

8		7		6		5		4		3		2		1	
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.														REV	
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.														ECN	
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.														DESCRIPTION OF REVISION	
X941 MLB SCHEMATIC														CK APPD	
LAST_MODIFICATION=Wed Jan 10 12:58:52 2018														DATE	
4														0010936498	
ENGINEERING RELEASED														2018-01-10	
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3 3 BOM Configuration J79A_MLB 05/09/2017														63 66 AUDIO Connector J132_PRADEEP 06/05/2017	
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8 8 CPU & PCH Power J132_GAREN 02/03/2017														68 71 CORE & SA IMVP IC J132_JIN 08/15/2017	
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14 14 PCH Power Management J132_JIN 06/12/2017														74 78 PMIC BUCKS AND SWS J132_JIN 05/09/2017	
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18 19 Chipset Support 1 J132_JIN 09/05/2017														78 82 Power FETS J132_JIN 09/05/2017	
19 20 Chipset Support 2 J79A_MLB 01/31/2017														79 84 LCD Backlight Driver J132_GAREN 04/12/2017	
20 22 LPDDR3 VREF Margining J79A_MLB 01/31/2017														80 85 eDP Display Connector J132_ANDREW 06/21/2017	
21 23 LPDDR3 DRAM Channel A (00-31) J79A_MLB 01/31/2017														81 86 S4E<0> J137_GS5_REDHEAD 02/17/2017	
22 24 LPDDR3 DRAM Channel A (32-63) J79A_MLB 01/31/2017														82 87 S4E<1> J137_GS5_REDHEAD 02/17/2017	
23 25 LPDDR3 DRAM Channel B (00-31) J79A_MLB 01/31/2017														83 88 S4E<2> J137_GS5_REDHEAD 02/17/2017	
24 26 LPDDR3 DRAM Channel B (32-63) J79A_MLB 01/31/2017														84 89 S4E<3> J137_GS5_REDHEAD 02/17/2017	
25 27 LPDDR3 DRAM Termination J79A_MLB 01/31/2017														85 90 OCARINA PMIC & NAND VCC VR J137_GS5_REDHEAD 02/17/2017	
26 28 USB-C HIGH SPEED 1 T290_CARD-CPU-CN1A5 05/09/2017														86 96 SSD Support J680_MLB 03/20/2017	
27 29 USB-C HIGH SPEED 2 J680_MLB 03/30/2017														87 98 Display Mux J132_GAREN 04/12/2017	
28 30 USB-C Support J132_RUENJOU 04/18/2017														88 110 USB-C HIGH SPEED 1 J132_RUENJOU 04/18/2017	
29 31 USB-C PORT CONTROLLER A J680_MLB 03/30/2017														89 111 USB-C HIGH SPEED 2 J680_MLB 03/30/2017	
30 32 USB-C PORT CONTROLLER B J680_MLB 03/30/2017														90 112 USB-C Support J132_RUENJOU 05/24/2017	
31 33 USB-C CONNECTOR A J132_RUENJOU 04/18/2017														91 113 USB-C PORT CONTROLLER A J132_RUENJOU 03/22/2017	
32 34 USBC T Connector Support J140_MLB 04/03/2017														92 114 USB-C PORT CONTROLLER B J132_RUENJOU 03/22/2017	
33 35 TBT 5V REGULATOR J132_JIN 08/24/2017														93 115 USB-C CONNECTOR A J132_RUENJOU 03/22/2017	
34 36 WIFI/BT: Support J132_JACK 11/03/2017														94 116 USBC T Connector Support J140_MLB 04/03/2017	
35 37 WIFI/BT: MODULE 1 J132_METE 03/30/2017														95 117 TBT 5V REGULATOR J132_JIN 08/24/2017	
36 38 WIFI/BT: MODULE 2 J132_METE 06/14/2017														96 120 Power Aliases - 1 J132_JIN 06/05/2017	
37 39 SoC GPIO/SEP/USB/DDR/Test T290_BIGSUR 06/14/2017														97 121 Power Aliases - 2 J140_MLB 04/05/2017	
38 40 SoC AOP/AON/SMC T290_BIGSUR 06/14/2017														98 122 Signal Aliases J132_GAREN 04/12/2017	
39 41 SoC ISP/I2C/UART/SPI/I2S T290_BIGSUR 05/26/2017														99 123 LPDDR3 Bit & Byte Swizzle AHARTMAN_J52 10/29/2013	
40 42 SoC PCie T290_BIGSUR 03/15/2017														100 124 ICT FCT 1 J132_CARLOS 06/15/2017	
41 43 SoC Power 1 T290_BIGSUR 03/29/2017														101 125 ICT FCT 2 J132_CARLOS 06/22/2017	
42 44 SoC Power 2 T290_BIGSUR 01/31/2017														102 127 Desense Capacitors 1 YHARTANTO_J44 01/09/2013	
43 45 SoC Power 3 T290_BIGSUR 08/15/2017														103 140 Dev Support 1 J132_PRADEEP 06/05/2017	
44 46 SoC Ground T290_BIGSUR 01/31/2017														104 141 Dev Support 2 J79_RIO 06/18/2015	
45 47 SoC Shared Support J132_JIN 09/05/2017														105 142 BOM Variants 1 J132_BOMS 12/18/2017	
46 48 SoC Project Support J132_JACK 11/03/2017														106 143 BOM Variants 2 J132_BOMS 12/18/2017	
47 49 T151 J132_GREG 08/21/2017														107 145 Alternates BOM Table J80_MLB 12/12/2015	
48 50 Secure Element J132_GREG 05/16/2017														108 150 References J79_RUENJOU_CONST&INT52015	
49 51 T139 Support J132_GREG 08/21/2017															
50 52 I2C Connections 1 J132_JACK 05/30/2017															
51 53 I2C Connections 2 J132_JACK 09/07/2017															
52 54 Power Sensors: High Side J132_JACK 11/03/2017															
53 55 Power Sensors: Load Side J132_JACK 11/03/2017															
54 56 Power Sensors: Extended J132_JACK 06/22/2017															
55 57 Power Sensors: Extended 2 J132_JACK 08/21/2017															
56 58 Thermal Sensors J132_JACK 05/30/2017															
57 59 Power Sensors:Extended 3 J132_JACK 09/07/2017															
58 60 Fans/SMC/AMUX Support J132_JACK 11/03/2017															
59 62 Audio Placeholder J132_ADRIEN 11/03/2017															
60 63 Audio Jack Codec J132_ADRIEN 06/22/2017															
Schematic / PCB #'s															
PART NUMBER		QTY		DESCRIPTION		REFERENCE DES		CRITICAL		BOM OPTION					
051-02166		1		SCHEM_MLB,X941		SCH		CRITICAL		SCH					
820-00850		1		PCBF_MLB,X941		PCB		CRITICAL		PCB					
8		7		6		5		4		3		2		1	
FABAD17JE19X															
SCHEM,MLB,X941															
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SCHEM_MLB,X941		
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Module Parts

CPU

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
337800456	1	CPU,CPU1,Q999,ES,39,2,3,210,1,19,MDA131E	U0500	CRITICAL	CPU1:2_3G
337800456	1	CPU,CPU1,Q999,ES,39,2,3,210,1,19,MDA131E	U0500	CRITICAL	CPU1:2_5G
337800456	1	CPU,CPU1,Q999,ES,39,2,3,210,1,19,MDA131E	U0500	CRITICAL	CPU1:2_6G
998-10522	1	SOCKET,CPU1-CPU-0	U0500	CRITICAL	CPU:SOCKET

SOC

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
339S00370	1	TOP,SOC,CT19MATE10-108 2100,6,10,CDT1005	U3900	CRITICAL	SOC:B0_1G
339S00372	1	TOP,SOC,CT19MATE10-108 2100,6,10,CDT1006	U3900	CRITICAL	SOC:B0_2G

SOC Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REV DES	COMMENTS
339S00371	339S00370	SOC:B0_1G	ALL	Hynix 1GB SCK
339S00375	339S00370	SOC:B0_1G	ALL	Microc 1GB ATK
339S00376	339S00370	SOC:B0_1G	ALL	Hynix 1GB ATK
339S00373	339S00372	SOC:B0_2G	ALL	Hynix 2GB SCK
339S00377	339S00372	SOC:B0_2G	ALL	Microc 2GB ATK
339S00378	339S00372	SOC:B0_2G	ALL	Hynix 2GB ATK

SE

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-11132	1	IC,MTN4,ES2,1,PK80V,DEV,UFLGA64	U5000	CRITICAL	SE:DEV_2017
338S00253	1	IC,MTN4,ES2,1,PK80V,PRD,UFLGA64	U5000	CRITICAL	SE:PROD_2017

TBT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S00356	2	IC,80V,512MB BLANK 39,0915,ES2,01,CDP137	U2800,UB000	CRITICAL	TBT_TR:B0
338S00399	2	IC,80V,512MB BLANK 39,0915,ES2,03,CDP137	U2800,UB000	CRITICAL	TBT_TR:C0
338S00408	2	IC,80V,512MB BLANK 39,0915,06,01,CDP137	U2800,UB000	CRITICAL	TBT_TR:C1

ACE

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S00961	4	IC,CD1215,ACE,C10,USB 19K,SW,BLANK,NSGA46	U3100,UT000,UB100,UB400	CRITICAL	ACE:CO_BGA
353S01442	4	IC,CD1215,ACE,C10,USB 19KSW,BLANK,NFPGA36	U3100,UT000,UB100,UB400	CRITICAL	ACE:CO_NFPGA

WIRELESS

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
339S00458	1	IC,MODULE,808000N,ES7,7,UGA385	U3750	CRITICAL	

PMU

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S00267	1	IC,20K-A,DA944MC,CM23,030724,AD007131	U7800	CRITICAL	

CHARGER IC

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S01525	1	IC,12E19740ETB00,PMU,8200W,NCP645,2,1K3,3	U7800	CRITICAL	

AMR

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
677-10581	2	8080001 (TAR) PCB,AMR 11E1E1E1E1E1E1E1E1E1	J4800, J4801	CRITICAL	

DRAM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
333S00125	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:HY_8G
333S00069	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:MI_8G
333S00166	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:SS_8G
333S00126	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:HY_16G
333S00070	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:MI_16G
333S00167	4	IC,128MB,UD000-2133,1600T7,2100,6,NSDA10	U0300,UD000,UD100,UD400	CRITICAL	DRAM:SS_16G

NAND Parts

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00324	4	NAND,30V,8500P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_256G
335S00329	4	NAND,30V,8500P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:TO_256G
335S00325	4	NAND,30V,13800P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_512G
335S00330	4	NAND,30V,13800P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:TO_512G
335S00327	4	NAND,30V,25600P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_1T
335S00321	4	NAND,30V,25600P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_1T
335S00332	4	NAND,30V,25600P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:TO_1T
335S00322	4	NAND,30V,51200P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_2T
335S00244	4	NAND,30V,51200P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_2T_DOE
335S00302	4	NAND,30V,8500P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:SD_256G_DOE
998-11757	4	NAND,30V,8500P,ES2,648,1700,8,UGA110	U0800,UT000,UB000,UB900	CRITICAL	NAND:TO_256G_DOE

Programmables (All Builds)

TBT ROMs

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00133	2	IC,80V,512MB BLANK 39,0915,ES2,01,CDP137	U2890,UB090	CRITICAL	TBT_ROM:BLANK
341S00931	1	T29,781 (V1-1) PRD00-0,1,9461	U2890	CRITICAL	TBT_LT_ROM:P0
341S00932	1	T29,782 (V1-1) PRD00-0,1,9461	UB090	CRITICAL	TBT_RT_ROM:P0
341S00959	1	T29,781 (V1-1) DCR,9461	U2890	CRITICAL	TBT_LT_ROM:DCB
341S00960	1	T29,782 (V1-1) DCR,9461	UB090	CRITICAL	TBT_RT_ROM:DCB
341S00967	1	T29,781 (V1-1) PRD00-0,1,9461	U2890	CRITICAL	TBT_LT_ROM:P1
341S00968	1	T29,782 (V1-1) PRD00-0,1,9461	UB090	CRITICAL	TBT_RT_ROM:P1
341S01028	1	T29,781 (V1-1) DCR,9461	U2890	CRITICAL	TBT_LT_ROM:EVT
341S01029	1	T29,782 (V1-1) DCR,9461	UB090	CRITICAL	TBT_RT_ROM:EVT

BT ROM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00256	1	IC,80V,512MB BLANK 39,0915,ES2,01,CDP137	U3750	CRITICAL	BT_ROM:BLANK
341S00965	1	IC,80V,512MB BLANK 39,0915,ES2,03,CDP137	U3750	CRITICAL	BT_ROM:P0
341S00965	1	IC,80V,512MB BLANK 39,0915,ES2,06,CDP137	U3750	CRITICAL	BT_ROM:P1
341S01025	1	IC,80V,512MB BLANK 39,0915,ES2,01,CDP137	U3750	CRITICAL	BT_ROM:EVT

WIFI ROM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00214	1	IC,80V,512MB BLANK 39,0915,ES2,01,CDP137	U3710	CRITICAL	WIFI_ROM:BLANK
341S00725	1	IC,80V,512MB BLANK 39,0915,ES2,03,CDP137	U3710	CRITICAL	WIFI_ROM:P0

Strategic Silicon

PART	STATISTICAL VALUE	COMMENT
337800454	08	CPU
336000069	01	MEMORY
336000070	01	MEMORY
336000125	01	MEMORY
336000126	01	MEMORY
336000146	08	MEMORY
336000147	08	MEMORY
336000370	09	PMU
336000372	09	PMU
336000267	08	CHARGE
336000321	10	NAND
336000322	10	NAND
336000324	09	NAND
336000325	09	NAND
336000327	09	NAND
336000329	09	NAND

PART	STATISTICAL VALUE	COMMENT
336000333	09	NAND
336000332	09	NAND
336000310	08	OSALIDA
353051442	05	ACK
336000408	08	TOPIC RIDGE
336000398	09	808000002
353051525	06	808000002
336000928	06	808000002
336000924	07	808000002
336000977	02	808000002
336001429	08	808000002
336000253	09	808000002
336000445	01	808000002
336001320	08	808000002
336001363	01	808000002

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BOM Configuration

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PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
685-00187	1	COMMON PARTS, M8, X941	BASE	CRITICAL	BASE_BOM
985-00366	1	DEV, M8, X941	DEVEL	CRITICAL	DEVEL_BOM

BOM GROUP	BOM OPTIONS
NANDCFG:SD_256G	NAND:SD_256G,SOC:80_16,NAND_VCC:2.5V
NANDCFG:TO_256G	NAND:TO_256G,SOC:80_16,NAND_VCC:2.5V
NANDCFG:SD_512G	NAND:SD_512G,SOC:80_16,NAND_VCC:2.5V
NANDCFG:TO_512G	NAND:TO_512G,SOC:80_16,NAND_VCC:2.5V
NANDCFG:SD_1T	NAND:SD_1T,SOC:80_20,NAND_VCC:2.5V
NANDCFG:SS_1T	NAND:SS_1T,SOC:80_20,NAND_VCC:2.5V
NANDCFG:TO_1T	NAND:TO_1T,SOC:80_20,NAND_VCC:2.5V
NANDCFG:SS_2T	NAND:SS_2T,SOC:80_20,NAND_VCC:2.5V
NANDCFG:SS_2T_DOE	NAND:SS_2T_DOE,SOC:80_20,NAND_VCC:2.7V
NANDCFG:SD_256G_DOE	NAND:SD_256G_DOE,SOC:80_16,NAND_VCC:2.5V
NANDCFG:TO_256G_DOE	NAND:TO_256G_DOE,SOC:80_16,NAND_VCC:2.5V

BOM GROUP	BOM OPTIONS
DRANCFG:HY_9G	DRANH_9G,RANCFQ4_1,RANCFQ3_1,RANCFQ2_1,RANCFQ1_1,RANCFQ0_1
DRANCFG:HI_9G	DRANH_9G,RANCFQ4_1,RANCFQ3_1,RANCFQ2_1,RANCFQ1_1
DRANCFG:SS_9G	DRANHSS_9G,RANCFQ3_1,RANCFQ2_1,RANCFQ1_1
DRANCFG:HY_16G	DRANH_16G,RANCFQ4_1,RANCFQ3_1,RANCFQ2_1,RANCFQ0_1
DRANCFG:HI_16G	DRANH_16G,RANCFQ4_1,RANCFQ3_1,RANCFQ1_1
DRANCFG:SS_16G	DRANHSS_16G,RANCFQ3_1,RANCFQ0_1

DIE REV	CFG 4
A	0
B	1


SPEED	CFG 3
2133	0
1866	1

CAPACITY	CFG 2
8GB	0
16GB	1

VENDOR	CFG 1	CFG 0
HTX	0	0
KICROW	0	1
SAMSUNG	1	0
N/A	1	1

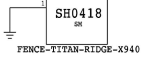
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PAGE TITLE	
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# BOARD MECHANICALS

## Shield Cans - BOTTOM SIDE

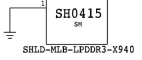
TITAN RIDGE - LEFT (U2800) - 806-12859



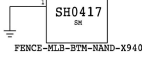
TITAN RIDGE - RIGHT (U8000) - 806-12859



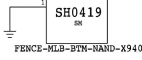
LPDDR3 (U2300 - U2600) - 806-15451



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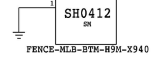


NAND - BOTTOM NORTH (U8900) - 806-12858

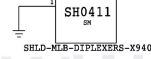


## Shield Cans - TOP SIDE

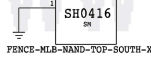
SOC (U3900) - 806-12855



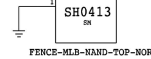
DIPLEXERS - 806-12854



NAND - TOP SOUTH (U8600) - 806-12857



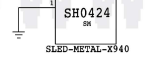
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CPU SLED (U0500) - 806-12626



CPU SLED (U0500) - 806-12626

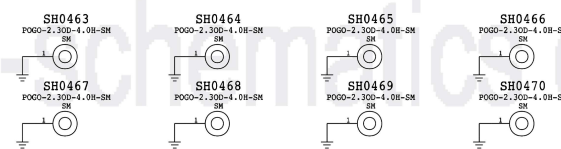


## POGO PINS

LIO and RIO - 2X (870-5071)



AROUND THE FAN AND CENTER - 8X (870-01518)

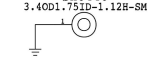
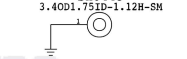


## Cowling Bosses - BOTTOM SIDE

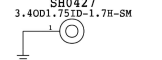
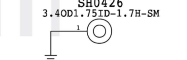
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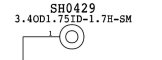
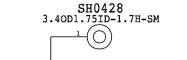
USB-C CONN - LIO (J3300) - 860-00392



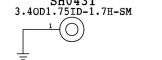
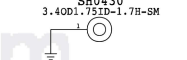
DFR DISPLAY CONN (J4401) - 860-00412



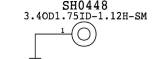
IPD CONN (J4501) - 860-00412



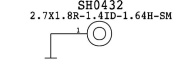
KBD CONN (J4500) - 860-00412



USB-C CONN - RIO (J5500) - 860-00392



AUDIO JACK CONN (J6600) - 860-00829

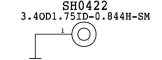
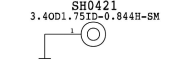


MESA CONN (J4900) - 860-00829



## Cowling Bosses - TOP SIDE

eDP CONN (J8500) - 860-00415



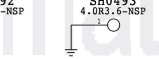
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## Thermal Stage Mounting Holes

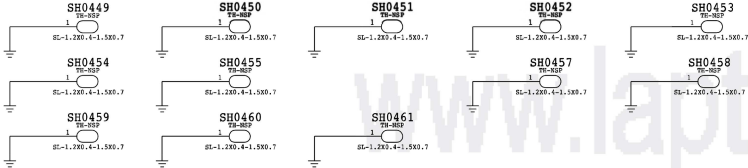
Plated Through Hole - 3.15mm - APN 998-0845



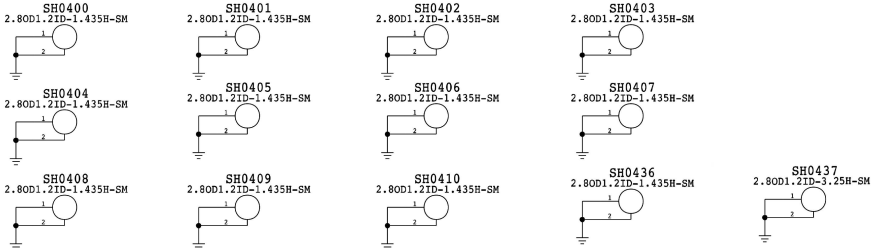
Plated Through Hole - 3.6mm - APN 998-03850



## Shield CAN Alignment Slots 14X - 998-04440 (1.2mm X 0.4mm)



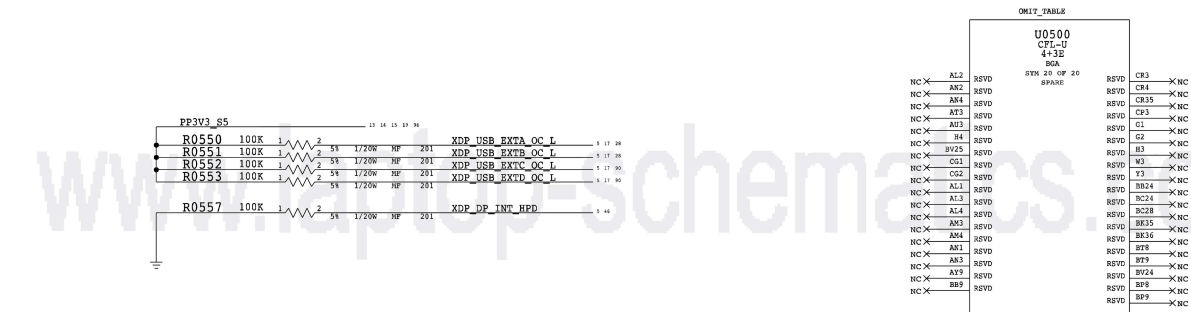
## TOP Rubber Mount Standoffs - 12X - (860-00430)



## Bottom Rubber Mount Standoffs - 1X - (860-00476)

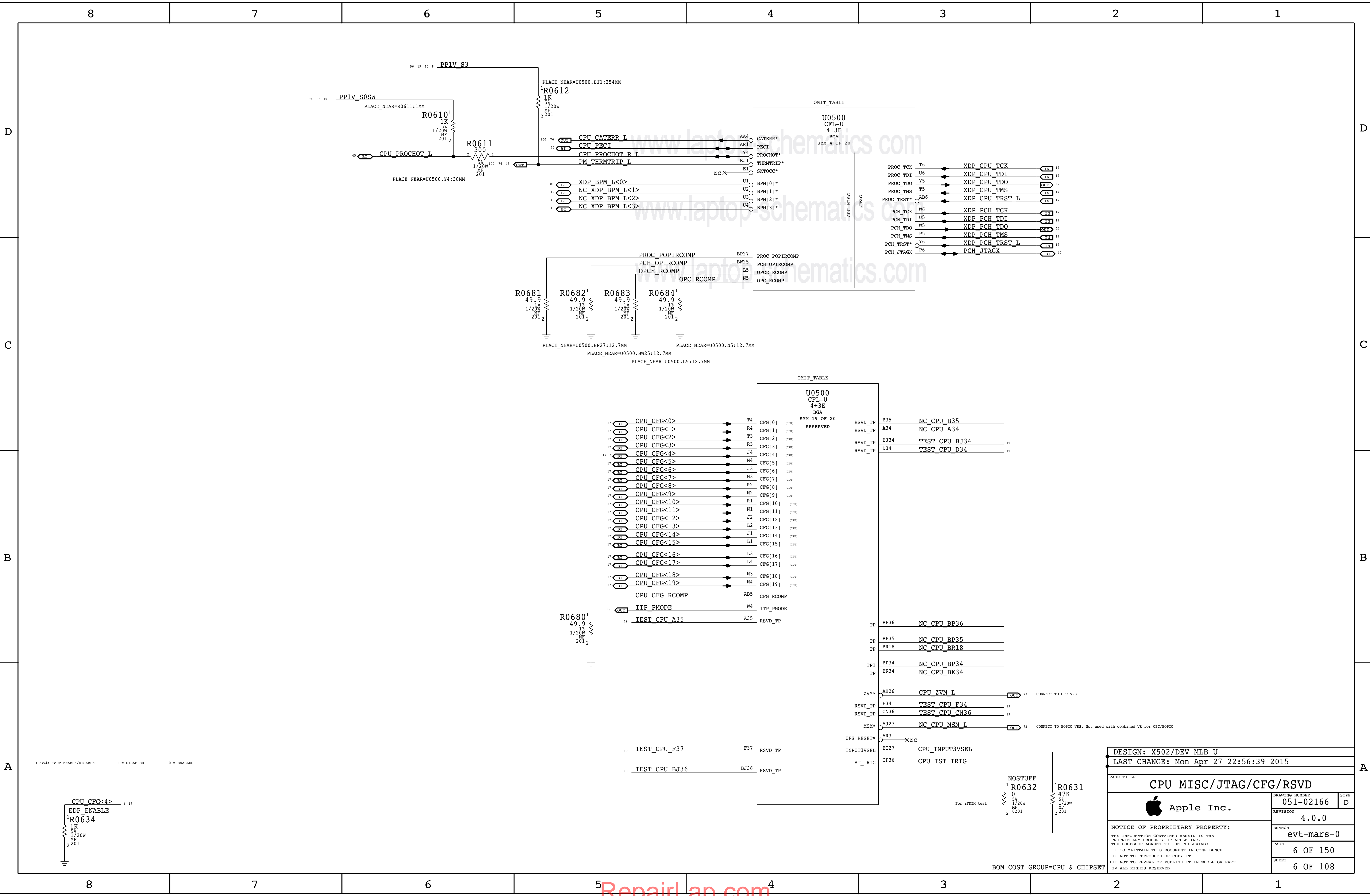
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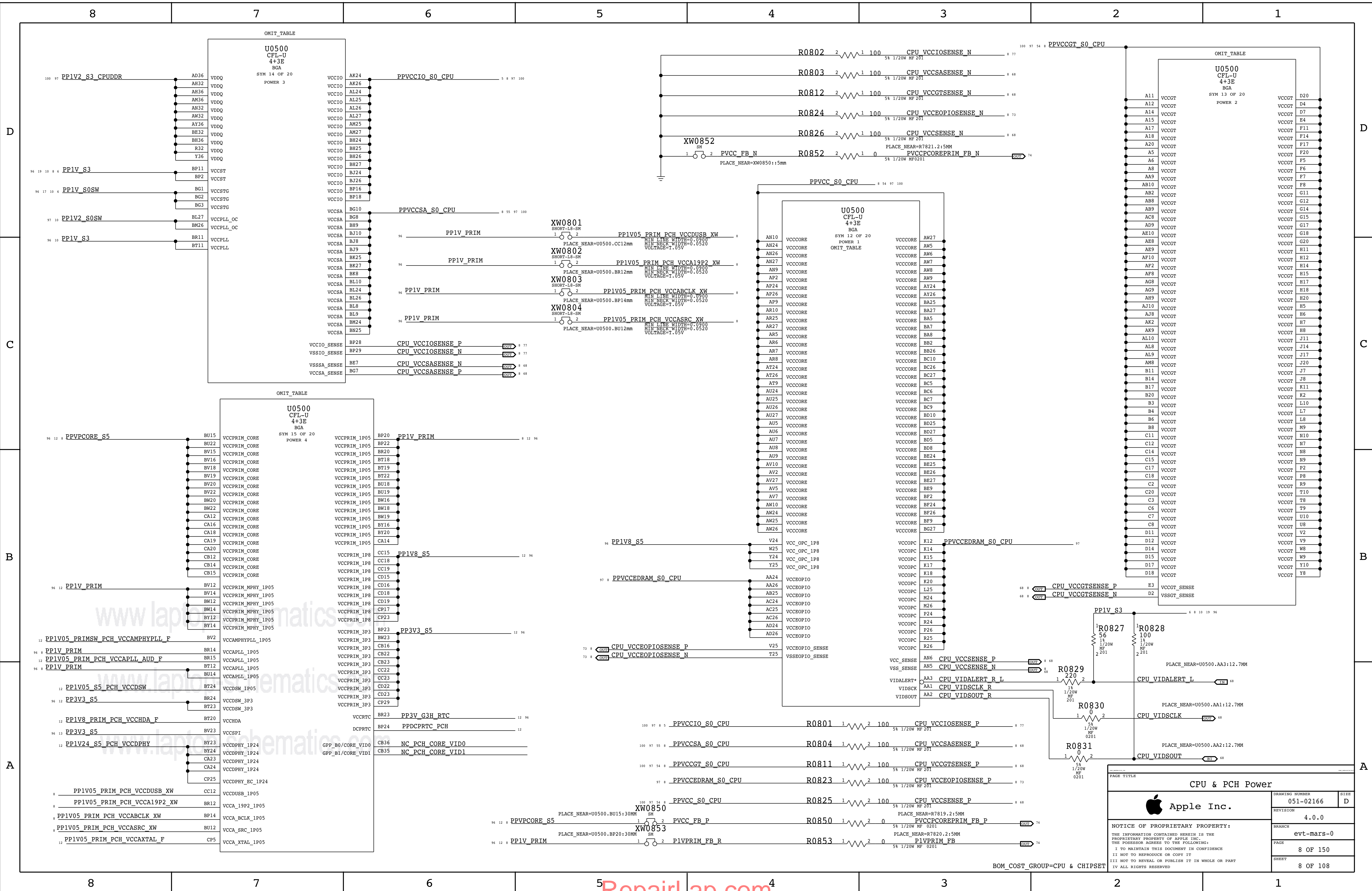




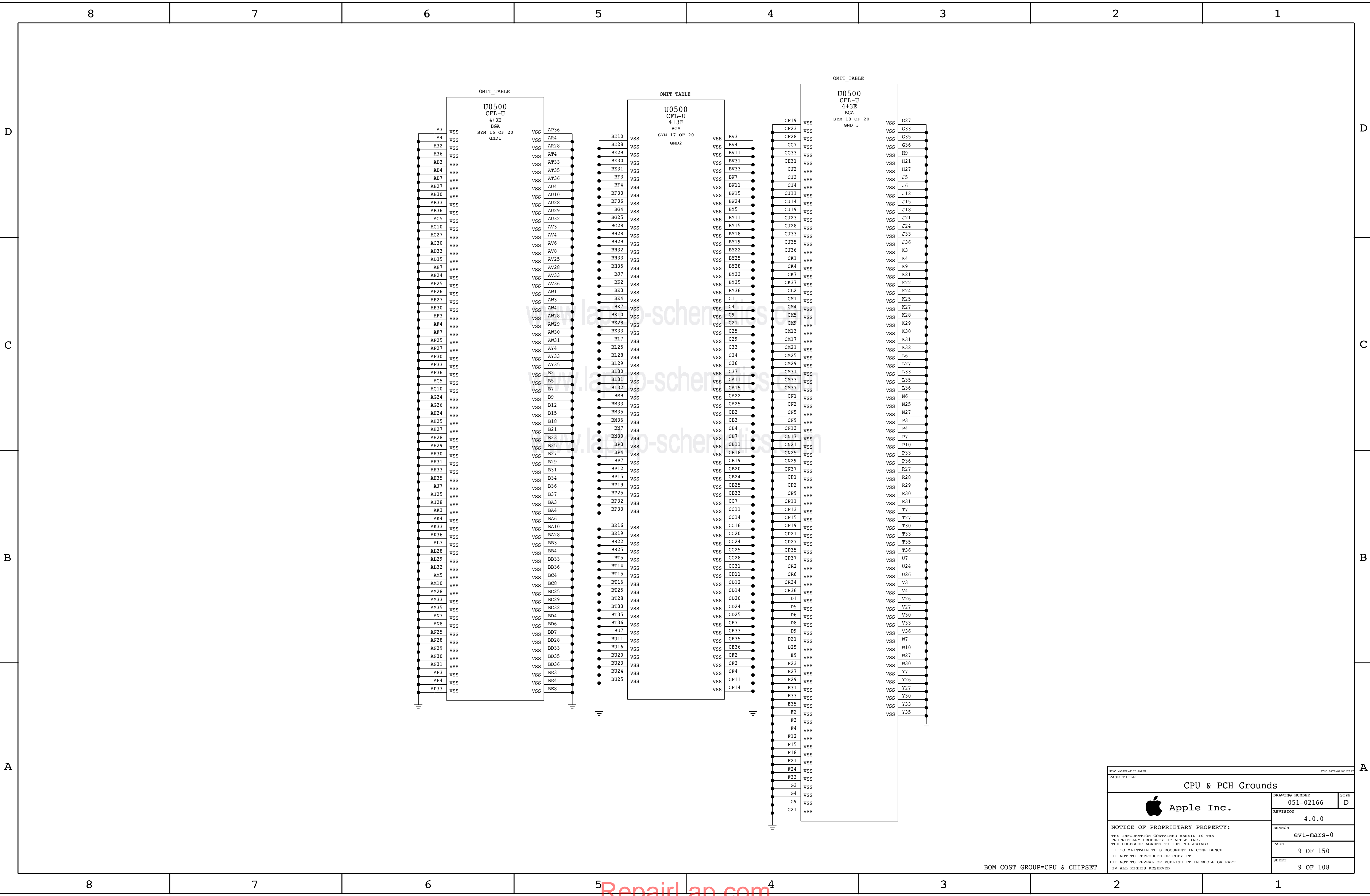












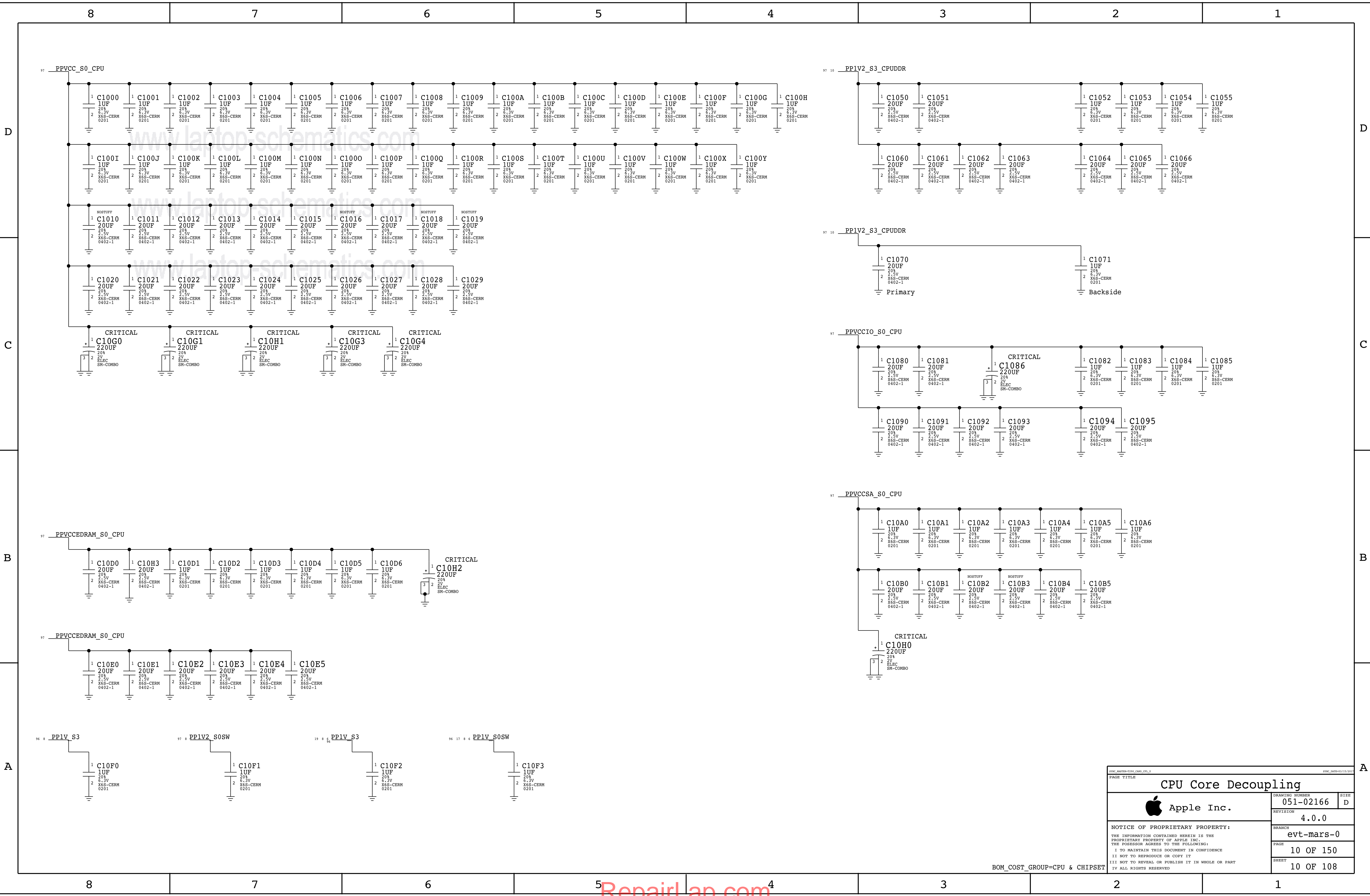
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CPU Core Decoupling

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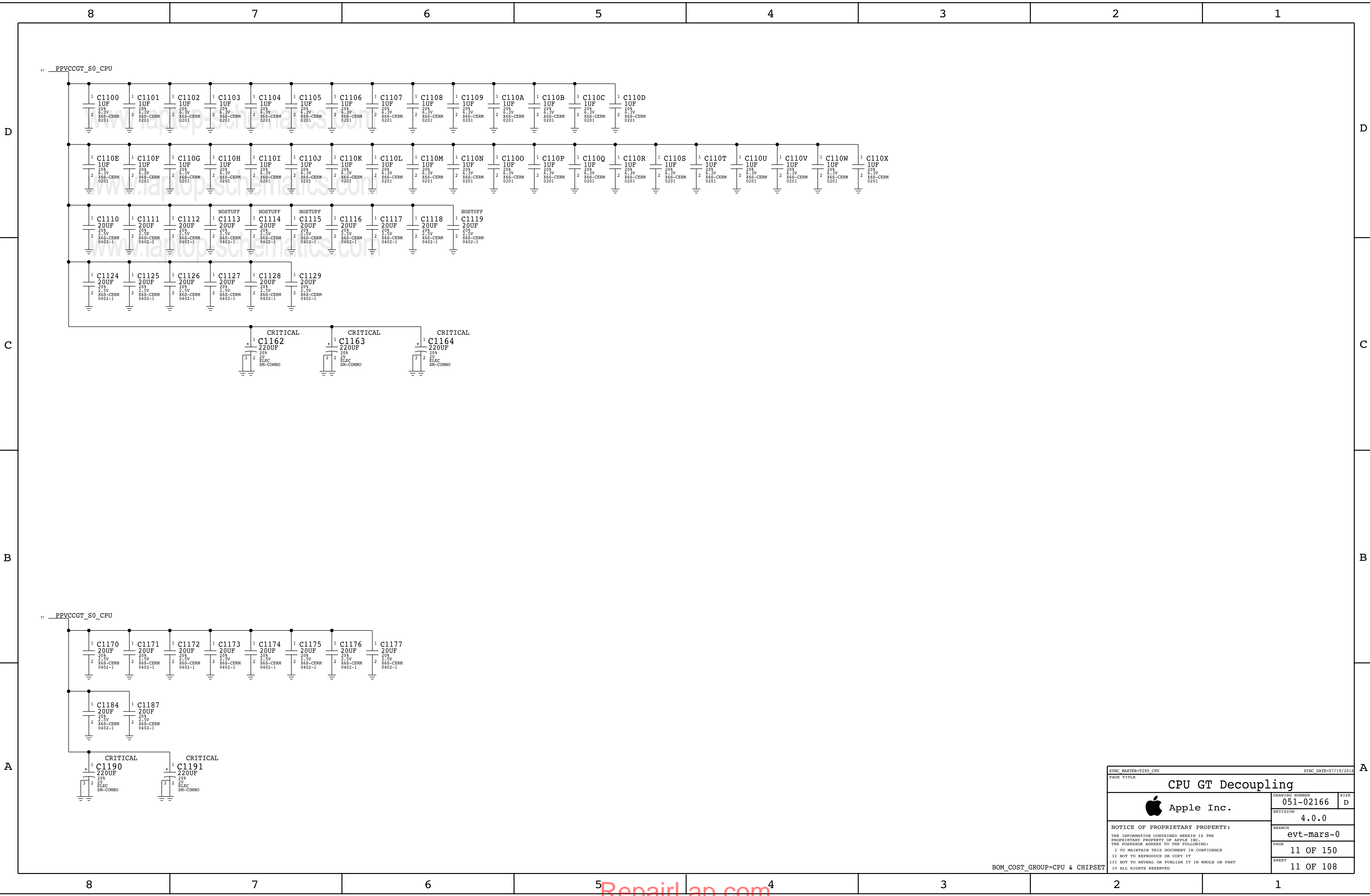
10 OF 108


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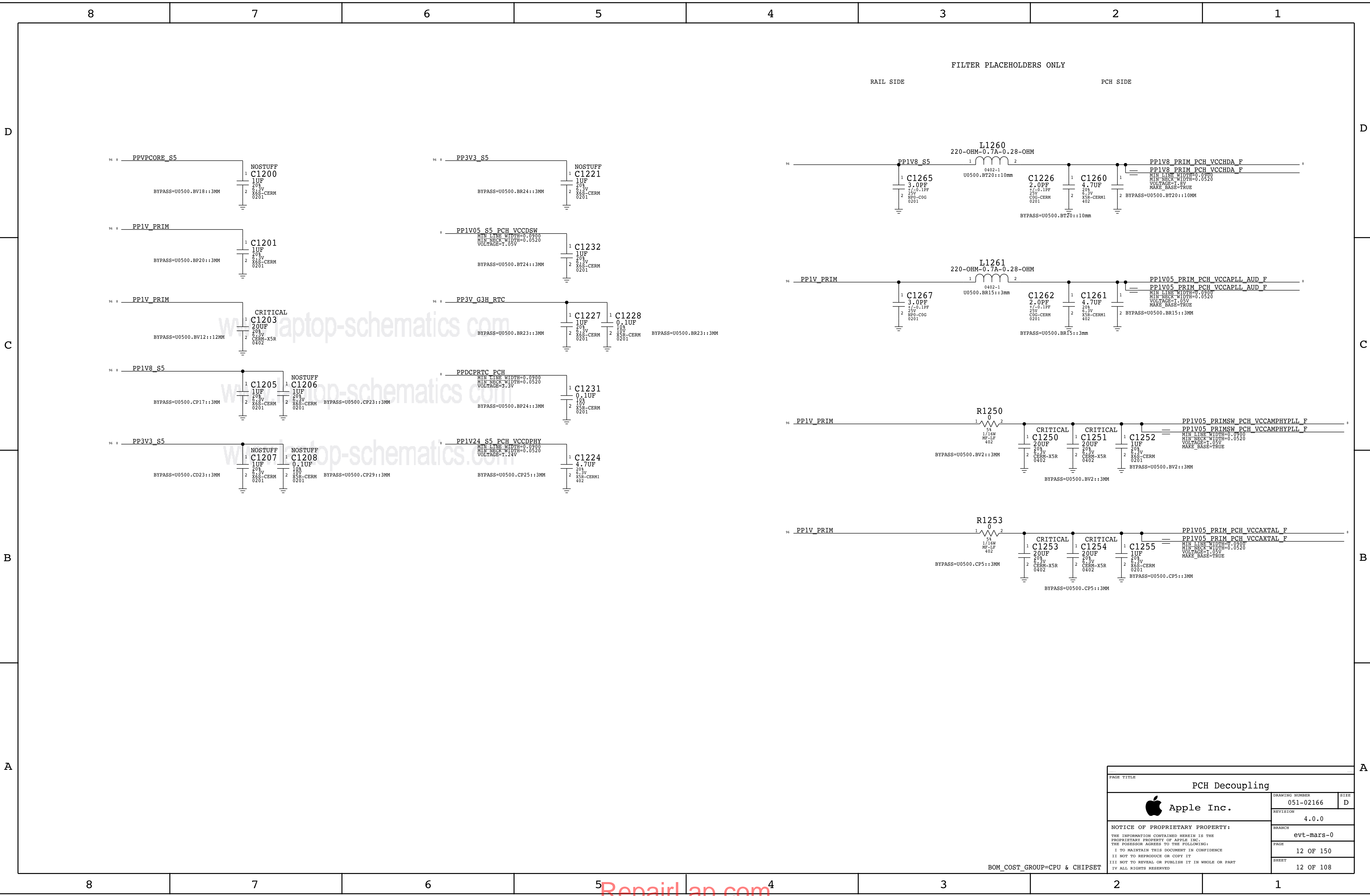




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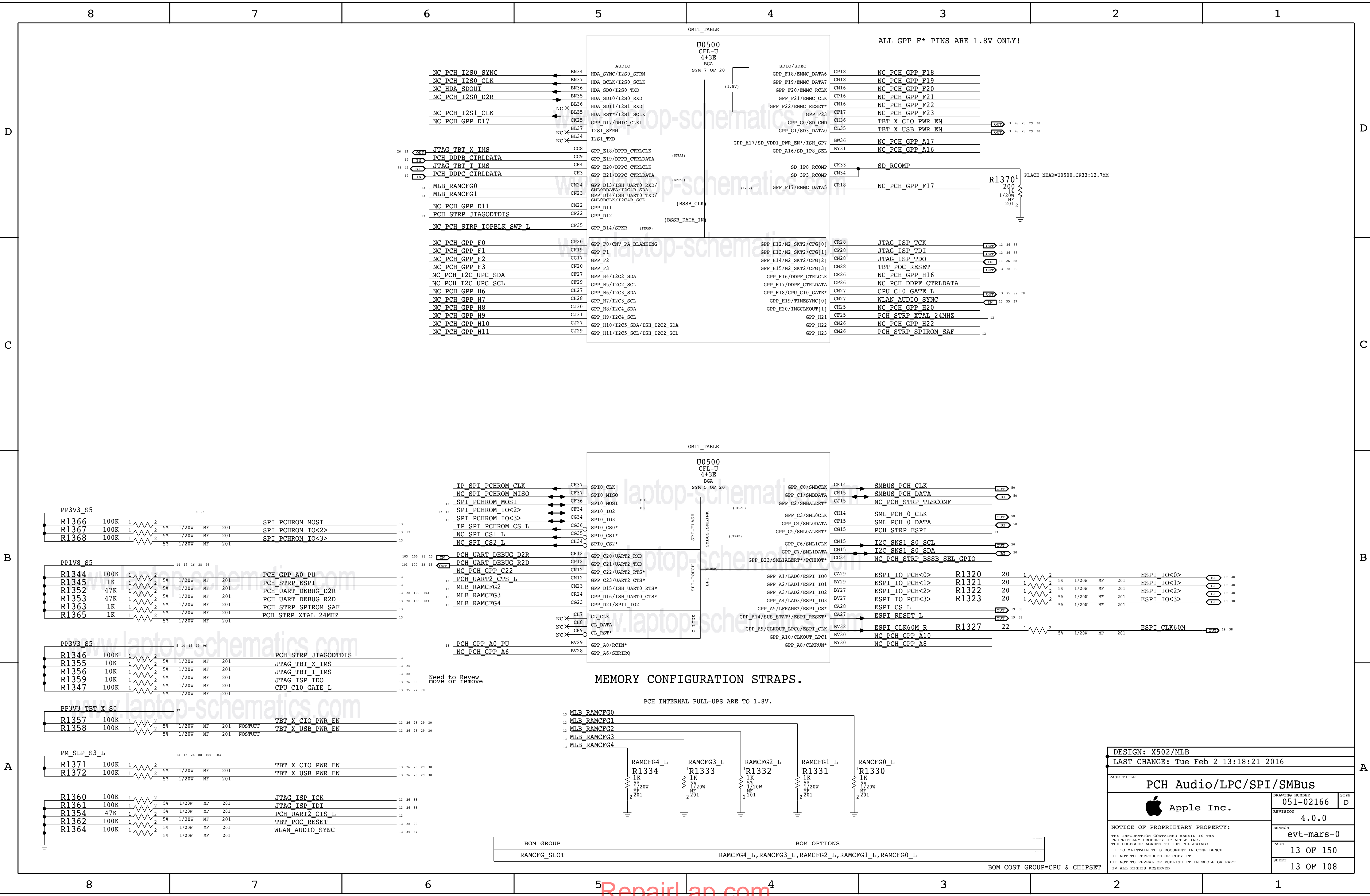




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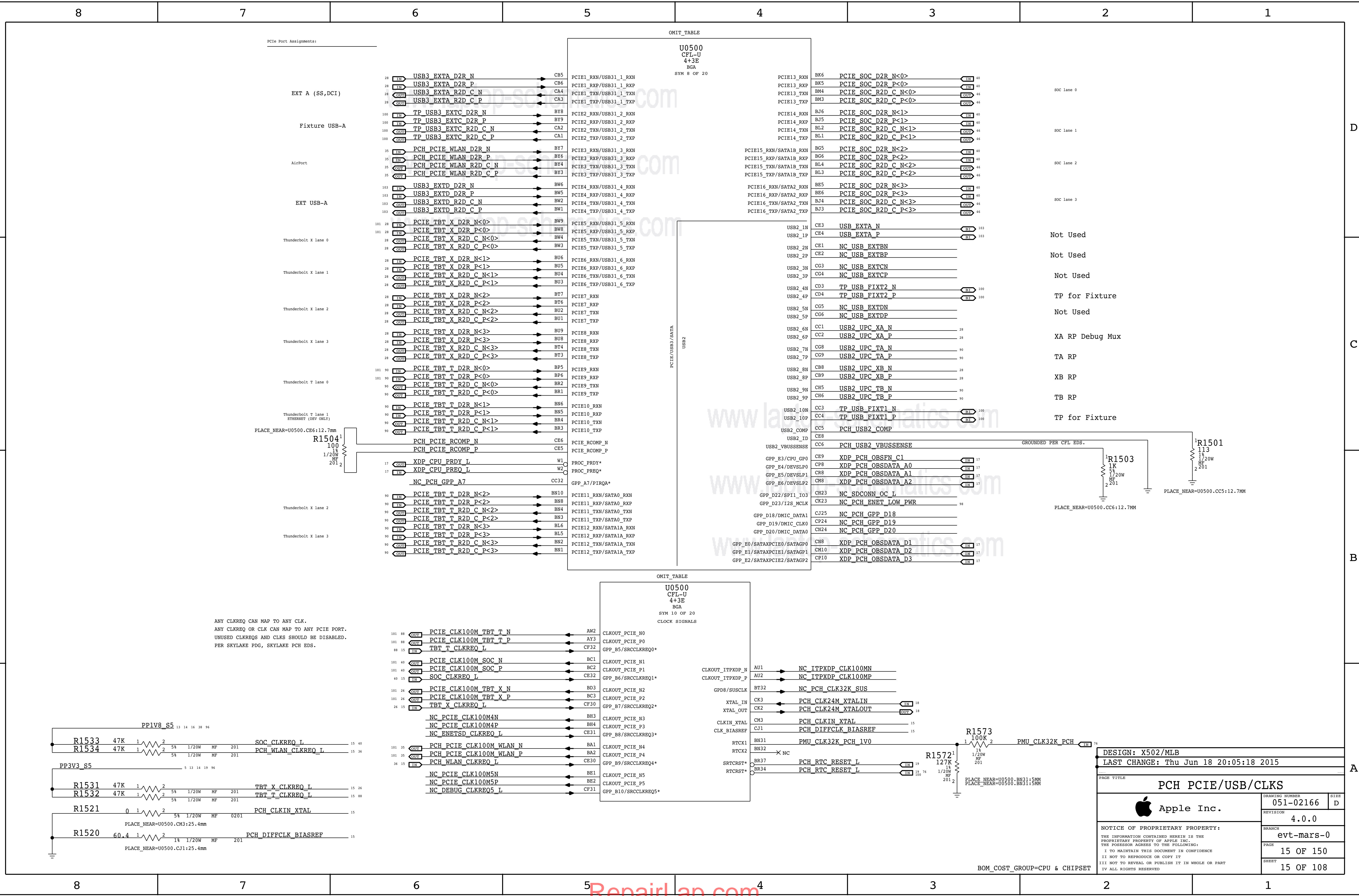




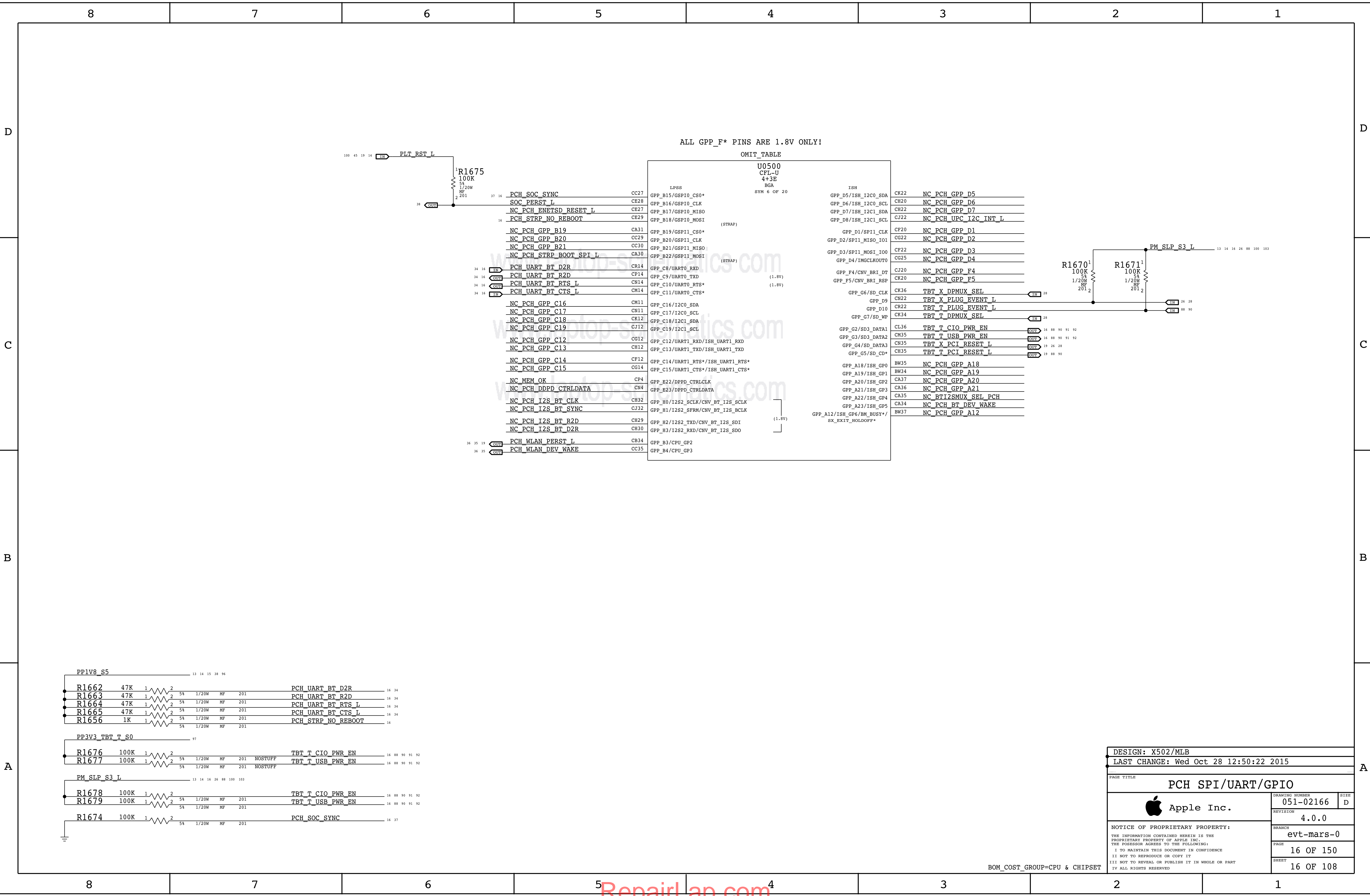




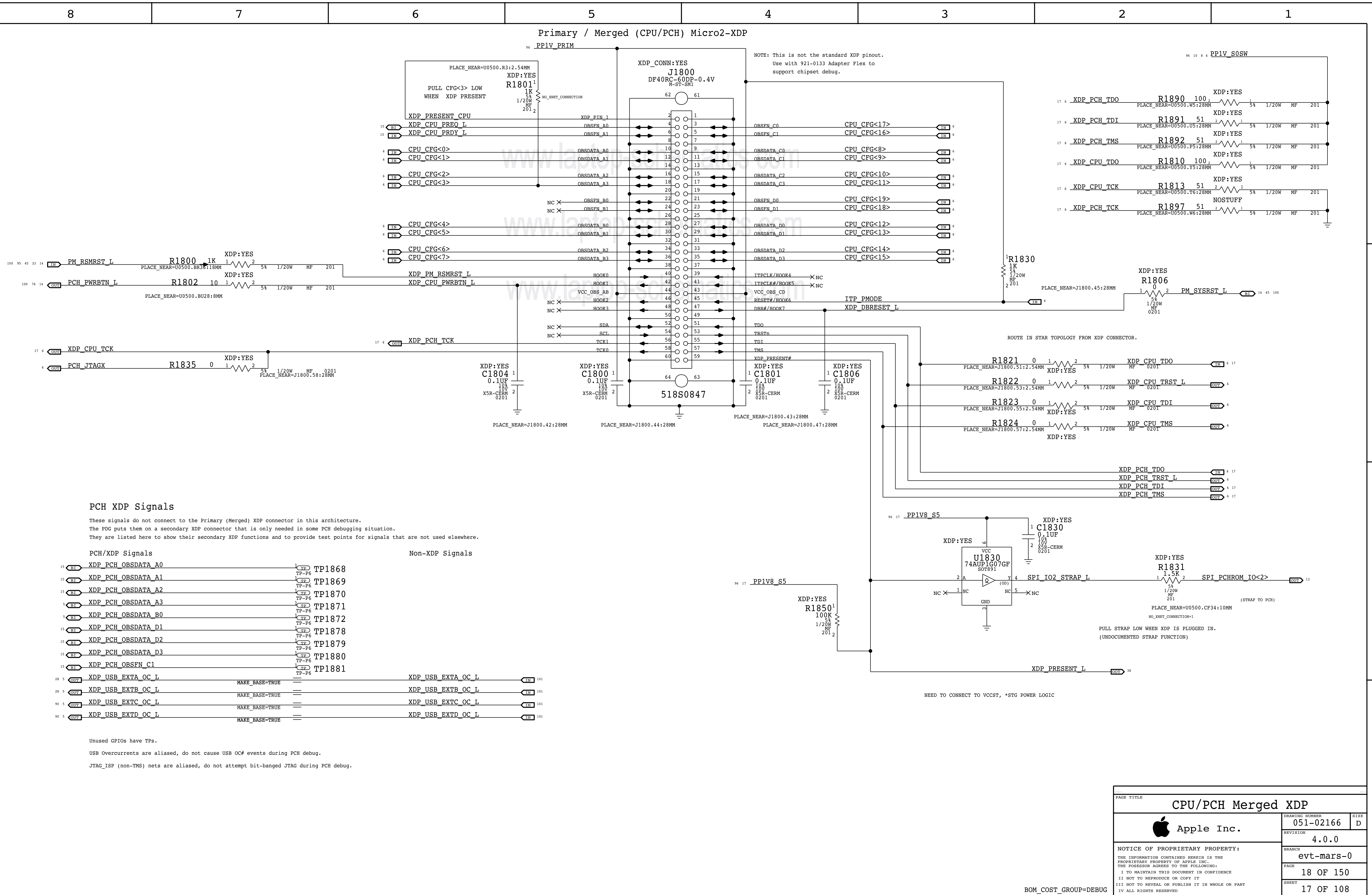




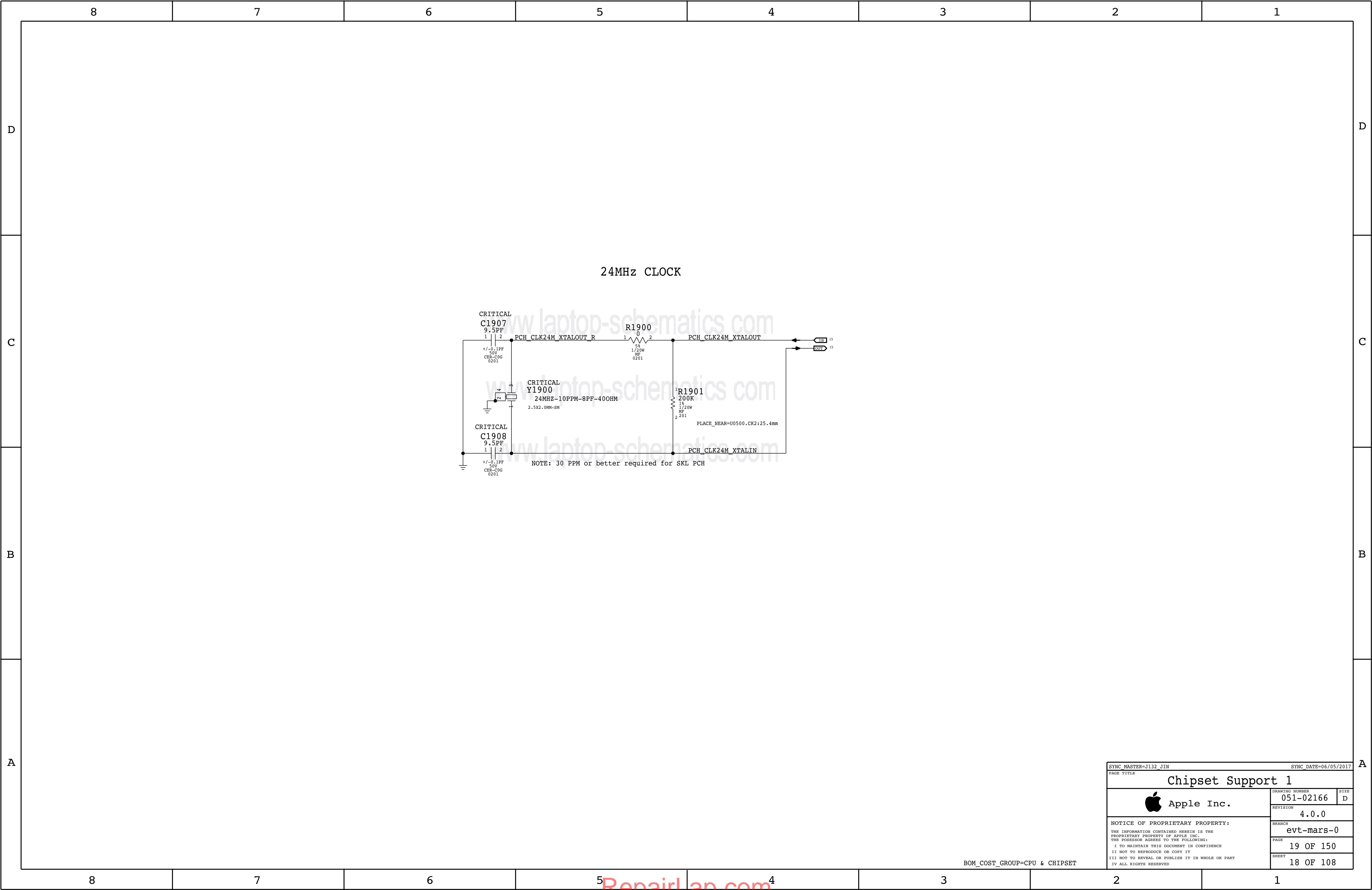




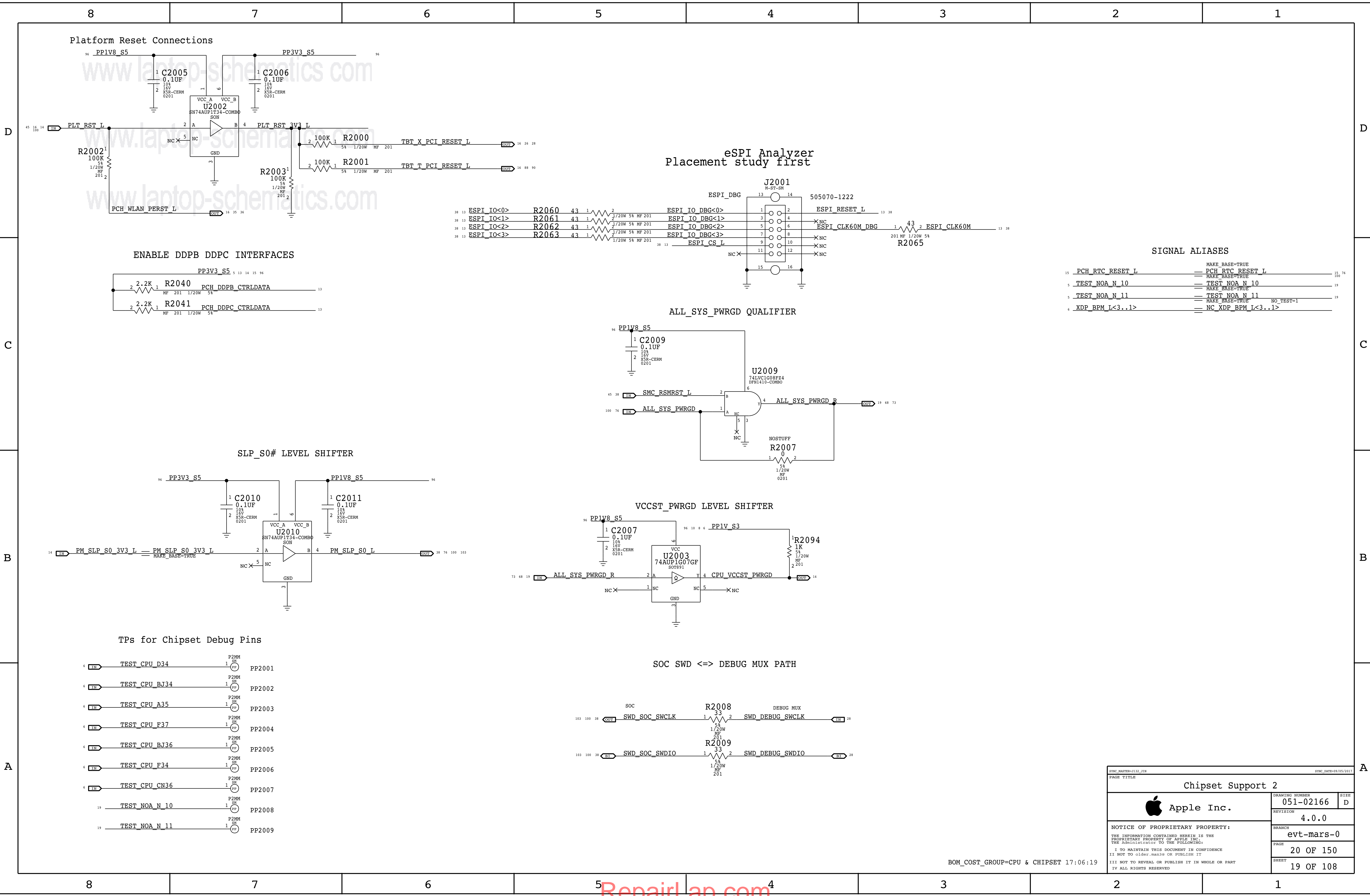










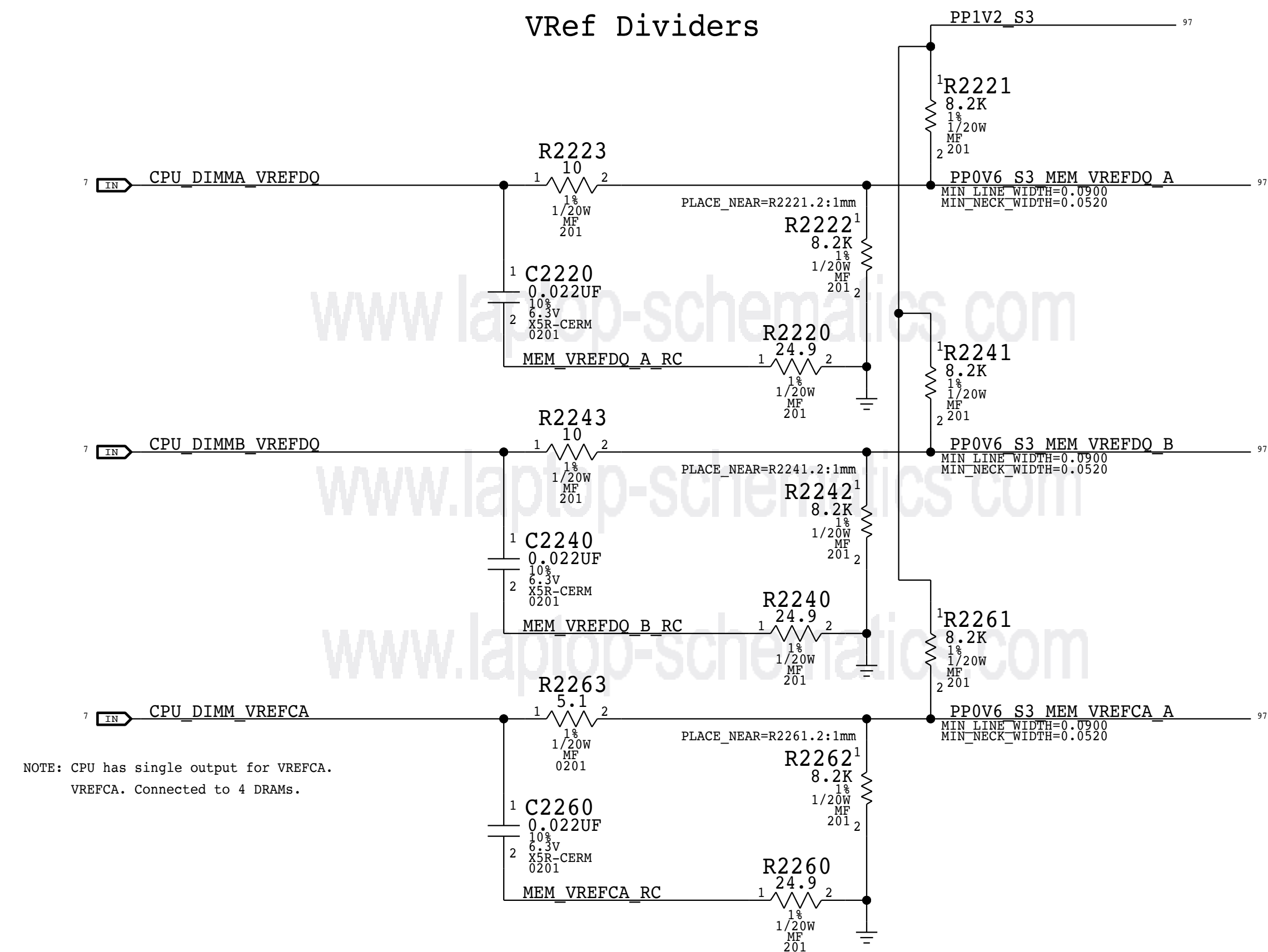


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BOM\_COST\_GROUP=CPU & CHIPSET 17:06:19



## CPU-Based Margining



NOTE: CPU has single output for VREFCA.  
VREFCA. Connected to 4 DRAMs.

SYMC MASTER-379A_HLB		SYMC_DATE=01/31/2017	
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LPDDR3 VREF Margining			
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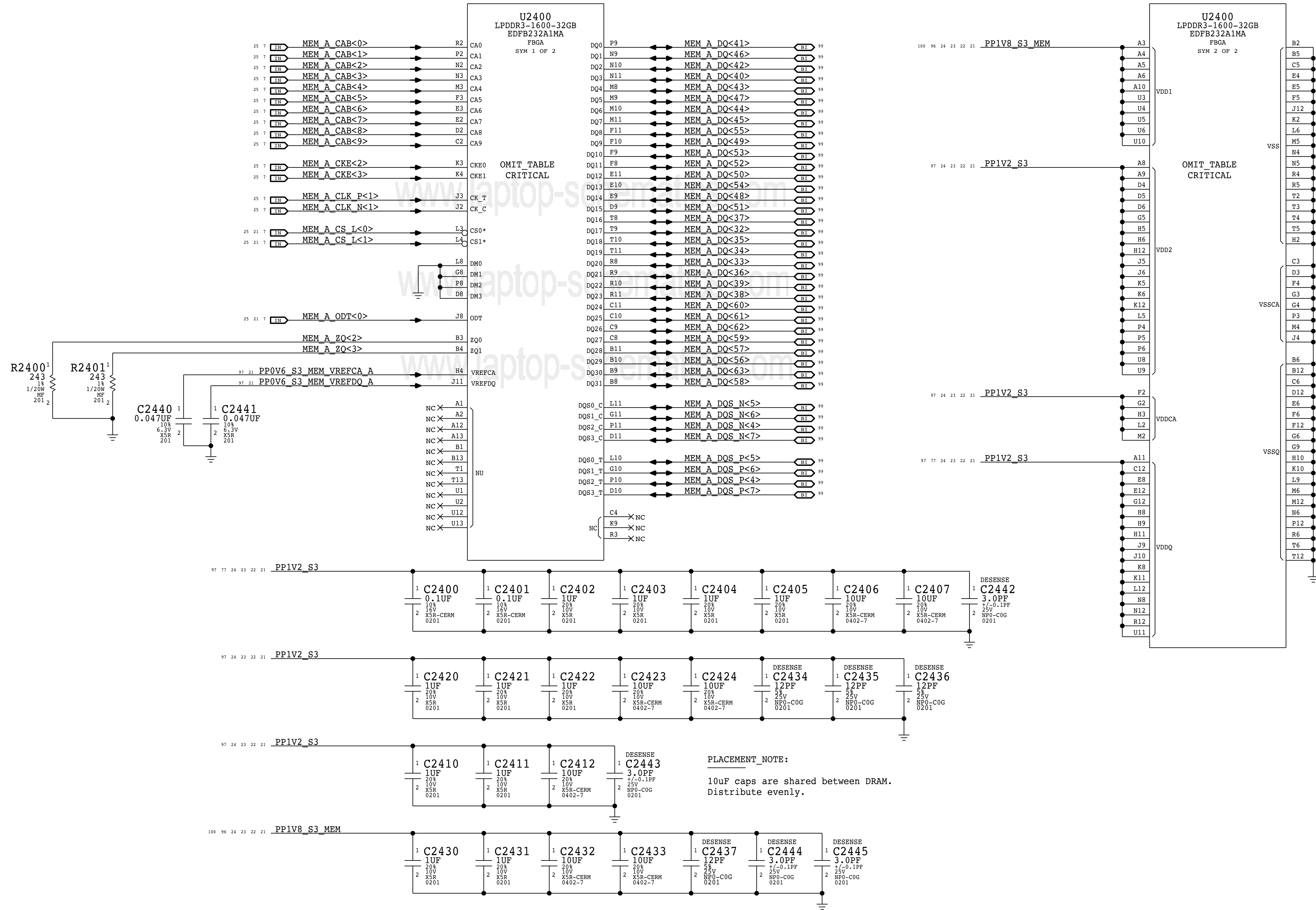
C

B


A



# LPDDR3 CHANNEL A (32-63)

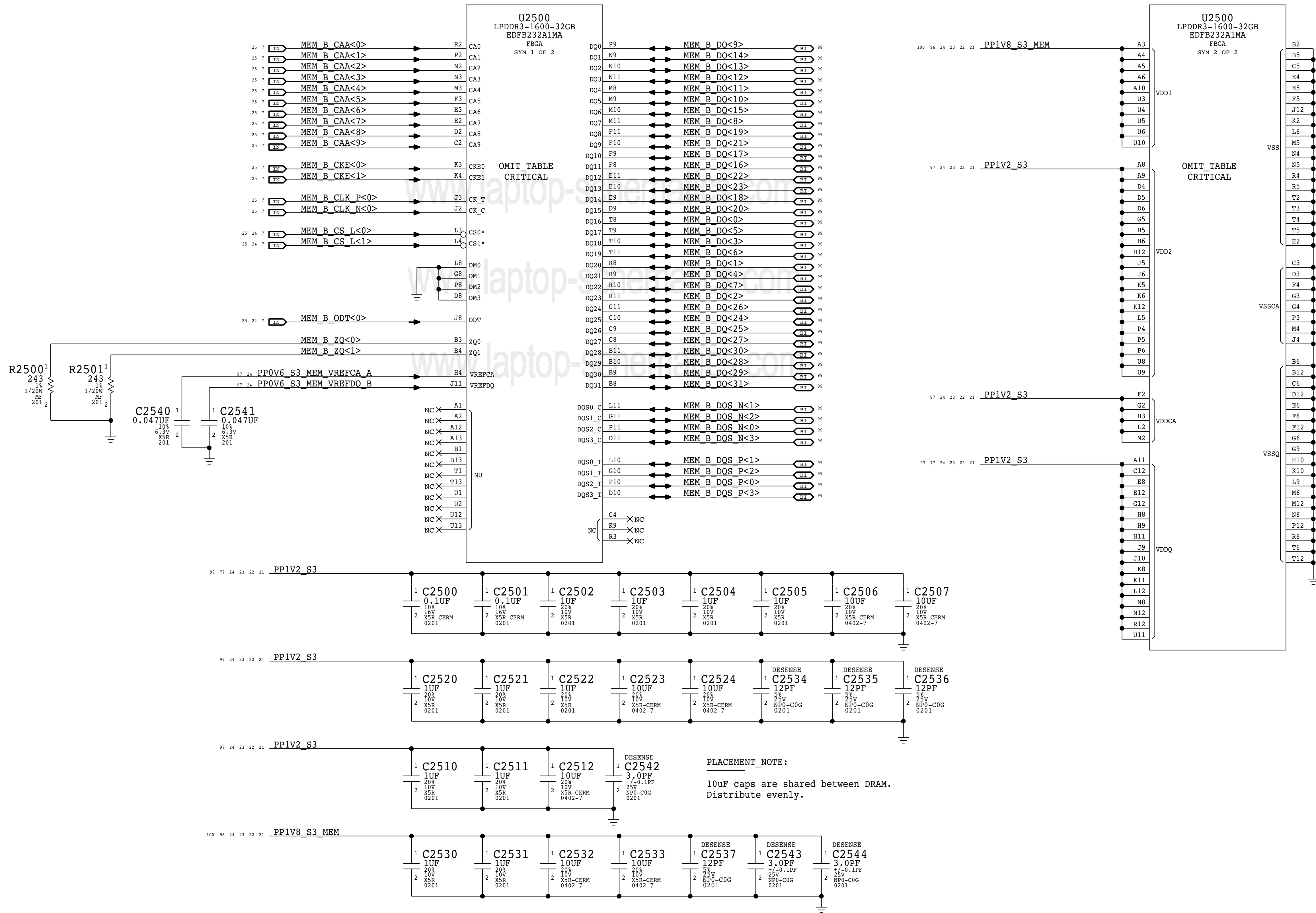



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 Apple Inc.	DRAWING NUMBER	051-02166	SIZE D
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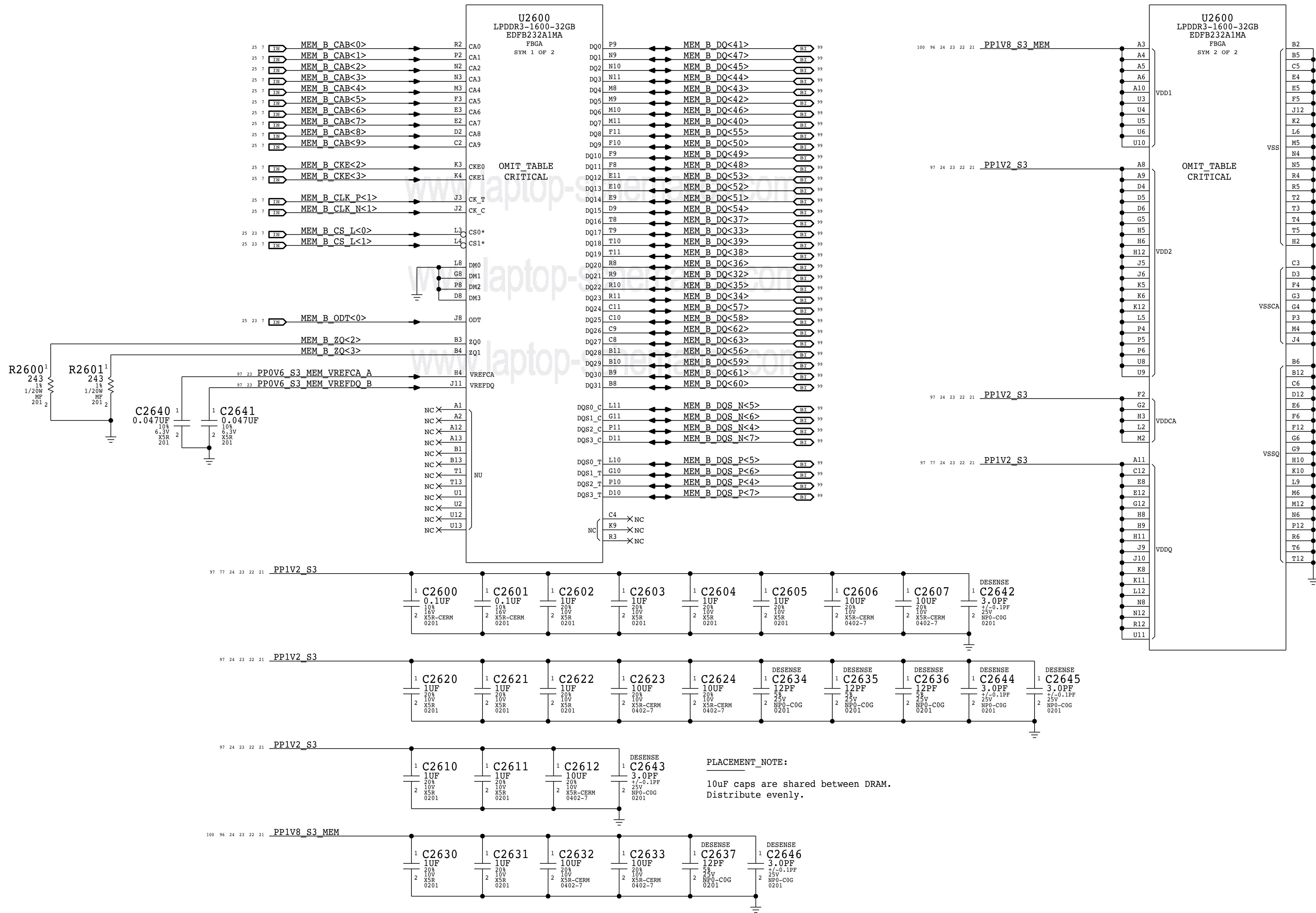
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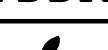


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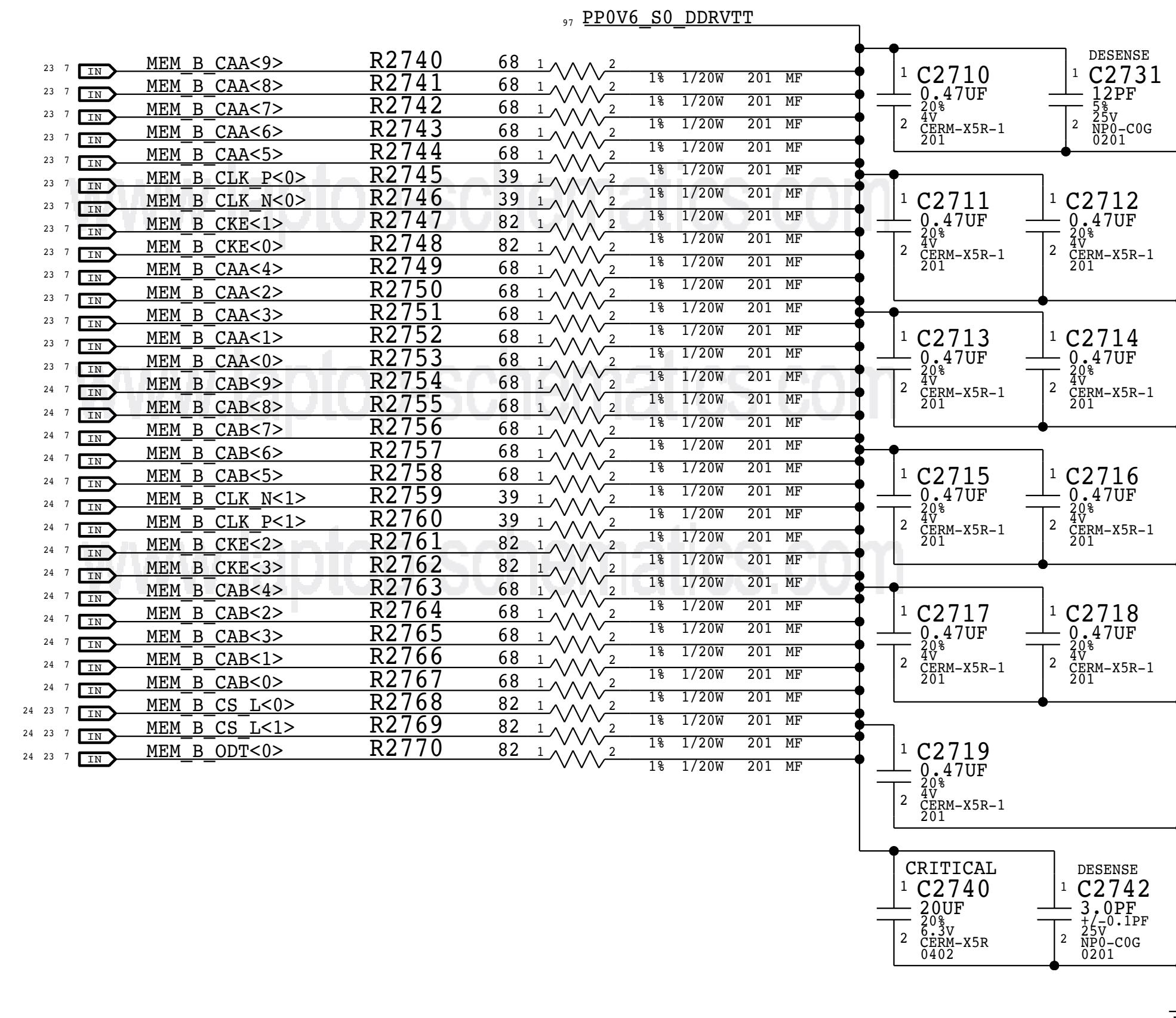
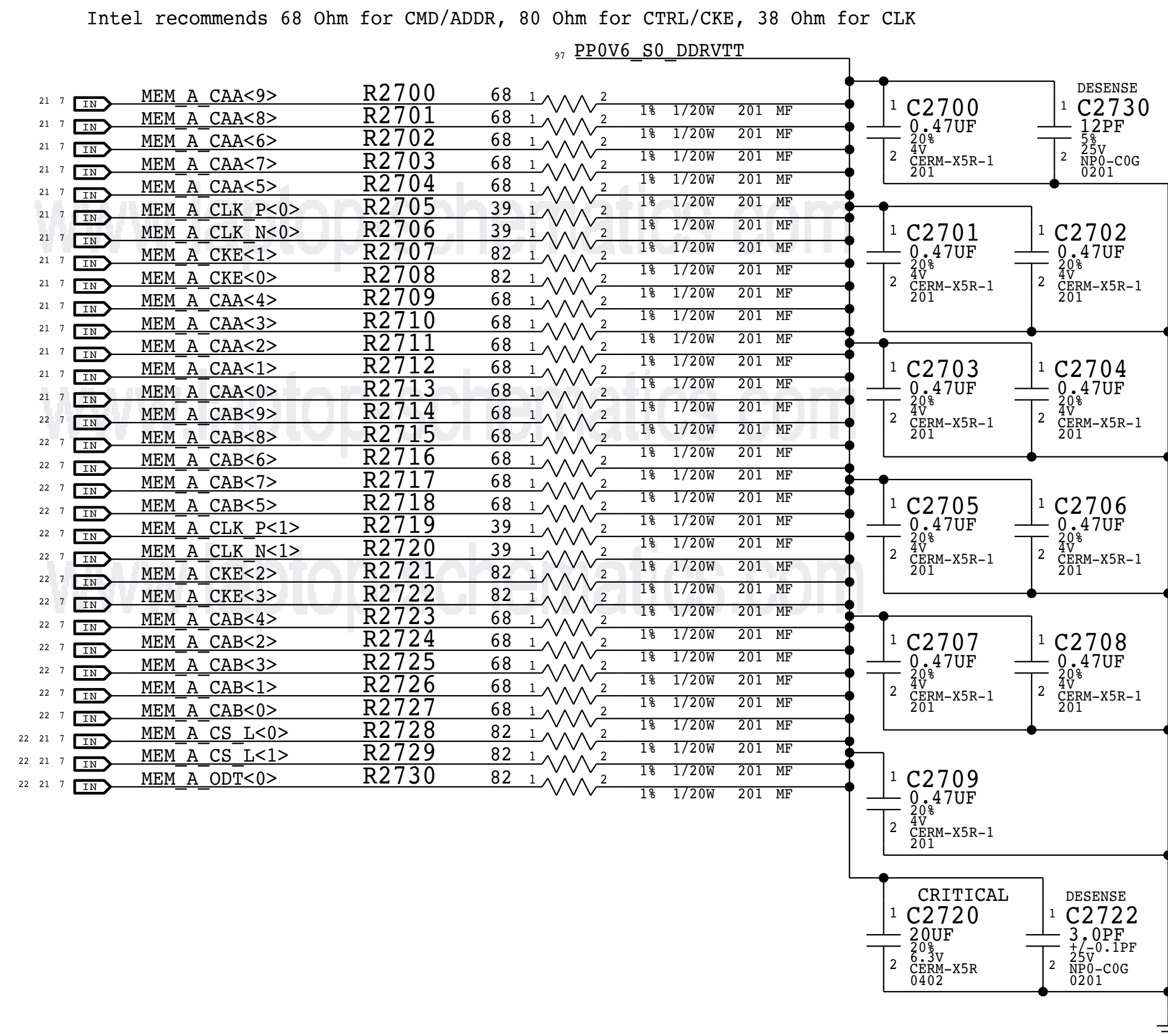
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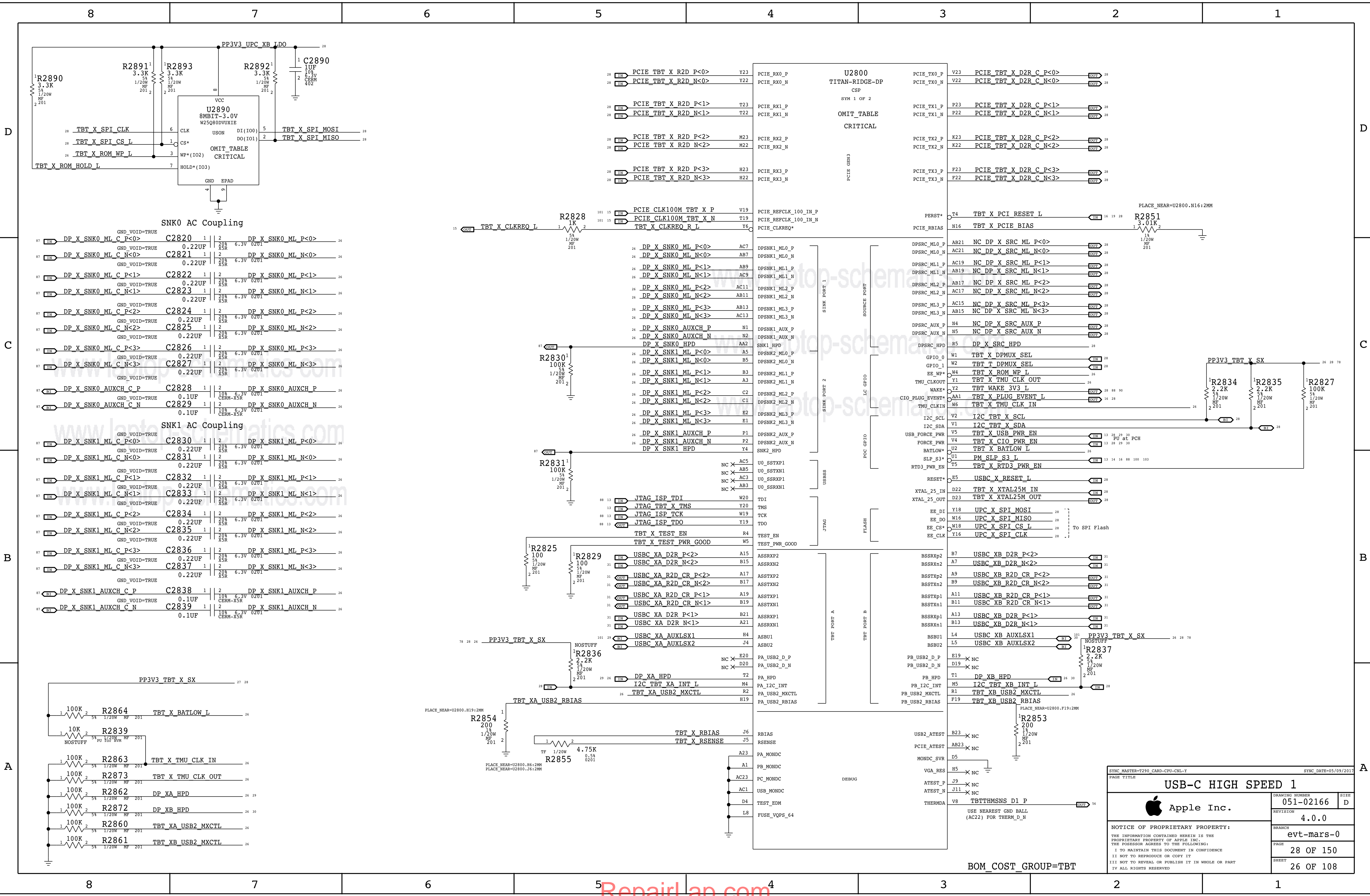
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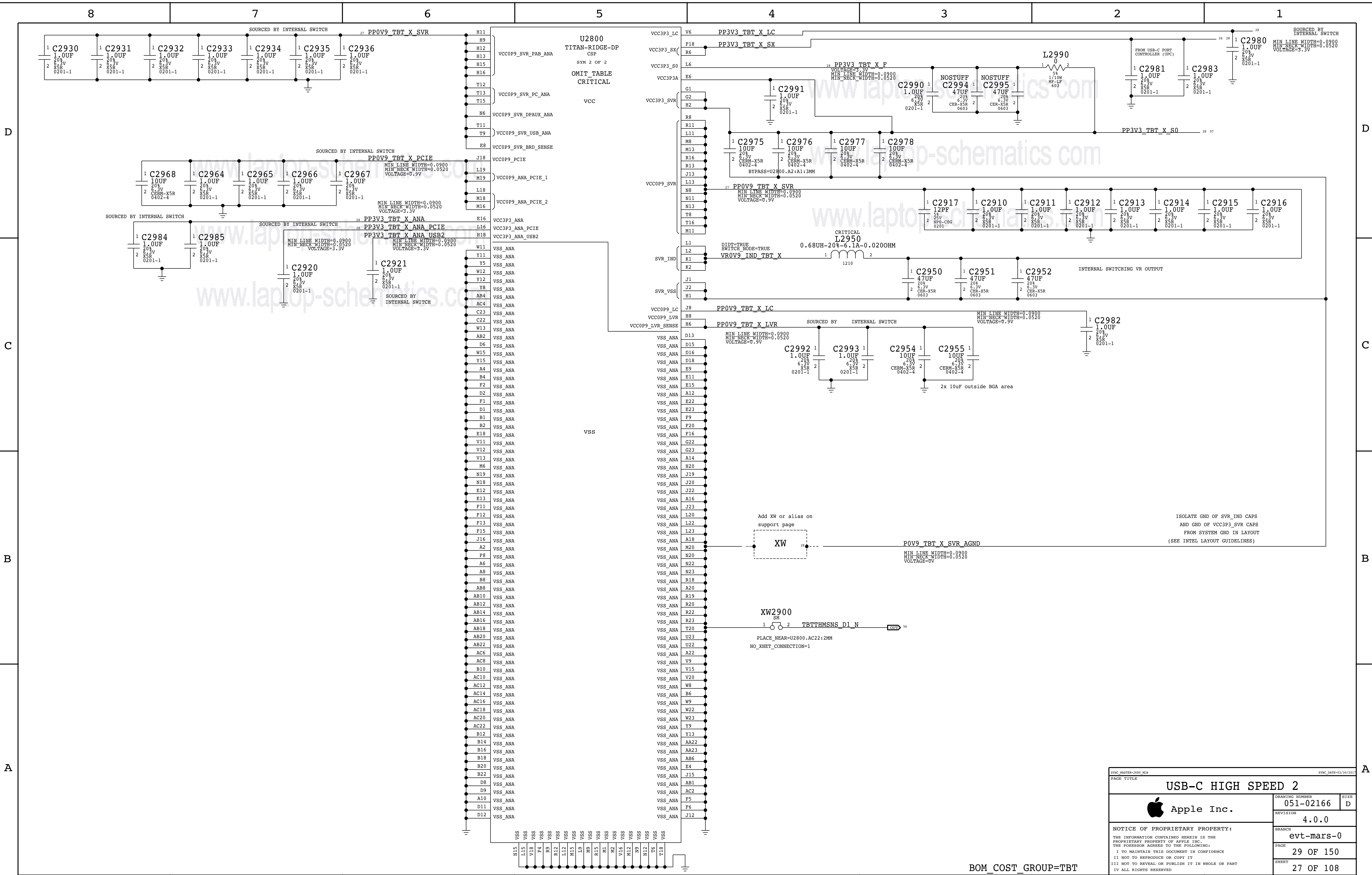




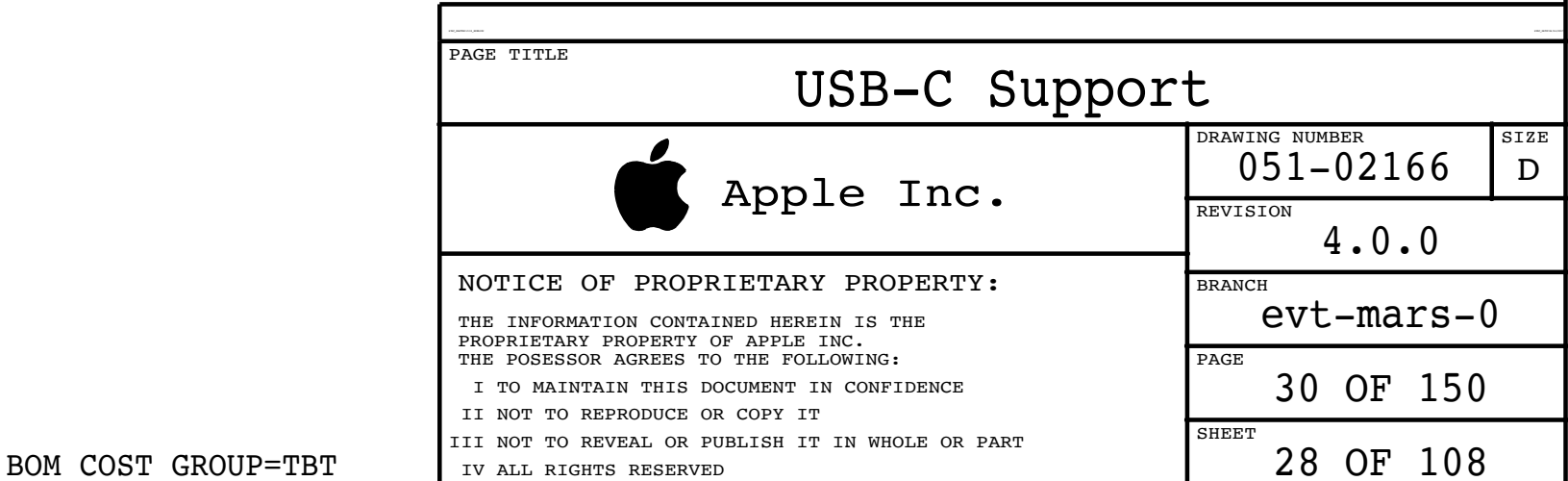
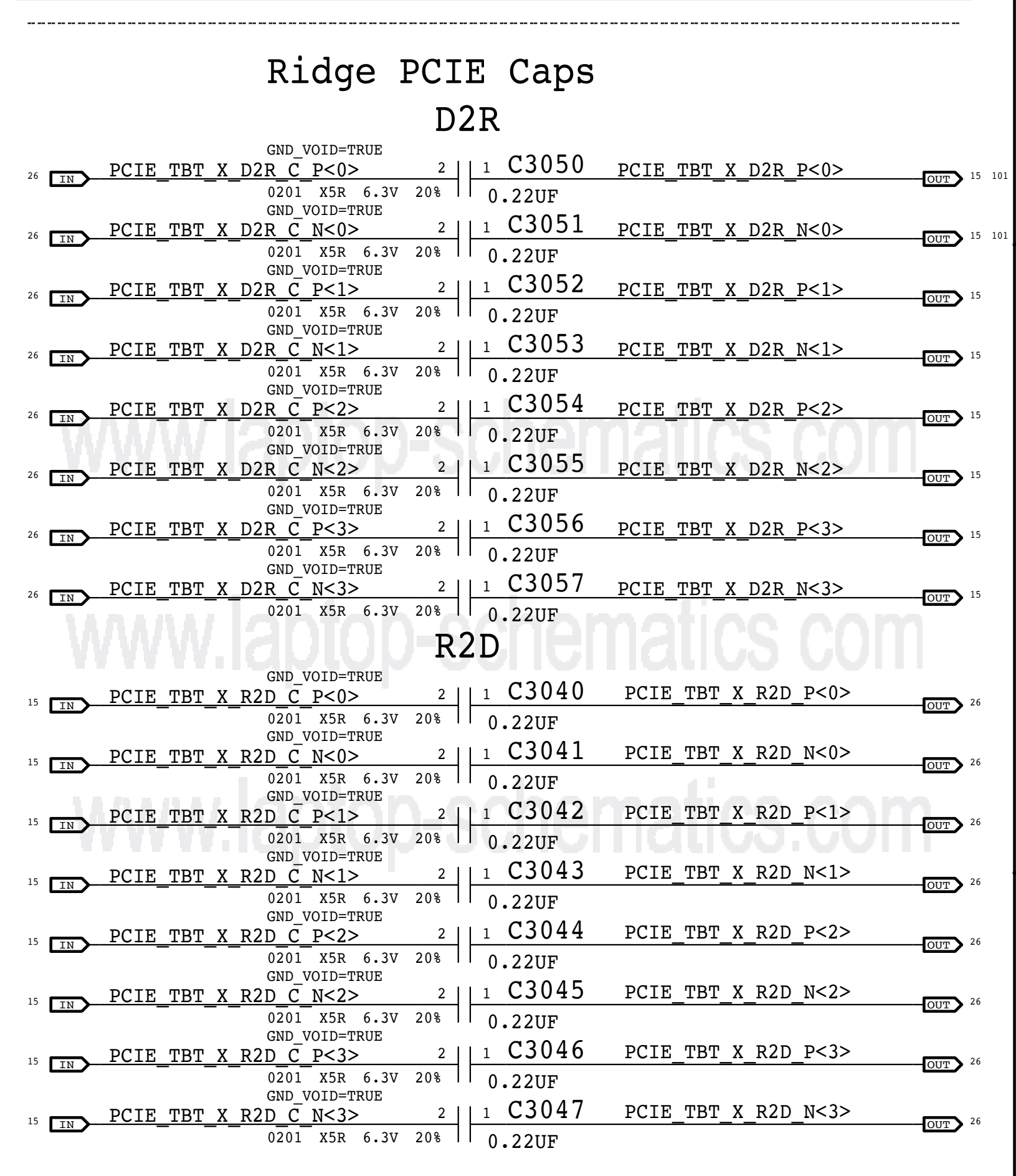
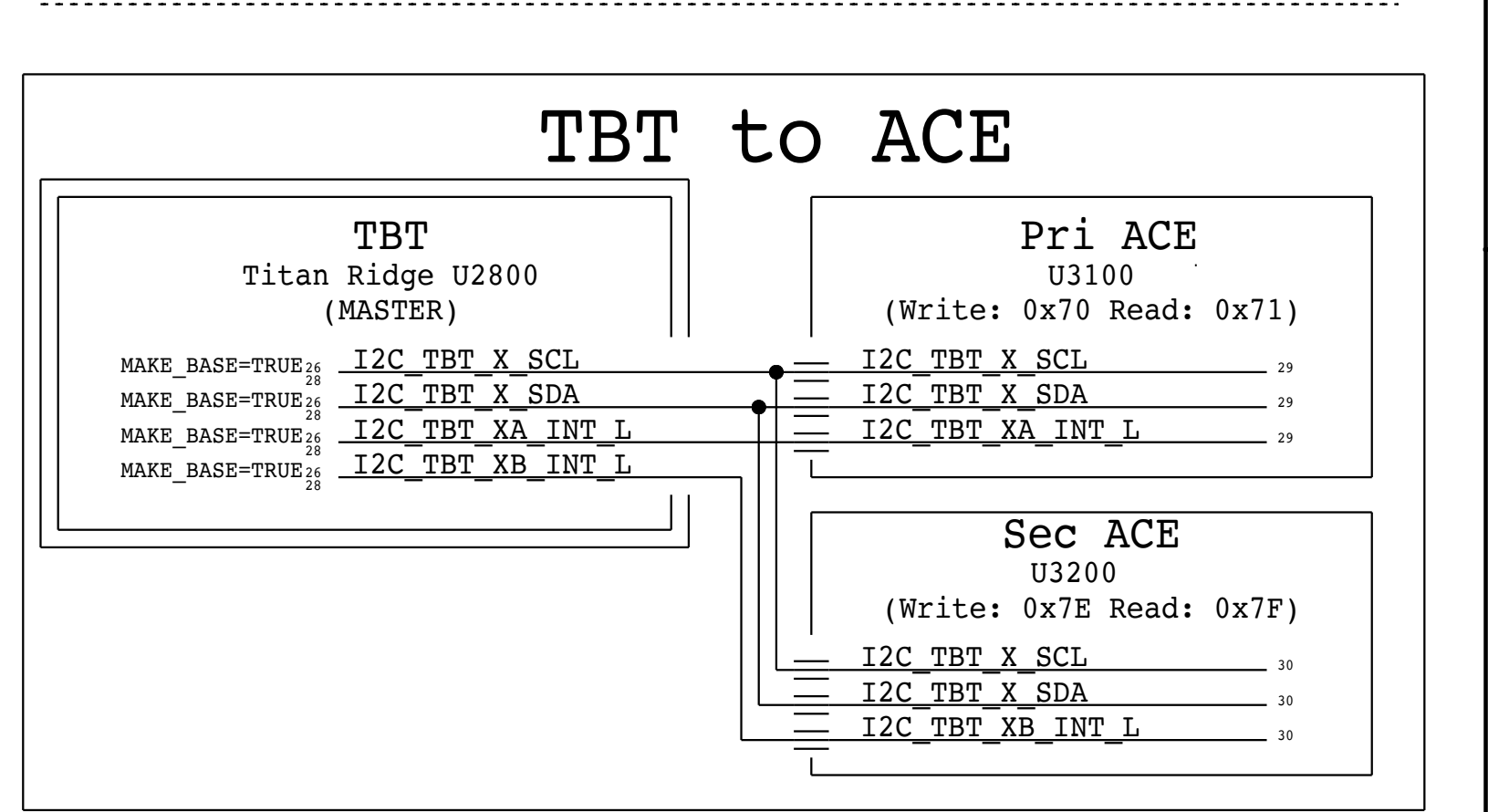
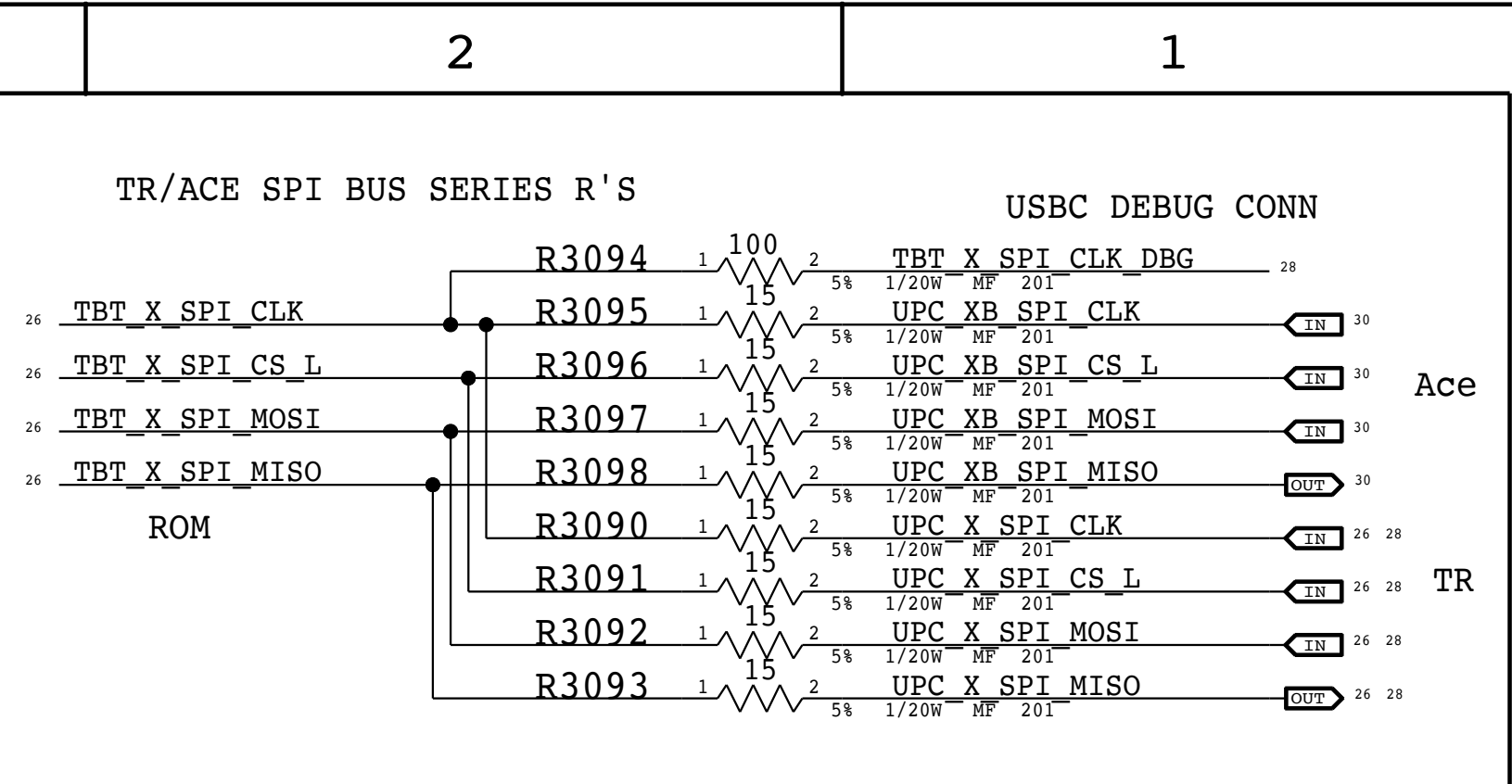
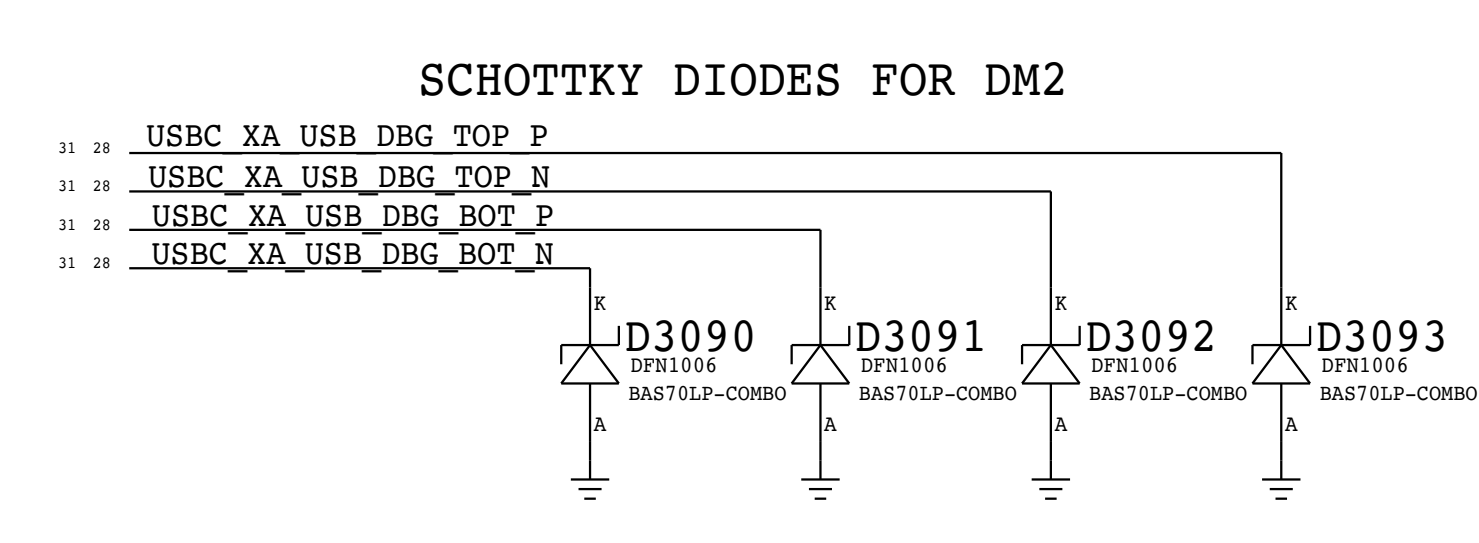
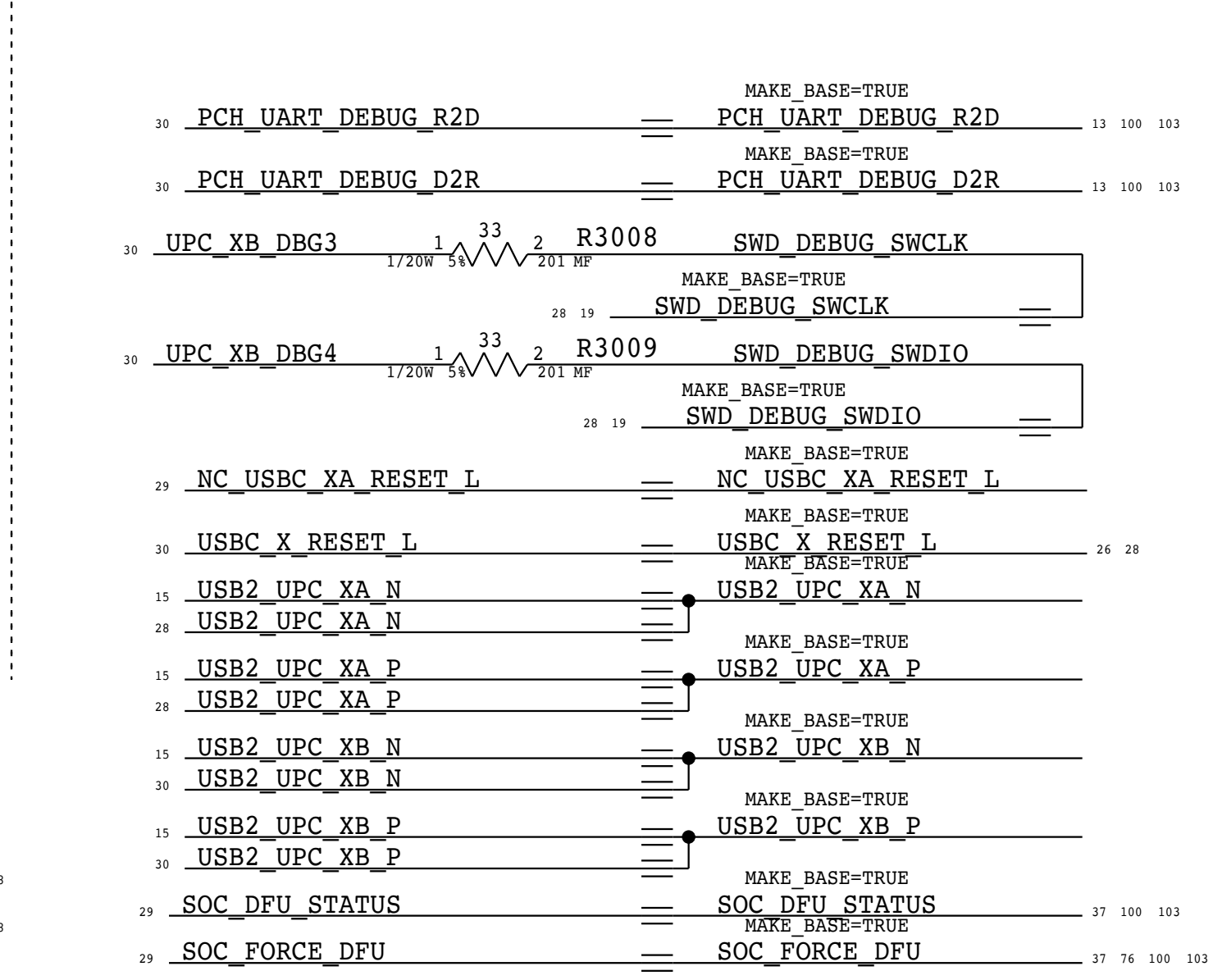
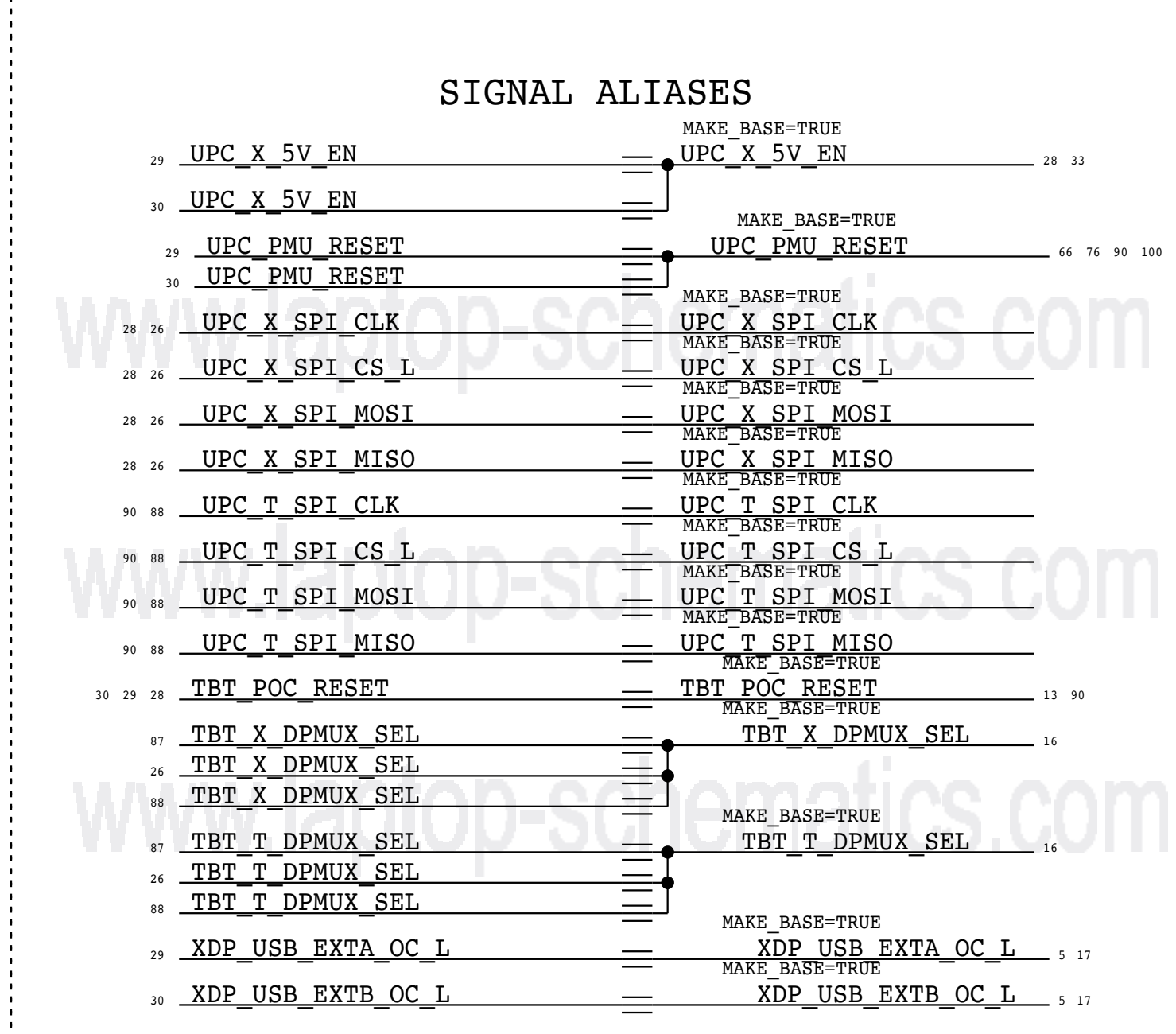
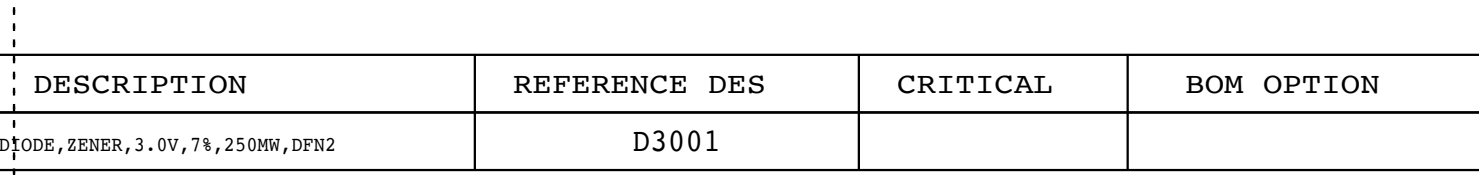
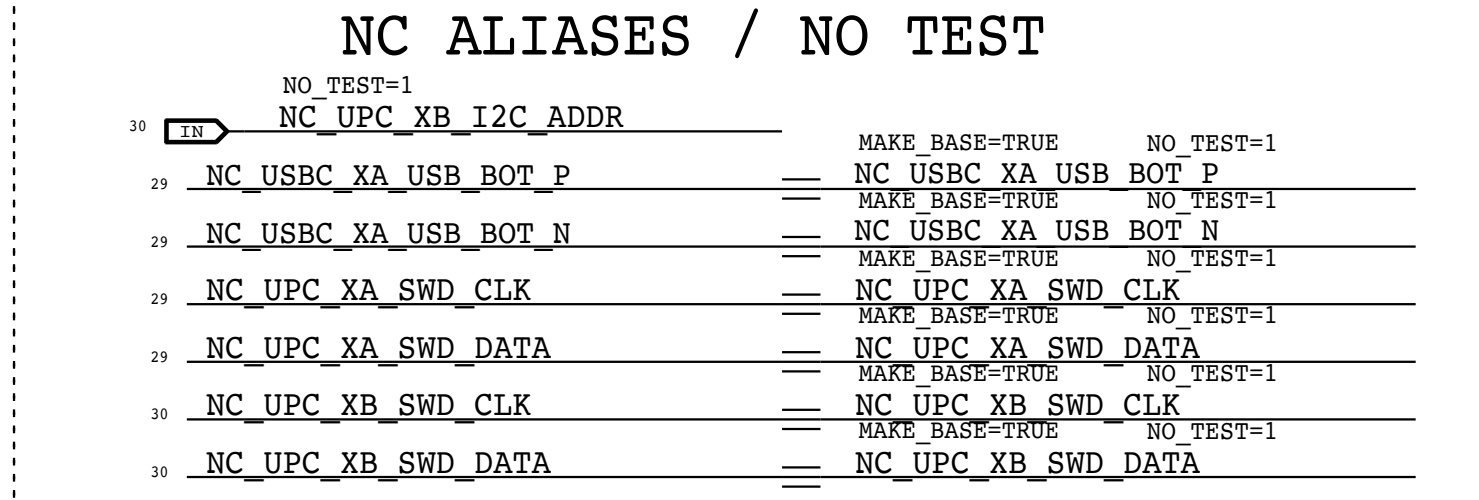
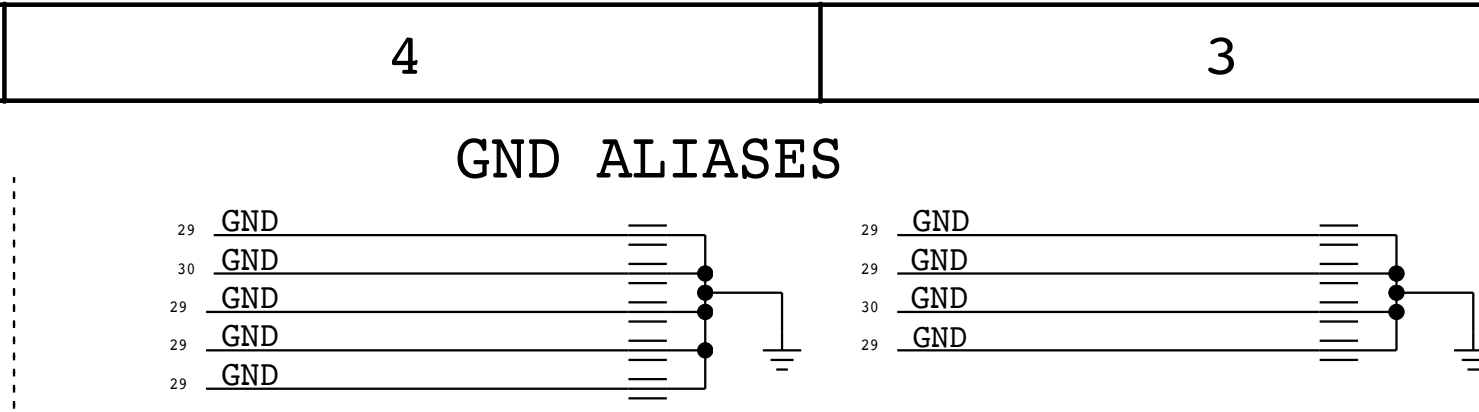
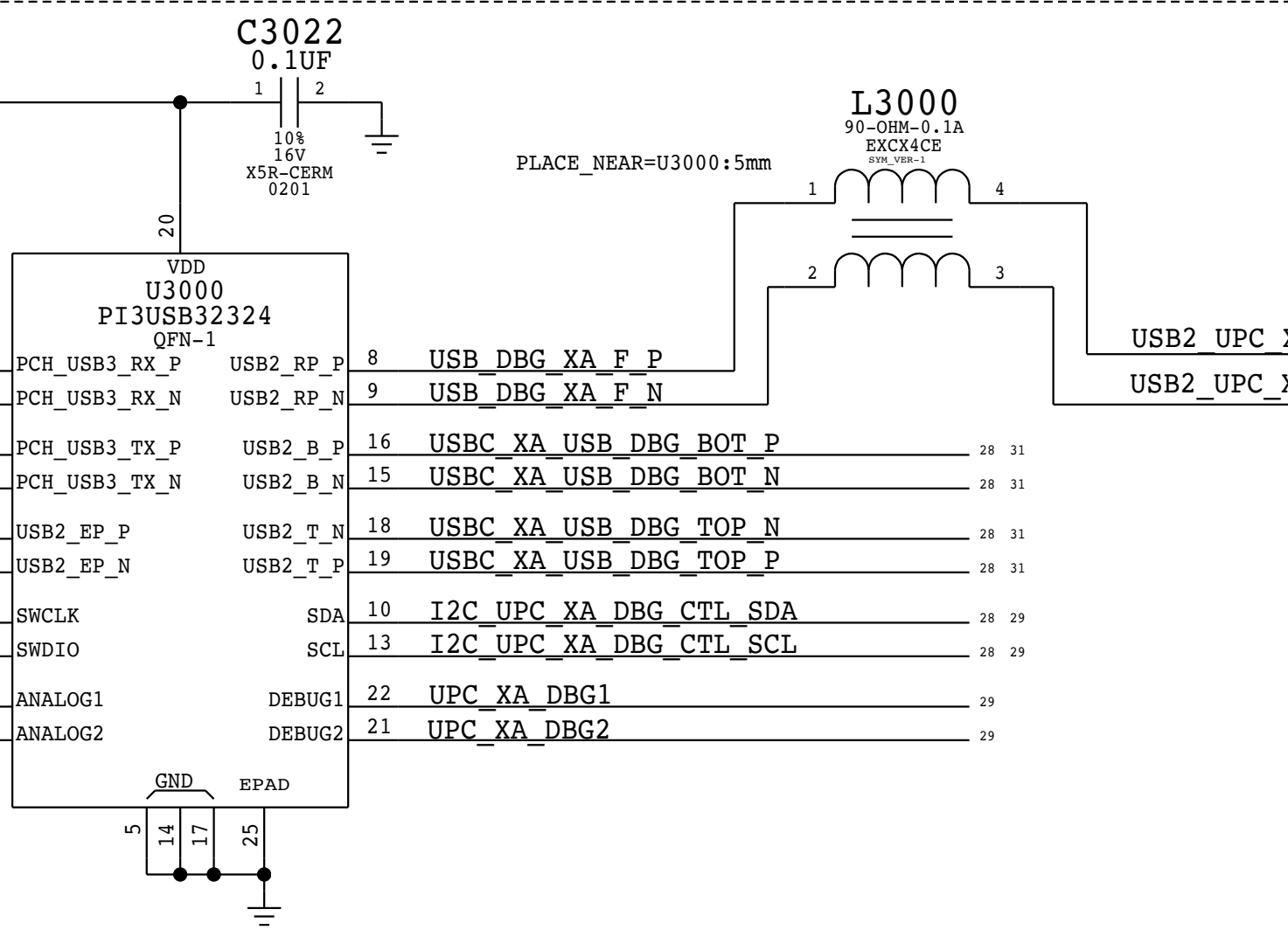
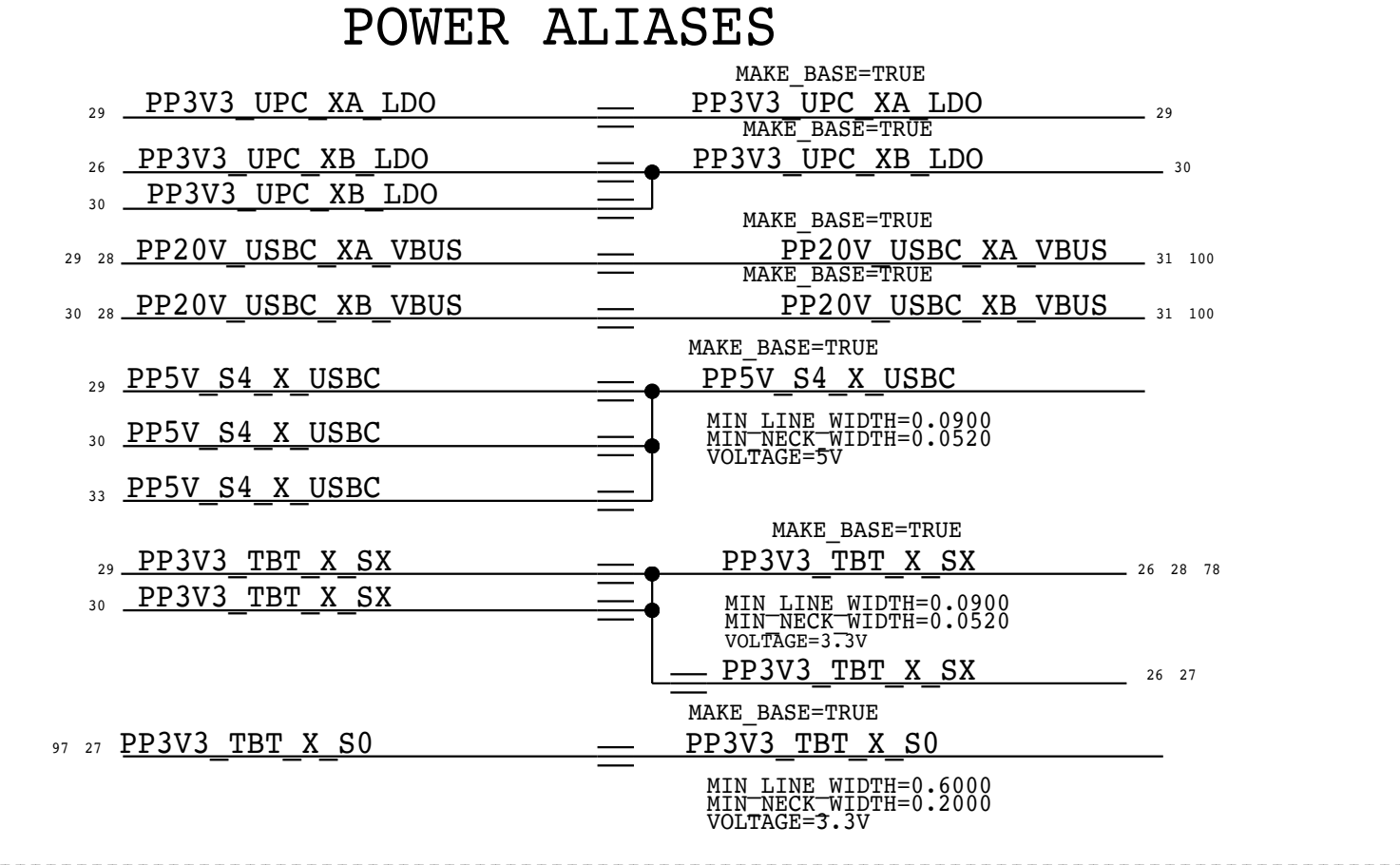
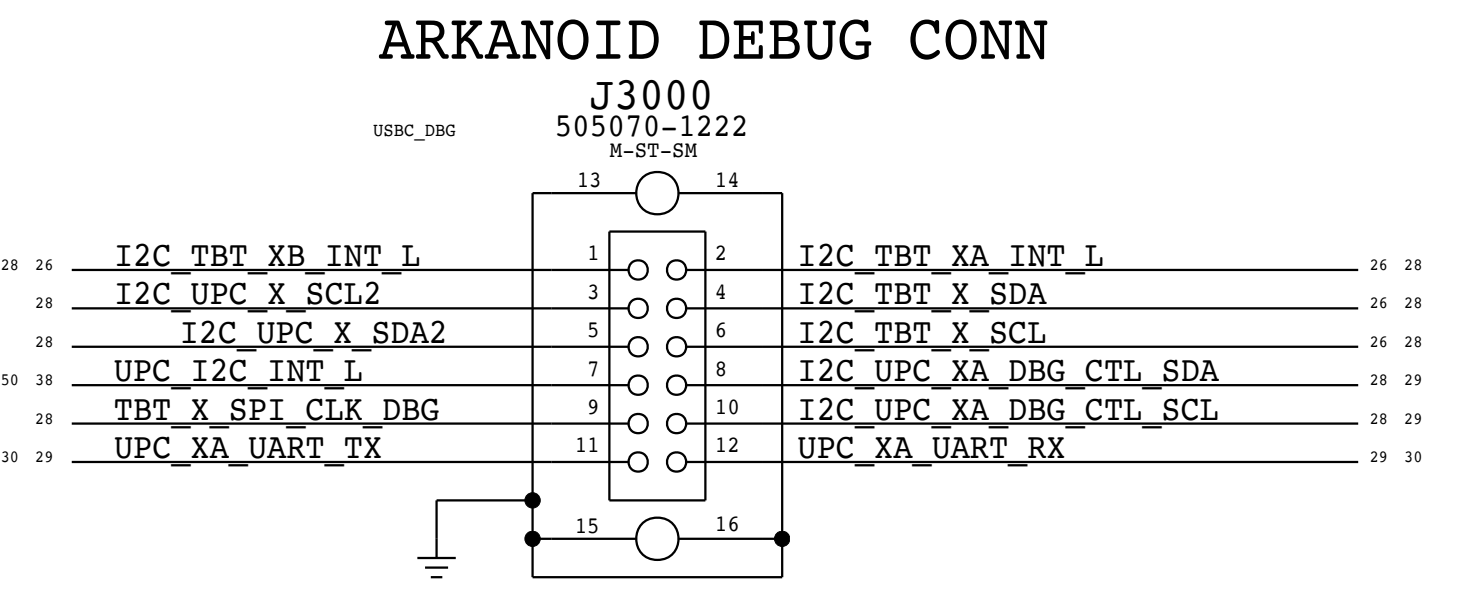
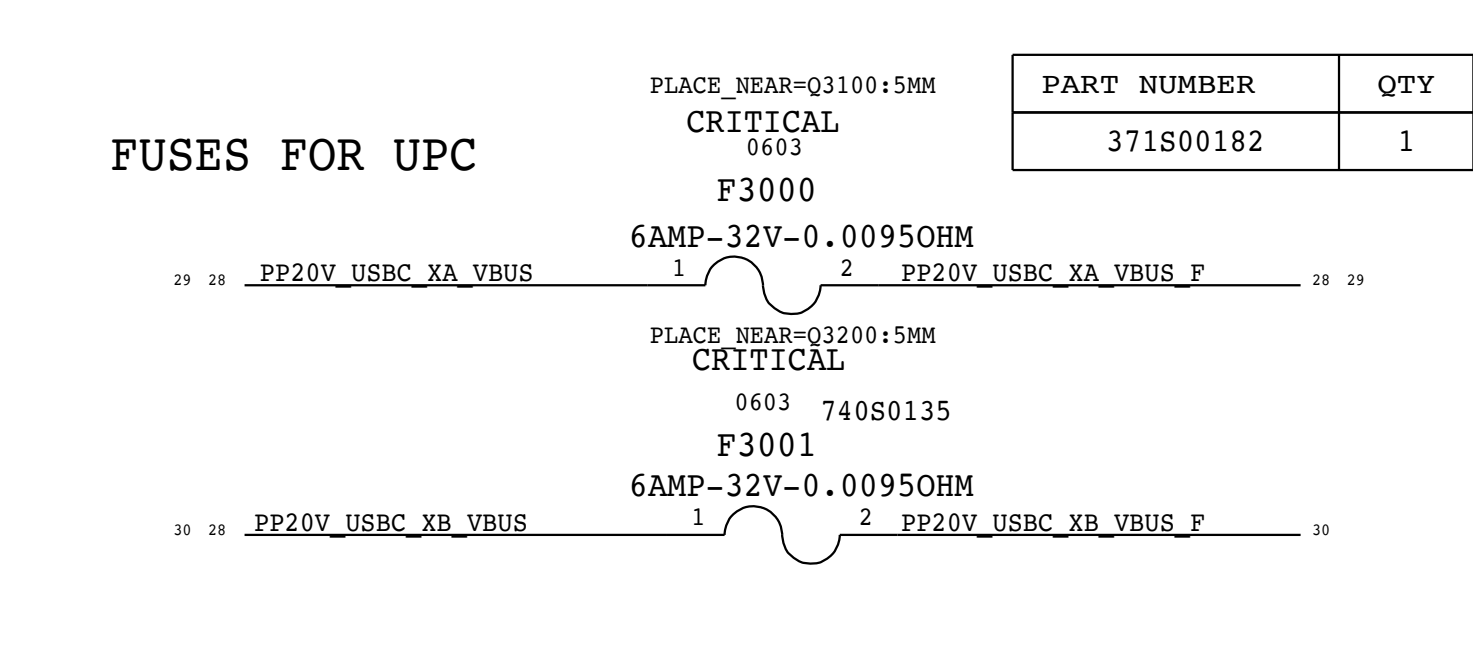
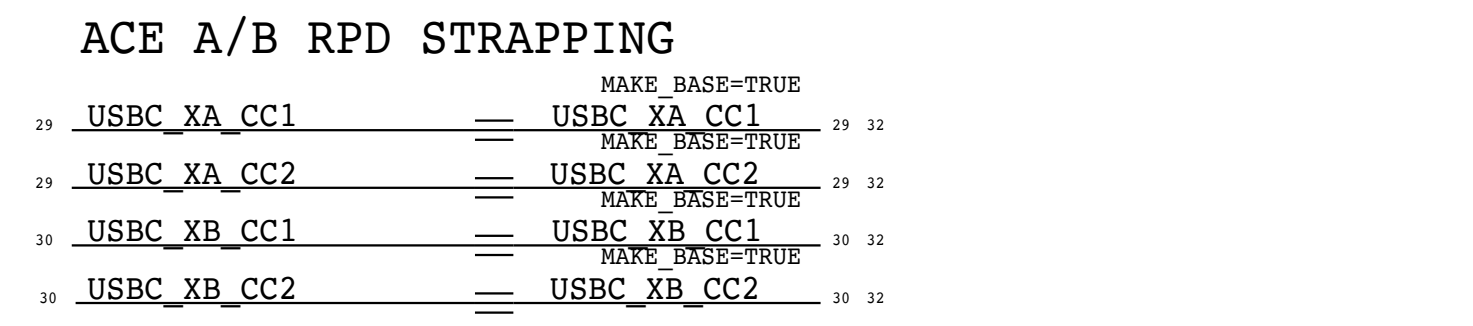
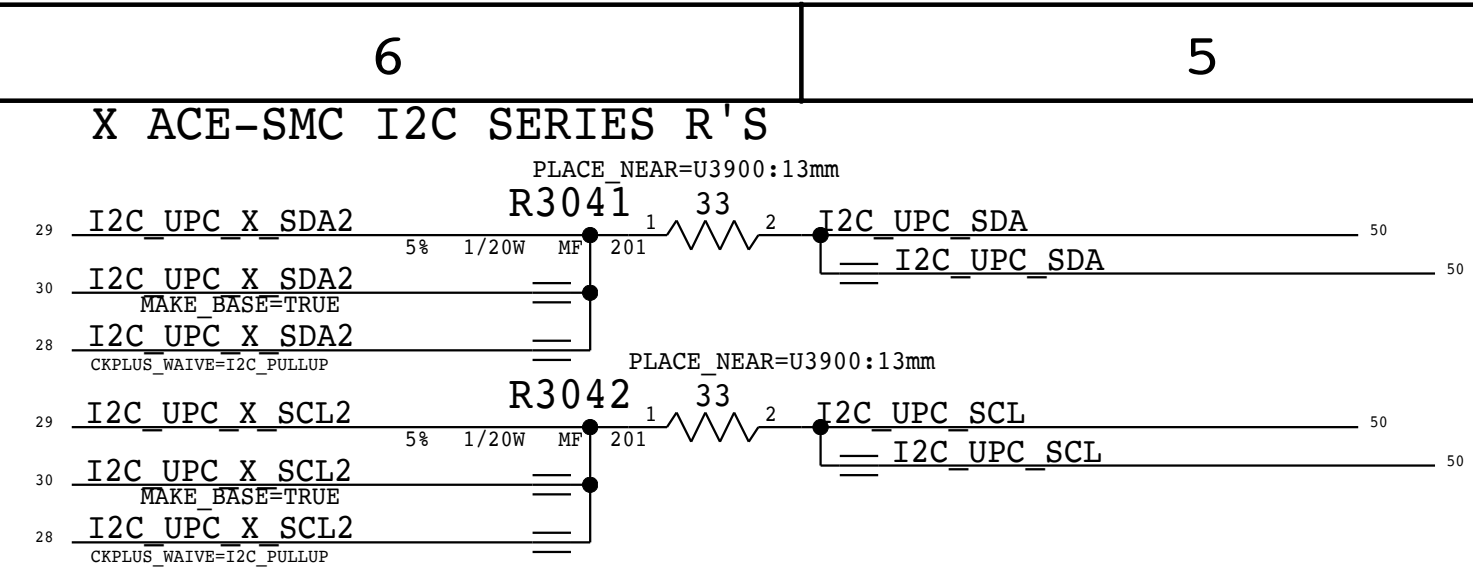
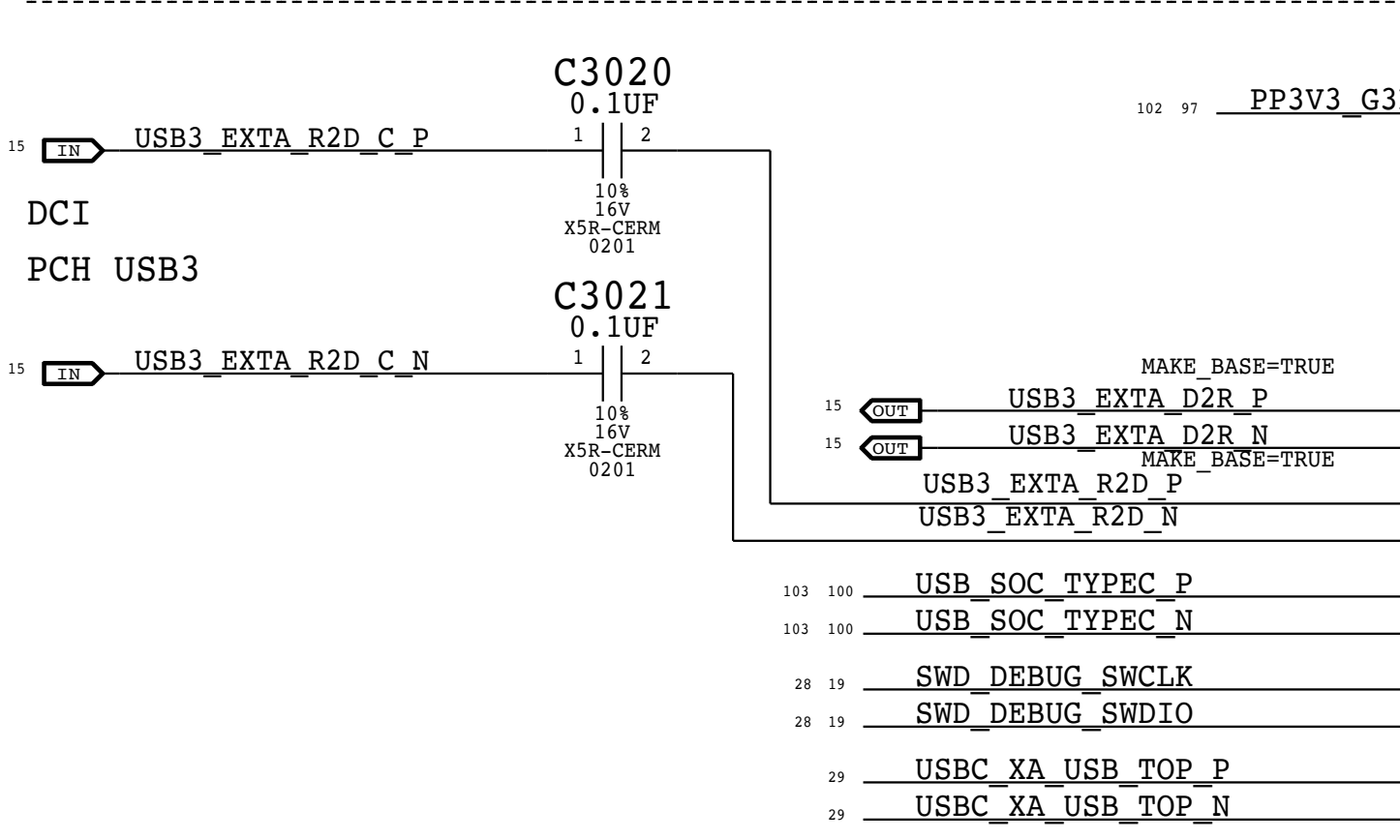
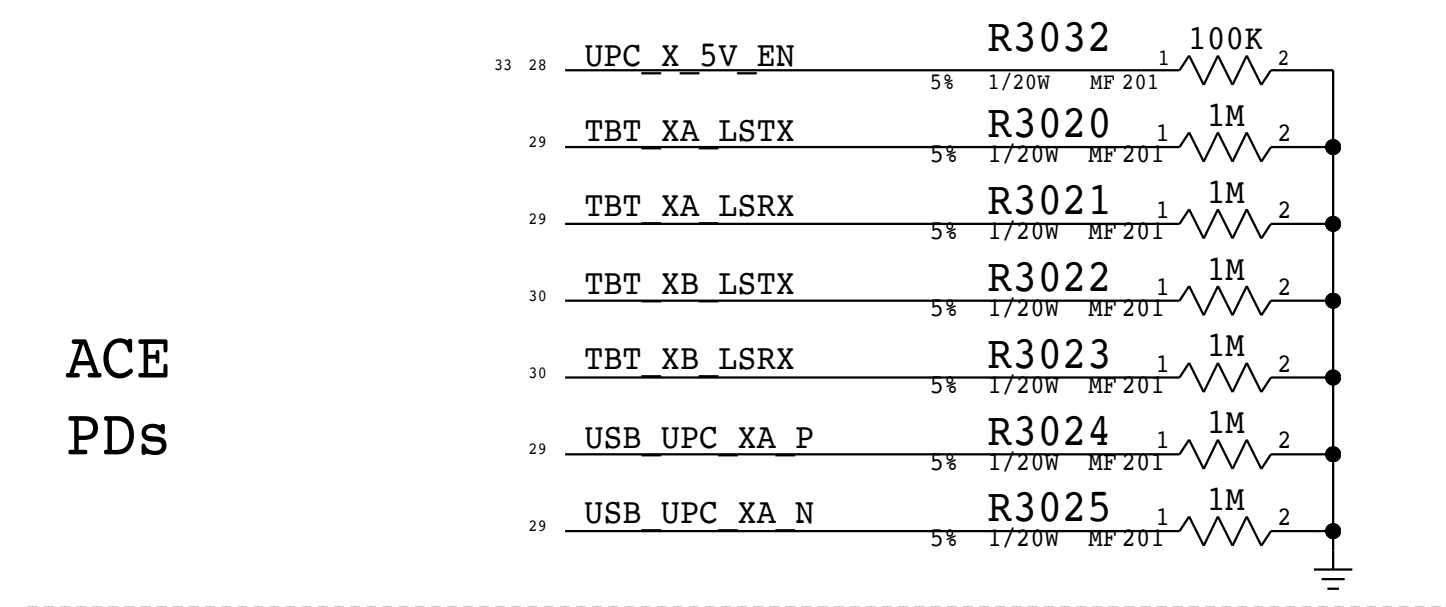
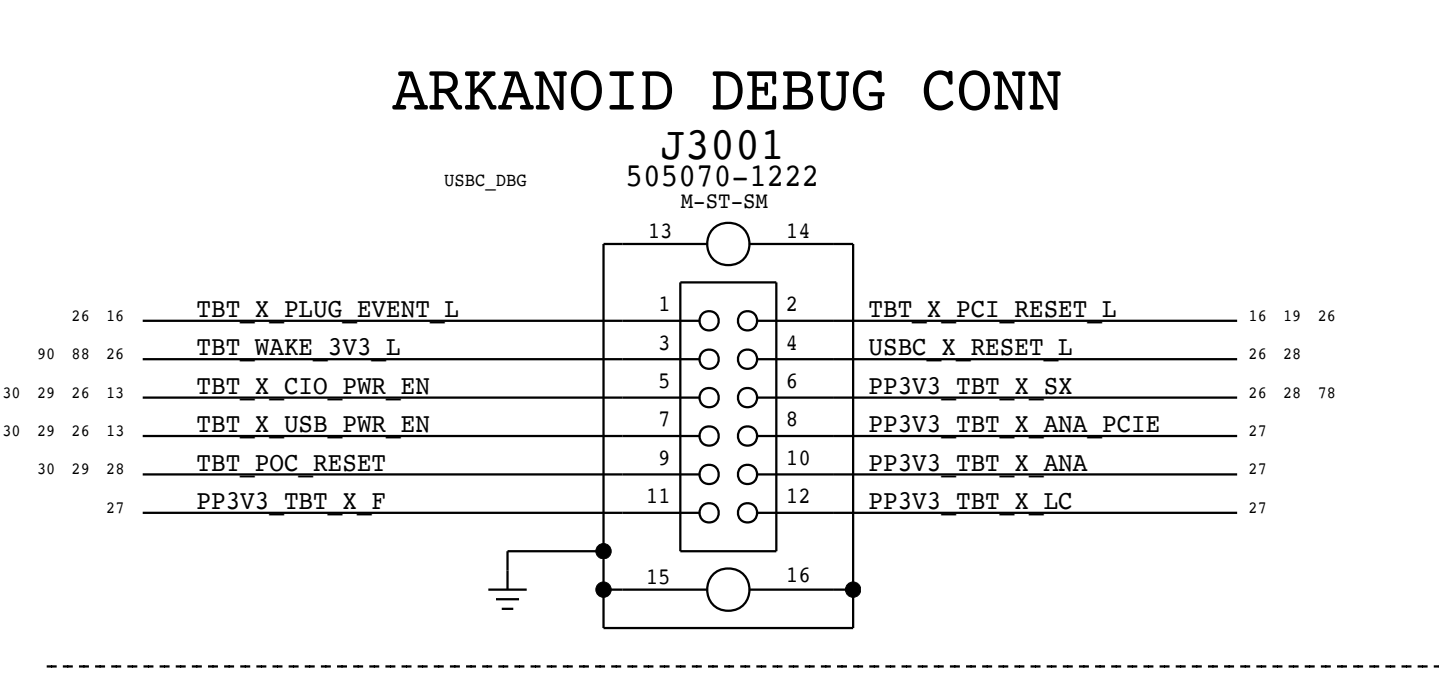
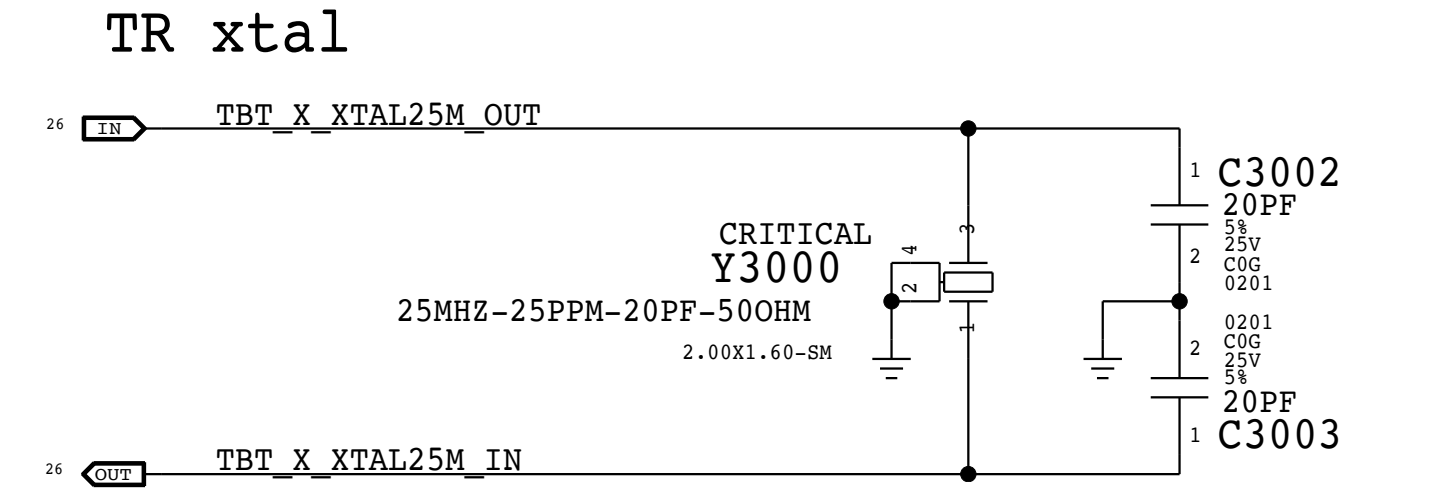
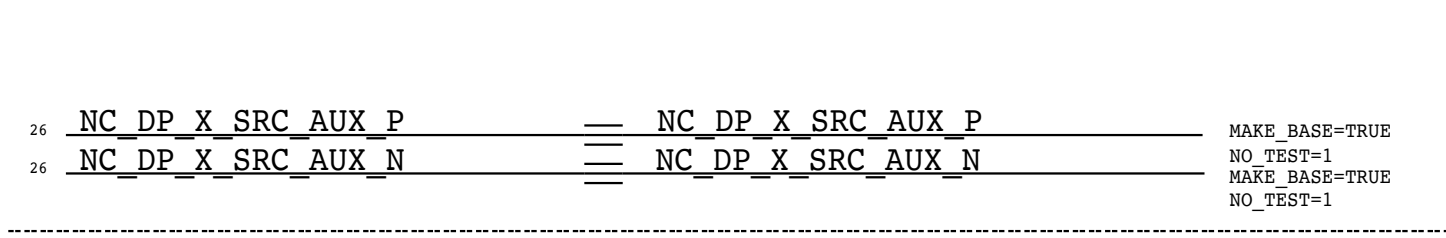
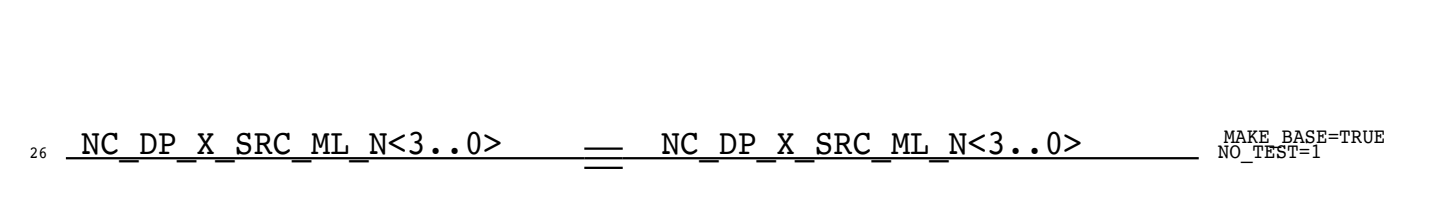
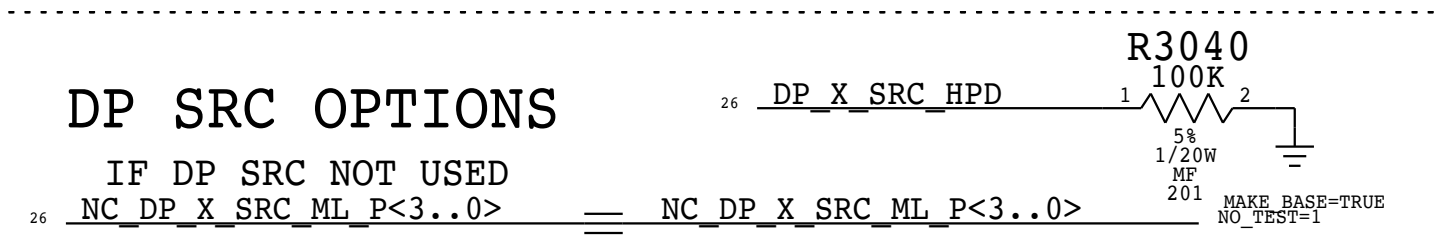
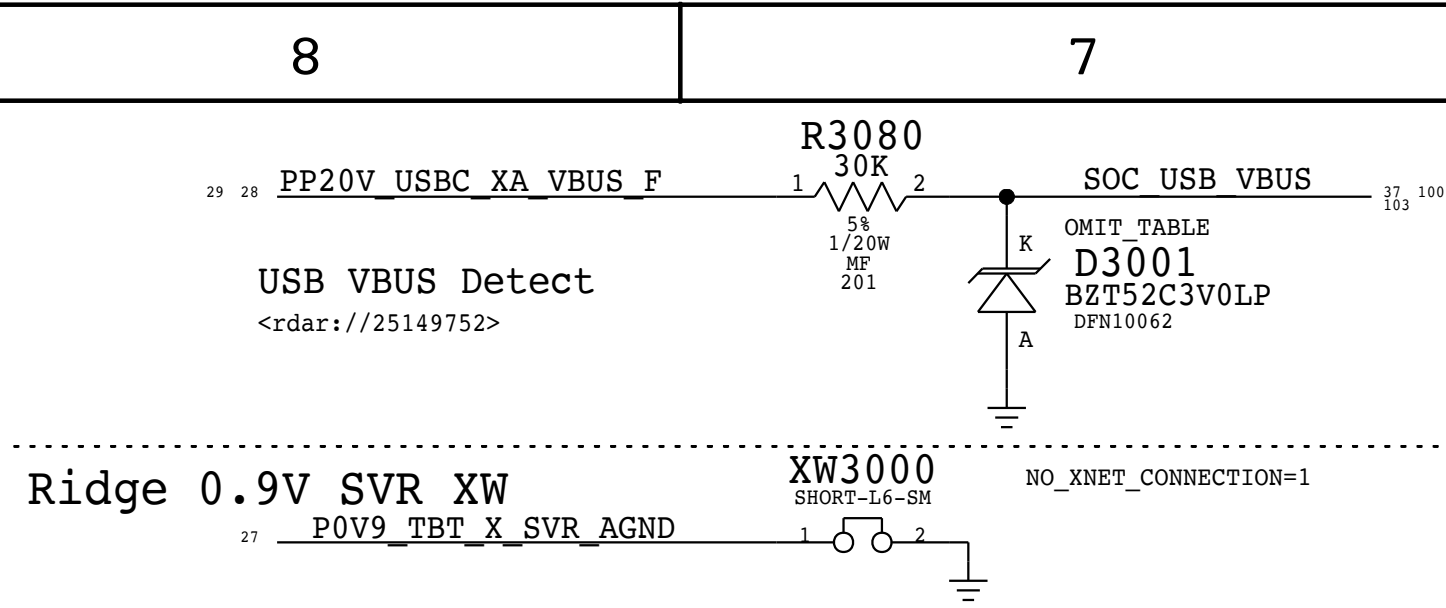


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PAGE TITLE		USB-C HIGH SPEED 1	
		DRAWING NUMBER	051-02166
		REVISION	4.0.0
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		PAGE	28 OF 150
		SHEET	26 OF 108



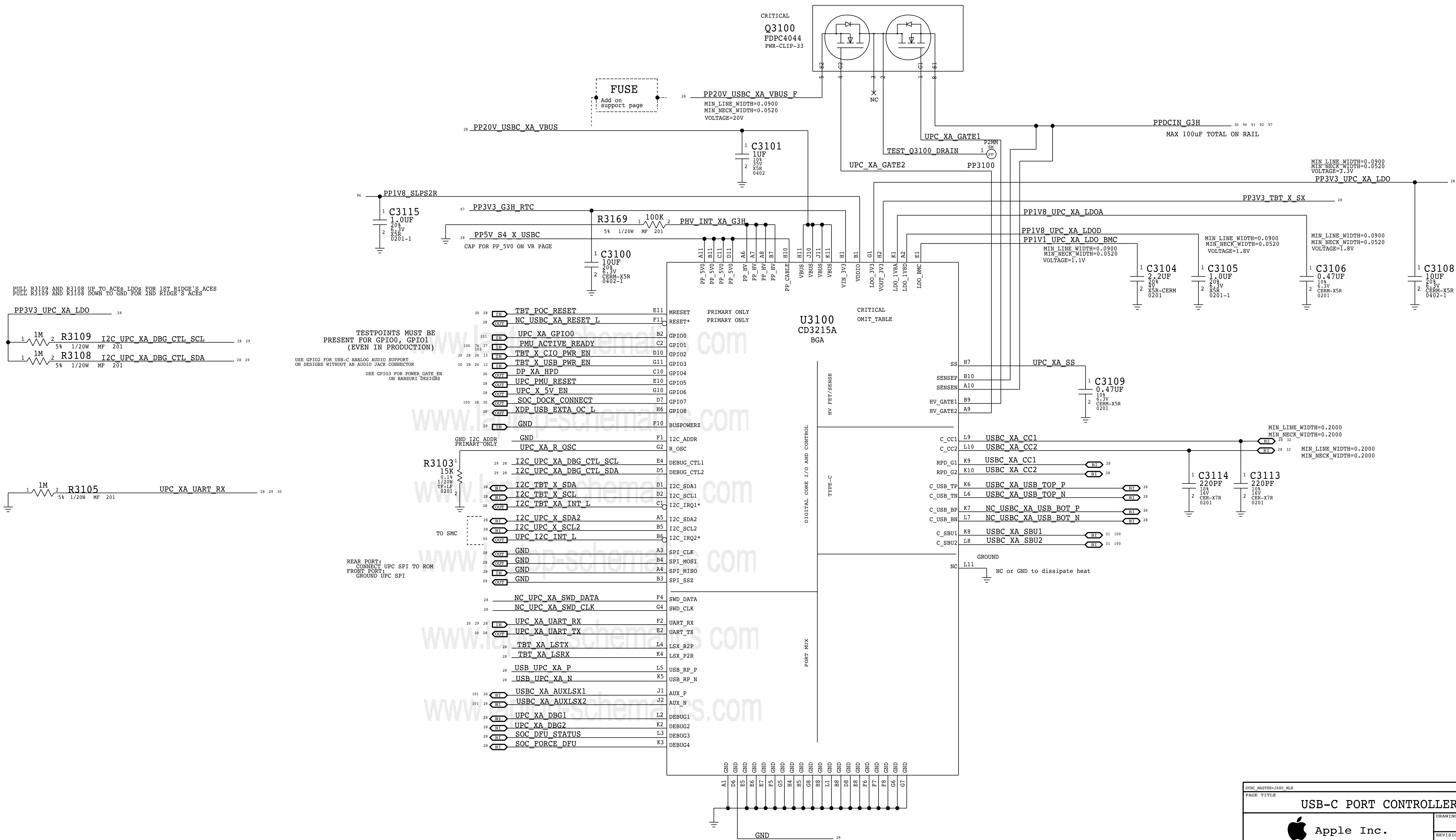








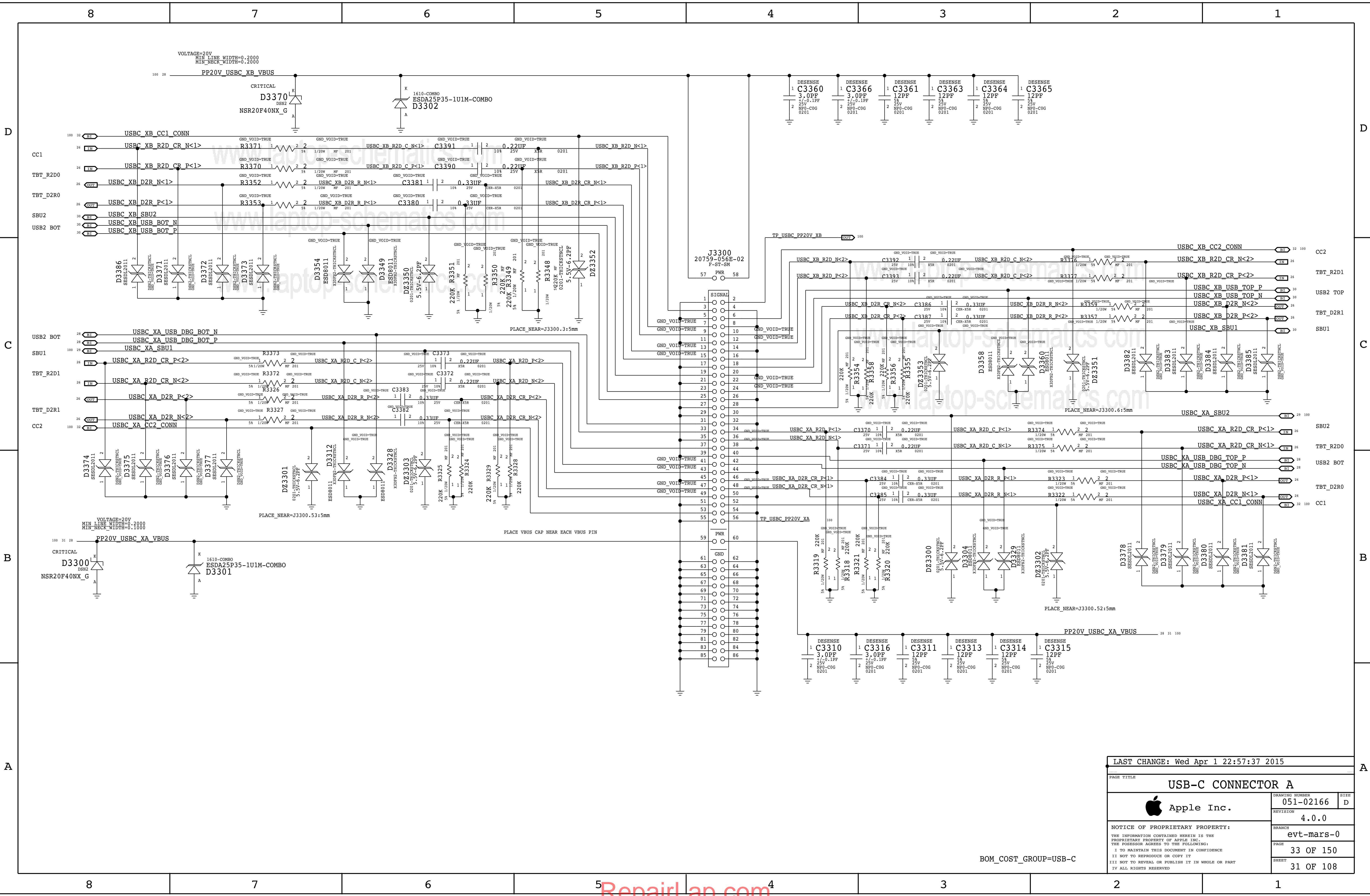
PRIMARY ACE USB-C PORT CONTROLLER (UPC)



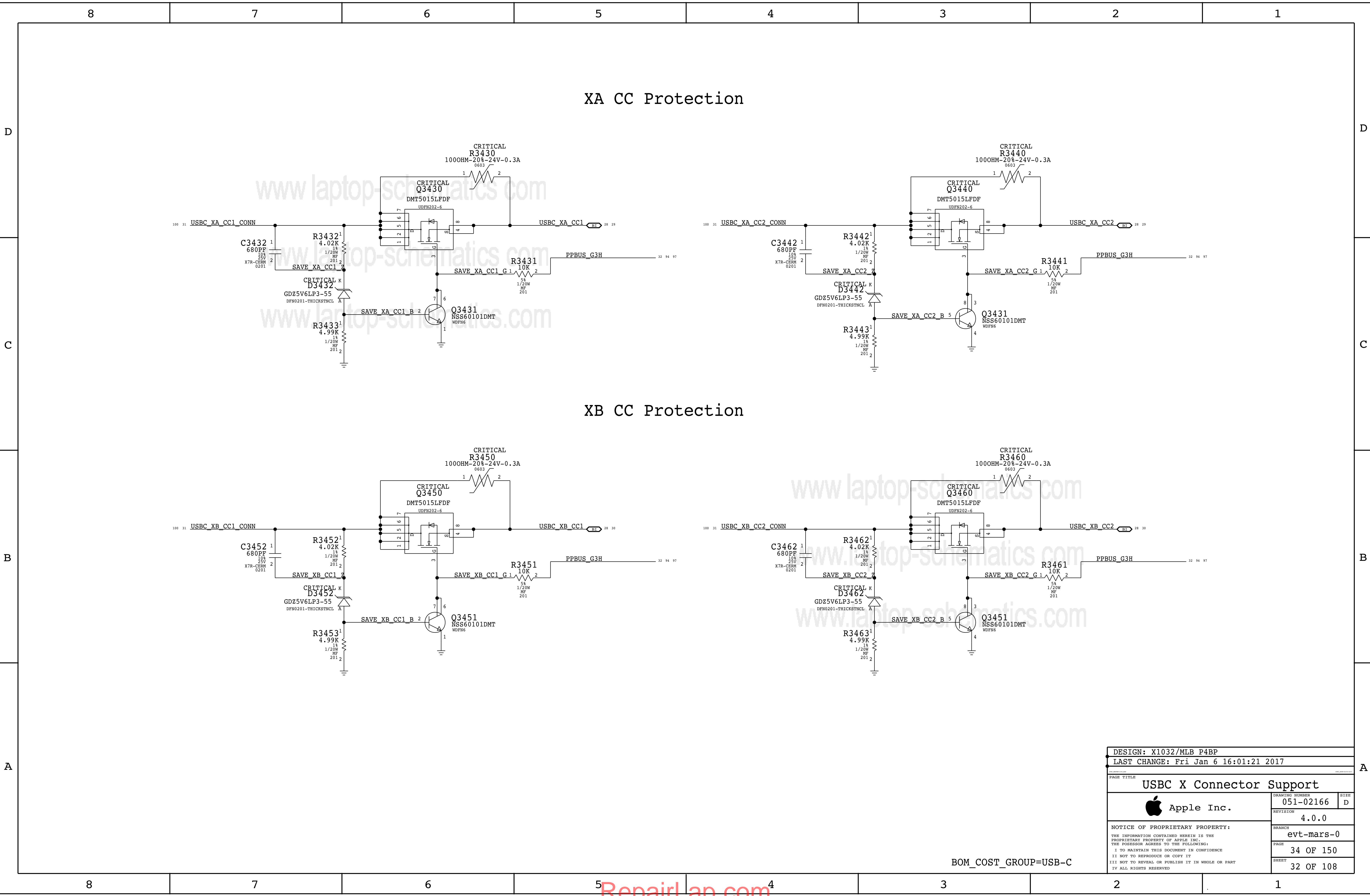













DESIGN: X1032/MLB P4BP		
LAST CHANGE: Fri Jan 6 16:01:21 2017		
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USB C X Connector Support		
 Apple Inc.	DRAWING NUMBER	051-02166
	REVISION	4.0.0
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	PAGE	34 OF 150
	SHEET	32 OF 108

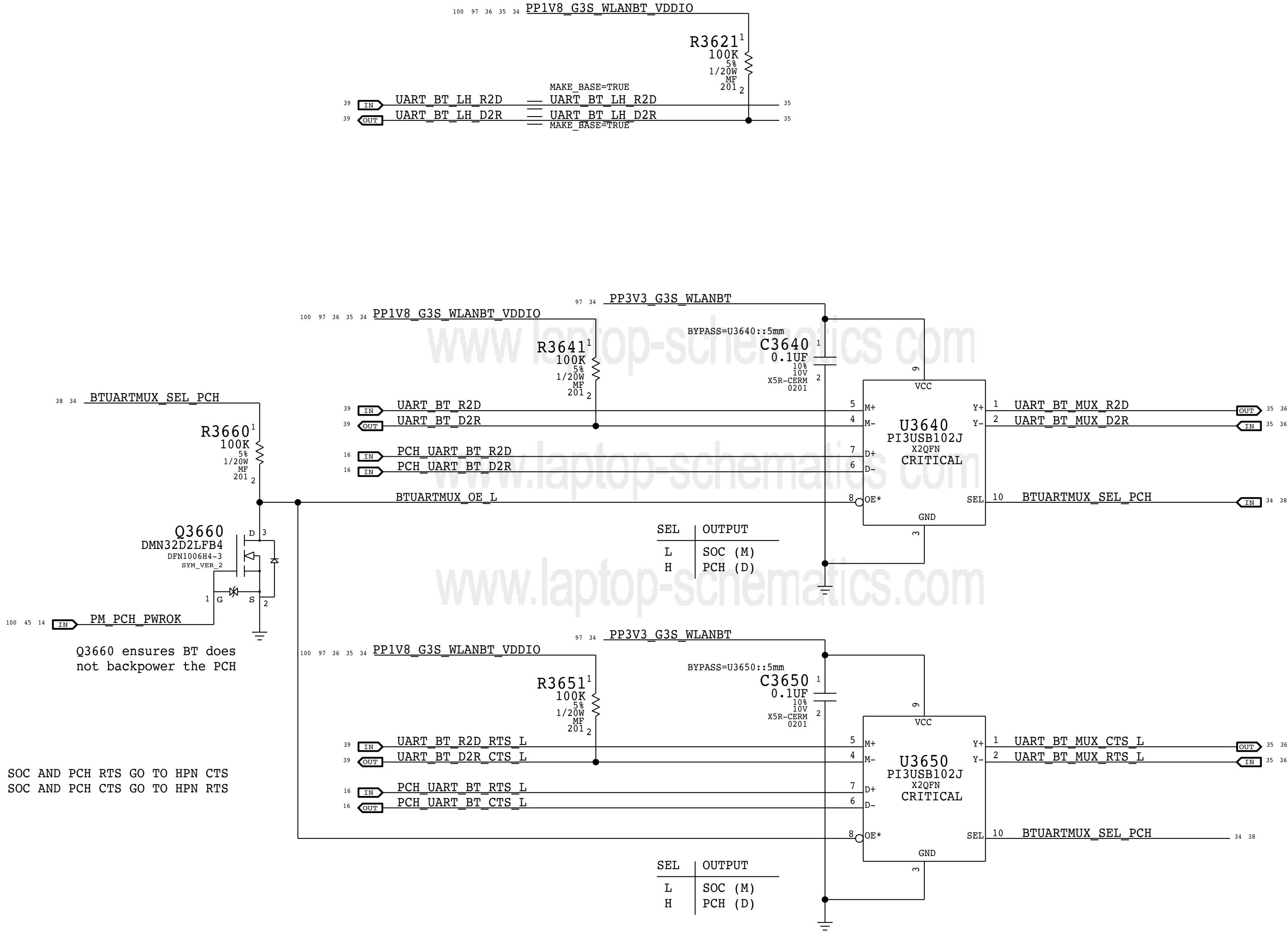
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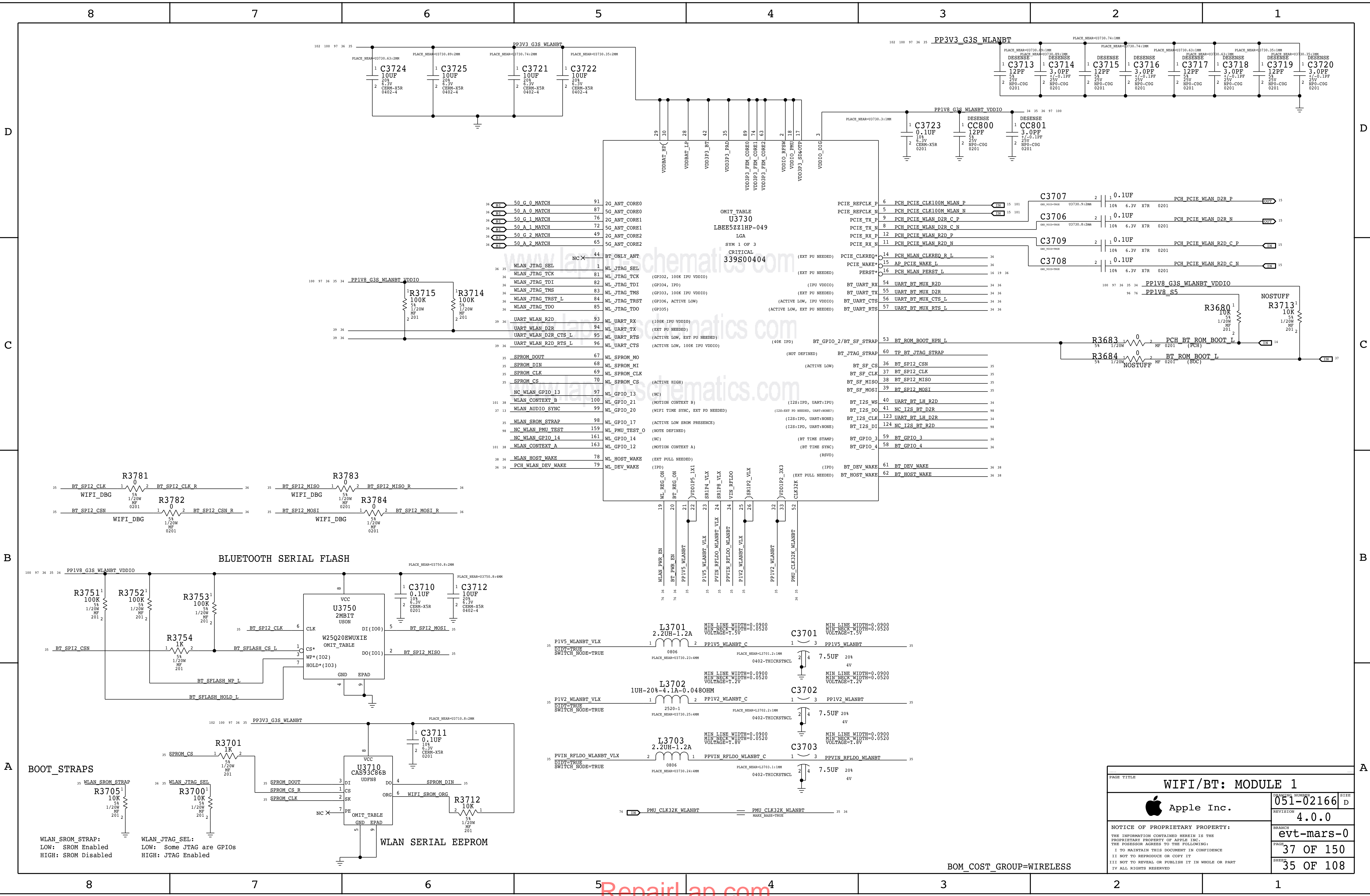
Software	I2S_SEL	UART_SEL	I2S I/F	UART I/F
Gen1 (macOS)	0	1	UART (PCH)	UART (PCH)
Gen1 (Bootcamp)	1	1	I2S (PCH)	UART (PCH)
Gen2	X	0	X	UART (SOC)



SYNC_MASTER=J132 JACK		SYNC_DATE=05/30/2017	
PAGE TITLE			
WIFI/BT: Support			
 Apple Inc.	DRAWING NUMBER		SIZE
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		4.0.0	
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		evt-mars-0	
		PAGE	36 OF 150
		SHEET	34 OF 108

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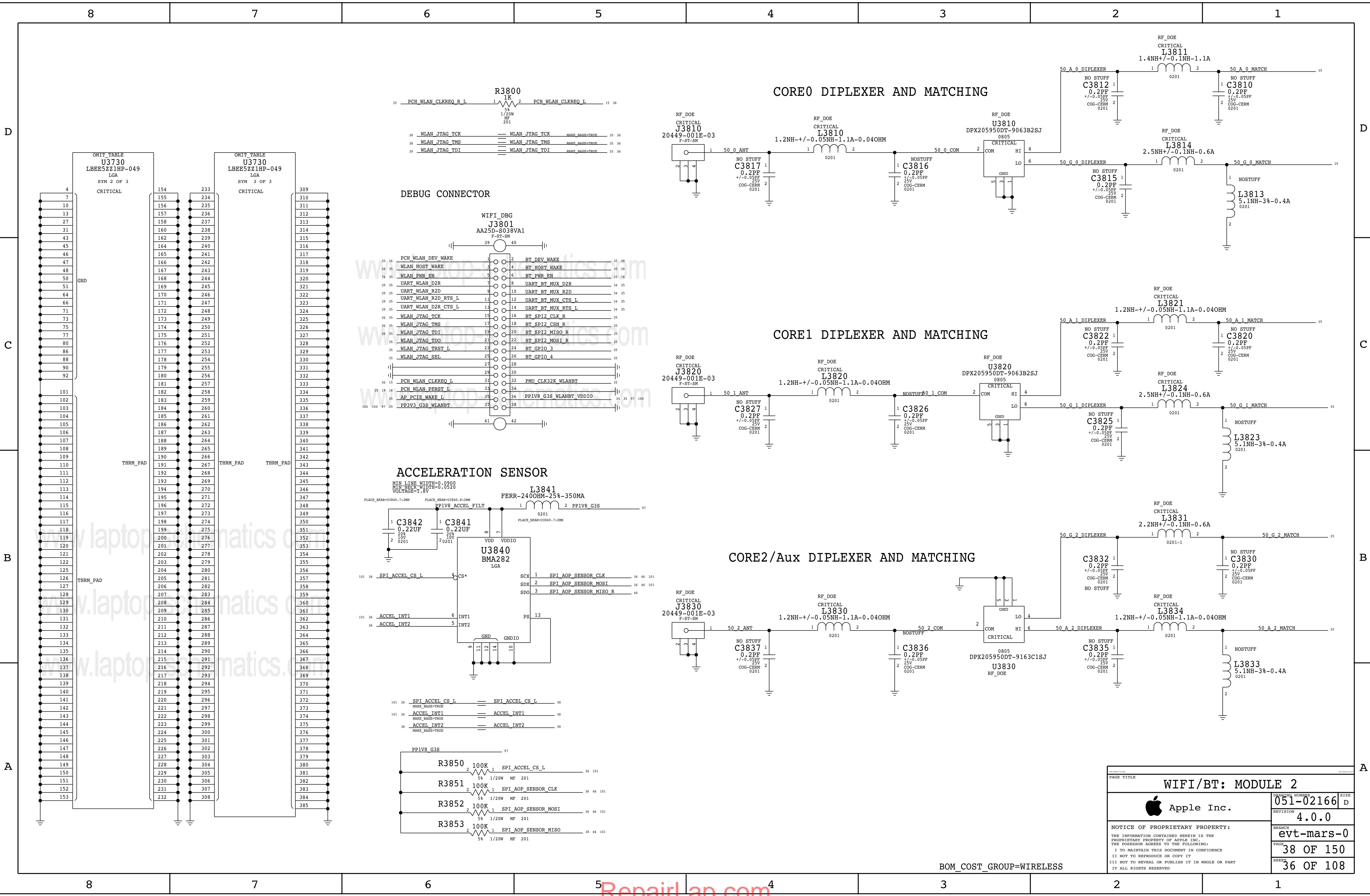





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		SHEET	35 OF 108

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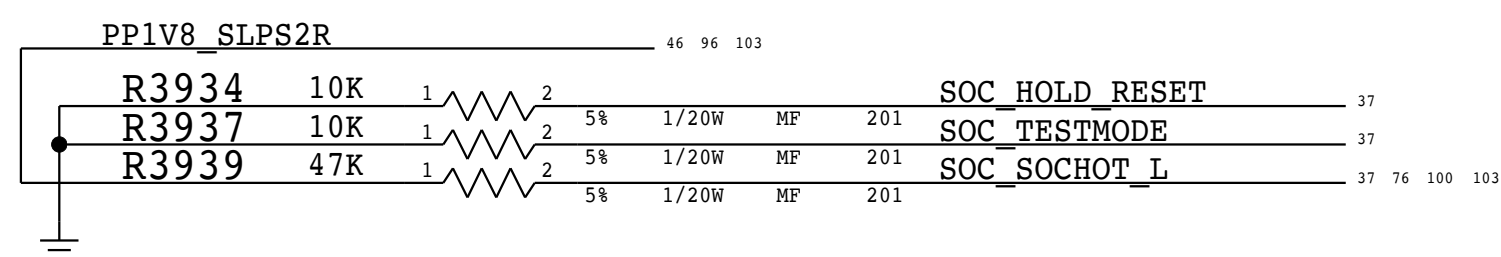
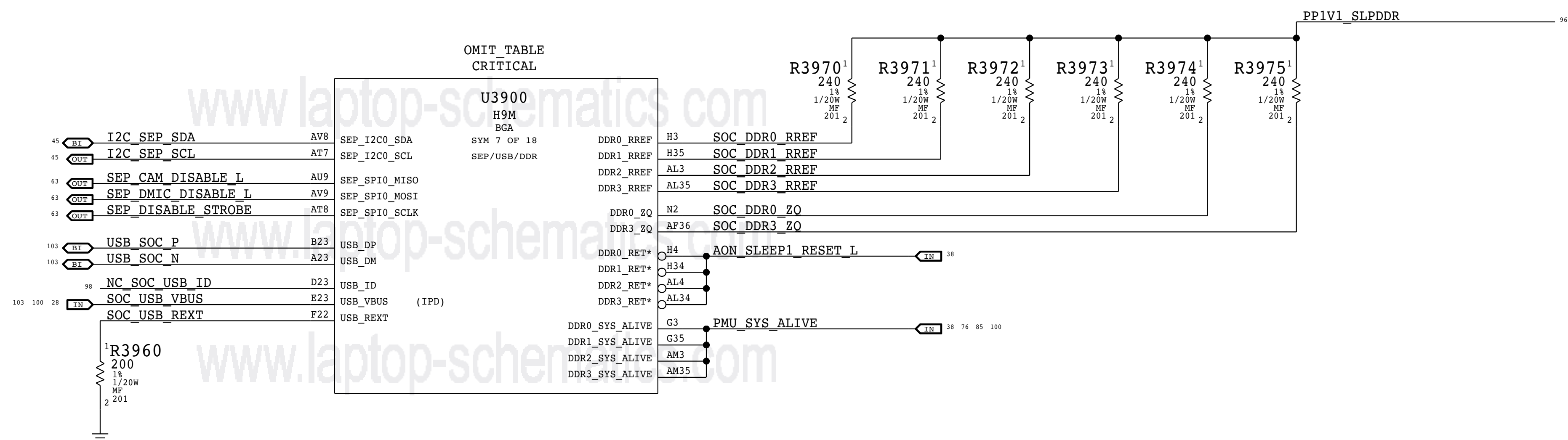
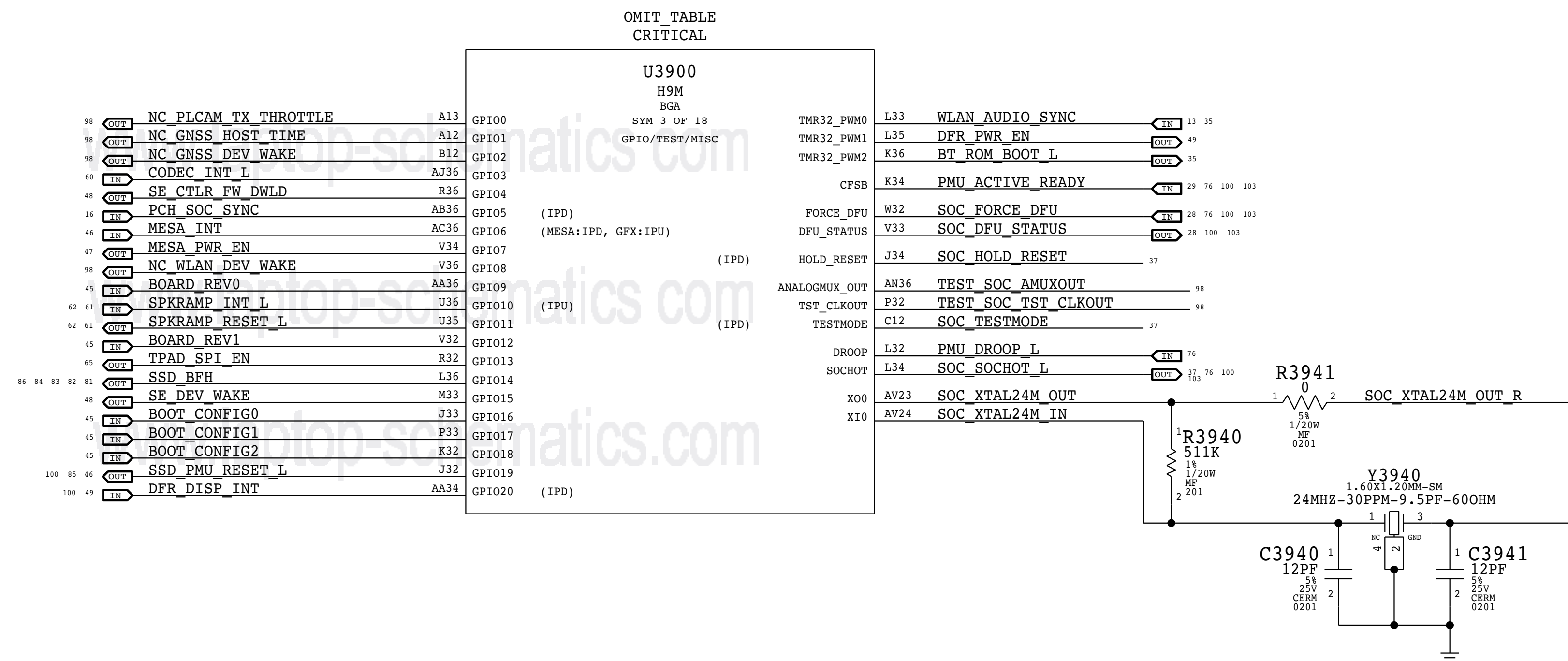





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		SHEET	36 OF 108

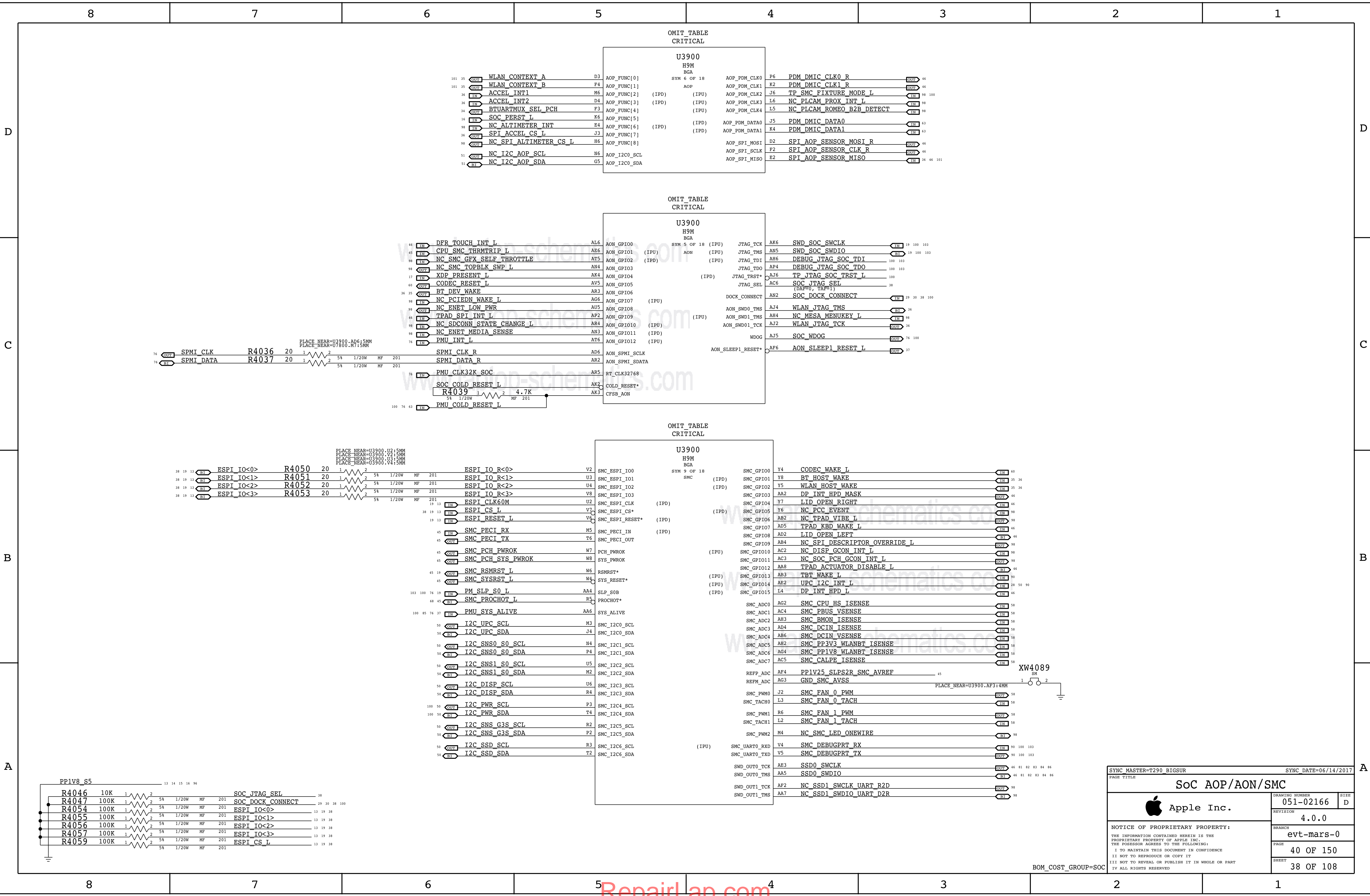



Note 1) IPU represents SW configured state, not HW default



SYNC MASTER=T290 BIGSUR	SYNC DATE=06/14/2017				
PAGE TITLE					
SoC GPIO/SEP/USB/DDR/Test					
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DRAWING NUMBER <b>051-02166</b>	SIZE <b>D</b>				
REVISION <b>4.0.0</b>					
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BRANCH <b>evt-mars-0</b>	PAGE <b>39 OF 150</b>				
SHEET <b>37 OF 108</b>					

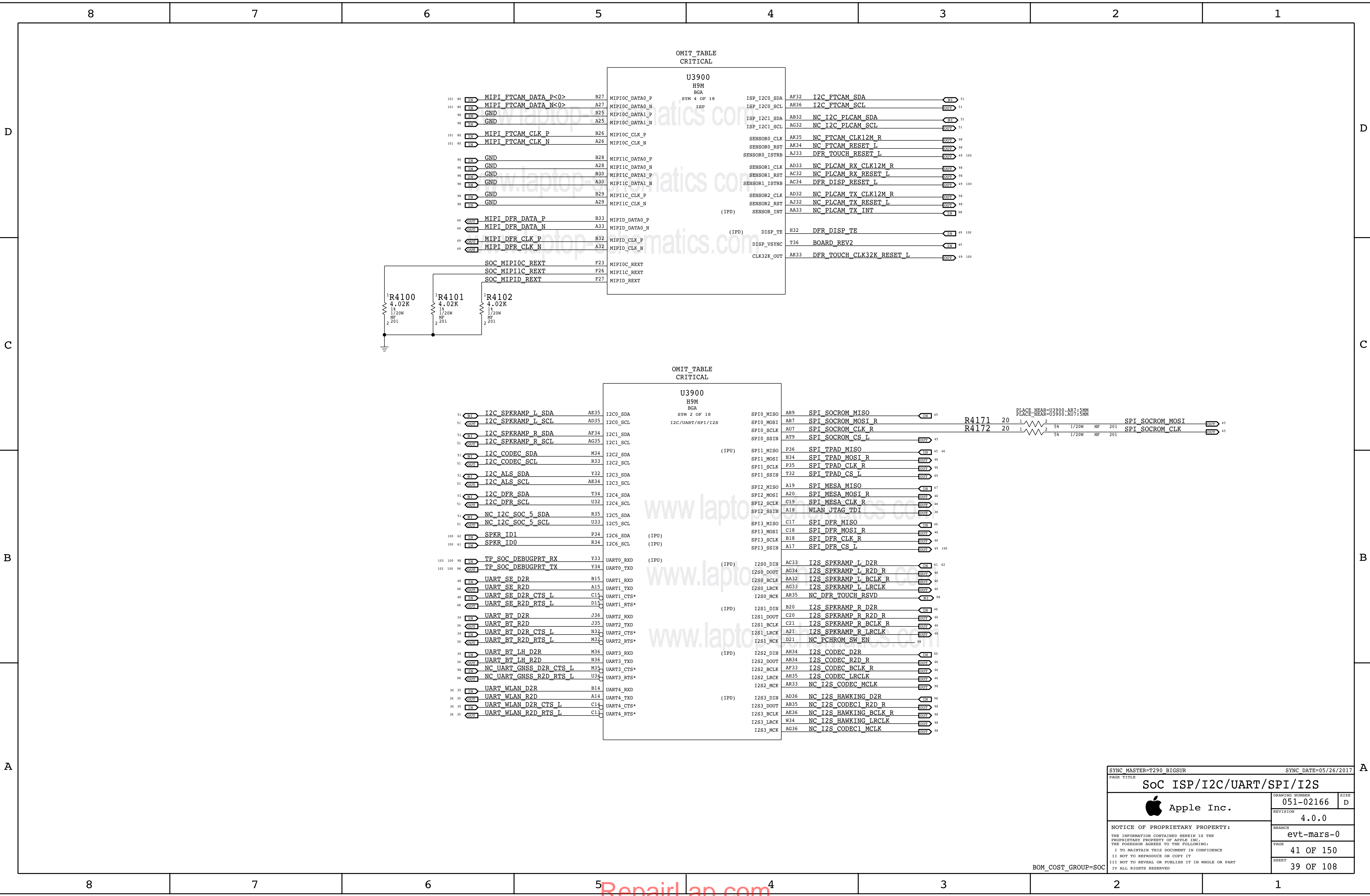





SYNC MASTER=T290 BIGSUR		SYNC DATE=06/14/2017	
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 Apple Inc.	DRAWING NUMBER		SIZE
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	PAGE 40 OF 150		
	SHEET 38 OF 108		

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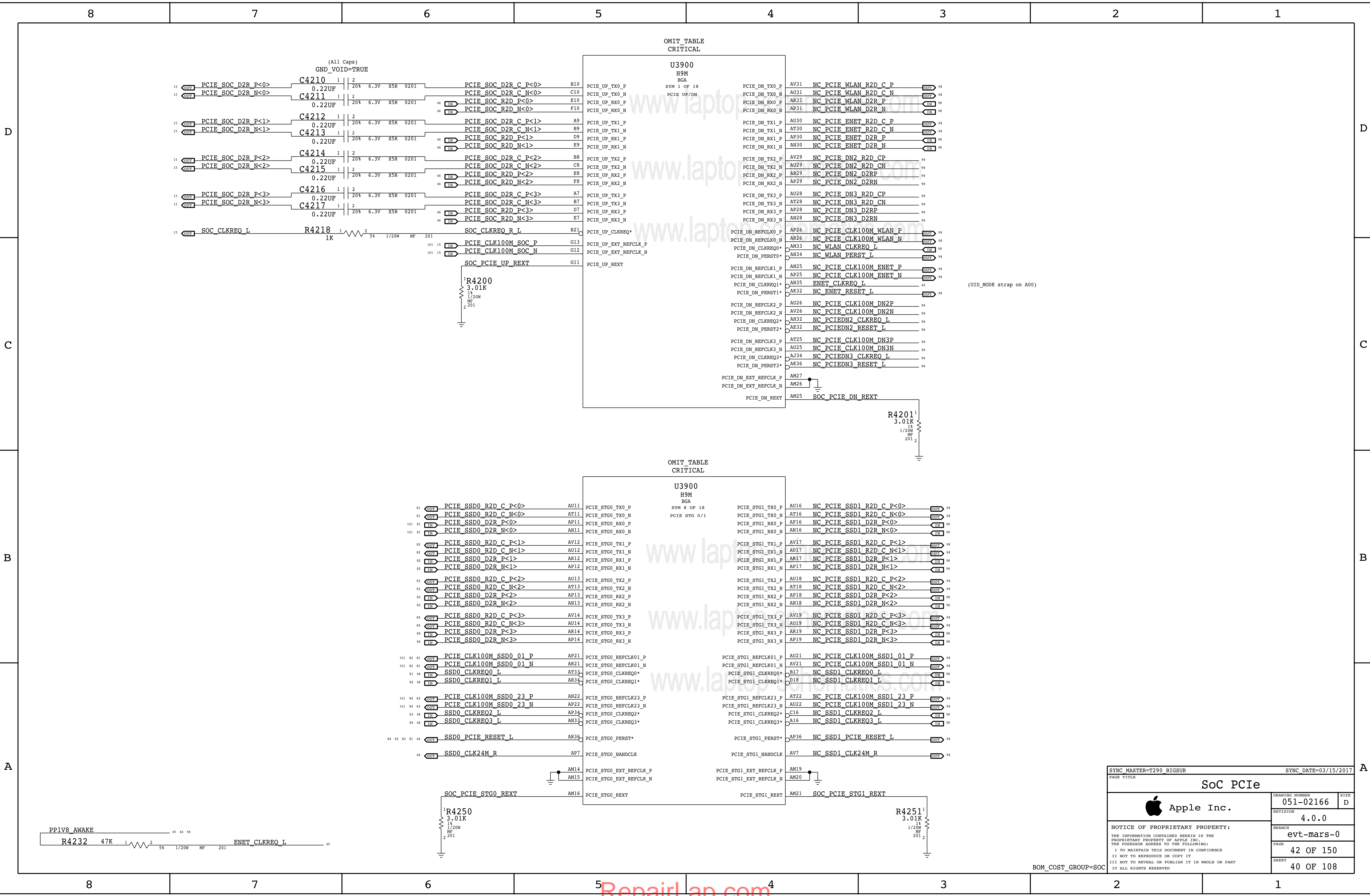





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PAGE TITLE			
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 Apple Inc.	DRAWING NUMBER	051-02166	SIZE
	REVISION	4.0.0	D
	BRANCH	evt-mars-0	
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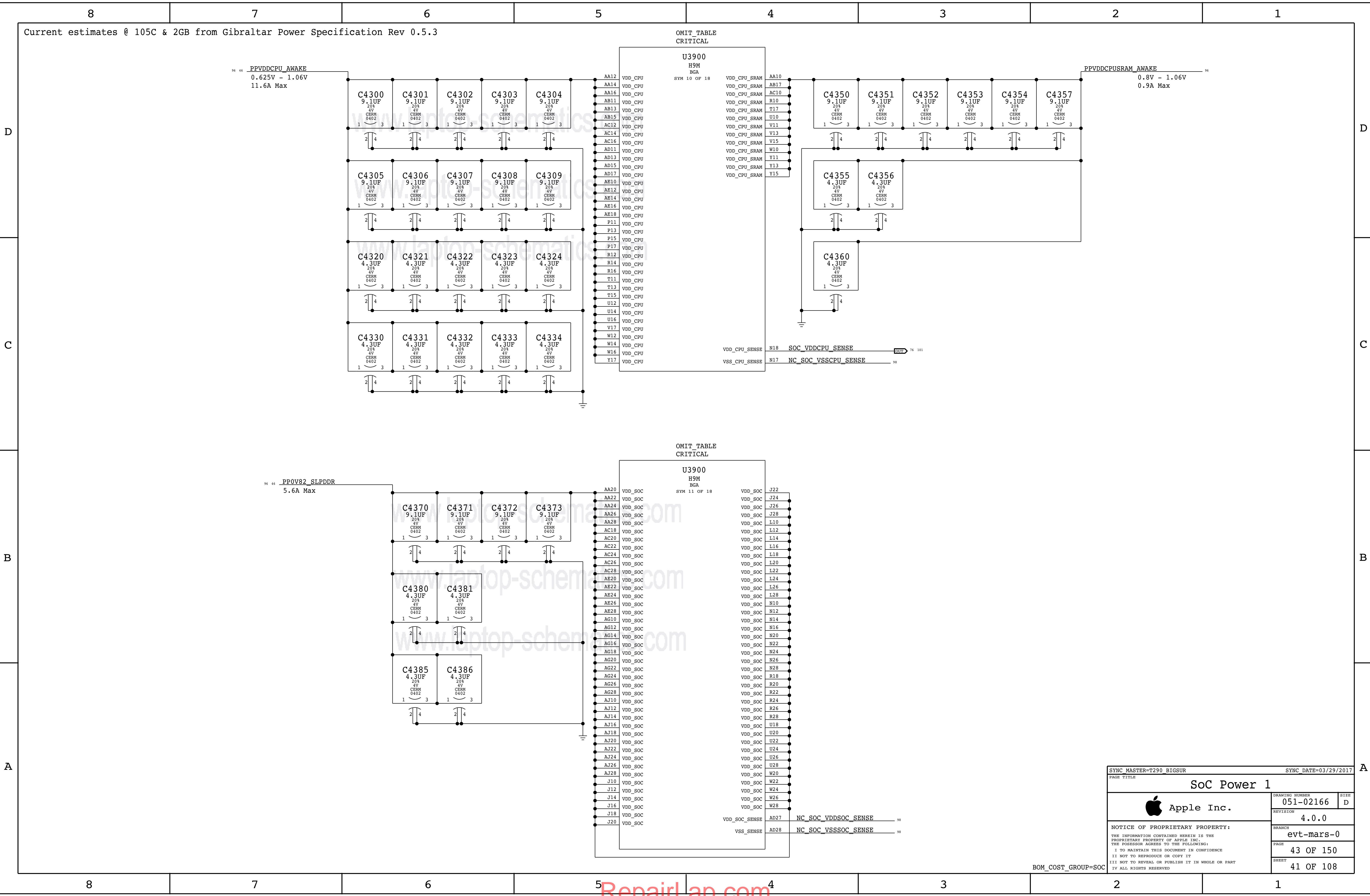




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			SHEET		40 OF 108	

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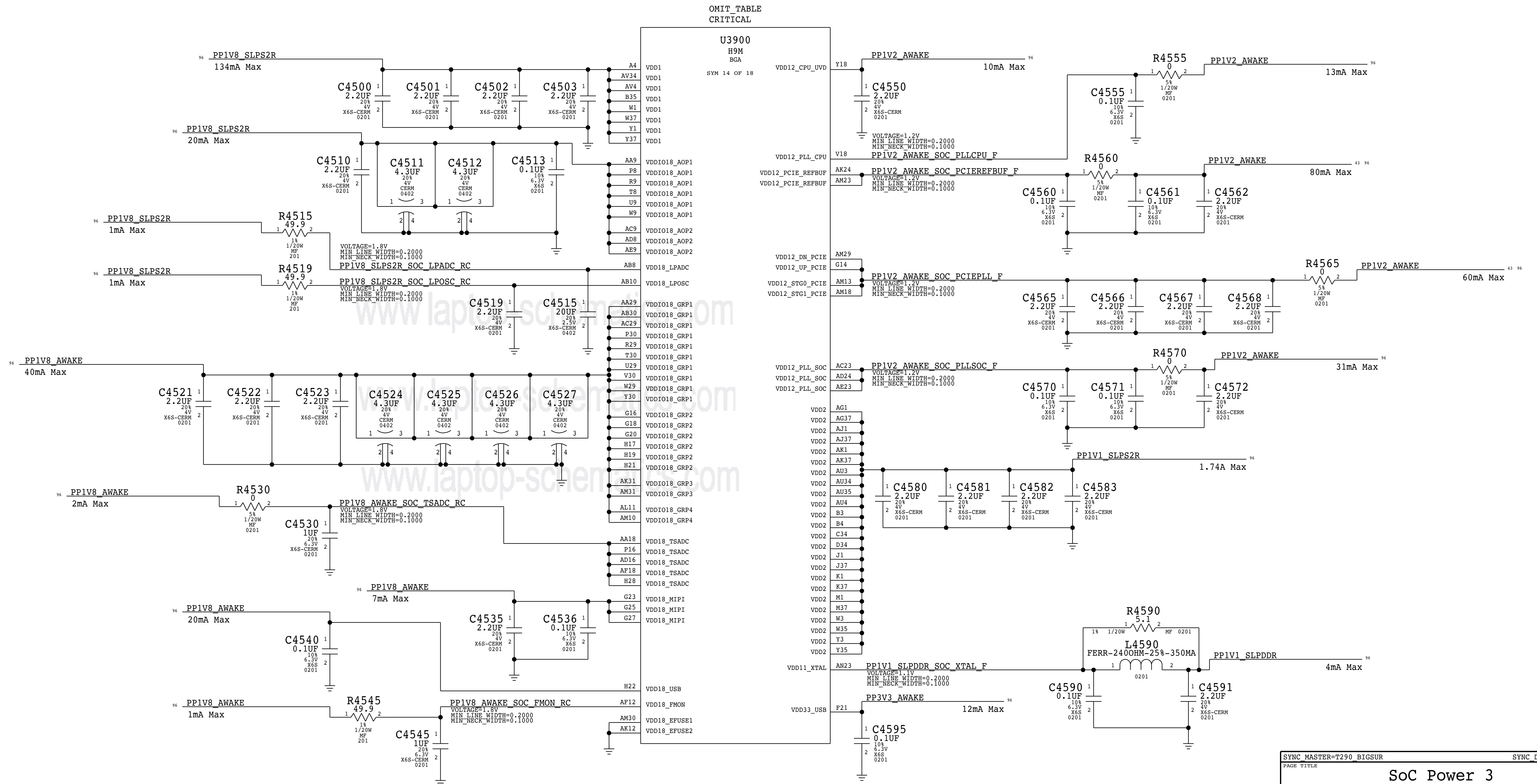


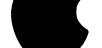
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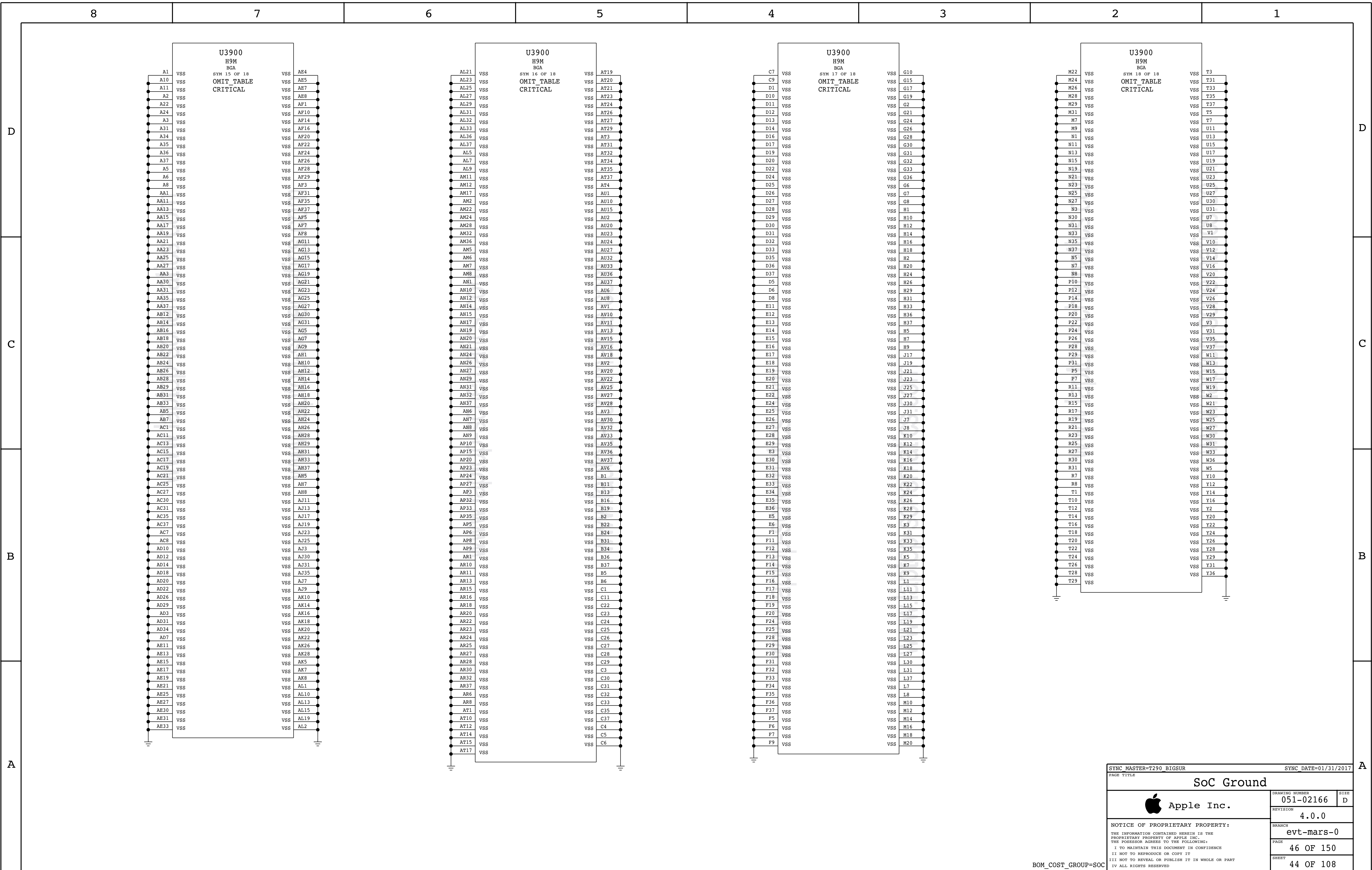


Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3

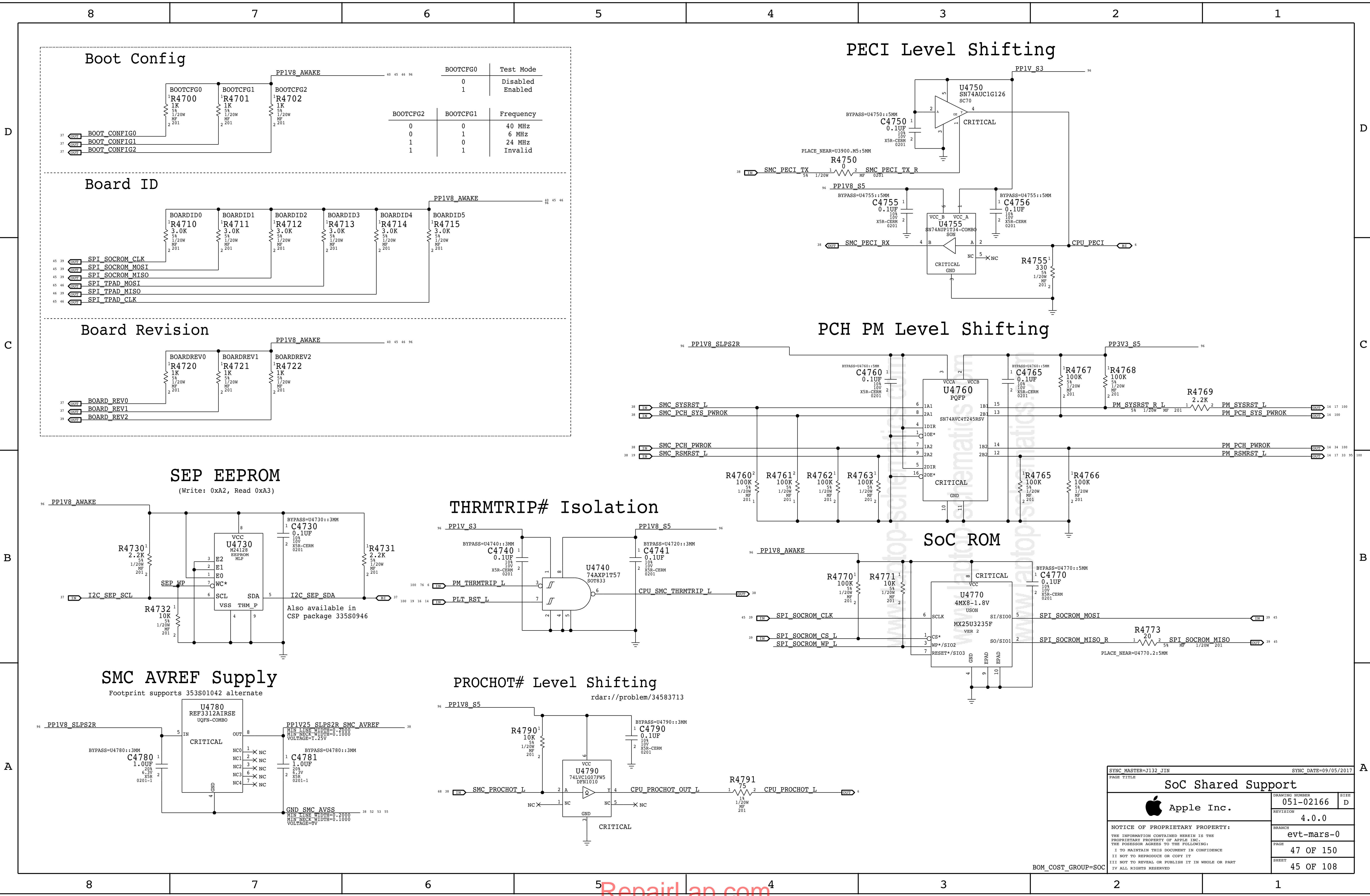


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			BRANCH evt-mars-0
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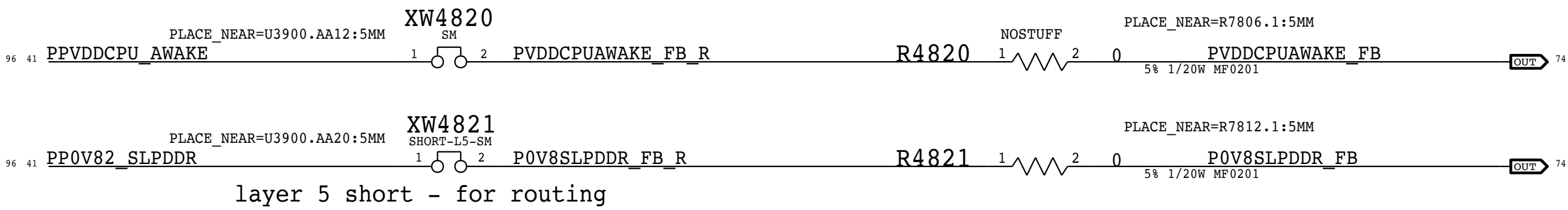




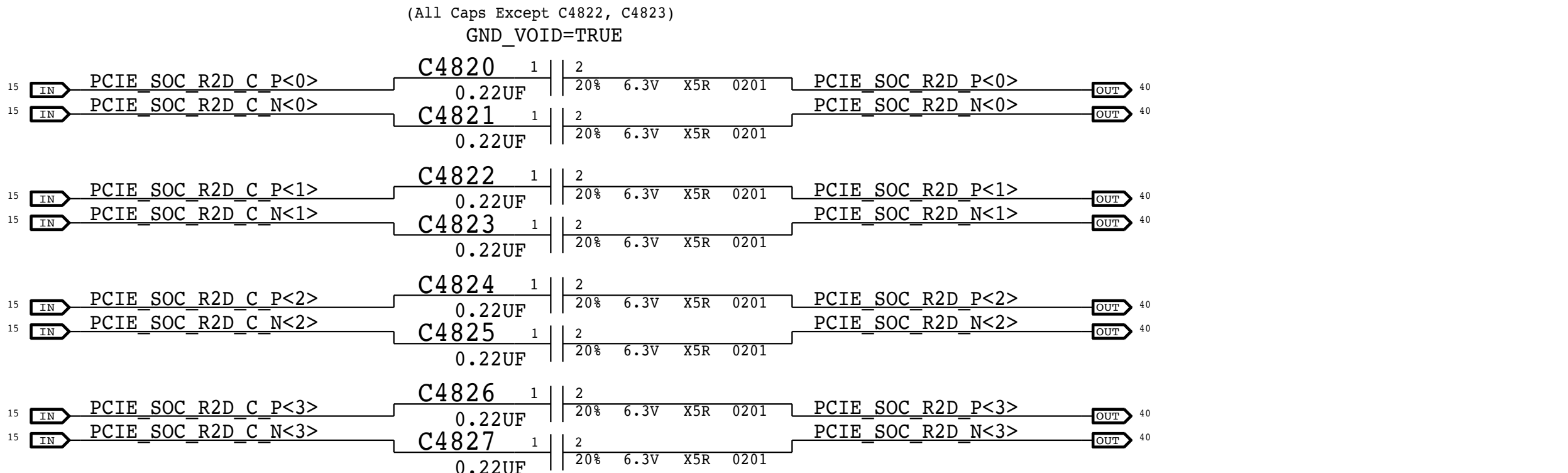




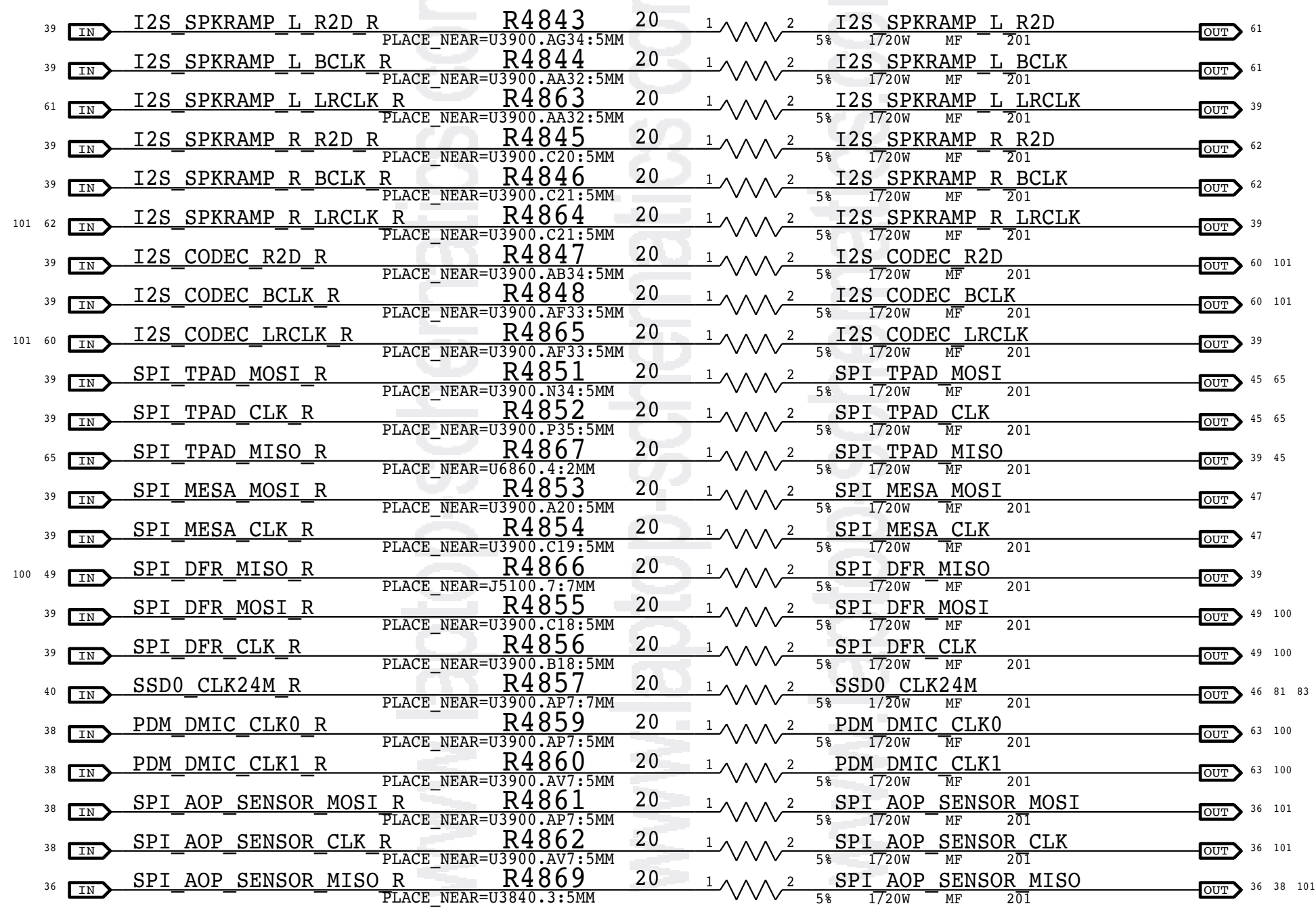
Alternate Feedback Sense



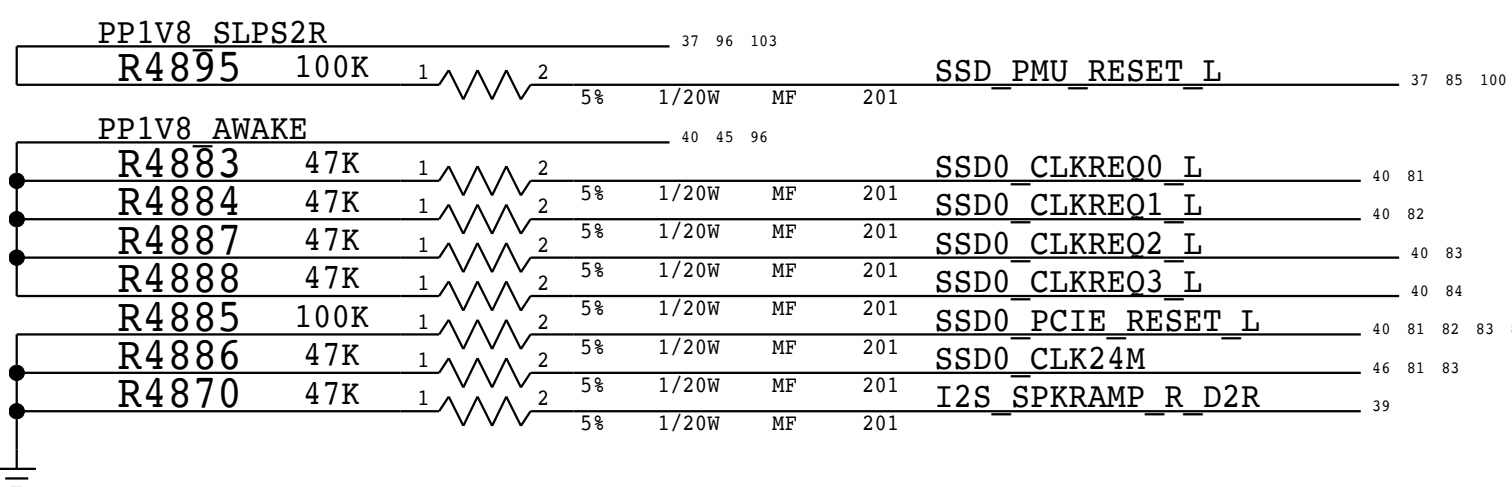
PCIe Up R2D AC Caps



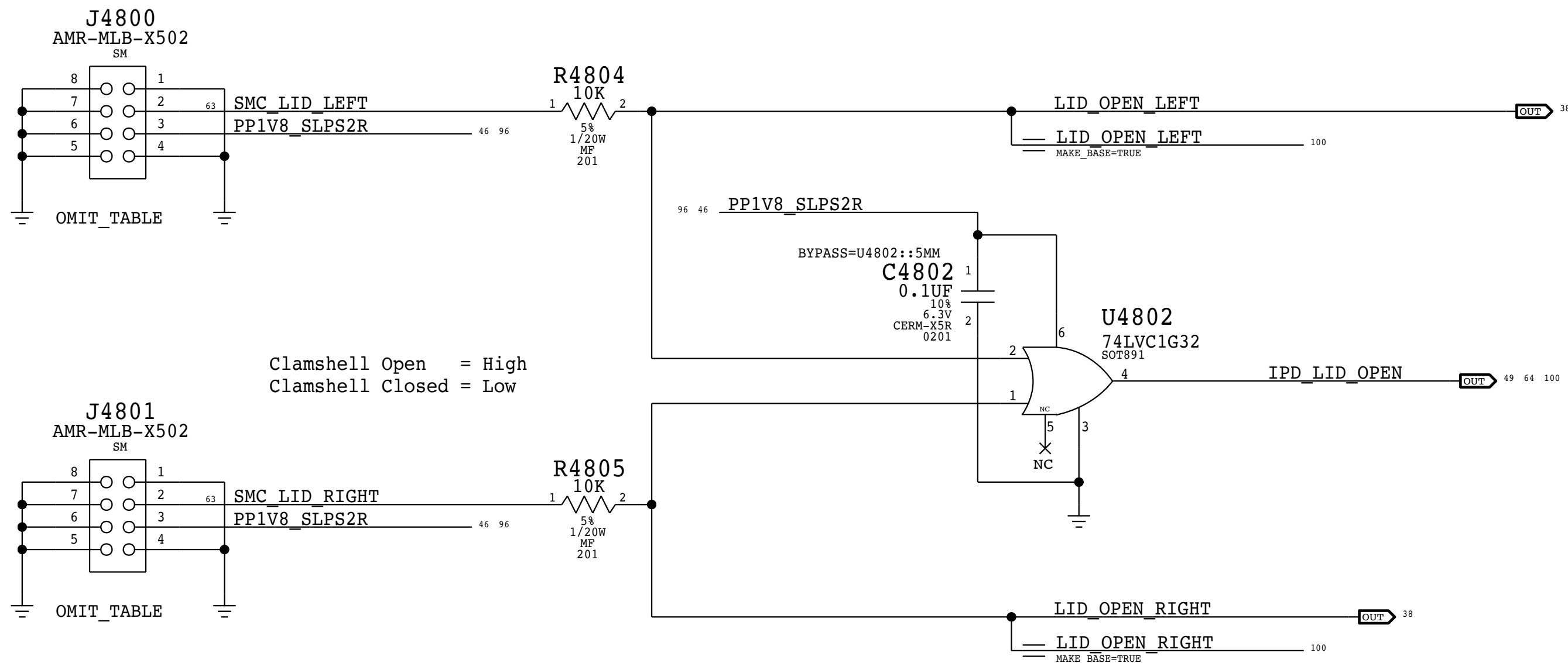
GPIO Source Termination



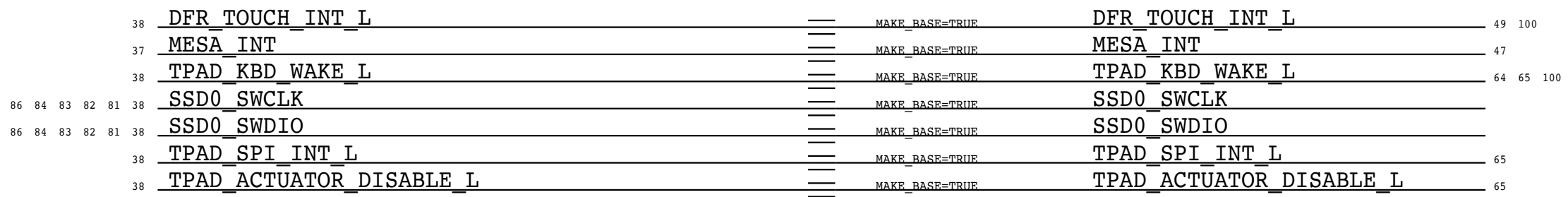
Project Specific Pull-Ups



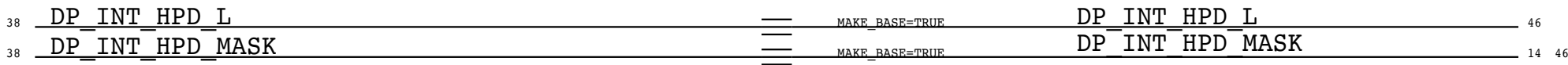
Lid Detect Sensors



SOC Overloaded GPIOs

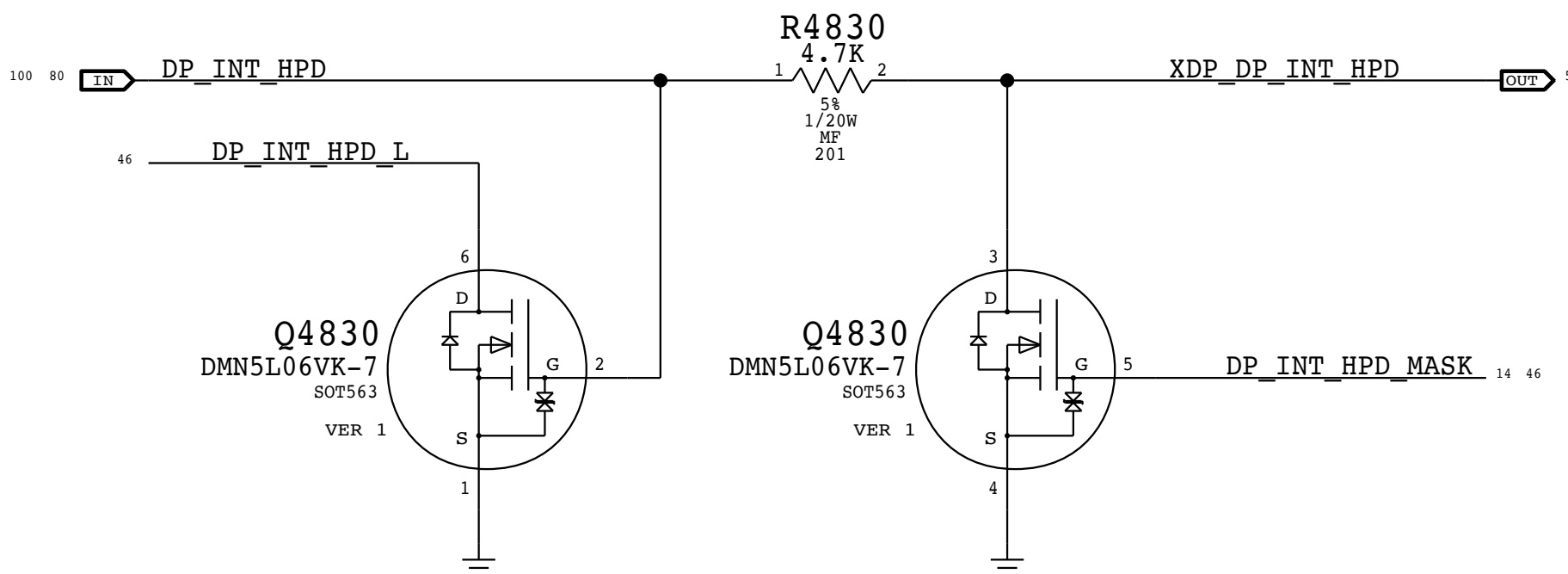


Platform-Specific GPIOs



HPD KSF Comp Circuit


R4830 needs to be characterized and adjusted if necessary



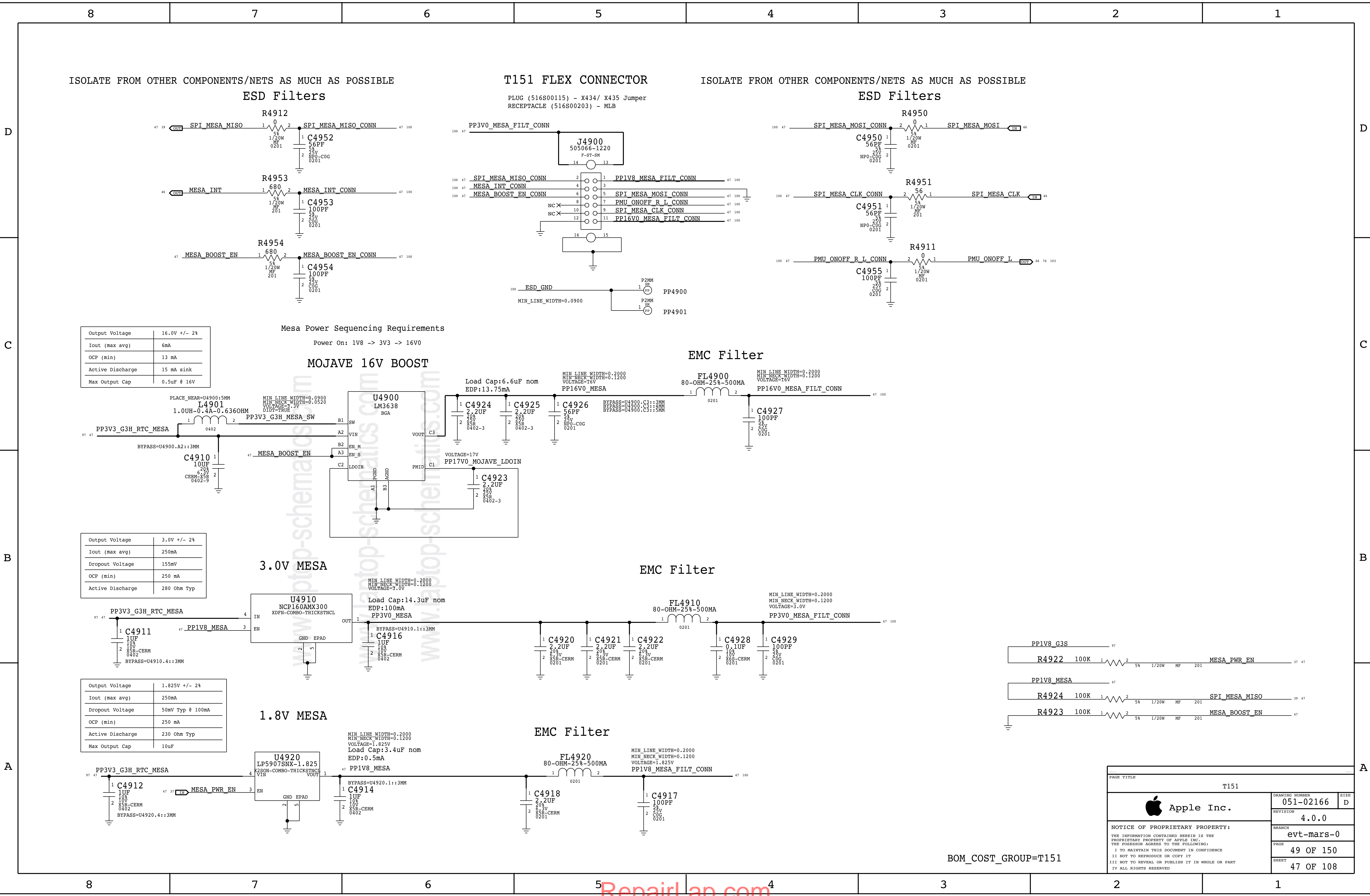
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BOARD_REV:100	BOARDREV2
BOARD_REV:011	BOARDREV1,BOARDREV0

BOM GROUP	BOM OPTIONS
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BOM\_COST\_GROUP=SOC

SYNC_MASTER=J112 JACK		SYNC_DATE=11/03/2017	
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		PAGE	48 OF 150
		SHEET	46 OF 108



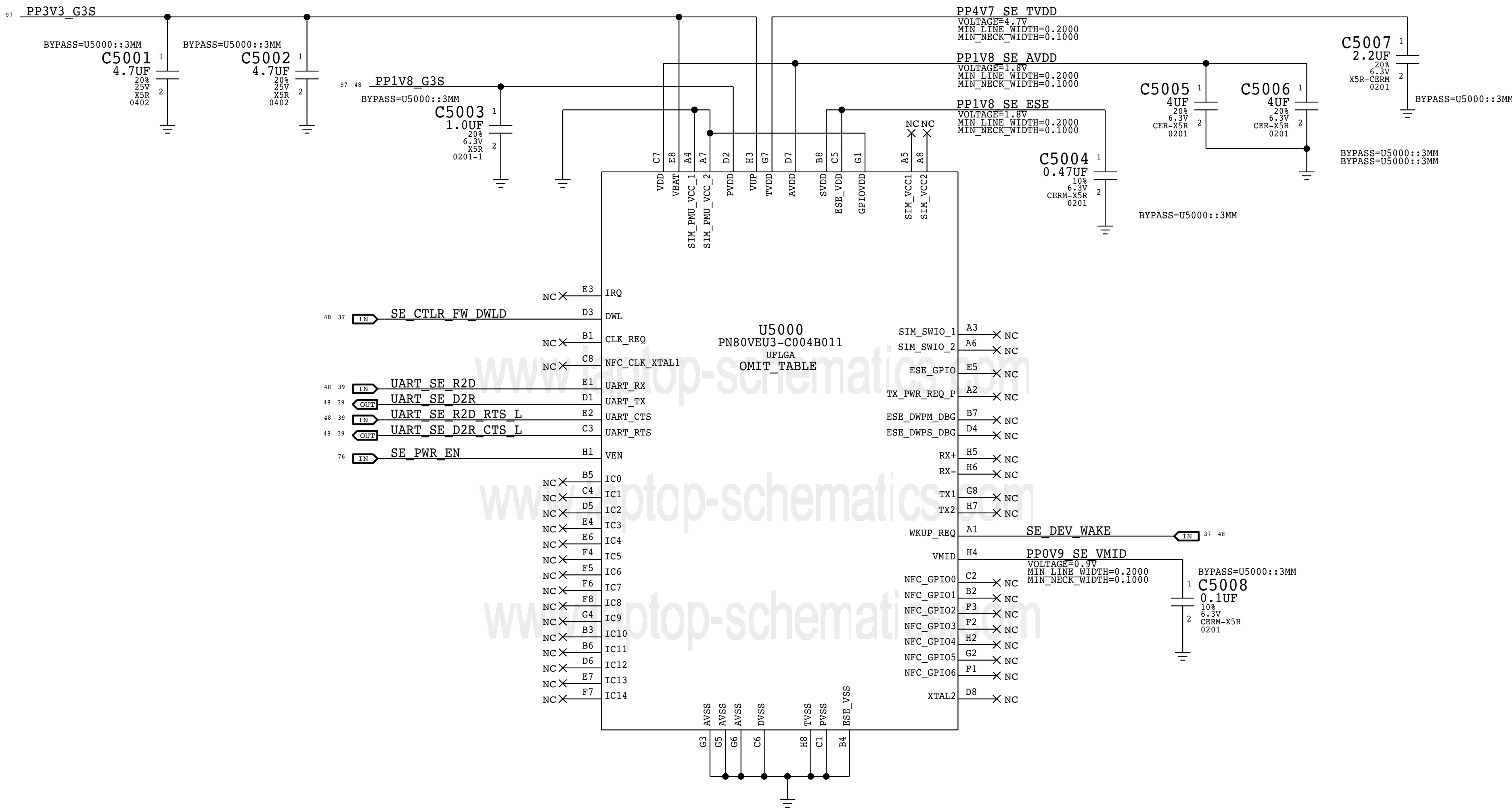


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			PAGE	49 OF 150	
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STOCKHOLM



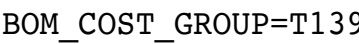
PP1V8_G3S		48	97
R5001	100K	1	2
R5002	100K	1	2
R5003	100K	1	2
R5004	100K	1	2
R5000	100K	1	2
R5005	100K	1	2
UART_SE_R2D		39	48
UART_SE_D2R		39	48
UART_SE_R2D_RTS_L		39	48
UART_SE_D2R_CTS_L		39	48
SE_CTLR_FW_DWLD		37	48
SE_DEV_WAKE		37	48


BOM\_COST\_GROUP=SOC

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		PAGE	50 OF 150
		SHEET	48 OF 108

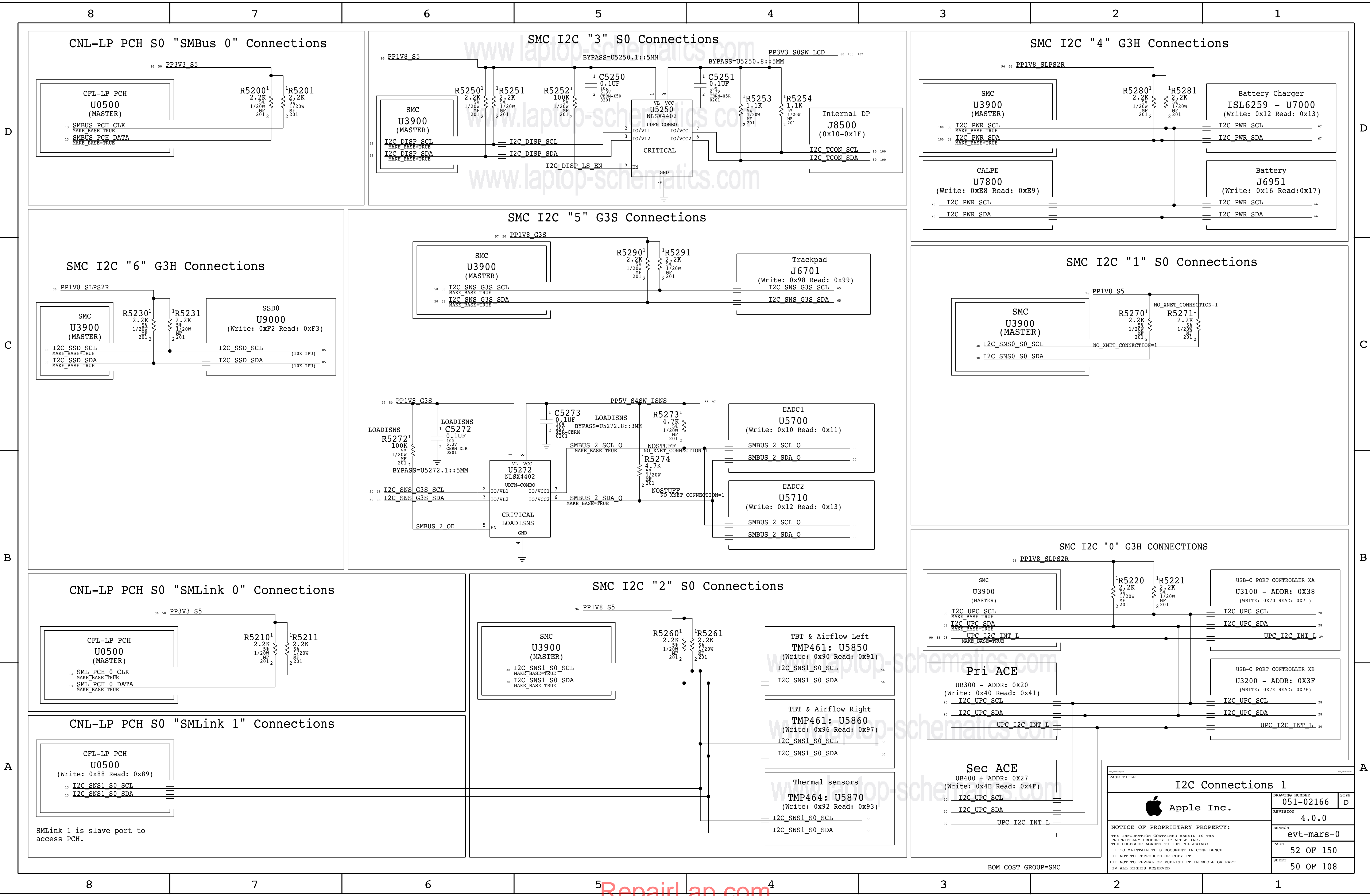


RepairLap.com

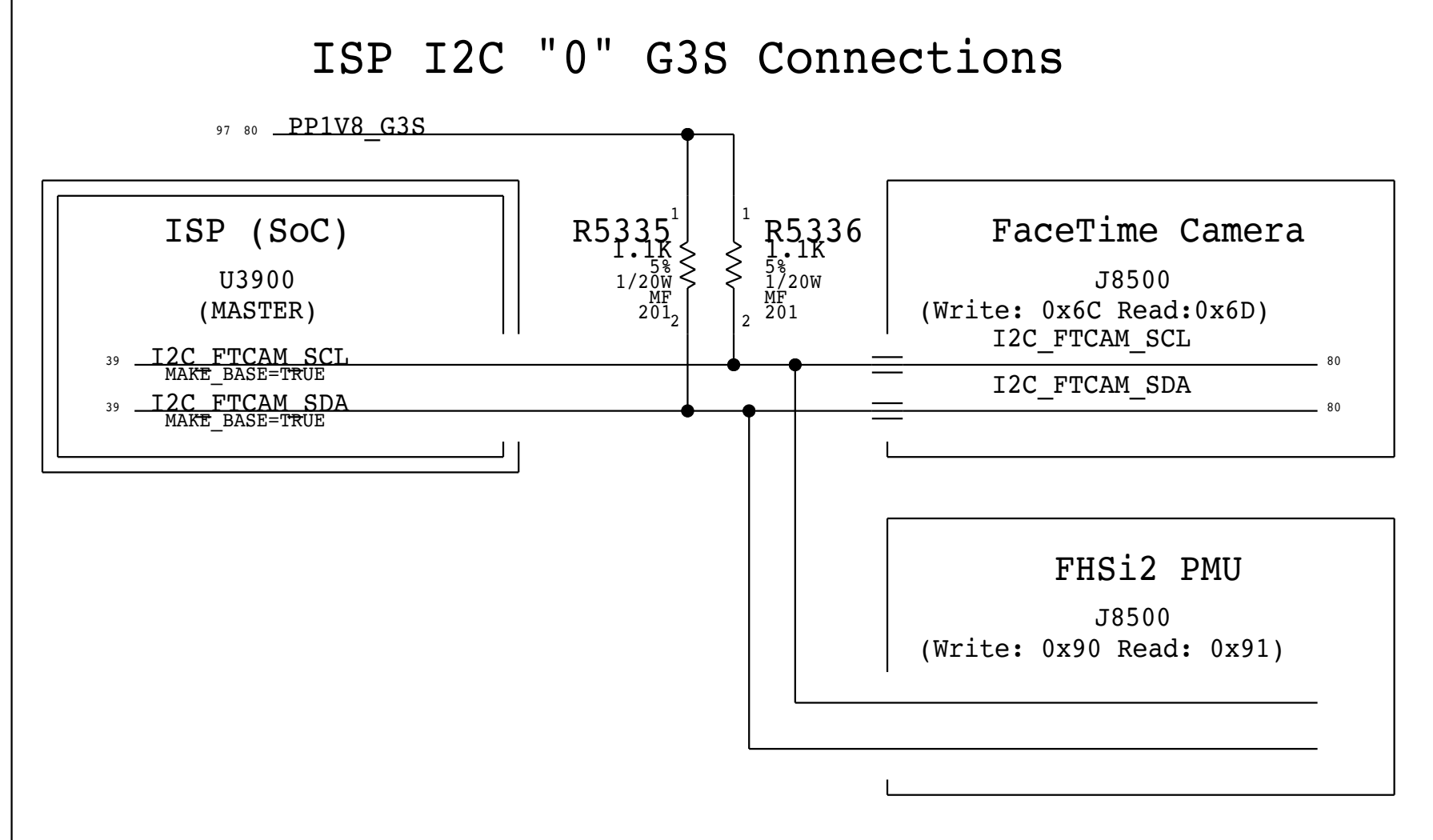
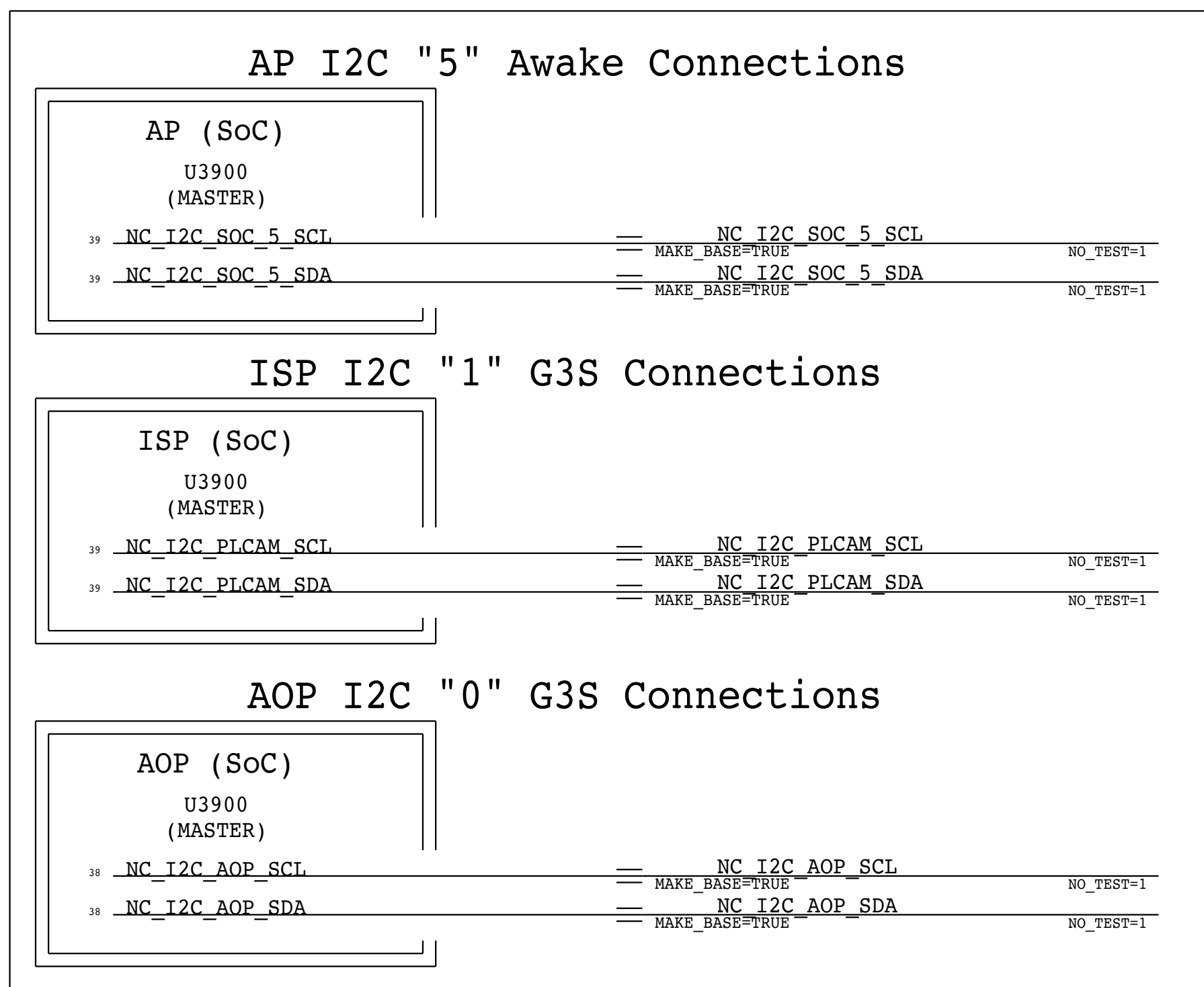
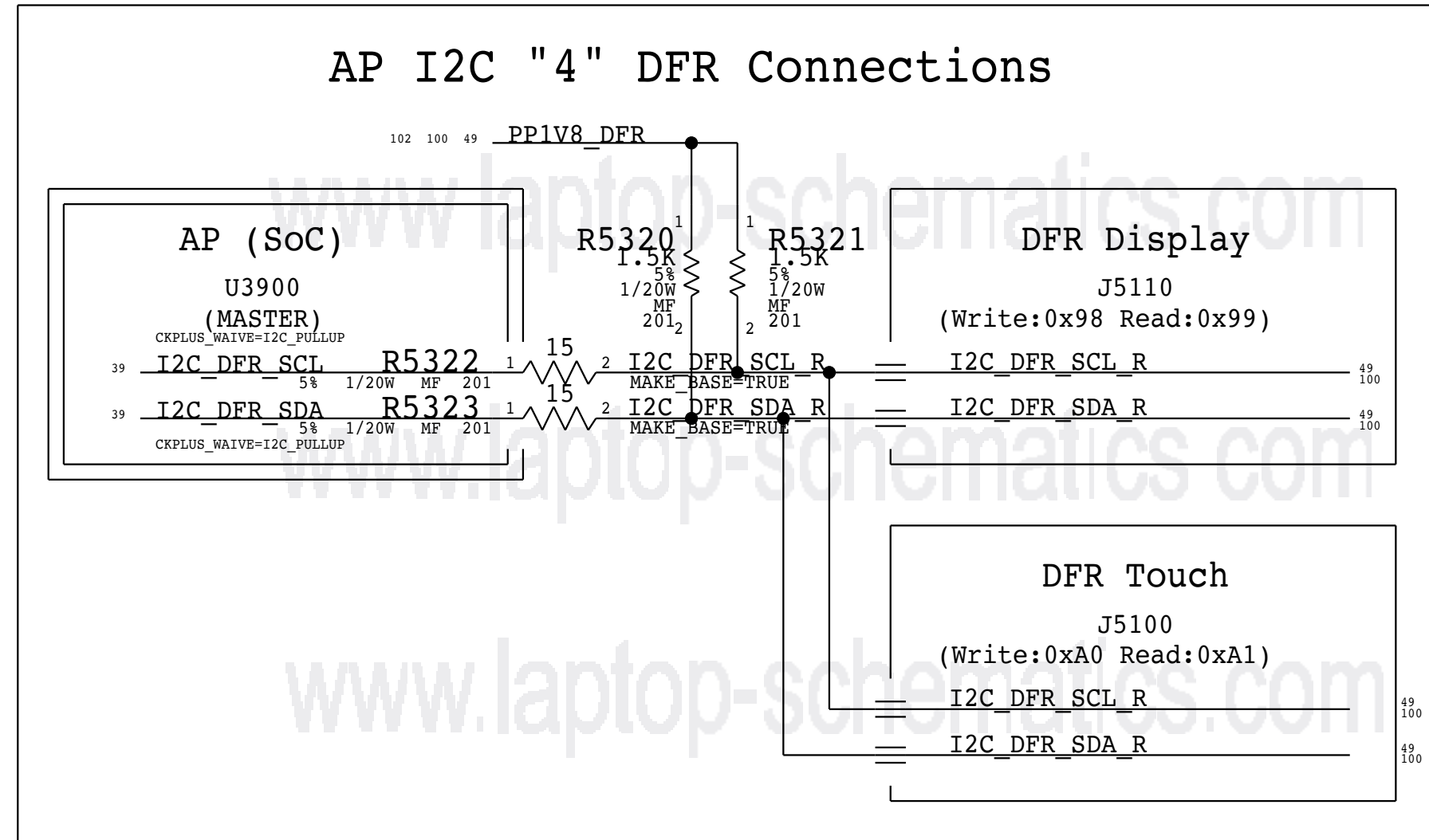
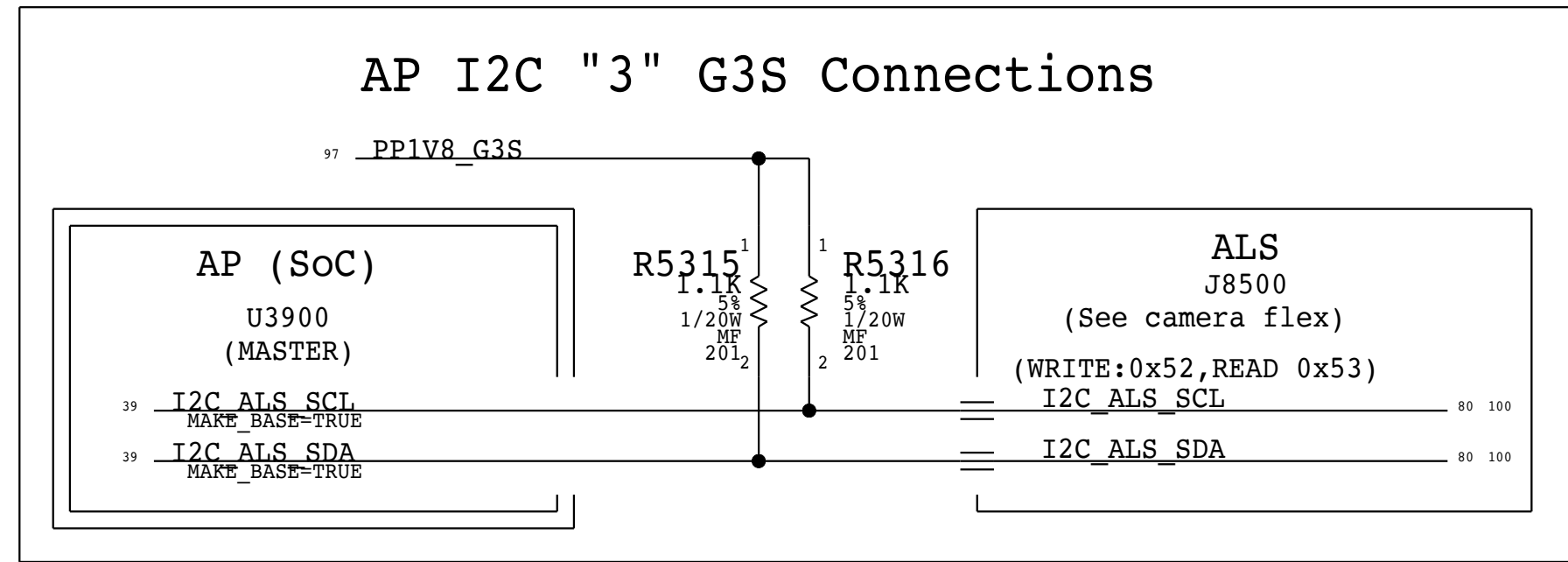
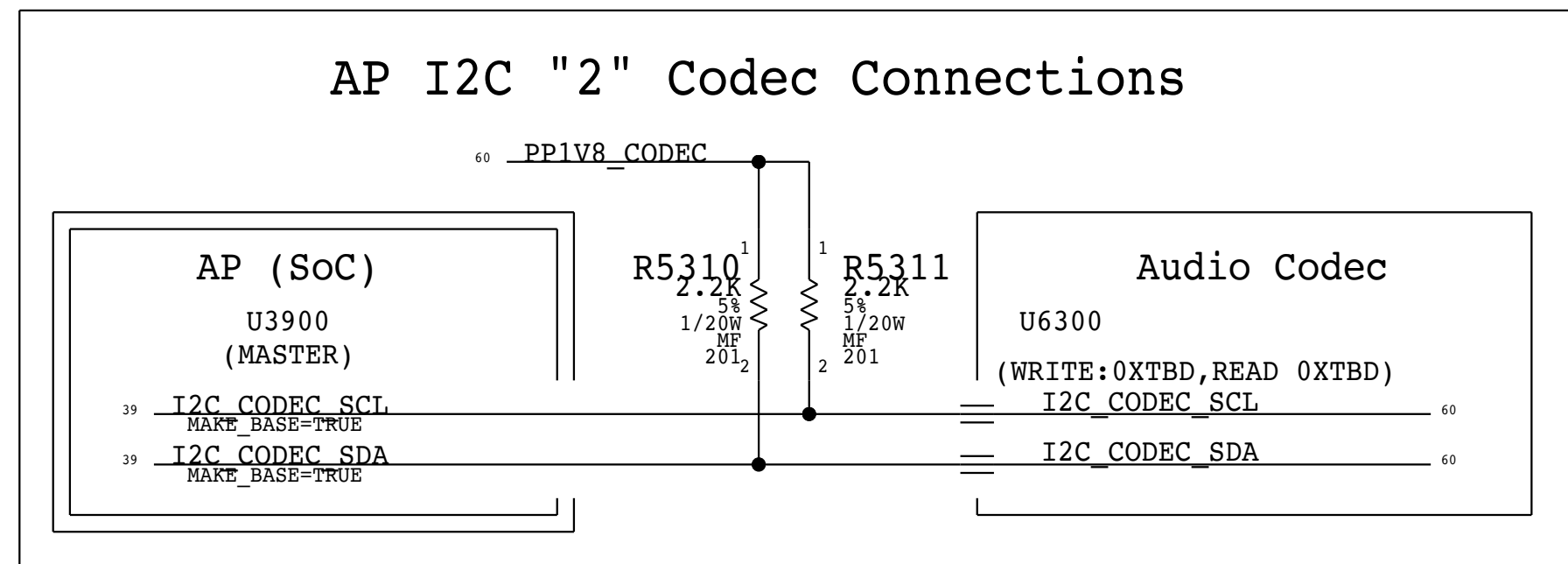
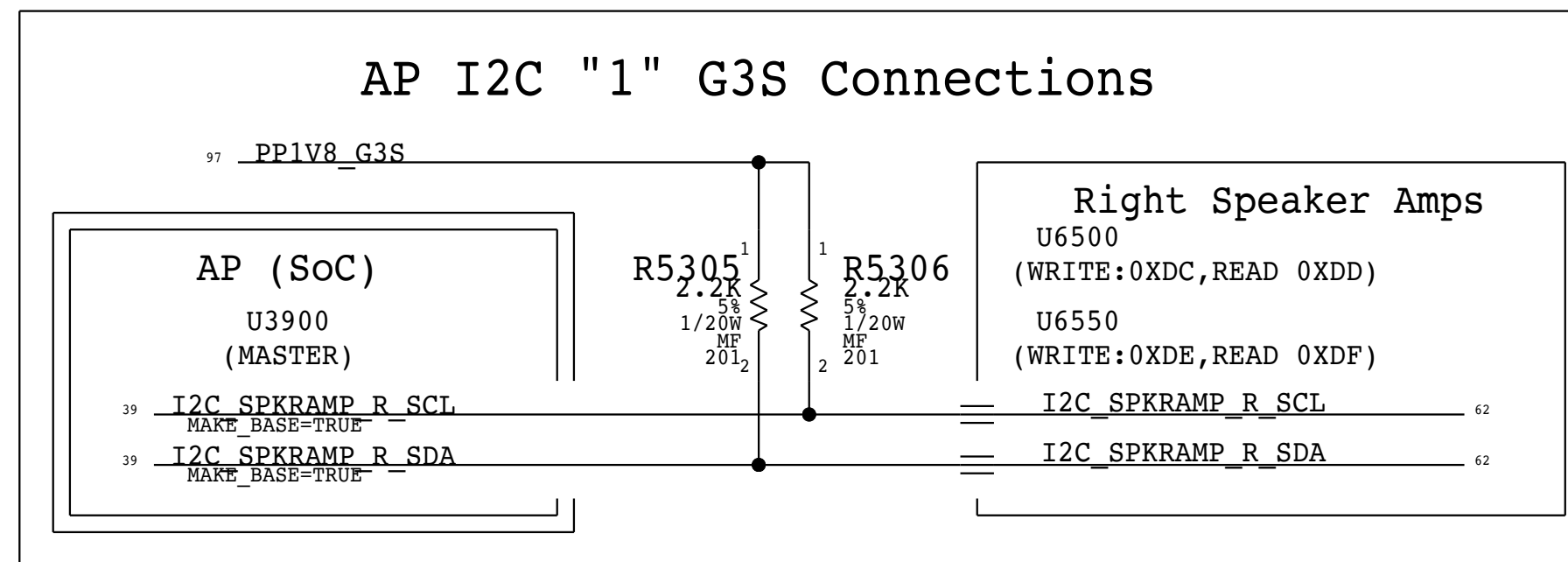
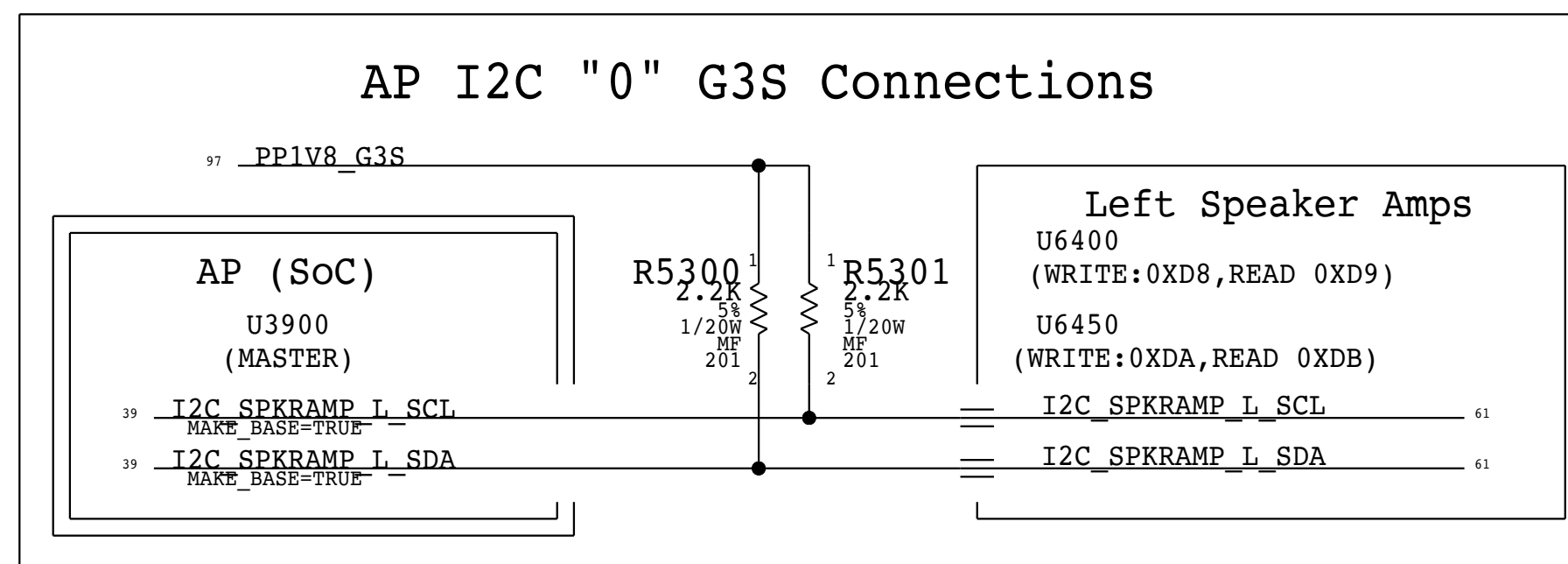


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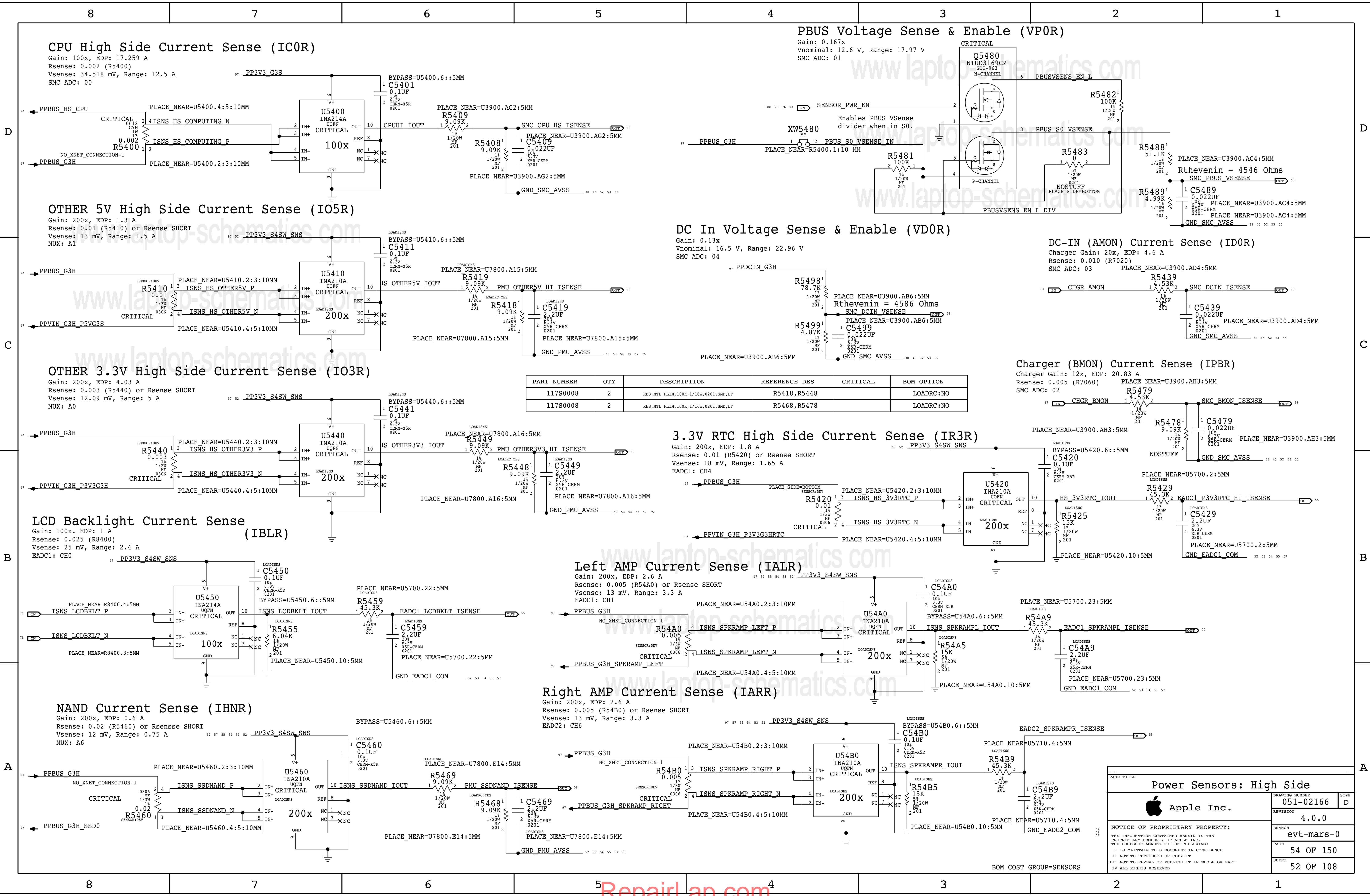




Device	SMC IF	ADDR. (8b)
ACE XA	I2C0	0X70/1
ACE XB	I2C0	0X7E/F
ACE TA	I2C0	0X40/1
ACE TB	I2C0	0X4E/F
NC.	I2C1	
Temp. Sensor Left	I2C2	0X90/1
Temp. Sensor Right	I2C2	0X96/7
Platform Thermal Sensor	I2C2	0X92/3
PCH	I2C2	0X88/9
TCON	I2C3	0X10-1F
Charger	I2C4	0X12/3
Battery	I2C4	0X16/7
Calpe	I2C4	0XE8/9
Trackpad	I2C5	0X98/9
EADC1	I2C5	0X10/1
EADC2	I2C5	0X12/3
SSD	I2C6	0XF2/3
SoC IF		
Left Spkr Amp.(U6400)	I2C0	0XD8/9
Left Spkr Amp.(U6450)	I2C0	0XDA/B
Right Spkr Amp.(U6500)	I2C1	0XDC/D
Right Spkr Amp.(U6550)	I2C1	0XDE/F
Audio Codec	I2C2	0X90/1
ALS	I2C3	0X52/3
DFR Display	I2C4	0X98/9
DFR Touch	I2C4	0XA0/1
NC.	I2C5	
Spkr ID1	I2C6	
Spkr ID0	I2C6	
SIP IF		
FT Camera	I2C0	0X6C/D
FHSi2	I2C0	0X90/1
NC.	I2C1	
AOP IF		
NC.	I2C0	

<small>Form No. 706-9-83 OMB No. 1545-0047</small>		<small>ESTATE TAX RETURN SEE INSTRUCTIONS ON PAGE 2</small>	
PAGE TITLE			
I2C Connections 2			
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	REVISION	4.0.0	
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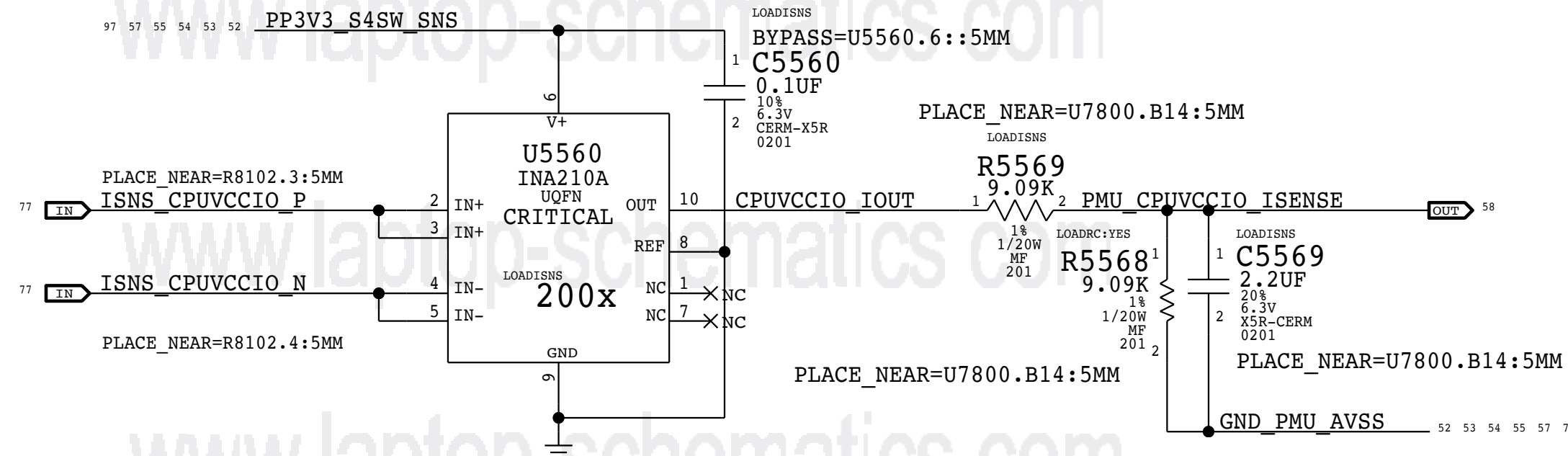






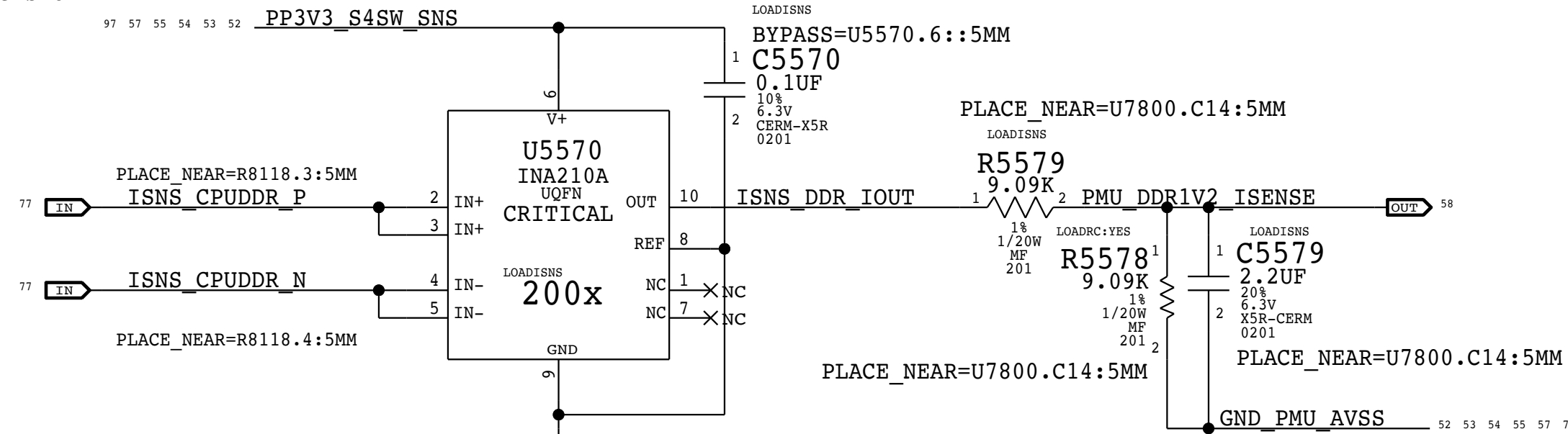
### CPU VCCIO Current Sense (IC1C)

Gain: 200x, EDP: 3.6 A  
Rsense: 0.003 (R8102) or Rsense SHORT  
Vsense: 10.8 mV, Range: 5 A  
MUX: A3



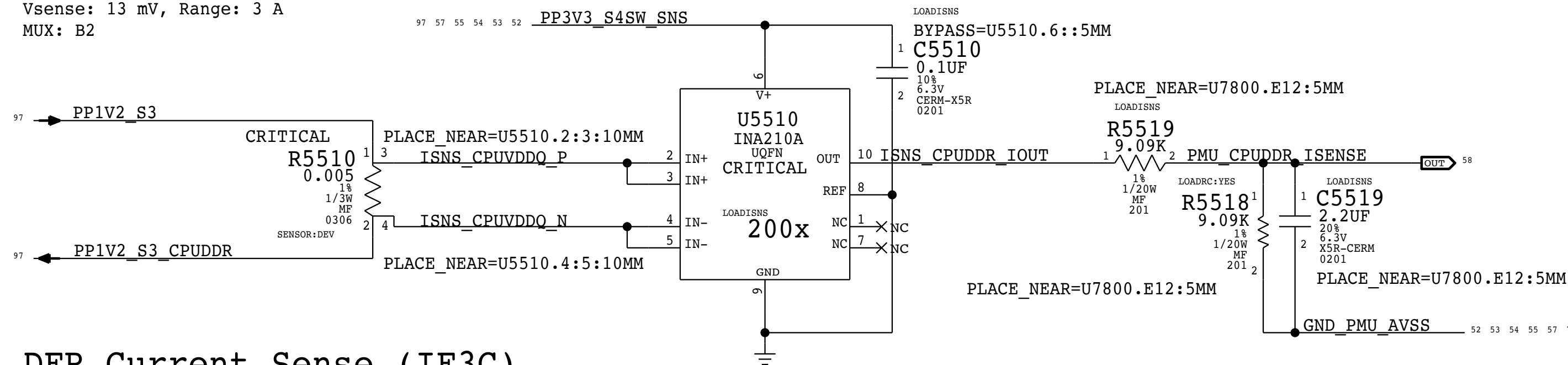
### DDR 1.2V S3 (CPU & Memory) Current Sense (IM0C)

Gain: 200x, EDP: 6.9 A  
Rsense: 0.002 (R8118) or Rsense SHORT  
Vsense: 13.8 mV, Range: 7.5 A  
MUX: A4



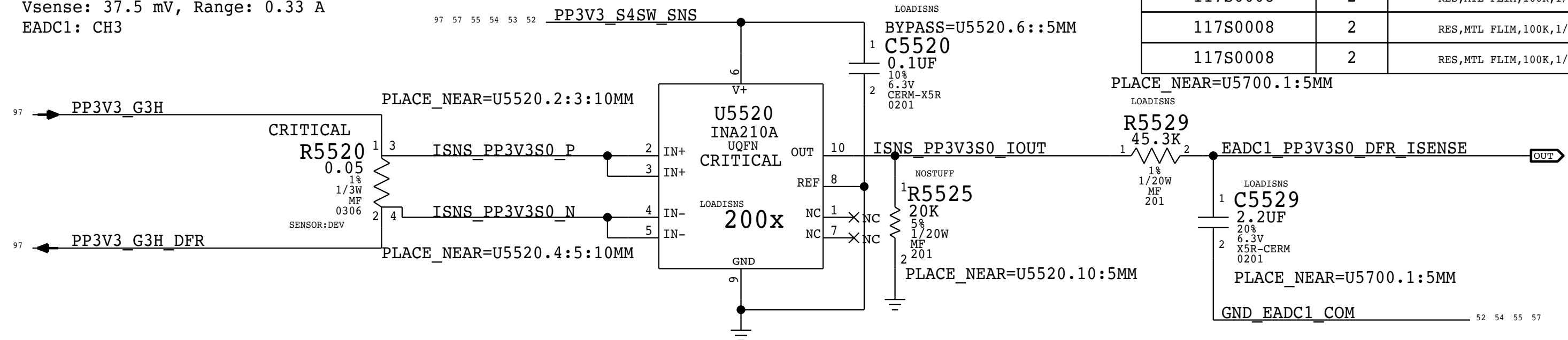
### CPU DDR 1.2V S3 (CPU Only) Current Sense (IMCC)

Gain: 200x, EDP: 2.6 A  
Rsense: 0.005 (R5510) or Rsense SHORT  
Vsense: 13 mV, Range: 3 A  
MUX: B2



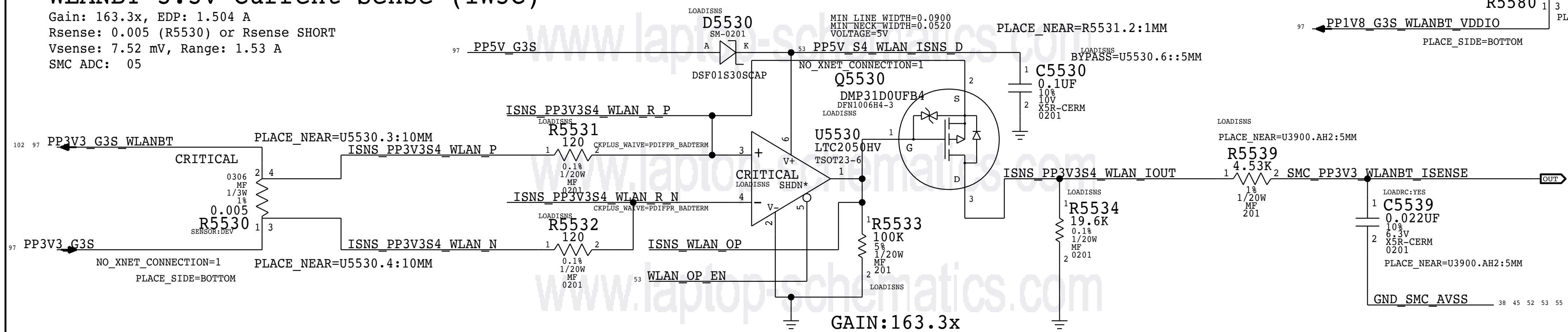
### DFR Current Sense (IF3C)

Gain: 200x, EDP: 0.75 A  
Rsense: 0.05 (R5520) or Rsense SHORT  
Vsense: 37.5 mV, Range: 0.33 A  
EADC1: CH3



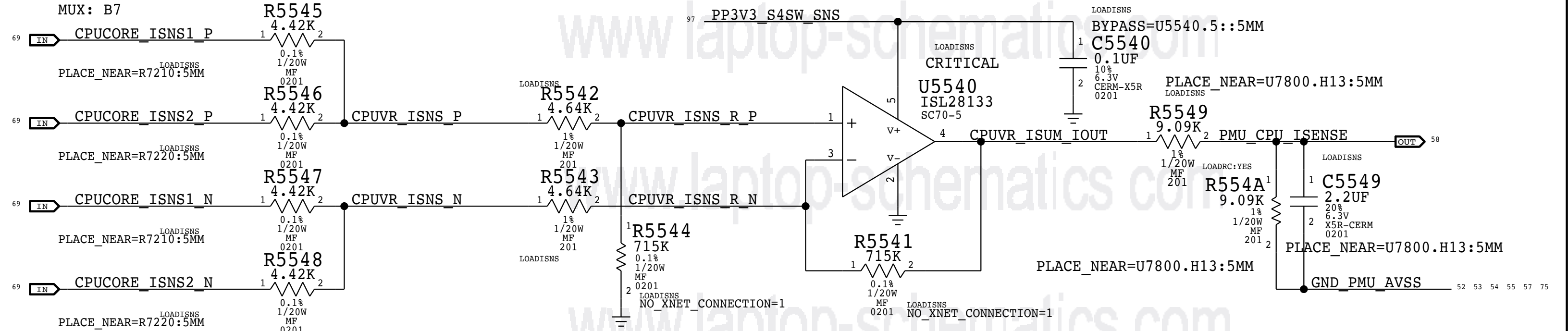
### WLANBT 3.3V Current Sense (IW3C)

Gain: 163.3x, EDP: 1.504 A  
Rsense: 0.005 (R5530) or Rsense SHORT  
Vsense: 7.52 mV, Range: 1.53 A  
SMC ADC: 05



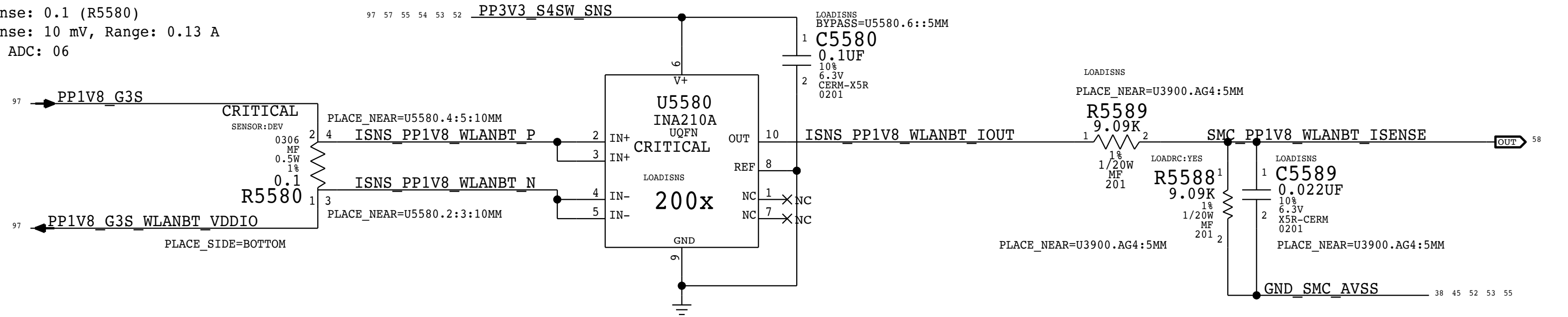
### CPU Fixed Current Sense (ICAC)

Gain: 275.74x, EDP: 29 A  
Rsense: 2x of 0.00075 (R7310, R7320), Rsum: 0.000375  
Vsense: 10.875 mV, Range: 29.01 A  
MUX: B7



### WLANBT 1.8V Current Sense (IW2C)

Gain: 200x. EDP: 0.1 A  
Rsense: 0.1 (R5580)  
Vsense: 10 mV, Range: 0.13 A  
SMC ADC: 06

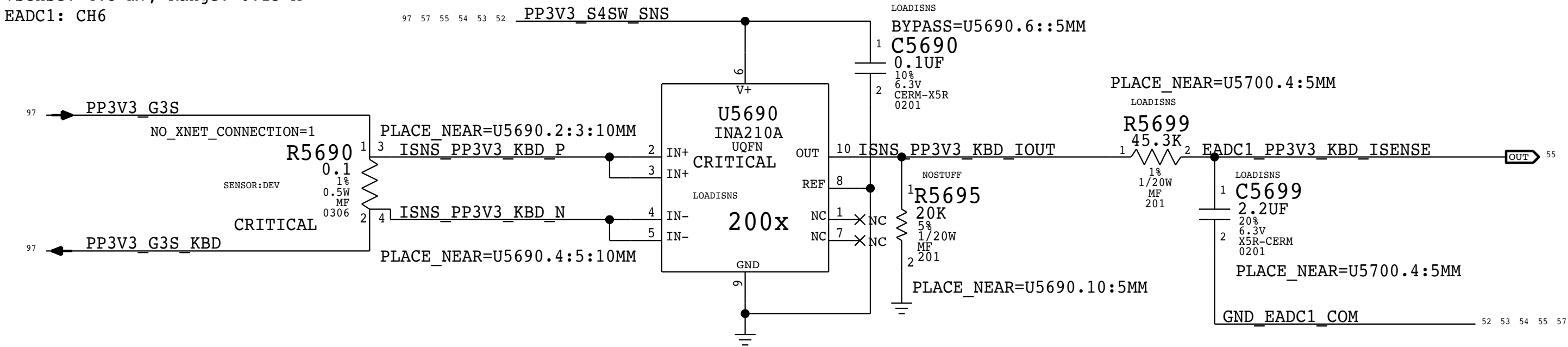


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Power Sensors: Load Side		
	DRAWING NUMBER	051-02166
	REVISION	4.0.0
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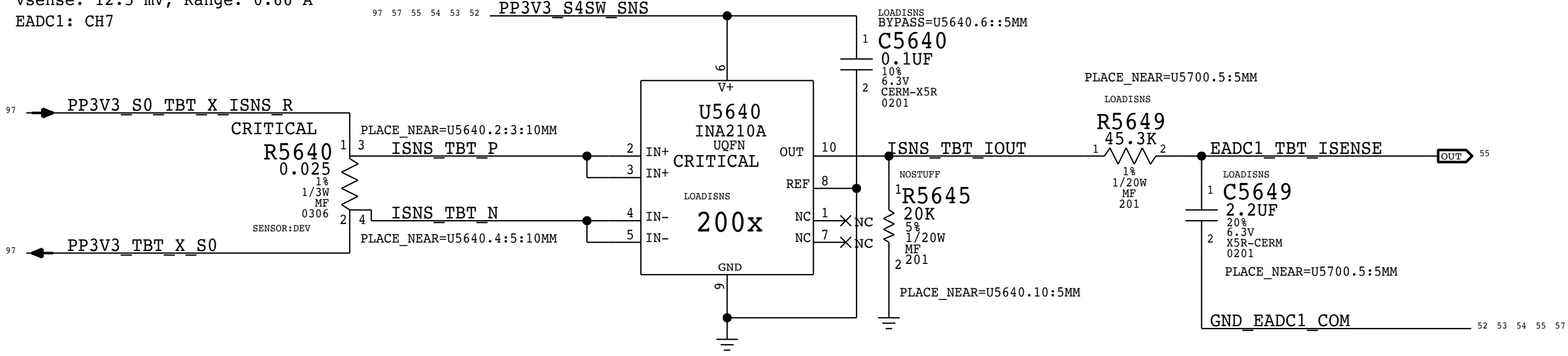
### Keyboard 3V Current Sense (IK3C)

Gain: 200x, EDP: 0.043 A  
Rsense: 0.1 (R5690) or Rsense SHORT  
Vsense: 4.3 mV, Range: 0.15 A  
EADC1: CH6



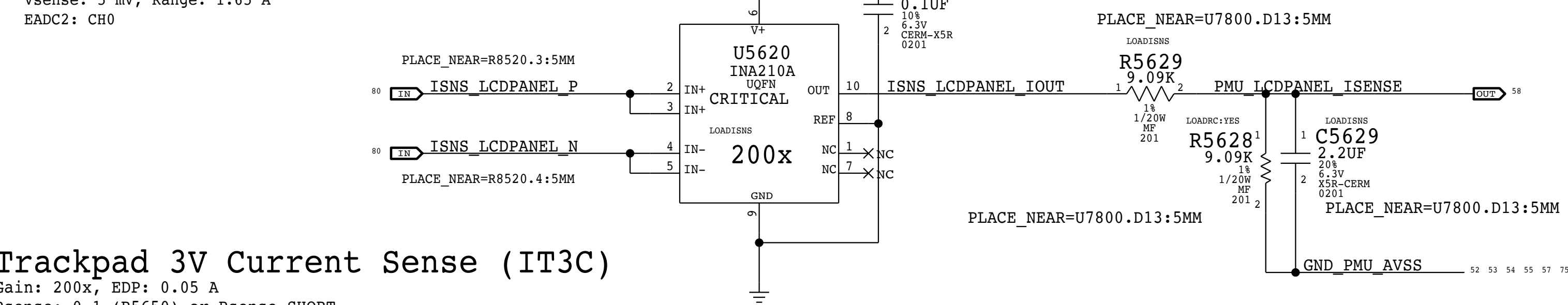
### Thunderbolt TBT Current Left (IULC)

Gain: 200x, EDP: 0.8 A  
Rsense: 0.025 (R5640) or Rsense SHORT  
Vsense: 12.5 mV, Range: 0.66 A  
EADC1: CH7



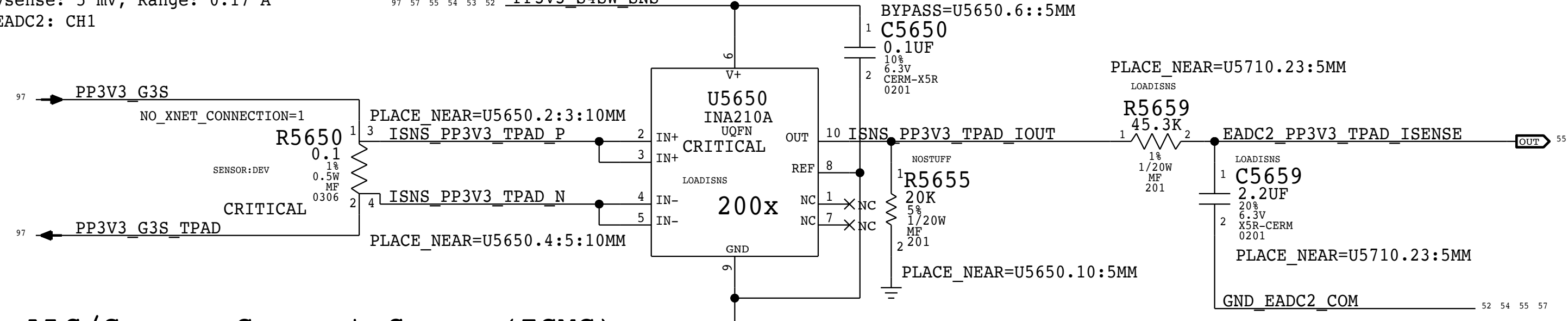
### LCD Panel 3V Current Sense (ILDC)

Gain: 200x, EDP: 1 A  
RSENSE: 0.01 (R8520) or Rsense SHORT  
Vsense: 5 mV, Range: 1.65 A  
EADC2: CH0



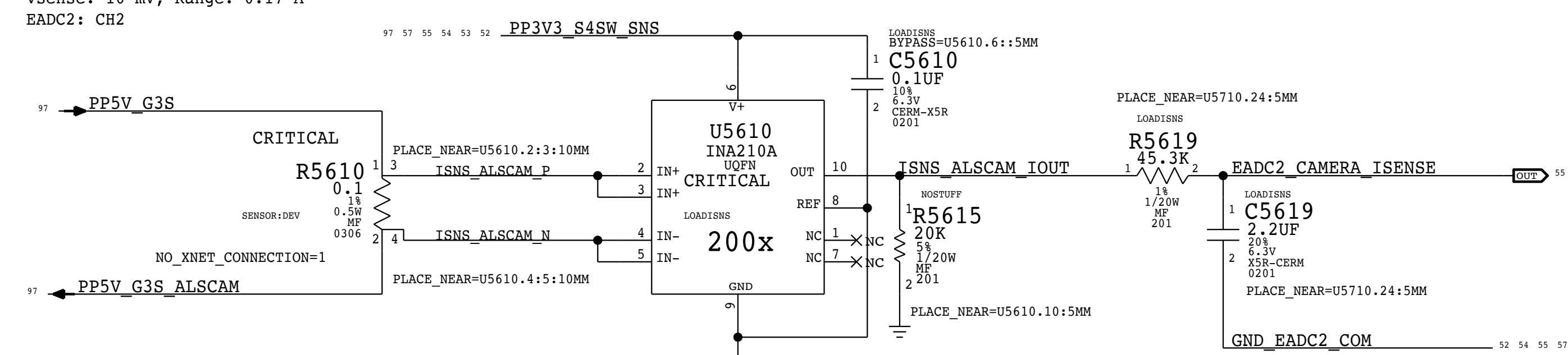
### Trackpad 3V Current Sense (IT3C)

Gain: 200x, EDP: 0.05 A  
Rsense: 0.1 (R5650) or Rsense SHORT  
Vsense: 5 mV, Range: 0.17 A  
EADC2: CH1



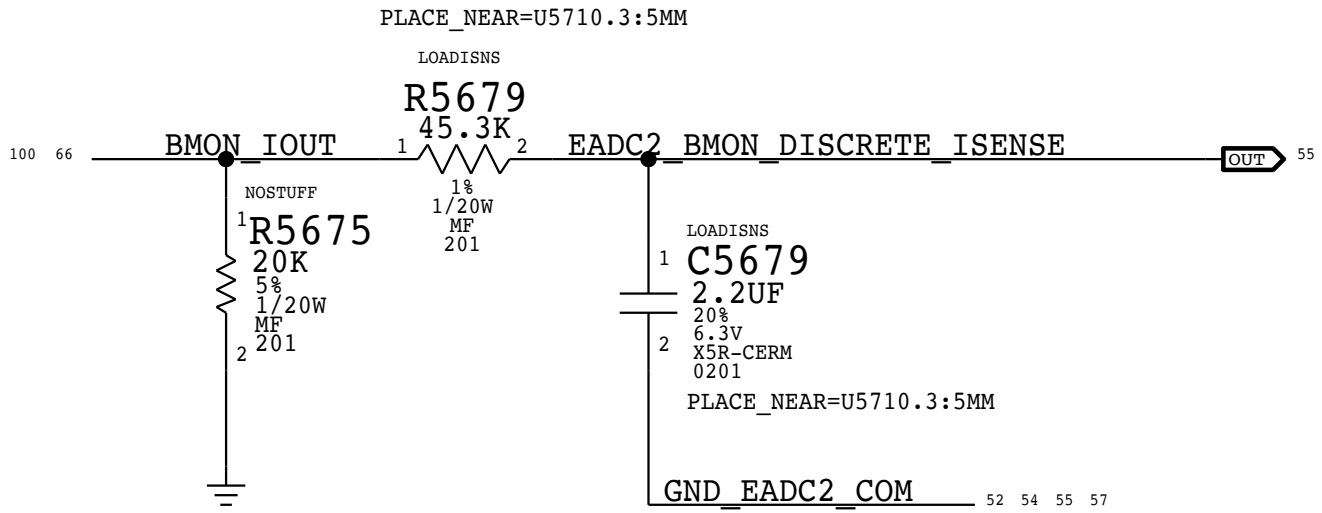
### ALS/Camera Current Sense (ICMC)

Gain: 200x, EDP: 0.1 A  
Rsense: 0.1 (R5610) or Rsense SHORT  
Vsense: 10 mV, Range: 0.17 A  
EADC2: CH2



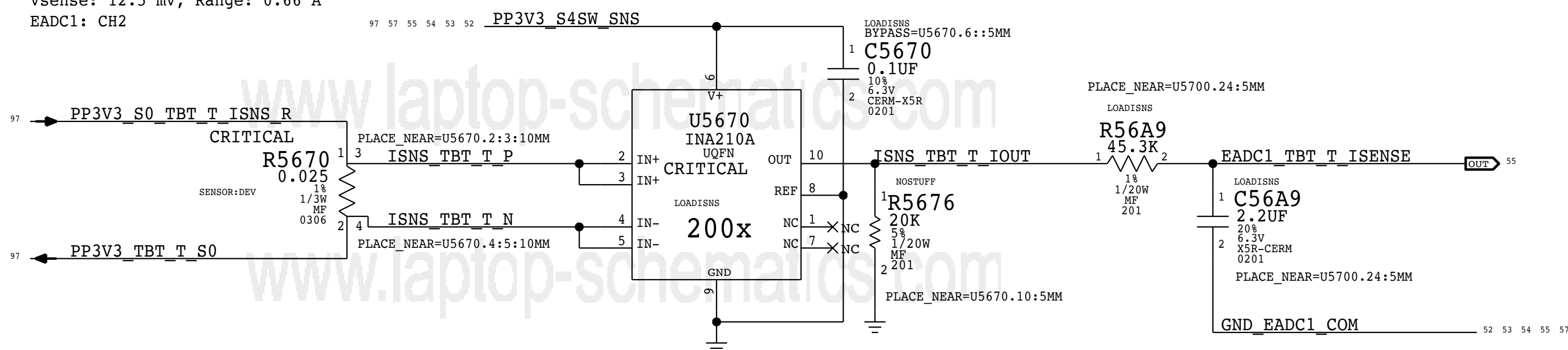
### Battery Discrete Current Sense (IB0L)

Gain: 2940x, EDP: 8 A  
Rsense: 0.003 (R501//R502)  
Vsense: 24 mV, Range: 0.28 A  
EADC2: CH5



### Thunderbolt TBT Current Right (IURC)

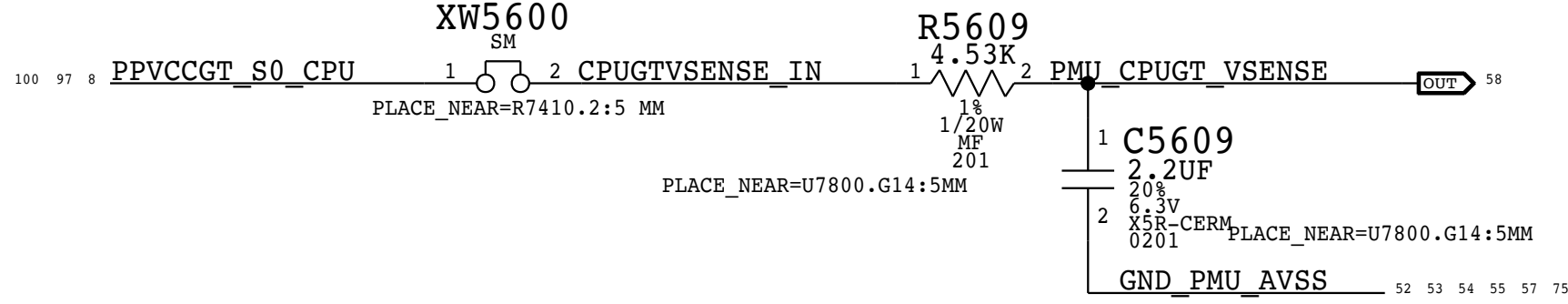
Gain: 200x, EDP: 0.8 A  
Rsense: 0.025 (R5670) or Rsense SHORT  
Vsense: 12.5 mV, Range: 0.66 A  
EADC1: CH2



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	R5698,R5628		LOADRC:NO

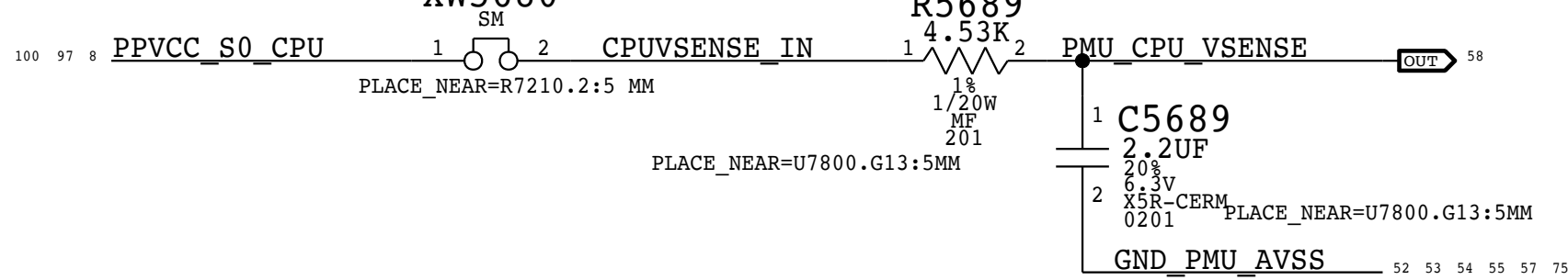
### CPU GT Voltage Sense (VCGC)

SMC ADC: 21



### CPU Core Voltage Sense (VCAC)

SMC ADC: 20

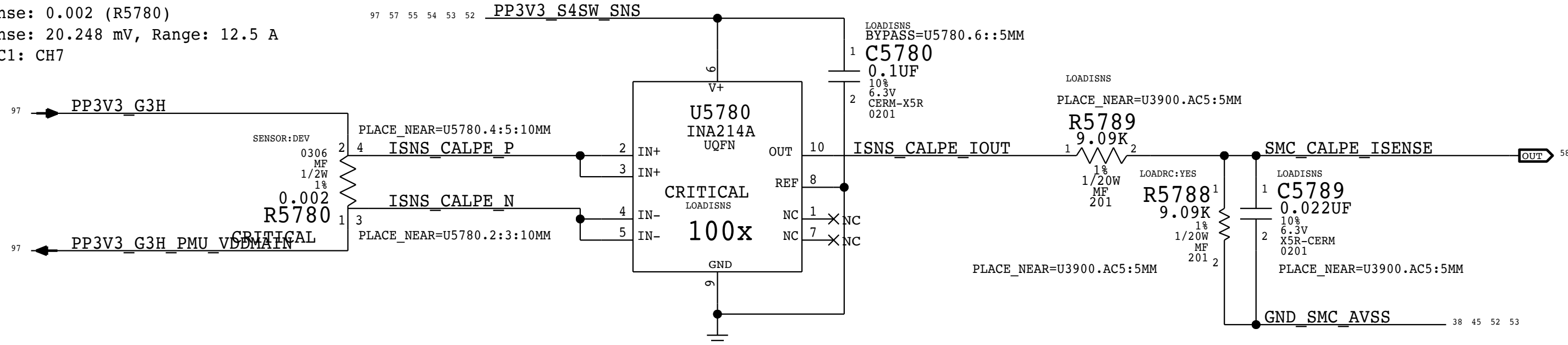


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Power Sensors: Extended		
	DRAWING NUMBER	051-02166
	REVISION	4.0.0
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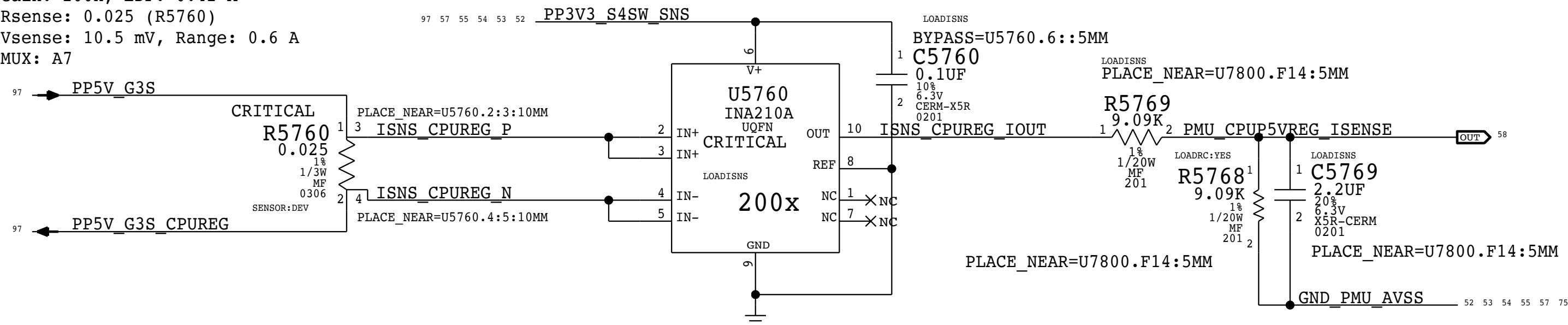
CALPE 3.3V INPUT Current Left (IP3C)

Gain: 200x. EDP: 10.124 A  
Rsense: 0.002 (R5780)  
Vsense: 20.248 mV, Range: 12.5 A  
EADC1: CH7



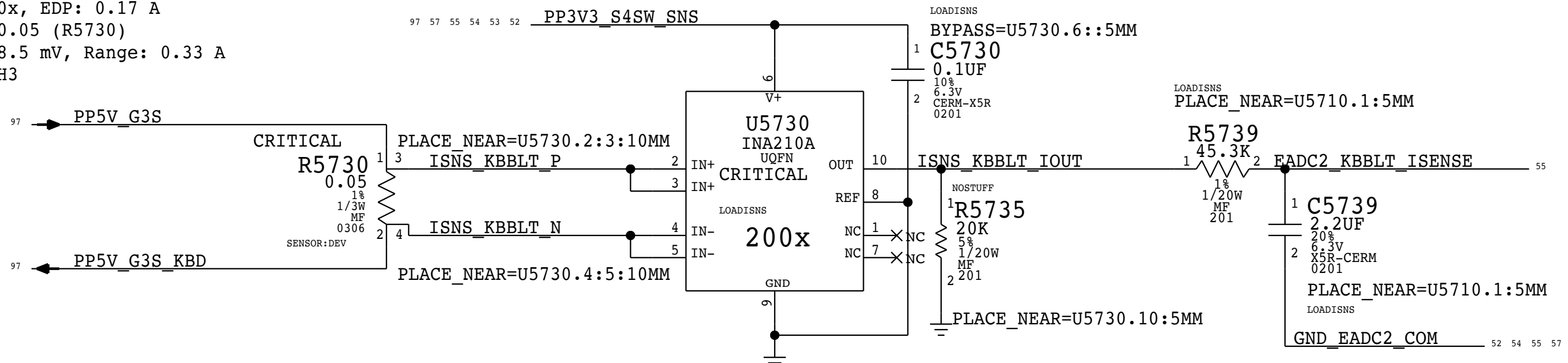
## CPU REG.5V Current Sense (IC5C)

```
Gain: 200x, EDP: 0.42 A
Rsense: 0.025 (R5760)
Vsense: 10.5 mV, Range: 0.6 A
MUX: A7
```



## KB backlite Current Sense (IKBC)

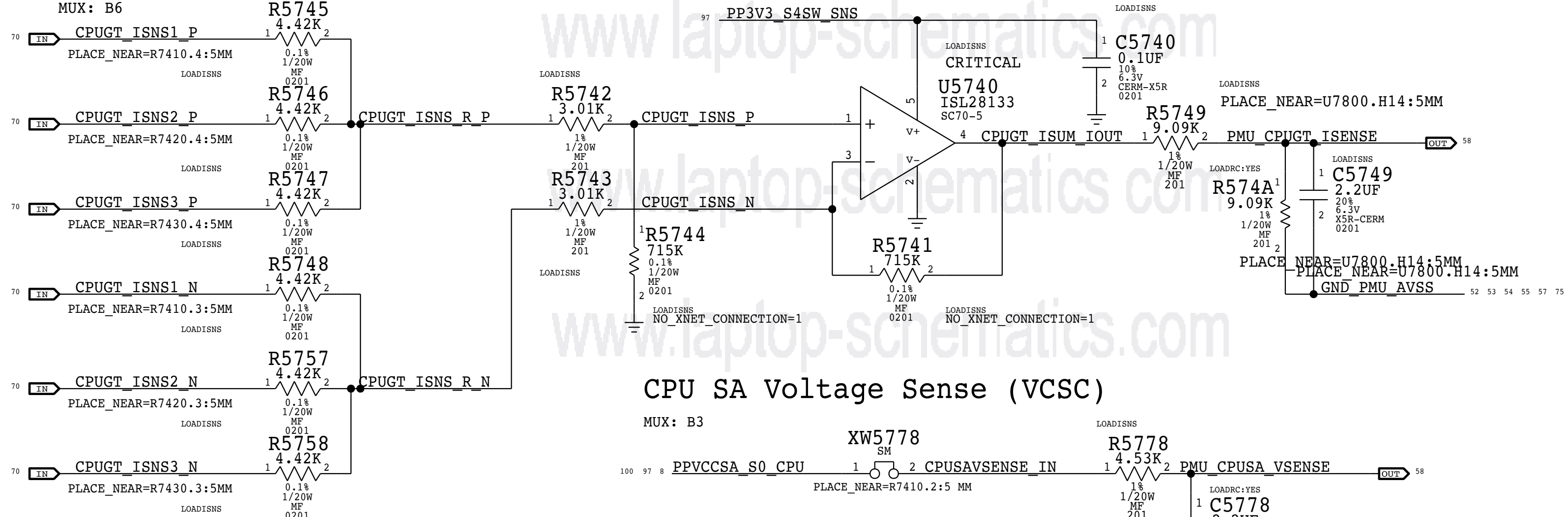
```
Gain: 200x, EDP: 0.17 A
Rsense: 0.05 (R5730)
Vsense: 8.5 mV, Range: 0.33 A
EADC2: CH3
```



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	R5768,R5777		LOADRC:NO
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	R574A,R5788		LOADRC:NO
117S0008	1	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	R5798		LOADRC:NO

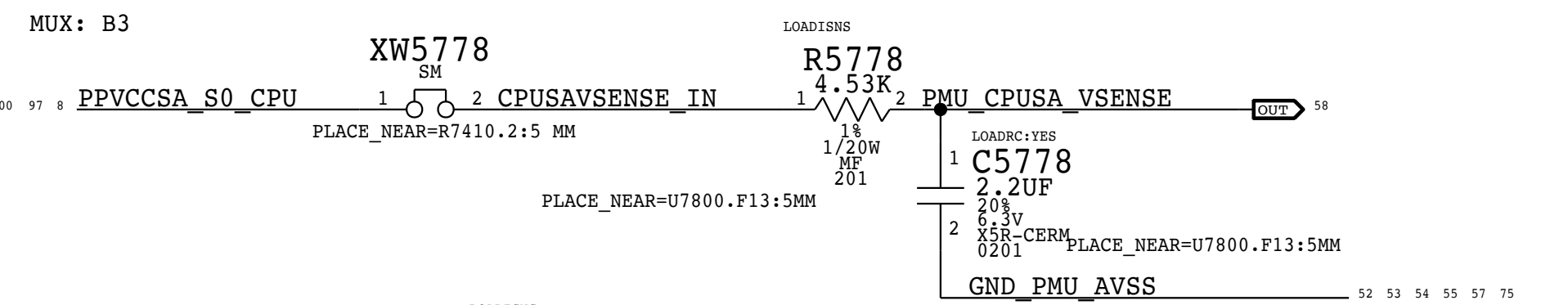
CPU	GT+GTX	Current Sense (ICGC)
-----	--------	----------------------

Gain: 188.49x, EDP: 64 A  
Rsense: 3x of 0.00075 (R7410, R7420, R7430), Rsum: 0.00025  
Vsense: 16 mV, Range: 53.05 A  
MUX: B6 R5745



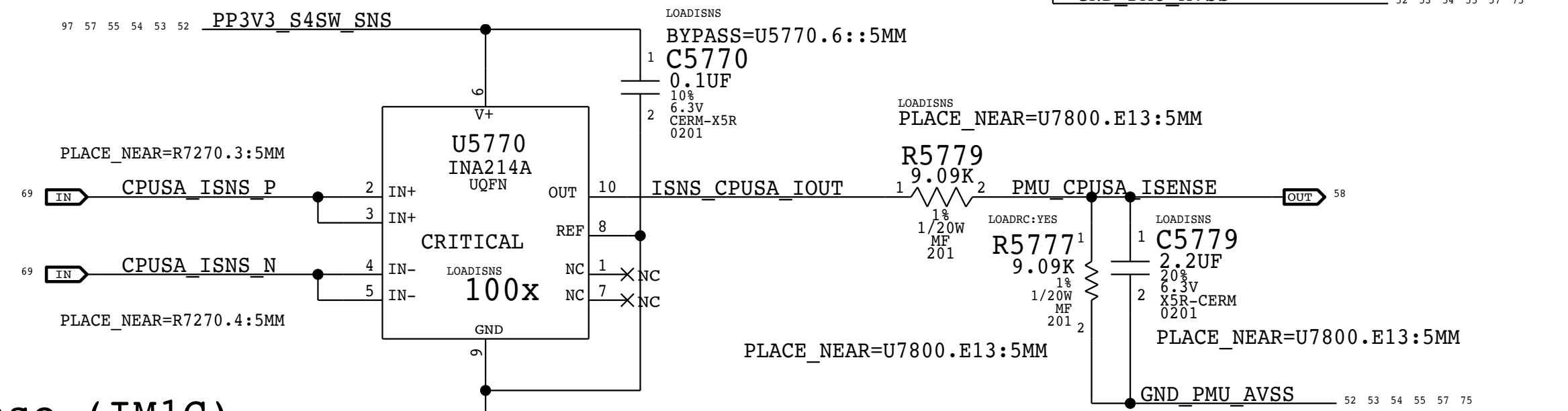
## CPU SA Voltage Sense (VCSC)

MUX: B3



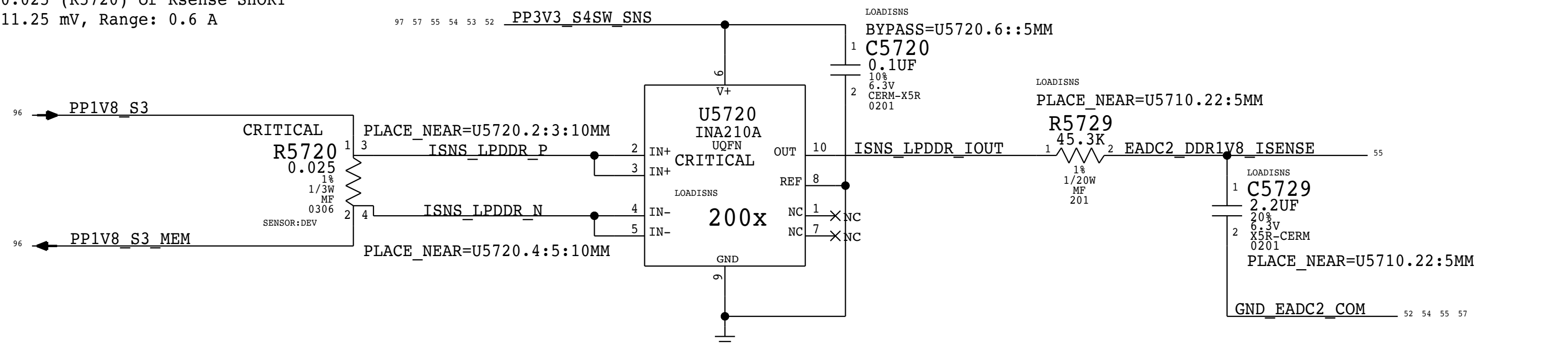
## CPU SA Current Sense (ICSC)

```
Gain: 100x, EDP: 9.5 A
Rsense: 0.002 (R7270)
Vsense: 19 mV, Range: 15 A
MUX: B1
```



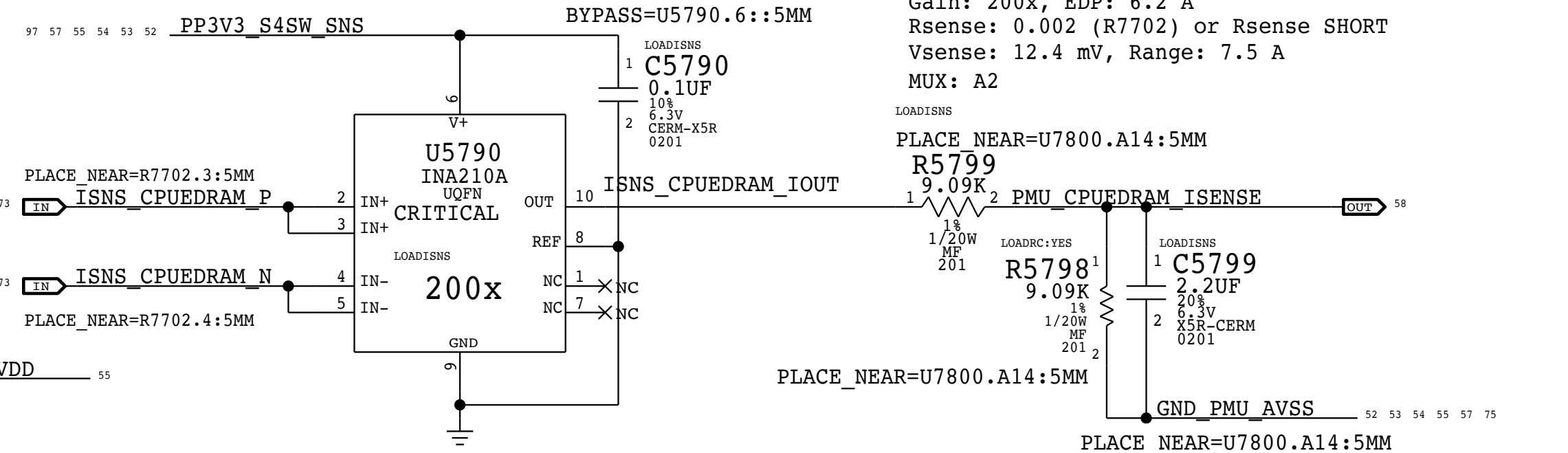
## LPDDR 1.8V Current Sense (IM1C)

Gain: 200x, EDP: 0.45 A  
Rsense: 0.025 (R5720) or Rsense SHORT  
Vsense: 11.25 mV, Range: 0.6 A  
MUX: B0



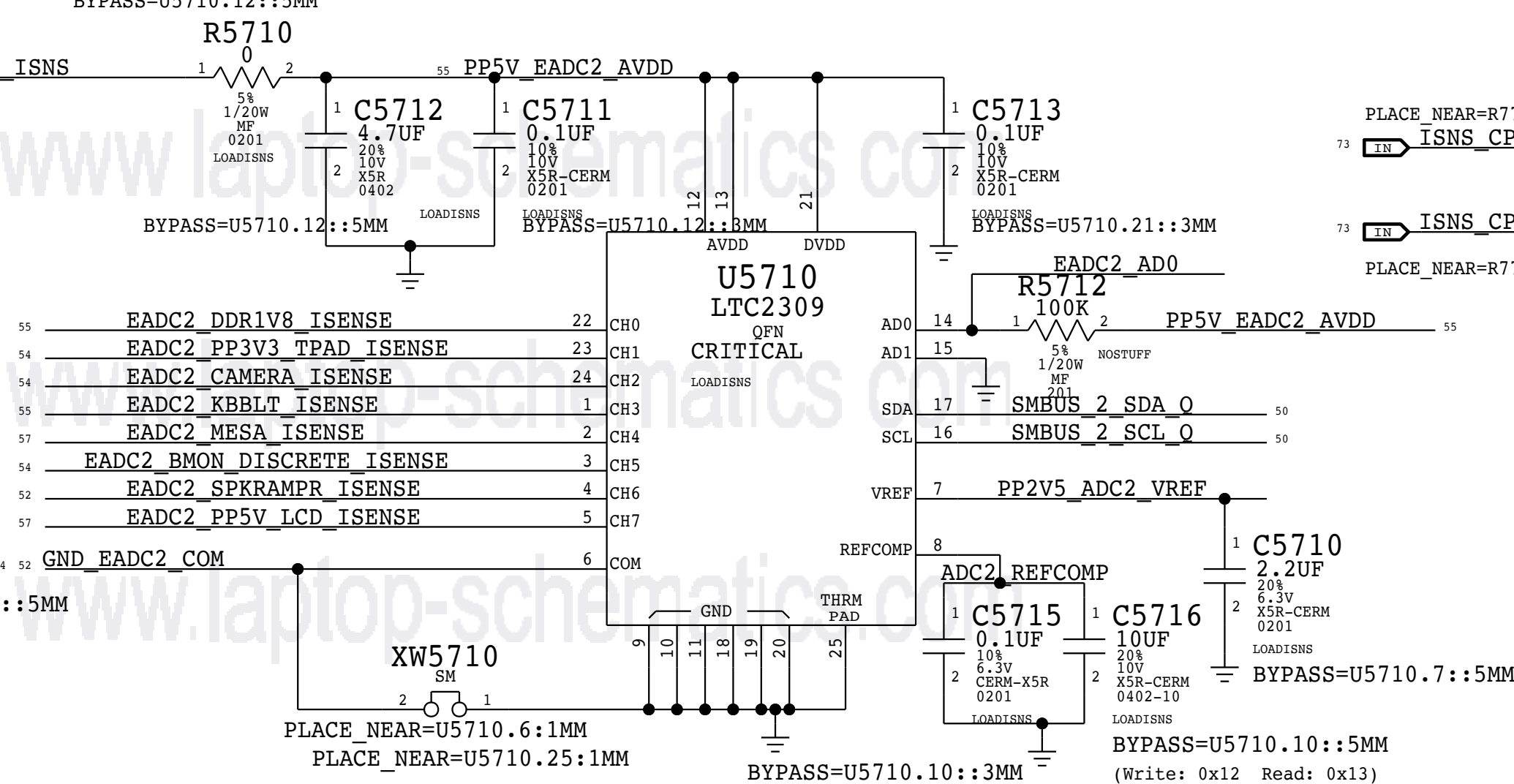
## CPU EDRAM Current Sense (ICEC)

Gain: 200x, EDP: 6.2 A  
Rsense: 0.002 (R7702) or Rsense SHORT  
Vsense: 12.4 mV, Range: 7.5 A  
MUX: A2



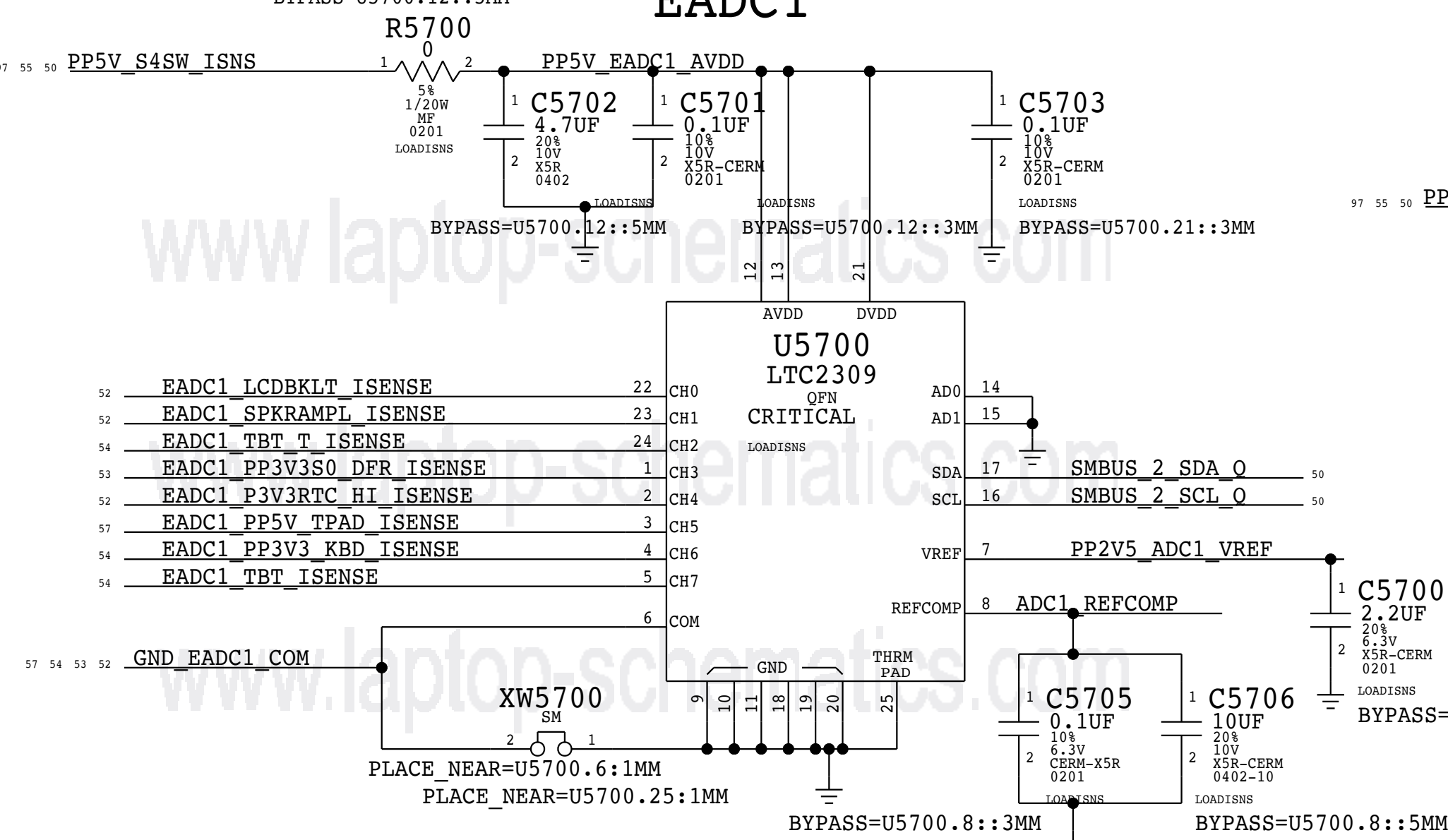
## EADC2

BYPASS=U5710.12::5MM



## EADC1


BYPASS=U5700.12::5MM



(Write: 0x10    Read: 0x11)

```
BYPASS=U5710.10::5MM
(Write: 0x12  Read: 0x13)
```

BOM\_COST\_GROUP=SENSORS

PAGE TITLE		Power Sensors: Extended 2	
 Apple Inc.	DRAWING NUMBER	051-02166	SIZE D
	REVISION	4.0.0	
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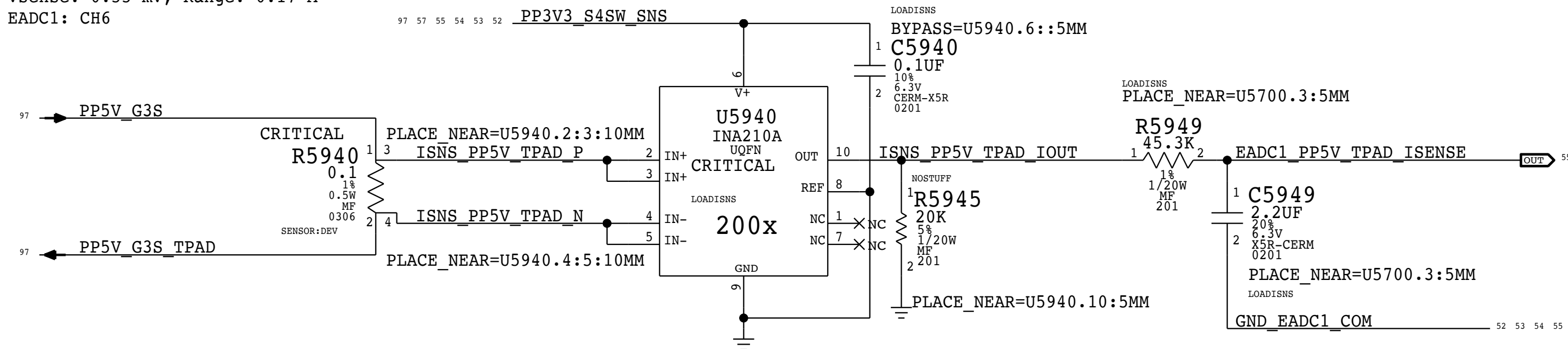






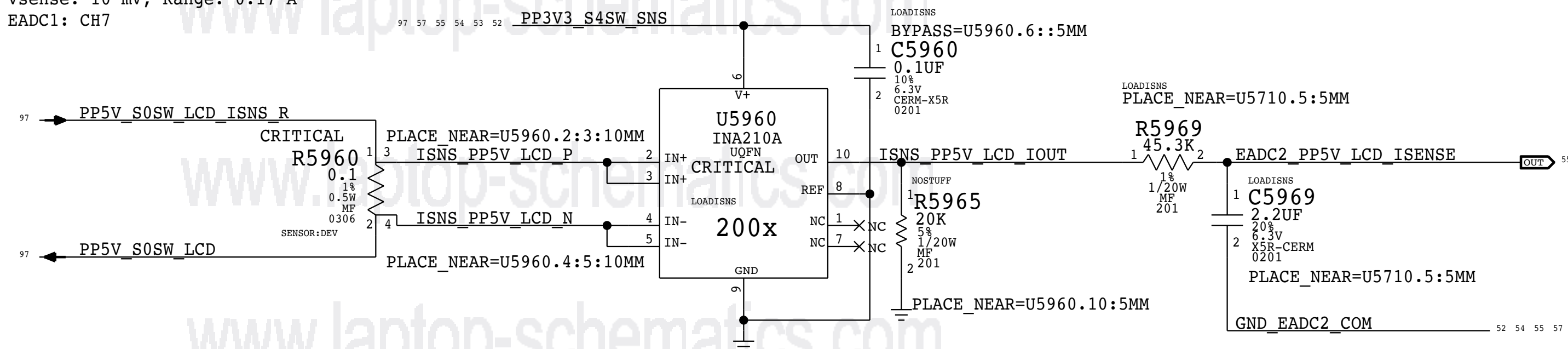
### Trackpad 5V Current Sense (IT5C)

Gain: 200x, EDP: 0.0055 A  
Rsense: 0.1 (R5940) or Rsense SHORT  
Vsense: 0.55 mV, Range: 0.17 A  
EADC1: CH6



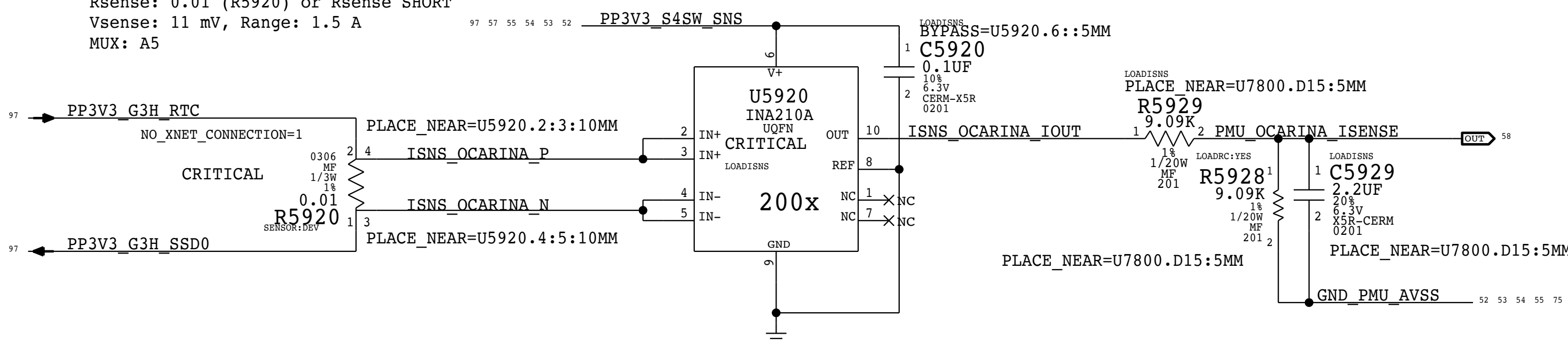
### LCD Panel 5V Current Sense (IL5C)

Gain: 200x, EDP: 0.1 A  
Rsense: 0.1 (R5960) or Rsense SHORT  
Vsense: 10 mV, Range: 0.17 A  
EADC1: CH7



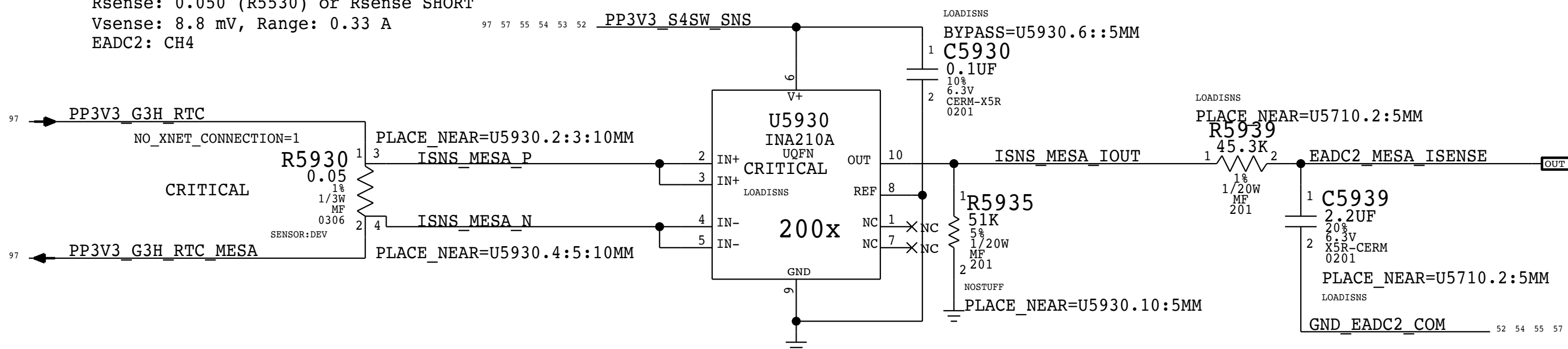
### Ocarina Current Sense (IHCC)

Gain: 200x, EDP: 1.1 A  
Rsense: 0.01 (R5920) or Rsense SHORT  
Vsense: 11 mV, Range: 1.5 A  
MUX: A5



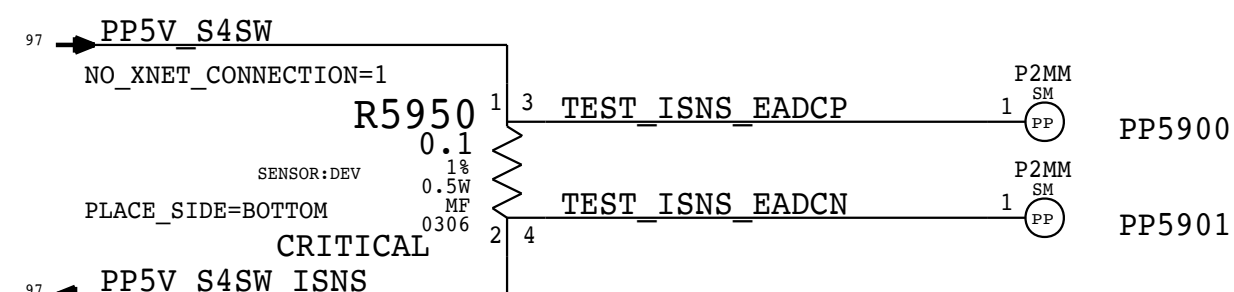
### MESA Current Sense (IIDC)

Gain: 200x, EDP: 0.176 A  
Rsense: 0.050 (R5930) or Rsense SHORT  
Vsense: 8.8 mV, Range: 0.33 A  
EADC2: CH4



### EADC Current Sense

EDP: 6m A  
Rsense: 0.1 (R5950) or Rsense SHORT  
Vsense: 0.6 mV



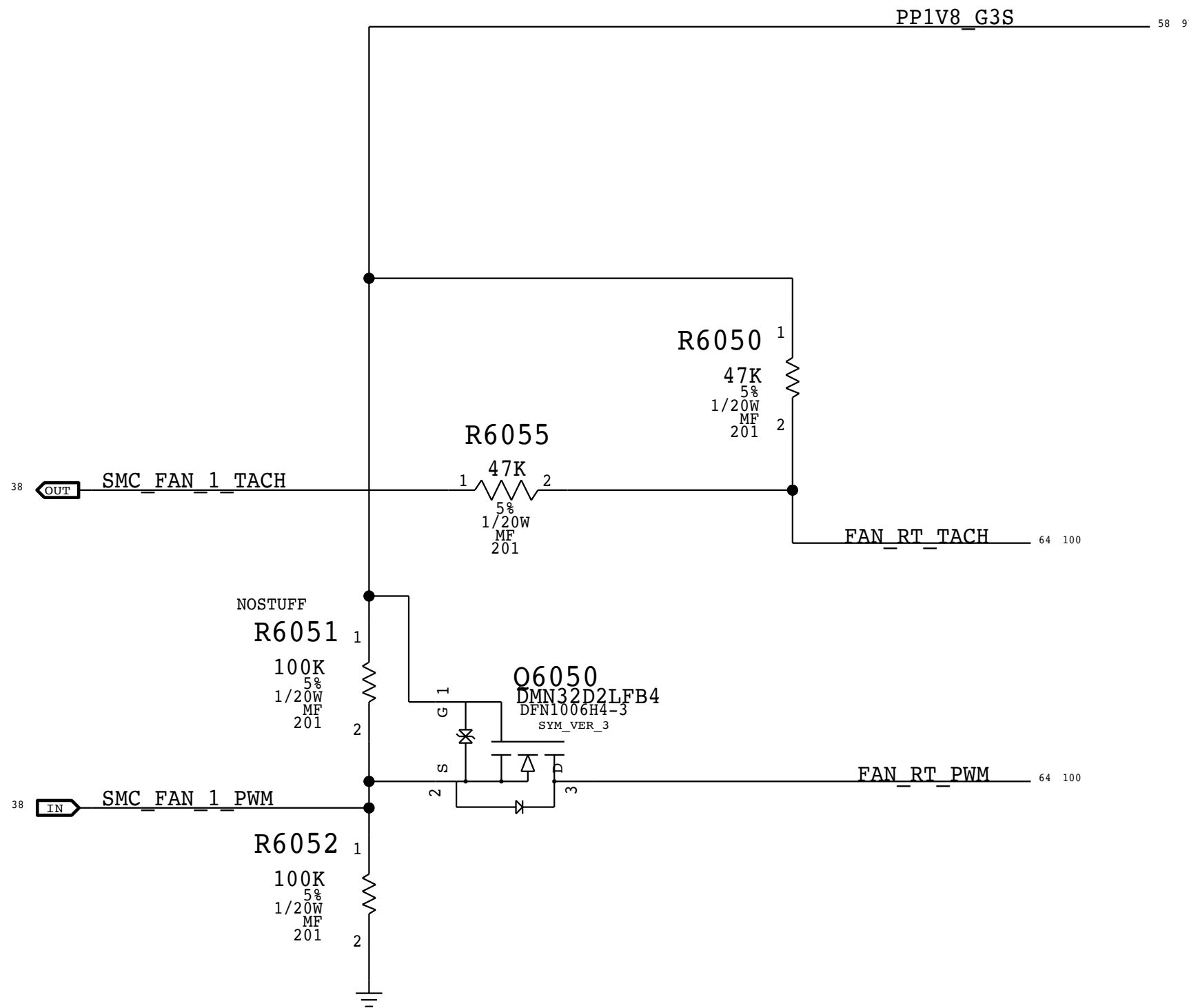
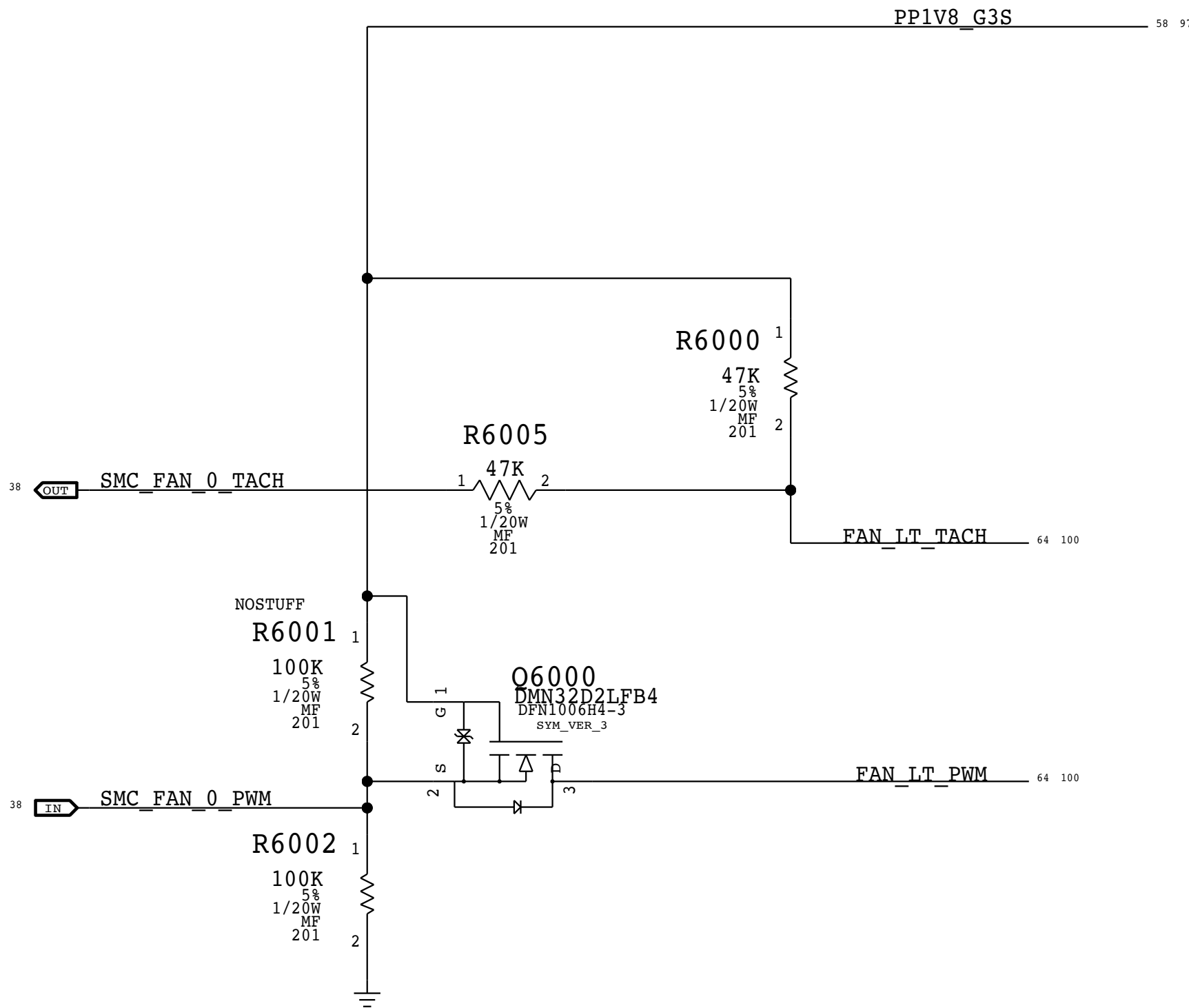
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Power Sensors:Extended 3		
	DRAWING NUMBER	051-02166
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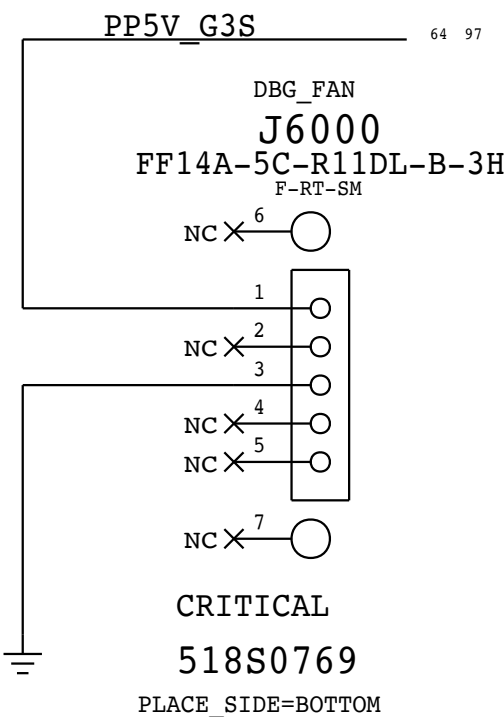
BOM\_COST\_GROUP=SENSORS



# FAN CONTROL



# FOR DEBUG FAN POWER



# SMC ADC Assignments

IN	SMC_CPU_HS_ISENSE	SMC_CPU_HS_ISENSE	OUT
IN	SMC_PBUS_VSENSE	SMC_PBUS_VSENSE	OUT
IN	SMC_BMON_ISENSE	SMC_BMON_ISENSE	OUT
IN	SMC_DCIN_ISENSE	SMC_DCIN_ISENSE	OUT
IN	SMC_DCIN_VSENSE	SMC_DCIN_VSENSE	OUT
IN	SMC_PP3V3_WLANBT_ISENSE	SMC_PP3V3_WLANBT_ISENSE	OUT
IN	SMC_PP1V8_WLANBT_ISENSE	SMC_PP1V8_WLANBT_ISENSE	OUT
IN	SMC_CALPE_ISENSE	SMC_CALPE_ISENSE	OUT

KBL-U NB Assignments

CPUGT ISNS	ADC5
IACORE ISNS	ADC6

Desktop Assignments

GPU_AUX	ADC0
GPU_CORE	ADC1
12V_VSNS	ADC2
12V_ISNS	ADC3
Same	ADC4-7


# PMU ADC Assignments

IN	PMU_OTHER3V3_HI_ISENSE	PMU_OTHER3V3_HI_ISENSE	OUT
IN	PMU_OTHER5V_HI_ISENSE	PMU_OTHER5V_HI_ISENSE	OUT
IN	PMU_CPUEDRAM_ISENSE	PMU_CPUEDRAM_ISENSE	OUT
IN	PMU_CPUVCCIO_ISENSE	PMU_CPUVCCIO_ISENSE	OUT
IN	PMU_DDR1V2_ISENSE	PMU_DDR1V2_ISENSE	OUT
IN	PMU_OCARINA_ISENSE	PMU_OCARINA_ISENSE	OUT
IN	PMU_SSDNAND_ISENSE	PMU_SSDNAND_ISENSE	OUT
IN	PMU_CPUP5VREG_ISENSE	PMU_CPUP5VREG_ISENSE	OUT
IN	NC_PMU_AMUX_AY	NC_PMU_AMUX_AY	OUT
IN	PMU_LCDPANEL_ISENSE	PMU_LCDPANEL_ISENSE	OUT
IN	PMU_CPUSA_ISENSE	PMU_CPUSA_ISENSE	OUT
IN	PMU_CPUDDR_ISENSE	PMU_CPUDDR_ISENSE	OUT
IN	PMU_CPUSA_VSENSE	PMU_CPUSA_VSENSE	OUT
IN	PMU_CPU_VSENSE	PMU_CPU_VSENSE	OUT
IN	PMU_CPUGT_VSENSE	PMU_CPUGT_VSENSE	OUT
IN	PMU_CPUGT_ISENSE	PMU_CPUGT_ISENSE	OUT
IN	PMU_CPU_ISENSE	PMU_CPU_ISENSE	OUT
IN	NC_PMU_AMUX_BY	NC_PMU_AMUX_BY	OUT

Fans/SMC/AMUX Support		
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8		7		6		5		4		3		2		1			
D																D	
C																C	
B																B	
A																A	
8		7		6		5		4		3		2		1			

DESIGN: X502/DEV MLB U		
LAST CHANGE: Wed Feb 18 17:12:24 2015		
PAGE TITLE		
Audio Placeholder		
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BOM\_COST\_GROUP=AUDIO

DESIGN: X502/DEV MLB U


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PTWC\_DRAWING-0112\_AUDIO

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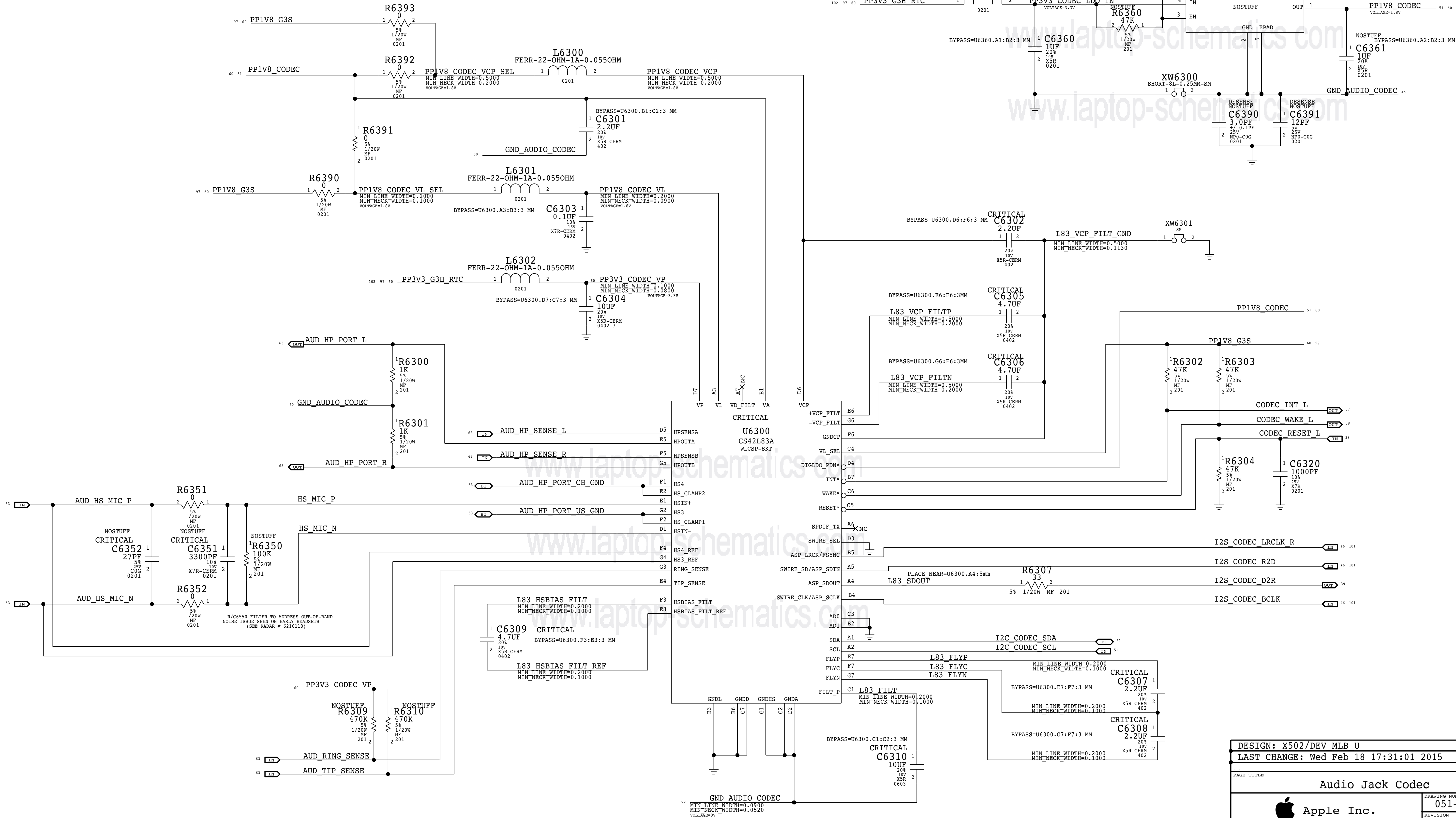
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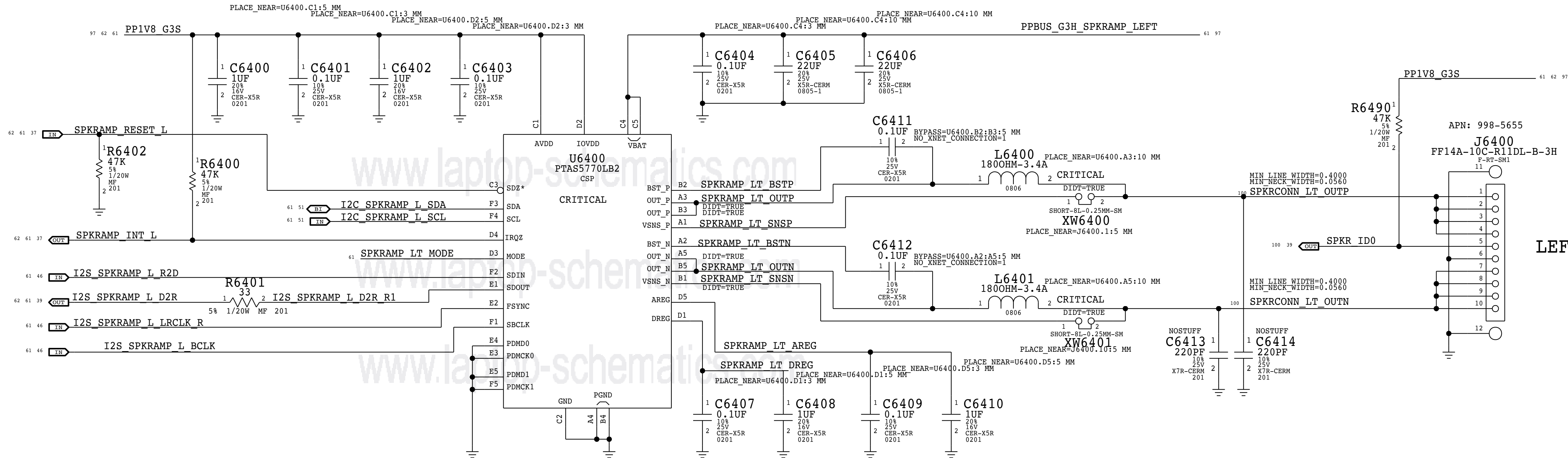
AUDIO JACK CODEC I2C ADDRESS		
AD1	AD0	ADDRESS
GND	GND	0x48 <--
GND	1.8V	0x49
1.8V	GND	0x4A
1.8V	1.8V	0x4B



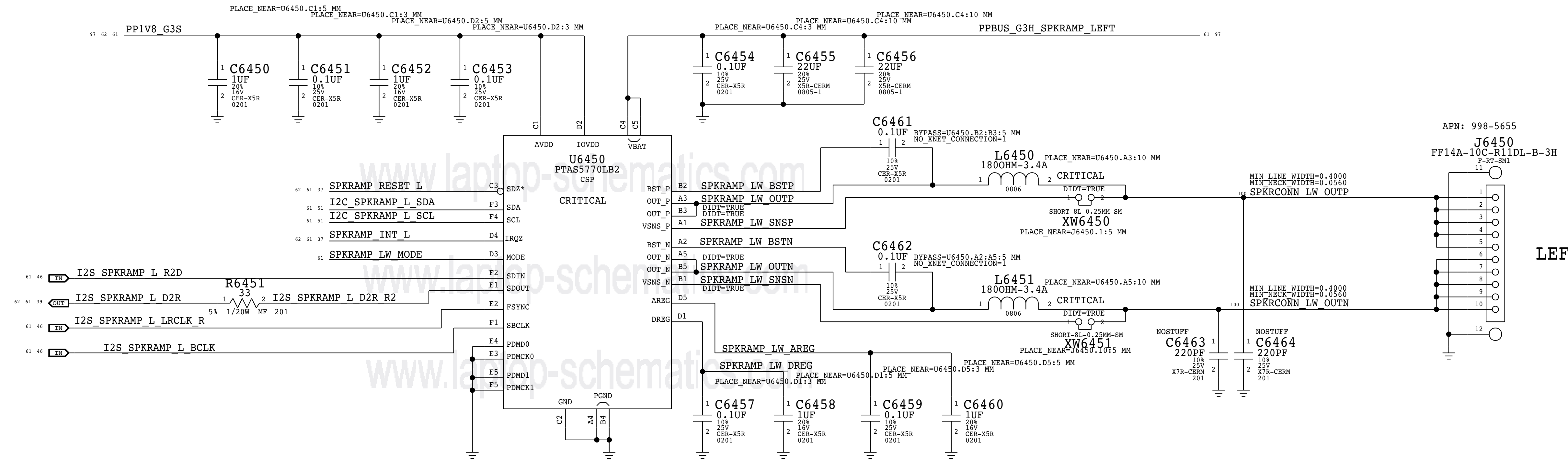


2X MONO SPEAKER LEFT AMPLIFIERS

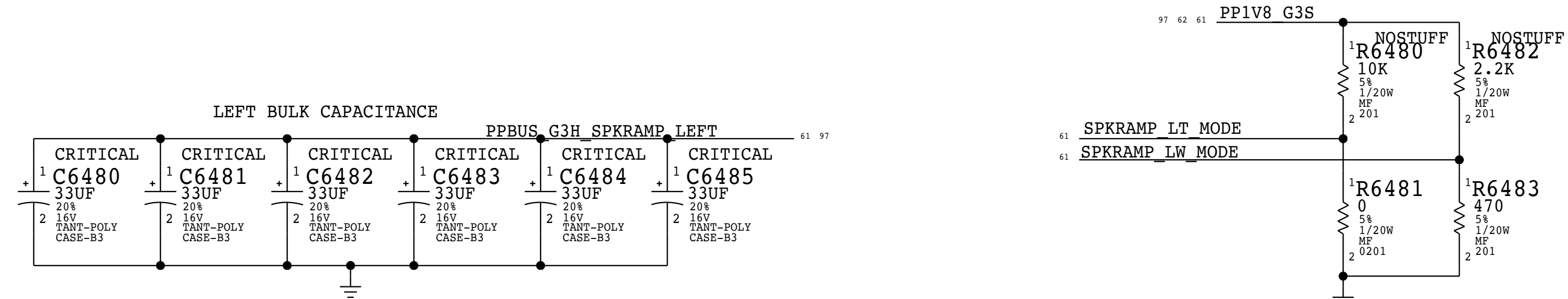
APN: 353S01252  
GAIN: 0DBFS = xxVRMS



LEFT TWEETER



LEFT WOOFER



MODE	PIN	I2C ADDR	CHANNEL
GND	0x31		L TW
470 to GND	0x32		L WF
470 to IOVDD	0x33		R TW
2k2 to GND	0x34		R WF
2k2 to IOVDD	0x35		
10k to GND	0x36		
10k to IOVDD	0x37		
47k to IOVDD	0x38		

BOM\_COST\_GROUP=AUDIO

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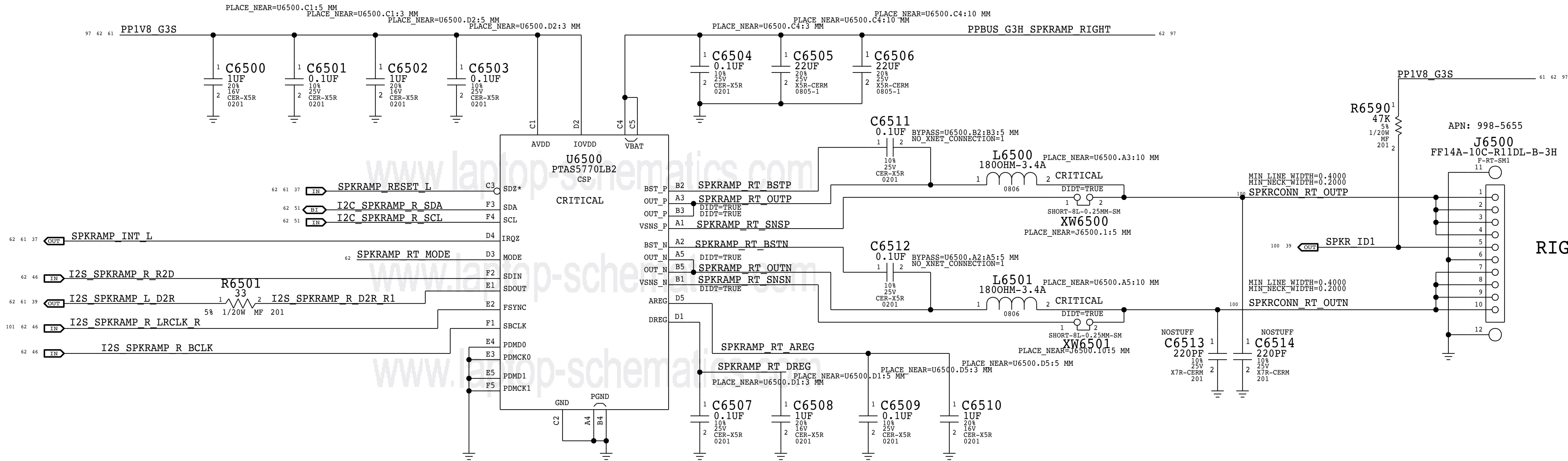
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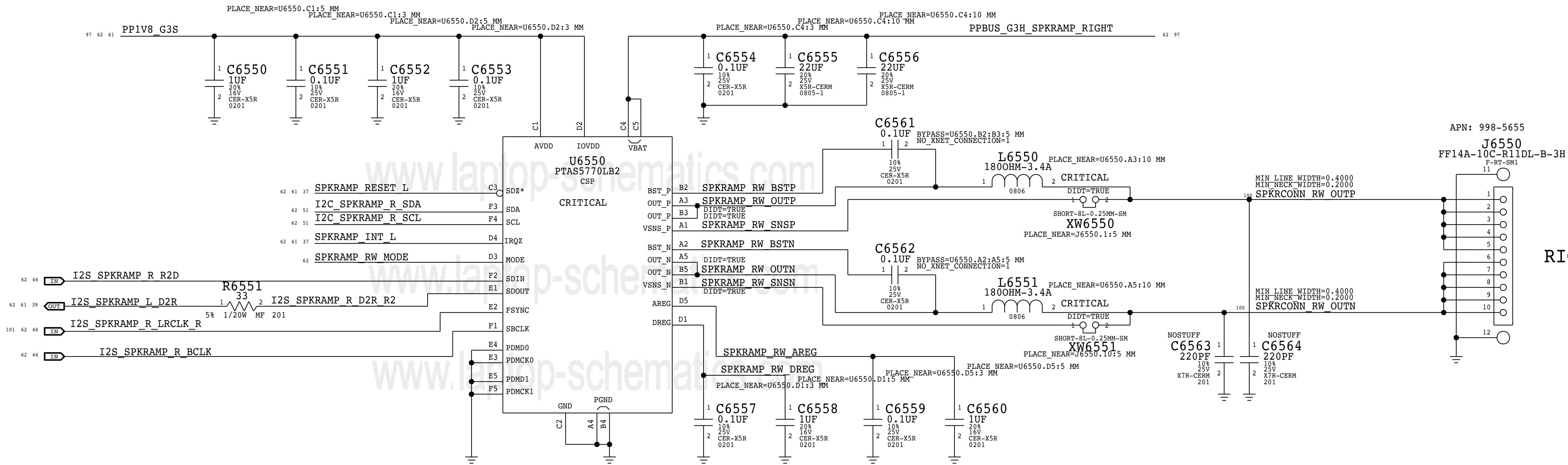


2X MONO SPEAKER RIGHT AMPLIFIERS

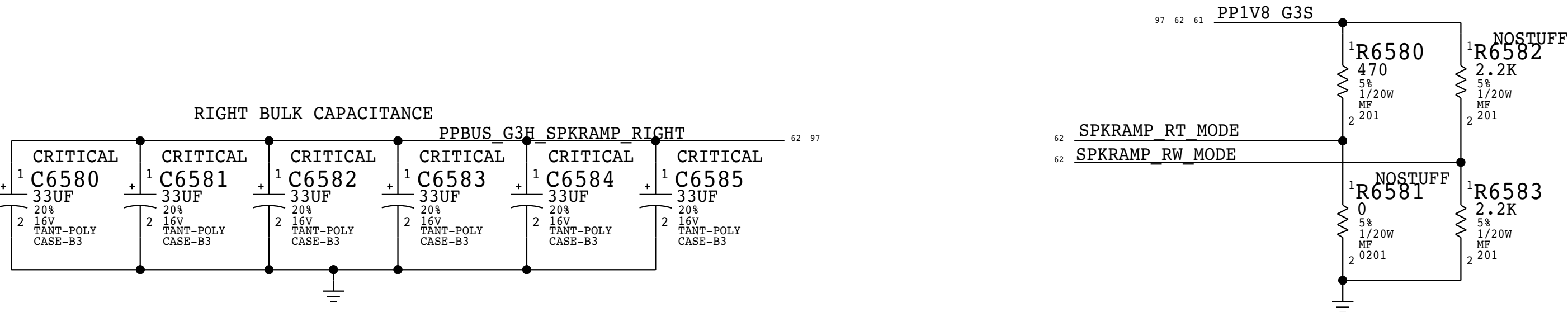
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GAIN: 0DBFS = xxVRMS



RIGHT TWEETER



RIGHT WOOFER

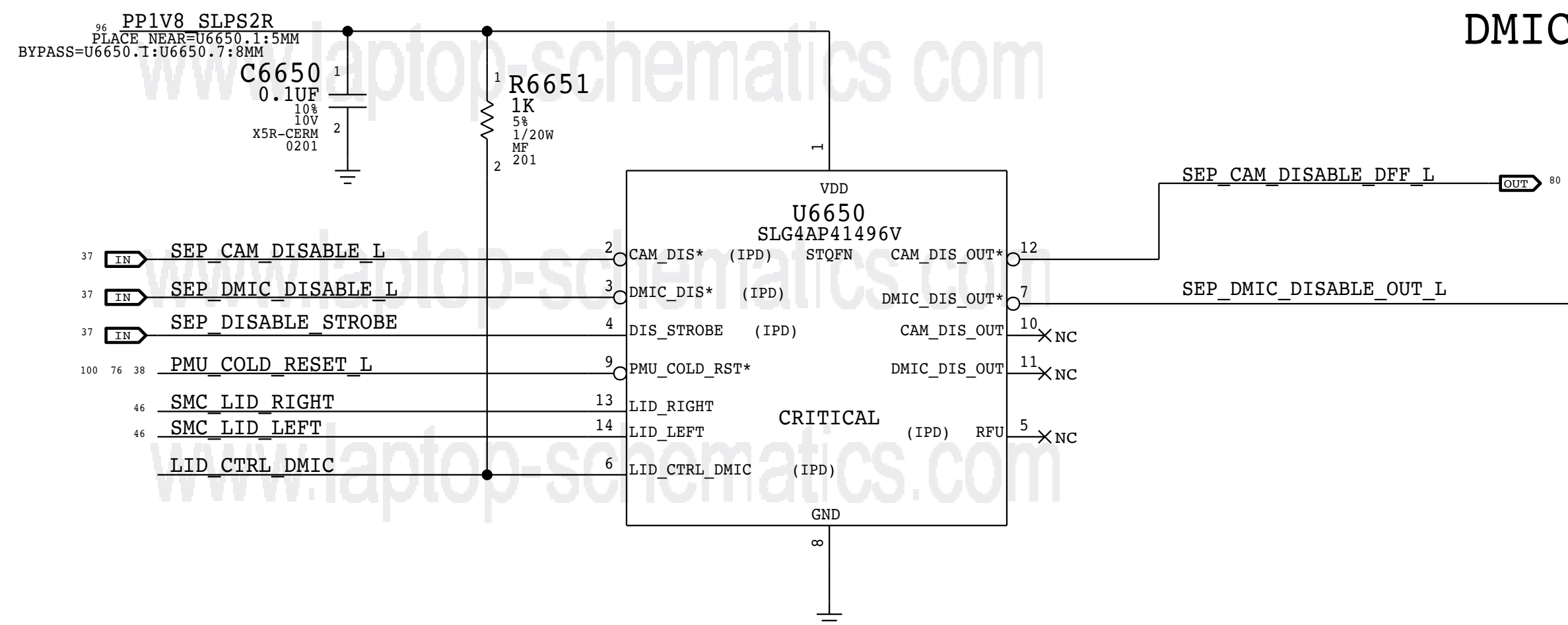


MODE	PIN	I2C ADDR	CHANNEL
GND		0x31	L TW
470 to GND		0x32	L WF
470 to IOVDD		0x33	R TW
2k2 to GND		0x34	R WF
2k2 to IOVDD		0x35	
10k to GND		0x36	
10k to IOVDD		0x37	
47k to IOVDD		0x38	

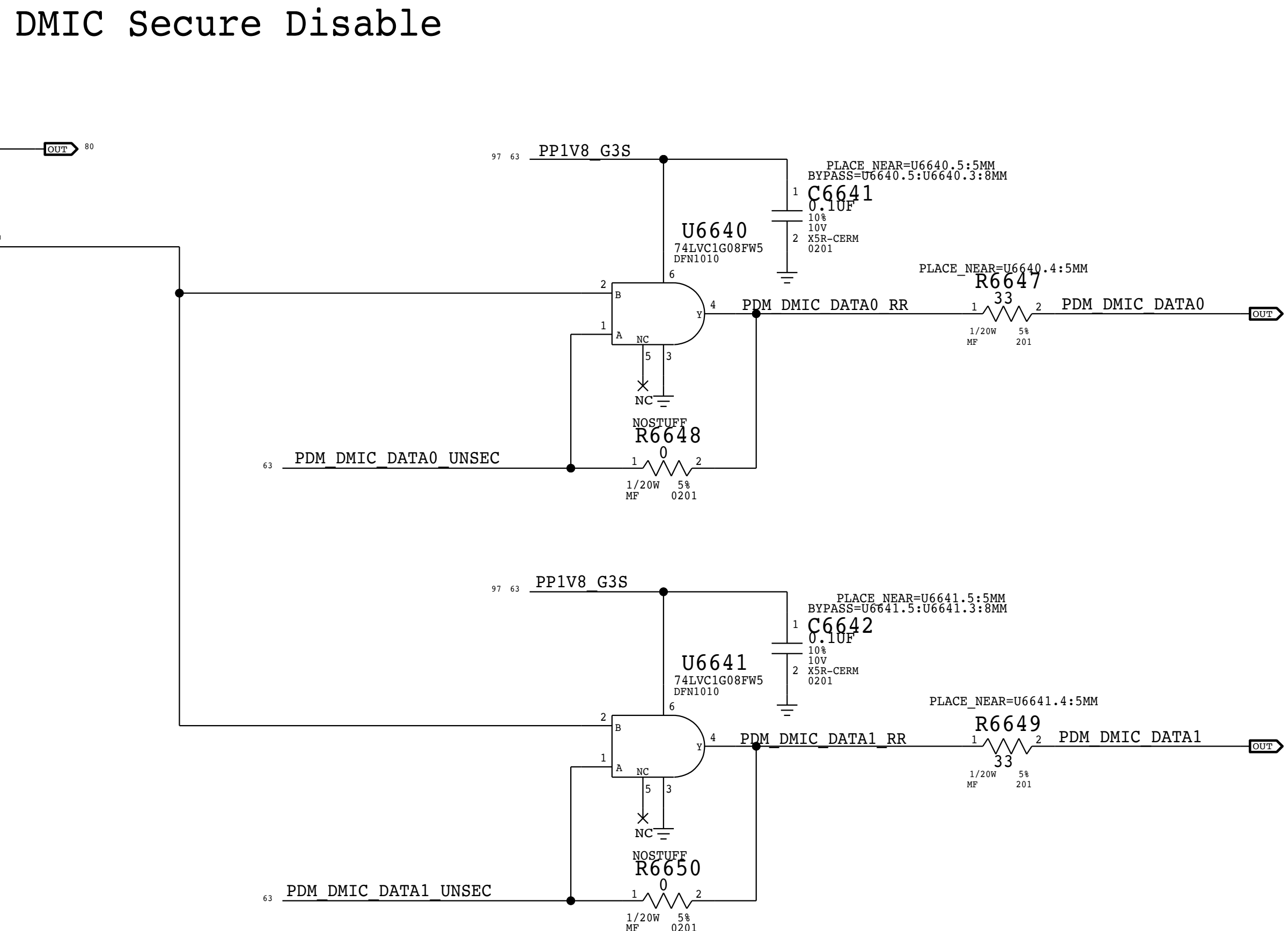
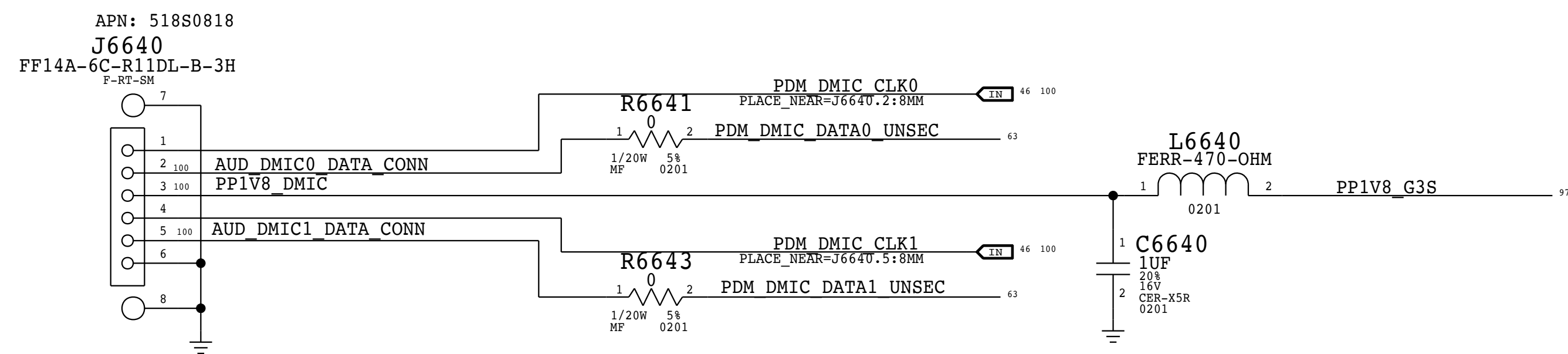
BOM\_COST\_GROUP=AUDIO

PAGE TITLE			
Audio Right Amplifiers			
	DRAWING NUMBER	051-02166	SIZE D
	REVISION	4.0.0	
	BRANCH	evt-mars-0	
PAGE		65 OF 150	
SHEET		62 OF 108	
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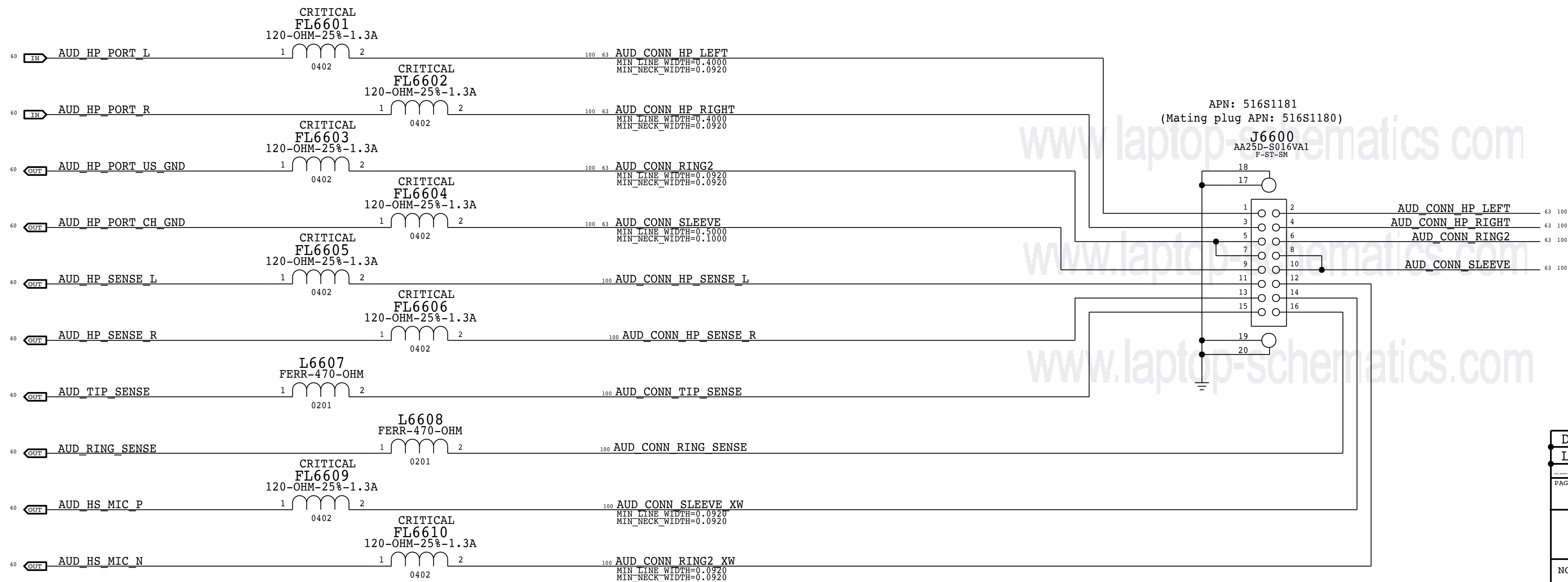





# Digital Mic Flex Connector



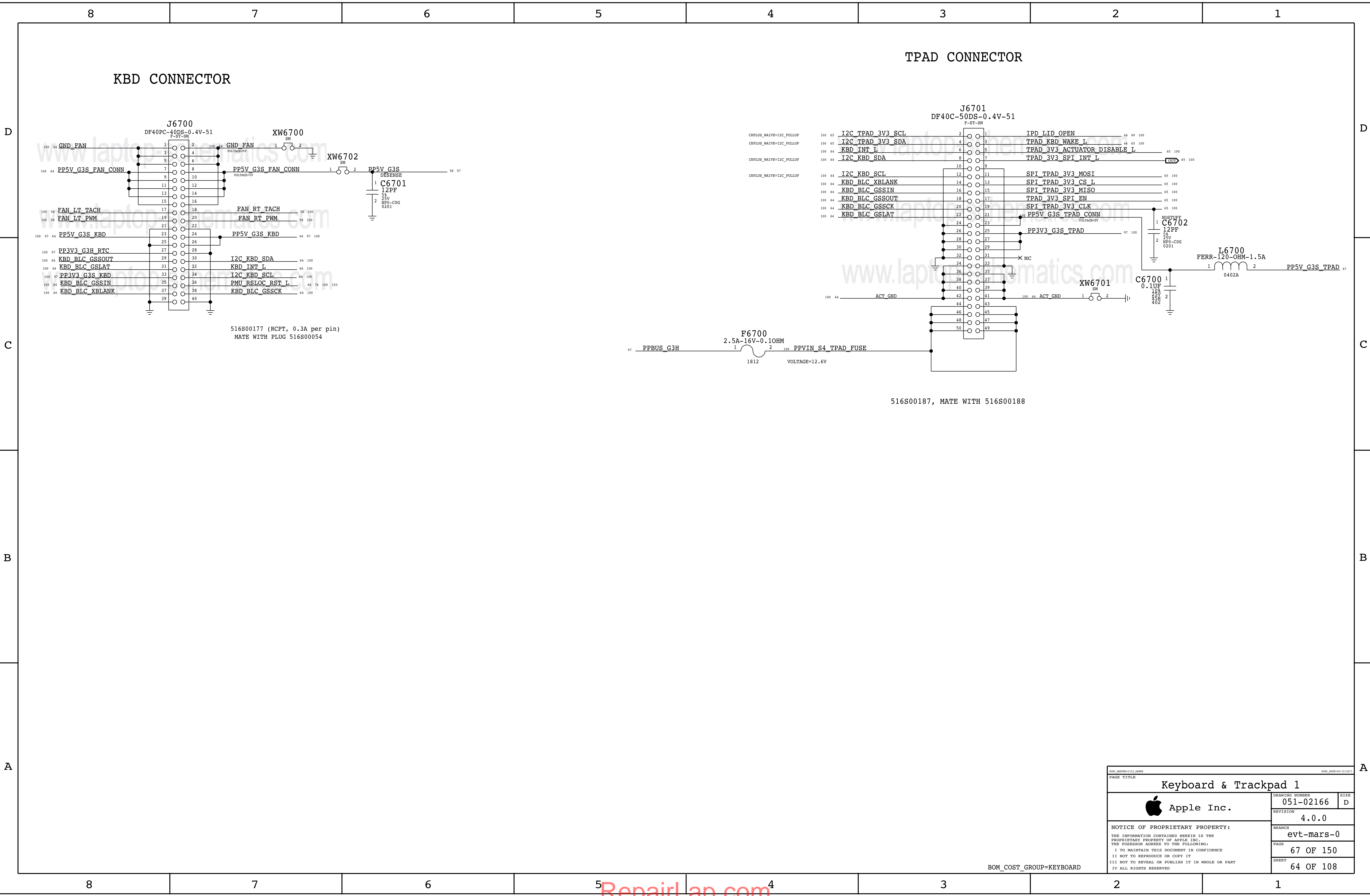
## Audio Jack Flex Connector



DESIGN: X502/DEV MLB U		
LAST CHANGE: Wed Feb 18 17:12:24 2015		
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 Apple Inc.	DRAWING NUMBER	051-02166
	REVISION	
	SIZE	D
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	SHEET	
		63 OF 108

BOM\_COST\_GROUP=AUDIO



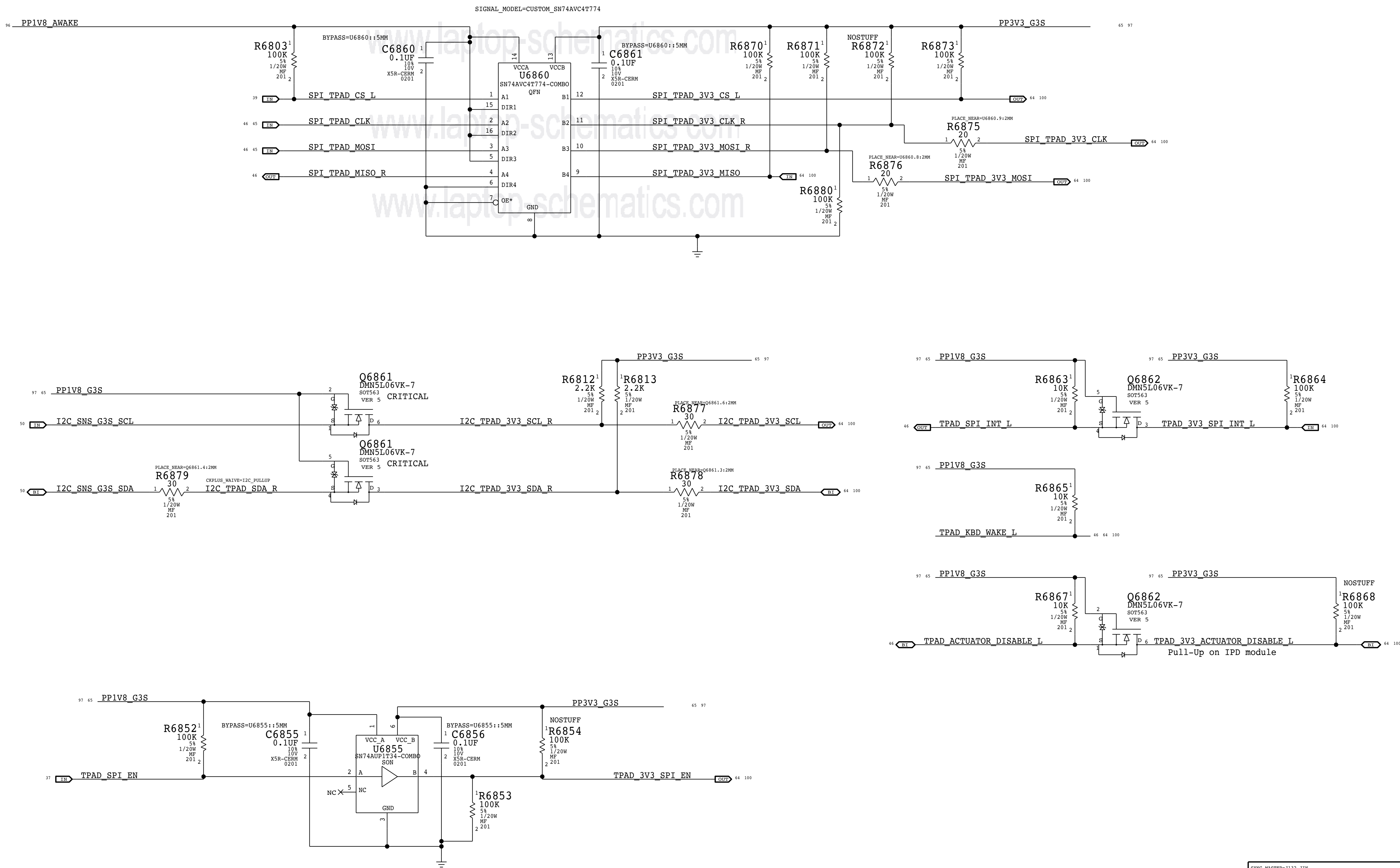



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Keyboard & Trackpad 1		
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	PAGE	67 OF 150
	SHEET	64 OF 108

BOM\_COST\_GROUP=KEYBOARD



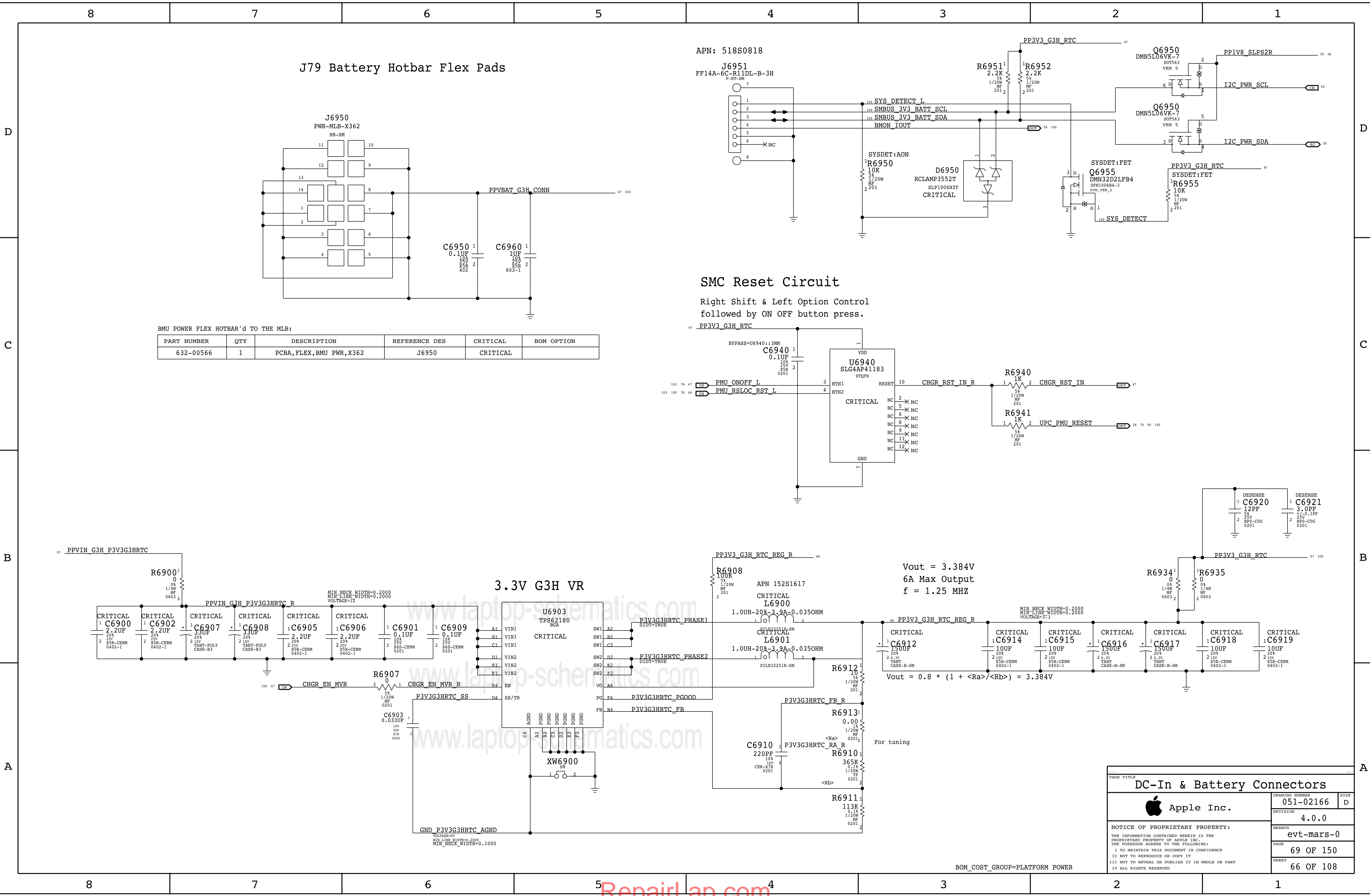
Trackpad Level Shifting



SYNC_MASTER=J132_JIN		SYNC_DATE=09/05/2017	
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	REVISION		4.0.0
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BRANCH		evt-mars-0	
PAGE		68 OF 150	
SHEET		65 OF 108	

BOM\_COST\_GROUP=TRACKPAD

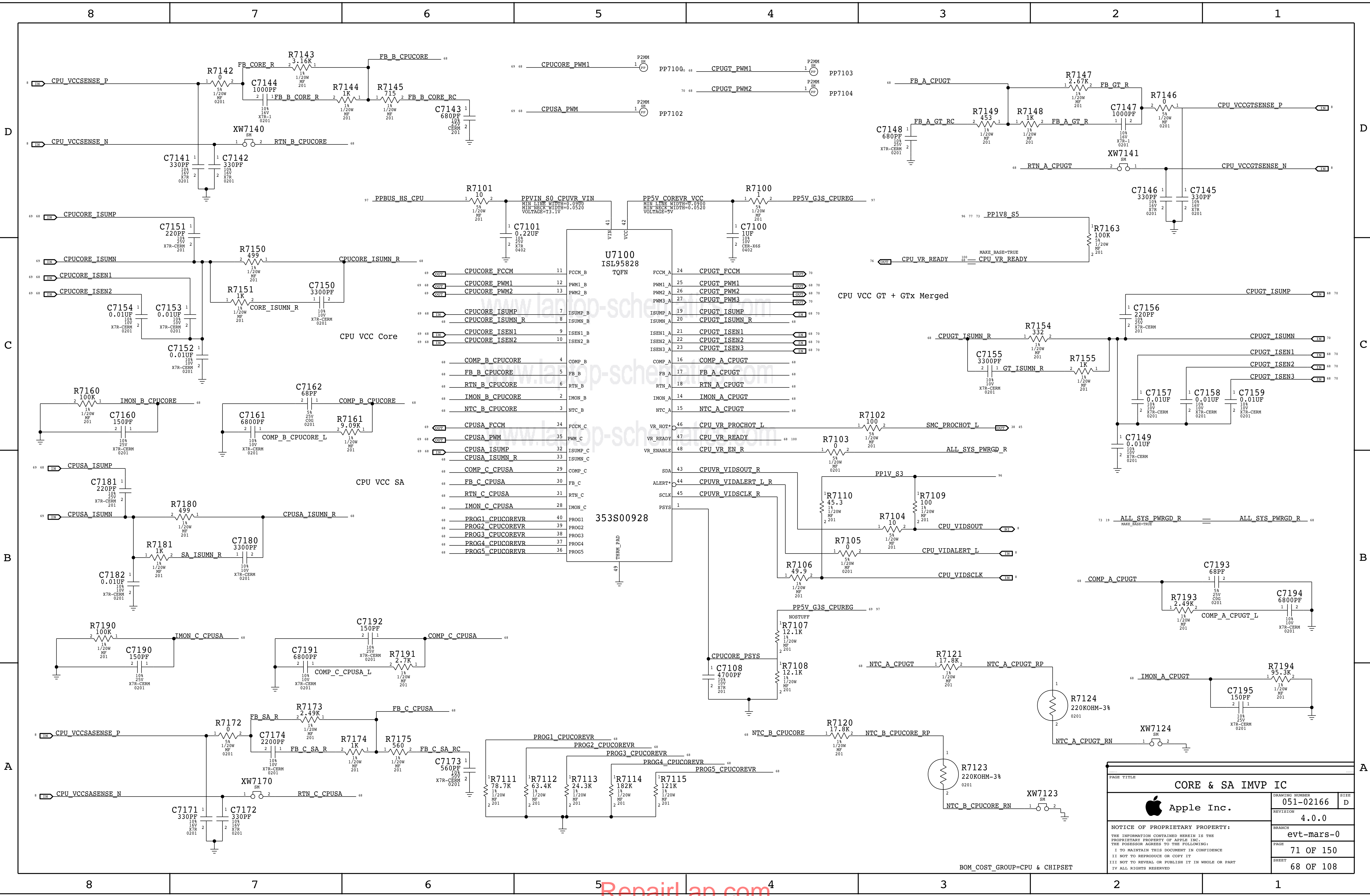




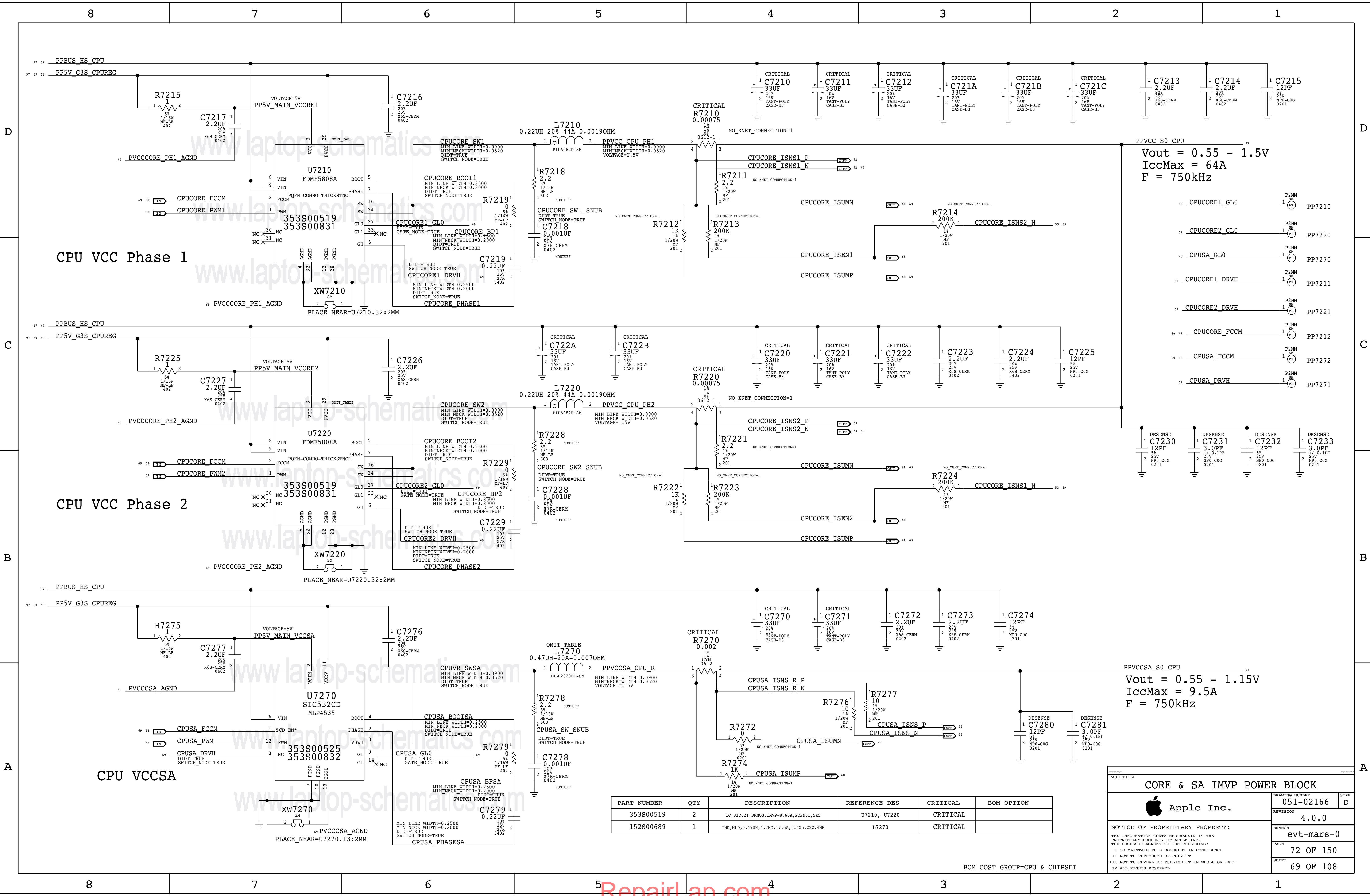














8

7

6

5

4

3

2

1


## CPU VCCGT/GTx Phase 1

## CPU VCCGT/GTx Phase 2

## CPU VCCGT/GTx Phase 3

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S00497	3	IC,FDMF808A,DRMOS,IMVP8,50A,PQFN31,5X5	U7410, U7420, U7430	CRITICAL	


Vout = 0.55 - 1.5V  
IccMax = 64A  
F = 750kHz

GT & GTX IMVP POWER BLOCK		
 Apple Inc.	DRAWING NUMBER	051-02166
	REVISION	4.0.0
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	PAGE	74 OF 150
	SHEET	70 OF 108

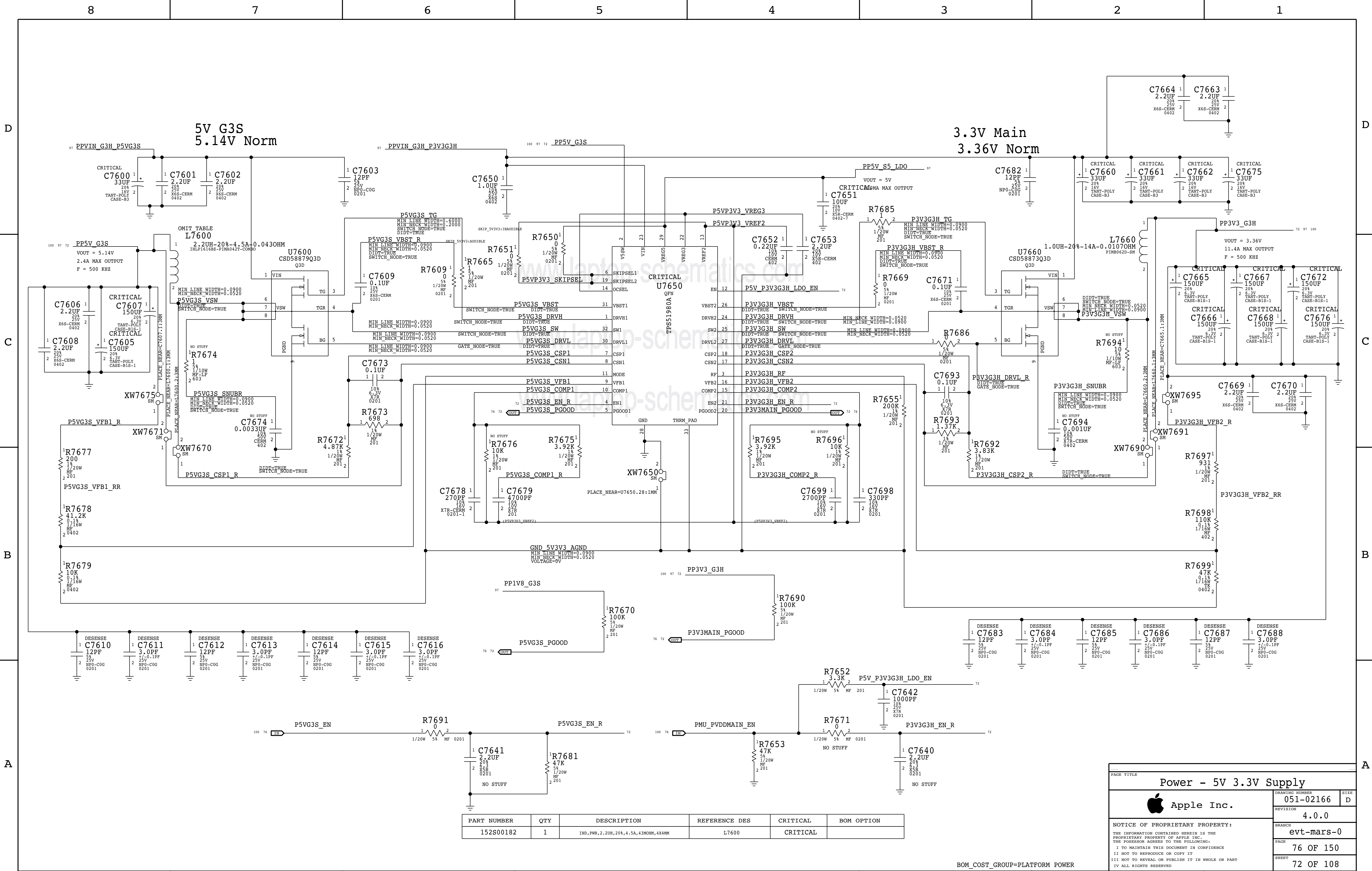
BOM\_COST\_GROUP=CPU &amp; CHIPSET




	8	7	6	5	4	3	2	1
D								
C								
B								
A								
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SYNC MASTER=J132 MAO			SYNC DATE=02/09/2017		
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			PAGE	75 OF 150	
			SHEET	71 OF 108	



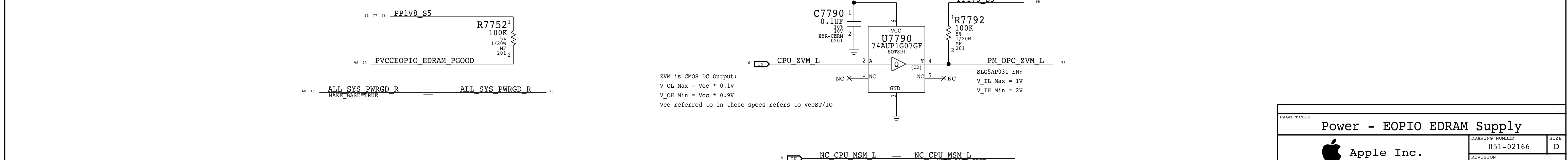
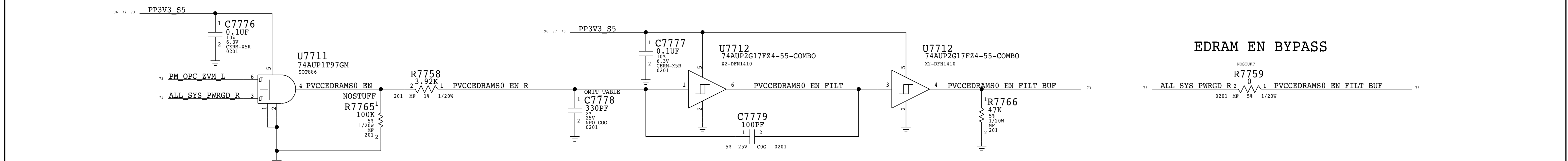
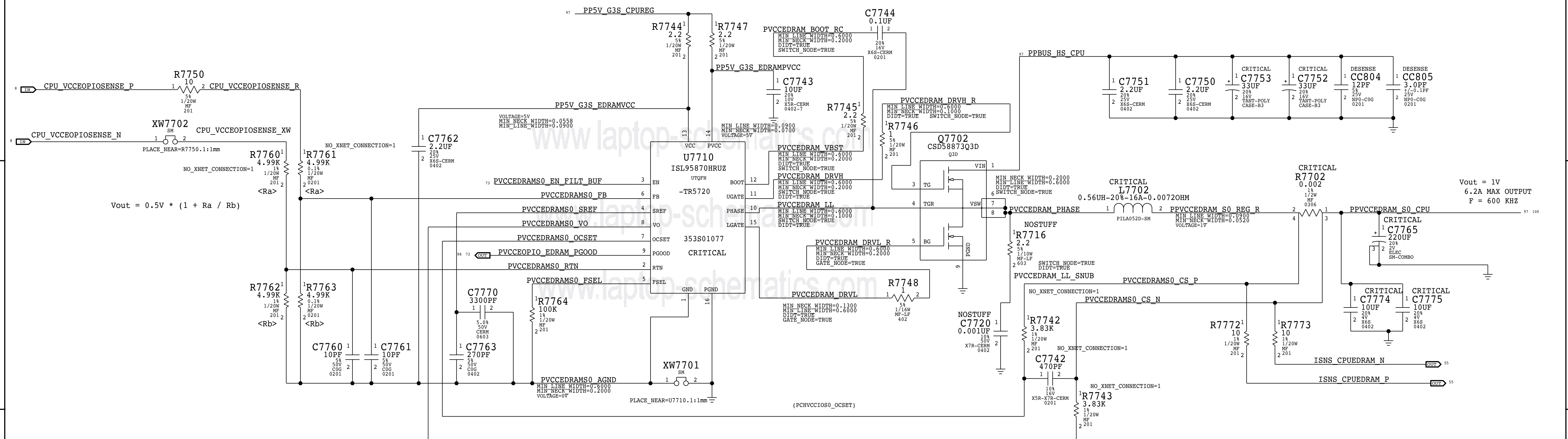


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
152S00182	1	IND, PWR, 2.2UH, 20%, 4.5A, 43MOHM, 4X4MM	L7600	CRITICAL	

PAGE TITLE		
Power - 5V 3.3V Supply		
 Apple Inc.	DRAWING NUMBER	051-02166
	REVISION	4.0.0
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	SHEET	72 OF 108

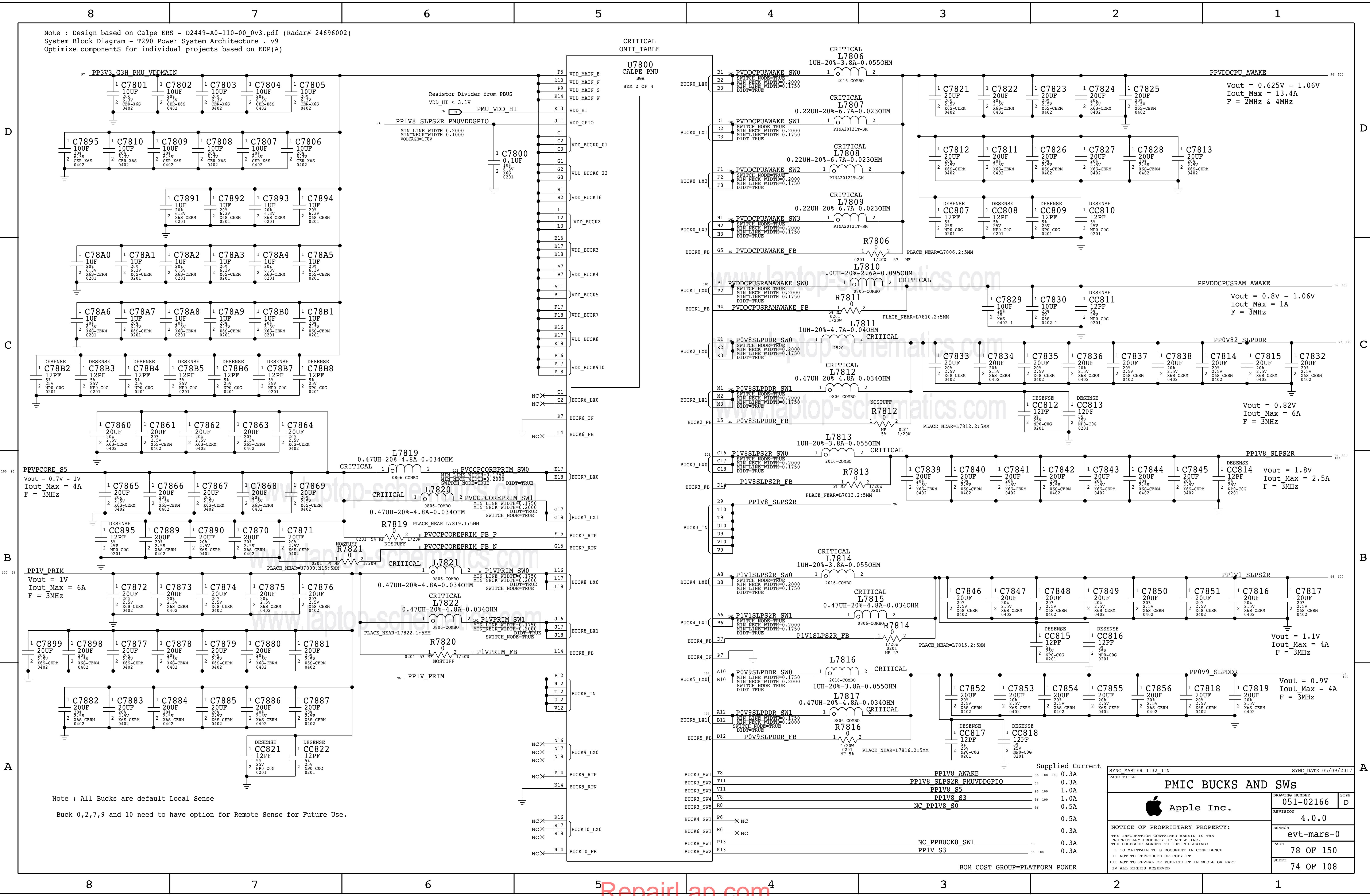
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BOM_COST_GROUP=CPU & CHIPSET										III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART TV ALL RIGHTS RESERVED										SHEET 73 OF 108	
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Note : Design based on Calpe ERS - D2449-A0-110-00\_0v3.pdf (Radar# 24696002)  
System Block Diagram - T290 Power System Architecture . v9  
Optimize components for individual projects based on EDP(A)

CRITICAL  
OMIT\_TABLE

U7800  
CALPE-PMU  
BGA  
SYM 2 OF 4


Note : All Bucks are default Local Sense  
Buck 0,2,7,9 and 10 need to have option for Remote Sense for Future Use.

Supplied Current	
BUCK3_SW1	T8
BUCK3_SW2	T11
BUCK3_SW3	V11
BUCK3_SW4	V8
BUCK3_SW5	R8
BUCK4_SW1	P6
BUCK6_SW1	R6
BUCK8_SW1	P13
BUCK8_SW2	R13
PP1V8_AWAKE	T8
PP1V8_SLPS2R_PMUVDGGPIO	T11
PP1V8_S5	V11
PP1V8_S3	V8
NC_PP1V8_S0	R8
NC_PPBUCK8_SW1	P13
PP1V_S3	R13

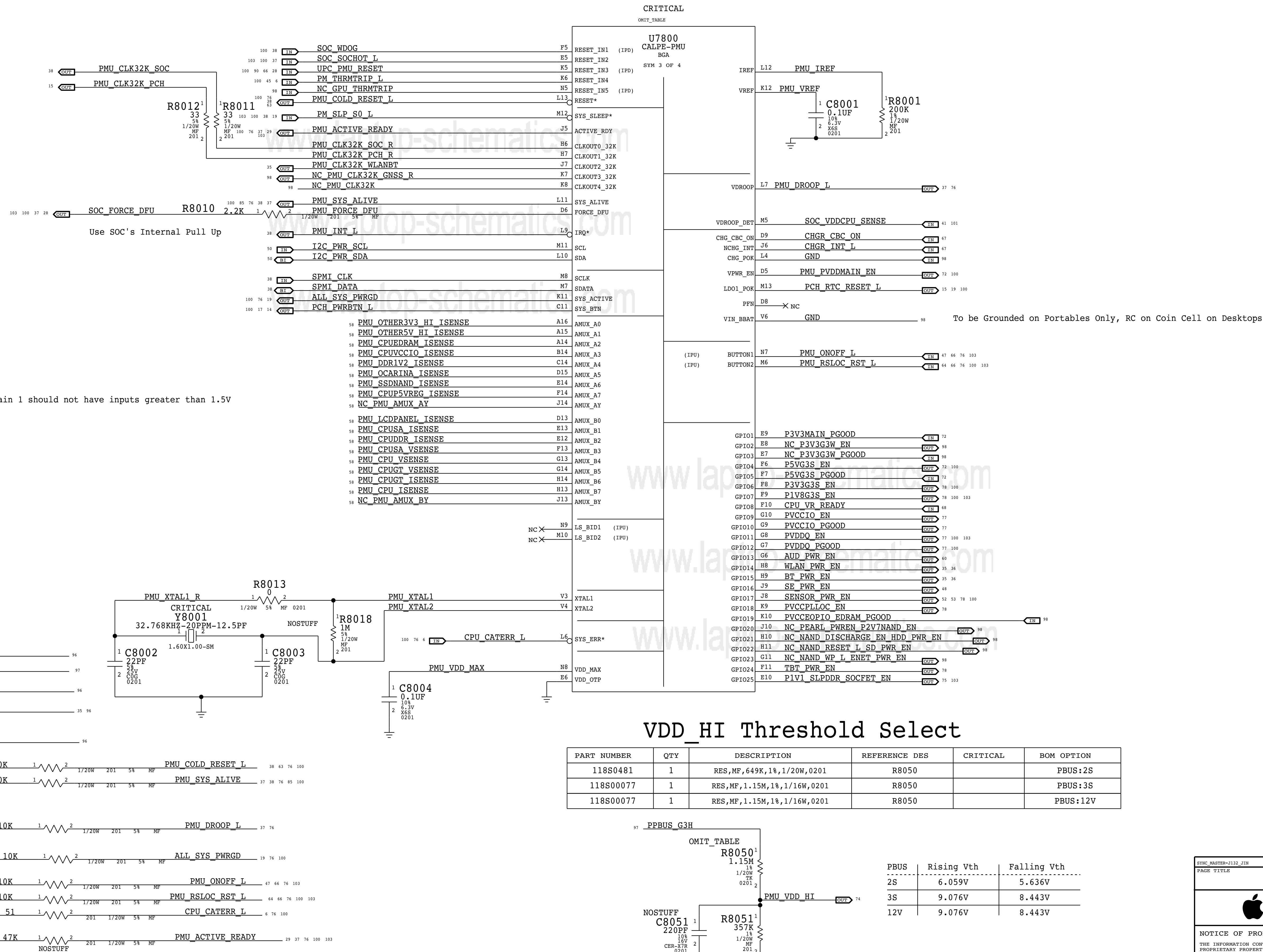
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		SHEET	74 OF 108




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		PAGE	79 OF 150
		SHEET	75 OF 108



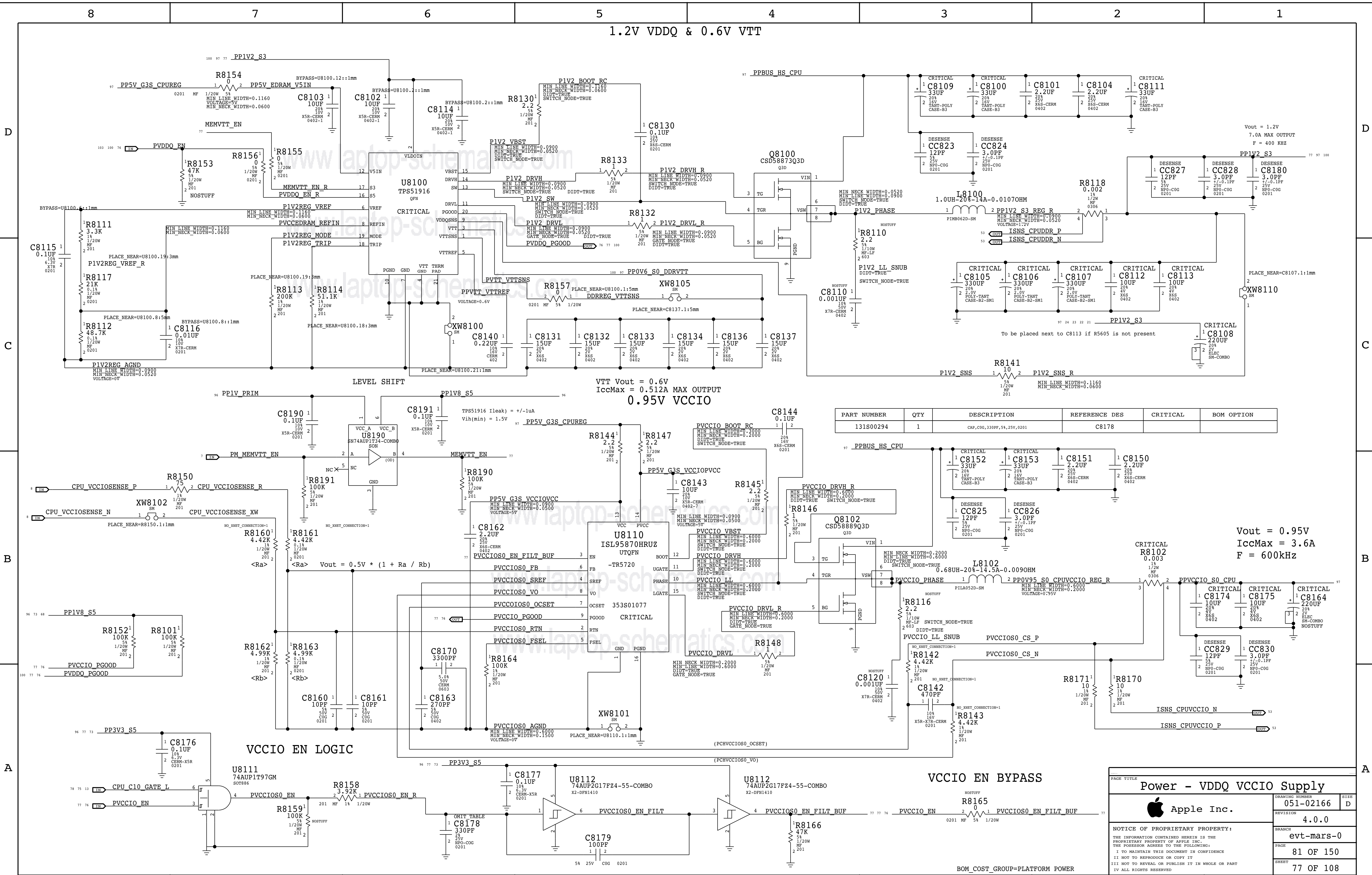


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
118S0481	1	RES,MF,649K,1%,1/20W,0201	R8050		PBUS:2S
118S00077	1	RES,MF,1.15M,1%,1/16W,0201	R8050		PBUS:3S
118S00077	1	RES,MF,1.15M,1%,1/16W,0201	R8050		PBUS:12V

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

SRC_MASTER=3132_JIN		SRC_DATE=09/05/2017	
PAGE TITLE			
PMIC GPIOs & Control			
 Apple Inc.	DRAWING NUMBER	051-02166	SHEET D
	REVISION	4.0.0	
	BRANCH	evt-mars-0	
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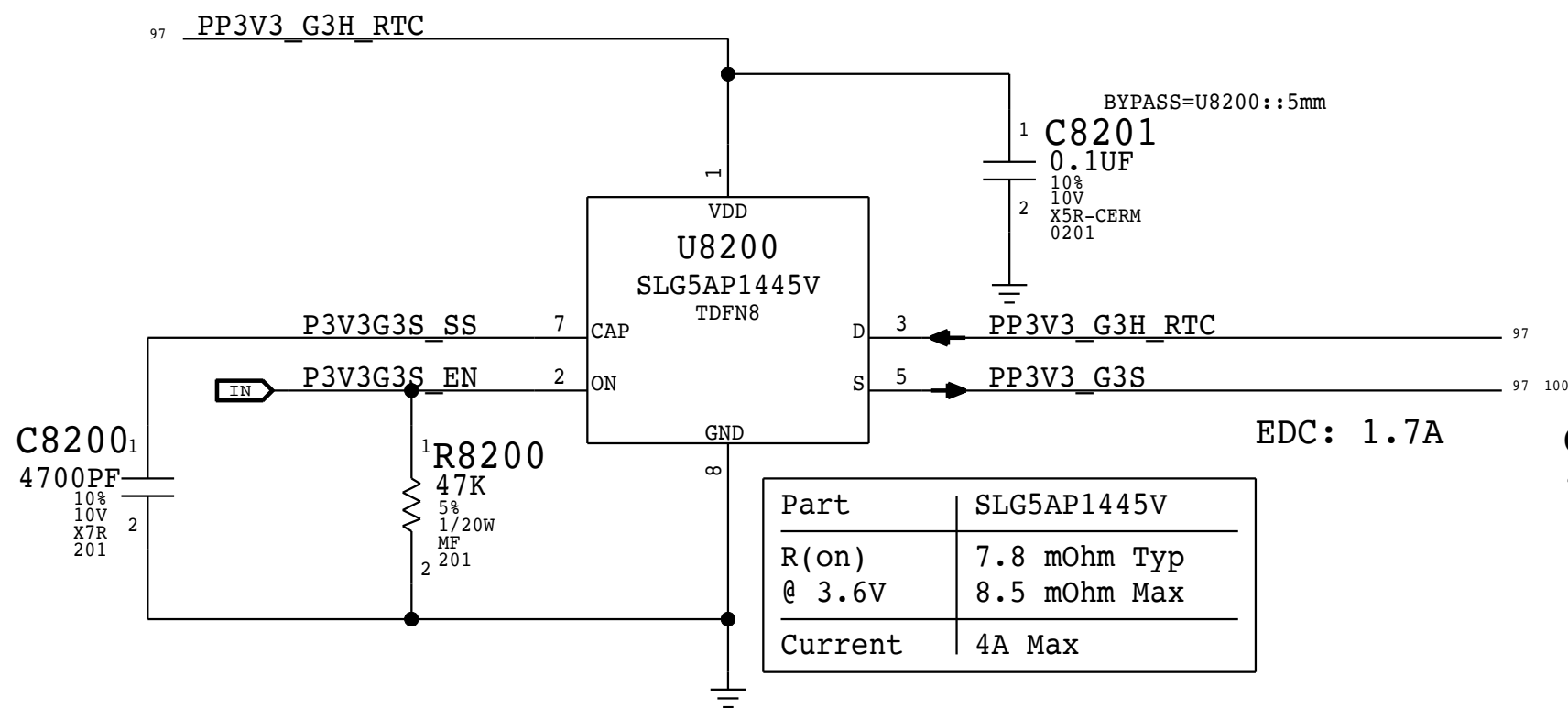




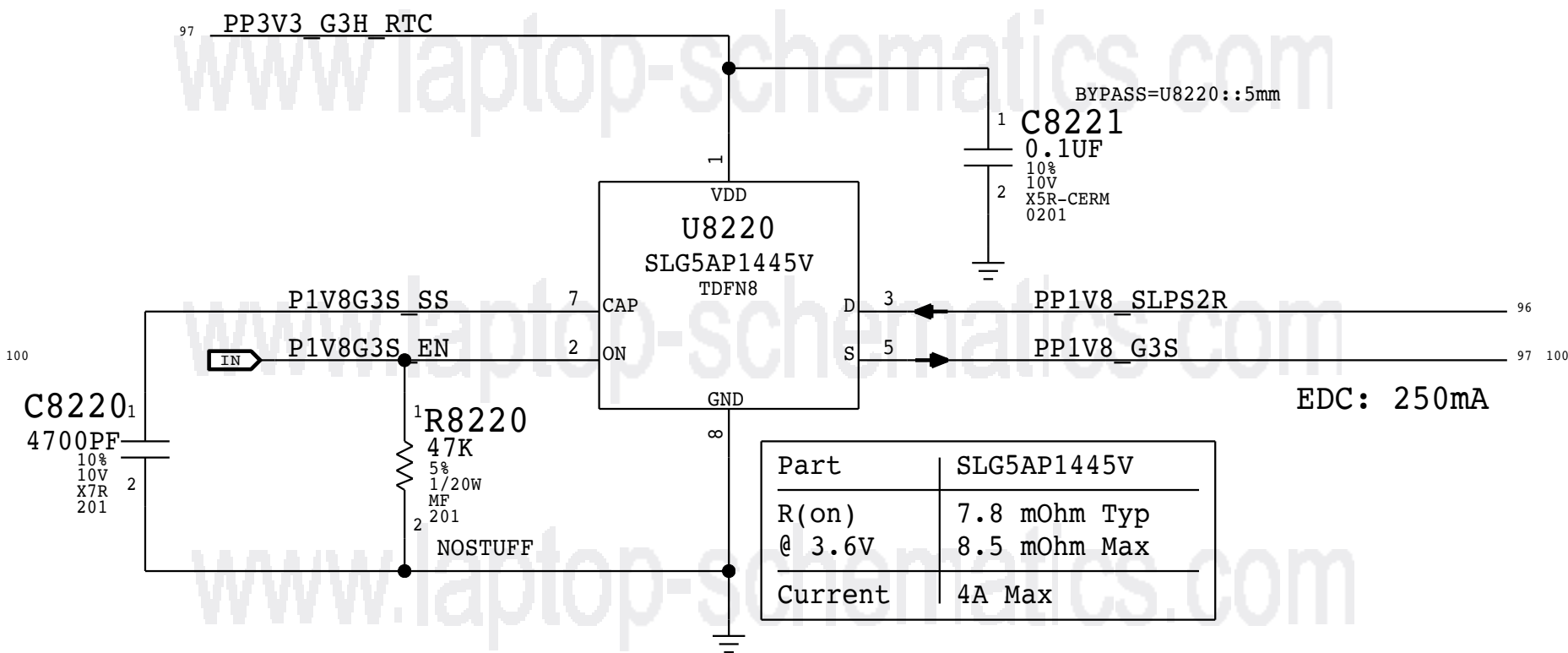


Note: Load switches may be larger than necessary

### 3.3V G3 Standby Switch



### 1.8V G3 Standby Switch

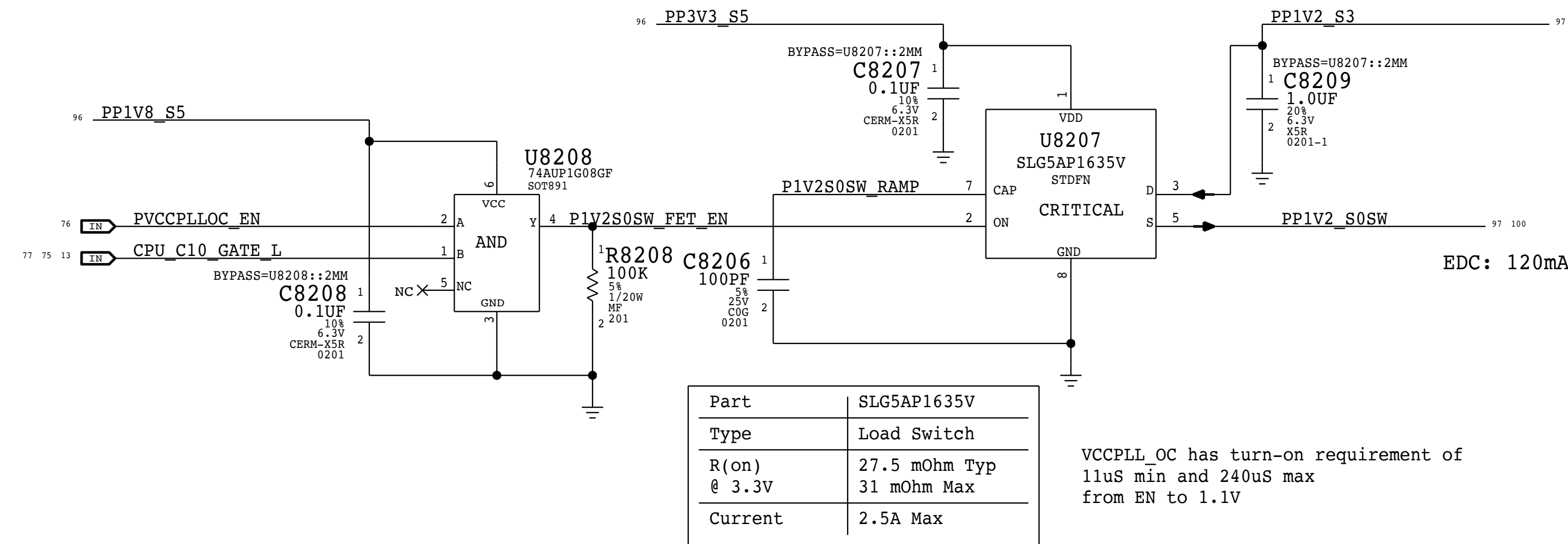


## System Power States

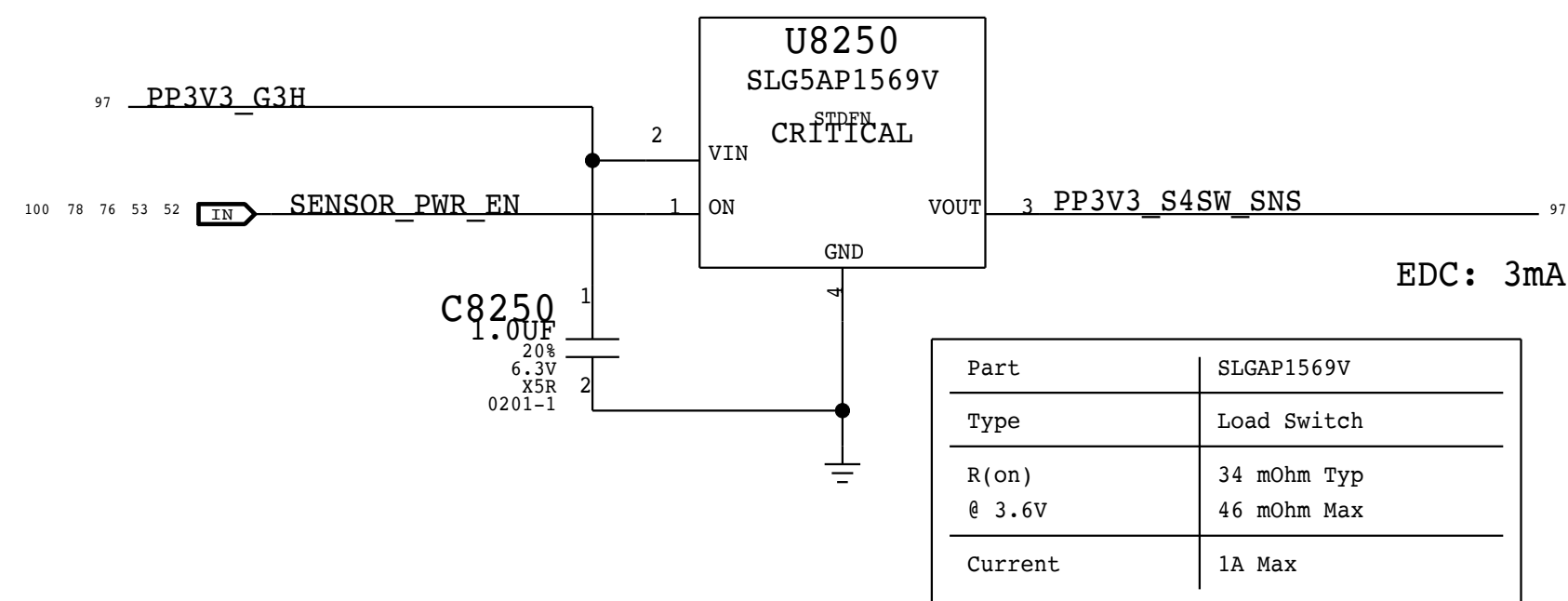
System State:	Shutdown (G3H)		Standby (G3S)		Standby (S4)		Sleep (S0i/S3)		Run (S0)
CPU/PCH State:	Off (RTC Only)		Off (RTC Only)		Standby		Sleep		Run
Rails	SoC State:		S2R	Awake	S2R	Awake	S2R	Awake	Awake
PP*_S2R (0.8,1.1,1.8V)	On	On	On	On	On	On	On	On	On
PP*_DDR (0.8,0.9,1.1V)	Off	On	Off	On	Off	On	Off	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
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/PCH VRs	Off	Off	Off	Off	Off/On	Off/On	Off/On	Off/On	On

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

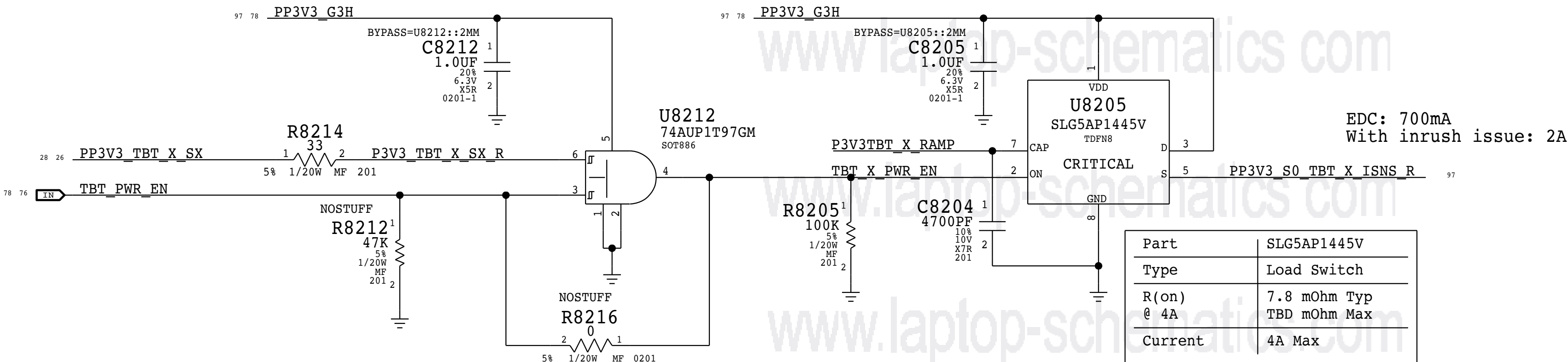
### 1.2V S0SW VCCPLL\_OC Switch



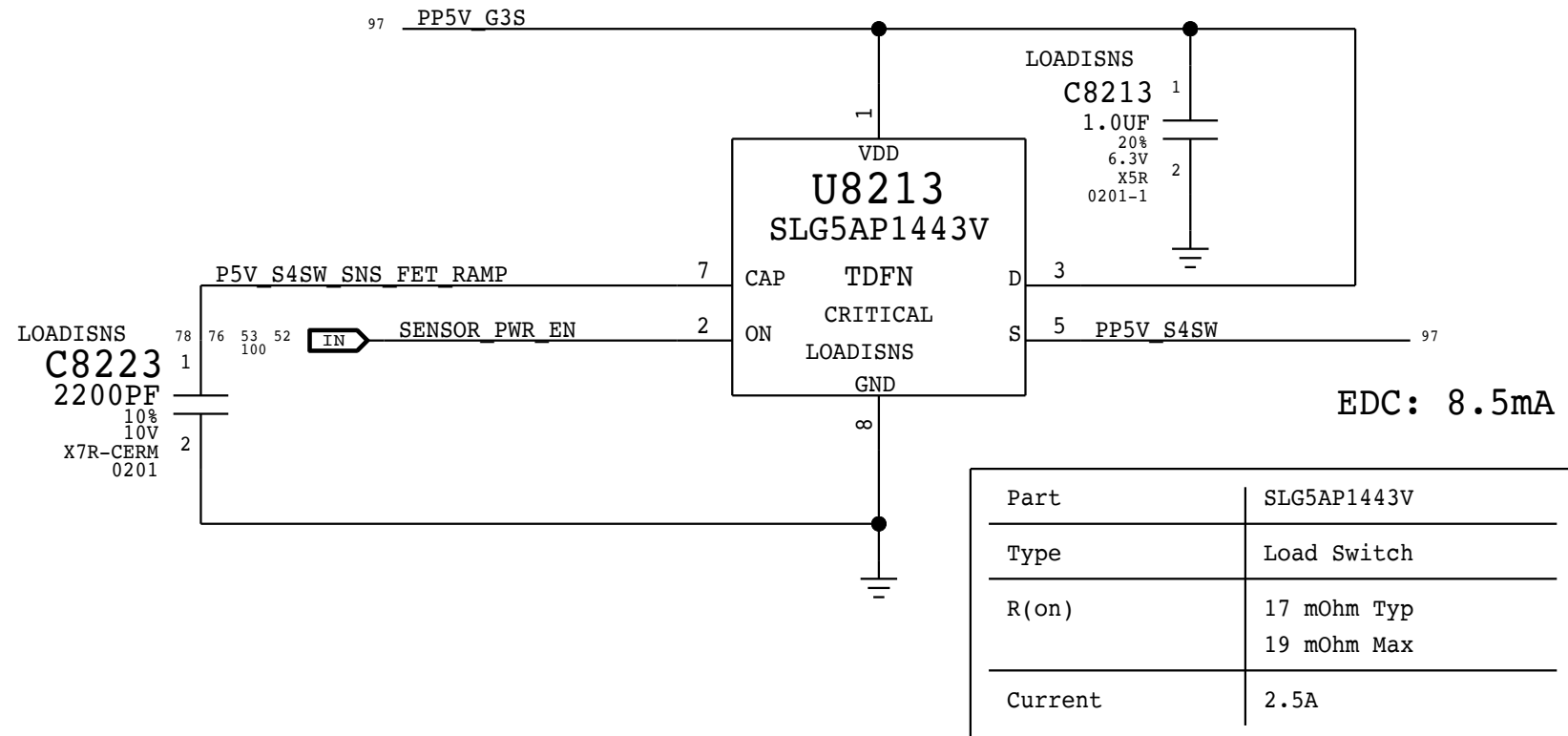
### 3.3V Sensor Switch



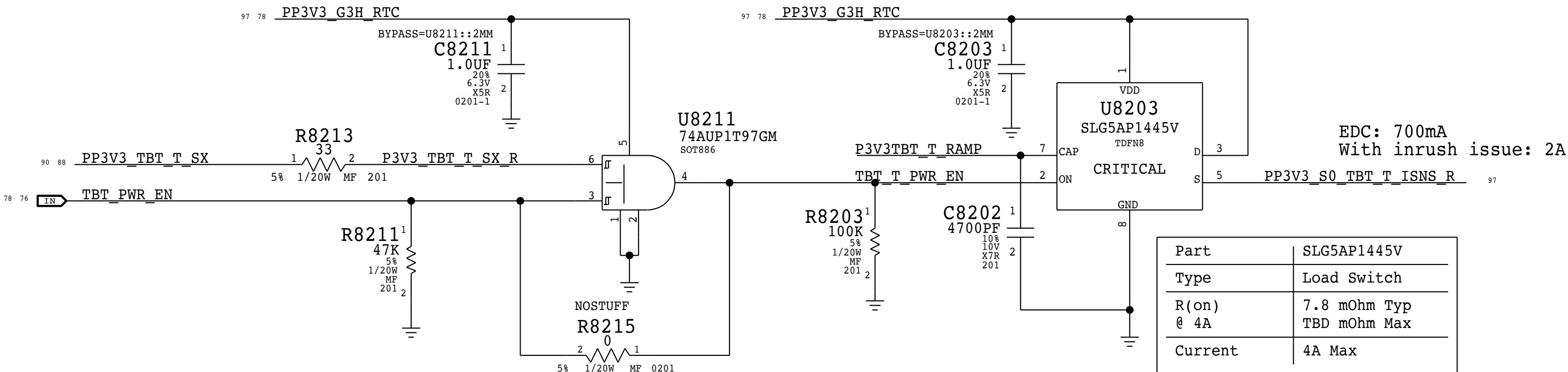
### 3.3V S0SW TBT X Switch



### 5V Sensor Switch



### 3.3V S0SW TBT T Switch



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Power FETs		
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Page Notes

Power aliases required by this page:  
- =PPVIN\_S0SW\_LCDBLTFFET (9-12.6V LCD BACKLIGHT INPUT)  
- =PP5V\_S0\_BKLT (5V BACKLIGHT DRIVER INPUT)

D

C

B

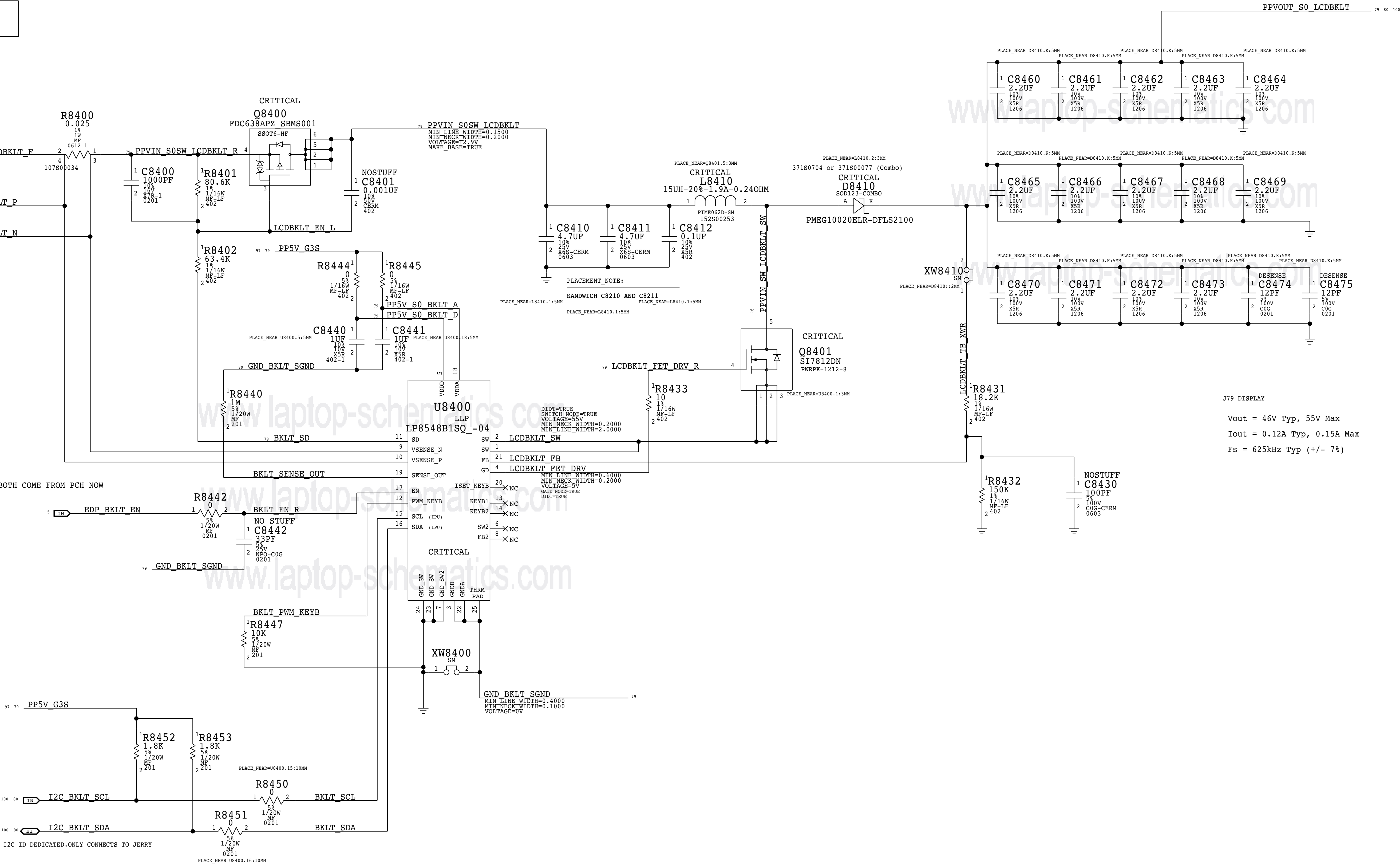
A

D

C

B

A



PLATFORM\_RESET NO LONGER GATES THE BKLT\_EN AS BOTH COME FROM PCH NOW

J79 DISPLAY  
Vout = 46V Typ, 55V Max  
Iout = 0.12A Typ, 0.15A Max  
Fs = 625kHz Typ (+/- 7%)

LINE WIDTHS

- PP5V\_S0\_BKLT\_A  
MIN LINE WIDTH=2.0000  
MIN NECK WIDTH=0.2000  
VOLTAGE=5V
- PP5V\_S0\_BKLT\_D  
MIN LINE WIDTH=2.0000  
MIN NECK WIDTH=0.2000  
VOLTAGE=5V
- BKLT\_SD  
MIN LINE WIDTH=0.2500  
MIN NECK WIDTH=0.2000

PBUS LINE WIDTHS

- PPVIN\_S0SW\_LCDBKLT\_F  
MIN LINE WIDTH=2.0000  
MIN NECK WIDTH=0.2000  
VOLTAGE=12.5V
- PPVIN\_S0SW\_LCDBKLT\_R  
MIN LINE WIDTH=2.0000  
MIN NECK WIDTH=0.2000  
VOLTAGE=12.5V
- PPVIN\_S0SW\_LCDBKLT  
MIN LINE WIDTH=0.1500  
MIN NECK WIDTH=0.2000  
VOLTAGE=12.5V

LCD BKLT LINE WIDTHS

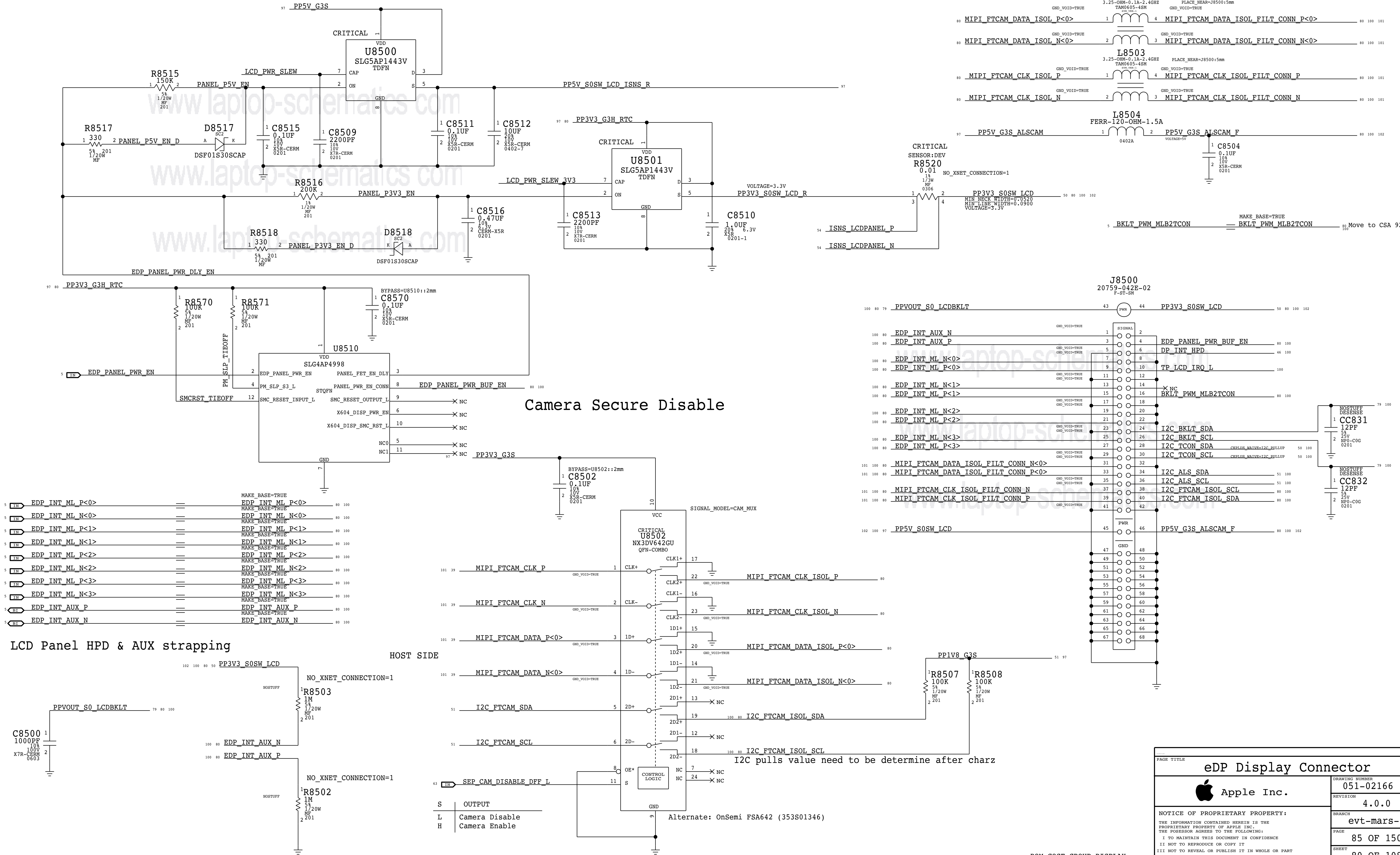
- LCDBKLT\_FET\_DRV\_R  
MIN LINE WIDTH=0.4000  
MIN NECK WIDTH=0.1000  
VOLTAGE=0V
- PPVIN\_SW\_LCDBKLT\_SW  
MIN LINE WIDTH=2.0000  
MIN NECK WIDTH=0.2000  
VOLTAGE=5V
- PPVOUT\_S0\_LCDBKLT  
MIN LINE WIDTH=0.5000  
MIN NECK WIDTH=0.1500  
VOLTAGE=5V

BOM\_COST\_GROUP=DISPLAY

PAGE TITLE		
LCD Backlight Driver		
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	BRANCH	evt-mars-0
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# LCD PANEL INTERFACE (eDP) + Camera (MIPI)



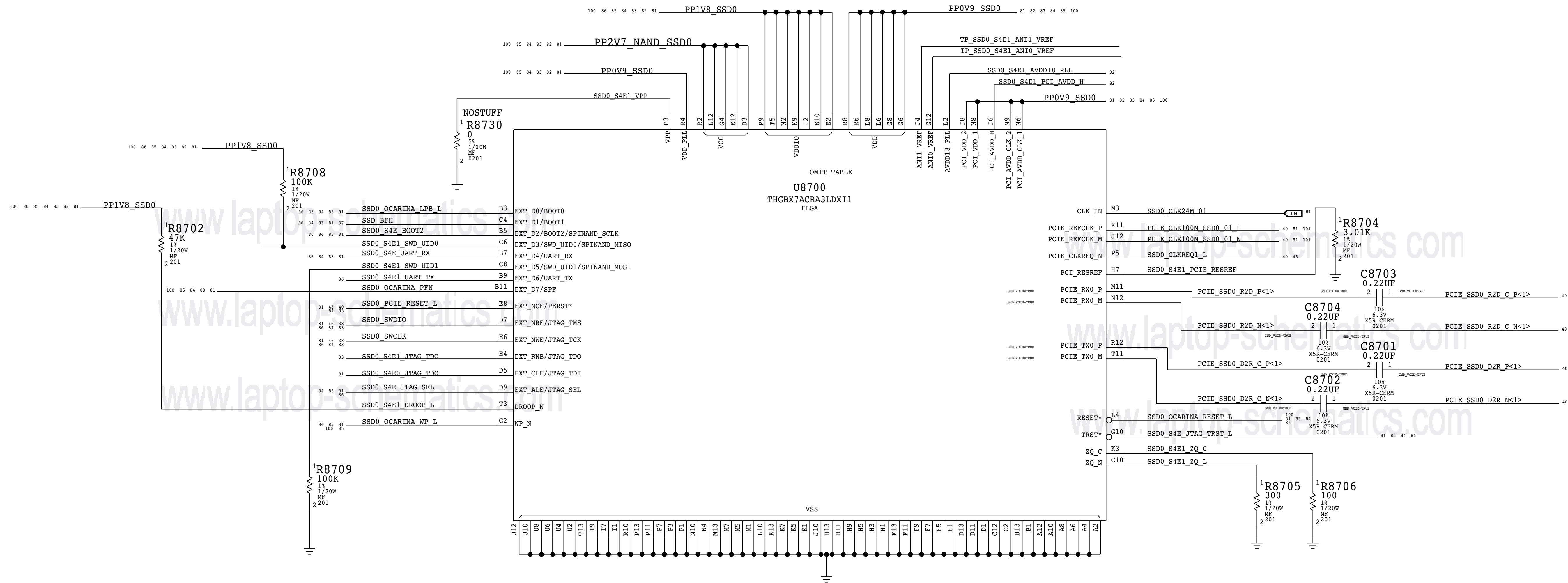
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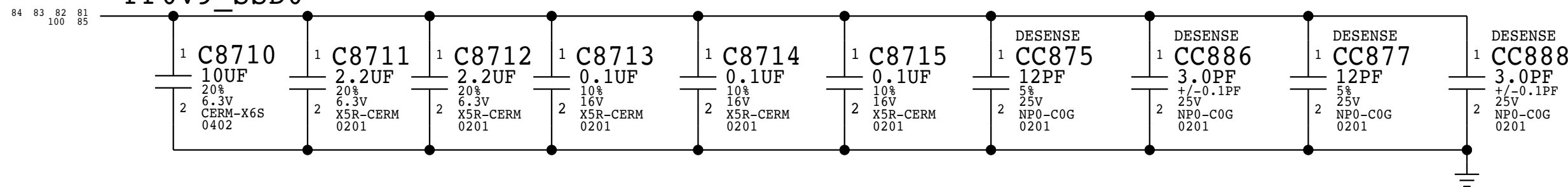


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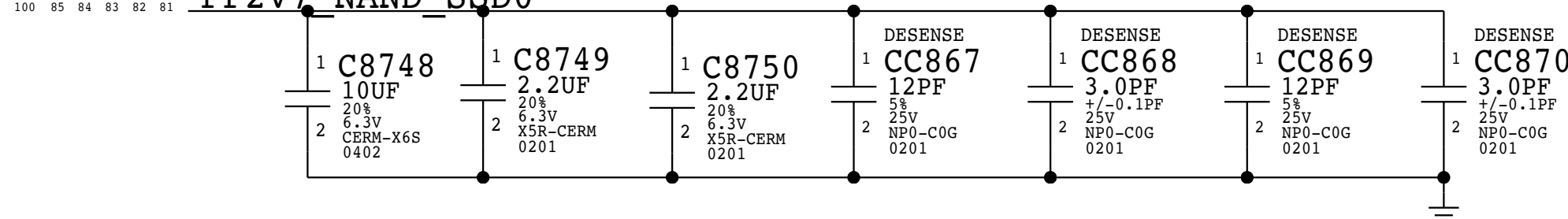
S4E VDD

PP0V9\_SSD0



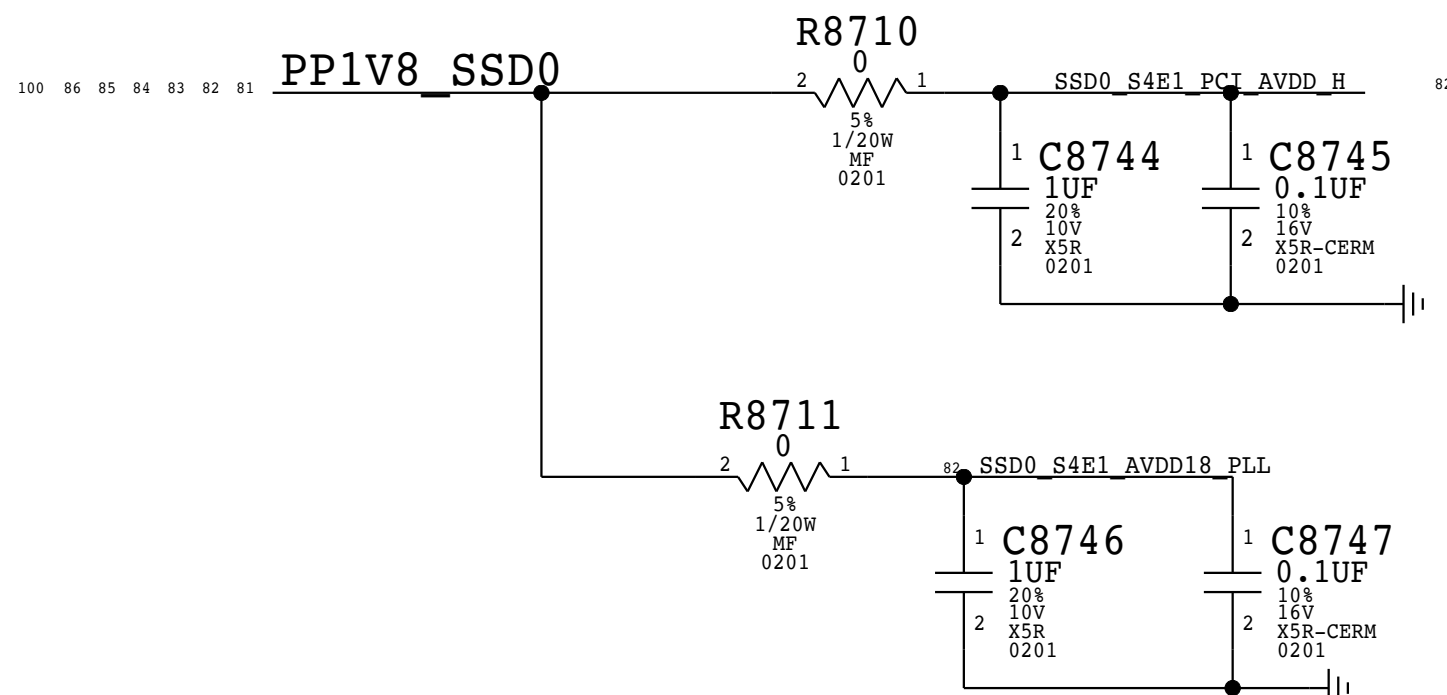
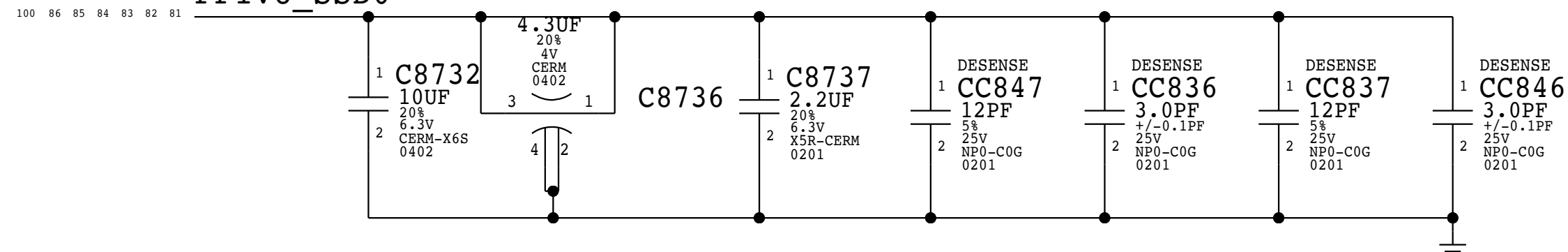
## VCC CAP

PP2V7\_NAND\_SSD0




S4E VDDIO

PP1V8\_SSD0

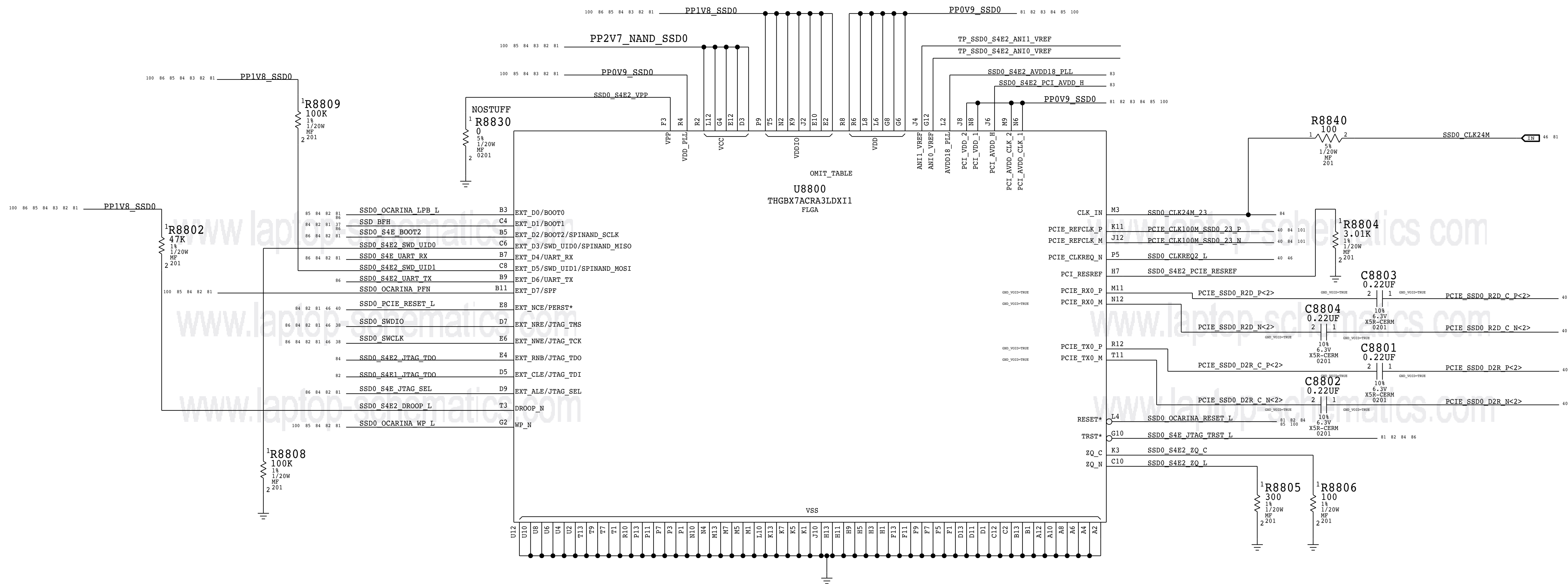


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	82 OF 108		

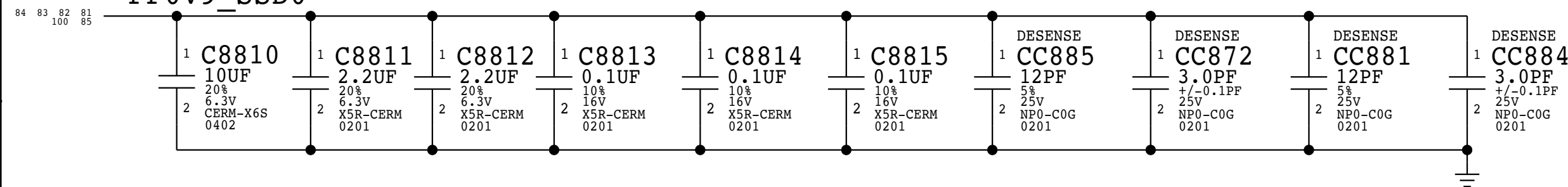


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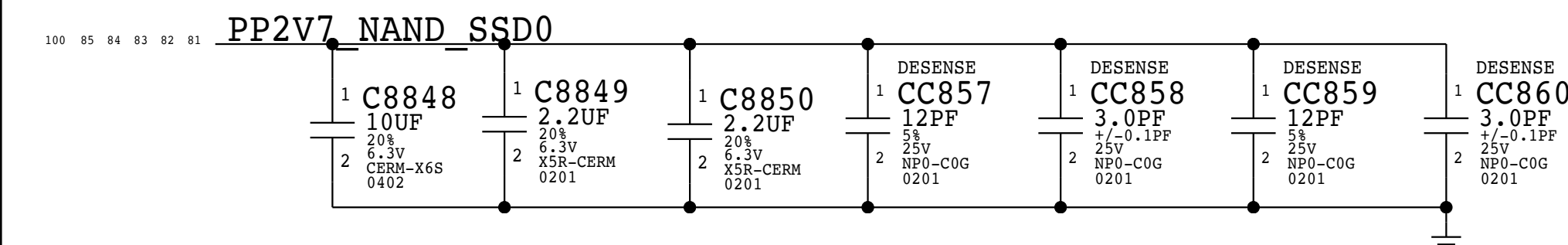


S4E VDD

## PP0V9 SSD0

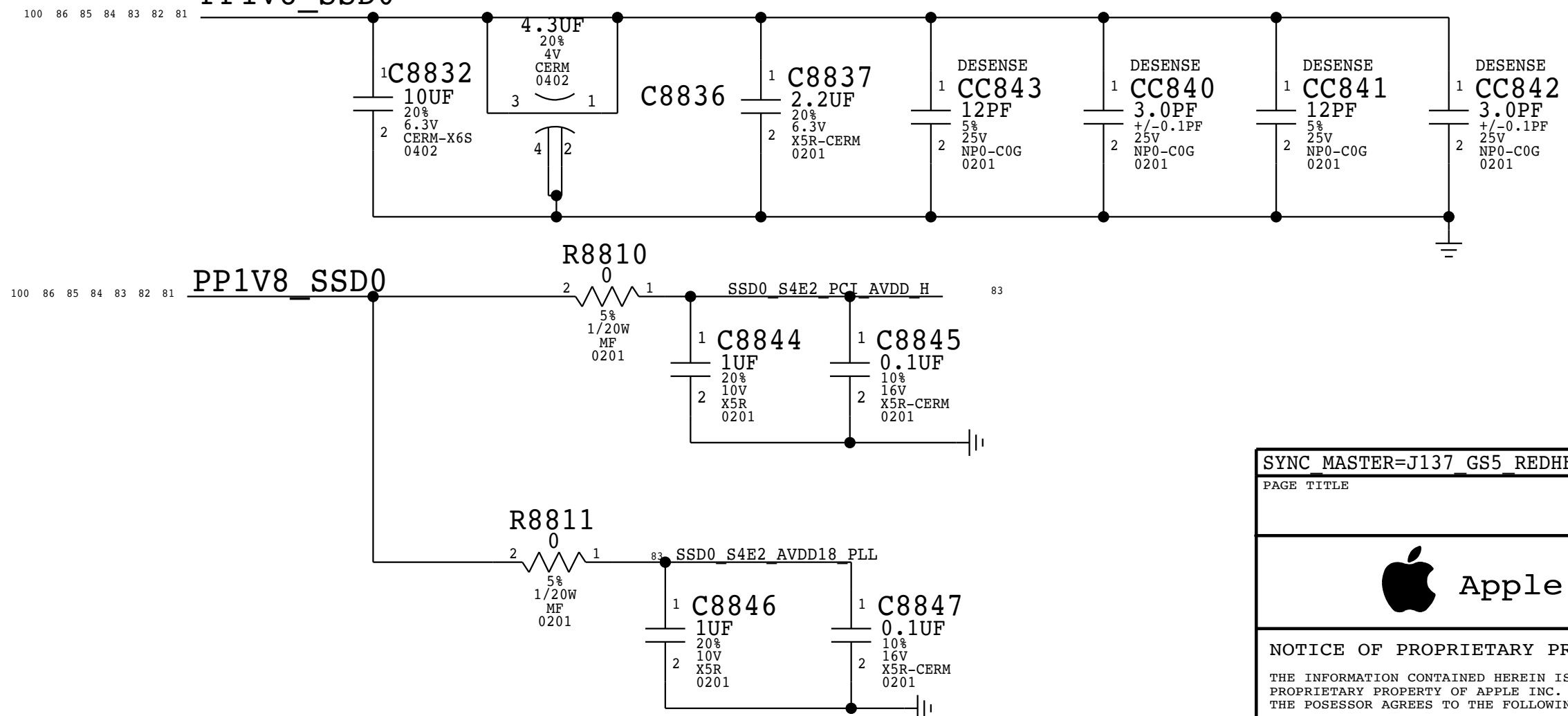


VCC CAP




## S4E VDDIO

## PP1V8 SSD0

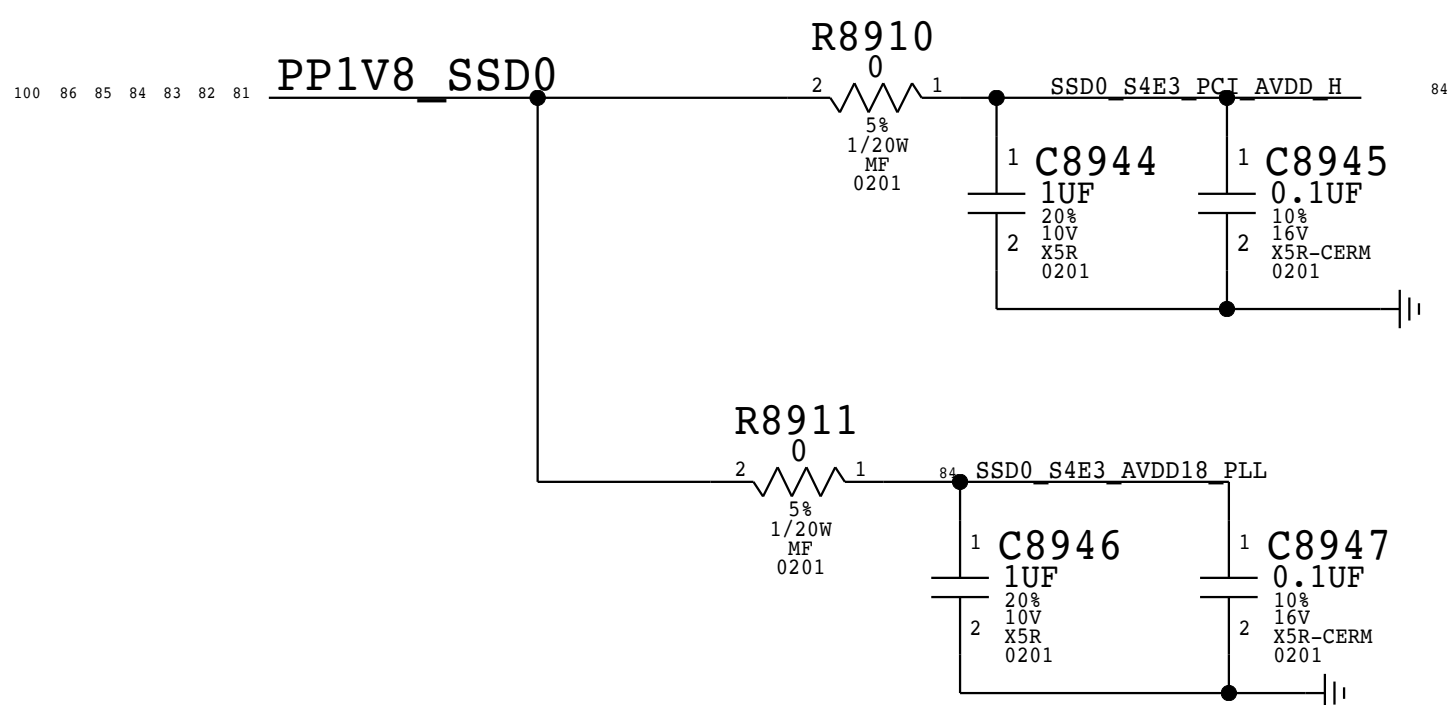
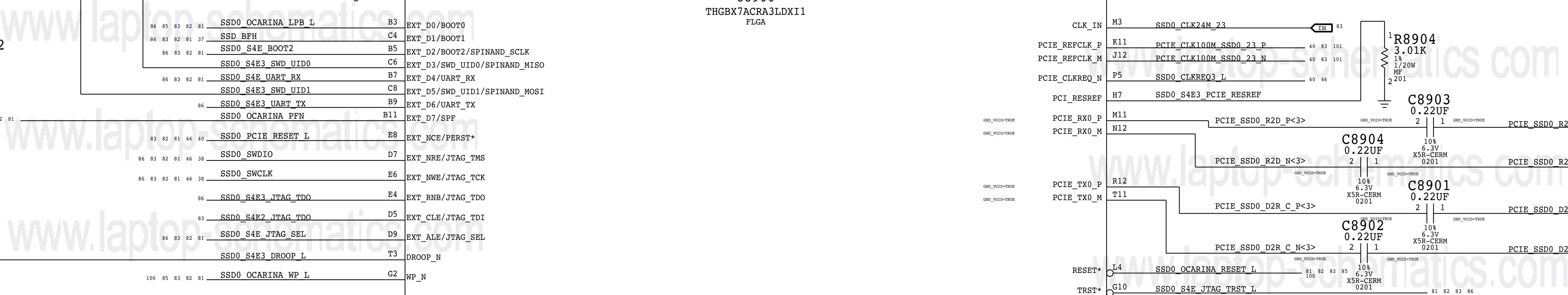



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83 OF 108			

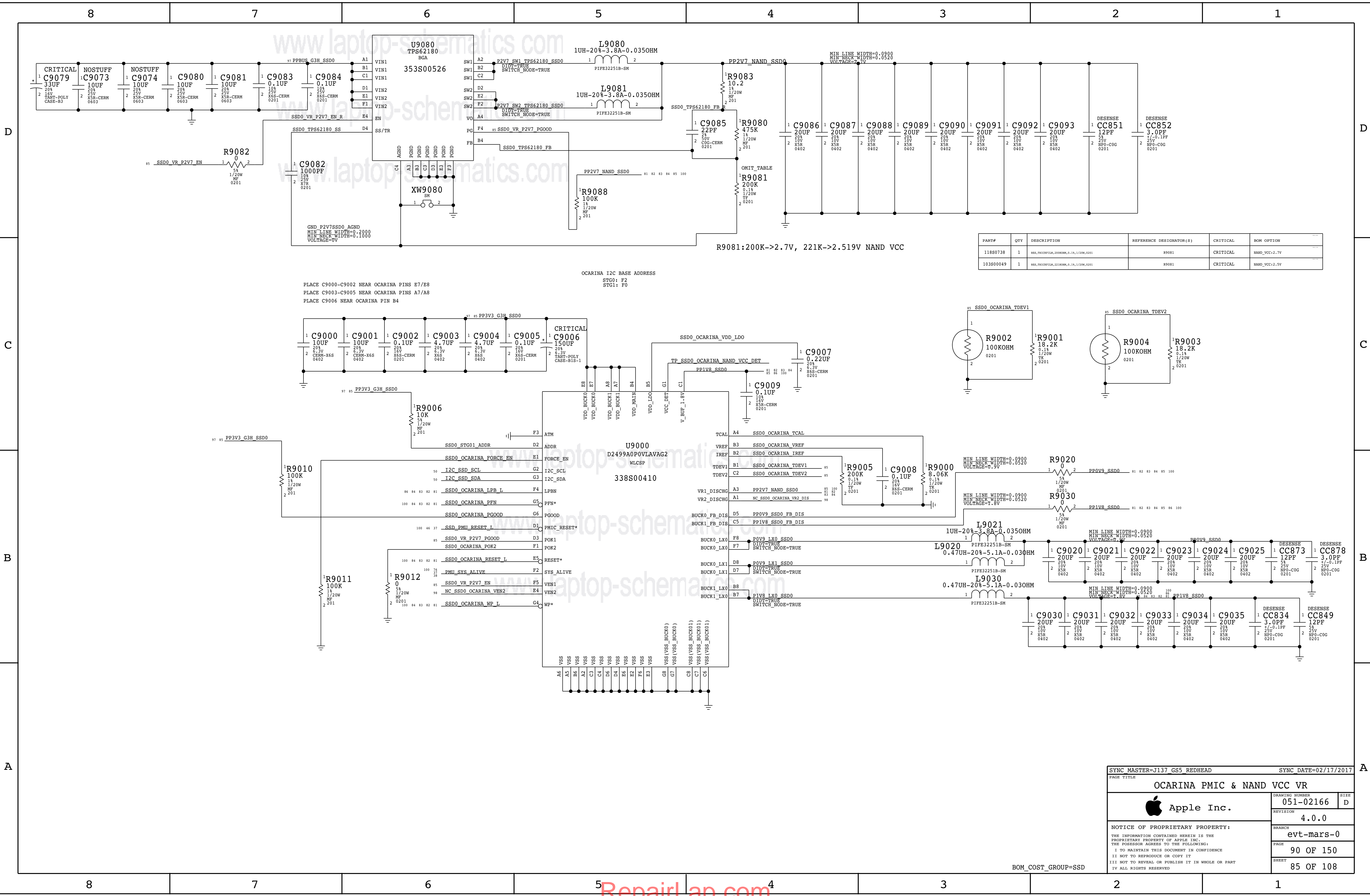


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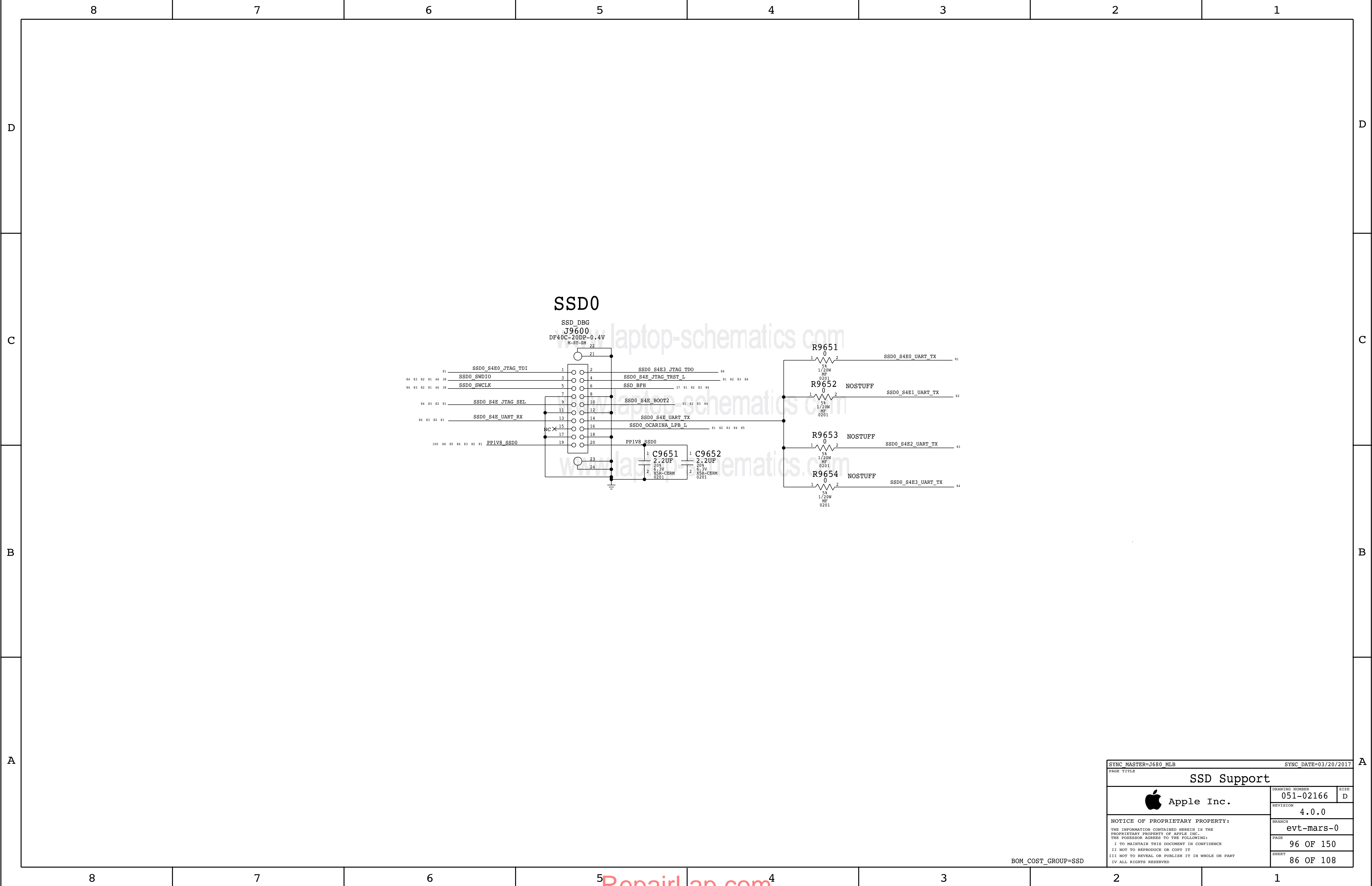
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103800049	1	RES,THICKFILM,221KOHM,0.1%,1/20W,0201	R9081	CRITICAL	NAND_VCC<2.5V

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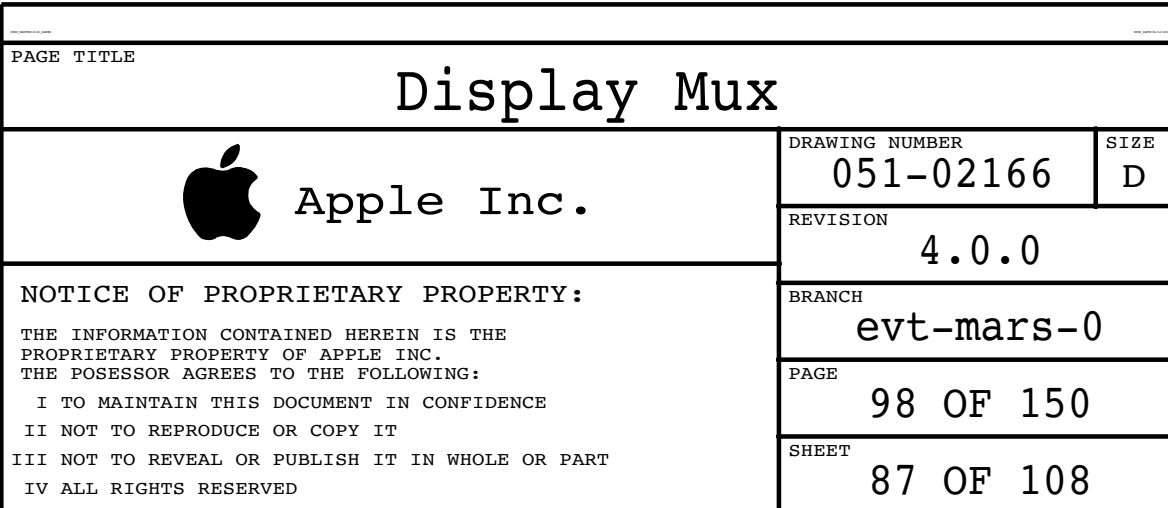
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BOM\_COST\_GROUP=SSD









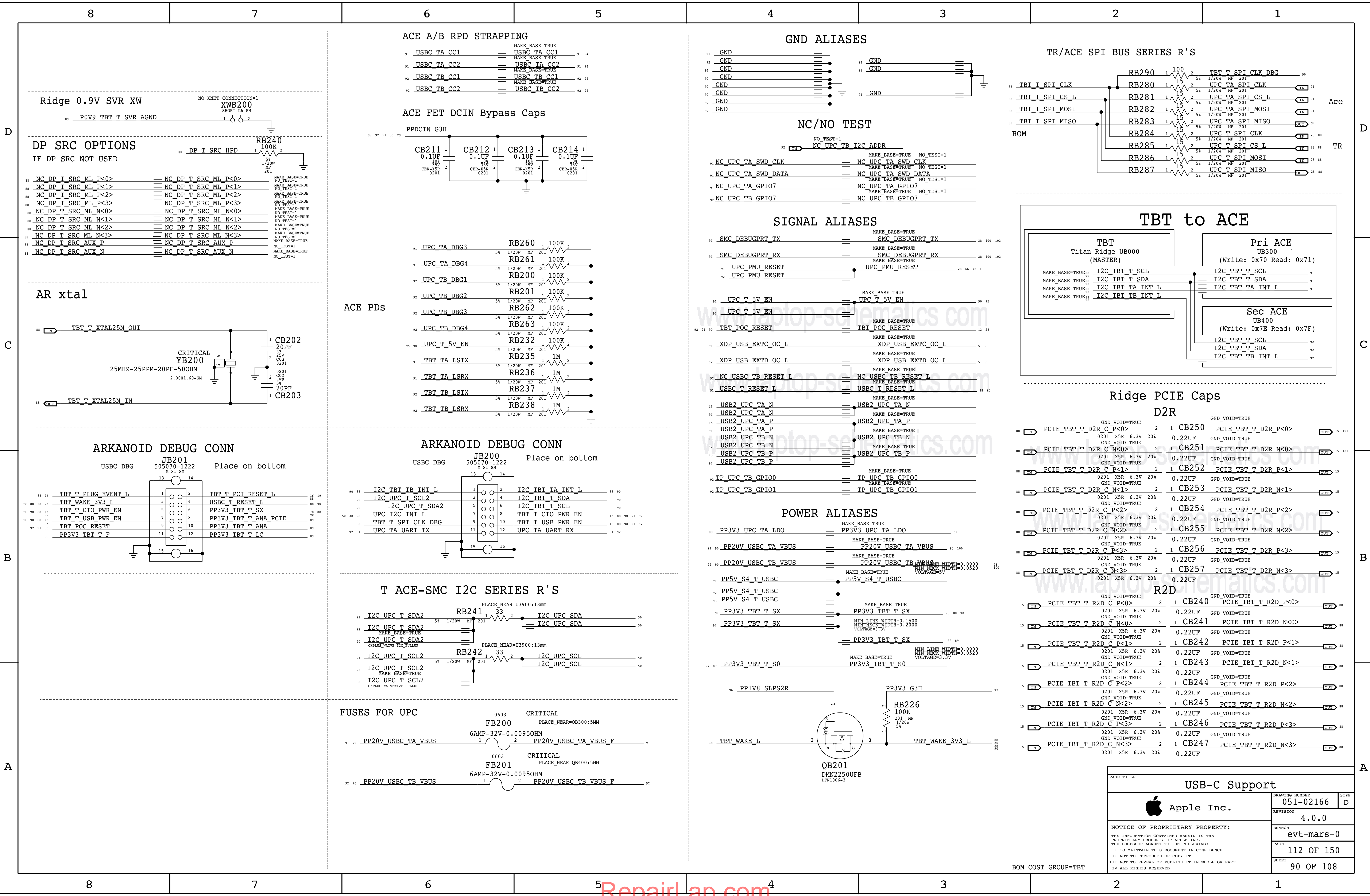


















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BOM COST GROUP=USB-C







## D



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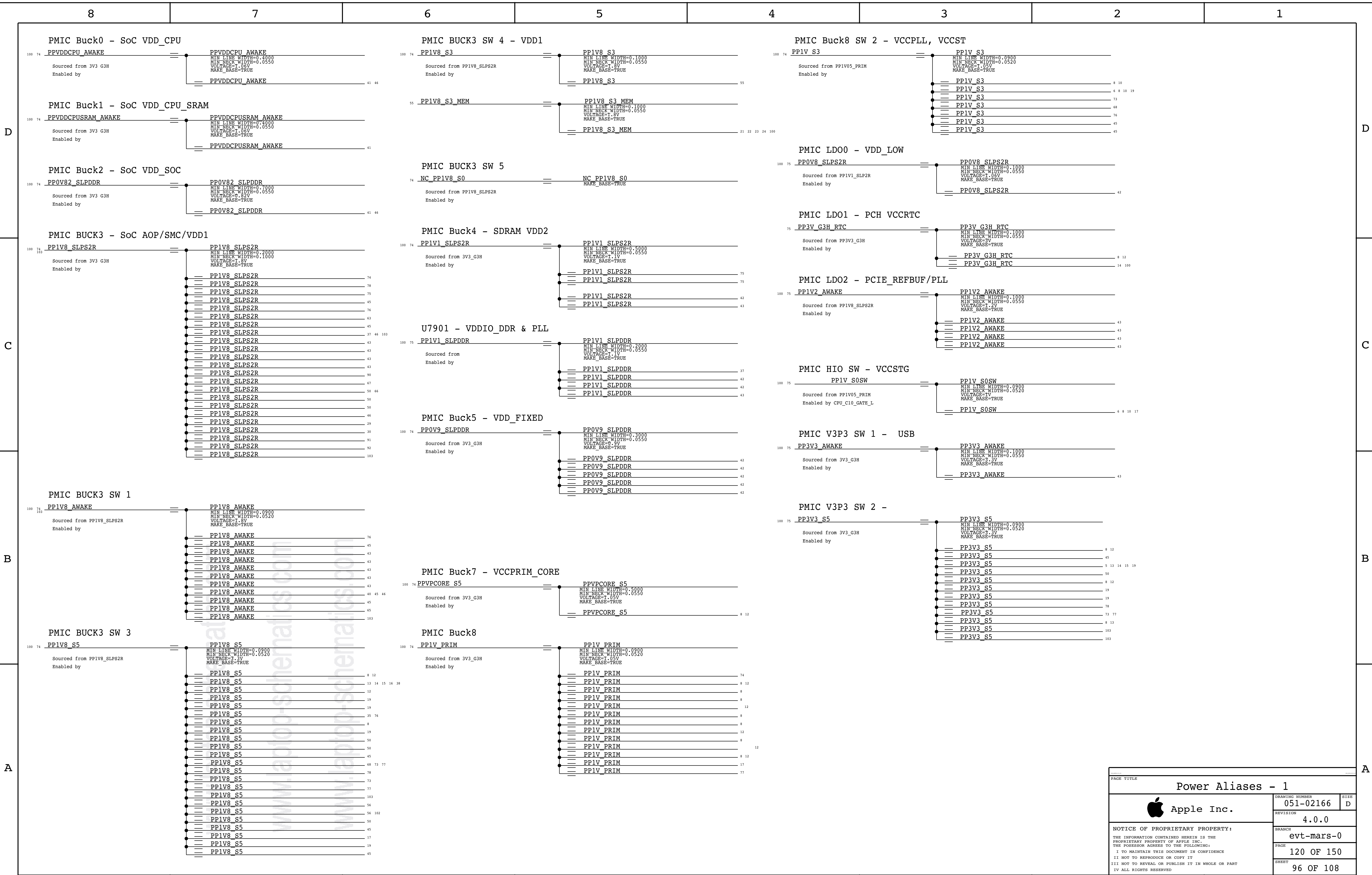


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8	7	6	5	4	3	2	1
<div>Unused SoC Signals</div> <div><div><div>39</div><div>NC</div><div>ALTIMETER</div><div>INT</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>ALTIMETER</div><div>INT</div></div><div><div>39</div><div>NC</div><div>DISP</div><div>GCON</div><div>INT</div><div>L</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>DISP</div><div>GCON</div><div>INT</div><div>L</div></div><div><div>39</div><div>NC</div><div>DFR</div><div>TOUCH</div><div>RSVD</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>DFR</div><div>TOUCH</div><div>RSVD</div></div><div><div>39</div><div>NC</div><div>ENET</div><div>LOW</div><div>PWR</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>ENET</div><div>LOW</div><div>PWR</div></div><div><div>39</div><div>NC</div><div>ENET</div><div>MEDIA</div><div>SENSE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>ENET</div><div>MEDIA</div><div>SENSE</div></div><div><div>40</div><div>NC</div><div>ENET</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>ENET</div><div>RESET</div><div>L</div></div><div><div>39</div><div>NC</div><div>FTCAM</div><div>CLK12M</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>FTCAM</div><div>CLK12M</div><div>R</div></div><div><div>39</div><div>NC</div><div>FTCAM</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>FTCAM</div><div>RESET</div><div>L</div></div><div><div>37</div><div>NC</div><div>GNSS</div><div>DEV</div><div>WAKE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>GNSS</div><div>DEV</div><div>WAKE</div></div><div><div>37</div><div>NC</div><div>GNSS</div><div>HOST</div><div>TIME</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>GNSS</div><div>HOST</div><div>TIME</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>CODEC</div><div>MCLK</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>CODEC</div><div>MCLK</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>CODEC1</div><div>MCLK</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>CODEC1</div><div>MCLK</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>CODEC1</div><div>R2D</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>CODEC1</div><div>R2D</div><div>R</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>BCLK</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>BCLK</div><div>R</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>D2R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>D2R</div></div><div><div>39</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>LRCLK</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>HAWKING</div><div>LRCLK</div></div><div><div>39</div><div>NC</div><div>MESA</div><div>MENUKEY</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>MESA</div><div>MENUKEY</div><div>L</div></div><div><div>39</div><div>NC</div><div>PCC</div><div>EVENT</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCC</div><div>EVENT</div></div><div><div>15</div><div>NC</div><div>PCH</div><div>ENET</div><div>LOW</div><div>PWR</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCH</div><div>ENET</div><div>LOW</div><div>PWR</div></div><div><div>39</div><div>NC</div><div>SOC</div><div>PCH</div><div>GCON</div><div>INT</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SOC</div><div>PCH</div><div>GCON</div><div>INT</div><div>L</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>ENET</div><div>N</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>ENET</div><div>N</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>ENET</div><div>P</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>ENET</div><div>P</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>SSD1</div><div>01</div><div>N</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>SSD1</div><div>0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ECT</div></div><div><div>39</div><div>NC</div><div>PLCAM</div><div>RX</div><div>CLK12M</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>RX</div><div>CLK12M</div><div>R</div></div><div><div>39</div><div>NC</div><div>PLCAM</div><div>RX</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>RX</div><div>RESET</div><div>L</div></div><div><div>39</div><div>NC</div><div>PLCAM</div><div>TX</div><div>CLK12M</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>TX</div><div>CLK12M</div><div>R</div></div><div><div>39</div><div>NC</div><div>PLCAM</div><div>TX</div><div>INT</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>TX</div><div>INT</div></div><div><div>39</div><div>NC</div><div>PLCAM</div><div>TX</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>TX</div><div>RESET</div><div>L</div></div><div><div>37</div><div>NC</div><div>PLCAM</div><div>TX</div><div>THROTTLE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PLCAM</div><div>TX</div><div>THROTTLE</div></div><div><div>39</div><div>NC</div><div>SDCONN</div><div>STATE</div><div>CHANGE</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SDCONN</div><div>STATE</div><div>CHANGE</div><div>L</div></div><div><div>39</div><div>NC</div><div>SMC</div><div>GFX</div><div>SELF</div><div>THROTTLE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SMC</div><div>GFX</div><div>SELF</div><div>THROTTLE</div></div><div><div>39</div><div>NC</div><div>SMC</div><div>LED</div><div>ONEWIRE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SMC</div><div>LED</div><div>ONEWIRE</div></div><div><div>39</div><div>NC</div><div>SMC</div><div>TOPBLK</div><div>SWP</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SMC</div><div>TOPBLK</div><div>SWP</div><div>L</div></div><div><div>39</div><div>NC</div><div>SPI</div><div>ALTIMETER</div><div>CS</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SPI</div><div>ALTIMETER</div><div>CS</div><div>L</div></div><div><div>39</div><div>NC</div><div>SPI</div><div>DESCRIPTOR</div><div>OVERRIDE</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SPI</div><div>DESCRIPTOR</div><div>OVERRIDE</div><div>L</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>CLK24M</div><div>R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>CLK24M</div><div>R</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>CLKREQ0</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>CLKREQ0</div><div>L</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>CLKREQ1</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>CLKREQ1</div><div>L</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>CLKREQ2</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>CLKREQ2</div><div>L</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>CLKREQ3</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>CLKREQ3</div><div>L</div></div><div><div>40</div><div>NC</div><div>SSD1</div><div>PCIE</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>PCIE</div><div>RESET</div><div>L</div></div><div><div>39</div><div>NC</div><div>SSD1</div><div>SWCLK</div><div>UART</div><div>R2D</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>SWCLK</div><div>UART</div><div>R2D</div></div><div><div>39</div><div>NC</div><div>SSD1</div><div>SWDIO</div><div>UART</div><div>D2R</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD1</div><div>SWDIO</div><div>UART</div><div>D2R</div></div><div><div>39</div><div>NC</div><div>PCHROM</div><div>SW</div><div>EN</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCHROM</div><div>SW</div><div>EN</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN2</div><div>R2D</div><div>CP</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN2</div><div>R2D</div><div>CP</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN2</div><div>R2D</div><div>CN</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN2</div><div>R2D</div><div>CN</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN2</div><div>D2RP</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN2</div><div>D2RP</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN2</div><div>D2RN</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN2</div><div>D2RN</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN3</div><div>R2D</div><div>CP</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN3</div><div>R2D</div><div>CP</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN3</div><div>R2D</div><div>CN</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN3</div><div>R2D</div><div>CN</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN3</div><div>D2RP</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN3</div><div>D2RP</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>DN3</div><div>D2RN</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>DN3</div><div>D2RN</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN2P</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN2P</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN2N</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN2N</div></div><div><div>40</div><div>NC</div><div>PCIEDN2</div><div>CLKREQ</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIEDN2</div><div>CLKREQ</div><div>L</div></div><div><div>40</div><div>NC</div><div>PCIEDN2</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIEDN2</div><div>RESET</div><div>L</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN3P</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN3P</div></div><div><div>40</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN3N</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIE</div><div>CLK100M</div><div>DN3N</div></div><div><div>40</div><div>NC</div><div>PCIEDN3</div><div>CLKREQ</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIEDN3</div><div>CLKREQ</div><div>L</div></div><div><div>40</div><div>NC</div><div>PCIEDN3</div><div>RESET</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>PCIEDN3</div><div>RESET</div><div>L</div></div><div><div>37</div><div>NC</div><div>SOC</div><div>USB</div><div>ID</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SOC</div><div>USB</div><div>ID</div></div><div><div>41</div><div>NC</div><div>SOC</div><div>VDDSOC</div><div>SENSE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SOC</div><div>VDDSOC</div><div>SENSE</div></div><div><div>41</div><div>NC</div><div>SOC</div><div>VSSCPU</div><div>SENSE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SOC</div><div>VSSCPU</div><div>SENSE</div></div><div><div>41</div><div>NC</div><div>SOC</div><div>VSSSOC</div><div>SENSE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SOC</div><div>VSSSOC</div><div>SENSE</div></div><div><div>39</div><div>NC</div><div>TPAD</div><div>VIBE</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>TPAD</div><div>VIBE</div><div>L</div></div><div><div>39</div><div>NC</div><div>UART</div><div>GNSS</div><div>D2R</div><div>CTS</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>UART</div><div>GNSS</div><div>D2R</div><div>CTS</div><div>L</div></div><div><div>39</div><div>NC</div><div>UART</div><div>GNSS</div><div>R2D</div><div>RTS</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>UART</div><div>GNSS</div><div>R2D</div><div>RTS</div><div>L</div></div><div><div>40</div><div>NC</div><div>WLAN</div><div>CLKREQ</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>WLAN</div><div>CLKREQ</div><div>L</div></div><div><div>37</div><div>NC</div><div>WLAN</div><div>DEV</div><div>WAKE</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>WLAN</div><div>DEV</div><div>WAKE</div></div><div><div>40</div><div>NC</div><div>WLAN</div><div>PERST</div><div>L</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>WLAN</div><div>PERST</div><div>L</div></div></div> <div><div>TP SoC Signals</div><div><div><div>100</div><div>39</div><div>TP</div><div>SMC</div><div>FIXTURE</div><div>MODE</div><div>L</div><div>---</div><div>MAKP_BASE+THIR</div><div></div><div>TP</div><div>SMC</div><div>FIXTURE</div><div>MODE</div><div>L</div></div><div><div>103</div><div>100</div><div>39</div><div>TP</div><div>SOC</div><div>DEBUGPRT</div><div>RX</div><div>---</div><div>MAKP_BASE+THIR</div><div></div><div>TP</div><div>SOC</div><div>DEBUGPRT</div><div>RX</div></div><div><div>103</div><div>100</div><div>39</div><div>TP</div><div>SOC</div><div>DEBUGPRT</div><div>TX</div><div>---</div><div>MAKP_BASE+THIR</div><div></div><div>TP</div><div>SOC</div><div>DEBUGPRT</div><div>TX</div></div><div><div>37</div><div></div><div></div><div>TEST</div><div>SOC</div><div>AMUXOUT</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div></div><div>TEST</div><div>SOC</div><div>AMUXOUT</div><div></div></div><div><div>37</div><div></div><div></div><div>TEST</div><div>SOC</div><div>TST</div><div>CLKOUT</div><div></div><div>---</div><div>MAKP_BASE+THIR</div><div></div><div>TEST</div><div>SOC</div><div>TST</div><div>CLKOUT</div><div></div></div></div></div> <div><div>SoC Aliases</div><div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div><div><div>39</div><div>GND</div><div>---</div><div>MAKP_BASE+THIR</div><div></div></div></div></div> <div><div>Unused PMIC 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Signals</div><div><div><div>35</div><div>NC</div><div>I2S</div><div>BT</div><div>D2R</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>BT</div><div>D2R</div></div><div><div>35</div><div>NC</div><div>I2S</div><div>BT</div><div>R2D</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>I2S</div><div>BT</div><div>R2D</div></div><div><div>35</div><div>NC</div><div>WLAN</div><div>PMU</div><div>TEST</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>WLAN</div><div>PMU</div><div>TEST</div></div></div></div> <div><div>Unused SSD Signals</div><div><div><div>85</div><div>NC</div><div>SSD0</div><div>OCARINA</div><div>VEN2</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD0</div><div>OCARINA</div><div>VEN2</div></div><div><div>85</div><div>NC</div><div>SSD0</div><div>OCARINA</div><div>VR2_DIS</div><div>---</div><div>MAKP_BASE+THIR</div><div>NO_TEST+1</div><div>NC</div><div>SSD0</div><div>OCARINA</div><div>VR2_DIS</div></div></div></div> <div><div>8</div><div>7</div><div>6</div><div>5</div><div>4</div><div>3</div><div>2</div><div>1</div></div> <div><div>Signal Aliases</div><div><div><div>Apple Inc.</div></div><div><div>051-02166</div><div>D</div></div><div><div>4.0.0</div></div><div><div>evt-mars-0</div></div><div><div>122 OF 150</div></div><div><div>98 OF 108</div></div></div><div><div>SYNC MASTER=J132 GAREN</div><div>SYNC DATE=04/12/2017</div></div><div><div>PAGE TITLE</div></div><div><div>NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY 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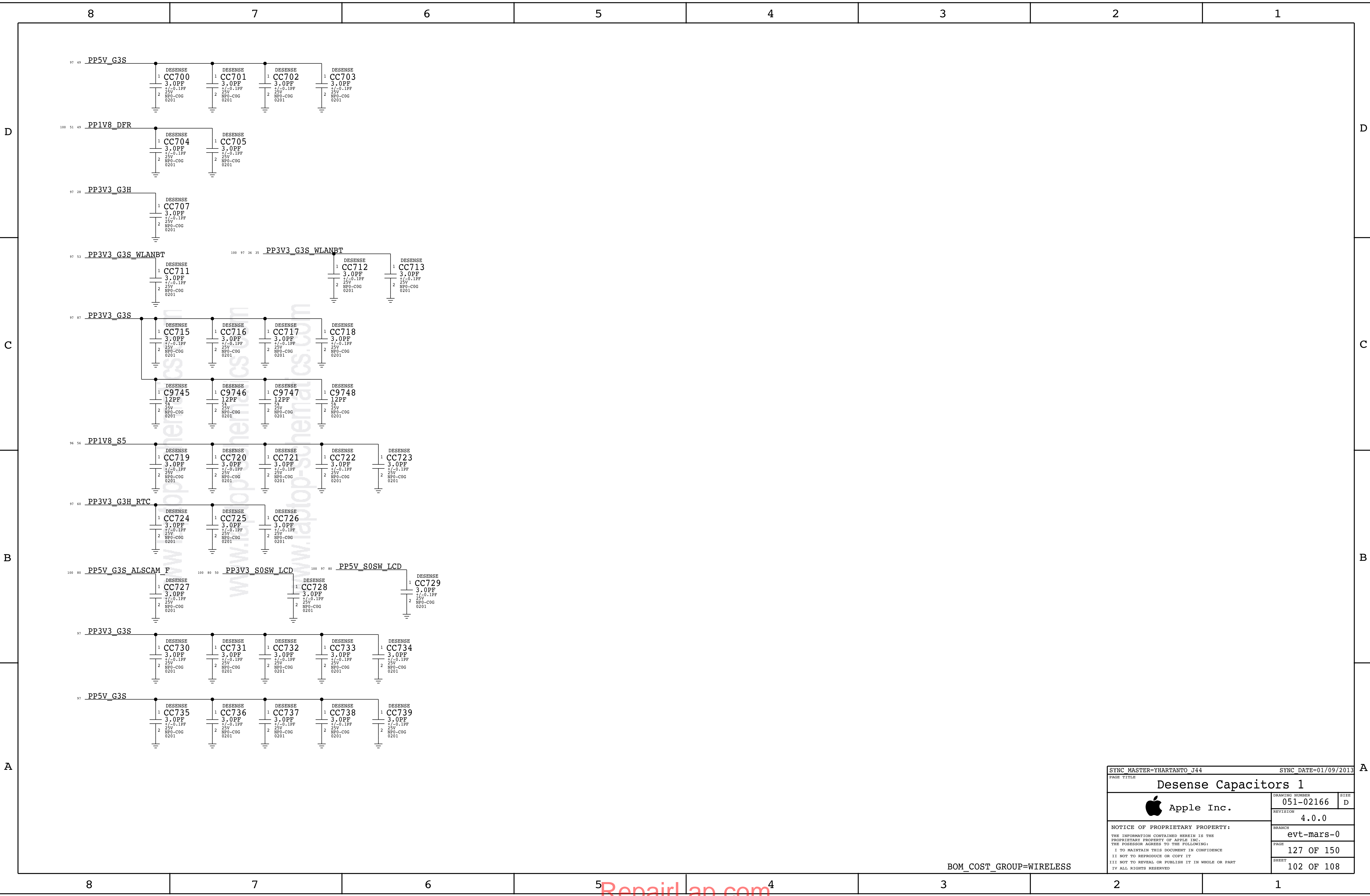











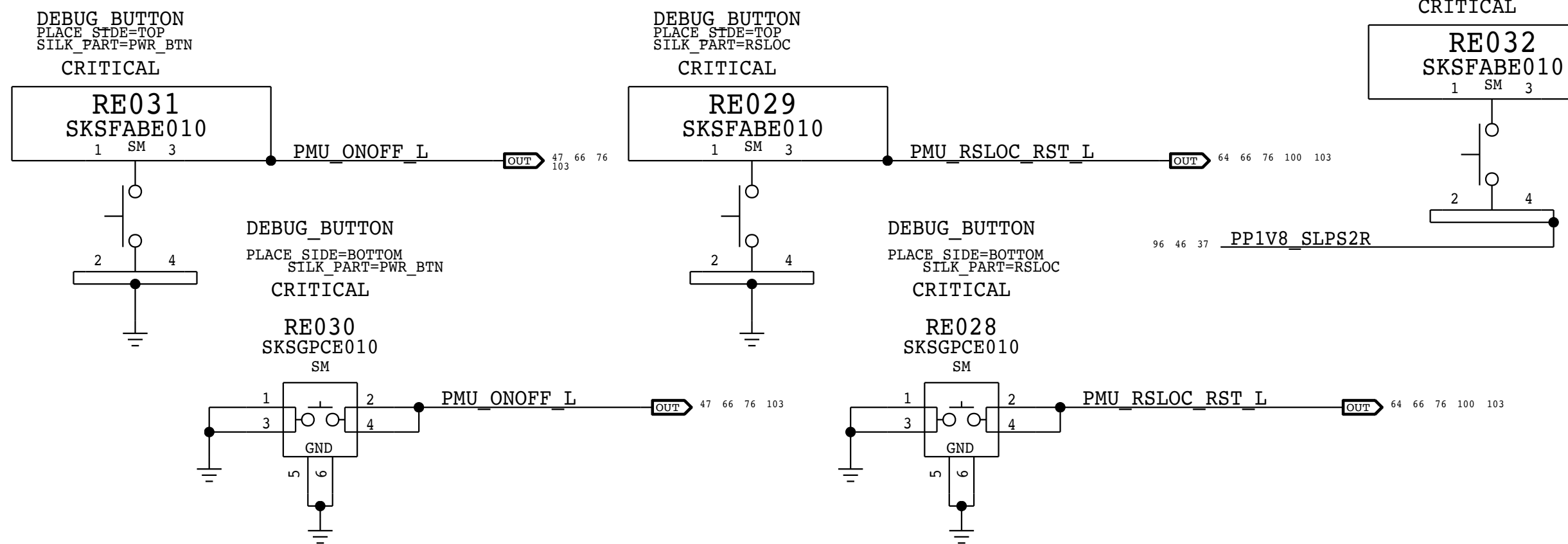


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Desense Capacitors 1					
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			REVISION	4.0.0	
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BOM\_COST\_GROUP=WIRELESS

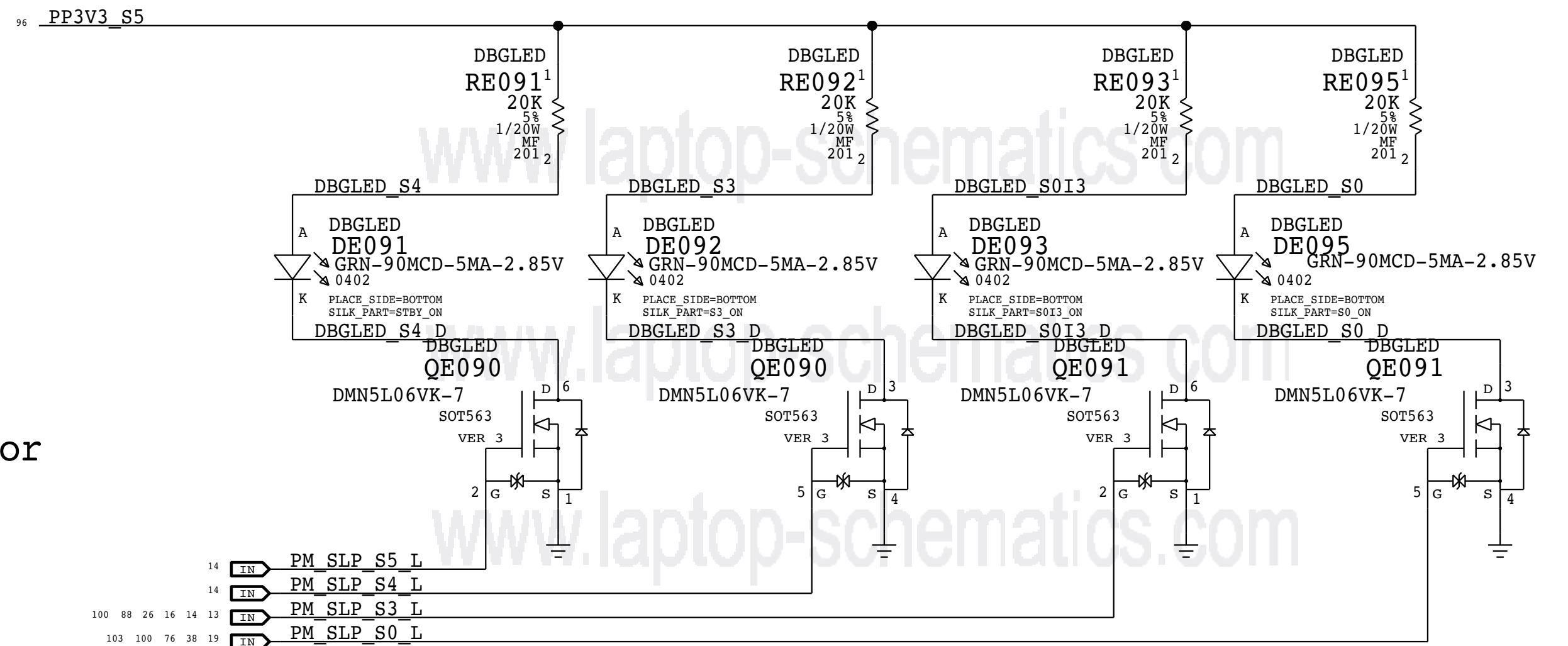


## Debug Power "Buttons"

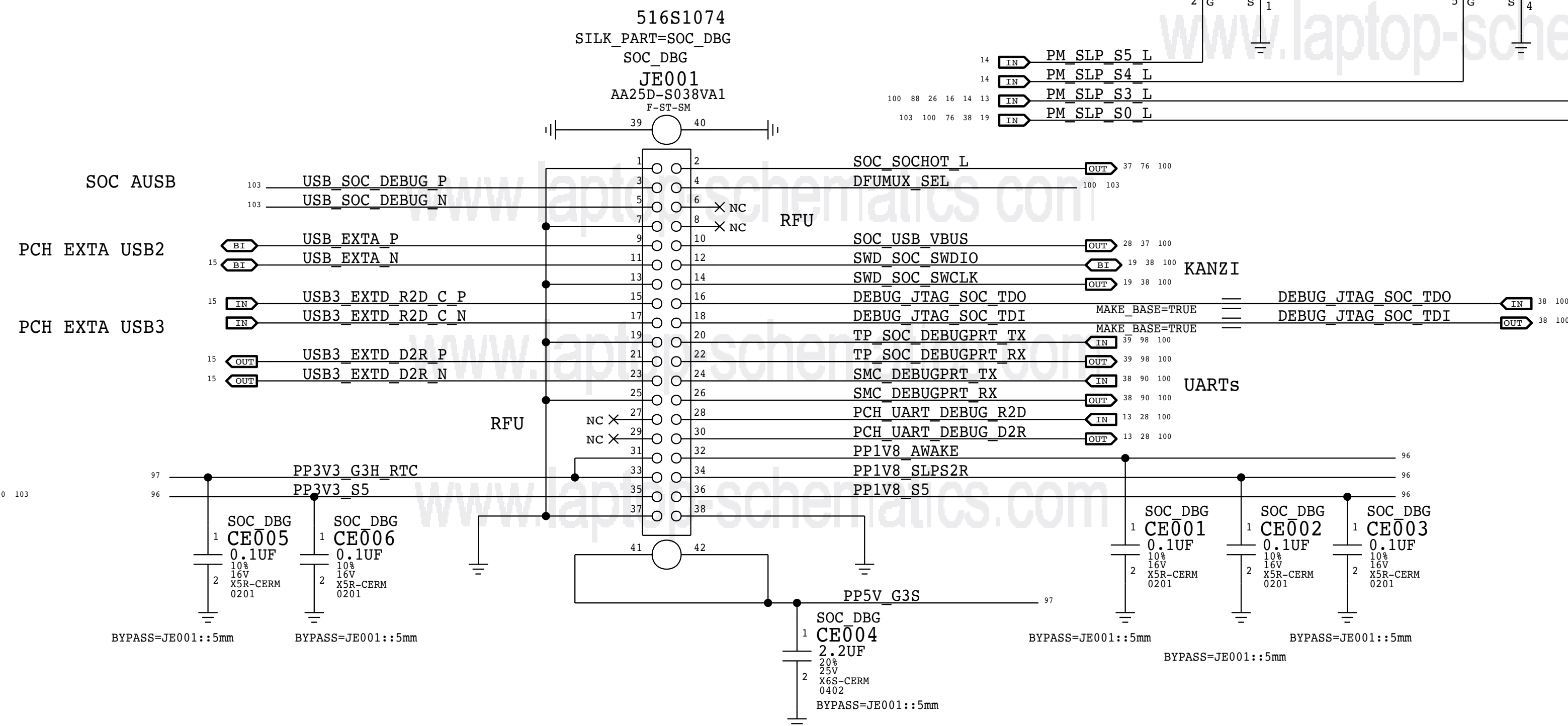


## Power State Debug LEDs

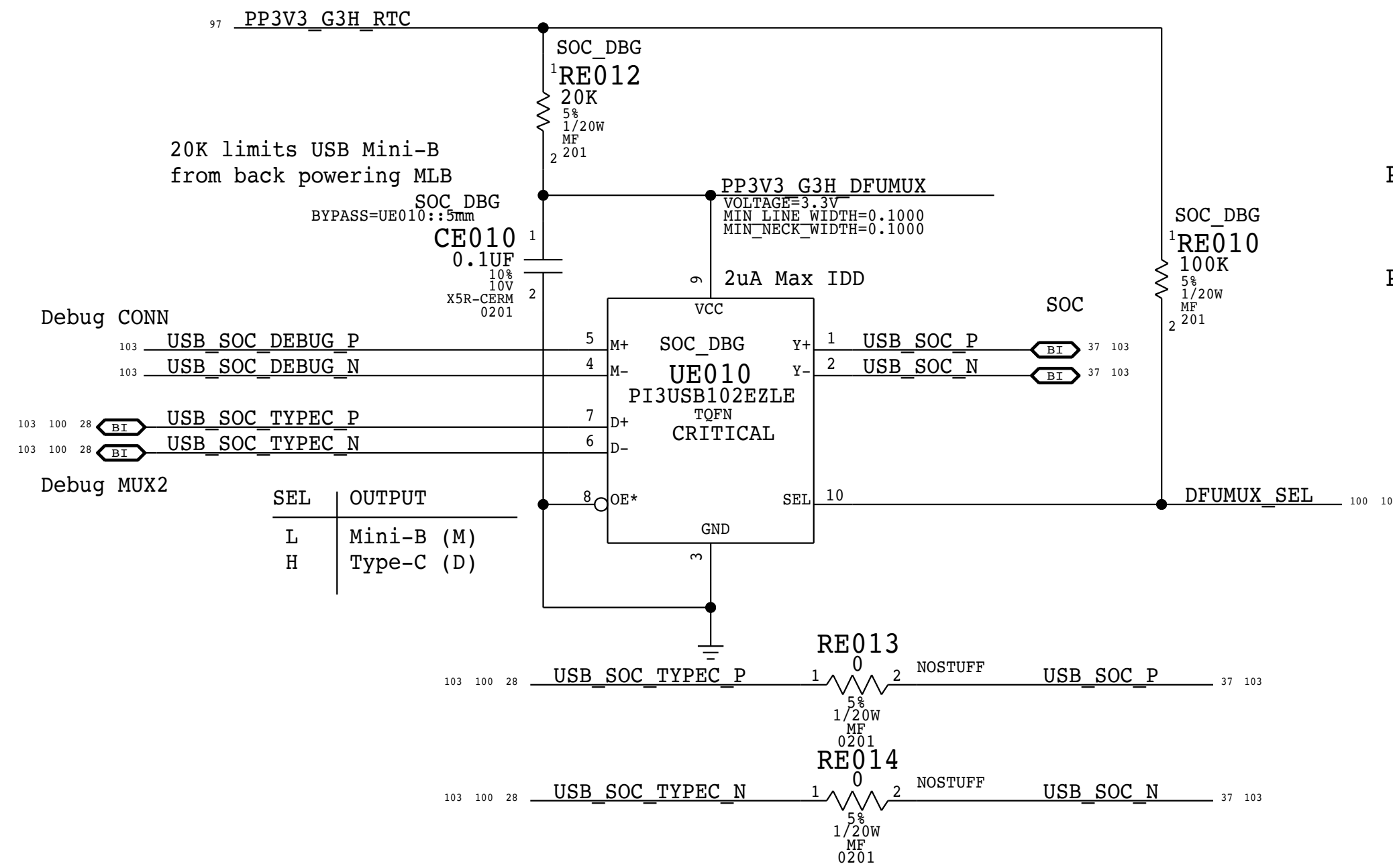
(For development only)



## SOC DEBUG Connector

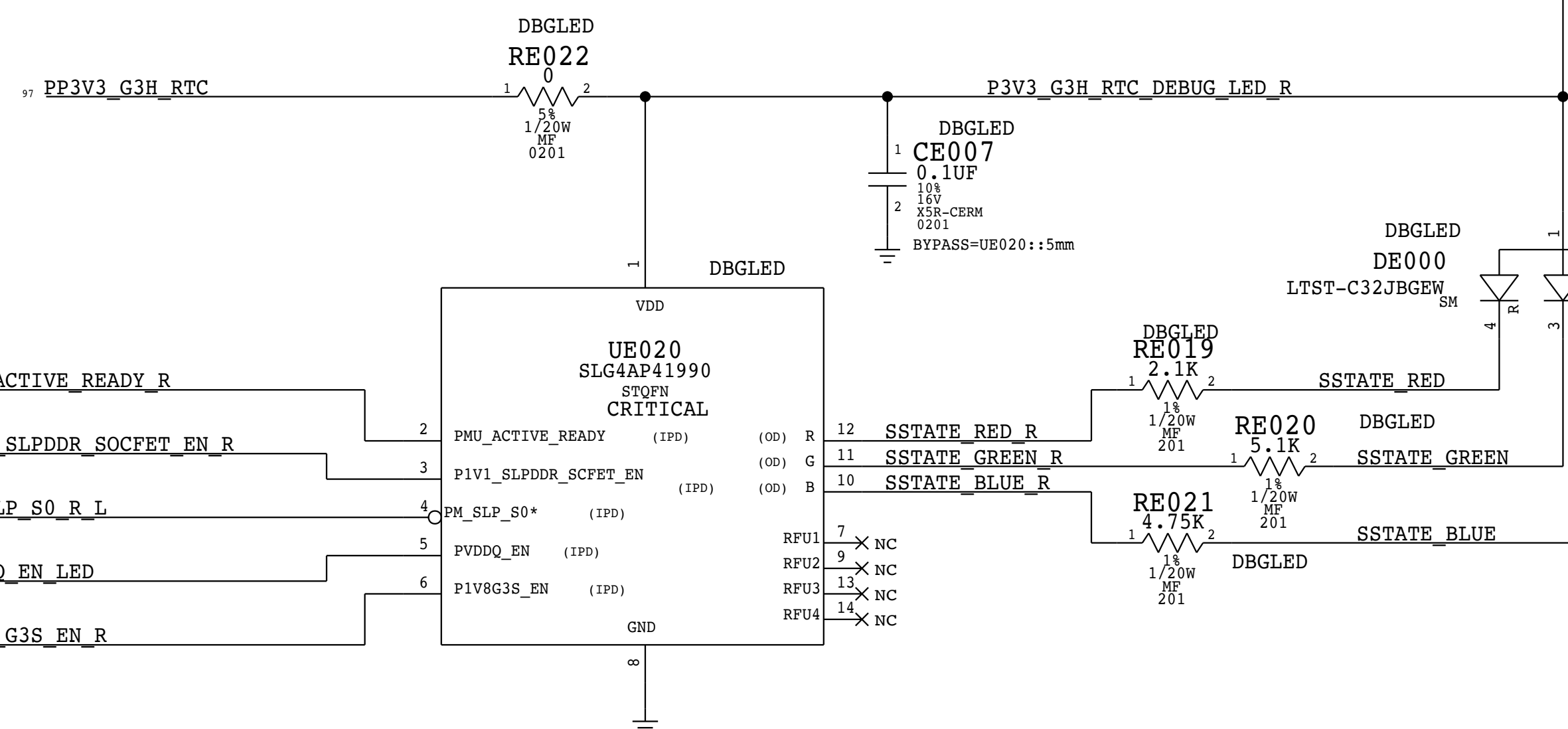


## SoC USB DFU Mux

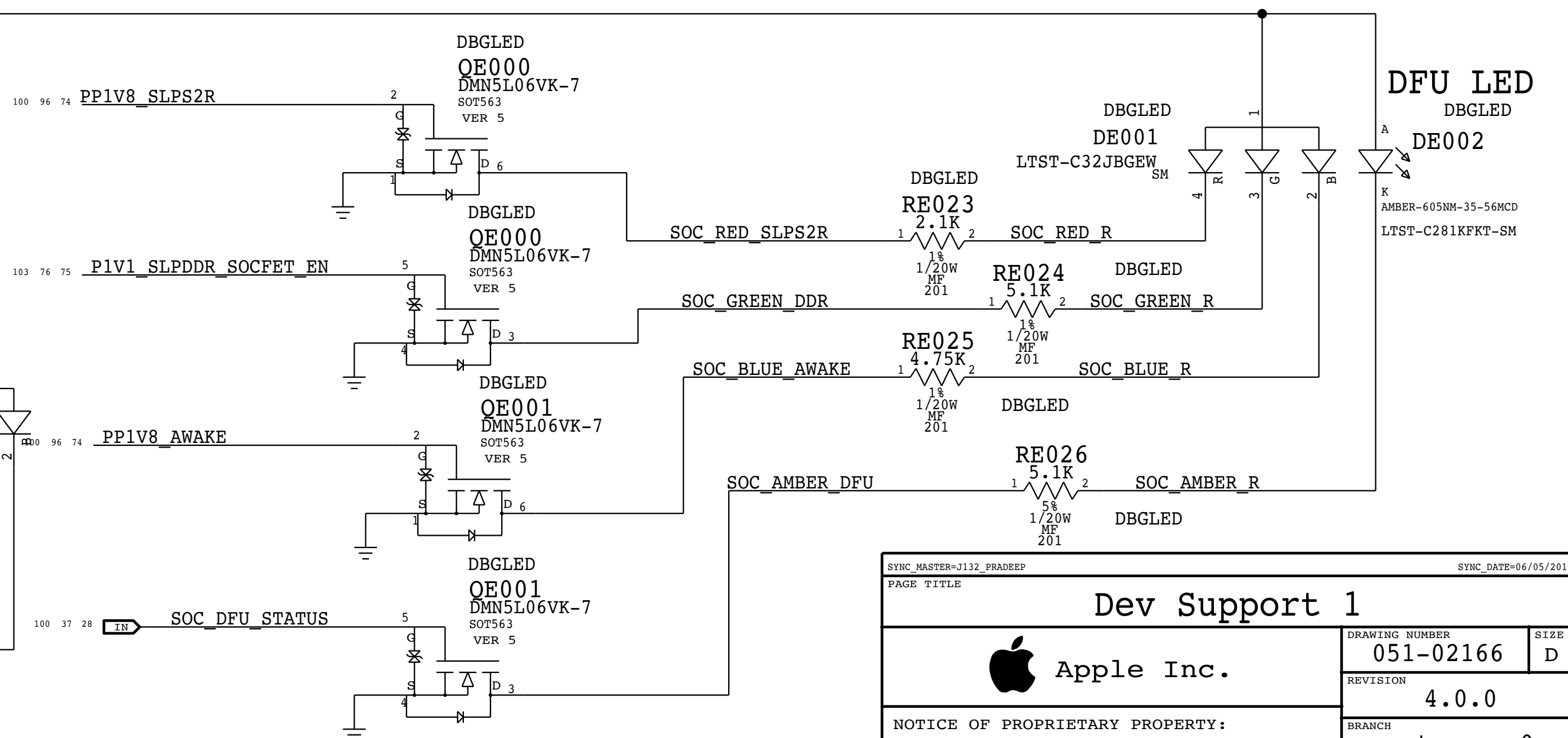


## System State LEDs

See color table on next page



## SOC State LEDs



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PAGE TITLE			Dev Support 1		
			DRAWING NUMBER	051-02166	SIZE
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	8	7	6	5	4	3	2	1	
D	BOM Variants								
	BOM NUMBER		BOM NAME		BOM OPTIONS				
	685-00187		COMMON PARTS,MLB,X941		X941_COMMON				
	985-00366		DEV,MLB,X941		X941_DEVEL:ENG				
	939-05022		PCBA,MLB,NO CPU,SS-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,DRAMCFG:SS_8G,NANDCFG:SD_256G				
	939-05023		PCBA,MLB,CPU SOCKET,SS-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:SOCKET,DRAMCFG:SS_8G,NANDCFG:SD_256G				
	939-05373		PCBA,MLB,2.3G,HY-8G,SS-2T-DOE,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SS_2T_DOE				
	939-05374		PCBA,MLB,2.3G,MI-8G,SD-256G-DOE,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SD_256G_DOE				
	939-05375		PCBA,MLB,2.3G,SS-8G,TO-256G-DOE,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:TO_256G_DOE				
	939-05698		PCBA,MLB,NO CPU,RF DOE,X941		SCH,PCB,RF_DOE				
C	BOM NUMBER		BOM NAME		BOM OPTIONS				
	639-05125		PCBA,MLB,2.3G,HY-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SD_256G				
	639-05126		PCBA,MLB,2.3G,HY-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:TO_256G				
	639-05127		PCBA,MLB,2.3G,MI-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SD_256G				
	639-05128		PCBA,MLB,2.3G,MI-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:TO_256G				
	639-05129		PCBA,MLB,2.3G,SS-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:SD_256G				
	639-05130		PCBA,MLB,2.3G,SS-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:TO_256G				
	639-05131		PCBA,MLB,2.3G,HY-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:SD_256G				
	639-05132		PCBA,MLB,2.3G,HY-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:TO_256G				
	639-05133		PCBA,MLB,2.3G,MI-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:SD_256G				
B	639-05134		PCBA,MLB,2.3G,MI-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:TO_256G				
	639-05135		PCBA,MLB,2.3G,SS-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:SD_256G				
	639-05136		PCBA,MLB,2.3G,SS-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:TO_256G				
	639-05193		PCBA,MLB,2.3G,HY-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SD_512G				
	639-05194		PCBA,MLB,2.3G,HY-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:TO_512G				
	639-05195		PCBA,MLB,2.3G,MI-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SD_512G				
	639-05196		PCBA,MLB,2.3G,MI-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:TO_512G				
	639-05197		PCBA,MLB,2.3G,SS-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:SD_512G				
	639-05198		PCBA,MLB,2.3G,SS-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:TO_512G				
	639-05199		PCBA,MLB,2.3G,HY-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:SD_512G				
A	639-05200		PCBA,MLB,2.3G,HY-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:TO_512G				
	639-05201		PCBA,MLB,2.3G,MI-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:SD_512G				
	639-05202		PCBA,MLB,2.3G,MI-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:TO_512G				
	639-05203		PCBA,MLB,2.3G,SS-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:SD_512G				
	639-05204		PCBA,MLB,2.3G,SS-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:TO_512G				
	639-05205		PCBA,MLB,2.3G,HY-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SD_1T				
	639-05206		PCBA,MLB,2.3G,HY-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SS_1T				
	639-05207		PCBA,MLB,2.3G,HY-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:TO_1T				
	639-05208		PCBA,MLB,2.3G,MI-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SD_1T				
	639-05209		PCBA,MLB,2.3G,MI-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SS_1T				
	639-05210		PCBA,MLB,2.3G,MI-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:TO_1T				
	639-05211		PCBA,MLB,2.3G,SS-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:SD_1T				
	639-05212		PCBA,MLB,2.3G,SS-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:SS_1T				
	639-05213		PCBA,MLB,2.3G,SS-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:TO_1T				
	639-05214		PCBA,MLB,2.3G,HY-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:SD_1T				
	639-05215		PCBA,MLB,2.3G,HY-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:SS_1T				
	639-05216		PCBA,MLB,2.3G,HY-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:TO_1T				
	639-05217		PCBA,MLB,2.3G,MI-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:SD_1T				
	639-05218		PCBA,MLB,2.3G,MI-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:SS_1T				
	639-05219		PCBA,MLB,2.3G,MI-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:TO_1T				
	639-05220		PCBA,MLB,2.3G,SS-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:SD_1T				
	639-05221		PCBA,MLB,2.3G,SS-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:SS_1T				
	639-05222		PCBA,MLB,2.3G,SS-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:TO_1T				
	639-05223		PCBA,MLB,2.3G,HY-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_8G,NANDCFG:SS_2T				
	639-05224		PCBA,MLB,2.3G,MI-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_8G,NANDCFG:SS_2T				
	639-05225		PCBA,MLB,2.3G,SS-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_8G,NANDCFG:SS_2T				
	639-05226		PCBA,MLB,2.3G,HY-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:HY_16G,NANDCFG:SS_2T				
	639-05227		PCBA,MLB,2.3G,MI-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:MI_16G,NANDCFG:SS_2T				
	639-05228		PCBA,MLB,2.3G,SS-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.3G,DRAMCFG:SS_16G,NANDCFG:SS_2T				
		BOM NUMBER		BOM NAME		BOM OPTIONS			
639-05528		PCBA,MLB,2.5G,HY-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:SD_256G					
639-05529		PCBA,MLB,2.5G,HY-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:TO_256G					
639-05530		PCBA,MLB,2.5G,MI-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:SD_256G					
639-05531		PCBA,MLB,2.5G,MI-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:TO_256G					
639-05532		PCBA,MLB,2.5G,SS-8G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:SD_256G					
639-05533		PCBA,MLB,2.5G,SS-8G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:TO_256G					
639-05534		PCBA,MLB,2.5G,HY-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:SD_256G					
639-05535		PCBA,MLB,2.5G,HY-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:TO_256G					
639-05536		PCBA,MLB,2.5G,MI-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:SD_256G					
	639-05537		PCBA,MLB,2.5G,MI-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:TO_256G				
	639-05538		PCBA,MLB,2.5G,SS-16G,SD-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:SD_256G				
	639-05539		PCBA,MLB,2.5G,SS-16G,TO-256G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:TO_256G				
	639-05540		PCBA,MLB,2.5G,HY-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:SD_512G				
	639-05541		PCBA,MLB,2.5G,HY-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:TO_512G				
	639-05542		PCBA,MLB,2.5G,MI-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:SD_512G				
	639-05543		PCBA,MLB,2.5G,MI-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:TO_512G				
	639-05544		PCBA,MLB,2.5G,SS-8G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:SD_512G				
	639-05545		PCBA,MLB,2.5G,SS-8G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:TO_512G				
	639-05546		PCBA,MLB,2.5G,HY-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:SD_512G				
	639-05547		PCBA,MLB,2.5G,HY-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:TO_512G				
	639-05548		PCBA,MLB,2.5G,MI-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:SD_512G				
	639-05549		PCBA,MLB,2.5G,MI-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:TO_512G				
	639-05550		PCBA,MLB,2.5G,SS-16G,SD-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:SD_512G				
	639-05551		PCBA,MLB,2.5G,SS-16G,TO-512G,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:TO_512G				
	639-05552		PCBA,MLB,2.5G,HY-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:SD_1T				
	639-05553		PCBA,MLB,2.5G,HY-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:SS_1T				
	639-05554		PCBA,MLB,2.5G,HY-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:TO_1T				
	639-05555		PCBA,MLB,2.5G,MI-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:SD_1T				
	639-05556		PCBA,MLB,2.5G,MI-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:SS_1T				
	639-05557		PCBA,MLB,2.5G,MI-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:TO_1T				
	639-05558		PCBA,MLB,2.5G,SS-8G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:SD_1T				
	639-05559		PCBA,MLB,2.5G,SS-8G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:SS_1T				
	639-05560		PCBA,MLB,2.5G,SS-8G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:TO_1T				
	639-05561		PCBA,MLB,2.5G,HY-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:SD_1T				
	639-05562		PCBA,MLB,2.5G,HY-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:SS_1T				
	639-05563		PCBA,MLB,2.5G,HY-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:TO_1T				
	639-05564		PCBA,MLB,2.5G,MI-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:SD_1T				
	639-05565		PCBA,MLB,2.5G,MI-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:SS_1T				
	639-05566		PCBA,MLB,2.5G,MI-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:TO_1T				
	639-05567		PCBA,MLB,2.5G,SS-16G,SD-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:SD_1T				
	639-05568		PCBA,MLB,2.5G,SS-16G,SS-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:SS_1T				
	639-05569		PCBA,MLB,2.5G,SS-16G,TO-1T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:TO_1T				
	639-05570		PCBA,MLB,2.5G,HY-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_8G,NANDCFG:SS_2T				
	639-05571		PCBA,MLB,2.5G,MI-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_8G,NANDCFG:SS_2T				
	639-05572		PCBA,MLB,2.5G,SS-8G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_8G,NANDCFG:SS_2T				
	639-05573		PCBA,MLB,2.5G,HY-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:SS_2T				
	639-05574		PCBA,MLB,2.5G,MI-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:SS_2T				
	639-05575		PCBA,MLB,2.5G,SS-16G,SS-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:SS_2T				
	639-05576		PCBA,MLB,2.5G,SS-16G,TO-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:TO_2T				
639-05577		PCBA,MLB,2.5G,HY-16G,TO-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:HY_16G,NANDCFG:TO_2T					
639-05578		PCBA,MLB,2.5G,MI-16G,TO-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:MI_16G,NANDCFG:TO_2T					
639-05579		PCBA,MLB,2.5G,SS-16G,TO-2T,X941		BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:2.5G,DRAMCFG:SS_16G,NANDCFG:TO_2T					
639-05									







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D	<div>Alternate Parts</div> <div>System EE</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>103S0321</td><td>103S0276</td><td></td><td>ALL</td><td></td></tr><tr><td>103S00248</td><td>103S00247</td><td></td><td>ALL</td><td>8.06K 0.1% RESISTOR</td></tr><tr><td>103S00250</td><td>103S00249</td><td></td><td>ALL</td><td>18.2K 0.1% RESISTOR</td></tr><tr><td>107S0284</td><td>107S00021</td><td>SENSOR:DEV</td><td>ALL</td><td>TFT w/ Yageo</td></tr><tr><td>107S00101</td><td>107S00005</td><td>SENSOR:DEV</td><td>ALL</td><td>Cyntec w/ Yageo</td></tr><tr><td>107S00102</td><td>107S00017</td><td>SENSOR:DEV</td><td>ALL</td><td>Cyntec w/ Yageo</td></tr><tr><td>107S0276</td><td>107S00020</td><td>SENSOR:DEV</td><td>ALL</td><td>Cyntec w/ TFT</td></tr><tr><td>107S00086</td><td>107S00056</td><td>ANY</td><td>ALL</td><td>TFT w/ Cyntec</td></tr><tr><td>107S00100</td><td>107S00057</td><td></td><td>ALL</td><td>Cyntec w/ TFT</td></tr><tr><td>107S00103</td><td>107S00058</td><td>SENSOR:DEV</td><td>ALL</td><td>Cyntec w/ Yageo</td></tr><tr><td>107S00070</td><td>107S0085</td><td></td><td>ALL</td><td>100K THERMISTOR</td></tr><tr><td>132S00202</td><td>132S00175</td><td></td><td>ALL</td><td></td></tr><tr><td>138S00084</td><td>138S00060</td><td></td><td>ALL</td><td></td></tr><tr><td>138S00117</td><td>138S00071</td><td></td><td>ALL</td><td></td></tr><tr><td>138S0714</td><td>138S0713</td><td></td><td>ALL</td><td>Murata w/ Samsung</td></tr><tr><td>138S0715</td><td>138S0732</td><td></td><td>ALL</td><td>Murata w/ Samsung</td></tr><tr><td>138S0706</td><td>138S0739</td><td></td><td>ALL</td><td>NEC w/ Vishay</td></tr><tr><td>138S0945</td><td>138S0739</td><td></td><td>ALL</td><td>NEC w/ Rohm</td></tr><tr><td>138S00049</td><td>138S0831</td><td>ANY</td><td>ALL</td><td></td></tr><tr><td>138S00006</td><td>138S0835</td><td></td><td>ALL</td><td></td></tr><tr><td>138S00086</td><td>138S0884</td><td></td><td>ALL</td><td></td></tr><tr><td>138S00104</td><td>138S0978</td><td></td><td>ALL</td><td>Murata w/ Taiyo</td></tr><tr><td>138S00056</td><td>138S1100</td><td></td><td>ALL</td><td></td></tr><tr><td>152S00369</td><td>152S00268</td><td></td><td>ALL</td><td>Cyntec w/ NEC</td></tr><tr><td>152S00403</td><td>152S00322</td><td></td><td>ALL</td><td>Murata w/ Chillisin</td></tr><tr><td>152S00864</td><td>152S00851</td><td></td><td>ALL</td><td></td></tr><tr><td>152S00434</td><td>152S1829</td><td></td><td>ALL</td><td></td></tr><tr><td>155S0665</td><td>155S00232</td><td></td><td>ALL</td><td></td></tr><tr><td>155S00166</td><td>155S0391</td><td></td><td>ALL</td><td></td></tr><tr><td>155S00018</td><td>155S0664</td><td></td><td>ALL</td><td>Murata w/ Taiyo</td></tr><tr><td>155S00007</td><td>155S0667</td><td></td><td>ALL</td><td></td></tr><tr><td>155S0914</td><td>155S0897</td><td></td><td>ALL</td><td></td></tr><tr><td>155S00190</td><td>155S0897</td><td></td><td>ALL</td><td></td></tr><tr><td>197S00046</td><td>197S00036</td><td></td><td>ALL</td><td>Epson w/ TXC</td></tr><tr><td>197S00047</td><td>197S00036</td><td></td><td>ALL</td><td>Kyocera w/ TXC</td></tr><tr><td>197S00048</td><td>197S00036</td><td></td><td>ALL</td><td>Murata w/ TXC</td></tr><tr><td>197S00053</td><td>197S00050</td><td></td><td>ALL</td><td>Kyocera w/ TXC</td></tr><tr><td>197S00054</td><td>197S00050</td><td></td><td>ALL</td><td>NDK w/ TXC</td></tr><tr><td>197S00055</td><td>197S00050</td><td></td><td>ALL</td><td>Murata w/ TXC</td></tr><tr><td>197S00120</td><td>197S00118</td><td></td><td>ALL</td><td></td></tr><tr><td>311S0426</td><td>311S00007</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00104</td><td>311S00091</td><td>ANY</td><td>ALL</td><td></td></tr><tr><td>311S00156</td><td>311S00129</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00196</td><td>311S00195</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00060</td><td>311S0273</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00121</td><td>311S0398</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00138</td><td>311S0436</td><td></td><td>ALL</td><td></td></tr><tr><td>311S00013</td><td>311S0508</td><td></td><td>ALL</td><td>NXP w/ Diodes</td></tr><tr><td>335S00270</td><td>335S00203</td><td></td><td>ALL</td><td></td></tr><tr><td>335S00213</td><td>335S0888</td><td></td><td>ALL</td><td></td></tr><tr><td>353S00878</td><td>353S00599</td><td></td><td>ALL</td><td></td></tr><tr><td>353S00879</td><td>353S00754</td><td></td><td>ALL</td><td></td></tr><tr><td>353S00750</td><td>353S00877</td><td></td><td>ALL</td><td></td></tr><tr><td>353S01041</td><td>353S01042</td><td></td><td>ALL</td><td></td></tr><tr><td>353S01346</td><td>353S01320</td><td></td><td>ALL</td><td></td></tr><tr><td>353S01506</td><td>353S01404</td><td>ANY</td><td>ALL</td><td></td></tr><tr><td>353S00107</td><td>353S3239</td><td>ANY</td><td>ALL</td><td>Onsemi alt to Intersil</td></tr><tr><td>353S00636</td><td>353S4037</td><td>ANY</td><td>ALL</td><td></td></tr><tr><td>353S00772</td><td>353S4068</td><td></td><td>ALL</td><td></td></tr><tr><td>371S00089</td><td>371S00085</td><td></td><td>ALL</td><td></td></tr></table>									PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	103S0321	103S0276		ALL		103S00248	103S00247		ALL	8.06K 0.1% RESISTOR	103S00250	103S00249		ALL	18.2K 0.1% RESISTOR	107S0284	107S00021	SENSOR:DEV	ALL	TFT w/ Yageo	107S00101	107S00005	SENSOR:DEV	ALL	Cyntec w/ Yageo	107S00102	107S00017	SENSOR:DEV	ALL	Cyntec w/ Yageo	107S0276	107S00020	SENSOR:DEV	ALL	Cyntec w/ TFT	107S00086	107S00056	ANY	ALL	TFT w/ Cyntec	107S00100	107S00057		ALL	Cyntec w/ TFT	107S00103	107S00058	SENSOR:DEV	ALL	Cyntec w/ Yageo	107S00070	107S0085		ALL	100K THERMISTOR	132S00202	132S00175		ALL		138S00084	138S00060		ALL		138S00117	138S00071		ALL		138S0714	138S0713		ALL	Murata w/ Samsung	138S0715	138S0732		ALL	Murata w/ Samsung	138S0706	138S0739		ALL	NEC w/ Vishay	138S0945	138S0739		ALL	NEC w/ Rohm	138S00049	138S0831	ANY	ALL		138S00006	138S0835		ALL		138S00086	138S0884		ALL		138S00104	138S0978		ALL	Murata w/ Taiyo	138S00056	138S1100		ALL		152S00369	152S00268		ALL	Cyntec w/ NEC	152S00403	152S00322		ALL	Murata w/ Chillisin	152S00864	152S00851		ALL		152S00434	152S1829		ALL		155S0665	155S00232		ALL		155S00166	155S0391		ALL		155S00018	155S0664		ALL	Murata w/ Taiyo	155S00007	155S0667		ALL		155S0914	155S0897		ALL		155S00190	155S0897		ALL		197S00046	197S00036		ALL	Epson w/ TXC	197S00047	197S00036		ALL	Kyocera w/ TXC	197S00048	197S00036		ALL	Murata w/ TXC	197S00053	197S00050		ALL	Kyocera w/ TXC	197S00054	197S00050		ALL	NDK w/ TXC	197S00055	197S00050		ALL	Murata w/ TXC	197S00120	197S00118		ALL		311S0426	311S00007		ALL		311S00104	311S00091	ANY	ALL		311S00156	311S00129		ALL		311S00196	311S00195		ALL		311S00060	311S0273		ALL		311S00121	311S0398		ALL		311S00138	311S0436		ALL		311S00013	311S0508		ALL	NXP w/ Diodes	335S00270	335S00203		ALL		335S00213	335S0888		ALL		353S00878	353S00599		ALL		353S00879	353S00754		ALL		353S00750	353S00877		ALL		353S01041	353S01042		ALL		353S01346	353S01320		ALL		353S01506	353S01404	ANY	ALL		353S00107	353S3239	ANY	ALL	Onsemi alt to Intersil	353S00636	353S4037	ANY	ALL		353S00772	353S4068		ALL		371S00089	371S00085		ALL														
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:																																																																																																																																																																																																																																																																																																																																			
103S0321	103S0276		ALL																																																																																																																																																																																																																																																																																																																																				
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103S00250	103S00249		ALL	18.2K 0.1% RESISTOR																																																																																																																																																																																																																																																																																																																																			
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Vishay	152S00388	152S00182		ALL		152S00703	152S00182		ALL		152S00383	152S00198		ALL		152S00680	152S00198		ALL		152S00398	152S00204		ALL		152S00841	152S00238		ALL		152S00765	152S00239		ALL		152S00368	152S00269		ALL		152S00724	152S00311		ALL		152S00786	152S00344		ALL		152S00725	152S00590		ALL		152S00726	152S00592		ALL		152S00707	152S00689		ALL		311S0596	311S0593		ALL	NXP w/ Diodes	311S00192	311S00191		ALL		311S00193	311S00191		ALL		353S00831	353S00519		ALL		353S00796	353S00497		ALL		353S00832	353S00525		ALL		376S00303	376S00012		ALL		376S00204	376S00203		ALL		376S00226	376S00203		ALL		376S00227	376S00203		ALL		376S00302	376S1038		ALL		376S00281	376S1147		ALL		376S00007	376S1179		ALL		376S00228	376S1179		ALL		376S00304	376S1187		ALL		740S0144	740S0118		ALL		740S00028	740S0118		ALL									
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DRAWING NUMBER

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