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X1783 MLB-TKSB												REV	ECN	DESCRIPTION OF REVISION	CK APPD DATE
												2	0018963445	ENGINEERING RELEASED	2019-07-29
LAST_MODIFICATION=Mon Jul 29 19:28:46 2019															
PAGE CSA CONTENTS												SYNC		DATE	
1	1	Table of Contents										LKS	11/09/2018		
2	2	BOM Configuration													
3	3	BOM Configuration													
4	4	PD Parts													
5	5	CPU GFX										MASTER	06/08/2018		
6	6	CPU Misc/JTAG/CFG/RSVD										CPU_CARD_ICL_Y	06/08/2018		
7	7	CPU LPDDR4 Interface										CPU_CARD_ICL_Y	06/08/2018		
8	8	CPU Power										CPU_CARD_ICL_Y	06/08/2018		
9	9	PCH Power										CPU_CARD_ICL_Y	06/08/2018		
10	10	CPU & PCH Grounds										CPU_CARD_ICL_Y	06/08/2018		
11	11	CPU Decoupling										CPU_CARD_ICL_Y	06/08/2018		
12	13	PCH Decoupling										CPU_CARD_ICL_Y	06/08/2018		
13	14	PCH ESPI/SMBUS/UART										CPU_CARD_ICL_Y	06/08/2018		
14	15	PCH Power Management										CPU_CARD_ICL_Y	06/08/2018		
15	16	PCH PCIe/USB/CLK										CPU_CARD_ICL_Y	06/08/2018		
16	18	CPU/PCH Merged XDP										X589_CPU_CNL_Y	03/13/2017		
17	19	Chipset Shared Support										CPU_CARD_ICL_Y	06/08/2018		
18	20	Chipset Project Support										CARD_CPU_ICL_YN	06/08/2018		
19	23	LPDDR4x Sub-Channels A & B										J140	08/23/2018		
20	25	LPDDR4x Sub-Channels C & D										J140	08/23/2018		
21	28	USB-C HIGH SPEED X (REAR)										CPU_CARD_ICL_Y	06/08/2018		
22	29	USB-C HIGH SPEED T (FRONT)										CPU_CARD_ICL_Y	06/08/2018		
23	30	USB-C Support										CPU_CARD_ICL_Y	06/08/2018		
24	31	USB-C PORT CONTROLLER X (REAR)										CPU_CARD_ICL_Y	06/08/2018		
25	32	USB-C PORT CONTROLLER T (FRONT)										CPU_CARD_ICL_Y	06/08/2018		
26	33	USB-C CONNECTOR										X1032_MLB_P4BP	02/13/2017		
27	34	USB-C DEV SUPPORT											06/11/2018		
28	36	WIFI/BT Desense										j140	09/20/2018		
29	37	WIFI/BT MODULE 1										J213_METE	11/04/2018		
30	38	WIFI/BT MODULE 2										J213_METE	10/17/2018		
31	39	SoC GPIO/SEP/USB/DDR/Test										X589_BIGSUR	03/15/2017		
32	40	SoC AOP/AON/SMC										X589_BIGSUR	03/16/2017		
33	41	SoC ISP/I2C/UART/SPI/I2S										X589_BIGSUR	03/15/2017		
34	42	SoC PCIe										X589_BIGSUR	03/15/2017		
35	43	SoC Power 1										X589_BIGSUR	02/13/2017		
36	44	SoC Power 2										X589_BIGSUR	02/13/2017		
37	45	SoC Power 3										X589_BIGSUR	02/13/2017		
38	46	SoC Ground										X589_BIGSUR	02/13/2017		
39	47	SoC Shared Support										X589_BIGSUR	03/16/2017		
40	48	SoC Project Support										X589_BIGSUR	02/13/2017		
41	50	Secure Element										X941_MLB	03/10/2017		
42	52	I2C Connections 1										X589_BIGSUR	02/13/2017		
43	53	I2C Connections 2										X589_BIGSUR	02/13/2017		
44	54	Power Sensors High Side										psm	10/18/2018		
45	55	Power Sensors Load Side										X1032_MLB_P4BP	02/14/2017		
46	56	Power Sensors Extended													
47	58	Thermal Sensors										X1032_MLB_P4BP	02/14/2017		
48	60	Fans										X1032_MLB_P4BP	02/13/2017		
49	61	RIO Connector													
50	64	Audio Speaker Amplifiers										AHAAGE_AUD	05/23/2017		
PART# QTY DESCRIPTION REFERENCE DESIGNATOR(S) CRITICAL BOM OPTION															
051-05232 1 SCH,MLB-TKSB,X1783 SCH CRITICAL SCHEM															
820-01958 1 PCBF,MLB-TKSB,X1783 MLB CRITICAL PCBF															
J230GHUB = https://github.pie.apple.com/MobileMacIX/j230_hw/blob/master/															
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1,1.5,1.75,2.6,2~7,7.5,8,9,10 80 80 80 1 2															
LAYERS MINIMUM CU WIDTH RATIO MINIMUM CU SPACING RATIO MINIMUM TO DEFAULT RATIO															
TOP,BOTTOM 2.8 2.8 1.0															
ISL2-ISL3,ISL6,ISL9,ISL12-ISL13 3.125 3.125 1.2															
ISL4,ISL11 3.125 3.125 1.2															
ISL5,ISL10 2.272 2.272 1.2															
ISL7,ISL8 2.23 2.23 1.3															
DRAWING TITLE SCHEM,MLB-TKSB,X1783															
Apple Inc.												DRAWING NUMBER 051-05232		SIZE D	
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8		7		6		5		4		3		2		1	

Module Parts

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
337S00749	1	CPU, ICL-YN, QSLM, D1, 64EU, 1.0, 1.1, BGA1044	U0500	CRITICAL	CPU_ICLY_P2: BEST
337S00750	1	CPU, ICL-YN, QSLQ, D1, 48EU, 0.7, 1.05, BGA1044	U0500	CRITICAL	CPU_ICLY_P2: GOOD
998-17650	1	INTERPOSER, VTT ADAPTER, ICL-YN, BGA1044	U0500	CRITICAL	CPU_ICLY: INTERPOSER
337S00766	1	CPU, ICLYN, QSSQ, ES2, D2, 1, 1.1, BGA1044	U0500	CRITICAL	CPU_ICLY: BEST
337S00767	1	CPU, ICLYN, QSSS, ES2, D2, 1, 1.05, BGA1044	U0500	CRITICAL	CPU_ICLY: BEDRE
337S00765	1	CPU, ICLYN, QSVZ, ES2, D2, 1, 1.1, 9, BGA1044	U0500	CRITICAL	CPU_ICLY: GOOD

NOTE: BEDRE is Danish for BETTER.

TBT Burnside Bridge

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
998-13316	2	IC, BURNBRIDGE BRIDGE, USB/TB BRIDGE, BGA105	U2800, U2900	CRITICAL	TBT_BB:A0
338S00503	2	IC, TBT, BURNBRIDGE BRIDGE, QSW, ES2, A1, BGA105	U2800, U2900	CRITICAL	TBT_BB:A1
338S00508	2	IC, TBT, BURNBRIDGE BRIDGE, ES2, Q5, A1, BGA105	U2800, U2900	CRITICAL	TBT_BB:QSA1
338S00561	2	IC, TBT, BURNBRIDGE BRIDGE, PRQ, A1, BGA105	U2800, U2900	CRITICAL	TBT_BB:PRQA1

Ace2

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S01826	2	IC, CD3217, ACE2, B1, USB PWR SW W/RY, BGA123	U3100, U3200	CRITICAL	ACE2:B1_BGA
353S01960	2	IC, CD3217, ACE2, B2, USB PWR SW W/RY, BGA123	U3100, U3200	CRITICAL	ACE2:B2_BGA
353S02158	2	IC, CD3217, ACE2, B1, USB PWR SW W/RY, BGA123	U3100, U3200	CRITICAL	ACE2:B12_BGA

SOC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)		CRITICAL	BOM OPTION
339S00370	1	POP, GIBBERALTAR+1GB 208M, H, B0, SCK, CSP1406		U3900	CRITICAL	SOC:B0_1G
339S00372	1	POP, GIBBERALTAR+2GB 208M, H, B0, SCK, CSP1406		U3900	CRITICAL	SOC:B0_2G
		PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		339S00371	339S00370	SOC:B0_1G	ALL	Hynix 1GB SCK
		339S00375	339S00370	SOC:B0_1G	ALL	Micron 1GB SCK
339S00376	339S00370	SOC:B0_1G	ALL	Hynix 1GB ATK		
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:		
339S00373	339S00372	SOC:B0_2G	ALL	Hynix 2GB SCK		
339S00377	339S00372	SOC:B0_2G	ALL	Micron 2GB SCK		
339S00378	339S00372	SOC:B0_2G	ALL	Hynix 2GB ATK		

PMU

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00267	1	IC, PMU, CASPE, 0224940, QTF-A1, CSP124, 5, 4P	U7800	CRITICAL	PMU:A0_A

Wireless

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
339S00616	1	MODULE, WIFI/BT, SAPPORO, ES3, 1, H, LGA451	U3701	CRITICAL	WIRELESS:P0
	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	998-16405	339S00616	WIRELESS:P0	ALL	USI Wireless Module (ES2)
339S00616	1	MODULE, WIFI/BT, SAPPORO, ES3, 1, H, LGA451	U3701	CRITICAL	WIRELESS:P1
	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	339S00628	339S00616	WIRELESS:P1	ALL	USI Wireless Module (ES2)
339S00616	1	MODULE, WIFI/BT, SAPPORO, ES3, 1, H, LGA451	U3701	CRITICAL	WIRELESS:P1B
	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	339S00632	339S00616	WIRELESS:P1B	ALL	USI Wireless Module (ES3,1)

NAND - Landing 0

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
998-17175	1	NAND, 30V4, 64GBIT, 64K, 256G, H, SUBX, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_128G_HY	
998-17176	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-17176	998-17175	NAND_L0:ITLC_128G_HY	U8600	HY 64G Substrate 2 L0
998-16394	1	NAND, 30V4, 64GBIT, 64K, 256G, T, SUB X, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_128G_TO	
998-16395	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16395	998-16394	NAND_L0:ITLC_128G_TO	U8600	TO 64G Substrate 2 L0
335S00416	1	NAND, 30V5, 64GBIT, 64K, 256G, SS, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_128G_SS	
998-16396	1	NAND, 30V4, 128GBIT, 64K, 256G, T, SUBX, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_256G_TO	
998-16397	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16397	998-16396	NAND_L0:ITLC_256G_TO	U8600	TO 128G Substrate 2 L0
998-16945	1	NAND, 30V4, 128GBIT, 64K, 256G, SD, SUBX, BGA110	U8600	CRITICAL	NAND_L0:ITLC_256G_SD	
998-16970	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16970	998-16945	NAND_L0:ITLC_256G_SD	U8600	SD 128G Substrate 2 L0
335S00378	1	NAND, 30V4, 128GBIT, 64K, 256G, H, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_256G_HY	
998-16400	1	NAND, 30V4, 256GBIT, 64K, 256G, T, SUBX, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_512G_TO	
998-16401	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16401	998-16400	NAND_L0:ITLC_512G_TO	U8600	TO 256G Substrate 2 L0
335S00397	1	NAND, 30V4, 32GBIT, XXX, 64K, 256G, T, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_512G_TO_P1	
335S00408	1	NAND, 30V4, 32GBIT, XXX, 64K, 256G, SD, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_512G_SD	
335S00391	1	NAND, 30V4, 512GBIT, XXX, 64K, 256G, SD, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_1P0T_SD	
335S00380	1	NAND, 30V4, 512GBIT, 64K, 256G, H, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_1P0T_HY	
335S00433	1	NAND, 30V4, 17BT, XXX, 64K, 512G, SD, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_2P0T_SD	
335S00444	1	NAND, 30V5, 1024GBIT, 64K, 512G, H, SLGA110	U8600	CRITICAL	NAND_L0:ITLC_2P0T_HY	

NAND - Landing 1

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	
998-17175	1	NAND, 30V4, 64GBIT, 64K, 256G, H, SUB X, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_128G_HY	
998-17176	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-17176	998-17175	NAND_L1:ITLC_128G_HY	U8700	HY 64G Substrate 2 L1
998-16394	1	NAND, 30V4, 64GBIT, 64K, 256G, T, SUB X, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_128G_TO	
998-16395	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16394	998-16394	NAND_L1:ITLC_128G_TO	U8700	TO 64G Substrate 2 L1
335S00416	1	NAND, 30V5, 64GBIT, 64K, 256G, SS, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_128G_SS	
998-16396	1	NAND, 30V4, 128GBIT, 64K, 256G, T, SUBX, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_256G_TO	
998-16397	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16397	998-16396	NAND_L1:ITLC_256G_TO	U8700	TO 128G Substrate 2 L1
998-16945	1	NAND, 30V4, 128GBIT, 64K, 256G, SD, SUBX, BGA110	U8700	CRITICAL	NAND_L1:ITLC_256G_SD	
998-16970	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16970	998-16945	NAND_L0:ITLC_256G_SD	U8700	SD 128G Substrate 2 L1
335S00378	1	NAND, 30V4, 128GBIT, 64K, 256G, H, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_256G_HY	
335S00396	1	NAND, 30V4, 256GBIT, XXX, 64K, 256G, T, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_512G_SSUB_TO	
998-16946	1	NAND, 30V4, 256GBIT, 64K, 256G, SD, SUBX, BGA110	U8700	CRITICAL	NAND_L1:ITLC_512G_SD	
998-16971	1	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
		998-16971	998-16946	NAND_L1:ITLC_512G_SD	U8700	SD 128G Substrate 2 L1
335S00391	1	NAND, 30V4, 512GBIT, XXX, 64K, 256G, SD, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_1P0T_SD	
335S00380	1	NAND, 30V4, 512GBIT, 64K, 256G, H, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_1P0T_HY	
335S00433	1	NAND, 30V4, 17BT, XXX, 64K, 512G, SD, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_2P0T_SD	
335S00444	1	NAND, 30V5, 1024GBIT, 64K, 512G, H, SLGA110	U8700	CRITICAL	NAND_L1:ITLC_2P0T_HY	

DRAM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
333S00137	2	IC, LPDDR4X-3733, 32GBIT, 18NM, S, BGA432	U2300, U2500	CRITICAL	DRAM:P1_SAMSUNG_8GB
333S00138	2	IC, LPDDR4X-3733, 64GBIT, 18NM, S, BGA432	U2300, U2500	CRITICAL	DRAM:P1_SAMSUNG_16GB
333S00221	2	IC, LPDDR4X-4266, 32GBIT, 16NM, S, BGA432	U2300, U2500	CRITICAL	DRAM:SAMSUNG_8GB
333S00222	2	IC, LPDDR4X-4266, 64GBIT, 16NM, S, BGA432	U2300, U2500	CRITICAL	DRAM:SAMSUNG_16GB
333S00214	2	IC, LPDDR4X-4266, 32GBIT, 19NM, H, BGA432	U2300, U2500	CRITICAL	DRAM:HYNIX_8GB
333S00215	2	IC, LPDDR4X-4266, 64GBIT, 19NM, H, BGA432	U2300, U2500	CRITICAL	DRAM:HYNIX_16GB
333S00170	2	IC, LPDDR4X-3733, 32GBIT, 18NM, BGA432	U2300, U2500	CRITICAL	DRAM:MICRON_8GB
333S00171	2	IC, LPDDR4X-3733, 64GBIT, 18NM, BGA432	U2300, U2500	CRITICAL	DRAM:MICRON_16GB

Programmables

TBT ROM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00133	1	IC, SPI SERIAL FLASH, 8MBITS, 3, 0V, US08H	U3060	CRITICAL	TBT_ROM:BLANK
	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	335S00232	335S00133	TWT_ROM:BLANK	U3060	rdar://problem/50598337
341S01282	1	IC, ROM (V14, 1) PROTO-0, X1418	U3060	CRITICAL	TBT_ROM:P0
341S01314	1	ROM, TBT (V14, 1, 1) PROTO-0-2, X1418	U3060	CRITICAL	TBT_ROM:P0A
341S01315	1	ROM, TBT (VXXXXXX) PROTO-0-3, X1418	U3060	CRITICAL	TBT_ROM:P0B
341S01337	1	ROM, TBT (V14, 4) PROTO-1, X1418	U3060	CRITICAL	TBT_ROM:P1
341S01410	1	ROM, BBR (VXXXX) PROTO-2, X1418	U3060	CRITICAL	TBT_ROM:P2
341S01450	1	ROM, BBR, ACE (V18, 9) PROTO-3, X1418	U3060	CRITICAL	TBT_ROM:P3
341S01470	1	ROM, BBR, ACE (V29, 3) PROTO-4A, X1783	U3060	CRITICAL	TBT_ROM:P4A
341S01515	1	ROM, BBR, ACE (VXXXX) PROTO-4, X1783	U3060	CRITICAL	TBT_ROM:P4B

BT ROM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00400	1	IC, SPI, SERIAL FLASH, 4M BITS, 1, 0V, US08H	U3750	CRITICAL	BT_ROM:BLANK
341S01260	1	ROM, BT, SFLASH (VXX) PROTO-1, X1536	U3750	CRITICAL	BT_ROM:P0

Wifi ROM


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00214	1	IC, EEPROM, SER, UM3E, 15K, 1, 0V, SP08	U3710	CRITICAL	WIFI_ROM:BLANK
341S01087	1	IC, WIFI ROM (V00) WWL, X1421	U3710	CRITICAL	WIFI_ROM:P0
341S01394	1	ROM, WIFI (VXX) (MEM FOR DVT) WWL, X1536	U3710	CRITICAL	WIFI_ROM:P2

SOC ROM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00203	1	IC, FLASH, SERIAL, SPI, 4MB, 1, 0V, 633MH, SP08	U4770	CRITICAL	SOC_ROM:BLANK

PAGE TITLE

BOM Configuration

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DRAWING NUMBER

051-05232

REVISION

2.0.0

BRANCH

proto4b

PAGE

2 OF 152

SHEET

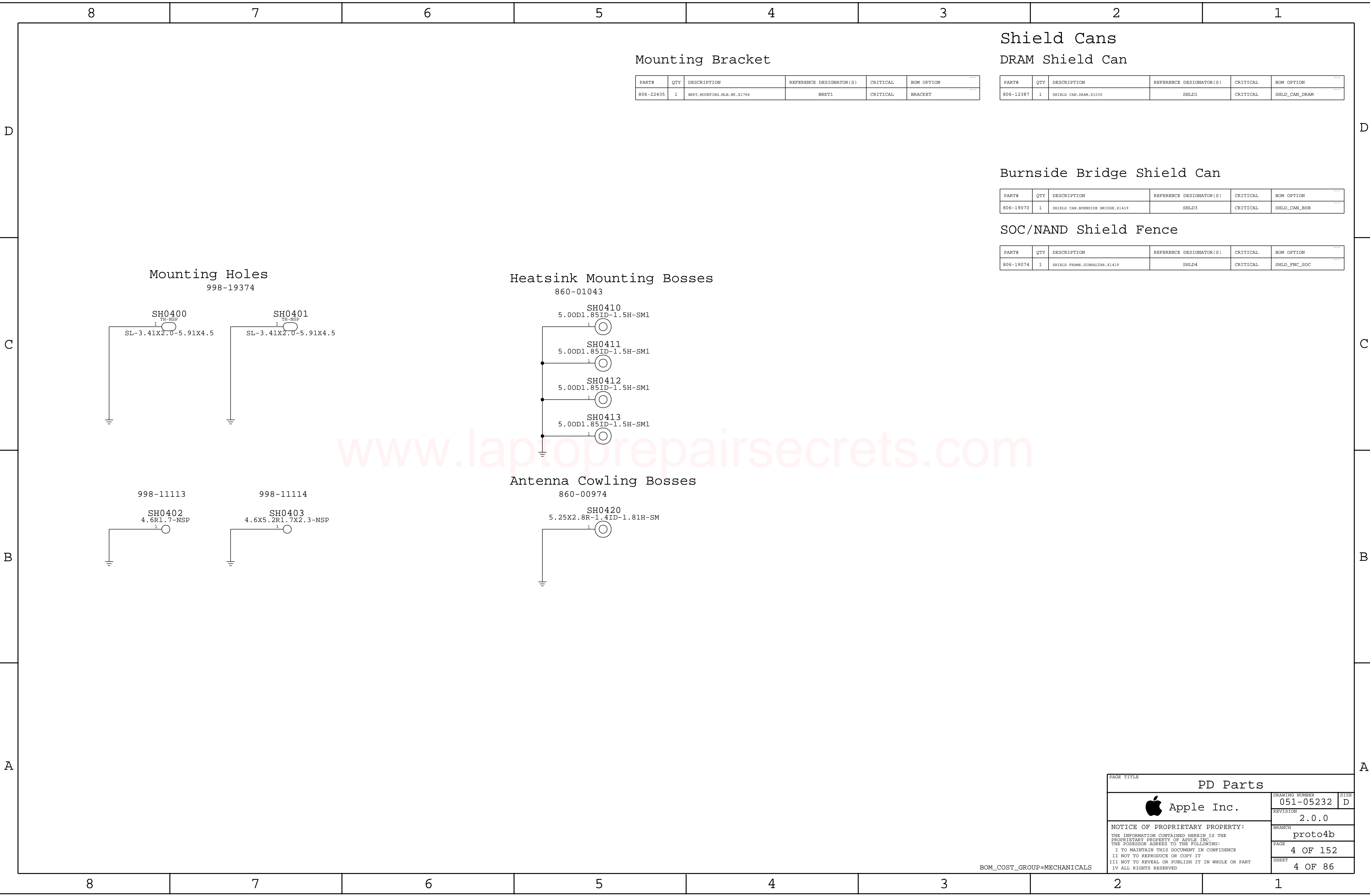
2 OF 86

SIZE

D







Mounting Bracket

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-22435	1	BRKT,MOUNTING,MLB,NK,X1766	BRKT1	CRITICAL	BRACKET

Shield Cans  
DRAM Shield Can

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-12387	1	SHIELD CAN,DRAM,X1030	SHLD1	CRITICAL	SHLD_CAN_DRAM

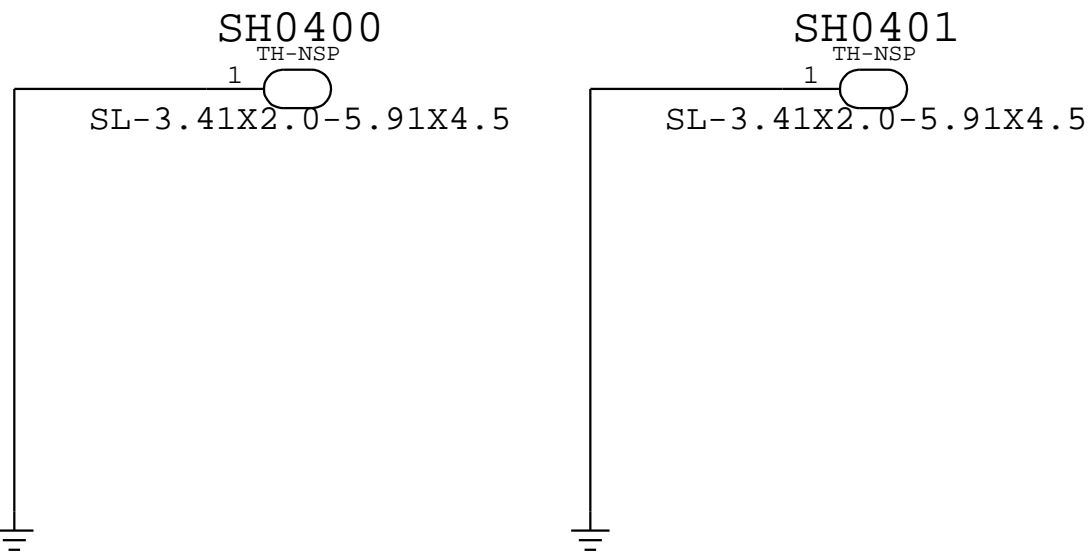
Burnside Bridge Shield Can

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-19070	1	SHIELD CAN,BURNSIDE BRIDGE,X1419	SHLD3	CRITICAL	SHLD_CAN_BSB

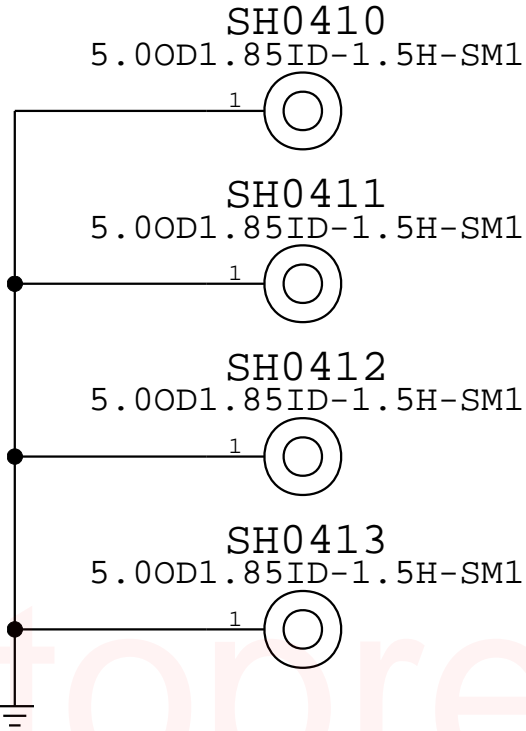
SOC/NAND Shield Fence

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-19074	1	SHIELD FRAME,GIBRALTAR,X1419	SHLD4	CRITICAL	SHLD_FNC_SOC

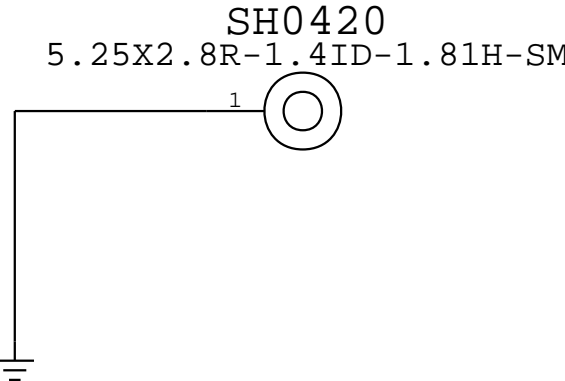
Mounting Holes  
998-19374



Heatsink Mounting Bosses  
860-01043



Antenna Cowling Bosses  
860-00974



PAGE TITLE		
PD Parts		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
	BRANCH	proto4b
	PAGE	4 OF 152
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BOM\_COST\_GROUP=MECHANICALS

D

C

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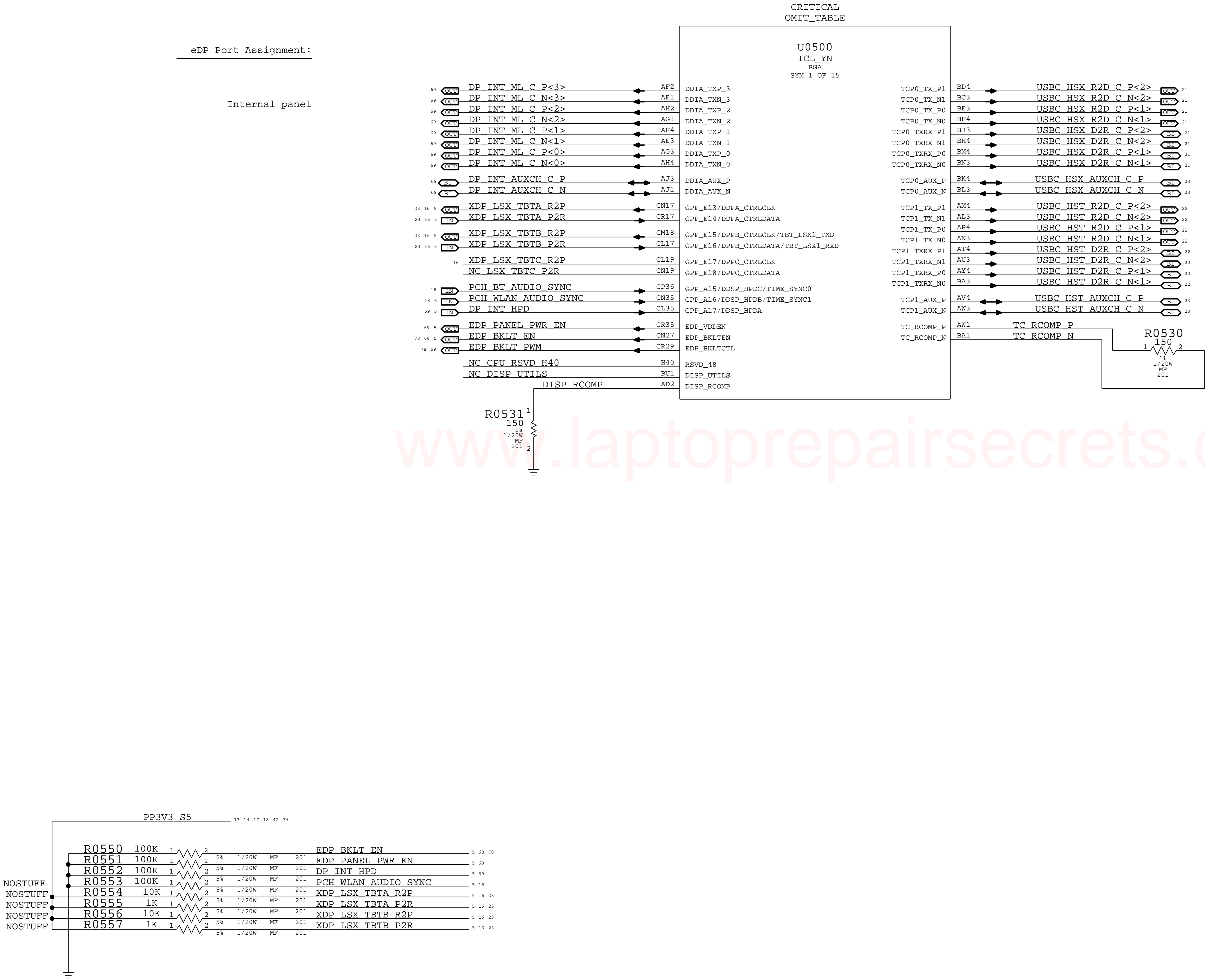
A

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A




Type-C Port Assignments:

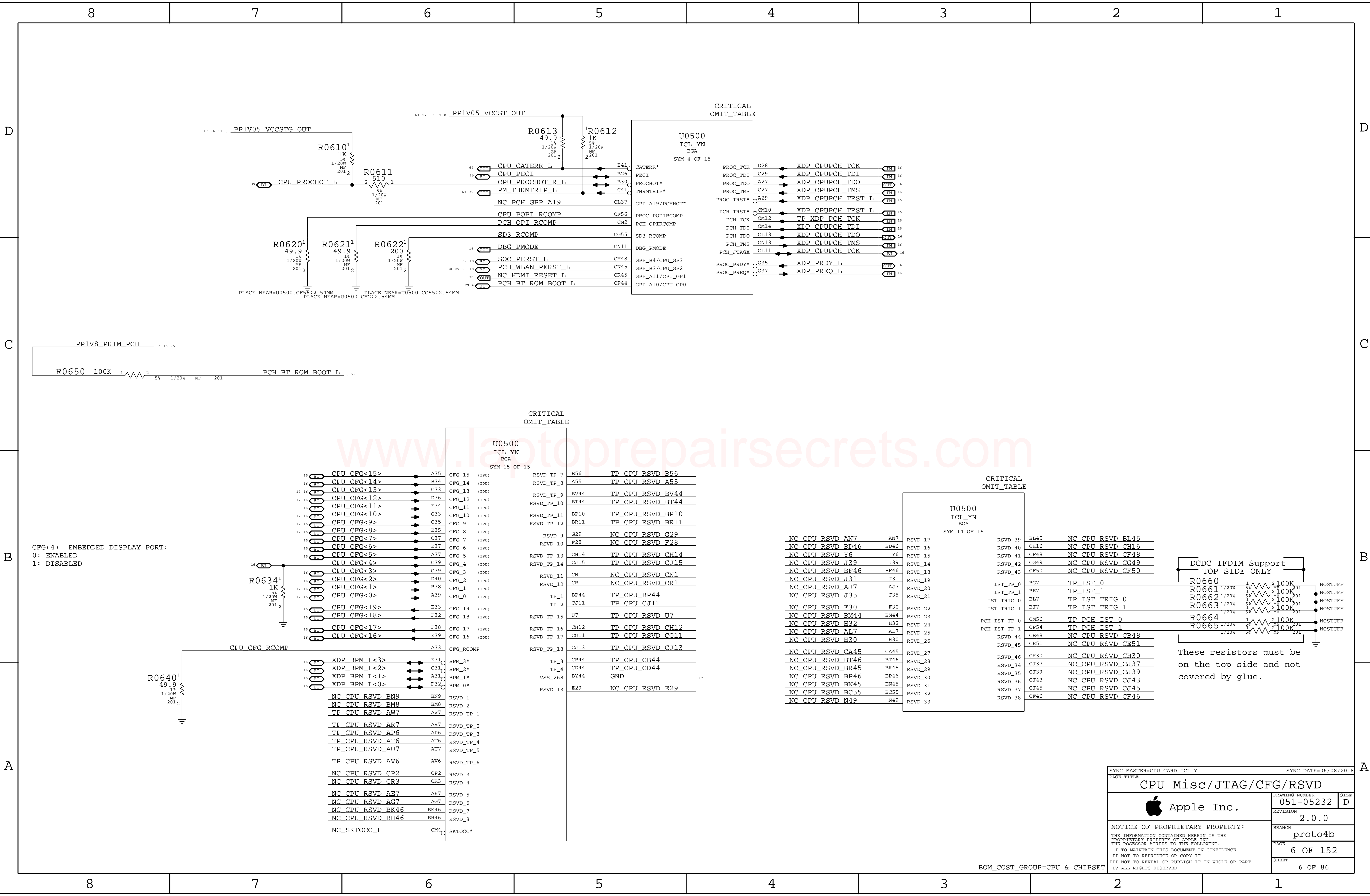
USBC Sink 0

USBC Sink 1

BOM\_COST\_GROUP=CPU & CHIPSET

SYNC_MASTER=MASTER		SYNC_DATE=06/08/2018	
PAGE TITLE			
CPU GFX			
 Apple Inc.		DRAWING NUMBER	SIZE
		051-05232	D
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		BRANCH	proto4b
		PAGE	5 OF 152
		SHEET	5 OF 86






CFG(4) EMBEDDED DISPLAY PORT:  
0: ENABLED  
1: DISABLED

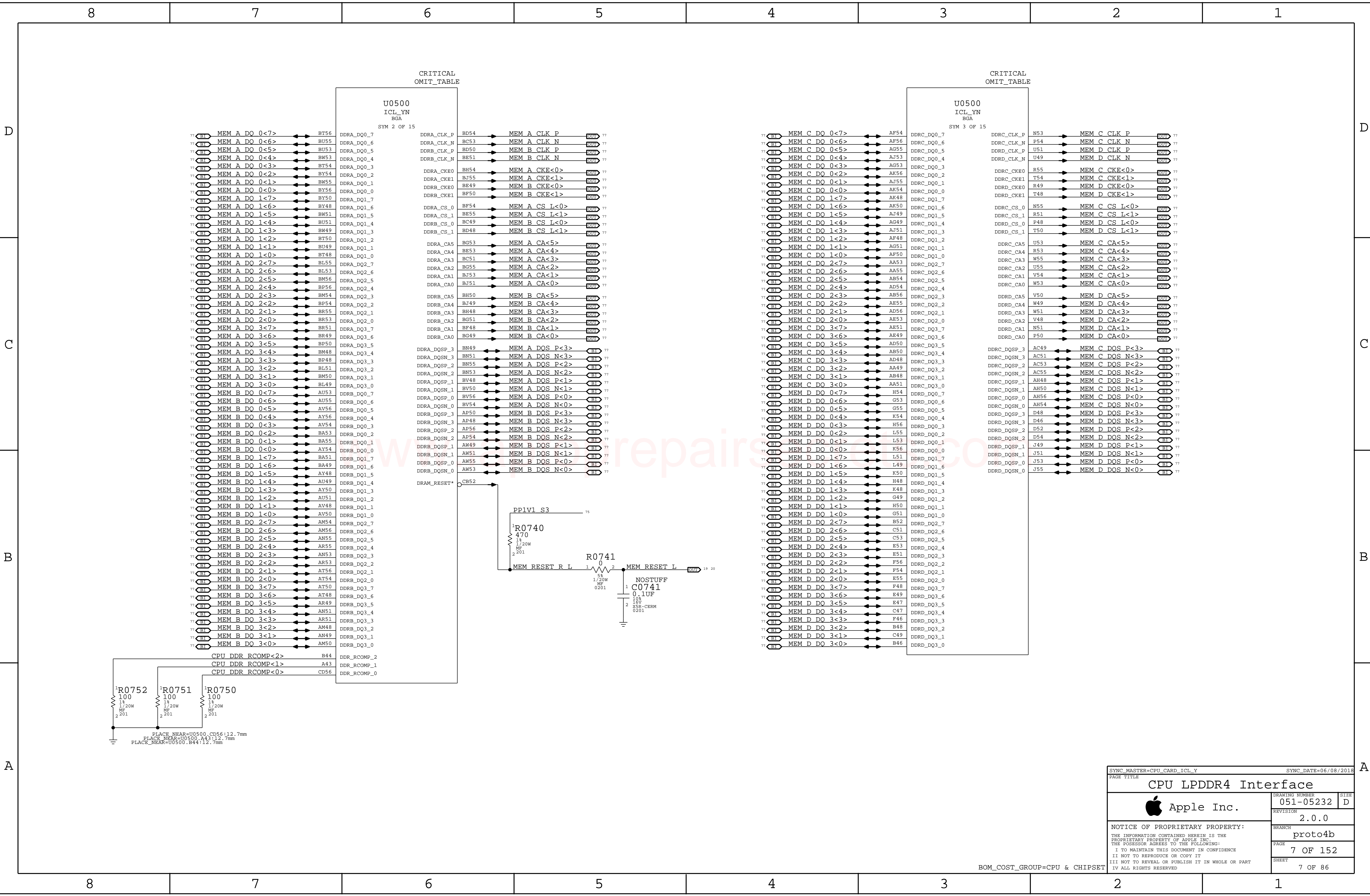
DCDC IFDIM Support  
TOP SIDE ONLY


These resistors must be on the top side and not covered by glue.

SYNC_MASTER=CPU_CARD_ICL_Y		SYNC_DATE=06/08/2018	
PAGE TITLE			
CPU Misc/JTAG/CFG/RSVD			
 Apple Inc.	DRAWING NUMBER	051-05232	SIZE
	REVISION	2.0.0	
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	PAGE	6 OF 152	
	SHEET	6 OF 86	

BOM\_COST\_GROUP=CPU & CHIPSET



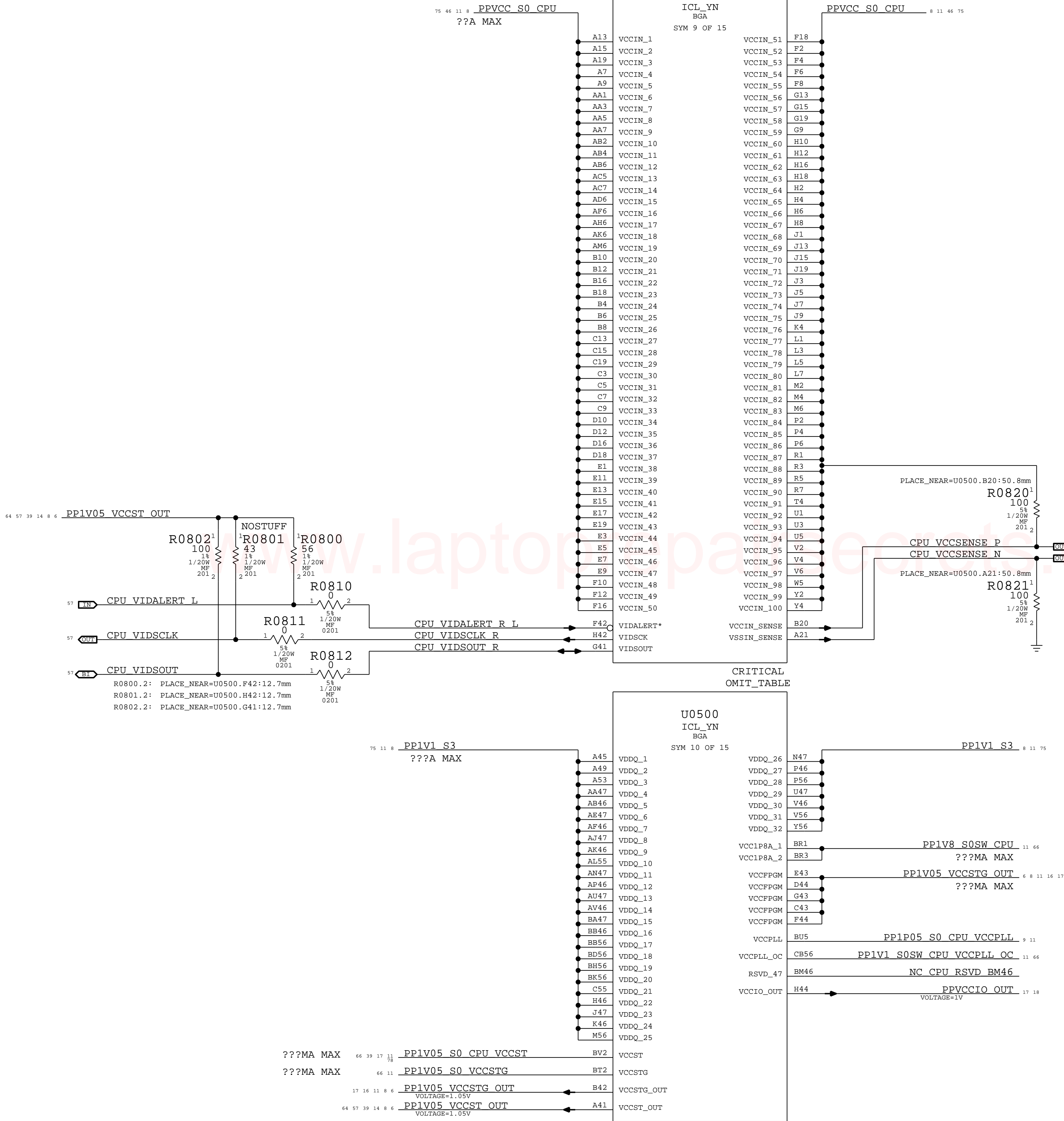


SYNC_MASTER=CPU_CARD_ICL_Y			SYNC_DATE=06/08/2018		
PAGE TITLE					
CPU LPDDR4 Interface					
 Apple Inc.			DRAWING NUMBER		SIZE
			051-05232		D
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			2.0.0		
			BRANCH		
			proto4b		
			PAGE		
			7 OF 152		
			SHEET		
			7 OF 86		


BOM\_COST\_GROUP=CPU & CHIPSET



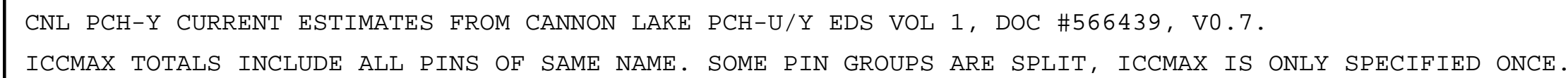
CNL CPU-Y current estimates from Cannon Lake Processor EDS Vol 1, doc #566214, v0.7.  
IccMax totals include all pins of same name. Some pin groups are split, IccMax is only specified once.



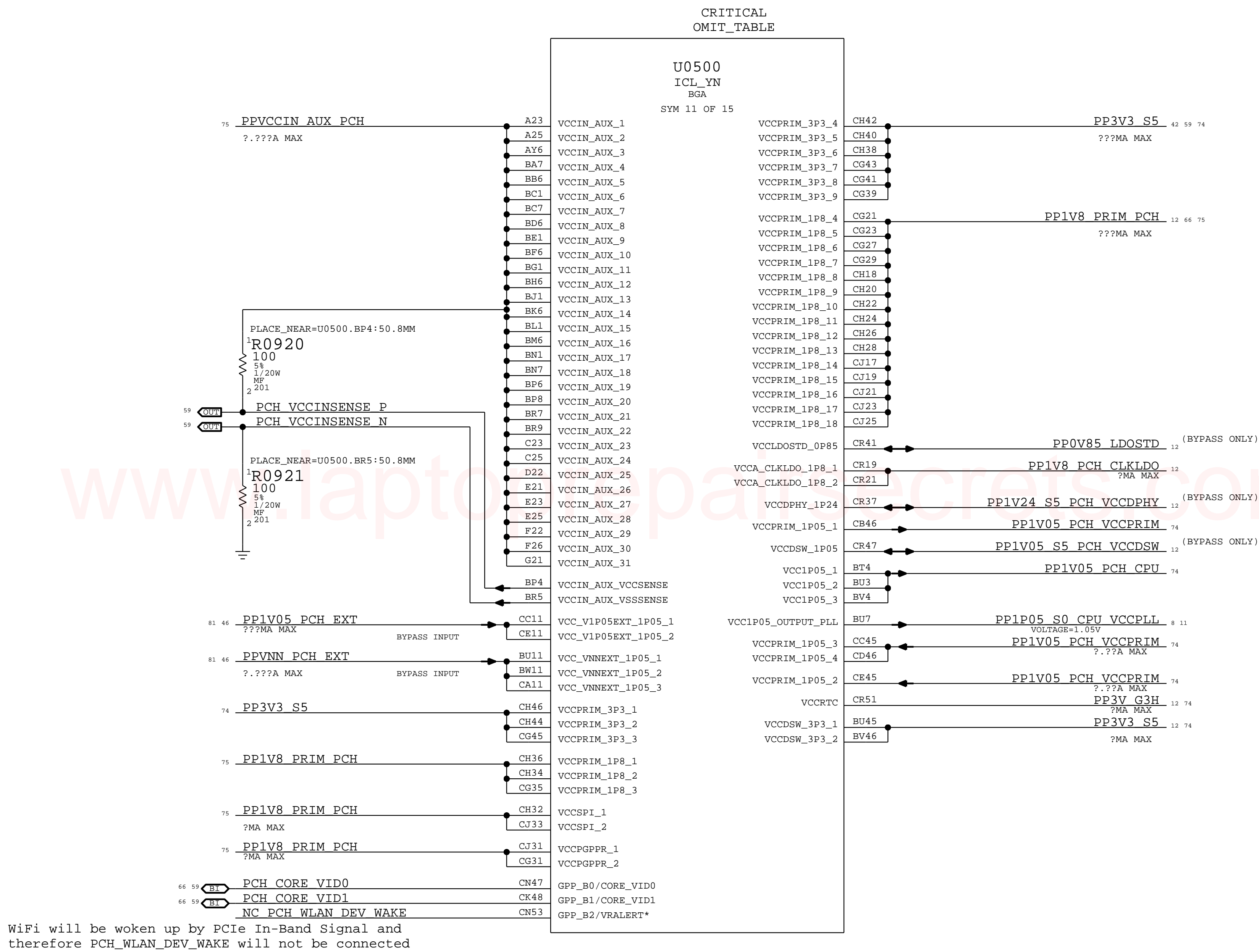
BOM\_COST\_GROUP=CPU & CHIPSET

SYNC_MASTER=CPU_CARD_ICL_Y		SYNC_DATE=06/08/2018	
PAGE TITLE			
CPU Power			
	DRAWING NUMBER		SIZE
	051-05232		D
<p>Apple Inc.</p> <p>NOTICE OF PROPRIETARY PROPERTY:</p> <p>THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:</p> <p>I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE</p> <p>II NOT TO REPRODUCE OR COPY IT</p> <p>III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART</p> <p>IV ALL RIGHTS RESERVED</p>	REVISION		2.0.0
	BRANCH		proto4b
	PAGE		8 OF 152
	SHEET		8 OF 86






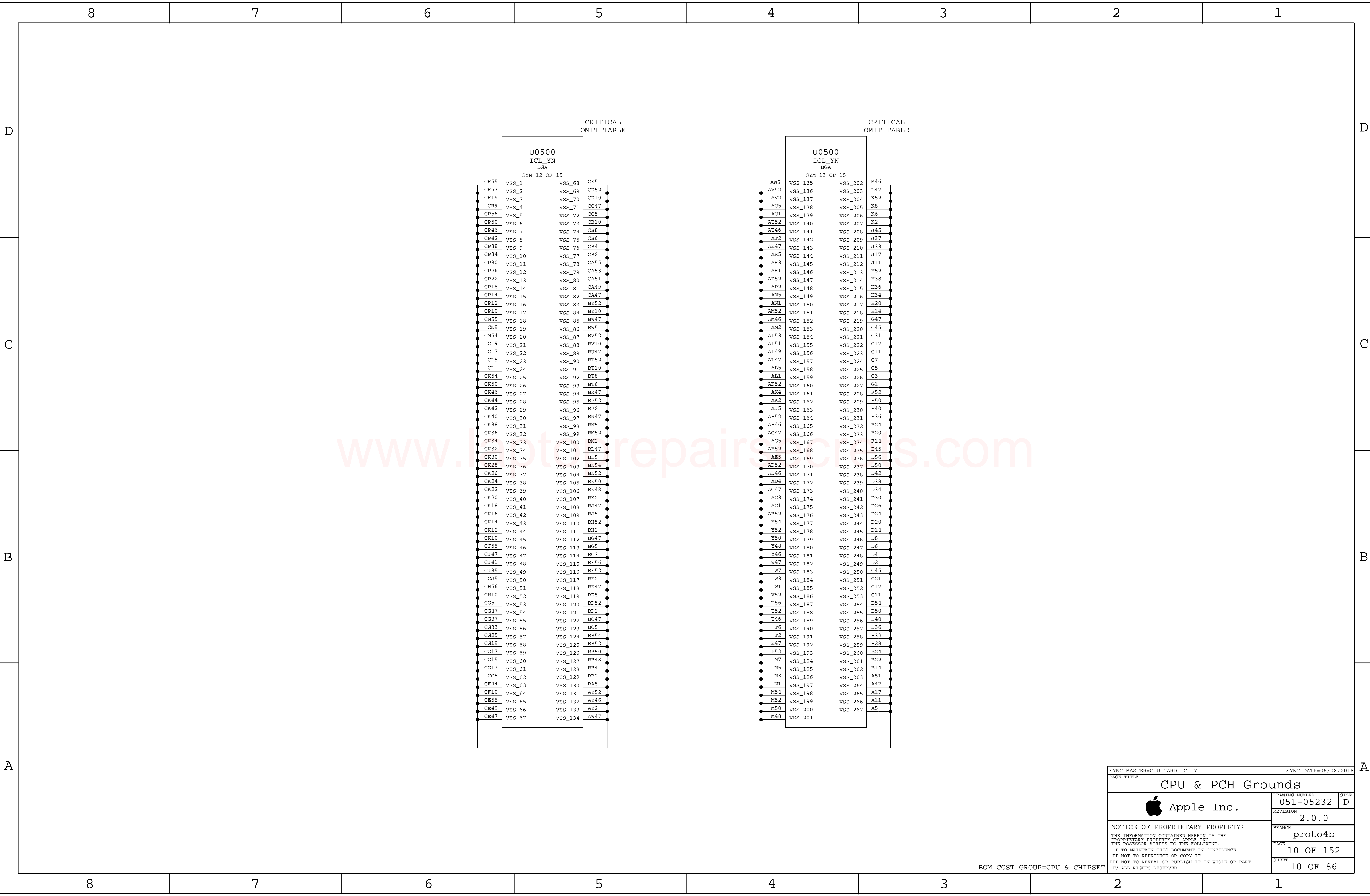
NOTE: ALIASES NOT USED ON CPU SUPPLY OUTPUTS  
TO AVOID ANY EXTRANEIOUS CONNECTIONS.



WiFi will be woken up by PCIe In-Band Signal and therefore PCH\_WLAN\_DEV\_WAKE will not be connected

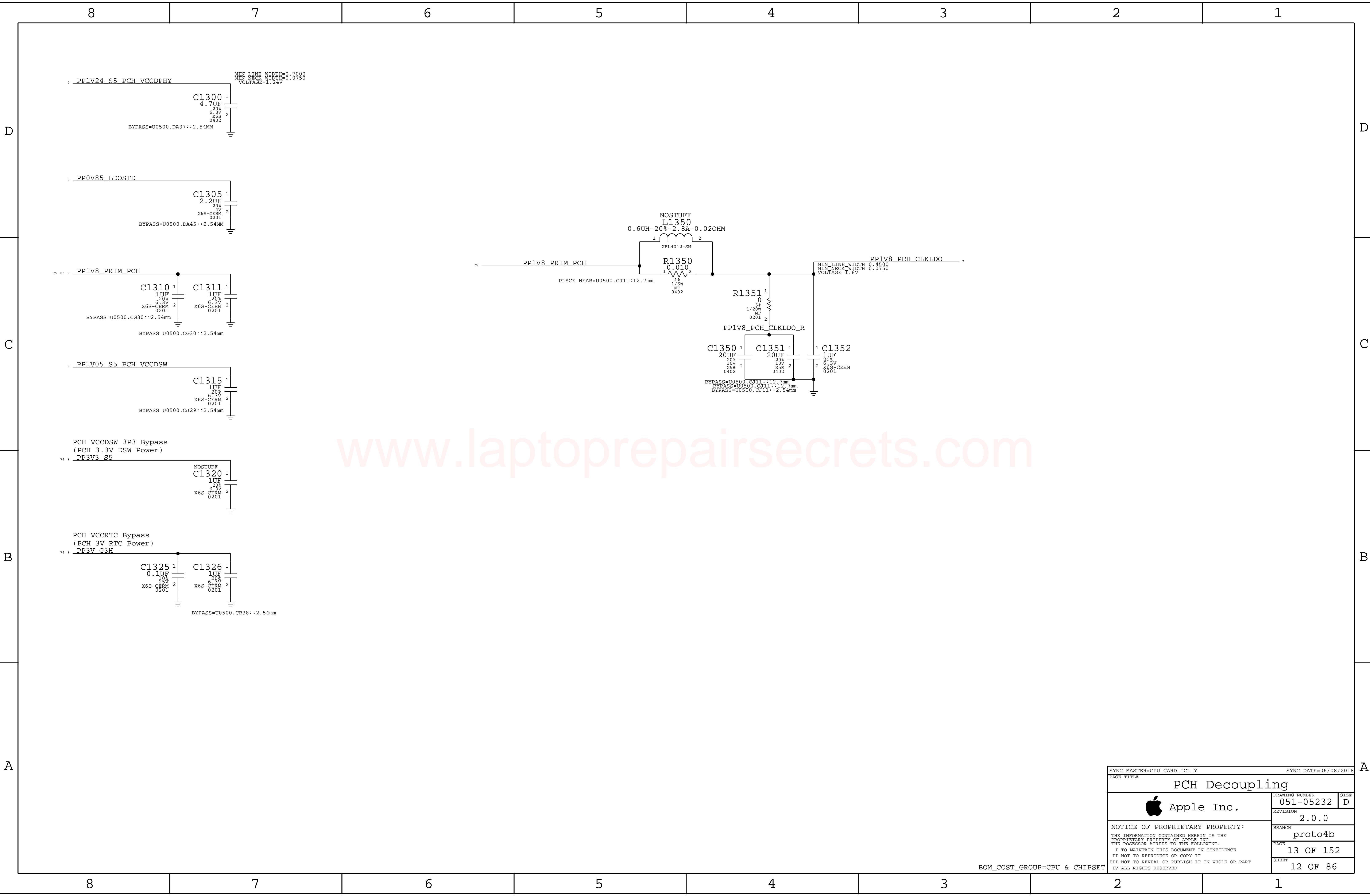
SYNC_MASTER=CPU_CARD_ICL_Y		SYNC_DATE=06/08/2018	
PAGE TITLE			
PCH Power			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-05232		D
	REVISION		
		2.0.0	
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BRANCH		proto4b	
PAGE		9 OF 152	
SHEET		9 OF 86	


BOM\_COST\_GROUP=CPU & CHIPSET





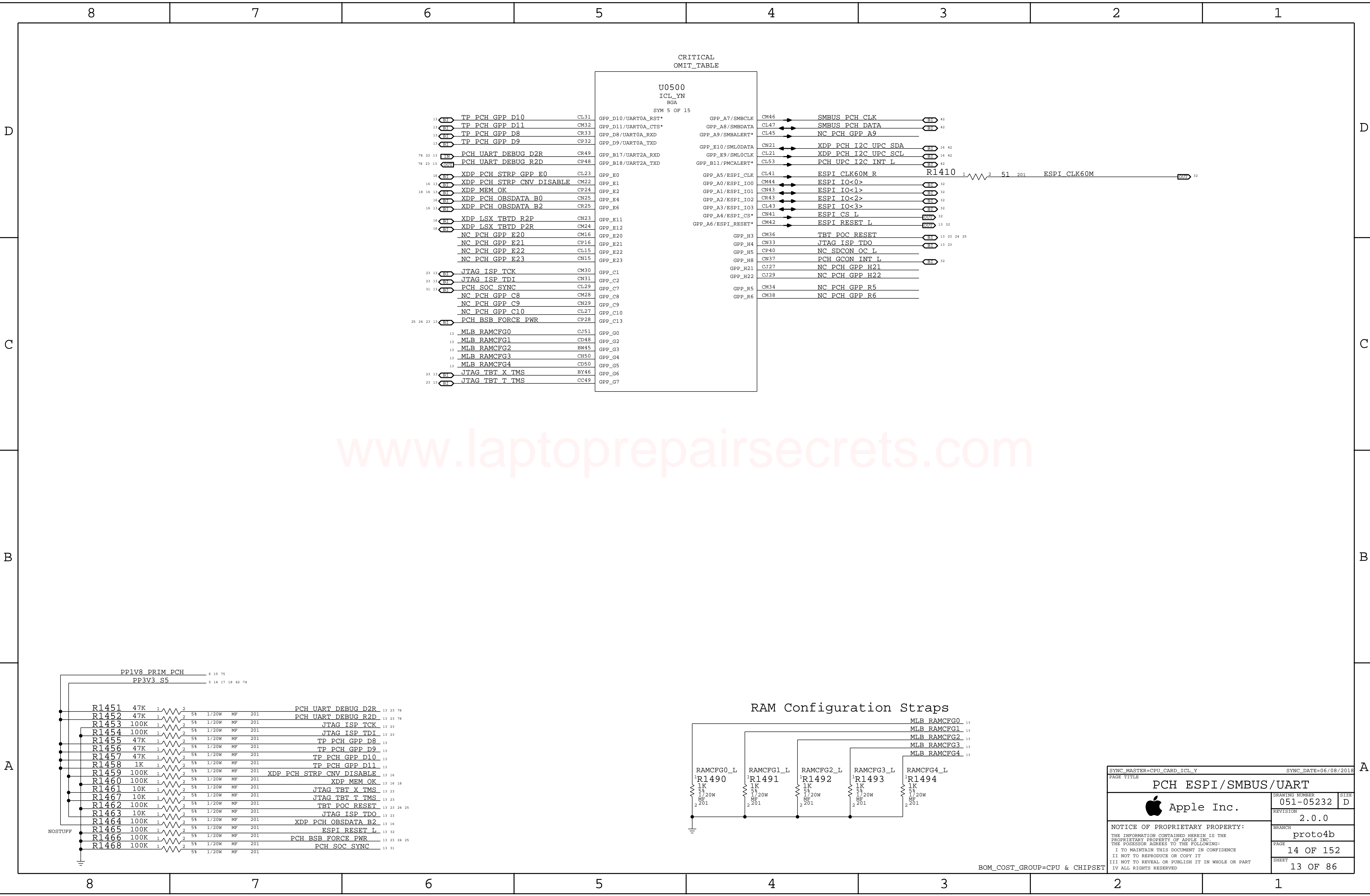




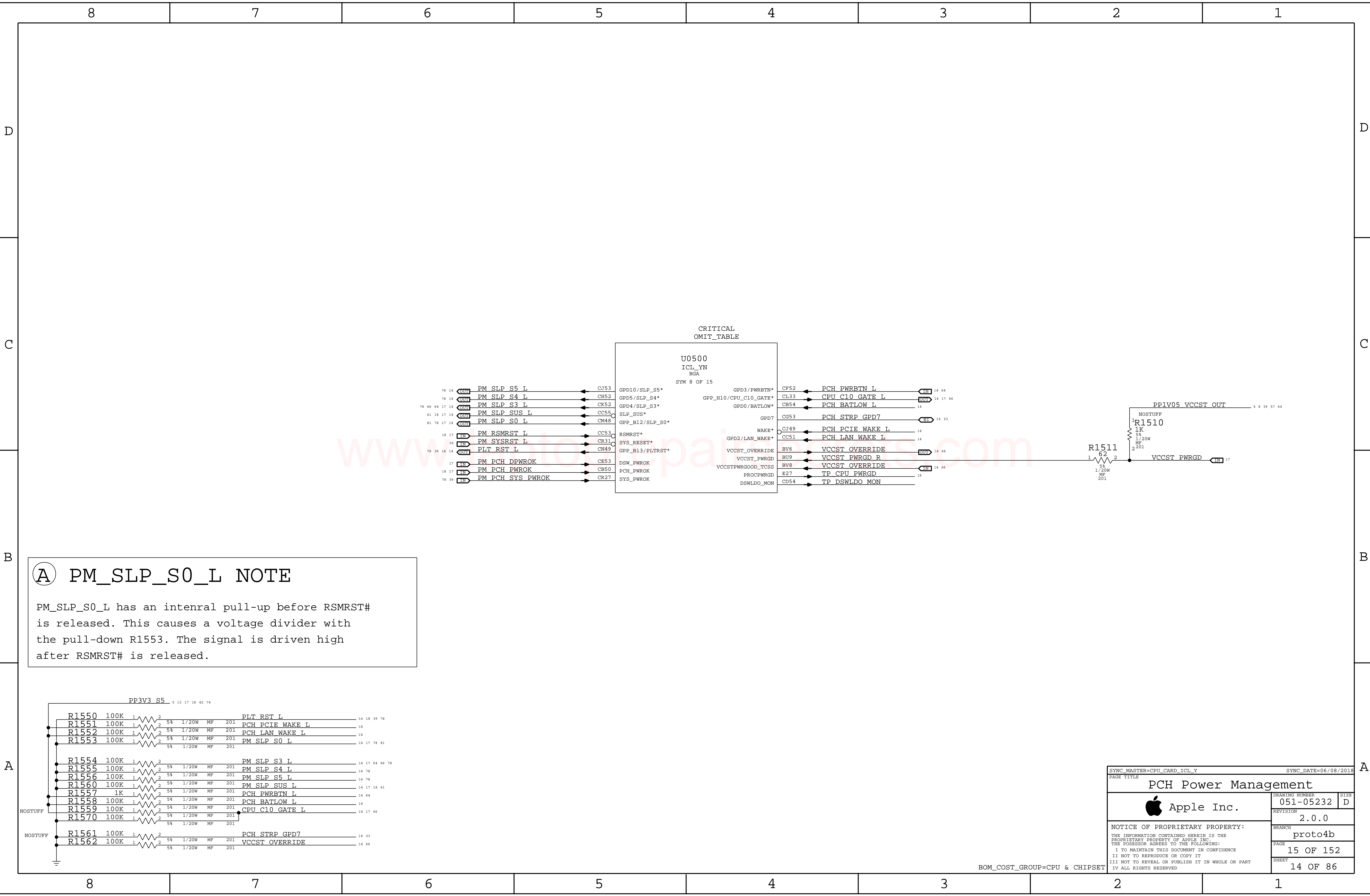
SYNC_MASTER=CPU_CARD_ICL_V		SYNC_DATE=06/08/2018	
PAGE TITLE			
PCH Decoupling			
 Apple Inc.	DRAWING NUMBER	051-05232	SIZE D
	REVISION	2.0.0	
NOTICE OF PROPRIETARY PROPERTY:			
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BRANCH		proto4b	
PAGE		13 OF 152	
SHEET		12 OF 86	

BOM\_COST\_GROUP=CPU & CHIPSET





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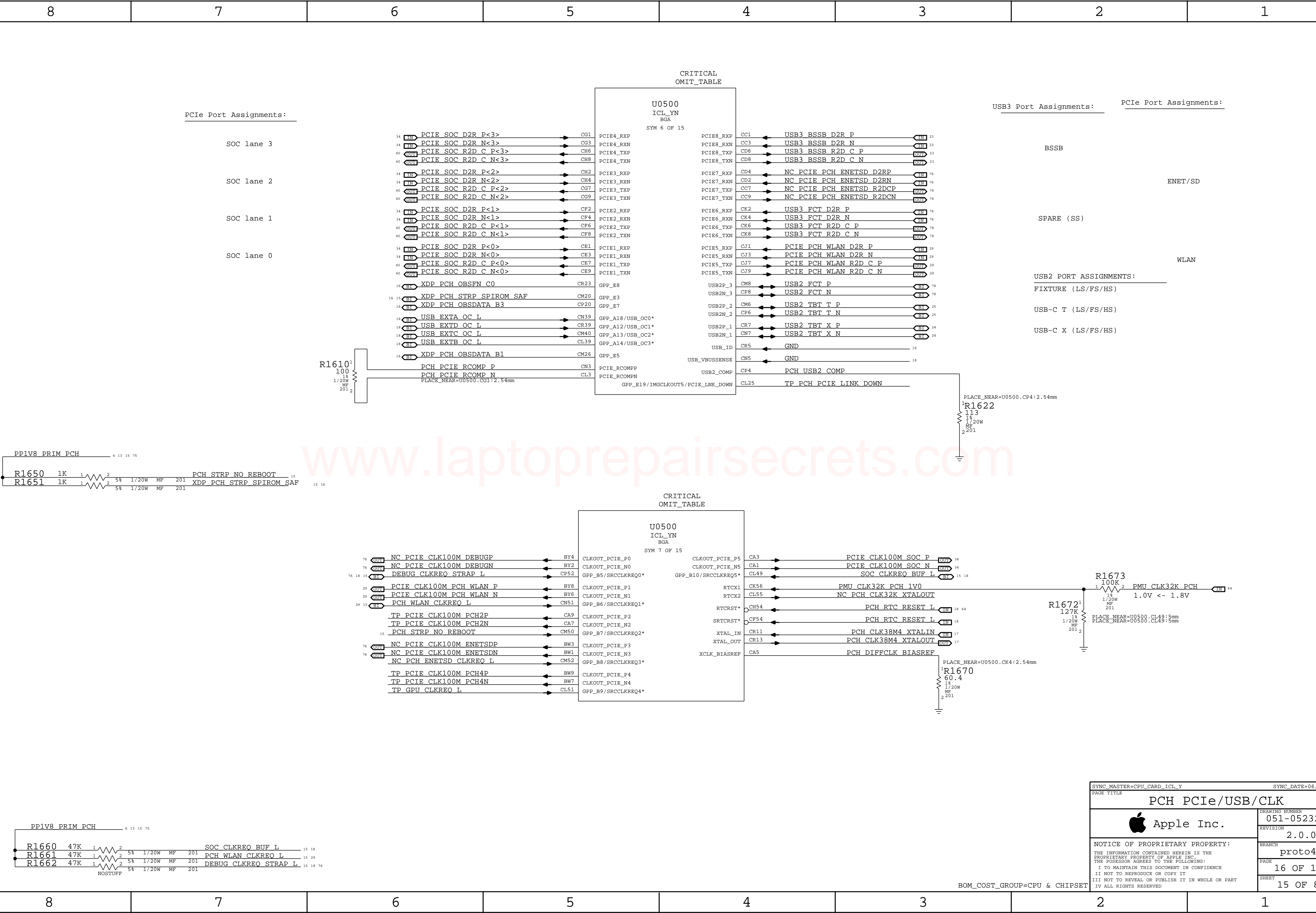
A


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SYNC_MASTER=CPU_CARD_ICL_Y		SYNC_DATE=06/08/2018	
PAGE TITLE			
PCH PCIe/USB/CLK			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-05232		D
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	BRANCH		
	proto4b		
	PAGE		
	16 OF 152		
	SHEET		
	15 OF 86		

BOM\_COST\_GROUP=CPU & CHIPSET

D

C

B

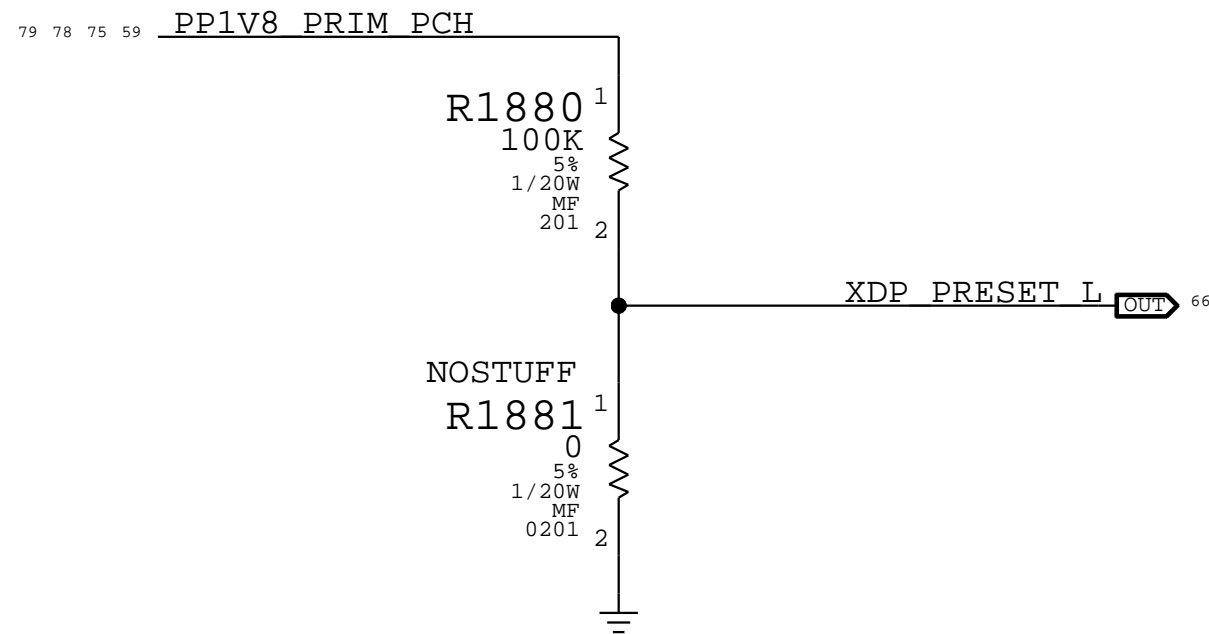
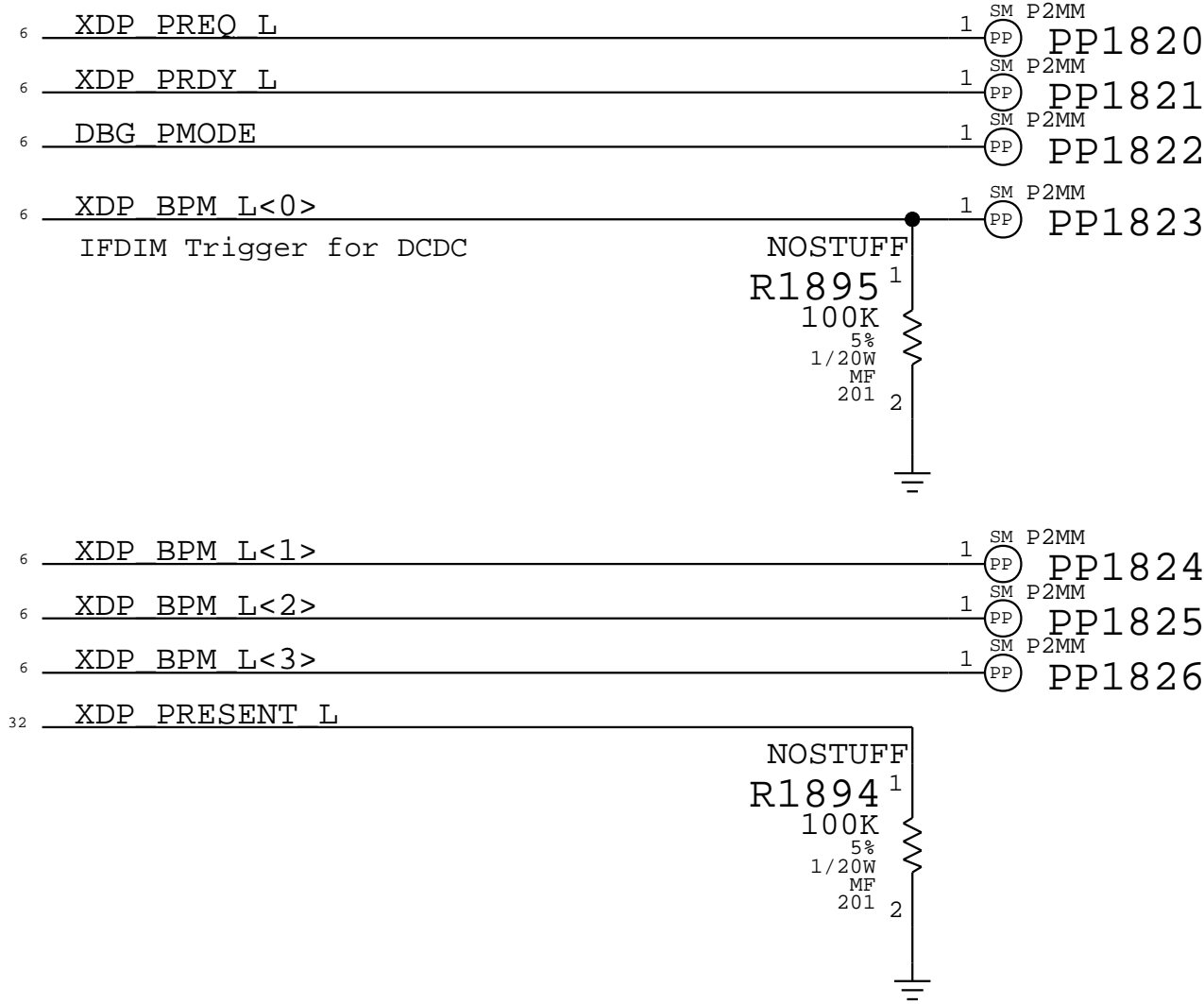
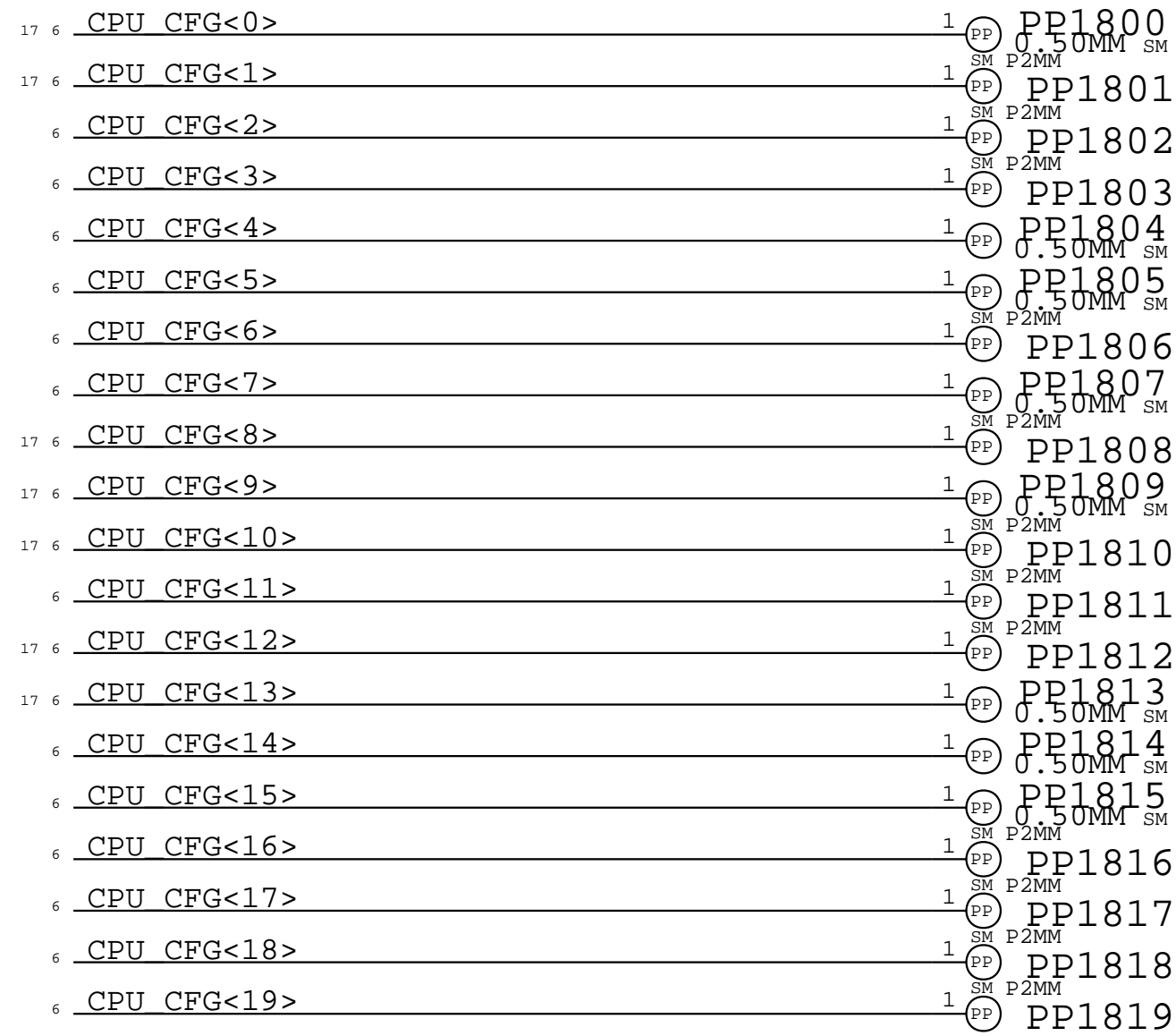
A

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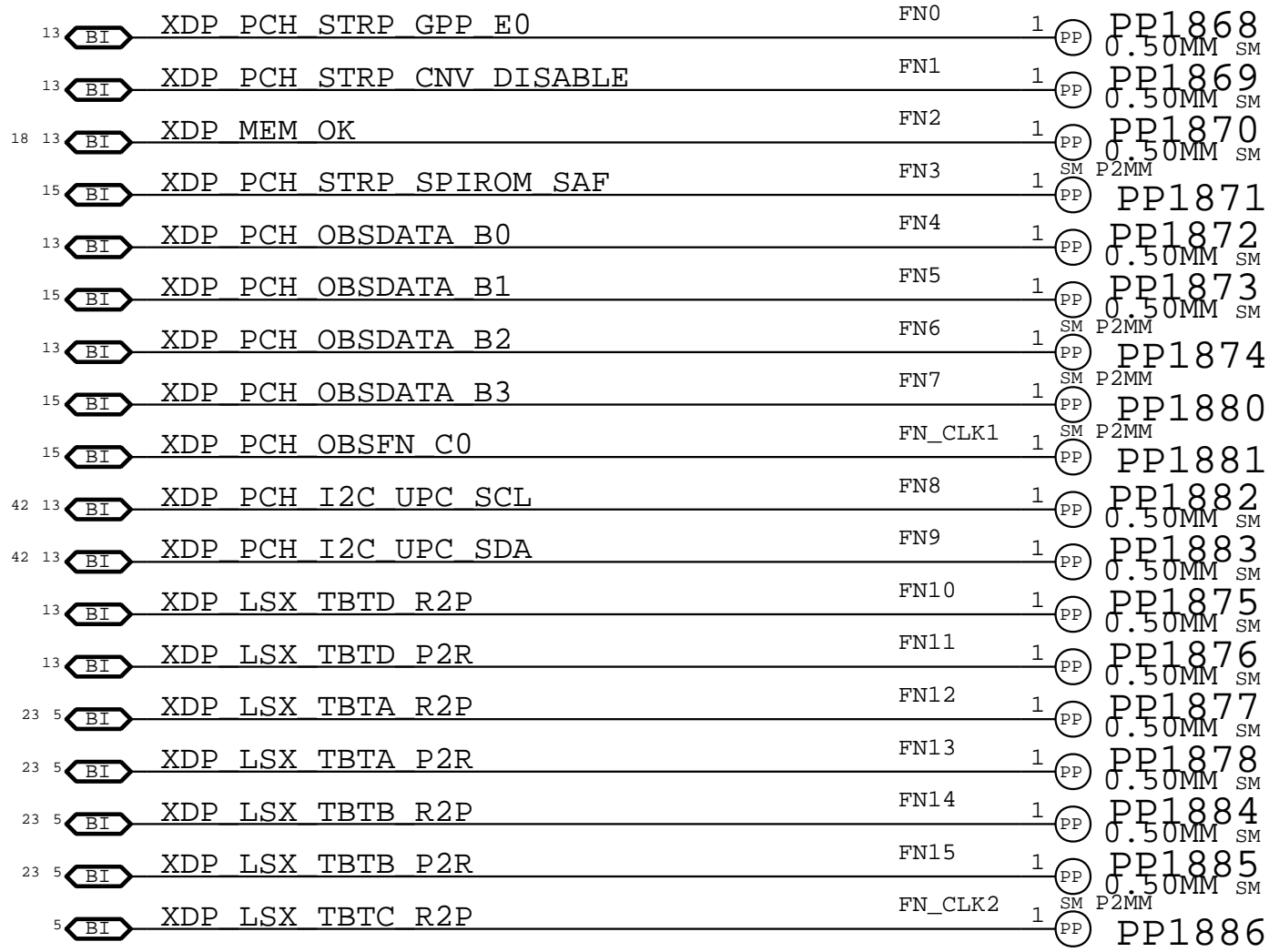
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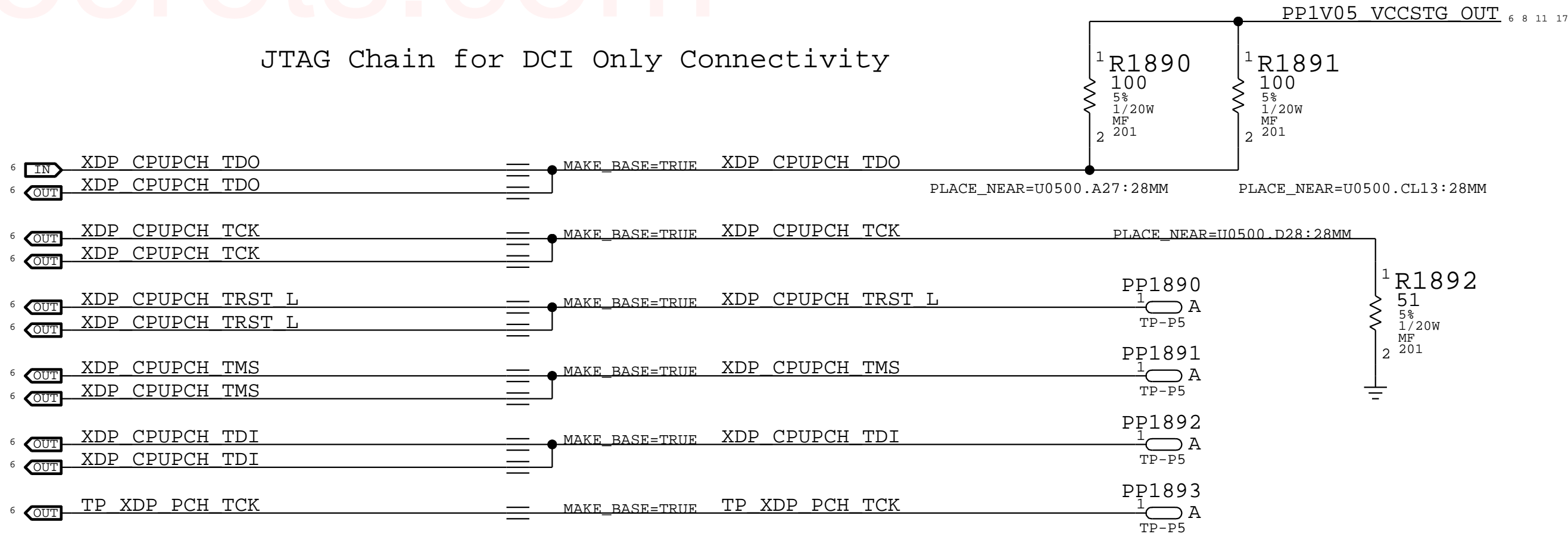
### PCH XDP Signals


These signals do not connect to the Primary (Merged) XDP connector in this architecture because it does not exist. The PDG puts them on a secondary XDP connector that is only needed in some PCH debugging situation, but also does not exist. They are listed here to show their secondary XDP functions and to provide test points for signals that are not used elsewhere. Unused GPIOs have TPs.

#### PCH/XDP Signals



### JTAG Chain for DCI Only Connectivity

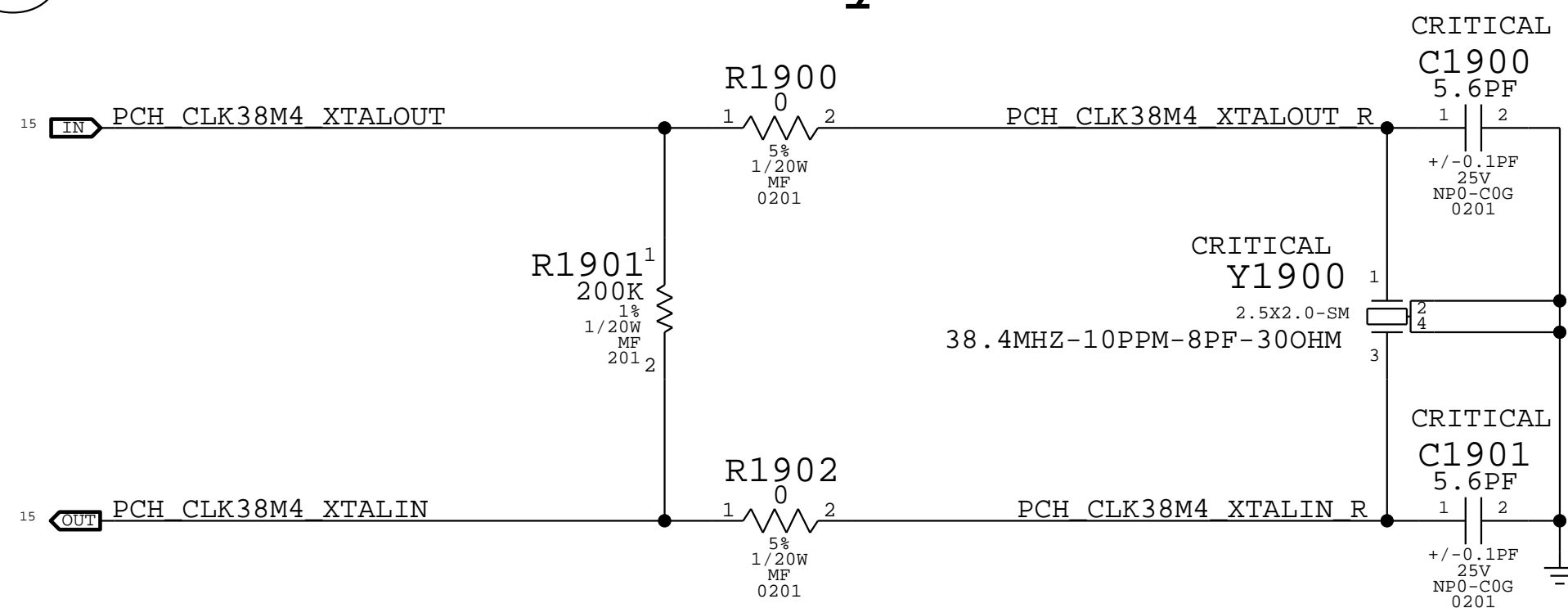


SYNC_MASTER=X589_CPU_CNLY			SYNC_DATE=03/13/2017			
PAGE TITLE						
CPU/PCH Merged XDP						
 Apple Inc.			DRAWING NUMBER		SIZE	
			051-05232		D	
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			BRANCH		proto4b	
			PAGE		18 OF 152	
			SHEET		16 OF 86	

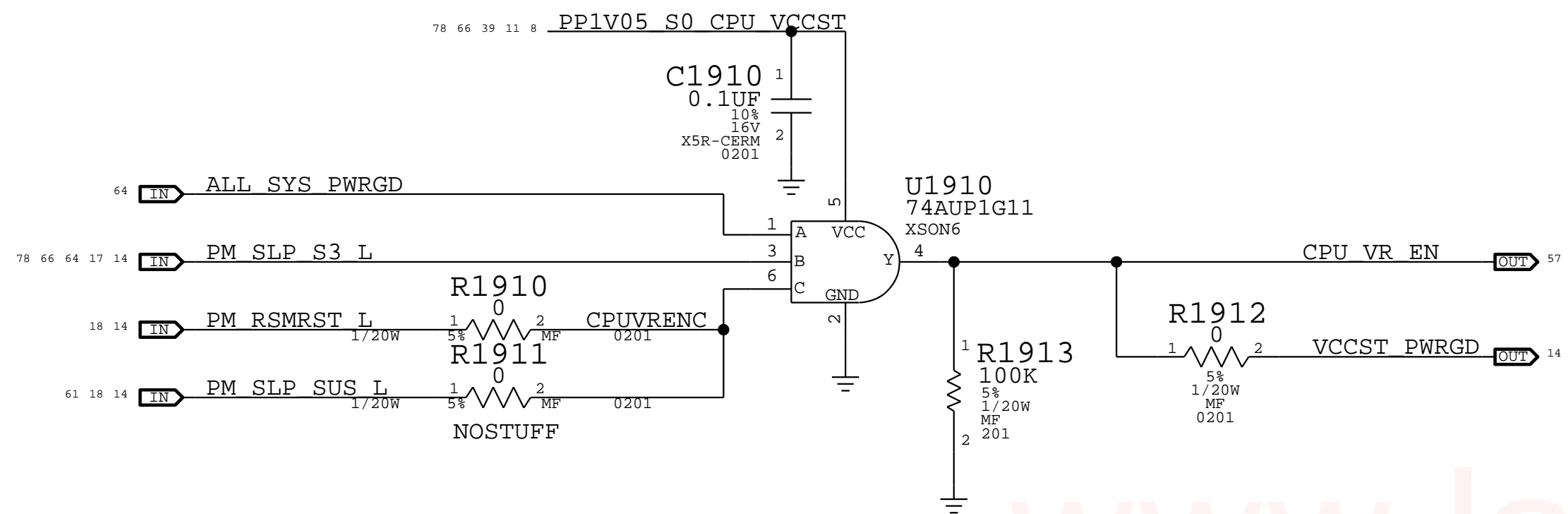
BOM\_COST\_GROUP=DEBUG



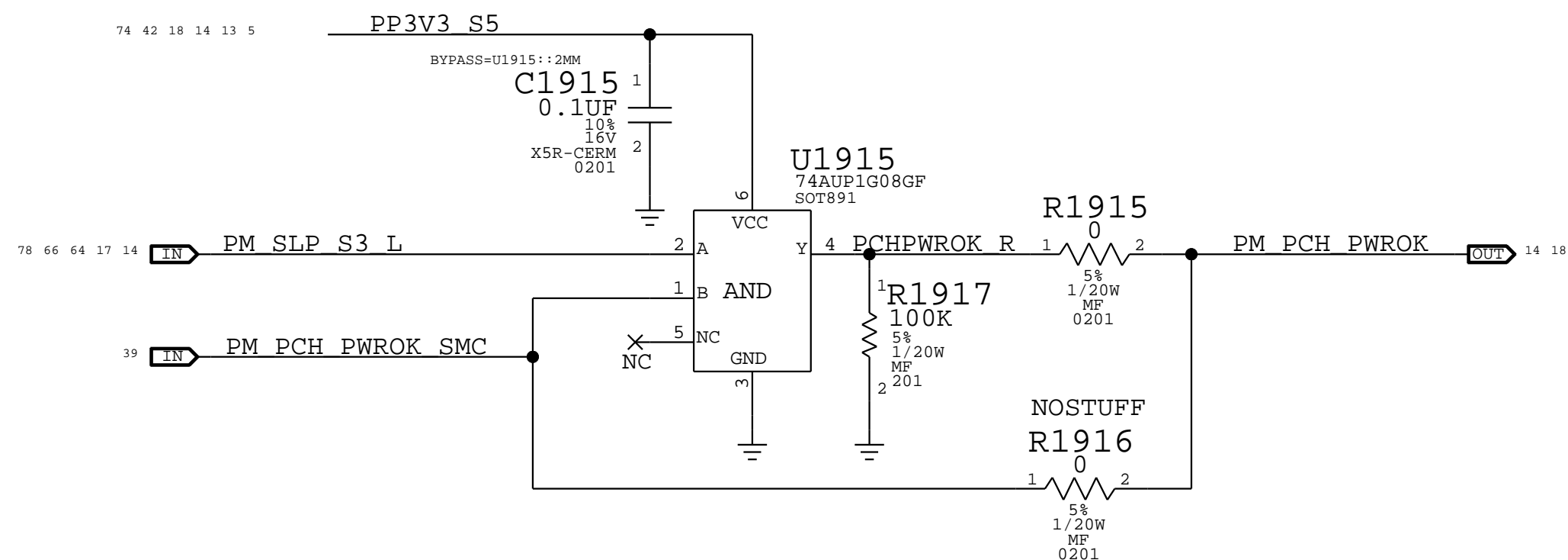
## A PCH 38.4MHz Crystal



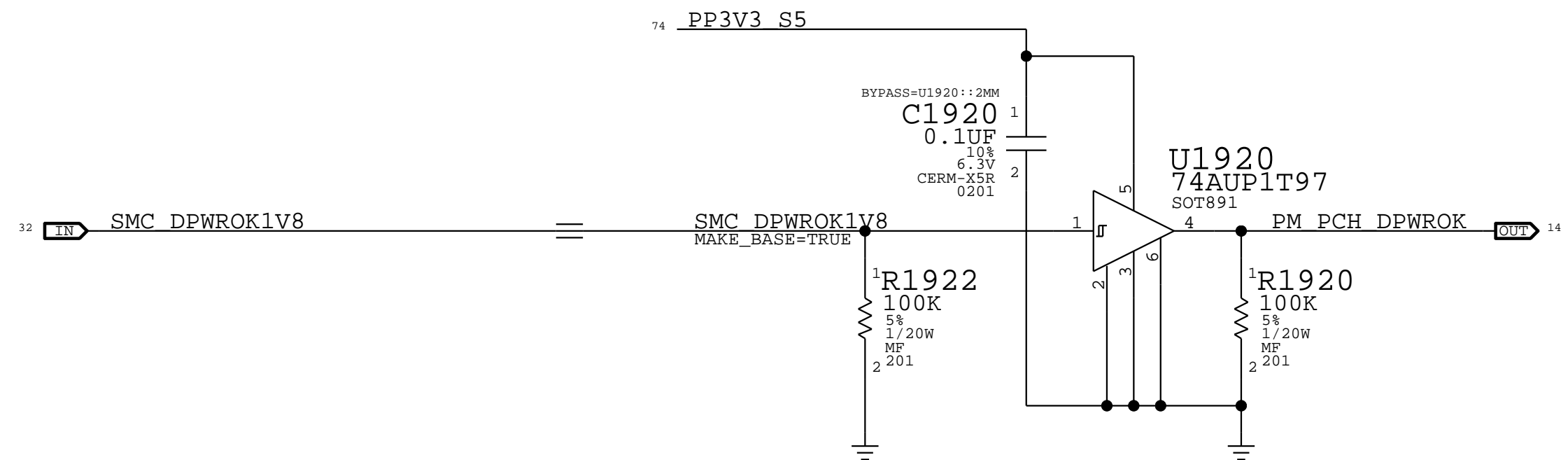
## B VCCIN VR EN and VCCST\_PWRGD Generation



## C PCH\_PWROK Generation



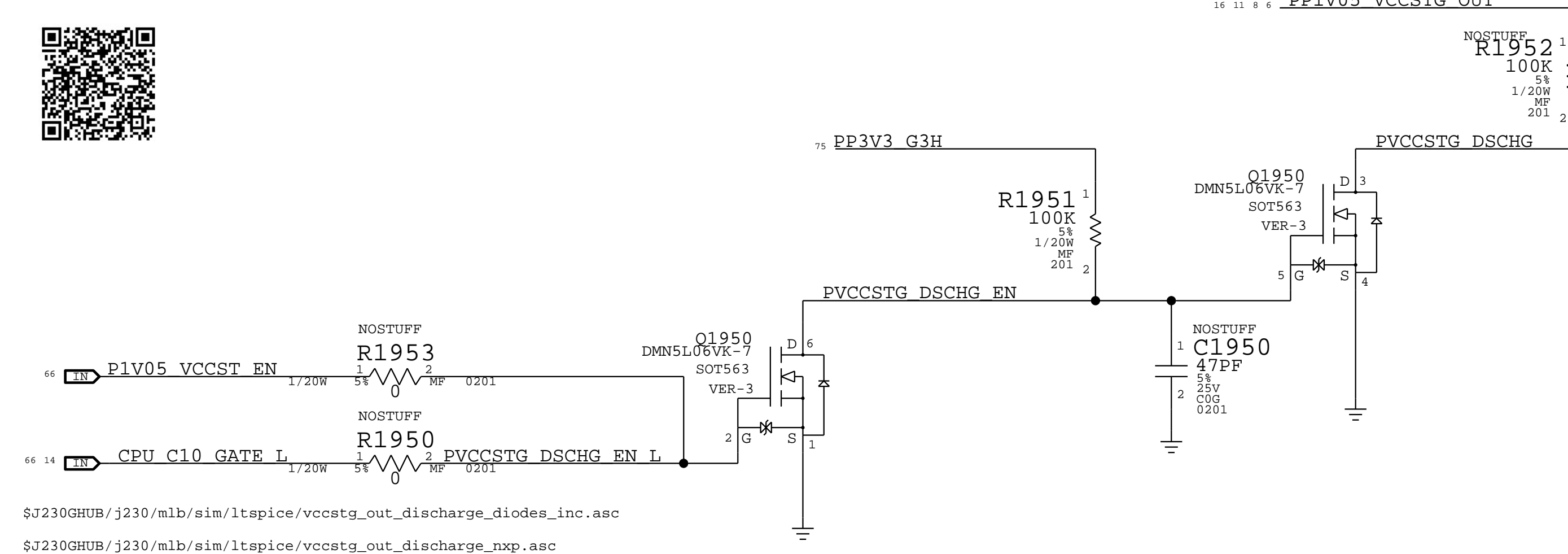
## D DSW\_PWROK 3.3V Level Shifter



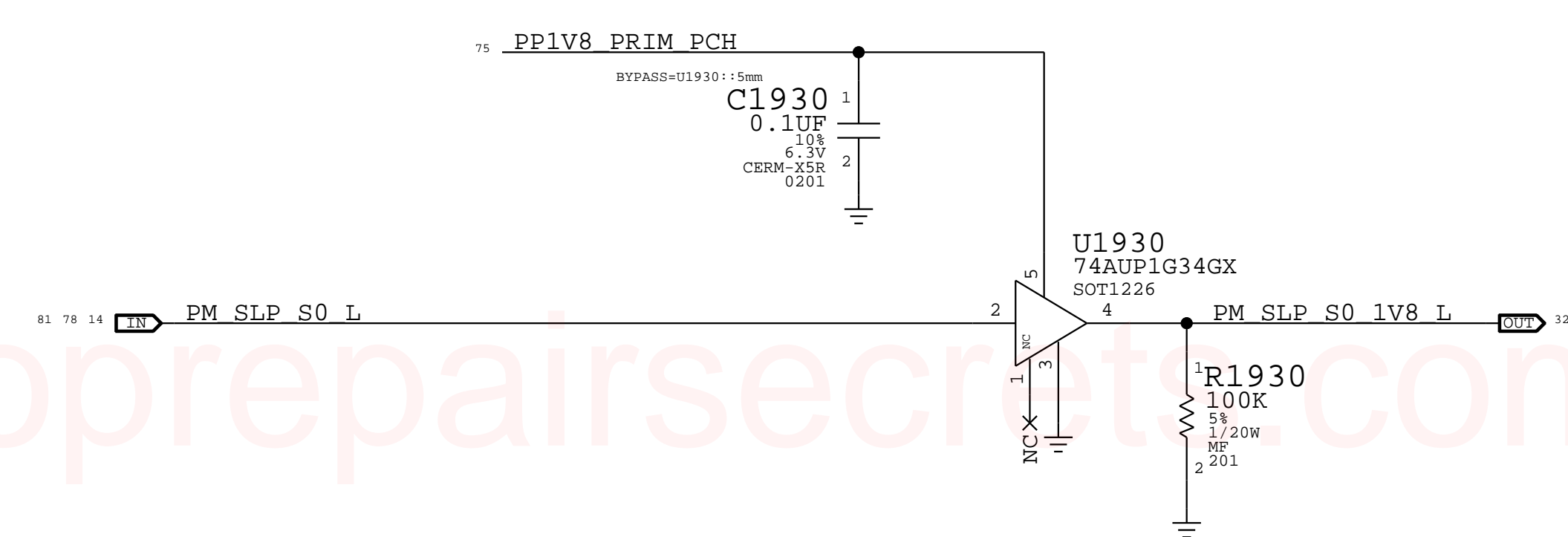
## E VCCSTG\_OUT Discharge Circuit

Ensure VCCSTG\_OUT <= VCCST during power-down (required at all times)

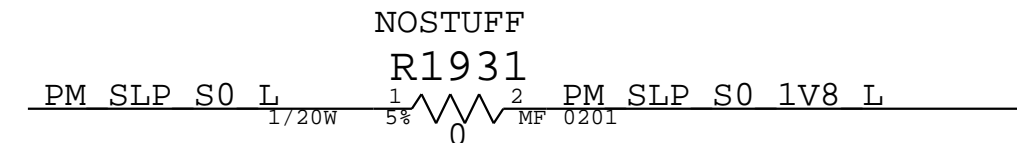
LTSipice Simulation



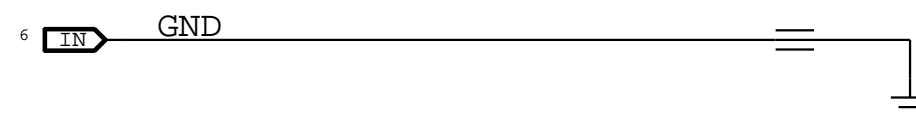
## F SLP\_S0# 1.8V Level Shifter



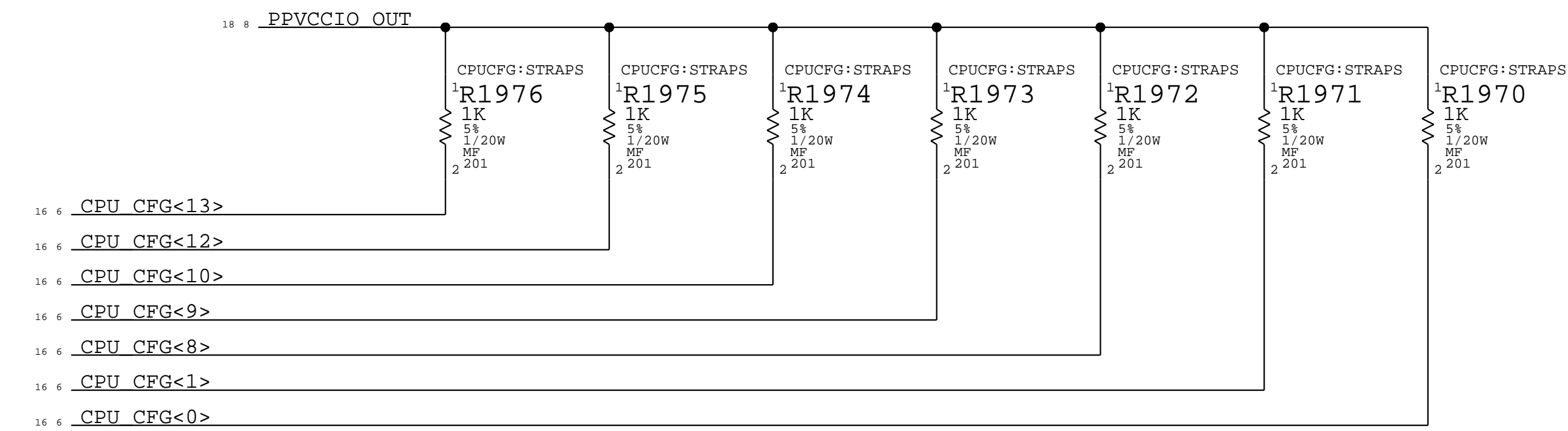
### SoC Buffer Bypass




## G VSS\_268 GND Connection



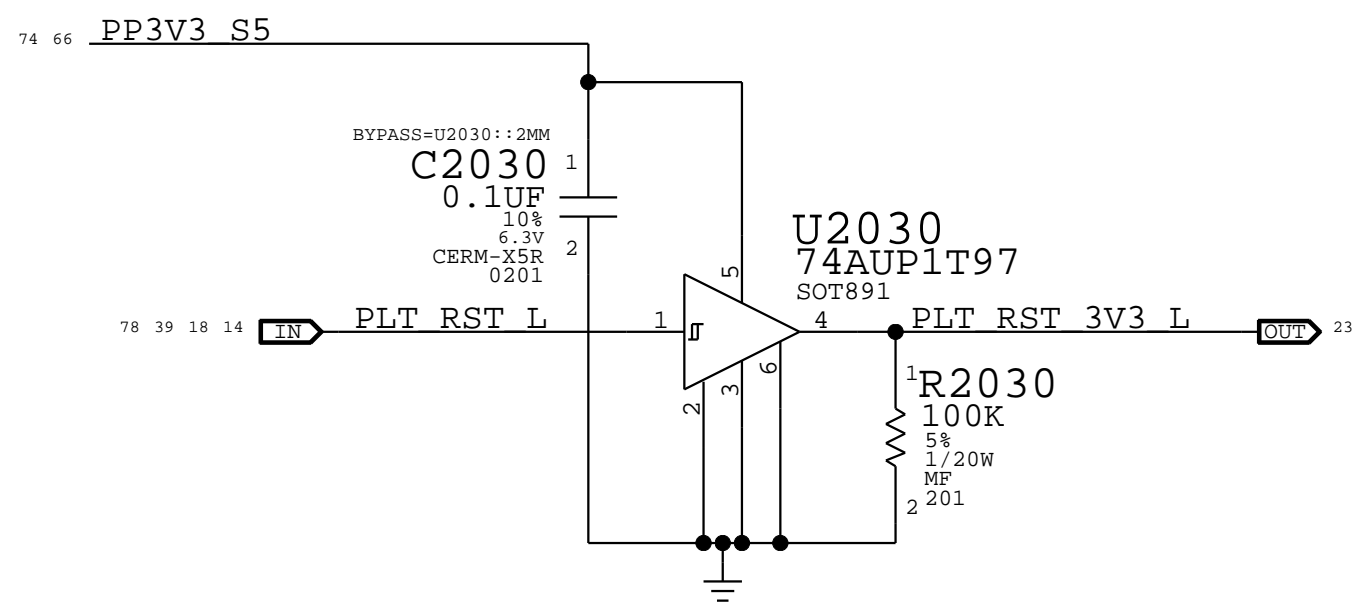
## H CFG Boot Straps



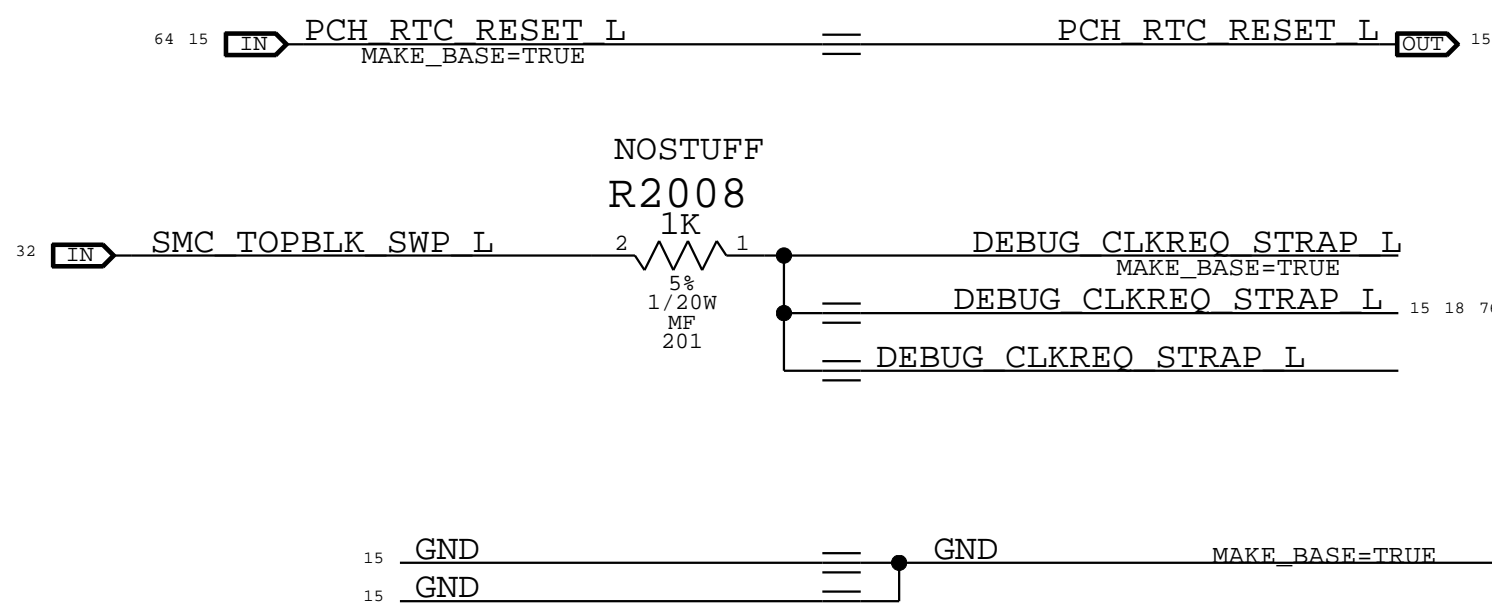
SYNC_MASTER=CPU_CARD_ICL_V		SYNC_DATE=06/08/2018	
PAGE TITLE			
Chipset Shared Support			
 Apple Inc.	DRAWING NUMBER	051-05232	SIZE
	REVISION	2.0.0	D
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	proto4b
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I/ NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART			
I/ ALL RIGHTS RESERVED			

BOM\_COST\_GROUP=CPU & CHIPSET

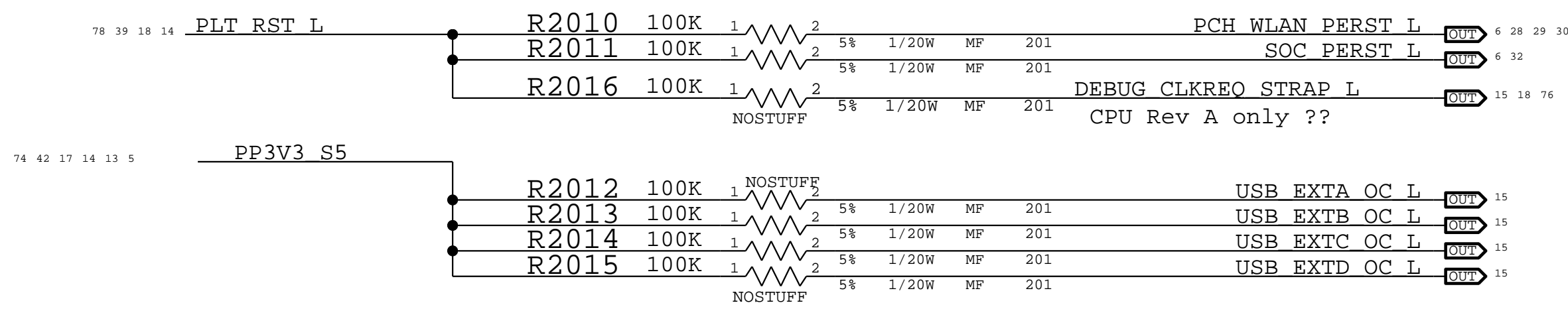
## A PLTRST# 3.3V Level Shifter



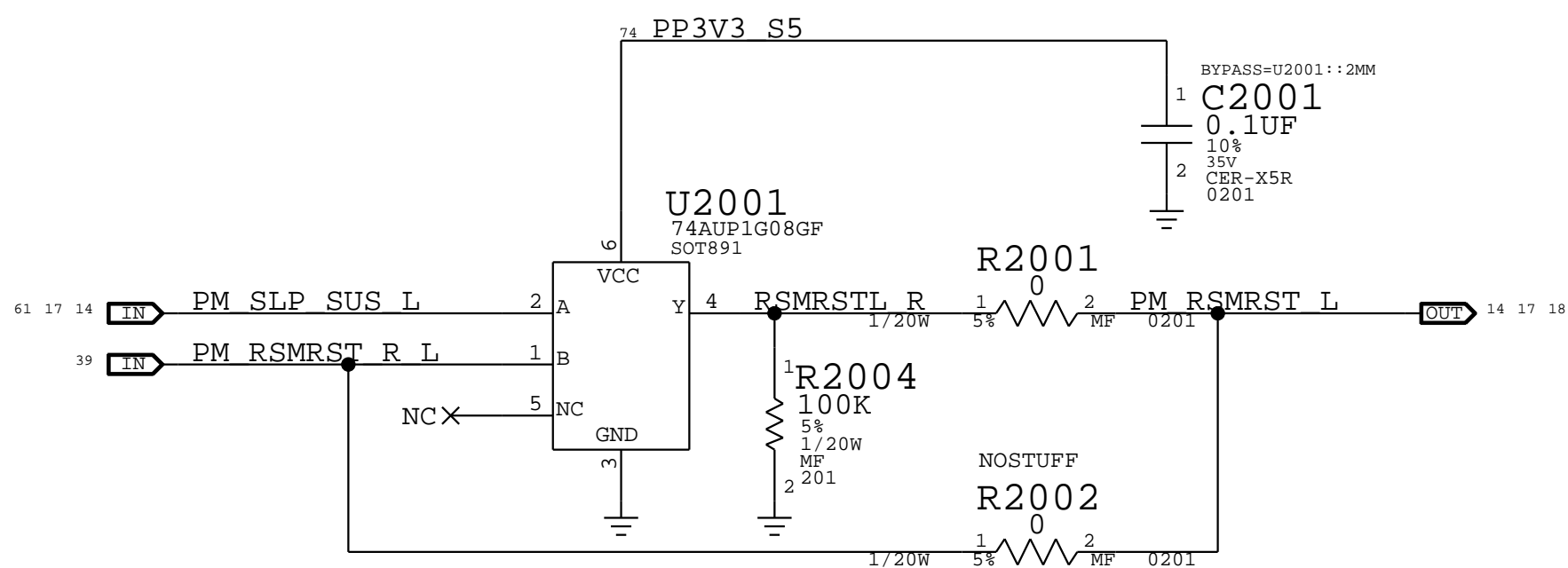
## B Miscellaneous Signal Aliases



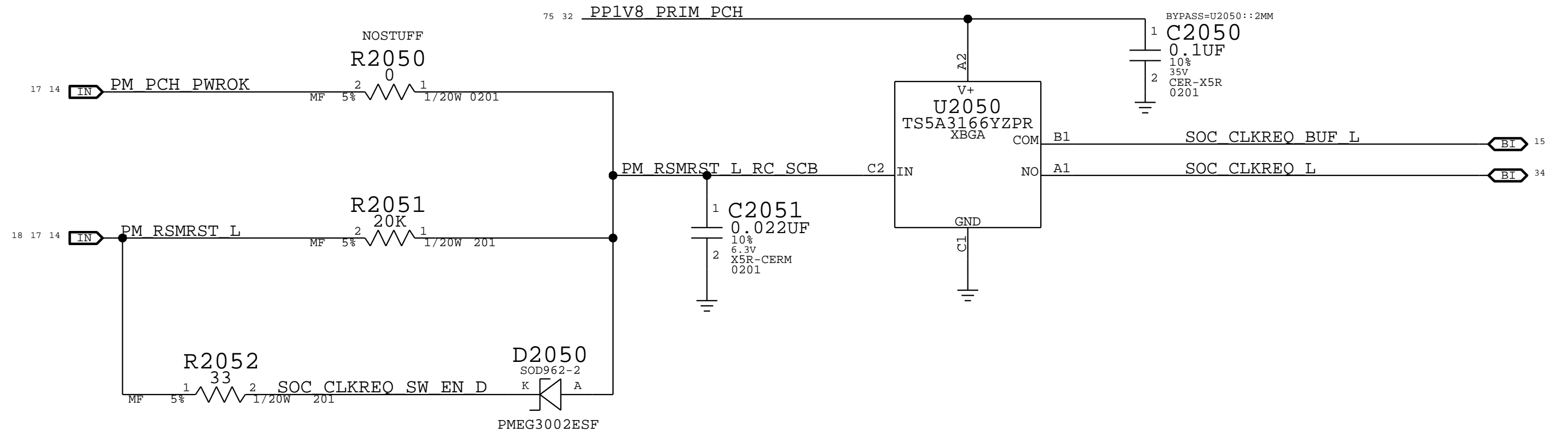
## C Miscellaneous Pull-Ups



## D PM\_RSMRST Control



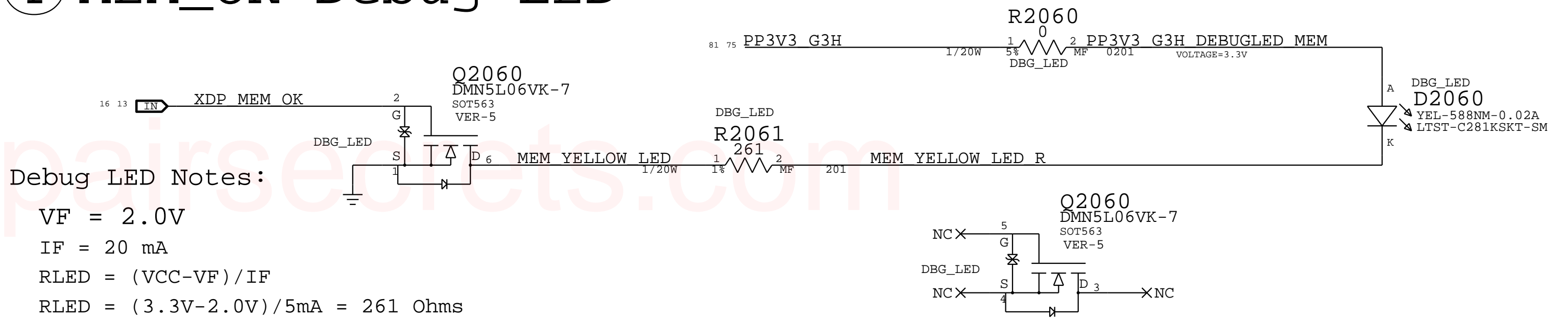
## E SOC\_CLKREQ Control



$\tau = RC = 20k \cdot 0.022\mu F = 440\mu s$

PCH latches SOC\_CLKREQ\_L boot strap 65us after RSMRST# de-assertion

## F MEM\_OK Debug LED



Debug LED Notes:

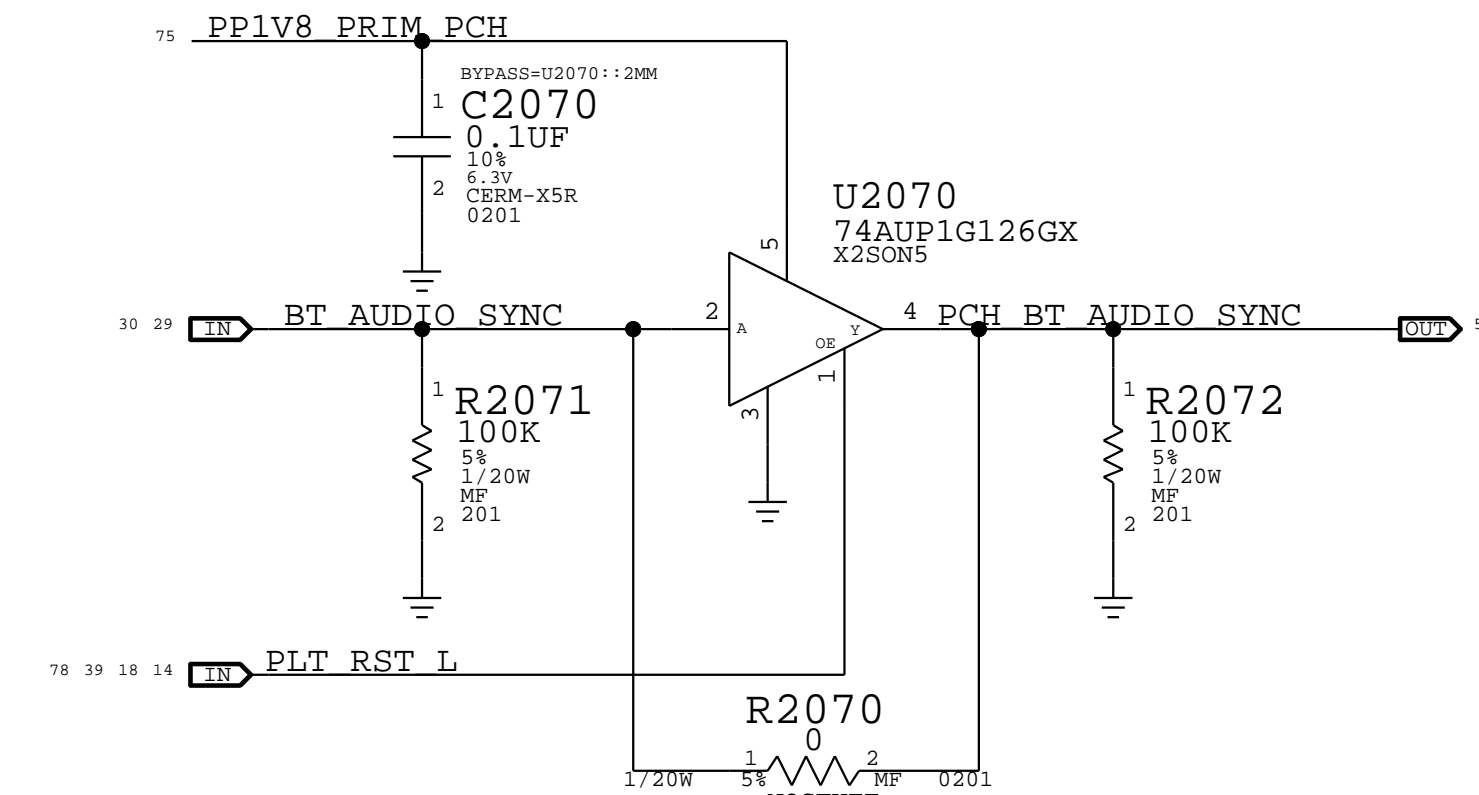
$V_F = 2.0V$

$I_F = 20\text{ mA}$

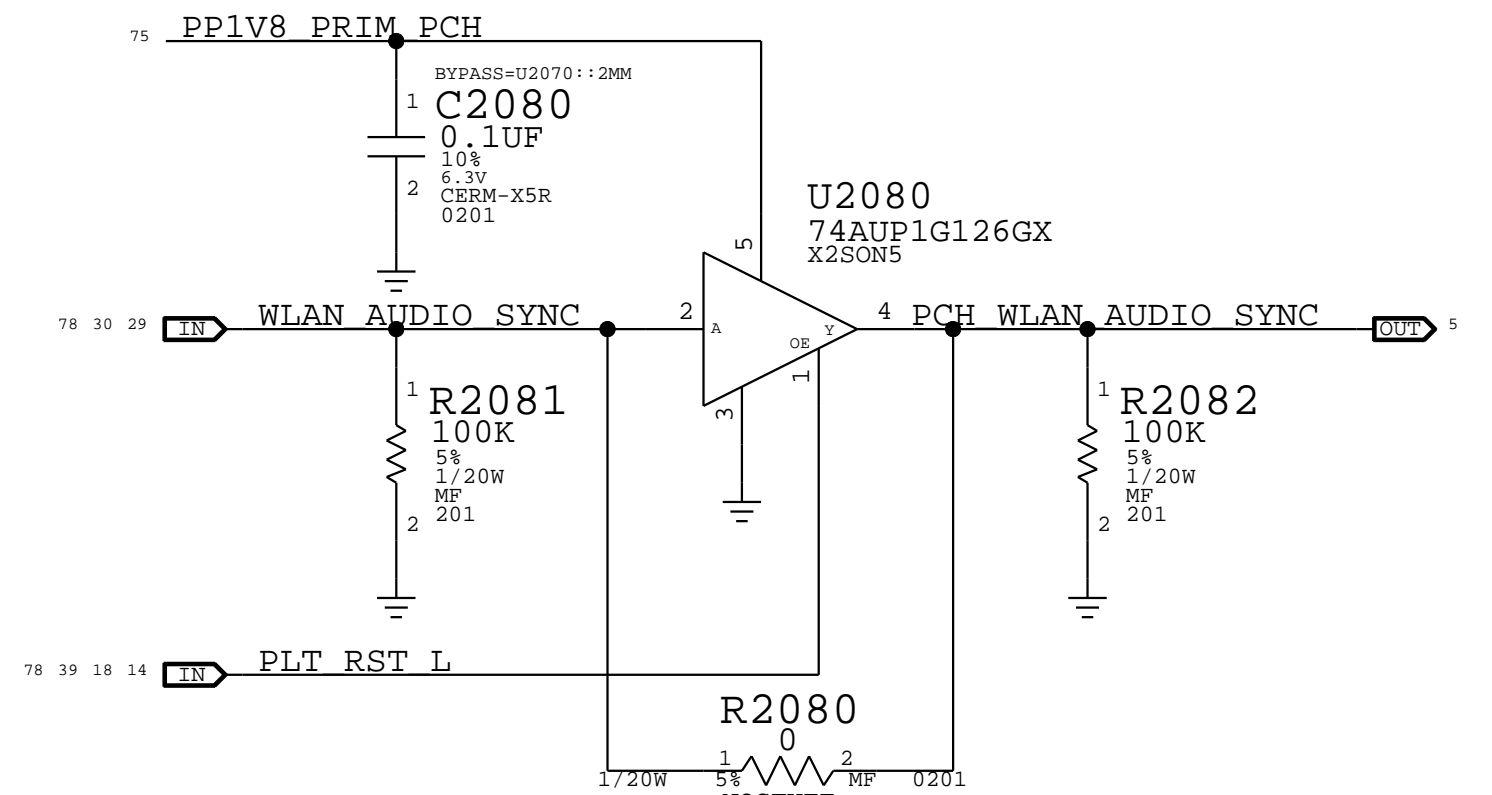
$R_{LED} = (V_{CC} - V_F) / I_F$

$R_{LED} = (3.3V - 2.0V) / 5mA = 261\text{ Ohms}$

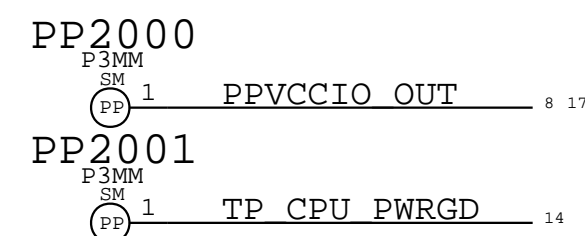
## G BT Audio Sync Buf



## H WiFi Audio Sync Buf



## I Miscellaneous Probe Points



BOM\_COST\_GROUP=CPU & CHIPSET

SYNC_MASTER=CARD_CPU_ICL_VN		SYNC_DATE=06/08/2018	
PAGE TITLE		Chipset Project Support	
		DRAWING NUMBER	051-05232
		REVISION	2.0.0
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		PAGE	20 OF 152
		SHEET	18 OF 86



LPDDR4x Sub-Channels A & B

D

C

B

A

D

C

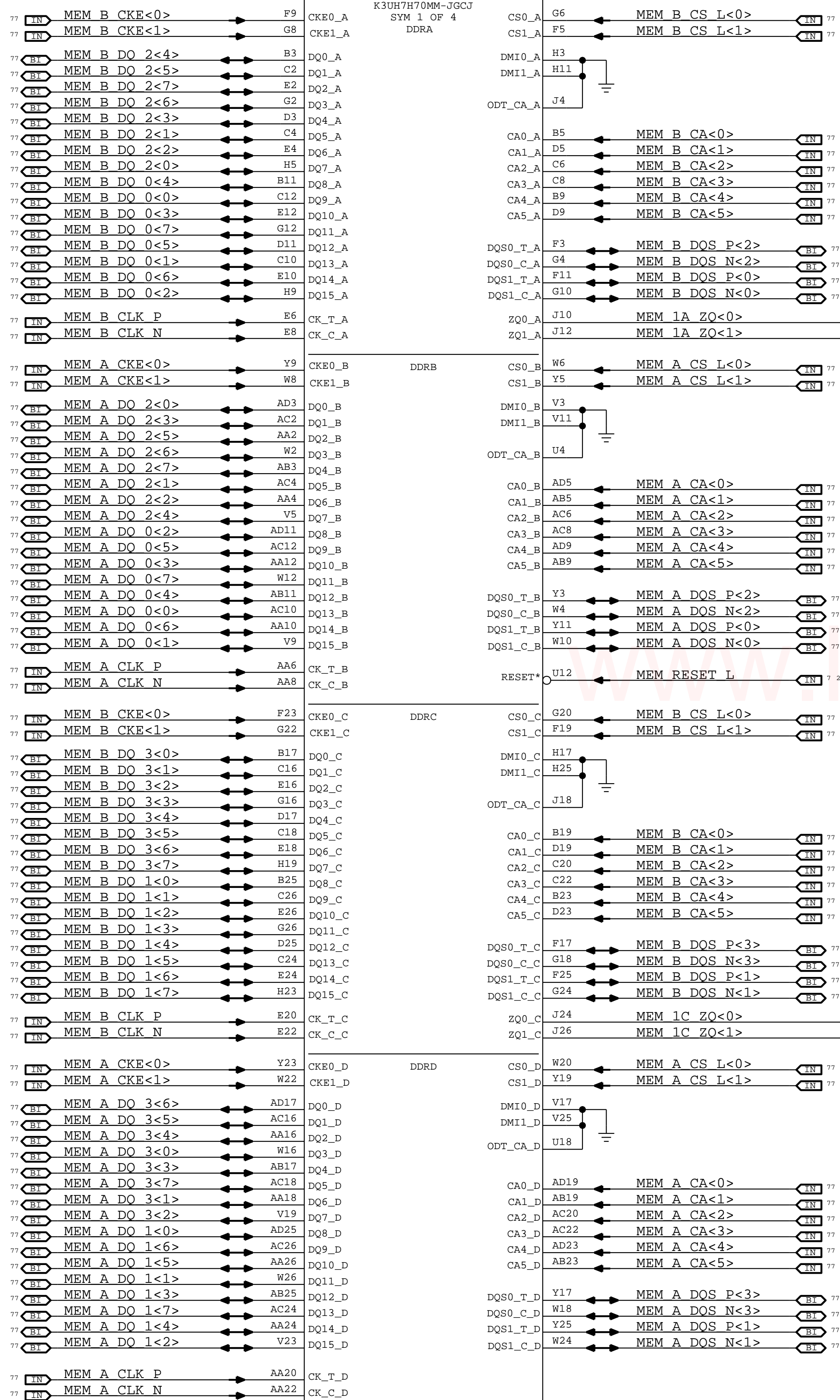
B

A

CRITICAL  
OMIT\_TABLE

U2300  
LPDDR4X-3200-64GBIT-18NM  
FBGA

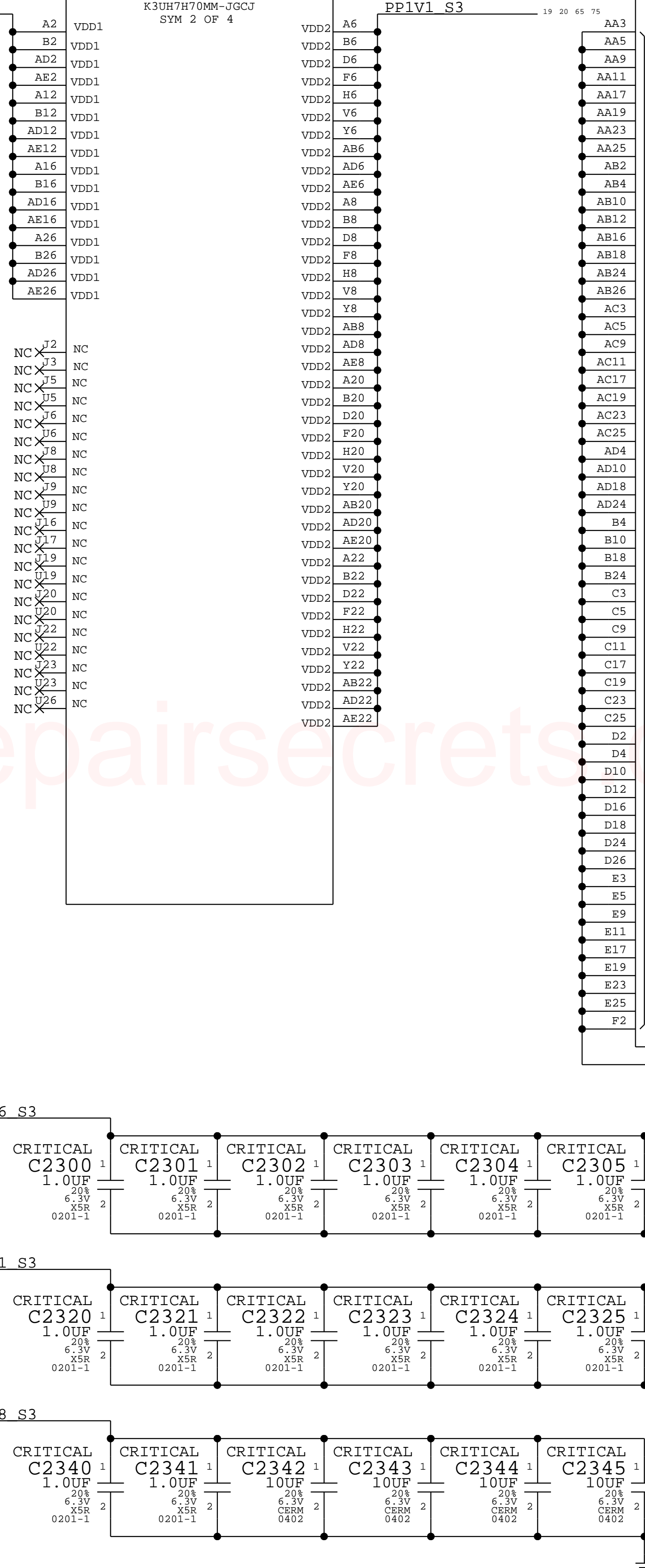
K3UH7H70MM-JGCJ  
SYM 1 OF 4  
DDRA



CRITICAL  
OMIT\_TABLE

U2300  
LPDDR4X-3200-64GBIT-18NM  
FBGA

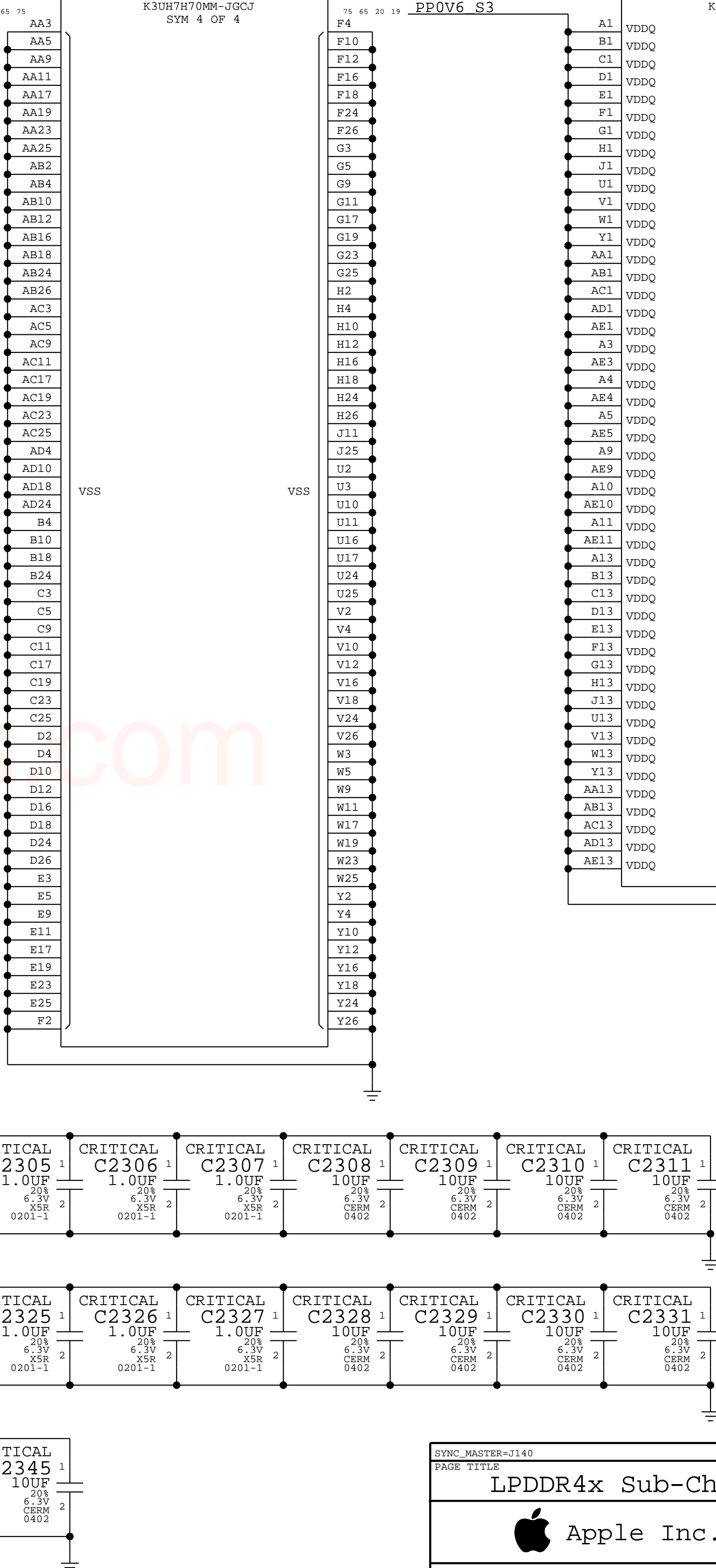
K3UH7H70MM-JGCJ  
SYM 2 OF 4



CRITICAL  
OMIT\_TABLE

U2300  
LPDDR4X-3200-64GBIT-18NM  
FBGA

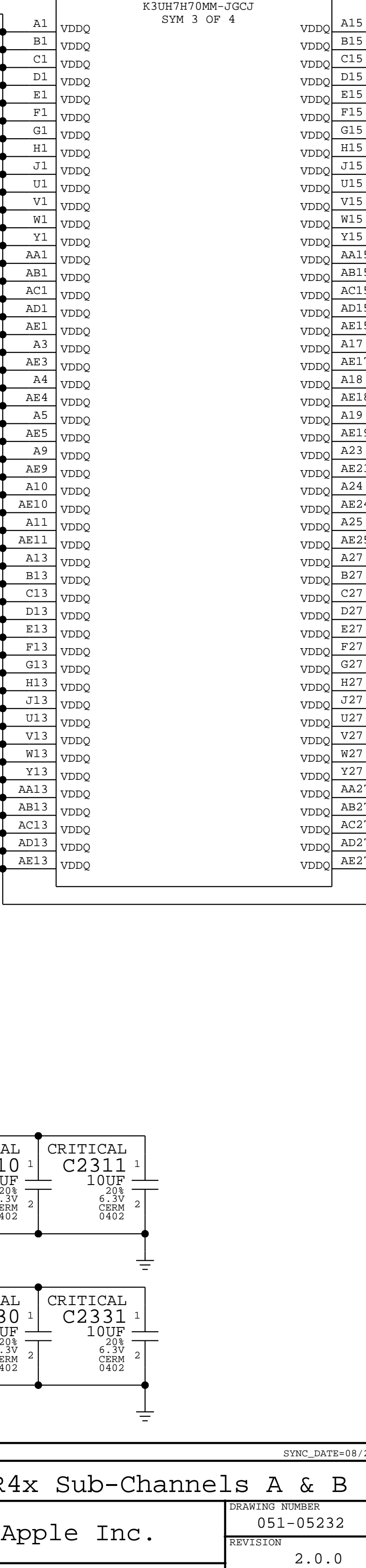
K3UH7H70MM-JGCJ  
SYM 4 OF 4



CRITICAL  
OMIT\_TABLE

U2300  
LPDDR4X-3200-64GBIT-18NM  
FBGA

K3UH7H70MM-JGCJ  
SYM 3 OF 4

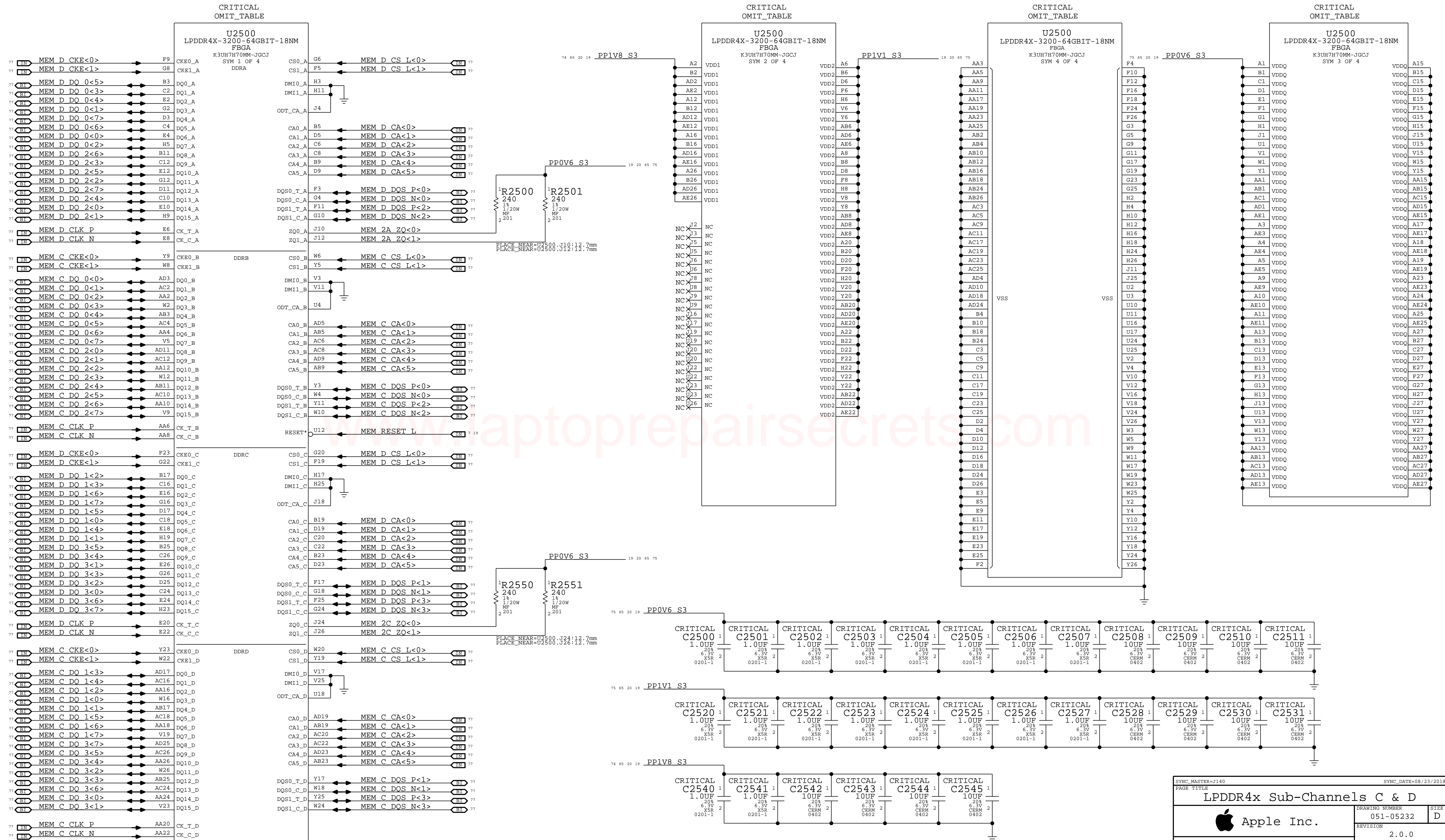


SYNC_MASTER=J140		SYNC_DATA=08/23/2018	
PAGE TITLE			
LPDDR4x Sub-Channels A & B			
Apple Inc.		DRAWING NUMBER	S128
		051-05232	D
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		BRANCH	proto4b
		PAGE	23 OF 152
		SHEET	19 OF 86


BOM\_COST\_GROUP=DRAM



## LPDDR4x Sub-Channels C &amp; D



BOM\_COST\_GROUP=DRAM

SYNC_MASTER=J140		SYNC_DATE=08/23/2018	
PAGE TITLE			
LPDDR4x Sub-Channels C & D			
 Apple Inc.	DRAWING NUMBER		SIZE
	051-05232		D
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		2.0.0	
		BRANCH	
		proto4b	
		PAGE	25 OF 152
		SHEET	20 OF 86



D

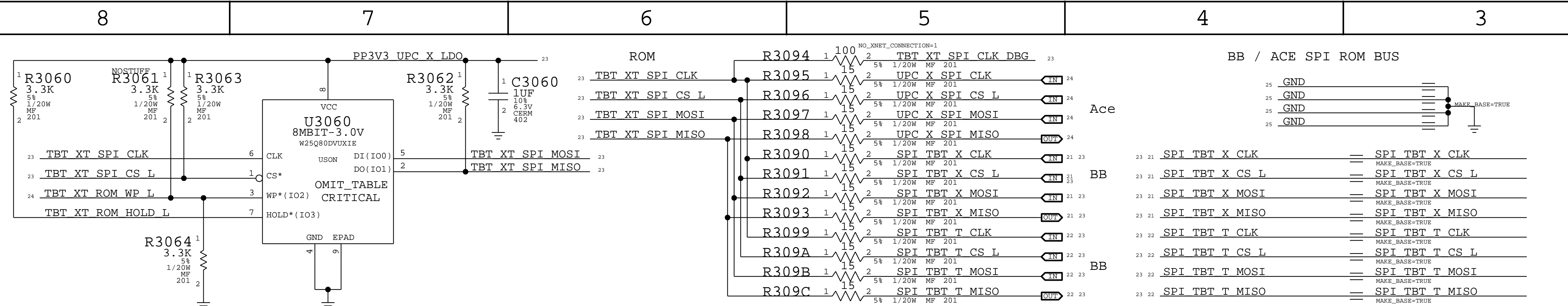
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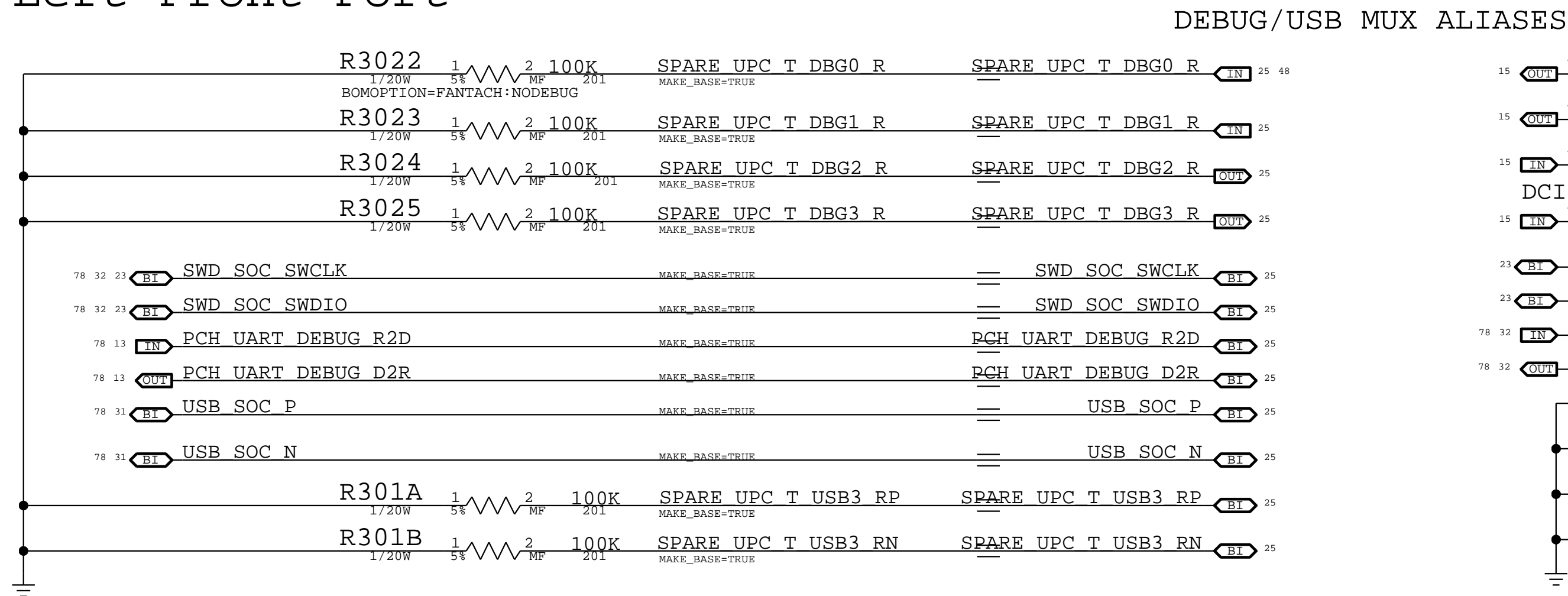
A

BOM\_COST\_GROUP=TBT

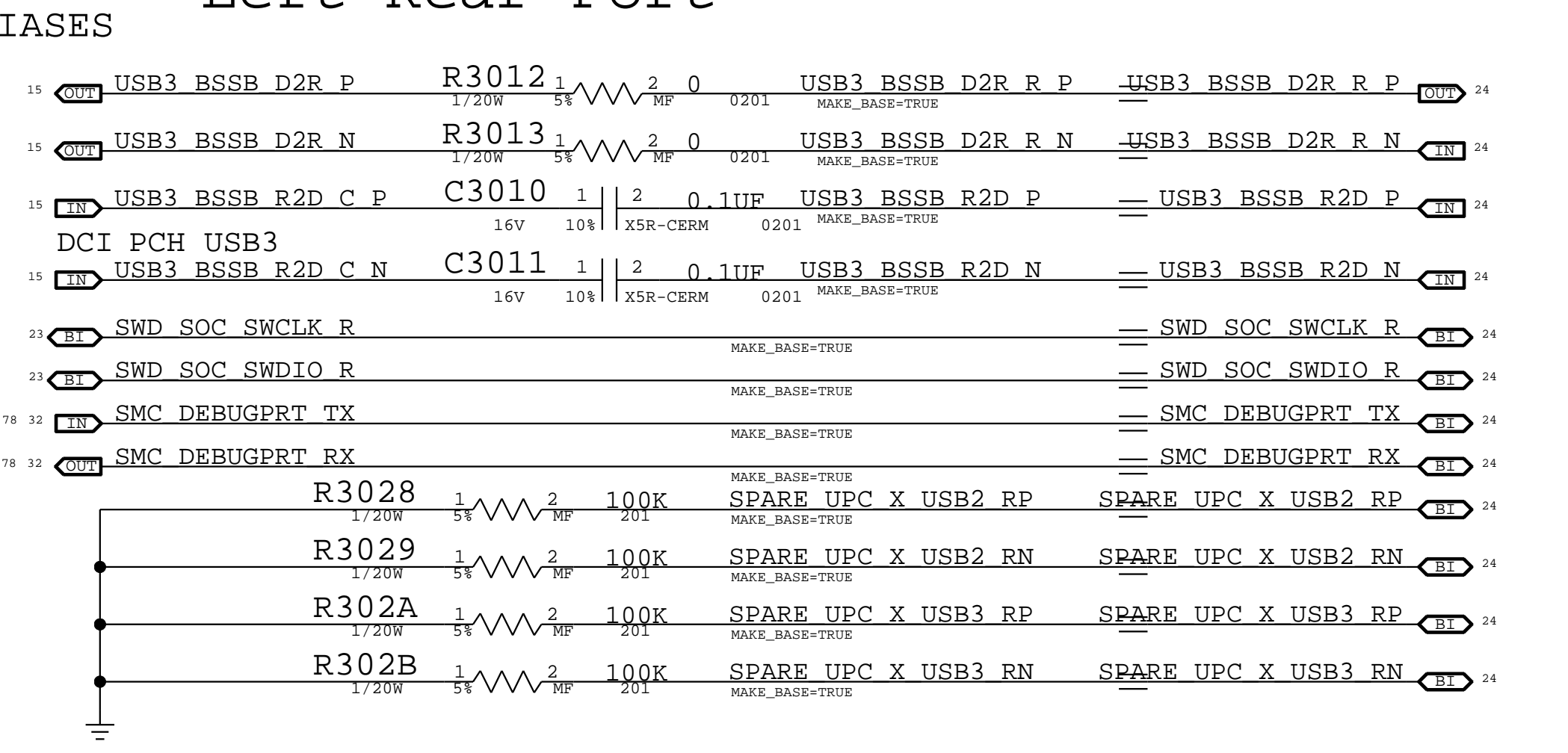




## Left Front Port

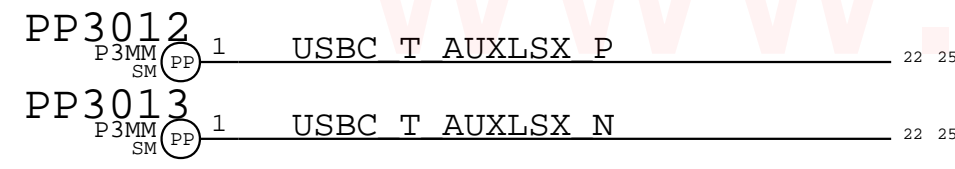


## Left Rear Port

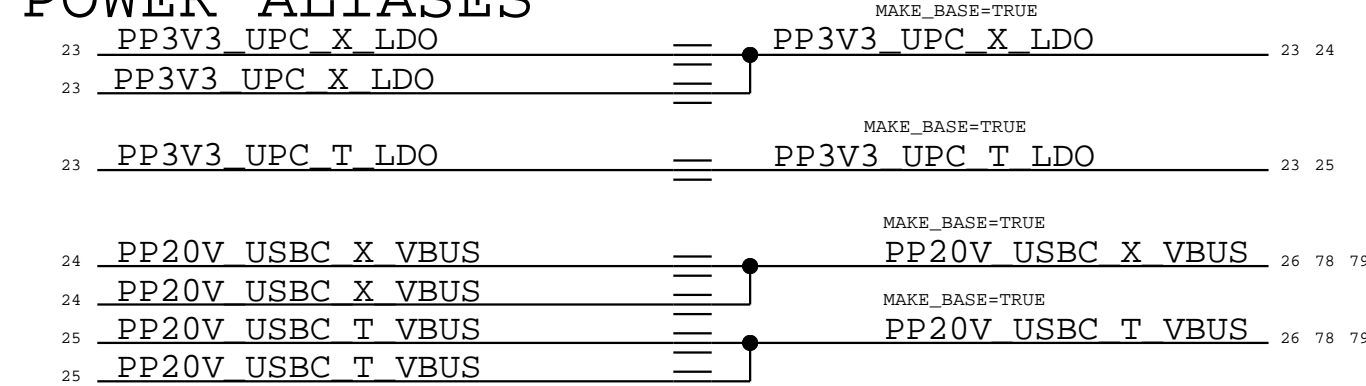


## AUXLSX Probe Points

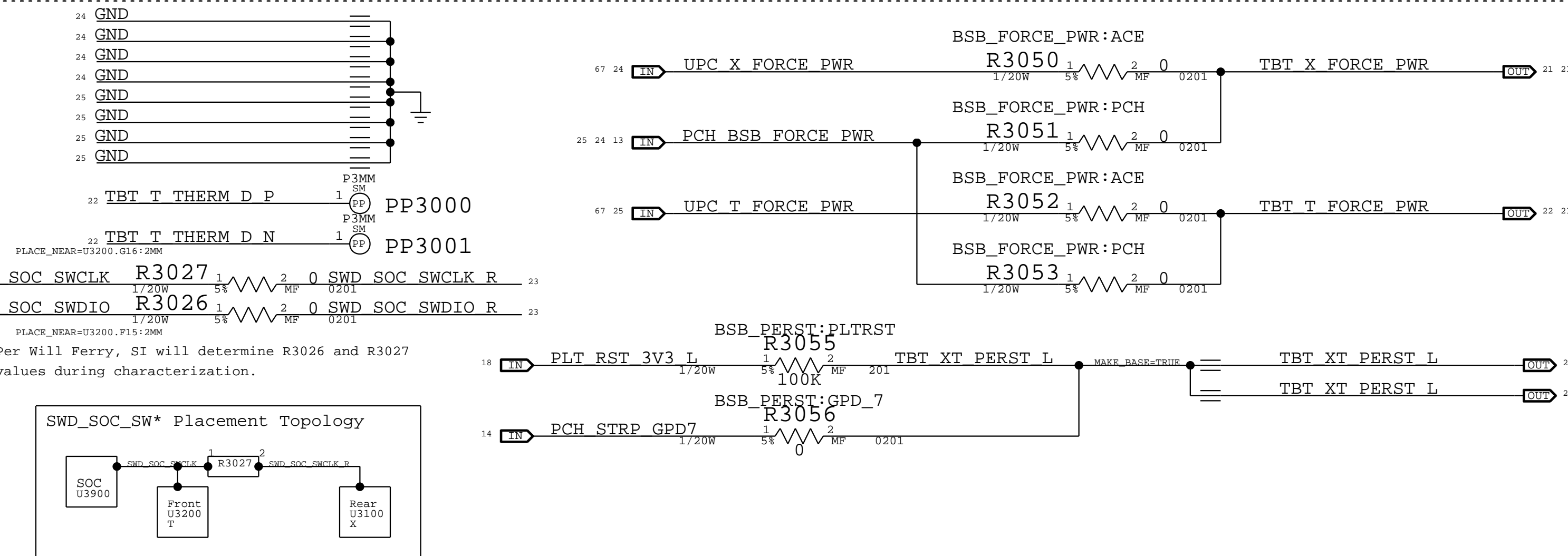
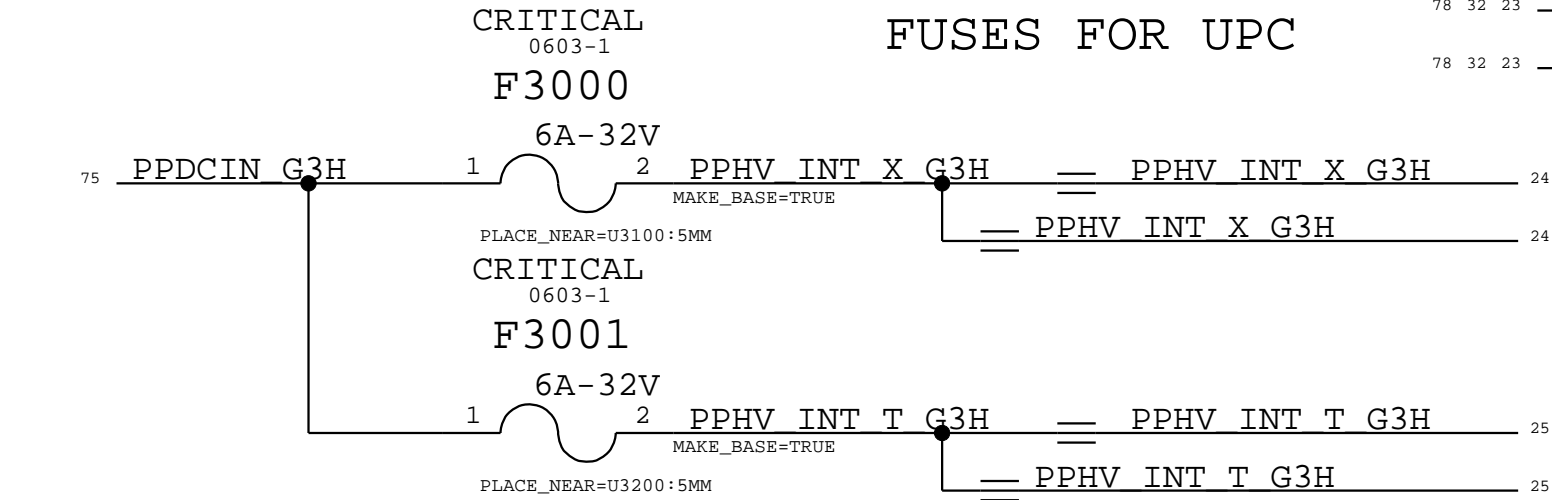
Probe Points for Port X  
were removed due to layout  
disruption.



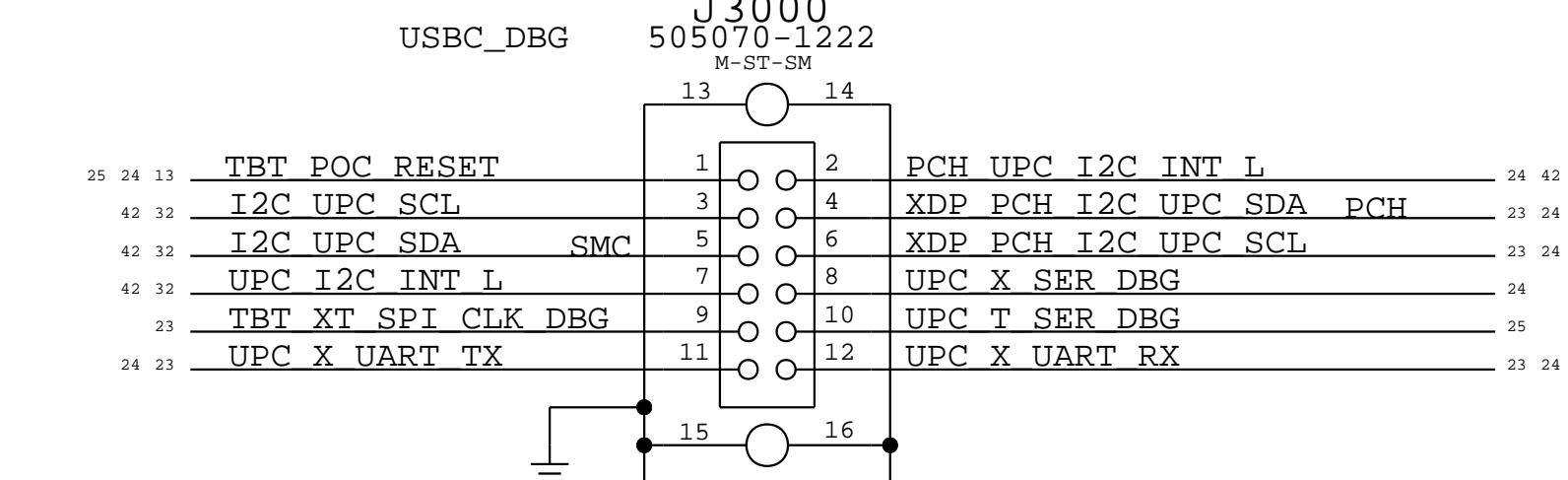
## POWER ALIASES



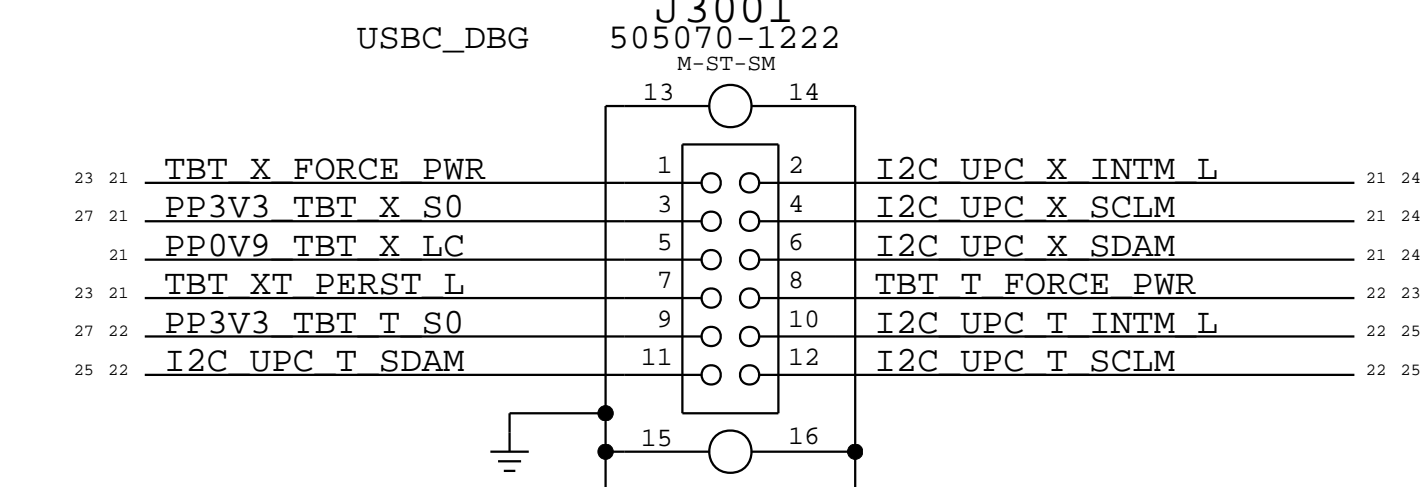
## FUSES FOR UPC



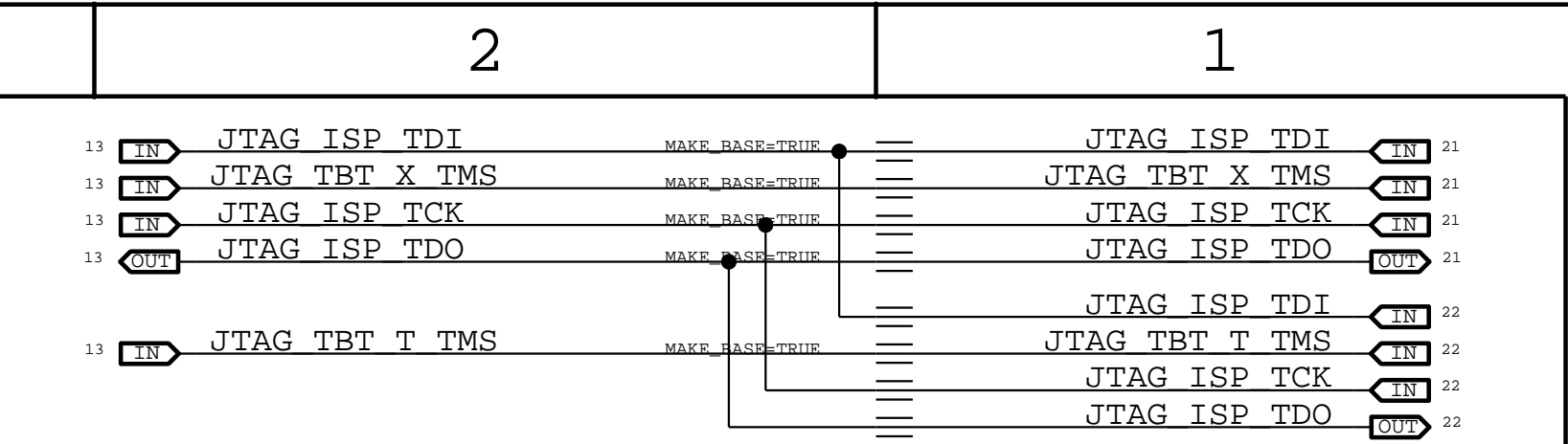
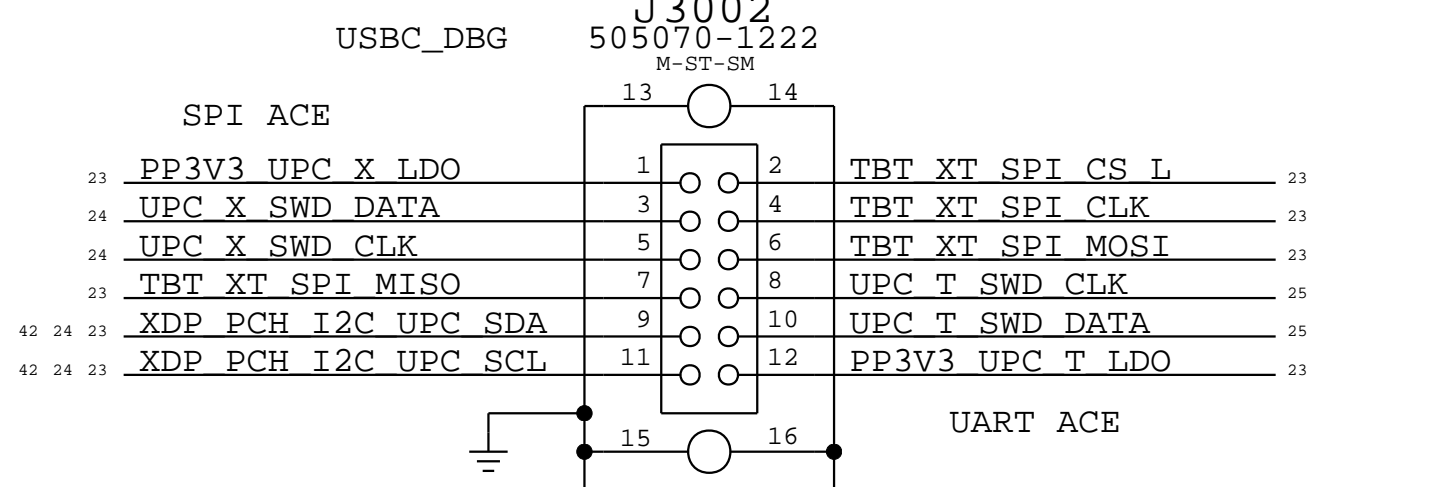
ACE ARKANOID CONN



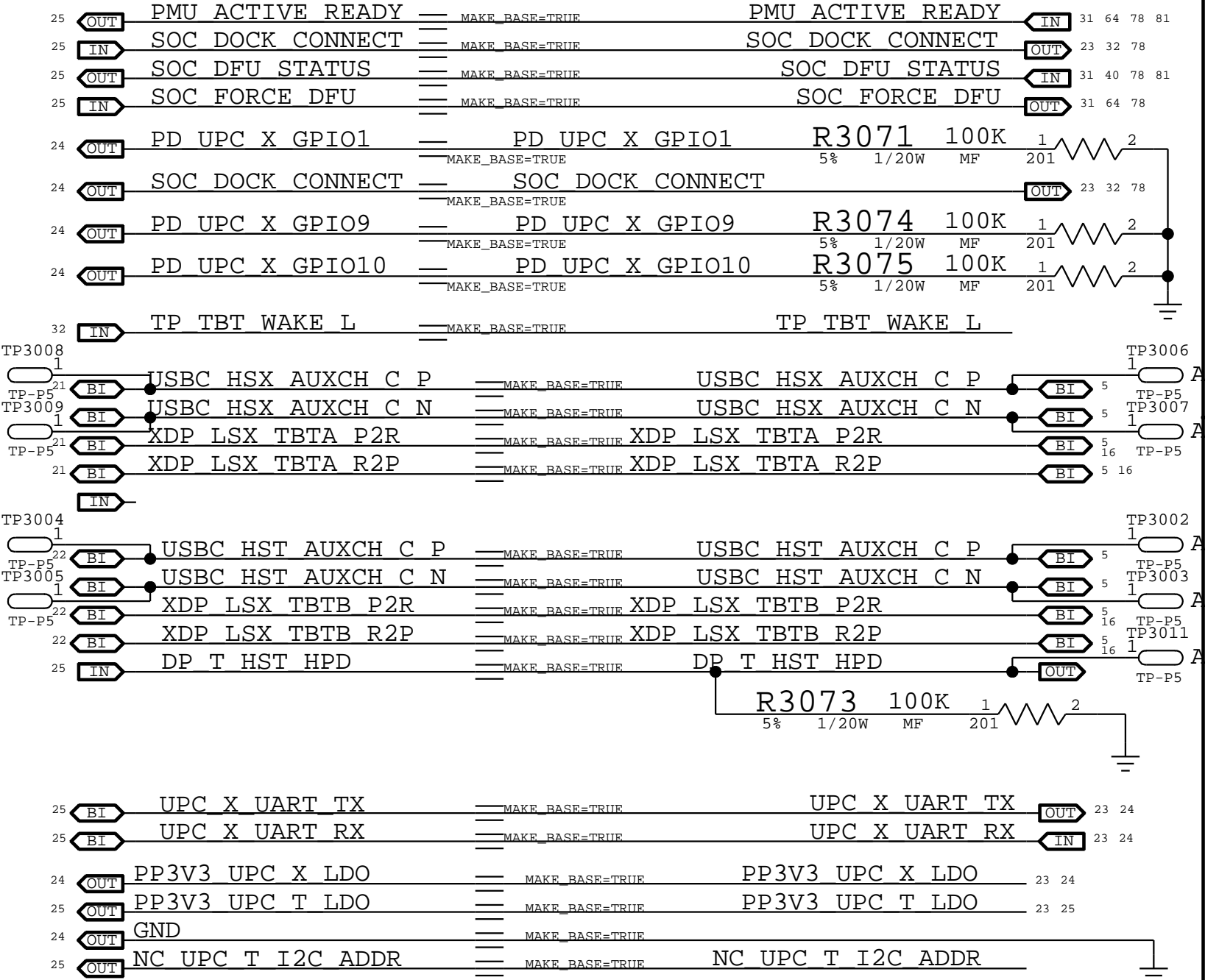
## BRIDGE ARKANOID CONN



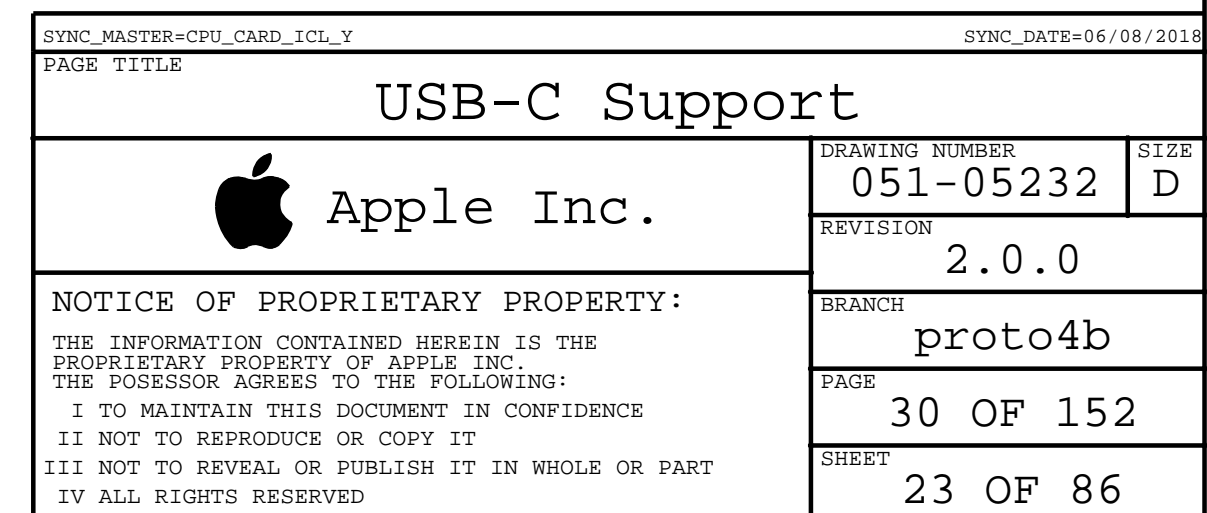
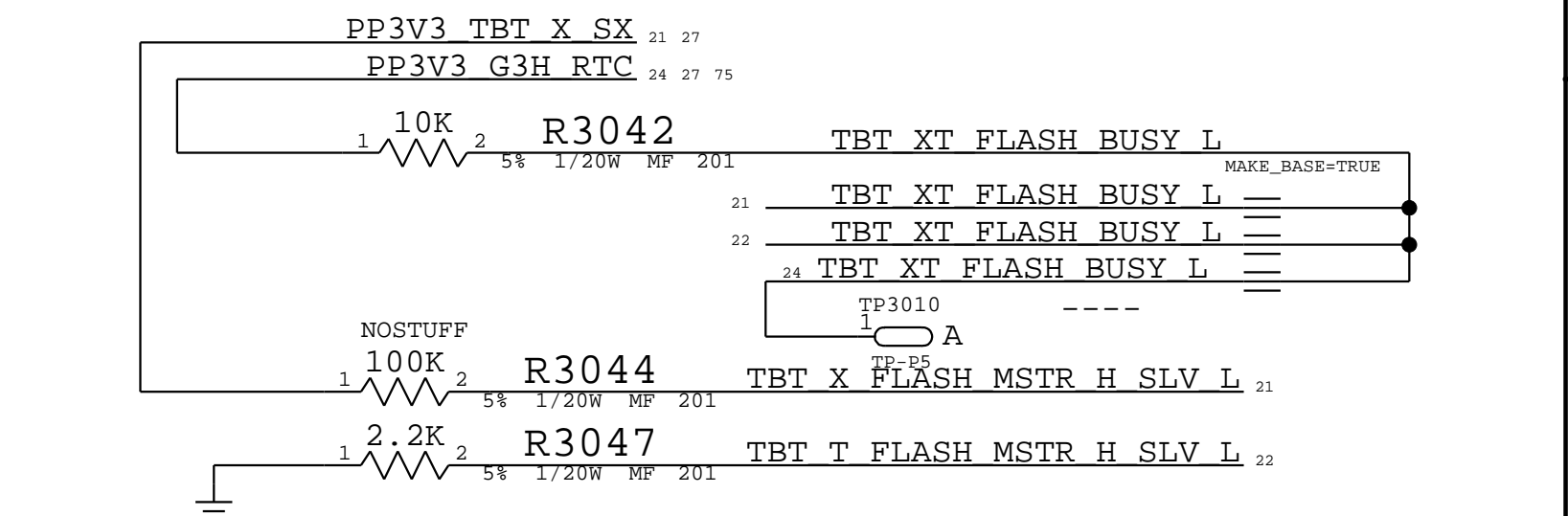
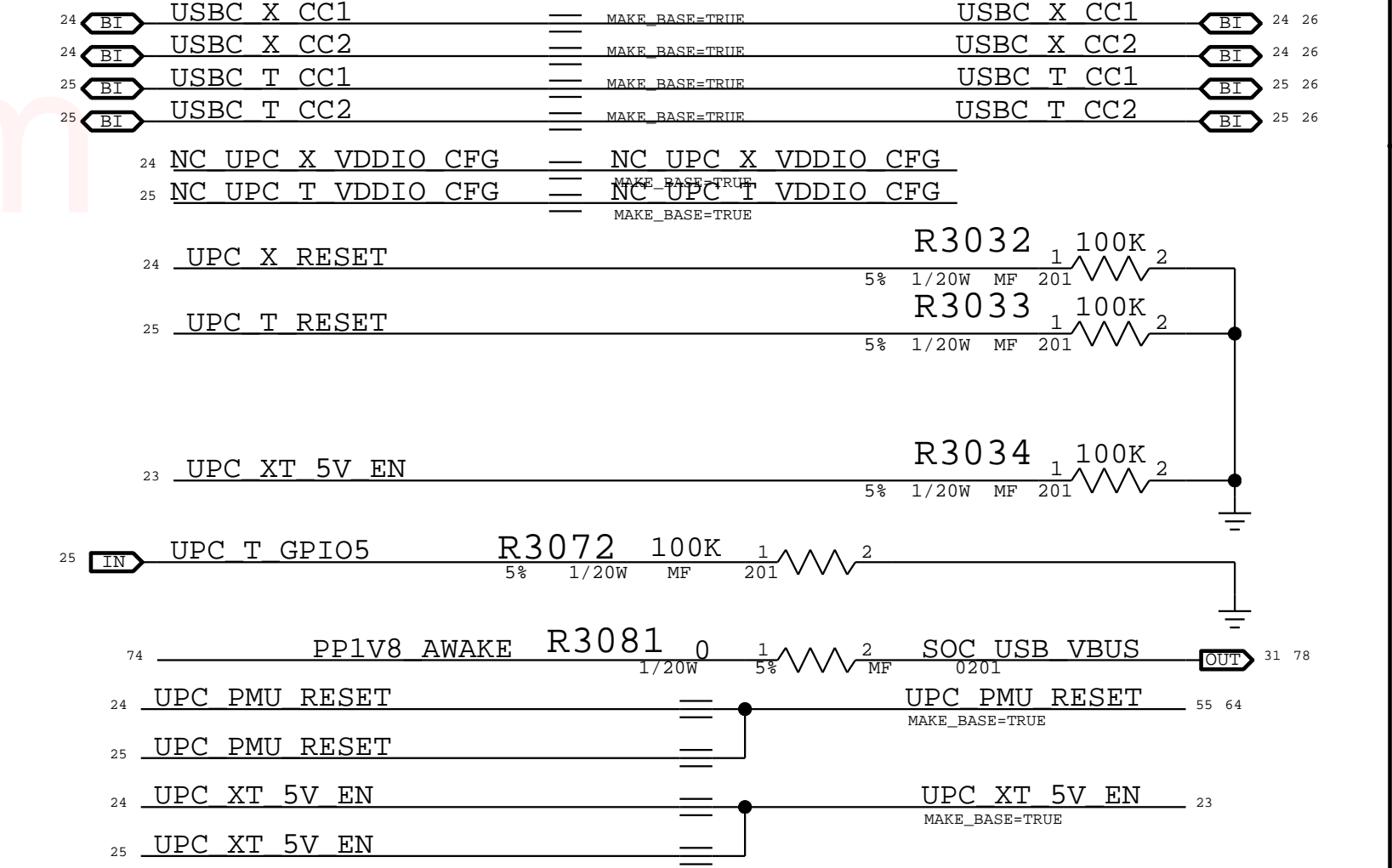
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# SIGNAL ALIASES

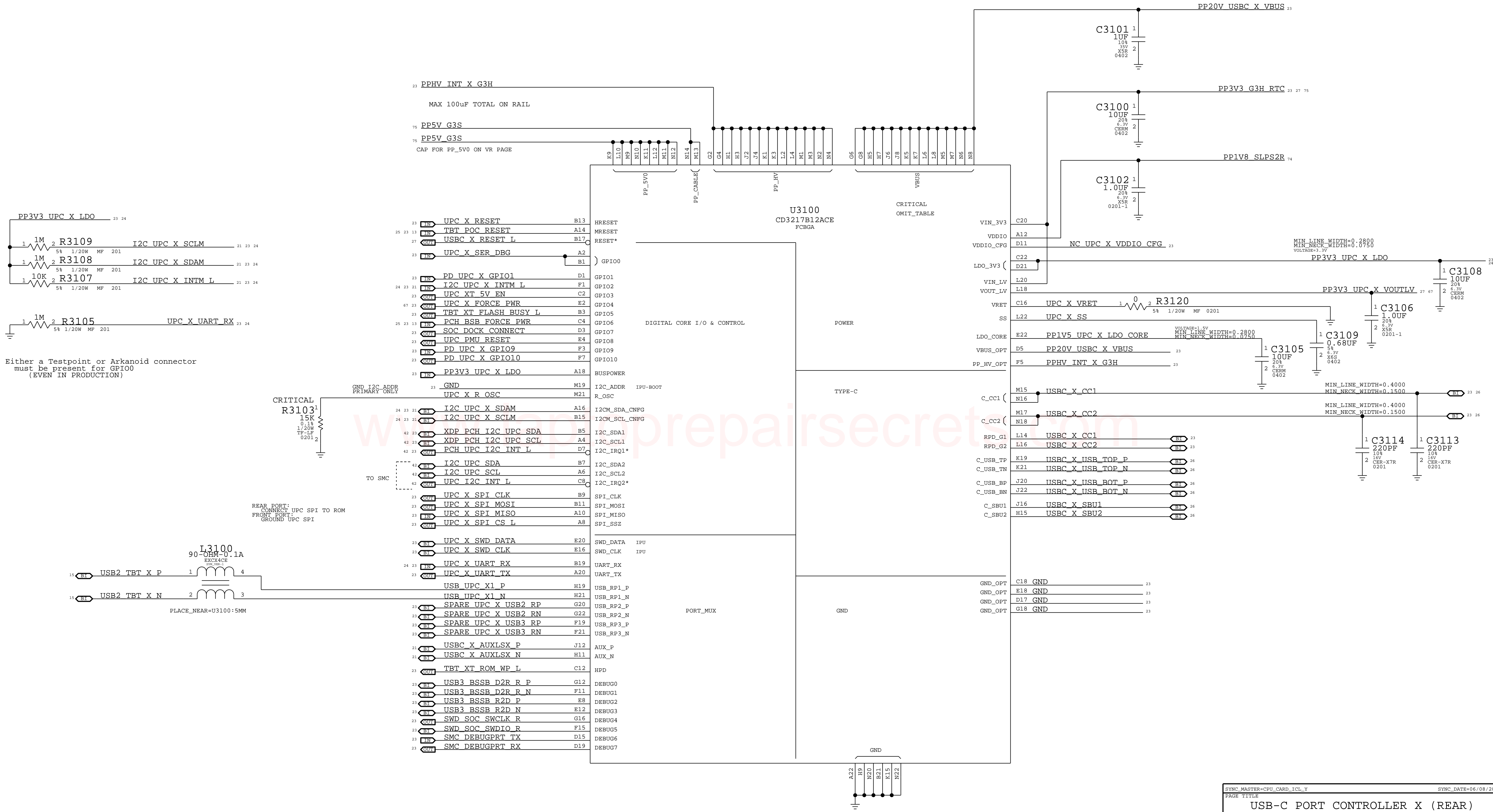



ACE A/B RPD STRAPPING





PRIMARY ACE2 USB-C PORT CONTROLLER (UPC)



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 Apple Inc.			DRAWING NUMBER		SIZE	
			051-05232		D	
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			BRANCH		proto4b	
			PAGE		31 OF 152	
			SHEET		24 OF 86	

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## D



B

B

A

 $\Delta$ 

BOM\_COST\_GROUP=USB-C



## D



C

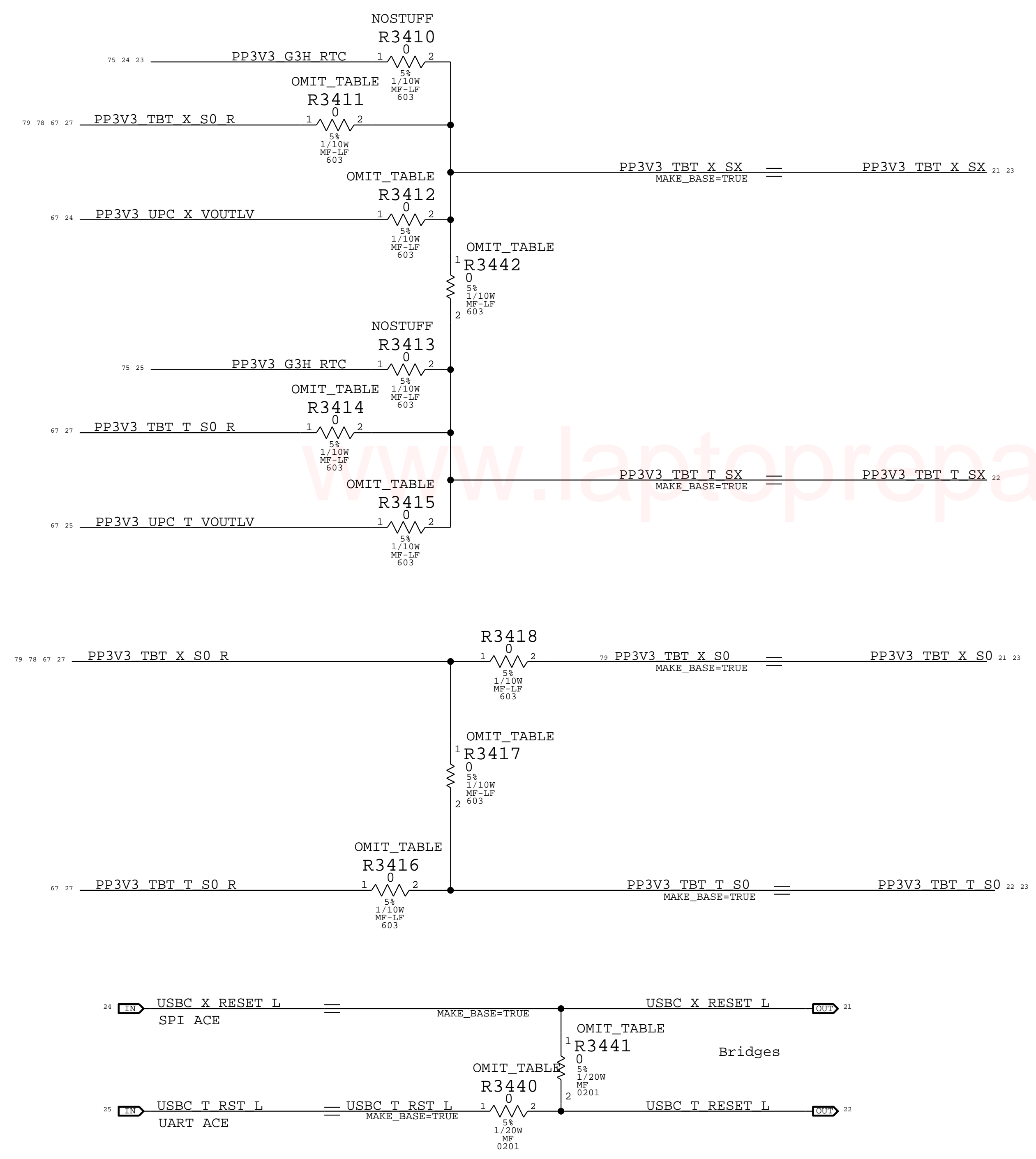
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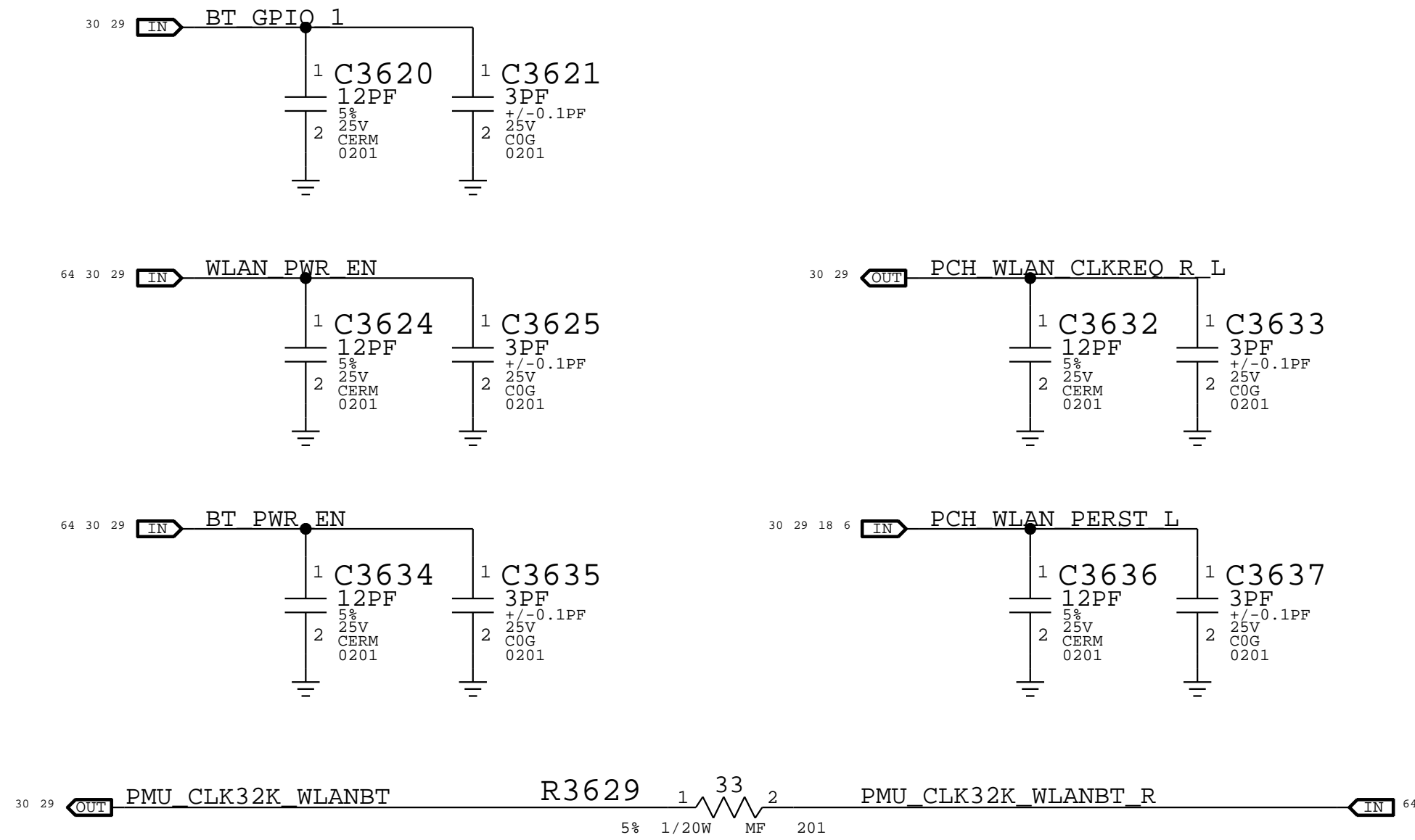
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		PAGE 34 OF 152	
		SHEET 27 OF 86	

A Wireless Desense Capacitors



www.laptoprepairsecrets.com

PAGE TITLE		
WIFI/BT Desense		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	36 OF 152
	SHEET	28 OF 86

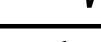
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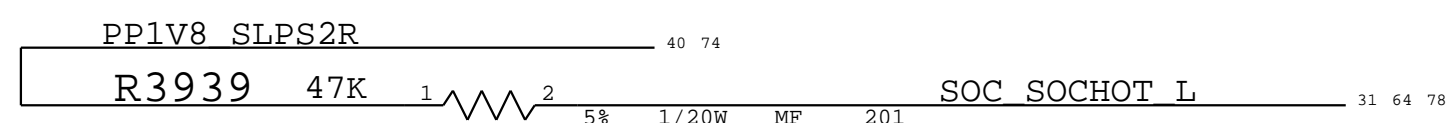
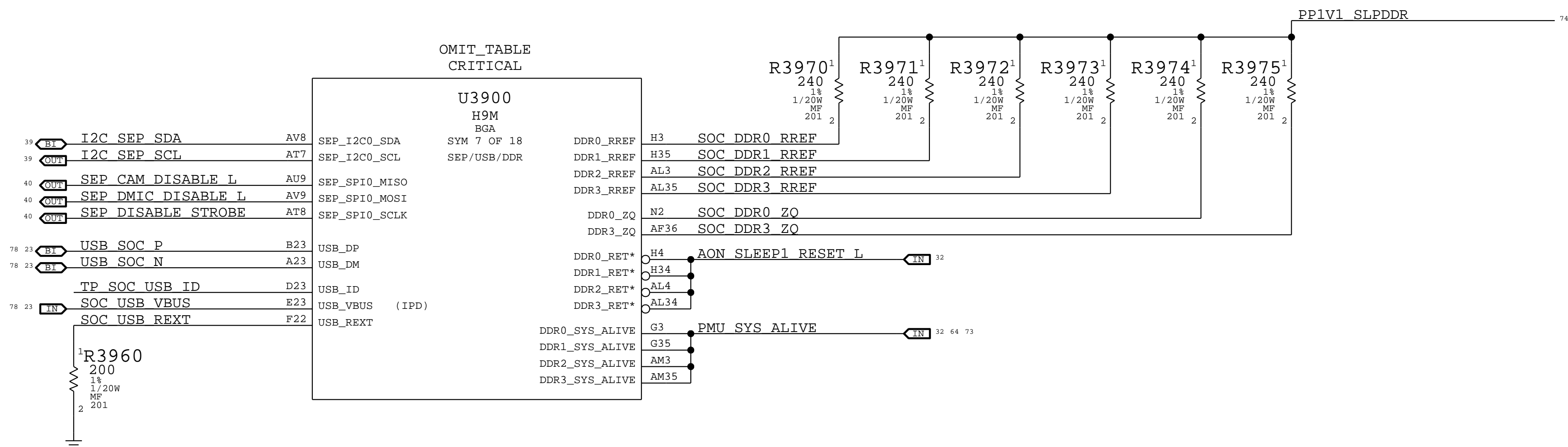
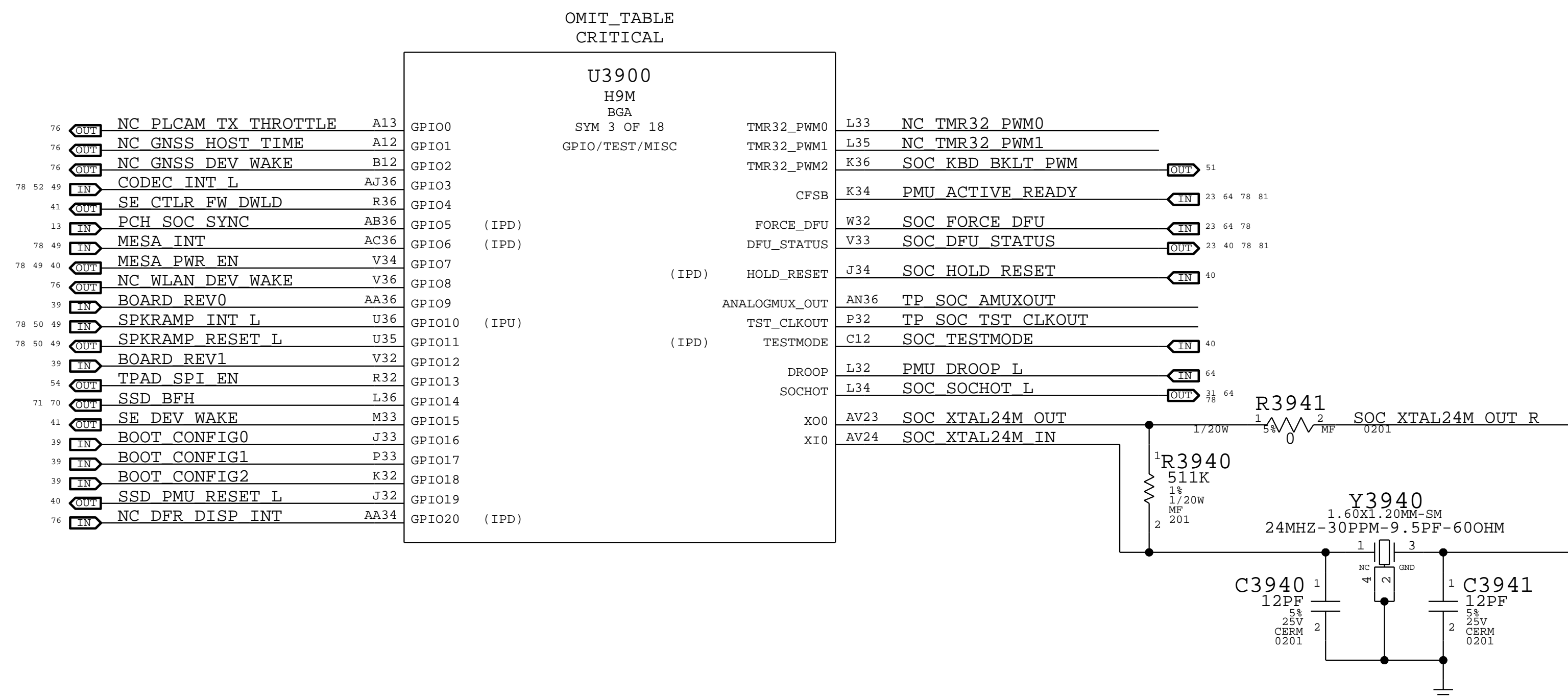


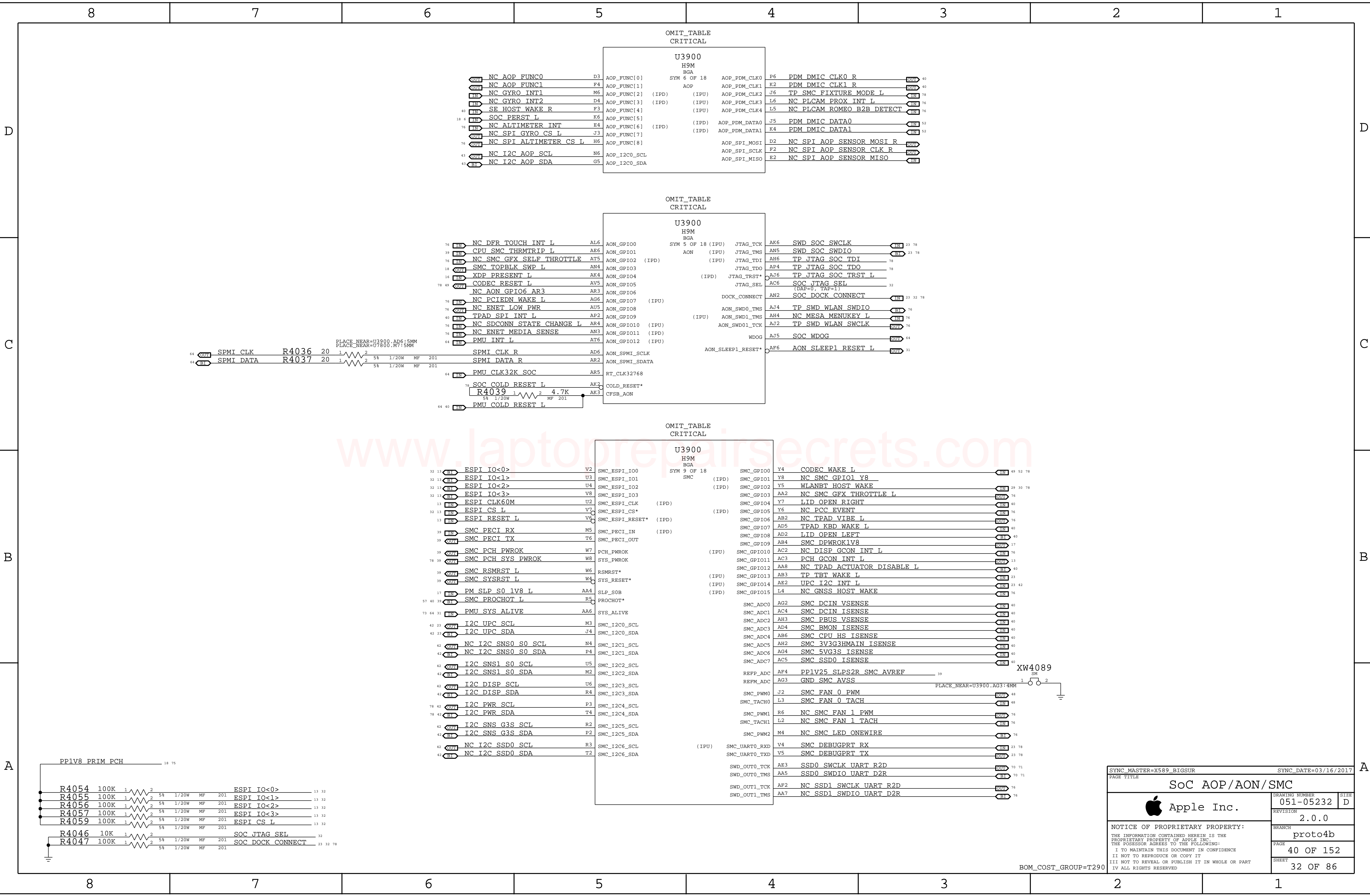



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	BRANCH		
		proto4b	
		PAGE	
		38 OF 152	
		SHEET	
		30 OF 86	



Note 1) IPU represents SW configured state, not HW default

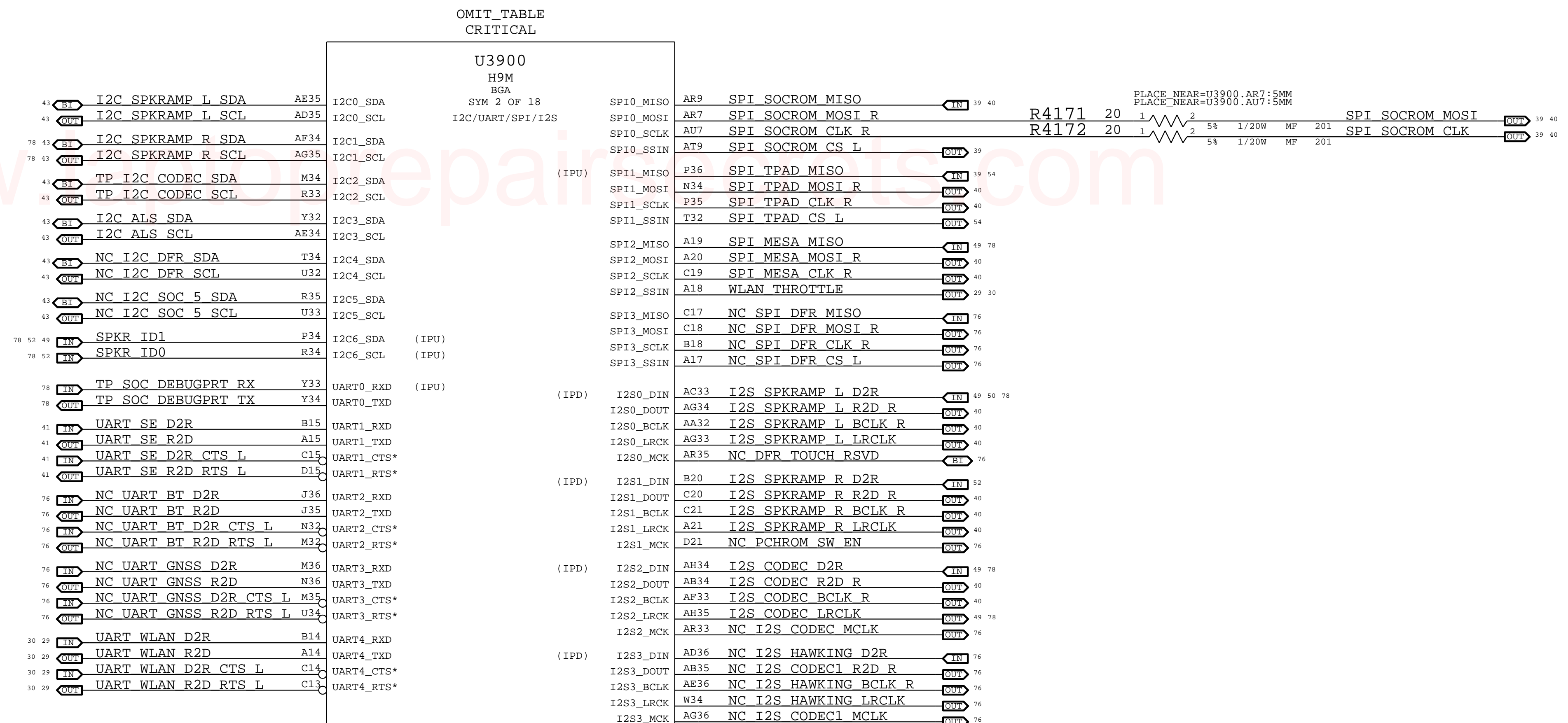
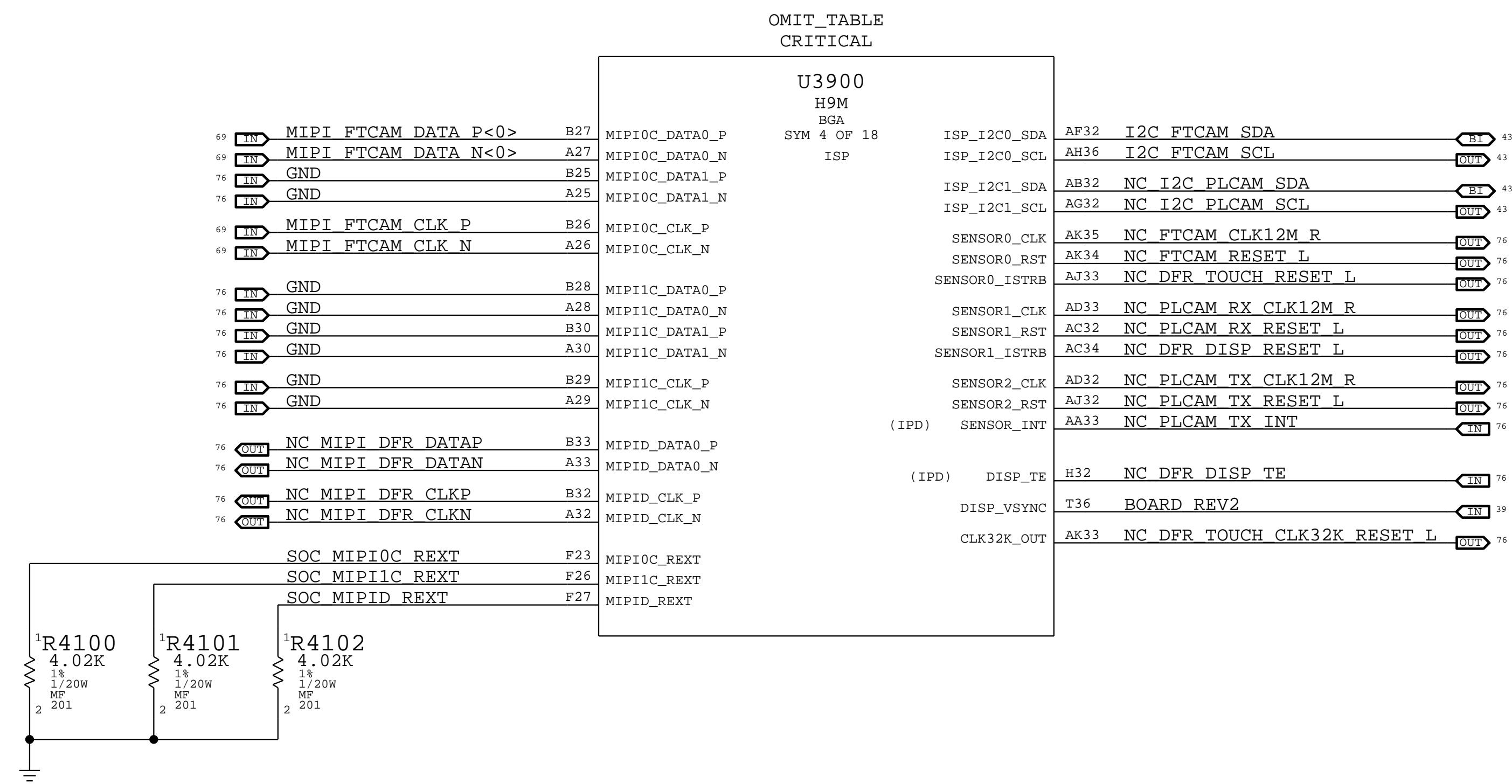





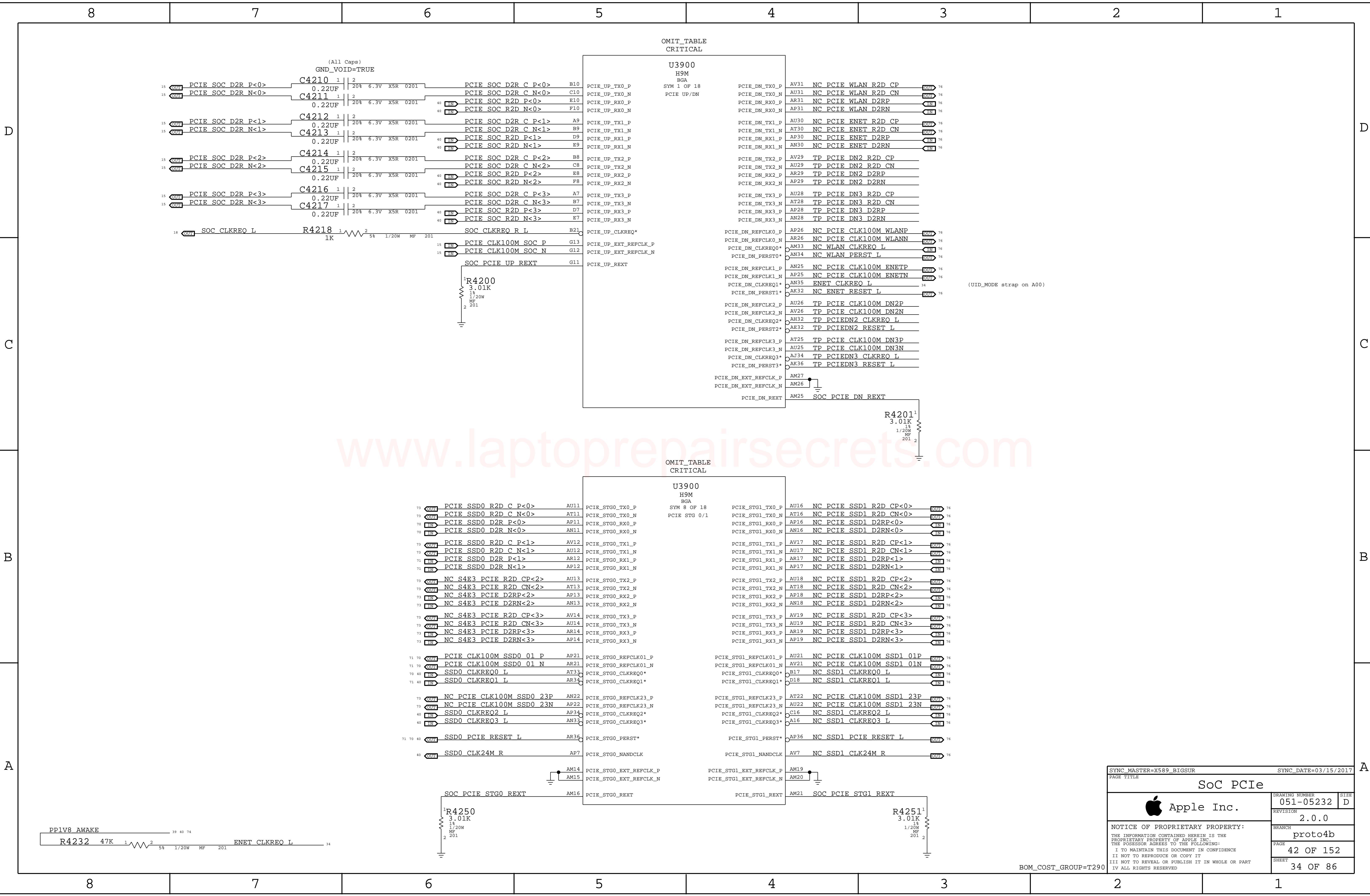
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			SHEET		32 OF 86	


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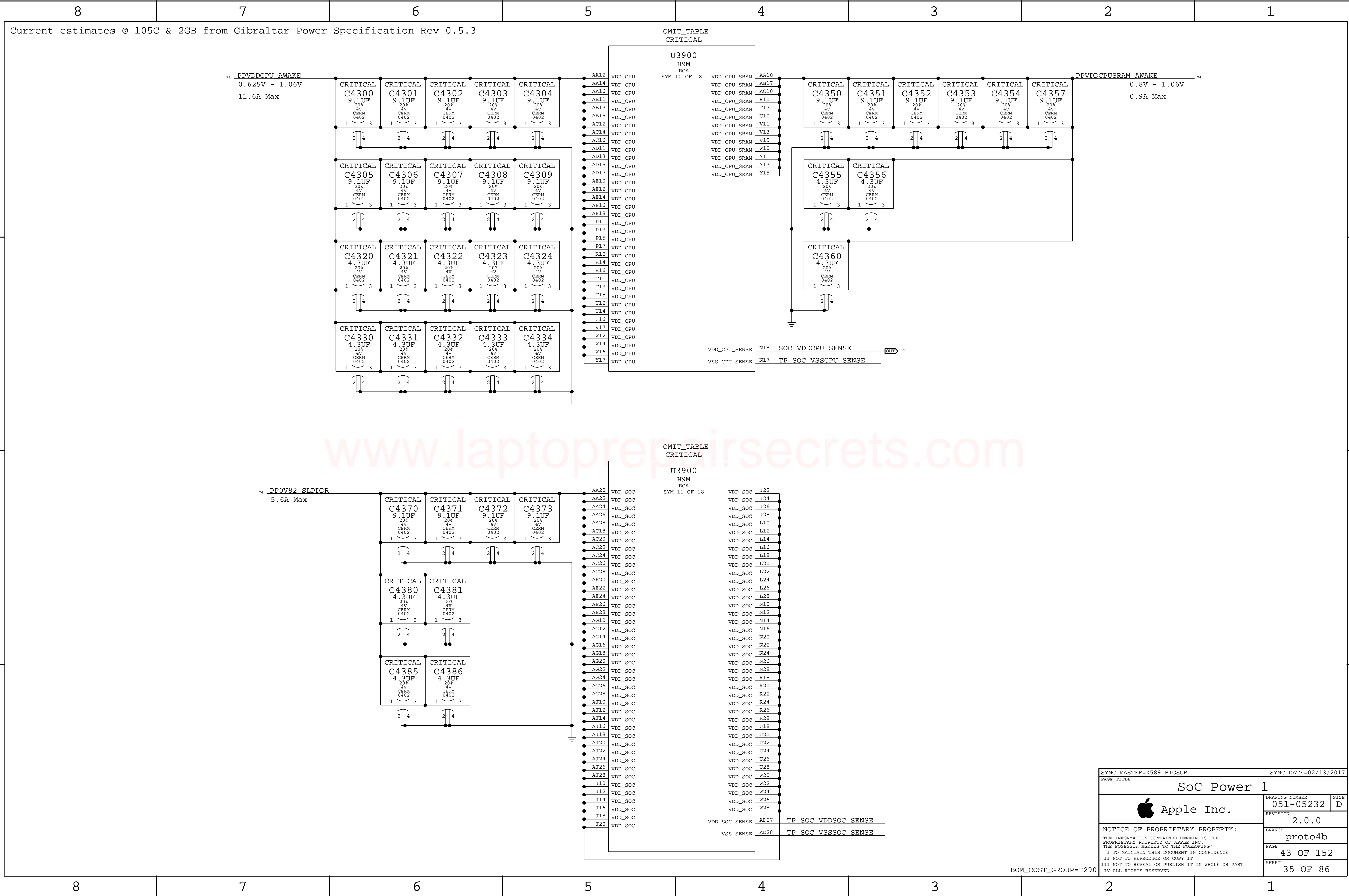


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		SHEET	33 OF 86

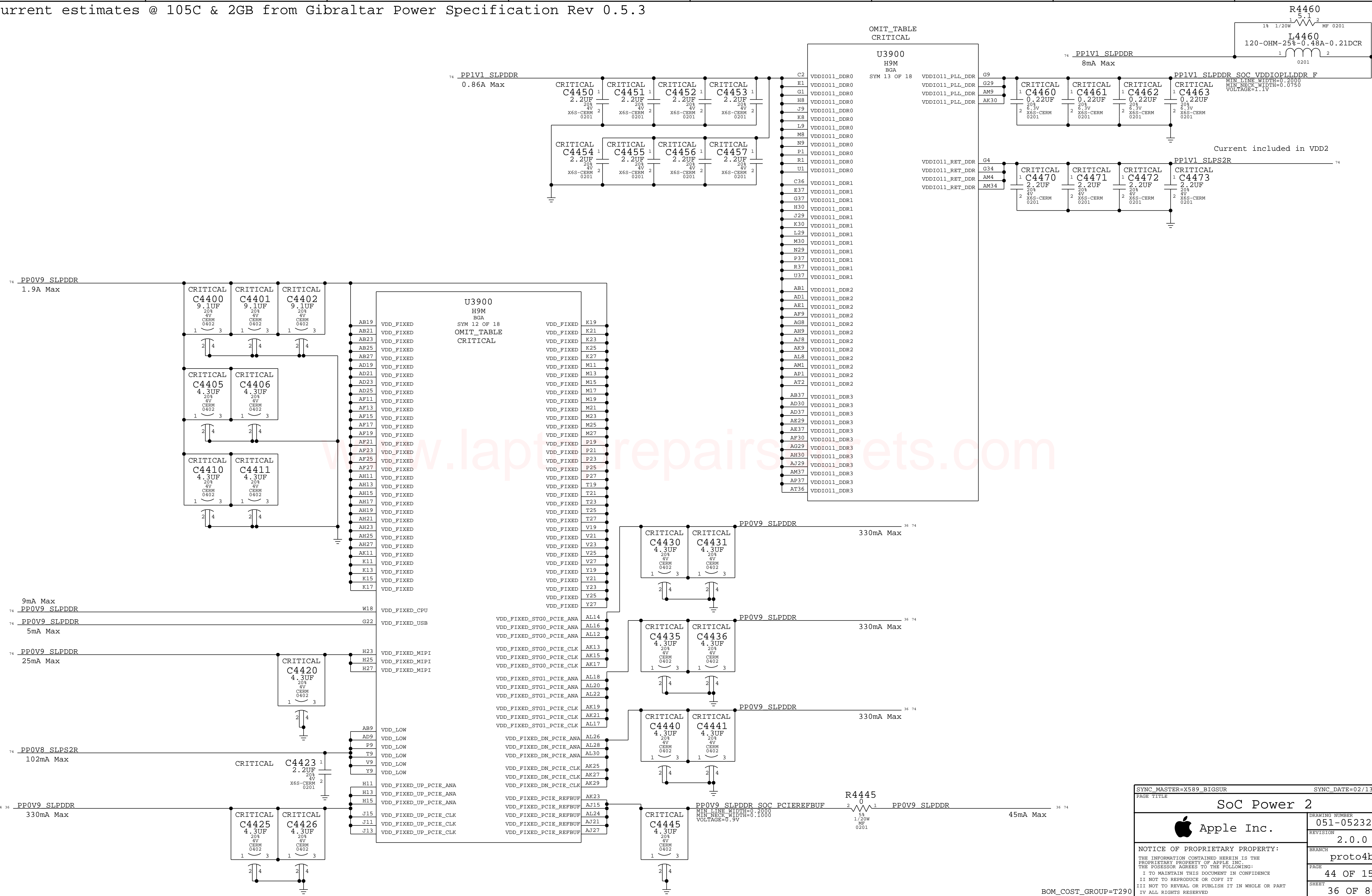


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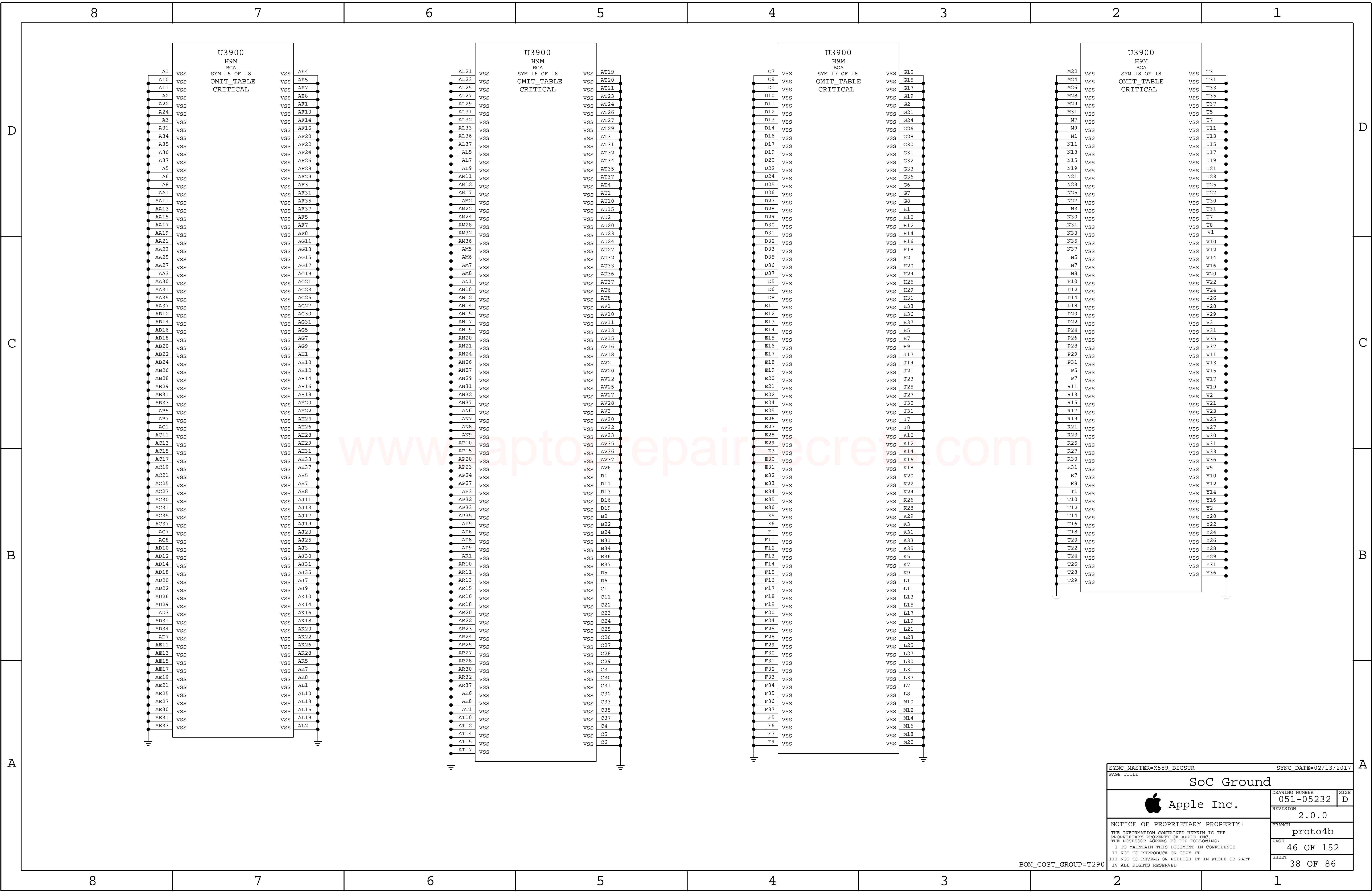


Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3



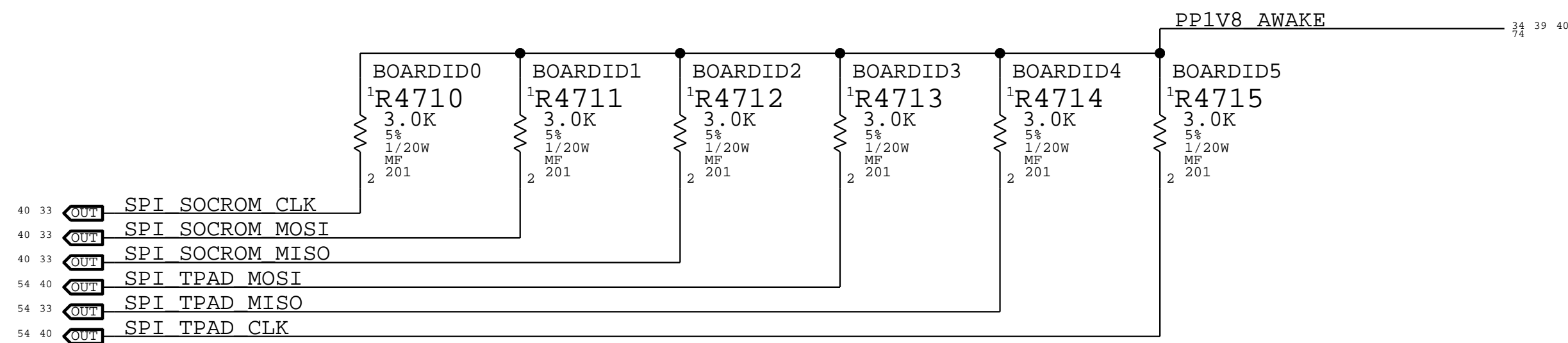
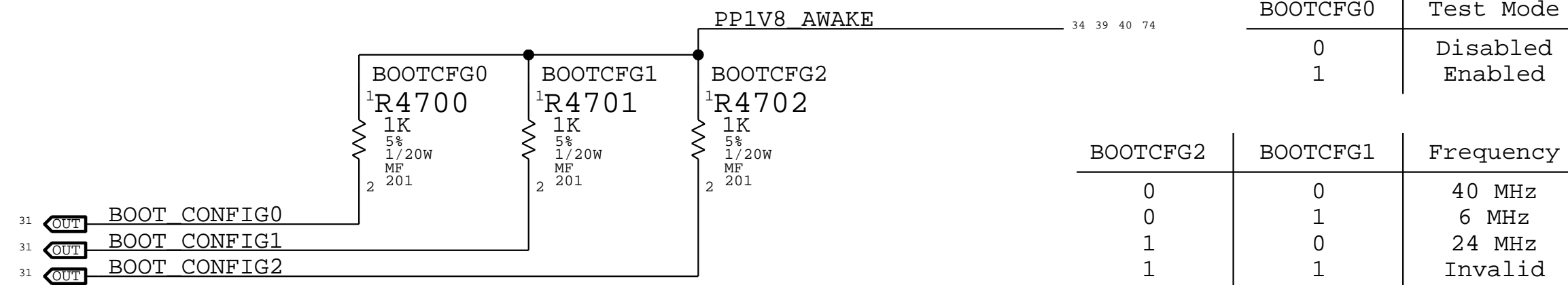




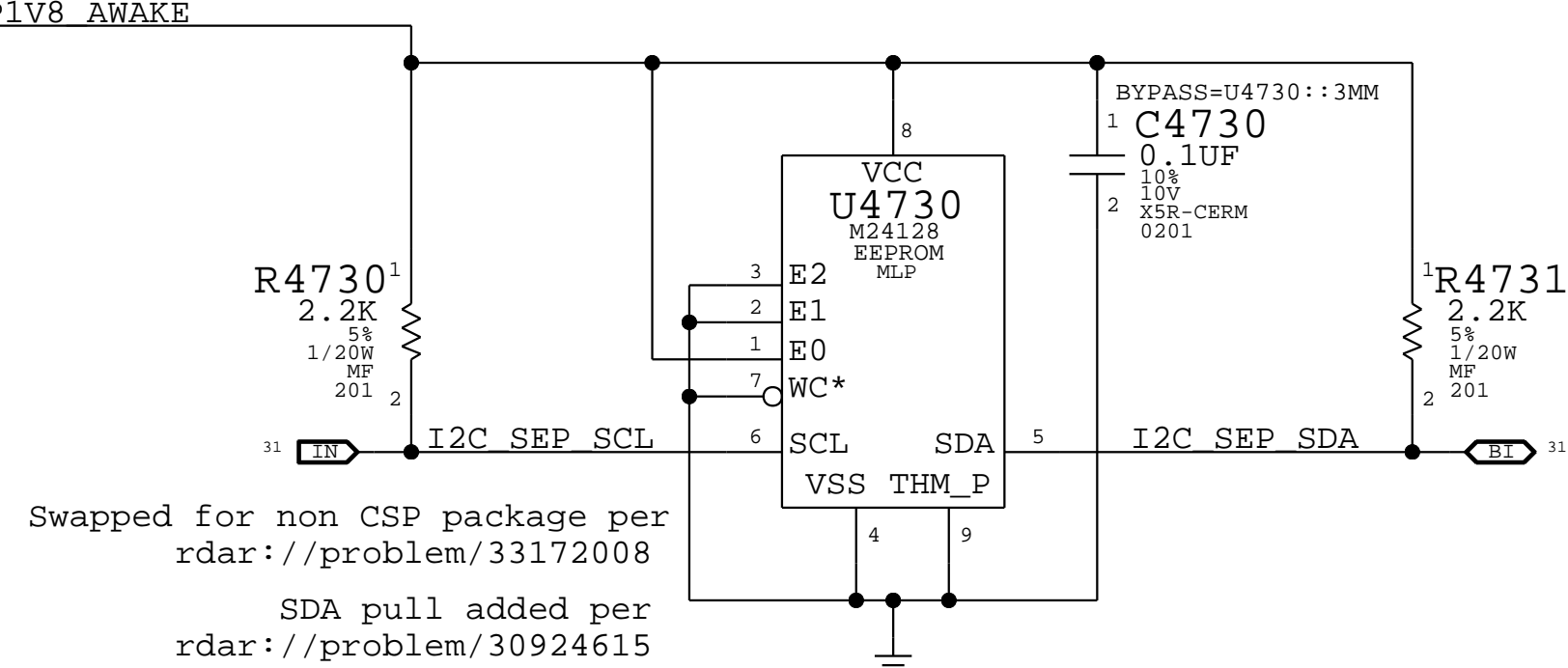
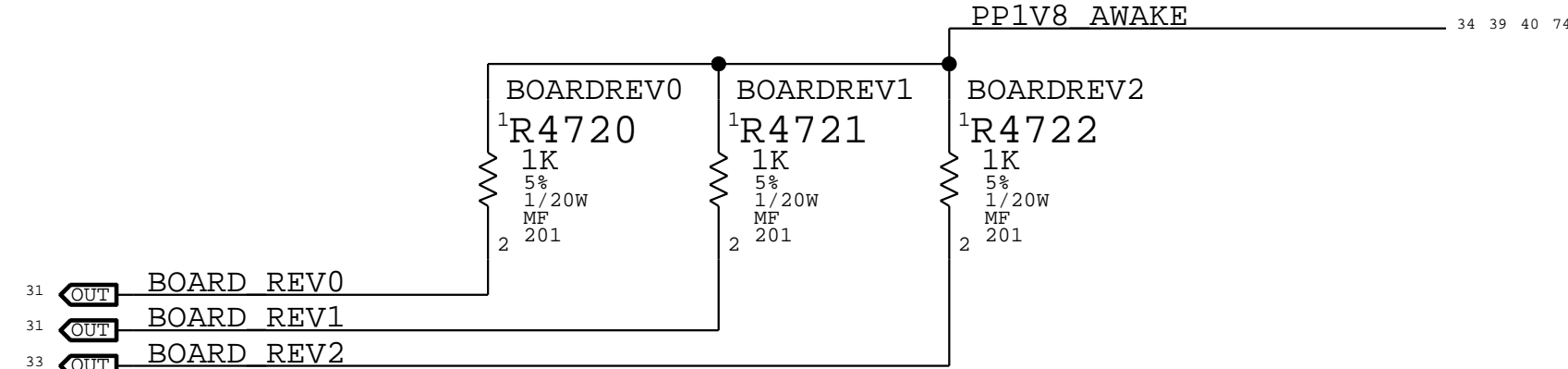


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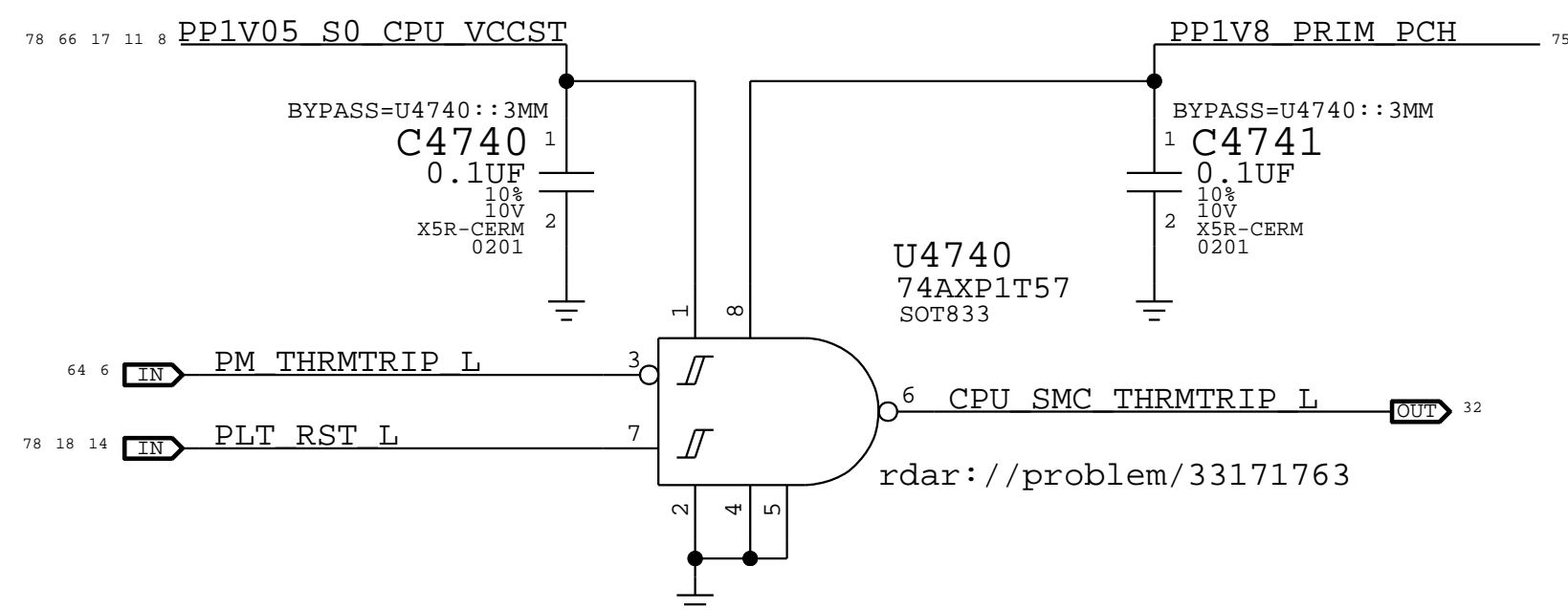
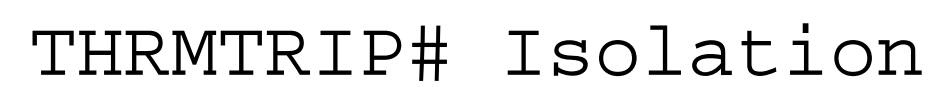
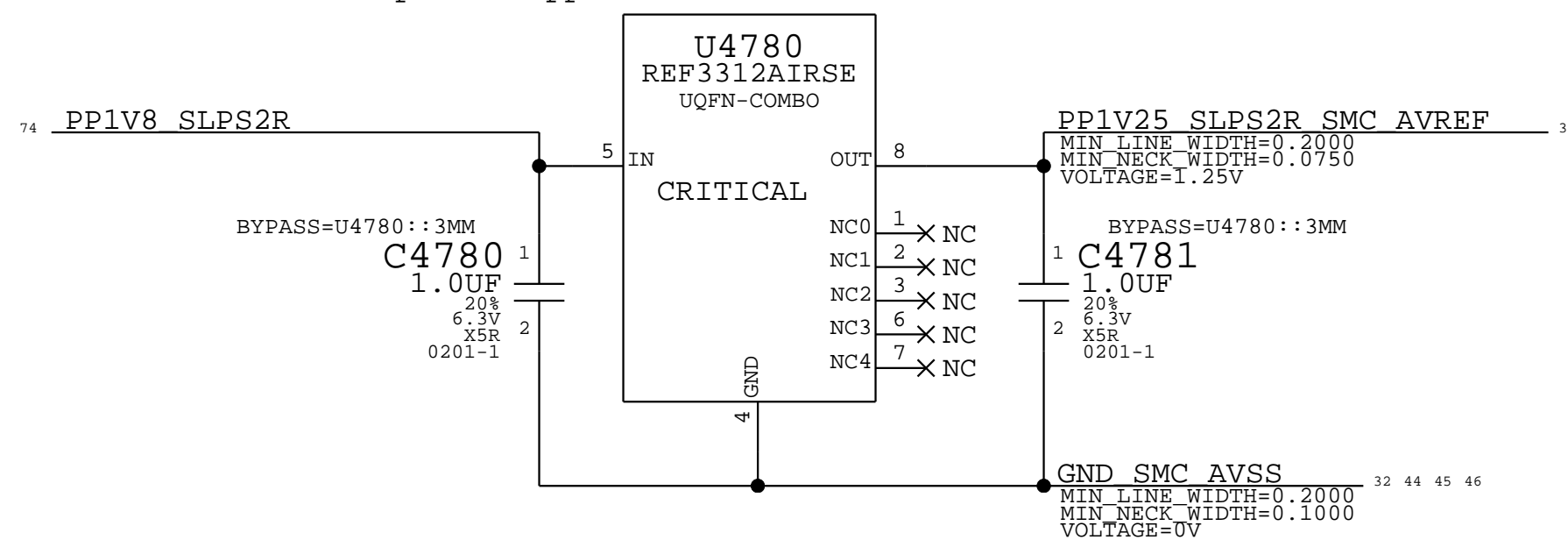




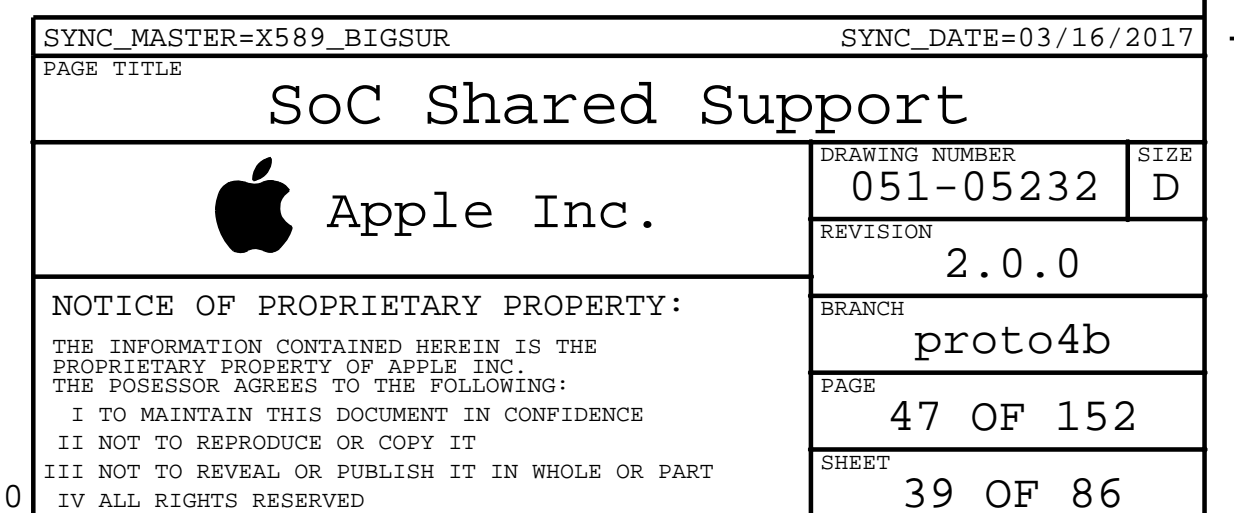
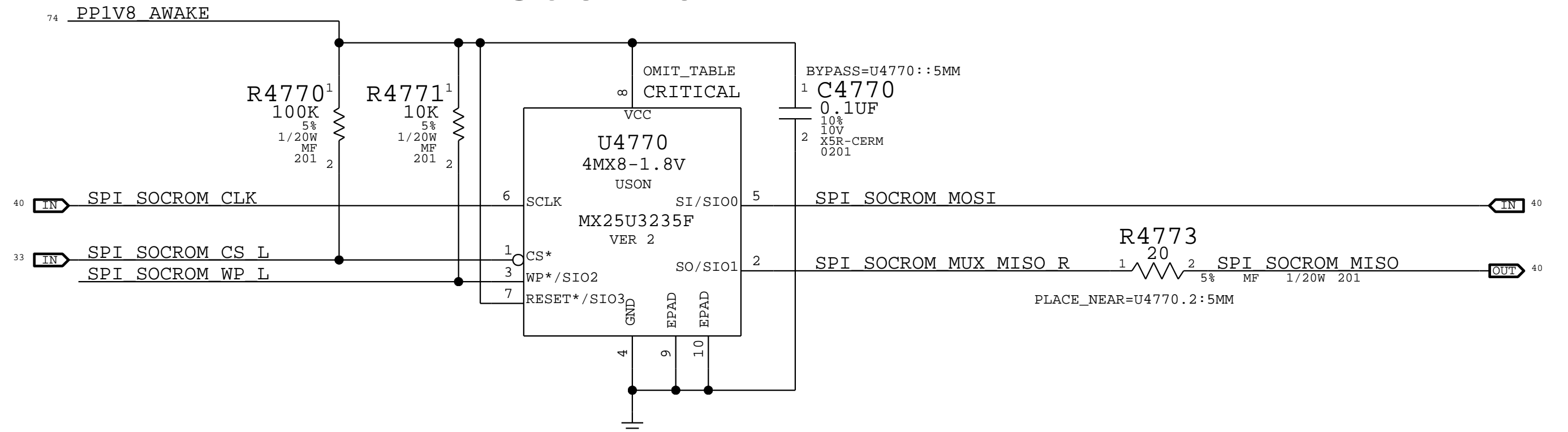
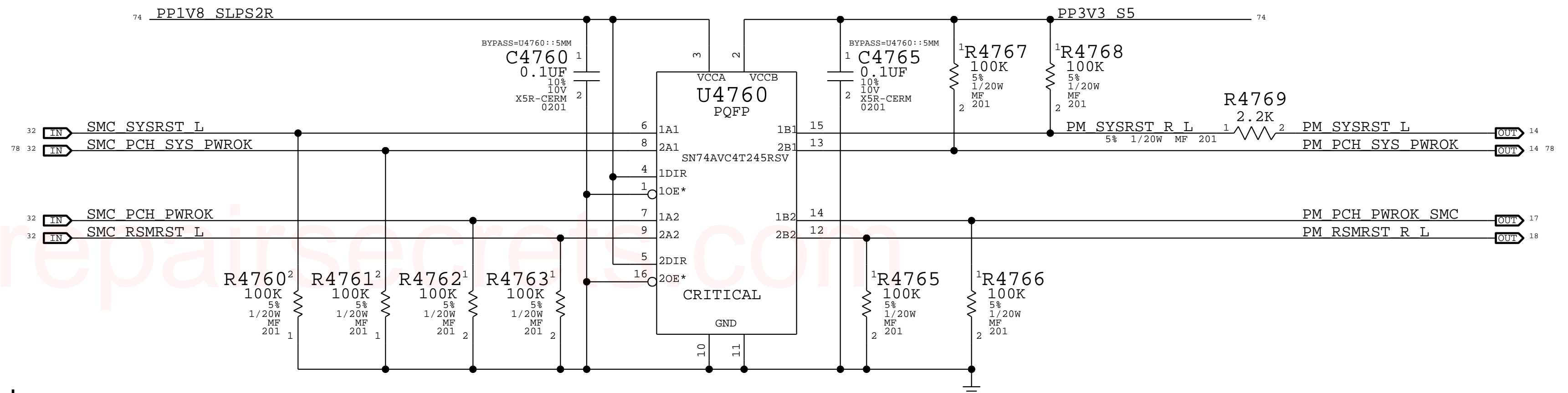
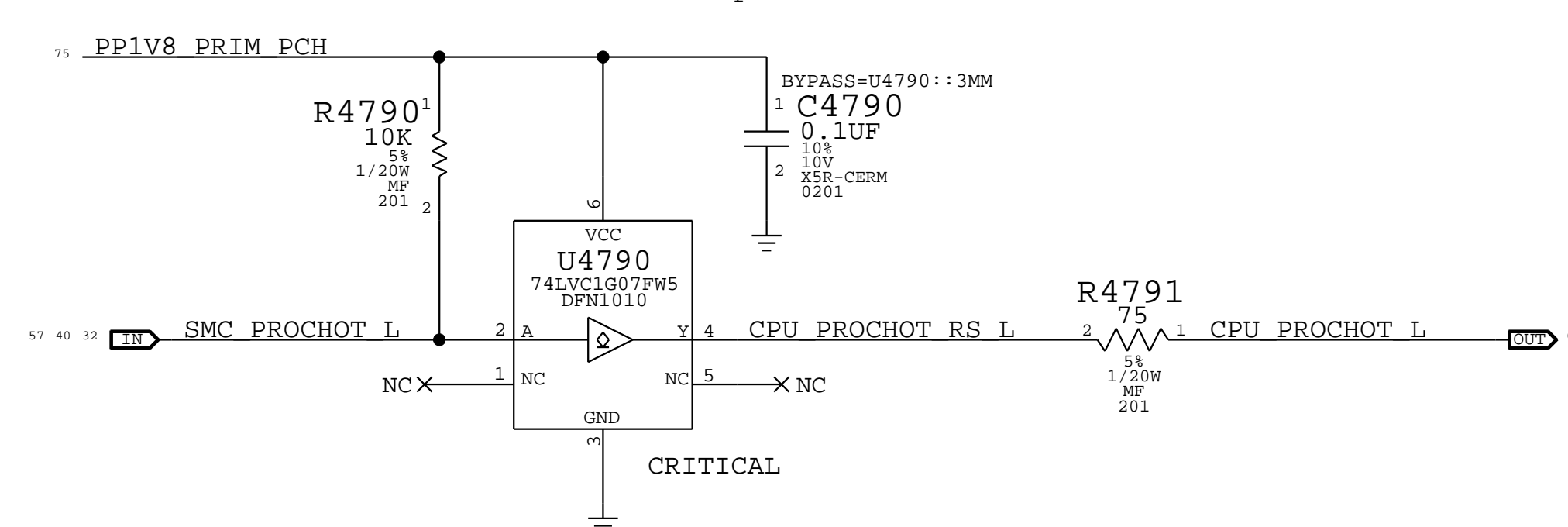
See [rdrar://problem/50175583](https://rdrar://problem/50175583) for J230k assignments



Footprint supports 353S01042 alternate

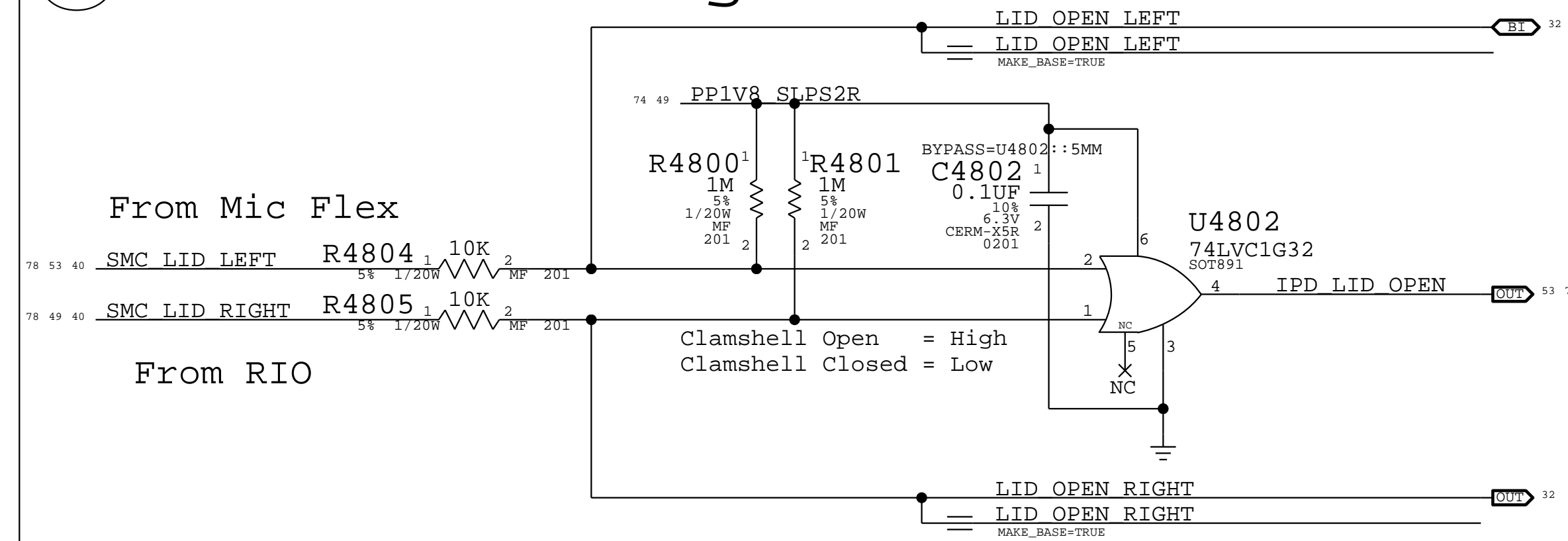


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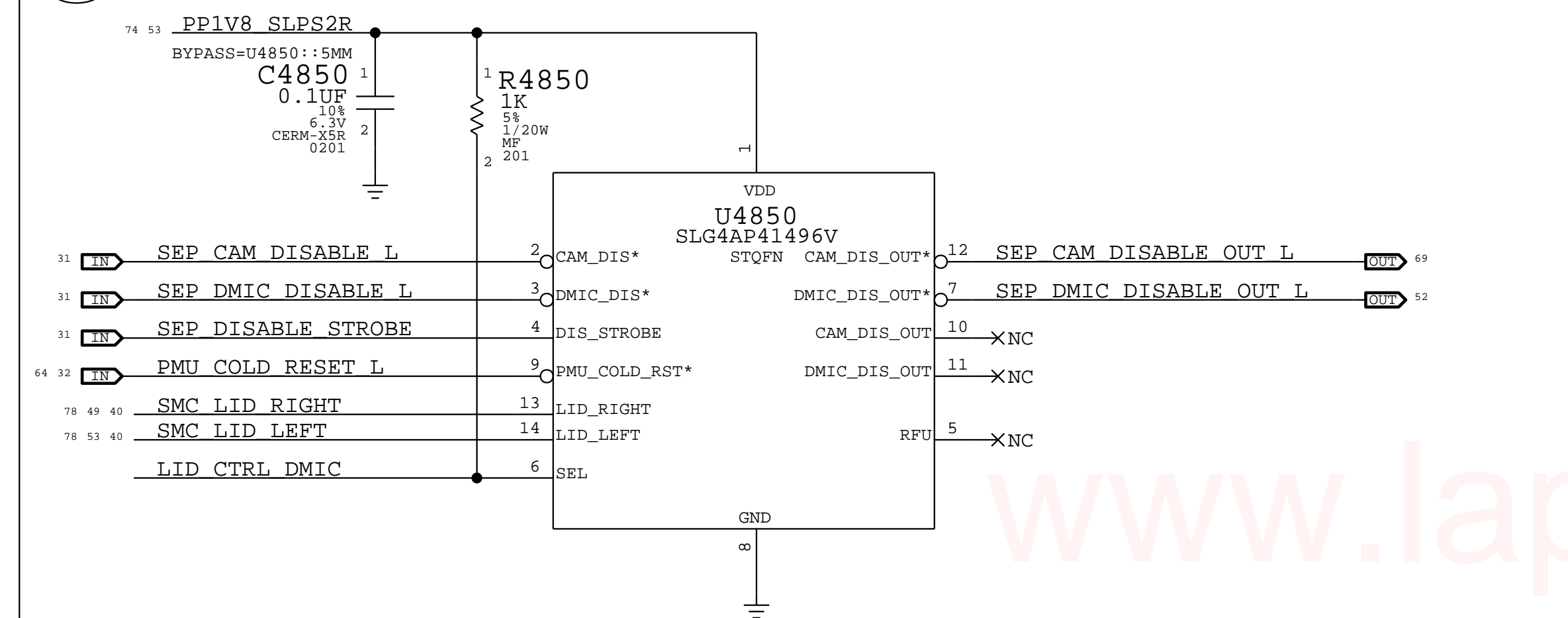




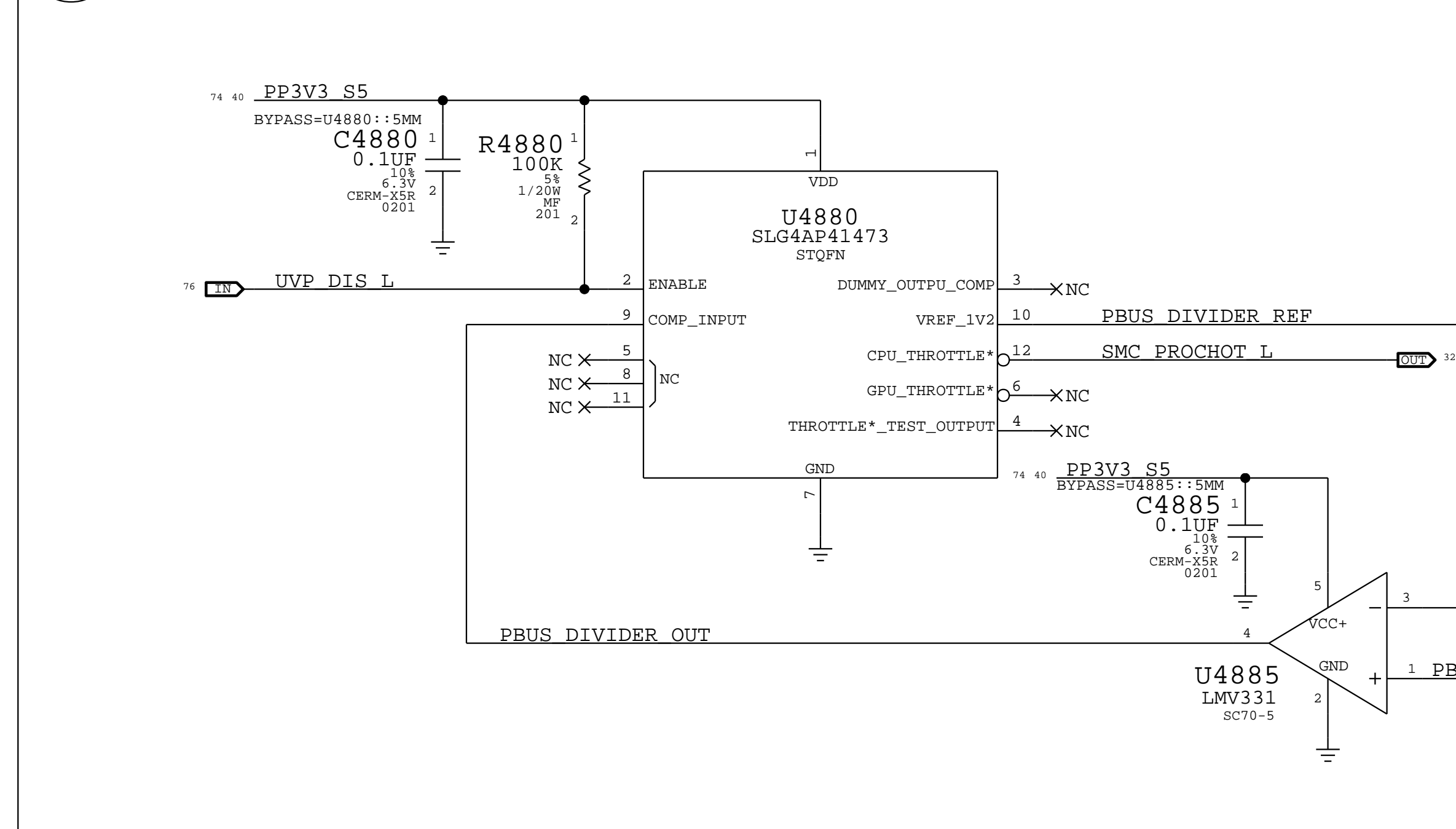
## A Lid Detect Logic



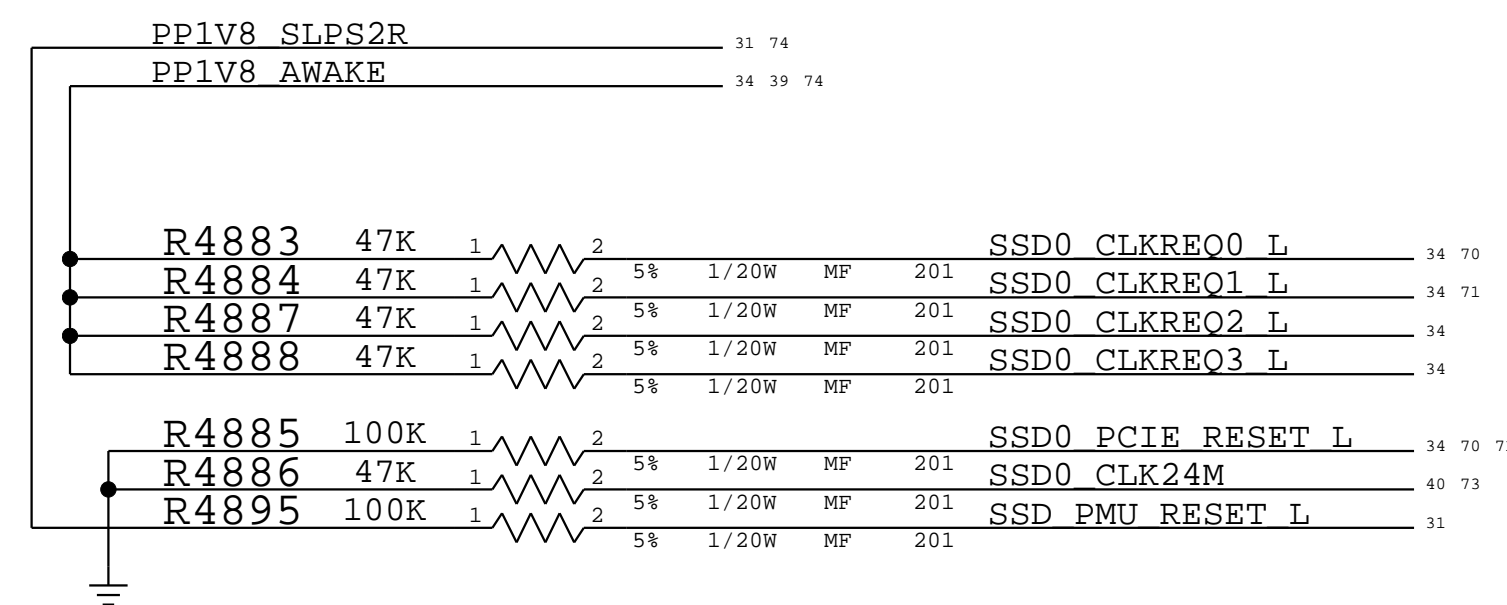
☐ B Secure Disable



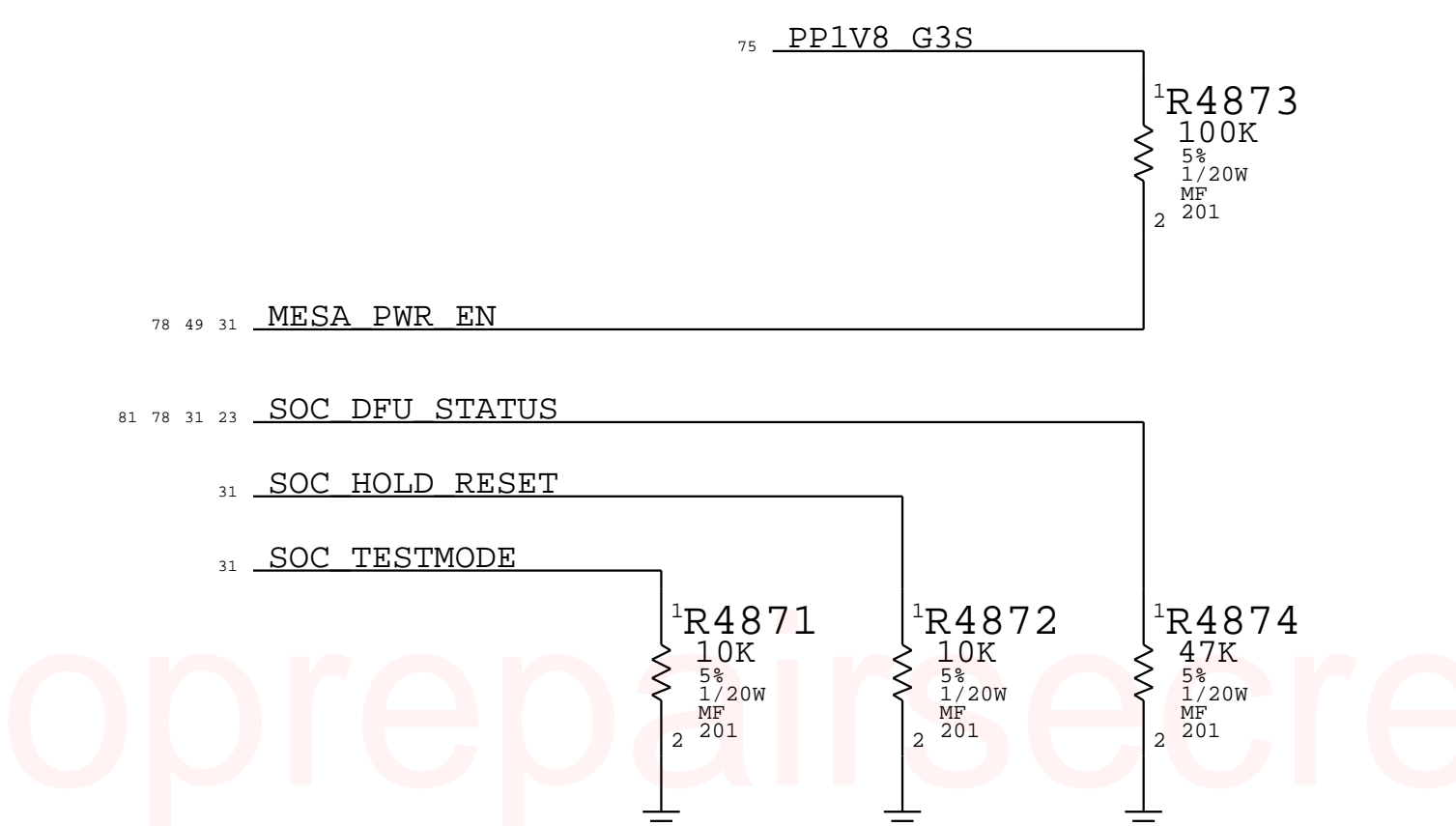
© SMC PROCHOT Control Circuit



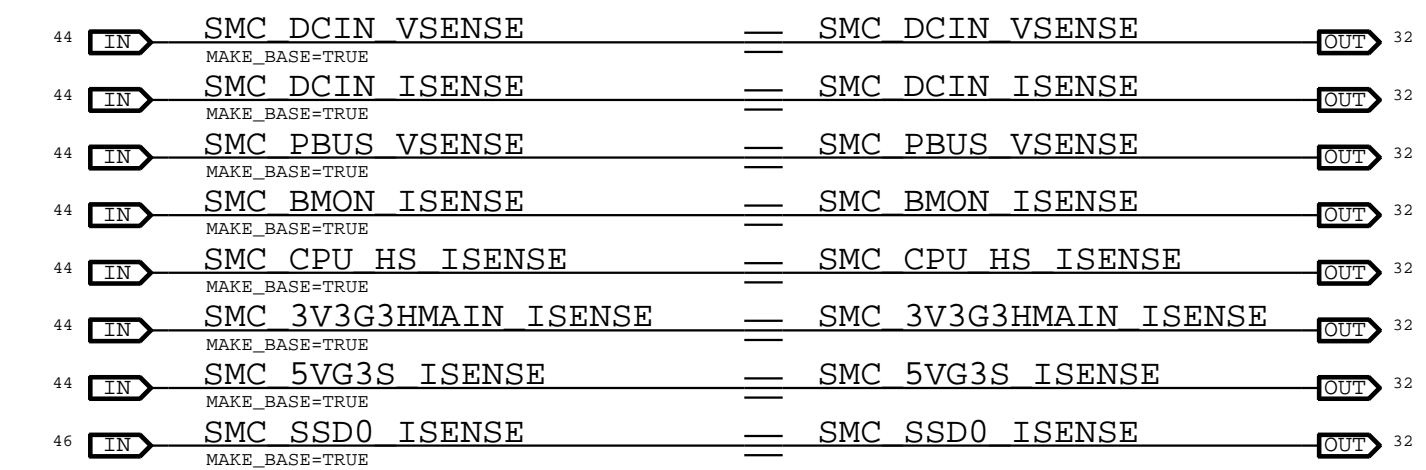
④ SSD Pull-Up/Downs



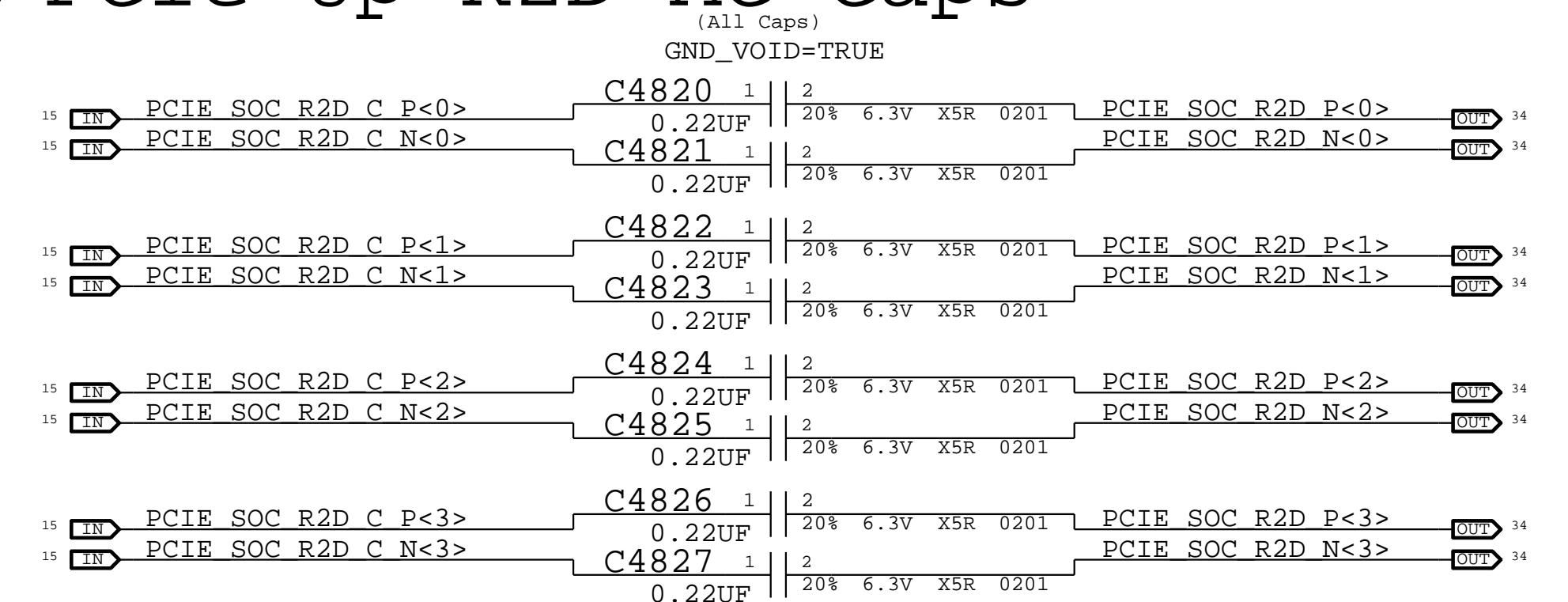
Ⓔ SoC Pull-Up/Downs



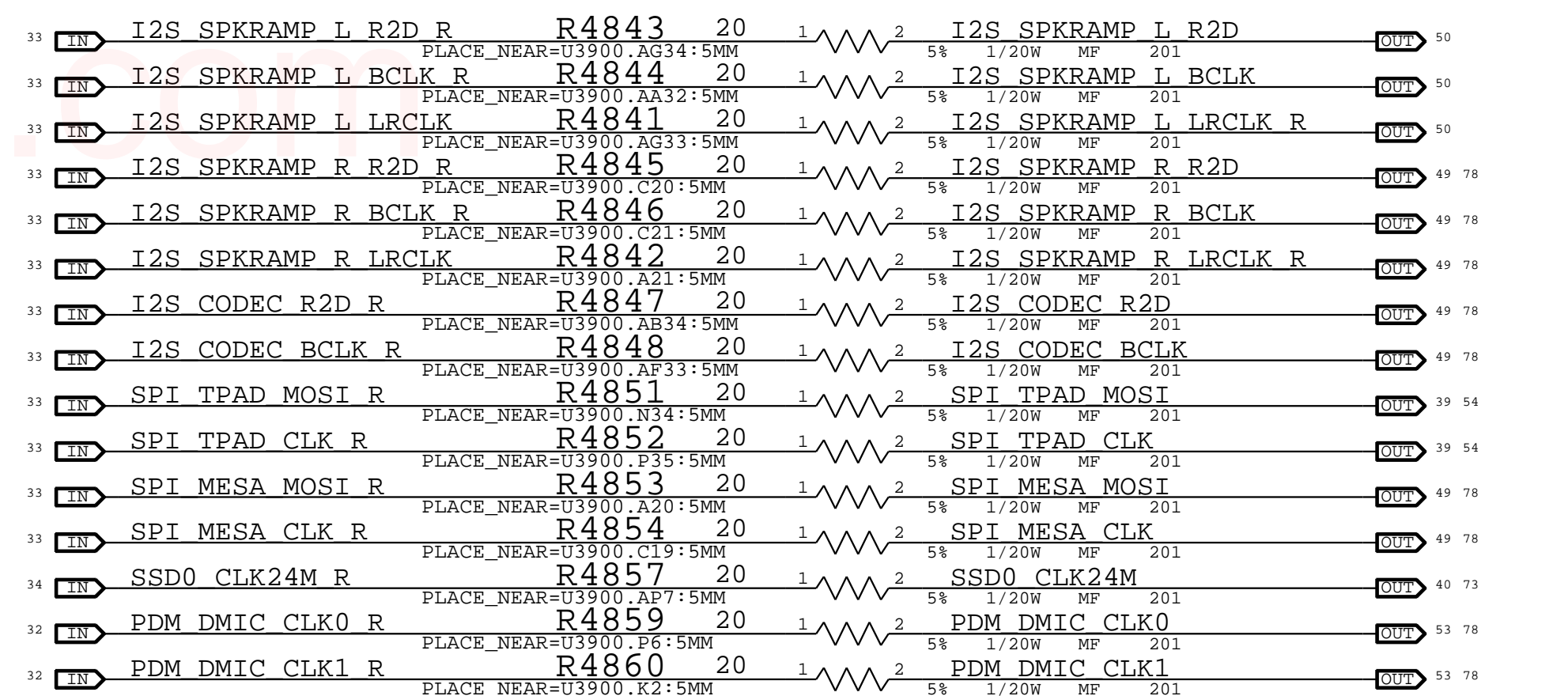
## Ⓜ SMC ADC Assignments



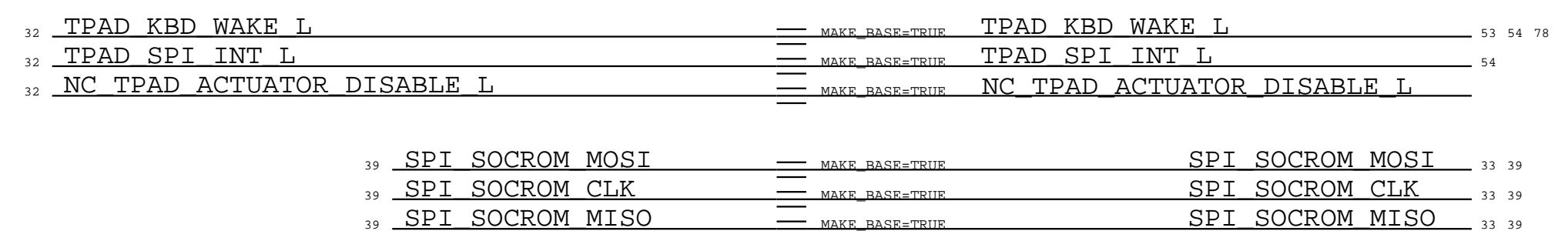
(H) PCIe Up R2D AC Caps



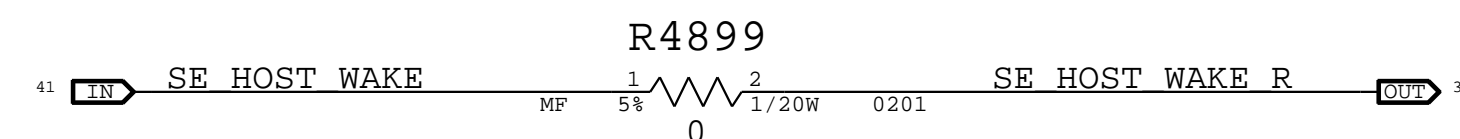
## I GPIO Source Termination




## ⓐ Overloaded GPIOs



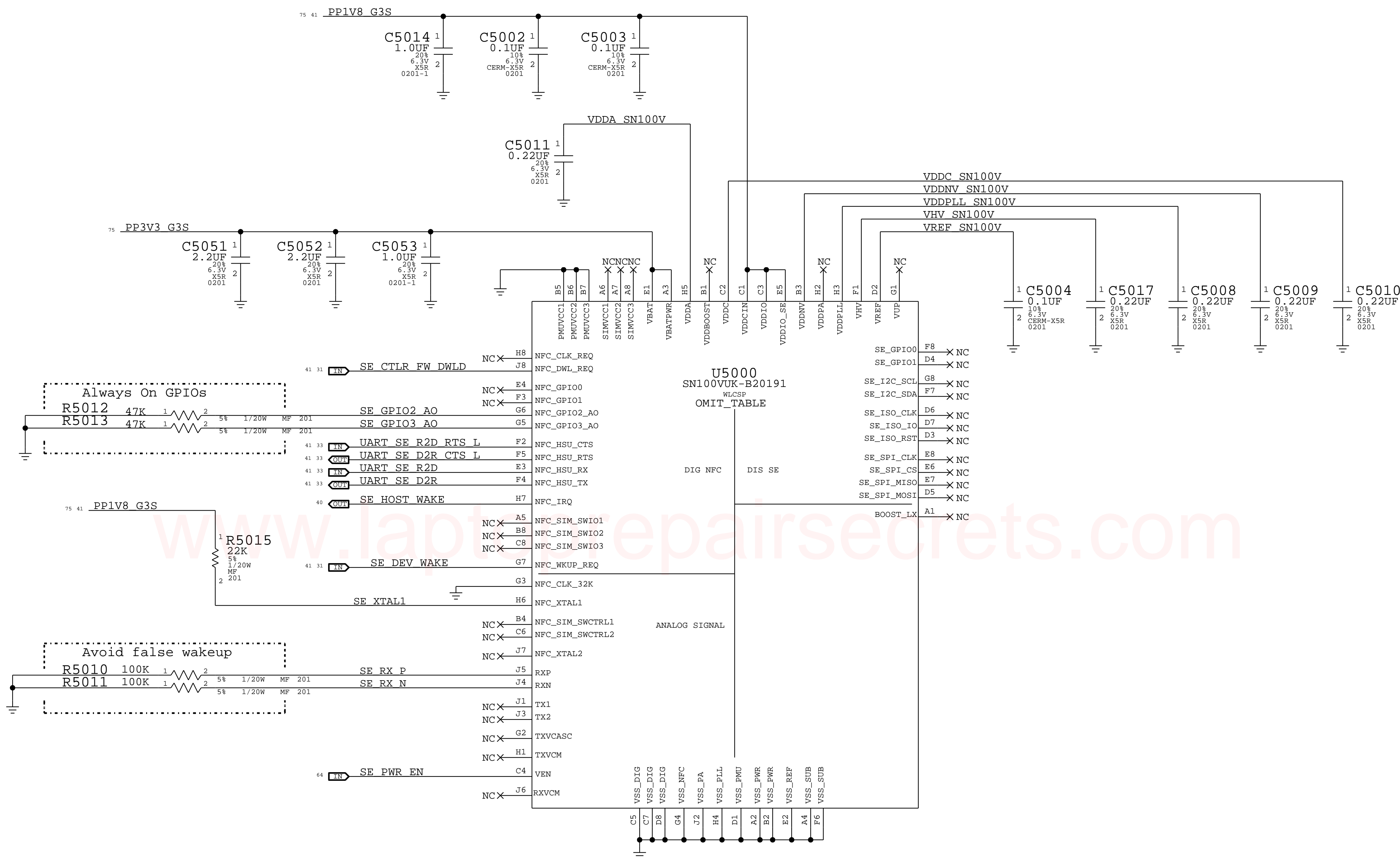
SE Host Wake



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 Apple Inc.	DRAWING NUMBER		SIZE
	051-05232		D
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PAGE		48 OF 152	
SHEET		40 OF 86	




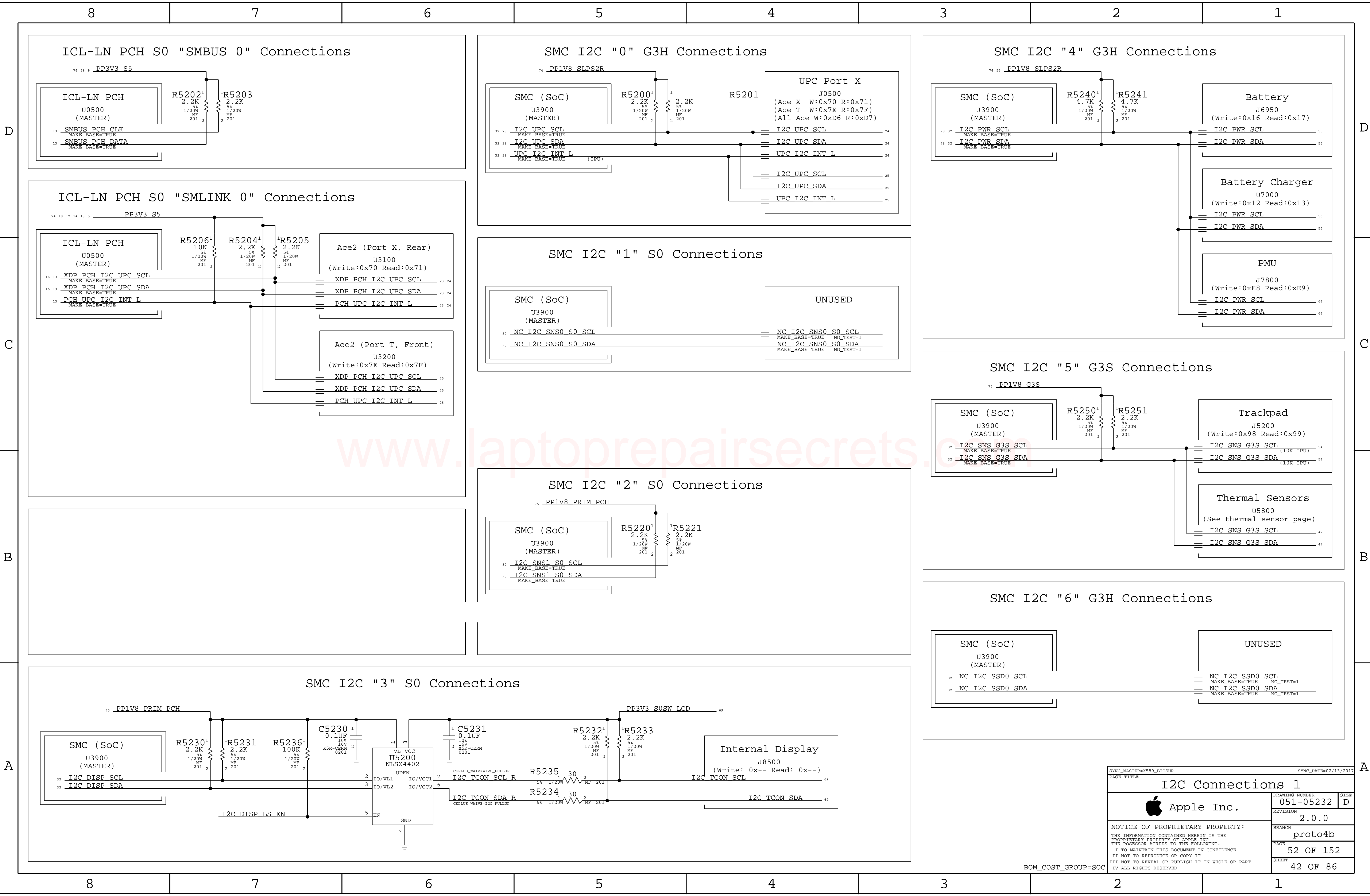
# Venus - Secure Element



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-15216	1	IC, SN100V, VENUS, DEV KEY, B2, S/W-M, WLCSP72	U5000	CRITICAL	SE:DEV_SW_N
338S00445	1	IC, SN100V, VENUS, PROD KEY, B2, S/W-M, WLCSP72	U5000	CRITICAL	SE:PROD_SW_N

PP1V8_G3S	75	
R5001	100K	1 2
R5002	100K	1 2
R5003	100K	1 2
R5004	100K	1 2
R5000	100K	1 2
R5006	100K	1 2
UART SE R2D	33	41
UART SE D2R	33	41
UART SE R2D RTS L	33	41
UART SE D2R CTS L	33	41
SE CTLR FW DWLD	31	41
SE DEV WAKE	31	41

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		PAGE	50 OF 152
		SHEET	41 OF 86



D

C

B


A

D

C

B

A

SYNC_MASTER=X589_BIGSUR		SYNC_DATA=02/13/2017	
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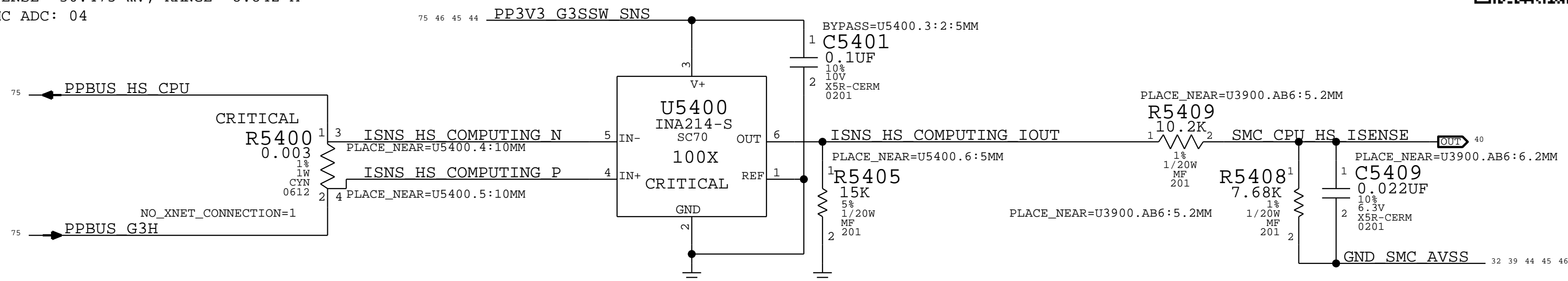
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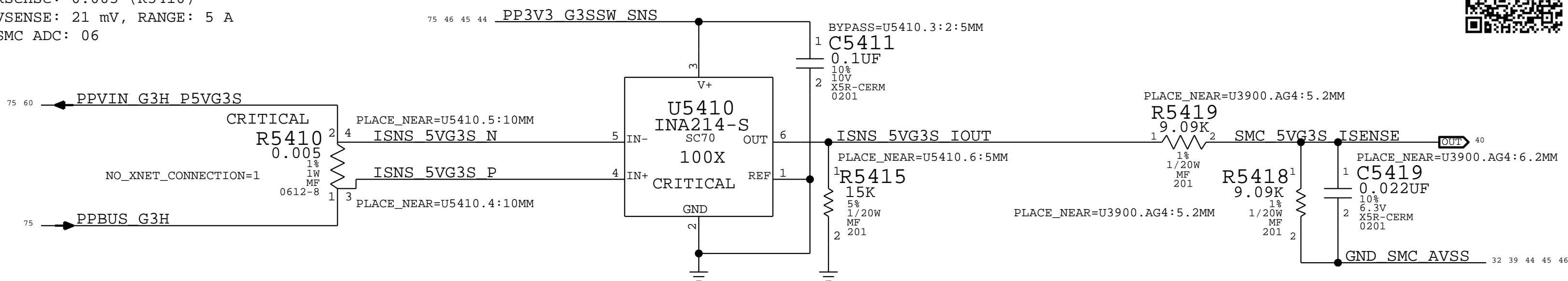
# A CPU High Side Current Sense (IC0R)

GAIN: 100X, EDP: 10.16 A  
Rsense: 0.003 (R5400)  
VSENSE: 30.475 mV, RANGE: 8.842 A  
SMC ADC: 04



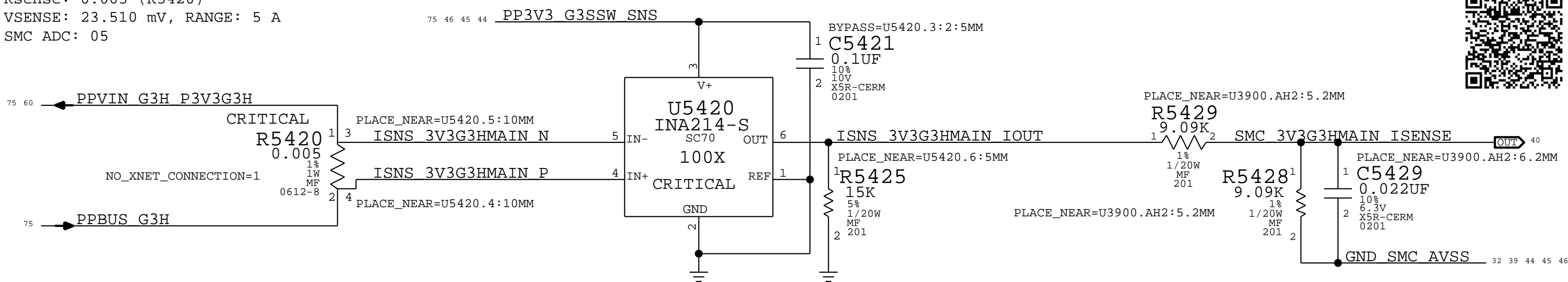
# B 5V G3S High Side Current Sense (IO5R)

GAIN: 100X, EDP: 4.2 A  
Rsense: 0.005 (R5410)  
VSENSE: 21 mV, RANGE: 5 A  
SMC ADC: 06



# C 3V3 G3H MAIN High Side Current Sense (IO3R)

GAIN: 100X, EDP: 4.702 A  
Rsense: 0.005 (R5420)  
VSENSE: 23.510 mV, RANGE: 5 A  
SMC ADC: 05



# D Sensor Documentation

Sensor information can be found in the ERS at the link below or by scanning the QR Code image.

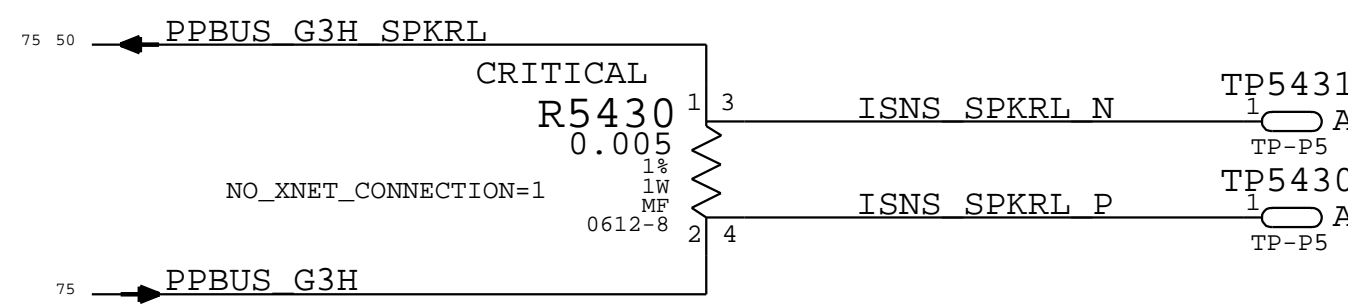


[https://github.pie.apple.com/MobileMacIX/j230\\_hw/blob/master/j230/mlb/docs/sensor\\_ers/j230\\_sensor\\_ers.pdf](https://github.pie.apple.com/MobileMacIX/j230_hw/blob/master/j230/mlb/docs/sensor_ers/j230_sensor_ers.pdf)

INA21X PARTS HAVE MINOR LEAKAGE PATH FROM INPUTS TO OUTPUT WHEN UNPOWERED.  
PULL-DOWN RESISTORS ON INA OUTPUTS BLEED OFF THE LEAKAGE CURRENT TO PREVENT SIGNAL PUMP-UP.

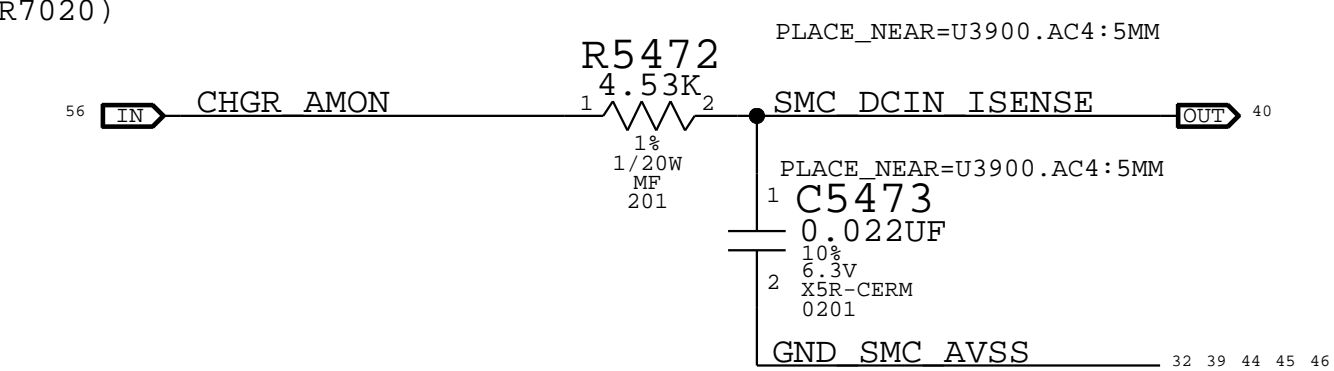
# I Speaker Amp Sense (Ixxx)

RSENSE: 0.005  
EDP: x A  
SMC ADC: 03



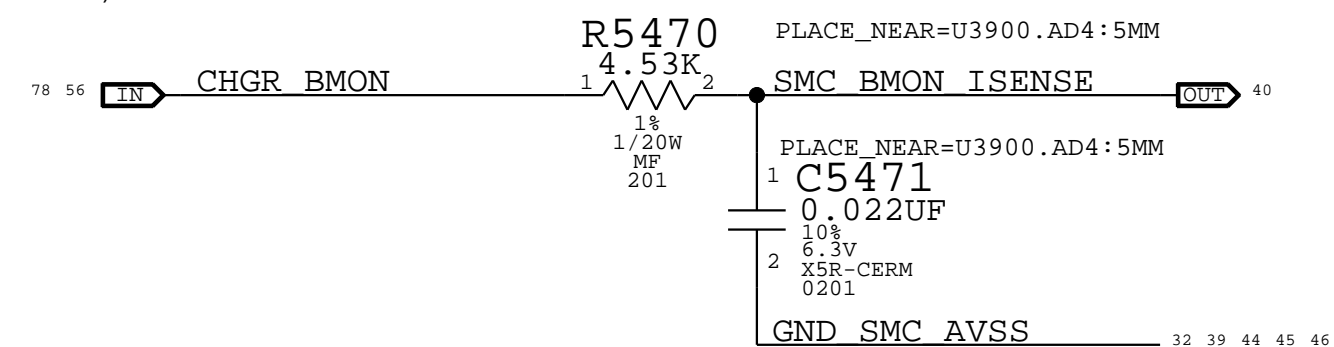
# G DC-IN (AMON) Current Sense (ID0R)

Charger Gain: 20x, EDP: 3.0 A  
RSENSE: 0.010 (R7020)  
SMC ADC: 01



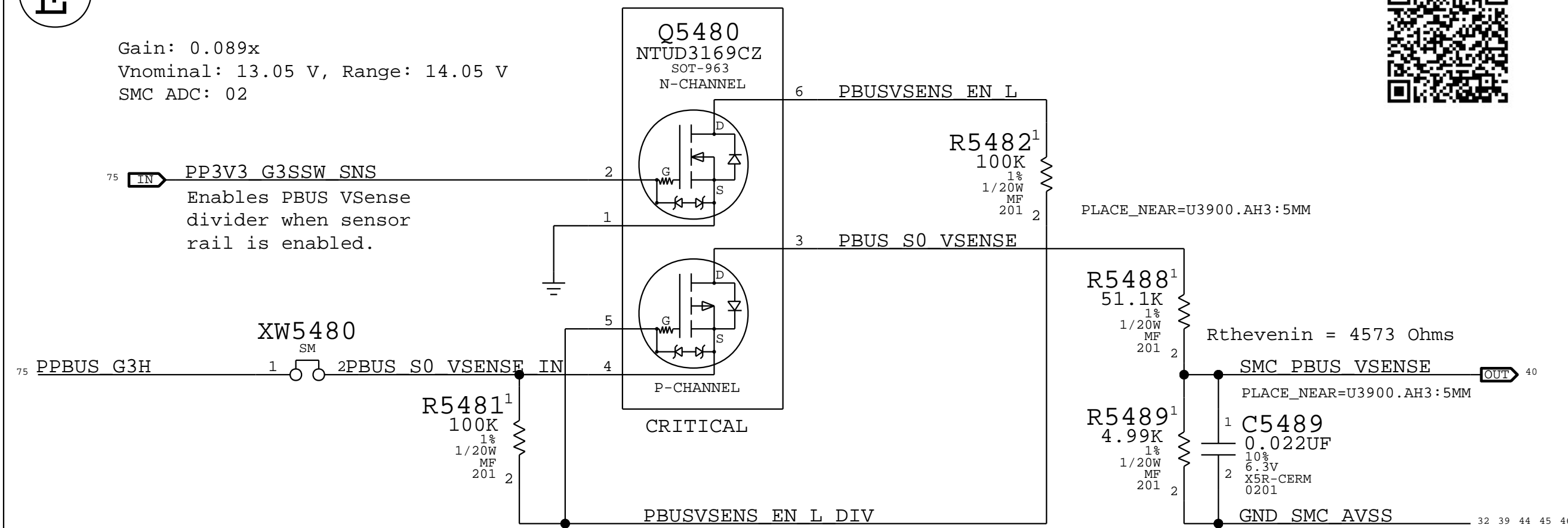
# H Charger (BMON) Current Sense (IPBR)

Charger Gain: 7.9x, EDP: 6.5 A  
RSENSE: 0.005 (R7060)  
SMC ADC: 03



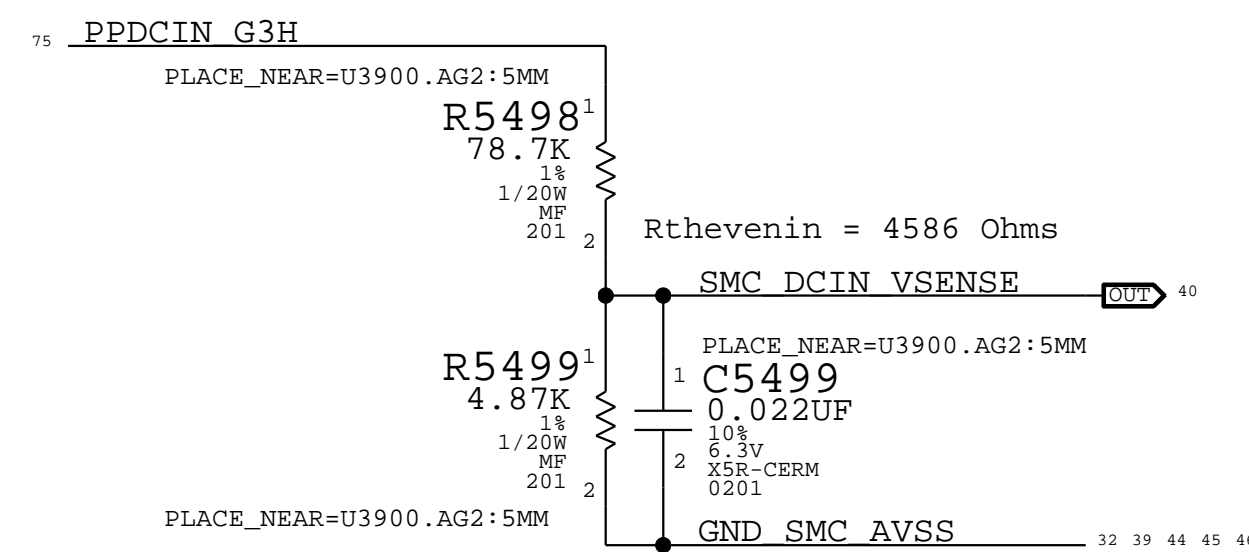
# E PBUS Voltage Sense & Enable (VP0R)

Gain: 0.089x  
Vnominal: 13.05 V, Range: 14.05 V  
SMC ADC: 02



# F DC In Voltage Sense (VD0R)

Gain: 0.148x  
Vnominal: 16.5 V, Range: 22.29 V  
SMC ADC: 00



DESIGN: J230/MLB  
LAST CHANGE: Fri Sep 28 20:05:04 2018

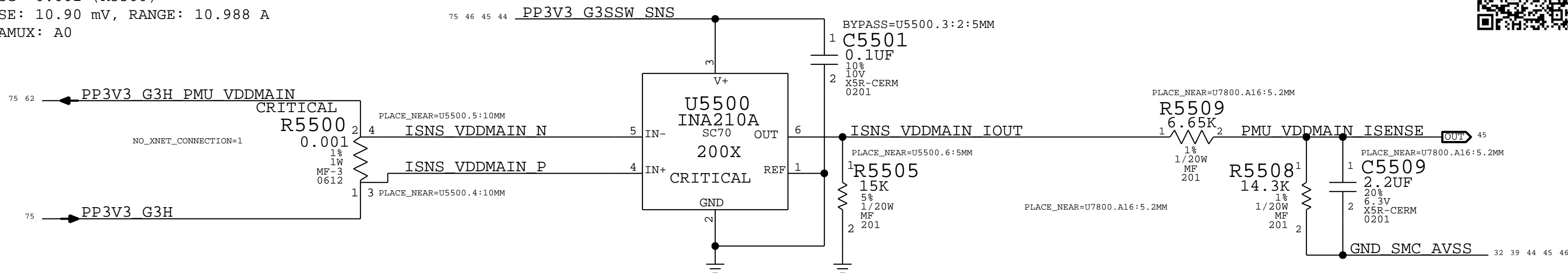
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	PAGE	54 OF 152		
	SHEET	44 OF 86		



## A VDDMAIN 3.3V Current Sense (ISLC)

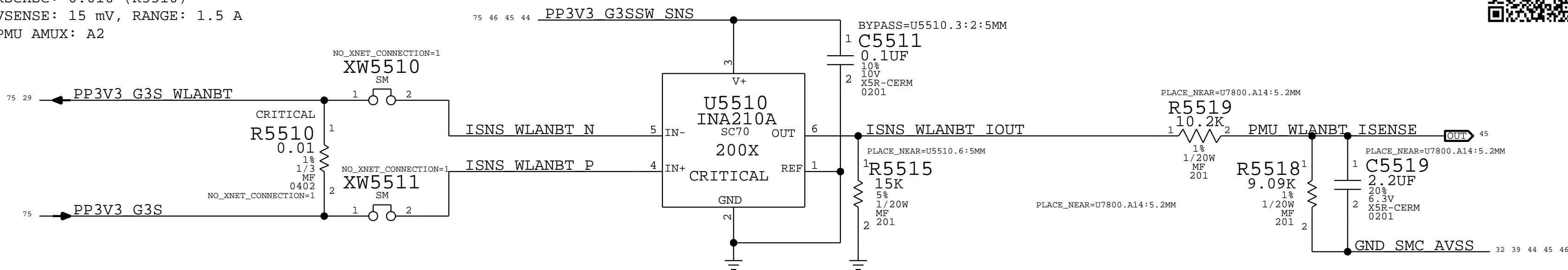
GAIN: 200X, EDP: 10.90 A  
Rsense: 0.001 (R5500)  
VSENSE: 10.90 mV, RANGE: 10.988 A  
PMU AMUX: A0



LTSpice Simulation

## C Wireless 3.3V Current Sense (IAPC)

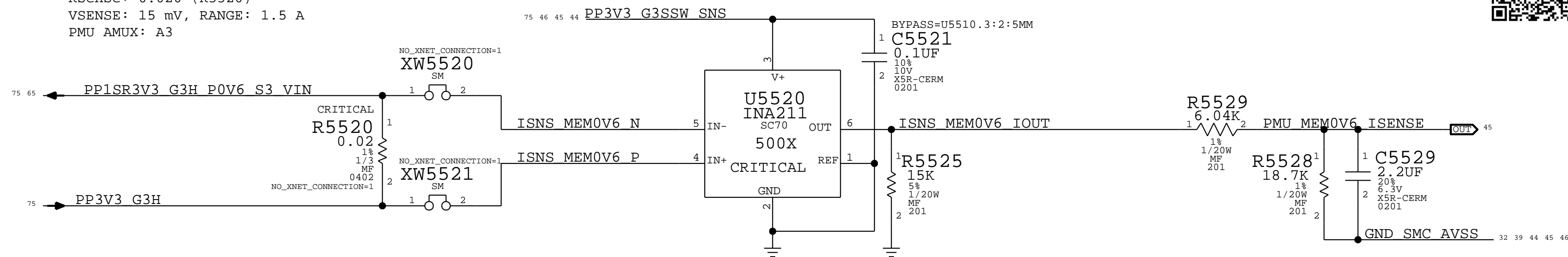
GAIN: 200X, EDP: 1.5 A  
Rsense: 0.010 (R5510)  
VSENSE: 15 mV, RANGE: 1.5 A  
PMU AMUX: A2



LTSpice Simulation

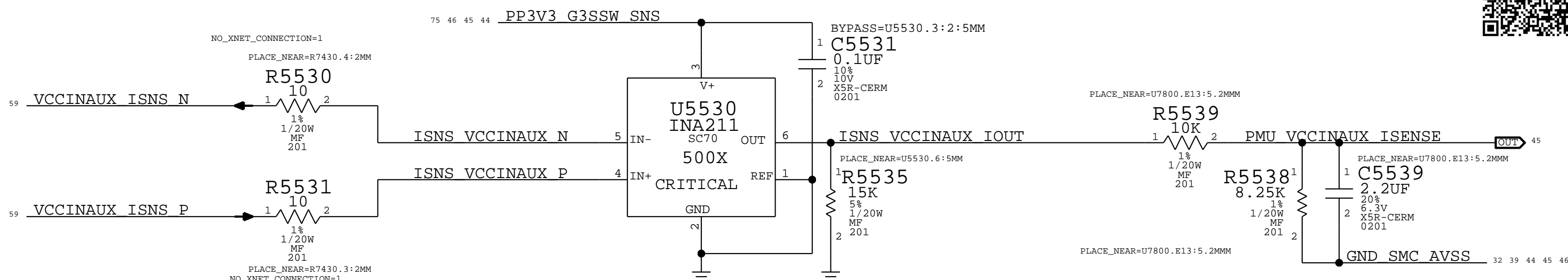
## E MEMORY 0.6V High-Side Current Sense (IM0C)

GAIN: 200X, EDP: 1.5 A  
Rsense: 0.020 (R5520)  
VSENSE: 15 mV, RANGE: 1.5 A  
PMU AMUX: A3



LTSpice Simulation

## G VCCIN\_AUX Current Sense (ICIC)



LTSpice Simulation

## B PMU ADC AMUX\_A ALIASES

45	PMU VDDMAIN ISENSE	==	PMU VDDMAIN ISENSE	64
45	PMU MEM1V1 ISENSE	==	PMU MEM1V1 ISENSE	64
45	PMU WLANBT ISENSE	==	PMU WLANBT ISENSE	64
45	PMU MEMOV6 ISENSE	==	PMU MEMOV6 ISENSE	64
46	PMU LCDBKLT ISENSE	==	PMU LCDBKLT ISENSE	64
46	PMU CPU VSENSE	==	PMU CPU VSENSE	64
46	PMU NAND VSENSE	==	PMU NAND VSENSE	64
46	PMU VCCIN_AUX VSENSE	==	PMU VCCIN_AUX VSENSE	64

## D PMU ADC AMUX\_B ALIASES

	NC PMU AMUX B0	==	NC PMU AMUX B0	64
45	PMU VCCIN_AUX ISENSE	==	PMU VCCIN_AUX ISENSE	64
	NC PMU AMUX B2	==	NC PMU AMUX B2	64
	NC PMU AMUX B3	==	NC PMU AMUX B3	64
	NC PMU AMUX B4	==	NC PMU AMUX B4	64
	NC PMU AMUX B5	==	NC PMU AMUX B5	64
	NC PMU AMUX B6	==	NC PMU AMUX B6	64
	NC PMU AMUX B7	==	NC PMU AMUX B7	64

## F Sensor Documentation

Sensor information can be found in the ERS by scanning the QR Code image.



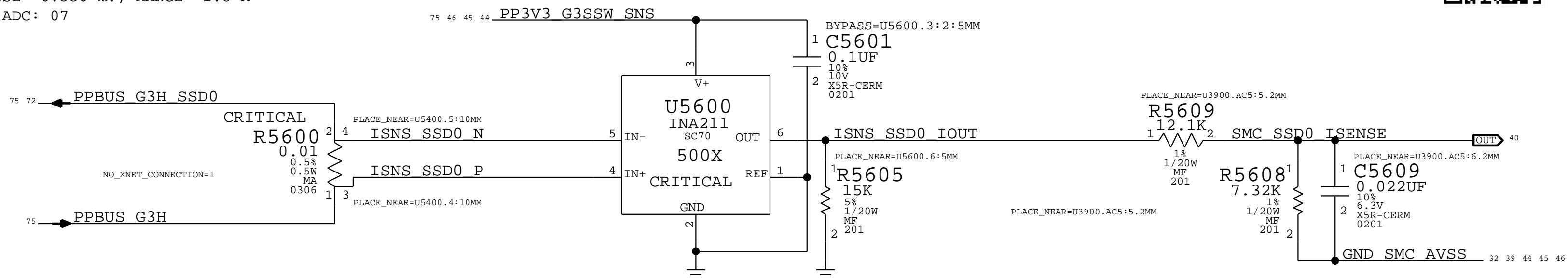
DESIGN: J230/MLB		
LAST CHANGE: Fri Sep 28 20:05:04 2018		
PAGE TITLE		
Power Sensors Load Side		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	55 OF 152
	SHEET	45 OF 86

BOM\_COST\_GROUP=SENSORS



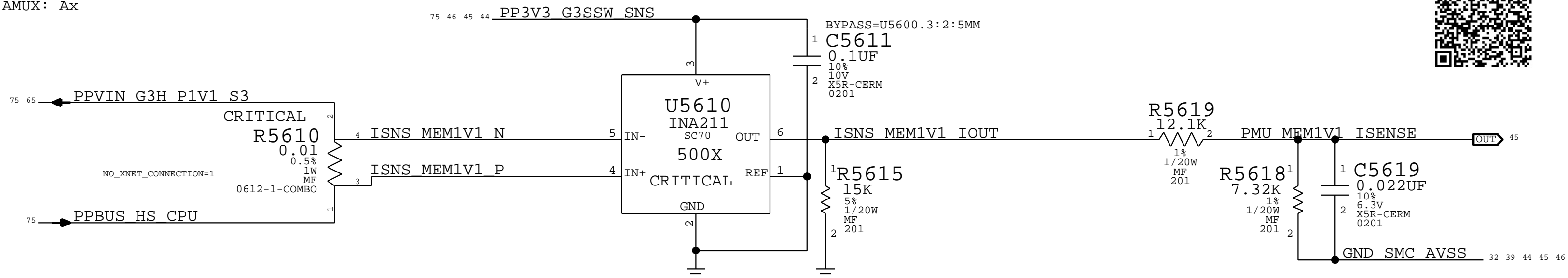
## A SSD High Side (IH0R)

GAIN: 500X, EDP: 0.654 A  
Rsense: 0.010 (R5600)  
VSENSE: 6.536 mV, RANGE: 1.8 A  
SMC ADC: 07



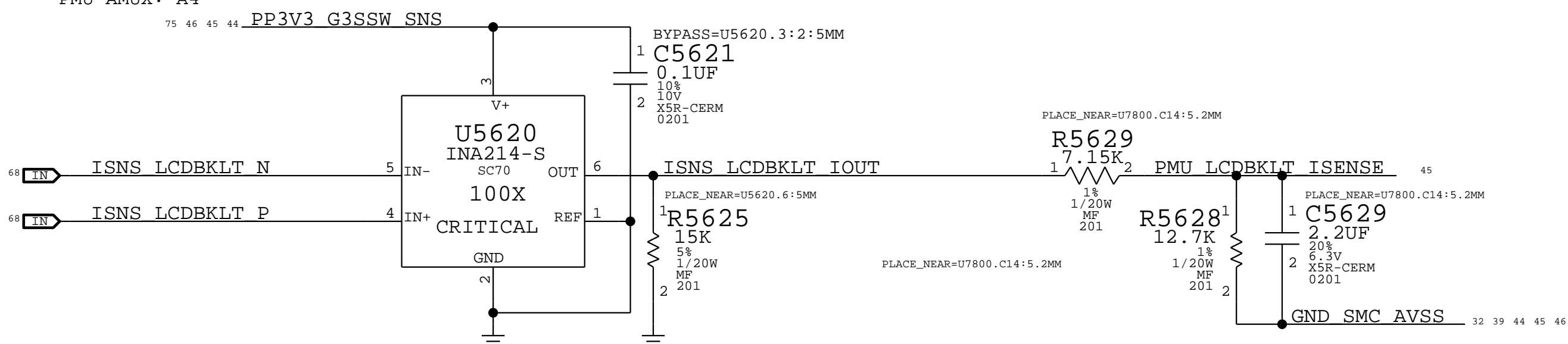
## C Memory 1.1V High Side Current Sense (IM1C)

GAIN: x, EDP: 2.3 A  
Rsense: 0.010 (R5610)  
VSENSE: 23 mV, RANGE: 2.344 A  
PMU AMUX: Ax



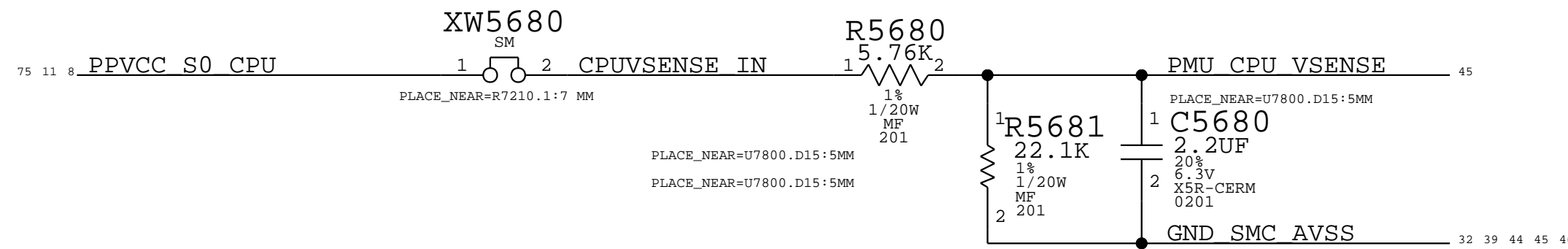
## E LCD Backlight (IBLR)

GAIN: 100X, EDP: 0.902 A  
Rsense: 0.025 (R8400)  
VSENSE: 22.549 mV, RANGE: 0.902 A  
PMU AMUX: A4



## F CPU VCCIN VOLTAGE SENSE (VCAC)

PMU AMUX: A5



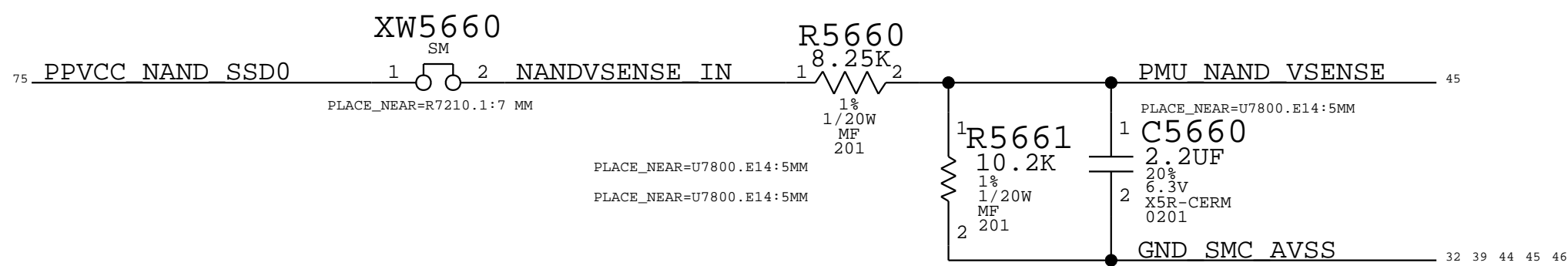
## G Sensor Docs

Scan the QR Code  
for sensor info.



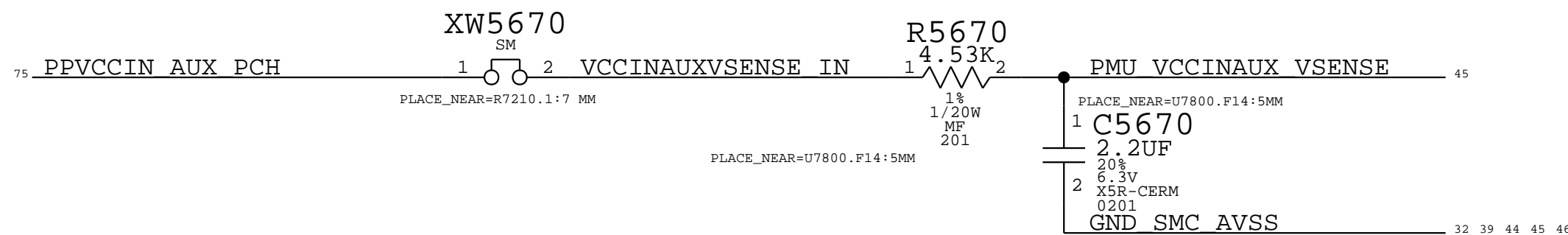
## H NAND 2V5 VOLTAGE SENSE (VHNC)

PMU AMUX: A6



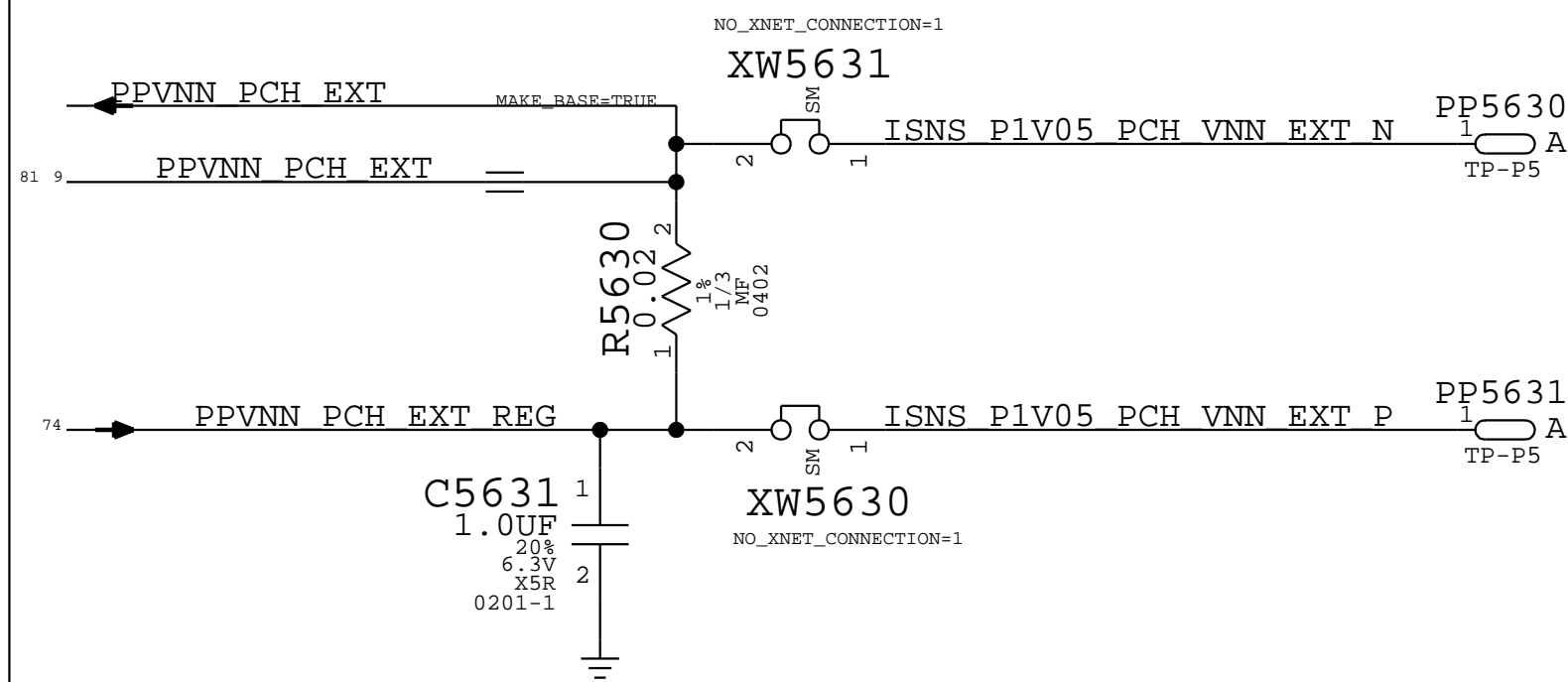
## I VCCIN\_AUX VOLTAGE SENSE (VCIC)

PMU AMUX: A7



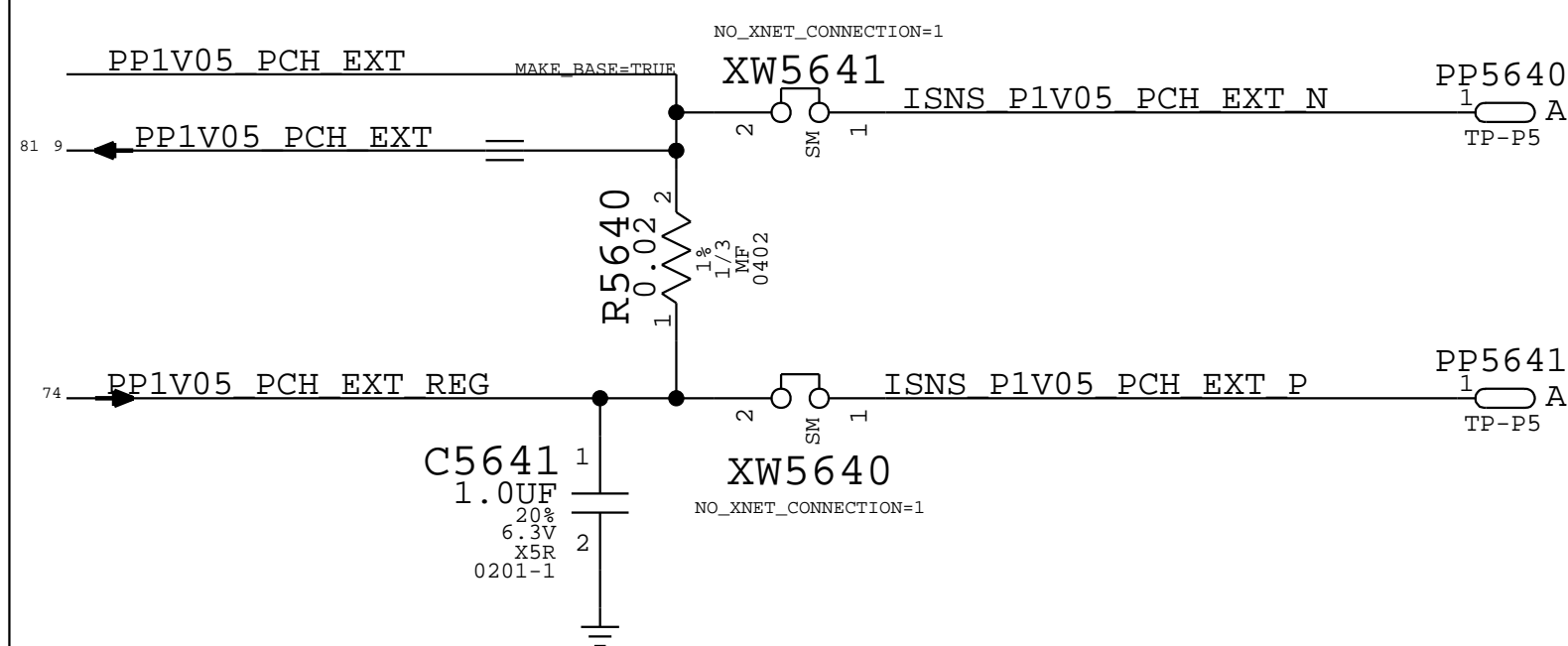
## B PCH VNN BYPASS CURRENT SENSE

GAIN: 200X, EDP: 0.2 A



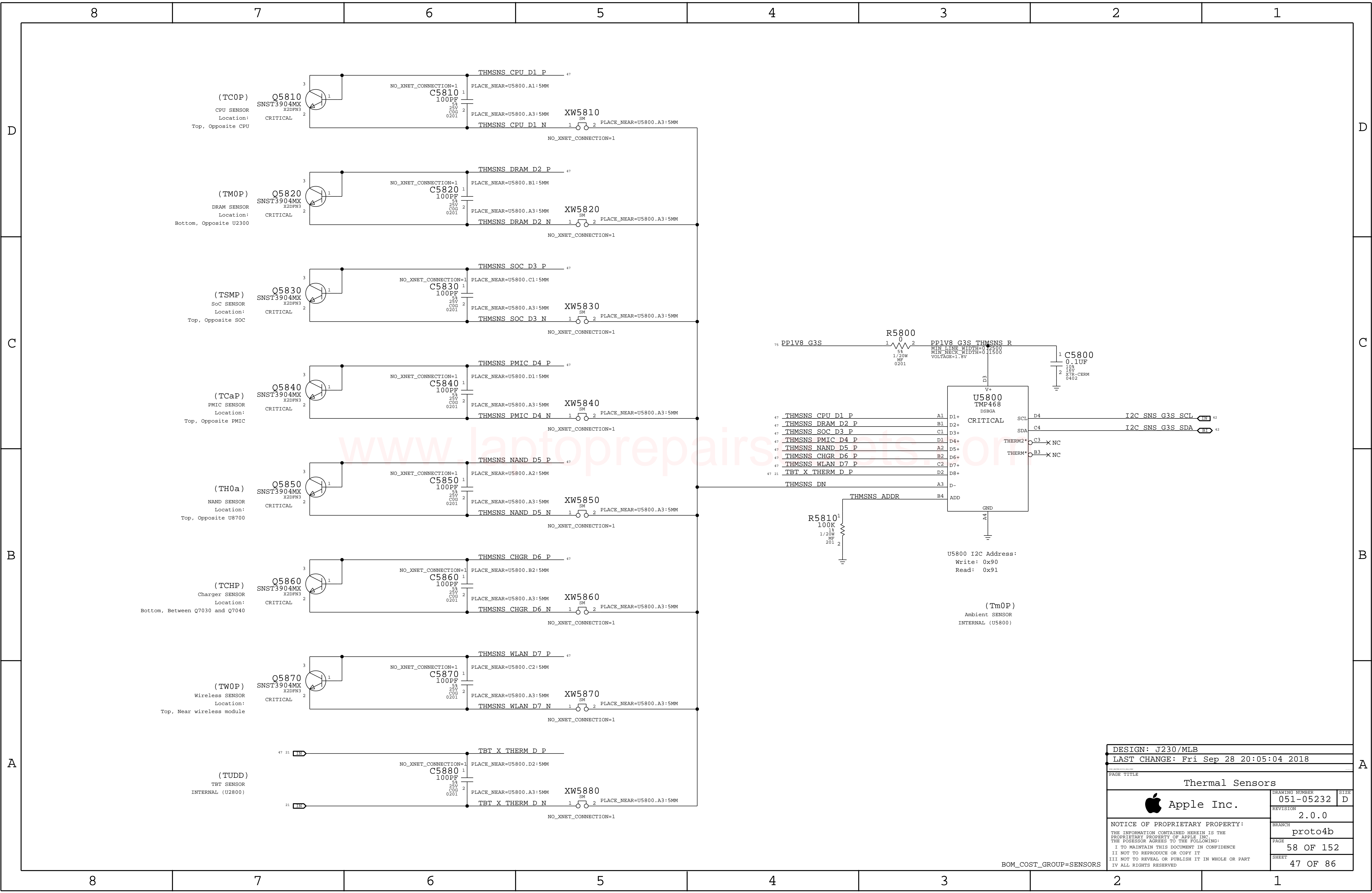
## D PCH 1.05V BYPASS CURRENT SENSE

GAIN: 200X, EDP: 0.2 A



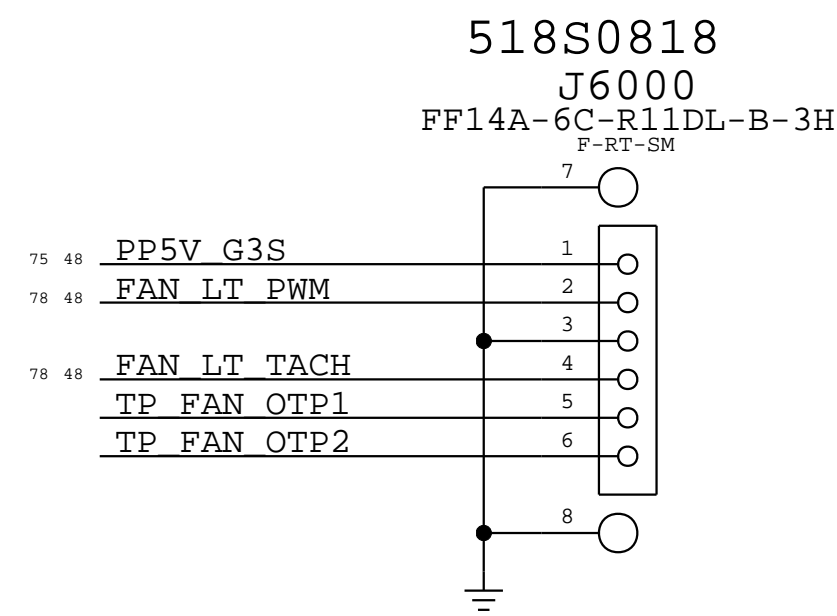
BOM\_COST\_GROUP=SENSORS



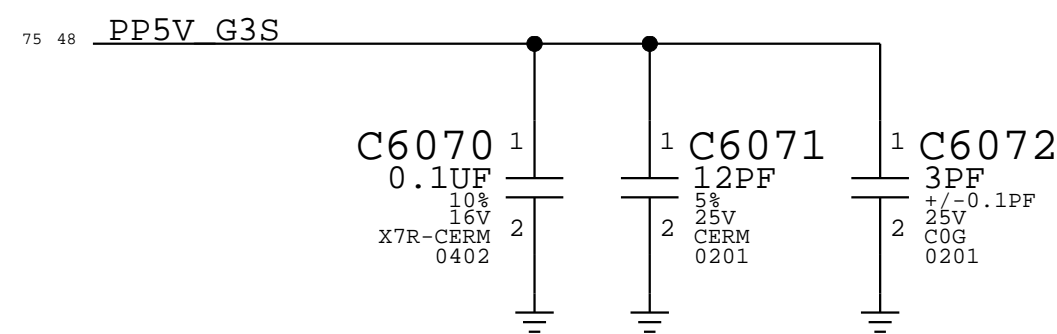


DESIGN: J230/MLB		
LAST CHANGE: Fri Sep 28 20:05:04 2018		
PAGE TITLE		
Thermal Sensors		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	58 OF 152
	SHEET	47 OF 86

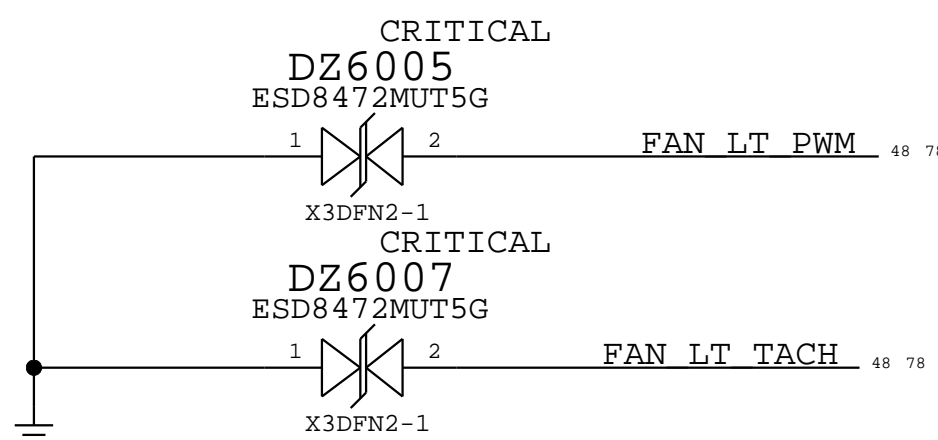
## A FAN Connector



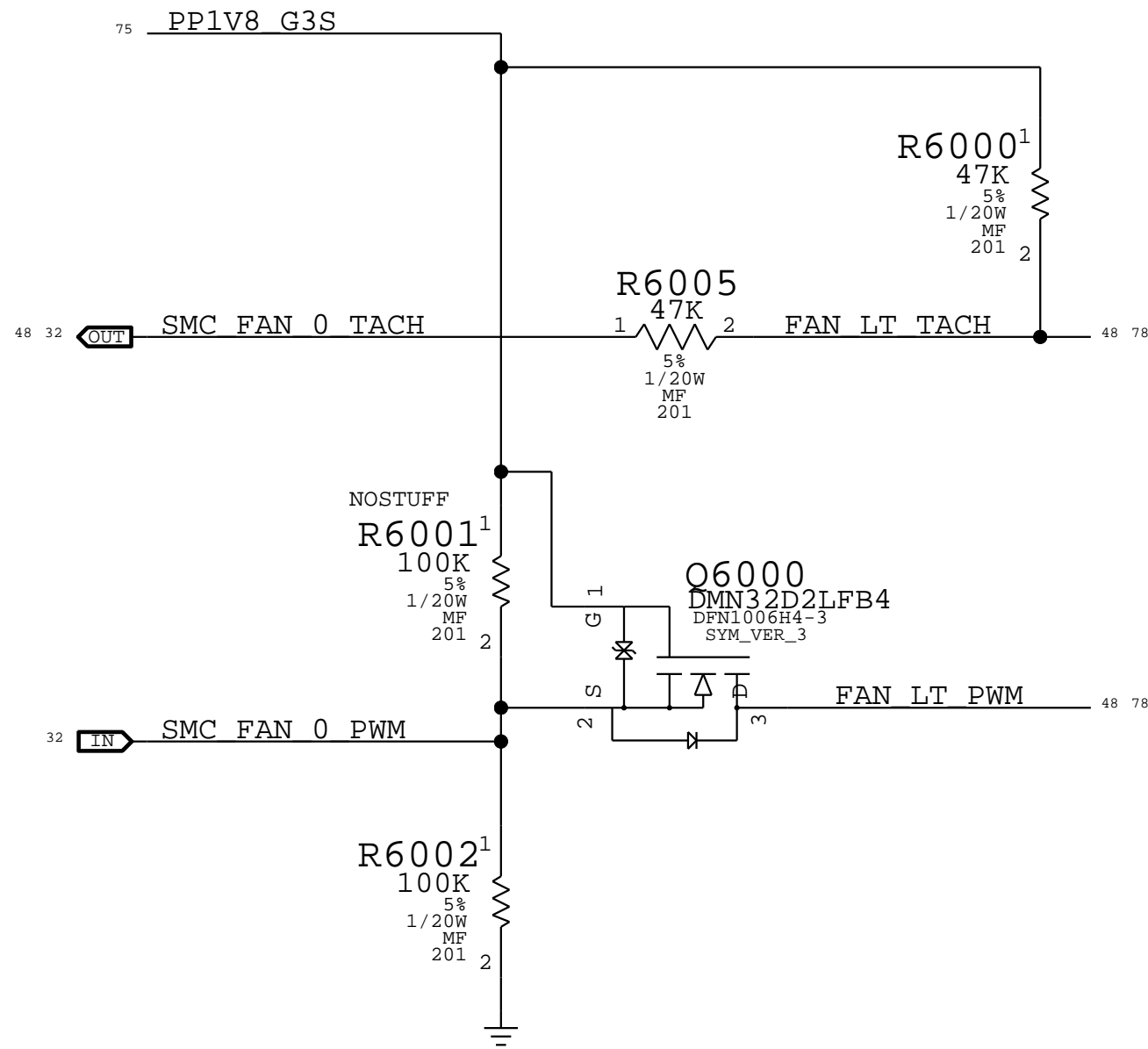
## B FAN Bypass Capacitors



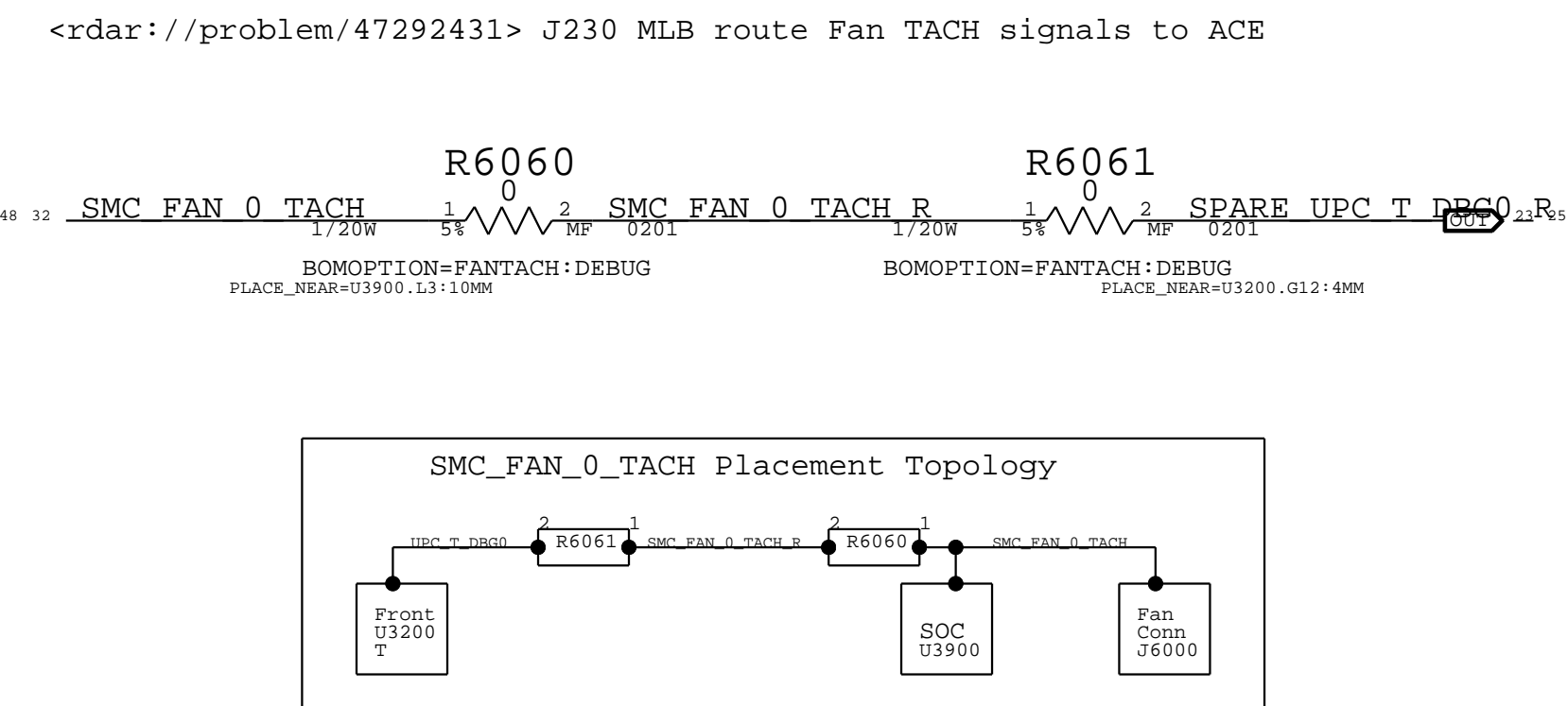
## C FAN Protection Diodes




## D FAN Support



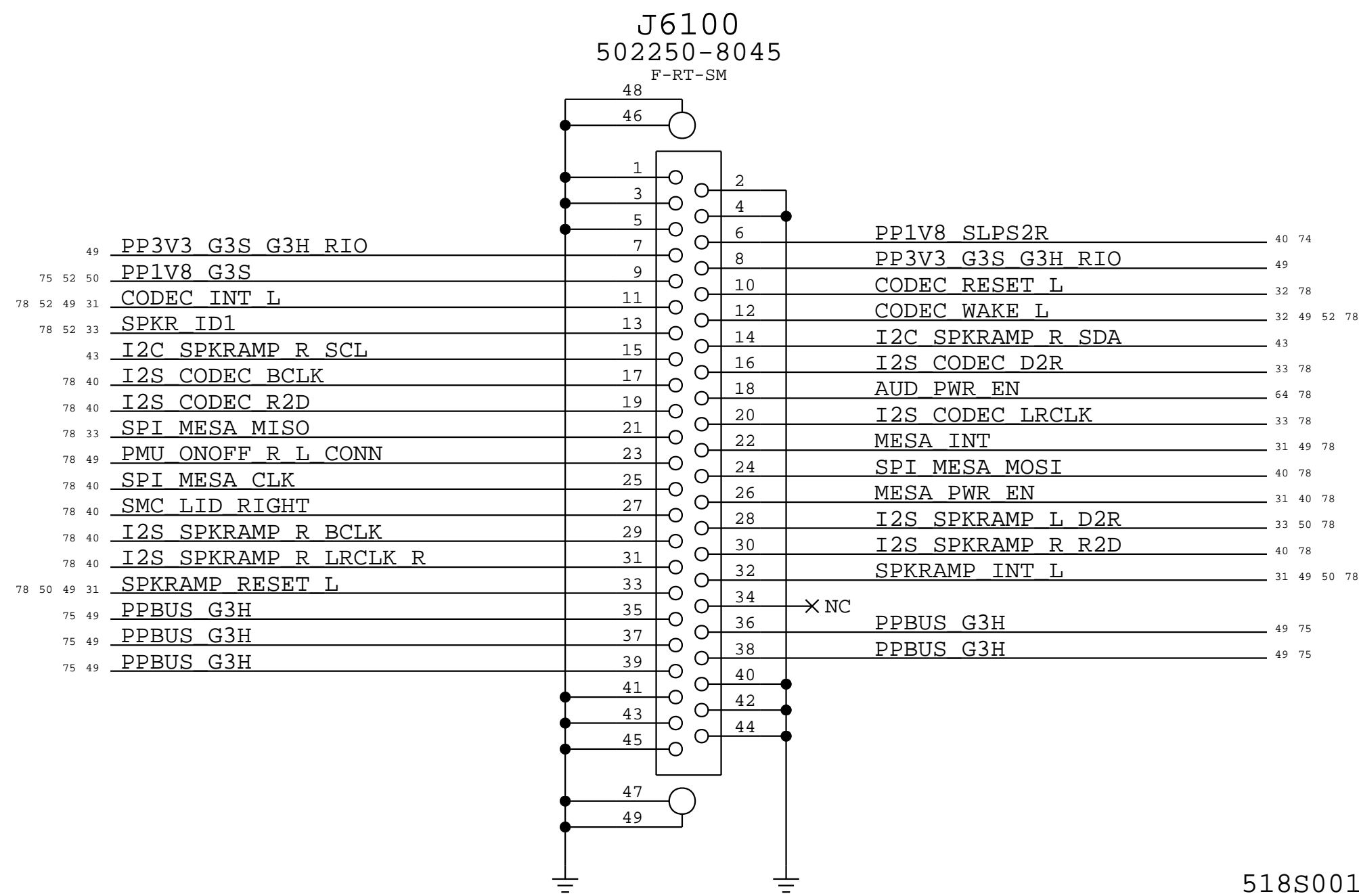
## E FAN Debug



SYNC_MASTER=X1032_MLB_P4BP			SYNC_DATE=02/13/2017		
PAGE TITLE					
Fans					
 Apple Inc.			DRAWING NUMBER		SIZE
			051-05232		D
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			2.0.0		
			BRANCH		
			proto4b		
			PAGE		
60 OF 152					
SHEET					
48 OF 86					

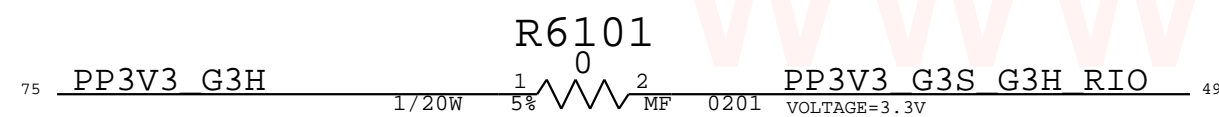


## A RIO Flex Connector

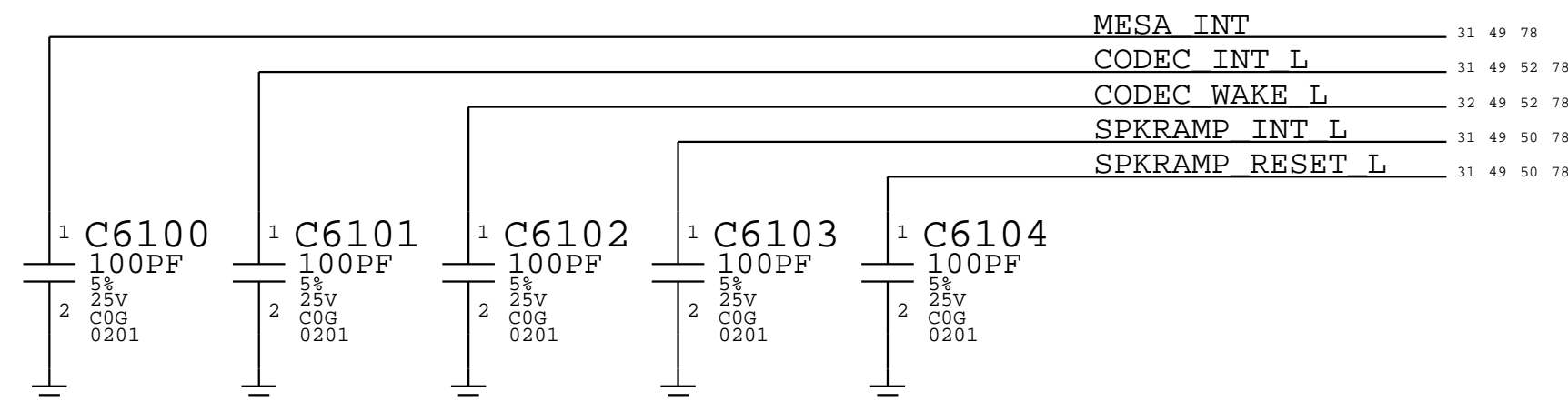


518S00155  
Mates with 998-11285  
on X1032 RIO Flex J0200

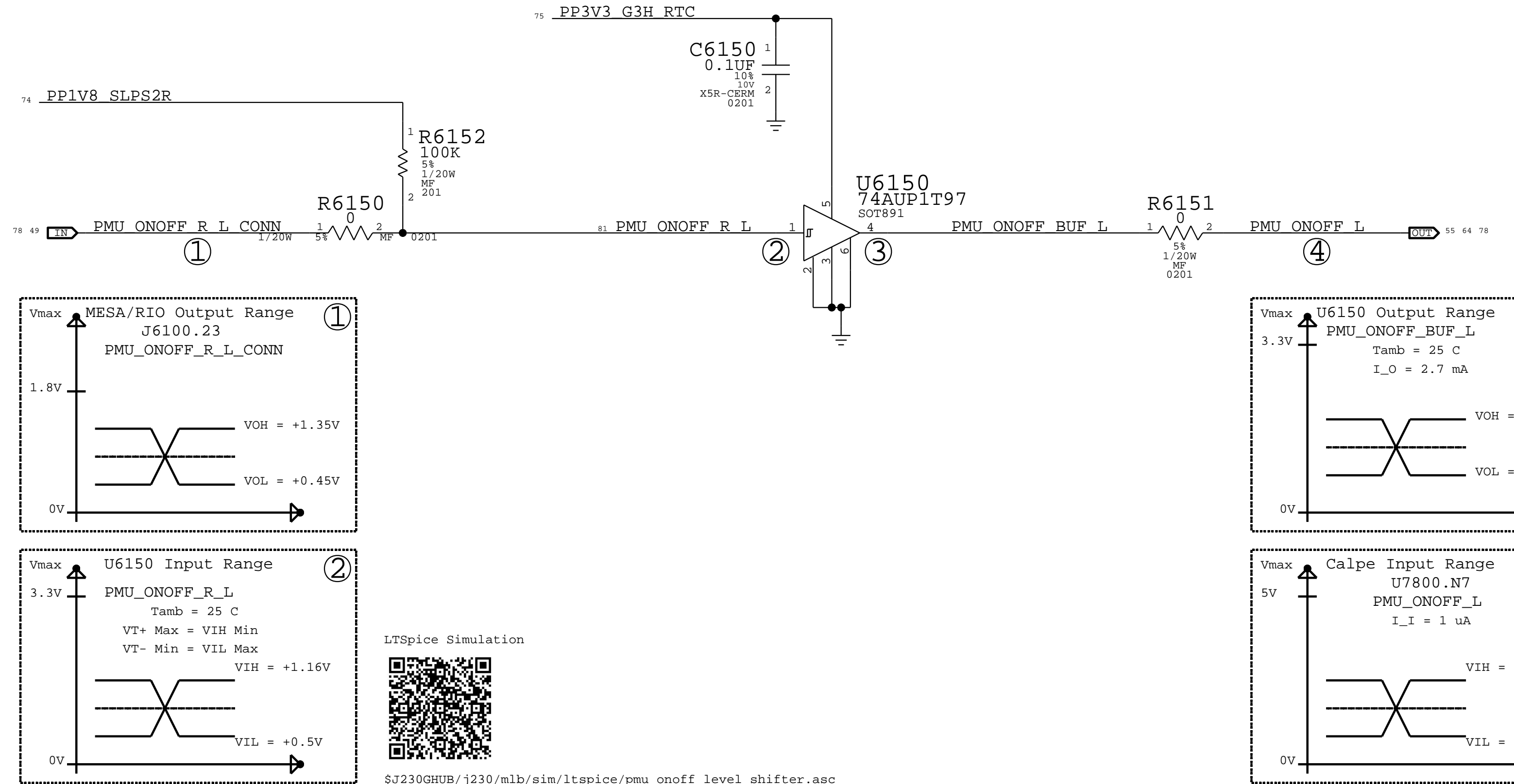
## B RIO P3V3\_G3H Connection



## C RIO Control Signals



## D PMU\_ONOFF\_L Level Shifter



PAGE TITLE		
RIO Connector		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	61 OF 152
	SHEET	49 OF 86

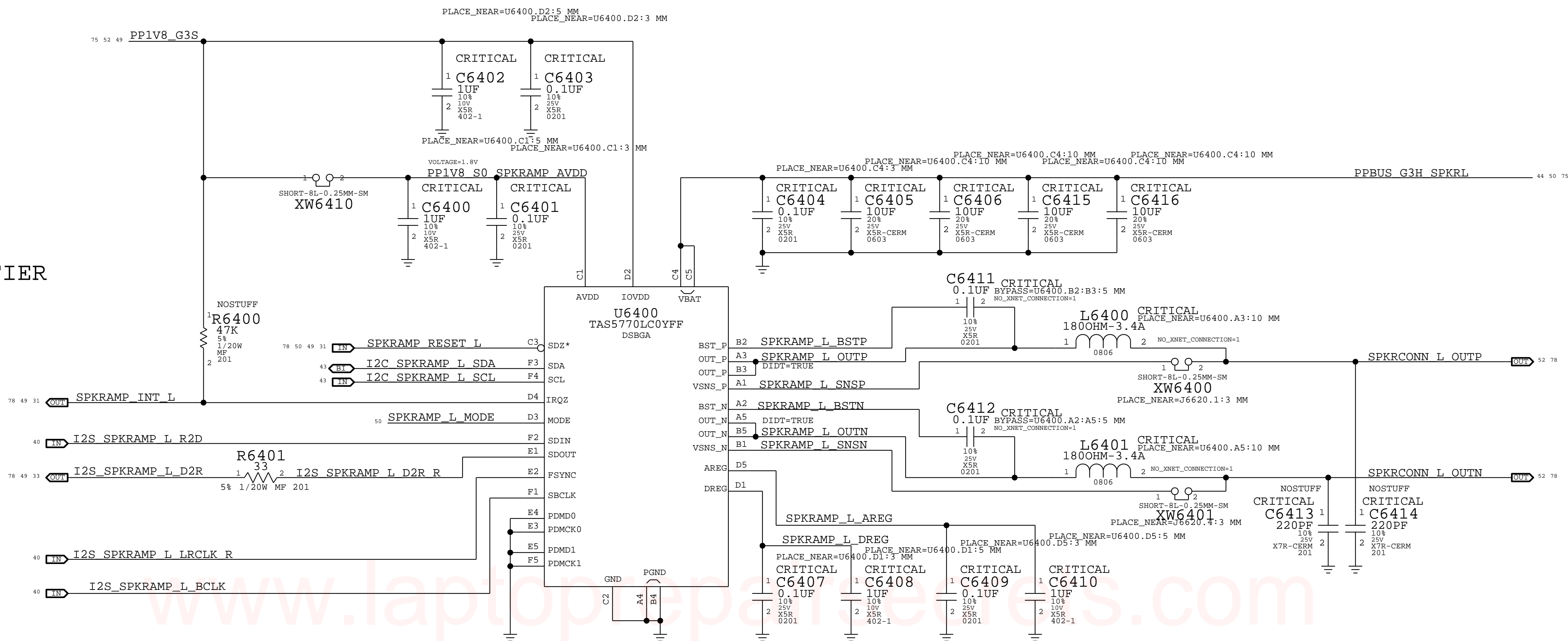
BOM\_COST\_GROUP=AUDIO

1X MONO SPEAKER AMPLIFIER

APN: 353S01629  
GAIN: 0DBFS = 6.31 VRMS

LEFT AMPLIFIER

LEFT BULK CAPACITANCE



MODE PIN	I2C ADDR	CHANNEL
GND	0x31	LEFT
470 to GND	0x32	
470 to IOVDD	0x33	
2k2 to GND	0x34	
2k2 to IOVDD	0x35	
10k to GND	0x36	
10k to IOVDD	0x37	
47k to IOVDD	0x38	RIGHT

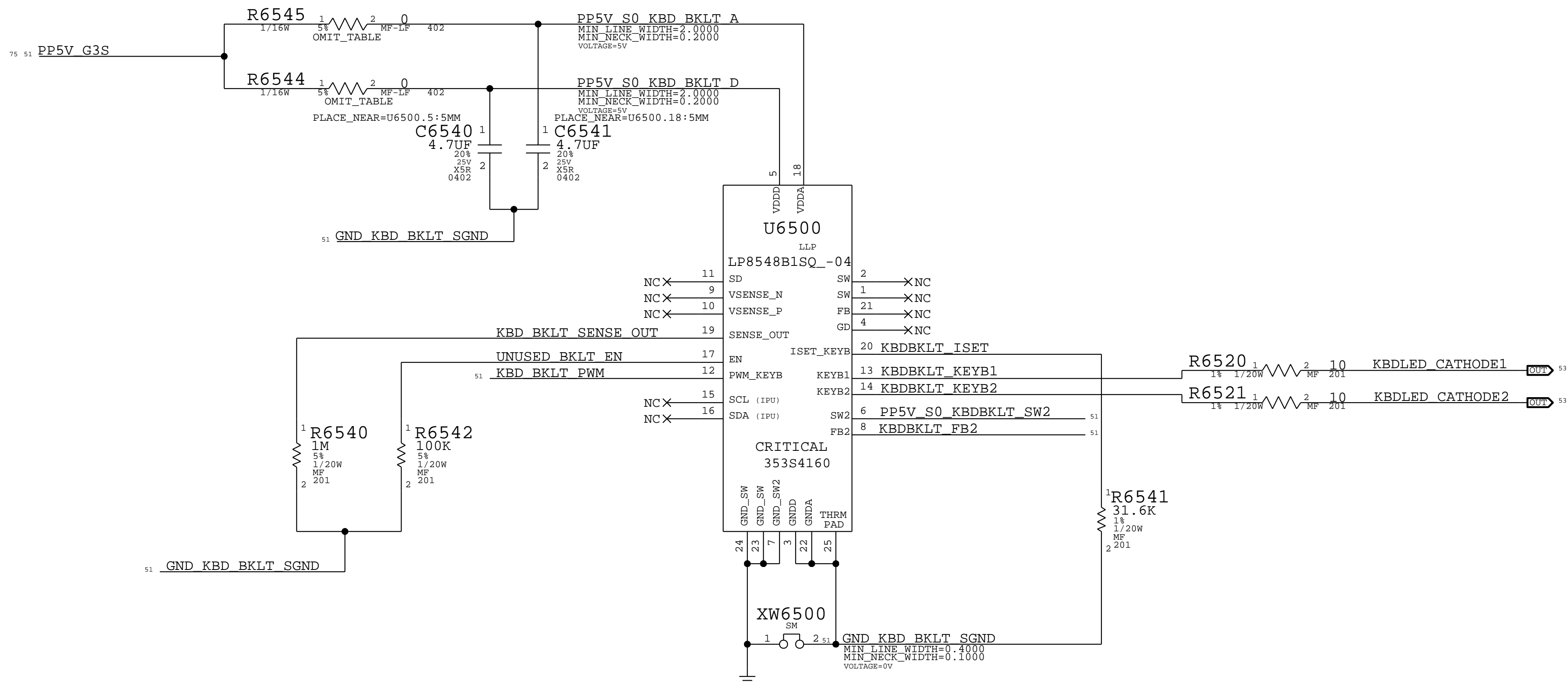
DESIGN: J230/MLB		
LAST CHANGE: Fri Sep 28 20:05:04 2018		
PAGE TITLE		
Audio Speaker Amplifiers		
	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	64 OF 152
	SHEET	50 OF 86

BOM\_COST\_GROUP=AUDIO

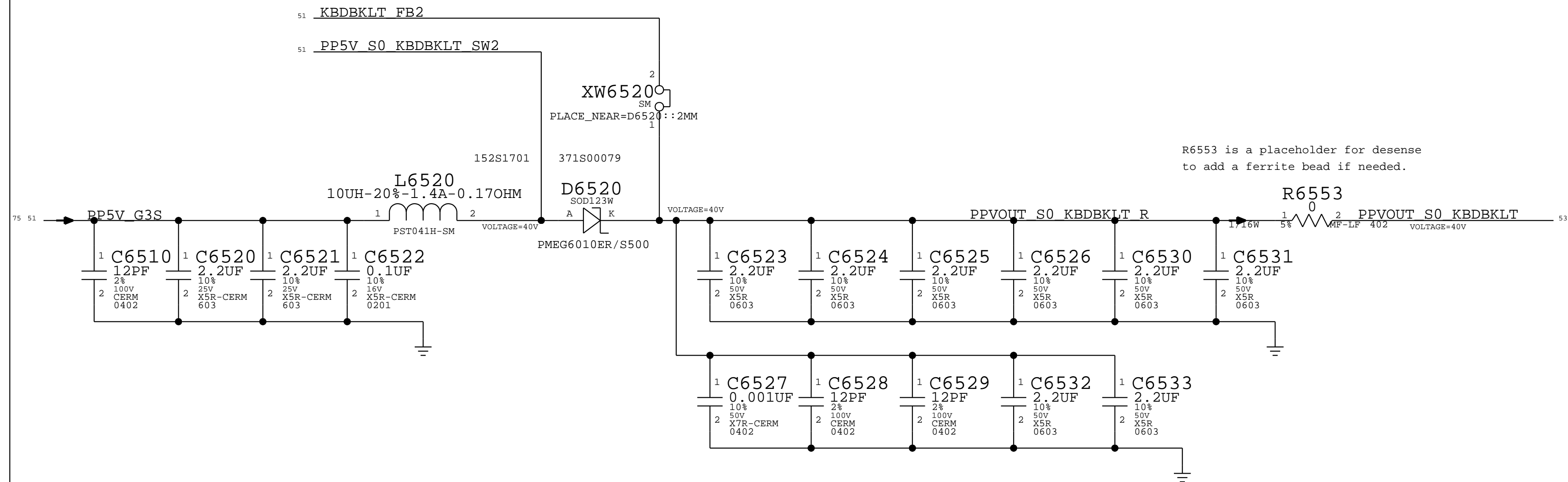


# A Keyboard Backlight LED Driver

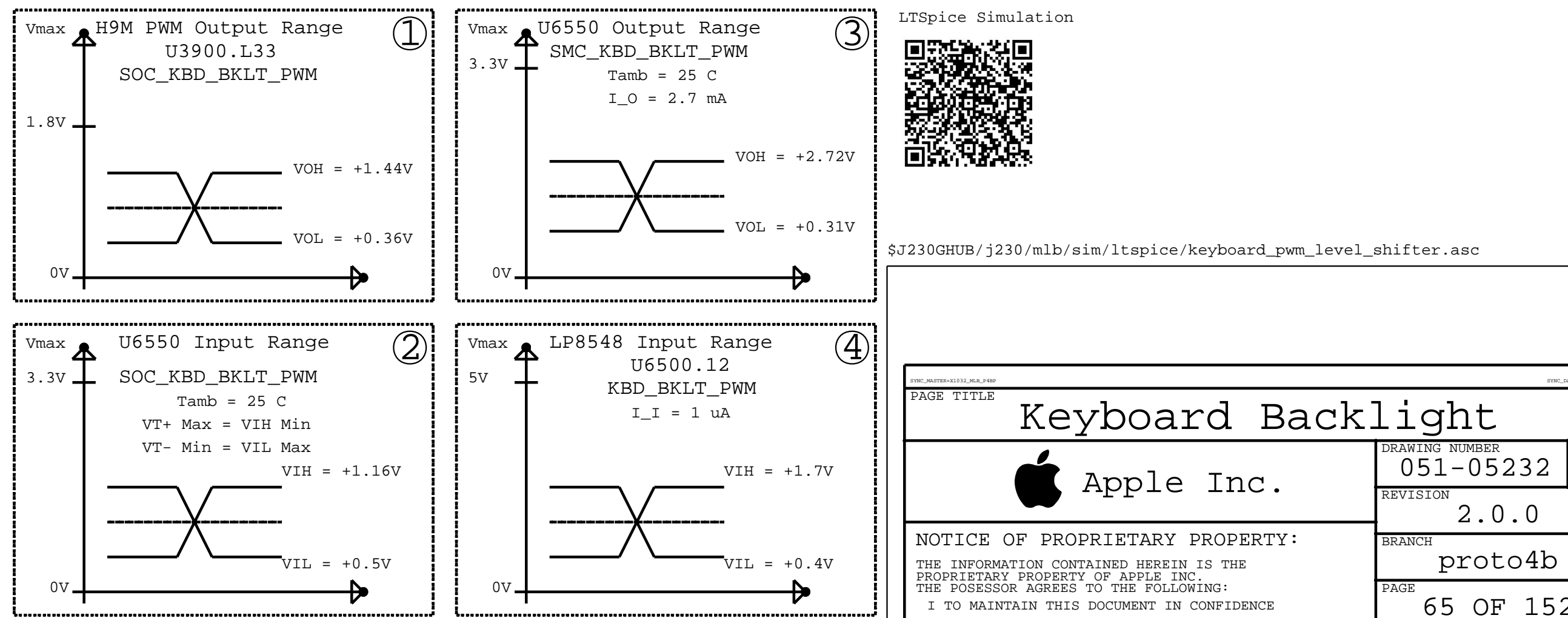
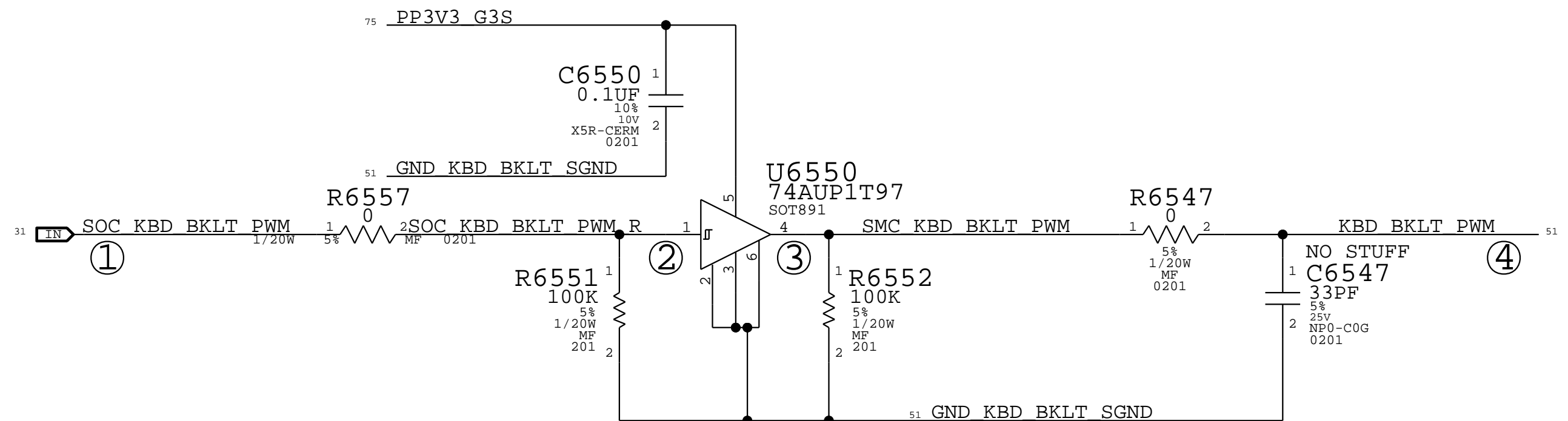
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S0023	2	RES,NTL,FLM,1/16W,10 OHM,1,0402,SMD,LF	R6544, R6545	



# B Keyboard Boost Converter Support



# C Keyboard PWM Level Shifter

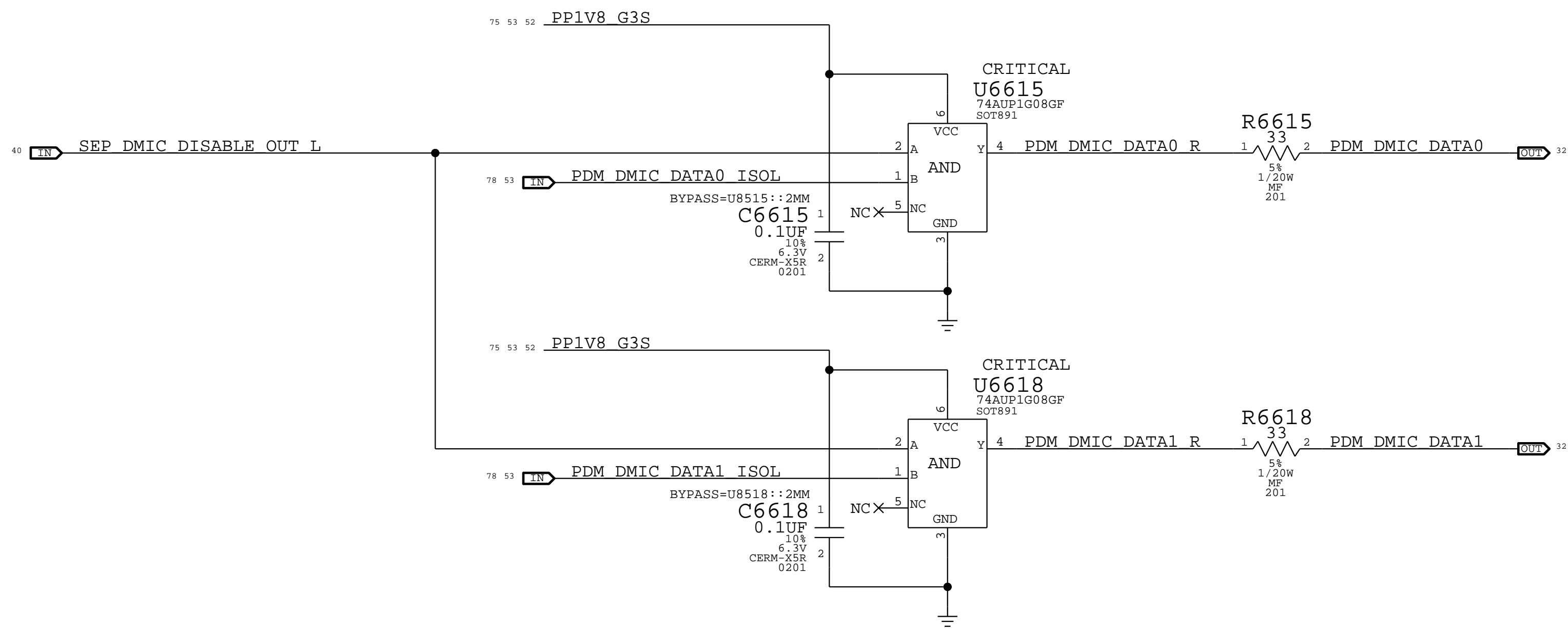


# D Keyboard Probe Points

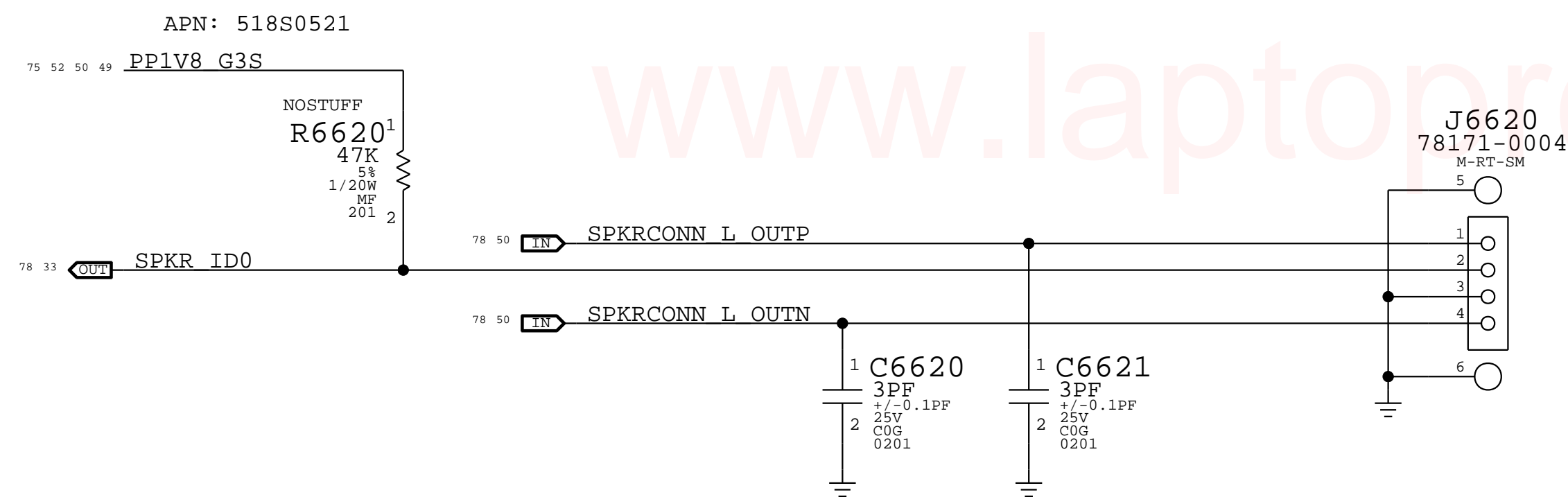
PP6500	PP5V_S0_KBDBKLT_SW2	51
PP6501	KBDBKLT_FB2	51
PP6502	KBD_BKLT_PWM	51
PP6503	GND_KBD_BKLT_SGND	51

PAGE TITLE		
Keyboard Backlight		
DRAWING NUMBER		051-05232
REVISION		2.0.0
BRANCH		proto4b
PAGE		65 OF 152
SHEET		51 OF 86

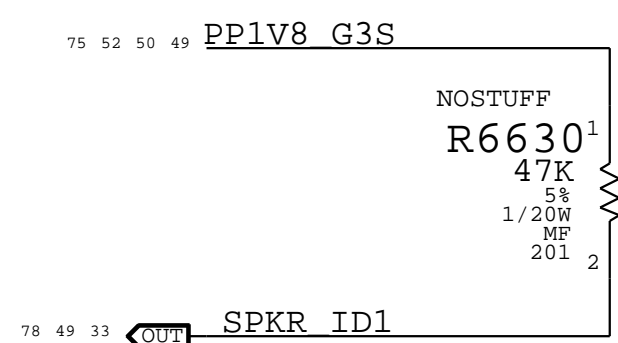
## A DMIC Secure Disable



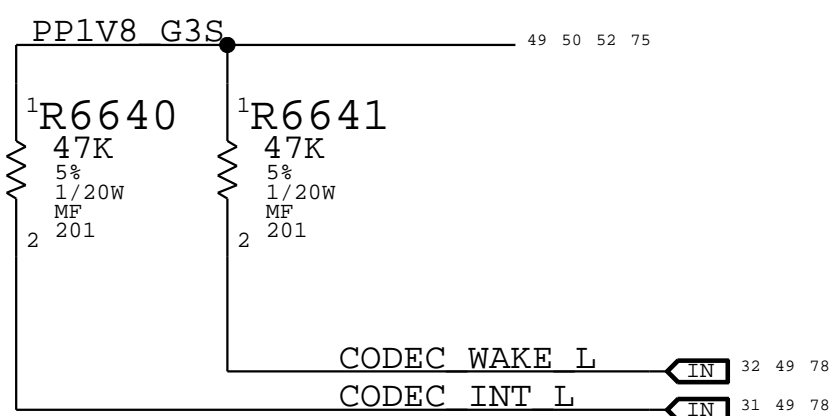
## B Left Speaker Connector



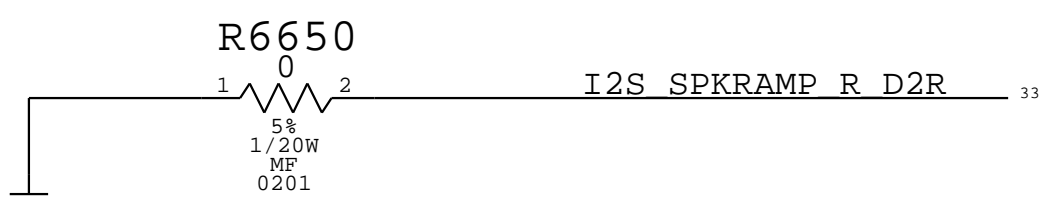
## C Right Speaker ID



## D Audio Codec Pull-Ups



## E Speaker Amp Control



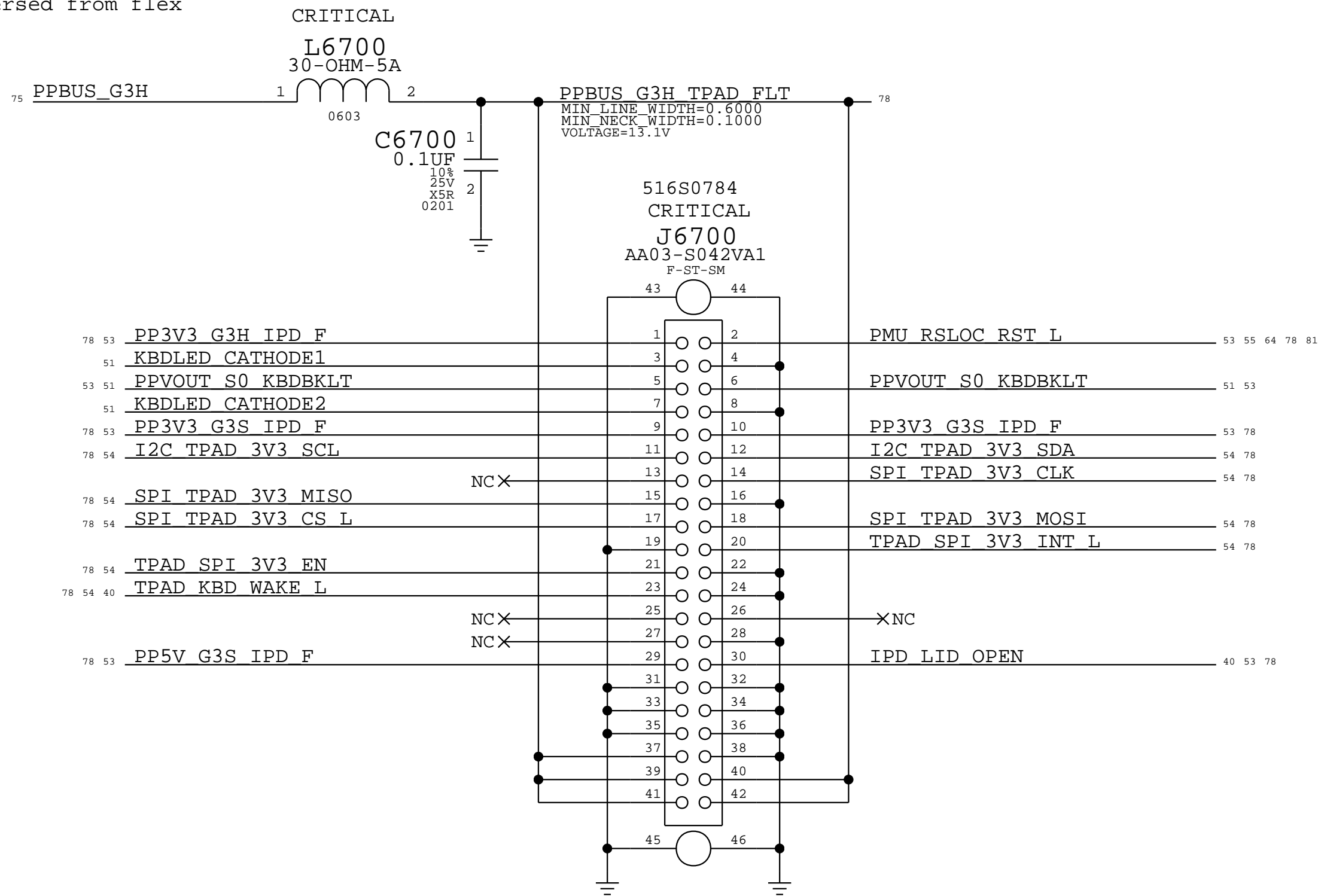
BOM\_COST\_GROUP=AUDIO

DESIGN: J230/MLB		
LAST CHANGE: Fri Sep 28 20:05:04 2018		
PAGE TITLE		
Audio Connectors		
Apple Inc.	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	66 OF 152
SHEET		52 OF 86

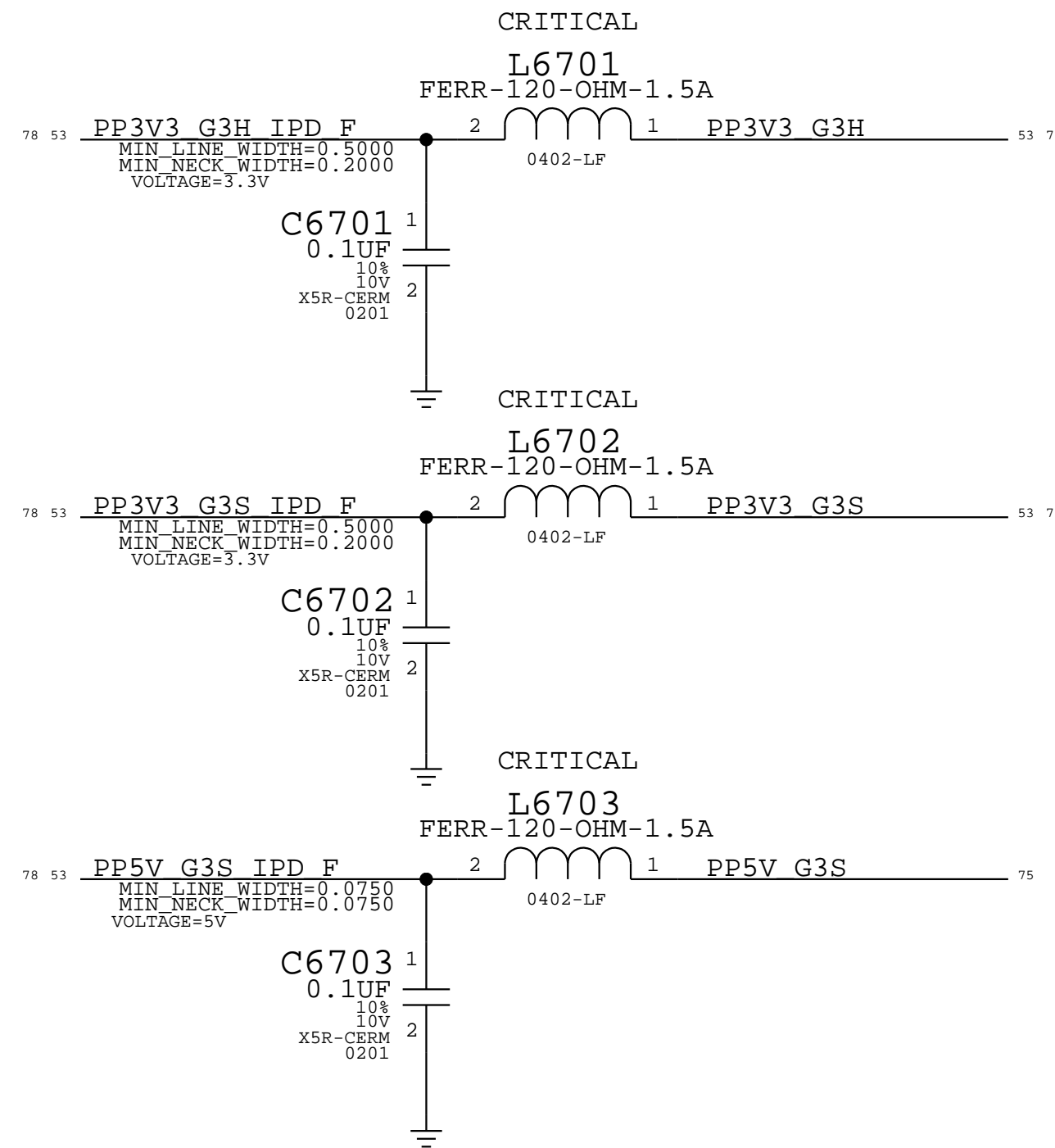


## A IPD B2B CONNECTOR

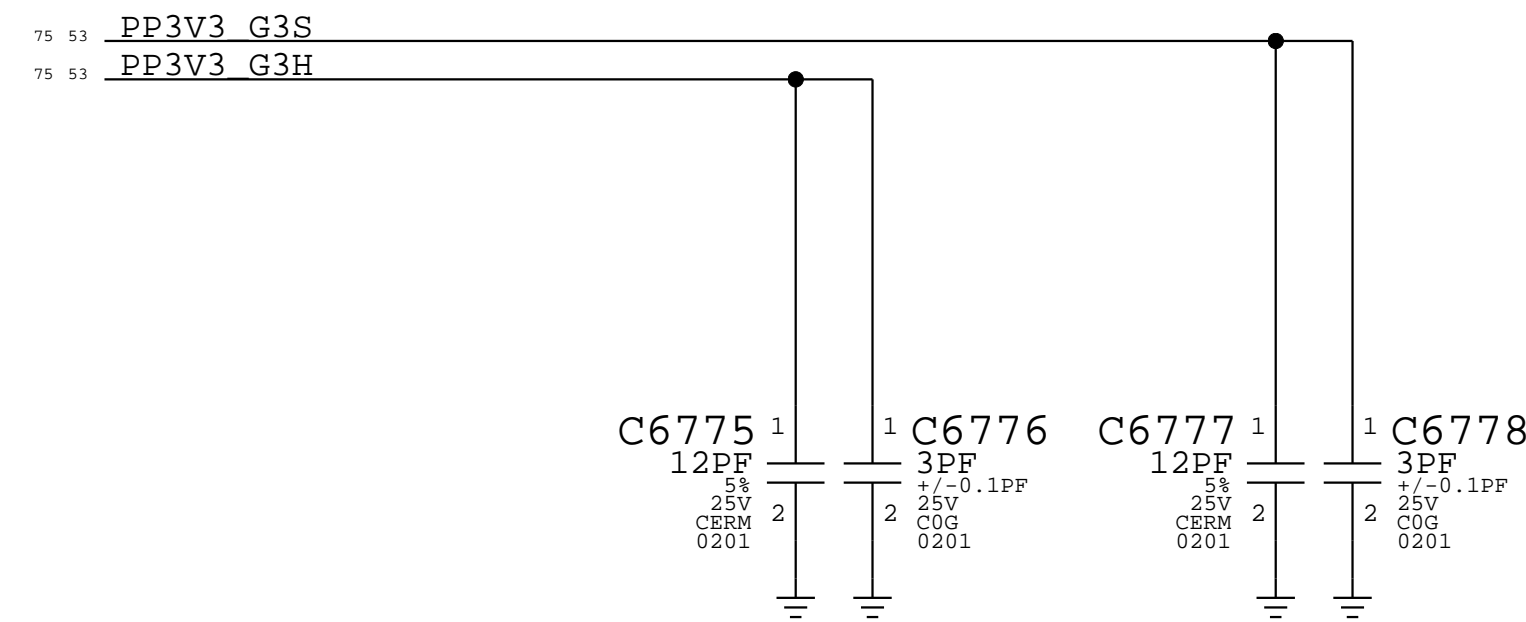
Bottom side contacts used  
Pinout reversed from flex



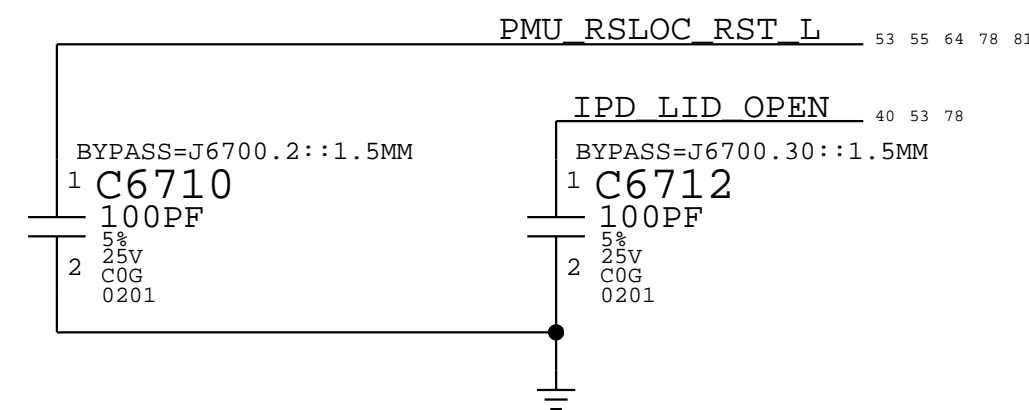
## B IPD Power Filters



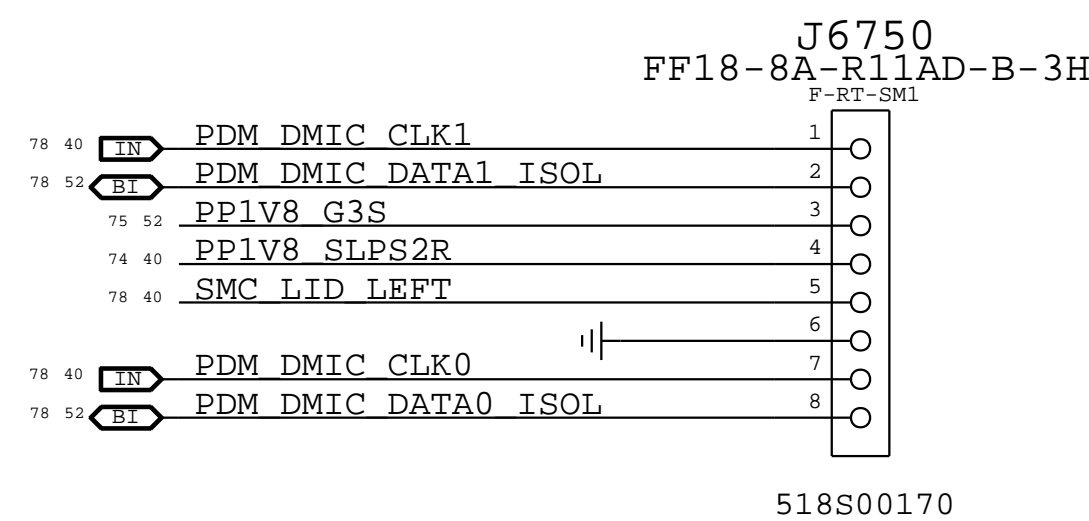
## C IPD Desense



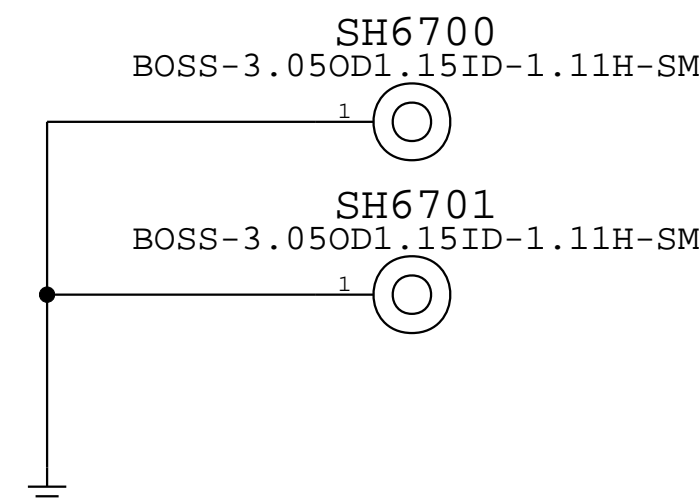
## D IPD Control




## E Microphone Connector



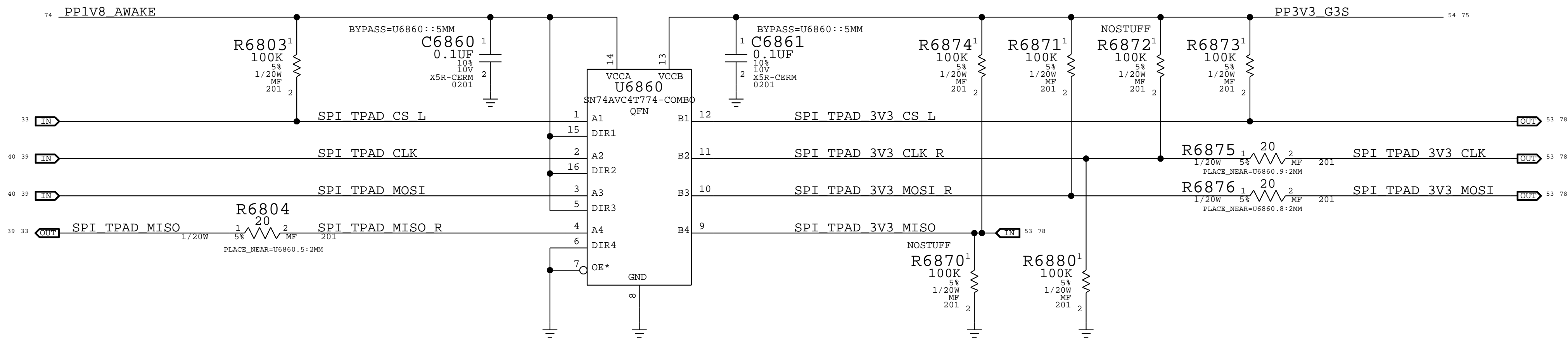
## F IPD Connector Bosses



SYNC_MASTER=X260_MLB		SYNC_DATE=02/16/2017	
PAGE TITLE			
Keyboard & Trackpad 1			
 Apple Inc.	DRAWING NUMBER	051-05232	
	REVISION	2.0.0	
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	PAGE	67 OF 152	
	SHEET	53 OF 86	

BOM\_COST\_GROUP=TRACKPAD

## A Trackpad SPI Bus Level Shifter (+1.8V to +3.3V)



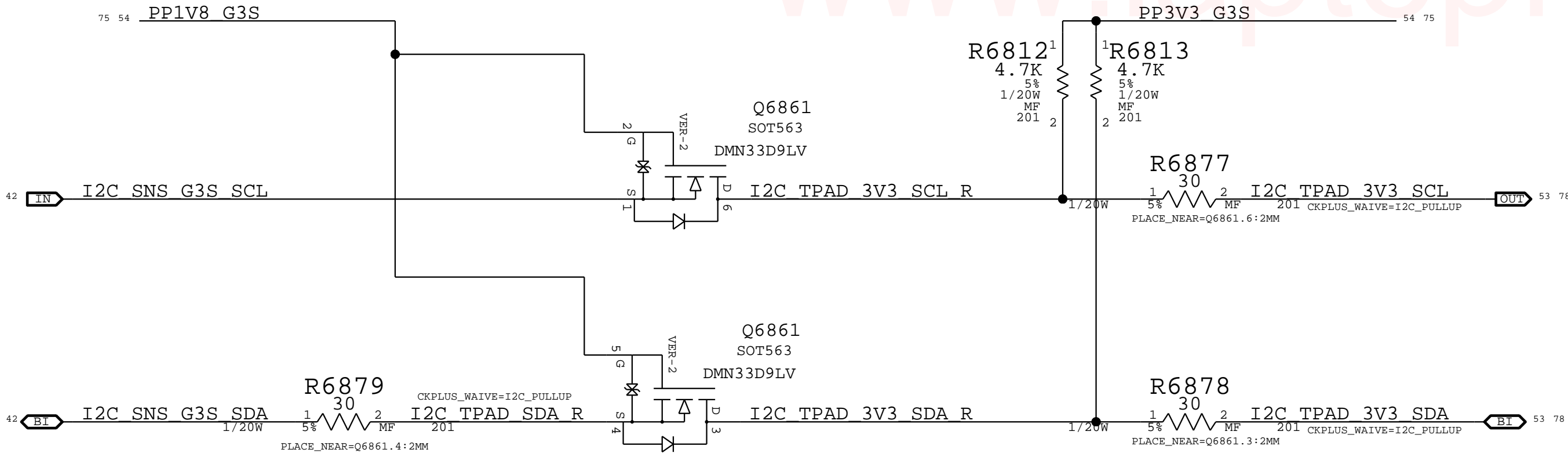
PROJECT	J230k = 0x3F
BOARDID[5]	= SPI_TPAD_CLK
BOARDID[4]	= SPI_TPAD_MISO*
BOARDID[3]	= SPI_TPAD_MOSI
BOARDID[2]	= SPI_SOCROM_MISO
BOARDID[1]	= SPI_SOCROM_MOSI
BOARDID[0]	= SPI_SOCROM_CLK

SN74AVC4T774 Truth Table

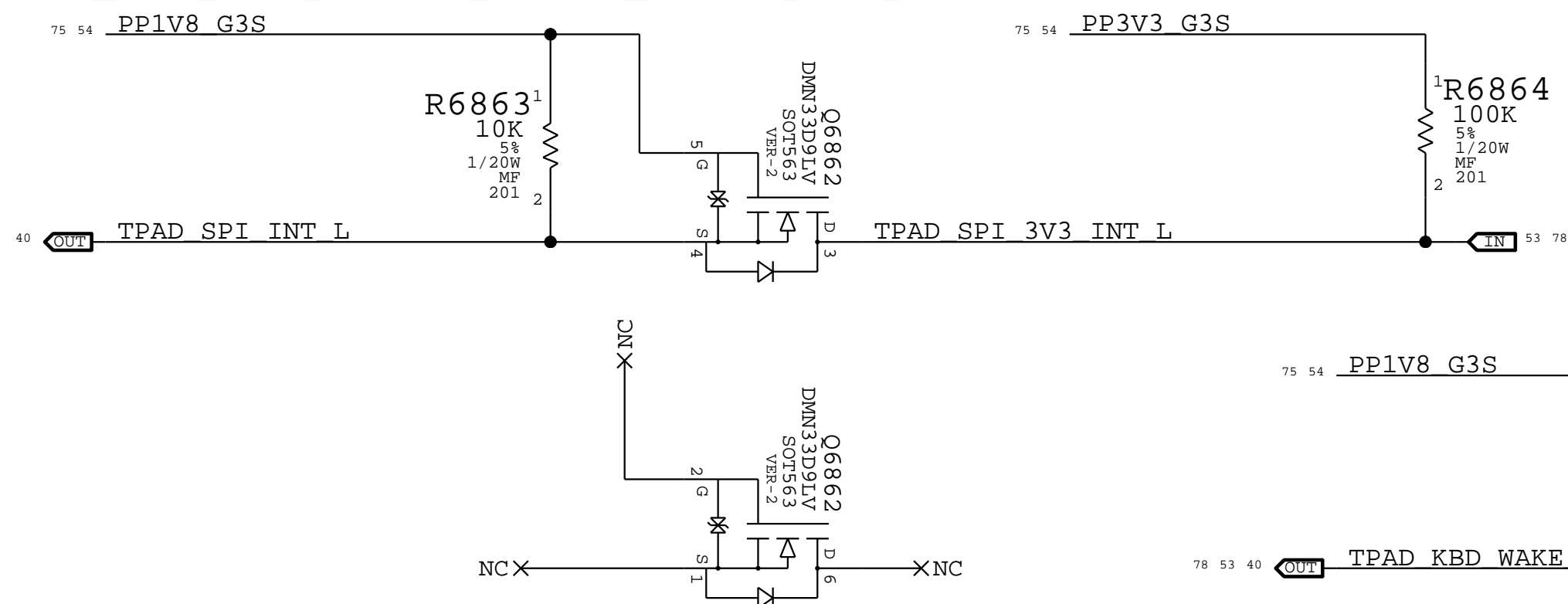
CTRL INPUTS		OUTPUT CIRCUITS		OPERATION
/OE	DIR	A PORT	B PORT	
L	L	Enabled	Hi-Z	B data to A data
L	H	Hi-Z	Enabled	A data to B data
H	X	Hi-Z	Hi-Z	Isolation

SPI\_TPAD\_CLK, SPI\_TPAD\_MOSI, and SPI\_TPAD\_CLK are shared signals with BOARDID on CSA 47.  
Ensure signals that drive from +3.3V to +1.8V (i.e., towards Gibraltar) are properly strapped based on the desired BOARDID.

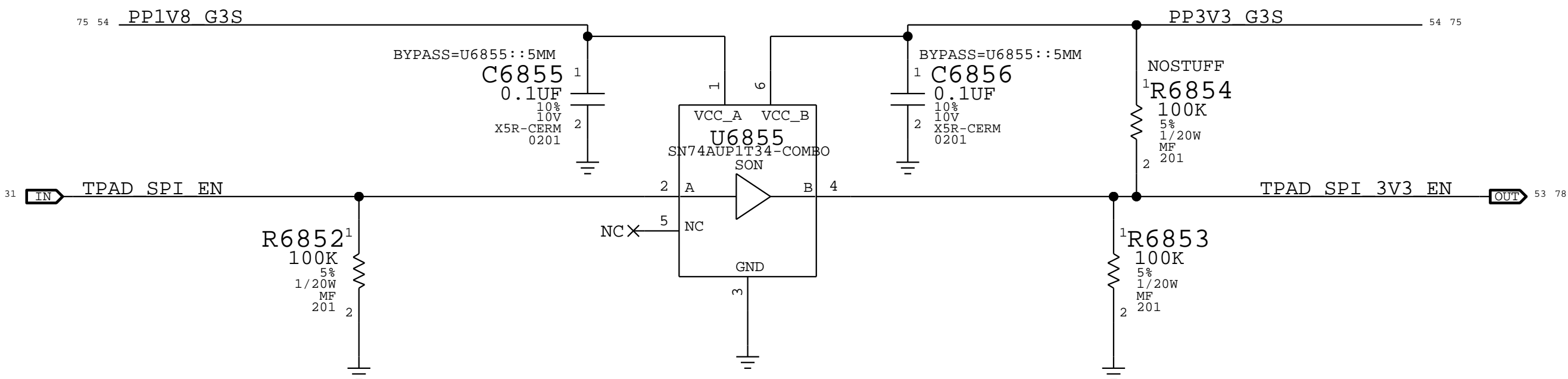
## B Trackpad I2C Bus Level Shifter




## C Trackpad Control Level Shifter



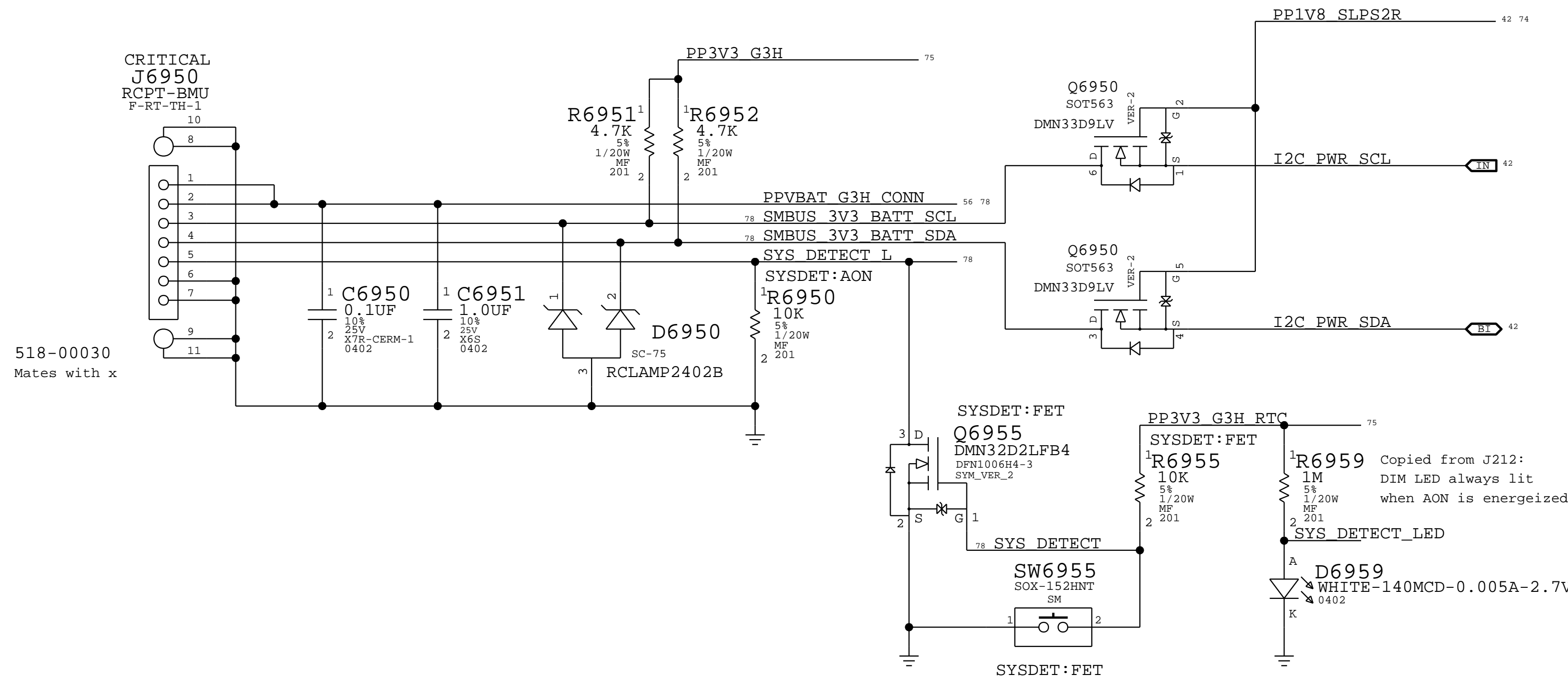
## D Trackpad SPI Enable Level Shifter



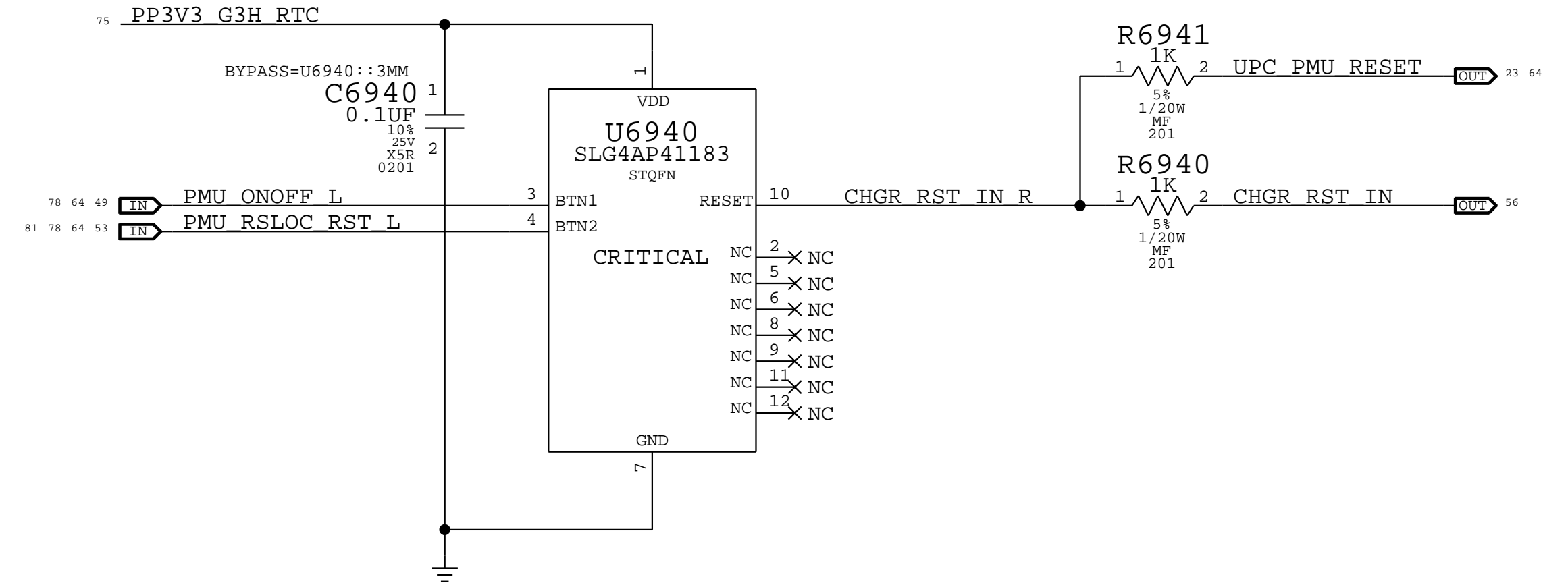
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PAGE TITLE			
Keyboard & Trackpad 2			
 Apple Inc.	DRAWING NUMBER	051-05232	SIZE D
	REVISION	2.0.0	
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		SHEET	54 OF 86



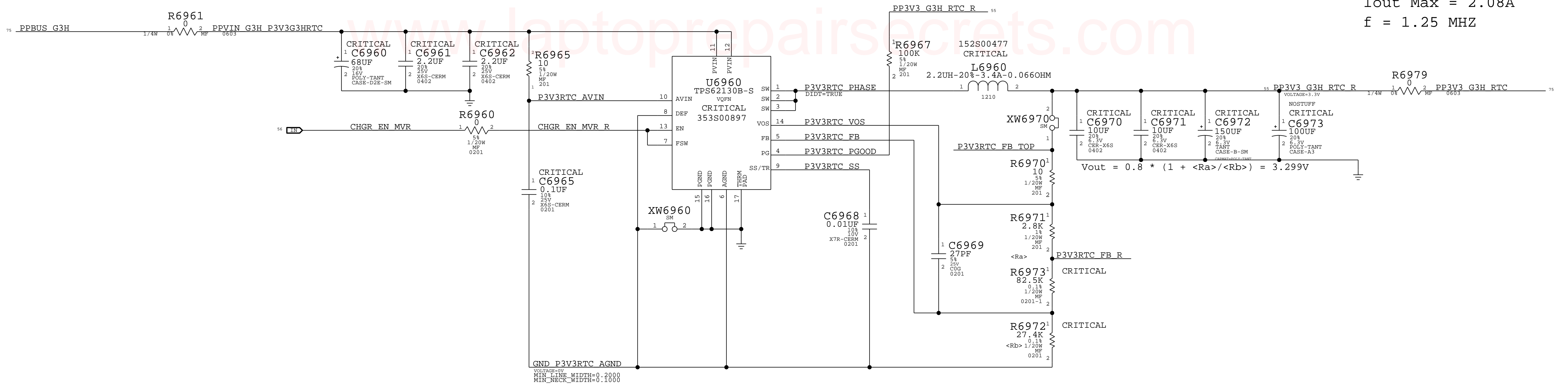
## A DC-In & Battery Connector



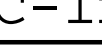
## B Charger Reset Circuit



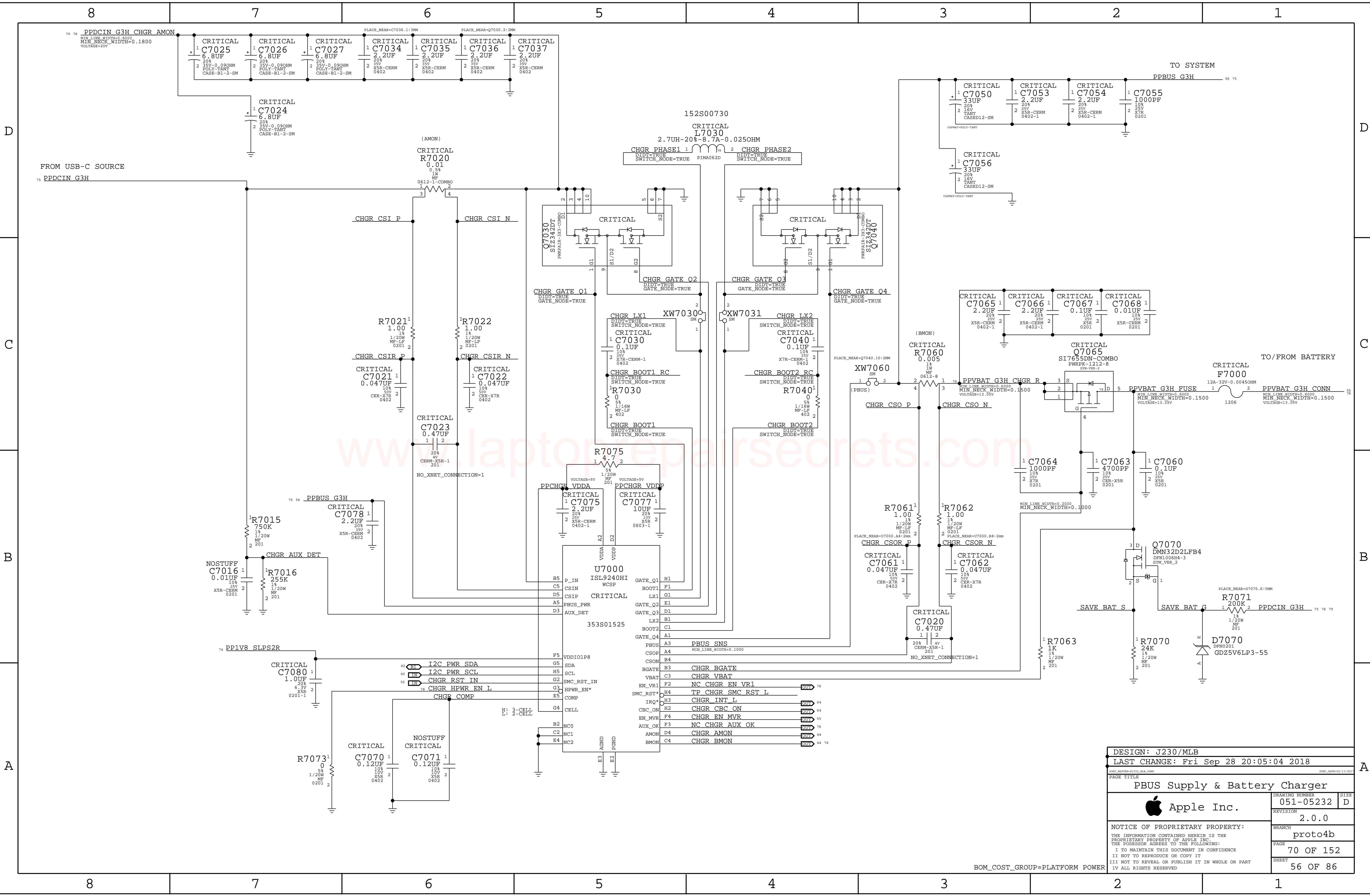
## C 3.3V G3H RTC Voltage Regulator



Vout = 3.3V  
Iout Max = 2.08A  
f = 1.25 MHz

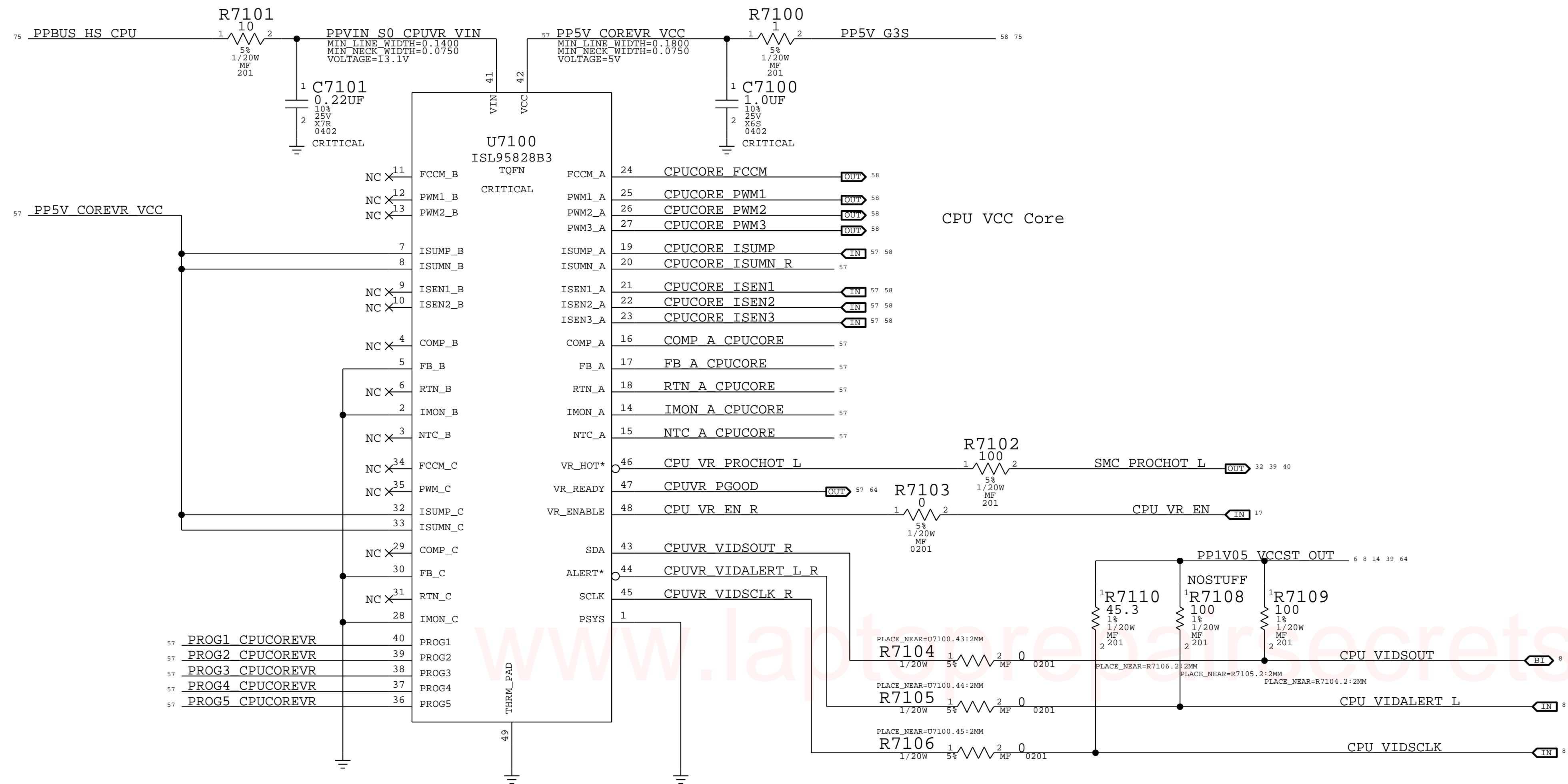
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PAGE TITLE			
DC-In & Battery Connectors			
 Apple Inc.		DRAWING NUMBER	051-05232
		SIZE	D
		REVISION	
		2.0.0	
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IV ALL RIGHTS RESERVED			

BOM\_COST\_GROUP=PLATFORM POWER

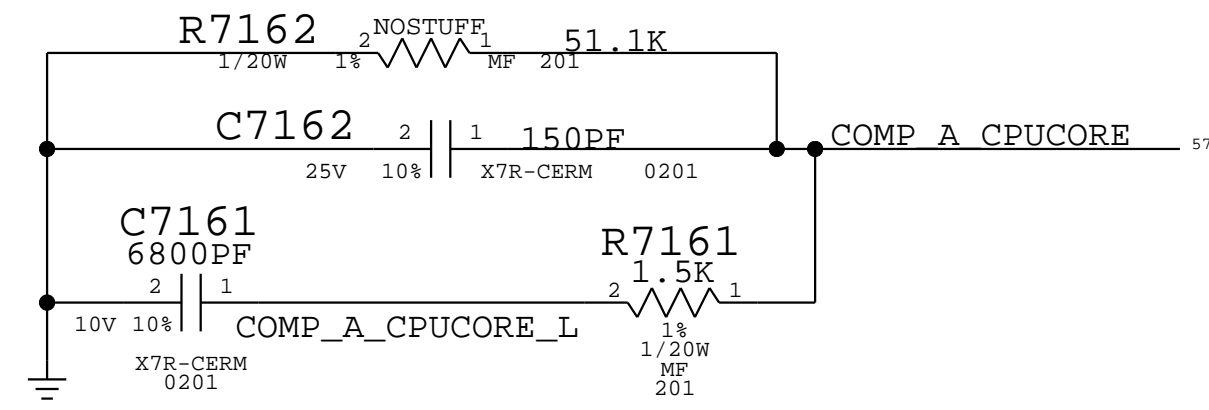




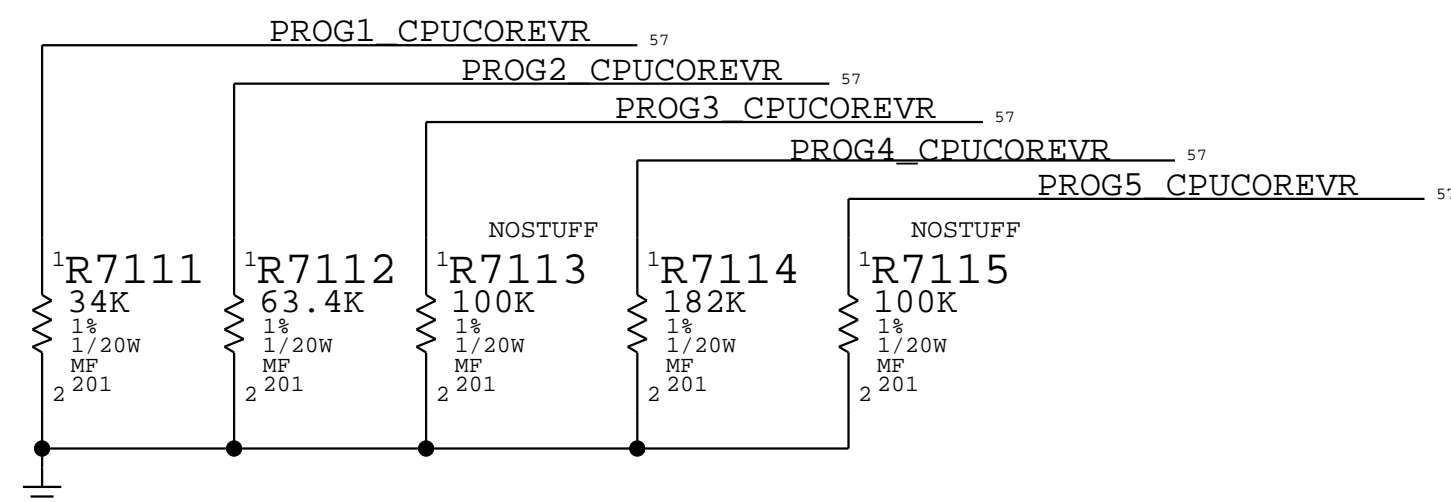
## A CPU Core IMVP9 PWM Controller



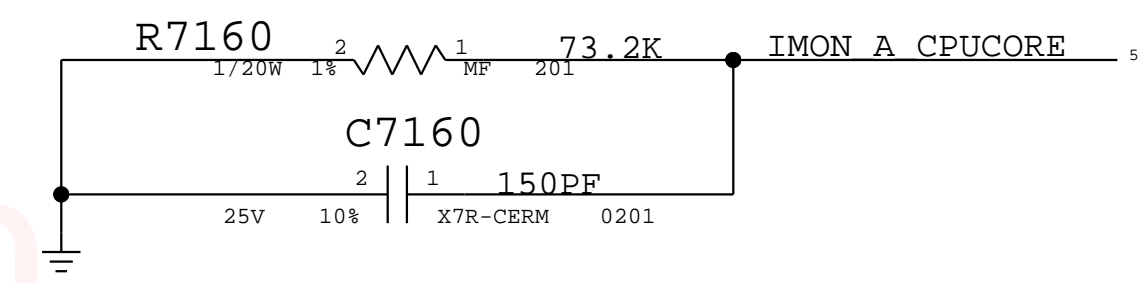
## D CPU Core Comp Network



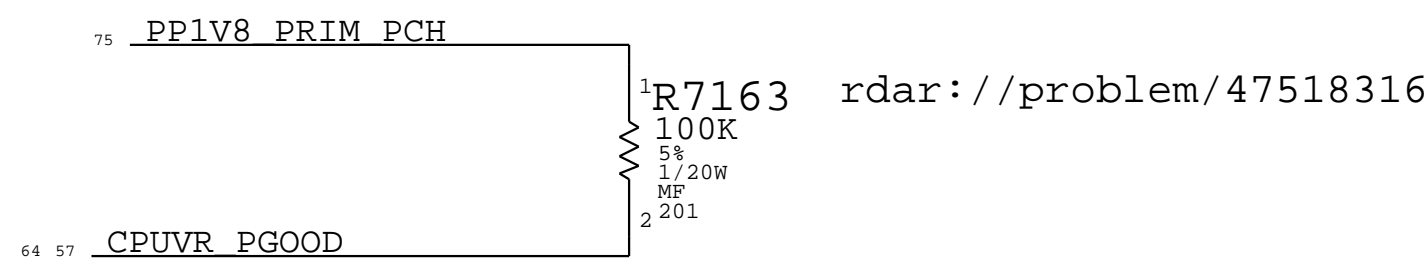
## E CPU Core Prog Options



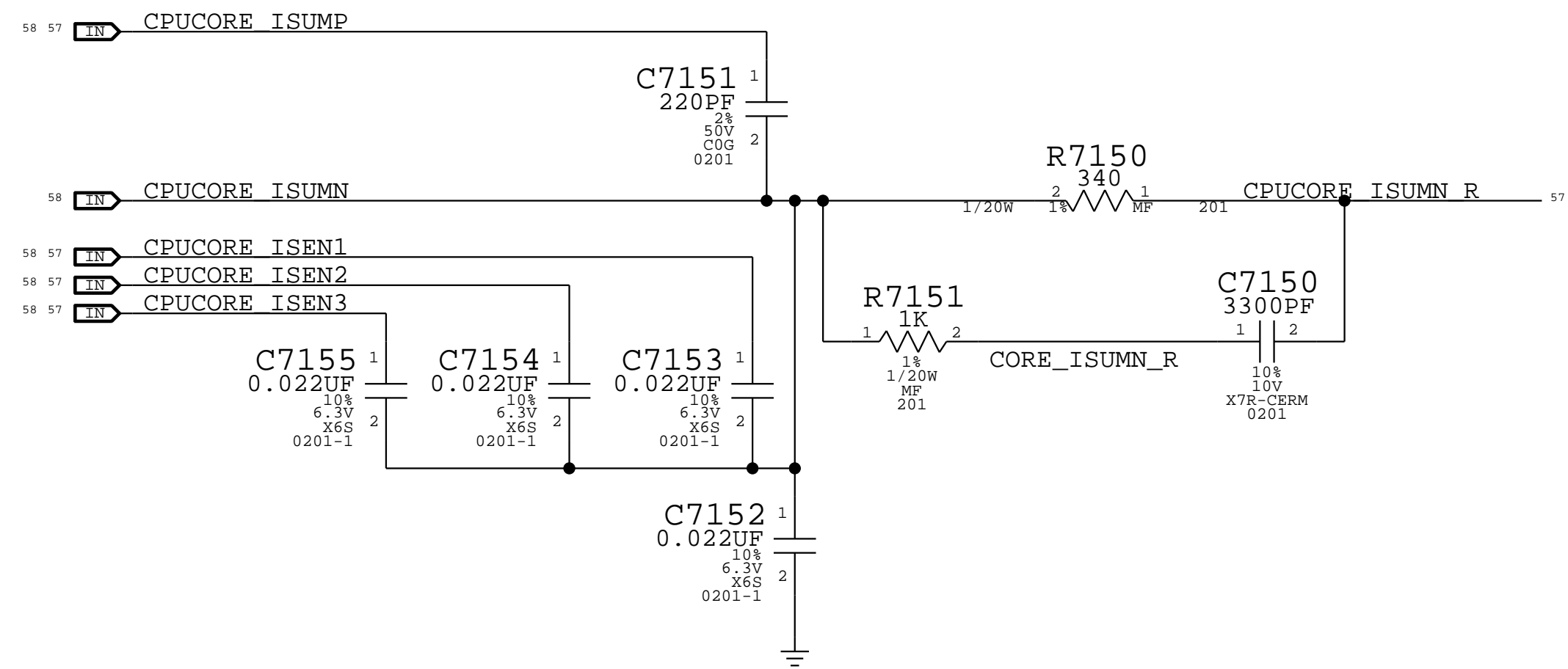
## F CPU Core IMON Network



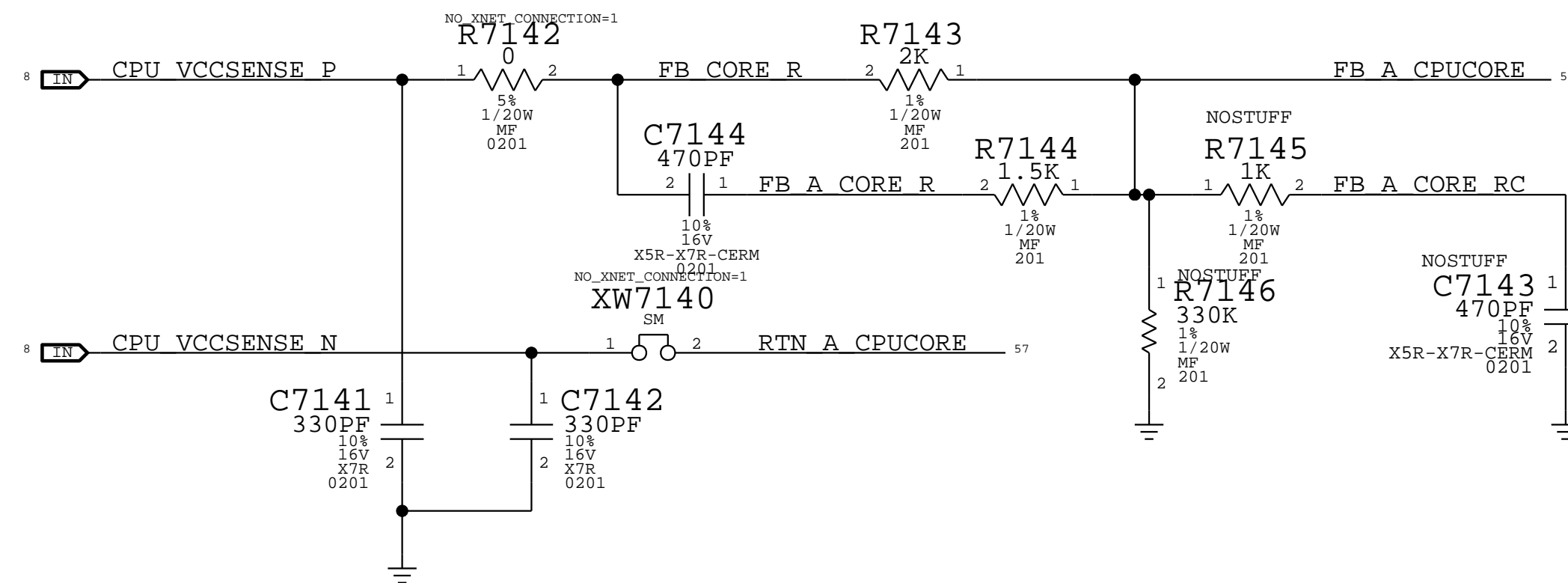
## G CPU Core Power Good



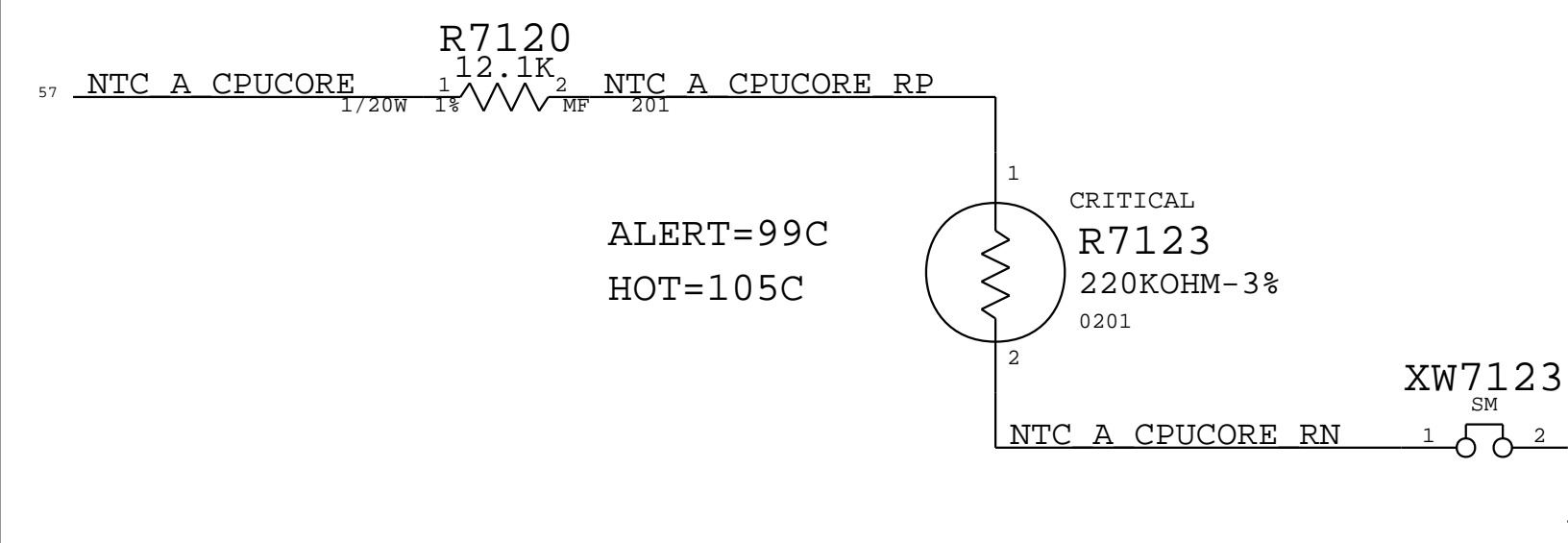
## B CPU Core ISUM Network



## C CPU Core Feedback Network



## H CPU Core Thermistor



PAGE TITLE			IMVP9 IC	
		DRAWING NUMBER	051-05232	SIZE
		REVISION	2.0.0	D
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		PAGE	71 OF 152	
		SHEET	57 OF 86	

D

C

B

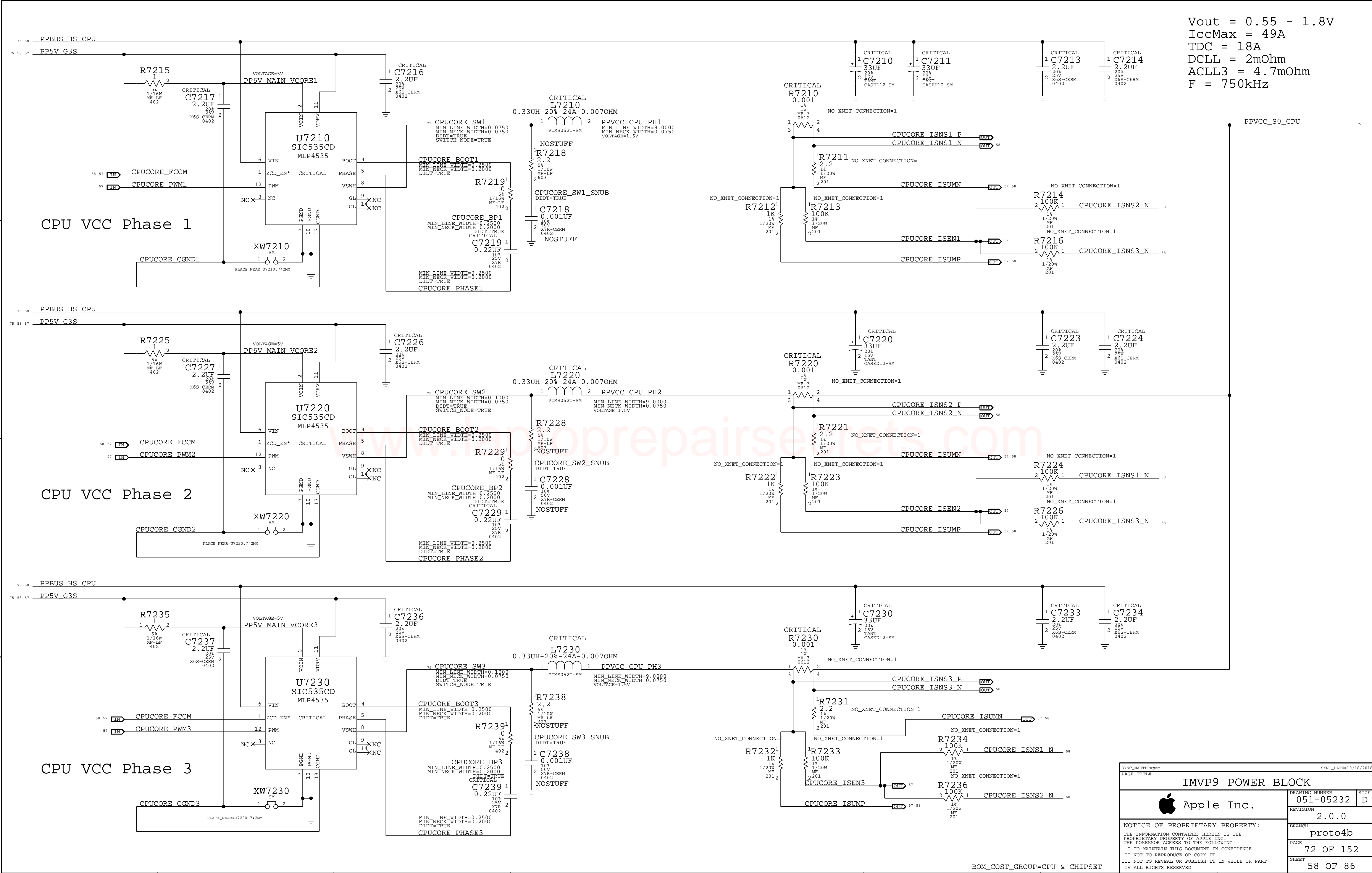
A

D


C

B

A



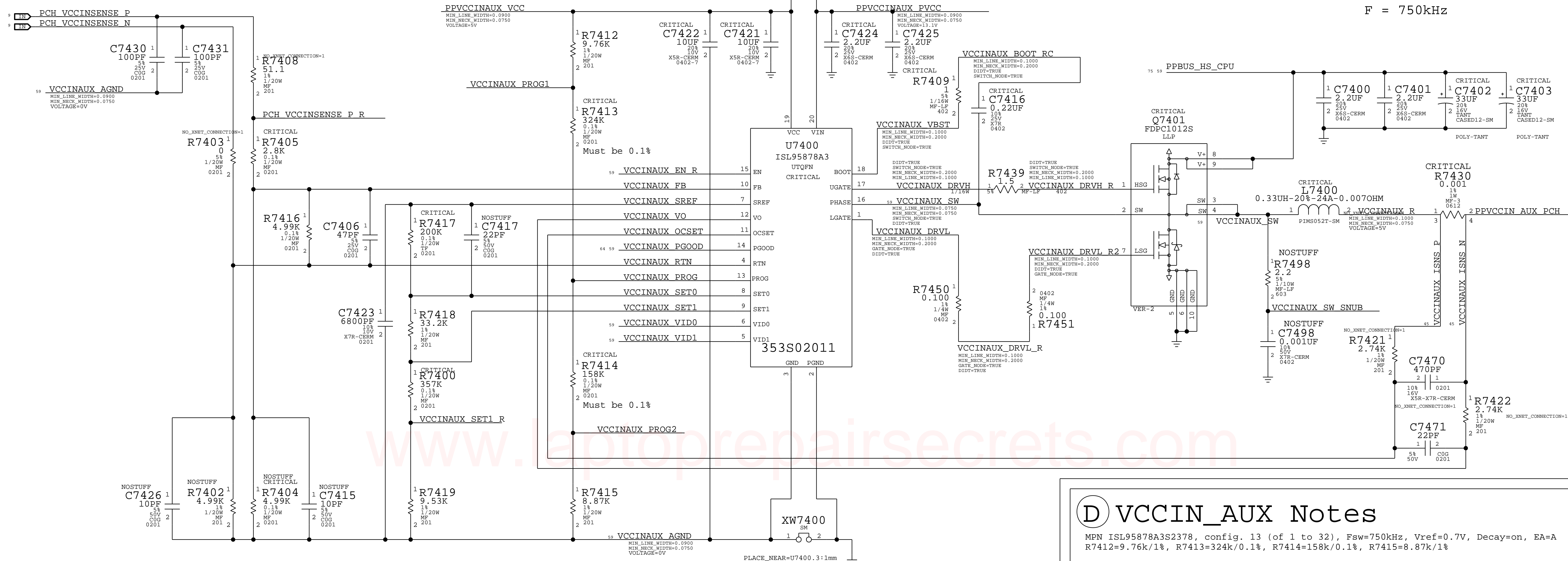
Vout = 0.55 - 1.8V  
IccMax = 49A  
TDC = 18A  
DCLL = 2mOhm  
ACLL3 = 4.7mOhm  
F = 750kHz

SYNC_MASTER=psm		SYNC_DATE=10/18/2018	
PAGE TITLE			
IMVP9 POWER BLOCK		BLOCK	
 Apple Inc.	DRAWING NUMBER		SIZE
	051-05232		D
		REVISION	2.0.0
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		SHEET	58 OF 86

BOM\_COST\_GROUP=CPU & CHIPSET



## (A) VCCIN\_AUX Voltage Regulator

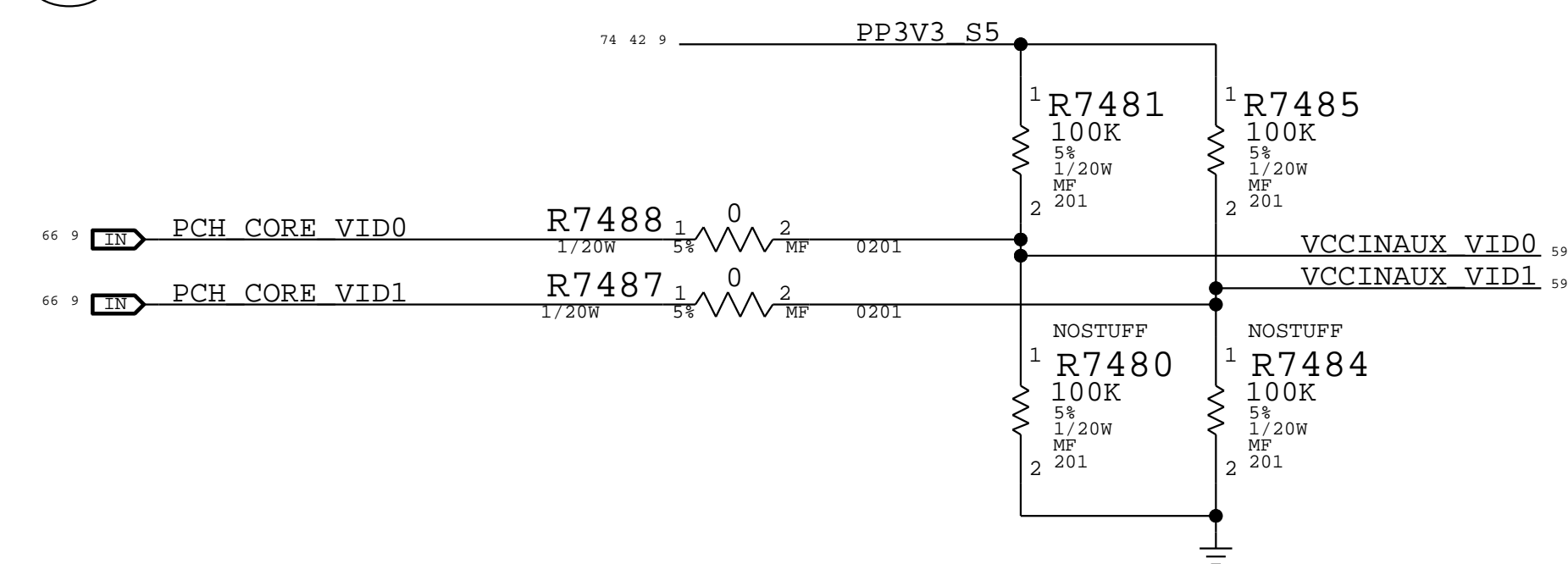


## (D) VCCIN\_AUX Notes

MPN ISL95878A3S2378, config. 13 (of 1 to 32), Fsw=750kHz, Vref=0.7V, Decay=on, EA=A  
R7412=9.76k/1%, R7413=324k/0.1%, R7414=158k/0.1%, R7415=8.87k/1%

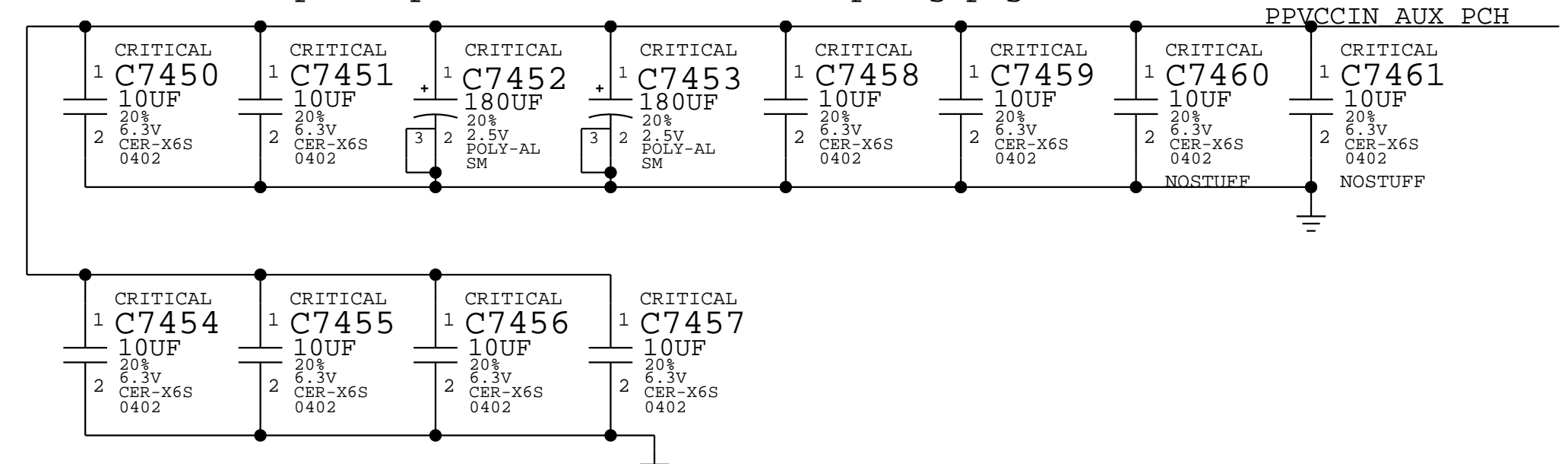
MPN ISL95878A3S2378, config. 9 (of 1 to 32), Fsw=750kHz, Vref=0.7V, Decay=off, EA=A  
R7412=47.5k/1%, R7413=324k/0.1%, R7414=127k/0.1%, R7415=1.58k/1%

## ⓑ VID Control



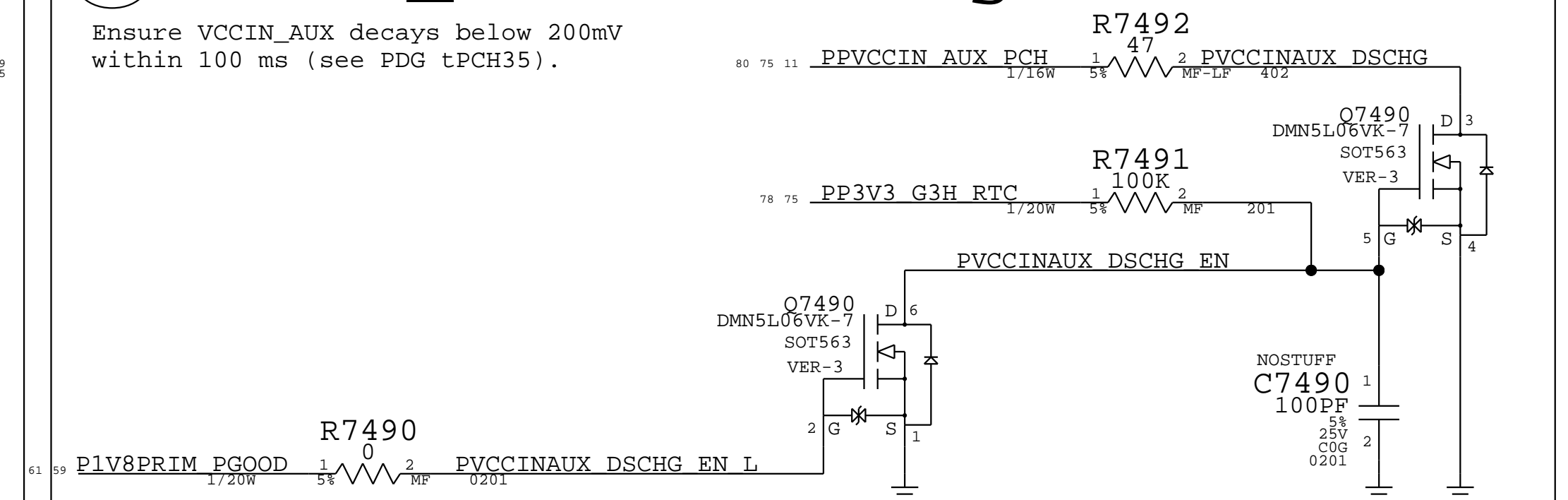
Ⓒ VCCIN\_AUX BHC Caps

Additional output caps are on the CPU decoupling page.

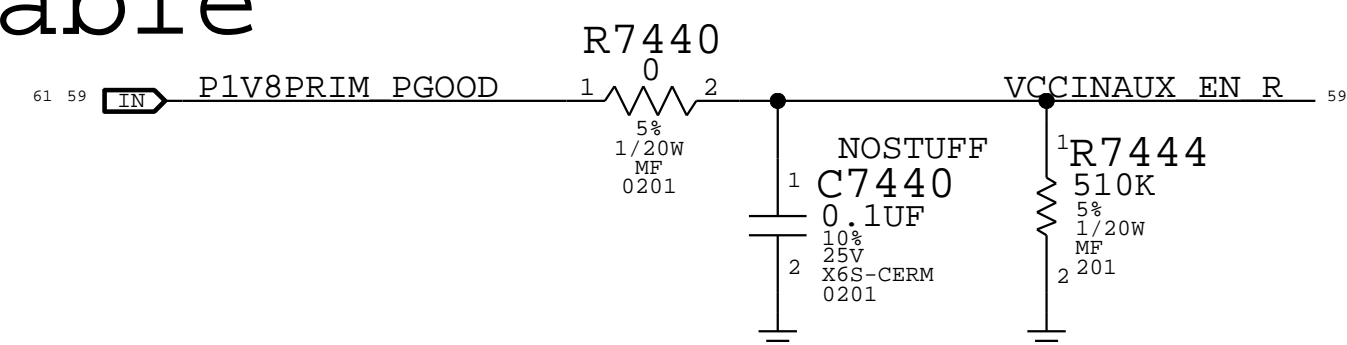


⑦ VCCIN\_AUX Discharge

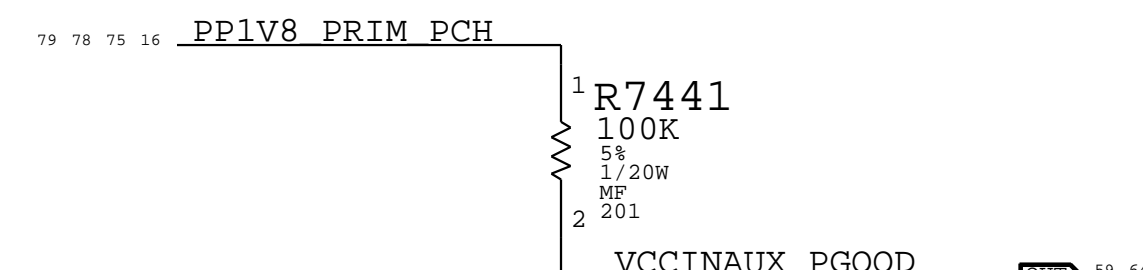
Ensure VCCIN\_AUX decays below 200mV within 100 ms (see PDG tPCH35).




(E) VR Enable



Ⓡ VR PGGOOD

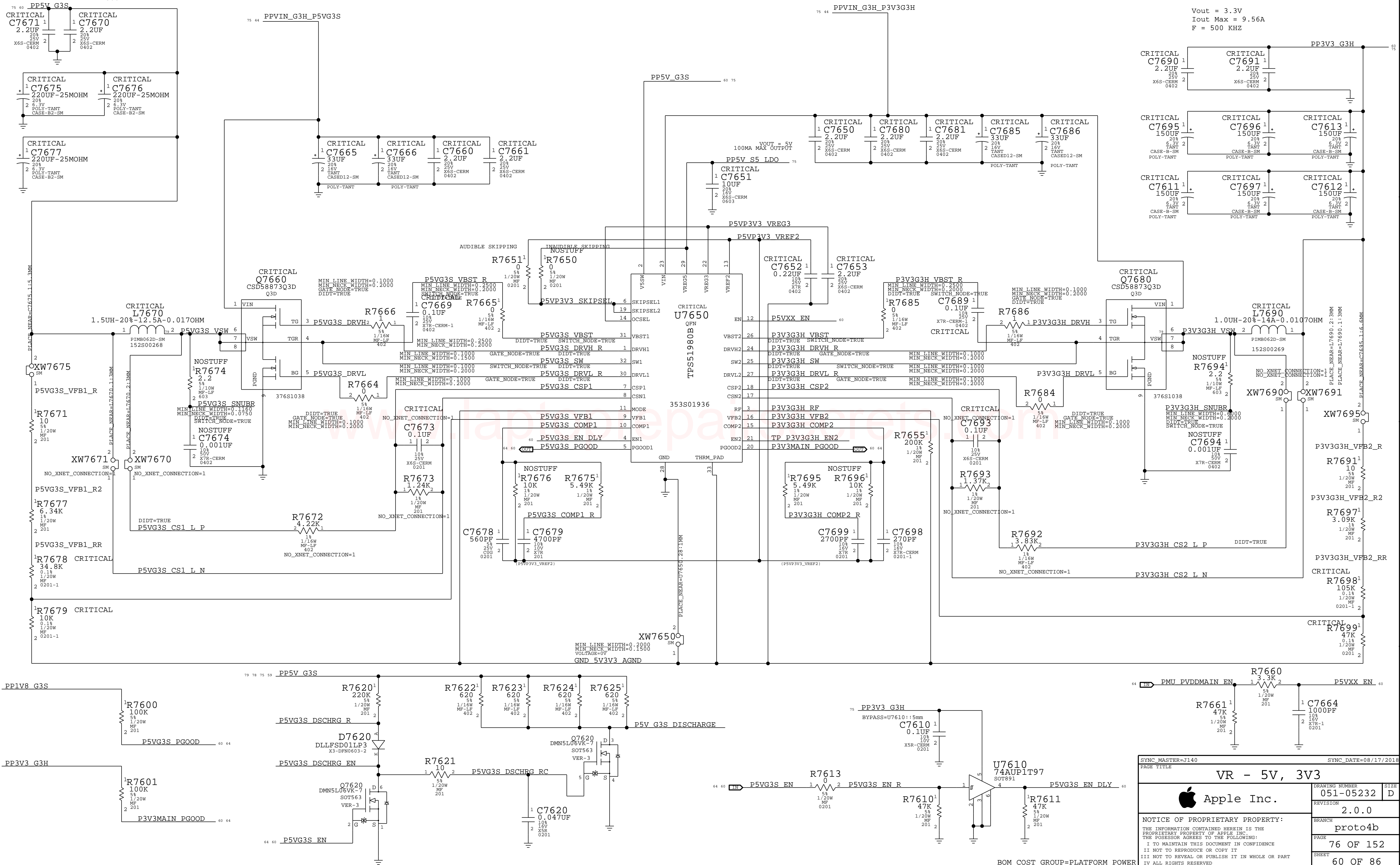
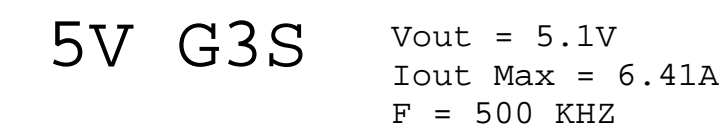


VID[1] Pin State	VID[0] Pin State	VCCIN_AUX (V)	USAGE
0	0	0	Power Saving State
0	1	1.1	Power Saving State
1	0	1.65	Full Current, ICL-Y
1	1	1.8	Initial boot for ICL-U/Y Full Current, ICL-U

PAGE _____			
PAGE TITLE			
VR: VCCIN_AUX ISL			
 Apple Inc.	DRAWING NUMBER		SIZE
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	2.0.0		
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		74 OF 152	
		SHEET	
		59 OF 86	

BOM\_COST\_GROUP=PLATFORM POWER

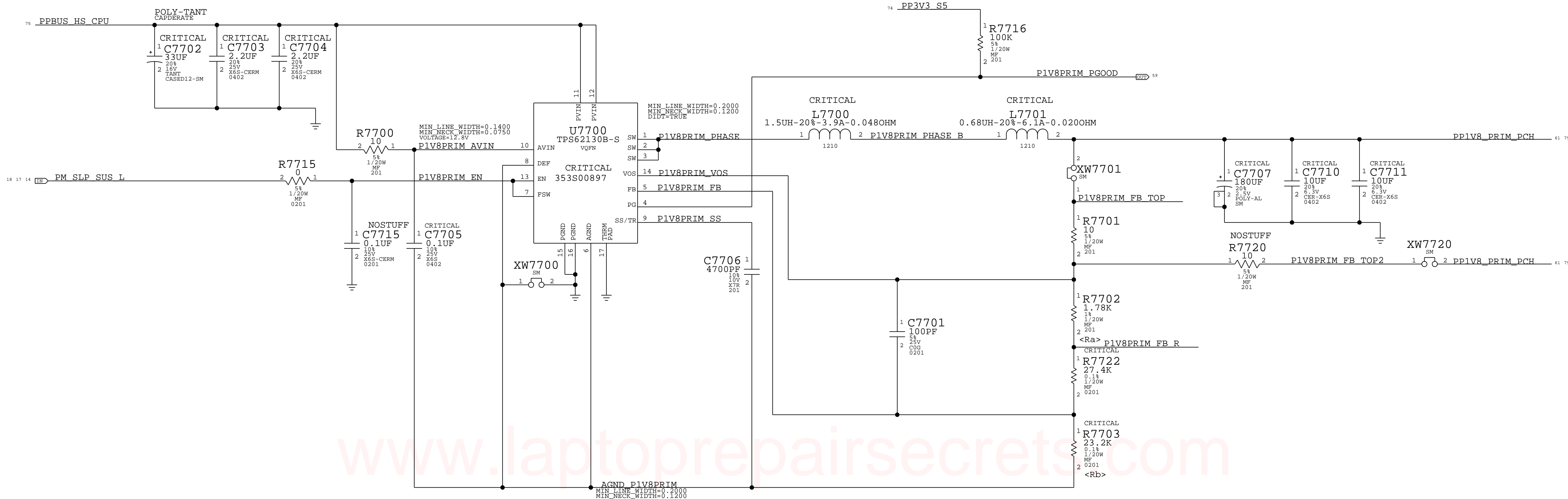






A VCCPRIM\_1P8 Voltage Regulator

Output voltage: 1.8 V  
Iout Max: 2.07 A  
Switching freq: 1250 kHz



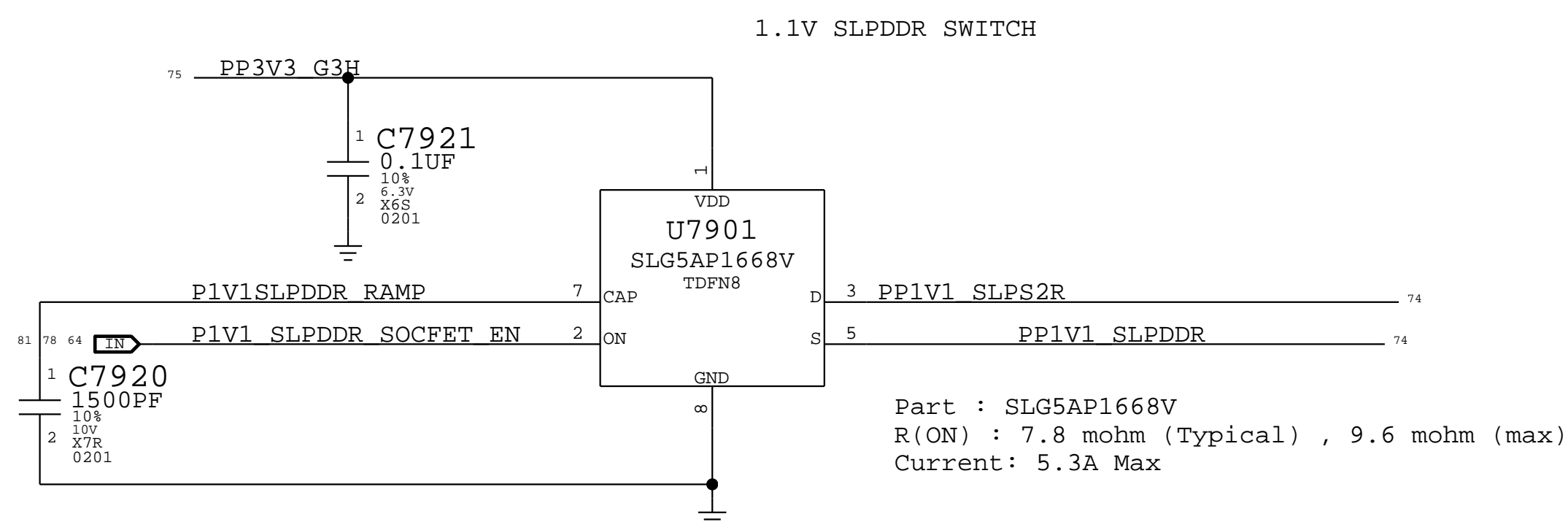
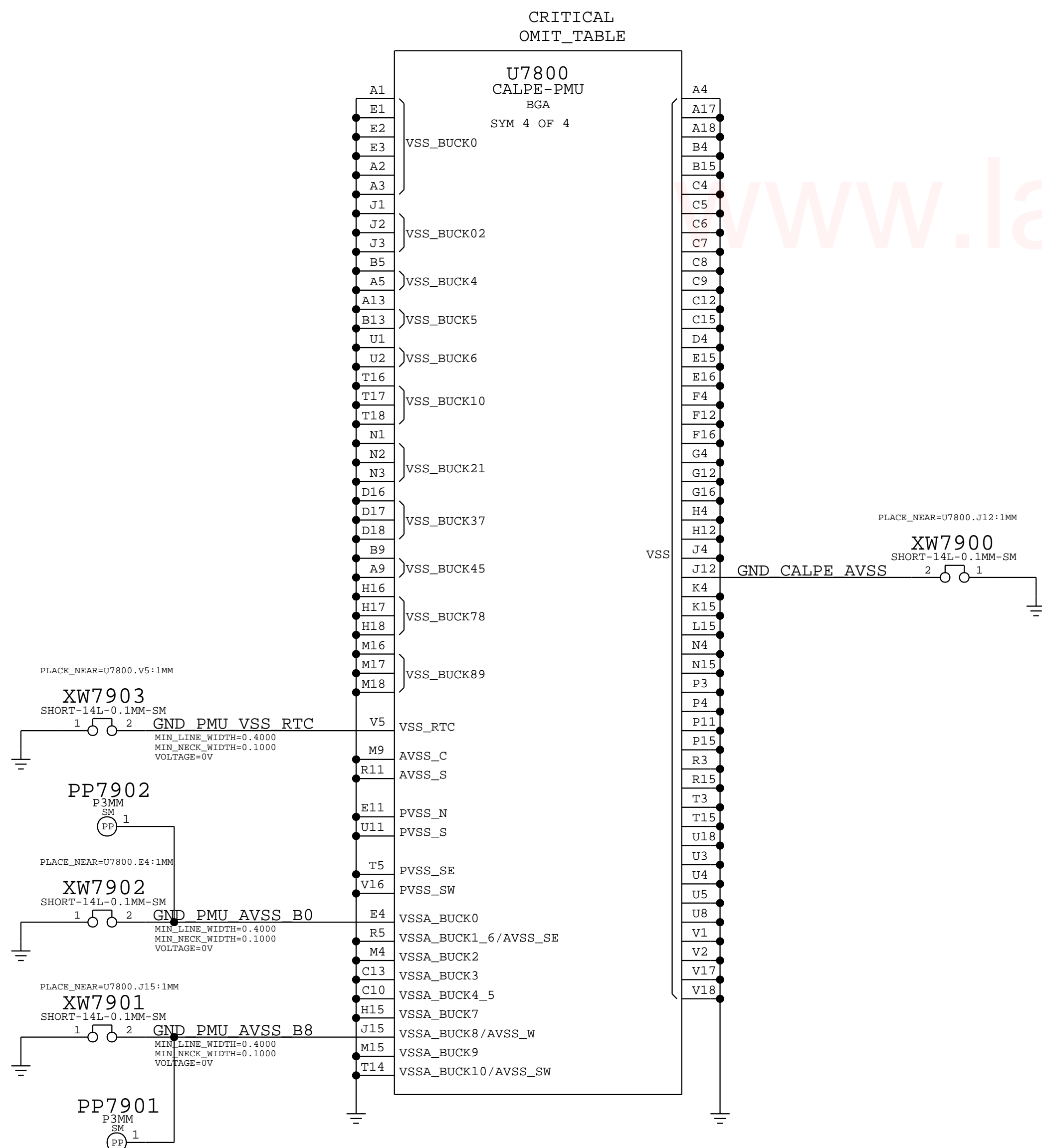
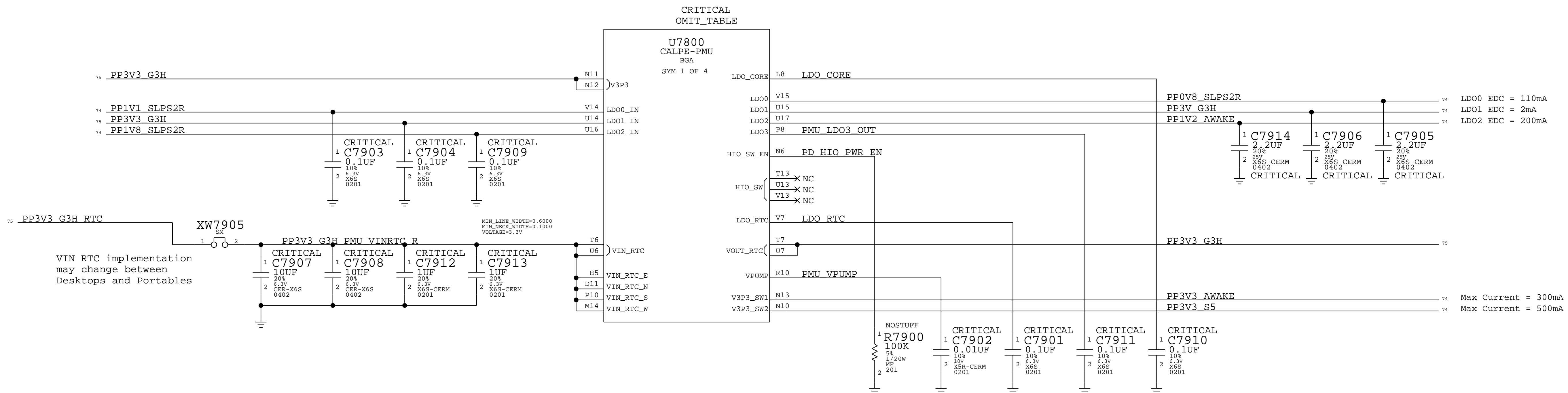
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Apple Inc.	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	SHEET	61 OF 86


BOM\_COST\_GROUP=GRAPHICS

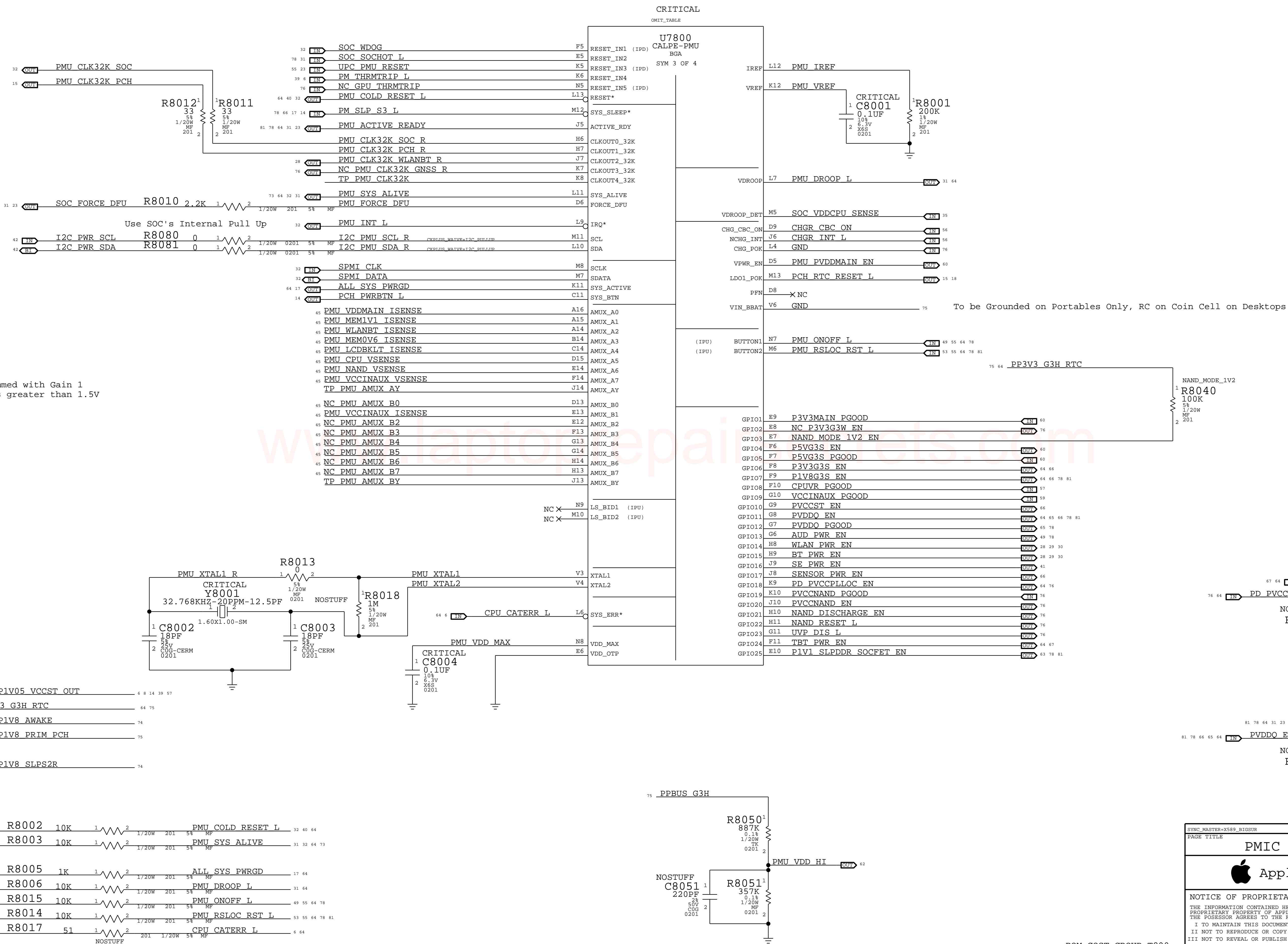









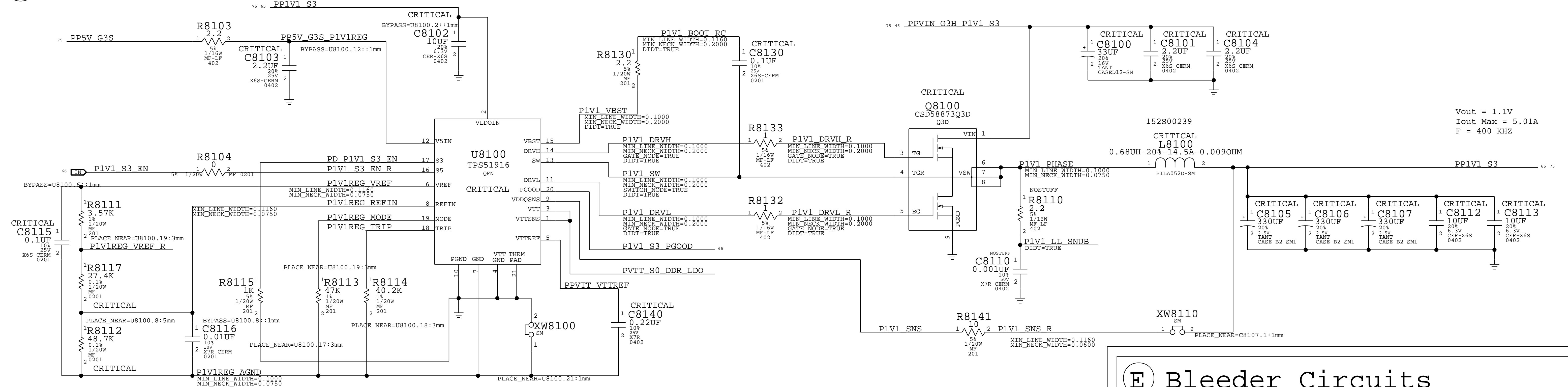
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	PAGE		
	79 OF 152		
	SHEET		
	63 OF 86		



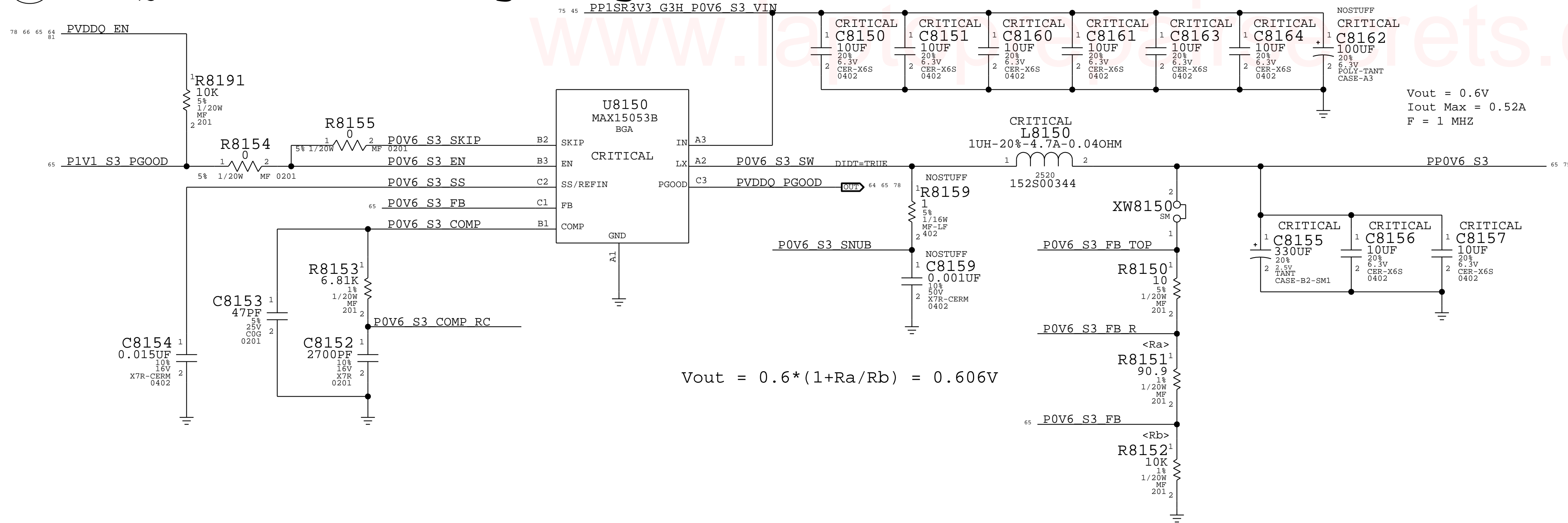
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	PAGE		
	80 OF 152		
	SHEET		
	64 OF 86		



### (A) VDD2 1.1V S3 Voltage Regulator

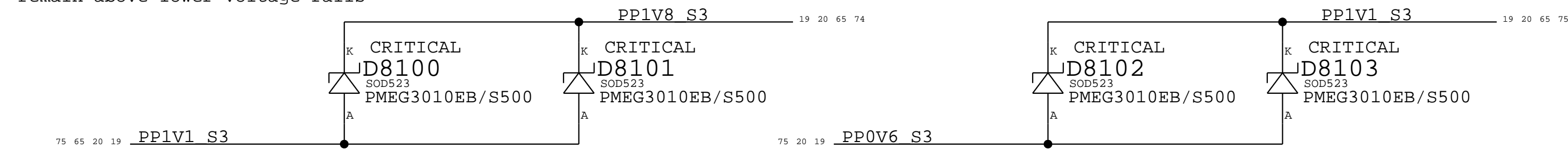


Ⓑ VDDQ 0.6V S3 Voltage Regulator

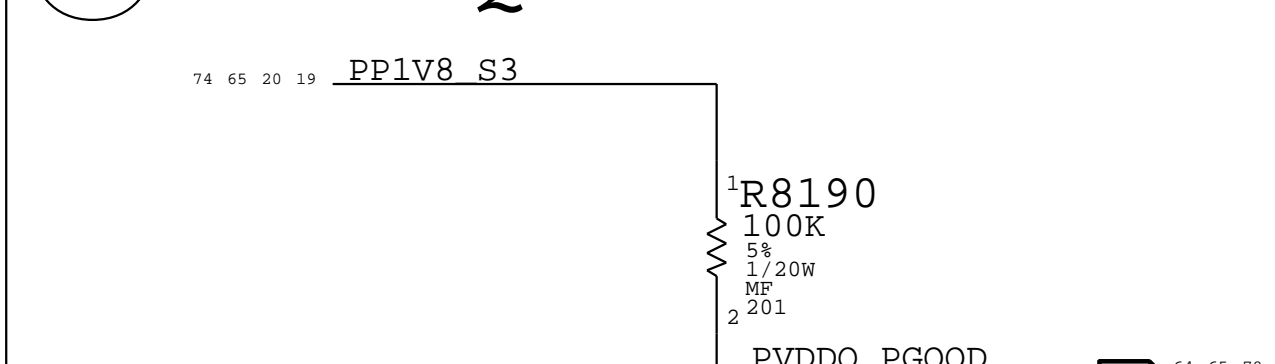


## © Protection Diodes

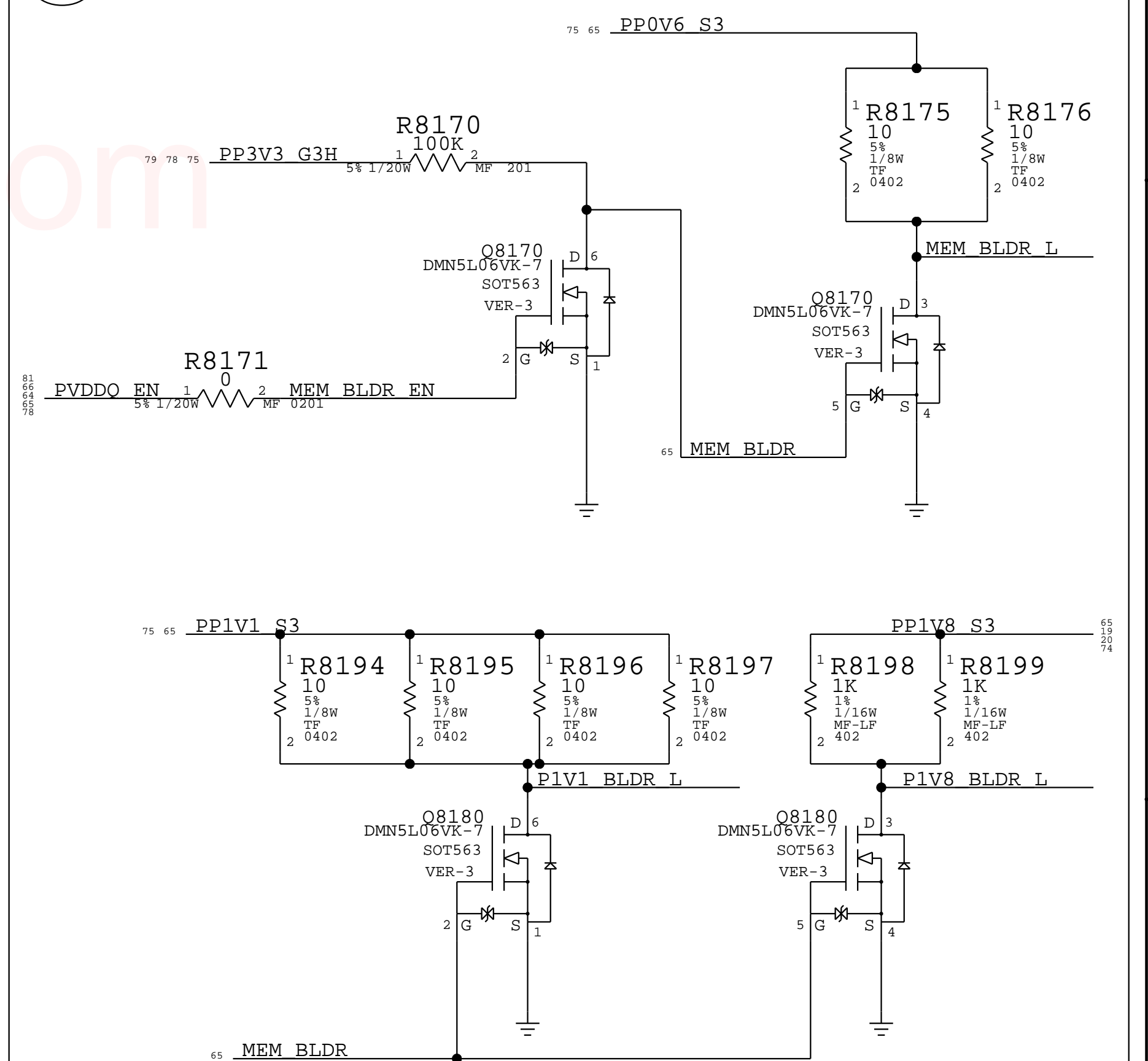
To ensure higher voltage rails remain above lower voltage rails



Ⓓ PVDDQ PG00D

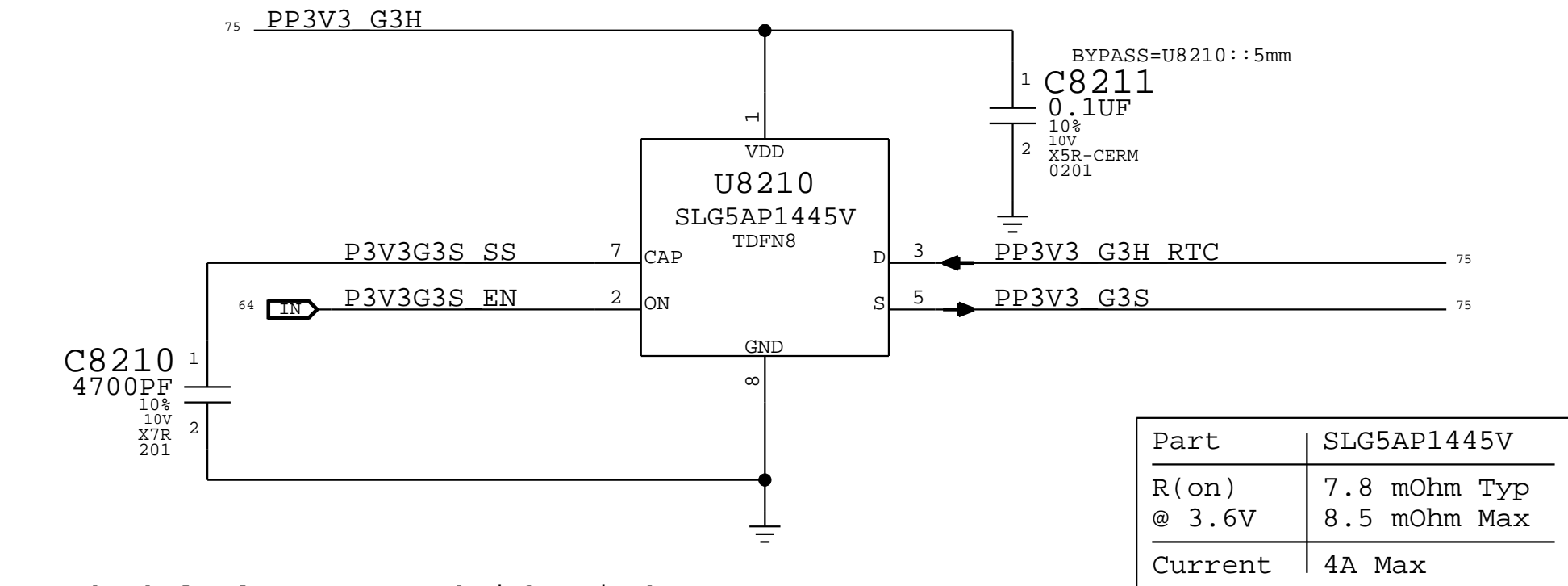


## (E) Bleeder Circuits

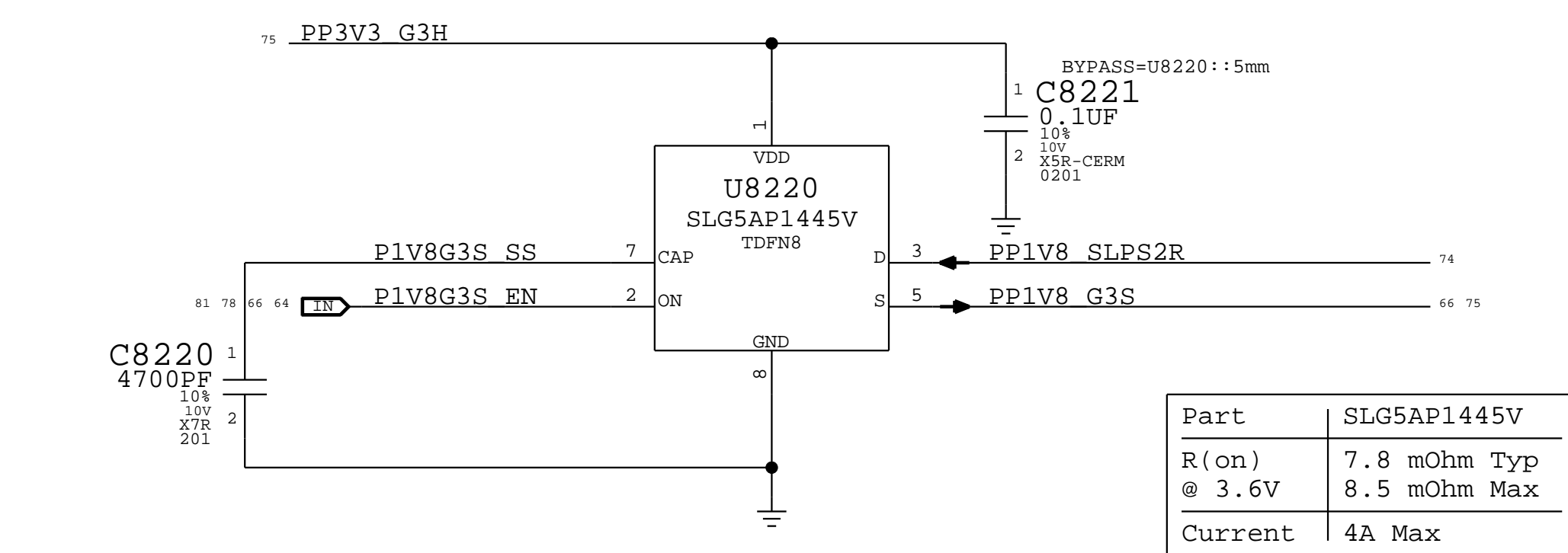




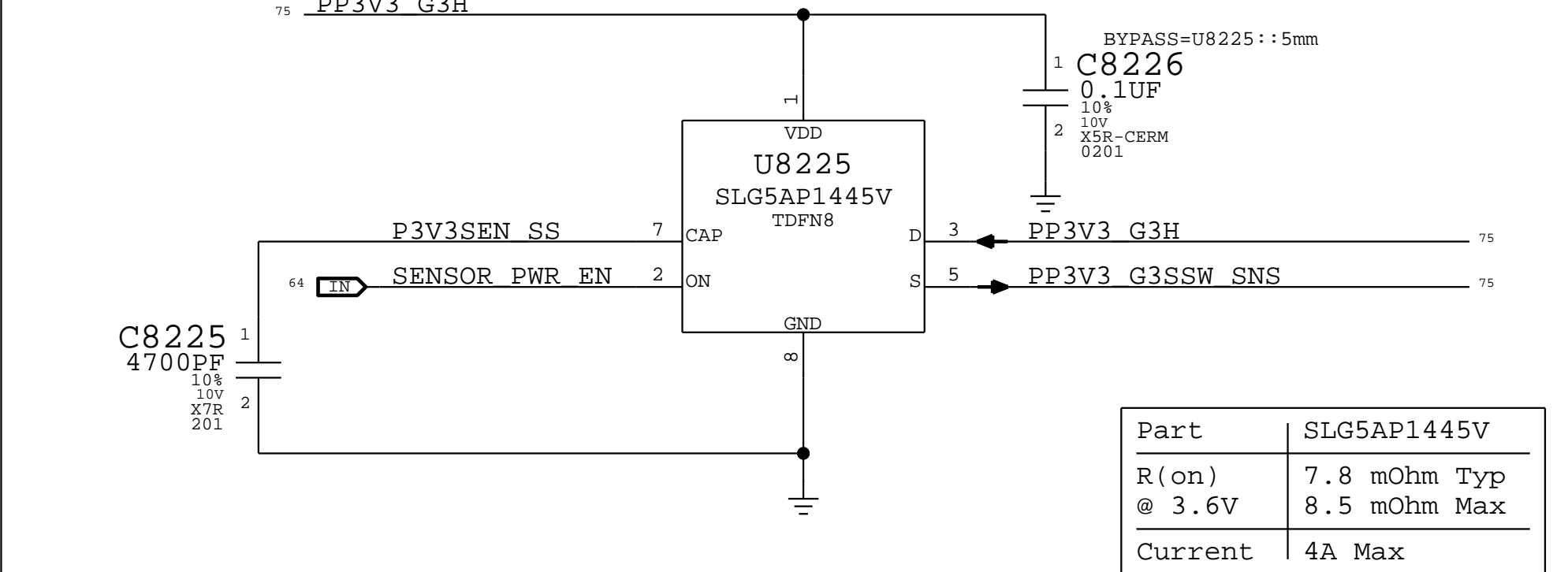
## A 3.3V G3 Standby Switch



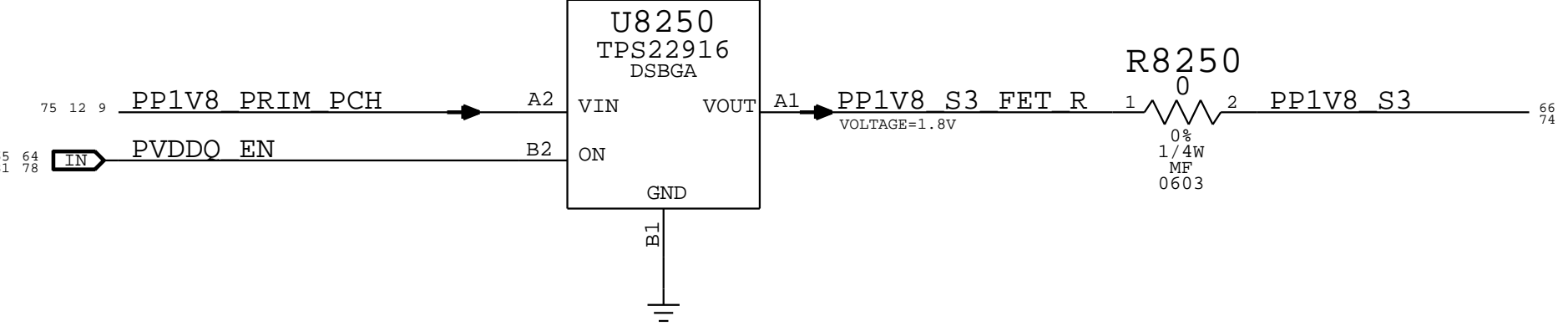
## B 1.8V G3 Standby Switch



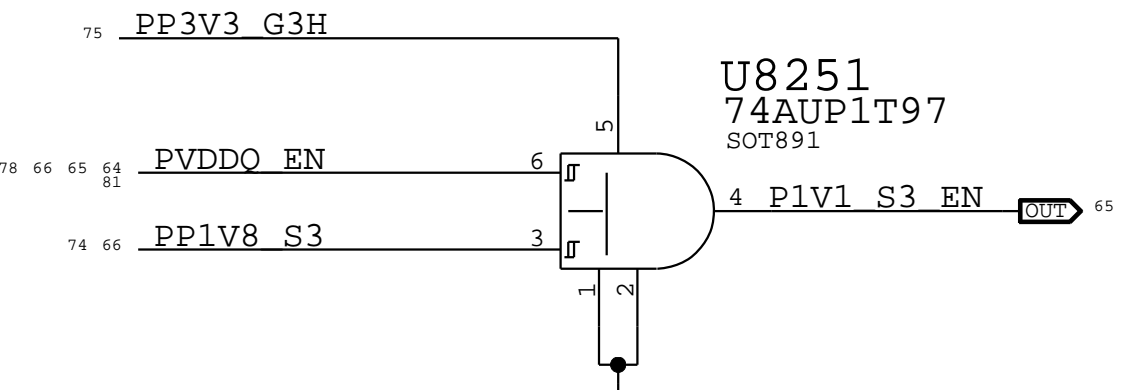
## C 3.3V Sensors Switch



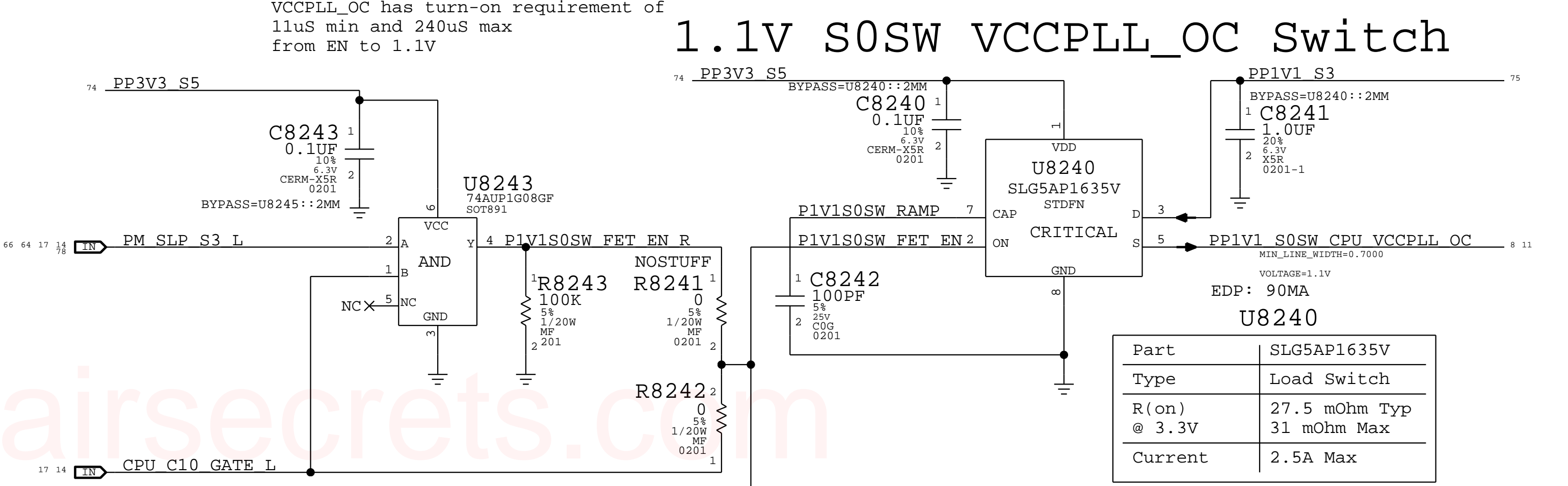
## D 1.8V S3 Switch



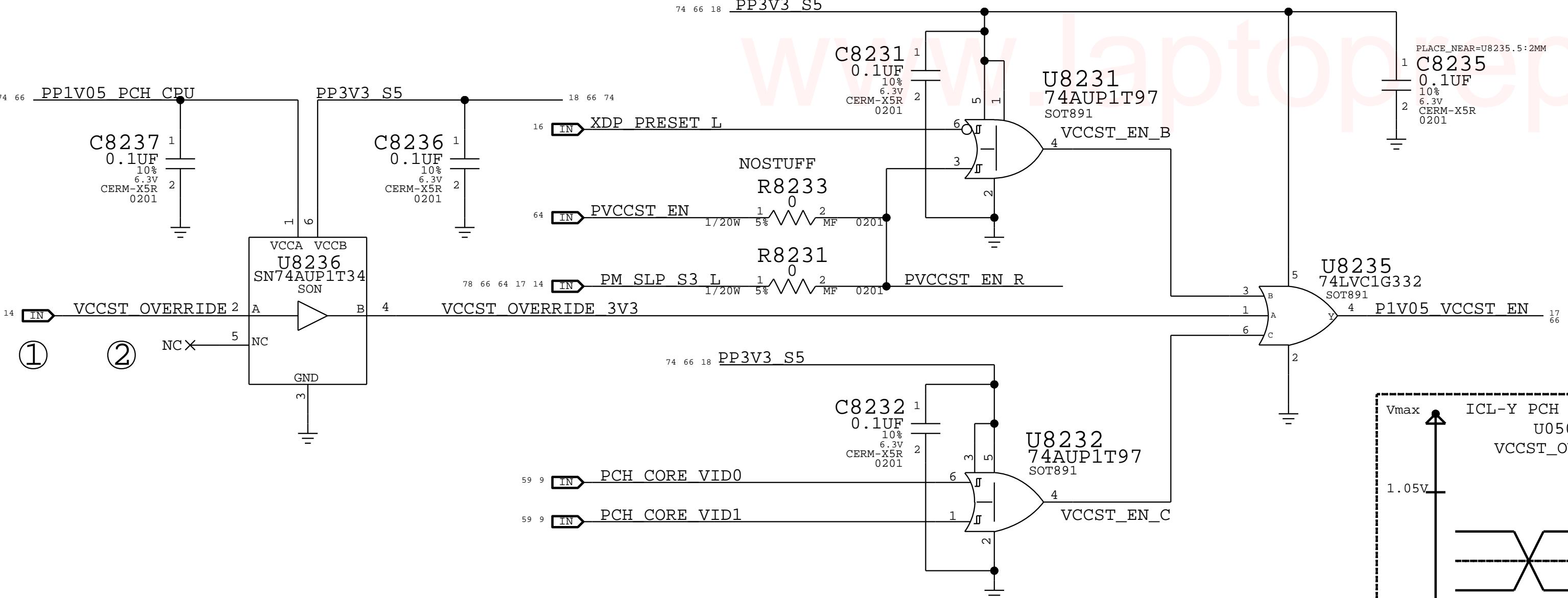
## E 1.1V S3 En



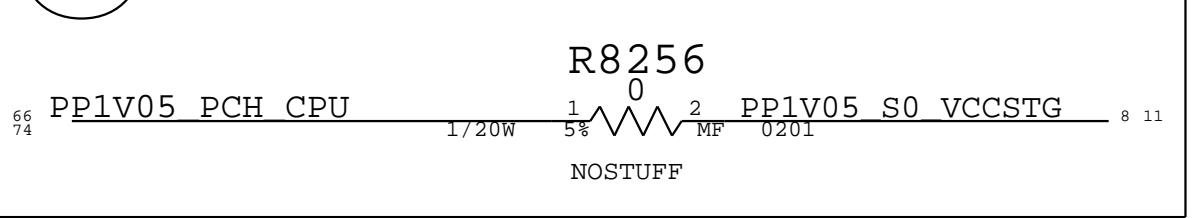
## F CPU Switches



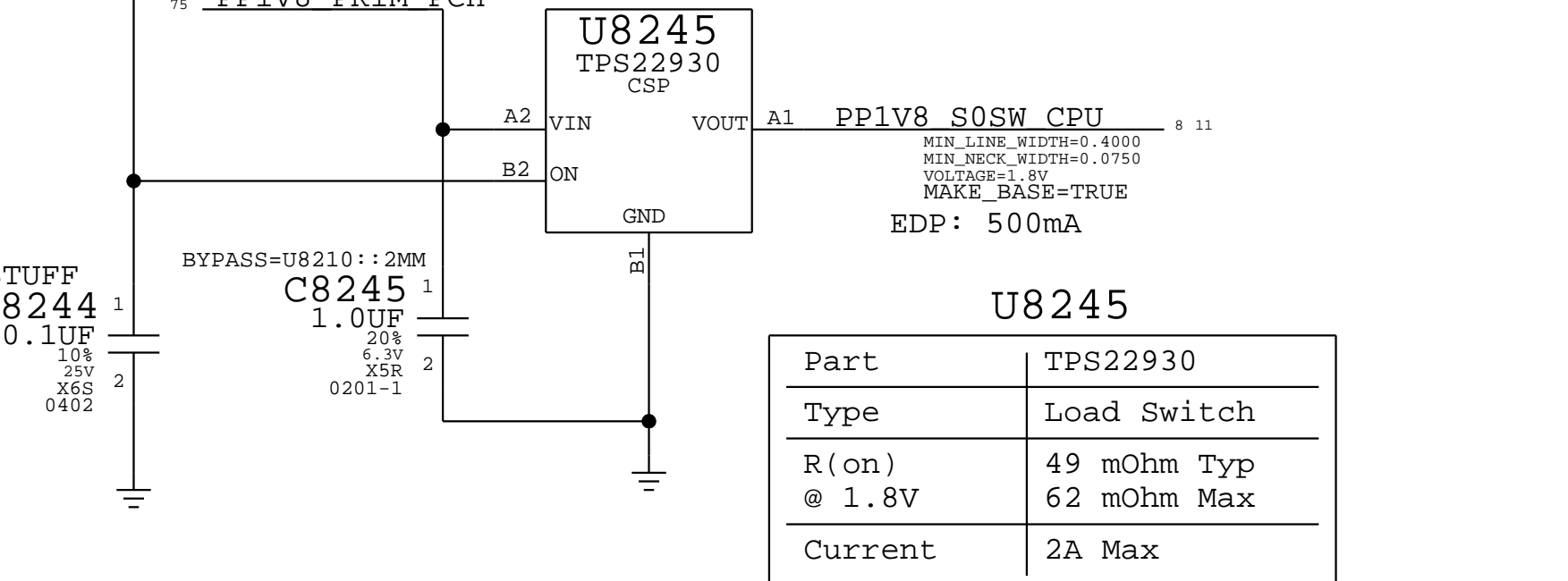
## G 1.05V VCCST Switch Control



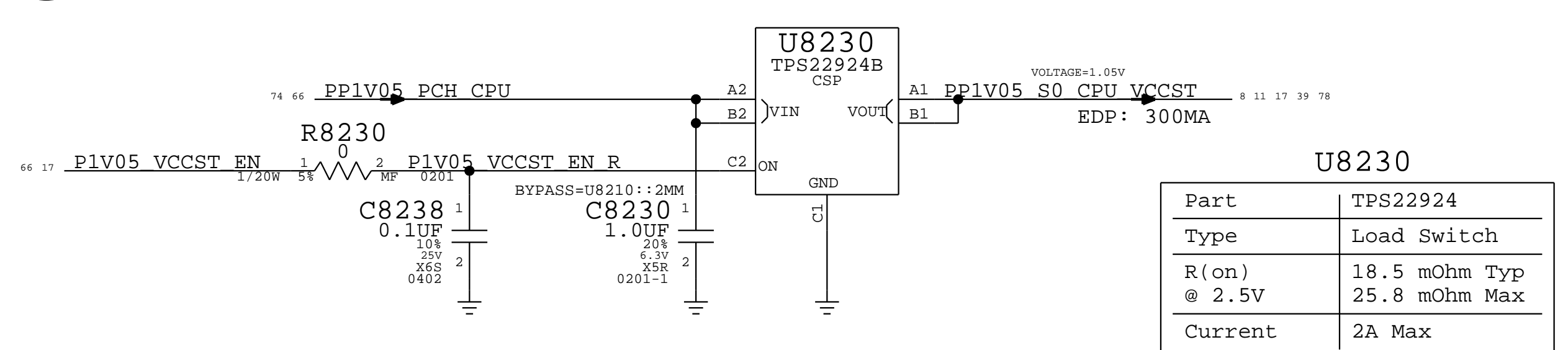
## H VCCSTG



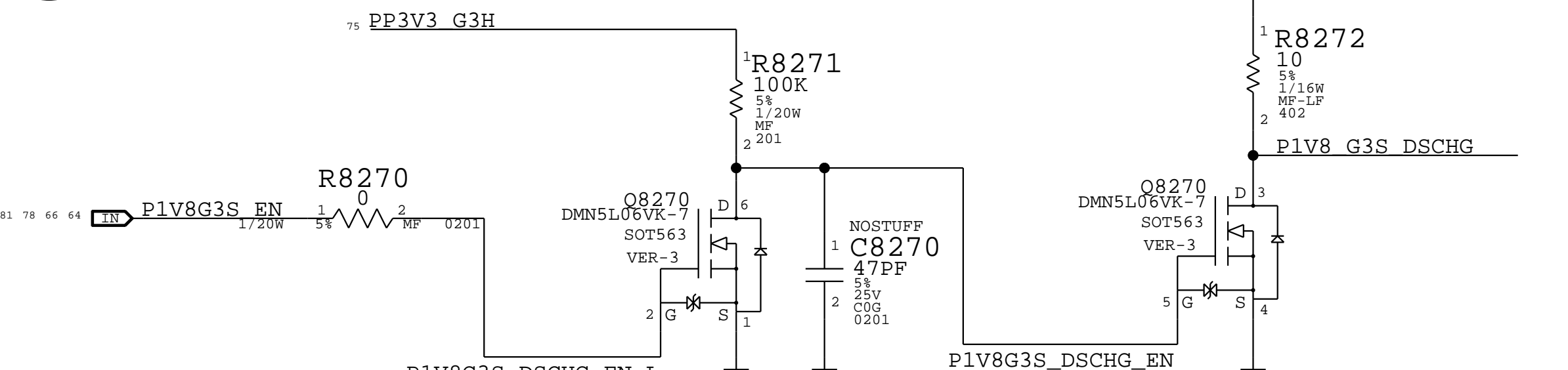
## I 1.8V S0 CPU Switch



## J PP1V8\_G3S Discharge



## K PP1V8\_G3S Discharge



This discharge circuit was added to enforce timing compliance to a spec for Venus (SE) that NXP provided that would confirm a hardware reset sequence will be power down compliant..

Power FETs			
	DRAWING NUMBER	051-05232	SIZE D
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## D

D


C

3 3V S0SW TBT Switch

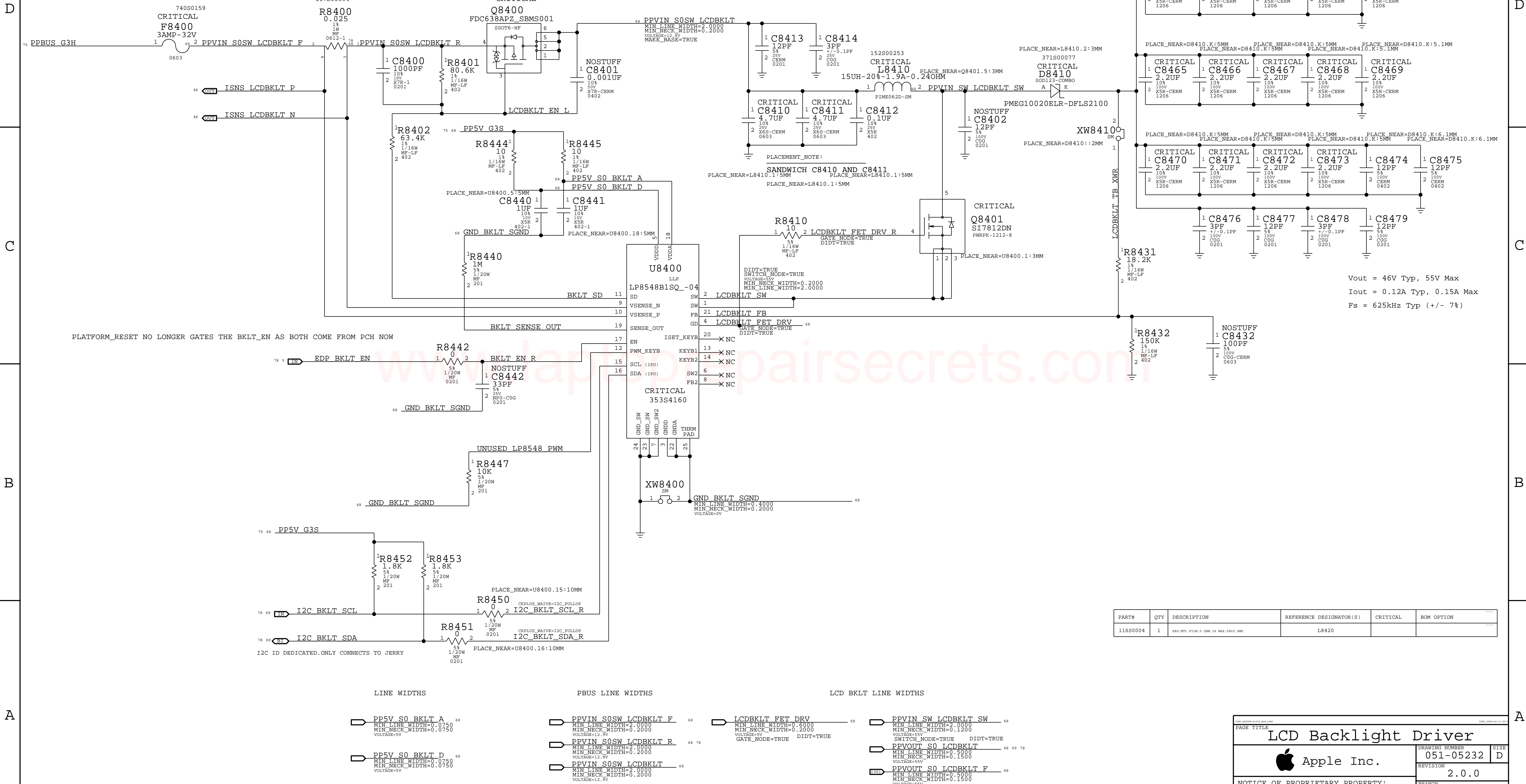
## B

B

A

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BOM\_COST\_GROUP=PLATFORM POWER



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
116S0004	1	RES,MTL FILM,0 OHM,1A MAX,0402,SMD	L8420		

[illegible]



## D



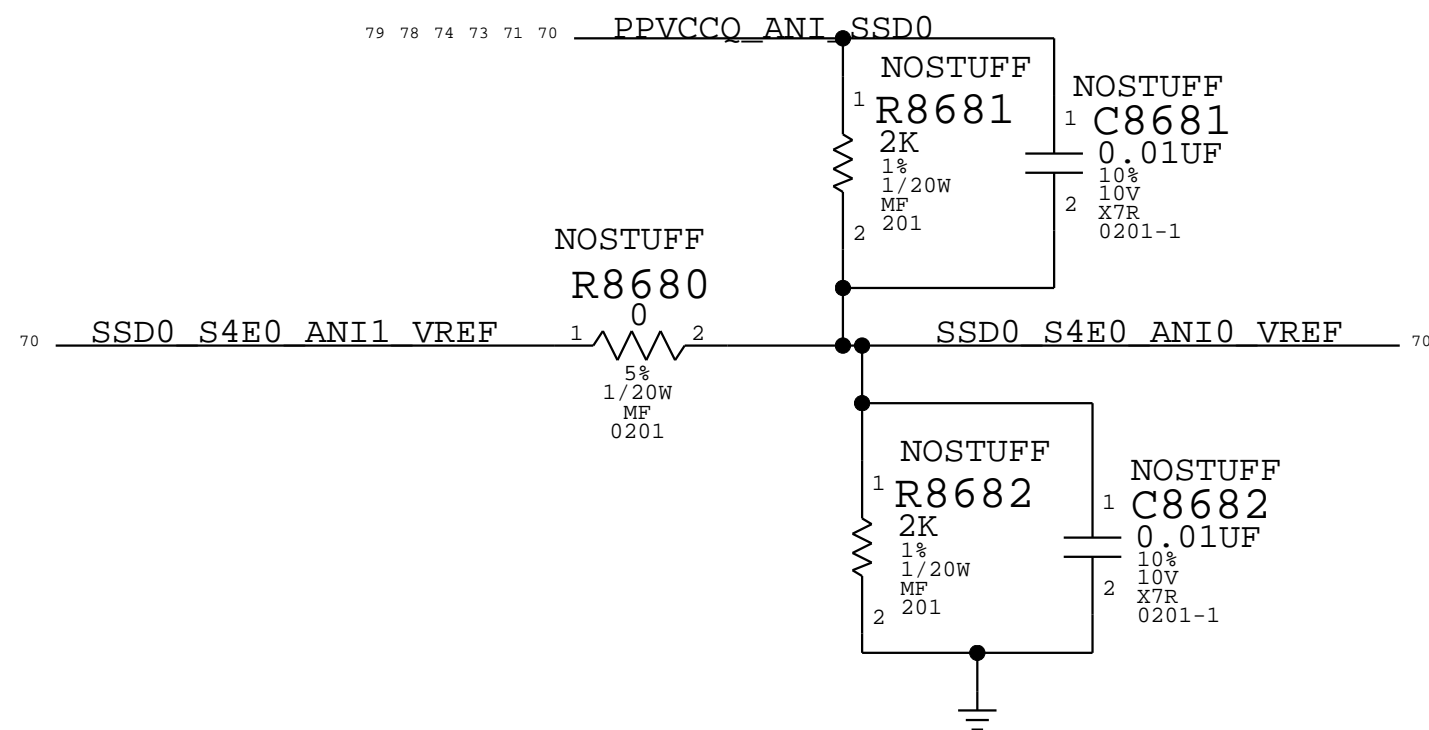
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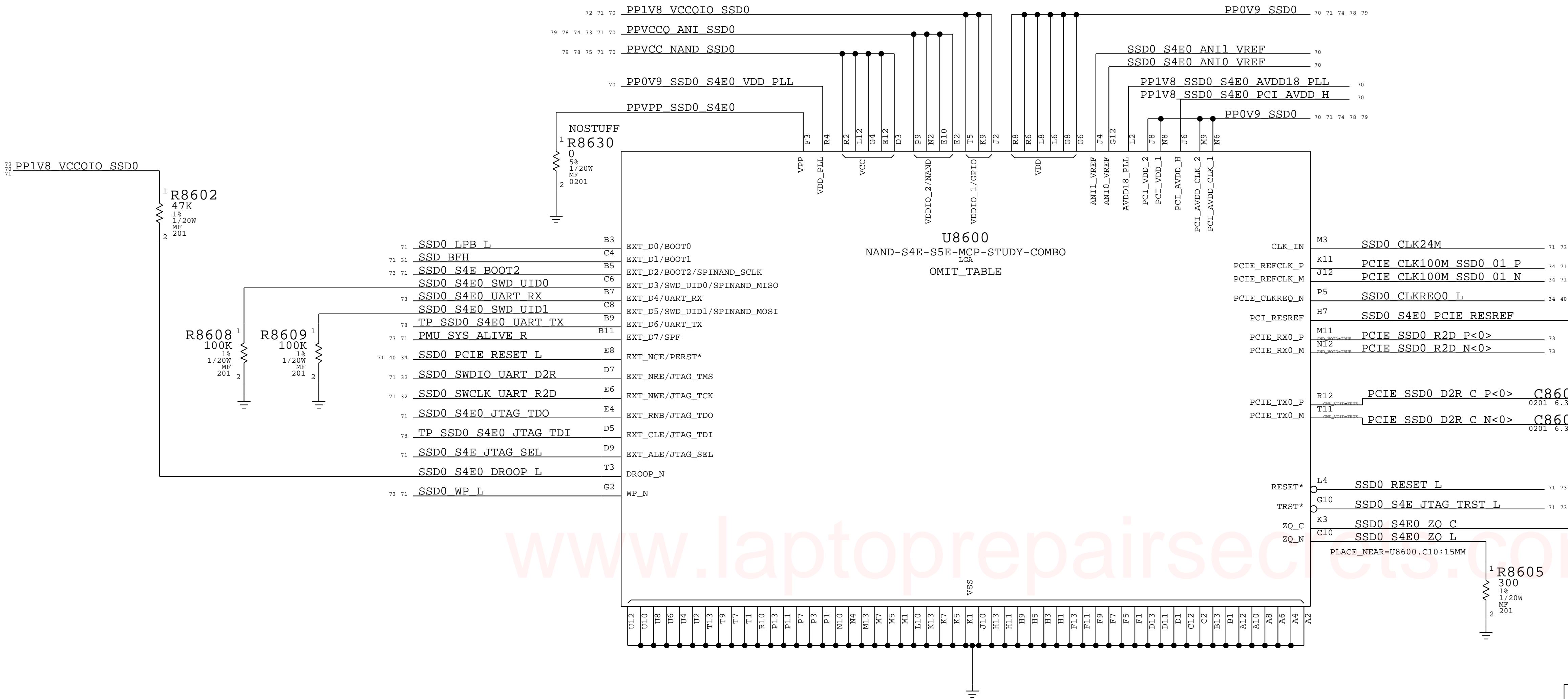


# S4E0

## A SSD External VREF

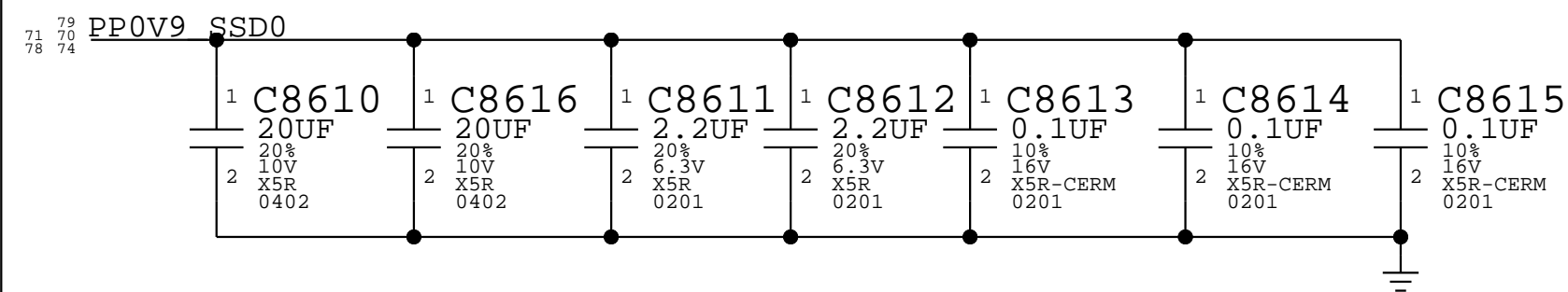


See Section 7.4.2.2 of the S4E MCP Product Spec (v1.3)

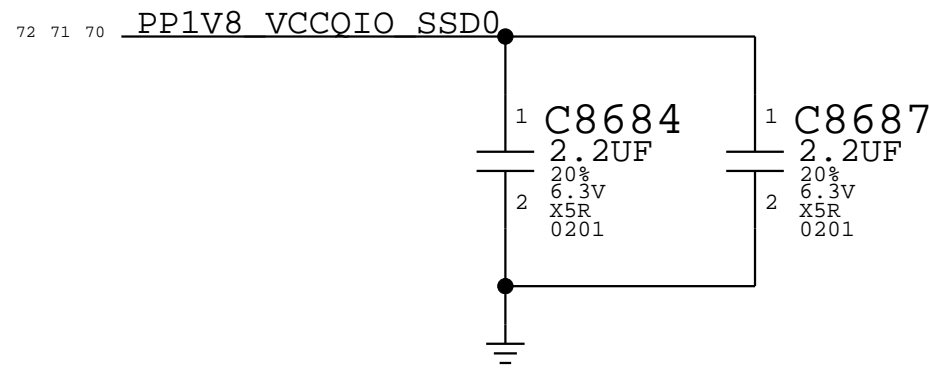


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES, 3.01KOHM, 1%, 1/20W, 0201	R8604	CRITICAL	S4E
103S00429	1	RES, 200OHM, 0.1%, 1/20W, 0201	R8604	CRITICAL	S5E
118S0011	1	RES, 100OHM, 1%, 1/20W, 0201	R8606	CRITICAL	S4E
118S0273	1	RES, 300OHM, 1%, 1/20W, 0201	R8606	CRITICAL	S5E
117S0201	2	RES, 0OHM, 1/20W, 0201	R8683, R8610, R8611	CRITICAL	S4E
155S00161	2	FERR BD, 100OHM, 0.05 DCR, 0201	R8683, R8610	CRITICAL	S5E
118S0794	1	RES, MF, 20HM, 1%, 1/20W, 0201	R8611	CRITICAL	S5E

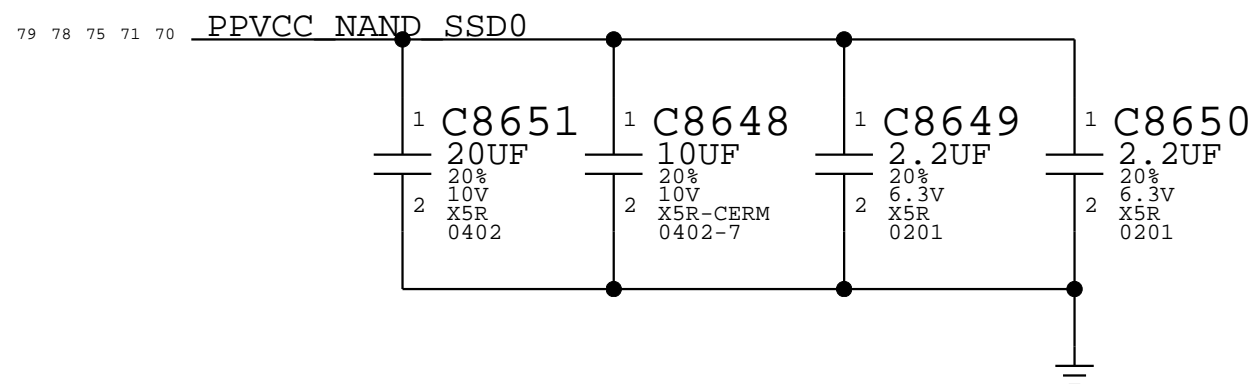
## B S4E VDD Decoupling



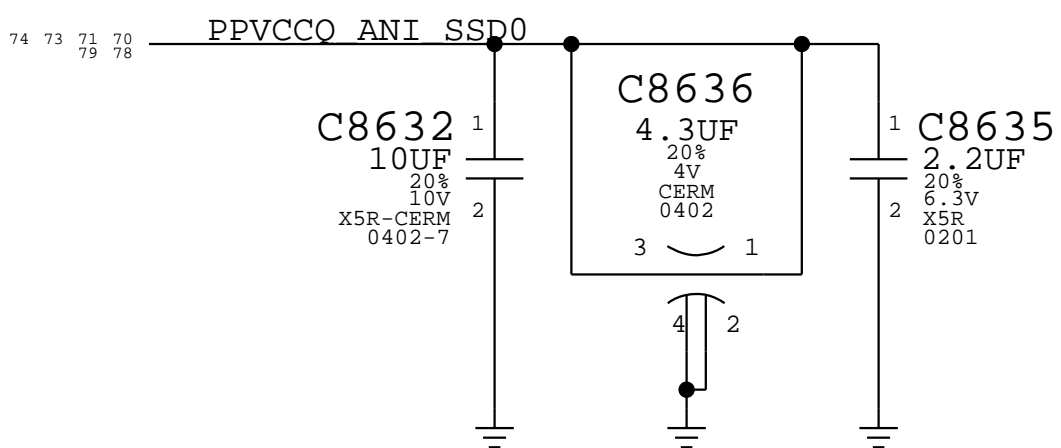
## D S4E VDDIO\_1



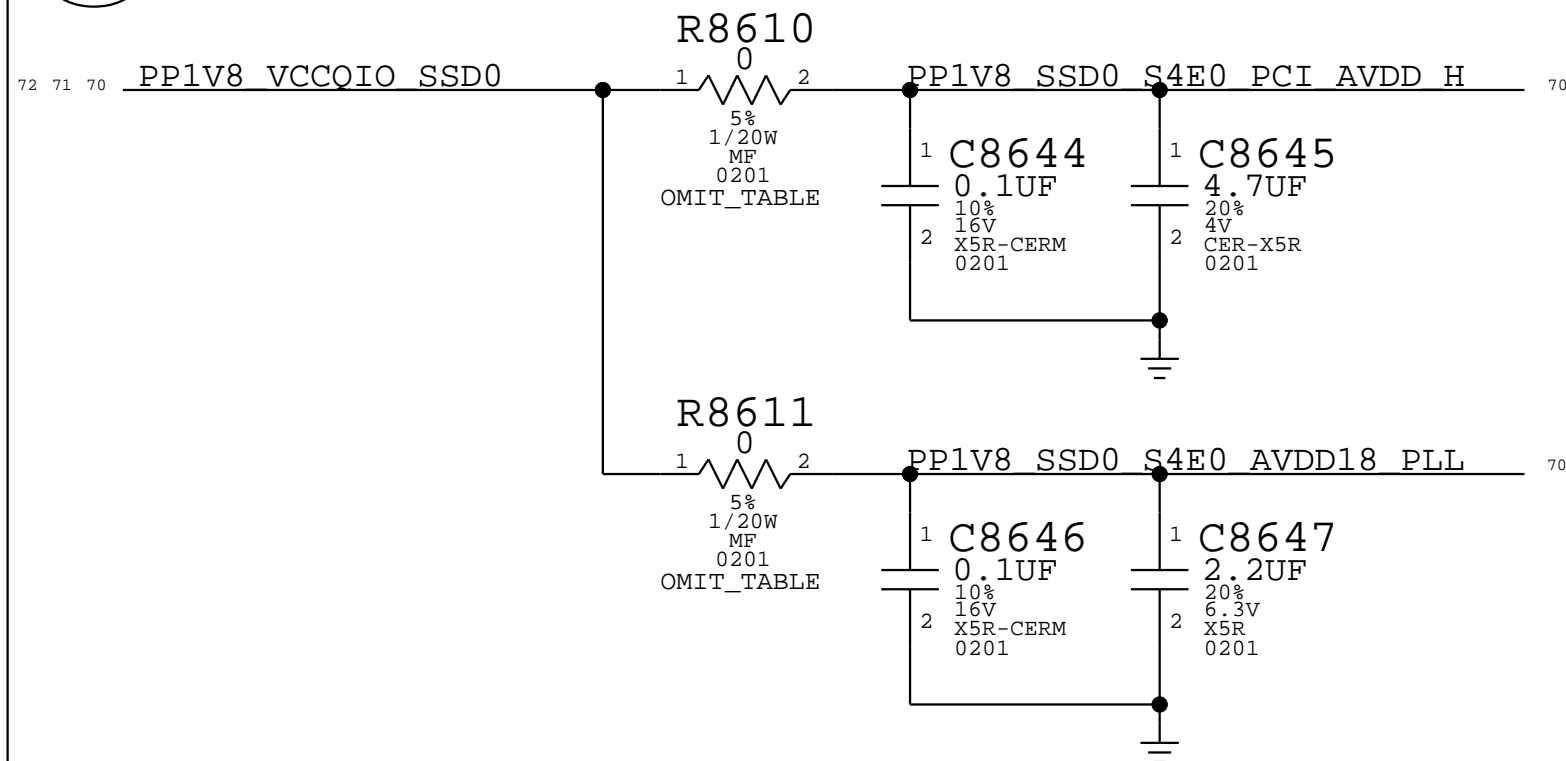
## C S4E VCC Decoupling



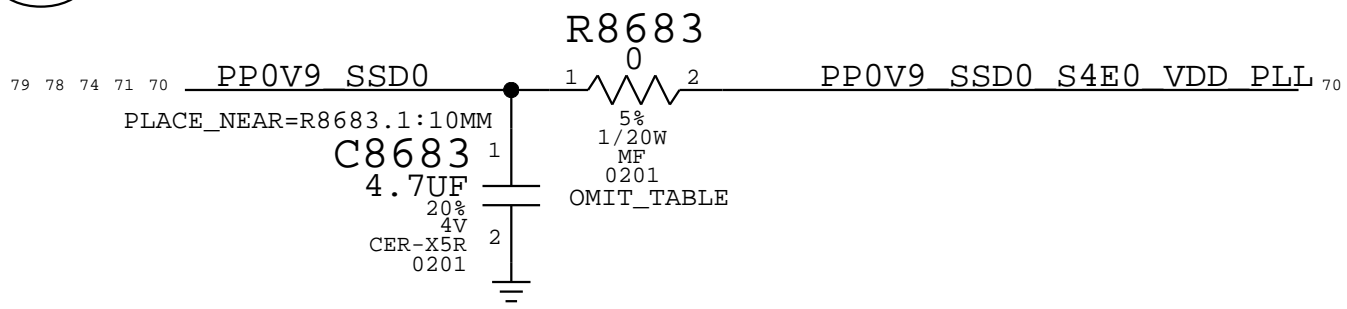
## E S4E VDDIO\_2



## F S4E AVDD\_H/AVDD18\_PLL



## G S4E VDD\_PLL



PAGE TITLE			
S4E<0>			
DRAWING NUMBER		051-05232	SIZE
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BRANCH		proto4b	
PAGE		86 OF 152	
SHEET		70 OF 86	

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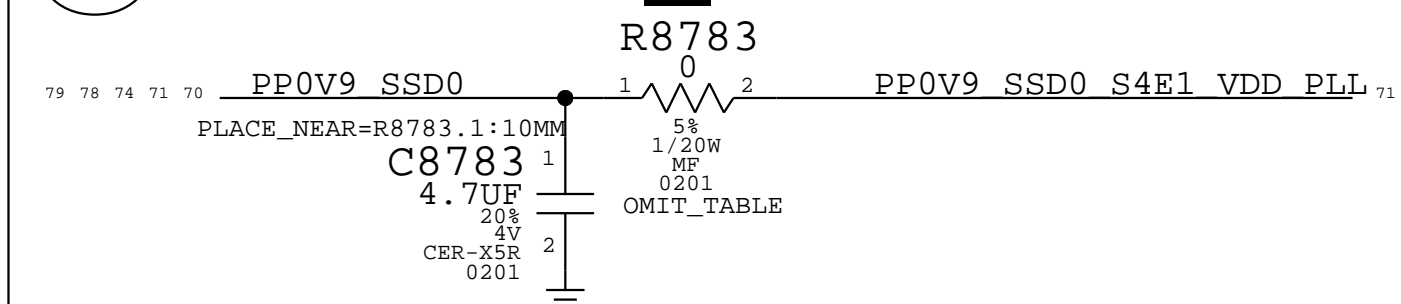
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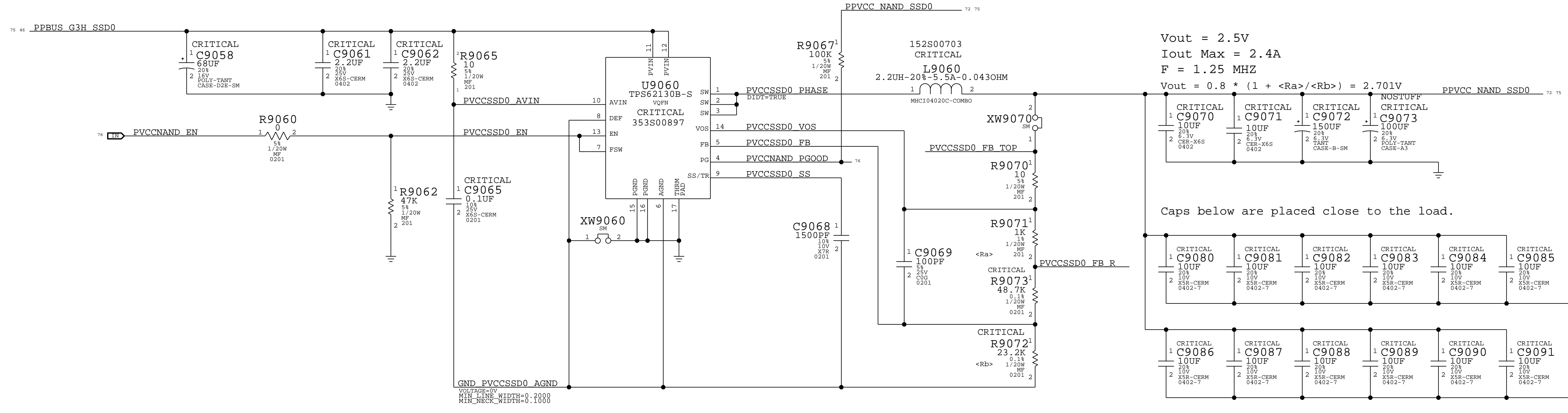
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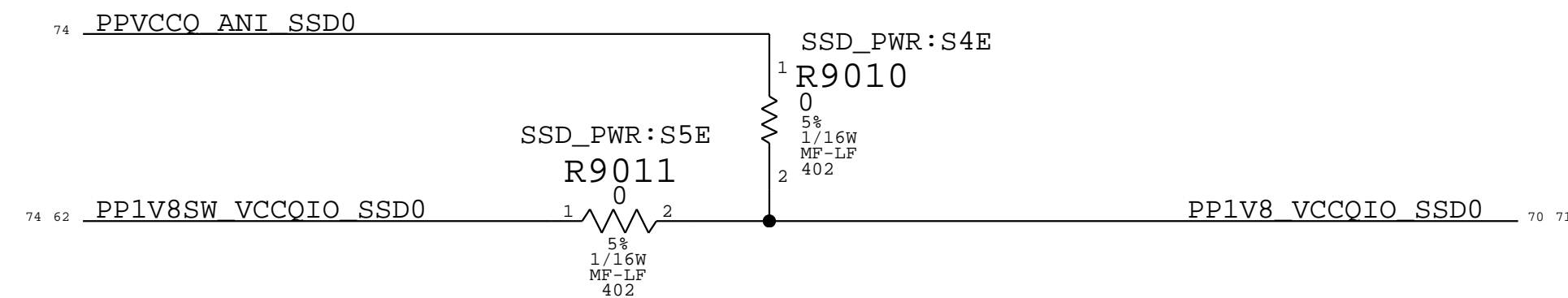
Ⓜ S4E VDD\_PLL


BOM\_COST\_GROUP=SSD

## Ⓐ NAND VCC (PPVCC\_NAND\_SSD0) Voltage Regulator



Ⓑ NAND VCCQ I/O Selector



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NAND VCC VR			
 Apple Inc.	DRAWING NUMBER	051-05232	SIZE D
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	SHEET	72 OF 86	

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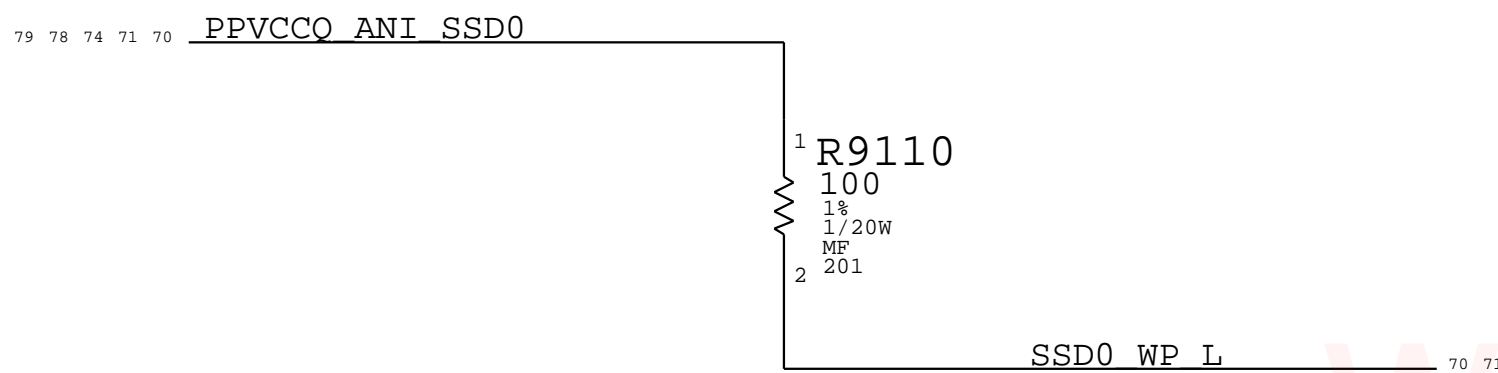
## A SSD PCIE AC Coupling Caps

(All Caps)				GND_VOID=TRUE			
34	OUT	PCIE SSD0 R2D C P<0>	C9110	1	2	20% 6.3V X5R 0201	PCIE SSD0 R2D P<0>
						0.22UF	70
34	OUT	PCIE SSD0 R2D C N<0>	C9111	1	2	20% 6.3V X5R 0201	PCIE SSD0 R2D N<0>
						0.22UF	70
34	OUT	PCIE SSD0 R2D C P<1>	C9112	1	2	20% 6.3V X5R 0201	PCIE SSD0 R2D P<1>
						0.22UF	71
34	OUT	PCIE SSD0 R2D C N<1>	C9113	1	2	20% 6.3V X5R 0201	PCIE SSD0 R2D N<1>
						0.22UF	71

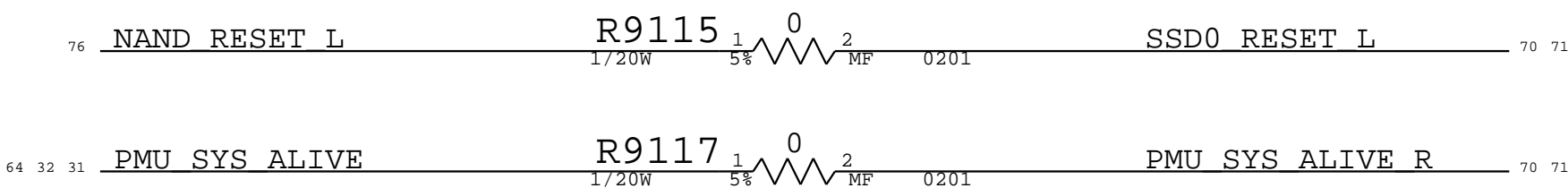
## B SSD PCIE Net Aliases

34	OUT	NC S4E3 PCIE R2D CP<2>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE R2D CP<2>
34	OUT	NC S4E3 PCIE R2D CN<2>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE R2D CN<2>
34	IN	NC S4E3 PCIE D2RP<2>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE D2RP<2>
34	IN	NC S4E3 PCIE D2RN<2>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE D2RN<2>
34	OUT	NC S4E3 PCIE R2D CP<3>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE R2D CP<3>
34	OUT	NC S4E3 PCIE R2D CN<3>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE R2D CN<3>
34	IN	NC S4E3 PCIE D2RP<3>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE D2RP<3>
34	IN	NC S4E3 PCIE D2RN<3>	==	WAKE_BASE=TRUE	NO_TEST=1	NC S4E3 PCIE D2RN<3>
34	IN	NC PCIE CLK100M SSD0 23N	==	WAKE_BASE=TRUE	NO_TEST=1	NC PCIE CLK100M SSD0 23N
34	IN	NC PCIE CLK100M SSD0 23P	==	WAKE_BASE=TRUE	NO_TEST=1	NC PCIE CLK100M SSD0 23P

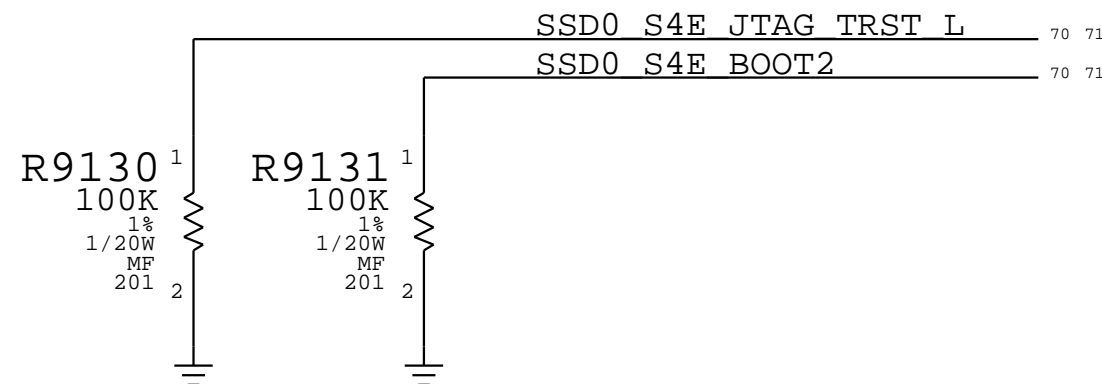
## C SSD Write Protect Control



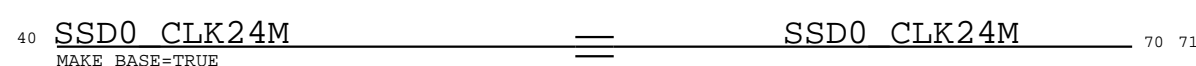
## D SSD Miscellaneous Control



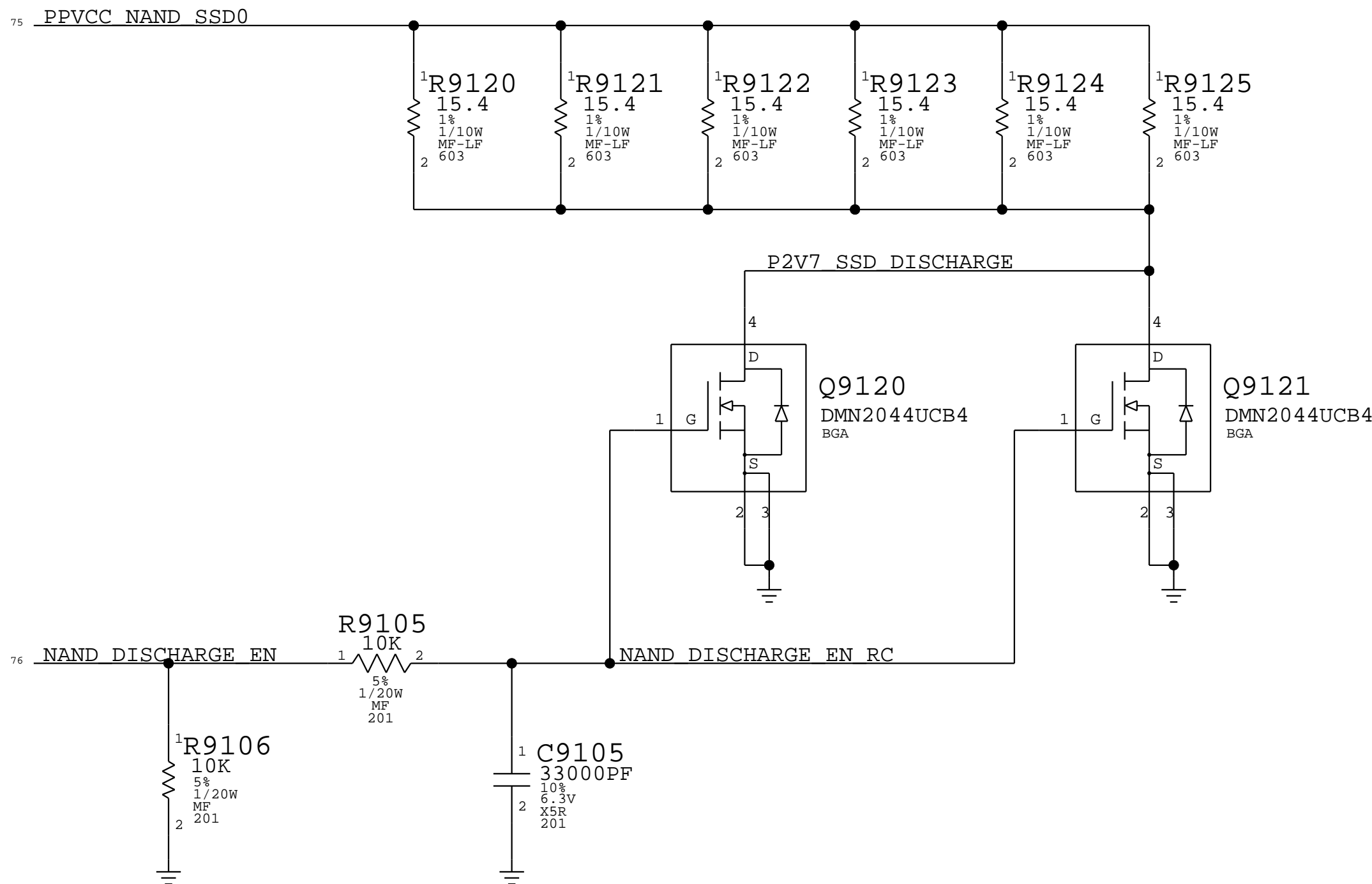
## E S4E Pull-Downs



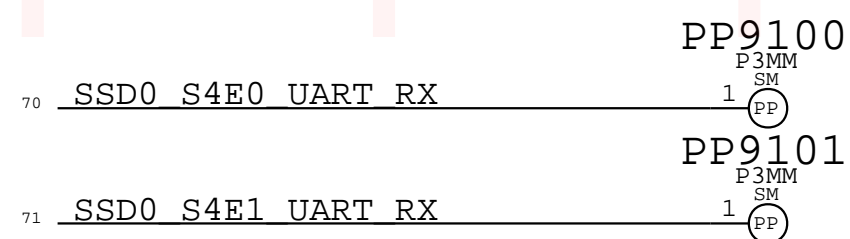
## F S4E Control Aliases




## G SSD Discharge Circuit

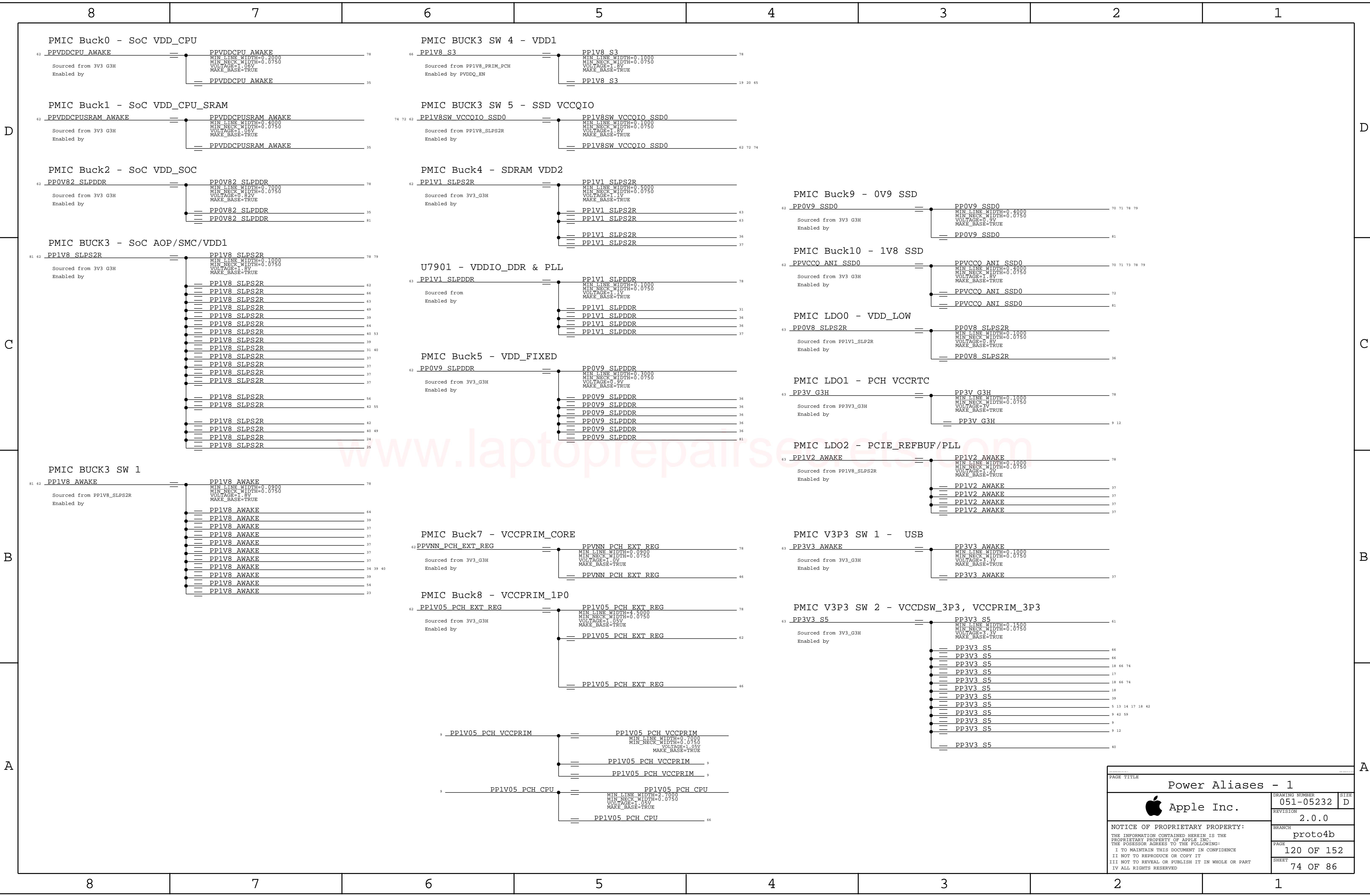


## H SSD UART Test Points

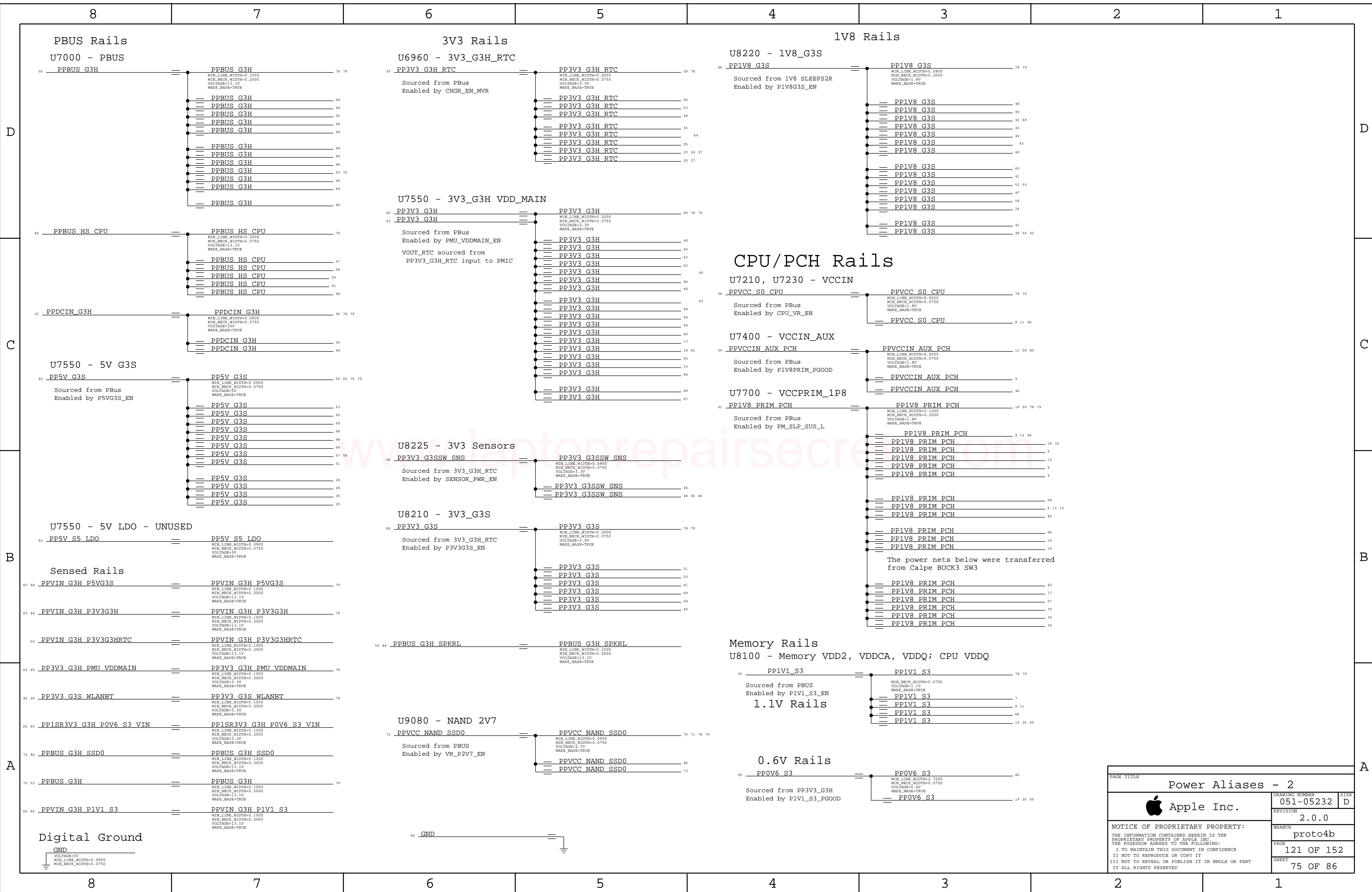


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SSD Support		
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	PAGE	91 OF 152
	SHEET	73 OF 86

BOM\_COST\_GROUP=SSD







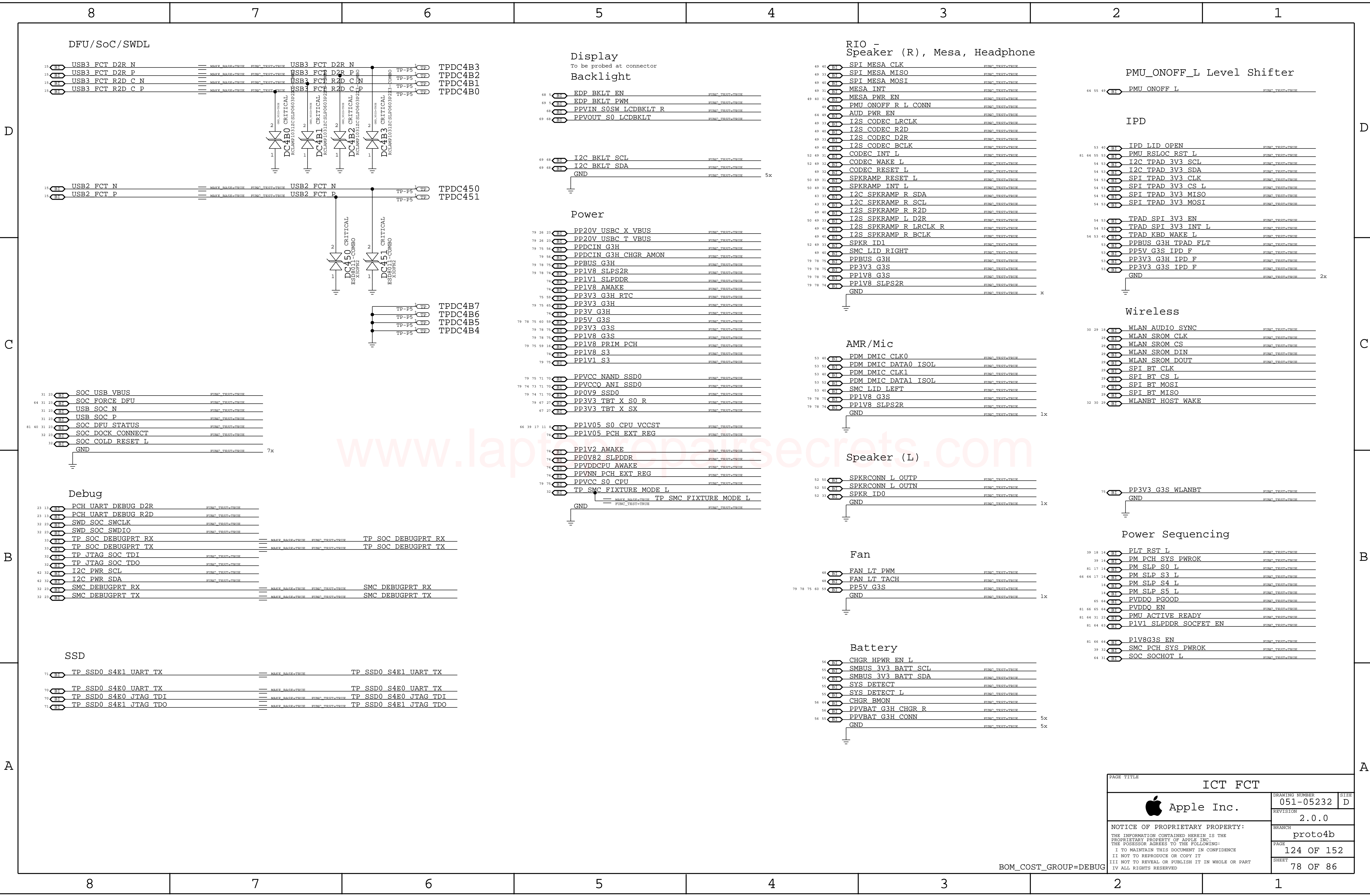




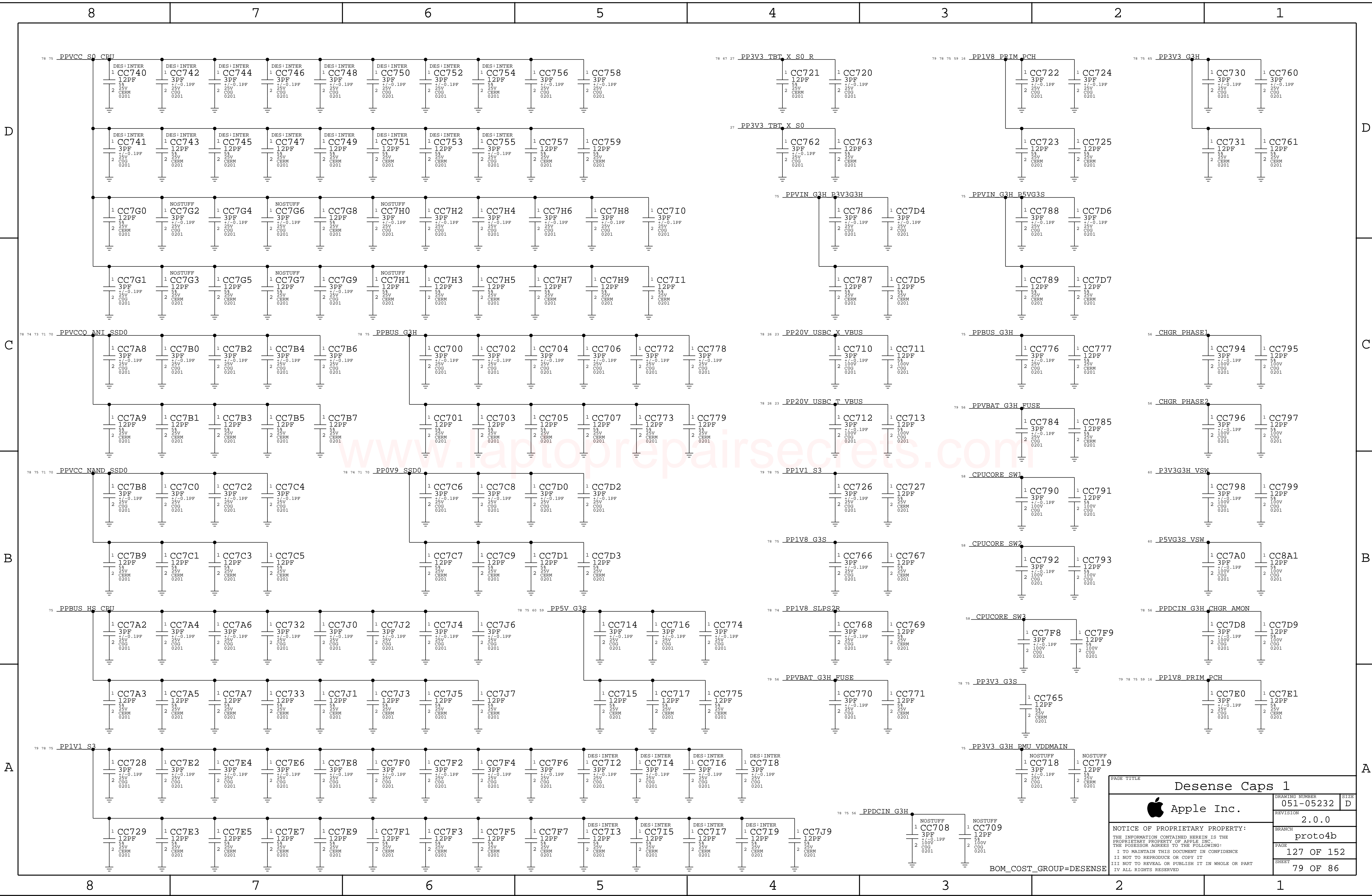


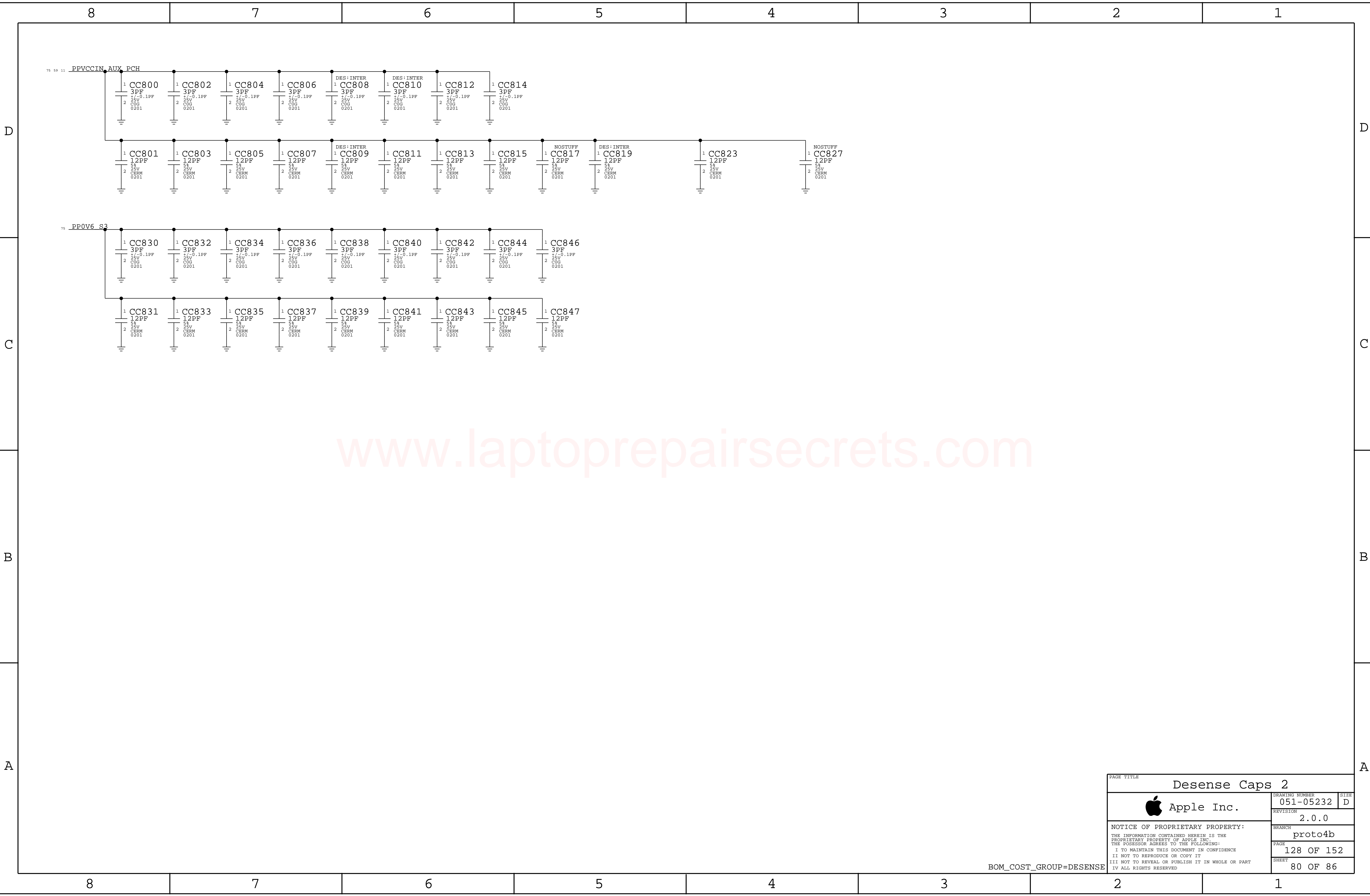













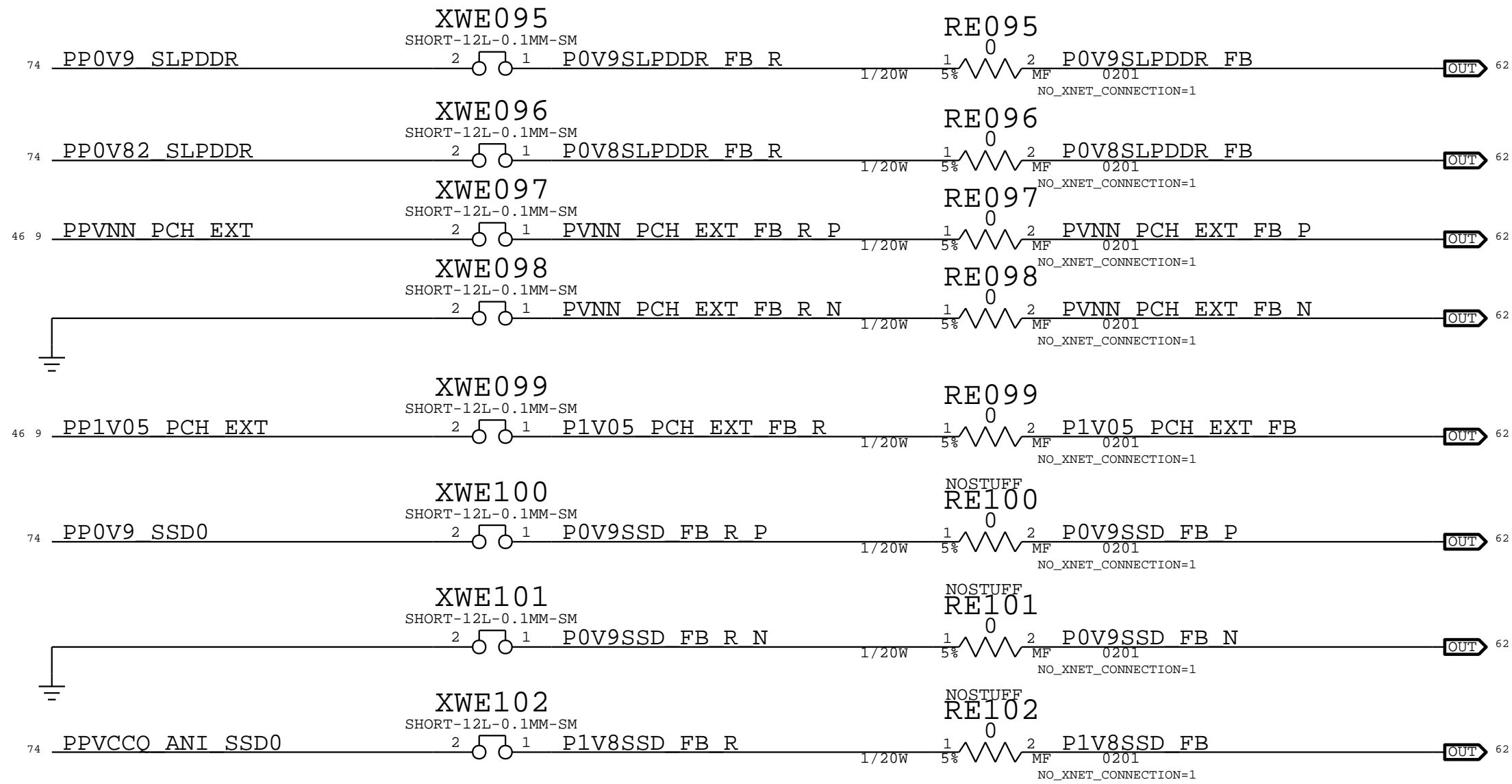
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PAGE TITLE			Desense Caps 2		
 Apple Inc.		DRAWING NUMBER		SIZE	
		051-05232		D	
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		BRANCH		proto4b	
		PAGE		128 OF 152	
		SHEET		80 OF 86	

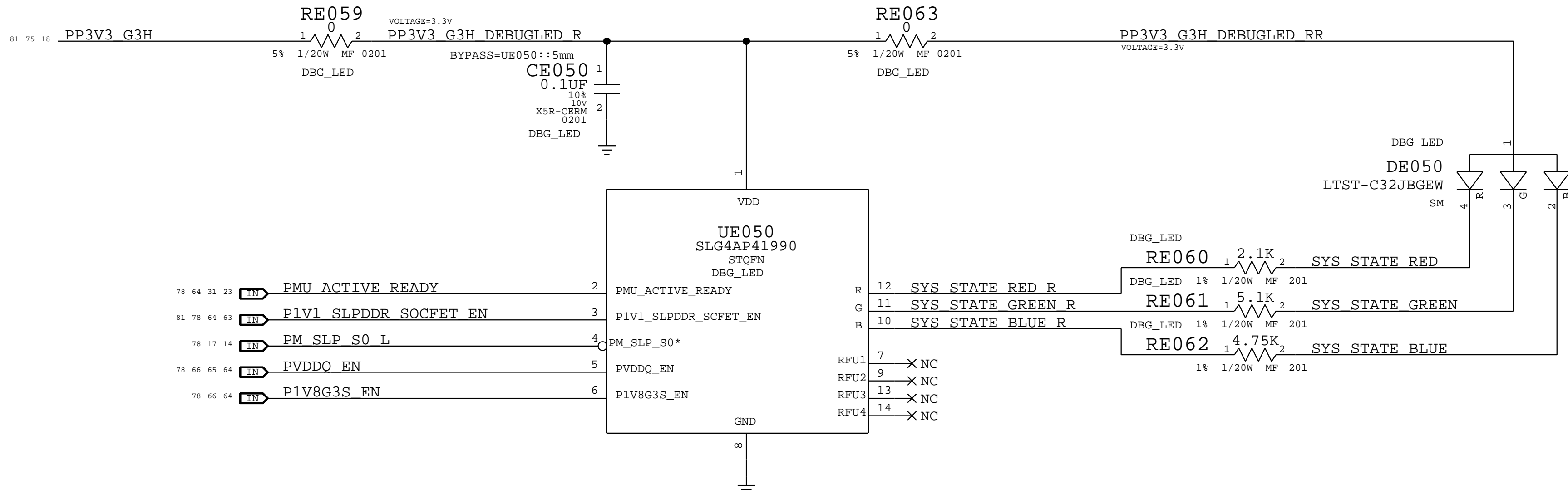
BOM\_COST\_GROUP=DESENSE



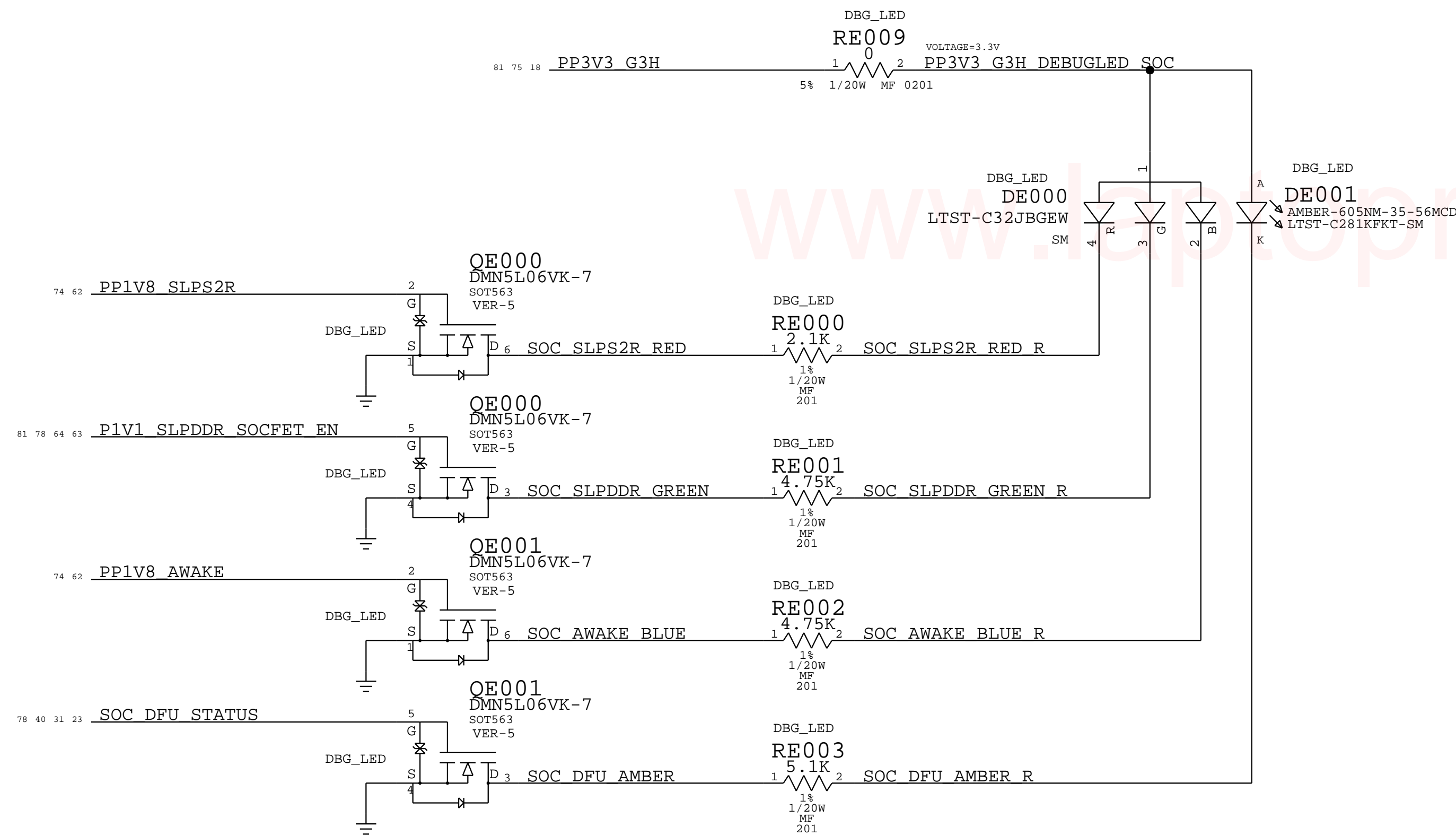
## A Remote Sense Support



## B System State LED



## C SoC State LEDs



Inputs					Outputs			Color	State		
PMU ACT RDY	P1V1_SLPDDR SOCFET_EN	PM_SLP S0_L	PVDDQ EN	P1V8G3S EN	R	G	B		System	SoC	CPU
0	0	0	0	0	BLINK	OFF	OFF	Blinking Red	Shutdown (G3H)	OFF	OFF
0	0	0	0	1	ON	OFF	OFF	Red	Standby (G3S)	SLPS2R	OFF
1	1	0	0	1	ON	ON	OFF	Yellow	Standby (G3S)	AWAKE	OFF
0	0	0	1	1	ON	ON	ON	White	Sleep	SLPS2R	S0i
1	1	0	1	1	OFF	OFF	ON	Blue	Sleep	AWAKE	S0i
1	1	1	1	1	OFF	ON	OFF	Green	Sleep	AWAKE	S0i
1	1	0	0	0	BLINK	ON	OFF	Blinking Yellow & Green	Run	AWAKE	S0

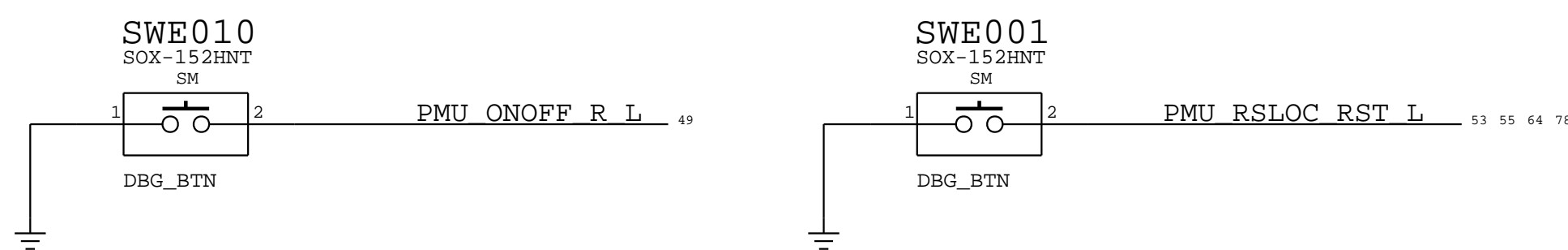
All other states are magenta


## D System Power States

	System State:		Shutdown (G3H)		Standby (G3S)		Standby (S4)		Sleep (S0i/S3)		Run (S0)
	CPU/PCH State:		Off (RTC Only)		Off (RTC Only)		Standby		Sleep		Run
Rails	SoC State:		S2R	Awake	S2R	Awake	S2R	Awake	S2R	Awake	Awake
PP*_S2R (0.8,1.1,1.8V)		On	On	On	On	On	On	On	On	On	On
PP*_DDR (0.8,0.9,1.1V)		Off	On	Off	On	Off	On	Off	On	On	On
PP*_AWAKE (CPU,SRAM,1.2,1.8,3.3V)		Off	On	Off	On	Off	On	Off	On	On	On
PP3V3_G3H (VR1)		On	On	On	On	On	On	On	On	On	On
PP1S_G3H		On	On	On	On	On	On	On	On	On	On
PP*_G3S (1.8,3.3,5V)		Off	On	On	On	On	On	On	On	On	On
PP*_S5 (1.8,3.3V)		Off	Off	Off	Off	Off	On	On	On	On	On
CPU/PCH VRs		Off	Off	Off	Off	Off	Off/On	Off/On	Off/On	Off/On	On

- \* System: Shutdown Awake is a transition state only.
- \* SoC: SLP\_DDR is a transition state only.
- \* CPU/PCH: S4 is only used by desktops for USB wakes.
- \* CPU/PCH: S5 is a transition state. May also be used for RTC wakes.

## E Debug Buttons




SYNC_MASTER=X589_BIGSUR		SYNC_DATE=04/12/2017	
PAGE TITLE			
Dev Support			
 Apple Inc.		DRAWING NUMBER	051-05232
		REVISION	2.0.0
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		PAGE	140 OF 152
		SHEET	81 OF 86

BOM\_COST\_GROUP=DEBUG



	8	7	6	5	4	3	2	1
	BOM Variants							
	EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS				
		685-00329	COMMON PARTS,MLB-TKSB,X1783	MLB_COMMON,MLB_DESENSE,MLB_CPUCFG				
		985-01143	DEV PARTS,MLB-TKSB,X1783	DBG_BTN,DBG_LED,USBC_DBG,WIFI_DBG,FANTACH:DEBUG				
	MVWL	939-08188	PCBA,MLB-TKSB,DCDC,X1783	ALTERNATE,COMMON_DEV_PARTS_BOM,SCHEM,PCBF,CPU_ICLY:INTERPOSER,MLB_POWER,MLB_MISC				
D	EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS				
	N4JL	639-08928	PCBA,MLB-TKSB,BEST,HY-8G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128G_HY				
	MTFF	639-08638	PCBA,MLB-TKSB,BEST,HY-8G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128G_SS				
	MXCP	639-08703	PCBA,MLB-TKSB,BEST,HY-8G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128G_TO				
	N4JY	639-08929	PCBA,MLB-TKSB,BEST,MI-8G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128G_HY				
	MXD2	639-08704	PCBA,MLB-TKSB,BEST,MI-8G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128G_SS				
	MXDF	639-08705	PCBA,MLB-TKSB,BEST,MI-8G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128G_TO				
	N4KJ	639-08930	PCBA,MLB-TKSB,BEST,SS-8G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128G_HY				
	MXDR	639-08706	PCBA,MLB-TKSB,BEST,SS-8G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128G_SS				
	MXF4	639-08707	PCBA,MLB-TKSB,BEST,SS-8G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128G_TO				
C	N4KY	639-08931	PCBA,MLB-TKSB,BEST,HY-16G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128G_HY				
	MXPH	639-08708	PCBA,MLB-TKSB,BEST,HY-16G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128G_SS				
	MXFV	639-08709	PCBA,MLB-TKSB,BEST,HY-16G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128G_TO				
	N4LF	639-08932	PCBA,MLB-TKSB,BEST,MI-16G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128G_HY				
	MXG6	639-08710	PCBA,MLB-TKSB,BEST,MI-16G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128G_SS				
	MXGK	639-08711	PCBA,MLB-TKSB,BEST,MI-16G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128G_TO				
	N4LR	639-08933	PCBA,MLB-TKSB,BEST,SS-16G,HY-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128G_HY				
	MXGX	639-08712	PCBA,MLB-TKSB,BEST,SS-16G,SS-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128G_SS				
	MXH8	639-08713	PCBA,MLB-TKSB,BEST,SS-16G,TO-128G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128G_TO				
	MXHM	639-08714	PCBA,MLB-TKSB,BEST,HY-8G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_HY				
B	MXJ0	639-08715	PCBA,MLB-TKSB,BEST,HY-8G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_SD				
	MXJC	639-08716	PCBA,MLB-TKSB,BEST,HY-8G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_TO				
	MXJQ	639-08717	PCBA,MLB-TKSB,BEST,MI-8G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_HY				
	MXK3	639-08718	PCBA,MLB-TKSB,BEST,MI-8G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_SD				
	MXKG	639-08719	PCBA,MLB-TKSB,BEST,MI-8G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_TO				
	MXKT	639-08720	PCBA,MLB-TKSB,BEST,SS-8G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_HY				
	MXL5	639-08721	PCBA,MLB-TKSB,BEST,SS-8G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_SD				
	MXLJ	639-08722	PCBA,MLB-TKSB,BEST,SS-8G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_TO				
	MXLW	639-08723	PCBA,MLB-TKSB,BEST,HY-16G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_HY				
	MXM7	639-08724	PCBA,MLB-TKSB,BEST,HY-16G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_SD				
A	MXML	639-08725	PCBA,MLB-TKSB,BEST,HY-16G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_TO				
	MXMY	639-08726	PCBA,MLB-TKSB,BEST,MI-16G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_HY				
	MXN9	639-08727	PCBA,MLB-TKSB,BEST,MI-16G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_SD				
	MXNN	639-08728	PCBA,MLB-TKSB,BEST,MI-16G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_TO				
	MXP1	639-08729	PCBA,MLB-TKSB,BEST,SS-16G,HY-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_HY				
	MXPD	639-08730	PCBA,MLB-TKSB,BEST,SS-16G,SD-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_SD				
	MXPQ	639-08731	PCBA,MLB-TKSB,BEST,SS-16G,TO-256G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_TO				
	MXQ3	639-08732	PCBA,MLB-TKSB,BEST,HY-8G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_512G_SD				
	MXQG	639-08733	PCBA,MLB-TKSB,BEST,HY-8G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_512G_TO				
	MXQT	639-08734	PCBA,MLB-TKSB,BEST,MI-8G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_512G_SD				
B	MXR5	639-08735	PCBA,MLB-TKSB,BEST,MI-8G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_512G_TO				
	MXRJ	639-08736	PCBA,MLB-TKSB,BEST,SS-8G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_512G_SD				
	MXRW	639-08737	PCBA,MLB-TKSB,BEST,SS-8G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_512G_TO				
	MXT7	639-08738	PCBA,MLB-TKSB,BEST,HY-16G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_512G_SD				
	MXTN	639-08739	PCBA,MLB-TKSB,BEST,HY-16G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_512G_TO				
	MXV1	639-08740	PCBA,MLB-TKSB,BEST,MI-16G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_512G_SD				
	MXVD	639-08741	PCBA,MLB-TKSB,BEST,MI-16G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_512G_TO				
	MXVQ	639-08742	PCBA,MLB-TKSB,BEST,SS-16G,SD-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_512G_SD				
	MXW3	639-08743	PCBA,MLB-TKSB,BEST,SS-16G,TO-512G,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_512G_TO				
	MXWG	639-08744	PCBA,MLB-TKSB,BEST,HY-8G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_1P0T_HY				
A	MXWT	639-08745	PCBA,MLB-TKSB,BEST,HY-8G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_1P0T_SD				
	MXX5	639-08746	PCBA,MLB-TKSB,BEST,MI-8G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_1P0T_HY				
	MXXJ	639-08747	PCBA,MLB-TKSB,BEST,MI-8G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_1P0T_SD				
	MXXH	639-08748	PCBA,MLB-TKSB,BEST,SS-8G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_1P0T_HY				
	MYX8	639-08749	PCBA,MLB-TKSB,BEST,SS-8G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_1P0T_SD				
	MYXM	639-08750	PCBA,MLB-TKSB,BEST,HY-16G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_1P0T_HY				
	MY11	639-08751	PCBA,MLB-TKSB,BEST,HY-16G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_1P0T_SD				
	MY1F	639-08752	PCBA,MLB-TKSB,BEST,MI-16G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_1P0T_HY				
	MY1R	639-08753	PCBA,MLB-TKSB,BEST,MI-16G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_1P0T_SD				
	MY25	639-08754	PCBA,MLB-TKSB,BEST,SS-16G,HY-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_1P0T_HY				
	MY2L	639-08755	PCBA,MLB-TKSB,BEST,SS-16G,SD-1.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_1P0T_SD				
	8	7	6	5	4	3	2	1


EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS
NRDT	639-09922	PCBA,MLB-TKSB,BEST,HY-8G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_2P0T_HY
MY2Y	639-08756	PCBA,MLB-TKSB,BEST,HY-8G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRF5	639-09923	PCBA,MLB-TKSB,BEST,MI-8G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_2P0T_HY
MY39	639-08757	PCBA,MLB-TKSB,BEST,MI-8G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRFJ	639-09924	PCBA,MLB-TKSB,BEST,SS-8G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_2P0T_HY
MY3N	639-08758	PCBA,MLB-TKSB,BEST,SS-8G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRFW	639-09925	PCBA,MLB-TKSB,BEST,HY-16G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_2P0T_HY
MY41	639-08759	PCBA,MLB-TKSB,BEST,HY-16G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_2P0T_SD
NRG7	639-09926	PCBA,MLB-TKSB,BEST,MI-16G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_2P0T_HY
MY4D	639-08760	PCBA,MLB-TKSB,BEST,MI-16G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_2P0T_SD
NRGL	639-09927	PCBA,MLB-TKSB,BEST,SS-16G,HY-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_2P0T_HY
MY4Q	639-08761	PCBA,MLB-TKSB,BEST,SS-16G,SD-2.0T,X1783	CMM_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEST,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_2P0T_SD

PAGE TITLE			
BOM Variants 1			
 Apple Inc.		DRAWING NUMBER	051-05232
		REVISION	D
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		PAGE	proto4b
		SHEET	141 OF 152
			82 OF 86



	8	7	6	5	4	3	2	1
D	BOM Variants							
	EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS				
	N4M6	639-08934	PCBA,MLB-TKSB,BEDRE, HY-8G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128Q_HY				
	N4MM	639-08935	PCBA,MLB-TKSB,BEDRE, HY-8G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128Q_SS				
	N4P1	639-08936	PCBA,MLB-TKSB,BEDRE, HY-8G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_128Q_TO				
	N4PD	639-08937	PCBA,MLB-TKSB,BEDRE, MI-8G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128Q_HY				
	N4PQ	639-08938	PCBA,MLB-TKSB,BEDRE, MI-8G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128Q_SS				
	N4Q3	639-08939	PCBA,MLB-TKSB,BEDRE, MI-8G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_128Q_TO				
	N4QH	639-08940	PCBA,MLB-TKSB,BEDRE, SS-8G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128Q_HY				
	N4QV	639-08941	PCBA,MLB-TKSB,BEDRE, SS-8G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128Q_SS				
	N4T7	639-08942	PCBA,MLB-TKSB,BEDRE, SS-8G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_128Q_TO				
	N4TL	639-08943	PCBA,MLB-TKSB,BEDRE, HY-16G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128Q_HY				
	N4TY	639-08944	PCBA,MLB-TKSB,BEDRE, HY-16G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128Q_SS				
	N4VC	639-08945	PCBA,MLB-TKSB,BEDRE, HY-16G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_128Q_TO				
	N4VP	639-08946	PCBA,MLB-TKSB,BEDRE, MI-16G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128Q_HY				
	N4W2	639-08947	PCBA,MLB-TKSB,BEDRE, MI-16G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128Q_SS				
	N4WG	639-08948	PCBA,MLB-TKSB,BEDRE, MI-16G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_128Q_TO				
	N4WT	639-08949	PCBA,MLB-TKSB,BEDRE, SS-16G, HY-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128Q_HY				
	N4X5	639-08950	PCBA,MLB-TKSB,BEDRE, SS-16G, SS-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128Q_SS				
	N4XJ	639-08951	PCBA,MLB-TKSB,BEDRE, SS-16G, TO-128G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_128Q_TO				
C	N4XW	639-08952	PCBA,MLB-TKSB,BEDRE, HY-8G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_HY				
	N4Y8	639-08953	PCBA,MLB-TKSB,BEDRE, HY-8G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_SD				
	N4YM	639-08954	PCBA,MLB-TKSB,BEDRE, HY-8G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_256G_TO				
	N500	639-08955	PCBA,MLB-TKSB,BEDRE, MI-8G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_HY				
	N50G	639-08956	PCBA,MLB-TKSB,BEDRE, MI-8G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_SD				
	N510	639-08957	PCBA,MLB-TKSB,BEDRE, MI-8G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_256G_TO				
	N51G	639-08958	PCBA,MLB-TKSB,BEDRE, SS-8G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_HY				
	N51W	639-08959	PCBA,MLB-TKSB,BEDRE, SS-8G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_SD				
	N527	639-08960	PCBA,MLB-TKSB,BEDRE, SS-8G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_256G_TO				
	N52L	639-08961	PCBA,MLB-TKSB,BEDRE, HY-16G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_HY				
	N52Y	639-08962	PCBA,MLB-TKSB,BEDRE, HY-16G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_SD				
	N539	639-08963	PCBA,MLB-TKSB,BEDRE, HY-16G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_256G_TO				
	N53Q	639-08964	PCBA,MLB-TKSB,BEDRE, MI-16G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_HY				
	N555	639-08965	PCBA,MLB-TKSB,BEDRE, MI-16G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_SD				
	N55J	639-08966	PCBA,MLB-TKSB,BEDRE, MI-16G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_256G_TO				
	N55W	639-08967	PCBA,MLB-TKSB,BEDRE, SS-16G, HY-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_HY				
	N567	639-08968	PCBA,MLB-TKSB,BEDRE, SS-16G, SD-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_SD				
	N56L	639-08969	PCBA,MLB-TKSB,BEDRE, SS-16G, TO-256G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_256G_TO				
	N56Y	639-08970	PCBA,MLB-TKSB,BEDRE, HY-8G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_512Q_SD				
	B	N579	639-08971	PCBA,MLB-TKSB,BEDRE, HY-8G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_512Q_TO			
N57N		639-08972	PCBA,MLB-TKSB,BEDRE, MI-8G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_512Q_SD				
N591		639-08973	PCBA,MLB-TKSB,BEDRE, MI-8G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_512Q_TO				
N59D		639-08974	PCBA,MLB-TKSB,BEDRE, SS-8G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_512Q_SD				
N59Q		639-08975	PCBA,MLB-TKSB,BEDRE, SS-8G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_512Q_TO				
N5C4		639-08976	PCBA,MLB-TKSB,BEDRE, HY-16G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_512Q_SD				
N5CH		639-08977	PCBA,MLB-TKSB,BEDRE, HY-16G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_512Q_TO				
N5CV		639-08978	PCBA,MLB-TKSB,BEDRE, MI-16G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_512Q_SD				
N5D6		639-08979	PCBA,MLB-TKSB,BEDRE, MI-16G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_512Q_TO				
N5DK		639-08980	PCBA,MLB-TKSB,BEDRE, SS-16G, SD-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_512Q_SD				
N5DX		639-08981	PCBA,MLB-TKSB,BEDRE, SS-16G, TO-512G, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_512Q_TO				
N5F8		639-08982	PCBA,MLB-TKSB,BEDRE, HY-8G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_1P0T_HY				
N5FM		639-08983	PCBA,MLB-TKSB,BEDRE, HY-8G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_1P0T_SD				
N5G0		639-08984	PCBA,MLB-TKSB,BEDRE, MI-8G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_1P0T_HY				
N5GC		639-08985	PCBA,MLB-TKSB,BEDRE, MI-8G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_1P0T_SD				
N5GP		639-08986	PCBA,MLB-TKSB,BEDRE, SS-8G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_1P0T_HY				
N5H3		639-08987	PCBA,MLB-TKSB,BEDRE, SS-8G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_1P0T_SD				
N5HG		639-08988	PCBA,MLB-TKSB,BEDRE, HY-16G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_1P0T_HY				
N5HV		639-08989	PCBA,MLB-TKSB,BEDRE, HY-16G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_1P0T_SD				
A		N5J6	639-08990	PCBA,MLB-TKSB,BEDRE, MI-16G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_1P0T_HY			
	N5JL	639-08991	PCBA,MLB-TKSB,BEDRE, MI-16G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_1P0T_SD				
	N5JY	639-08992	PCBA,MLB-TKSB,BEDRE, SS-16G, HY-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_1P0T_HY				
	N5KC	639-08993	PCBA,MLB-TKSB,BEDRE, SS-16G, SD-1.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_1P0T_SD				
	8	7	6	5	4	3	2	1

EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS
NRGY	639-09928	PCBA,MLB-TKSB,BEDRE, HY-8G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_2P0T_HY
N5KP	639-08994	PCBA,MLB-TKSB,BEDRE, HY-8G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRH9	639-09929	PCBA,MLB-TKSB,BEDRE, MI-8G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_2P0T_HY
N5L2	639-08995	PCBA,MLB-TKSB,BEDRE, MI-8G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRHN	639-09930	PCBA,MLB-TKSB,BEDRE, SS-8G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_2P0T_HY
N5LF	639-08996	PCBA,MLB-TKSB,BEDRE, SS-8G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_8GB,NANDCFG:ITLC_S48_2P0T_SD
NRJ1	639-09931	PCBA,MLB-TKSB,BEDRE, HY-16G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_2P0T_HY
N5LR	639-08997	PCBA,MLB-TKSB,BEDRE, HY-16G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S48_2P0T_SD
NRJD	639-09932	PCBA,MLB-TKSB,BEDRE, MI-16G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_2P0T_HY
N5M4	639-08998	PCBA,MLB-TKSB,BEDRE, MI-16G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S48_2P0T_SD
NRJQ	639-09933	PCBA,MLB-TKSB,BEDRE, SS-16G, HY-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_2P0T_HY
N5MH	639-08999	PCBA,MLB-TKSB,BEDRE, SS-16G, SD-2.0T, X1783	CMN_PARTS_BOM_DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:BEDRE,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S48_2P0T_SD


PAGE TITLE		
BOM Variants 2		
 Apple Inc.	DRAWING NUMBER	051-05232
	REVISION	2.0.0
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	PAGE	142 OF 152
	SHEET	83 OF 86



## BOM Variants

EEEE	BOM NUMBER	BOM NAME	BOM OPTIONS
N5MV	639-09000	PCBA,MLB-TKSB,GOOD,HY-8G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_128G_HY
MY53	639-08762	PCBA,MLB-TKSB,GOOD,HY-8G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_128G_SS
MY5G	639-08763	PCBA,MLB-TKSB,GOOD,HY-8G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_128G_TO
N5N6	639-09001	PCBA,MLB-TKSB,GOOD,MI-8G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_128G_HY
MY5T	639-08764	PCBA,MLB-TKSB,GOOD,MI-8G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_128G_SS
MY65	639-08765	PCBA,MLB-TKSB,GOOD,MI-8G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_128G_TO
N5NK	639-09002	PCBA,MLB-TKSB,GOOD,SS-8G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_128G_HY
MY6J	639-08766	PCBA,MLB-TKSB,GOOD,SS-8G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_128G_SS
MY6W	639-08767	PCBA,MLB-TKSB,GOOD,SS-8G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_128G_TO
N5NX	639-09003	PCBA,MLB-TKSB,GOOD,HY-16G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_128G_HY
MY77	639-08768	PCBA,MLB-TKSB,GOOD,HY-16G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_128G_SS
MY7L	639-08769	PCBA,MLB-TKSB,GOOD,HY-16G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_128G_TO
N5P9	639-09004	PCBA,MLB-TKSB,GOOD,MI-16G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_128G_HY
MY7Y	639-08770	PCBA,MLB-TKSB,GOOD,MI-16G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_128G_SS
MY89	639-08771	PCBA,MLB-TKSB,GOOD,MI-16G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_128G_TO
N5PN	639-09005	PCBA,MLB-TKSB,GOOD,SS-16G,HY-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_128G_HY
MY8N	639-08772	PCBA,MLB-TKSB,GOOD,SS-16G,SS-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_128G_SS
MY91	639-08773	PCBA,MLB-TKSB,GOOD,SS-16G,TO-128G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_128G_TO
MY9D	639-08774	PCBA,MLB-TKSB,GOOD,HY-8G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_256G_HY
MY9Q	639-08775	PCBA,MLB-TKSB,GOOD,HY-8G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_256G_SD
MYC3	639-08776	PCBA,MLB-TKSB,GOOD,HY-8G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_256G_TO
MYCG	639-08777	PCBA,MLB-TKSB,GOOD,MI-8G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_256G_HY
MYCT	639-08778	PCBA,MLB-TKSB,GOOD,MI-8G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_256G_SD
MYD5	639-08779	PCBA,MLB-TKSB,GOOD,MI-8G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_256G_TO
MYDJ	639-08780	PCBA,MLB-TKSB,GOOD,SS-8G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_256G_HY
MYDW	639-08781	PCBA,MLB-TKSB,GOOD,SS-8G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_256G_SD
MYF7	639-08782	PCBA,MLB-TKSB,GOOD,SS-8G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_256G_TO
MYFL	639-08783	PCBA,MLB-TKSB,GOOD,HY-16G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_256G_HY
MYFY	639-08784	PCBA,MLB-TKSB,GOOD,HY-16G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_256G_SD
MYG9	639-08785	PCBA,MLB-TKSB,GOOD,HY-16G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_256G_TO
MYGN	639-08786	PCBA,MLB-TKSB,GOOD,MI-16G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_256G_HY
MYH1	639-08787	PCBA,MLB-TKSB,GOOD,MI-16G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_256G_SD
MYHD	639-08788	PCBA,MLB-TKSB,GOOD,MI-16G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_256G_TO
MYHQ	639-08789	PCBA,MLB-TKSB,GOOD,SS-16G,HY-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_256G_HY
MYJ3	639-08790	PCBA,MLB-TKSB,GOOD,SS-16G,SD-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_256G_SD
MYJG	639-08791	PCBA,MLB-TKSB,GOOD,SS-16G,TO-256G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_256G_TO
MYK5	639-08792	PCBA,MLB-TKSB,GOOD,HY-8G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_512G_SD
MYKJ	639-08793	PCBA,MLB-TKSB,GOOD,HY-8G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_512G_TO
MYKW	639-08794	PCBA,MLB-TKSB,GOOD,MI-8G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_512G_SD
MYL7	639-08795	PCBA,MLB-TKSB,GOOD,MI-8G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_512G_TO
MYLL	639-08796	PCBA,MLB-TKSB,GOOD,SS-8G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_512G_SD
MYLY	639-08797	PCBA,MLB-TKSB,GOOD,SS-8G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_512G_TO
MYM9	639-08798	PCBA,MLB-TKSB,GOOD,HY-16G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_512G_SD
MYMN	639-08799	PCBA,MLB-TKSB,GOOD,HY-16G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_512G_TO
MYN1	639-08800	PCBA,MLB-TKSB,GOOD,MI-16G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_512G_SD
MYND	639-08801	PCBA,MLB-TKSB,GOOD,MI-16G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_512G_TO
MYNQ	639-08802	PCBA,MLB-TKSB,GOOD,SS-16G,SD-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_512G_SD
MYP3	639-08803	PCBA,MLB-TKSB,GOOD,SS-16G,TO-512G,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_512G_TO
MYPG	639-08804	PCBA,MLB-TKSB,GOOD,HY-8G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_1P0T_HY
MYPT	639-08805	PCBA,MLB-TKSB,GOOD,HY-8G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_R8B,NANDCFG:ITLC_S4E_1P0T_SD
MYQ5	639-08806	PCBA,MLB-TKSB,GOOD,MI-8G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_1P0T_HY
MYQJ	639-08807	PCBA,MLB-TKSB,GOOD,MI-8G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_R8B,NANDCFG:ITLC_S4E_1P0T_SD
MYQW	639-08808	PCBA,MLB-TKSB,GOOD,SS-8G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_1P0T_HY
MYR7	639-08809	PCBA,MLB-TKSB,GOOD,SS-8G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_R8B,NANDCFG:ITLC_S4E_1P0T_SD
MYRL	639-08810	PCBA,MLB-TKSB,GOOD,HY-16G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_1P0T_HY
MYRY	639-08811	PCBA,MLB-TKSB,GOOD,HY-16G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:HYNIX_16GB,NANDCFG:ITLC_S4E_1P0T_SD
MYT9	639-08812	PCBA,MLB-TKSB,GOOD,MI-16G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_1P0T_HY
MYTN	639-08813	PCBA,MLB-TKSB,GOOD,MI-16G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:MICRON_16GB,NANDCFG:ITLC_S4E_1P0T_SD
MV1	639-08814	PCBA,MLB-TKSB,GOOD,SS-16G,HY-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_1P0T_HY
MYVR	639-08816	PCBA,MLB-TKSB,GOOD,SS-16G,SD-1.0T,X1783	CHN_PARTS_BOM.DEV_PARTS_BOM.ALTERNATE,CPU_ICLY:GOOD,DRAMCFG:SAMSUNG_16GB,NANDCFG:ITLC_S4E_1P0T_SD

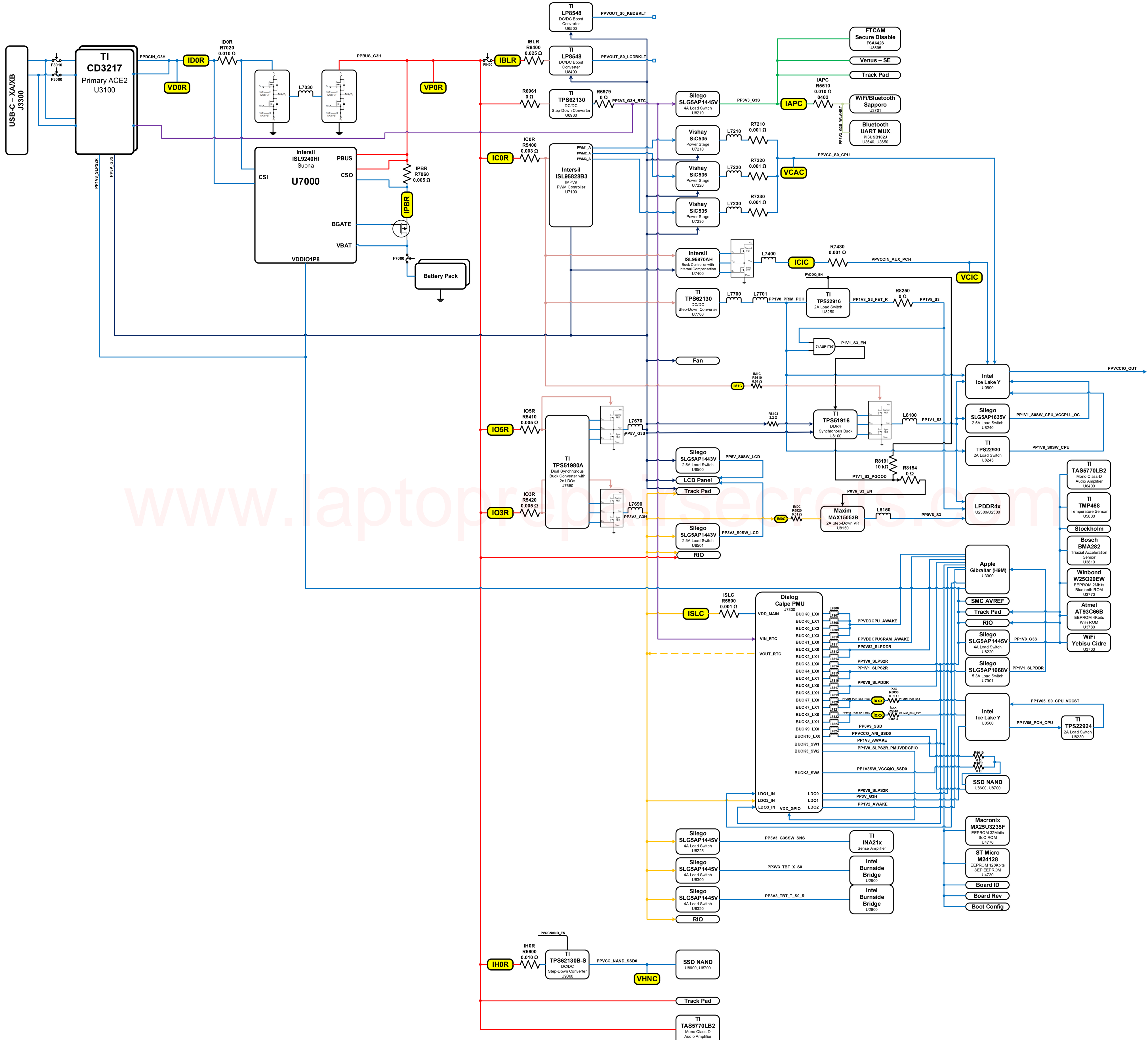
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NRK3	639-09934	PCBA,MLB-TKSB,GOOD,HY-8G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:HYNIX_8GB,NANDCPG:ITLC_S48_2POT_HY
MYW4	639-08817	PCBA,MLB-TKSB,GOOD,HY-8G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:HYNIX_8GB,NANDCPG:ITLC_S48_2POT_SD
NRKG	639-09935	PCBA,MLB-TKSB,GOOD,MI-8G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:MICRON_8GB,NANDCPG:ITLC_S48_2POT_HY
MYWH	639-08818	PCBA,MLB-TKSB,GOOD,MI-8G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:MICRON_8GB,NANDCPG:ITLC_S48_2POT_SD
NRKT	639-09936	PCBA,MLB-TKSB,GOOD,SS-8G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:SAMSUNG_8GB,NANDCPG:ITLC_S48_2POT_HY
MYWV	639-08819	PCBA,MLB-TKSB,GOOD,SS-8G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:SAMSUNG_8GB,NANDCPG:ITLC_S48_2POT_SD
NRL5	639-09937	PCBA,MLB-TKSB,GOOD,HY-16G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:HYNIX_16GB,NANDCPG:ITLC_S48_2POT_HY
MYX6	639-08820	PCBA,MLB-TKSB,GOOD,HY-16G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:HYNIX_16GB,NANDCPG:ITLC_S48_2POT_SD
NRLJ	639-09938	PCBA,MLB-TKSB,GOOD,MI-16G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:MICRON_16GB,NANDCPG:ITLC_S48_2POT_HY
MYXK	639-08821	PCBA,MLB-TKSB,GOOD,MI-16G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:MICRON_16GB,NANDCPG:ITLC_S48_2POT_SD
NRLW	639-09939	PCBA,MLB-TKSB,GOOD,SS-16G,HY-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:SAMSUNG_16GB,NANDCPG:ITLC_S48_2POT_HY
MYXX	639-08822	PCBA,MLB-TKSB,GOOD,SS-16G,SD-2.0T,X1783	CMN_PARTS_BOM,DEV_PARTS_BOM,ALTERNATE,CPU_ICLY:GOOD,DRAMCPG:SAMSUNG_16GB,NANDCPG:ITLC_S48_2POT_SD

PAGE TITLE		BOM Variants 3	
 Apple Inc.	DRAWING NUMBER		SIZE
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		PAGE	143 OF 152
		SHEET	84 OF 86





# Power Supply Sub-System



### Power Block Diagram



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DRAWING NUMBER	SIZE
251 250000	—

051-05232	D
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PAGE 152 OF 152

132 OF 132

86 OF 86