


8		7		6		5		4		3		2		1											
D	1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%. 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS. 3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.											REV	ECN	DESCRIPTION OF REVISION	CK APPD DATE										
												4	0021398968	ENGINEERING RELEASED	2019-12-19										
	X1647 MLB NAVI10 P1																								
C	LAST_MODIFICATION=Thu Dec 19 09:25:43 2019				LAST_MODIFICATION=Thu Dec 19 09:25:43 2019				LAST_MODIFICATION=Thu Dec 19 09:25:43 2019																
	PAGE	CSA	CONTENTS	SYNC	DATE	PAGE	CSA	CONTENTS	SYNC	DATE	PAGE	CSA	CONTENTS	SYNC	DATE										
	1	1	SCHEM,MLB_NAVI10			61	67	AUDIO MIC CONNECTOR	DIRK	12/12/2019	121	140	GDDR6 X16 GPU CH F0, F1	RAYMOND	08/28/2019										
	2	2	BOM Configuration	KRITHIKA	05/24/2019	62	68	CAMERA/ALS CONNECTOR	J184	06/07/2019	122	141	GDDR6 X16 GPU CH G0, G1	RAYMOND	08/28/2019										
	3	3	DEBUG: LEDs	J185_NAVI14	12/04/2018	63	69	PLATFORM POWER: CONNECTORS	JERRY	12/12/2019	123	142	GDDR6 X16 GPU CH H0, H1	RAYMOND	08/28/2019										
	4	4	MECHANICAL: PD PARTS	KRITHIKA	09/24/2019	64	70	VR CPU Core & VCCGT Ctrl	SUNIL	08/27/2019	124	145	VR VDDCR_GFX, VDDCR_SOC CTRL	SUNIL	11/15/2019										
	5	5	CPU DMI/PEG/DDI	J184	06/07/2019	65	71	VR CPU CORE PHASES 1-3	SUNIL	08/27/2019	125	146	VR VDDCR_GFX PHASES 1-3	SUNIL	10/02/2019										
	6	6	CPU Clock/Misc/JTAG/CFG	MURPHY	10/28/2019	66	72	VR CPU CORE PHASES 4-6	SUNIL	08/27/2019	126	147	VR VDDCR_GFX PHASES 4-6	SUNIL	10/02/2019										
	7	7	CPU DDR4 Interface	J184	06/07/2019	67	73	CPU & CHIPSET: CPU VDDQ VR	SUNIL	11/15/2019	127	148	VR VDDCR_GFX PHASES 7-9	SUNIL	10/02/2019										
	8	8	CPU Power	MURPHY	10/31/2019	68	74	CPU & CHIPSET: VCCGT & VCCSA	SUNIL	08/27/2019	128	149	VR GFX VDDIO, VDDCI CTRL	SUNIL	08/27/2019										
	9	9	CPU Ground	J184	06/07/2019	69	75	CPU & CHIPSET: CPU VCCIO VR	SUNIL	08/27/2019	129	150	GRAPHICS: GPU VDDCI VR	SUNIL	08/27/2019										
	10	10	CPU DECOUPLING 1	MURPHY	09/26/2019	70	76	PLATFORM POWER: 3.3V G3H/5V G3S VR	SUNIL	08/27/2019	130	151	GRAPHICS: GPU 0V75 VR	SUNIL	08/27/2019										
	11	11	CPU DECOUPLING-2	MURPHY	05/06/2019	71	77	CPU & CHIPSET: PCH 1V05	SUNIL	11/15/2019	131	152	GRAPHICS: GPU 1V8 VR	SUNIL	10/16/2019										
	12	12	PCH DMI/eSPI/SPI/RTC/Sideband/PM	RAYMOND	11/01/2019	72	78	PMIC BUCKS AND SWs	MATTHEW	10/24/2019	132	153	VR GFX VDDIO PHASES 1-2	SUNIL	08/27/2019										
	13	13	PCH USB/JTAG/HDA	MATTHEW	09/10/2019	73	79	PMIC LDOs	MATTHEW	10/11/2019	133	154	GPU POWER RAIL DISCHARGE	MATTHEW	08/09/2019										
	14	14	PCH PCIe and Clocks	MATTHEW	09/04/2019	74	80	PMIC GPIOs Controls	MATTHEW	09/16/2019	134	155	POWER ALIASES - 1	KENNYC	04/29/2019										
	15	15	PCH GPIO/Misc/NCTF	MATTHEW	09/04/2019	75	81	DISPLAY: LCD Backlight Driver (LP8565)	JERRYHU	06/13/2019	135	156	POWER ALIASES - 2	KRITHIKA	04/29/2019										
	16	16	PCH Power	MATTHEW	10/24/2019	76	82	DISPLAY: Backlight Driver 2	RAYMOND	03/11/2019	136	158	FCT/ICT TPS -1	J184	06/07/2019										
	17	17	PCH Decoupling	MATTHEW	10/24/2019	77	83	DISPLAY: Support	RAYMOND	08/28/2019	137	159	CHARZ AUTOMATION TPS	MATTHEW	08/09/2019										
	18	18	CPU XDP	MATTHEW	10/11/2019	78	84	POWER FET 2	MATTHEW	10/11/2019	138	160	SIGNAL ALIASES	KRITHIKA	04/24/2019										
B	19	19	CPU & CHIPSET: Chipset Support	MATTHEW	08/09/2019	79	85	POWER FET	MATTHEW	08/09/2019	139	161	ALTERNATE TABLE	KRITHIKA	10/11/2019										
	20	20	Project-Specific Chipset Support	MATTHEW	08/09/2019	80	86	SSD0: S4E/S5E<0>	KRITHIKA	06/07/2019	140	162	FCT/ICT TPS -2	KRITHIKA	08/07/2019										
	21	21	DRAM: ALIASES AND BITSWAPS	RAYMOND	08/27/2019	81	87	SSD0: S4E/S5E<1>	KRITHIKA	06/07/2019	141	163	TESTPOINTS TABLE 1												
	22	22	DRAM:VREF/VTT EN	RAYMOND	09/10/2019	82	88	SSD0: S4E/S5E<2>	KRITHIKA	06/07/2019	142	164	TESTPOINTS TABLE 2												
	23	23	DRAM:SO-DIMM CONNECTOR A DIMM 0	RAYMOND	08/27/2019	83	89	SSD0: S4E/S5E<3>	KRITHIKA	06/07/2019	143	165	TESTPOINTS TABLE 3												
	24	24	DRAM:SO-DIMM CONNECTOR A DIMM 1	RAYMOND	08/27/2019	84	90	OCARINA PMIC & NAND VCC VR	KRITHIKA	06/07/2019	144	166	TESTPOINTS TABLE 4												
	25	25	DRAM:SO-DIMM CONNECTOR B DIMM 0	RAYMOND	08/27/2019	85	91	SSD0 SUPPORT	KRITHIKA	06/07/2019	145	167	TESTPOINTS TABLE 5												
	26	26	DRAM:SO-DIMM CONNECTOR B DIMM 1	RAYMOND	08/27/2019	86	92	SSD 1 CONN	KRITHIKA	06/07/2019	146	168	TESTPOINTS TABLE 6												
	27	28	USB-C High Speed 1	J184	06/07/2019	87	95	SYSTEM POWER SEQUENCING	MATTHEW	10/24/2019	147	170	BOM Configuration	KRITHIKA	09/26/2019										
	28	29	USB-C High Speed 2	J184	06/07/2019	88	96	GPU POWER SEQUENCING S0	MATTHEW	08/09/2019	148	171	CONFIGURATION BOMS P0	KRITHIKA	09/26/2019										
	29	30	USB-C Support Page	JACOB	11/14/2019	89	97	10G ETHERNET CONTROLLER 1	MURPHY	07/01/2019	149	172	BOM CONFIGURATION												
	30	31	USB-C PORT CONTROLLER XA	JACOB	10/11/2019	90	98	10G ETHERNET CONTROLLER 2	MURPHY	09/11/2019															
	31	32	USB-C PORT CONTROLLER XB	JACOB	10/11/2019	91	99	10G ENET SUPPORT 1	MURPHY	08/05/2019															
	32	33	USB-C Connector	J185_NAVI14	12/04/2018	92	100	10G ENET SUPPORT 2	MURPHY	05/22/2019															
	33	36	SECURE ELEMENT	RAYMOND	08/05/2019	93	101	VR 10G ENET 1V2, 2V1	MURPHY	09/24/2019															
	34	38	SOC DEV LED	J184	06/07/2019	94	102	VR 10G ENET 0V85	SUNIL	08/27/2019															
	35	39	SoC GPIO/SEP/USB/DDR/Test	J184	06/07/2019	95	103	SD CONTROLLER UHS-II	MURPHY	06/27/2019															
	36	40	SoC AOP/AON/SMC	KRITHIKA	08/20/2019	96	104	SD CONNECTOR UHS-II	MURPHY	07/05/2019															
	37	41	SoC ISP/I2C/UART/SPI/I2S	J184	06/07/2019	97	106	USB-A: EXTERNAL USB PORTS A & B	RAYMOND	08/27/2019															
A	38	42	SoC PCIe	J184	06/07/2019	98	107	USB-A: EXTERNAL USB PORTS C & D	RAYMOND	08/27/2019															
	39	43	SoC Power 1	J184	06/07/2019	99	110	WIFI/BT MODULE 1	KRITHIKA	08/20/2019															
	40	44	SoC Power 2	J184	06/07/2019	100	111	WIFI/BT MODULE 2	KRITHIKA	08/20/2019															
	41	45	SoC Power 3	J184	06/07/2019	101	112	WIFI/BT SUPPORT	KRITHIKA	08/20/2019															
	42	46	SoC Ground	J184	06/07/2019	102	120	GPU PCIE	RAYMOND	08/20/2019															
	43	47	SoC Shared Support	J184	06/07/2019	103	121	GPU GPIOs, STRAPS	RAYMOND	09/10/2019															
	44	48	SOC PROJECT SUPPORT	KRITHIKA	08/20/2019	104	122	GPU DISPLAYPORT	RAYMOND	09/10/2019															
	45	49	SOC SHARED SUPPORT IMAC 1	MATTHEW	07/31/2019	105	123	GPU GND	RAYMOND	08/20/2019															
	46	50	I2C SOC 1	JERRY	12/12/2019	106	124	GPU CLK GEN, JTAG	RAYMOND	08/20/2019															
	47	51	I2C SOC 2	RAYMOND	08/19/2019	107	125	GPU MEMORY PWR	RAYMOND	08/20/2019															
	48	52	SMC Project Support	JERRY	12/12/2019	108	126	GPU CORE AND SOC PWR	RAYMOND	08/20/2019															
	49	53	SOC SHARED SUPPORT IMAC 2	J184	06/07/2019	109	127	GPU CORE PWR DECOUPLING	RAYMOND	08/20/2019															
	50	54	SENSORS: I and V Sense	JERRY	12/12/2019	110	128	GPU MEM CH A0, A1, B0, B1	RAYMOND	08/20/2019															
	51	55	SENSORS: I and V Sense(Continued)	JERRY	12/12/2019	111	129	GPU MEM CH C0, C1, D0, D1	RAYMOND	08/20/2019															
	52	56	SENSORS THERMAL 1	JERRY	12/12/2019	112	130	GPU MEM CH E0, E1, F0, F1	RAYMOND	08/20/2019															
	53	57	SENSORS: PSU/PCC	JERRY	12/12/2019	113	131	GPU MEM CH G0, G1, H0, H1	RAYMOND	08/20/2019															
	54	58	FAN: System Fan	JERRY	12/12/2019	114	132	GPU ROM	RAYMOND	06/13/2019															
	55	60	1G ENET PHY (Caesar IV)	MURPHY	08/07/2019	115	134	GPU ISO	RAYMOND	06/17/2019															
	56	61	1G ENET SUPPORT	MURPHY	06/19/2019	116	135	GDDR6 X16 GPU CH A0,A1	RAYMOND	06/24/2019															
	57	63	Audio Jack CODEC	DIRK	12/12/2019	117	136	GDDR6 X16 GPU CH B0,B1	RAYMOND	06/24/2019															
A	58	64	Left Speaker Amps	DIRK	12/12/2019	118	137	GDDR6 X16 GPU CH C0, C1	RAYMOND	06/24/2019															
	59	65	Right Speaker Amp	DIRK	12/12/2019	119	138	GDDR6 X16 GPU CH D0, D1	RAYMOND	06/24/2019															
	60	66	Audio Jack Connector	DIRK	12/12/2019	120	139	GDDR6 X16 GPU CH E0, E1	RAYMOND	08/28/2019															
8		7		6		5		4		3		2		1											

SCHEM,MLB\_NAVI10

SYNC\_MASTER=KRITHIKA  
DRAWING TITLE

SCHEM,MLB,NAVI10, X1647

 Apple Inc.

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DRAWING NUMBER  
051-04826




REVISION  
4.0.0


BRANCH  
proto-1-b

PAGE  
1 OF 172

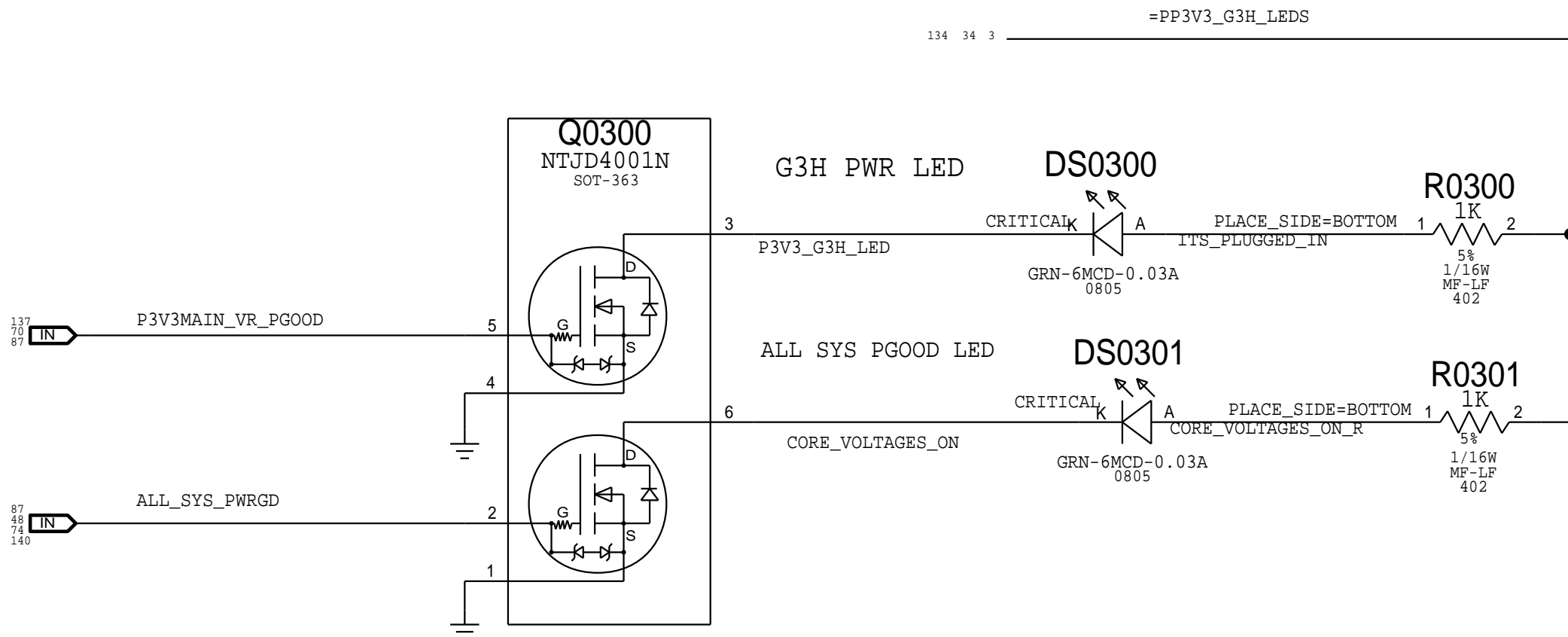
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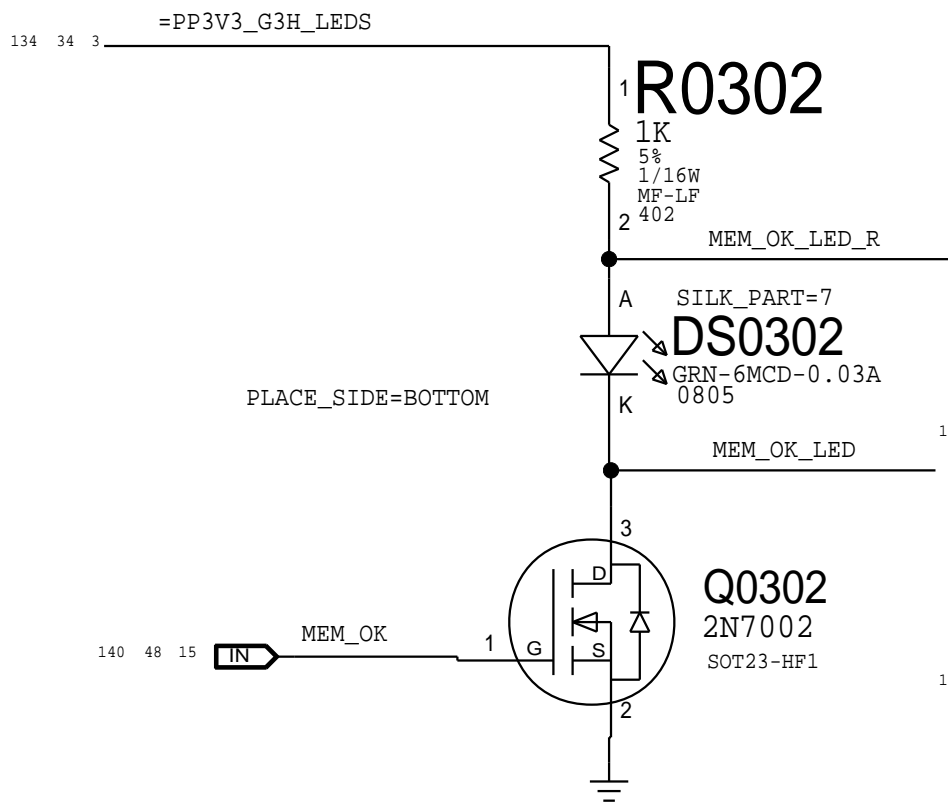
D	8		7		6		5		4		3		2		1																																																																																			
	X1647 SCHEMATIC / PCB #'S															D																																																																																		
	<table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>051-04826</td><td>1</td><td>SCHEM_MLB_NAVI10,X1647</td><td>SCH1</td><td>CRITICAL</td><td>X1647</td></tr><tr><td>820-01823</td><td>1</td><td>PCBF_MLB_NAVI10,X1647</td><td>PCB1</td><td>CRITICAL</td><td>X1647</td></tr><tr><td>685-00316</td><td>1</td><td>PCBA_COMMON PARTS_MLB_NAVI10,X1647</td><td>CMNP1S</td><td>CRITICAL</td><td>MLB_CMNP1S</td></tr><tr><td>685-00343</td><td>1</td><td>ITLC_SSD PARTS_NAVI10,4L S4E,X1647</td><td>SSD_S4E_4L</td><td></td><td>4L_S4E</td></tr><tr><td>685-00345</td><td>1</td><td>ITLC_SSD PARTS_NAVI10,4L S5E,X1647</td><td>SSD_S5E_4L</td><td></td><td>4L_S5E</td></tr><tr><td>685-00362</td><td>1</td><td>ENET PARTS_NAVI10,10G ENET,X1647</td><td>10G_ENET</td><td></td><td>10G_ENET</td></tr><tr><td>685-00363</td><td>1</td><td>ENETPARTS_NAVI10,1G ENET,X1647</td><td>1G_ENET</td><td></td><td>1G_ENET</td></tr></table>					PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	051-04826	1	SCHEM_MLB_NAVI10,X1647	SCH1		CRITICAL	X1647	820-01823	1	PCBF_MLB_NAVI10,X1647	PCB1	CRITICAL	X1647	685-00316	1	PCBA_COMMON PARTS_MLB_NAVI10,X1647	CMNP1S	CRITICAL	MLB_CMNP1S	685-00343	1	ITLC_SSD PARTS_NAVI10,4L S4E,X1647	SSD_S4E_4L		4L_S4E	685-00345	1	ITLC_SSD PARTS_NAVI10,4L S5E,X1647	SSD_S5E_4L		4L_S5E	685-00362	1	ENET PARTS_NAVI10,10G ENET,X1647	10G_ENET		10G_ENET	685-00363	1	ENETPARTS_NAVI10,1G ENET,X1647	1G_ENET		1G_ENET	<table><tr><th>BOM GROUP</th><th colspan="5">BOM OPTIONS</th></tr><tr><td>X1647_COMMON</td><td colspan="5">COMMON,ALTERNATE,X1647_PROGPARTS,1V8_AUDIO_DLY:M,PEG:REVERSE,LDO_CLIFDEN,NO_LDO_CLIFDEN,RF:TUNE</td></tr><tr><td>X1647_COMMON2</td><td colspan="5">X1647,C10:NO,PWR_SEQUENCE:SMC,SE:PROD,XDP:YES,WIFI:MURATA,BOARDREV_P1</td></tr><tr><td>X1647_PROGPARTS</td><td colspan="5">TBTR0M:PROG,WIFI_ROM:PROG,BT_ROM:PROG,SD_ROM:PROG</td></tr><tr><td>X1647_DEVEL</td><td colspan="5">DEVELOPMENT,SSD_DBG,XDP_CONN,UPC_DBG_HDR,DEBUG,DEBUG_LEDS,DBG_LED,SOC_DBG:YES,BOOTCFG0</td></tr><tr><td>X1647_SPECIFIC</td><td colspan="5">BOARDID5,BOARDID1,BOARDID0NAVI10 BOARDID: 100011</td></tr></table>										BOM GROUP	BOM OPTIONS					X1647_COMMON	COMMON,ALTERNATE,X1647_PROGPARTS,1V8_AUDIO_DLY:M,PEG:REVERSE,LDO_CLIFDEN,NO_LDO_CLIFDEN,RF:TUNE					X1647_COMMON2	X1647,C10:NO,PWR_SEQUENCE:SMC,SE:PROD,XDP:YES,WIFI:MURATA,BOARDREV_P1					X1647_PROGPARTS	TBTR0M:PROG,WIFI_ROM:PROG,BT_ROM:PROG,SD_ROM:PROG					X1647_DEVEL	DEVELOPMENT,SSD_DBG,XDP_CONN,UPC_DBG_HDR,DEBUG,DEBUG_LEDS,DBG_LED,SOC_DBG:YES,BOOTCFG0					X1647_SPECIFIC	BOARDID5,BOARDID1,BOARDID0NAVI10 BOARDID: 100011		
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																													
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820-01823	1	PCBF_MLB_NAVI10,X1647	PCB1	CRITICAL	X1647																																																																																													
685-00316	1	PCBA_COMMON PARTS_MLB_NAVI10,X1647	CMNP1S	CRITICAL	MLB_CMNP1S																																																																																													
685-00343	1	ITLC_SSD PARTS_NAVI10,4L S4E,X1647	SSD_S4E_4L		4L_S4E																																																																																													
685-00345	1	ITLC_SSD PARTS_NAVI10,4L S5E,X1647	SSD_S5E_4L		4L_S5E																																																																																													
685-00362	1	ENET PARTS_NAVI10,10G ENET,X1647	10G_ENET		10G_ENET																																																																																													
685-00363	1	ENETPARTS_NAVI10,1G ENET,X1647	1G_ENET		1G_ENET																																																																																													
BOM GROUP	BOM OPTIONS																																																																																																	
X1647_COMMON	COMMON,ALTERNATE,X1647_PROGPARTS,1V8_AUDIO_DLY:M,PEG:REVERSE,LDO_CLIFDEN,NO_LDO_CLIFDEN,RF:TUNE																																																																																																	
X1647_COMMON2	X1647,C10:NO,PWR_SEQUENCE:SMC,SE:PROD,XDP:YES,WIFI:MURATA,BOARDREV_P1																																																																																																	
X1647_PROGPARTS	TBTR0M:PROG,WIFI_ROM:PROG,BT_ROM:PROG,SD_ROM:PROG																																																																																																	
X1647_DEVEL	DEVELOPMENT,SSD_DBG,XDP_CONN,UPC_DBG_HDR,DEBUG,DEBUG_LEDS,DBG_LED,SOC_DBG:YES,BOOTCFG0																																																																																																	
X1647_SPECIFIC	BOARDID5,BOARDID1,BOARDID0NAVI10 BOARDID: 100011																																																																																																	
C	GPU PROGRAMMABLE															C																																																																																		
	<table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>341S01566</td><td>1</td><td>ROM_VBIOS_NAVI10-XTMA,GPU[V002]P1,X1647</td><td>UD200</td><td>CRITICAL</td><td>GPU_XTMA_ROM:PROG</td></tr><tr><td>341S01567</td><td>1</td><td>ROM_VBIOS_NAVI10-S5E,GPU[V002]P1,X1647</td><td>UD200</td><td>CRITICAL</td><td>GPU_XGA_ROM:PROG</td></tr><tr><td>335S00232</td><td>1</td><td>IC_GPU_SERIAL_FLASH,HWKITV,1.0V,0008</td><td>UD200</td><td>CRITICAL</td><td>GPU_ROM:BLANK</td></tr></table>					PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	341S01566	1	ROM_VBIOS_NAVI10-XTMA,GPU[V002]P1,X1647	UD200		CRITICAL	GPU_XTMA_ROM:PROG	341S01567	1	ROM_VBIOS_NAVI10-S5E,GPU[V002]P1,X1647	UD200	CRITICAL	GPU_XGA_ROM:PROG	335S00232	1	IC_GPU_SERIAL_FLASH,HWKITV,1.0V,0008	UD200	CRITICAL	GPU_ROM:BLANK	<table><tr><th>BOM NUMBER</th><th>BOM NAME</th><th>BOM OPTIONS</th></tr><tr><td>985-01183</td><td>PCBA_MLB_NAVI10_DEV,X1647</td><td>X1647_DEVEL</td></tr><tr><td>685-00316</td><td>PCBA_COMMON PARTS_MLB_NAVI10,X1647</td><td>X1647_COMMON,X1647_COMMON2,X1647_SPECIFIC</td></tr><tr><td>685-00342</td><td>PCBA_MLB_NAVI10,2L_S4E,X1647</td><td>SSD0_2L,SSD0_S4E</td></tr><tr><td>685-00343</td><td>PCBA_MLB_NAVI10,4L_S4E,X1647</td><td>SSD0_4L,SSD0_S4E,SSD0_S4E_4L</td></tr><tr><td>685-00344</td><td>PCBA_MLB_NAVI10,2L_S5E,X1647</td><td>SSD0_2L,SSD0_S5E,SSD0_S5E_2L</td></tr><tr><td>685-00345</td><td>PCBA_MLB_NAV10,4L_S5E,X1647</td><td>SSD0_4L,SSD0_S5E,SSD0_S5E_4L</td></tr><tr><td>685-00362</td><td>PCBA_MLB_NAVI10,10G_ENET,X1647</td><td>ENET:10G,10G_ENET_ROM:PROG</td></tr><tr><td>685-00363</td><td>PCBA_MLB_NAVI10,1G_ENET,X1647</td><td>ENET:1G,1G_ENET_ROM:PROG</td></tr></table>										BOM NUMBER	BOM NAME	BOM OPTIONS	985-01183	PCBA_MLB_NAVI10_DEV,X1647	X1647_DEVEL	685-00316	PCBA_COMMON PARTS_MLB_NAVI10,X1647	X1647_COMMON,X1647_COMMON2,X1647_SPECIFIC	685-00342	PCBA_MLB_NAVI10,2L_S4E,X1647	SSD0_2L,SSD0_S4E	685-00343	PCBA_MLB_NAVI10,4L_S4E,X1647	SSD0_4L,SSD0_S4E,SSD0_S4E_4L	685-00344	PCBA_MLB_NAVI10,2L_S5E,X1647	SSD0_2L,SSD0_S5E,SSD0_S5E_2L	685-00345	PCBA_MLB_NAV10,4L_S5E,X1647	SSD0_4L,SSD0_S5E,SSD0_S5E_4L	685-00362	PCBA_MLB_NAVI10,10G_ENET,X1647	ENET:10G,10G_ENET_ROM:PROG	685-00363	PCBA_MLB_NAVI10,1G_ENET,X1647	ENET:1G,1G_ENET_ROM:PROG																															
	PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																												
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341S01567	1	ROM_VBIOS_NAVI10-S5E,GPU[V002]P1,X1647	UD200	CRITICAL	GPU_XGA_ROM:PROG																																																																																													
335S00232	1	IC_GPU_SERIAL_FLASH,HWKITV,1.0V,0008	UD200	CRITICAL	GPU_ROM:BLANK																																																																																													
BOM NUMBER	BOM NAME	BOM OPTIONS																																																																																																
985-01183	PCBA_MLB_NAVI10_DEV,X1647	X1647_DEVEL																																																																																																
685-00316	PCBA_COMMON PARTS_MLB_NAVI10,X1647	X1647_COMMON,X1647_COMMON2,X1647_SPECIFIC																																																																																																
685-00342	PCBA_MLB_NAVI10,2L_S4E,X1647	SSD0_2L,SSD0_S4E																																																																																																
685-00343	PCBA_MLB_NAVI10,4L_S4E,X1647	SSD0_4L,SSD0_S4E,SSD0_S4E_4L																																																																																																
685-00344	PCBA_MLB_NAVI10,2L_S5E,X1647	SSD0_2L,SSD0_S5E,SSD0_S5E_2L																																																																																																
685-00345	PCBA_MLB_NAV10,4L_S5E,X1647	SSD0_4L,SSD0_S5E,SSD0_S5E_4L																																																																																																
685-00362	PCBA_MLB_NAVI10,10G_ENET,X1647	ENET:10G,10G_ENET_ROM:PROG																																																																																																
685-00363	PCBA_MLB_NAVI10,1G_ENET,X1647	ENET:1G,1G_ENET_ROM:PROG																																																																																																
B	GPU															B																																																																																		
	<table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>337S00771</td><td>1</td><td>GPU_AMD_NAVI10,XTMA,A2,S5,BOARD1928</td><td>UC000</td><td>CRITICAL</td><td>GPU_SKU:XTMA</td></tr><tr><td>337S00772</td><td>1</td><td>GPU_AMD_NAVI10,S5E,A2,S5,BOARD1928</td><td>UC000</td><td>CRITICAL</td><td>GPU_SKU:XGA</td></tr></table>					PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	337S00771	1	GPU_AMD_NAVI10,XTMA,A2,S5,BOARD1928	UC000		CRITICAL	GPU_SKU:XTMA	337S00772	1	GPU_AMD_NAVI10,S5E,A2,S5,BOARD1928	UC000	CRITICAL	GPU_SKU:XGA	<table><tr><th>BOM GROUP</th><th colspan="5">BOM OPTIONS</th></tr><tr><td>NV10_XTA_16GB_SAMSUNG</td><td colspan="5">GPU_SKU:XTMA,FB:16GB_SAMSUNG,GPU_XTMA_ROM:PROG</td></tr><tr><td>NV10_XTA_16GB_MICRON</td><td colspan="5">GPU_SKU:XTMA,FB:16GB_MICRON,GPU_XTMA_ROM:PROG</td></tr><tr><td>NV10_XTA_16GB_HYNIX</td><td colspan="5">GPU_SKU:XTMA,FB:16GB_HYNIX,GPU_XTMA_ROM:PROG</td></tr><tr><td>NV10_XGA_8GB_SAMSUNG</td><td colspan="5">GPU_SKU:XGA,FB:8GB_SAMSUNG,GPU_XGA_ROM:PROG</td></tr><tr><td>NV10_XGA_8GB_MICRON</td><td colspan="5">GPU_SKU:XGA,FB:8GB_MICRON,GPU_XGA_ROM:PROG</td></tr><tr><td>NV10_XGA_8GB_HYNIX</td><td colspan="5">GPU_SKU:XGA,FB:8GB_HYNIX,GPU_XGA_ROM:PROG</td></tr></table>										BOM GROUP	BOM OPTIONS					NV10_XTA_16GB_SAMSUNG	GPU_SKU:XTMA,FB:16GB_SAMSUNG,GPU_XTMA_ROM:PROG					NV10_XTA_16GB_MICRON	GPU_SKU:XTMA,FB:16GB_MICRON,GPU_XTMA_ROM:PROG					NV10_XTA_16GB_HYNIX	GPU_SKU:XTMA,FB:16GB_HYNIX,GPU_XTMA_ROM:PROG					NV10_XGA_8GB_SAMSUNG	GPU_SKU:XGA,FB:8GB_SAMSUNG,GPU_XGA_ROM:PROG					NV10_XGA_8GB_MICRON	GPU_SKU:XGA,FB:8GB_MICRON,GPU_XGA_ROM:PROG					NV10_XGA_8GB_HYNIX	GPU_SKU:XGA,FB:8GB_HYNIX,GPU_XGA_ROM:PROG																										
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NV10_XTA_16GB_SAMSUNG	GPU_SKU:XTMA,FB:16GB_SAMSUNG,GPU_XTMA_ROM:PROG																																																																																																	
NV10_XTA_16GB_MICRON	GPU_SKU:XTMA,FB:16GB_MICRON,GPU_XTMA_ROM:PROG																																																																																																	
NV10_XTA_16GB_HYNIX	GPU_SKU:XTMA,FB:16GB_HYNIX,GPU_XTMA_ROM:PROG																																																																																																	
NV10_XGA_8GB_SAMSUNG	GPU_SKU:XGA,FB:8GB_SAMSUNG,GPU_XGA_ROM:PROG																																																																																																	
NV10_XGA_8GB_MICRON	GPU_SKU:XGA,FB:8GB_MICRON,GPU_XGA_ROM:PROG																																																																																																	
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A	VRAM															A																																																																																		
	<table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>333S00223</td><td>8</td><td>IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,S,80180</td><td></td><td>CRITICAL</td><td>FB:8GB_HYNIX</td></tr><tr><td>333S00209</td><td>8</td><td>IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,M,80180</td><td></td><td>CRITICAL</td><td>FB:8GB_MICRON</td></tr><tr><td>333S00210</td><td>8</td><td>IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,S,80180</td><td></td><td>CRITICAL</td><td>FB:8GB_SAMSUNG</td></tr><tr><td>333S00211</td><td>8</td><td>IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,S,8180</td><td></td><td>CRITICAL</td><td>FB:16GB_HYNIX</td></tr><tr><td>333S00212</td><td>8</td><td>IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,M,8180</td><td></td><td>CRITICAL</td><td>FB:16GB_MICRON</td></tr><tr><td>333S00213</td><td>8</td><td>IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,S,8180</td><td></td><td>CRITICAL</td><td>FB:16GB_SAMSUNG</td></tr></table>					PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	333S00223	8	IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,S,80180			CRITICAL	FB:8GB_HYNIX	333S00209	8	IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,M,80180		CRITICAL	FB:8GB_MICRON	333S00210	8	IC_GDDR6_8GBIT_14GBPS_1.35V_18NM,S,80180		CRITICAL	FB:8GB_SAMSUNG	333S00211	8	IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,S,8180		CRITICAL	FB:16GB_HYNIX	333S00212	8	IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,M,8180		CRITICAL	FB:16GB_MICRON	333S00213	8	IC_GDDR6_16GBIT_14GBPS_1.35V_18NM,S,8180		CRITICAL	FB:16GB_SAMSUNG																																																		
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CPU SKU																																																																																																		
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ALTERNATE PARTS TABLE LOCATED ON CSA 115																																																																																																		
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BOM Configuration																																																																																																		
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	BRANCH		
	proto-1-b		
	PAGE		
2 OF 172			
SHEET			
2 OF 149			

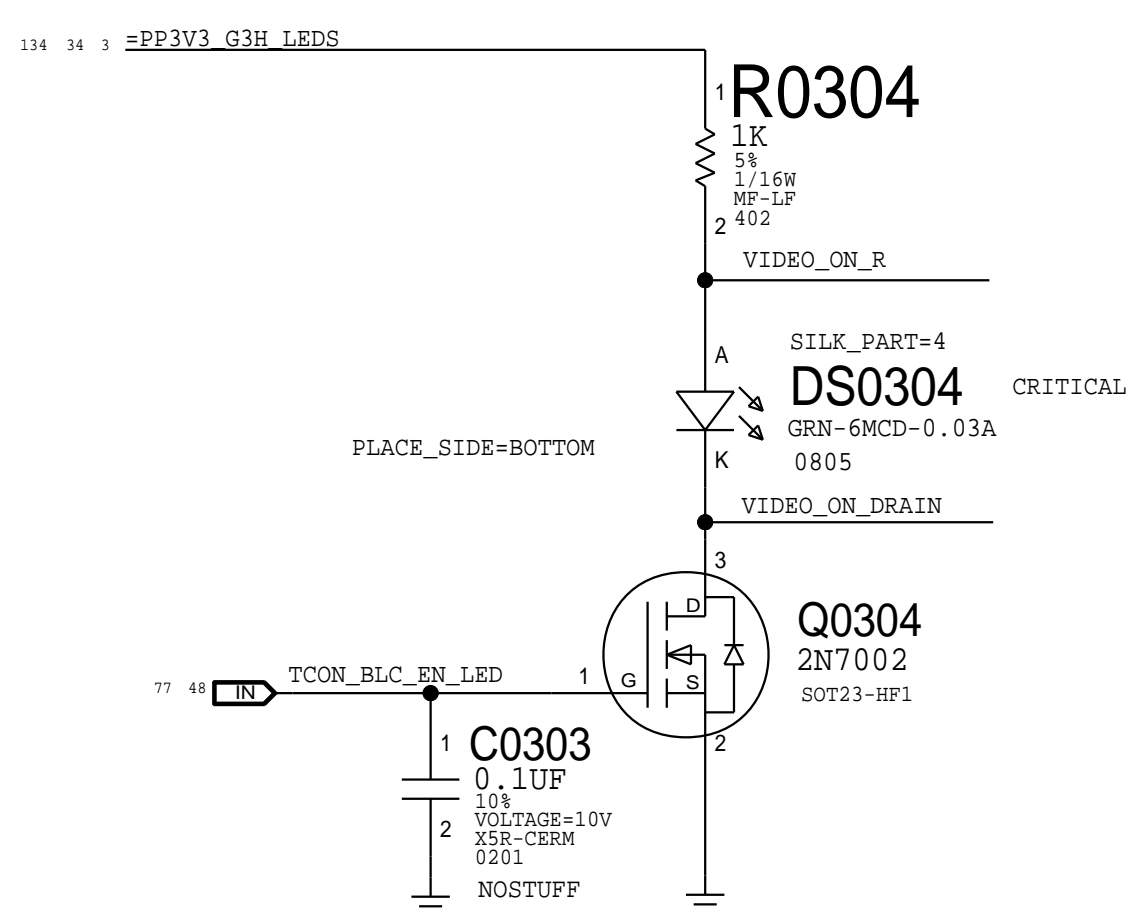
POR LEDS



MEM\_OK LED

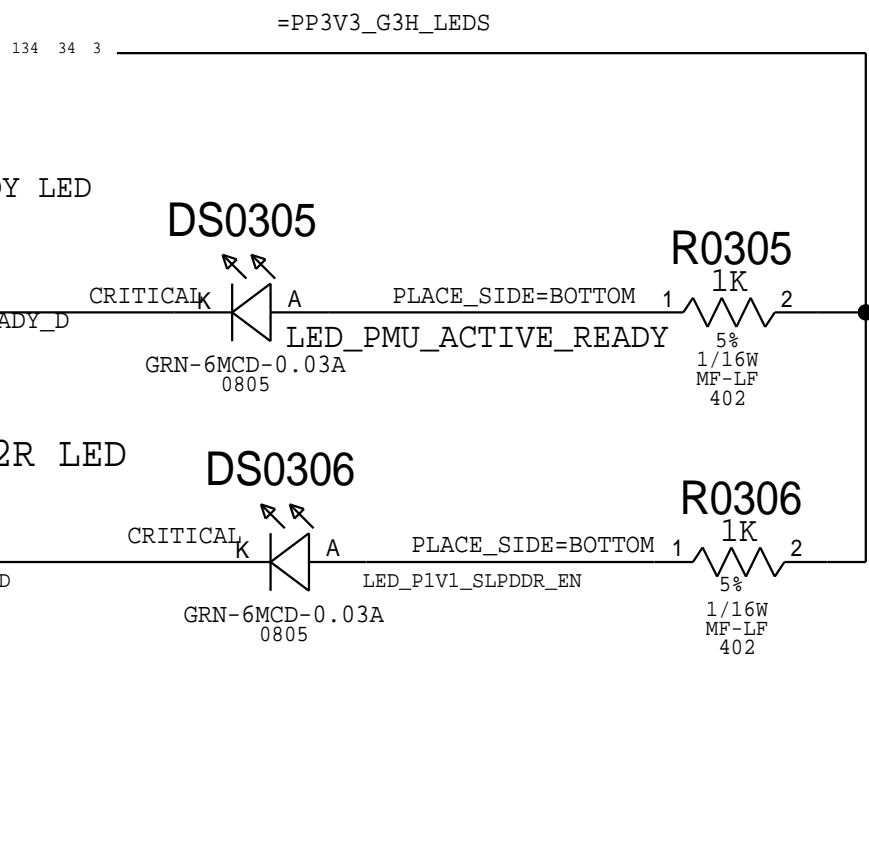
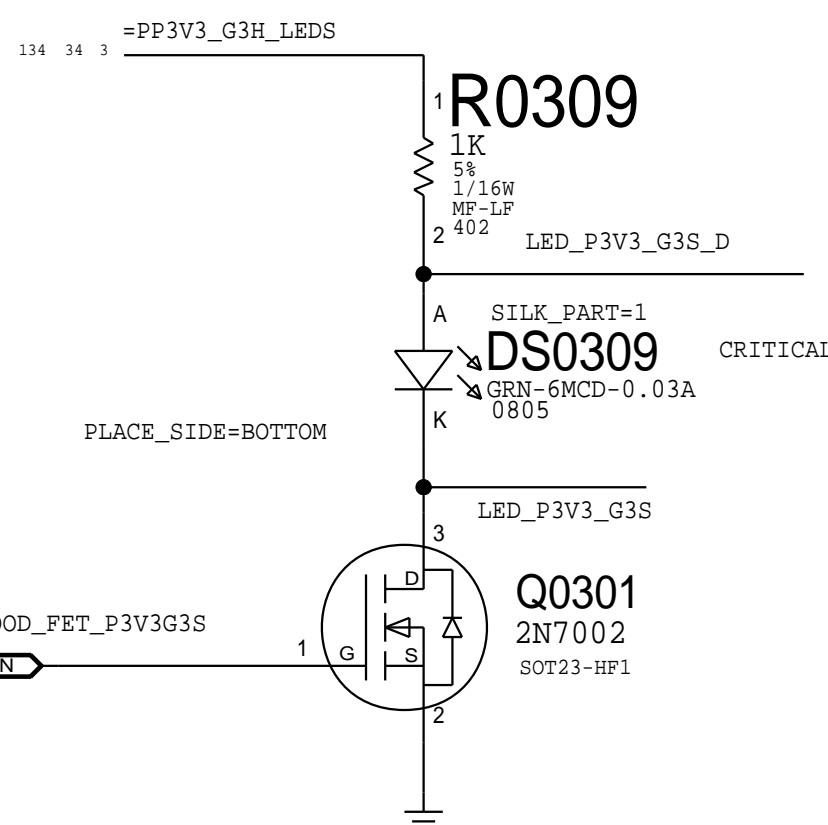


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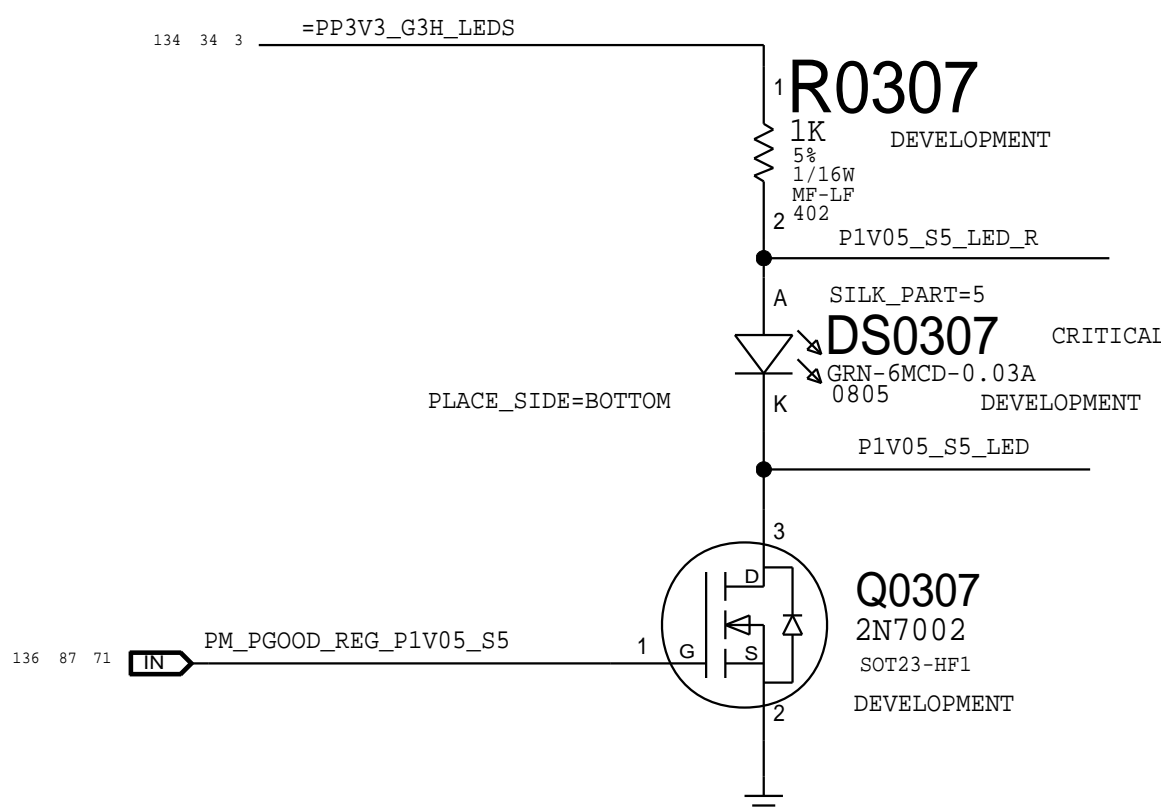
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GFX\_OK HIGH LIGHTS THE LED DIMLY  
DP\_LINK\_OK HIGH LIGHTS THE LED FULLY

PP3V3 G3S LED

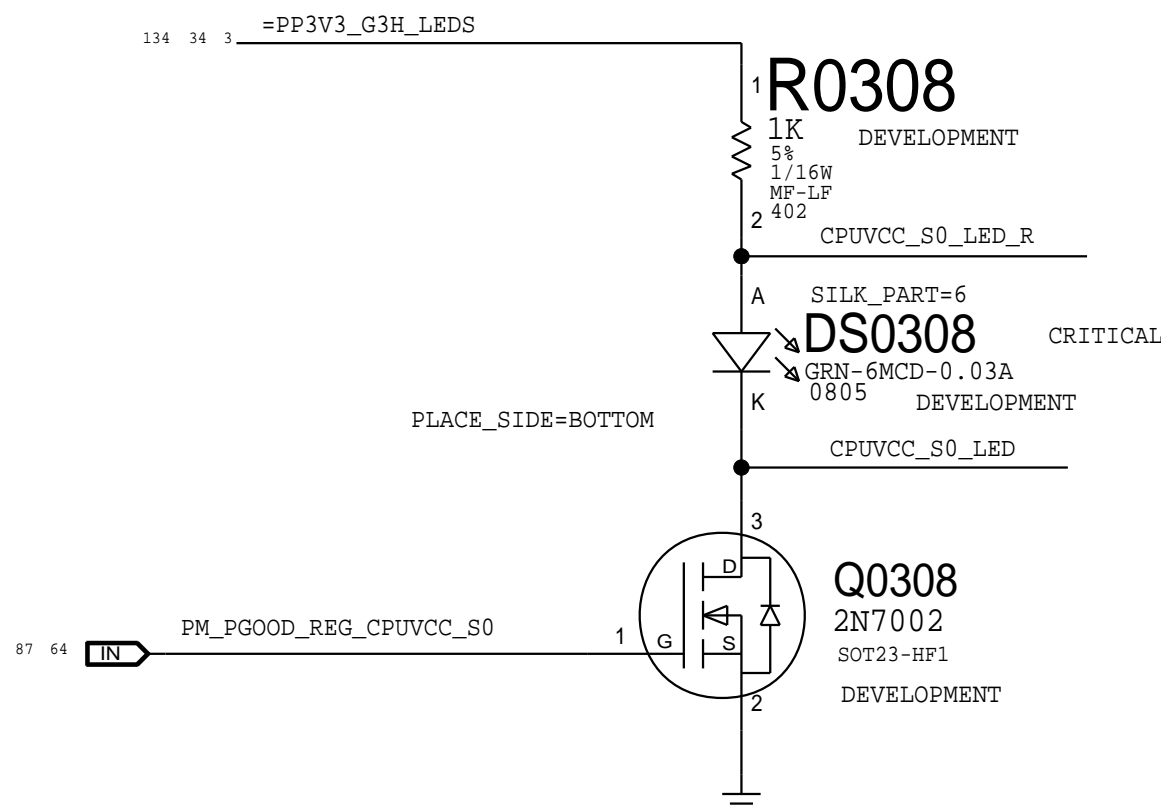


DEBUG LEDS (DEVELOPMENT ONLY)

P1V05\_S5\_PWRGD LED

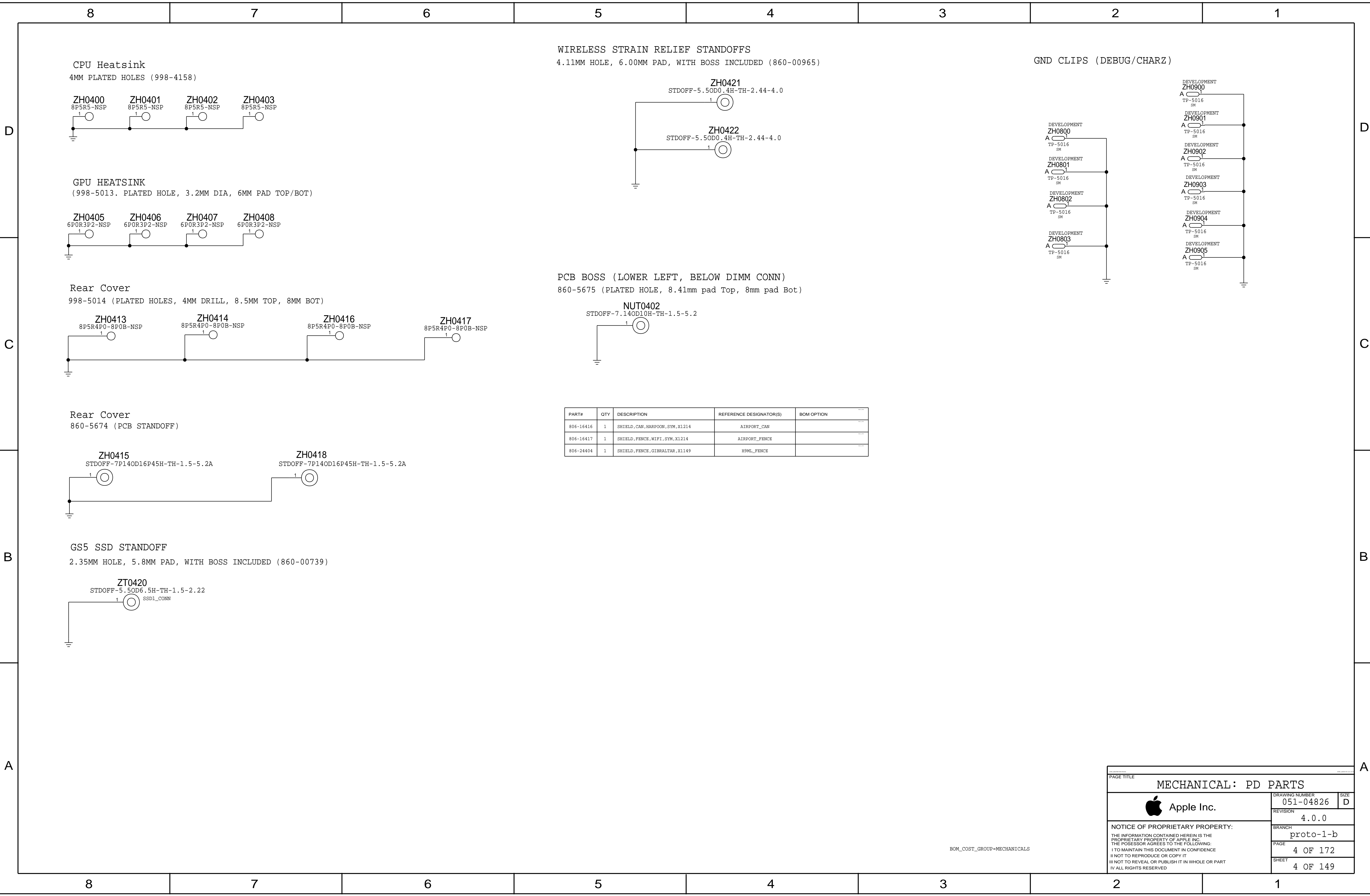



CPUVCC\_S0\_PWRGD LED



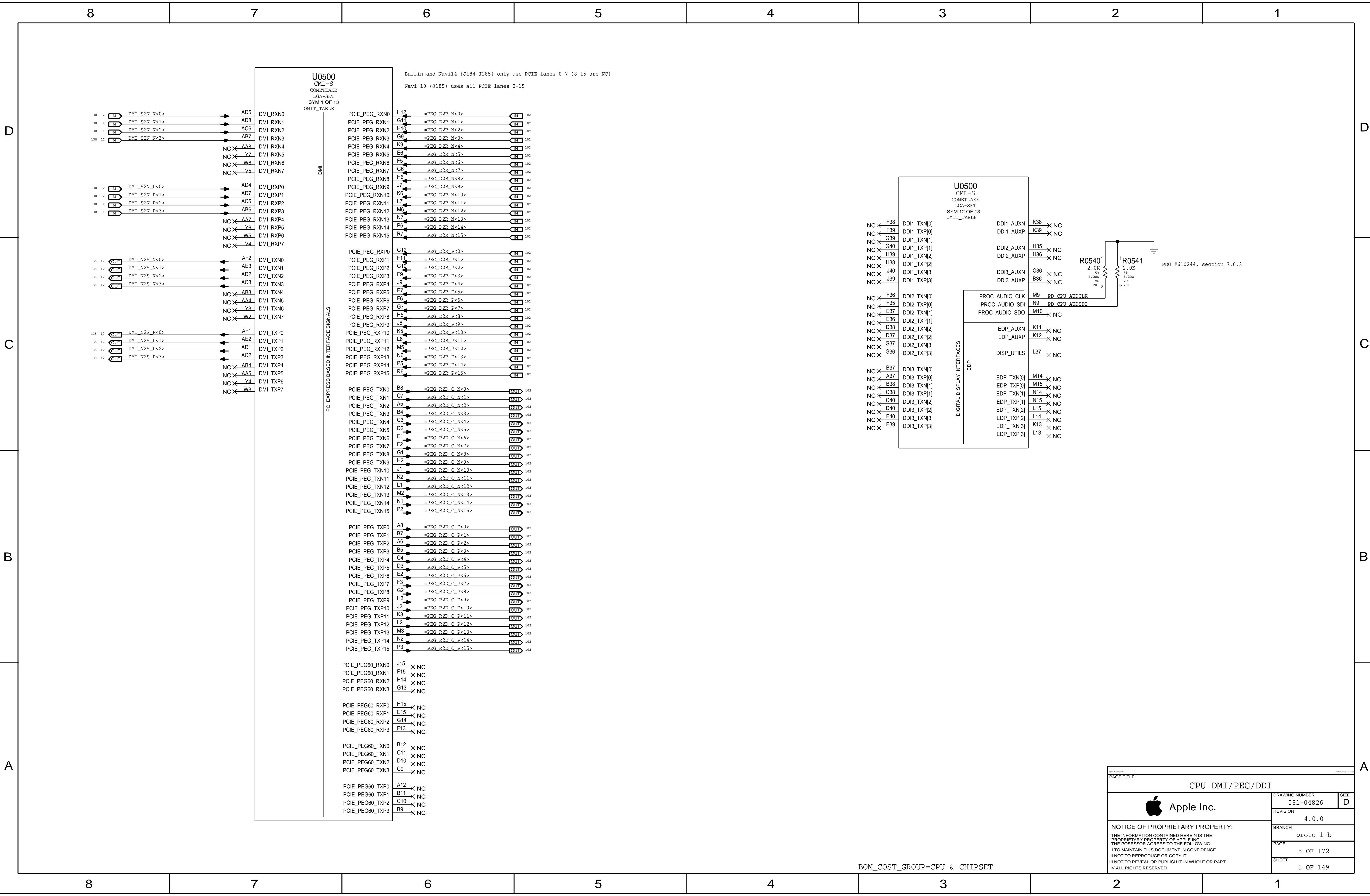
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	PAGE	3 OF 172
	SHEET	3 OF 149


BOM\_COST\_GROUP=DEBUG



PAGE TITLE		
MECHANICAL: PD PARTS		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED	BRANCH	proto-1-b
	PAGE	4 OF 172
	SHEET	4 OF 149

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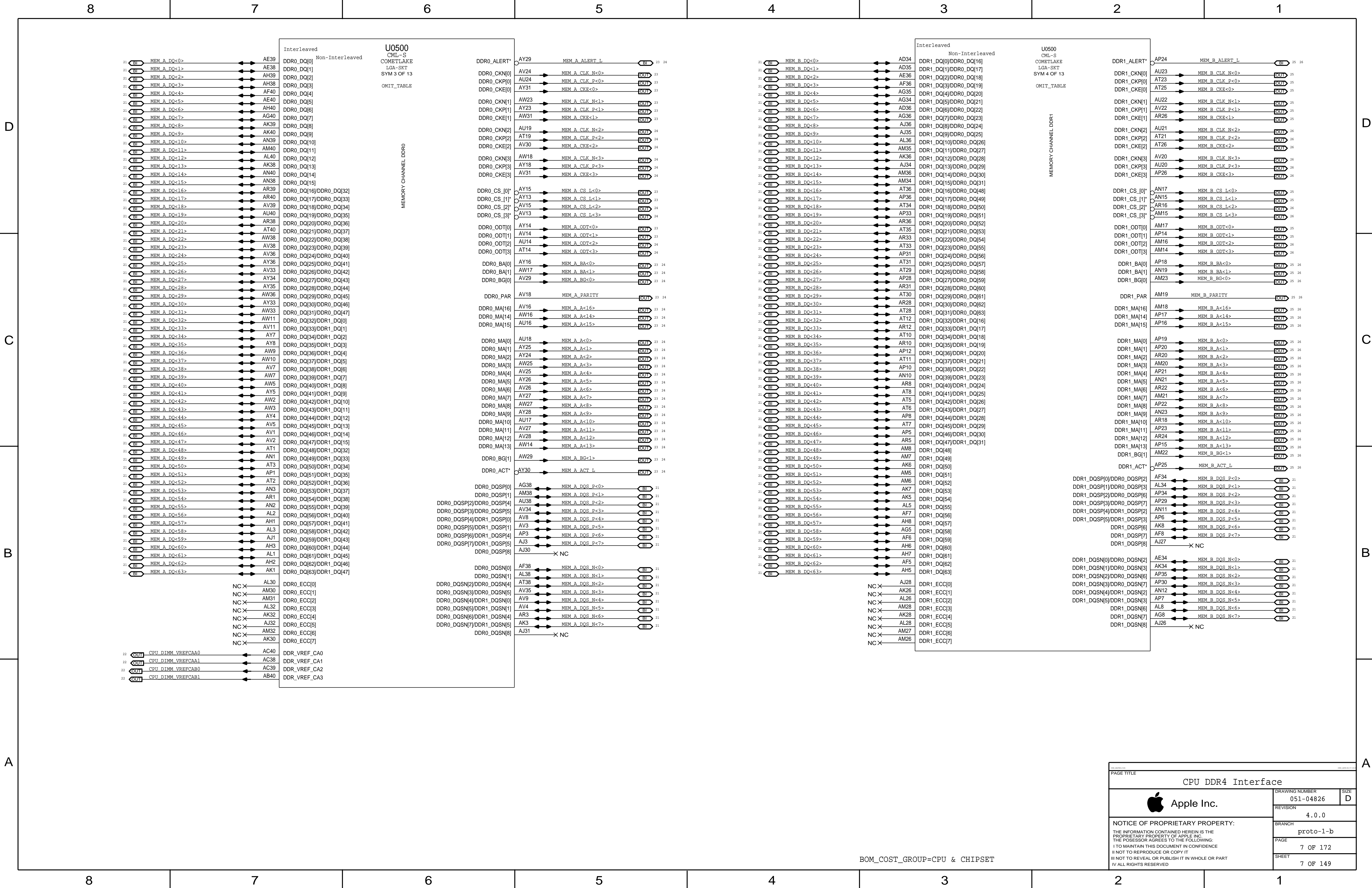


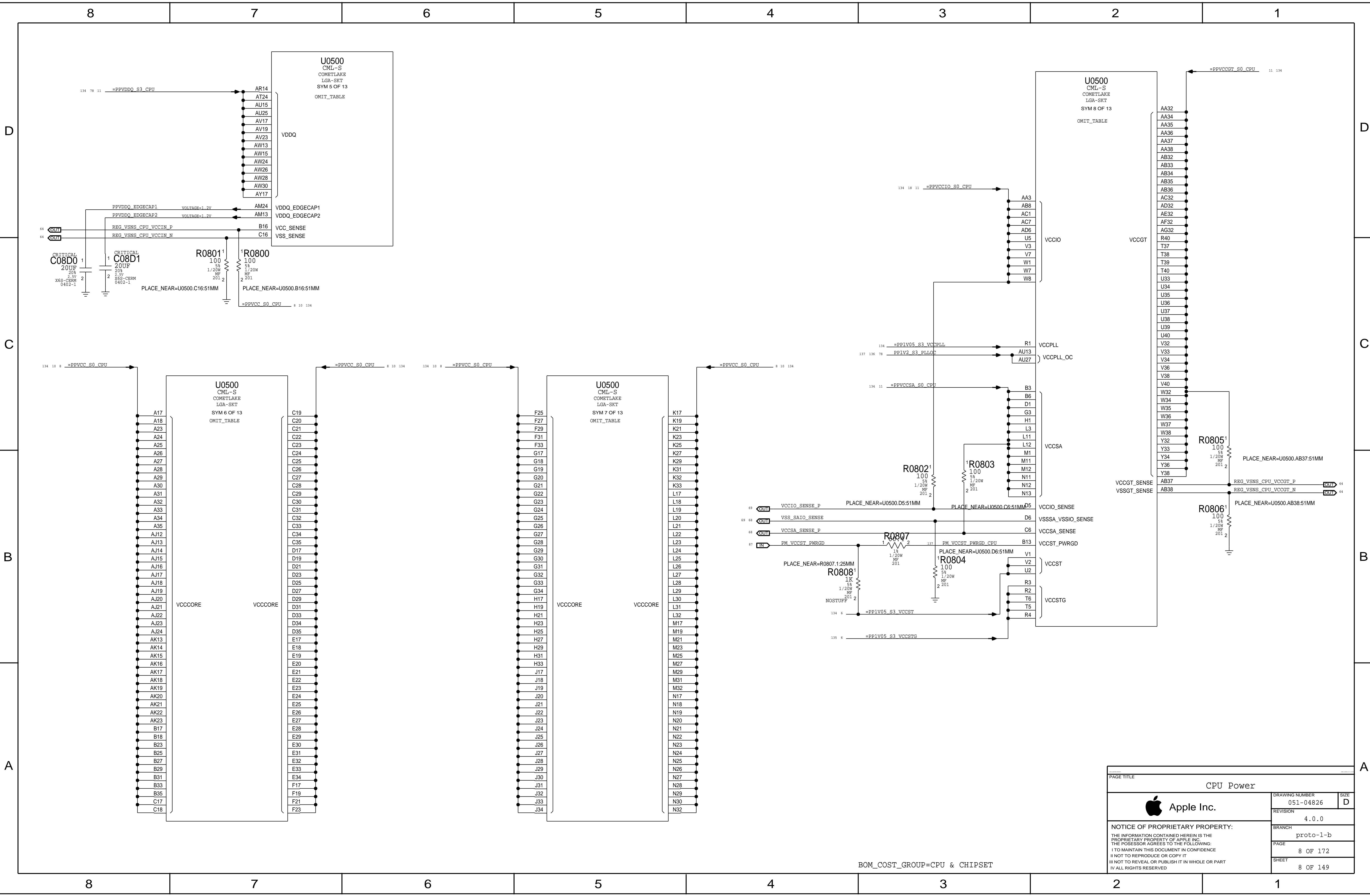
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CPU DMI/PEG/DDI		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
	BRANCH	proto-1-b
	PAGE	5 OF 172
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BOM\_COST\_GROUP=CPU & CHIPSET









PAGE TITLE		
CPU Power		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
	BRANCH	proto-1-b
	PAGE	8 OF 172
NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED		SHEET 8 OF 149

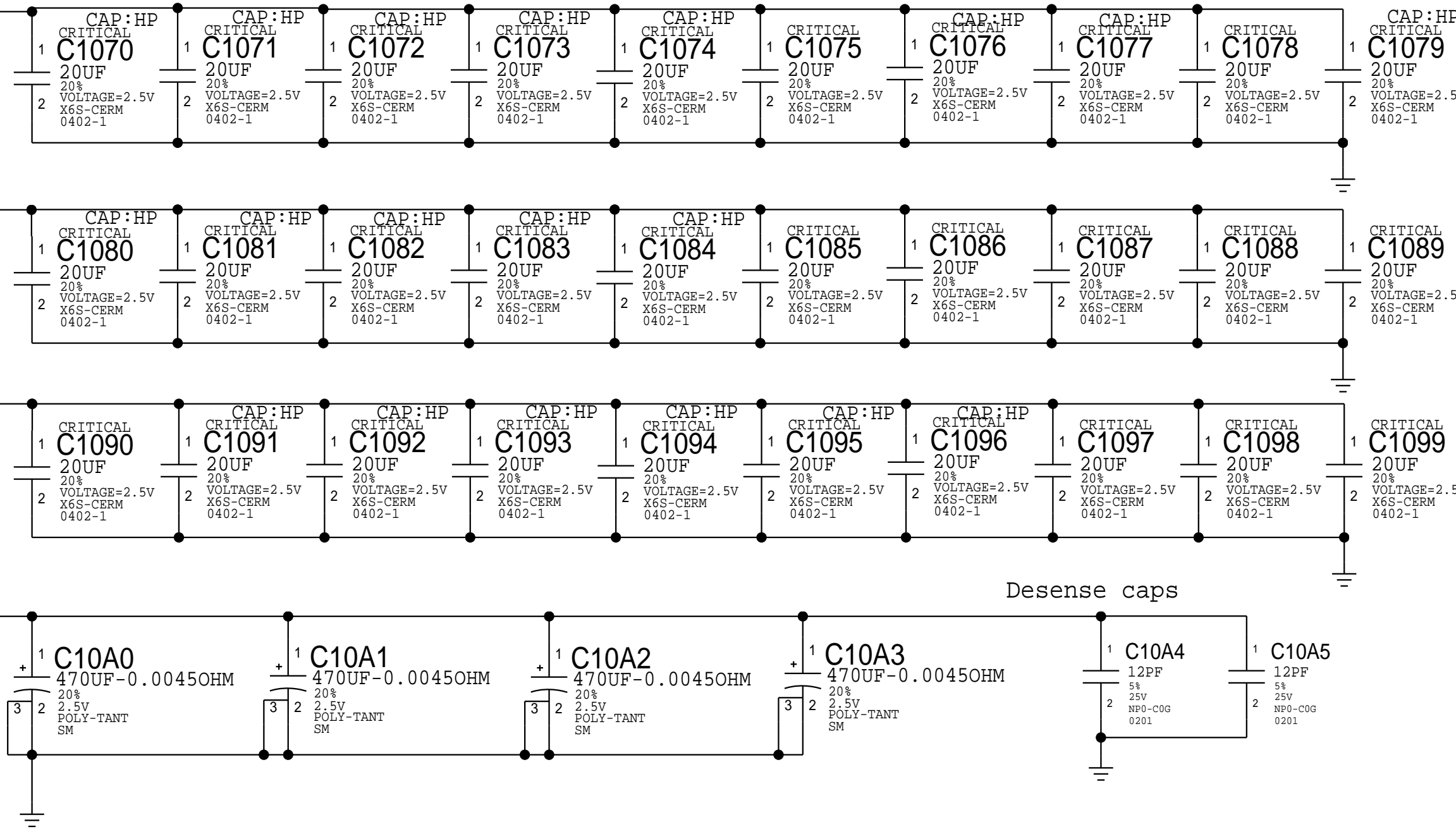
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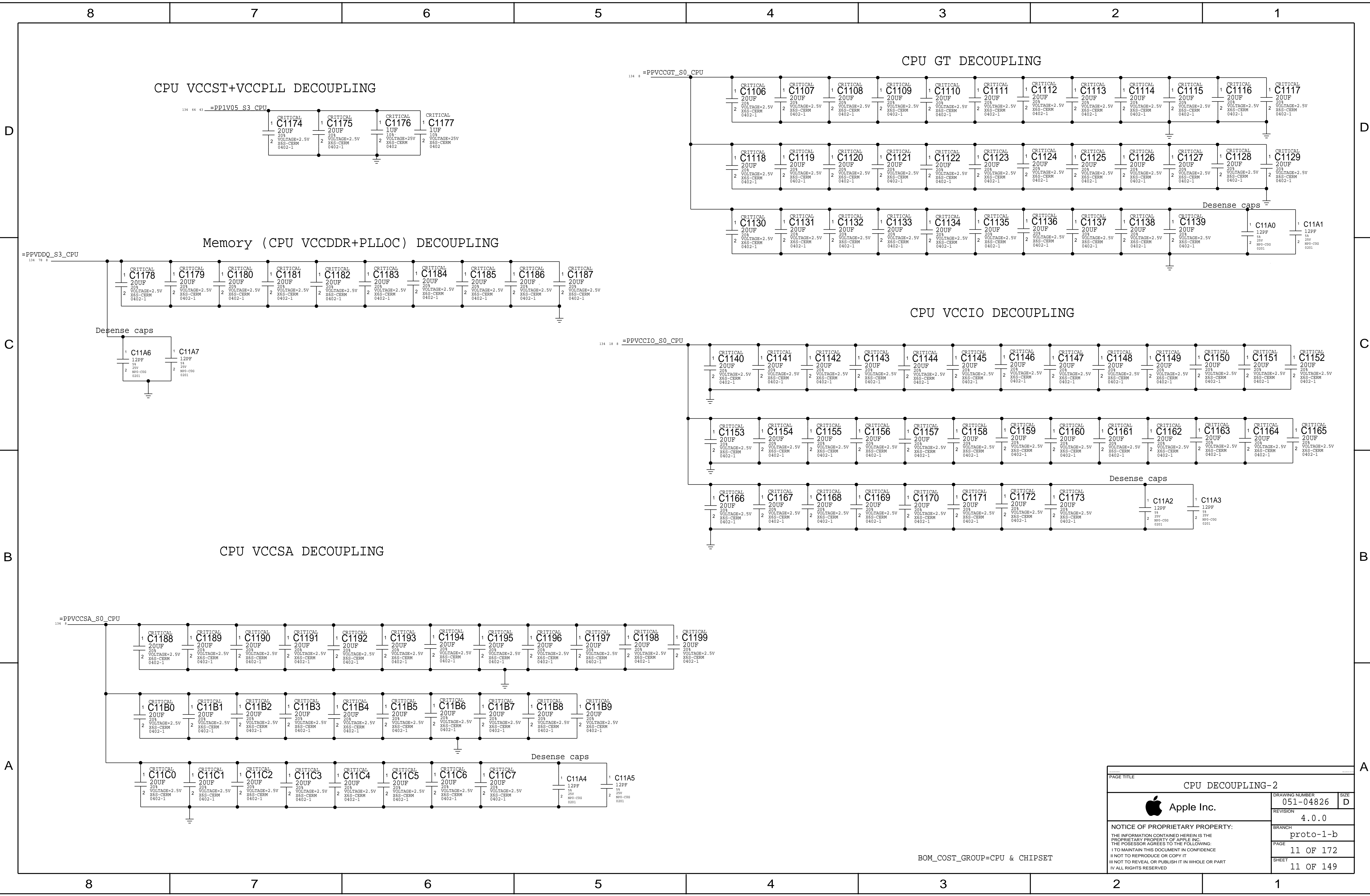
CPU VCORE DECOUPLING


134 8 =PPVCC S0 CPU



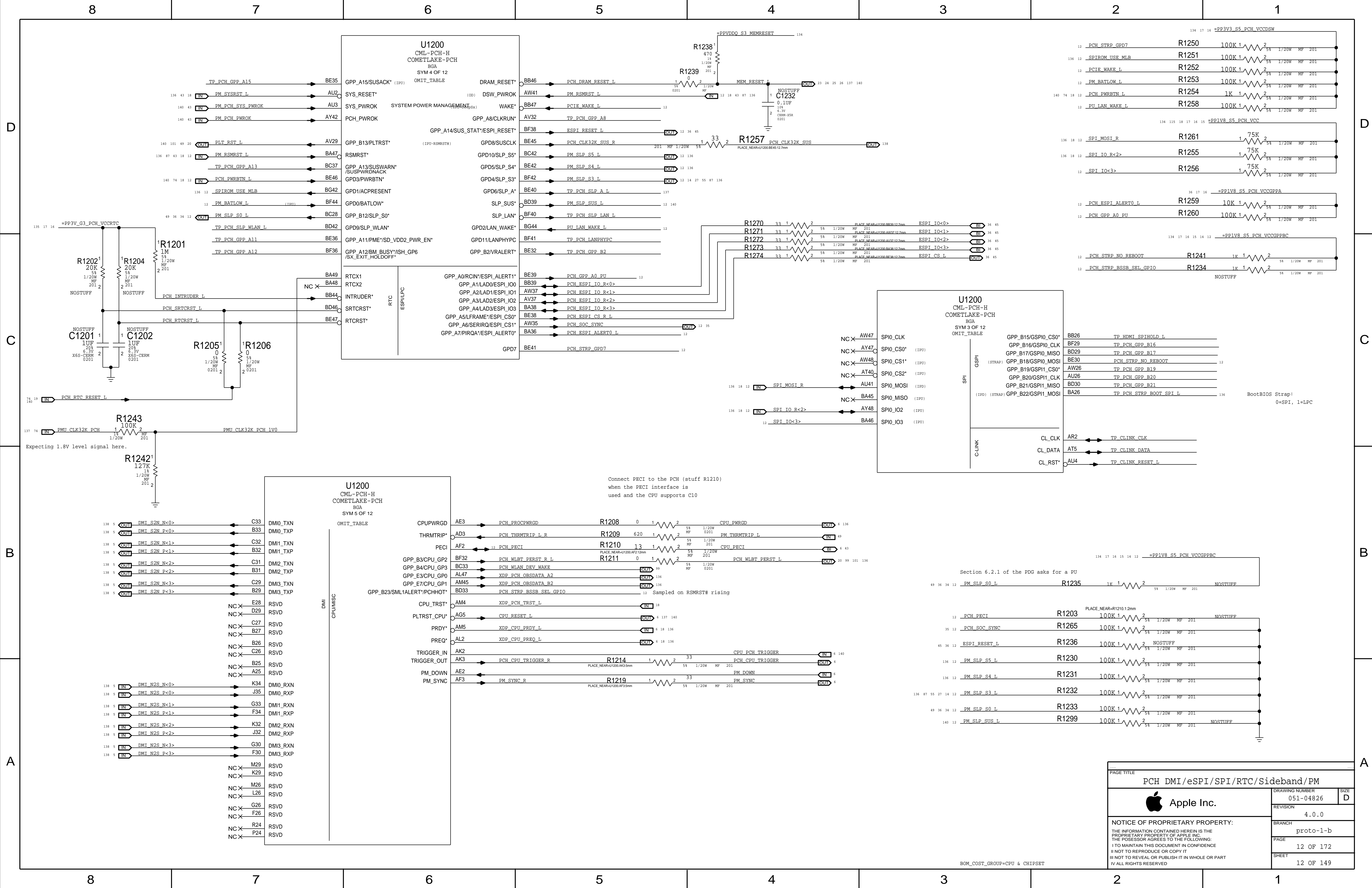
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	PAGE	10 OF 172
	SHEET	10 OF 149

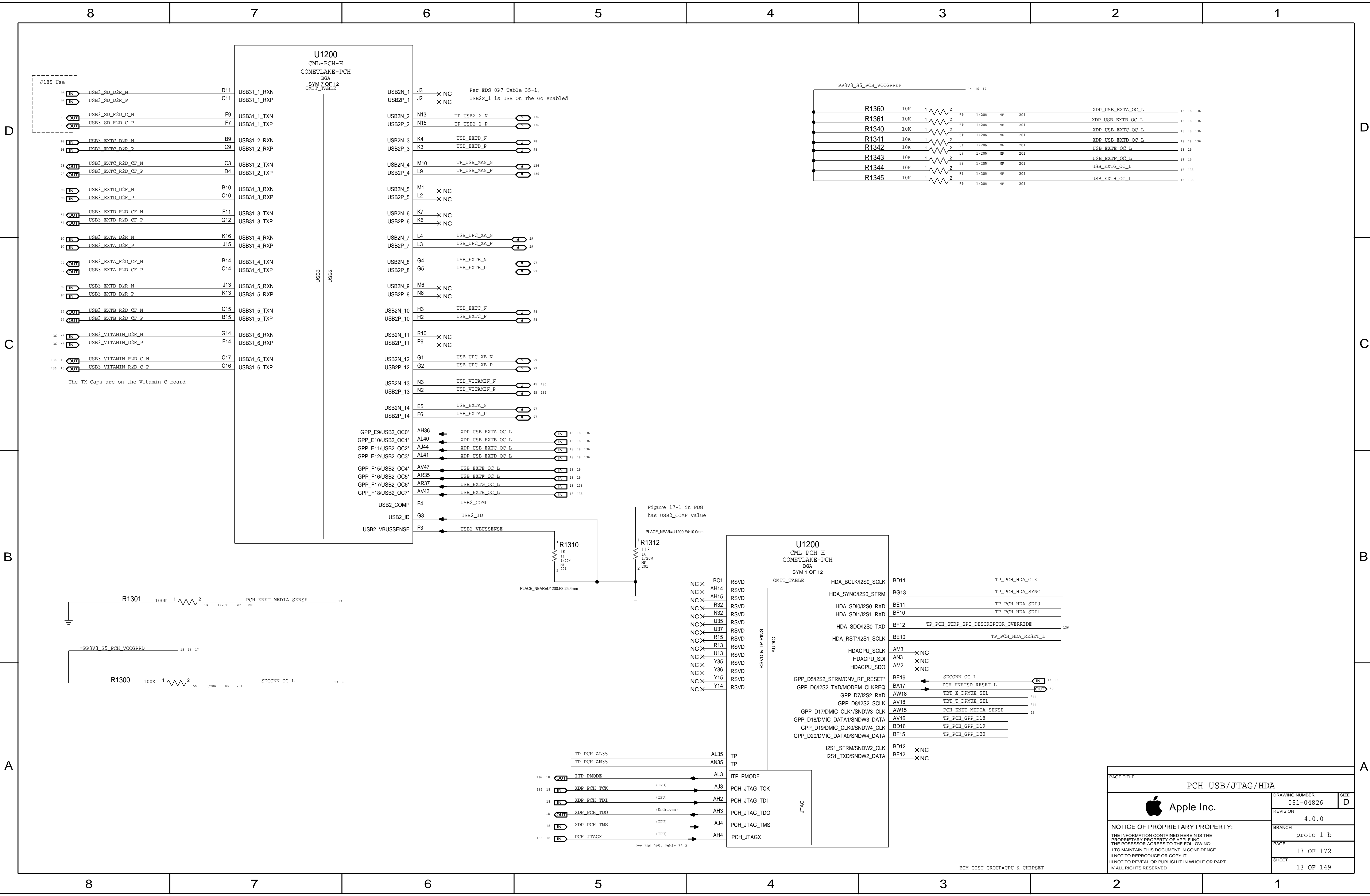
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PAGE TITLE		
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	REVISION	4.0.0
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	PAGE	11 OF 172
	SHEET	11 OF 149

BOM\_COST\_GROUP=CPU & CHIPSET

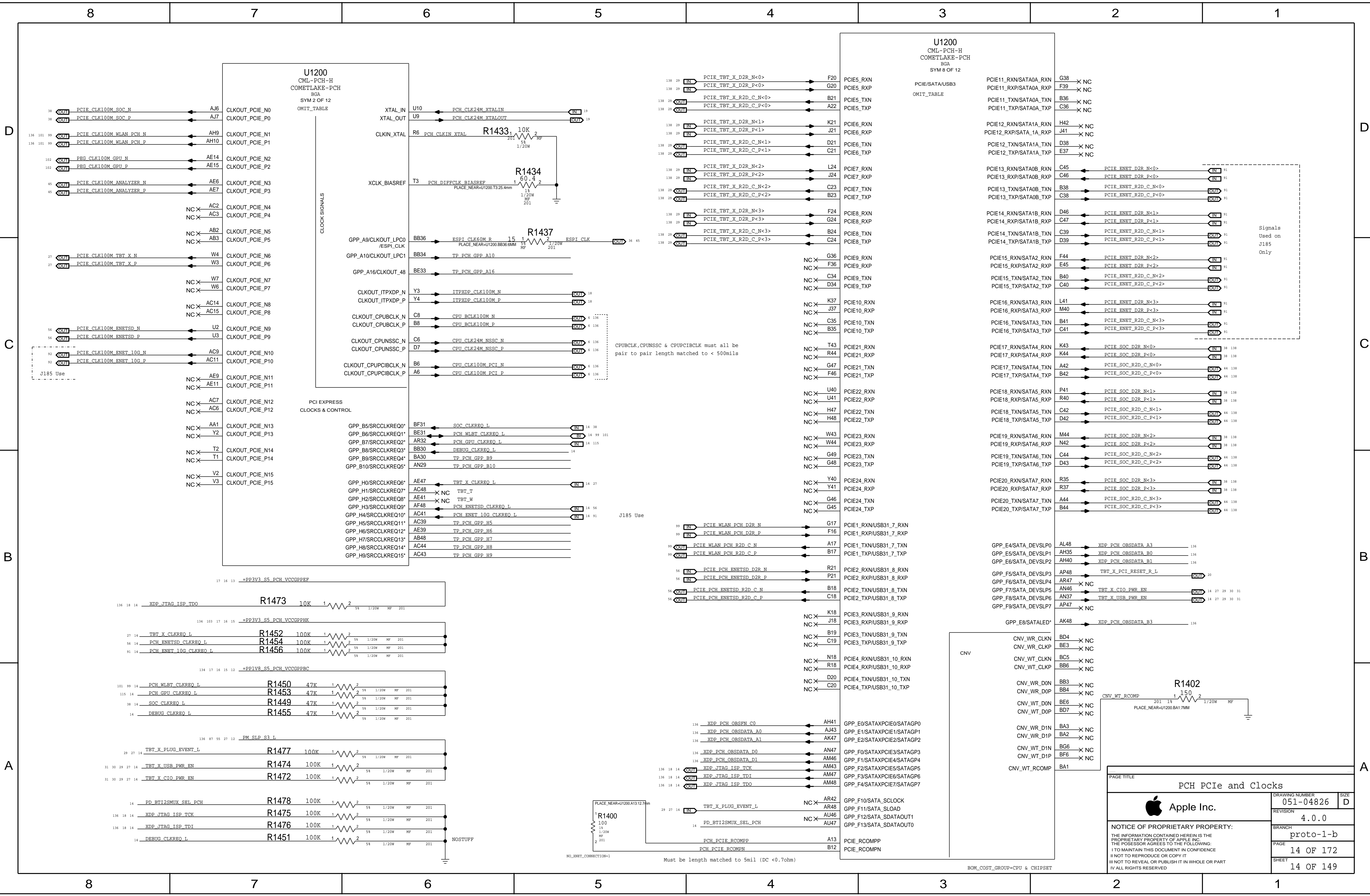


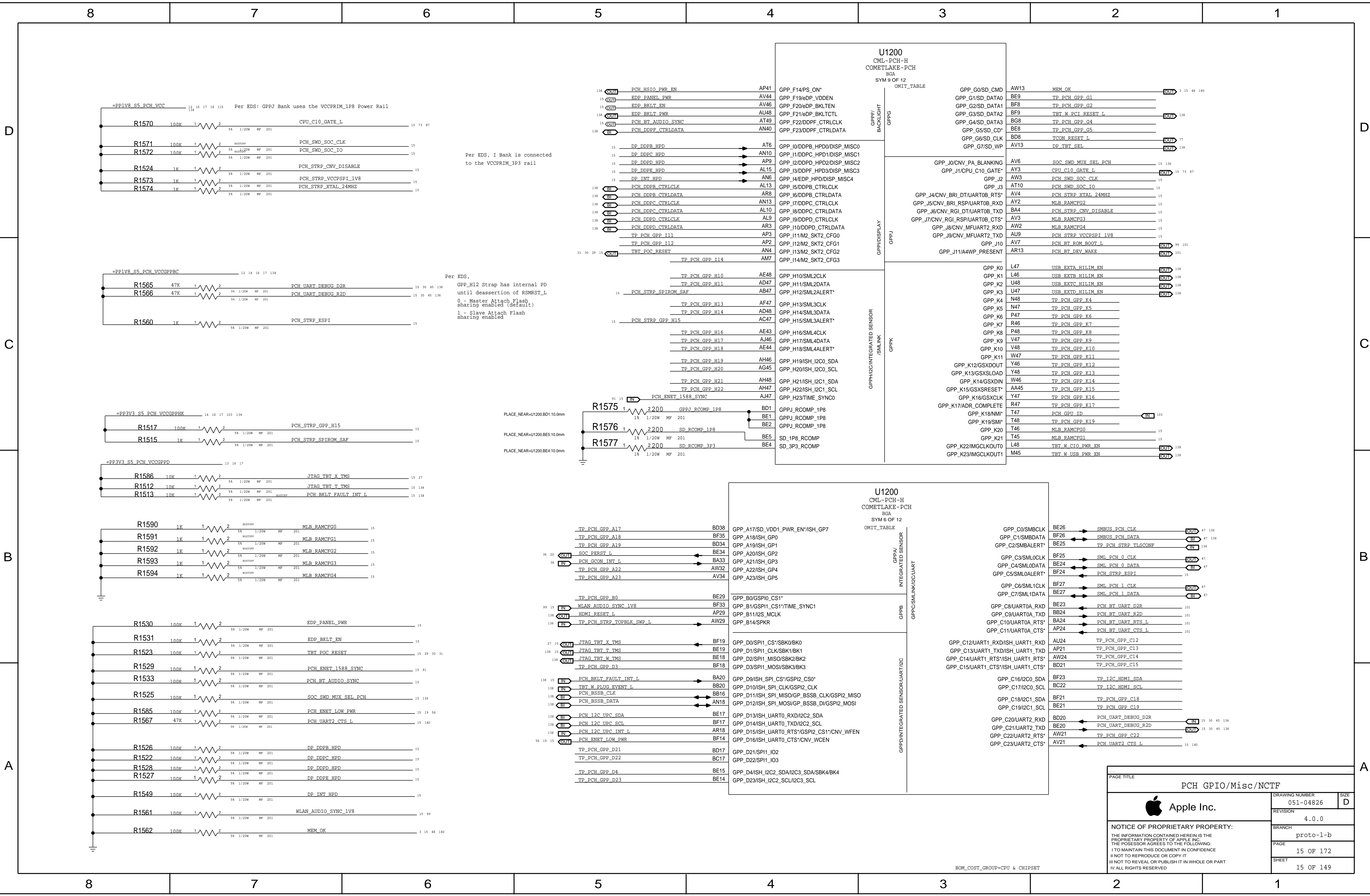


PAGE TITLE		
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	REVISION	4.0.0
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	PAGE	13 OF 172
	SHEET	13 OF 149

BOM\_COST\_GROUP=CPU & CHIPSET









BOM\_COST\_GROUP=CPU & CHIPSET





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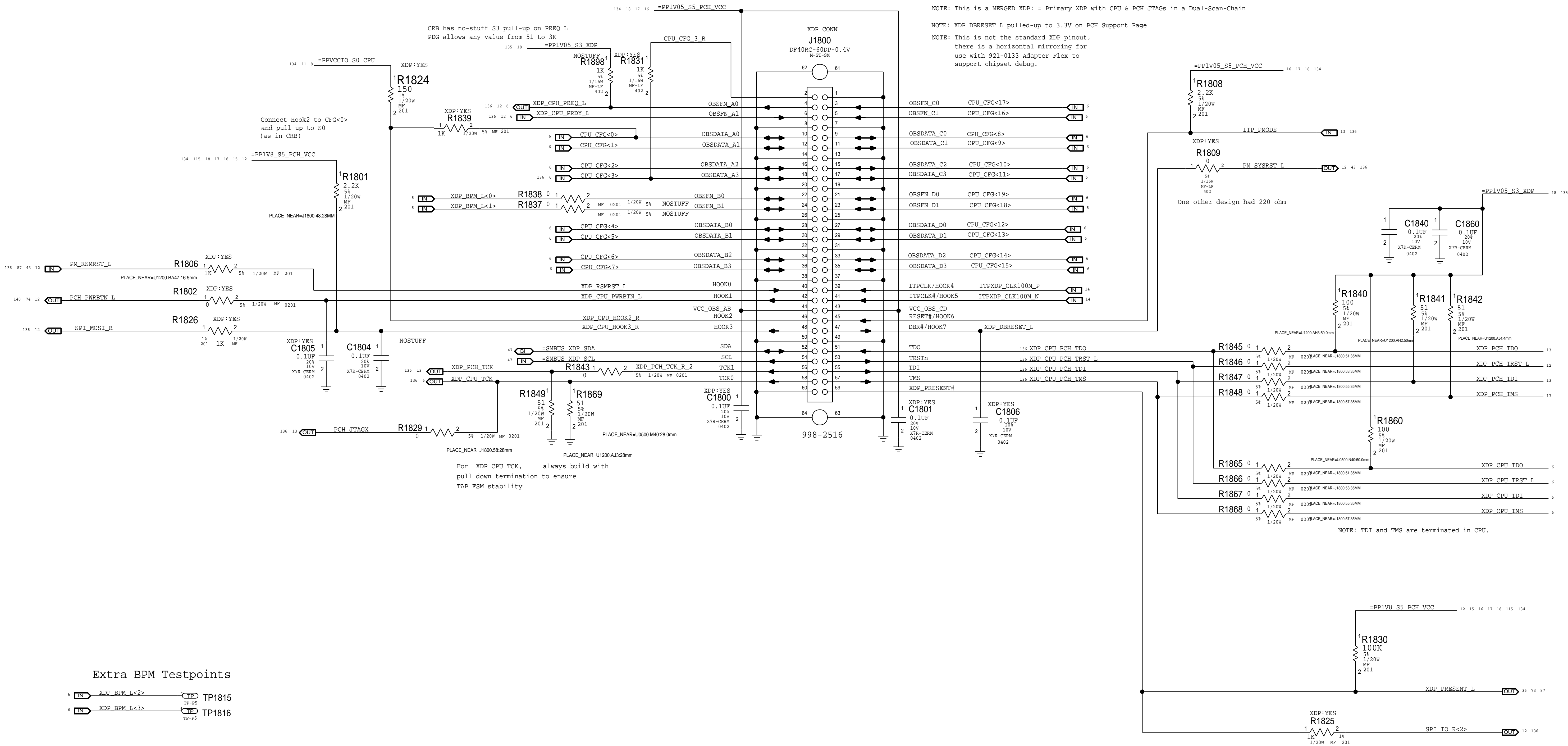
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Micro2-XDP



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PAGE TITLE		
CPU XDP		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
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	PAGE	18 OF 172
	SHEET	18 OF 149



D

C

B

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D

C

B

A

8

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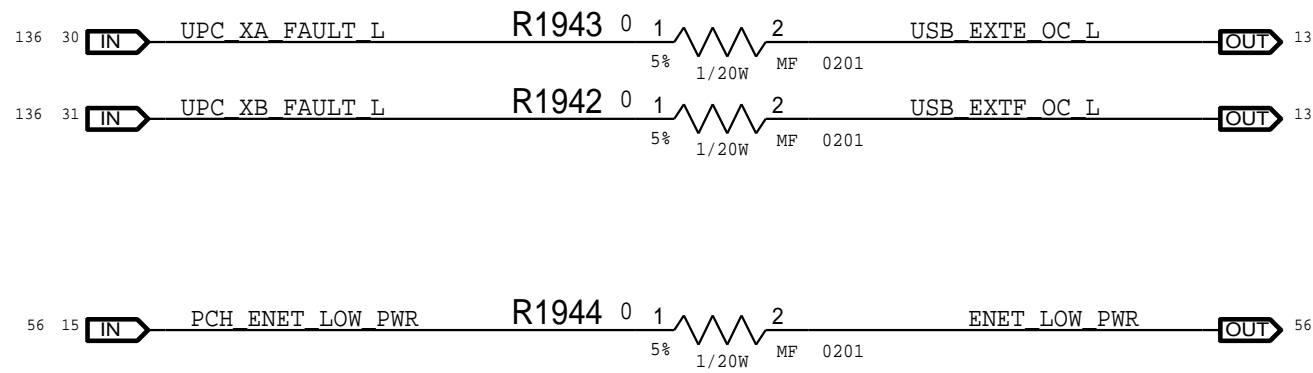
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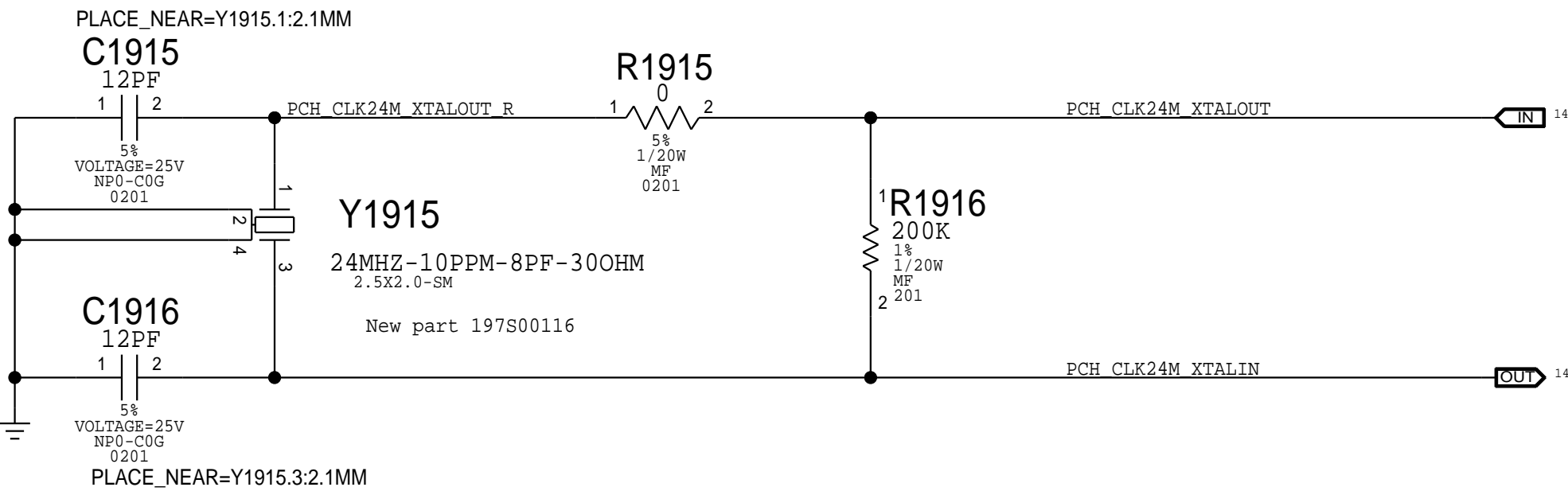
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2

1

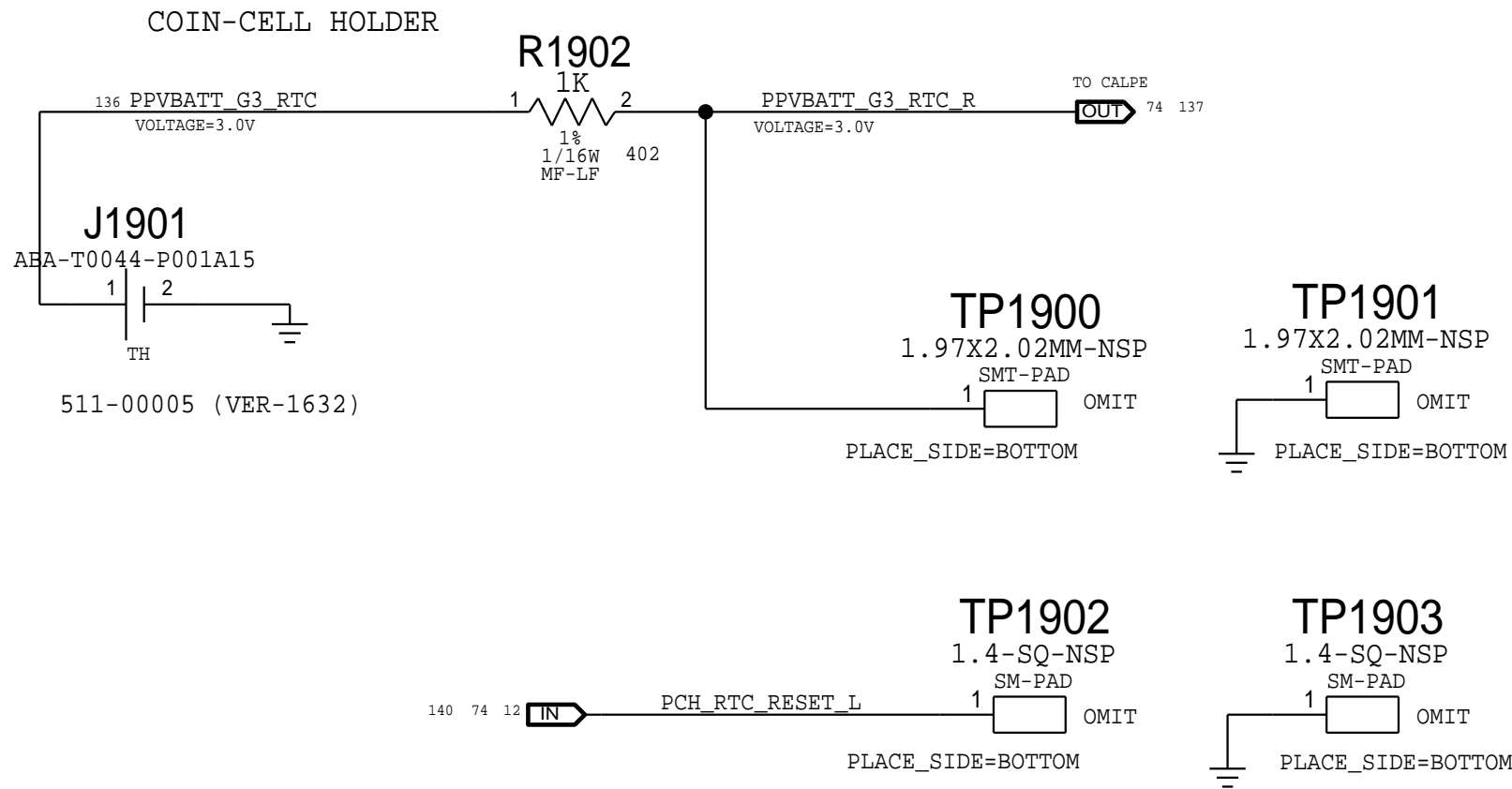


## PCH 24MHz Crystal




Ce = 2 \* [C1 - (Cs + Ci)]  
C1 per 197S00116 spec = 8pf  
Cs is trace and xtal pad capacitance ~= 1pf (extract after layout)  
Ci is PCH pin capacitance ~= 1 pf (assumption, need spec)  
Ce = 2 \* [8 - (1 + 1)] = 2 \* [8 - 2] = 2 \* 6 = 12 pf

## RTC Power Sources

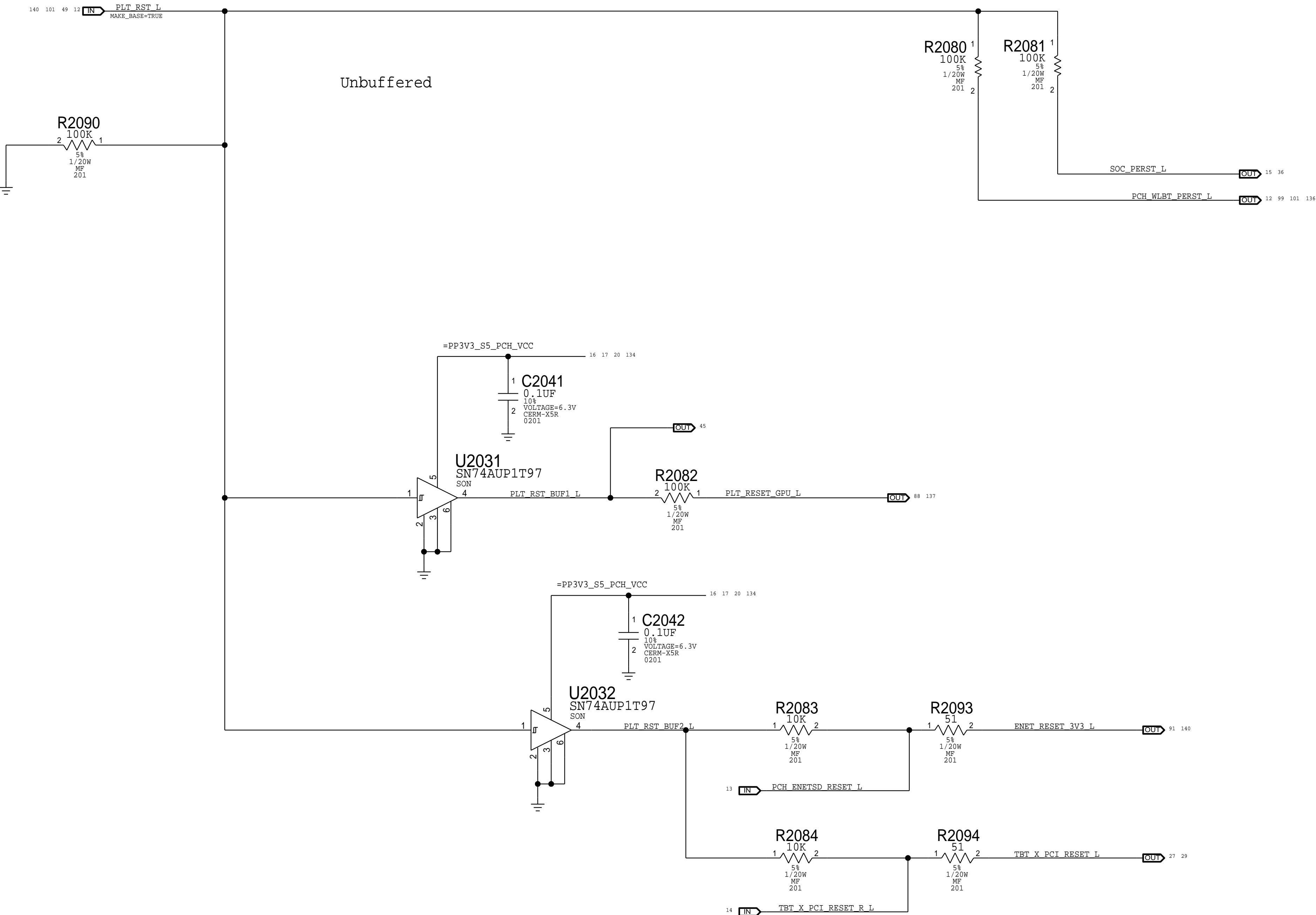


Place TP1901-TP1903 on bottom side


BOM\_COST\_GROUP=CPU & CHIPSET

PAGE TITLE		
CPU & CHIPSET: Chipset Support		
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	PAGE	19 OF 172
	SHEET	19 OF 149

MOW NOTE WW34  
SECTION 5.1.4



BOM\_COST\_GROUP=CPU & CHIPSET

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Project-Specific Chipset Support		
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	PAGE	20 OF 172
	SHEET	20 OF 149



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D

C

B

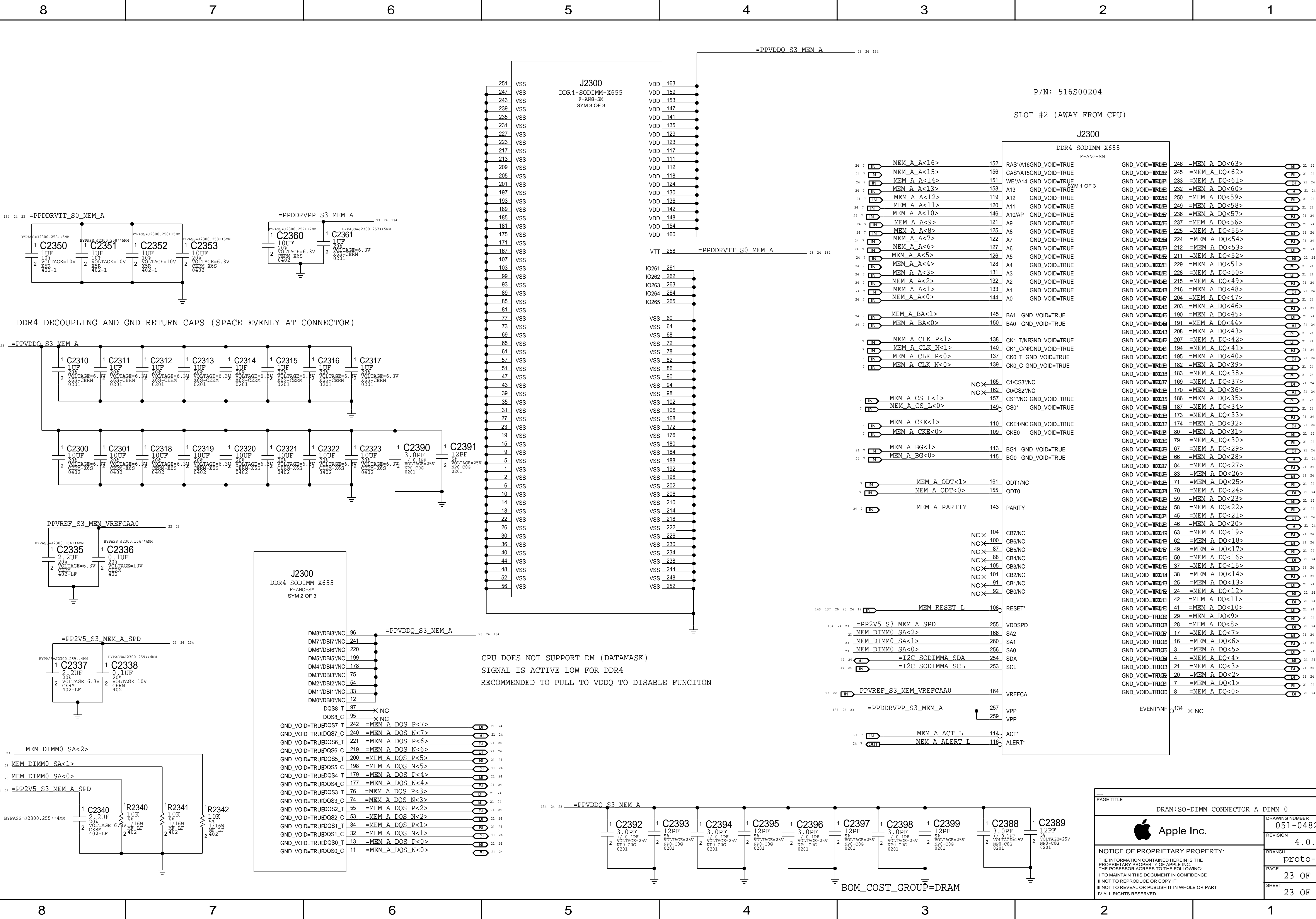
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D

C

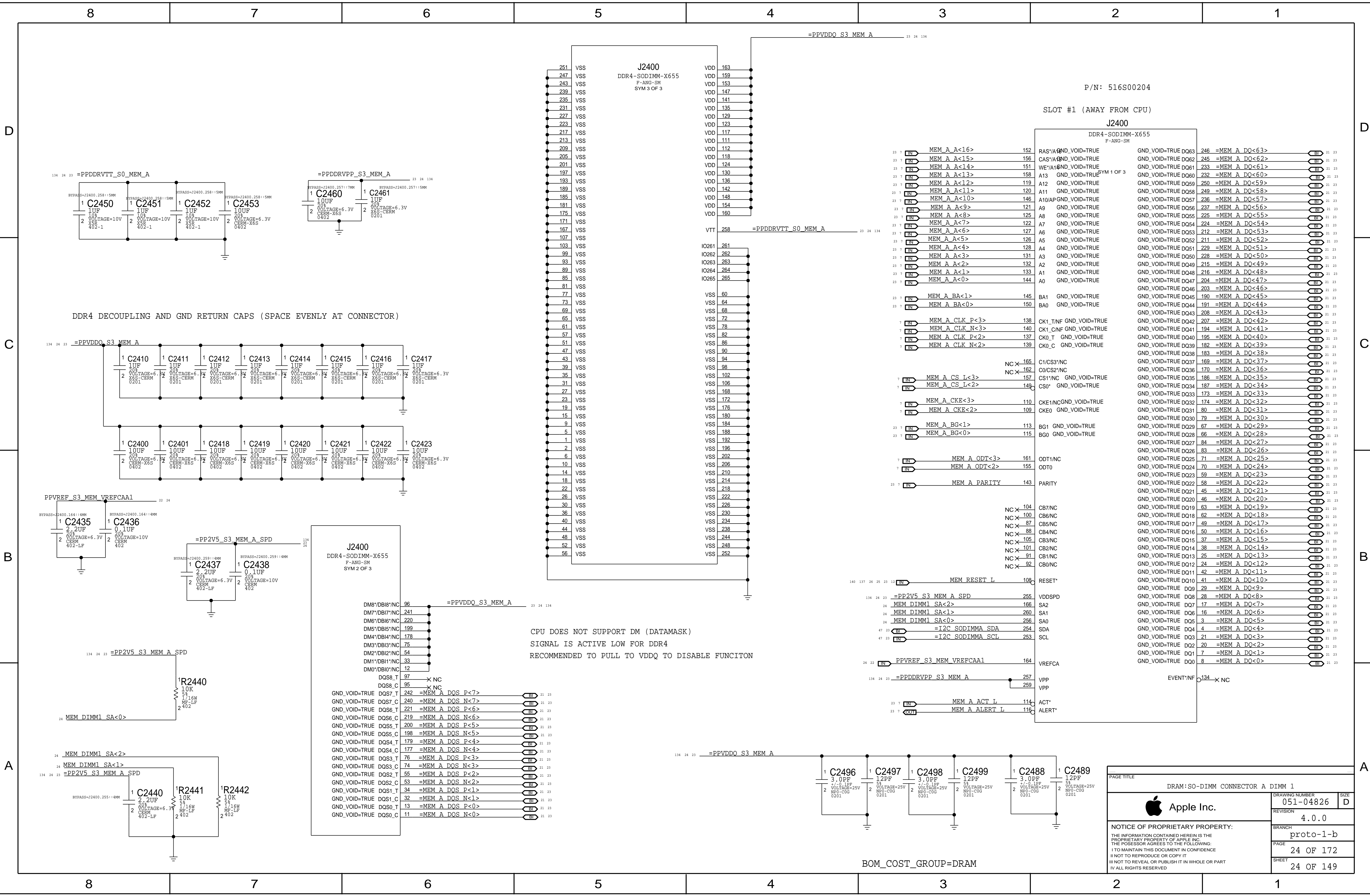
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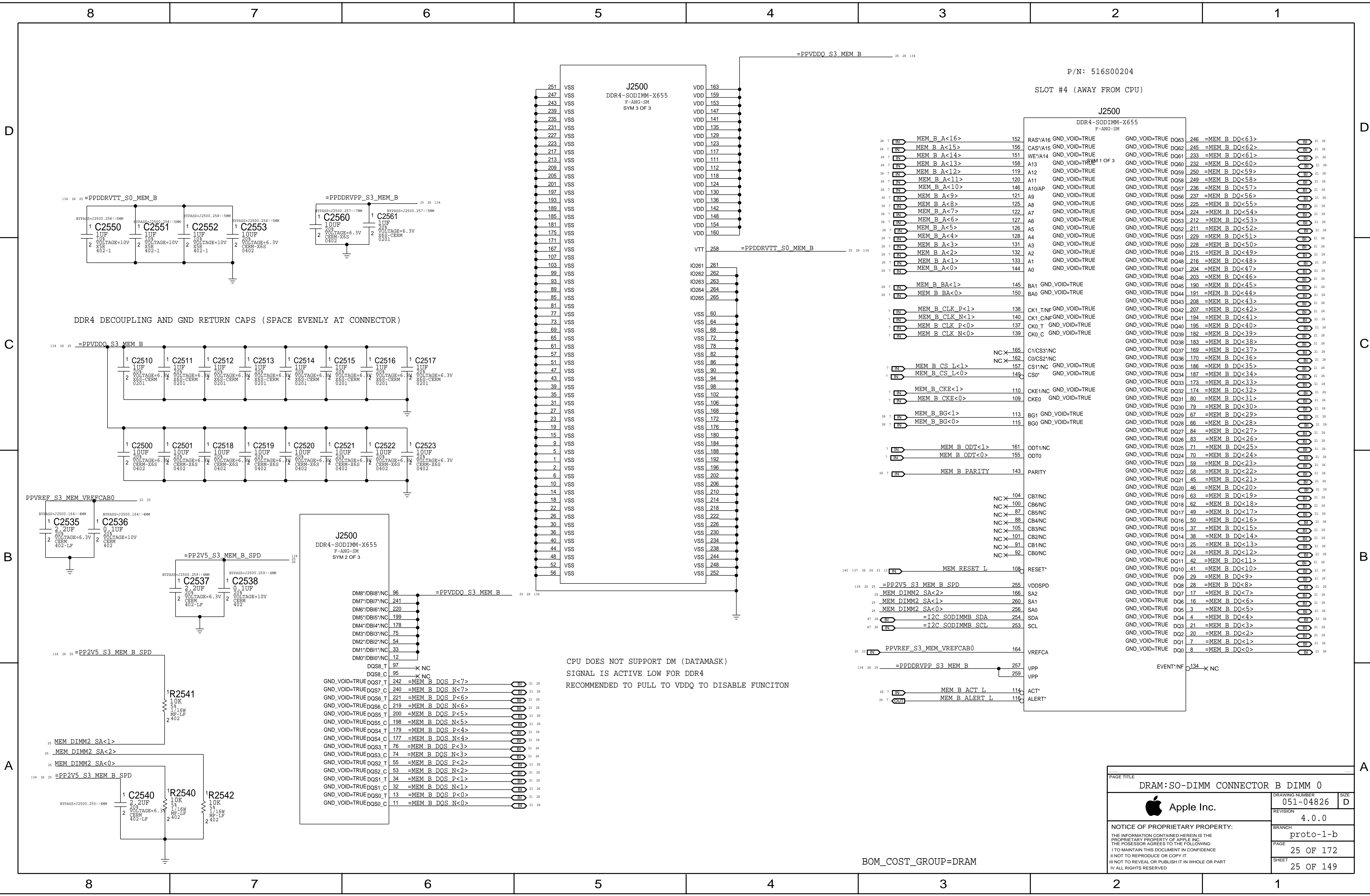
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DRAM:SO-DIMM CONNECTOR A DIMM 0		
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	PAGE	23 OF 172
	SHEET	23 OF 149

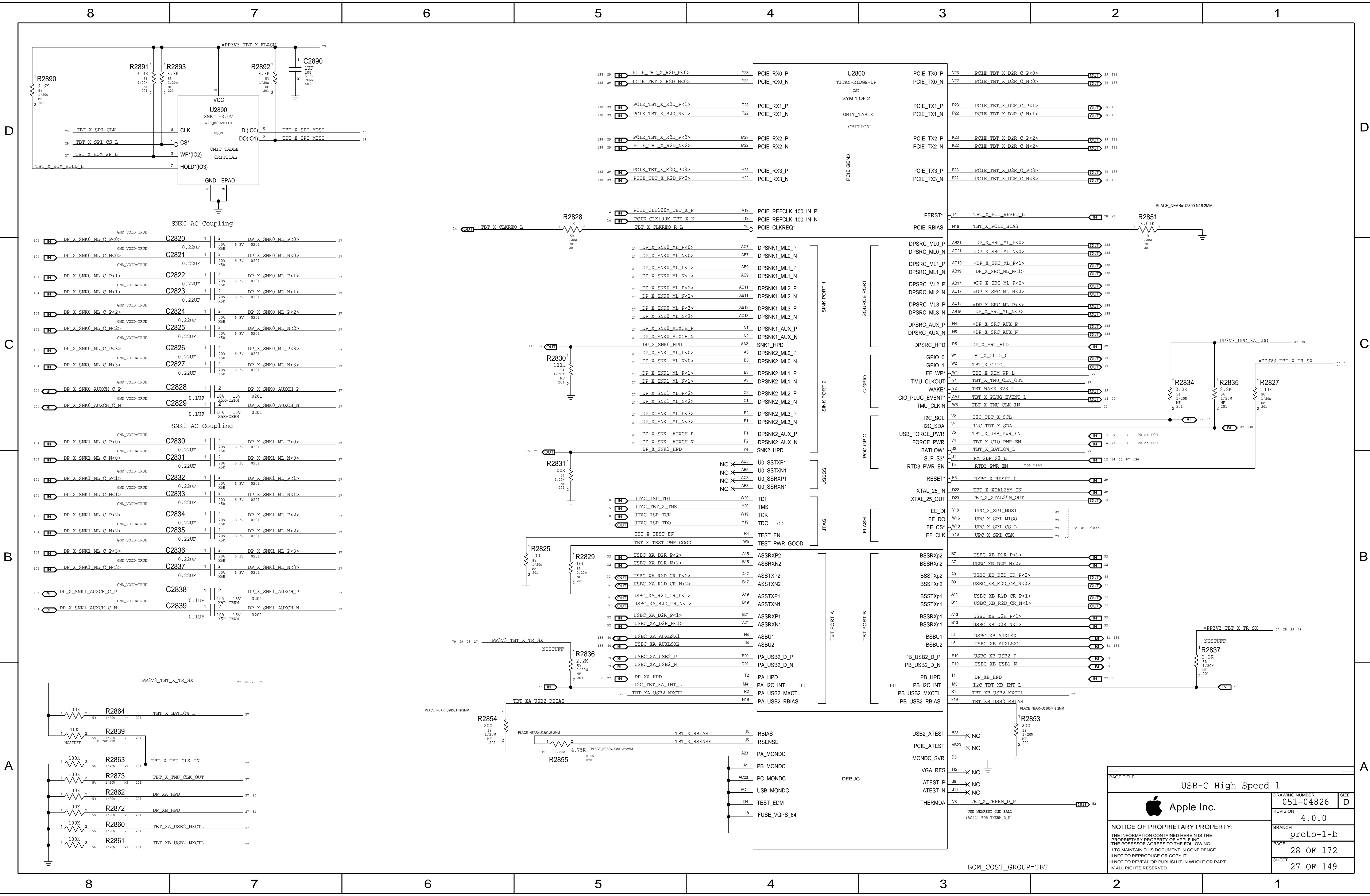


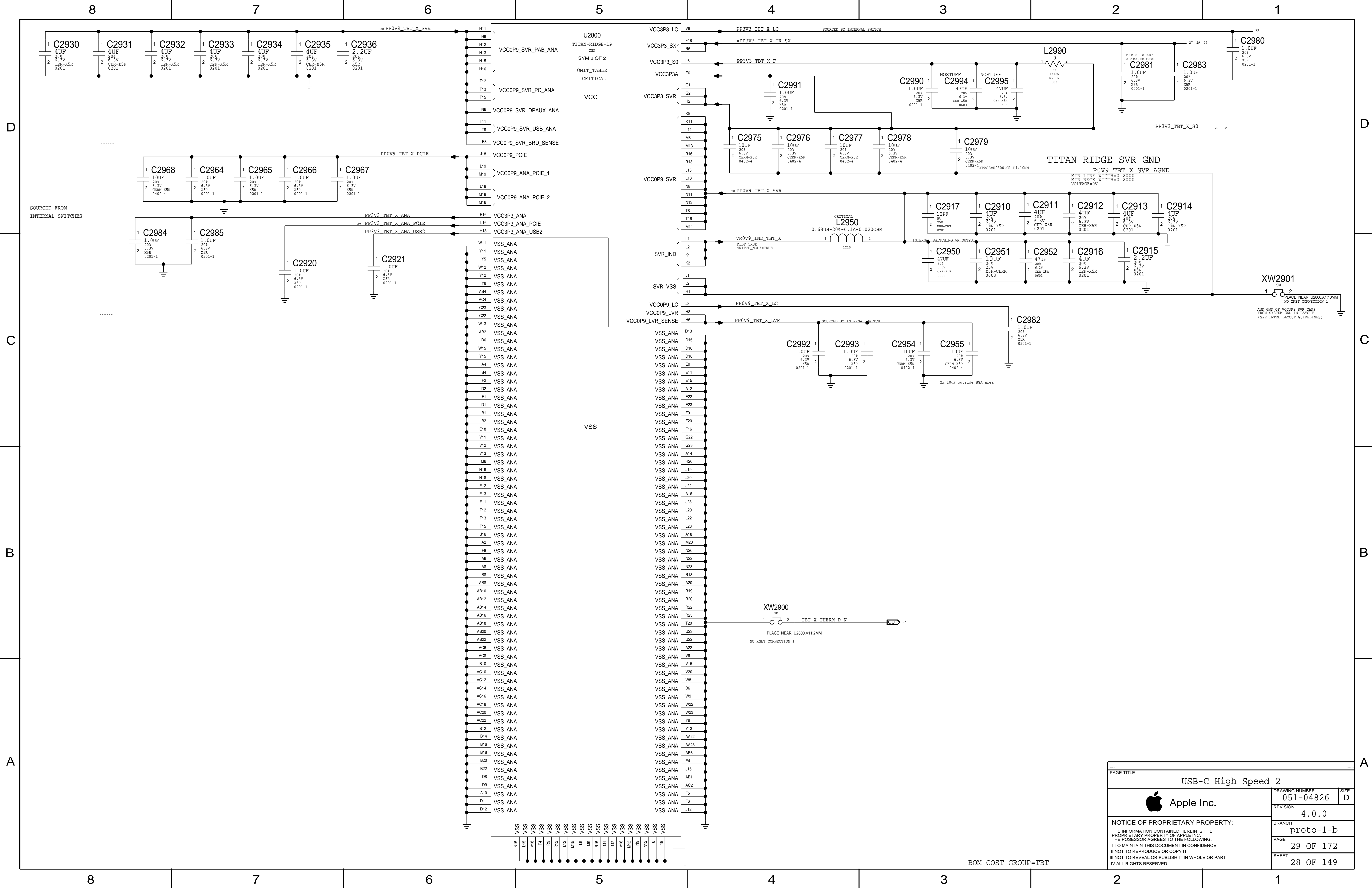




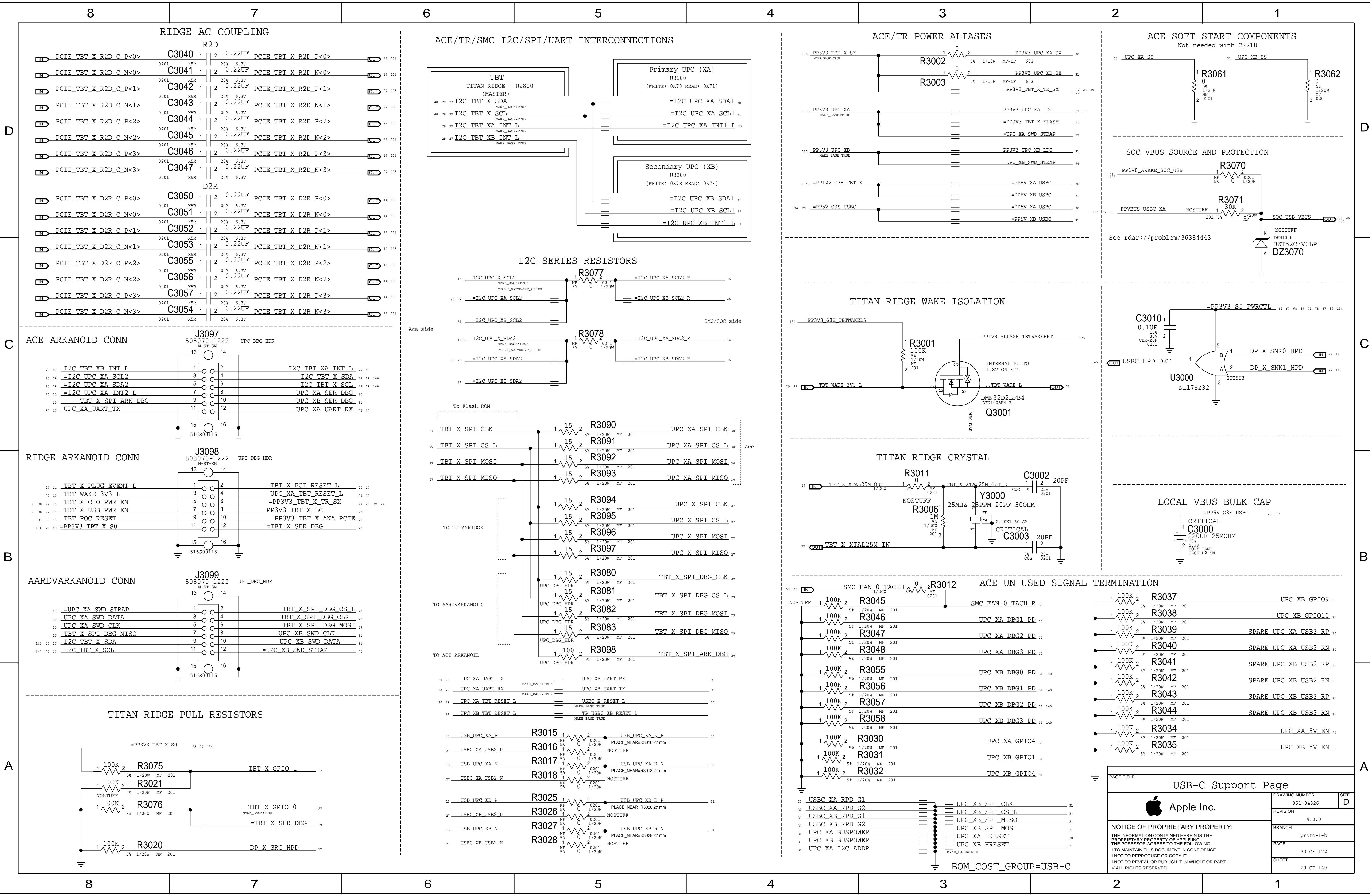













```
ACE2 PINCONFIG
(1) 3.3V PP
(2) 3.3V OD NMOS
(3) 3.3V OD PMOS
(4) 3.3V INPUT
(5) 1.8V PP
(6) 1.8V OD NMOS
(7) 1.8V OD PMOS
(8) 1.8V INPUT
```



PAGE TITLE		
USB-C PORT CONTROLLER XA		
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# X SECONDARY ACE USB-C PORT CONTROLLER (UPC)

ACE2 PINCONFIG  
(1) 3.3V PP  
(2) 3.3V OD NMOS  
(3) 3.3V OD PMOS  
(4) 3.3V INPUT  
(5) 1.8V PP  
(6) 1.8V OD NMOS  
(7) 1.8V OD PMOS  
(8) 1.8V INPUT

ACE LDO CAN DRAW UP TO  
5.9 MA WHILE PROGRAMMING OTP  
MAX 100UF TOTAL ON RAIL

MRESET HIGH FORCES B17 RESET LOW  
ACTIVE LOW RESET OUTPUT

TP must be present on GPIO0 or be accessible on connector even in production

USE GPIO8 FOR PMU RESET AFTER BOOT

BUSPOWER needs to connect to GND on Desktop and LDO\_3V3 on Mobile.  
I2C\_ADDR CONTROLS ADDR BITS 3,2,1  
GND I2C\_ADDR ON PRIMARY ONLY  
R\_0SC NEEDS NEEDS 0.1% RES

I2C BUS 1 IS TBT / ACES

I2C BUS 2 IS SMC / ACES

L3200

90-OHM-0.1A

R3250

R3251

U3200  
CD32172B11ACE  
FCBGA  
CRITICAL  
ONKIT\_PABLE

DIGITAL CORE I/O & CONTROL

POWER

TYPE-C

GND

PORT\_MUX

VIN\_3V3

VDDIO

VDDIO\_CFG

LDO\_3V3

VOUT\_LV

VRET

SS

LDO\_CORE

VBUS\_OPT

PP\_HV\_OPT

C\_CC1

C\_CC2

RPD\_G1

RPD\_G2

C\_USB\_TP

C\_USB\_TN

C\_USB\_BP

C\_USB\_BN

C\_SBU1

C\_SBU2

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

GND\_OPT

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GND\_OPT

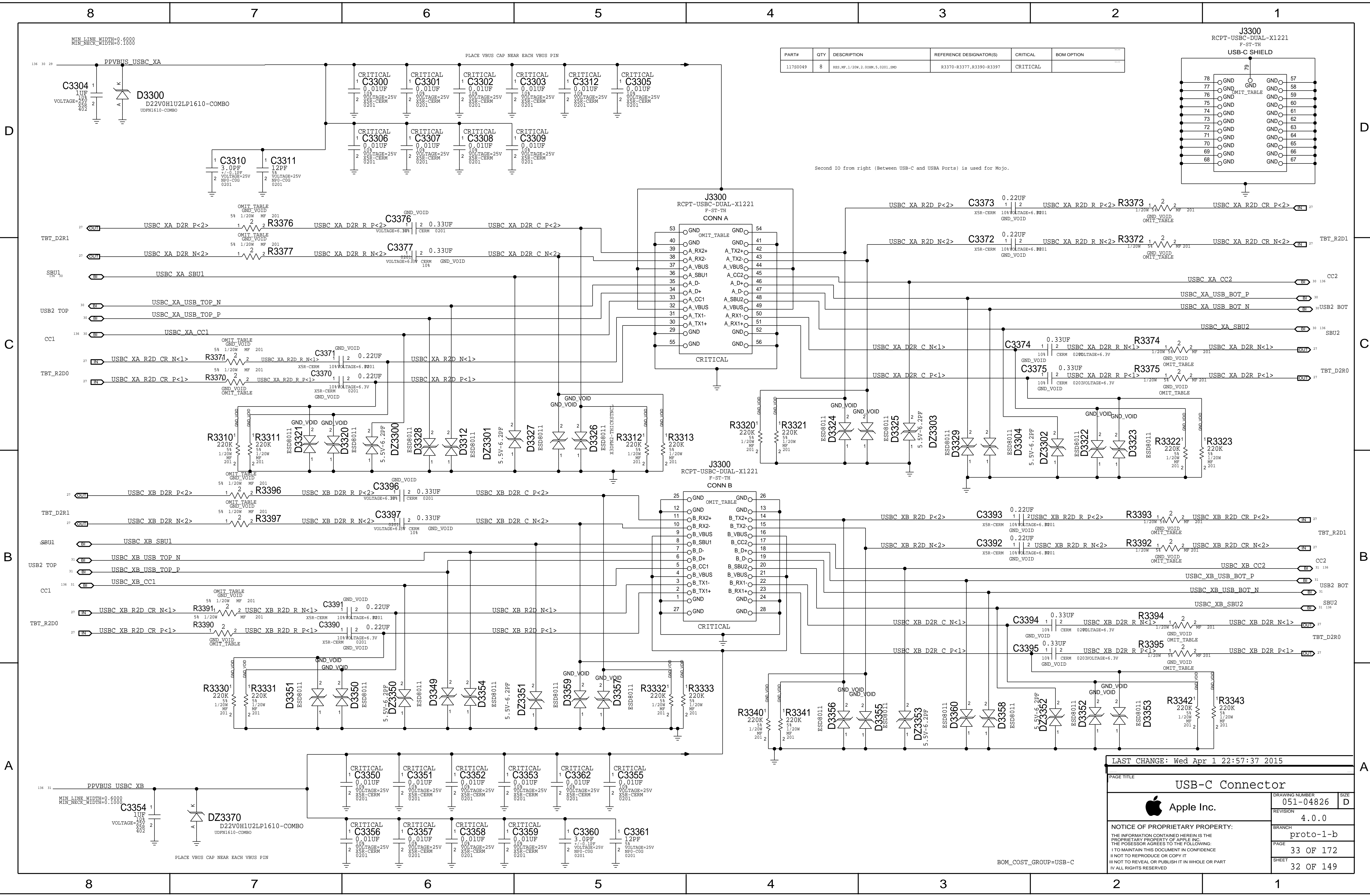
PULL R3109 AND R3108 UP TO ACES LDO FOR 1ST RIDGE'S ACES  
PULL THEM DOWN TO GND FOR 2ND RIDGE'S ACES

I2C UPC XB DBG CTL SCL  
I2C UPC XB DBG CTL SDA

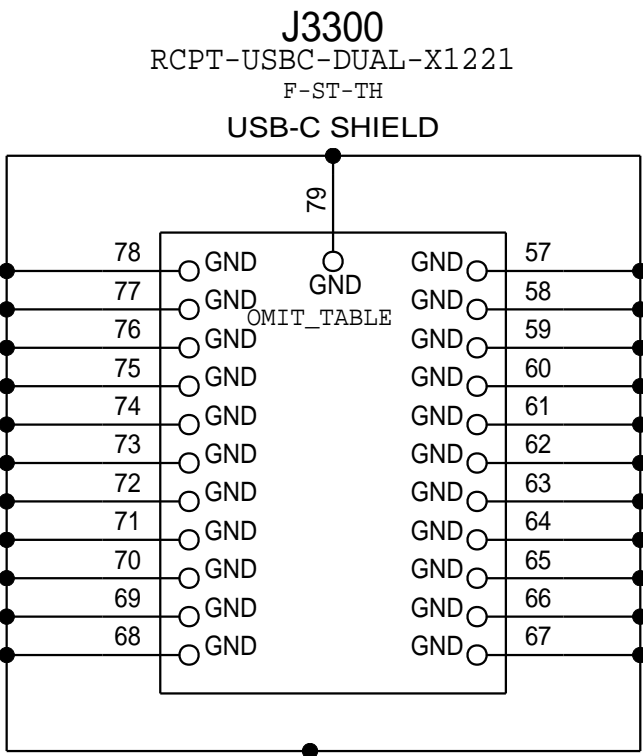
UPC XB UART RX

PAGE TITLE			
PAGE TITLE			
DRAWING NUMBER			
051-04826			
REVISION			
4.0.0			
BRANCH			
proto-1-b			
PAGE			
32 OF 172			
SHEET			
31 OF 149			

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S0049	8	RBS,MF,1/20W,2.00HM,5.0201,SMD	R3370-R3377,R3390-R3397	CRITICAL	



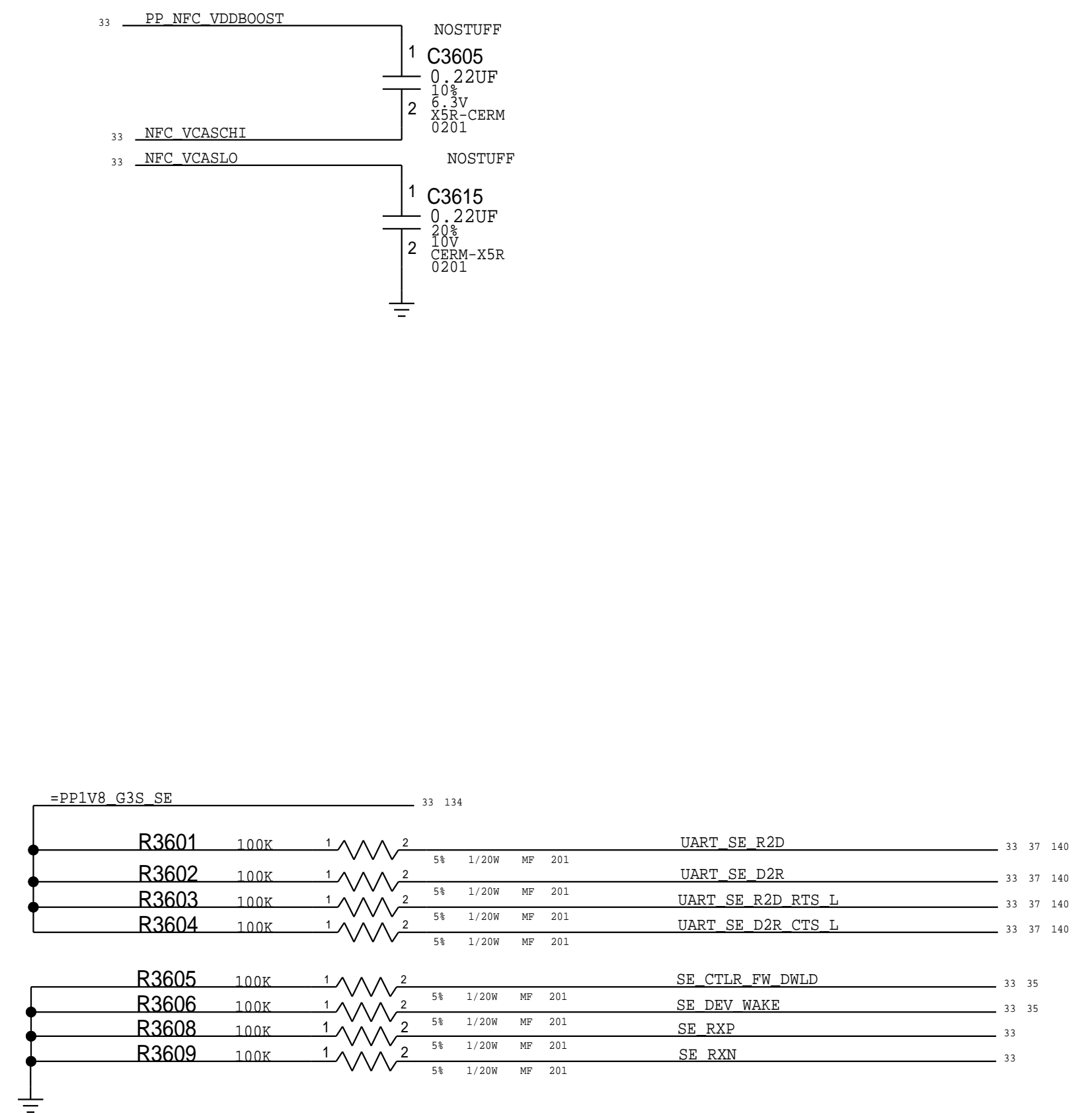
Second IO from right (Between USB-C and USB-A Ports) is used for Mojo.


LAST CHANGE: Wed Apr 1 22:57:37 2015

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		PAGE	33 OF 172
		SHEET	32 OF 149



## NFC & SE CONTROLLER



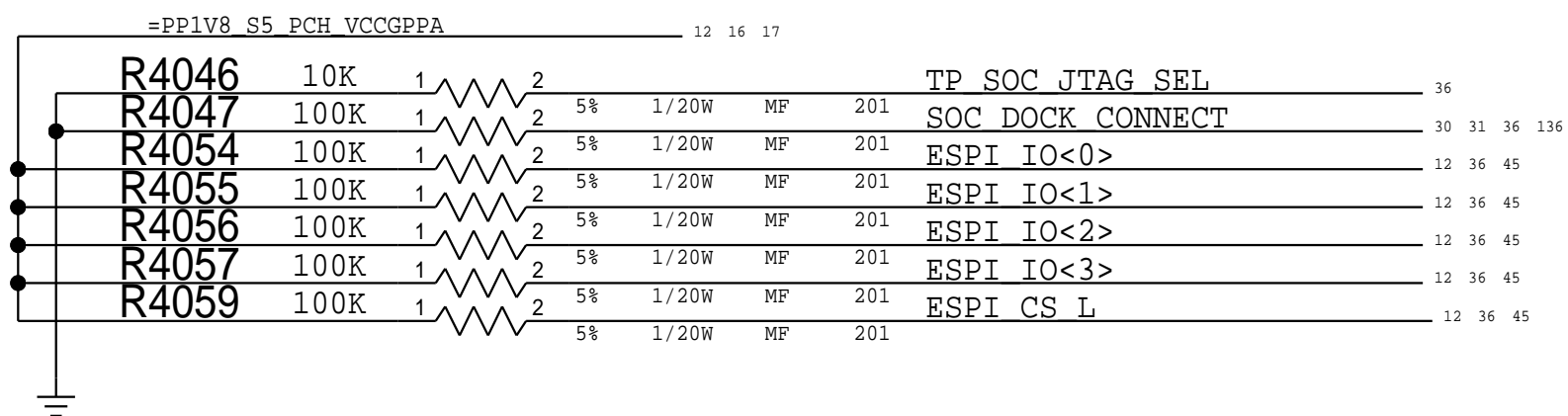
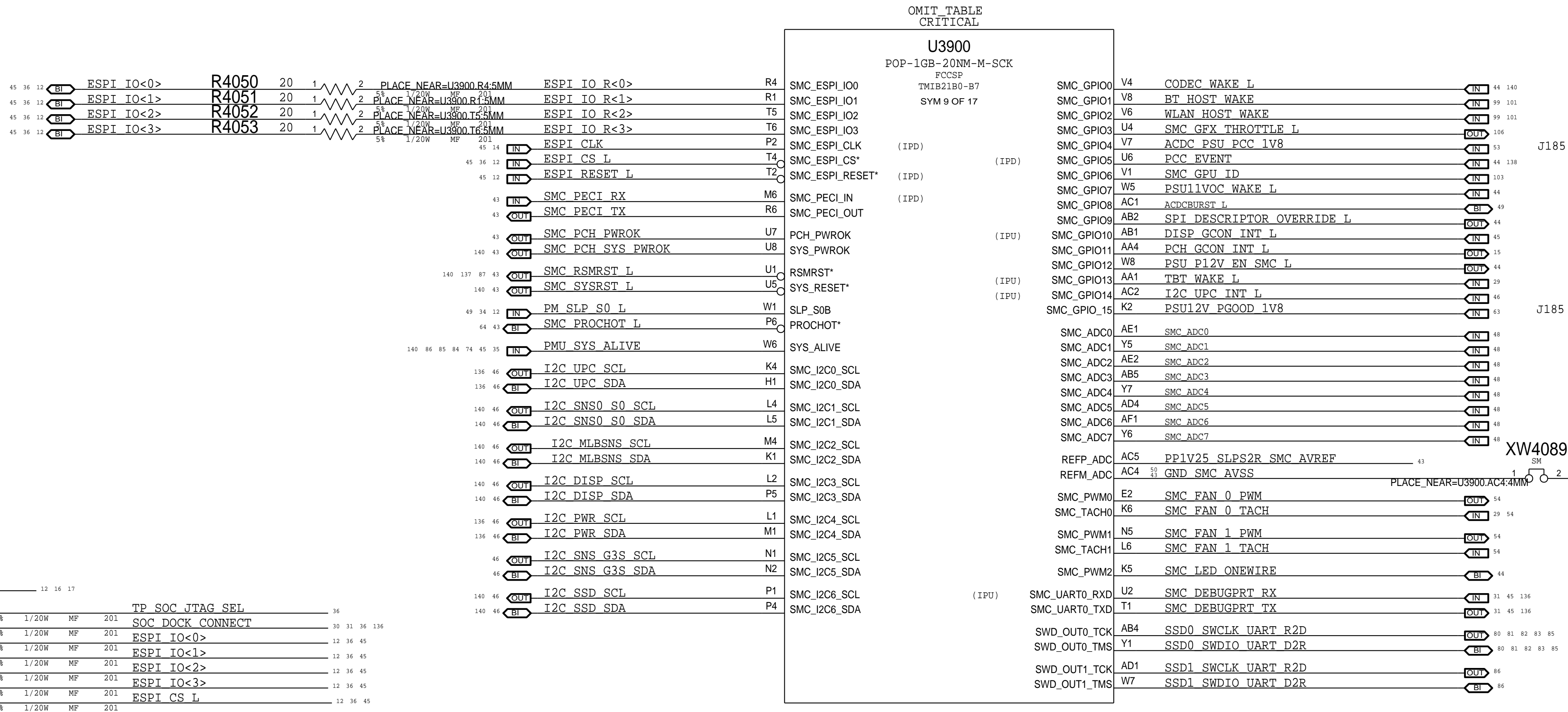
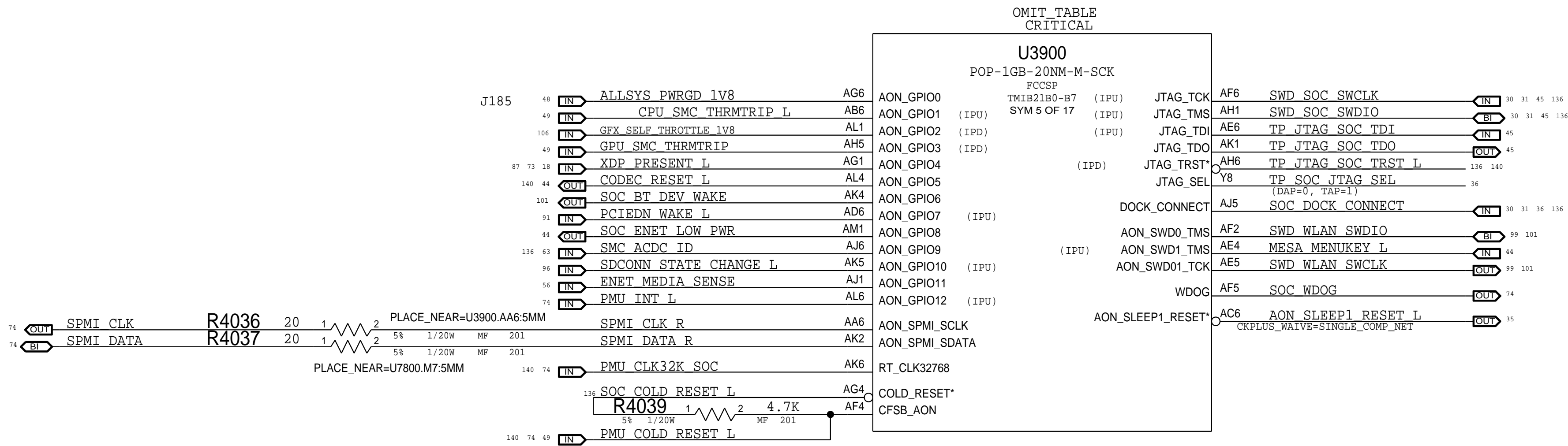
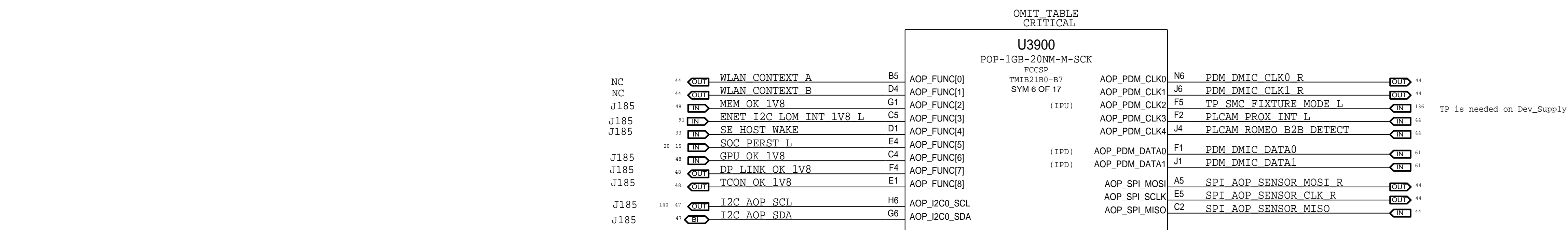
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		SHEET		33 OF 149	


BOM\_COST\_GROUP=KEYBOARD



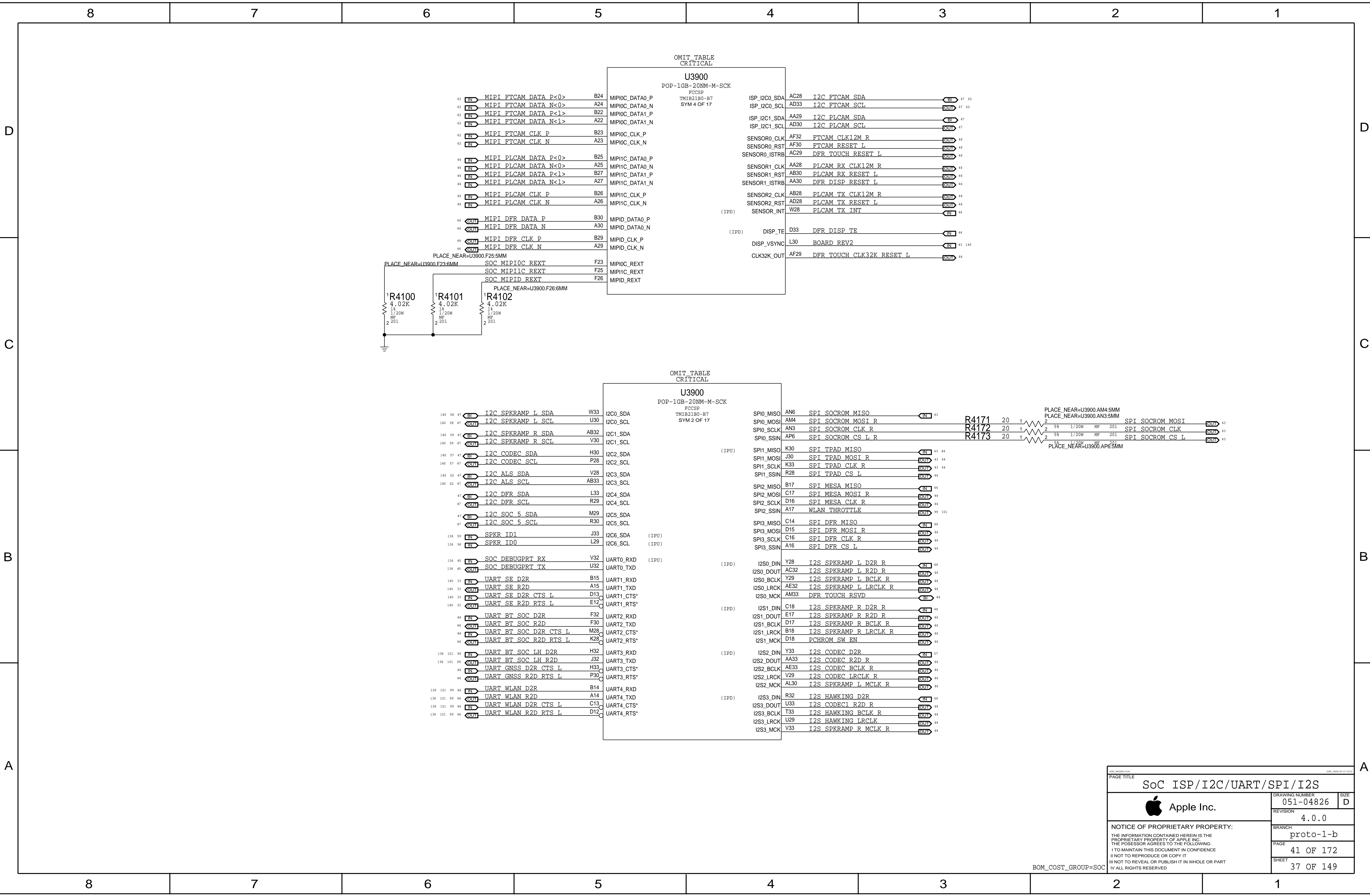


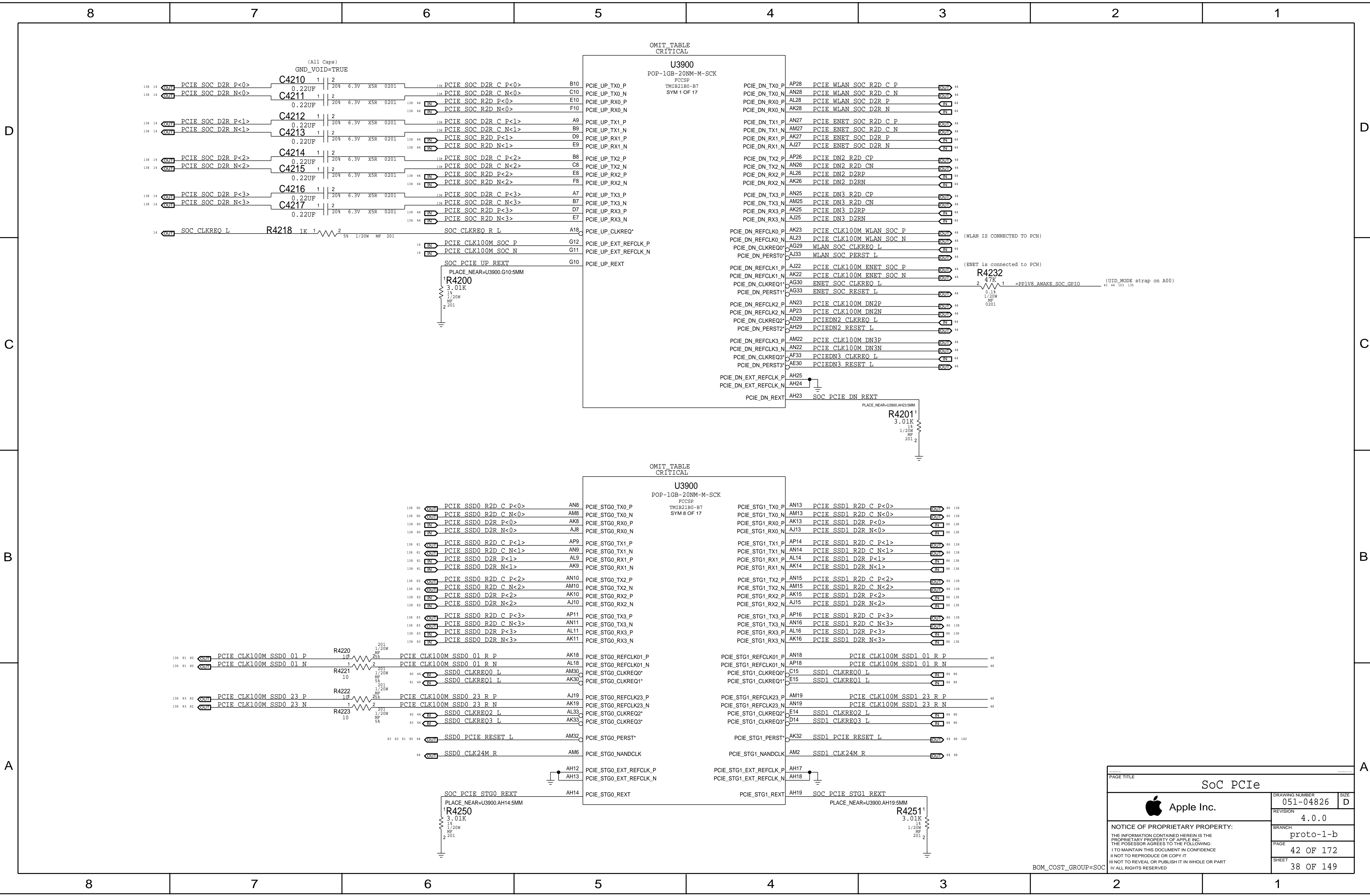




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SoC AOP/AON/SMC			
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	051-04826		D
	REVISION		
	4.0.0		
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BOM\_COST\_GROUP=SOC





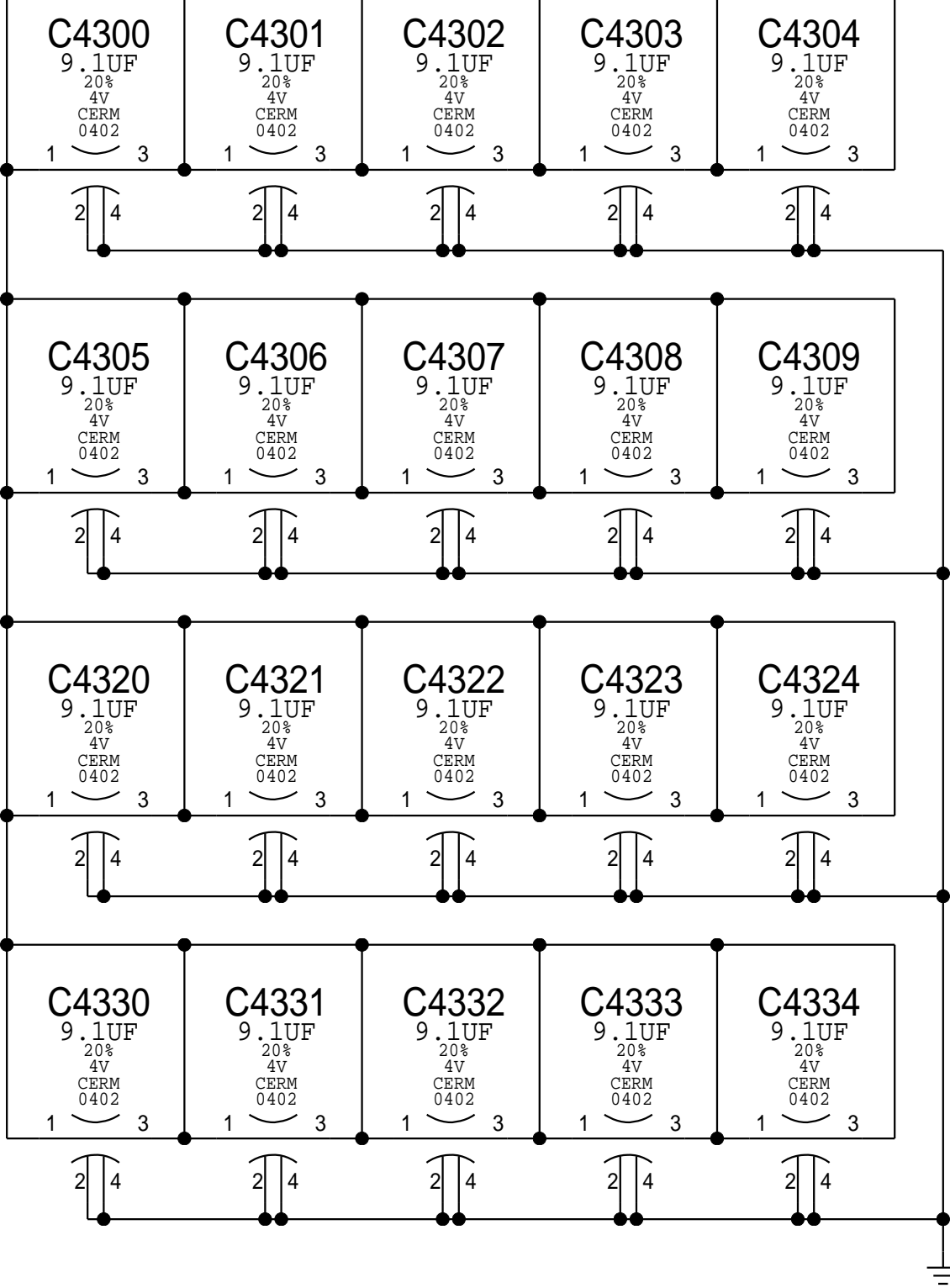
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		SHEET	38 OF 149

BOM\_COST\_GROUP=SOC

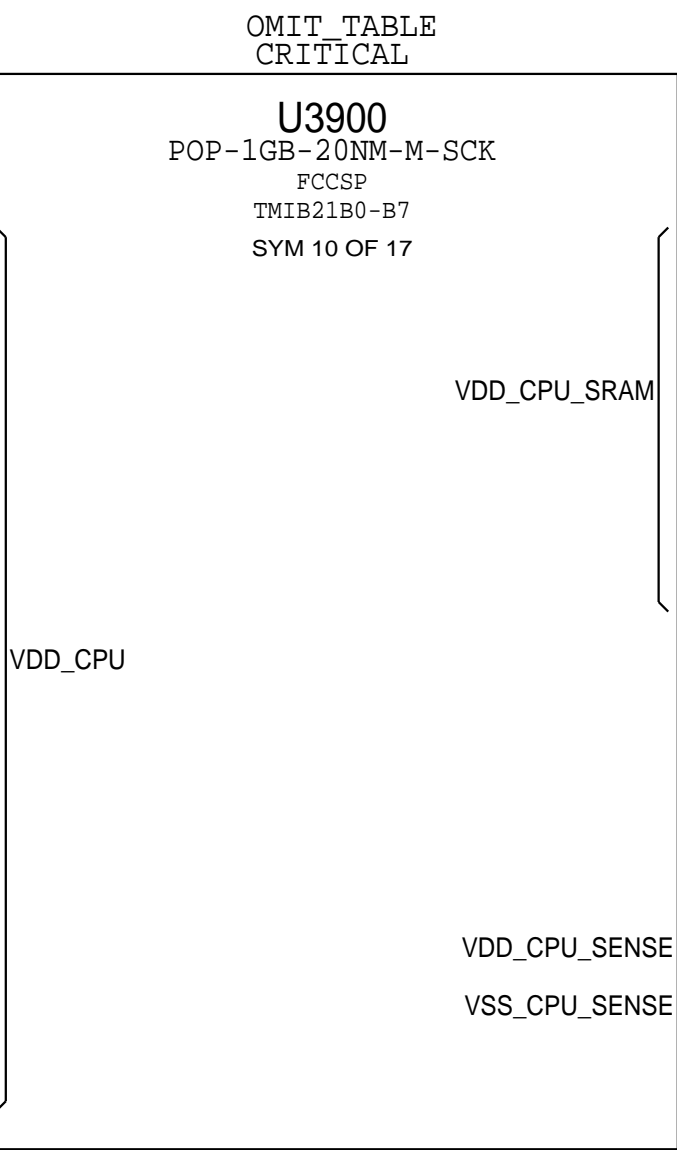


Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3

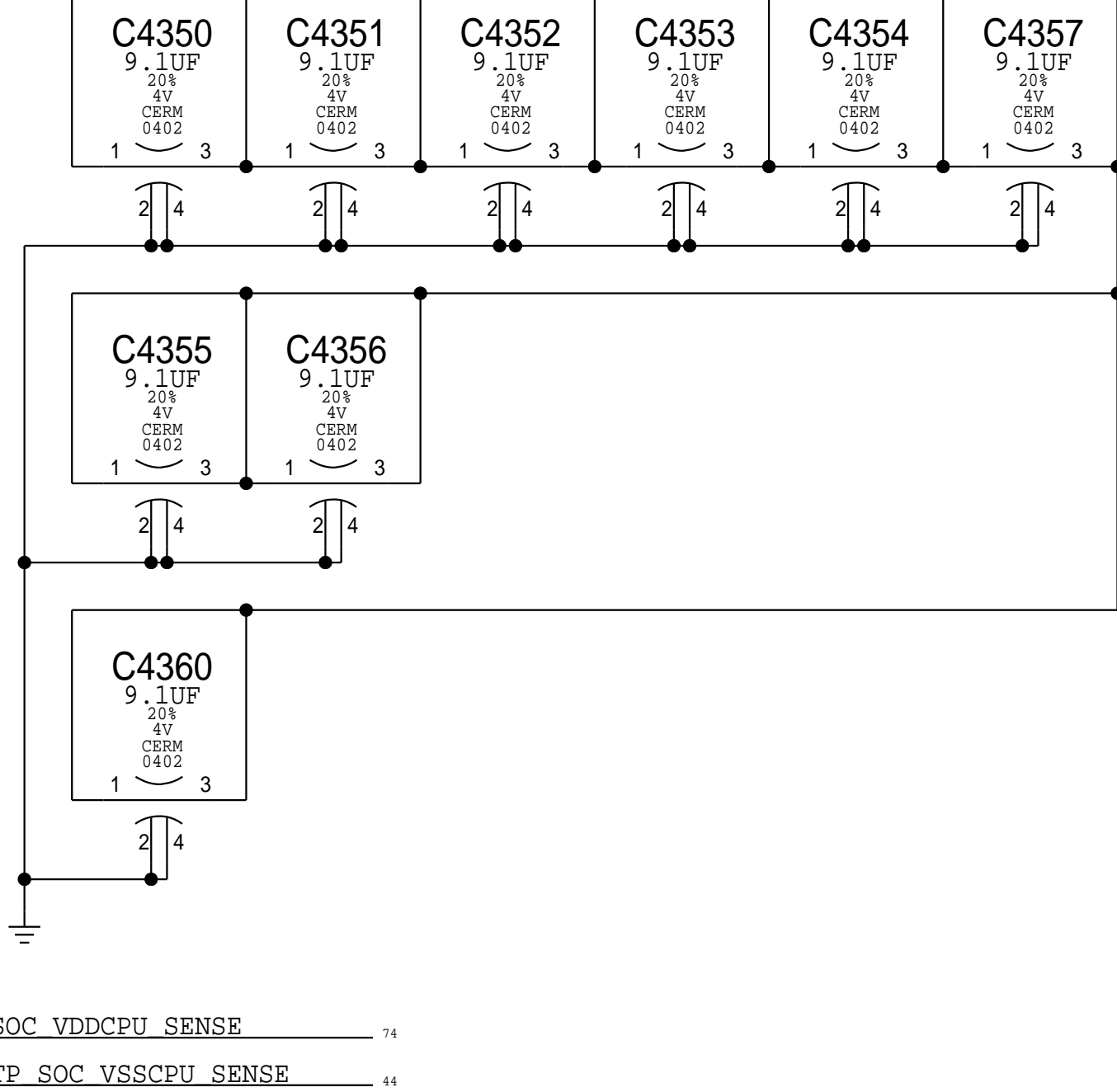
135 =PPVDDCPU AWAKE SOC  
0.625V - 1.06V  
11.6A Max



AA12  
AA14  
AA16  
AB11  
AB13  
AB15  
N12  
N14  
N16  
P11  
P13  
P15  
R10  
R12  
R14  
U12  
U14  
U16  
W10  
W12  
Y11  
Y13  
Y15

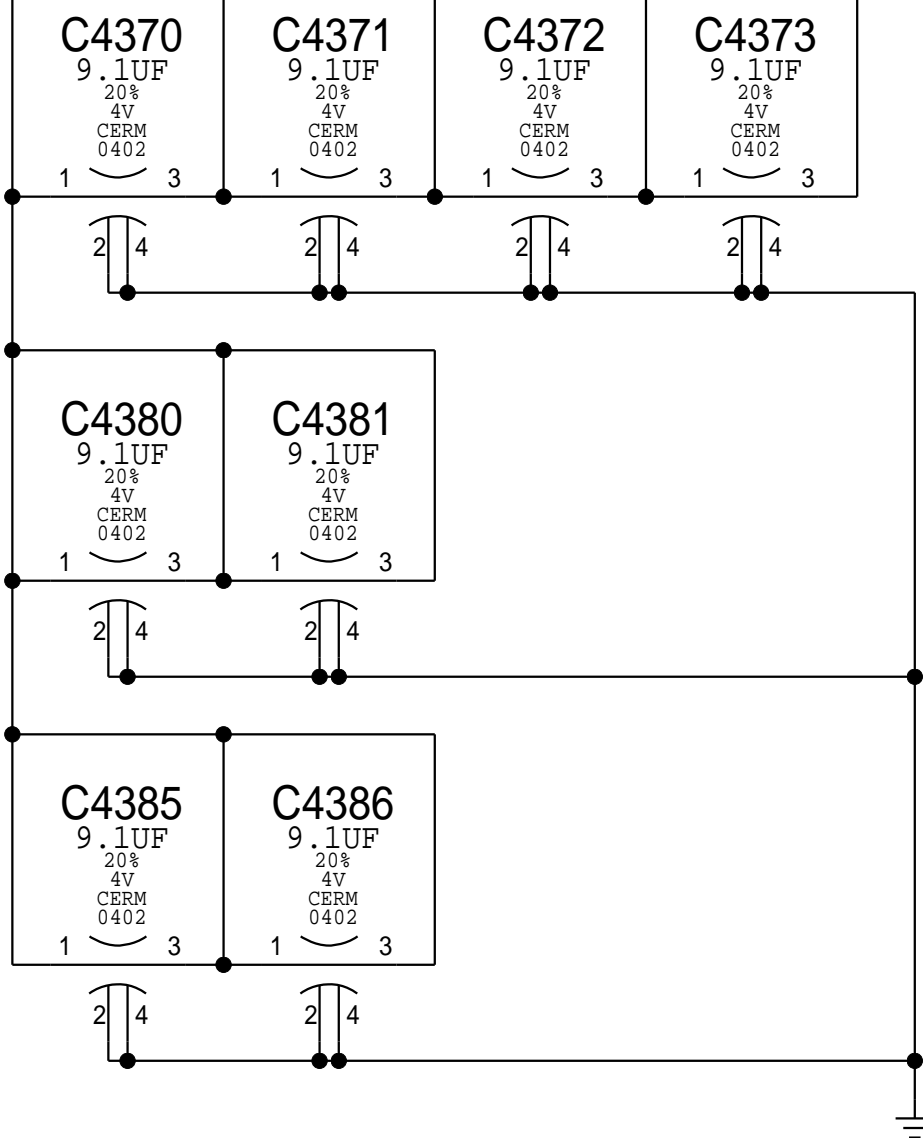


AA10  
N10  
R16  
T11  
T13  
T15  
U10  
V11  
V13  
V15  
W16

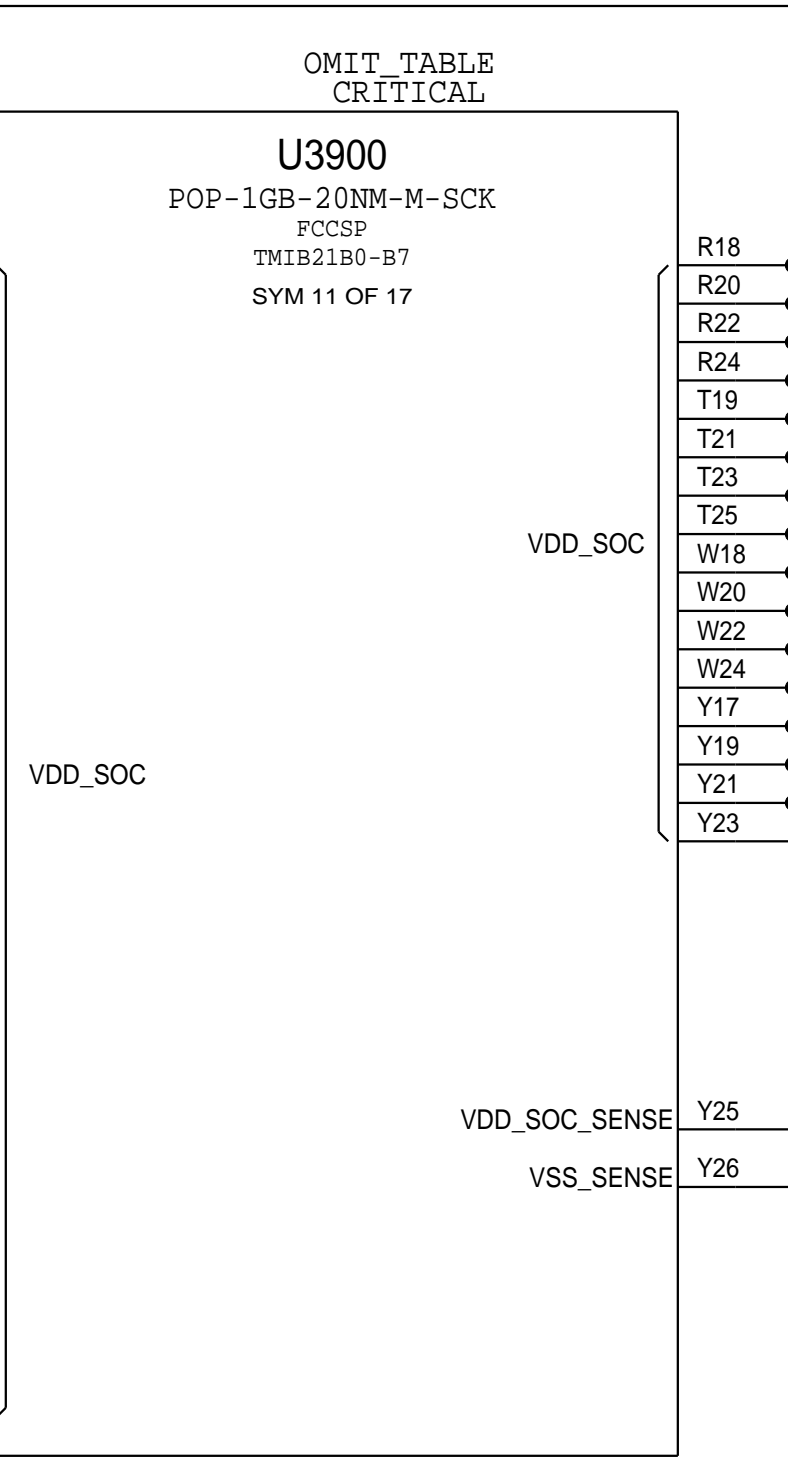


=PPVDDCPUSRAM AWAKE SOC 135  
0.8V - 1.06V  
0.9A Max

135 =PPQV82\_SLPDDR VDDSOC  
5.6A Max



AC10  
AC12  
AC14  
AC16  
AC18  
AC20  
AC22  
AC24  
AD11  
AD13  
AD15  
AD17  
AD19  
AD21  
AD23  
AD25  
L10  
L12  
L14  
L16  
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M21  
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M25



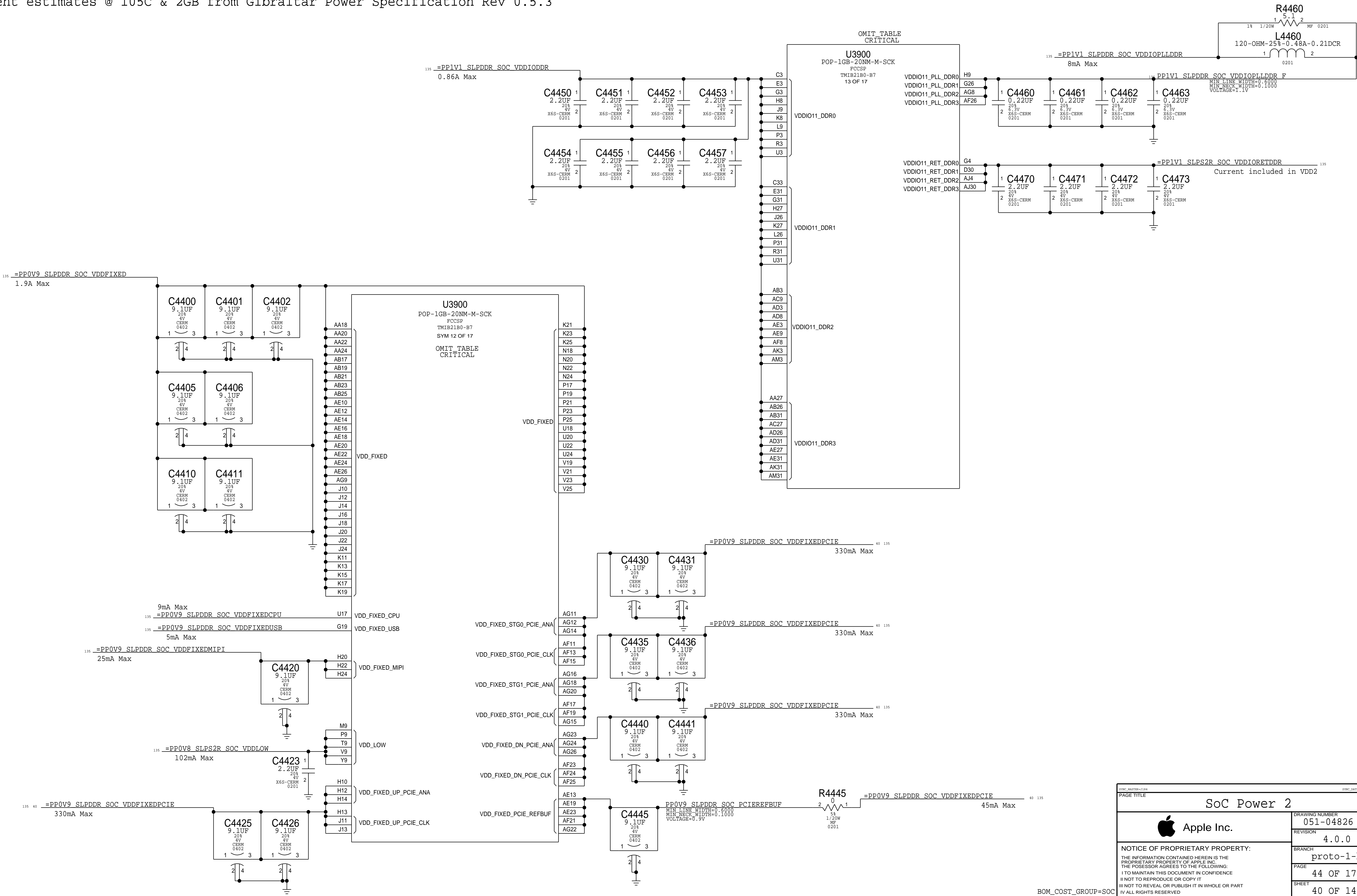
R18  
R20  
R22  
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T19  
T21  
T23  
T25  
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W20  
W22  
W24  
Y17  
Y19  
Y21  
Y23

Y25 TP\_SOC VDDSOC\_SENSE 44  
Y26 TP\_SOC VSSSOC\_SENSE 44

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SoC Power 1		
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	PAGE	43 OF 172
	SHEET	39 OF 149


BOM\_COST\_GROUP=SOC

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

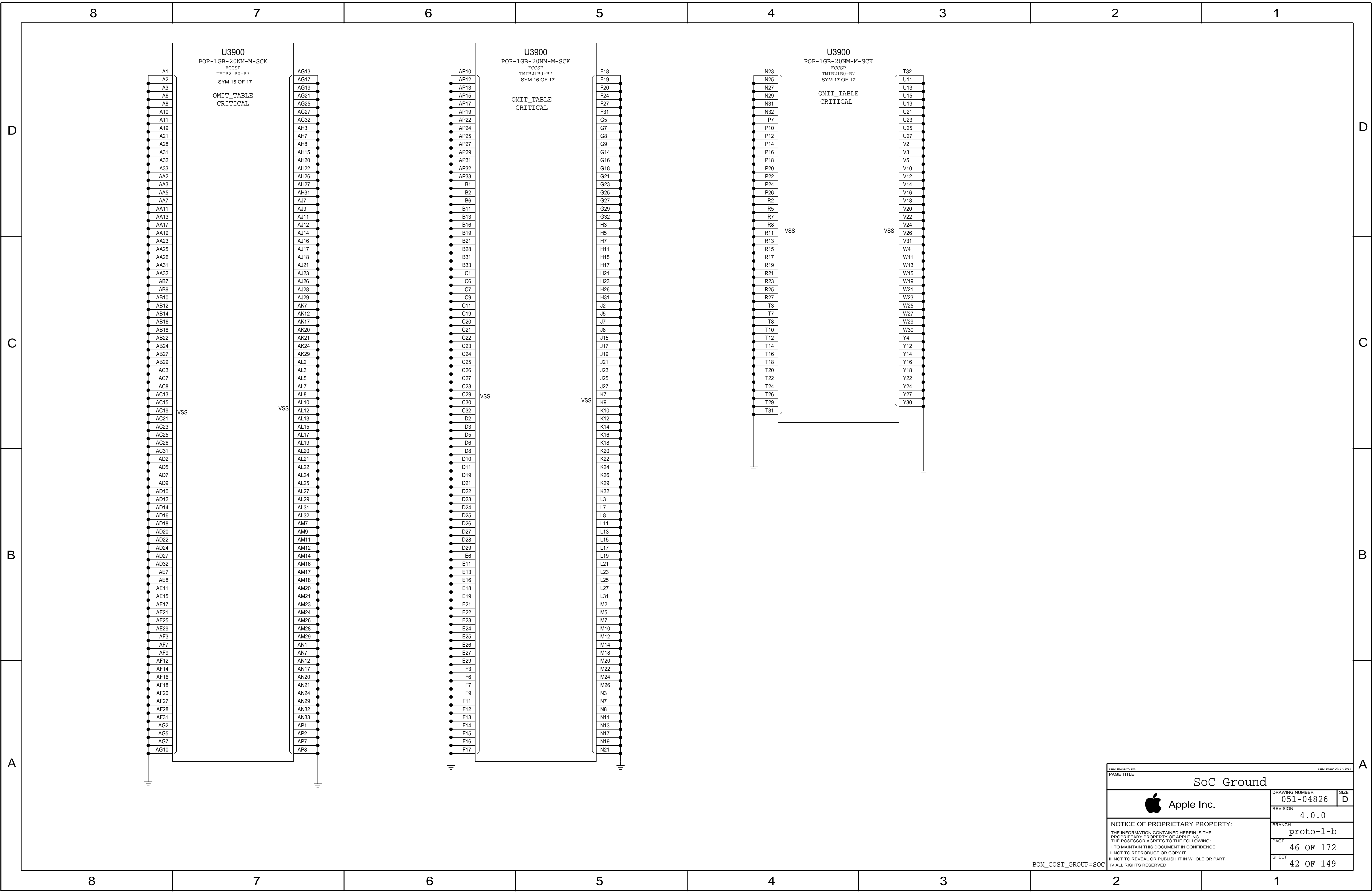


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SYRC DATE 06/07/2019

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	PAGE 44 OF 172
	SHEET 40 OF 149







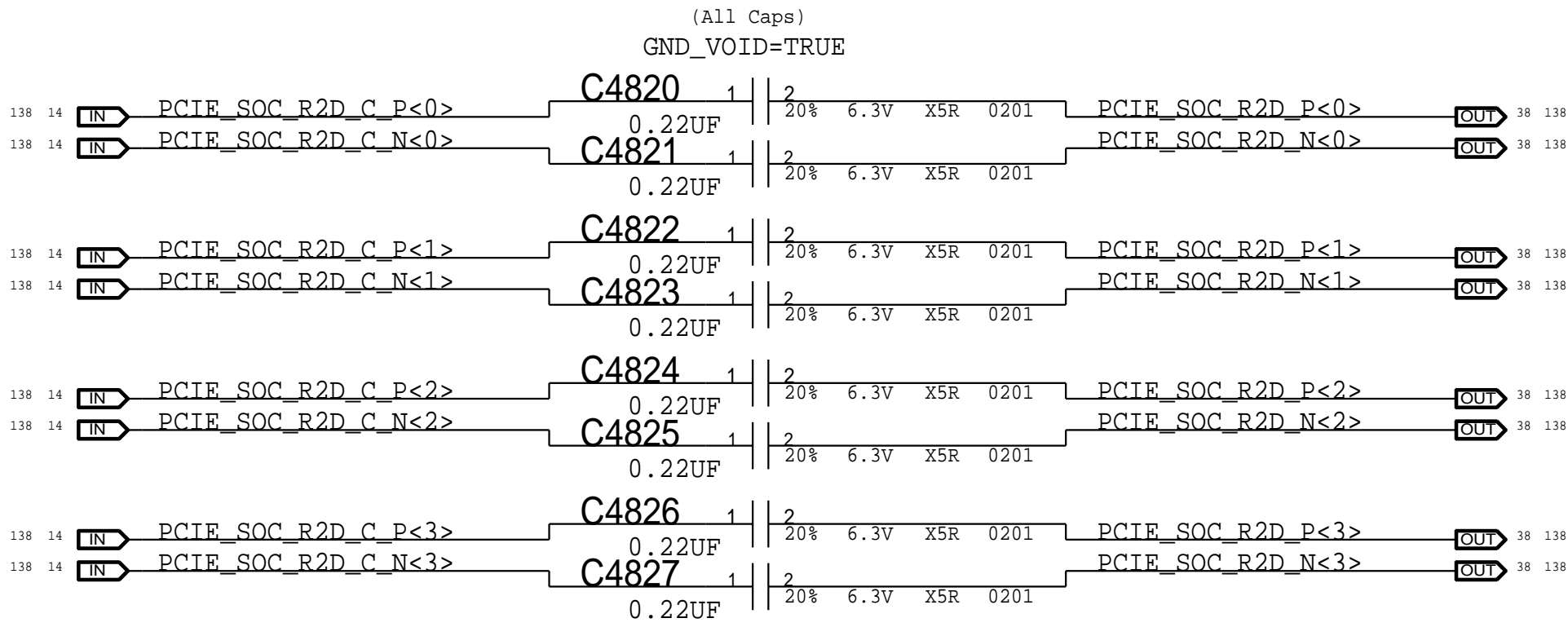


PCIE Up R2D AC Caps

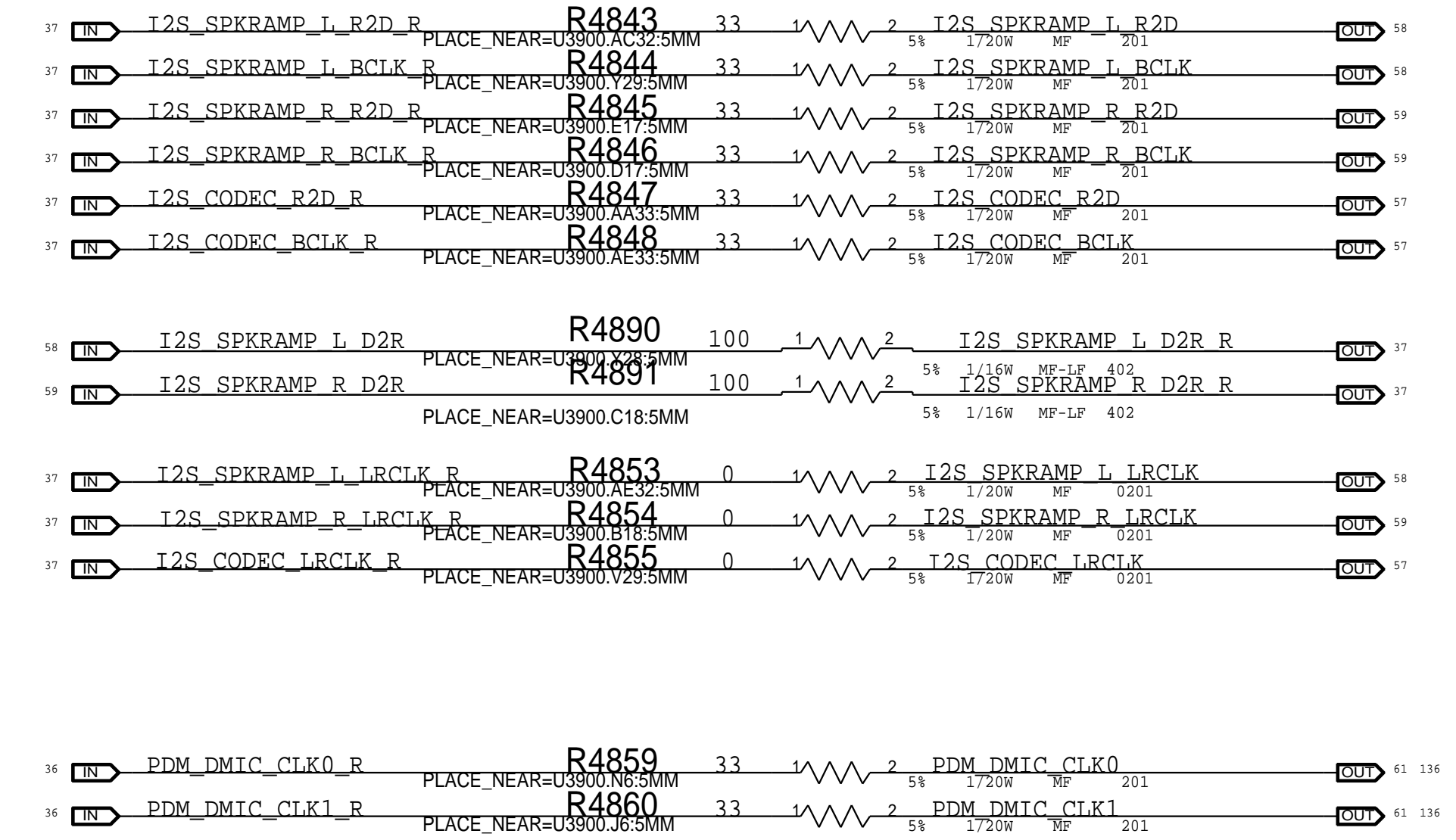
SOC SIGNAL ALIAS

SOC SIGNAL NC's

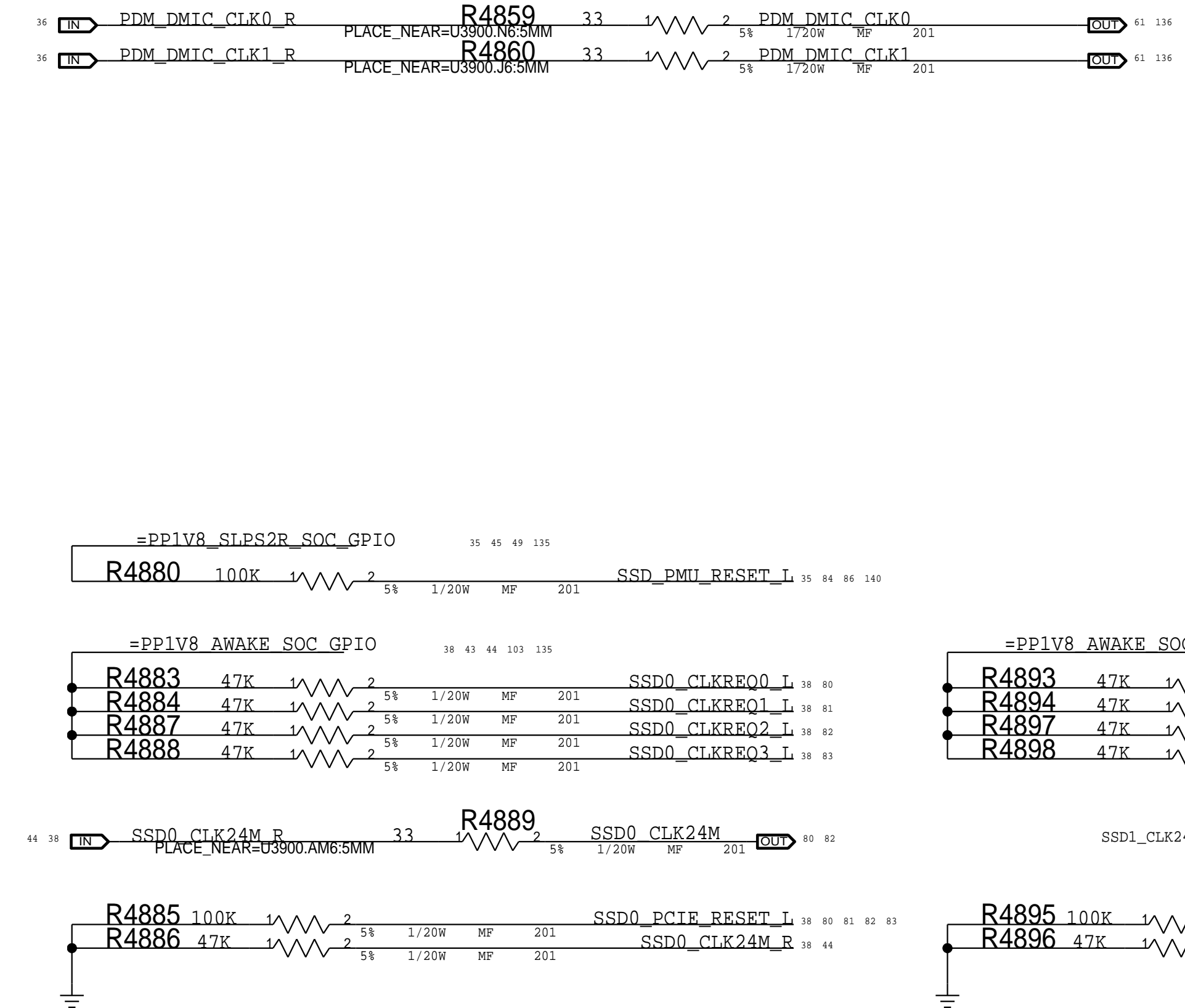
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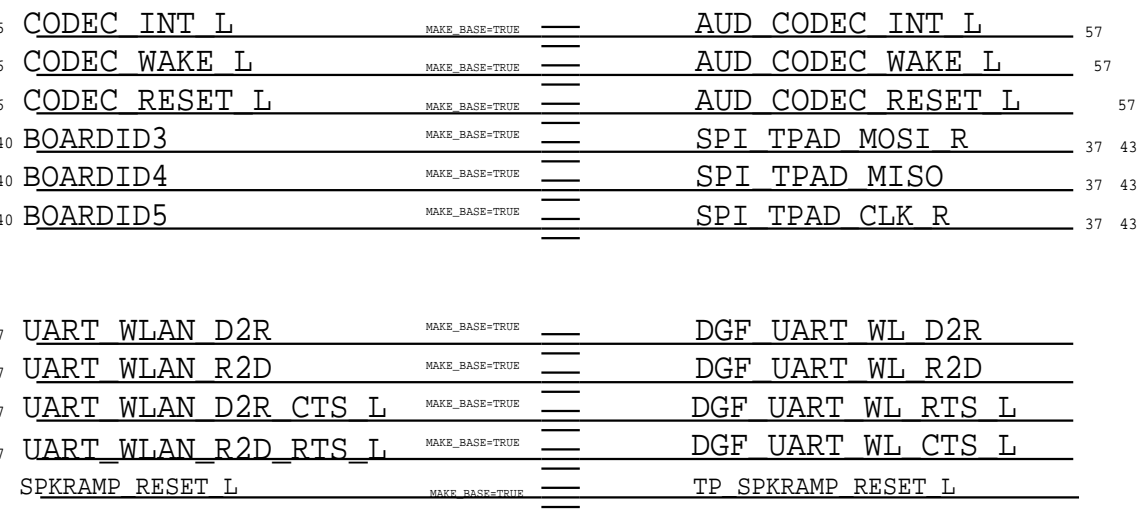
GPIO Source Termination



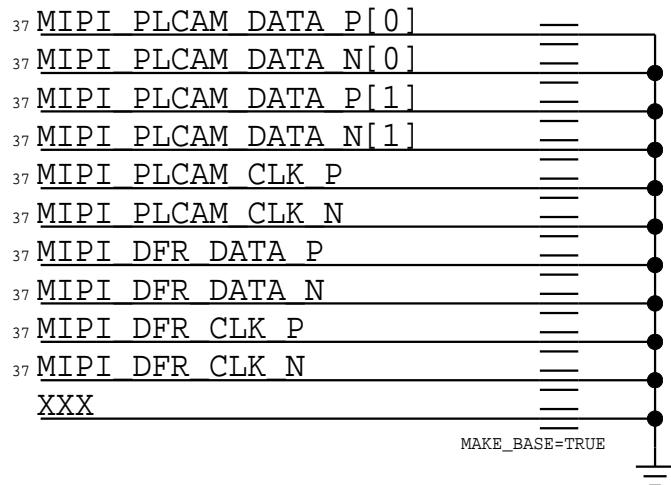
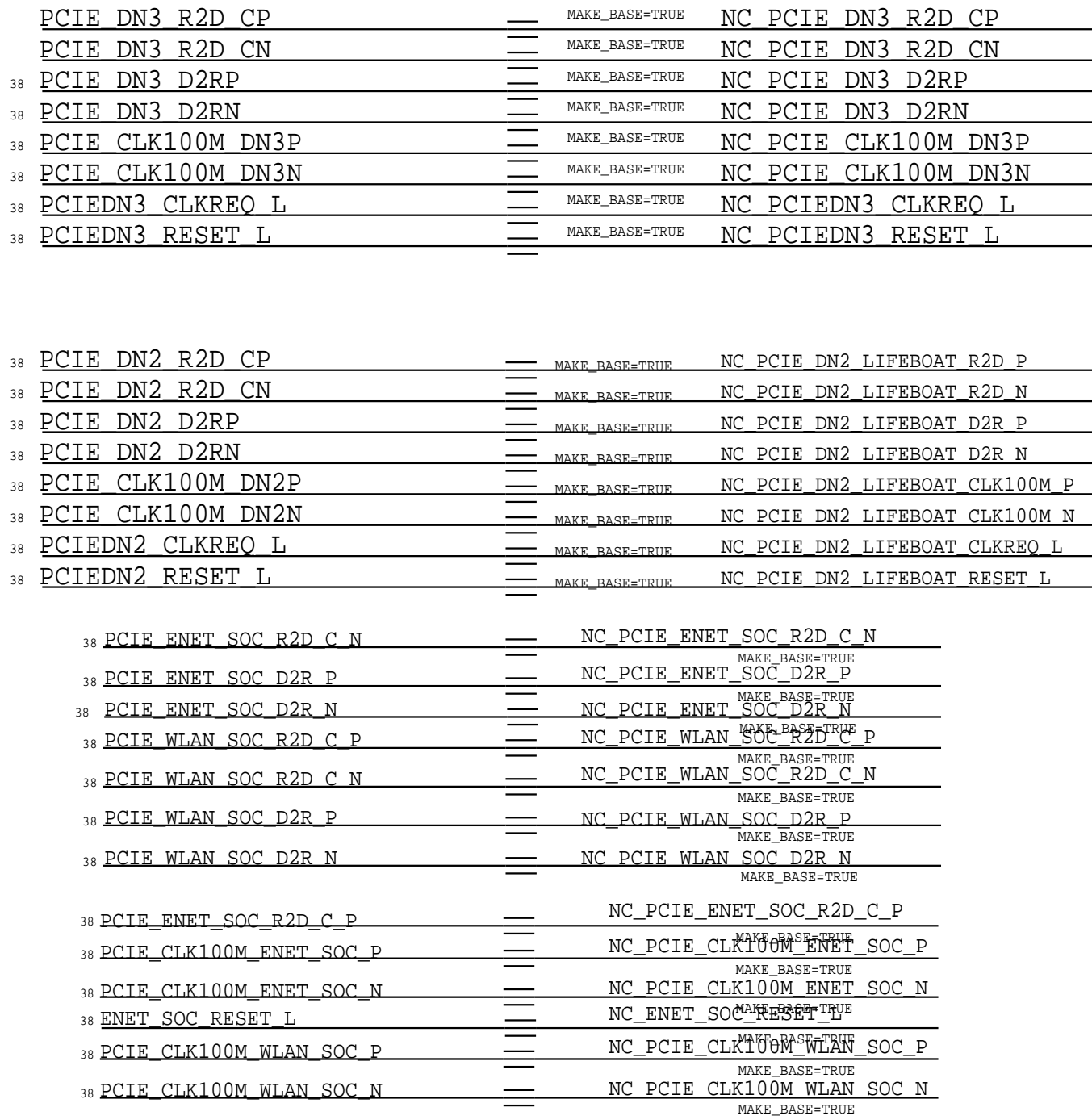
B



A



SOC SIGNAL NC's



These 6 resistors allows J185  
to use the same H9M GPIO configuration.  
Warning: SSD1\_CLK24M turned on but unused on J184.

D

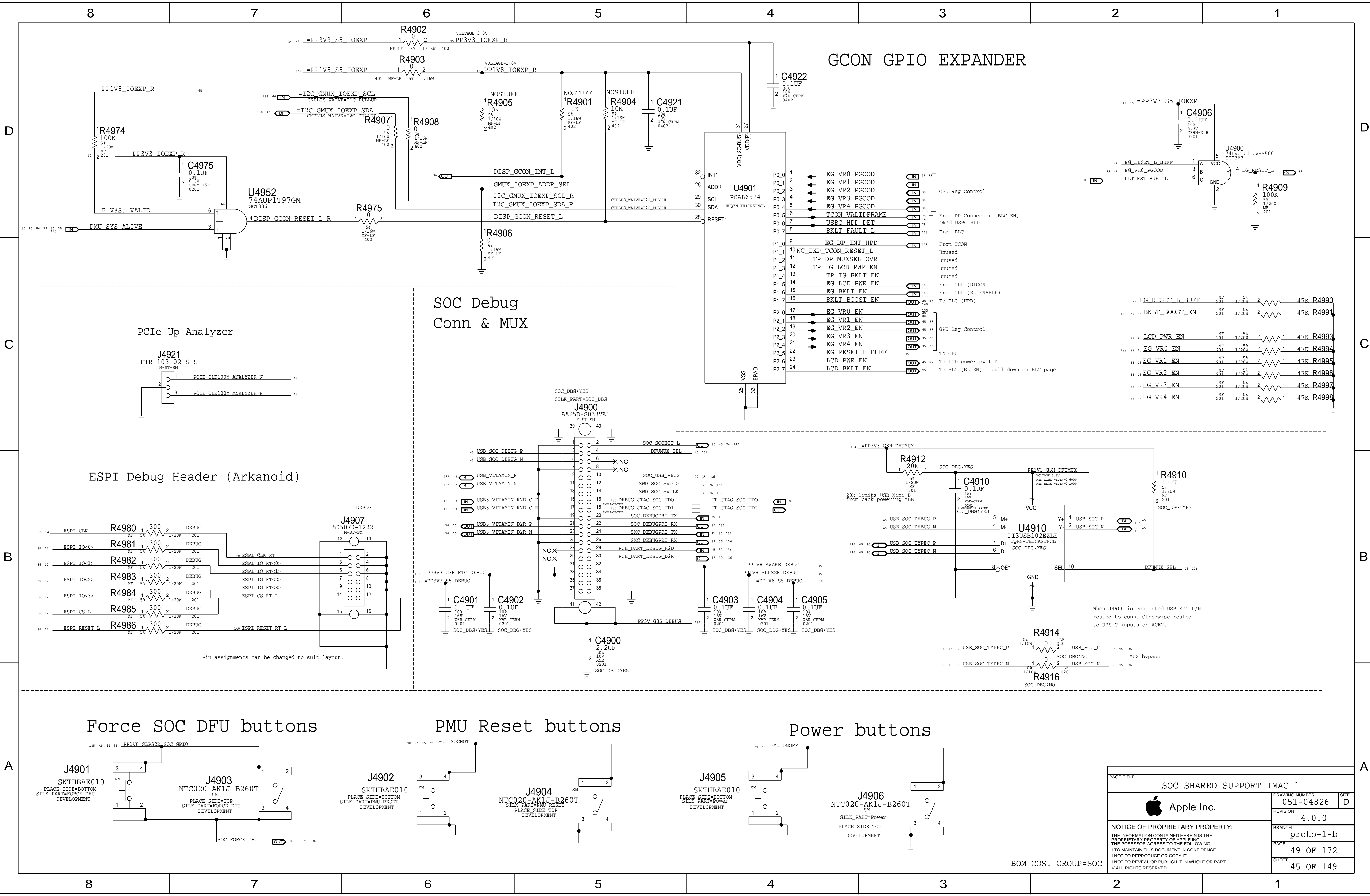
C

B

A

BOM\_COST\_GROUP=SOC

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	PAGE	48 OF 172
	SHEET	44 OF 149



# GCON GPIO EXPANDER

## SOC Debug Conn & MUX

### PCIe Up Analyzer

### ESPI Debug Header (Arkanoid)

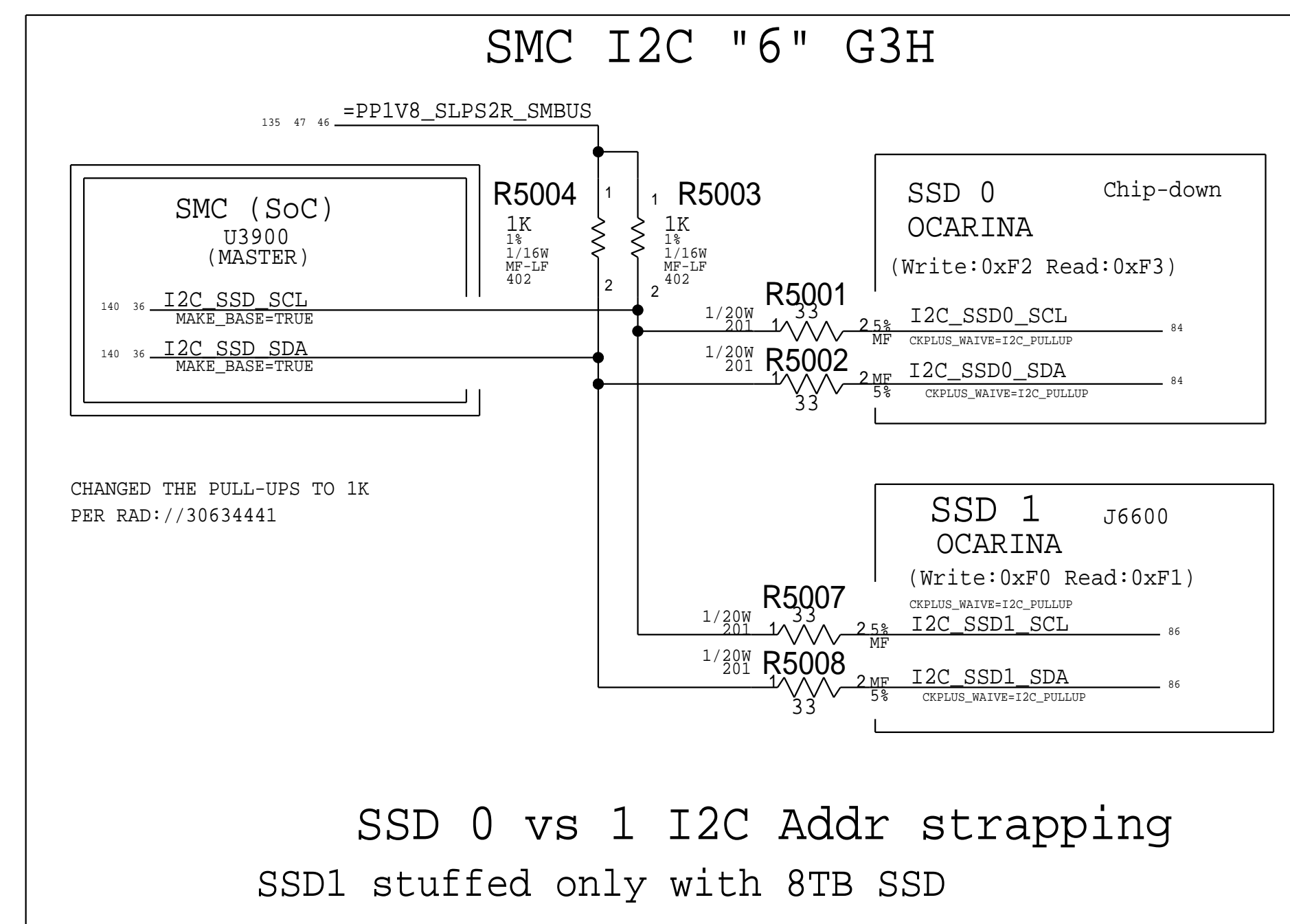
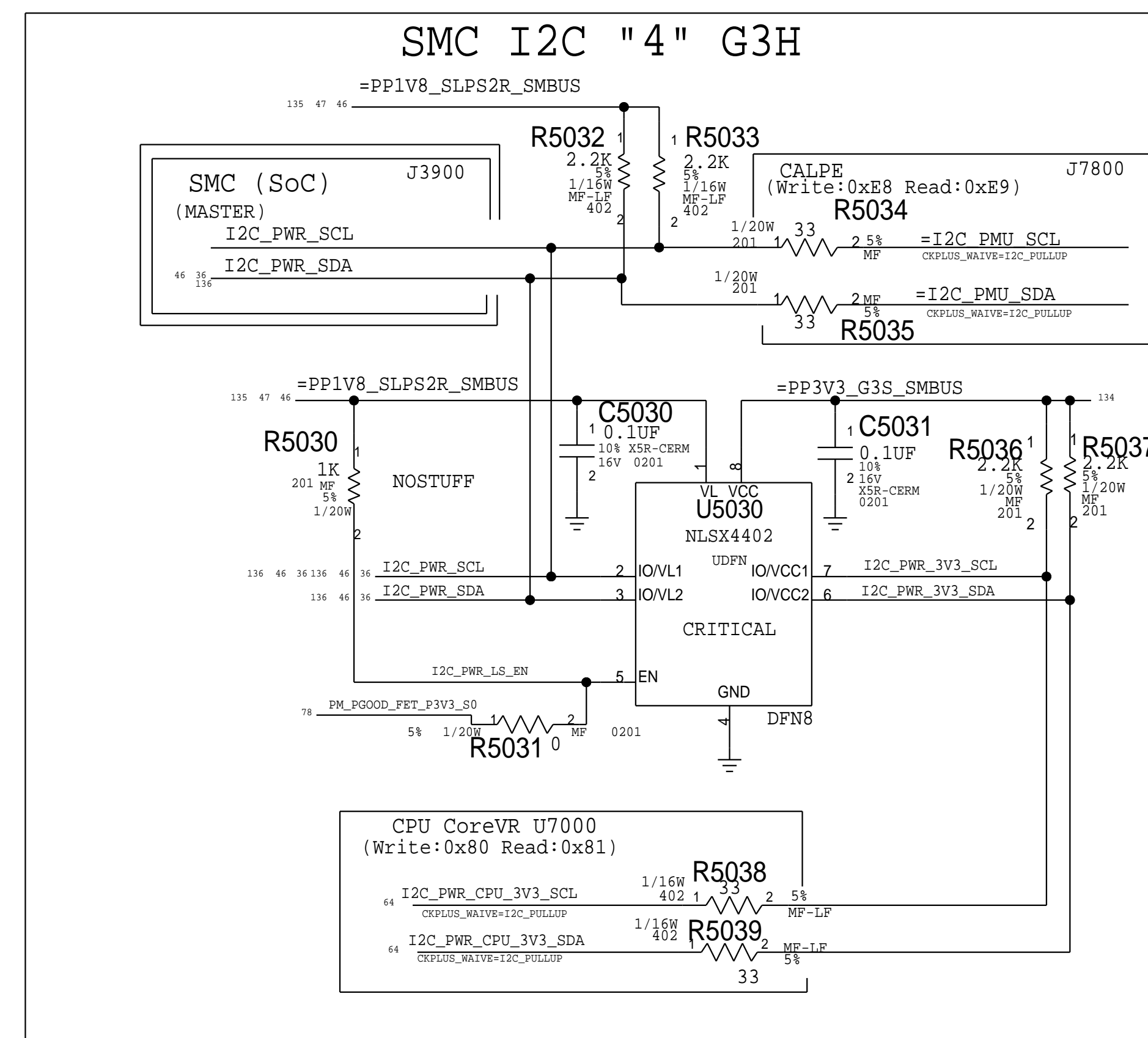
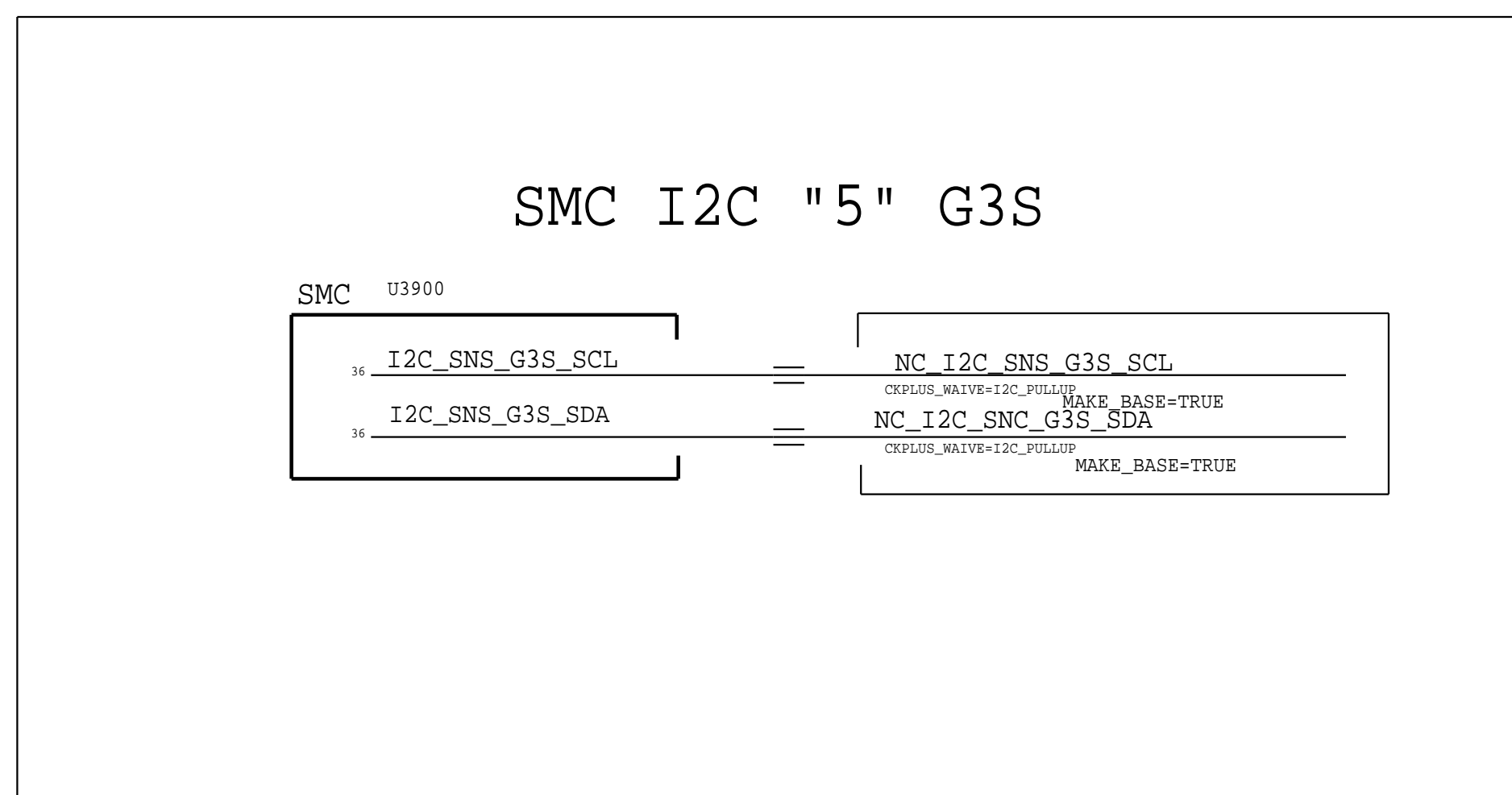
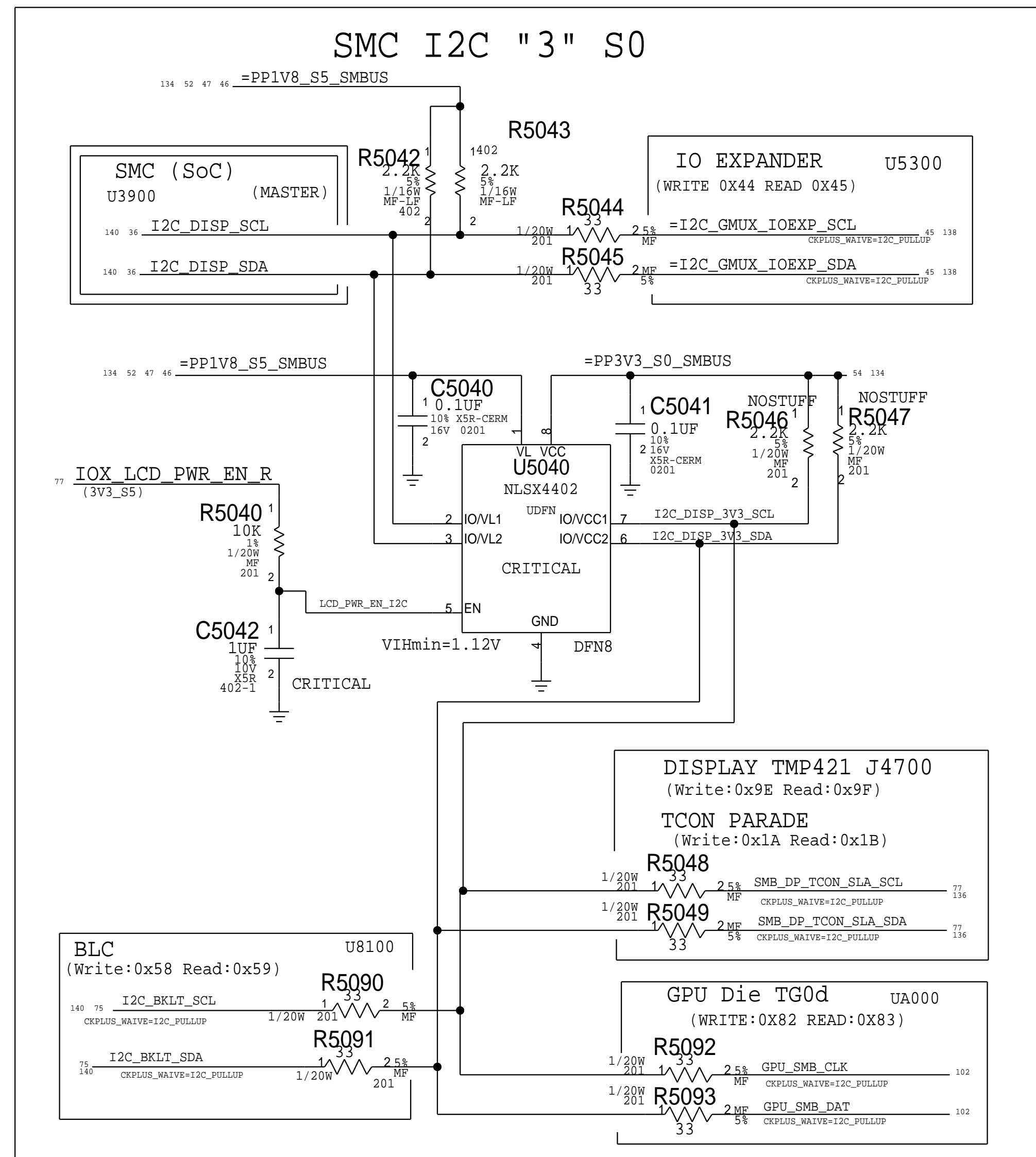
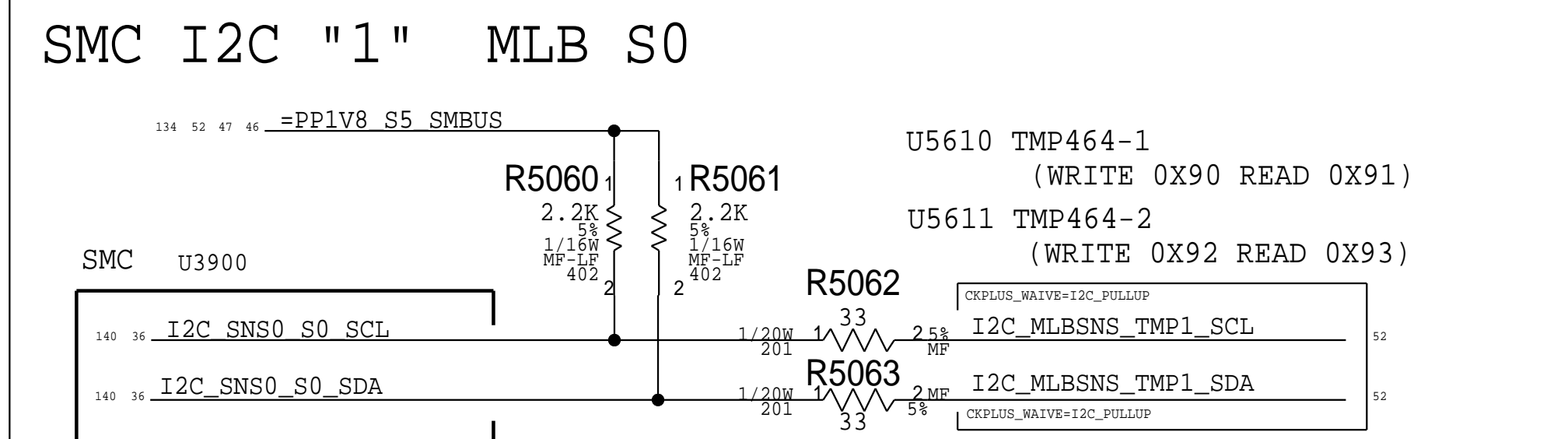
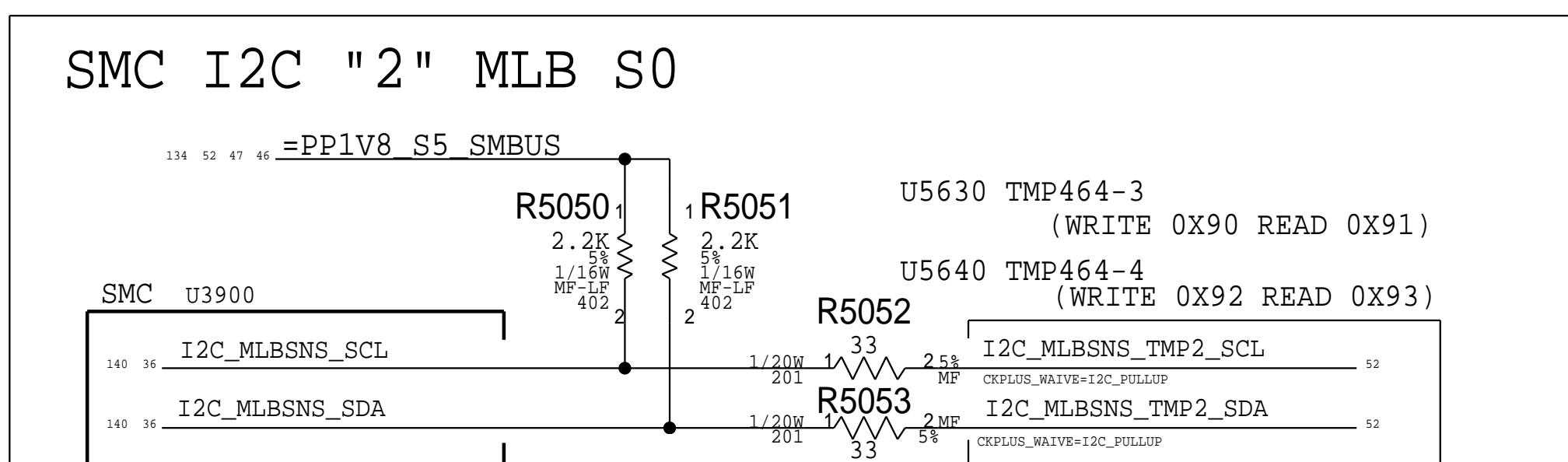
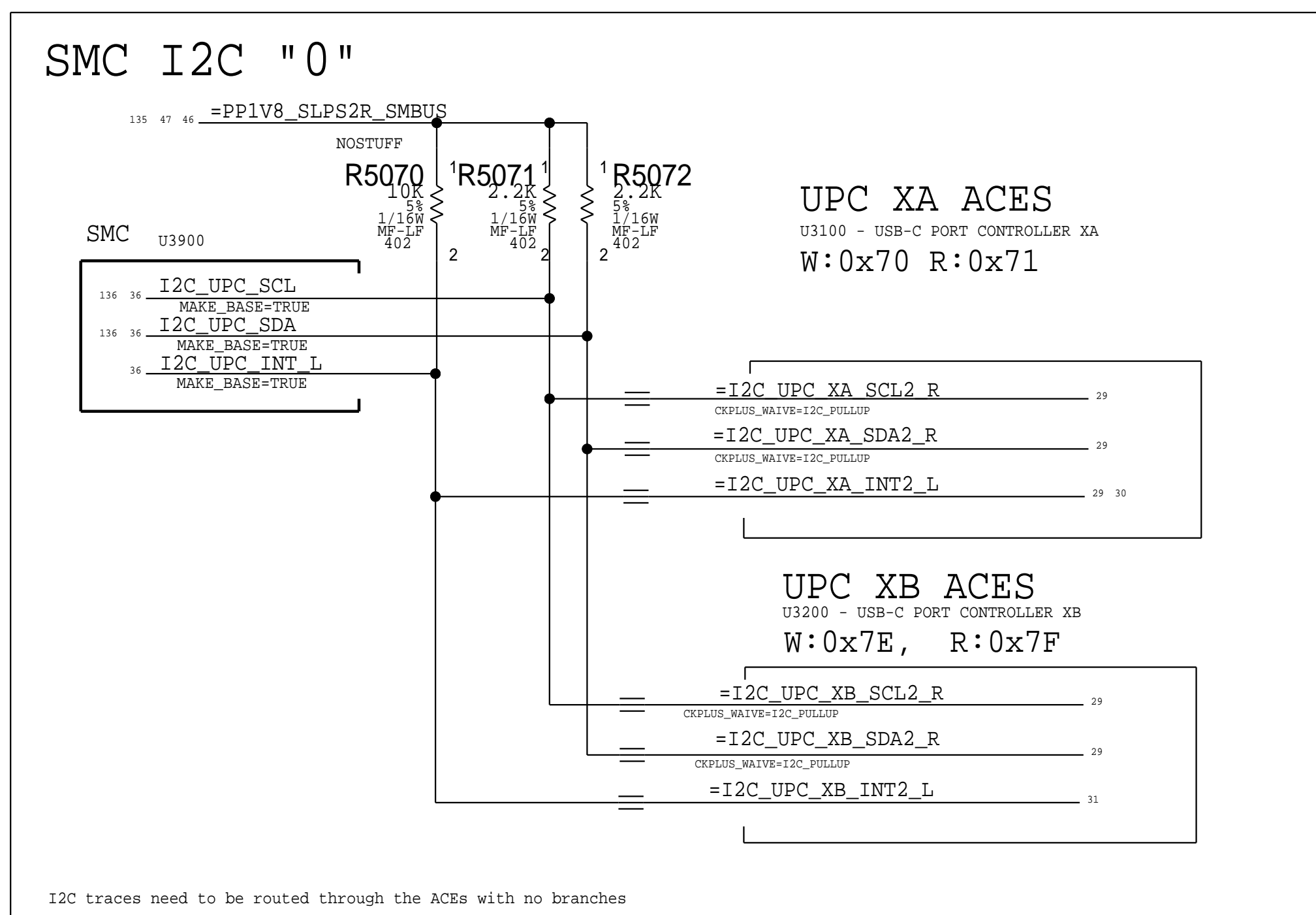
### Force SOC DFU buttons


### PMU Reset buttons

### Power buttons

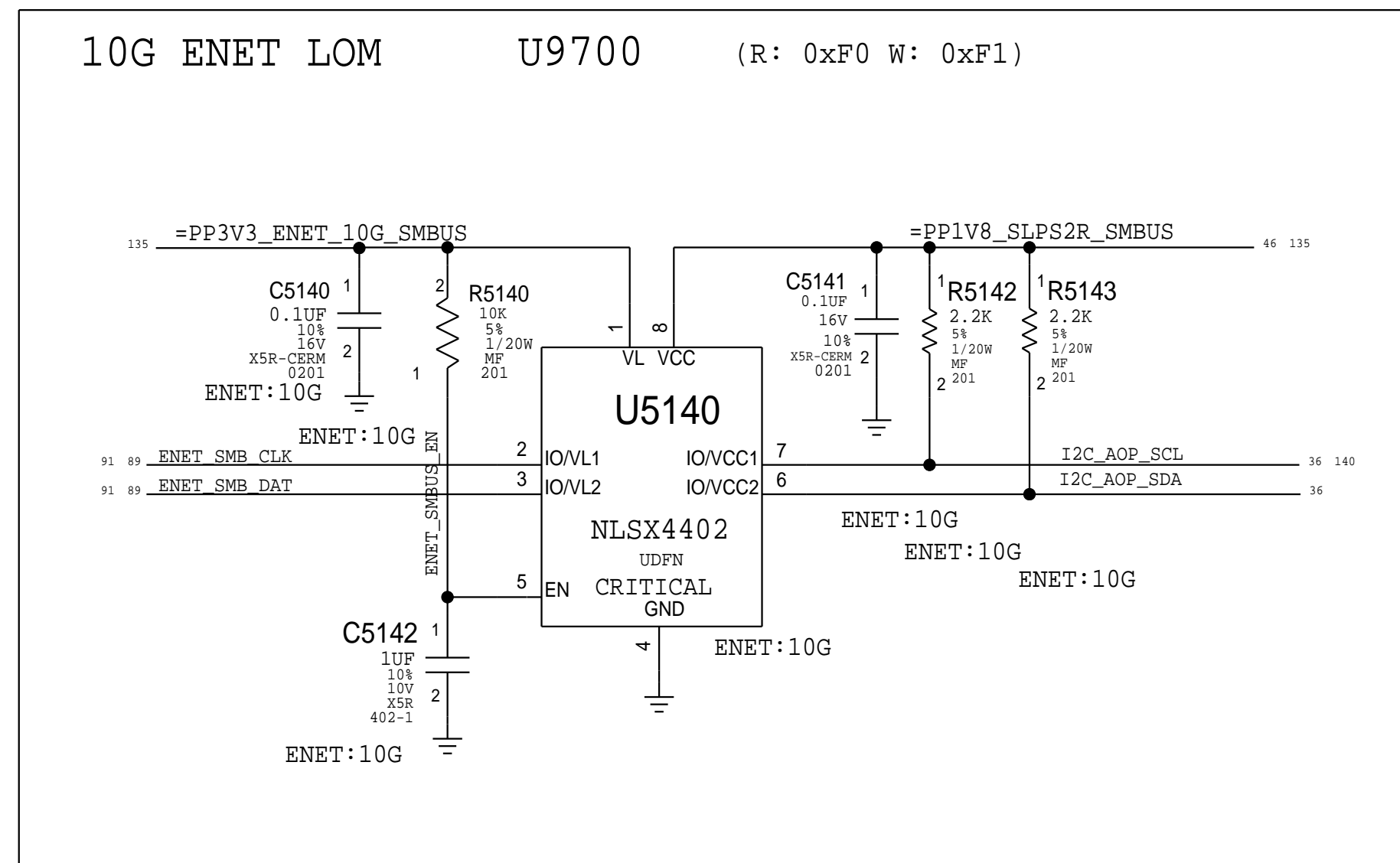
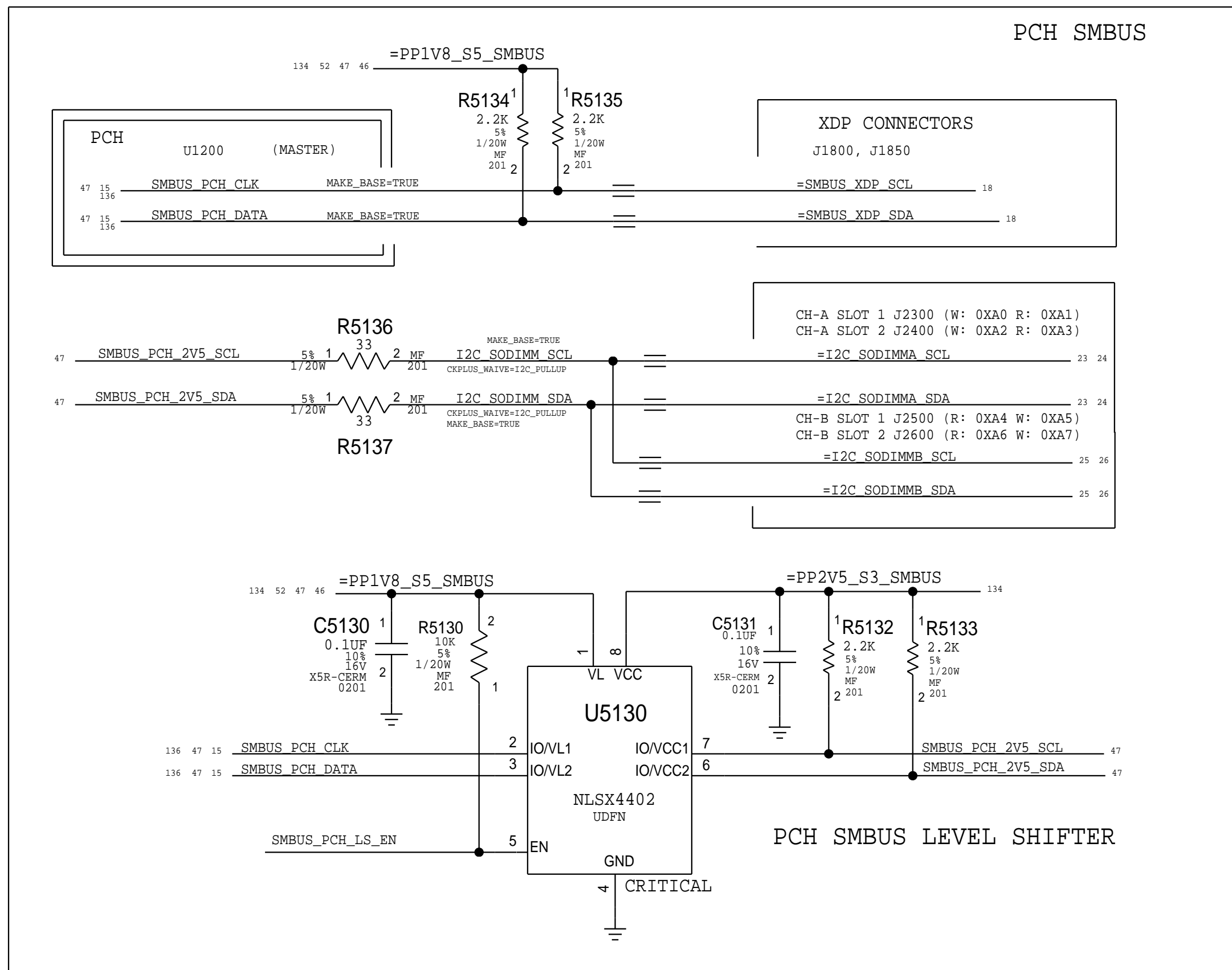
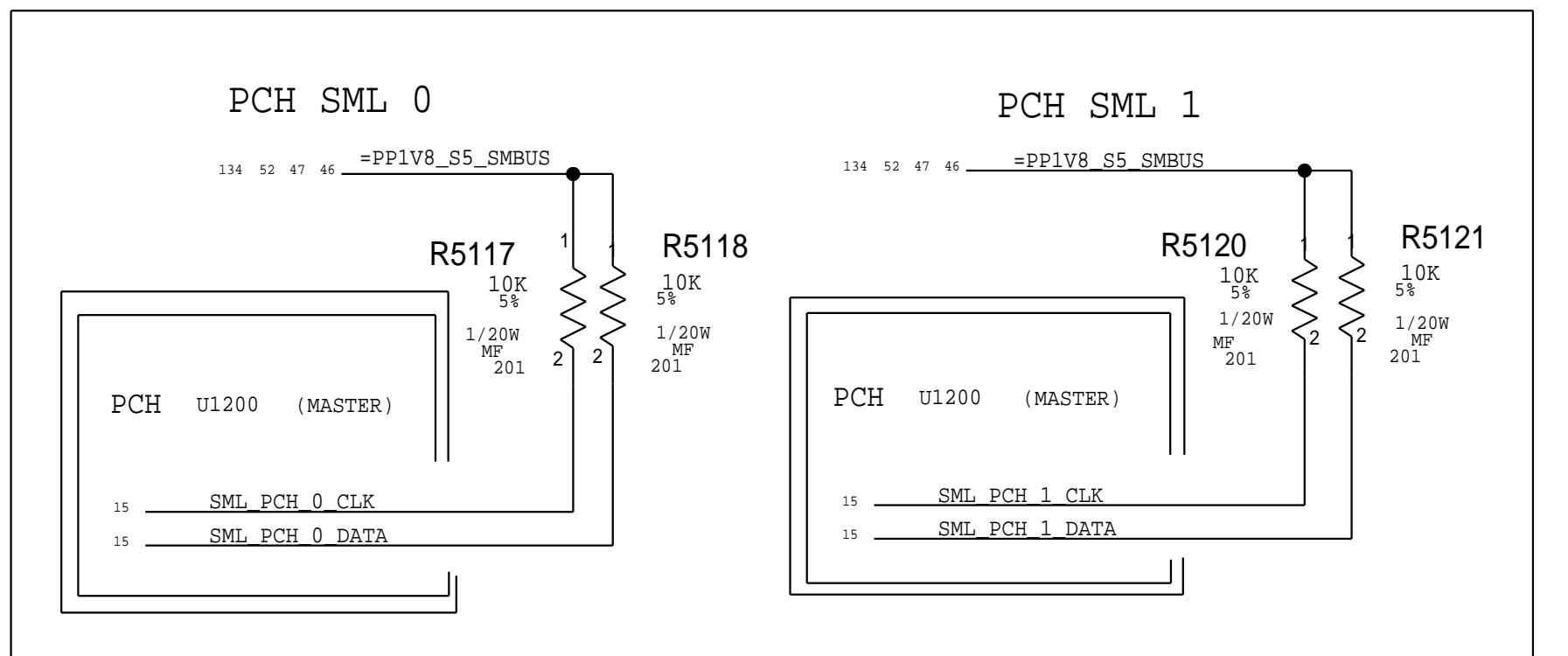
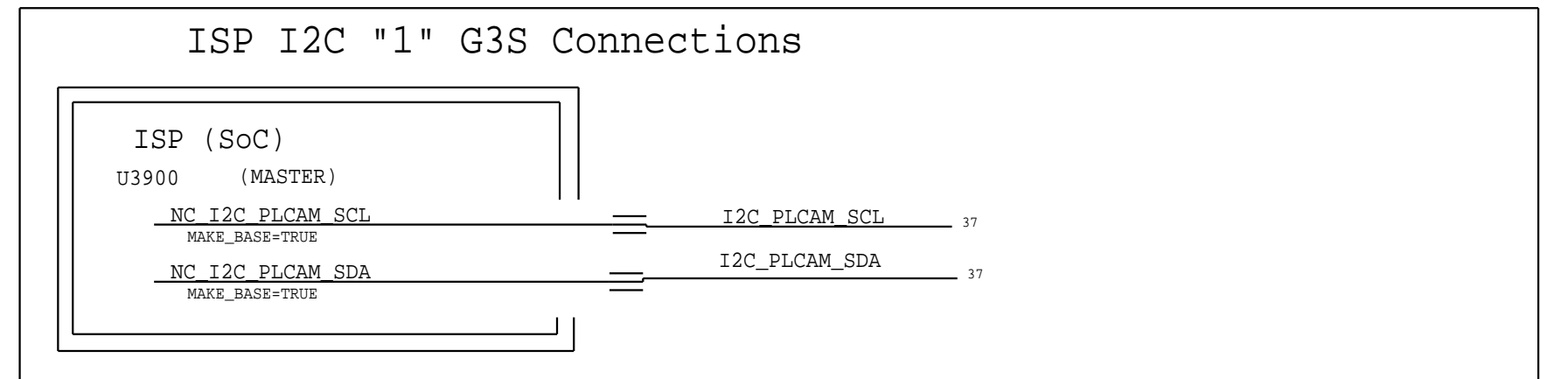
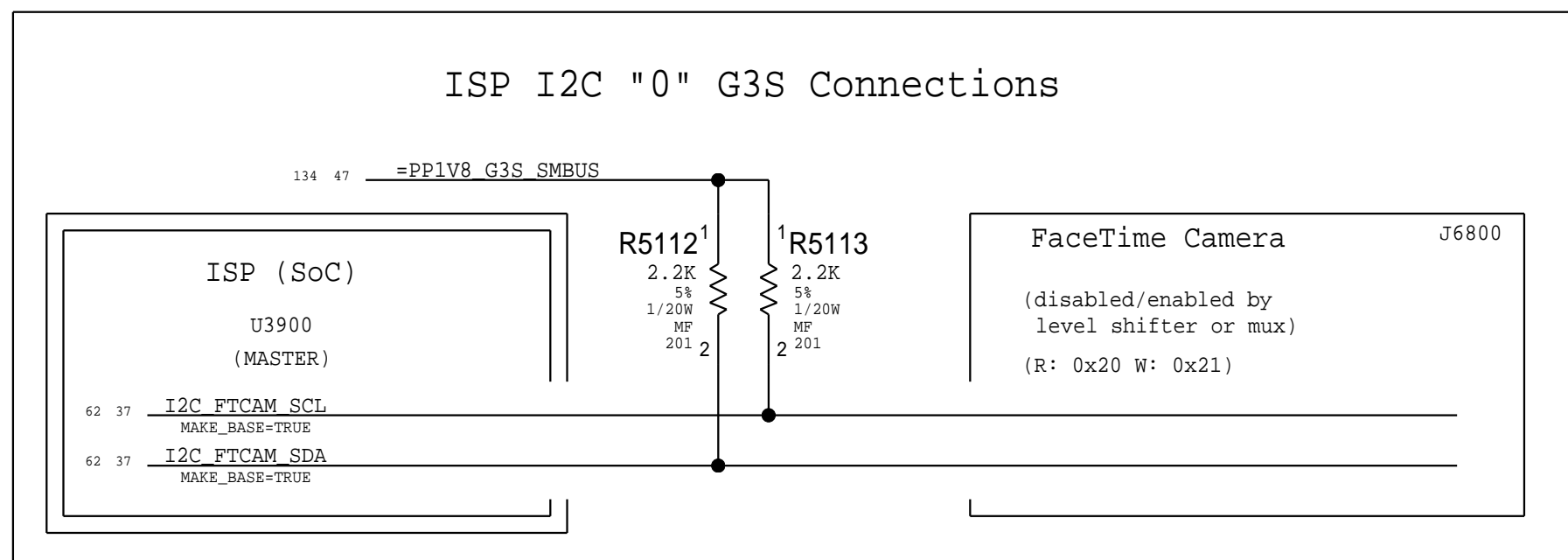
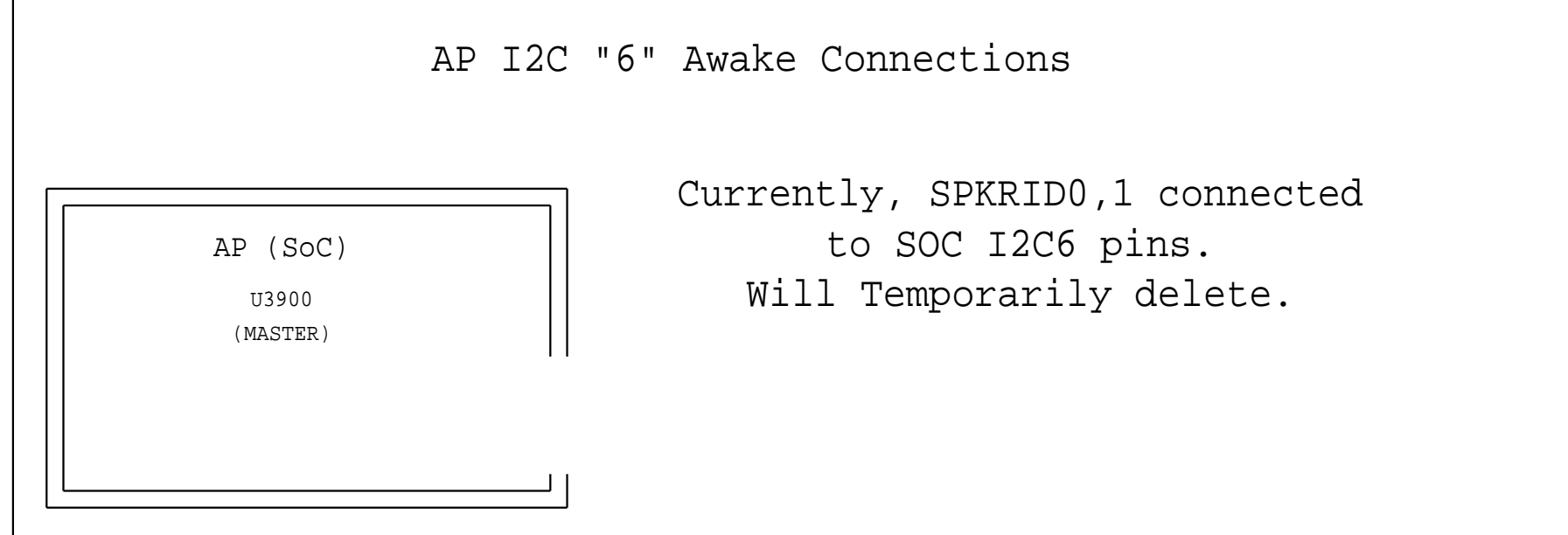
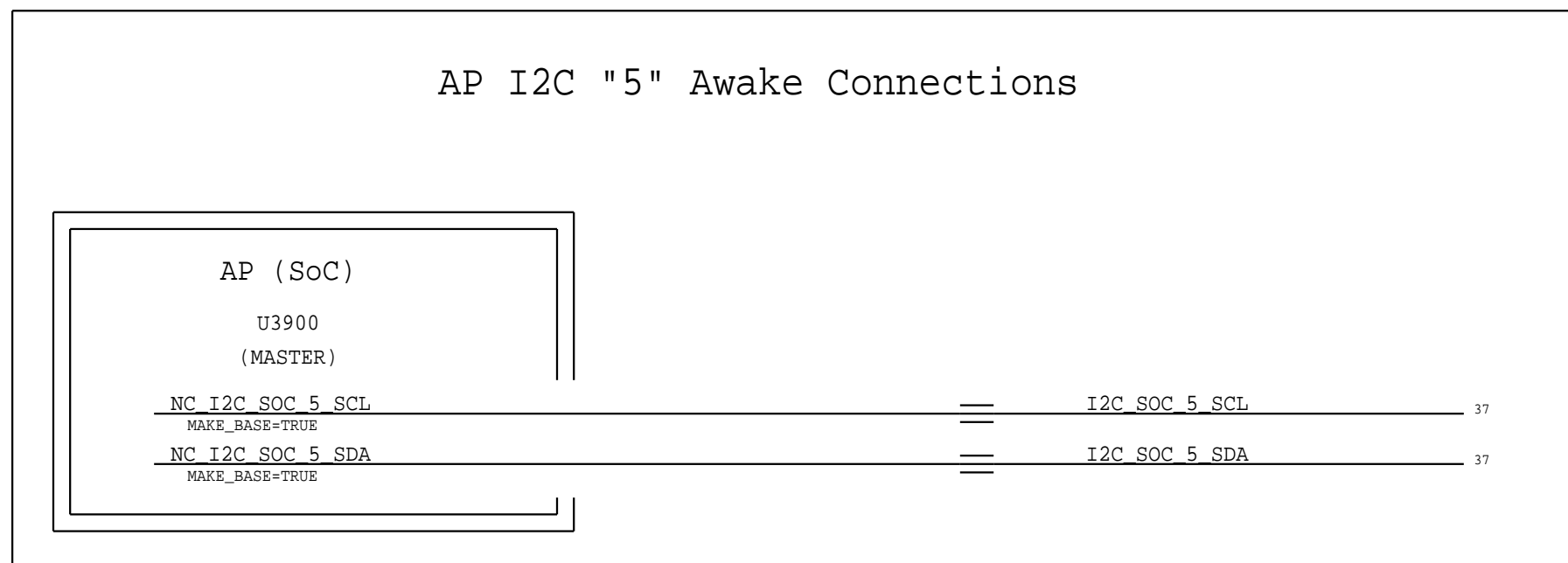
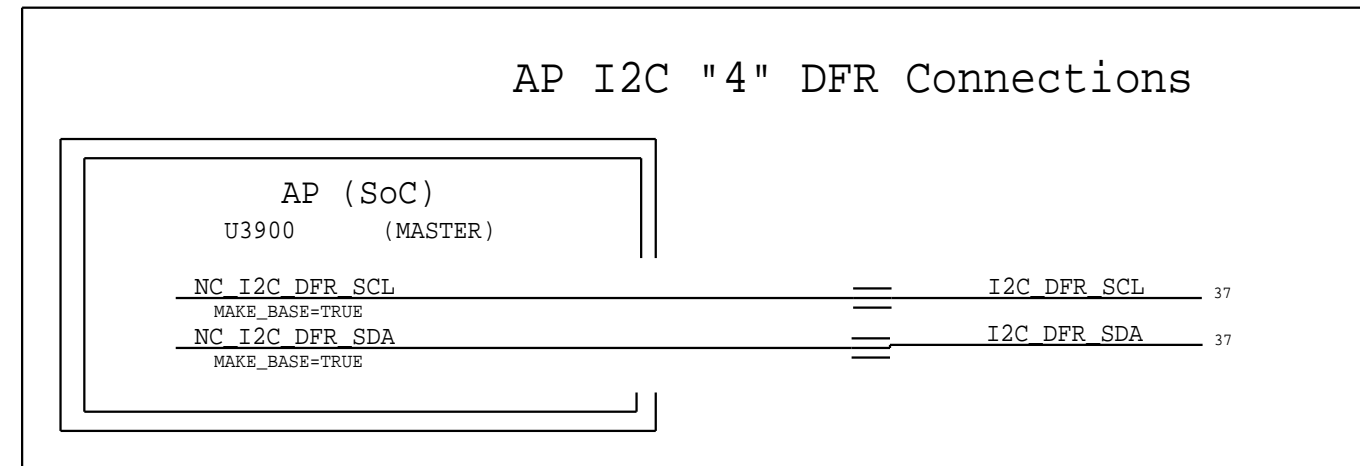
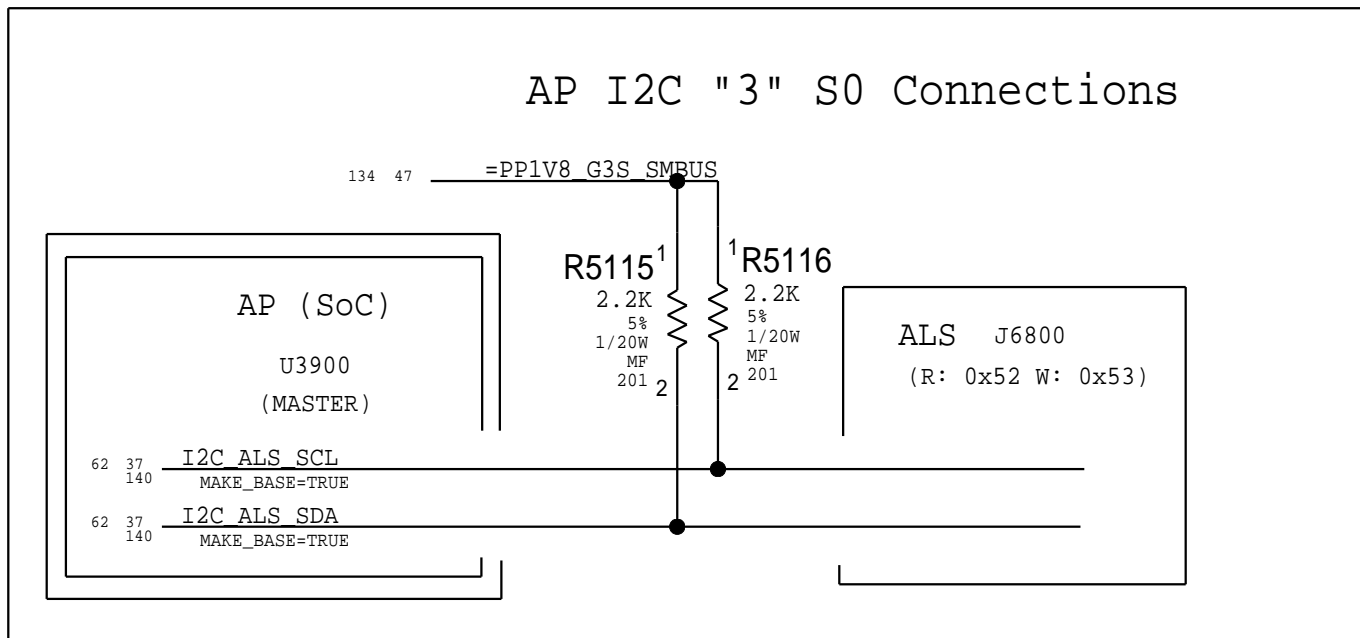
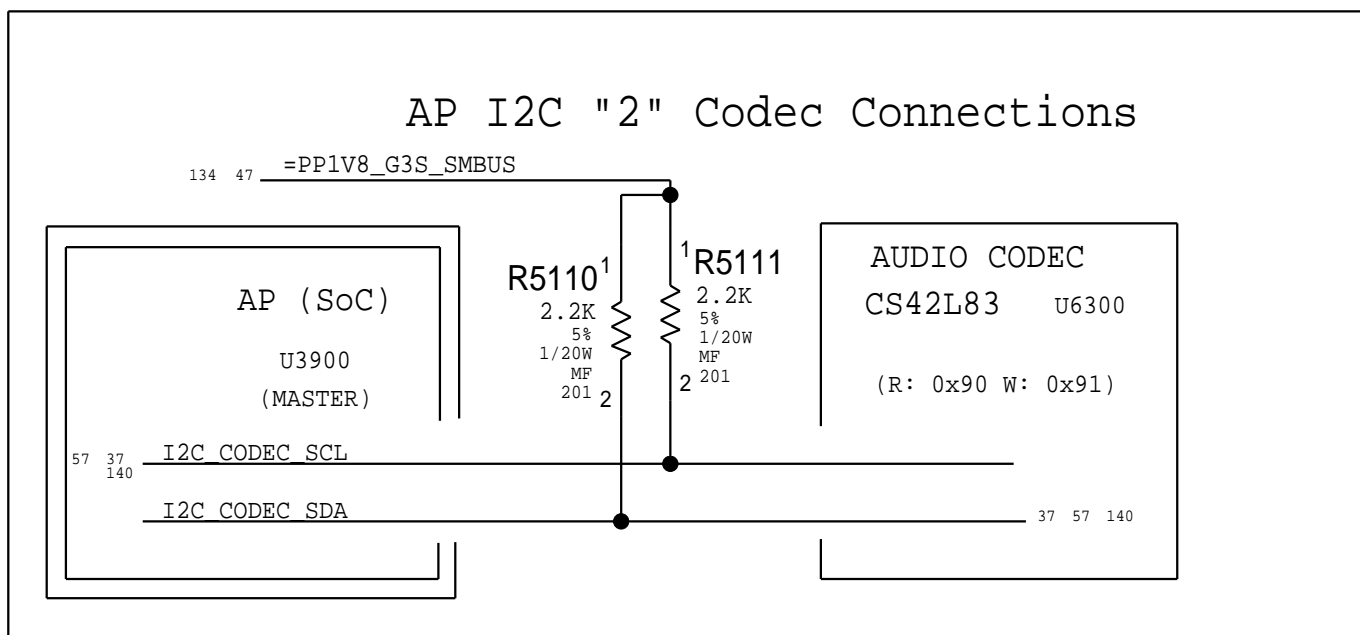
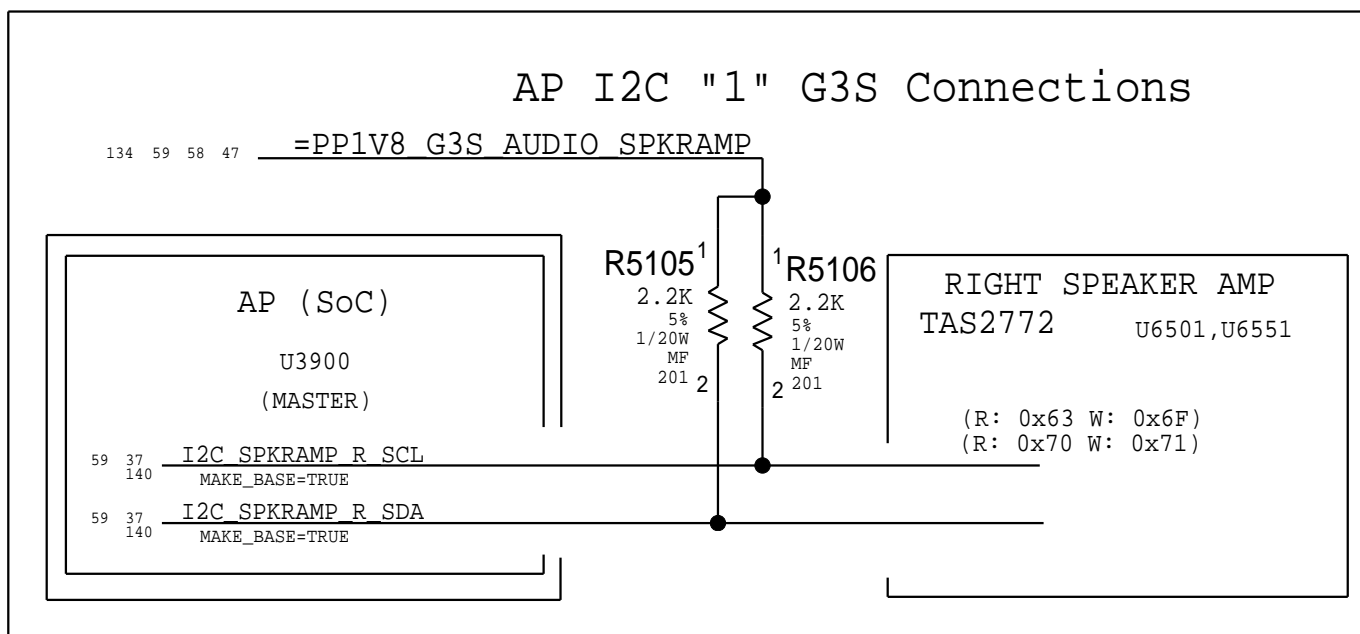
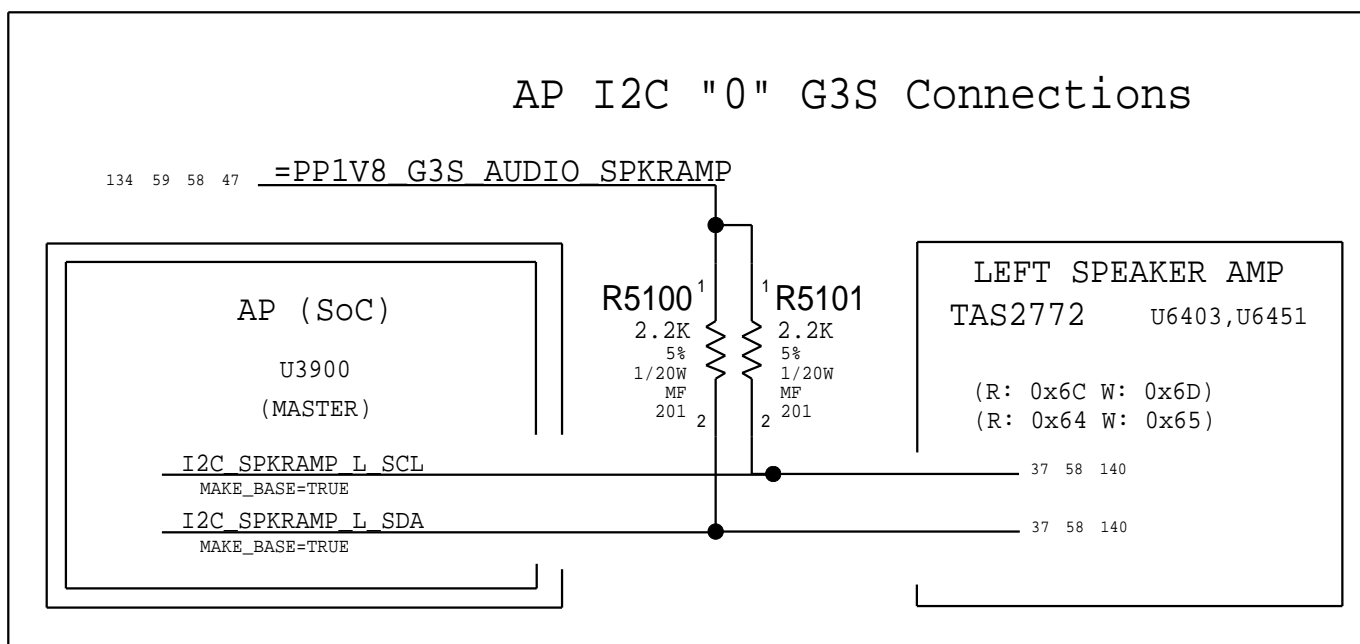
PAGE TITLE			
SOC SHARED SUPPORT IMAC 1			
	DRAWING NUMBER	051-04826	SIZE
	REVISION	4.0.0	D
NOTICE OF PROPRIETARY PROPERTY:		BRANCH	proto-1-b
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II NOT TO REPRODUCE OR COPY IT			
III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART			
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BOM\_COST\_GROUP=SOC

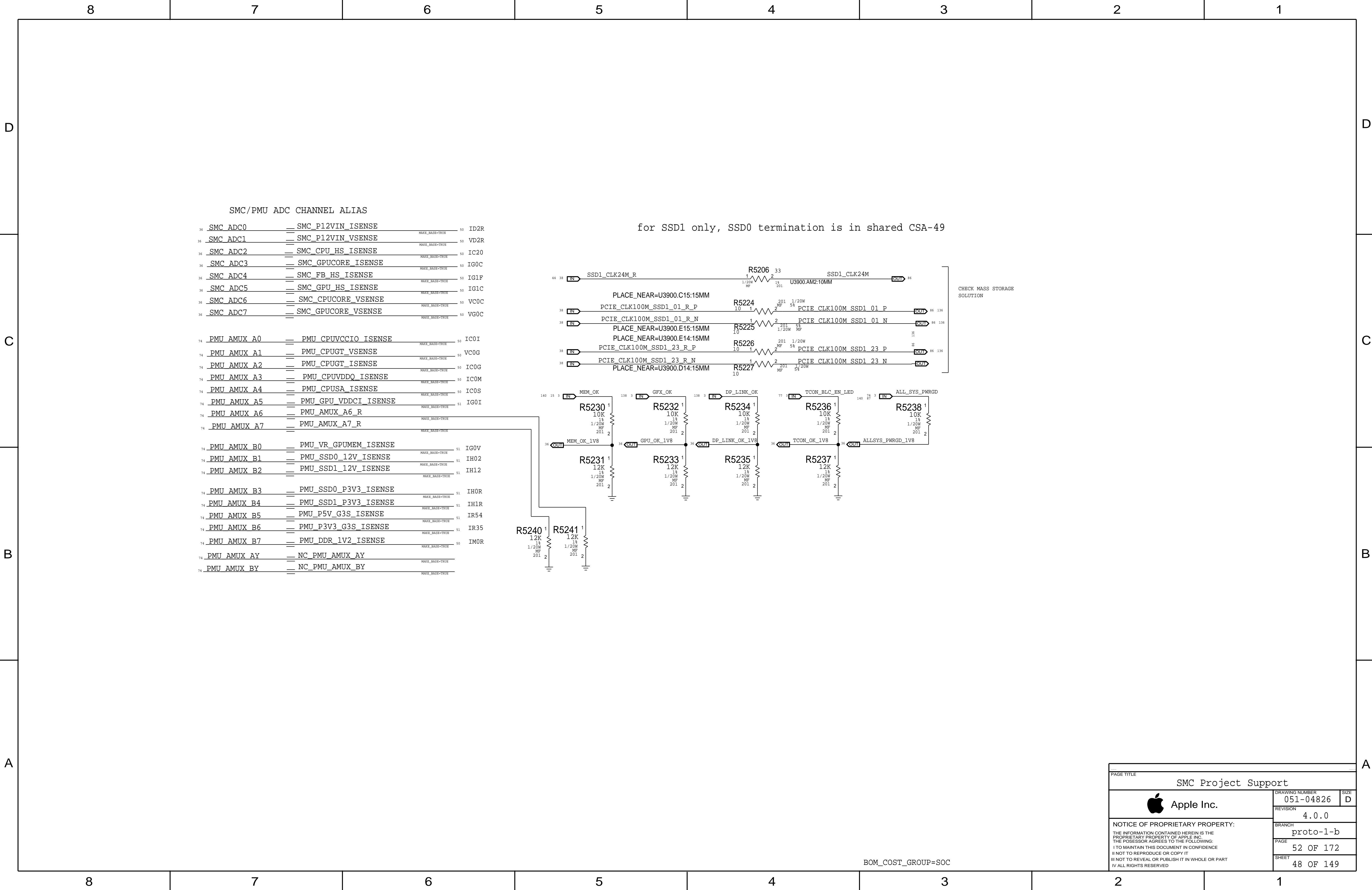


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<div>  <div> Apple Inc. </div> </div>		<div> <div> REVISION </div> <div> 4.0.0 </div> </div>			
<div> NOTICE OF PROPRIETARY PROPERTY:  THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING:  I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE  I NOT TO REPRODUCE OR COPY IT  I NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART  IV ALL RIGHTS RESERVED </div>		<div> <div> BRANCH </div> <div> proto-1-b </div> </div>			
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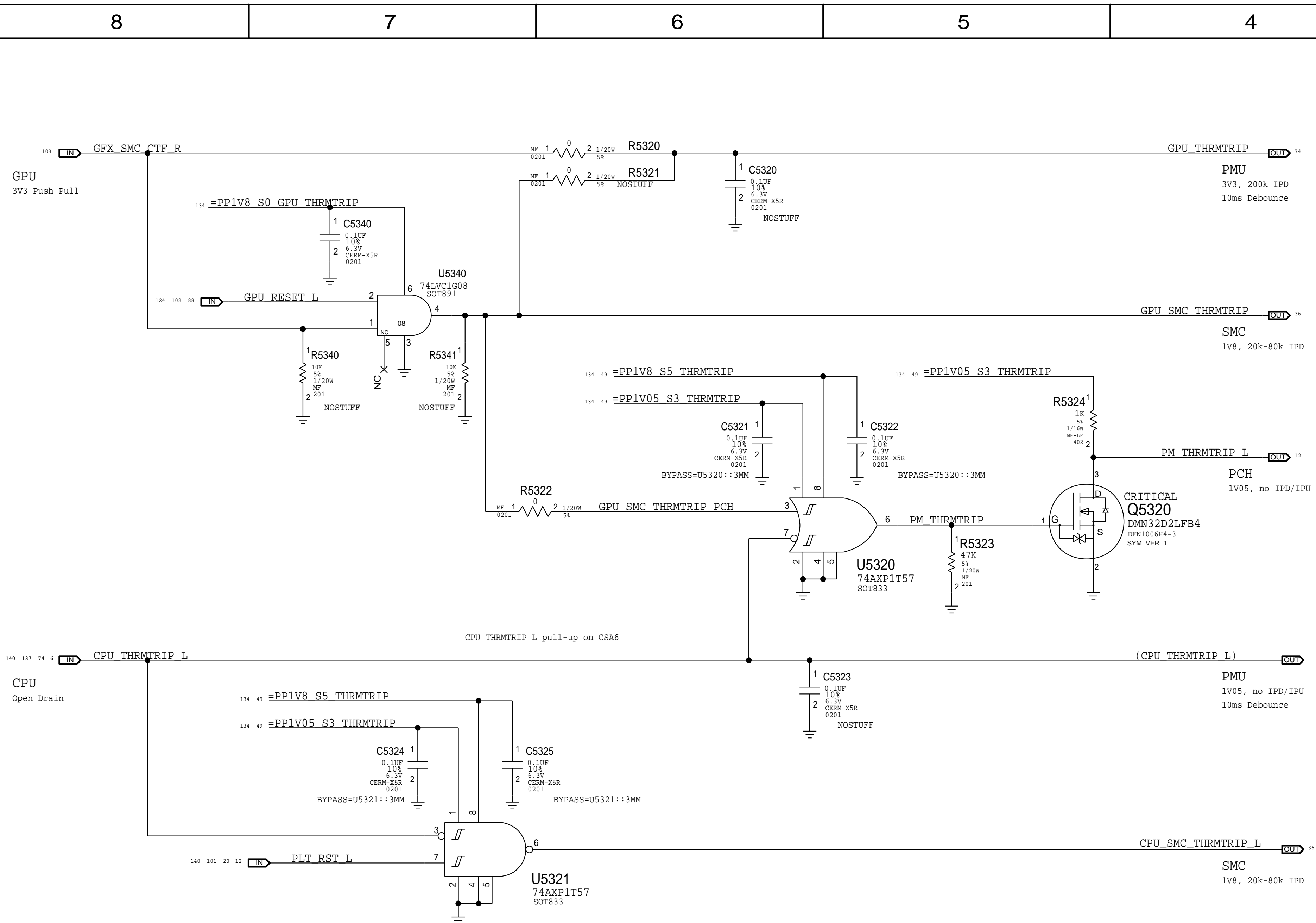
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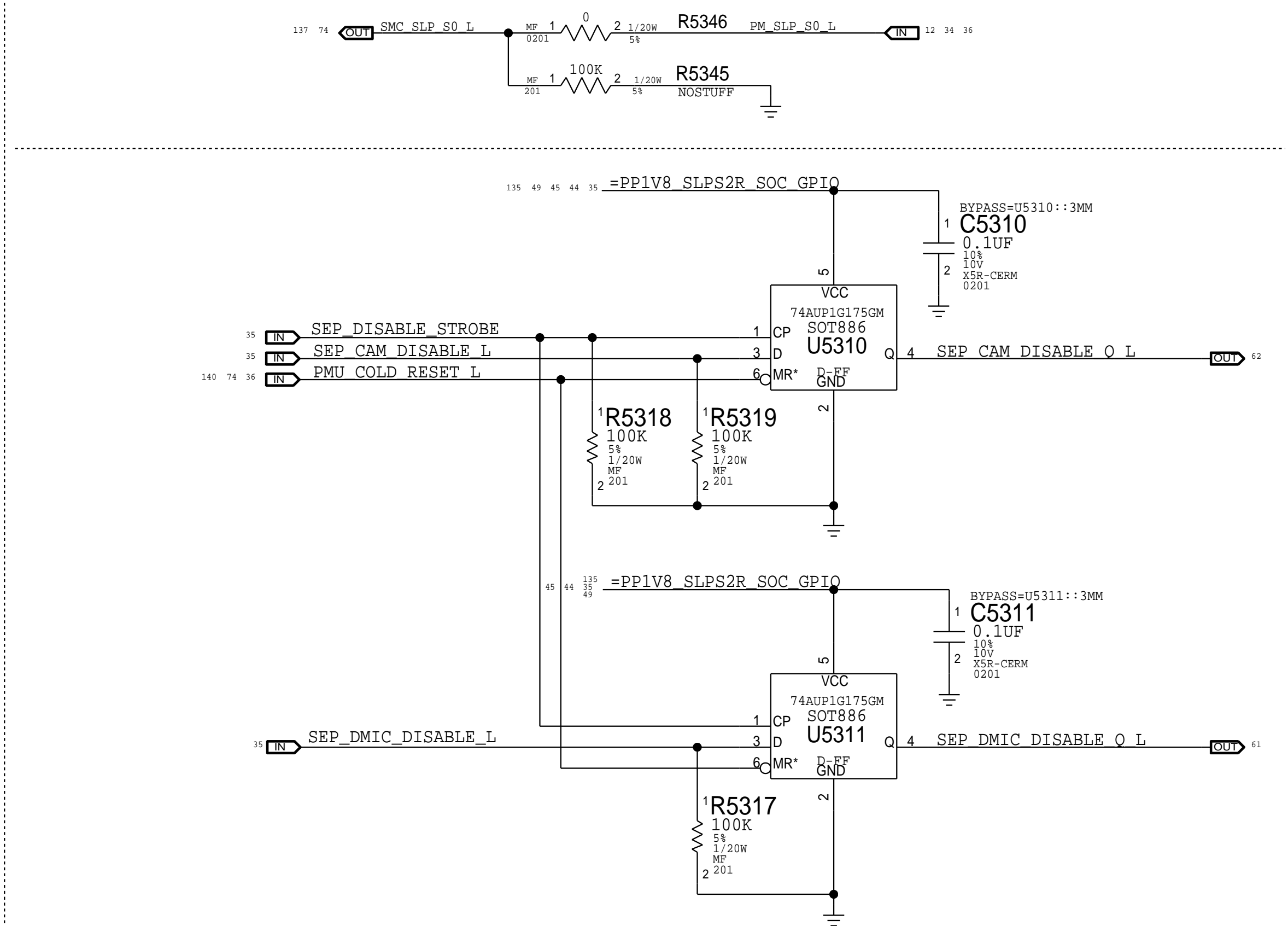




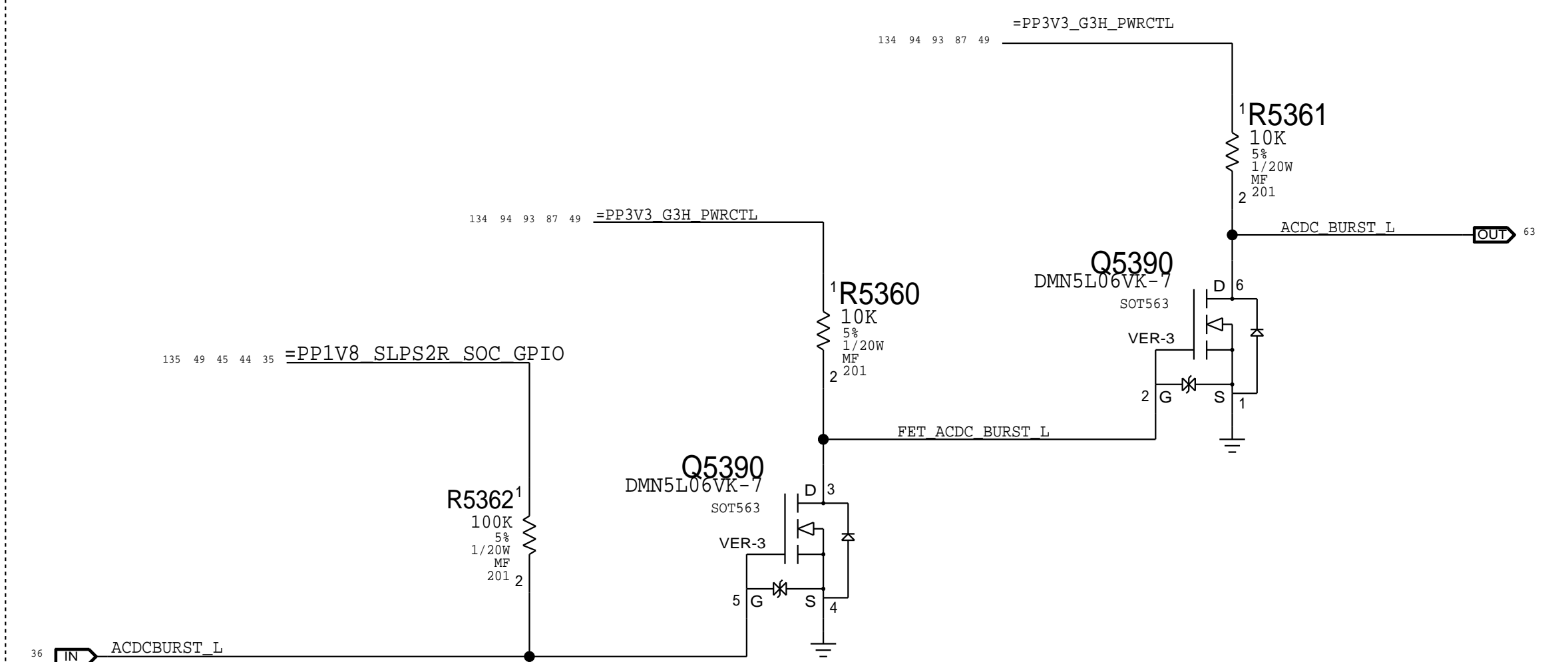





PMU response will be overridden by SMC, unless SMC and/or PCH is hung.



## AC/DC Burst Mode Enable



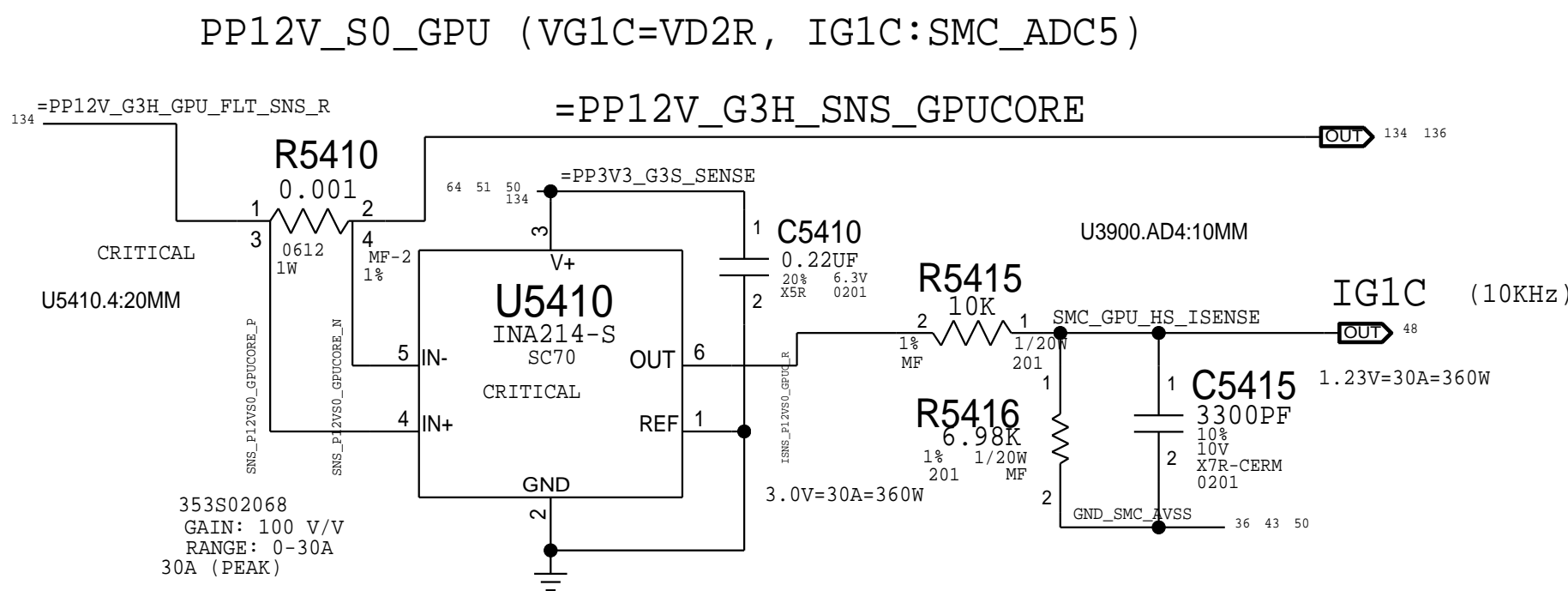
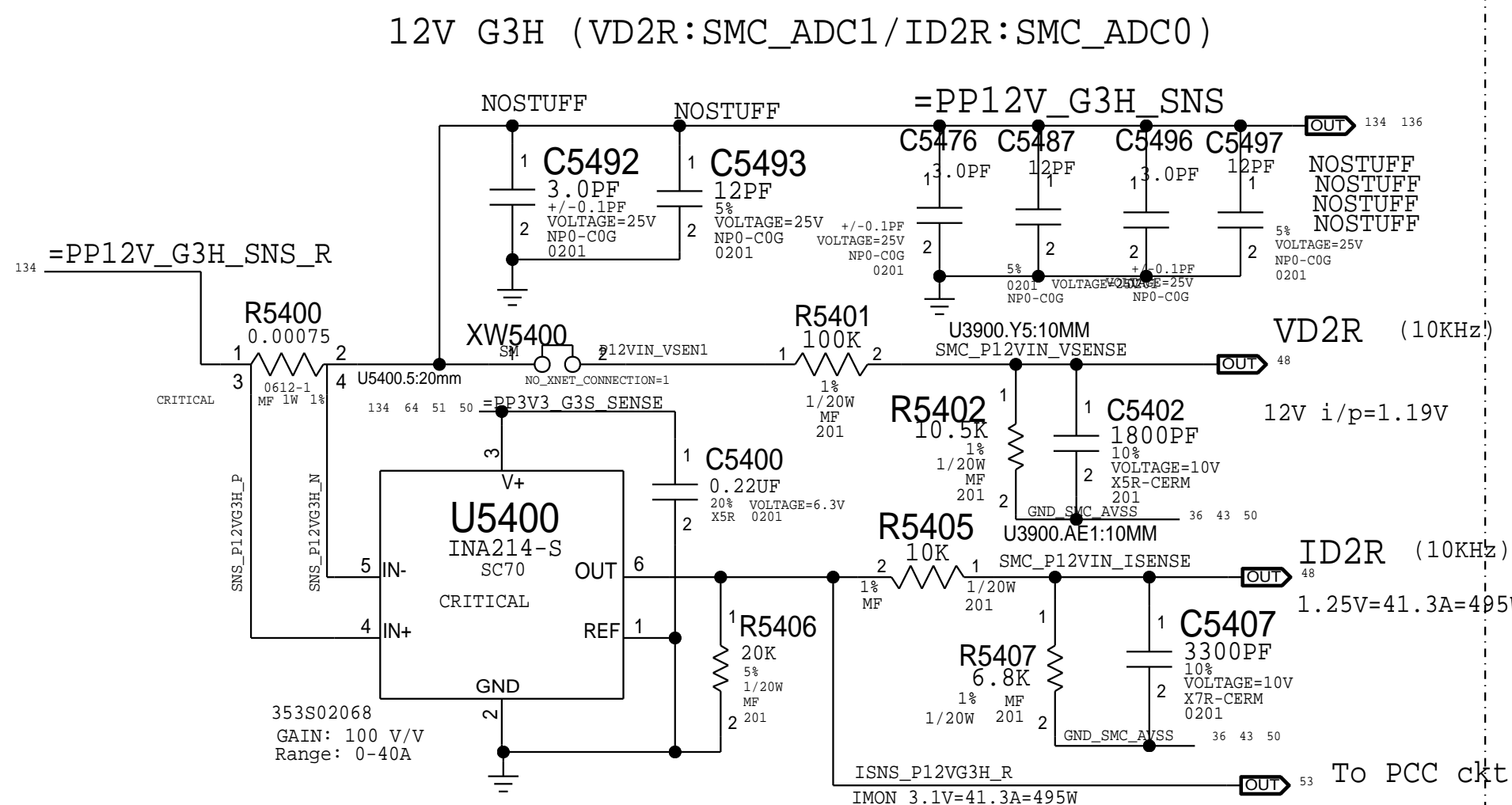
PAGE TITLE		SOC SHARED SUPPORT IMAC 2	
 Apple Inc.	DRAWING NUMBER	051-04826	
	REVISION	4.0.0	
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		SHEET	49 OF 149

D

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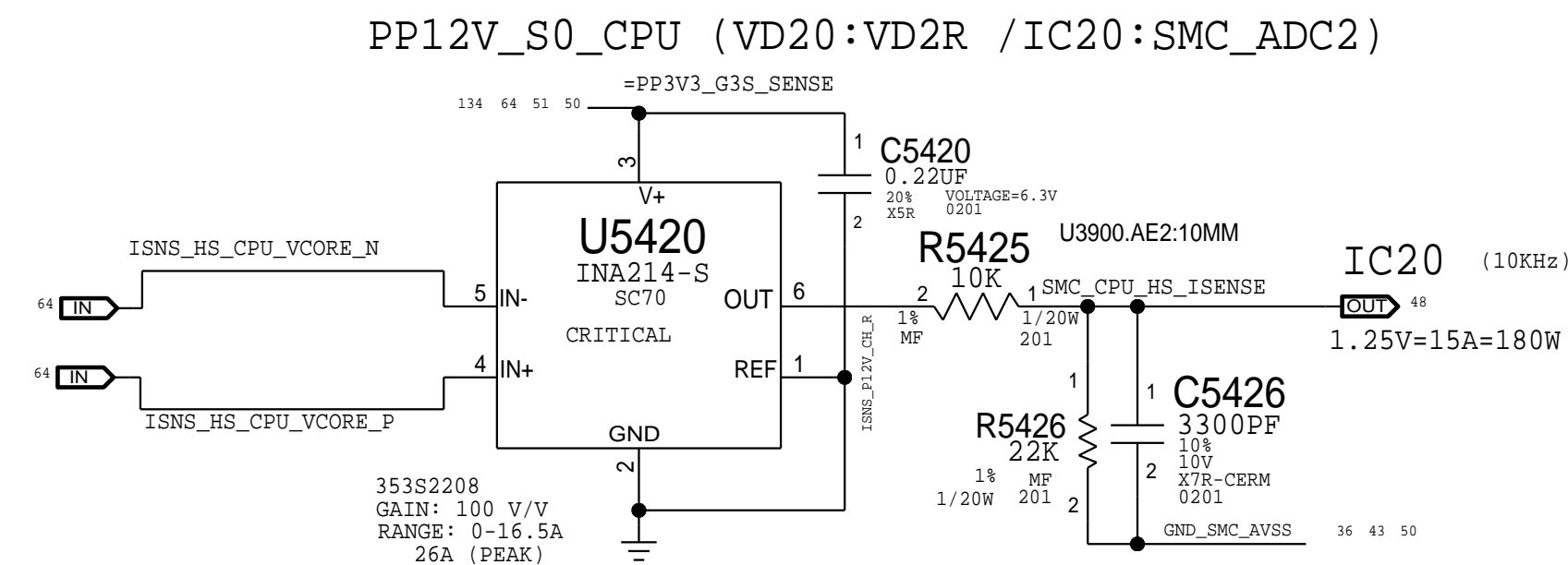
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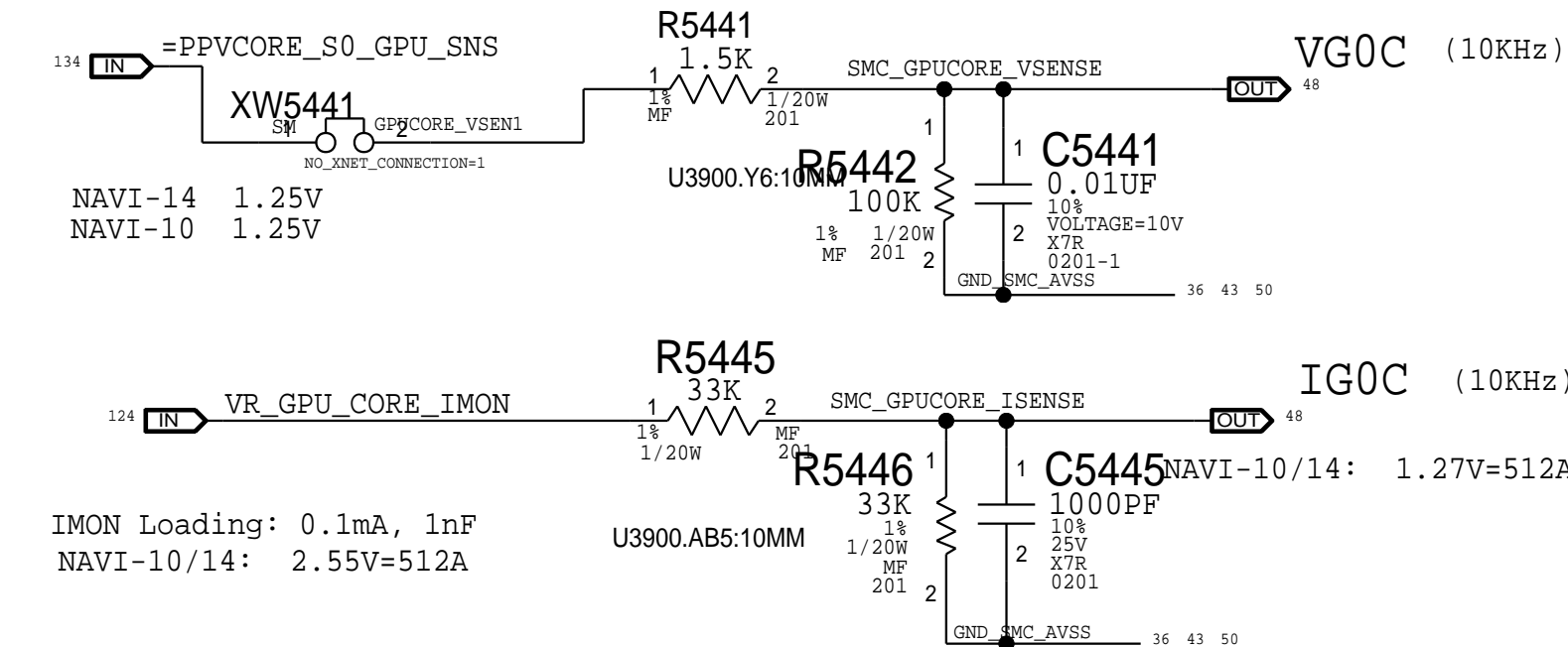


GPU AUX RAILS (VG1A=VD2R, IG1A:AMUX\_A7) (100Hz)

GPU highside sense for GPU 0.9V & 1.8V VR

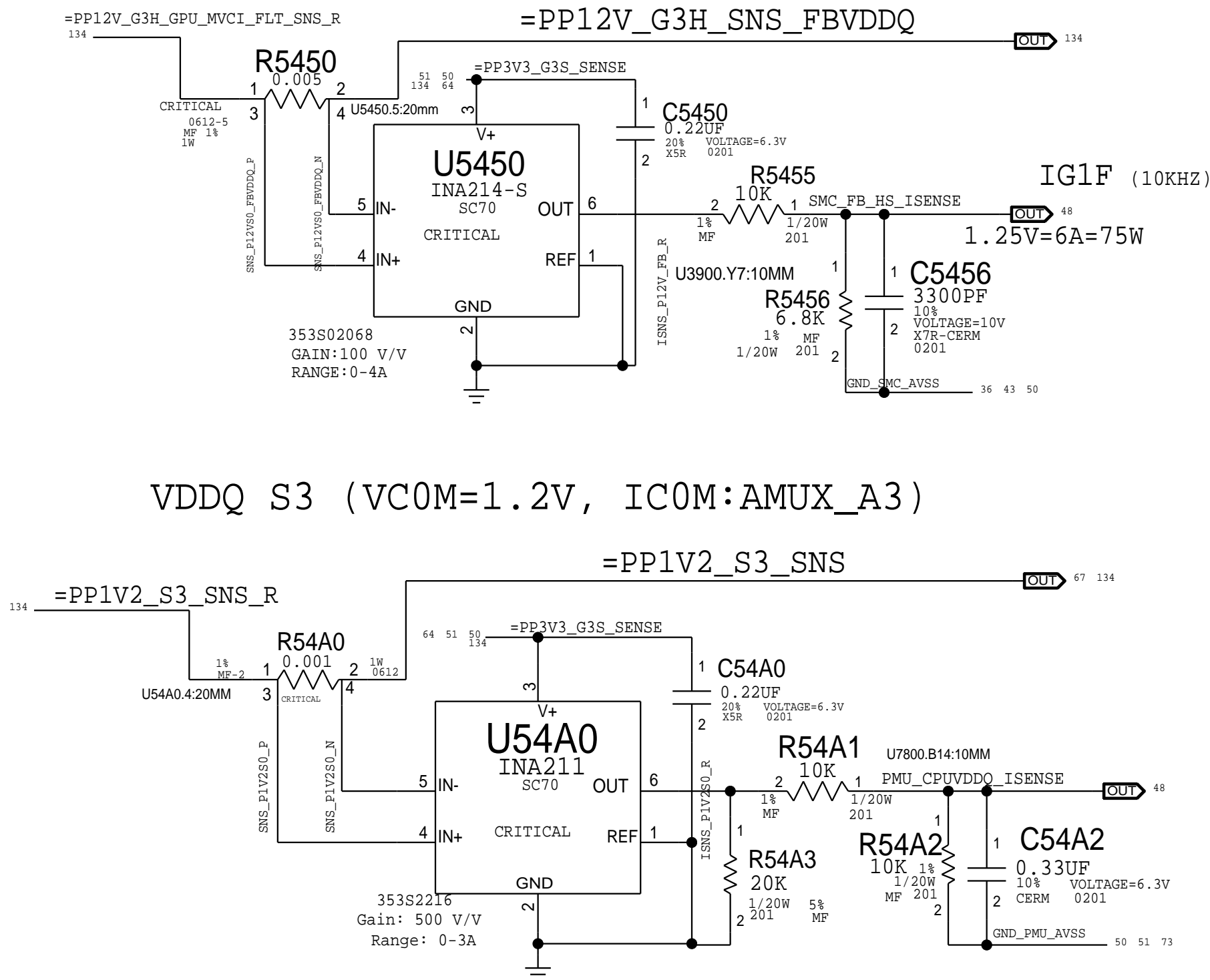


GPU CORE (VG0C:SMC\_ADC7/IG0C:SMC\_ADC3)

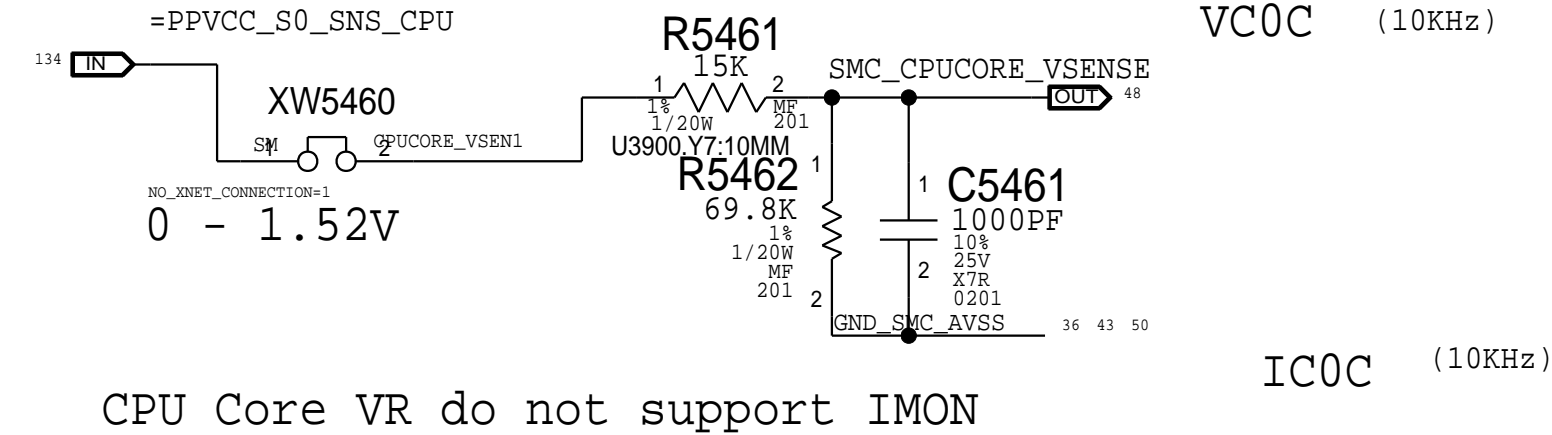


GPU FB (VG1F=VD20, IG1F:SMC\_ADC4)

GPU highside sense for GPU FB 1.5V VDDQ VR

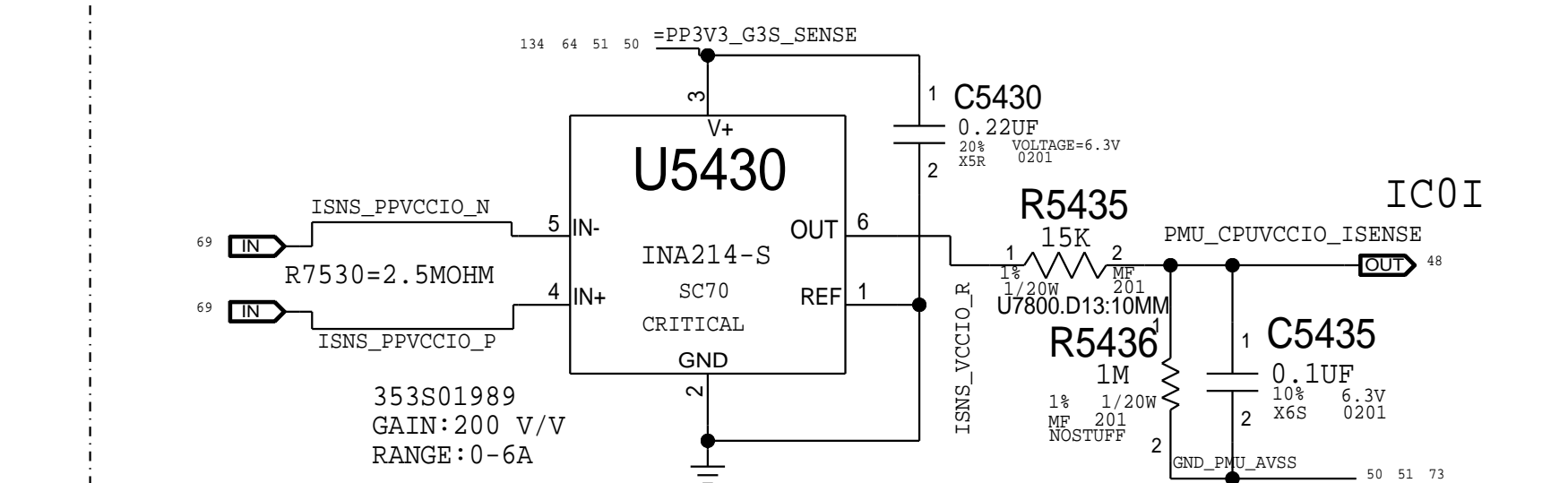


CPU CORE (VC0C:SMC\_ADC6 /IC0C:NA)

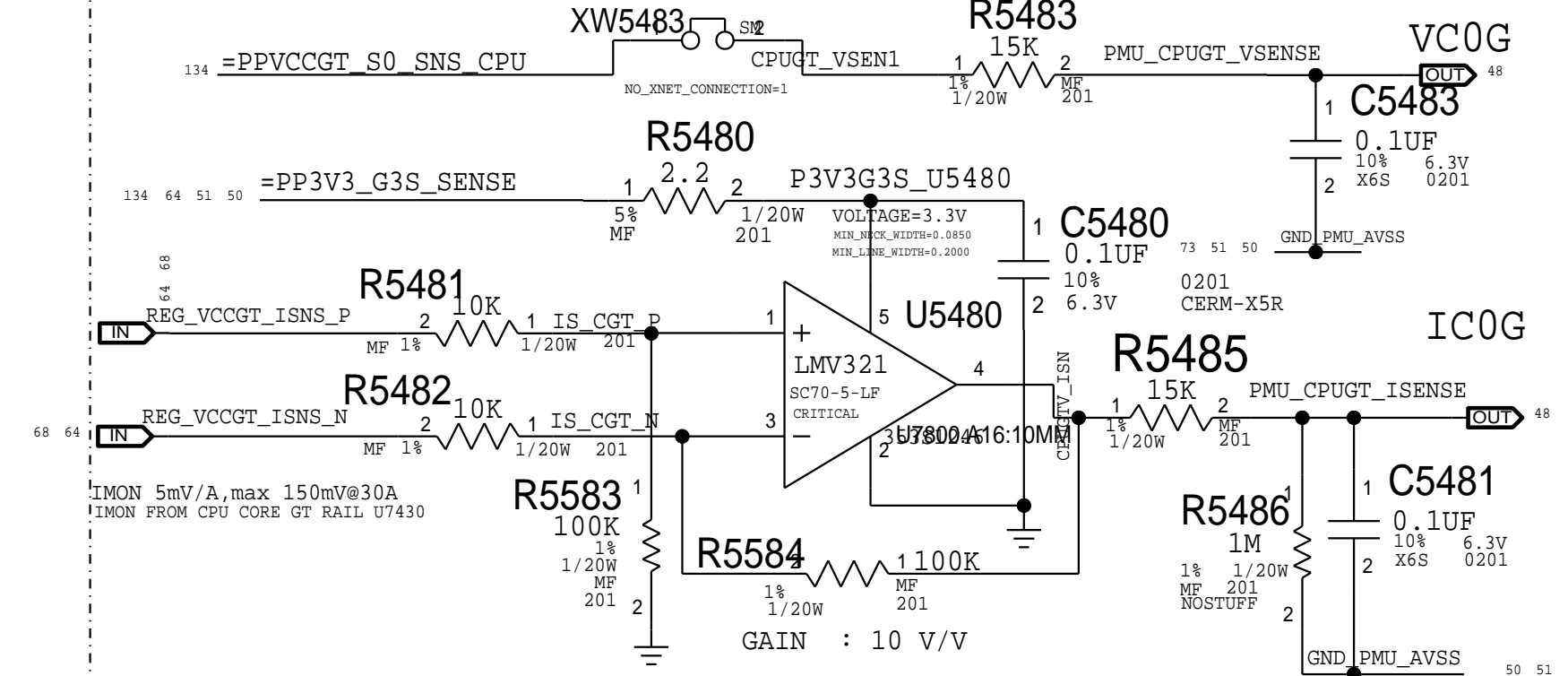


CPU Core VR do not support IMON

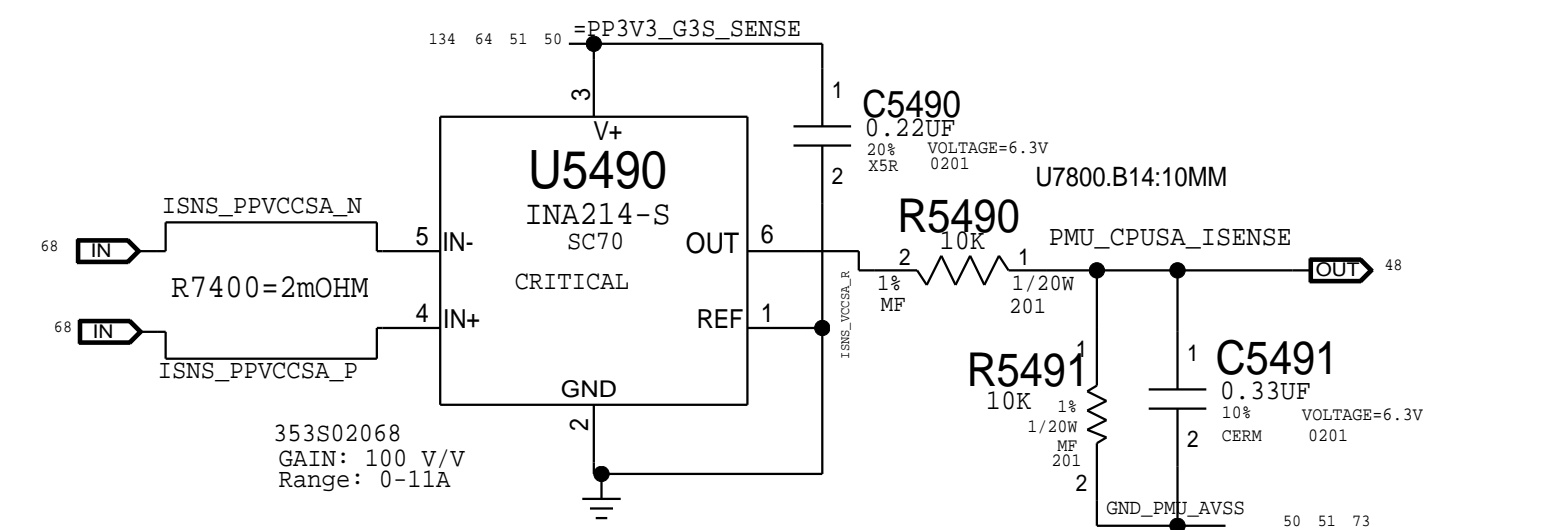
CPU VCCIO (VC0I=0.95V, IC0I:AMUX\_A0)




CPU CORE GT (VC0G:AMUX\_A1/IC0G:AMUX\_A2)



CPU CORE VCC\_SA (VC0S=1.05V, IC0S:AMUX\_A4)



BOM\_COST\_GROUP=SENSORS

PAGE TITLE		
SENSORS: I and V Sense		
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	PAGE	54 OF 172
	SHEET	50 OF 149

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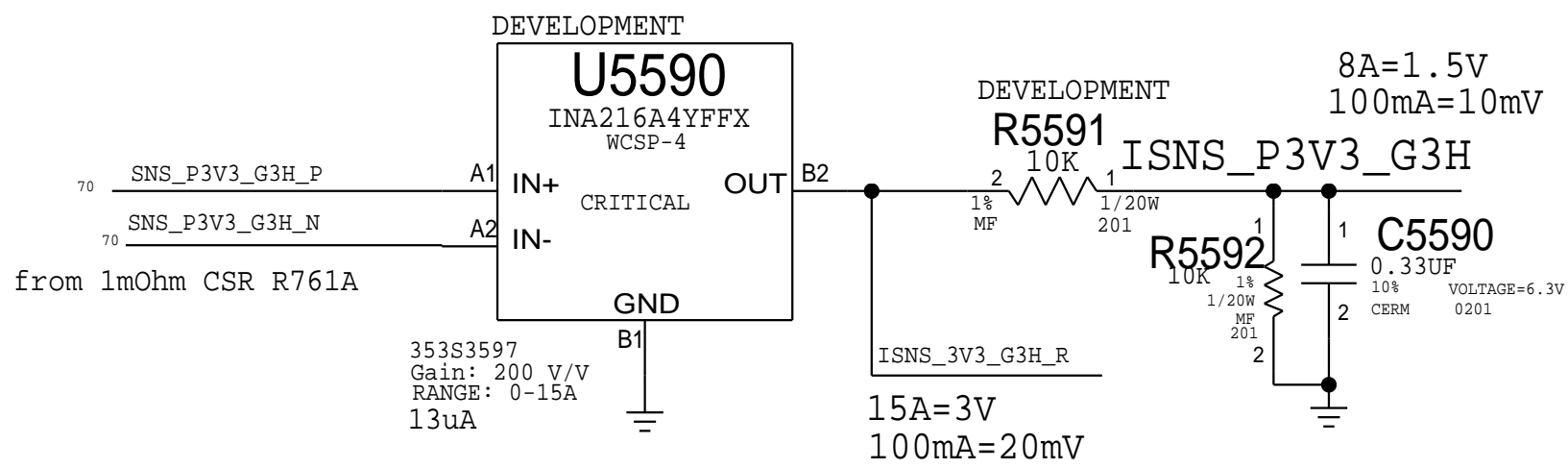
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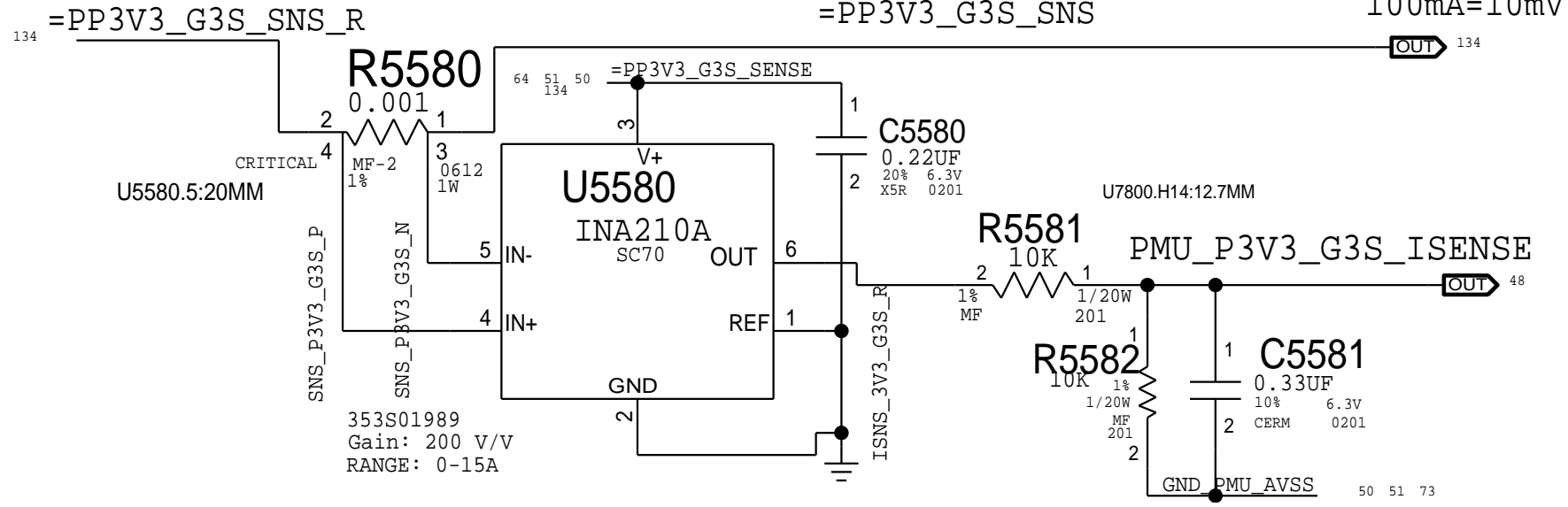
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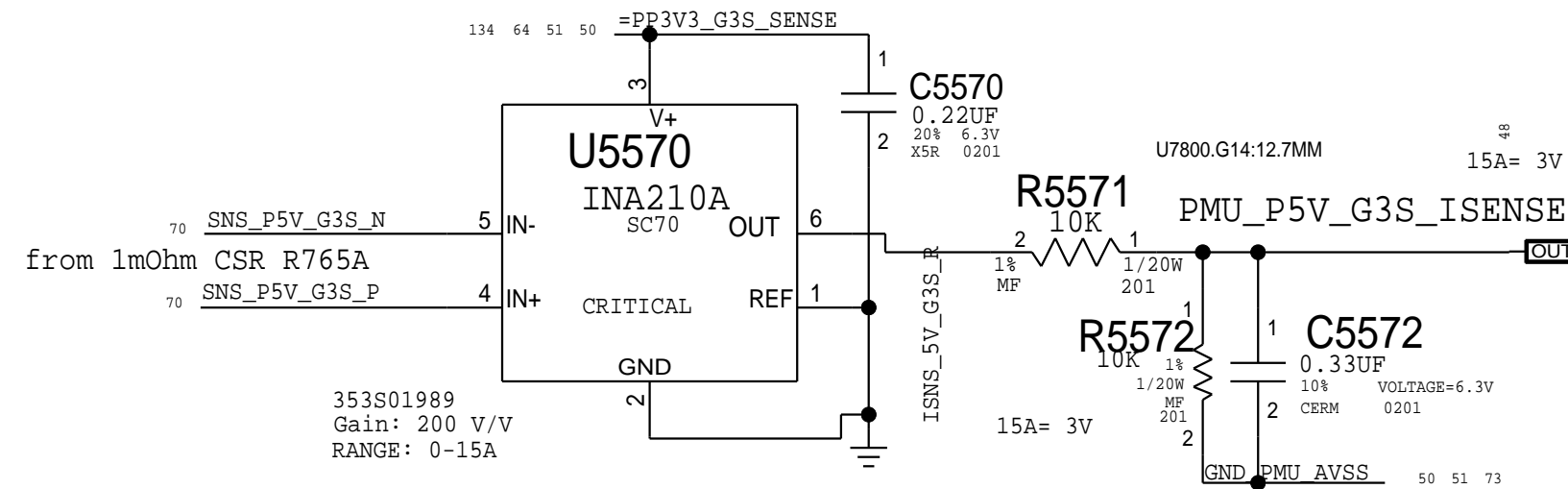
3V3\_G3H MANUAL MEASUREMENT



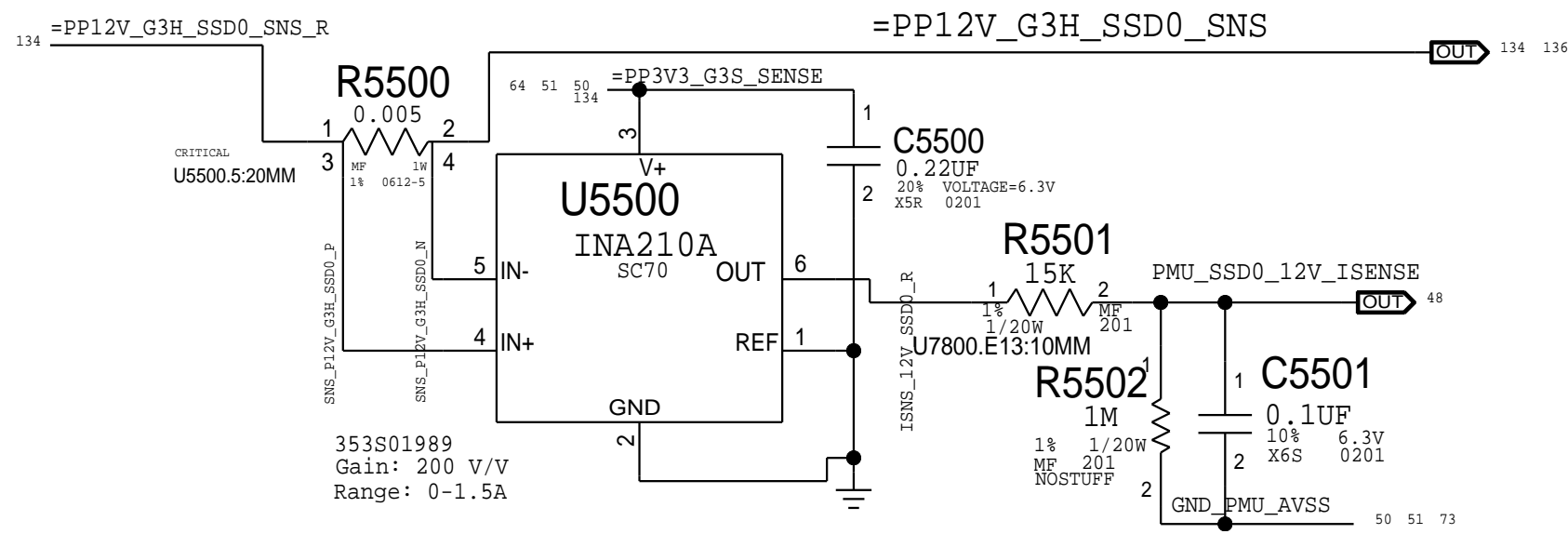
3V3\_G3S (IG3S:AMUX\_B6) 8A=1.5V 100mA=10mV



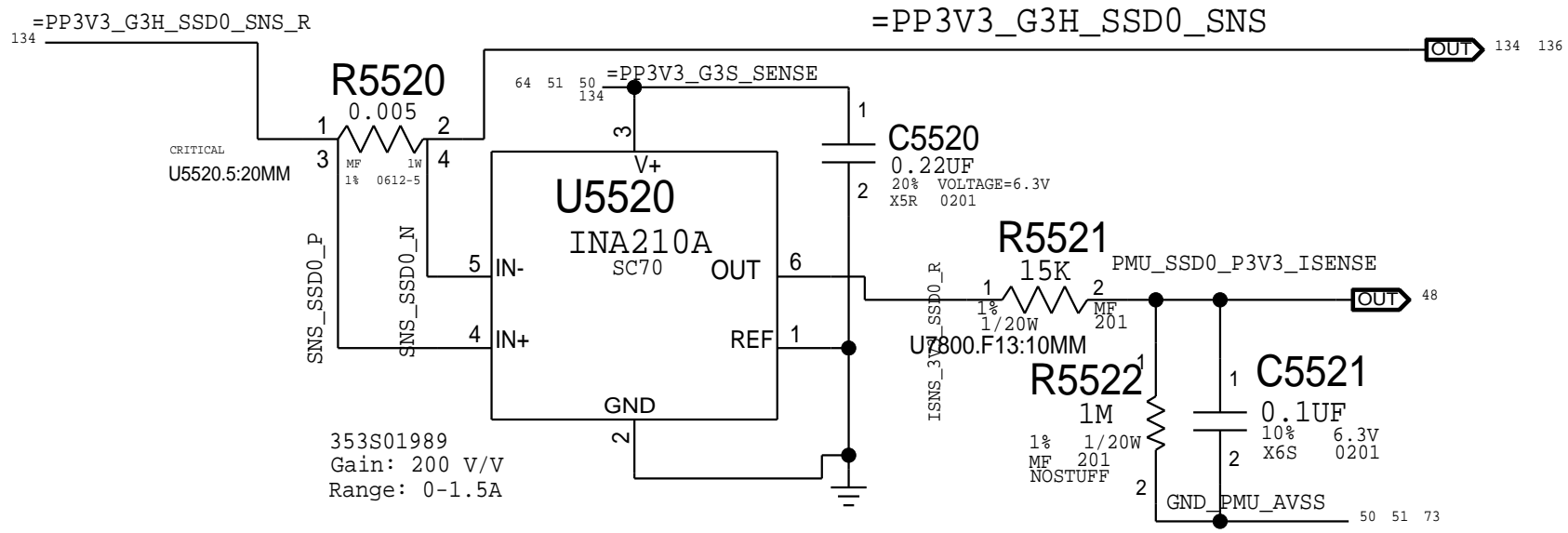
5V\_G3S (IR45:AMUX\_B5 )



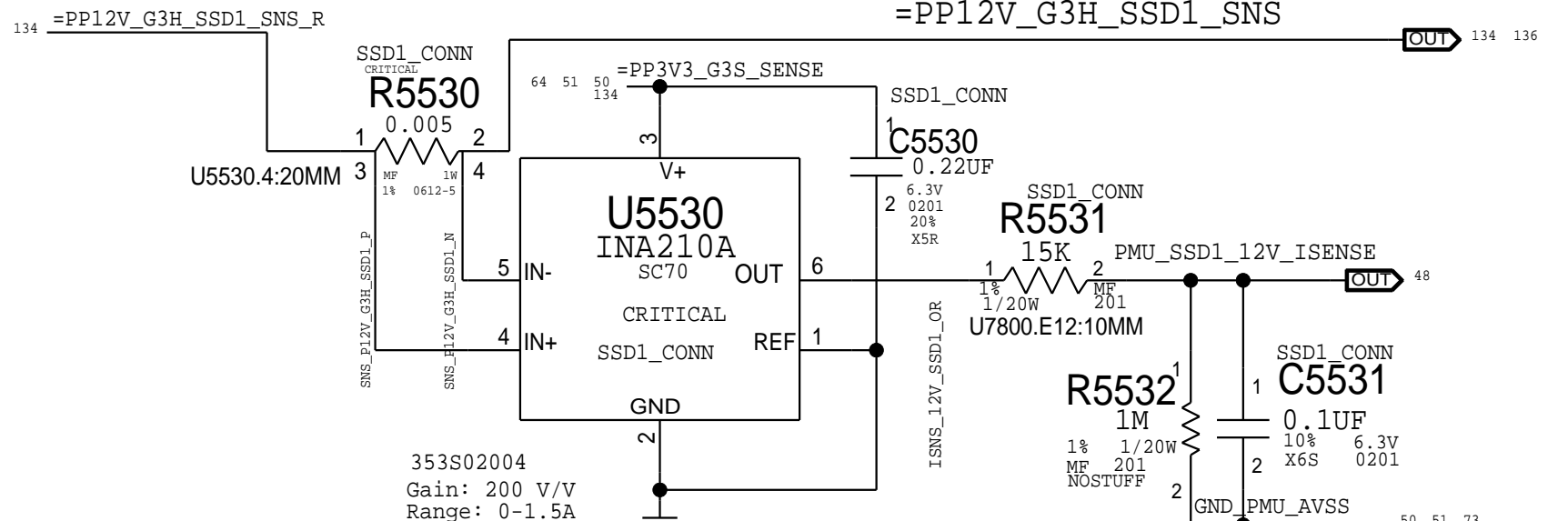
SSD0 PP12V\_SSD0 (VH02:VD20/IH02:AMUX\_B1)



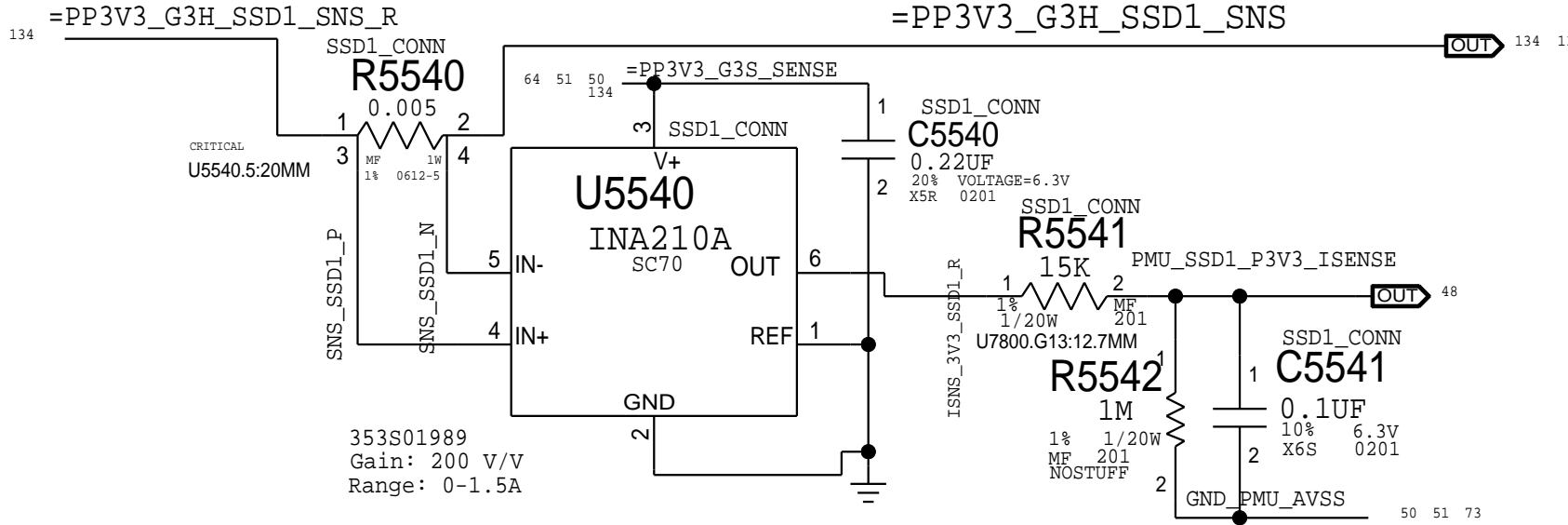
SSD0 (VR1R:3.3V/IH0R:AMUX\_B3)



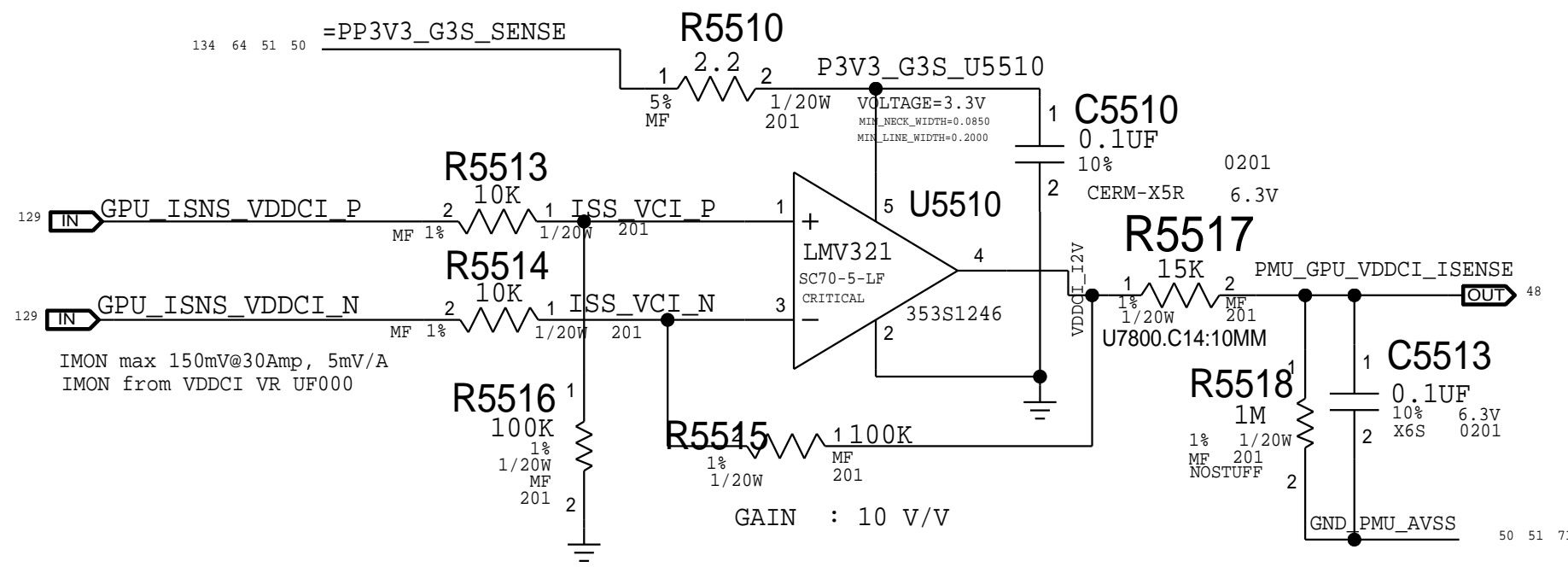
SSD1 PP12V\_SSD1 (VH02:VD20/IH12:AMUX\_B2)



SSD1 (VR1R:3.3V / IH1R:AMUX\_B4)

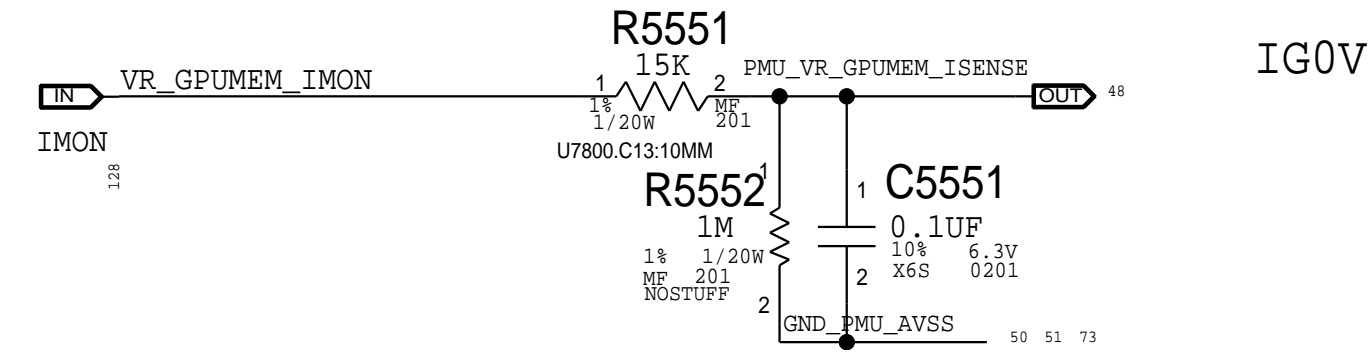


GPU\_VDDCI S0 (VG0I:1V /IG0I: AMUX\_A5)



Chip	Vref	Vmax	SMC_ADC_Freq	ADC_LPF
H9M	1.25V	1.8V	10Khz	10Khz
Calpe	1.5V	5V	100hz	100hz

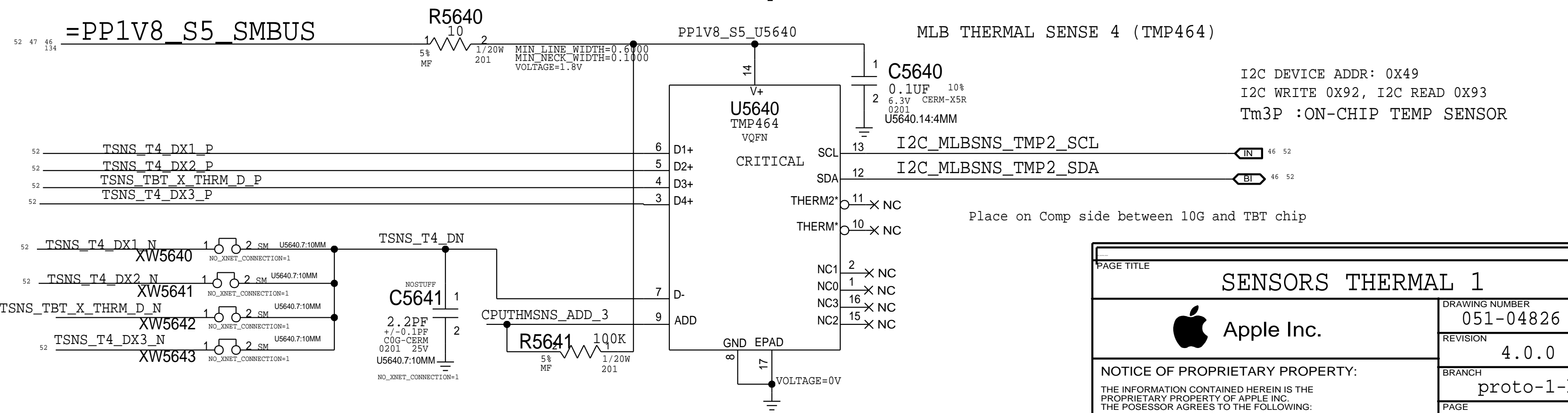
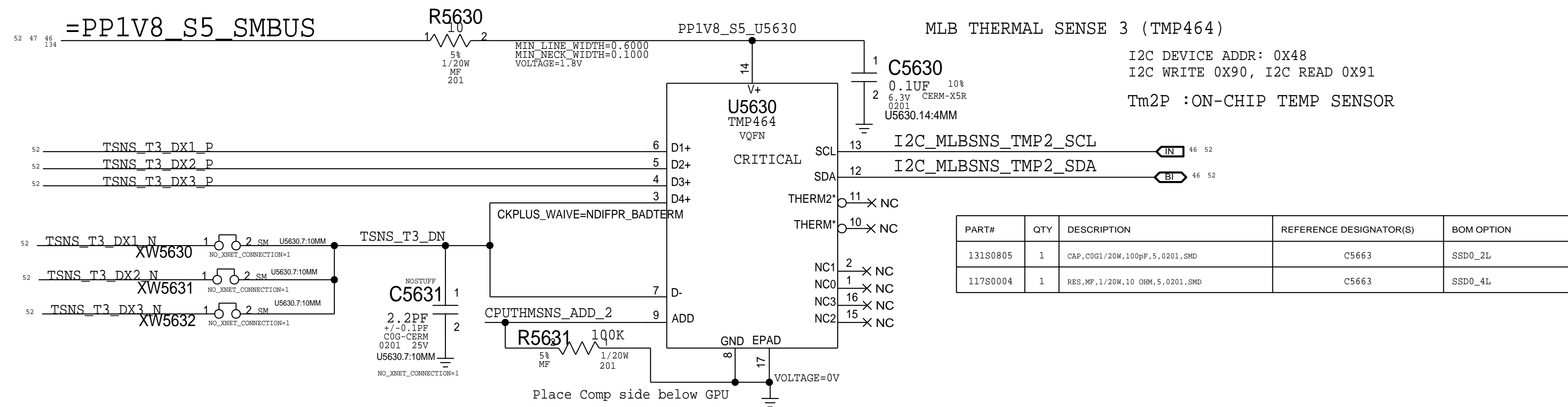
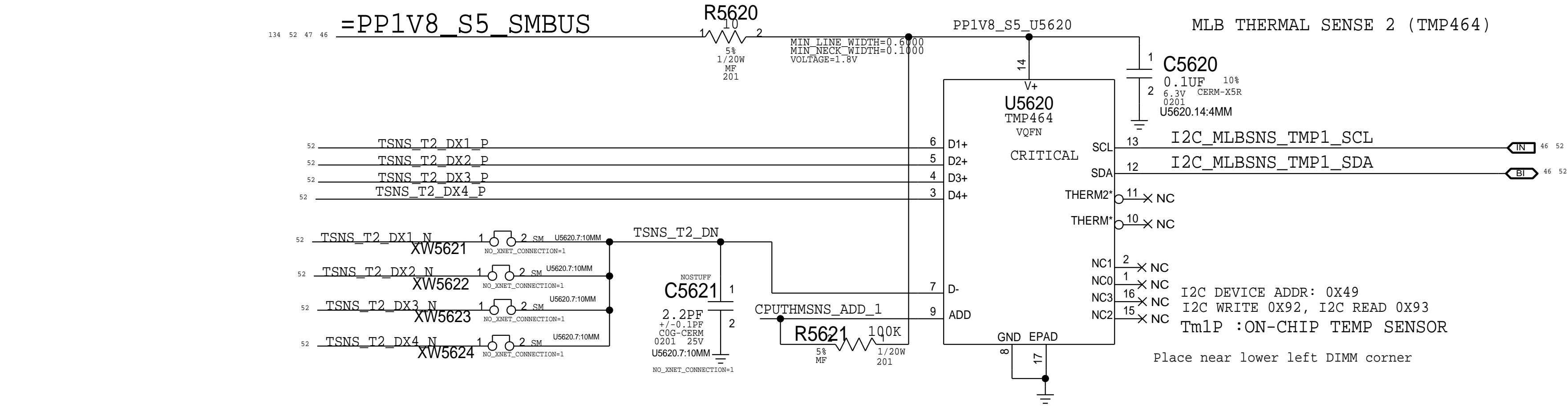
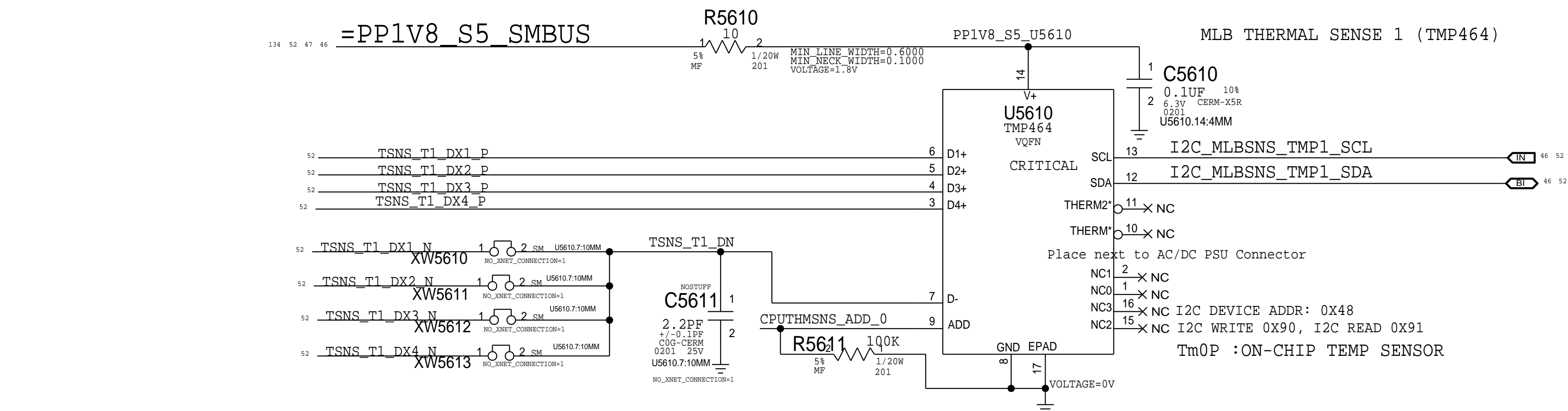
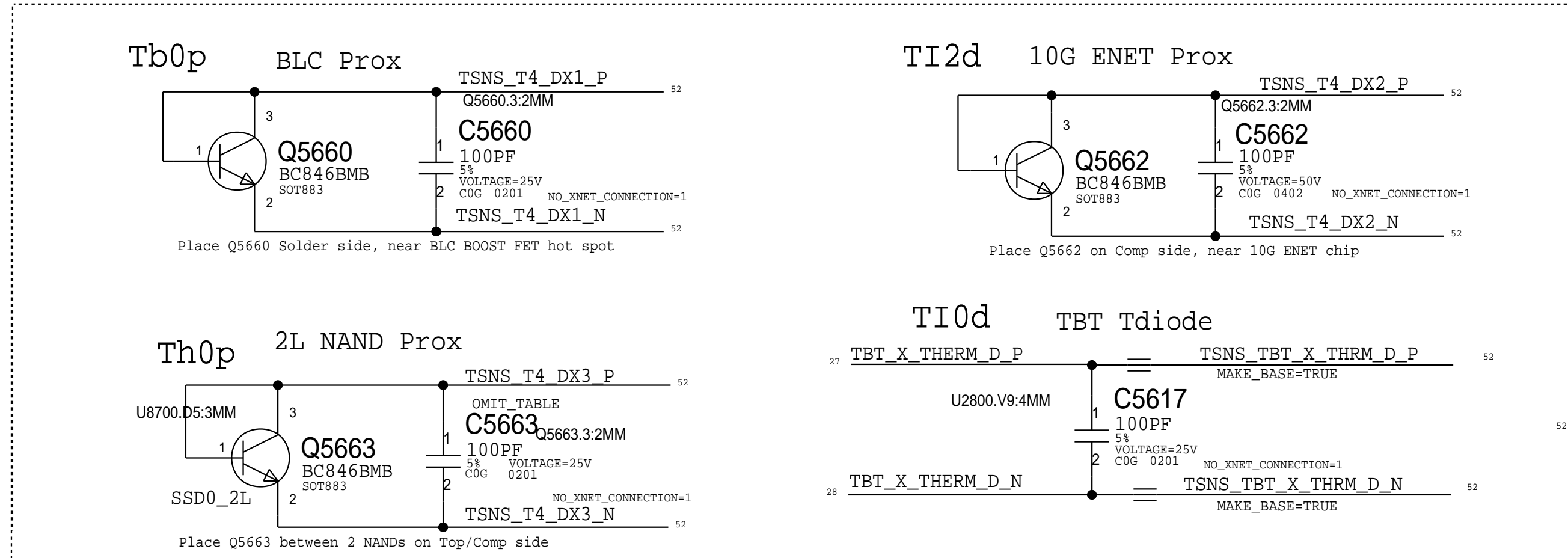
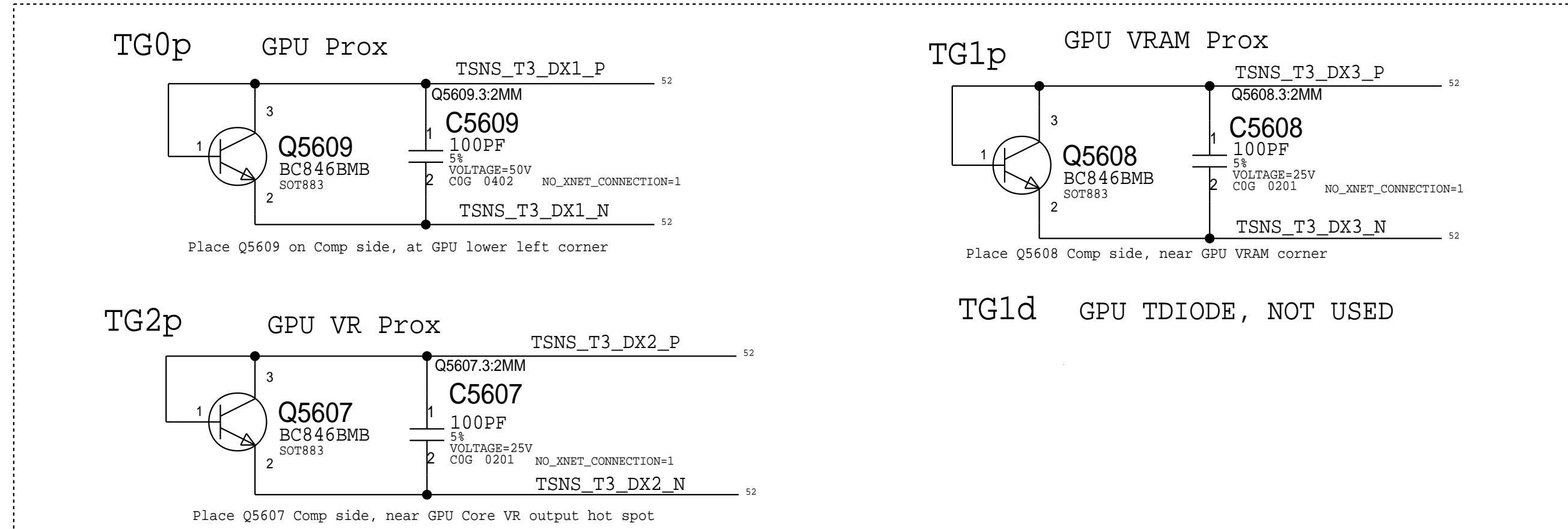
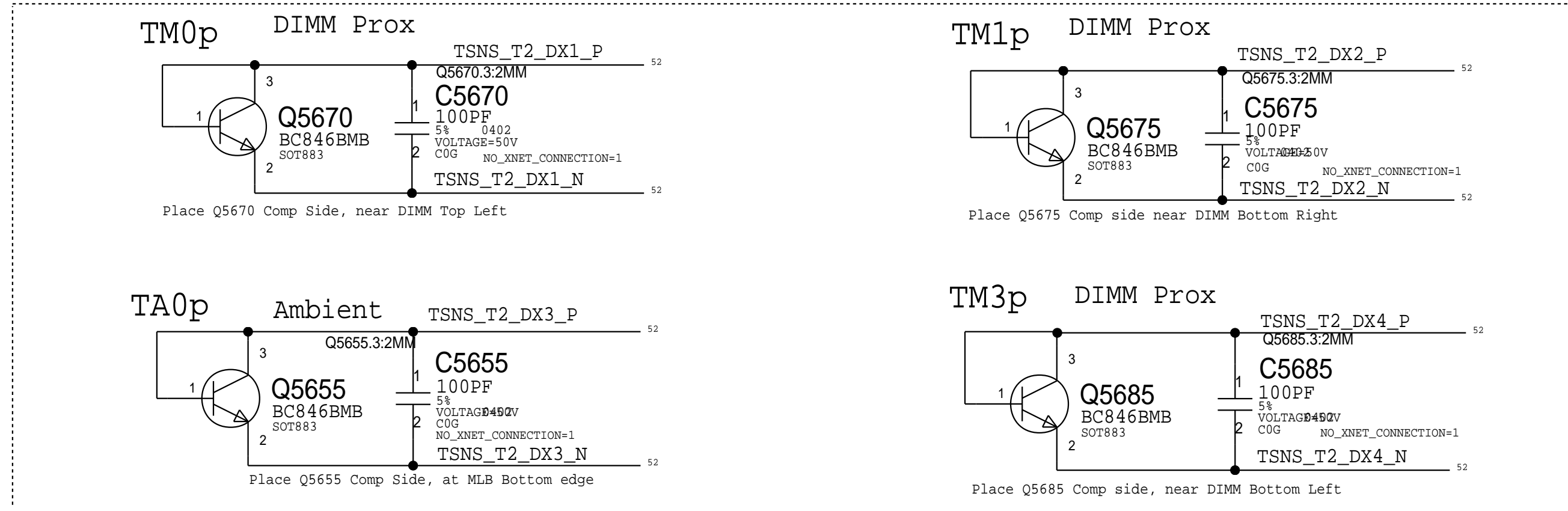
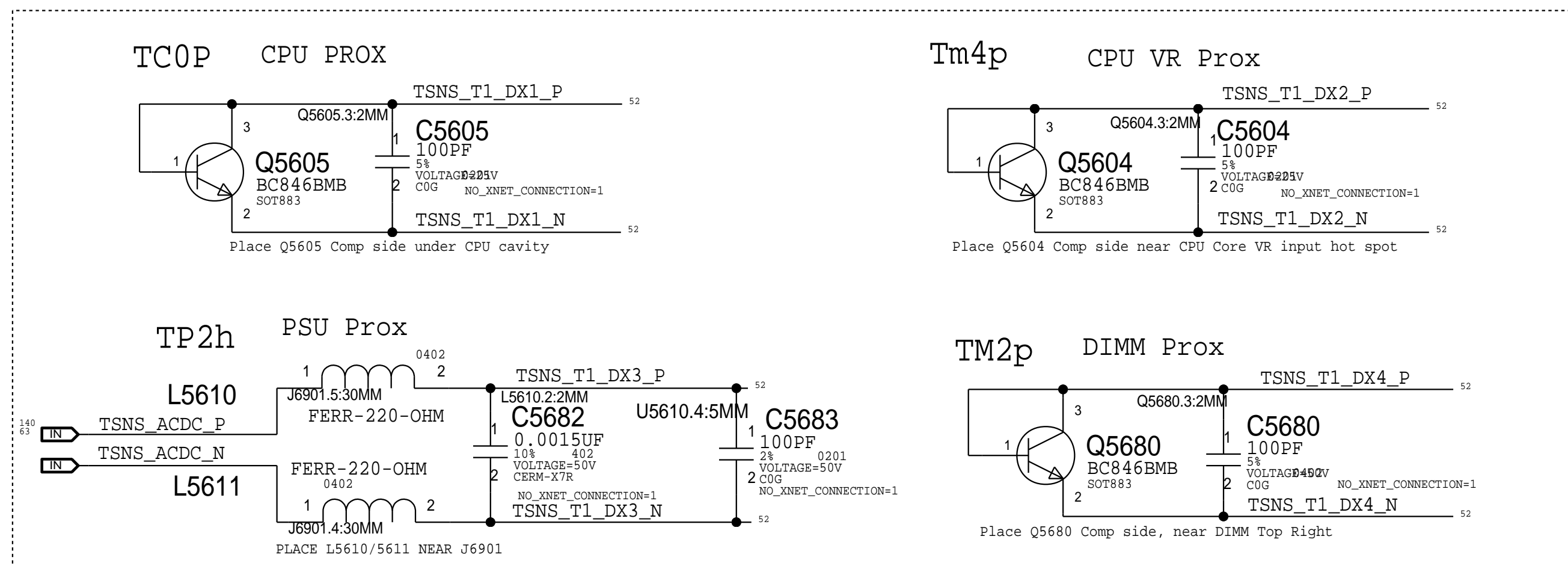
GPU VDDIO/MVDD( VG0F:1.35V IG0F:AMUX\_B0)



NAVI-10 1.5V=50A

BOM\_COST\_GROUP=SENSORS

PAGE TITLE		
SENSORS: I and V Sense(Continued)		
	DRAWING NUMBER	051-04826
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	PAGE	55 OF 172
	SHEET	51 OF 149



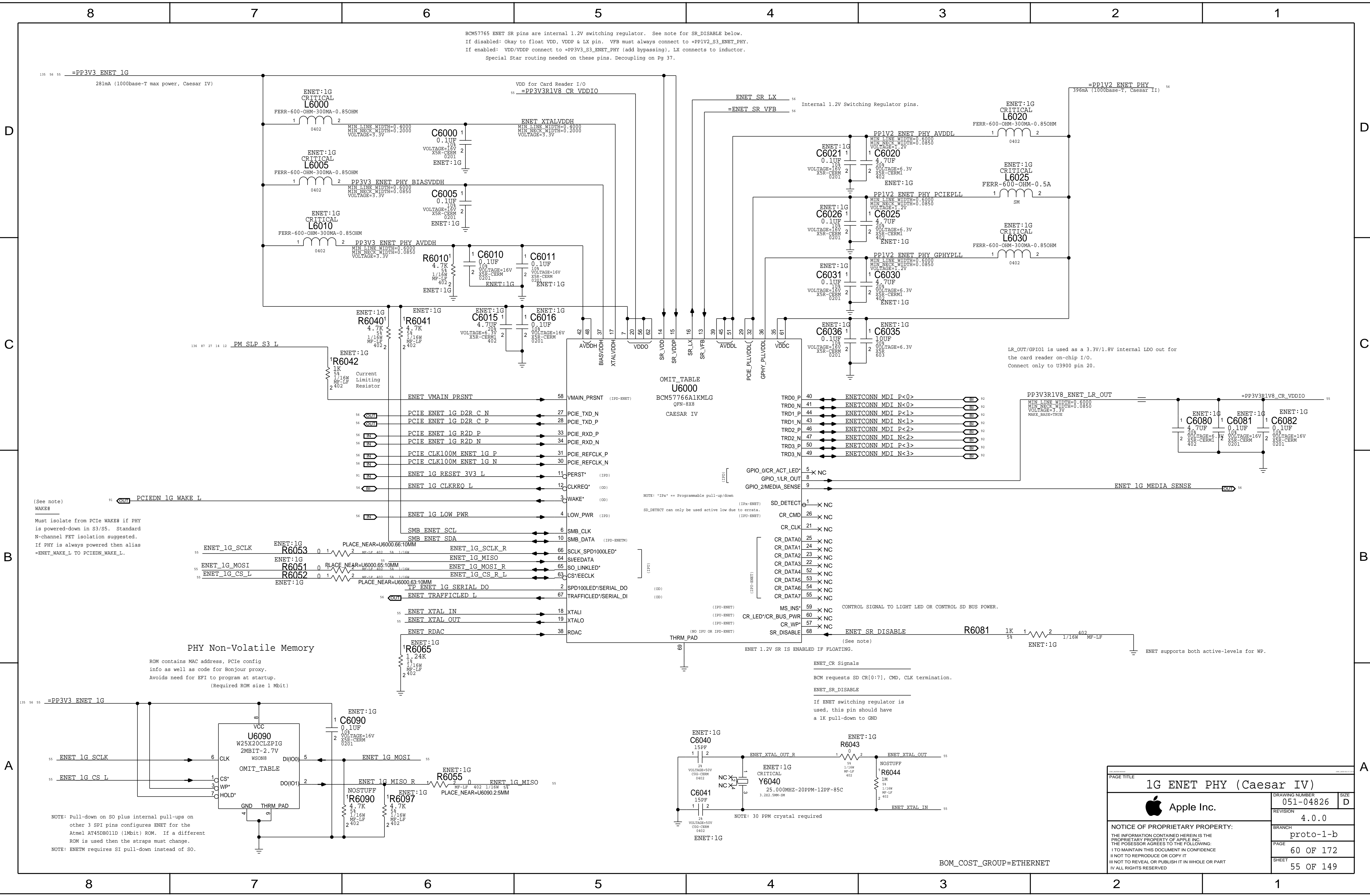
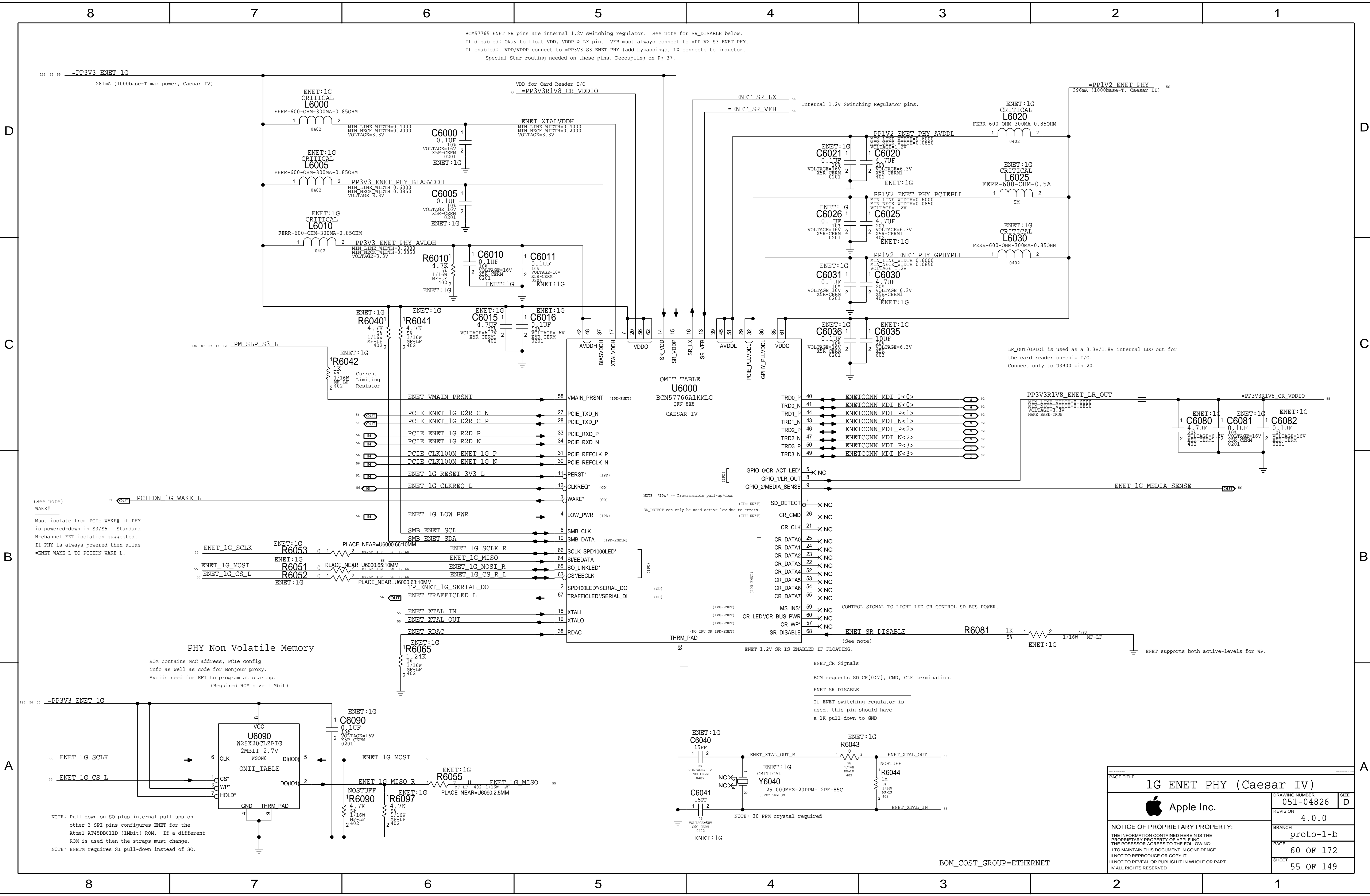
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
131S0805	1	CAP,C0G1/20M,100pf,5,0201,SMD	C5663	SSD_02L
117S0004	1	RES,MF,1/20W,10 OHM,5,0201,SMD	C5663	SSD_04L



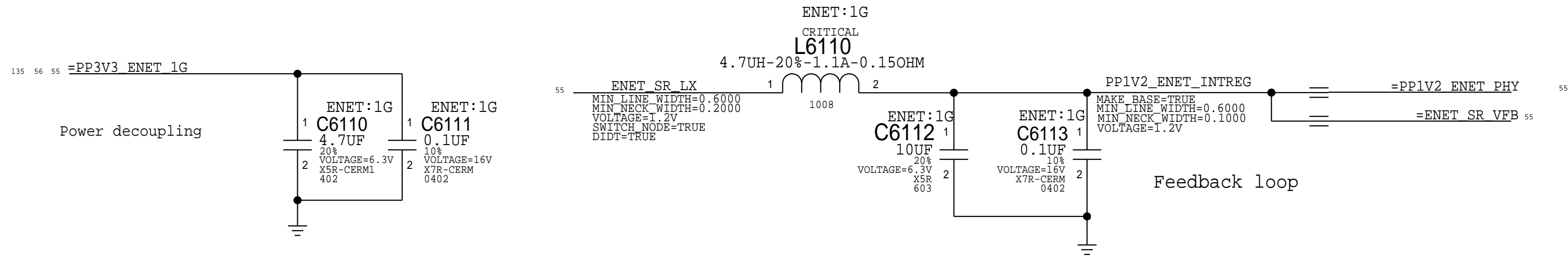




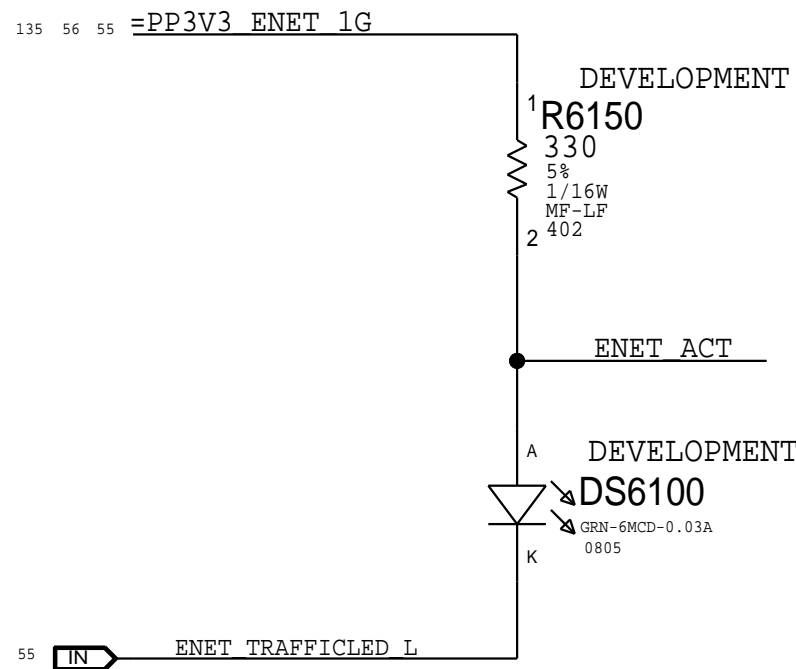


[illegible]

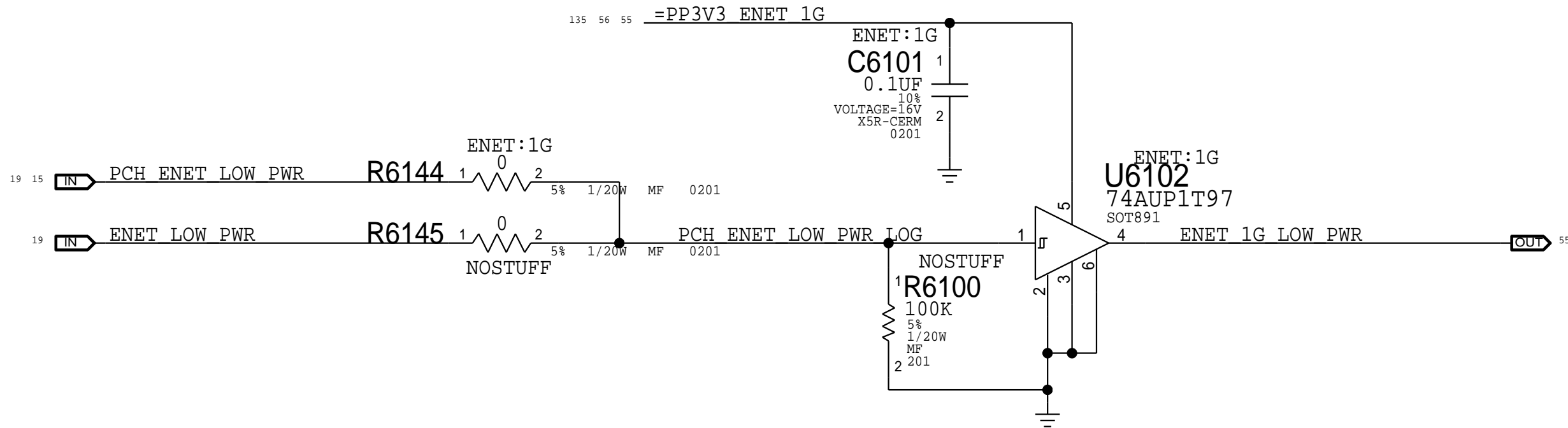
CAESAR IV 1.2V INT.VR CMPTS



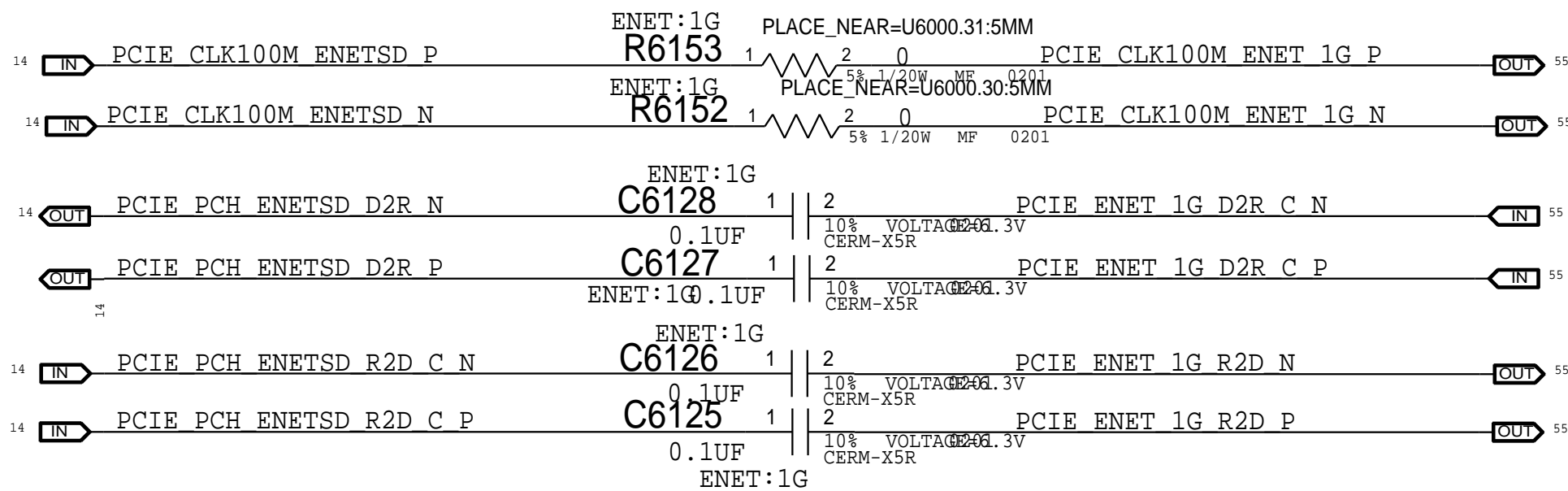
1G ETHERNET ACTIVITY LED



1G ENET LOW PWR

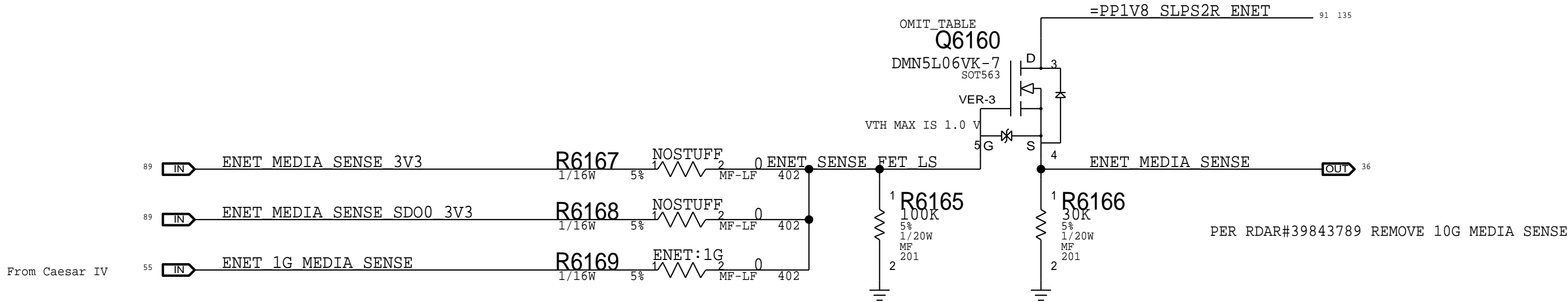


PCIE Connection

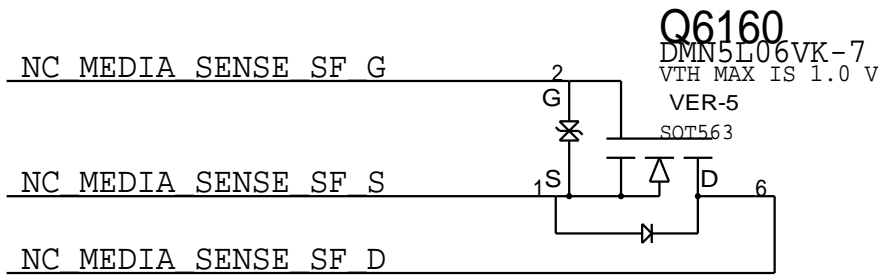


ENET MEDIA SENSE LEVEL SHIFTER

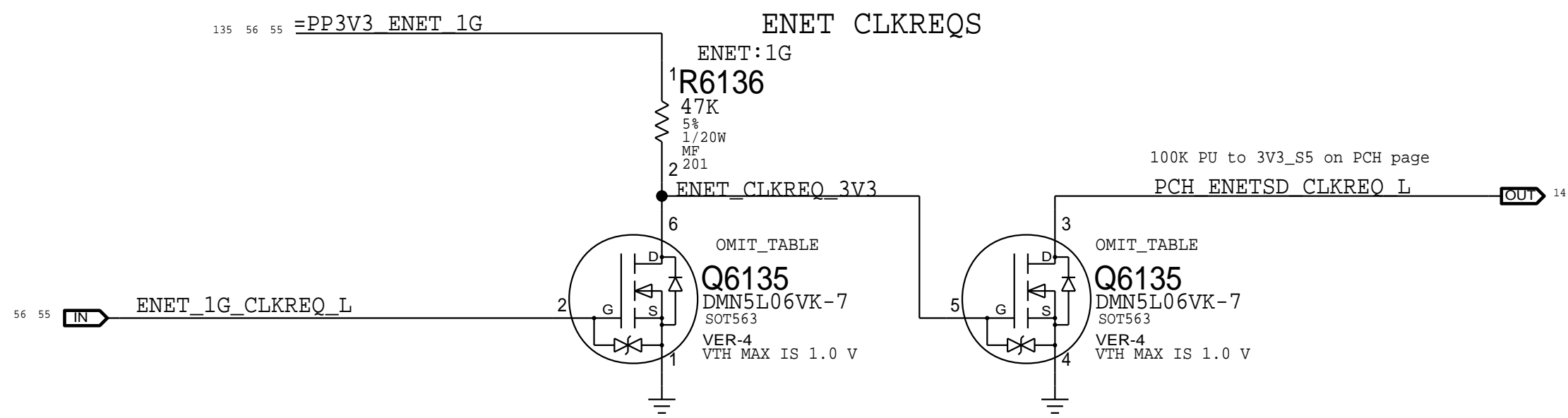
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
376S0855	2	dual FET	Q6160,Q6135	CRITICAL	ENET:1G



SPARE MOSFET



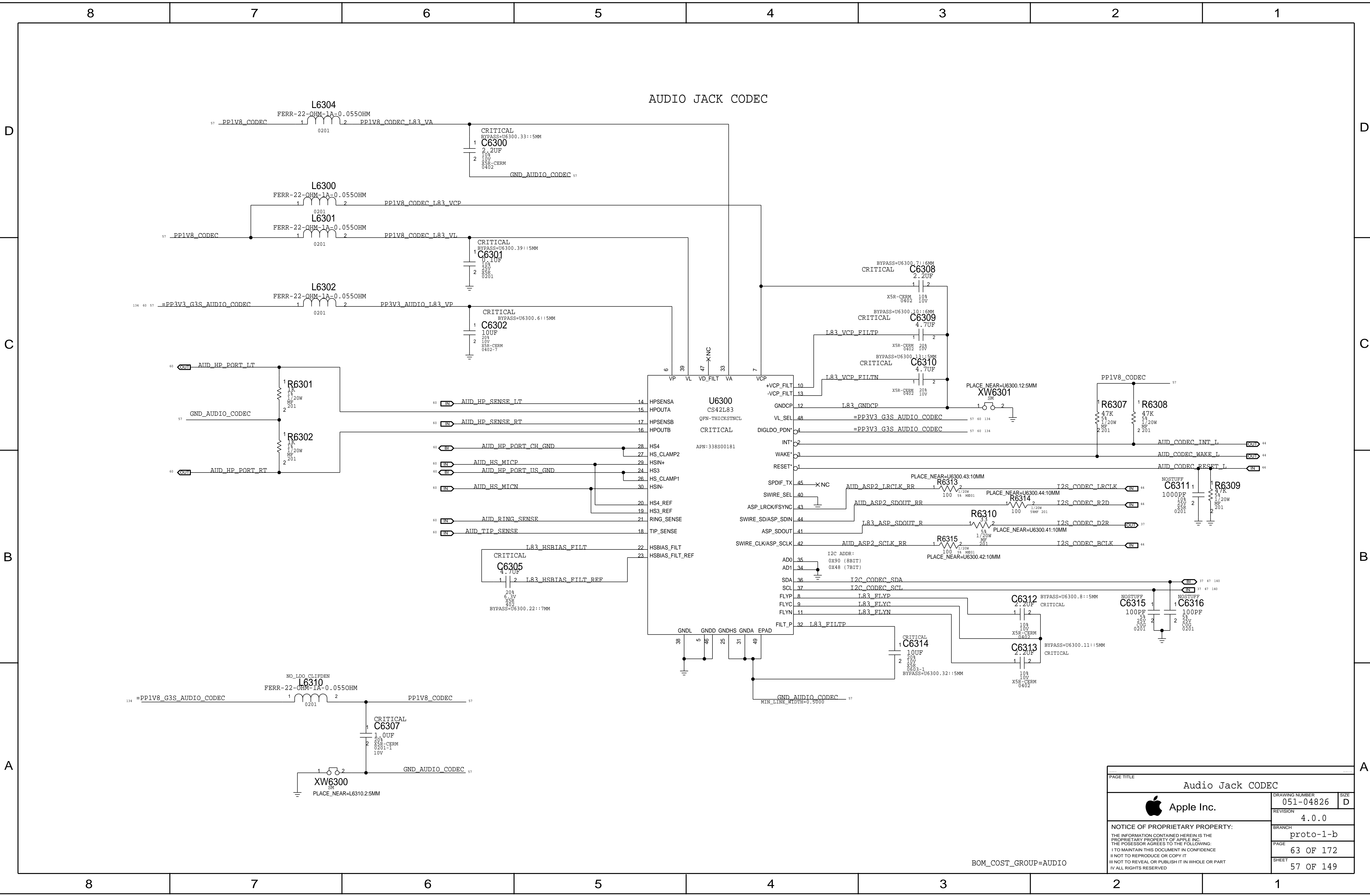
ENET CLKREQS




Caesar IV

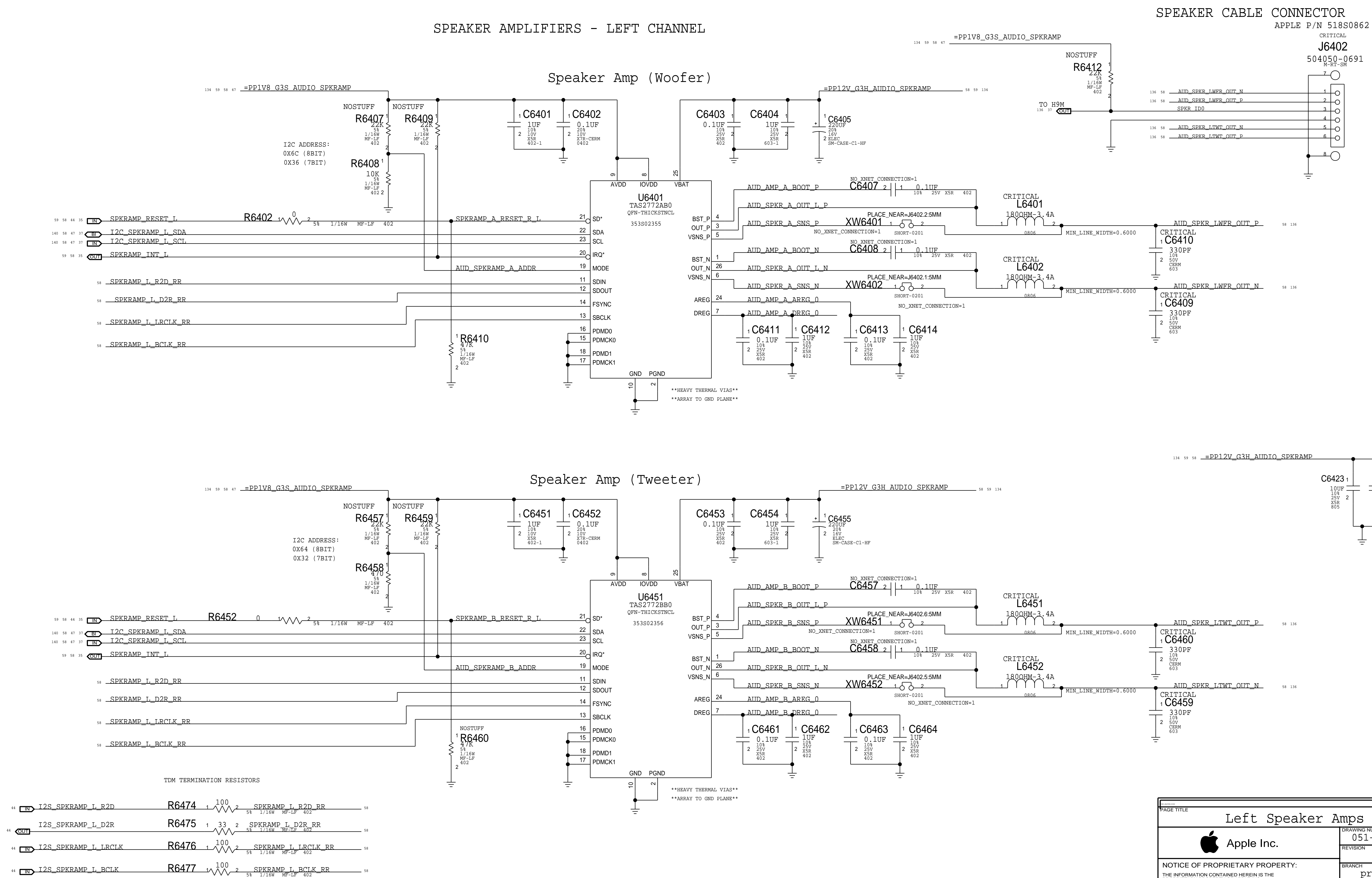
BOM\_COST\_GROUP=ETHERNET

PAGE TITLE		
1G ENET SUPPORT		
	DRAWING NUMBER	051-04826
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	PAGE	61 OF 172
	SHEET	56 OF 149



PAGE TITLE			
Audio Jack CODEC			
 Apple Inc.	DRAWING NUMBER	051-04826	SIZE
	REVISION	4.0.0	D
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	PAGE	63 OF 172	
	SHEET	57 OF 149	

BOM\_COST\_GROUP=AUDIO





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SPEAKER AMPLIFIERS - RIGHT CHANNEL

SPEAKER CABLE CONNECTOR

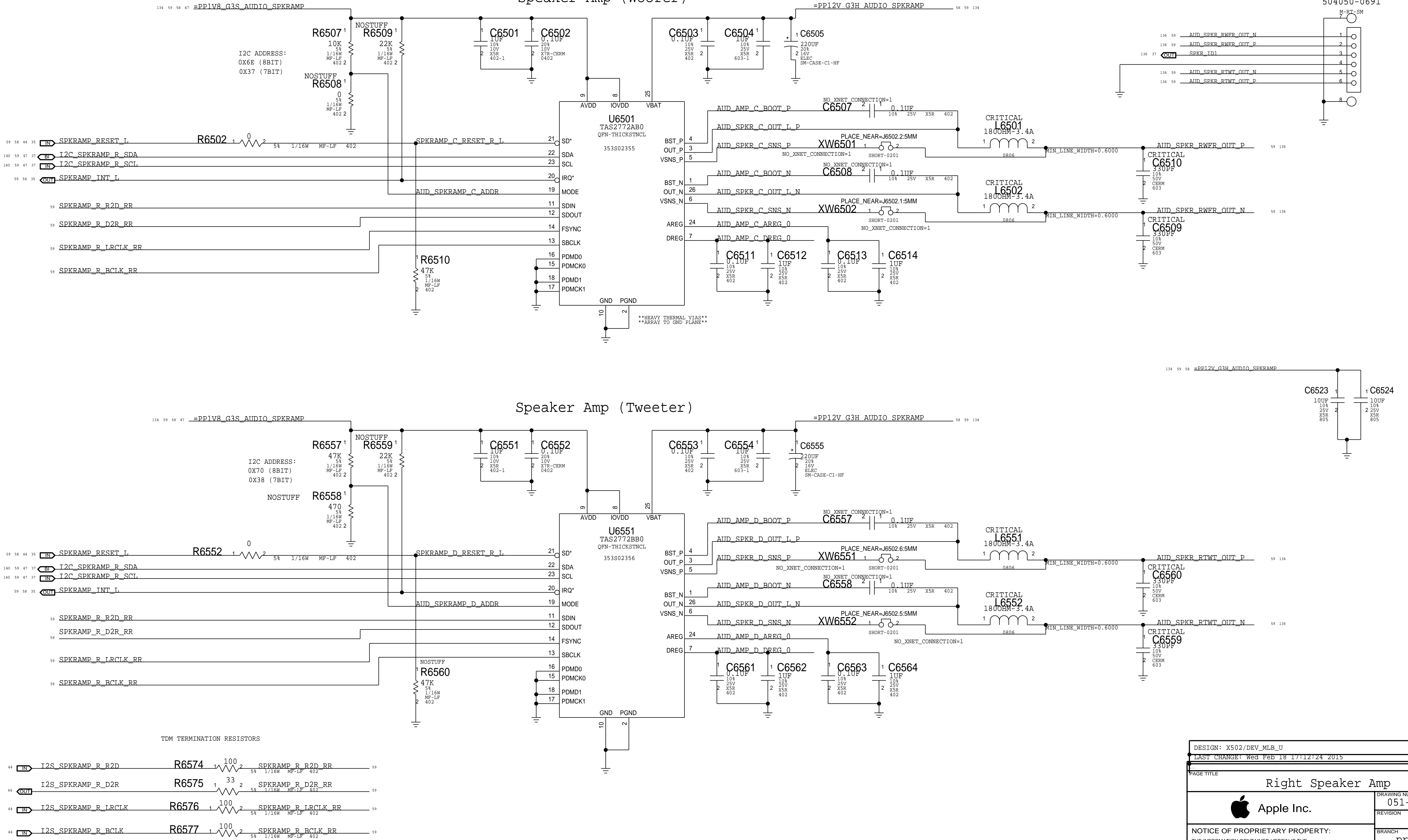
APPLE P/N 518S0862

J6502

504050-0691

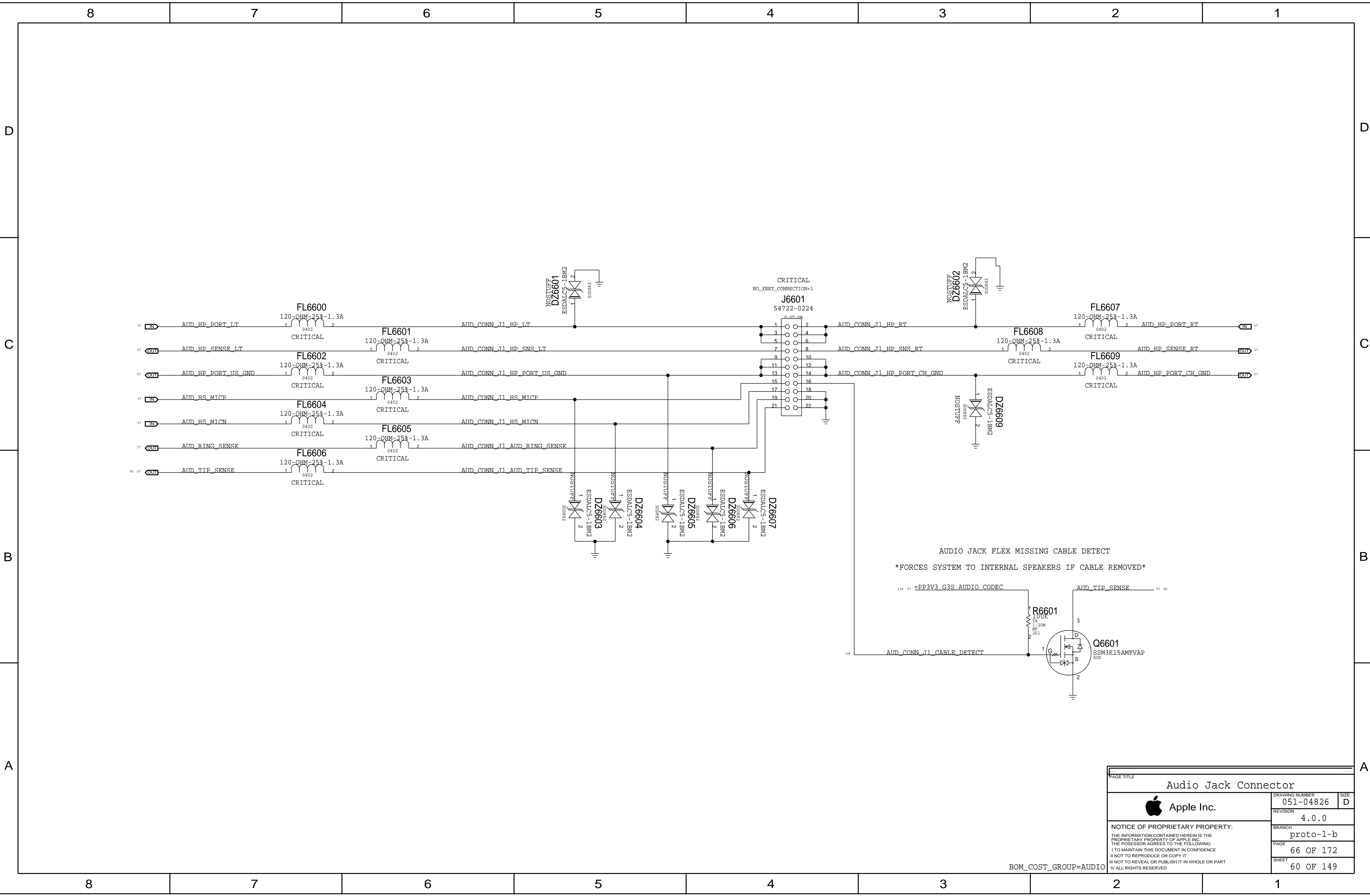
Speaker Amp (Woofer)

Speaker Amp (Tweeter)



BOM\_COST\_GROUP=AUDIO

DESIGN: X502/DEV_MLB_U		
LAST CHANGE: Wed Feb 18 17:12:24 2015		
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Right Speaker Amp		
	DRAWING NUMBER	051-04826
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	PAGE	65 OF 172
	SHEET	59 OF 149



PAGE TITLE		
Audio Jack Connector		
	DRAWING NUMBER	051-04826
	REVISION	4.0.0
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	PAGE	66 OF 172
	SHEET	60 OF 149

D

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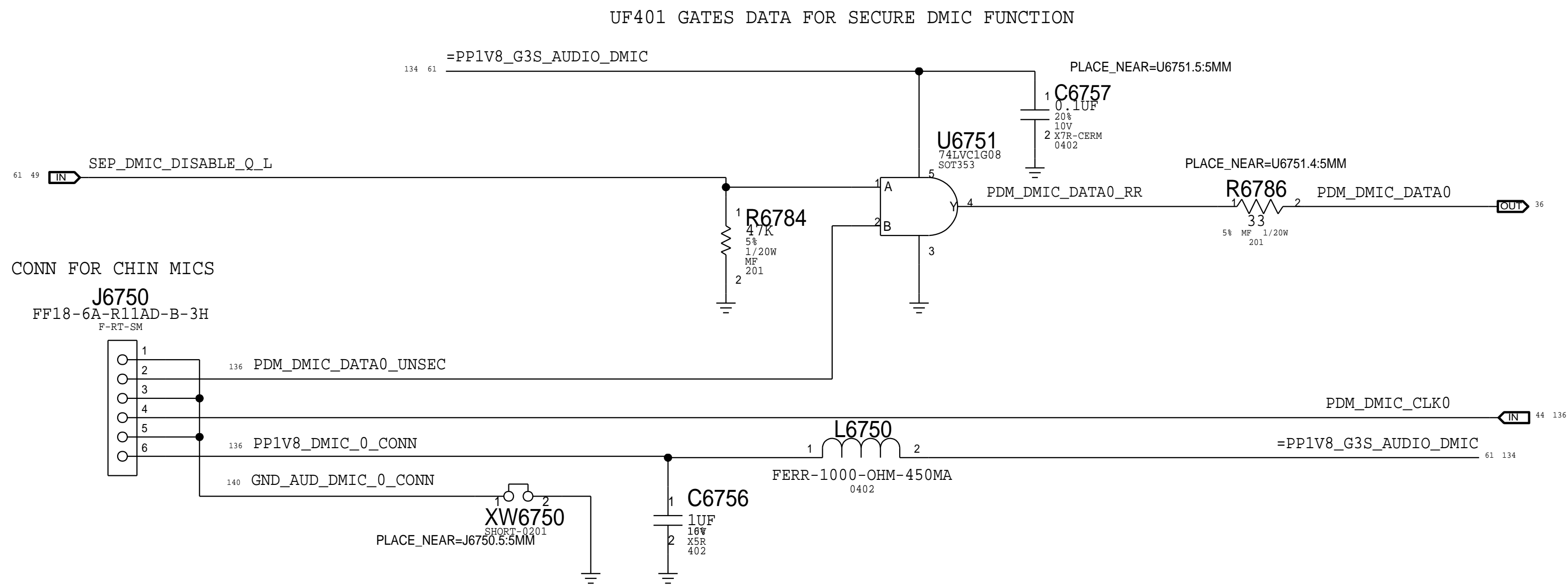
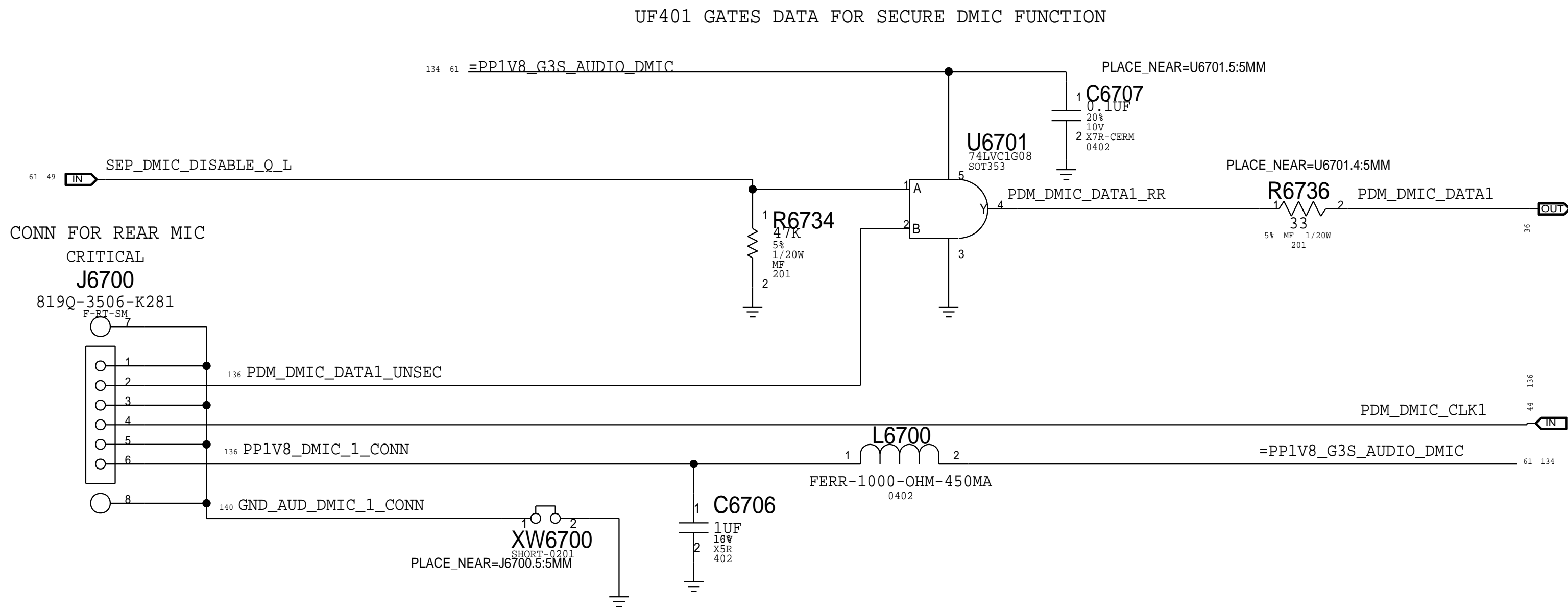
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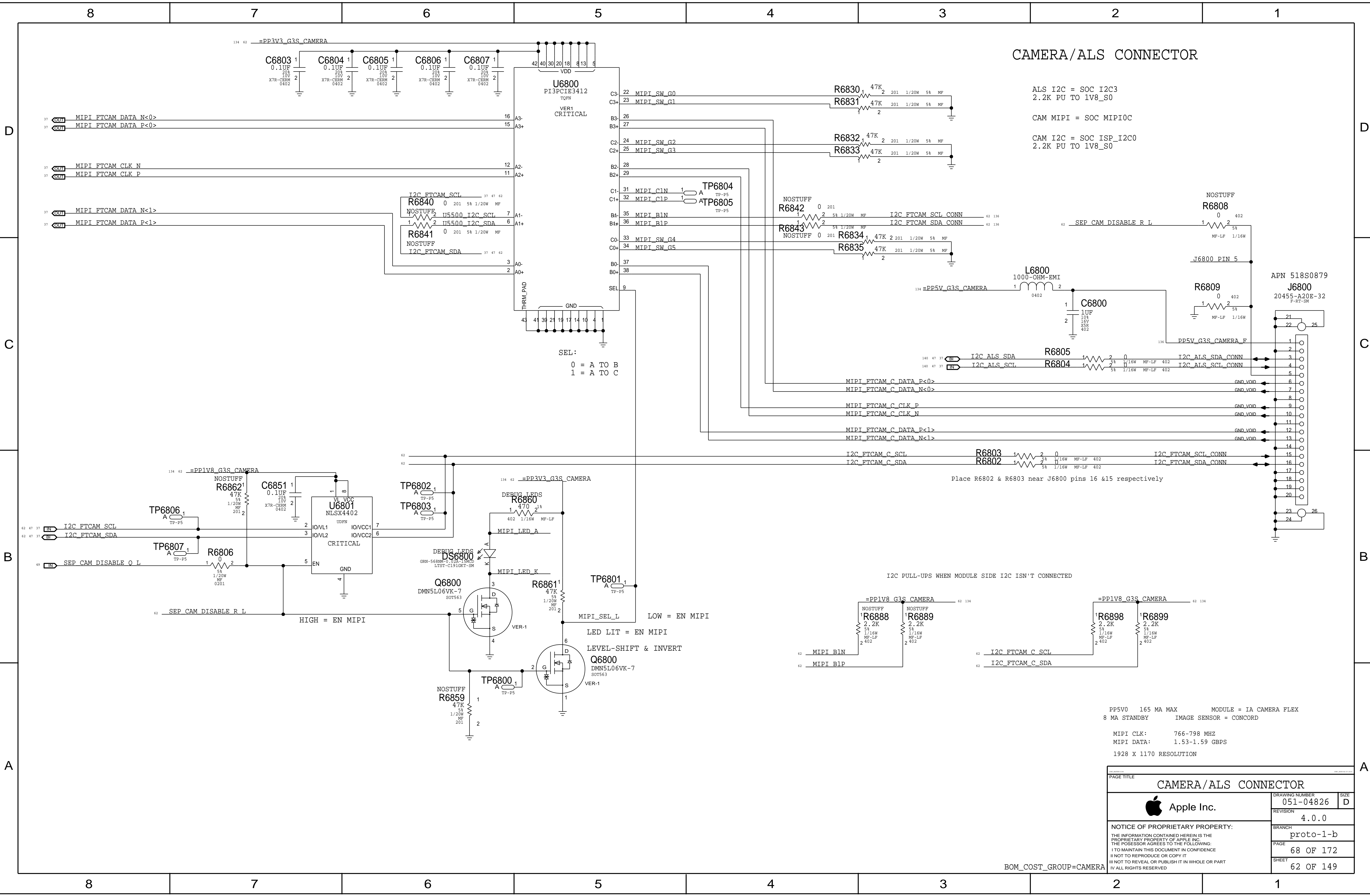
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BOM\_COST\_GROUP=AUDIO

PAGE TITLE		
AUDIO MIC CONNECTOR		
 Apple Inc.	DRAWING NUMBER	051-04826
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	PAGE	67 OF 172
	SHEET	61 OF 149



CAMERA/ALS CONNECTOR

ALS I2C = SOC I2C3  
2.2K PU TO 1V8\_S0


CAM MIPI = SOC MIPI0C

CAM I2C = SOC ISP\_I2C0  
2.2K PU TO 1V8\_S0

PP5V0 165 MA MAX MODULE = IA CAMERA FLEX  
8 MA STANDBY IMAGE SENSOR = CONCORD

MIPI CLK: 766-798 MHZ  
MIPI DATA: 1.53-1.59 GBPS

1928 X 1170 RESOLUTION

PAGE TITLE		
CAMERA/ALS CONNECTOR		
 Apple Inc.	DRAWING NUMBER	051-04826
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	PAGE	68 OF 172
	SHEET	62 OF 149

BOM\_COST\_GROUP=CAMERA

D

C

B

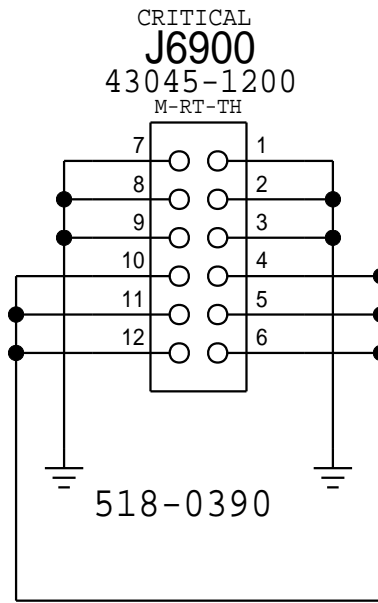
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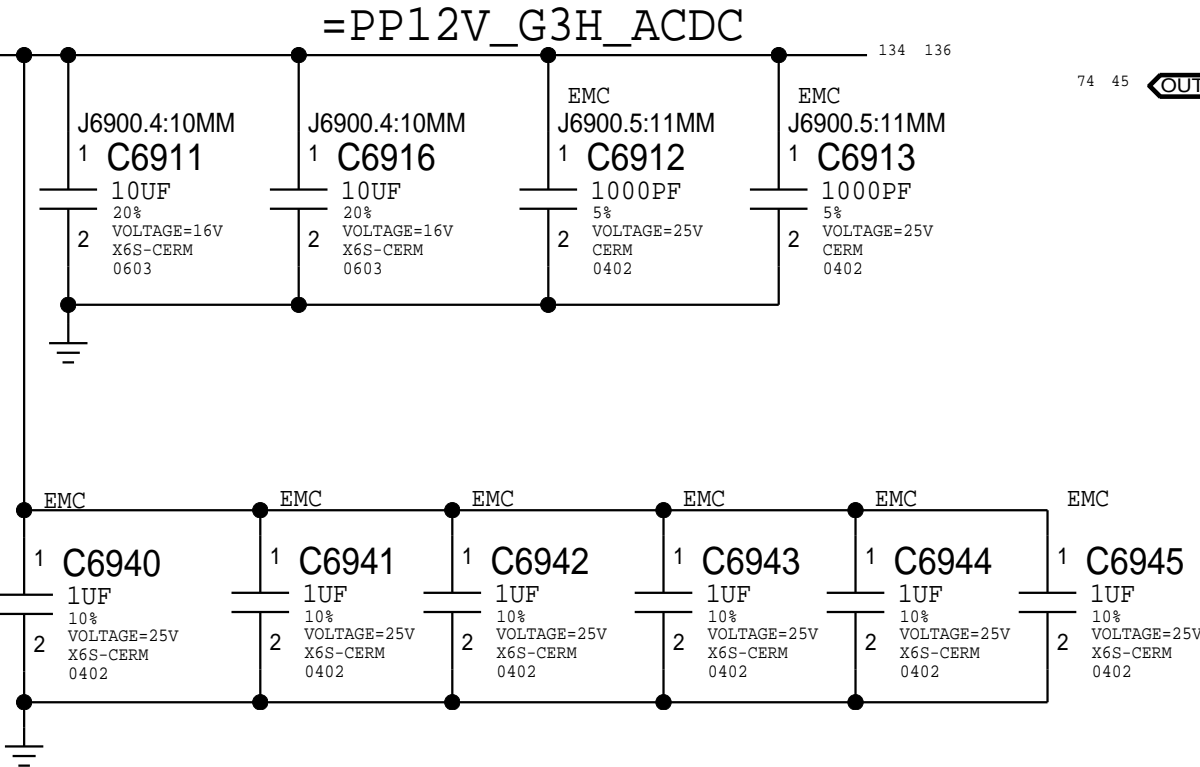
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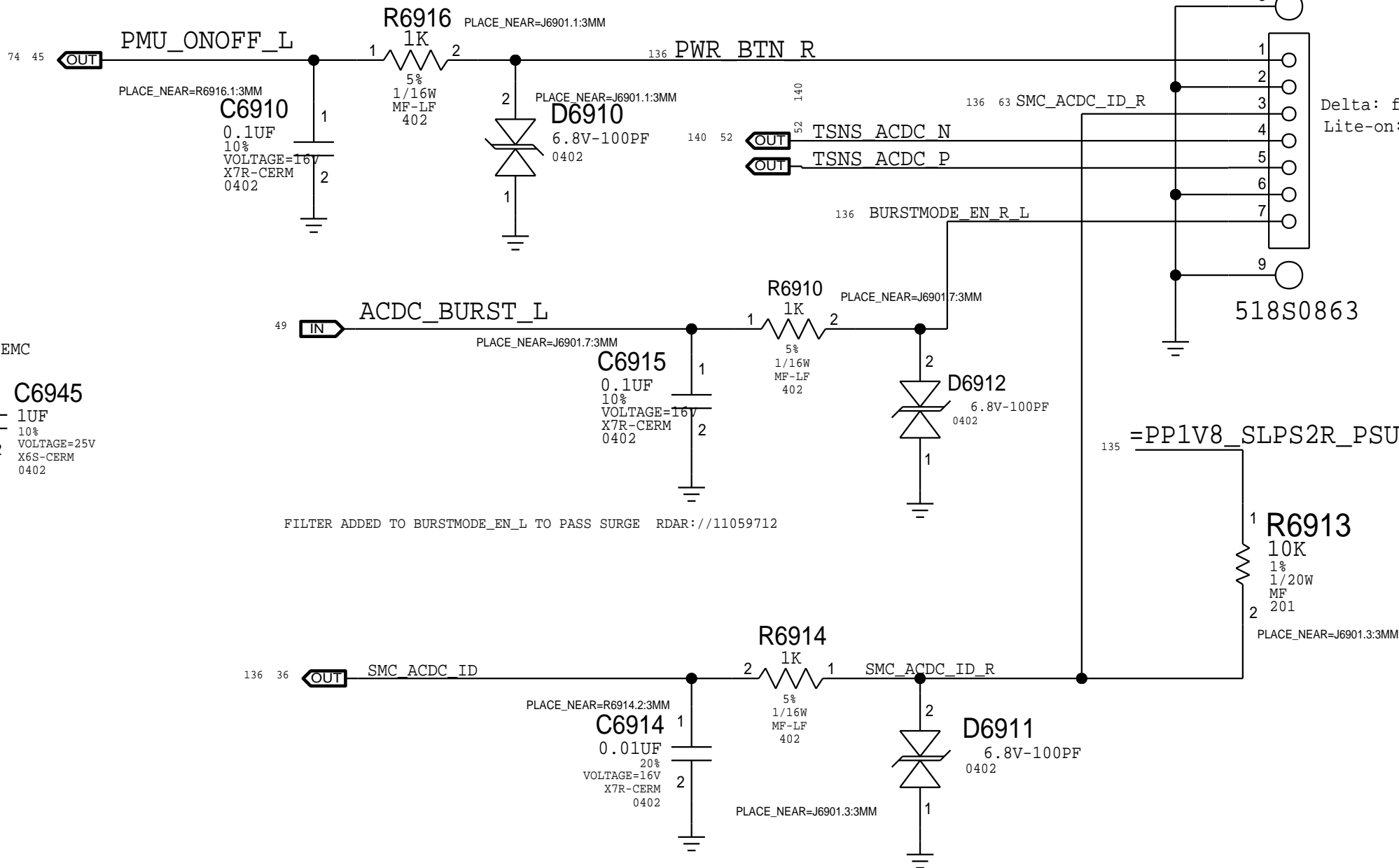
A



MLB to AC-DC Connector



MLB to AC-DC Supplemental Signal Connector



SILK\_PART=PWSIG

J6901

504050-0791

M-RT-SM

8

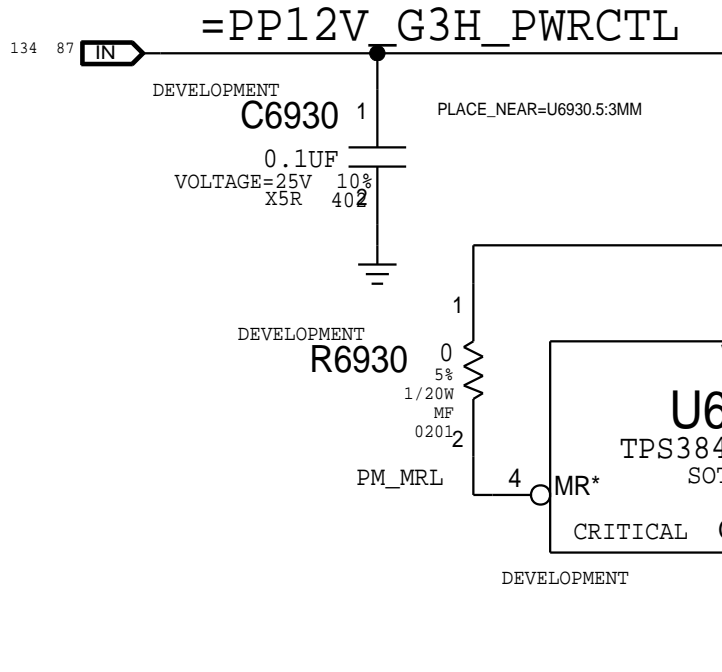
Delta: floating

Lite-on: grounded

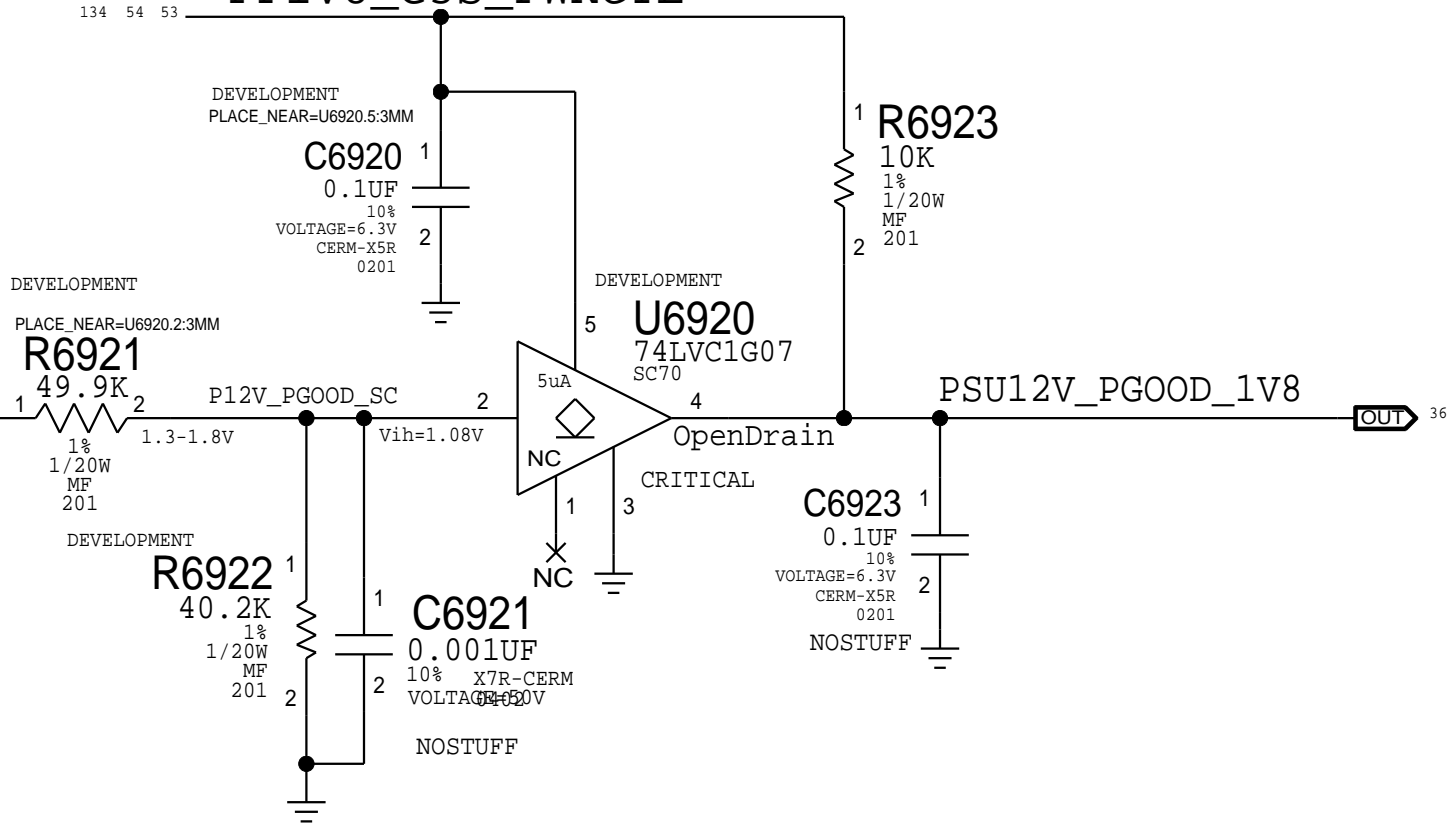
518S0863

=PP1V8\_SLP52R\_PSU

ACDC PSU : min 11.5V, nominal 12.1V



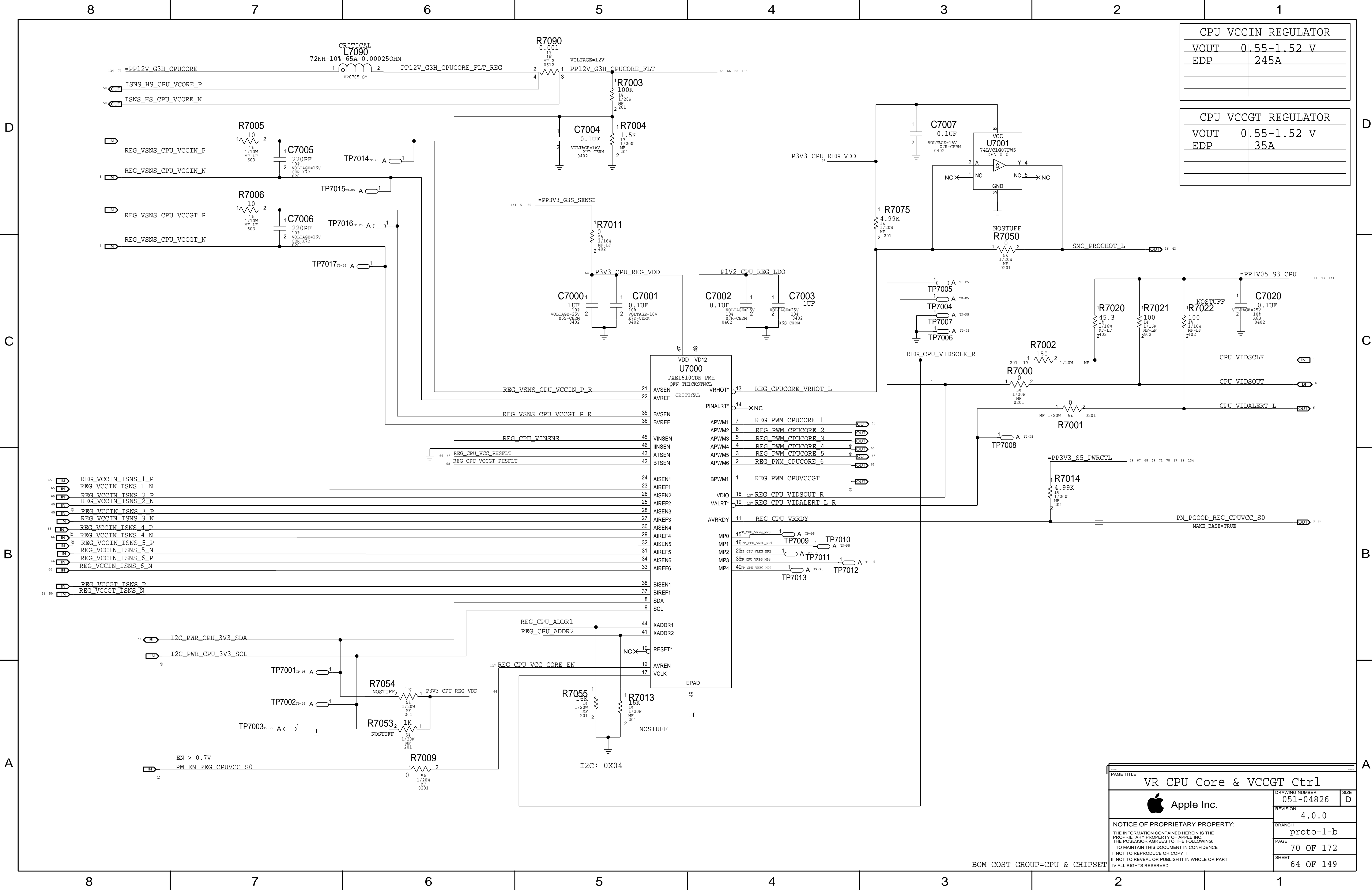
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BOM\_COST\_GROUP=Platform Power


PAGE TITLE		
PLATFORM POWER: CONNECTORS		
	DRAWING NUMBER	051-04826
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	PAGE	69 OF 172
	SHEET	63 OF 149



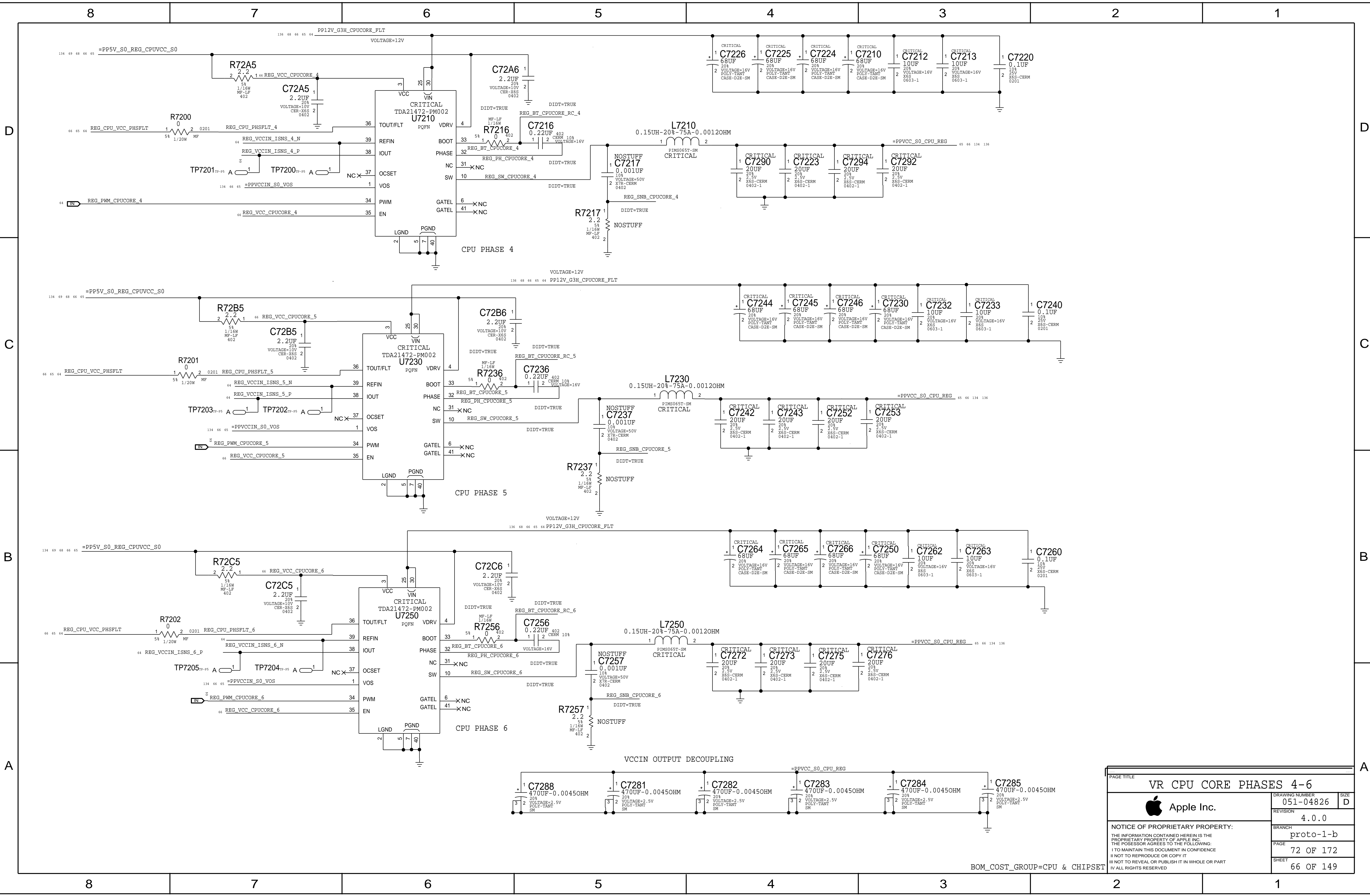


CPU VCCIN REGULATOR	
VOUT	0.55-1.52 V
EDP	245A

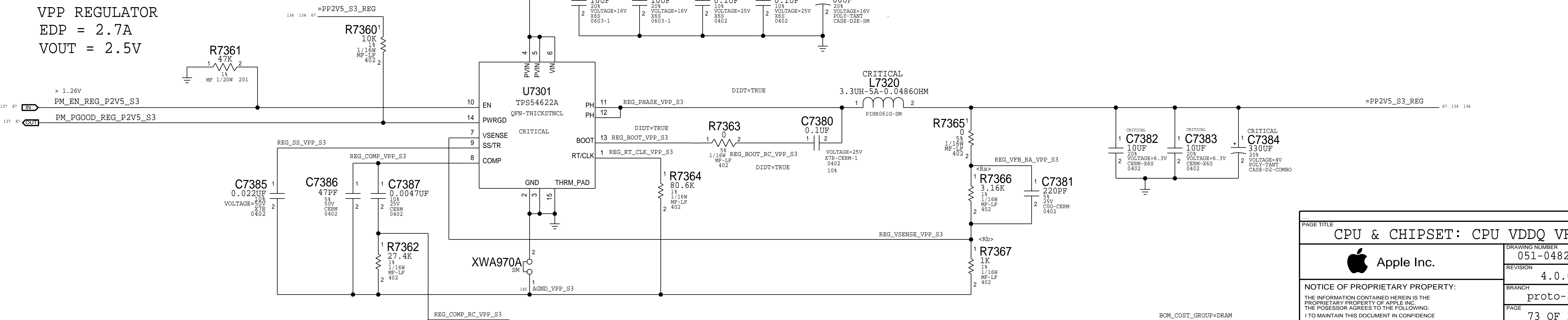
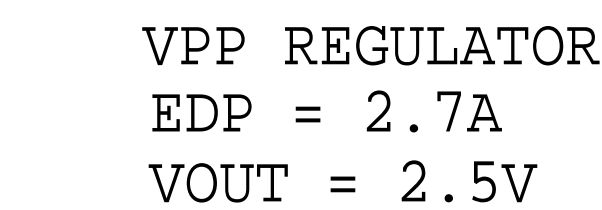
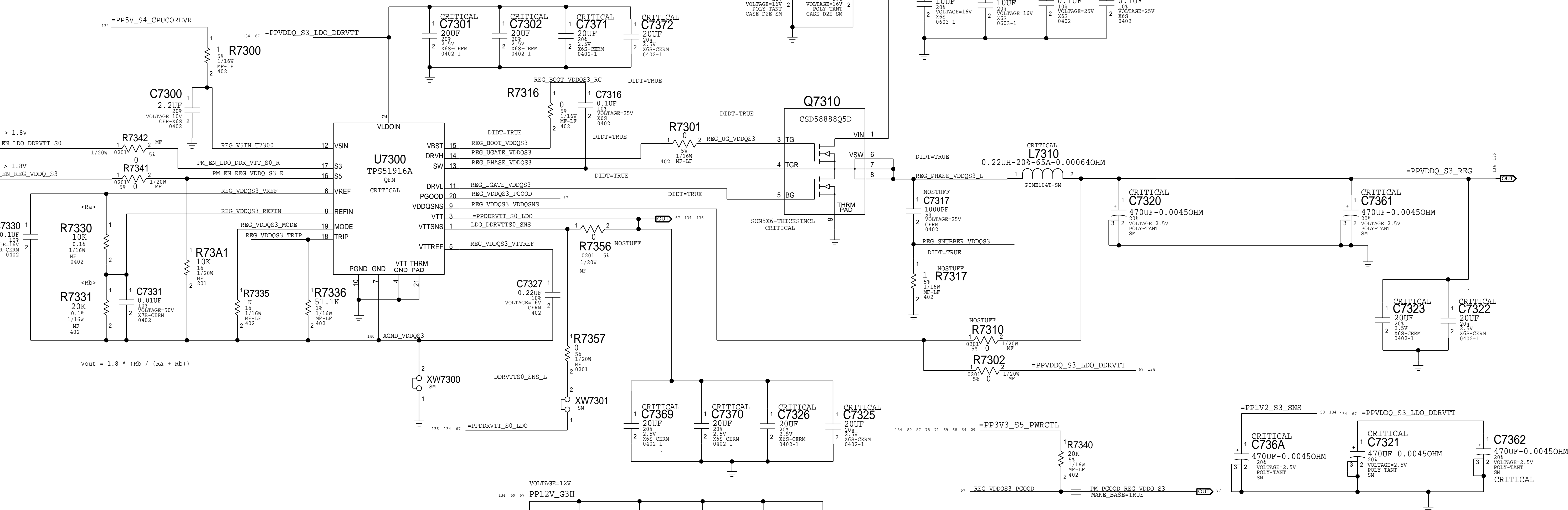
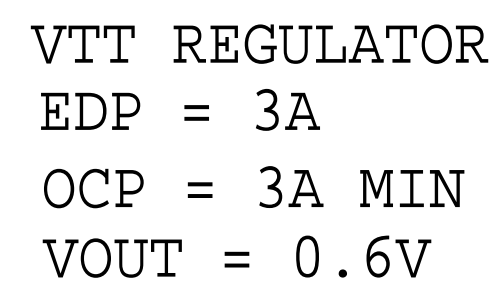
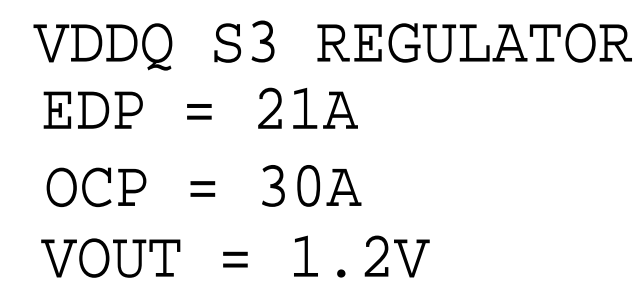
CPU VCCGT REGULATOR	
VOUT	0.55-1.52 V
EDP	35A

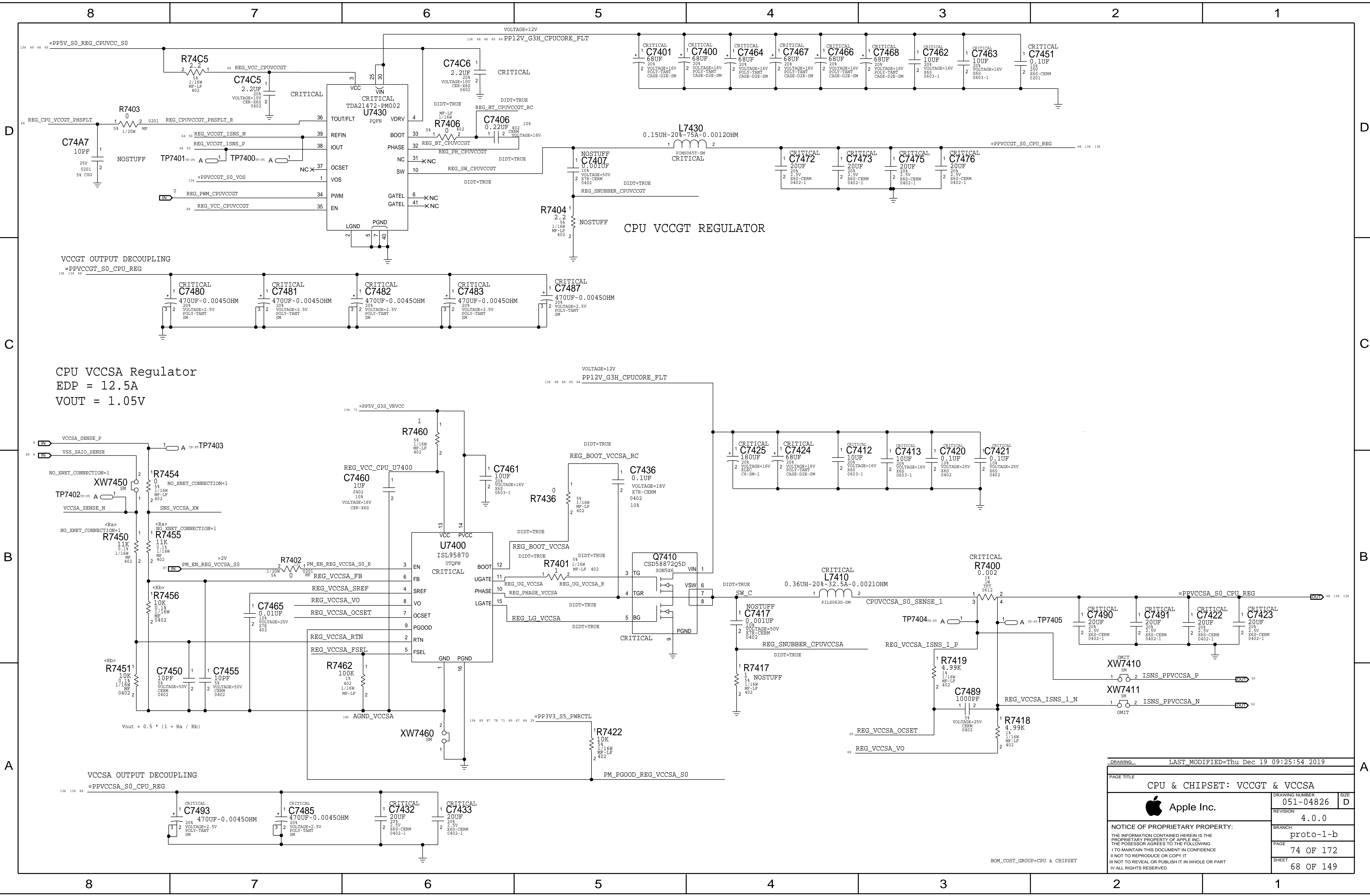
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VR CPU Core & VCCGT Ctrl		
 Apple Inc.	DRAWING NUMBER	051-04826
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	PAGE	70 OF 172
	SHEET	64 OF 149



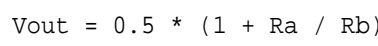



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VR CPU CORE PHASES 4-6		
	DRAWING NUMBER	051-04826
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	PAGE	72 OF 172
	SHEET	66 OF 149



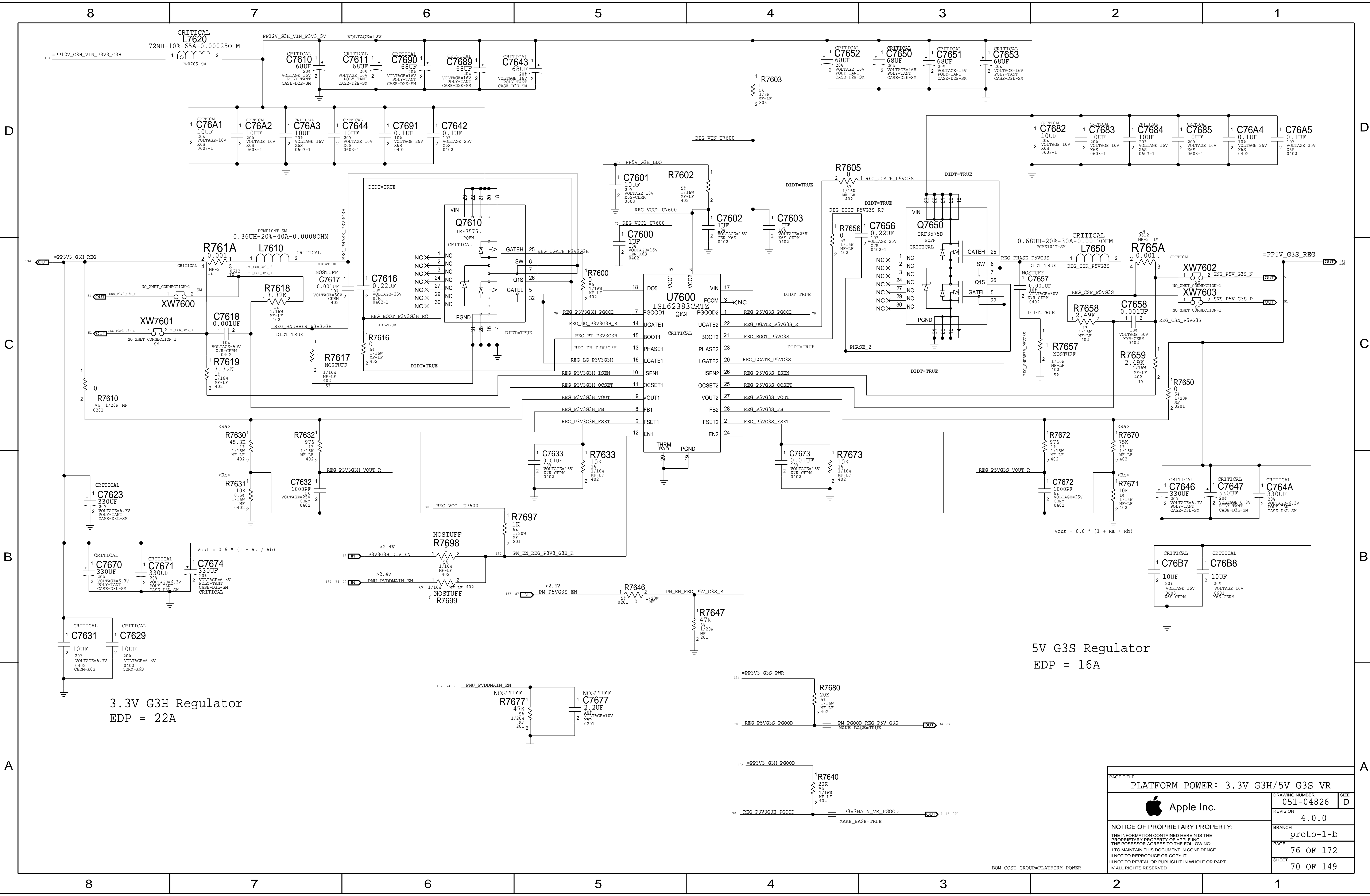


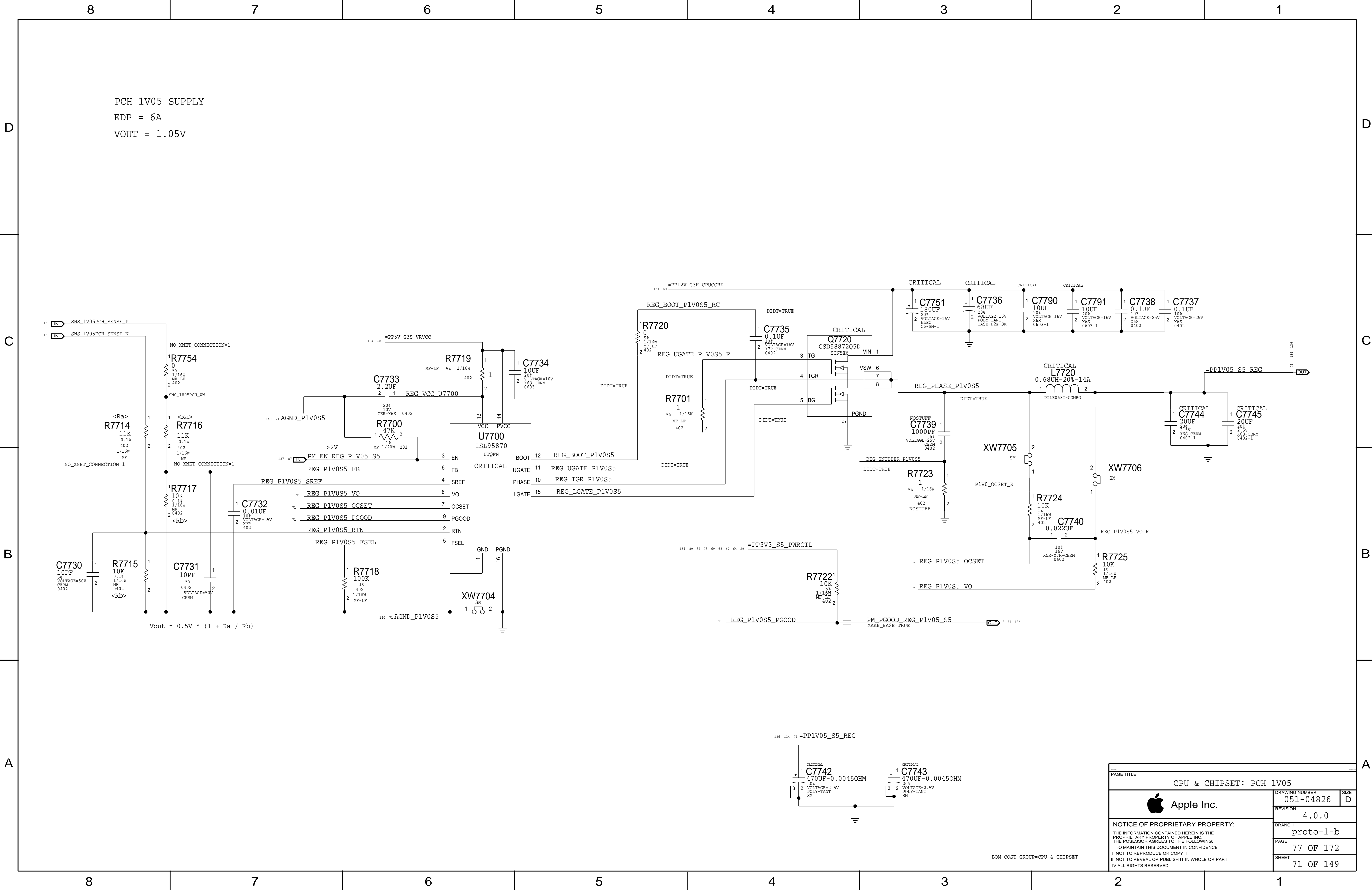



$$\begin{aligned} \text{EDP} &= 6.5\text{A} \\ \text{VOUT} &= 0.95\text{V} \end{aligned}$$


DRAWING _____		LAST_MODIFIED=Thu Dec 19 09:25:54 2019	
PAGE TITLE			
CPU & CHIPSET: CPU VCCIO VR			
 Apple Inc.	DRAWING NUMBER		SIZE
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	REVISION		
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		BRANCH	
		proto-1-b	
		PAGE	75 OF 172
		SHEET	69 OF 149

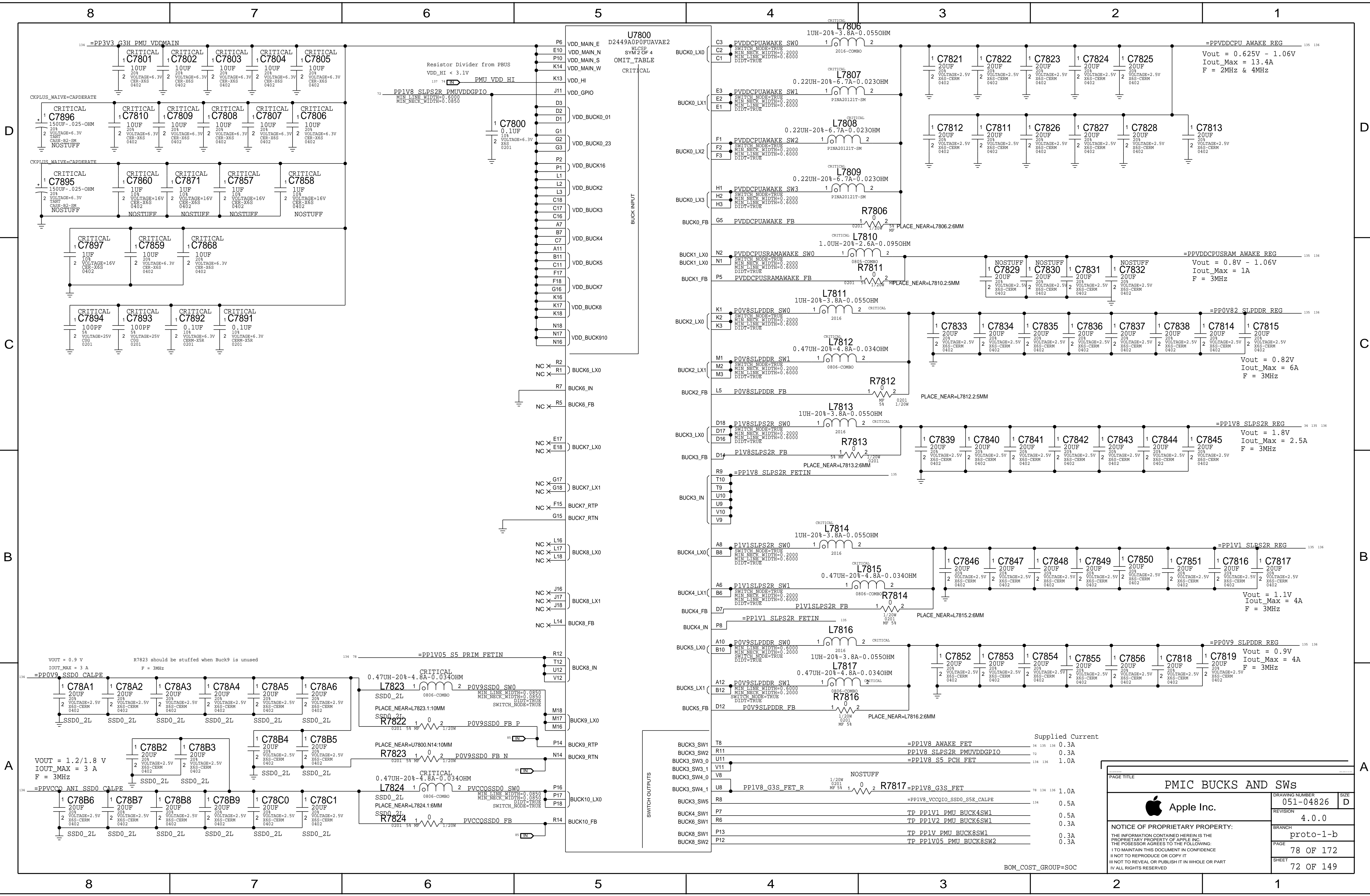
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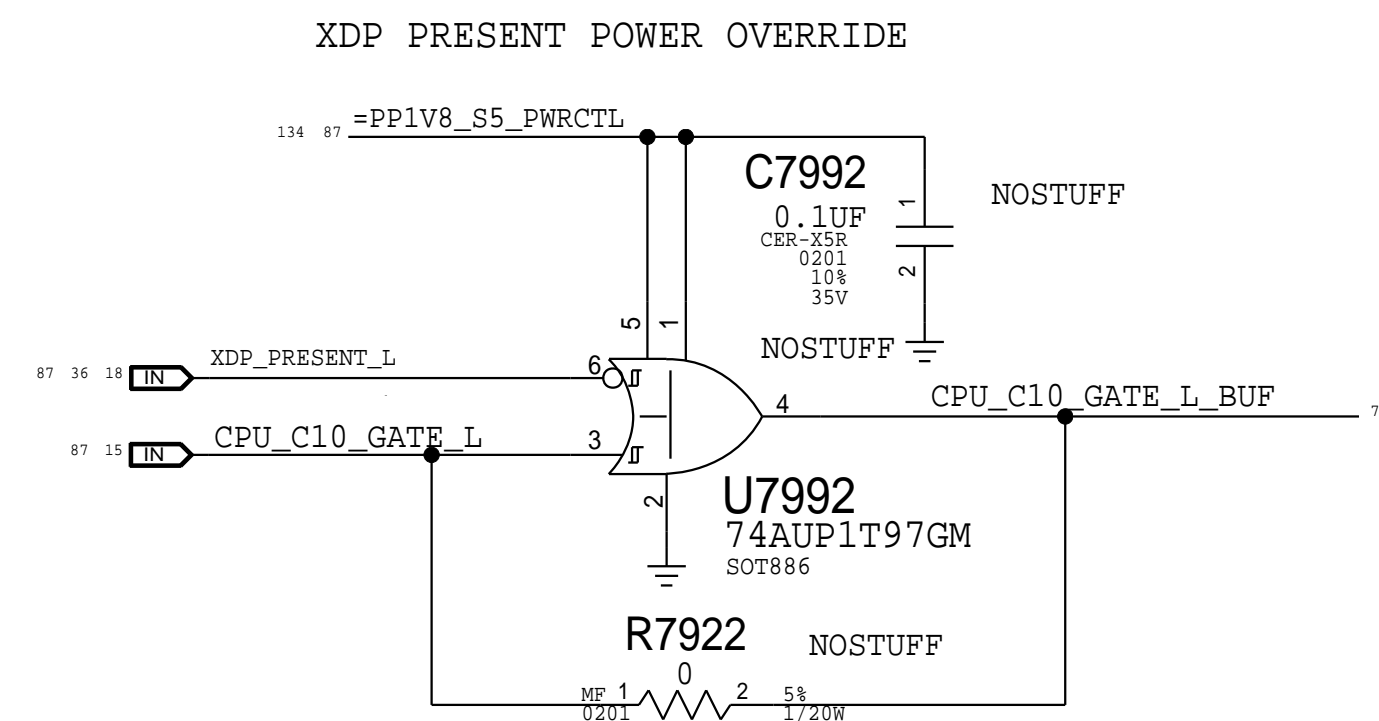
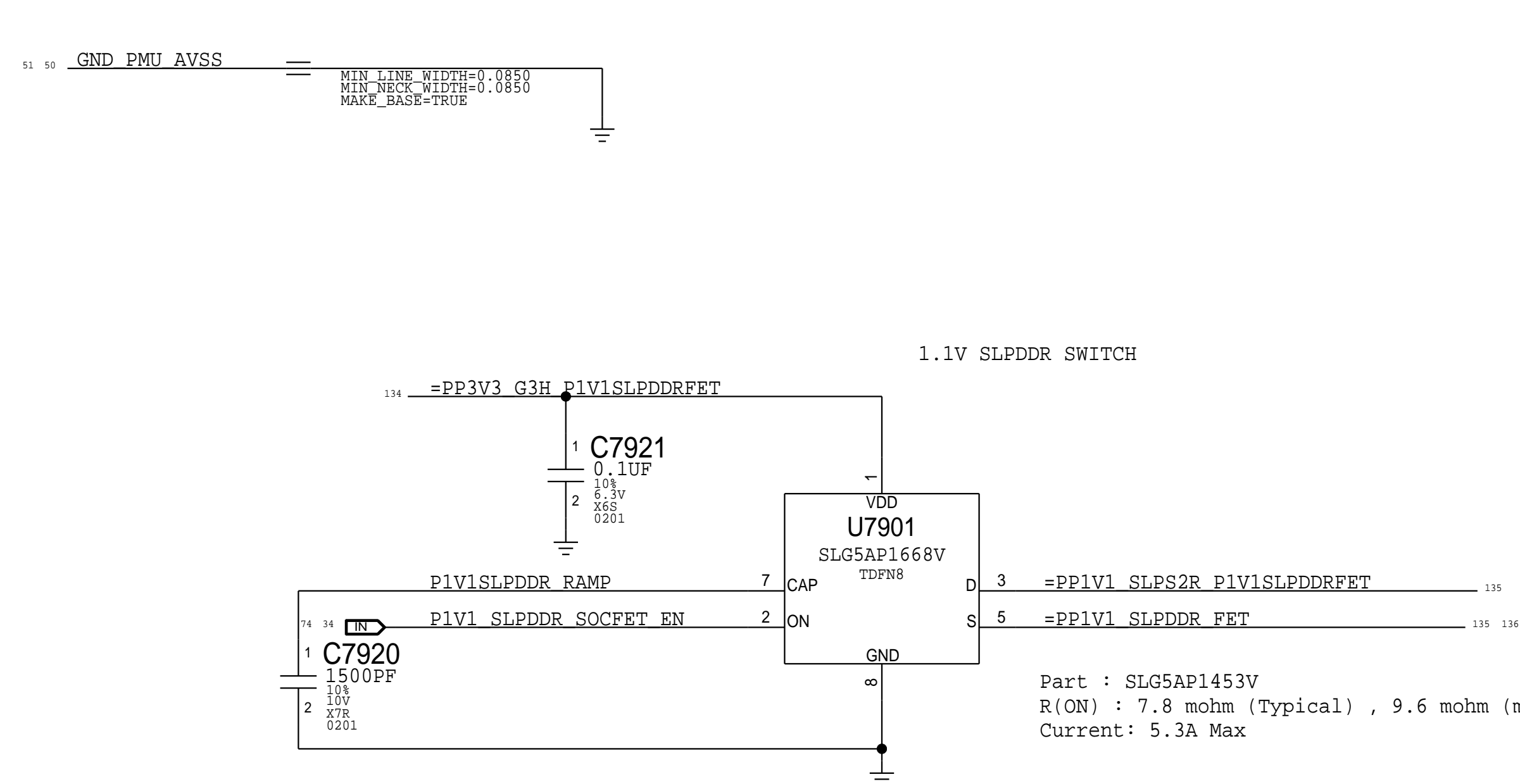
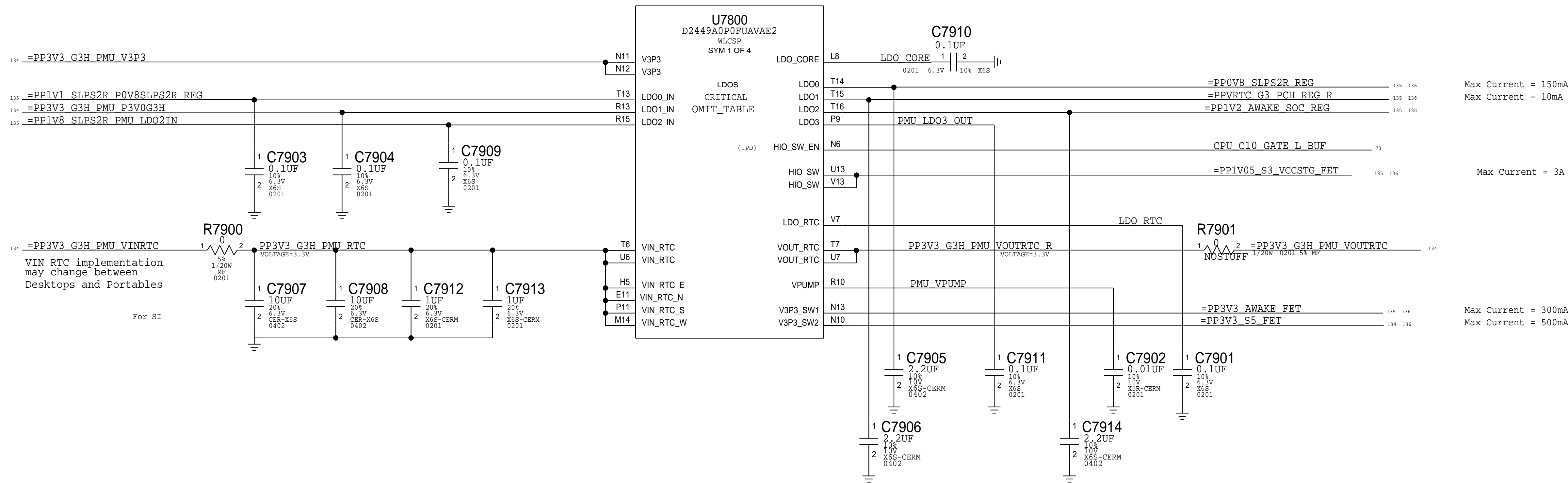
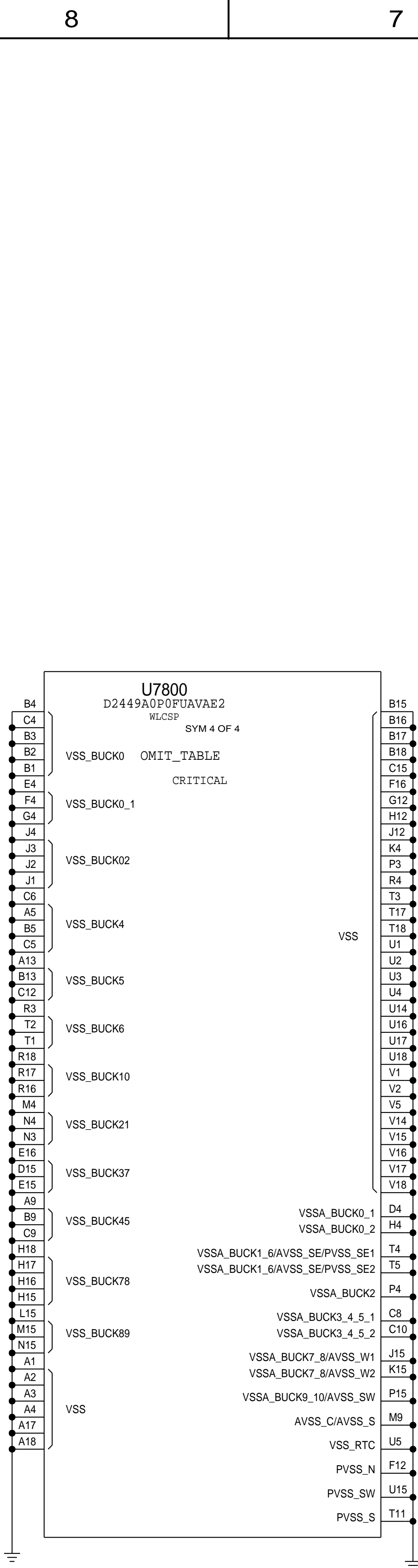
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CPU & CHIPSET: PCH 1V05		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
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	PAGE	77 OF 172
	SHEET	71 OF 149


BOM\_COST\_GROUP=CPU & CHIPSET



BOM\_COST\_GROUP=SOC

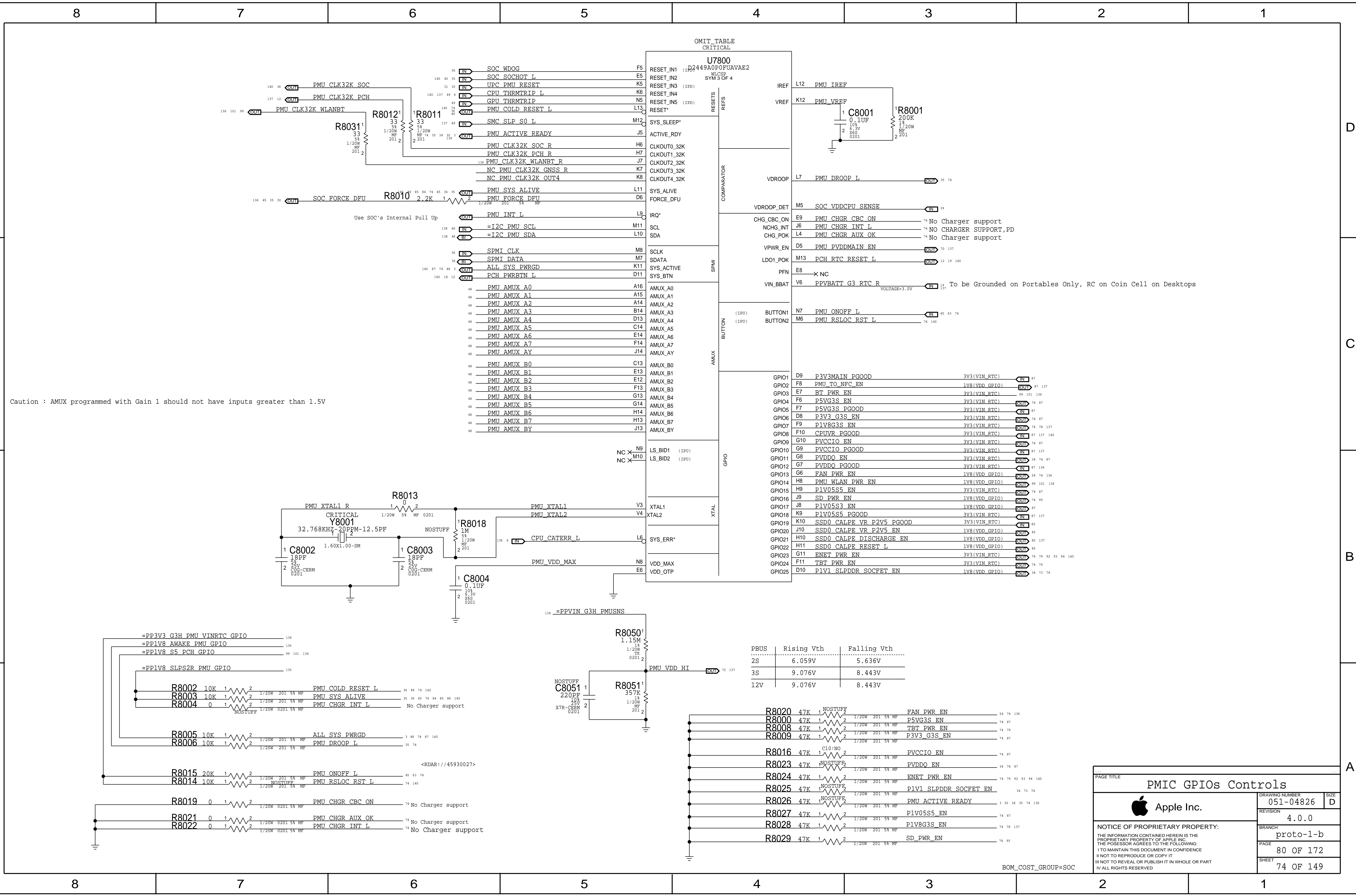
PAGE TITLE			PMIC BUCKS AND SWs		
 Apple Inc.			DRAWING NUMBER	051-04826	
			REVISION	4.0.0	
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			PAGE	78 OF 172	
			SHEET	72 OF 149	










PAGE TITLE		DRAWING NUMBER		SIZE	
PMIC LDOs		051-04826		D	
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		SHEET		73 OF 149	


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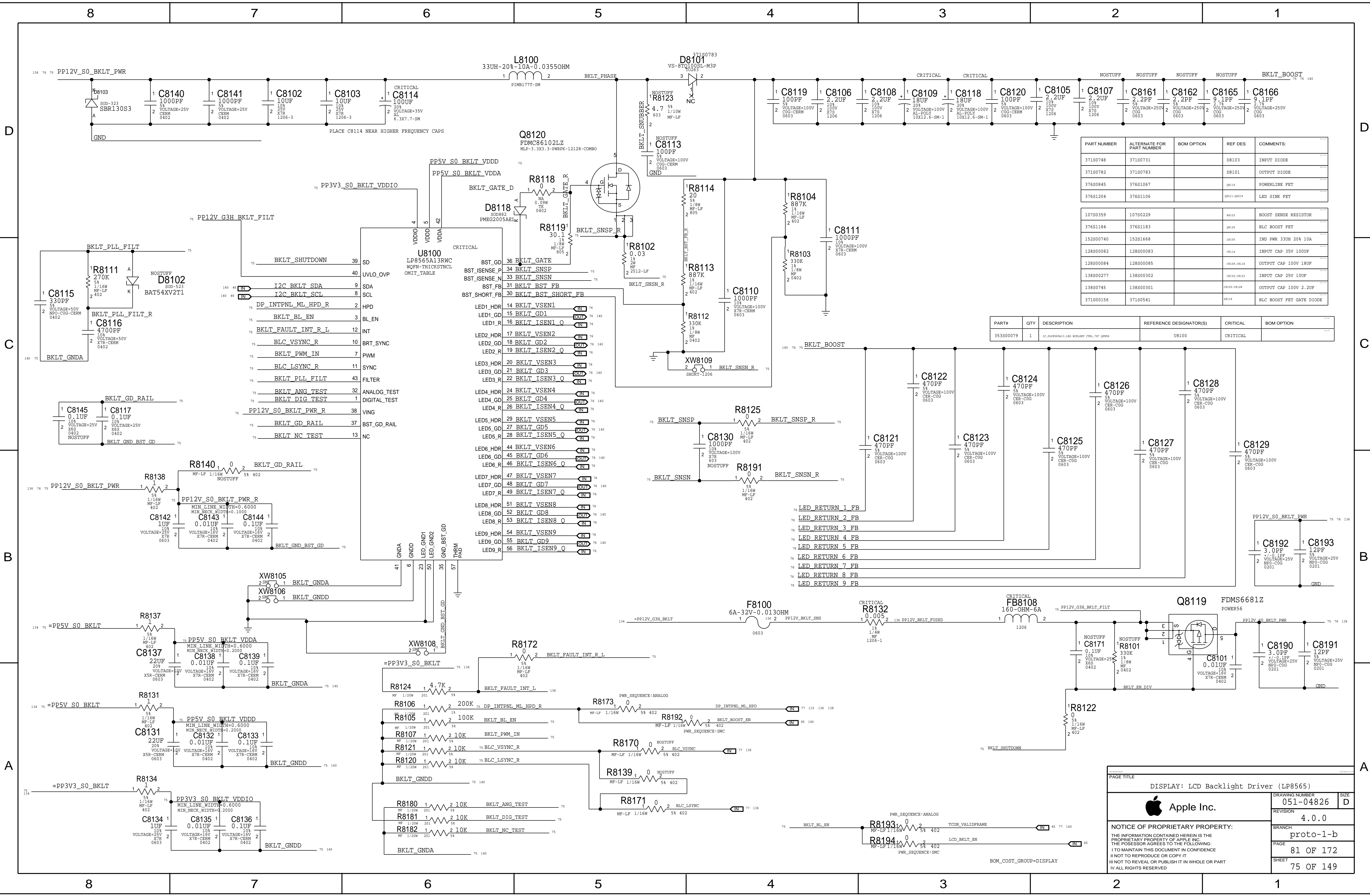




PBUS	Rising Vth	Falling Vth
2S	6.059V	5.636V
3S	9.076V	8.443V
12V	9.076V	8.443V

R8020	47K	1	NOSTUFF		FAN_PWR_EN	54	74	136			
R8000	47K	1		2	P5VG3S_EN	74	87				
R8008	47K	1		2	TBT_PWR_EN	74	79				
R8009	47K	1		2	P3V3_G3S_EN	74	87				
				1/20W	201 5A MF						
R8016	47K	1	C10:NO		PVCCIO_EN	74	87				
R8023	47K	1	NOSTUFF	2	PVDDQ_EN	34	74	87			
				1/20W	201 5A MF						
R8024	47K	1		2	ENET_PWR_EN	74	79	92	93	94	140
R8025	47K	1	NOSTUFF	2	P1V1_SLPPDDR_SOCFET_EN	34	73	74			
R8026	47K	1	NOSTUFF	2	PMU ACTIVE_READY	3	30	34	35	74	136
				1/20W	201 5A MF						
R8027	47K	1		2	P1V05S5_EN	74	87				
R8028	47K	1		2	P1V8G3S_EN	74	78	137			
				1/20W	201 5A MF						
R8029	47K	1		2	SD_PWR_EN	74	95				
				1/20W	201 5A MF						

PAGE TITLE			
PMIC GPIOs Controls			
 Apple Inc.	DRAWING NUMBER	051-04826	
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	REVISION	4.0.0	
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	PAGE	80 OF 172	
	SHEET	74 OF 149	

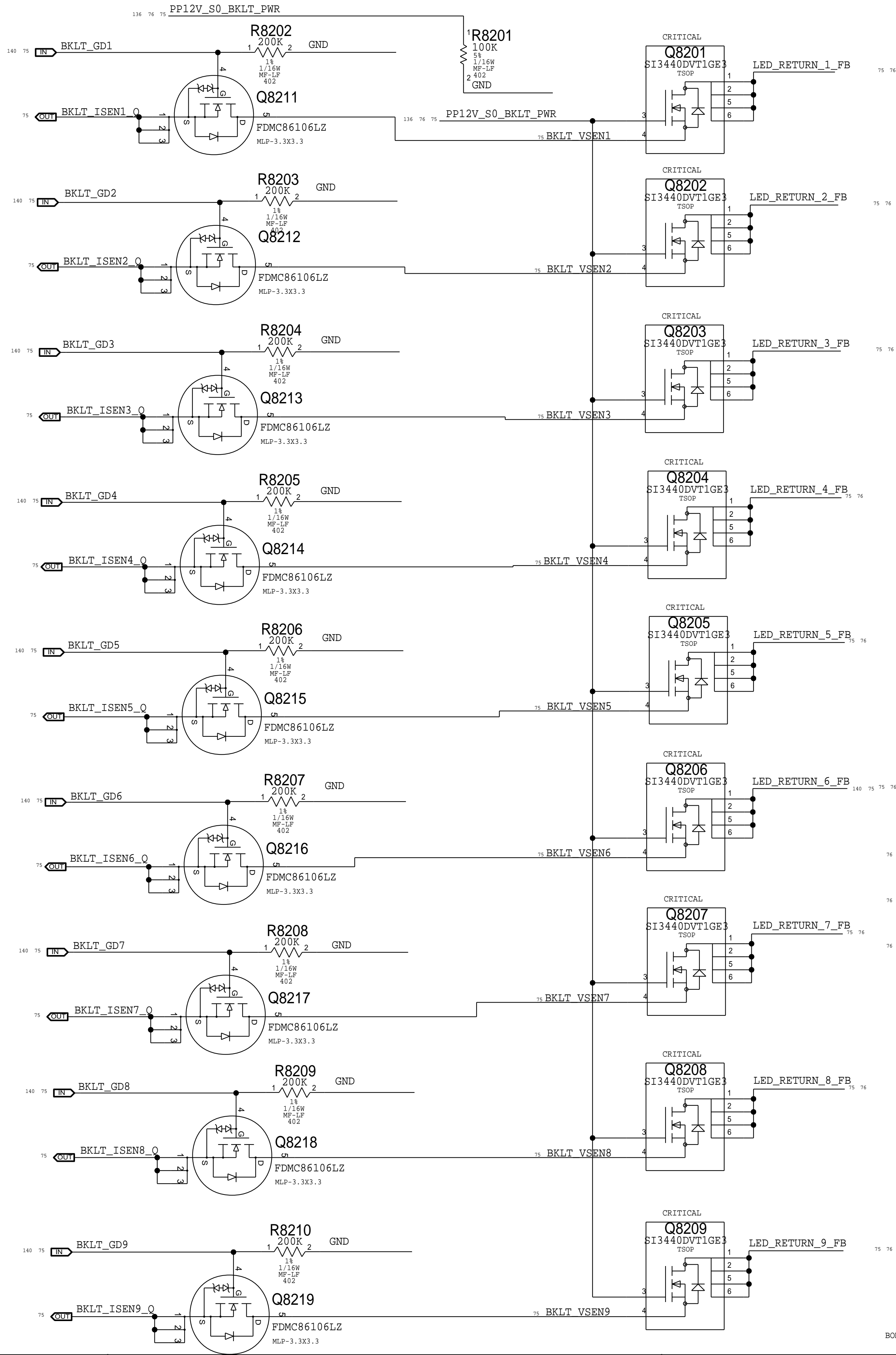


PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
371S0748	371S0731		D8103	INPUT DIODE
371S0782	371S0783		D8101	OUTPUT DIODE
376S0845	376S1067		Q8119	POWERLINE FET
376S1204	376S1106		Q8211-Q8219	LED SINK FET
107S0359	107S0229		R8102	BOOST SENSE RESISTOR
376S1184	376S1183		Q8120	BLC BOOST FET
152S00740	152S1668		C8100	IND FWR 33UH 20% 10A
128S00082	128S00083		C8114	INPUT CAP 35V 100UF
128S00084	128S00085		C8109,C8118	OUTPUT CAP 100V 18UF
138S00277	138S00302		C8102,C8103	INPUT CAP 25V 10UF
138S0745	138S00301		C8105-C8108	OUTPUT CAP 100V 2.2UF
371S00156	371S0541		D8118	BLC BOOST FET GATE DIODE

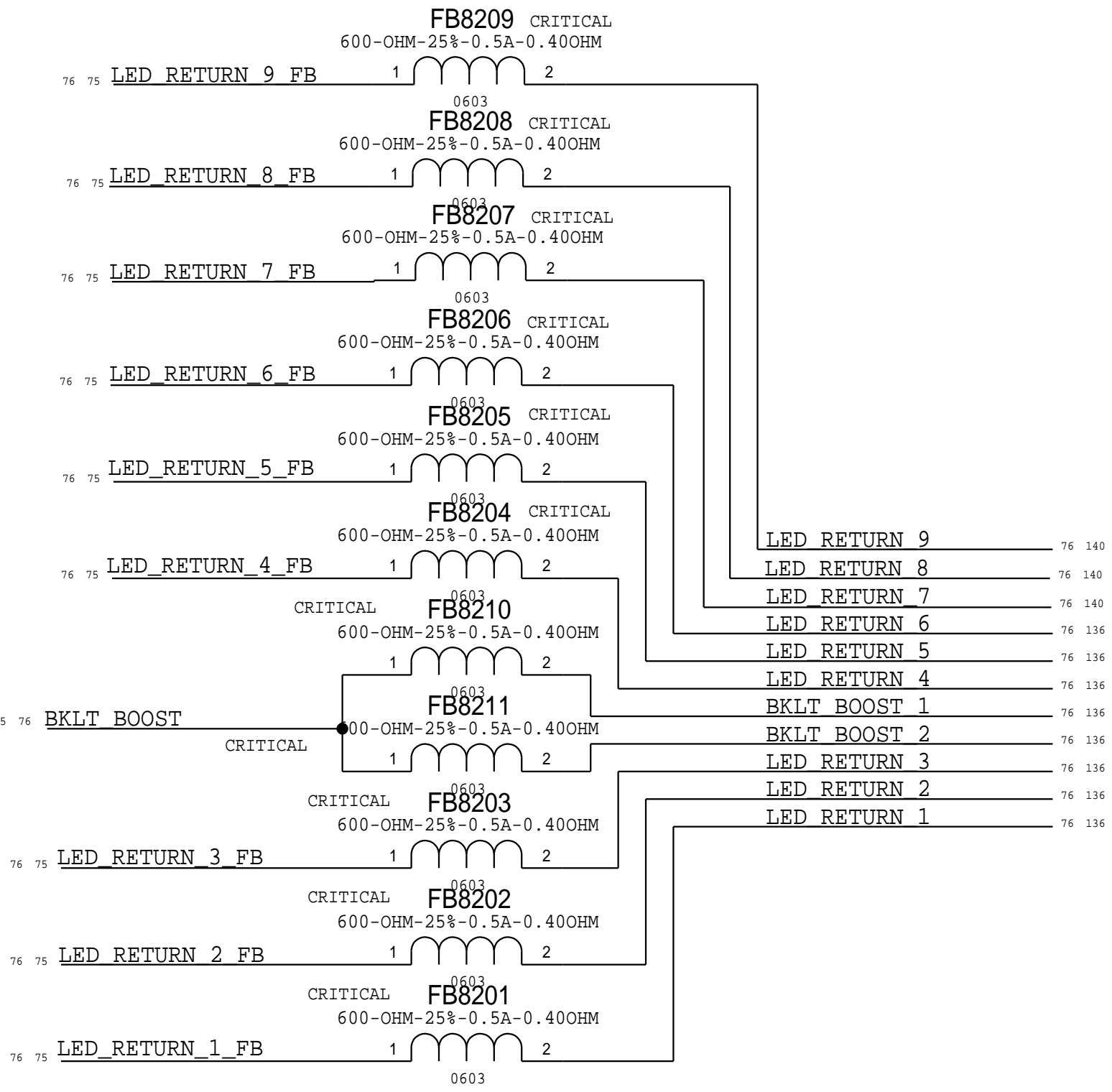
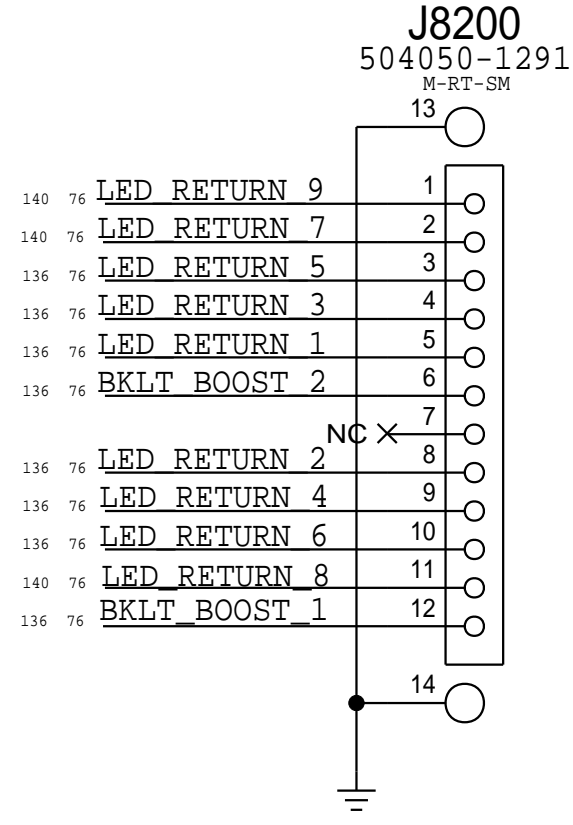
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S00079	1	IC,LP8565A13,LED BACKLIGHT CTRL,7X7 QFN56	U8100	CRITICAL	


PAGE TITLE			
DISPLAY: LCD Backlight Driver (LP8565)			
		DRAWING NUMBER	051-04826
		SIZE	D
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		BRANCH	proto-1-b
		PAGE	81 OF 172
		SHEET	75 OF 149

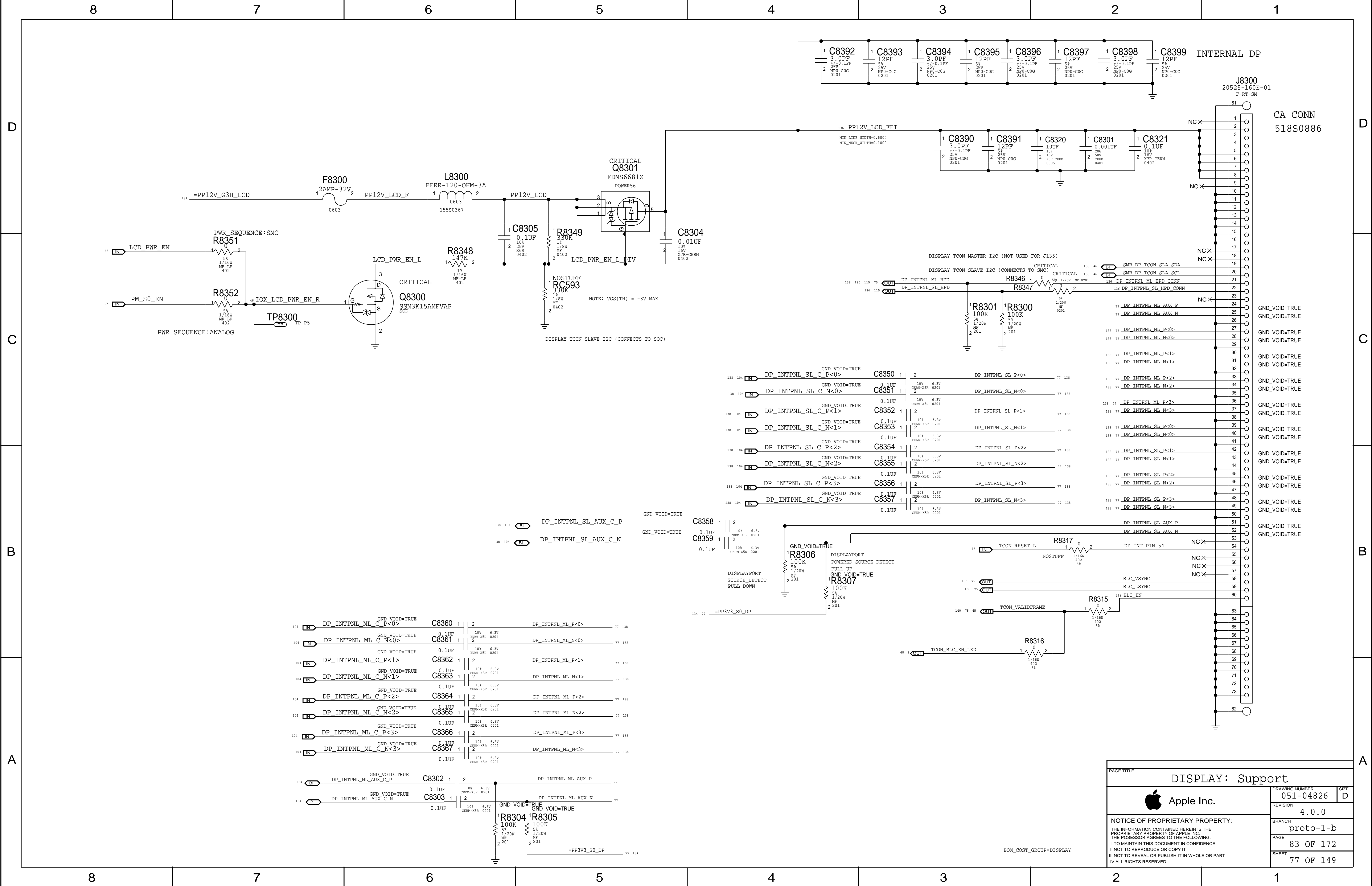
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S1256	376S1073		ALL	Short Protection FET
155S0831	155S0797		ALL	FB8201 TO FB8211

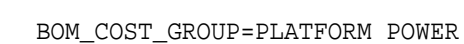
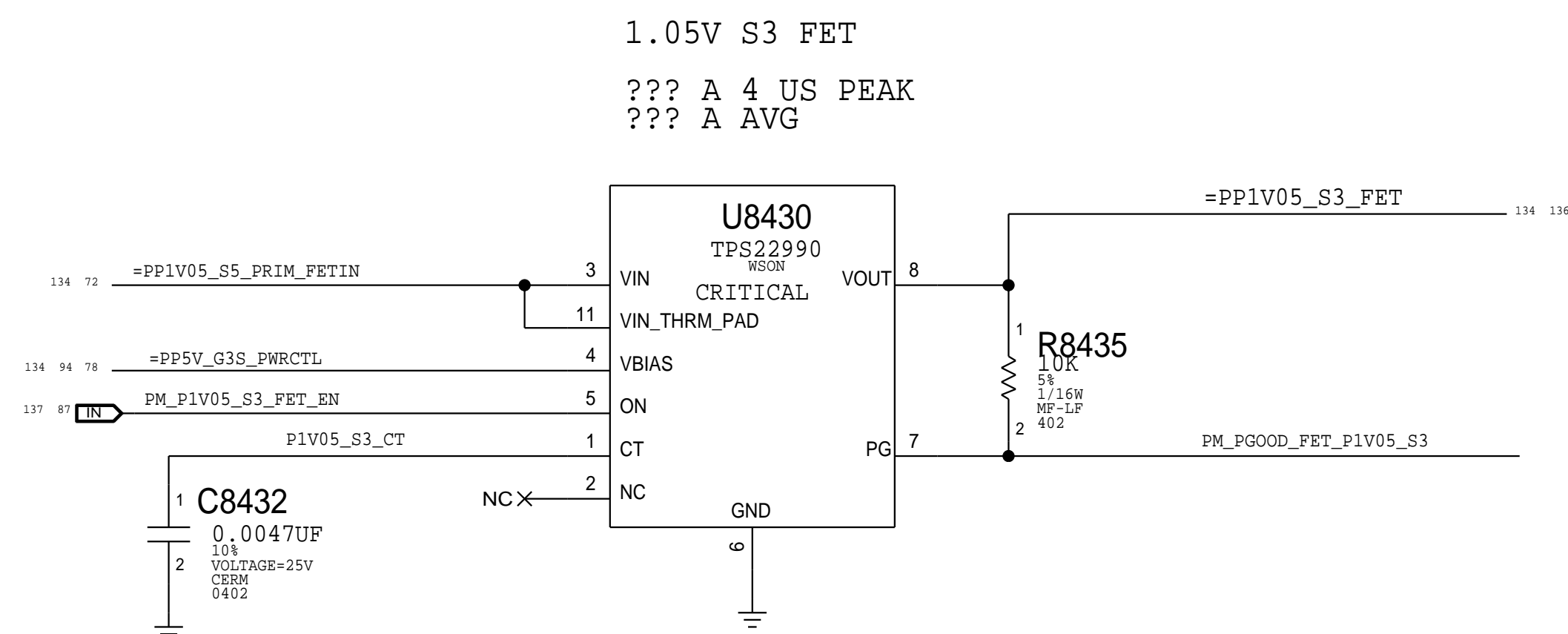
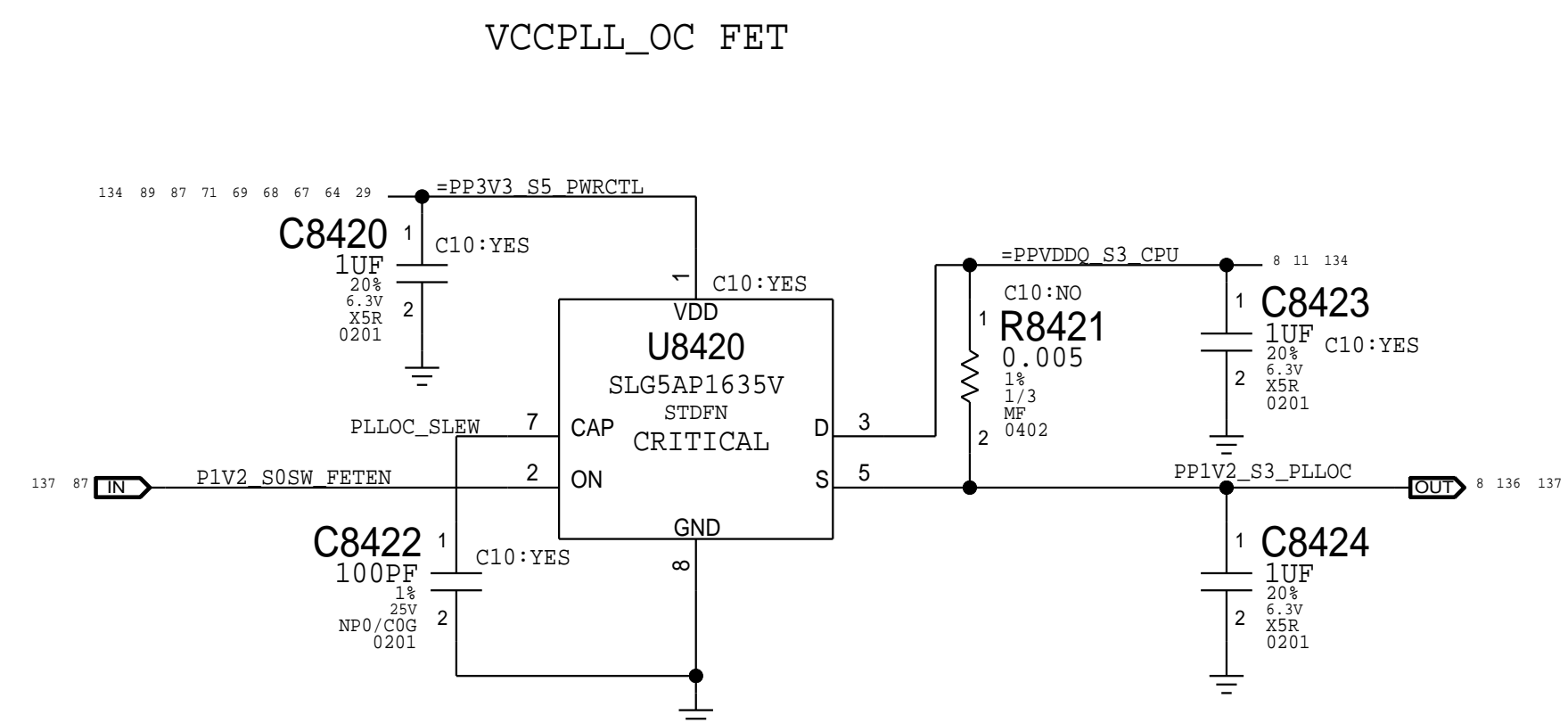
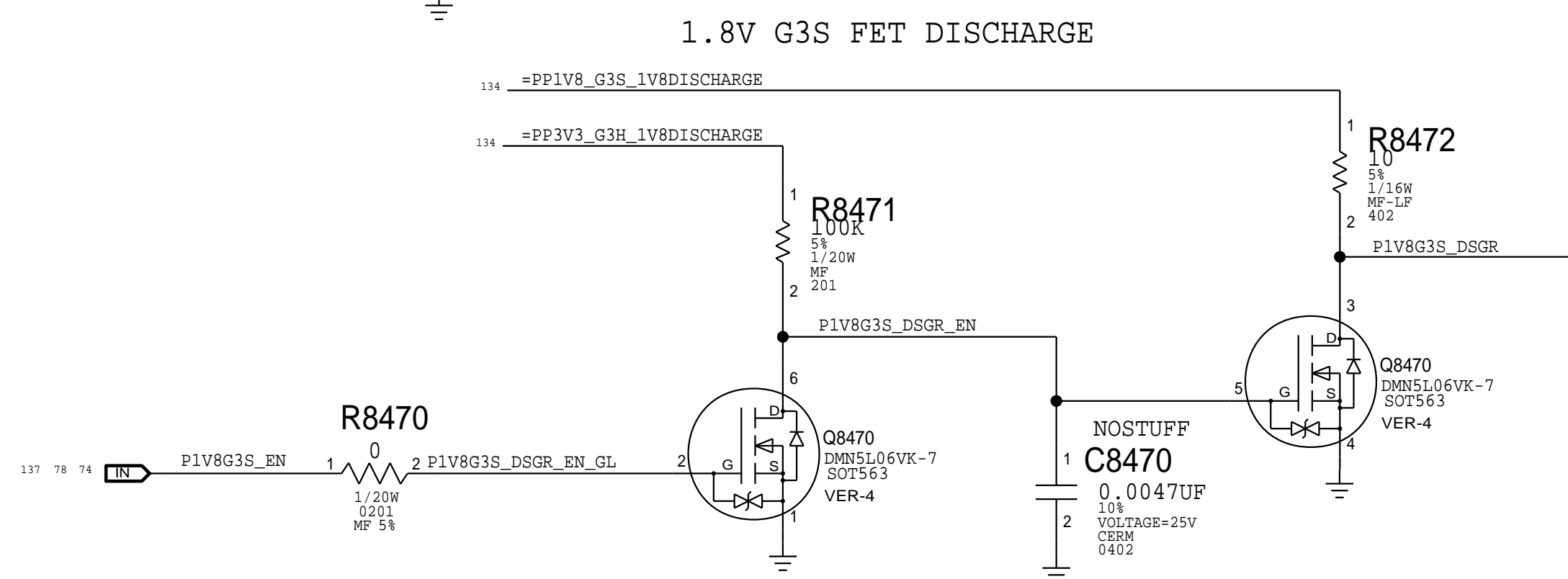
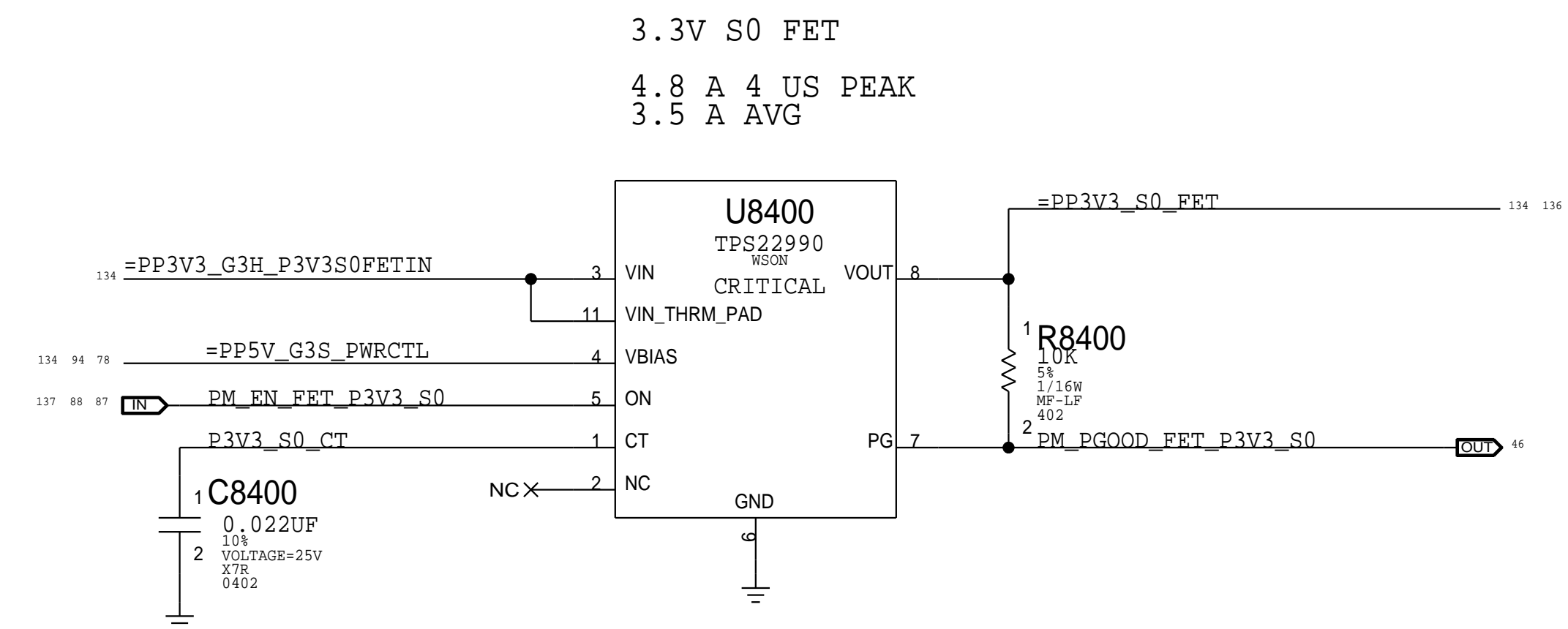
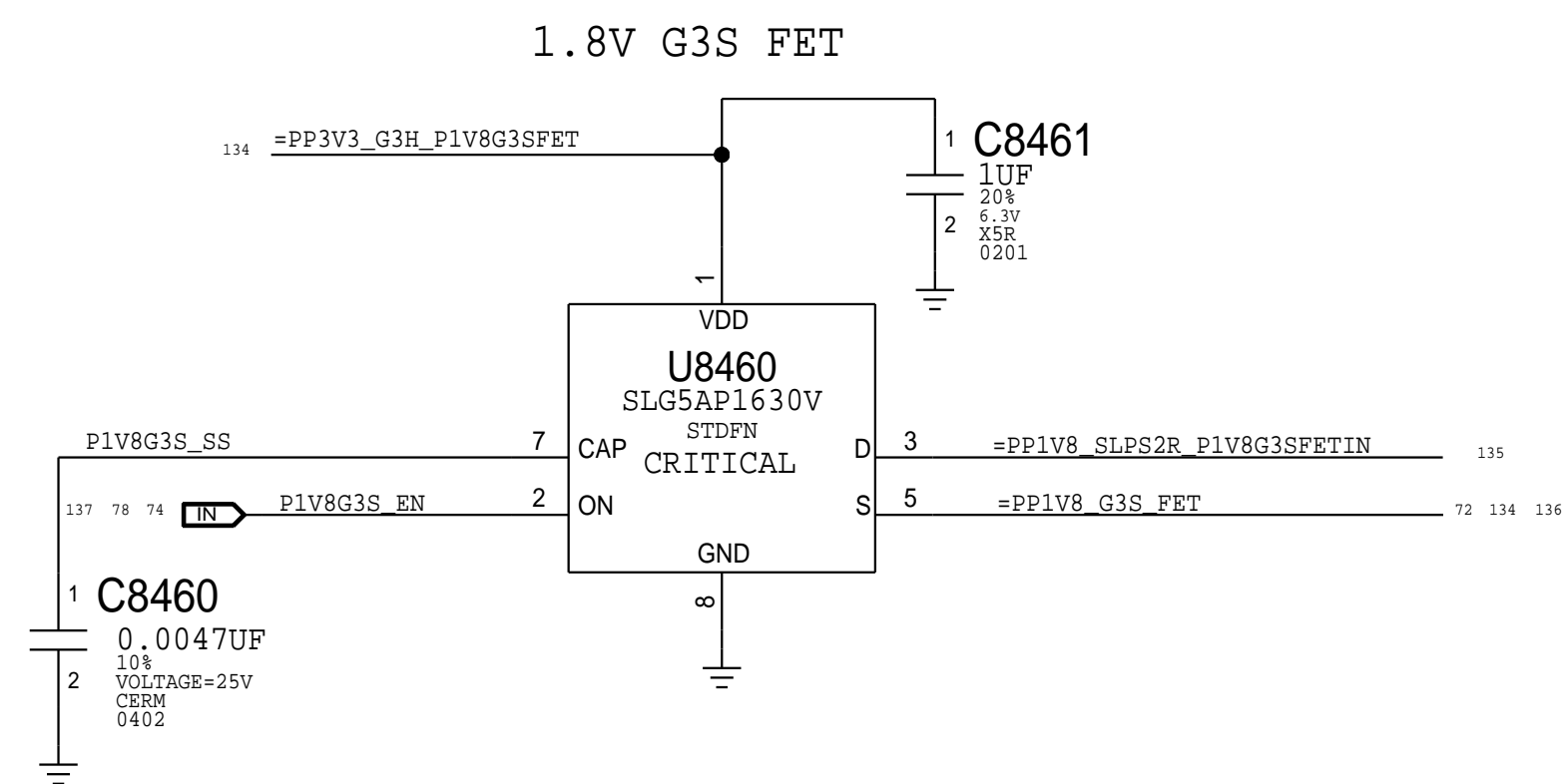
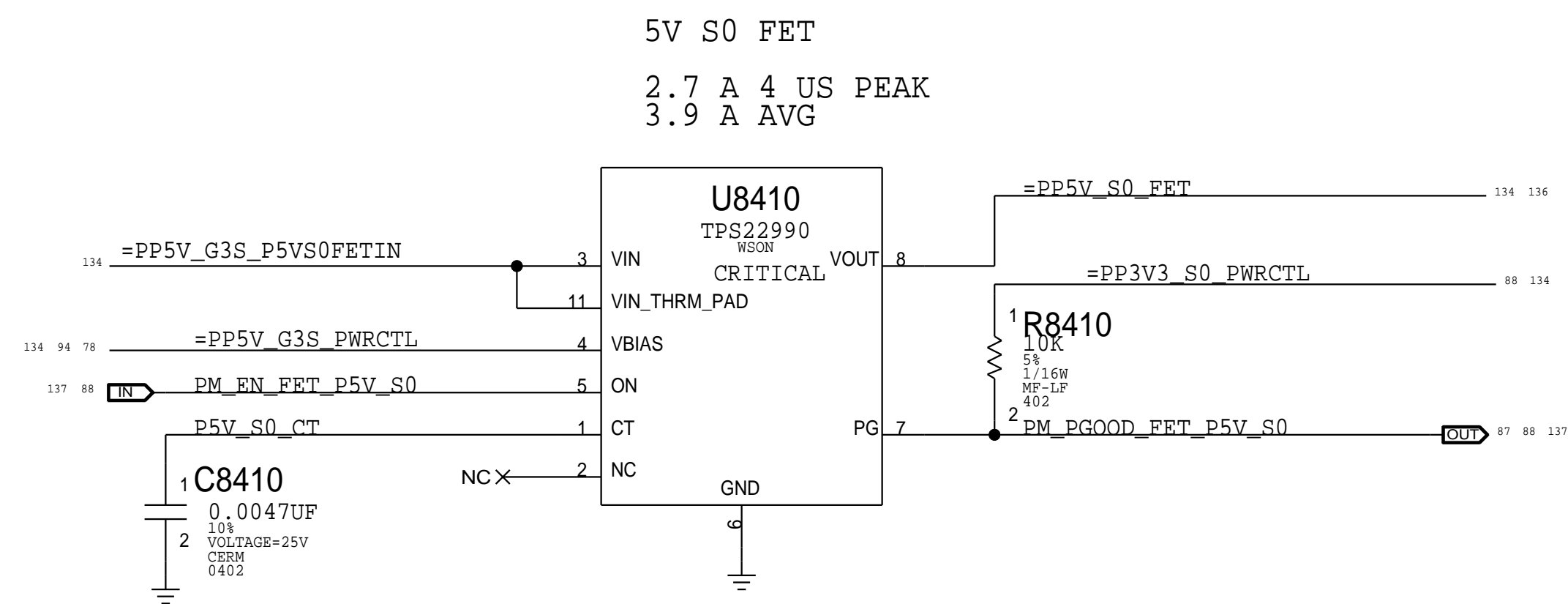
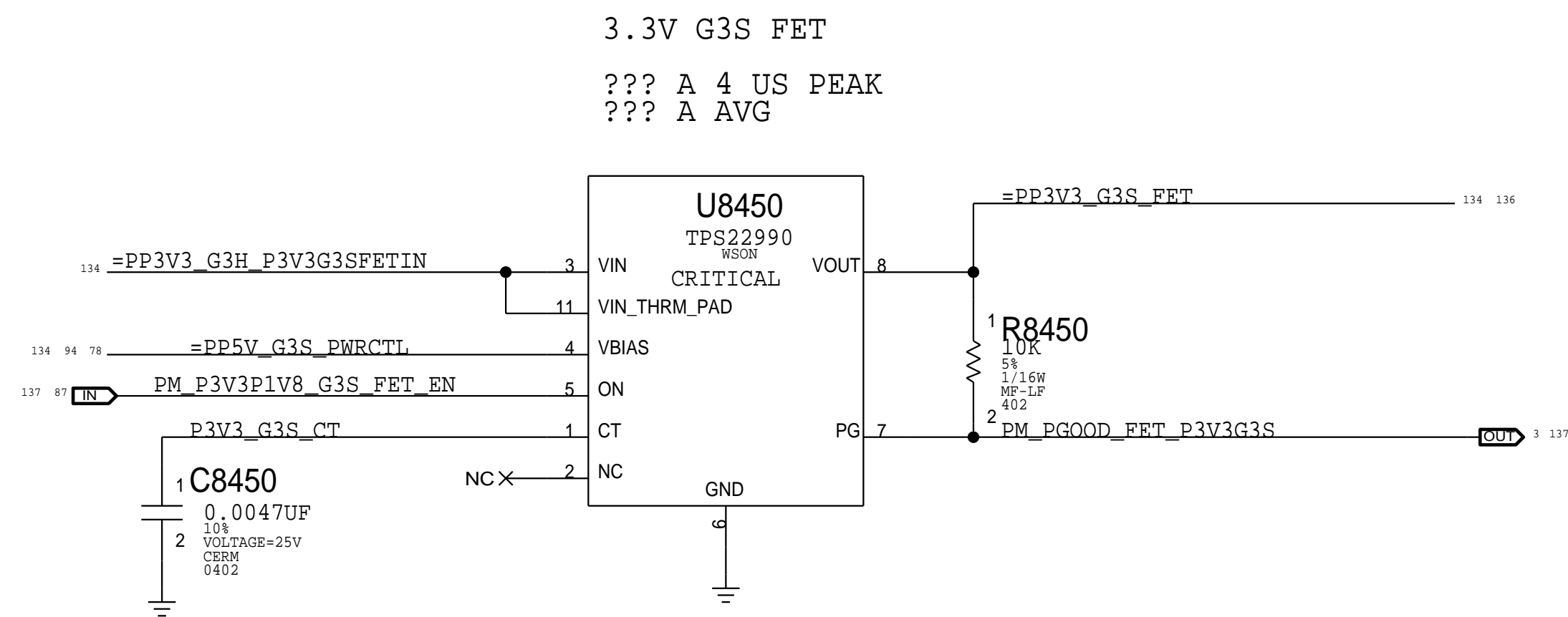



BOM\_COST\_GROUP=DISPLAY



SYNCH_MASTER=RAYMOND		SYNCH_DATE=03/11/2019	
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DISPLAY: Backlight Driver 2			
 Apple Inc.	DRAWING NUMBER	051-04826	SIZE D
	REVISION	4.0.0	
	BRANCH	proto-1-b	
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POWER FET 2			
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	4.0.0		
	BRANCH		
	proto-1-b		
	PAGE		
	84 OF 172		
	SHEET		
	78 OF 149		



D

C

B

A

D

C

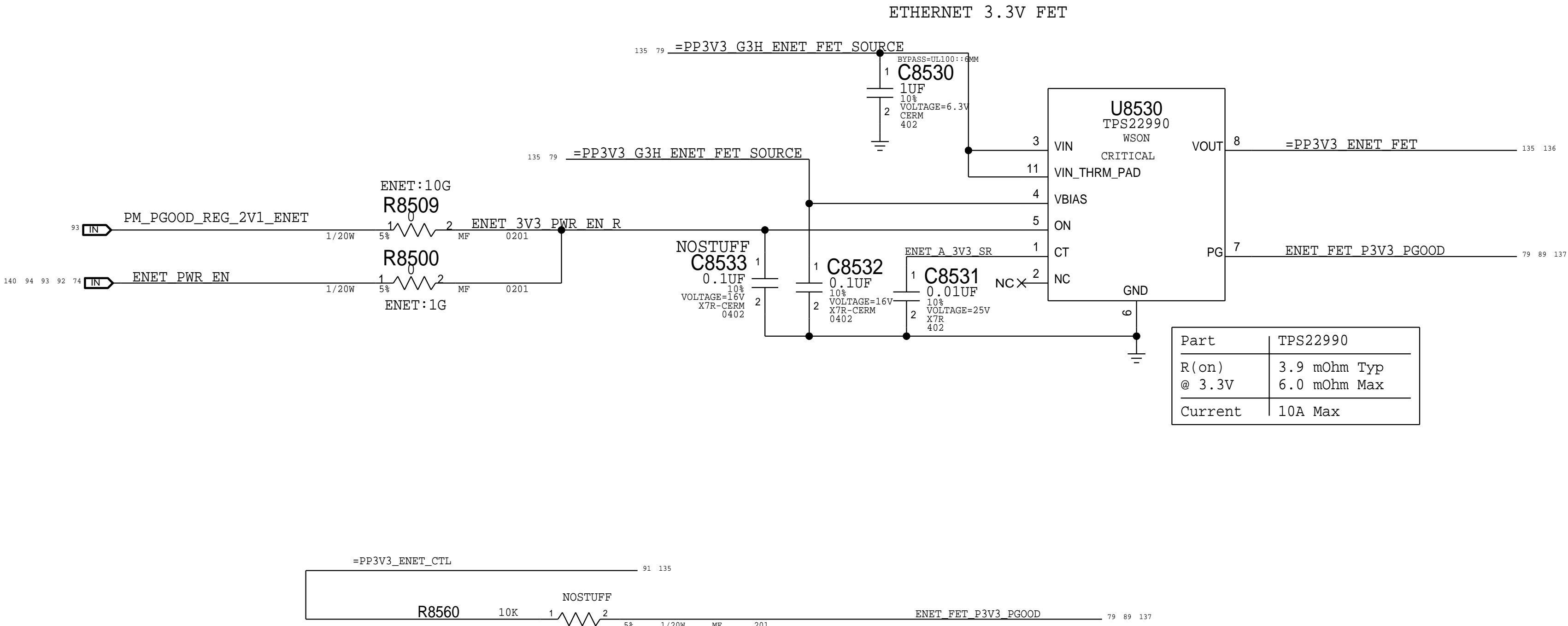
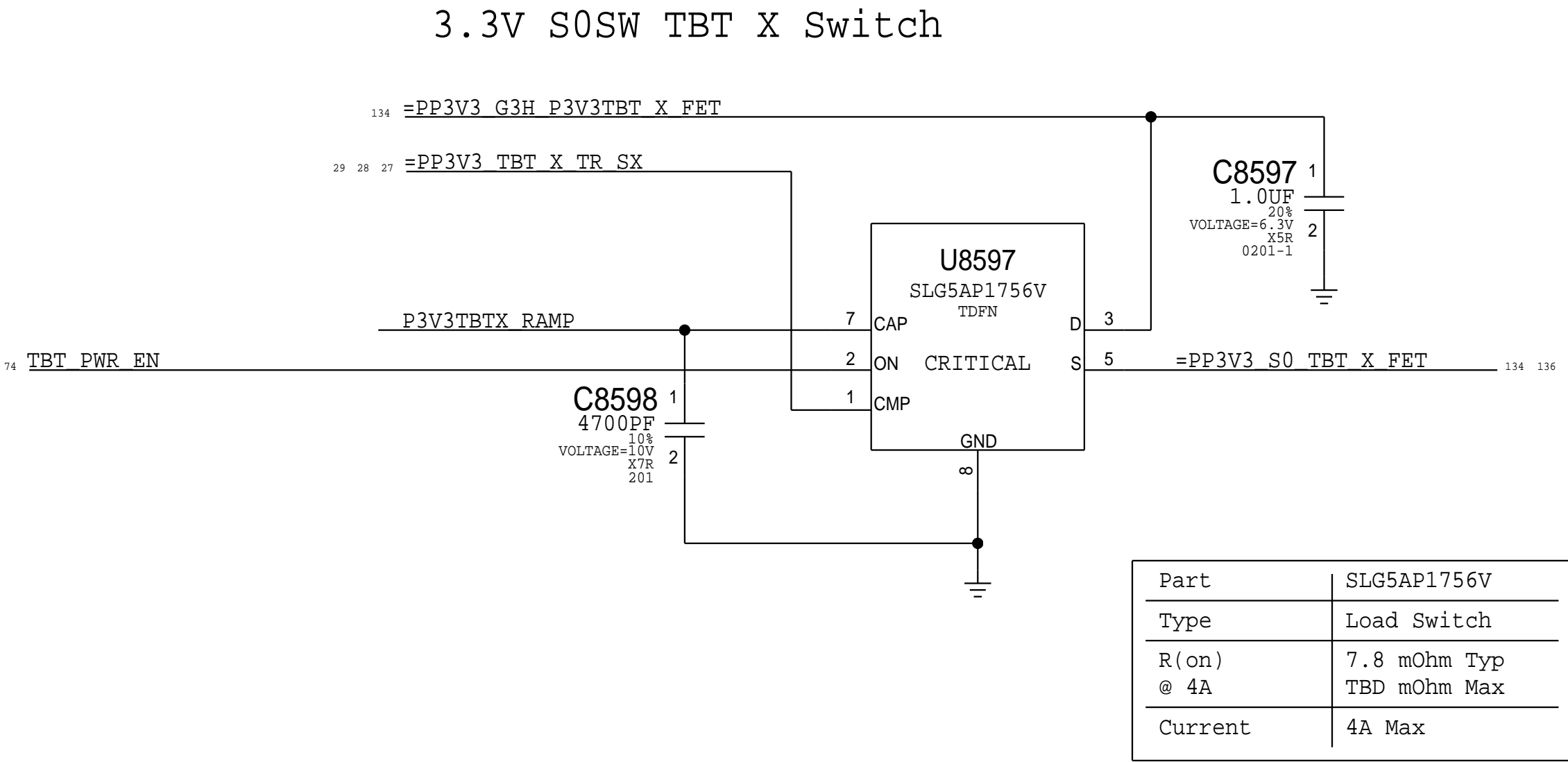
B

A

System Power States

System State:	Shutdown (G3H)		Standby (G3S)		Standby (S4)		Sleep (S3/S0i)		Run (S0)
CPU/PCH State:	Off (RTC Only)		Off (RTC Only)		Standby		Sleep		Run
Rails	SoC State:		S2R	Awake	S2R	Awake	S2R	Awake	Awake
PP*_S2R (0.8,1.1,1.8V)	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
PP*_AWAKE (CPU,SRAM,1.2,1.8,3.3V)	Off	On	Off	On	Off	On	Off	On	On
PP3V3_G3H (VR1)	On	On	On	On	On	On	On	On	On
PP3V3_G3H (VMAIN)	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
PP*_S5 (1.8,3.3V)	Off	Off	Off	Off	On	On	On	On	On
CPU VRs	Off	Off	Off	Off	Off	Off	Off/On	Off/On	On
PCH VRs	Off	Off	Off	Off	On	On	On	On	On
DDR4 VRs	Off	Off	Off	Off	Off	Off	SR	SR	On
GPU VRs/BLC/DISPLAY	Off	Off	Off	Off	Off	Off	Off	Off	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.  
\* SR:Self Refresh

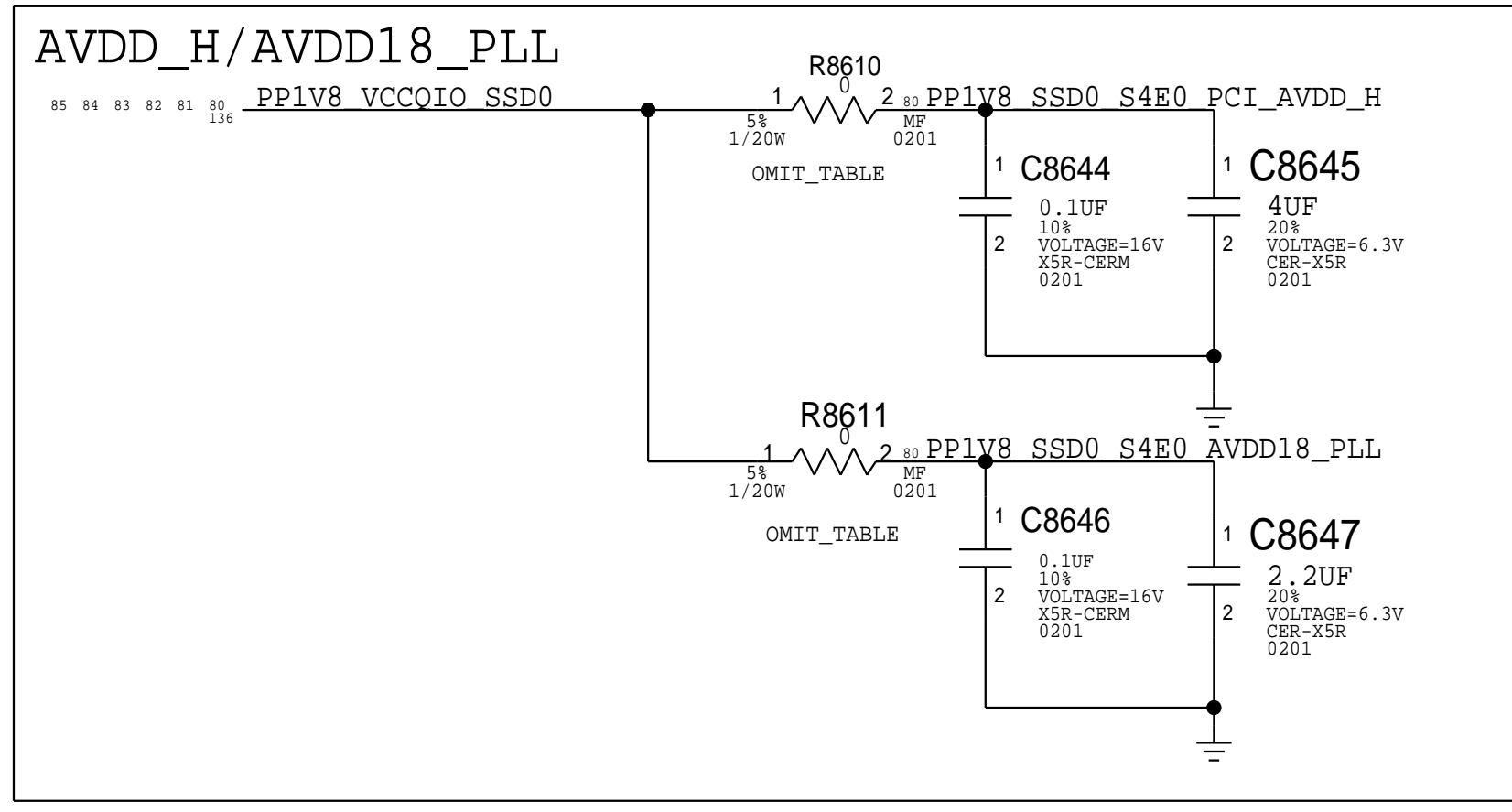
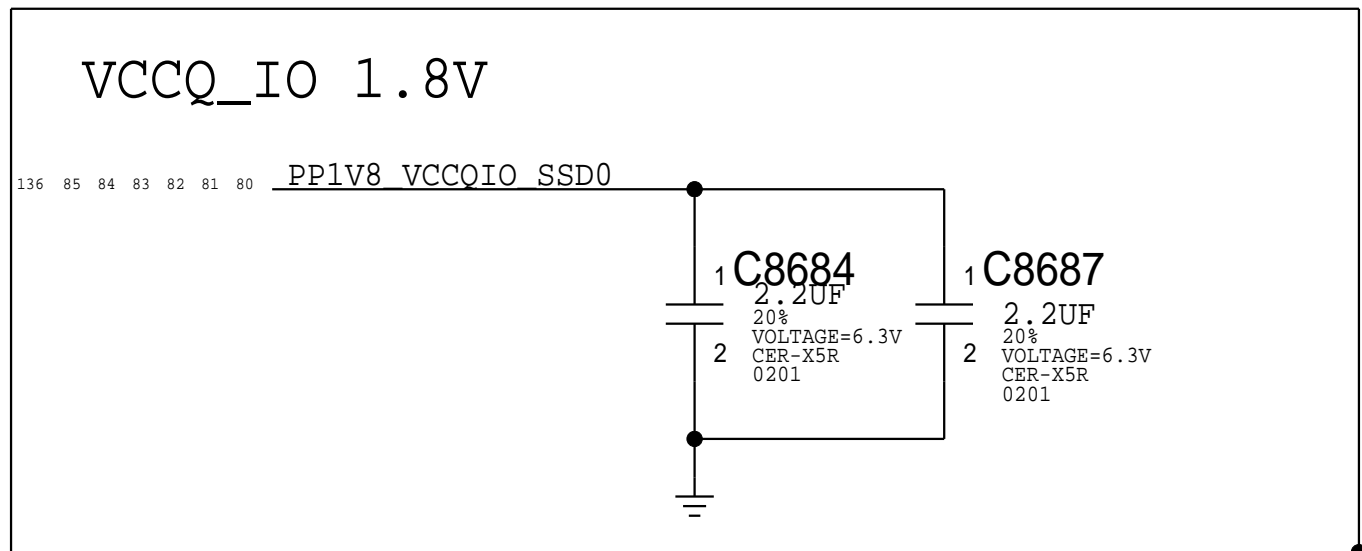
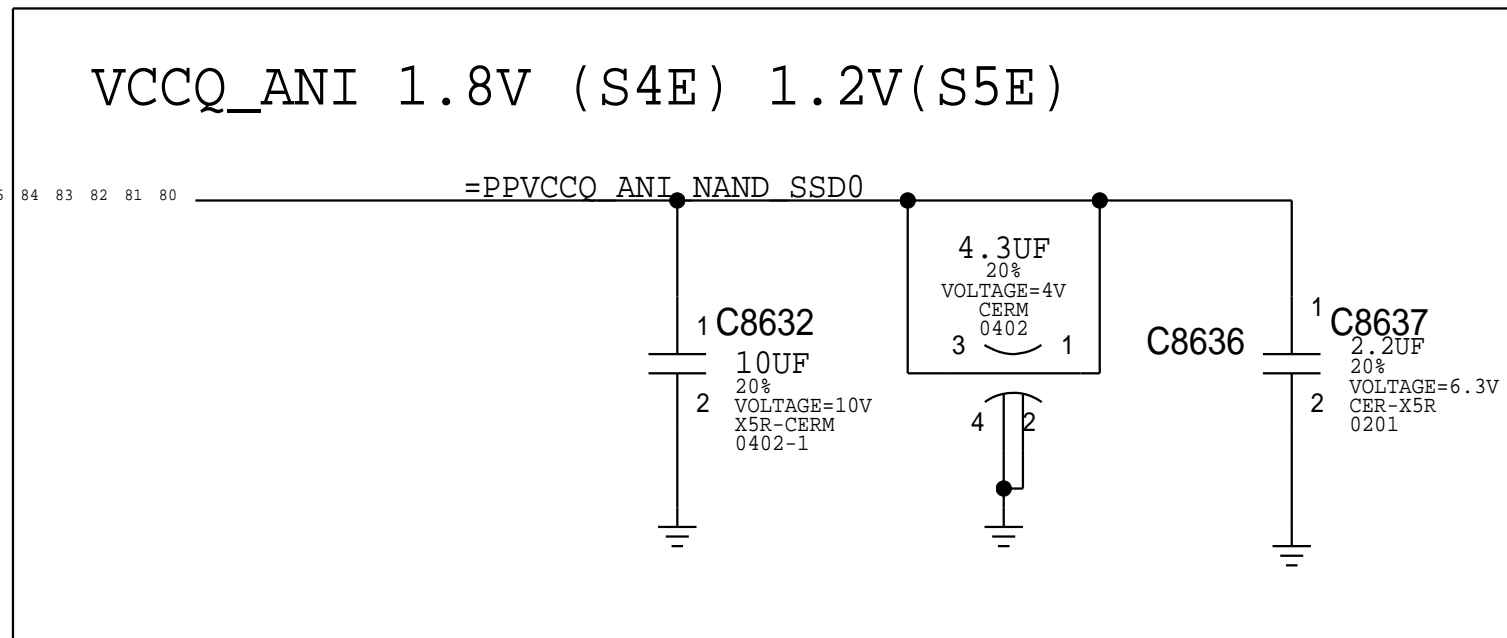
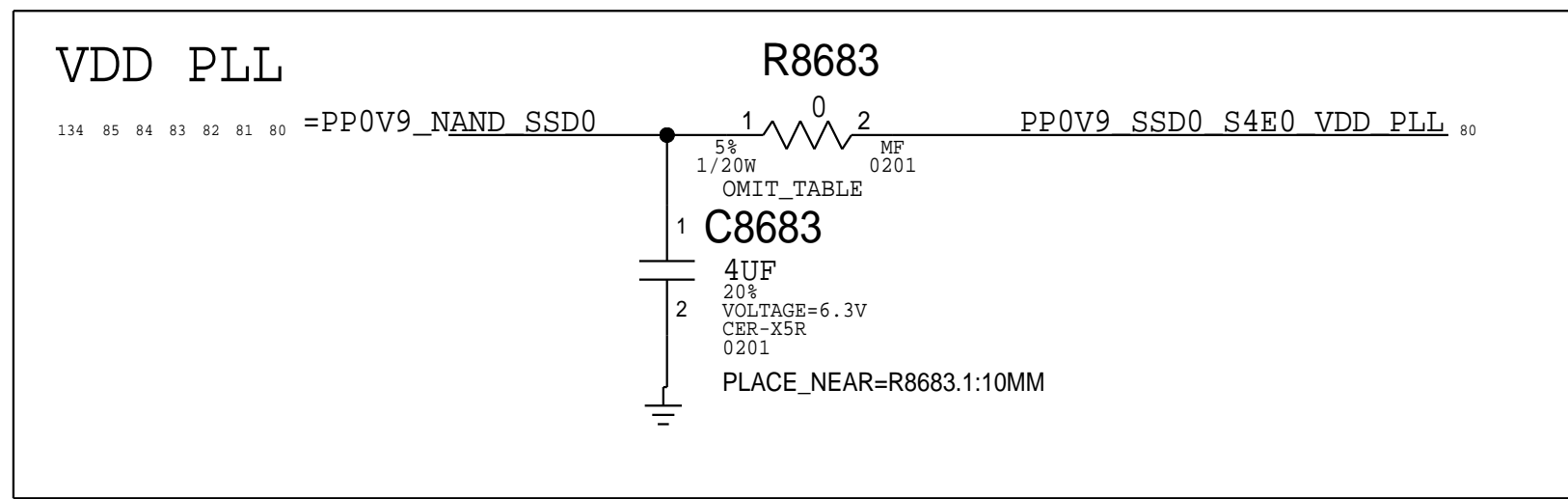
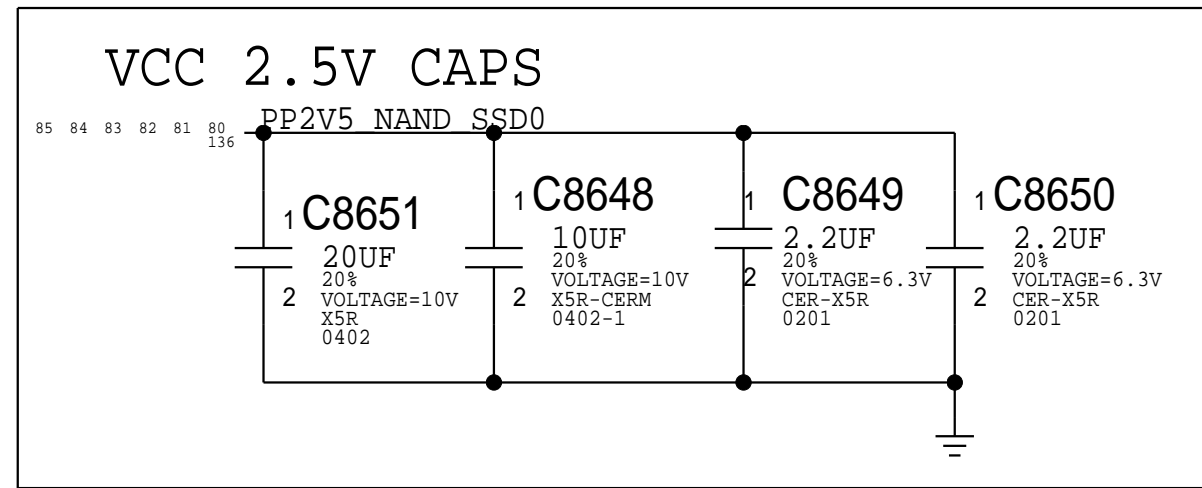
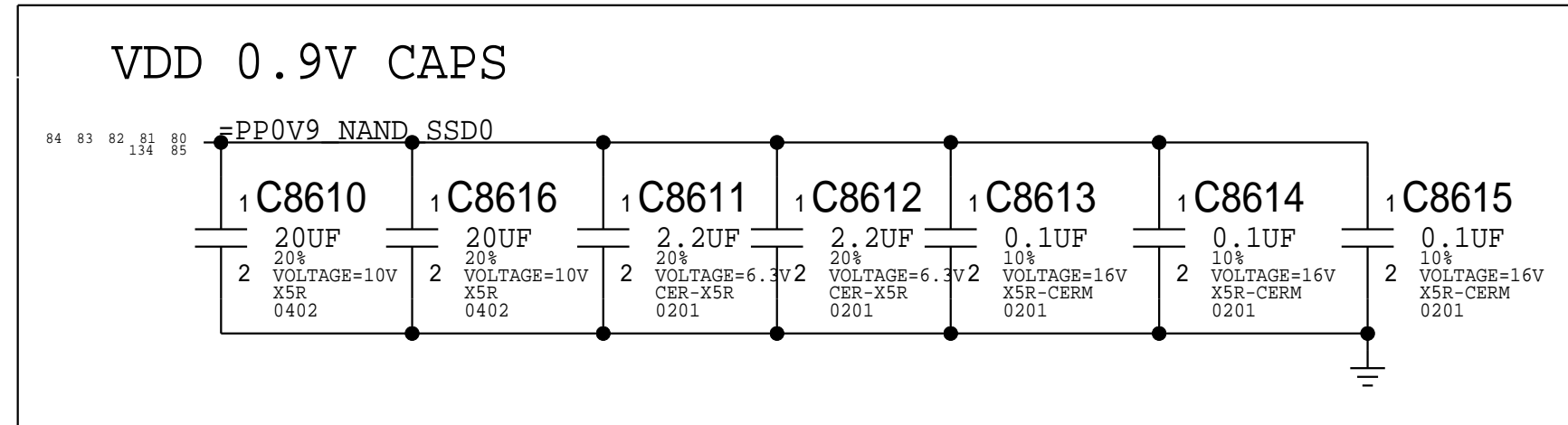
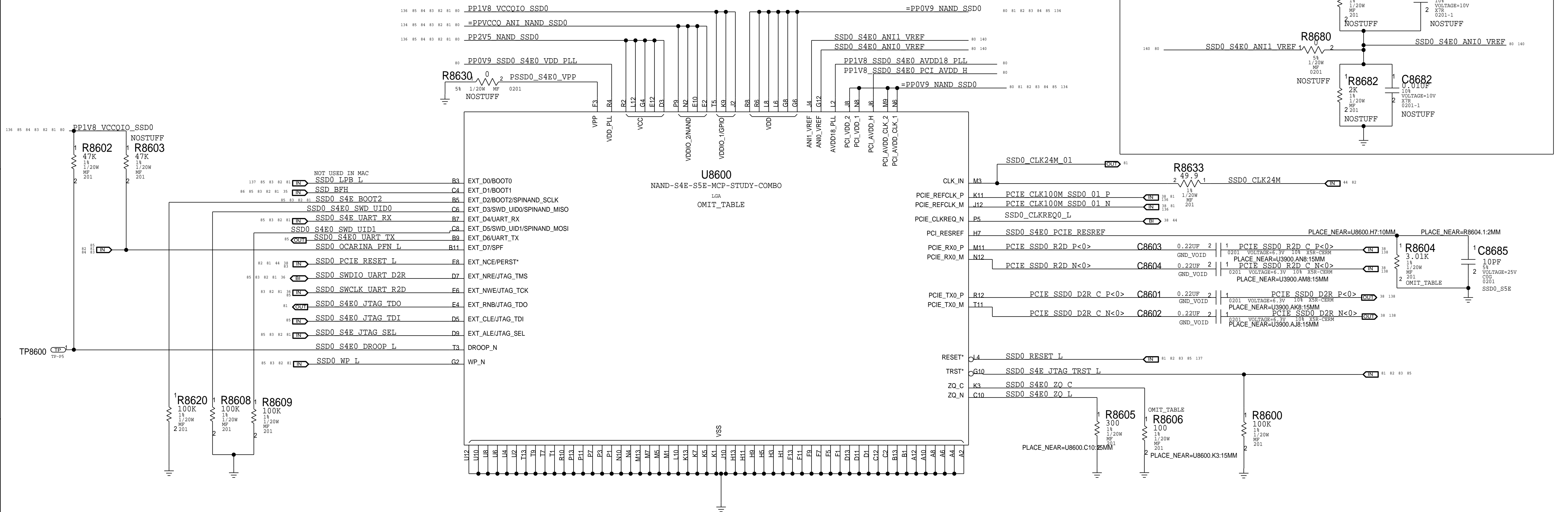


POWER FET

DRAWING NUMBER  
051-04826  
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BRANCH  
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PAGE  
85 OF 172  
SHEET  
79 OF 149

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# SSD0 S4E0/S5E0

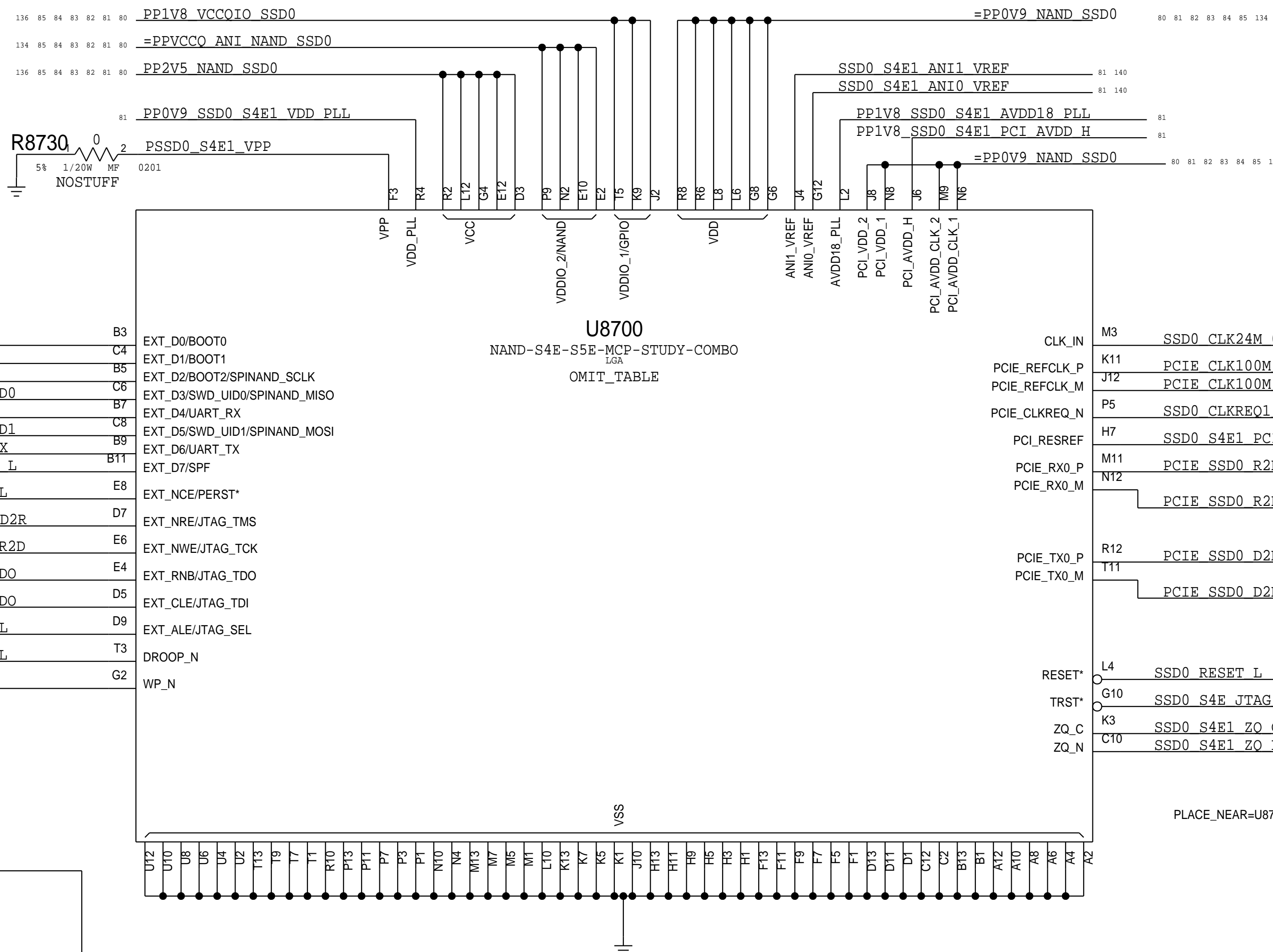
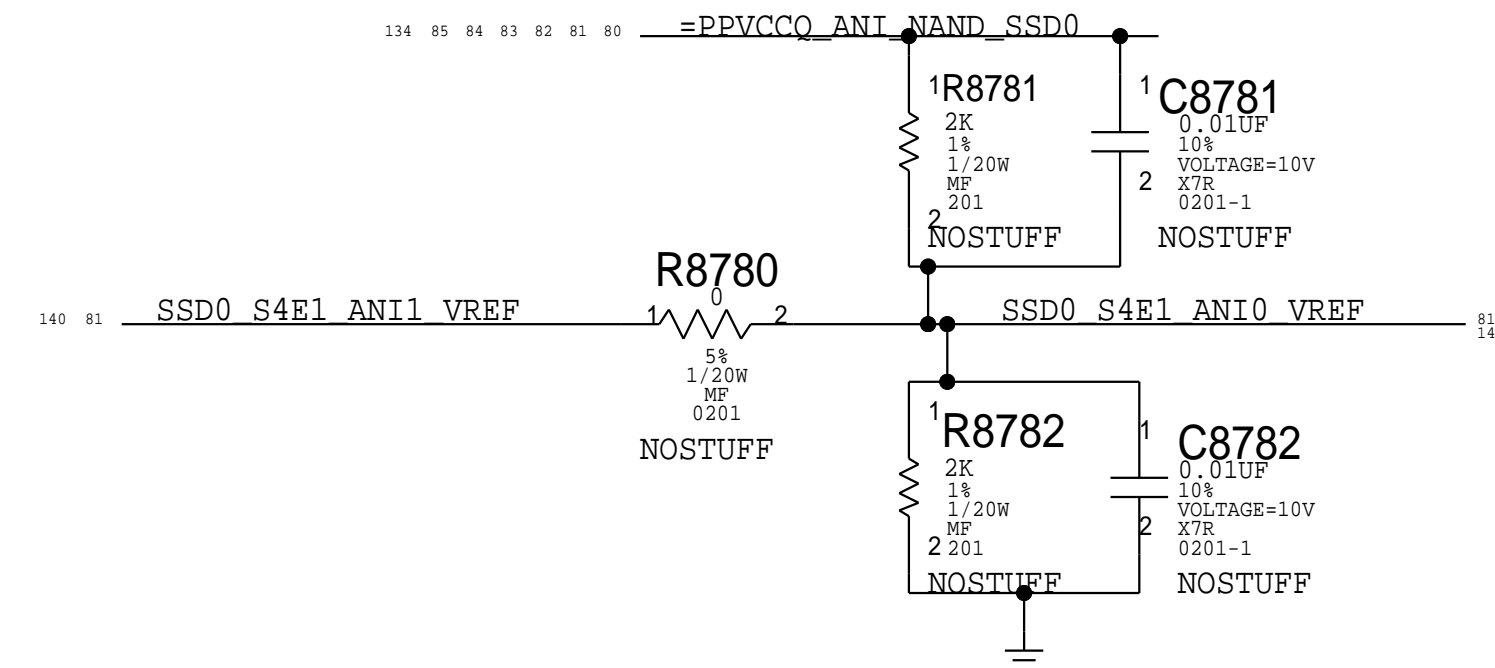


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES,3.01KOHM,1%,1/20W,0201	R8604	CRITICAL	SSD0_S4E
103S00429	1	RES,200OHM,0.1%,1/20W,0201	R8604	CRITICAL	SSD0_S5E
118S0011	1	RES,100OHM,1%,1/20W,0201	R8606	CRITICAL	SSD0_S4E
118S0273	1	RES,300OHM,1%,1/20W,0201	R8606	CRITICAL	SSD0_S5E
117S0201	2	RES,0OHM,1/20W,0201	R8683,R8610,R8611		SSD0_S4E
155S00161	2	FERR BD,100HM,0.05 DCR,0201	R8683,R8610	CRITICAL	SSD0_S5E
118S0794	1	RES,MF,20HM,1%,1/20W,0201	R8611	CRITICAL	SSD0_S5E

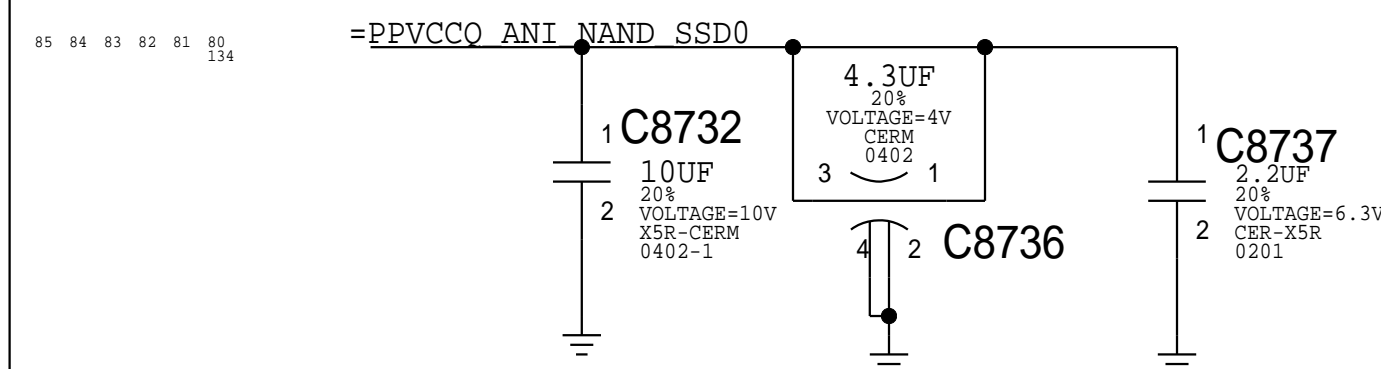
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Apple Inc.		REVISION	4.0.0
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# SSD0 S4E1/S5E1

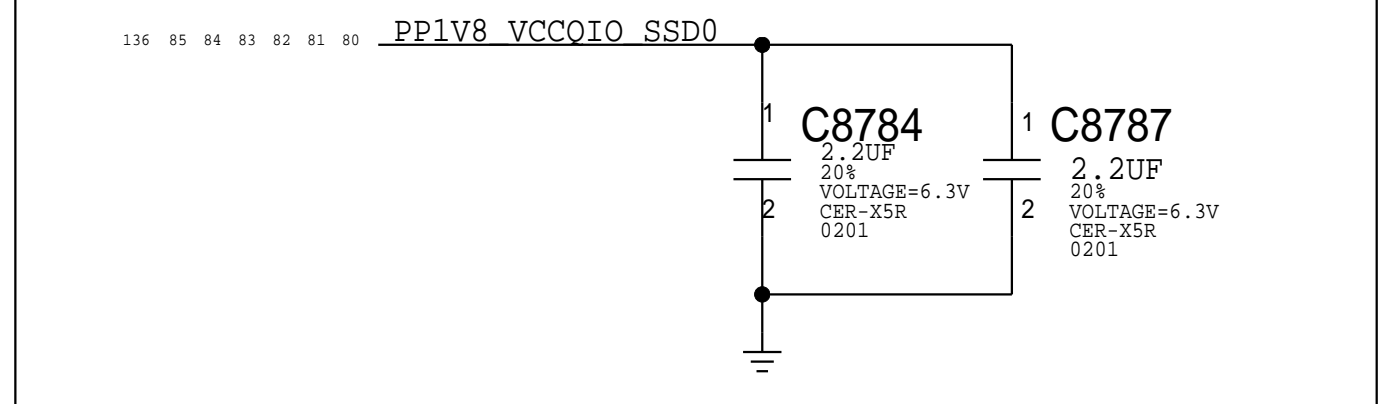
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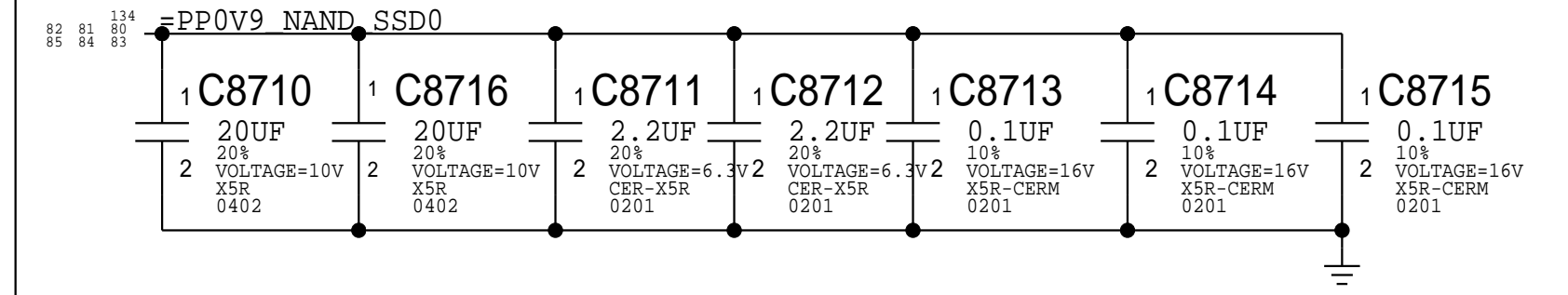
## VCCQ\_ANI 1.8V (S4E) 1.2V(S5E)



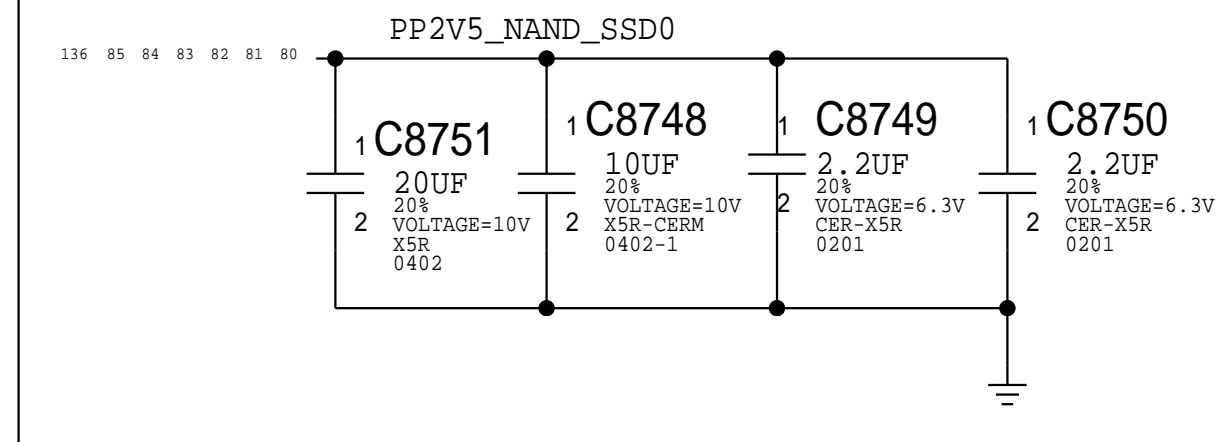
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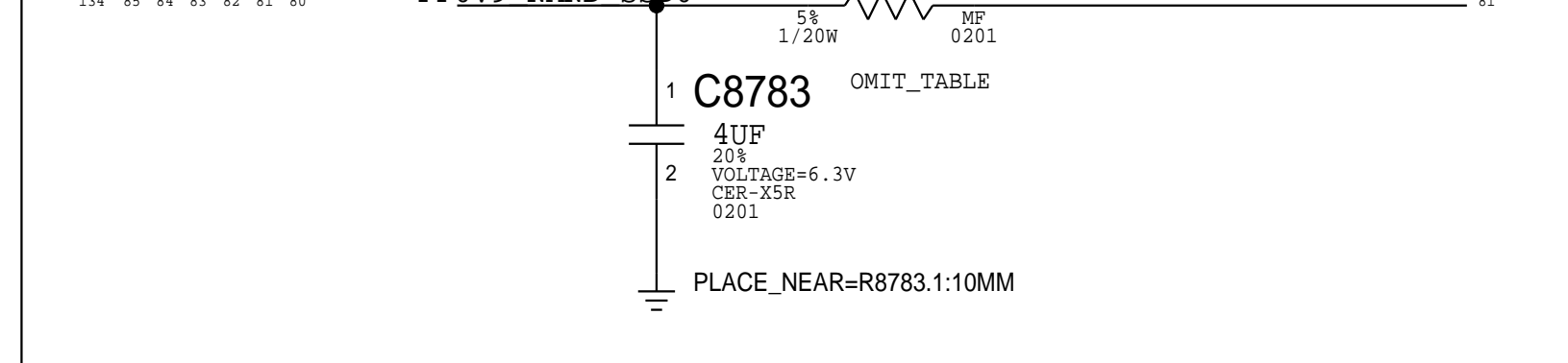
## VDD 0.9V CAPS



## VCC 2.5V CAPS

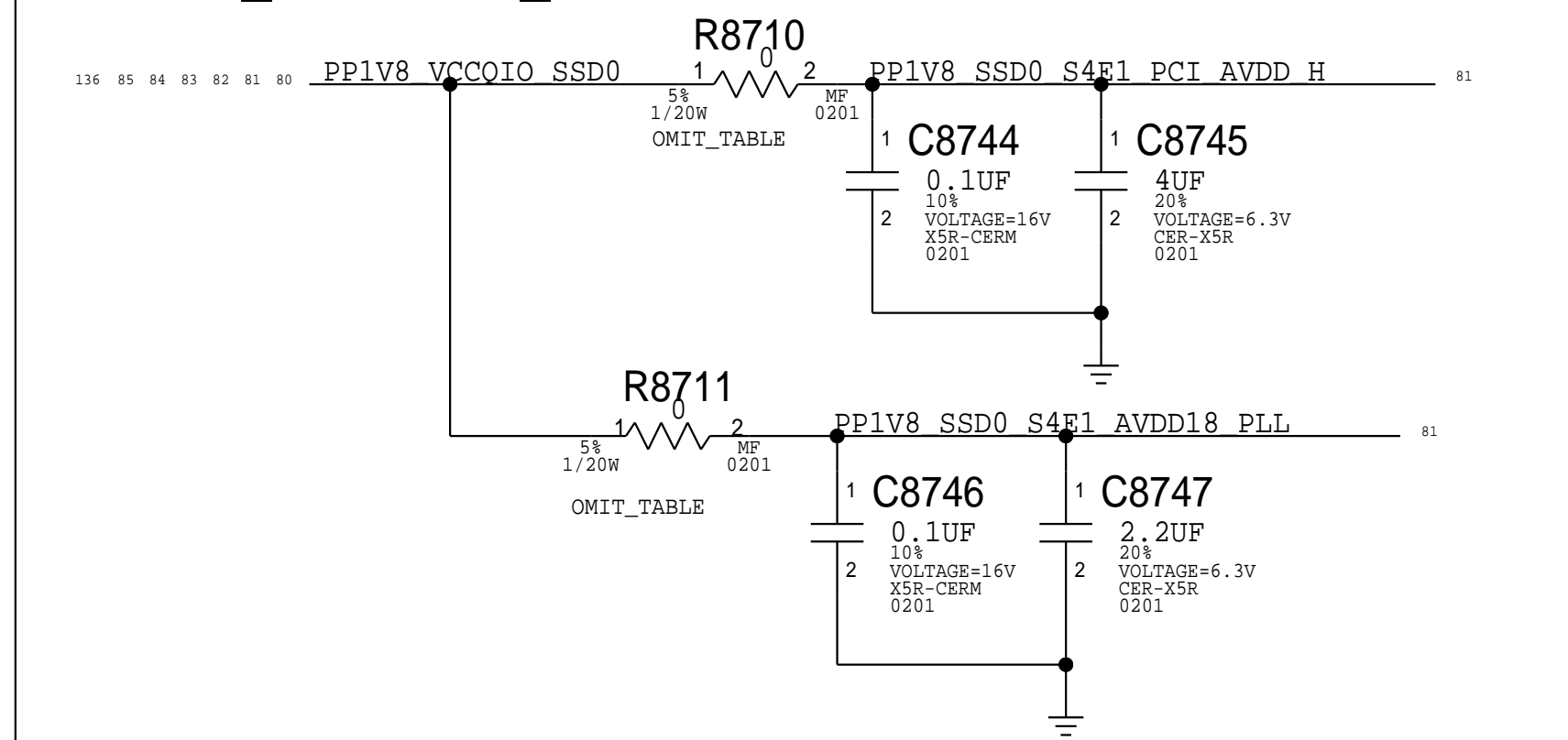


## VDD PLL



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES, 3.01KOHM, 1%, 1/20W, 0201	R8704	CRITICAL	SSD0_S4E
103S00429	1	RES, 200OHM, 0.1%, 1/20W, 0201	R8704	CRITICAL	SSD0_S5E
118S0011	1	RES, 100OHM, 1%, 1/20W, 0201	R8705	CRITICAL	SSD0_S4E
118S0273	1	RES, 300OHM, 1%, 1/20W, 0201	R8706	CRITICAL	SSD0_S5E
117S0201	2	RES, 0OHM, 1/20W, 0201	R8783, R8710, R8711		SSD0_S4E
155S00161	2	FERR BD, 10OHM, 0.05 DCR, 0201	R8783, R8710	CRITICAL	SSD0_S5E
118S0794	1	RES, MF, 20HM, 1%, 1/20W, 0201	R8711	CRITICAL	SSD0_S5E

## AVDD\_H/AVDD18\_PLL



BOM\_COST\_GROUP=SSD

SSD0: S4E/S5E<1>



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DRAWING NUMBER	SIZE
051-04826	D
REVISION	4.0.0
BRANCH	proto-1-b
PAGE	87 OF 172
SHEET	81 OF 149

# SSD0 SE4/S5E 2

D

C

B

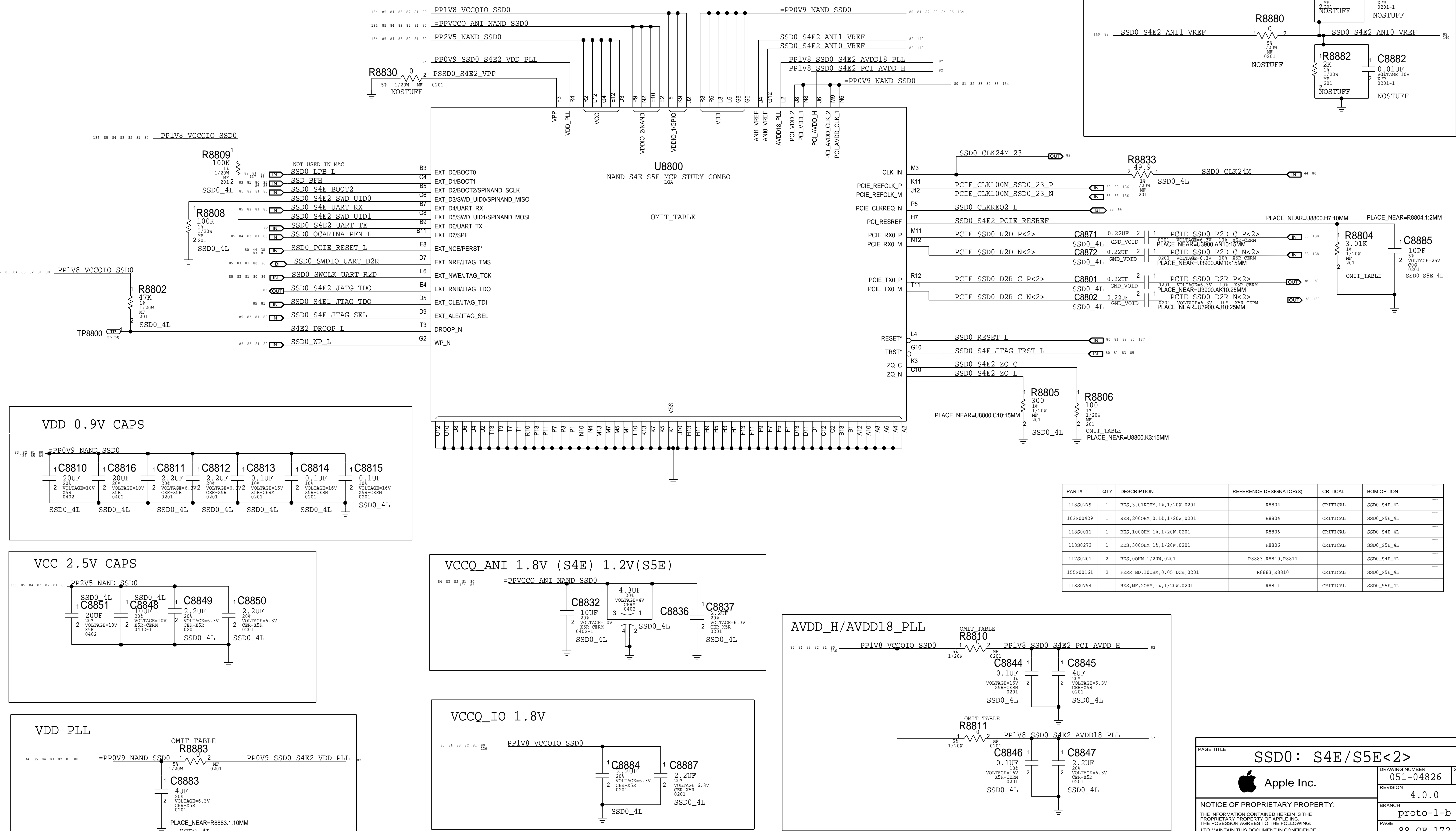
A

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A



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
11880279	1	RES,3.01KOHM,1%,1/20W,0201	R8804	CRITICAL	SSD0_S4E_4L
103800429	1	RES,200OHM,0.1%,1/20W,0201	R8804	CRITICAL	SSD0_S5E_4L
11880011	1	RES,100OHM,1%,1/20W,0201	R8806	CRITICAL	SSD0_S4E_4L
11880273	1	RES,300OHM,1%,1/20W,0201	R8806	CRITICAL	SSD0_S5E_4L
11780201	2	RES,00HM,1/20W,0201	R8883,R8810,R8811		SSD0_S4E_4L
155800161	2	FERR BD,100HM,0.05 DCR,0201	R8883,R8810	CRITICAL	SSD0_S5E_4L
11880794	1	RES,MF,20HM,1%,1/20W,0201	R8811	CRITICAL	SSD0_S5E_4L

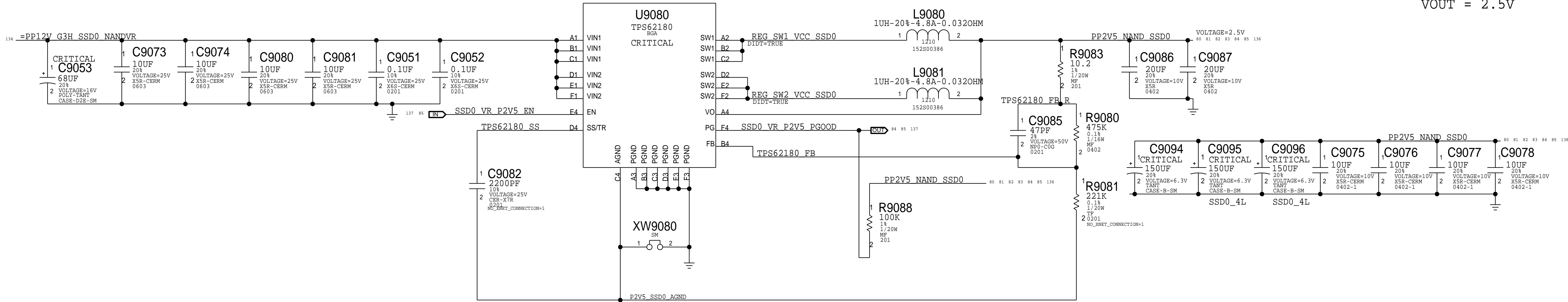
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SSD0: S4E/S5E<2>		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
	BRANCH	proto-1-b
	PAGE	88 OF 172
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VR FOR 2.5V NAND VCC

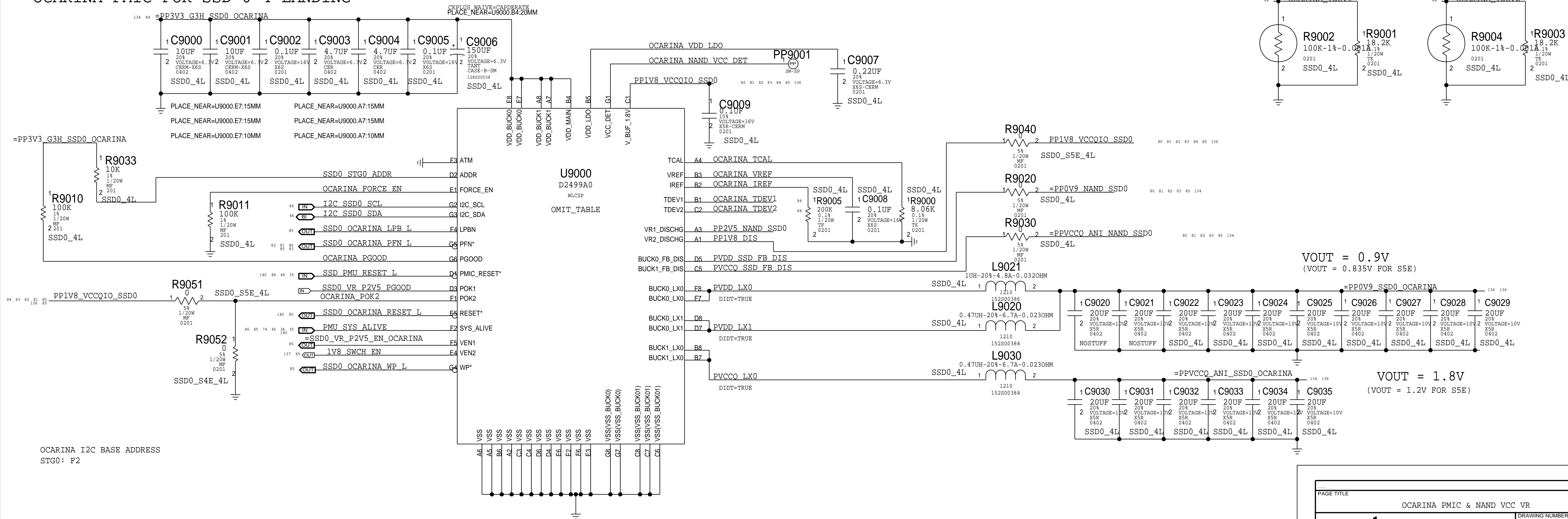
VOUT = 2.5V




OCARINA PMIC FOR SSD 0 4 LANDING

VOUT = 0.9V  
(VOUT = 0.835V FOR S5E)

VOUT = 1.8V  
(VOUT = 1.2V FOR S5E)

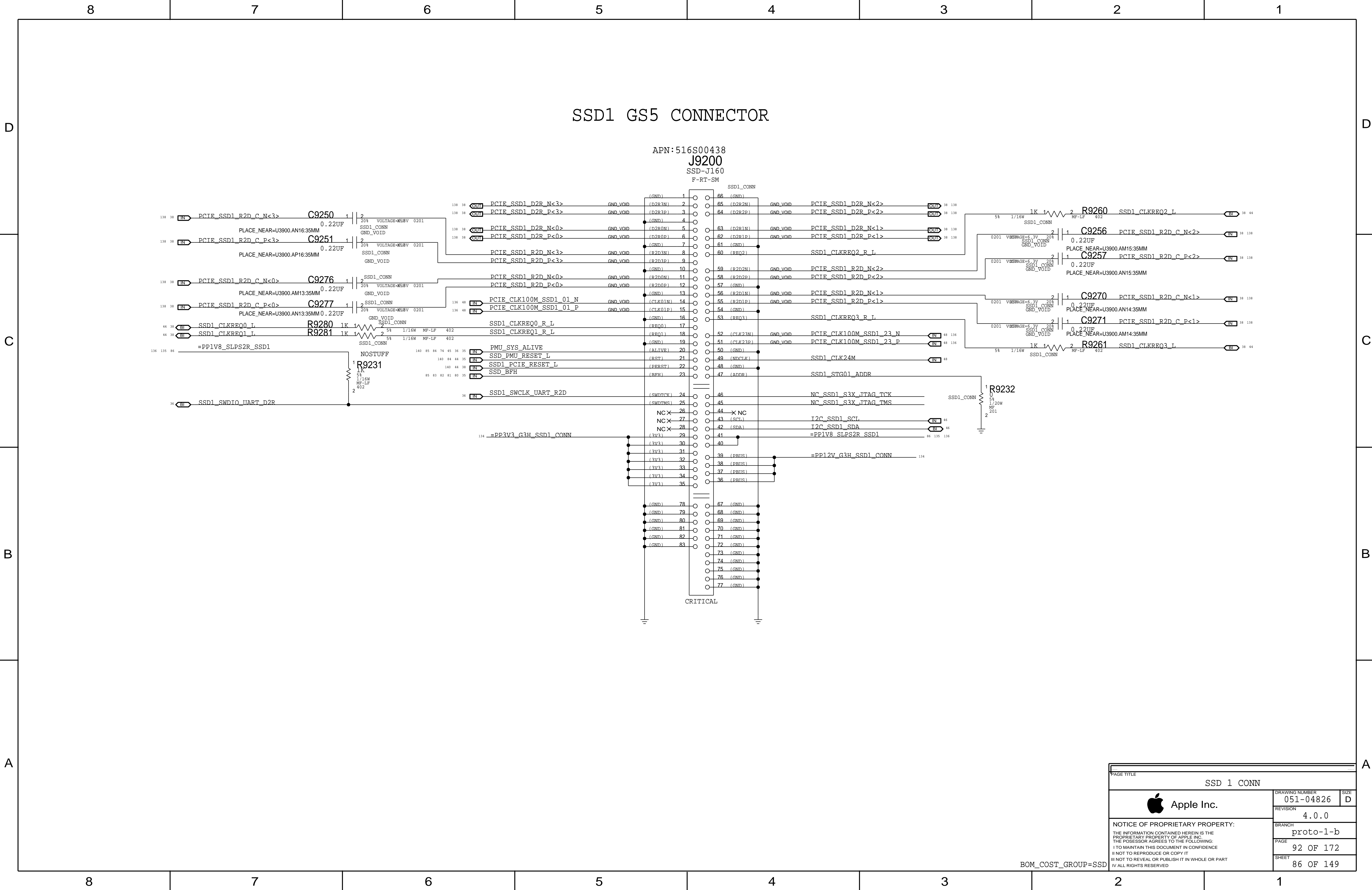


OCARINA I2C BASE ADDRESS  
STG0: F2

PAGE TITLE		
OCARINA PMIC & NAND VCC VR		
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	PAGE	90 OF 172
	SHEET	84 OF 149

BOM\_COST\_GROUP=SSD

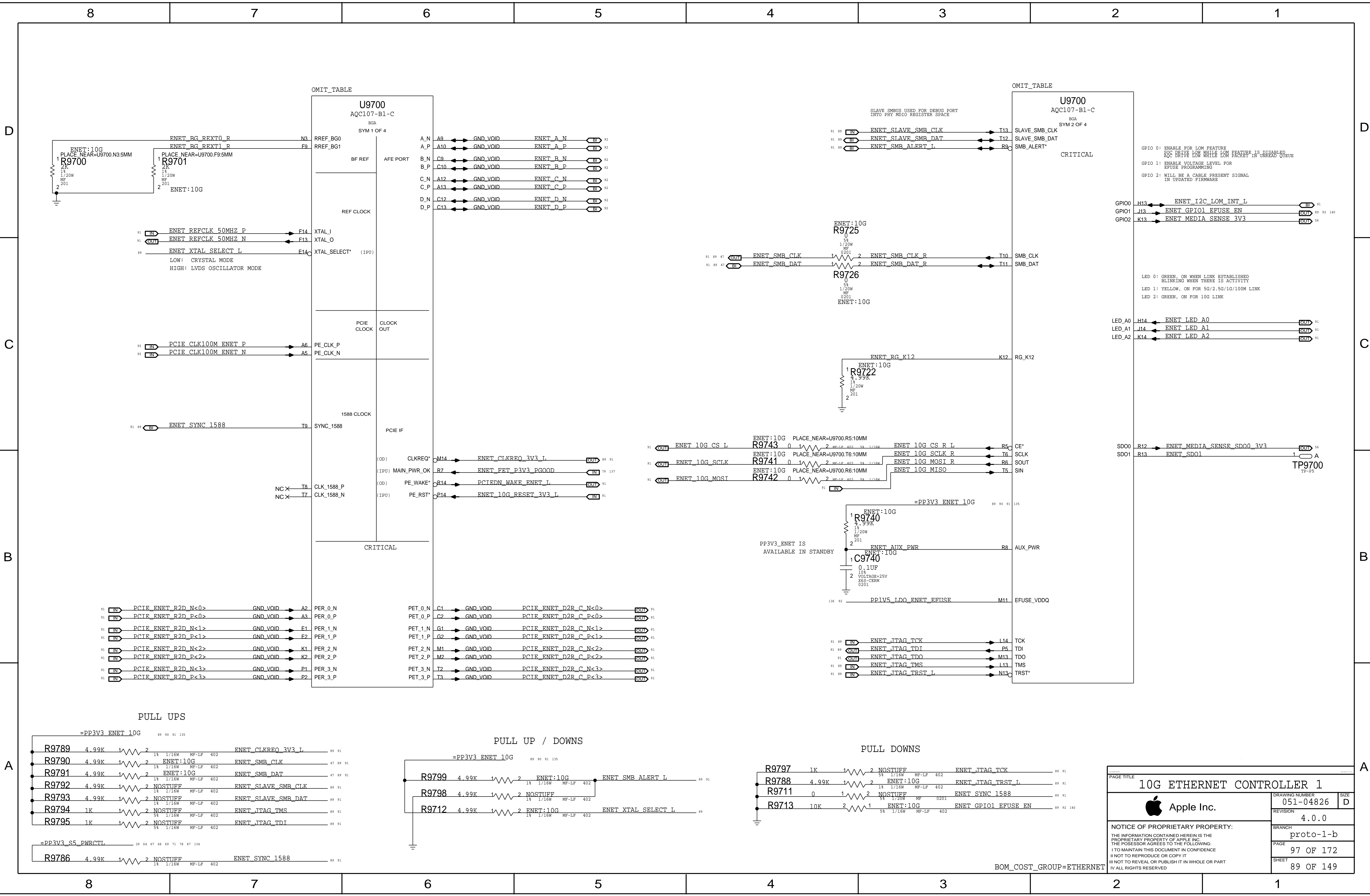






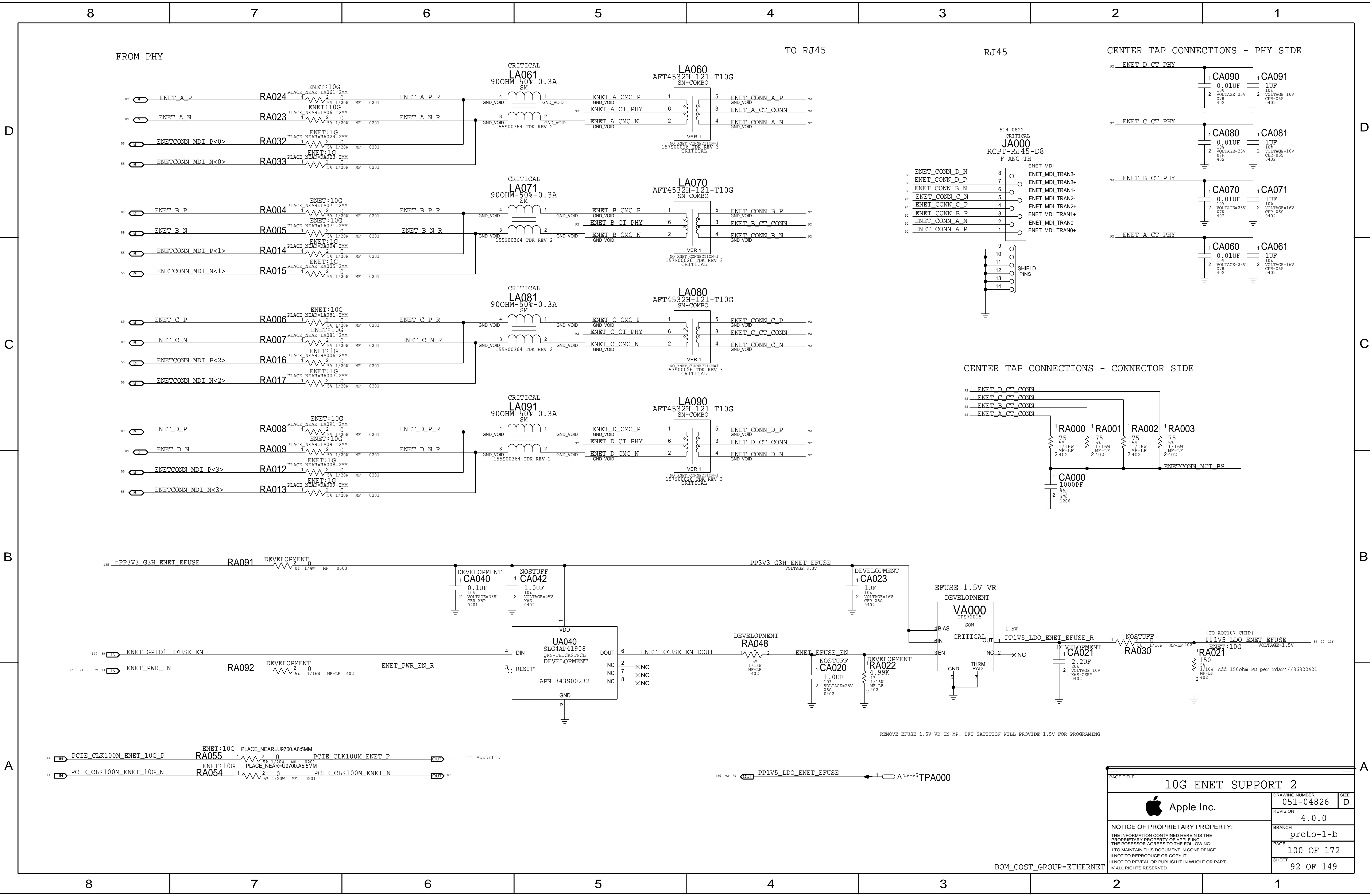







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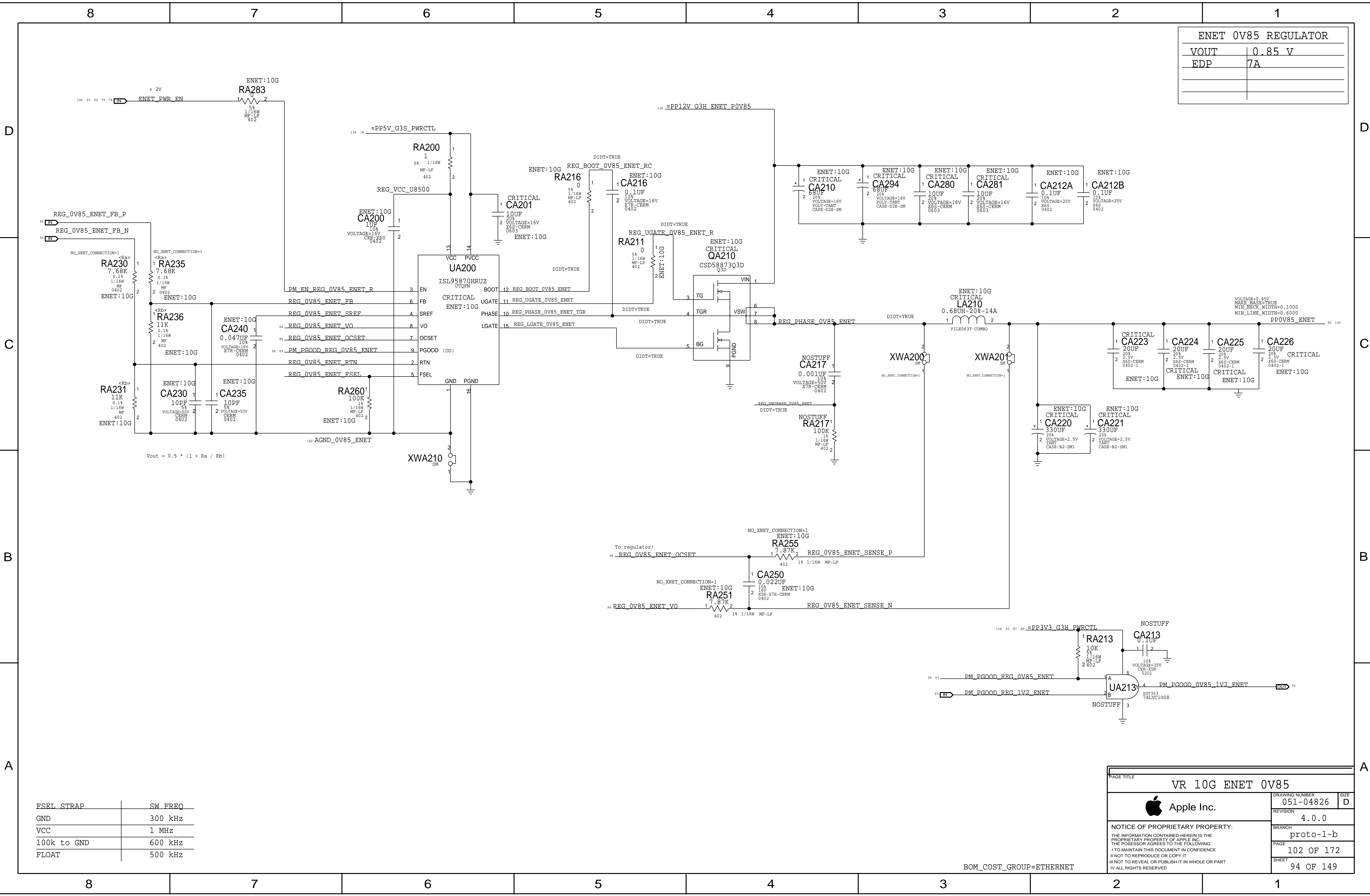





PAGE TITLE		
10G ENET SUPPORT 2		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
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	PAGE	100 OF 172
	SHEET	92 OF 149







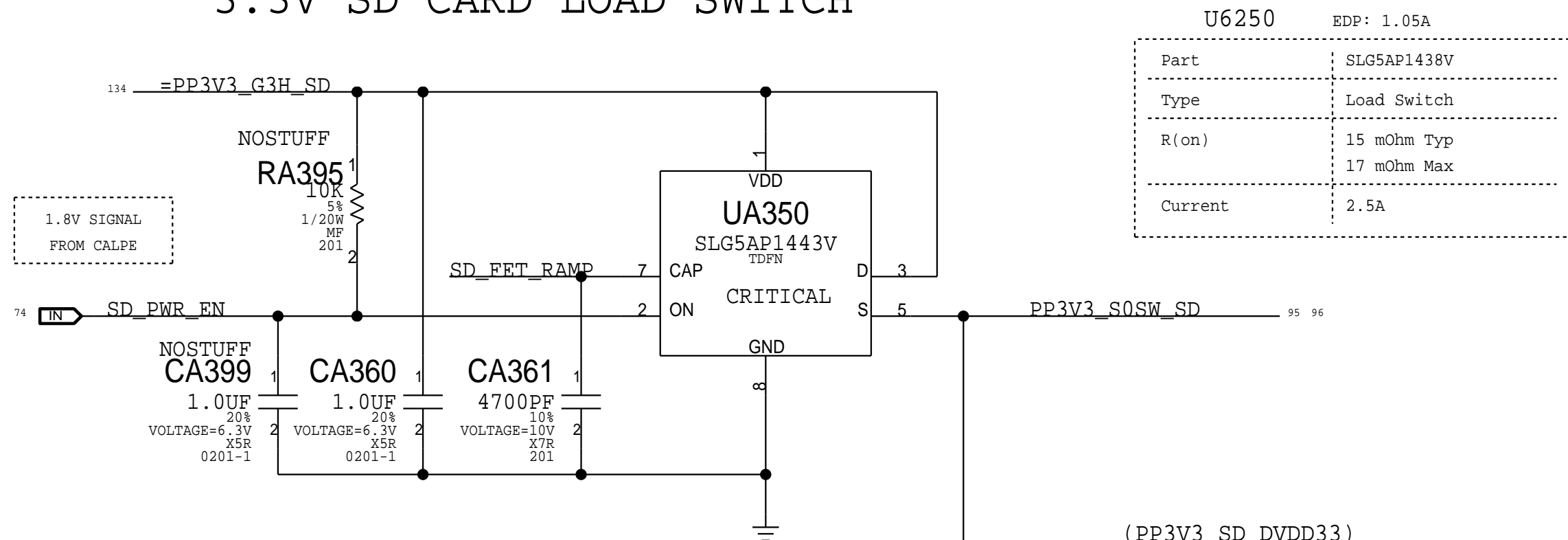
ENET 0V85 REGULATOR	
VOUT	0.85 V
EDP	7A

PAGE TITLE		
VR 10G ENET 0V85		
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	PAGE	102 OF 172
	SHEET	94 OF 149

FSEL STRAP	SW FREQ
GND	300 kHz
VCC	1 MHz
100k to GND	600 kHz
FLOAT	500 kHz

BOM\_COST\_GROUP=ETHERNET

3.3V SD CARD LOAD SWITCH



NOTE:

HOST PROVIDES DVDD33 AND AVDD33  
GL3227 GENERATES 1.2V USING INTERNAL  
LDO OR DCDC. DCDC IS ENABLED IN FW

FOR USH-I: 3.3V @ 900MA

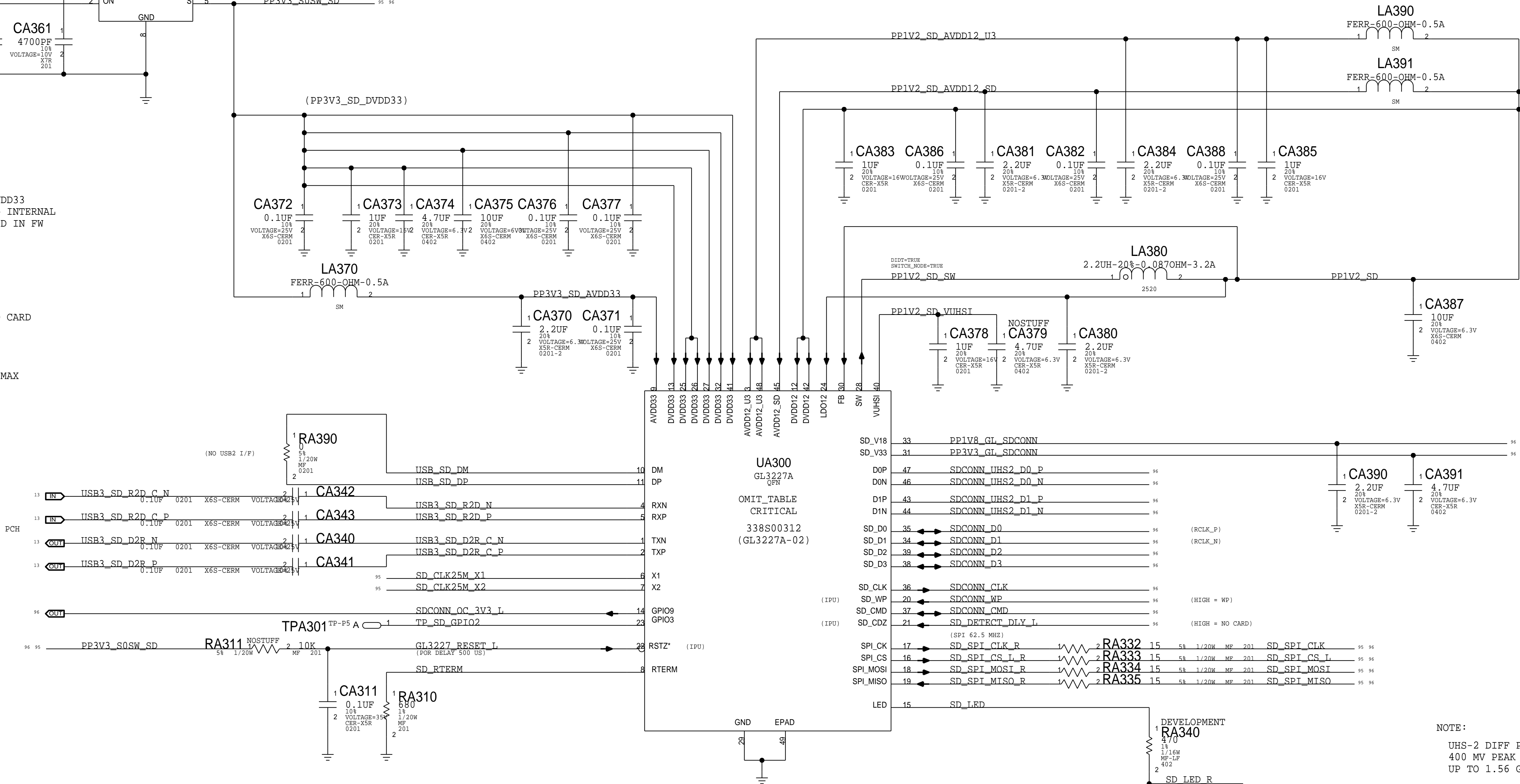
FOR USH-II: 3.3V @ 700MA

1.2V SVR OPERATES @ 1.6 MHZ

GL3227 PROVIDES POWER TO SD CARD

FOR UHS-I: SD\_V33 @ 800MA

FOR UHS-II: SD\_V33 @ 400MA  
SD\_V18 @ 200MA MAX



PIN 29 IS SVR GND  
DO NOT CONNECT PIN 29 TO EPAD DIRECTLY  
CONNECT PIN 29 TO PIN 27 CAP FIRST  
THEN TO MAIN GND

NOTE:


UHS-2 DIFF PAIRS 100 OHM  
400 MV PEAK TO PEAK  
UP TO 1.56 GBIT/S

UHS-2 DIFF CLK UP TO 52 MHZ

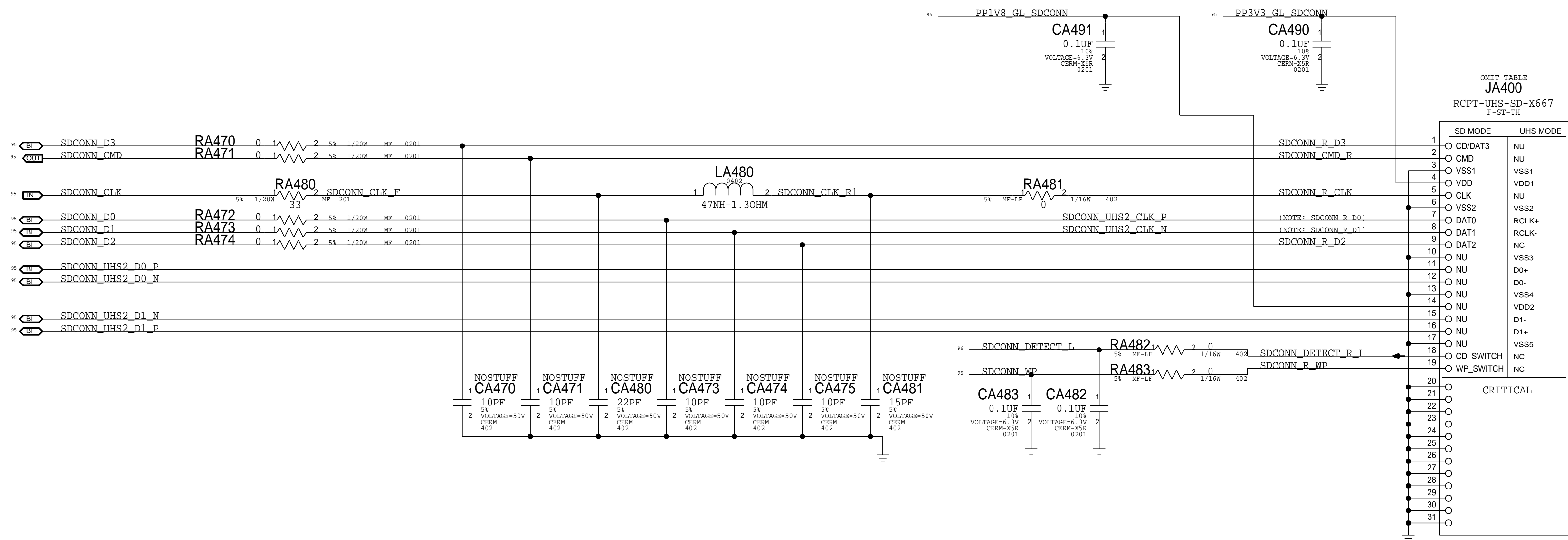
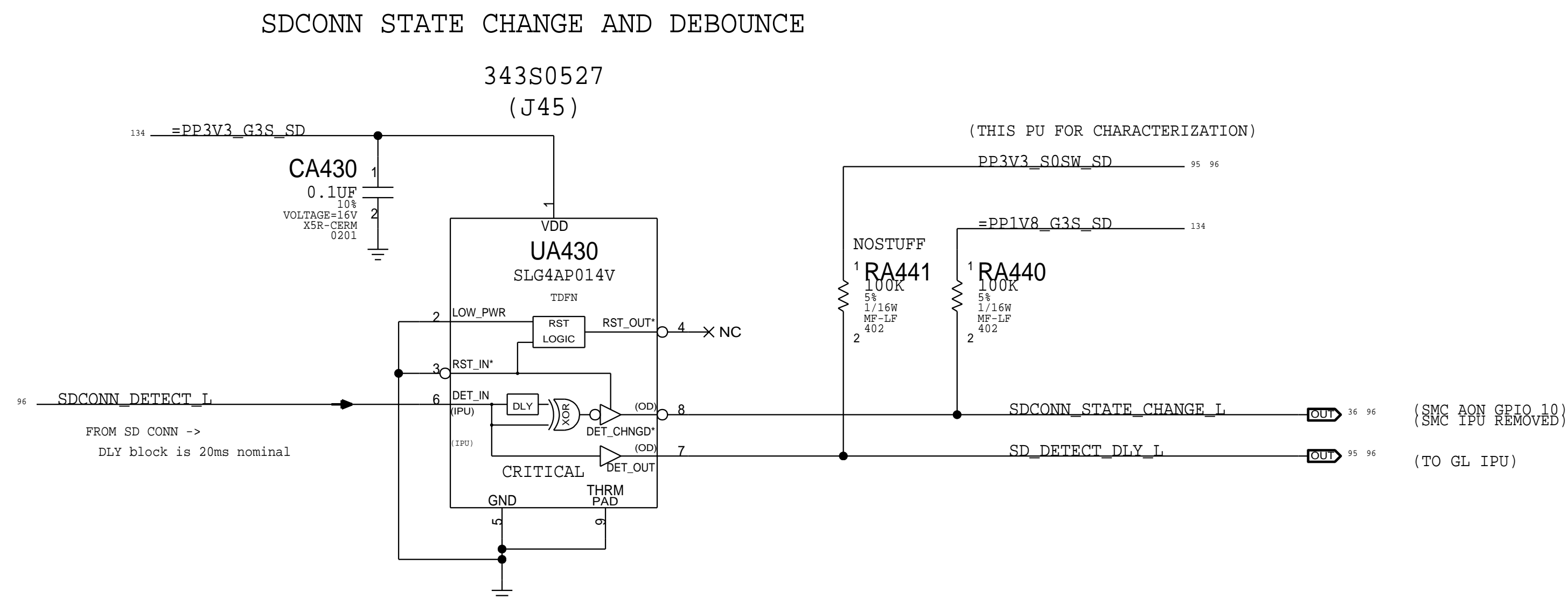
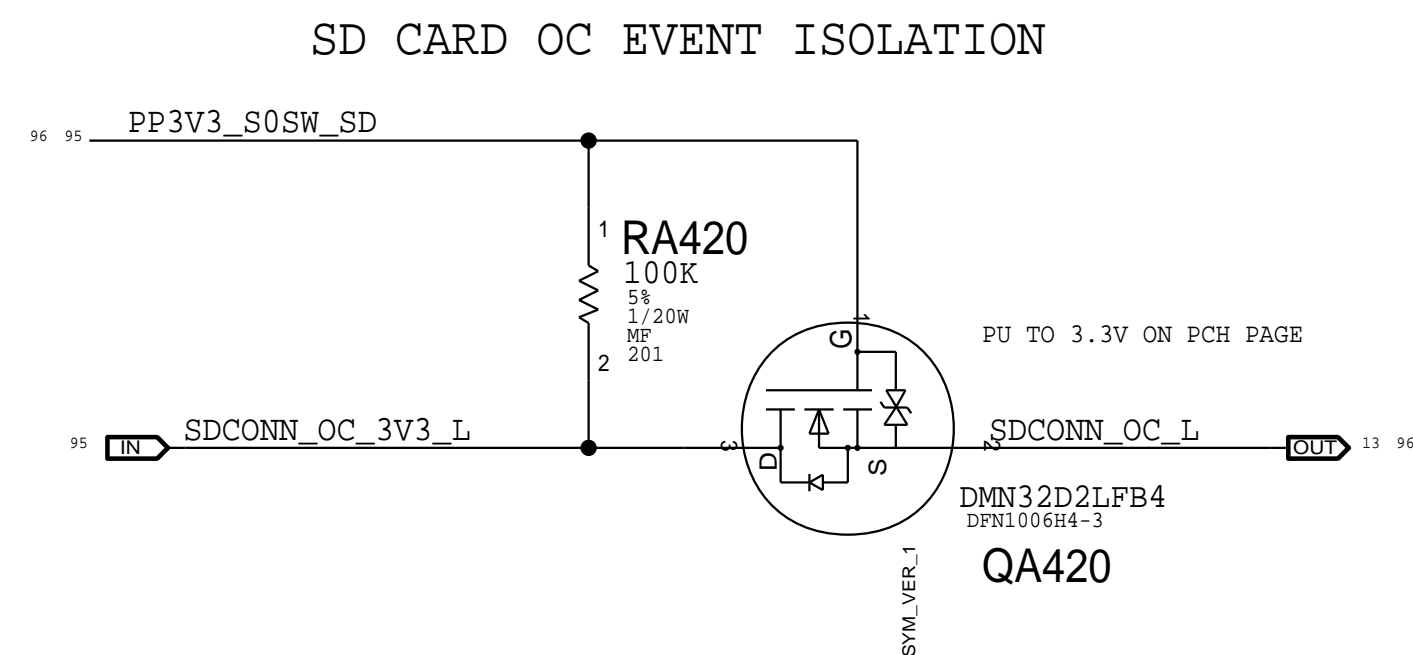
USH-1 SE SIGNALS 50-OHM

SD\_CLK MAX FREQ IS 208 MHZ  
AT SDRI04 MODE

LED IS ON WHEN POWER ON  
BLINKING DURING R/W OPERATIONS


SD CONTROLLER UHS-II		
 Apple Inc.	DRAWING NUMBER	051-04826
	REVISION	4.0.0
	BRANCH	proto-1-b
	PAGE	103 OF 172
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BOM\_COST\_GROUP=SD\_CARD

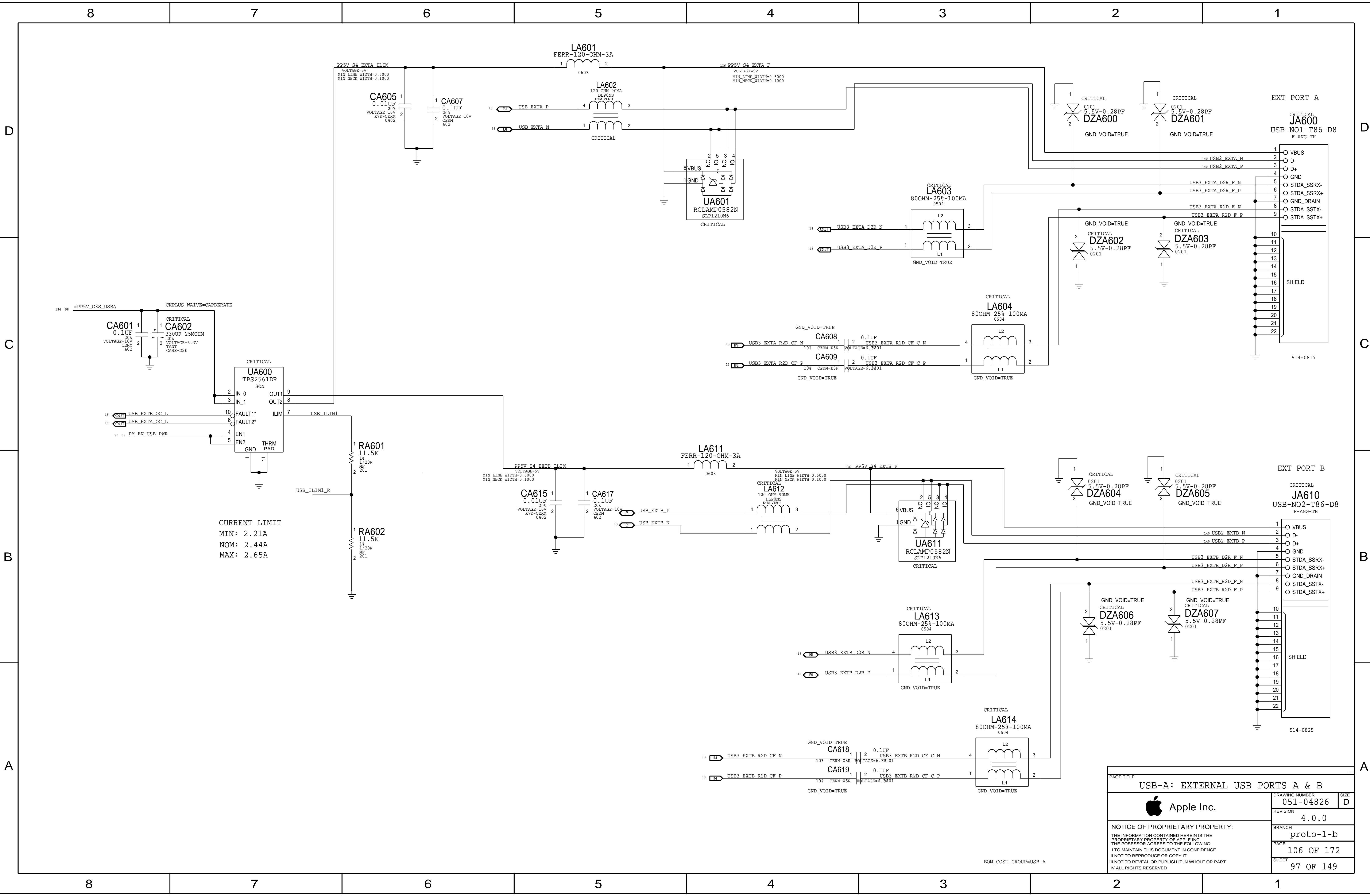



TPA4301	A	1	TP-P5	SD_SPI_CLK	95
TPA4301	A	1	TP-P5	SD_SPI_CS_L	95
TPA4321	A	1	TP-P5	SD_SPI_MOSI	95
TPA4331	A	1	TP-P5	SD_SPI_MISO	95
TPA4401	A	1	TP-P5	SDCONN_OC_L	13 96
TPA4411	A	1	TP-P5	SDCONN_DETECT_L	96
TPA4421	A	1	TP-P5	SDCONN_STATE_CHANGE_L	96
TPA4431	A	1	TP-P5	SD_DETECT_DLY_L	36 96

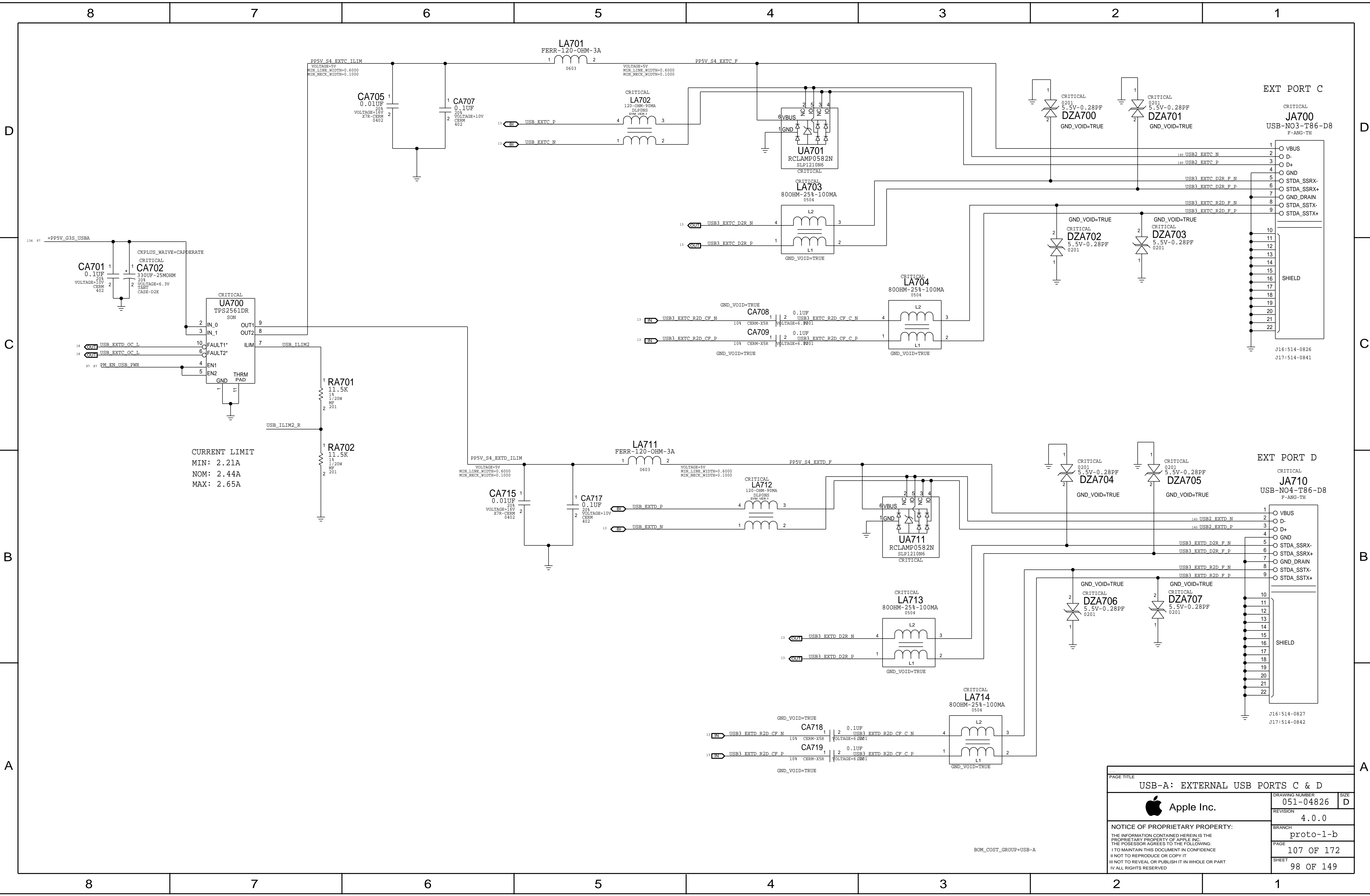
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512-00005	1	CONN,RCPT,UHS SD,X1146	JA400	CRITICAL	

PAGE TITLE		SD CONNECTOR UHS-II	
 Apple Inc.	DRAWING NUMBER	051-04826	SIZE
	REVISION	4.0.0	
	BRANCH	proto-1-b	
	PAGE	104 OF 172	
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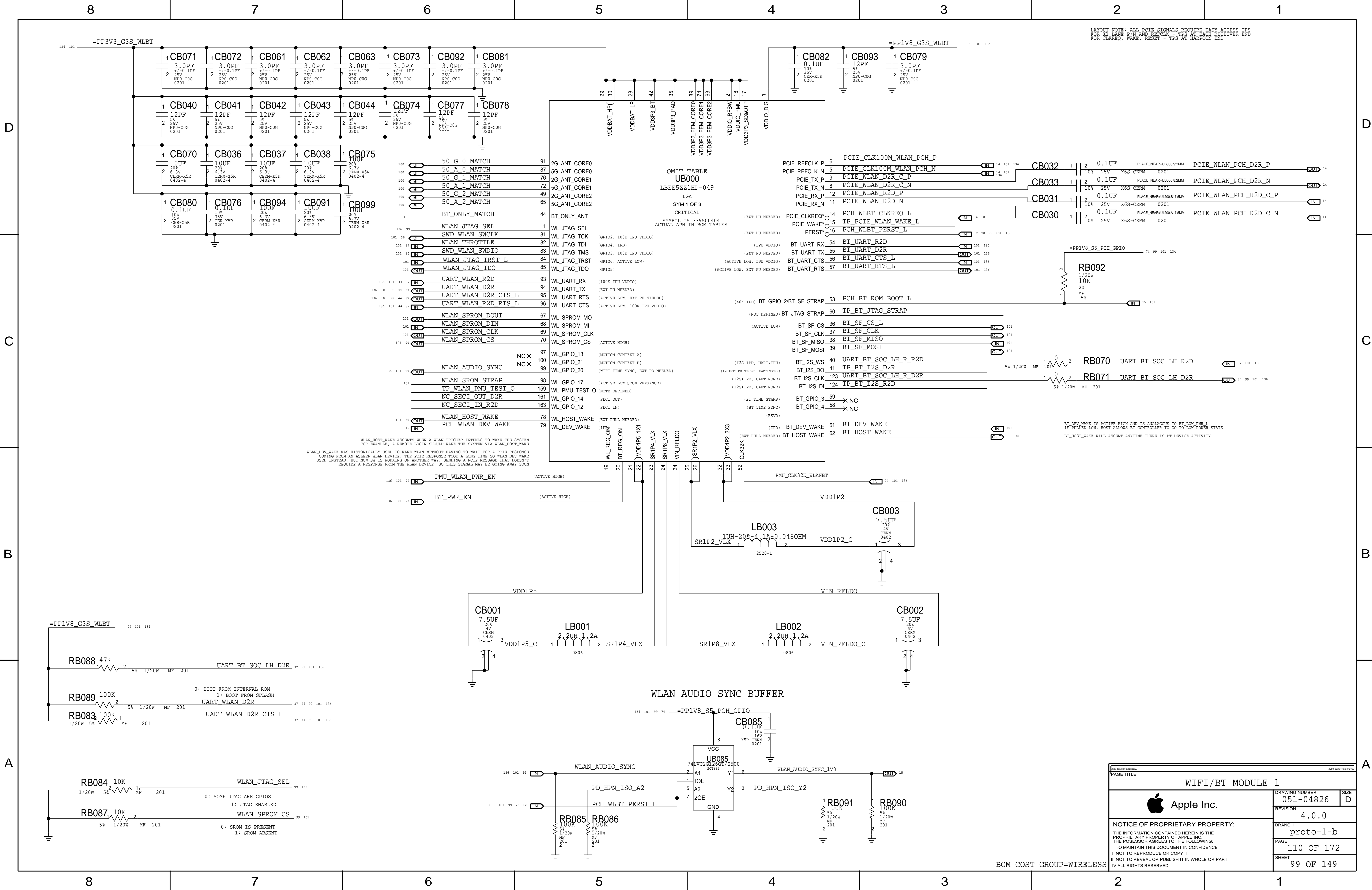
BOM\_COST\_GROUP=SD CARD



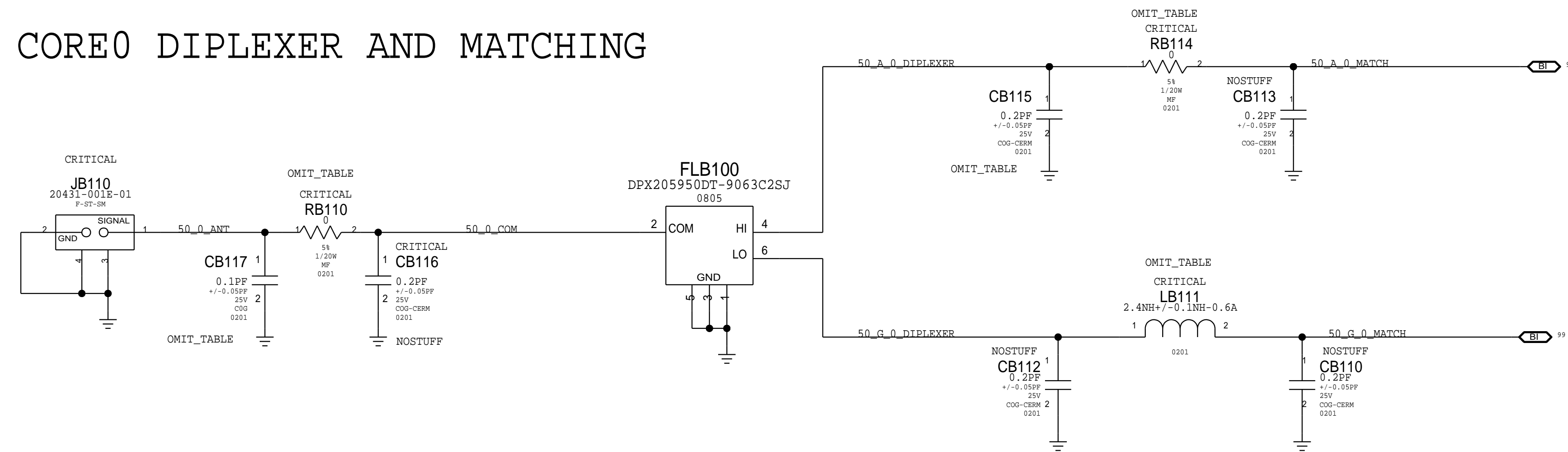
PAGE TITLE		
USB-A: EXTERNAL USB PORTS A & B		
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	REVISION	4.0.0
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	PAGE	106 OF 172
	SHEET	97 OF 149



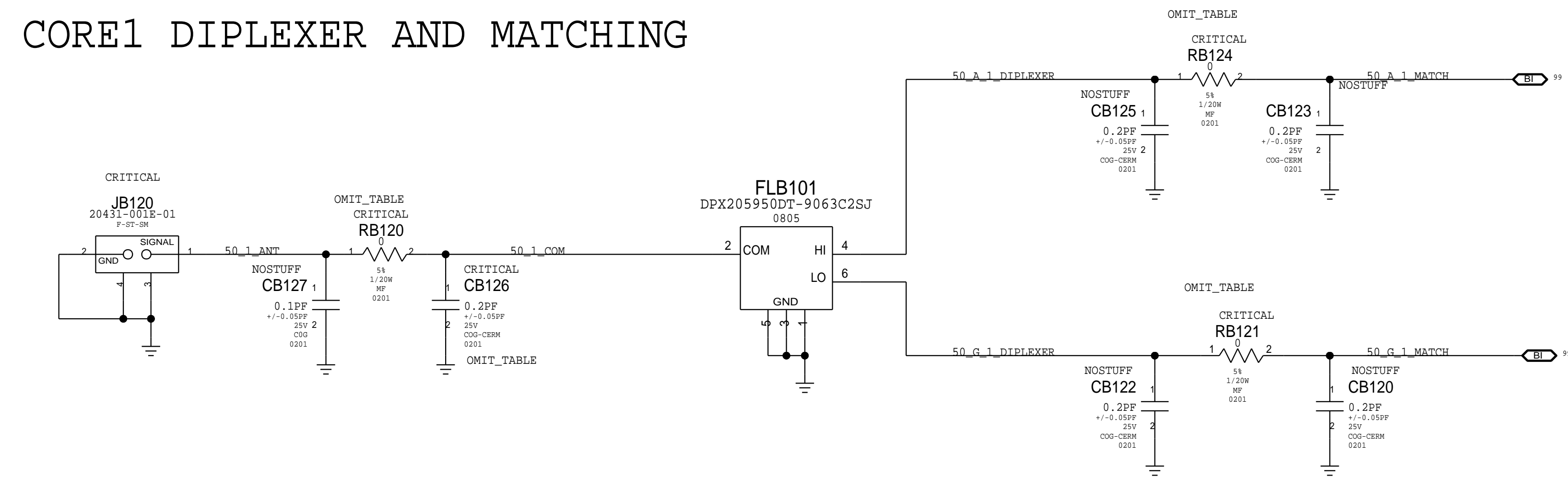




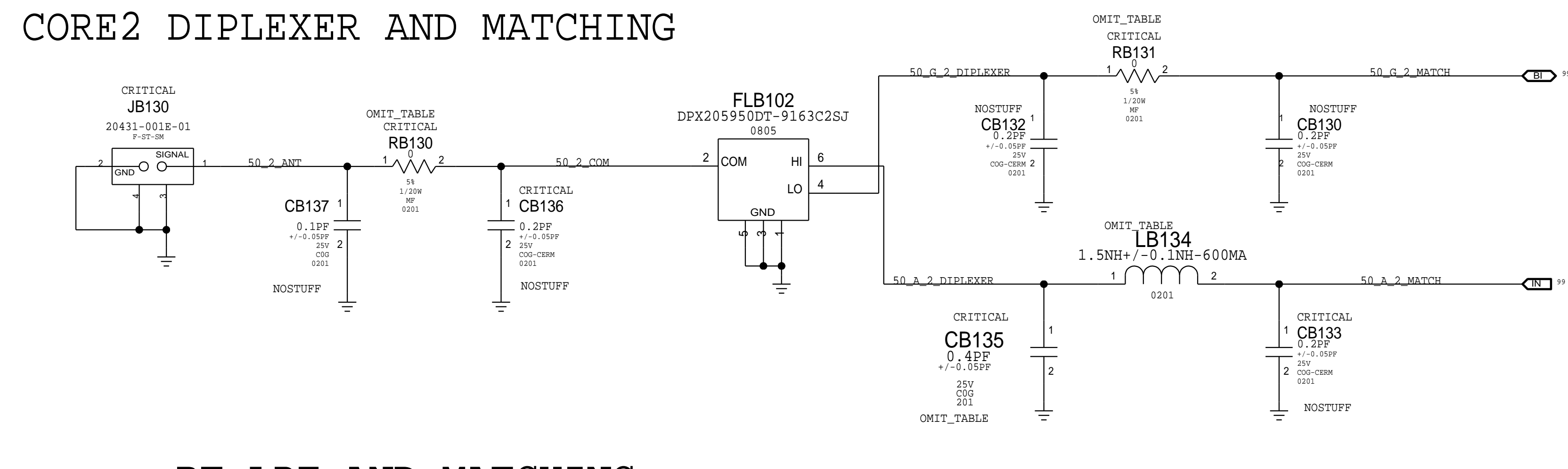
## CORE0 DIPLEXER AND MATCHING



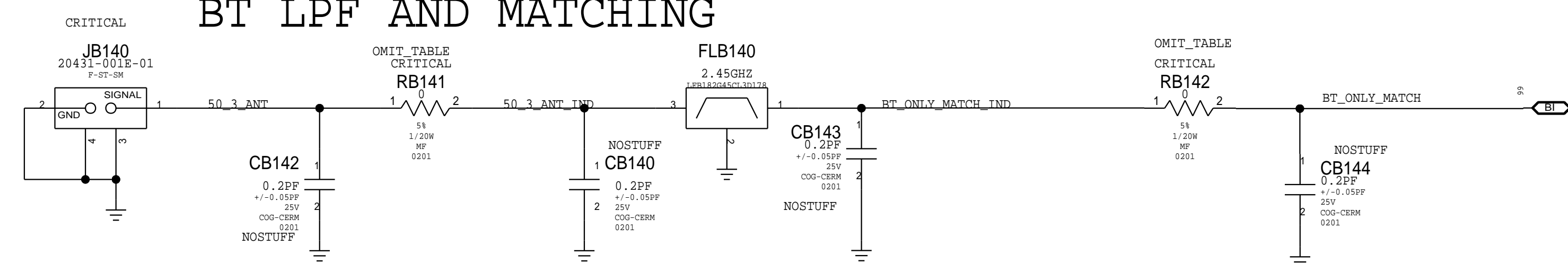
## CORE1 DIPLEXER AND MATCHING




## CORE2 DIPLEXER AND MATCHING



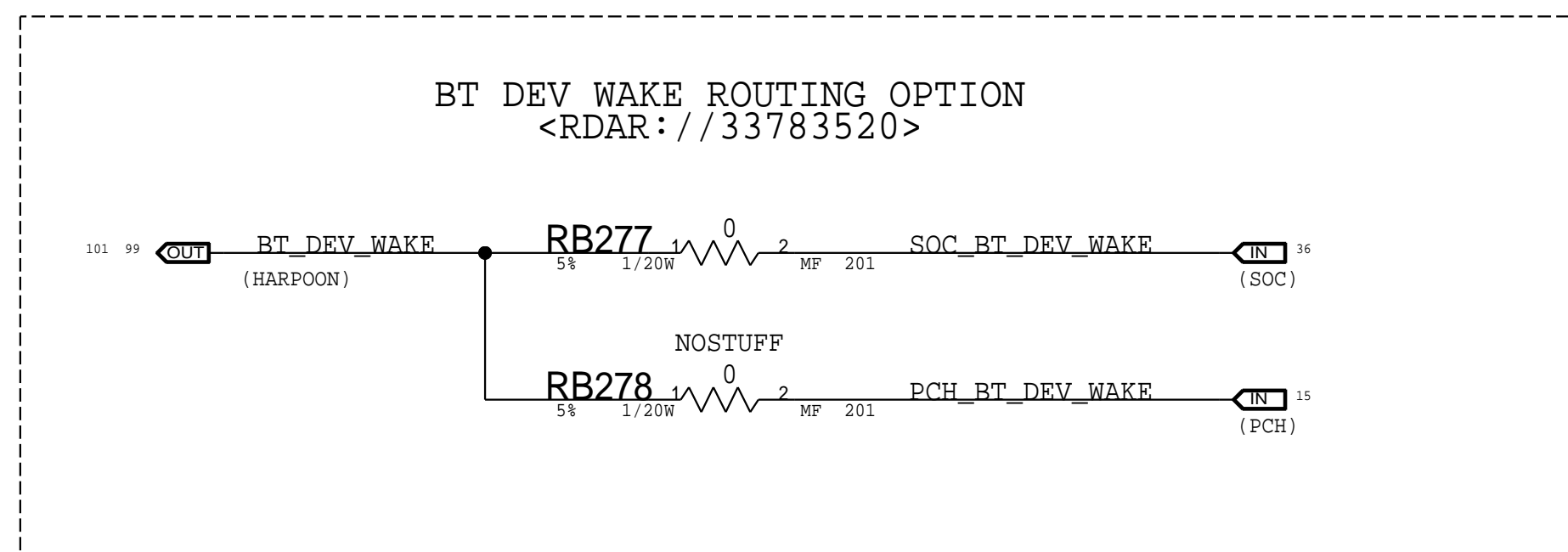
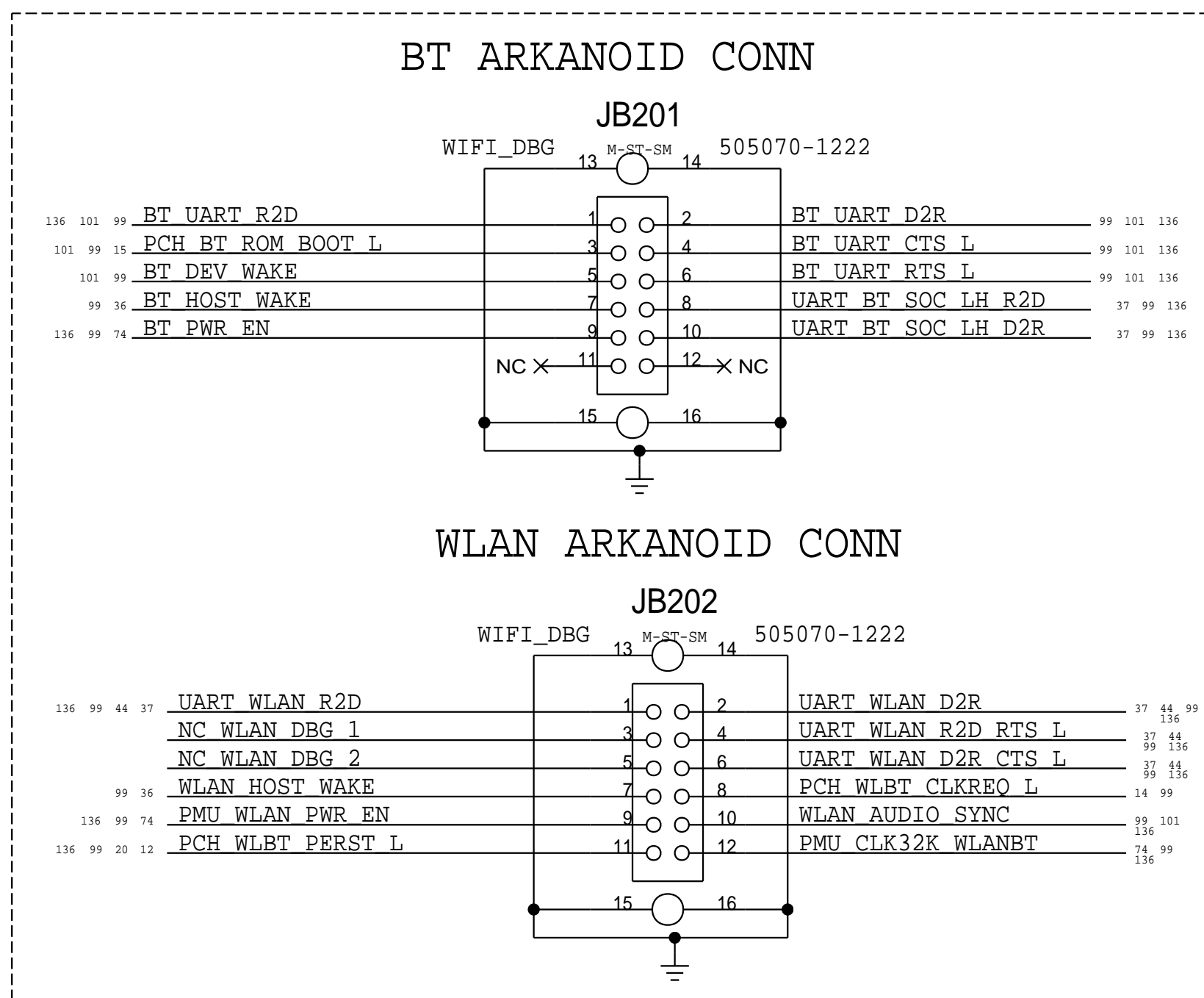
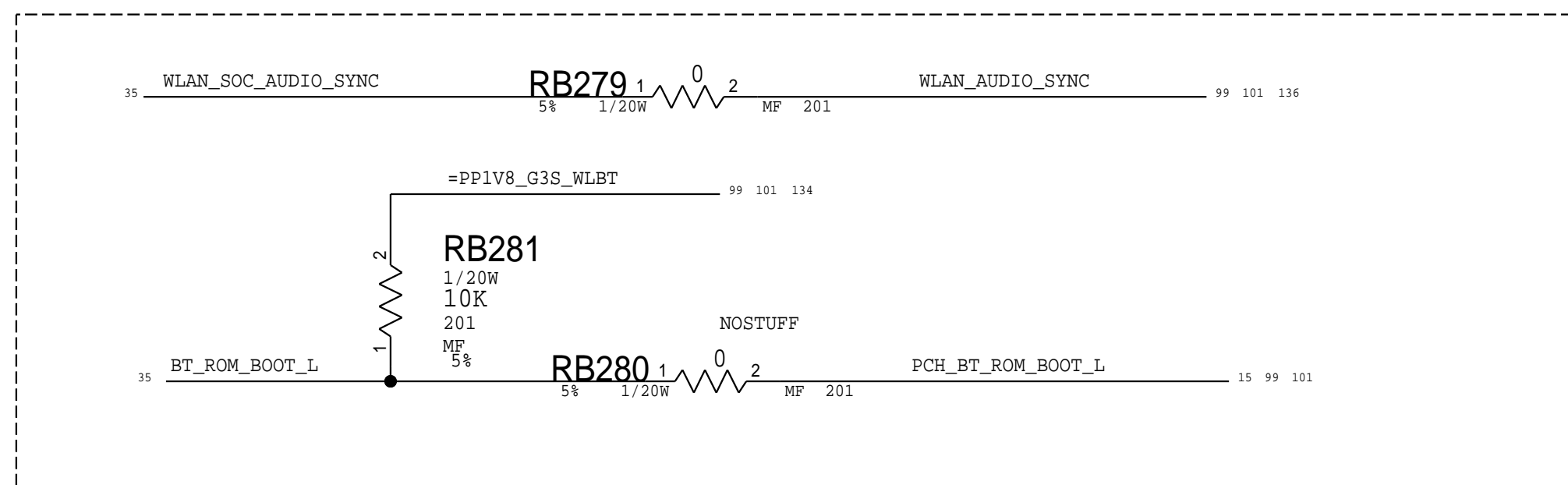
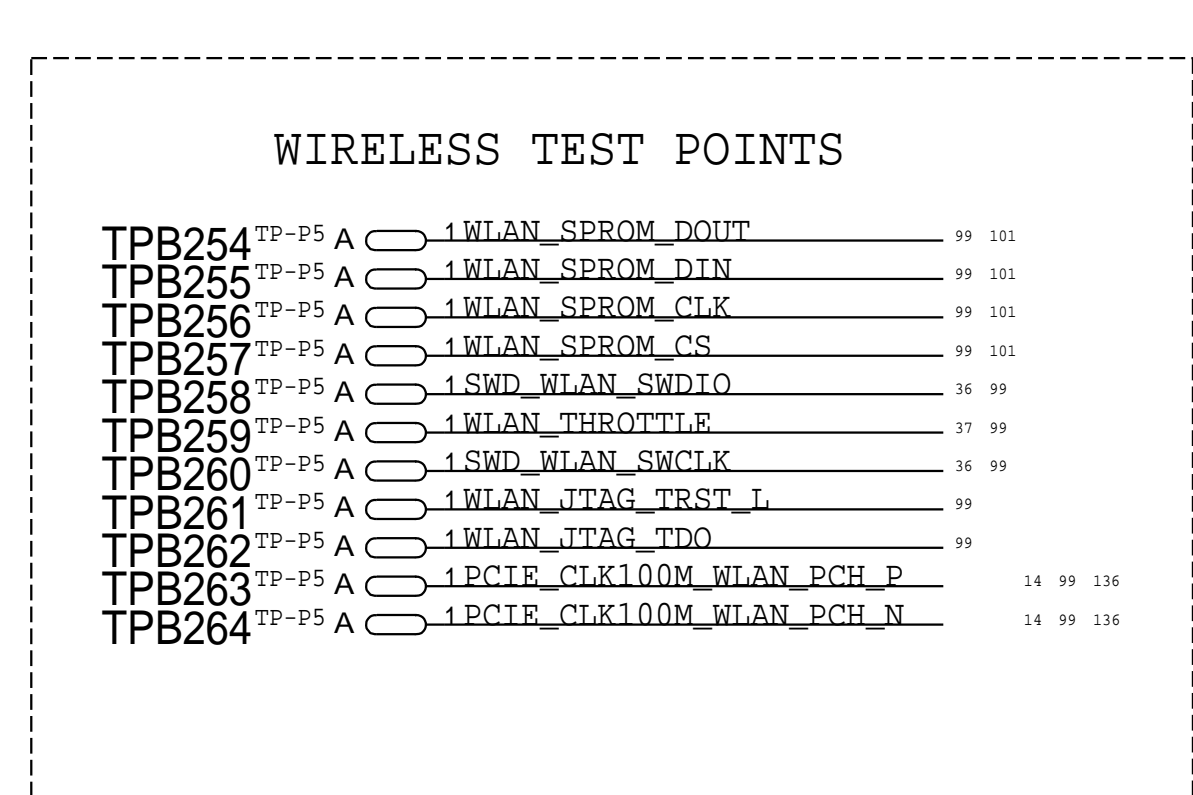
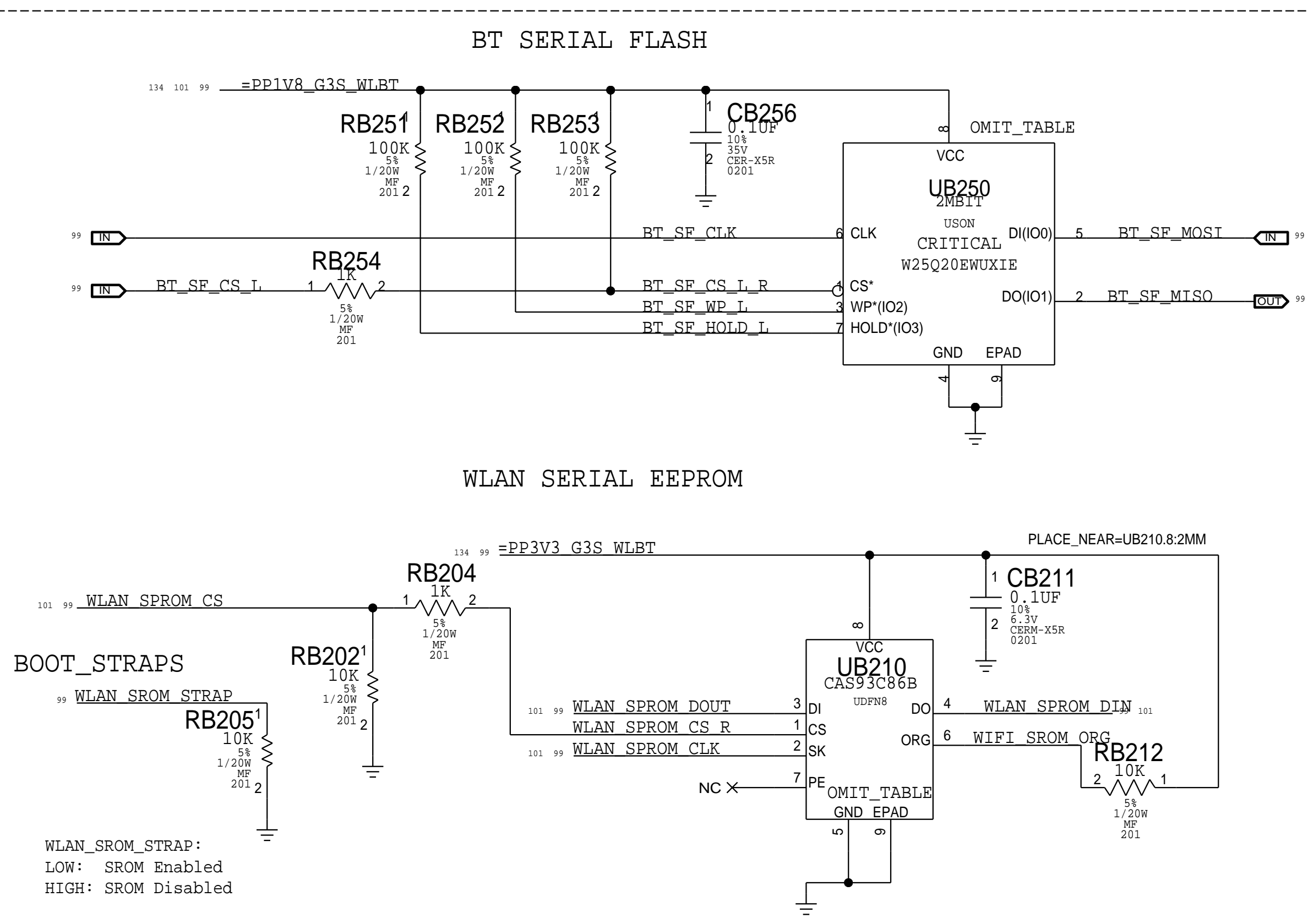
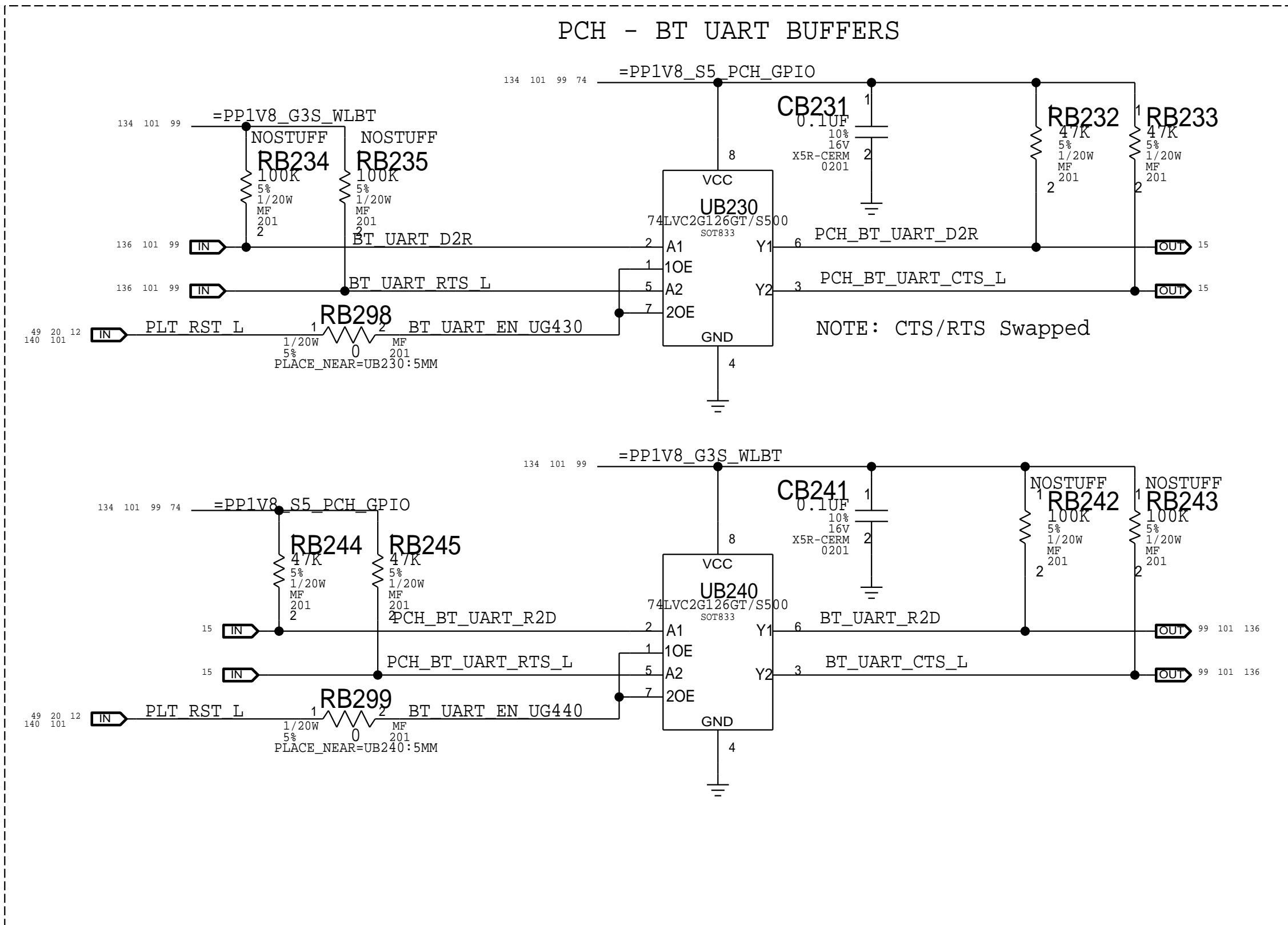
## BT LPF AND MATCHING




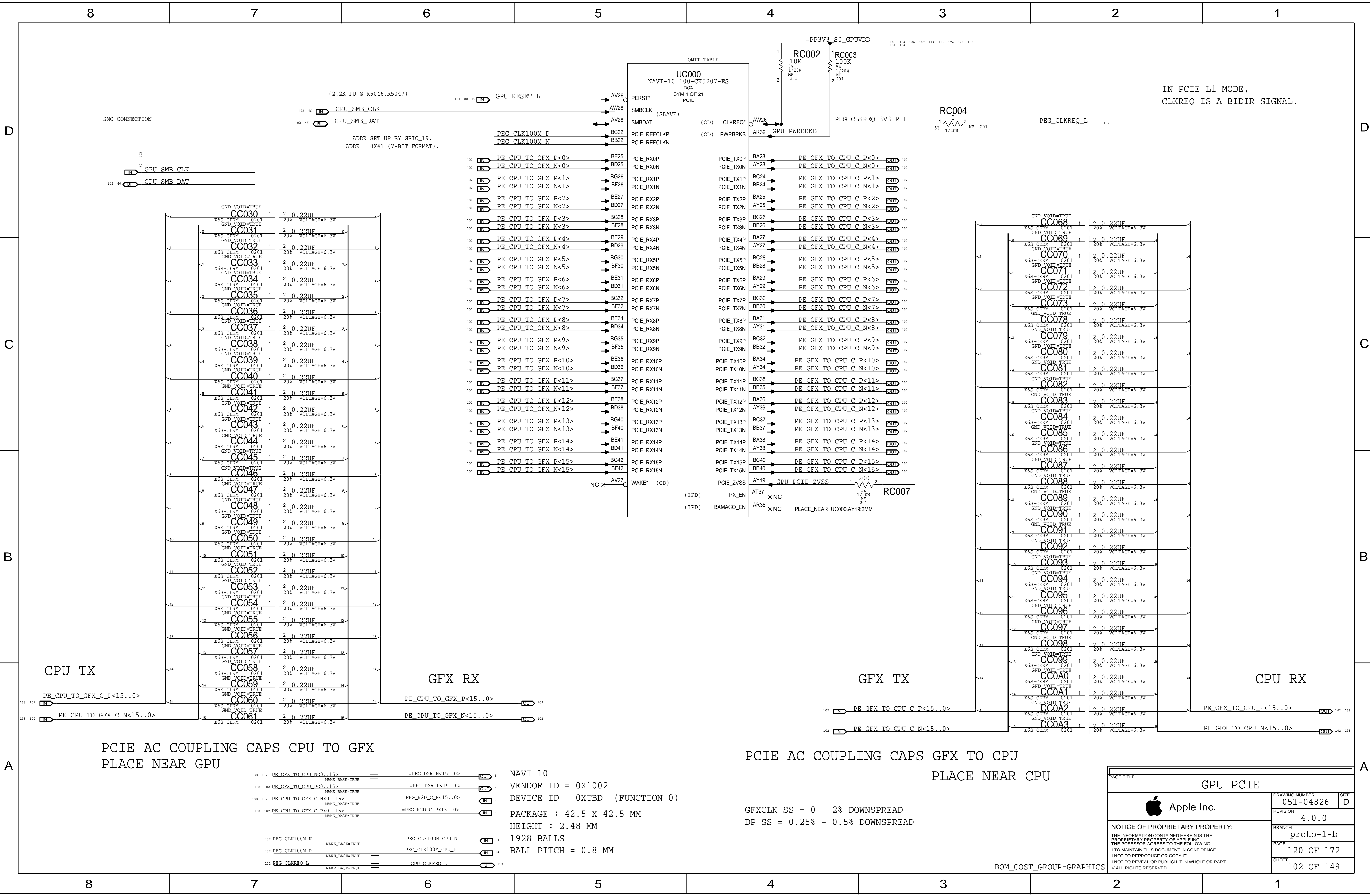
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S0201	8	RES, HP, 1A, 50M, 5%, 0201, BLACK	10B11, 00B15, 00B13, 00B14, 00B20, 00B23, 00B13, 00B14, 00B15	CRITICAL	RF:TUNE
131S0555	2	CAP, CER, COG, 50V, 1.0PF, +/-0.050PF, 25V, 0201	RB114, LB134	CRITICAL	RF:TUNE
152S2036	2	IND, FILM, 2.5NH, +/-0.138H, 6000MA, 10K-0.0201	CB115, CB135	CRITICAL	RF:TUNE
131S0431	2	CAP, CER, COG, 0.20PF, +/-0.0050PF, 25V, 0201, B-Q	CB117, CB126	CRITICAL	RF:TUNE
152800058	1	IND, FILM, 1.7NH, +/-0.138H, 8000MA, 10K-0.0201	RB142	CRITICAL	RF:TUNE

DOC NUMBER: 07896		SYNC DATE: 04-20-2014	
PAGE TITLE WIFI/BT MODULE 2			
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		PAGE	111 OF 172
		SHEET	100 OF 149

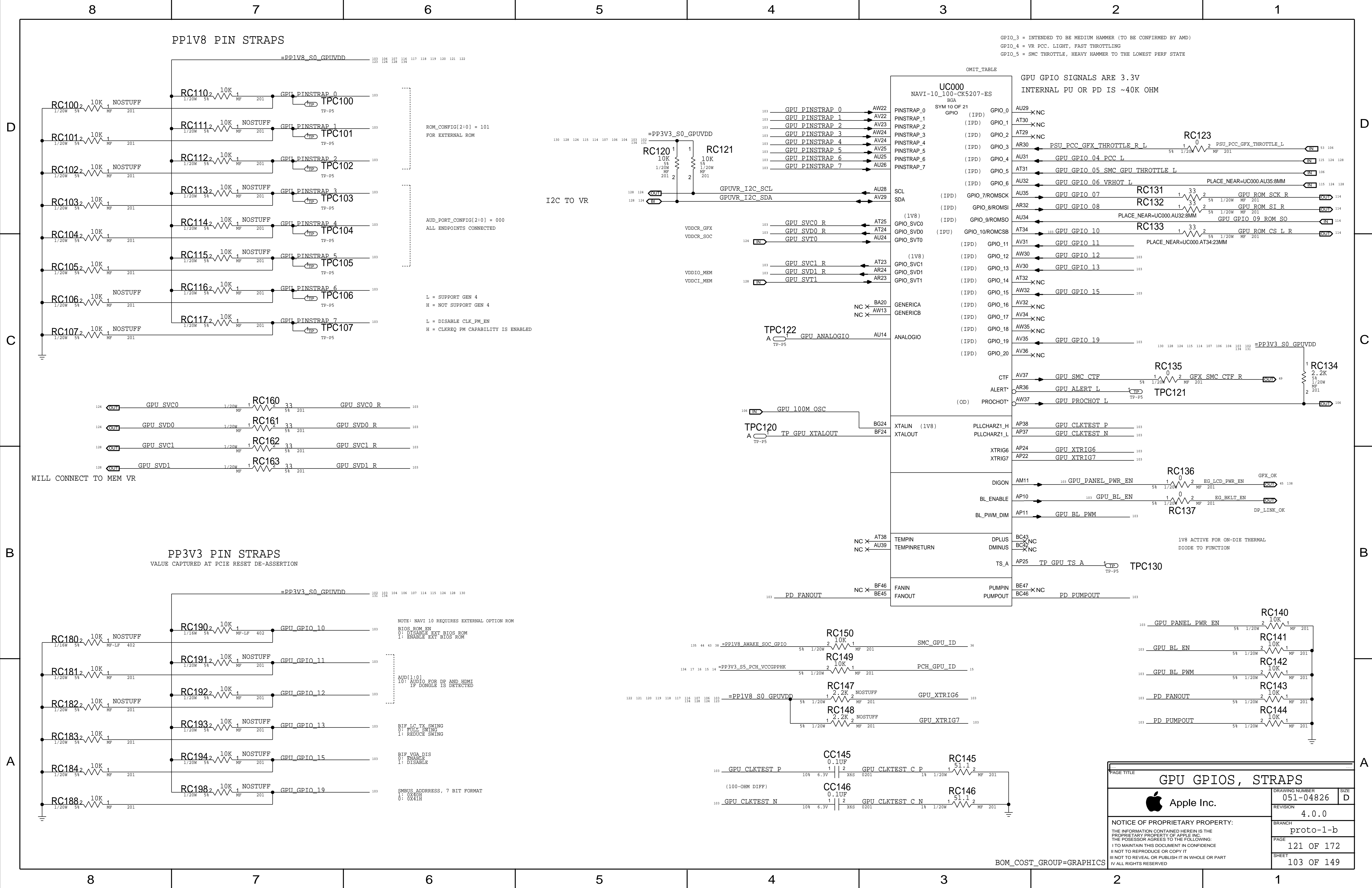
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FORM: ACP/STP/02/17/02/01		FORM: 02/01/16-17/02/12/01/01	
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WIFI/BT SUPPORT			
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	4.0.0		
BRANCH		proto-1-b	
PAGE		112 OF 172	
SHEET		101 OF 149	



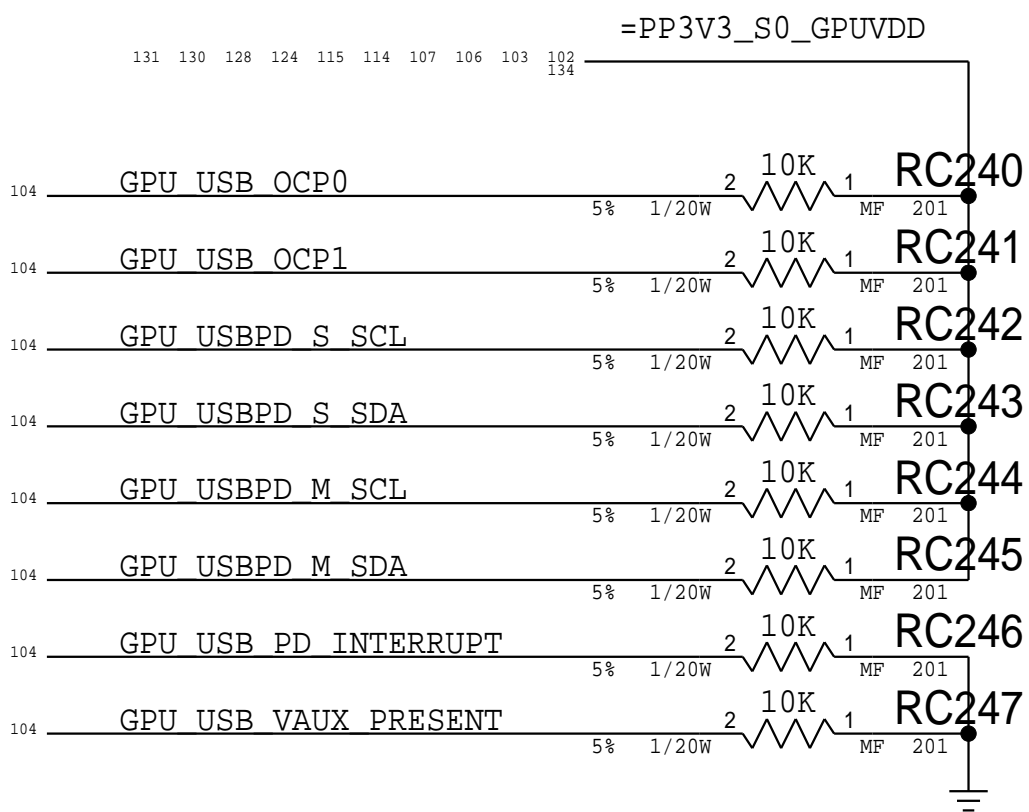
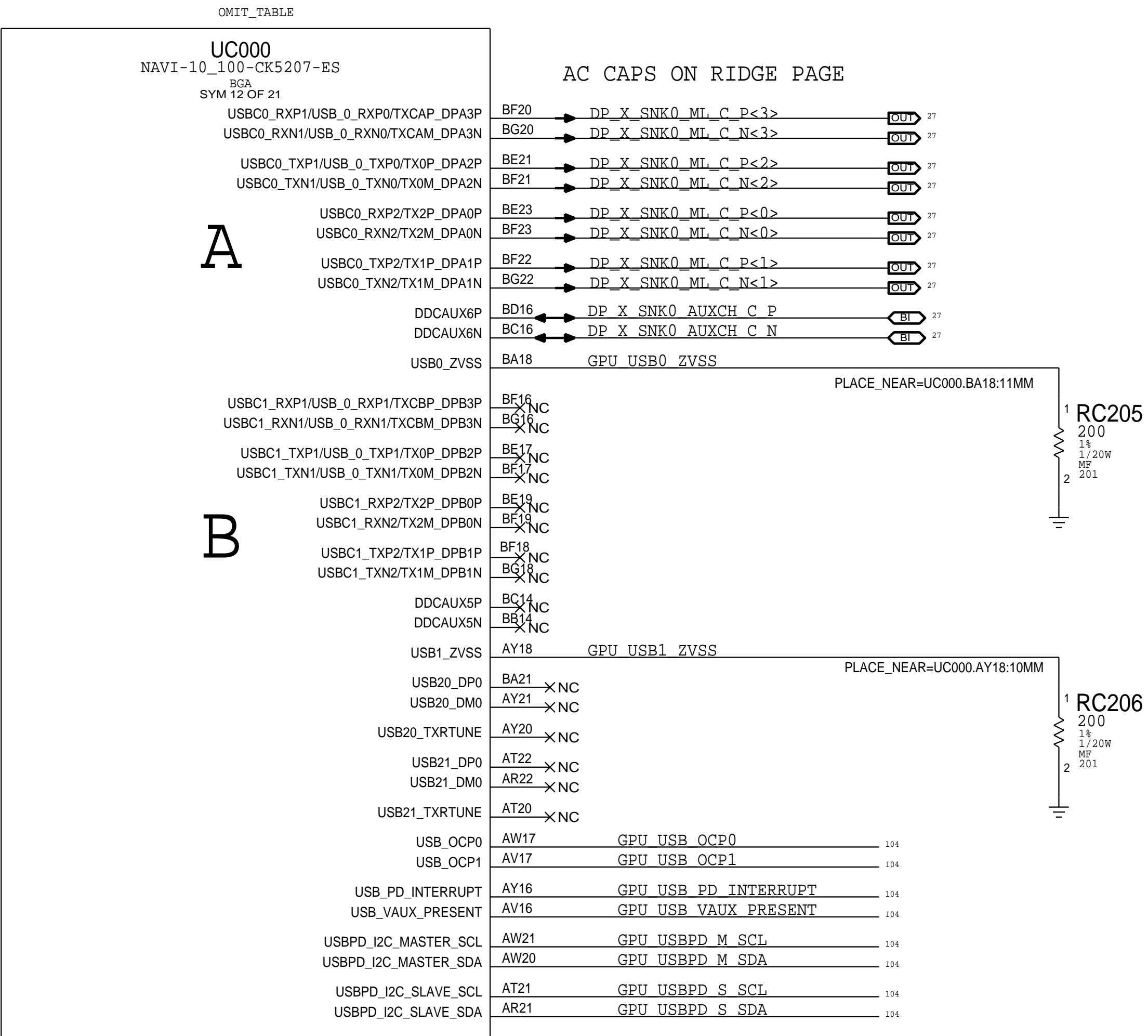
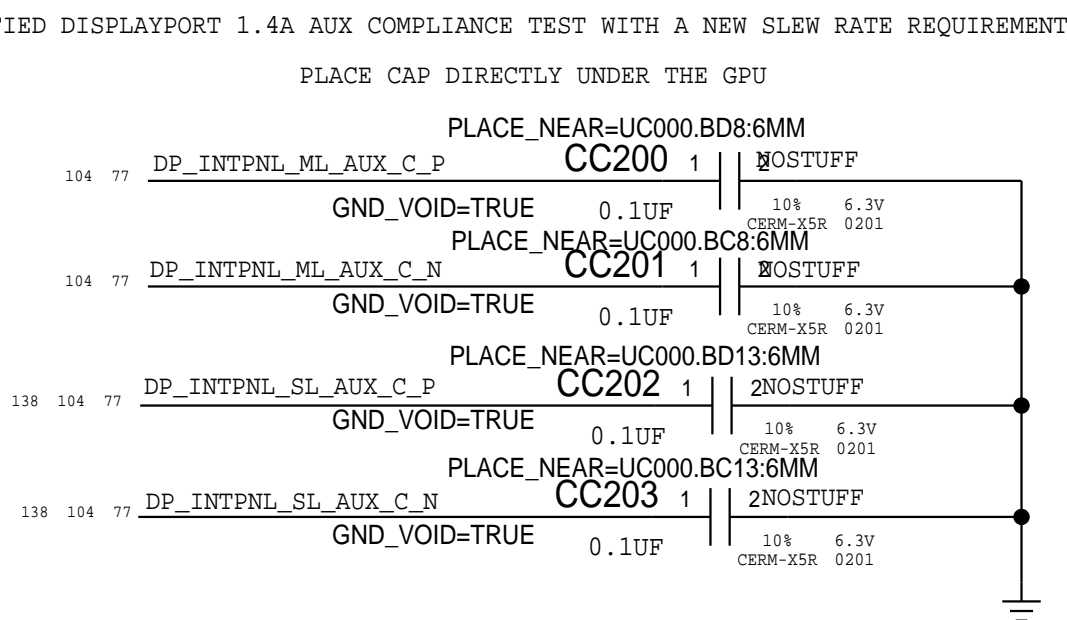
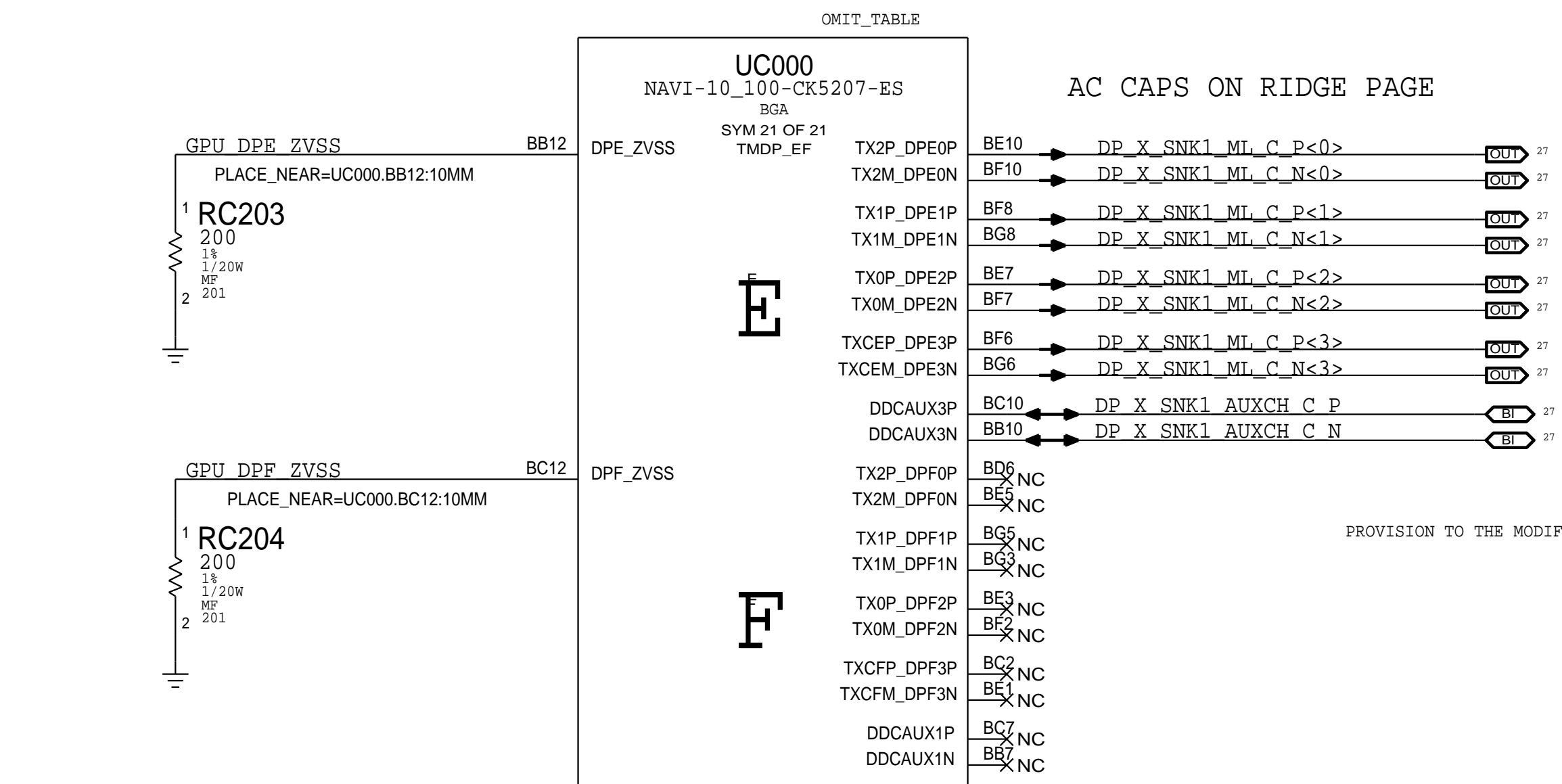
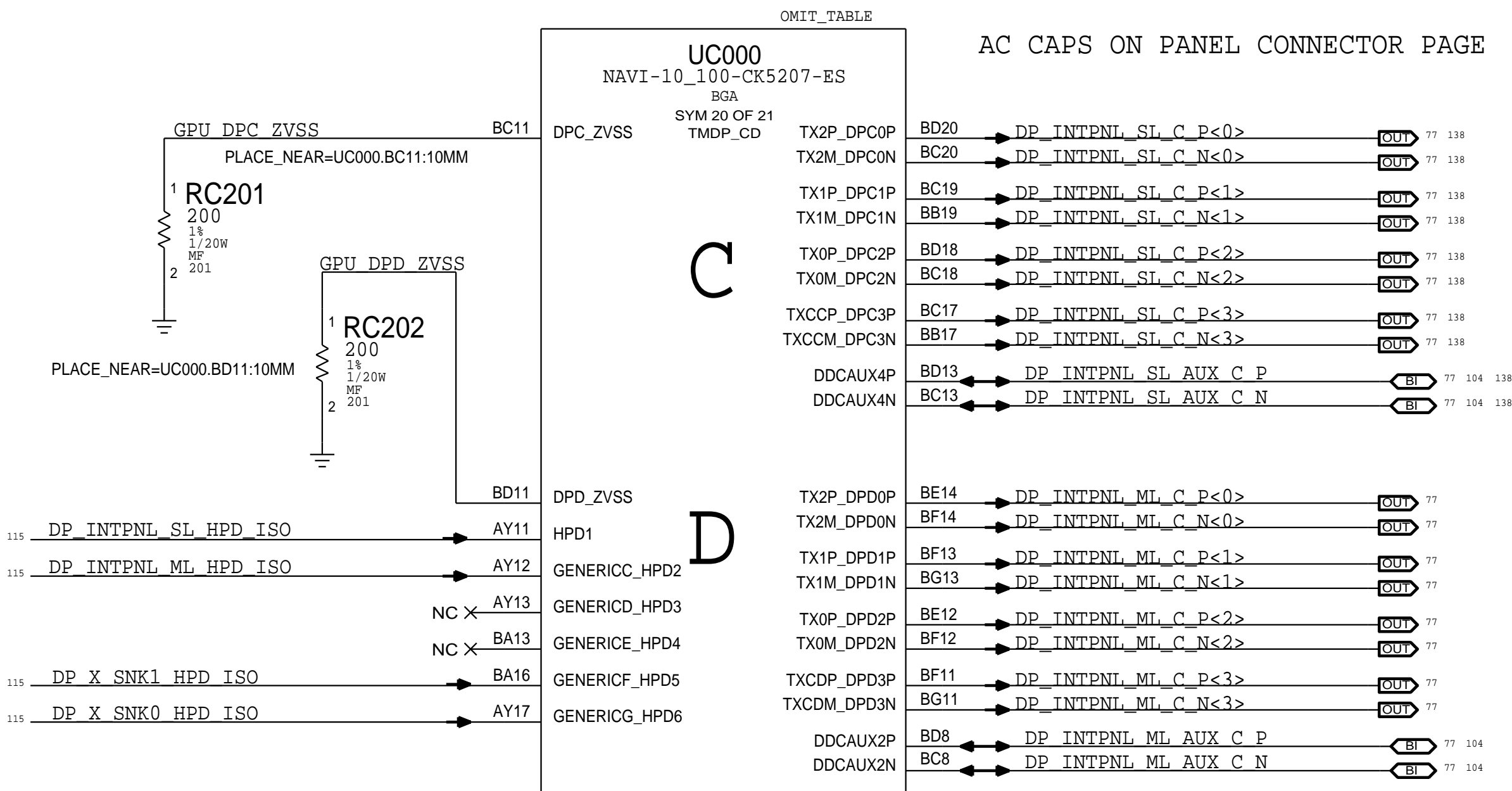






THIS DESIGN  
DOES NOT USE GPU  
USBC FEATURE

NOTE: SYMBOL LANES ARE ORDERED FOR USB-C  
PORT A DP LANES ARE OUT OF ORDER, 3-2-0-1




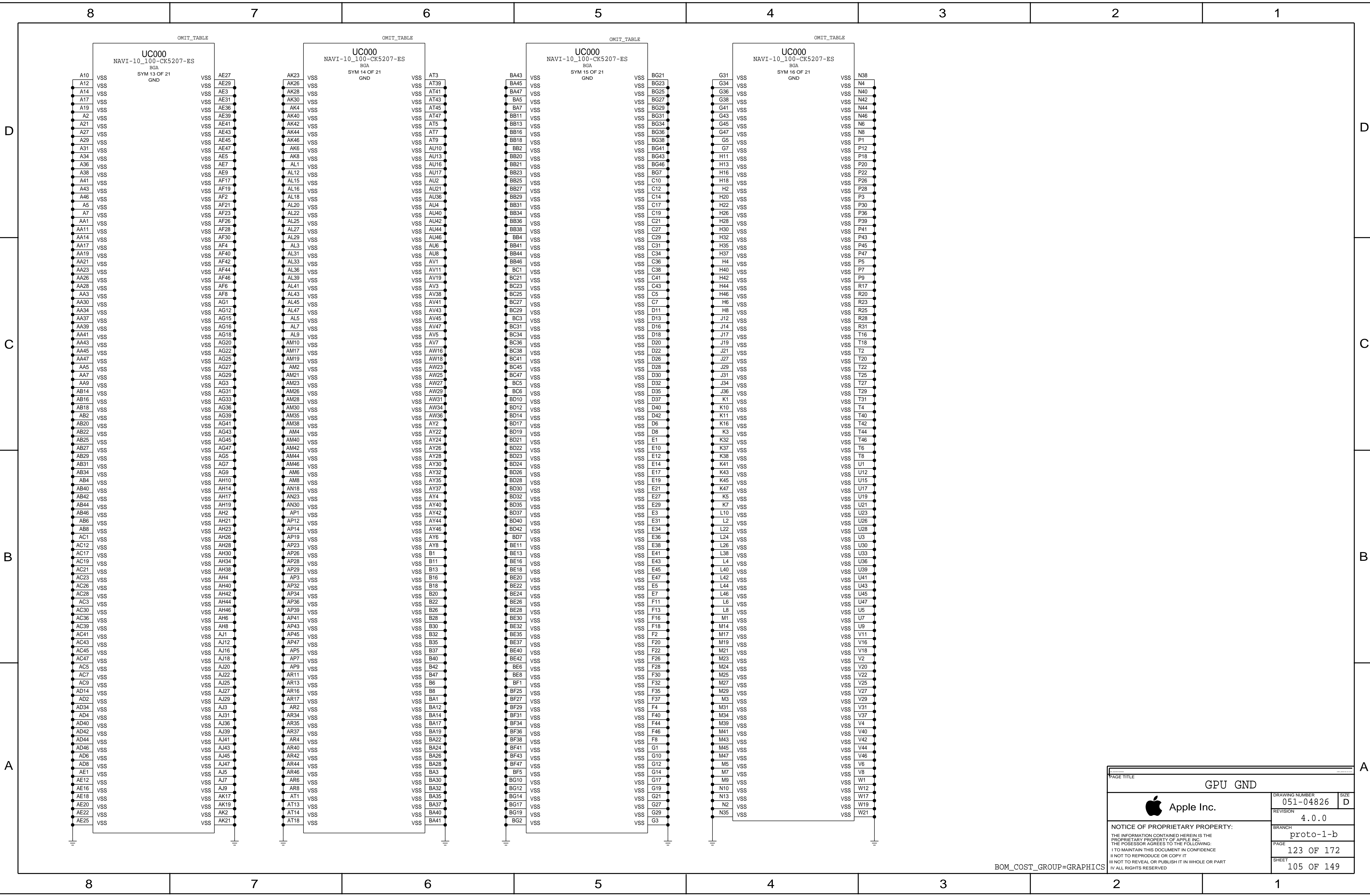
NOTES:

ALL 6 VIDEO PORTS ARE CONFIG TO DP IN VBIOS

NAVI DOES NOT SUPPORT DUAL LINK DVI

BOM\_COST\_GROUP=GRAPHICS

PAGE TITLE		
GPU DISPLAYPORT		
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	REVISION	4.0.0
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	PAGE	122 OF 172
	SHEET	104 OF 149



D

C

B

A

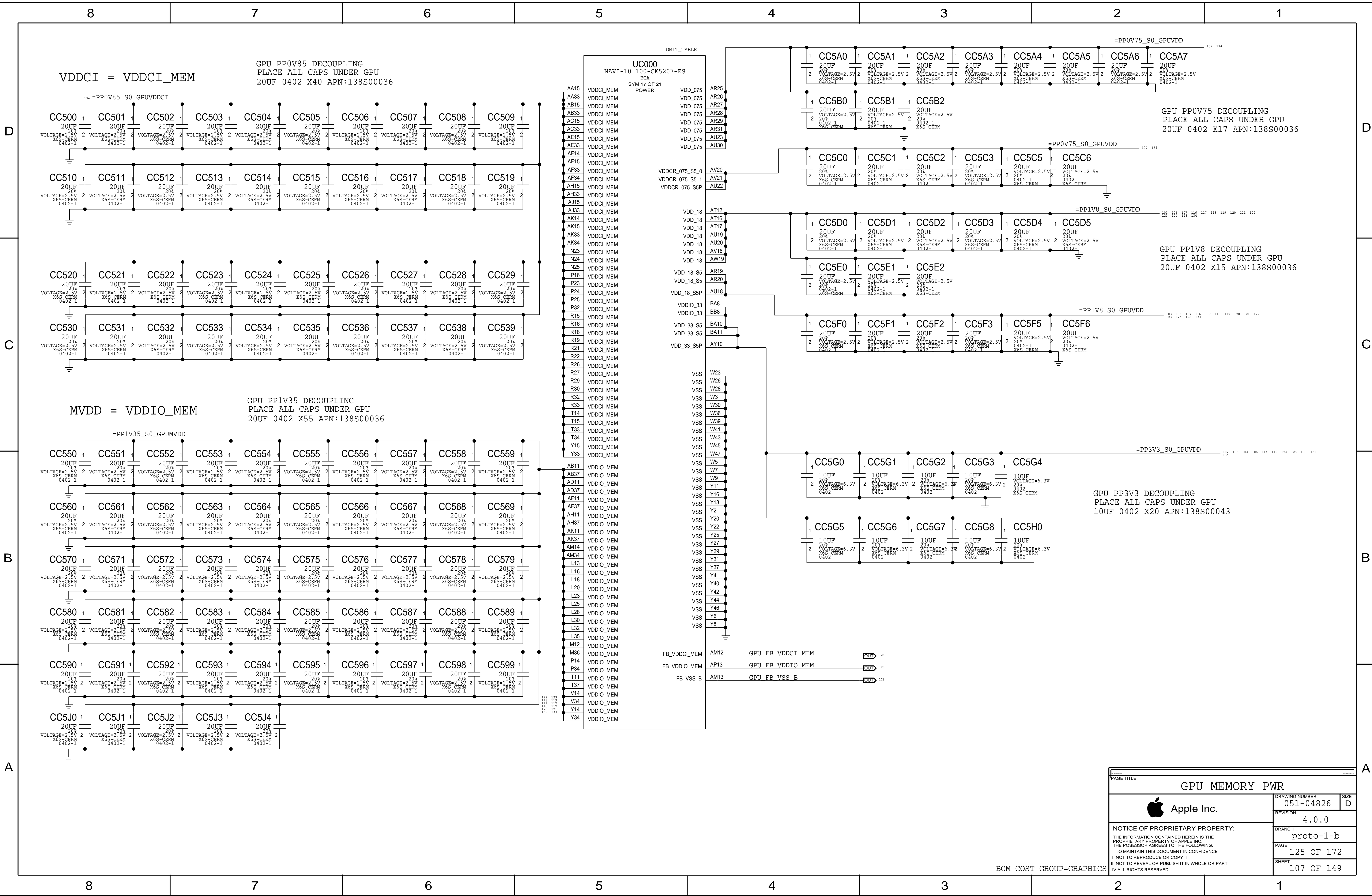
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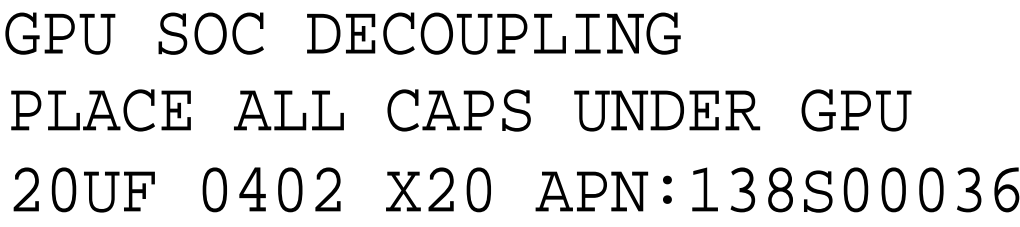
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
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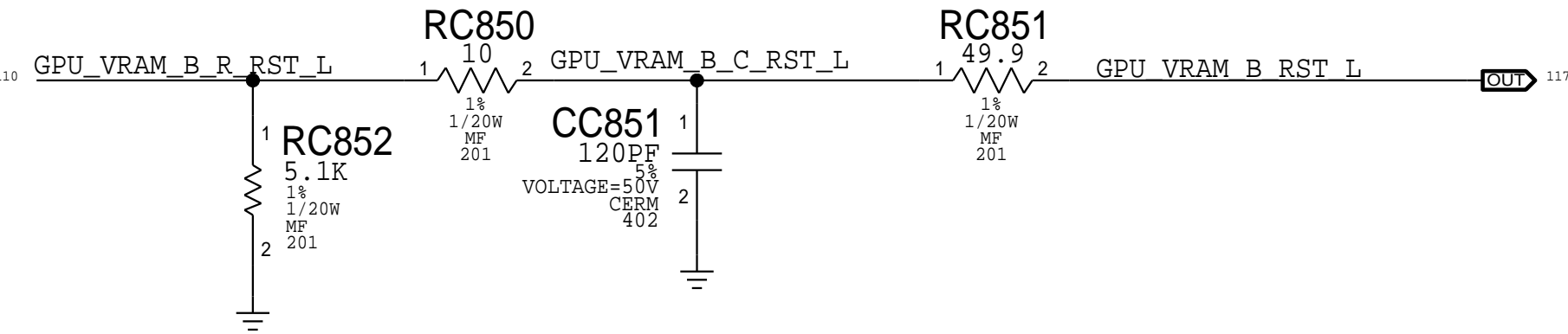
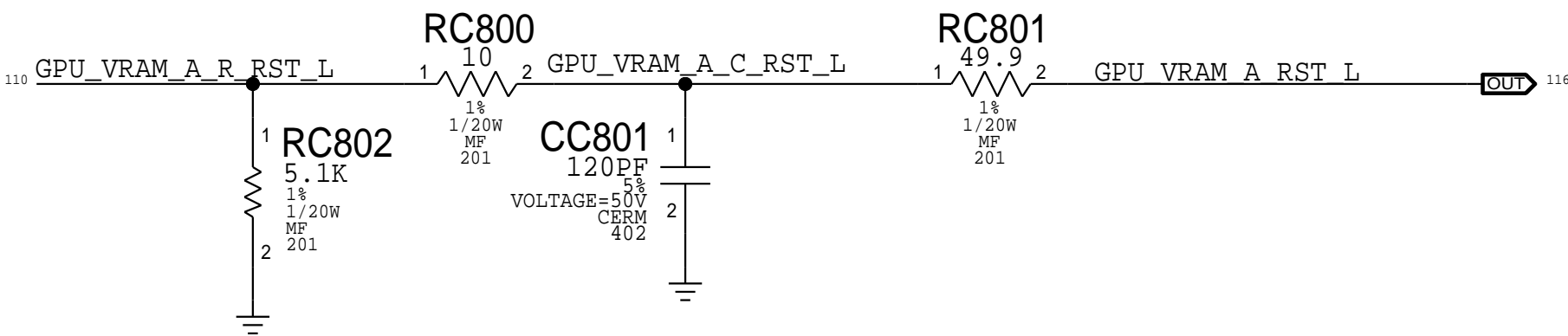
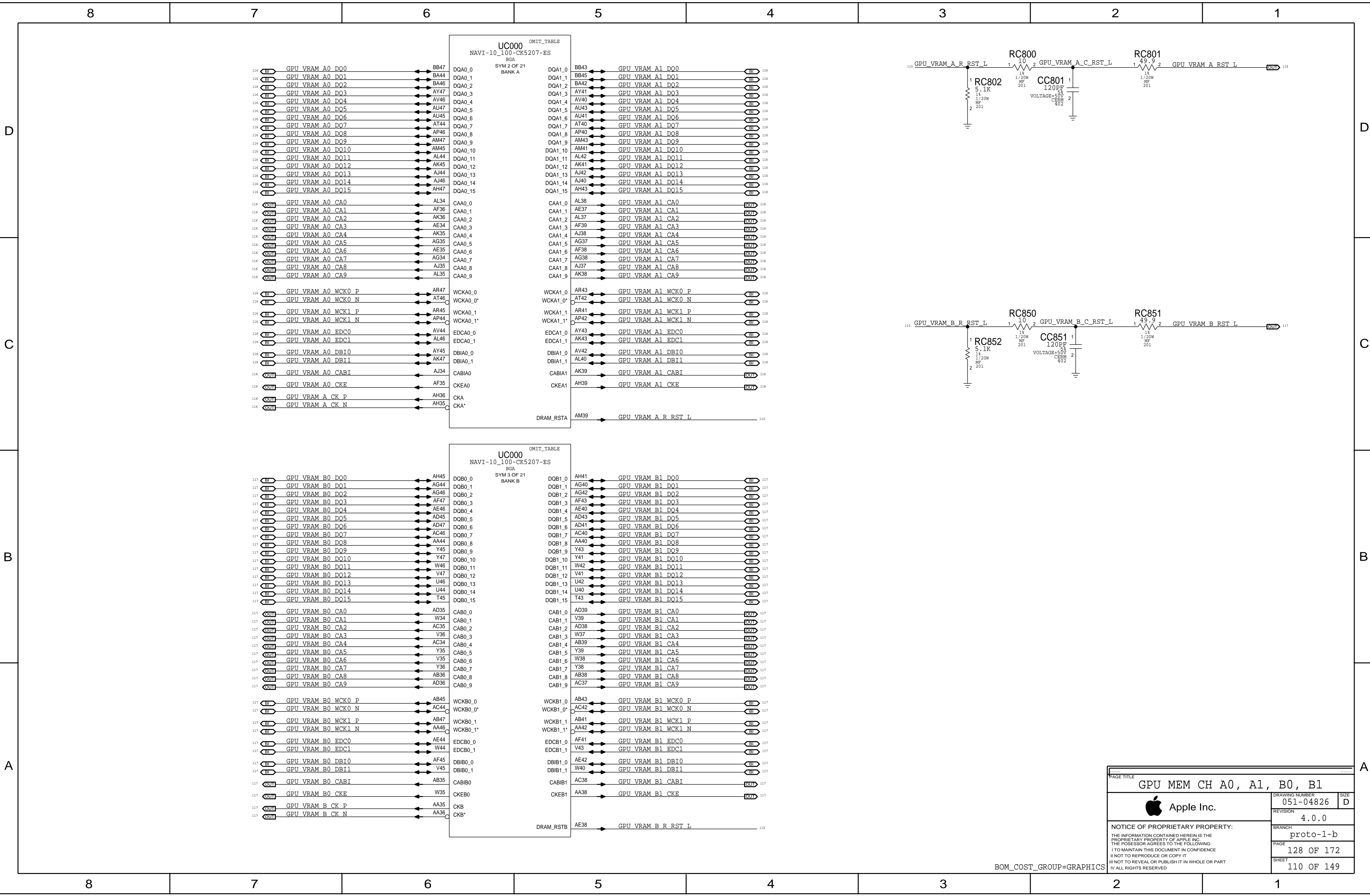




PAGE TITLE		DRAWING NUMBER		SIZE
GPU CORE AND SOC PWR		051-04826	D	
 Apple Inc.	REVISION		4.0.0	
	BRANCH		proto-1-b	
	PAGE		126 OF 172	
	SHEET		108 OF 149	
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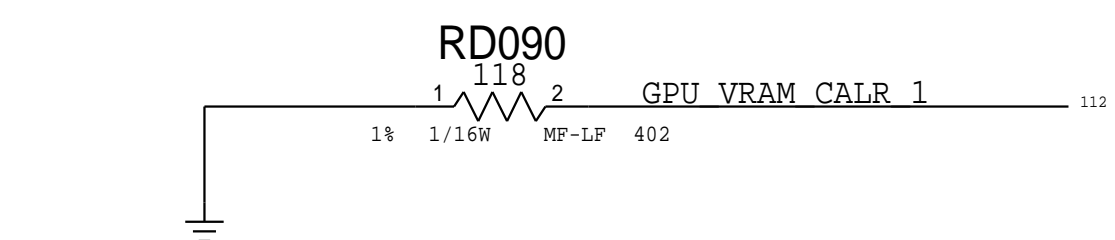
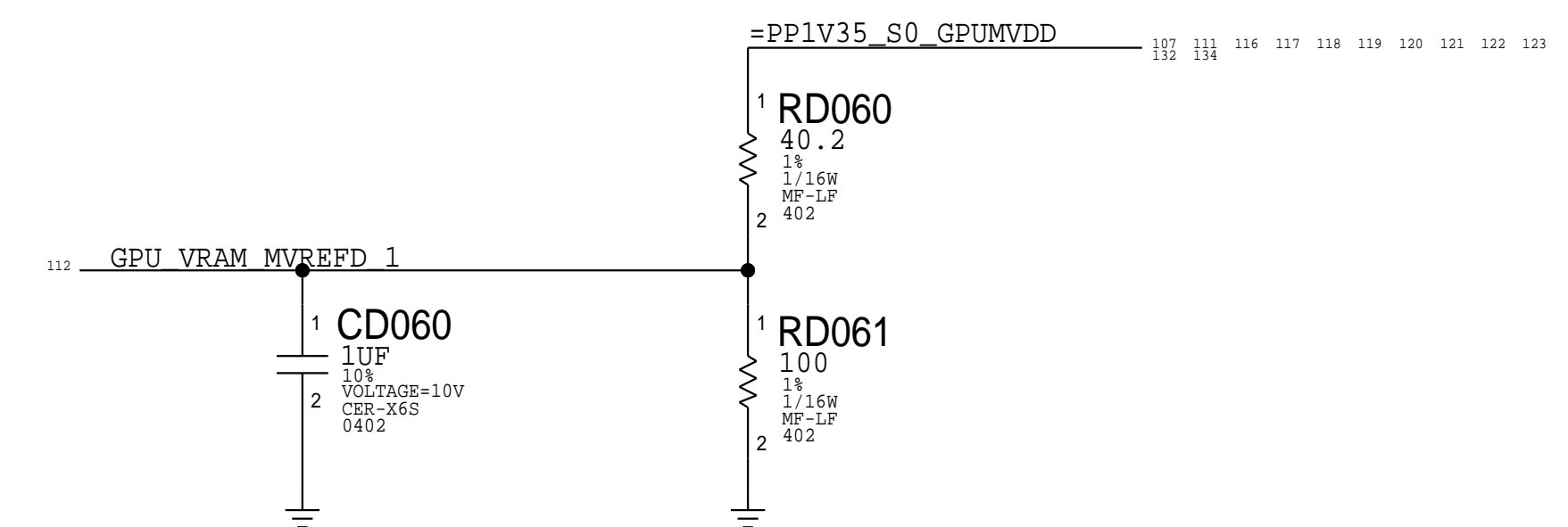
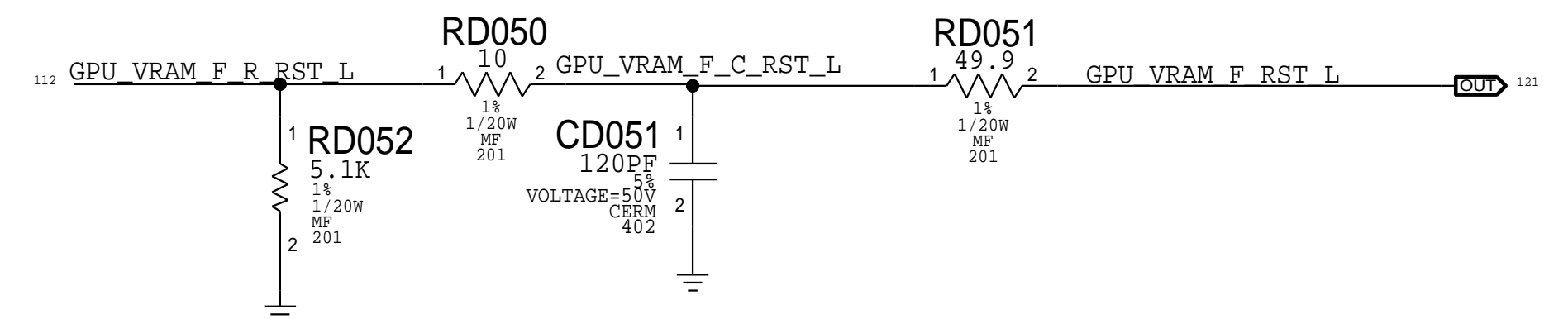
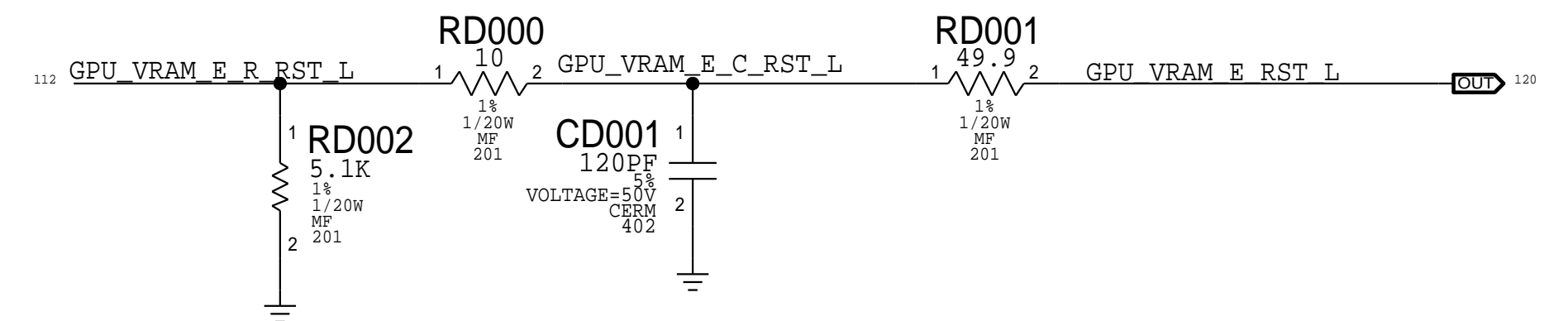
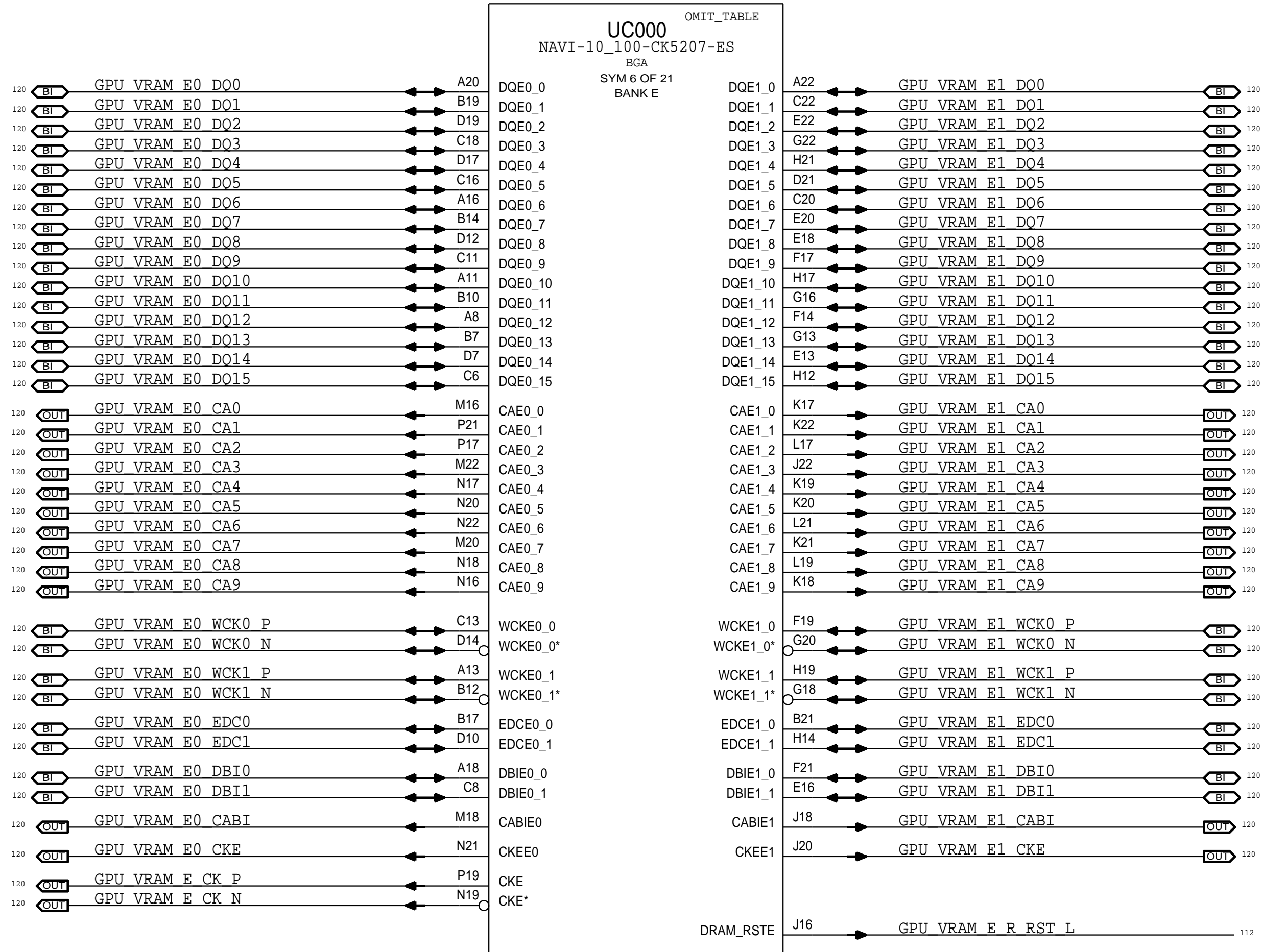





PAGE TITLE		
GPU MEM CH A0, A1, B0, B1		
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	REVISION	4.0.0
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BOM\_COST\_GROUP=GRAPHICS

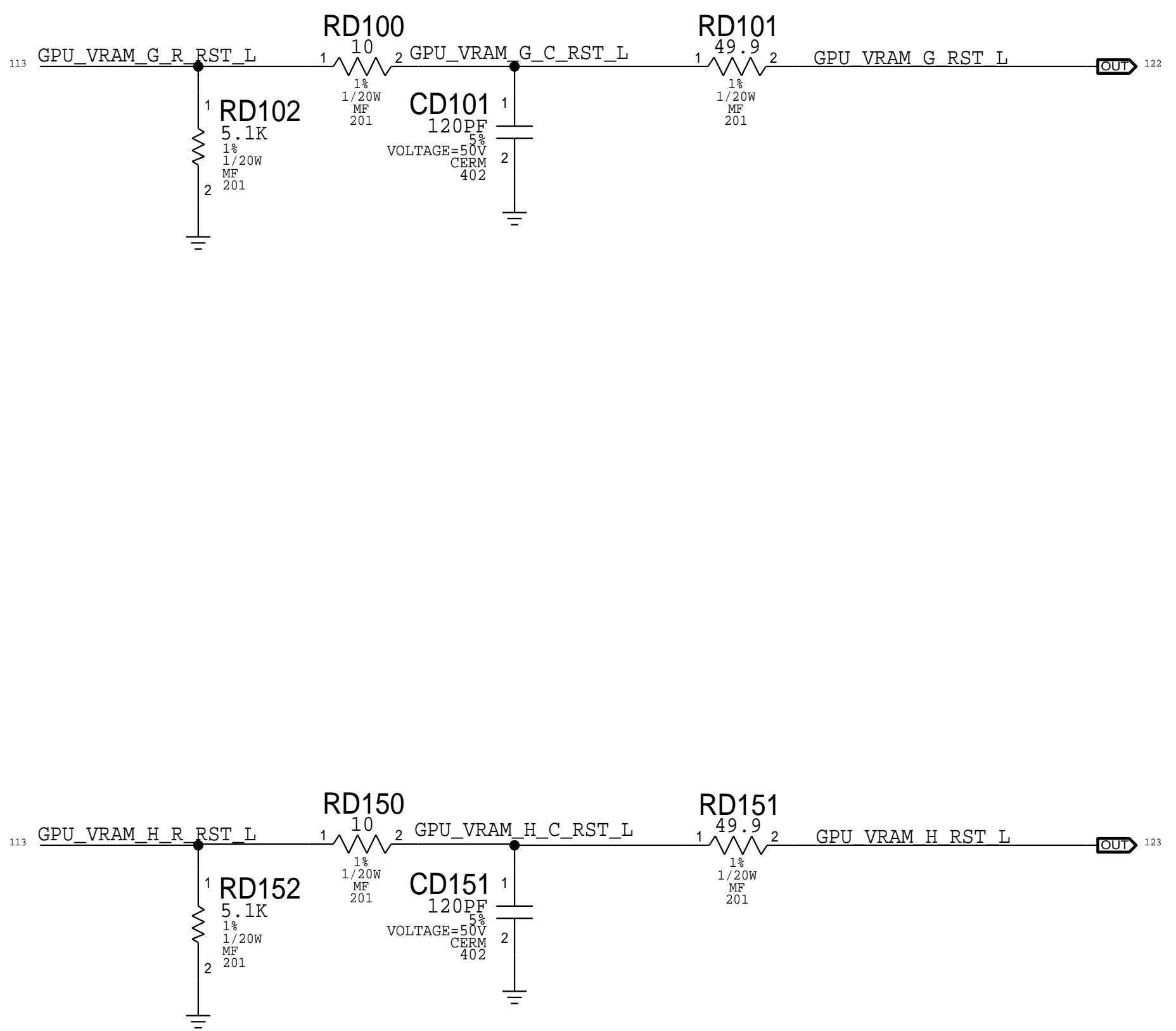
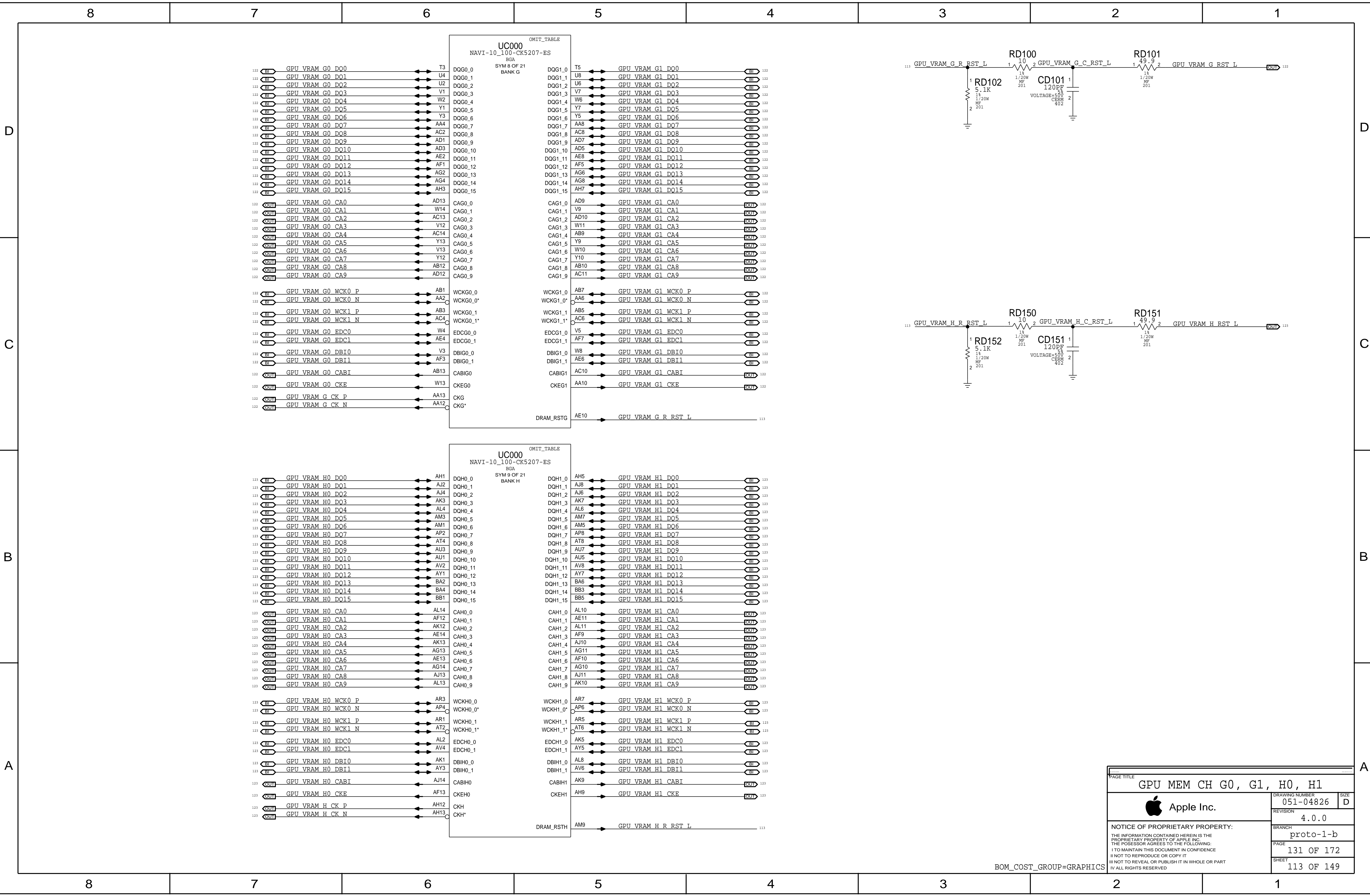


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GPU MEM CH E0, E1, F0, F1		051-04826		D
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		PAGE		
		130 OF 172		
		SHEET		
		112 OF 149		

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GPU MEM CH G0, G1, H0, H1

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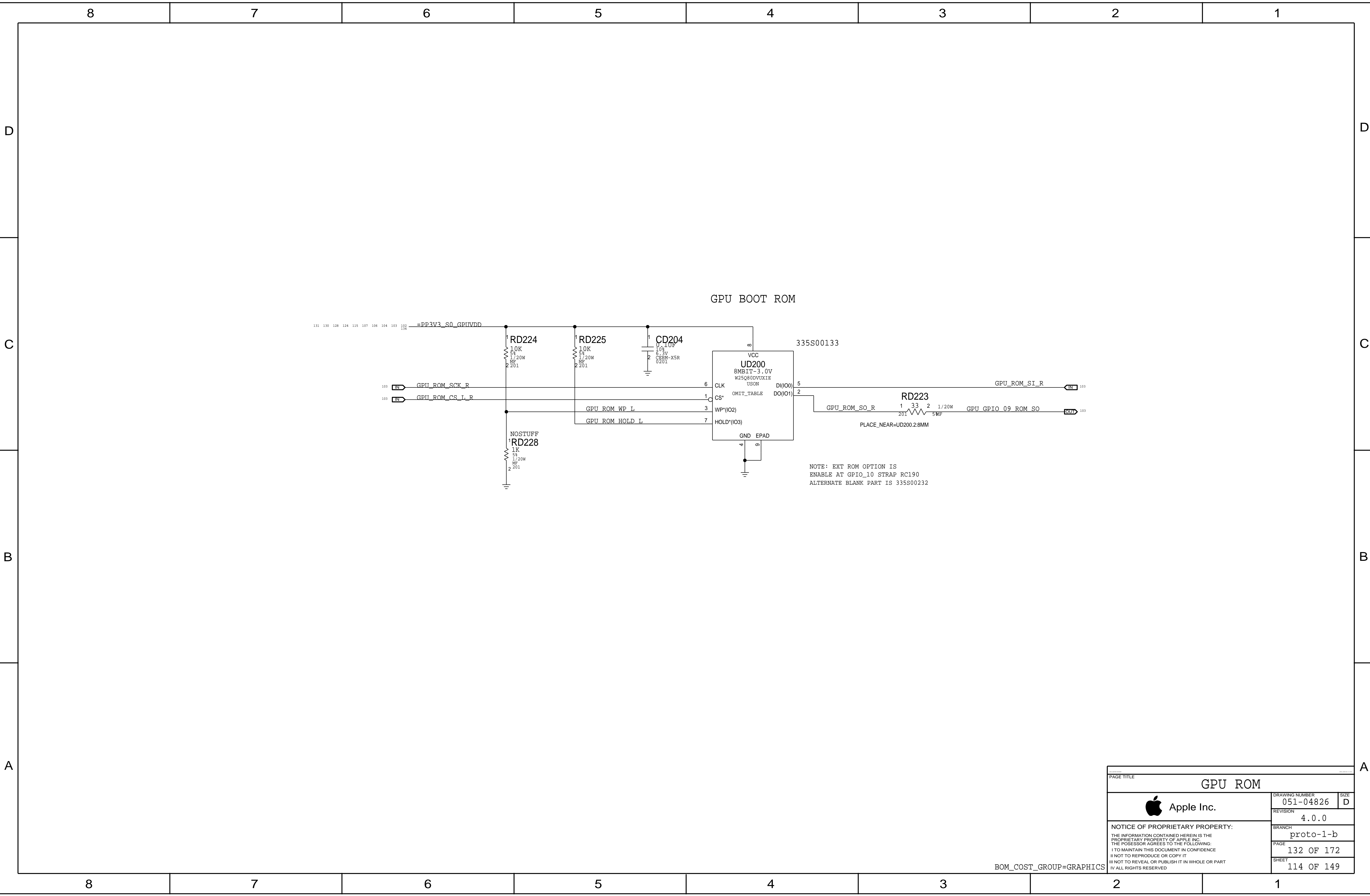
PAGE  
131 OF 172

SHEET  
113 OF 149


SIZE  
D

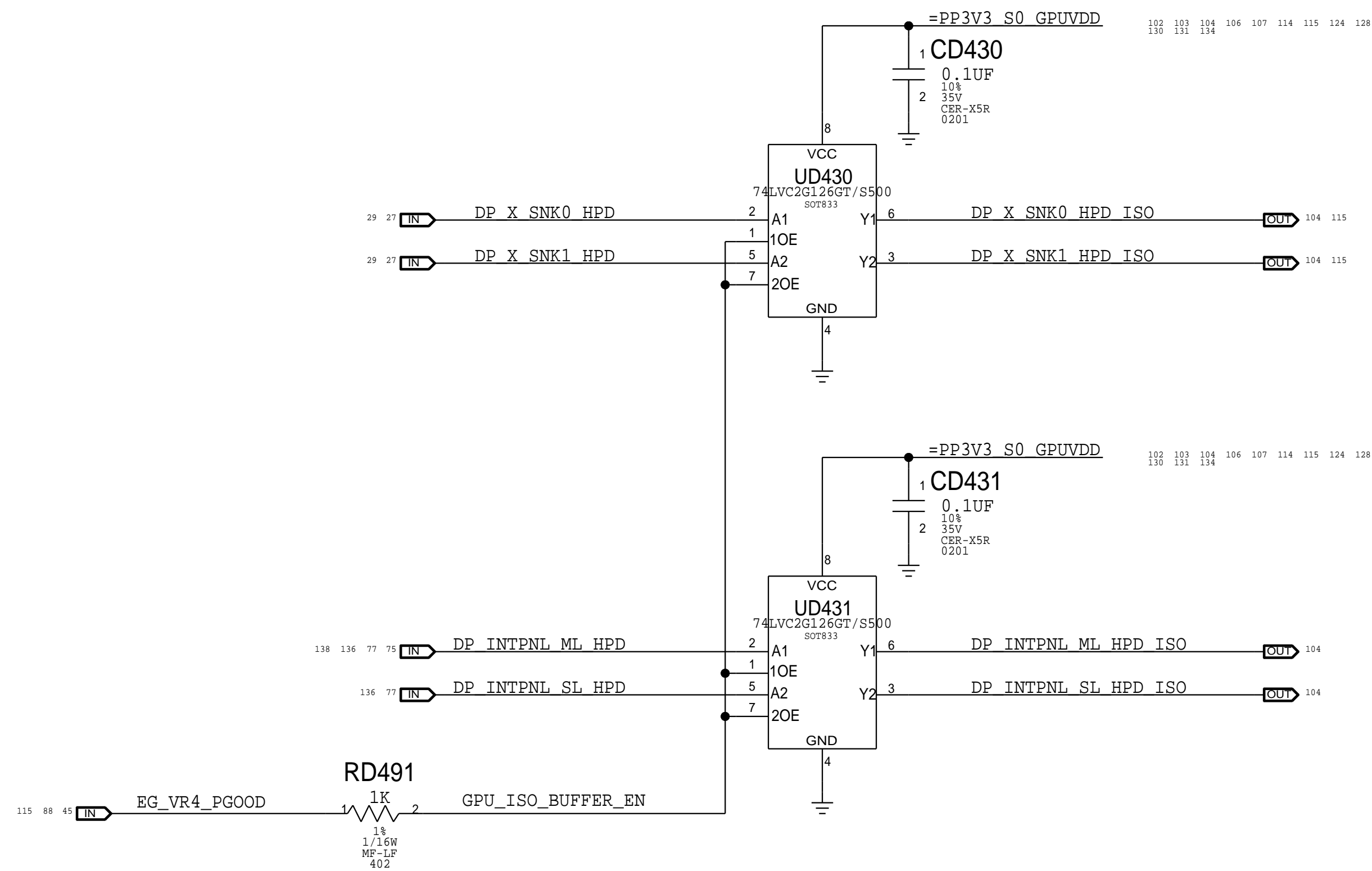
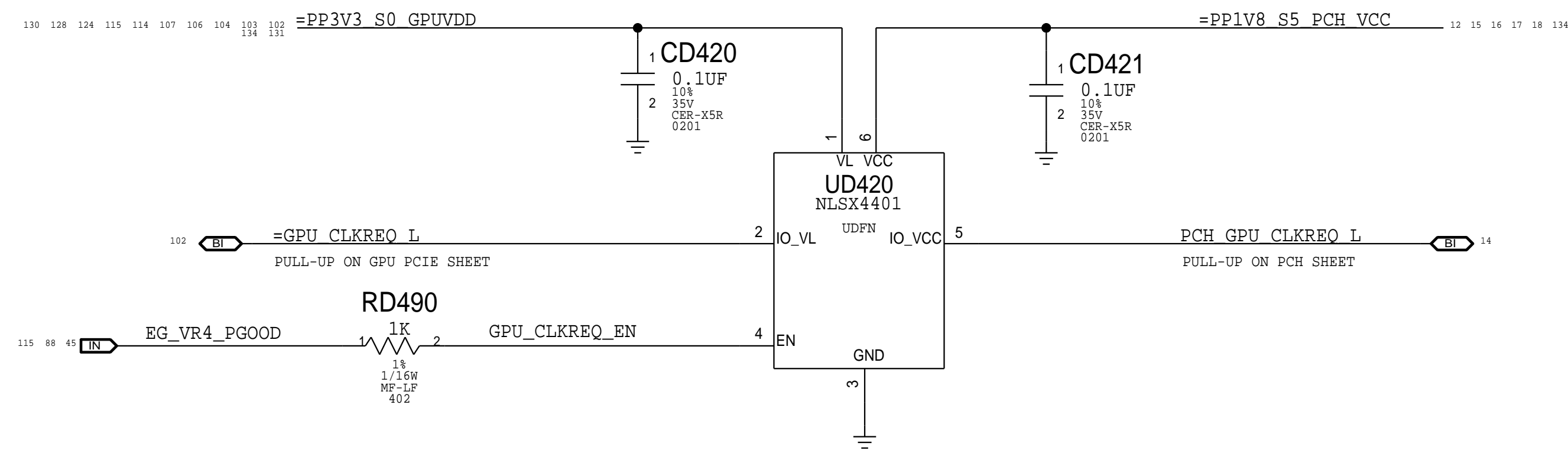
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	SHEET	114 OF 149





## TEST POINTS


TPD409  
A  1 DP\_X\_SNK0\_HPD\_ISO 104 115  
TP-P5


TPD408  
A  1 DP\_X\_SNK1\_HPD\_ISO 104 115  
TP-P5


TPD404  
A  1 GPU\_GPIO\_06\_VRHOT\_L 103 124 128  
TP-P5

TPD403  
A  1 GPU\_GPIO\_04\_PCC\_L 103 124 128  
TP-P5

TPD401  
A  1 =PP3V3\_S0\_GPUVDD 102 103 104 106 107 114 115 124 128 130  
TP-P5

TPD402  
A  1 =PP5V\_S0\_GPU 124 125 126 127 128 129 132 134  
TP-P5

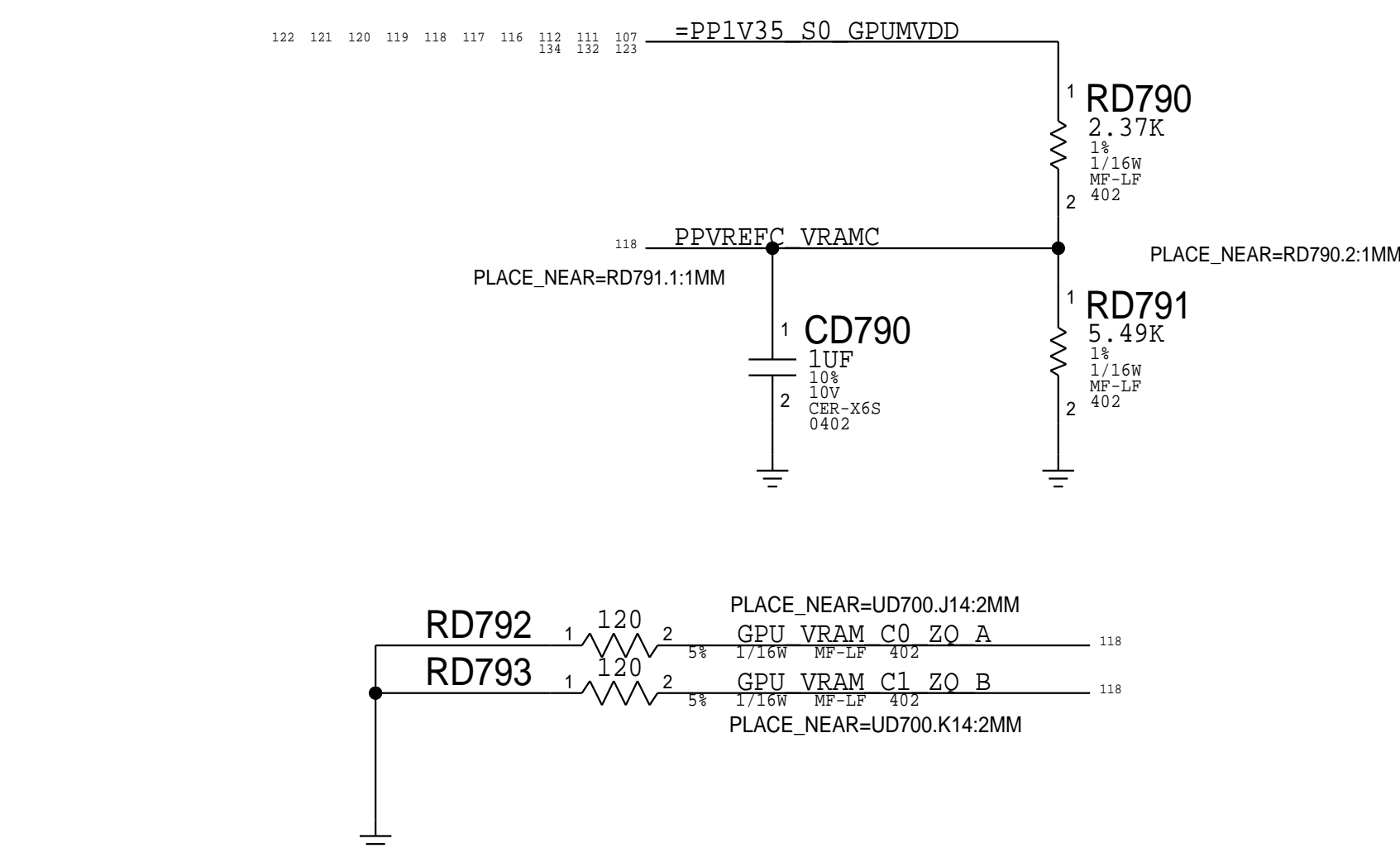
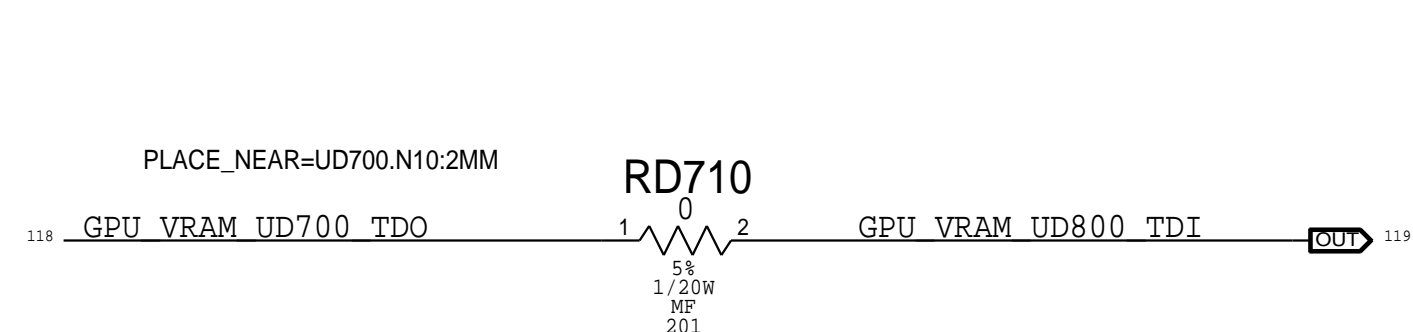
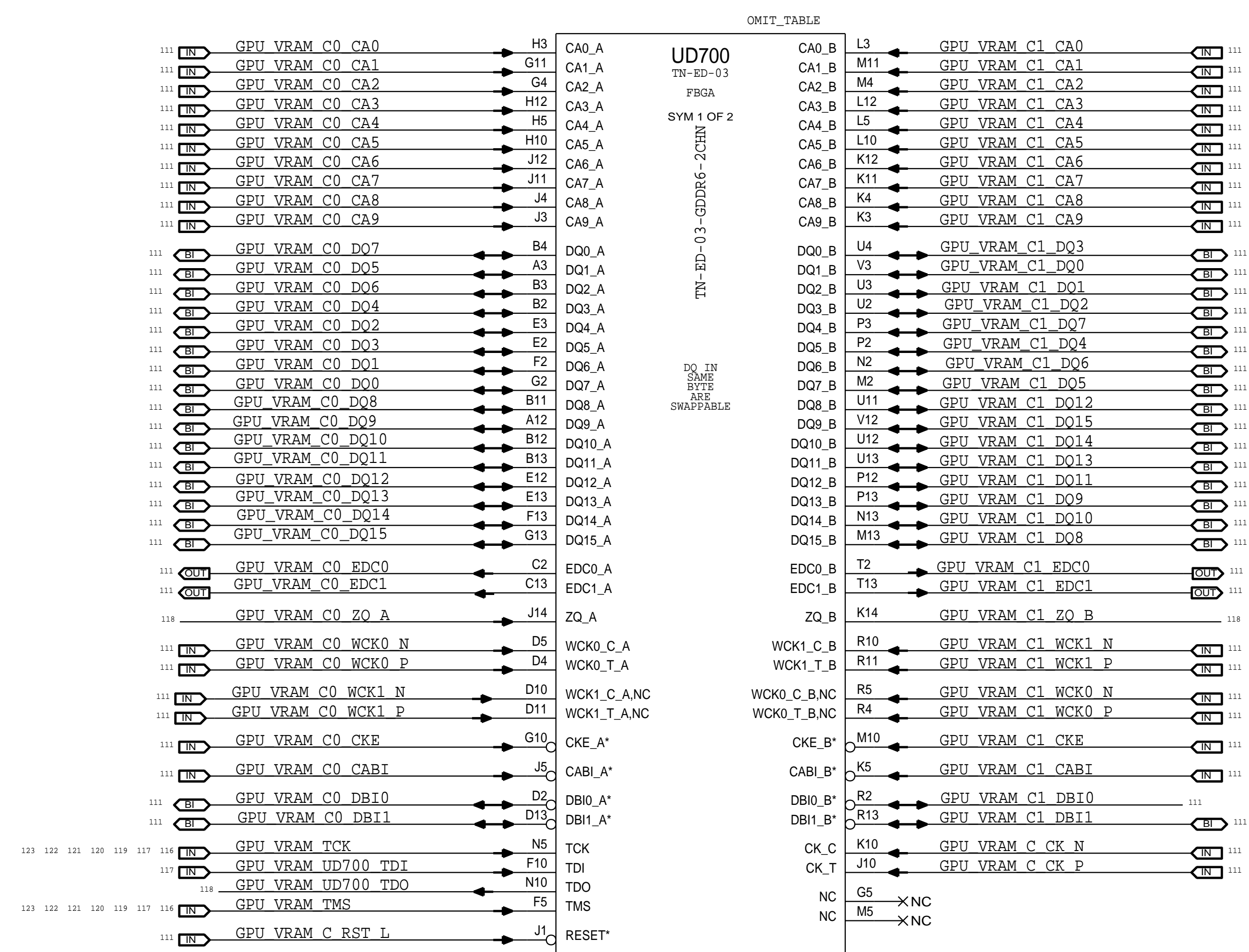
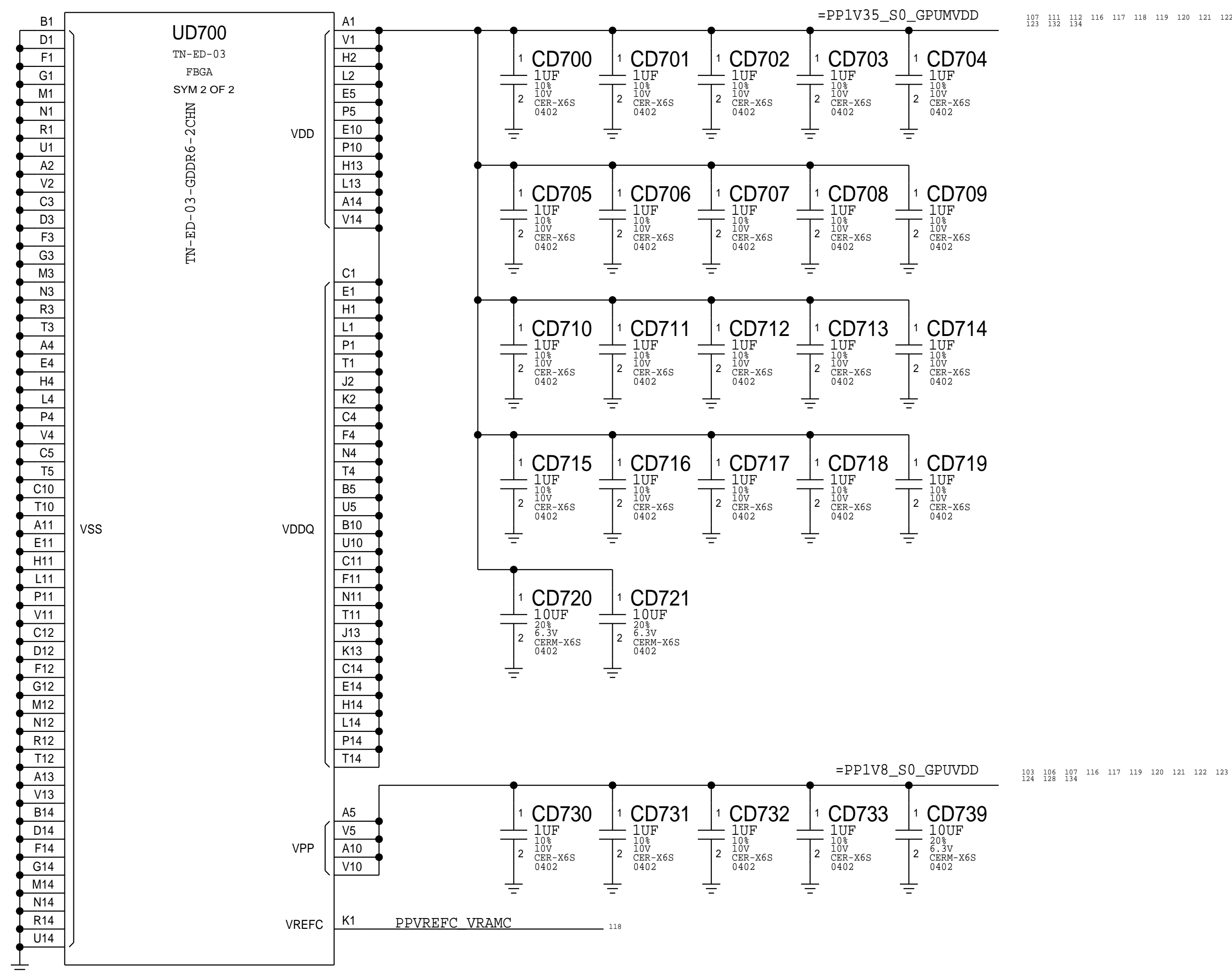
TPD400  
CIP  
TP-5016  
SM 


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			PAGE 134 OF 172	
			SHEET 115 OF 149	

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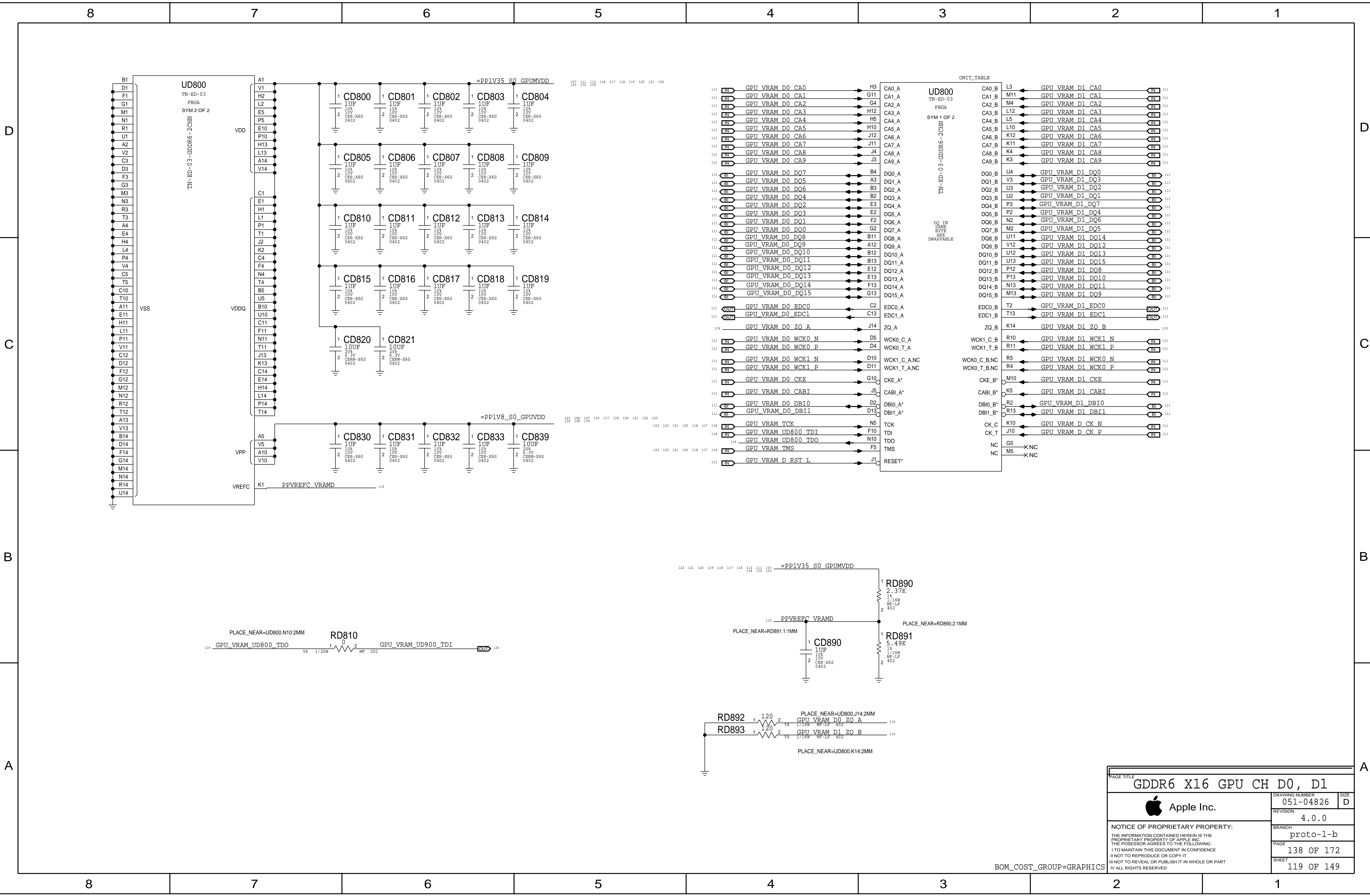





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proto-1-b		
PAGE		
137 OF 172		
SHEET		
118 OF 149		

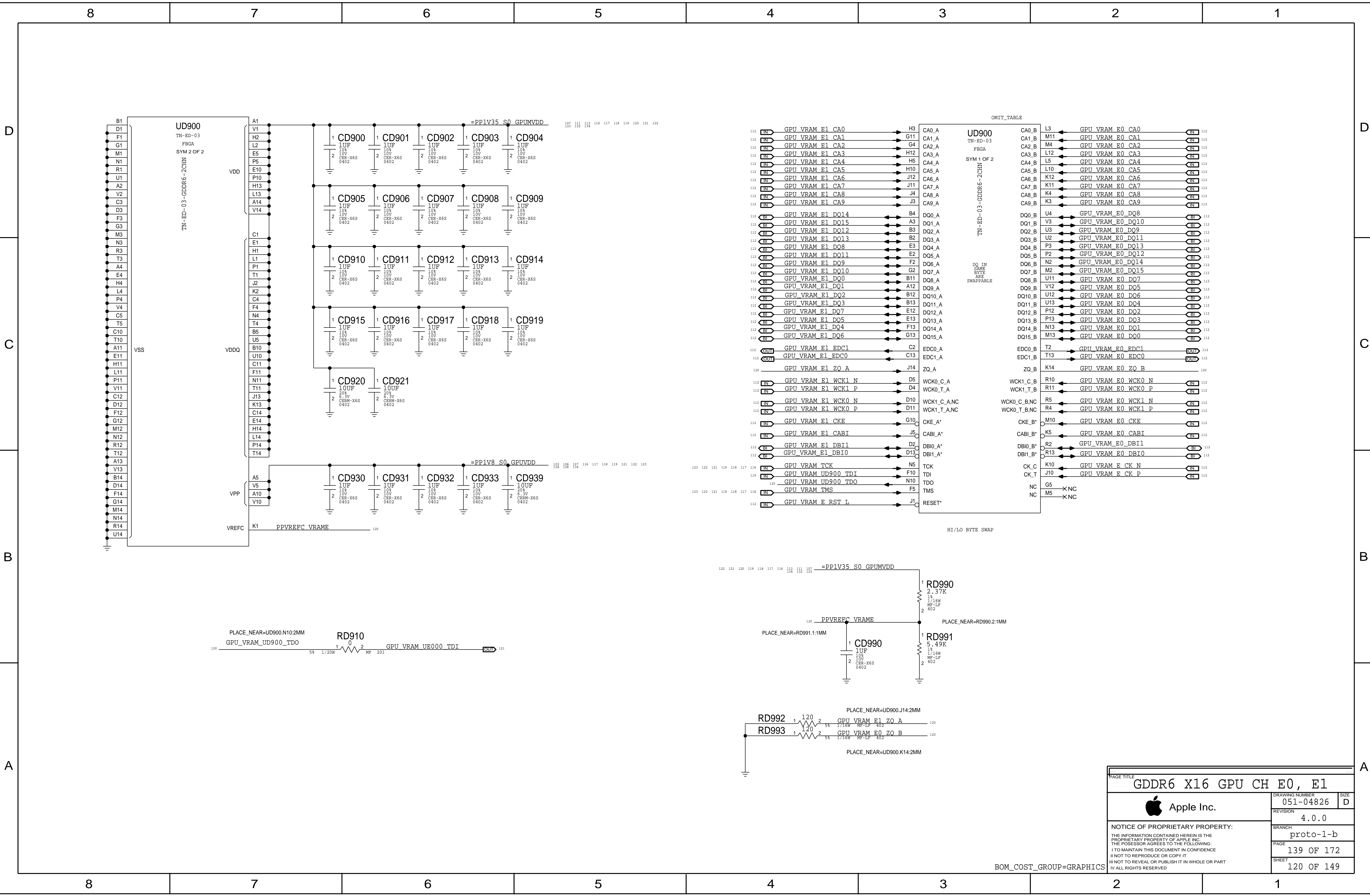
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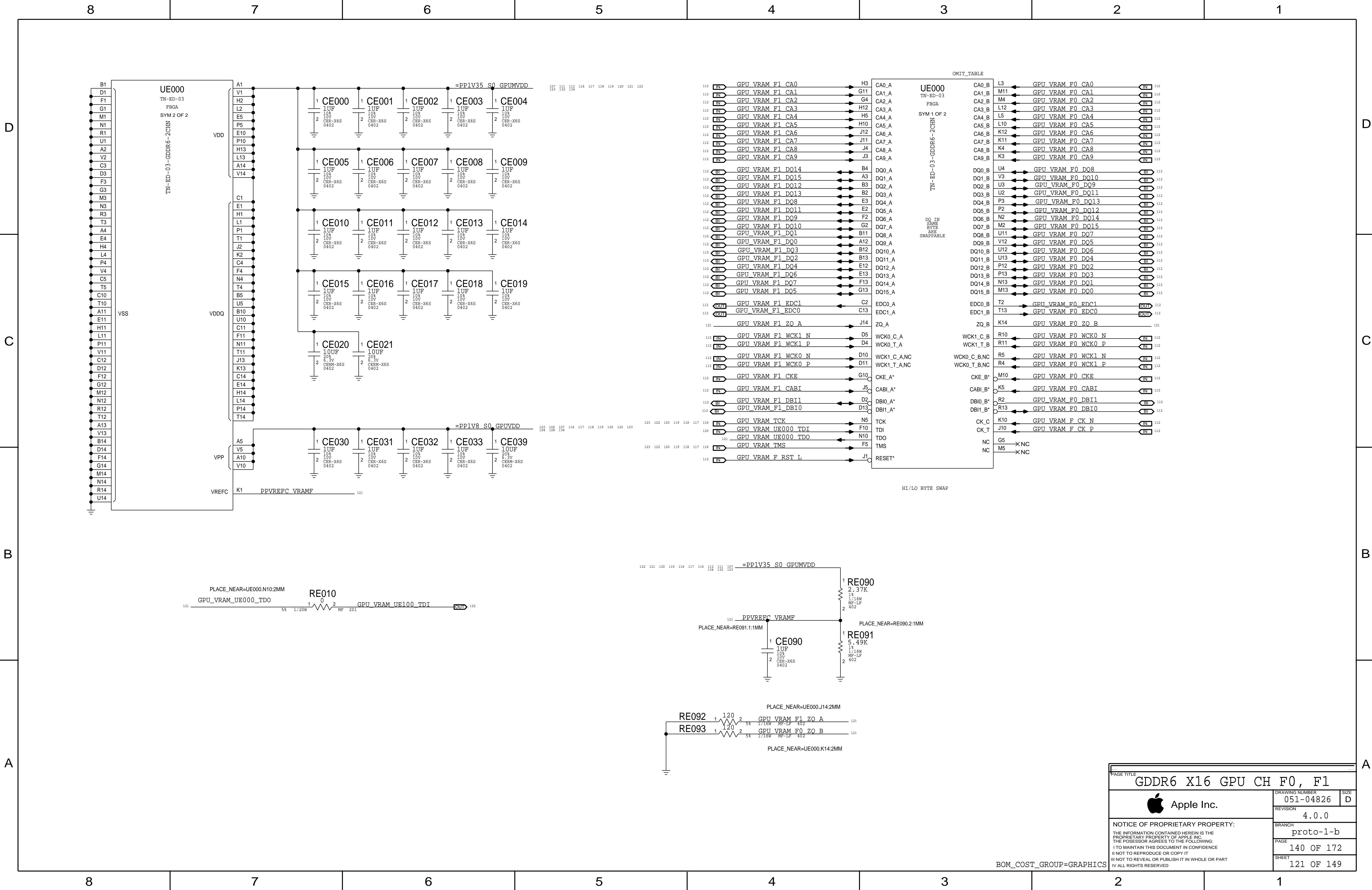
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	PAGE	138 OF 172
	SHEET	119 OF 149


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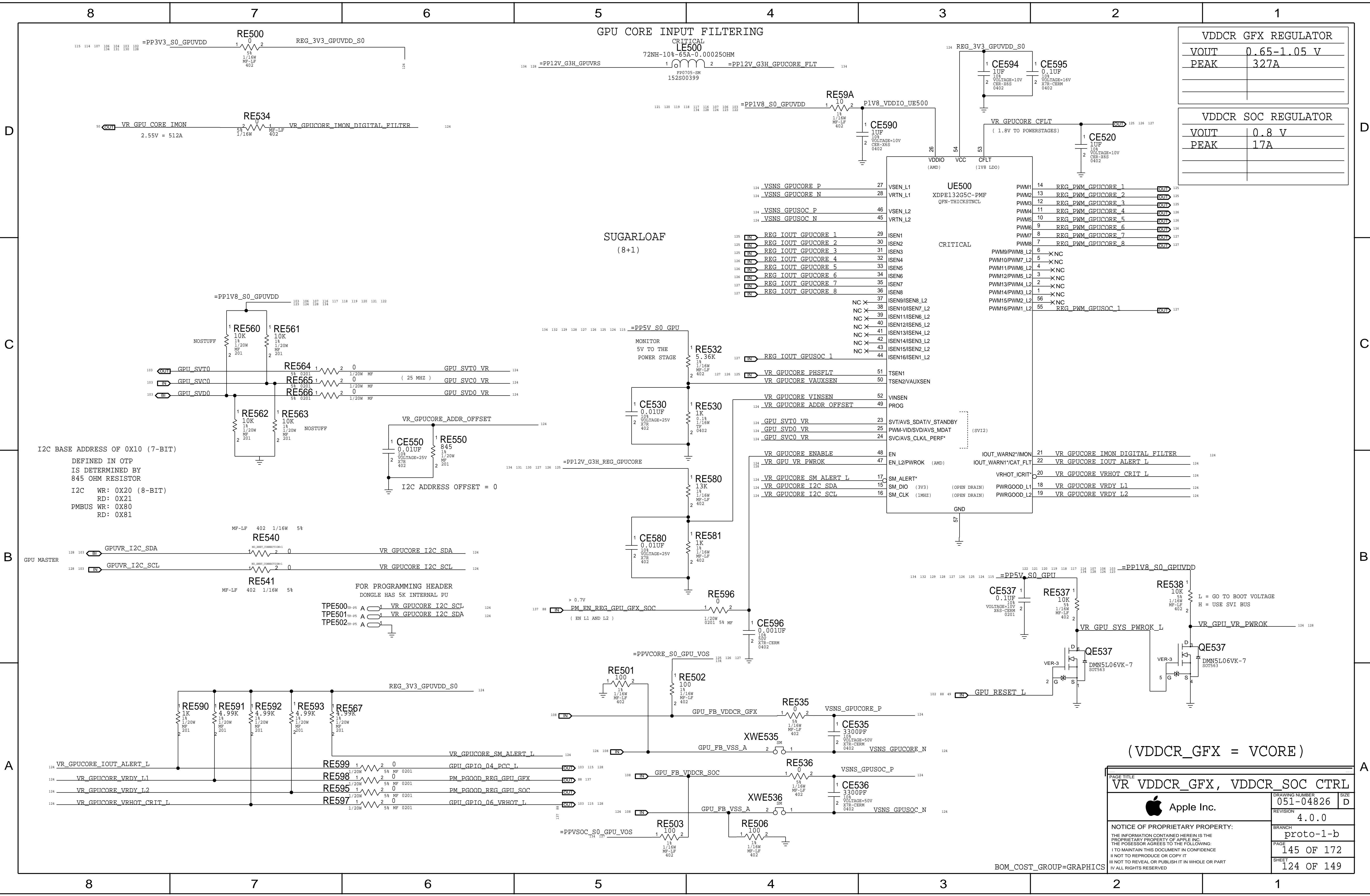


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	PAGE	140 OF 172
	SHEET	121 OF 149





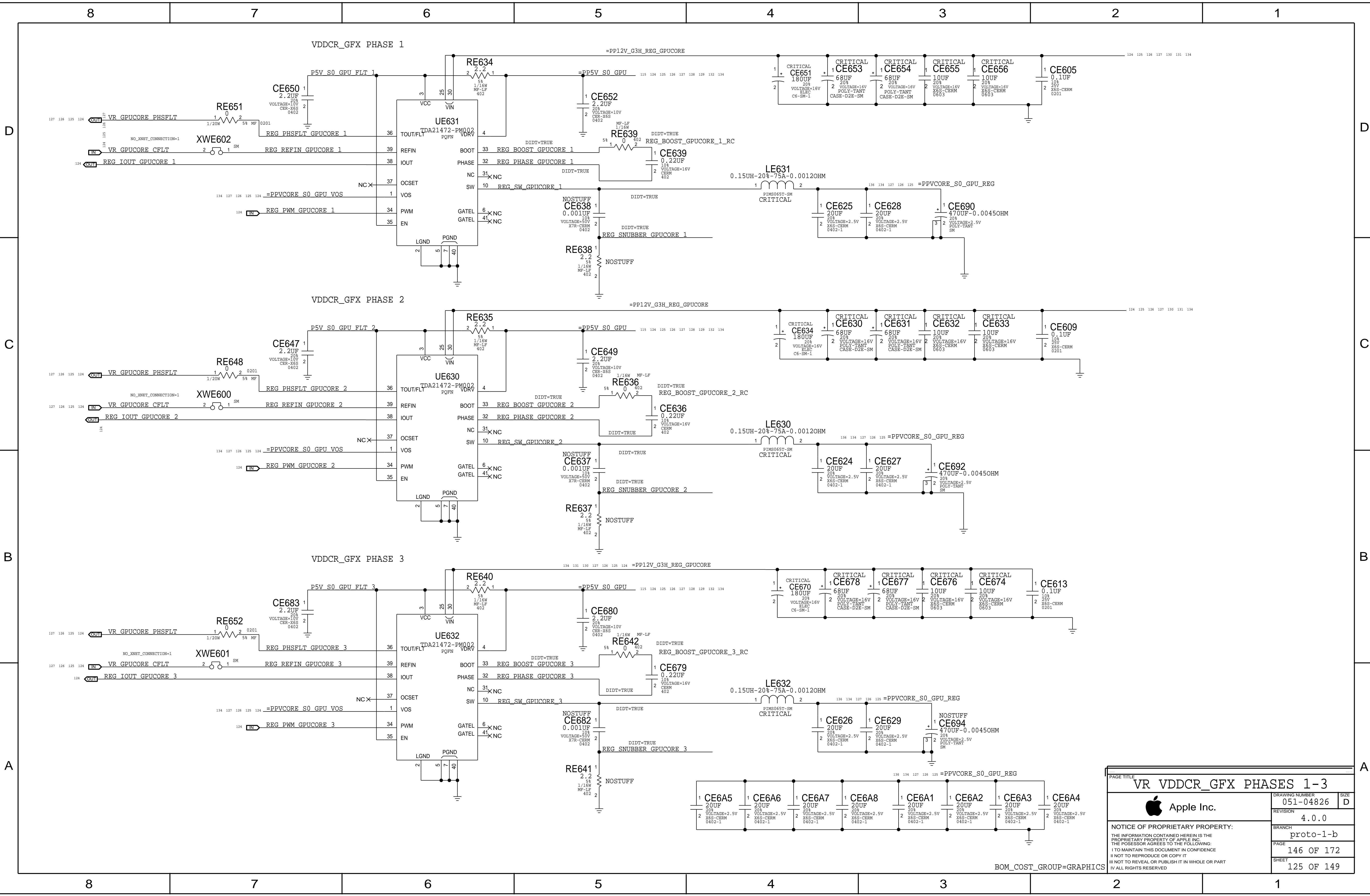





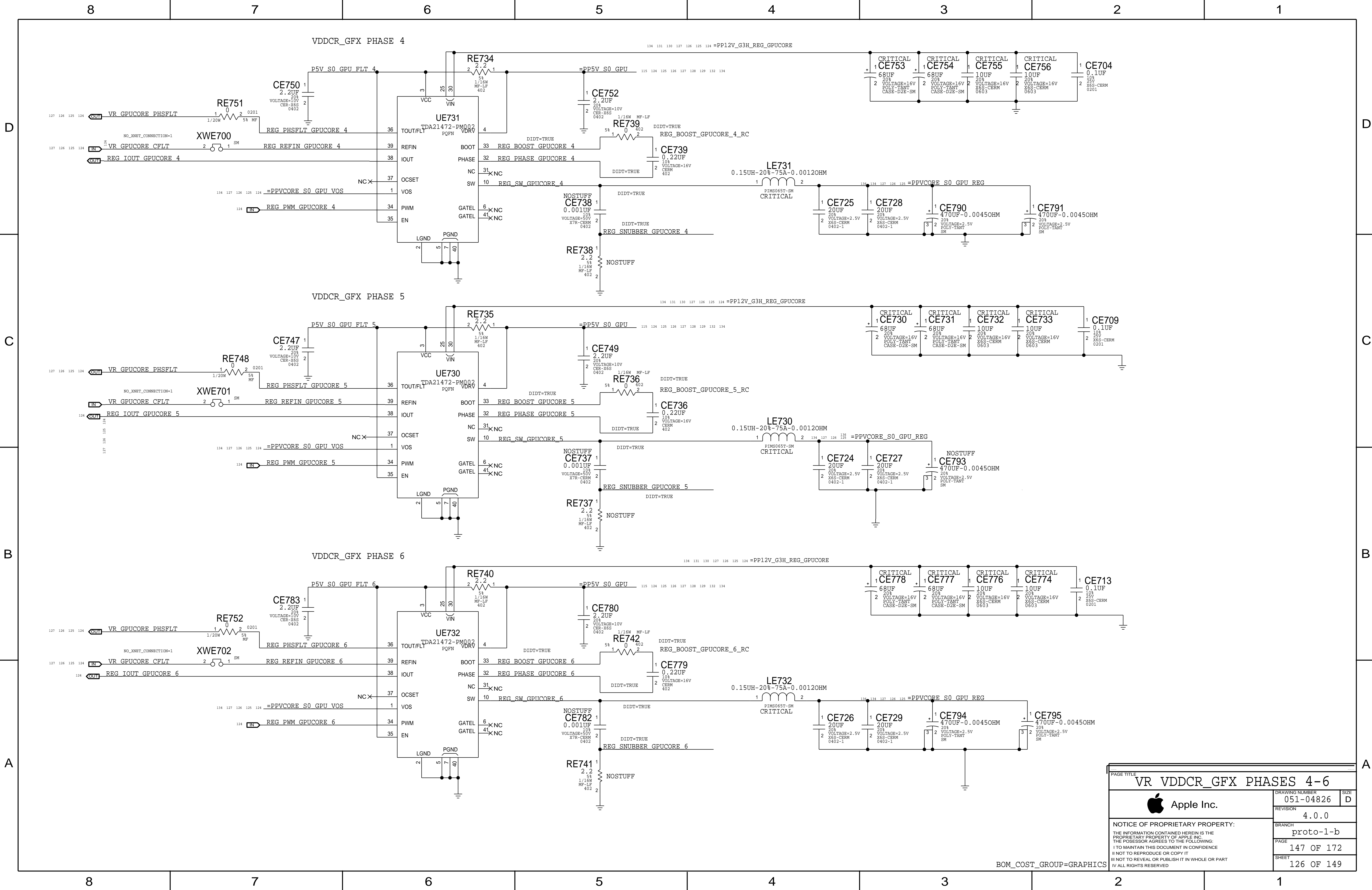
VDDCR GFX REGULATOR	
VOUT	0.65-1.05 V
PEAK	327A


VDDCR SOC REGULATOR	
VOUT	0.8 V
PEAK	17A

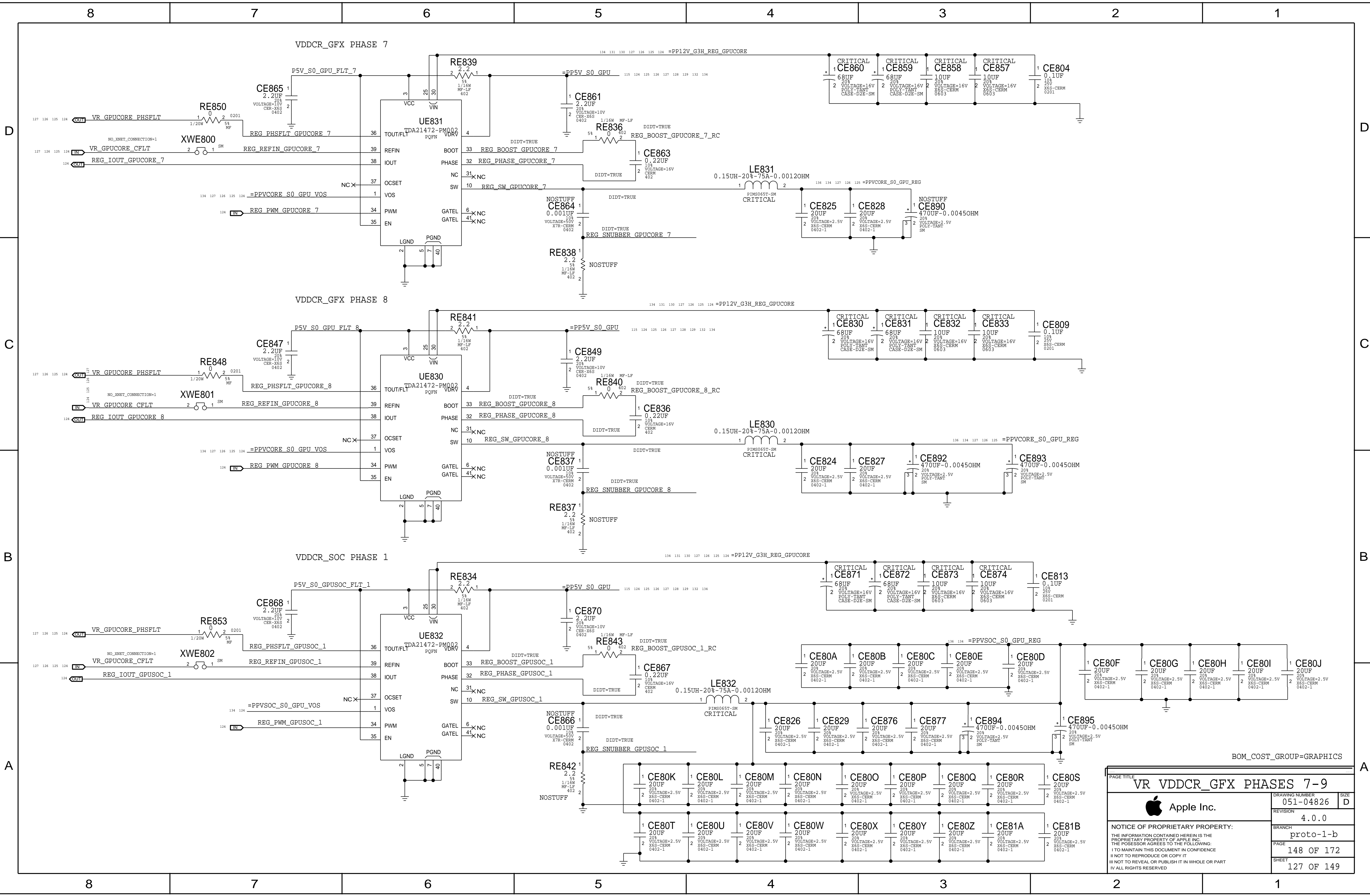
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	PAGE	145 OF 172
	SHEET	124 OF 149



PAGE TITLE		
VR VDDCR_GFX PHASES 1-3		
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	PAGE	146 OF 172
	SHEET	125 OF 149



PAGE TITLE		
VR VDDCR_GFX PHASES 4-6		
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	PAGE	147 OF 172
	SHEET	126 OF 149

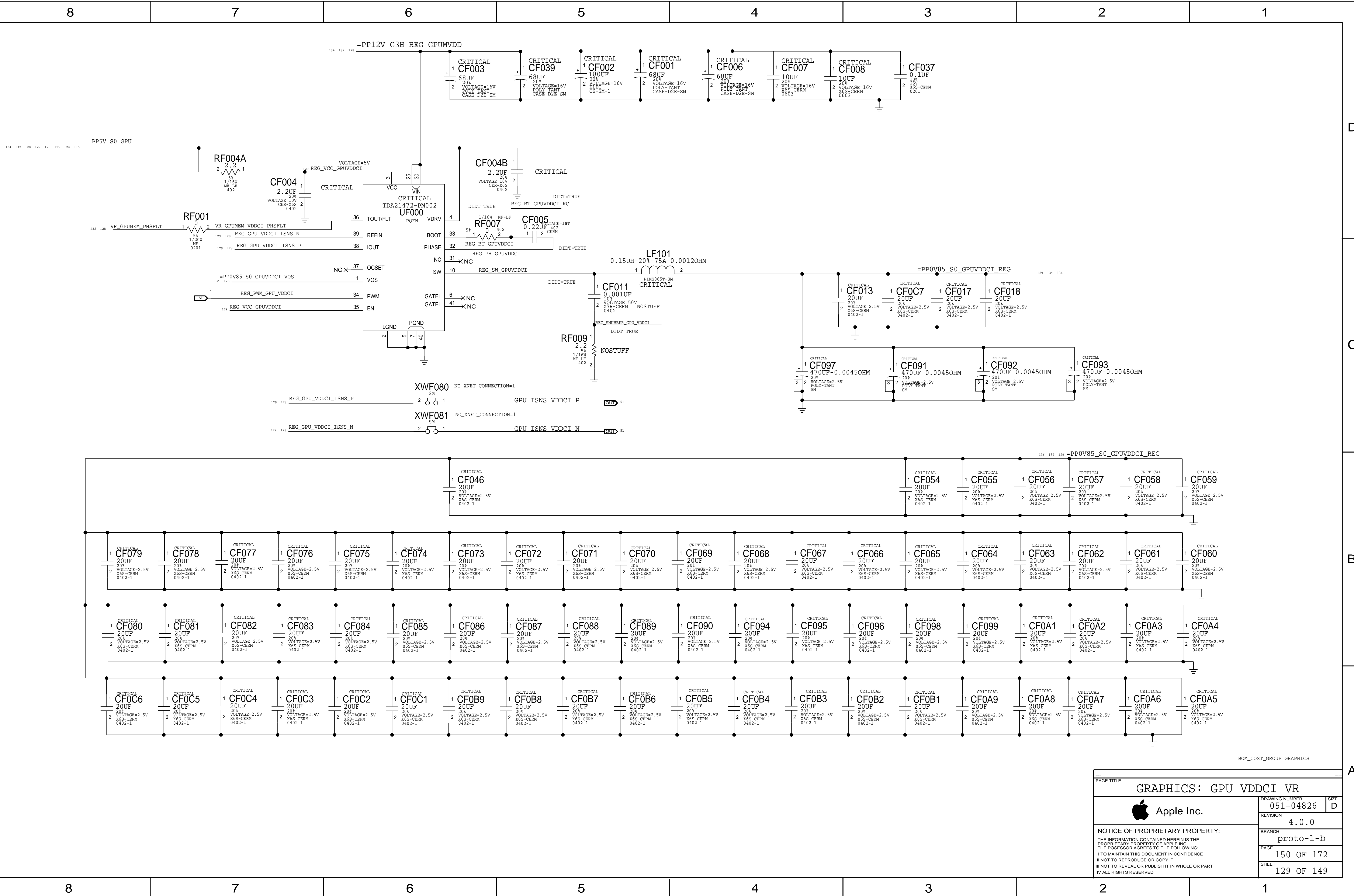


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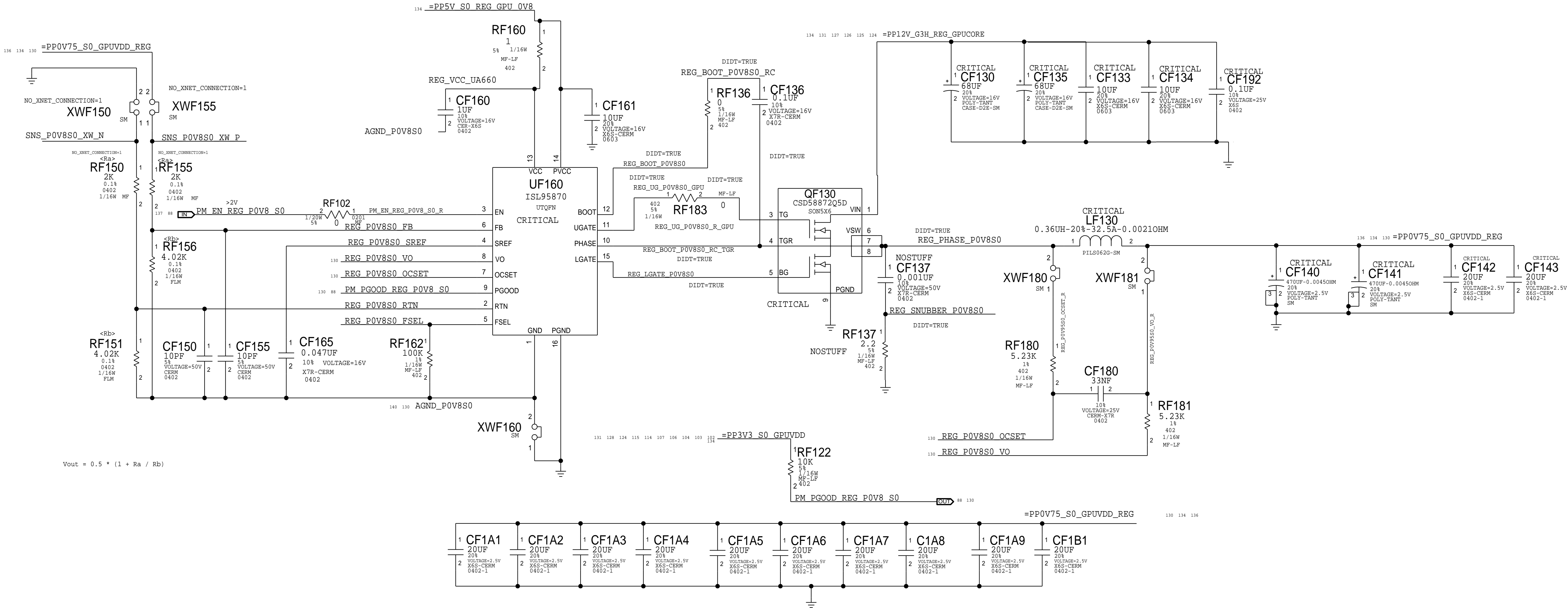









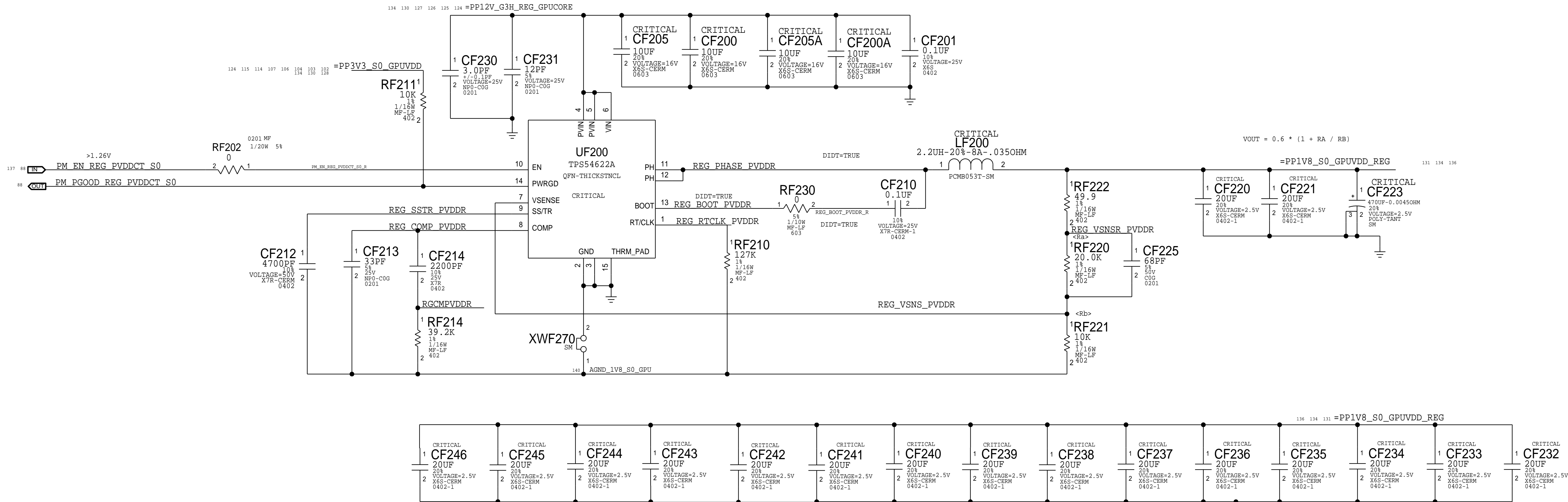
GPU 0V75\_S0 REGULATOR  
EDP = 10A




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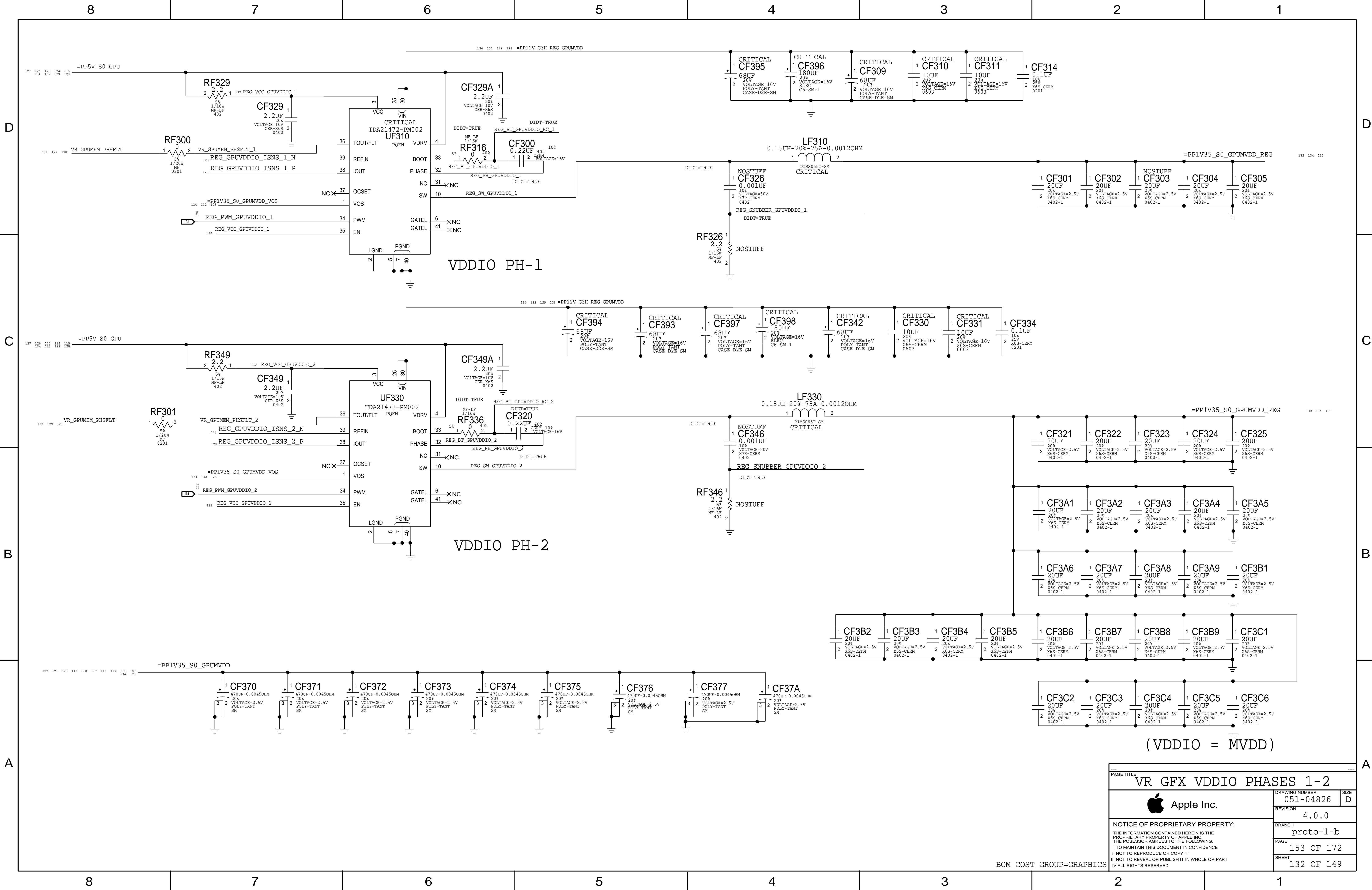
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	BRANCH		
	proto-1-b		
	PAGE		
151 OF 172			
SHEET			
130 OF 149			

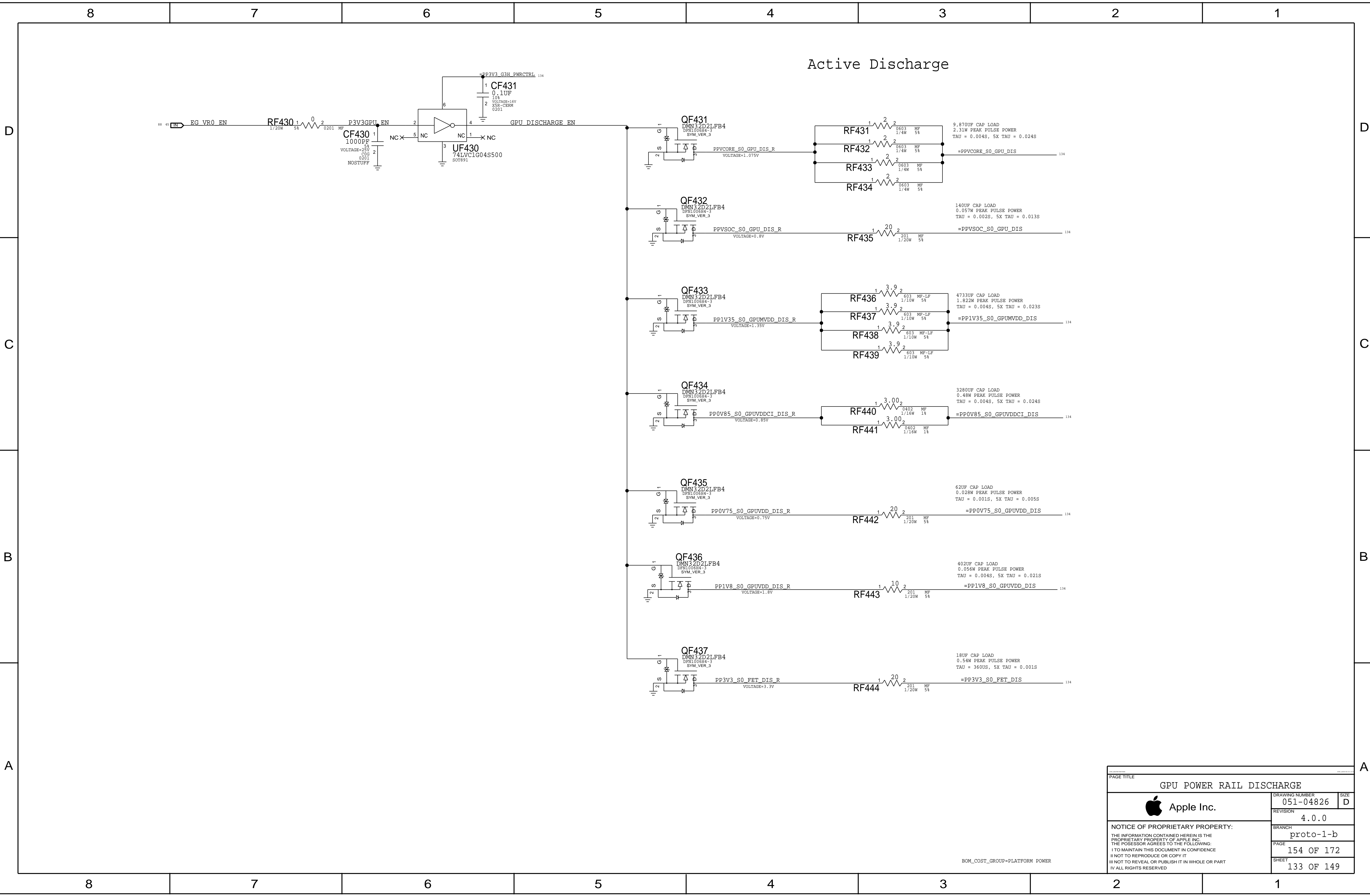
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	proto-1-b		
	PAGE		
	152 OF 172		
	SHEET		
	131 OF 149		

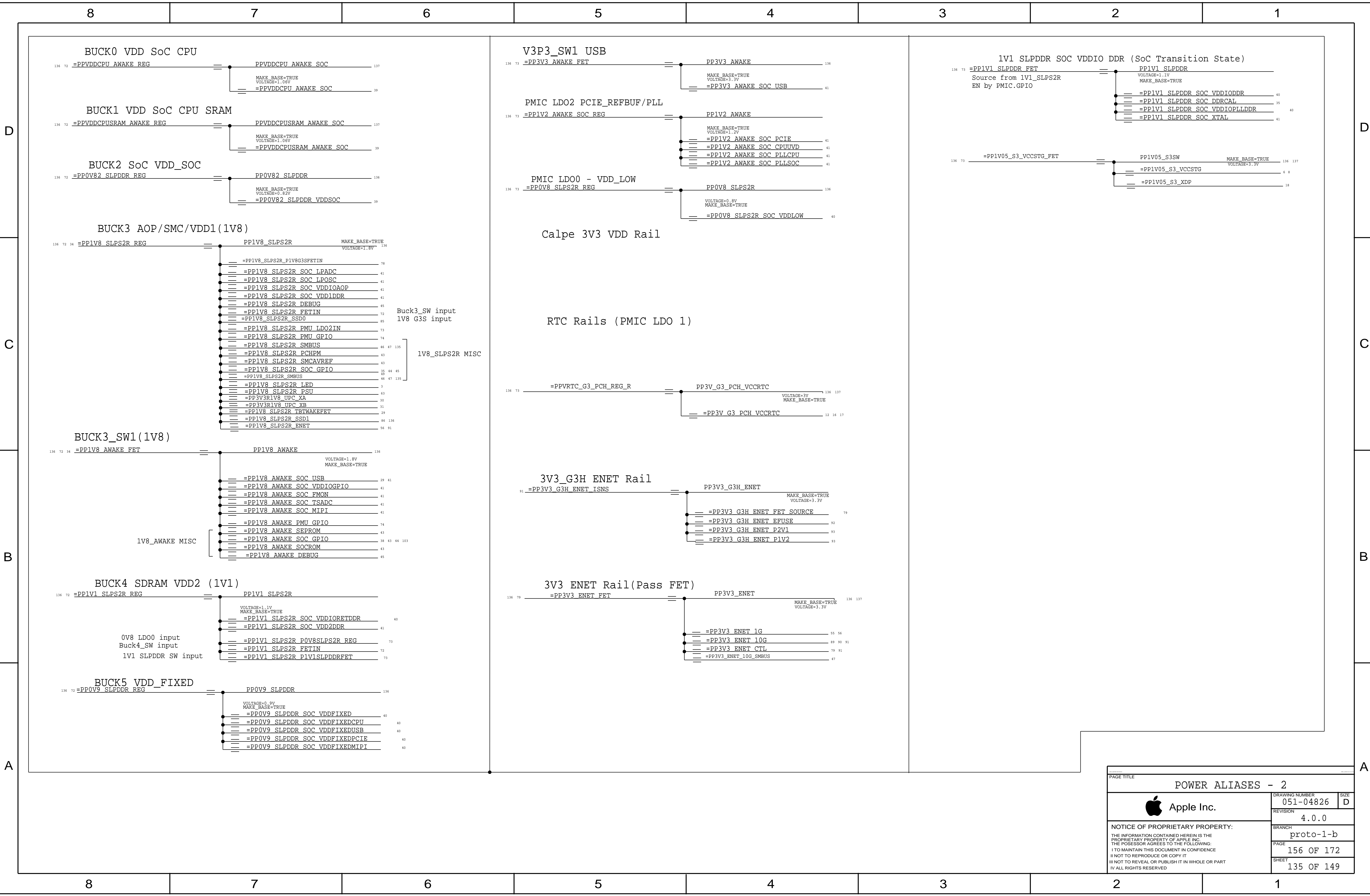





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	PAGE	154 OF 172
	SHEET	133 OF 149





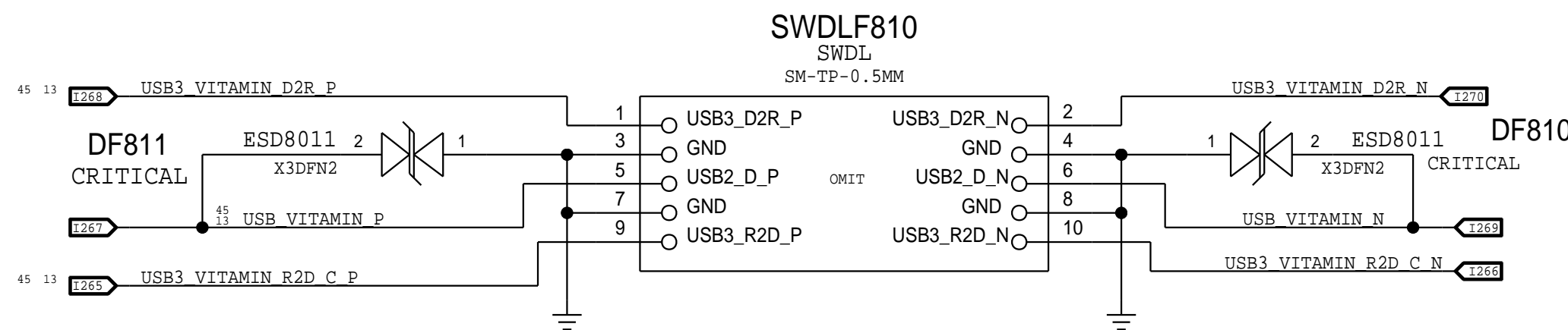


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	PAGE	156 OF 172	
	SHEET	135 OF 149	

## Connector FuncTest Points

FUNC_TEST		
PP12V_LCD_FET	TRUE	77
I2C_DP_TCON_SLA_3V3_SDA	TRUE	
I2C_DP_TCON_SLA_3V3_SCL	TRUE	
DP_INTPNL_ML_HPD	TRUE	75, 77, 115
MIPI CAMERA		
I2C_FTCAM_SDA_CONN	TRUE	62
I2C_FTCAM_SCL_CONN	TRUE	62
PP5V_G3S_CAMERA_F	TRUE	62
I2C_ALS_SDA_CONN	TRUE	62
I2C_ALS_SCL_CONN	TRUE	62
DMIC		
PP1V8_DMIC_0_CONN	TRUE	61
PDM_DMIC_CLK0	TRUE	44, 61
PDM_DMIC_DATA0_UNSEC	TRUE	61
PP1V8_DMIC_1_CONN	TRUE	61
PDM_DMIC_CLK1	TRUE	44, 61
PDM_DMIC_DATA1_UNSEC	TRUE	61
SPKR 0		
AUD_SPKR_LWFR_OUT_N	TRUE	58
AUD_SPKR_LWFR_OUT_P	TRUE	58
SPKR_ID0	TRUE	37, 58
AUD_SPKR_LTWTT_OUT_N	TRUE	58
AUD_SPKR_LTWTT_OUT_P	TRUE	58
SPKR 1		
AUD_SPKR_RWFR_OUT_N	TRUE	59
AUD_SPKR_RWFR_OUT_P	TRUE	59
SPKR_ID1	TRUE	37, 59
AUD_SPKR_RTWTT_OUT_N	TRUE	59
AUD_SPKR_RTWTT_OUT_P	TRUE	59
AUDIO		
AUD_CONN_J1_HP_LT	TRUE	60
AUD_CONN_J1_HP_SNS_LT	TRUE	60
AUD_CONN_J1_HP_RT	TRUE	60
AUD_CONN_J1_HP_SNS_RT	TRUE	60
AUD_CONN_J1_HP_PORT_US_GND	TRUE	60
AUD_CONN_J1_HP_PORT_CH_GND	TRUE	60
AUD_CONN_J1_HS_MICP	TRUE	60
AUD_CONN_J1_HS_MICN	TRUE	60
AUD_CONN_J1_AUD_RING_SENSE	TRUE	60
AUD_CONN_J1_AUD_TIP_SENSE	TRUE	60
AUD_CONN_J1_CABLE_DETECT	TRUE	60
FAN		
FAN_0_PWM_FILT	TRUE	54
FAN_0_TACH_FILT	TRUE	54
PP12V_FAN_FILT	TRUE	54
SOC		
SOC_DOCK_CONNECT	TRUE	30, 31, 36
DFUMUX_SEL	TRUE	45
SOC_COLD_RESPT_L	TRUE	36
PCH_UART_DEBUG_R2D	TRUE	15, 30, 45
PCH_UART_DEBUG_D2R	TRUE	15, 30, 45
SMD_SOC_SWCLK	TRUE	30, 31, 36, 45
SMD_SOC_SWDIO	TRUE	30, 31, 36, 45
DEBUG_JTAG_SOC_TDO	TRUE	45
DEBUG_JTAG_SOC_TDI	TRUE	45
TP_JTAG_SOC_TRST_L	TRUE	36, 140
SMC_DEBUGPRT_RX	TRUE	31, 36, 45
SMC_DEBUGPRT_TX	TRUE	31, 36, 45
SOC_DEBUGPRT_RX	TRUE	37, 45
SOC_DEBUGPRT_TX	TRUE	37, 45
I2C_PWR_SDA	TRUE	36, 46
I2C_PWR_SCL	TRUE	36, 46
I2C_UPC_SDA	TRUE	36, 46
I2C_UPC_SCL	TRUE	36, 46
SOC_TESTMODE	TRUE	35
SOC_SWD_MUX_SEL_PCH	TRUE	15
MISC		
FAN_PWR_EN	TRUE	54, 74
PP12V_S0_BKLT_PWR	TRUE	75, 76
PP12V_BKLT_FUSED	TRUE	75
PP12V_BKLT_SNS	TRUE	75

## J185 TP



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TESTPOINTS TABLE 1															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						D		
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	1V8_SWCH_EN	CHAR	0.6	BOT	1		BOARDID5	FCT	0.6	BOTTOM	1				
	ACDCBURST_L	CHAR	0.6	BOT	1		BOARD_REV0	FCT,CHAR	0.6	BOT	1				
	ACDC_P5U_PCC_1V8	CHAR	0.6	BOT	1		BOARD_REV1	FCT,CHAR	0.6	BOT	1				
	AGND_0V85_ENET	FCT	0.6	BOTTOM	1		BOARD_REV2	FCT	0.6	BOTTOM	1				
	AGND_1V8_S0_GPU	FCT	0.6	BOTTOM	1		BOOT_CONFIG0	FCT,CHAR	0.6	BOT	1				
	AGND_P0V8S0	FCT	0.6	BOTTOM	1		BOOT_CONFIG1	FCT,CHAR	0.6	BOT	1				
	AGND_P0V95S0_CPU	FCT	0.6	BOTTOM	1		BOOT_CONFIG2	FCT,CHAR	0.6	BOT	1				
	AGND_P1V0S5	FCT	0.6	BOTTOM	1		BT_AUDIO_SYNC	FCT	0.6	BOTTOM	1				
C	AGND_VCCSA	FCT	0.6	BOTTOM	1		BURSTMODE_EN_R_L	FCT	0.6	BOTTOM	1		C		
	AGND_VDDQS3	FCT	0.6	BOTTOM	1		CODEC_INT_L	FCT,CHAR	0.6	BOT	1				
	AGND_VPP_S3	FCT	0.6	BOTTOM	1		CODEC_RESET_L	FCT,CHAR	0.6	BOT	1				
	ALL_SYS_PWRGD	FCT,CHAR	0.6	BOT	1		CODEC_WAKE_L	FCT,CHAR	0.6	BOT	1				
	AUD_CONN_J1_AUD_RING_SENSE	FCT	0.6	BOTTOM	1		CPUVR_PGOOD	FCT,CHAR	0.6	BOT	1				
	AUD_CONN_J1_AUD_TIP_SENSE	FCT	0.6	BOTTOM	1		CPU_BCLK100M_N	CHAR	0.6	BOT	1				
	AUD_CONN_J1_CABLE_DETECT	FCT	0.6	BOTTOM	1		CPU_BCLK100M_P	CHAR	0.6	BOT	1				
	AUD_CONN_J1_HP_LT	FCT	0.6	BOTTOM	1		CPU_C10_GATE_L	CHAR	0.6	BOT	1				
	AUD_CONN_J1_HP_PORT_CH_GND	FCT	0.6	BOTTOM	1		CPU_CATERR_L	FCT	0.6	BOTTOM	1				
	AUD_CONN_J1_HP_PORT_US_GND	FCT	0.6	BOTTOM	1		CPU_PCH_TRIGGER	FCT	0.6	BOTTOM	1				
B	AUD_CONN_J1_HP_RT	FCT	0.6	BOTTOM	1		CPU_PROCHOT_L	FCT	0.6	BOTTOM	1		B		
	AUD_CONN_J1_HP_SNS_LT	FCT	0.6	BOTTOM	1		CPU_PWRGD	FCT,CHAR	0.6	BOT	1				
	AUD_CONN_J1_HP_SNS_RT	FCT	0.6	BOTTOM	1		CPU_RESET_L	FCT,CHAR	0.6	BOT	1				
	AUD_CONN_J1_HS_MICN	FCT	0.6	BOTTOM	1		CPU_SMC_THRMTRIP_L	CHAR	0.6	BOT	1				
	AUD_CONN_J1_HS_MICP	FCT	0.6	BOTTOM	1		CPU_THRMTRIP_L	FCT,CHAR	0.6	BOT	1				
	AUD_SPKR_L1TWT_OUT_N	FCT	0.6	BOTTOM	1		DEBUG_CLKREQ_L	CHAR	0.6	BOT	1				
	AUD_SPKR_L1TWT_OUT_P	FCT	0.6	BOTTOM	1		DFUMUX_SEL	FCT	0.6	BOTTOM	1				
	AUD_SPKR_LWFR_OUT_N	FCT	0.6	BOTTOM	1		DISP_GCON_INT_L	CHAR	0.6	BOT	1				
	AUD_SPKR_LWFR_OUT_P	FCT	0.6	BOTTOM	1		DP_DDPB_HPD	CHAR	0.6	BOT	1				
	AUD_SPKR_RTWT_OUT_N	FCT	0.6	BOTTOM	1		DP_DDFC_HPD	CHAR	0.6	BOT	1				
A	AUD_SPKR_RTWT_OUT_P	FCT	0.6	BOTTOM	1		DP_DDPD_HPD	CHAR	0.6	BOT	1		A		
	AUD_SPKR_RWFR_OUT_N	FCT	0.6	BOTTOM	1		DP_DDPE_HPD	CHAR	0.6	BOT	1				
	AUD_SPKR_RWFR_OUT_P	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_AUX_C_N	FCT	0.6	BOTTOM	1				
	BKLT_BOOST	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_AUX_C_P	FCT	0.6	BOTTOM	1				
	BKLT_BOOST_1	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_AUX_N	FCT	0.6	BOTTOM	1				
	BKLT_BOOST_2	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_AUX_P	FCT	0.6	BOTTOM	1				
	BKLT_BOOST_EN	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_HPD	FCT	0.6	BOTTOM	1				
	BKLT_GD1	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_HPD_CONN	FCT	0.6	BOTTOM	1				
	BKLT_GD2	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_N<0>	FCT	0.6	BOTTOM	1				
	BKLT_GD3	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_N<1>	FCT	0.6	BOTTOM	1				
BKLT_GD4	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_N<2>	FCT	0.6	BOTTOM	1					
BKLT_GD5	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_N<3>	FCT	0.6	BOTTOM	1					
BKLT_GD6	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_P<0>	FCT	0.6	BOTTOM	1					
BKLT_GD7	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_P<1>	FCT	0.6	BOTTOM	1					
BKLT_GD8	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_P<2>	FCT	0.6	BOTTOM	1					
BKLT_GD9	FCT	0.6	BOTTOM	1		DP_INTPNL_ML_P<3>	FCT	0.6	BOTTOM	1					
BKLT_GNDA	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_AUX_N	FCT	0.6	BOTTOM	1					
BKLT_GNDD	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_AUX_P	FCT	0.6	BOTTOM	1					
BLC_LASYNC	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_HPD	FCT	0.6	BOTTOM	1					
BLC_VSYNC	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_HPD_CONN	FCT	0.6	BOTTOM	1					
BOARDID3	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_N<0>	FCT	0.6	BOTTOM	1					
BOARDID4	FCT	0.6	BOTTOM	1		DP_INTPNL_SL_N<1>	FCT	0.6	BOTTOM	1					
8		7		6		5		4		3		2		1	
<div><div><div><div><div></div><div>Apple Inc.</div></div><div>TESTPOINTS TABLE 1</div><div>051-04826</div><div>4.0.0</div><div>proto-1-b</div><div>163 OF 172</div><div>141 OF 149</div></div><div><div>NOTICE OF PROPRIETARY PROPERTY:</div><div>THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED</div></div></div></div>															

8		7		6		5		4		3		2		1	
TESTPOINTS TABLE 2															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						D		
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	DP_INTPNL_SL_N<2>	FCT	0.6	BOTTOM	1		I2C_AOP_SDA	CHAR	0.6	BOT	1				
	DP_INTPNL_SL_N<3>	FCT	0.6	BOTTOM	1		I2C_BKLT_SCL	FCT	0.6	BOTTOM	1				
	DP_INTPNL_SL_P<0>	FCT	0.6	BOTTOM	1		I2C_BKLT_SDA	FCT	0.6	BOTTOM	1				
	DP_INTPNL_SL_P<1>	FCT	0.6	BOTTOM	1		I2C_CODEC_SCL	FCT, CHAR	0.6	BOT	1				
	DP_INTPNL_SL_P<2>	FCT	0.6	BOTTOM	1		I2C_CODEC_SDA	FCT, CHAR	0.6	BOT	1				
	DP_INTPNL_SL_P<3>	FCT	0.6	BOTTOM	1		I2C_DISP_SCL	FCT, CHAR	0.6	BOT	1				
	DP_INT_HPD	CHAR	0.6	BOT	1		I2C_DISP_SDA	FCT, CHAR	0.6	BOT	1				
	EG_RESET_RES_L	CHAR	0.6	BOT	1		I2C_FTCAM_SCL	CHAR	0.6	BOT	1				
C	ENET_3V3_PWR_EN_R	CHAR	0.6	BOT	1		I2C_FTCAM_SCL_CONN	FCT	0.6	BOTTOM	1		C		
	ENET_3V3_PWR_EN_R	CHAR	0.6	BOT	1		I2C_FTCAM_SDA	CHAR	0.6	BOT	1				
	ENET_FET_P3V3_PGOOD	CHAR	0.6	BOT	1		I2C_FTCAM_SDA_CONN	FCT	0.6	BOTTOM	1				
	ENET_GPI01_EFUSE_EN	FCT, CHAR	0.6	BOT	1		I2C_MLBSNS_SCL	FCT	0.6	BOTTOM	1				
	ENET_PWR_EN	FCT	0.6	BOTTOM	1		I2C_MLBSNS_SDA	FCT	0.6	BOTTOM	1				
	ENET_RESET_3V3_L	FCT	0.6	BOTTOM	1		I2C_PWR_SCL	FCT, CHAR	0.6	BOT	1				
	ESPI_CLK60M_R	CHAR	0.6	BOT	1		I2C_PWR_SDA	FCT, CHAR	0.6	BOT	1				
	ESPI_CLK_RT	FCT	0.6	BOTTOM	1		I2C_SEP_SCL	FCT, CHAR	0.6	BOT	1				
	ESPI_CS_L	CHAR	0.6	BOT	1		I2C_SEP_SDA	FCT, CHAR	0.6	BOT	1				
	ESPI_IO<0>	CHAR	0.6	BOT	1		I2C_SNS0_S0_SCL	FCT, CHAR	0.6	BOT	1				
B	ESPI_IO<1>	CHAR	0.6	BOT	1		I2C_SNS0_S0_SDA	FCT, CHAR	0.6	BOT	1		B		
	ESPI_IO<2>	CHAR	0.6	BOT	1		I2C_SPKRAMP_L_SCL	FCT, CHAR	0.6	BOT	1				
	ESPI_IO<3>	CHAR	0.6	BOT	1		I2C_SPKRAMP_L_SDA	FCT, CHAR	0.6	BOT	1				
	ESPI_IO_RT<0>	FCT	0.6	BOTTOM	1		I2C_SPKRAMP_R_SCL	FCT, CHAR	0.6	BOT	1				
	ESPI_IO_RT<1>	FCT	0.6	BOTTOM	1		I2C_SPKRAMP_R_SDA	FCT, CHAR	0.6	BOT	1				
	ESPI_IO_RT<2>	FCT	0.6	BOTTOM	1		I2C_SSD_SCL	FCT, CHAR	0.6	BOT	1				
	ESPI_IO_RT<3>	FCT	0.6	BOTTOM	1		I2C_SSD_SDA	FCT, CHAR	0.6	BOT	1				
	ESPI_RESET_L	CHAR	0.6	BOT	1		I2C_TBT_X_SCL	FCT	0.6	BOTTOM	1				
	ESPI_RESET_RT_L	FCT	0.6	BOTTOM	1		I2C_TBT_X_SDA	FCT	0.6	BOTTOM	1				
	FAN_0_PWM_FILT	FCT	0.6	BOTTOM	1		I2C_UPC_INT_L	CHAR	0.6	BOT	1				
A	FAN_0_TACH_FILT	FCT	0.6	BOTTOM	1		I2C_UPC_SCL	FCT	0.6	BOTTOM	1		A		
	FAN_PWR_EN	FCT, CHAR	0.6	BOT	1		I2C_UPC_SDA	FCT	0.6	BOTTOM	1				
	GFX_SELF_THROTTLE_1V8	CHAR	0.6	BOT	1		I2C_UPC_XA_DBG_CTL_SCL	CHAR	0.6	BOT	1				
	GND	FCT	0.6	BOTTOM	40		I2C_UPC_XA_DBG_CTL_SDA	CHAR	0.6	BOT	1				
	GND	FCT	0.7	BOTTOM	5		I2C_UPC_XB_DBG_CTL_SCL	CHAR	0.6	BOT	1				
	GND_AUD_DMIC_0_CONN	FCT	0.6	BOTTOM	1		I2C_UPC_XB_DBG_CTL_SDA	CHAR	0.6	BOT	1				
	GND_AUD_DMIC_1_CONN	FCT	0.6	BOTTOM	1		I2C_UPC_X_SCL2	FCT	0.6	BOTTOM	1				
	GPUVR_I2C_SCL	CHAR	0.6	BOT	1		I2C_UPC_X_SDA2	FCT	0.6	BOTTOM	1				
	GPUVR_I2C_SDA	CHAR	0.6	BOT	1		JTAG_TBT_X_TMS	CHAR	0.6	BOT	1				
	GPU_DISCHARGE_EN	FCT	0.6	BOTTOM	1		LED_RETURN_1	FCT	0.6	BOTTOM	1				
8		7		6		5		4		3		2		1	

Apple Inc.

051-04826

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proto-1-b

164 OF 172


142 OF 149

TESTPOINTS TABLE 2

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

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TESTPOINTS TABLE 2

 Apple Inc.

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proto-1-b

PAGE  
164 OF 172

SHEET  
142 OF 149

SIZE  
D

8		7		6		5		4		3		2		1	
TESTPOINTS TABLE 3															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						D		
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	MIPI_FTCAM_C_CLK_P	FCT	0.6	BOTTOM	1		PLT_RESET_GPU_L	CHAR	0.6	BOT	1				
	MIPI_FTCAM_C_DATA_N<0>	FCT	0.6	BOTTOM	1		PLT_RST_L	FCT, CHAR	0.6	BOT	1				
	MIPI_FTCAM_C_DATA_N<1>	FCT	0.6	BOTTOM	1		PMU_ACTIVE_READY	FCT, CHAR	0.6	BOT	1				
	MIPI_FTCAM_C_DATA_P<0>	FCT	0.6	BOTTOM	1		PMU_CLK32K_PCH	CHAR	0.6	BOT	1				
	MIPI_FTCAM_C_DATA_P<1>	FCT	0.6	BOTTOM	1		PMU_CLK32K_SOC	FCT, CHAR	0.6	BOT	1				
	NAND_MODE_1V2_EN	CHAR	0.6	BOT	1		PMU_CLK32K_WLANBT	CHAR	0.6	BOT	1				
	NC_PCH_CLK32K_SUS	CHAR	0.6	BOT	1		PMU_CLK32K_WLANBT_R	FCT	0.6	BOTTOM	1				
	P1V05S5_PGOOD	CHAR	0.6	BOT	1		PMU_COLD_RESET_L	FCT, CHAR	0.6	BOT	1				
C	P1V1_SLPDDR_SOCFET_EN	CHAR	0.6	BOT	1		PMU_ONOFF_L	CHAR	0.6	BOT	1		C		
	P1V2_S0SW_FETEN	CHAR	0.6	BOT	1		PMU_PVDDMAIN_EN	CHAR	0.6	BOT	1				
	P1V8G3S_EN	CHAR	0.6	BOT	1		PMU_RSLOC_RST_L	FCT	0.6	BOTTOM	1				
	P3V3MAIN_PGOOD	CHAR	0.6	BOT	1		PMU_SYS_ALIVE	FCT, CHAR	0.6	BOT	1				
	P3V3MAIN_PGOOD	CHAR	0.6	BOT	1		PMU_TO_NFC_EN	CHAR	0.6	BOT	1				
	P5VG3S_PGOOD	CHAR	0.6	BOT	1		PMU_VDD_HI	CHAR	0.6	BOT	1				
	PCH_BT_AUDIO_SYNC	CHAR	0.6	BOT	1		PMU_WLBT_PWR_EN	CHAR	0.6	BOT	1				
	PCH_ENETSD_CLKREQ_L	CHAR	0.6	BOT	1		PM_BATLOW_L	CHAR	0.6	BOT	1				
	PCH_ENETSD_RESET_L	CHAR	0.6	BOT	1		PM_EN_FET_P3V3_S0	CHAR	0.6	BOT	1				
	PCH_ENET_10G_CLKREQ_L	CHAR	0.6	BOT	1		PM_EN_FET_P5V_S0	CHAR	0.6	BOT	1				
B	PCH_ENET_LOW_PWR	CHAR	0.6	BOT	1		PM_EN_LDO_DDRVTT_S0	CHAR	0.6	BOT	1		B		
	PCH_ESPI_ALERT0_L	CHAR	0.6	BOT	1		PM_EN_REG_GPU_GFX_SOC	CHAR	0.6	BOT	1				
	PCH_GCON_INT_L	CHAR	0.6	BOT	1		PM_EN_REG_P0V8_S0	CHAR	0.6	BOT	1				
	PCH_GPP_A0_PU	CHAR	0.6	BOT	1		PM_EN_REG_P1V05_S5	CHAR	0.6	BOT	1				
	PCH_GPU_CLKREQ_L	CHAR	0.6	BOT	1		PM_EN_REG_P2V5_S3	CHAR	0.6	BOT	1				
	PCH_GPU_ID	CHAR	0.6	BOT	1		PM_EN_REG_P3V3_G3H_R	CHAR	0.6	BOT	1				
	PCH_PWRBTN_L	FCT, CHAR	0.6	BOT	1		PM_EN_REG_PVDDCT_S0	CHAR	0.6	BOT	1				
	PCH_RTC_RESET_L	FCT, CHAR	0.6	BOT	1		PM_EN_REG_VCCIO_S0	CHAR	0.6	BOT	1				
	PCH_SOC_SYNC	CHAR	0.6	BOT	1		PM_EN_REG_VCCSA_S0_R	CHAR	0.6	BOT	1				
	PCH_STRP_BSSB_SEL_GPIO	CHAR	0.6	BOT	1		PM_EN_REG_VDDQ_S3	CHAR	0.6	BOT	1				
A	PCH_STRP_ESPI	CHAR	0.6	BOT	1		PM_P1V05_S3_FET_EN	CHAR	0.6	BOT	1		A		
	PCH_STRP_GPD7	CHAR	0.6	BOT	1		PM_P3V3P1V8_G3S_FET_EN	CHAR	0.6	BOT	1				
	PCH_STRP_GPP_H15	CHAR	0.6	BOT	1		PM_P5VG3S_EN	CHAR	0.6	BOT	1				
	PCH_STRP_NO_REBOOT	CHAR	0.6	BOT	1		PM_PCH_PWROK	FCT, CHAR	0.6	BOT	1				
	PCH_STRP_SPIROM_SAF	CHAR	0.6	BOT	1		PM_PCH_SYS_PWROK	FCT, CHAR	0.6	BOT	1				
	PCH_STRP_VCCPSPI_1V8	CHAR	0.6	BOT	1		PM_PGOOD_FET_P3V3G3S	CHAR	0.6	BOT	1				
	PCH_STRP_XTAL_24MHZ	CHAR	0.6	BOT	1		PM_PGOOD_FET_P5V_S0	CHAR	0.6	BOT	1				
	PCH_SWD_SOC_CLK	CHAR	0.6	BOT	1		PM_PGOOD_REG_GPU_GFX	CHAR	0.6	BOT	1				
	PCH_SWD_SOC_IO	CHAR	0.6	BOT	1		PM_PGOOD_REG_GPU_SOC	CHAR	0.6	BOT	1				
	PCH_UART2_CTS_L	FCT, CHAR	0.6	BOT	1		PM_PGOOD_REG_GPU_VDDCI	CHAR	0.6	BOT	1				
8		7		6		5		4		3		2		1	

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DRAWING NUMBER  
051-04826

REVISION  
4.0.0

BRANCH  
proto-1-b

PAGE  
165 OF 172

SHEET  
143 OF 149

TESTPOINTS TABLE 3



8		7		6		5		4		3		2		1	
TESTPOINTS TABLE 4															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						D		
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	PP0V75_S0_GPUVDD	FCT, CHAR	0.6	BOT	1		PP3V3_S5	FCT, CHAR	0.6	BOT	1				
	PP0V82_SLPPDDR	FCT, CHAR	0.6	BOT	1		PP3V3_TBT_X_SX	FCT	0.6	BOTTOM	1				
	PP0V85_ENET	FCT	0.6	BOTTOM	1		PP3V3_UPC_XA	FCT	0.6	BOTTOM	1				
	PP0V85_S0_GPUVDDCI	FCT, CHAR	0.6	BOT	1		PP3V3_UPC_XB	FCT	0.6	BOTTOM	1				
	PP0V8_SLPS2R	FCT, CHAR	0.6	BOT	1		PP3V_G3_PCH_VCCRTC	FCT, CHAR	0.6	BOT	1				
	PP0V9_SLPPDDR	FCT, CHAR	0.6	BOT	1		PP5V_G3S	FCT, CHAR	0.6	BOT	1				
	PP0V9_SSD0	FCT, CHAR	0.6	BOT	1		PP5V_G3S_CAMERA_F	FCT	0.6	BOTTOM	1				
	PP12V_FAN_FILT	FCT	0.6	BOTTOM	1		PP5V_S0	FCT, CHAR	0.6	BOT	1				
C	PP12V_G3H	FCT	0.6	BOTTOM	1		PPDDRVTT_S0	FCT, CHAR	0.6	BOT	1				
	PP12V_G3H_ACDC	FCT, CHAR	0.7	BOT	5		PPVBATT_G3_RTC	FCT	0.6	BOTTOM	1				
	PP12V_G3H_GPUCORE	FCT	0.6	BOTTOM	1		PPVBATT_G3_RTC_R	CHAR	0.6	BOT	1				
	PP12V_G3H_SSD0	FCT	0.6	BOTTOM	1		PPVBUS_USBC_XA	FCT	0.6	BOTTOM	1				
	PP12V_G3H_SSD1	FCT	0.6	BOTTOM	1		PPVBUS_USBC_XB	FCT	0.6	BOTTOM	1				
	PP12V_LCD_FET	FCT	0.6	BOTTOM	1		PPVCCGT_S0_CPU	FCT, CHAR	0.6	BOT	1				
	PP12V_S0_BKLT_PWR	FCT	0.6	BOTTOM	1		PPVCCIN_S0_CPU	FCT, CHAR	0.6	BOT	1				
	PP1V05_S3SW	FCT, CHAR	0.6	BOT	1		PPVCCIO_S0_CPU	FCT, CHAR	0.6	BOT	1				
	PP1V05_S3_FET	FCT, CHAR	0.6	BOT	1		PPVCCQ_ANI_SSD0	FCT, CHAR	0.6	BOT	1				
	PP1V05_S5	FCT, CHAR	0.6	BOT	1		PPVCCSA_S0_CPU	FCT, CHAR	0.6	BOT	1				
B	PP1V1_SLPPDDR	FCT, CHAR	0.6	BOT	1		PPVCORE_S0_GPU	FCT, CHAR	0.6	BOT	1				
	PP1V1_SLPPDDR_SOC_VDDIOPLDDR_F	FCT	0.6	BOTTOM	1		PPVDDCPUSRAM_AWAKE_SOC	FCT, CHAR	0.6	BOT	1				
	PP1V1_SLPS2R	FCT, CHAR	0.6	BOT	1		PPVDDCPU_AWAKE_SOC	FCT, CHAR	0.6	BOT	1				
	PP1V2_AWAKE	FCT, CHAR	0.6	BOT	1		PPVDDQ_S3	FCT, CHAR	0.6	BOT	1				
	PP1V2_S3_CPU	FCT	0.6	BOTTOM	1		PPVDDQ_S3_DDR	FCT	0.6	BOTTOM	1				
	PP1V2_S3_PLLOC	CHAR, CHAR, FCT, CHAR	0.6	BOT	1		PPVSOC_S0_GPU	FCT, CHAR	0.6	BOT	1				
	PP1V2_S3_PLLOC	CHAR	0.6	BOT	1		PSU12V_PG00D_1V8	CHAR	0.6	BOT	1				
	PP1V35_S0_GPUMVDD	FCT, CHAR	0.6	BOT	1		PU_LAN_WAKE_L	CHAR	0.6	BOT	1				
	PP1V5_LDO_ENET_EFUSE	FCT	0.6	BOTTOM	1		PVCCIO_EN	CHAR	0.6	BOT	1				
	PP1V8_AWAKE	FCT, CHAR	0.6	BOT	1		PVCCIO_PG00D	CHAR	0.6	BOT	1				
A	PP1V8_DMIC_0_CONN	FCT	0.6	BOTTOM	1		PVDDQ_EN_BUF	CHAR	0.6	BOT	1				
	PP1V8_DMIC_1_CONN	FCT	0.6	BOTTOM	1		PVDDQ_PG00D	FCT, CHAR	0.6	BOT	1				
	PP1V8_G3S	FCT, CHAR	0.6	BOT	1		PWR_BTN_R	FCT	0.6	BOTTOM	1				
	PP1V8_S0_GPUVDD	FCT, CHAR	0.6	BOT	1		REG_CPU_VCC_CORE_EN	CHAR	0.6	BOT	1				
	PP1V8_S5	FCT, CHAR	0.6	BOT	1		REG_CPU_VIDALERT_L_R	CHAR	0.6	BOT	1				
	PP1V8_SLPS2R	FCT, CHAR	0.6	BOT	1		REG_CPU_VIDSOUT_R	CHAR	0.6	BOT	1				
	PP1V8_SLPS2R_PMUVDGPI0	CHAR	0.6	BOT	1		SDCONN_OC_L	CHAR	0.6	BOT	1				
	PP1V8_VCCQIO_SSD0	FCT	0.6	BOTTOM	1		SDCONN_STATE_CHANGE_L	CHAR	0.6	BOT	1				
	PP1V8_VCCQIO_SSD0_S5E_2L	FCT	0.6	BOTTOM	1		SD_PWR_EN	CHAR	0.6	BOT	1				
	PP1V8_VCCQIO_SSD0_S5E_4L	CHAR	0.6	BOT	1		SE_CTLR_FW_DWLD	CHAR	0.6	BOT	1				
8		7		6		5		4		3		2		1	

Apple Inc.

TESTPOINTS TABLE 4

DRAWING NUMBER  
051-04826


REVISION  
4.0.0

BRANCH  
proto-1-b

PAGE  
166 OF 172

SHEET  
144 OF 149

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PAGE TITLE			
TESTPOINTS TABLE 4			
 Apple Inc.	DRAWING NUMBER	051-04826	SIZE
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		PAGE	166 OF 172
		SHEET	144 OF 149

8		7		6		5		4		3		2		1	
TESTPOINTS TABLE 5															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						D		
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	SMC_GPU_THROTTLE_L	CHAR	0.6	BOT	1		SWD_SOC_SWCLK	FCT	0.6	BOTTOM	1				
	SMC_PCH_SYS_PWROK	FCT	0.6	BOTTOM	1		SWD_SOC_SWDIO	FCT	0.6	BOTTOM	1				
	SMC_RSMRST_L	FCT, CHAR	0.6	BOT	1		SYS_STATE_BLUE_R	FCT	0.6	BOTTOM	1				
	SMC_SLP_S0_L	CHAR	0.6	BOT	1		SYS_STATE_GREEN_R	FCT	0.6	BOTTOM	1				
	SMC_SYSRST_L	FCT	0.6	BOTTOM	1		SYS_STATE_RED_R	FCT	0.6	BOTTOM	1				
	SML_PCH_0_CLK	FCT, CHAR	0.6	BOT	1		TBT_POC_RESET	CHAR	0.6	BOT	1				
	SML_PCH_0_DATA	FCT, CHAR	0.6	BOT	1		TBT_PWR_EN	CHAR	0.6	BOT	1				
	SML_PCH_1_CLK	FCT, CHAR	0.6	BOT	1		TBT_X_CIO_PWR_EN	CHAR	0.6	BOT	1				
C	SML_PCH_1_DATA	FCT, CHAR	0.6	BOT	1		TBT_X_CLKREQ_L	CHAR	0.6	BOT	1				
	SOC_CLKREQ_L	CHAR	0.6	BOT	1		TBT_X_GPIO_0	CHAR	0.6	BOT	1				
	SOC_COLD_RESET_L	FCT	0.6	BOTTOM	1		TBT_X_GPIO_1	CHAR	0.6	BOT	1				
	SOC_DEBUGPRT_RX	FCT	0.6	BOTTOM	1		TBT_X_PCI_RESET_R_L	CHAR	0.6	BOT	1				
	SOC_DEBUGPRT_TX	FCT	0.6	BOTTOM	1		TBT_X_PLUG_EVENT_L	CHAR	0.6	BOT	1				
	SOC_DFU_STATUS	FCT	0.6	BOTTOM	1		TBT_X_USB_PWR_EN	CHAR	0.6	BOT	1				
	SOC_DOCK_CONNECT	FCT	0.6	BOTTOM	1		TCON_VALIDFRAME	FCT	0.6	BOTTOM	1				
	SOC_FORCE_DFU	FCT	0.6	BOTTOM	1		TP_BT_GPIO_2	CHAR	0.6	BOT	1				
	SOC_HOLD_RESET	FCT	0.6	BOTTOM	1		TP_BT_GPIO_4	CHAR	0.6	BOT	1				
	SOC_SOCHOT_L	FCT	0.6	BOTTOM	1		TP_BT_GPIO_5	CHAR	0.6	BOT	1				
B	SOC_SWD_MUX_SEL_PCH	CHAR	0.6	BOT	1		TP_EXTRA_1	CHAR	0.6	BOT	1				
	SOC_USB_VBUS	FCT	0.6	BOTTOM	1		TP_EXTRA_10	CHAR	0.6	BOT	1				
	SPI2_WLBT_SFL_CLK	FCT	0.6	BOTTOM	1		TP_EXTRA_11	CHAR	0.6	BOT	1				
	SPI2_WLBT_SFL_CS_L	FCT	0.6	BOTTOM	1		TP_EXTRA_12	CHAR	0.6	BOT	1				
	SPI2_WLBT_SFL_CS_L_R	FCT	0.6	BOTTOM	1		TP_EXTRA_13	CHAR	0.6	BOT	1				
	SPI2_WLBT_SFL_MISO	FCT	0.6	BOTTOM	1		TP_EXTRA_14	CHAR	0.6	BOT	1				
	SPI2_WLBT_SFL_MOSI	FCT	0.6	BOTTOM	1		TP_EXTRA_15	CHAR	0.6	BOT	1				
	SPIROM_USE_MLB	CHAR	0.6	BOT	1		TP_EXTRA_16	CHAR	0.6	BOT	1				
	SPKRAMP_INT_L	CHAR	0.6	BOT	1		TP_EXTRA_17	CHAR	0.6	BOT	1				
	SPKRAMP_RESET_L	CHAR	0.6	BOT	1		TP_EXTRA_18	CHAR	0.6	BOT	1				
A	SPKR_ID0	FCT	0.6	BOTTOM	1		TP_EXTRA_2	CHAR	0.6	BOT	1				
	SPKR_ID1	FCT	0.6	BOTTOM	1		TP_EXTRA_3	CHAR	0.6	BOT	1				
	SSD0_CALPE_DISCHARGE_EN	CHAR	0.6	BOT	1		TP_EXTRA_4	CHAR	0.6	BOT	1				
	SSD0_LPB_L	CHAR	0.6	BOT	1		TP_EXTRA_5	CHAR	0.6	BOT	1				
	SSD0_OCARINA_PFN_L	CHAR	0.6	BOT	1		TP_EXTRA_6	CHAR	0.6	BOT	1				
	SSD0_OCARINA_PFN_L	CHAR	0.6	BOT	1		TP_EXTRA_7	CHAR	0.6	BOT	1				
	SSD0_OCARINA_RESET_L	FCT	0.6	BOTTOM	1		TP_EXTRA_8	CHAR	0.6	BOT	1				
	SSD0_RESET_L	CHAR	0.6	BOT	1		TP_EXTRA_9	CHAR	0.6	BOT	1				
	SSD0_S4E0_ANI0_VREF	FCT	0.6	BOTTOM	1		TP_UTAG_SOC_TRST_L	FCT	0.6	BOTTOM	1				
	SSD0_S4E0_ANI1_VREF	FCT	0.6	BOTTOM	1		TP_PCH_SLP_A_L	CHAR	0.6	BOT	1				
8		7		6		5		4		3		2		1	

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051-04826

REVISION

4.0.0

BRANCH

proto-1-b

PAGE

167 OF 172


SHEET

145 OF 149

TESTPOINTS TABLE 5

PAGE TITLE

TESTPOINTS TABLE 5

 Apple Inc.

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DRAWING NUMBER  
051-04826

REVISION  
4.0.0

BRANCH  
proto-1-b

PAGE  
167 OF 172

SHEET  
145 OF 149

SIZE  
D

8		7		6		5		4		3		2		1	
TESTPOINTS TABLE 6															
D	TESTPOINTS CONFIGURATION						TESTPOINTS CONFIGURATION						C	B	A
	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR	NETNAME	TYPE (ICT, FUNC, CHAR)	MIN SIZE(MM)	TOP/BOTTOM	QUANTITY	PLACE_NEAR			
	UART_SE_D2R_CTS_L	FCT	0.6	BOTTOM	1		USBC_XA_D2R_C_P<1>	FCT	0.6	BOTTOM	1				
	UART_SE_R2D	FCT	0.6	BOTTOM	1		USBC_XA_D2R_C_P<2>	FCT	0.6	BOTTOM	1				
	UART_SE_R2D_RTS_L	FCT	0.6	BOTTOM	1		USBC_XA_D2R_N<1>	FCT	0.6	BOTTOM	1				
	UART_WLAN_D2R	FCT	0.6	BOTTOM	1		USBC_XA_D2R_N<2>	FCT	0.6	BOTTOM	1				
	UART_WLAN_D2R_CTS_L	FCT	0.6	BOTTOM	1		USBC_XA_D2R_P<1>	FCT	0.6	BOTTOM	1				
	UART_WLAN_R2D	FCT	0.6	BOTTOM	1		USBC_XA_D2R_P<2>	FCT	0.6	BOTTOM	1				
	UART_WLAN_R2D_RTS_L	FCT	0.6	BOTTOM	1		USBC_XA_R2D_N<1>	FCT	0.6	BOTTOM	1				
	UPC_XA_GPI04	CHAR	0.6	BOT	1		USBC_XA_R2D_N<2>	FCT	0.6	BOTTOM	1				
C	UPC_XB_DBG0_PD	FCT	0.6	BOTTOM	1		USBC_XA_R2D_P<1>	FCT	0.6	BOTTOM	1				
	UPC_XB_DBG1_PD	FCT	0.6	BOTTOM	1		USBC_XA_R2D_P<2>	FCT	0.6	BOTTOM	1				
	UPC_XB_DBG2_PD	FCT	0.6	BOTTOM	1		USBC_XA_SBU1	FCT	0.6	BOTTOM	1				
	UPC_XB_DBG3_PD	FCT	0.6	BOTTOM	1		USBC_XA_SBU2	FCT	0.6	BOTTOM	1				
	UPC_XB_GPI01	CHAR	0.6	BOT	1		USBC_XA_USB_BOT_N	FCT	0.6	BOTTOM	1				
	UPC_XB_GPI010	CHAR	0.6	BOT	1		USBC_XA_USB_BOT_P	FCT	0.6	BOTTOM	1				
	UPC_XB_GPI04	CHAR	0.6	BOT	1		USBC_XA_USB_TOP_N	FCT	0.6	BOTTOM	1				
	UPC_XB_GPI09	CHAR	0.6	BOT	1		USBC_XA_USB_TOP_P	FCT	0.6	BOTTOM	1				
	USB2_EXT_A_N	FCT	0.6	BOTTOM	1		USBC_XB_AUXLSX1	FCT	0.6	BOTTOM	1				
	USB2_EXT_A_P	FCT	0.6	BOTTOM	1		USBC_XB_AUXLSX2	FCT	0.6	BOTTOM	1				
B	USB2_EXT_B_N	FCT	0.6	BOTTOM	1		USBC_XB_CC1	FCT	0.6	BOTTOM	1				
	USB2_EXT_B_P	FCT	0.6	BOTTOM	1		USBC_XB_CC2	FCT	0.6	BOTTOM	1				
	USB2_EXTC_N	FCT	0.6	BOTTOM	1		USBC_XB_D2R_C_N<1>	FCT	0.6	BOTTOM	1				
	USB2_EXTC_P	FCT	0.6	BOTTOM	1		USBC_XB_D2R_C_N<2>	FCT	0.6	BOTTOM	1				
	USB2_EXTD_N	FCT	0.6	BOTTOM	1		USBC_XB_D2R_C_P<1>	FCT	0.6	BOTTOM	1				
	USB2_EXTD_P	FCT	0.6	BOTTOM	1		USBC_XB_D2R_C_P<2>	FCT	0.6	BOTTOM	1				
	USB3_EXT_A_D2R_F_N	FCT	0.6	BOTTOM	1		USBC_XB_R2D_N<1>	FCT	0.6	BOTTOM	1				
	USB3_EXT_A_D2R_F_P	FCT	0.6	BOTTOM	1		USBC_XB_R2D_N<2>	FCT	0.6	BOTTOM	1				
	USB3_EXT_A_R2D_F_N	FCT	0.6	BOTTOM	1		USBC_XB_R2D_P<1>	FCT	0.6	BOTTOM	1				
	USB3_EXT_A_R2D_F_P	FCT	0.6	BOTTOM	1		USBC_XB_R2D_P<2>	FCT	0.6	BOTTOM	1				
A	USB3_EXTB_D2R_F_N	FCT	0.6	BOTTOM	1		USBC_XB_SBU1	FCT	0.6	BOTTOM	1				
	USB3_EXTB_D2R_F_P	FCT	0.6	BOTTOM	1		USBC_XB_SBU2	FCT	0.6	BOTTOM	1				
	USB3_EXTB_R2D_F_N	FCT	0.6	BOTTOM	1		USBC_XB_USB_BOT_N	FCT	0.6	BOTTOM	1				
	USB3_EXTB_R2D_F_P	FCT	0.6	BOTTOM	1		USBC_XB_USB_BOT_P	FCT	0.6	BOTTOM	1				
	USB3_EXTC_D2R_F_N	FCT	0.6	BOTTOM	1		USBC_XB_USB_TOP_N	FCT	0.6	BOTTOM	1				
	USB3_EXTC_D2R_F_P	FCT	0.6	BOTTOM	1		USBC_XB_USB_TOP_P	FCT	0.6	BOTTOM	1				
	USB3_EXTC_R2D_F_N	FCT	0.6	BOTTOM	1		USB_EXTE_OC_L	CHAR	0.6	BOT	1				
	USB3_EXTC_R2D_F_P	FCT	0.6	BOTTOM	1		USB_EXTF_OC_L	CHAR	0.6	BOT	1				
	USB3_EXTD_D2R_F_N	FCT	0.6	BOTTOM	1		USB_SOC_N	FCT	0.6	BOTTOM	1				
	USB3_EXTD_D2R_F_P	FCT	0.6	BOTTOM	1		USB_SOC_P	FCT	0.6	BOTTOM	1				
8		7		6		5		4		3		2		1	

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PAGE  
168 OF 172







SHEET  
146 OF 149

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D	<div>SSD BOM GROUPS</div> <table><tr><th>BOM GROUP</th><th>BOM OPTIONS</th></tr><tr><td>STG_256GB_WD</td><td>2L_S4E,S4E_256GB_2L_WD,SOC:1G</td></tr><tr><td>STG_256GB_TO</td><td>2L_S4E,S4E_256GB_2L_TO,SOC:1G</td></tr><tr><td>STG_512GB_HY</td><td>4L_S4E,S4E_512GB_4L_HY,SOC:1G</td></tr><tr><td>STG_512GB_TO</td><td>4L_S4E,S4E_512GB_4L_TO,SOC:1G</td></tr><tr><td>STG_1TB_HY</td><td>4L_S4E,S4E_1TB_4L_HY,SOC:2G</td></tr><tr><td>STG_1TB_TO</td><td>4L_S4E,S4E_1TB_4L_TO,SOC:2G</td></tr><tr><td>STG_2TB_WD</td><td>4L_S4E,S4E_2TB_4L_WD,SOC:2G</td></tr><tr><td>STG_2TB_HY</td><td>4L_S4E,S4E_2TB_4L_HY,SOC:2G</td></tr><tr><td>STG_4TB_WD</td><td>4L_S4E,S4E_4TB_4L_WD,SOC:2G,SSD1_CONN,SSD:2TB_WD_ITLC</td></tr><tr><td>STG_4TB_HY</td><td>4L_S4E,S4E_4TB_4L_HY,SOC:2G,SSD1_CONN,SSD:2TB_HY_ITLC</td></tr><tr><td>STG_8TB_WD</td><td>4L_S4E,S4E_8TB_4L_WD,SOC:2G,SSD1_CONN,SSD:4TB_WD_ITLC</td></tr><tr><td>STG_8TB_HY</td><td>4L_S4E,S4E_8TB_4L_HY,SOC:2G,SSD1_CONN,SSD:4TB_HY_ITLC</td></tr></table> <div>SOC GROUPS</div> <table><tr><th>BOM GROUP</th><th>BOM OPTIONS</th></tr><tr><td>SOC:1G</td><td>SOC:DEV_1G</td></tr><tr><td>SOC:2G</td><td>SOC:DEV_2G</td></tr></table> <div>BOARD REV GROUPS</div> <table><tr><th>BOM GROUP</th><th>BOM OPTIONS</th></tr><tr><td>BOARDREV_POC</td><td></td></tr><tr><td>BOARDREV_P1</td><td>BOARDREV0</td></tr><tr><td>BOARDREV_EVT</td><td>BOARDREV1</td></tr><tr><td>BOARDREV_PVT</td><td>BOARDREV1,BOARDREV0</td></tr></table> <div>GS5 ASSEMBLIES</div> <table><tr><th>PART NUMBER</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DES</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>656-0118</td><td>1</td><td>SSD,WD,4L,16DP,GS5,ITLC,X1318</td><td>SSD</td><td>CRITICAL</td><td>SSD:2TB_WD_ITLC</td></tr><tr><td>656-0107</td><td>1</td><td>SSD,HY,4L,16DP,GS5,ITLC,X1318</td><td>SSD</td><td>CRITICAL</td><td>SSD:2TB_HY_ITLC</td></tr><tr><td>656-0123</td><td>1</td><td>SSD,WD,4L,16DP,GS5,ITLC,X1318</td><td>SSD</td><td>CRITICAL</td><td>SSD:4TB_WD_ITLC</td></tr><tr><td>656-0124</td><td>1</td><td>SSD,HY,4L,16DP,GS5,ITLC,X1318</td><td>SSD</td><td>CRITICAL</td><td>SSD:4TB_HY_ITLC</td></tr></table> <div>SSD BOM Groups</div> <div>&lt;rdar://50926379&amp;50926402&gt;</div> <table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>998-16396</td><td>2</td><td>NAND,3DV4,128GBT,S4e,256GB,T,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_256GB_2L_TO</td></tr><tr><td>335S00378</td><td>2</td><td>NAND,3DV4,128GBT,S4E,256G,H,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_256GB_2L_WD</td></tr><tr><td>335S00395</td><td>2</td><td>NAND,3DV4,192GBT,21.1,S4E,256G,T,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_512GB_4L_TO</td></tr><tr><td>998-16396</td><td>2</td><td>NAND,3DV4,128GBT,S4E,256G,T,20NM,SLGA110</td><td>U8800,U8900</td><td>CRITICAL</td><td>S4E_512GB_4L_TO</td></tr><tr><td>335S00398</td><td>2</td><td>NAND,3DV4,192GBT,21.1,S4E,256G,H,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_512GB_4L_HY</td></tr><tr><td>335S00378</td><td>2</td><td>NAND,3DV4,128GBT,S4E,256G,H,SLGA110</td><td>U8800,U8900</td><td>CRITICAL</td><td>S4E_512GB_4L_HY</td></tr><tr><td>335S00397</td><td>2</td><td>NAND,3DV4,320GBT,S4e,256GB,T,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_1TB_4L_TO</td></tr><tr><td>335S00396</td><td>2</td><td>NAND,3DV4,256GBT,S4e,256GB,T,SLGA110</td><td>U8800,U8900</td><td>CRITICAL</td><td>S4E_1TB_4L_TO</td></tr><tr><td>335S00399</td><td>2</td><td>NAND,3DV4,320GBT,21.1,S4E,256G,H,SLGA110</td><td>U8600,U8700</td><td>CRITICAL</td><td>S4E_1TB_4L_HY</td></tr><tr><td>335S00379</td><td>2</td><td>NAND,3DV4,256GBT,S4E,256G,H,SLGA110</td><td>U8800,U8900</td><td>CRITICAL</td><td>S4E_1TB_4L_HY</td></tr><tr><td>335S00391</td><td>4</td><td>NAND,3DV4,512GBT,S4e,256GB,SD,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_2TB_4L_WD</td></tr><tr><td>335S00380</td><td>4</td><td>NAND,3DV4,512GBT,S4E,256G,H,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_2TB_4L_HY</td></tr><tr><td>335S00391</td><td>4</td><td>NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_4TB_4L_WD</td></tr><tr><td>335S00380</td><td>4</td><td>NAND,3DV4,512GBT,S4E,256G,H,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_4TB_4L_HY</td></tr><tr><td>335S00433</td><td>4</td><td>NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_8TB_4L_WD</td></tr><tr><td>335S00444</td><td>4</td><td>NAND,3DV5,1024GBT,S4E,512G,H,SLGA110</td><td>U8600,U8700,U8800,U8900</td><td>CRITICAL</td><td>S4E_8TB_4L_HY</td></tr></table> <div>SOCKET&amp; CONNECTOR</div> <table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>511S00012</td><td>1</td><td>CONN,CPU,SOCKET,1GA1200,HF</td><td>U0500</td><td>CRITICAL</td><td></td></tr><tr><td>514-00118</td><td>1</td><td>CONN,AC/PT,USB-C,DUAL,X1221</td><td>J3300</td><td>CRITICAL</td><td></td></tr></table>									BOM GROUP	BOM OPTIONS	STG_256GB_WD	2L_S4E,S4E_256GB_2L_WD,SOC:1G	STG_256GB_TO	2L_S4E,S4E_256GB_2L_TO,SOC:1G	STG_512GB_HY	4L_S4E,S4E_512GB_4L_HY,SOC:1G	STG_512GB_TO	4L_S4E,S4E_512GB_4L_TO,SOC:1G	STG_1TB_HY	4L_S4E,S4E_1TB_4L_HY,SOC:2G	STG_1TB_TO	4L_S4E,S4E_1TB_4L_TO,SOC:2G	STG_2TB_WD	4L_S4E,S4E_2TB_4L_WD,SOC:2G	STG_2TB_HY	4L_S4E,S4E_2TB_4L_HY,SOC:2G	STG_4TB_WD	4L_S4E,S4E_4TB_4L_WD,SOC:2G,SSD1_CONN,SSD:2TB_WD_ITLC	STG_4TB_HY	4L_S4E,S4E_4TB_4L_HY,SOC:2G,SSD1_CONN,SSD:2TB_HY_ITLC	STG_8TB_WD	4L_S4E,S4E_8TB_4L_WD,SOC:2G,SSD1_CONN,SSD:4TB_WD_ITLC	STG_8TB_HY	4L_S4E,S4E_8TB_4L_HY,SOC:2G,SSD1_CONN,SSD:4TB_HY_ITLC	BOM GROUP	BOM OPTIONS	SOC:1G	SOC:DEV_1G	SOC:2G	SOC:DEV_2G	BOM GROUP	BOM OPTIONS	BOARDREV_POC		BOARDREV_P1	BOARDREV0	BOARDREV_EVT	BOARDREV1	BOARDREV_PVT	BOARDREV1,BOARDREV0	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	656-0118	1	SSD,WD,4L,16DP,GS5,ITLC,X1318	SSD	CRITICAL	SSD:2TB_WD_ITLC	656-0107	1	SSD,HY,4L,16DP,GS5,ITLC,X1318	SSD	CRITICAL	SSD:2TB_HY_ITLC	656-0123	1	SSD,WD,4L,16DP,GS5,ITLC,X1318	SSD	CRITICAL	SSD:4TB_WD_ITLC	656-0124	1	SSD,HY,4L,16DP,GS5,ITLC,X1318	SSD	CRITICAL	SSD:4TB_HY_ITLC	PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	998-16396	2	NAND,3DV4,128GBT,S4e,256GB,T,SLGA110	U8600,U8700	CRITICAL	S4E_256GB_2L_TO	335S00378	2	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_256GB_2L_WD	335S00395	2	NAND,3DV4,192GBT,21.1,S4E,256G,T,SLGA110	U8600,U8700	CRITICAL	S4E_512GB_4L_TO	998-16396	2	NAND,3DV4,128GBT,S4E,256G,T,20NM,SLGA110	U8800,U8900	CRITICAL	S4E_512GB_4L_TO	335S00398	2	NAND,3DV4,192GBT,21.1,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_512GB_4L_HY	335S00378	2	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8800,U8900	CRITICAL	S4E_512GB_4L_HY	335S00397	2	NAND,3DV4,320GBT,S4e,256GB,T,SLGA110	U8600,U8700	CRITICAL	S4E_1TB_4L_TO	335S00396	2	NAND,3DV4,256GBT,S4e,256GB,T,SLGA110	U8800,U8900	CRITICAL	S4E_1TB_4L_TO	335S00399	2	NAND,3DV4,320GBT,21.1,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_1TB_4L_HY	335S00379	2	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8800,U8900	CRITICAL	S4E_1TB_4L_HY	335S00391	4	NAND,3DV4,512GBT,S4e,256GB,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_2TB_4L_WD	335S00380	4	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_2TB_4L_HY	335S00391	4	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_4TB_4L_WD	335S00380	4	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_4TB_4L_HY	335S00433	4	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_8TB_4L_WD	335S00444	4	NAND,3DV5,1024GBT,S4E,512G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_8TB_4L_HY	PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION	511S00012	1	CONN,CPU,SOCKET,1GA1200,HF	U0500	CRITICAL		514-00118	1	CONN,AC/PT,USB-C,DUAL,X1221	J3300	CRITICAL																																																															
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335S00378	2	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_256GB_2L_WD																																																																																																																																																																																																																																																																		
335S00395	2	NAND,3DV4,192GBT,21.1,S4E,256G,T,SLGA110	U8600,U8700	CRITICAL	S4E_512GB_4L_TO																																																																																																																																																																																																																																																																		
998-16396	2	NAND,3DV4,128GBT,S4E,256G,T,20NM,SLGA110	U8800,U8900	CRITICAL	S4E_512GB_4L_TO																																																																																																																																																																																																																																																																		
335S00398	2	NAND,3DV4,192GBT,21.1,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_512GB_4L_HY																																																																																																																																																																																																																																																																		
335S00378	2	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8800,U8900	CRITICAL	S4E_512GB_4L_HY																																																																																																																																																																																																																																																																		
335S00397	2	NAND,3DV4,320GBT,S4e,256GB,T,SLGA110	U8600,U8700	CRITICAL	S4E_1TB_4L_TO																																																																																																																																																																																																																																																																		
335S00396	2	NAND,3DV4,256GBT,S4e,256GB,T,SLGA110	U8800,U8900	CRITICAL	S4E_1TB_4L_TO																																																																																																																																																																																																																																																																		
335S00399	2	NAND,3DV4,320GBT,21.1,S4E,256G,H,SLGA110	U8600,U8700	CRITICAL	S4E_1TB_4L_HY																																																																																																																																																																																																																																																																		
335S00379	2	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8800,U8900	CRITICAL	S4E_1TB_4L_HY																																																																																																																																																																																																																																																																		
335S00391	4	NAND,3DV4,512GBT,S4e,256GB,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_2TB_4L_WD																																																																																																																																																																																																																																																																		
335S00380	4	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_2TB_4L_HY																																																																																																																																																																																																																																																																		
335S00391	4	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_4TB_4L_WD																																																																																																																																																																																																																																																																		
335S00380	4	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_4TB_4L_HY																																																																																																																																																																																																																																																																		
335S00433	4	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_8TB_4L_WD																																																																																																																																																																																																																																																																		
335S00444	4	NAND,3DV5,1024GBT,S4E,512G,H,SLGA110	U8600,U8700,U8800,U8900	CRITICAL	S4E_8TB_4L_HY																																																																																																																																																																																																																																																																		
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																																																																																																																																																																																																		
511S00012	1	CONN,CPU,SOCKET,1GA1200,HF	U0500	CRITICAL																																																																																																																																																																																																																																																																			
514-00118	1	CONN,AC/PT,USB-C,DUAL,X1221	J3300	CRITICAL																																																																																																																																																																																																																																																																			
B	<div>Programmable Parts</div> <table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>341S01498</td><td>1</td><td>IC,TBT,TBT-X (VXXX) POC,X1447</td><td>U2890</td><td>CRITICAL</td><td>TBTROM:PROG</td></tr><tr><td>335S00133</td><td>1</td><td>IC,SPI_FLASH_ROM,8MBIT,50MBZ,US0N8</td><td>U2890</td><td>CRITICAL</td><td>TBTROM:BLANK</td></tr><tr><td>341S01201</td><td>1</td><td>IC,ENETNET,1GB,(V1.15),DVT,X1336</td><td>U6090</td><td>CRITICAL</td><td>1G_ENET_ROM:PROG</td></tr><tr><td>335S00198</td><td>1</td><td>IC,SPI_SERIAL_FLASH,2MBIT,2-TV,80208</td><td>U6090</td><td>CRITICAL</td><td>1G_ENET_ROM:BLANK</td></tr><tr><td>341S01500</td><td>1</td><td>ROM,BT-SPLASH,1-BV (V35) DVT-2,X1394</td><td>UB250</td><td>CRITICAL</td><td>BT_ROM:PROG</td></tr><tr><td>335S00255</td><td>1</td><td>IC,SPI_SERIAL_FLASH,2MBIT,1-BV,DFW8</td><td>UB250</td><td>CRITICAL</td><td>BT_ROM:BLANK</td></tr><tr><td>341S01421</td><td>1</td><td>IC,ENET_ROM (V2.11.9),DVT,X1294</td><td>U9990</td><td>CRITICAL</td><td>10G_ENET_ROM:PROG</td></tr><tr><td>335S00365</td><td>1</td><td>IC,SPI_SERIAL_FLASH,3MBIT,3V,Q8+0,80208</td><td>U9990</td><td>CRITICAL</td><td>10G_ENET_ROM:BLANK</td></tr><tr><td>341S01502</td><td>1</td><td>IC,ESDIOD_CTS,083237A(V7A05),POC,X1547</td><td>UA330</td><td>CRITICAL</td><td>SD_ROM:PROG</td></tr><tr><td>335S00024</td><td>1</td><td>IC,SERIAL_FLASH,2MBIT,3V,8-080N,2K3X,80M</td><td>UA330</td><td>CRITICAL</td><td>SD_ROM:BLANK</td></tr><tr><td>341S00725</td><td>1</td><td>WIFI_ROM (V01) WWL,0685</td><td>UB210</td><td>CRITICAL</td><td>WIFI_ROM:PROG</td></tr><tr><td>335S00214</td><td>1</td><td>IC,EEPROM,SER,ONCE,16K,1-BV,DFW8</td><td>UB210</td><td>CRITICAL</td><td>WIFI_ROM:BLANK</td></tr></table> <div>ASICs</div> <table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>337S00821</td><td>1</td><td>IC,PCB-E,CML,QML8,Q5-A-0,ROM474</td><td>U1200</td><td>CRITICAL</td><td></td></tr><tr><td>338S00441</td><td>1</td><td>IC,TBT,TITANMID08 DV,8MBSD,PRQ,C1,C0P137</td><td>U2800</td><td>CRITICAL</td><td></td></tr><tr><td>338S00342</td><td>1</td><td>IC,PMD,CALDE-1,D2248AD,OTP-AE,CSP124,0.5</td><td>U7800</td><td>CRITICAL</td><td></td></tr><tr><td>353S01961</td><td>2</td><td>IC,C73218,ACFET,82,05B PWR SW,804N,SGA123</td><td>U3100,U3200</td><td>CRITICAL</td><td></td></tr><tr><td>338S00332</td><td>1</td><td>IC,ENET_CONTROLLER,AGC157,B3,WR324</td><td>U9700</td><td>CRITICAL</td><td>10G_ENET</td></tr><tr><td>343S0616</td><td>1</td><td>IC,COREAN_TV,081T,ENET_C0SL,QP84</td><td>U6000</td><td>CRITICAL</td><td>1G_ENET</td></tr><tr><td>338S00312</td><td>1</td><td>IC,063227A,DS83 3.0 TO SD CARD BRACER,QP88</td><td>UA300</td><td>CRITICAL</td><td></td></tr><tr><td>338S00410</td><td>1</td><td>IC,PMD,OCARINA,D2499AD,OTP-AG,WLCSP56</td><td>U9000</td><td>CRITICAL</td><td>SSD0_S4E_4L</td></tr><tr><td>338S00410</td><td>1</td><td>IC,PMD,OCARINA,D2499AD,OTP-AG,WLCSP56</td><td>U9000</td><td>CRITICAL</td><td>SSD0_S5E_4L</td></tr><tr><td>339S00609</td><td>1</td><td>IC,MODULE,HARPOON,B3,M,EST-9,LGA385</td><td>UB000</td><td>CRITICAL</td><td>WIFI:MURATA</td></tr><tr><td>339S00610</td><td>1</td><td>IC,MODULE,HARPOON,B3,U,EST-7,LGA385</td><td>UB000</td><td>CRITICAL</td><td>WIFI:USI</td></tr></table> <div>H9M</div> <table><tr><th>PART#</th><th>QTY</th><th>DESCRIPTION</th><th>REFERENCE DESIGNATOR(S)</th><th>CRITICAL</th><th>BOM OPTION</th></tr><tr><td>339S00386</td><td>1</td><td>POP,GIBRALTAR,1+1GB,20NM,M,DEV,SCX,CSP1122</td><td>U3900</td><td>CRITICAL</td><td>SOC:DEV_1G</td></tr><tr><td>339S00388</td><td>1</td><td>POP,GIBRALTAR,1+2GB,20NM,M,DEV,SCX,CSP1122</td><td>U3900</td><td>CRITICAL</td><td>SOC:DEV_2G</td></tr><tr><td>339S00601</td><td>1</td><td>POP,GIBRALTAR,1+1GB,16NM,M,B0,SCX,CSP1122</td><td>U3900</td><td>CRITICAL</td><td>SOC:PRD_1G</td></tr><tr><td>339S00605</td><td>1</td><td>POP,GIBRALTAR,1+2GB,16NM,M,B0,SCX,CSP1122</td><td>U3900</td><td>CRITICAL</td><td>SOC:PRD_2G</td></tr></table> <div>H9M</div> <table><tr><th>PART NUMBER</th><th>ALTERNATE FOR PART NUMBER</th><th>BOM OPTION</th><th>REF DES</th><th>COMMENTS:</th></tr><tr><td>339S00387</td><td>339S00386</td><td>SOC:DEV_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00390</td><td>339S00386</td><td>SOC:DEV_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00391</td><td>339S00386</td><td>SOC:DEV_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00389</td><td>339S00388</td><td>SOC:DEV_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00392</td><td>339S00388</td><td>SOC:DEV_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00393</td><td>339S00388</td><td>SOC:DEV_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00602</td><td>339S00601</td><td>SOC:PROD_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00603</td><td>339S00601</td><td>SOC:PROD_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00604</td><td>339S00601</td><td>SOC:PROD_1G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00606</td><td>339S00605</td><td>SOC:PROD_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00607</td><td>339S00605</td><td>SOC:PROD_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr><tr><td>339S00608</td><td>339S00605</td><td>SOC:PROD_2G</td><td>ALL</td><td>&lt;RDAR://41988491&gt;</td></tr></table> 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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																																																																																																																																																																																																		
341S01498	1	IC,TBT,TBT-X (VXXX) POC,X1447	U2890	CRITICAL	TBTROM:PROG																																																																																																																																																																																																																																																																		
335S00133	1	IC,SPI_FLASH_ROM,8MBIT,50MBZ,US0N8	U2890	CRITICAL	TBTROM:BLANK																																																																																																																																																																																																																																																																		
341S01201	1	IC,ENETNET,1GB,(V1.15),DVT,X1336	U6090	CRITICAL	1G_ENET_ROM:PROG																																																																																																																																																																																																																																																																		
335S00198	1	IC,SPI_SERIAL_FLASH,2MBIT,2-TV,80208	U6090	CRITICAL	1G_ENET_ROM:BLANK																																																																																																																																																																																																																																																																		
341S01500	1	ROM,BT-SPLASH,1-BV (V35) DVT-2,X1394	UB250	CRITICAL	BT_ROM:PROG																																																																																																																																																																																																																																																																		
335S00255	1	IC,SPI_SERIAL_FLASH,2MBIT,1-BV,DFW8	UB250	CRITICAL	BT_ROM:BLANK																																																																																																																																																																																																																																																																		
341S01421	1	IC,ENET_ROM (V2.11.9),DVT,X1294	U9990	CRITICAL	10G_ENET_ROM:PROG																																																																																																																																																																																																																																																																		
335S00365	1	IC,SPI_SERIAL_FLASH,3MBIT,3V,Q8+0,80208	U9990	CRITICAL	10G_ENET_ROM:BLANK																																																																																																																																																																																																																																																																		
341S01502	1	IC,ESDIOD_CTS,083237A(V7A05),POC,X1547	UA330	CRITICAL	SD_ROM:PROG																																																																																																																																																																																																																																																																		
335S00024	1	IC,SERIAL_FLASH,2MBIT,3V,8-080N,2K3X,80M	UA330	CRITICAL	SD_ROM:BLANK																																																																																																																																																																																																																																																																		
341S00725	1	WIFI_ROM (V01) WWL,0685	UB210	CRITICAL	WIFI_ROM:PROG																																																																																																																																																																																																																																																																		
335S00214	1	IC,EEPROM,SER,ONCE,16K,1-BV,DFW8	UB210	CRITICAL	WIFI_ROM:BLANK																																																																																																																																																																																																																																																																		
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																																																																																																																																																																																																		
337S00821	1	IC,PCB-E,CML,QML8,Q5-A-0,ROM474	U1200	CRITICAL																																																																																																																																																																																																																																																																			
338S00441	1	IC,TBT,TITANMID08 DV,8MBSD,PRQ,C1,C0P137	U2800	CRITICAL																																																																																																																																																																																																																																																																			
338S00342	1	IC,PMD,CALDE-1,D2248AD,OTP-AE,CSP124,0.5	U7800	CRITICAL																																																																																																																																																																																																																																																																			
353S01961	2	IC,C73218,ACFET,82,05B PWR SW,804N,SGA123	U3100,U3200	CRITICAL																																																																																																																																																																																																																																																																			
338S00332	1	IC,ENET_CONTROLLER,AGC157,B3,WR324	U9700	CRITICAL	10G_ENET																																																																																																																																																																																																																																																																		
343S0616	1	IC,COREAN_TV,081T,ENET_C0SL,QP84	U6000	CRITICAL	1G_ENET																																																																																																																																																																																																																																																																		
338S00312	1	IC,063227A,DS83 3.0 TO SD CARD BRACER,QP88	UA300	CRITICAL																																																																																																																																																																																																																																																																			
338S00410	1	IC,PMD,OCARINA,D2499AD,OTP-AG,WLCSP56	U9000	CRITICAL	SSD0_S4E_4L																																																																																																																																																																																																																																																																		
338S00410	1	IC,PMD,OCARINA,D2499AD,OTP-AG,WLCSP56	U9000	CRITICAL	SSD0_S5E_4L																																																																																																																																																																																																																																																																		
339S00609	1	IC,MODULE,HARPOON,B3,M,EST-9,LGA385	UB000	CRITICAL	WIFI:MURATA																																																																																																																																																																																																																																																																		
339S00610	1	IC,MODULE,HARPOON,B3,U,EST-7,LGA385	UB000	CRITICAL	WIFI:USI																																																																																																																																																																																																																																																																		
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION																																																																																																																																																																																																																																																																		
339S00386	1	POP,GIBRALTAR,1+1GB,20NM,M,DEV,SCX,CSP1122	U3900	CRITICAL	SOC:DEV_1G																																																																																																																																																																																																																																																																		
339S00388	1	POP,GIBRALTAR,1+2GB,20NM,M,DEV,SCX,CSP1122	U3900	CRITICAL	SOC:DEV_2G																																																																																																																																																																																																																																																																		
339S00601	1	POP,GIBRALTAR,1+1GB,16NM,M,B0,SCX,CSP1122	U3900	CRITICAL	SOC:PRD_1G																																																																																																																																																																																																																																																																		
339S00605	1	POP,GIBRALTAR,1+2GB,16NM,M,B0,SCX,CSP1122	U3900	CRITICAL	SOC:PRD_2G																																																																																																																																																																																																																																																																		
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339S00387	339S00386	SOC:DEV_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00390	339S00386	SOC:DEV_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00391	339S00386	SOC:DEV_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00389	339S00388	SOC:DEV_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00392	339S00388	SOC:DEV_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00393	339S00388	SOC:DEV_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00602	339S00601	SOC:PROD_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00603	339S00601	SOC:PROD_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00604	339S00601	SOC:PROD_1G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00606	339S00605	SOC:PROD_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00607	339S00605	SOC:PROD_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
339S00608	339S00605	SOC:PROD_2G	ALL	<RDAR://41988491>																																																																																																																																																																																																																																																																			
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	PAGE	170 OF 172	
	SHEET	147 OF 149	





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	BOM CONFIGURATION																																																																																																																																																				
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rowspan="10">C</td><td>639-10560</td><td>MLB,CTO,XTMA,SS16GB,8TBWD,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_WD,10G_ENET</td></tr><tr><td>639-10561</td><td>MLB,CTO,XTMA,MI16G,8TBWD,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_8TB_WD,10G_ENET</td></tr><tr><td>639-10562</td><td>MLB,CTO,XGA,HY8GB,1TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_HY,10G_ENET</td></tr><tr><td>639-10563</td><td>MLB,CTO,XTMA,MI16G,4TBWD,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_4TB_WD,10G_ENET</td></tr><tr><td>639-10564</td><td>MLB,CTO,XTMA,HY16G,8TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_HY,10G_ENET</td></tr><tr><td>639-10565</td><td>MLB,CTO,XGA,SS8G,2TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_2TB_HY,10G_ENET</td></tr><tr><td>639-10566</td><td>MLB,CTO,XGA,MI8G,1TBHY,EN1G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_1TB_HY,1G_ENET</td></tr><tr><td>639-10567</td><td>MLB,CTO,XTMA,MI16G,512GBTO,EN1G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_512GB_TO,1G_ENET</td></tr><tr><td>639-10568</td><td>MLB,CTO,XGA,MI8G,2TBWD,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_2TB_WD,10G_ENET</td></tr><tr><td>639-10904</td><td>MLB,CTO,XGA,MI8G,4TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_4TB_HY,10G_ENET</td></tr><tr><td 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rowspan="4">A</td><td>639-10900</td><td>MLB,ULT,XTMA,SS16G,4TBWD,EN10G,X1647</td><td>MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_4TB_WD,10G_ENET</td></tr><tr><td>639-10901</td><td>MLB,ULT,XTMA,MI16G,8TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_8TB_HY,10G_ENET</td></tr><tr><td>639-10902</td><td>MLB,ULT,XTMA,HY16G,8TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_HY,10G_ENET</td></tr><tr><td>639-10903</td><td>MLB,ULT,XTMA,SS16G,8TBHY,EN10G,X1647</td><td>MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_HY,10G_ENET</td></tr><tr><td colspan="8"><table><tr><td colspan="3">PAGE TITLE</td></tr><tr><td colspan="3">BOM CONFIGURATION</td></tr><tr><td rowspan="2"> Apple Inc.</td><td>DRAWING NUMBER</td><td>051-04826</td></tr><tr><td>REVISION</td><td>4.0.0</td></tr><tr><td rowspan="4">NOTICE OF PROPRIETARY PROPERTY: THE 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OPTIONS	639-10551	MLB,CTO,XTMA,HY16G,512GBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_512GB_TO,1G_ENET	639-10552	MLB,CTO,XGA,SS8G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_4TB_HY,10G_ENET	639-10553	MLB,CTO,XGA,HY8GB,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_TO,1G_ENET	639-10554	MLB,CTO,XTMA,SS16GB,512GBHY,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_512GB_HY,1G_ENET	639-10555	MLB,CTO,XTMA,SS16GB,2TBWD,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_2TB_WD,1G_ENET	639-10556	MLB,CTO,XTMA,MI16G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_4TB_HY,10G_ENET	639-10557	MLB,CTO,XGA,MI8G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_4TB_WD,10G_ENET	639-10558	MLB,CTO,XTMA,MI16G,2TBHY,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_2TB_HY,1G_ENET	639-10559	MLB,CTO,XTMA,SS16GB,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_HY,10G_ENET	C	639-10560	MLB,CTO,XTMA,SS16GB,8TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_WD,10G_ENET	639-10561	MLB,CTO,XTMA,MI16G,8TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_8TB_WD,10G_ENET	639-10562	MLB,CTO,XGA,HY8GB,1TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_HY,10G_ENET	639-10563	MLB,CTO,XTMA,MI16G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_4TB_WD,10G_ENET	639-10564	MLB,CTO,XTMA,HY16G,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_HY,10G_ENET	639-10565	MLB,CTO,XGA,SS8G,2TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_2TB_HY,10G_ENET	639-10566	MLB,CTO,XGA,MI8G,1TBHY,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_1TB_HY,1G_ENET	639-10567	MLB,CTO,XTMA,MI16G,512GBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_512GB_TO,1G_ENET	639-10568	MLB,CTO,XGA,MI8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_2TB_WD,10G_ENET	639-10904	MLB,CTO,XGA,MI8G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_4TB_HY,10G_ENET	B	639-10905	MLB,CTO,XGA,HY8G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_4TB_HY,10G_ENET	639-10907	MLB,CTO,XTMA,HY16G,8TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_WD,10G_ENET	639-10892	MLB,ULT,XGA,MI8G,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_1TB_TO,1G_ENET	639-10893	MLB,ULT,XGA,HY8G,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_TO,1G_ENET	639-10894	MLB,ULT,XGA,SS8G,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_1TB_TO,1G_ENET	639-10895	MLB,ULT,XGA,MI8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_2TB_WD,10G_ENET	639-10896	MLB,ULT,XGA,HY8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_2TB_WD,10G_ENET	639-10897	MLB,ULT,XGA,SS8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_2TB_WD,10G_ENET	639-10898	MLB,ULT,XTMA,MI16G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_4TB_WD,10G_ENET	639-10899	MLB,ULT,XTMA,HY16G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_4TB_WD,10G_ENET	A	639-10900	MLB,ULT,XTMA,SS16G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_4TB_WD,10G_ENET	639-10901	MLB,ULT,XTMA,MI16G,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_8TB_HY,10G_ENET	639-10902	MLB,ULT,XTMA,HY16G,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_HY,10G_ENET	639-10903	MLB,ULT,XTMA,SS16G,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_HY,10G_ENET	<table><tr><td 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	BOM NUMBER	BOM NAME	BOM OPTIONS																																																																																																																																																		
	639-10551	MLB,CTO,XTMA,HY16G,512GBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_512GB_TO,1G_ENET																																																																																																																																																		
	639-10552	MLB,CTO,XGA,SS8G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_4TB_HY,10G_ENET																																																																																																																																																		
	639-10553	MLB,CTO,XGA,HY8GB,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_TO,1G_ENET																																																																																																																																																		
	639-10554	MLB,CTO,XTMA,SS16GB,512GBHY,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_512GB_HY,1G_ENET																																																																																																																																																		
	639-10555	MLB,CTO,XTMA,SS16GB,2TBWD,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_2TB_WD,1G_ENET																																																																																																																																																		
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639-10559	MLB,CTO,XTMA,SS16GB,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_HY,10G_ENET																																																																																																																																																			
C	639-10560	MLB,CTO,XTMA,SS16GB,8TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_SAMSUNG,STD_8TB_WD,10G_ENET																																																																																																																																																		
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	639-10562	MLB,CTO,XGA,HY8GB,1TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_HYNIX,STD_1TB_HY,10G_ENET																																																																																																																																																		
	639-10563	MLB,CTO,XTMA,MI16G,4TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_4TB_WD,10G_ENET																																																																																																																																																		
	639-10564	MLB,CTO,XTMA,HY16G,8TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_HY,10G_ENET																																																																																																																																																		
	639-10565	MLB,CTO,XGA,SS8G,2TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_SAMSUNG,STD_2TB_HY,10G_ENET																																																																																																																																																		
	639-10566	MLB,CTO,XGA,MI8G,1TBHY,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_1TB_HY,1G_ENET																																																																																																																																																		
	639-10567	MLB,CTO,XTMA,MI16G,512GBTO,EN1G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_MICRON,STD_512GB_TO,1G_ENET																																																																																																																																																		
	639-10568	MLB,CTO,XGA,MI8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_2TB_WD,10G_ENET																																																																																																																																																		
	639-10904	MLB,CTO,XGA,MI8G,4TBHY,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_4TB_HY,10G_ENET																																																																																																																																																		
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	639-10907	MLB,CTO,XTMA,HY16G,8TBWD,EN10G,X1647	MLB_CNPPTS,CPU:CTO,CAP:HP,GPU_SKU:XTMA,GPU_XTMA_ROM:PROG,FB:16GB_HYNIX,STD_8TB_WD,10G_ENET																																																																																																																																																		
	639-10892	MLB,ULT,XGA,MI8G,1TBTO,EN1G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_1TB_TO,1G_ENET																																																																																																																																																		
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	639-10895	MLB,ULT,XGA,MI8G,2TBWD,EN10G,X1647	MLB_CNPPTS,CPU:ULT,CAP:HP,GPU_SKU:XGA,GPU_XGA_ROM:PROG,FB:8GB_MICRON,STD_2TB_WD,10G_ENET																																																																																																																																																		
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