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1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.

2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.

3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

REV

ECN

DESCRIPTION OF REVISION

CK APPD

DATE

2010-07-22

SCHEM,MLB DVT,K99

07/22/10

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Acoustic Cap BOM Config Tables

K16\_MLB

Schematic / PCB #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-8379	1	SCHEM,MLB,K99	SCH	CRITICAL	
820-2796	1	PCBF,MLB,K99	PCB	CRITICAL	

DRAWING TITLE

SCHEM,MLB,K99

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051-8379

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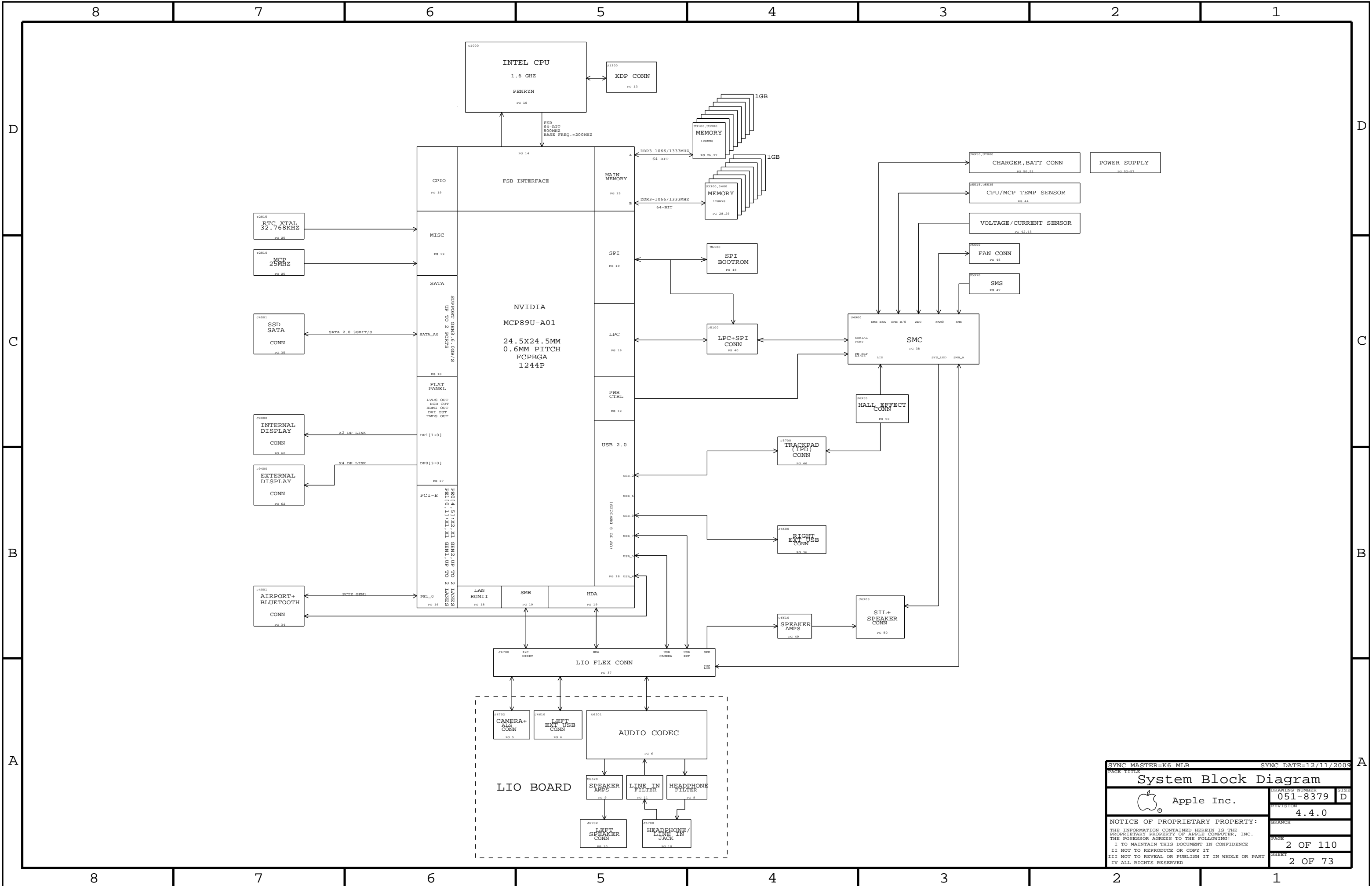
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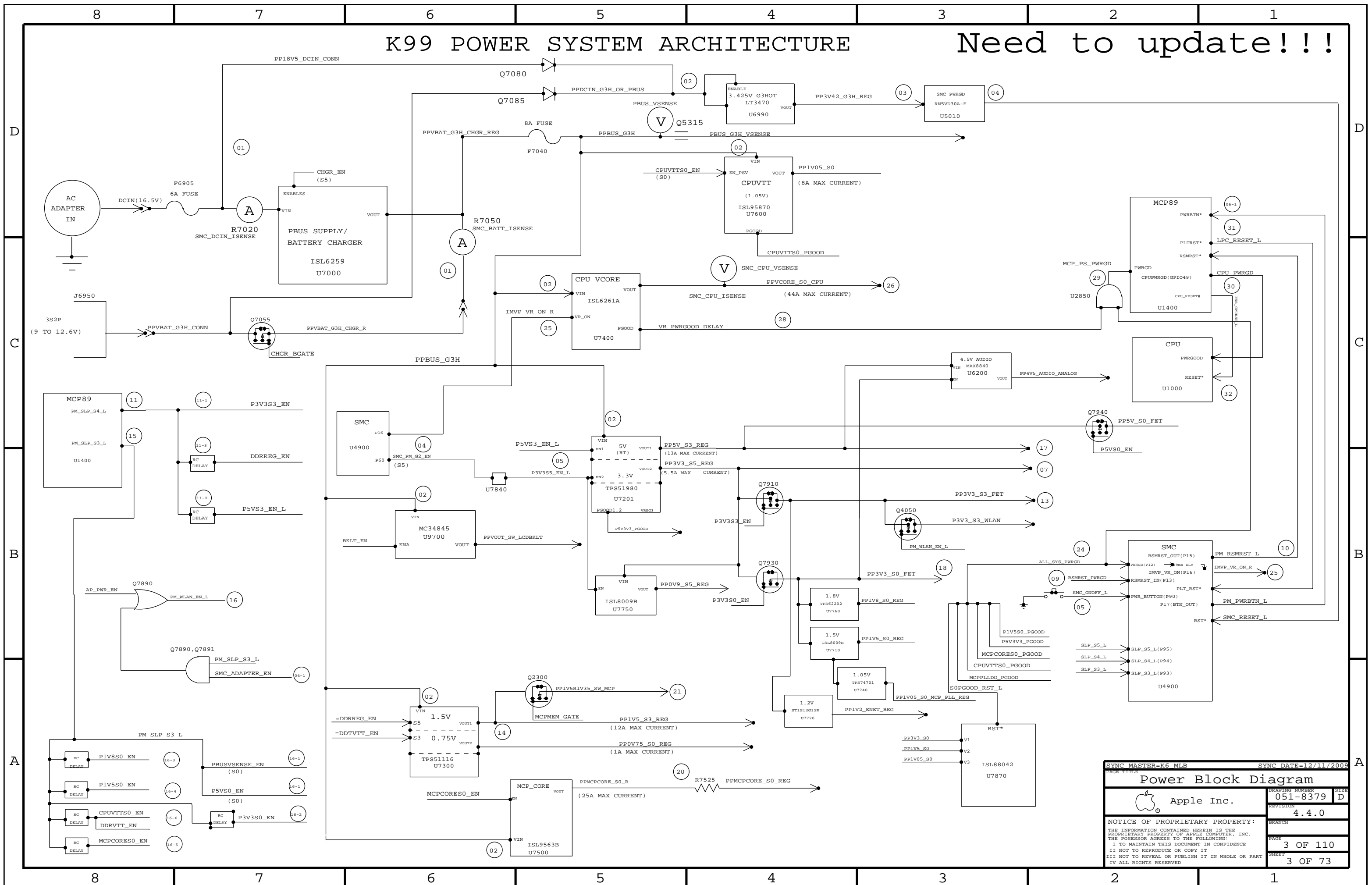
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BOM Variants

BOM NUMBER	BOM NAME	BOM OPTIONS
639-0651	PCBA,MLB,HY 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DX7,DDR3:HYNIX_2GB,CAPS:SS
639-1055	PCBA,MLB,HY 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD15,DDR3:HYNIX_2GB,CAPS:MU
639-1048	PCBA,MLB,HY 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0X,DDR3:HYNIX_2GB,CAPS:TY
639-1043	PCBA,MLB,HY 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0Q,DDR3:HYNIX_4GB,CAPS:SS
639-1044	PCBA,MLB,HY 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0R,DDR3:HYNIX_4GB,CAPS:MU
639-1039	PCBA,MLB,HY 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0L,DDR3:HYNIX_4GB,CAPS:TY
639-1045	PCBA,MLB,SA 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0T,DDR3:SAMSUNG_2GB,CAPS:SS
639-1054	PCBA,MLB,SA 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD14,DDR3:SAMSUNG_2GB,CAPS:MU
639-1049	PCBA,MLB,SA 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0Y,DDR3:SAMSUNG_2GB,CAPS:TY
639-1052	PCBA,MLB,SA 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD12,DDR3:SAMSUNG_4GB,CAPS:SS
639-1046	PCBA,MLB,SA 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0V,DDR3:SAMSUNG_4GB,CAPS:MU
639-1040	PCBA,MLB,SA 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0M,DDR3:SAMSUNG_4GB,CAPS:TY
639-1042	PCBA,MLB,MI 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0P,DDR3:MICRON_2GB,CAPS:SS
639-1053	PCBA,MLB,MI 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD13,DDR3:MICRON_2GB,CAPS:MU
639-1047	PCBA,MLB,MI 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0W,DDR3:MICRON_2GB,CAPS:TY
639-1051	PCBA,MLB,MI 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD11,DDR3:MICRON_4GB,CAPS:SS
639-1041	PCBA,MLB,MI 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD0N,DDR3:MICRON_4GB,CAPS:MU
639-1050	PCBA,MLB,MI 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DD10,DDR3:MICRON_4GB,CAPS:TY
639-1446	PCBA,MLB,1.6GHZ,EL 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4Q,DDR3:ELPIDA_2GB,CAPS:SS
639-1438	PCBA,MLB,1.6GHZ,EL 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4G,DDR3:ELPIDA_2GB,CAPS:MU
639-1444	PCBA,MLB,1.6GHZ,EL 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4N,DDR3:ELPIDA_2GB,CAPS:TY
639-1449	PCBA,MLB,1.6GHZ,EL 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4V,DDR3:ELPIDA_4GB,CAPS:SS
639-1448	PCBA,MLB,1.6GHZ,EL 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4T,DDR3:ELPIDA_4GB,CAPS:MU
639-1445	PCBA,MLB,1.6GHZ,EL 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.6GHZ,EE:DG4P,DDR3:ELPIDA_4GB,CAPS:TY
607-6999	CMN PTS,PCBA,MLB,K99	K99_COMMON
085-1121	K99 MLB DEVELOPMENT BOM	K99_DEVEL:ENG
639-1355	PCBA,MLB,1.4GHZ,HY 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8L,DDR3:HYNIX_2GB,CAPS:SS
639-1341	PCBA,MLB,1.4GHZ,HY 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8J,DDR3:HYNIX_2GB,CAPS:MU
639-1353	PCBA,MLB,1.4GHZ,HY 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8J,DDR3:HYNIX_2GB,CAPS:TY
639-1350	PCBA,MLB,1.4GHZ,HY 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8F,DDR3:HYNIX_4GB,CAPS:SS
639-1356	PCBA,MLB,1.4GHZ,HY 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8M,DDR3:HYNIX_4GB,CAPS:MU
639-1348	PCBA,MLB,1.4GHZ,HY 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8C,DDR3:HYNIX_4GB,CAPS:TY
639-1349	PCBA,MLB,1.4GHZ,SA 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8D,DDR3:SAMSUNG_2GB,CAPS:SS
639-1351	PCBA,MLB,1.4GHZ,SA 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8G,DDR3:SAMSUNG_2GB,CAPS:MU
639-1357	PCBA,MLB,1.4GHZ,SA 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8N,DDR3:SAMSUNG_2GB,CAPS:TY
639-1344	PCBA,MLB,1.4GHZ,SA 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF86,DDR3:SAMSUNG_4GB,CAPS:SS
639-1352	PCBA,MLB,1.4GHZ,SA 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8H,DDR3:SAMSUNG_4GB,CAPS:MU
639-1354	PCBA,MLB,1.4GHZ,SA 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF8K,DDR3:SAMSUNG_4GB,CAPS:TY
639-1342	PCBA,MLB,1.4GHZ,MI 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF84,DDR3:MICRON_2GB,CAPS:SS
639-1346	PCBA,MLB,1.4GHZ,MI 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF88,DDR3:MICRON_2GB,CAPS:MU
639-1343	PCBA,MLB,1.4GHZ,MI 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF85,DDR3:MICRON_2GB,CAPS:TY
639-1347	PCBA,MLB,1.4GHZ,MI 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF89,DDR3:MICRON_4GB,CAPS:SS
639-1345	PCBA,MLB,1.4GHZ,MI 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF87,DDR3:MICRON_4GB,CAPS:MU
639-1340	PCBA,MLB,1.4GHZ,MI 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DF82,DDR3:MICRON_4GB,CAPS:TY
639-1442	PCBA,MLB,1.4GHZ,EL 2GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4L,DDR3:ELPIDA_2GB,CAPS:SS
639-1443	PCBA,MLB,1.4GHZ,EL 2GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4M,DDR3:ELPIDA_2GB,CAPS:MU
639-1447	PCBA,MLB,1.4GHZ,EL 2GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4R,DDR3:ELPIDA_2GB,CAPS:TY
639-1441	PCBA,MLB,1.4GHZ,EL 4GB,SS CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4K,DDR3:ELPIDA_4GB,CAPS:SS
639-1439	PCBA,MLB,1.4GHZ,EL 4GB,MU CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4H,DDR3:ELPIDA_4GB,CAPS:MU
639-1440	PCBA,MLB,1.4GHZ,EL 4GB,TY CAP,K99	K99_CMNPTS,CPU:1.4GHZ,EE:DG4J,DDR3:ELPIDA_4GB,CAPS:TY

Bar Code Labels / EEE #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
825-7557	1	LABEL,MLB,K16/K99	[EEE_DX7]	CRITICAL	EEE:DX7
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0L]	CRITICAL	EEE:DD0L
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0M]	CRITICAL	EEE:DD0M
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0N]	CRITICAL	EEE:DD0N
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0P]	CRITICAL	EEE:DD0P
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0Q]	CRITICAL	EEE:DD0Q
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0R]	CRITICAL	EEE:DD0R
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0T]	CRITICAL	EEE:DD0T
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0V]	CRITICAL	EEE:DD0V
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0W]	CRITICAL	EEE:DD0W
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0X]	CRITICAL	EEE:DD0X
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD0Y]	CRITICAL	EEE:DD0Y
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD10]	CRITICAL	EEE:DD10
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD11]	CRITICAL	EEE:DD11
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD12]	CRITICAL	EEE:DD12
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD13]	CRITICAL	EEE:DD13
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD14]	CRITICAL	EEE:DD14
825-7557	1	LABEL,MLB,K16/K99	[EEE_DD15]	CRITICAL	EEE:DD15
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF82]	CRITICAL	EEE:DF82
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF83]	CRITICAL	EEE:DF83
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF84]	CRITICAL	EEE:DF84
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF85]	CRITICAL	EEE:DF85
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF86]	CRITICAL	EEE:DF86
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF87]	CRITICAL	EEE:DF87
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF88]	CRITICAL	EEE:DF88
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF89]	CRITICAL	EEE:DF89
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8C]	CRITICAL	EEE:DF8C
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8D]	CRITICAL	EEE:DF8D
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8F]	CRITICAL	EEE:DF8F
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8G]	CRITICAL	EEE:DF8G
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8H]	CRITICAL	EEE:DF8H
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8J]	CRITICAL	EEE:DF8J
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8K]	CRITICAL	EEE:DF8K
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8L]	CRITICAL	EEE:DF8L
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8M]	CRITICAL	EEE:DF8M
825-7557	1	LABEL,MLB,K16/K99	[EEE_DF8N]	CRITICAL	EEE:DF8N
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4G]	CRITICAL	EEE:DG4G
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4H]	CRITICAL	EEE:DG4H
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4J]	CRITICAL	EEE:DG4J
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4K]	CRITICAL	EEE:DG4K
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4M]	CRITICAL	EEE:DG4M
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4N]	CRITICAL	EEE:DG4N
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4P]	CRITICAL	EEE:DG4P
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4Q]	CRITICAL	EEE:DG4Q
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4R]	CRITICAL	EEE:DG4R
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4L]	CRITICAL	EEE:DG4L
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4T]	CRITICAL	EEE:DG4T
825-7557	1	LABEL,MLB,K16/K99	[EEE_DG4V]	CRITICAL	EEE:DG4V

DRAM CFG CHART

VENDOR	CFG 1	CFG 0
HYNIX	0	0
SAMSUNG	1	0
MICRON	0	1
ELPIDA	1	1

SIZE	CFG 2
2GB	0
4GB	1

DIE REV	CFG 3
A	0
B	1

Sub-BOMs

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
085-1121	1	K99 MLB DEVELOPMENT BOM	DEVEL	CRITICAL	DEVEL_BOM
607-6999	1	CMN PTS,PCBA,MLB,K99	CMNPTS	CRITICAL	K99_CMNPTS

SYNC MASTER=K6\_MLB

SYNC DATE=12/11/2009

K99 BOM Variants

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<div>Programmable Parts</div> <table><tr><td>338S0563</td><td>1</td><td>IC,SMC,H58/2117,5X9MM,TLP,HF</td><td>U4900</td><td>CRITICAL</td><td>SMC:BLANK</td></tr><tr><td>341T0261</td><td>1</td><td>IC ASSY,SMC EXTERNAL,K99</td><td>U4900</td><td>CRITICAL</td><td>SMC:PROG</td></tr><tr><td>335S0610</td><td>1</td><td>IC,FLASH,SPI,138BIT,3.3V,66MHZ,8-BOP</td><td>U6100</td><td>CRITICAL</td><td>BOOTROM:BLANK</td></tr><tr><td>341T0262</td><td>1</td><td>IC ASSY,EFI UNLOCKED,K99</td><td>U6100</td><td>CRITICAL</td><td>BOOTROM:UNLOCKED</td></tr><tr><td>341T0263</td><td>1</td><td>IC ASSY,EFI,LOCKED,K99</td><td>U6100</td><td>CRITICAL</td><td>BOOTROM:LOCKED</td></tr></table> <div>Alternate Parts</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>138S0681</td><td>138S0638</td><td></td><td>ALL</td><td>TAIYO VIDEO AS ALTERNATE</td></tr><tr><td>152S0874</td><td>152S0516</td><td></td><td>ALL</td><td>ANALOGUE AS ALTERNATE</td></tr><tr><td>152S0847</td><td>152S0586</td><td></td><td>ALL</td><td>ANALOGUE AS ALTERNATE</td></tr><tr><td>353S2987</td><td>353S2988</td><td>HYDSELDO:FIXED</td><td>ALL</td><td>YOUTUTISION AS ALTERNATE FOR U2030</td></tr><tr><td>104S0023</td><td>104S0018</td><td></td><td>ALL</td><td>CONTRIC:DALE AS ALTERNATE</td></tr><tr><td>107S0139</td><td>107S0075</td><td></td><td>ALL</td><td>CONTRIC AS ALTERNATE</td></tr><tr><td>138S0671</td><td>138S0673</td><td></td><td>ALL</td><td>TAIYO AS ALTERNATE</td></tr><tr><td>155S0578</td><td>155S0367</td><td></td><td>ALL</td><td>TAIYO AS ALTERNATE</td></tr><tr><td>376S0926</td><td>376S0610</td><td></td><td>ALL</td><td>FAIRCHILD AS ALTERNATE</td></tr><tr><td>155S0457</td><td>155S0329</td><td></td><td>ALL</td><td>ANALOGUE AS ALTERNATE</td></tr><tr><td>377S0107</td><td>377S0066</td><td></td><td>ALL</td><td>OSHRO AS ALTERNATE</td></tr></table>								338S0563	1	IC,SMC,H58/2117,5X9MM,TLP,HF	U4900	CRITICAL	SMC:BLANK	341T0261	1	IC ASSY,SMC EXTERNAL,K99	U4900	CRITICAL	SMC:PROG	335S0610	1	IC,FLASH,SPI,138BIT,3.3V,66MHZ,8-BOP	U6100	CRITICAL	BOOTROM:BLANK	341T0262	1	IC ASSY,EFI UNLOCKED,K99	U6100	CRITICAL	BOOTROM:UNLOCKED	341T0263	1	IC ASSY,EFI,LOCKED,K99	U6100	CRITICAL	BOOTROM:LOCKED	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	138S0681	138S0638		ALL	TAIYO VIDEO AS ALTERNATE	152S0874	152S0516		ALL	ANALOGUE AS ALTERNATE	152S0847	152S0586		ALL	ANALOGUE AS ALTERNATE	353S2987	353S2988	HYDSELDO:FIXED	ALL	YOUTUTISION AS ALTERNATE FOR U2030	104S0023	104S0018		ALL	CONTRIC:DALE AS ALTERNATE	107S0139	107S0075		ALL	CONTRIC AS ALTERNATE	138S0671	138S0673		ALL	TAIYO AS ALTERNATE	155S0578	155S0367		ALL	TAIYO AS ALTERNATE	376S0926	376S0610		ALL	FAIRCHILD AS ALTERNATE	155S0457	155S0329		ALL	ANALOGUE AS ALTERNATE	377S0107	377S0066		ALL	OSHRO AS ALTERNATE																																																																																																																																																																		
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OPTION</th></tr><tr><td>337S3792</td><td>1</td><td>CDC,QDMA,Q8,1.2,10M,800,80,1M,80A</td><td>U1000</td><td>CRITICAL</td><td>CPU:1.2GHZ</td></tr><tr><td>337S3947</td><td>1</td><td>SDC,SLQFW,FRQ,1.6,10M,80,3M,80A</td><td>U1000</td><td>CRITICAL</td><td>CPU:1.6GHZ</td></tr><tr><td>337S3954</td><td>1</td><td>SDC,SLQAE,FRQ,1.4,10M,80,3M,80A</td><td>U1000</td><td>CRITICAL</td><td>CPU:1.4GHZ</td></tr><tr><td>337S3820</td><td>1</td><td>IC,MCP890-A01,24,18M624,5MM,1248FCBGA</td><td>U1400</td><td>CRITICAL</td><td>MCP890:A01</td></tr><tr><td>337S3868</td><td>1</td><td>IC,MCP890-A02,24,18M624,5MM,1248FCBGA</td><td>U1400</td><td>CRITICAL</td><td>MCP890:A02</td></tr><tr><td>337S3939</td><td>1</td><td>IC,MCP890-A03,24,18M624,5MM,1248FCBGA</td><td>U1400</td><td>CRITICAL</td><td>MCP890:A03</td></tr><tr><td>333S0552</td><td>4</td><td>HYNIX,LVDDR3,1GBIT,7.5K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_2GB</td></tr><tr><td>333S0552</td><td>4</td><td>HYNIX,LVDDR3,1GBIT,7.5K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_2GB</td></tr><tr><td>333S0552</td><td>4</td><td>HYNIX,LVDDR3,1GBIT,7.5K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_2GB</td></tr><tr><td>333S0552</td><td>4</td><td>HYNIX,LVDDR3,1GBIT,7.5K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_2GB</td></tr><tr><td>333S0553</td><td>4</td><td>SAMSUNG,LVDDR3,1GBIT,7.5K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_2GB</td></tr><tr><td>333S0553</td><td>4</td><td>SAMSUNG,LVDDR3,1GBIT,7.5K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_2GB</td></tr><tr><td>333S0553</td><td>4</td><td>SAMSUNG,LVDDR3,1GBIT,7.5K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_2GB</td></tr><tr><td>333S0553</td><td>4</td><td>SAMSUNG,LVDDR3,1GBIT,7.5K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_2GB</td></tr><tr><td>333S0554</td><td>4</td><td>MICRON,LVDDR3,1GBIT,8K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_2GB</td></tr><tr><td>333S0554</td><td>4</td><td>MICRON,LVDDR3,1GBIT,8K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_2GB</td></tr><tr><td>333S0554</td><td>4</td><td>MICRON,LVDDR3,1GBIT,8K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_2GB</td></tr><tr><td>333S0554</td><td>4</td><td>MICRON,LVDDR3,1GBIT,8K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_2GB</td></tr><tr><td>333S0565</td><td>4</td><td>ELPIDA,LVDDR3,1GBIT,7.5K10.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_2GB</td></tr><tr><td>333S0565</td><td>4</td><td>ELPIDA,LVDDR3,1GBIT,7.5K10.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_2GB</td></tr><tr><td>333S0565</td><td>4</td><td>ELPIDA,LVDDR3,1GBIT,7.5K10.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_2GB</td></tr><tr><td>333S0565</td><td>4</td><td>ELPIDA,LVDDR3,1GBIT,7.5K10.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_2GB</td></tr><tr><td>333S0555</td><td>4</td><td>HYNIX,LVDDR3,2GBIT,8K11.1</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_4GB</td></tr><tr><td>333S0555</td><td>4</td><td>HYNIX,LVDDR3,2GBIT,8K11.1</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_4GB</td></tr><tr><td>333S0555</td><td>4</td><td>HYNIX,LVDDR3,2GBIT,8K11.1</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_4GB</td></tr><tr><td>333S0555</td><td>4</td><td>HYNIX,LVDDR3,2GBIT,8K11.1</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:HYNIX_4GB</td></tr><tr><td>333S0556</td><td>4</td><td>SAMSUNG,LVDDR3,2GBIT,7.5K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_4GB</td></tr><tr><td>333S0556</td><td>4</td><td>SAMSUNG,LVDDR3,2GBIT,7.5K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_4GB</td></tr><tr><td>333S0556</td><td>4</td><td>SAMSUNG,LVDDR3,2GBIT,7.5K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_4GB</td></tr><tr><td>333S0556</td><td>4</td><td>SAMSUNG,LVDDR3,2GBIT,7.5K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:SAMSUNG_4GB</td></tr><tr><td>333S0557</td><td>4</td><td>MICRON,LVDDR3,2GBIT,8K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_4GB</td></tr><tr><td>333S0557</td><td>4</td><td>MICRON,LVDDR3,2GBIT,8K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_4GB</td></tr><tr><td>333S0557</td><td>4</td><td>MICRON,LVDDR3,2GBIT,8K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_4GB</td></tr><tr><td>333S0557</td><td>4</td><td>MICRON,LVDDR3,2GBIT,8K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:MICRON_4GB</td></tr><tr><td>333S0566</td><td>4</td><td>ELPIDA,LVDDR3,2GBIT,8K11.0</td><td>U3100,U3110,U3120,U3130</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_4GB</td></tr><tr><td>333S0566</td><td>4</td><td>ELPIDA,LVDDR3,2GBIT,8K11.0</td><td>U3200,U3210,U3220,U3230</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_4GB</td></tr><tr><td>333S0566</td><td>4</td><td>ELPIDA,LVDDR3,2GBIT,8K11.0</td><td>U3300,U3310,U3320,U3330</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_4GB</td></tr><tr><td>333S0566</td><td>4</td><td>ELPIDA,LVDDR3,2GBIT,8K11.0</td><td>U3400,U3410,U3420,U3430</td><td>CRITICAL</td><td>DRAM_TYPE:ELPIDA_4GB</td></tr><tr><td>353S2392</td><td>1</td><td>IC,ISL6259,BATCHCHARGE,4XMM,QFN28</td><td>U7000</td><td>CRITICAL</td><td>ISL6259_SCREENED:NO</td></tr><tr><td>353S2929</td><td>1</td><td>IC,ISL6259,BATCHCHARGE,3X,40MM,QFN28</td><td>U7000</td><td>CRITICAL</td><td>ISL6259_SCREENED:YES</td></tr><tr><td>607-6811</td><td>1</td><td>ASSEMBLY,SURGEITY,PCBA HALL SUPPORT, K99</td><td>J6955</td><td>CRITICAL</td><td></td></tr></table>								PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	337S3792	1	CDC,QDMA,Q8,1.2,10M,800,80,1M,80A	U1000	CRITICAL	CPU:1.2GHZ	337S3947	1	SDC,SLQFW,FRQ,1.6,10M,80,3M,80A	U1000	CRITICAL	CPU:1.6GHZ	337S3954	1	SDC,SLQAE,FRQ,1.4,10M,80,3M,80A	U1000	CRITICAL	CPU:1.4GHZ	337S3820	1	IC,MCP890-A01,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A01	337S3868	1	IC,MCP890-A02,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A02	337S3939	1	IC,MCP890-A03,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A03	333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:HYNIX_2GB	333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:HYNIX_2GB	333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:HYNIX_2GB	333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:HYNIX_2GB	333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:SAMSUNG_2GB	333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:SAMSUNG_2GB	333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:SAMSUNG_2GB	333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:SAMSUNG_2GB	333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:MICRON_2GB	333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:MICRON_2GB	333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:MICRON_2GB	333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:MICRON_2GB	333S0565	4	ELPIDA,LVDDR3,1GBIT,7.5K10.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:ELPIDA_2GB	333S0565	4	ELPIDA,LVDDR3,1GBIT,7.5K10.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:ELPIDA_2GB	333S0565	4	ELPIDA,LVDDR3,1GBIT,7.5K10.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:ELPIDA_2GB	333S0565	4	ELPIDA,LVDDR3,1GBIT,7.5K10.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:ELPIDA_2GB	333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:HYNIX_4GB	333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:HYNIX_4GB	333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:HYNIX_4GB	333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:HYNIX_4GB	333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:SAMSUNG_4GB	333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:SAMSUNG_4GB	333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:SAMSUNG_4GB	333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:SAMSUNG_4GB	333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:MICRON_4GB	333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:MICRON_4GB	333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:MICRON_4GB	333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:MICRON_4GB	333S0566	4	ELPIDA,LVDDR3,2GBIT,8K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:ELPIDA_4GB	333S0566	4	ELPIDA,LVDDR3,2GBIT,8K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:ELPIDA_4GB	333S0566	4	ELPIDA,LVDDR3,2GBIT,8K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:ELPIDA_4GB	333S0566	4	ELPIDA,LVDDR3,2GBIT,8K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:ELPIDA_4GB	353S2392	1	IC,ISL6259,BATCHCHARGE,4XMM,QFN28	U7000	CRITICAL	ISL6259_SCREENED:NO	353S2929	1	IC,ISL6259,BATCHCHARGE,3X,40MM,QFN28	U7000	CRITICAL	ISL6259_SCREENED:YES	607-6811	1	ASSEMBLY,SURGEITY,PCBA HALL SUPPORT, K99	J6955	CRITICAL	
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION																																																																																																																																																																																																																																																														
337S3792	1	CDC,QDMA,Q8,1.2,10M,800,80,1M,80A	U1000	CRITICAL	CPU:1.2GHZ																																																																																																																																																																																																																																																														
337S3947	1	SDC,SLQFW,FRQ,1.6,10M,80,3M,80A	U1000	CRITICAL	CPU:1.6GHZ																																																																																																																																																																																																																																																														
337S3954	1	SDC,SLQAE,FRQ,1.4,10M,80,3M,80A	U1000	CRITICAL	CPU:1.4GHZ																																																																																																																																																																																																																																																														
337S3820	1	IC,MCP890-A01,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A01																																																																																																																																																																																																																																																														
337S3868	1	IC,MCP890-A02,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A02																																																																																																																																																																																																																																																														
337S3939	1	IC,MCP890-A03,24,18M624,5MM,1248FCBGA	U1400	CRITICAL	MCP890:A03																																																																																																																																																																																																																																																														
333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:HYNIX_2GB																																																																																																																																																																																																																																																														
333S0552	4	HYNIX,LVDDR3,1GBIT,7.5K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:HYNIX_2GB																																																																																																																																																																																																																																																														
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333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:SAMSUNG_2GB																																																																																																																																																																																																																																																														
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333S0553	4	SAMSUNG,LVDDR3,1GBIT,7.5K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:SAMSUNG_2GB																																																																																																																																																																																																																																																														
333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:MICRON_2GB																																																																																																																																																																																																																																																														
333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:MICRON_2GB																																																																																																																																																																																																																																																														
333S0554	4	MICRON,LVDDR3,1GBIT,8K11.0	U3300,U3310,U3320,U3330	CRITICAL	DRAM_TYPE:MICRON_2GB																																																																																																																																																																																																																																																														
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333S0565	4	ELPIDA,LVDDR3,1GBIT,7.5K10.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:ELPIDA_2GB																																																																																																																																																																																																																																																														
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333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:HYNIX_4GB																																																																																																																																																																																																																																																														
333S0555	4	HYNIX,LVDDR3,2GBIT,8K11.1	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:HYNIX_4GB																																																																																																																																																																																																																																																														
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333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:SAMSUNG_4GB																																																																																																																																																																																																																																																														
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333S0556	4	SAMSUNG,LVDDR3,2GBIT,7.5K11.0	U3400,U3410,U3420,U3430	CRITICAL	DRAM_TYPE:SAMSUNG_4GB																																																																																																																																																																																																																																																														
333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3100,U3110,U3120,U3130	CRITICAL	DRAM_TYPE:MICRON_4GB																																																																																																																																																																																																																																																														
333S0557	4	MICRON,LVDDR3,2GBIT,8K11.0	U3200,U3210,U3220,U3230	CRITICAL	DRAM_TYPE:MICRON_4GB																																																																																																																																																																																																																																																														
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353S2392	1	IC,ISL6259,BATCHCHARGE,4XMM,QFN28	U7000	CRITICAL	ISL6259_SCREENED:NO																																																																																																																																																																																																																																																														
353S2929	1	IC,ISL6259,BATCHCHARGE,3X,40MM,QFN28	U7000	CRITICAL	ISL6259_SCREENED:YES																																																																																																																																																																																																																																																														
607-6811	1	ASSEMBLY,SURGEITY,PCBA HALL SUPPORT, K99	J6955	CRITICAL																																																																																																																																																																																																																																																															
<div>BOM Groups</div> <table><tr><th>BOM GROUP</th><th>BOM OPTIONS</th></tr><tr><td>K99_COMMON</td><td>COMMON,ALTERNATE,PROJ:K99,K99_MISC,MCP890:A03,K99_DEBUG:ENG,K99_PROGPARTS,SPI:41MHZ,LVDDR3:YES,WLAN_PCTL:HW,IPD_5V:SS_INT,IPD_3V3:SS</td></tr><tr><td>K99_MISC</td><td>DP_ESD,DP_PWR:SMC,VPRQ:ELPES,HYDSELDO:FIXED,MCPWDD:V2V5,MCPPLL_R:REQ,SOPGOOD_BUT,ISL6259_SCREENED:YES,DP12C:SMC</td></tr><tr><td>K99_PROGPARTS</td><td>BOOTROM:UNLOCKED,SMC:PROG</td></tr><tr><td>K99_DEVEL:ENG</td><td>BKLT:ENG,BMON:ENG,XDP_CONN,LPCPLUS,VREFMRGN:YES,EFI_DEBUG,SOPGOOD_ISL,MCPPLL_LDO,SS_S0_LED</td></tr><tr><td>K99_DEVEL:PVT</td><td>LPCPLUS</td></tr><tr><td>K99_DEBUG:ENG</td><td>DEVEL_BOM,SMC_DEBUG:YES,XDP</td></tr><tr><td>K99_DEBUG:PVT</td><td>DEVEL_BOM,BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO</td></tr><tr><td>K99_DEBUG:PROD</td><td>BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO</td></tr><tr><td>DDR3:HYNIX_2GB</td><td>DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:HYNIX_2GB</td></tr><tr><td>DDR3:SAMSUNG_2GB</td><td>DRAM_CFG0:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_2GB</td></tr><tr><td>DDR3:MICRON_2GB</td><td>DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:MICRON_2GB</td></tr><tr><td>DDR3:ELPIDA_2GB</td><td>DRAM_CFG0:H,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_2GB</td></tr><tr><td>DDR3:HYNIX_4GB</td><td>DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:HYNIX_4GB</td></tr><tr><td>DDR3:SAMSUNG_4GB</td><td>DRAM_CFG0:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_4GB</td></tr><tr><td>DDR3:MICRON_4GB</td><td>DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:MICRON_4GB</td></tr><tr><td>DDR3:ELPIDA_4GB</td><td>DRAM_CFG0:H,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_4GB</td></tr><tr><td>CAPS:SS</td><td>SS_CAP_2_2UF,SS_CAP_10UF,SS_CAP_1UF,SS_CAP_22UF</td></tr><tr><td>CAPS:MU</td><td>MU_CAP_2_2UF,MU_CAP_10UF,MU_CAP_1UF,MU_CAP_22UF</td></tr><tr><td>CAPS:TY</td><td>TY_CAP_2_2UF,TY_CAP_10UF,TY_CAP_1UF,TY_CAP_22UF</td></tr></table>								BOM GROUP	BOM OPTIONS	K99_COMMON	COMMON,ALTERNATE,PROJ:K99,K99_MISC,MCP890:A03,K99_DEBUG:ENG,K99_PROGPARTS,SPI:41MHZ,LVDDR3:YES,WLAN_PCTL:HW,IPD_5V:SS_INT,IPD_3V3:SS	K99_MISC	DP_ESD,DP_PWR:SMC,VPRQ:ELPES,HYDSELDO:FIXED,MCPWDD:V2V5,MCPPLL_R:REQ,SOPGOOD_BUT,ISL6259_SCREENED:YES,DP12C:SMC	K99_PROGPARTS	BOOTROM:UNLOCKED,SMC:PROG	K99_DEVEL:ENG	BKLT:ENG,BMON:ENG,XDP_CONN,LPCPLUS,VREFMRGN:YES,EFI_DEBUG,SOPGOOD_ISL,MCPPLL_LDO,SS_S0_LED	K99_DEVEL:PVT	LPCPLUS	K99_DEBUG:ENG	DEVEL_BOM,SMC_DEBUG:YES,XDP	K99_DEBUG:PVT	DEVEL_BOM,BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO	K99_DEBUG:PROD	BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO	DDR3:HYNIX_2GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:HYNIX_2GB	DDR3:SAMSUNG_2GB	DRAM_CFG0:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_2GB	DDR3:MICRON_2GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:MICRON_2GB	DDR3:ELPIDA_2GB	DRAM_CFG0:H,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_2GB	DDR3:HYNIX_4GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:HYNIX_4GB	DDR3:SAMSUNG_4GB	DRAM_CFG0:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_4GB	DDR3:MICRON_4GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:MICRON_4GB	DDR3:ELPIDA_4GB	DRAM_CFG0:H,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_4GB	CAPS:SS	SS_CAP_2_2UF,SS_CAP_10UF,SS_CAP_1UF,SS_CAP_22UF	CAPS:MU	MU_CAP_2_2UF,MU_CAP_10UF,MU_CAP_1UF,MU_CAP_22UF	CAPS:TY	TY_CAP_2_2UF,TY_CAP_10UF,TY_CAP_1UF,TY_CAP_22UF																																																																																																																																																																																																																				
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DDR3:HYNIX_2GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:HYNIX_2GB																																																																																																																																																																																																																																																																		
DDR3:SAMSUNG_2GB	DRAM_CFG0:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_2GB																																																																																																																																																																																																																																																																		
DDR3:MICRON_2GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:MICRON_2GB																																																																																																																																																																																																																																																																		
DDR3:ELPIDA_2GB	DRAM_CFG0:H,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_2GB																																																																																																																																																																																																																																																																		
DDR3:HYNIX_4GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:HYNIX_4GB																																																																																																																																																																																																																																																																		
DDR3:SAMSUNG_4GB	DRAM_CFG0:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_4GB																																																																																																																																																																																																																																																																		
DDR3:MICRON_4GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:MICRON_4GB																																																																																																																																																																																																																																																																		
DDR3:ELPIDA_4GB	DRAM_CFG0:H,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_4GB																																																																																																																																																																																																																																																																		
CAPS:SS	SS_CAP_2_2UF,SS_CAP_10UF,SS_CAP_1UF,SS_CAP_22UF																																																																																																																																																																																																																																																																		
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<div>SYNC MASTER=K24 MLB SYNC DATE=07/20/2009</div> <div><div><div><div><div></div><div>BOM Configuration</div></div><div><div>Apple Inc.</div><div>051-8379</div><div>4.4.0</div></div></div><div><div>NOTICE OF PROPRIETARY PROPERTY: THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THIS DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IT IN WHOLE OR PART IV ALL RIGHTS RESERVED</div><div><div>DRAWING NUMBER 051-8379 REVISION 4.4.0 BRANCH PAGE 5 OF 110 SHEET 5 OF 73</div><div>STATUS D</div></div></div></div></div>																																																																																																																																																																																																																																																																			
8	7	6	5	4	3	2	1																																																																																																																																																																																																																																																												

BOM Groups

BOM_GROUP	BOM_OPTIONS
K99_COMMON	COMMON,ALTERNATE,PROJ:K99,K99_MISC,MCP89U:A03,K99_DEBUG:ENG,K99_PROGPARTS,SPI:41MHZ,LVDDR3:YES,WLAN_PCTL:HW,IPD_5V:S5_INT,IPD_3V3:S5
K99_MISC	DP_ESD,DP_PWR:SMC,VPRQ:SLPS3,HYDSELDO:FIXED,MCPHYD:P2V5,MCPPLL_R:REG,SOPGOOD_A07,ISL6259_SCREENED:YES,D010C:SMC
K99_PROGPARTS	BOOTROM:UNLOCKED,SMC:PROG
K99_DEVEL:ENG	BKLT:ENG,BMON:ENG,XDP_CONN,LPPLUS,VREFMRGN:YES,EFI_DEBUG,SOPGOOD_IS1,MCPPLL_LDO,S3_S0_LED
K99_DEVEL:PVT	LPPLUS
K99_DEBUG:ENG	DEVEL_BOM,SMC_DEBUG:YES,XDP
K99_DEBUG:PVT	DEVEL_BOM,BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO
K99_DEBUG:PROD	BKLT:PROD,BMON:PROD,SMC_DEBUG:YES,XDP,VREFMRGN:NO
DDR3:HYNIX_2GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:HYNIX_2GB
DDR3:SAMSUNG_2GB	DRAM_CFG0:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_2GB
DDR3:MICRON_2GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:MICRON_2GB
DDR3:ELPIDA_2GB	DRAM_CFG0:H,DRAM_CFG2:L,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_2GB
DDR3:HYNIX_4GB	DRAM_CFG0:L,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:HYNIX_4GB
DDR3:SAMSUNG_4GB	DRAM_CFG0:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:SAMSUNG_4GB
DDR3:MICRON_4GB	DRAM_CFG0:H,DRAM_CFG1:L,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:MICRON_4GB
DDR3:ELPIDA_4GB	DRAM_CFG0:H,DRAM_CFG2:H,DRAM_CFG3:L,DRAM_TYPE:ELPIDA_4GB
CAPS:SS	SS_CAP_2_2UF,SS_CAP_10UF,SS_CAP_1UF,SS_CAP_22UF
CAPS:MU	MU_CAP_2_2UF,MU_CAP_10UF,MU_CAP_1UF,MU_CAP_22UF
CAPS:TY	TY_CAP_2_2UF,TY_CAP_10UF,TY_CAP_1UF,TY_CAP_22UF

SYNC MASTER=K24 MLB

SYNC DATE=07/20/2009

BOM Configuration

 Apple Inc.

DRAWING NUMBER  
051-8379

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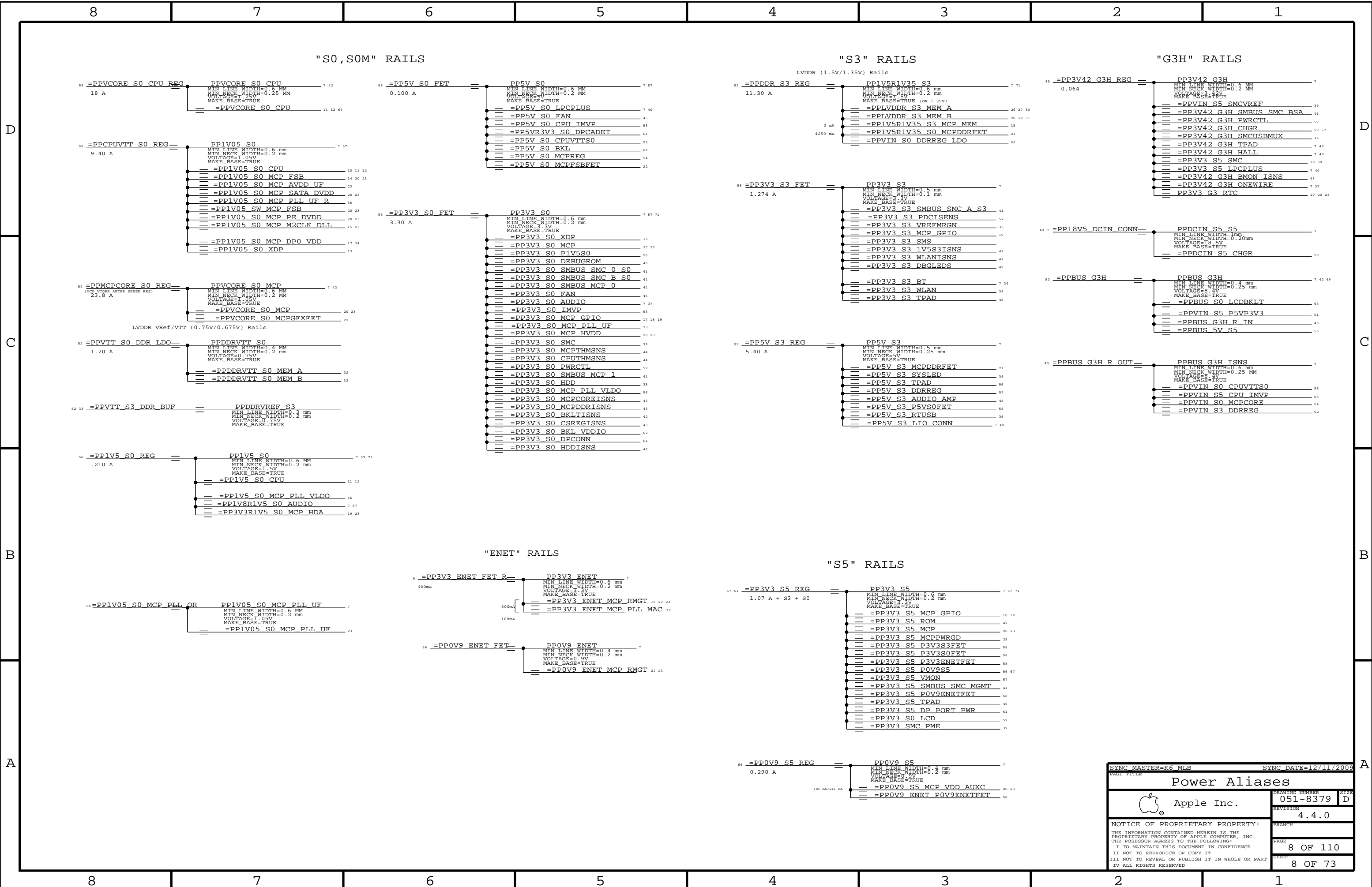
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	8	7	6	5	4	3	2	1		
	Functional Test Points									
D	Fan Connectors		LIO CONNECTOR		LCP + SPI CONN		DEBUG VOLTAGE		D	
	TP1	TRUE PP5V_S0 7 8 57	TP1	TRUE =PP3V3_S0_AUDIO 8 37 (NEED 2 TP)	TP1	TRUE =PP3V3_S5_LPCPLUS 8 40	TP1	TRUE PPVCORE_S0_CPU 8 42		
	TP2	TRUE FAN_RT_PWM 45	TP2	TRUE =PP3V42_G3H_ONEWIRE 8 37	TP2	TRUE =PP5V_S0_LPCPLUS 8 40	TP2	TRUE PPVCORE_S0_MCP 8 42		
	TP3	TRUE FAN_RT_TACH 45	TP3	TRUE SMC_BC_ACOK 9 37 38 39	TP3	TRUE LPC_AD<3..0> 19 38 40 68	TP3	TRUE PP1V05_S0 8 57		
	(NEED TO ADD 1 GND TP)		TP4	TRUE SYS_ONEWIRE 37 38	TP4	TRUE SPI_ALT_MOSI 40 68	TP4	TRUE PP1V5_S0 8 57 71		
			TP5	TRUE =USB_PWR_EN 36 37 57	TP5	TRUE SPI_ALT_MISO 40 68	TP5	TRUE PP3V3_S0 8 57 71		
			TP6	TRUE USB_EXTD_OC_L 18 37	TP6	TRUE LPC_FRAME_L 19 38 40 68	TP6	TRUE PP5V_S0 7 8 57		
			TP7	TRUE USB_CAMERA_P 18 37 68	TP7	TRUE PM_CLKRUN_L 19 38 40	TP7	TRUE PP3V3_S3 8		
			TP8	TRUE USB_CAMERA_N 18 37 68	TP8	TRUE SMC_TMS 38 39 40	TP8	TRUE PP5V_S3 8		
			TP9	TRUE USB_EXTD_P 18 37 68	TP9	TRUE LPCPLUS_RESET_L 25 40	TP9	TRUE PP0V9_S5 8		
C	SPEAKER FUNC_TEST		TP10	TRUE USB_EXTD_N 18 37 68	TP10	TRUE SMC_TDO 38 39 40	TP10	TRUE PP3V3_S5 8 57 71	C	
	TP10	TRUE SPKRAMP_R_N_OUT 48 49	TP11	TRUE =PP1V8R1V5_S0_AUDIO 8 37	TP11	TRUE SMC_TRST_L 38 40	TP11	TRUE PP3V42_G3H 8		
	TP11	TRUE SPKRAMP_R_P_OUT 48 49	TP12	TRUE =I2C_LIO_SDA 37 41	TP12	TRUE SMC_MDI 38 40	TP12	TRUE PPBUS_G3H 8 42 49		
			TP13	TRUE =I2C_LIO_SCL 37 41	TP13	TRUE SMC_TX_L 36 38 39 40	TP13	TRUE PP3V3_WLAN_F 7 34 39		
			TP14	TRUE AUD_GPIO_3 37 48	TP14	TRUE LPC_CLK33M_LPCPLUS 25 40 68	TP14	TRUE PP3V3_S0_HDD_R 7 35		
			TP15	TRUE AUD_I2C_INT_L 19 37	TP15	TRUE SPIROM_USE_MLB 19 40 47	TP15	TRUE PPDCIN_S5_S5 8		
			TP16	TRUE =I2C_MIKEY_SDA 37 41	TP16	TRUE SPI_ALT_CLK 40 68	TP16	TRUE PPVOUT_SW_LCDBKLT 7 42 59 62		
			TP17	TRUE =I2C_MIKEY_SCL 37 41	TP17	TRUE SPI_ALT_CS_L 40 68	TP17	TRUE PP3V3_SW_LCD 7 59		
			TP18	TRUE AUD_IP_PERIPHERAL_DET 17 37	TP18	TRUE LPC_SERIRO 19 38 40	TP18	TRUE PP1V5R1V35_S3 8 71		
			TP19	TRUE SPKRAMP_INR_P 37 48 71	TP19	TRUE LPC_PWRDWN_L 19 38 40	TP19	TRUE SMC_PM_G2_EN 38 57		
B			TP20	TRUE SPKRAMP_INR_N 37 48 71	TP20	TRUE SMC_TDI 38 39 40	TP20	TRUE PM_SLP_S4_L 19 38 57	B	
			TP21	TRUE HDA_SDIN0 19 37 68	TP21	TRUE SMC_TCK 38 39 40	TP21	TRUE PM_SLP_S3_L 19 38 39 57		
			TP22	TRUE HDA_SDOUT 19 37 68	TP22	TRUE SMC_RESET_L 38 39 40 50	TP22	TRUE PP0V9_ENET 8		
			TP23	TRUE HDA_BIT_CLK 19 37 68	TP23	TRUE SMC_NMI 38 40	TP23	TRUE PP1V05_S0_MCP_PLL_UP 8		
			TP24	TRUE HDA_SYNC 19 37 68	TP24	TRUE SMC_RX_L 36 38 39 40	TP24	TRUE PP3V3_ENET 8		
			TP25	TRUE HDA_RST_L 19 37 68	TP25	TRUE LPCPLUS_GPIO 19 40	TP25	TRUE PP3V3_SW_DPPWR 61		
			TP26	TRUE AUD_IPHS_SWITCH_EN 19 37	TP26		TP26	TRUE PP5V_S3_RTUSB_A_F 36		
			(NEED TO ADD 5 GND TP)		(NEED TO ADD 6 GND TP)		TP27	TRUE PPBUS_G3H_ISNS 8		
							(NEED TO ADD 27 GND TP)			
A	INT DP FUNC_TEST		AIRPORT / BT		DC POWER CONN				A	

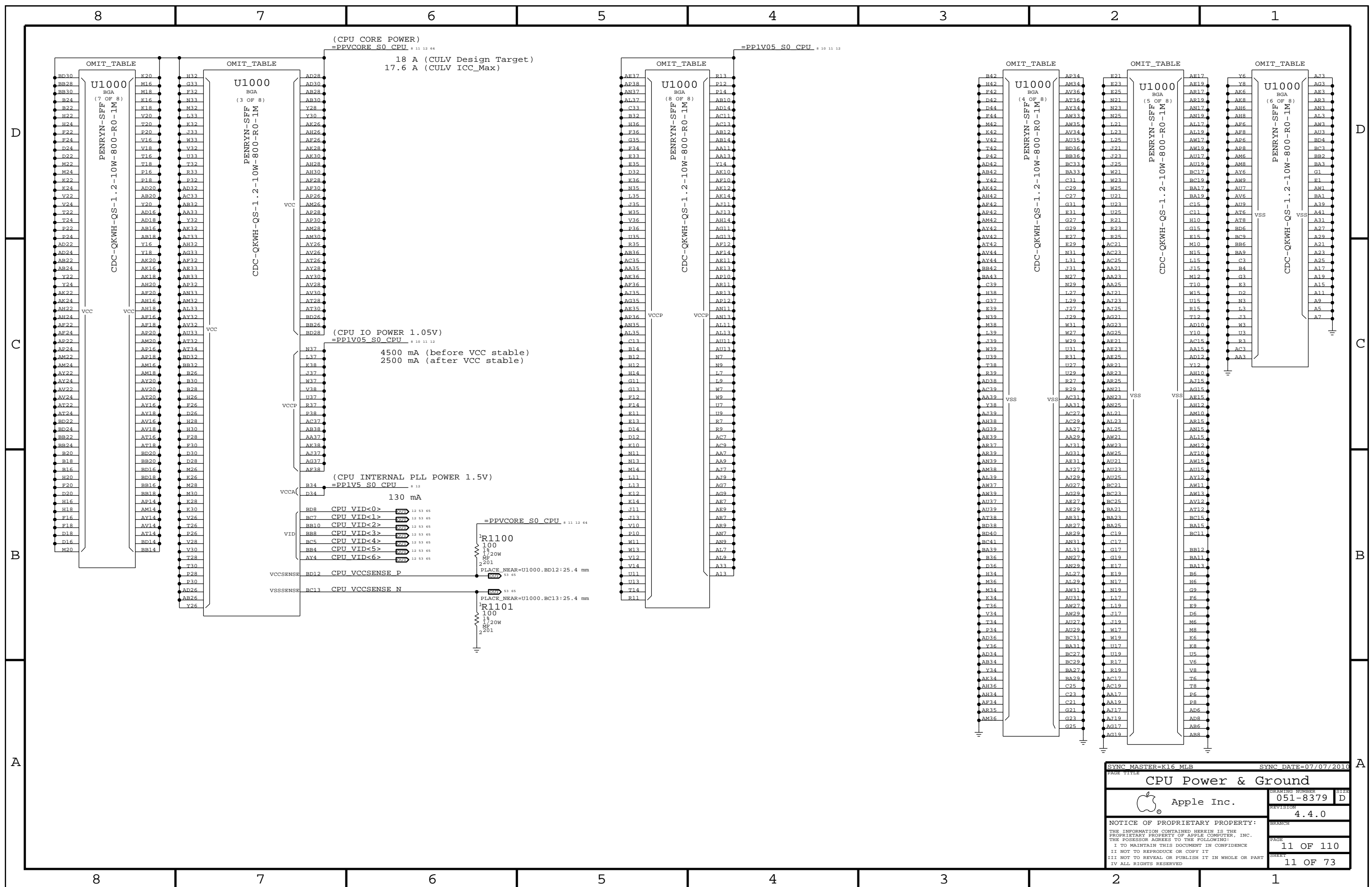


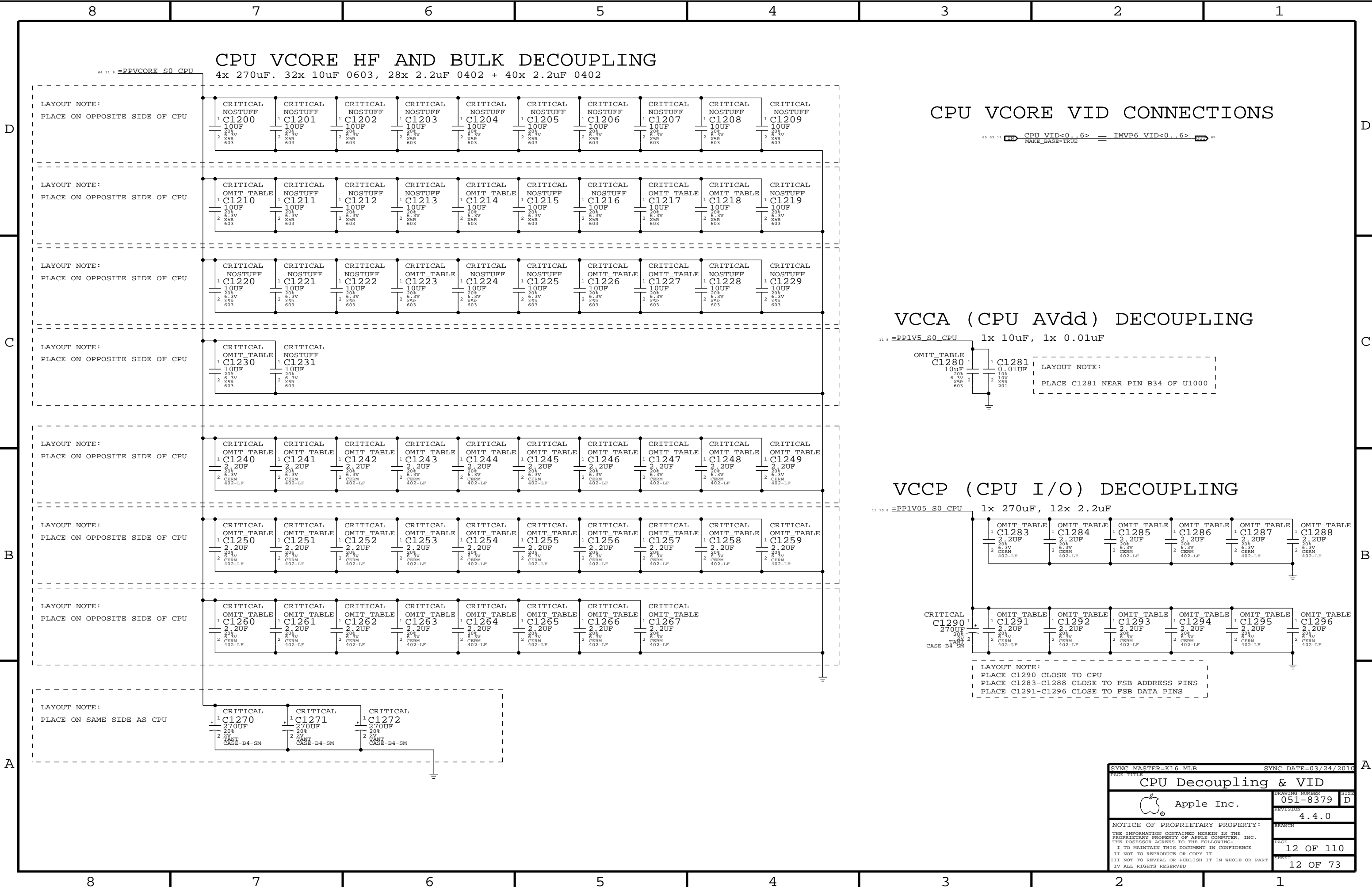








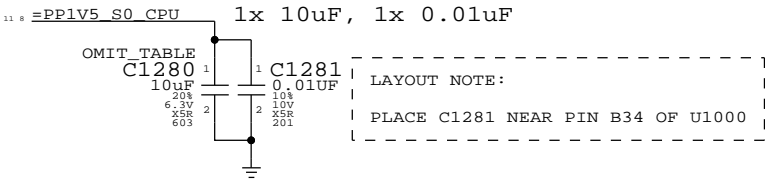




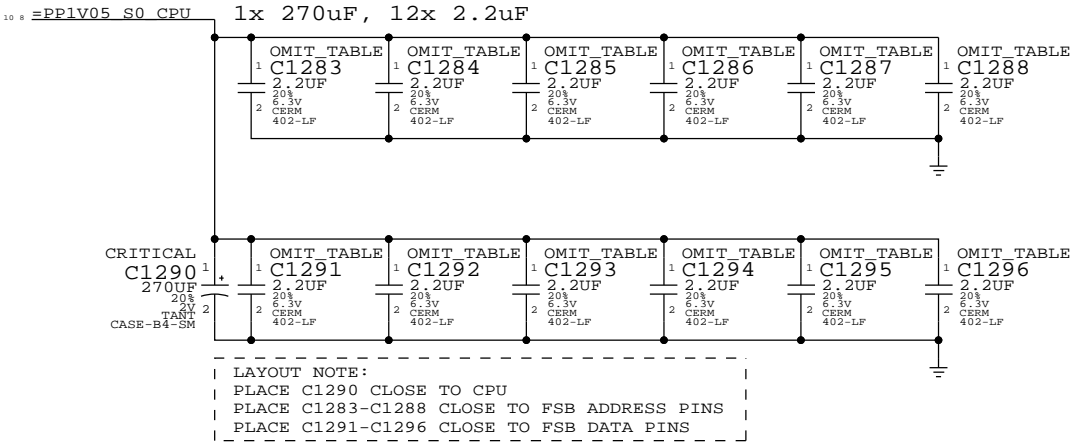
CPU Vcore VID CONNECTIONS


CPU VID<0..6> = IMVP6 VID<0..6>

VCCA (CPU AVdd) DECOUPLING



VCCP (CPU I/O) DECOUPLING



SYNC MASTER=K16 MLB		SYNC DATE=03/24/2010	
PAGE TITLE			
CPU Decoupling & VID		DRAWING NUMBER	
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		4.4.0	
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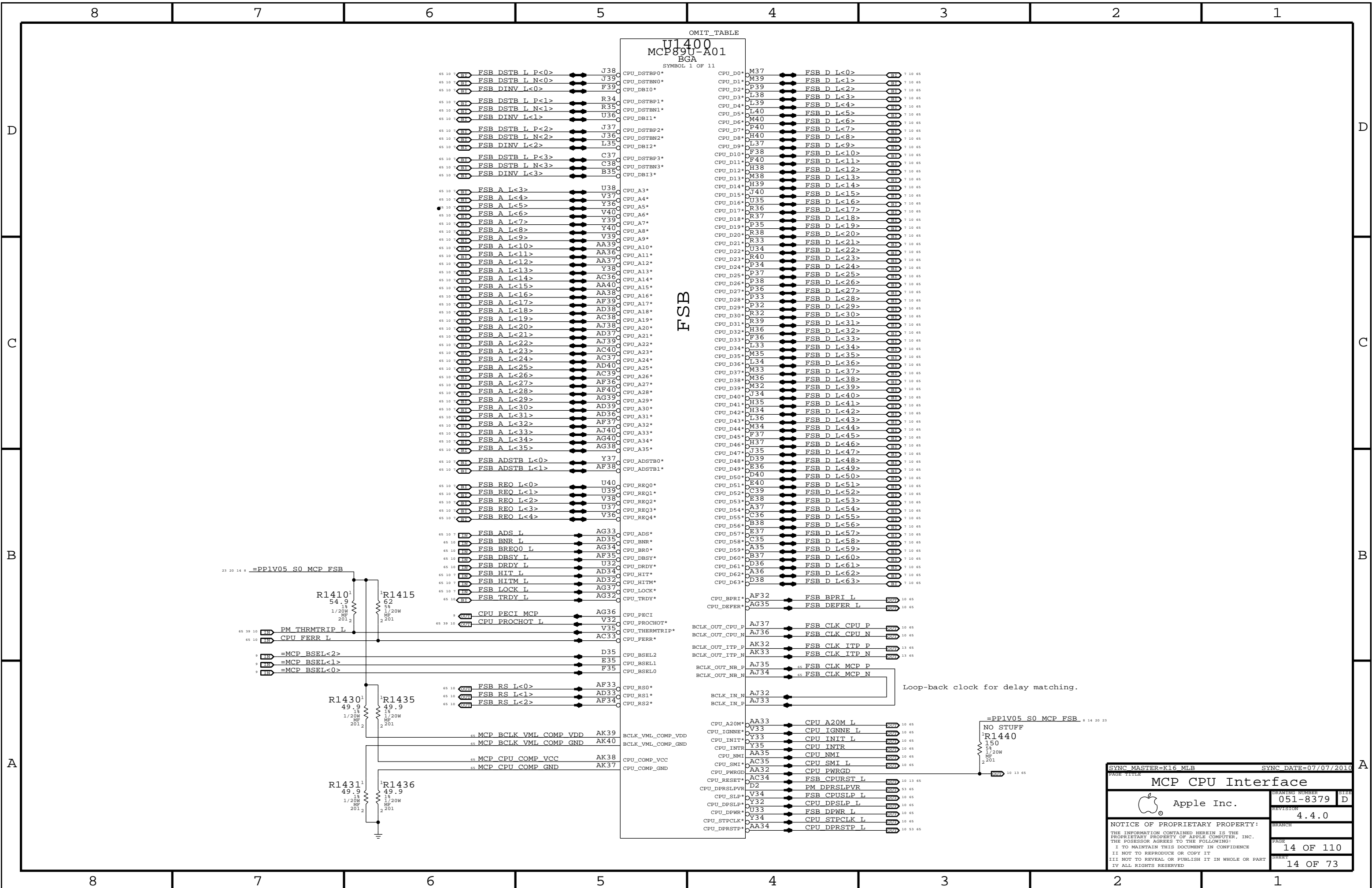
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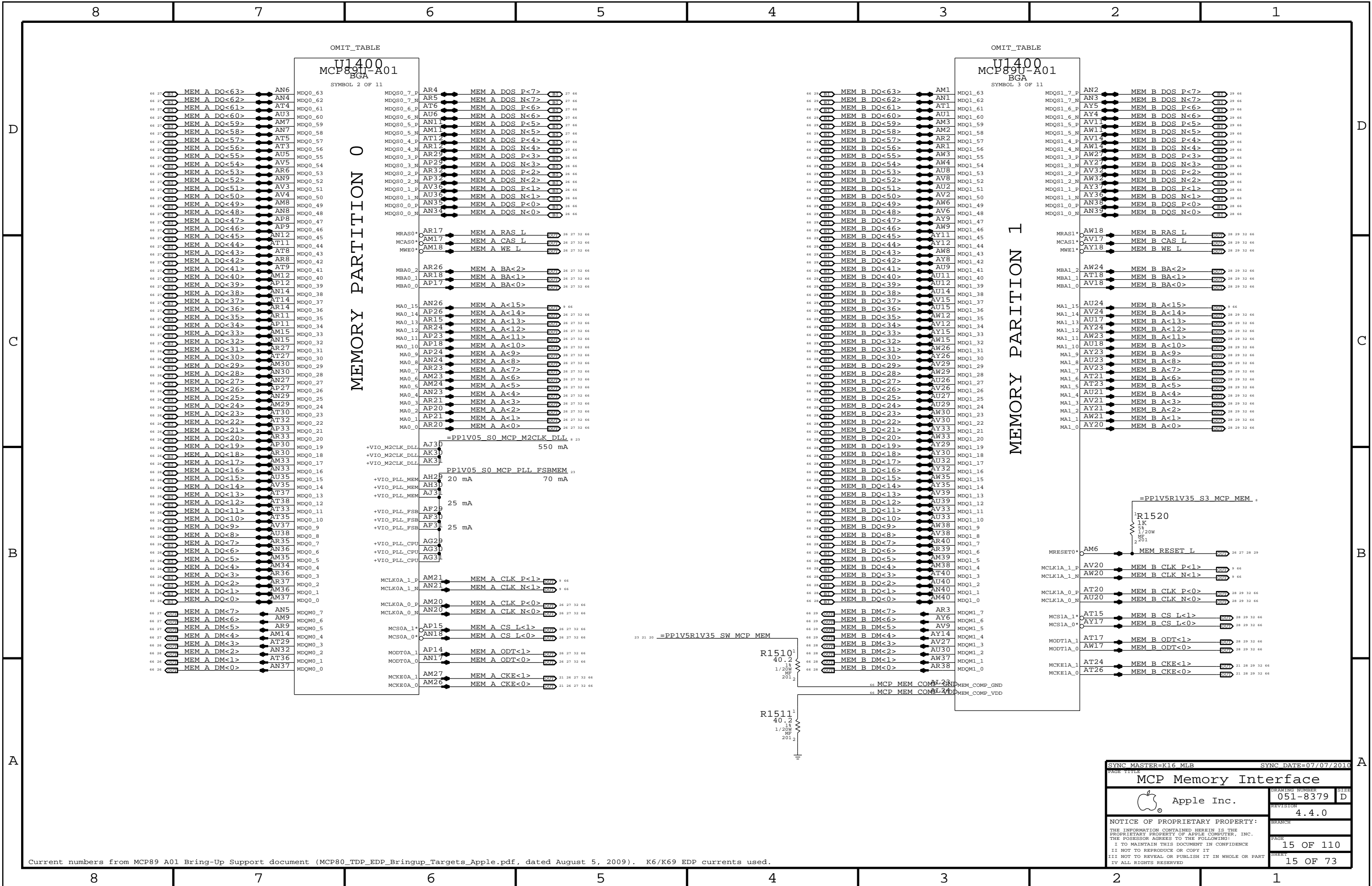
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SYNC MASTER=K16 MLB

SYNC DATE=07/07/2010

MCP Memory Interface

 Apple Inc.

Drawing Number: 051-8379

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Branch:

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Sheet: 15 OF 73

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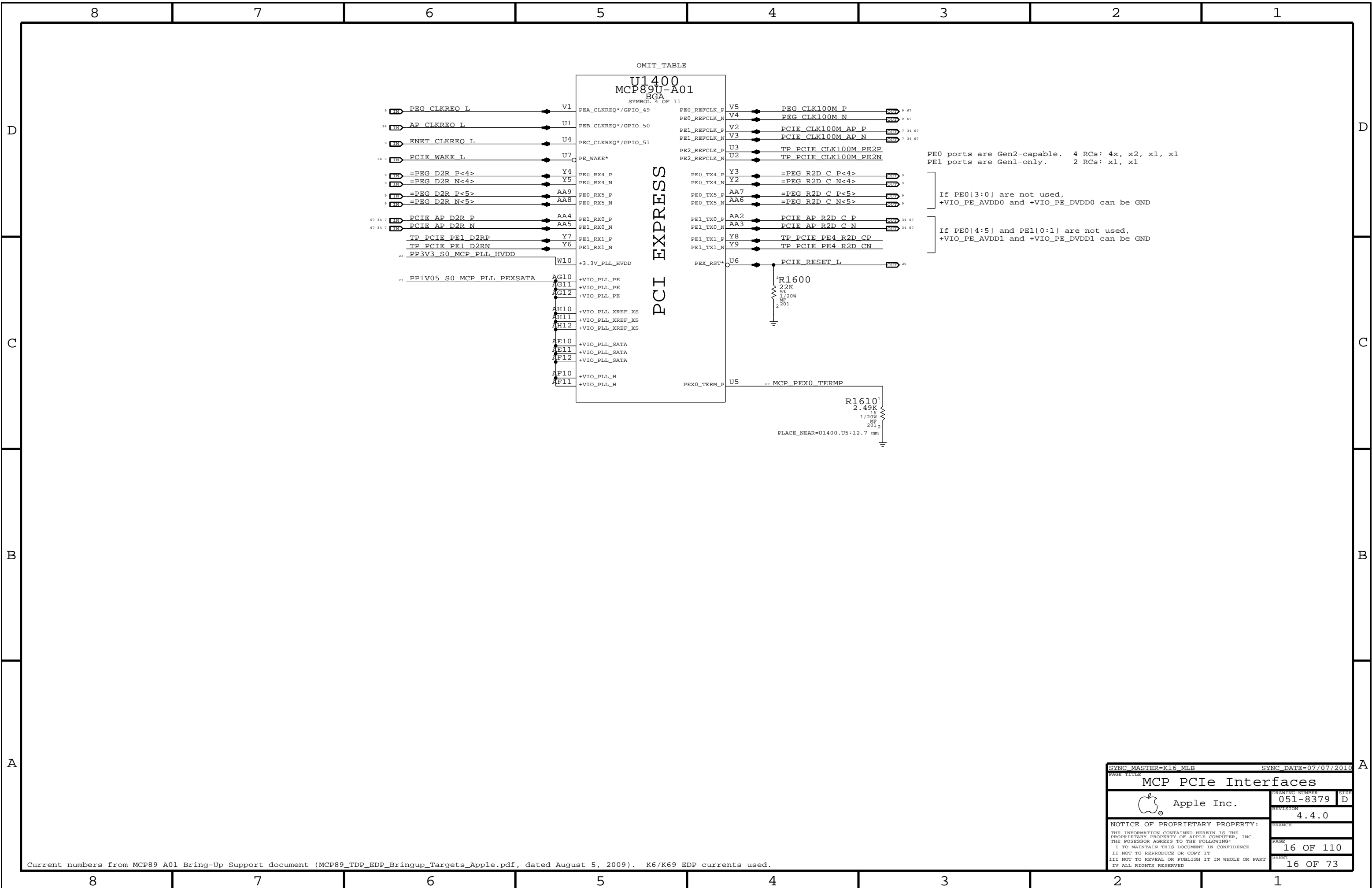
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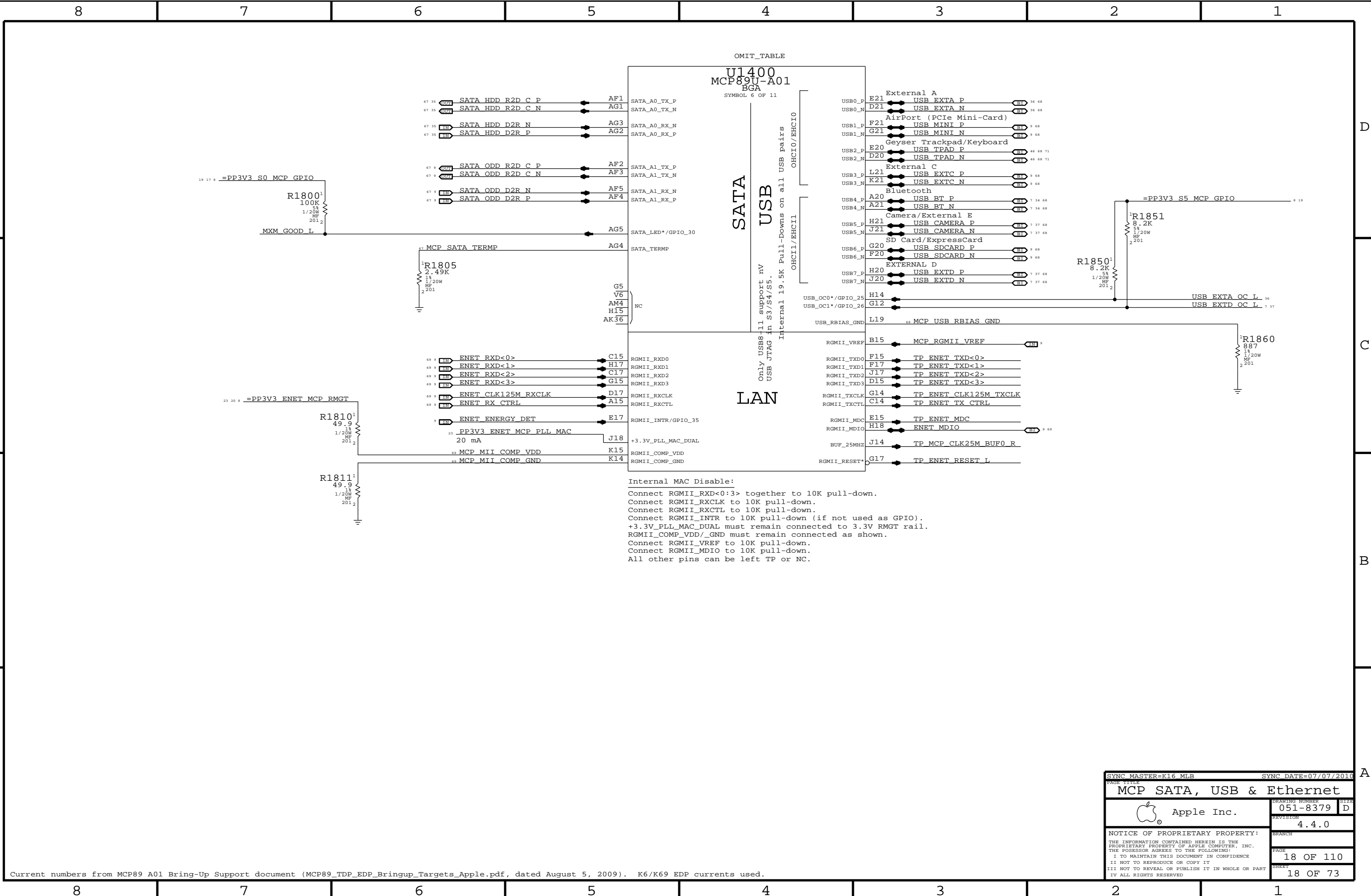
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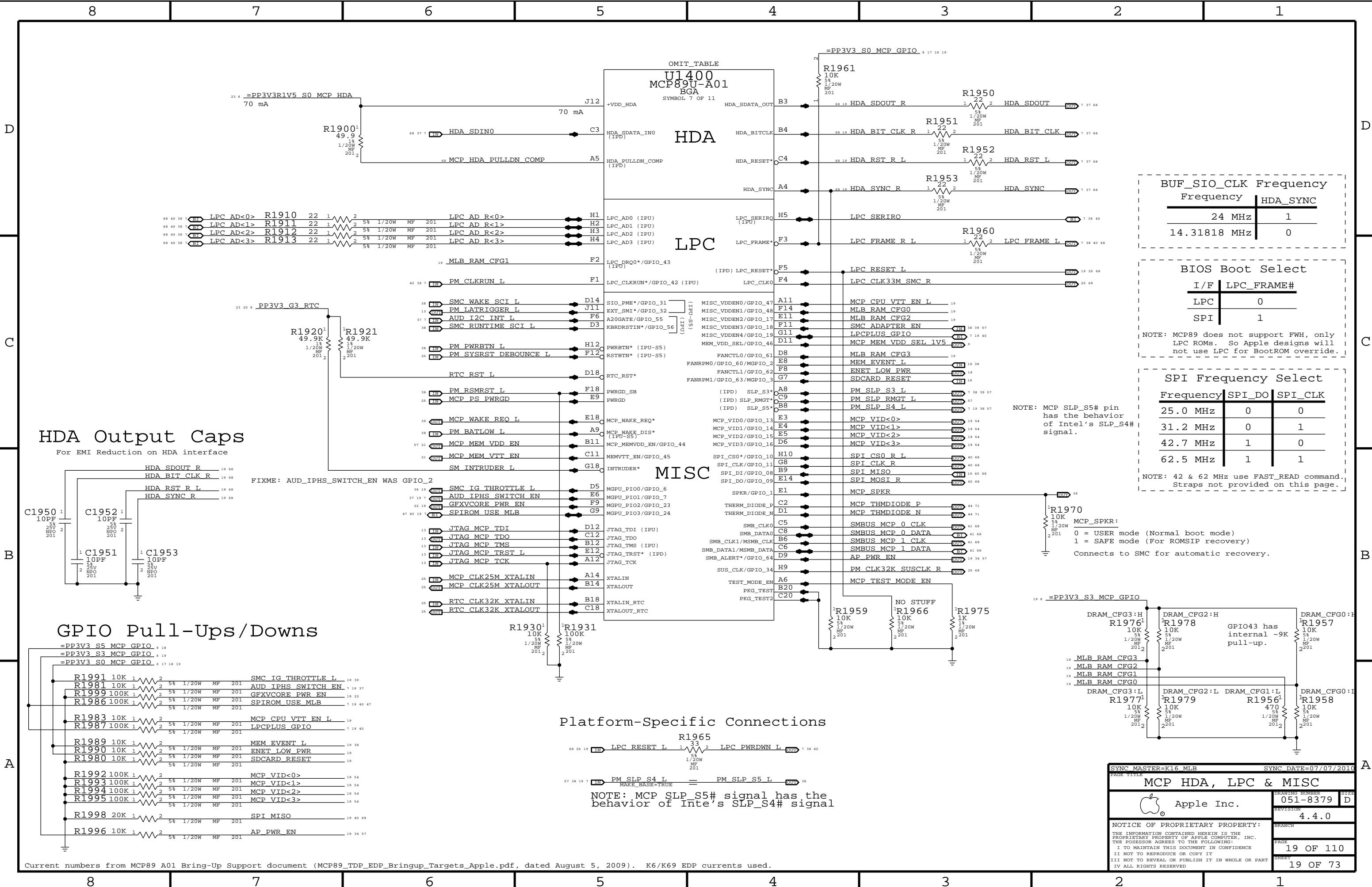
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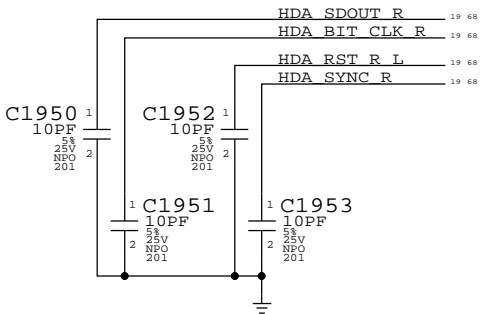
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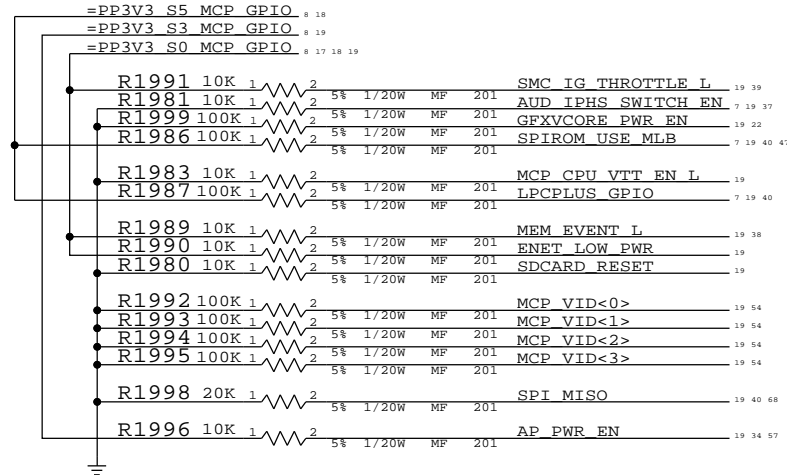


HDA Output Caps

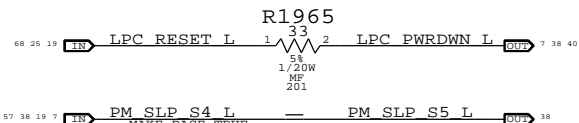
For EMI Reduction on HDA interface



GPIO Pull-Ups/Downs



Platform-Specific Connections



NOTE: MCP SLP\_S5# signal has the behavior of Inte's SLP\_S4# signal

BUF_SIO_CLK Frequency	
Frequency	HDA_SYNC
24 MHz	1
14.31818 MHz	0

BIOS Boot Select

I/F	LPC_FRAME#
LPC	0
SPI	1

NOTE: MCP89 does not support FWH, only LPC ROMs. So Apple designs will not use LPC for BootROM override.

SPI Frequency Select

Frequency	SPI_DO	SPI_CLK
25.0 MHz	0	0
31.2 MHz	0	1
42.7 MHz	1	0
62.5 MHz	1	1

NOTE: 42 & 62 Mhz use FAST\_READ command. Straps not provided on this page.

NOTE: MCP SLP\_S5# pin has the behavior of Intel's SLP\_S4# signal.

MCP\_SPKR:  
0 = USER mode (Normal boot mode)  
1 = SAFE mode (For ROMSIP recovery)  
Connects to SMC for automatic recovery.

SYNC MASTER=K16 MLB

SYNC DATE=07/07/2010

MCP HDA, LPC & MISC

Apple Inc.

051-8379

4.4.0

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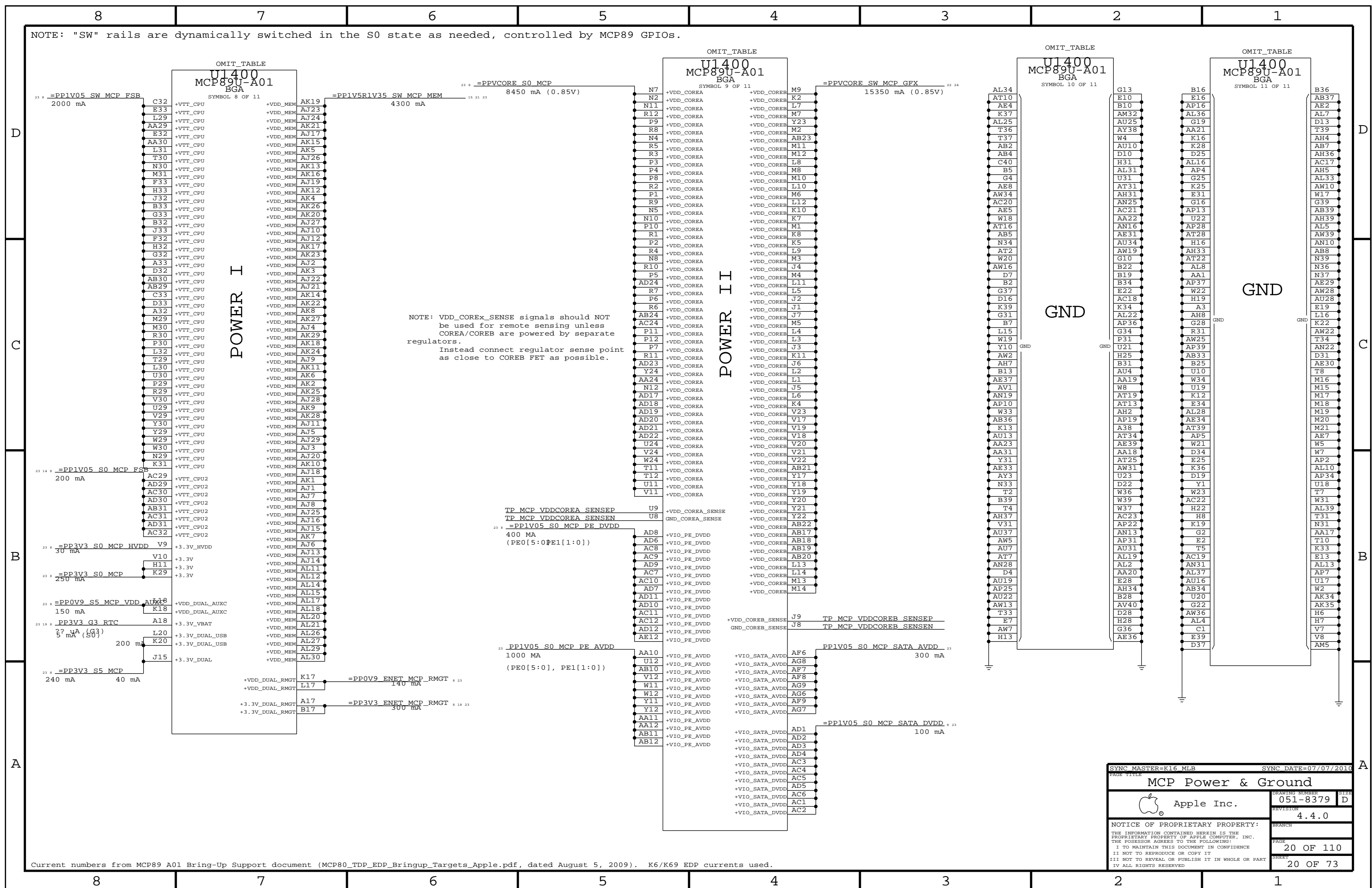
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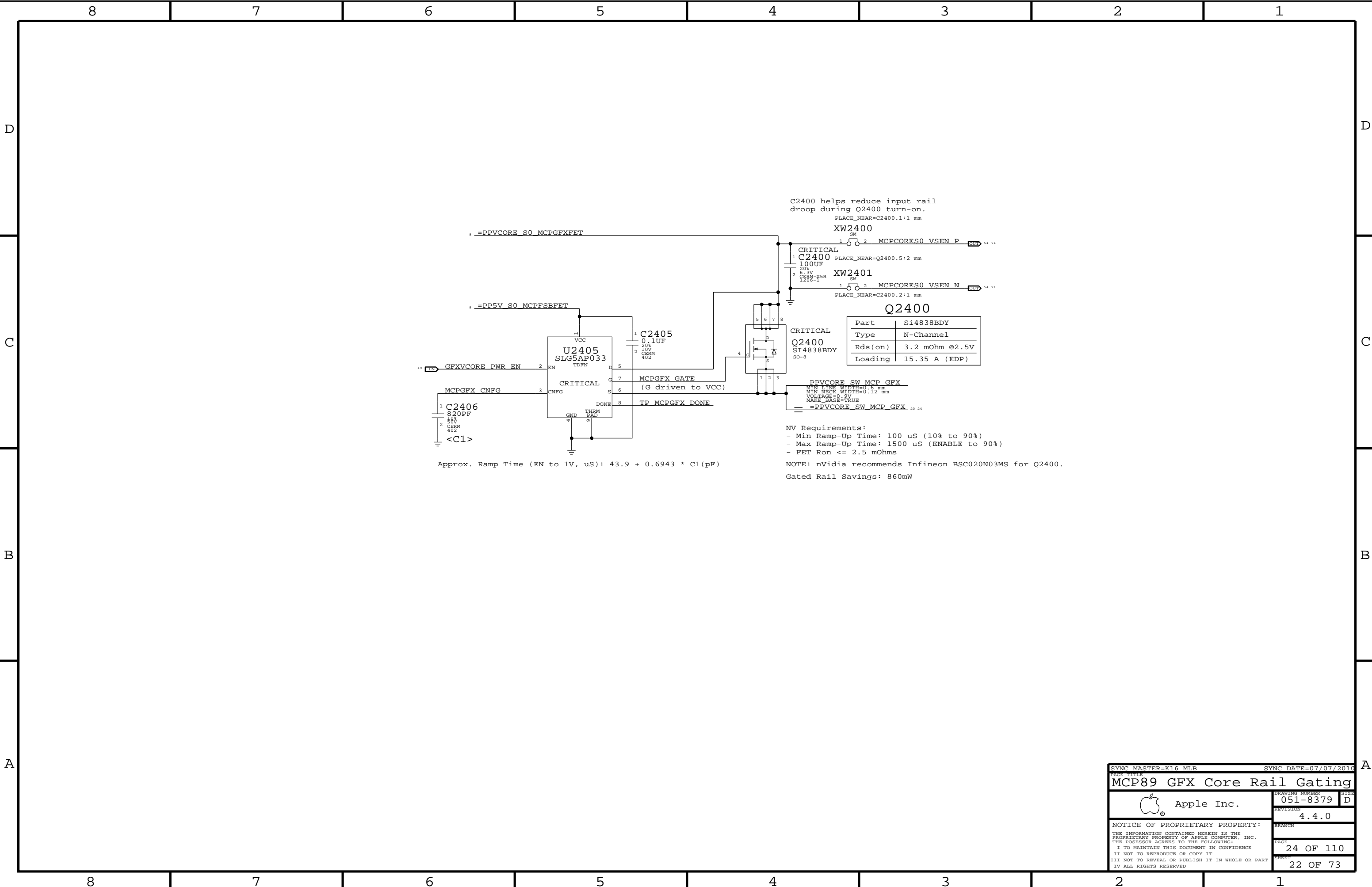
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C2400 helps reduce input rail droop during Q2400 turn-on.  
PLACE\_NEAR=C2400.1:1 mm

**XW2400**  
SM  
1 2 MCPCORES0 VSEN P 54 71

**C2400**  
CRITICAL  
1 200UF  
2 20%  
6.3V CERM-X5R  
1206-1  
PLACE\_NEAR=Q2400.5:2 mm

**XW2401**  
SM  
1 2 MCPCORES0 VSEN N 54 71  
PLACE\_NEAR=C2400.2:1 mm

<b>Q2400</b>	
Part	Si4838BDY
Type	N-Channel
Rds(on)	3.2 mOhm @2.5V
Loading	15.35 A (EDP)

NV Requirements:  
- Min Ramp-Up Time: 100 uS (10% to 90%)  
- Max Ramp-Up Time: 1500 uS (ENABLE to 90%)  
- FET Ron <= 2.5 mOhms

NOTE: nVidia recommends Infineon BSC020N03MS for Q2400.  
Gated Rail Savings: 860mW

Approx. Ramp Time (EN to 1V, uS): 43.9 + 0.6943 \* C1(pF)

SYNC MASTER=K16 MLB

SYNC DATE=07/07/2010

MCP89 GFX Core Rail Gating

Apple Inc.

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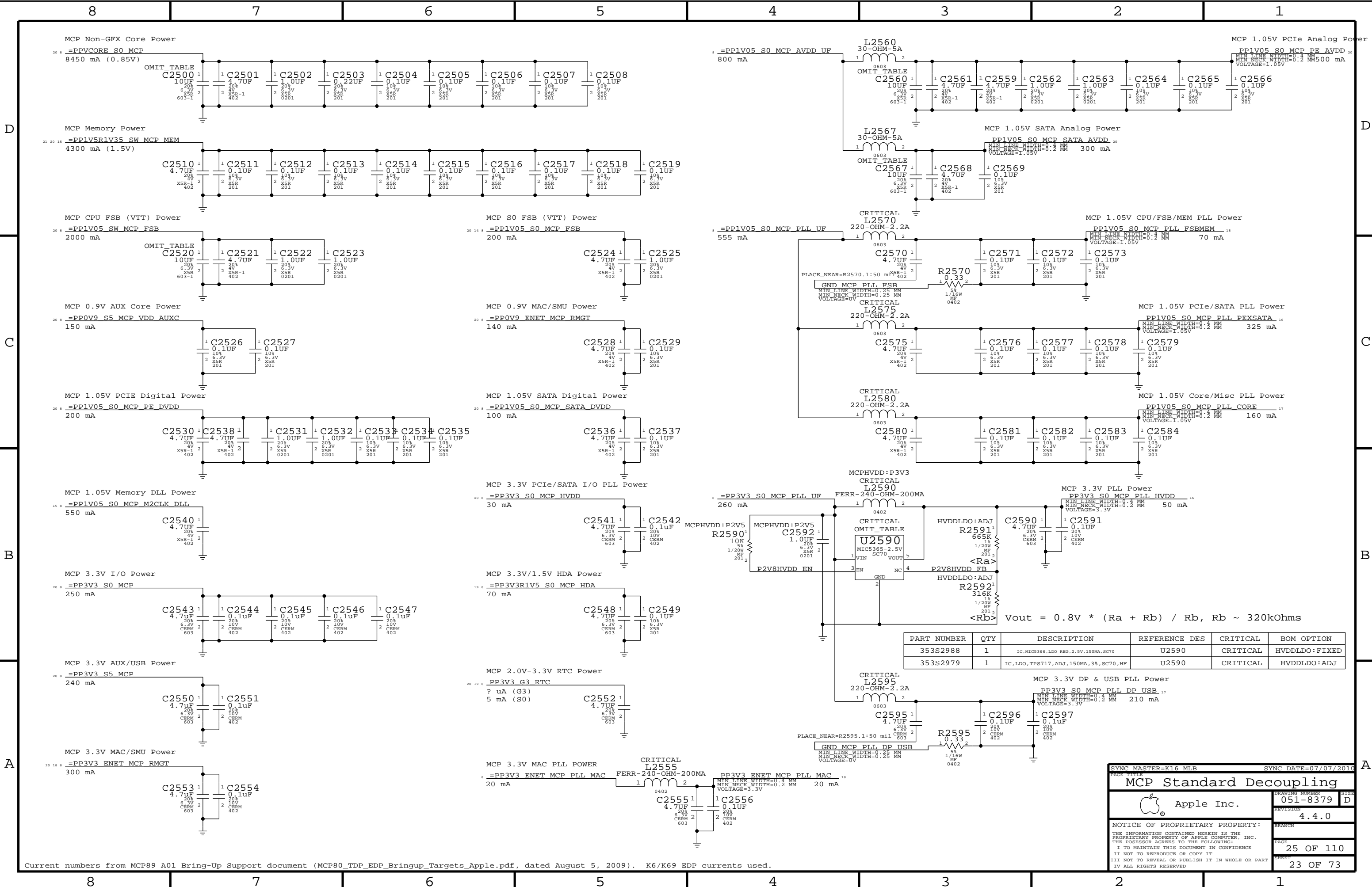
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051-8379

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24 OF 110


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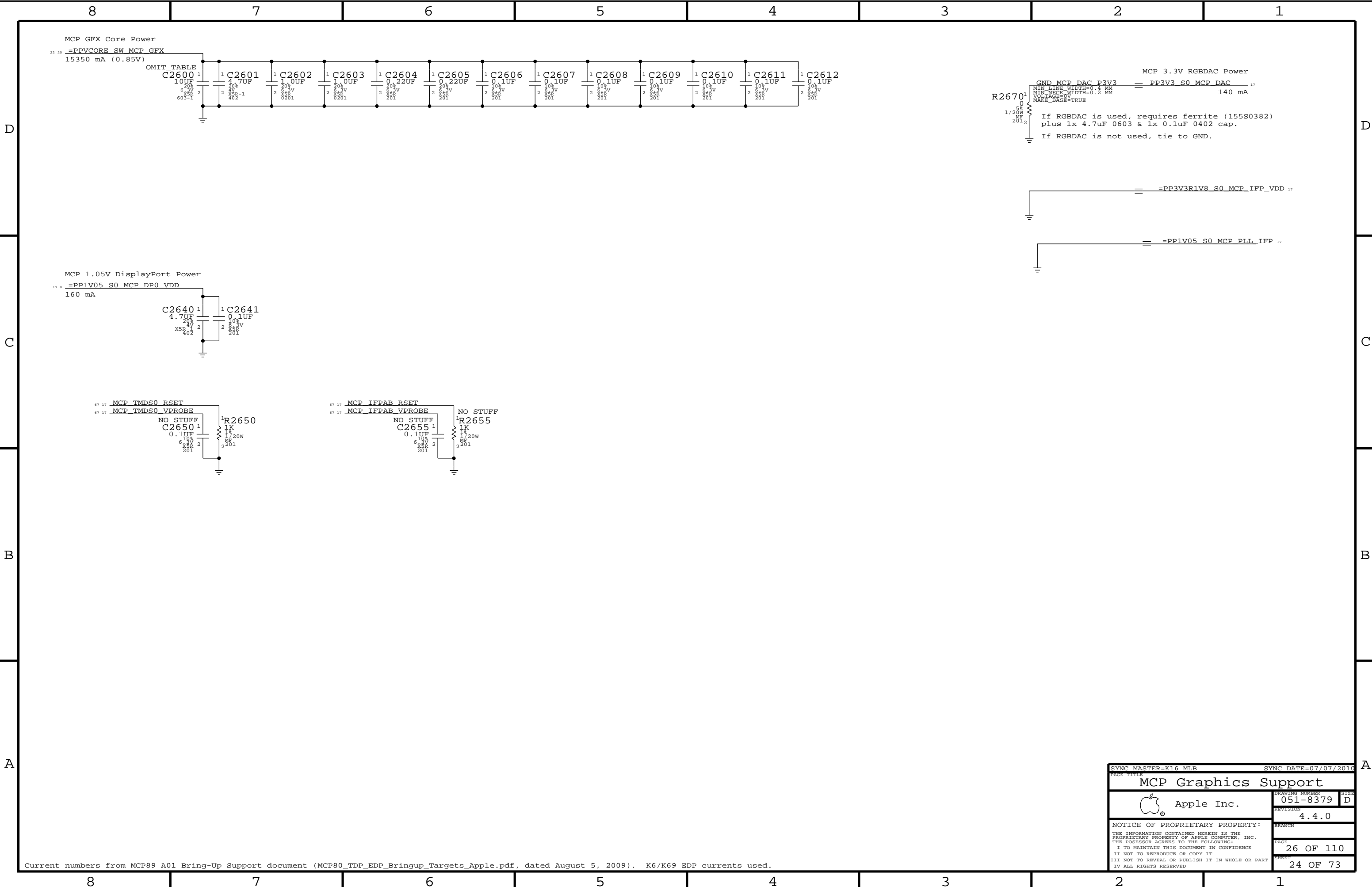


Current numbers from MCP89 A01 Bring-Up Support document (MCP80\_TDP\_EDP\_Bringup\_Targets\_Apple.pdf, dated August 5, 2009). K6/K69 EDP currents used.


PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S2988	1	IC, MIC5366, LDO REG, 2.5V, 150mA, SC70	U2590	CRITICAL	HVDDLDO: FIXED
353S2979	1	IC, LDO, TPS717, ADJ, 150mA, 3%, SC70, HF	U2590	CRITICAL	HVDDLDO: ADJ

$$V_{out} = 0.8V * (R_a + R_b) / R_b, R_b \sim 320k\Omega$$

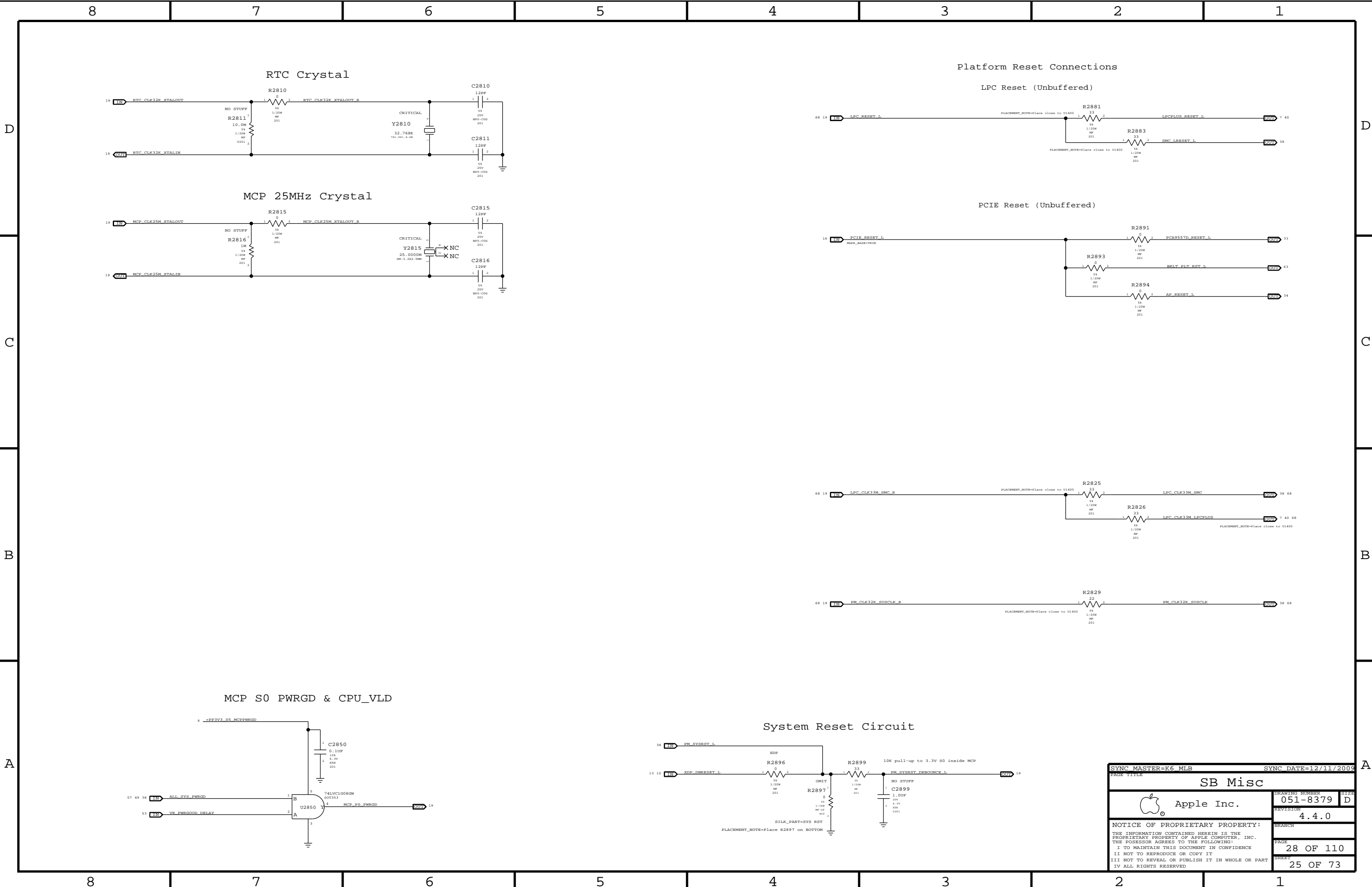
SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
MCP Standard Decoupling			
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		REVISION	4.4.0
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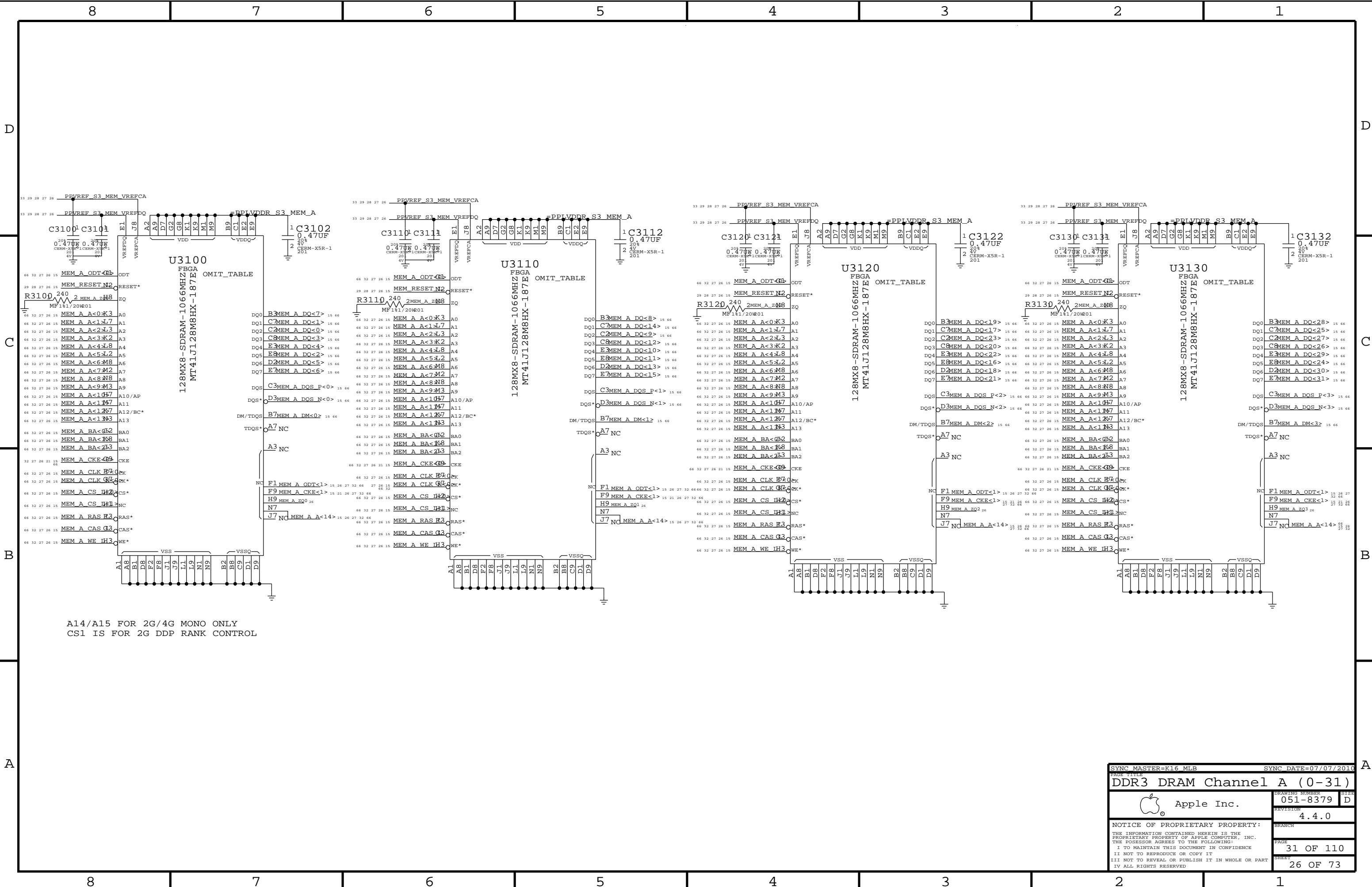
Current numbers from MCP89 A01 Bring-Up Support document (MCP80\_TDP\_EDP\_Bringup\_Targets\_Apple.pdf, dated August 5, 2009). K6/K69 EDP currents used.

SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
MCP Graphics Support		Support	
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SB Misc			
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SYNC MASTER=K16 MLB

SYNC DATE=07/07/2010

DDR3 DRAM Channel A (0-31)

 Apple Inc.

DRAWING NUMBER  
051-8379

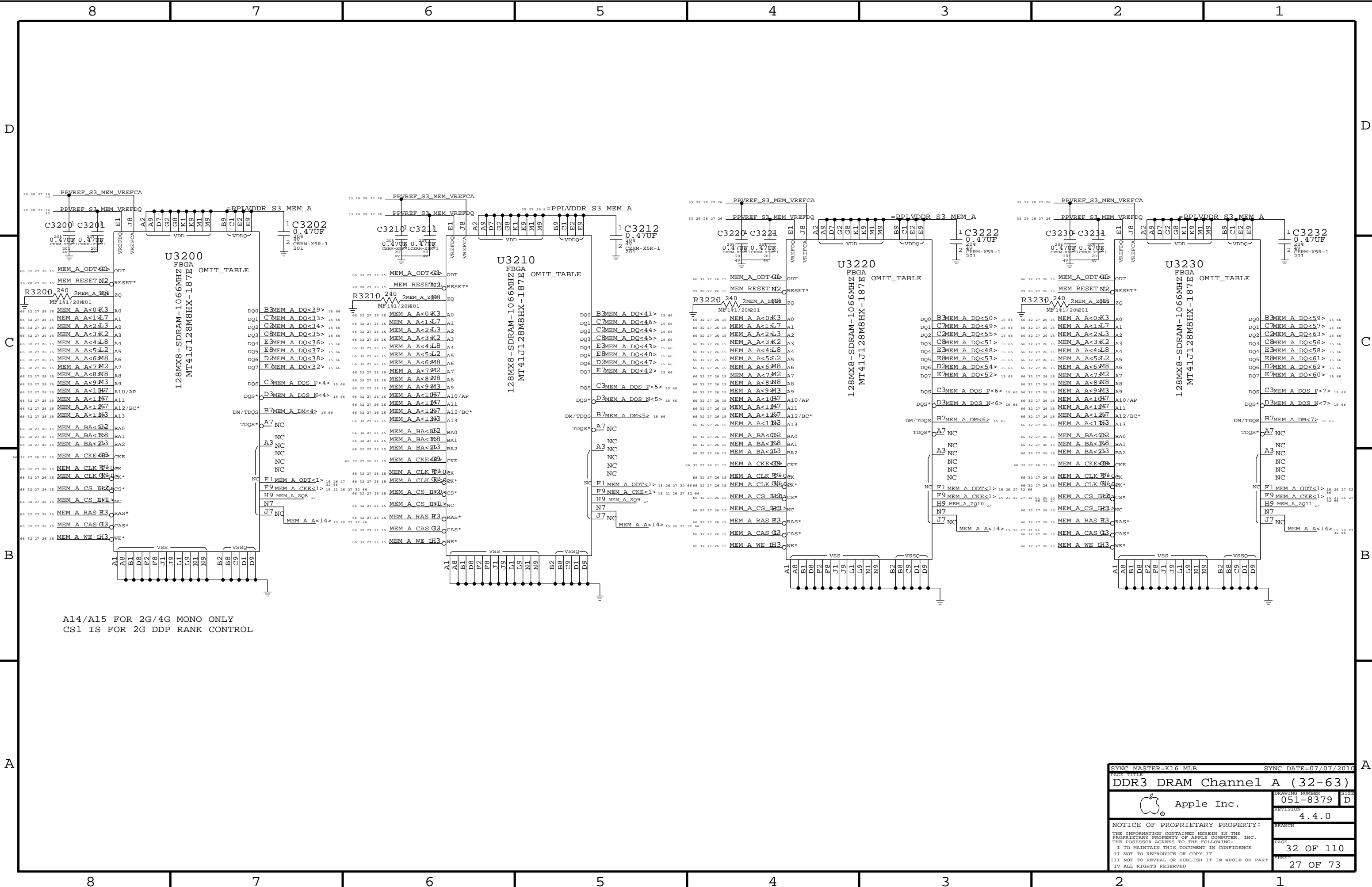
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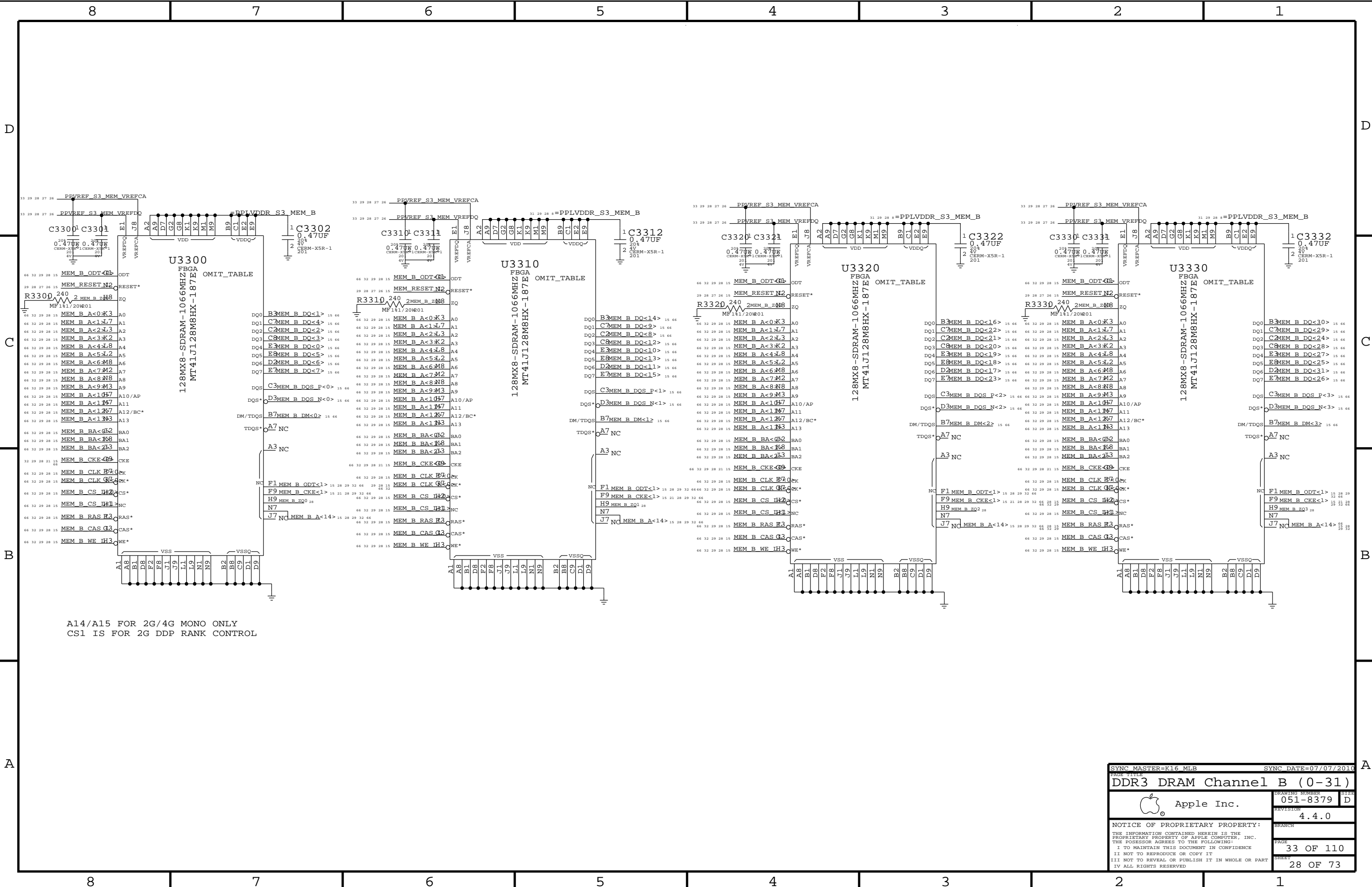
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


A14/A15 FOR 2G/4G MONO ONLY  
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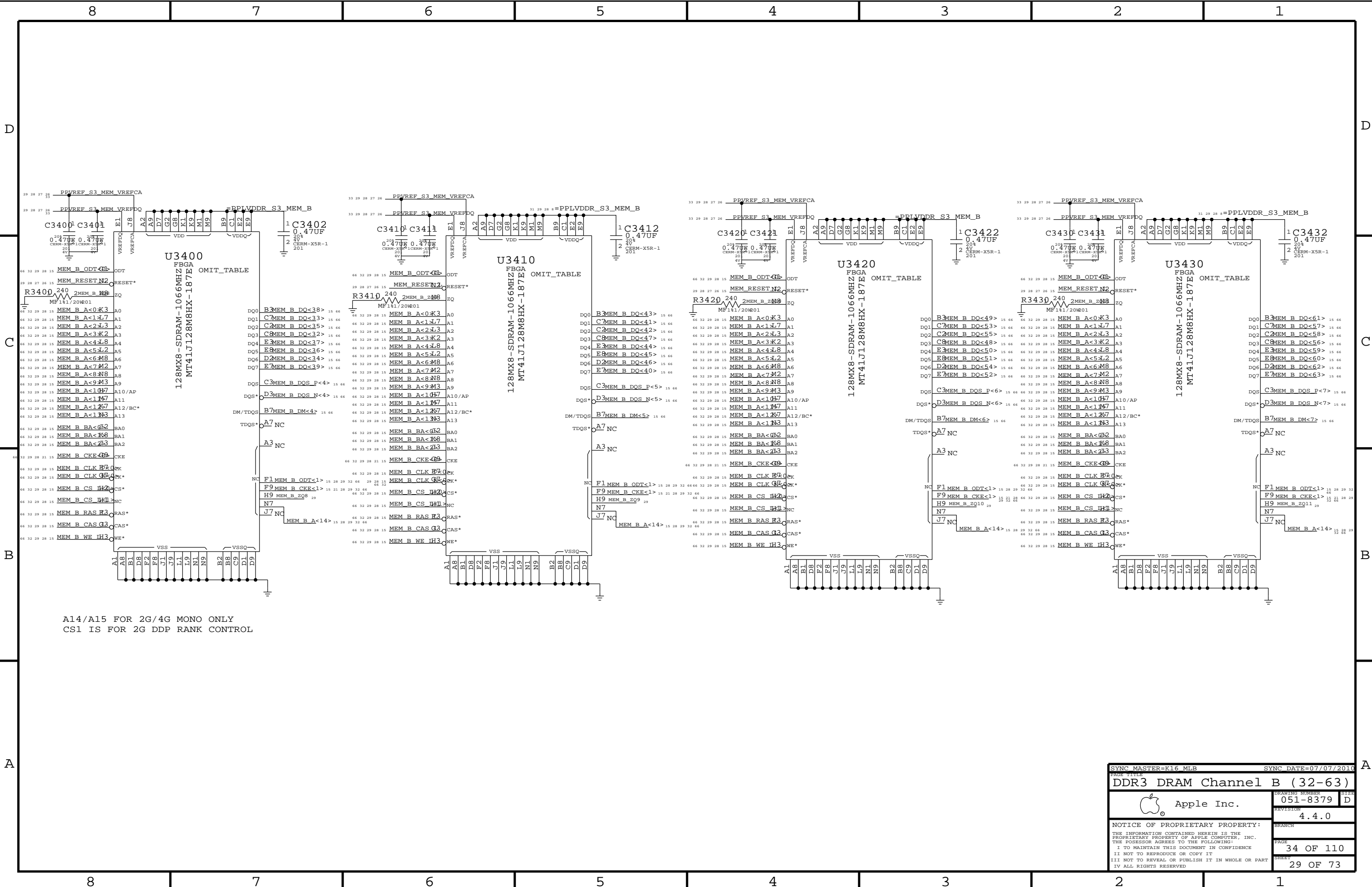
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
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CS1 IS FOR 2G DDP RANK CONTROL

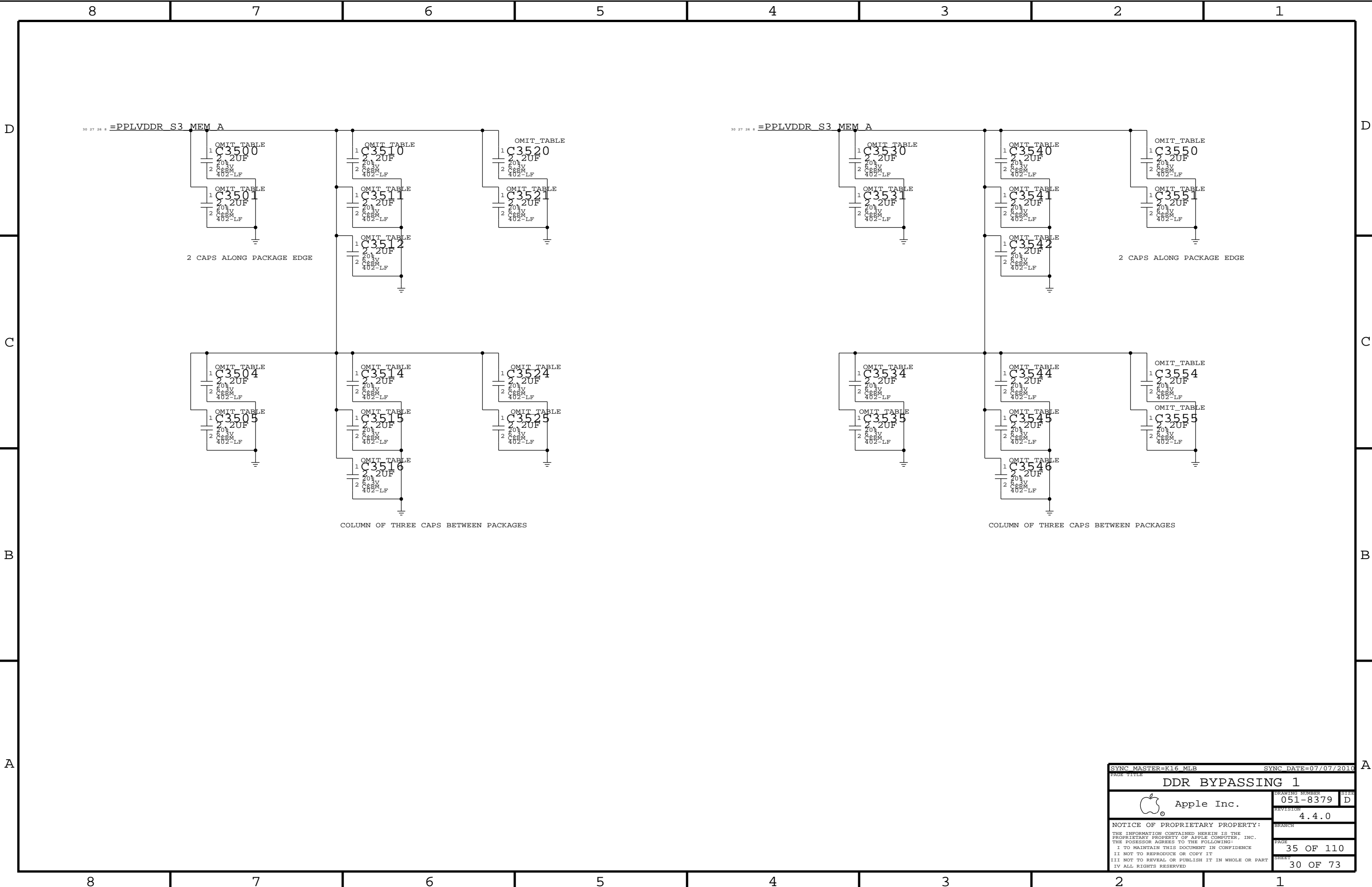
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PAGE TITLE			
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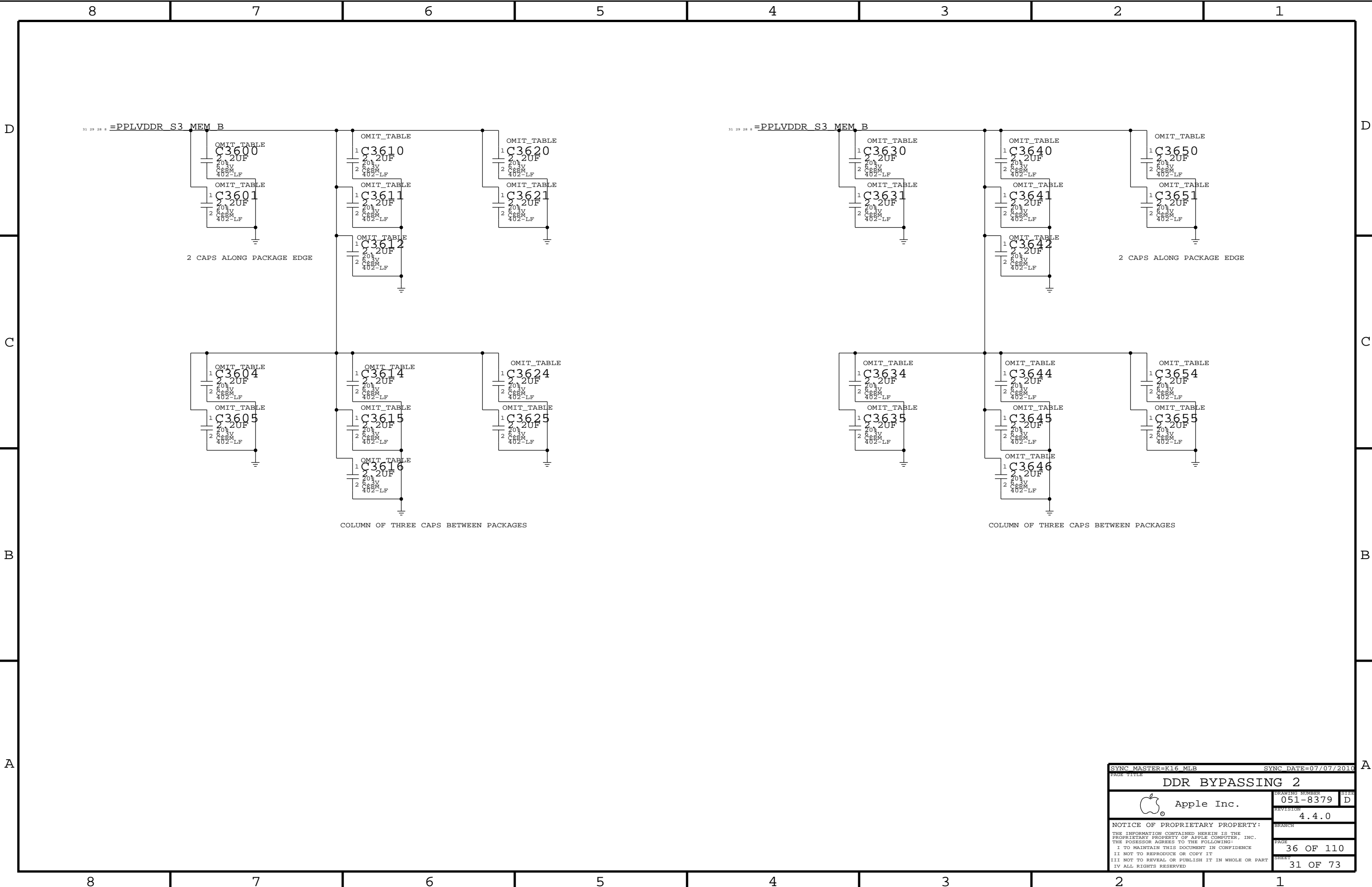


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DDR BYPASSING 1			
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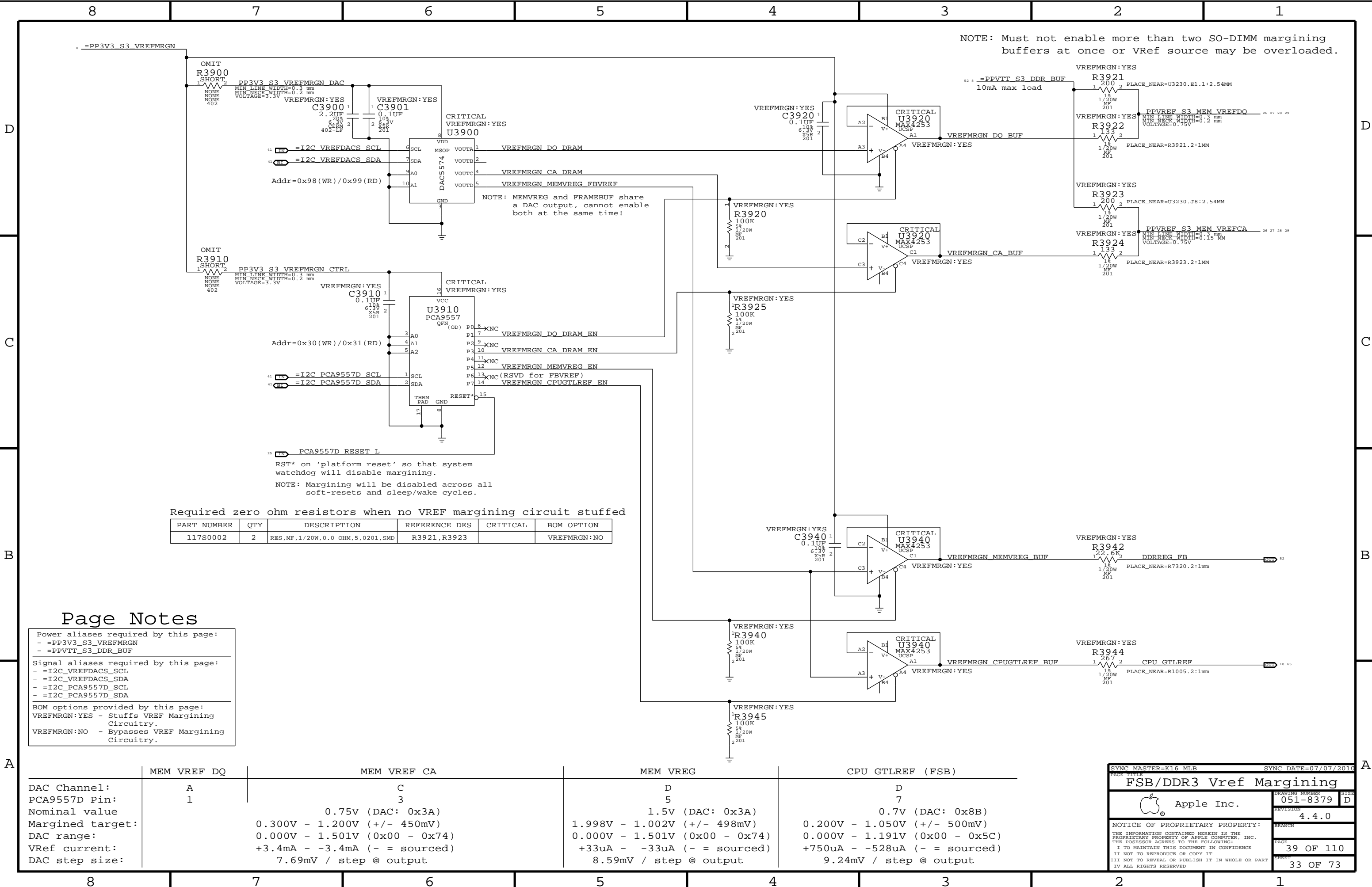
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C



A






### Page Notes

Power aliases required by this page:  
- =PP3V3\_S3\_VREFMRGN  
- =PPVTT\_S3\_DDR\_BUF

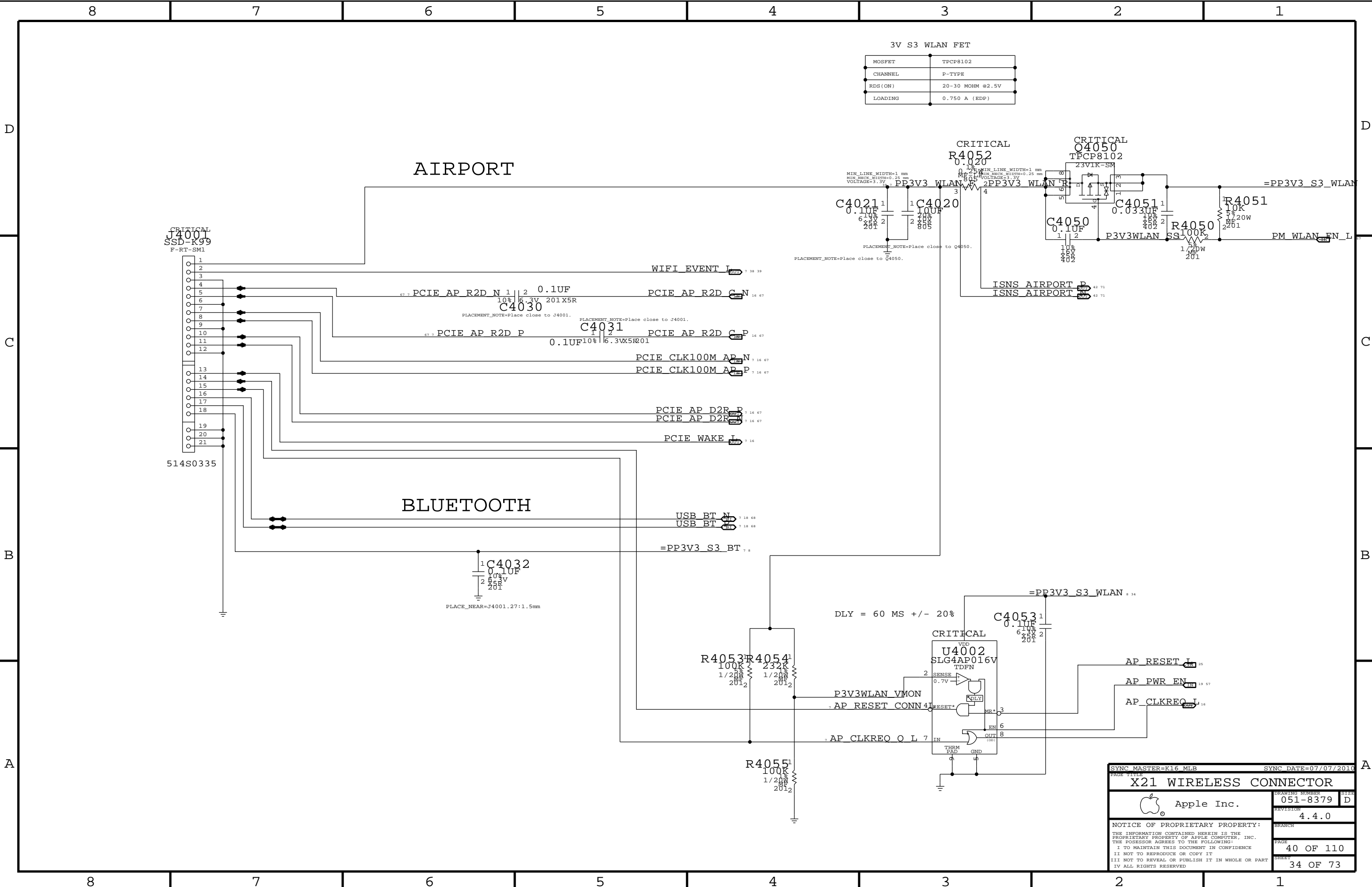
Signal aliases required by this page:  
- =I2C\_VREFDACS\_SCL  
- =I2C\_VREFDACS\_SDA  
- =I2C\_PCA9557D\_SCL  
- =I2C\_PCA9557D\_SDA

BOM options provided by this page:  
VREFMRGN:YES - Stuffs VREF Margining Circuitry.  
VREFMRGN:NO - Bypasses VREF Margining Circuitry.

	MEM VREF DQ	MEM VREF CA	MEM VREG	CPU GTLREF (FSB)
DAC Channel:	A	C	D	D
PCA9557D Pin:	1	3	5	7
Nominal value		0.75V (DAC: 0x3A)	1.5V (DAC: 0x3A)	0.7V (DAC: 0x8B)
Margined target:		0.300V - 1.200V (+/- 450mV)	1.998V - 1.002V (+/- 498mV)	0.200V - 1.050V (+/- 500mV)
DAC range:		0.000V - 1.501V (0x00 - 0x74)	0.000V - 1.501V (0x00 - 0x74)	0.000V - 1.191V (0x00 - 0x5C)
Vref current:		+3.4mA - -3.4mA (- = sourced)	+33uA - -33uA (- = sourced)	+750uA - -528uA (- = sourced)
DAC step size:		7.69mV / step @ output	8.59mV / step @ output	9.24mV / step @ output

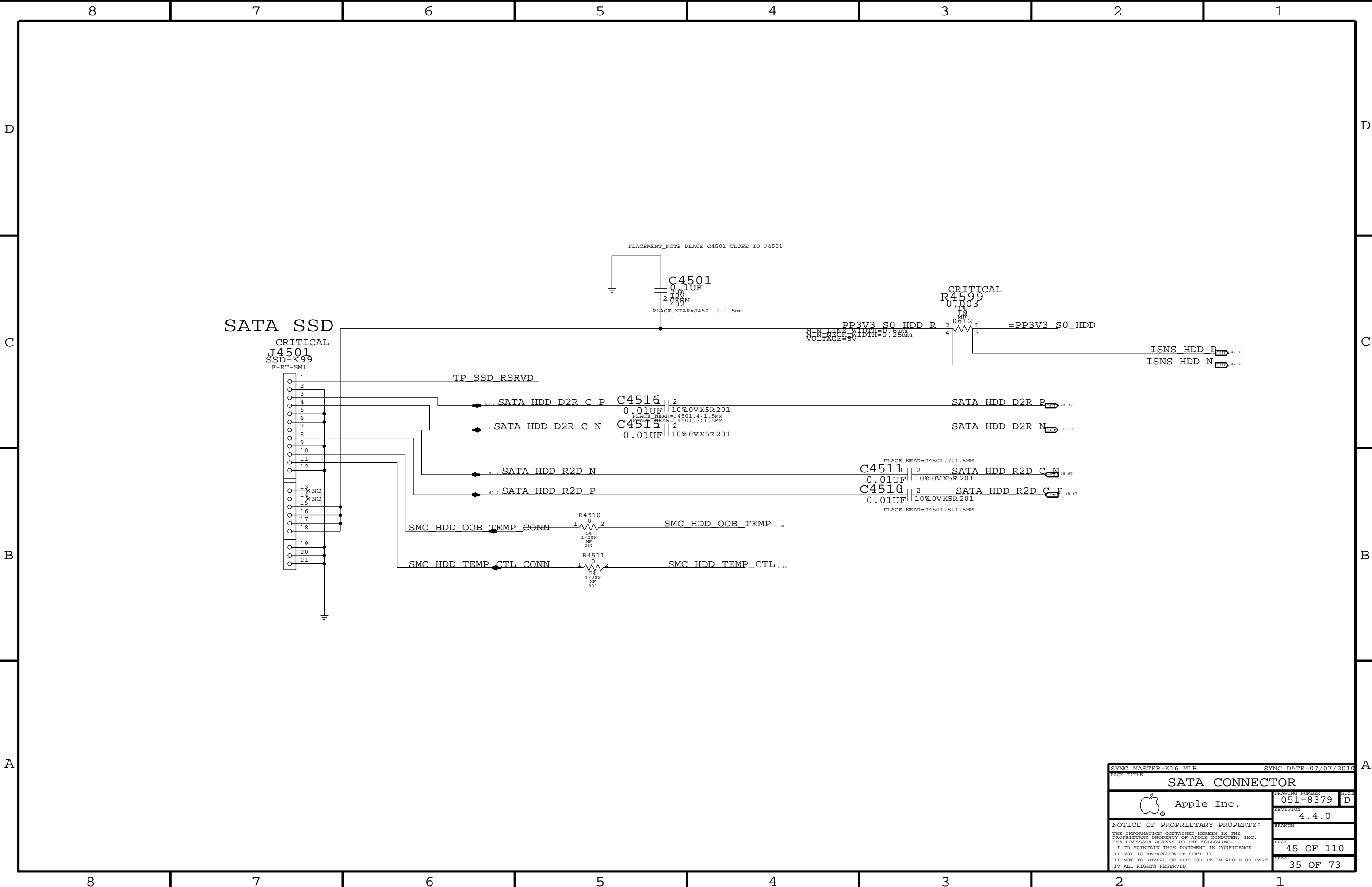
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PAGE TITLE			
FSB/DDR3 Vref Margining			
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3V S3 WLAN FET	
MOSFET	TPCP8102
CHANNEL	P-TYPE
RDS (ON)	20-30 MOHM @2.5V
LOADING	0.750 A (EDP)

SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010
X21 WIRELESS CONNECTOR		
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SATA CONNECTOR			
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		SHEET	35 OF 73

D

C

B

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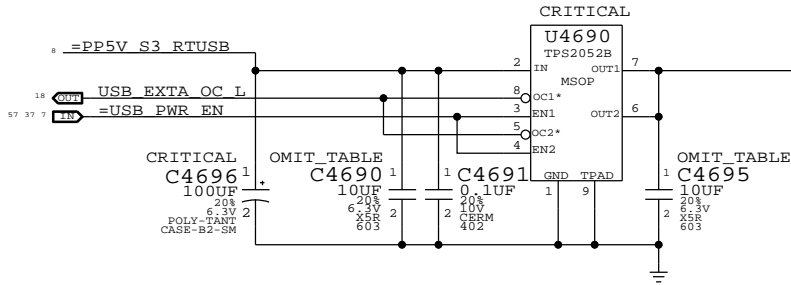
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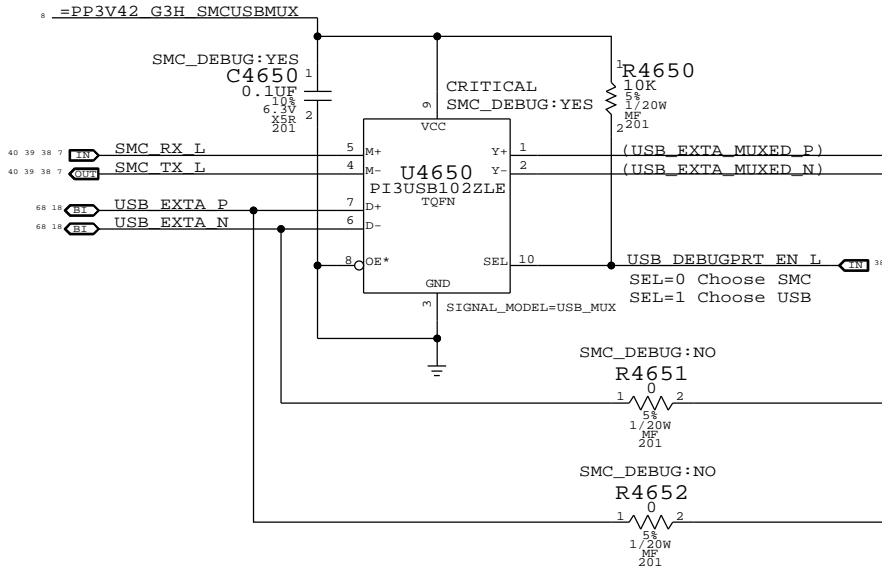
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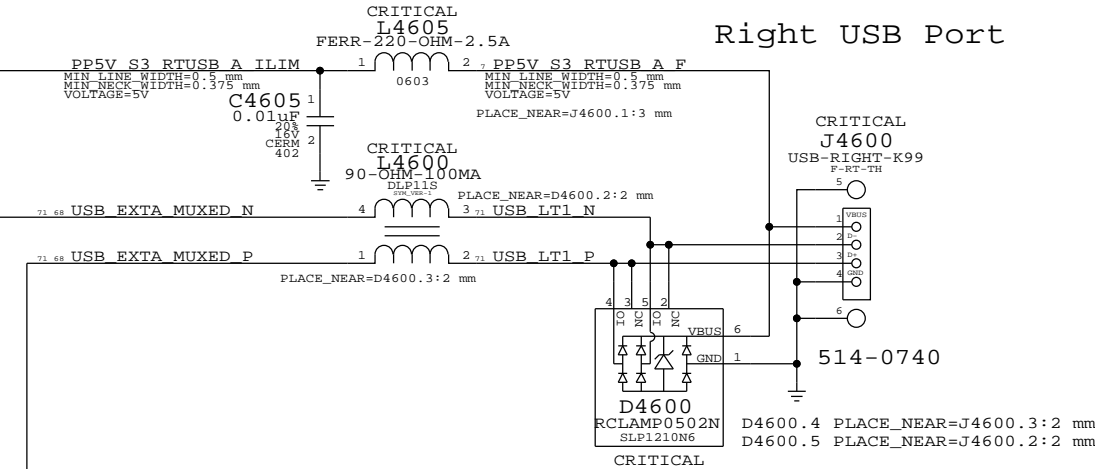
Port Power Switch




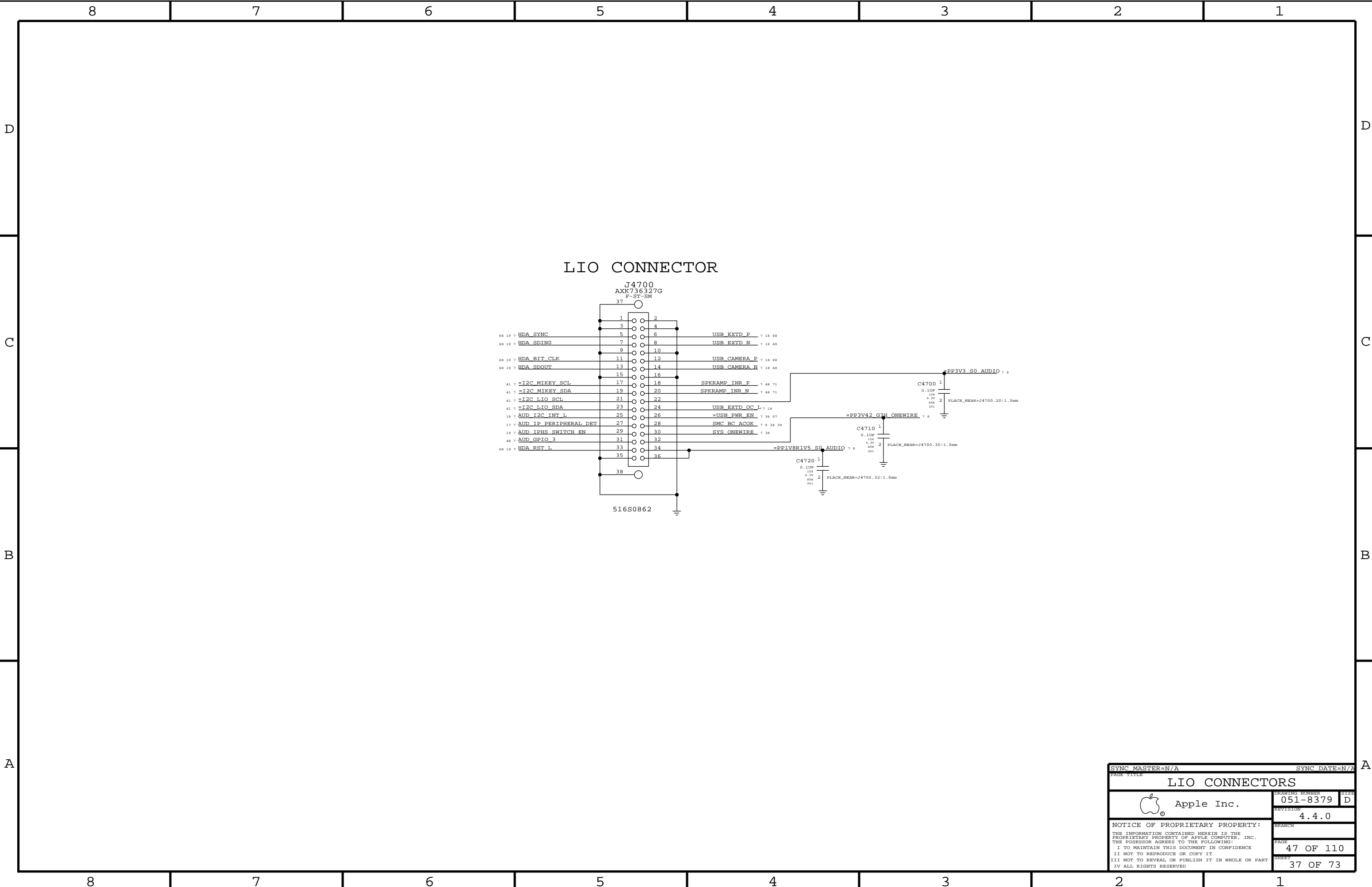
USB/SMC Debug Mux




Right USB Port

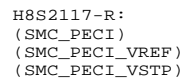


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PAGE TITLE			
External USB Connectors			
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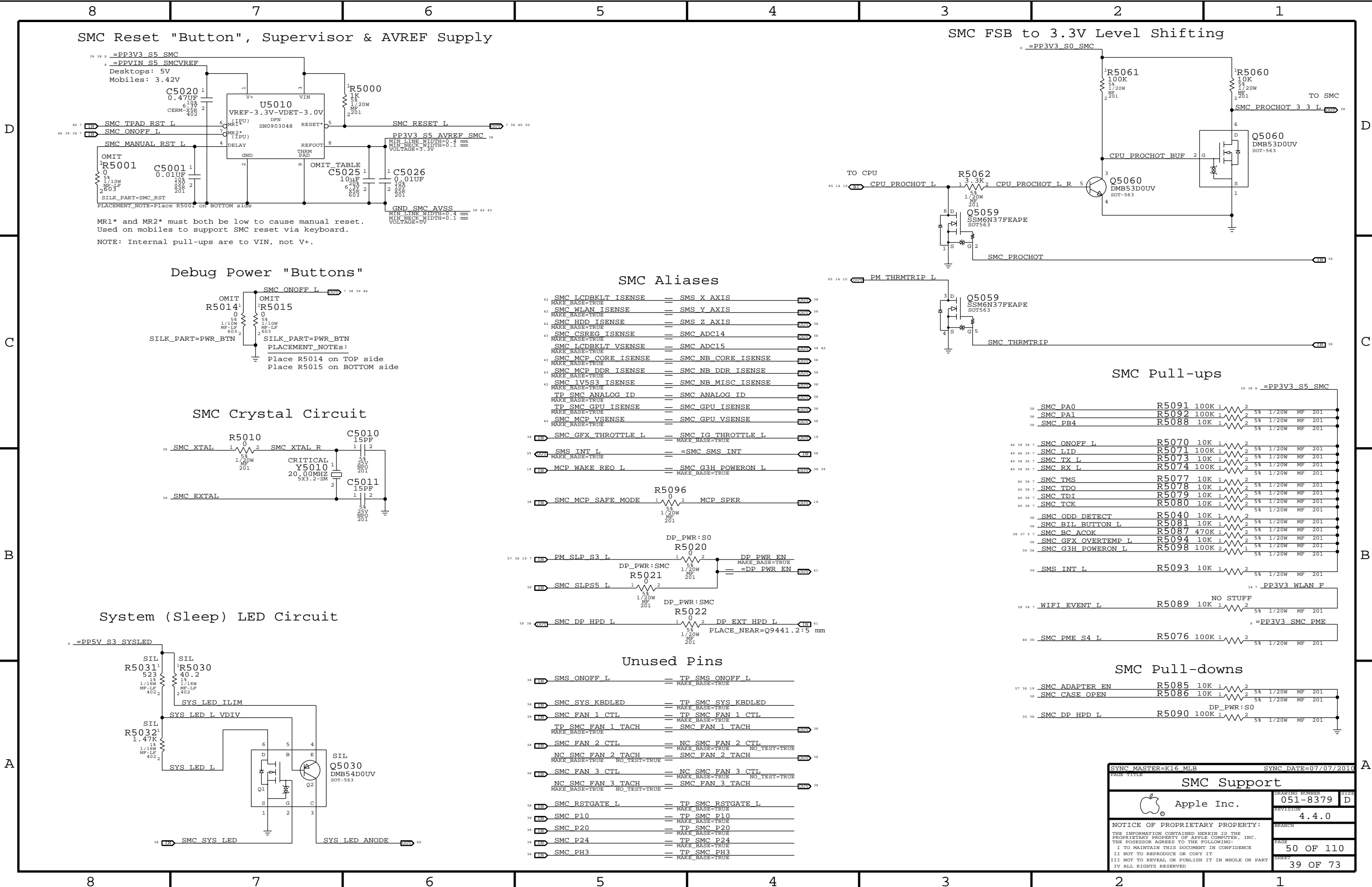
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		SHEET	37 OF 73

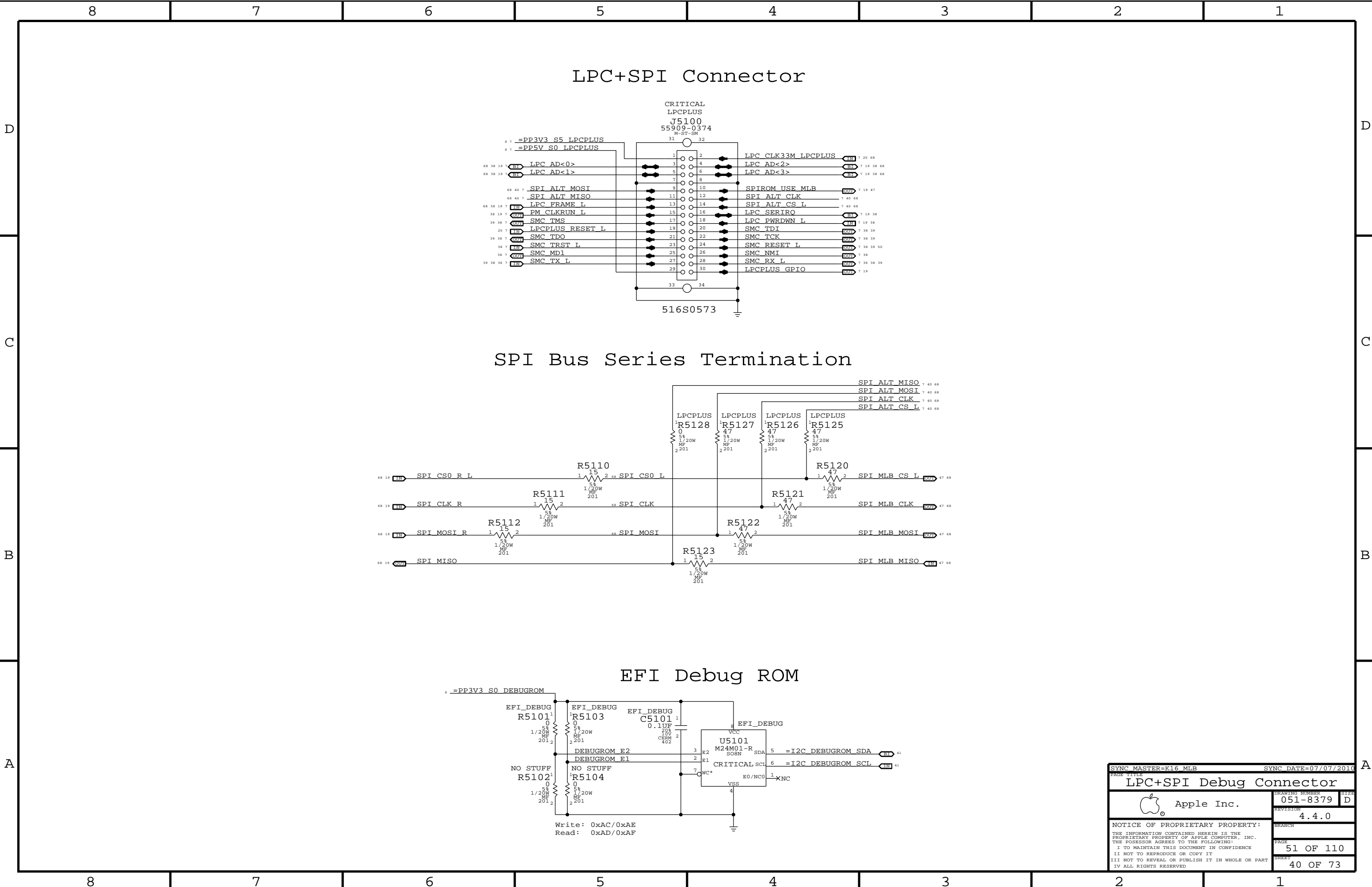
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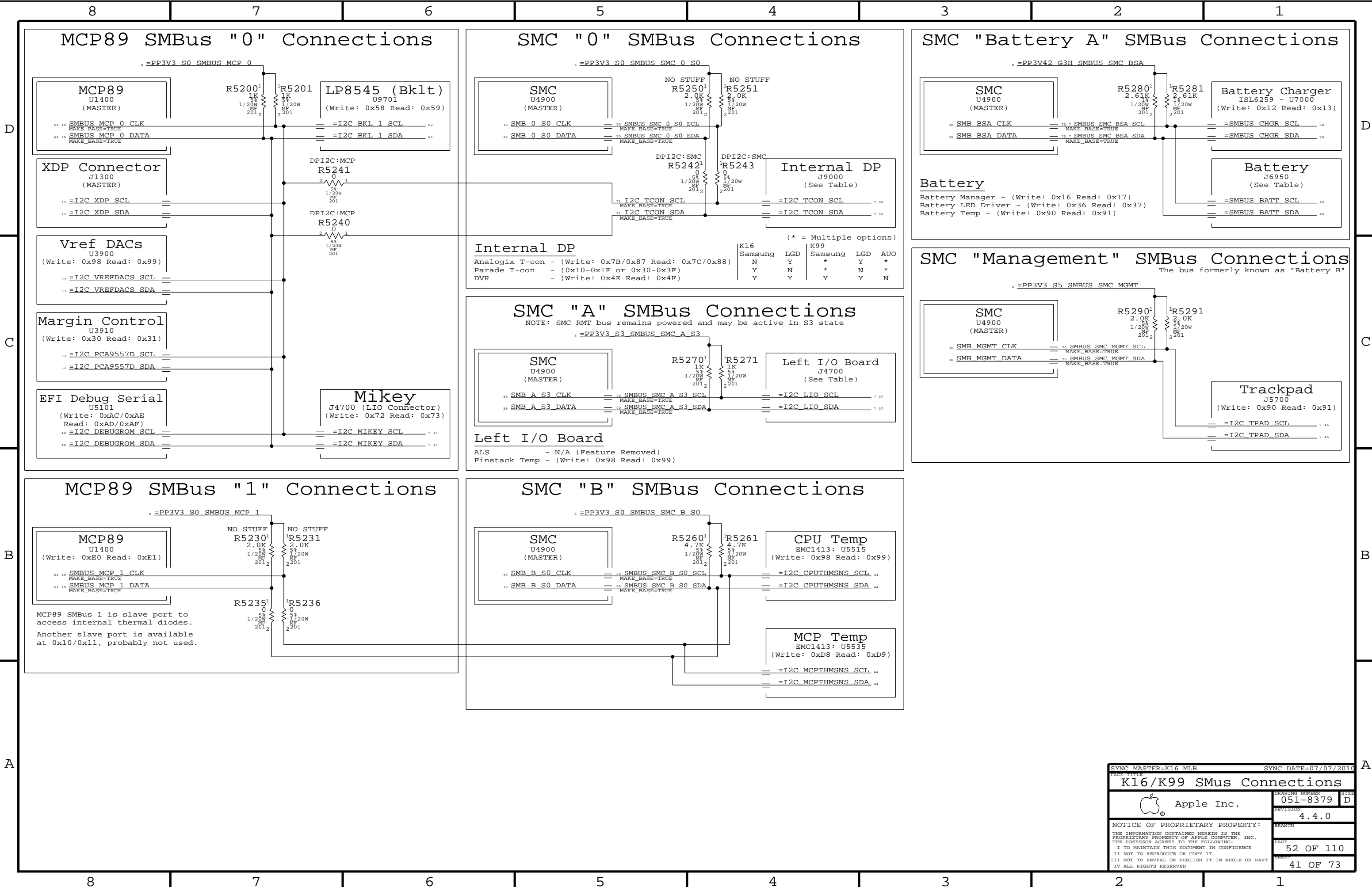


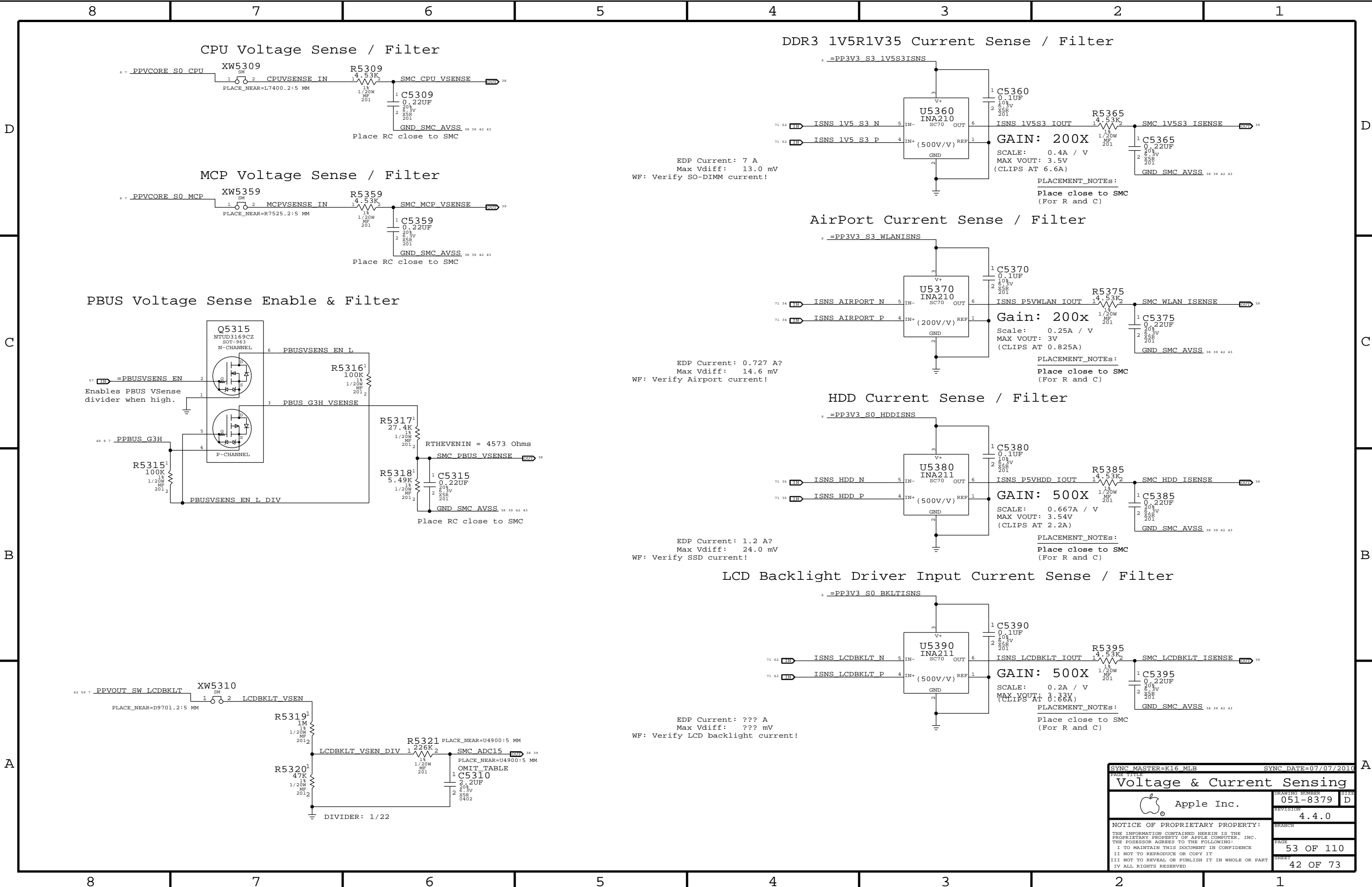
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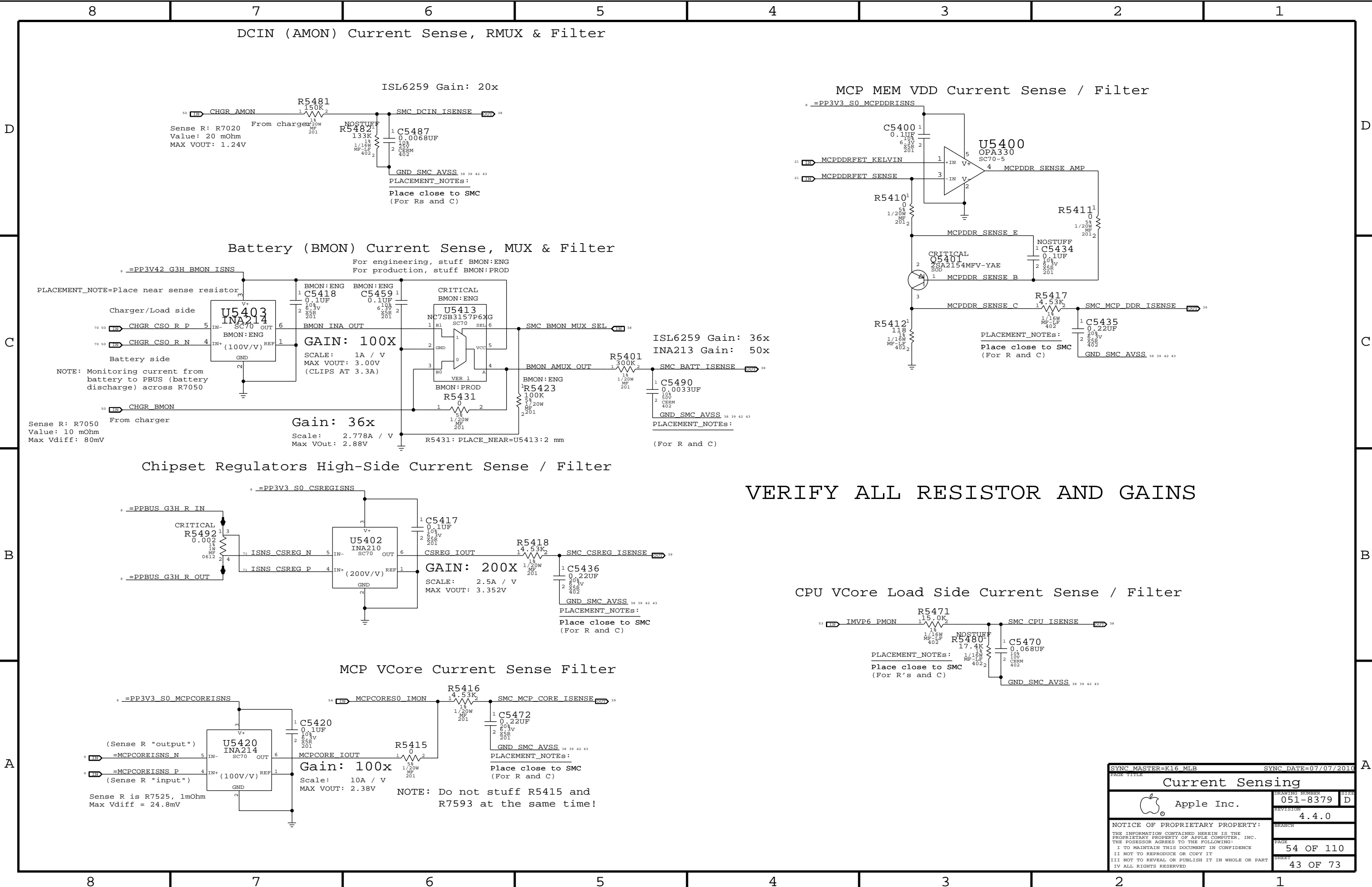







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PAGE TITLE		Voltage & Current Sensing	
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VERIFY ALL RESISTOR AND GAINS

SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
Current Sensing			
 Apple Inc.		DRAWING NUMBER	051-8379
		SHEET	D
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		PAGE	54 OF 110
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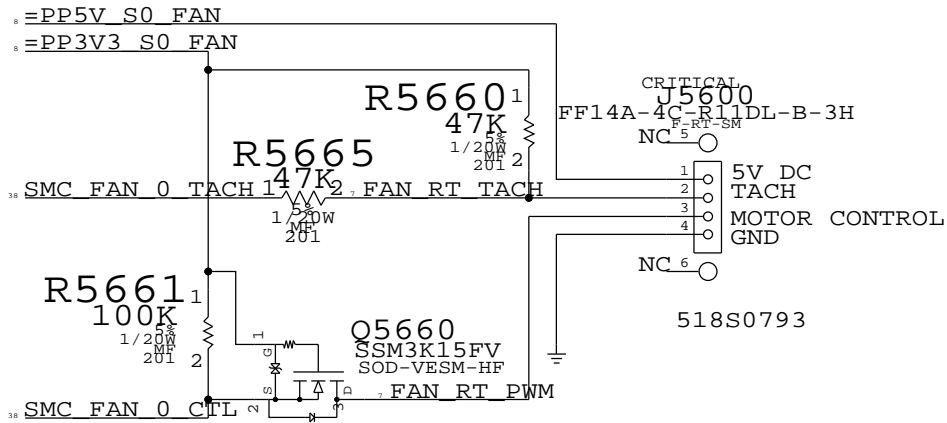
## C




## B

B

# FAN CONNECTOR



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PAGE TITLE		Fan	
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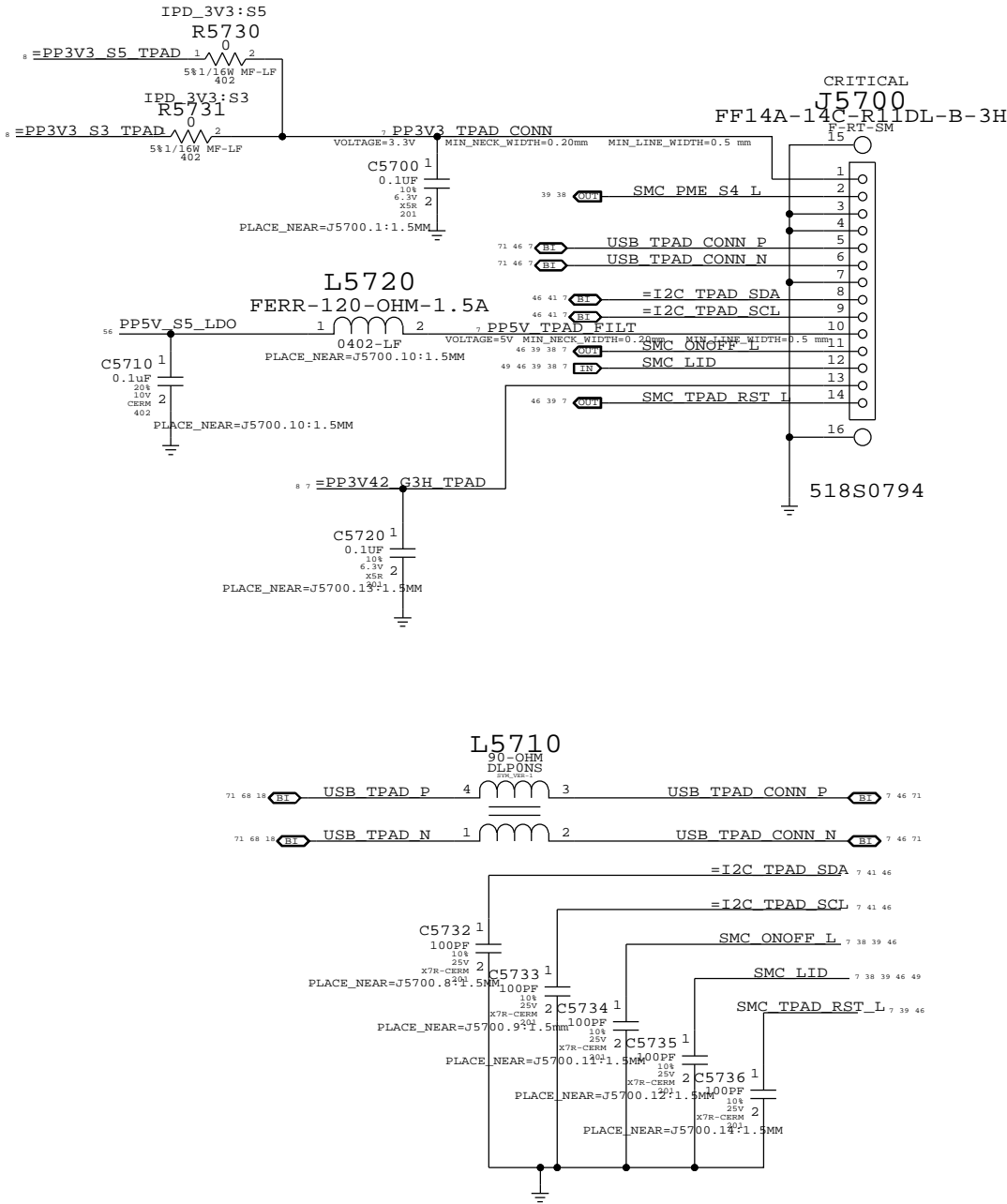
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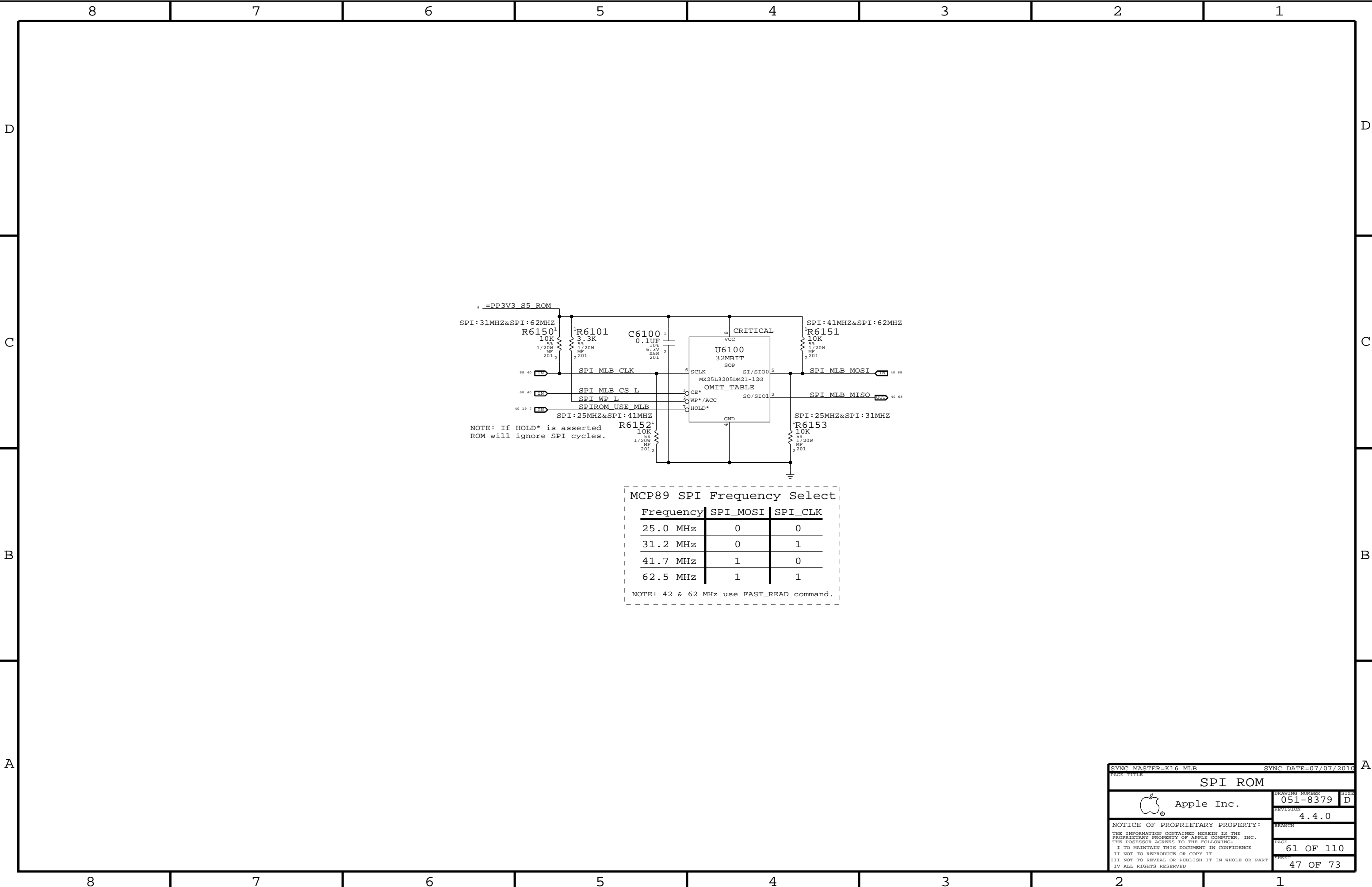
B

A

IPD Flex Connector



SYNC MASTER=K16_MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
WELLSPRING 1			
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MCP89 SPI Frequency Select		
Frequency	SPI_MOSI	SPI_CLK
25.0 MHz	0	0
31.2 MHz	0	1
41.7 MHz	1	0
62.5 MHz	1	1
NOTE: 42 & 62 MHz use FAST_READ command.		

SYNC MASTER=K16\_MLB

SYNC DATE=07/07/2010

SPI ROM

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## D

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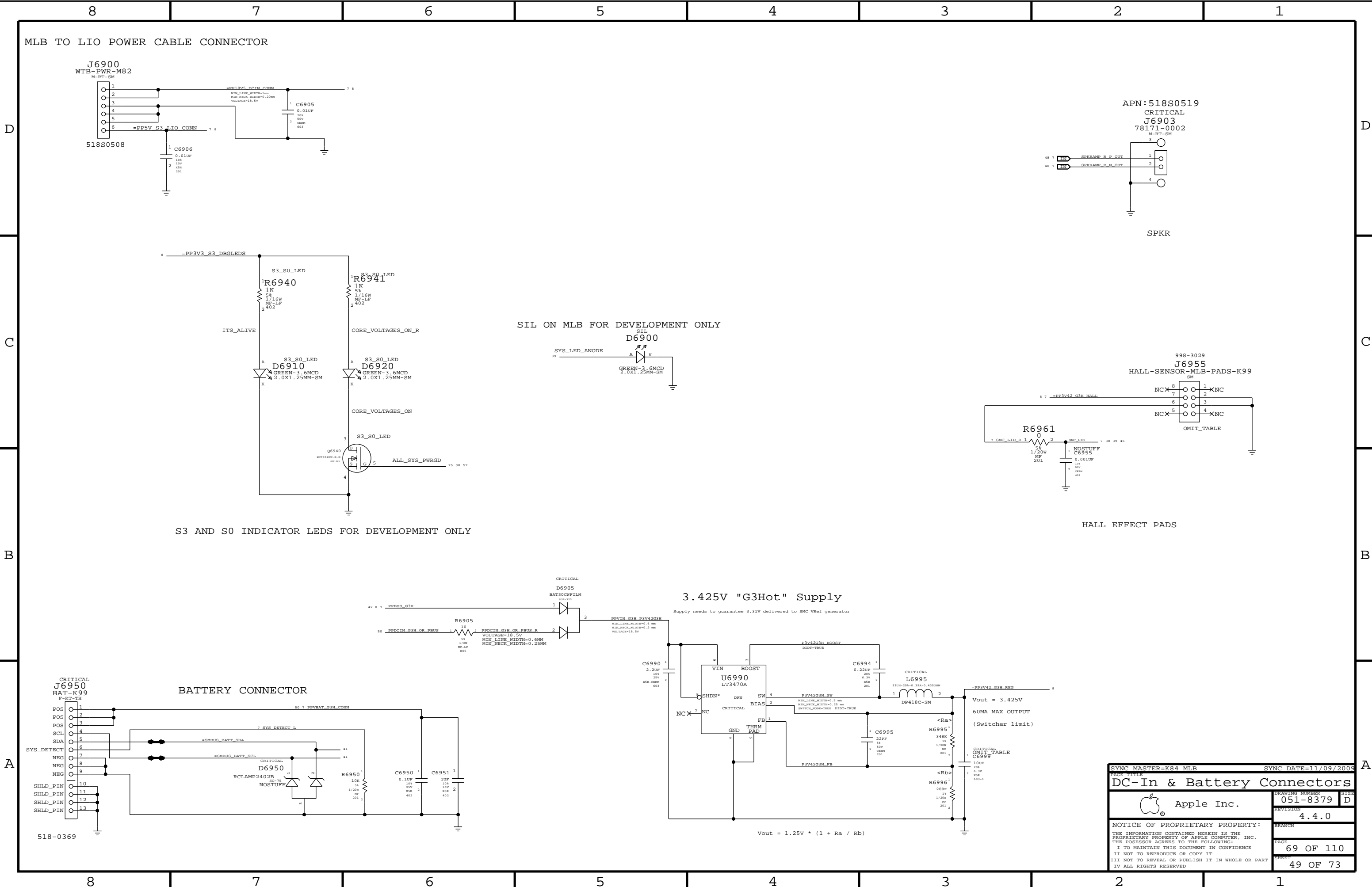
C


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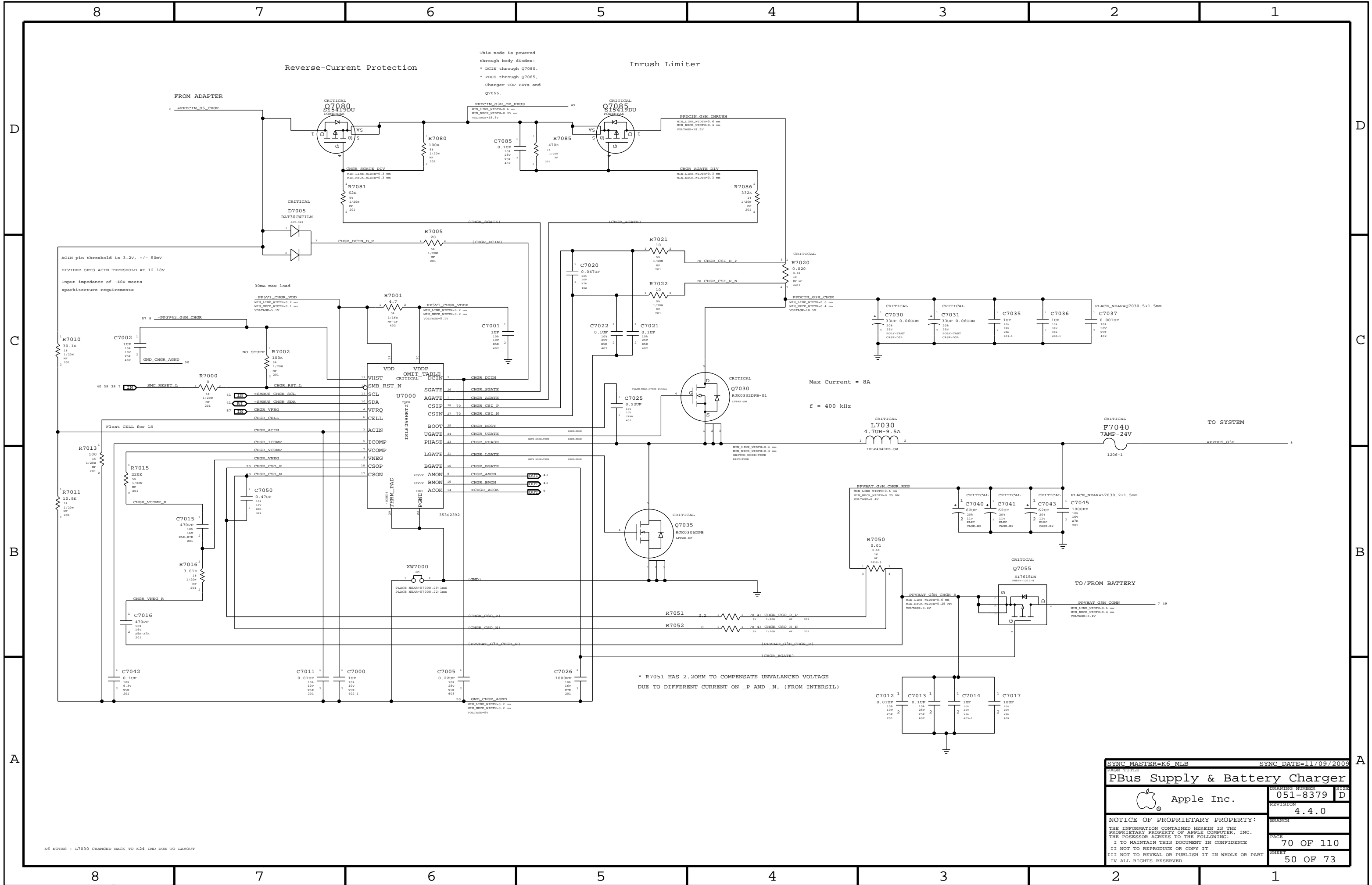



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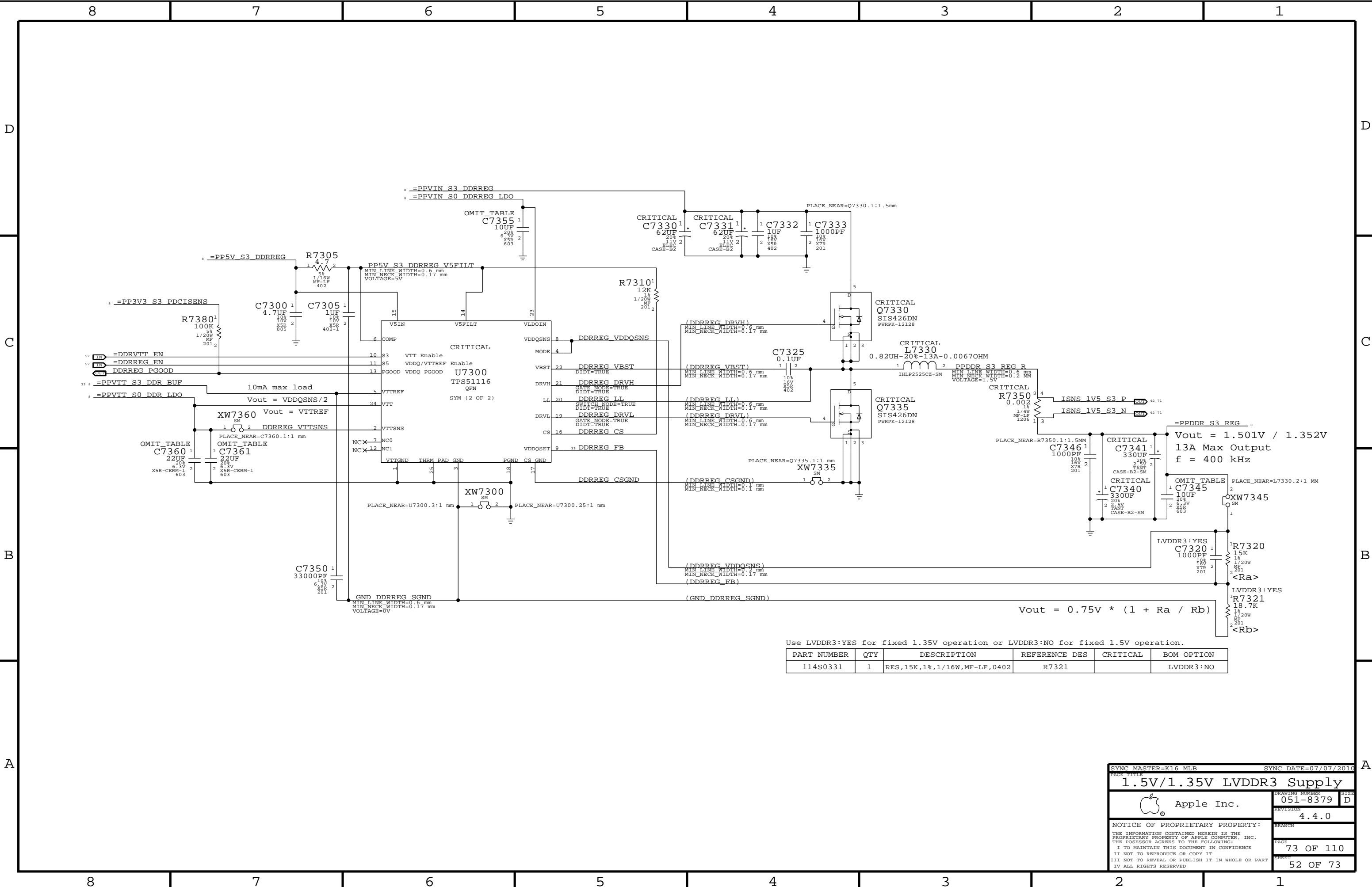


SYNC MASTER=K84 MLB		SYNC DATE=11/09/2009	
PAGE TITLE			
DC-In & Battery Connectors			
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		REVISION	4.4.0
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SYNC MASTER=K6.MLB		SYNC DATE=11/09/2009	
PAGE TITLE			
PBus Supply & Battery Charger			
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		PAGE	70 OF 110
		SHEET	50 OF 73





Use LVDDR3:YES for fixed 1.35V operation or LVDDR3:NO for fixed 1.5V operation.

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S0331	1	RES,15K,1%,1/16W,MF-LF,0402	R7321		LVDDR3:NO

SYNC MASTER=K16 MLB

SYNC DATE=07/07/2010

1.5V/1.35V LVDDR3 Supply

Apple Inc.

051-8379

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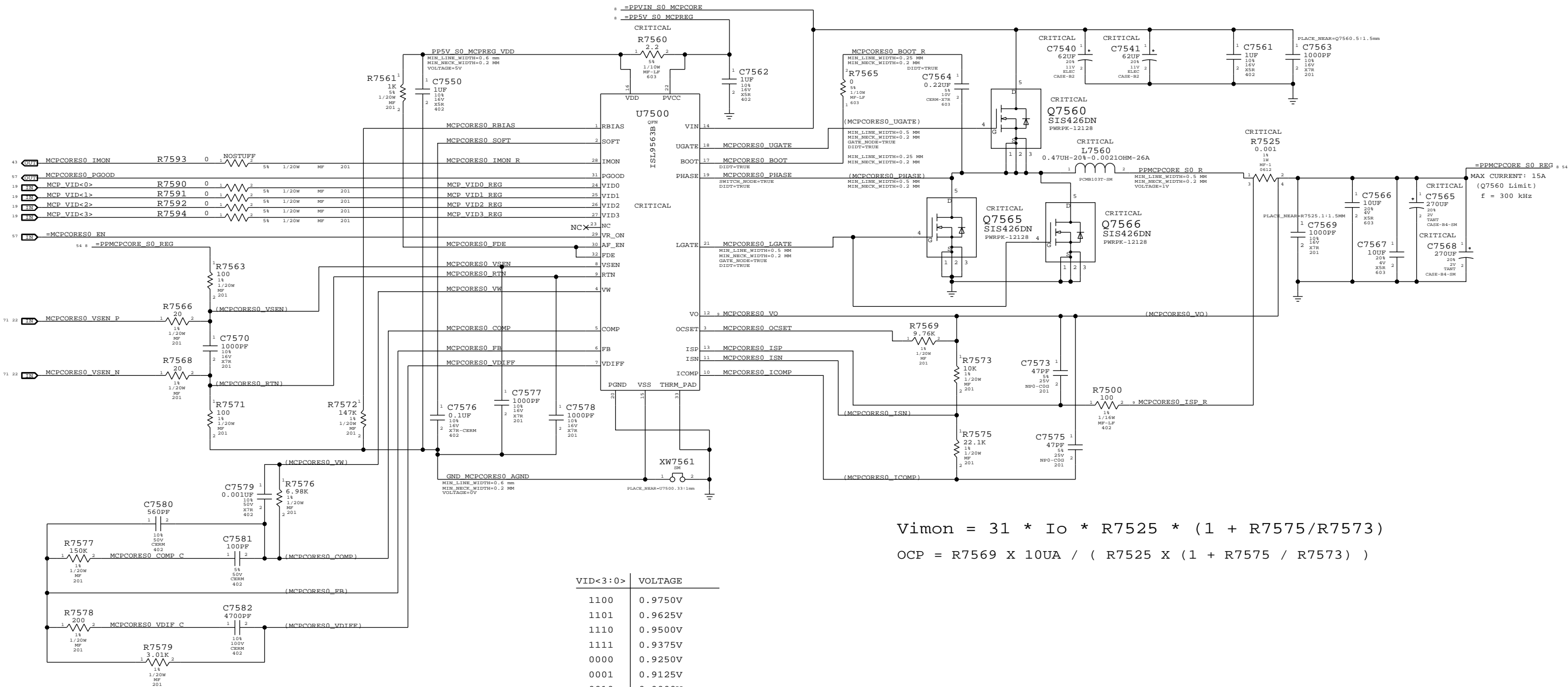
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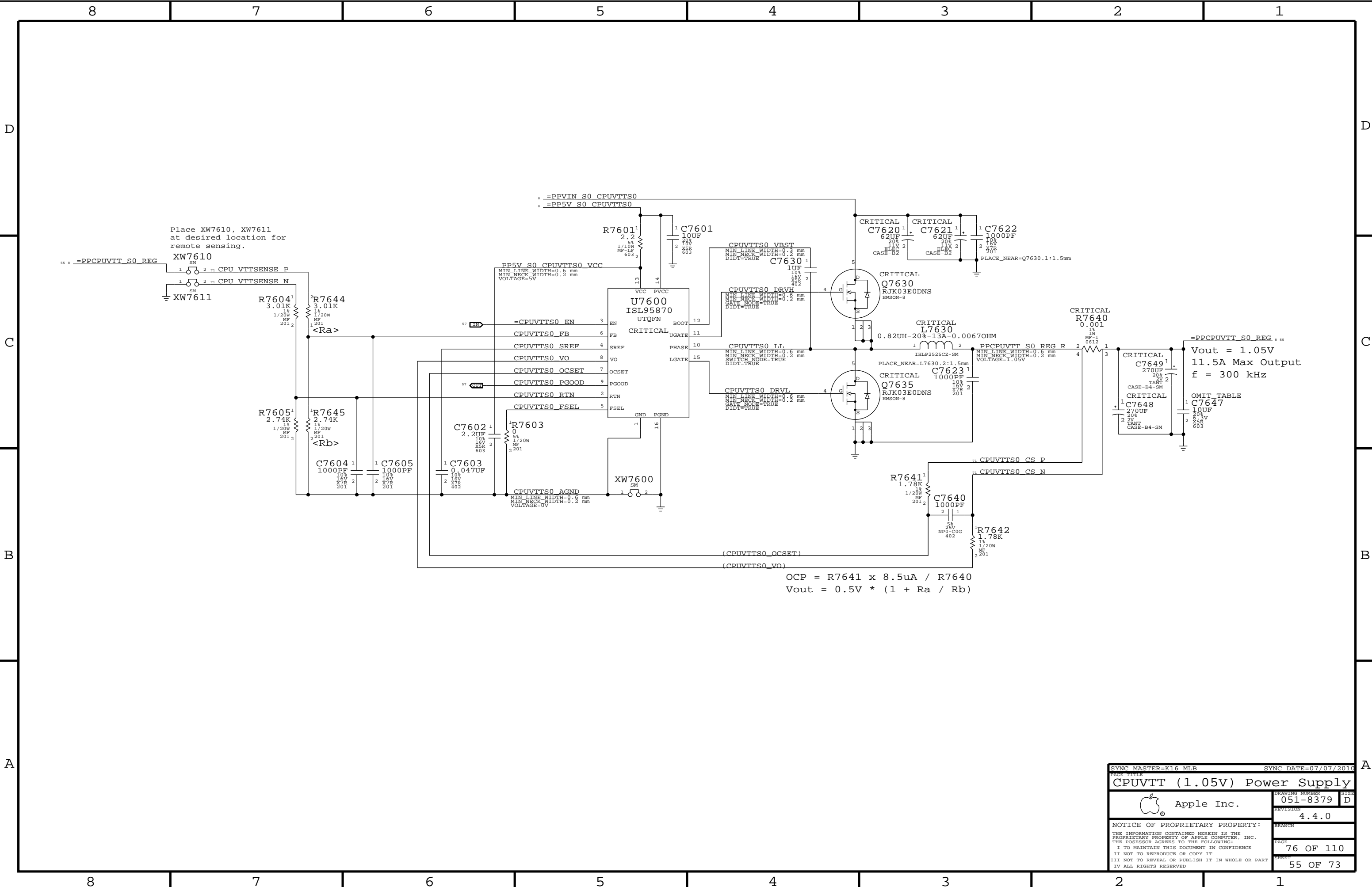
$$V_{imono} = 31 \times I_o \times R_{7525} \times (1 + R_{7575}/R_{7573})$$


$$OCP = R_{7569} \times 10UA / (R_{7525} \times (1 + R_{7575} / R_{7573}))$$

VID<3:0>	VOLTAGE
1100	0.9750V
1101	0.9625V
1110	0.9500V
1111	0.9375V
0000	0.9250V
0001	0.9125V
0010	0.9000V
0011	0.8875V
0100	0.8750V
0101	0.8625V
0110	0.8500V
0111	0.8375V
1000	0.8250V
1001	0.8125V
1010	0.8000V
1011	0.7875V

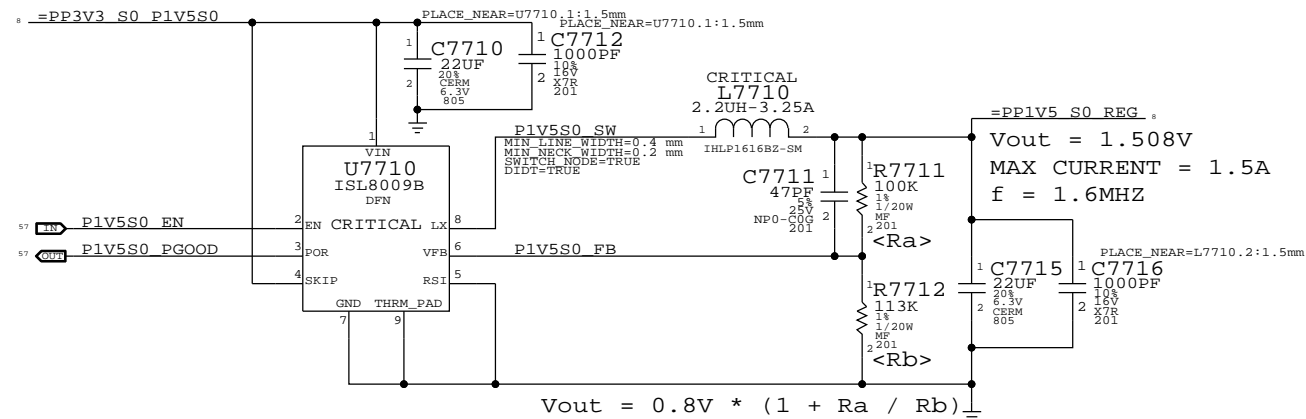
K6 NOTES : XOR AND INVERTER IS REMOVED, CANNOT SYNC THIS PAGE FROM T27

SYNC MASTER=K6 MLB		SYNC DATE=12/11/2009	
PAGE TITLE			
MCP VCore Regulator			
 Apple Inc.		DRAWING NUMBER	051-8379
		SHEET	D
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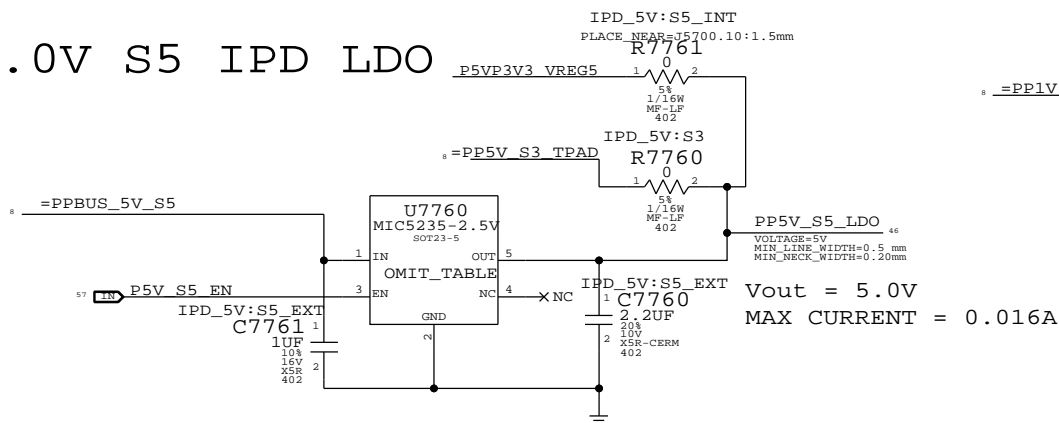


SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
CPUVTT (1.05V) Power Supply			
	DRAWING NUMBER		8122
	051-8379		D
	REVISION		
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## 1.5V S0 Regulator

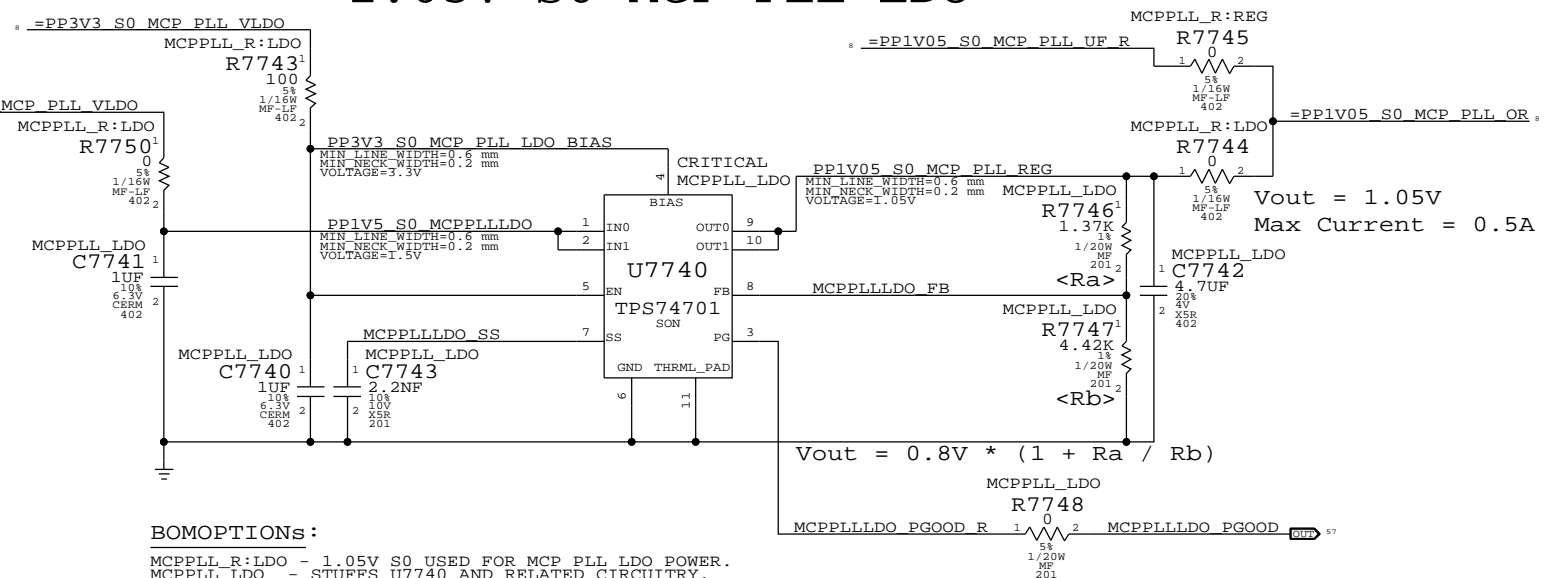


## 5.0V S5 IPD LDO



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S3034	1	IC,LDO,MIC5235,5V,1A,150MA,SOT23-5	U7760		IPD_5V:S5_EXT

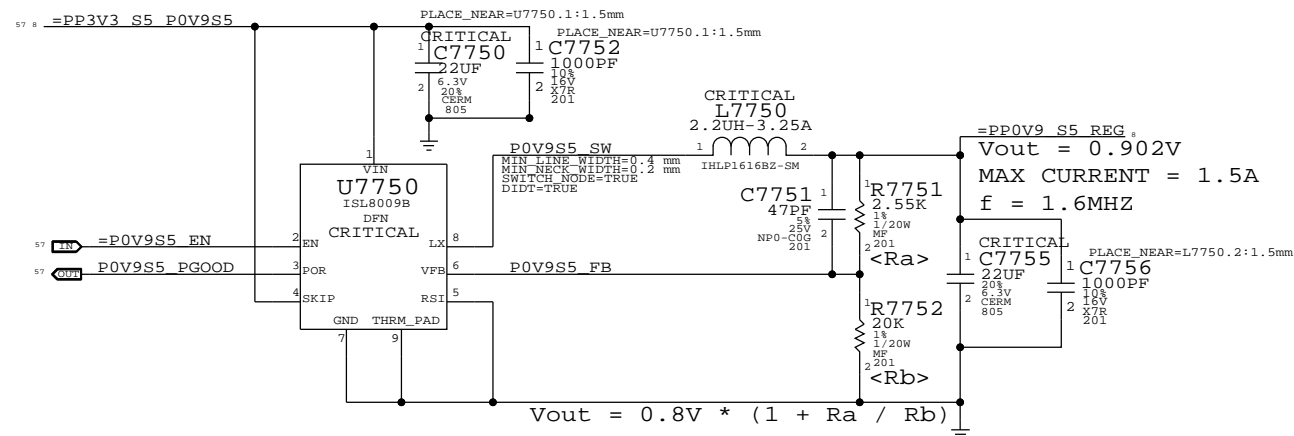
## 1.05V S0 MCP PLL LDO




### BOMOPTIONS:

MCPPLL\_R:LDO - 1.05V S0 USED FOR MCP PLL LDO POWER.  
MCPPLL\_LDO - STUFFS U7740 AND RELATED CIRCUITRY.  
TO USE U7740, MCPPLL\_R:LDO AND MCPPLL\_LDO MUST BE ACTIVE.  
TO USE 1.05V S0, MCPPLL\_R:REG MUST BE ACTIVE, MCPPLL\_LDO CAN BE ACTIVE, MCPPLL\_R:LDO MUST BE INACTIVE.

## MCP 0.9V S5 (AUXC) Switcher



SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
Misc Power Supplies			
	DRAWING NUMBER		SIZE
	051-8379		D
	REVISION		
		4.4.0	
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8	7	6	5	4	3	2	1
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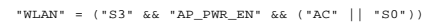


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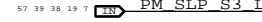
VTT rail must ramp up in about the same time as MEMVDD rail (Q2300).



## S0 Rail PGOOD (ISL Version)



NOTE: S3 term is guaranteed by S3 pull-up on open-drain AP\_PWR\_EN signal.  
NOTE: "AC" term valid only when Q7891 is stuffed

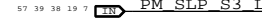



State	SMC_PM_G2_ENABLE	PM_SLP_S4_L	PM_SLP_S3_L
Run (S0)	1	1	1
Sleep (S3)	1	1	0
Soft-Off (S5)	1	0	0
Battery Off (G3Hot)	0	0	0

Schematic diagram of the CHGR\_VFRO driver circuit. The circuit includes two input buffers, R7864 and R7863, which take PM\_SLP\_S4\_L and PM\_SLP\_S3\_L signals respectively. Their outputs are connected to the CHGR\_VFRO\_GATE input of an N-channel MOSFET, Q7860 (SSM3K15FV). The MOSFET's drain is connected to the CHGR\_VFRO output through a 10k resistor (R7861) and a 1/20W 5% resistor. The MOSFET's source is connected to ground. The MOSFET's gate is connected to ground through a 10k resistor (R7863) and a 1/20W 5% resistor. The MOSFET's drain is also connected to ground through a 10k resistor (R7864) and a 1/20W 5% resistor.

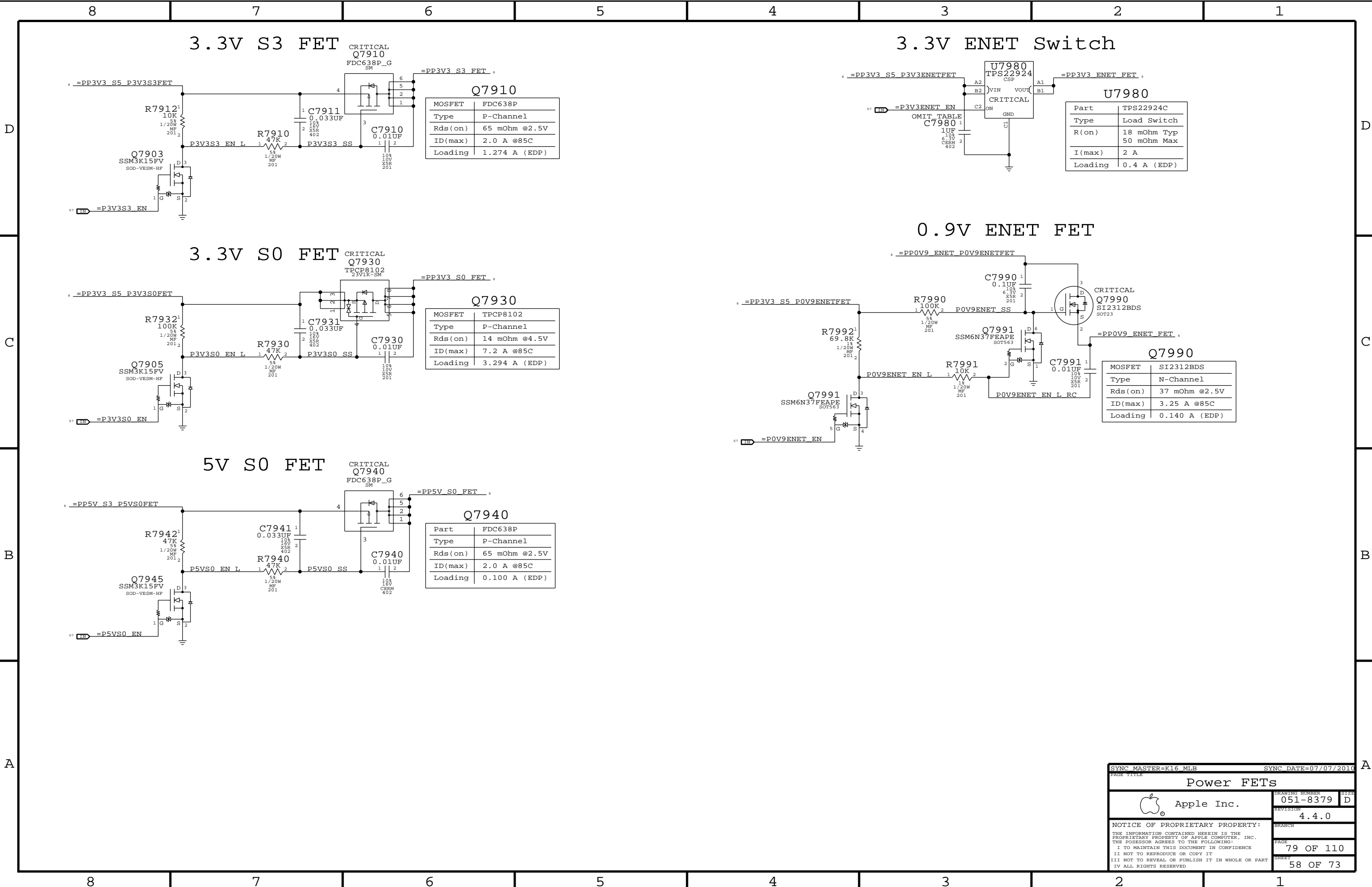
```
"WLAN" = ("S3" && "AP_PWR_EN" && ("AC" || "S0"))
```

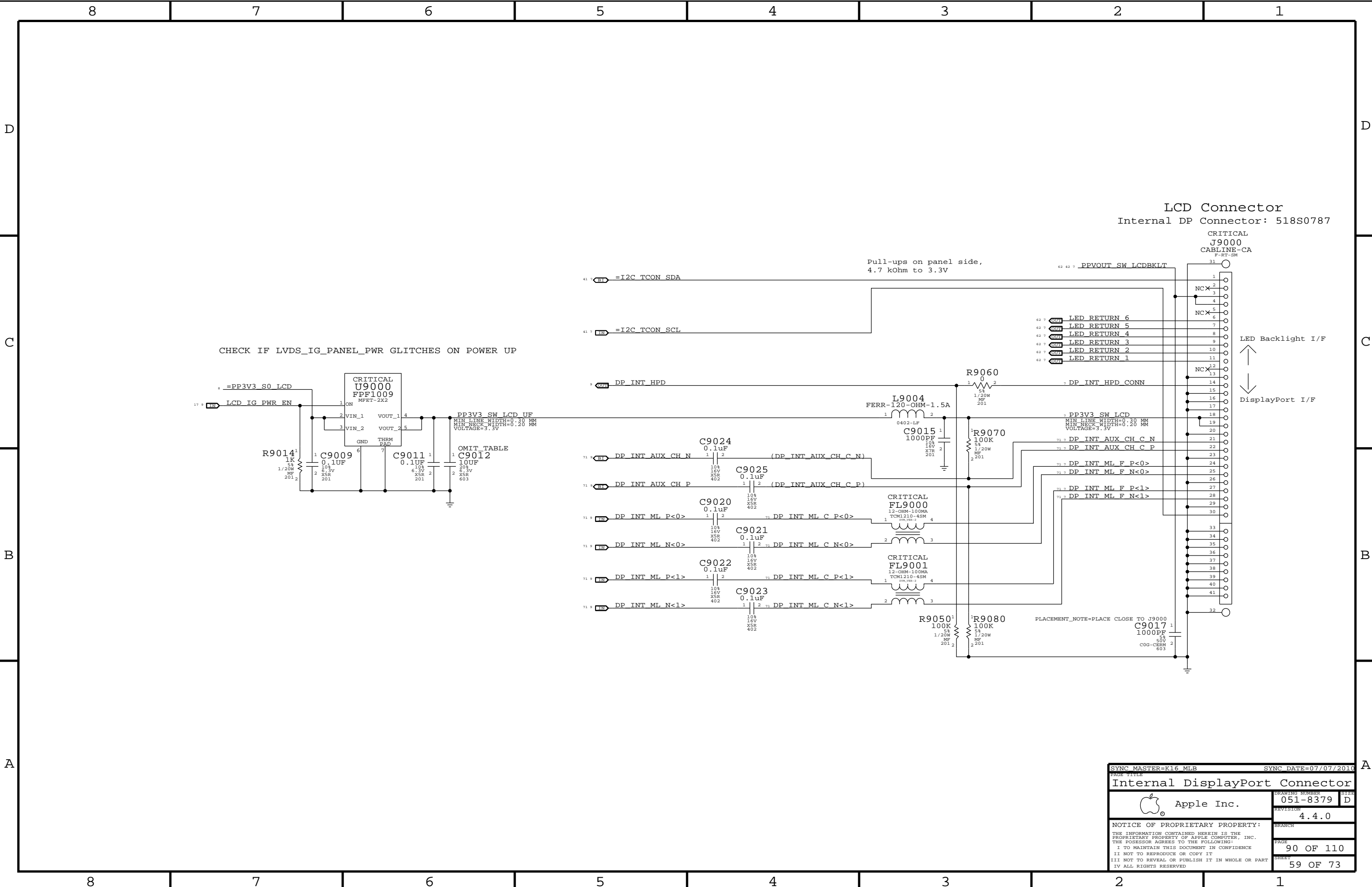
NOTE: S3 term is guaranteed by S3 pull-up on open-drain AP\_PWR\_EN signal.  
NOTE: "AC" term valid only when Q7891 is stuffed




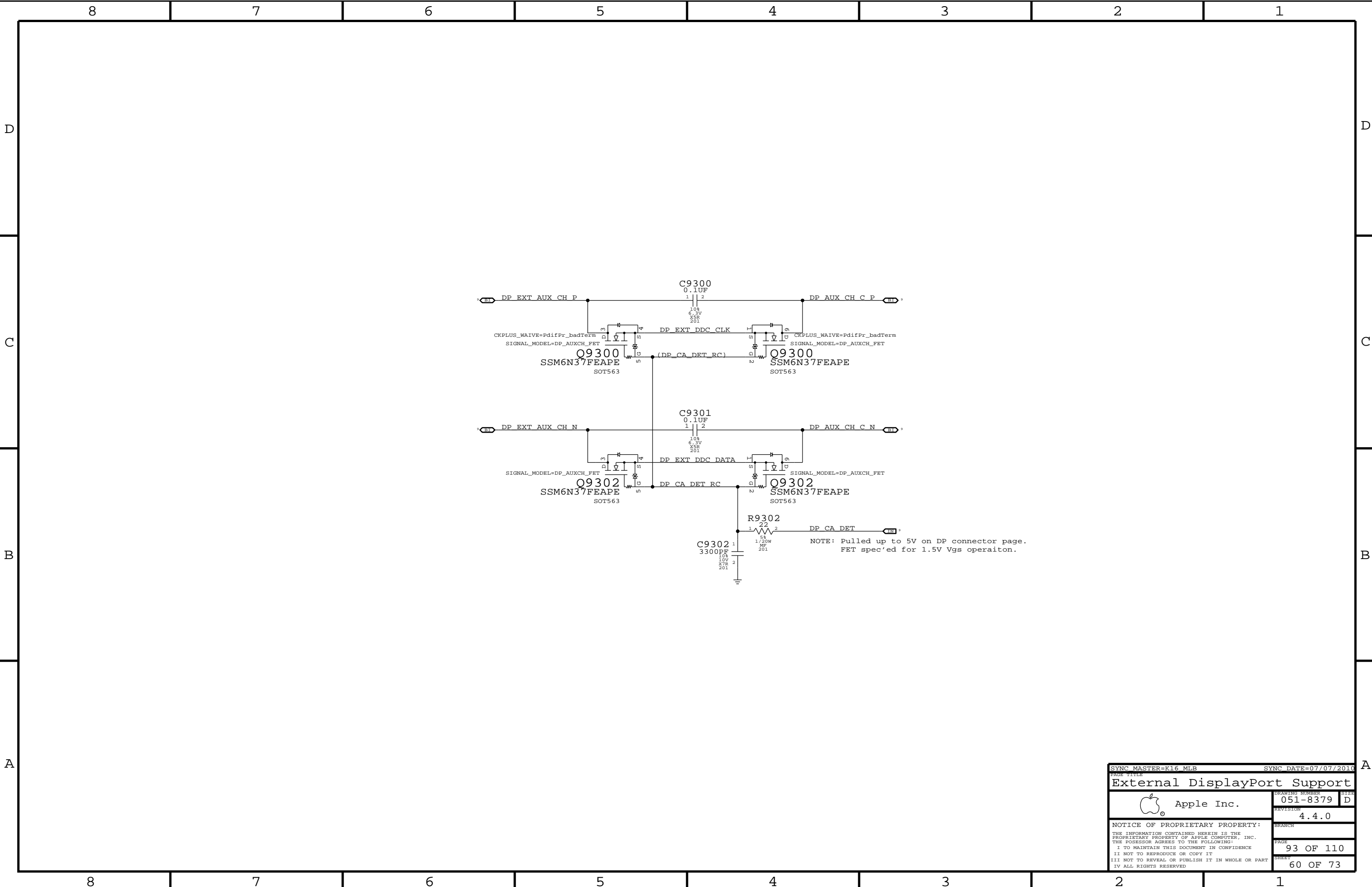
SYNCH MASTER=K16 MLE		SYNCH DATE=07/07/2010	
PAGE TITLE			
Power Sequencing			
 Apple Inc.		DRAWING NUMBER	SHEET
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






SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
PAGE TITLE			
Internal DisplayPort Connector			
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		REVISION	4.4.0
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PAGE TITLE			
External DisplayPort Support			
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		SHEET	60 OF 73

## D



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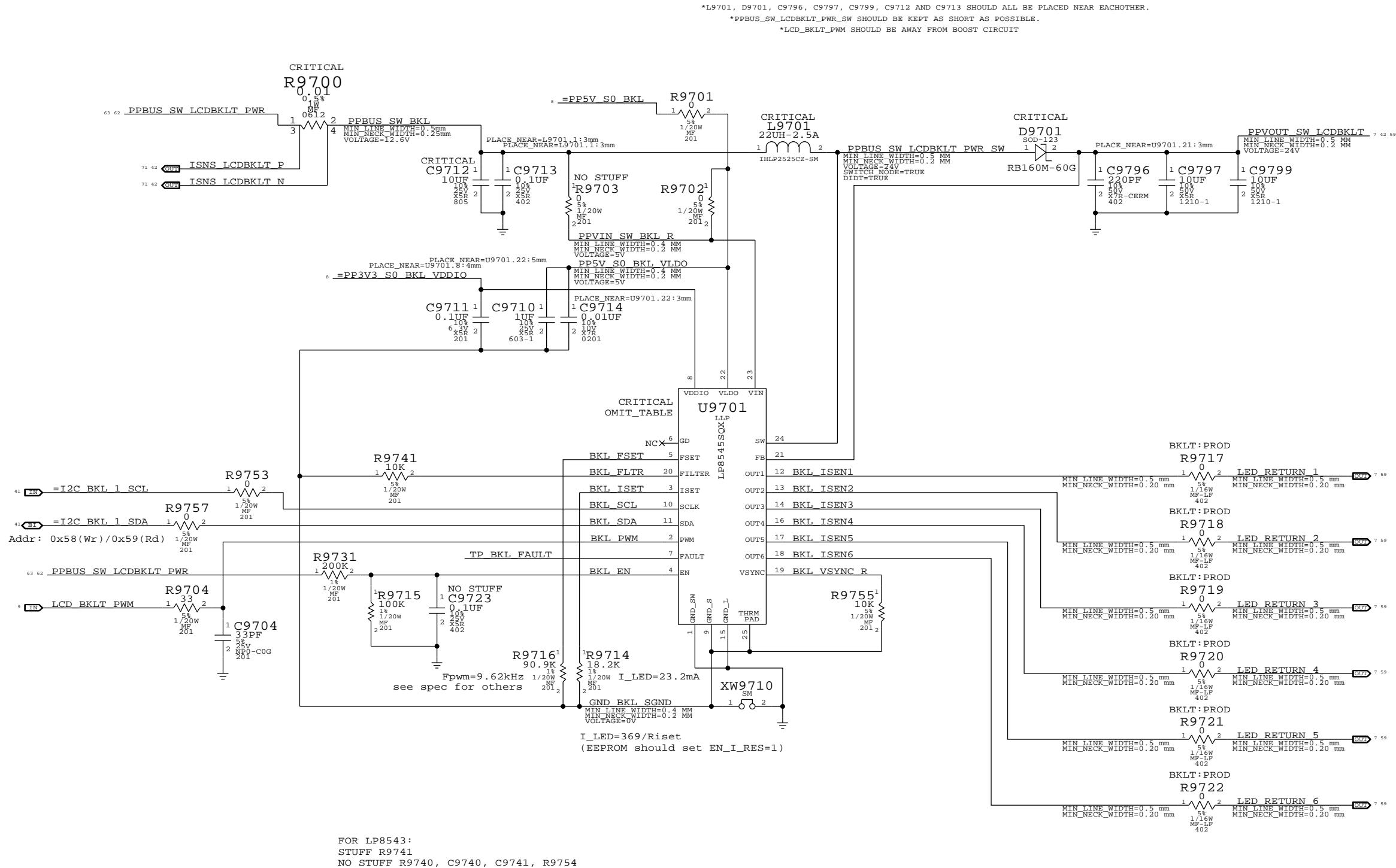
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
B

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PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
103S0198	3	RES,THIN FLIM,1/16W,10.2 OHM,0.1,0402,SM	R9717,R9718,R9719		BKLT:ENG
103S0198	3	RES,THIN FLIM,1/16W,10.2 OHM,0.1,0402,SM	R9720,R9721,R9722		BKLT:ENG
353S2896	1	IC,LP8545,LED BKLT CTRLR,PRODUCTIO,LLP24	U9701	CRITICAL	PROJ:K16
353S2967	1	IC,LP8545,LED BKLT CTRLR,LLP24,K99 VER	U9701	CRITICAL	PROJ:K99

10.2 ohm resistors for current measurement on LED strings.

SYNC MASTER=K16 MLB		SYNC DATE=03/31/2010	
PAGE TITLE			
LCD Backlight Driver		DRAWING NUMBER	
 Apple Inc.		051-8379	
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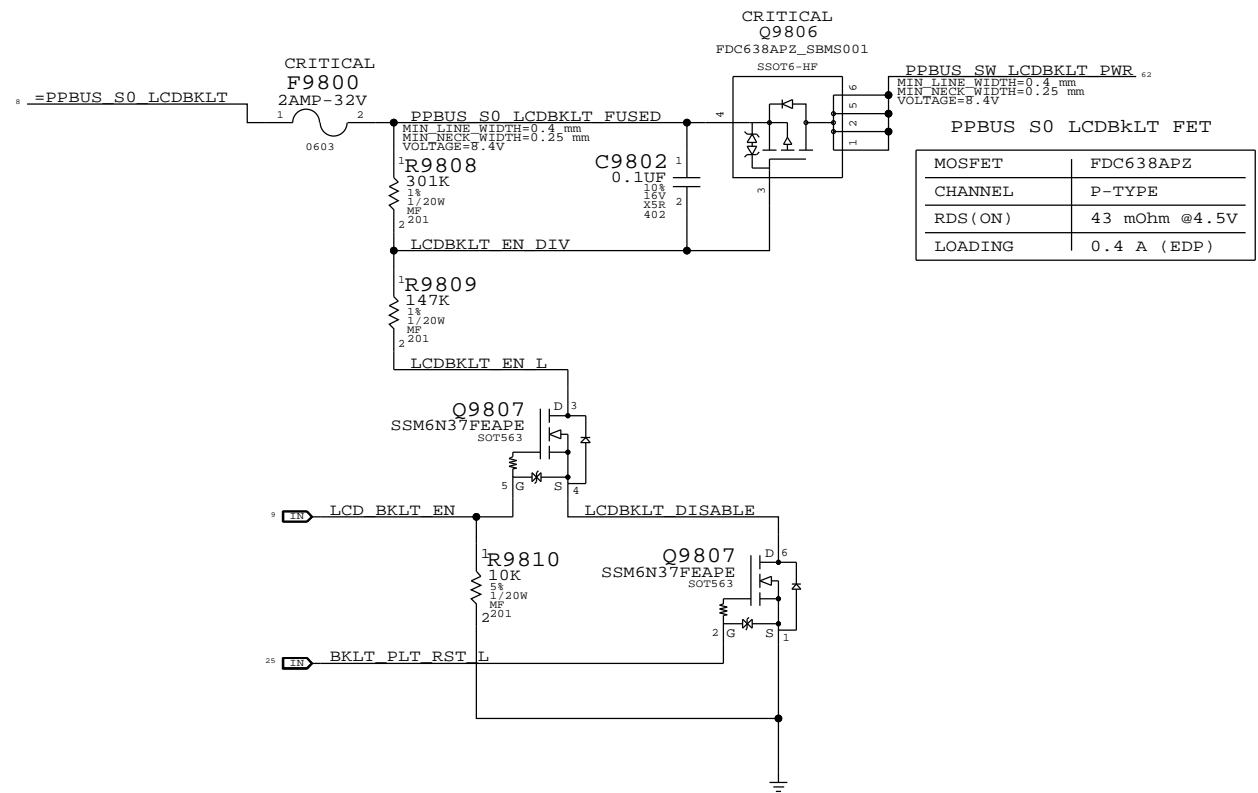
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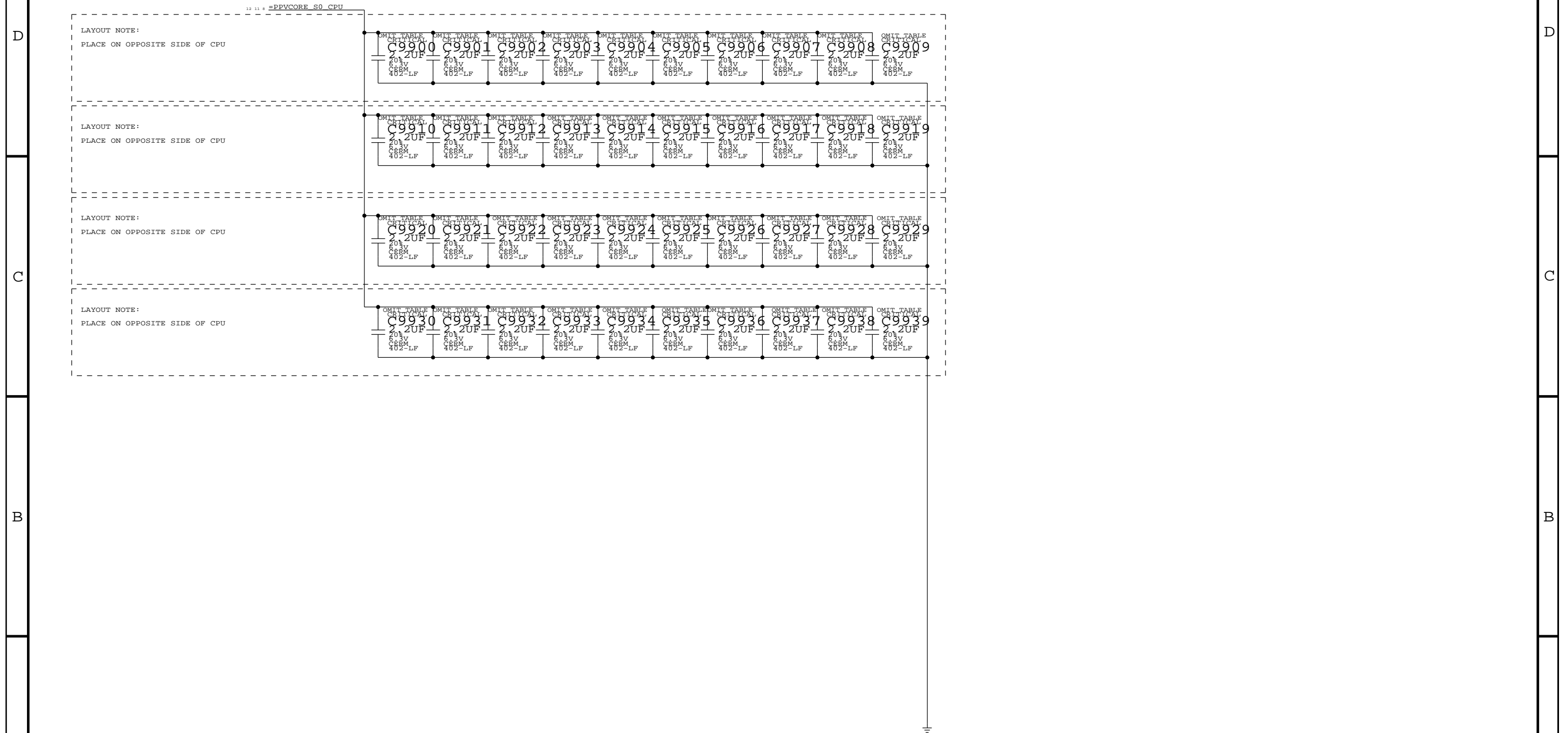
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SYNC MASTER=K16 MLB		SYNC DATE=07/07/2010	
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LCD Backlight Support			
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ADDITIONAL CPU VCORE HF DECOUPLING  
40x 1uF 0402



SYNC MASTER=K16 MLB PAGE 1 OF 11		SYNC DATE=07/07/2010	
Additional CPU/GPU Decoupling			
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## Memory Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MEM_50S	*	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD
MEM_55S	*	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
MEM_70D	*	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
MEM_CLK2MEM	*	=4:1_SPACING	?
MEM_CTRL2CTRL	*	=2:1_SPACING	?
MEM_CTRL2MEM	*	=2.5:1_SPACING	?
MEM_CMD2CMD	*	=1.5:1_SPACING	?
MEM_CMD2MEM	*	=3:1_SPACING	?
MEM_DATA2DATA	*	=1.5:1_SPACING	?
MEM_DATA2MEM	*	=3:1_SPACING	?
MEM_QS2MEM	*	=3:1_SPACING	?
MEM_2OTHER	*	25 MIL	?

## Memory Bus Spacing Group Assignments

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	MEM_CLK	*	MEM_CLK2MEM
MEM_CLK	MEM_CTRL	*	MEM_CLK2MEM
MEM_CLK	MEM_CMD	*	MEM_CLK2MEM
MEM_CLK	MEM_DATA	*	MEM_CLK2MEM
MEM_CLK	MEM_QDS	*	MEM_CLK2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CTRL	MEM_CLK	*	MEM_CTRL2MEM
MEM_CTRL	MEM_CTRL	*	MEM_CTRL2CTRL
MEM_CTRL	MEM_CMD	*	MEM_CTRL2MEM
MEM_CTRL	MEM_DATA	*	MEM_CTRL2MEM
MEM_CTRL	MEM_QDS	*	MEM_CTRL2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_QDS	MEM_CLK	*	MEM_QDS2MEM
MEM_QDS	MEM_CTRL	*	MEM_QDS2MEM
MEM_QDS	MEM_CMD	*	MEM_QDS2MEM
MEM_QDS	MEM_DATA	*	MEM_QDS2MEM
MEM_QDS	MEM_QDS	*	MEM_QDS2MEM

DDR3:  
DQ signals should be matched within 5 ps of associated QDS pair.  
QDS intra-pair matching should be within 1 ps, inter-pair matching should be within 360 ps  
No QDS to clock matching requirement.  
CLK intra-pair matching should be within 1 ps, inter-pair matching should be within 2 ps.  
CMD/CTRL signals should be matched within 150 ps.  
All memory signals maximum length is 1.030 ps.

SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.2.3  
SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Section 6.2

## MCP MEM COMP Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MCP_MEM_COMP	*	=40_OHM_SE	=40_OHM_SE	=40_OHM_SE	=40_OHM_SE	=STANDARD	=STANDARD


SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
MCP_MEM_COMP	*	=2x_DIELECTRIC	?

SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.2.2

MEM\_A/B\_CKE EC SET NAME IS CHANGED ON K6, CANNOT SYNC THIS PAGE FROM T27

## Memory Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE			
	PHYSICAL	SPACING		
MEM_A_CLK	MEM_70D	MEM_CLK	MEM A CLK P<5..0>	9 15 26 27 32
MEM_A_CLK	MEM_70D	MEM_CLK	MEM A CLK N<5..0>	9 15 26 27 32
MEM_A_CKE	MEM_50S	MEM_CTRL	MEM A CKE<3..0>	15 21 26 27 32
MEM_A_CNTRL	MEM_50S	MEM_CTRL	MEM A CS L<3..0>	15 26 27 32
MEM_A_CNTRL	MEM_50S	MEM_CTRL	MEM A ODT<3..0>	15 26 27 32
MEM_A_CMD	MEM_50S	MEM_CMD	MEM A A<15..0>	9 15 26 27 32
MEM_A_CMD	MEM_50S	MEM_CMD	MEM A BA<2..0>	15 26 27 32
MEM_A_CMD	MEM_50S	MEM_CMD	MEM A RAS L	15 26 27 32
MEM_A_CMD	MEM_50S	MEM_CMD	MEM A CAS L	15 26 27 32
MEM_A_CMD	MEM_50S	MEM_CMD	MEM A WE L	15 26 27 32
MEM_A_DQ_BYTE0	MEM_55S	MEM_DATA	MEM A DQ<7..0>	15 26
MEM_A_DQ_BYTE1	MEM_55S	MEM_DATA	MEM A DQ<15..8>	15 26
MEM_A_DQ_BYTE2	MEM_55S	MEM_DATA	MEM A DQ<23..16>	15 26
MEM_A_DQ_BYTE3	MEM_55S	MEM_DATA	MEM A DQ<31..24>	15 26
MEM_A_DQ_BYTE4	MEM_55S	MEM_DATA	MEM A DQ<39..32>	15 27
MEM_A_DQ_BYTE5	MEM_55S	MEM_DATA	MEM A DQ<47..40>	15 27
MEM_A_DQ_BYTE6	MEM_55S	MEM_DATA	MEM A DQ<55..48>	15 27
MEM_A_DQ_BYTE7	MEM_55S	MEM_DATA	MEM A DQ<63..56>	15 27
MEM_A_DQ_BYTE0	MEM_55S	MEM_DATA	MEM A DM<0>	15 26
MEM_A_DQ_BYTE1	MEM_55S	MEM_DATA	MEM A DM<1>	15 26
MEM_A_DQ_BYTE2	MEM_55S	MEM_DATA	MEM A DM<2>	15 26
MEM_A_DQ_BYTE3	MEM_55S	MEM_DATA	MEM A DM<3>	15 26
MEM_A_DQ_BYTE4	MEM_55S	MEM_DATA	MEM A DM<4>	15 27
MEM_A_DQ_BYTE5	MEM_55S	MEM_DATA	MEM A DM<5>	15 27
MEM_A_DQ_BYTE6	MEM_55S	MEM_DATA	MEM A DM<6>	15 27
MEM_A_DQ_BYTE7	MEM_55S	MEM_DATA	MEM A DM<7>	15 27
MEM_A_QDS0	MEM_70D	MEM_QDS	MEM A QDS P<0>	15 26
MEM_A_QDS0	MEM_70D	MEM_QDS	MEM A QDS N<0>	15 26
MEM_A_QDS1	MEM_70D	MEM_QDS	MEM A QDS P<1>	15 26
MEM_A_QDS1	MEM_70D	MEM_QDS	MEM A QDS N<1>	15 26
MEM_A_QDS2	MEM_70D	MEM_QDS	MEM A QDS P<2>	15 26
MEM_A_QDS2	MEM_70D	MEM_QDS	MEM A QDS N<2>	15 26
MEM_A_QDS3	MEM_70D	MEM_QDS	MEM A QDS P<3>	15 26
MEM_A_QDS3	MEM_70D	MEM_QDS	MEM A QDS N<3>	15 26
MEM_A_QDS4	MEM_70D	MEM_QDS	MEM A QDS P<4>	15 27
MEM_A_QDS4	MEM_70D	MEM_QDS	MEM A QDS N<4>	15 27
MEM_A_QDS5	MEM_70D	MEM_QDS	MEM A QDS P<5>	15 27
MEM_A_QDS5	MEM_70D	MEM_QDS	MEM A QDS N<5>	15 27
MEM_A_QDS6	MEM_70D	MEM_QDS	MEM A QDS P<6>	15 27
MEM_A_QDS6	MEM_70D	MEM_QDS	MEM A QDS N<6>	15 27
MEM_A_QDS7	MEM_70D	MEM_QDS	MEM A QDS P<7>	15 27
MEM_A_QDS7	MEM_70D	MEM_QDS	MEM A QDS N<7>	15 27
MEM_B_CLK	MEM_70D	MEM_CLK	MEM B CLK P<5..0>	9 15 28 29 32
MEM_B_CLK	MEM_70D	MEM_CLK	MEM B CLK N<5..0>	9 15 28 29 32
MEM_B_CKE	MEM_50S	MEM_CTRL	MEM B CKE<3..0>	15 21 28 29 32
MEM_B_CNTRL	MEM_50S	MEM_CTRL	MEM B CS L<3..0>	15 28 29 32
MEM_B_CNTRL	MEM_50S	MEM_CTRL	MEM B ODT<3..0>	15 28 29 32
MEM_B_CMD	MEM_50S	MEM_CMD	MEM B A<15..0>	9 15 28 29 32
MEM_B_CMD	MEM_50S	MEM_CMD	MEM B BA<2..0>	15 28 29 32
MEM_B_CMD	MEM_50S	MEM_CMD	MEM B RAS L	15 28 29 32
MEM_B_CMD	MEM_50S	MEM_CMD	MEM B CAS L	15 28 29 32
MEM_B_CMD	MEM_50S	MEM_CMD	MEM B WE L	15 28 29 32
MEM_B_DQ_BYTE0	MEM_55S	MEM_DATA	MEM B DQ<7..0>	15 28
MEM_B_DQ_BYTE1	MEM_55S	MEM_DATA	MEM B DQ<15..8>	15 28
MEM_B_DQ_BYTE2	MEM_55S	MEM_DATA	MEM B DQ<23..16>	15 28
MEM_B_DQ_BYTE3	MEM_55S	MEM_DATA	MEM B DQ<31..24>	15 28
MEM_B_DQ_BYTE4	MEM_55S	MEM_DATA	MEM B DQ<39..32>	15 29
MEM_B_DQ_BYTE5	MEM_55S	MEM_DATA	MEM B DQ<47..40>	15 29
MEM_B_DQ_BYTE6	MEM_55S	MEM_DATA	MEM B DQ<55..48>	15 29
MEM_B_DQ_BYTE7	MEM_55S	MEM_DATA	MEM B DQ<63..56>	15 29
MEM_B_DQ_BYTE0	MEM_55S	MEM_DATA	MEM B DM<0>	15 28
MEM_B_DQ_BYTE1	MEM_55S	MEM_DATA	MEM B DM<1>	15 28
MEM_B_DQ_BYTE2	MEM_55S	MEM_DATA	MEM B DM<2>	15 28
MEM_B_DQ_BYTE3	MEM_55S	MEM_DATA	MEM B DM<3>	15 28
MEM_B_DQ_BYTE4	MEM_55S	MEM_DATA	MEM B DM<4>	15 29
MEM_B_DQ_BYTE5	MEM_55S	MEM_DATA	MEM B DM<5>	15 29
MEM_B_DQ_BYTE6	MEM_55S	MEM_DATA	MEM B DM<6>	15 29
MEM_B_DQ_BYTE7	MEM_55S	MEM_DATA	MEM B DM<7>	15 29
MEM_B_QDS0	MEM_70D	MEM_QDS	MEM B QDS P<0>	15 28
MEM_B_QDS0	MEM_70D	MEM_QDS	MEM B QDS N<0>	15 28
MEM_B_QDS1	MEM_70D	MEM_QDS	MEM B QDS P<1>	15 28
MEM_B_QDS1	MEM_70D	MEM_QDS	MEM B QDS N<1>	15 28
MEM_B_QDS2	MEM_70D	MEM_QDS	MEM B QDS P<2>	15 28
MEM_B_QDS2	MEM_70D	MEM_QDS	MEM B QDS N<2>	15 28
MEM_B_QDS3	MEM_70D	MEM_QDS	MEM B QDS P<3>	15 28
MEM_B_QDS3	MEM_70D	MEM_QDS	MEM B QDS N<3>	15 28
MEM_B_QDS4	MEM_70D	MEM_QDS	MEM B QDS P<4>	15 29
MEM_B_QDS4	MEM_70D	MEM_QDS	MEM B QDS N<4>	15 29
MEM_B_QDS5	MEM_70D	MEM_QDS	MEM B QDS P<5>	15 29
MEM_B_QDS5	MEM_70D	MEM_QDS	MEM B QDS N<5>	15 29
MEM_B_QDS6	MEM_70D	MEM_QDS	MEM B QDS P<6>	15 29
MEM_B_QDS6	MEM_70D	MEM_QDS	MEM B QDS N<6>	15 29
MEM_B_QDS7	MEM_70D	MEM_QDS	MEM B QDS P<7>	15 29
MEM_B_QDS7	MEM_70D	MEM_QDS	MEM B QDS N<7>	15 29
MCP_MEM_COMP	MCP_MEM_COMP	MCP_MEM_COMP	MCP MEM COMP VDD	15
MCP_MEM_COMP	MCP_MEM_COMP	MCP_MEM_COMP	MCP MEM COMP GND	15

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Memory Constraints			
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PCI-Express

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PCIE_90D	*	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF
CLK_PCIE_100D	*	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PCIE	*	=3X_DIELECTRIC	?
CLK_PCIE	*	20 MIL	?
MCP_PEX_COMP	*	8 MIL	?

SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.3

NEED PCIe Gen1/Gen2 notes!

Analog Video Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
CRT_50S	*	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CRT	*	20 MIL	?
CRT_2CRT	*	15 MIL	?
CRT_2CLK	*	50 MIL	?
CRT_2SWITCHER	*	250 MIL	?
CRT_SYNC	*	=4x_DIELECTRIC	?
MCP_DAC_COMP	*	=2x_DIELECTRIC	?

CRT signal single-ended impedance varies by location:

- 37.5-ohm from MCP to first termination resistor.
- 50-ohm from first to second termination resistor.
- 75-ohm from output of three-pole filter to connector (if possible).

R/G/B signals should be matched as close as possible and < 10 inches.  
SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.4.1.

Digital Video Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
DP_90D	*	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF
LVDS_100D	*	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
MCP_DV_COMP	*	Y	20 MIL	20 MIL	=STANDARD	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
DISPLAYPORT	*	=3x_DIELECTRIC	?
LVDS	*	=3x_DIELECTRIC	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
DISPLAYPORT	TOP,BOTTOM	=4x_DIELECTRIC	?
LVDS	TOP,BOTTOM	=4x_DIELECTRIC	?

LVDS intra-pair matching should be 5 mils. Pairs should be matched within 100 mils.  
NOTE: NV DG recommends 90 ohm differential for LVDS, but cable/display assume 100 ohm.  
DisplayPort/TMDS intra-pair matching should be 5 ps. Inter-pair matching should be within 100 ps.  
DisplayPort AUX CH intra-pair matching should be 5 ps. No relationship to other signals.  
Max trace length: LVDS 10 inches, DP 8.5 inches.  
SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.4.2

SATA Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
SATA_90D	*	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SATA	*	=3x_DIELECTRIC	?
SATA_TERM	*	8 MIL	?

SATA intra-pair matching should be 1 ps.  
Max trace length: 12 inches for SATA Gen1/Gen2, TBD for SATA Gen3.  
SOURCE: MCP89 Interface DG (DG-04625-001\_v0.9), Section 2.6

MCP89 Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE		
	PHYSICAL	SPACING	
	PCIE_90D	PCIE	PEG R2D P<15..0>
	PCIE_90D	PCIE	PEG R2D N<15..0>
PEG_R2D	PCIE_90D	PCIE	PEG R2D C P<15..0>
	PCIE_90D	PCIE	PEG R2D C N<15..0>
PEG_D2R	PCIE_90D	PCIE	PEG D2R P<15..0>
	PCIE_90D	PCIE	PEG D2R N<15..0>
	PCIE_90D	PCIE	PEG D2R C P<15..0>
	PCIE_90D	PCIE	PEG D2R C N<15..0>
	PCIE_90D	PCIE	PCIE AP R2D P
	PCIE_90D	PCIE	PCIE AP R2D N
PCIE_AP_R2D	PCIE_90D	PCIE	PCIE AP R2D C P
	PCIE_90D	PCIE	PCIE AP R2D C N
PCIE_AP_D2R	PCIE_90D	PCIE	PCIE AP D2R P
	PCIE_90D	PCIE	PCIE AP D2R N
	PCIE_90D	PCIE	PCIE ENET R2D P
	PCIE_90D	PCIE	PCIE ENET R2D N
PCIE_ENET_R2D	PCIE_90D	PCIE	PCIE ENET R2D C P
	PCIE_90D	PCIE	PCIE ENET R2D C N
PCIE_ENET_D2R	PCIE_90D	PCIE	PCIE ENET D2R P
	PCIE_90D	PCIE	PCIE ENET D2R N
	PCIE_90D	PCIE	PCIE ENET D2R C P
	PCIE_90D	PCIE	PCIE ENET D2R C N
	PCIE_90D	PCIE	PCIE FW R2D P
	PCIE_90D	PCIE	PCIE FW R2D N
PCIE_FW_R2D	PCIE_90D	PCIE	PCIE FW R2D C P
	PCIE_90D	PCIE	PCIE FW R2D C N
PCIE_FW_D2R	PCIE_90D	PCIE	PCIE FW D2R P
	PCIE_90D	PCIE	PCIE FW D2R N
	PCIE_90D	PCIE	PCIE FW D2R C P
	PCIE_90D	PCIE	PCIE FW D2R C N
MCP_PE0_BECLK	CLK_PCIE_100D	CLK_PCIE	PEG CLK100M P
	CLK_PCIE_100D	CLK_PCIE	PEG CLK100M N
MCP_PE1_BECLK	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M AP P
	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M AP N
MCP_PE2_BECLK	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M ENET P
	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M ENET N
MCP_PE3_BECLK	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M FW P
	CLK_PCIE_100D	CLK_PCIE	PCIE CLK100M FW N
MCP_PEX_CLK_COMP		MCP_PEX_COMP	MCP PEX0 TERMP
CRT_RED	CRT_50S	CRT	CRT IG R C PR
CRT_GREEN	CRT_50S	CRT	CRT IG G Y Y
CRT_BLUE	CRT_50S	CRT	CRT IG B COMP PB
CRT_SYNC	CRT_50S	CRT_SYNC	CRT IG HSYNC
CRT_SYNC	CRT_50S	CRT_SYNC	CRT IG VSYNC
MCP_DAC_RSET		MCP_DAC_COMP	MCP TV_DAC RSET
MCP_DAC_VREF		MCP_DAC_COMP	MCP TV_DAC VREF
DP_INT_ML	DP_90D	DISPLAYPORT	DP IG ML1 P<1..0>
DP_INT_ML	DP_90D	DISPLAYPORT	DP IG ML1 N<1..0>
DP_INT_AUX_CH	DP_90D	DISPLAYPORT	DP IG AUX CH1 P
DP_INT_AUX_CH	DP_90D	DISPLAYPORT	DP IG AUX CH1 N
DP_EXT_ML	DP_90D	DISPLAYPORT	DP IG ML0 P<3..0>
DP_EXT_ML	DP_90D	DISPLAYPORT	DP IG ML0 N<3..0>
DP_EXT_AUX_CH	DP_90D	DISPLAYPORT	DP IG AUX CH0 P
DP_EXT_AUX_CH	DP_90D	DISPLAYPORT	DP IG AUX CH0 N
MCP_TMDS0_RSET	MCP_DV_COMP		MCP TMDS0 RSET
MCP_TMDS0_VPROBE			MCP TMDS0 VPROBE
LVDS_IG_A_CLK	LVDS_100D	LVDS	LVDS IG A CLK P
LVDS_IG_A_CLK	LVDS_100D	LVDS	LVDS IG A CLK N
LVDS_IG_A_DATA	LVDS_100D	LVDS	LVDS IG A DATA P<2..0>
LVDS_IG_A_DATA	LVDS_100D	LVDS	LVDS IG A DATA N<2..0>
LVDS_IG_A_DATA3	LVDS_100D	LVDS	LVDS IG A DATA P<3>
LVDS_IG_A_DATA3	LVDS_100D	LVDS	LVDS IG A DATA N<3>
LVDS_IG_B_CLK	LVDS_100D	LVDS	LVDS IG B CLK P
LVDS_IG_B_CLK	LVDS_100D	LVDS	LVDS IG B CLK N
LVDS_IG_B_DATA	LVDS_100D	LVDS	LVDS IG B DATA P<2..0>
LVDS_IG_B_DATA	LVDS_100D	LVDS	LVDS IG B DATA N<2..0>
LVDS_IG_B_DATA3	LVDS_100D	LVDS	LVDS IG B DATA P<3>
LVDS_IG_B_DATA3	LVDS_100D	LVDS	LVDS IG B DATA N<3>
MCP_IFPAB_RSET	MCP_DV_COMP		MCP IFPAB RSET
MCP_IFPAB_VPROBE			MCP IFPAB VPROBE
SATA_HDD_R2D	SATA_90D	SATA	SATA HDD R2D C P
	SATA_90D	SATA	SATA HDD R2D C N
	SATA_90D	SATA	SATA HDD R2D P
	SATA_90D	SATA	SATA HDD R2D N
SATA_HDD_D2R	SATA_90D	SATA	SATA HDD D2R P
	SATA_90D	SATA	SATA HDD D2R N
	SATA_90D	SATA	SATA HDD D2R C P
	SATA_90D	SATA	SATA HDD D2R C N
SATA_ODD_R2D	SATA_90D	SATA	SATA ODD R2D C P
	SATA_90D	SATA	SATA ODD R2D C N
	SATA_90D	SATA	SATA ODD R2D P
	SATA_90D	SATA	SATA ODD R2D N
SATA_ODD_D2R	SATA_90D	SATA	SATA ODD D2R P
	SATA_90D	SATA	SATA ODD D2R N
	SATA_90D	SATA	SATA ODD D2R C P
	SATA_90D	SATA	SATA ODD D2R C N
MCP_SATA_TERM		SATA_TERM	MCP SATA TERMP

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MCP Constraints 1

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DRAWING NUMBER  
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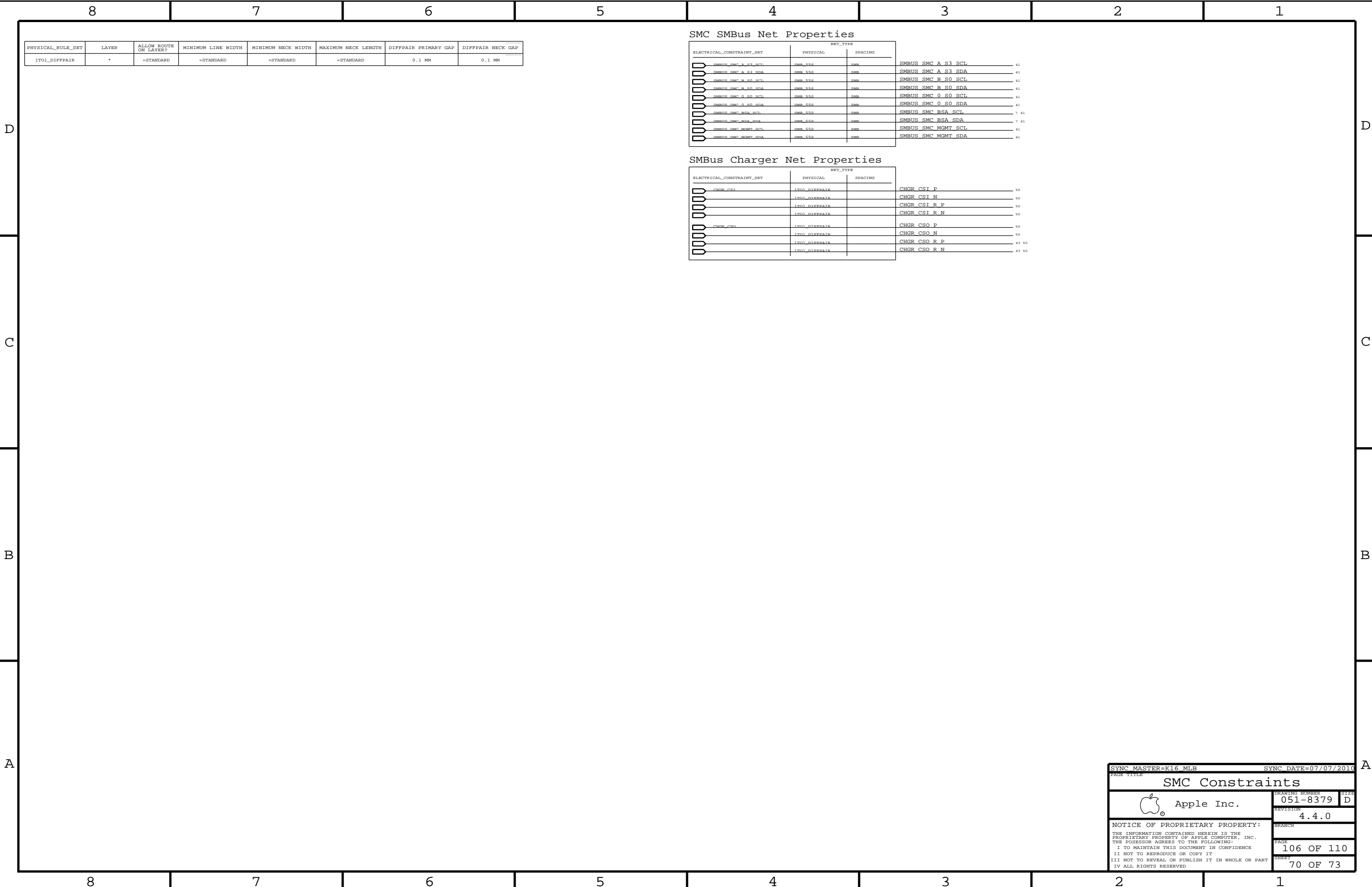
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PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFFAIR PRIMARY GAP	DIFFFAIR NECK GAP
SENSE_I101_55S	*	=1:1_DIFFFAIR	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=1:1_DIFFFAIR	=1:1_DIFFFAIR
THERM_I101_55S	*	=1:1_DIFFFAIR	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=1:1_DIFFFAIR	=1:1_DIFFFAIR
DIFFFAIR	*	=1:1_DIFFFAIR			=1:1_DIFFFAIR	=1:1_DIFFFAIR	=1:1_DIFFFAIR

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SENSE	*	=1:1_SPACING	?
THERM	*	=1:1_SPACING	?
AUDIO	*	=1:1_SPACING	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
ENETCONN	*	25 MILS	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
GND	*	=STANDARD	?
MEM_POWER	*	=STANDARD	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
GND_P2MM	*	0.20 MM	1000
PWR_P2MM	*	0.20 MM	1000

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	GND	*	GND_P2MM
MEM_CMD	GND	*	GND_P2MM
MEM_CTRL	GND	*	GND_P2MM
MEM_DATA	GND	*	GND_P2MM
MEM_DQS	GND	*	GND_P2MM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	MEM_POWER	*	PWR_P2MM
MEM_CMD	MEM_POWER	*	PWR_P2MM
MEM_CTRL	MEM_POWER	*	PWR_P2MM
MEM_DATA	MEM_POWER	*	PWR_P2MM
MEM_DQS	MEM_POWER	*	PWR_P2MM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CLK_PCIE	GND	*	GND_P2MM
PCIE	GND	*	GND_P2MM
SATA	GND	*	GND_P2MM
USB	GND	*	GND_P2MM
CLK_PCIE	SB_POWER	*	PWR_P2MM
SATA	SB_POWER	*	PWR_P2MM
USB	SB_POWER	*	PWR_P2MM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CLK_FSB	GND	*	GND_P2MM
CPU_COMP	GND	*	GND_P2MM
CPU_GTLREF	GND	*	GND_P2MM
CPU_VCCSENSE	GND	*	GND_P2MM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
LVDS	GND	*	GND_P2MM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
ENET_MDI	GND	*	GND_P2MM















## SD CARD READER LAYOUT RELAXATIONS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
SD_55S OVERRIDE	* OVERRIDE	OVERRIDE	=STANDARD OVERRIDE	OVERRIDE	OVERRIDE	OVERRIDE	OVERRIDE

## MCP Fanout Constraint Relaxations

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MEM_40S OVERRIDE	* OVERRIDE	OVERRIDE	OVERRIDE	0.09 MM OVERRIDE	5.8 MM OVERRIDE	OVERRIDE	OVERRIDE
MCP_DV_COMP OVERRIDE	TOP OVERRIDE	OVERRIDE	OVERRIDE	0.1 MM OVERRIDE	500 MIL OVERRIDE	OVERRIDE	OVERRIDE
MCP_MEM_COMP OVERRIDE	TOP OVERRIDE	OVERRIDE	OVERRIDE	0.1 MM OVERRIDE	500 MIL OVERRIDE	OVERRIDE	OVERRIDE
MCP_MII_COMP OVERRIDE	TOP OVERRIDE	OVERRIDE	OVERRIDE	0.1 MM OVERRIDE	500 MIL OVERRIDE	OVERRIDE	OVERRIDE
MCP_USB_RBIA5 OVERRIDE	TOP OVERRIDE	OVERRIDE	OVERRIDE	0.1 MM OVERRIDE	500 MIL OVERRIDE	OVERRIDE	OVERRIDE
MCP_DV_COMP OVERRIDE	* OVERRIDE	OVERRIDE	OVERRIDE	0.25 MM OVERRIDE	250 MIL OVERRIDE	OVERRIDE	OVERRIDE

## Misc Net Properties

ELECTRICAL_CONSTRAINT_SET		NET_TYPE			
		PHYSICAL	SPACING		
	(USB_EXTN)	USB_90D	USB	USB_EXTN_MUXED_P	36 68
	(USB_EXTN)	USB_90D	USB	USB_EXTN_MUXED_N	36 68
	(USB_EXTN)	USB_90D	USB	USB_LT1_P	36
	(USB_EXTN)	USB_90D	USB	USB_LT1_N	36
	(USB_TPAD)	USB_90D	USB	USB_TPAD_P	18 46 68
	(USB_TPAD)	USB_90D	USB	USB_TPAD_N	18 46 68
	(USB_TPAD)	USB_90D	USB	USB_TPAD_CONN_P	7 46
	(USB_TPAD)	USB_90D	USB	USB_TPAD_CONN_N	7 46
	SMR2C_SMC_MGMT_SDA	SMR_55S	SMR	I2C_SMC_SMS_SDA_R	
	SMR2C_SMC_MGMT_SCL	SMR_55S	SMR	I2C_SMC_SMS_SCL_R	
		SMR_55S	SMR	I2C_TCON_SCL	41
		SMR_55S	SMR	I2C_TCON_SDA	41
		SMR_55S	SMR	I2C_TCON_SCL_CONN	
		SMR_55S	SMR	I2C_TCON_SDA_CONN	





## Graphics Net Properties


ELECTRICAL_CONSTRAINT_SET		NET_TYPE			
		PHYSICAL	SPACING		
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		DP_90D	DISPLAYPORT	DP INT ML P<1..0>	9 59
		DP_90D	DISPLAYPORT	DP INT ML N<1..0>	9 59
		DP_90D	DISPLAYPORT	DP INT ML C P<1..0>	59
		DP_90D	DISPLAYPORT	DP INT ML C N<1..0>	59
		DP_90D	DISPLAYPORT	DP INT ML F P<1..0>	7 59
		DP_90D	DISPLAYPORT	DP INT ML F N<1..0>	7 59
		DP_90D	DISPLAYPORT	DP INT AUX CH C P	7 59
		DP_90D	DISPLAYPORT	DP INT AUX CH C N	7 59
		DP_90D	DISPLAYPORT	DP INT AUX CH P	9 59
		DP_90D	DISPLAYPORT	DP INT AUX CH N	9 59
<div><div></div><div></div><div></div><div></div><div></div><div></div></div>	(DP_EXT_ML)	DP_90D	DISPLAYPORT	DP EXT ML P<3..0>	9 61
		DP_90D	DISPLAYPORT	DP EXT ML N<3..0>	9 61
		DP_90D	DISPLAYPORT	DP EXT ML C P<3..0>	61
		DP_90D	DISPLAYPORT	DP EXT ML C N<3..0>	61
		DP_90D	DISPLAYPORT	DP EXT ML F P<3..0>	61
		DP_90D	DISPLAYPORT	DP EXT ML F N<3..0>	61
<div><div></div><div></div><div></div><div></div></div>	(DP_EXT_AUX_CH)	DP_90D	DISPLAYPORT	DP EXT AUX CH C P	9 61
		DP_90D	DISPLAYPORT	DP EXT AUX CH C N	9 61

## Power Net Properties

ELECTRICAL_CONSTRAINT_SET		NET_TYPE			
		PHYSICAL	SPACING		
	CPUITHMSNS_D2	THERM 1T01 55S	THERM	DRAMTHMSNS D2 P	44
		THERM 1T01 55S	THERM	DRAMTHMSNS D2 N	44
	CPU_THERMD	THERM 1T01 55S	THERM	CPU_THERMD P	10 44
		THERM 1T01 55S	THERM	CPU_THERMD N	10 44
	MCPTHMSNS_D2	THERM 1T01 55S	THERM	MLBR THMDIODE P	44
		THERM 1T01 55S	THERM	MLBR THMDIODE N	44
	MCP_THMDIODE	THERM 1T01 55S	THERM	MCP_THMDIODE P	19 44
		THERM 1T01 55S	THERM	MCP_THMDIODE N	19 44
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	ISNS 1V5 S3 P	42 52
		SENSE 1T01 55S	SENSE	ISNS 1V5 S3 N	42 52
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	ISNS AIRPORT P	34 42
		SENSE 1T01 55S	SENSE	ISNS AIRPORT N	34 42
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	ISNS CSREG P	43
		SENSE 1T01 55S	SENSE	ISNS CSREG N	43
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	ISNS HDD P	35 42
		SENSE 1T01 55S	SENSE	ISNS HDD N	35 42
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	ISNS LCDBKLT P	42 62
		SENSE 1T01 55S	SENSE	ISNS LCDBKLT N	42 62
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	CPUVTT50 CS P	55
		SENSE 1T01 55S	SENSE	CPUVTT50 CS N	55
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	IMVP6 CS P	53
		SENSE 1T01 55S	SENSE	IMVP6 CS N	53
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	IMVP6 CS R P	53
		SENSE 1T01 55S	SENSE	IMVP6 CS R N	53
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	CPU_VTTSSENSE P	55
		SENSE 1T01 55S	SENSE	CPU_VTTSSENSE N	55
	SENSE_DIFFPAIR	SENSE 1T01 55S	SENSE	MCPCORE0 VSEN P	22 54
		SENSE 1T01 55S	SENSE	MCPCORE0 VSEN N	22 54
			MEM_POWER	PP1V5R1V35 S3	7 8
			SB_POWER	PP3V3 S5	7 8 57
			SB_POWER	PP3V3 S0	7 8 57
			SB_POWER	PP1V5 S0	7 8 57
			GND	GND	7 8

## Audio Net Properties

ELECTRICAL_CONSTRAINT_SET		NET_TYPE			
		PHYSICAL	SPACING		
	SPKRAMP_INR	DIEFEPAIR	AUDIO	SPKRAMP_INR_P	7 37 48
		DIEFEPAIR	AUDIO	SPKRAMP_INR_N	7 37 48
	MAX98300_R	DIEFEPAIR	AUDIO	MAX98300_R_P	48
		DIEFEPAIR	AUDIO	MAX98300_R_N	48

8	7	6	5	4	3	2	1
K99 BOARD-SPECIFIC SPACING & PHYSICAL CONSTRAINTS							
BOARD LAYERS				BOARD AREAS		BOARD UNITS (MIL or MM)	ALLEGRO VERSION
TOP,ISL2,ISL3,ISL4,ISL5,ISL6,ISL7,ISL8,ISL9,ISL10,ISL11,BOTTOM				NO_TYPE,BGA		MM	15.5.1
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
DEFAULT	*	Y	0.100 MM	0.076 MM	30 MM	0 MM	0 MM
STANDARD	*	Y	=DEFAULT	=DEFAULT	12.7 MM	=DEFAULT	=DEFAULT
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
27P4_OHM_SE	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
27P4_OHM_SE	ISL3,ISL10	Y	0.250 MM	0.250 MM			
27P4_OHM_SE	ISL4,ISL9	Y	0.250 MM	0.250 MM			
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
40_OHM_SE	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
40_OHM_SE	TOP,BOTTOM	Y	0.170 MM	0.170 MM			
40_OHM_SE	ISL3,ISL4,ISL9,ISL10	Y	0.140 MM	0.140 MM			
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
50_OHM_SE	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
50_OHM_SE	TOP,BOTTOM	Y	0.110 MM	0.110 MM			
50_OHM_SE	ISL3,ISL4,ISL9,ISL10	Y	0.090 MM	0.090 MM			
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
55_OHM_SE	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
55_OHM_SE	TOP,BOTTOM	Y	0.090 MM	0.090 MM			
55_OHM_SE	ISL3,ISL4,ISL9,ISL10	Y	0.076 MM	0.076 MM			
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
70_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
70_OHM_DIFF	TOP,BOTTOM	Y	0.175 MM	0.175 MM		0.130 MM	0.130 MM
70_OHM_DIFF	ISL3,ISL10	Y	0.135 MM	0.135 MM		0.130 MM	0.130 MM
70_OHM_DIFF	ISL4,ISL9	Y	0.155 MM	0.155 MM		0.130 MM	0.130 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
80_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
80_OHM_DIFF	TOP,BOTTOM	Y	0.140 MM	0.140 MM		0.160 MM	0.160 MM
80_OHM_DIFF	ISL3,ISL10	Y	0.109 MM	0.109 MM		0.160 MM	0.160 MM
80_OHM_DIFF	ISL4,ISL9	Y	0.125 MM	0.125 MM		0.160 MM	0.160 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
75_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
75_OHM_DIFF	TOP,BOTTOM	Y	0.160 MM	0.160 MM		0.160 MM	0.160 MM
75_OHM_DIFF	ISL3,ISL10	Y	0.120 MM	0.120 MM		0.140 MM	0.140 MM
75_OHM_DIFF	ISL4,ISL9	Y	0.140 MM	0.140 MM		0.140 MM	0.140 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
90_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
90_OHM_DIFF	TOP,BOTTOM	Y	0.115 MM	0.115 MM		0.210 MM	0.210 MM
90_OHM_DIFF	ISL3,ISL10	Y	0.089 MM	0.089 MM		0.210 MM	0.210 MM
90_OHM_DIFF	ISL4,ISL9	Y	0.105 MM	0.105 MM		0.210 MM	0.210 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
95_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
95_OHM_DIFF	TOP,BOTTOM	Y	0.115 MM	0.115 MM		0.210 MM	0.210 MM
95_OHM_DIFF	ISL3,ISL10	Y	0.089 MM	0.089 MM		0.210 MM	0.210 MM
95_OHM_DIFF	ISL4,ISL9	Y	0.105 MM	0.105 MM		0.210 MM	0.210 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
100_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
100_OHM_DIFF	TOP,BOTTOM	Y	0.091 MM	0.091 MM		0.200 MM	0.200 MM
100_OHM_DIFF	ISL3,ISL10	Y	0.075 MM	0.075 MM		0.300 MM	0.300 MM
100_OHM_DIFF	ISL4,ISL9	Y	0.085 MM	0.085 MM		0.200 MM	0.200 MM
PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
1:1_DIFFPAIR	*	Y	=STANDARD	=STANDARD	=STANDARD	0.1 MM	0.1 MM
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
DEFAULT				*	0.1 MM	?	
STANDARD				*	=DEFAULT	?	
BGA_P1MM				*	0.1 MM	?	
BGA_P2MM				*	0.2 MM	?	
BGA_P3MM				*	0.3 MM	?	
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
1:1_SPACING				*	0.1 MM	?	
1.5:1_SPACING				*	0.15 MM	?	
1.8:1_SPACING				*	0.18 MM	?	
2:1_SPACING				*	0.2 MM	?	
2.28:1_SPACING				*	0.228 MM	?	
2.5:1_SPACING				*	0.25 MM	?	
3:1_SPACING				*	0.3 MM	?	
4:1_SPACING				*	0.4 MM	?	
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
GND				*	=STANDARD	?	
PPIV5_MEM				*	=STANDARD	?	
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
GND_P2MM				*	0.2 MM	1000	
PWR_P2MM				*	0.2 MM	1000	
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
NB_STATIC				*	=STANDARD	?	
SPACING_RULE_SET				LAYER	LINE-TO-LINE SPACING	WEIGHT	
2X_DIELECTRIC				*	0.140 MM	?	
3X_DIELECTRIC				*	0.210 MM	?	
4X_DIELECTRIC				*	0.280 MM	?	
1.5X_DIELECTRIC				*	0.105 MM	?	
5X_DIELECTRIC				*	0.350 MM	?	
SYNC MASTER=K16 MLB SYNC DATE=07/07/2010							
K99 RULE DEFINITIONS							
 Apple Inc.				DRAWING NUMBER		SIZE	
				051-8379		D	
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8		7		6		5		4		3		2		1			
1UF 0402 CAPACITOR VENDOR TABLES FOR ACOUSTICS																	
SAMSUNG						MURATA						TAIYO YUDEN					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
138S0629	2	CAP, 1UF, 6.3V, 10%, 0402	C7303,C7360	CRITICAL	SS_CAP_1UF	138S0628	2	CAP, 1UF, 6.3V, 10%, 0402	C7303,C7360	CRITICAL	MU_CAP_1UF	138S0630	2	CAP, 1UF, 6.3V, 10%, 0402	C7303,C7360	CRITICAL	TY_CAP_1UF
2.2UF 0402 CAPACITOR VENDOR TABLES FOR ACOUSTICS																	
SAMSUNG						MURATA						TAIYO YUDEN					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1241,C1242,C1243,C1244,C1245,C1246,C1247,C1248,C1249,C1250	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1241,C1242,C1243,C1244,C1245,C1246,C1247,C1248,C1249,C1250	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1241,C1242,C1243,C1244,C1245,C1246,C1247,C1248,C1249,C1250	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1261,C1262,C1263,C1264,C1265,C1266,C1267,C1268,C1269,C1270	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1261,C1262,C1263,C1264,C1265,C1266,C1267,C1268,C1269,C1270	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C1261,C1262,C1263,C1264,C1265,C1266,C1267,C1268,C1269,C1270	CRITICAL	TY_CAP_2_2UF
138S0632	8	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1281,C1282,C1283,C1284,C1285,C1286,C1287,C1288,C1289	CRITICAL	SS_CAP_2_2UF	138S0633	8	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1281,C1282,C1283,C1284,C1285,C1286,C1287,C1288,C1289	CRITICAL	MU_CAP_2_2UF	138S0634	8	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1281,C1282,C1283,C1284,C1285,C1286,C1287,C1288,C1289	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3901,C3902,C3903,C3904,C3905,C3906,C3907,C3908,C3909,C3910	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3901,C3902,C3903,C3904,C3905,C3906,C3907,C3908,C3909,C3910	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3901,C3902,C3903,C3904,C3905,C3906,C3907,C3908,C3909,C3910	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3911,C3912,C3913,C3914,C3915,C3916,C3917,C3918,C3919,C3920	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3911,C3912,C3913,C3914,C3915,C3916,C3917,C3918,C3919,C3920	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3911,C3912,C3913,C3914,C3915,C3916,C3917,C3918,C3919,C3920	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3921,C3922,C3923,C3924,C3925,C3926,C3927,C3928,C3929,C3930	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3921,C3922,C3923,C3924,C3925,C3926,C3927,C3928,C3929,C3930	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3921,C3922,C3923,C3924,C3925,C3926,C3927,C3928,C3929,C3930	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3931,C3932,C3933,C3934,C3935,C3936,C3937,C3938,C3939,C3940	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3931,C3932,C3933,C3934,C3935,C3936,C3937,C3938,C3939,C3940	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3931,C3932,C3933,C3934,C3935,C3936,C3937,C3938,C3939,C3940	CRITICAL	TY_CAP_2_2UF
138S0632	12	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1286,C1287,C1288,C1291,C1292,C1293,C1294,C1295,C1296	CRITICAL	SS_CAP_2_2UF	138S0633	12	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1286,C1287,C1288,C1291,C1292,C1293,C1294,C1295,C1296	CRITICAL	MU_CAP_2_2UF	138S0634	12	CAP, 2.2UF, 6.3V, 20%, 0402	C1280,C1286,C1287,C1288,C1291,C1292,C1293,C1294,C1295,C1296	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3501,C3504,C3505,C3510,C3511,C3512,C3514,C3515,C3516,C3517	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3501,C3504,C3505,C3510,C3511,C3512,C3514,C3515,C3516,C3517	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3501,C3504,C3505,C3510,C3511,C3512,C3514,C3515,C3516,C3517	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3521,C3524,C3525,C3530,C3531,C3534,C3535,C3536,C3537,C3538	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3521,C3524,C3525,C3530,C3531,C3534,C3535,C3536,C3537,C3538	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3521,C3524,C3525,C3530,C3531,C3534,C3535,C3536,C3537,C3538	CRITICAL	TY_CAP_2_2UF
138S0632	8	CAP, 2.2UF, 6.3V, 20%, 0402	C3543,C3544,C3545,C3546,C3550,C3551,C3554,C3555,C3556,C3557	CRITICAL	SS_CAP_2_2UF	138S0633	8	CAP, 2.2UF, 6.3V, 20%, 0402	C3543,C3544,C3545,C3546,C3550,C3551,C3554,C3555,C3556,C3557	CRITICAL	MU_CAP_2_2UF	138S0634	8	CAP, 2.2UF, 6.3V, 20%, 0402	C3543,C3544,C3545,C3546,C3550,C3551,C3554,C3555,C3556,C3557	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3601,C3604,C3605,C3610,C3611,C3612,C3614,C3615,C3616,C3617	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3601,C3604,C3605,C3610,C3611,C3612,C3614,C3615,C3616,C3617	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3601,C3604,C3605,C3610,C3611,C3612,C3614,C3615,C3616,C3617	CRITICAL	TY_CAP_2_2UF
138S0632	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3621,C3624,C3625,C3630,C3631,C3634,C3635,C3636,C3637,C3638	CRITICAL	SS_CAP_2_2UF	138S0633	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3621,C3624,C3625,C3630,C3631,C3634,C3635,C3636,C3637,C3638	CRITICAL	MU_CAP_2_2UF	138S0634	10	CAP, 2.2UF, 6.3V, 20%, 0402	C3621,C3624,C3625,C3630,C3631,C3634,C3635,C3636,C3637,C3638	CRITICAL	TY_CAP_2_2UF
138S0632	9	CAP, 2.2UF, 6.3V, 20%, 0402	C3643,C3644,C3645,C3646,C3650,C3651,C3654,C3655,C3656,C3657	CRITICAL	SS_CAP_2_2UF	138S0633	9	CAP, 2.2UF, 6.3V, 20%, 0402	C3643,C3644,C3645,C3646,C3650,C3651,C3654,C3655,C3656,C3657	CRITICAL	MU_CAP_2_2UF	138S0634	9	CAP, 2.2UF, 6.3V, 20%, 0402	C3643,C3644,C3645,C3646,C3650,C3651,C3654,C3655,C3656,C3657	CRITICAL	TY_CAP_2_2UF
10UF 0603 CAPACITOR VENDOR TABLES FOR ACOUSTICS																	
SAMSUNG						MURATA						TAIYO YUDEN					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
138S0626	1	CAP, 10UF, 6.3V, 20%, 0603	C1280	CRITICAL	SS_CAP_10UF	138S0625	1	CAP, 10UF, 6.3V, 20%, 0603	C1280	CRITICAL	MU_CAP_10UF	138S0627	1	CAP, 10UF, 6.3V, 20%, 0603	C1280	CRITICAL	TY_CAP_10UF
138S0626	8	CAP, 10UF, 6.3V, 20%, 0603	C3600,C4600,C5020,C7200,C7205,C7340,C7350,C7360,C7365,C7370	CRITICAL	SS_CAP_10UF	138S0625	8	CAP, 10UF, 6.3V, 20%, 0603	C3600,C4600,C5020,C7200,C7205,C7340,C7350,C7360,C7365,C7370	CRITICAL	MU_CAP_10UF	138S0627	8	CAP, 10UF, 6.3V, 20%, 0603	C3600,C4600,C5020,C7200,C7205,C7340,C7350,C7360,C7365,C7370	CRITICAL	TY_CAP_10UF
138S0626	8	CAP, 10UF, 6.3V, 20%, 0603	C3612,C3646,C3650,C3920,C3950,C3957,C3960,C3961,C3962,C3963	CRITICAL	SS_CAP_10UF	138S0625	8	CAP, 10UF, 6.3V, 20%, 0603	C3612,C3646,C3650,C3920,C3950,C3957,C3960,C3961,C3962,C3963	CRITICAL	MU_CAP_10UF	138S0627	8	CAP, 10UF, 6.3V, 20%, 0603	C3612,C3646,C3650,C3920,C3950,C3957,C3960,C3961,C3962,C3963	CRITICAL	TY_CAP_10UF
22UF 0603 CAPACITOR VENDOR TABLES FOR ACOUSTICS																	
SAMSUNG						MURATA						TAIYO YUDEN					
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
138S0635	4	CAP, 22UF, 6.3V, 20%, 0603	C1210,C1214,C1217,C1218	CRITICAL	SS_CAP_22UF	138S0676	4	CAP, 22UF, 6.3V, 20%, 0603	C1210,C1214,C1217,C1218	CRITICAL	MU_CAP_22UF	138S0688	4	CAP, 22UF, 6.3V, 20%, 0603	C1210,C1214,C1217,C1218	CRITICAL	TY_CAP_22UF
138S0635	3	CAP, 22UF, 6.3V, 20%, 0603	C1223,C1226,C1227	CRITICAL	SS_CAP_22UF	138S0676	3	CAP, 22UF, 6.3V, 20%, 0603	C1223,C1226,C1227	CRITICAL	MU_CAP_22UF	138S0688	3	CAP, 22UF, 6.3V, 20%, 0603	C1223,C1226,C1227	CRITICAL	TY_CAP_22UF
138S0635	5	CAP, 22UF, 6.3V, 20%, 0603	C1230,C4602,C7360,C7361,C4640	CRITICAL	SS_CAP_22UF	138S0676	5	CAP, 22UF, 6.3V, 20%, 0603	C1230,C4602,C7360,C7361,C4640	CRITICAL	MU_CAP_22UF	138S0688	5	CAP, 22UF, 6.3V, 20%, 0603	C1230,C4602,C7360,C7361,C4640	CRITICAL	TY_CAP_22UF
Acoustic Cap BOM Config Tables																	
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