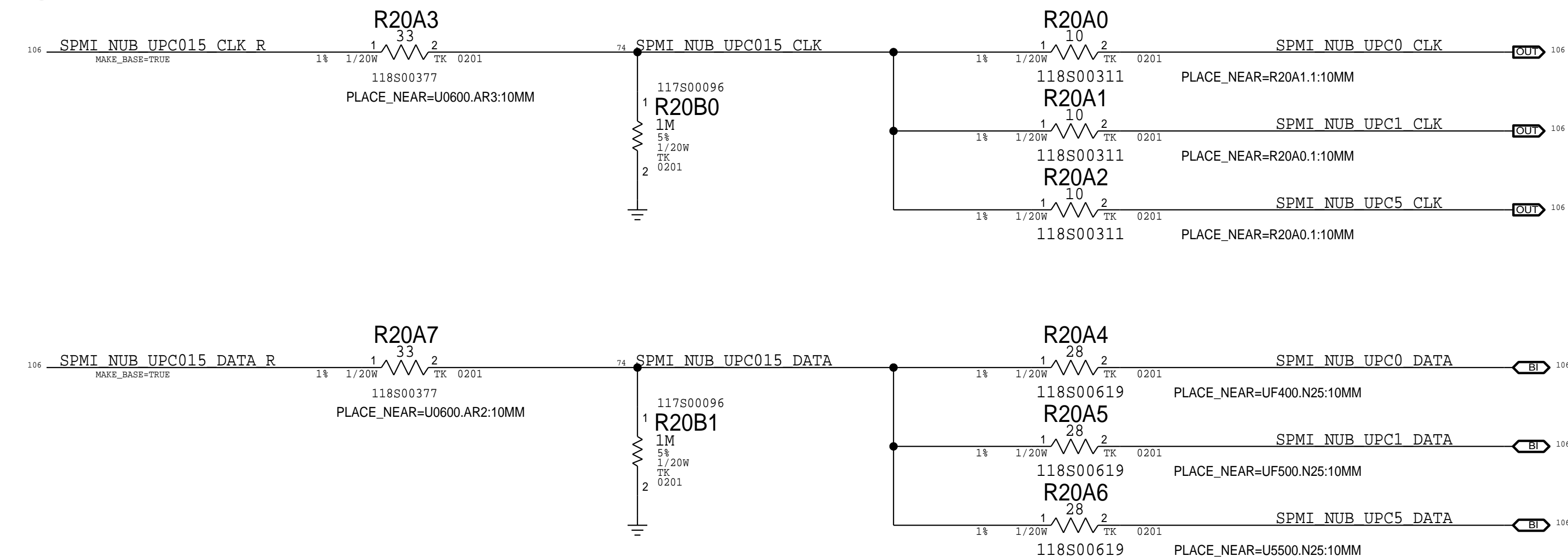
## I PMU SWD Series R



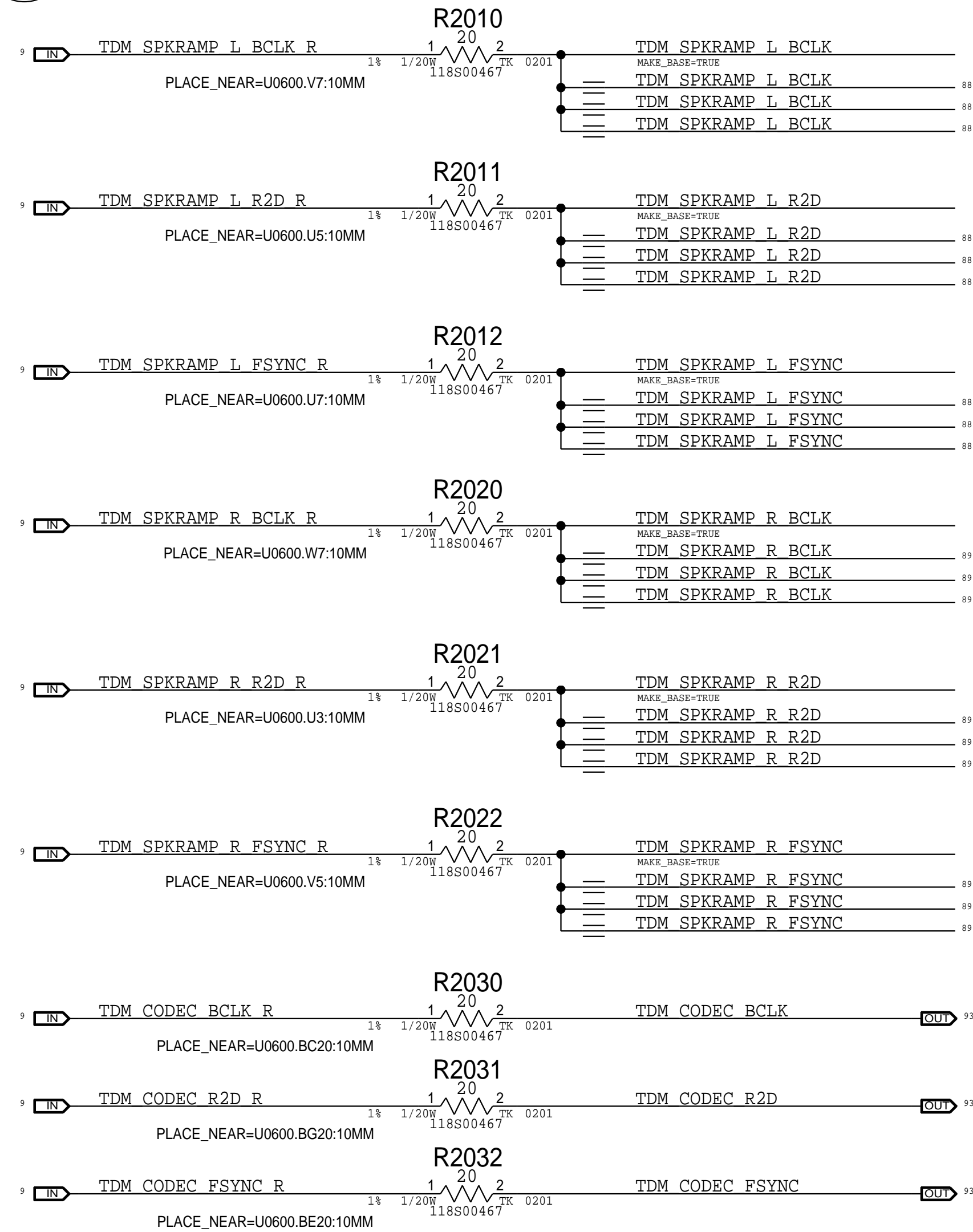
## J LAS Source Terminations




## K UPC 015 SPMI Terminations



## L TDM Source Terminations

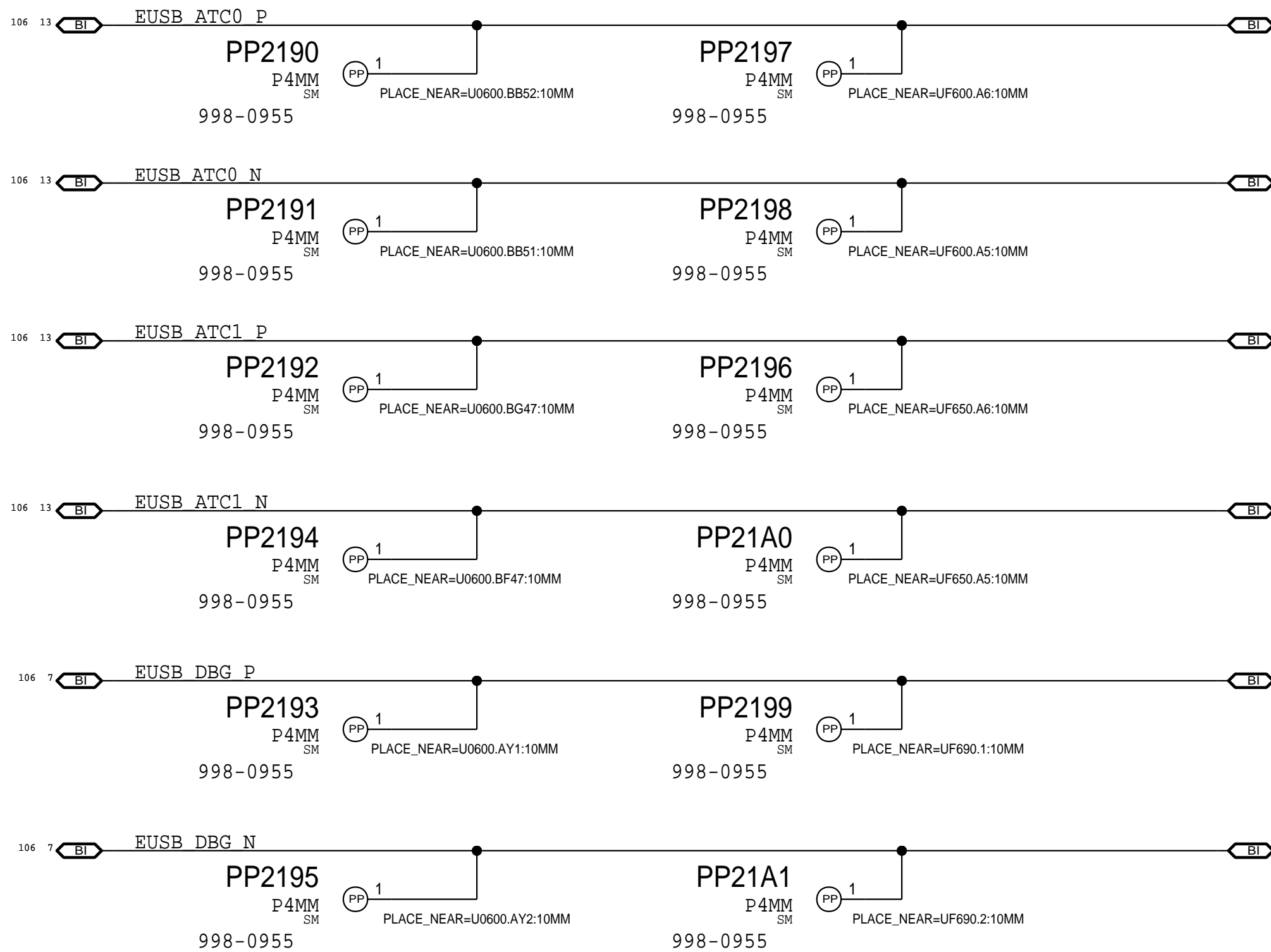


BOM\_COST\_GROUP=SOC

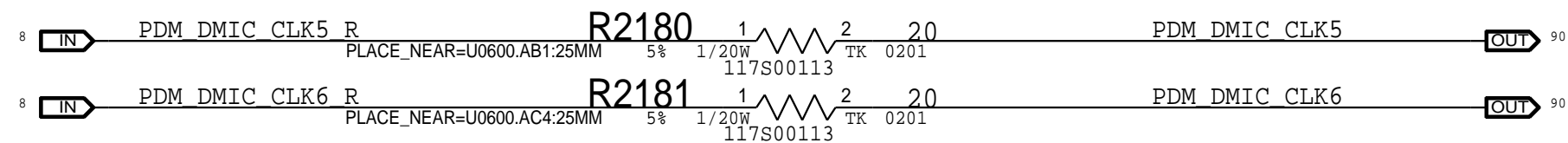
08/25/2023		
PAGE TITLE	SOC: SOURCE TERMS	
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART I ALL RIGHTS RESERVED	BRANCH	
	PAGE	20 OF 801
	SHEET	15 OF 121



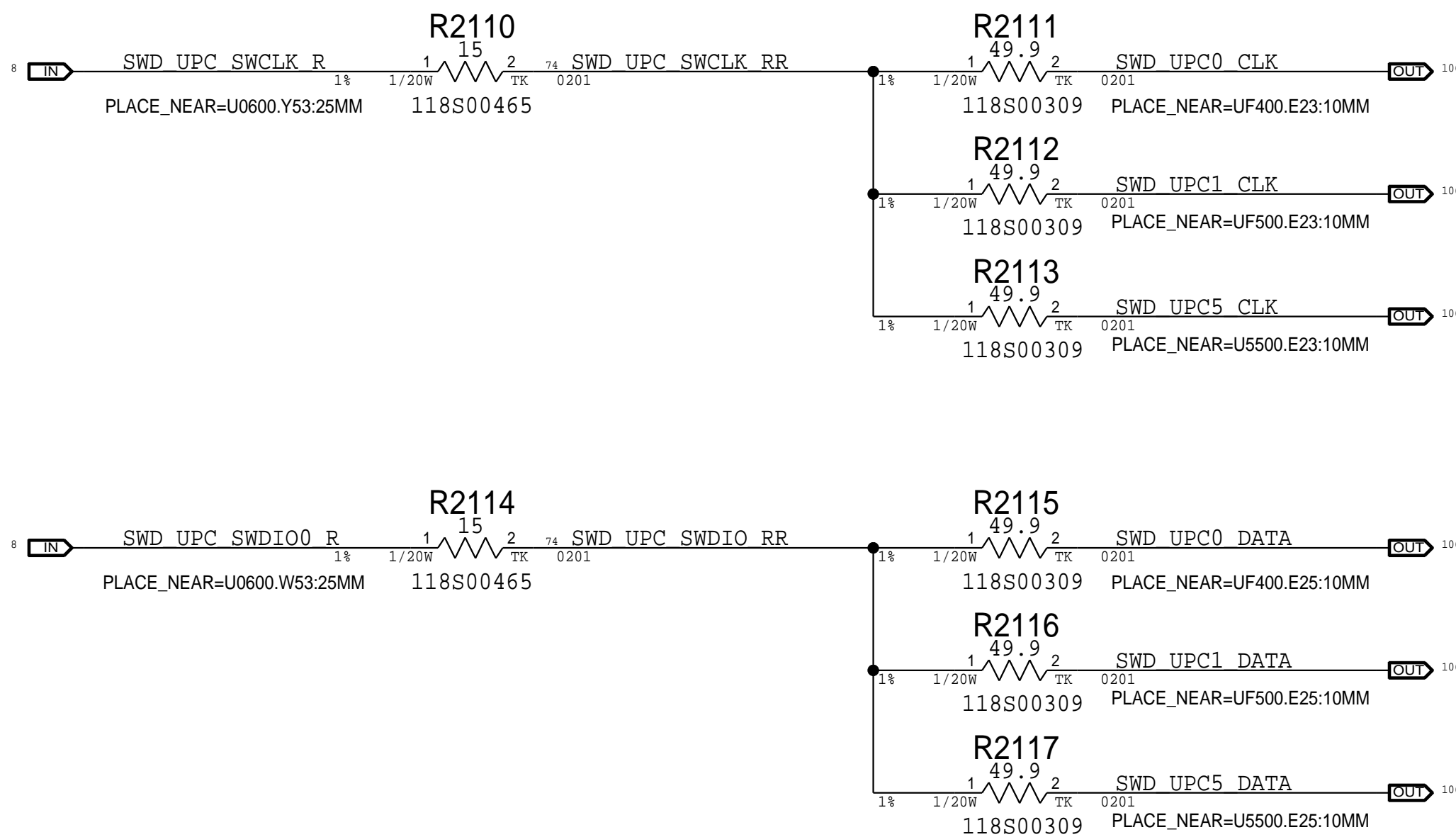
## A EUSB Series Resistors & Test Points



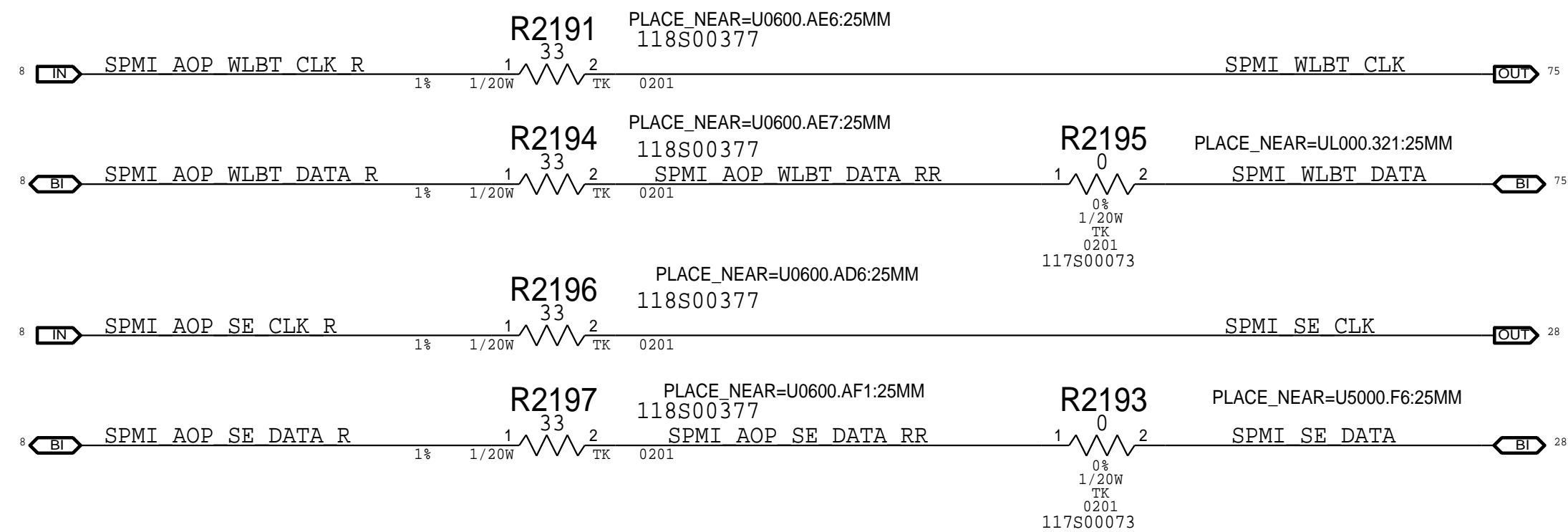
## B DMIC Source Term



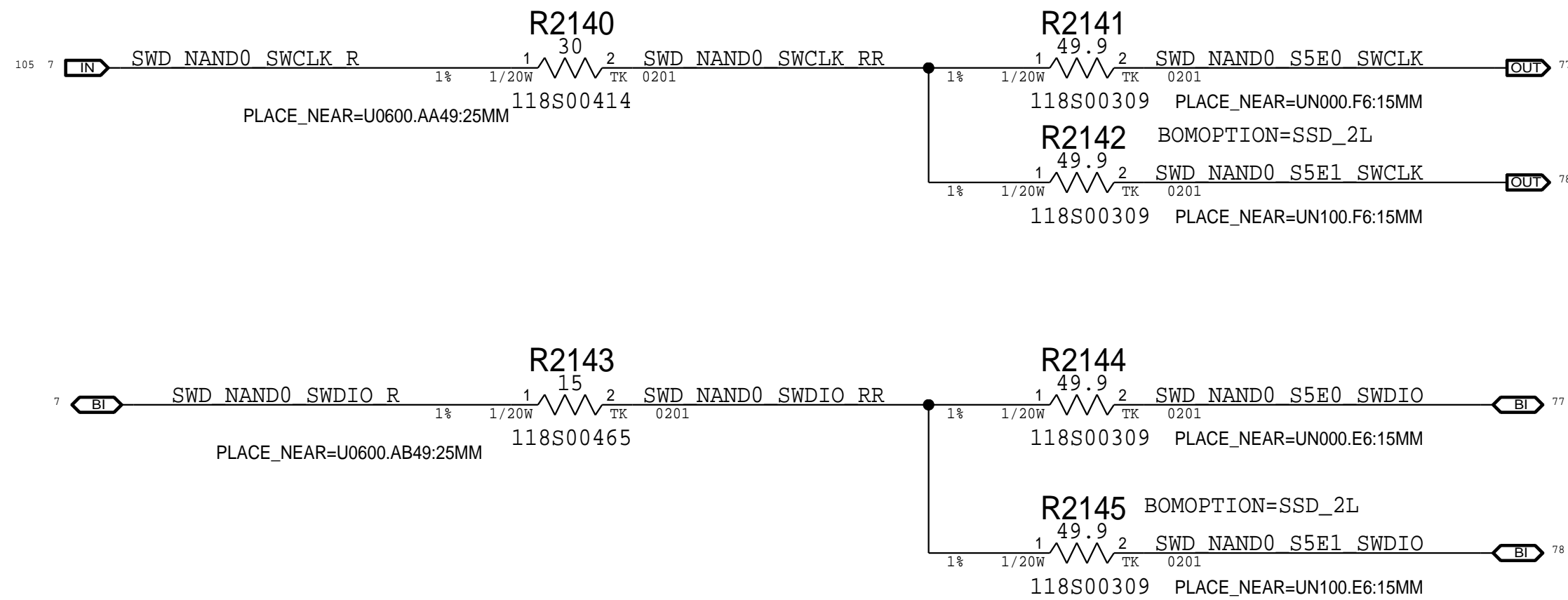
## C UPC SWD Source Term



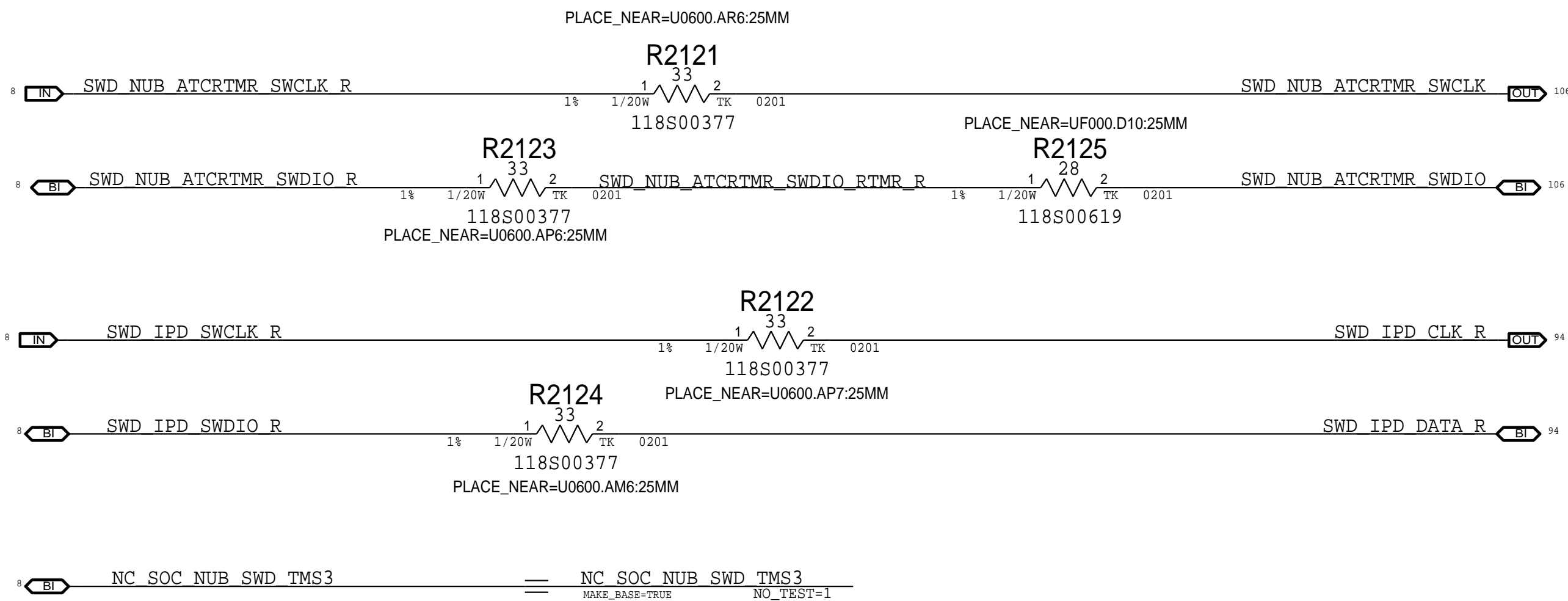
## D Secure Element and WiFi SPMI Source Term



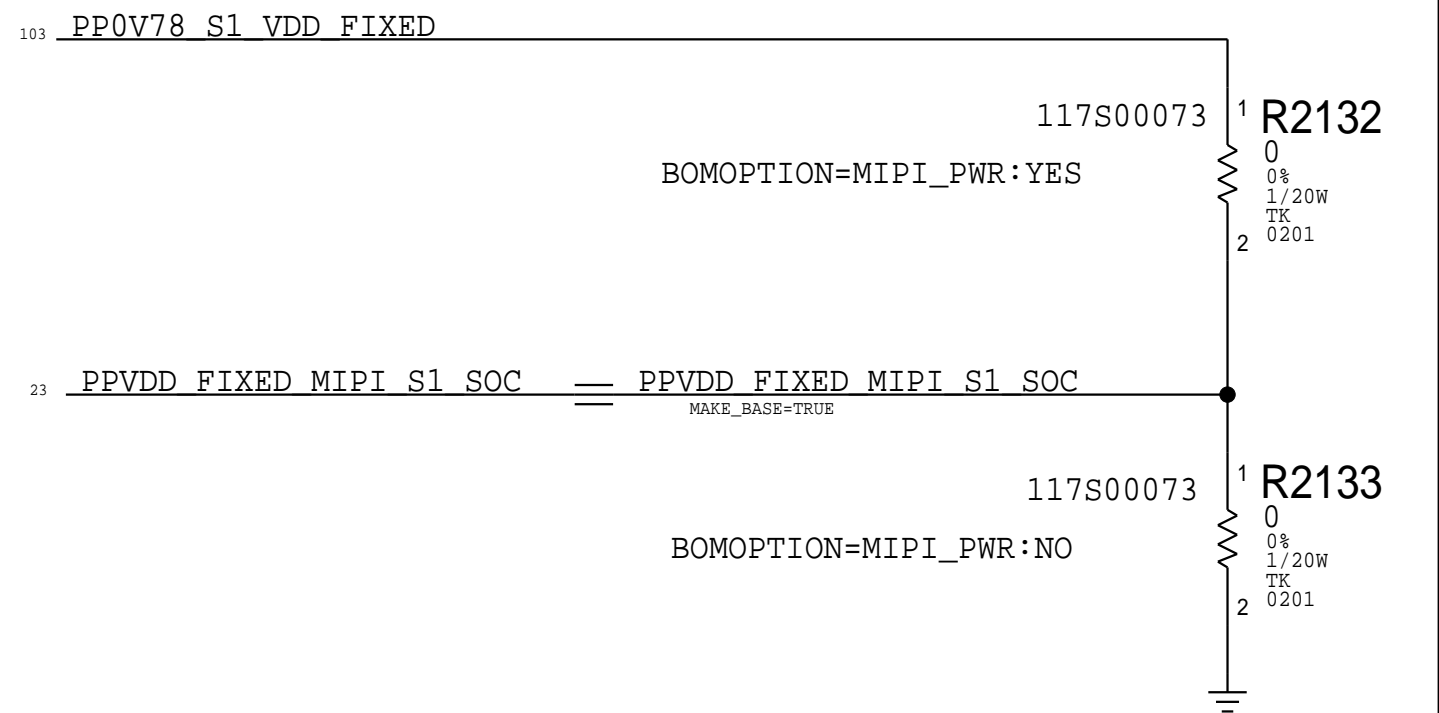
## E NAND SWD Source Term



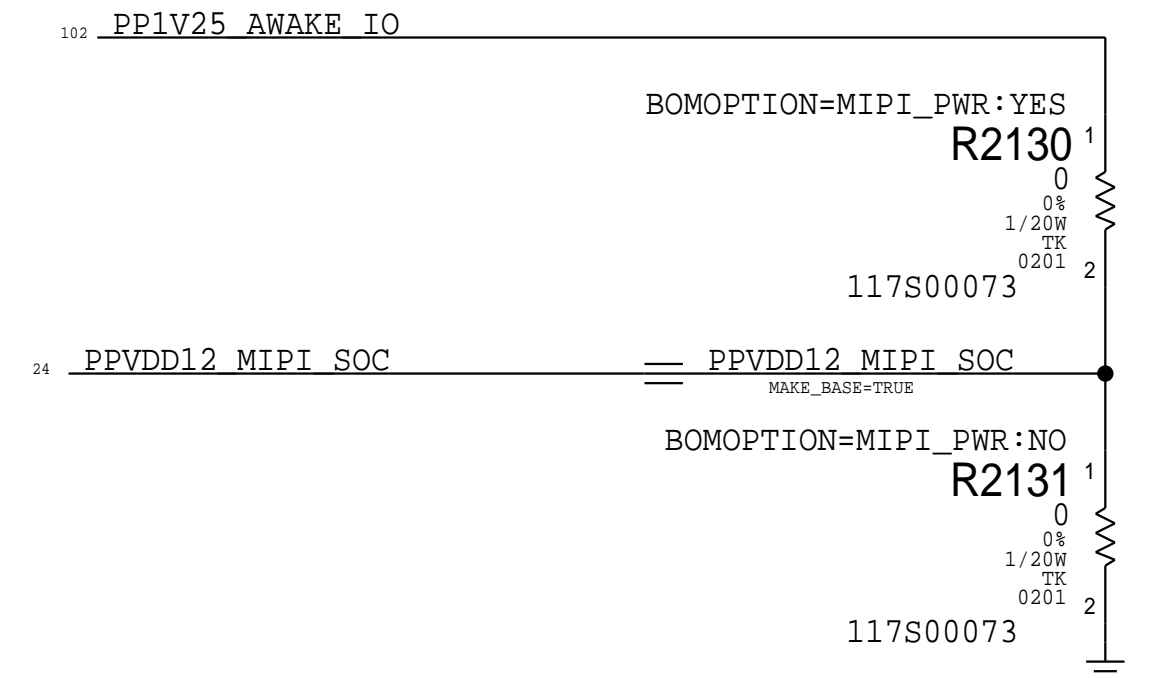
## F IPD and ATC SWD Source Term



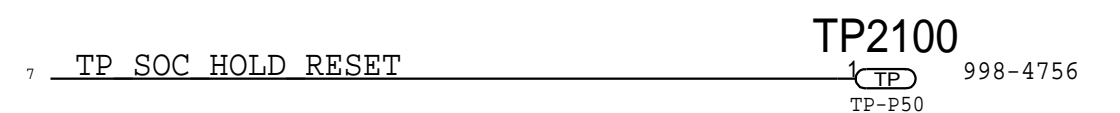
## G MIPI PPVDD\_FIXED S1 Supply Select



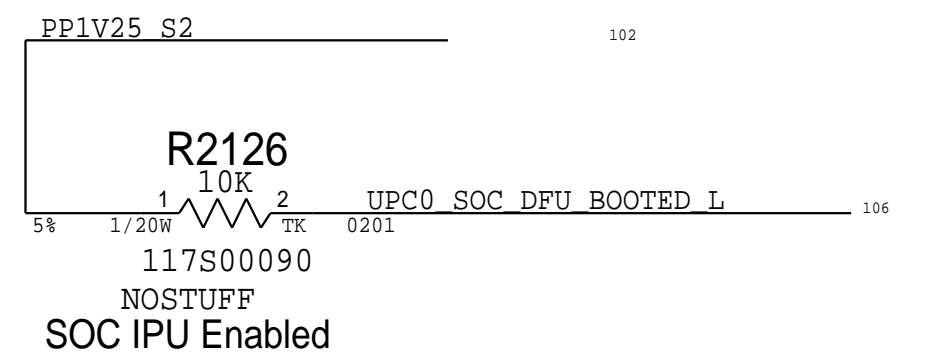
## H MIPI PPVDD12 Supply Select



## I Explicit SOC Test Points

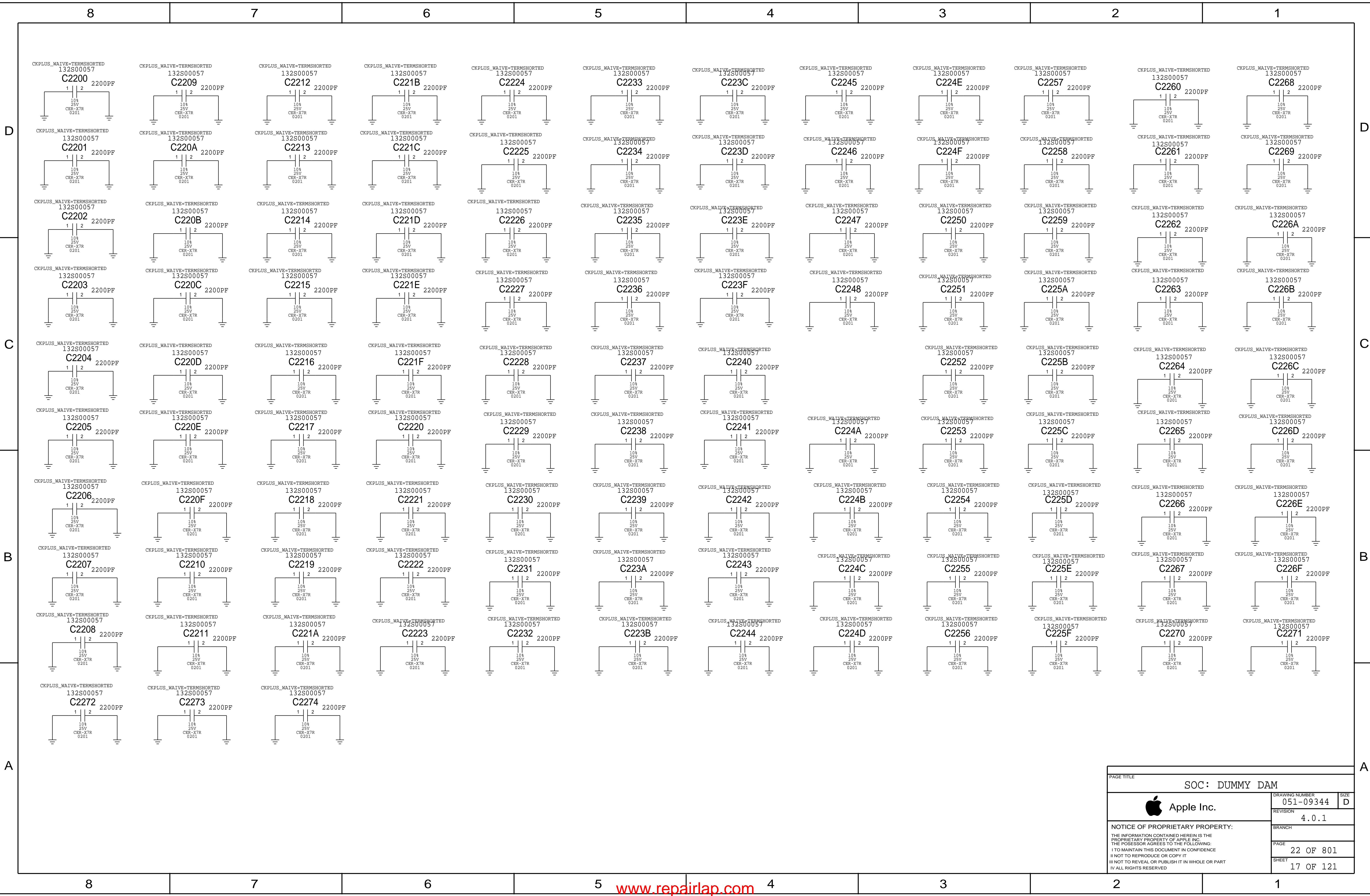


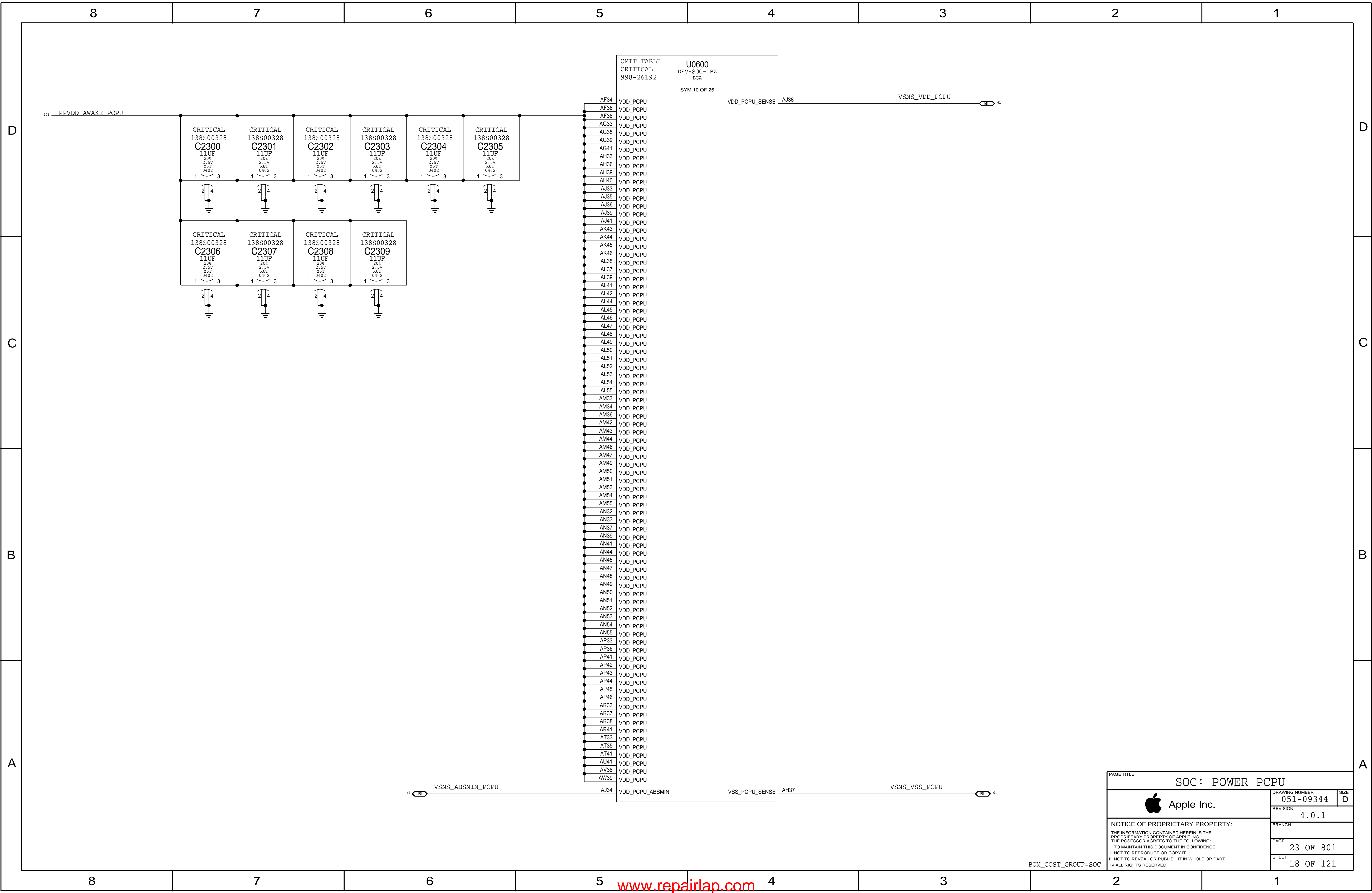
## J UPC DFU Booted

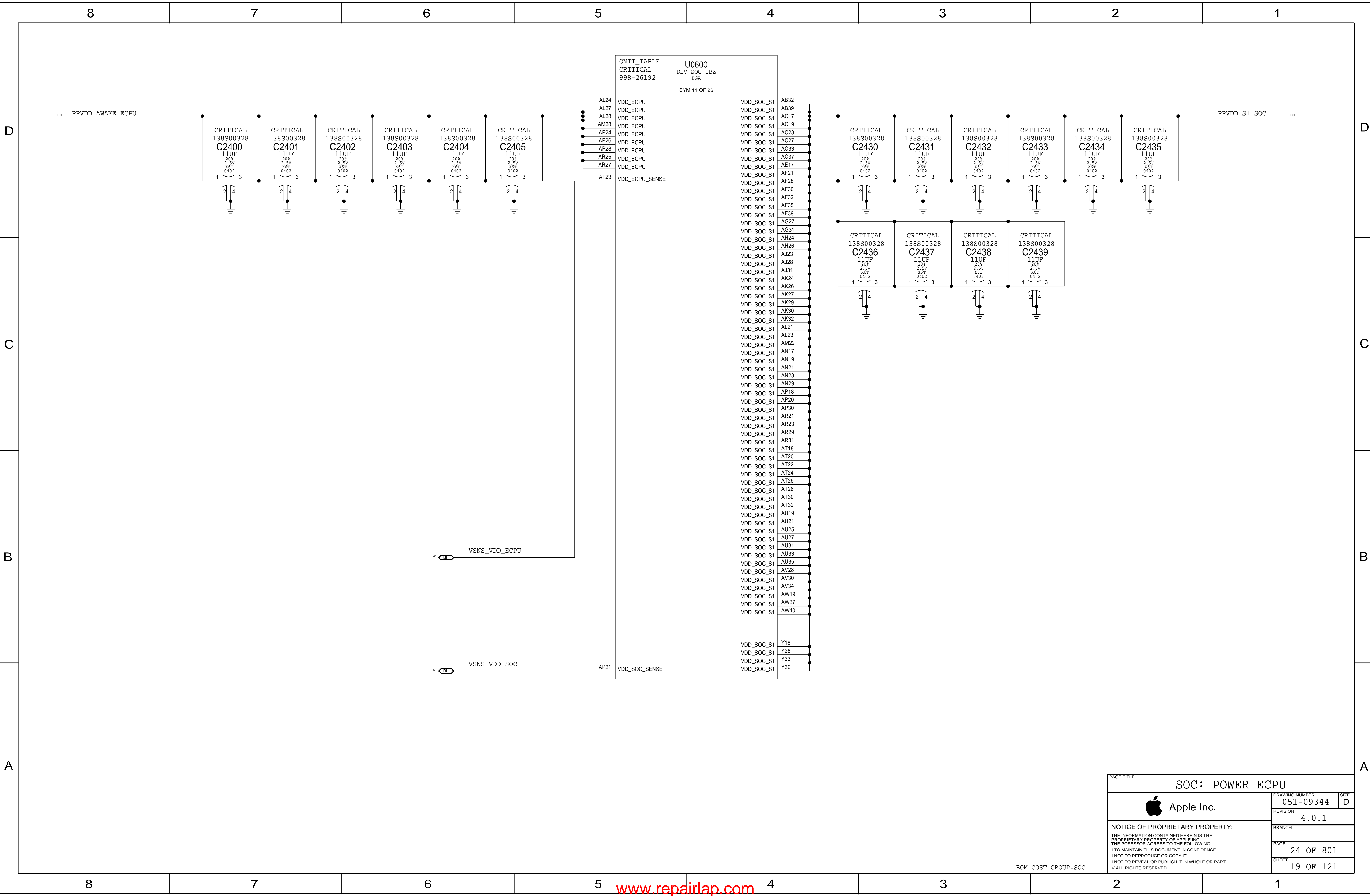


PAGE TITLE			
SOC: SOURCE TERMS			
	DRAWING NUMBER	051-09344	
	REVISION	4.0.1	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		BRANCH	
		PAGE	21 OF 801
		SHEET	16 OF 121









SOC: POWER ECPU

Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE  
PROPRIETARY PROPERTY OF APPLE INC.  
THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

PAGE  
24 OF 801

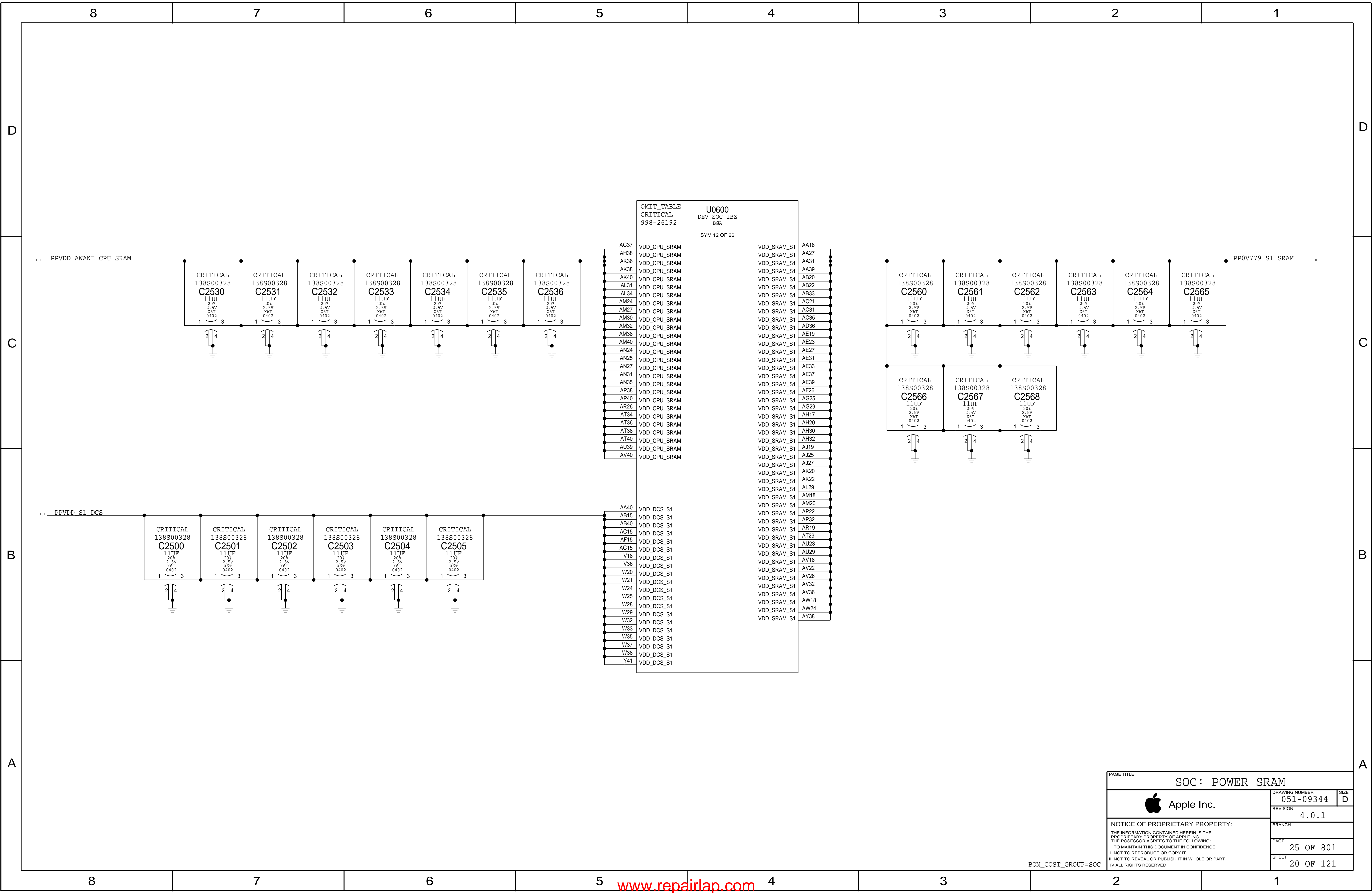
SHEET  
19 OF 121


SIZE  
D

BRANCH

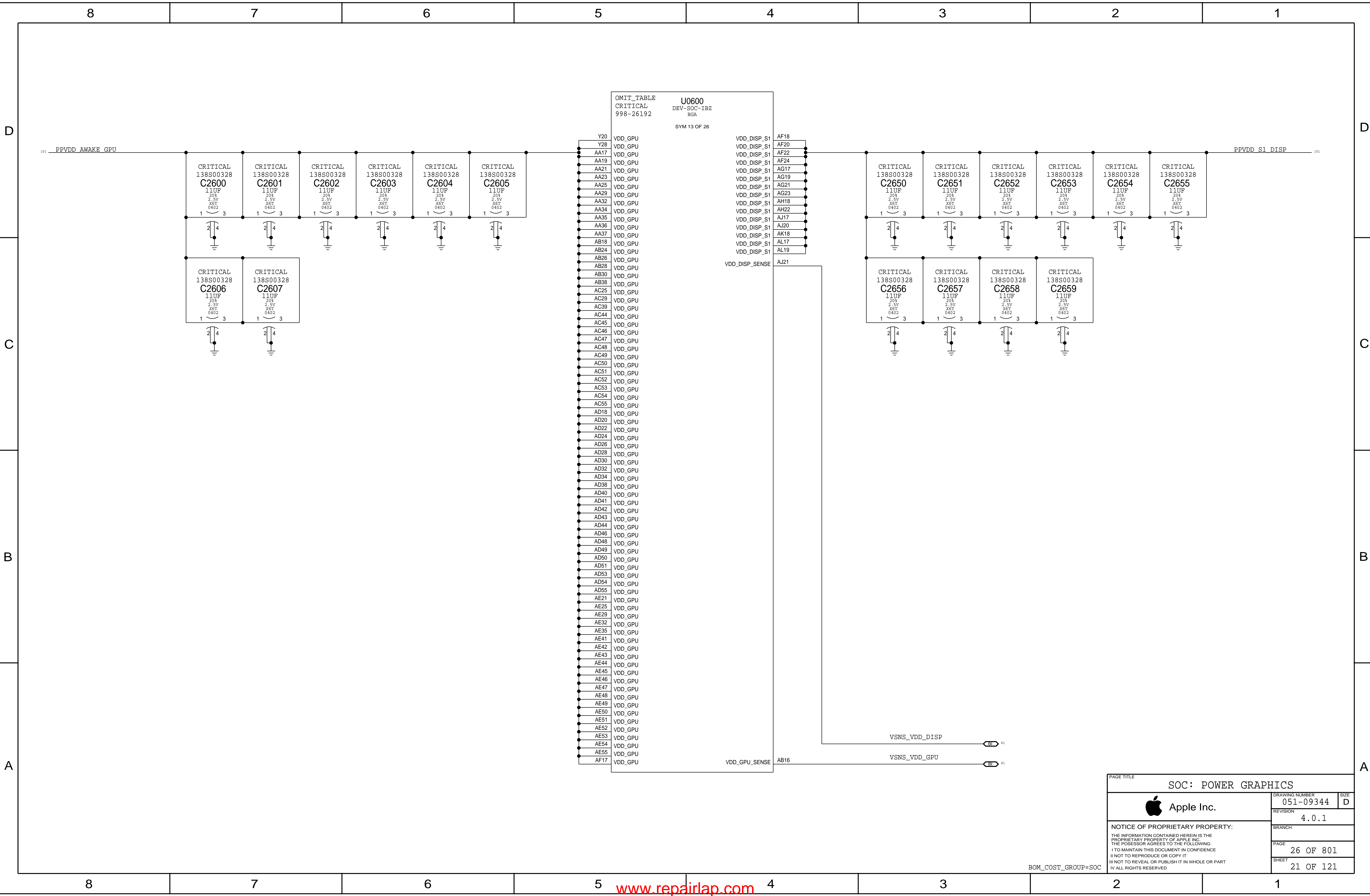
www.repairlap.com

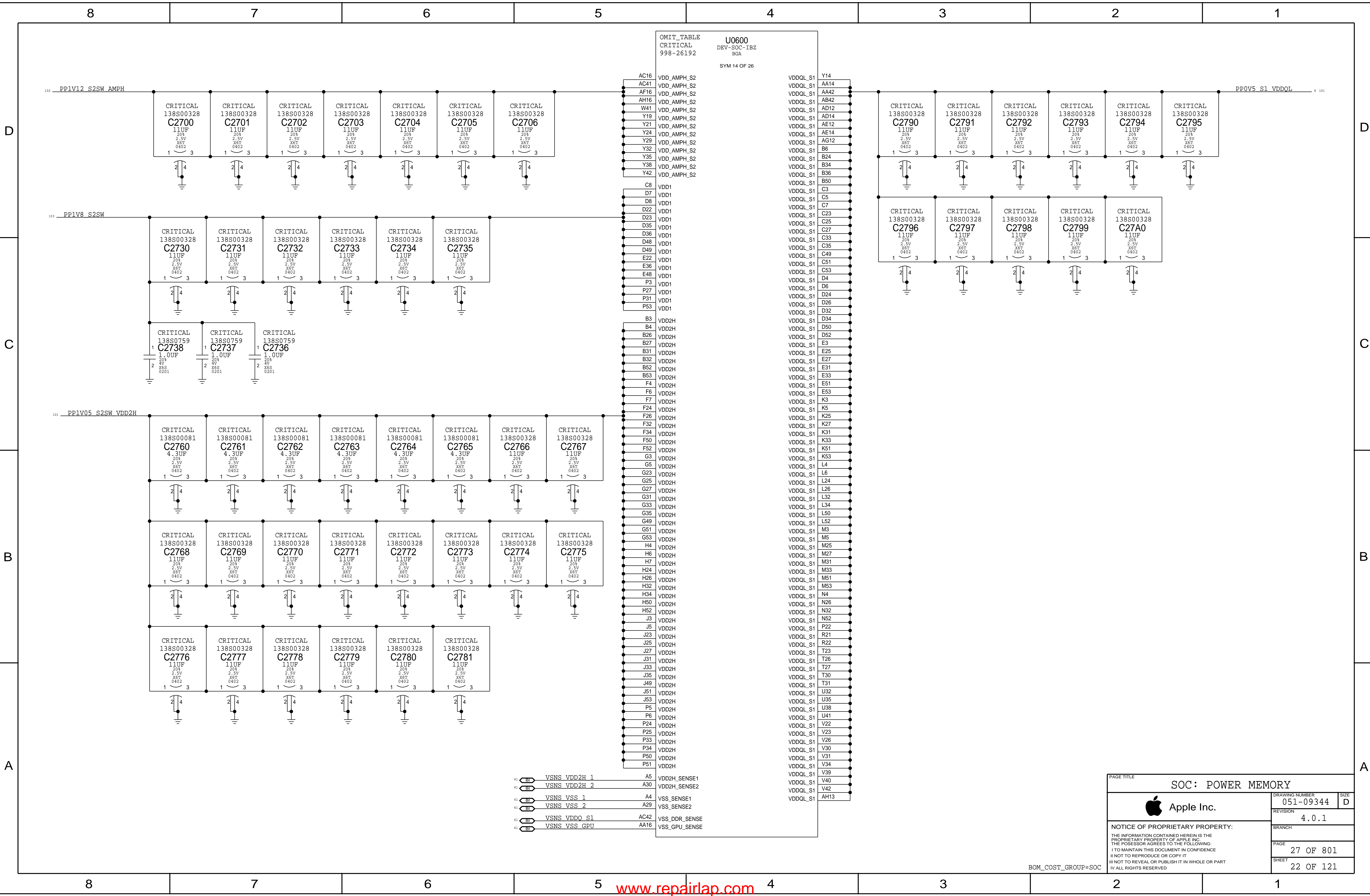




PAGE TITLE		
SOC: POWER SRAM		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
NOTICE OF PROPRIETARY PROPERTY:		PAGE
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		25 OF 801
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		SHEET
II NOT TO REPRODUCE OR COPY IT		20 OF 121
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=SOC





PAGE TITLE

SOC: POWER MEMORY

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

BRANCH

NOTICE OF PROPRIETARY PROPERTY:

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

SIZE  
D

PAGE  
27 OF 801

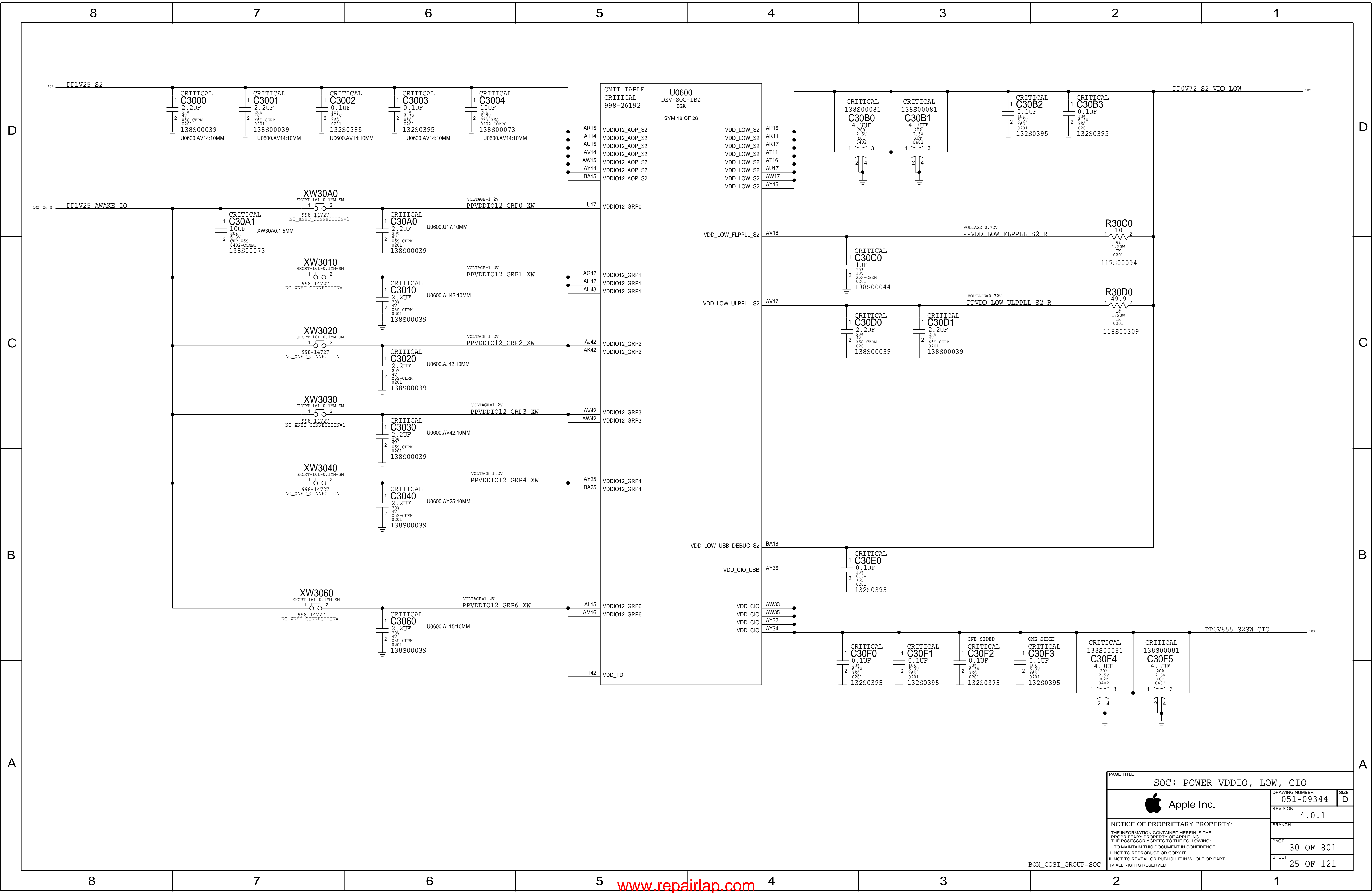
SHEET  
22 OF 121






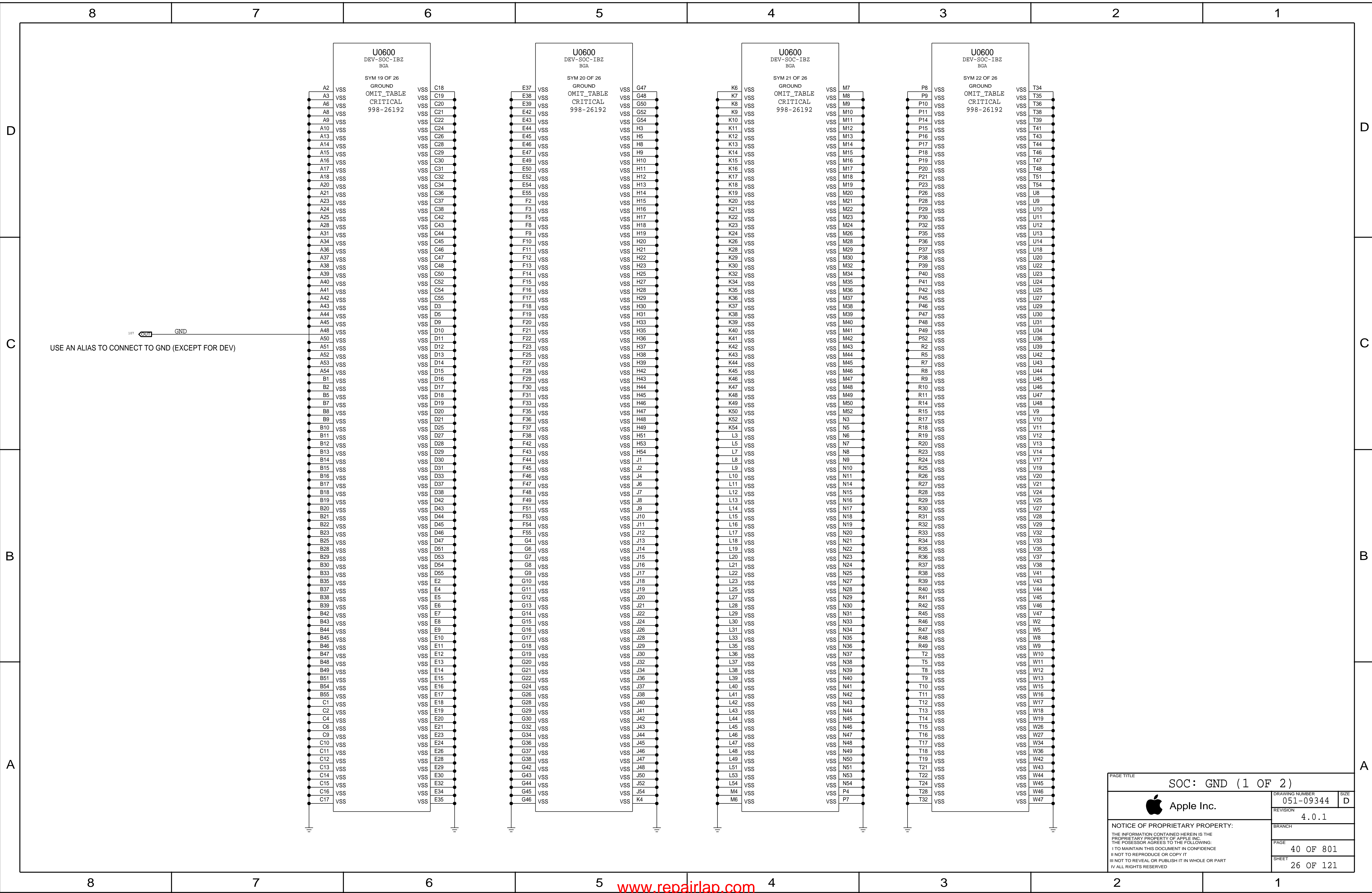




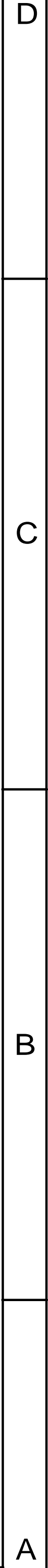


PAGE TITLE		
SOC: POWER VDDIO, LOW, CIO		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	30 OF 801
	SHEET	25 OF 121









# Juno - Secure Element

AONSW nets will connect to either AON LDOs or dedicated AONSW rails. Consult power arch docs to determine appropriate connectivity.

Form factors should break out GPIO0 to a TP/PP  
GPIO 1/2 should be NC'd on Form factors  
=SE\_SYS\_GPIO3 (formerly SE\_IRQ\_WAKE) should be NC'd


Form factors should break out GPIO1 to a TP/PP  
and NC-alias GPIO0

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
338S00941	1	IC, JUNO, SE310S, A0, DEV, 10C, MLCSP42	U5000	JUNO>A0_DEV
338S00956	1	IC, JUNO, SE310S, A0, PROD, 1PB, MLCSP42	U5000	JUNO>A0_PROD
338S01012	1	IC, JUNO, SE310S, A0, DEV, 10C1, MLCSP42	U5000	JUNO>A0_DEV_DLY
338S01013	1	IC, JUNO, SE310S, A0, PROD, 1PB1, MLCSP42	U5000	JUNO>A0_PROD_DLY

<rdar://problem/89368110> [SE310S] Data Sheet

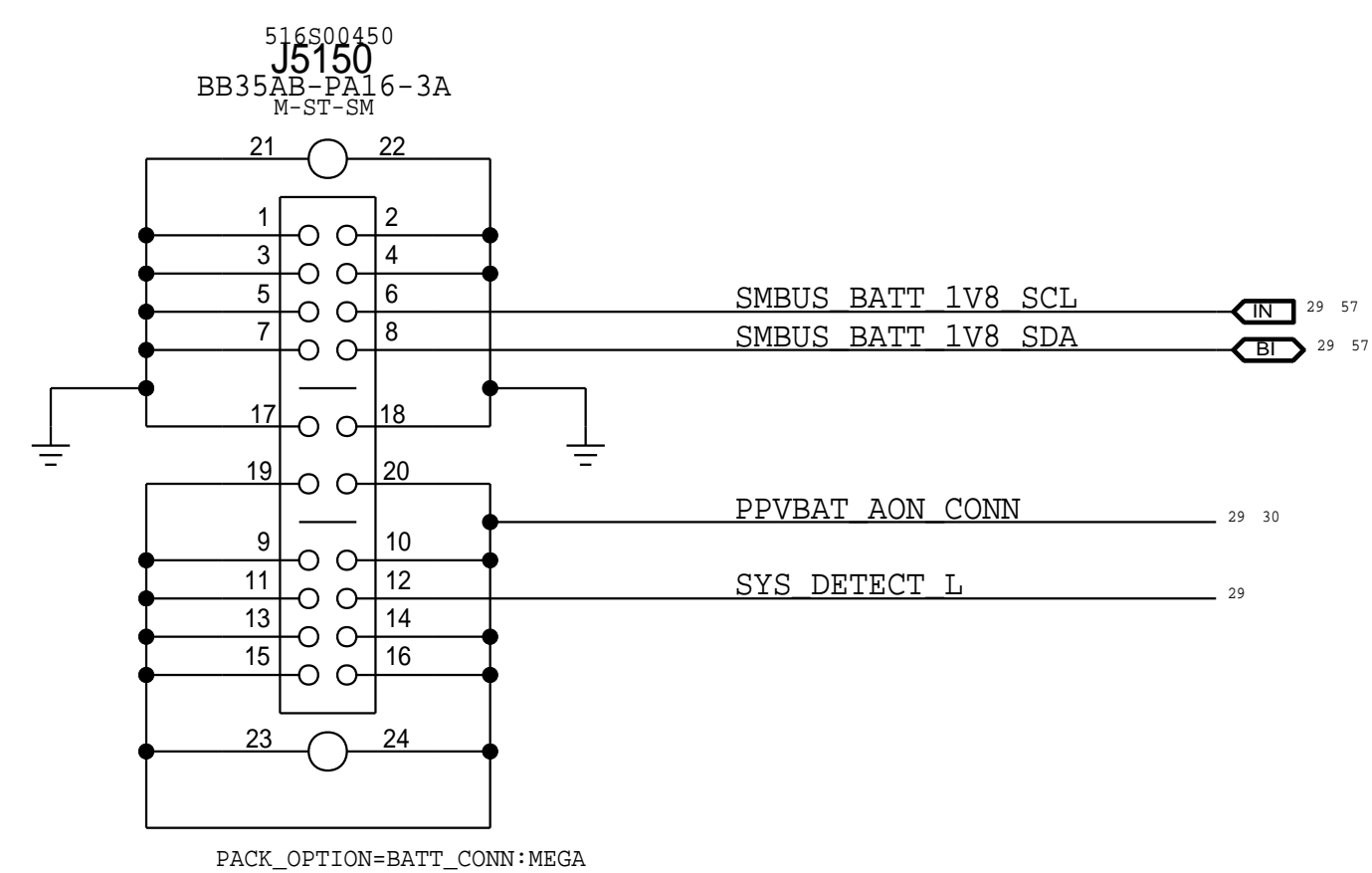
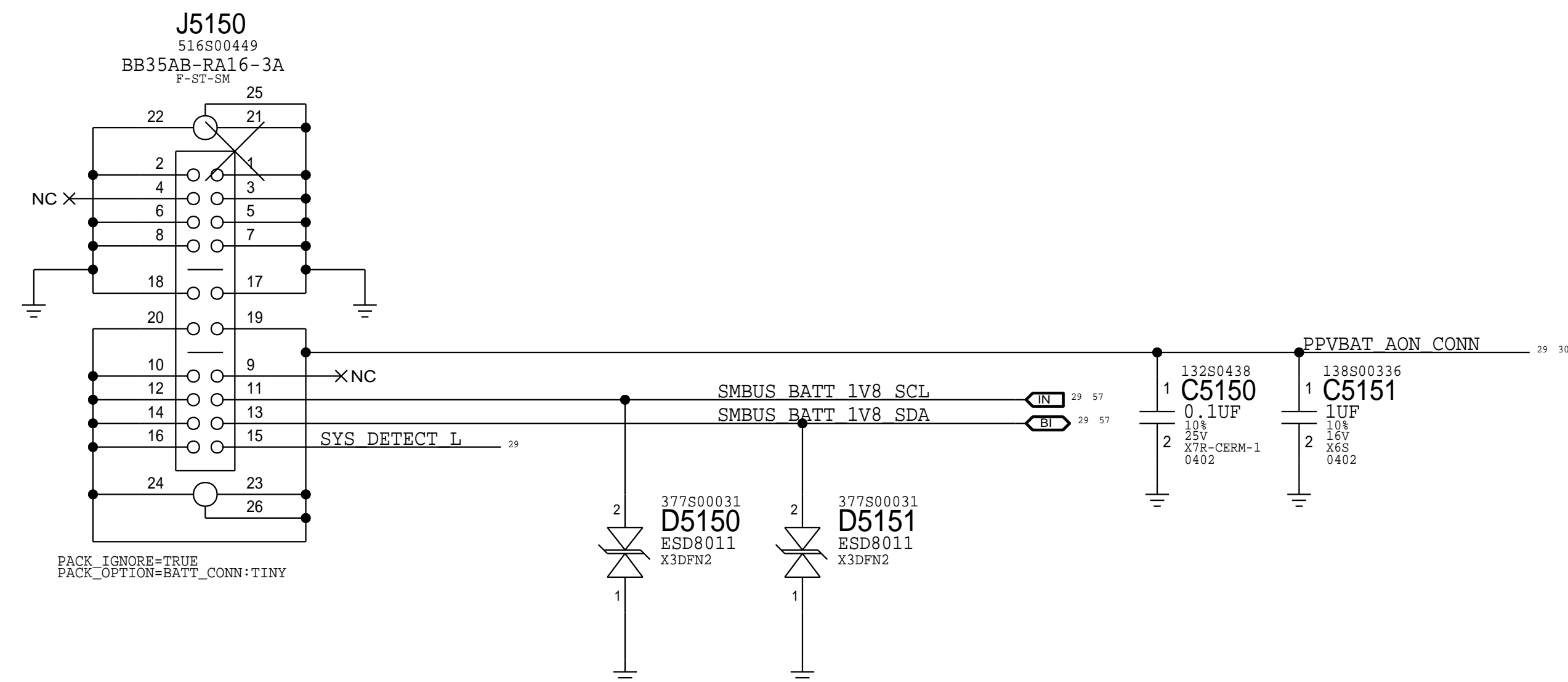
<rdar://problem/90105225> [SE310S] Juno Reference Schematic

BOM\_COST\_GROUP=SECURE ELEMENT

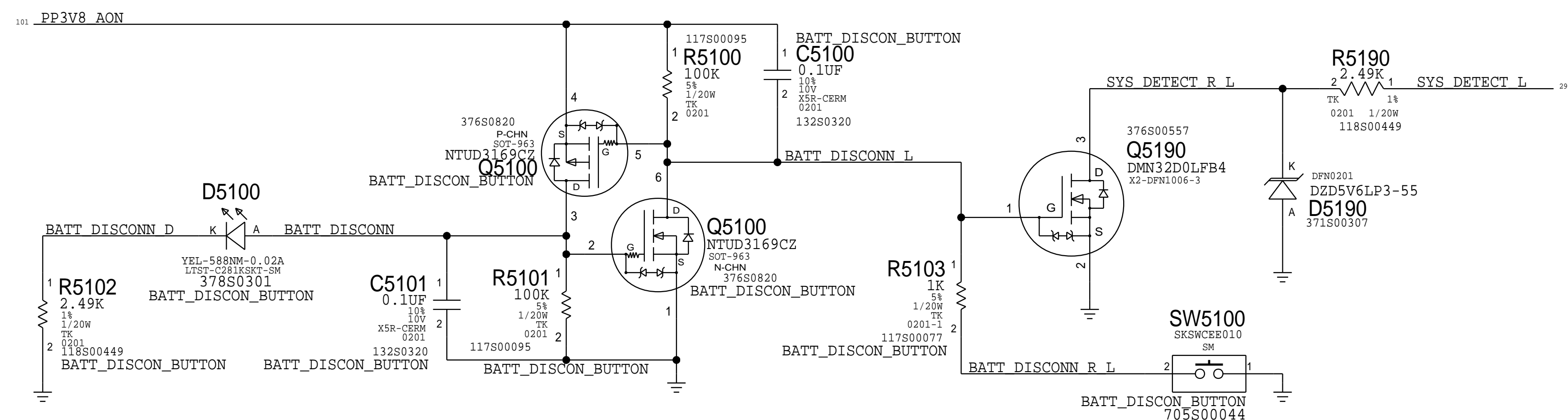
PAGE TITLE			Secure Element		
 Apple Inc.		DRAWING NUMBER	051-09344	SIZE	D
		REVISION	4.0.1		
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I TO NOT REPRODUCE OR COPY IT I TO NOT REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		BRANCH			
		PAGE	50 OF 801		
		SHEET	28 OF 121		



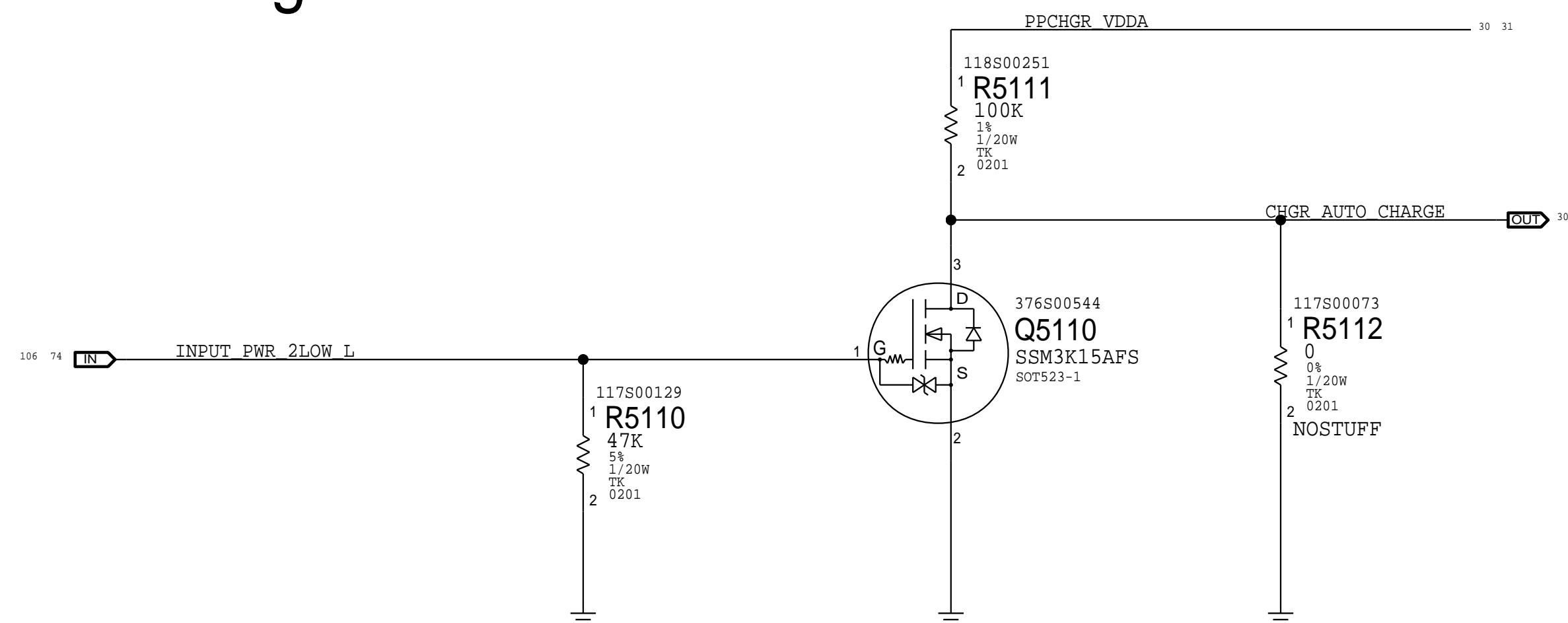
## A BMU Connector




## ⑧ BMU SYS\_DETECT Circuit

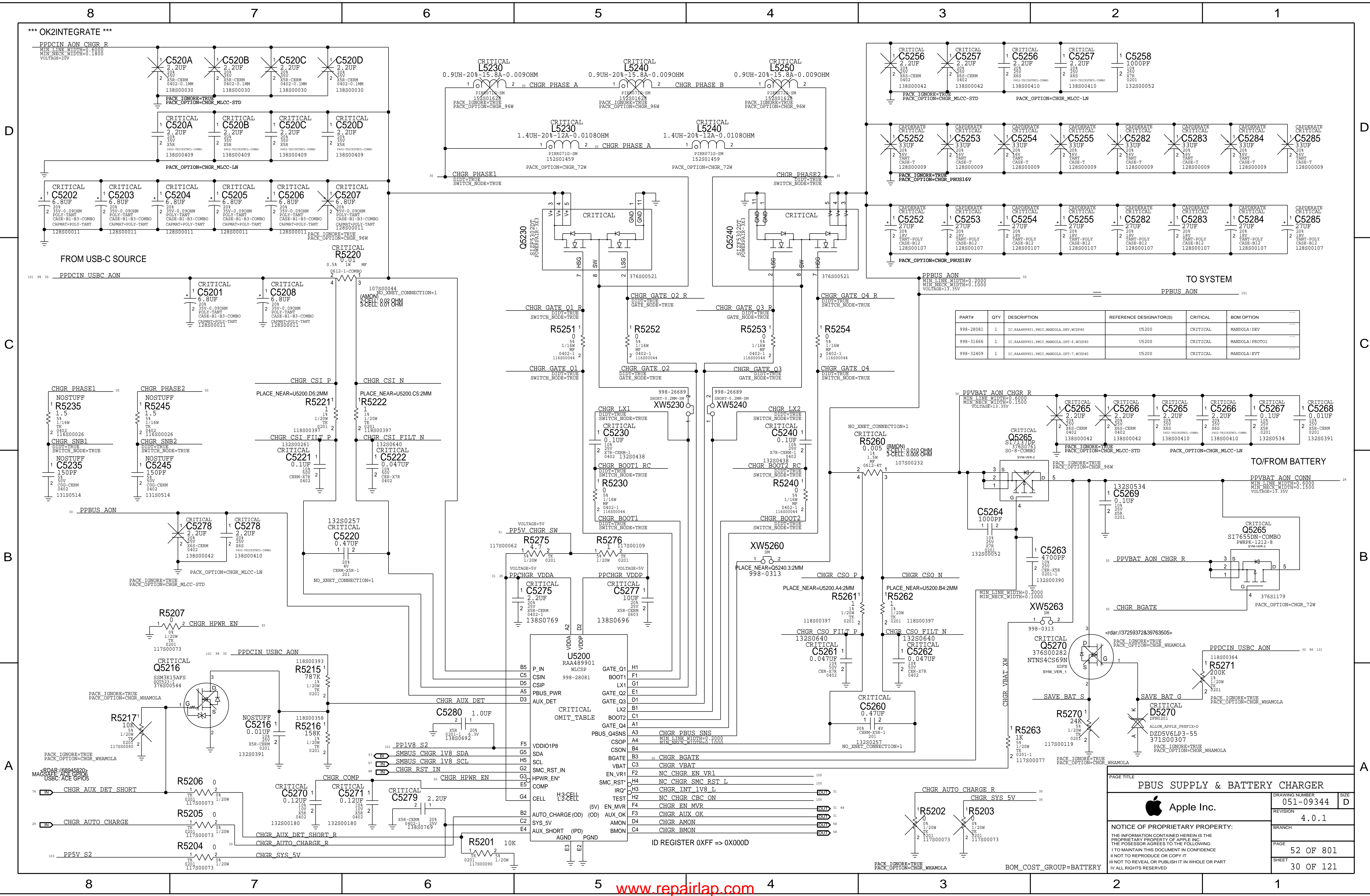


**Ⓒ Auto-Charge Enable**



PAGE TITLE			
Battery Connector			
 Apple Inc.	DRAWING NUMBER 051-09344		SIZE D
	REVISION 4.0.1		
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE 51 OF 801	
		SHEET 29 OF 121	





Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE  
PROPERTY OF APPLE INC. ANY REPRODUCTION  
WITHOUT THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
I NOT TO REPRODUCE OR COPY IT  
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
I ALL RIGHTS RESERVED

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

PAGE  
52 OF 801

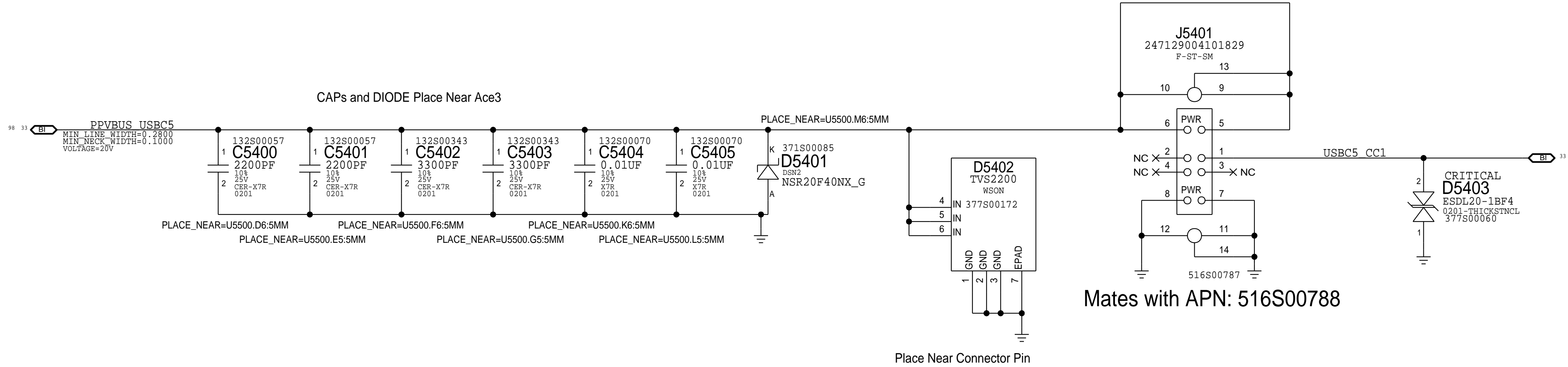
SHEET  
30 OF 121








# A MagSafe Connector



Mates with APN: 516S00788

BOM\_COST\_GROUP=MAGSAFE

PAGE TITLE		
MAGSAFE: CONNECTOR		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
NOTICE OF PROPRIETARY PROPERTY:		PAGE
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		54 OF 801
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		SHEET
II NOT TO REPRODUCE OR COPY IT		32 OF 121
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		

\*\*\* IN PROGRESS \*\*\*

D

C

B

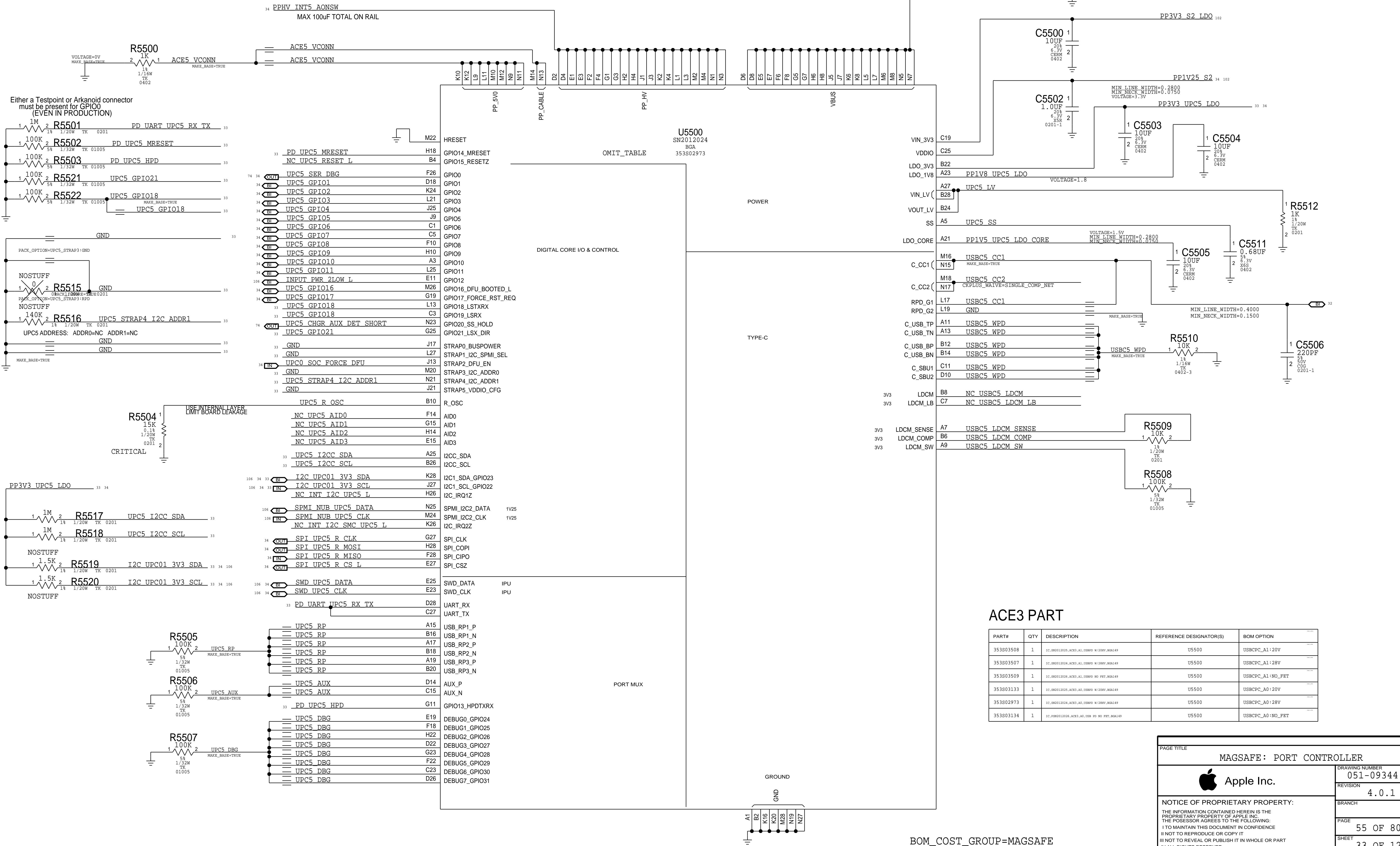
A

D

C

B

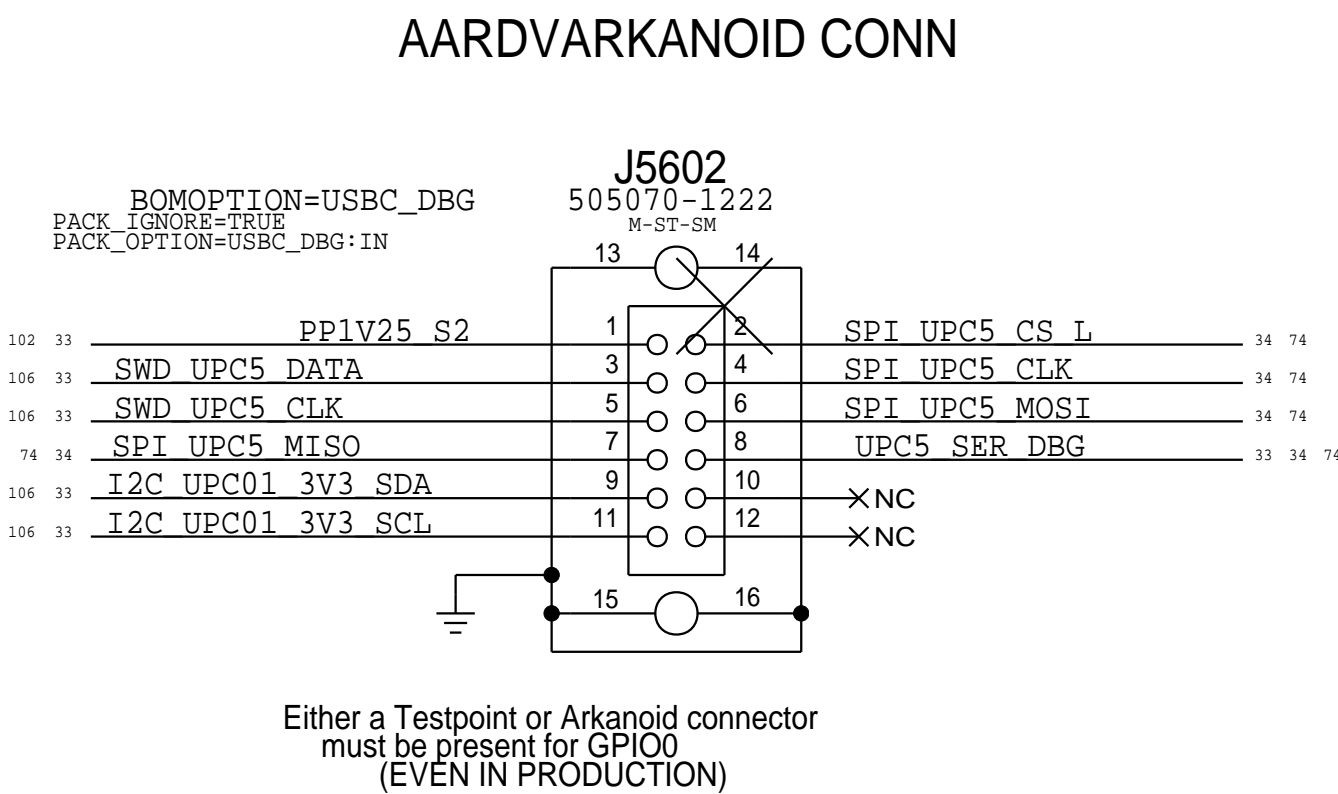
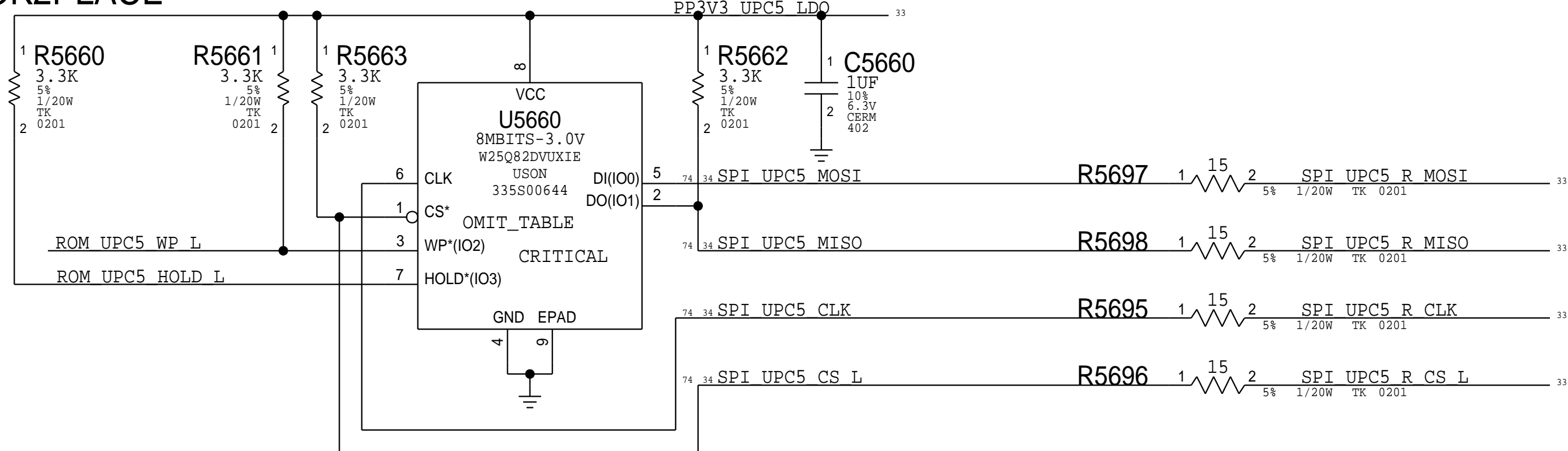
A



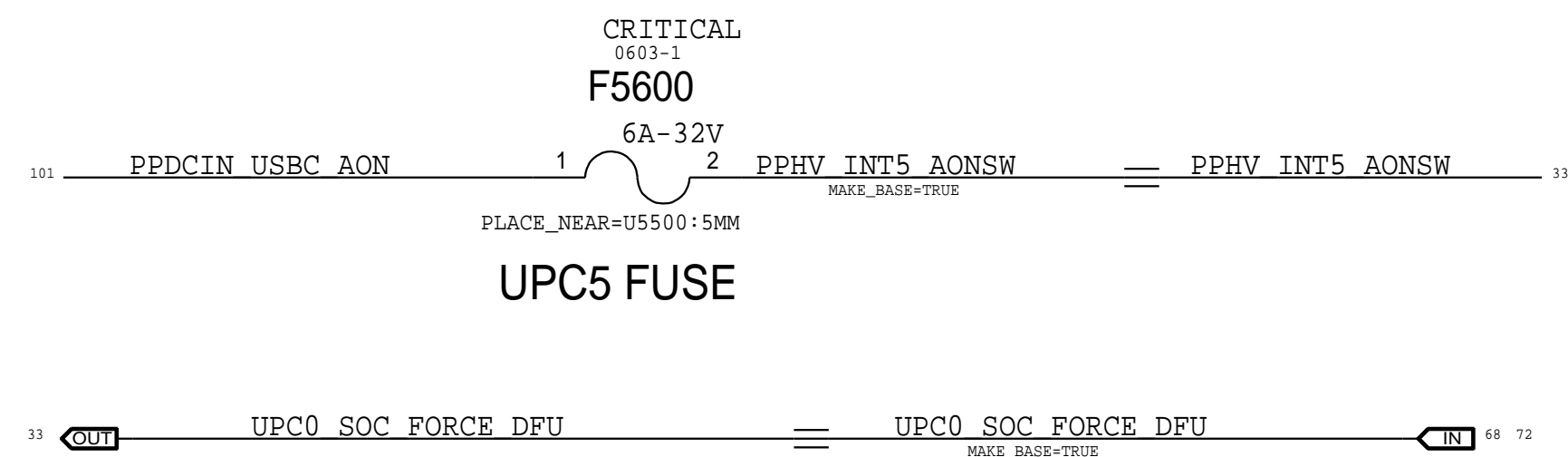
## ACE3 PART

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
353803508	1	1C, 080212026, ACE3, A1, USBPD: W/280V, B0A149	U5500	USBCPC_A1:20V
353803507	1	1C, 080212024, ACE3, A1, USBPD: W/280V, B0A149	U5500	USBCPC_A1:28V
353803509	1	1C, 080212026, ACE3, A1, USBPD: NO_FET, B0A149	U5500	USBCPC_A1:NO_FET
353803133	1	1C, 080212026, ACE3, A0, USBPD: W/280V, B0A149	U5500	USBCPC_A0:20V
353802973	1	1C, 080212024, ACE3, A0, USBPD: W/280V, B0A149	U5500	USBCPC_A0:28V
353803134	1	1C, 080212026, ACE3, A0, USB PD: NO_FET, B0A149	U5500	USBCPC_A0:NO_FET

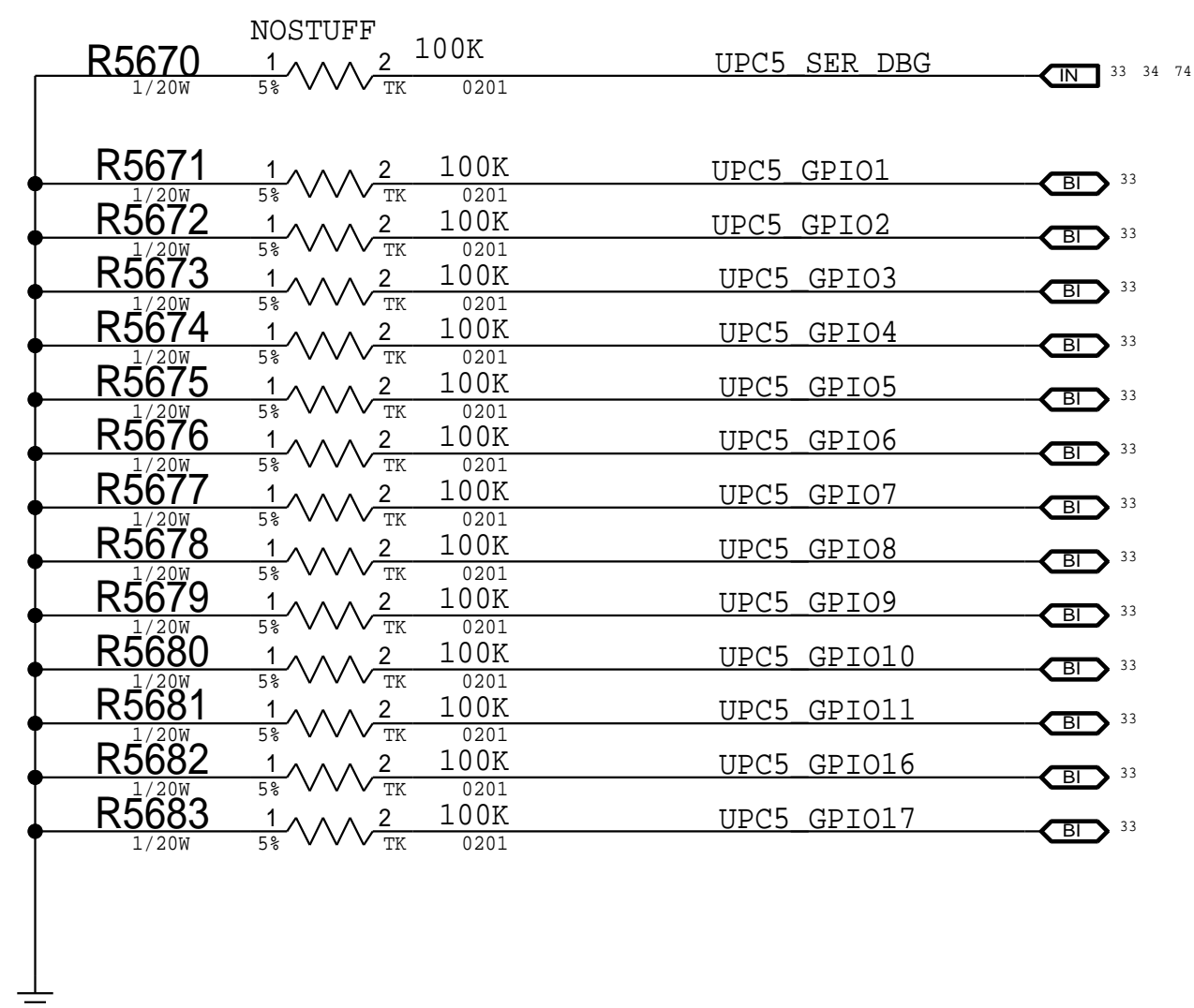
PAGE TITLE		
MAGSAFE: PORT CONTROLLER		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		55 OF 801
I NOT TO REPRODUCE OR COPY IT		SHEET
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		33 OF 121
I V ALL RIGHTS RESERVED		




## CONNECTION TO DCIN



## Unused ports and GPIOs



PAGE TITLE		DRAWING NUMBER		SIZE	
MAGSAFE: CONTROLLER SUPPORT		051-09344		D	
 Apple Inc.		REVISION		4.0.1	
		BRANCH			
NOTICE OF PROPRIETARY PROPERTY:		PAGE		56 OF 801	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		SHEET		34 OF 121	



3V8 AON CONTROLLER  
30A ICC MAX

D

C

B

A

D

C

B

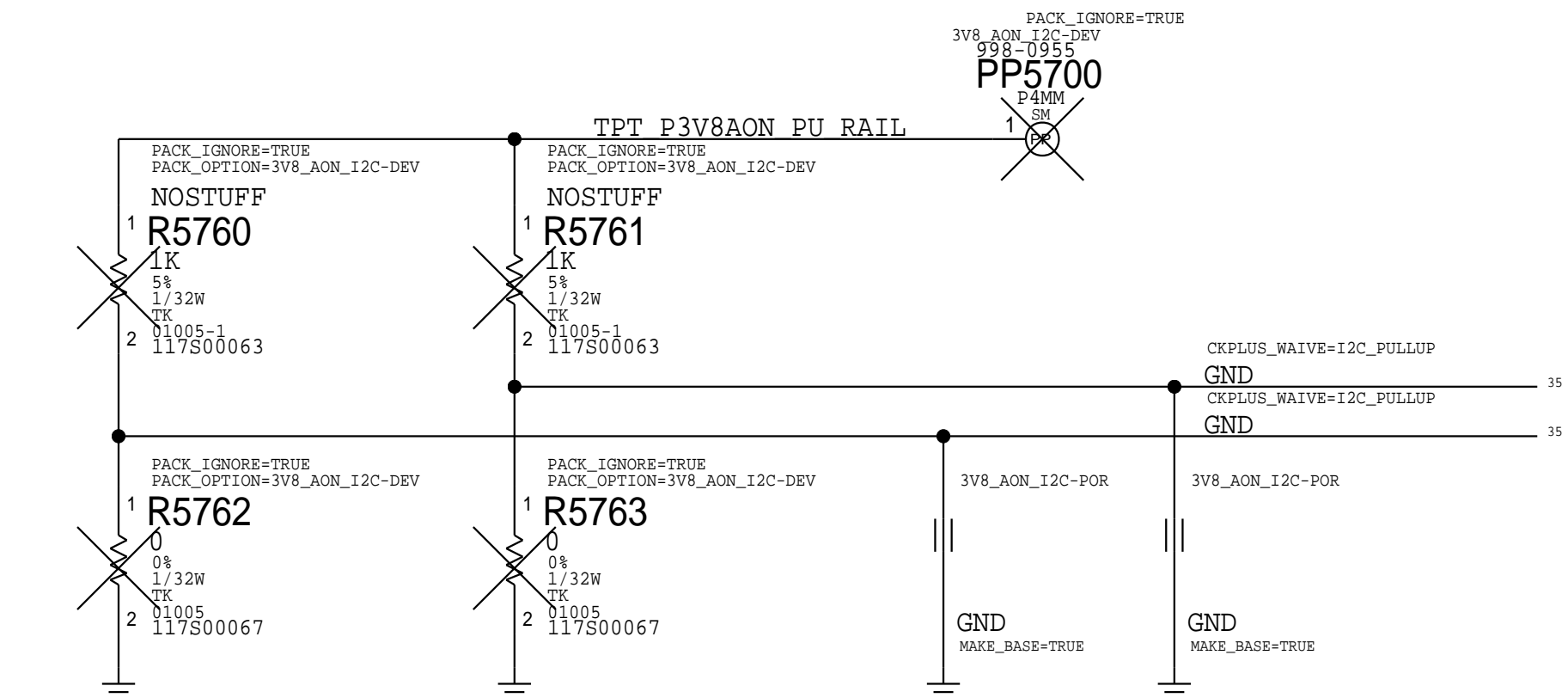
A

30A OTP CHANGES DOCUMENTED IN <RDAR-/61519509>  
BOM5 IS A CONTINUATION OF BOM1 SINCE BOM1 IS FROZEN FOR TGA PROGRAMS


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S02326	1	IC, RAA225501, 3-PH VOLT REG, TQFN32	U5700	CRITICAL	P3V8AON_IC:A0
353S02472	1	IC, RAA225501B, ICB, BOM1, A1, OTP-R0B0, QFN32	U5700	CRITICAL	P3V8AON_IC:A1_ROB0
353S02544	1	IC, RAA225501B, ICB, BOM1, A1, OTP-R0B1, QFN32	U5700	CRITICAL	P3V8AON_IC:A1_ROB1
353S02560	1	IC, RAA225501B, ICB, BOM1, A1, OTP-R0B2, QFN32	U5700	CRITICAL	P3V8AON_IC:A1_ROB2
353S02576	1	IC, RAA225501B, ICB, BOM1, A1, OTP-R0B3, QFN32	U5700	CRITICAL	P3V8AON_IC:A1_ROB3
353S02592	1	IC, RAA225501B, ICB, BOM1, A2, OTP-R0B0, QFN32	U5700	CRITICAL	P3V8AON_IC:A2_ROB0
353S02645	1	IC, RAA225501C, ICB, BOM5, A2, OTP-R170, QFN32	U5700	CRITICAL	P3V8AON_IC:A2_R170

< 30A BOM1 OTP TGA PROGRAMS ARE GOING TO RAMP WITH

< NEW BOM5 OTP FOR FUTURE PROGRAMS



BOM\_COST\_GROUP=SOC POWER

PAGE TITLE		
POWER: 3V8 AON (1/2)		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	57 OF 801
	SHEET	35 OF 121

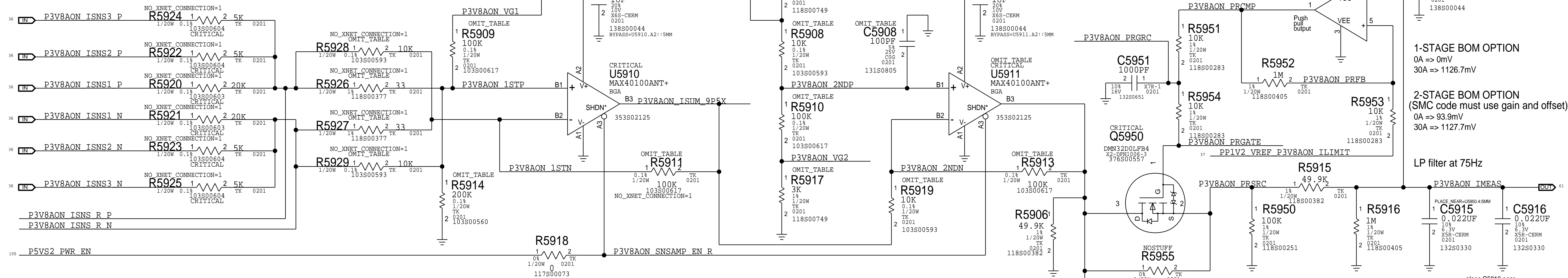




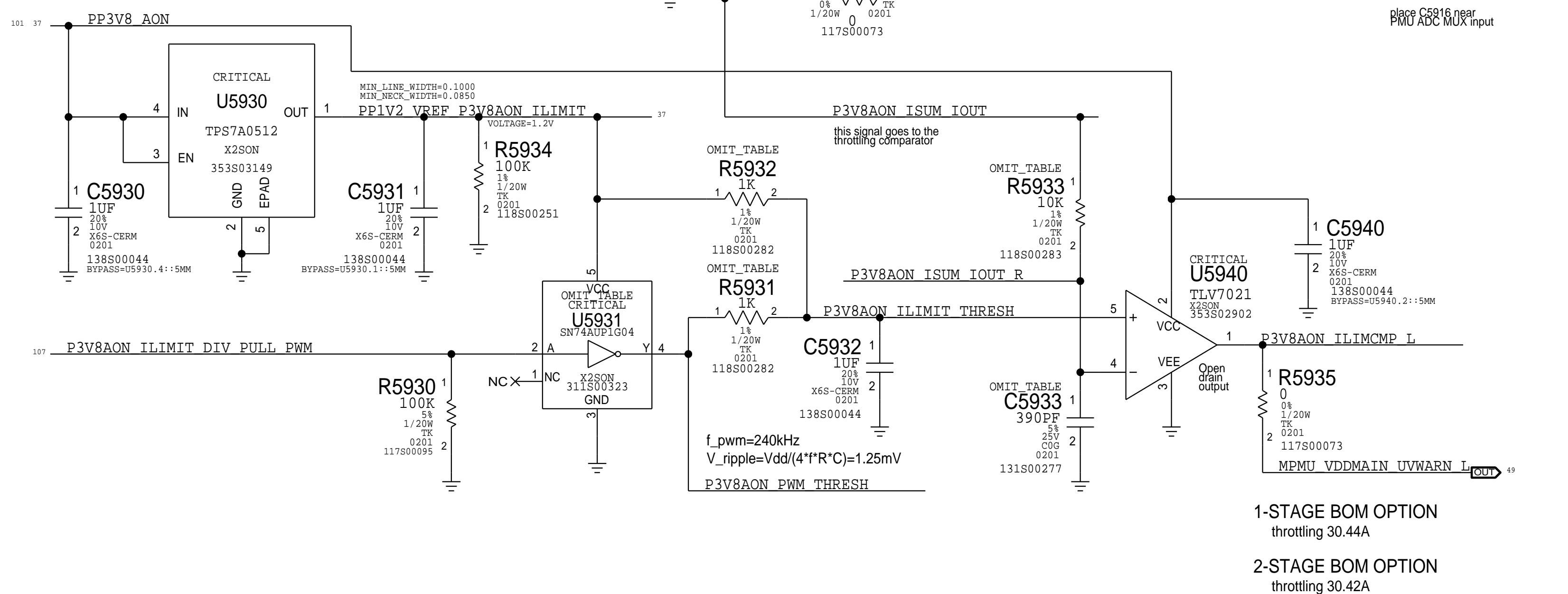


## Ⓐ PP3V8\_AON Current Sensing & Throttling

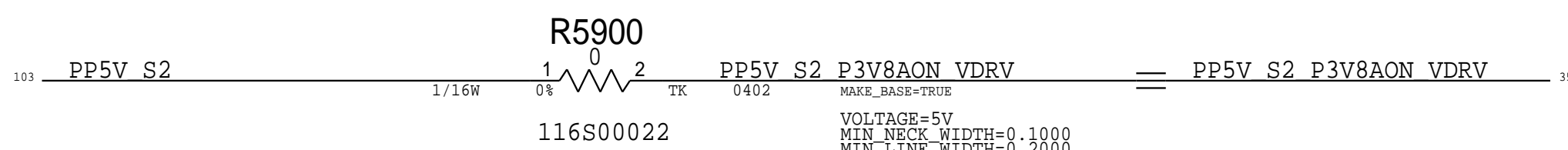
Based on: [rdar://problem/104008096](https://rdar://problem/104008096)




PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S00282	1	RES,TX,1K OHM,1/4,1/20W,0201	R5932		3V8_AON_THRPPW:NO
118S00282	1	RES,TX,1K OHM,1/4,1/20W,0201	R5931		3V8_AON_THRPPW:YES
311S00323	1	IC,74AUP1G04,SNGL INVERTER GATE,X250M	U5931	CRITICAL	3V8_AON_THRPPW:YES
117S00073	3	RES,TX,0 OHM,1A MAX,1/20W,0201	R5919,R5913,R5933		3V8_AON_SNSAMP:1STG
118S00377	2	RES,TX,33 OHM,1/4,1/20W,0201	R5926,R5927		3V8_AON_SNSAMP:1STG
103S00560	2	RES,TX,250K OHM,0.1/4,1/20W,50PPM,0201	R5914,R5911	CRITICAL	3V8_AON_SNSAMP:1STG
103S00593	4	RES,TX,1K 10K OHM,0.1/4,1/20W,50PPM,0201	R5928,R5929,R5908,R5919	CRITICAL	3V8_AON_SNSAMP:2STG
103S00617	4	RES,TX,100K OHM,0.1/4,1/20W,0201	R5909,R5911,R5910,R5913	CRITICAL	3V8_AON_SNSAMP:2STG
118S00749	2	RES,TX,3K OHM,1/4,1/20W,0201	R5912,R5917		3V8_AON_SNSAMP:2STG
353S02125	1	IC,MX46100,OP-AMP,SNGL,RK10,CSF6	U5911	CRITICAL	3V8_AON_SNSAMP:2STG
138S00044	2	CAP,CER,1UF,20V,10V,X5R,0201	C5911		3V8_AON_SNSAMP:2STG
118S00283	1	RES,TX,10K OHM,1/4,1/20W,0201	R5933		3V8_AON_SNSAMP:2STG
131S00277	1	CAP,COG,390PF,5V,25V,0201	C5933		3V8_AON_SNSAMP:2STG
131S00805	1	CAP,CER,NPO/COG,100PF,5V,25V,0201	C5908		3V8_AON_SNSAMP:2STG

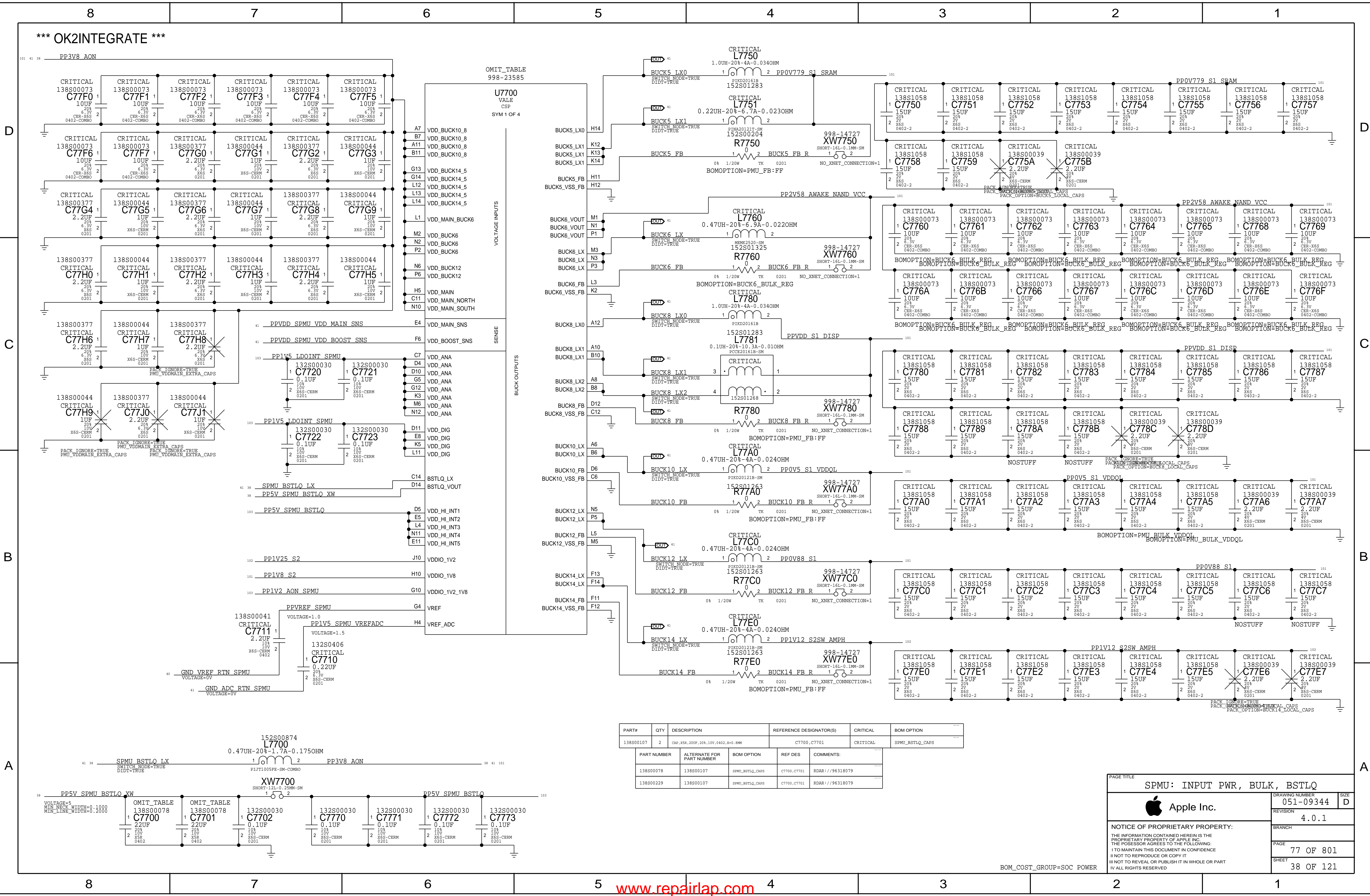


### ⑧ PP5V\_S2 to PP3V8\_AON VDRV Connection



PAGE TITLE		
POWER: 3V8 AON SUPPORT		
 Apple Inc.	DRAWING NUMBER	SIZE
	051-09344	D
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  II NOT TO REPRODUCE OR COPY IT  III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	REVISION	
	4.0.1	
	BRANCH	
	PAGE	
	59	OF 801
	SHEET	
	37	OF 121






PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00107	2	CAP_XSR, 20UF, 20%, 10V, 0402, R=0.8MM	C7700, C7701	CRITICAL	SPMU_BSTLQ_CAPS
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	
138S00078	138S00107	SPMU_BSTLQ_CAPS	C7700, C7701	RDAR: / / 96318079	
138S00229	138S00107	SPMU_BSTLQ_CAPS	C7700, C7701	RDAR: / / 96318079	

PAGE TITLE

SPMU: INPUT PWR, BULK, BSTLQ

 Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
I NOT TO REPRODUCE OR COPY IT  
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

DRAWING NUMBER

051-09344

REVISION

4.0.1

BRANCH

PAGE

77 OF 801

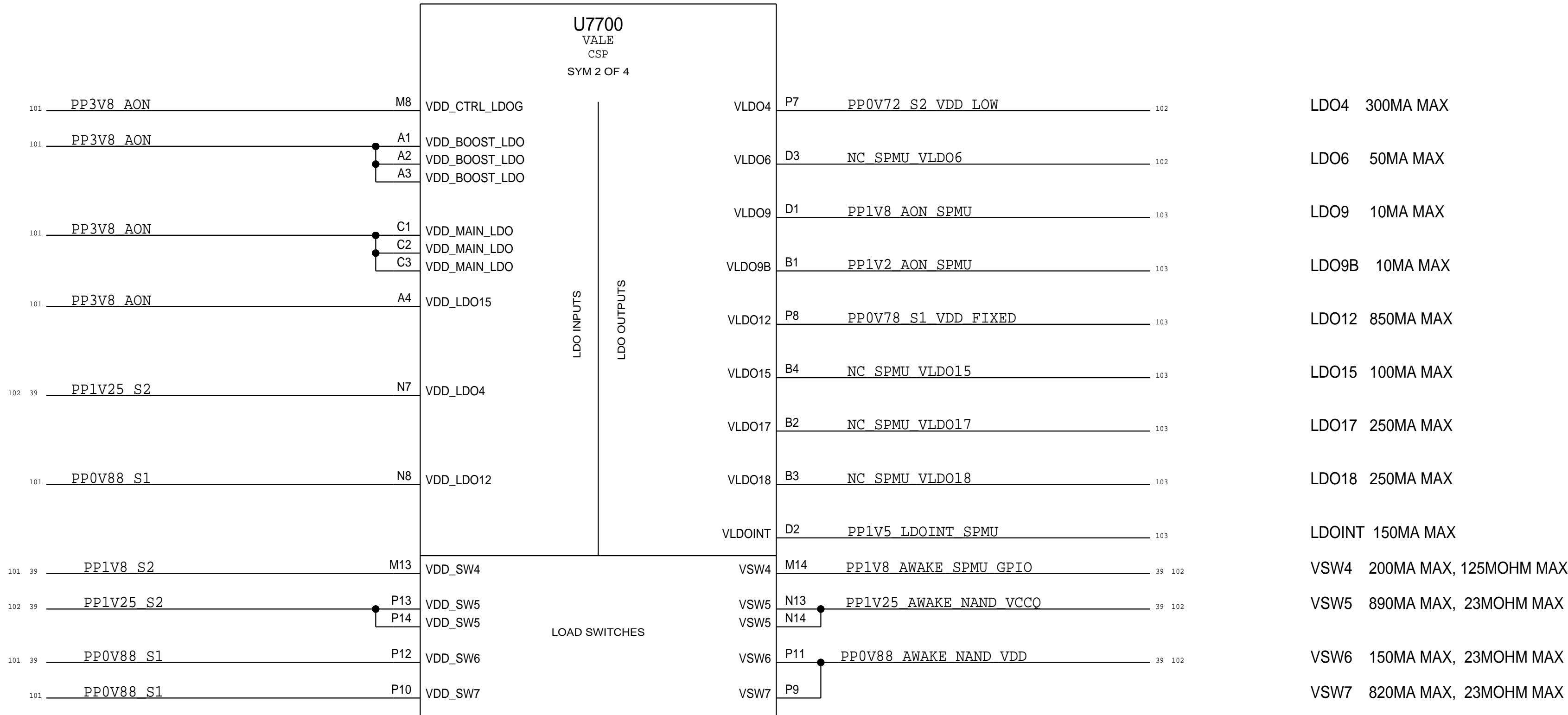
SHEET

38 OF 121



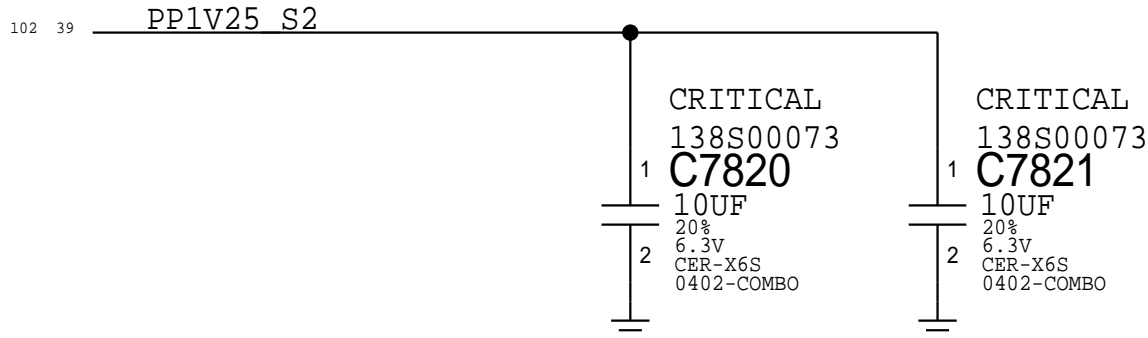
\*\*\* OK2INTEGRATE \*\*\*

OMIT\_TABLE  
998-23585

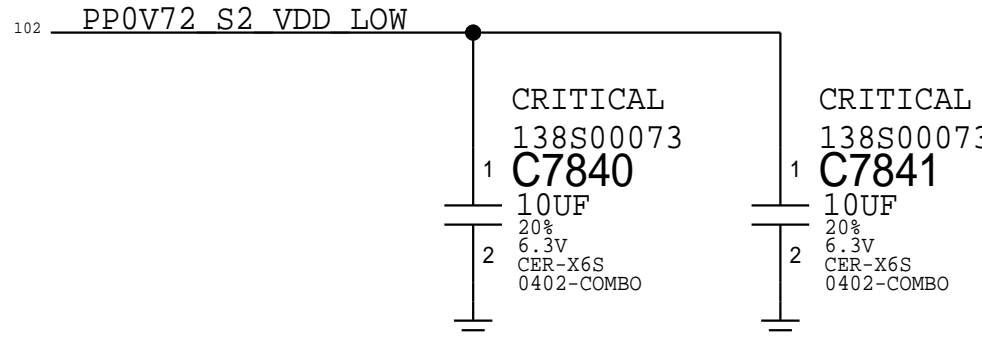


### VDD\_LDO4

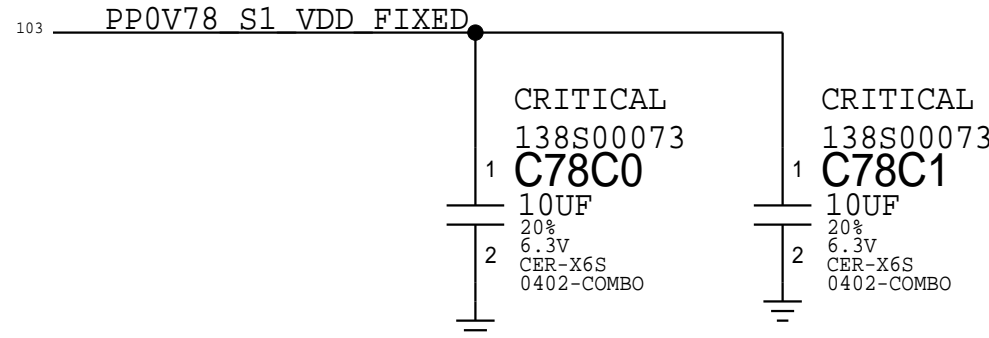
DECOUPLNIG SHARED WITH J10 (VDDIO\_1V2)



### VLDO4

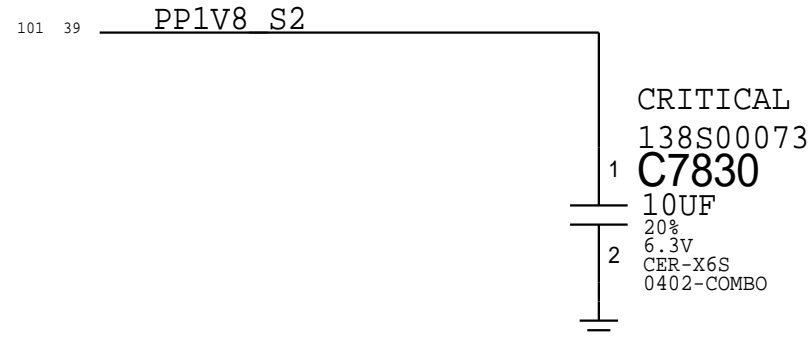


### VLDO12

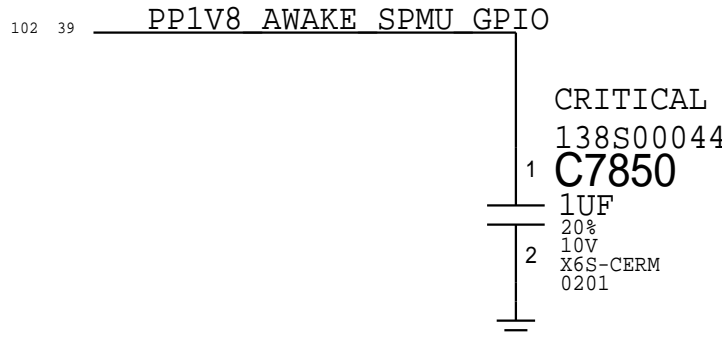


### VDD\_SW4

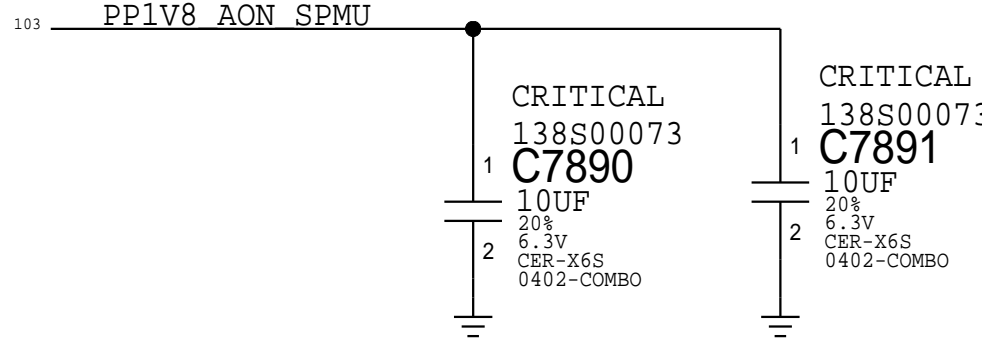
DECOUPLNIG SHARED WITH H10 (VDDIO\_1V8)



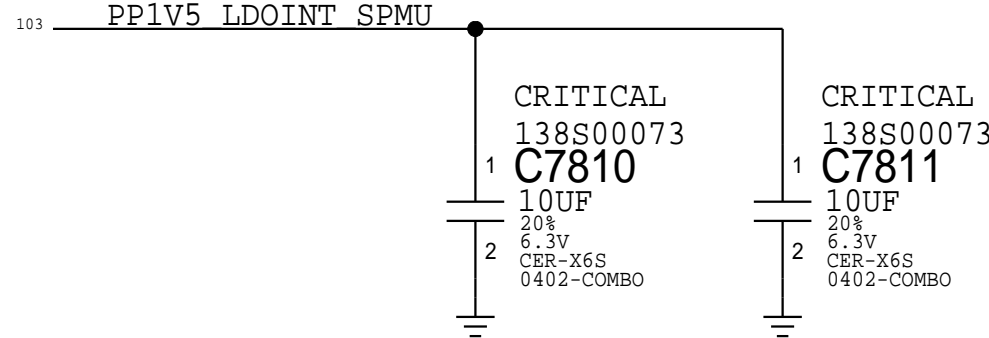
### VSW4



### VLDO9

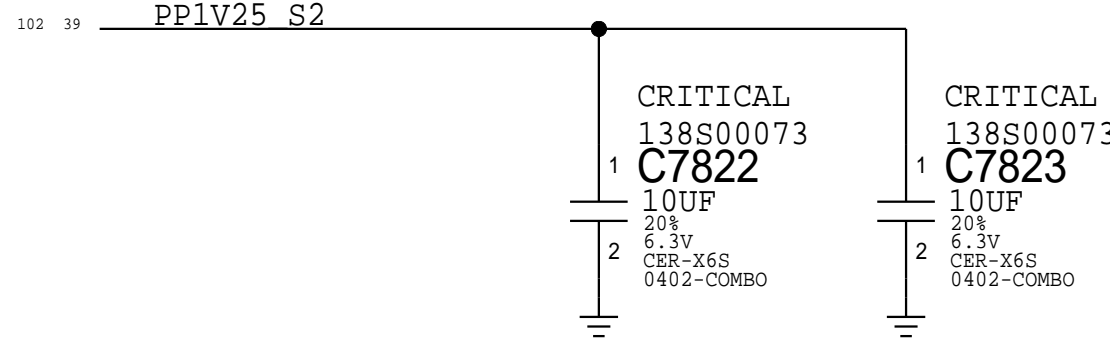


### VLDOINT

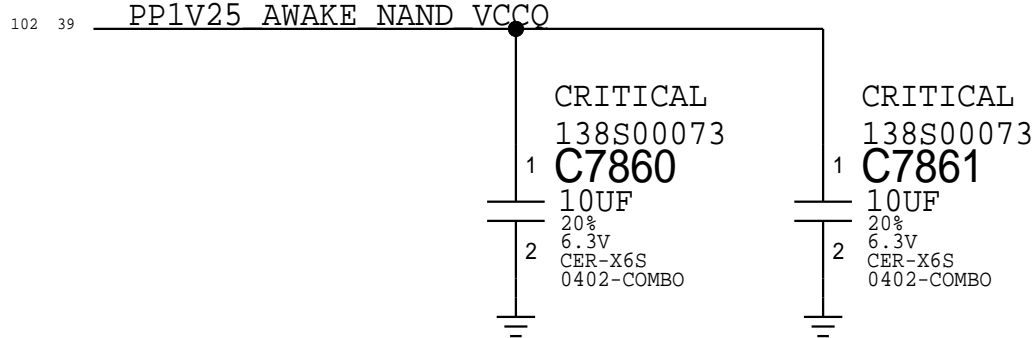


### VDD\_SW5

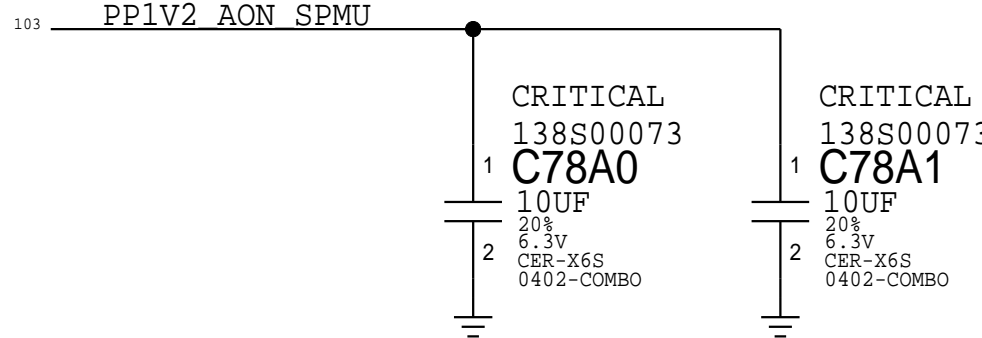
DECOUPLNIG SHARED WITH J10 (VDDIO\_1V2)



### VSW5



### VLDO9B

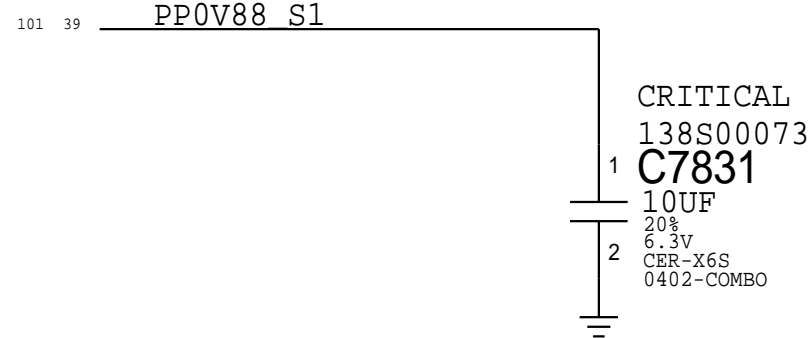


### UN-UNUSED LDOS

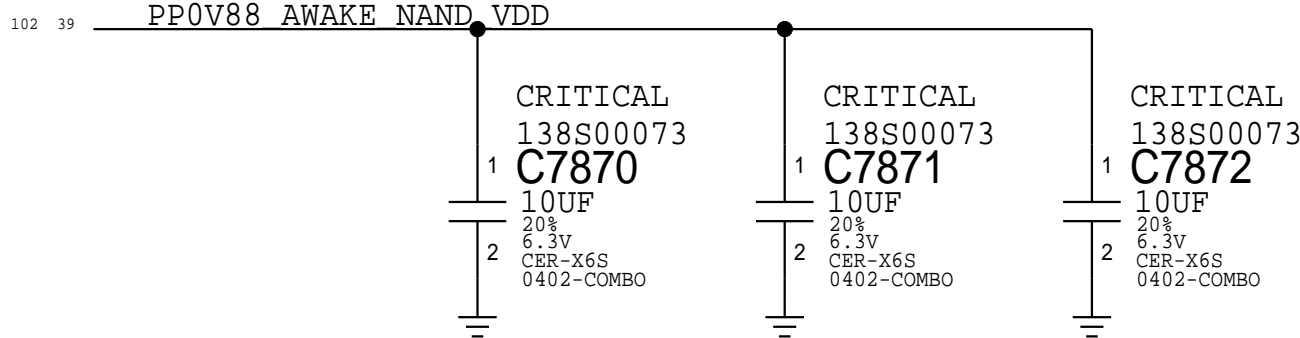
LDO 6, 15, 17, 18


### VDD\_SW6/7

DECOUPLNIG SHARED VDD\_LDO12



### VSW6/7



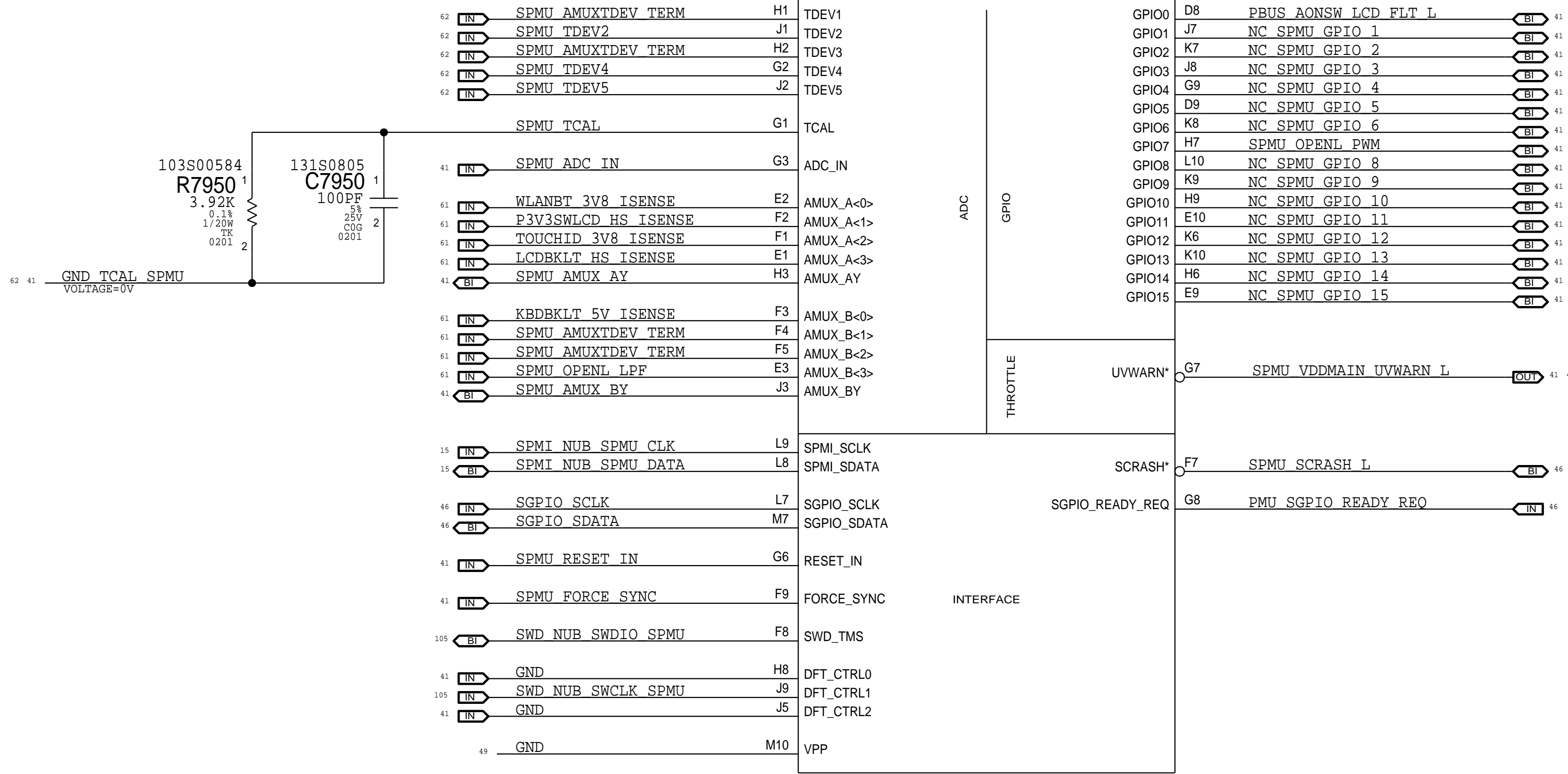
PAGE TITLE		
SPMU: LDO, SW		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	78 OF 801
	SHEET	39 OF 121

BOM\_COST\_GROUP=SOC POWER

\*\*\* OK2INTEGRATE \*\*\*

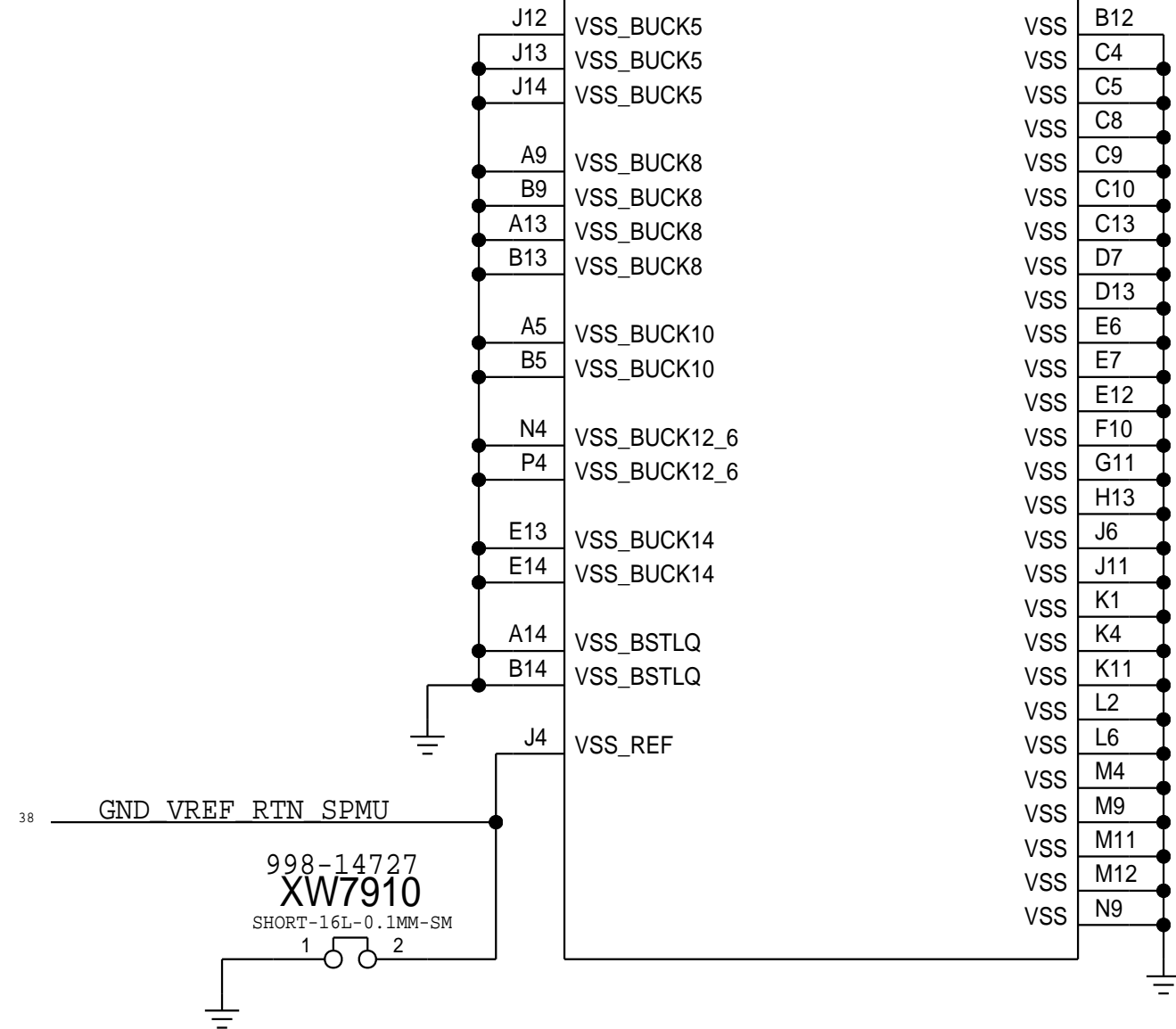
OMIT\_TABLE  
998-23585

U7700  
VALE  
CSP  
SYM 3 OF 4




OMIT\_TABLE  
998-23585

U7700  
VALE  
CSP  
SYM 4 OF 4



#### PLACEMENT NOTES

CONNECT VSS\_REF THROUGH ALL GND LAYERS  
PLACE XW AT VSS\_REF PIN, ROUTE RTN SIGNAL BACK TO PASSIVES

PAGE TITLE		
SPMU: GPIO, VSS		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	79 OF 801
	SHEET	40 OF 121

BOM\_COST\_GROUP=SOC POWER



D

C

B

A

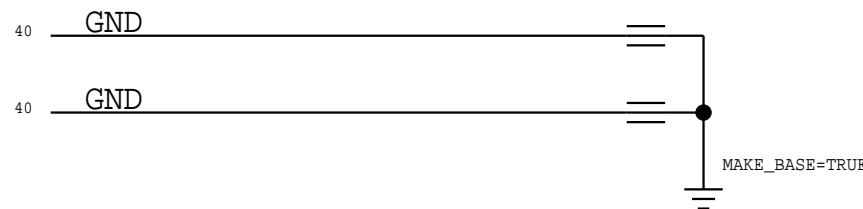
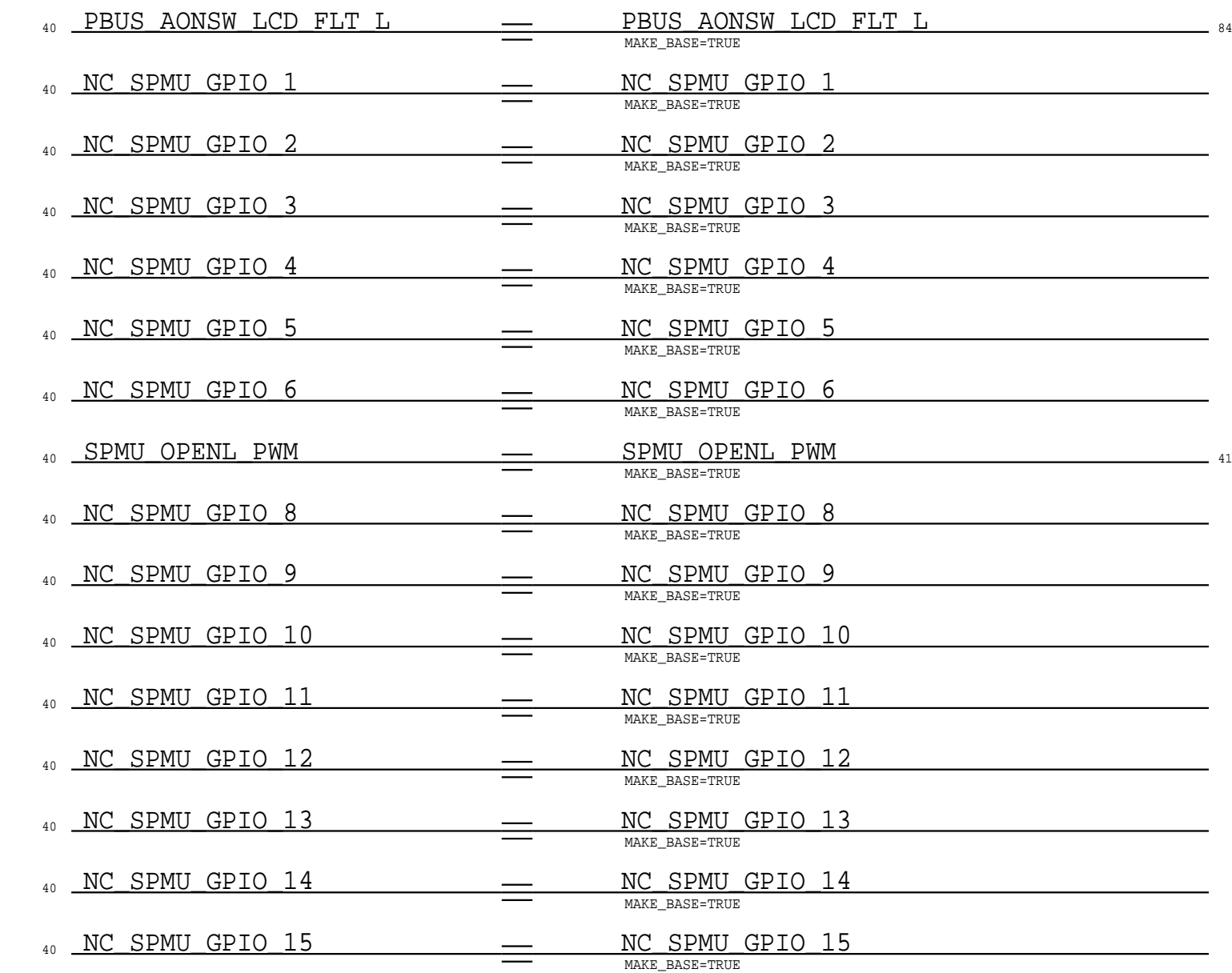
D

C

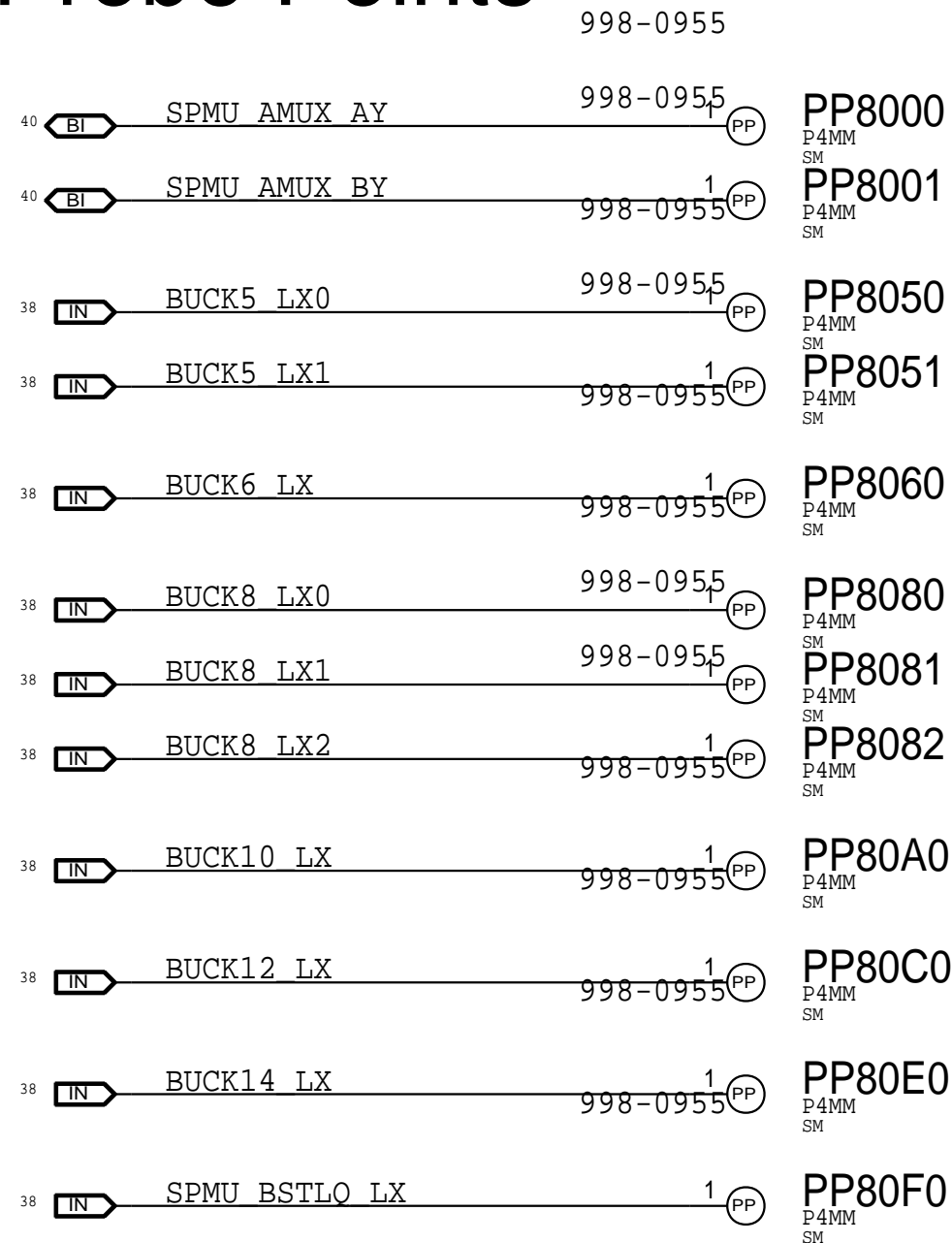
B

A

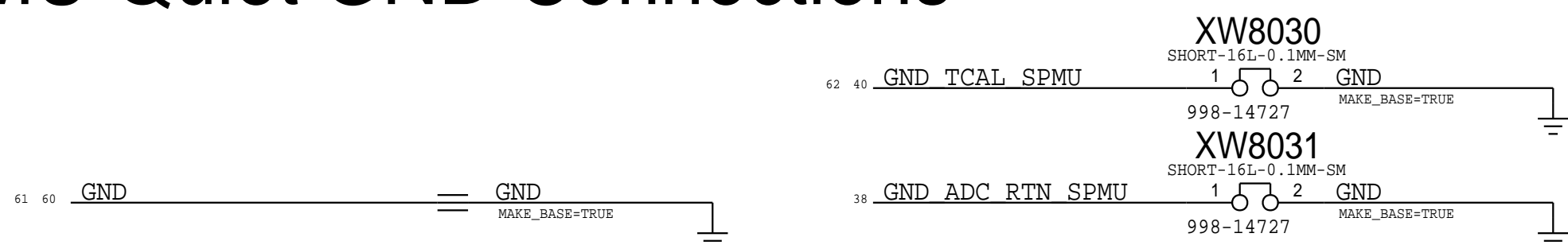
## A SPMU GPIO



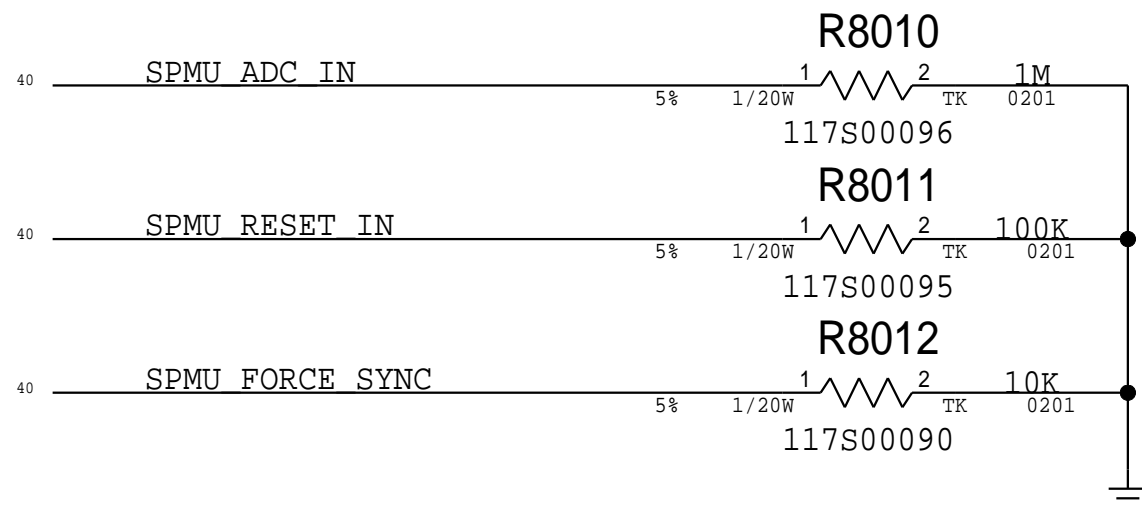
## B Probe Points



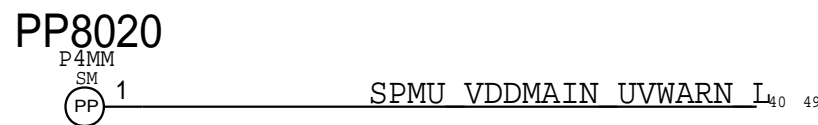
## C SPMU Quiet GND Connections



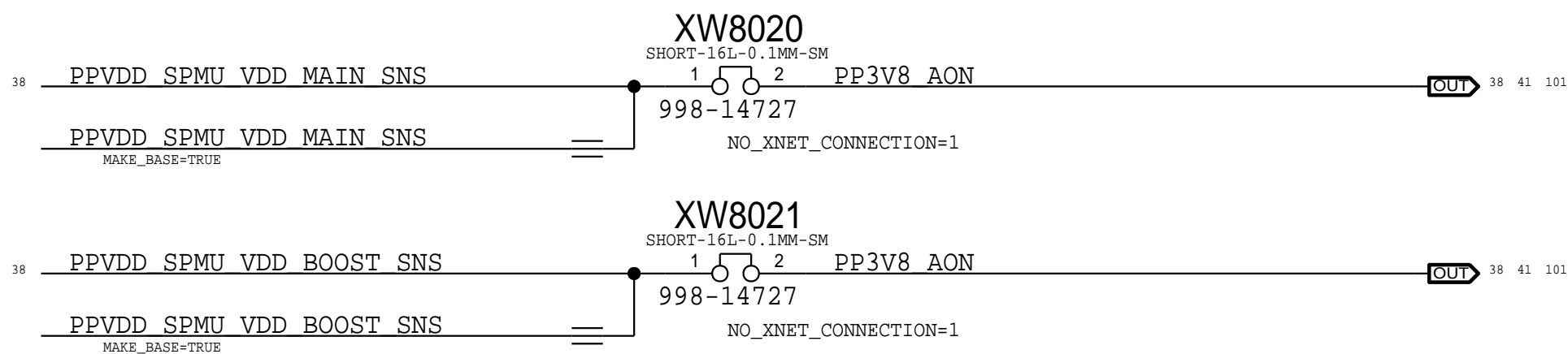
## D SPMU Input Protection



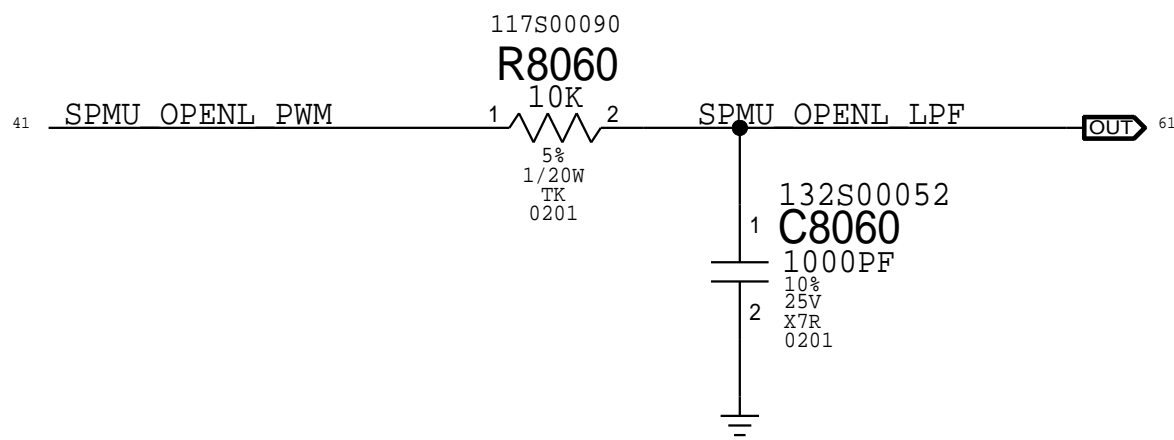
## E SPMU/SOC Throttle PP



## F SPMU Sense Connections



## D SPMU Open Coil Test



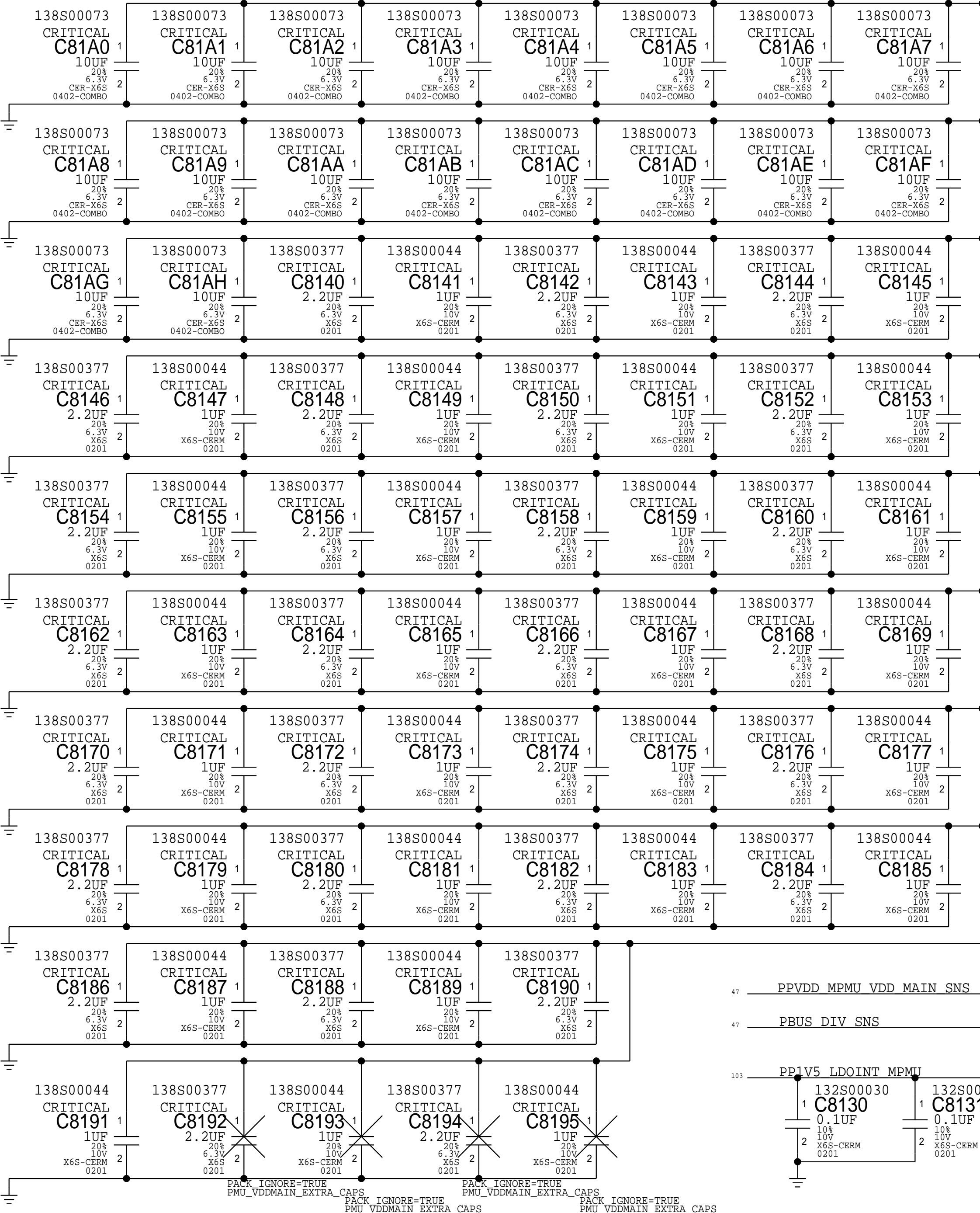
BOM\_COST\_GROUP=SOC POWER

PAGE TITLE		
SPMU: ALIASES, SUPPORT		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	80 OF 801
	SHEET	41 OF 121



\*\*\* OK2INTEGRATE \*\*\*

PP3V8 AON

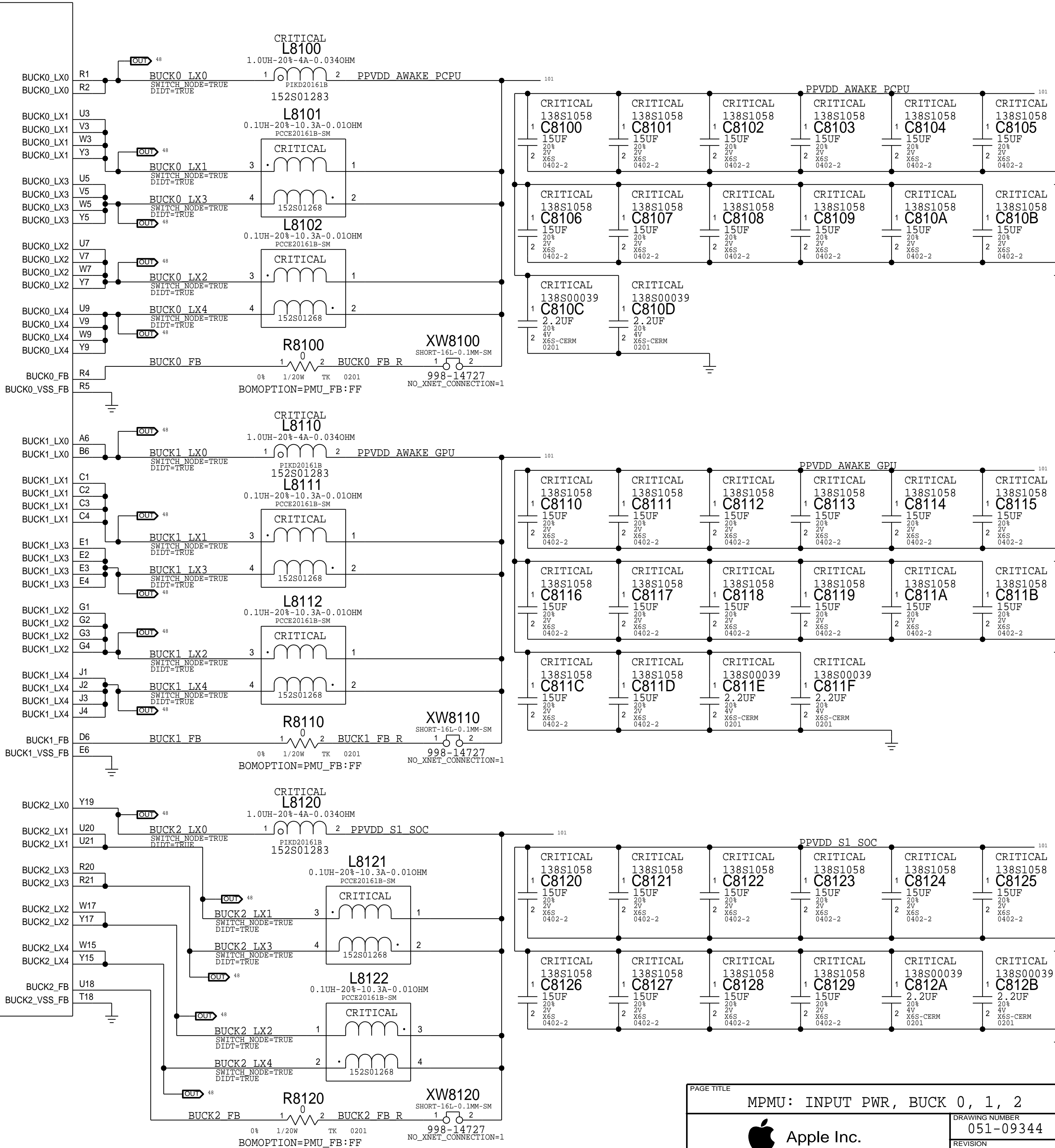


OMIT\_TABLE  
998-23524  
SYM 1 OF 5


VOLTAGE INPUTS

BUCK OUTPUTS

SENSE



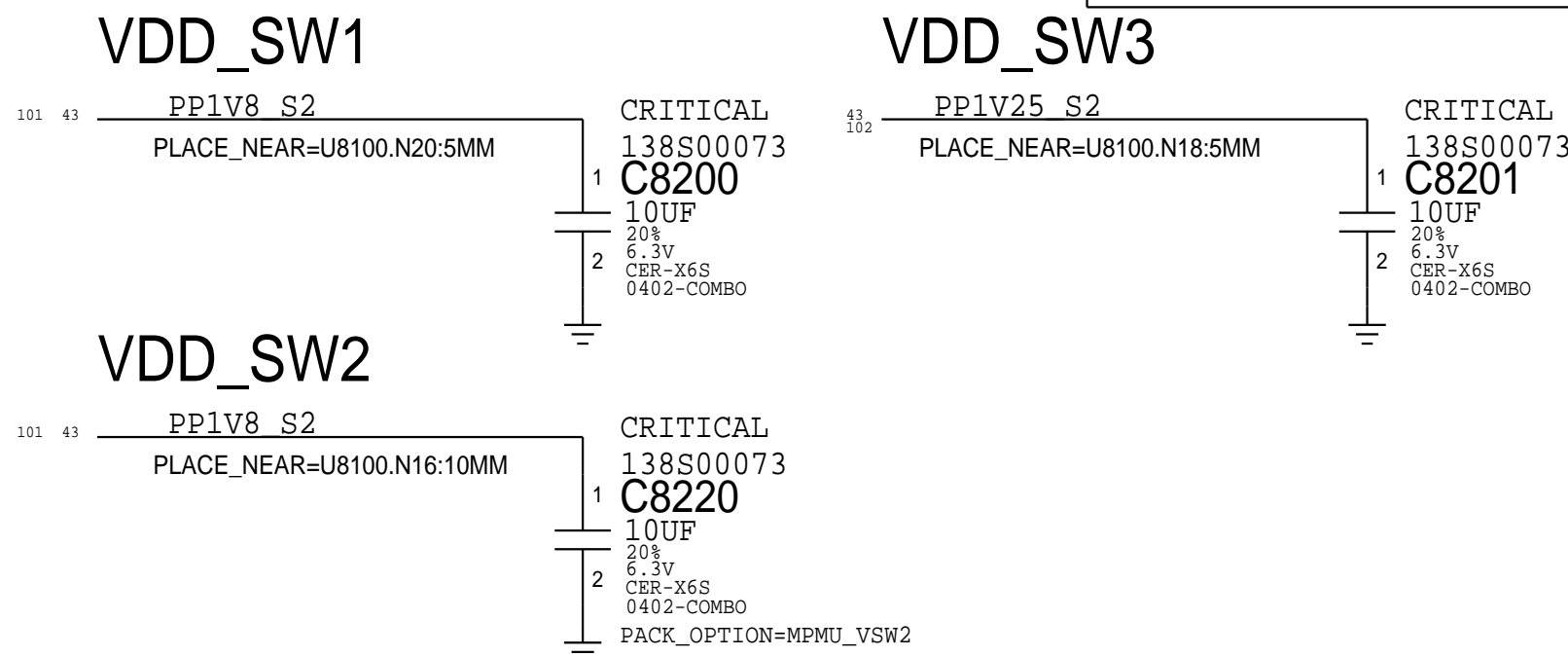
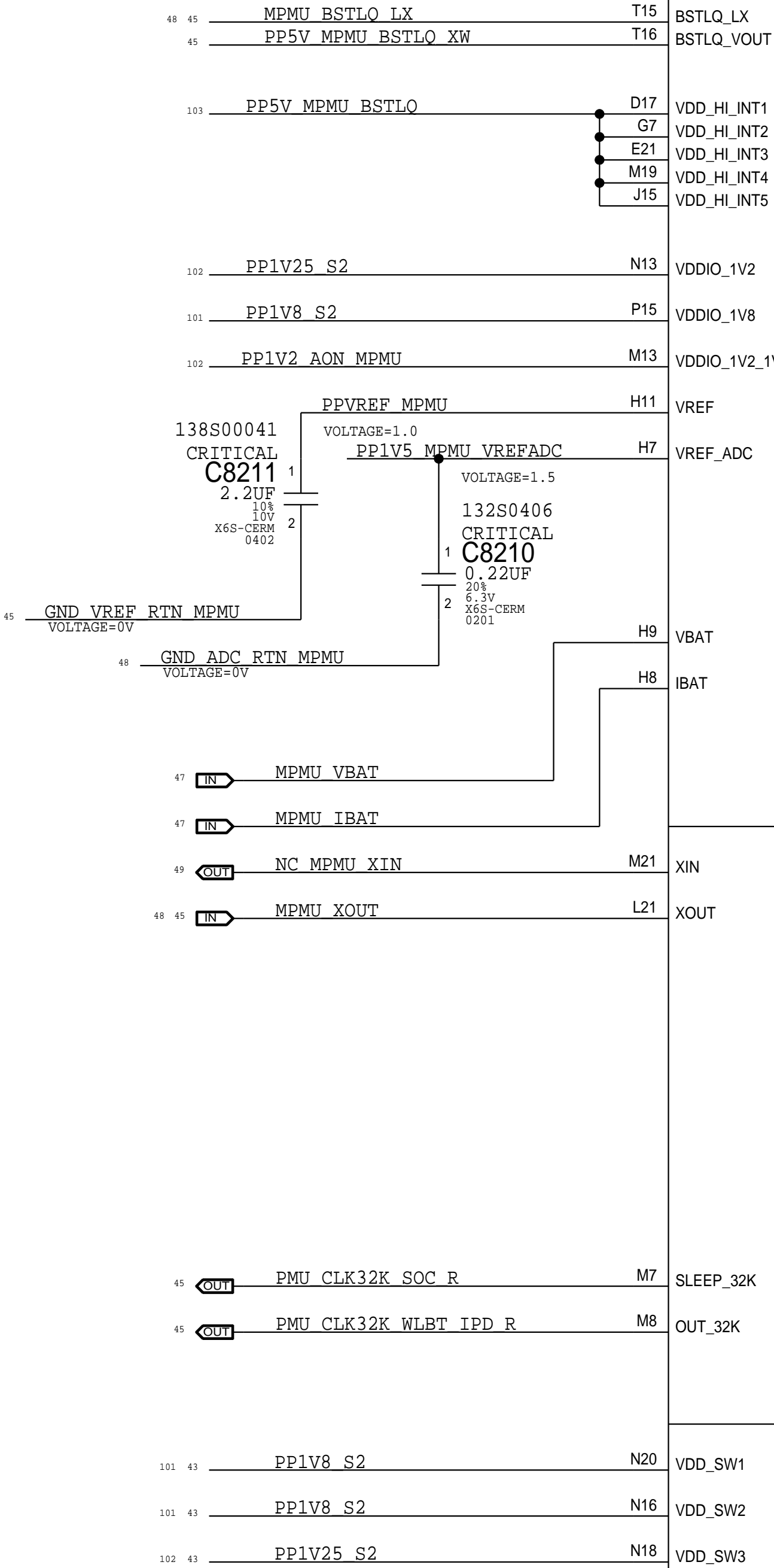
BOM\_COST\_GROUP=SOC POWER


PAGE TITLE		
MPMU: INPUT PWR, BUCK 0, 1, 2		
 Apple Inc.	DRAWING NUMBER	051-09344
	SIZE	D
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT II NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	REVISION	4.0.1
	BRANCH	
	PAGE	81 OF 801
	SHEET	42 OF 121



\*\*\* OK2INTEGRATE \*\*\*

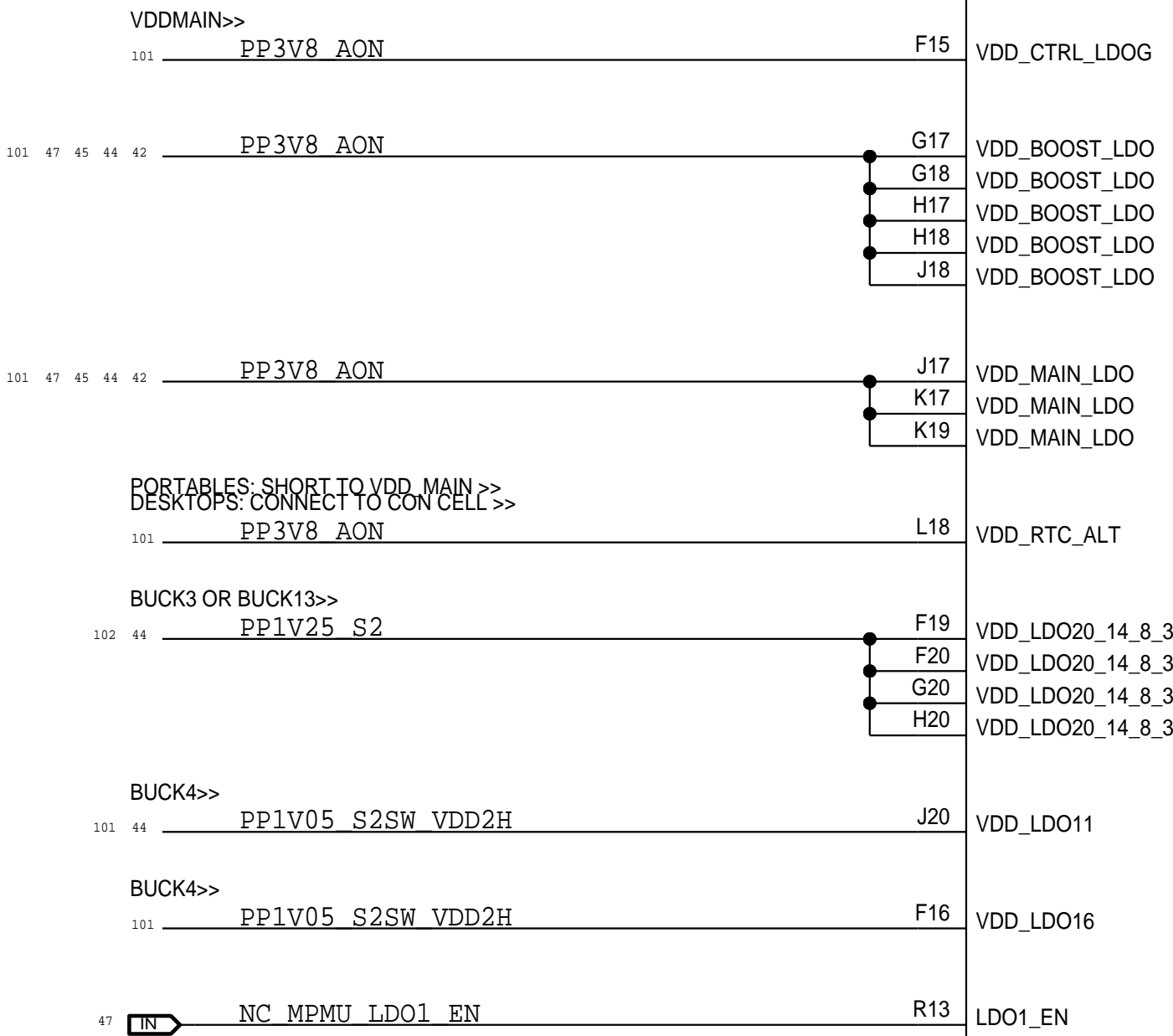
OMIT\_TABLE  
998-23524  
U8100  
STOWE\_00  
CSP  
SYM 2 OF 5



PAGE TITLE		
MPMU: BUCK 3, 4, 7, 9, 11, 13, SW		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	82 OF 801
	SHEET	43 OF 121

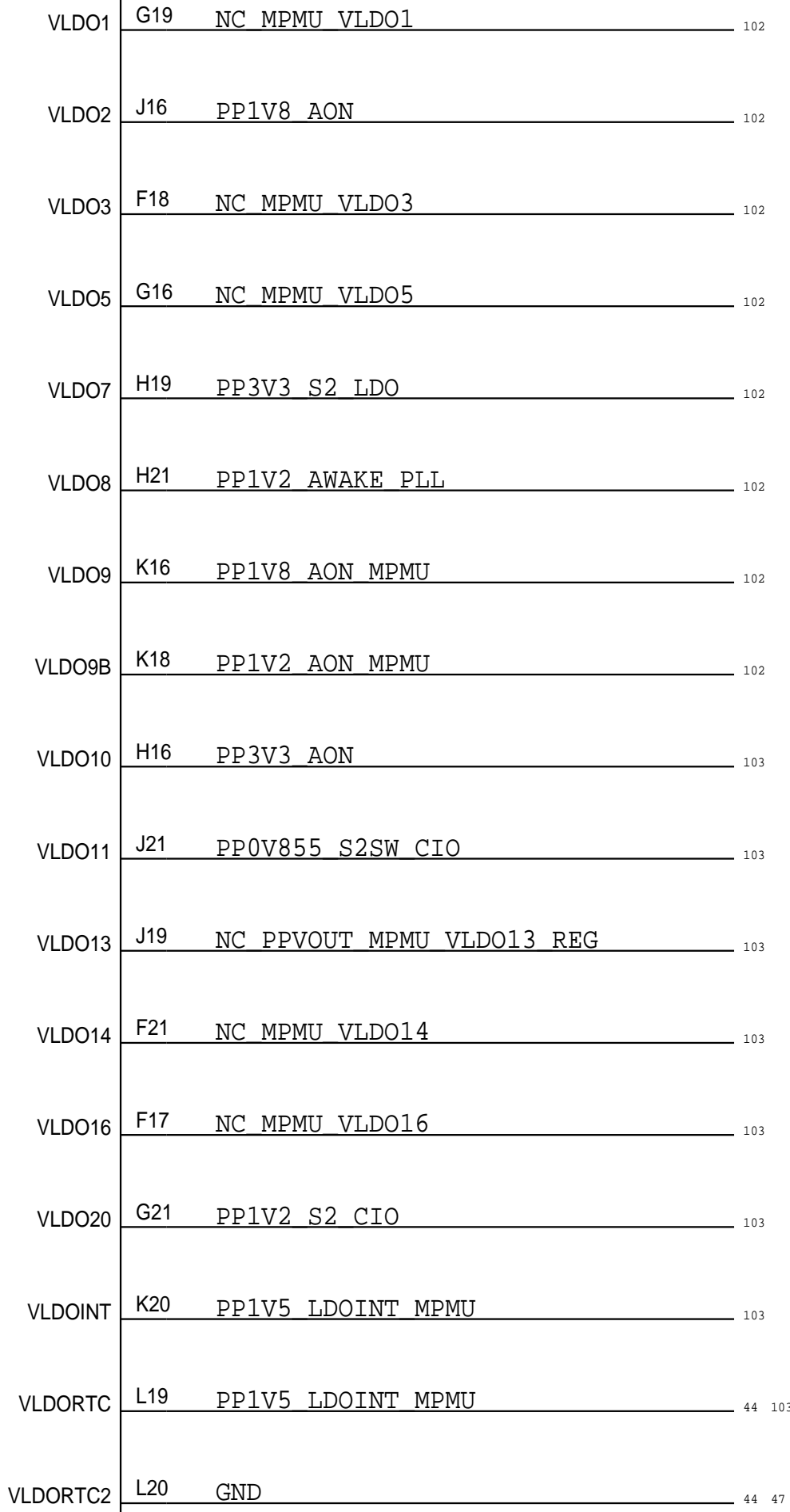
\*\*\* OK2INTEGRATE \*\*\*

OMIT\_TABLE  
998-23524



U8100  
STOWE\_00  
CSP  
SYM 3 OF 5

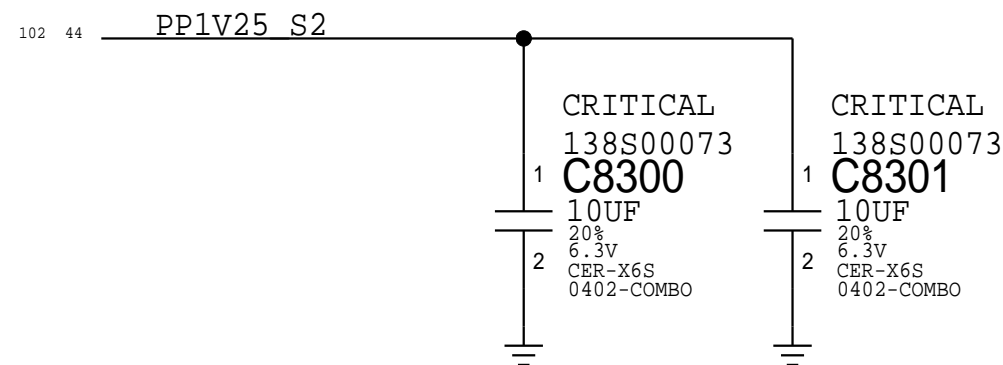
LDO INPUTS  
LDO OUTPUTS



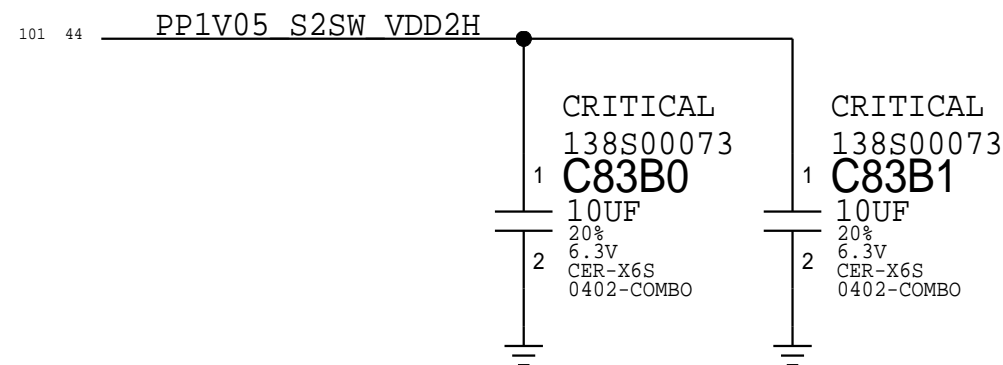
## UN-UNUSED LDOS

LDO 3, 5, 14, 16

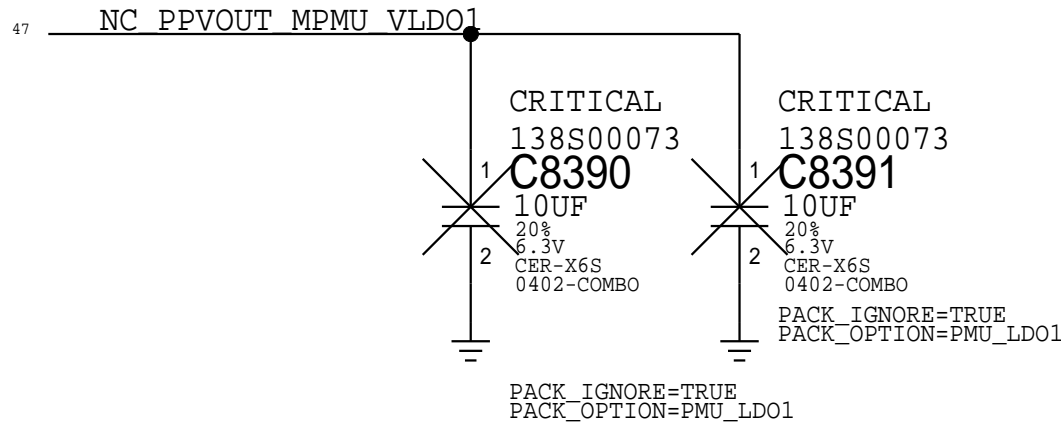
## VDD LDO 3/8/14/20



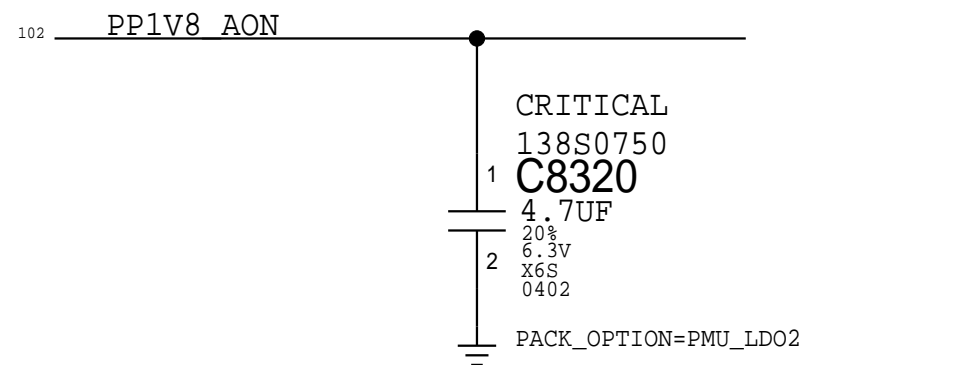
## VDD\_LDO11



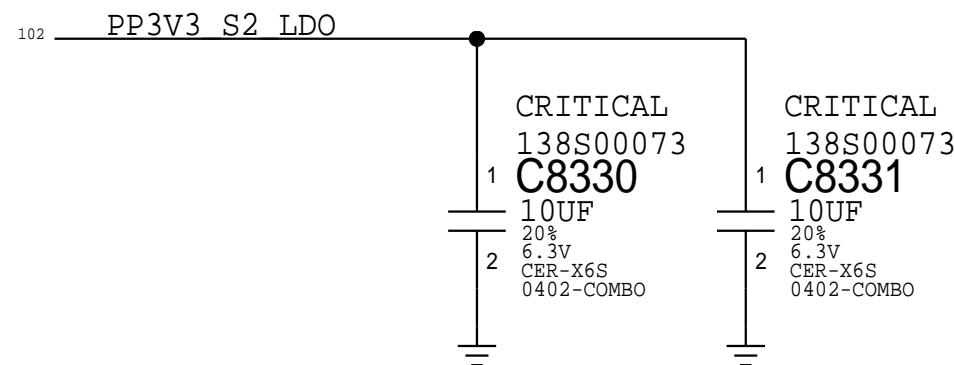
## VLD01 DECOUPLING



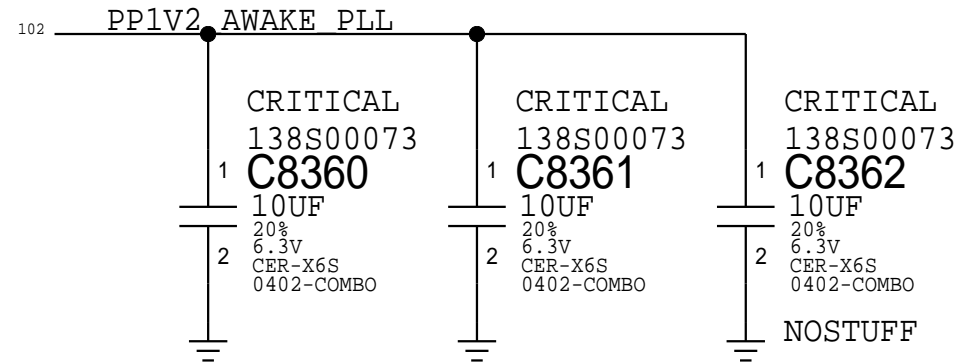
## VLD02 DECOUPLING



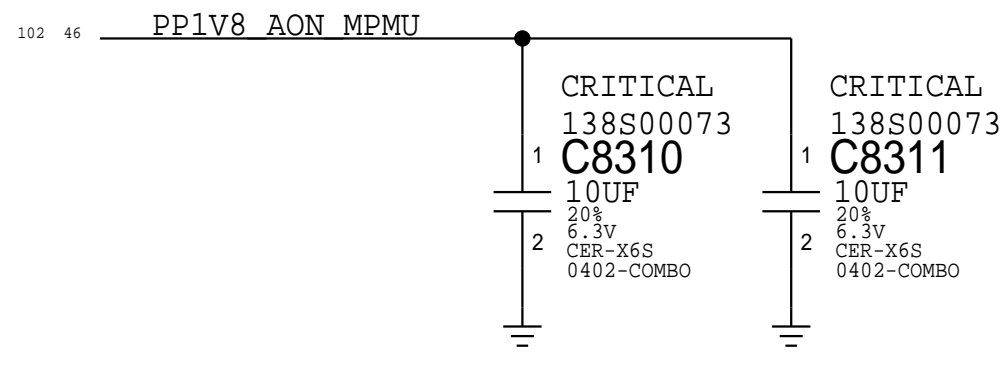
## VLD07 DECOUPLING



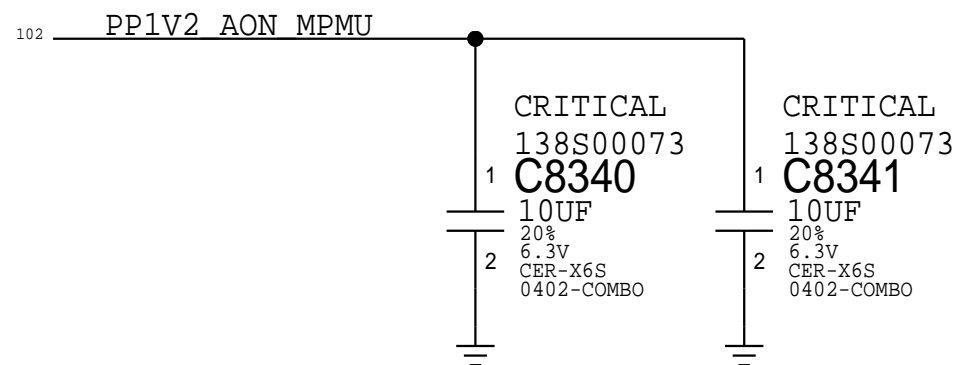
## VLD08 DECOUPLING



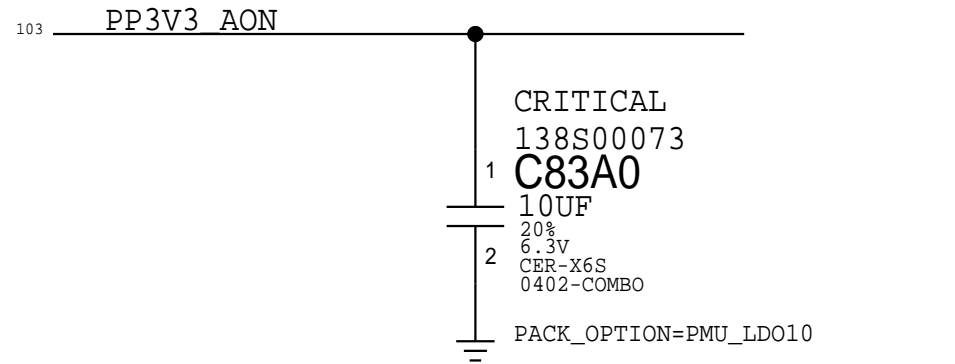
## VLD09 DECOUPLING



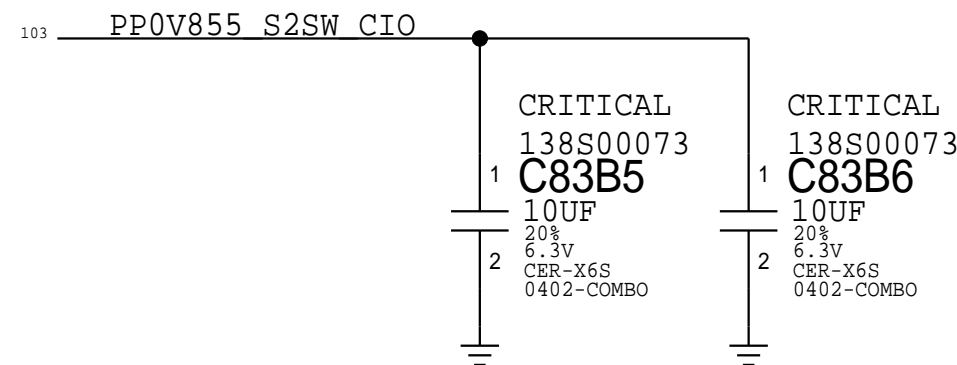
## VLD09B DECOUPLING



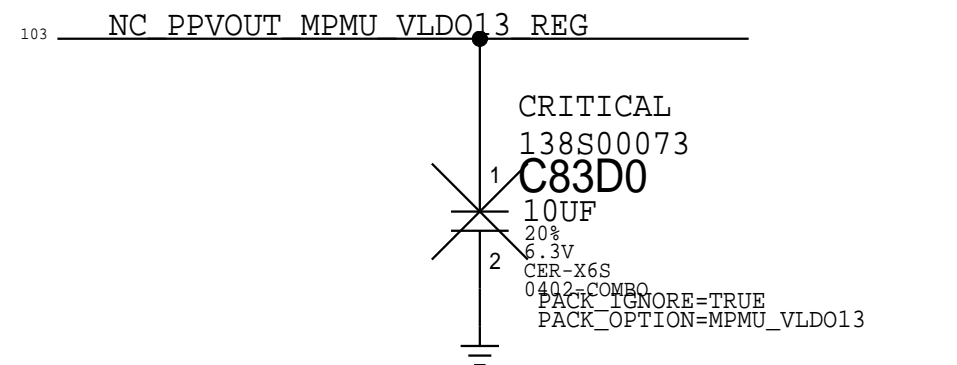
## VLD010 DECOUPLING



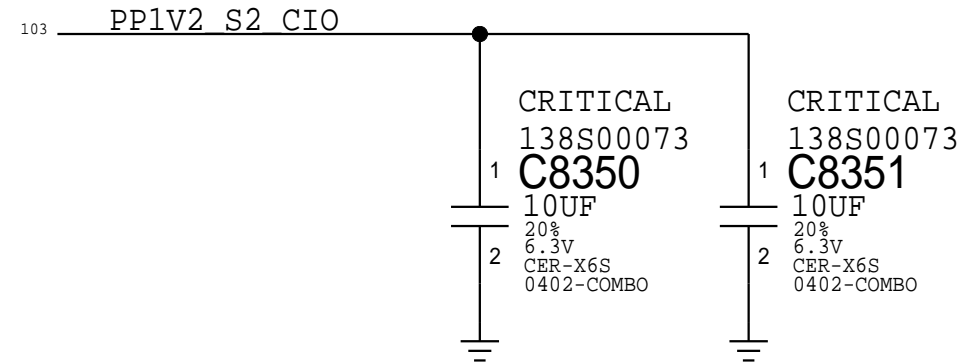
## VLD011 DECOUPLING



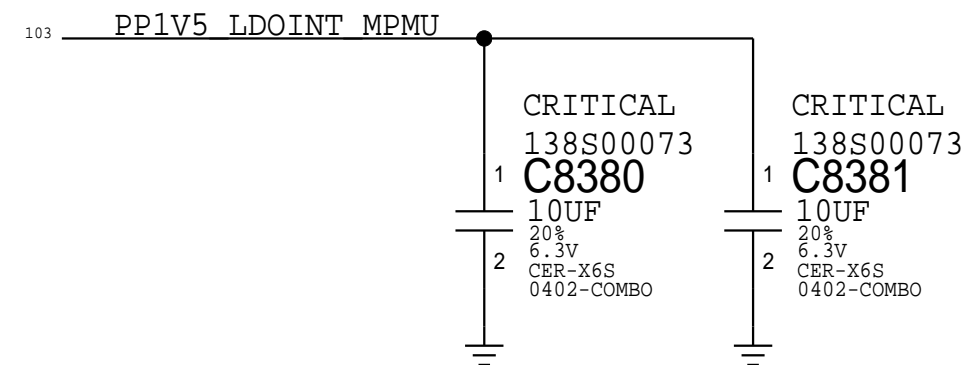
## VLD013 DECOUPLING



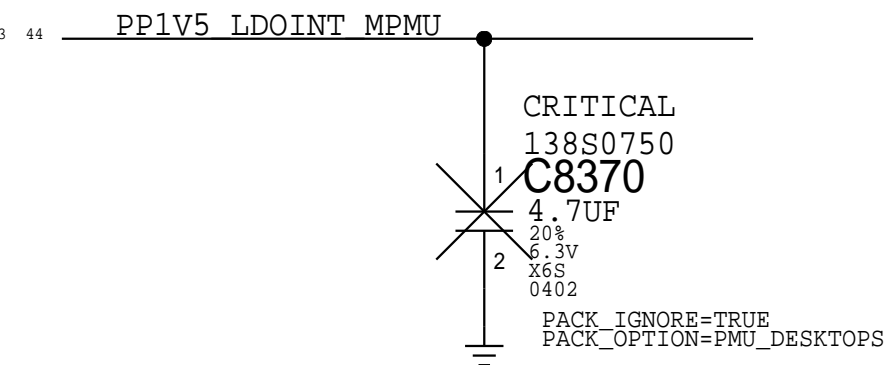
## VLD020 DECOUPLING



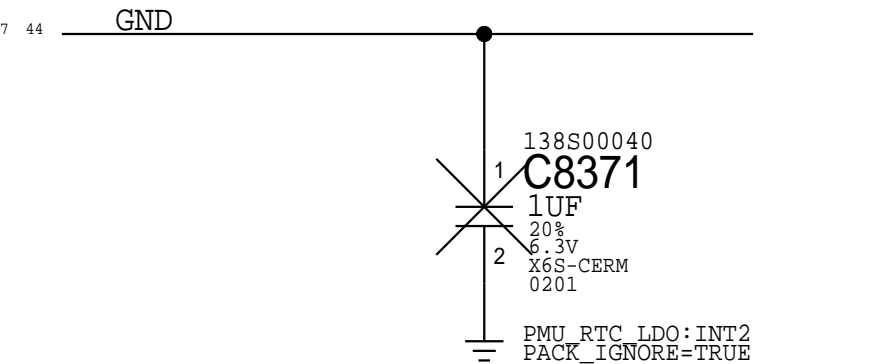
## VLD0INT DECOUPLING




## VLDORTC DECOUPLING



## VLDORTC2 DECOUPLING



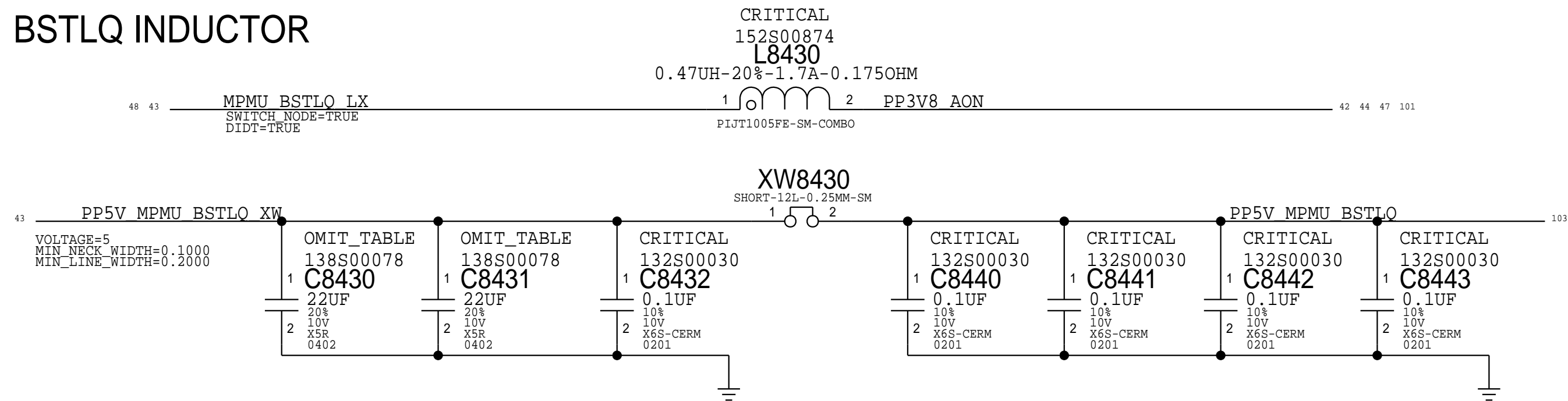
BOM\_COST\_GROUP=SOC POWER

PAGE TITLE		
MPMU: LDO		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
	PAGE	83 OF 801
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		SHEET 44 OF 121



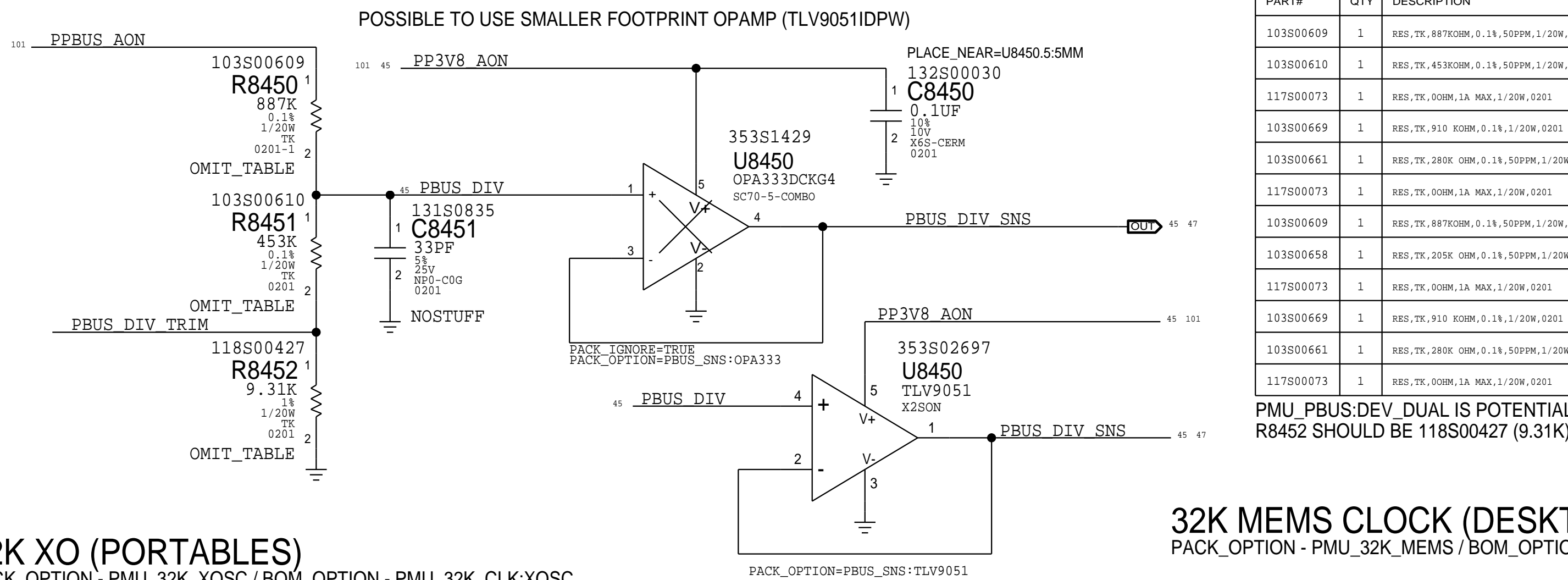
\*\*\* OK2INTEGRATE \*\*\*

## BSTLQ INDUCTOR



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00107	2	CAP,X5R,200F,20,10V,0402,H=0.8MM	C8430,C8431	CRITICAL	MPMU_BSTIQ_CAPS
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	
138S00078	138S00107	MPMU_BSTIQ_CAPS	C8430,C8431	RDAR://96318079	
138S00229	138S00107	MPMU_BSTIQ_CAPS	C8430,C8431	RDAR://96318079	

## PBUS SENSE

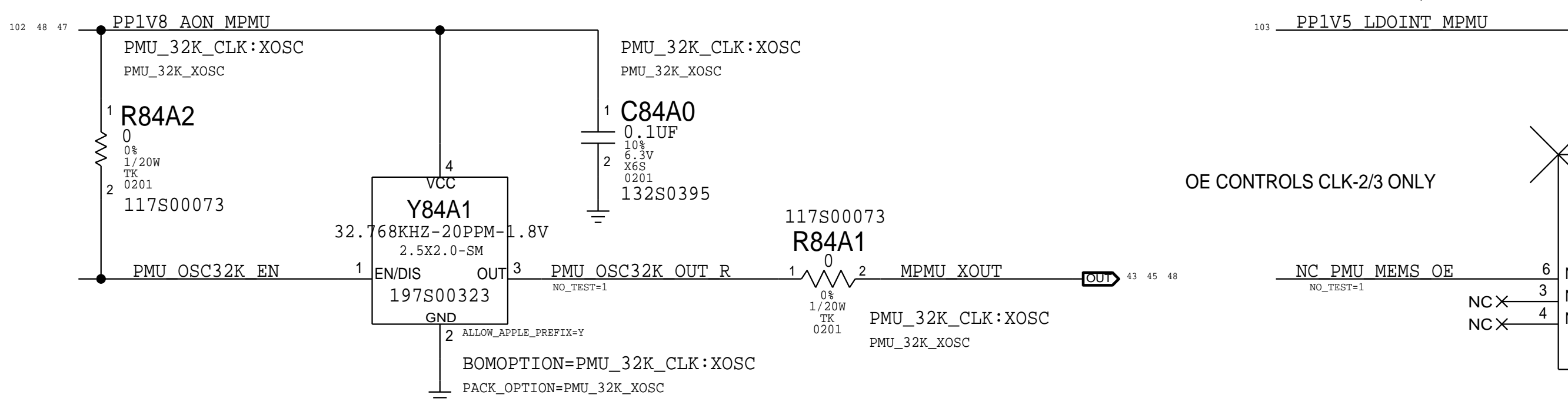


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
103S00609	1	RES,TX,887KOHM,0.1%,50PPM,1/20W,0201	R8450	PMU_PBUS:BATT3S
103S00610	1	RES,TX,453KOHM,0.1%,50PPM,1/20W,0201	R8451	PMU_PBUS:BATT3S
117S00073	1	RES,TX,000M,1A MAX.,1/20W,0201	R8452	PMU_PBUS:BATT3S
103S00669	1	RES,TX,910 KOHM,0.1%,1/20W,0201	R8450	PMU_PBUS:12V
103S00661	1	RES,TX,280K OHM,0.1%,50PPM,1/20W,0201	R8451	PMU_PBUS:12V
117S00073	1	RES,TX,000M,1A MAX.,1/20W,0201	R8452	PMU_PBUS:12V
103S00609	1	RES,TX,887KOHM,0.1%,50PPM,1/20W,0201	R8450	PMU_PBUS:15V8
103S00658	1	RES,TX,205K OHM,0.1%,50PPM,1/20W,0201	R8451	PMU_PBUS:15V8
117S00073	1	RES,TX,000M,1A MAX.,1/20W,0201	R8452	PMU_PBUS:15V8
103S00669	1	RES,TX,910 KOHM,0.1%,1/20W,0201	R8450	PMU_PBUS:DEV_DUAL
103S00661	1	RES,TX,280K OHM,0.1%,50PPM,1/20W,0201	R8451	PMU_PBUS:DEV_DUAL
117S00073	1	RES,TX,000M,1A MAX.,1/20W,0201	R8452	PMU_PBUS:DEV_DUAL

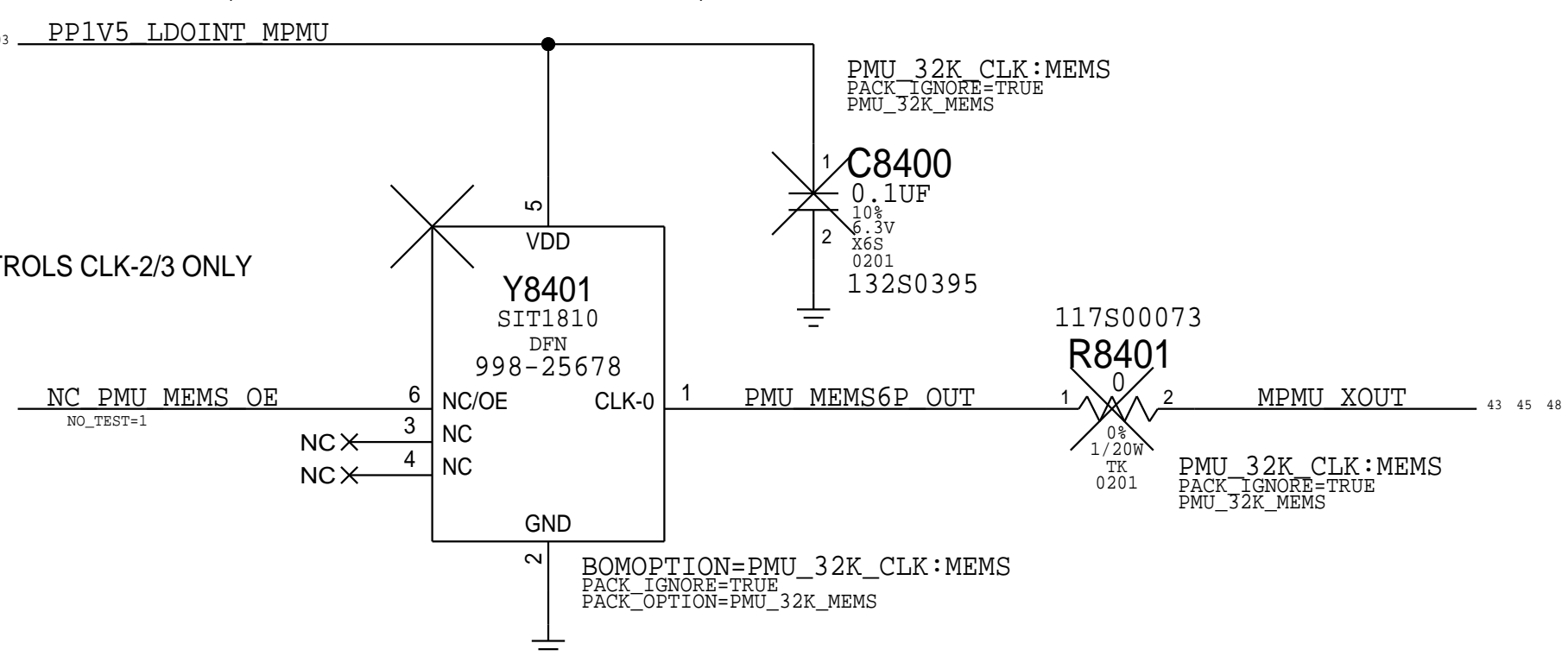
PMU\_PBUS:DEV\_DUAL IS POTENTIALLY USED IN DEV BOARD ON OTHER PAGES.  
R8452 SHOULD BE 118S00427 (9.31K) IF ENABLING BOOST\_SNS PULL DOWN CIRCUIT (NON POR)

## 32K XO (PORTABLES)

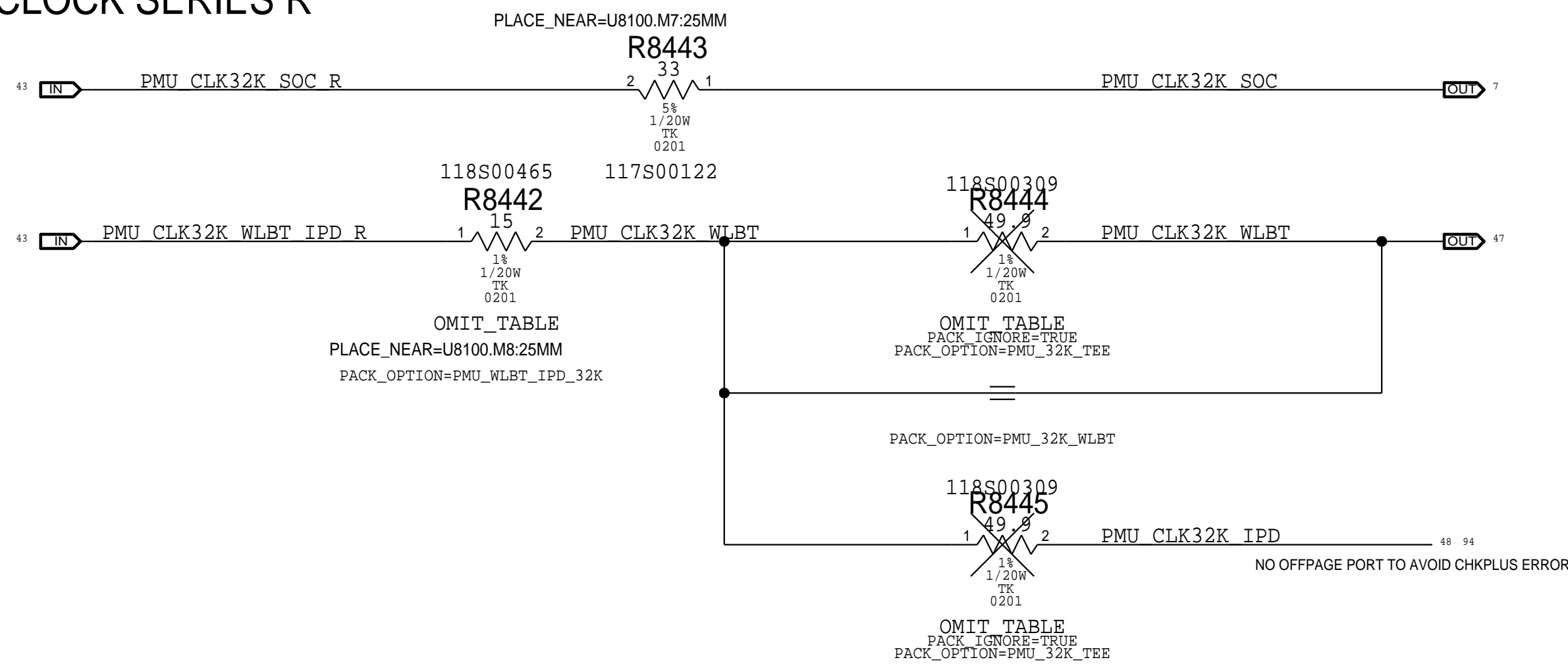
```
PACK_OPTION - PMU_32K_XOSC / BOM_OPTION - PMU_32K_CLK:XOSC
>> LD09
```



>> RTC SUPPLY (DISCRETE, VLDORTC, OR VLDORTC2)



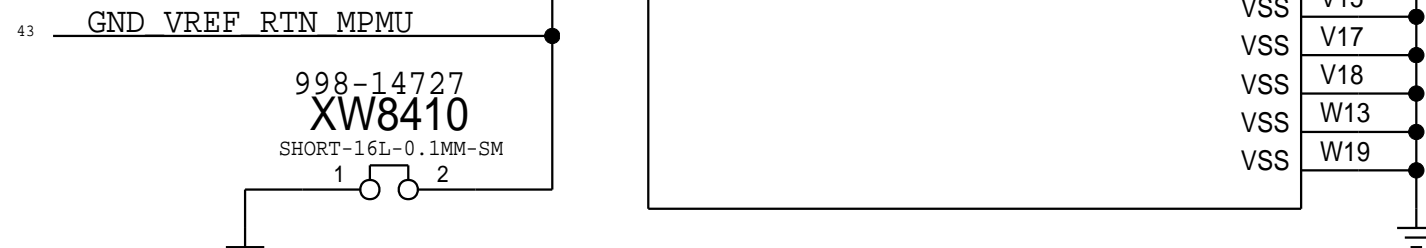
## 32K CLOCK SERIES R




PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S00465	1	RES,TK,15 OHM,1/16,1/20W,0201	R8442		PMU_OUT32K:TEE
117S00122	1	RES,TK,33 OHM,5/16,1/20W,0201	R8442		PMU_OUT32K:WLBT
118S00309	2	RES,TK,49.9 OHM,1/16,1/20W,0201	R8444,R8445		PMU_OUT32K:TEE

## PLACEMENT NOTES

CONNECT VSS\_REF THROUGH ALL GND LAYERS  
PLACE XW AT VSS\_REF PIN, ROUTE RTN SIGNAL BACK TO PASSIVES



PAGE TITLE			
MPMU: MISC CKT, VSS			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		4.0.1	
		BRANCH	
		PAGE	
		84 OF 801	
		SHEET	
		45 OF 121	






























[www.repairlap.com](http://www.repairlap.com)

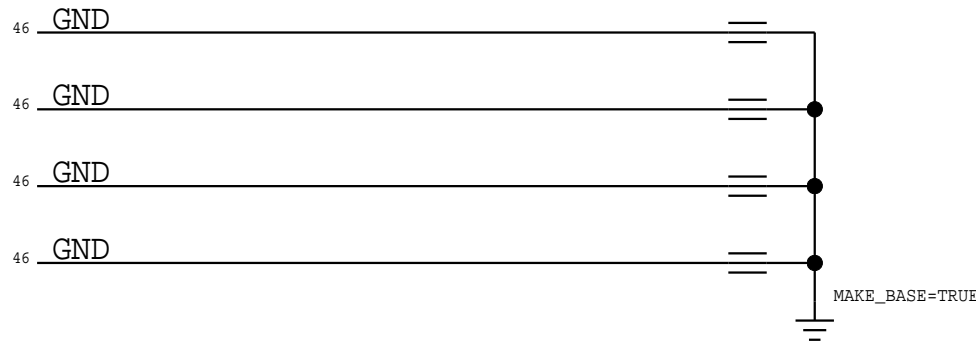


## A MPMU GPIO Aliases

IO OTP SETTINGS (WIP), IF NOT OTP IT WILL BE CONFIGURED AS SW OVERRIDE..  
SUPPLY:LDO9 (1.8V AON), BUCK13 (1.25V S2), BUCK3 (1.8V S2), SLDO9B (1.2V AON)  
IO TYPE: INPUT, OUTPUT OPEN DRAIN, OR OUTPUT PUSH PULL  
PULLS: IPU, IPD, NONE

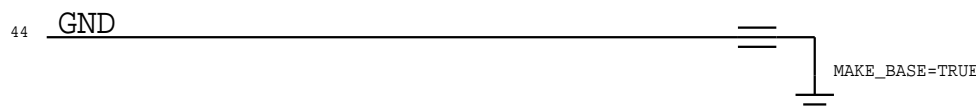
GPIO0: LDO9B IN NONE	 LID CLOSED DMIC WARN L	==	LID CLOSED DMIC WARN L	105
GPIO1: LDO9 IN IPU	 CODEC WAKE L	==	CODEC WAKE L	93
GPIO2: LDO9 IN IPD	 IPD OCP FLT	==	IPD OCP FLT	54
GPIO3: BUCK13 IN IPD	 CHGR AUX OK	==	CHGR AUX OK	31
GPIO4: -WIP- IN IPU	 NC MPMU GPIO 4	==	NC MPMU GPIO 4	
GPIO5: BUCK13 IN IPD	 WLBT WAKE	==	WLBT WAKE	75 76
GPIO6: LDO9 PP NONE	 IPD PWR EN	==	IPD PWR EN	47 54
GPIO7: LDO9 IN IPD > NEEDS OVERRIDE?	 MPMU OPENL PWM	==	MPMU OPENL PWM	47
GPIO8: LDO9 OD NONE	 IPD TOUCH RESET L	==	IPD TOUCH RESET L	47 94
GPIO9: LDO9 IN IPD > NEEDS OVERRIDE?	 NC MPMU GPIO 9	==	NC MPMU GPIO 9	
GPIO10: LDO9 PP NONE	 LCD PWR EN	==	LCD PWR EN	82
GPIO11: LDO9 PP NONE	 NC MPMU GPIO 11	==	NC MPMU GPIO 11	
GPIO12: LDO9 OD NONE	 PVDD1 PWR EN	==	PVDD1 PWR EN	54
GPIO13: -WIP- PP NONE	 WLBT PWR EN	==	WLBT PWR EN	75 76
GPIO14: LDO9 IN NONE	 IPD WAKE L	==	IPD WAKE L	94
GPIO15: LDO9 PP NONE	 SE PWR EN R	==	SE PWR EN R	28
GPIO16: LDO9 IN IPD > NEEDS OVERRIDE?	 AMR 1V8 PMU	==	AMR 1V8 PMU	49
GPIO17: BUCK13 PP NONE	 NAND0 LPB L	==	NAND0 LPB L	77 78 97
GPIO18: LDO9 PP NONE	 BL PWR EN	==	BL PWR EN	63
GPIO19: LDO9 PP IPD	 P3V8AON LPM	==	P3V8AON LPM	35 47
GPIO20: LDO9 PP NONE	 P5VS2TPS PWR EN	==	P5VS2TPS PWR EN	47 52
GPIO21: LDO9 IN IPD > NEEDS OVERRIDE?	 NC MPMU GPIO 21	==	NC MPMU GPIO 21	
GPIO22: LDO9 IN IPD > NEEDS OVERRIDE?	 SE LPM	==	SE LPM	28
GPIO23: LDO9 IN IPD > NEEDS OVERRIDE?	 NC MPMU GPIO 23	==	NC MPMU GPIO 23	
GPIO24: LDO9 OD NONE	 IPD MCU RESET L	==	IPD MCU RESET L	47 94
GPIO25: WIP PP NONE	 NC MPMU GPIO 25	==	NC MPMU GPIO 25	
GPIO26: LDO9 IN IPD > NEEDS OVERRIDE?	 NC MPMU GPIO 26	==	NC MPMU GPIO 26	

## D MPMU Misc Aliases



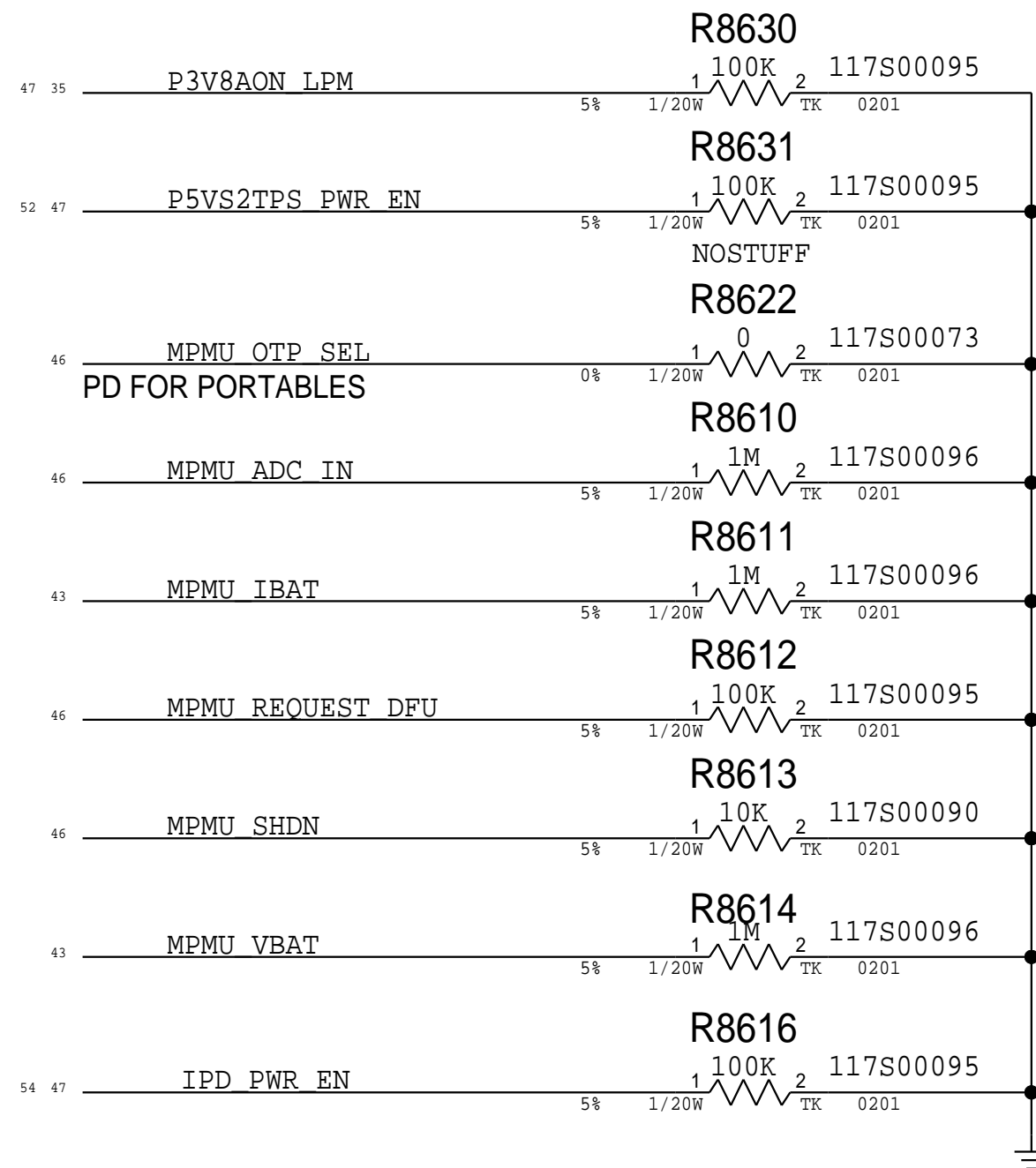
NC MPMU LDO1 EN	==	NC MPMU LDO1 EN
NC MPMU OFF REQ	==	NC MPMU OFF REQ
NC MPMU WAKE2MS	==	NC MPMU WAKE2MS

VLDORTC2 IS PLANNED FOR B0, AND CURRENTLY NOT IMPLEMENTED

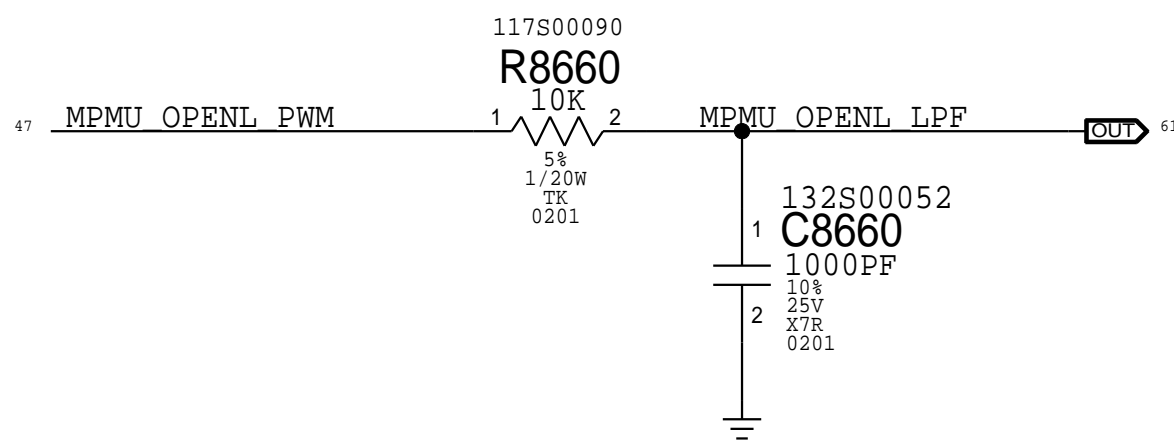


PMU_CLK32K WLBT	==	PMU_CLK32K WLBT
NC PPVOUT MPMU VLD01	==	NC PPVOUT MPMU VLD01

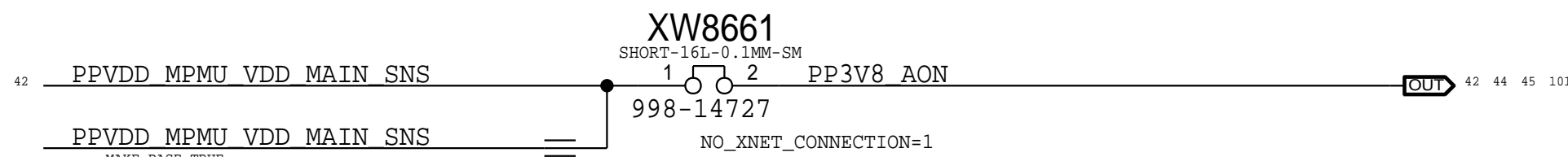
## B MPMU Input Protection & Pull-Downs



## D MPMU Open Coil Test



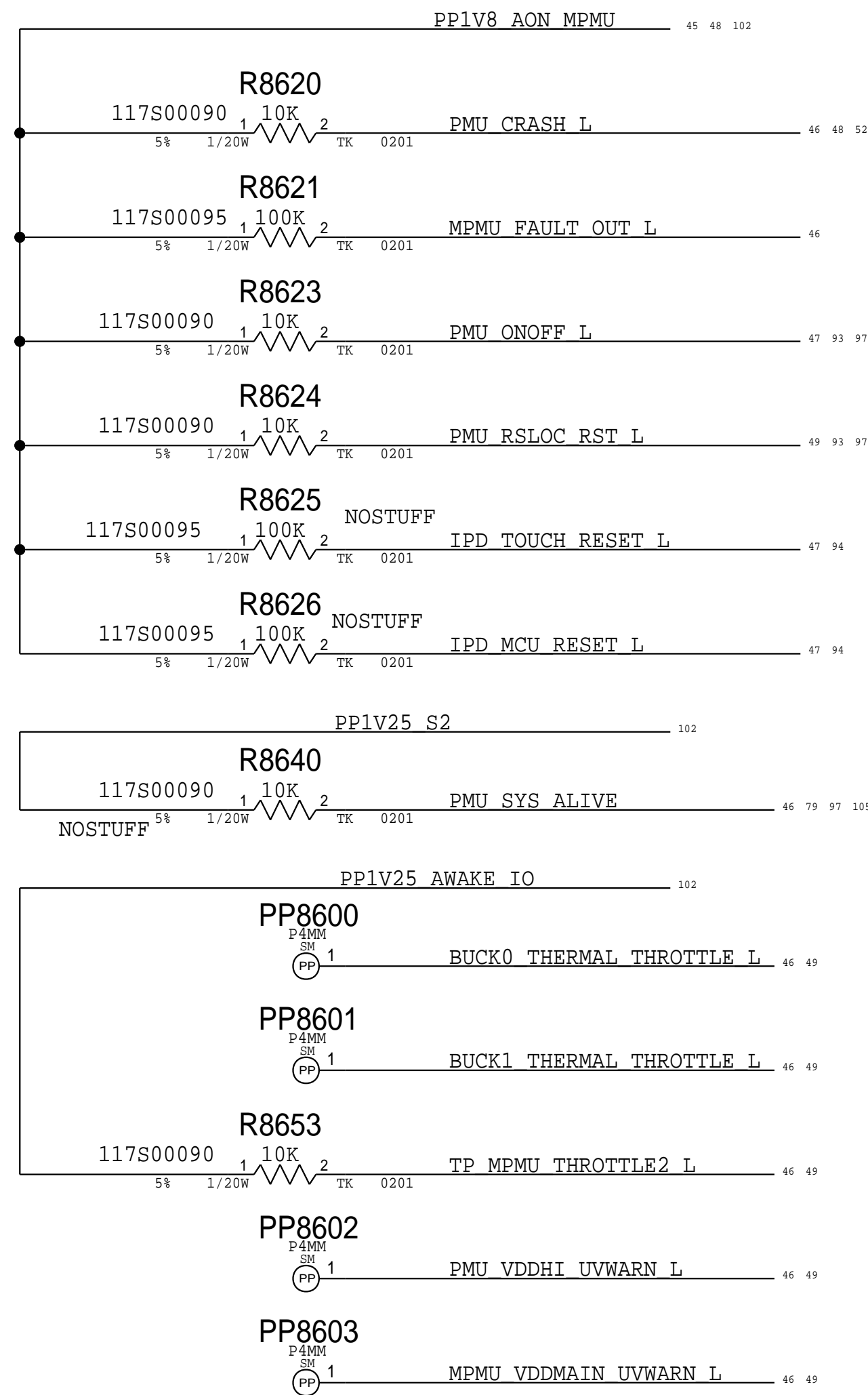
## E MPMU VDD\_MAIN Sense



## F MPMU VDD\_BOOST Sense




## C MPMU Pull-Ups



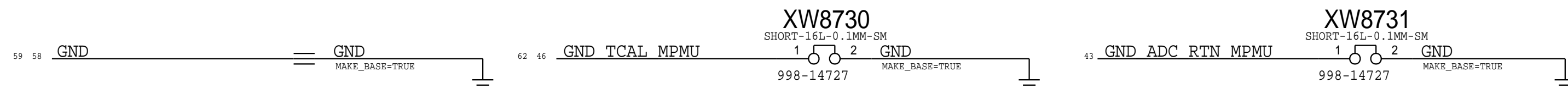
## G MPMU Button and Reset Aliases

PMU_ONOFF L	==	PMU_ONOFF L
NC MPMU_BUTTON3	==	NC MPMU_BUTTON3
NC MPMU_BUTTON4	==	NC MPMU_BUTTON4
NC MPMU_BUTTON01	==	NC MPMU_BUTTON01
NC MPMU_BUTTON02	==	NC MPMU_BUTTON02
NC MPMU_BUTTON03	==	NC MPMU_BUTTON03
NC MPMU_RESET_IN0	==	NC MPMU_RESET_IN0
UPC_PMU_RESET_1V2	==	UPC_PMU_RESET_1V2

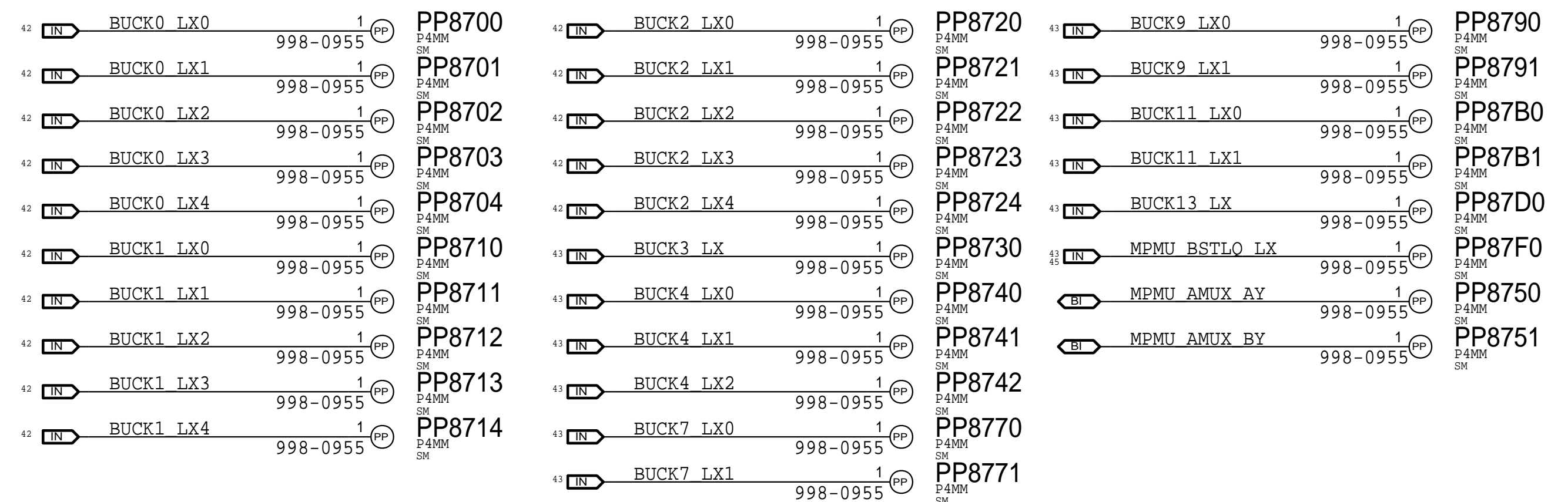
BOM\_COST\_GROUP=SOC POWER

PAGE TITLE		
MPMU: ALIAS, PULLS		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I TO NOT REPRODUCE OR COPY IT I TO NOT REVEAL OR PUBLISH IT IN WHOLE OR PART I TO NOT REVEAL OR PUBLISH IT IN WHOLE OR PART	BRANCH	
	PAGE	86 OF 801
	SHEET	47 OF 121

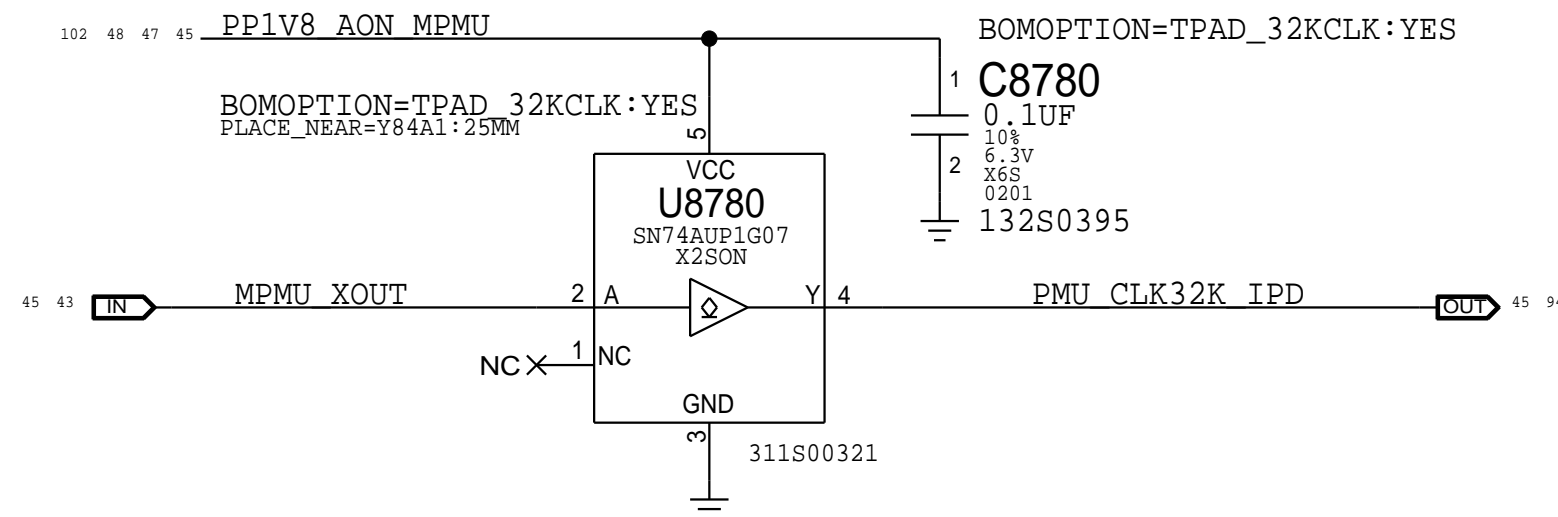
## Ⓐ MPMU Quiet GND Connections



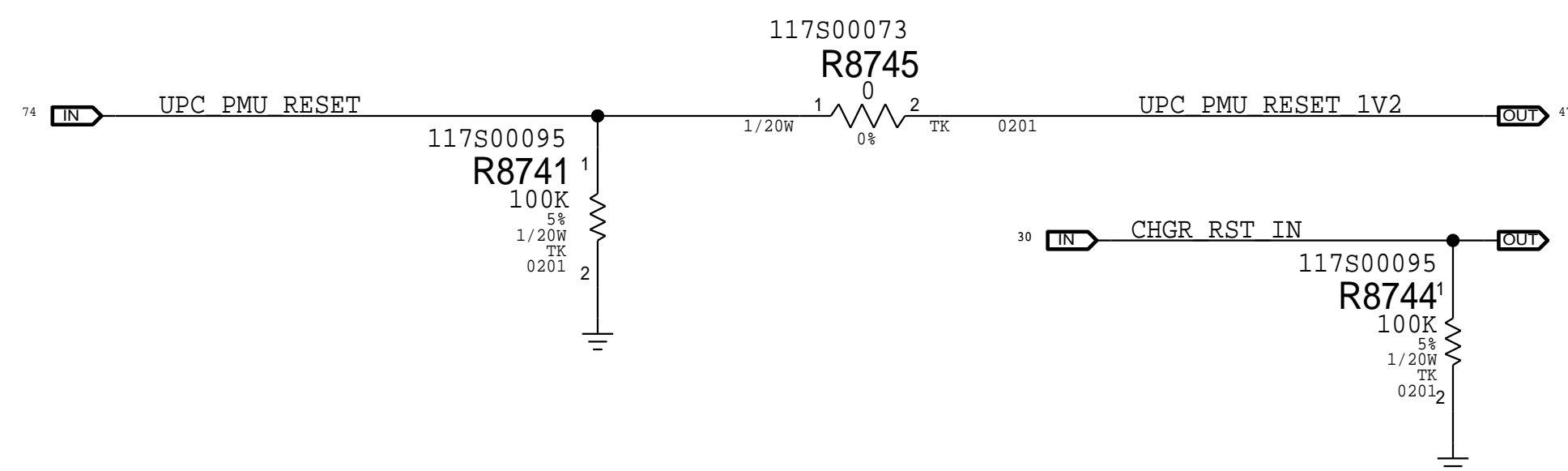
## B MPMU Probe Points



④ Buffer 32kHz Clock to Trackpad

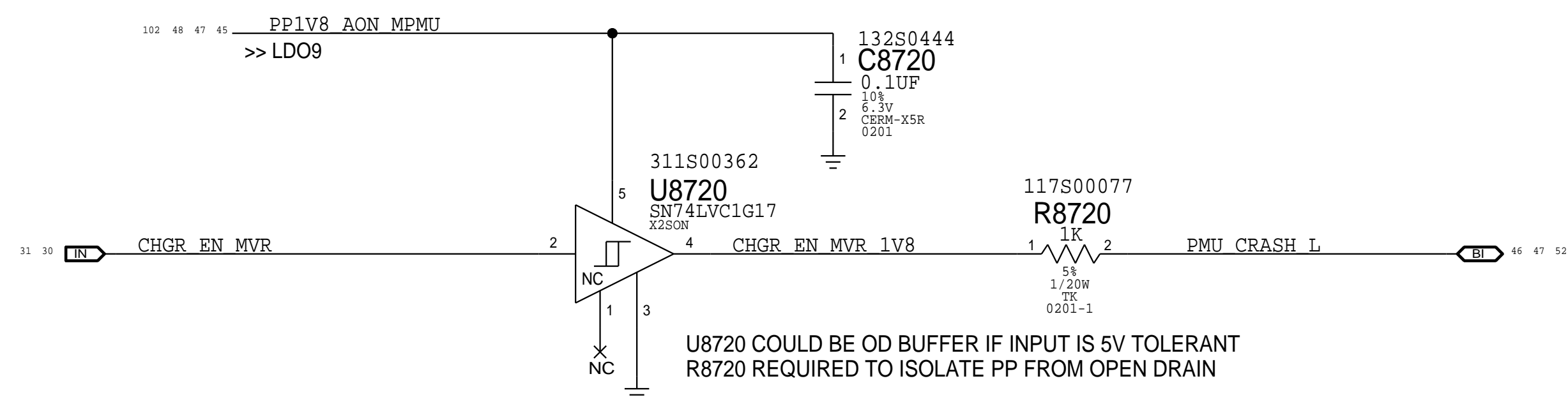



## © MPMU Charger Reset Circuit



Ⓔ Early Crash PMU signal

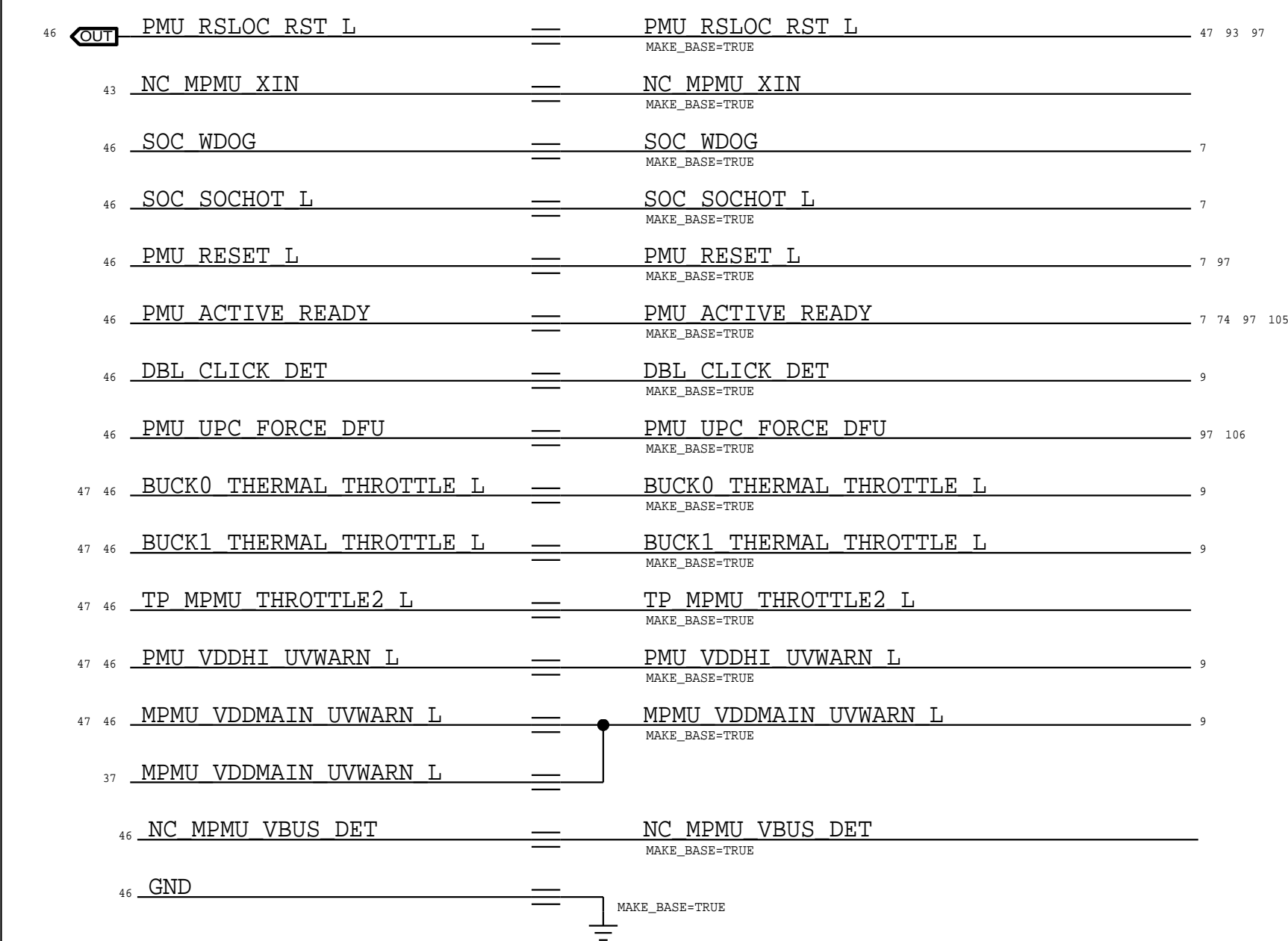
rdar://84737210



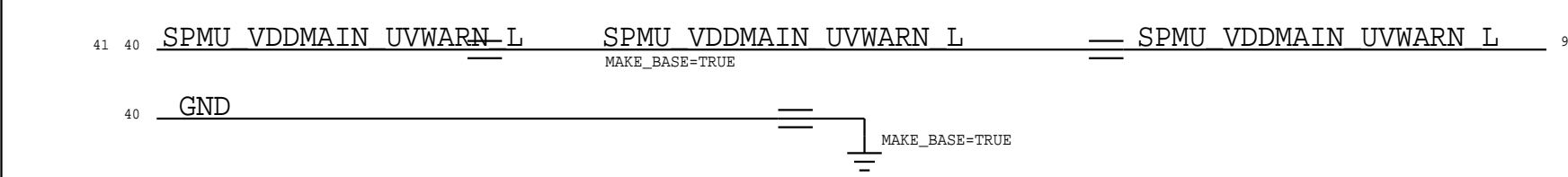
PAGE TITLE			
MPMU: SUPPORT			
 Apple Inc.	DRAWING NUMBER 051-09344		SIZE D
	REVISION 4.0.1		
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE 87 OF 801	
		SHEET 48 OF 121	



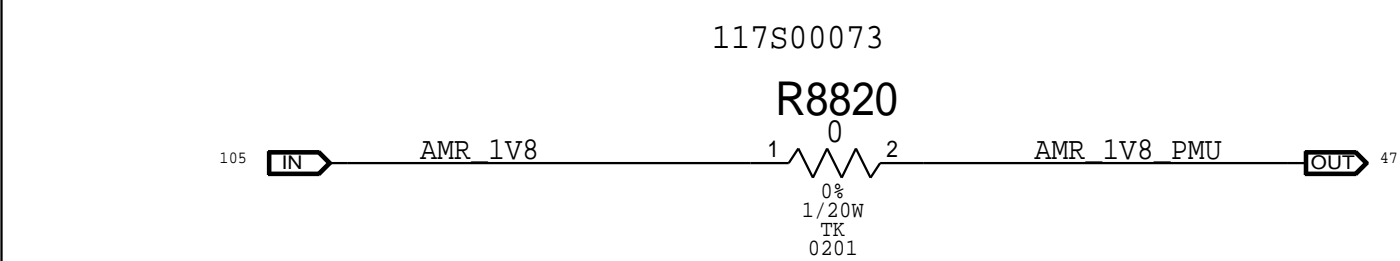
A MPMU Misc Aliases



B SPMU Misc Aliases



C PMU AMR Test



PAGE TITLE		
PMU: SUPPORT - FF		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	88 OF 801
	SHEET	49 OF 121

BOM\_COST\_GROUP=SOC POWER





**\* OK2INTEGRATE \***

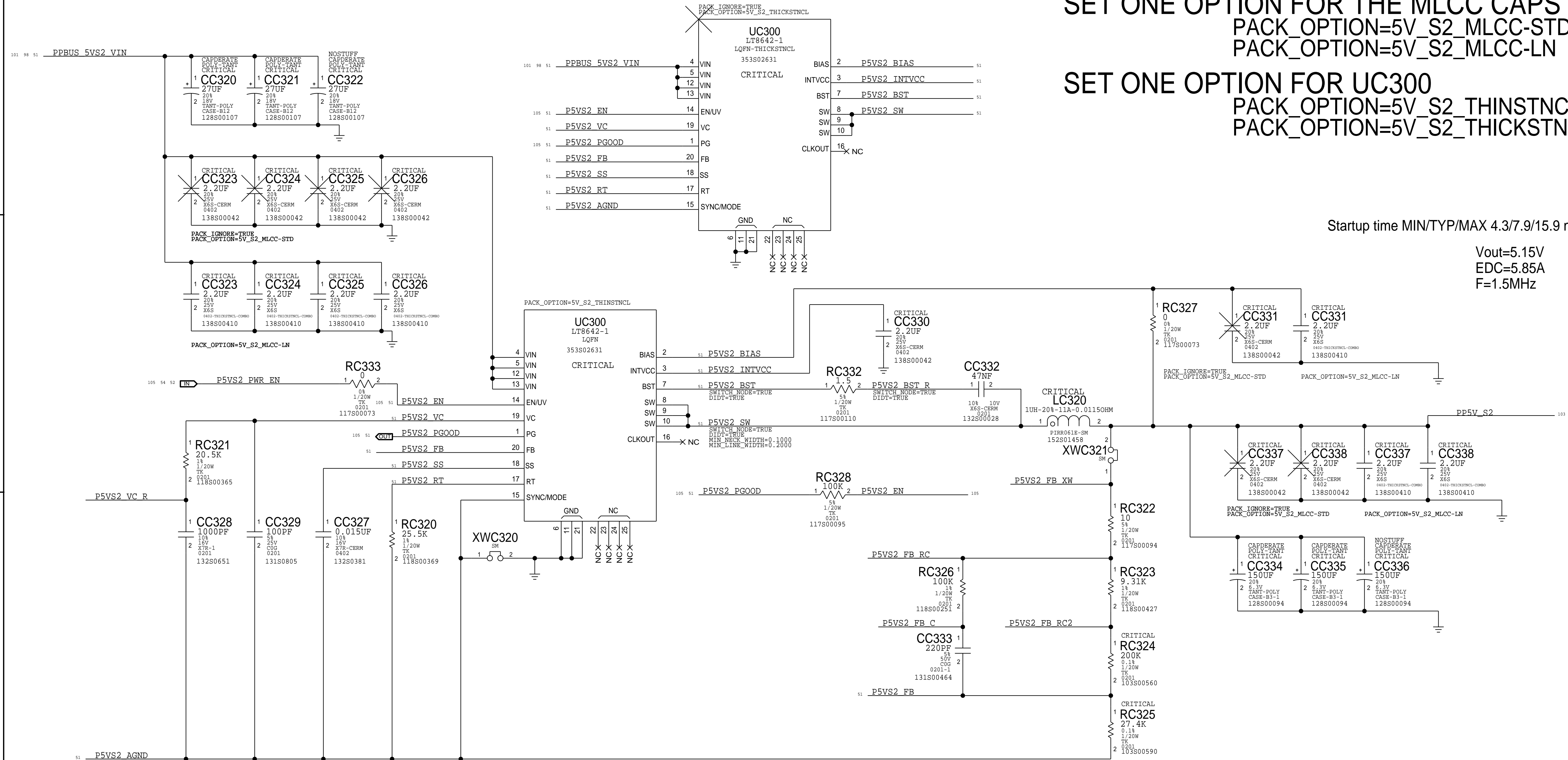
## 5V\_S2 voltage regulator (Low power option)


SET ONE OPTION FOR THE MLCC CAPS  
PACK\_OPTION=5V\_S2\_MLCC-STD  
PACK\_OPTION=5V\_S2\_MLCC-LN

SET ONE OPTION FOR UC300  
PACK\_OPTION=5V\_S2\_THINSTNCL  
PACK\_OPTION=5V\_S2\_THICKSTNCL

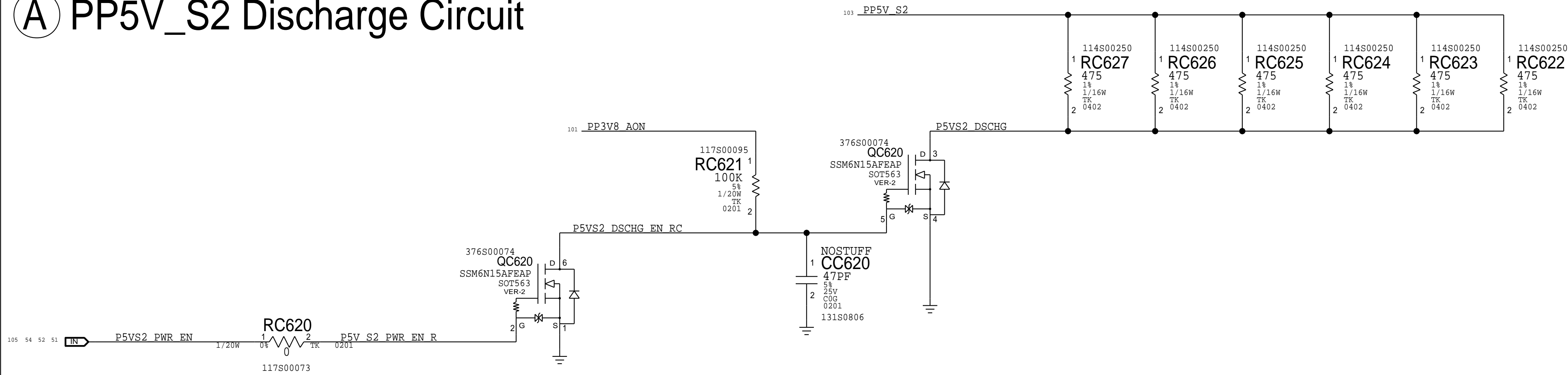
Startup time MIN/TYP/MAX 4.3/7.9/15.9 ms

Vout=5.15V  
EDC=5.85A  
F=1.5MHz

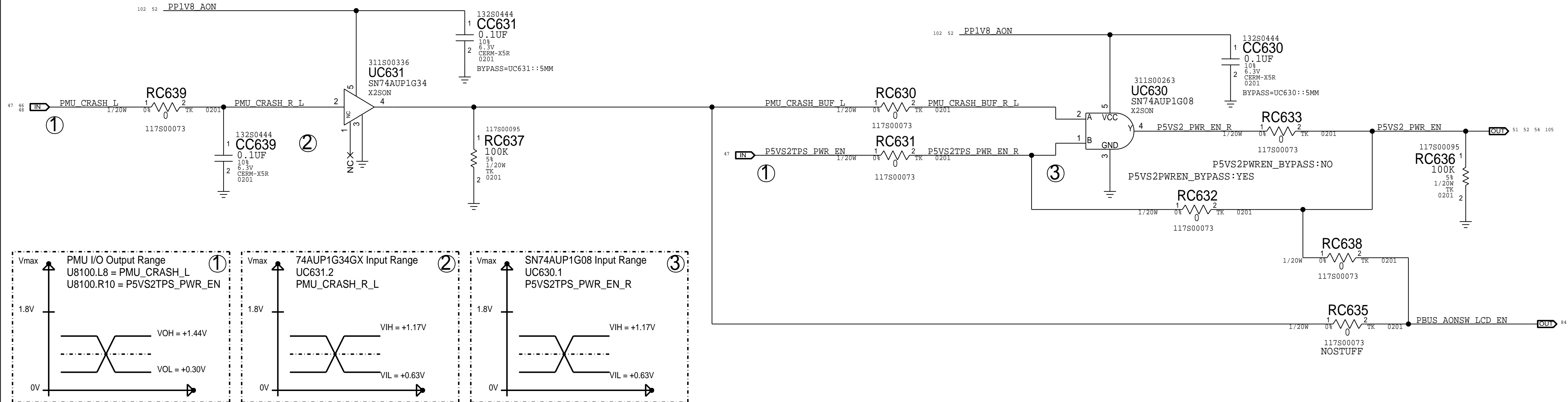


PAGE TITLE			
POWER: 5V S2			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  II NOT TO REPRODUCE OR COPY IT  III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		4.0.1	
		BRANCH	
		PAGE	123 OF 801
		SHEET	51 OF 121

A PP5V\_S2 Discharge Circuit



B P5VS2\_PWR\_EN Control Logic



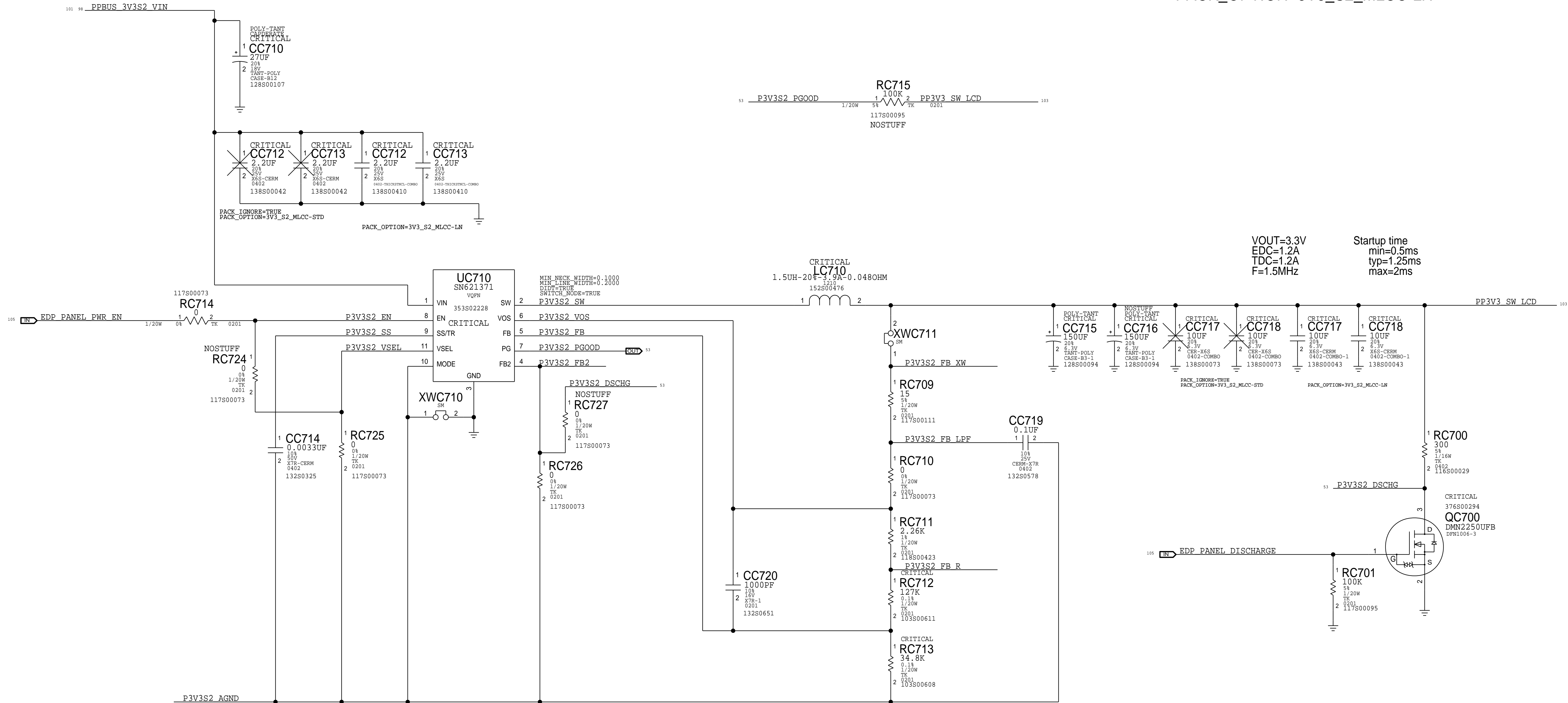
PAGE TITLE POWER: 5V, 3V3 Support		
	DRAWING NUMBER 051-09344	SIZE D
	REVISION 4.0.1	BRANCH
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		
PAGE 126 OF 801		SHEET 52 OF 121



\* OK2INTEGRATE \*


3V3\_S2 VR

SET ONE OPTION FOR MLCC CAPS  
PACK\_OPTION=3V3\_S2\_MLCC-STD  
PACK\_OPTION=3V3\_S2\_MLCC-LN



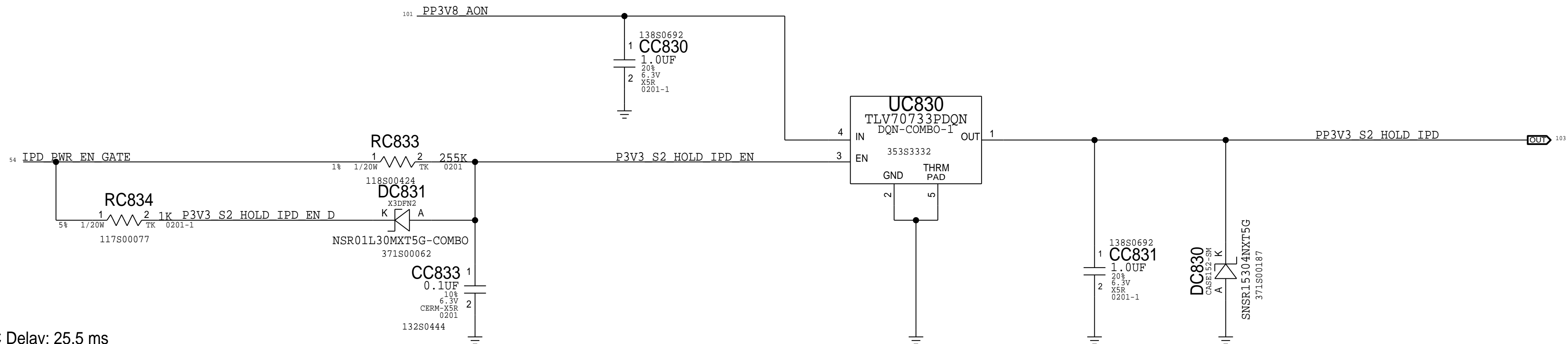
VOUT=3.3V  
EDC=1.2A  
TDC=1.2A  
F=1.5MHz

Startup time  
min=0.5ms  
typ=1.25ms  
max=2ms

PAGE TITLE		
POWER: 3V3 S2		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	127 OF 801
	SHEET	53 OF 121

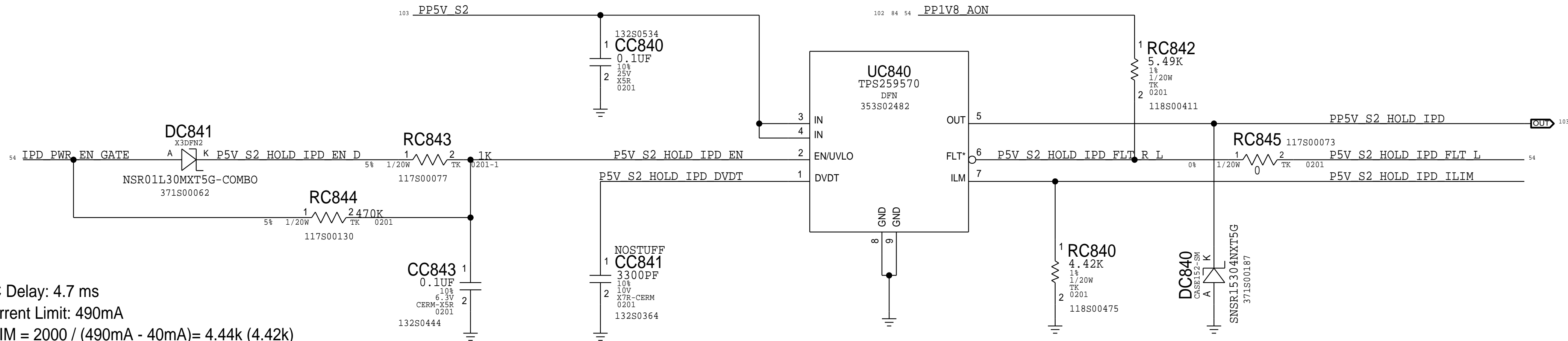
BOM\_COST\_GROUP=PLATFORM POWER

## A PP3V3\_S2\_HOLD\_IPD LDO



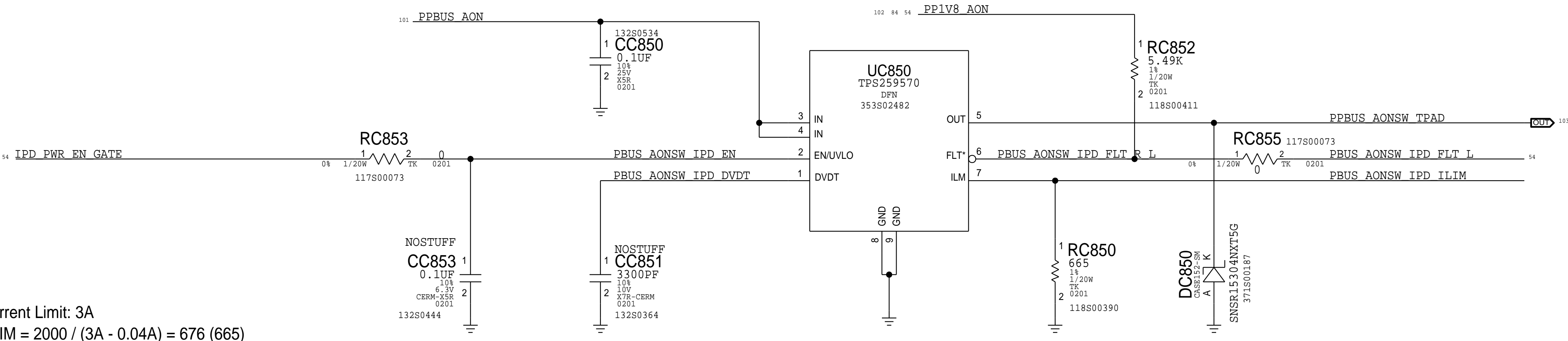
RC Delay: 25.5 ms  
Current Limit: 350mA  
Host-Controlled (EN = MPMU GPIO6, 1.8V LVCMOS (PP1V8\_AON))  
\$X2203GHUB/mlb/sim/ltspice/ocp\_rc\_filters/ocp\_filters.asc

## B PP5V\_S2\_HOLD\_IPD Load Switch & e-Fuse



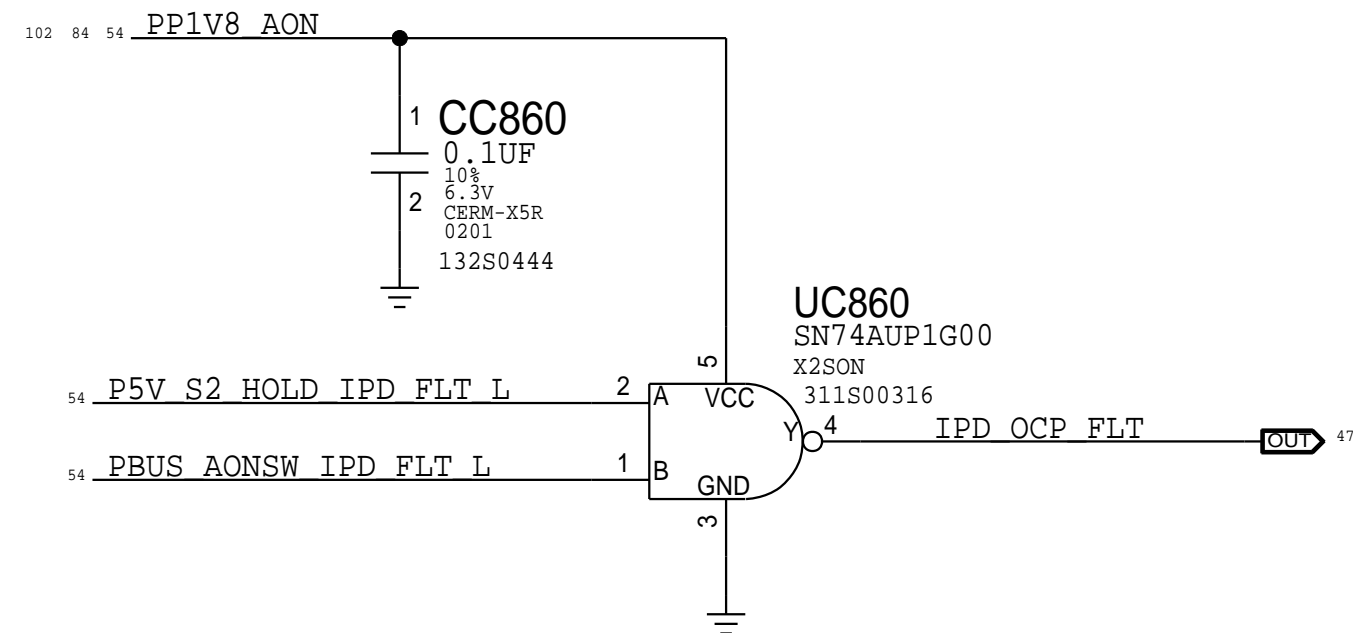
RC Delay: 4.7 ms  
Current Limit: 490mA  
RLIM = 2000 / (490mA - 40mA) = 4.44k (4.42k)  
/FLT Open Drain  
Host-Controlled (EN = MPMU GPIO6, 1.8V LVCMOS (PP1V8\_AON))  
\$X2203GHUB/mlb/sim/ltspice/ocp\_rc\_filters/ocp\_filters.asc

## C PPBUS\_AONSW\_IPD Load Switch & e-Fuse

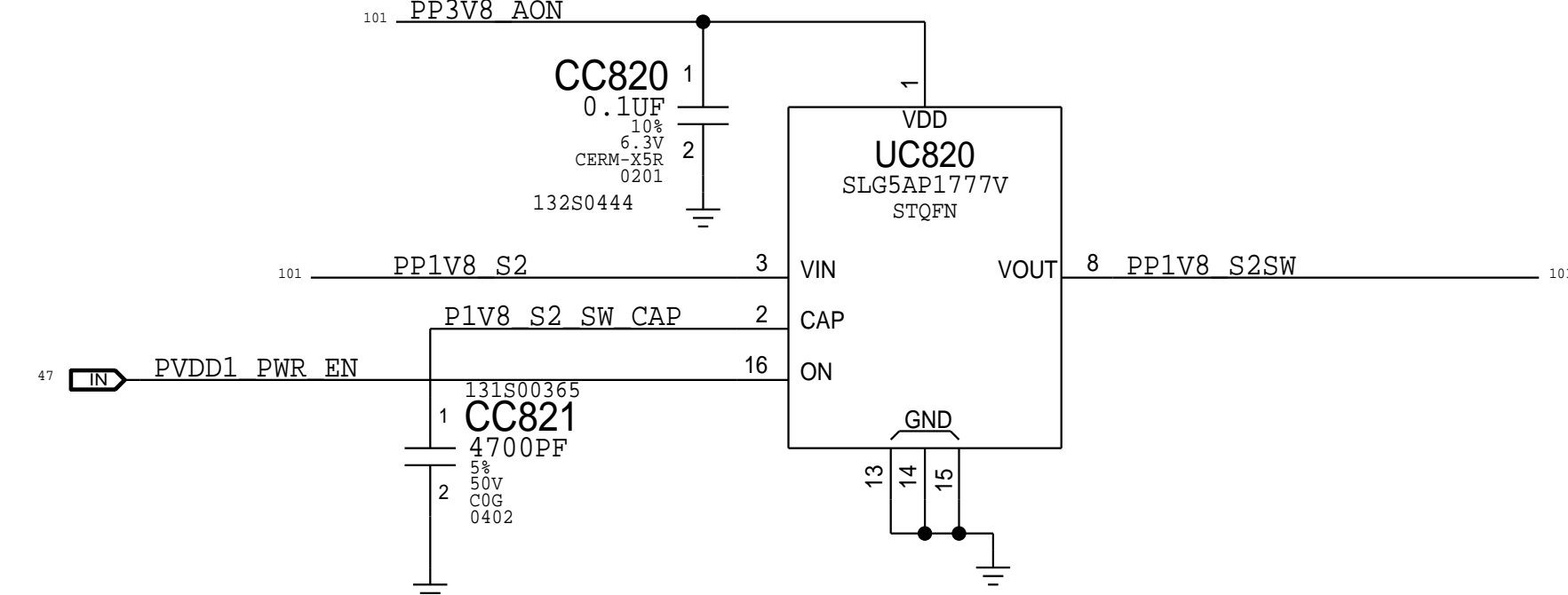


Current Limit: 3A  
RLIM = 2000 / (3A - 0.04A) = 676 (665)  
/FLT Open Drain  
Host-Controlled (EN = MPMU GPIO6, 1.8V LVCMOS (PP1V8\_AON))

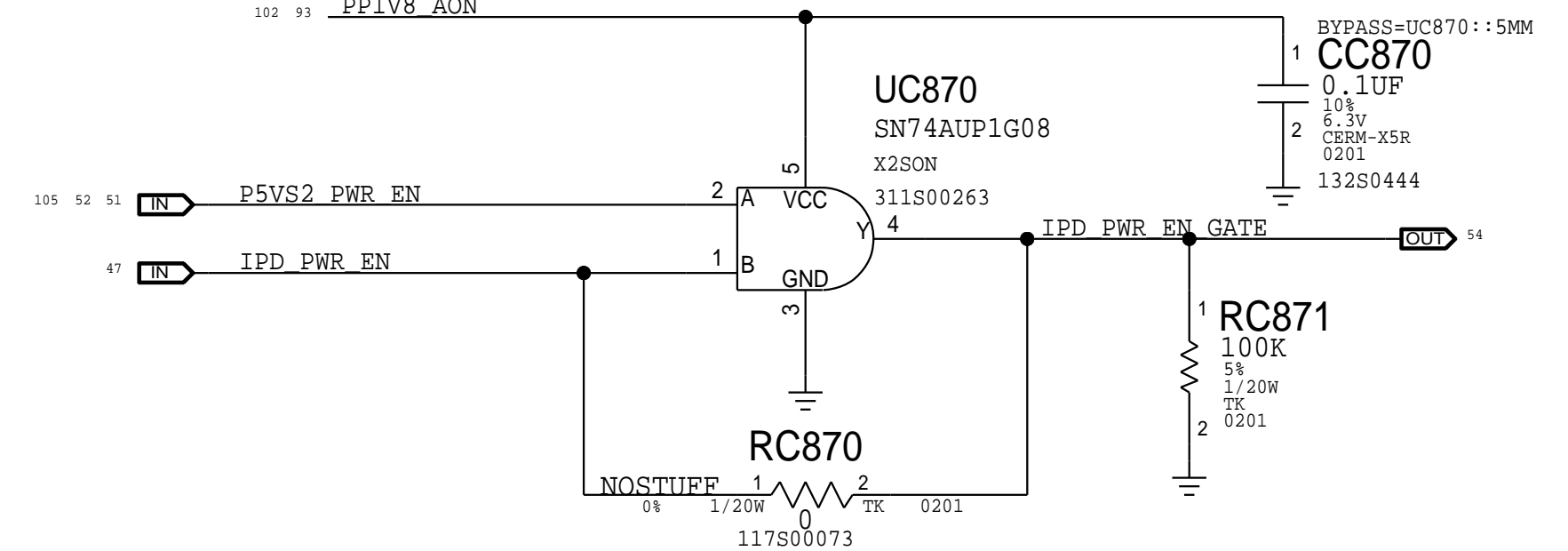
## D IPD\_OCP\_FLT Control Logic



## E PP1V8\_S2SW Load Switch



## F IPD\_PWR\_EN Gating Logic



PAGE TITLE		
Power: Load Switches		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	128 OF 801
	SHEET	54 OF 121

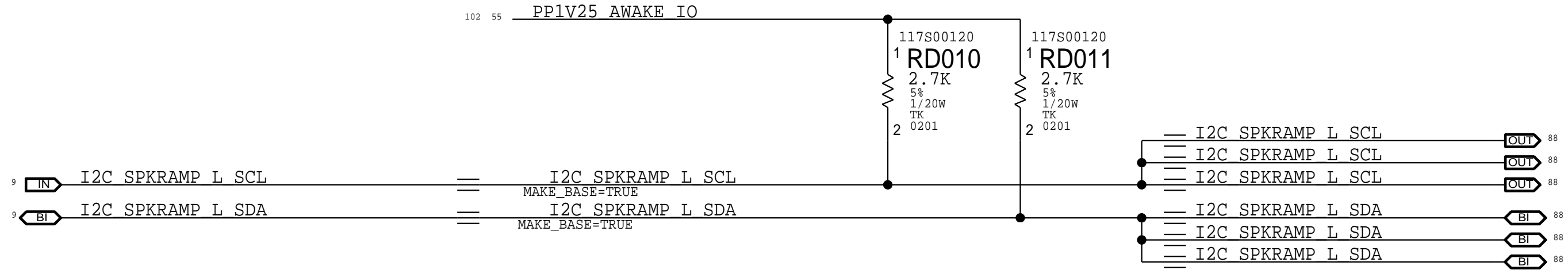
BOM\_COST\_GROUP=PLATFORM POWER



A AP\_I2C0 - I2C Interface (Unused)

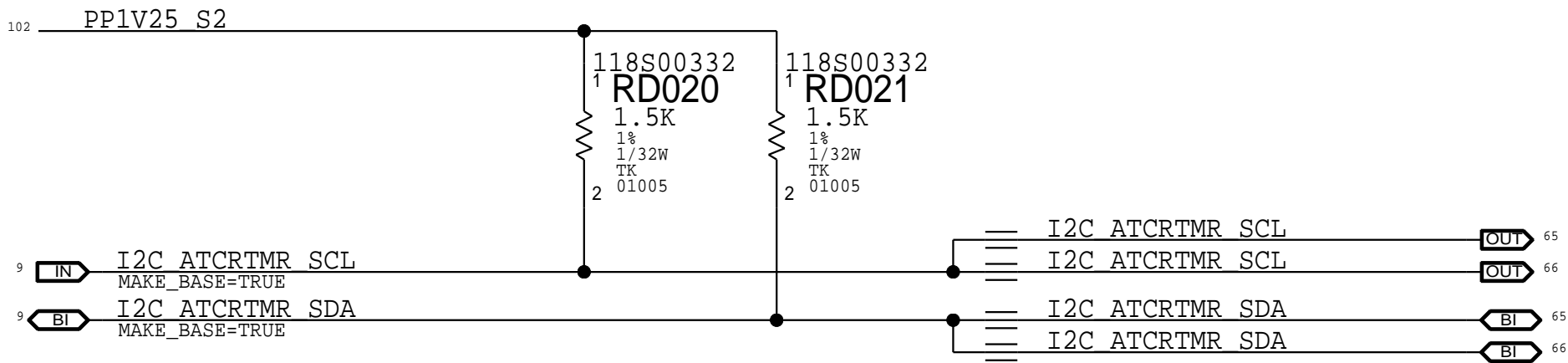
B AP\_I2C1 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
AP	1	400 kHz	0X38	0X71	Left SpkrAmp A
AP	1	400 kHz	0X39	0X73	Left SpkrAmp B
AP	1	400 kHz	0X3A	0X75	Left SpkrAmp C



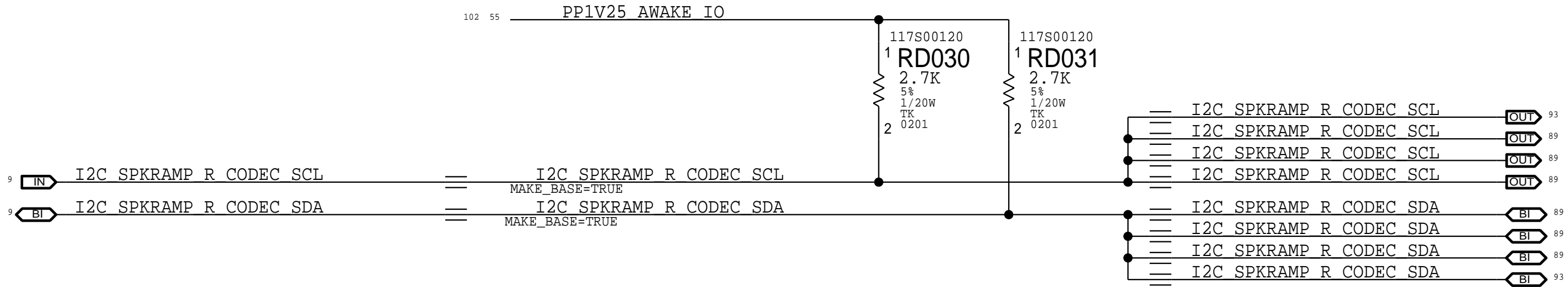
C AP\_I2C2 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
AP	2	100 kHz/400 kHz	0X18	0X31	RT13 Port 0
AP	2	100 kHz/400 kHz	0X19	0X33	RT13 Port 1



D AP\_I2C3 - I2C Interface

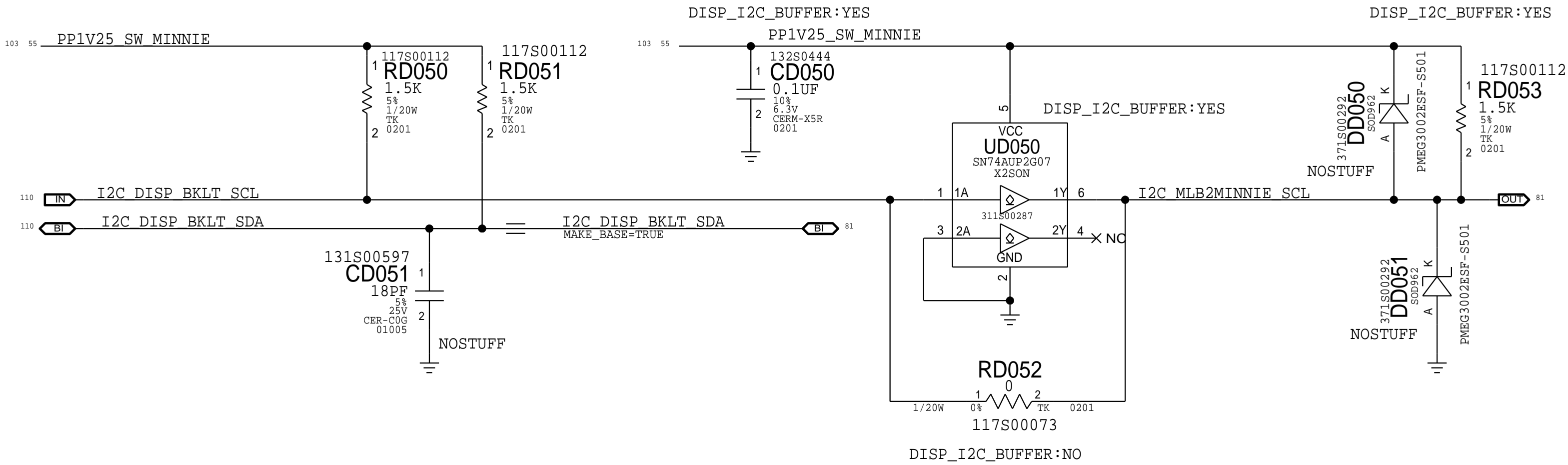
MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
AP	3	400 kHz	0X3B	0X77	Right SpkrAmp D
AP	3	400 kHz	0X3C	0X79	Right SpkrAmp E
AP	3	400 kHz	0X3D	0X7B	Right SpkrAmp F
AP	3	400 kHz	0X4B	0X97	CODEC



E AP\_I2C4 - I2C Interface (Unused)

F DISP\_I2C - I2C Interface

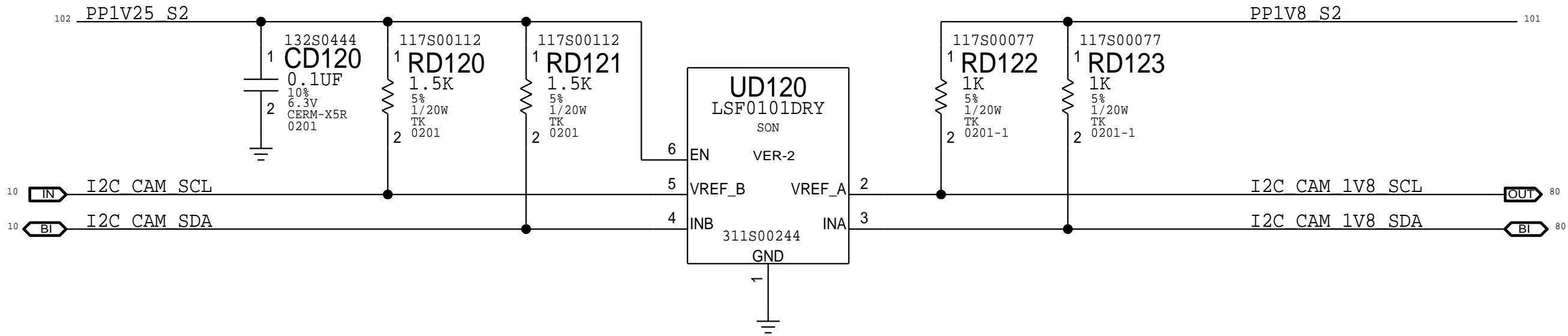
MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
DISP	0	100 kHz	0X2F	0X5F	Minnie Bklt Drvr



PAGE TITLE		
I2C: AP, DISP		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		
BRANCH		
PAGE		
130 OF 801		
SHEET		
55 OF 121		

A ISP\_I2C0 - I2C Interface

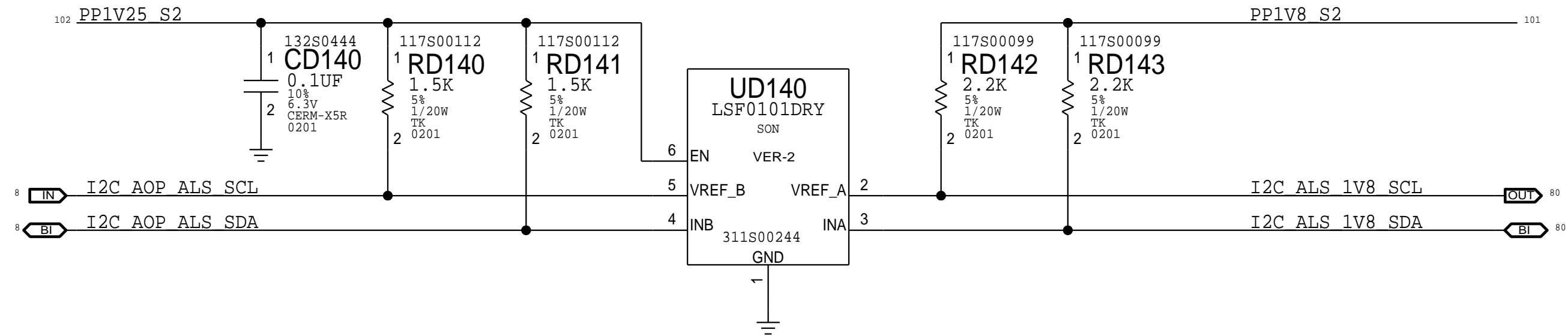
MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
ISP	0	400 kHz	0X10	0X21	Camera PMIC
ISP	0	400 kHz	0X36	0X6D	Image Sensor



B ISP\_I2C1 - I2C Interface (Unused)

C AOP\_I2CM0 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
AOP	0	400 kHz	0X48	0X91	TMP108
AOP	0	400 kHz	0X29	0X53	TETRA2 ALS



D AOP\_I2CM1 - I2C Interface (Unused)

E AOP\_I2CM2 - I2C Interface (Unused)

F SEP\_I2C0 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
SEP	0	400 kHz/1 MHz	0X71	0XE3	SEP Custom App
SEP	0	400 kHz/1 MHz	0X51	0XA3	SEP EEPROM App

I2C Pull-Ups at EEPROM (U1950)

PAGE TITLE		
I2C: ISP, AOP, SEP		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		131 OF 801
II NOT TO REPRODUCE OR COPY IT		SHEET
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		56 OF 121
IV ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=SENSORS



## A SMC\_I2C0 - I2C Interface (Unused)

I2CM0 Aliases on CSA 406

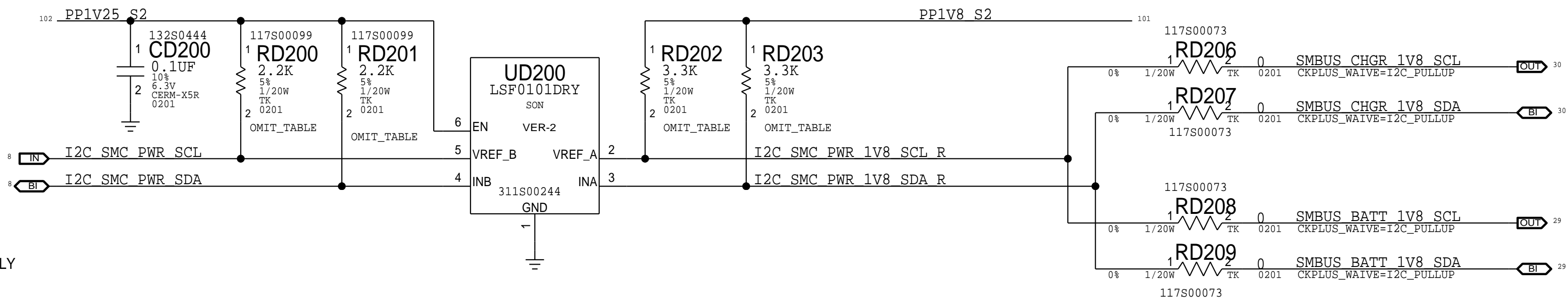
## B SMC\_I2C1 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
SMC	1	100 kHz	0X09	0X13	Mandola Charger
SMC	1	100 kHz	0X0B	0X17	Battery BMU
SMC	1	100 kHz	0X0A	0X81	INA233 ~ U201
SMC	1	100 kHz	0X44	0X89	INA233 ~ U202
SMC	1	100 kHz	0X40	0X81	INA236 ~ U201
SMC	1	100 kHz	0X41	0X83	INA236 ~ U202
SMC	1	100 kHz	0X42	0X85	INA236 ~ U203
SMC	1	100 kHz	0X43	0X87	INA236 ~ U204
SMC	1	100 kHz	0X20	0X41	SMC Fixture IO Expander

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
117S00099	2	RES,TK,2.2K OHM,5%,1/20W,0201	RD200,RD201	I2C_PWR_PU:TINY
117S00123	2	RES,TK,3.3K OHM,5%,1/20W,0201	RD202,RD203	I2C_PWR_PU:TINY

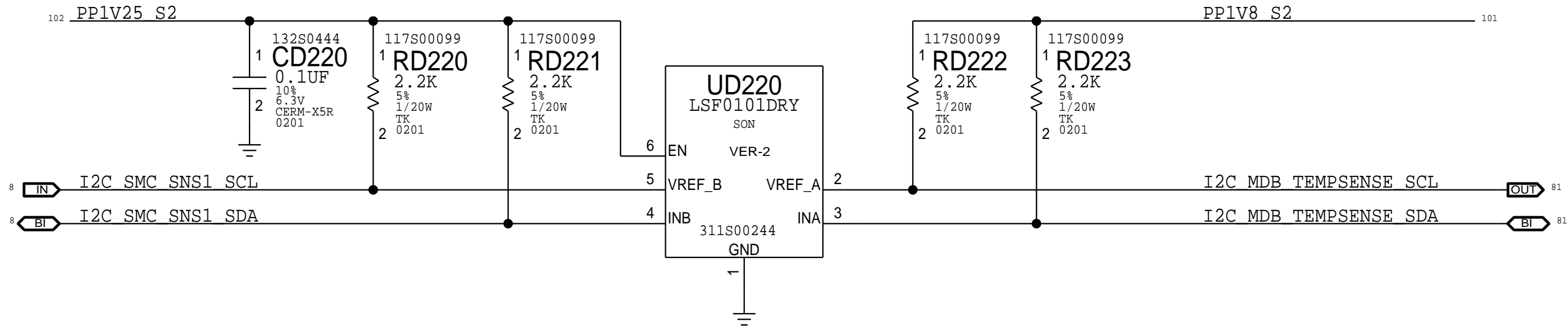
TINY ONLY  
TINY ONLY  
MEGA ONLY  
MEGA ONLY  
MEGA ONLY  
MEGA ONLY  
FACTORY ONLY

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
117S00090	2	RES,TK,10K OHM,5%,1/20W,0201	RD200,RD201	I2C_PWR_PU:MEGA
117S00087	2	RES,TK,4.7K OHM,5%,1/20W,0201	RD202,RD203	I2C_PWR_PU:MEGA



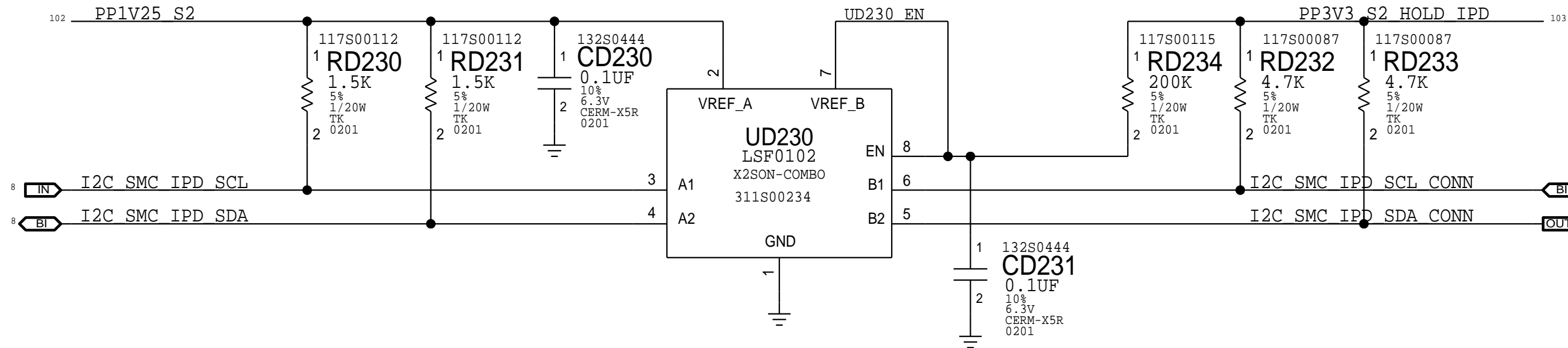
## C SMC\_I2C2 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
SMC	2	100 kHz	0X48	0X91	MDB - TMP468

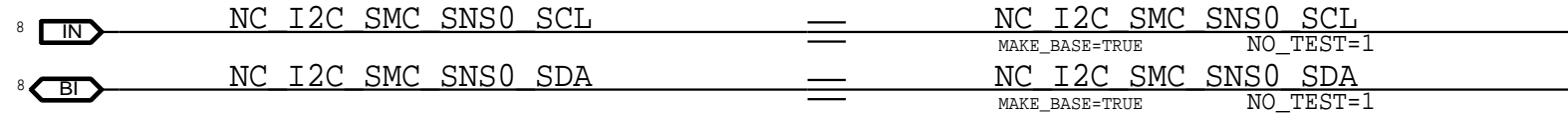


## D SMC\_I2C3 - I2C Interface

MASTER	NUMBER	SPEED	7-BIT ADDR	8-BIT ADDR (R)	DEVICE
SMC	3	100 kHz	0X4C	0X99	PALM - TempSense

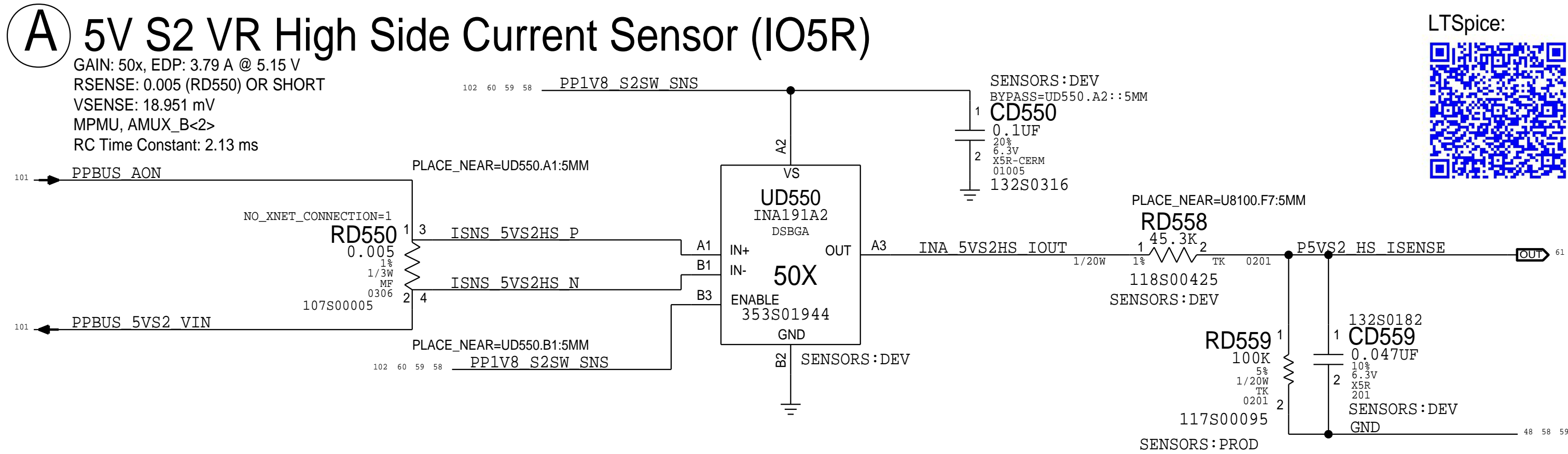


## E SMC\_I2C4 - I2C Interface (Unused)

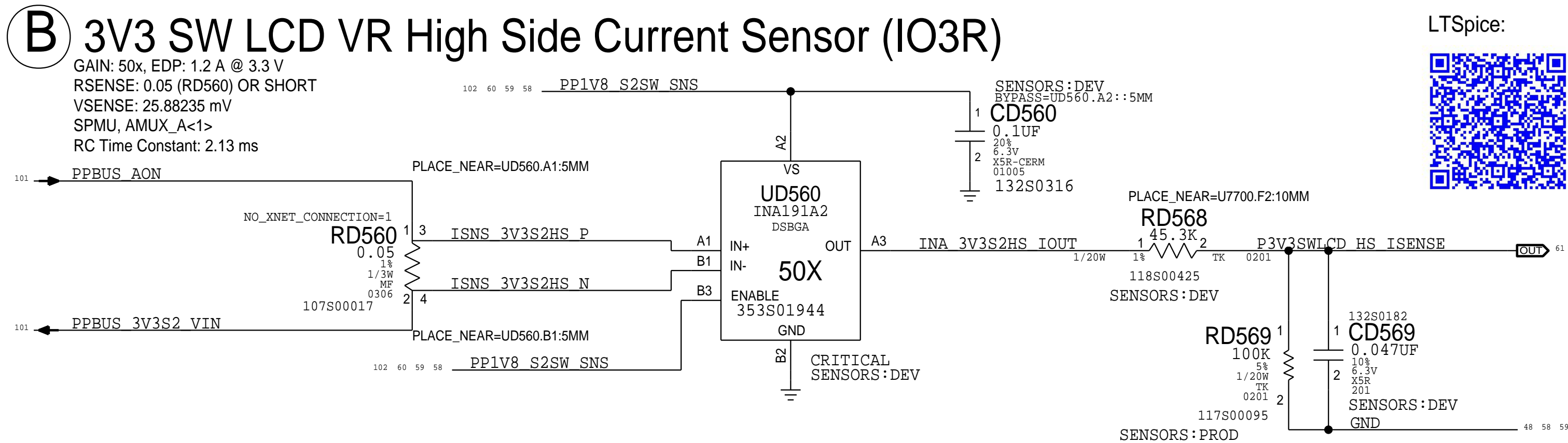


PAGE TITLE		
I2C: SMC		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	132 OF 801
	SHEET	57 OF 121

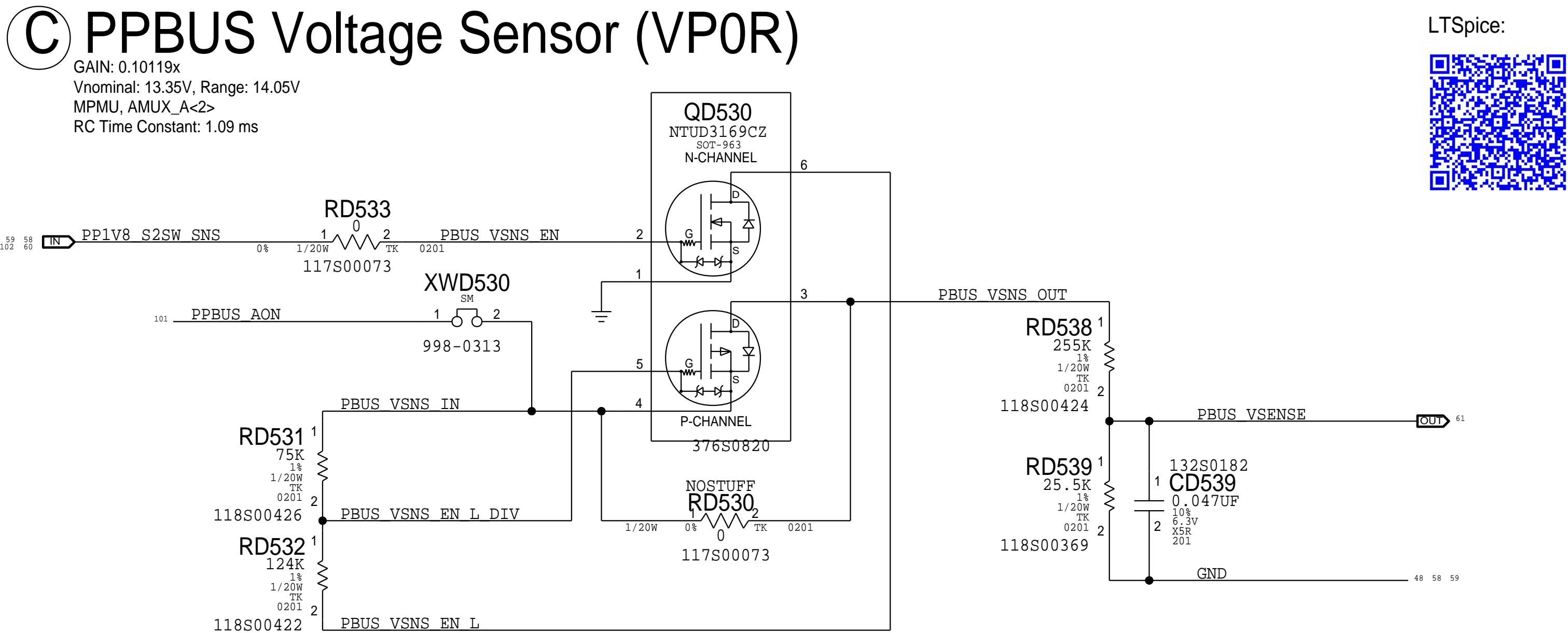
BOM\_COST\_GROUP=SENSORS



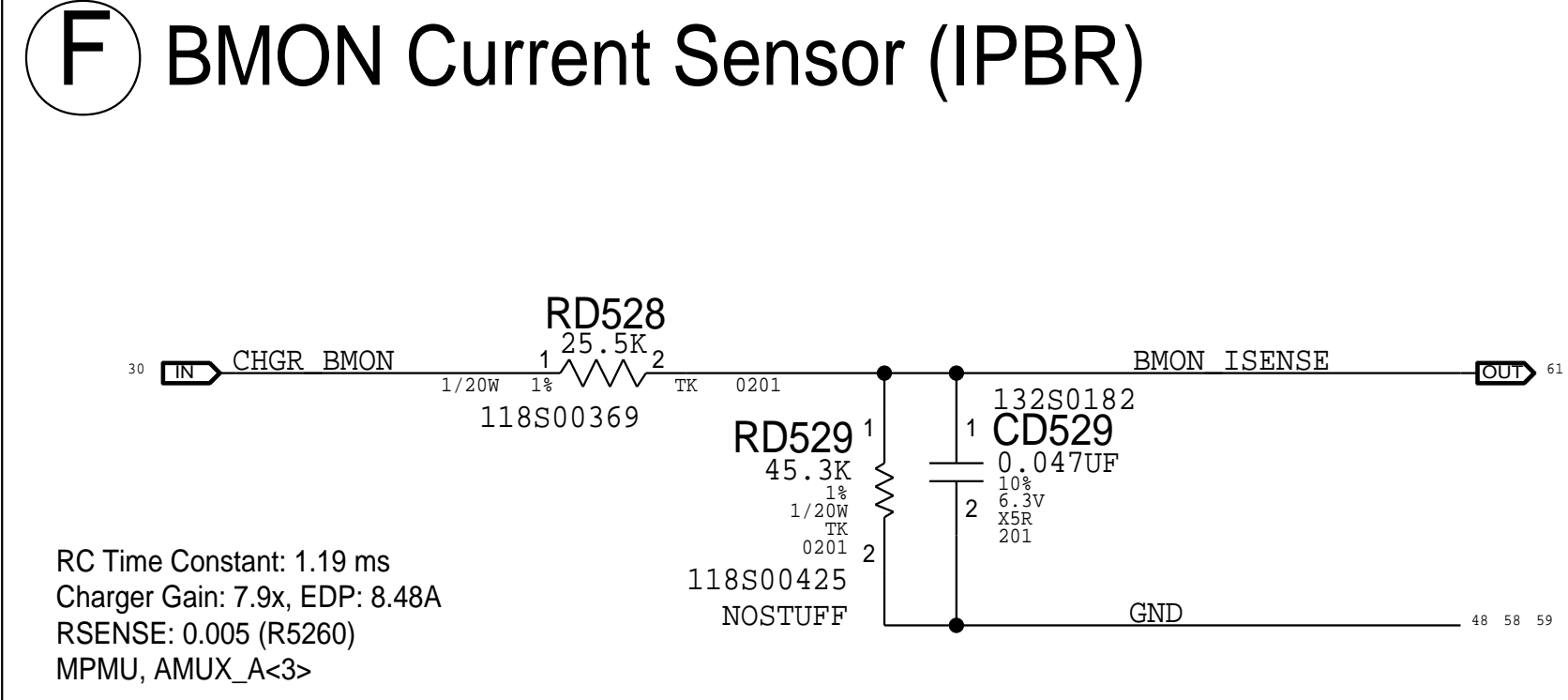
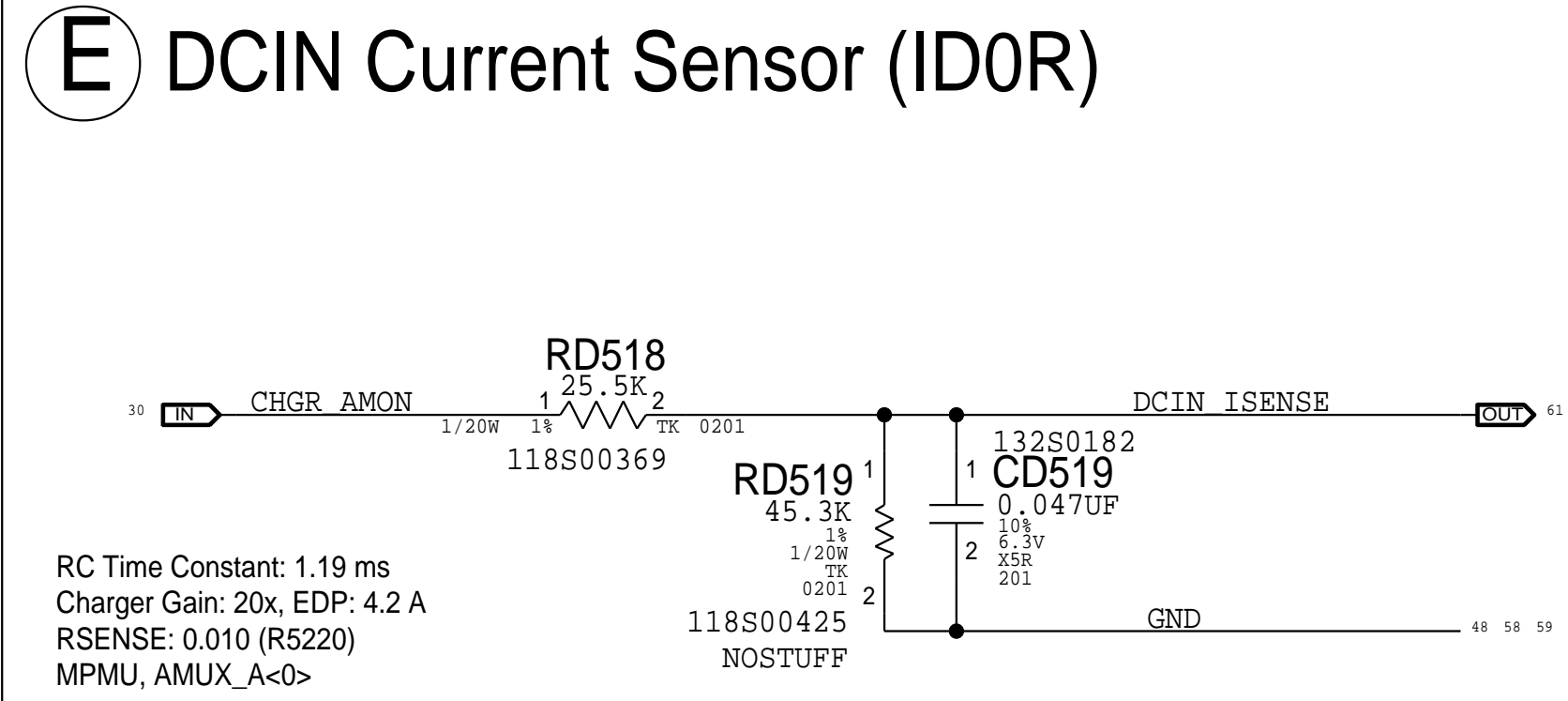
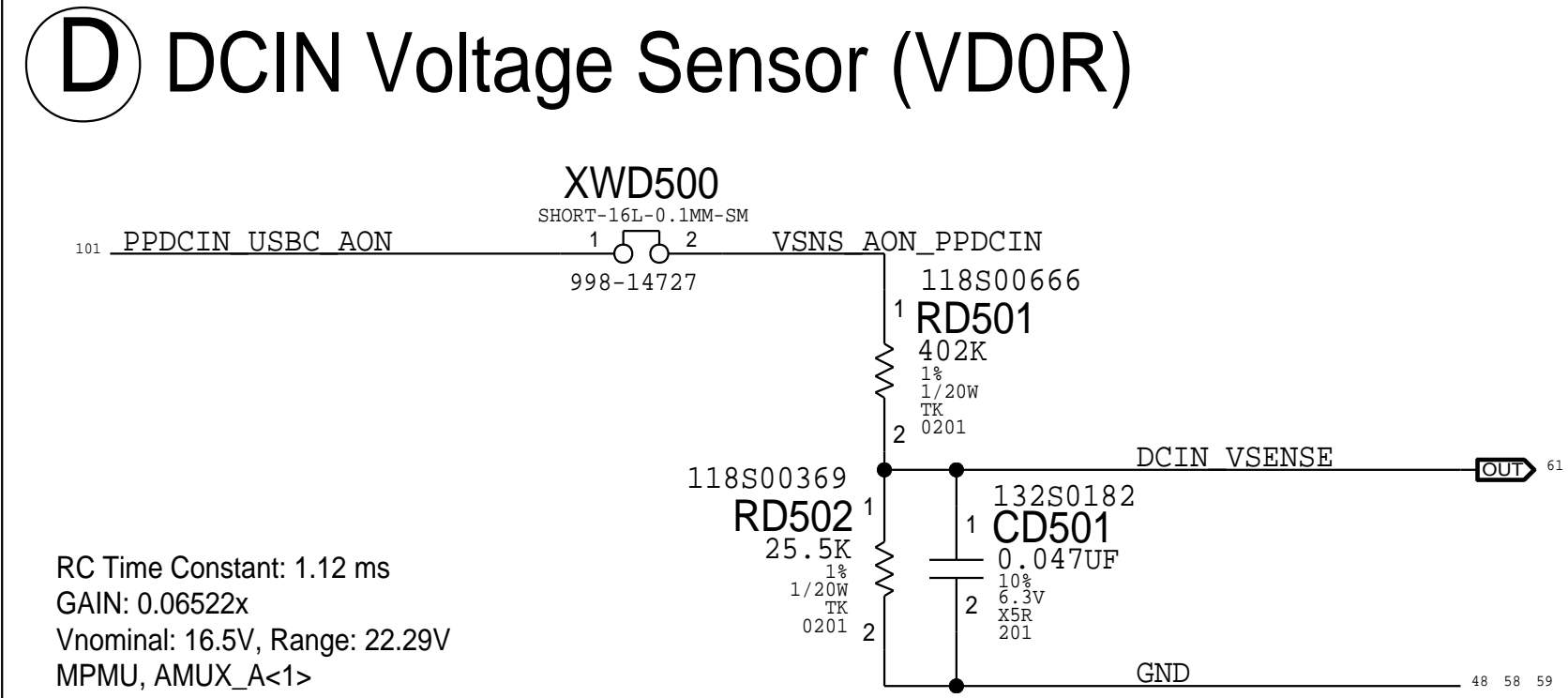
\$X2203GHUB/mlb/sim/ltpspice/io5r\_p5vs2\_hs\_isense/io5r\_p5vs2\_hs\_isense.asc



\$X2203GHUB/mlb/sim/ltpspice/io3r\_p3v3s2\_hs\_isense/io3r\_p3v3s2\_hs\_isense.asc



\$X2203GHUB/mlb/sim/ltpspice/vp0r\_sense/vp0r\_pbus\_vsense\_pulse\_diodesinc.asc  
\$X2203GHUB/mlb/sim/ltpspice/vp0r\_sense/vp0r\_pbus\_vsense\_pulse\_onsemi.asc



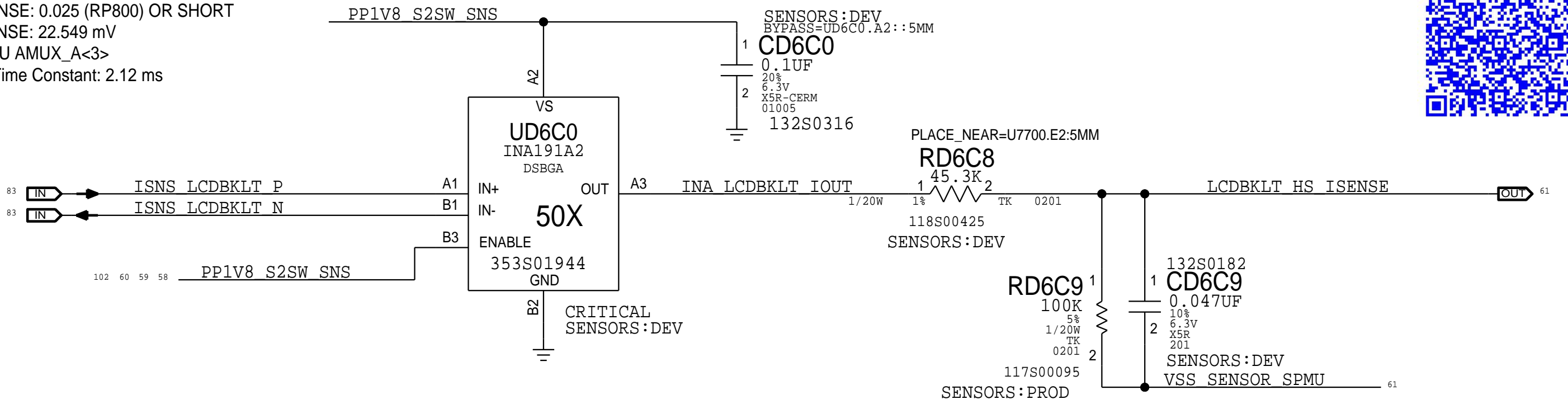
PAGE TITLE		
SENSORS: POWER HIGH SIDE (1/2)		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
II NOT TO REPRODUCE OR COPY IT		
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=SENSORS



A LCD Backlight High Side Current Sensor (IBLR)

GAIN: 50X, EDP: 0.150 A @ 46 V  
RSENSE: 0.025 (RP800) OR SHORT  
VSENSE: 22.549 mV  
SPMU AMUX\_A<3>  
RC Time Constant: 2.12 ms

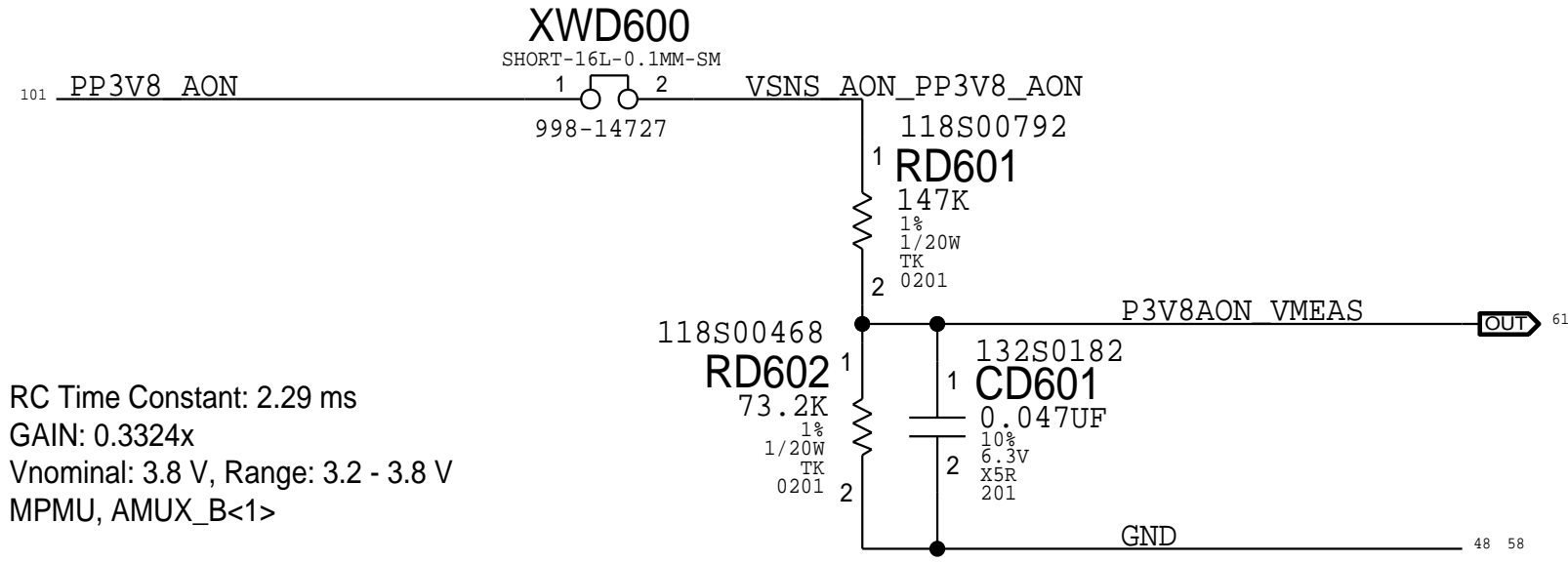


LTSpice:



\$X2203GHUB/mlb/sim/ltspace/iblr\_lcdbklt\_hs\_isense/iblr\_lcdbklt\_hs\_isense.asc

C Iceman Voltage Sensor (VMVC)



RC Time Constant: 2.29 ms  
GAIN: 0.3324x  
Vnominal: 3.8 V, Range: 3.2 - 3.8 V  
MPMU, AMUX\_B<1>

D Iceman LS Current Sensor (IMVC)

See CSA 59

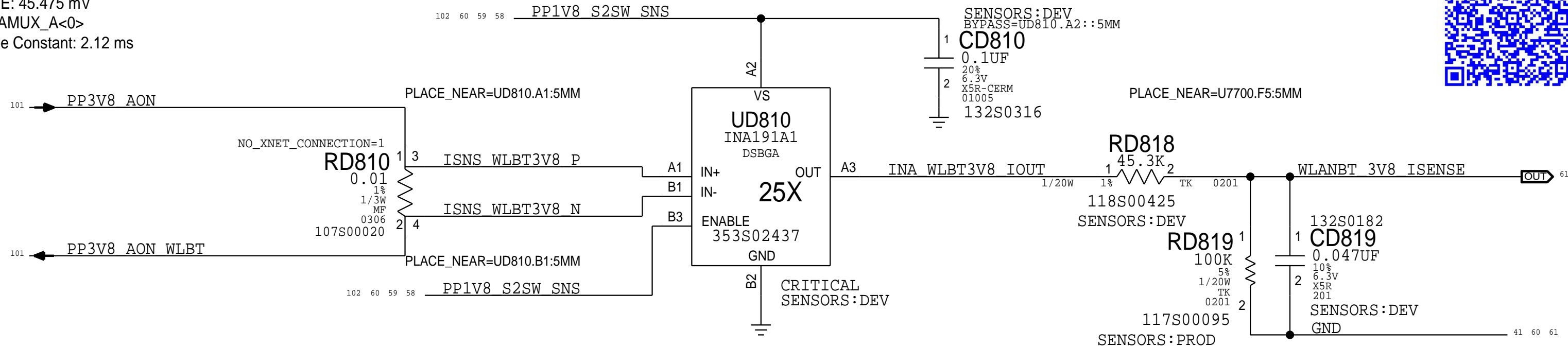
RC Time Constant: 21.22 ms  
EDP: 30 A  
MPMU, AMUX\_B<0>

PAGE TITLE		
SENSORS: POWER HIGH SIDE (2/2)		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		136 OF 801
II NOT TO REPRODUCE OR COPY IT		SHEET
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		59 OF 121
IV ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=SENSORS

## A WLAN BT 3V8 AON Current Sensor (IW3C)

GAIN: 25x, EDP: 1.819 A @ 3.8 V  
RSENSE: 0.01 (RD810) OR SHORT  
VSENSE: 45.475 mV  
SPMU AMUX\_A<0>  
RC Time Constant: 2.12 ms



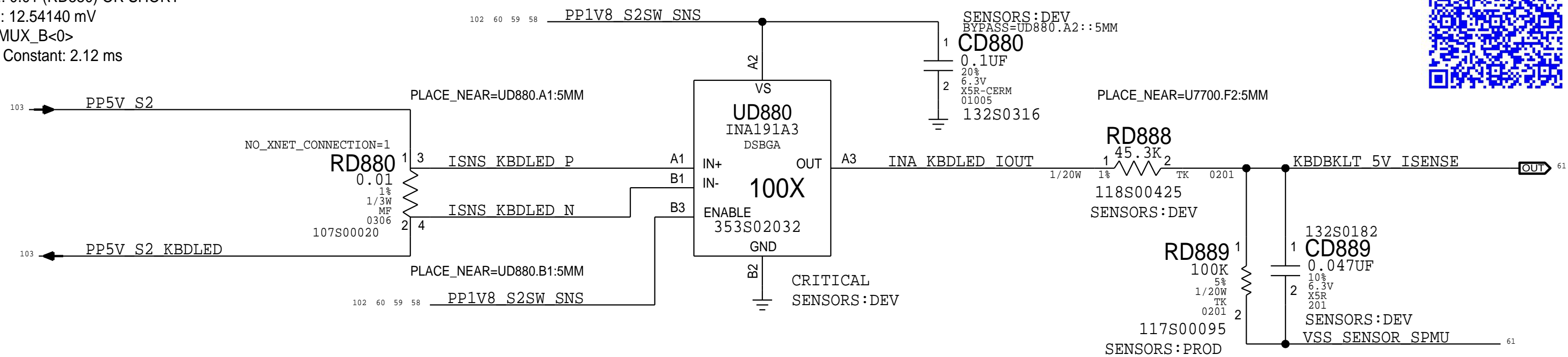
LTSpice:



\$X2203GHUB/mlb/sim/ltspice/iw3c\_wlanbt\_3v3\_isense/iw3c\_wlanbt\_3v3\_isense.asc

## B Keyboard LED 5V Current Sensor (IKBC)

GAIN: 100X, EDP: 0.183 A @ 30 V  
RSENSE: 0.01 (RD880) OR SHORT  
VSENSE: 12.54140 mV  
SPMU AMUX\_B<0>  
RC Time Constant: 2.12 ms



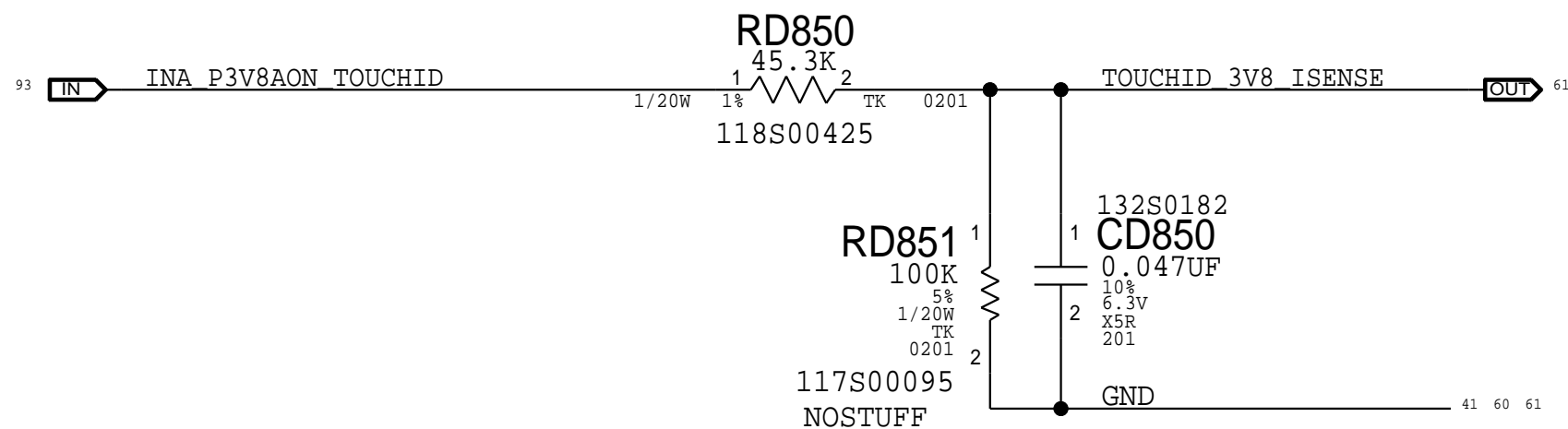
LTSpice:



\$X2203GHUB/mlb/sim/ltspice/ikbc\_kbdbklt\_5v\_isense/ikbc\_kbdbklt\_5v\_isense.asc

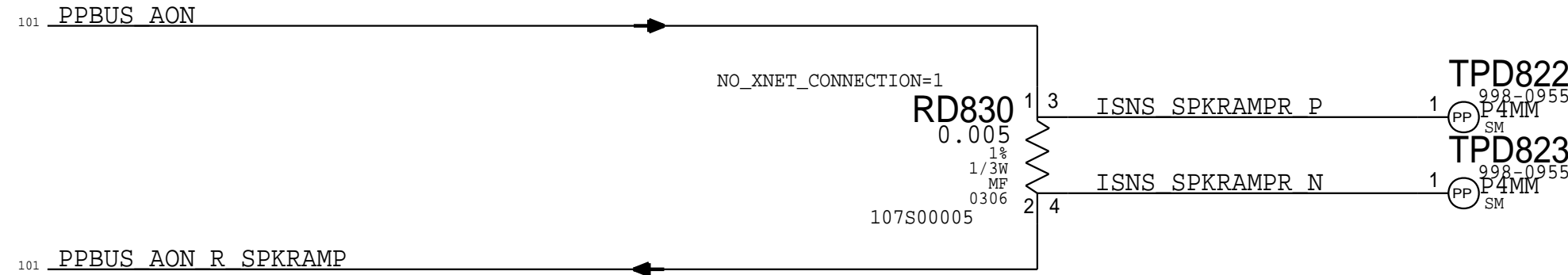
## C TouchID Current Sensor (IIDR)

GAIN: 200X, EDP: 0.200 A @ 3.8 V  
RSENSE: 0.035 (RT505 on KBDB)  
VSENSE: 7.000 mV, Range 0.214 A  
SPMU AMUX\_A<2>  
RC Time Constant: 10 ms



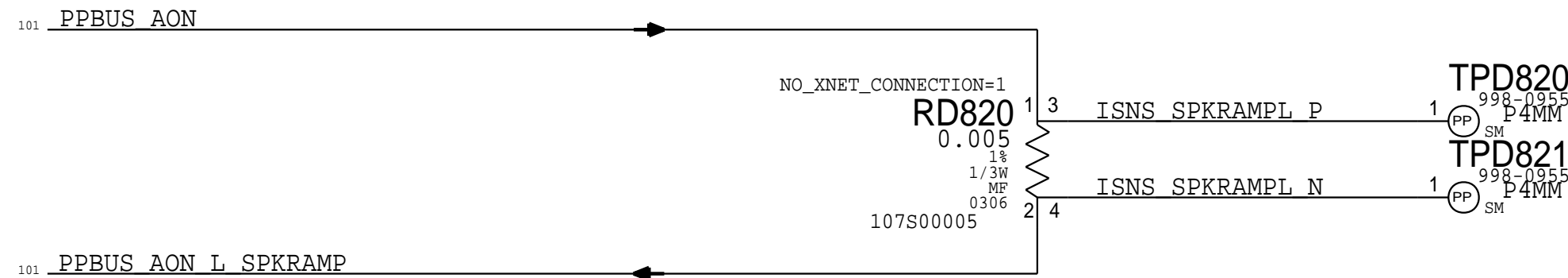
## D Right Speaker Amplifier Current Sensor (Ixxx)


GAIN: 100X, EDP: 2.6 A  
RSENSE: 0.005 (RD820) OR SHORT  
VSENSE: 13 mV, RANGE: 3.3 A



## E Left Speaker Amplifier Current Sensor (Ixxx)

GAIN: 100X, EDP: 2.6 A  
RSENSE: 0.005 (RD820) OR SHORT  
VSENSE: 13 mV, RANGE: 3.3 A



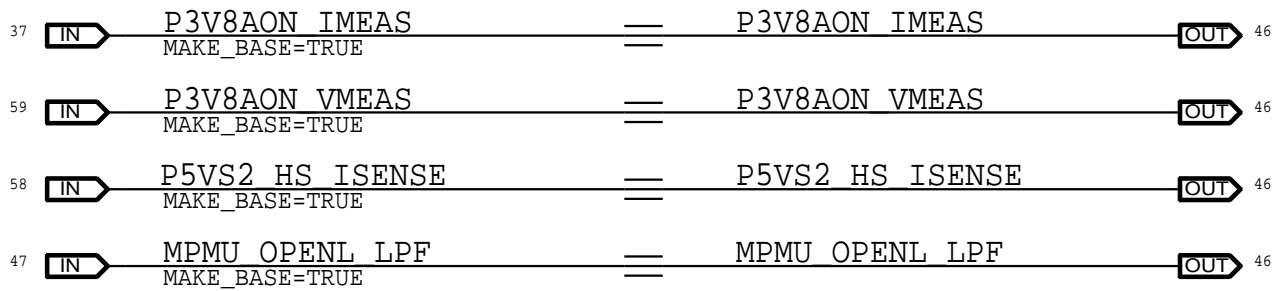
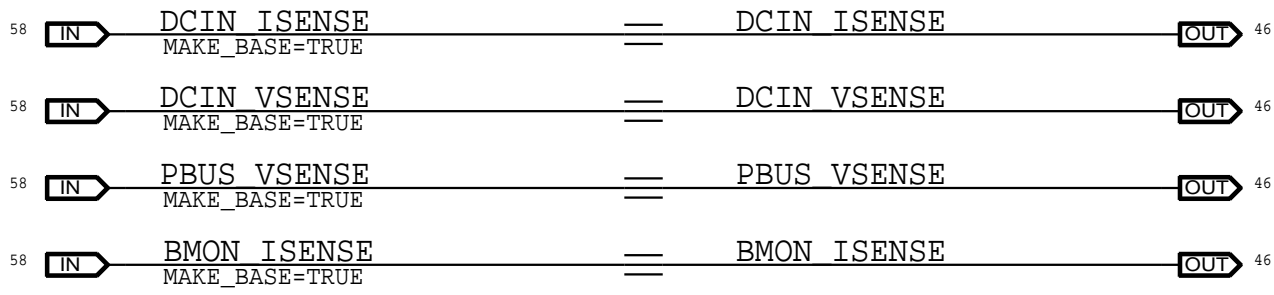
PAGE TITLE		
SENSORS: POWER LOW SIDE		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	138 OF 801
	SHEET	60 OF 121

BOM\_COST\_GROUP=SENSORS

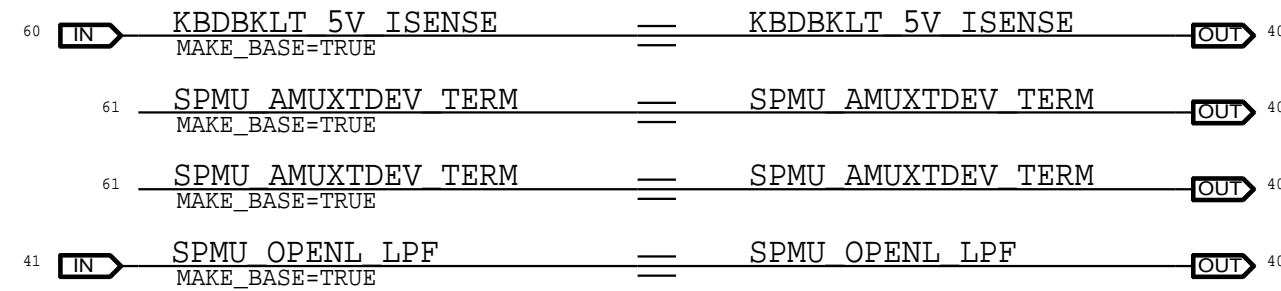
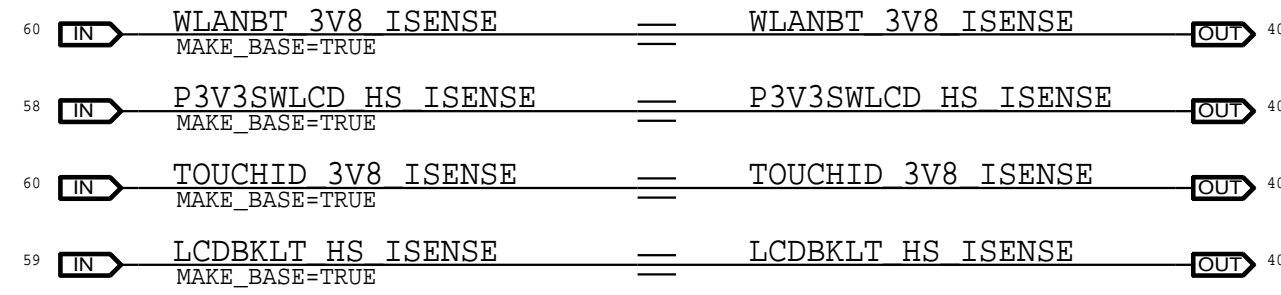


A ADC Input Aliases

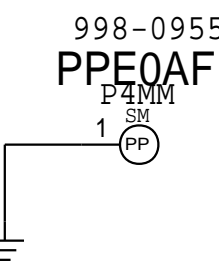
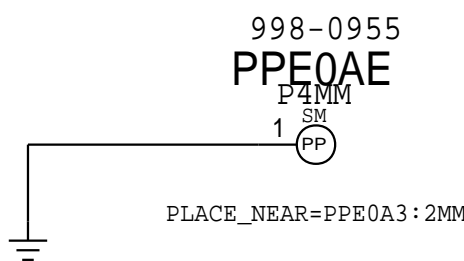
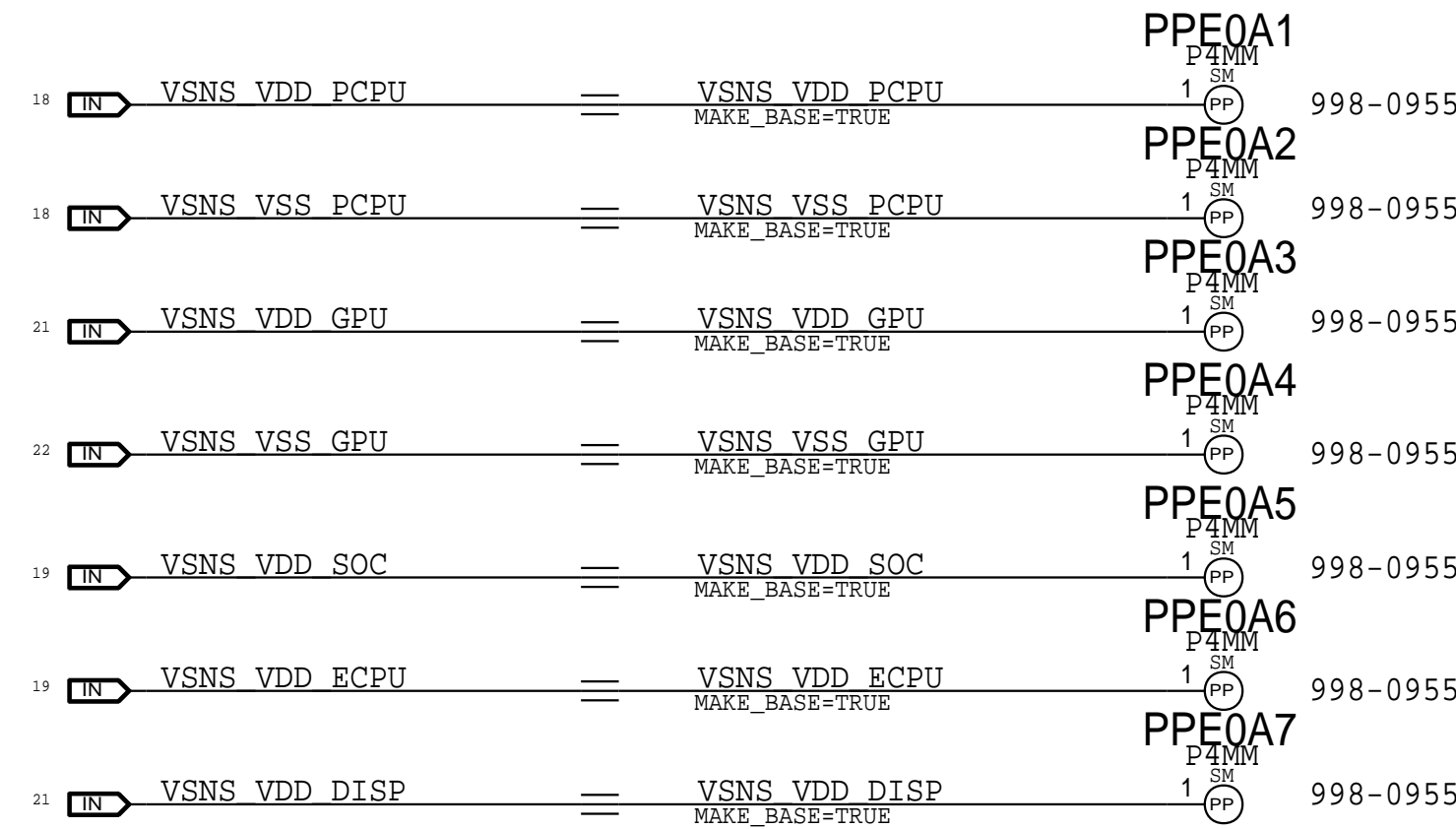
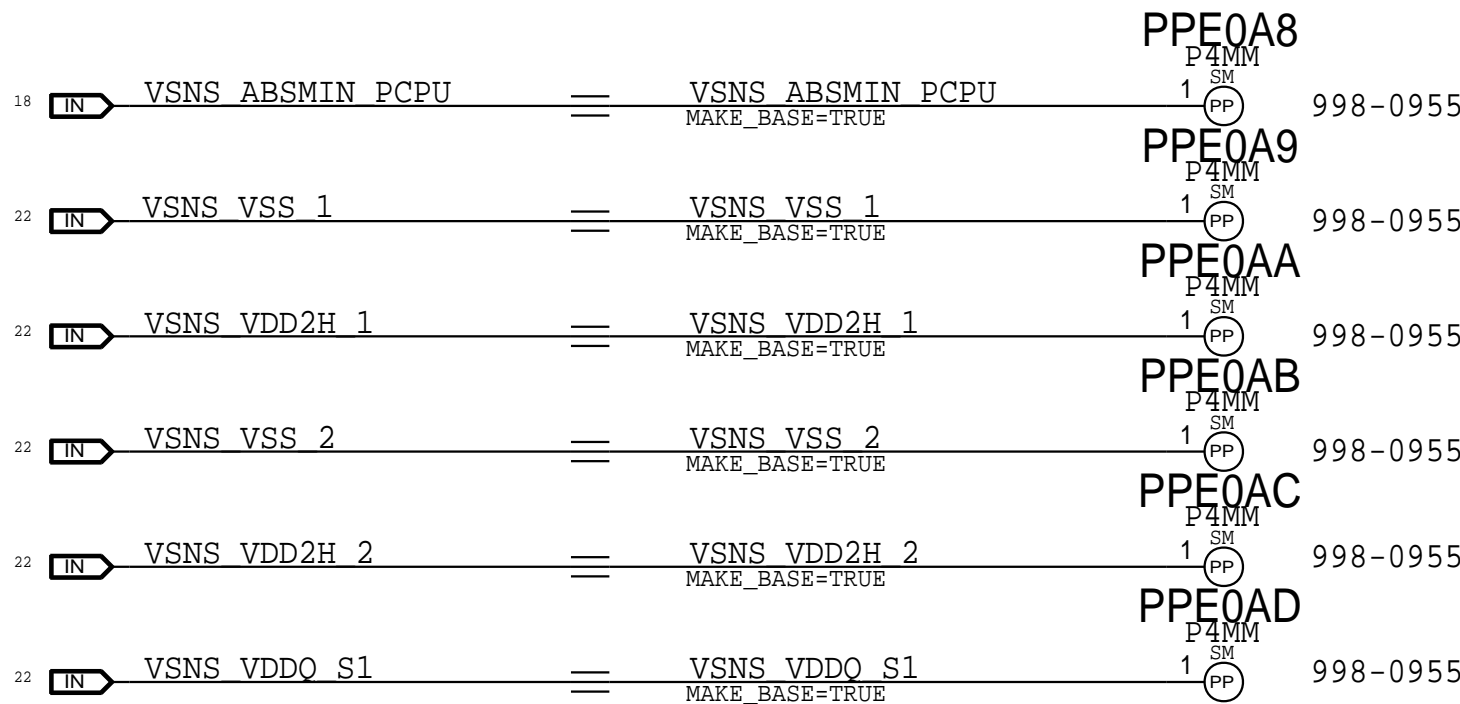
LEADER PMU AMUX ALIAS



FOLLOWER PMU AMUX ALIAS

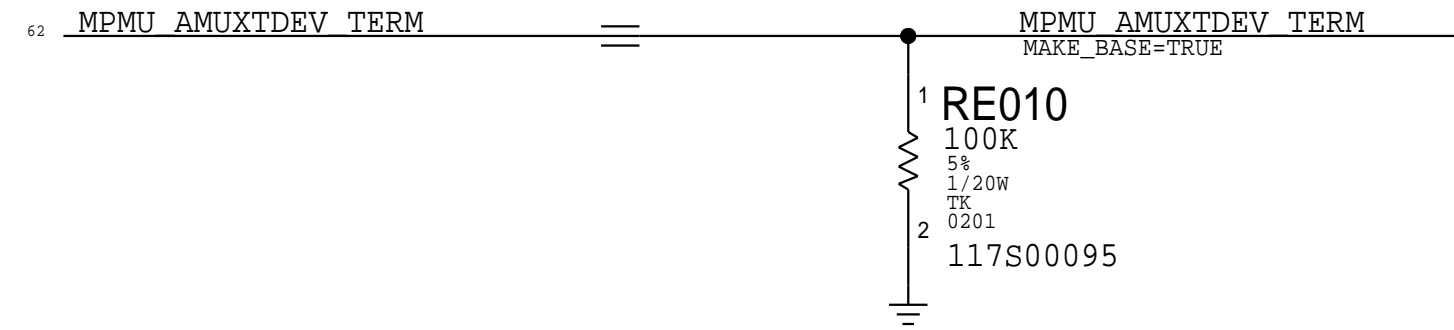


B SOC Sense Lines



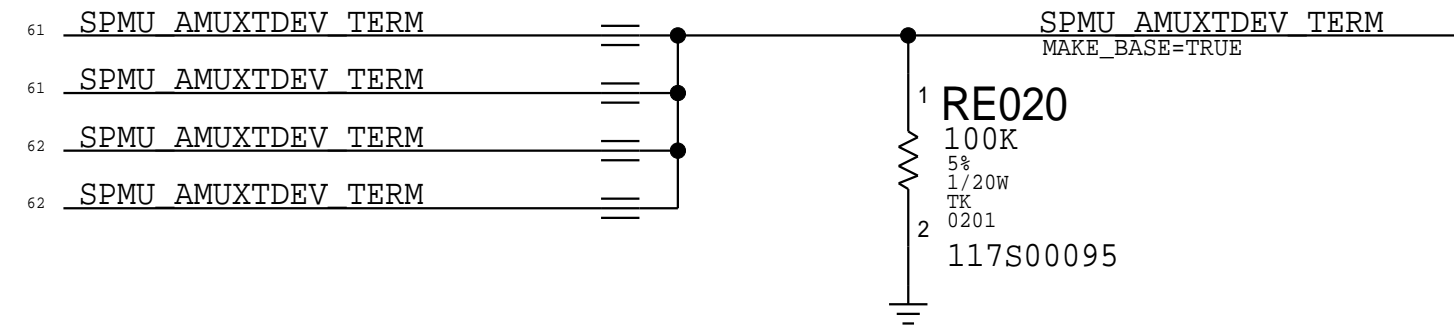
C Unused MPMU AMUX/TDEV Termination

RECOMMENDED NOT TO LEAVE AMUX/TDEV FLOATING.



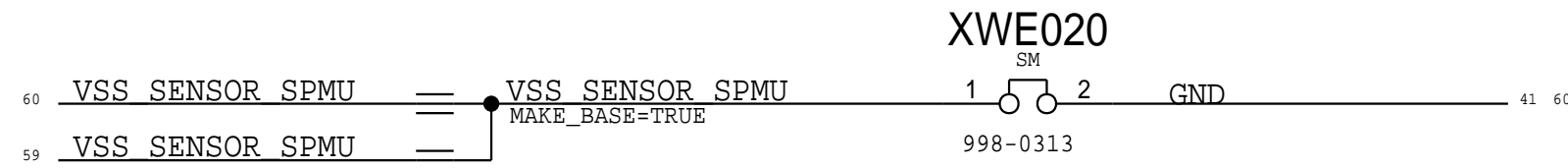
D Unused SPMU AMUX/TDEV Termination

RECOMMENDED NOT TO LEAVE AMUX/TDEV FLOATING.



E I/V Sensor Ground Reference Aliases

FOLLOWER PMU ADC Ground Alias



PAGE TITLE		
SENSORS: POWER SUPPORT		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		140 OF 801
II NOT TO REPRODUCE OR COPY IT		SHEET
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		61 OF 121
IV ALL RIGHTS RESERVED		

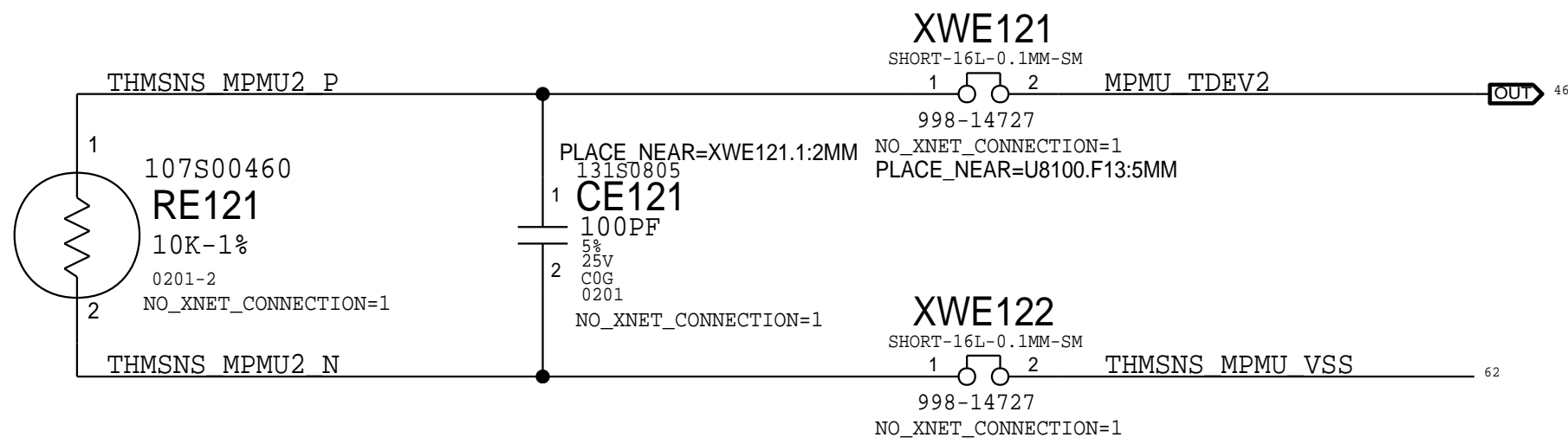
BOM\_COST\_GROUP=SENSORS

## A Leader PMU TDEV1 (Txxx)

61 MPMU AMUXTDEV\_TERM == MPMU AMUXTDEV\_TERM 46

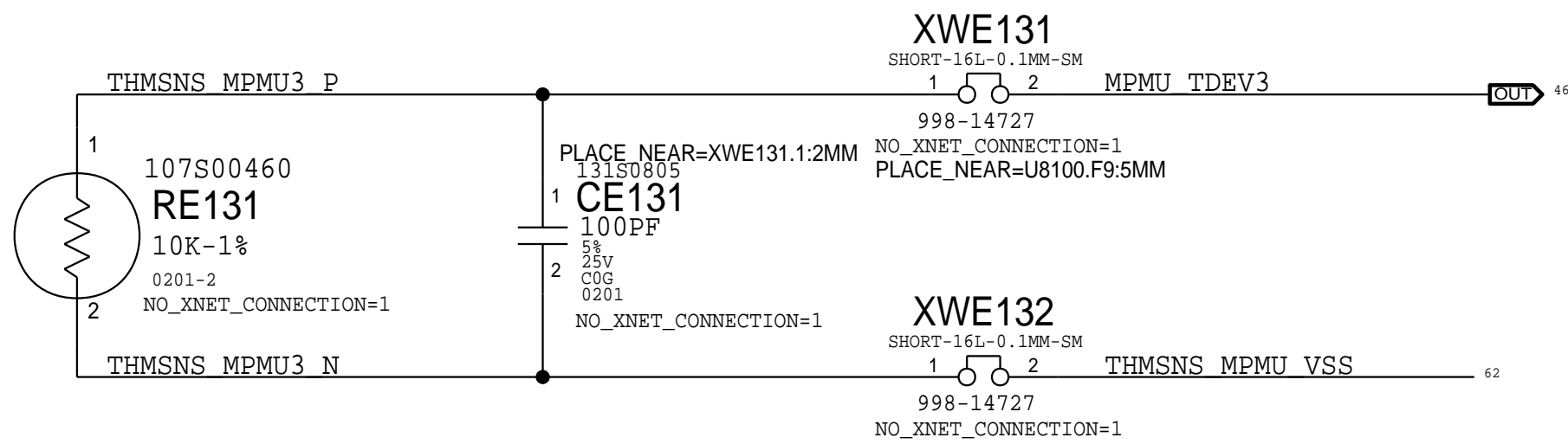
## B Leader PMU TDEV2 (Tm0B)

Location: Ambient



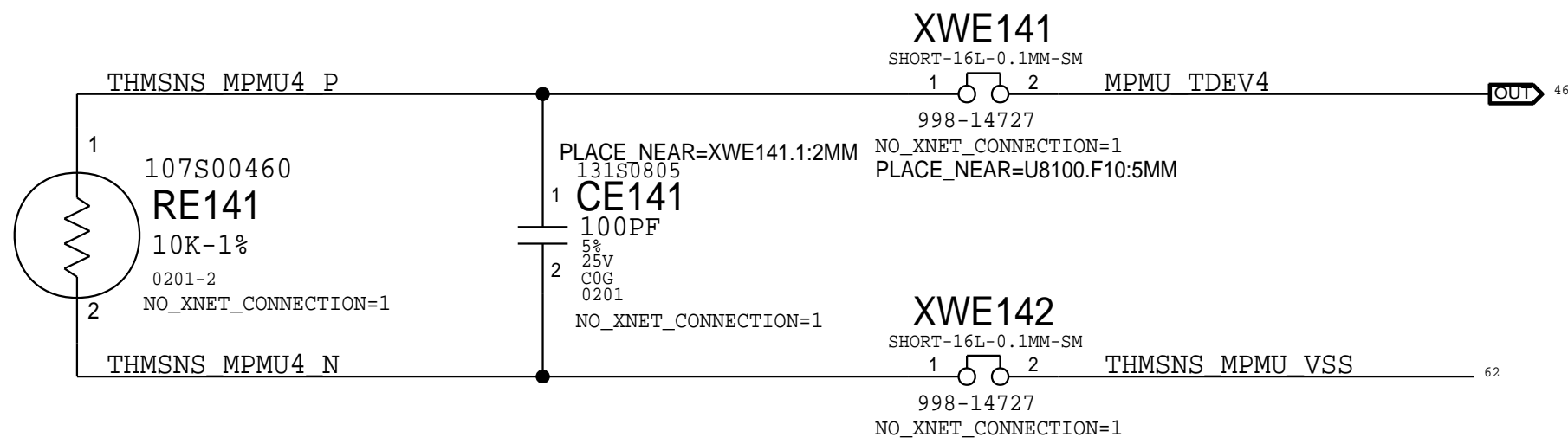
## C Leader PMU TDEV3 (TIOP)

Location: Thunderbolt Proximity

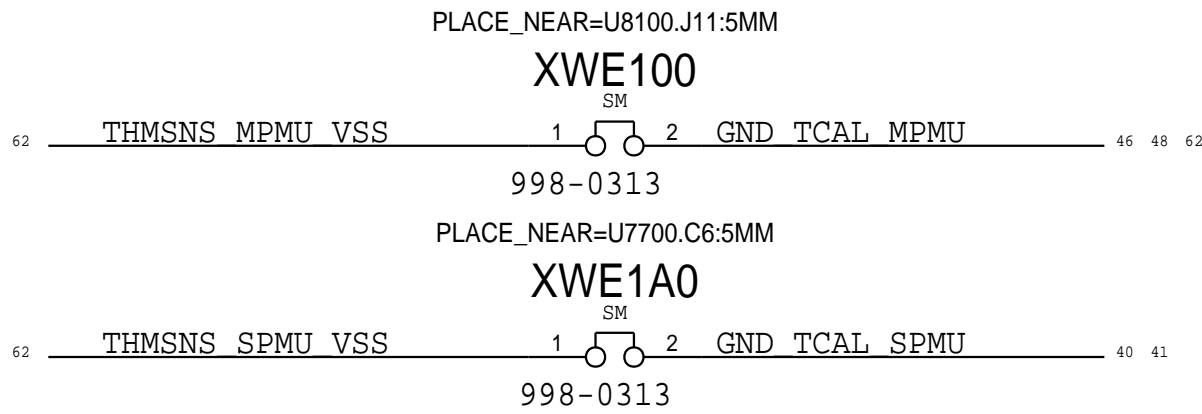


## D Leader PMU TDEV4 (TW0P)

Location: Wireless Proximity

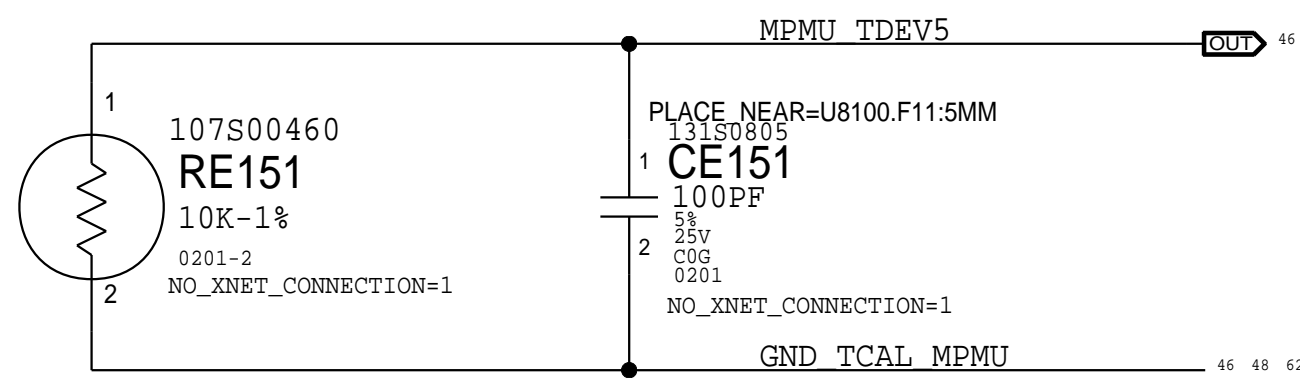


## E Leader/Follower PMU VSS Connection



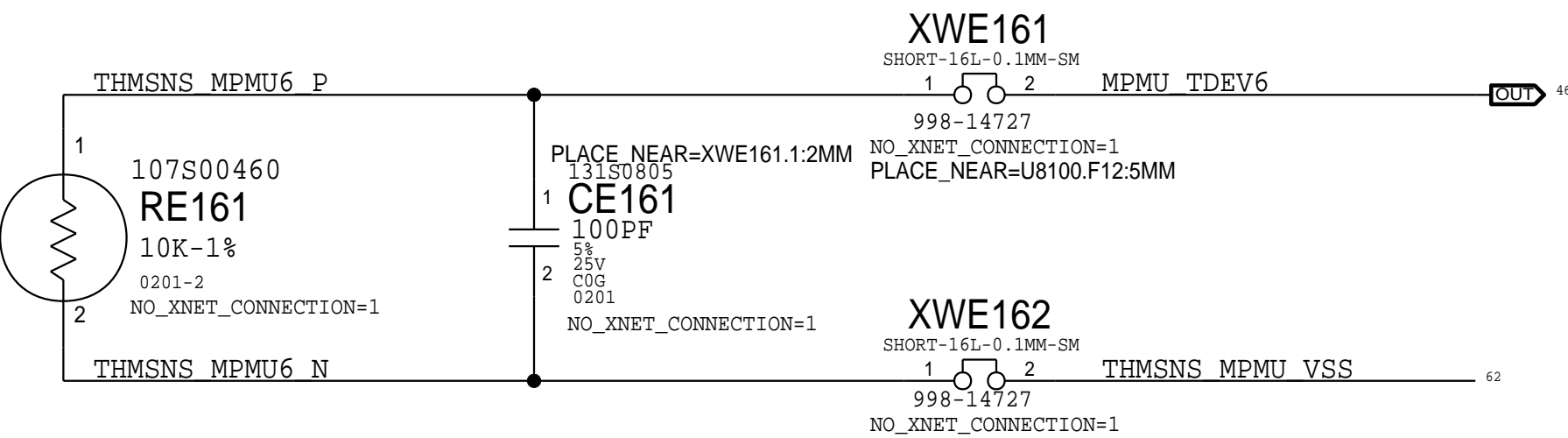
## F Leader PMU TDEV5 (TPMP)

Location: Leader PMU Proximity



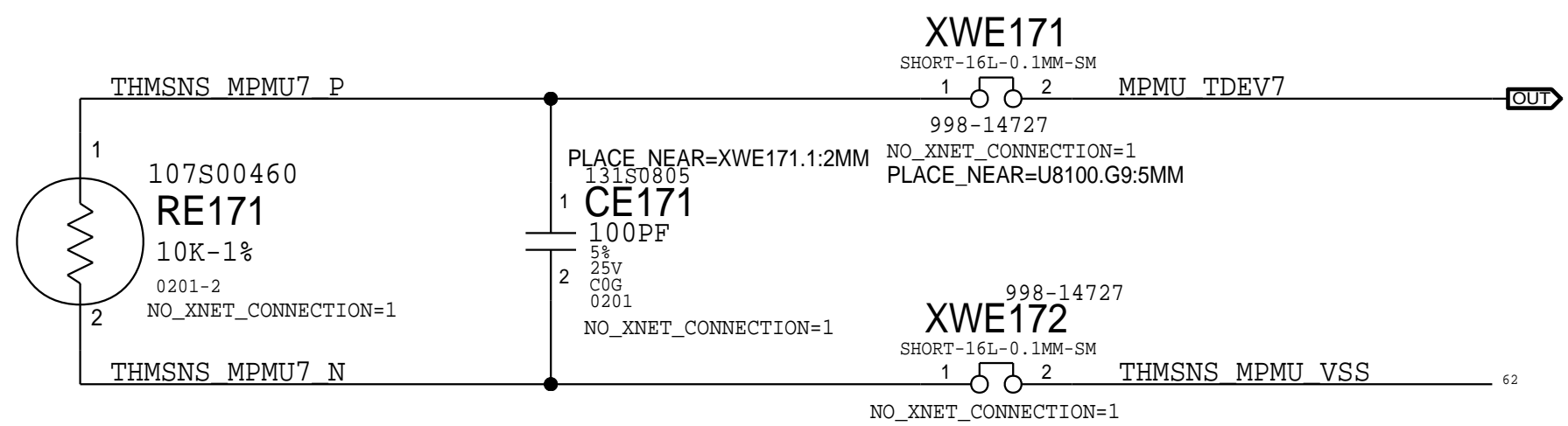
## G Leader PMU TDEV6 (T5SP)

Location: PP5V\_S2 (UC300)



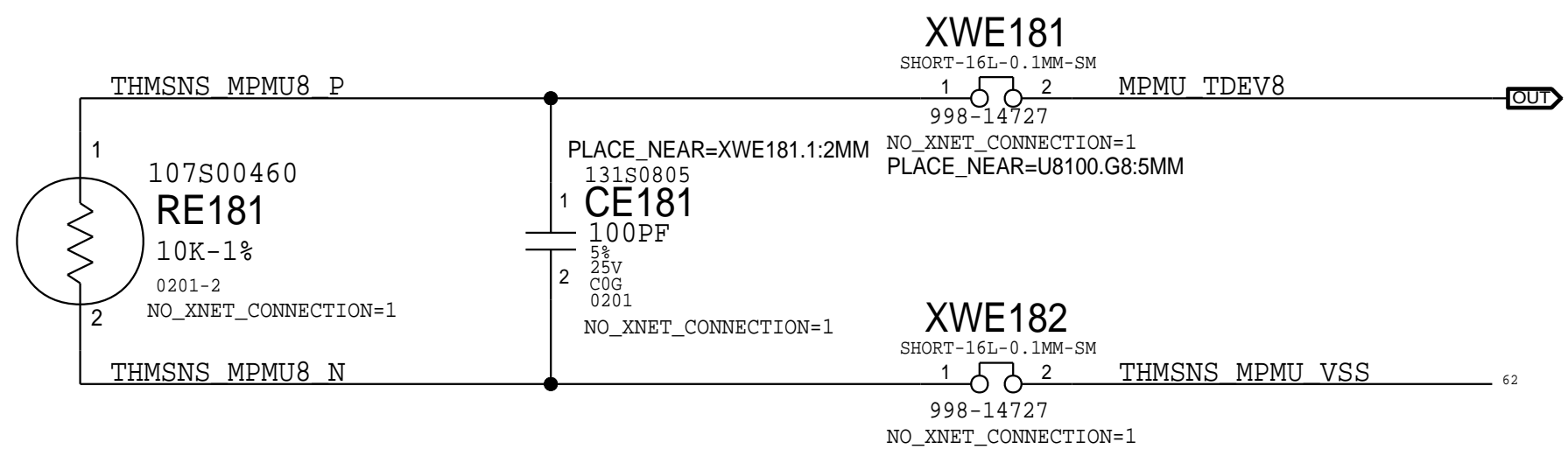
## H Leader PMU TDEV7 (TCHP)

Location: Charger Proximity



## I Leader PMU TDEV8 (TMVR)

Location: Main VR (PP3V8\_AON\_VDDMAIN)

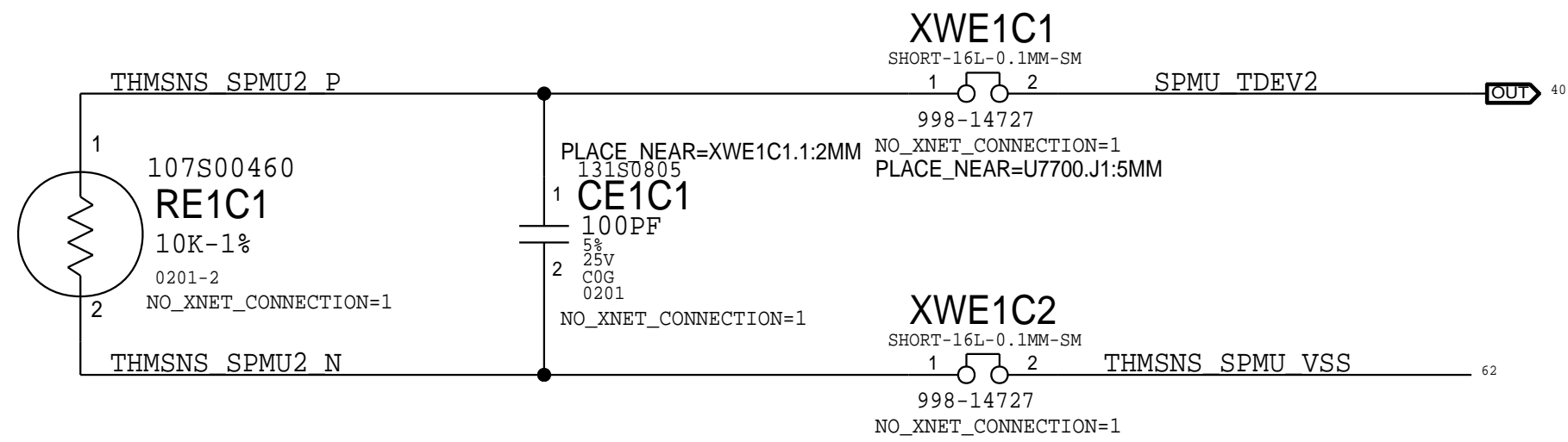


## J Follower PMU TDEV1 (Txxx)

61 SPMU AMUXTDEV\_TERM == SPMU AMUXTDEV\_TERM 40

## K Follower PMU TDEV2 (TH0T)

Location: NAND Proximity

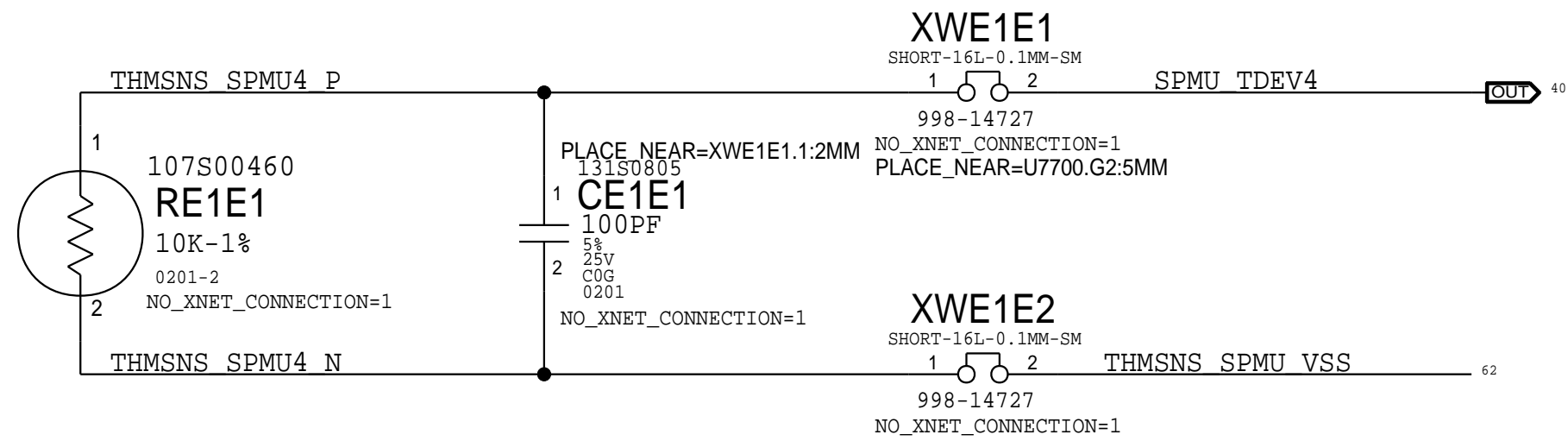


## L Follower PMU TDEV3 (Txxx)

61 SPMU AMUXTDEV\_TERM == SPMU AMUXTDEV\_TERM 40

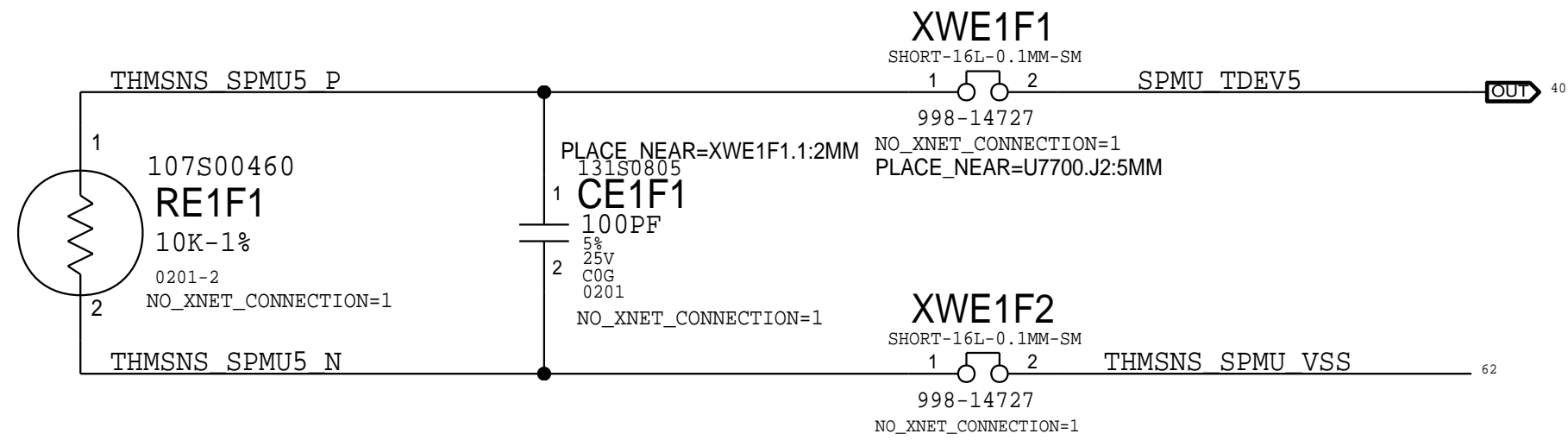
## M Follower PMU TDEV4 (TSCD)

Location: SOC Proximity




## N Follower PMU TDEV5 (TPSP)

Location: Follower PMU Proximity

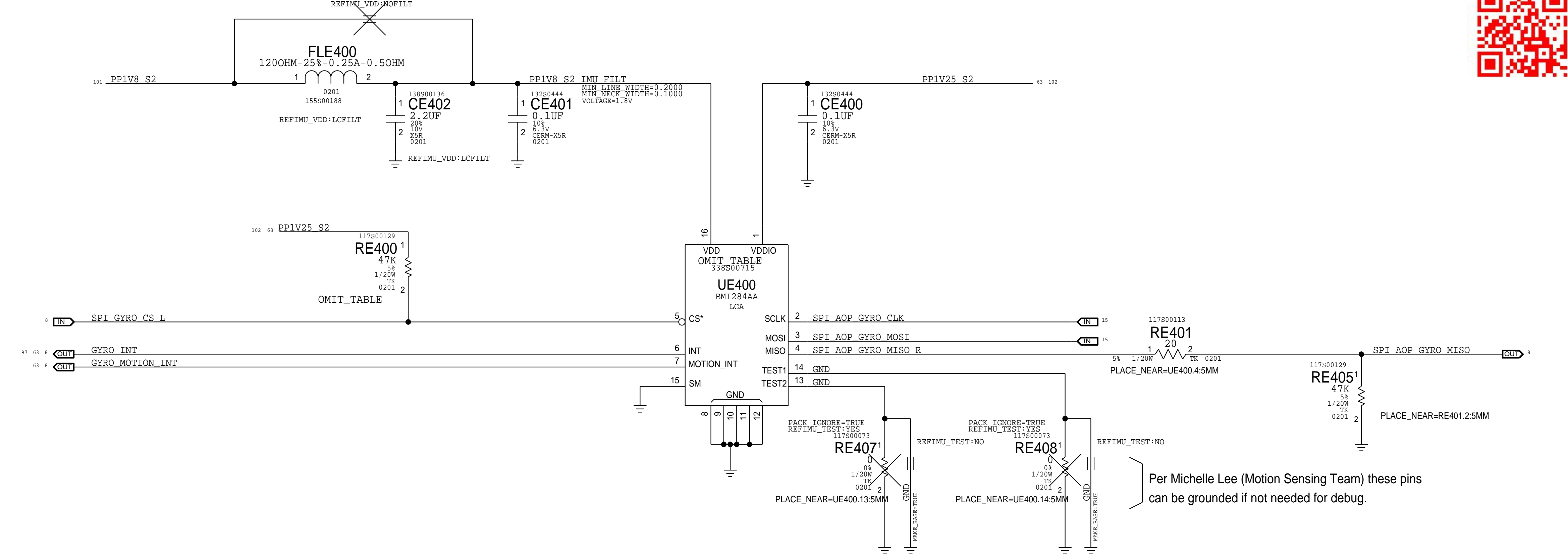


BOM\_COST\_GROUP=SENSORS

PAGE TITLE		
SENSORS: THERMAL		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	141 OF 801
	SHEET	62 OF 121

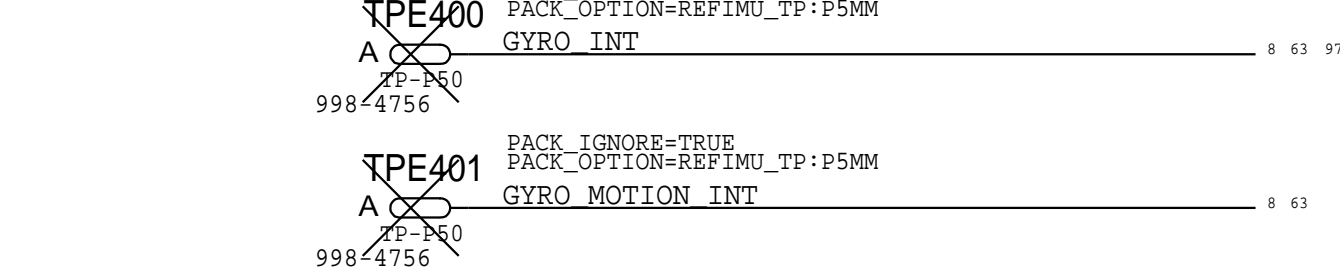


# A Sovereign Accelerometer and Gyroscope



MFG: Bosch  
MPN: BMI284AA  
APN: 338S00715  
URL: <https://www.bosch-sensortec.com/products/motion-sensors/imus/>  
Radar: [rdar://61521702](https://rdar://61521702) (Sovereign: Datasheet)

## B Test Points



## C Sovereign BOM Options

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00715	1	IC, SOVEREIGN, BMI284, AA, LGA16	UE400	CRITICAL	REFIMU_IC: BMI284
338S00849	1	IC, SOVEREIGN2, BMI286, AA, LGA16	UE400	CRITICAL	REFIMU_IC: BMI286
117S00129	1	RES, TK, 47K, OHM, 5%, 1/20W, 0201	RE400	CRITICAL	REFIMU_RE400: 47K
118S00521	1	RES, TK, 30K, OHM, 1%, 1/20W, 0201	RE400	CRITICAL	REFIMU_RE400: 30K

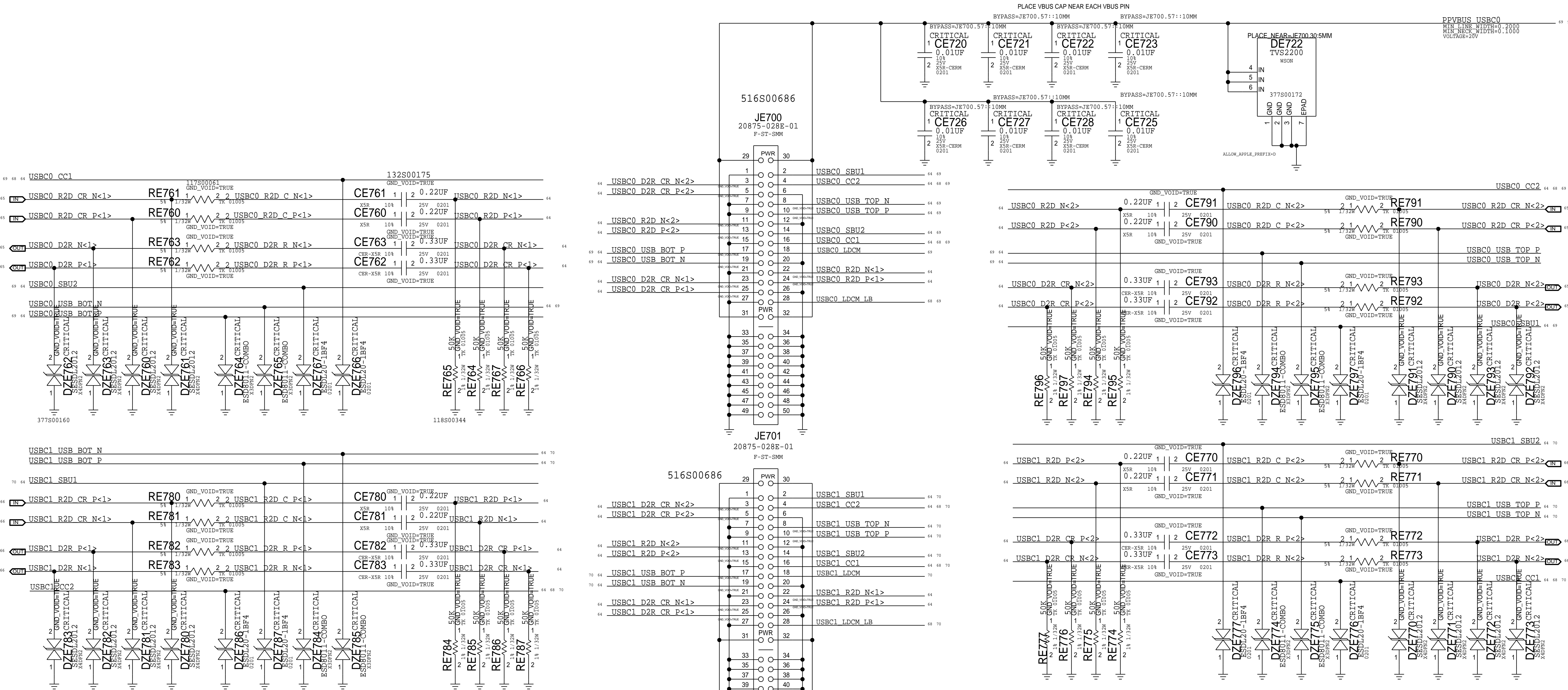
\*\*\* OK2INTEGRATE \*\*\*

BOM\_COST\_GROUP=SENSORS

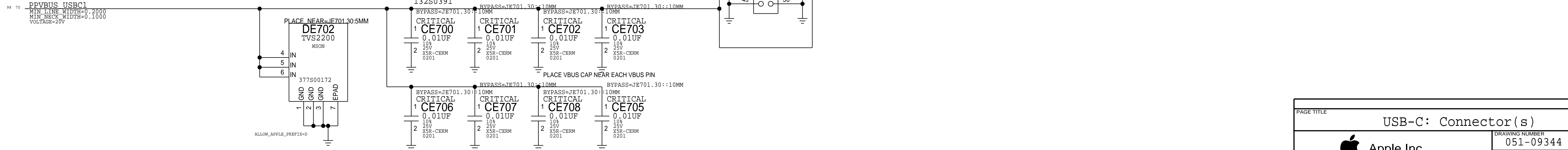
PAGE TITLE		
SENSORS: MOTION		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	144 OF 801
	SHEET	63 OF 121

Left Rear Port

FOR POR, VERIFY 20% TOLERANCE ON 0.22UF AC COUPLING CAP IS OK



FOR POR, VERIFY 20% TOLERANCE ON 0.22UF AC COUPLING CAP IS OK

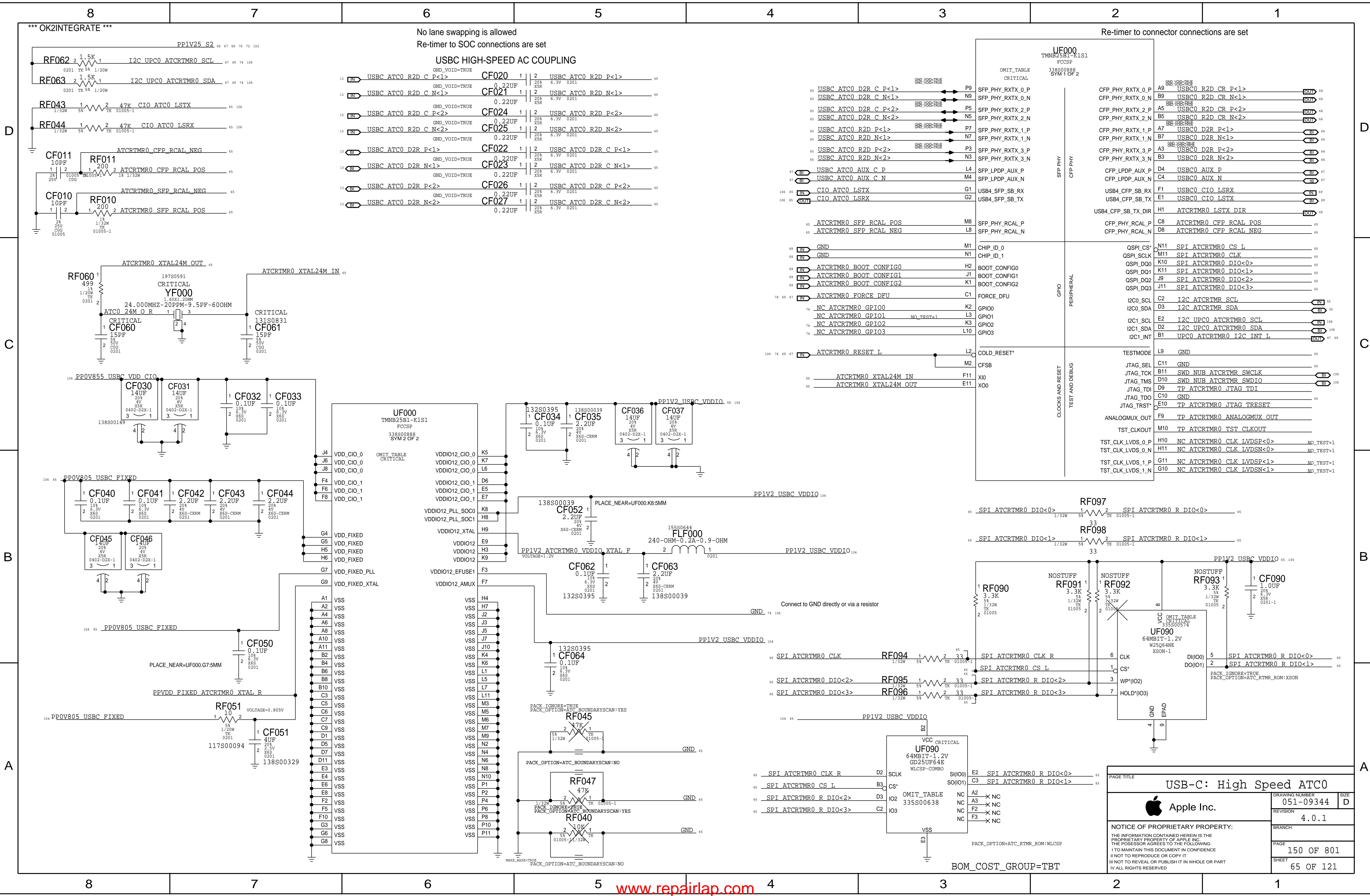


Left Front Port

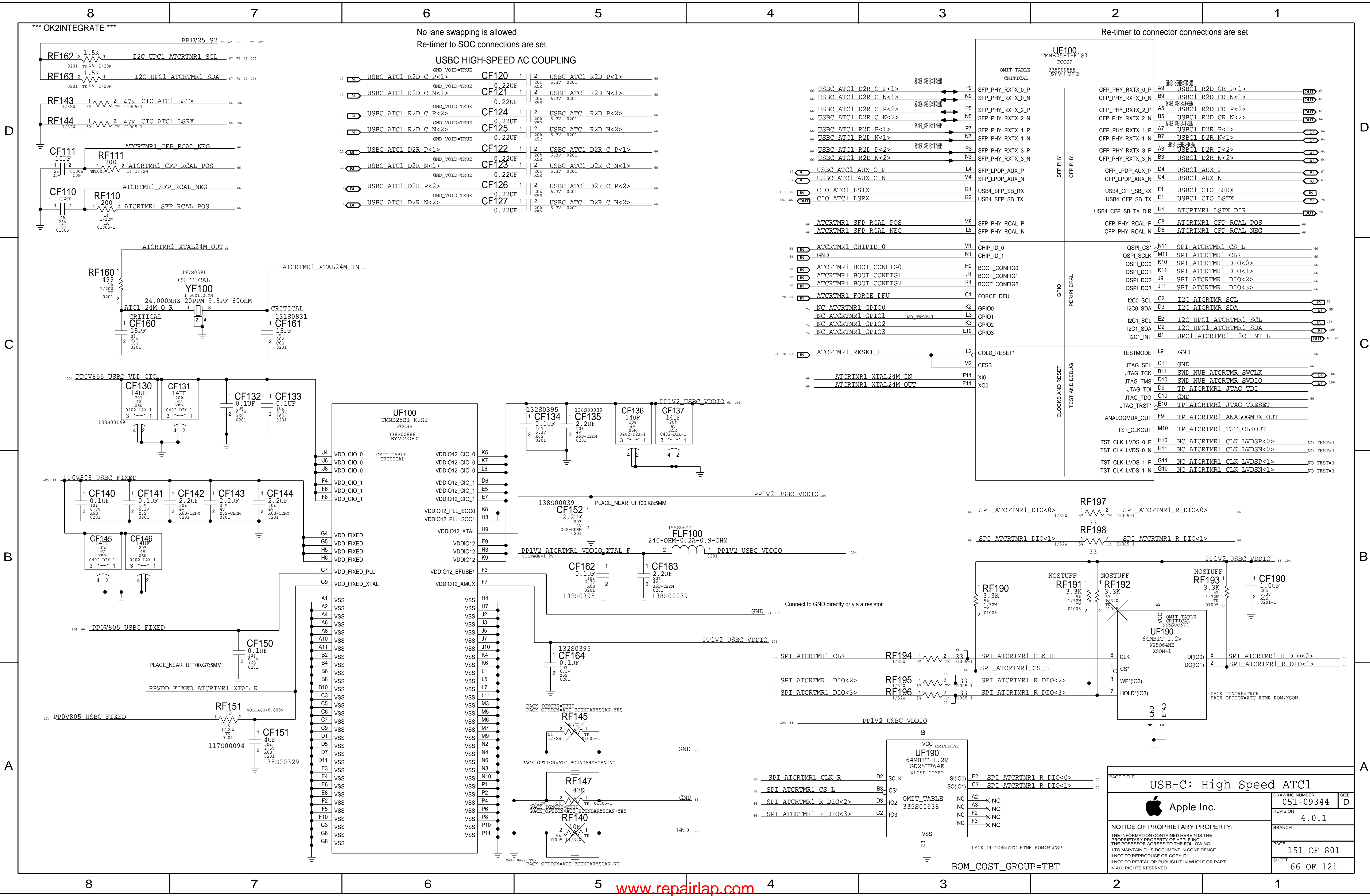
BOM\_COST\_GROUP=USB-C

PAGE TITLE		
USB-C: Connector(s)		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	147 OF 801
	SHEET	64 OF 121



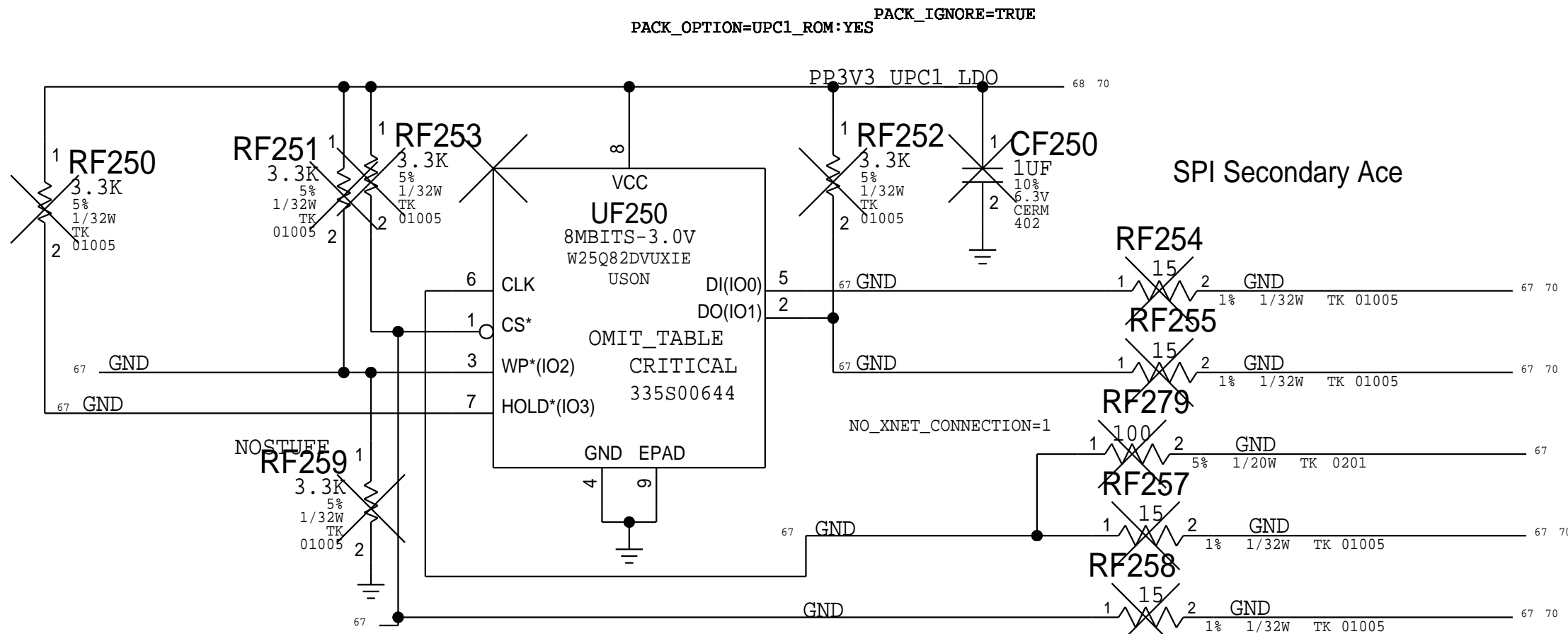
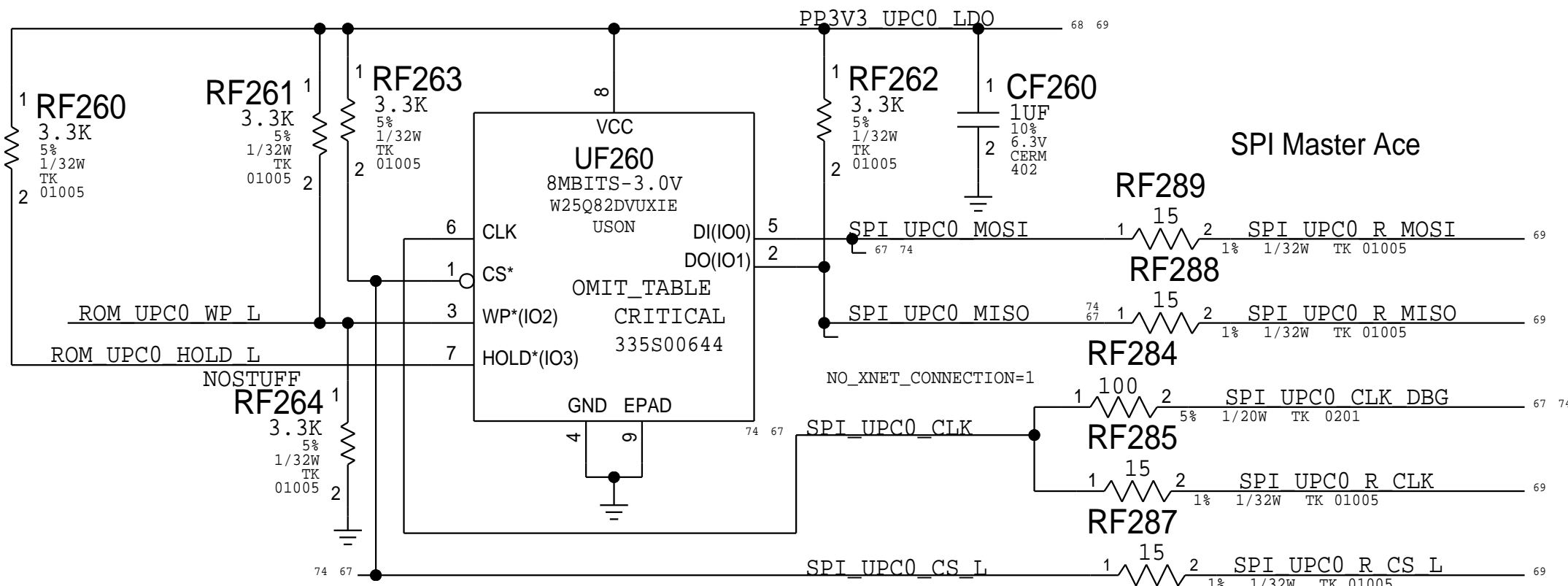






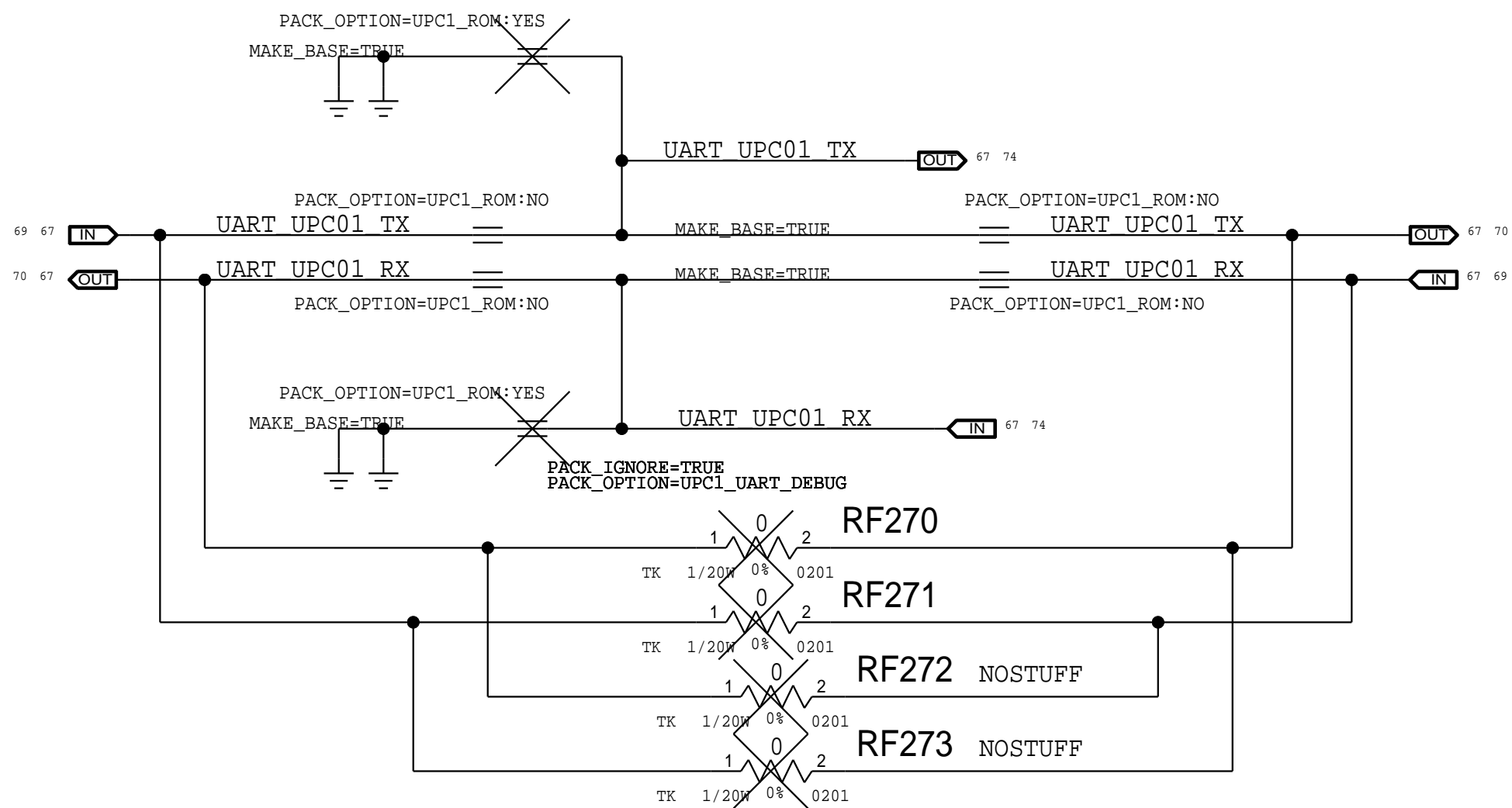


\*\*\* REFERENCE ONLY \*\*\*

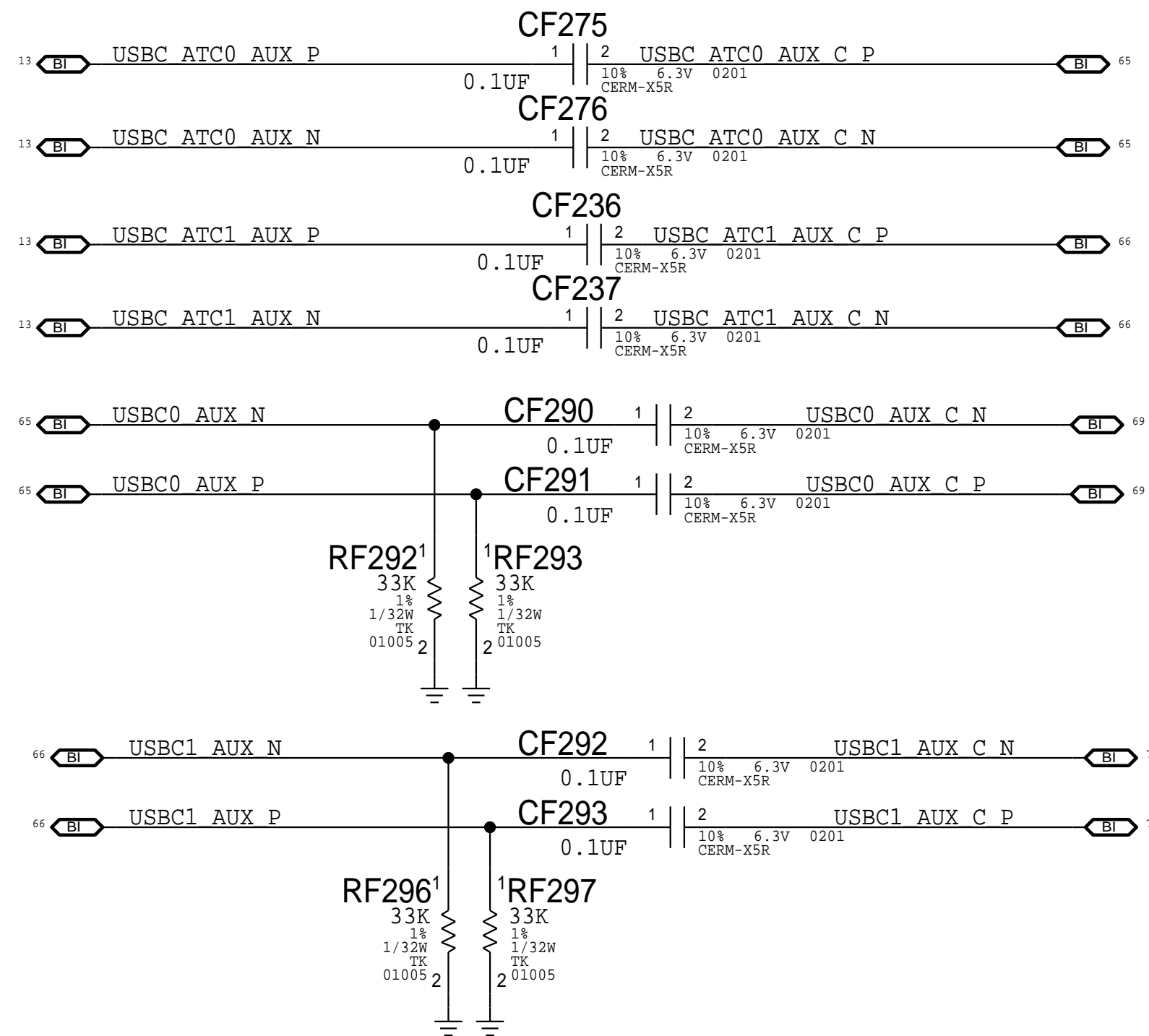
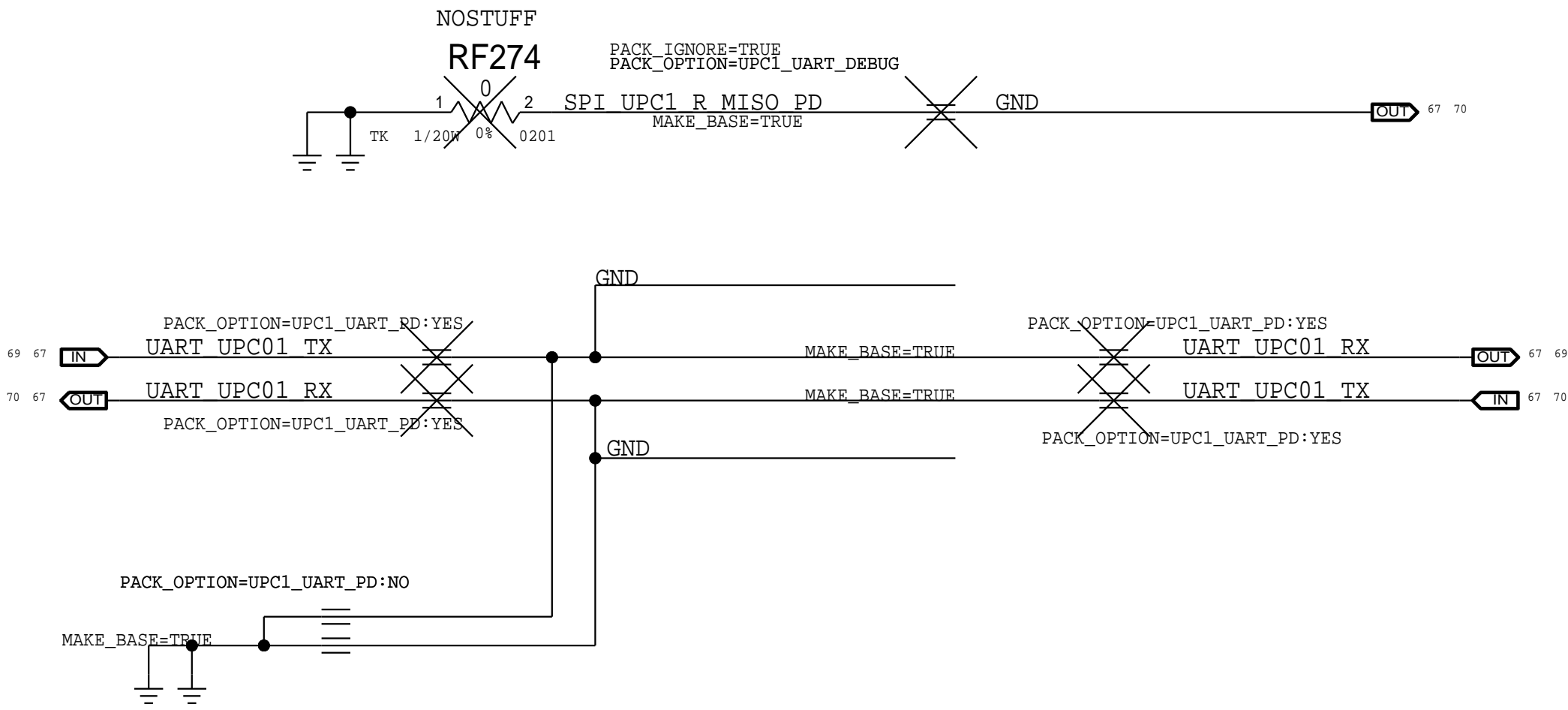
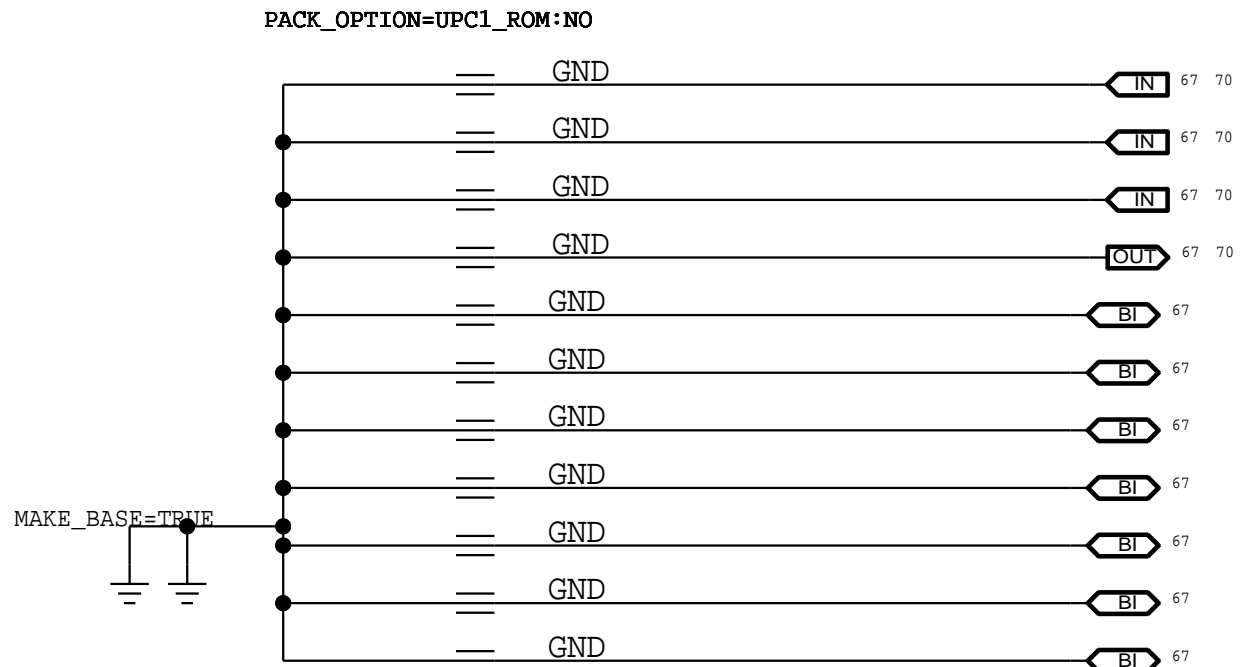


UPC1 Dedicated ROM and UART Debug chain possible pack\_options:

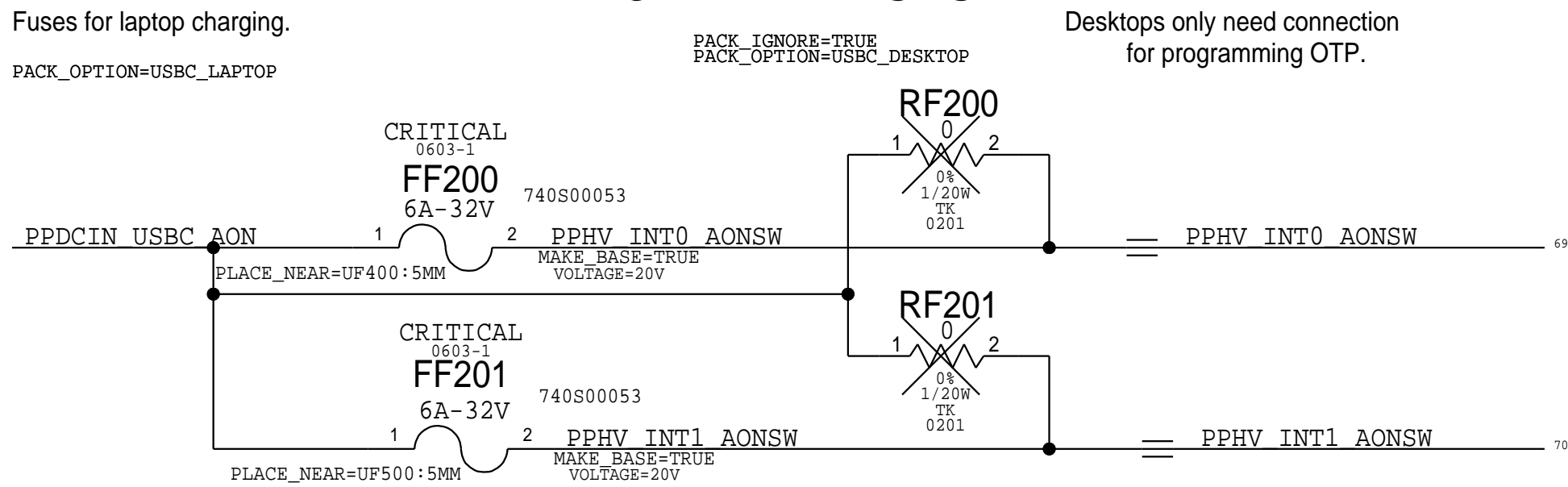
- UPC1 may need its own ROM and need a fall-back method to no ROM for UPC1  
pick: "UPC1\_ROM:YES", "UPC1\_UART\_DEBUG" and "UPC1\_UART\_PD:NO"
- UPC1 needs its own ROM and do not need a fall-back method to no ROM for UPC1  
pick: "UPC1\_ROM:YES" and "UPC1\_UART\_PD:YES"
- UPC1 does not need its own ROM  
pick: "UPC1\_ROM:NO" and "UPC1\_UART\_PD:NO"



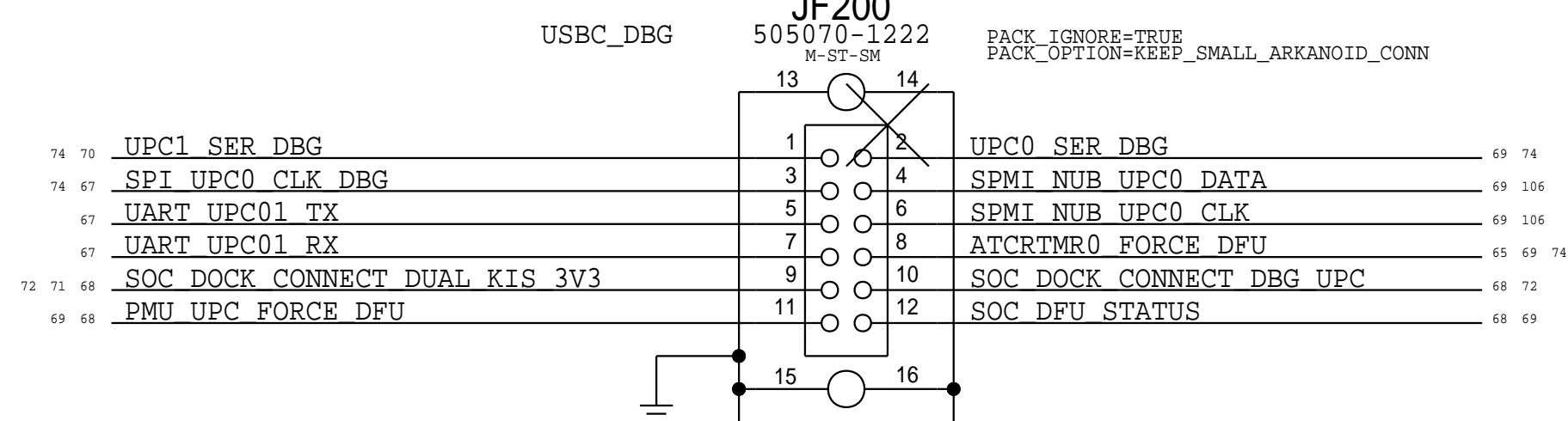
Ace 1 is UART Ace?



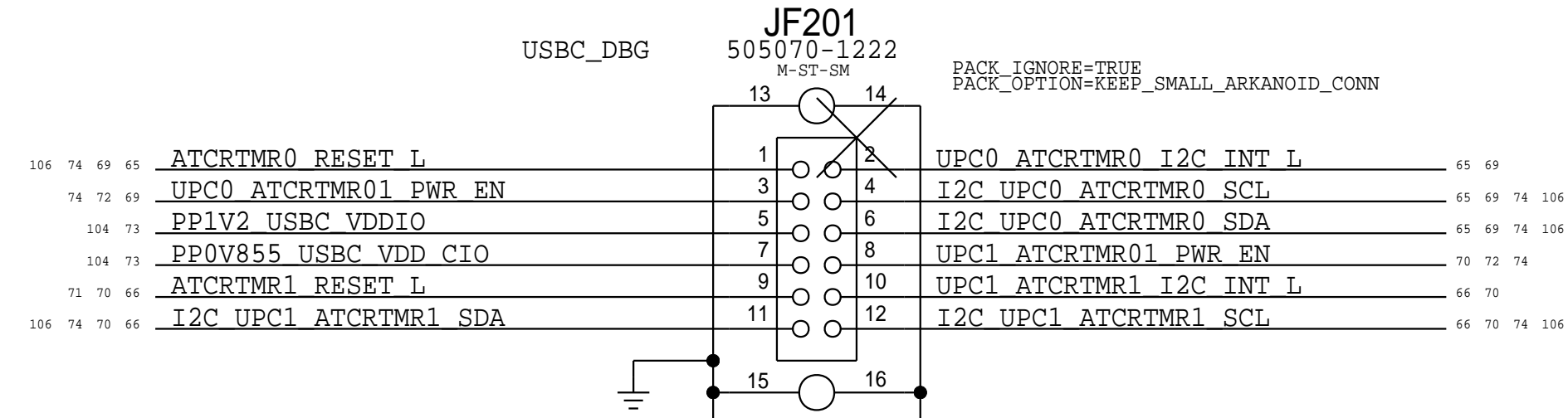
HV POWER ALIASES



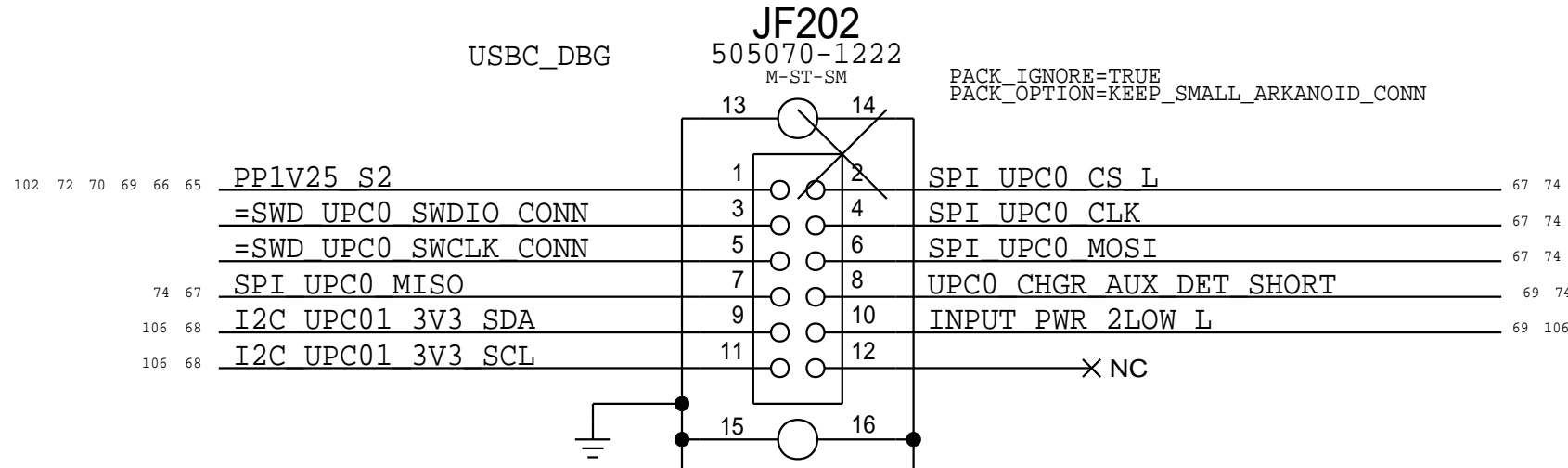
ACE ARKANOID CONN



BRIDGE ARKANOID CONN



AARDVARKANOID CONN UPC0



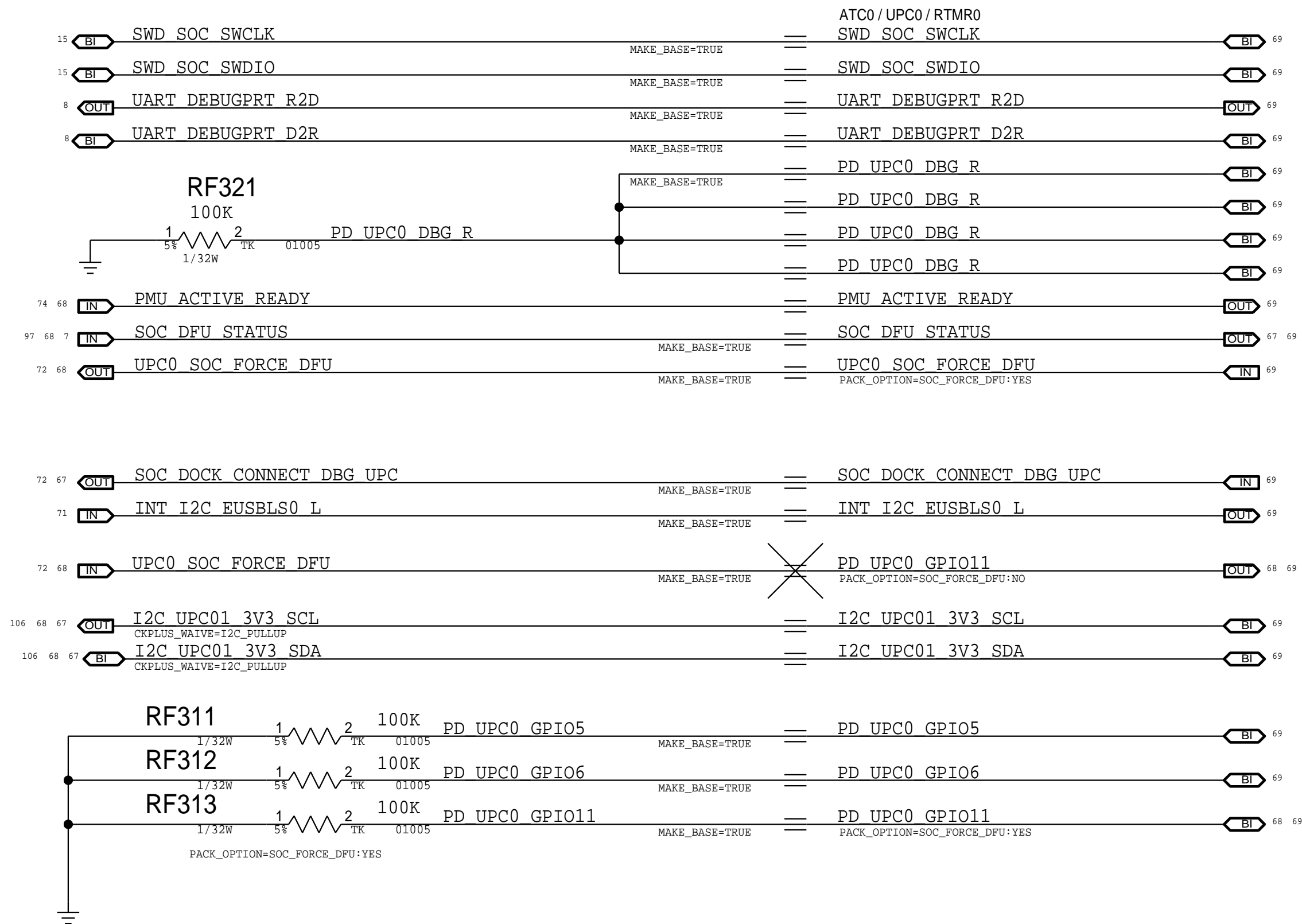
BOM\_COST\_GROUP=USB-C

PAGE TITLE		
USB-C: Support 1 ATC01		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
I NOT TO REPRODUCE OR COPY IT		
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
I ALL RIGHTS RESERVED		
BRANCH		PAGE
		152 OF 801
SHEET		67 OF 121

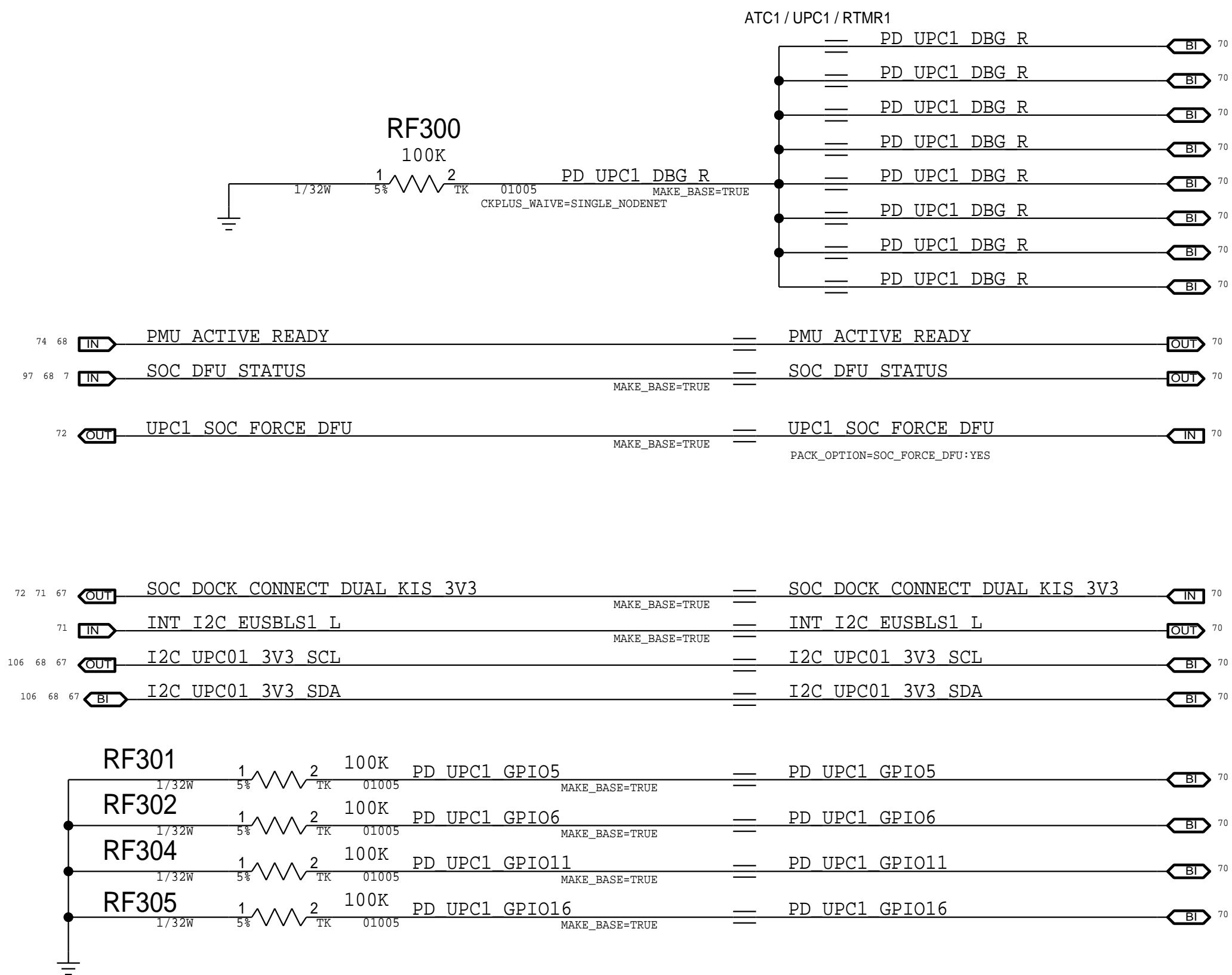


\*\*\* REFERENCE ONLY \*\*\*

## UPC 0 is the Debug Port



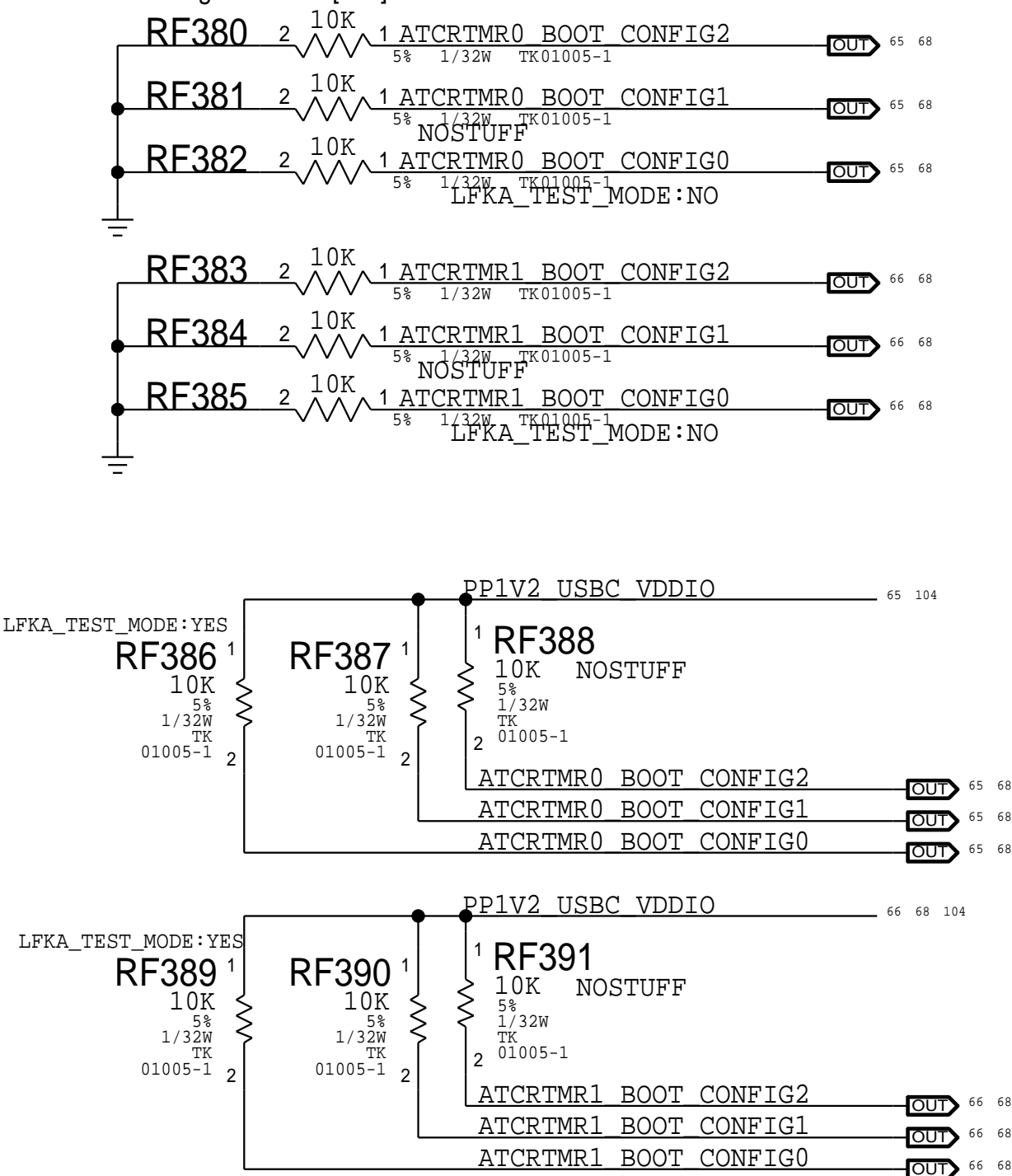
## UPC 1 GPIOs



## ATCRTMR Boot Config

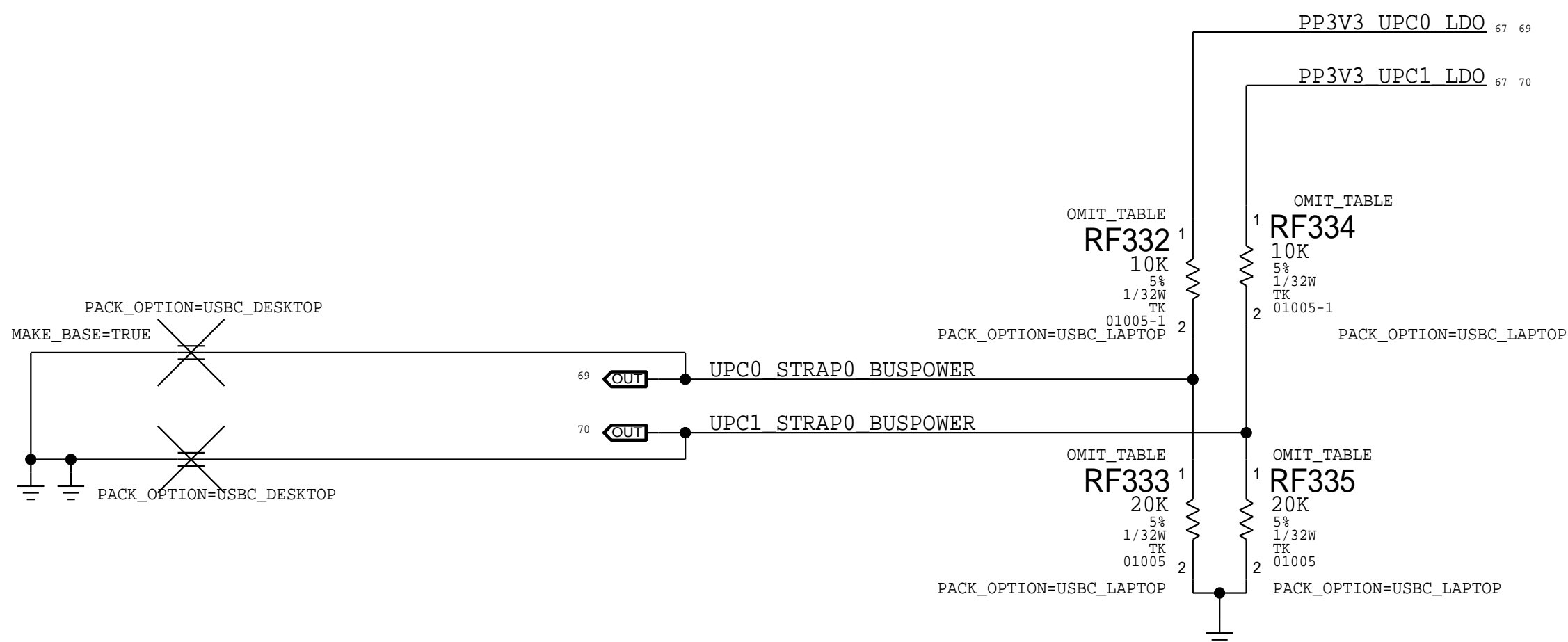
[2:0] = [011] 30Mhz QSPI and Test Mode Enabled

POR config should be [010] Test Mode Disabled

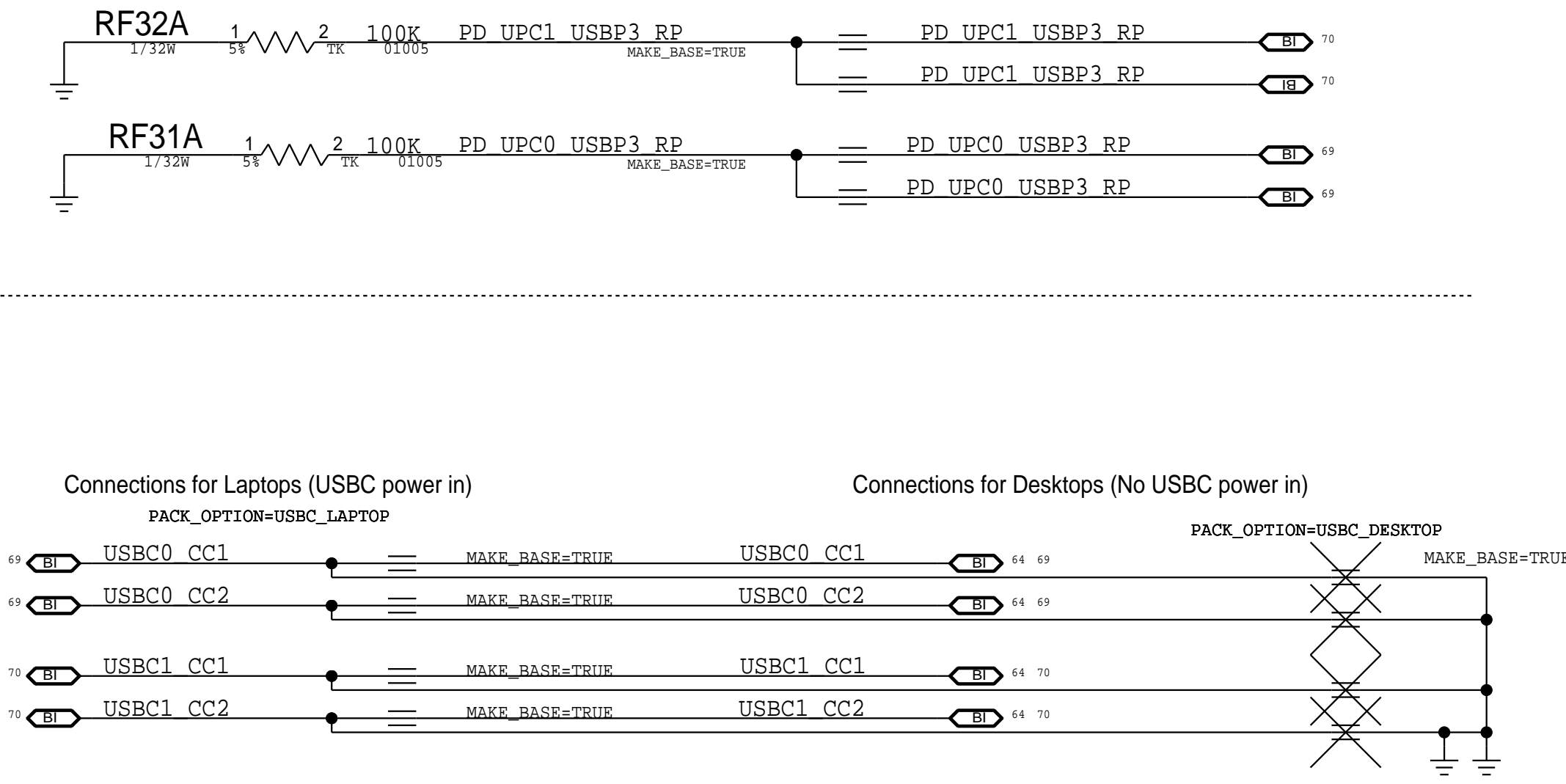


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S00067	2	RES,TK,0 OHM,1/32W,01005	RF332,RF334	CRITICAL	SYS_BOOT_PWR:DEFAULT_500ma
117S00067	2	RES,TK,0 OHM,1/32W,01005	RF333,RF335	CRITICAL	SYS_BOOT_PWR:DISABLED

## STRAP0/BUSPOWER

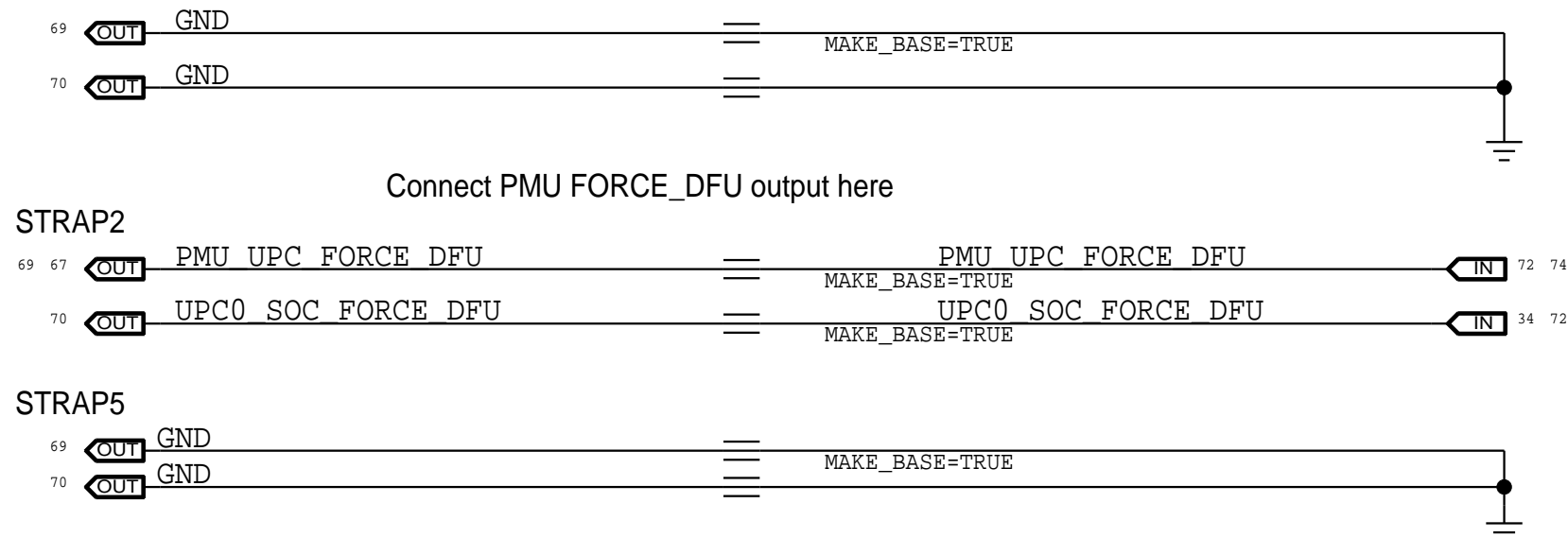


## Unused ports

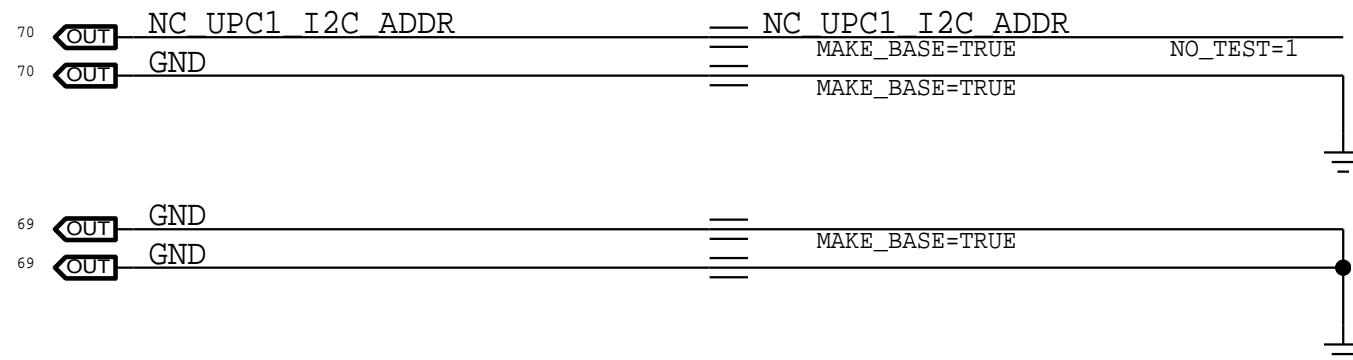


FOR FF TIE STRAP1 TO GND, FOR DEV HAVE HI/LO OPTION  
Enables SPMI interface to SoC  
SPMI: STRAP1=GND  
I2C: STRAP1=LDO\_3V3

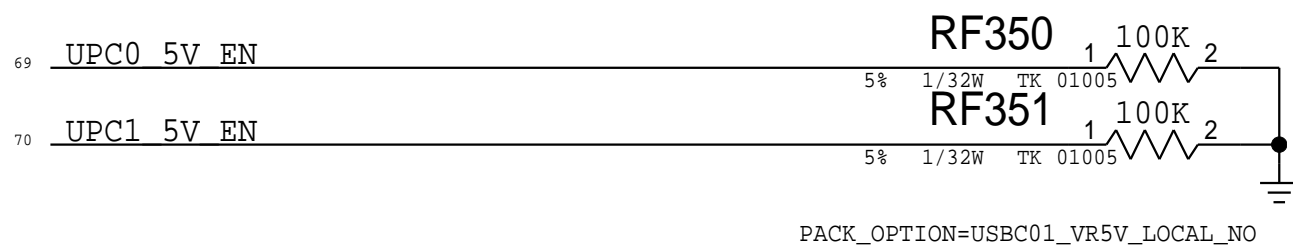
## STRAPS Configurations



STRAP3 AND STRAP4 VARY BY SPMI BUS IMPLEMENTATION  
UPC0: STRAP3=GND STRAP4=GND  
UPC1: STRAP3=NC STRAP4=GND  
UPC2: STRAP3=GND STRAP4=NC  
UPC5: STRAP3=NC STRAP4=140K

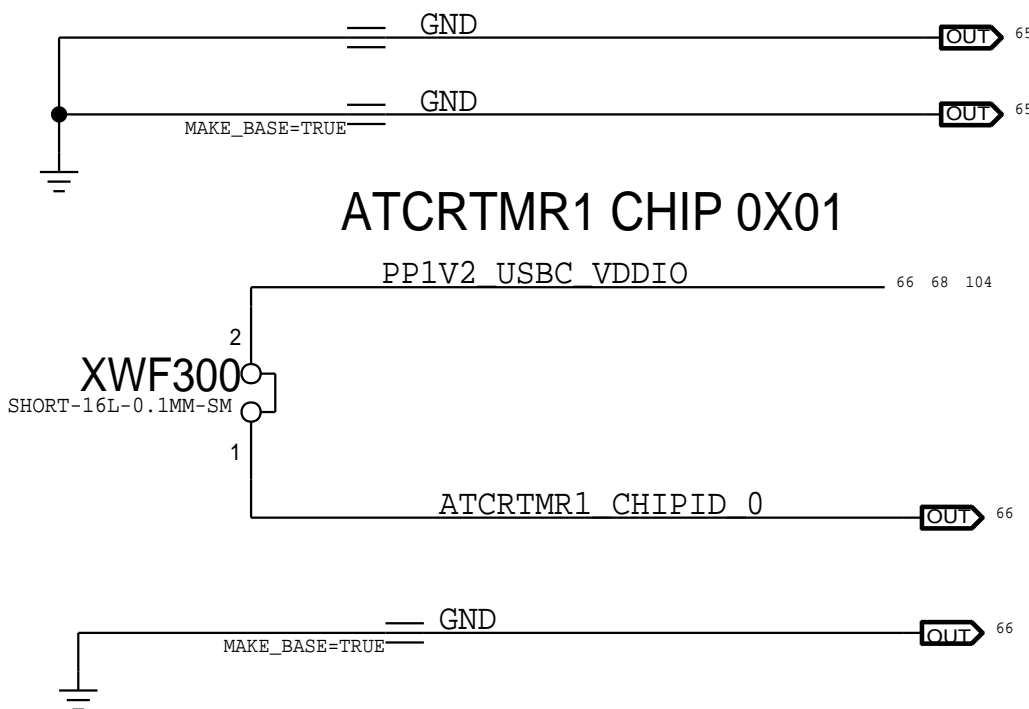


Is UPCx\_5V\_EN being used?

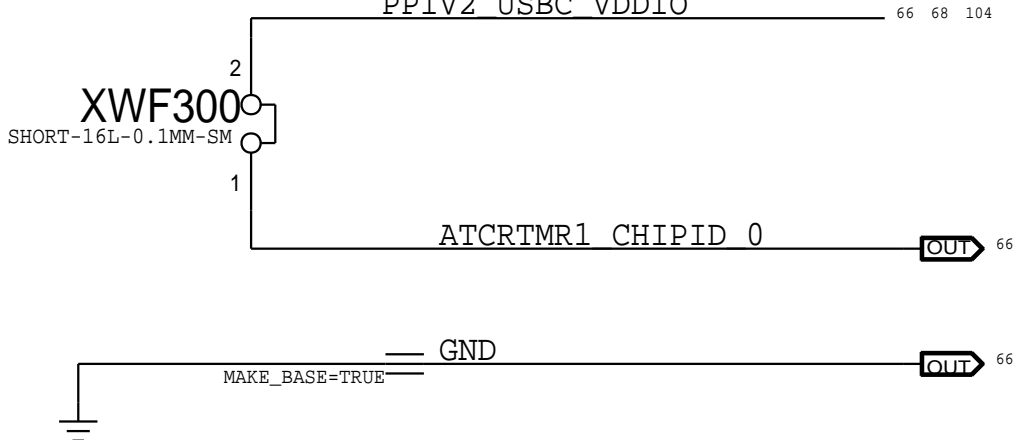


ATCRTMR CHIP ID NEEDS TO FOLLOW SOC ATC INDEX

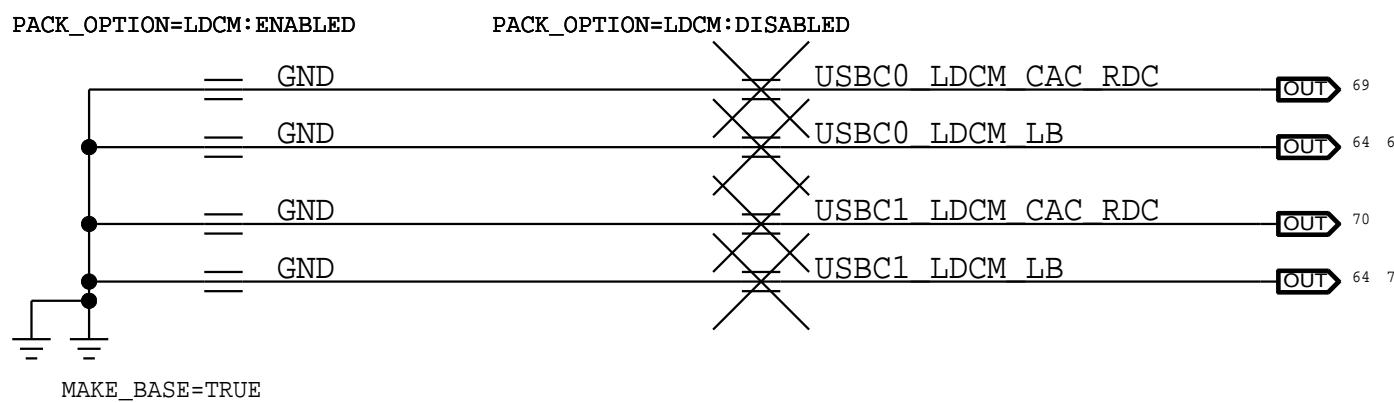
## ATCRTMR0 CHIP 0X00



## ATCRTMR1 CHIP 0X01



## LDCM



PAGE TITLE			
USB-C: Support 2 ATC01			
DRAWING NUMBER		SIZE	
051-09344		D	
REVISION		4.0.1	
BRANCH		PAGE	
NOTICE OF PROPRIETARY PROPERTY:		153 OF 801	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		SHEET	
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		68 OF 121	
I NOT TO REPRODUCE OR COPY IT			
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART			
I V ALL RIGHTS RESERVED			

BOM\_COST\_GROUP=USB-C



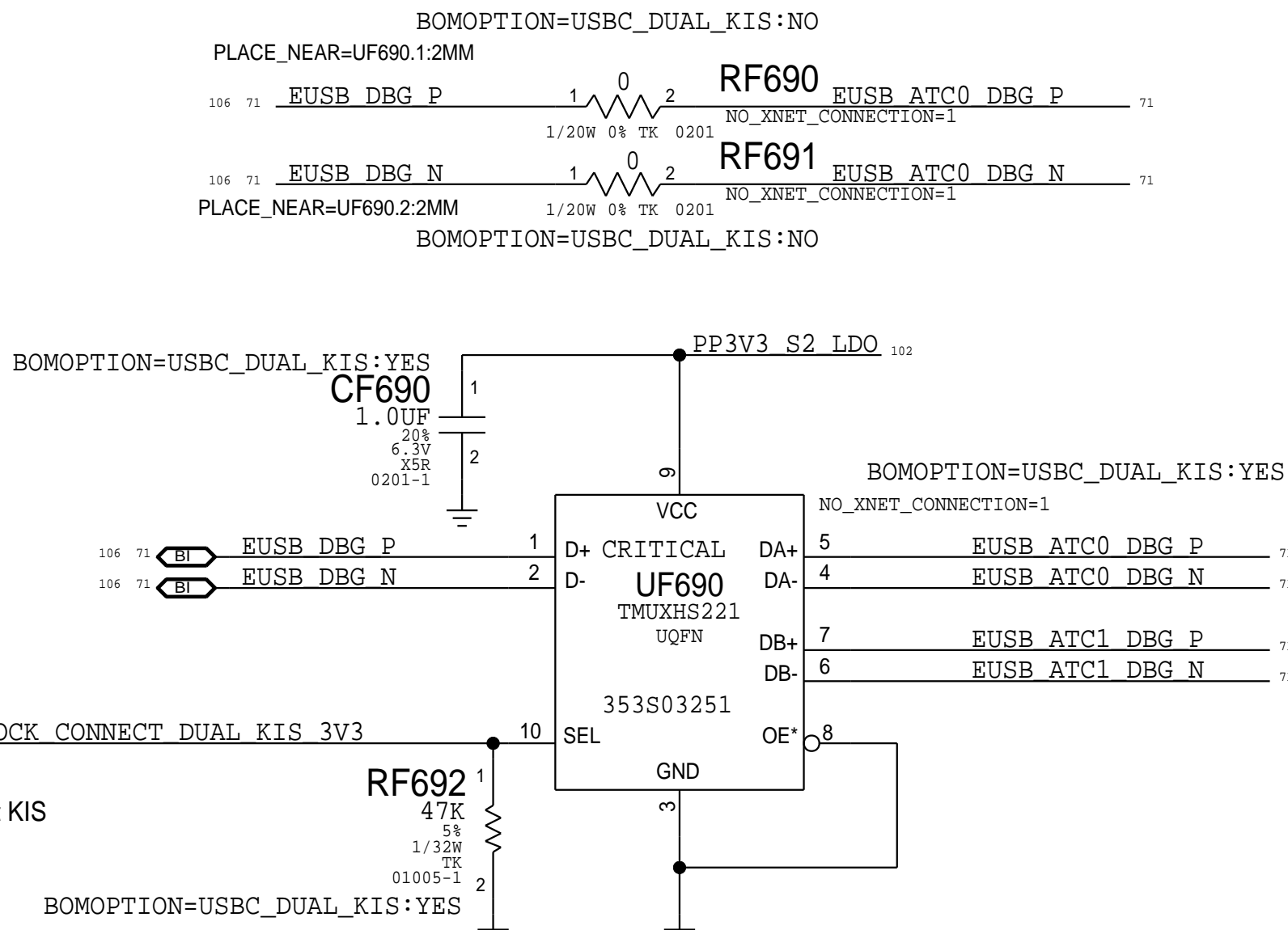




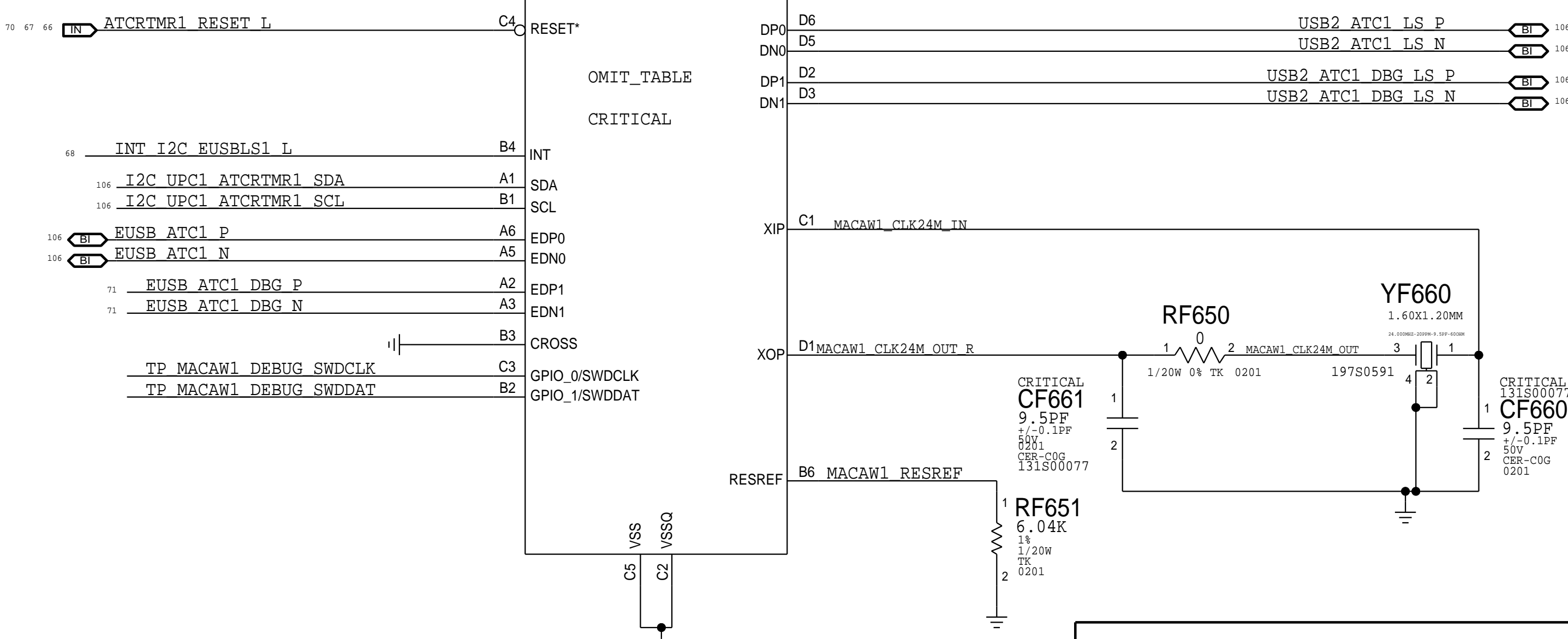





# MACAW 0




# MACAW 1



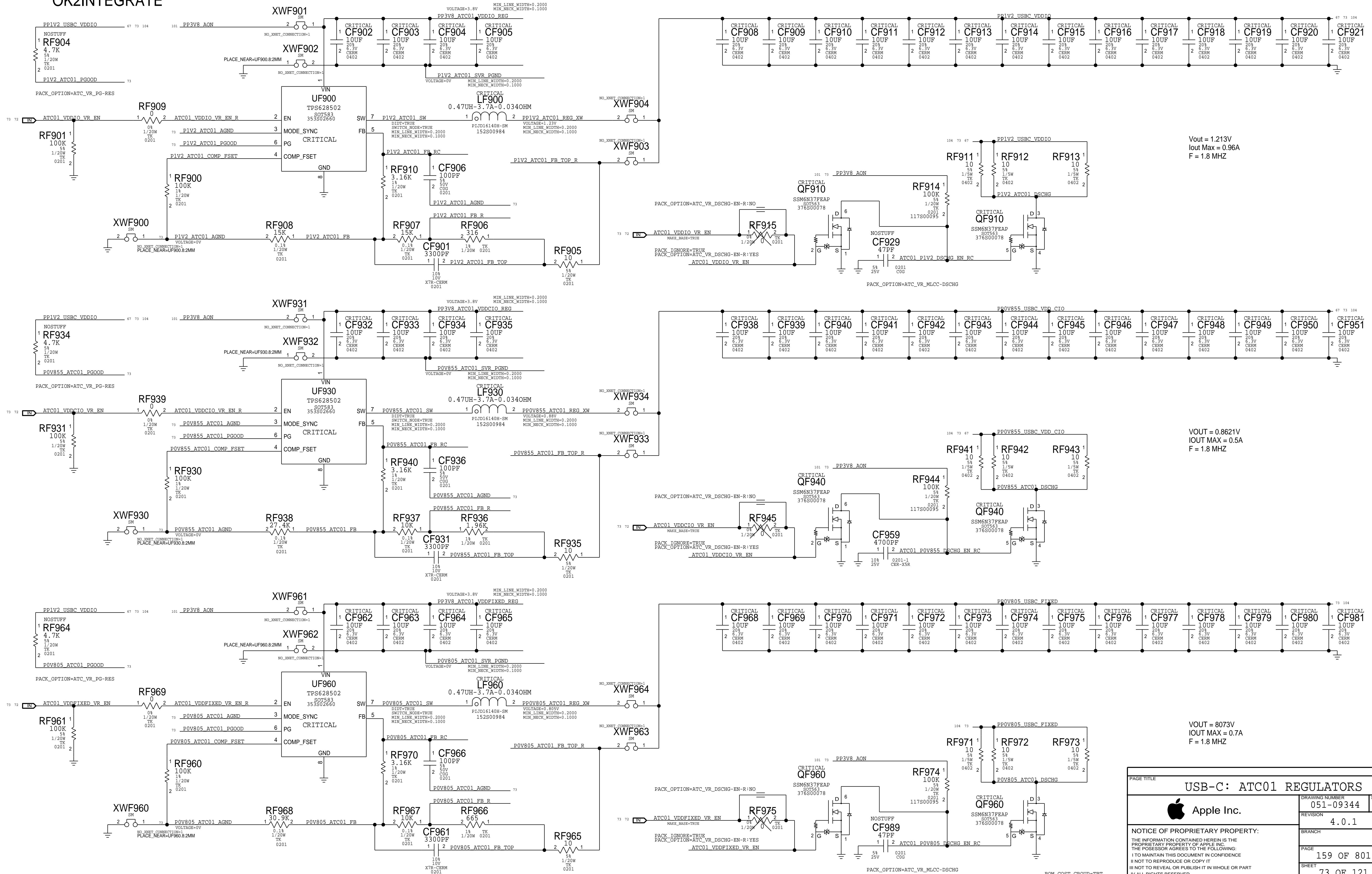
PAGE TITLE		
USB-C: USB2 RPT		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART I ALL RIGHTS RESERVED	BRANCH	
	PAGE	156 OF 801
	SHEET	71 OF 121


A

PAGE TITLE			
USB-C: Support 3 ATC01			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IN ALL RIGHTS RESERVED.	REVISION		
	4.0.1		
	BRANCH		
	PAGE		
		157 OF 801	
		SHEET	
		72 OF 121	



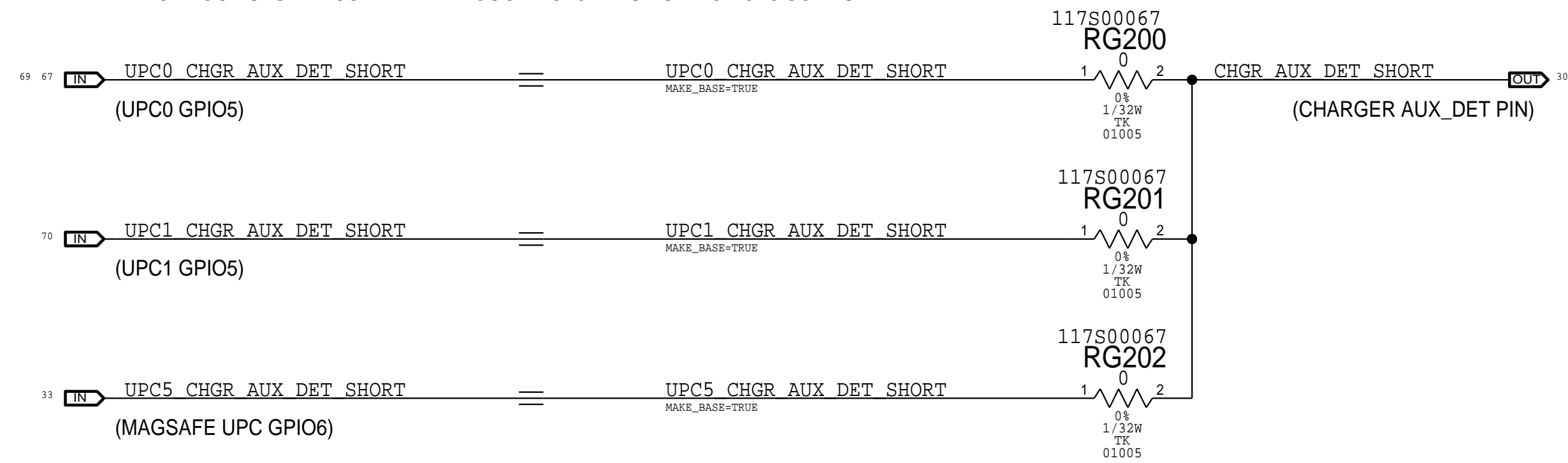
\*\*\* OK2INTEGRATE \*\*\*



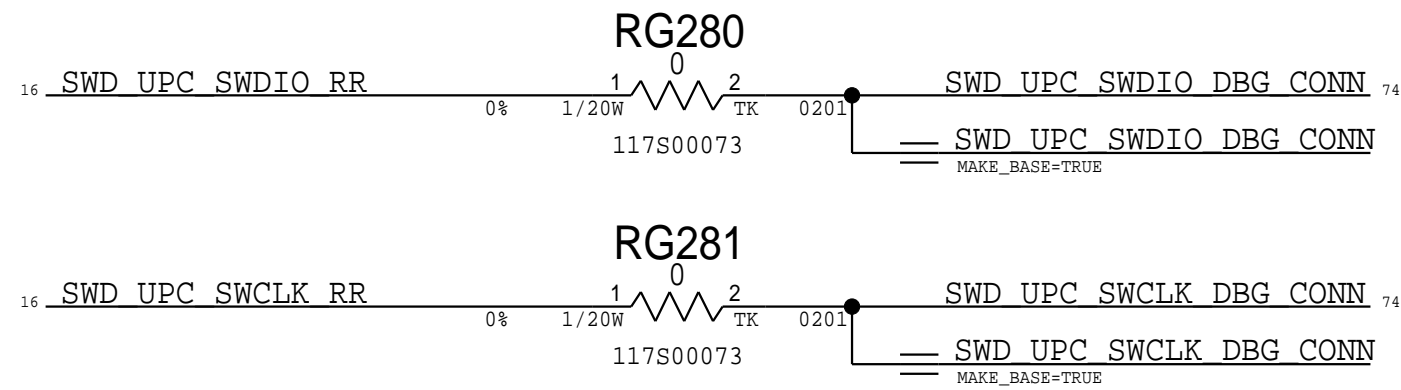
PAGE TITLE		
USB-C: ATC01 REGULATORS		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	159 OF 801
	SHEET	73 OF 121

## A Charger AUX\_DET Connections

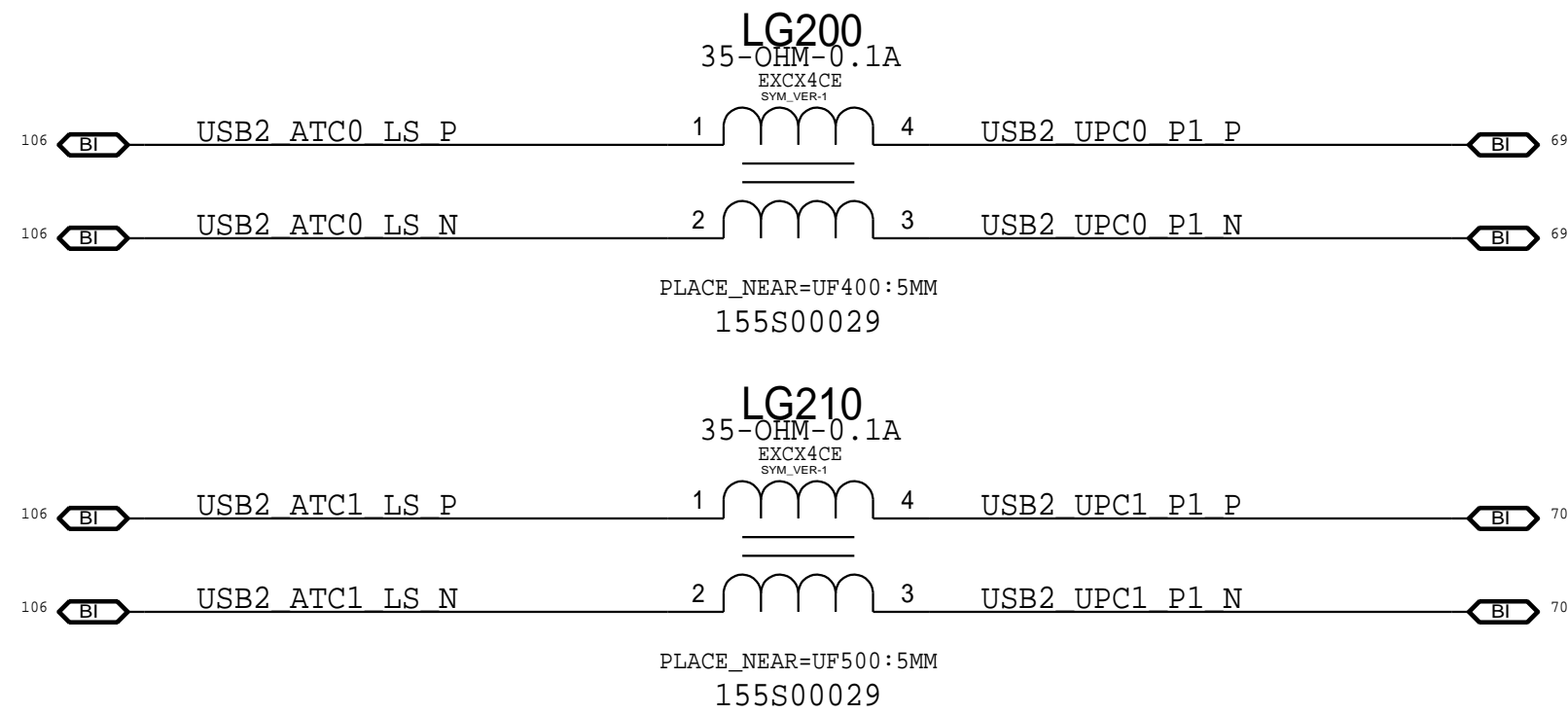
CHARGER AUX DET CONNECTIONS <RDAR://70072178>  
ALLOW ACE TO SEND A SIGNAL TO CHARGER  
TO BLOCK SYSTEM CURRENT THROUGH ACE3 FETS DURING ACE3 SOFT START



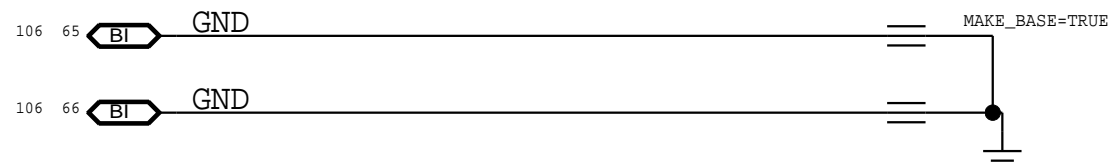
## C USB-C SWDIO Aliases



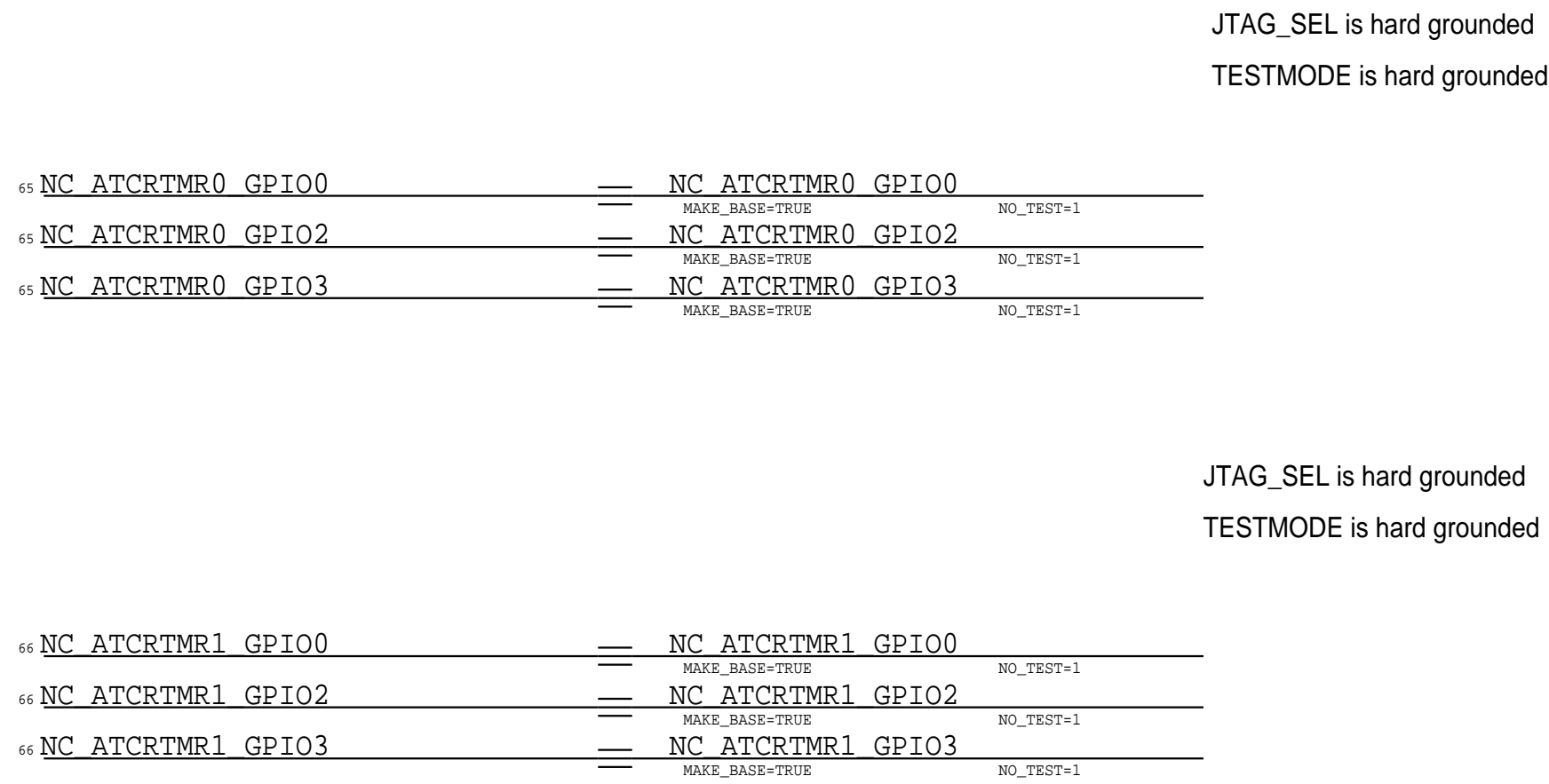
## E USB 2.0 Common Mode Choke



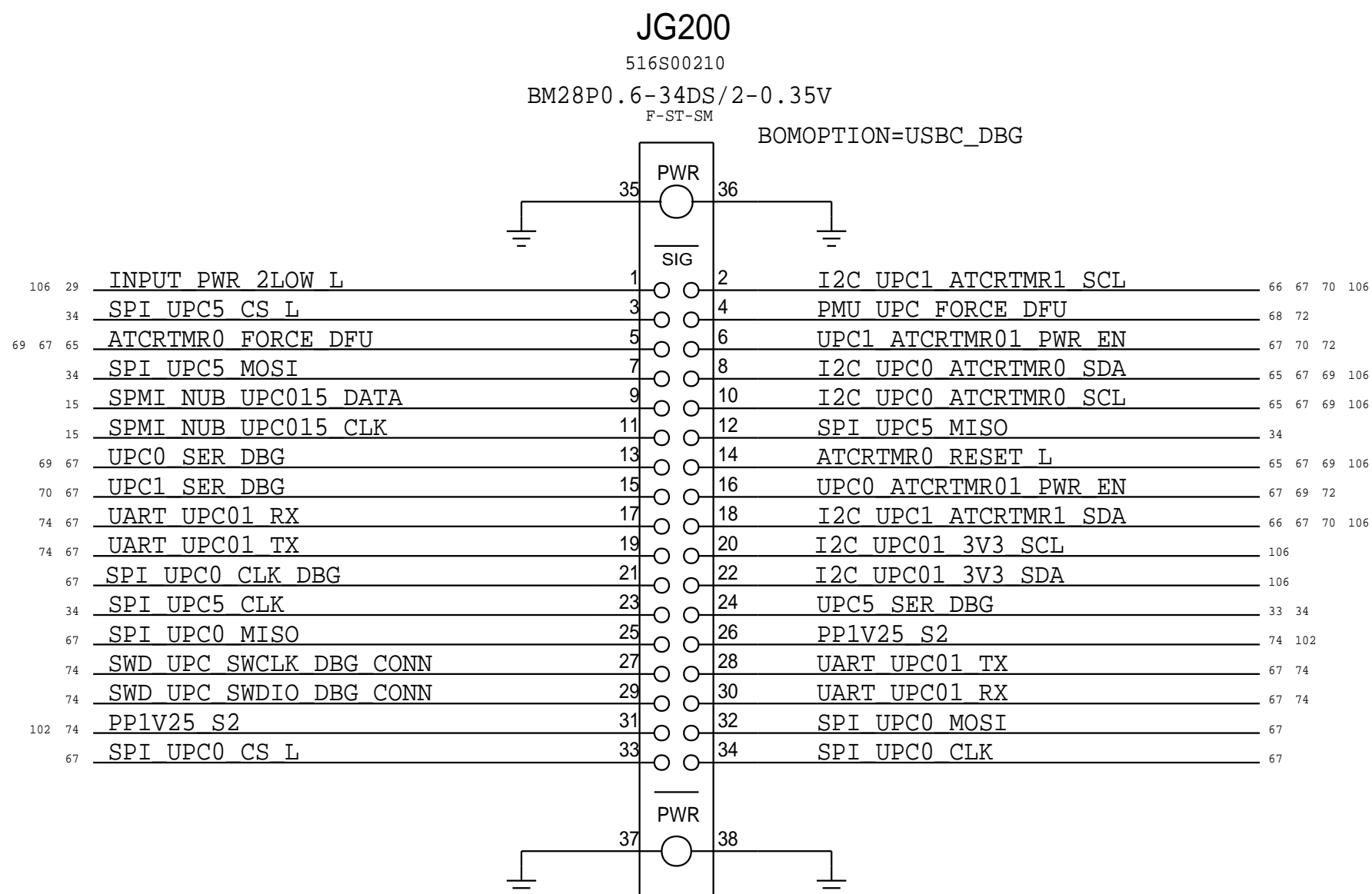
## G RT13 VDDIO\_EFUSE Connections



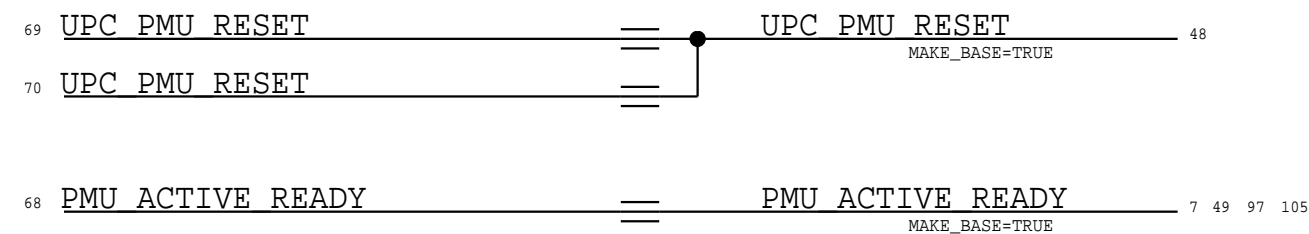
## H NC UNUSED SIGNALS



## B USB-C/MagSafe Debug Connector



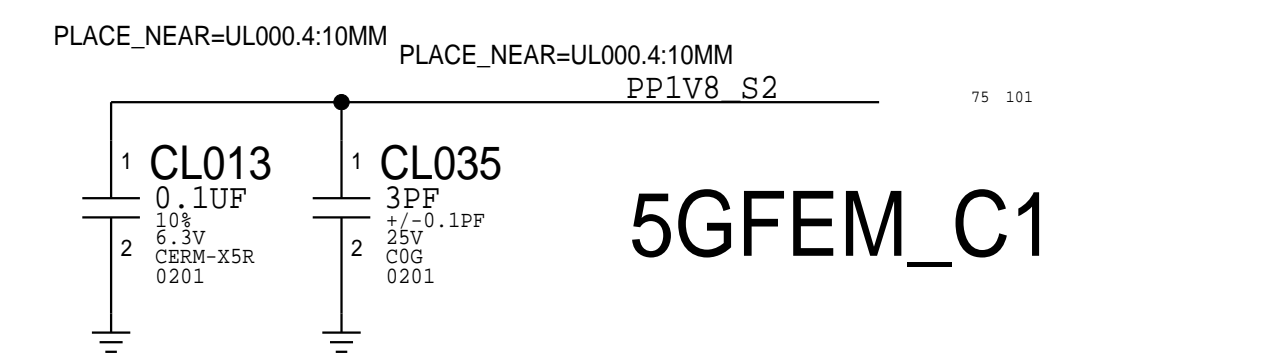
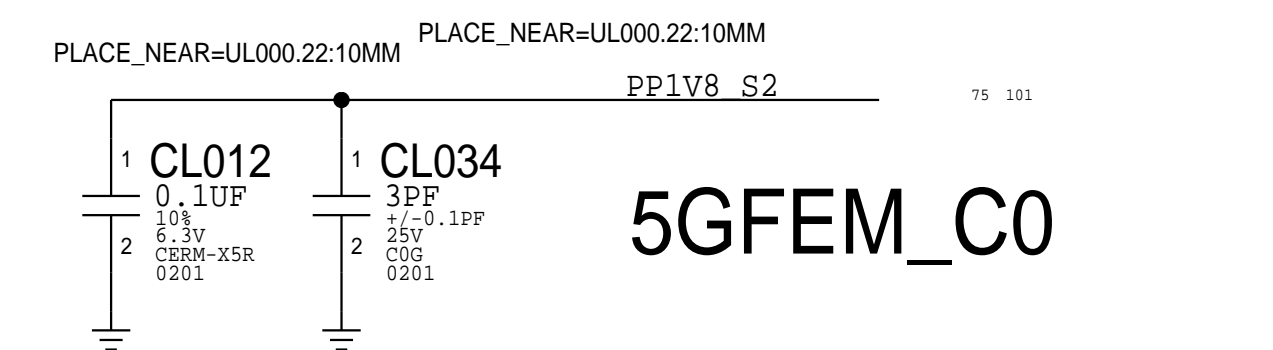
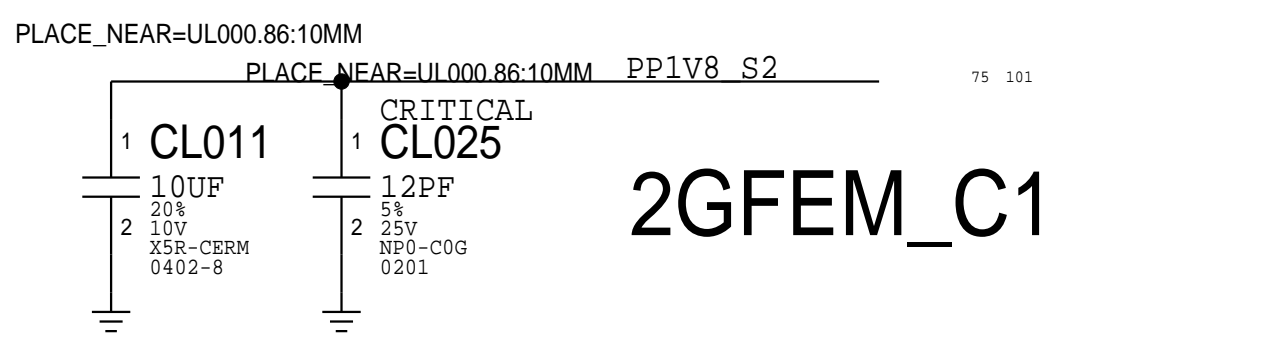
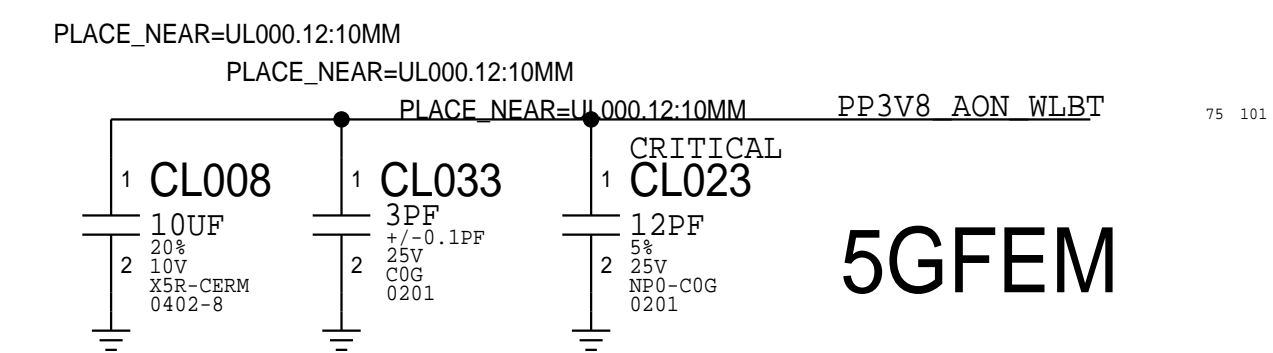
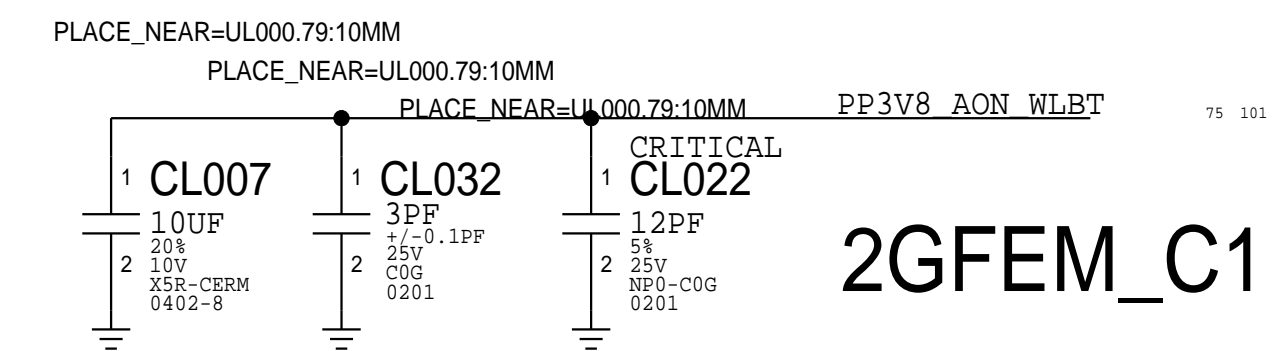
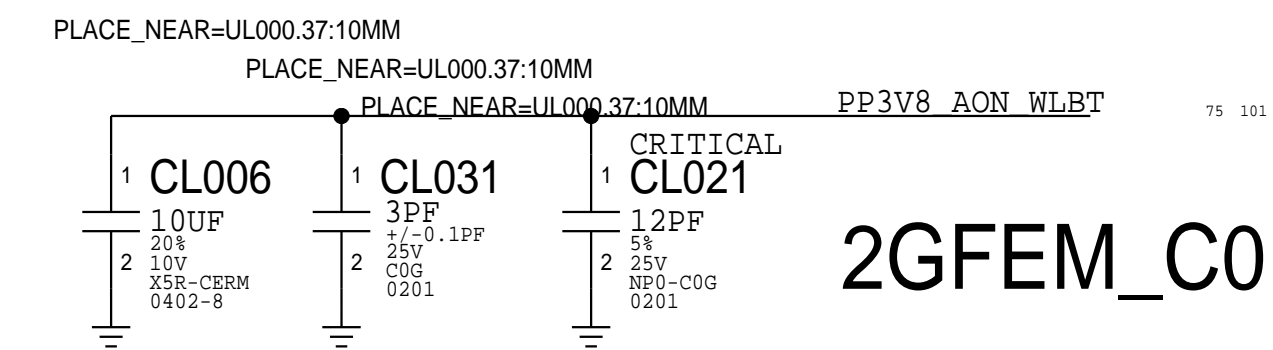
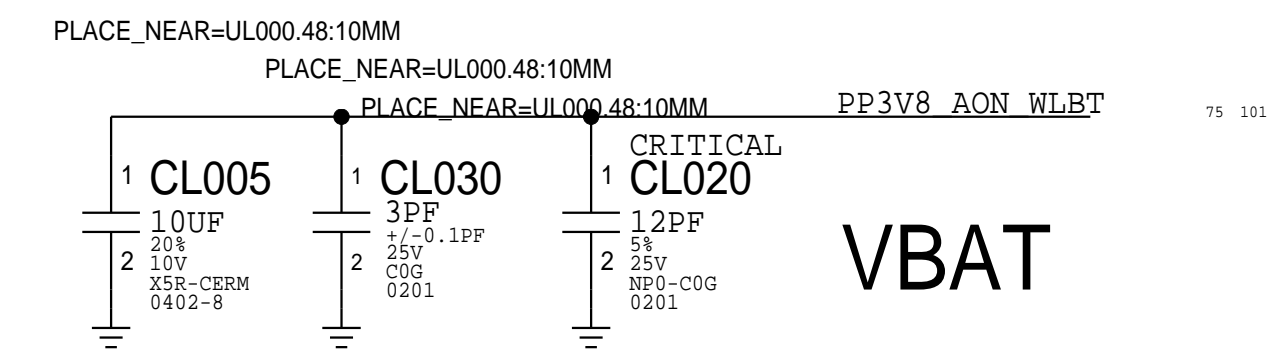
## I ALIASES TO REST OF SYSTEM



PAGE TITLE			
USB-C: PROJECT SUPPORT			
	DRAWING NUMBER	051-09344	SIZE
	REVISION	4.0.1	D
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE	
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		162 OF 801	
II NOT TO REPRODUCE OR COPY IT		SHEET	
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		74 OF 121	
IV ALL RIGHTS RESERVED			

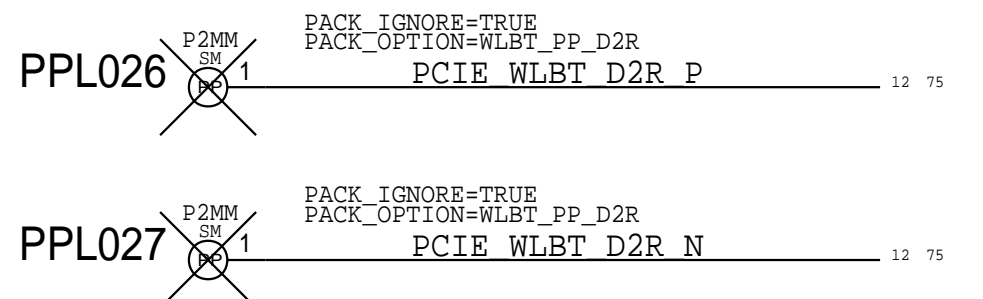
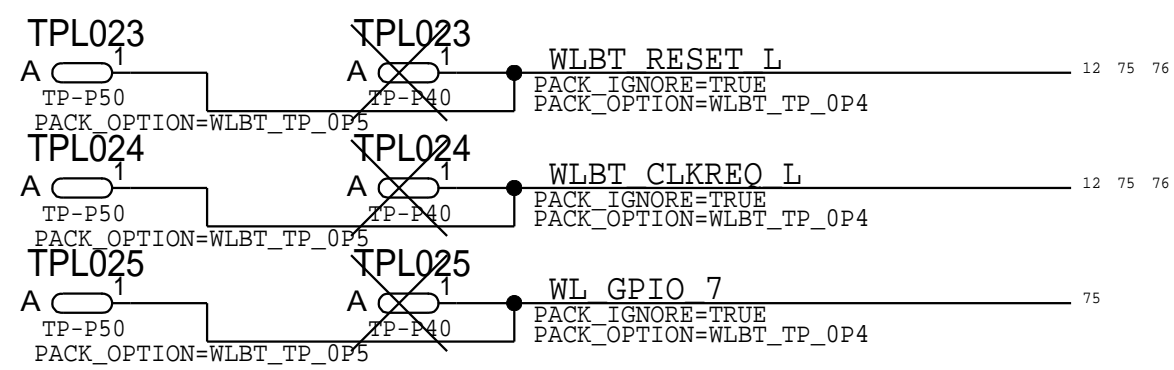
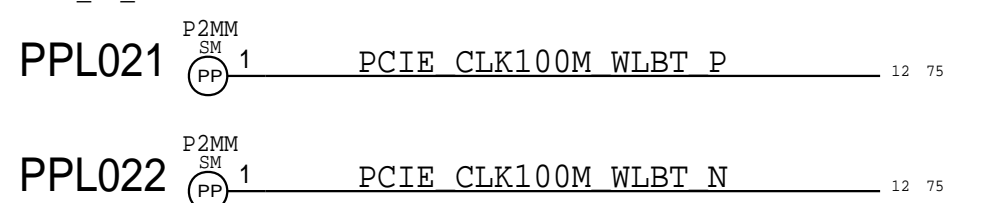
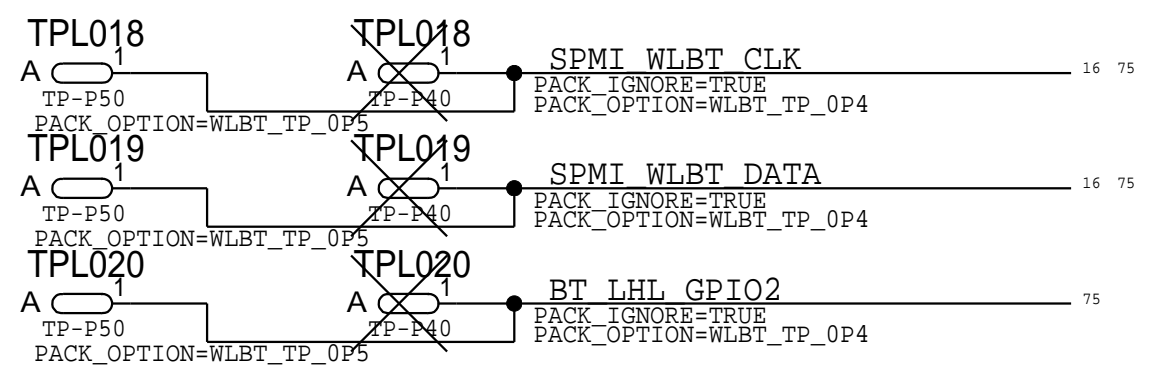
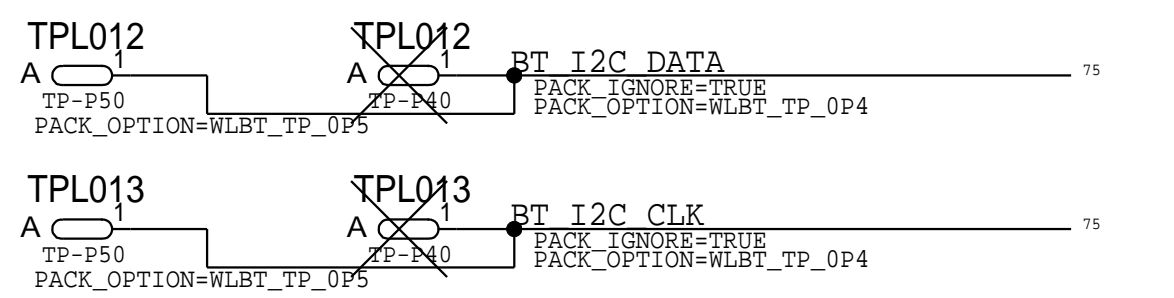
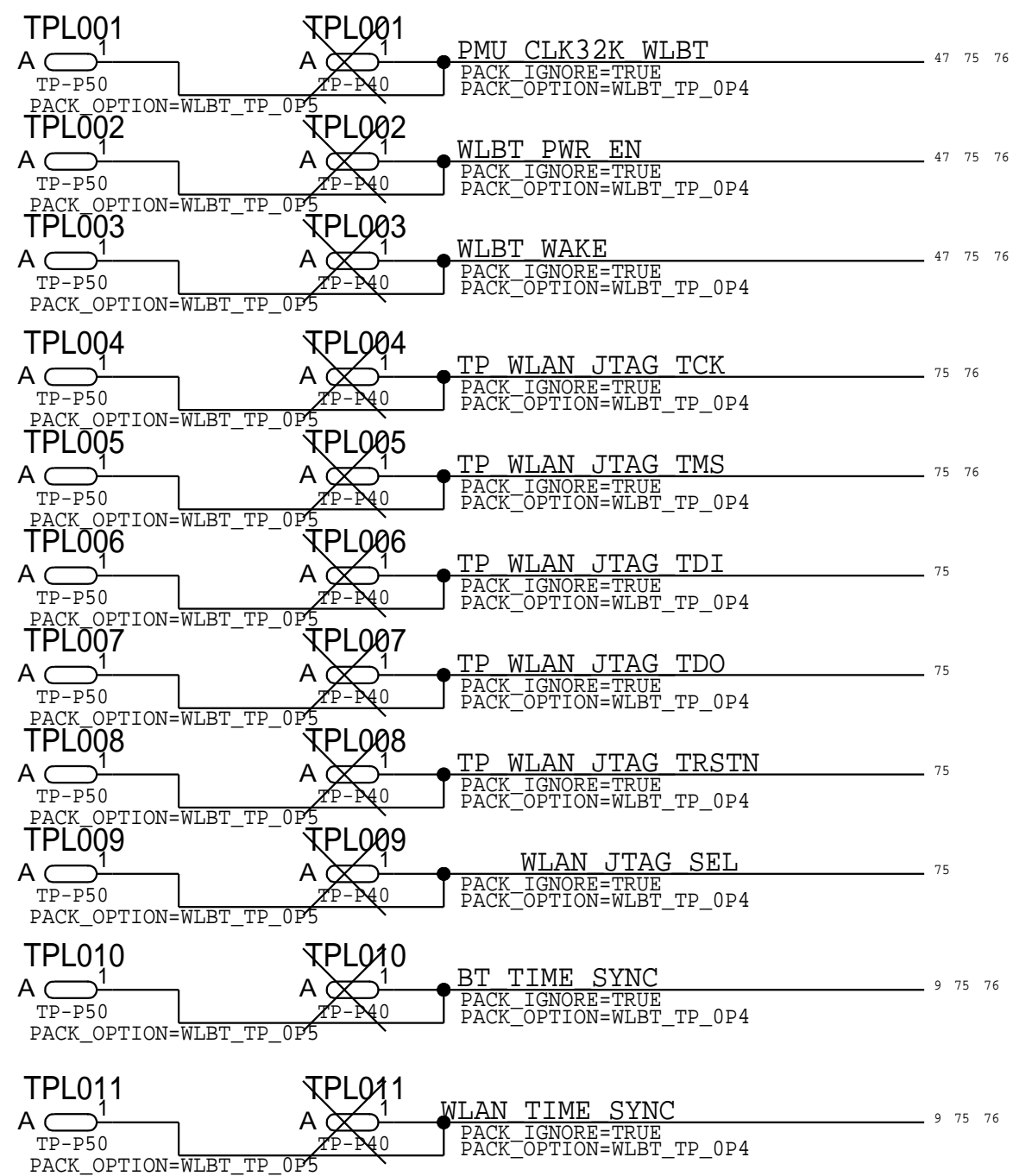
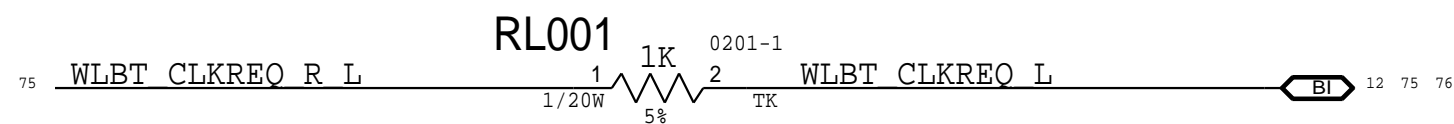
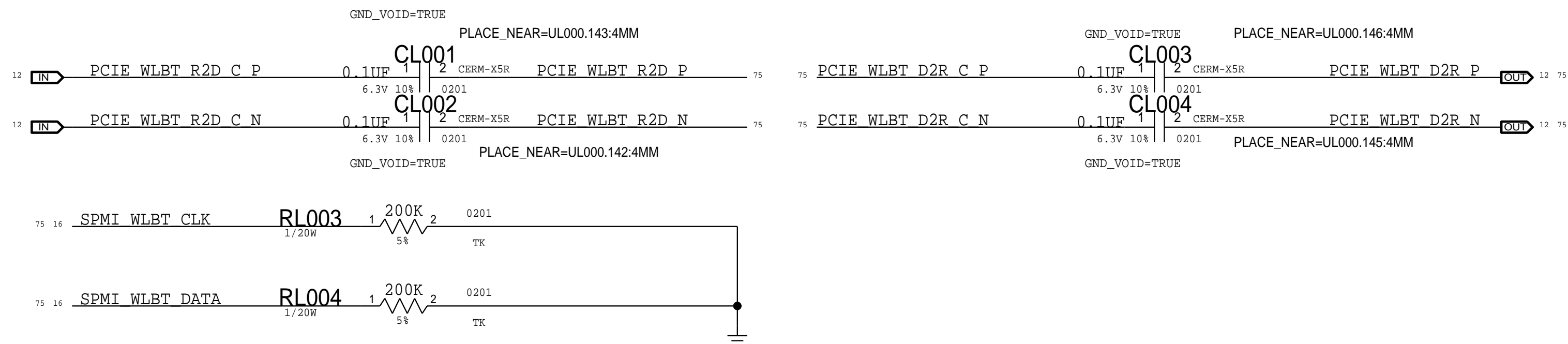
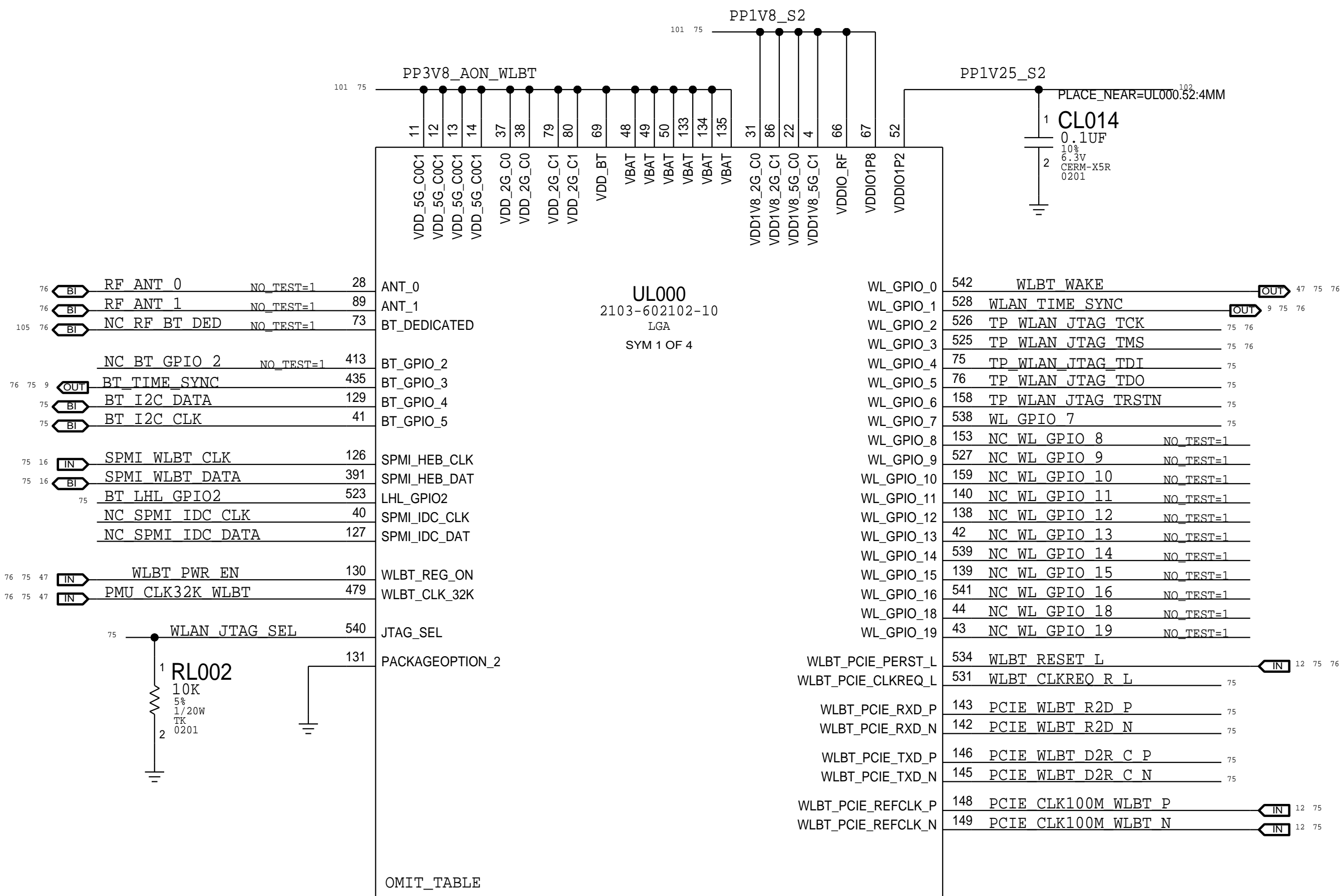



FOR SYSTEM INTEGRATION INFORMATION OF WILLAMETTE REFER TO  
RDAR://PROBLEM/72432057



## WLMT ALT BOM TABLE:

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S01206	339S01093	ANY	UL000	AMKOR



PAGE TITLE		WIFI/BT: MODULE	
 Apple Inc.	DRAWING NUMBER	051-09344	SIZE D
	REVISION	4.0.1	
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR PUBLISH IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE	200 OF 801
		SHEET	75 OF 121



# WILLAMETTE WIFI/BT MODULE GND

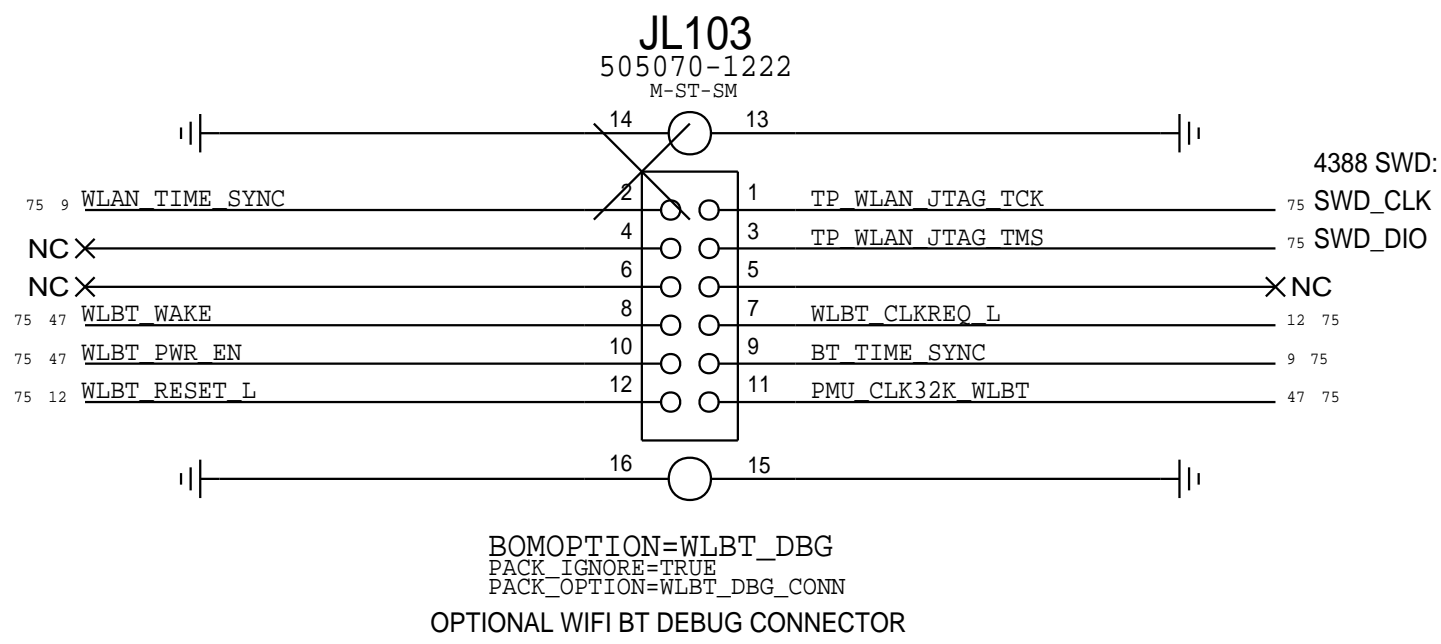
# ANTENNA CONNECTORS


2G\_C0  
5G\_C0  
BT\_C0

2G\_C1  
5G\_C1  
BT\_C1

BT\_C1\_DED

# WLBT DEBUG CONNECTOR



PAGE TITLE <b>WIFI/BT: ANTENNA and GND</b>		
 Apple Inc.	DRAWING NUMBER 051-09344	SIZE D
	REVISION 4.0.1	BRANCH
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART I ALL RIGHTS RESERVED	PAGE 201 OF 801	
	SHEET 76 OF 121	



A



**B**



©



**D**



II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	SHEET <span style="font-size: 1.5em;">77 OF 121</span>
--	---



A

**B**

©

		UN100	
		MK2-H1.3MM	
		BGA	
		SYM 3 OF 4	
		OMIT_TABLE	
		998-24627	
NC	UN100_C5	RFU_2	NC
NC	UN100_C6	RFU_2	RFU_2
NC	UN100_C7	RFU_2	RFU_2
NC	UN100_C8	RFU_2	RFU_2
NC	UN100_C9	RFU_2	RFU_2
NC	UN100_D4	RFU_2	RFU_2
NC	UN100_D5	RFU_2	RFU_2
NC	UN100_D6	RFU_2	RFU_2
NC	UN100_D7	RFU_2	RFU_2
NC	UN100_D8	RFU_2	RFU_2
NC	UN100_D9	RFU_2	RFU_2
NC	UN100_D10	RFU_2	RFU_2
NC	UN100_D11	RFU_2	RFU_2
NC	UN100_D12	RFU_2	RFU_2

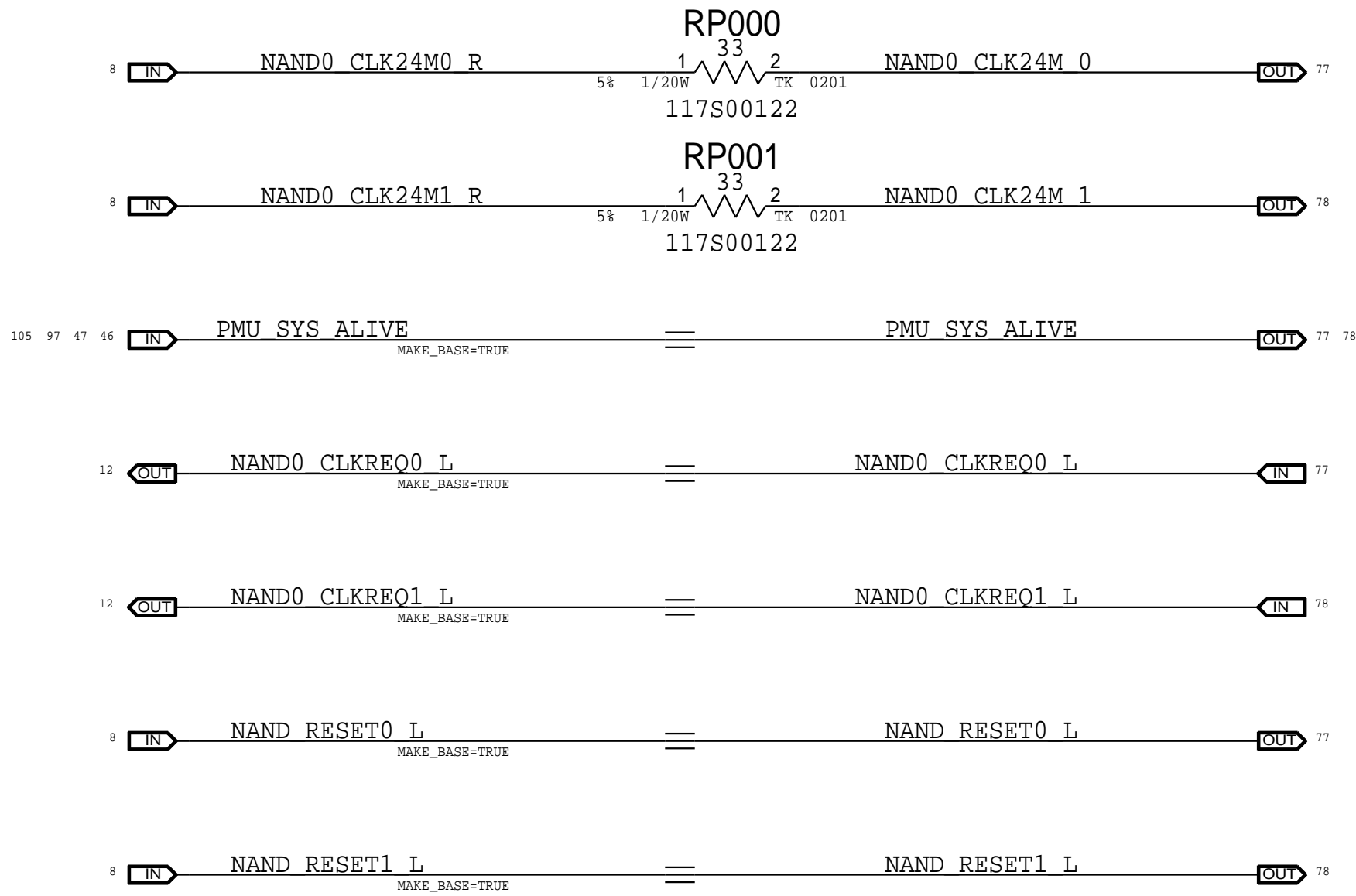
[illegible]

**D**

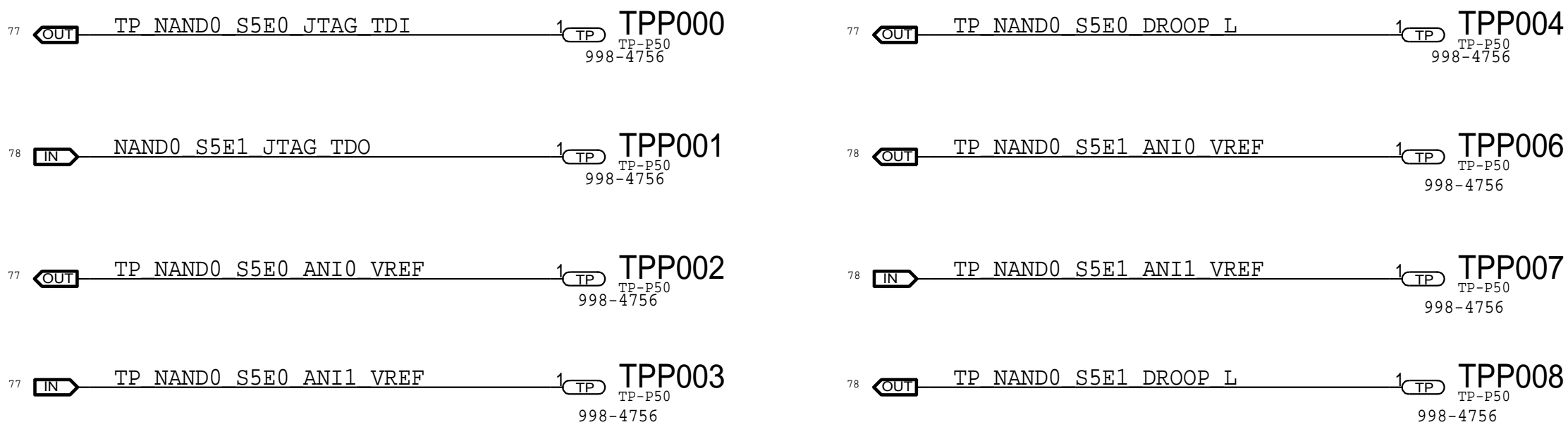




A SSD Termination Resistors



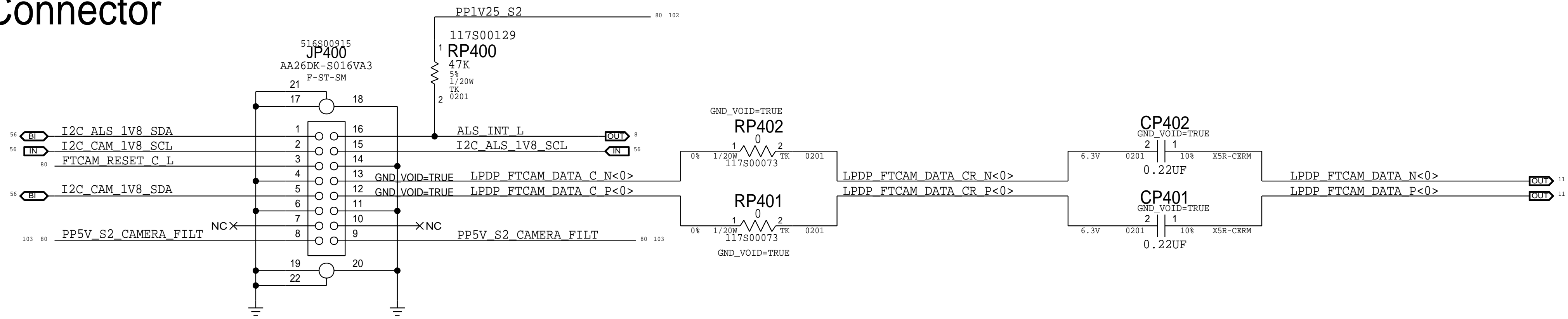
B S5E Test Points



PAGE TITLE		
STORAGE: SSD Support		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
NOTICE OF PROPRIETARY PROPERTY:		PAGE
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		230 OF 801
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		SHEET
II NOT TO REPRODUCE OR COPY IT		79 OF 121
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		

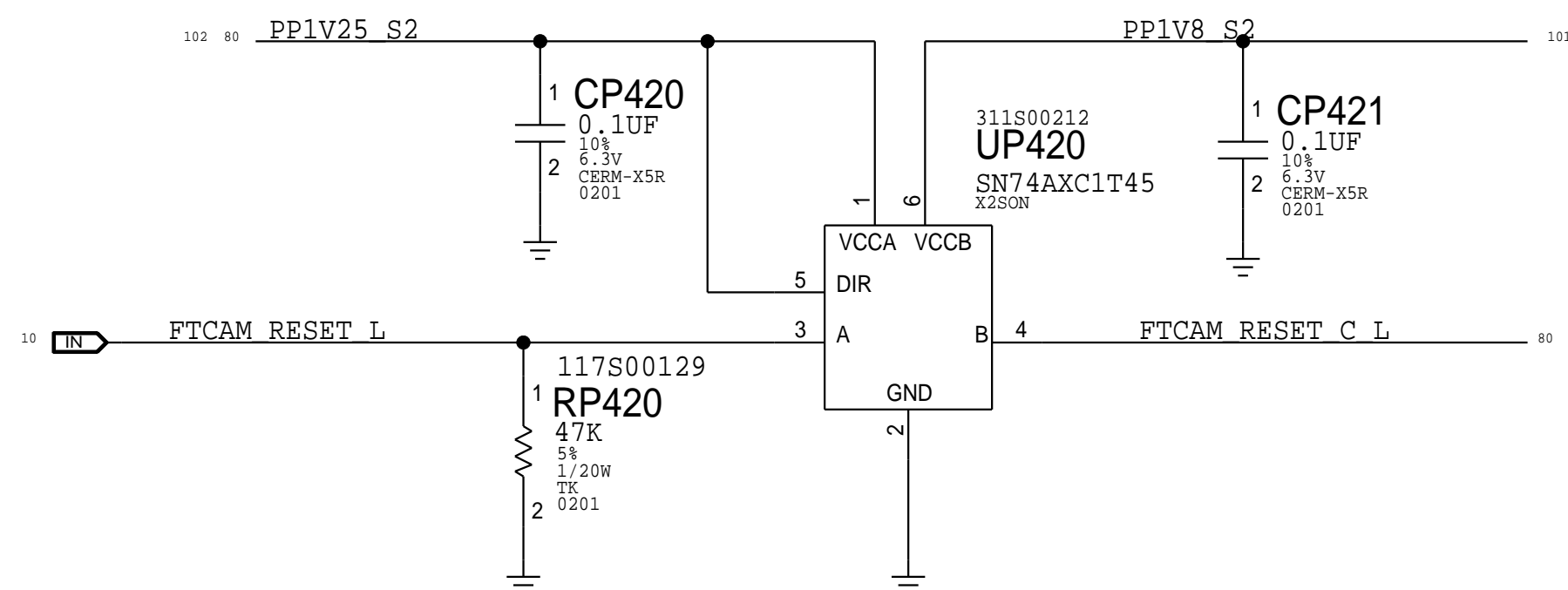
BOM\_COST\_GROUP=SSD

# A Camera Flex Connector

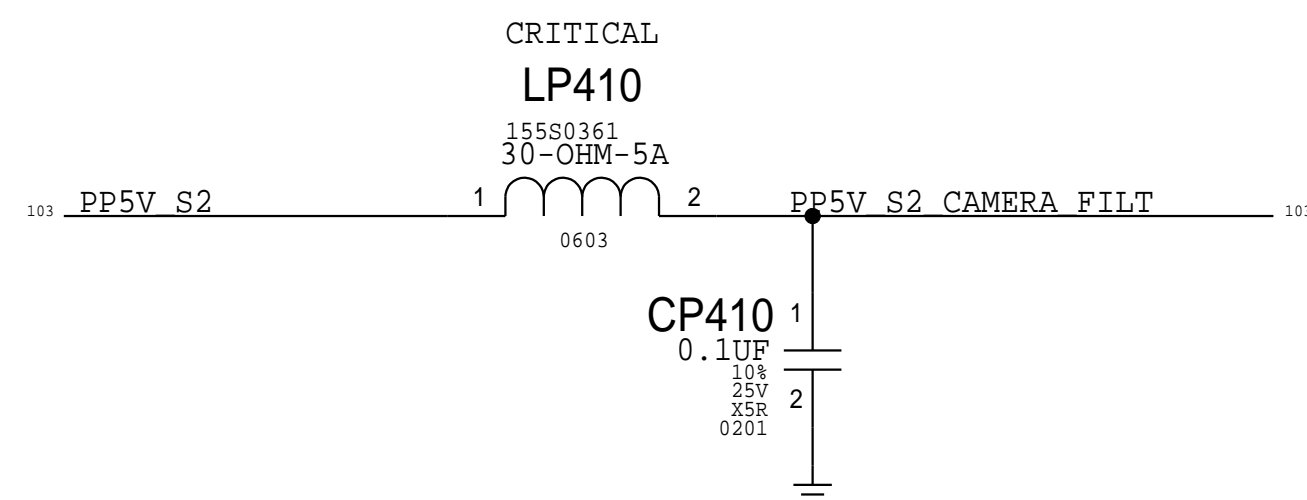


CAM TAIL FLEX CONNECTOR APN 516S00916

# B Camera Reset Level Shifter



# C Camera Power Filter(s)

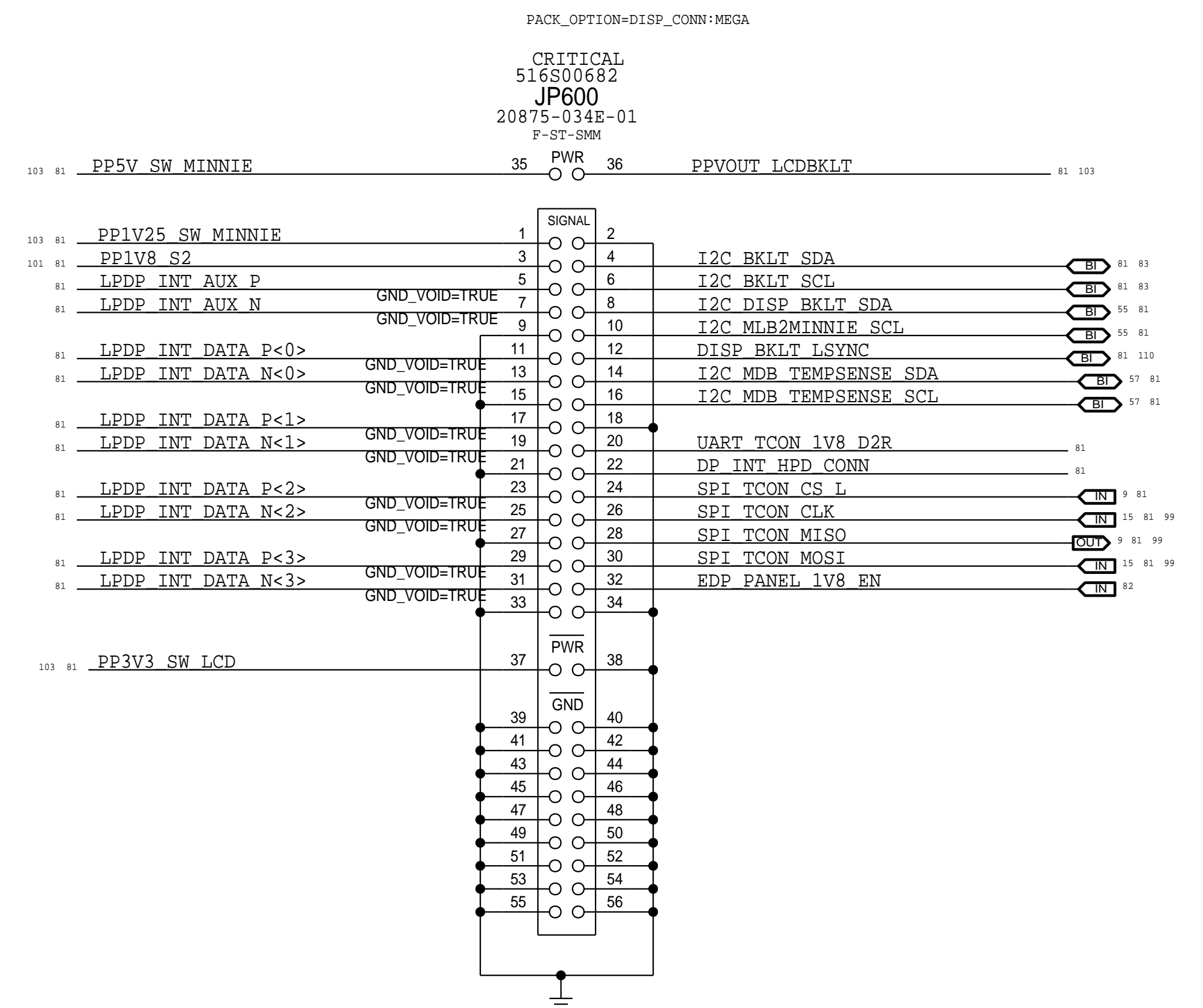
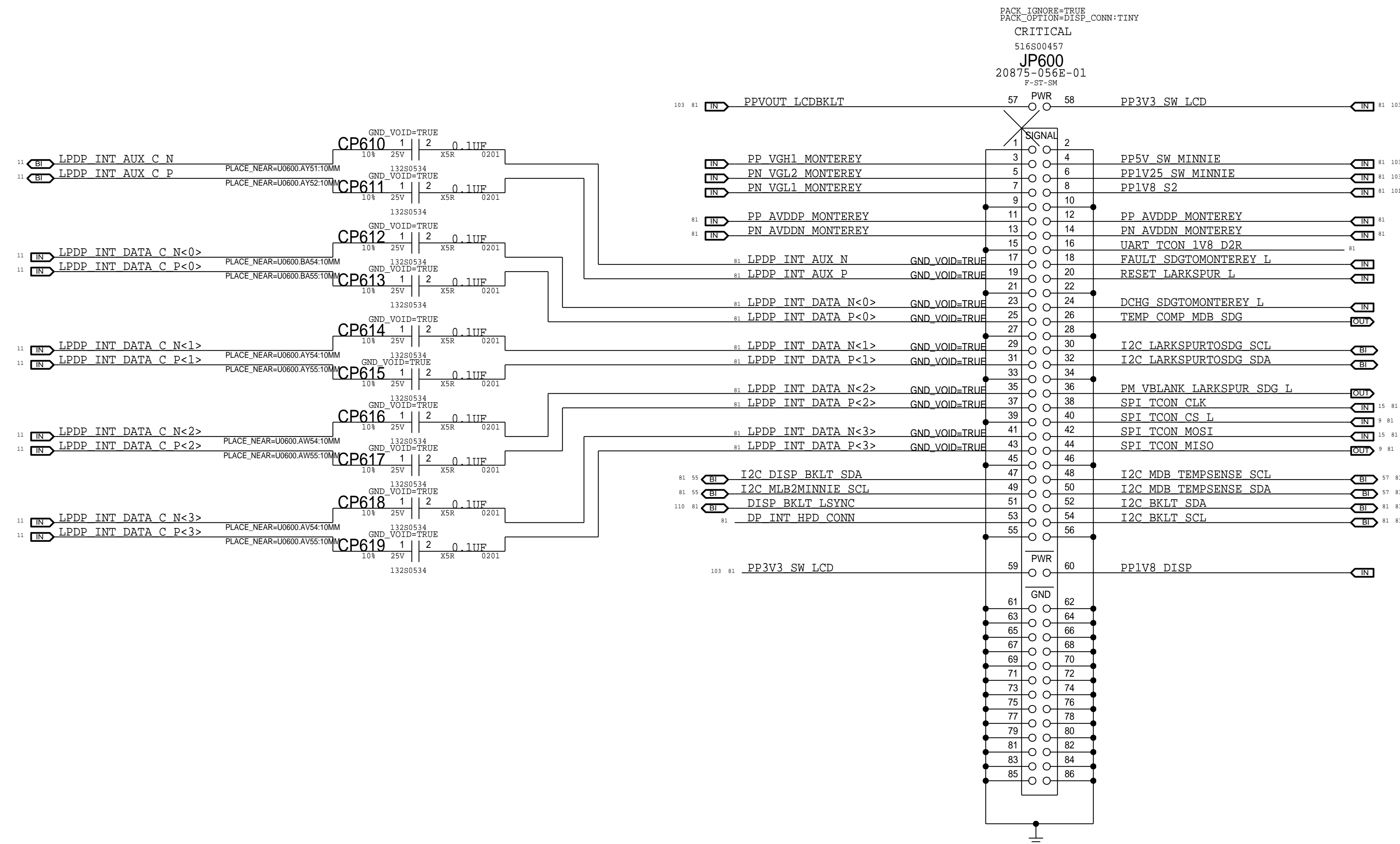


BOM\_COST\_GROUP=CAMERA

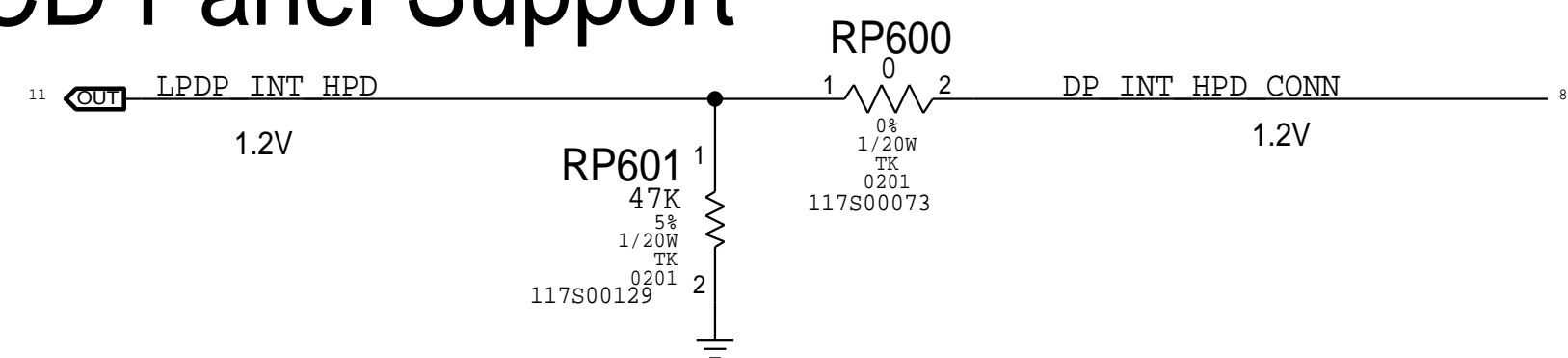
PAGE TITLE		
CAMERA: FLEX CONNECTOR		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
II NOT TO REPRODUCE OR COPY IT		
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		
PAGE		234 OF 801
SHEET		80 OF 121



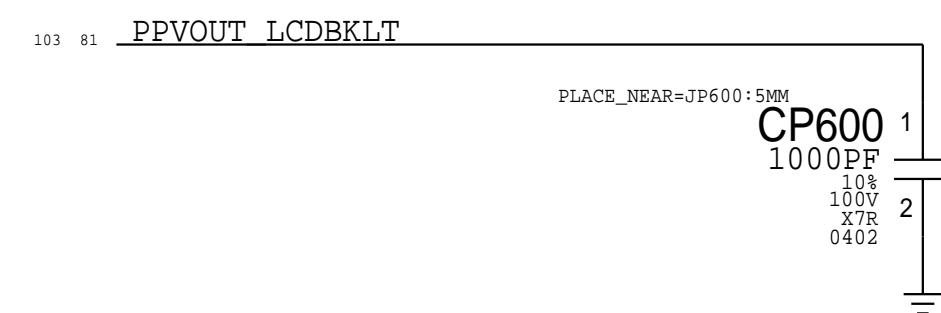
## ① LCD Panel Interface



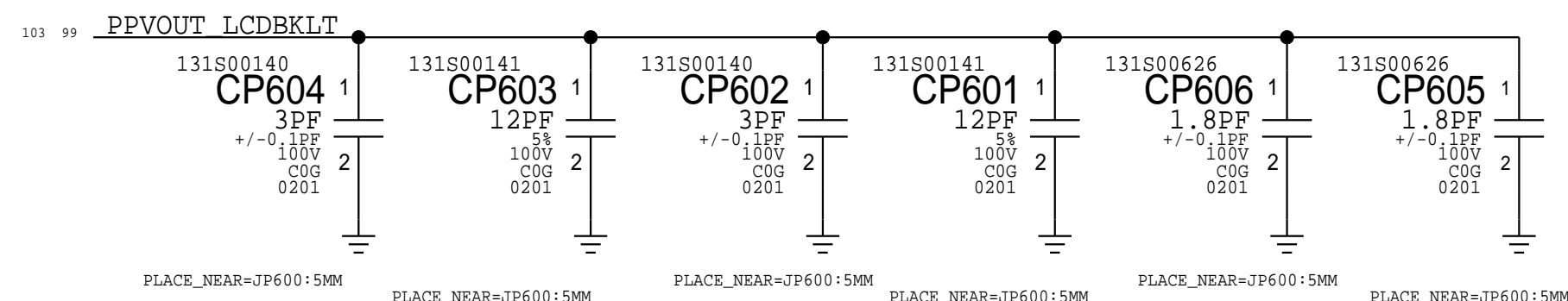
## ⑧ LCD Panel Support



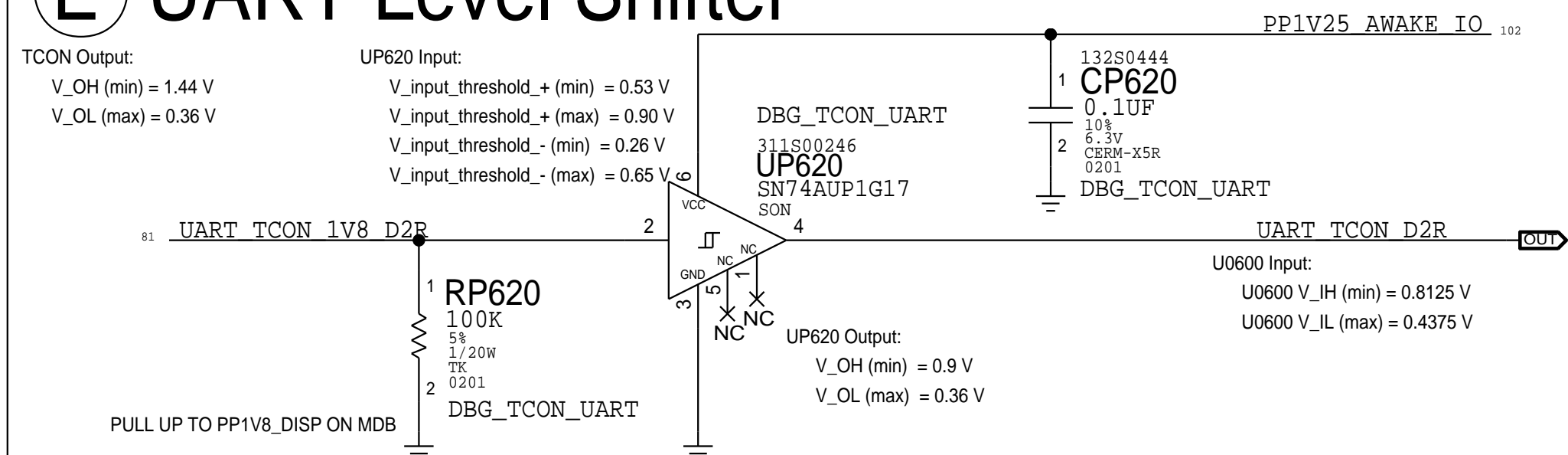
## ④ LCD Panel Bypass




## © LCD Panel Desense



## ⑤ UART Level Shifter



PAGE TITLE			
eDP Display Connector			
 Apple Inc.	DRAWING NUMBER 051-09344		SIZE D
	REVISION 4.0.1		
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE 236 OF 801	
		SHEET 81 OF 121	

\*\*\* OK2INTEGRATE \*\*\*

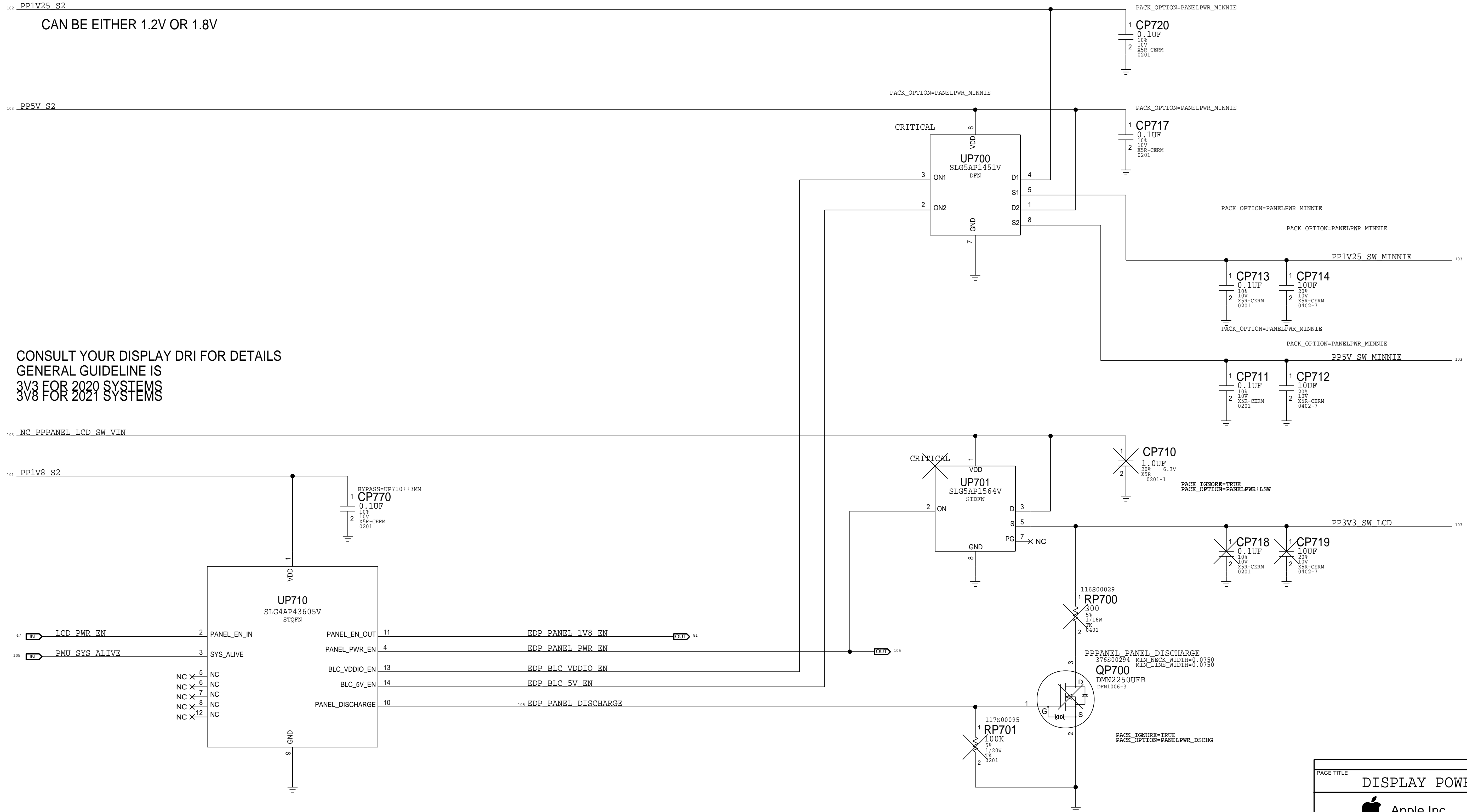
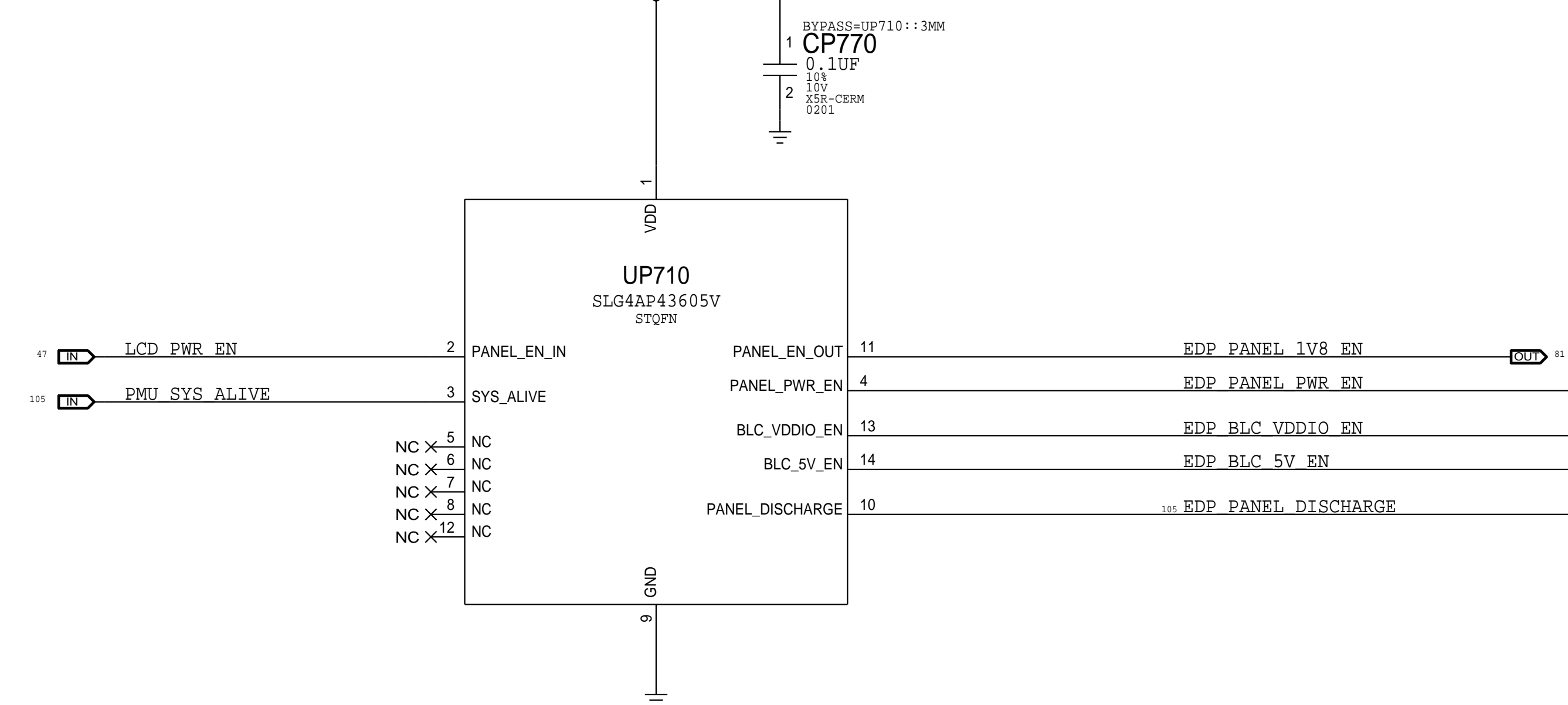
CAN BE EITHER 1.2V OR 1.8V


103 PP5V S2

CONSULT YOUR DISPLAY DRI FOR DETAILS  
GENERAL GUIDELINE IS  
3V3 FOR 2020 SYSTEMS  
3V8 FOR 2021 SYSTEMS

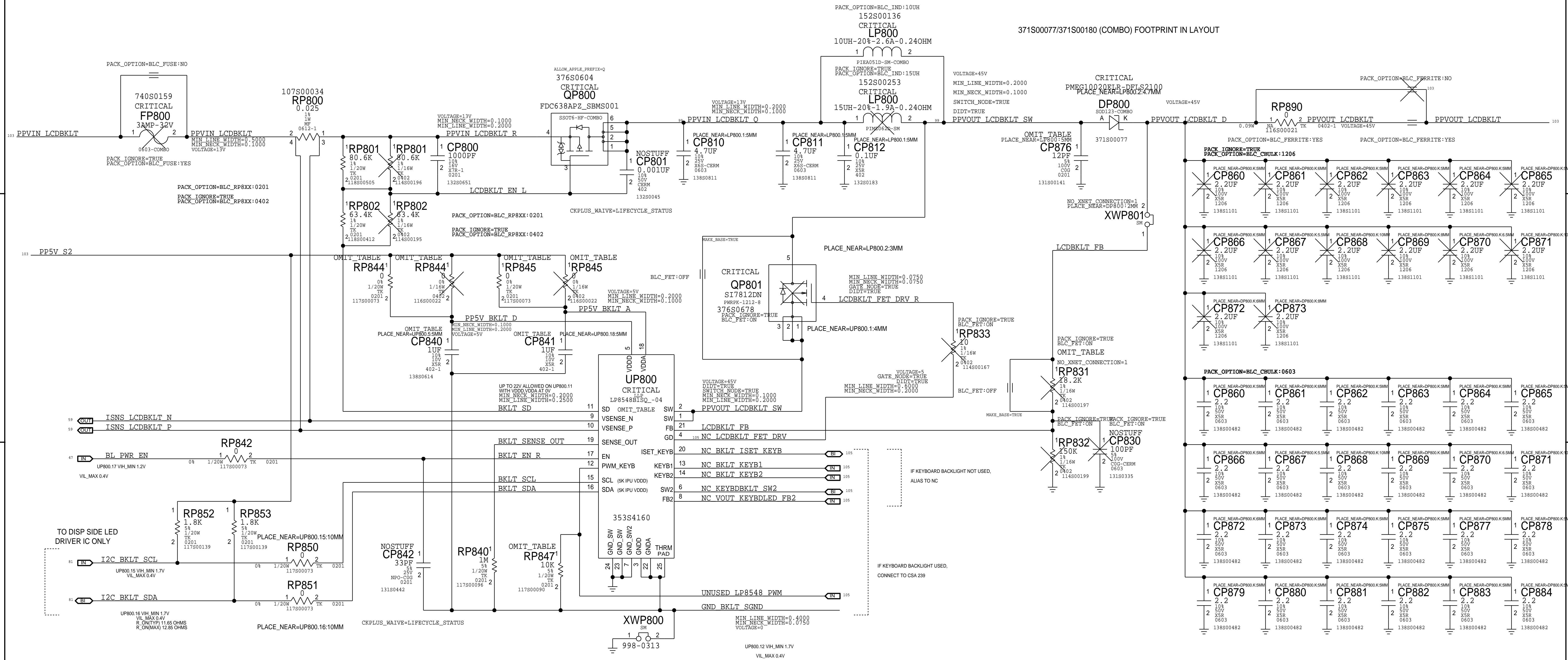
103 NC PPPANEL LCD SW VIN

101 PP1V8 S2



PAGE TITLE			
DISPLAY POWER SEQUENCER			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  II NOT TO REPRODUCE OR COPY IT  III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		4.0.1	
		BRANCH	
		PAGE	237 OF 801
		SHEET	82 OF 121






### BACKLIGHT BOOST VOLTAGE LEVEL BASED ON NUMBER OF LEDS PER STRING

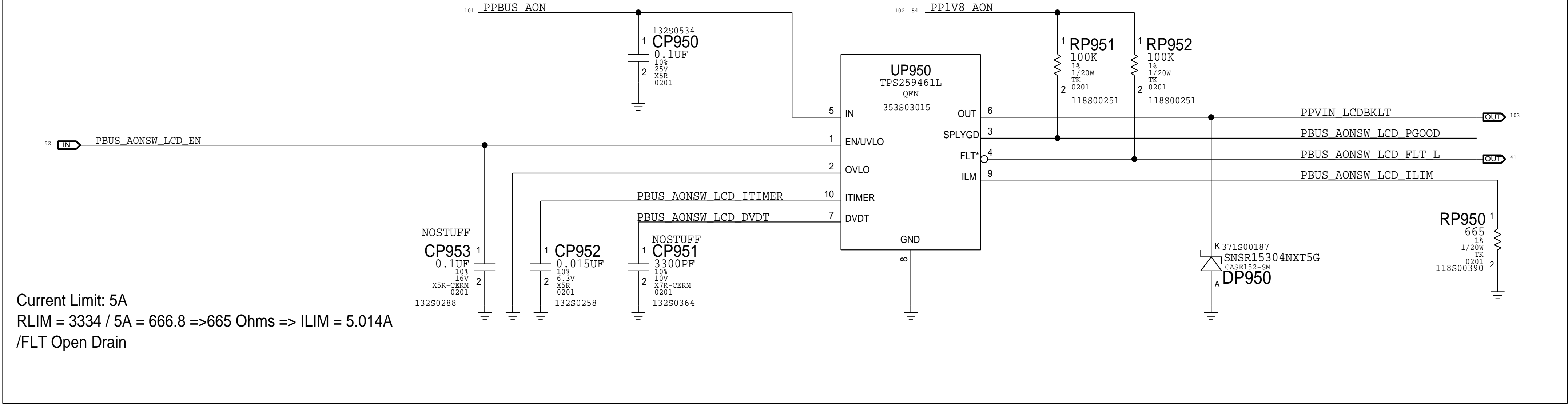
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
114800197	1	R8S,TX,18.2KOHM,1%,1/16W,0402	RP831		BLC_LED_PER_STRING:16
114800198	1	R8S,TX,28.7KOHM,1%,1/16W,0402	RP831		BLC_LED_PER_STRING:18

BOM OPTION FOR BLC 5V RC FILTER, BASED ON PER PROJECT 5V RIPPLE CHARACTERIZATION AS COMPARED TO BLC TEAM'S 50 mV RIPPLE SPEC FOR VDDD & VDDA. SEE <RDAR: /50682542>

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117500073	2	RES,TX,0 OHM,1A MAX,1/20W,0201	RP844,RP845		BLC_5V_SERIES:0_OHM_0201
118800311	2	RES,TX,10 OHM,1A,1/20W,0201	RP844,RP845		BLC_5V_SERIES:10_OHM_0201
116800022	2	RES,TX,0 OHM,2A MAX,1/16W,0402	RP844,RP845		BLC_5V_SERIES:0_OHM
114800167	2	RES,TX,10 OHM,1A,1/16W,0402	RP844,RP845		BLC_5V_SERIES:10_OHM
138S0614	2	CAP,CER,X5R,1UF,108,10V,0402	CP840,CP841		BLC_5V_CAP:1_1UF
138S00070	2	CAP,CER,X5R,4.7UF,20%,25V,0402	CP840,CP841		BLC_5V_CAP:4P7_UF

PAGE TITLE			
BEN: CONTROLLER			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
NOTICE OF PROPRIETARY PROPERTY:	4.0.1		
	BRANCH		
	PAGE		
	238 OF 801		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	SHEET		
	83 OF 121		

A PPBUS\_AONSW\_LCD Load Switch & e-Fuse



PAGE TITLE		
BEN: PBUS E-Fuse		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		239 OF 801
II NOT TO REPRODUCE OR COPY IT		SHEET
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		84 OF 121
IV ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=PLATFORM POWER

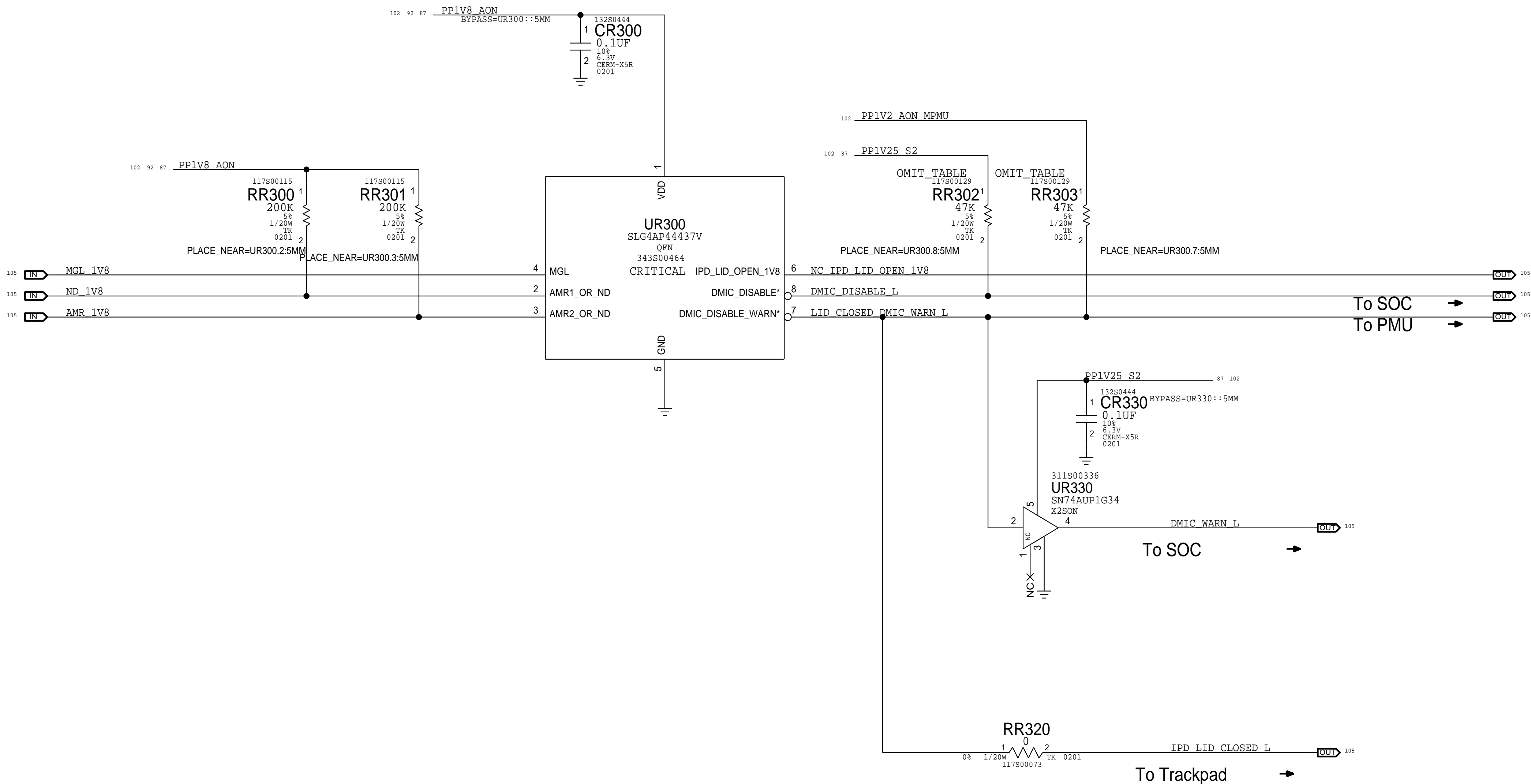








A Secure Disable SAK: AMR+LAS

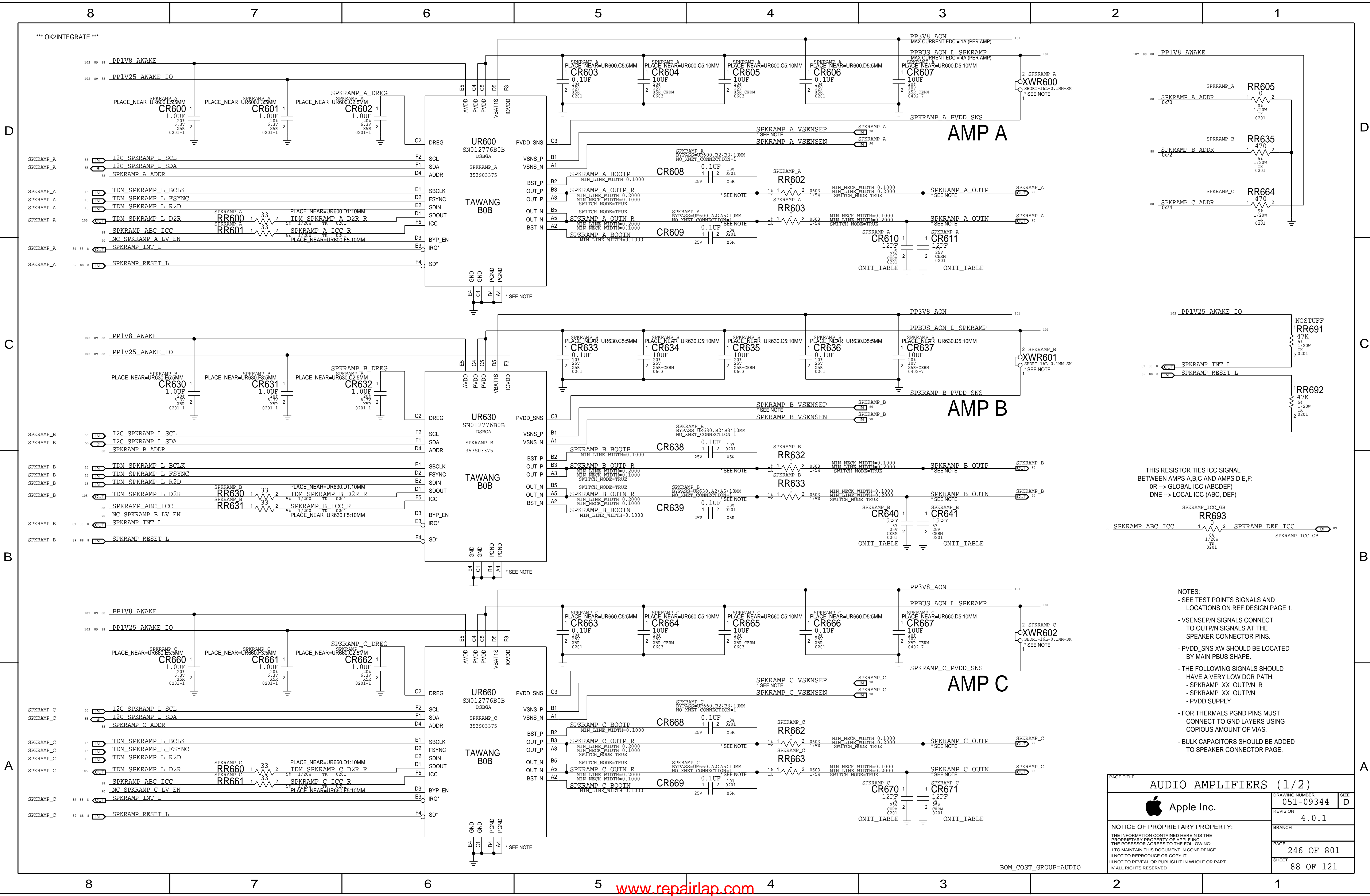


B Secure Disable BOM Options

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S00129	1	RES,TK,47K OHM,5%,1/20W,0201	RR302,RR303	CRITICAL	REFSECDIS_RR302:47K
118S00521	1	RES,TK,30K OHM,1%,1/20W,0201	RR302,RR303	CRITICAL	REFSECDIS_RR302:30K

PAGE TITLE			SECDIS: SAK, AMR+LAS		
		DRAWING NUMBER		SIZE	
		051-09344		D	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		REVISION		4.0.1	
		BRANCH			
		PAGE		243 OF 801	
		SHEET		87 OF 121	

BOM\_COST\_GROUP=SOC

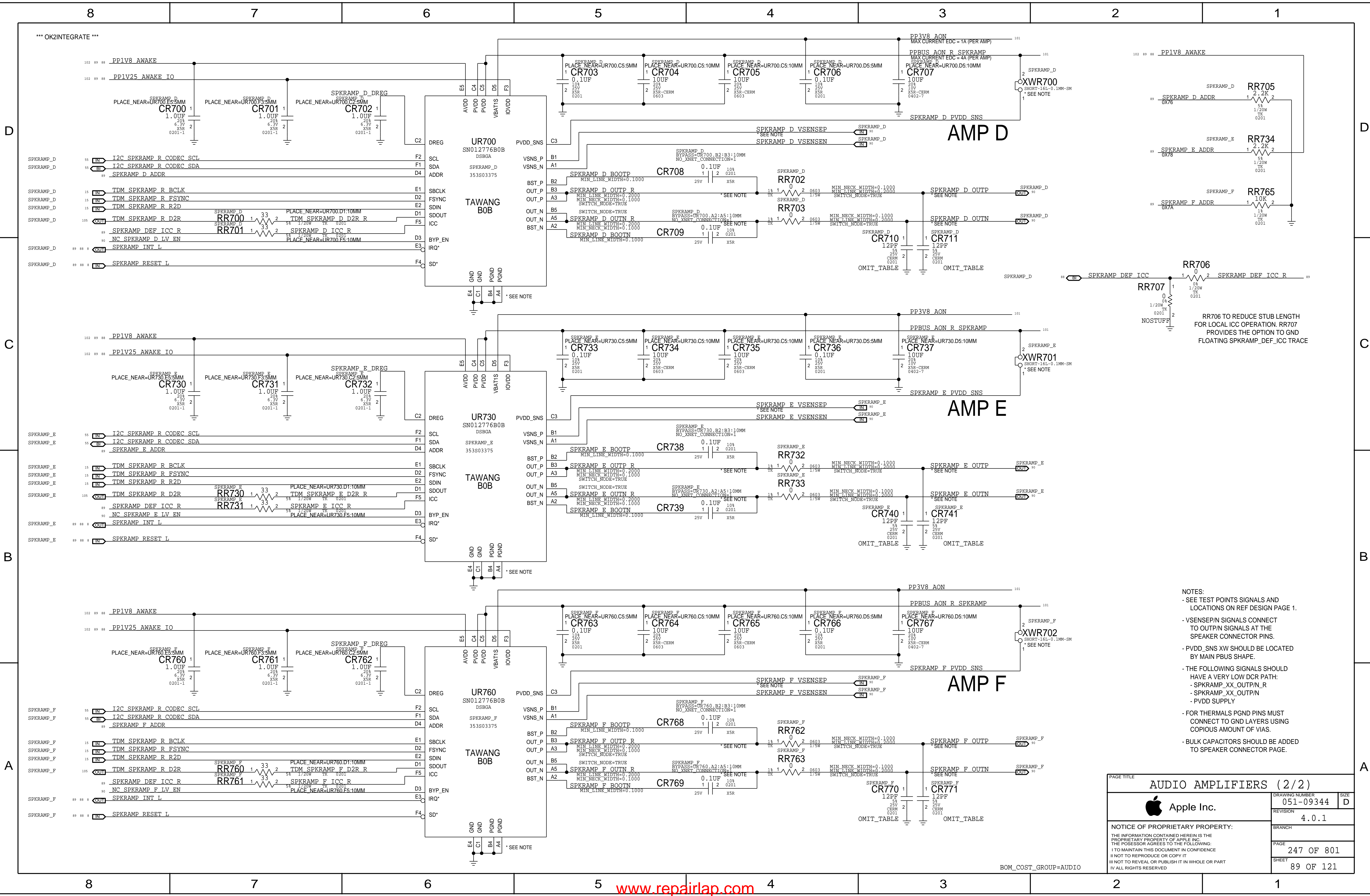


NOTES:

- SEE TEST POINTS SIGNALS AND LOCATIONS ON REF DESIGN PAGE 1.
- VSENSEP/N SIGNALS CONNECT TO OUTP/N SIGNALS AT THE SPEAKER CONNECTOR PINS.
- PVDD\_SNS XW SHOULD BE LOCATED BY MAIN PBUS SHAPE.
- THE FOLLOWING SIGNALS SHOULD HAVE A VERY LOW DCR PATH:
  - SPKRAMP\_XX\_OUTP/N
  - SPKRAMP\_XX\_OUTP/N
  - PVDD SUPPLY
- FOR THERMALS PGND PINS MUST CONNECT TO GND LAYERS USING COPIOUS AMOUNT OF VIAS.
- BULK CAPACITORS SHOULD BE ADDED TO SPEAKER CONNECTOR PAGE.

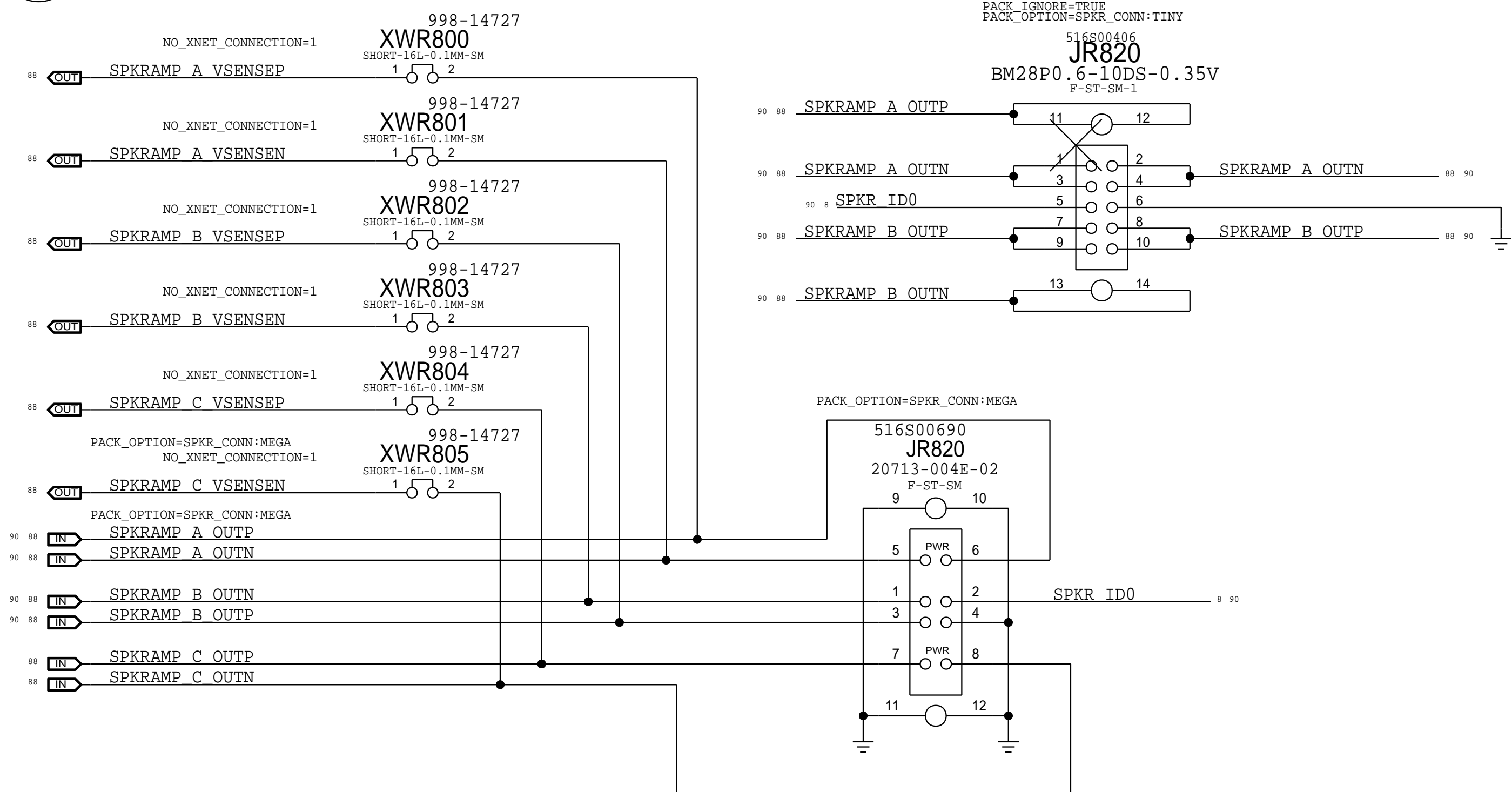
PAGE TITLE		
AUDIO AMPLIFIERS (1/2)		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
	PAGE	246 OF 801
NOTICE OF PROPRIETARY PROPERTY:		SHEET
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART I ALL RIGHTS RESERVED		88 OF 121



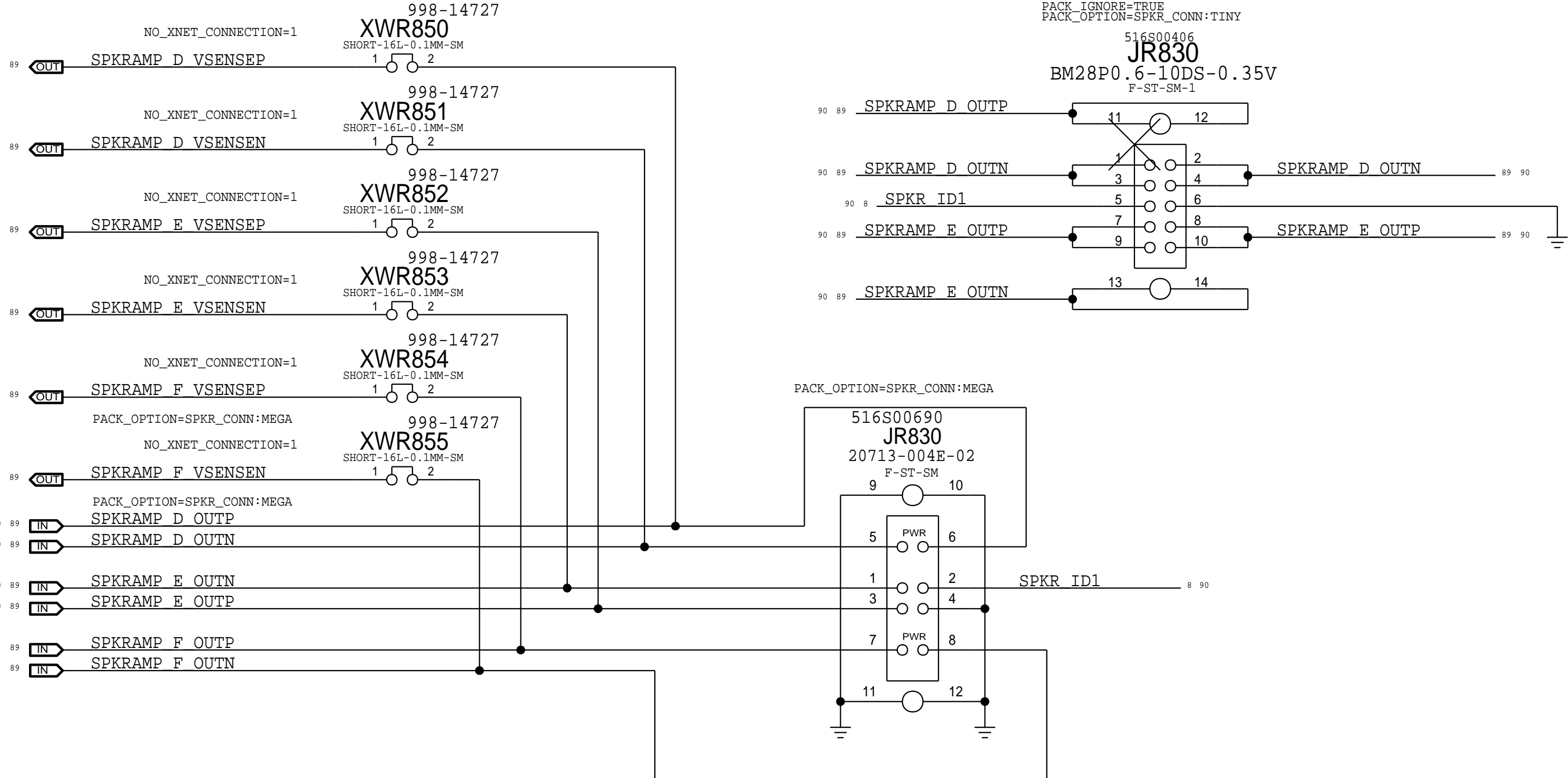




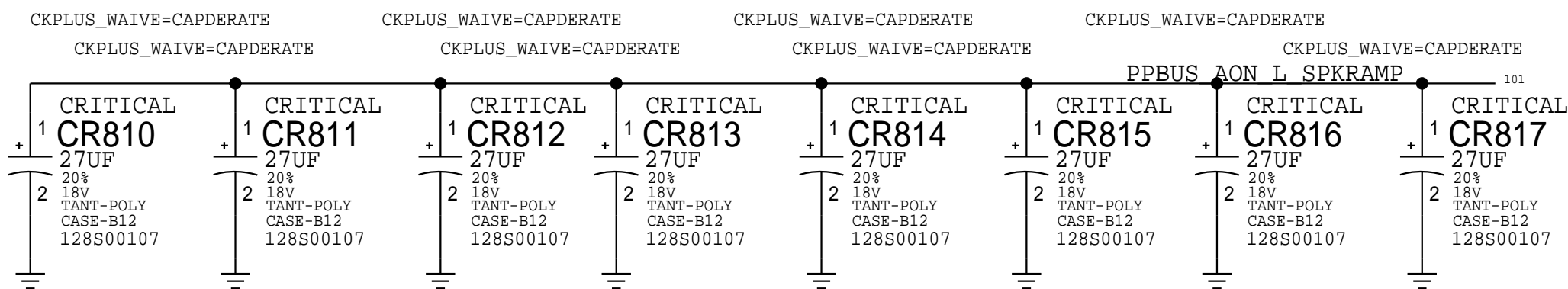
## A LEFT SPEAKER CONNECTOR



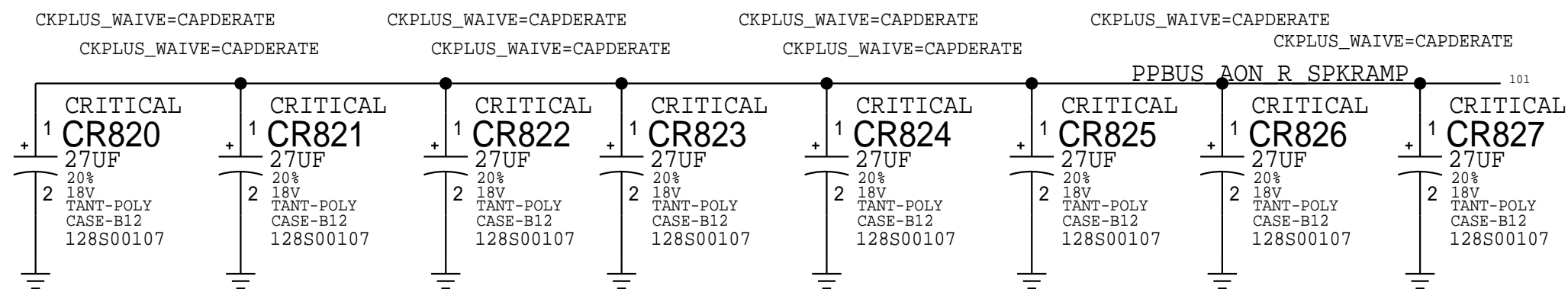
## B RIGHT SPEAKER CONNECTOR



## C LEFT SPEAKER AMP BULK CAP

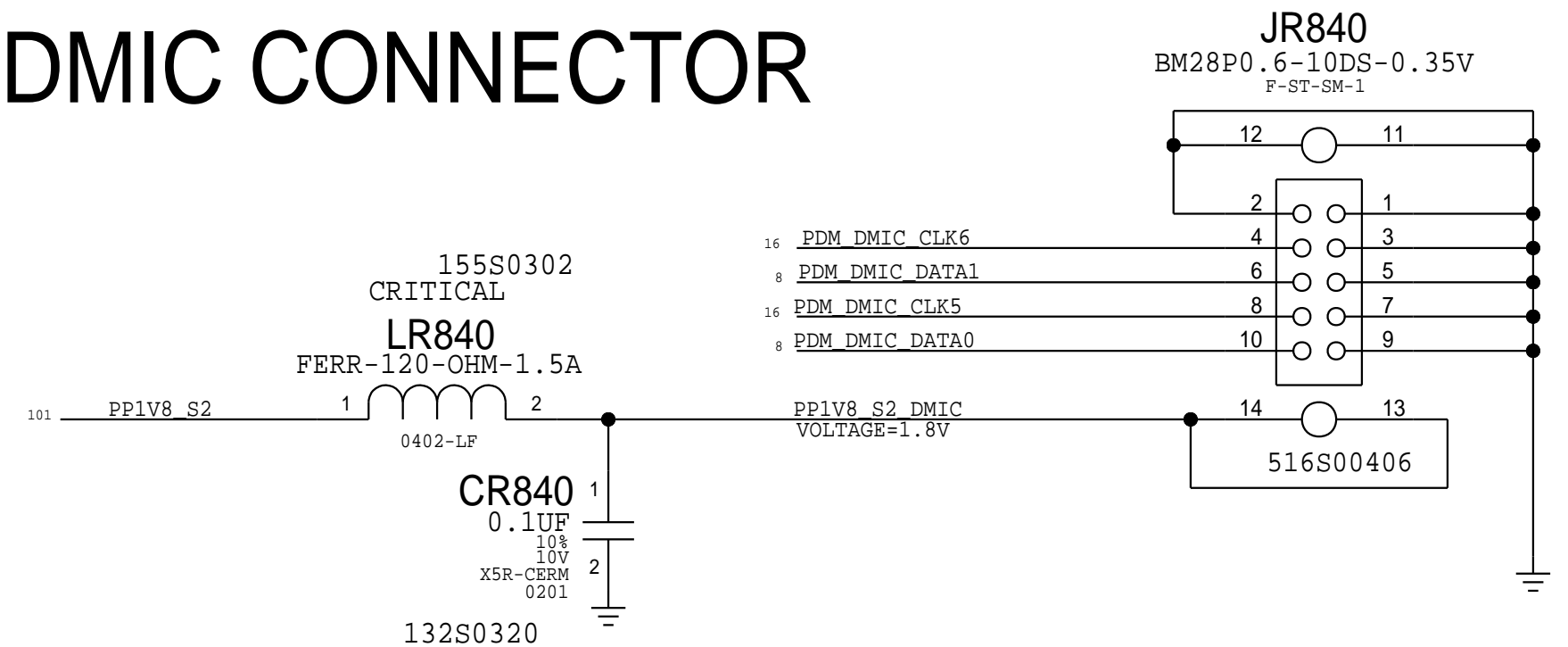


## D RIGHT SPEAKER AMP BULK CAP



## E Intentionally Blank

## F DMIC CONNECTOR



## G Unused TPs and MADIs

NC SPKRAMP A LV EN	NC SPKRAMP A LV EN
NC SPKRAMP B LV EN	NC SPKRAMP B LV EN
NC SPKRAMP C LV EN	NC SPKRAMP C LV EN
NC SPKRAMP D LV EN	NC SPKRAMP D LV EN
NC SPKRAMP E LV EN	NC SPKRAMP E LV EN
NC SPKRAMP F LV EN	NC SPKRAMP F LV EN

TP AOP LEAP MADi IN

TP AOP LEAP MADi OUT

TPR800

TPR801

## H Desense Cap Table

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR610,CR611	SPKRAMP_A_DESENSE
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR640,CR641	SPKRAMP_B_DESENSE
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR670,CR671	SPKRAMP_C_DESENSE
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR710,CR711	SPKRAMP_D_DESENSE
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR740,CR741	SPKRAMP_E_DESENSE
131S0852	1	CAP,CER,COG,12PF,5%,25V,0201	CR770,CR771	SPKRAMP_F_DESENSE

BOM\_COST\_GROUP=AUDIO

PAGE TITLE		
Audio Connectors		
Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART I ALL RIGHTS RESERVED	BRANCH	
	PAGE	248 OF 801
	SHEET	90 OF 121



## D



D

C

B

A


## B



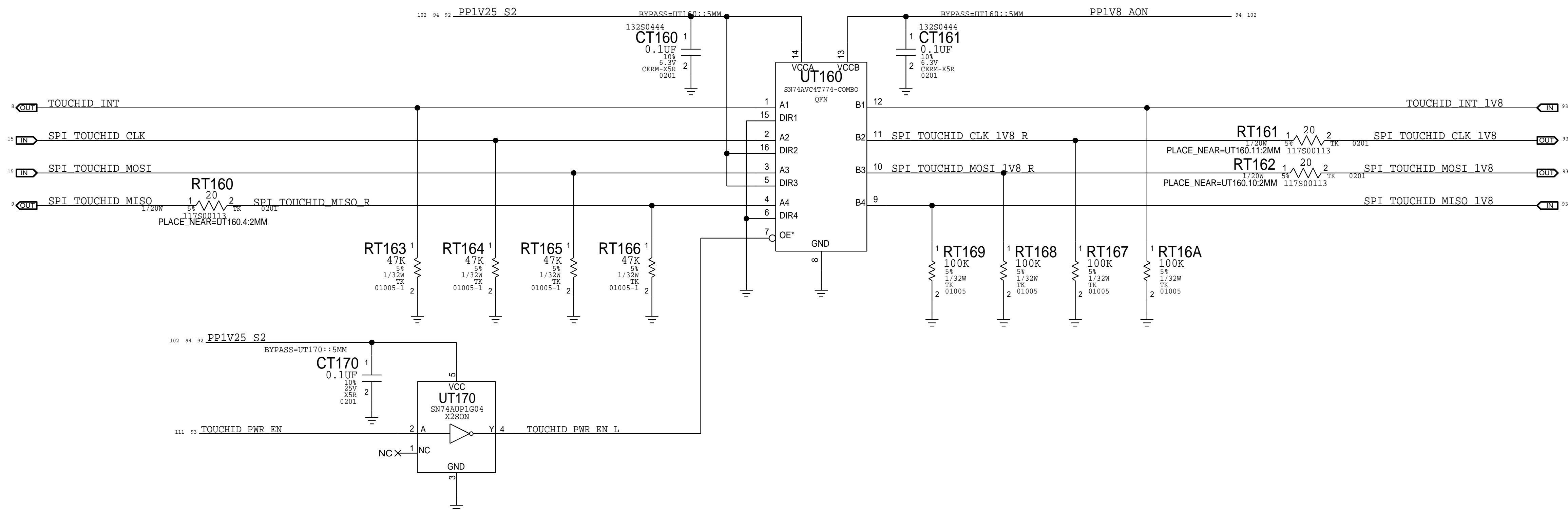
[www.repairlap.com](http://www.repairlap.com)

BOM COST GROUP=DISPLAY

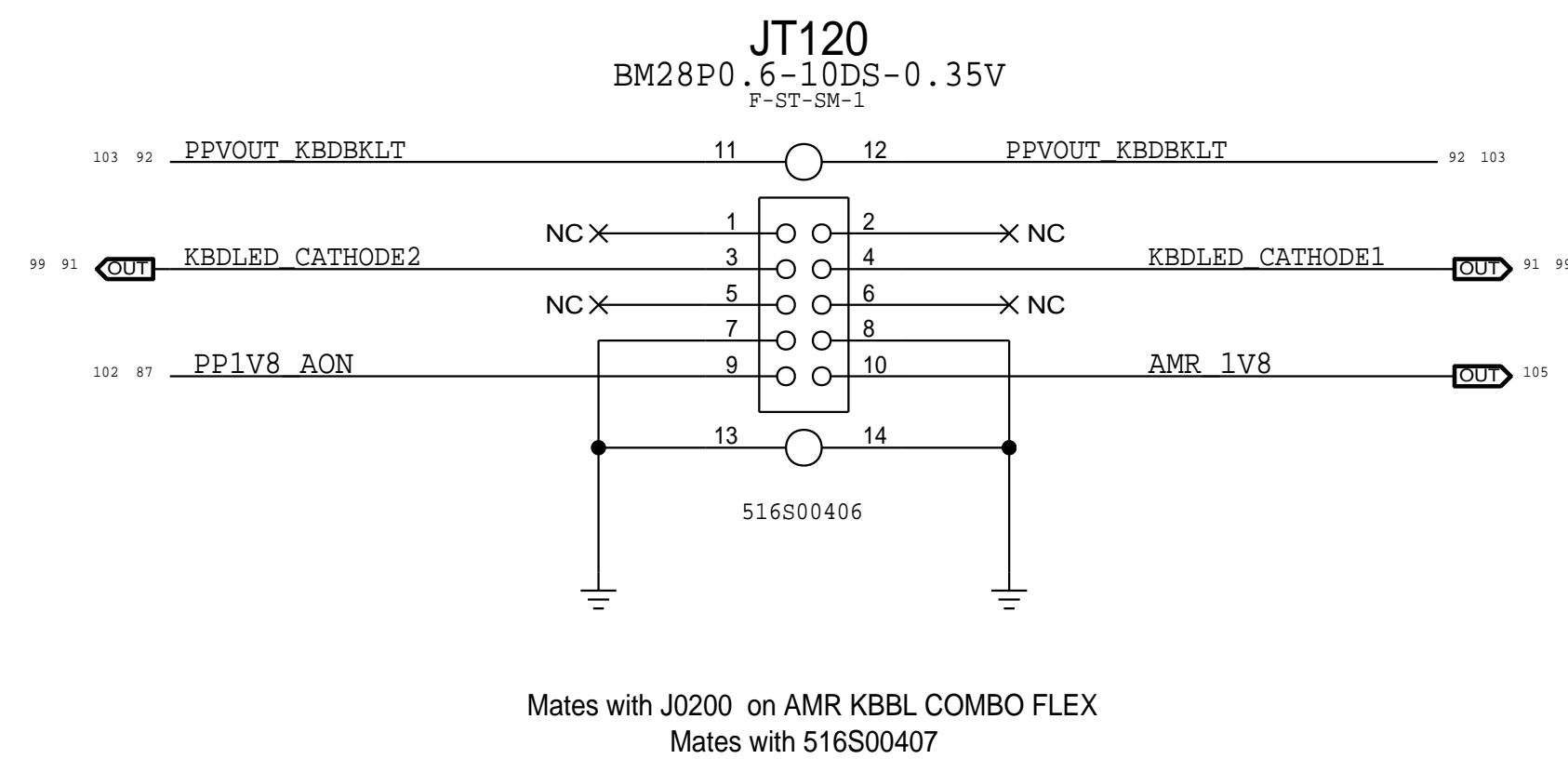
RDAR://106882113


PAGE TITLE		BLC: KEYBOARD BACKLOG	
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
REVISION		4.0.1	
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR PUBLISH IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE	
		250 OF 801	
		SHEET	
		91 OF 121	

## A TouchID SPI Bus Level Shifter



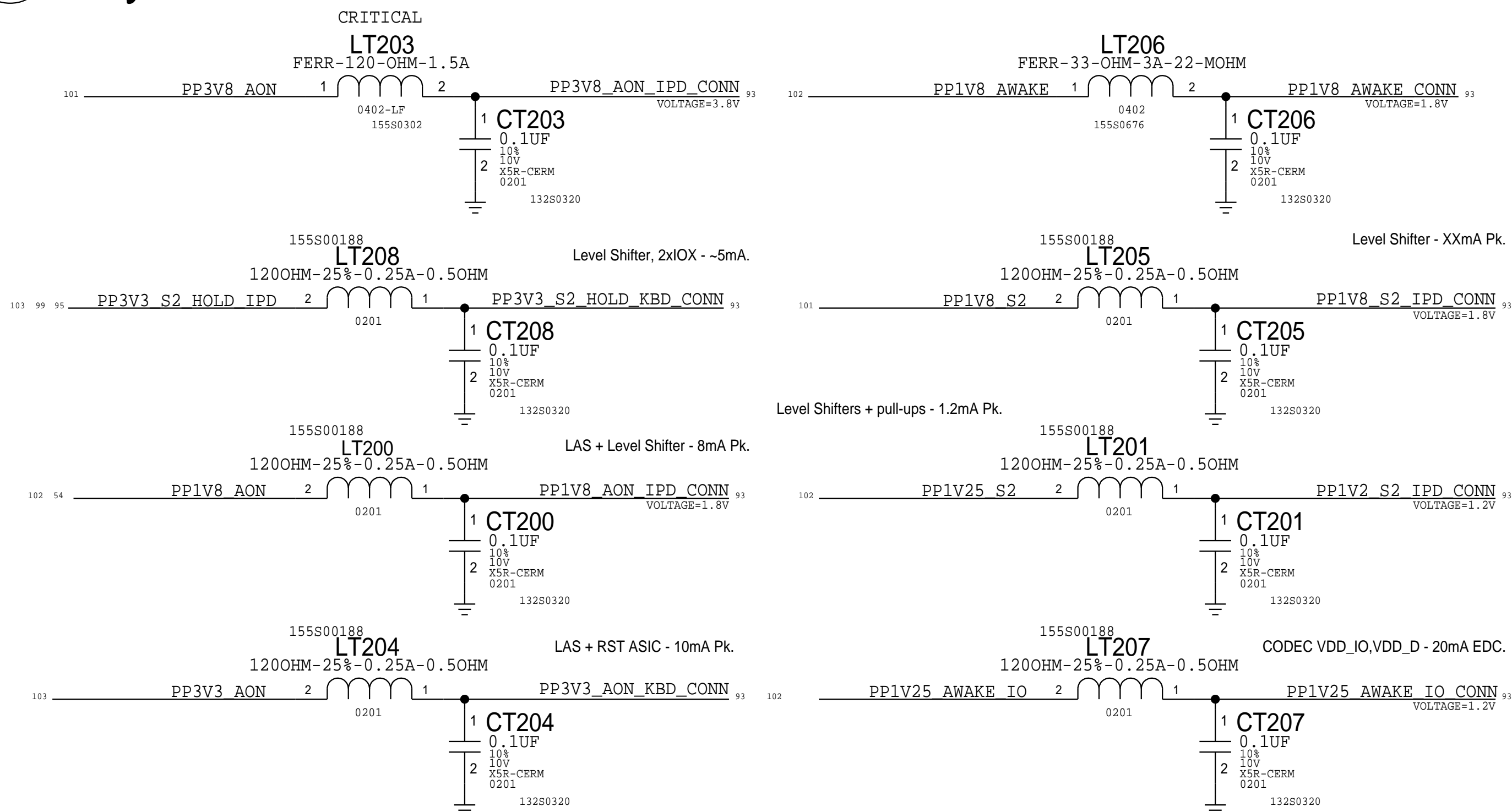
## B KBD BKLT Connector



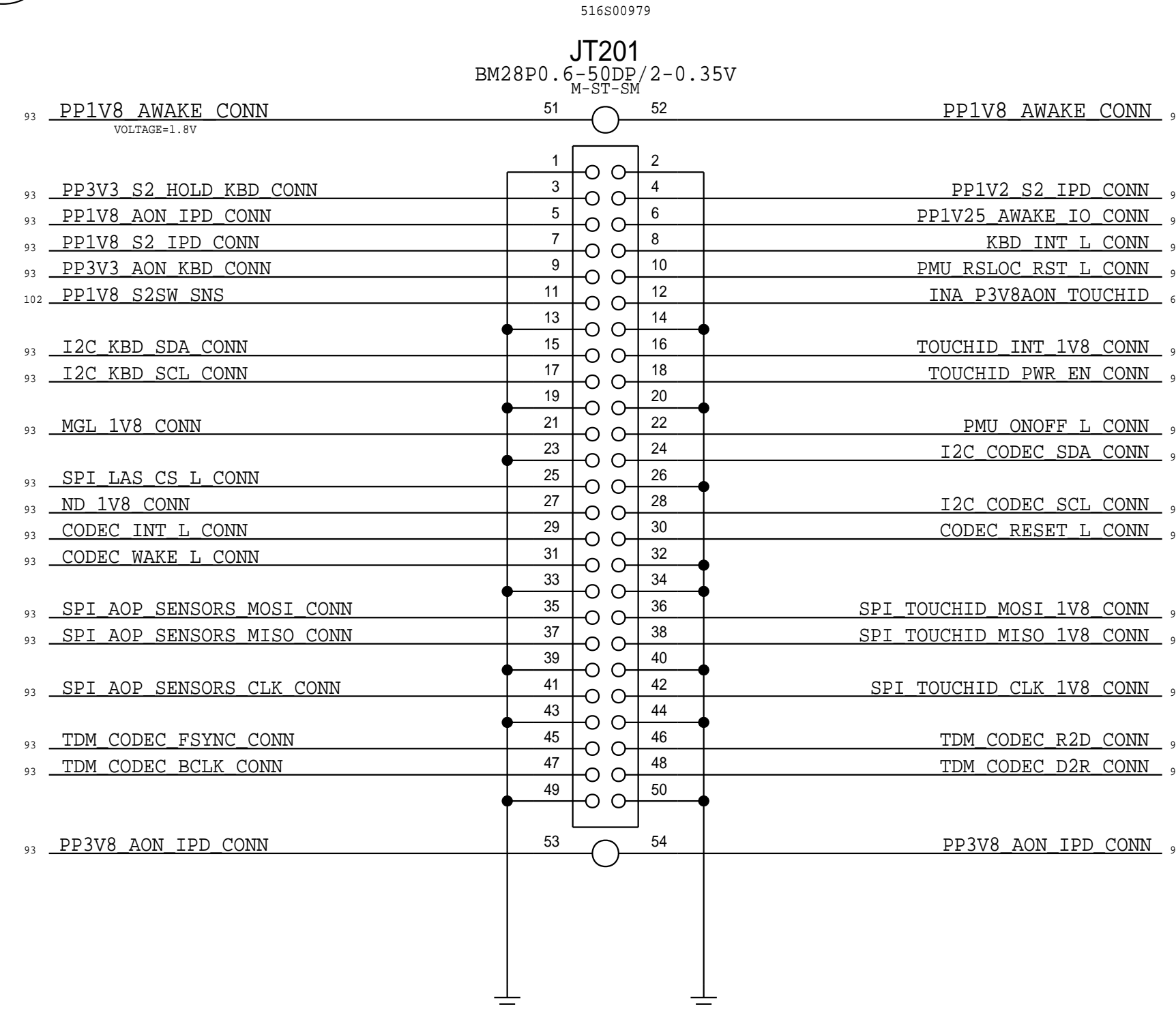
PAGE TITLE		
Keyboard Support		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	251 OF 801
	SHEET	92 OF 121



## A Keyboard Power Filters

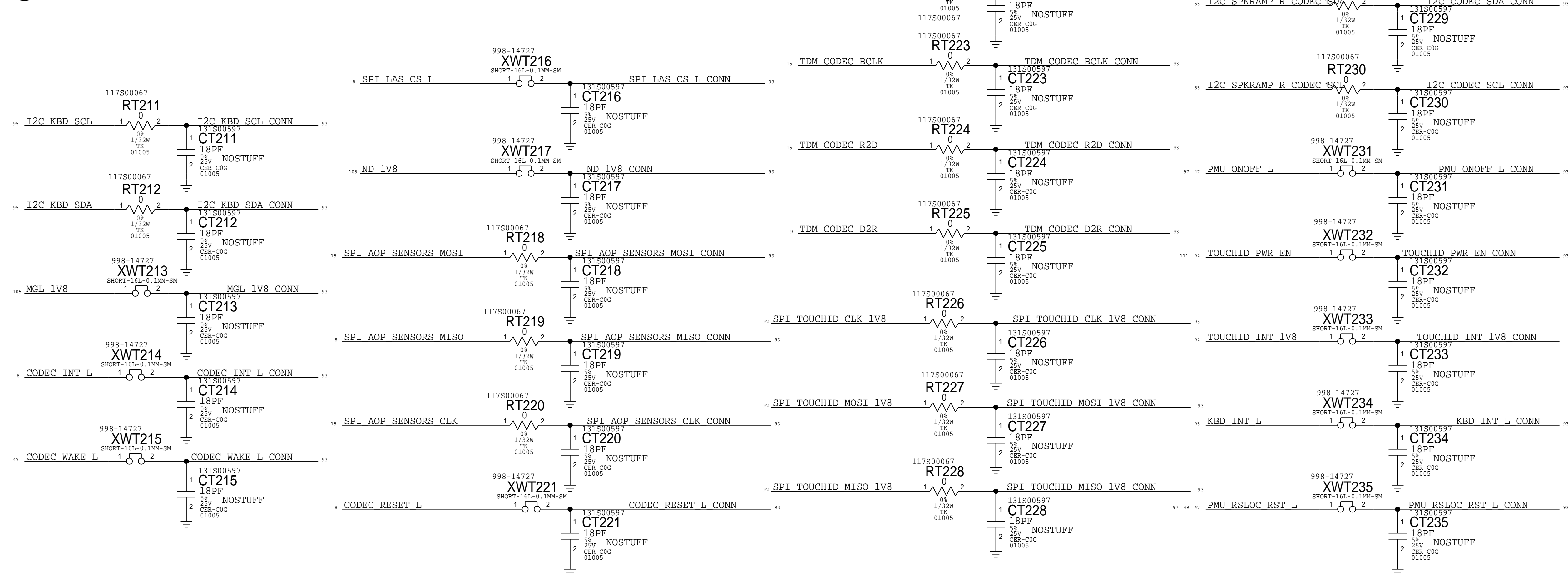


## D KBD B2B CONNECTOR




Mates with J0200 516S00978 on MLB-KBDB flex

## B Keyboard Control Signal Filters

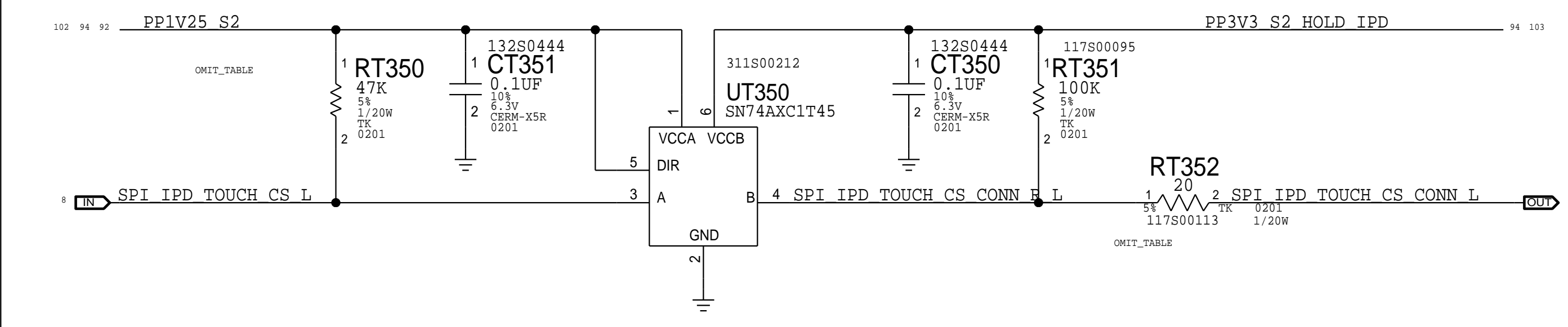
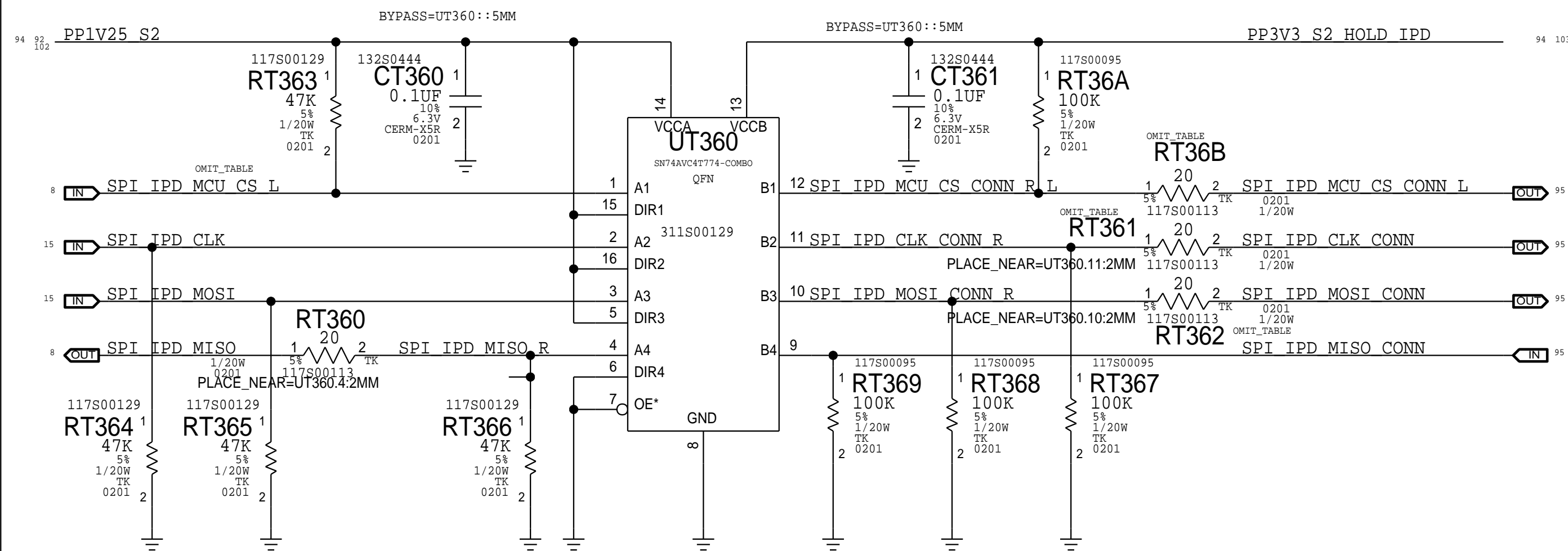


BOM\_COST\_GROUP=KEYBOARD

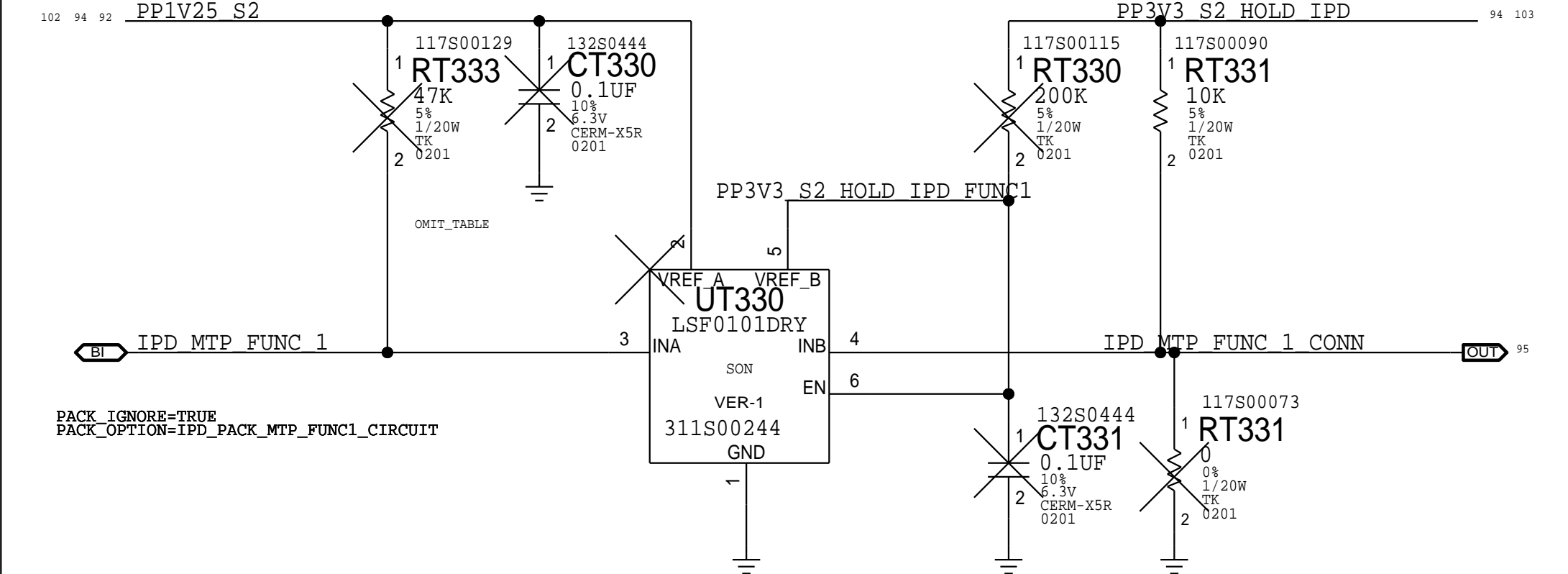
PAGE TITLE		
Keyboard Connector		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
	PAGE	252 OF 801
NOTICE OF PROPRIETARY PROPERTY:		SHEET
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		93 OF 121
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
I NOT TO REPRODUCE OR COPY IT		
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
I ALL RIGHTS RESERVED		



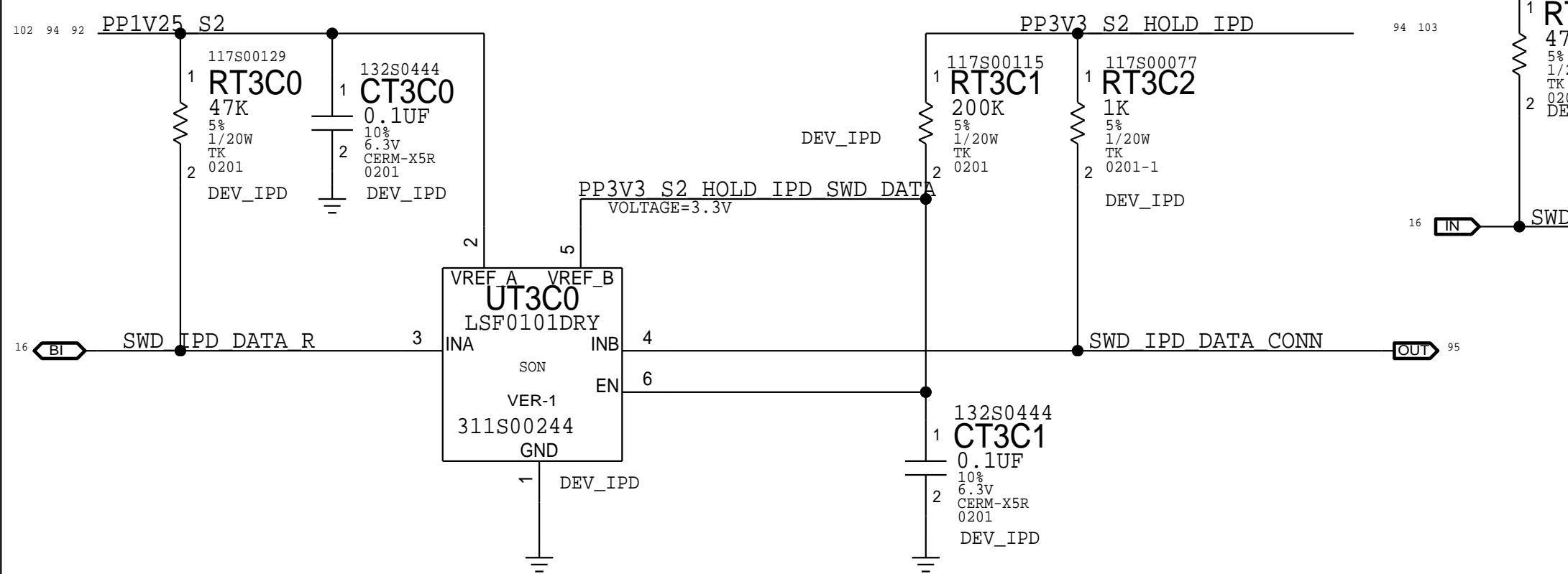
## A HOST SPI LEVEL SHIFTER



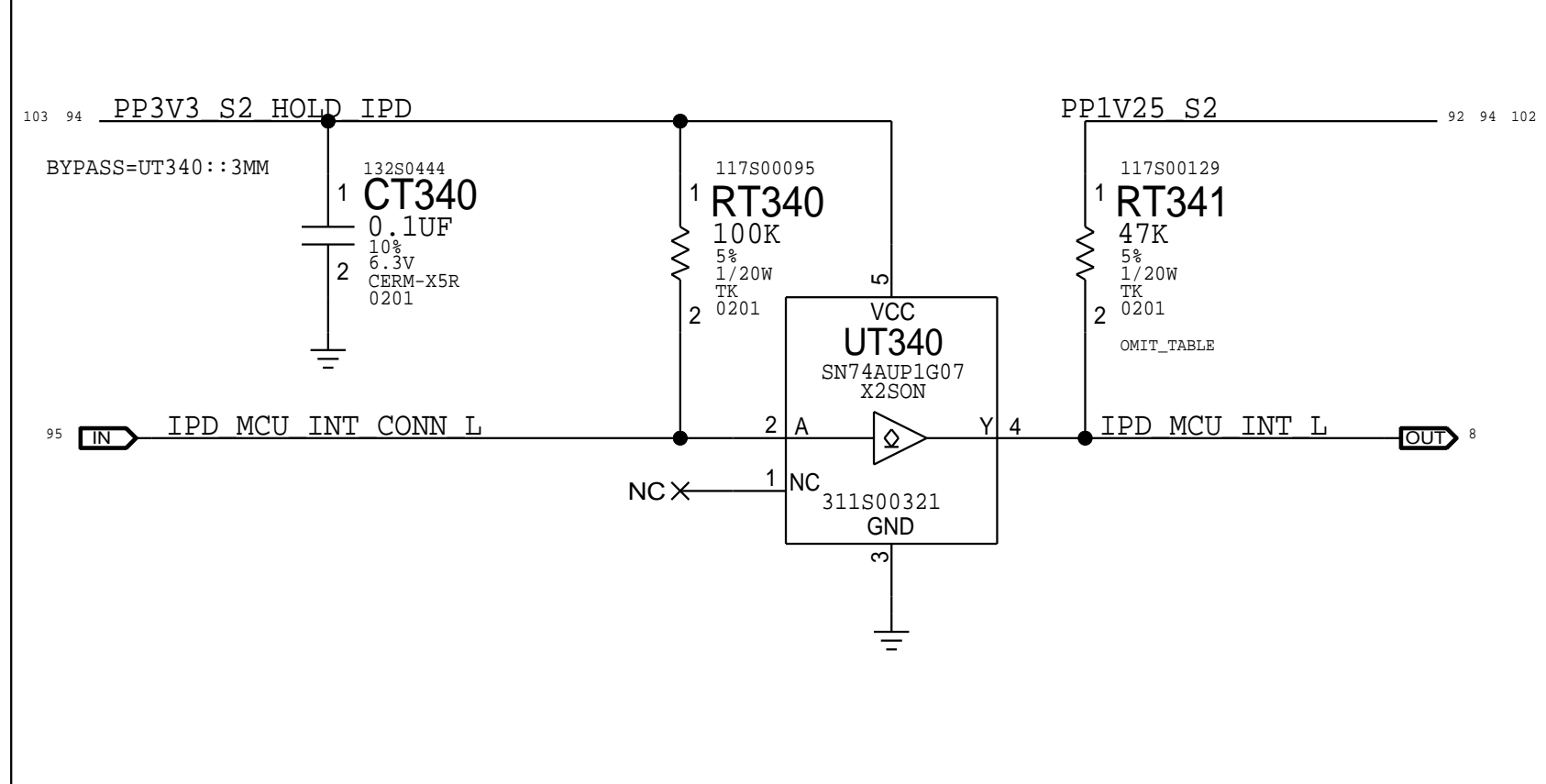
## F MTP FUNC1 LS



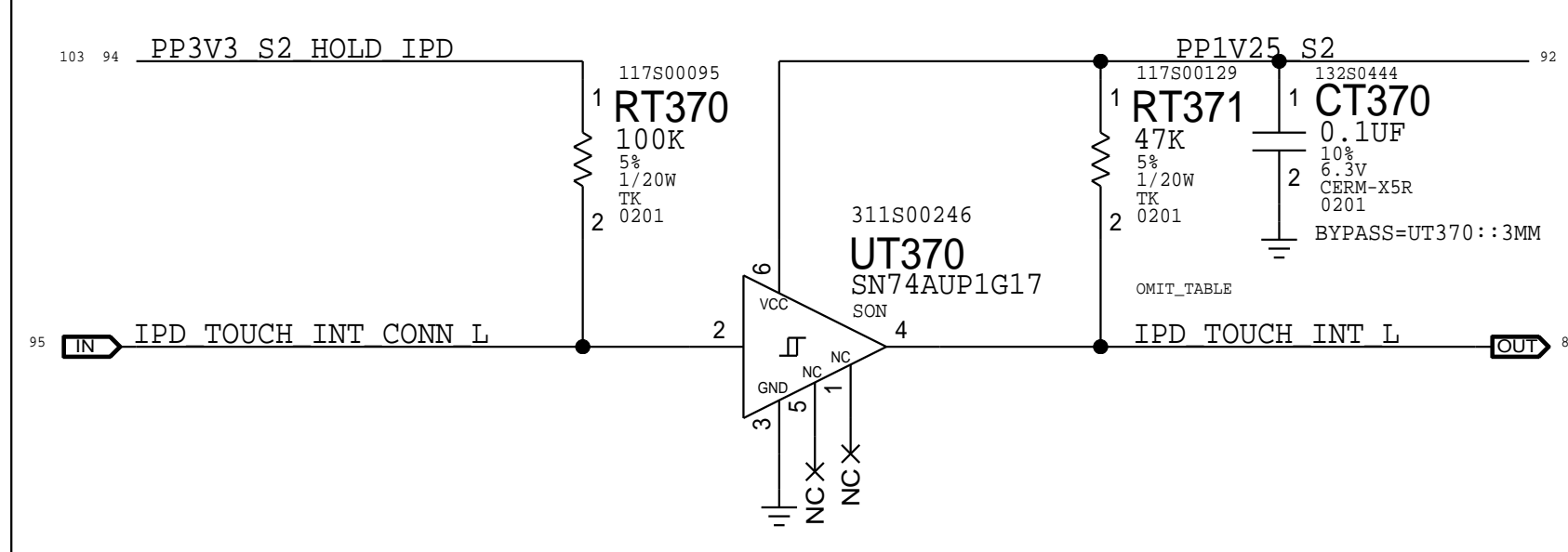
## I DEV SWD LEVEL SHIFTER



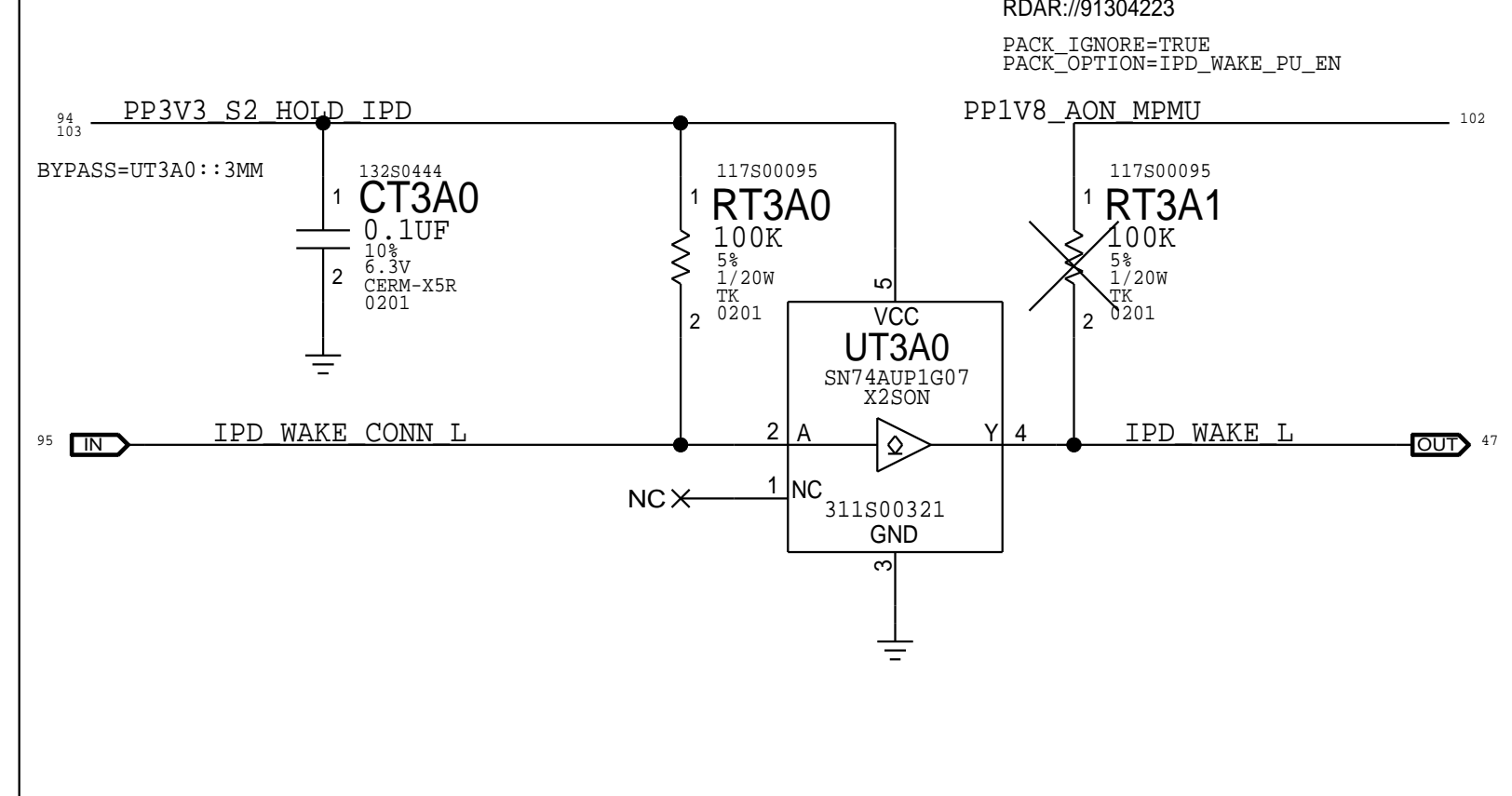
## B MCU INT L LS



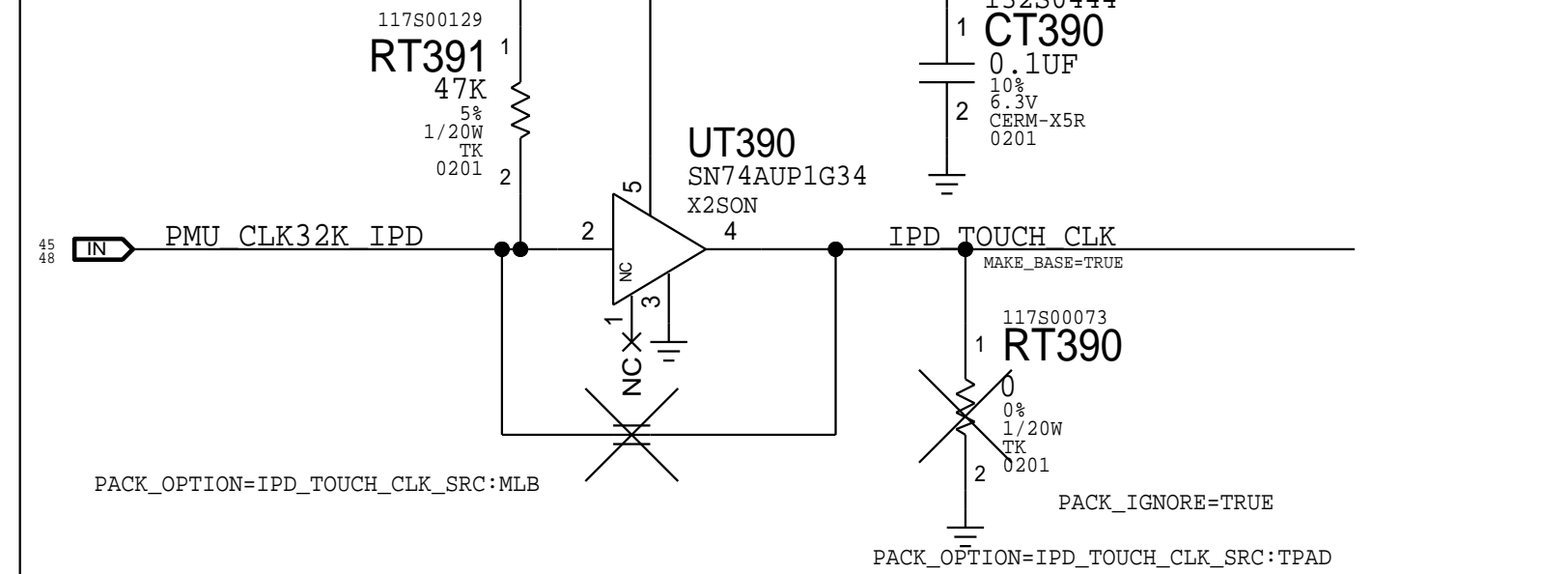
## D TOUCH INT L LS



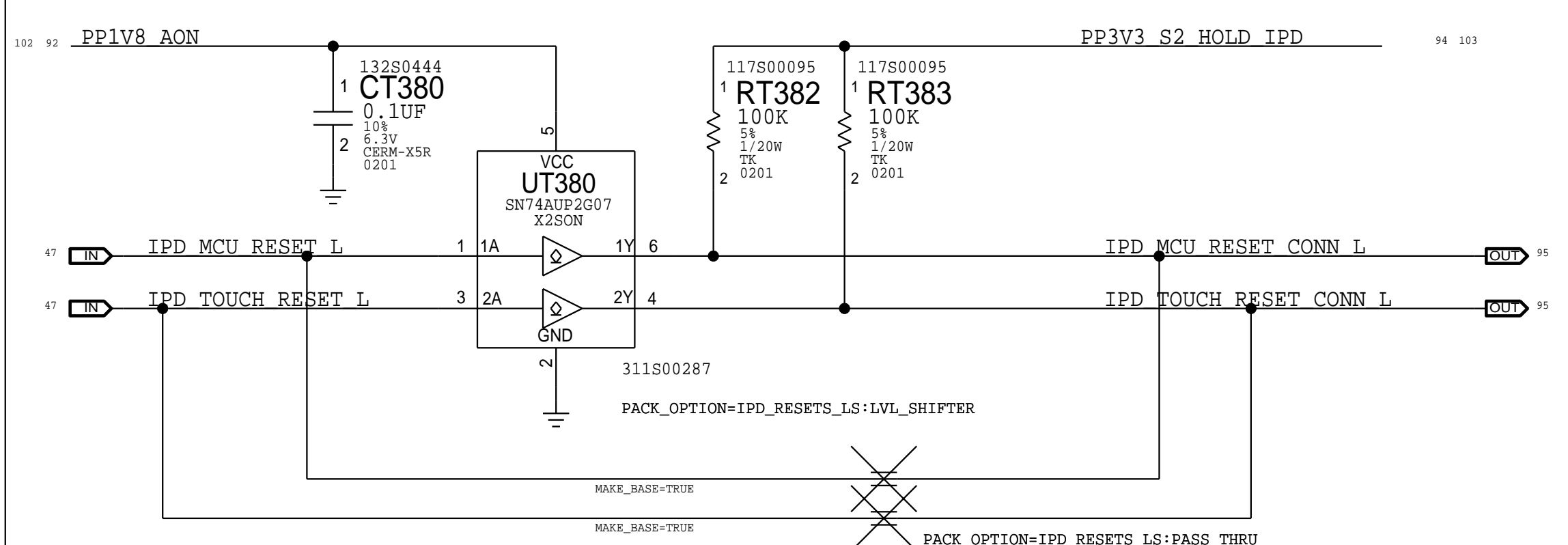
## C WAKE L LS



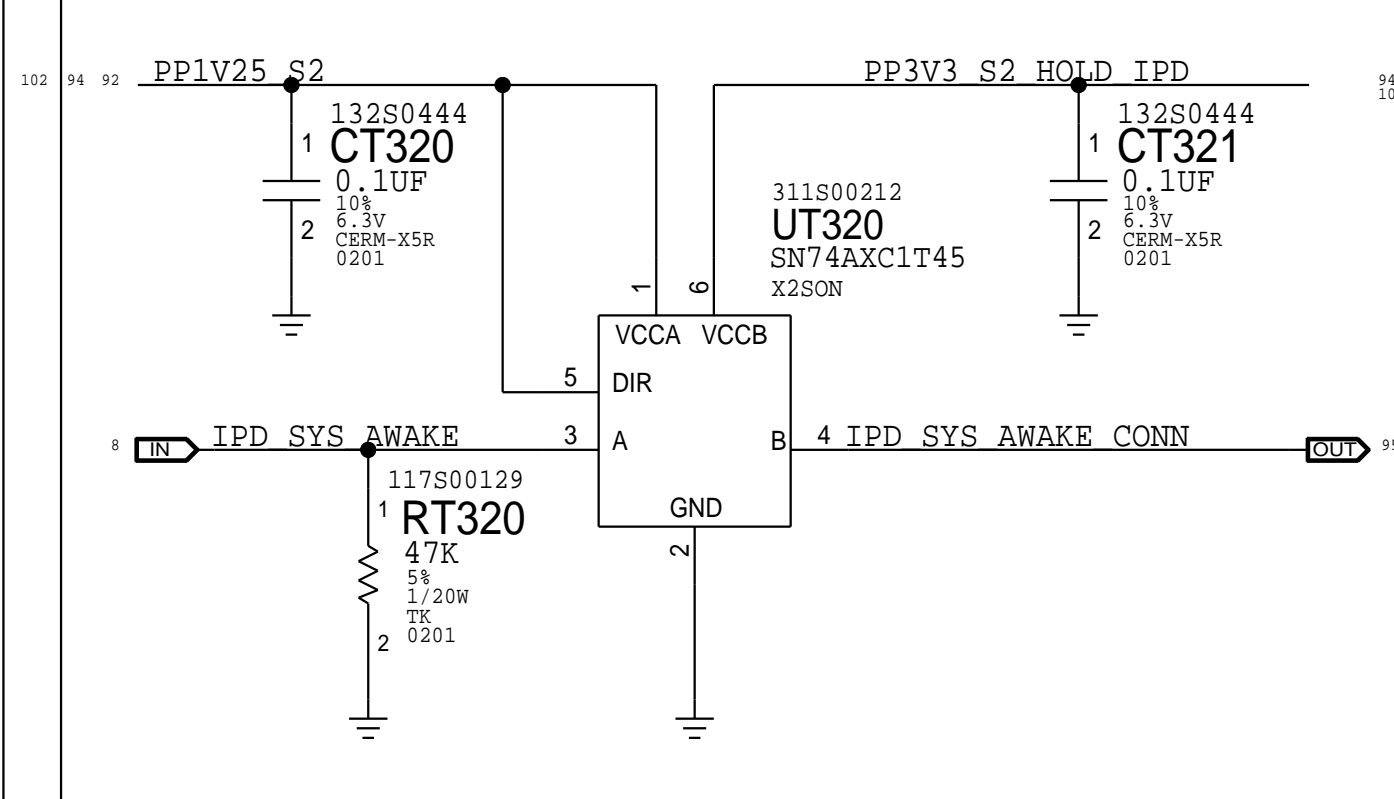
## E TOUCH CLK



## G RESET LEVEL SHIFTER



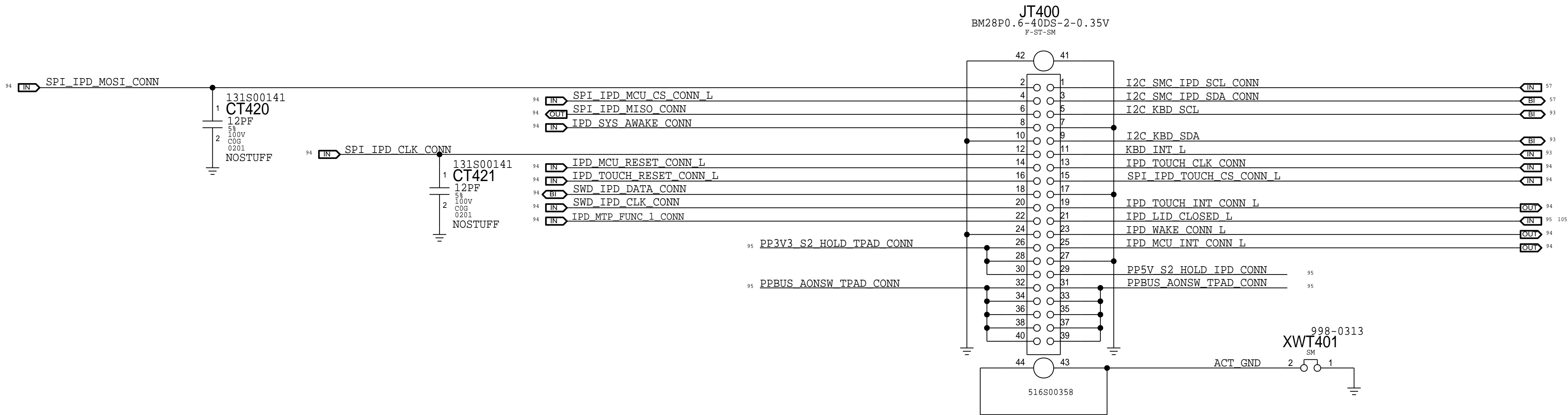
## J SYS AWAKE LS



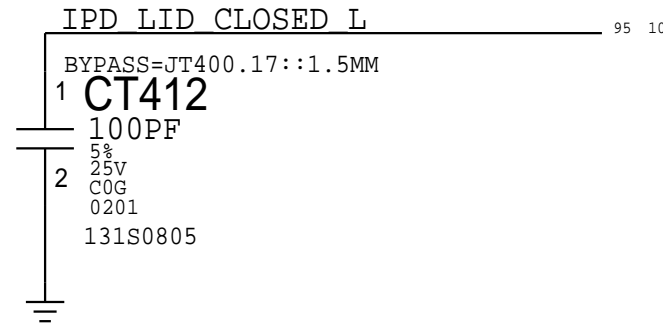


## A Trackpad Connector

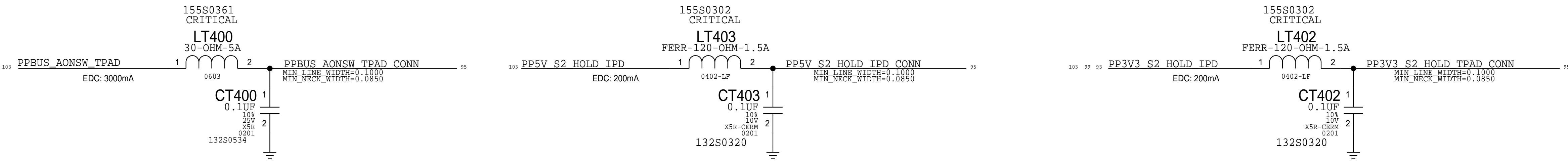
Bottom side contacts used  
Pinout reversed from flex



## D Trackpad Control



## B Trackpad Power Supply Filters



## C BOM CALLOUT TABLES

BOM\_OPTION=IPD\_SPI\_CS\_R:<0\_OHM/20\_OHM/33\_OHM>

ADD BOMOPTION TO STUFF RT36B,RT352 WITH 0 OHM, 20 OHM, OR 33 OHM

SPI\_IPD\_CS\_L SERIES SOURCE TERMINATION RESISTOR

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
117S00073	2	RES,TX,0 OHM,1A MAX,1/20W,0201	RT36B,RT352	IPD_SPI_CS_R:0_OHM
117S00113	2	RES,TX,20 OHM,5%,1/20W,0201	RT36B,RT352	IPD_SPI_CS_R:20_OHM
117S00122	2	RES,TX,33 OHM,5%,1/20W,0201	RT36B,RT352	IPD_SPI_CS_R:33_OHM

BOMOPTION=DEV\_IPD

ADD BOMOPTION TO STUFF SWD LEVEL SHIFTERS

YES: STUFF 1.8V->3.3V OPEN DRAIN LS FOR IPD\_TOUCH\_CLK\_CONN

NO : UNSTUFF 1.8V->3.3V OPEN DRAIN LS FOR IPD\_TOUCH\_CLK\_CONN

THE CIRCUIT IS SETUP TO OUTPUT HIGH WHEN NOT DRIVEN E.G. THROUGH A POWER STATE TRANSITION

USE BOM\_OPTION TO SELECT BETWEEN 30K OR 47K PULL-UPS THAT TIE TO SOC PINS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
118S00521	5	RES,TX,30K OHM,1%,1/20W,0201	RT350,RT363,RT341,RT371	TPAD_SOC_PULLUP:30K
117S00129	5	RES,TX,47K OHM,5%,1/20W,0201	RT350,RT363,RT341,RT371	TPAD_SOC_PULLUP:47K

BOM\_OPTION=IPD\_SPI\_CLK\_MOSI\_R:<20\_OHM/51\_OHM>

ADD BOMOPTION TO STUFF RT361 and RT362 with 20 OHM or 51 OHM

SPI\_IPD\_CS\_L SERIES SOURCE TERMINATION RESISTOR

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
117S00113	2	RES,TX,20 OHM,5%,1/20W,0201	RT361,RT362	IPD_SPI_CLK_MOSI_R:20_OHM
118S00418	2	RES,TX,51 OHM,1%,1/20W,0201	RT361,RT362	IPD_SPI_CLK_MOSI_R:51_OHM
117S00113	2	RES,TX,20 OHM,5%,1/20W,0201	RT361,RT362	IPD_SPI_CLK_MOSI_R:5_OHM

BOM\_COST\_GROUP=TRACKPAD

08/25/2023		
PAGE TITLE		
Trackpad Connector		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		
I NOT TO REPRODUCE OR COPY IT		
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
I ALL RIGHTS RESERVED		
BRANCH		
PAGE		
254 OF 801		
SHEET		
95 OF 121		

8								7								6								5								4								3								2								1																							
D																																																																D															
C																																																																								C							
B																																																																								B							
A																																																																								A							
8								7								6								5								4								3								2								1																							

Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC.  
THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

BRANCH

PAGE  
259 OF 801


SHEET  
96 OF 121

SIZE  
D

Intentionally Blank

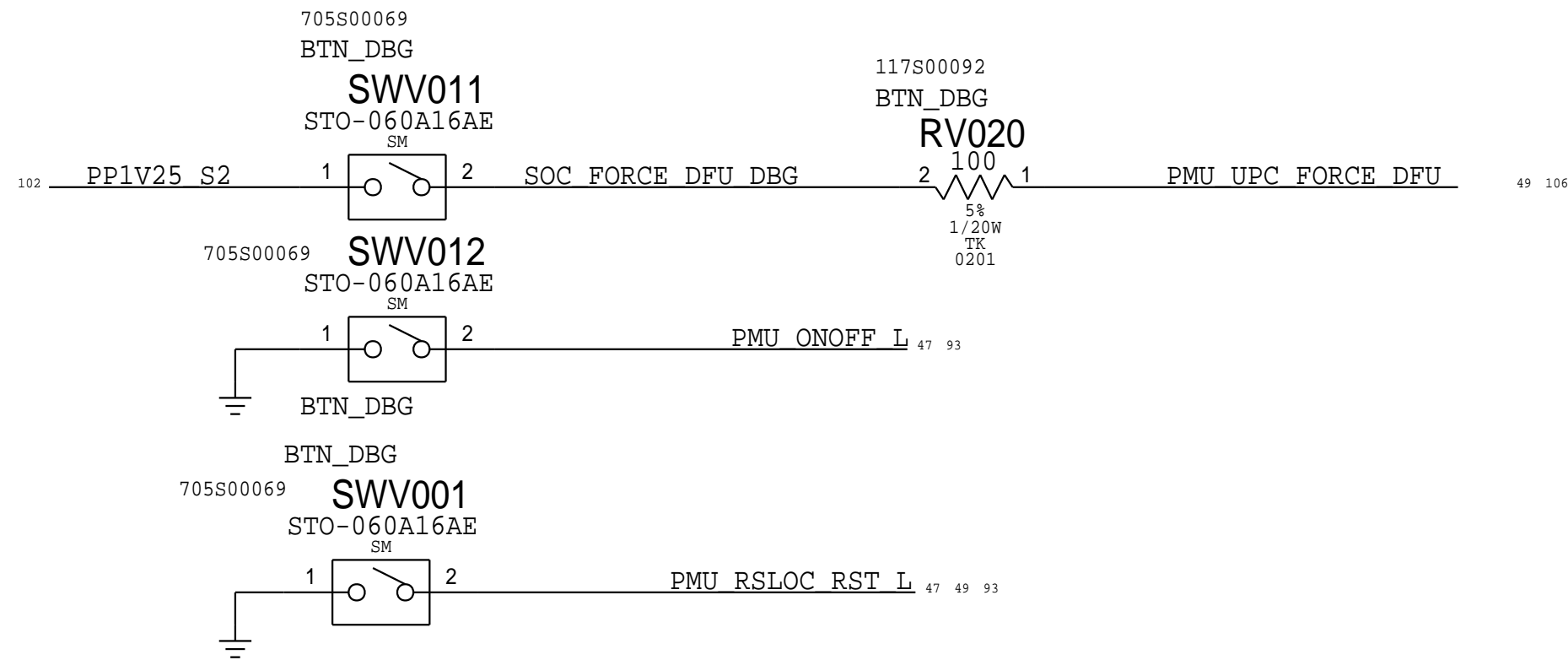
www.repairlap.com

Intentionally Blank

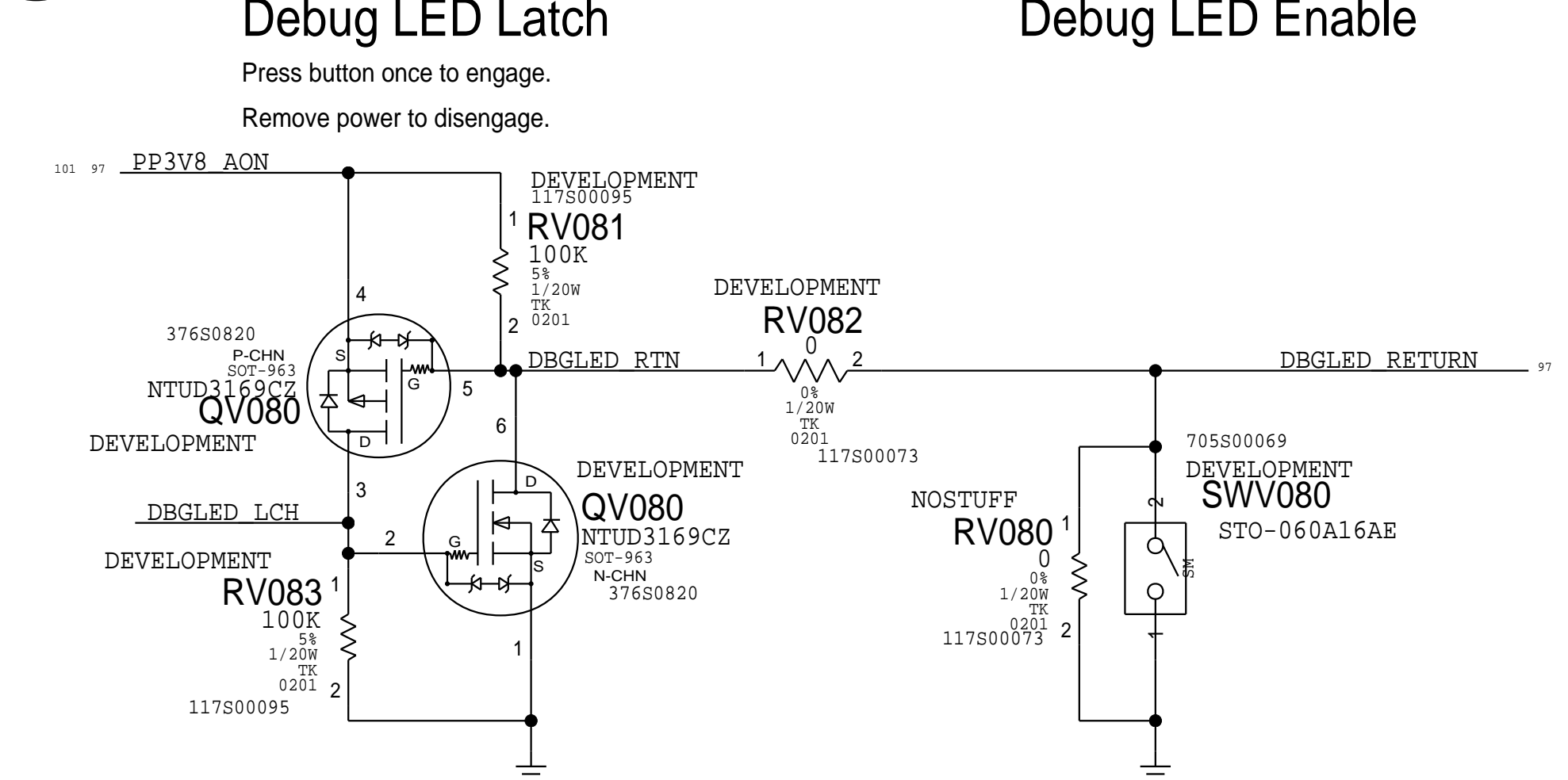
PAGE TITLE -----		
 Apple Inc.	DRAWING NUMBER 051-09344	SIZE D
	REVISION 4.0.1	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE 259 OF 801	
	SHEET 96 OF 121	



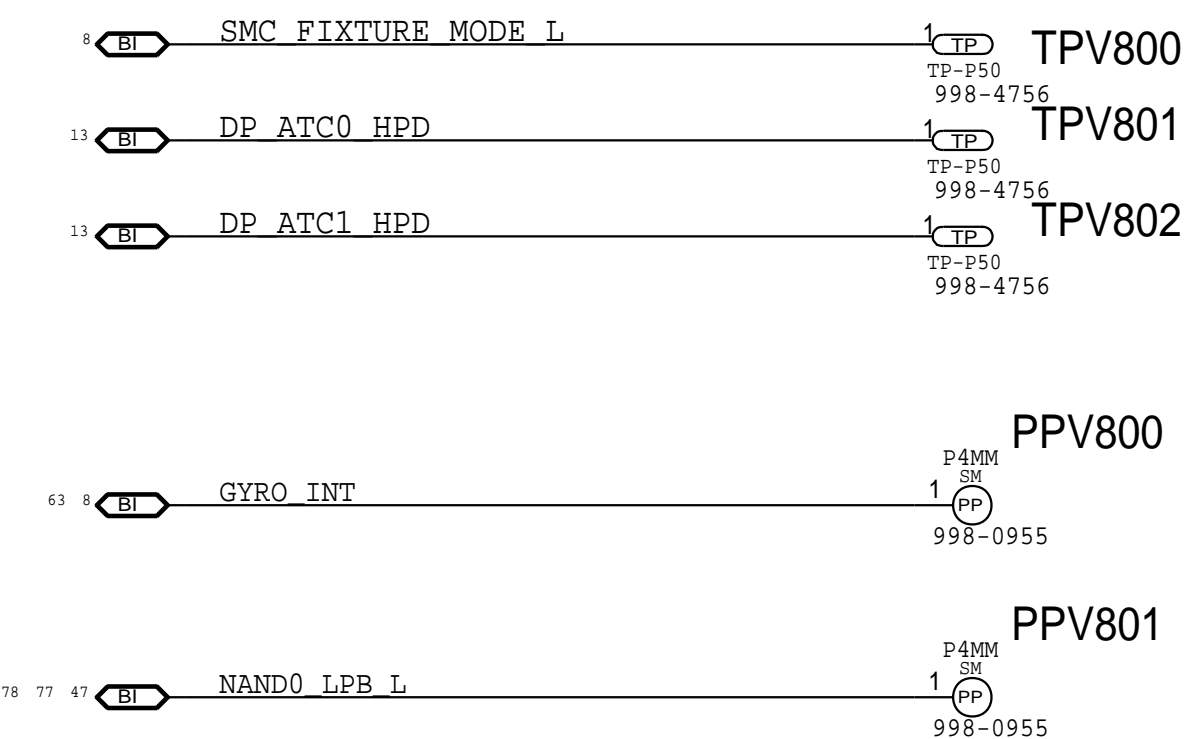
A Debug Push-Buttons



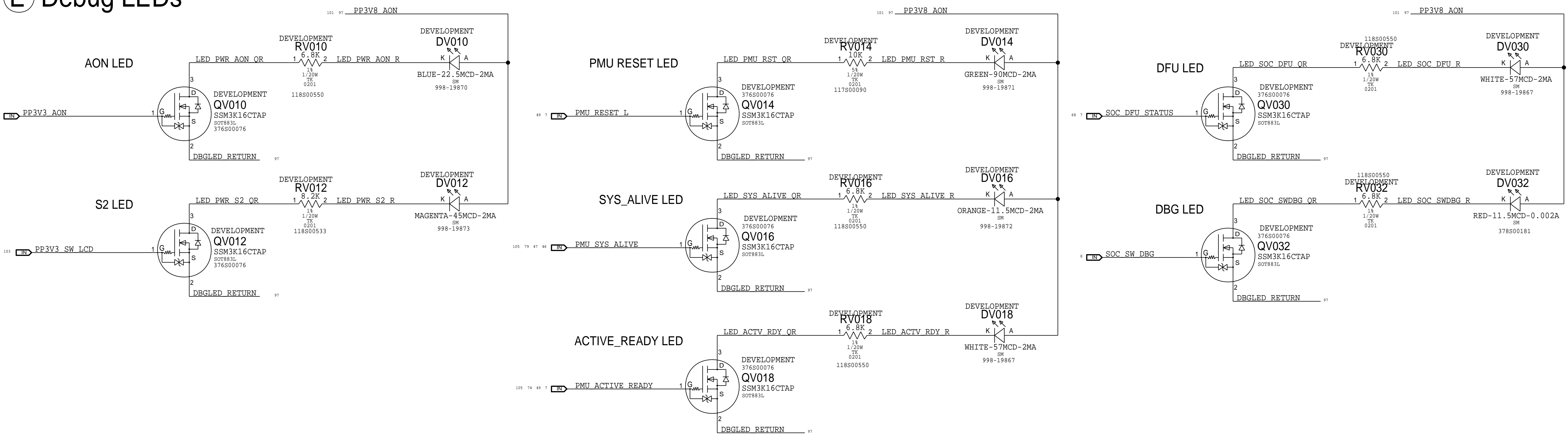
B Debug LED Control



D Debug Test/Probe Points

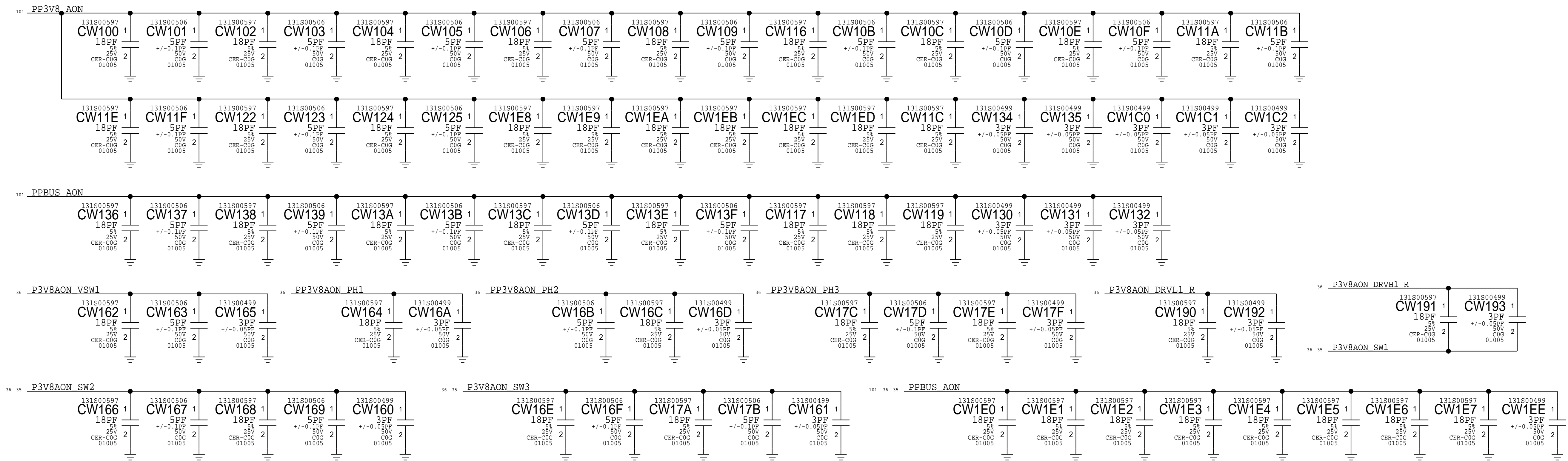


E Debug LEDs

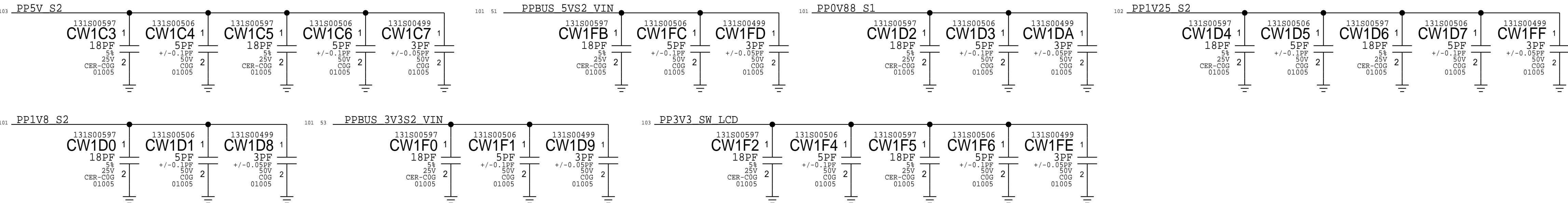


PAGE TITLE		
DEBUG		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	270 OF 801
	SHEET	97 OF 121

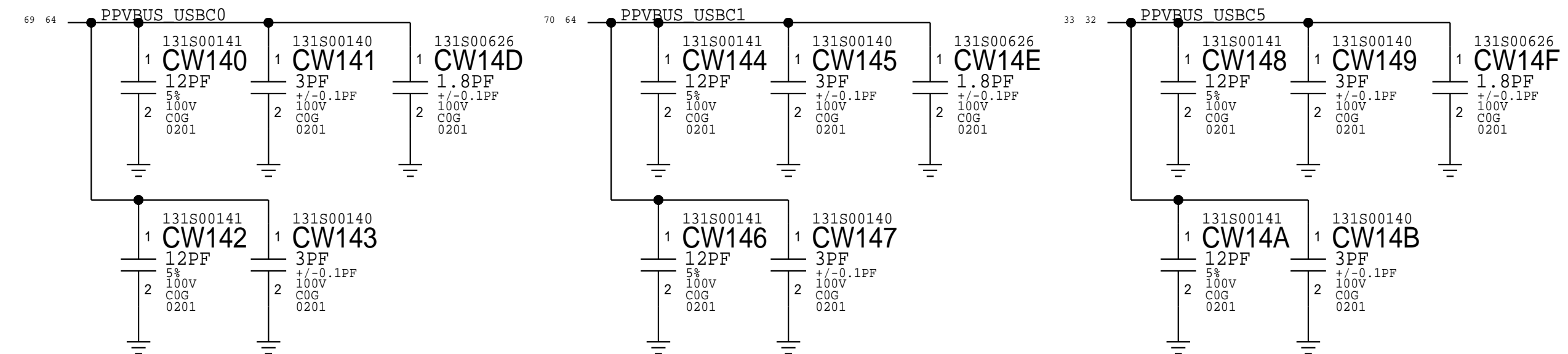
## A ICEMAN Desense



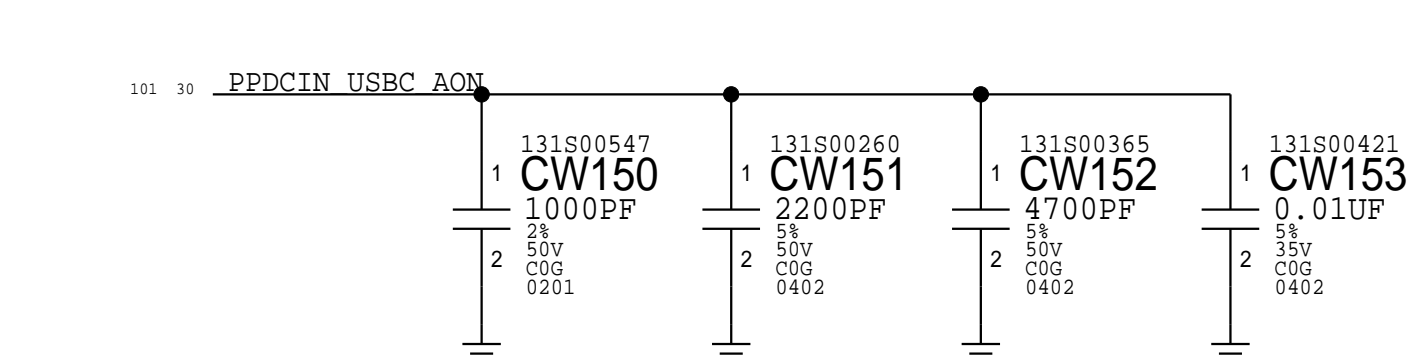
## B BUCK POWER Desense



## C USB-C Desense



## D PDN Noise Mitigation (from PI Team Simulations)

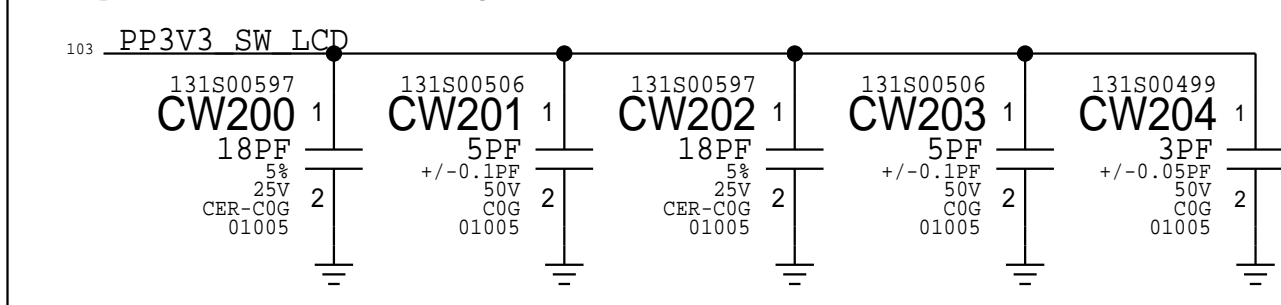


BOM\_COST\_GROUP=DESENSE

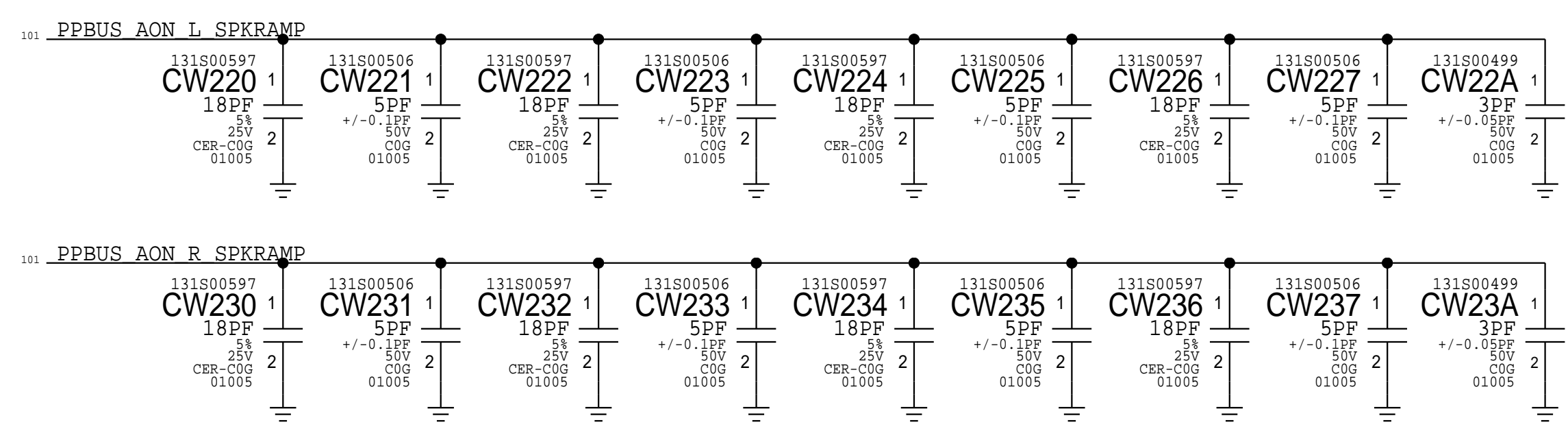
PAGE TITLE			
Desense 1			
	DRAWING NUMBER	051-09344	SIZE
	REVISION	4.0.1	D
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE I NOT TO REPRODUCE OR COPY IT I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		BRANCH	
		PAGE	281 OF 801
		SHEET	98 OF 121



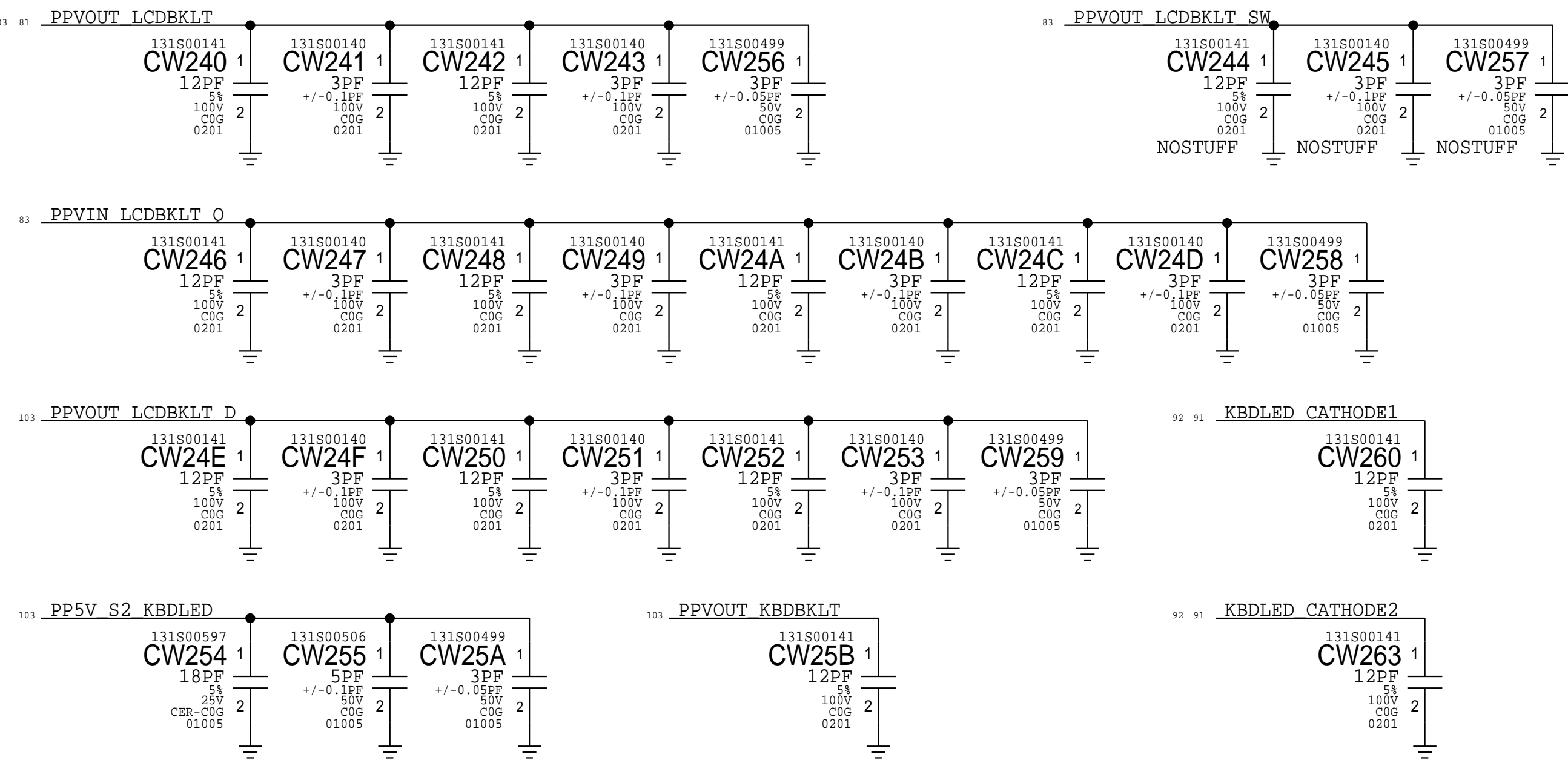
## A Display PMIC Desense



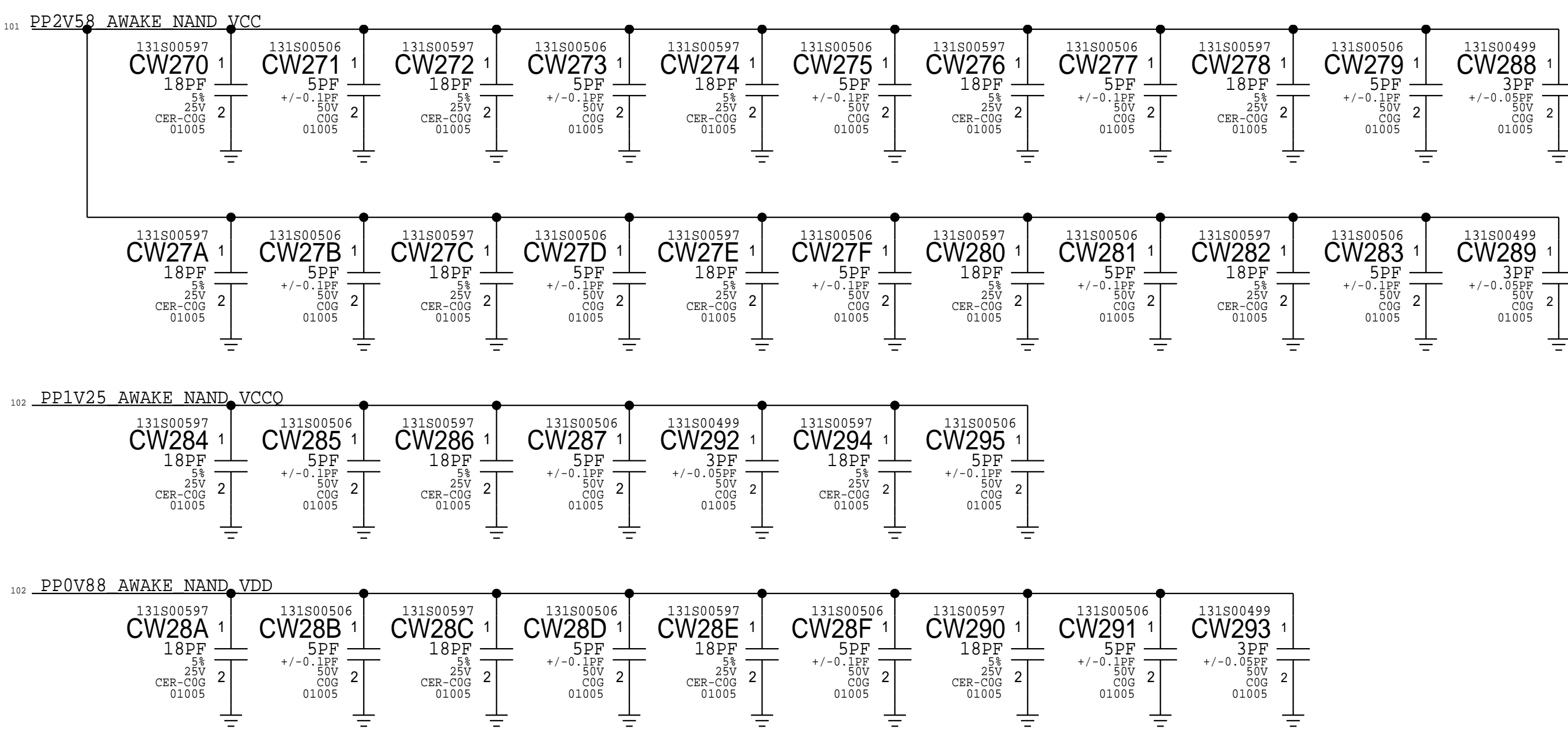
## B Speaker Amplifier Desense



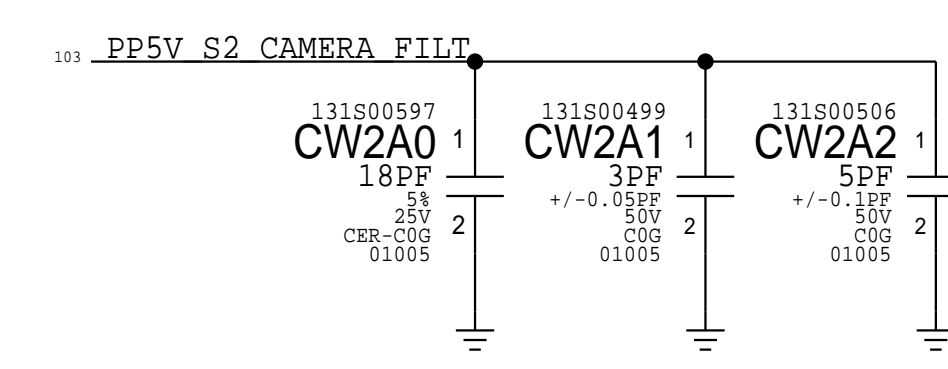
## C Display and Keyboard Backlight Desense



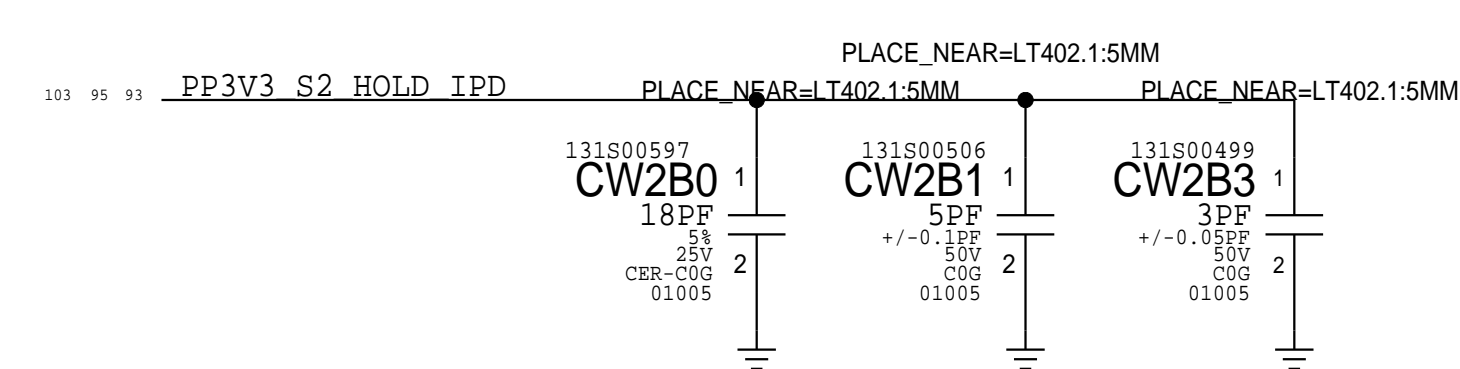
## D NAND Desense



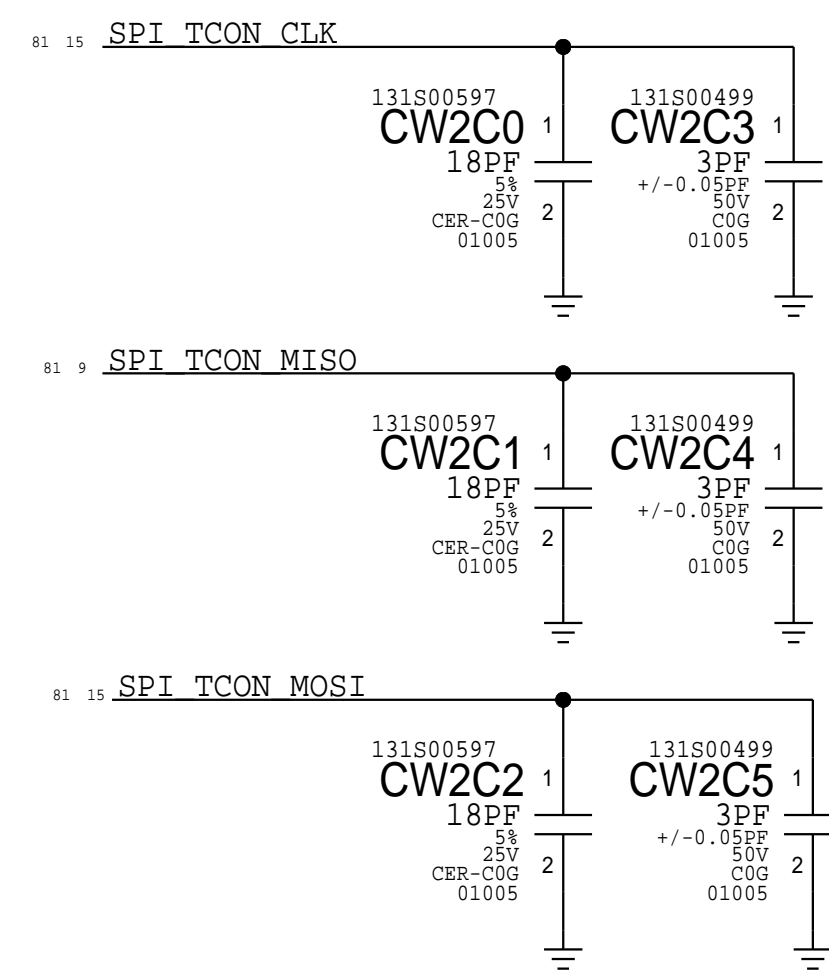
## E Camera Desense



## F Trackpad Desense



## G Display TCON Desense




PAGE TITLE		
Desense 2		
	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY:		BRANCH
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		PAGE
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		282 OF 801
I NOT TO REPRODUCE OR COPY IT		SHEET
I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		99 OF 121
I ALL RIGHTS RESERVED		

BOM\_COST\_GROUP=DESENSE

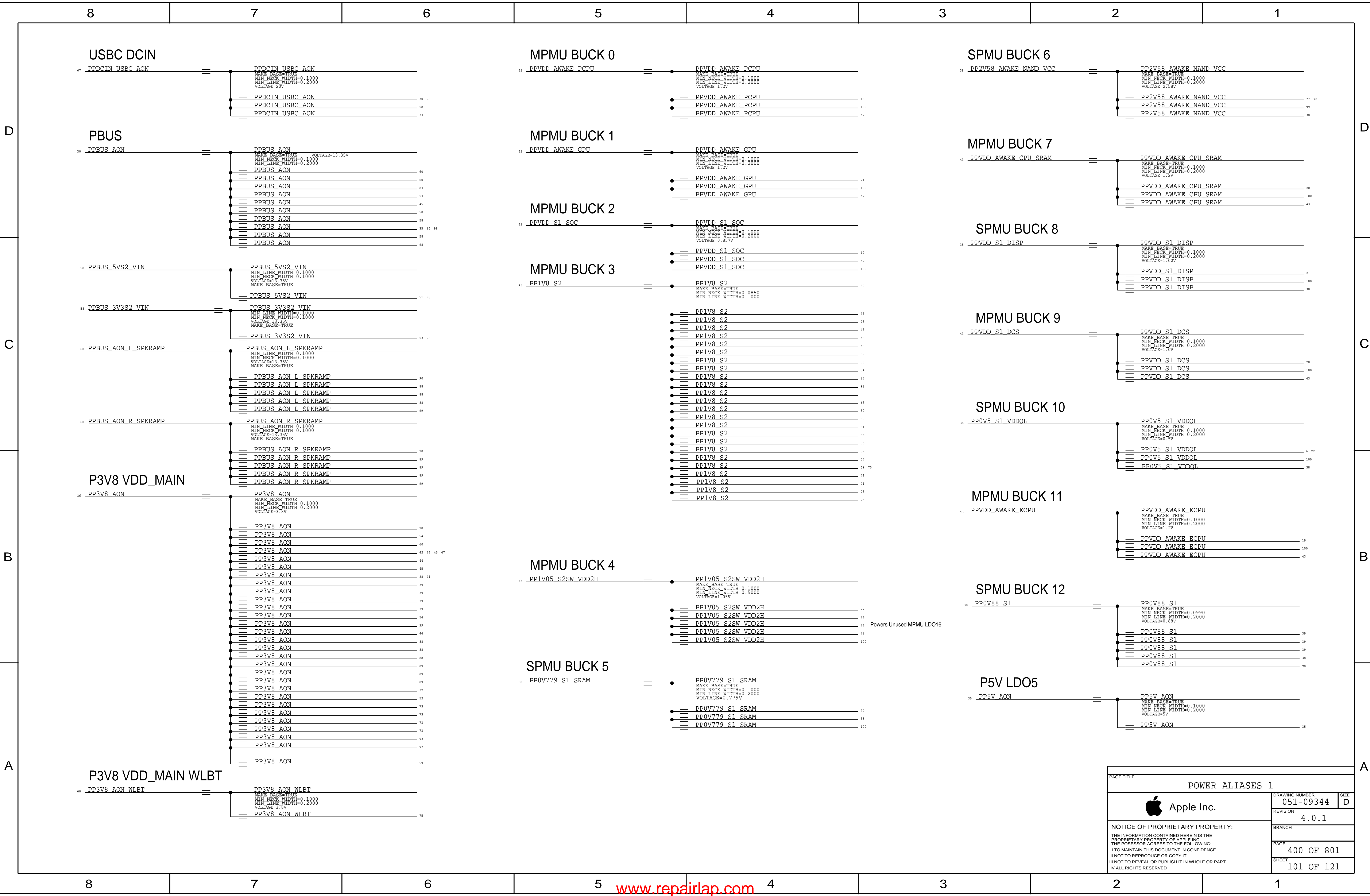
A SOC Desense




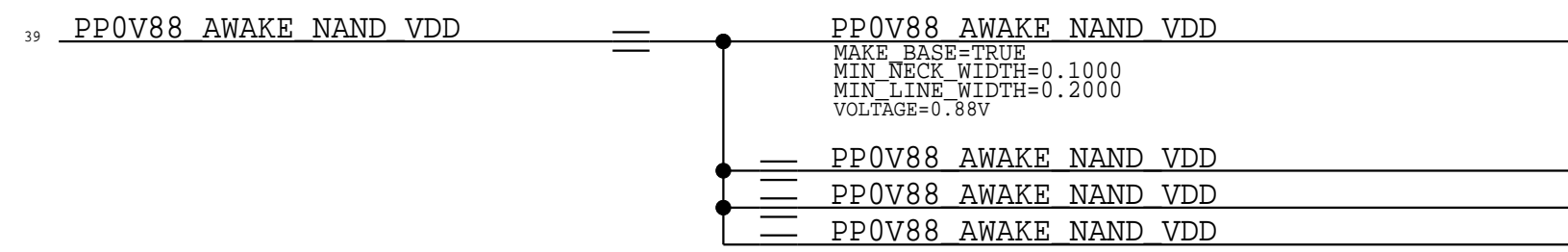
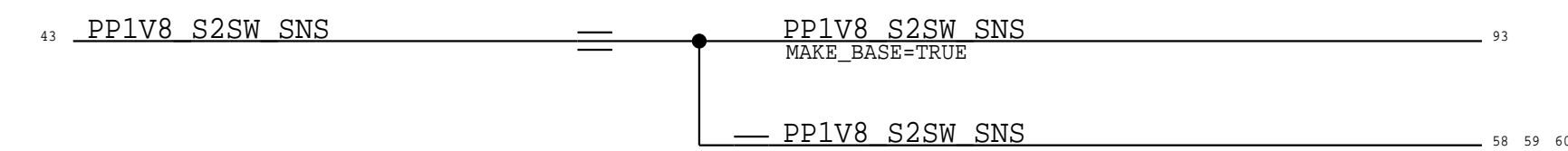
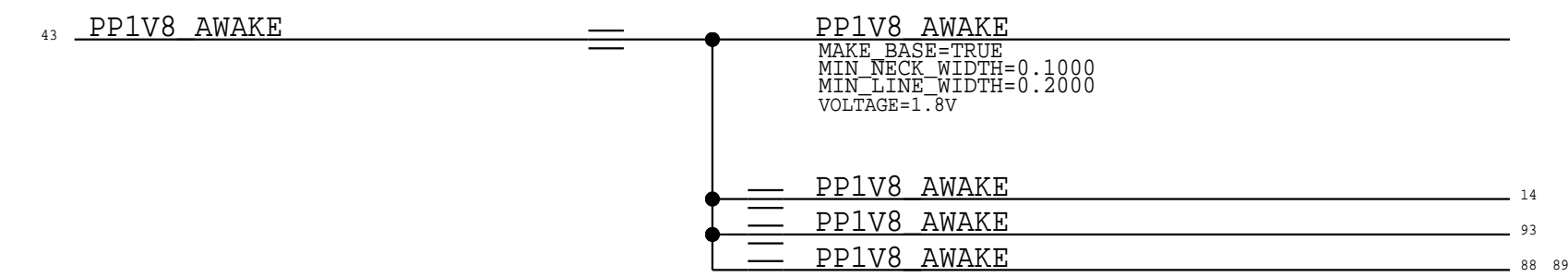
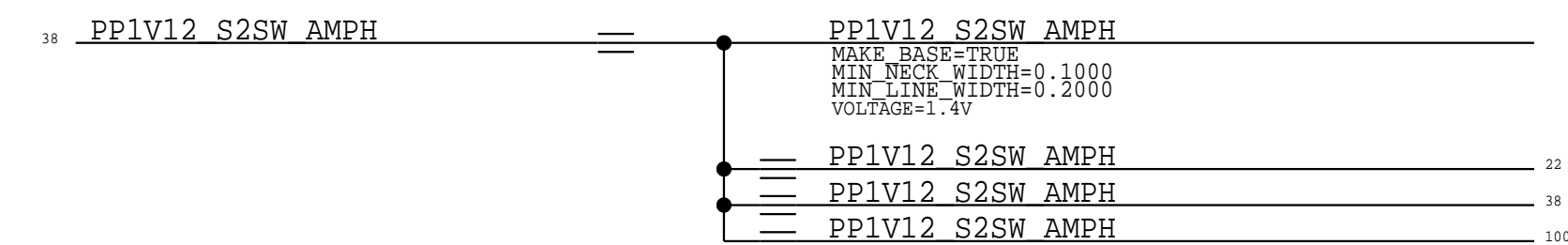
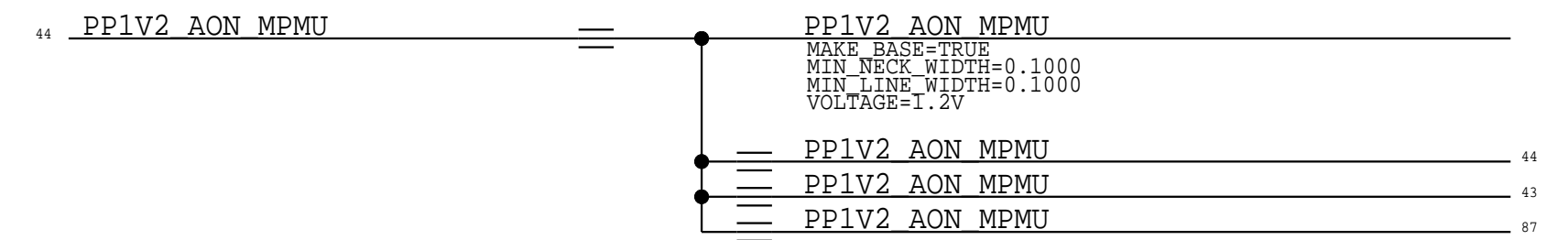
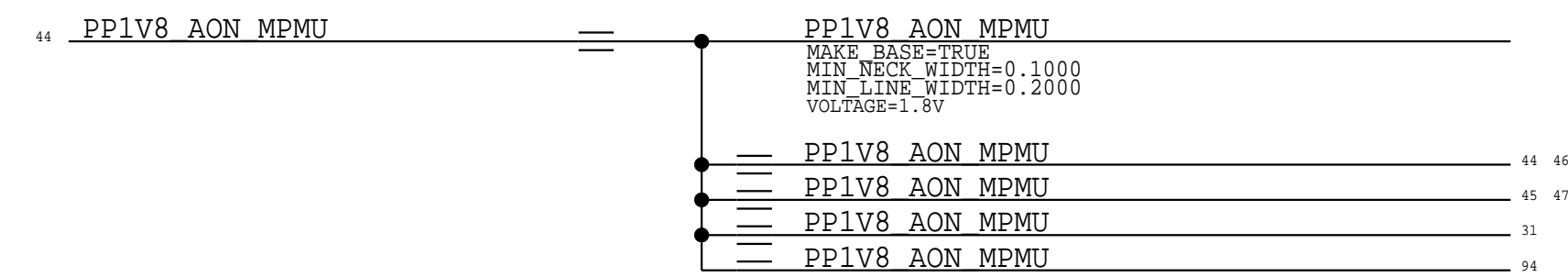
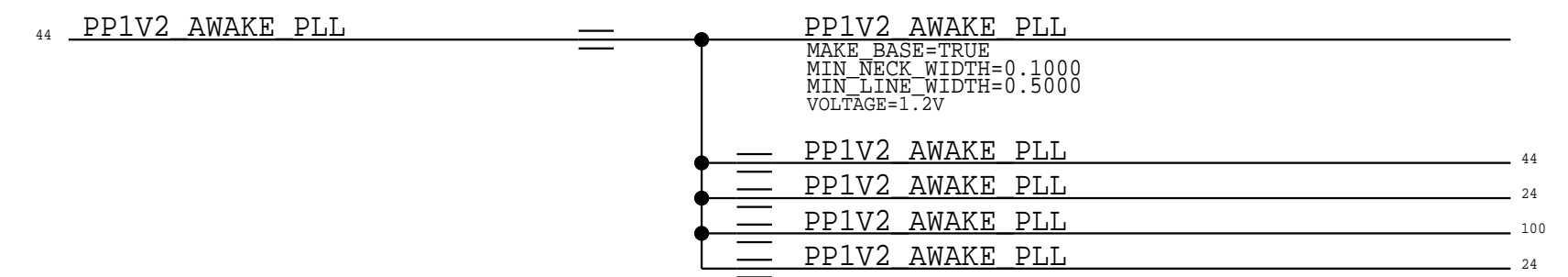
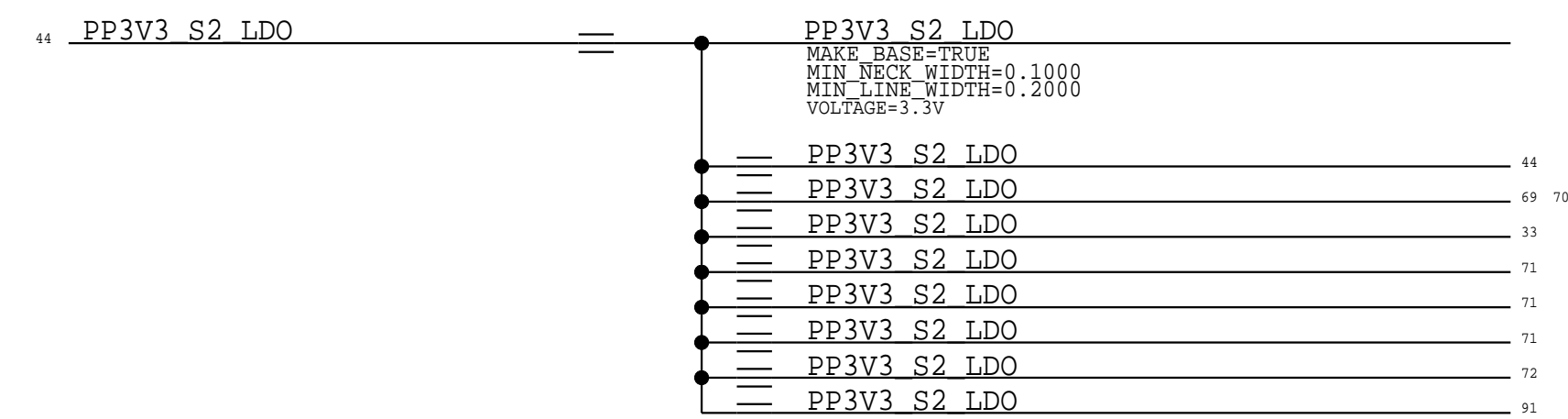
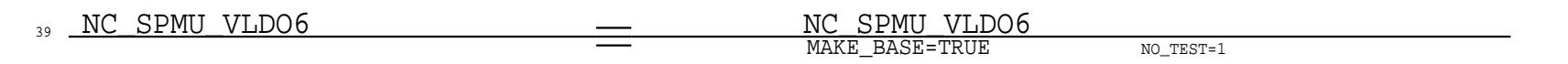
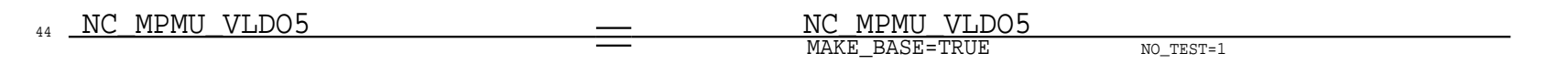
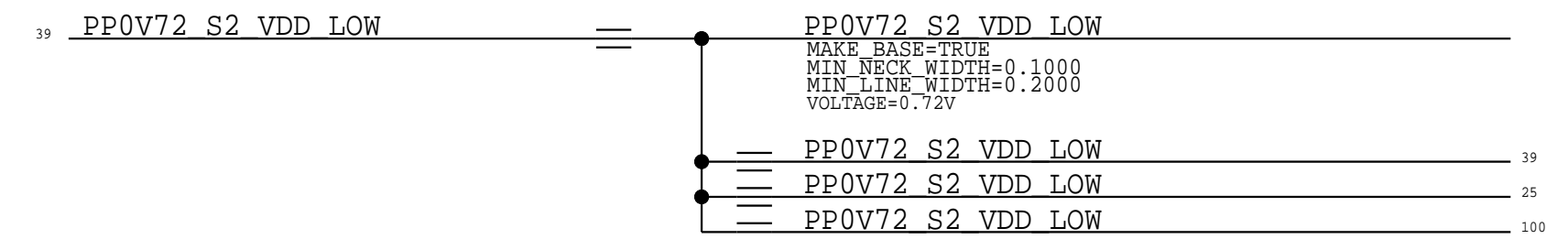
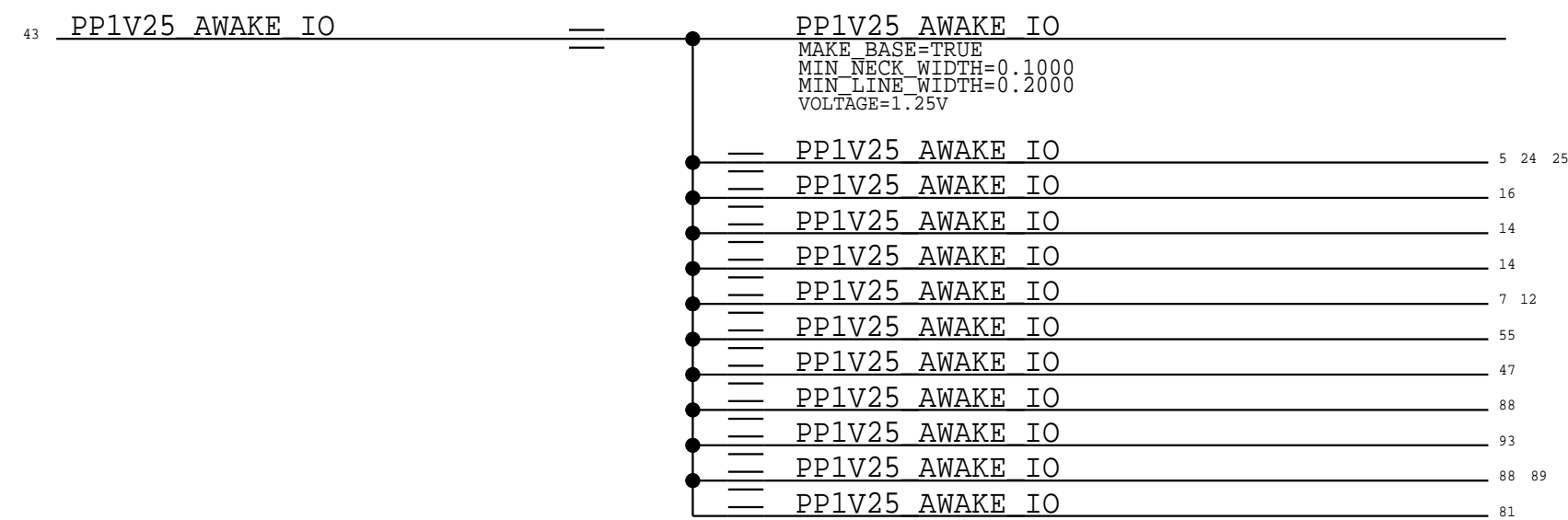
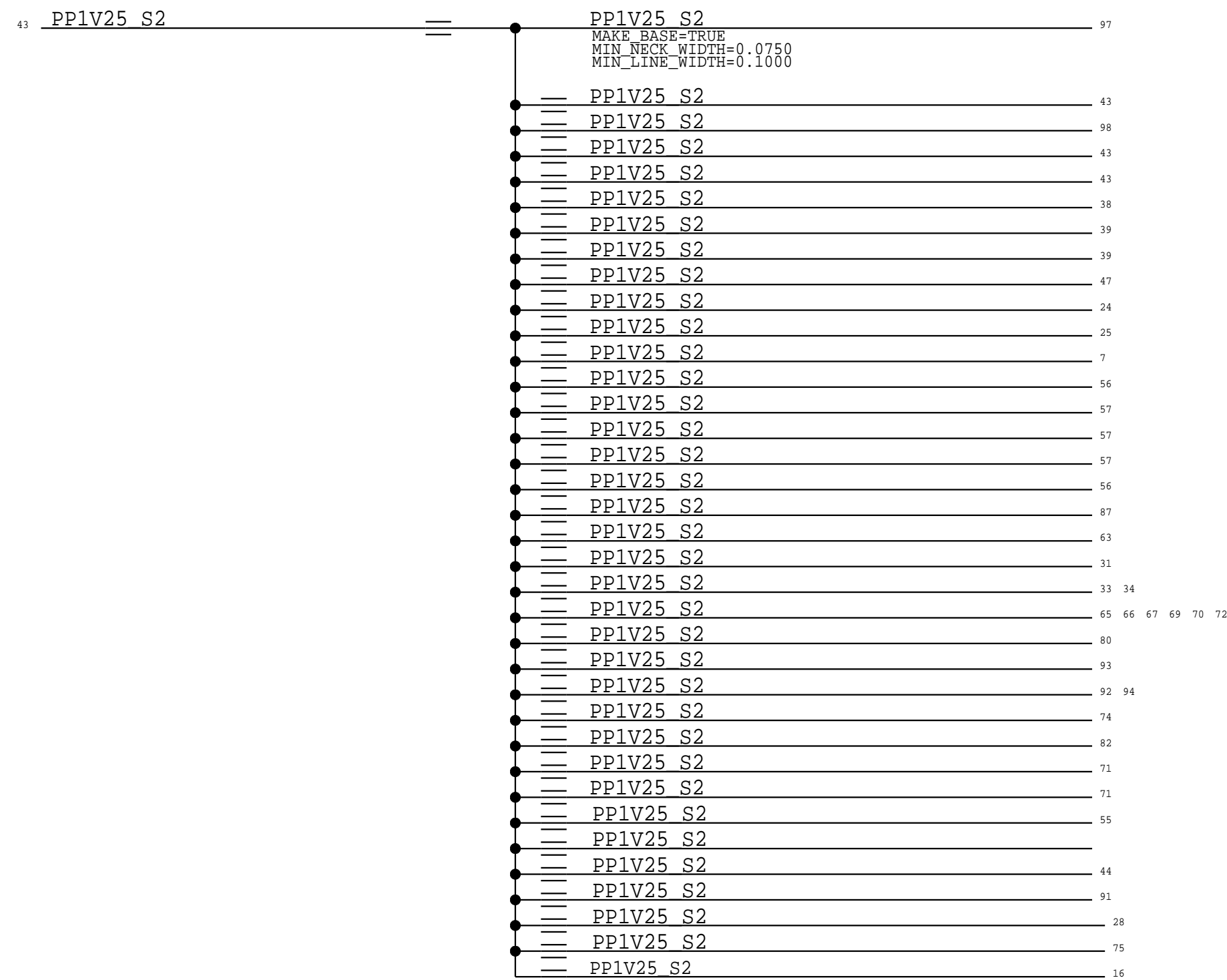
PAGE TITLE		
Desense 3		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	283 OF 801
	SHEET	100 OF 121

BOM\_COST\_GROUP=DESENSE

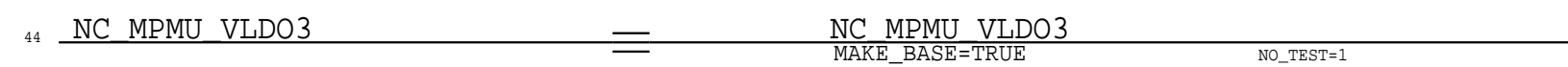
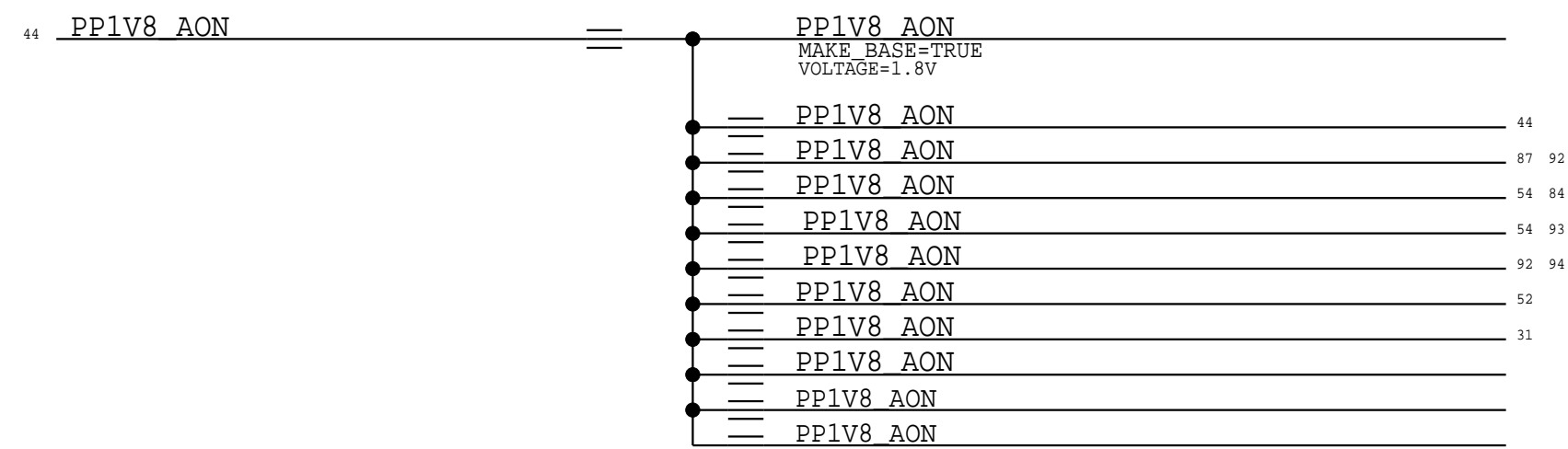
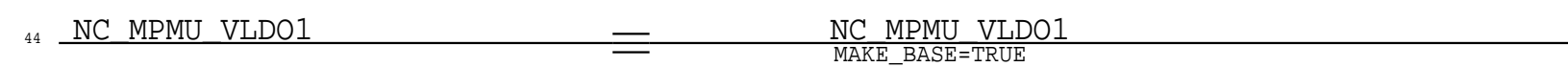





PAGE TITLE		
POWER ALIASES 1		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
	BRANCH	
NOTICE OF PROPRIETARY PROPERTY:		PAGE
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:		400 OF 801
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE		SHEET
II NOT TO REPRODUCE OR COPY IT		101 OF 121
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART		
IV ALL RIGHTS RESERVED		

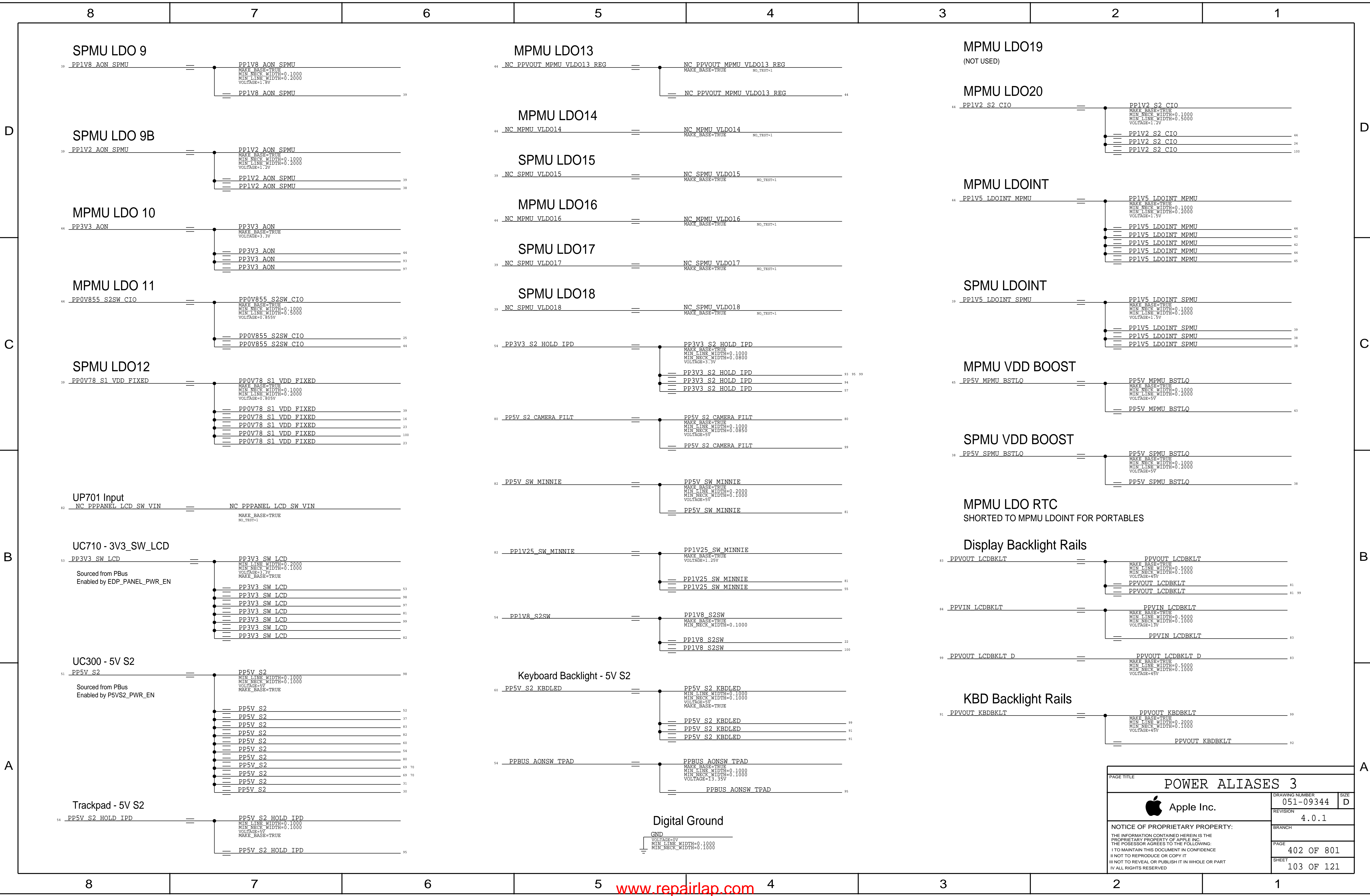



TIED TO SW6

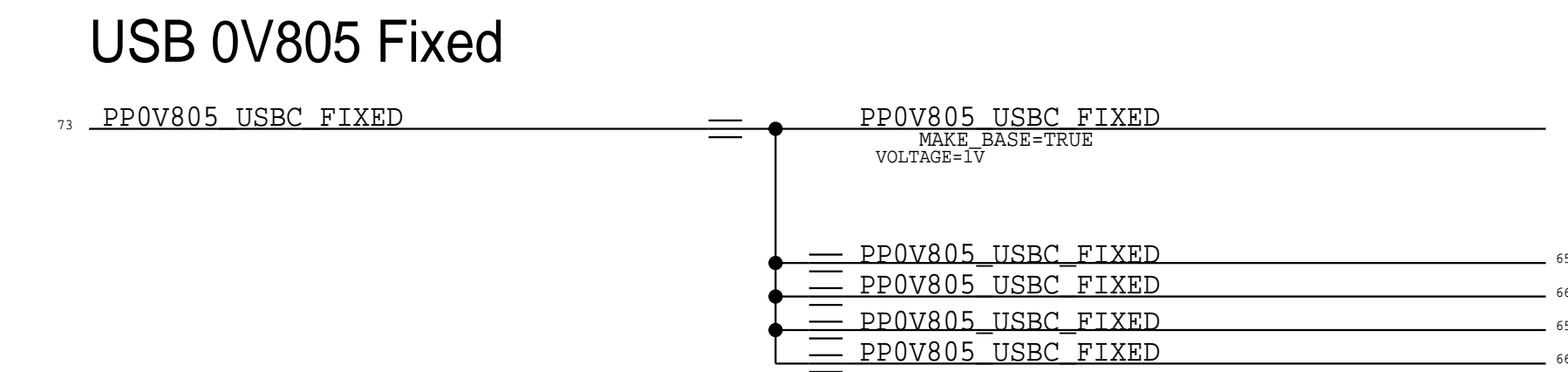
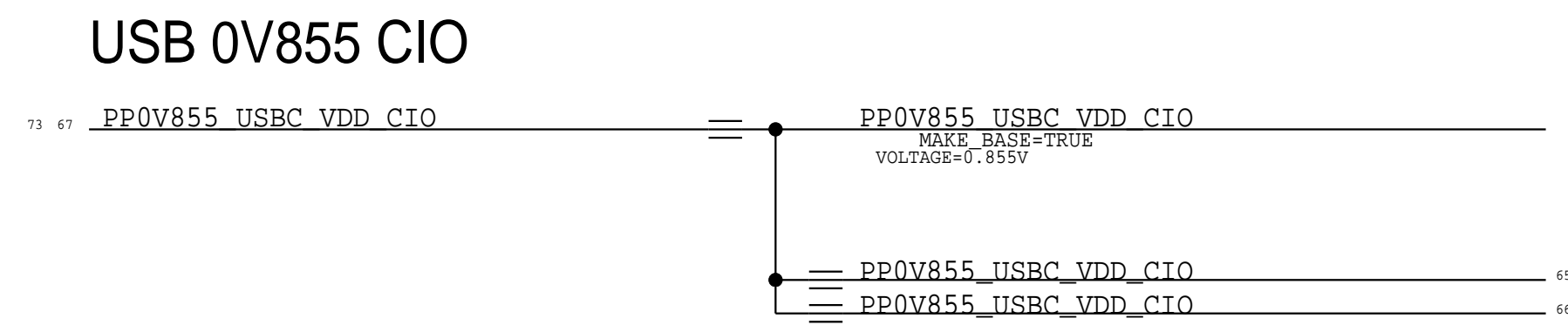
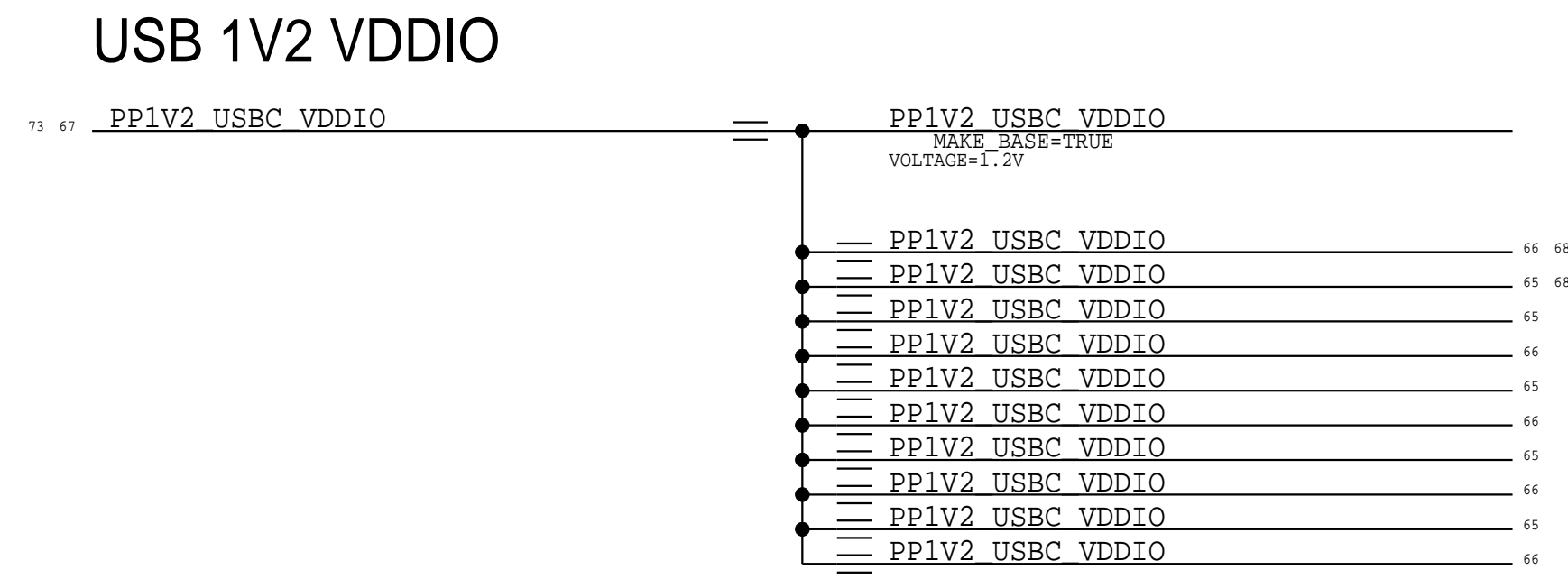


PAGE TITLE			
POWER ALIASES 2			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-09344		D
	REVISION		
	4.0.1		
NOTICE OF PROPRIETARY PROPERTY:			
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED			
BRANCH			
PAGE		401 OF 801	
SHEET		102 OF 121	



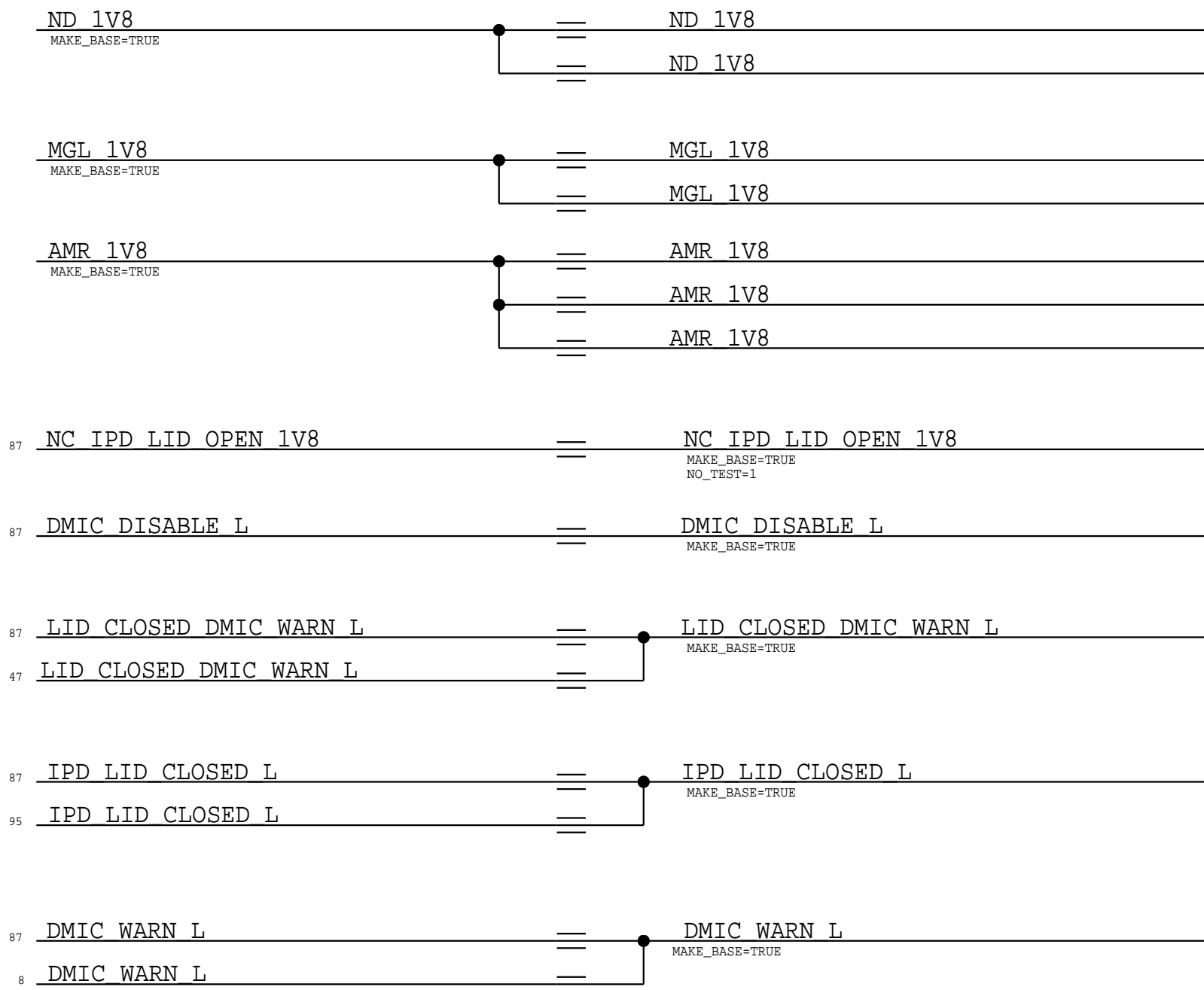


PAGE TITLE		
POWER ALIASES 3		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	402 OF 801
	SHEET	103 OF 121

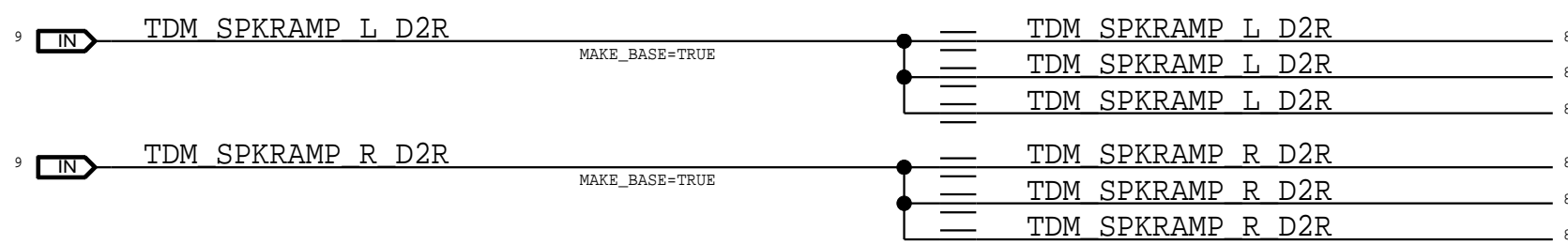




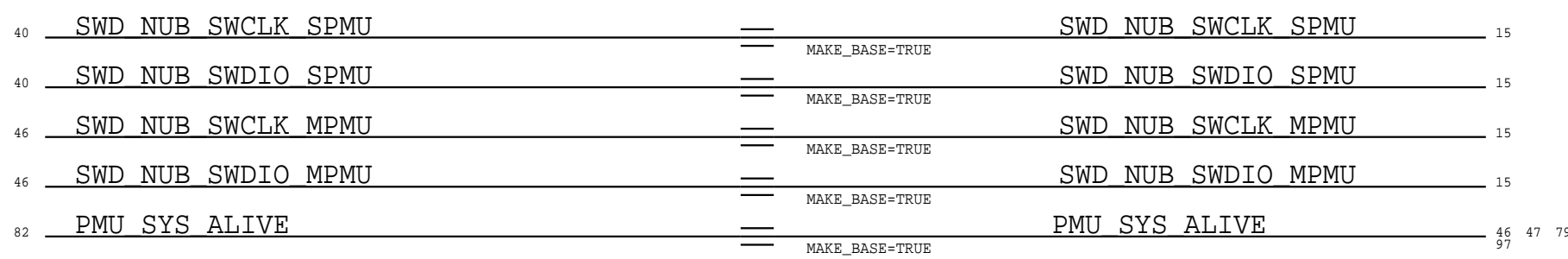
## A Secure Disable Aliases



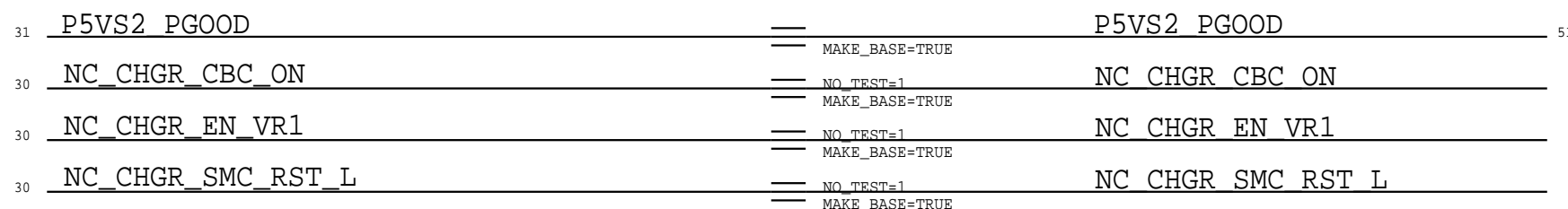
## B Speaker Amplifier Aliases



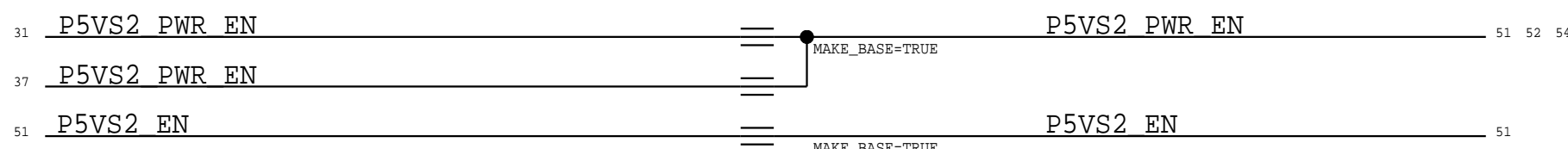
## C PMU Aliases



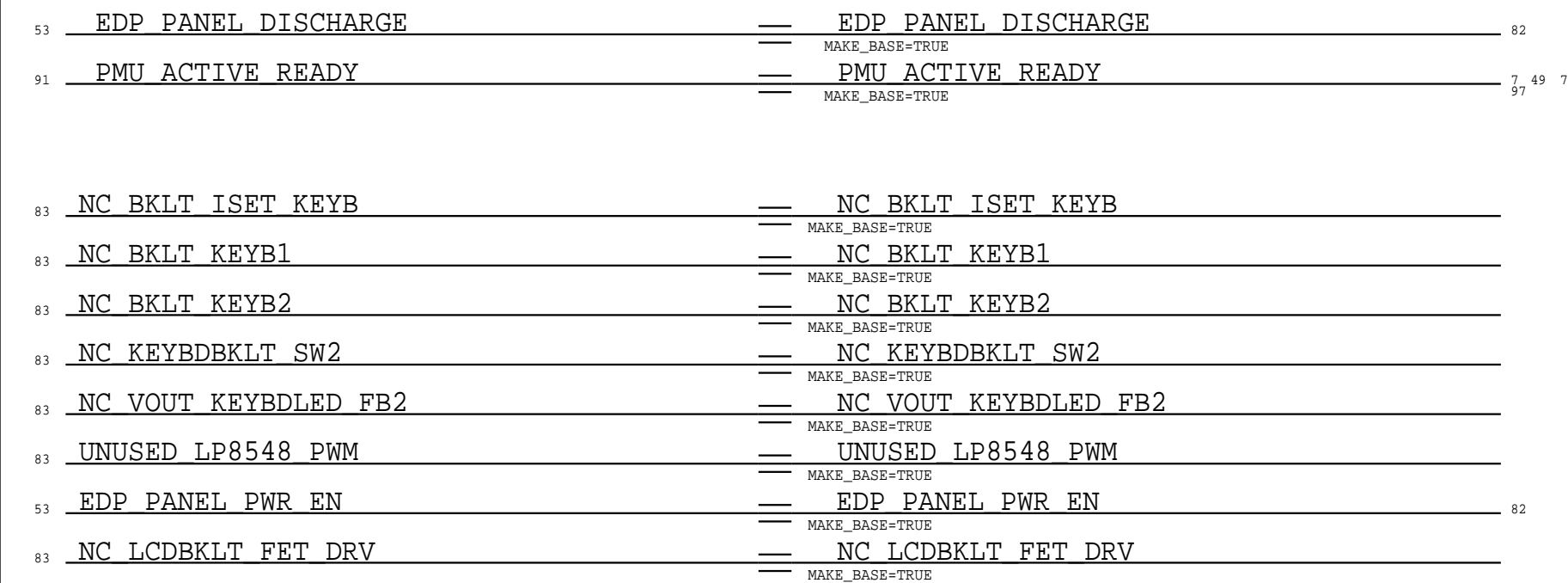
## D Charger Aliases



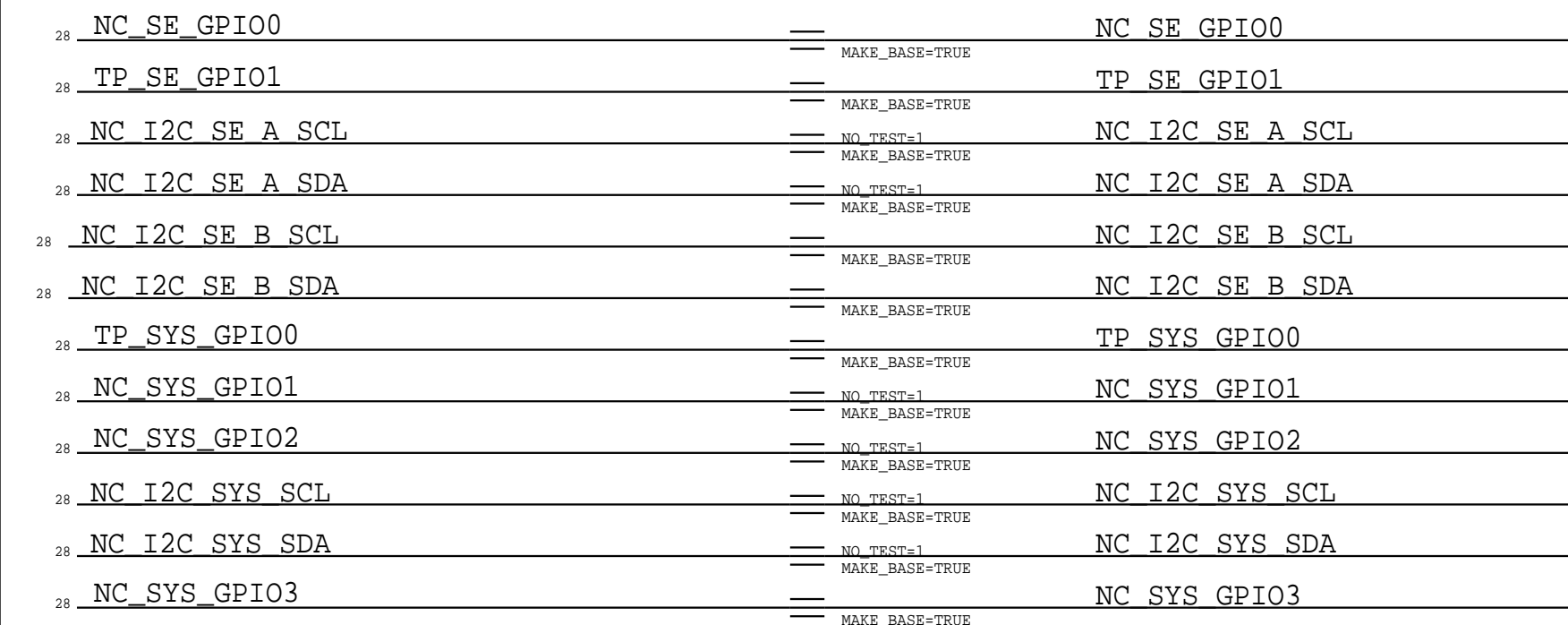
## E PP5V\_S2 Aliases



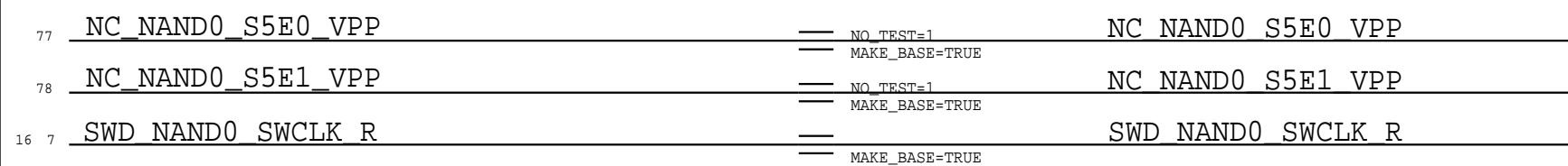
## F Display and Backlight Aliases



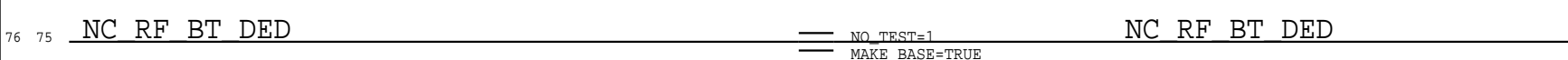
## G Secure Element Aliases



## H NAND Aliases

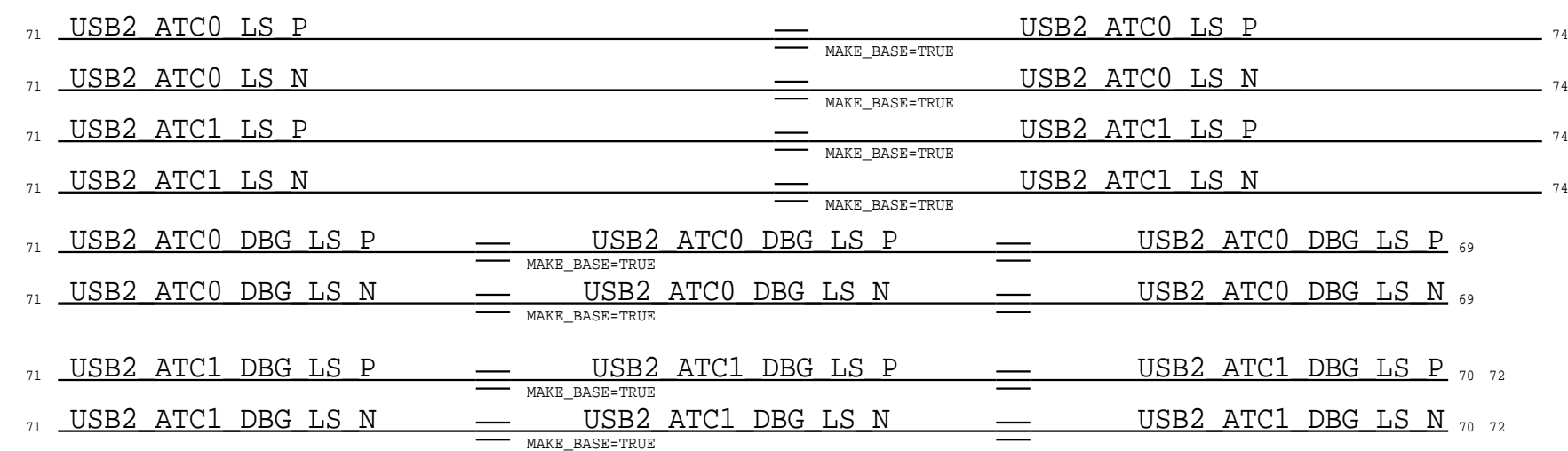


## I Wireless Module Aliases

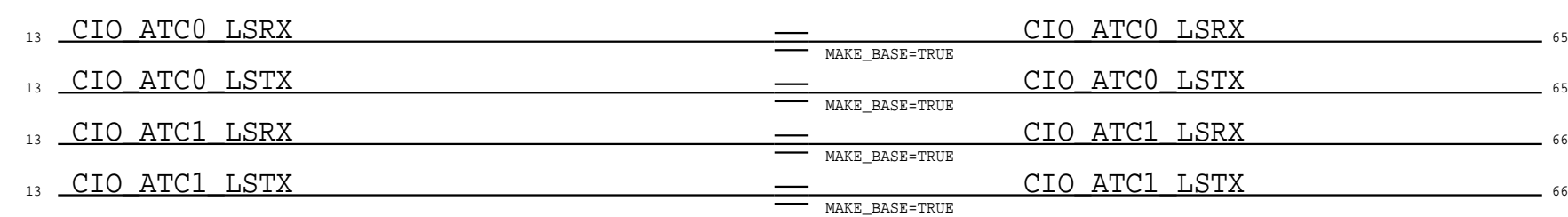


08/18/2023		
PAGE TITLESignal Aliases 1		
	DRAWING NUMBER051-09344	SIZED
	REVISION4.0.1	
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE405 OF 801	
	SHEET105 OF 121	

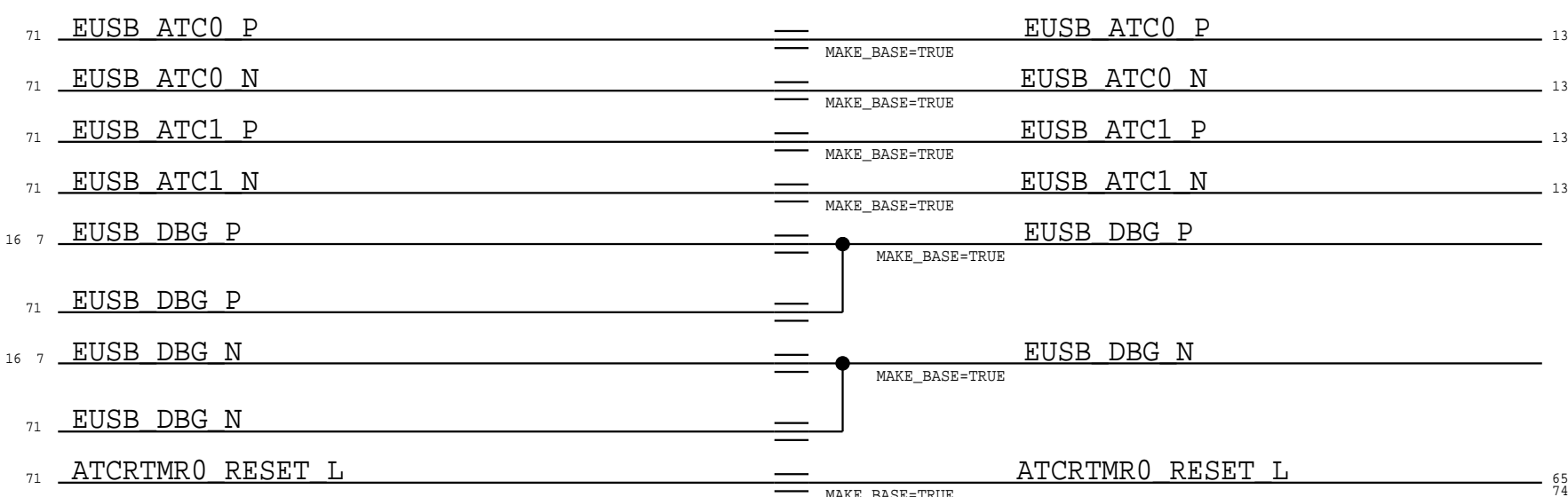
Ⓐ USB-C Aliases: USB 2.0 I/F



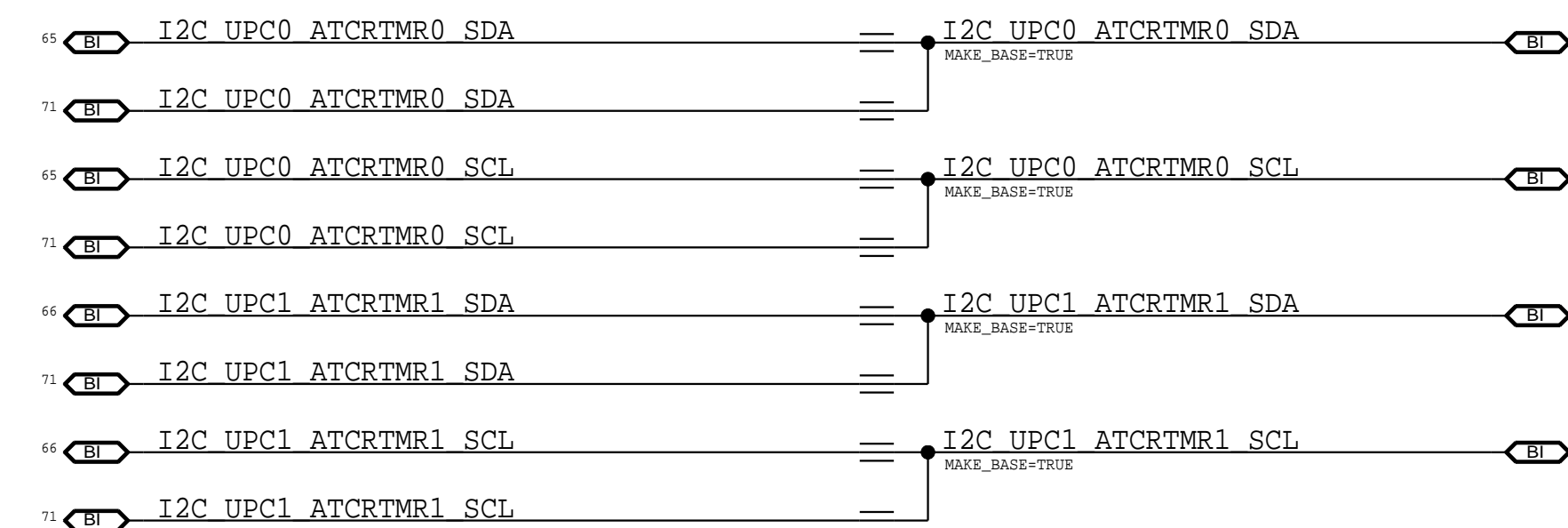
Ⓑ USB-C Aliases: CIO Debug I/F



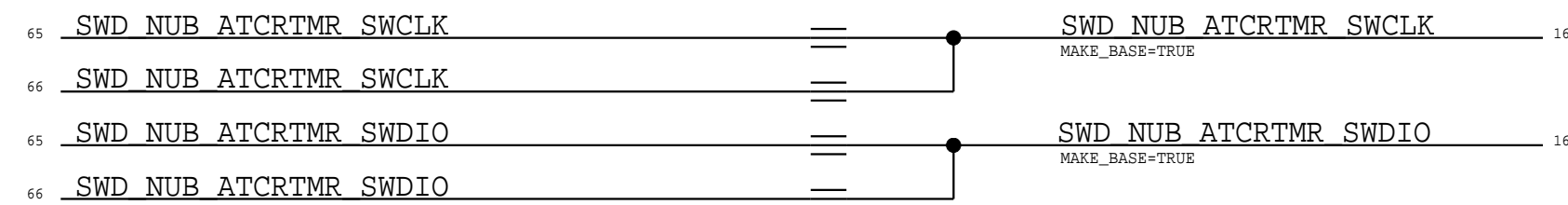
③ USB-C Aliases: EUSB I/F



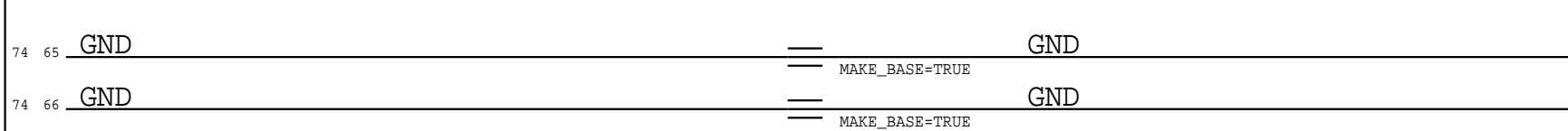
④ USB-C Aliases: I2C I/F



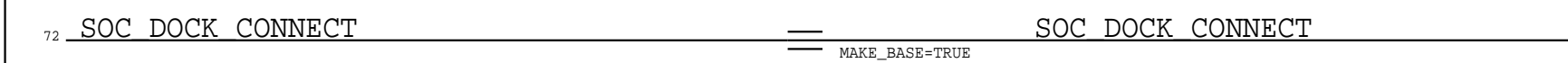
⑤ USB-C Aliases: SWD I/F



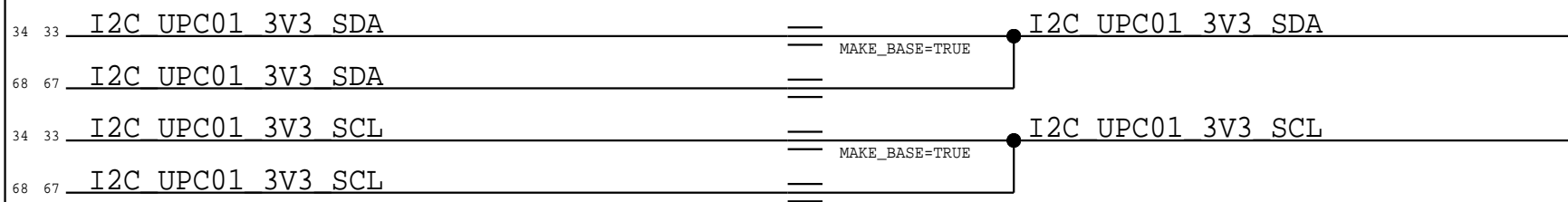
ⓕ USB-C Aliases: VDD I/O Fuse I/F



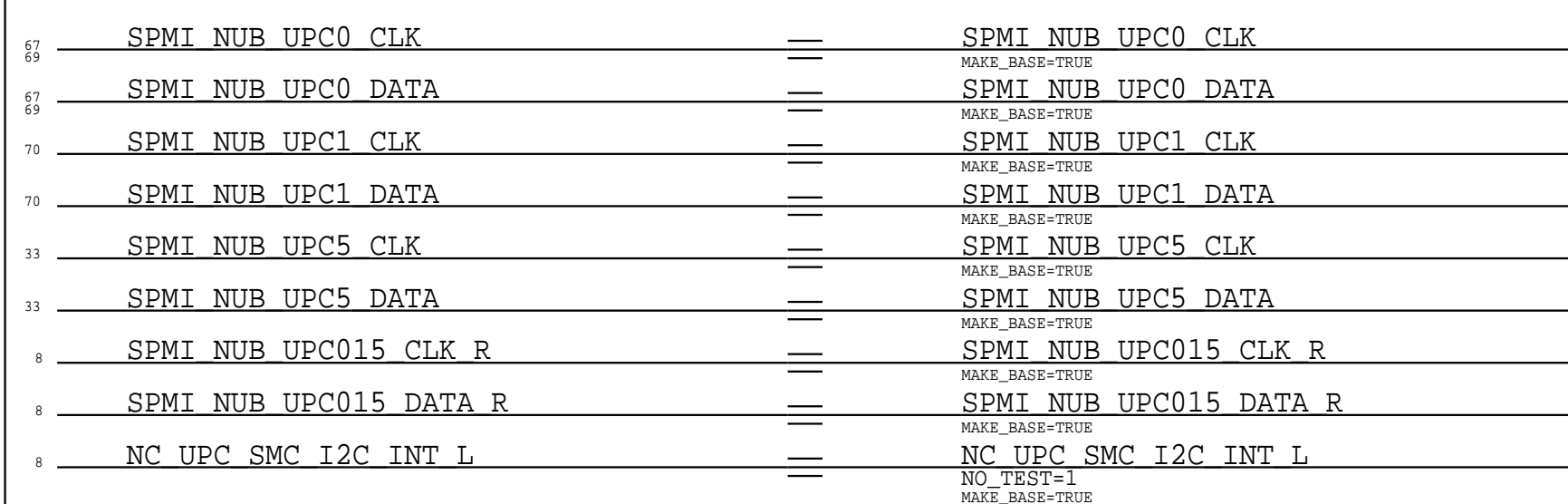
## ① USB-C Aliases: SOC Dock Connect



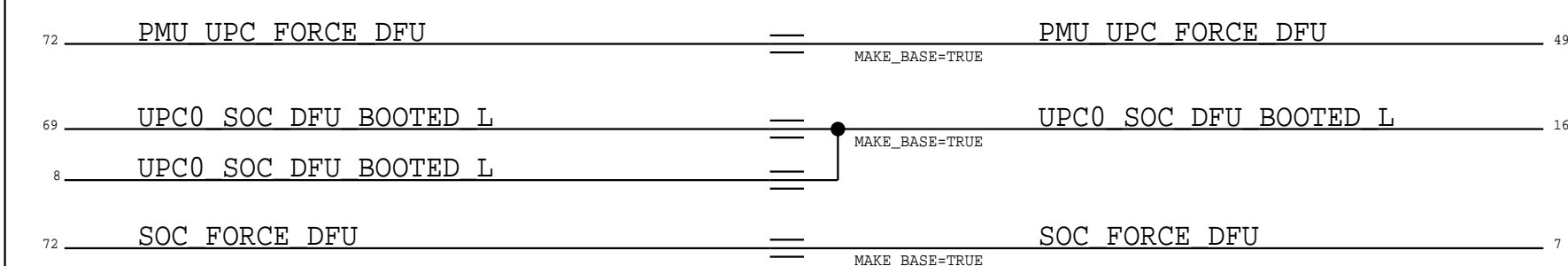
## Ⓜ USB-C Aliases: UPC I2C



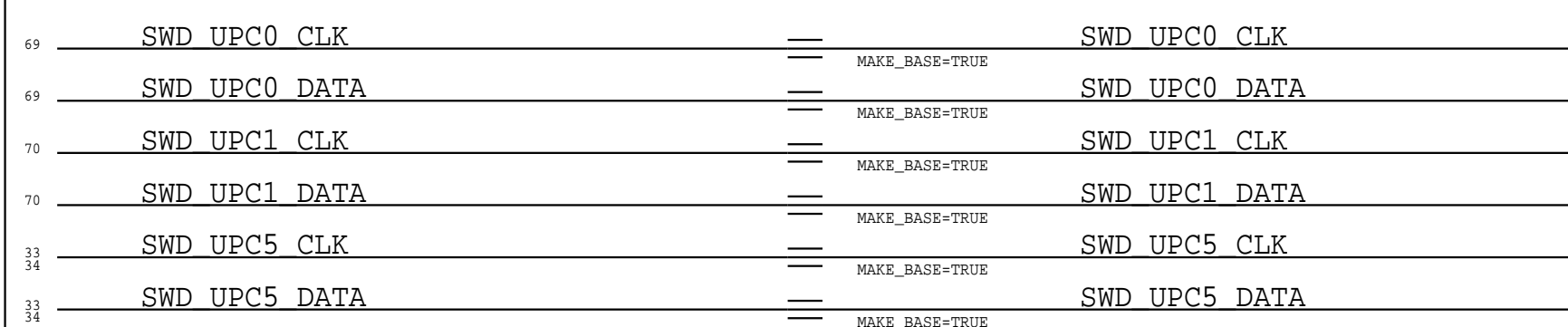
## ① USB-C Aliases: UPC SPMI



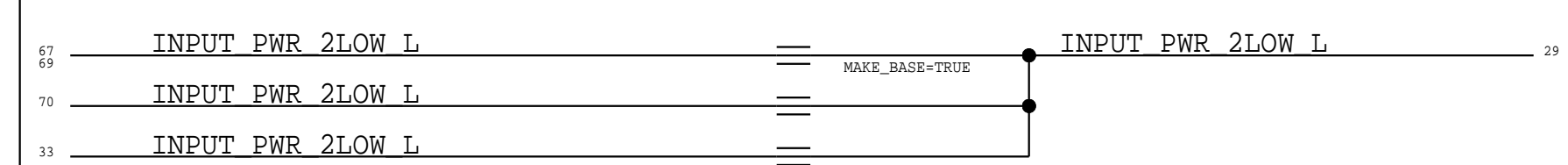
① USB-C Aliases: PMU UPC FORCE DFU



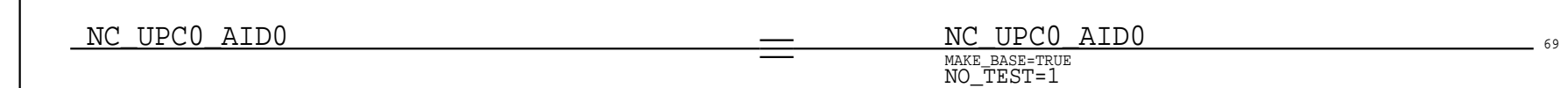
Ⓚ USB-C Aliases: UPC SWD



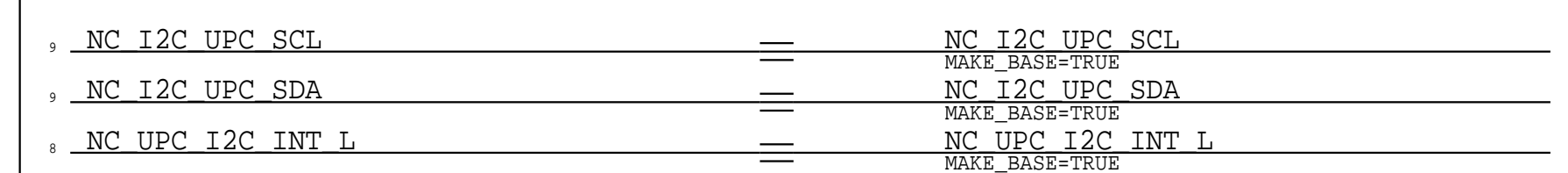
Ⓛ USB-C Aliases: UPC PWR Too Low



## ④ USB-C Aliases: Unused Mogul



Ⓝ USB-C Aliases: Unused I2C0 to UPCs





## A GPIO AOP ALIAS

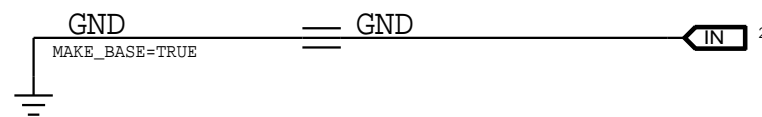
8	NC SOC AOP I2CM1 SCL	==	NC SOC AOP I2CM1 SCL
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP I2CM1 SDA	==	NC SOC AOP I2CM1 SDA
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP I2CM2 SCL	==	NC SOC AOP I2CM2 SCL
	MAKE_BASE=TRUE		NO_TEST=1
8	NC SOC AOP I2CM2 SDA	==	NC SOC AOP I2CM2 SDA
	MAKE_BASE=TRUE		NO_TEST=1
8	NC SOC NUB SPMI2 SCLK	==	NC SOC NUB SPMI2 SCLK
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC NUB SPMI2 SDATA	==	NC SOC NUB SPMI2 SDATA
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP UART0 RXD	==	NC SOC AOP UART0 RXD
	MAKE_BASE=TRUE		NO_TEST=1
8	NC SOC AOP UART0 TXD	==	NC SOC AOP UART0 TXD
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP UART1 RXD	==	NC SOC AOP UART1 RXD
	MAKE_BASE=TRUE		NO_TEST=1
8	NC SOC AOP UART1 TXD	==	NC SOC AOP UART1 TXD
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP UART2 RXD	==	NC SOC AOP UART2 RXD
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP UART2 TXD	==	NC SOC AOP UART2 TXD
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC PDM DMIC DATA2	==	NC PDM DMIC DATA2
	MAKE_BASE=TRUE		NO_TEST=1
9	NC SOC SGPIO1	==	NC SOC SGPIO1
	MAKE_BASE=TRUE		NO_TEST=1
5	P3V8A0N_ILIMIT_DIV_PULL_PWM	==	P3V8A0N_ILIMIT_DIV_PULL_PWM
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC SOC AOP GPIO 15	==	NC SOC AOP GPIO 15
	MAKE_BASE=TRUE		NO_TEST=1
8	NC HDMI CEC AOP TX	==	NC HDMI CEC AOP TX
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
8	NC HDMI CEC AOP RX	==	NC HDMI CEC AOP RX
	MAKE_BASE=TRUE		NO_TEST=1
8	NC HDMI HDP AOP	==	NC HDMI HDP AOP
	MAKE_BASE=TRUE		MAKE_BASE=TRUE
7	TP SOC DOCK ATTENTION	==	TP SOC DOCK ATTENTION
	MAKE_BASE=TRUE		MAKE_BASE=TRUE

## © DEBUG ALIAS

```
7 NC SOC SWD TMS5 — NC SOC SWD TMS5
  — MAKE_BASE=TRUE NO_TEST=1
```

## D GND ALIAS

The DUT\_GND\_DETECT signal is for dev only, and should be tied to GND.



## Ⓑ GPIO AP ALIAS

NC SOC AP GPIO 22	NC SOC AP GPIO 22
NC BKLTL PWR ON	NC BKLTL PWR ON
NC SOC AP GPIO 1	NC SOC AP GPIO 1
NC SWD UPC SWDIO1 R	NC SWD UPC SWDIO1 R
NC CCG I2C INT	NC CCG I2C INT
NC SD PRSNT L DMIC ID	NC SD PRSNT L DMIC ID
NC SOC AP GPIO 17	NC SOC AP GPIO 17
NC SOC AP GPIO 18	NC SOC AP GPIO 18
NC SOC AP GPIO 19	NC SOC AP GPIO 19
NC SOC AP GPIO 20	NC SOC AP GPIO 20
NC SOC AP GPIO 23	NC SOC AP GPIO 23
NC SOC AP GPIO 24	NC SOC AP GPIO 24
NC SOC AP GPIO 25	NC SOC AP GPIO 25
NC SOC AP GPIO 26	NC SOC AP GPIO 26
NC SOC AP UART1 CTS L	NC SOC AP UART1 CTS L
NC SOC AP UART1 RTS L	NC SOC AP UART1 RTS L
NC SOC AP UART1 RXD	NC SOC AP UART1 RXD
NC SOC AP UART1 TXD	NC SOC AP UART1 TXD
NC SOC AP UART2 CTS L	NC SOC AP UART2 CTS L
NC SOC AP UART2 RTS L	NC SOC AP UART2 RTS L
NC SOC AP UART2 RXD	NC SOC AP UART2 RXD
NC SOC AP UART2 TXD	NC SOC AP UART2 TXD
NC SOC AP UART3 CTS L	NC SOC AP UART3 CTS L
NC SOC AP UART3 RTS L	NC SOC AP UART3 RTS L
NC SOC AP UART3 RXD	NC SOC AP UART3 RXD
NC SOC AP UART3 TXD	NC SOC AP UART3 TXD
NC SOC AP UART4 RXD	NC SOC AP UART4 RXD
NC SOC AP UART4 TXD	NC SOC AP UART4 TXD
NC UART TCON R2D	NC UART TCON R2D
NC UART HDMI D2R	NC UART HDMI D2R
NC UART HDMI R2D	NC UART HDMI R2D

## A SPI & I2S ALIAS

NC TDM SPKRAMP TOP BCLK R	==	NC TDM SPKRAMP TOP BCLK R MAKE_BASE=TRUE NO_TEST=1
NC TDM SPKRAMP TOP D2R	==	NC TDM SPKRAMP TOP D2R MAKE_BASE=TRUE
NC TDM SPKRAMP TOP R2D R	==	NC TDM SPKRAMP TOP R2D R MAKE_BASE=TRUE NO_TEST=1
NC TDM SPKRAMP TOP FSYNC R	==	NC TDM SPKRAMP TOP FSYNC R MAKE_BASE=TRUE NO_TEST=1

NC SOC AP SPI5 MISO	==	NC SOC AP SPI5 MISO	NO_TEST=1
NC SOC AP SPI5 MOSI	==	NC SOC AP SPI5 MOSI	NO_TEST=1
NC SOC AP SPI5 SCLK	==	NC SOC AP SPI5 SCLK	NO_TEST=1
NC SOC AP SPI5 CS L	==	NC SOC AP SPI5 CS L	NO_TEST=1

9	NC SOC SSPI0 MISO	==	NC SOC SSPI0 MISO MAKE_BASE=TRUE
9	NC SOC SSPI0 MOSI	==	NC SOC SSPI0 MOSI MAKE_BASE=TRUE NO_TEST=1
9	NC SOC SSPI0 SCLK	==	NC SOC SSPI0 SCLK MAKE_BASE=TRUE


9	NC SOC AP SPI2 CS L	==	NC SOC AP SPI2 CS L	MAKE_BASE=TRUE
9	NC SPI DP2HDMI_HOLD L	==	NC SPI DP2HDMI_HOLD L	NO_TEST=1
9	NC SOC AP I2S0 MCK	==	NC SOC AP I2S0 MCK	NO_TEST=1
9	NC SOC AP I2S1 MCK	==	NC SOC AP I2S1 MCK	NO_TEST=1
9	NC SOC AP I2S2 MCK	==	NC SOC AP I2S2 MCK	MAKE_BASE=TRUE

NC AOP I2S0 MCK	==	NC AOP I2S0 MCK	MAKE_BASE=TRUE	NO_TEST=1
NC AOP I2S0 LRCLK	==	NC AOP I2S0 LRCLK	MAKE_BASE=TRUE	
NC AOP I2S0 BCLK	==	NC AOP I2S0 BCLK	MAKE_BASE=TRUE	
NC AOP I2S0 DIN	==	NC AOP I2S0 DIN	MAKE_BASE=TRUE	NO_TEST=1
NC AOP I2S0 DOUT	==	NC AOP I2S0 DOUT	MAKE_BASE=TRUE	NO_TEST=1
NC PDM DMIC CLK7 R	==	NC PDM DMIC CLK7 R	MAKE_BASE=TRUE	

NC_SOC_SPI3_MOSI	==	NC_SOC_SPI3_MOSI	MAKE_BASE=TRUE
NC_SOC_SPI3_MISO	==	NC_SOC_SPI3_MISO	MAKE_BASE=TRUE NO_TEST=1
NC_SOC_SPI3_SCLK	==	NC_SOC_SPI3_SCLK	MAKE_BASE=TRUE NO_TEST=1
NC_SOC_SPI3_SSIN	==	NC_SOC_SPI3_SSIN	MAKE_BASE=TRUE NO_TEST=1

## B GPIO MTP ALIAS

8	<u>NC_SOC_MTP_I2C0_SCL</u>	<u>==</u>	<u>NC_SOC_MTP_I2C0_SCL</u> MAKE_BASE=TRUE
8	<u>NC_SOC_MTP_I2C0_SDA</u>	<u>==</u>	<u>NC_SOC_MTP_I2C0_SDA</u> MAKE_BASE=TRUE
8	<u>NC_SOC_MTP_FUNC_6</u>	<u>==</u>	<u>NC_SOC_MTP_FUNC_6</u> MAKE_BASE=TRUE NO_TEST=1
8	<u>NC_SOC_MTP_FUNC_7</u>	<u>==</u>	<u>NC_SOC_MTP_FUNC_7</u> MAKE_BASE=TRUE NO_TEST=1
8	<u>NC_SOC_MTP_FUNC_1</u>	<u>==</u>	<u>NC_SOC_MTP_FUNC_1</u> MAKE_BASE=TRUE
8	<u>NC_SOC_MTP_FUNC_2</u>	<u>==</u>	<u>NC_SOC_MTP_FUNC_2</u> MAKE_BASE=TRUE

PAGE TITLE		SOC: ALIASES SPI, I2S	
 Apple Inc.	DRAWING NUMBER	051-09344	SIZE D
	REVISION	4.0.1	
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR PUBLISH IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE 421 OF 801	
		SHEET 108 OF 121	




## A LPDP ALIAS

11	NC SOC LPDP RX AUX D0	==	NC SOC LPDP RX AUX D0	MAKE_BASE=TRUE
11	NC SOC LPDP RX AUX D1	==	NC SOC LPDP RX AUX D1	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D2	==	NC SOC LPDP RX AUX D2	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D3	==	NC SOC LPDP RX AUX D3	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D4	==	NC SOC LPDP RX AUX D4	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D5	==	NC SOC LPDP RX AUX D5	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D6	==	NC SOC LPDP RX AUX D6	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX AUX D7	==	NC SOC LPDP RX AUX D7	MAKE_BASE=TRUE NO_TEST=1

11	NC SOC LPDP RX D1P	==	NC SOC LPDP RX D1P MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX D1N	==	NC SOC LPDP RX D1N MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX D2P	==	NC SOC LPDP RX D2P MAKE_BASE=TRUE
11	NC SOC LPDP RX D2N	==	NC SOC LPDP RX D2N MAKE_BASE=TRUE
11	NC SOC LPDP RX D3P	==	NC SOC LPDP RX D3P MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX D3N	==	NC SOC LPDP RX D3N MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX D4P	==	NC SOC LPDP RX D4P MAKE_BASE=TRUE
11	NC SOC LPDP RX D4N	==	NC SOC LPDP RX D4N MAKE_BASE=TRUE
11	NC SOC LPDP RX D5P	==	NC SOC LPDP RX D5P MAKE_BASE=TRUE
11	NC SOC LPDP RX D5N	==	NC SOC LPDP RX D5N MAKE_BASE=TRUE
11	NC SOC LPDP RX D6P	==	NC SOC LPDP RX D6P MAKE_BASE=TRUE
11	NC SOC LPDP RX D6N	==	NC SOC LPDP RX D6N MAKE_BASE=TRUE
11	NC SOC LPDP RX D7P	==	NC SOC LPDP RX D7P MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX D7N	==	NC SOC LPDP RX D7N MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX1 RCAL POS	==	NC SOC LPDP RX1 RCAL POS MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP RX1 RCAL NEG	==	NC SOC LPDP RX1 RCAL NEG MAKE_BASE=TRUE NO_TEST=1

11	NC LPDP EXT DATA CP<0>	==	NC LPDP EXT DATA CP<0> MAKE_BASE=TRUE
11	NC LPDP EXT DATA CN<0>	==	NC LPDP EXT DATA CN<0> MAKE_BASE=TRUE
11	NC LPDP EXT DATA CP<1>	==	NC LPDP EXT DATA CP<1> MAKE_BASE=TRUE
11	NC LPDP EXT DATA CN<1>	==	NC LPDP EXT DATA CN<1> MAKE_BASE=TRUE
11	NC LPDP EXT DATA CP<2>	==	NC LPDP EXT DATA CP<2> MAKE_BASE=TRUE NO_TEST=1
11	NC LPDP EXT DATA CN<2>	==	NC LPDP EXT DATA CN<2> MAKE_BASE=TRUE NO_TEST=1
11	NC LPDP EXT DATA CP<3>	==	NC LPDP EXT DATA CP<3> MAKE_BASE=TRUE NO_TEST=1
11	NC LPDP EXT DATA CN<3>	==	NC LPDP EXT DATA CN<3> MAKE_BASE=TRUE NO_TEST=1
11	NC LPDP EXT AUX CP	==	NC LPDP EXT AUX CP MAKE_BASE=TRUE
11	NC LPDP EXT AUX CN	==	NC LPDP EXT AUX CN MAKE_BASE=TRUE
11	NC LPDP EXT HPD	==	NC LPDP EXT HPD MAKE_BASE=TRUE NO_TEST=1

PAGE TITLE		SOC: ALIASES LPDP RX	
 Apple Inc.	DRAWING NUMBER	051-09344	SIZE D
	REVISION	4.0.1	
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I. TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		PAGE	423 OF 801
		SHEET	109 OF 121

## A PCIe ALIAS

10	NC SOC GP PCIE RX1P	==	NC SOC GP PCIE RX1P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE RX1N	==	NC SOC GP PCIE RX1N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX1P	==	NC SOC GP PCIE TX1P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX1N	==	NC SOC GP PCIE TX1N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK1 100MP	==	NC SOC GP PCIE CLK1 100MP	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK1 100MN	==	NC SOC GP PCIE CLK1 100MN	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLKREQ 1 L	==	NC SOC GP PCIE CLKREQ 1 L	MAKE_BASE=TRUE	
12	NC SOC GP PCIE PERST 1 L	==	NC SOC GP PCIE PERST 1 L	MAKE_BASE=TRUE	
12	NC SOC GP PCIE RX2P	==	NC SOC GP PCIE RX2P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE RX2N	==	NC SOC GP PCIE RX2N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX2P	==	NC SOC GP PCIE TX2P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX2N	==	NC SOC GP PCIE TX2N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK2 100MP	==	NC SOC GP PCIE CLK2 100MP	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK2 100MN	==	NC SOC GP PCIE CLK2 100MN	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLKREQ 2 L	==	NC SOC GP PCIE CLKREQ 2 L	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE PERST 2 L	==	NC SOC GP PCIE PERST 2 L	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE RX3P	==	NC SOC GP PCIE RX3P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE RX3N	==	NC SOC GP PCIE RX3N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX3P	==	NC SOC GP PCIE TX3P	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE TX3N	==	NC SOC GP PCIE TX3N	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK3 100MP	==	NC SOC GP PCIE CLK3 100MP	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLK3 100MN	==	NC SOC GP PCIE CLK3 100MN	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE CLKREQ 3 L	==	NC SOC GP PCIE CLKREQ 3 L	MAKE_BASE=TRUE	NO_TEST=1
12	NC SOC GP PCIE PERST 3 L	==	NC SOC GP PCIE PERST 3 L	MAKE_BASE=TRUE	NO_TEST=1

## B DISP ALIAS

9	NC I2C SD DISP BKLT_SCL	==	NC I2C SD DISP BKLT_SCL	
			MAKE_BASE=TRUE	
9	NC I2C SD DISP BKLT_SDA	==	NC I2C SD DISP BKLT_SDA	
			MAKE_BASE=TRUE	NO_TEST=1
11	I2C DISP BKLT_SCL	==	I2C DISP BKLT_SCL	55
			MAKE_BASE=TRUE	
11	I2C DISP BKLT_SDA	==	I2C DISP BKLT_SDA	55
			MAKE_BASE=TRUE	
11	NC SPI DISP BKLT_CLK_R	==	NC SPI DISP BKLT_CLK_R	
			MAKE_BASE=TRUE	NO_TEST=1
11	NC SPI DISP BKLT_CS_L	==	NC SPI DISP BKLT_CS_L	
			MAKE_BASE=TRUE	NO_TEST=1
11	NC SPMI DISP BKLT_CLK	==	NC SPMI DISP BKLT_CLK	
			MAKE_BASE=TRUE	NO_TEST=1
11	NC SPMI DISP BKLT_DATA	==	NC SPMI DISP BKLT_DATA	
			MAKE_BASE=TRUE	
11	NC SOC DISP POL	==	NC SOC DISP POL	
			MAKE_BASE=TRUE	NO_TEST=1
11	NC DISP BKLT_FSYNC	==	NC DISP BKLT_FSYNC	
			MAKE_BASE=TRUE	
81	DISP BKLT_LSYNC	==	DISP BKLT_LSYNC	11
			MAKE_BASE=TRUE	
11	NC SOC DISP TOUCH_BSYNC0	==	NC SOC DISP TOUCH_BSYNC0	
			MAKE_BASE=TRUE	
11	NC SOC DISP TOUCH_BSYNC1	==	NC SOC DISP TOUCH_BSYNC1	
			MAKE_BASE=TRUE	
11	NC SOC DISP TOUCH_EB	==	NC SOC DISP TOUCH_EB	
			MAKE_BASE=TRUE	
11	NC BKLT_BOOST_THROTTLE_L	==	NC BKLT_BOOST_THROTTLE_L	
			MAKE_BASE=TRUE	NO_TEST=1

## D LPDP Aliases

11	NC SOC LPDP DP2HDMI RCAL POS	==	NC SOC LPDP DP2HDMI RCAL POS
		==	MAKE_BASE=TRUE NO_TEST=1
11	NC SOC LPDP DP2HDMI RCAL NEG	==	NC SOC LPDP DP2HDMI RCAL NEG
		==	MAKE_BASE=TRUE



8

7

6

5

4

3

2

1

A

SMC & NUB ALIAS

8

TOUCHID\_PWR\_EN

==

TOUCHID\_PWR\_EN

92 93

MAKE\_BASE=TRUE

8

NC\_SOC\_NUB\_GPIO\_2

==

NC\_SOC\_NUB\_GPIO\_2

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_3

==

NC\_SOC\_NUB\_GPIO\_3

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_4

==

NC\_SOC\_NUB\_GPIO\_4

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_5

==

NC\_SOC\_NUB\_GPIO\_5

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_ENET\_LOW\_PWR

==

NC\_ENET\_LOW\_PWR

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_10

==

NC\_SOC\_NUB\_GPIO\_10

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_12

==

NC\_SOC\_NUB\_GPIO\_12

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_14

==

NC\_SOC\_NUB\_GPIO\_14

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_GPIO\_15

==

NC\_SOC\_NUB\_GPIO\_15

MAKE\_BASE=TRUE

NO\_TEST=1

D

MTR\_TD Aliases

7

NC\_SOC\_MTR\_TD\_B

==

NC\_SOC\_MTR\_TD\_B

MAKE\_BASE=TRUE

NO\_TEST=1

7

NC\_SOC\_MTR\_TD\_BS

==

NC\_SOC\_MTR\_TD\_BS

MAKE\_BASE=TRUE

NO\_TEST=1

7

NC\_SOC\_MTR\_TD\_E

==

NC\_SOC\_MTR\_TD\_E

MAKE\_BASE=TRUE

NO\_TEST=1

7

NC\_SOC\_MTR\_TD\_ES

==

NC\_SOC\_MTR\_TD\_ES

MAKE\_BASE=TRUE

NO\_TEST=1

7

NC\_SOC\_MTR\_TD\_ESD

==

NC\_SOC\_MTR\_TD\_ESD

MAKE\_BASE=TRUE

NO\_TEST=1

B

ISP ALIAS

10

NC\_SOC\_ISP\_GPIO\_1

==

NC\_SOC\_ISP\_GPIO\_1

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_ISP\_GPIO\_2

==

NC\_SOC\_ISP\_GPIO\_2

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_ISP\_GPIO\_3

==

NC\_SOC\_ISP\_GPIO\_3

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_ISP\_SPMI0\_SCLK

==

NC\_SOC\_ISP\_SPMI0\_SCLK

MAKE\_BASE=TRUE

10

NC\_SOC\_ISP\_SPMI0\_SDATA

==

NC\_SOC\_ISP\_SPMI0\_SDATA

MAKE\_BASE=TRUE

10

NC\_SOC\_ISP\_SPMI1\_SCLK

==

NC\_SOC\_ISP\_SPMI1\_SCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_ISP\_SPMI1\_SDATA

==

NC\_SOC\_ISP\_SPMI1\_SDATA

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_SENSOR0\_CLK

==

NC\_SOC\_SENSOR0\_CLK

MAKE\_BASE=TRUE

10

NC\_SOC\_SENSOR1\_CLK

==

NC\_SOC\_SENSOR1\_CLK

MAKE\_BASE=TRUE

NO\_TEST=1

E

MISC. ALIAS

8

NC\_SOC\_SMC\_GPIO\_1

==

NC\_SOC\_SMC\_GPIO\_1

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SMC\_FAN\_0\_PWM

==

NC\_SMC\_FAN\_0\_PWM

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SMC\_FAN\_0\_TACH

==

NC\_SMC\_FAN\_0\_TACH

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SMC\_FAN\_1\_PWM

==

NC\_SMC\_FAN\_1\_PWM

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SMC\_FAN\_1\_TACH

==

NC\_SMC\_FAN\_1\_TACH

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_SOC\_NUB\_CLK\_OUT\_0

==

NC\_SOC\_NUB\_CLK\_OUT\_0

MAKE\_BASE=TRUE

NO\_TEST=1

111 8

TP\_SOC\_NUB\_CLK\_OUT\_1

==

TP\_SOC\_NUB\_CLK\_OUT\_1

8 111

MAKE\_BASE=TRUE

C

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10

NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNCLK

==

NC\_SOC\_MIPI0C\_DNCLK

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<0>

==

NC\_SOC\_MIPI0C\_DPDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<0>

==

NC\_SOC\_MIPI0C\_DNDATA<0>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DPDATA<1>

==

NC\_SOC\_MIPI0C\_DPDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_DNDATA<1>

==

NC\_SOC\_MIPI0C\_DNDATA<1>

MAKE\_BASE=TRUE

NO\_TEST=1

10

NC\_SOC\_MIPI0C\_REXT

==

NC\_SOC\_MIPI0C\_REXT

MAKE\_BASE=TRUE

NO\_TEST=1

CKPLUS\_WAIVE=MULTI\_PIN\_NC\_NETS

F

UWB Aliases

8

NC\_UWB\_HOST\_WAKE

==

NC\_UWB\_HOST\_WAKE

MAKE\_BASE=TRUE

NO\_TEST=1

8

NC\_UWB\_DUMP\_TRIG

==

NC\_UWB\_DUMP\_TRIG

MAKE\_BASE=TRUE

8

NC\_UWB\_CS\_L

==

NC\_UWB\_CS\_L

MAKE\_BASE=TRUE

7

NC\_SWD\_UWB\_SWDIO\_R

==

NC\_SWD\_UWB\_SWDIO\_R

MAKE\_BASE=TRUE

8

7

6

5

4

3

2

1

A

MIPI Aliases

10


NC\_SOC\_MIPI0C\_DPCLK

==

NC\_SOC\_MIPI0C\_DPCLK

MAKE\_BASE=TRUE

NO\_TEST=1

PAGE TITLE		
SOC: ALIASES CAMERA, USB, MISC		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	425 OF 801
	SHEET	111 OF 121

## PHYSICAL CONSTRAINT SET, CLASS ASSIGNMENT

CLASS DEFINITIONS			COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*	CLASS CATEGORY
CLASS NAME	TYPE	CONSTRAINT SET	DP NAMES EX: DP_DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:)	Y/N
I2C	P	DEFAULT	SMB*SCL*,SMB*SDA*,I2C*SCL*,I2C*SDA*,I2C*INT*	Y
SP1	P	DEFAULT	SPI*MISO*,SPI*MOSI*,SPI*CLK*	Y
SPM1	P	DEFAULT	SPM1*	Y
SWD	P	DEFAULT	SWD_NAND*,SWD_NUB*	Y
JTAG	P	DEFAULT	*JTAG*SEL,*JTAG*TC*,*JTAG*TDI,*JTAG*TDO,*JTAG*TMS	Y
CLOCK_24M	P	A_45_OHM_SE	SCOT_XTAL24M*,SCOT_24M_O_R,NAND0_CLK24M*	Y
CLOCK_32K	P	A_45_OHM_SE	PMU_CLK32K*	Y
TDM_SPKRAMP	P	DEFAULT	TDM_SPKRAMP_*	Y
TDM_CODEC	P	A_45_OHM_SE	TDM_CODEC_*	Y
DMIC_PDM	P	A_45_OHM_SE	PDM_DMIC_DATA*,DMIC_DATA*,PDM_DMIC_CLK*,DMIC_CLK*	Y
USBC_SBU	P	A_45_OHM_SE	USBC0_SBU*,USBC1_SBU*	Y
CIO_D2R	P	A_85_OHM_DIFF	DP:DP_USBC*_D2R*	Y
CIO_R2D	P	A_85_OHM_DIFF	DP:DP_USBC*_R2D*	Y
PCIE_NAND_D2R	P	A_85_OHM_DIFF	DP:DP_PCIE_NAND*_D2R*	Y
PCIE_NAND_R2D	P	A_85_OHM_DIFF	DP:DP_PCIE_NAND*_R2D*	Y
PCIE_WLBT_D2R	P	A_85_OHM_DIFF	DP:DP_PCIE_WLBT*_D2R*	Y
PCIE_WLBT_R2D	P	A_85_OHM_DIFF	DP:DP_PCIE_WLBT*_R2D*	Y
LPDP	P	A_85_OHM_DIFF	DP:DP_LPDP_INT_DATA*	Y
LPDP_FTCAM	P	A_85_OHM_DIFF	DP:DP_LPDP_FTCAM_DATA*	Y
PCIE_CLK	P	A_85_OHM_DIFF	DP:DP_PCIE_CLK100M*	Y
EUSB	P	A_85_OHM_DIFF	DP:DP_EUSB*	Y
USB2	P	A_85_OHM_DIFF	DP:DP_USB2_ATC*_LS,DP_USB2_ATC*_LS_DP_USBC*_USB_BOT_DP_USBC*_USB_TOP	Y
USBC_ATC_AUX	P	A_85_OHM_DIFF	DP:DP_USBC*_AUX*	Y
ISNS_TSNS	P	SNS_DP	DP:DP_ISNS*,DP_CHNR_CS*,DP_F3VBACK_ISNS*,DP_F3VBACK_ISNS*,DP_F3VBACK_VSNS*,DP_THINGS*	Y
GROUND	P	DEFAULT	GND	Y
POWER	P	POWER	PP*,PN*	Y

## PHYSICAL CONSTRAINT SET, NET ASSIGNMENT

DOMAIN	NET RULE ASSIGNMENT	
REF ID	CONSTRAINT SET	COMMA SEPARATED NET NAMES (WILDCARD SUPPORT EX: DDR* )





SPACING CONSTRAINT SET ASSIGNMENT, CLASS-CLASS

CLASS TO CLASS SPACING		
CLASS NAME	CLASS NAME	CONSTRAINT SET
CIO_D2R	GROUND	DEFAULT_WITH_4X_TO_SHAPE
CIO_R2D	GROUND	DEFAULT_WITH_4X_TO_SHAPE
LPDP	GROUND	DEFAULT_WITH_4X_TO_SHAPE
LPDP_FTCAM	GROUND	DEFAULT_WITH_4X_TO_SHAPE
PCIE_CLK	GROUND	DEFAULT_WITH_4X_TO_SHAPE
PCIE_NAND_D2R	GROUND	DEFAULT_WITH_4X_TO_SHAPE
PCIE_NAND_R2D	GROUND	DEFAULT_WITH_4X_TO_SHAPE
PCIE_WLBT_D2R	GROUND	DEFAULT_WITH_4X_TO_SHAPE
PCIE_WLBT_R2D	GROUND	DEFAULT_WITH_4X_TO_SHAPE
USBC_ATC_AUX	GROUND	DEFAULT_WITH_4X_TO_SHAPE
EUSB	GROUND	DEFAULT_WITH_4X_TO_SHAPE
USB2	GROUND	DEFAULT_WITH_4X_TO_SHAPE
CIO_D2R	POWER	DEFAULT_WITH_4X_TO_SHAPE
CIO_R2D	POWER	DEFAULT_WITH_4X_TO_SHAPE
LPDP	POWER	DEFAULT_WITH_4X_TO_SHAPE
LPDP_FTCAM	POWER	DEFAULT_WITH_4X_TO_SHAPE
PCIE_CLK	POWER	DEFAULT_WITH_4X_TO_SHAPE
PCIE_NAND_D2R	POWER	DEFAULT_WITH_4X_TO_SHAPE
PCIE_NAND_R2D	POWER	DEFAULT_WITH_4X_TO_SHAPE
PCIE_WLBT_D2R	POWER	DEFAULT_WITH_4X_TO_SHAPE
PCIE_WLBT_R2D	POWER	DEFAULT_WITH_4X_TO_SHAPE
CIO_D2R	PCIE_NAND_D2R	A_DIELECTRIC_4X
CIO_D2R	PCIE_WLBT_D2R	A_DIELECTRIC_4X
CIO_D2R	LPDP_FTCAM	A_DIELECTRIC_4X
CIO_D2R	CIO_R2D	A_DIELECTRIC_5X
PCIE_NAND_D2R	PCIE_NAND_D2R	A_DIELECTRIC_4X
PCIE_NAND_D2R	PCIE_WLBT_D2R	A_DIELECTRIC_4X
PCIE_NAND_D2R	LPDP_FTCAM	A_DIELECTRIC_4X
PCIE_NAND_D2R	PCIE_NAND_R2D	A_DIELECTRIC_5X
PCIE_WLBT_D2R	PCIE_WLBT_R2D	A_DIELECTRIC_4X
PCIE_WLBT_D2R	LPDP_FTCAM	A_DIELECTRIC_4X
CIO_R2D	PCIE_NAND_R2D	A_DIELECTRIC_4X
CIO_R2D	PCIE_WLBT_R2D	A_DIELECTRIC_4X
CIO_R2D	PCIE_CLK	A_DIELECTRIC_4X
CIO_R2D	LPDP	A_DIELECTRIC_4X
PCIE_NAND_R2D	PCIE_NAND_R2D	A_DIELECTRIC_4X
PCIE_NAND_R2D	PCIE_WLBT_R2D	A_DIELECTRIC_4X
PCIE_NAND_R2D	PCIE_CLK	A_DIELECTRIC_4X
PCIE_NAND_R2D	LPDP	A_DIELECTRIC_4X
PCIE_WLBT_R2D	PCIE_CLK	A_DIELECTRIC_4X
PCIE_WLBT_R2D	LPDP	A_DIELECTRIC_4X
PCIE_CLK	PCIE_CLK	A_DIELECTRIC_4X
PCIE_CLK	LPDP	A_DIELECTRIC_4X
LPDP	LPDP	A_DIELECTRIC_3X
LPDP_FTCAM	LPDP_FTCAM	A_DIELECTRIC_3X



8		7		6	
SOC					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
939-13035	1	PCBA,MUDUMALAI , X2483	U0600	CRITICAL	SOC : INTERPOSER

C0 GOOD - Hynix 8,16,24 GB

PART NUMBER	QTY	DESCRIPTION				REFERENCE DES	CRITICAL	BOM OPTION
998-30913	1	SOC, IRE C0+80,1Y,4C,BIN3,CX,H,M2565				U0600	CRITICAL	SOC:GOOD_C0_HY_8GB
	PART NUMBER	ALTERNATE FOR	BOM OPTION	REFDES	COMMENTS			
	998-30907	998-30913	ALT_CNN	ALL	Hynix Bin1			
	998-32805	998-30913	ALT_CNN	ALL	Hynix Bin4			
998-30914	1	SOC, IRE C0+160,1Y,4C,BIN3,CX,H,M2565				U0600	CRITICAL	SOC:GOOD_C0_HY_16GB
	998-30908	998-30914	ALT_CNN	ALL	Hynix Bin1			
	998-32806	998-30914	ALT_CNN	ALL	Hynix Bin4			
998-30915	1	SOC, IRE C0+240,1Z,4C,BIN3,CX,H,M2565				U0600	CRITICAL	SOC:GOOD_C0_HY_24GB
	998-30909	998-30915	ALT_CNN	ALL	Hynix Bin1			
	998-32807	998-30915	ALT_CNN	ALL	Hynix Bin4			

C0 GOOD - Samsung 8GB

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-32030	1	SOC,1B2 C0+8G,1A,4C,B1N3,CX,S,M2565	U0600	CRITICAL	SOC:GOOD_C0_SS_8GB
PART NUMBER	ALTERNATE FOR	BOM OPTION	REFDES	COMMENTS	
998-32028	998-32030	ALT_CMN	ALL	Samsung Bin1	
998-32808	998-32030	ALT_CMN	ALL	Samsung Bin4	

## C0 GOOD - Micron 16,24 GB

PART NUMBER	QTY	DESCRIPTION				REFERENCE DES	CRITICAL	BOM OPTION
998-32534	1	SOC,IRE C0160,1B,4C,B1N3,CX,M,M3555				U0600	CRITICAL	SOC:GOOD_C0_M1_16GB
PART NUMBER	ALTERNATE FOR	BOM OPTION	REFDES	COMMENTS				
998-30911	998-32534	ALT_CNN	ALL	Micron Bin1				
998-32809	998-32534	ALT_CNN	ALL	Micron Bin4				
998-30918	1	SOC,IRE C0240,1A,4C,B1N3,CX,M,M3555				U0600	CRITICAL	SOC:GOOD_C0_M1_24GB
998-30912	998-30918	ALT_CNN	ALL	Micron Bin1				
998-32810	998-30918	ALT_CNN	ALL	Micron Bin4				

C0 BEST - Hynix 8,16,24 GB


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-30907	1	SOC,1B2 C0+8G,1Y,4C,B1N1,CX,H,M2565	U0600	CRITICAL	SOC:BEST_C0_HY_8GB
998-30908	1	SOC,1B2 C0+16G,1Y,4C,B1N1,CX,H,M2565	U0600	CRITICAL	SOC:BEST_C0_HY_16GB
998-30909	1	SOC,1B2 C0+24G,1Z,4C,B1N1,CX,H,M2565	U0600	CRITICAL	SOC:BEST_C0_HY_24GB

C0 BEST - Samsung 8 GB

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-32028	1	SOC, IBE C0+8G, 1A, 4C, BIN1, CK, S, M2565	U0600	CRITICAL	SOC: BEST_C0_SS_8GB

## C0 BEST - Micron 16,24 GB

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-32531	1	SOC,1B2 C0+160,1B,4C,B1N1,CX,M,M2565	U0600	CRITICAL	SOC:BEST_C0_M1_16GB
998-30912	1	SOC,1B2 C0+240,1A,4C,B1N1,CX,M,M2565	U0600	CRITICAL	SOC:BEST_C0_M1_24GB

PAGE TITLE		
BOM: SOC		
 Apple Inc.	DRAWING NUMBER	SIZE
	051-09344	D
NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	REVISION	
	4.0.1	
	BRANCH	
	PAGE	
	601 OF 801	
	SHEET	
	115 OF 121	

NAND BOM GROUPS

BOM GROUP	BOM OPTIONS
NANDCFG:KX_256G	NAND_L0_L1:ITLC_256G_KX
NANDCFG:WD_256G	NAND_L0_L1:ITLC_256G_WD
NANDCFG:KX_512G	NAND_L0_L1:ITLC_512G_KX
NANDCFG:WD_512G	NAND_L0_L1:ITLC_512G_WD
NANDCFG:KX_1P0T	NAND_L0_L1:ITLC_1P0T_KX
NANDCFG:WD_1P0T	NAND_L0_L1:ITLC_1P0T_WD
NANDCFG:KX_2P0T	NAND_L0_L1:ITLC_2P0T_KX
NANDCFG:WD_2P0T	NAND_L0_L1:ITLC_2P0T_WD
NANDCFG:INTERPOSER	NAND_L0_L1:INTERPOSER
NANDCFG:NONE	NAND_L0_L1:OFF
NANDCFG:S5E_MK2	NAND_L0_L1:S5E_MK2

NAND Landing 0 and Landing 1

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-24627	2	IC,NAND,S5E-MK2,13.3x11.0MM,H=1.3,LGA315	UN000,UN100	CRITICAL	NAND_L0_L1:S5E_MK2
939-11766	2	PCBA,NANAS,X2371	UN000,UN100	CRITICAL	NAND_L0_L1:INTERPOSER
335S00551	2	NAND,BC5T,128GB,S5E,11.0,512G,K,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_256G_KX
335S00619	2	NAND,BC5T,128GB,S5E,11.0,512G,W,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_256G_WD


335S00552	2	NAND,BC5T,256GB,S5E,XX.X,512G,K,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_512G_KX
335S00620	2	NAND,BC5T,256GB,S5E,XX.X,512G,W,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_512G_WD

335S00553	2	NAND,BC5T,512GB,S5E,XX.X,512G,K,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_1P0T_KX
335S00550	2	NAND,BC5T,512GB,S5E,XX.X,512G,W,ULGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_1P0T_WD

335S00643	2	NAND,BC5T,1TB,S5E,XX.X,512G,K,MLGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_2P0T_KX
335S00567	2	NAND,BC5ST,1024GB,S5E,XX.X,512G,W,LGA315	UN000,UN100	CRITICAL	NAND_L0_L1:ITLC_2P0T_WD

PAGE TITLE

BOM: NAND

 Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

BRANCH

PAGE  
602 OF 801

SHEET  
116 OF 121

SIZE  
D

8

7

6

5

4

3

2

1

www.repairlap.com

A

B

C

D



## A Module Parts

### RT13 Retimer

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
998-25504	2	IC,LIFURA,B0,USB-C RETIMER,DEV,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B0
998-27476	2	IC,LIFURA,B1,USB-C RETIMER,DEV,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B1_DEV
338S00888	2	IC,LIFURA,B1,USB-C RETIMER,ATK,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B1_ATK_PROD
338S00889	2	IC,LIFURA,B1,USB-C RETIMER,SKC,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B1_SCK_PROD
338S00890	2	IC,LIFURA,B1,USB-C RETIMER,ASE,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B1_ASE_PROD
998-30147	2	IC,LIFURA,B2,USBC RETIMER,AXX,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B2_DEV
998-33058	2	IC,LIFURA,B2,USBC RETIMER,A06,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B2_A06_DEV
998-33083	2	IC,LIFURA,B2,USBC RETIMER,A09,CSP154	UF000,UF100	CRITICAL	ATCRTRM:B2_A09_DEV

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
998-33083	998-33058	ALT_CMN	UF000,UF100	rdar://113696992

### Ace3

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S03133	3	IC,S80012024,ACE3,A0,USB PD W/PT,80A149	UF400,UF500	CRITICAL	USBCPC:PORTABLE_A0
353S03508	3	IC,S80012025,ACE3,A1,USB PD W/PT,80A149	UF400,UF500	CRITICAL	USBCPC:PORTABLE_A1

### eUSB Level Shifter

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00908	2	IC,RTMR,CYUSB2402,A3,CSP24	UF600,UF650	CRITICAL	OTP_CORRECTED_V2_PORTABLE

### Secure Element Prod and Dev

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
338S00941	338S00956	ALT_CMN	U5000	

## B Programmable Parts

### USBC Ace3 SPI Flash

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00644	1	IC,SPI SERIAL FLASH,8MBITS,1.2V,US088	UF260	CRITICAL	UPC01_ROM:BLANK

Winbond

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00537	335S00644	UPC01_ROM:BLANK	UF260	rdar://100123287
335S00571	335S00644	UPC01_ROM:BLANK	UF260	rdar://100123287

Macronix  
Gigadevice

### MagSafe Ace3 SPI Flash

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00644	1	IC,SPI SERIAL FLASH,8MBITS,1.2V,US088	U5660	CRITICAL	UPC5_ROM:BLANK

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00537	335S00644	UPC5_ROM:BLANK	U5660	rdar://100123287
335S00571	335S00644	UPC5_ROM:BLANK	U5660	rdar://100123287

Macronix  
Gigadevice

### SOC QSPI Flash

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00575	1	IC,FLASH,64MBIT,1.2V,QB=1,M,64KBM,5088	U1900	CRITICAL	SOC_ROM:BLANK

Macronix

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00574	335S00575	SOC_ROM:BLANK	U1900	Winbond rdar://108580217
335S00596	335S00575	SOC_ROM:BLANK	U1900	Gigadevice rdar://108580217

### Re-timer ROM


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00638	2	IC,FLASH,64MBIT,1.2V,QB=1,M,CSP12	UF090,UF190	CRITICAL	ATCRTRM_ROM:CSP_BLANK

Gigadevice

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00573	335S00638	ATCRTRM_ROM:CSP_BLANK	UF090,UF190	Winbond rdar://108012086
335S00594	335S00638	ATCRTRM_ROM:CSP_BLANK	UF090,UF190	Macronix rdar://108012086

## C USB-C Approved Alternates


PART NUMBER	ALTERNATE FOR PART NUMBER	REFERENCE DESIGNATOR(S)	DESCRIPTION	BOM OPTION
376S00588	376S00078	QF910,QF940,QF960	TOSHIBA	VISHAY
353S4037	353S03251	UF690	TI	ON-SEMI
353S00636	353S03251	UF690	TI	PERICOM
353S03294	353S03251	UF690	TI	PERICOM

PAGE TITLE		
BOM: Prog and Module Parts		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	603 OF 801
	SHEET	117 OF 121

8		7		6		5		4		3		2		1																																																																							
<div>MPMU</div> <table><tr><th>PART NUMBER</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DES</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>998-30983</td><td>1</td><td>IC,PMU,STOWE,A1,OTP-CPC,WLCSP420</td><td>U8100</td><td>CRITICAL</td><td>MPMU_IC:A1_CPC</td></tr><tr><td>998-31475</td><td>1</td><td>IC,PMU,STOWE,A1,OTP-CPD,WLCSP420</td><td>U8100</td><td>CRITICAL</td><td>MPMU_IC:A1_CPD</td></tr><tr><td>998-31669</td><td>1</td><td>IC,PMU,STOWE,A1,OTP-CPE,WLCSP420</td><td>U8100</td><td>CRITICAL</td><td>MPMU_IC:A1_CPE</td></tr><tr><td>998-32325</td><td>1</td><td>IC,PMU,STOWE,A1,OTP-CPF,WLCSP420</td><td>U8100</td><td>CRITICAL</td><td>MPMU_IC:A1_CPF</td></tr><tr><td>998-32439</td><td>1</td><td>IC,PMU,STOWE,A1,OTP-CPG,WLCSP420</td><td>U8100</td><td>CRITICAL</td><td>MPMU_IC:A1_CPG</td></tr></table> <div>SPMU</div> <table><tr><th>PART NUMBER</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DES</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>998-30984</td><td>1</td><td>IC,PMU,VALE,A1,OTP-CPC,WLCSP196</td><td>U7700</td><td>CRITICAL</td><td>SPMU_IC:A1_CPC</td></tr><tr><td>998-32326</td><td>1</td><td>IC,PMU,VALE,A1,OTP-CPD,WLCSP196</td><td>U7700</td><td>CRITICAL</td><td>SPMU_IC:A1_CPD</td></tr></table>																PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	998-30983	1	IC,PMU,STOWE,A1,OTP-CPC,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPC	998-31475	1	IC,PMU,STOWE,A1,OTP-CPD,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPD	998-31669	1	IC,PMU,STOWE,A1,OTP-CPE,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPE	998-32325	1	IC,PMU,STOWE,A1,OTP-CPF,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPF	998-32439	1	IC,PMU,STOWE,A1,OTP-CPG,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPG	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	998-30984	1	IC,PMU,VALE,A1,OTP-CPC,WLCSP196	U7700	CRITICAL	SPMU_IC:A1_CPC	998-32326	1	IC,PMU,VALE,A1,OTP-CPD,WLCSP196	U7700	CRITICAL	SPMU_IC:A1_CPD	8		7		6		5		4		3		2		1	
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION																																																																																
998-30983	1	IC,PMU,STOWE,A1,OTP-CPC,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPC																																																																																
998-31475	1	IC,PMU,STOWE,A1,OTP-CPD,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPD																																																																																
998-31669	1	IC,PMU,STOWE,A1,OTP-CPE,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPE																																																																																
998-32325	1	IC,PMU,STOWE,A1,OTP-CPF,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPF																																																																																
998-32439	1	IC,PMU,STOWE,A1,OTP-CPG,WLCSP420	U8100	CRITICAL	MPMU_IC:A1_CPG																																																																																
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION																																																																																
998-30984	1	IC,PMU,VALE,A1,OTP-CPC,WLCSP196	U7700	CRITICAL	SPMU_IC:A1_CPC																																																																																
998-32326	1	IC,PMU,VALE,A1,OTP-CPD,WLCSP196	U7700	CRITICAL	SPMU_IC:A1_CPD																																																																																

PAGE TITLE

BOM: PMU

 Apple Inc.

NOTICE OF PROPRIETARY PROPERTY:  
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC.  
THE POSSESSOR AGREES TO THE FOLLOWING:  
I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  
IV ALL RIGHTS RESERVED

DRAWING NUMBER  
051-09344

REVISION  
4.0.1

BRANCH

PAGE  
604 OF 801

SHEET  
118 OF 121

SIZE  
D



	8	7	6	5	4	3	2	1																																																																																																																																																																																																																																																																																																																																																															
D	<div>Resistors</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>107S00033</td><td>107S00034</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59471007</td></tr><tr><td>107S00055</td><td>107S00090</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73982769</td></tr><tr><td>107S00101</td><td>107S00005</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>107S00443</td><td>107S00005</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>107S00102</td><td>107S00017</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>107S0276</td><td>107S00020</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>107S00298</td><td>107S00460</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>107S00076</td><td>107S00044</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831138</td></tr><tr><td>107S00365</td><td>107S00373</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831414</td></tr><tr><td>107S00475</td><td>107S00044</td><td>ALT_CMN</td><td>ALL</td><td>Peter H Req 1/27</td></tr><tr><td>107S00325</td><td>107S00232</td><td>ALT_CMN</td><td>ALL</td><td>Peter H Req 1/27</td></tr><tr><td>107S00479</td><td>107S00478</td><td>ALT_CMN</td><td>ALL</td><td>Peter H Req 1/27</td></tr><tr><td>116S00014</td><td>116S00044</td><td>ALT_CMN</td><td>ALL</td><td>Peter H Req 1/27</td></tr><tr><td>104S00138</td><td>104S00135</td><td>ALT_CMN</td><td>ALL</td><td>rdar://97447887</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	107S00033	107S00034	ALT_CMN	ALL	rdar://problem/59471007	107S00055	107S00090	ALT_CMN	ALL	rdar://problem/73982769	107S00101	107S00005	ALT_CMN	ALL	TBD	107S00443	107S00005	ALT_CMN	ALL	TBD	107S00102	107S00017	ALT_CMN	ALL	TBD	107S0276	107S00020	ALT_CMN	ALL	TBD	107S00298	107S00460	ALT_CMN	ALL	TBD	107S00076	107S00044	ALT_CMN	ALL	rdar://problem/71831138	107S00365	107S00373	ALT_CMN	ALL	rdar://problem/71831414	107S00475	107S00044	ALT_CMN	ALL	Peter H Req 1/27	107S00325	107S00232	ALT_CMN	ALL	Peter H Req 1/27	107S00479	107S00478	ALT_CMN	ALL	Peter H Req 1/27	116S00014	116S00044	ALT_CMN	ALL	Peter H Req 1/27	104S00138	104S00135	ALT_CMN	ALL	rdar://97447887	<div>TFT</div> <div>Cyntec</div> <div>TFT</div> <div>Cyntec</div> <div>TFT</div> <div>Cyntec</div> <div>TFT</div> <div>Cyntec</div> <div>TDK</div> <div>Murata</div> <div>Yageo</div> <div>Cyntec</div> <div>Cyntec</div> <div>TFT</div> <div>TFT</div> <div>Cyntec</div> <div>TFT</div> <div>Cyntec</div> <div>Yageo</div> <div>Cyntec</div> <div>TFT</div> <div>Cyntec</div>	<div>Inductors</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>152S00398</td><td>152S00204</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73959393</td></tr><tr><td>152S00997</td><td>152S00476</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73957803</td></tr><tr><td>152S00991</td><td>152S00984</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73958066</td></tr><tr><td>152S01494</td><td>152S01263</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73957626</td></tr><tr><td>152S00343</td><td>152S01325</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/78474169</td></tr><tr><td>152S00979</td><td>152S00874</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73960389</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	152S00398	152S00204	ALT_CMN	ALL	rdar://problem/73959393	152S00997	152S00476	ALT_CMN	ALL	rdar://problem/73957803	152S00991	152S00984	ALT_CMN	ALL	rdar://problem/73958066	152S01494	152S01263	ALT_CMN	ALL	rdar://problem/73957626	152S00343	152S01325	ALT_CMN	ALL	rdar://problem/78474169	152S00979	152S00874	ALT_CMN	ALL	rdar://problem/73960389	<div>152S01782</div> <div>152S01458</div> <div>ALT_CMN</div> <div>ALL</div> <div>rdar://98672879</div> <div>152S01781</div> <div>152S01457</div> <div>ALT_CMN</div> <div>ALL</div> <div>rdar://98673070</div> <div>152S01461</div> <div>152S01283</div> <div>ALT_CMN</div> <div>ALL</div> <div>Peter H Req 1/27</div> <div>152S01836</div> <div>152S01268</div> <div>ALT_CMN</div> <div>ALL</div> <div>rdar://problem/73958701</div> <div>152S01804</div> <div>152S00114</div> <div>ALT_CMN</div> <div>ALL</div> <div>TBD</div> <div>152S01805</div> <div>152S00136</div> <div>ALT_CMN</div> <div>ALL</div> <div>Per Louisa Zhang</div>	<div>Taiyo</div> <div>Cyntec</div> <div>Chilisin</div> <div>Murata</div> <div>Taiyo</div> <div>Cyntec</div> <div>Murata</div> <div>Taiyo</div> <div>Cyntec</div> <div>Sunlord</div> <div>Cyntec</div> <div>Sunlord</div> <div>Cyntec</div> <div>Sunlord</div> <div>Cyntec</div> <div>Taiyo</div> <div>Cyntec</div> <div>Chilisin</div> <div>Cyntec</div> <div>Chilisin</div> <div>Cyntec</div>	<div>Discrete FETs</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>376S00253</td><td>376S00076</td><td>ALT_CMN</td><td>ALL</td><td></td></tr><tr><td>376S00228</td><td>376S1179</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73939839</td></tr><tr><td>376S00007</td><td>376S1179</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73939839</td></tr><tr><td>376S1147</td><td>376S00281</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73940207</td></tr><tr><td>376S00632</td><td>376S0820</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100785917</td></tr><tr><td>376S0725</td><td>376S0604</td><td>ALT_CMN</td><td>ALL</td><td>LOUISA REQ.</td></tr><tr><td>376S00516</td><td>376S00544</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100786186</td></tr><tr><td>376S00618</td><td>376S00544</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100786186</td></tr><tr><td>376S00292</td><td>376S00294</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100806454</td></tr><tr><td>376S00633</td><td>376S00294</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100806454</td></tr><tr><td>376S00303</td><td>376S00012</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73219339</td></tr><tr><td>376S00519</td><td>376S00521</td><td>ALT_CMN</td><td>ALL</td><td>rdar://91767233</td></tr><tr><td>376S00332</td><td>376S00074</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100804973</td></tr><tr><td>376S00588</td><td>376S00074</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100804973</td></tr><tr><td>376S00078</td><td>376S00074</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100804973</td></tr><tr><td>376S00634</td><td>376S00074</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100804973</td></tr><tr><td>376S00647</td><td>376S00074</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100804973</td></tr><tr><td>376S00588</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100803216</td></tr><tr><td>376S00634</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100803216</td></tr><tr><td>376S00647</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://100803216</td></tr><tr><td>376S00588</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://91590833</td></tr><tr><td>376S00634</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://91590833</td></tr><tr><td>376S00647</td><td>376S00078</td><td>ALT_CMN</td><td>ALL</td><td>rdar://91590833</td></tr><tr><td>376S00224</td><td>376S00557</td><td>ALT_CMN</td><td>ALL</td><td>rdar://105746357</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	376S00253	376S00076	ALT_CMN	ALL		376S00228	376S1179	ALT_CMN	ALL	rdar://problem/73939839	376S00007	376S1179	ALT_CMN	ALL	rdar://problem/73939839	376S1147	376S00281	ALT_CMN	ALL	rdar://problem/73940207	376S00632	376S0820	ALT_CMN	ALL	rdar://100785917	376S0725	376S0604	ALT_CMN	ALL	LOUISA REQ.	376S00516	376S00544	ALT_CMN	ALL	rdar://100786186	376S00618	376S00544	ALT_CMN	ALL	rdar://100786186	376S00292	376S00294	ALT_CMN	ALL	rdar://100806454	376S00633	376S00294	ALT_CMN	ALL	rdar://100806454	376S00303	376S00012	ALT_CMN	ALL	rdar://problem/73219339	376S00519	376S00521	ALT_CMN	ALL	rdar://91767233	376S00332	376S00074	ALT_CMN	ALL	rdar://100804973	376S00588	376S00074	ALT_CMN	ALL	rdar://100804973	376S00078	376S00074	ALT_CMN	ALL	rdar://100804973	376S00634	376S00074	ALT_CMN	ALL	rdar://100804973	376S00647	376S00074	ALT_CMN	ALL	rdar://100804973	376S00588	376S00078	ALT_CMN	ALL	rdar://100803216	376S00634	376S00078	ALT_CMN	ALL	rdar://100803216	376S00647	376S00078	ALT_CMN	ALL	rdar://100803216	376S00588	376S00078	ALT_CMN	ALL	rdar://91590833	376S00634	376S00078	ALT_CMN	ALL	rdar://91590833	376S00647	376S00078	ALT_CMN	ALL	rdar://91590833	376S00224	376S00557	ALT_CMN	ALL	rdar://105746357	<div>Alt for 72W Charger AOS</div> <div>On Semi</div> <div>Toshiba</div> <div>Fairchild</div> <div>Vishay</div> <div>AOS</div> <div>Vishay</div> <div>On Semi</div> <div>AOS</div> <div>Diodes Inc</div> <div>On Semi</div> <div>Vishay</div> <div>On Semi</div> <div>On Semi</div> <div>Toshiba</div> <div>Diodes Inc</div> <div>Toshiba</div> <div>Nexperia</div> <div>Diodes Inc</div> <div>Diodes Inc</div> <div>Diodes Inc</div> <div>TI</div> <div>Vishay</div> <div>On Semi</div> <div>Nexperia</div> <div>Toshiba</div> <div>Vishay</div> <div>Toshiba</div> <div>Toshiba</div> <div>Toshiba</div> <div>Diodes Inc</div> <div>Toshiba</div> <div>Diodes Inc</div> <div>Toshiba</div> <div>Vishay</div> <div>Toshiba</div> <div>Diodes Inc</div> <div>Toshiba</div> <div>Vishay</div> <div>Toshiba</div> <div>Diodes Inc</div> <div>Toshiba</div> <div>Nexperia</div> <div>Diodes Inc</div>	D																																																																																																																				
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
107S00033	107S00034	ALT_CMN	ALL	rdar://problem/59471007																																																																																																																																																																																																																																																																																																																																																																			
107S00055	107S00090	ALT_CMN	ALL	rdar://problem/73982769																																																																																																																																																																																																																																																																																																																																																																			
107S00101	107S00005	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
107S00443	107S00005	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
107S00102	107S00017	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
107S0276	107S00020	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
107S00298	107S00460	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
107S00076	107S00044	ALT_CMN	ALL	rdar://problem/71831138																																																																																																																																																																																																																																																																																																																																																																			
107S00365	107S00373	ALT_CMN	ALL	rdar://problem/71831414																																																																																																																																																																																																																																																																																																																																																																			
107S00475	107S00044	ALT_CMN	ALL	Peter H Req 1/27																																																																																																																																																																																																																																																																																																																																																																			
107S00325	107S00232	ALT_CMN	ALL	Peter H Req 1/27																																																																																																																																																																																																																																																																																																																																																																			
107S00479	107S00478	ALT_CMN	ALL	Peter H Req 1/27																																																																																																																																																																																																																																																																																																																																																																			
116S00014	116S00044	ALT_CMN	ALL	Peter H Req 1/27																																																																																																																																																																																																																																																																																																																																																																			
104S00138	104S00135	ALT_CMN	ALL	rdar://97447887																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
152S00398	152S00204	ALT_CMN	ALL	rdar://problem/73959393																																																																																																																																																																																																																																																																																																																																																																			
152S00997	152S00476	ALT_CMN	ALL	rdar://problem/73957803																																																																																																																																																																																																																																																																																																																																																																			
152S00991	152S00984	ALT_CMN	ALL	rdar://problem/73958066																																																																																																																																																																																																																																																																																																																																																																			
152S01494	152S01263	ALT_CMN	ALL	rdar://problem/73957626																																																																																																																																																																																																																																																																																																																																																																			
152S00343	152S01325	ALT_CMN	ALL	rdar://problem/78474169																																																																																																																																																																																																																																																																																																																																																																			
152S00979	152S00874	ALT_CMN	ALL	rdar://problem/73960389																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
376S00253	376S00076	ALT_CMN	ALL																																																																																																																																																																																																																																																																																																																																																																				
376S00228	376S1179	ALT_CMN	ALL	rdar://problem/73939839																																																																																																																																																																																																																																																																																																																																																																			
376S00007	376S1179	ALT_CMN	ALL	rdar://problem/73939839																																																																																																																																																																																																																																																																																																																																																																			
376S1147	376S00281	ALT_CMN	ALL	rdar://problem/73940207																																																																																																																																																																																																																																																																																																																																																																			
376S00632	376S0820	ALT_CMN	ALL	rdar://100785917																																																																																																																																																																																																																																																																																																																																																																			
376S0725	376S0604	ALT_CMN	ALL	LOUISA REQ.																																																																																																																																																																																																																																																																																																																																																																			
376S00516	376S00544	ALT_CMN	ALL	rdar://100786186																																																																																																																																																																																																																																																																																																																																																																			
376S00618	376S00544	ALT_CMN	ALL	rdar://100786186																																																																																																																																																																																																																																																																																																																																																																			
376S00292	376S00294	ALT_CMN	ALL	rdar://100806454																																																																																																																																																																																																																																																																																																																																																																			
376S00633	376S00294	ALT_CMN	ALL	rdar://100806454																																																																																																																																																																																																																																																																																																																																																																			
376S00303	376S00012	ALT_CMN	ALL	rdar://problem/73219339																																																																																																																																																																																																																																																																																																																																																																			
376S00519	376S00521	ALT_CMN	ALL	rdar://91767233																																																																																																																																																																																																																																																																																																																																																																			
376S00332	376S00074	ALT_CMN	ALL	rdar://100804973																																																																																																																																																																																																																																																																																																																																																																			
376S00588	376S00074	ALT_CMN	ALL	rdar://100804973																																																																																																																																																																																																																																																																																																																																																																			
376S00078	376S00074	ALT_CMN	ALL	rdar://100804973																																																																																																																																																																																																																																																																																																																																																																			
376S00634	376S00074	ALT_CMN	ALL	rdar://100804973																																																																																																																																																																																																																																																																																																																																																																			
376S00647	376S00074	ALT_CMN	ALL	rdar://100804973																																																																																																																																																																																																																																																																																																																																																																			
376S00588	376S00078	ALT_CMN	ALL	rdar://100803216																																																																																																																																																																																																																																																																																																																																																																			
376S00634	376S00078	ALT_CMN	ALL	rdar://100803216																																																																																																																																																																																																																																																																																																																																																																			
376S00647	376S00078	ALT_CMN	ALL	rdar://100803216																																																																																																																																																																																																																																																																																																																																																																			
376S00588	376S00078	ALT_CMN	ALL	rdar://91590833																																																																																																																																																																																																																																																																																																																																																																			
376S00634	376S00078	ALT_CMN	ALL	rdar://91590833																																																																																																																																																																																																																																																																																																																																																																			
376S00647	376S00078	ALT_CMN	ALL	rdar://91590833																																																																																																																																																																																																																																																																																																																																																																			
376S00224	376S00557	ALT_CMN	ALL	rdar://105746357																																																																																																																																																																																																																																																																																																																																																																			
C	<div>Ceramic Capacitors</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>138S0846</td><td>138S0811</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59474499</td></tr><tr><td>138S00332</td><td>138S00328</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74145755</td></tr><tr><td>138S00229</td><td>138S00107</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108573025</td></tr><tr><td>138S00078</td><td>138S00107</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108573025</td></tr><tr><td>138S00022</td><td>138S0801</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74146716</td></tr><tr><td>138S00181</td><td>138S0835</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74150148</td></tr><tr><td>138S00291</td><td>138S0835</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74150148</td></tr><tr><td>138S00197</td><td>138S00409</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/75264457</td></tr><tr><td>138S00413</td><td>138S00410</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/75264676</td></tr><tr><td>138S00164</td><td>138S00138</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831667</td></tr><tr><td>138S00280</td><td>138S00138</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831667</td></tr><tr><td>138S00139</td><td>138S00138</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831667</td></tr><tr><td>138S00047</td><td>138S00073</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831776</td></tr><tr><td>138S00097</td><td>138S0750</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74149037</td></tr><tr><td>138S00151</td><td>138S00149</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71832189</td></tr><tr><td>138S00150</td><td>138S00149</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71832189</td></tr><tr><td>138S00148</td><td>138S00149</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71832189</td></tr><tr><td>138S00330</td><td>138S00081</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74146122</td></tr><tr><td>138S0771</td><td>138S00336</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71832350</td></tr><tr><td>138S00343</td><td>138S00329</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71832255</td></tr><tr><td>138S00284</td><td>138S00136</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74149755</td></tr><tr><td>138S0852</td><td>138S0818</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>138S00385</td><td>138S00377</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73954116</td></tr><tr><td>138S00416</td><td>138S00328</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/74145755</td></tr><tr><td>138S00087</td><td>138S00482</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>132S00176</td><td>132S0640</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71831575</td></tr><tr><td>138S1065</td><td>138S1058</td><td>ALT_CMN</td><td>ALL</td><td>Peter H Req 1/27</td></tr><tr><td>131S00633</td><td>131S00506</td><td>ALT_CMN</td><td>ALL</td><td>Eric L Req 2/25</td></tr><tr><td>131S00691</td><td>131S00365</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108571669</td></tr><tr><td>138S00124</td><td>138S00123</td><td>ALT_CMN</td><td>ALL</td><td>rdar://96478420</td></tr><tr><td>138S00345</td><td>138S00134</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108531210</td></tr><tr><td>138S00489</td><td>138S00488</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108580532</td></tr><tr><td>138S00457</td><td>138S00377</td><td>ALT_CMN</td><td>ALL</td><td>rdar://107029534</td></tr><tr><td>138S00188</td><td>138S00043</td><td>ALT_CMN</td><td>ALL</td><td>rdar://110740505</td></tr><tr><td>131S00535</td><td>131S00365</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108571669</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	138S0846	138S0811	ALT_CMN	ALL	rdar://problem/59474499	138S00332	138S00328	ALT_CMN	ALL	rdar://problem/74145755	138S00229	138S00107	ALT_CMN	ALL	rdar://108573025	138S00078	138S00107	ALT_CMN	ALL	rdar://108573025	138S00022	138S0801	ALT_CMN	ALL	rdar://problem/74146716	138S00181	138S0835	ALT_CMN	ALL	rdar://problem/74150148	138S00291	138S0835	ALT_CMN	ALL	rdar://problem/74150148	138S00197	138S00409	ALT_CMN	ALL	rdar://problem/75264457	138S00413	138S00410	ALT_CMN	ALL	rdar://problem/75264676	138S00164	138S00138	ALT_CMN	ALL	rdar://problem/71831667	138S00280	138S00138	ALT_CMN	ALL	rdar://problem/71831667	138S00139	138S00138	ALT_CMN	ALL	rdar://problem/71831667	138S00047	138S00073	ALT_CMN	ALL	rdar://problem/71831776	138S00097	138S0750	ALT_CMN	ALL	rdar://problem/74149037	138S00151	138S00149	ALT_CMN	ALL	rdar://problem/71832189	138S00150	138S00149	ALT_CMN	ALL	rdar://problem/71832189	138S00148	138S00149	ALT_CMN	ALL	rdar://problem/71832189	138S00330	138S00081	ALT_CMN	ALL	rdar://problem/74146122	138S0771	138S00336	ALT_CMN	ALL	rdar://problem/71832350	138S00343	138S00329	ALT_CMN	ALL	rdar://problem/71832255	138S00284	138S00136	ALT_CMN	ALL	rdar://problem/74149755	138S0852	138S0818	ALT_CMN	ALL	TBD	138S00385	138S00377	ALT_CMN	ALL	rdar://problem/73954116	138S00416	138S00328	ALT_CMN	ALL	rdar://problem/74145755	138S00087	138S00482	ALT_CMN	ALL	TBD	132S00176	132S0640	ALT_CMN	ALL	rdar://problem/71831575	138S1065	138S1058	ALT_CMN	ALL	Peter H Req 1/27	131S00633	131S00506	ALT_CMN	ALL	Eric L Req 2/25	131S00691	131S00365	ALT_CMN	ALL	rdar://108571669	138S00124	138S00123	ALT_CMN	ALL	rdar://96478420	138S00345	138S00134	ALT_CMN	ALL	rdar://108531210	138S00489	138S00488	ALT_CMN	ALL	rdar://108580532	138S00457	138S00377	ALT_CMN	ALL	rdar://107029534	138S00188	138S00043	ALT_CMN	ALL	rdar://110740505	131S00535	131S00365	ALT_CMN	ALL	rdar://108571669	<div>Alternate Vendor</div> <div>Primary Vendor</div> <div>Samsung</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>Taiyo</div> <div>Murata/Samsung</div> <div>Samsung</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Taiyo</div> <div>Kyocera</div> <div>Samsung</div> <div>Kyocera</div> <div>Murata</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Yageo</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Kyocera/Taiyo</div> <div>Murata</div> <div>SEMCO</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Kyocera</div> <div>Murata</div> <div>SEMCO</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div> <div>Taiyo</div> <div>Murata</div>	<div>Ferrites and Filters</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>155S00034</td><td>155S0302</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108576666</td></tr><tr><td>155S0741</td><td>155S0361</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>155S00867</td><td>155S0644</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108577302</td></tr><tr><td>155S00374</td><td>155S0676</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>155S00885</td><td>155S00188</td><td>ALT_CMN</td><td>ALL</td><td>rdar://108573925</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	155S00034	155S0302	ALT_CMN	ALL	rdar://108576666	155S0741	155S0361	ALT_CMN	ALL	TBD	155S00867	155S0644	ALT_CMN	ALL	rdar://108577302	155S00374	155S0676	ALT_CMN	ALL	TBD	155S00885	155S00188	ALT_CMN	ALL	rdar://108573925	<div>Murata</div> <div>Murata</div> <div>Murata</div> <div>TDK</div> <div>Murata</div> <div>TDK</div> <div>Murata</div> <div>TDK</div> <div>Murata</div>	<div>Fuses</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>740S00081</td><td>740S00053</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73218321</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	740S00081	740S00053	ALT_CMN	ALL	rdar://problem/73218321	<div>Bourns</div> <div>AEM</div>	<div>Diodes and TVSs</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>377S00166</td><td>377S00160</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59407974</td></tr><tr><td>377S00123</td><td>377S00031</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59407768</td></tr><tr><td>377S00186</td><td>377S00060</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59407847</td></tr><tr><td>377S00210</td><td>377S00172</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73218476</td></tr><tr><td>371S00325</td><td>371S00085</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59404531</td></tr><tr><td>371S00284</td><td>371S00187</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/76171510</td></tr><tr><td>371S00205</td><td>371S00077</td><td>ALT_CMN</td><td>ALL</td><td>LOUISA REQ.</td></tr><tr><td>371S00220</td><td>371S00307</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/73940785</td></tr><tr><td>371S00370</td><td>371S00062</td><td>ALT_CMN</td><td>ALL</td><td></td></tr><tr><td>371S00217</td><td>371S00079</td><td>ALT_CMN</td><td>ALL</td><td>rdar://109469452</td></tr><tr><td>371S00435</td><td>371S00079</td><td>ALT_CMN</td><td>ALL</td><td>rdar://107029515</td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	377S00166	377S00160	ALT_CMN	ALL	rdar://problem/59407974	377S00123	377S00031	ALT_CMN	ALL	rdar://problem/59407768	377S00186	377S00060	ALT_CMN	ALL	rdar://problem/59407847	377S00210	377S00172	ALT_CMN	ALL	rdar://problem/73218476	371S00325	371S00085	ALT_CMN	ALL	rdar://problem/59404531	371S00284	371S00187	ALT_CMN	ALL	rdar://problem/76171510	371S00205	371S00077	ALT_CMN	ALL	LOUISA REQ.	371S00220	371S00307	ALT_CMN	ALL	rdar://problem/73940785	371S00370	371S00062	ALT_CMN	ALL		371S00217	371S00079	ALT_CMN	ALL	rdar://109469452	371S00435	371S00079	ALT_CMN	ALL	rdar://107029515	<div>Semtech</div> <div>On Semi</div> <div>Semtech</div> <div>On Semi</div> <div>Semtech</div> <div>ST Micro</div> <div>Semtech</div> <div>TI</div> <div>Diodes Inc</div> <div>On Semi</div> <div>NXP</div> <div>On Semi</div> <div>Vishay</div> <div>NXP</div> <div>On Semi</div> <div>Diodes Inc</div> <div>Diodes Inc</div> <div>On Semi</div>	<div>Logic ICs</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>311S00392</td><td>311S00129</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59489090</td></tr><tr><td>311S00269</td><td>311S00234</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/59489341</td></tr><tr><td>311S00267</td><td>311S00244</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>311S00268</td><td>311S00246</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>311S00317</td><td>311S00316</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>311S00272</td><td>311S00287</td><td>ALT_CMN</td><td>ALL</td><td>TBD</td></tr><tr><td>311S00386</td><td>311S00336</td><td>ALT_CMN</td><td>ALL</td><td>rdar://87560278</td></tr><tr><td>311S0612</td><td>311S00263</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/76165274</td></tr><tr><td>311S00322</td><td>311S00321</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/72334560</td></tr><tr><td>311S00230</td><td>311S00212</td><td>ALT_CMN</td><td>ALL</td><td>rdar://problem/71866385</td></tr><tr><td>311S00078</td><td>311S00275</td><td>ALT_CMN</td><td>ALL</td><td></td></tr><tr><td>311S00385</td><td>311S00323</td><td>ALT_CMN</td><td>ALL</td><td></td></tr><tr><td>311S00360</td><td>311S00362</td><td>ALT_CMN</td><td>ALL</td><td></td></tr></table>	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	311S00392	311S00129	ALT_CMN	ALL	rdar://problem/59489090	311S00269	311S00234	ALT_CMN	ALL	rdar://problem/59489341	311S00267	311S00244	ALT_CMN	ALL	TBD	311S00268	311S00246	ALT_CMN	ALL	TBD	311S00317	311S00316	ALT_CMN	ALL	TBD	311S00272	311S00287	ALT_CMN	ALL	TBD	311S00386	311S00336	ALT_CMN	ALL	rdar://87560278	311S0612	311S00263	ALT_CMN	ALL	rdar://problem/76165274	311S00322	311S00321	ALT_CMN	ALL	rdar://problem/72334560	311S00230	311S00212	ALT_CMN	ALL	rdar://problem/71866385	311S00078	311S00275	ALT_CMN	ALL		311S00385	311S00323	ALT_CMN	ALL		311S00360	311S00362	ALT_CMN	ALL	
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
138S0846	138S0811	ALT_CMN	ALL	rdar://problem/59474499																																																																																																																																																																																																																																																																																																																																																																			
138S00332	138S00328	ALT_CMN	ALL	rdar://problem/74145755																																																																																																																																																																																																																																																																																																																																																																			
138S00229	138S00107	ALT_CMN	ALL	rdar://108573025																																																																																																																																																																																																																																																																																																																																																																			
138S00078	138S00107	ALT_CMN	ALL	rdar://108573025																																																																																																																																																																																																																																																																																																																																																																			
138S00022	138S0801	ALT_CMN	ALL	rdar://problem/74146716																																																																																																																																																																																																																																																																																																																																																																			
138S00181	138S0835	ALT_CMN	ALL	rdar://problem/74150148																																																																																																																																																																																																																																																																																																																																																																			
138S00291	138S0835	ALT_CMN	ALL	rdar://problem/74150148																																																																																																																																																																																																																																																																																																																																																																			
138S00197	138S00409	ALT_CMN	ALL	rdar://problem/75264457																																																																																																																																																																																																																																																																																																																																																																			
138S00413	138S00410	ALT_CMN	ALL	rdar://problem/75264676																																																																																																																																																																																																																																																																																																																																																																			
138S00164	138S00138	ALT_CMN	ALL	rdar://problem/71831667																																																																																																																																																																																																																																																																																																																																																																			
138S00280	138S00138	ALT_CMN	ALL	rdar://problem/71831667																																																																																																																																																																																																																																																																																																																																																																			
138S00139	138S00138	ALT_CMN	ALL	rdar://problem/71831667																																																																																																																																																																																																																																																																																																																																																																			
138S00047	138S00073	ALT_CMN	ALL	rdar://problem/71831776																																																																																																																																																																																																																																																																																																																																																																			
138S00097	138S0750	ALT_CMN	ALL	rdar://problem/74149037																																																																																																																																																																																																																																																																																																																																																																			
138S00151	138S00149	ALT_CMN	ALL	rdar://problem/71832189																																																																																																																																																																																																																																																																																																																																																																			
138S00150	138S00149	ALT_CMN	ALL	rdar://problem/71832189																																																																																																																																																																																																																																																																																																																																																																			
138S00148	138S00149	ALT_CMN	ALL	rdar://problem/71832189																																																																																																																																																																																																																																																																																																																																																																			
138S00330	138S00081	ALT_CMN	ALL	rdar://problem/74146122																																																																																																																																																																																																																																																																																																																																																																			
138S0771	138S00336	ALT_CMN	ALL	rdar://problem/71832350																																																																																																																																																																																																																																																																																																																																																																			
138S00343	138S00329	ALT_CMN	ALL	rdar://problem/71832255																																																																																																																																																																																																																																																																																																																																																																			
138S00284	138S00136	ALT_CMN	ALL	rdar://problem/74149755																																																																																																																																																																																																																																																																																																																																																																			
138S0852	138S0818	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
138S00385	138S00377	ALT_CMN	ALL	rdar://problem/73954116																																																																																																																																																																																																																																																																																																																																																																			
138S00416	138S00328	ALT_CMN	ALL	rdar://problem/74145755																																																																																																																																																																																																																																																																																																																																																																			
138S00087	138S00482	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
132S00176	132S0640	ALT_CMN	ALL	rdar://problem/71831575																																																																																																																																																																																																																																																																																																																																																																			
138S1065	138S1058	ALT_CMN	ALL	Peter H Req 1/27																																																																																																																																																																																																																																																																																																																																																																			
131S00633	131S00506	ALT_CMN	ALL	Eric L Req 2/25																																																																																																																																																																																																																																																																																																																																																																			
131S00691	131S00365	ALT_CMN	ALL	rdar://108571669																																																																																																																																																																																																																																																																																																																																																																			
138S00124	138S00123	ALT_CMN	ALL	rdar://96478420																																																																																																																																																																																																																																																																																																																																																																			
138S00345	138S00134	ALT_CMN	ALL	rdar://108531210																																																																																																																																																																																																																																																																																																																																																																			
138S00489	138S00488	ALT_CMN	ALL	rdar://108580532																																																																																																																																																																																																																																																																																																																																																																			
138S00457	138S00377	ALT_CMN	ALL	rdar://107029534																																																																																																																																																																																																																																																																																																																																																																			
138S00188	138S00043	ALT_CMN	ALL	rdar://110740505																																																																																																																																																																																																																																																																																																																																																																			
131S00535	131S00365	ALT_CMN	ALL	rdar://108571669																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
155S00034	155S0302	ALT_CMN	ALL	rdar://108576666																																																																																																																																																																																																																																																																																																																																																																			
155S0741	155S0361	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
155S00867	155S0644	ALT_CMN	ALL	rdar://108577302																																																																																																																																																																																																																																																																																																																																																																			
155S00374	155S0676	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
155S00885	155S00188	ALT_CMN	ALL	rdar://108573925																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
740S00081	740S00053	ALT_CMN	ALL	rdar://problem/73218321																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
377S00166	377S00160	ALT_CMN	ALL	rdar://problem/59407974																																																																																																																																																																																																																																																																																																																																																																			
377S00123	377S00031	ALT_CMN	ALL	rdar://problem/59407768																																																																																																																																																																																																																																																																																																																																																																			
377S00186	377S00060	ALT_CMN	ALL	rdar://problem/59407847																																																																																																																																																																																																																																																																																																																																																																			
377S00210	377S00172	ALT_CMN	ALL	rdar://problem/73218476																																																																																																																																																																																																																																																																																																																																																																			
371S00325	371S00085	ALT_CMN	ALL	rdar://problem/59404531																																																																																																																																																																																																																																																																																																																																																																			
371S00284	371S00187	ALT_CMN	ALL	rdar://problem/76171510																																																																																																																																																																																																																																																																																																																																																																			
371S00205	371S00077	ALT_CMN	ALL	LOUISA REQ.																																																																																																																																																																																																																																																																																																																																																																			
371S00220	371S00307	ALT_CMN	ALL	rdar://problem/73940785																																																																																																																																																																																																																																																																																																																																																																			
371S00370	371S00062	ALT_CMN	ALL																																																																																																																																																																																																																																																																																																																																																																				
371S00217	371S00079	ALT_CMN	ALL	rdar://109469452																																																																																																																																																																																																																																																																																																																																																																			
371S00435	371S00079	ALT_CMN	ALL	rdar://107029515																																																																																																																																																																																																																																																																																																																																																																			
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																																																			
311S00392	311S00129	ALT_CMN	ALL	rdar://problem/59489090																																																																																																																																																																																																																																																																																																																																																																			
311S00269	311S00234	ALT_CMN	ALL	rdar://problem/59489341																																																																																																																																																																																																																																																																																																																																																																			
311S00267	311S00244	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
311S00268	311S00246	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
311S00317	311S00316	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
311S00272	311S00287	ALT_CMN	ALL	TBD																																																																																																																																																																																																																																																																																																																																																																			
311S00386	311S00336	ALT_CMN	ALL	rdar://87560278																																																																																																																																																																																																																																																																																																																																																																			
311S0612	311S00263	ALT_CMN	ALL	rdar://problem/76165274																																																																																																																																																																																																																																																																																																																																																																			
311S00322	311S00321	ALT_CMN	ALL	rdar://problem/72334560																																																																																																																																																																																																																																																																																																																																																																			
311S00230	311S00212	ALT_CMN	ALL	rdar://problem/71866385																																																																																																																																																																																																																																																																																																																																																																			
311S00078	311S00275	ALT_CMN	ALL																																																																																																																																																																																																																																																																																																																																																																				
311S00385	311S00323	ALT_CMN	ALL																																																																																																																																																																																																																																																																																																																																																																				
311S00360	311S00362	ALT_CMN	ALL																																																																																																																																																																																																																																																																																																																																																																				



SOC (BEST) Hynix and Samsung 8 GB

APN	EEEEEEE	DESC	BOMOPTIONS
639-20136	0000FMY	PCBA,MLB,SOC,BEST,HY-8G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_HY_8GB
639-20157	0000FQK	PCBA,MLB,SOC,BEST,HY-8G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_HY_8GB
639-20146	0000FN8	PCBA,MLB,SOC,BEST,HY-8G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_HY_8GB
639-20163	0000FQR	PCBA,MLB,SOC,BEST,HY-8G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_HY_8GB
639-20138	0000FN0	PCBA,MLB,SOC,BEST,HY-8G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_HY_8GB
639-20149	0000FNB	PCBA,MLB,SOC,BEST,HY-8G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_HY_8GB
639-20143	0000FN5	PCBA,MLB,SOC,BEST,HY-8G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_HY_8GB
639-20160	0000FQN	PCBA,MLB,SOC,BEST,HY-8G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_HY_8GB
639-18860	0000601	PCBA,MLB,SOC,BEST,SS-8G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_SS_8GB
639-18887	000060U	PCBA,MLB,SOC,BEST,SS-8G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_SS_8GB
639-18868	0000609	PCBA,MLB,SOC,BEST,SS-8G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_SS_8GB
639-18896	0000613	PCBA,MLB,SOC,BEST,SS-8G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_SS_8GB
639-18858	00005ZZ	PCBA,MLB,SOC,BEST,SS-8G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_SS_8GB
639-18875	000060G	PCBA,MLB,SOC,BEST,SS-8G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_SS_8GB
639-18866	0000607	PCBA,MLB,SOC,BEST,SS-8G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_SS_8GB
639-18892	000060Z	PCBA,MLB,SOC,BEST,SS-8G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_SS_8GB

Hynix	HY	H
Micron	MI	M
Samsung	SS	S

Common BOMs

BOM NUMBER	BOM NAME	BOM OPTIONS
685-00549	COMMON PARTS,MLB,X2819	MLB_COMMON,ALT_CMN,ALTERNATE:PART,SSD_2L
985-02074	DEV PARTS,MLB,X2819	MLB_DEV,ALT_CMN,ALTERNATE:PART


APN	EEEEEEE	DESC	BOMOPTIONS
939-15449	0000641	PCBA,MLB,DCDC-X2819	CMN_PARTS_BOM,DEV_PARTS_BOM,NAND_L0_L1:INTERPOSER,SOC:INTERPOSER
939-15450	0000642	PCBA,MLB,RF-CHAR-X2819	RF_COMMON

SOC (BEST) Hynix and Micron 16 GB

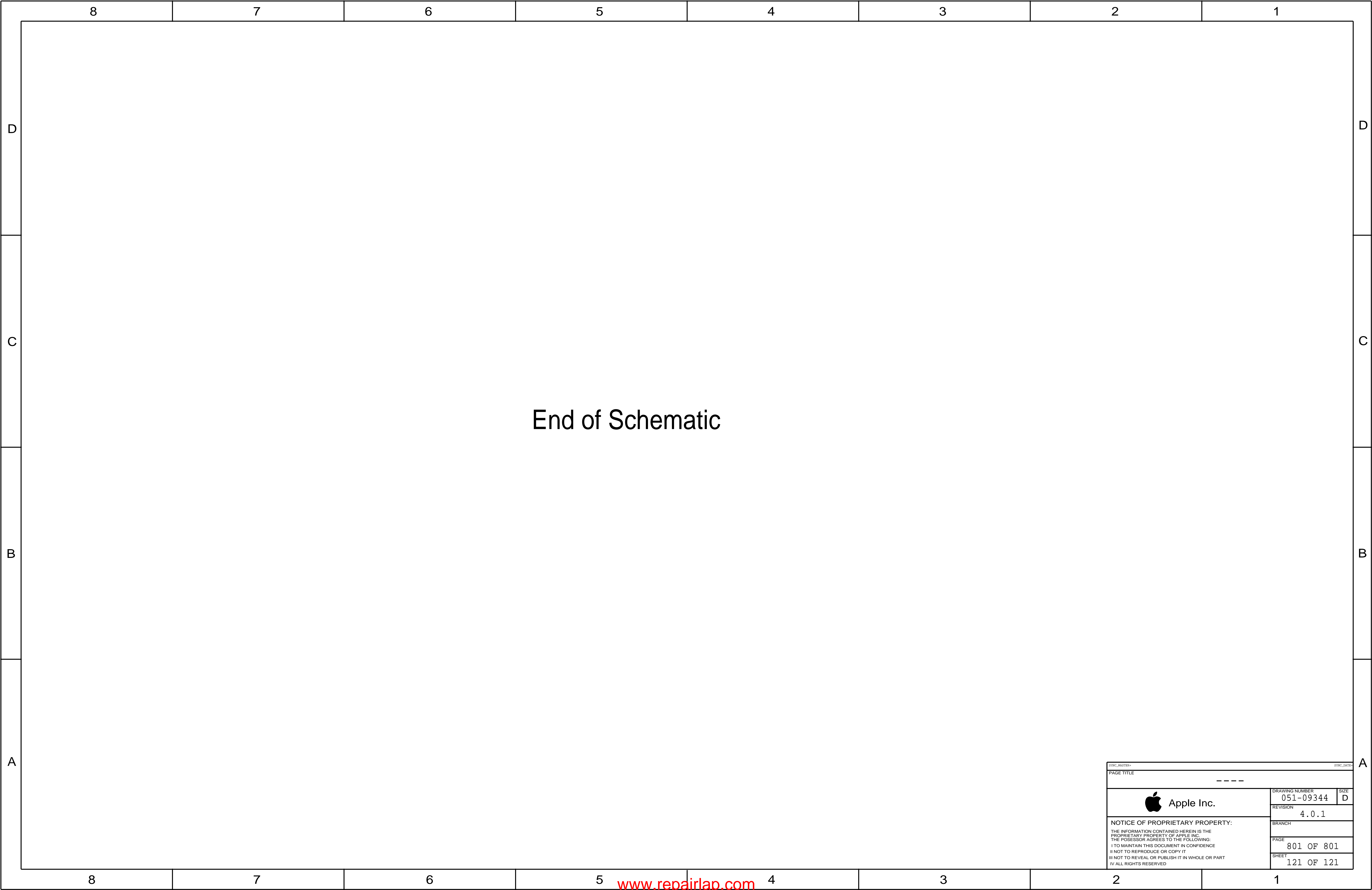
APN	EEEEEEE	DESC	BOMOPTIONS
639-20140	0000FN2	PCBA,MLB,SOC,BEST,HY-16G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_HY_16GB
639-20155	0000FQH	PCBA,MLB,SOC,BEST,HY-16G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_HY_16GB
639-20144	0000FN6	PCBA,MLB,SOC,BEST,HY-16G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_HY_16GB
639-20161	0000FQP	PCBA,MLB,SOC,BEST,HY-16G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_HY_16GB
639-20135	0000FRU	PCBA,MLB,SOC,BEST,HY-16G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_HY_16GB
639-20147	0000FN9	PCBA,MLB,SOC,BEST,HY-16G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_HY_16GB
639-20139	0000FN1	PCBA,MLB,SOC,BEST,HY-16G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_HY_16GB
639-20158	0000FQL	PCBA,MLB,SOC,BEST,HY-16G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_HY_16GB
639-18854	00005ZV	PCBA,MLB,SOC,BEST,MI-16G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_MI_16GB
639-18882	000060P	PCBA,MLB,SOC,BEST,MI-16G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_MI_16GB
639-18874	000060F	PCBA,MLB,SOC,BEST,MI-16G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_MI_16GB
639-18891	000060Y	PCBA,MLB,SOC,BEST,MI-16G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_MI_16GB
639-18852	00005ZT	PCBA,MLB,SOC,BEST,MI-16G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_MI_16GB
639-18879	000060L	PCBA,MLB,SOC,BEST,MI-16G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_MI_16GB
639-18862	0000603	PCBA,MLB,SOC,BEST,MI-16G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_MI_16GB
639-18886	0000607	PCBA,MLB,SOC,BEST,MI-16G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_MI_16GB

SOC (BEST) Hynix and Micron 24 GB


APN	EEEEEEE	DESC	BOMOPTIONS
639-20142	0000FN4	PCBA,MLB,SOC,BEST,HY-24G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_HY_24GB
639-20156	0000FQJ	PCBA,MLB,SOC,BEST,HY-24G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_HY_24GB
639-20145	0000FN7	PCBA,MLB,SOC,BEST,HY-24G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_HY_24GB
639-20162	0000FQQ	PCBA,MLB,SOC,BEST,HY-24G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_HY_24GB
639-20137	0000FRV	PCBA,MLB,SOC,BEST,HY-24G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_HY_24GB
639-20148	0000FNA	PCBA,MLB,SOC,BEST,HY-24G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_HY_24GB
639-20141	0000FN3	PCBA,MLB,SOC,BEST,HY-24G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_HY_24GB
639-20159	0000FQM	PCBA,MLB,SOC,BEST,HY-24G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_HY_24GB
639-18857	00005ZY	PCBA,MLB,SOC,BEST,MI-24G,KX-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_256G,SOC:BEST_C0_MI_24GB
639-18884	000060R	PCBA,MLB,SOC,BEST,MI-24G,WD-256G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_256G,SOC:BEST_C0_MI_24GB
639-18877	000060J	PCBA,MLB,SOC,BEST,MI-24G,KX-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_512G,SOC:BEST_C0_MI_24GB
639-18894	0000611	PCBA,MLB,SOC,BEST,MI-24G,WD-512G,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_512G,SOC:BEST_C0_MI_24GB
639-18855	00005ZW	PCBA,MLB,SOC,BEST,MI-24G,KX-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_1P0T,SOC:BEST_C0_MI_24GB
639-18872	000060D	PCBA,MLB,SOC,BEST,MI-24G,WD-1P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_1P0T,SOC:BEST_C0_MI_24GB
639-18865	0000606	PCBA,MLB,SOC,BEST,MI-24G,KX-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:KX_2P0T,SOC:BEST_C0_MI_24GB
639-18889	000060W	PCBA,MLB,SOC,BEST,MI-24G,WD-2P0T,X2819	ALTERNATE:PART,ALT_CMN,CMN_PARTS_BOM,DEV_PARTS_BOM,NANDCFG:WD_2P0T,SOC:BEST_C0_MI_24GB

PAGE TITLE		
BOM: Variants		
 Apple Inc.	DRAWING NUMBER	051-09344
	REVISION	4.0.1
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	
	PAGE	611 OF 801
	SHEET	120 OF 121





End of Schematic

PAGE TITLE			DRAWING NUMBER		SIZE
-----			051-09344		D
 Apple Inc.			REVISION		4.0.1
			BRANCH		
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED			PAGE		801 OF 801
			SHEET		121 OF 121