

"Pily"

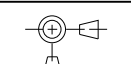
REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD	ENG APPD
L		539149	PRODUCTION RELEASED	10/15/07	06/22/04

10/15/07

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.

PAGE	PDF	CIRCUIT
1 ^{JD}	1	TABLE OF CONTENTS
2 ^{JD}	2	SYSTEM BLOCK DIAGRAM
3 ^{MY}	3	POWER BLOCK DIAGRAM
4 ^{JD}	4	TABLE ITEMS & REVISION HISTORY
5 ^{JD}	5	FUNC TEST
6 ^{MY}	6	POWER CONNECTOR / POWER ALIAS
7 ^{JD}	7	CPU - BUS INTERFACE
8 ^{JD}	8	CPU - PWR & GND
9 ^{JD}	9	CPU - DECAPS
10 ^{JD}	10	CPU - THERMAL SENSOR
11 ^{JD}	11	CPU - ITP CONN
12 ^{JH}	12	NB - CPU INTERFACE
13 ^{JH}	13	NB - VIDEO INTERFACE
14 ^{JH}	14	NB - MISC INTERFACES
15 ^{JH}	15	NB - DDR2 INTERFACE
16 ^{JH}	16	NB - POWER 1
17 ^{JH}	17	NB - POWER 2
18 ^{JH}	18	NB - GROUNDS
19 ^{JH}	19	NB - DECAPS
20 ^{JH}	20	NB - CONFIG STRAPS
21 ^{JD}	21	SB - RTC, LAN, AUDIO, ATA, CPU, LPC
22 ^{JD}	22	SB - PCIE, SPI, USB, DMI, PCI
23 ^{JD}	23	SB - SMB, GPIO, PM, CLKS
24 ^{JD}	24	SB - POWERS AND GROUNDS
25 ^{JD}	25	SB - DECAPS
26 ^{JD}	26	SB - MISC
27 ^{JD}	27	SB - SMB BUS CONNECTIONS
28 ^{JD}	28	DDR2 - SO-DIMM CONN A
29 ^{JD}	29	DDR2 - SO-DIMM CONN B (REVERSED)
30 ^{JD}	30	DDR2 - TERMINATION
31 ^{MY}	31	DDR2 - VTT SUPPLY
33 ^{JD}	32	CLOCKS - GENERATOR
34 ^{JD}	33	CLOCKS - TERMINATIONS
38 ^{JD}	34	ATA (SATA AND IDE) CONN'S
41 ^{JD}	35	LAN - YUKON'S PCIE INTERFACE
42 ^{JD}	36	LAN - YUKON'S PWR, MISC
43 ^{JD}	37	LAN - CONN
44 ^{JD}	38	FIREWIRE - FW323-06
45 ^{JD}	39	FIREWIRE - DECAPS
46 ^{JD}	40	FIREWIRE - CONN'S
47 ^{JD}	41	USB - CONN'S
53 ^{JD}	42	PCI-E - AIRPORT MINI-PCIE CONN
54 ^{JD}	43	PCI-E - UNUSED PORTS

PAGE	PDF	CIRCUIT
57 ^{MY}	44	VR - "S5" 3.3V AND 2.5V
58 ^{MY}	45	SMC - H8S2116
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60 ^{MY}	47	SMC - LPC+ CONN
61 ^{MY}	48	SMC - GPU/NB THERMAL SENSOR
63 ^{MY}	49	SMC - SPI BOOTROM
65 ^{MY}	50	SMC - FANS
66 ^{MY}	51	SMC - FANS
67 ^{JD}	52	SMC - TPM
TG 68	53	AUDIO - CODEC, VREG, MIC BIAS
TG 72	54	AUDIO - INTERNAL SPEAKER AMP
TG 73	55	AUDIO - I/O CONN'S, EMC
TG 74	56	AUDIO - DETECT TRANSLATORS
75 ^{MY}	57	VR - CPU CORE
76 ^{MY}	58	VR - CPU I-V SENSE CKT
77 ^{MY}	59	VR - "S3" 1.2V & "S0" 1.2V
78 ^{MY}	60	VR - "S0" 1.8V
79 ^{MY}	61	VR - "S3" 1.8V
80 ^{MY}	62	VR - "S0" 1.5V
81 ^{MY}	63	VR - "S0" 1.05V
82 ^{MY}	64	VR - "S5" 5V AND "S0" 4.5V
83 ^{MY}	65	VR - FETS FOR REMAINING RAILS
84	JH66	GPU - M56 PCI-E
85	JH67	GPU - VCORE SUPPLY
86	JH68	GPU - M56 CORE PWR
87	JH69	GPU - M56 FRAME BUFFER
88	JH70	GPU - MISC
89	JH71	GPU - GDDR SDRAM A
90	JH72	GPU - GDDR SDRAM B
91	JH73	GPU - M56 GPIO, DVO, MISC
92	JH74	GPU - M56 CLOCKS
93	JH75	GPU - M56 VIDEO INTERFACES
94	JH76	GPU - INTERNAL DISPLAY CONN'S
95	JH77	GPU - TP'S
96	JH78	GPU - TMDS, INVERTER, EXT VGA
97	JH79	GPU - EXTERNAL DISPLAY CONN'S

DIMENSIONS ARE IN MILLIMETERS		METRIC		APPLE INC.	
XX :	_____	DRAPTER	/	DESIGN CK	/
X.XX :	_____	ENG APPD	/	MFG APPD	/
X.XXX :	_____	QA APPD	/	DESIGNER	/
ANGLES :	_____	RELEASE	/	SCALE	NONE
DO NOT SCALE DRAWING		MATERIAL/FINISH NOTED AS APPLICABLE		SIZE	D
 THIRD ANGLE PROJECTION		DRAWING NUMBER		051-7124	REV. L
				SHT 1 OF 111	

D

C

B

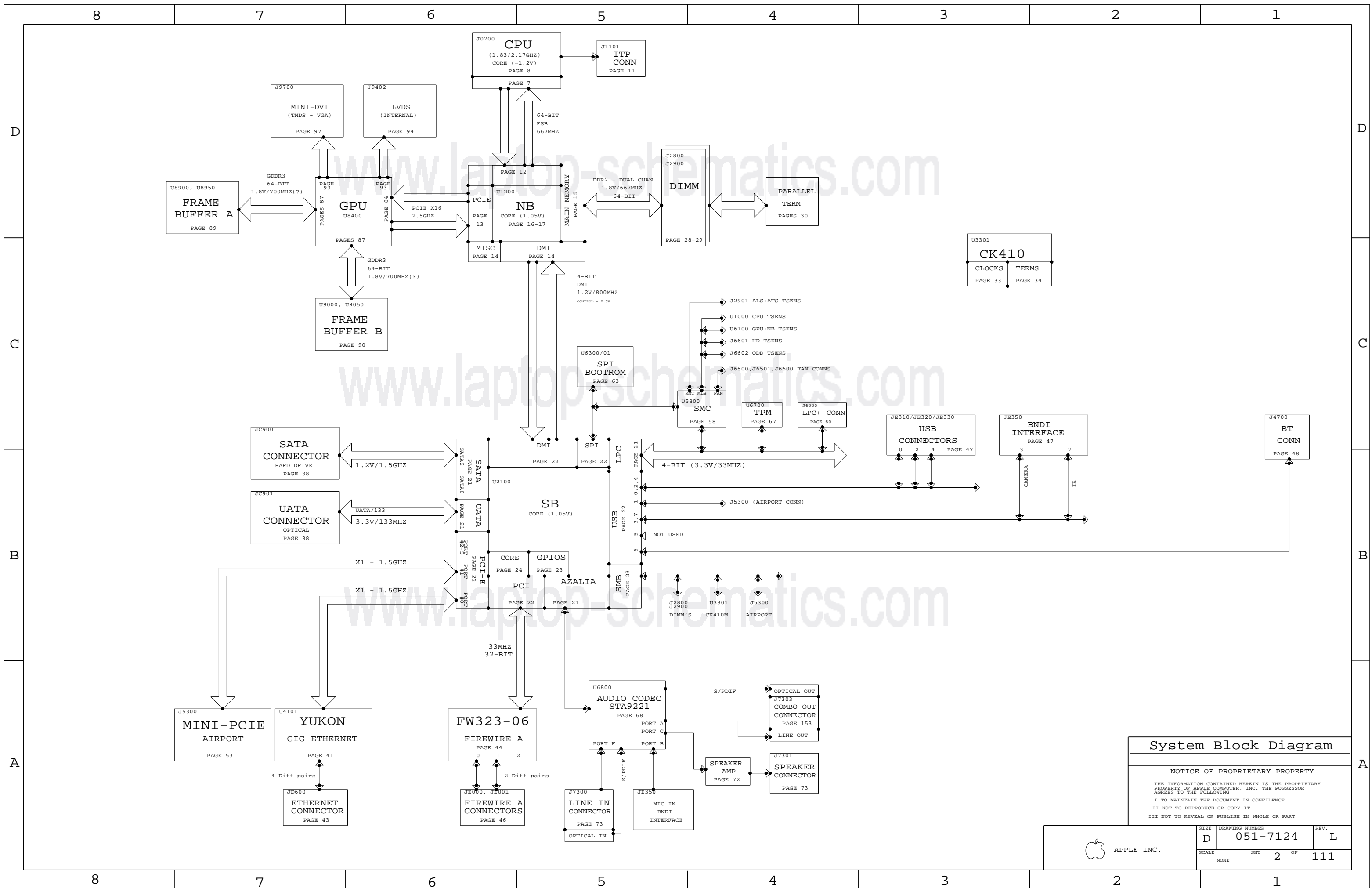
A

D

C

B

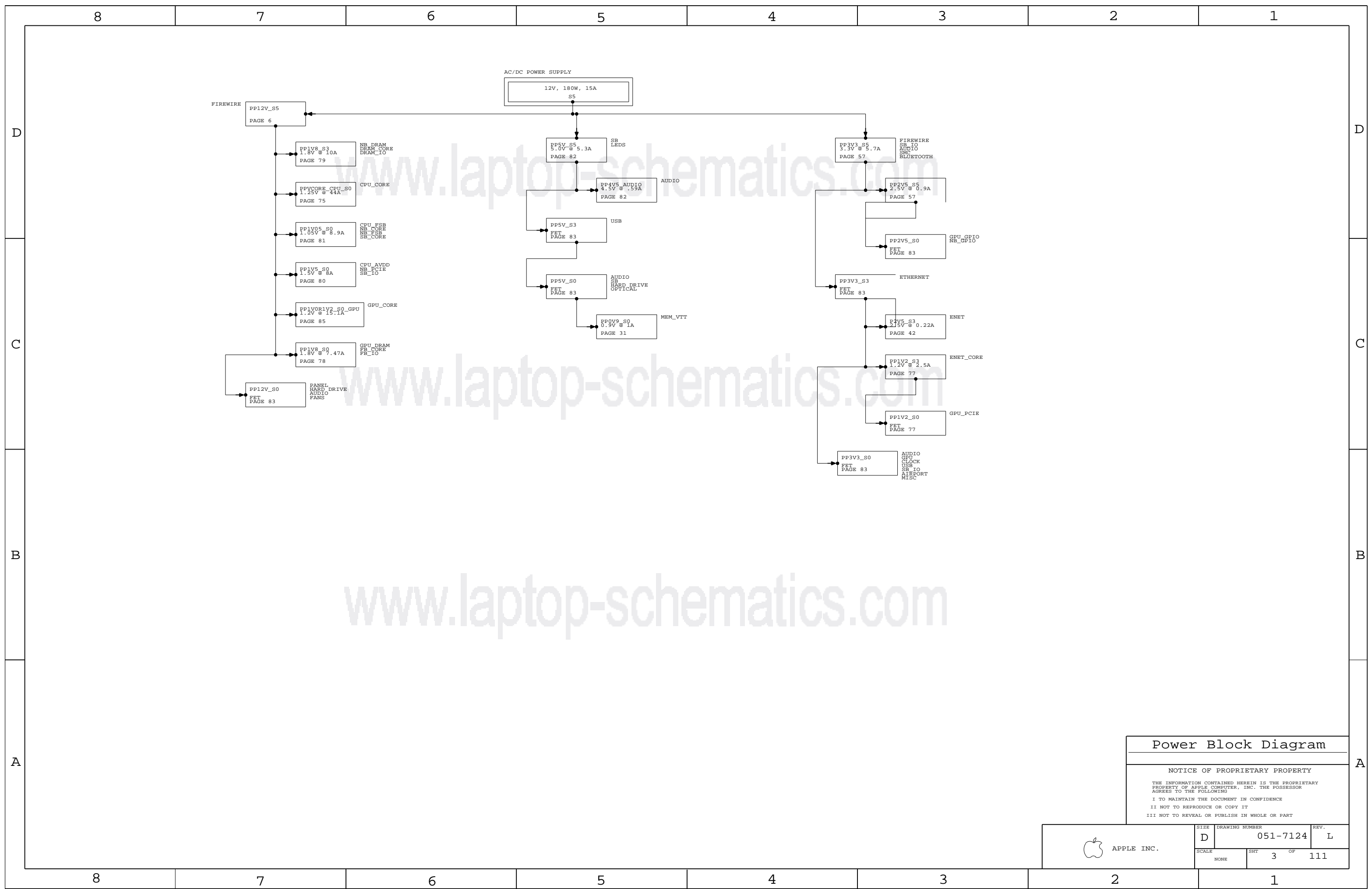
A



System Block Diagram

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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 2	OF 111



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Power Block Diagram

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	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	3	111	

8

7

6

5

4

3

2

1

COMMON

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
511S0025	1	IC,CPU-SKT,479BGA	J0700	CRITICAL	
338S0328	1	IC,945PM,NORTHBRIDGE	U1200	CRITICAL	
343S0385	1	IC,SB,652BGA	U2100	CRITICAL	
338S0345	1	IC,ATI,M56D,GRAFIXCTLR,880BGA,LF	U8400	CRITICAL	
359S0101	1	IC,CY28445-5,CLK GEN,68PIN QFN	U3301	CRITICAL	
338S0270	1	IC,88E8053,DIGARIT ENET XCVR,64P QFN,MD	U4101	CRITICAL	
(335S0382)	1	IC,ENET LAN ROM	U4102	CRITICAL	
338S0279	1	IC,FW32306,1394A LINK,TQFP	U4400	CRITICAL	
341S1789	1	IC,TPM,TSSOP,28P	U6700	CRITICAL	LEMENU
UNSCREENED P/N 353S1235	1	IC,CPU VREG,1MVP,TWO PHASE	U7500	CRITICAL	
152S0138	2	IND,PWR,SMD,3.3OHM,20%,6A,30MHZ,LF,MPD	L5703,L8203	CRITICAL	
128S0078	2	CAP,EL,AL,330UF,20%,16V,10X12.7MM,SMD,LF	C7517,C7518	CRITICAL	
825-6447	1	MLB LABEL,48.0X4.8	X14	CRITICAL	
155S0289	7	EMI CHOKE	FLR011,FLR021,FL4610,FL4620,L4712,L4722,L4732	CRITICAL	

(341S1904 - DEV)
 (341S1905 - PVT)
 (335S0384 - BLNK)
 (341S1903 - PROG)
 (338S0274 - BLNK)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-7124	1	PCB,SCHEM,MLB,M60	SCH1		20_INCH_LCD
820-2031	1	PCB,FAB,MLB,M60	MLB1		20_INCH_LCD
341T0059	1	EPI ROM,M60	U6301	CRITICAL	20_INCH_LCD
341T0035	1	IC,SMC,M60	U5800	CRITICAL	20_INCH_LCD
338S0315	1	IC,ATI,M56LP,GRAFIX CTLR,880BGA,LF	U8400	CRITICAL	GPU_B26_LP
11480264	1	3.01K,1%,1/16W,402,MP-LF	R8522		GPU_VCORE_1P2V
337S3390	1	2.16GHZ MEROM	CPU	CRITICAL	2P16_CPU
337S3392	1	2.33GHZ MEROM	CPU	CRITICAL	2P33_CPU

1/24/07
 OLD P/N 341T0036
 NEW P/N 341T0059

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
333S0354	4	IC,SDRAM,GDDR3,8MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_128M_SAMSUNG
333S0358	4	IC,SDRAM,GDDR3,8MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_128M_HYNIX
333S0376	4	IC,SDRAM,GDDR3,8MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_128M_INFINEON

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
333S0350	4	IC,SDRAM,GDDR3,16MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_256M_SAMSUNG
333S0351	4	IC,SDRAM,GDDR3,16MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_256M_HYNIX
333S0377	4	IC,SDRAM,GDDR3,16MX32,600MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_256M_INFINEON

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
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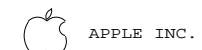
126S0086	126S0078		C940,C1900,C1901,C1968	SANYO W6CE330F8 330UF 6.3V LP
128S0080	128S0078		C7517,C7518	SANYO 166VP330M 330UF 16V SMD LP
124-0338	124-0333			CAP,AL,EL,680UF,16V,RAD,10X12.5MM
138S0580	138S0552			22UF 0805
124-0361	124-0339		C7807	SANYO
353S1321	353S1105		U7910	LM339
338S0344	338S0345		U8400	N56 B26 P - DIFF P/N
338S0368	338S0345		U8400	N56 B26 LLP

353S1461	353S1465		U7500	CPU REGULATOR - ISL9504
378S0141	378S0140		LED01,LED602,LED603	LED
138S0598	138S0512			SAMSUNG
155S0232	155S0289		FLR011,FLR021,FL4610,FL4620	L4712,L4722,L4732 EMI CHOKE
138S0608	138S0576		C622,C7202	1UF,25V,0805
353S1647	353S1709		H6100	MAX6695

Table Items

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SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	4	111

8

7

6

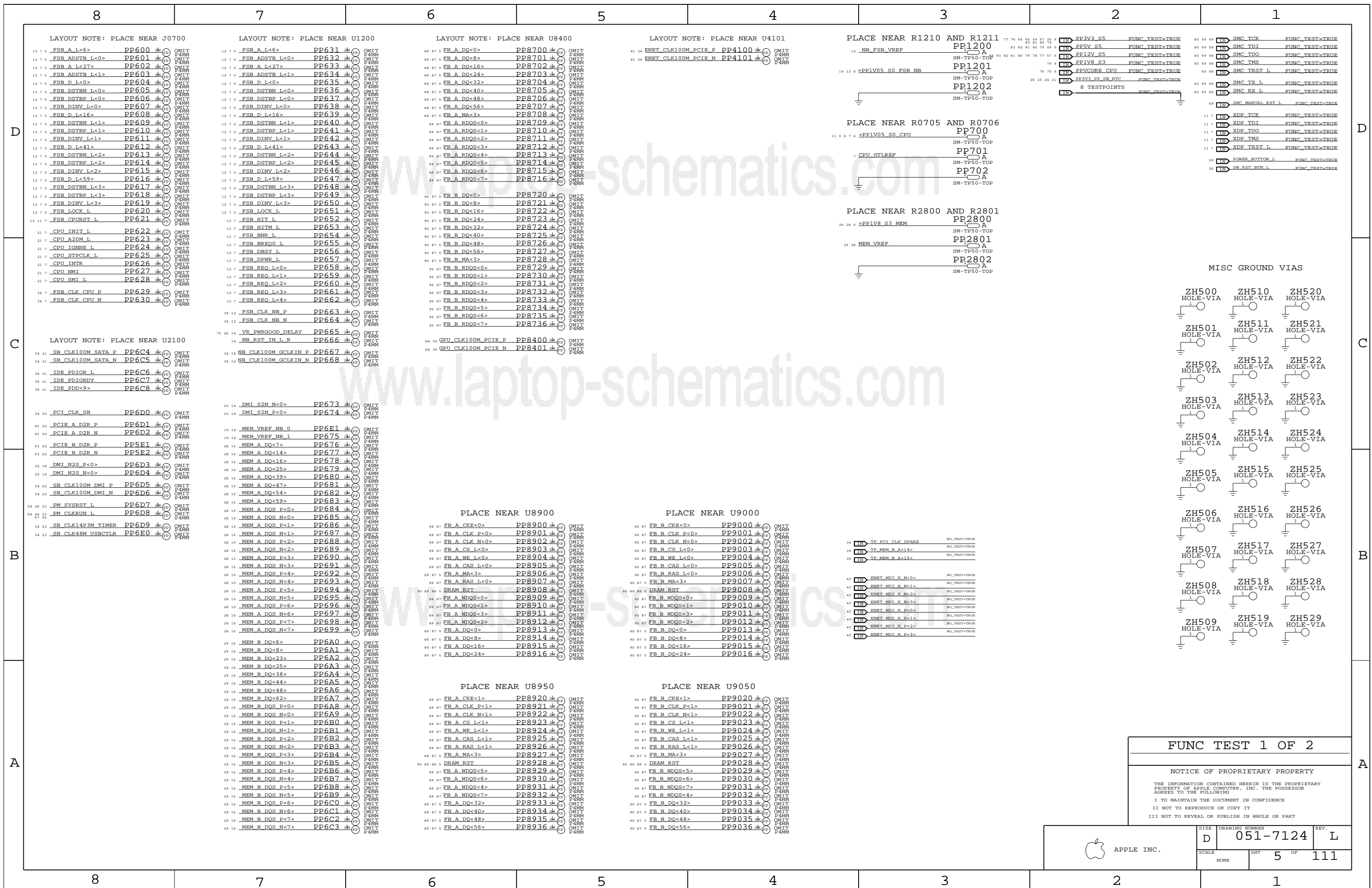
5

4

3

2

1



LAYOUT NOTE: PLACE NEAR J0700

LAYOUT NOTE: PLACE NEAR U1200

LAYOUT NOTE: PLACE NEAR U8400

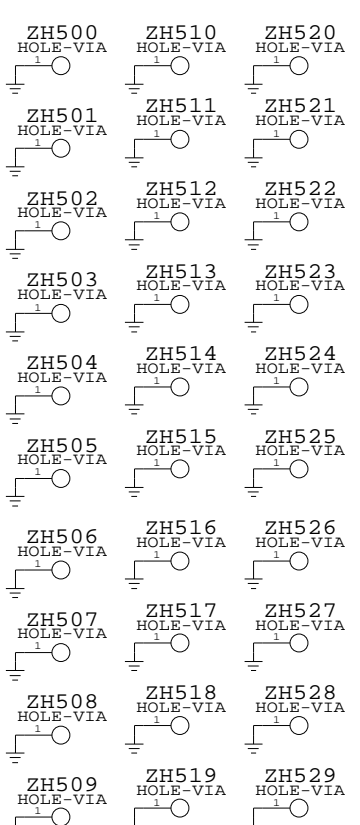
LAYOUT NOTE: PLACE NEAR U4101

PLACE NEAR R1210 AND R1211

PLACE NEAR R0705 AND R0706

PLACE NEAR R2800 AND R2801

MISC GROUND VIAS



PLACE NEAR U8900

PLACE NEAR U9000

PLACE NEAR U8950

PLACE NEAR U9050

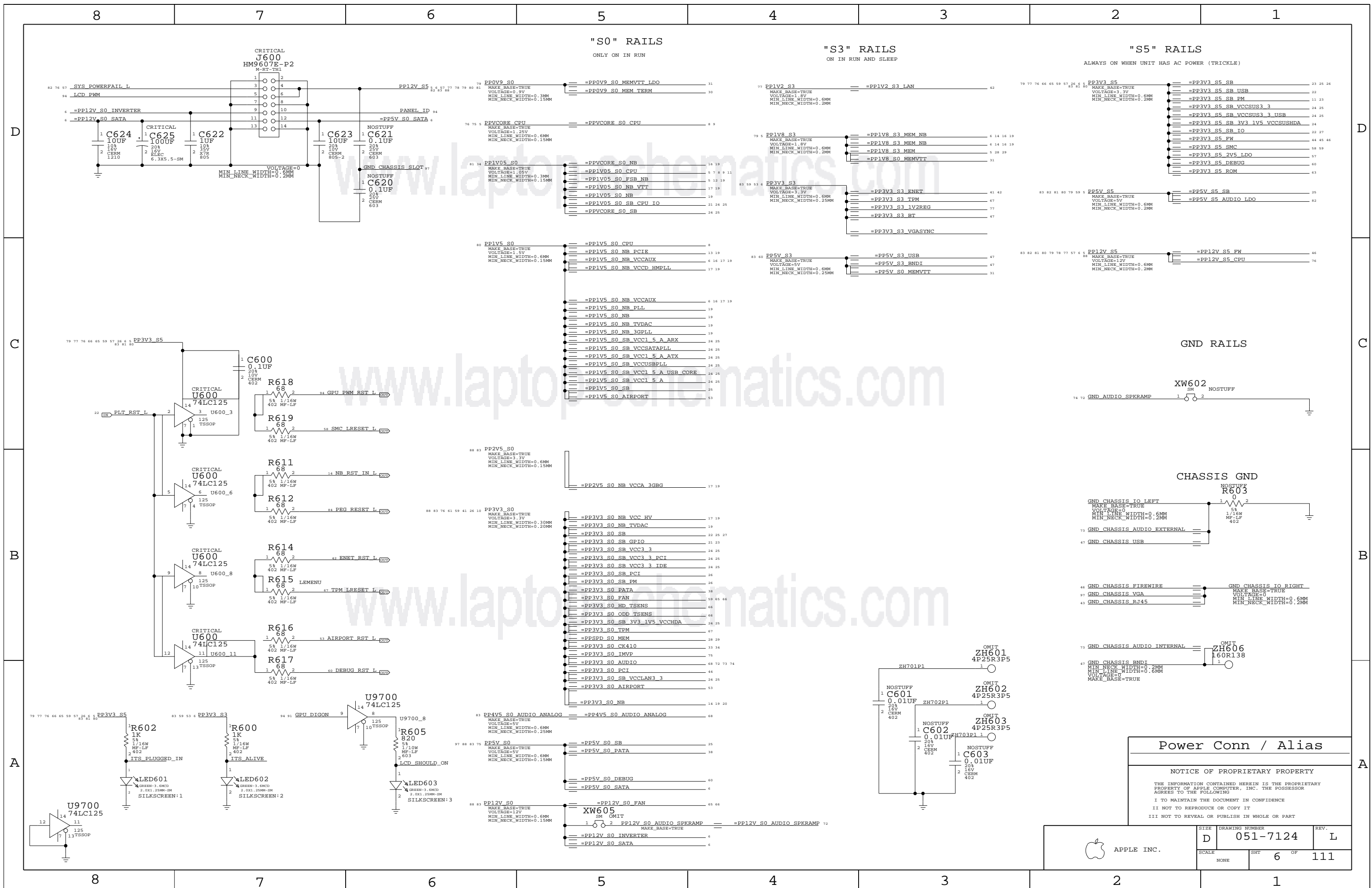
FUNC TEST 1 OF 2

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Table with columns: SIZE (D), DRAWING NUMBER (051-7124), REV. (L), SCALE (NONE), SHEET (5 OF 111)





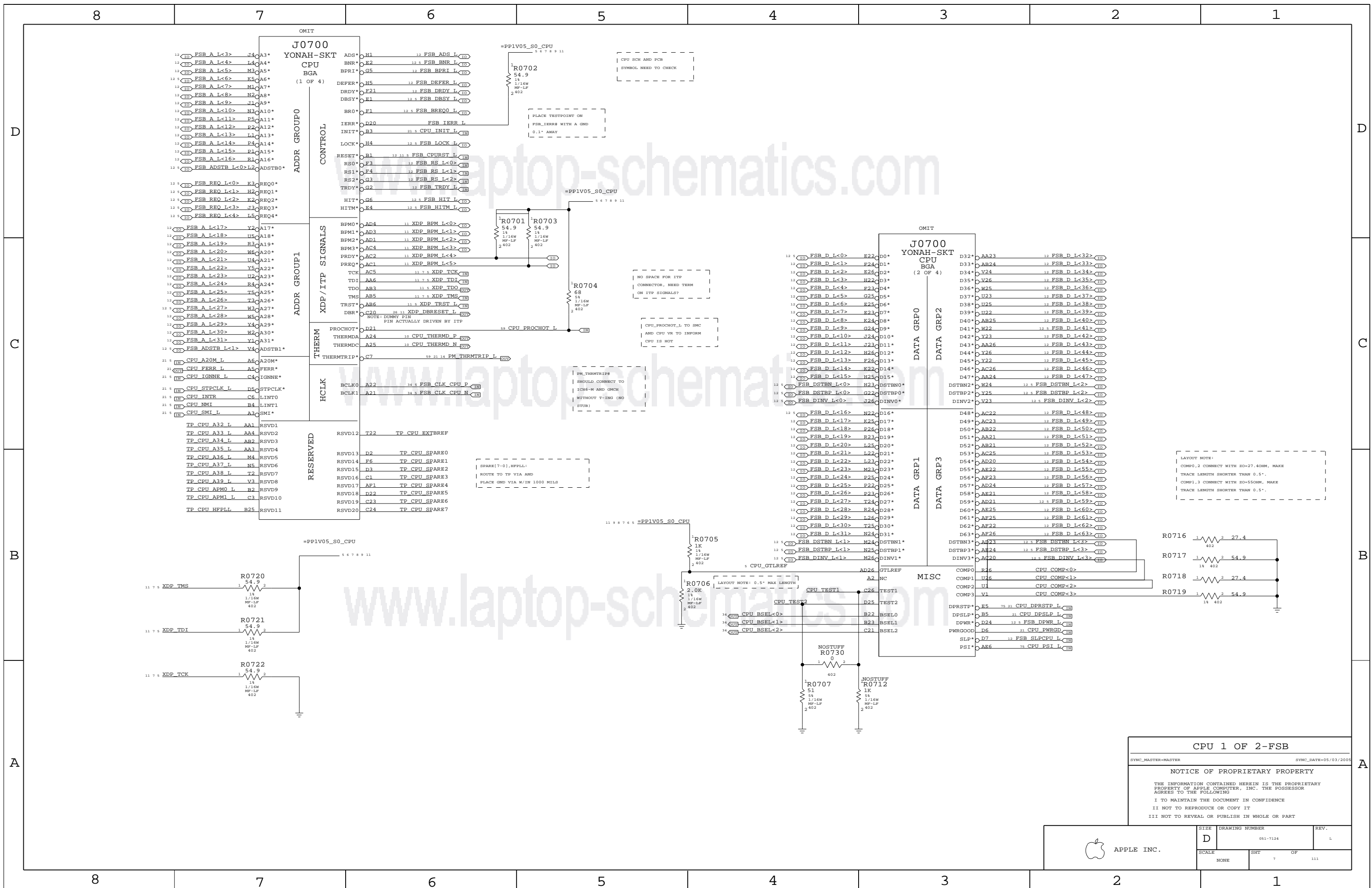
Power Conn / Alias

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SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	OF
NONE	6	111



CPU 1 OF 2-FSB

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

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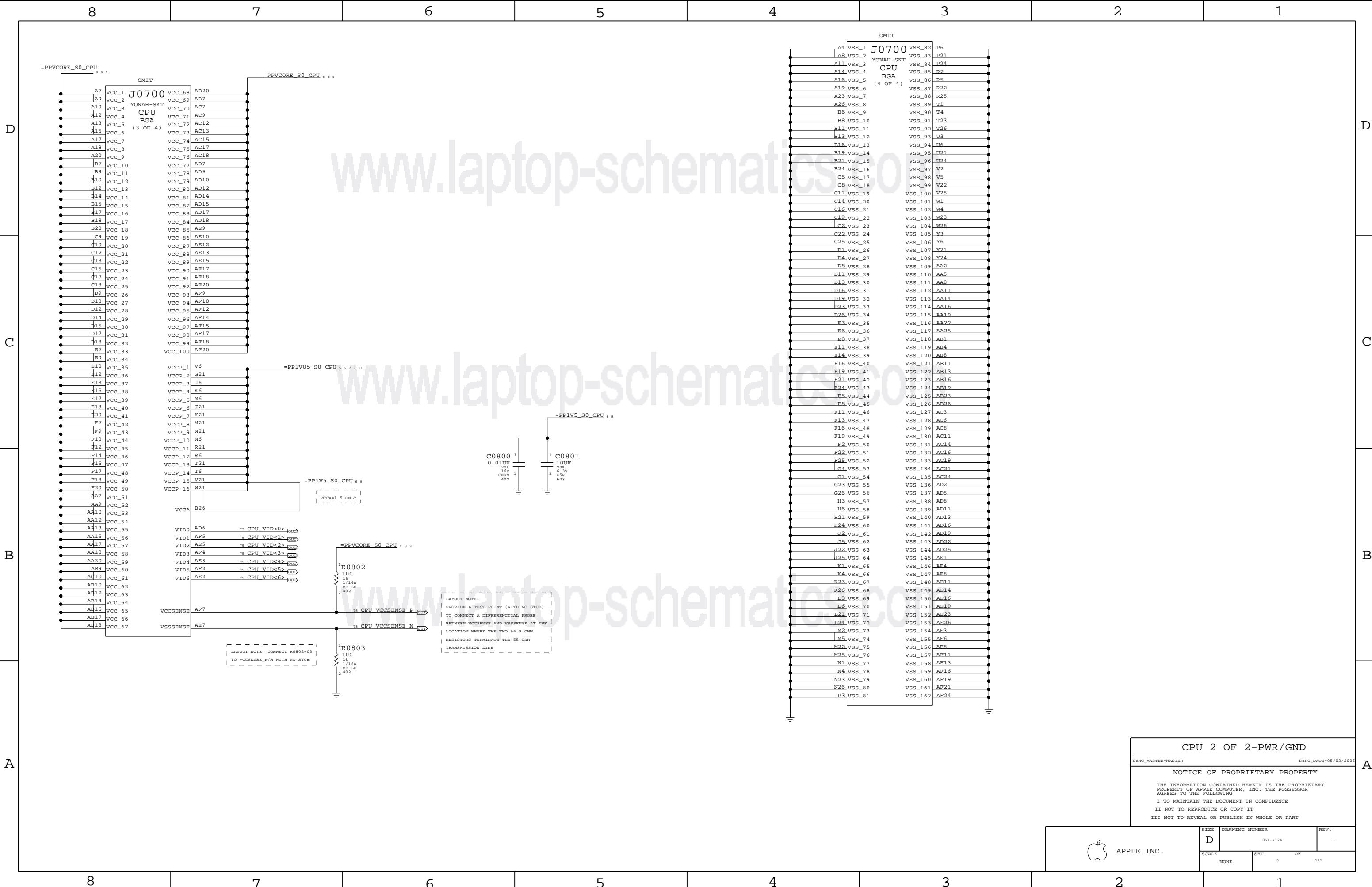
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	D	051-7124	L
SCALE	SHT	OF	111
NONE	7		



CPU 2 OF 2-PWR/GND

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

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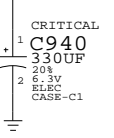
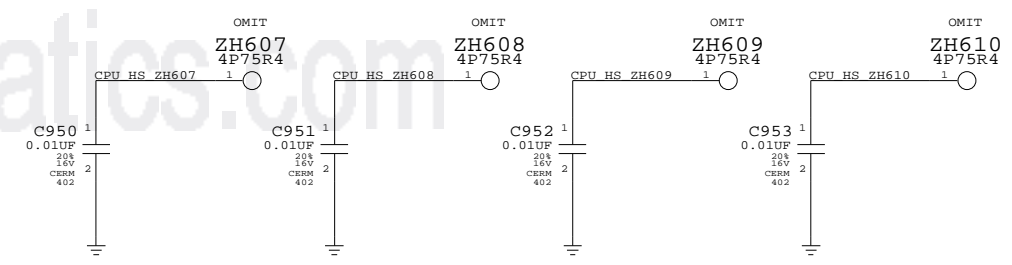
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II NOT TO REPRODUCE OR COPY IT

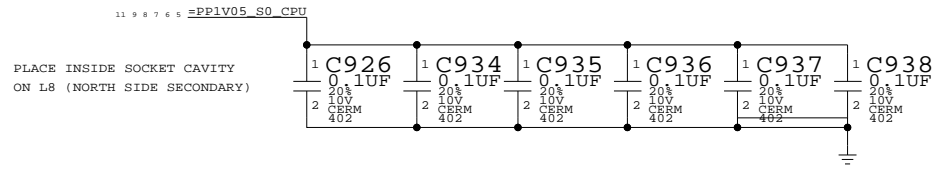
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

 APPLE INC.	SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	OF	REV.
NONE	8	111	

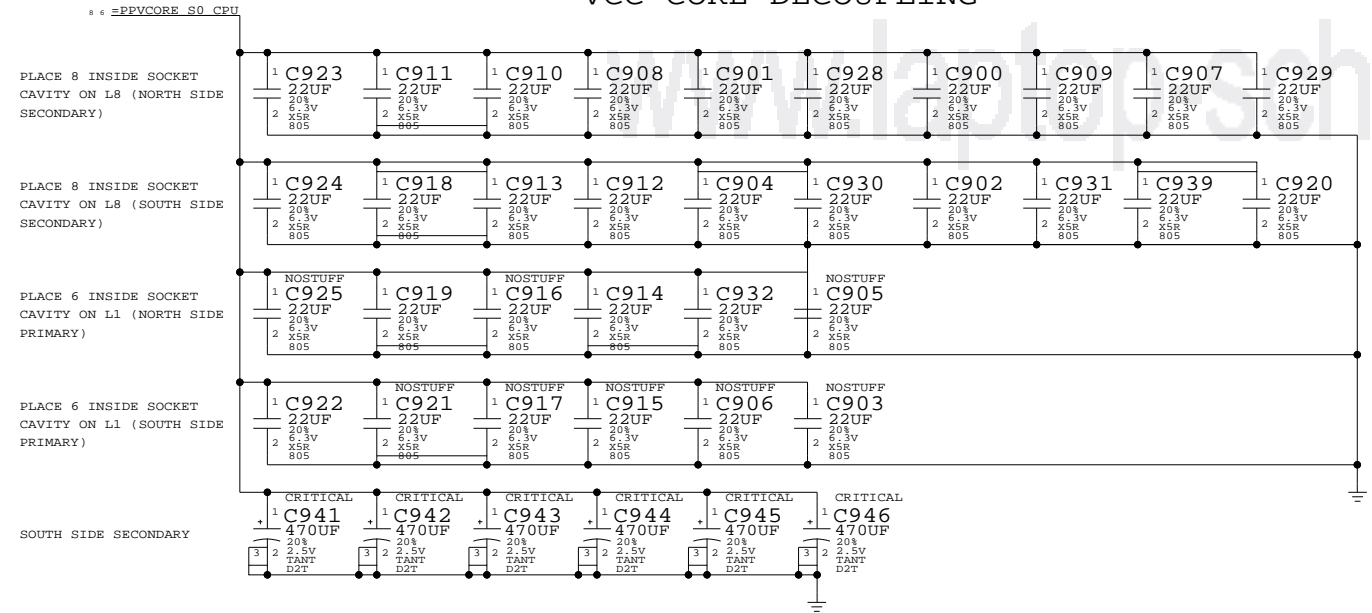
CPU HEATSINK MOUNTING HOLES



VCCP CORE DECOUPLING



VCC CORE DECOUPLING



CPU DECAPS & VID<>

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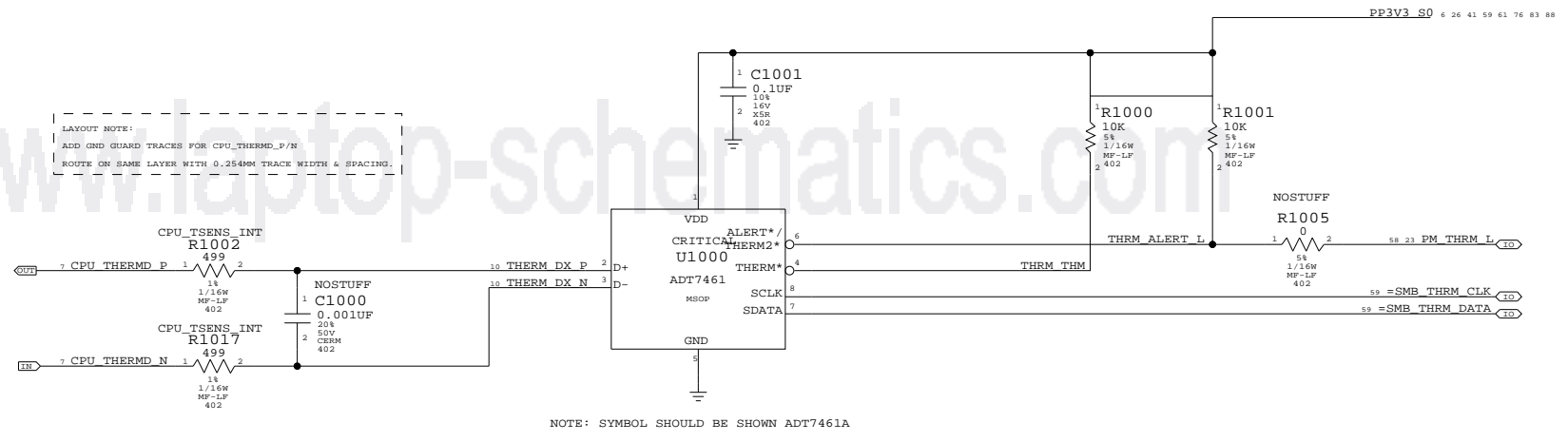
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	9	111	

CPU THERMAL SENSOR

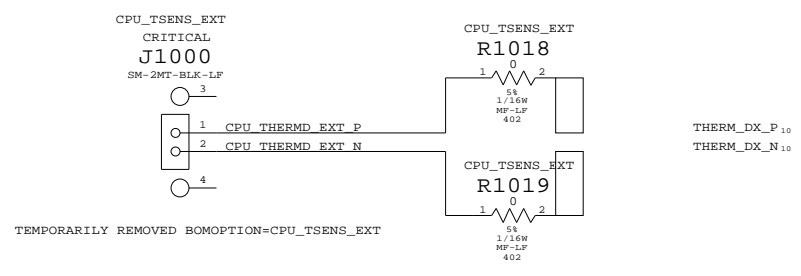
NOTE:
IF CPU T DIODE TO BE READ IN OFF STATE,
THEN THIS SHOULD BE S5

LAYOUT NOTE:
ADD GND GUARD TRACKS FOR CPU_THERMD_P/N
ROUTE ON SAME LAYER WITH 0.254MM TRACE WIDTH & SPACING.



NOTE: SYMBOL SHOULD BE SHOWN ADT7461A

LAYOUT NOTE:
PLACE R1002 AND R1018 SUCH THAT THEY SHARE ONE PAD
PLACE R1017 AND R1019 SUCH THAT THEY SHARE ONE PAD



CPU TEMP SENSOR

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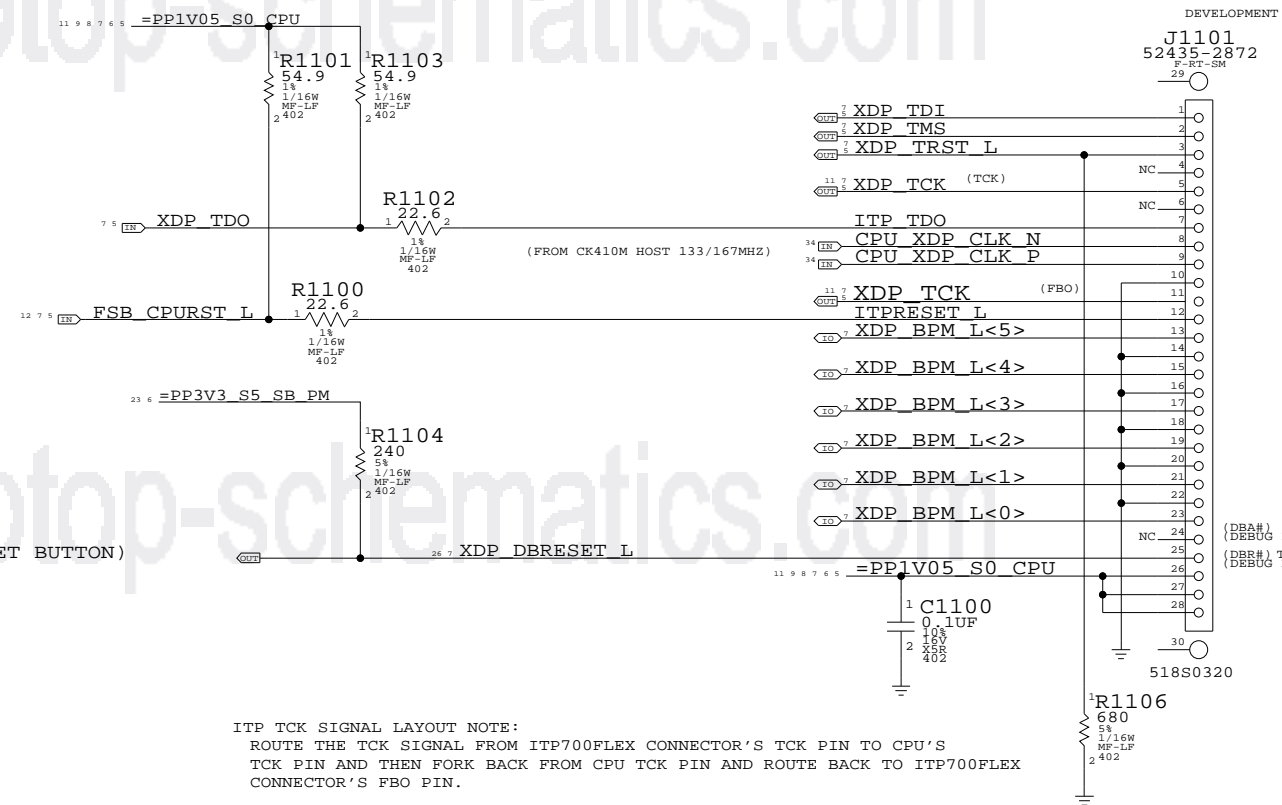
	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	111
NONE	10		

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CPU ITP700FLEX DEBUG SUPPORT

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ITP TCK SIGNAL LAYOUT NOTE:
ROUTE THE TCK SIGNAL FROM ITP700FLEX CONNECTOR'S TCK PIN TO CPU'S
TCK PIN AND THEN FURK BACK FROM CPU TCK PIN AND ROUTE BACK TO ITP700FLEX
CONNECTOR'S FBO PIN.

(DBA#) INDICATE THAT ITP IS USING TAP I/F, NC IN 945GM CHIPSET SYSTEM.
(DEBUG PORT ACTIVE)
(DBR#) TO ICH7M SYS_RST*, AND WITH SYSTEM RESET LOGIC
(DEBUG PORT RESET)

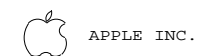
CPU ITP700FLEX DEBUG

SYNC_MASTER=MASTER SYNC_DATE=5/23/05

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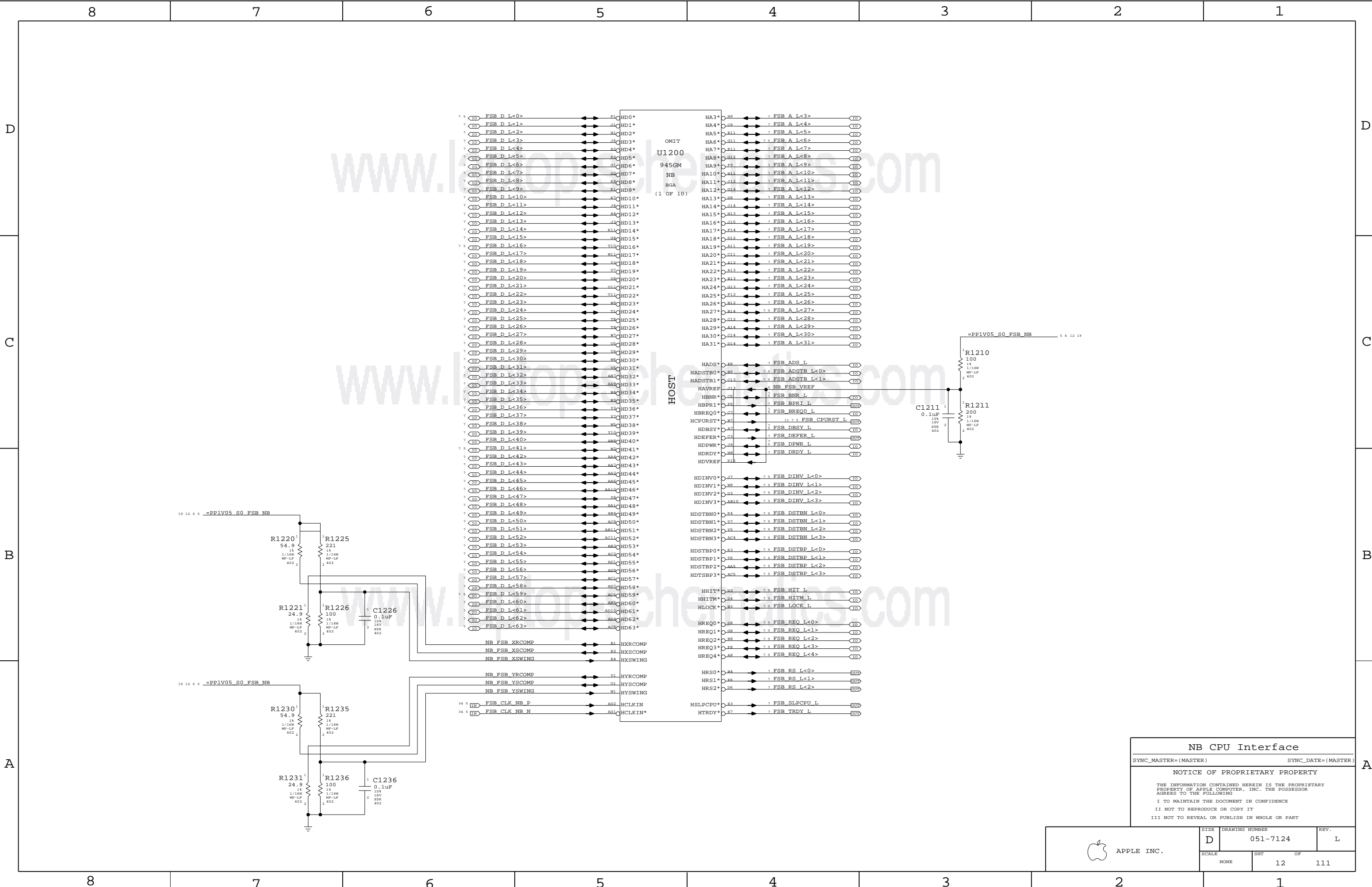
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APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	11	111



NB CPU Interface

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 12	OF 111

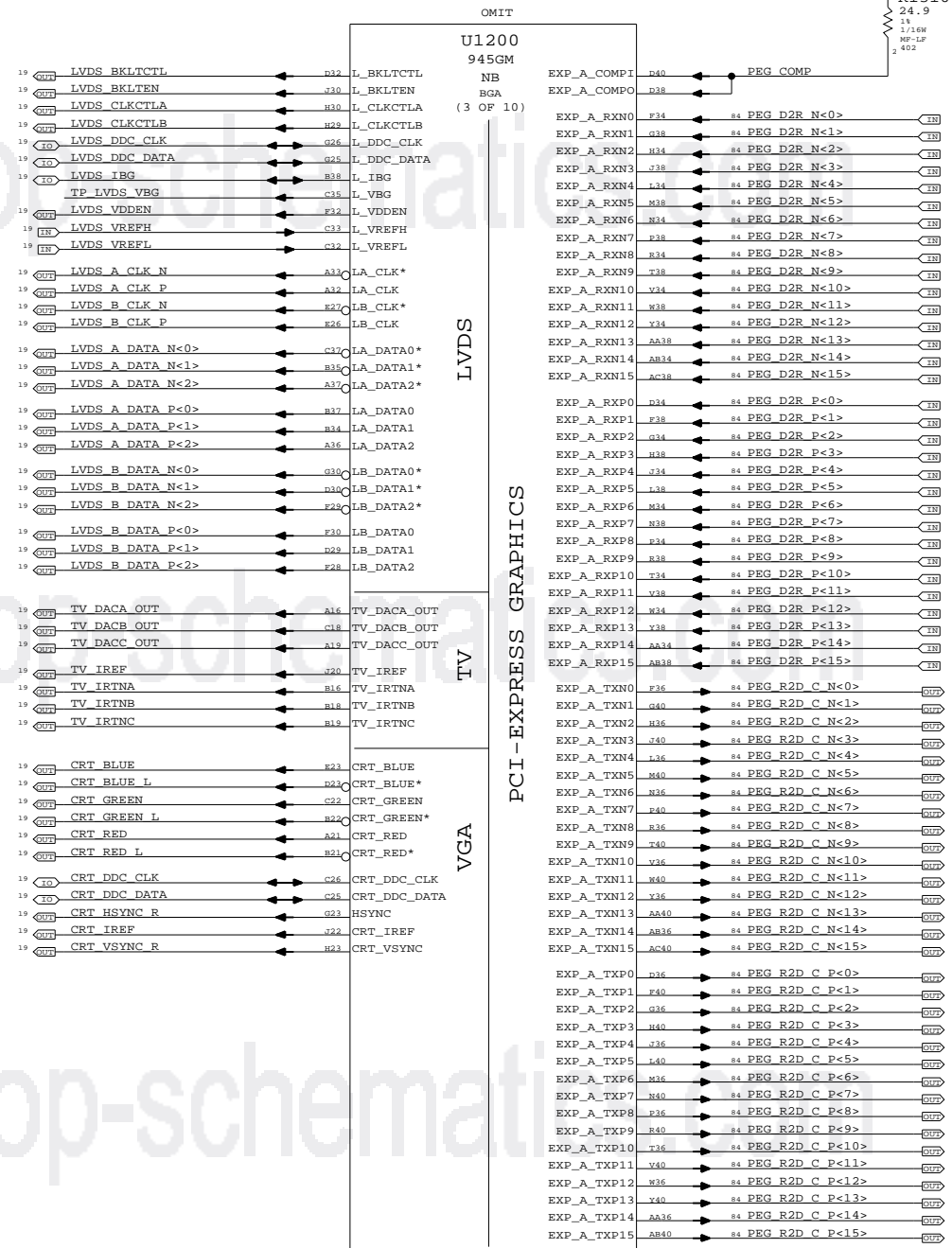
LVDS Disable
 Can leave all signals NC if LVDS is not implemented
 Tie VCC_TXLVDS and VCCA_LVDS to GND. If SDVO is used
 VCCD_LVDS must remain powered with proper decoupling.
 Otherwise, tie VCCD_LVDS to GND also.

TV-Out Signal Usage:
 Composite: DACA only
 S-Video: DACB & DACC only
 Component: DACA, DACB & DACC

Unused DAC outputs must remain powered, but can omit
 filtering components. Unused DAC outputs should
 connect to GND through 75-ohm resistors.

TV-Out Disable
 Tie DACx_OUT, IRTNx, and IREF to 1.5V power rail.
 Tie VCCD_TVDAC, VCCD_QTVDAC, VCCA_TVDACx, and
 VCCA_TVVBG to 1.5V power rail. Tie VSSA_TVVBG to GND.

CRT Disable
 Tie R/R#/G/G#/B/B# and IREF to VCC Core rail, tie
 HSYNC and VSYNC to GND. Tie VCCA_CRTDAC to VCC Core
 rail, and tie VSSA_CRTDAC and VCC_SYNC to GND.



SDVO Alternate Function

SDVO_TVCLKIN#
 SDVO_INT#
 SDVO_FLDSTALL#

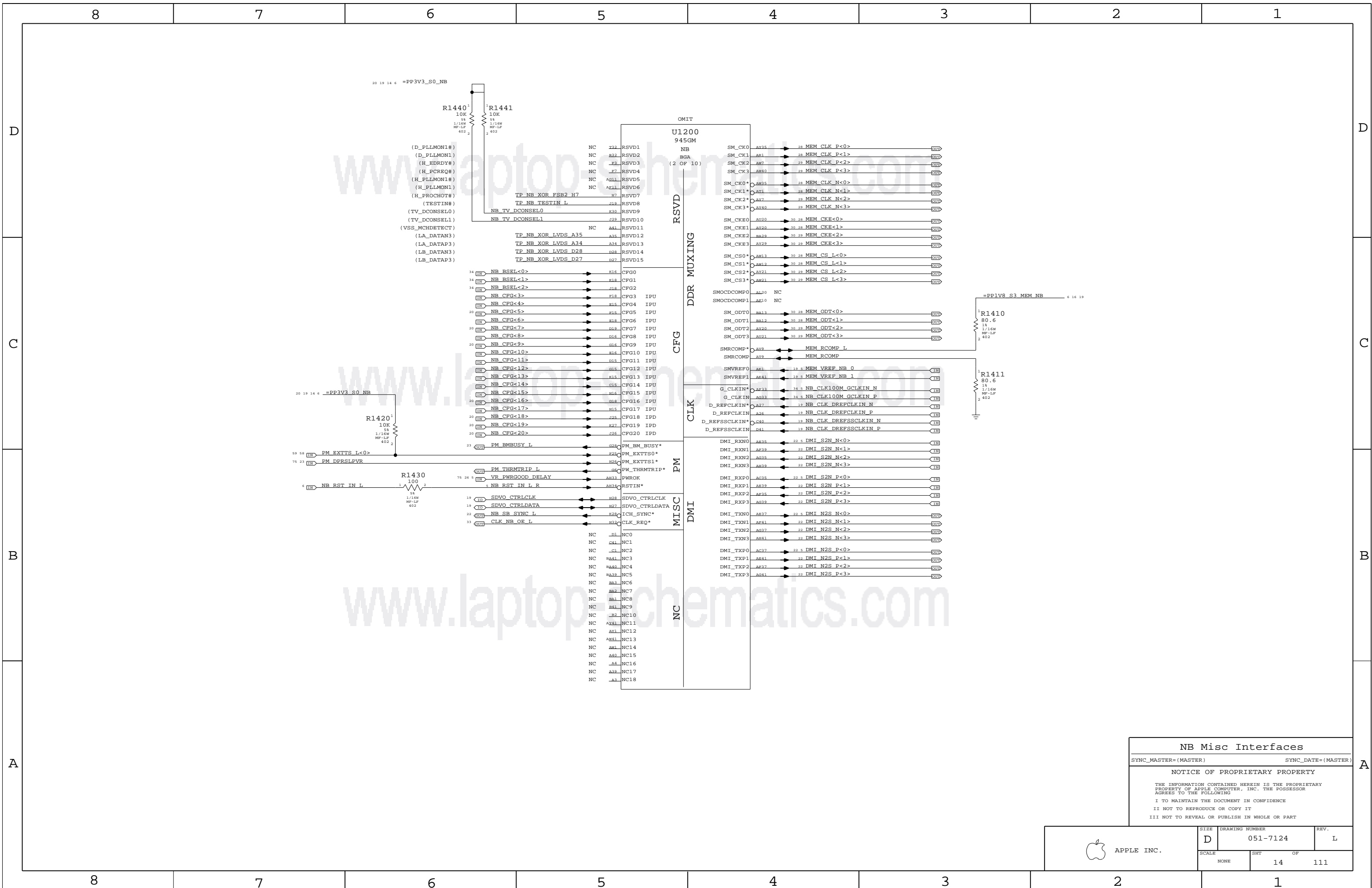
SDVO_TVCLKIN
 SDVO_INT
 SDVO_FLDSTALL

SDVOB_RED#
 SDVOB_GREEN#
 SDVOB_BLUE#
 SDVOB_CLKN
 SDVOC_RED#
 SDVOC_GREEN#
 SDVOC_BLUE#
 SDVOC_CLKN

SDVOB_RED
 SDVOB_GREEN
 SDVOB_BLUE
 SDVOB_CLKP
 SDVOC_RED
 SDVOC_GREEN
 SDVOC_BLUE
 SDVOC_CLKP

NB PEG / Video Interfaces
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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SCALE	SHT	OF	
NONE	13	111	

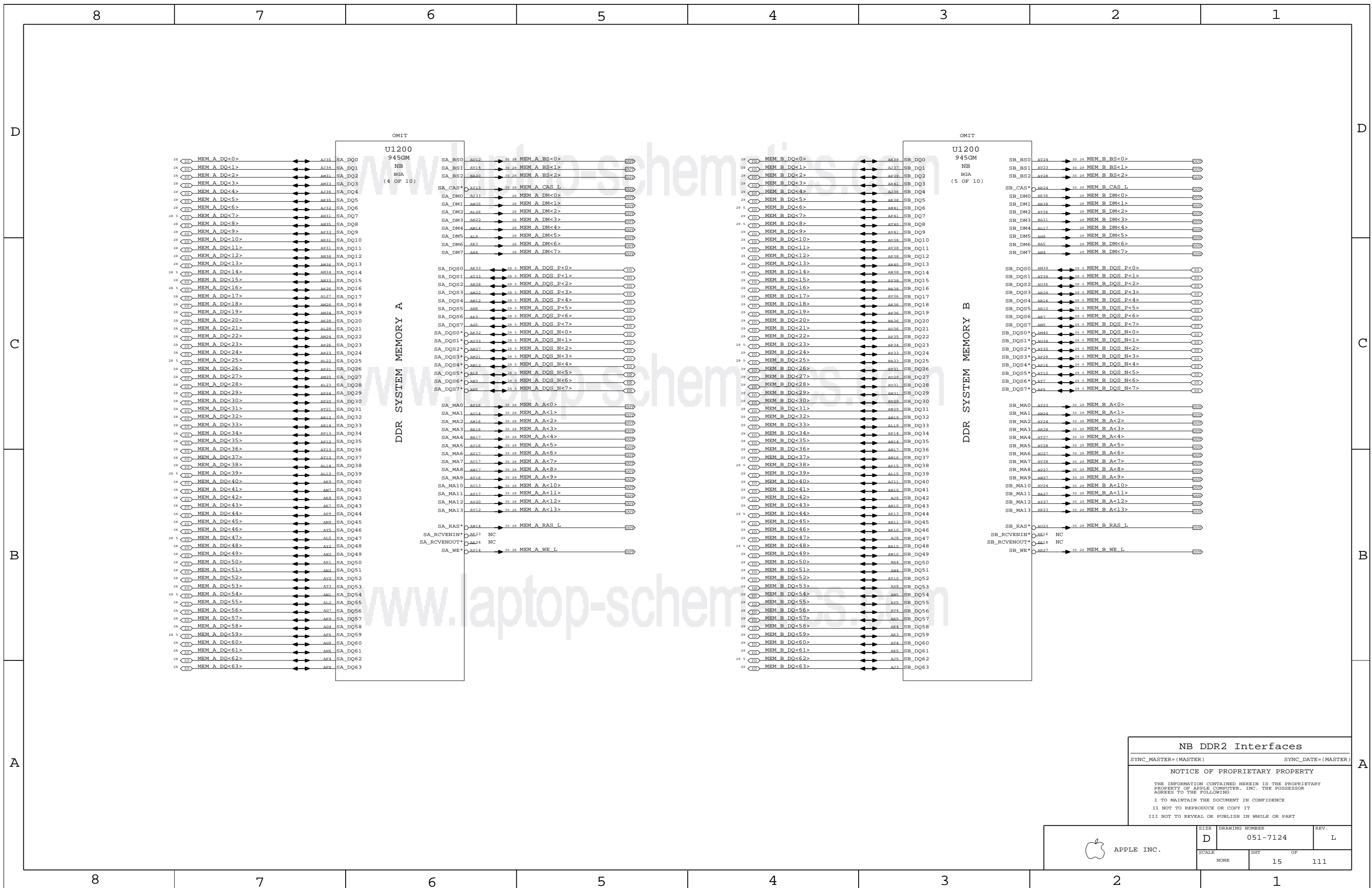


NB Misc Interfaces
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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 APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	14	111	



NB DDR2 Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 15	OF 111

NCTF balls are Not Critical To Function

These connections can break without impacting part performance.

OMIT

D

D



C

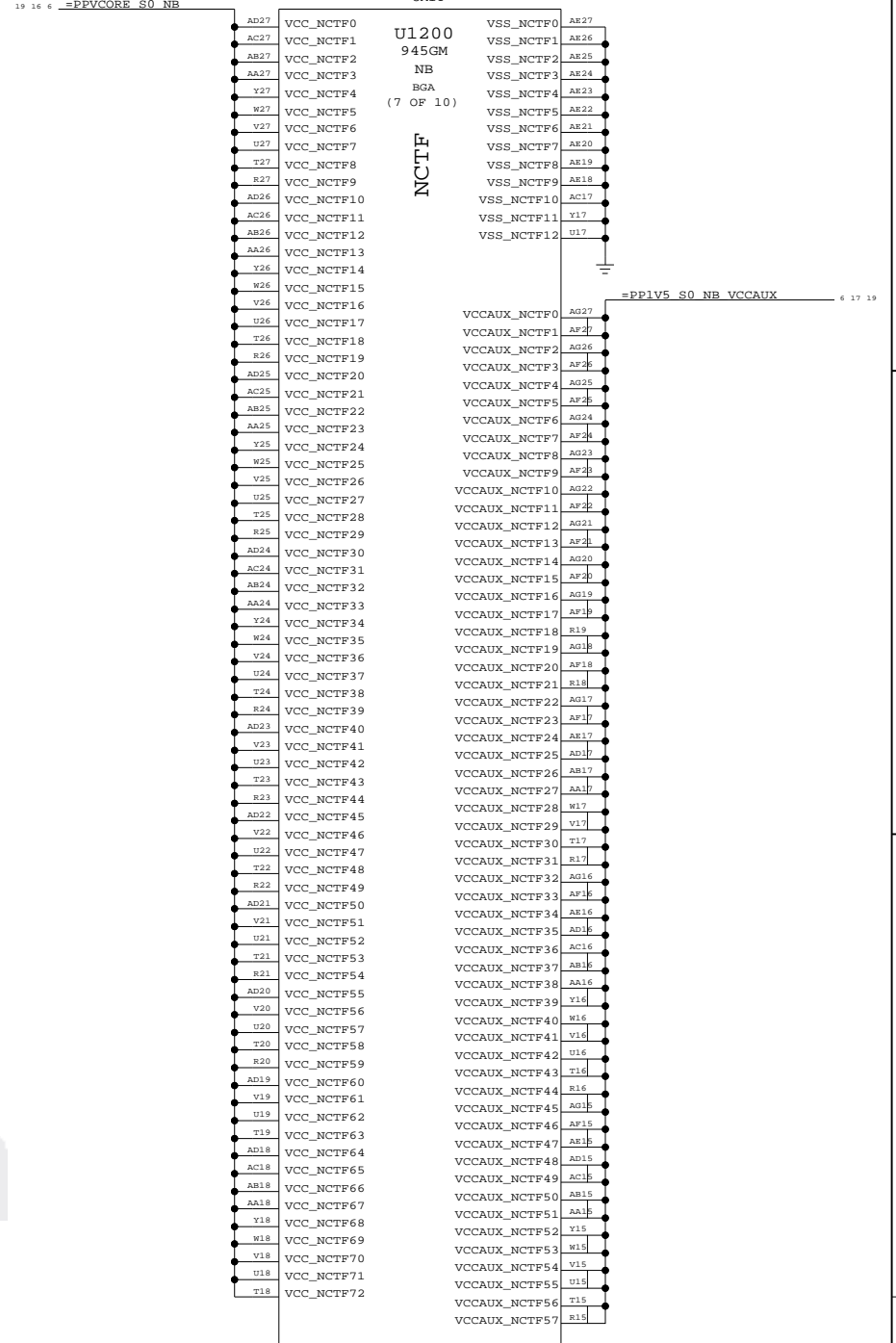
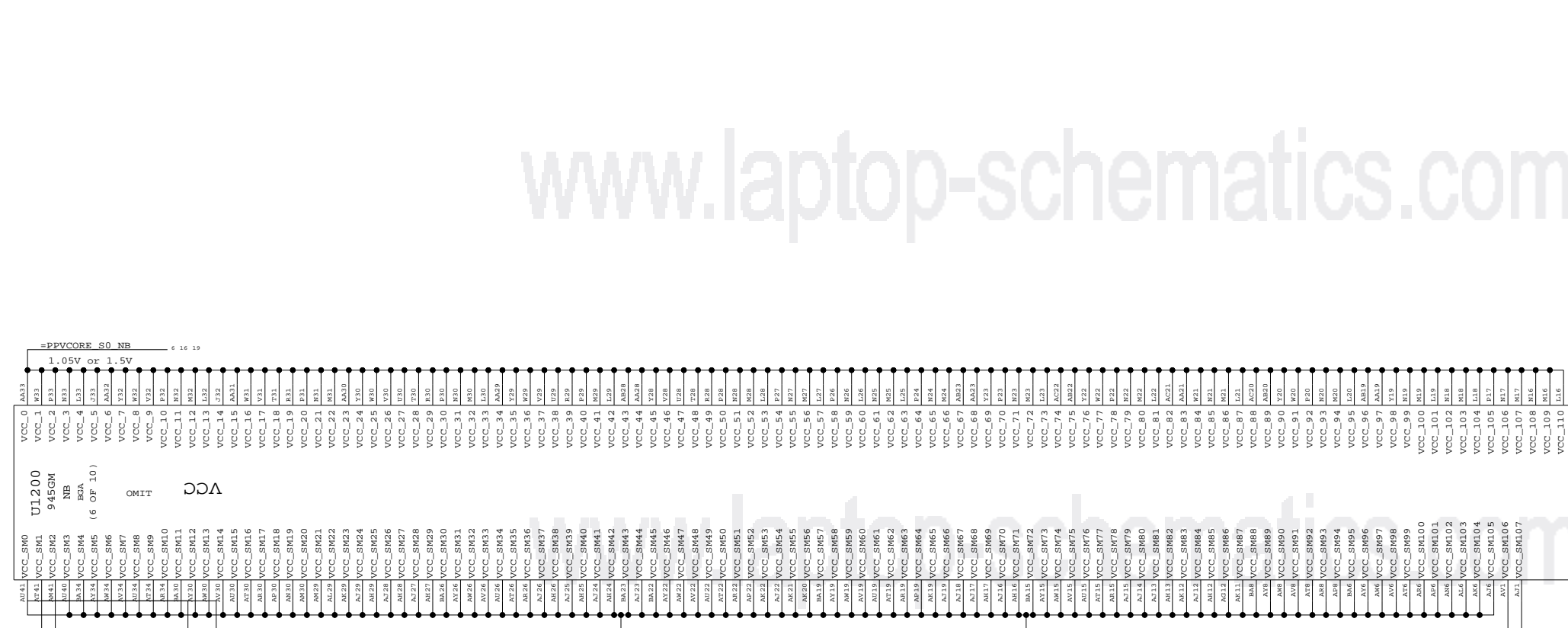
C

B

B

A

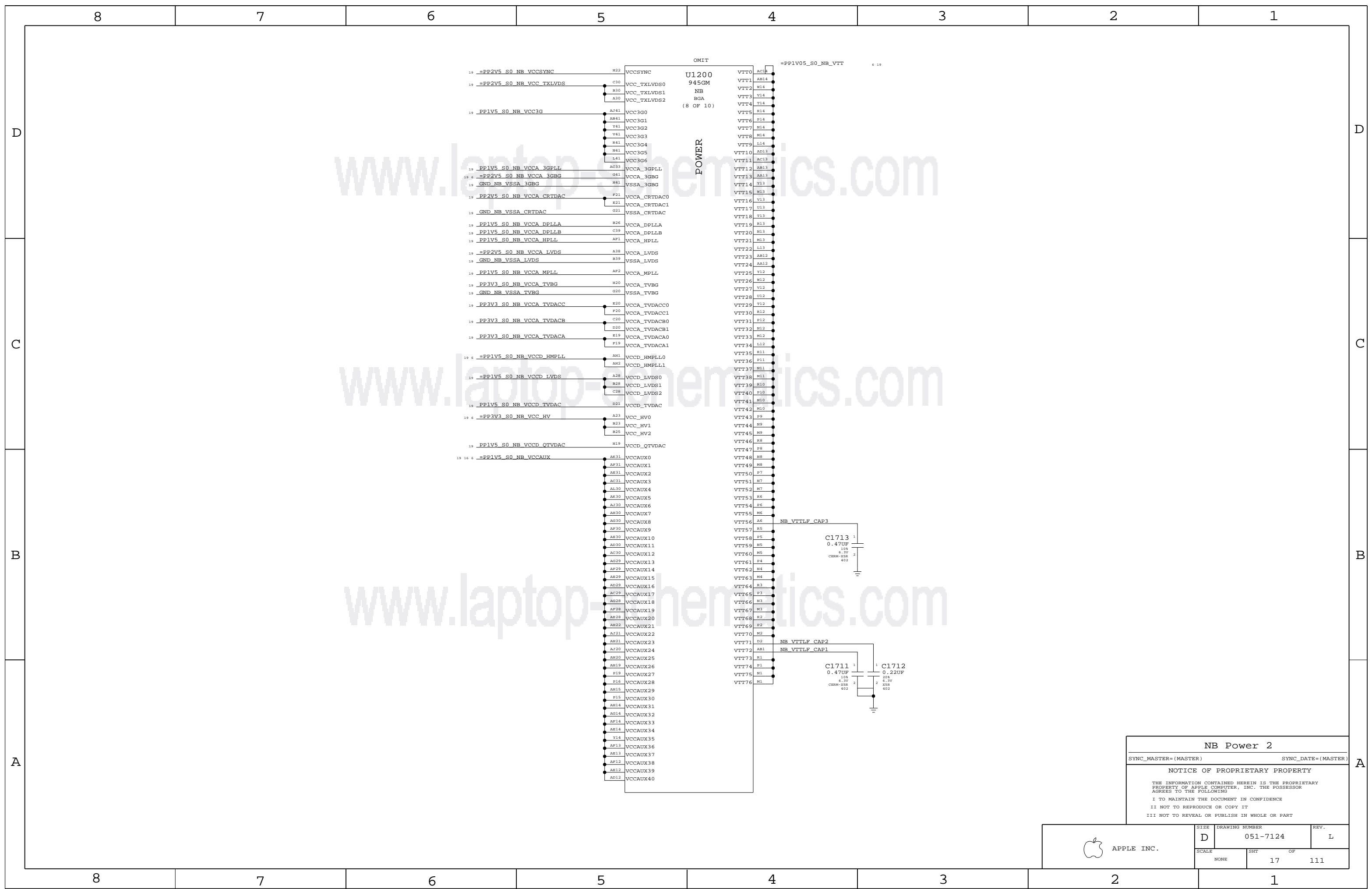
A



NB Power 1
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	16	111	



NB Power 2

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

NOTICE OF PROPRIETARY PROPERTY

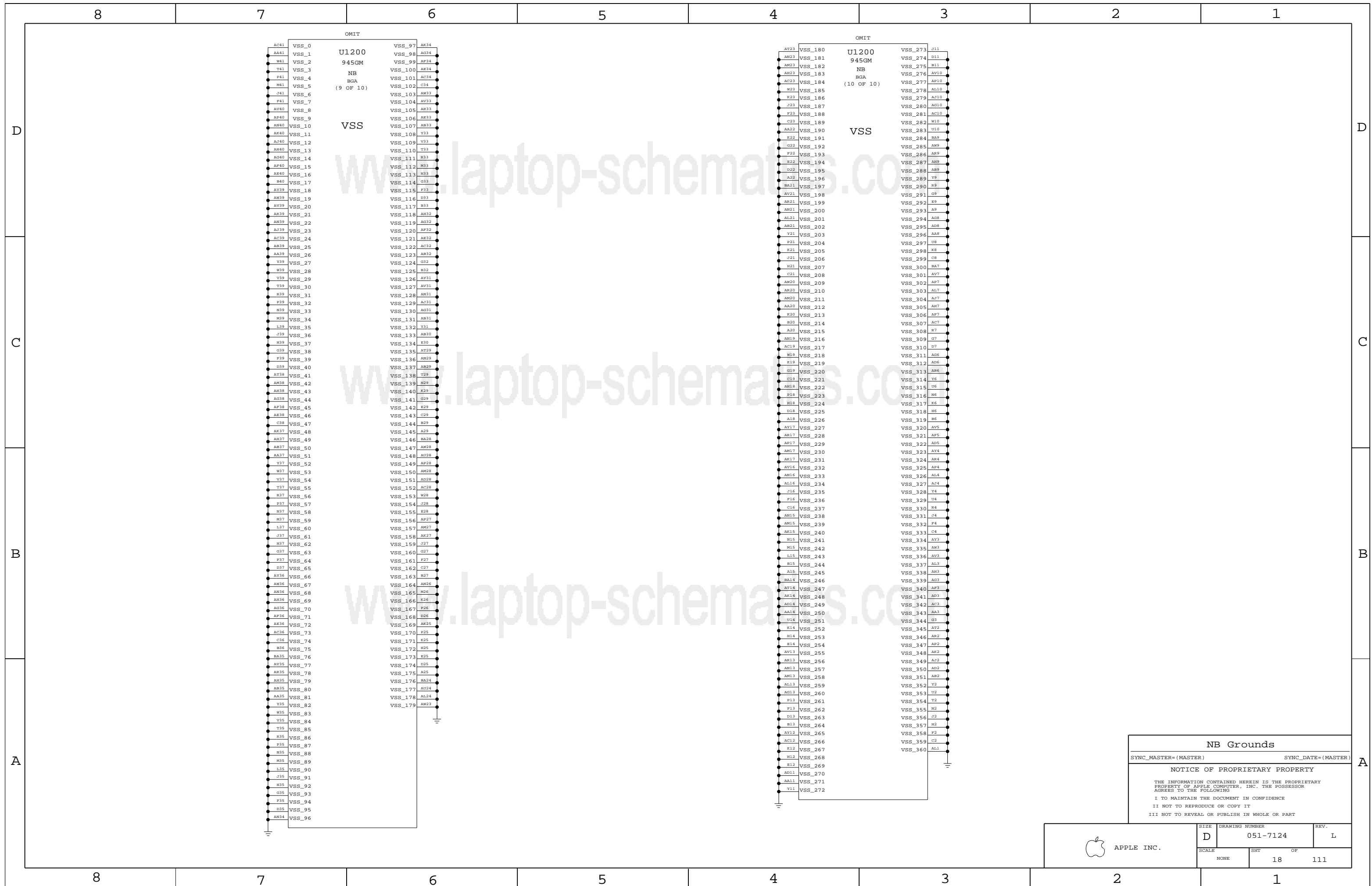
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET OF 17 OF 111	



NB Grounds

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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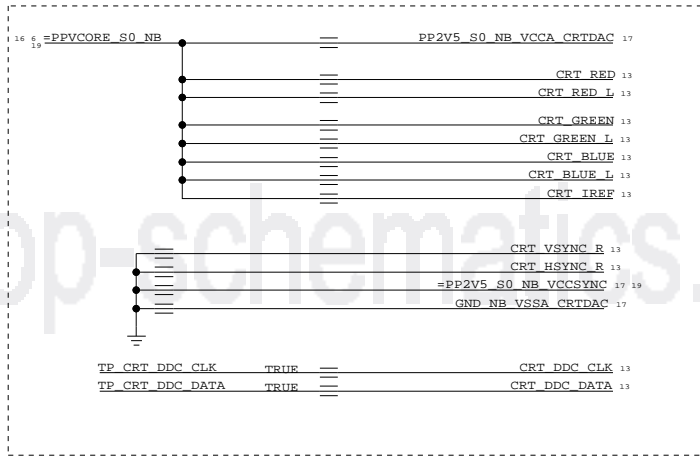
 APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	18		111

Power Interface

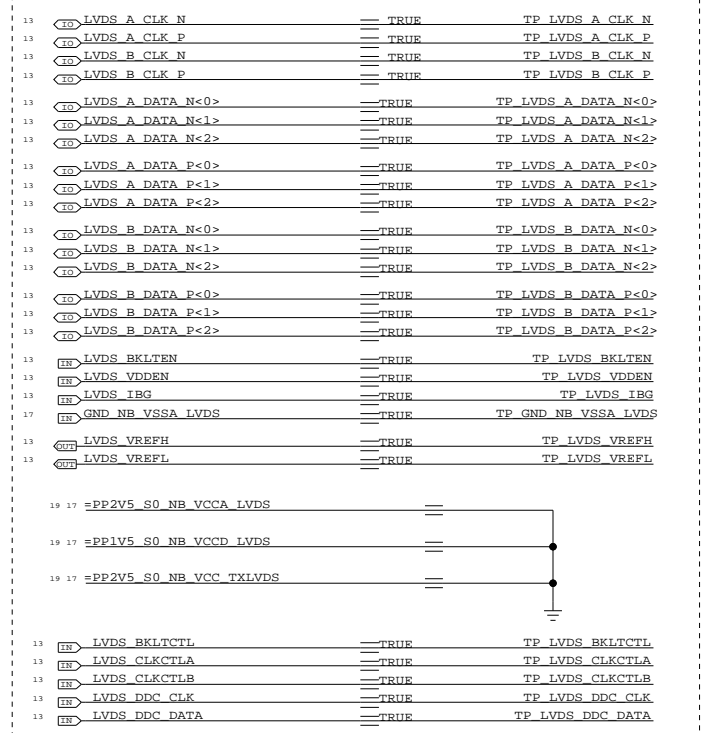
These are the power signals that leave the NB "block"

IN	=PP1V05_S0_FSB_NB	5 6 12
IN	=PPVCORE_S0_NB	6 16 19
IN	=PP1V05_S0_NB	6
IN	=PP1V05_S0_NB_VTT	6 17 19
IN	=PP1V5_S0_NB	6 19
IN	=PP1V5_S0_NB_PCIE	6 13
IN	=PP1V5_S0_NB_PLL	6 19
IN	=PP1V5_S0_NB_TVDAC	6 19
IN	=PP1V5_S0_NB_VCCD_HMPLL	6 17
IN	=PP1V5_S0_NB_VCCD_LVDS	17 19
IN	=PP1V5_S0_NB_VCCAUX	6 16 17 19
IN	=PP1V8_S3_MEM_NB	6 14 16 19
IN	=PP2V5_S0_NB_VCCSYNCR	17 19
IN	=PP2V5_S0_NB_VCC_TXLVDS	17 19
IN	=PP2V5_S0_NB_VCCA_3GBG	6 17 19
IN	=PP2V5_S0_NB_VCCA_LVDS	17 19
IN	=PP3V3_S0_NB	6 14 20
IN	=PP3V3_S0_NB_TVDAC	6
IN	=PP3V3_S0_NB_VCC_HV	6 17 19

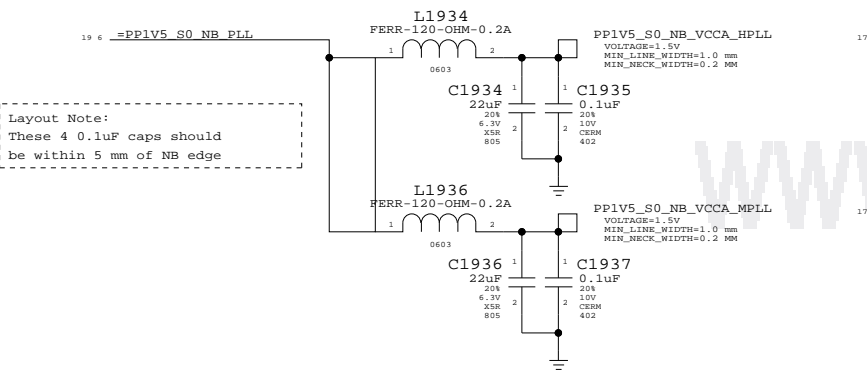
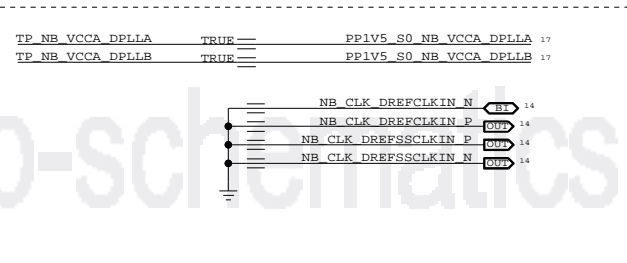
TVOUT DISABLE



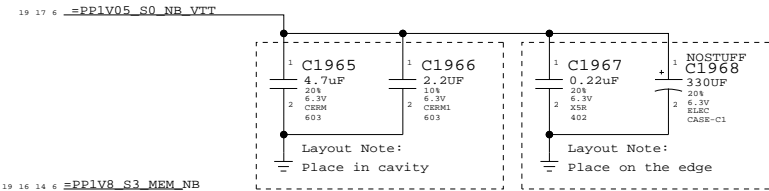
LVDS DISABLE



DISPLAY DISABLE

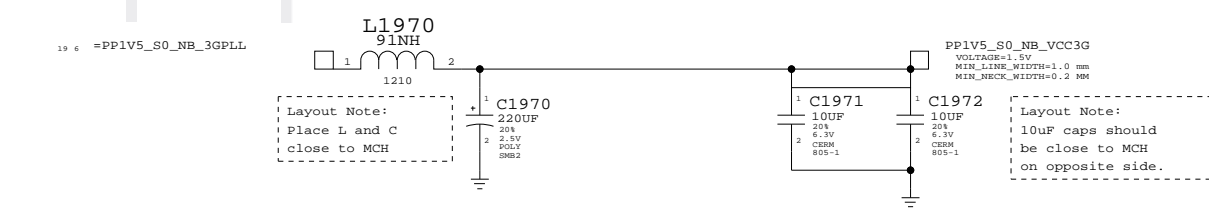
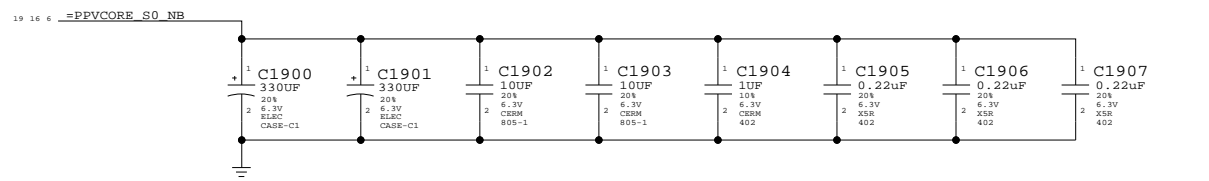
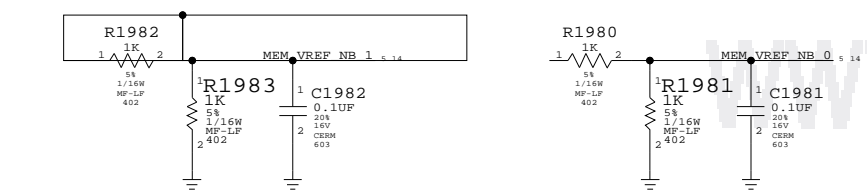


Layout Note:
These 4 0.1uF caps should be within 5 mm of NB edge



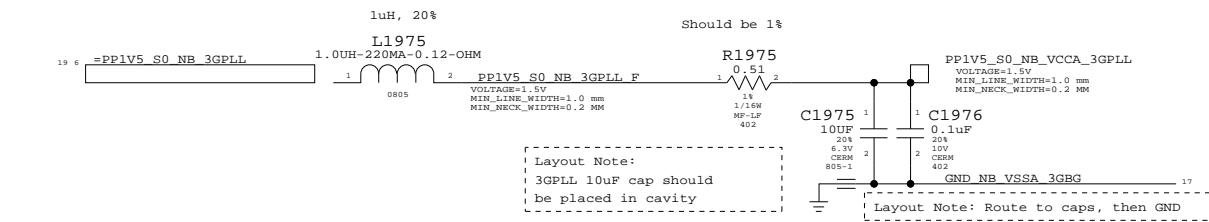
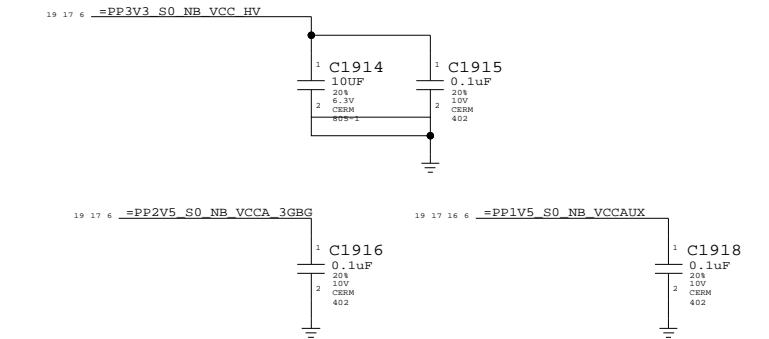
Layout Note:
Place in cavity

Layout Note:
Place on the edge



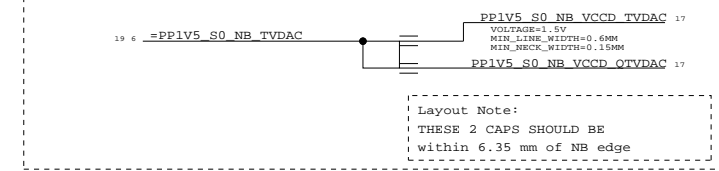
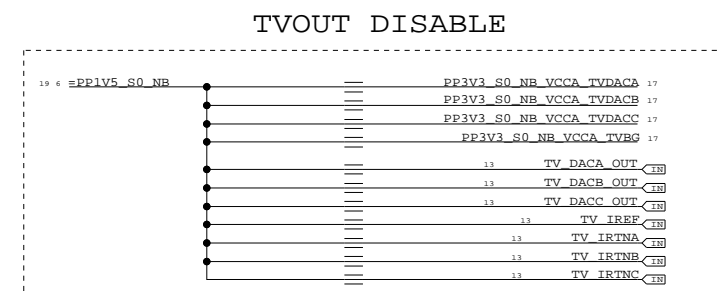
Layout Note:
Place L and C close to MCH

Layout Note:
10uF caps should be close to MCH on opposite side.

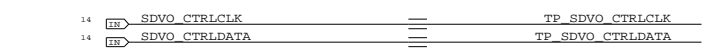


Layout Note:
3GPLL 10uF cap should be placed in cavity

Layout Note: Route to caps, then GND

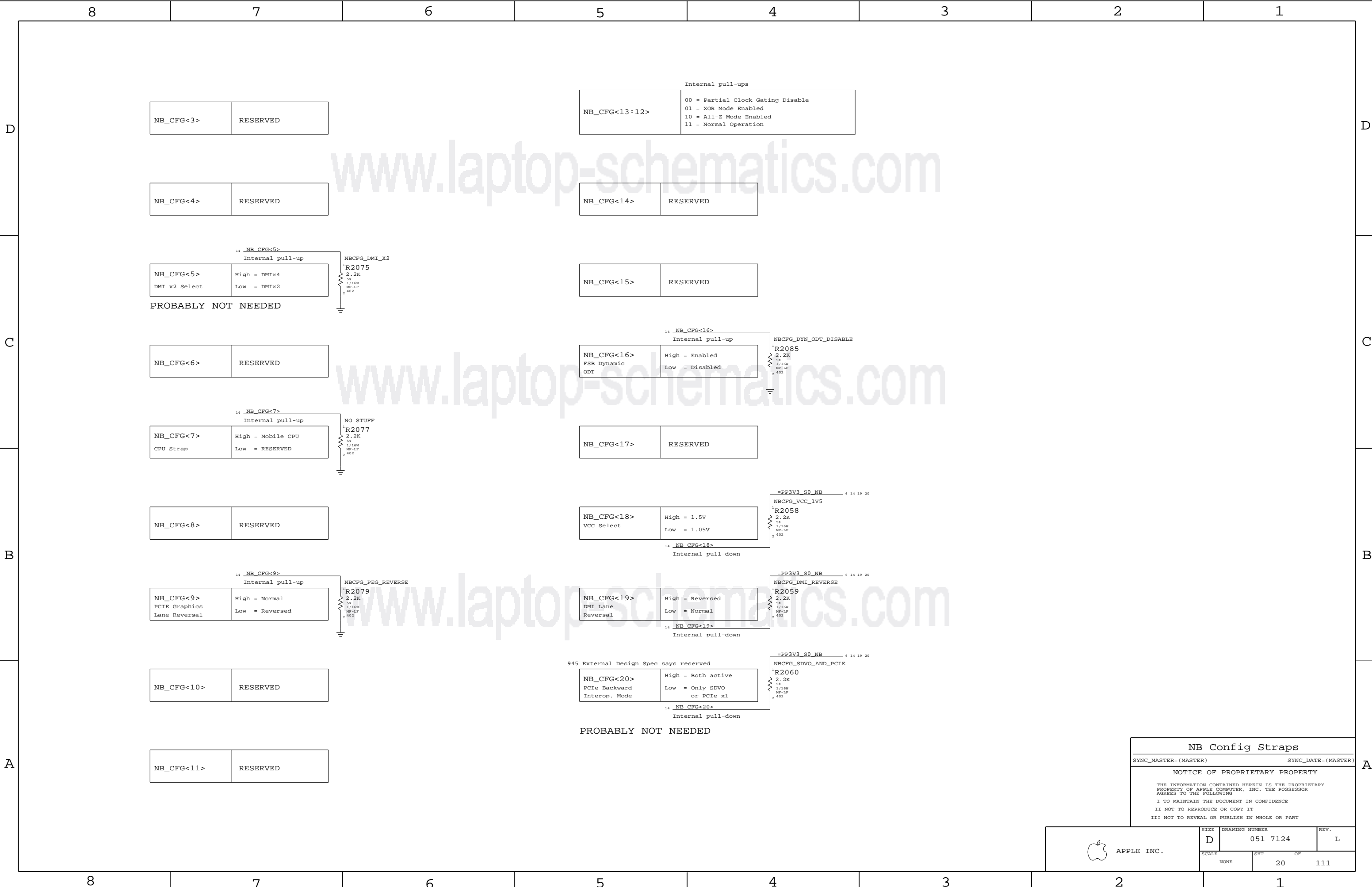


Layout Note:
THESE 2 CAPS SHOULD BE WITHIN 6.35 mm OF NB EDGE



NB (GM) Decoupling
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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	D	051-7124	L
SCALE	SHT	OF	
NONE	19	111	



NB_CFG<3>	RESERVED
-----------	----------

Internal pull-ups	
NB_CFG<13:12>	00 = Partial Clock Gating Disable 01 = XOR Mode Enabled 10 = All-Z Mode Enabled 11 = Normal Operation

NB_CFG<4>	RESERVED
-----------	----------

NB_CFG<14>	RESERVED
------------	----------

14 NB_CFG<5> Internal pull-up	
NB_CFG<5>	High = DMiX4 DMI x2 Select Low = DMiX2
PROBABLY NOT NEEDED	

NB_CFG<15>	RESERVED
------------	----------

NB_CFG<6>	RESERVED
-----------	----------

14 NB_CFG<16> Internal pull-up	
NB_CFG<16>	High = Enabled FSB Dynamic Low = Disabled ODT

14 NB_CFG<7> Internal pull-up	
NB_CFG<7>	High = Mobile CPU CPU Strap Low = RESERVED
NO STUFF	

NB_CFG<17>	RESERVED
------------	----------

NB_CFG<8>	RESERVED
-----------	----------

14 NB_CFG<18> Internal pull-down	
NB_CFG<18>	High = 1.5V VCC Select Low = 1.05V

14 NB_CFG<9> Internal pull-up	
NB_CFG<9>	High = Normal PCIe Graphics Lane Reversal Low = Reversed

14 NB_CFG<19> Internal pull-down	
NB_CFG<19>	High = Reversed DMI Lane Low = Normal Reversal

NB_CFG<10>	RESERVED
------------	----------

945 External Design Spec says reserved	
14 NB_CFG<20> Internal pull-down	
NB_CFG<20>	High = Both active PCIe Backward Interop. Mode Low = Only SDVO or PCIe x1

NB_CFG<11>	RESERVED
------------	----------

NB Config Straps

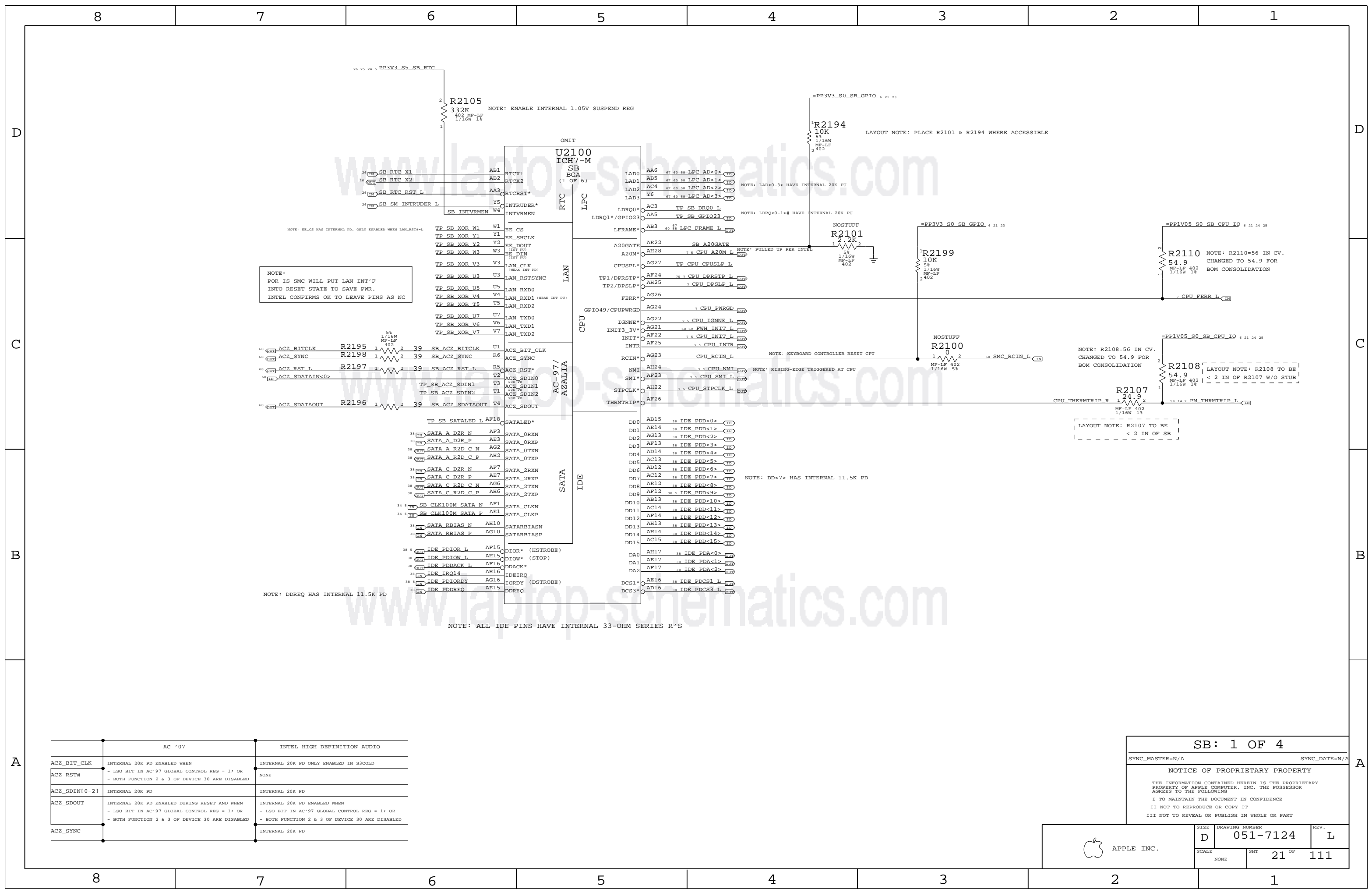
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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	D	051-7124	L
SCALE		SHT	OF
NONE		20	111



NOTE:
 POR IS SMC WILL PUT LAN INT'F
 INTO RESET STATE TO SAVE PWR.
 INTEL CONFIRMS OK TO LEAVE PINS AS NC

NOTE: DDREQ HAS INTERNAL 11.5K PD

NOTE: ALL IDE PINS HAVE INTERNAL 33-OHM SERIES R'S

AC '07		INTEL HIGH DEFINITION AUDIO	
ACZ_BIT_CLK	INTERNAL 20K PD ENABLED WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR	INTERNAL 20K PD ONLY ENABLED IN S3COLD	
ACZ_RST#	- BOTH FUNCTION 2 & 3 OF DEVICE 30 ARE DISABLED	NONE	
ACZ_SDIN[0-2]	INTERNAL 20K PD	INTERNAL 20K PD	
ACZ_SDOUT	INTERNAL 20K PD ENABLED DURING RESET AND WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR	INTERNAL 20K PD ENABLED WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR	
	- BOTH FUNCTION 2 & 3 OF DEVICE 30 ARE DISABLED	- BOTH FUNCTION 2 & 3 OF DEVICE 30 ARE DISABLED	
ACZ_SYNC		INTERNAL 20K PD	

SB: 1 OF 4

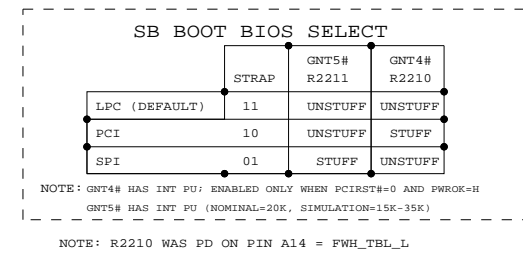
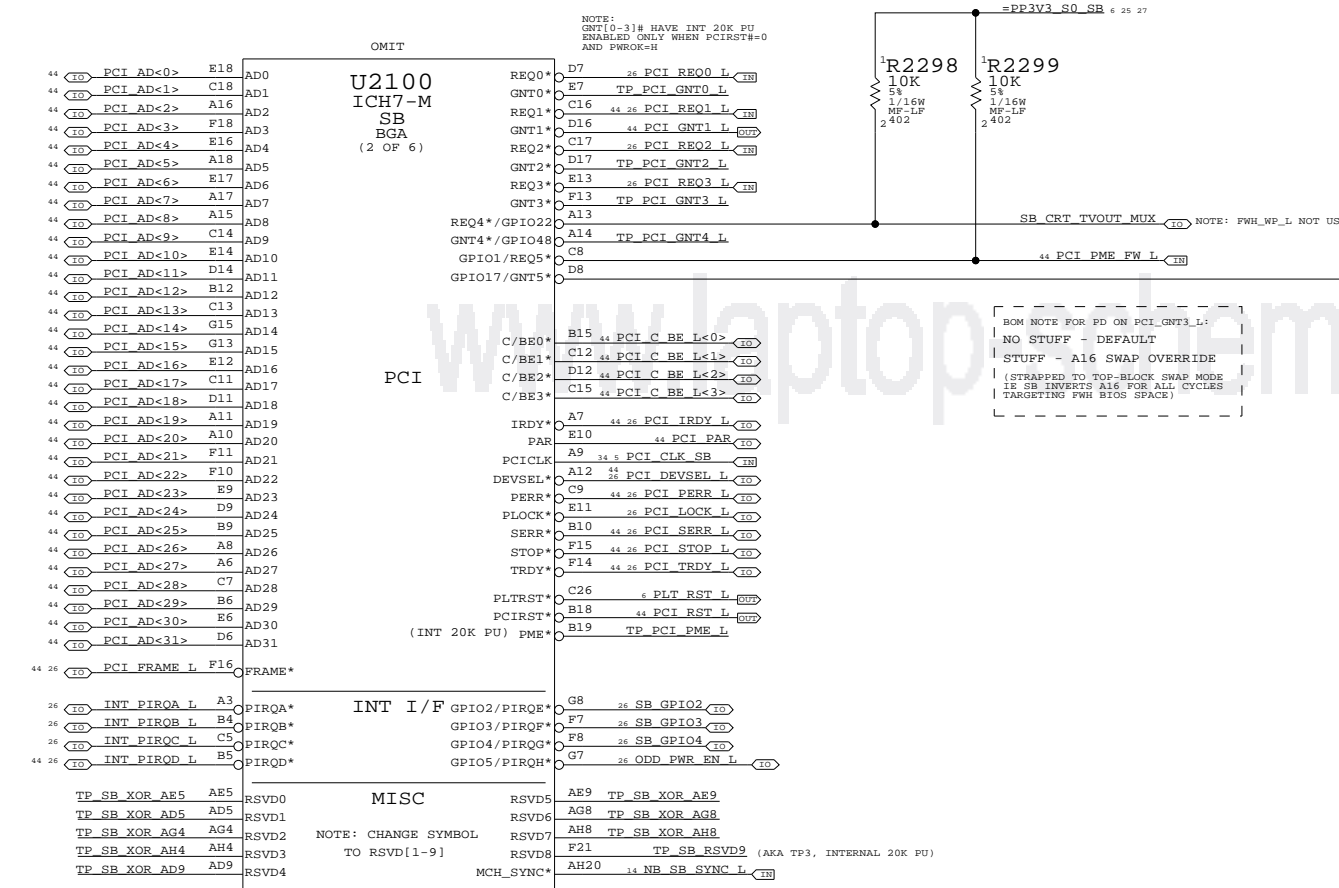
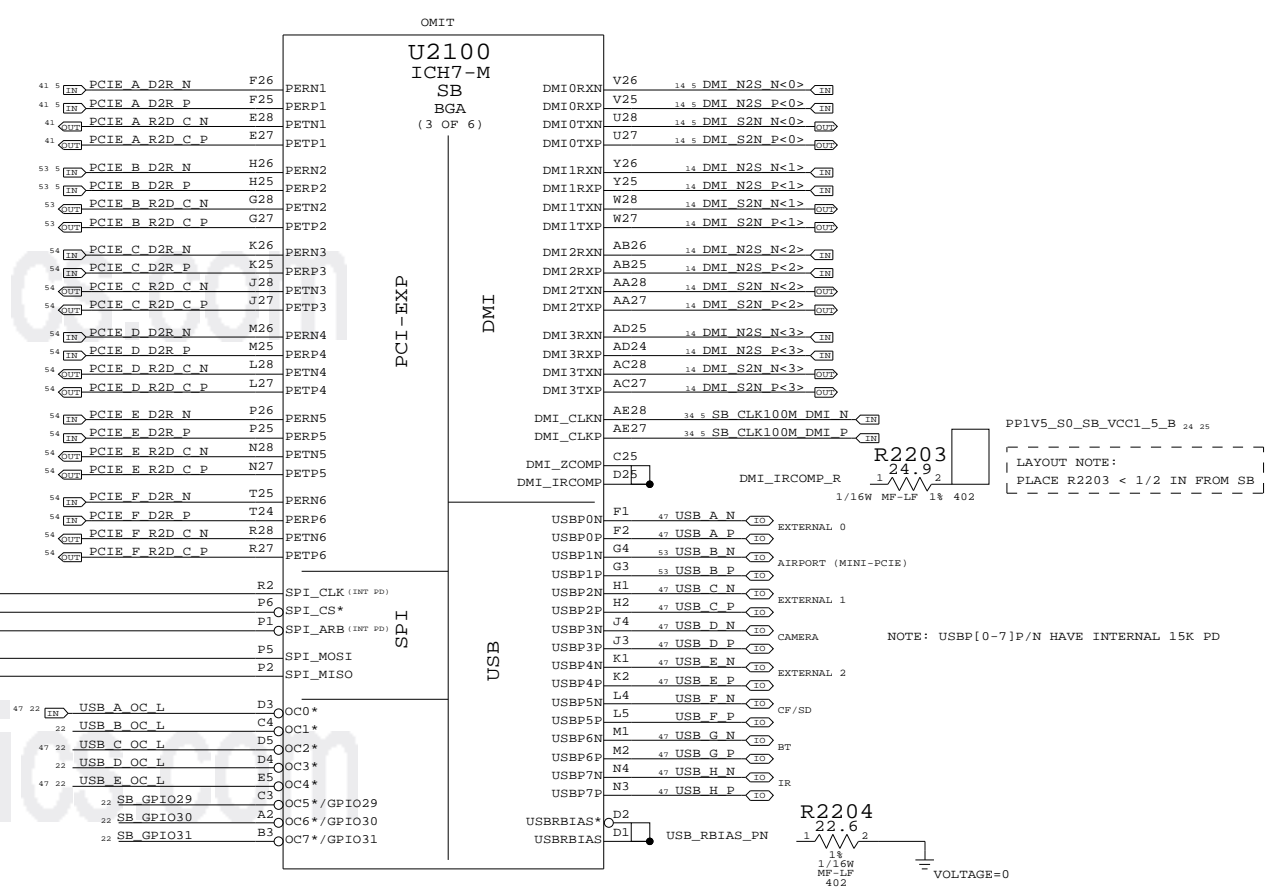
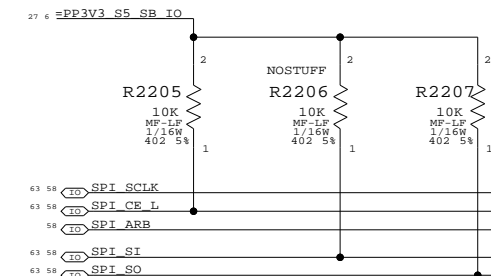
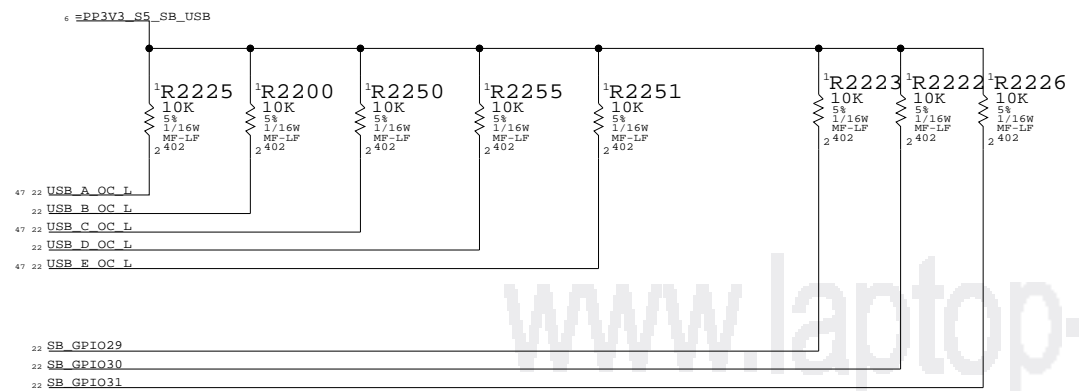
SYNC_MASTER=N/A SYNC_DATE=N/A

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	D	051-7124	L
SCALE	SHT	21 OF 111	
NONE			



SB: 2 OF 4

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

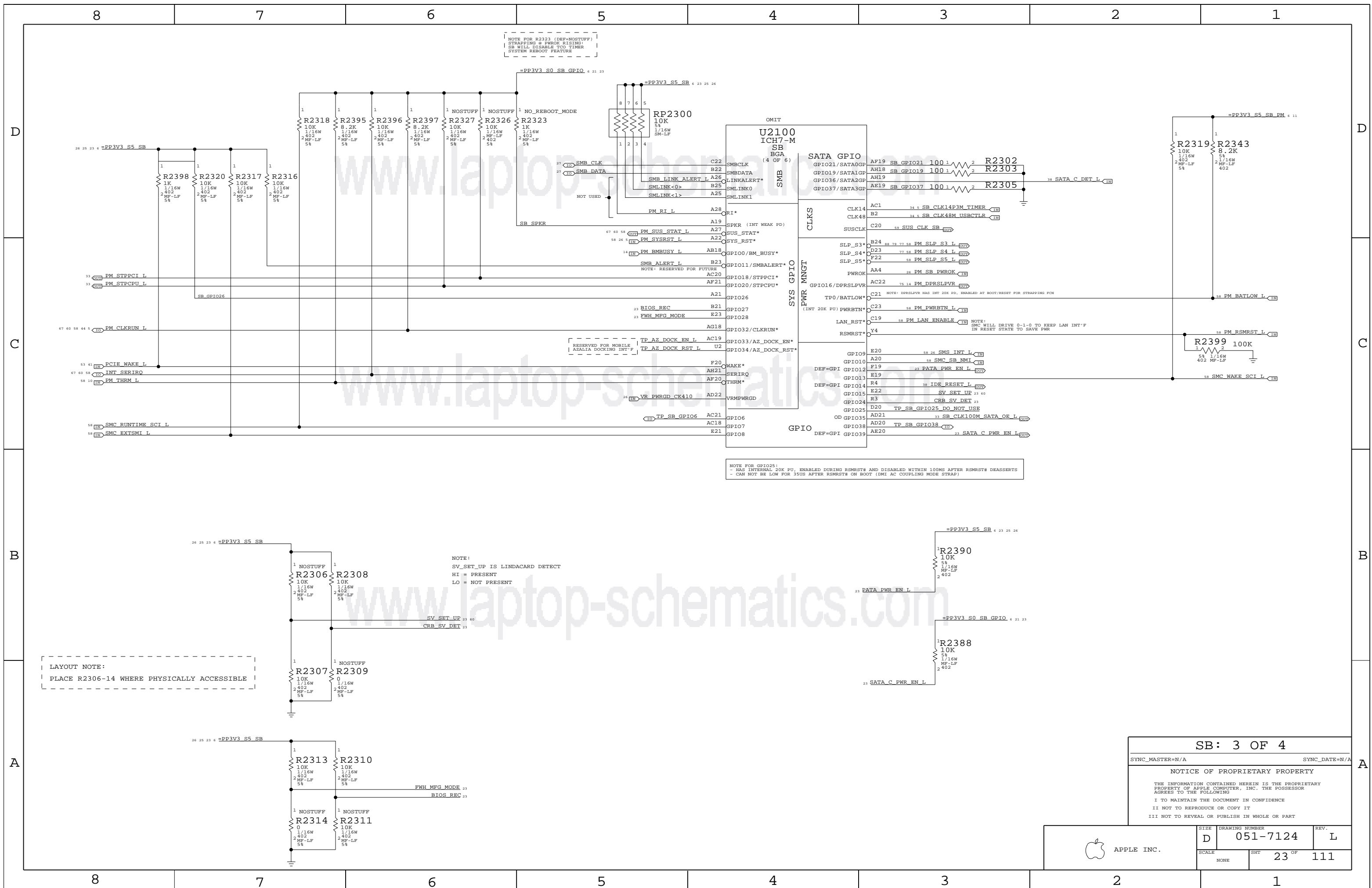
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APPLE INC.

SCALE: NONE

SIZE: D	DRAWING NUMBER: 051-7124	REV.: L
SCALE: NONE	SHT: 22 OF	111



NOTE FOR R2323 (DEF-NOSTUFF)
STRAPPING & PWROK RISING:
SB WILL DISABLE TOO TIMER
SYSTEM REBOOT FEATURE

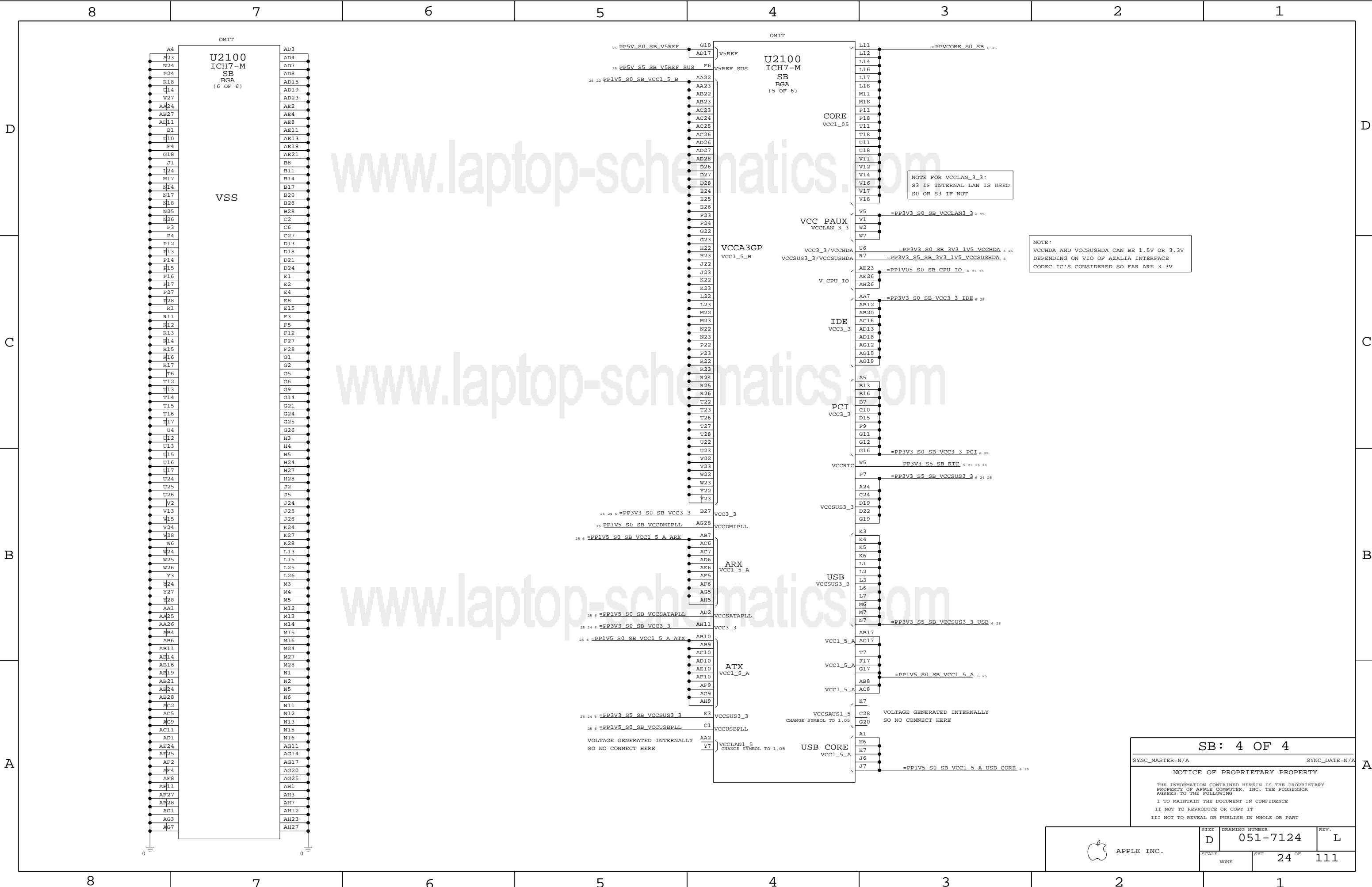
NOTE FOR GPIO25:
- HAS INTERNAL 20K PU, ENABLED DURING RSMRST# AND DISABLED WITHIN 100MS AFTER RSMRST# DEASSERTS
- CAN NOT BE LOW FOR 35US AFTER RSMRST# ON BOOT (DMI AC COUPLING MODE STRAP)

LAYOUT NOTE:
PLACE R2306-14 WHERE PHYSICALLY ACCESSIBLE

NOTE:
SV_SET_UP IS LINDACARD DETECT
HI = PRESENT
LO = NOT PRESENT

SB: 3 OF 4
SYNC_MASTER=N/A SYNC_DATE=N/A
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	D	051-7124	L
SCALE	NONE	SHT	23 OF 111



SB: 4 OF 4

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

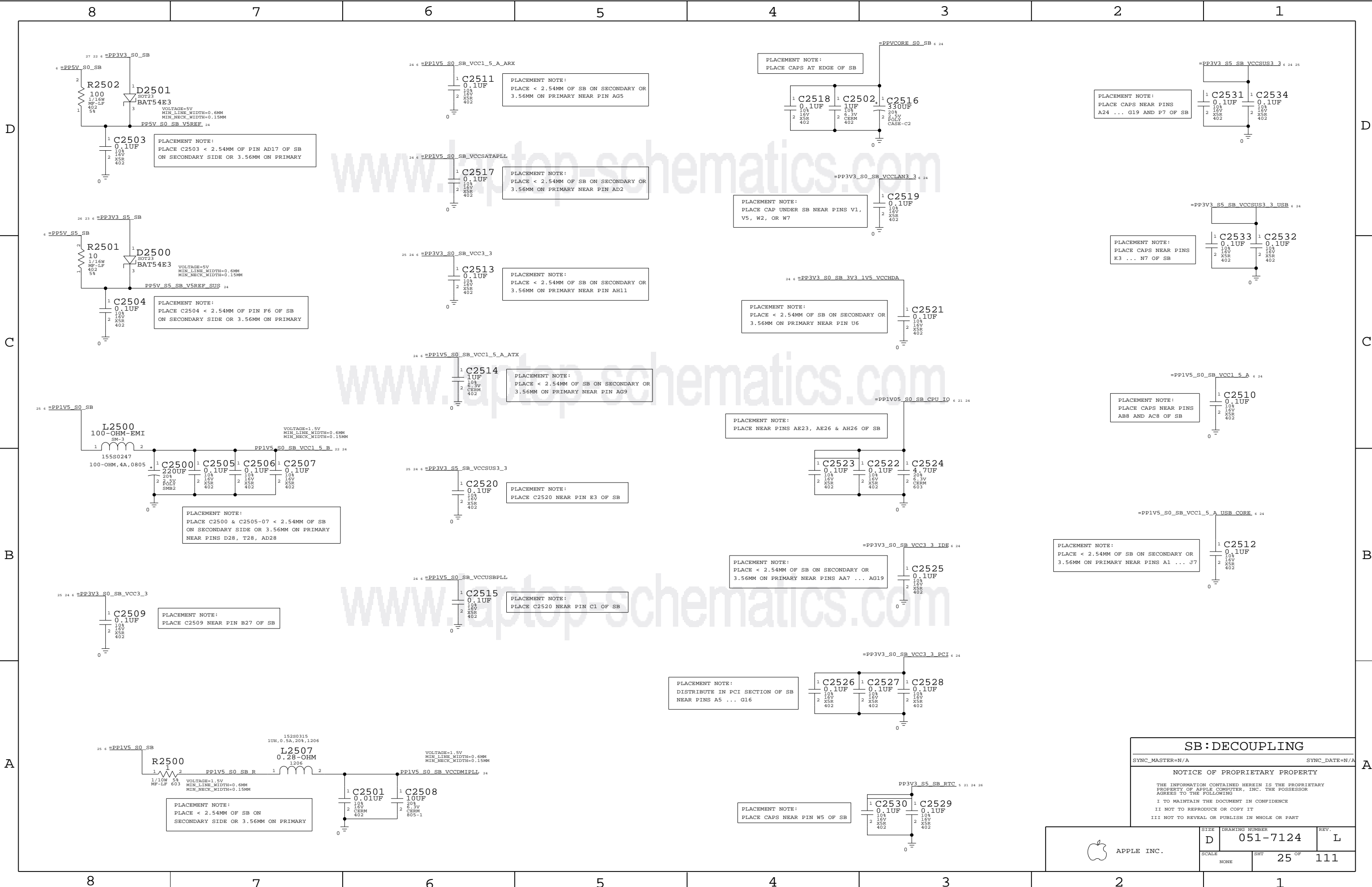
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	D	051-7124	L
SCALE	SHT	24 OF 111	
NONE			



SB: DECOUPLING

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

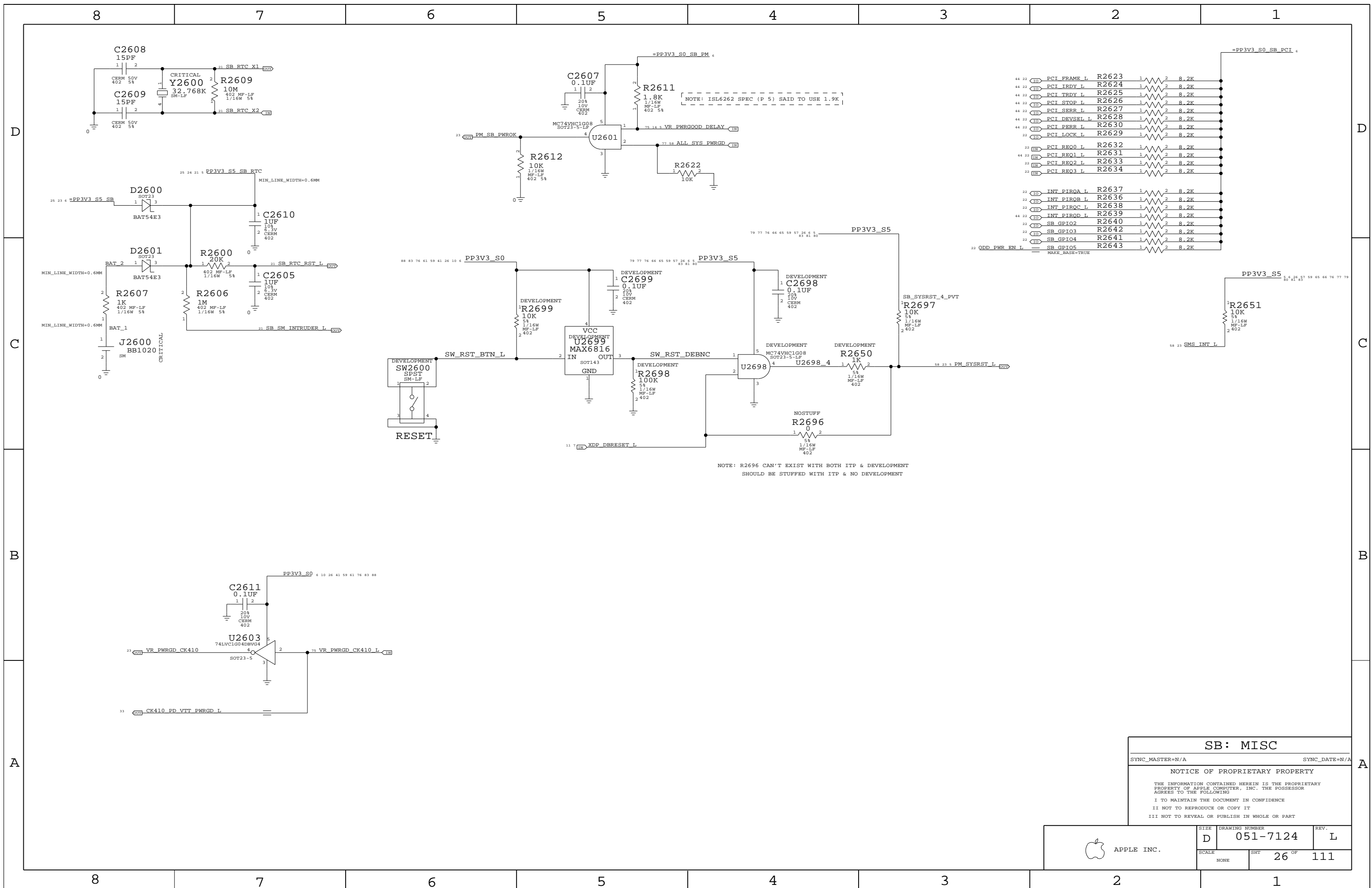
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	25 OF	111
NONE			



SB: MISC

SYNC_MASTER=N/A SYNC_DATE=N/A

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	26 OF	111
NONE			

NOTE: R2696 CAN'T EXIST WITH BOTH ITP & DEVELOPMENT
SHOULD BE STUFFED WITH ITP & NO DEVELOPMENT

8

7

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5

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3

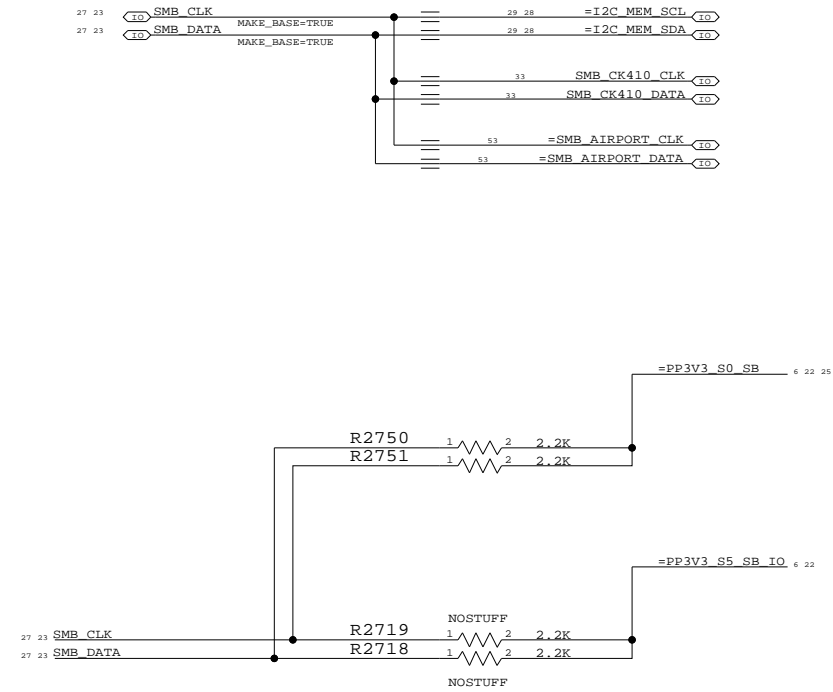
2

1

D

D

SB I2C BUSSES



C

C

B

B

A

A

SB: SMB HUB

SYNC_MASTER=N/A SYNC_DATE=N/A

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	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	27 OF 111	
NONE			

8

7

6

5

4

3

2

1

Page Notes

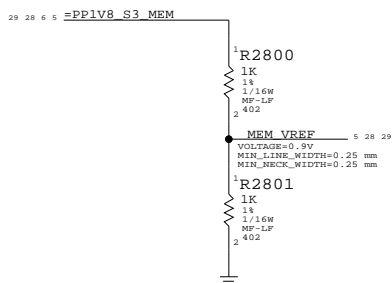
Power aliases required by this page:
 - =PP1V8_S3_MEM
 - =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
 - =I2C_MEM_SCL
 - =I2C_MEM_SDA

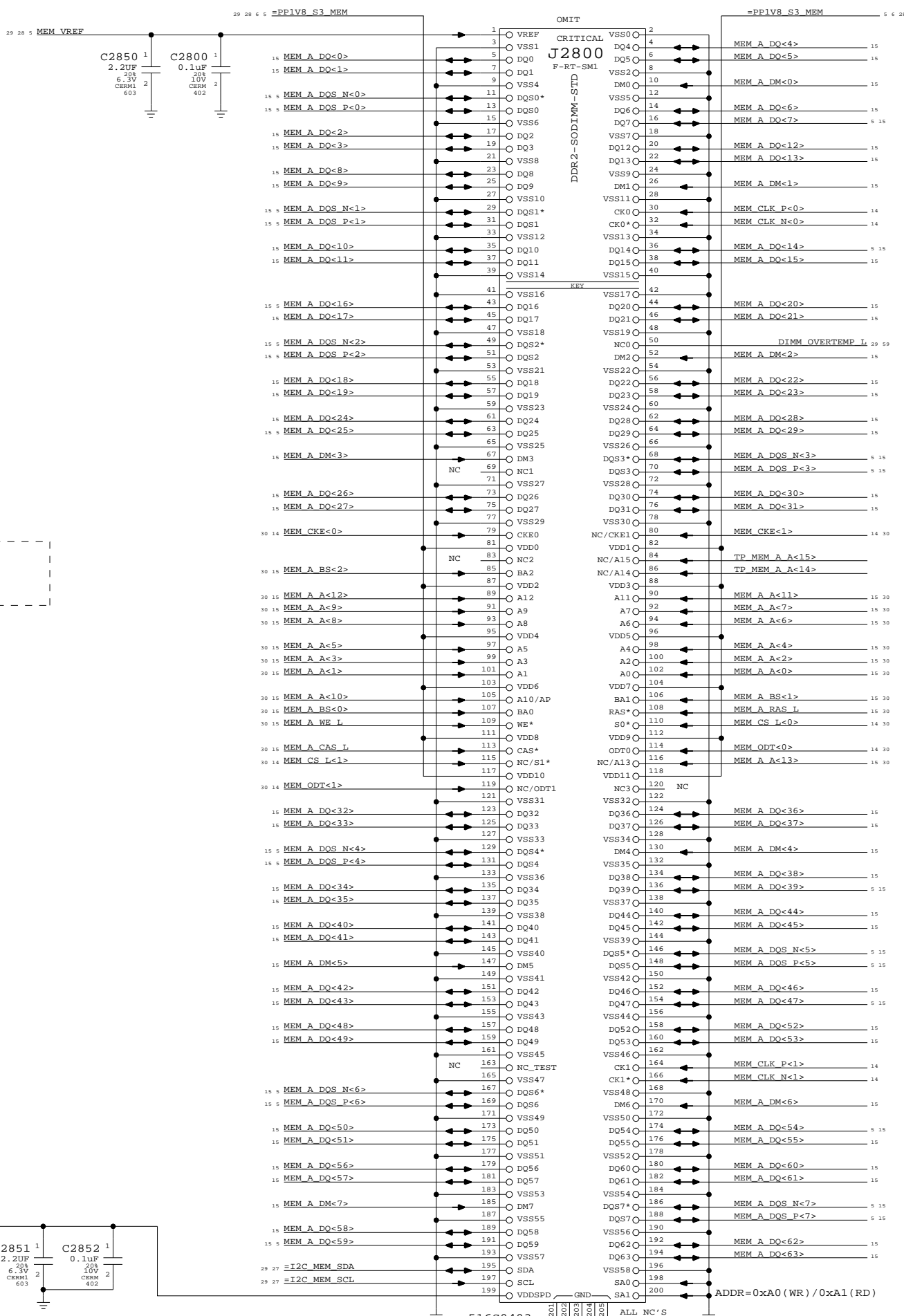
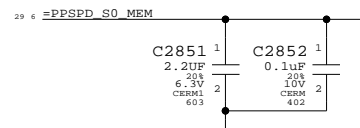
BOM options provided by this page:
 (NONE)

DDR2 VRef

One 0.1uF per connector



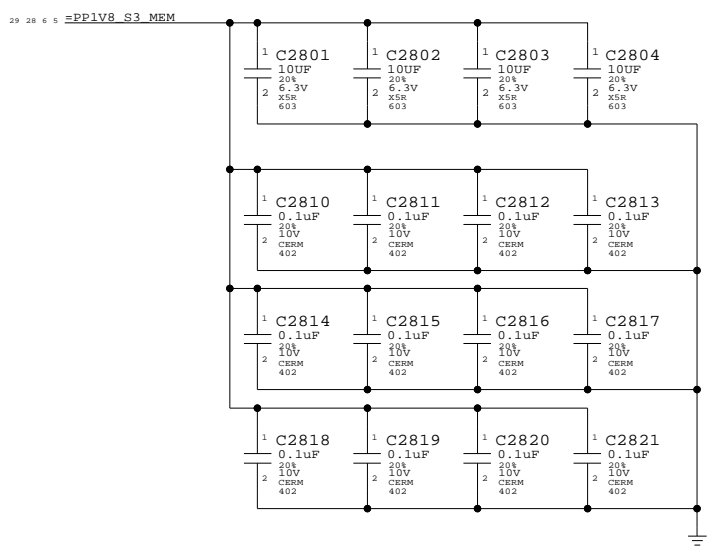
Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors.
 (See Capell Valley pg 47)



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
516S0503	1	DDR2 SODIMM STD	J2800	CRITICAL	

DDR2 Bypass Caps

(For return current)



DDR2 SO-DIMM Connector A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	28	111	

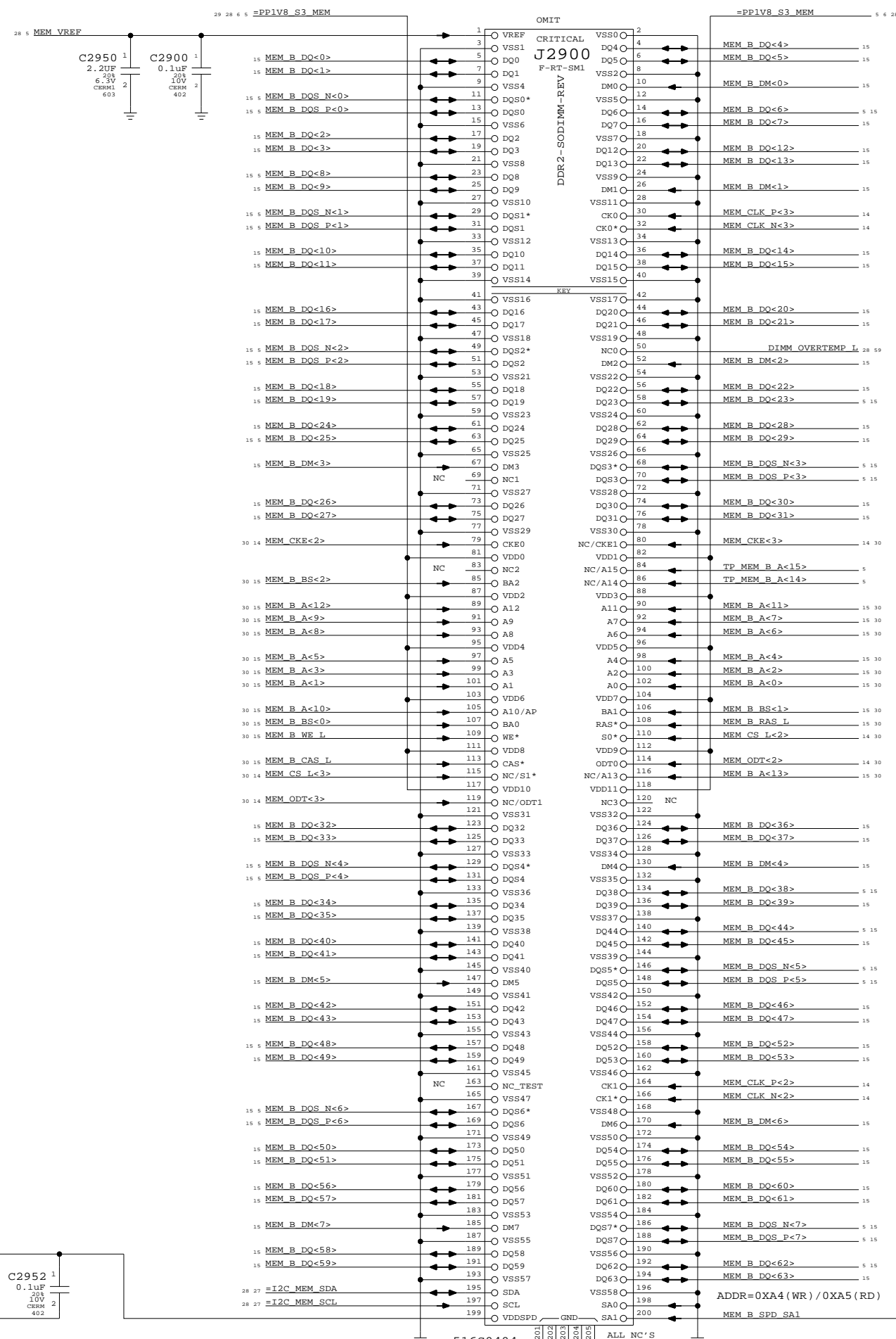
Page Notes

Power aliases required by this page:
 - =PP1V8_S3_MEM
 - =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
 - =I2C_MEM_SCL
 - =I2C_MEM_SDA

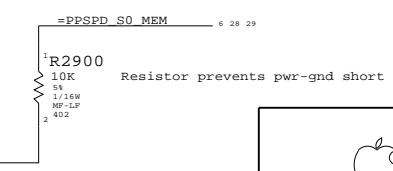
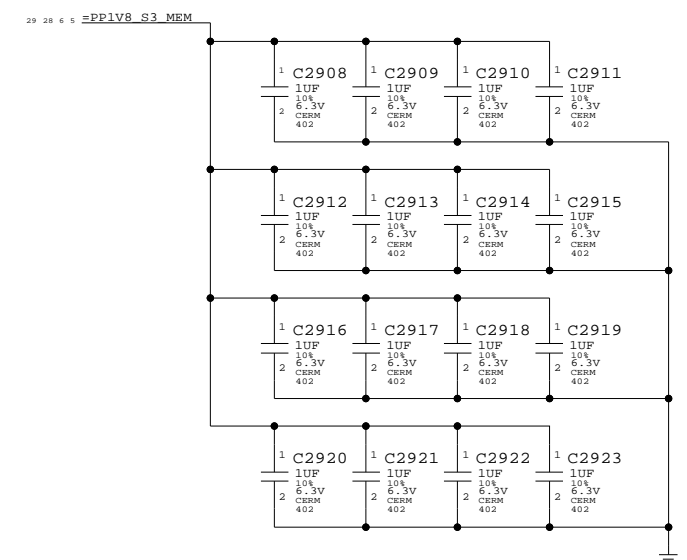
BOM options provided by this page:
 (NONE)

NOTE: This page does not supply VREF.
 The reference voltage must be provided by another page.



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
516S0504	1	DDR2 SODIMM REV	J2900	CRITICAL	

DDR2 Bypass Caps
 (For return current)



DDR2 SO-DIMM Connector B
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	29	111	

8

7

6

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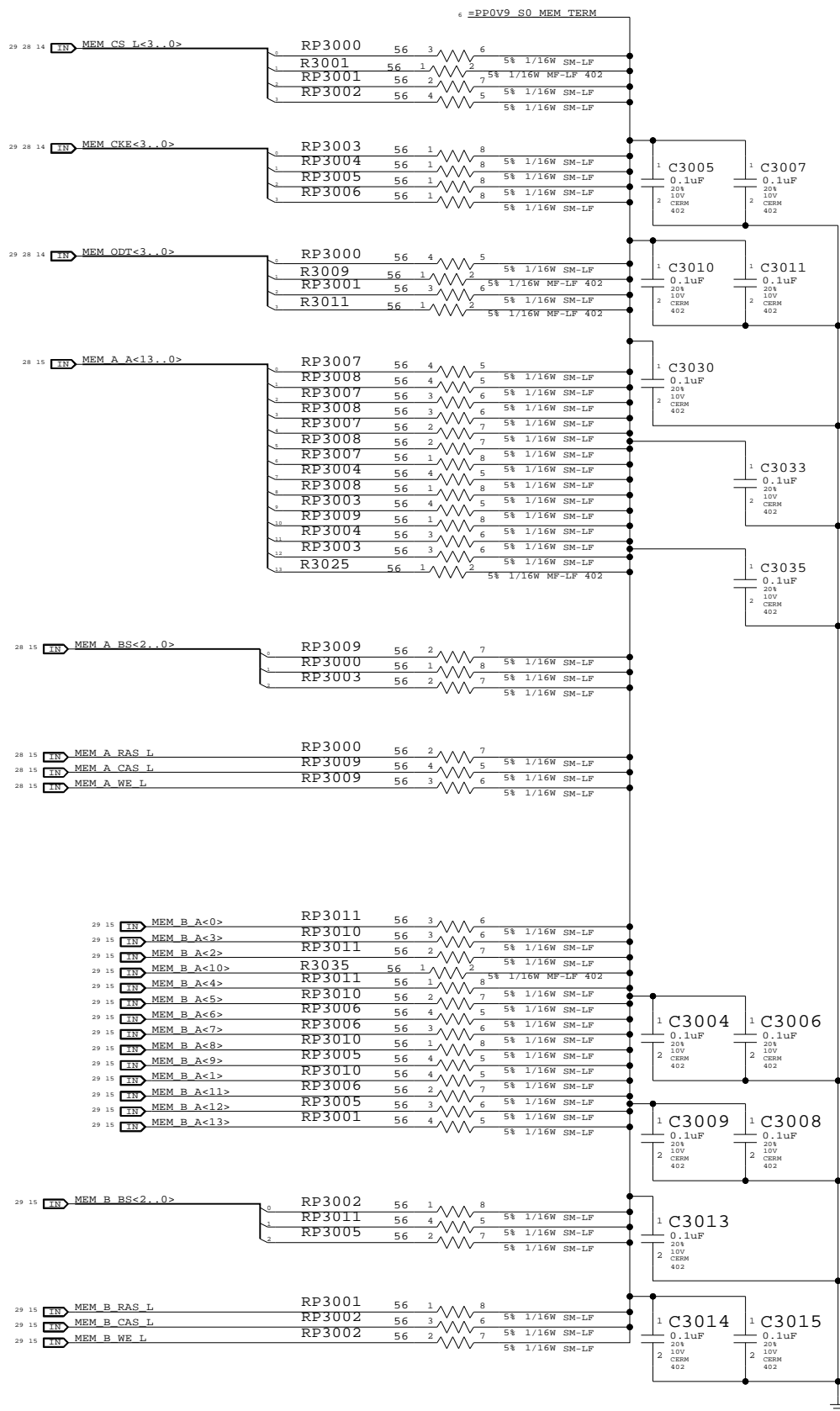
4

3

2

1

One cap for each side of every RPAK, one cap for every two discrete resistors
BOMOPTION shown at the top of each group applies to every part below it



Memory Active Termination

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SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	30	111

8

7

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2

1

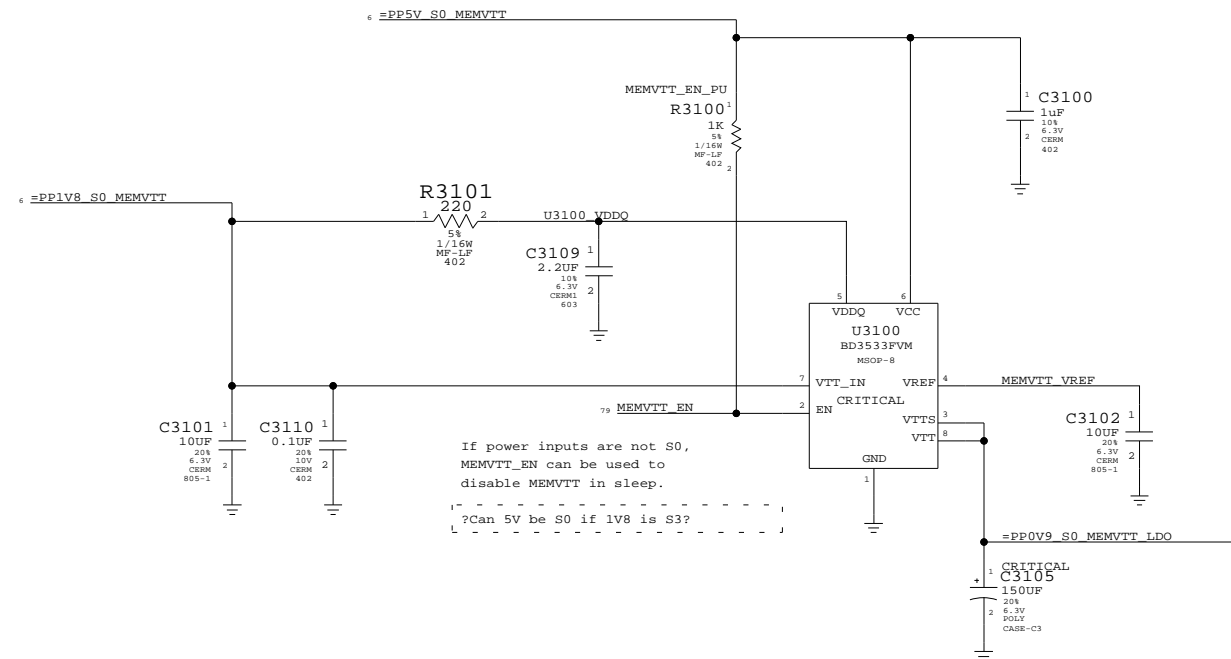
Page Notes

Power aliases required by this page:
 - =PP5V_S0_MEMVTT
 - =PP1V8_S0_MEMVTT
 - =PP0V9_S0_MEMVTT_LDO

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)

DDR2 Vtt Regulator



Memory Vtt Supply

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

NOTICE OF PROPRIETARY PROPERTY

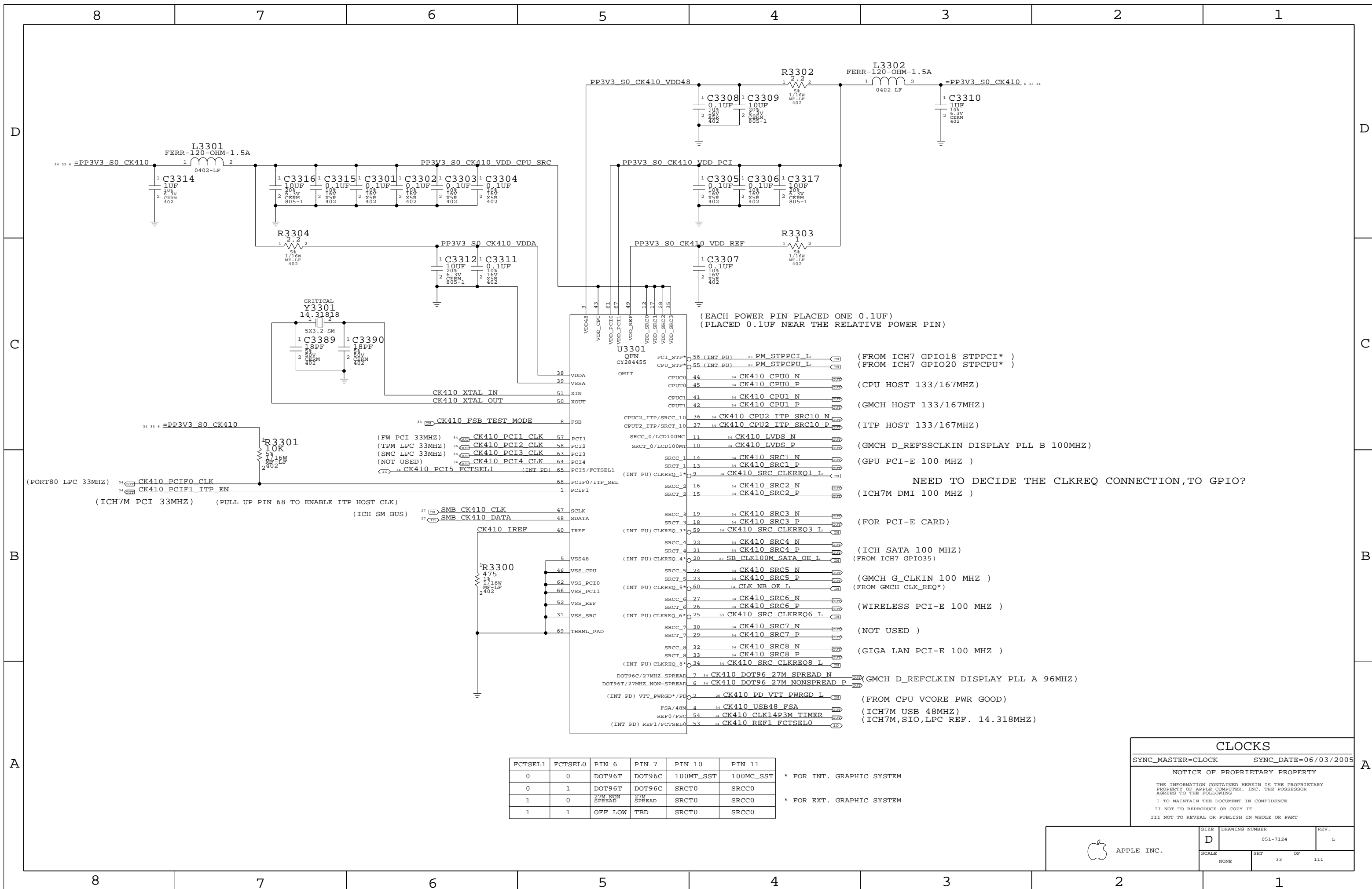
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	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	31	111	



(EACH POWER PIN PLACED ONE 0.1UF)
(PLACED 0.1UF NEAR THE RELATIVE POWER PIN)

Pin	Signal	Description
56	INT_EU	PM STPPCI L (FROM ICH7 GPIO18 STPPCI*)
55	INT_PU	PM STPCPU L (FROM ICH7 GPIO20 STPCPU*)
44	CPU0_C	CK410 CPU0 N (CPU HOST 133/167MHZ)
45	CPU0_P	CK410 CPU0 P
41	CPU1_C	CK410 CPU1 N (GMCH HOST 133/167MHZ)
42	CPU1_P	CK410 CPU1 P
36	CPU2_ITP_SRC10_N	CK410 CPU2 ITP SRC10 N (ITP HOST 133/167MHZ)
37	CPU2_ITP_SRC10_P	CK410 CPU2 ITP SRC10 P
11	SRCC_0/LCD100MC	CK410 LVDS N (GMCH D_REFSSCLKIN DISPLAY PLL B 100MHZ)
10	SRCT_0/LCD100MT	CK410 LVDS P
14	SRCC_1	CK410 SRC1 N (GPU PCI-E 100 MHZ)
13	SRCT_1	CK410 SRC1 P
9	CLKREQ_1*	CK410 SRC CLKREQ1 L
16	SRCC_2	CK410 SRC2 N
15	SRCT_2	CK410 SRC2 P
19	SRCC_3	CK410 SRC3 N
18	SRCT_3	CK410 SRC3 P (FOR PCI-E CARD)
59	CLKREQ_3*	CK410 SRC CLKREQ3 L
22	SRCC_4	CK410 SRC4 N (ICH SATA 100 MHZ)
21	SRCT_4	CK410 SRC4 P (FROM ICH7 GPIO35)
20	CLKREQ_4*	SB CLK100M SATA OE L
24	SRCC_5	CK410 SRC5 N (GMCH G_CLKIN 100 MHZ)
23	SRCT_5	CK410 SRC5 P (FROM GMCH CLK_REQ*)
60	CLKREQ_5*	CLK NB OE L
27	SRCC_6	CK410 SRC6 N (WIRELESS PCI-E 100 MHZ)
26	SRCT_6	CK410 SRC6 P
25	CLKREQ_6*	CK410 SRC CLKREQ6 L
30	SRCC_7	CK410 SRC7 N (NOT USED)
29	SRCT_7	CK410 SRC7 P
32	SRCC_8	CK410 SRC8 N (GIGA LAN PCI-E 100 MHZ)
33	SRCT_8	CK410 SRC8 P
34	CLKREQ_8*	CK410 SRC CLKREQ8 L
7	DOT96C/27MHZ_SPREAD	CK410 DOT96 27M SPREAD N (GMCH D_REFCLKIN DISPLAY PLL A 96MHZ)
6	DOT96T/27MHZ_NON-SPREAD	CK410 DOT96 27M NONSPREAD P
2	VTT_PWRGD*/PD	CK410 PD VTT PWRGD L (FROM CPU VCORE PWR GOOD)
4	FSA/48M	CK410 USB48 FSA (ICH7M USB 48MHZ)
54	REF0/FSC	CK410 CLK14P3M TIMER (ICH7M,SIO,LPC REF. 14.318MHZ)
53	REF1/FCTSELO	CK410 REF1 FCTSELO

NEED TO DECIDE THE CLKREQ CONNECTION, TO GPIO?

FCTSEL1	FCTSELO	PIN 6	PIN 7	PIN 10	PIN 11	
0	0	DOT96T	DOT96C	100MT_SST	100MC_SST	* FOR INT. GRAPHIC SYSTEM
0	1	DOT96T	DOT96C	SRCT0	SRCC0	
1	0	27M NON SPREAD	27M SPREAD	SRCT0	SRCC0	* FOR EXT. GRAPHIC SYSTEM
1	1	OFF LOW	TBD	SRCT0	SRCC0	

CLOCKS

SYNC_MASTER=CLOCK SYNC_DATE=06/03/2005

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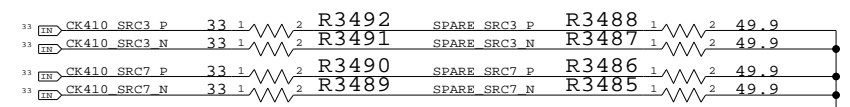
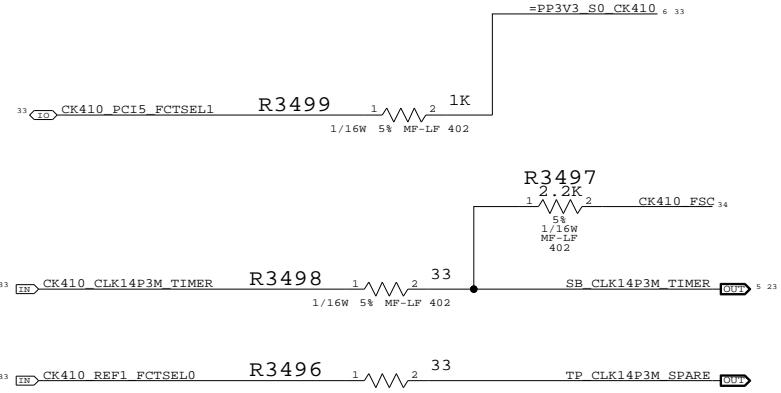
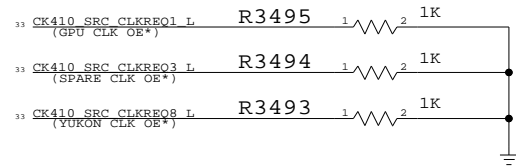
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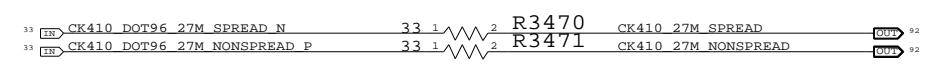
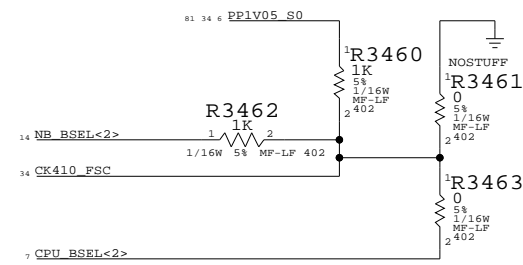
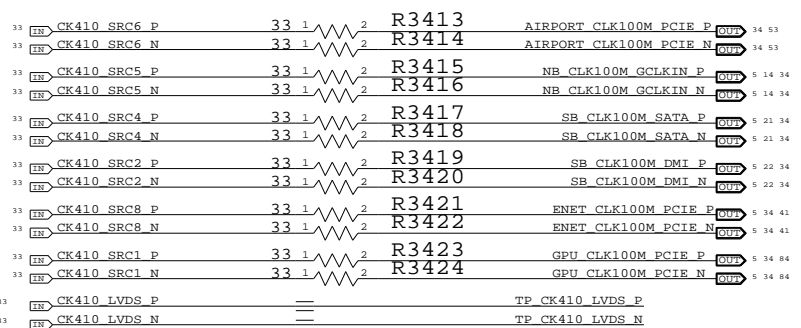
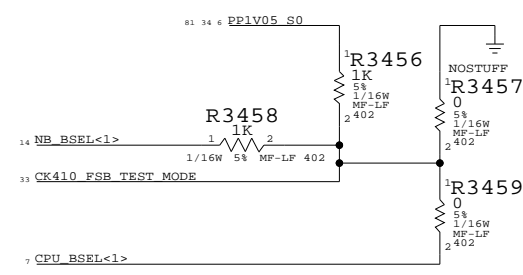
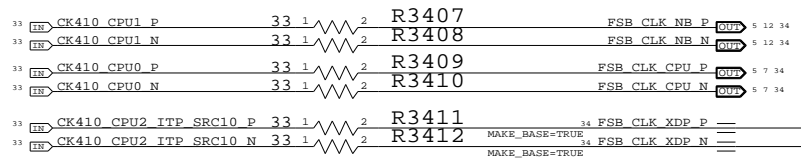
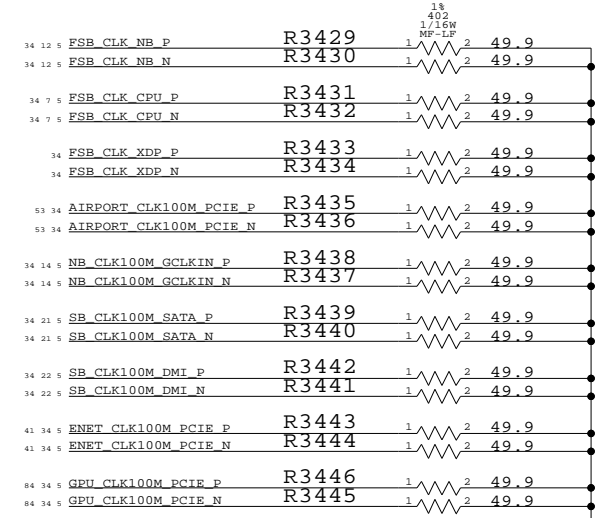
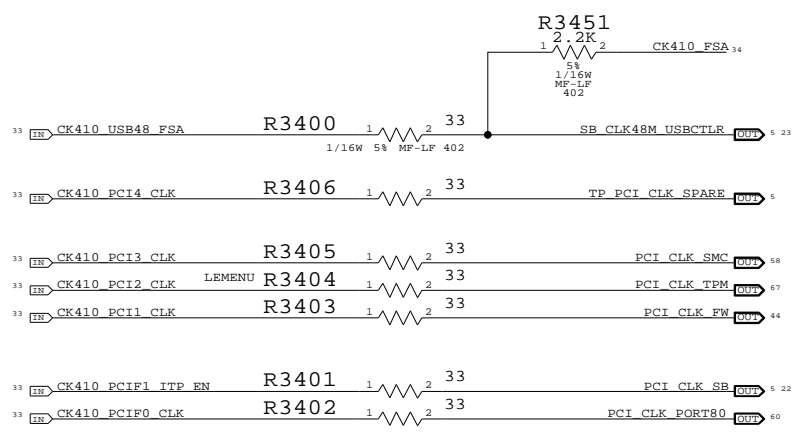
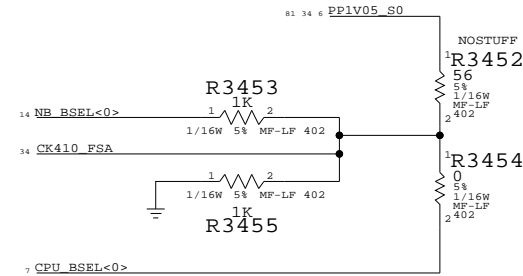
APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	111
NONE	33		

NOTE: USE THESE PULL-DOWNS IF NOT CONNECTED TO GPIO'S



FSB FREQUENCY SELECT:

	STUFF	NO STUFF
CPU DRIVEN	R3453 R3454 R3455	R3452 R3456 R3457
533MHZ (133MHZ CPU CLK)	R3453 R3454 R3455	R3452 R3456 R3457
667MHZ (166MHZ CPU CLK)	R3452 R3456 R3457	R3453 R3454 R3455



CLOCKS: TERMINATIONS

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

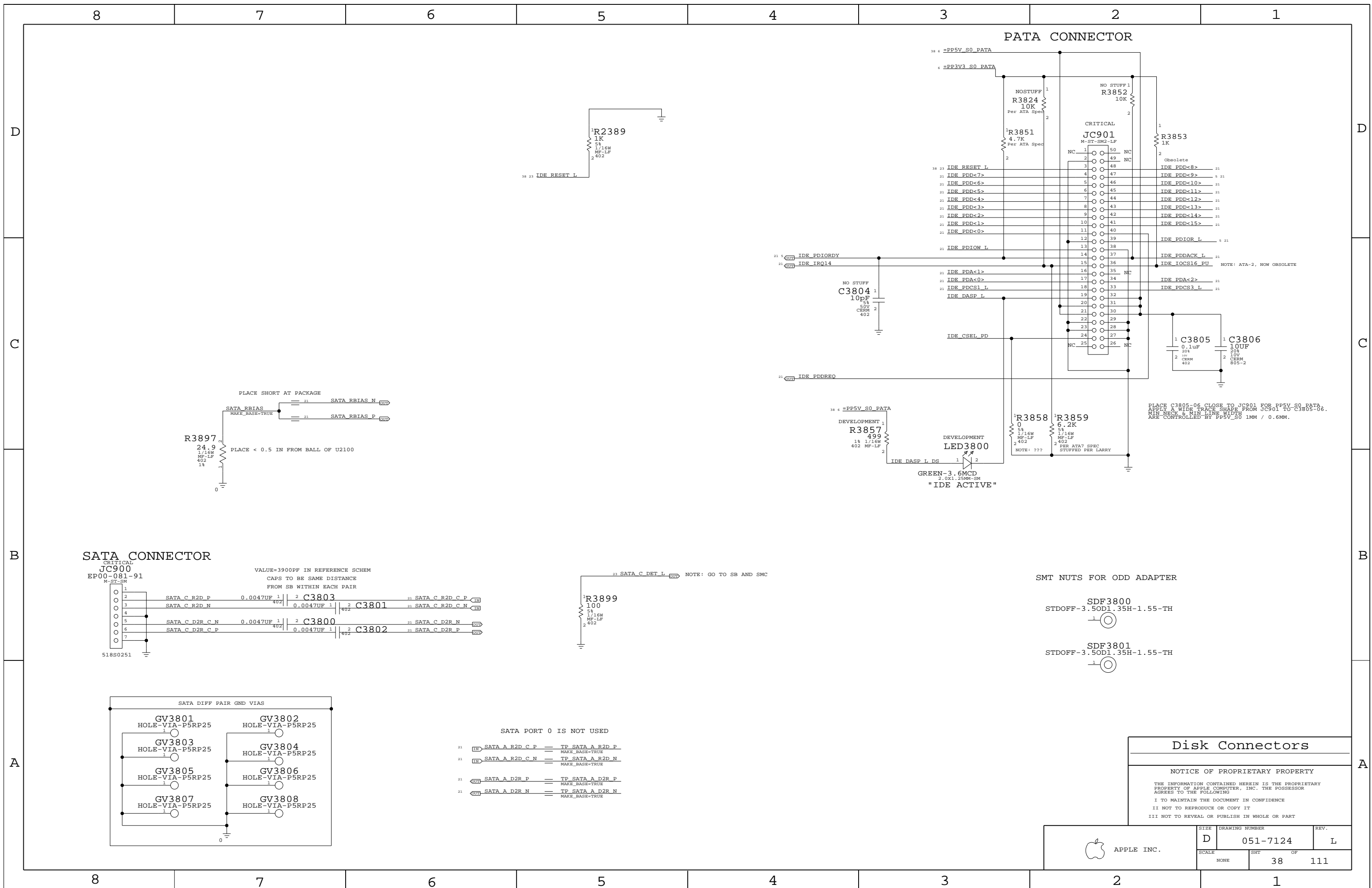
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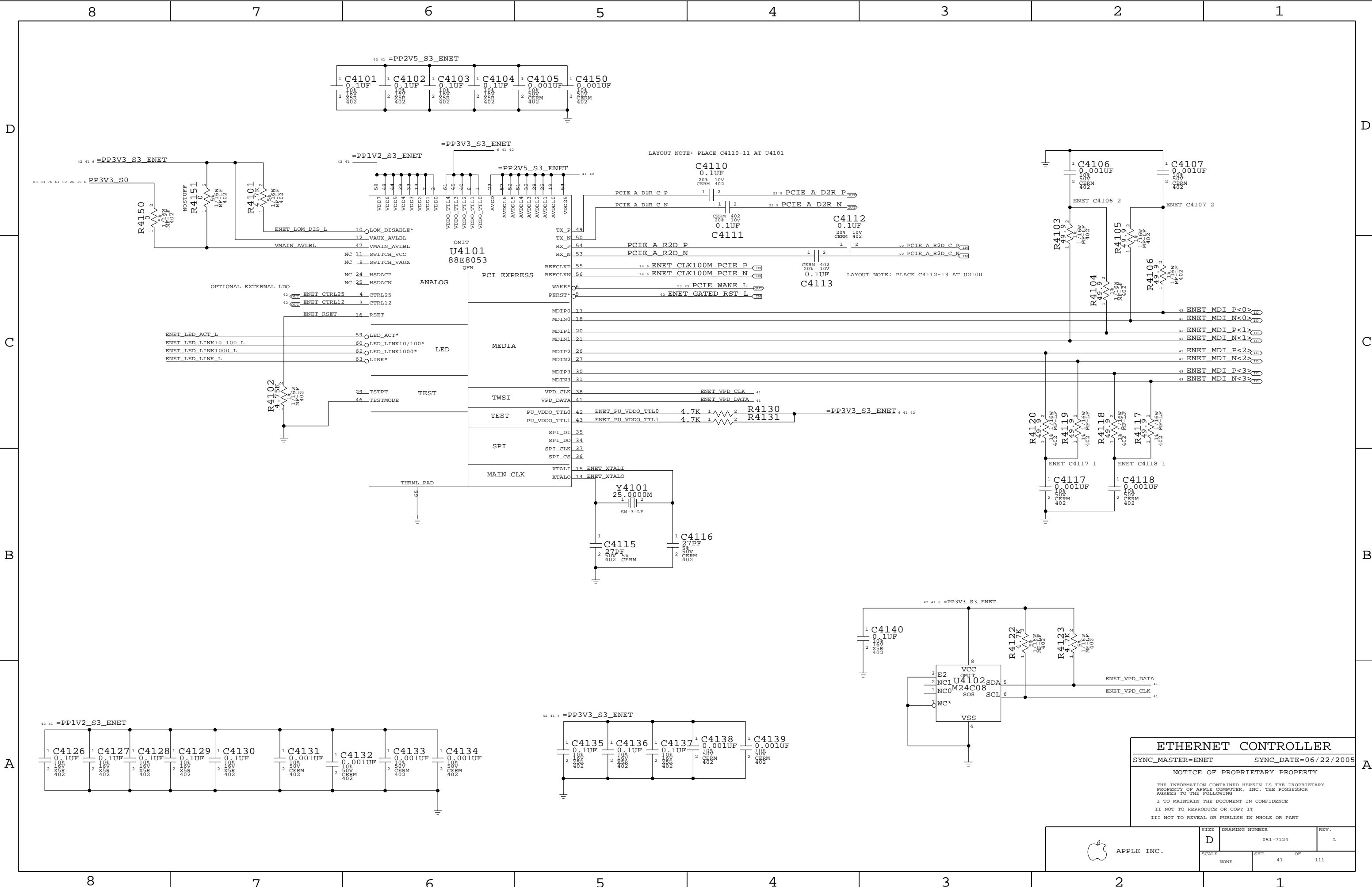
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	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	34	111	

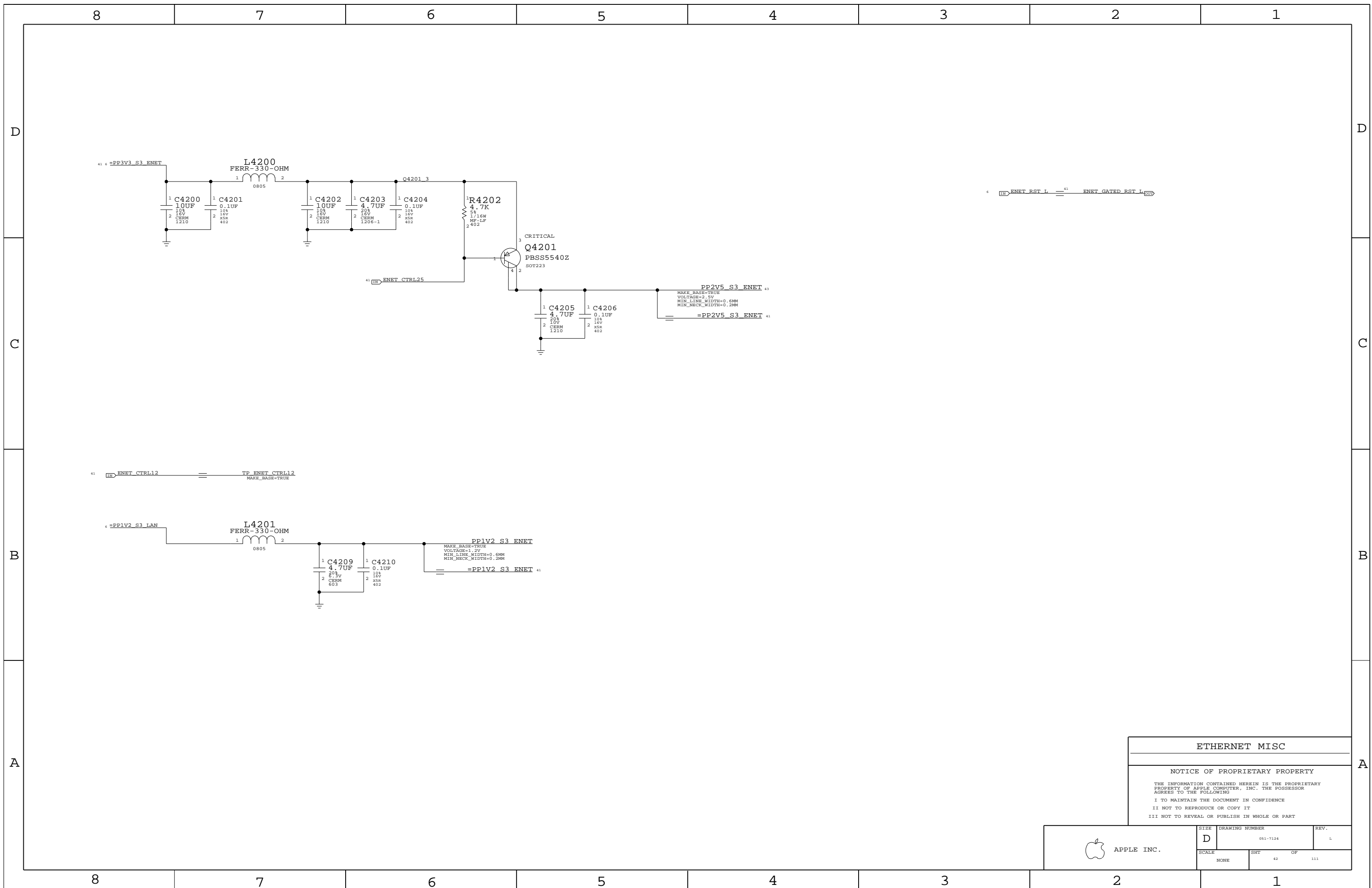




ETHERNET CONTROLLER
 SYNC_MASTER=ENET SYNC_DATE=06/22/2005

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	SCALE	DRAWING NUMBER		REV.
	NONE	D	051-7124	L
		SHT	OF	111
		41		



ETHERNET MISC

NOTICE OF PROPRIETARY PROPERTY

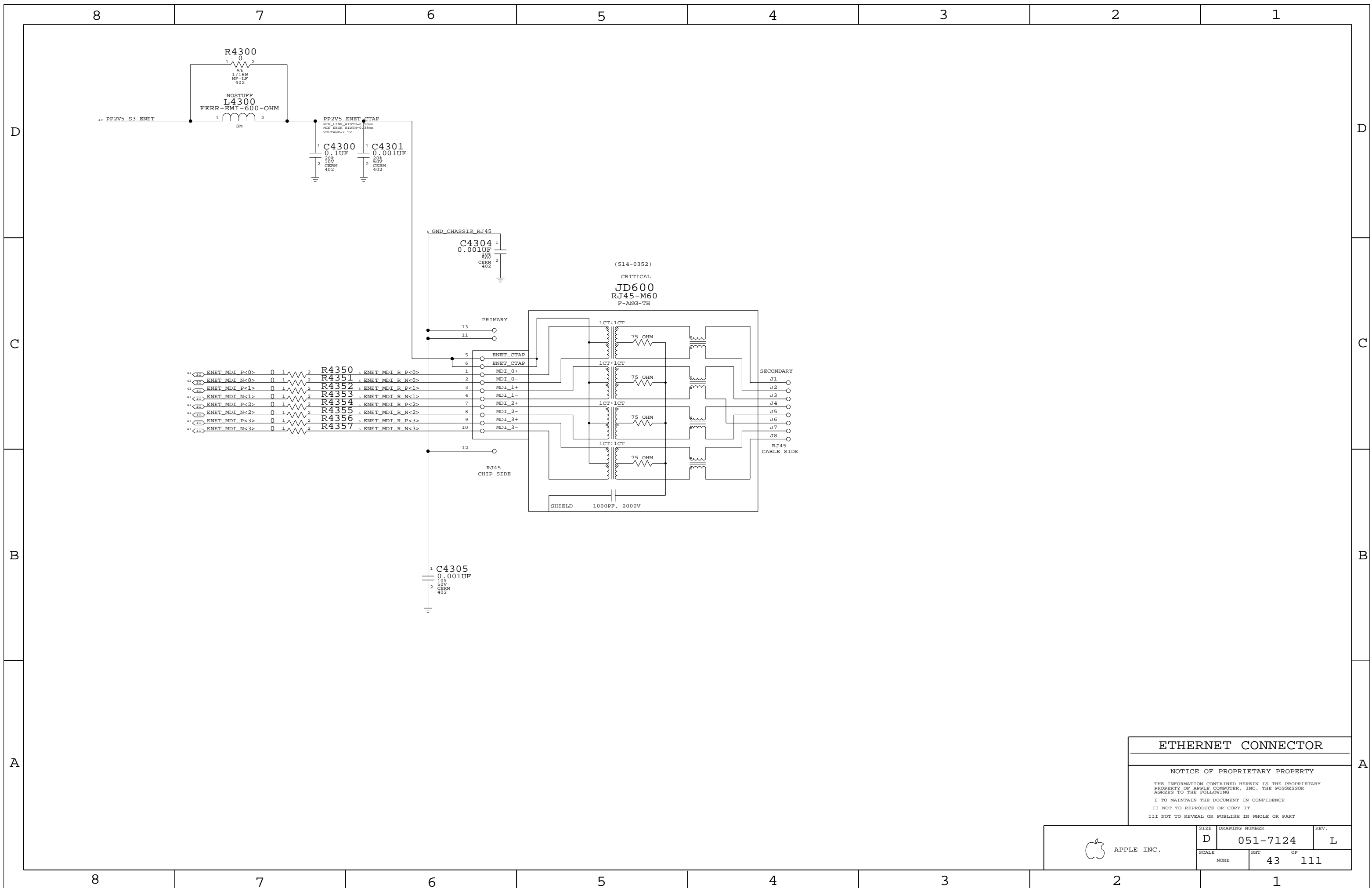
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 42	OF 111



ETHERNET CONNECTOR

NOTICE OF PROPRIETARY PROPERTY

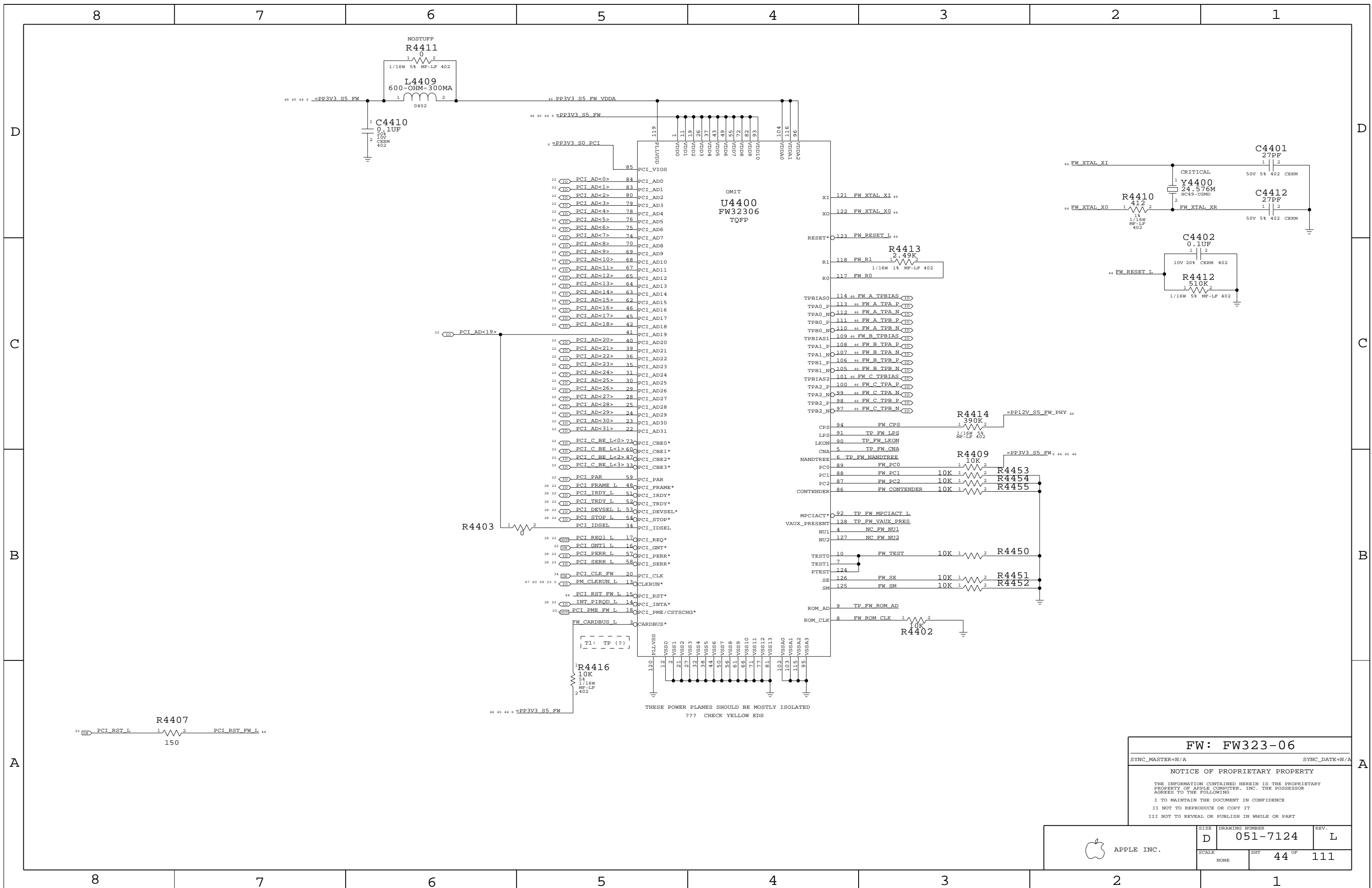
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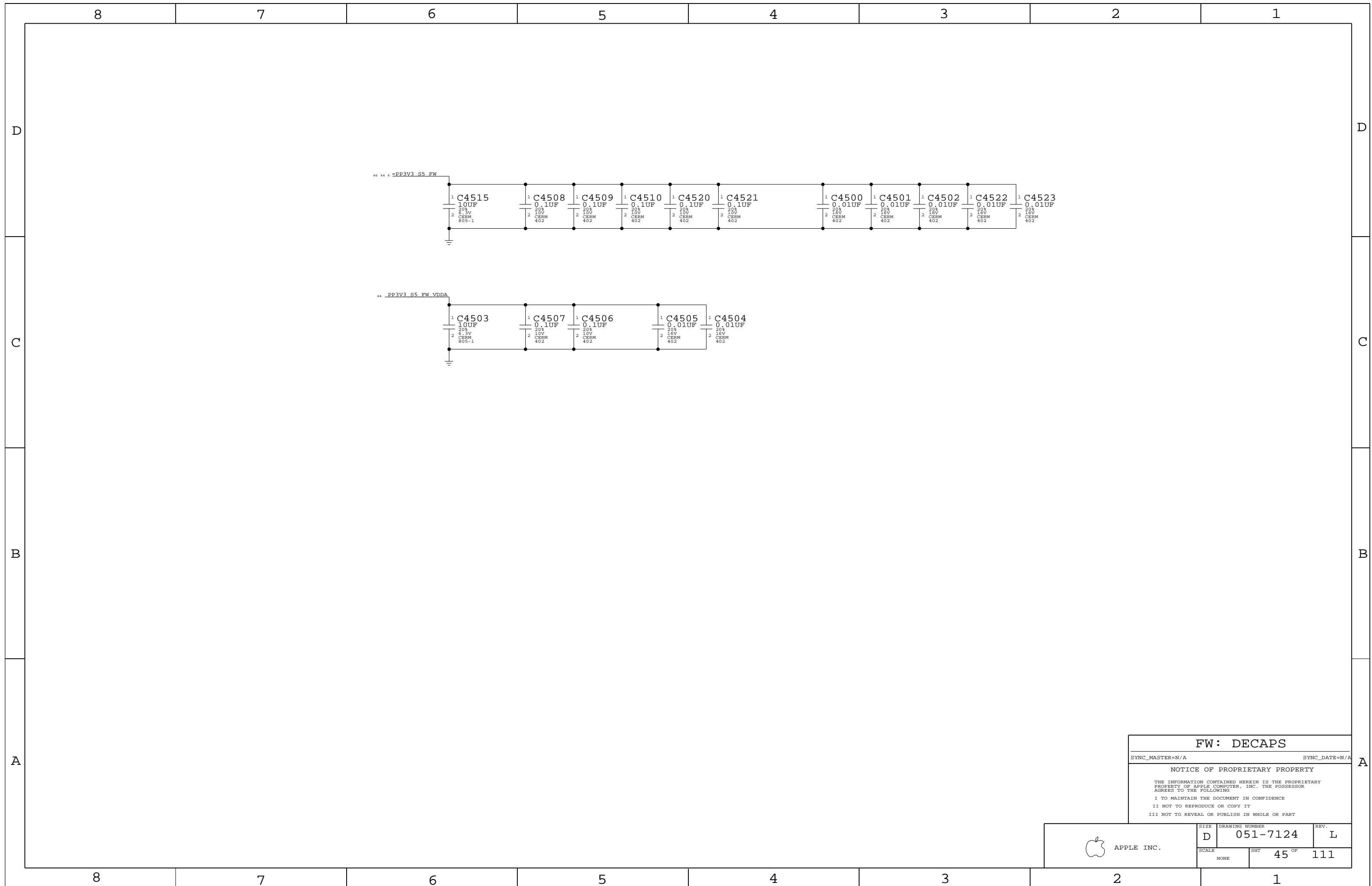
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 43	OF 111



FW: FW323-06
 SYNC_MASTER=N/A SYNC_DATE=N/A
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	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 44 OF 111	



FW: DECAPS

SYNC_MASTER=N/A SYNC_DATE=N/A

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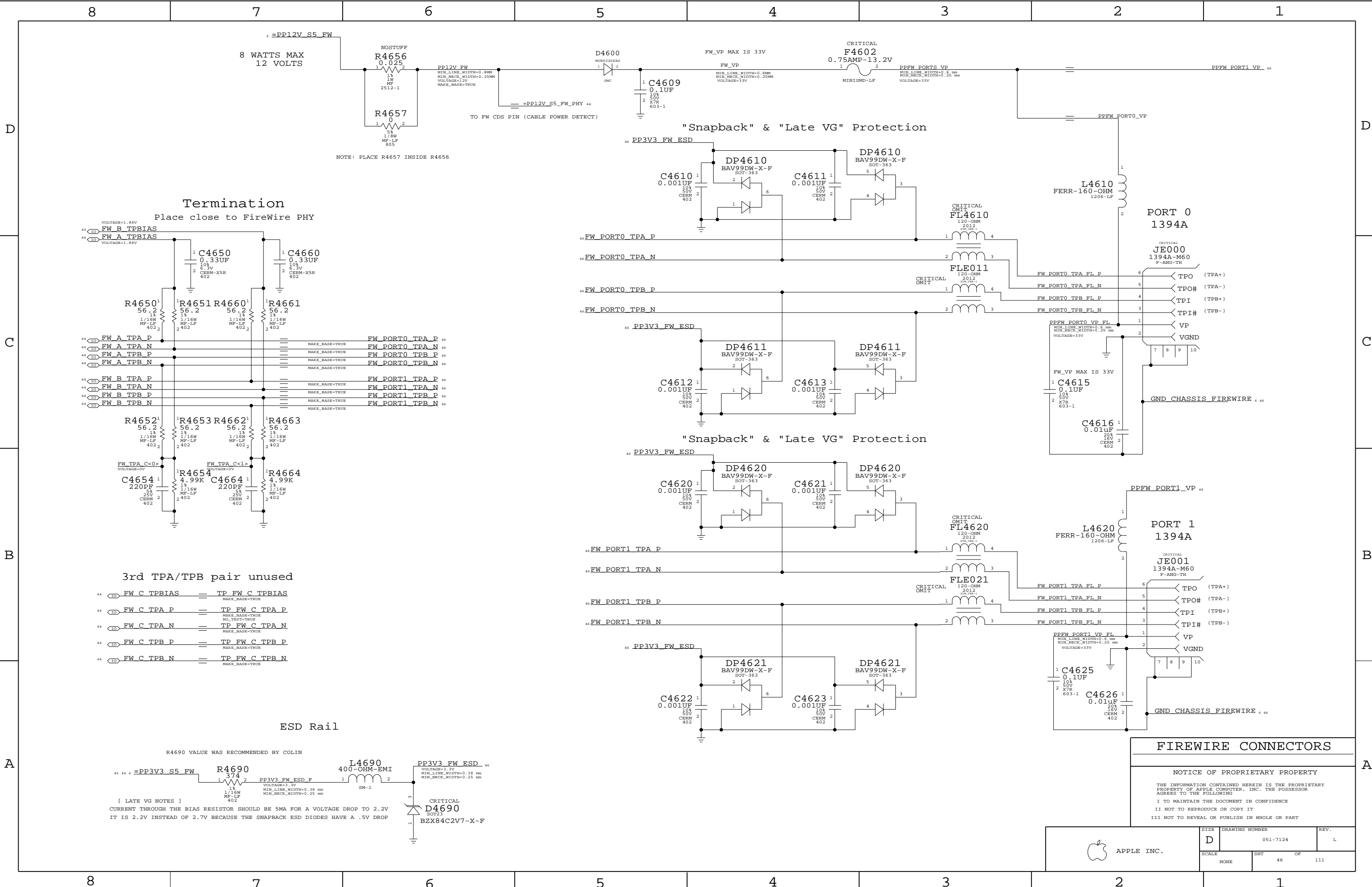
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	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	45	111	



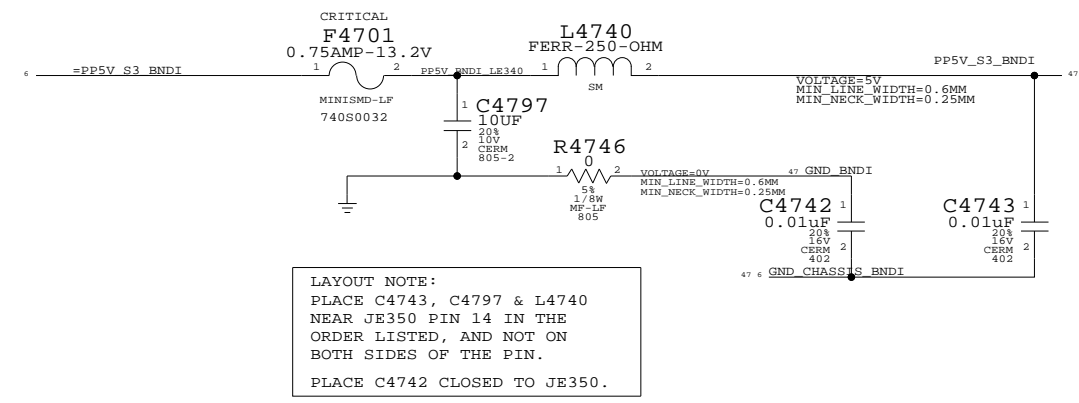
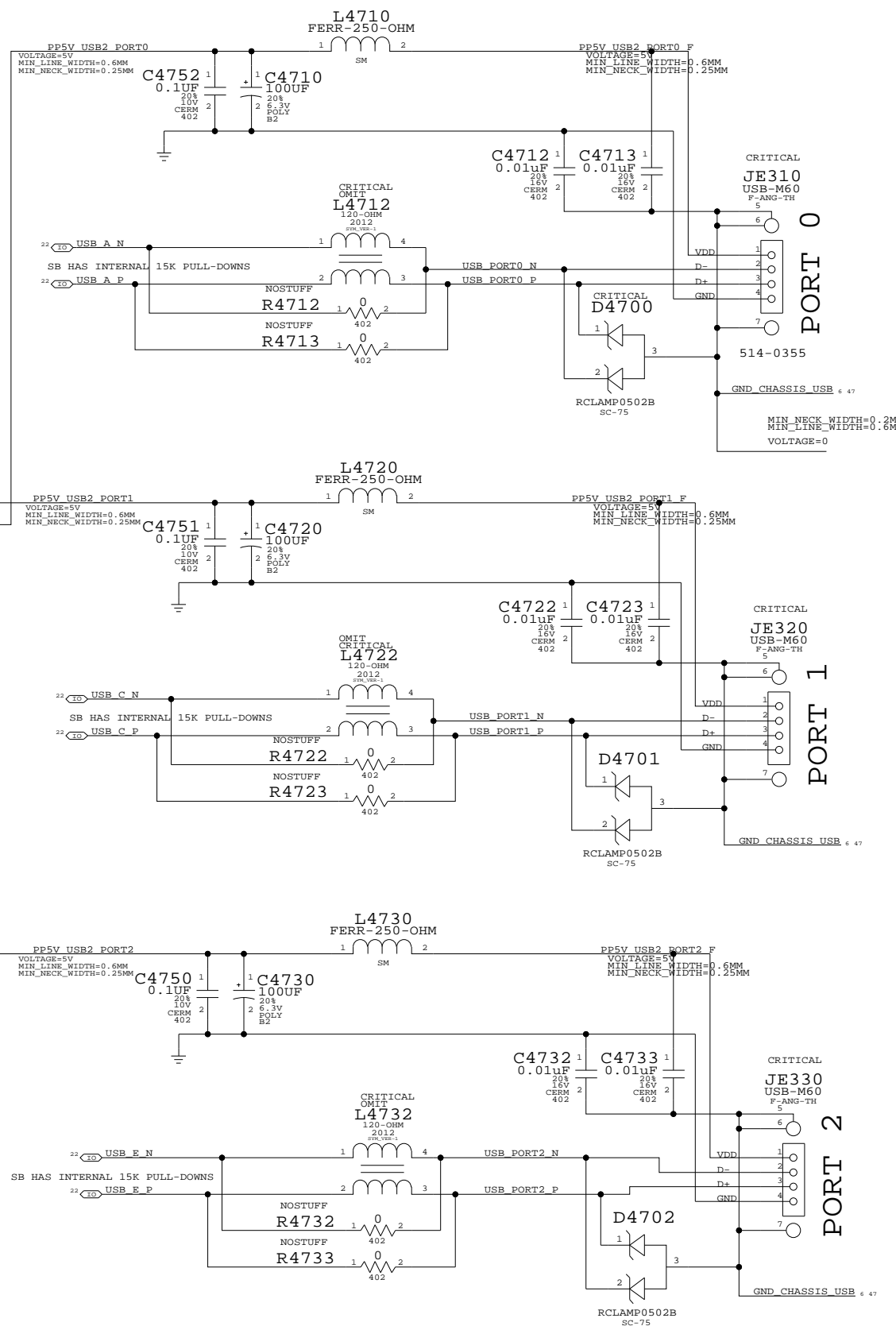
FIREWIRE CONNECTORS

NOTICE OF PROPRIETARY PROPERTY

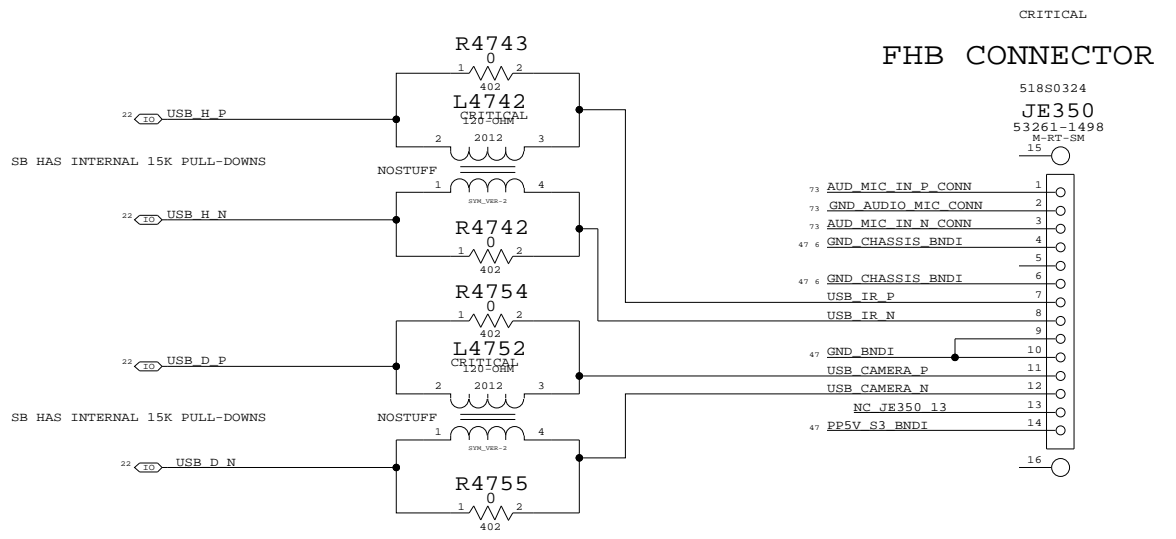
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	D	051-7124	L
SCALE	SHT	OF	111
NONE	46		

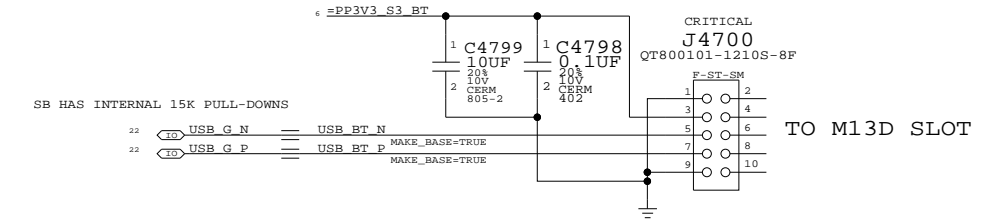
External USB Ports



LAYOUT NOTE:
PLACE C4743, C4797 & L4740
NEAR JE350 PIN 14 IN THE
ORDER LISTED, AND NOT ON
BOTH SIDES OF THE PIN.
PLACE C4742 CLOSED TO JE350.



BLUETOOTH



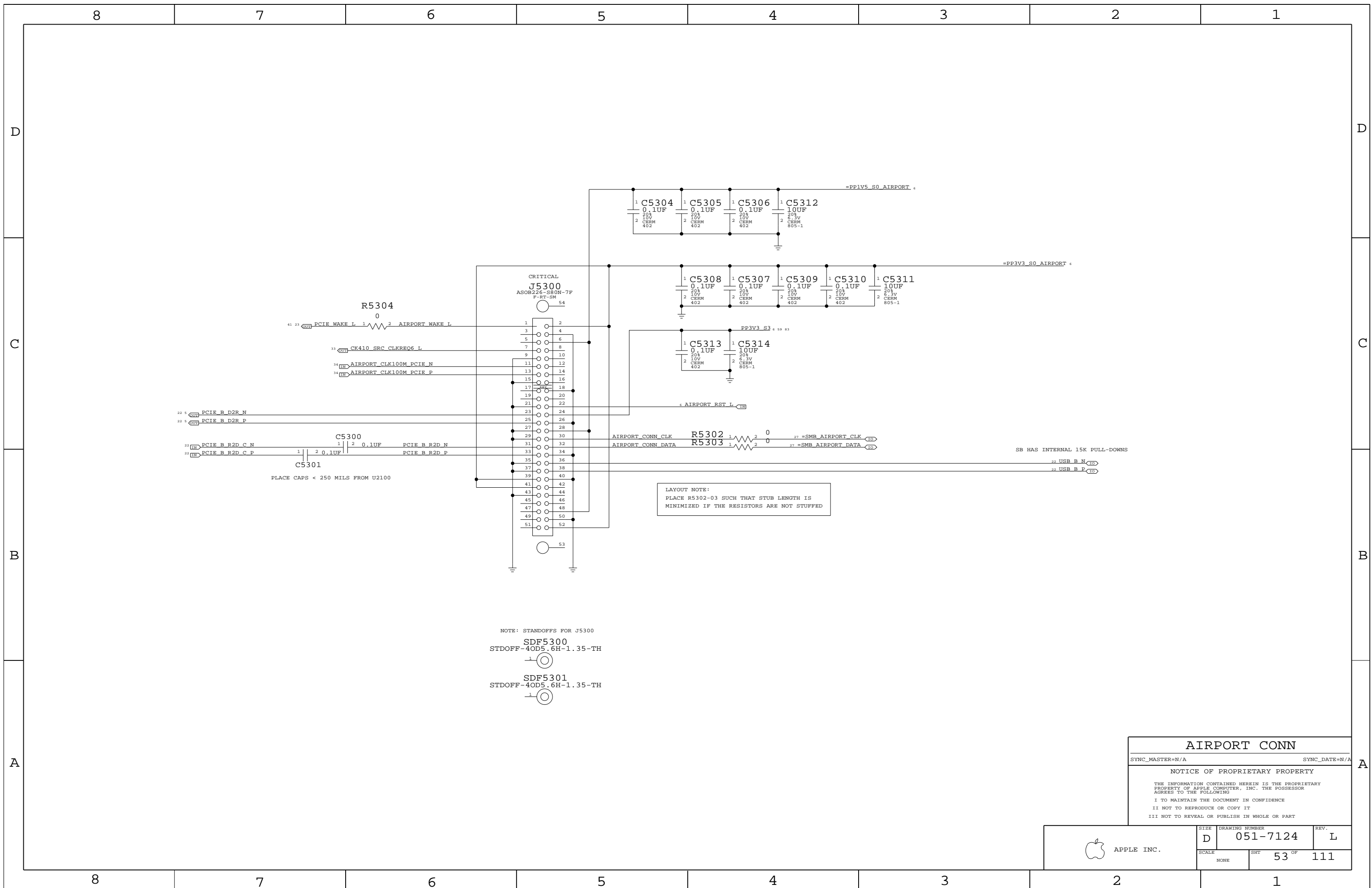
NOTE: STANDOFFS FOR J4700
SDF4700
STDOFF-40D4.5H-1.35-TH
SDF4701
STDOFF-40D4.5H-1.35-TH

USB Device Interfaces

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0355	3	USB RECEPTACLE, 4P, RIBLESS	JE310, JE320, JE330	CRITICAL	20_INCH_LCD

APPLE INC.	SCALE	SHT	OF	REV.
	NONE	47	111	L



LAYOUT NOTE:
 PLACE R5302-03 SUCH THAT STUB LENGTH IS
 MINIMIZED IF THE RESISTORS ARE NOT STUFFED

NOTE: STANDOFFS FOR J5300

SDF5300
 STDOFF-40D5.6H-1.35-TH



SDF5301
 STDOFF-40D5.6H-1.35-TH



AIRPORT CONN

SYNC_MASTER=N/A SYNC_DATE=N/A

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	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHT 53 OF	111

8

7

6

5

4

3

2

1

D

D

C

C

B

B

A

A

22 PCIE C R2D C N == TP PCIE C R2D C N
MAKE_BASE=TRUE

22 PCIE C R2D C P == TP PCIE C R2D C P
MAKE_BASE=TRUE

22 PCIE C D2R N == TP PCIE C D2R N
MAKE_BASE=TRUE

22 PCIE C D2R P == TP PCIE C D2R P
MAKE_BASE=TRUE

22 PCIE D R2D C N == TP PCIE D R2D C N
MAKE_BASE=TRUE

22 PCIE D R2D C P == TP PCIE D R2D C P
MAKE_BASE=TRUE

22 PCIE D D2R N == TP PCIE D D2R N
MAKE_BASE=TRUE

22 PCIE D D2R P == TP PCIE D D2R P
MAKE_BASE=TRUE

22 PCIE E R2D C N == TP PCIE E R2D C N
MAKE_BASE=TRUE

22 PCIE E R2D C P == TP PCIE E R2D C P
MAKE_BASE=TRUE

22 PCIE E D2R N == TP PCIE E D2R N
MAKE_BASE=TRUE

22 PCIE E D2R P == TP PCIE E D2R P
MAKE_BASE=TRUE

22 PCIE F R2D C N == TP PCIE F R2D C N
MAKE_BASE=TRUE

22 PCIE F R2D C P == TP PCIE F R2D C P
MAKE_BASE=TRUE

22 PCIE F D2R N == TP PCIE F D2R N
MAKE_BASE=TRUE

22 PCIE F D2R P == TP PCIE F D2R P
MAKE_BASE=TRUE

PCIE UNUSED PORTS

SYNC_MASTER=N/A SYNC_DATE=N/A

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SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	54	111

8

7

6

5

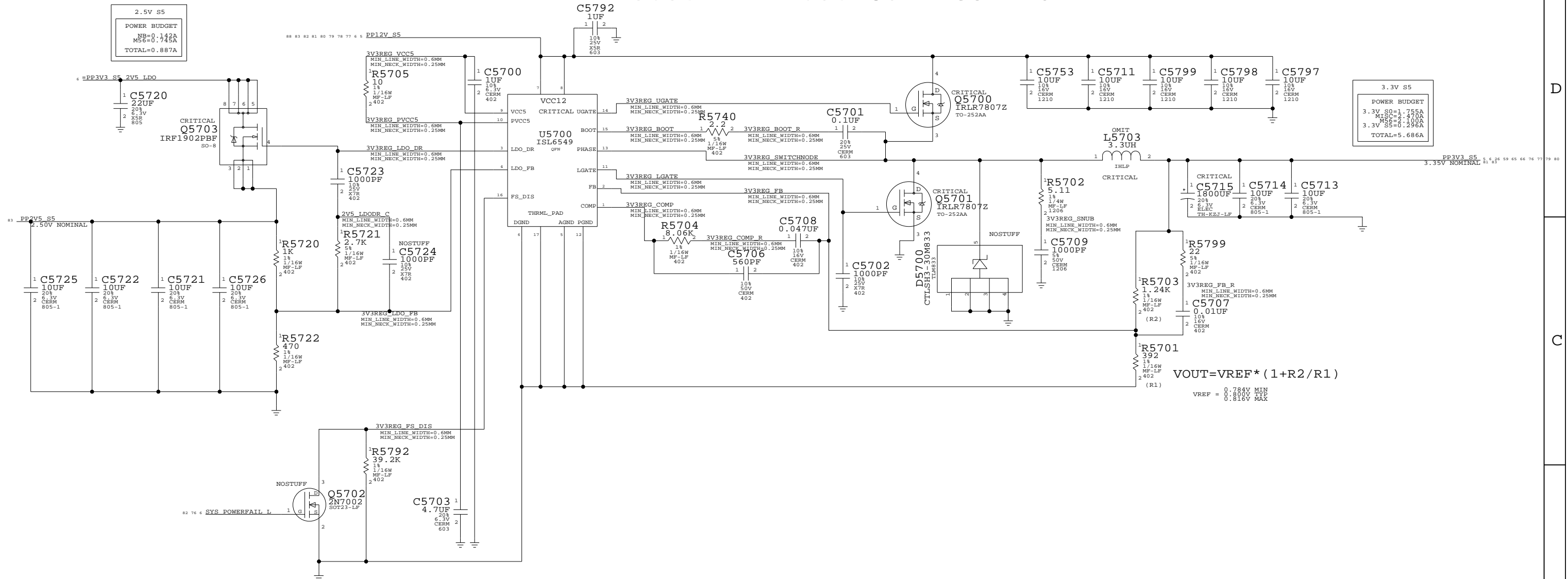
4

3

2

1

3.3V AND 2.5V S5 REGULATOR



2.5V S5
POWER BUDGET
NB=0.142A
MS6=0.745A
TOTAL=0.887A

3.3V S5
POWER BUDGET
3.3V S0=1.755A
MS6=2.470A
MS7=2.100A
3.3V S5=0.296A
TOTAL=5.686A

$$V_{OUT} = V_{REF} * (1 + R2/R1)$$

VREF = 0.784V MIN
0.800V TYP
0.816V MAX

3.3V DC/DC 2.5V

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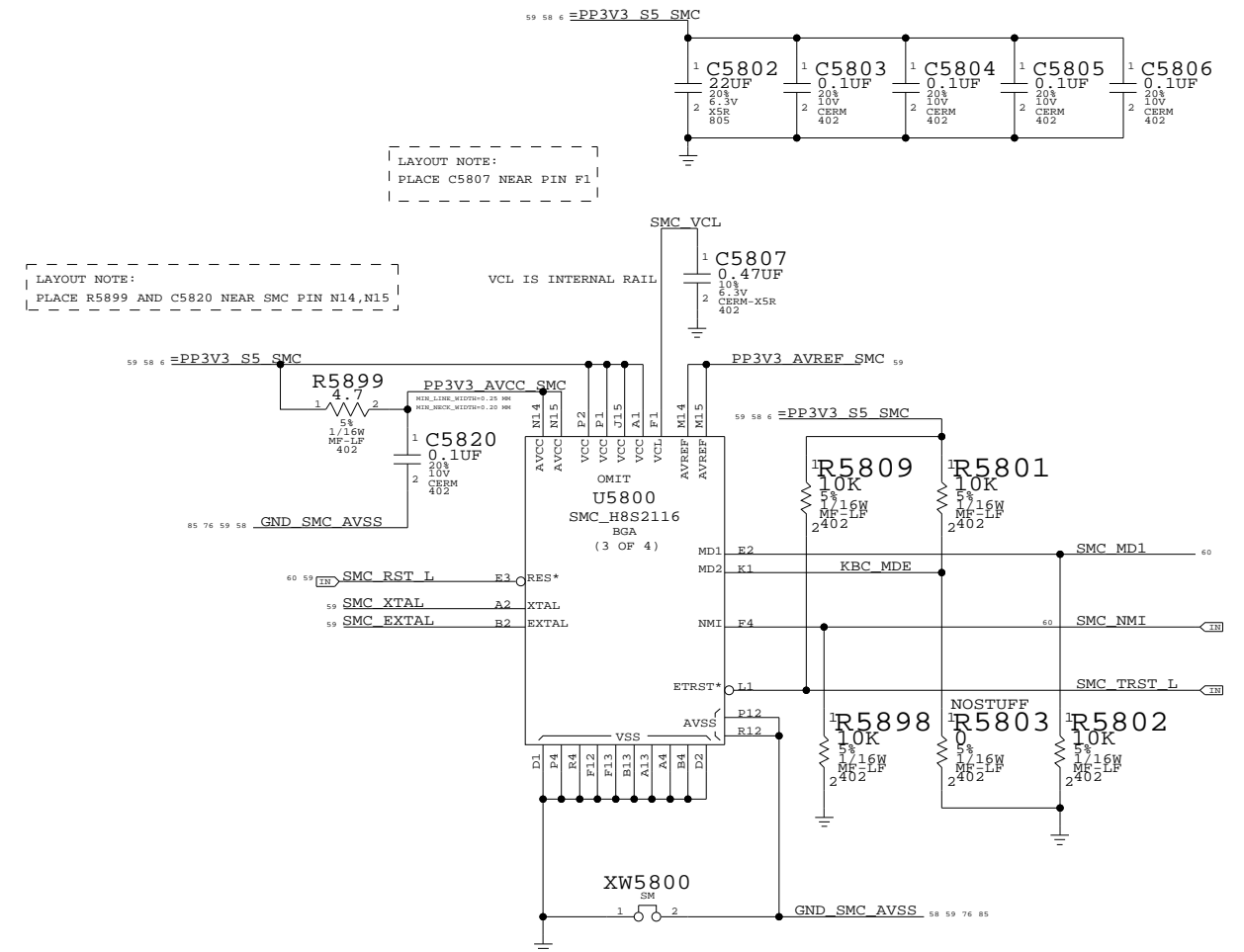
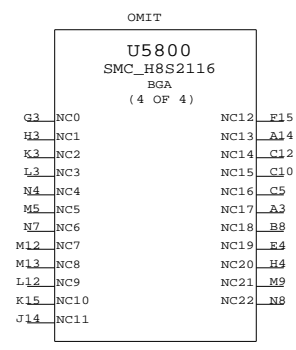
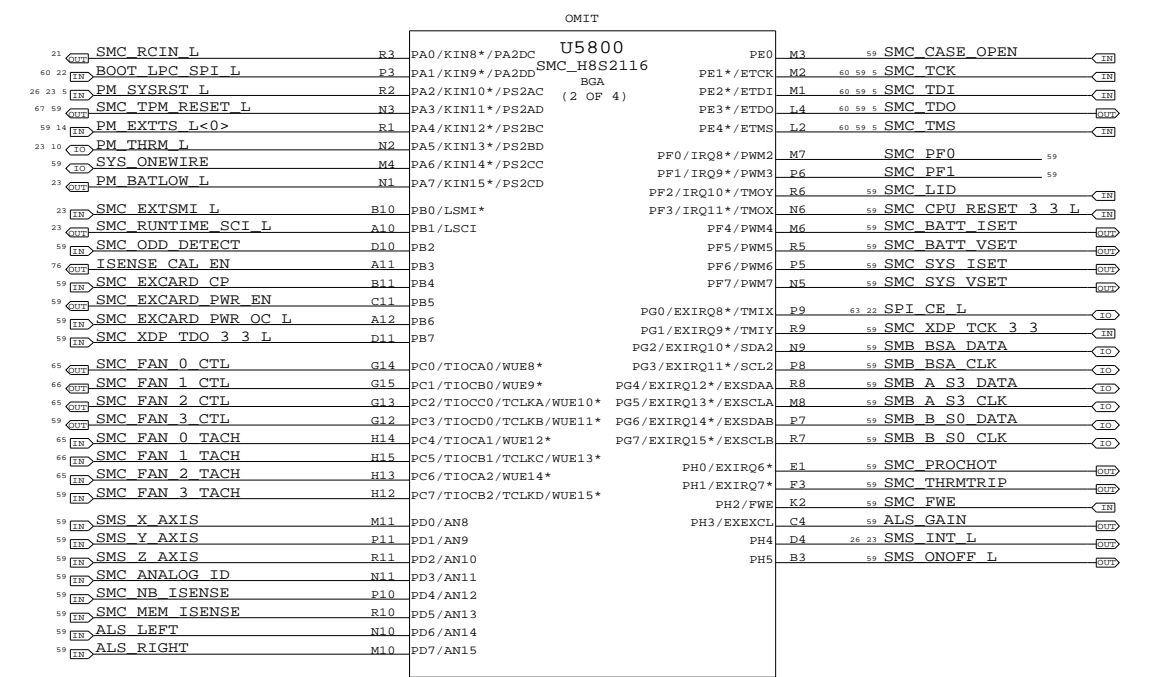
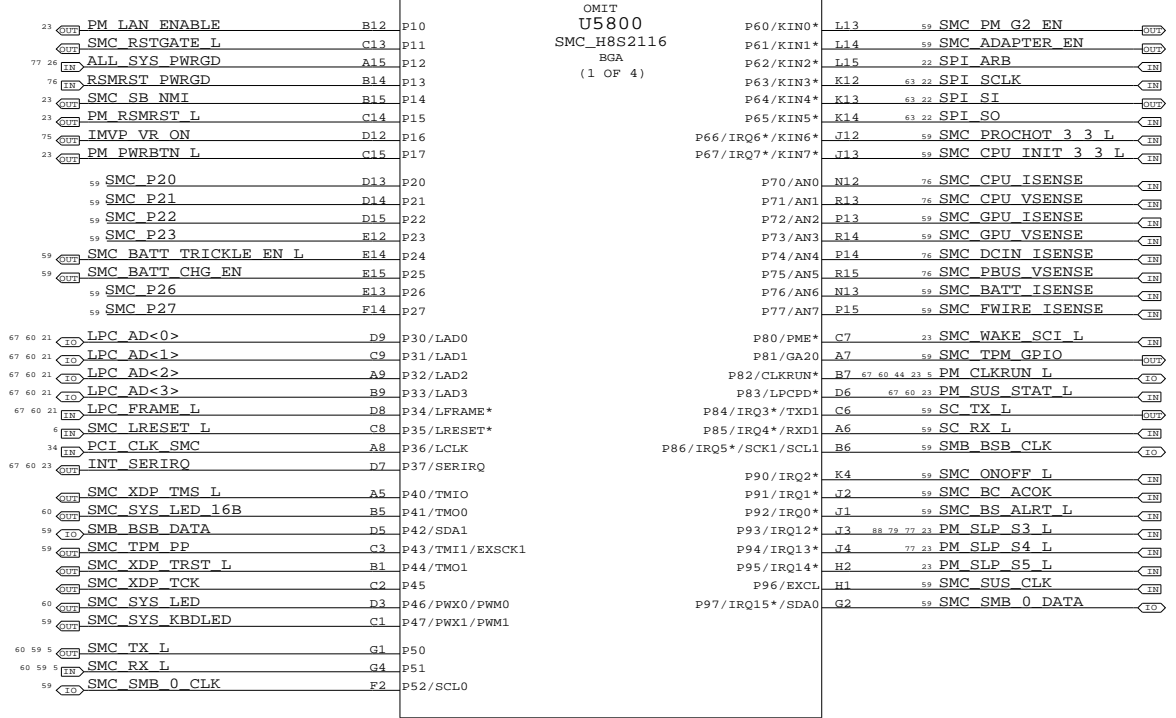
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	57 OF	111
NONE			

UNUSED PINS HAVE THE FORMAT SMC_XXX WHERE XXX IS THE PORT NUMBER. THEY ARE SET BY SOFTWARE TO BE DRIVEN OUTPUTS ALWAYS SO THEY CAN BE LEFT NO-CONNECTED.



SMC

SYNC_MASTER=N/A SYNC_DATE=N/A

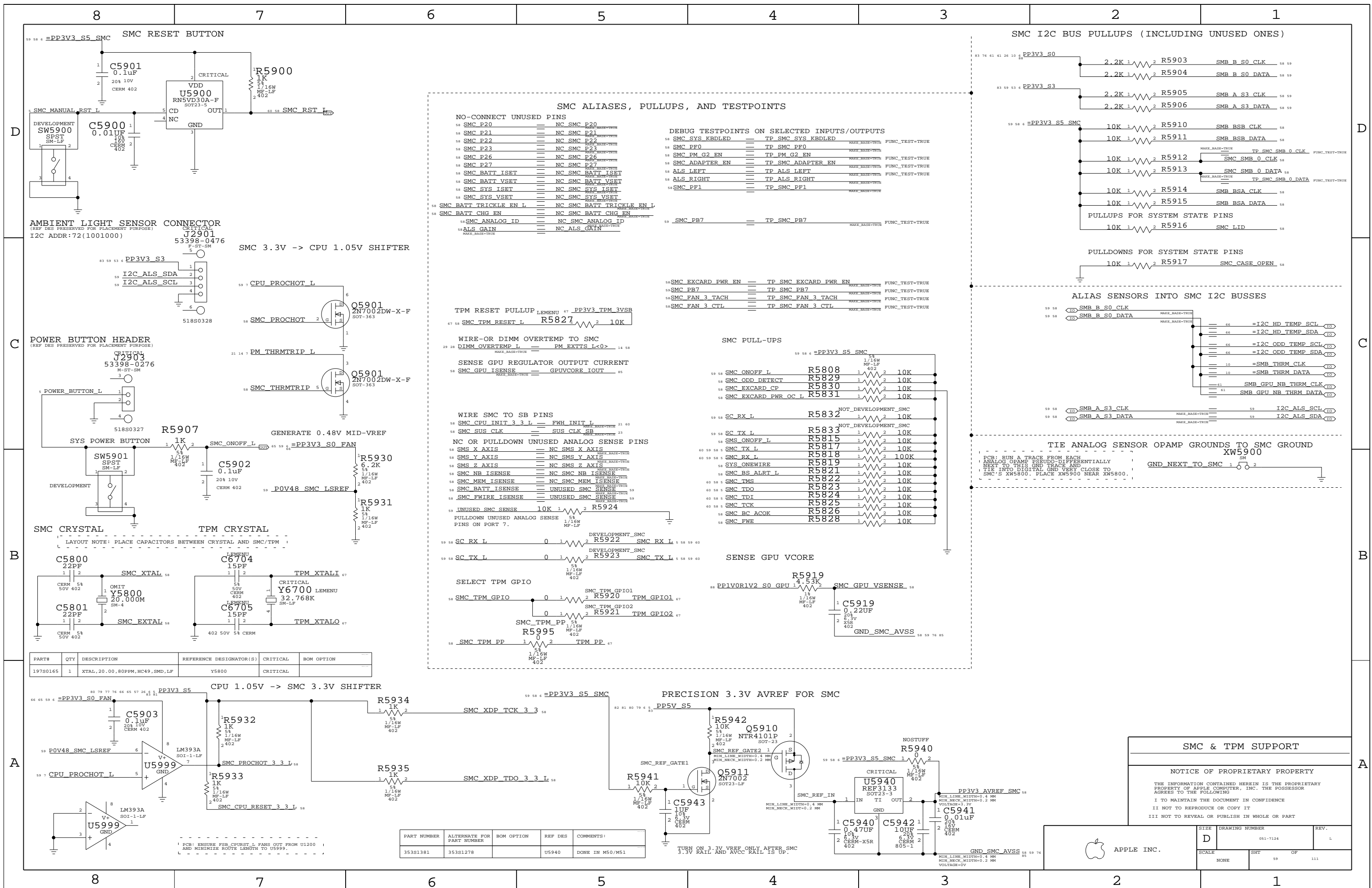
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SMC ALIASES, PULLUPS, AND TESTPOINTS

NO-CONNECT UNUSED PINS		DEBUG TESTPOINTS ON SELECTED INPUTS/OUTPUTS	
58 SMC P20	== NC SMC P20	58 SMC SYS_KBDLED	== TP_SMC_SYS_KBDLED
58 SMC P21	== NC SMC P21	58 SMC PF0	== TP_SMC_PF0
58 SMC P22	== NC SMC P22	58 SMC PM_G2_EN	== TP_PM_G2_EN
58 SMC P23	== NC SMC P23	58 SMC_ADAPTER_EN	== TP_SMC_ADAPTER_EN
58 SMC P26	== NC SMC P26	58 ALS_LEFT	== TP_ALS_LEFT
58 SMC P27	== NC SMC P27	58 ALS_RIGHT	== TP_ALS_RIGHT
58 SMC_BATT_ISET	== NC SMC_BATT_ISET	58 SMC_PF1	== TP_SMC_PF1
58 SMC_BATT_VSET	== NC SMC_BATT_VSET		
58 SMC_SYS_ISET	== NC SMC_SYS_ISET		
58 SMC_SYS_VSET	== NC SMC_SYS_VSET		
58 SMC_BATT_TRICKLE_EN_L	== NC SMC_BATT_TRICKLE_EN_L		
58 SMC_BATT_CHG_EN	== NC SMC_BATT_CHG_EN		
58 SMC_ANALOG_ID	== NC SMC_ANALOG_ID		
58 ALS_GAIN	== NC ALS_GAIN		
		59 SMC_PB7	== TP_SMC_PB7
		58 SMC_EXCARD_PWR_EN	== TP_SMC_EXCARD_PWR_EN
		58 SMC_PB7	== TP_SMC_PB7
		58 SMC_FAN_3_TACH	== TP_SMC_FAN_3_TACH
		58 SMC_FAN_3_CTL	== TP_SMC_FAN_3_CTL

SMC PULL-UPS	
58 SMC_ONOFF_L	R5808 10K
58 SMC_ODD_DETECT	R5829 10K
58 SMC_EXCARD_CP	R5830 10K
58 SMC_EXCARD_PWR_OC_L	R5831 10K
58 SC_RX_L	R5832 10K
58 SC_TX_L	R5833 10K
58 SMS_ONOFF_L	R5815 10K
58 SMC_TX_L	R5817 10K
58 SMC_RX_L	R5818 100K
58 SYS_ONEWIRE	R5819 10K
58 SMC_BS_ALERT_L	R5821 10K
58 SMC_TMS	R5822 10K
58 SMC_TDO	R5823 10K
58 SMC_TDI	R5824 10K
58 SMC_TCK	R5825 10K
58 SMC_BC_ACOK	R5826 10K
58 SMC_FWE	R5828 10K

WIRE SMC TO SB PINS	
58 SMC_CPU_INIT_3_3_L	== FWH_INIT_L
58 SMC_SUS_CLK	== SUS_CLK_SB

SELECT TPM GPIO	
58 SMC_TPM_GPIO	== SMC_TPM_GPIO1
58 SMC_TPM_PP	== SMC_TPM_PP

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
353S1381	353S1278		U5940	DONE IN M50/M51

SMC & TPM SUPPORT

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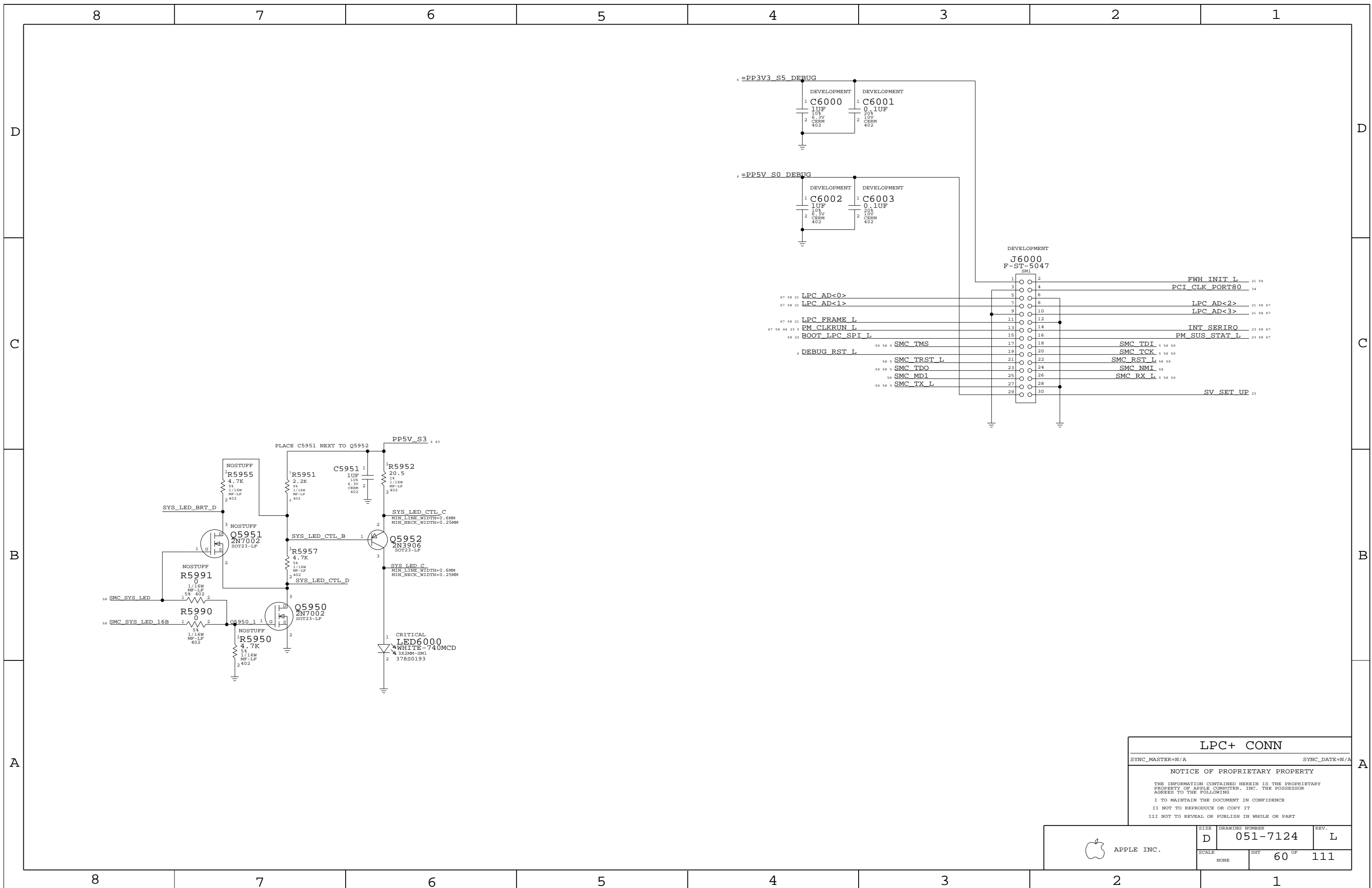
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SIZE D	DRAWING NUMBER 051-7124	REV. L
SCALE NONE	SHEET 59	OF 111

APPLE INC.

PCB: ENSURE FSB_CPURST_L PINS OUT FROM U1200 AND MINIMIZE ROUTER LENGTH TO U5999.

PCB: RUN A TRACE FROM EACH ANALOG OPAMP PSEUDO-DIFFERENTIALLY NEXT TO THIS GND TRACE AND TIE INTO DIGITAL GND VERY CLOSE TO SMC'S XW5800. PLACE XW5900 NEAR XW5800.



LPC+ CONN

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

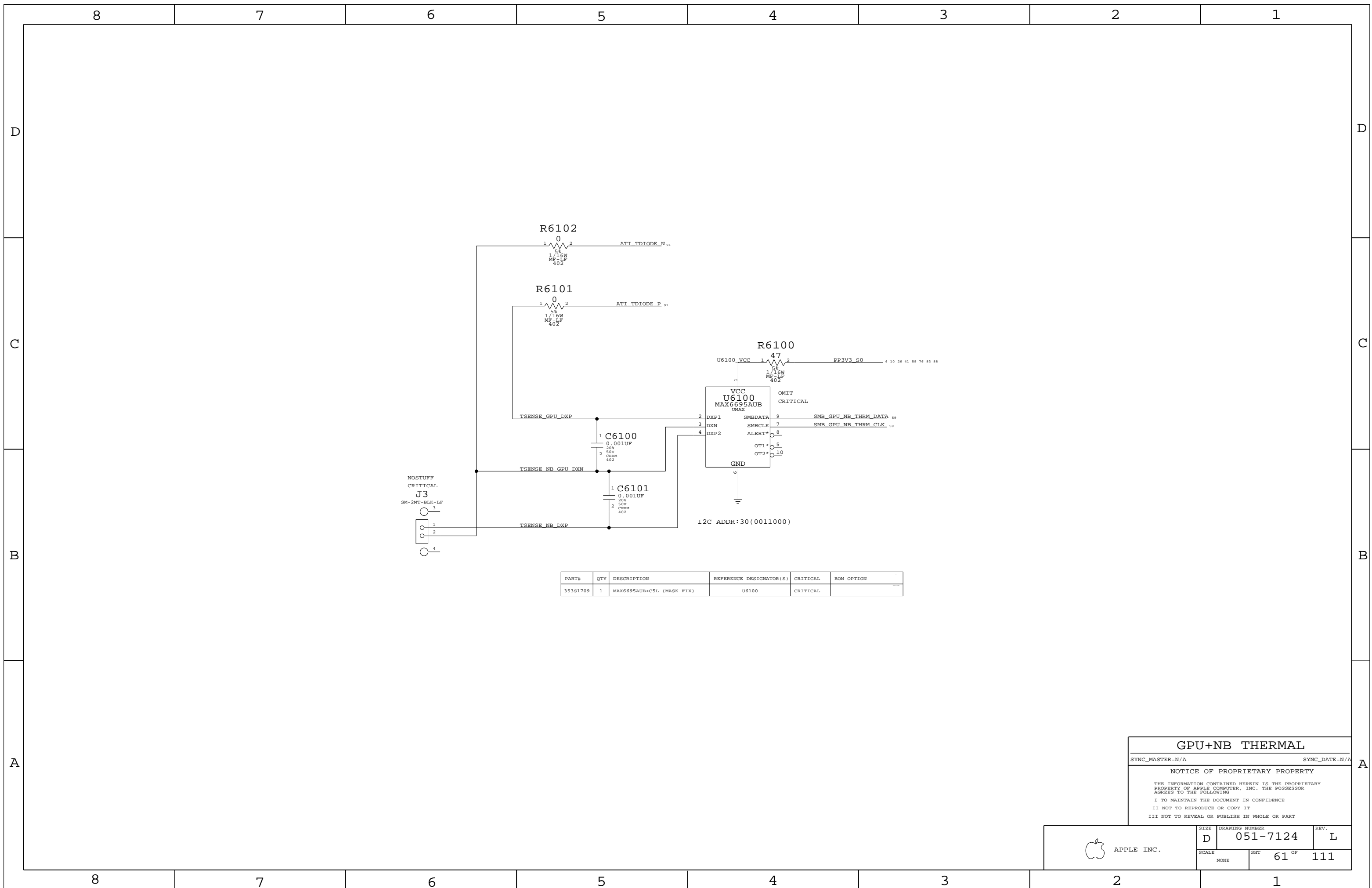
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHEET 60 OF	TOTAL SHEETS 111



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S1709	1	MAX6695AUB+C5L (MASK FIX)	U6100	CRITICAL	

GPU+NB THERMAL

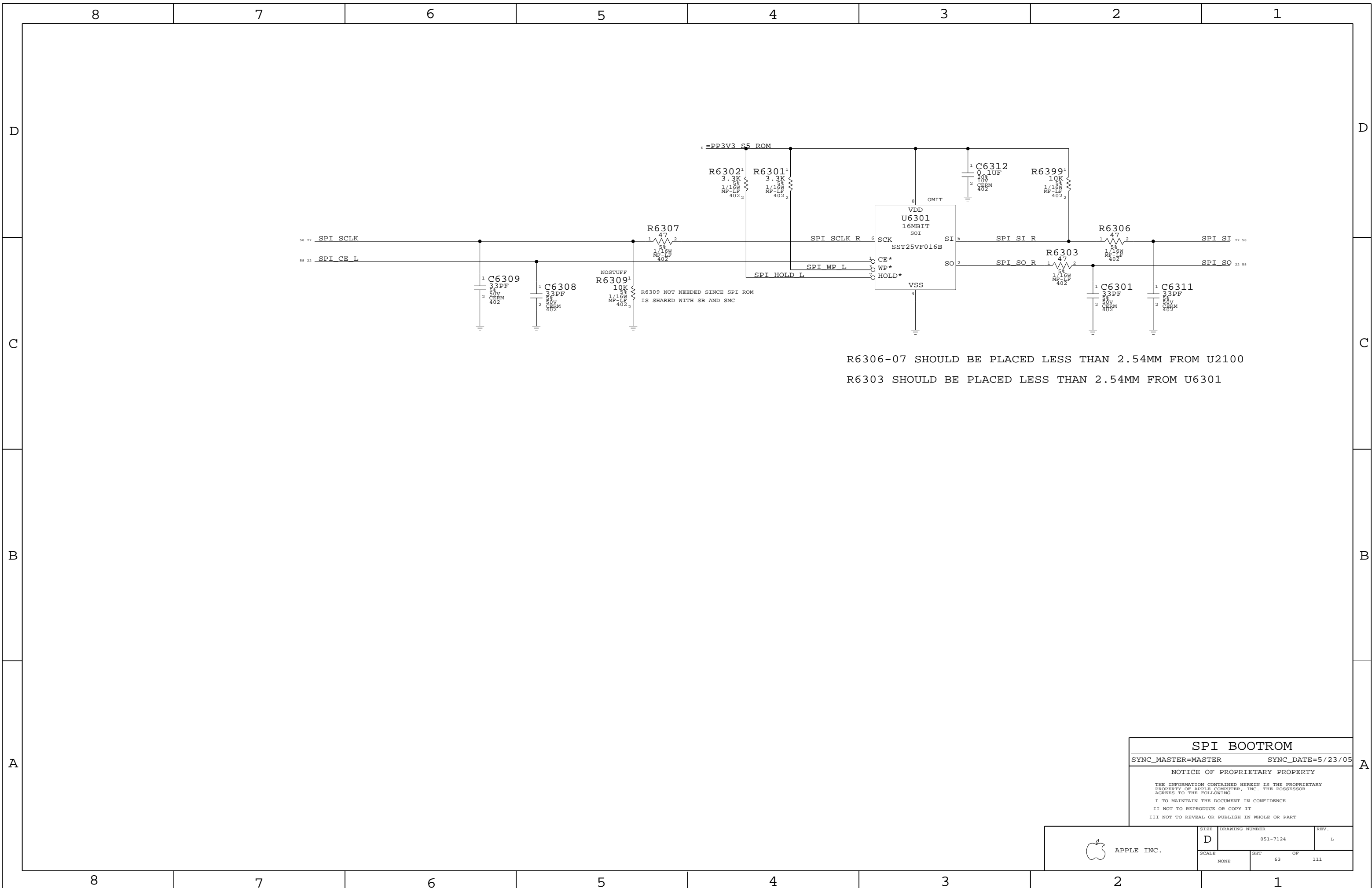
SYNC_MASTER=N/A SYNC_DATE=N/A

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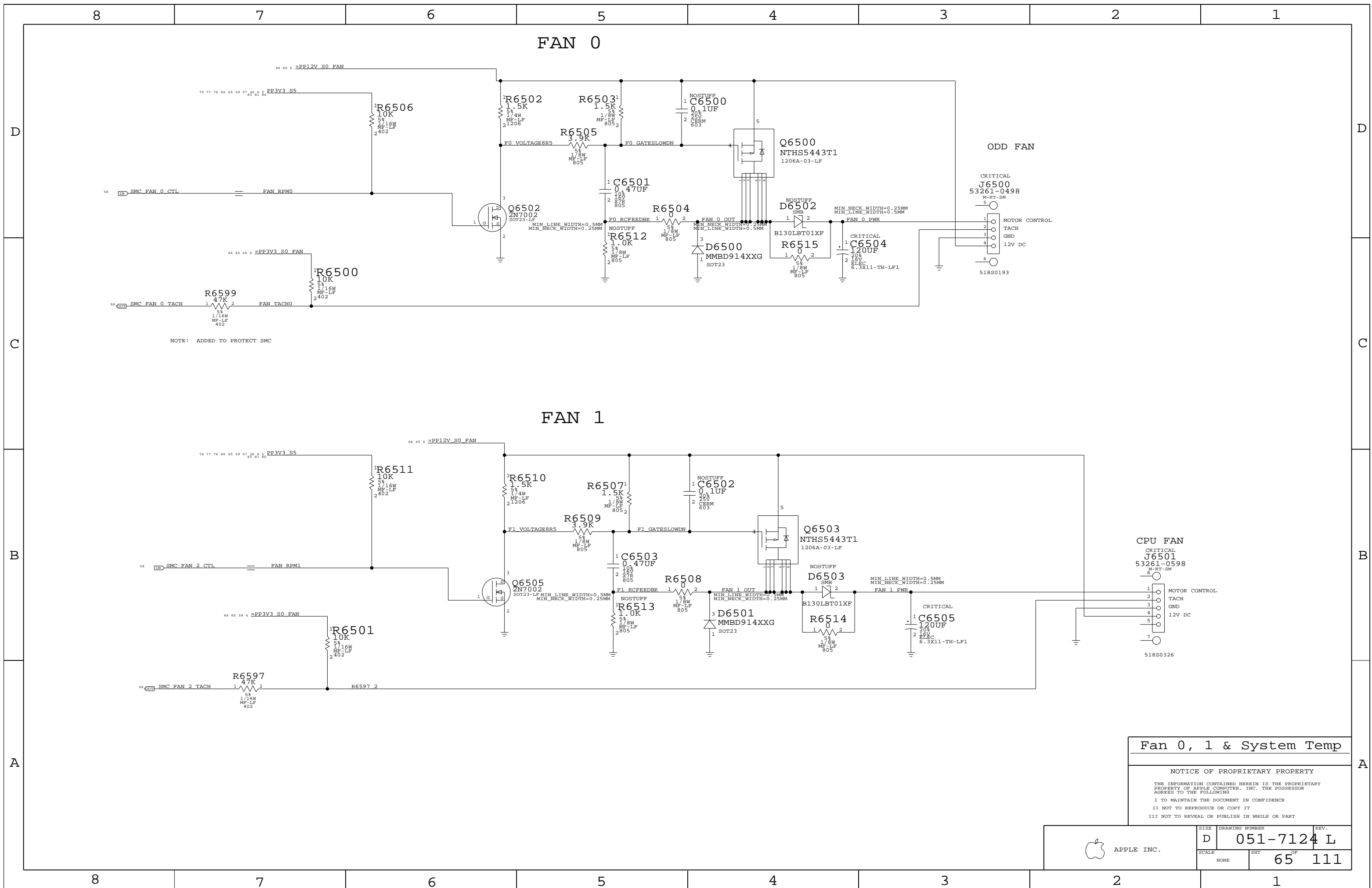
	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	61 OF 111	
NONE			



R6306-07 SHOULD BE PLACED LESS THAN 2.54MM FROM U2100
R6303 SHOULD BE PLACED LESS THAN 2.54MM FROM U6301

SPI BOOTROM
 SYNC_MASTER=MASTER SYNC_DATE=5/23/05
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	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	REV.
NONE	63	111	

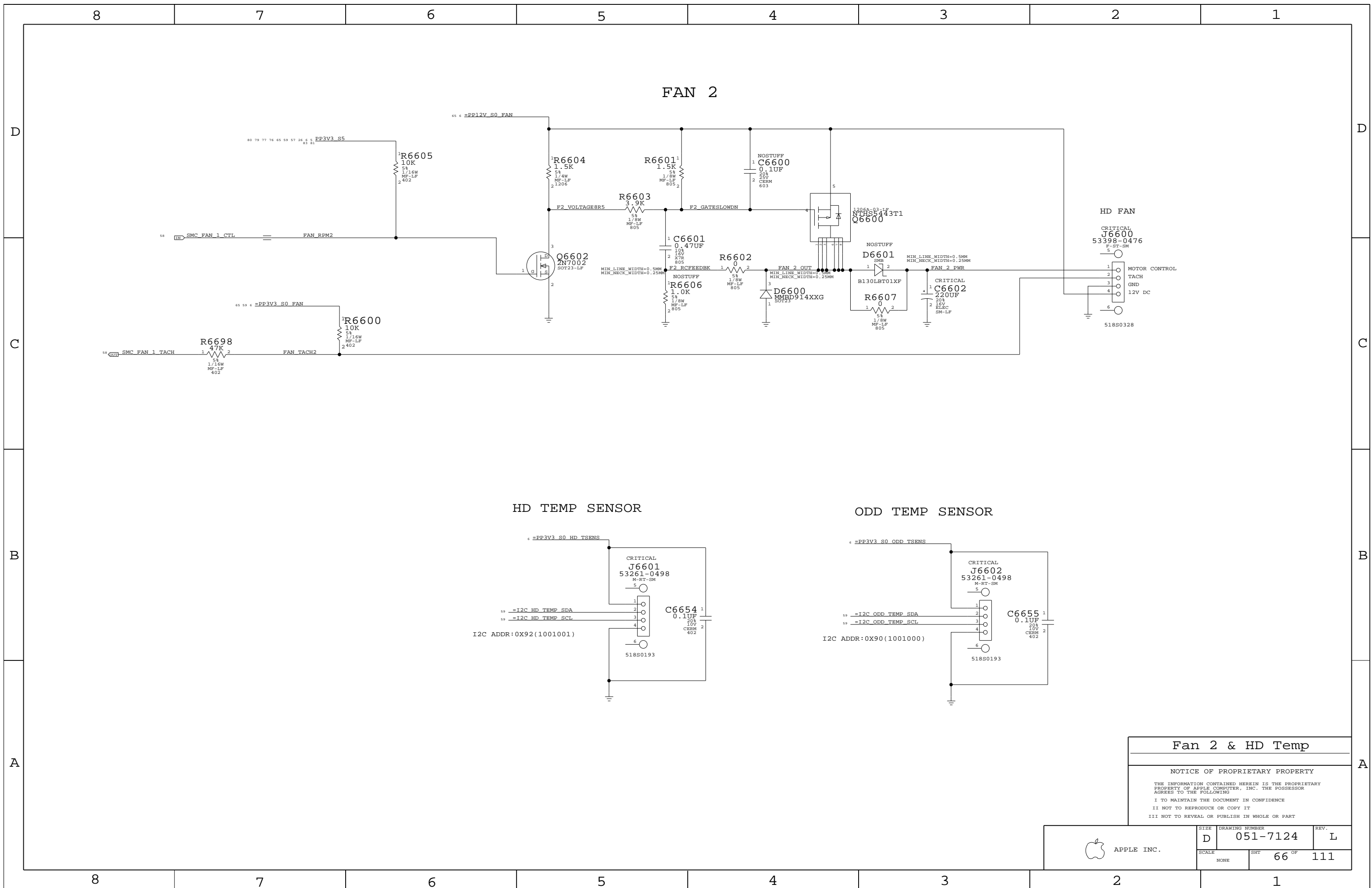


NOTE: ADDED TO PROTECT SMC

Fan 0, 1 & System Temp

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124 L	
SCALE	NONE	SHT	OF
		65	111



FAN 2

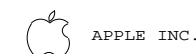
HD TEMP SENSOR

ODD TEMP SENSOR

Fan 2 & HD Temp

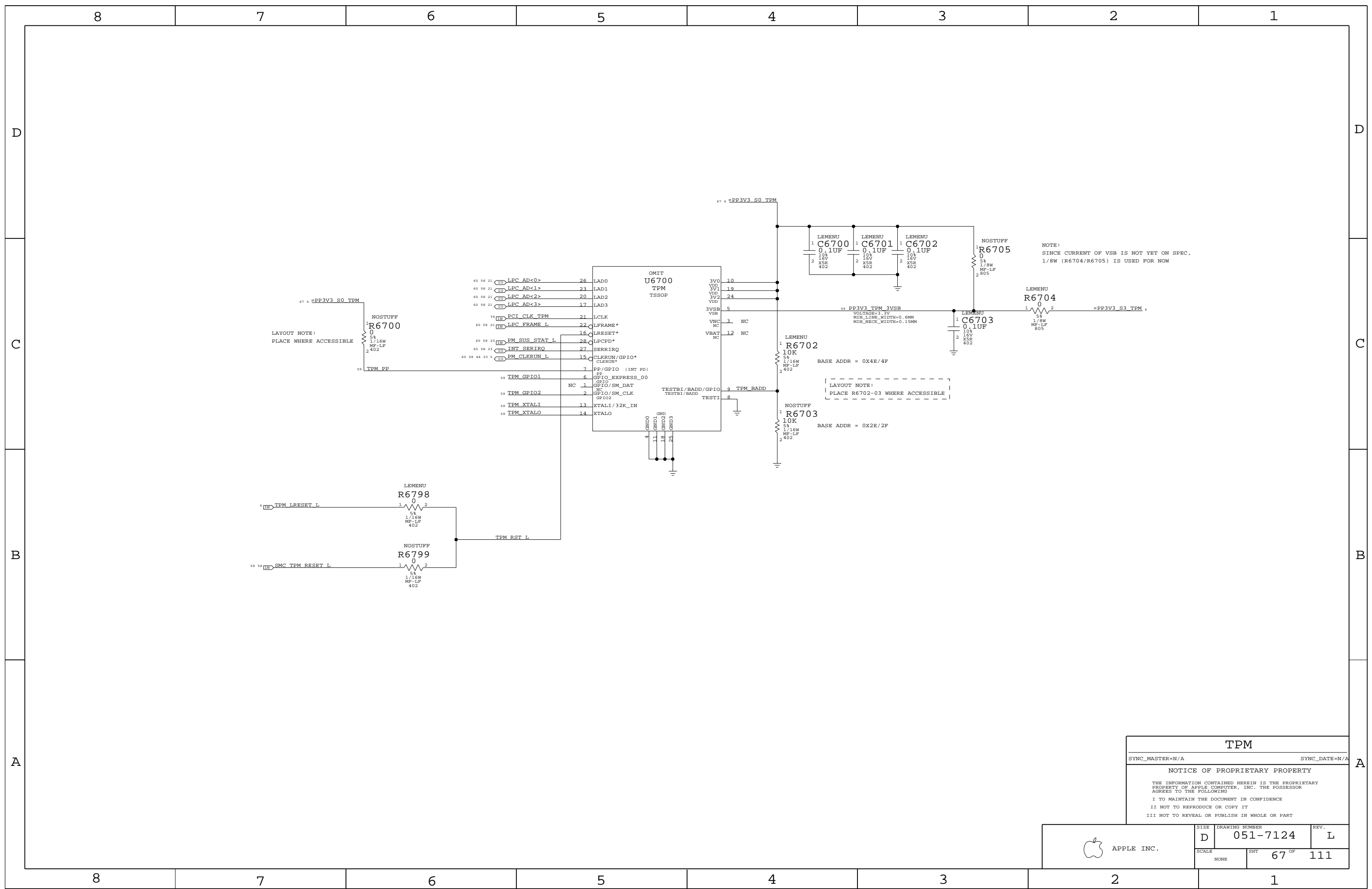
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APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	66	111



LAYOUT NOTE:
PLACE WHERE ACCESSIBLE

LAYOUT NOTE:
PLACE R6702-03 WHERE ACCESSIBLE

NOTE:
SINCE CURRENT OF VSB IS NOT YET ON SPEC,
1/8W (R6704/R6705) IS USED FOR NOW

TPM

SYNC_MASTER=N/A SYNC_DATE=N/A

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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHT 67 OF	111

8 7 6 5 4 3 2 1

D

C

B

A

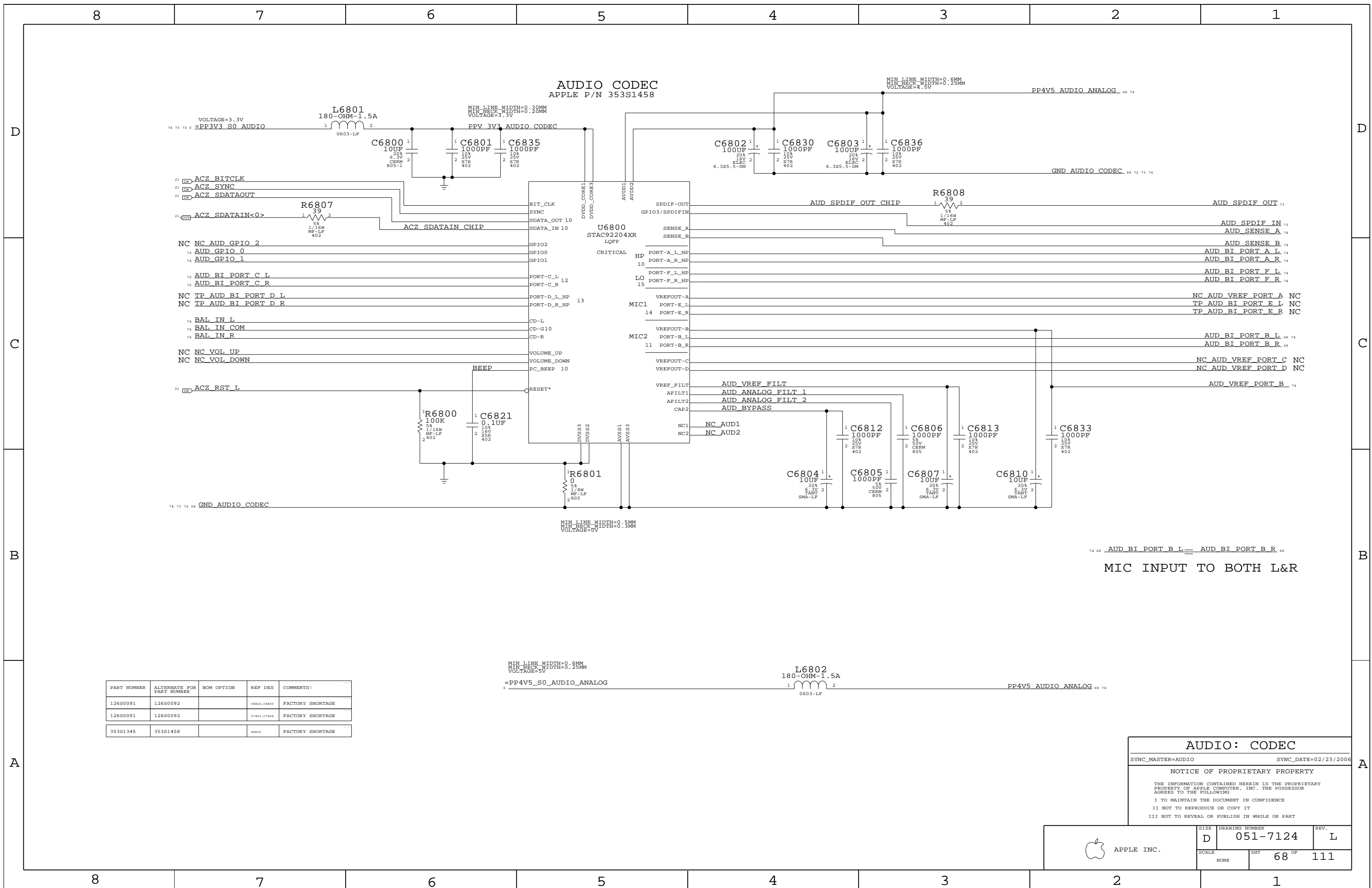
D

C

B

A

8 7 6 5 4 3 2 1



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
126S0091	126S0092		C802,C803	FACTORY SHORTAGE
126S0091	126S0092		C7403,C7404	FACTORY SHORTAGE
353S1345	353S1458		U6800	FACTORY SHORTAGE

AUDIO: CODEC

SYNC_MASTER=AUDIO SYNC_DATE=02/23/2006

NOTICE OF PROPRIETARY PROPERTY

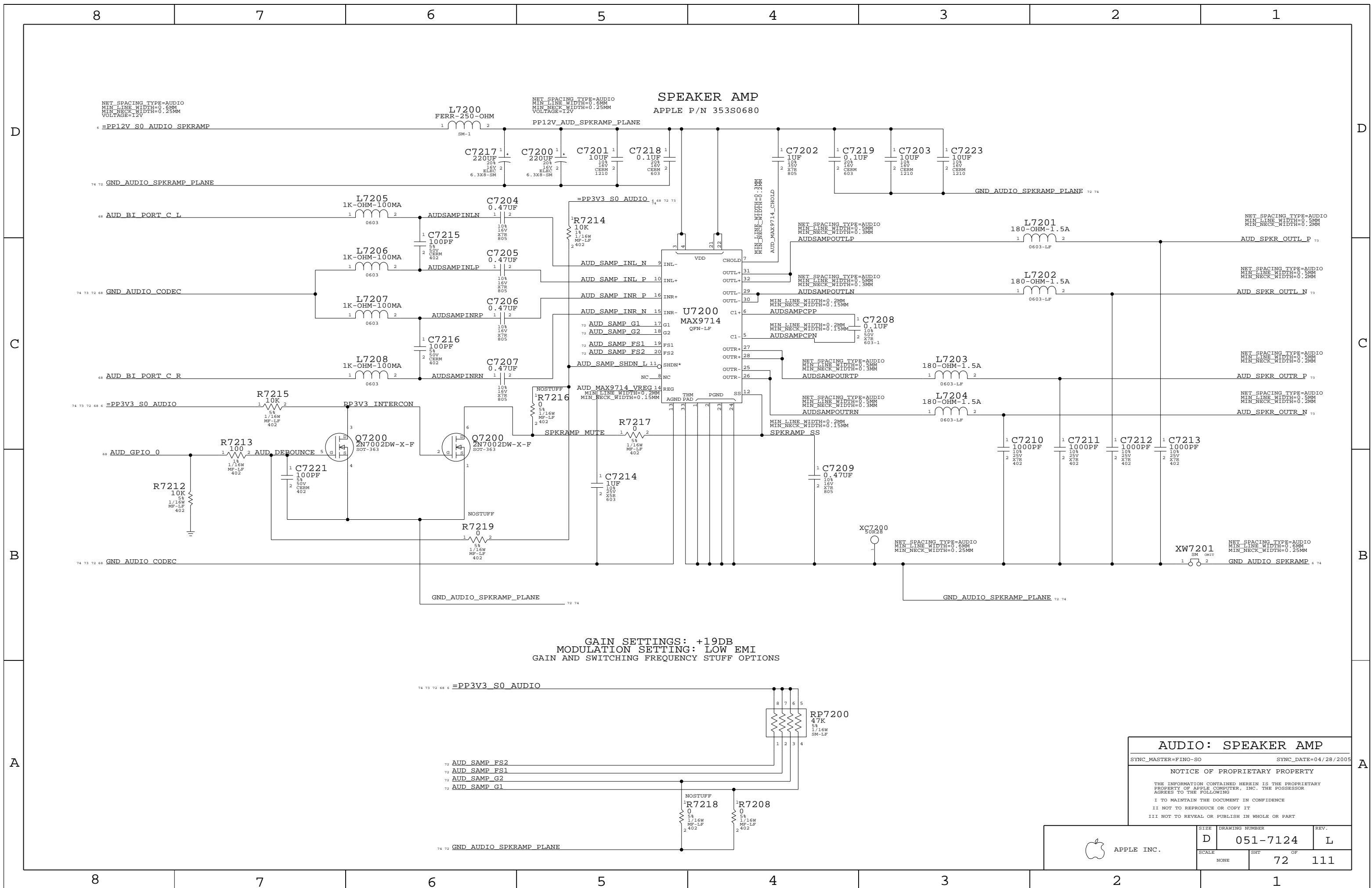
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	D	051-7124	L
SCALE	SHT	68 OF	111
NONE			

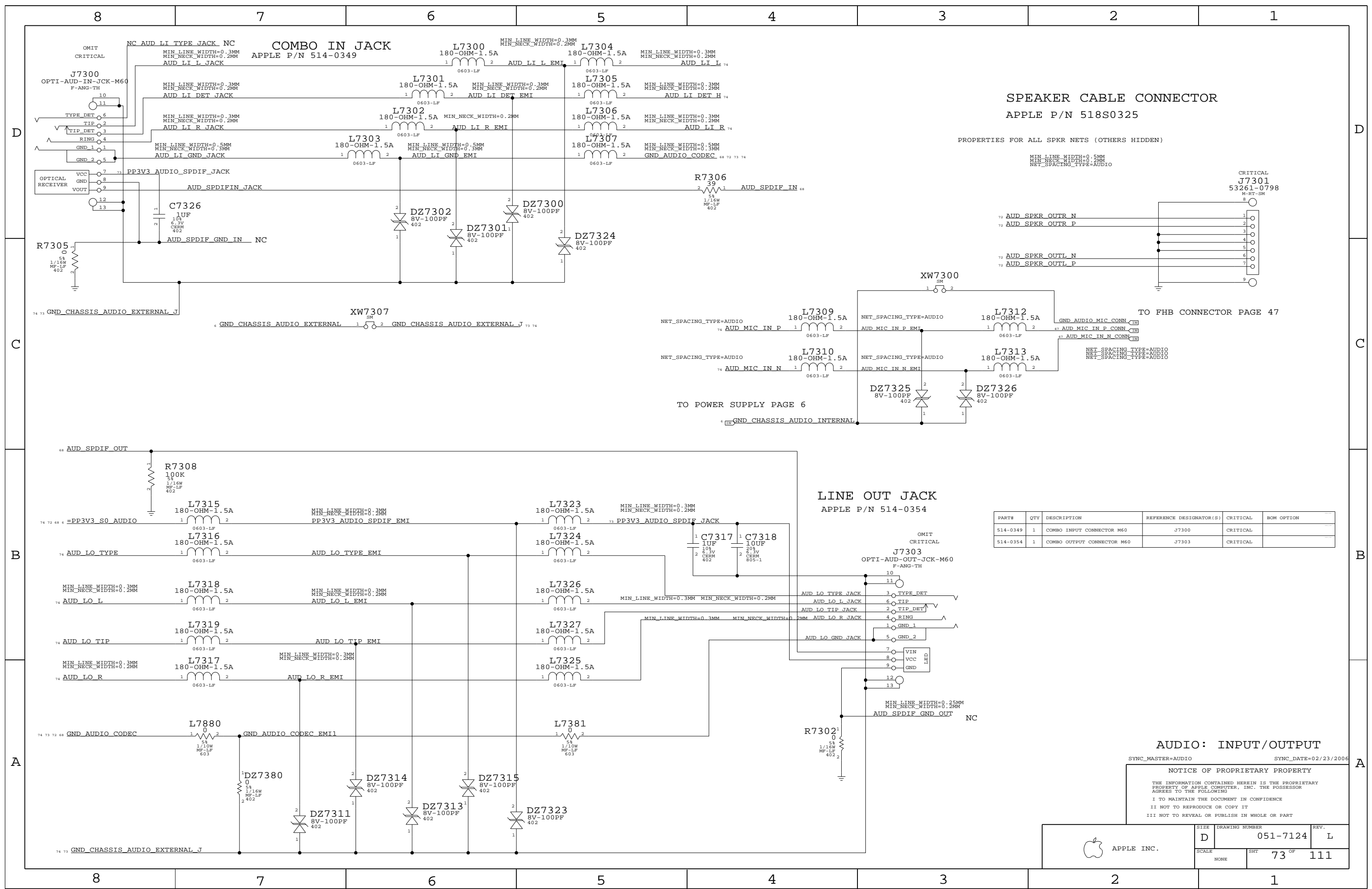


SPEAKER AMP
APPLE P/N 353S0680

GAIN SETTINGS: +19DB
MODULATION SETTING: LOW EMI
GAIN AND SWITCHING FREQUENCY STUFF OPTIONS

AUDIO: SPEAKER AMP
SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	NONE	SHT OF	72 OF 111

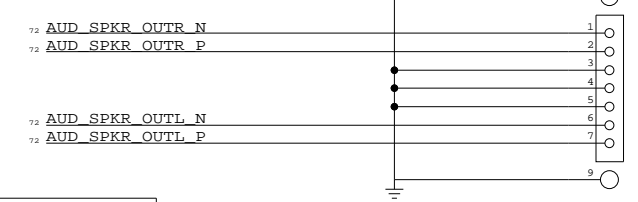


SPEAKER CABLE CONNECTOR
APPLE P/N 518S0325

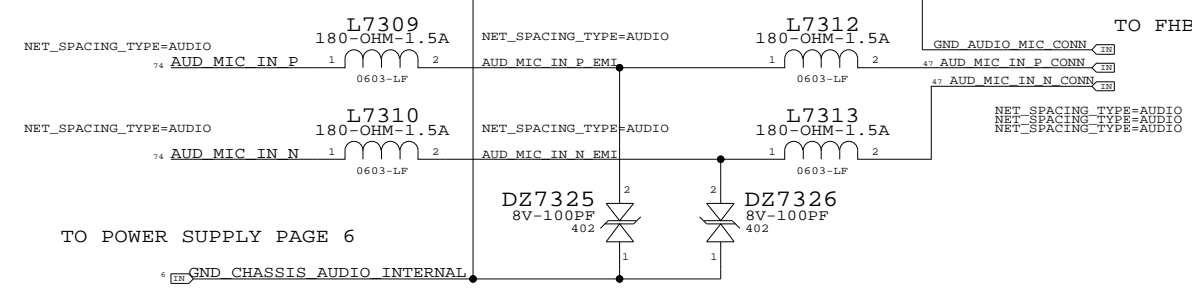
PROPERTIES FOR ALL SPKR NETS (OTHERS HIDDEN)

MIN LINE WIDTH=0.5MM
MIN NECK WIDTH=0.2MM
NET_SPACING_TYPE=AUDIO

CRITICAL
J7301
53261-0798
MST-SM



TO FHB CONNECTOR PAGE 47



TO POWER SUPPLY PAGE 6

LINE OUT JACK
APPLE P/N 514-0354

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0349	1	COMBO INPUT CONNECTOR M60	J7300	CRITICAL	
514-0354	1	COMBO OUTPUT CONNECTOR M60	J7303	CRITICAL	

AUDIO: INPUT/OUTPUT

SYNC_MASTER=AUDIO SYNC_DATE=02/23/2006

NOTICE OF PROPRIETARY PROPERTY

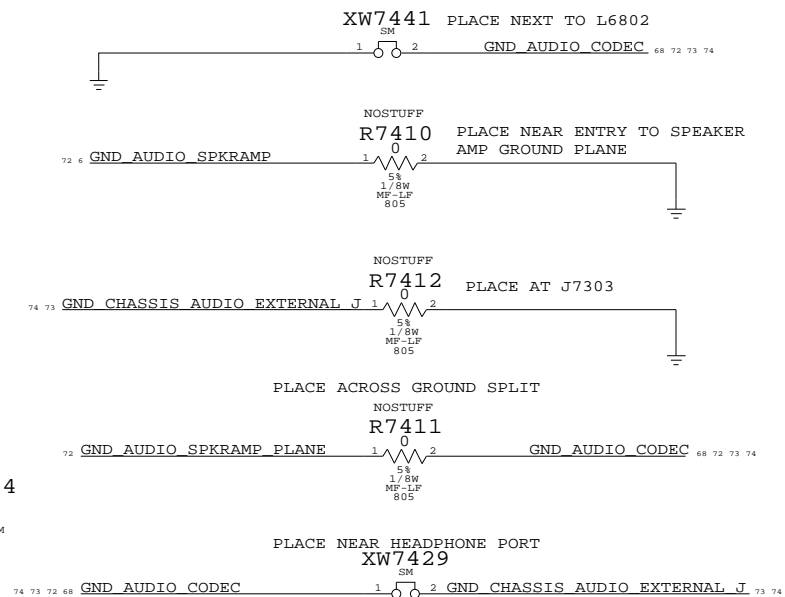
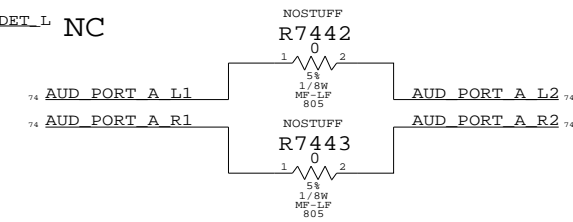
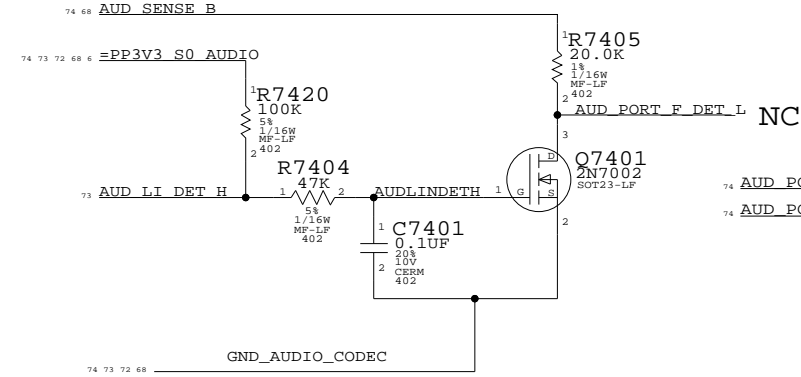
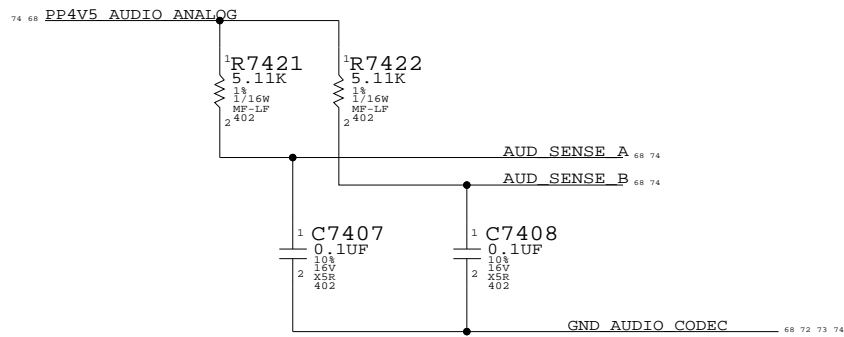
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	73 OF	111
NONE			

PORT F (LI) PLUG DETECT

AUDIO GROUND RETURNS

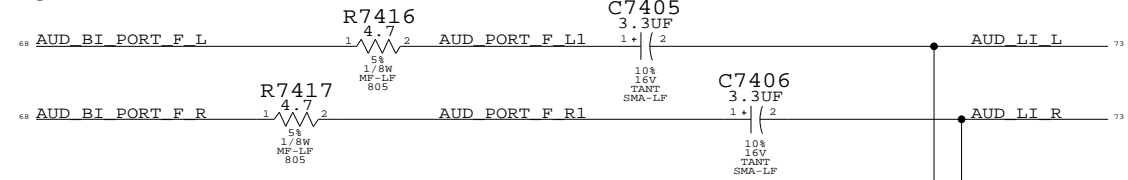
JACK SENSE PULL UPS (PLACE NEXT TO CODEC)



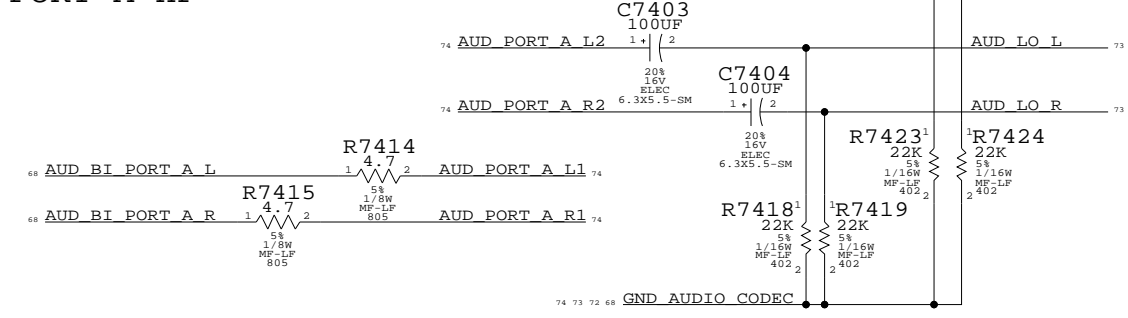
USED PORTS
 PORT A HP
 PORT B MIC IN VREF =80%
 PORT C BI SPEAKERS
 PORT F LI

UNUSED PORTS
 PORT E DETECT DELEGATE
 PORT D

PORT F LI



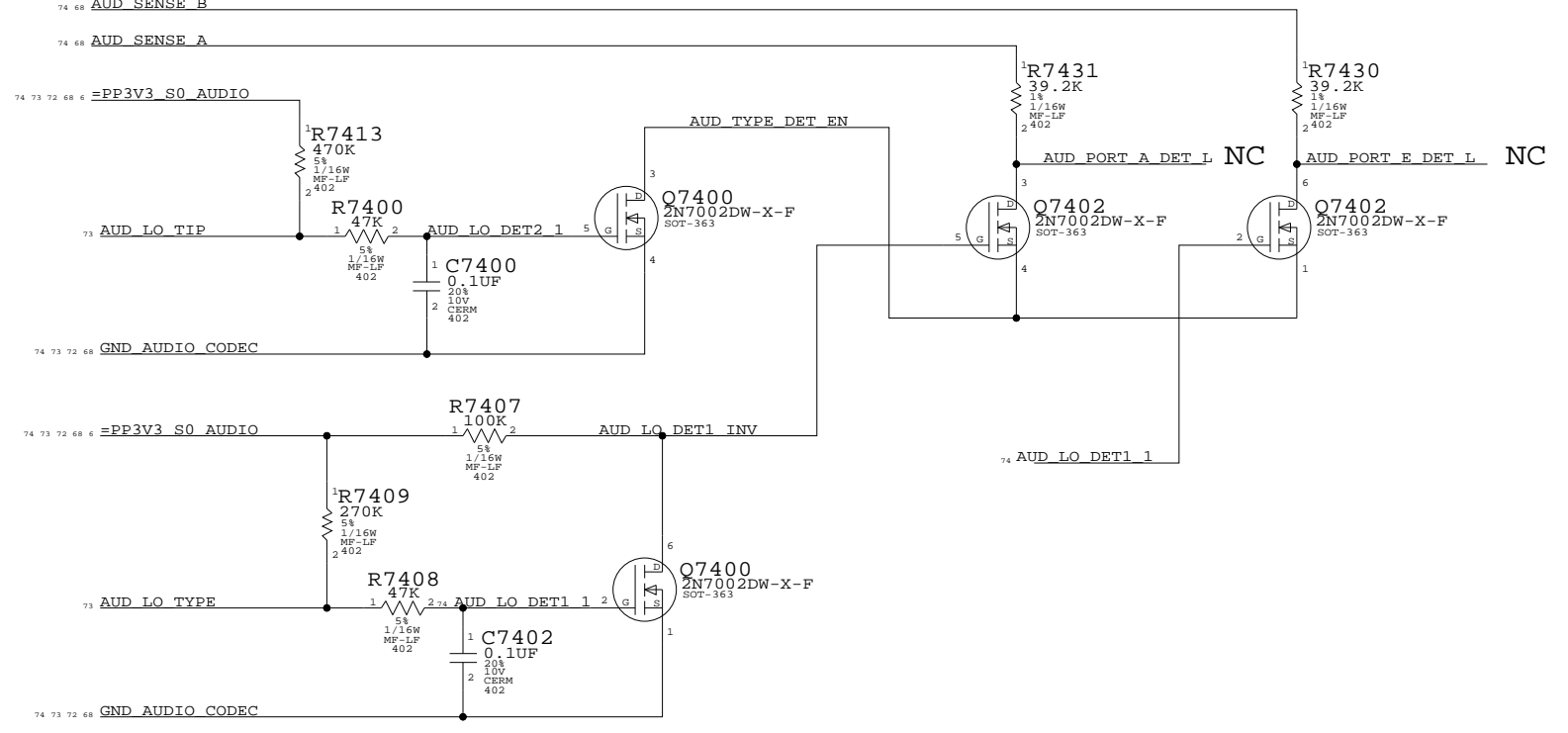
PORT A HP



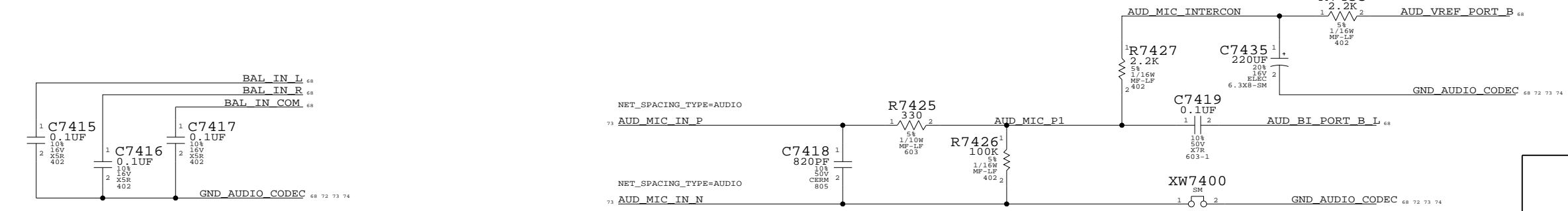
UNUSED PORT TERMINATION



PORT A/H (LO/DIG_OUT) PLUG DETECT (E TELLS H TO COME ON)

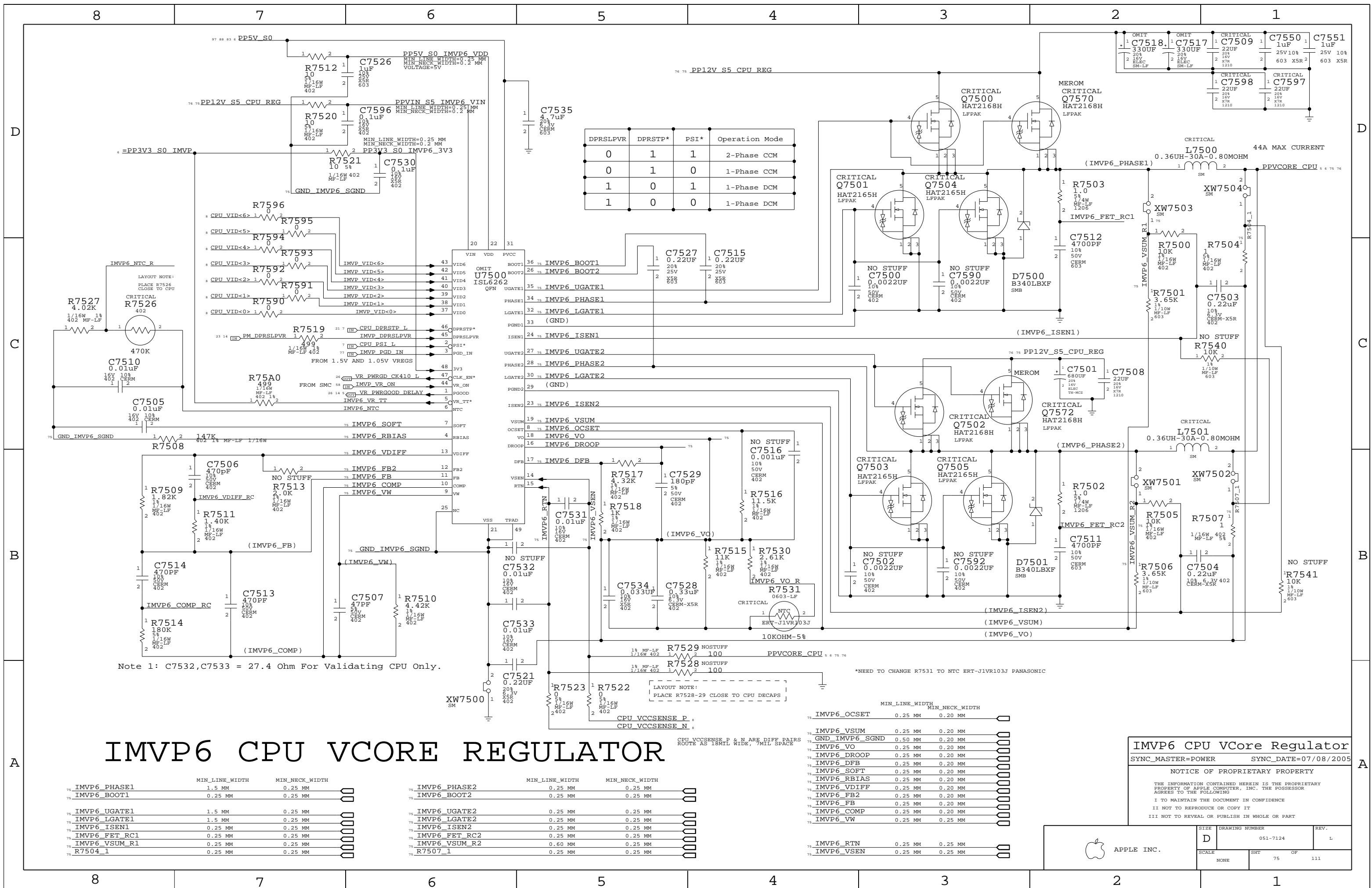


MICROPHONE IMPEDANCE MATCHING CIRCUIT



AUDIO: JACK DETECT
 SYNC_MASTER=AUDIO SYNC_DATE=02/23/2006
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	74 OF	111
NONE			



DPRSLPVR	DPRSTP*	PSI*	Operation Mode
0	1	1	2-Phase CCM
0	1	0	1-Phase CCM
1	0	1	1-Phase DCM
1	0	0	1-Phase DCM

NO STUFF	C7527	0.22UF	20%	25V	25V	25V	25V
NO STUFF	C7515	0.22UF	20%	25V	25V	25V	25V
NO STUFF	C7500	0.0022UF	10%	50V	50V	50V	50V

Note 1: C7532,C7533 = 27.4 Ohm For Validating CPU Only.

*NEED TO CHANGE R7531 TO NTC ERT-J1VR103J PANASONIC

LAYOUT NOTE:
PLACE R7528-29 CLOSE TO CPU DECAPS

IMVP6 CPU VCore Regulator

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
75 IMVP6_PHASE1	1.5 MM	0.25 MM
75 IMVP6_BOOT1	0.25 MM	0.25 MM
75 IMVP6_UGATE1	1.5 MM	0.25 MM
75 IMVP6_LGATE1	1.5 MM	0.25 MM
75 IMVP6_ISEN1	0.25 MM	0.25 MM
75 IMVP6_FET_RC1	0.25 MM	0.25 MM
75 IMVP6_VSUM_R1	0.25 MM	0.25 MM
75 R7504_1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
75 IMVP6_PHASE2	0.25 MM	0.25 MM
75 IMVP6_BOOT2	0.25 MM	0.25 MM
75 IMVP6_UGATE2	0.25 MM	0.25 MM
75 IMVP6_LGATE2	0.25 MM	0.25 MM
75 IMVP6_ISEN2	0.25 MM	0.25 MM
75 IMVP6_FET_RC2	0.25 MM	0.25 MM
75 IMVP6_VSUM_R2	0.60 MM	0.25 MM
75 R7507_1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
75 IMVP6_OCSET	0.25 MM	0.20 MM
75 IMVP6_VSUM	0.25 MM	0.20 MM
75 GND_IMVP6_SGND	0.50 MM	0.20 MM
75 IMVP6_VO	0.25 MM	0.20 MM
75 IMVP6_DROOP	0.25 MM	0.20 MM
75 IMVP6_DFB	0.25 MM	0.20 MM
75 IMVP6_SOFT	0.25 MM	0.20 MM
75 IMVP6_RBIAS	0.25 MM	0.20 MM
75 IMVP6_VDIFF	0.25 MM	0.20 MM
75 IMVP6_FB2	0.25 MM	0.20 MM
75 IMVP6_FB	0.25 MM	0.20 MM
75 IMVP6_COMP	0.25 MM	0.20 MM
75 IMVP6_VW	0.25 MM	0.25 MM
75 IMVP6_RTIN	0.25 MM	0.25 MM
75 IMVP6_VSEN	0.25 MM	0.25 MM

IMVP6 CPU VCore Regulator
SYNC_MASTER=POWER SYNC_DATE=07/08/2005

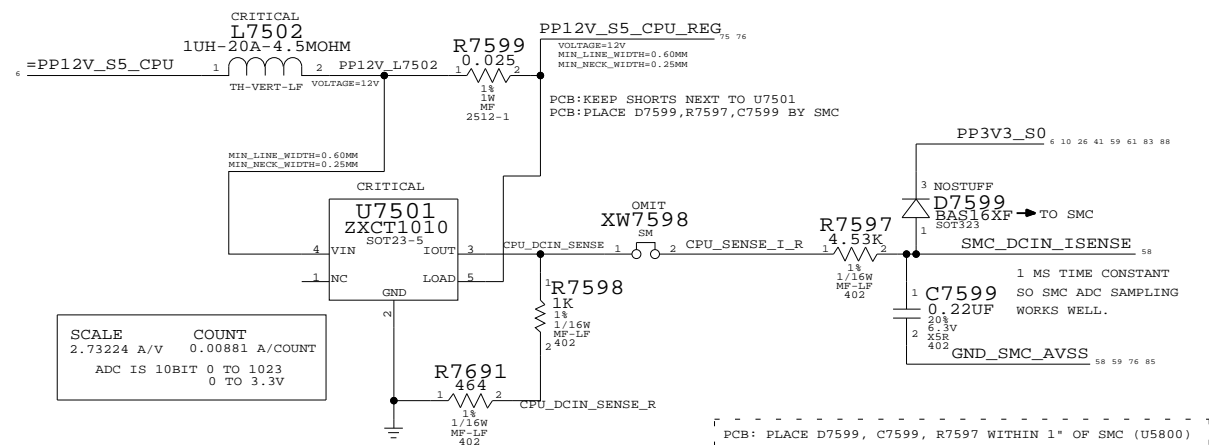
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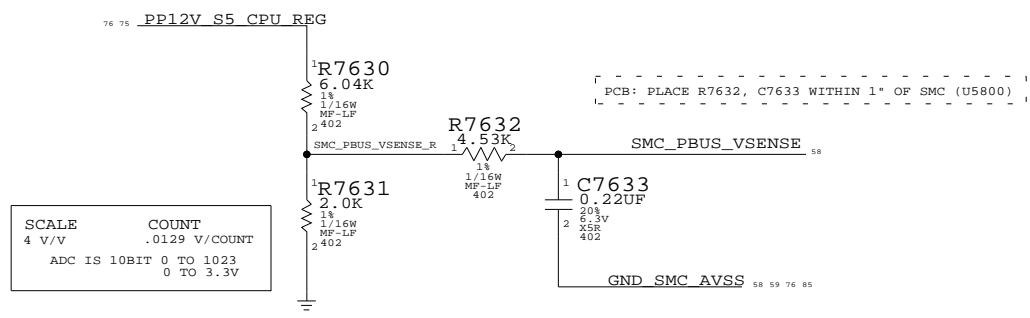
SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	75	111

PROCESSOR VCORE CURRENT SENSE
(USING 12V INPUT CURRENT TO DERIVE CPU CURRENT)



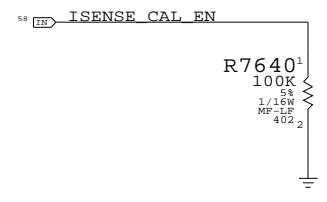
SCALE	COUNT
2.73224 A/V	0.00881 A/COUNT
ADC IS 10BIT 0 TO 1023	
0 TO 3.3V	

PROCESSOR DCIN VOLTAGE SENSE
(SCALING 12V INPUT VOLTAGE TO SMC)

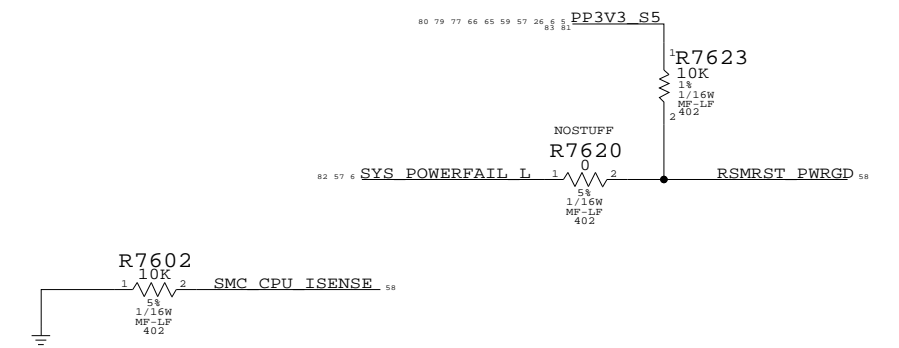


SCALE	COUNT
4 V/V	.0129 V/COUNT
ADC IS 10BIT 0 TO 1023	
0 TO 3.3V	

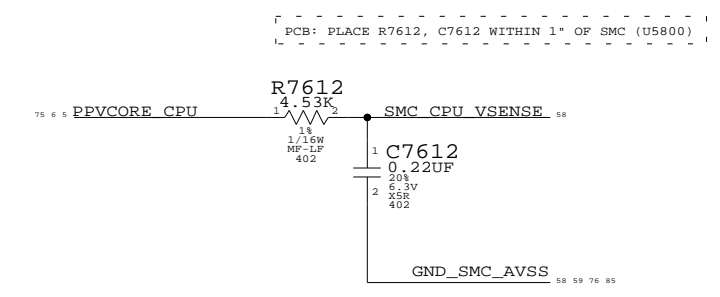
Current Sense Calibration Circuit
Switches in fixed load on power supplies to calibrate current sense circuits



SMC PWRGD PULLUP



PROCESSOR VCORE SENSE



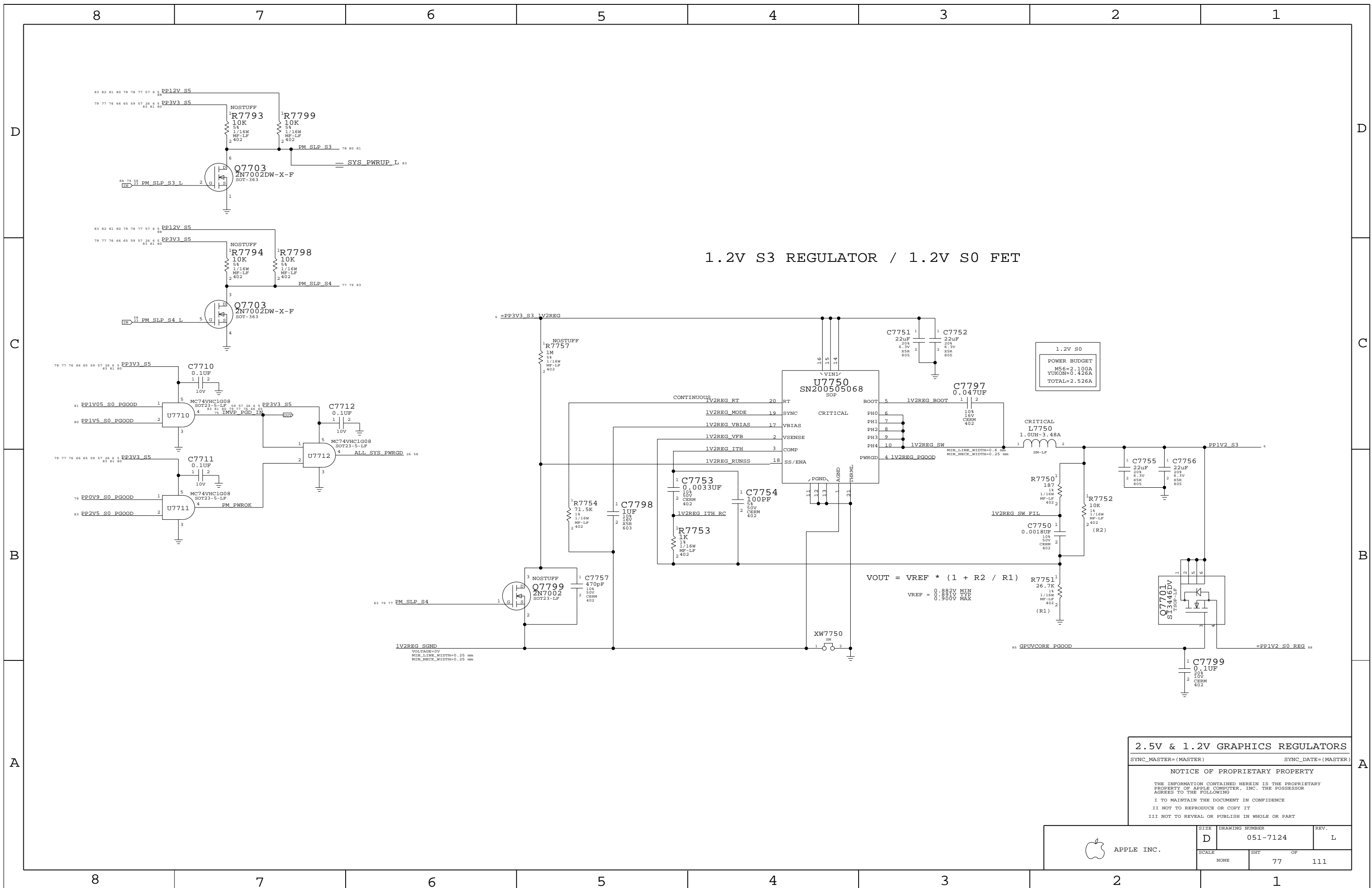
CPU SENSE CIRCUITRIES

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	76 OF	111
NONE			



2.5V & 1.2V GRAPHICS REGULATORS

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	77	111	

D

D

C

C

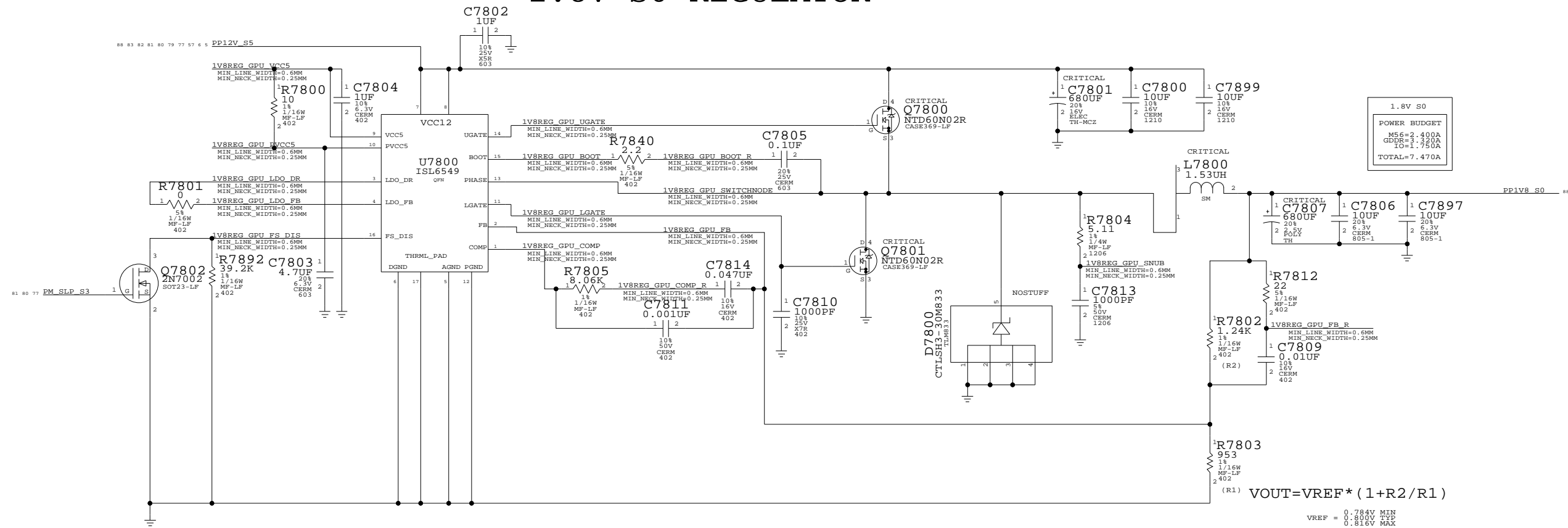
B

B

A

A

1.8V S0 REGULATOR



1.8V GDDR REGULATOR

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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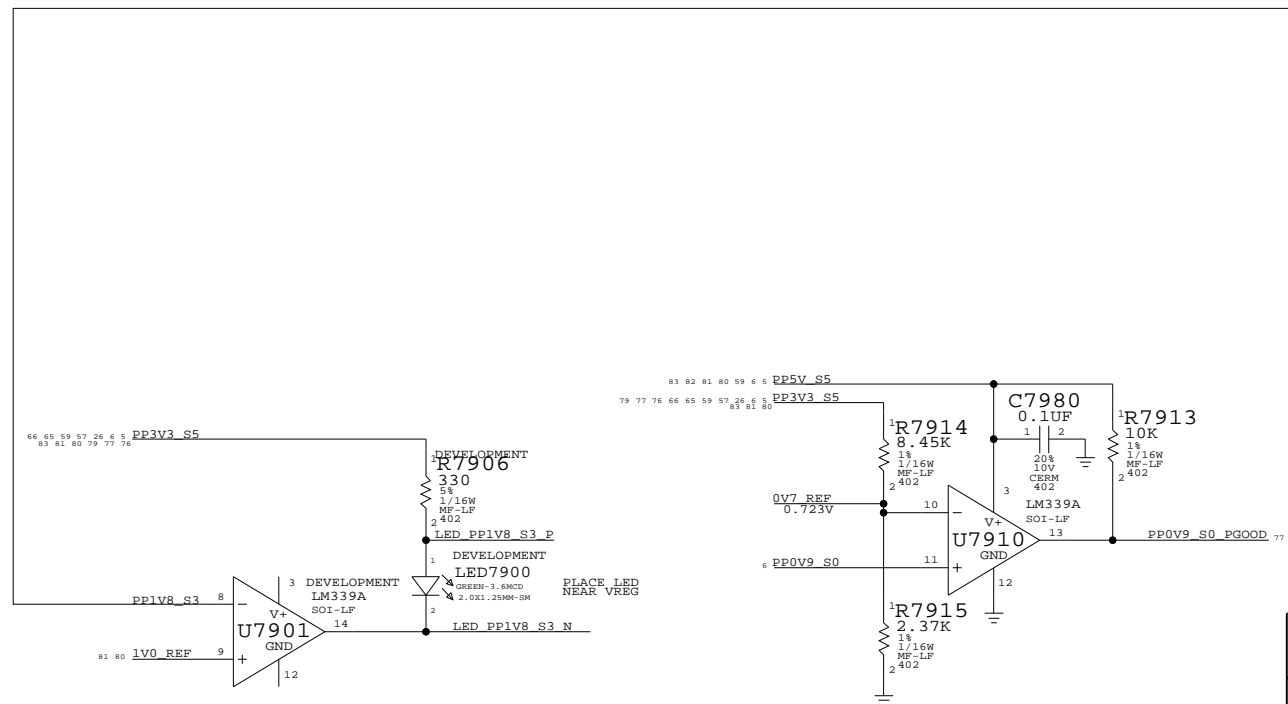
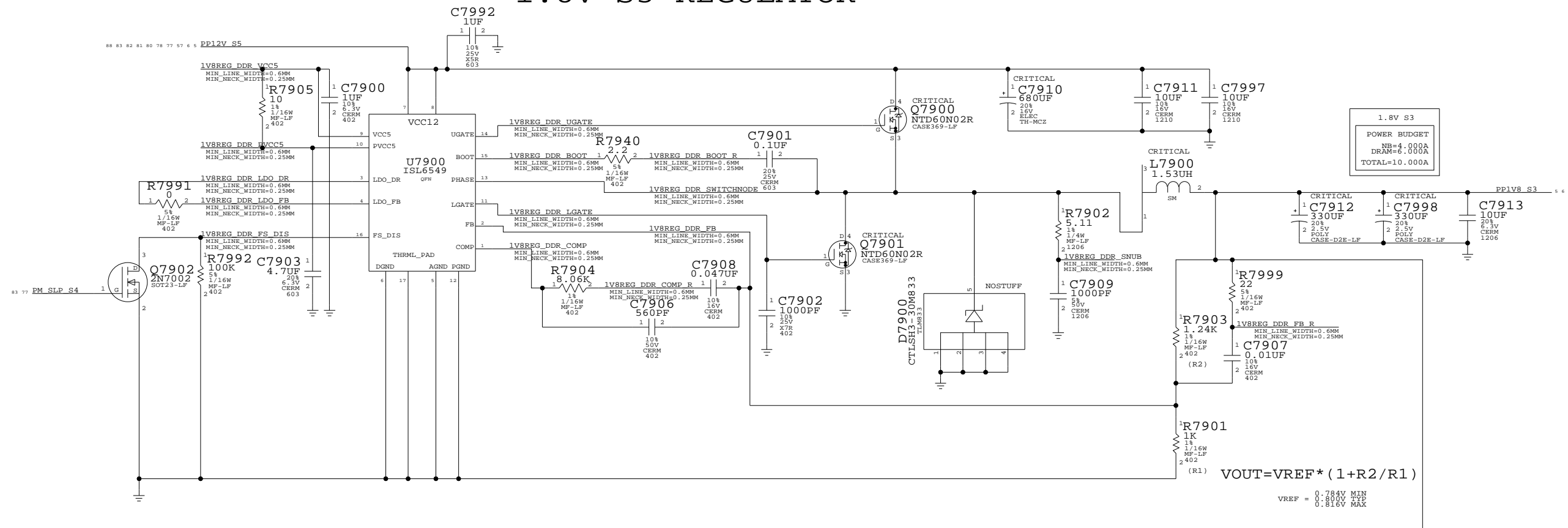
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II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE		SHT	OF
NONE		78	111

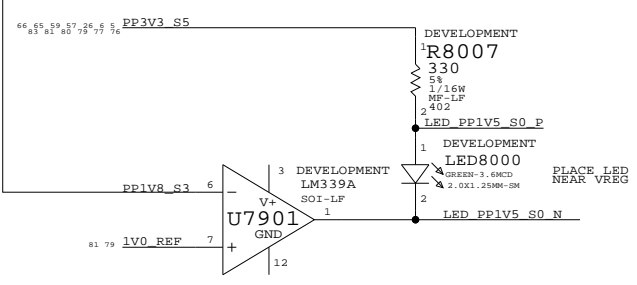
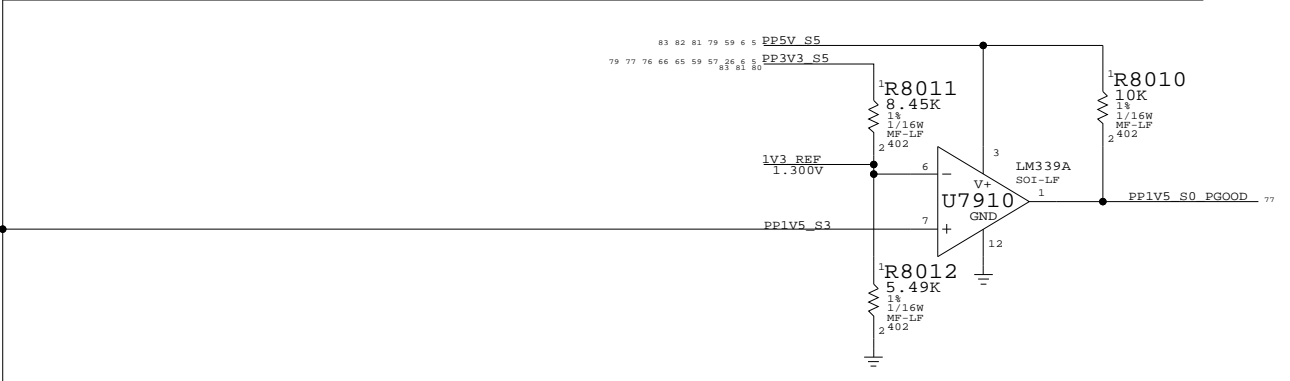
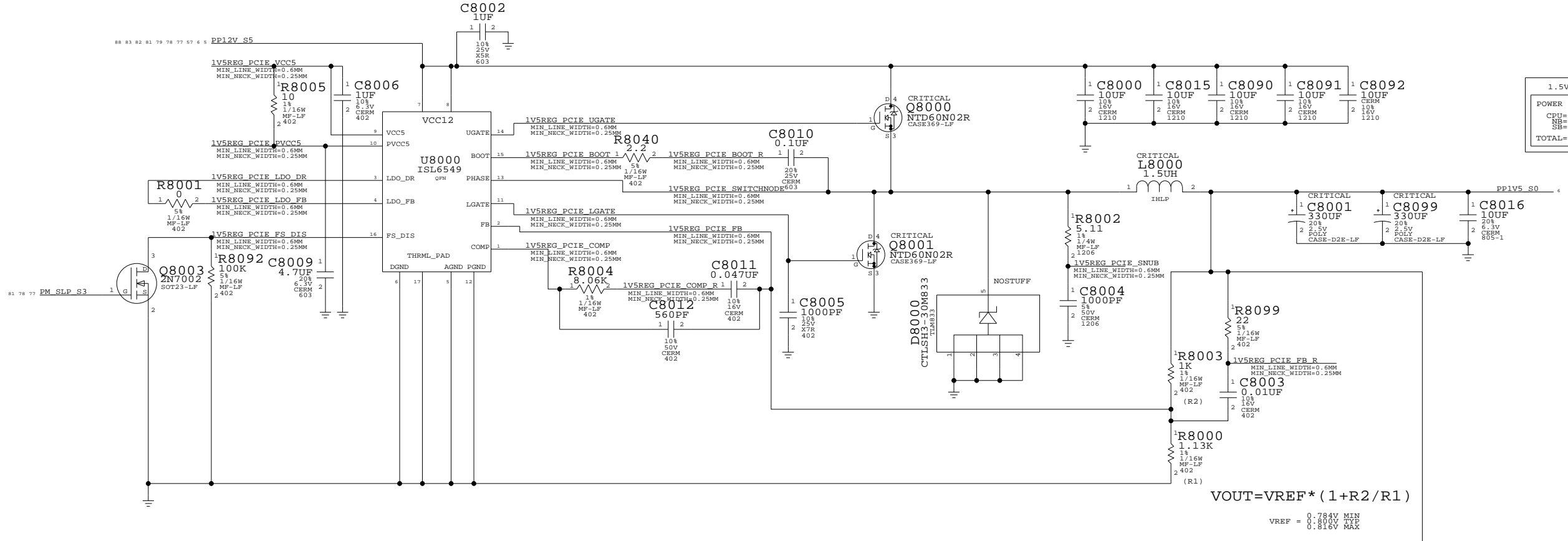
1.8V S3 REGULATOR



1.8V Vreg
 SYNC_MASTER=M23-PC SYNC_DATE=04/12/2005
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	79 OF	111
NONE			

1.5V S0 REGULATOR



1.5V Vreg

SYNC_MASTER=FINO-PC SYNC_DATE=05/18/2005

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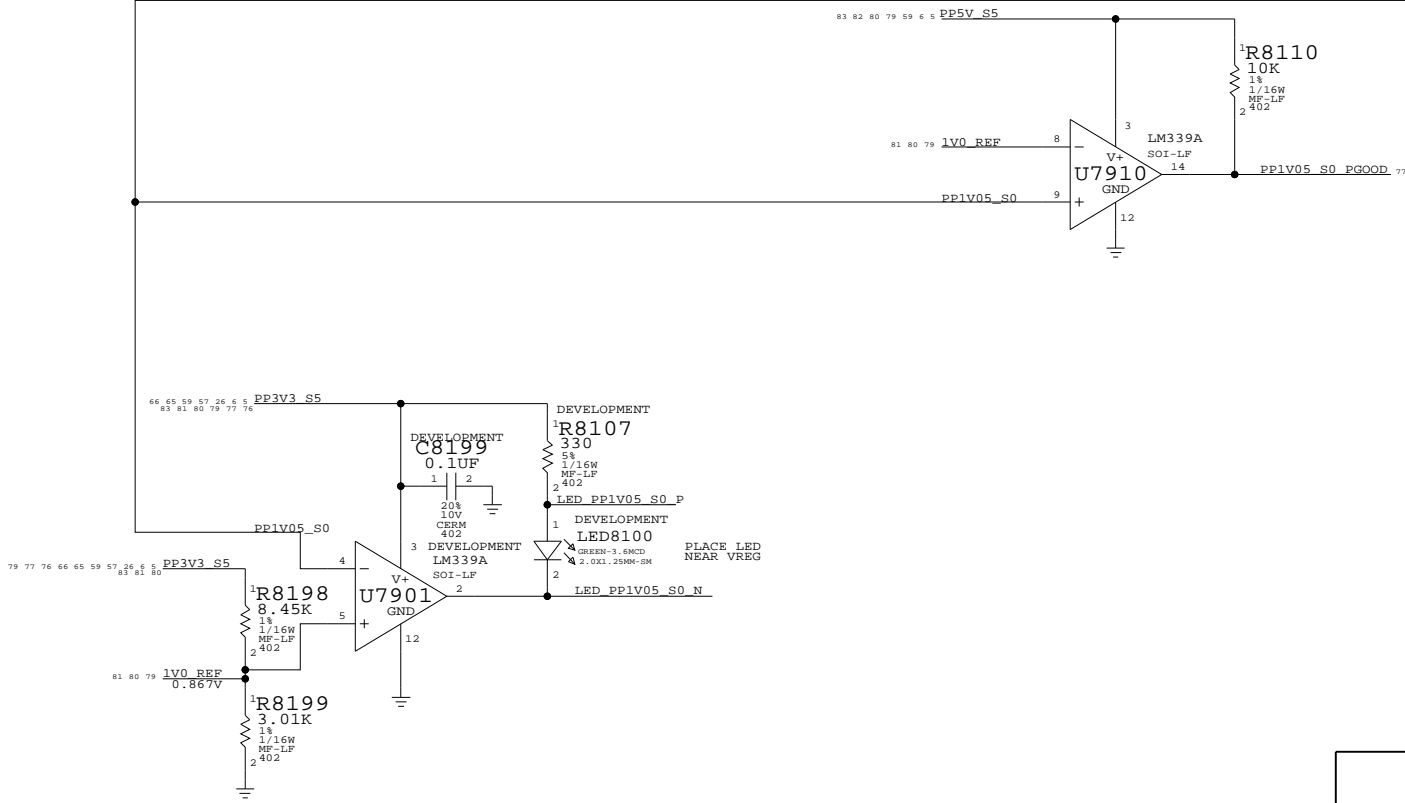
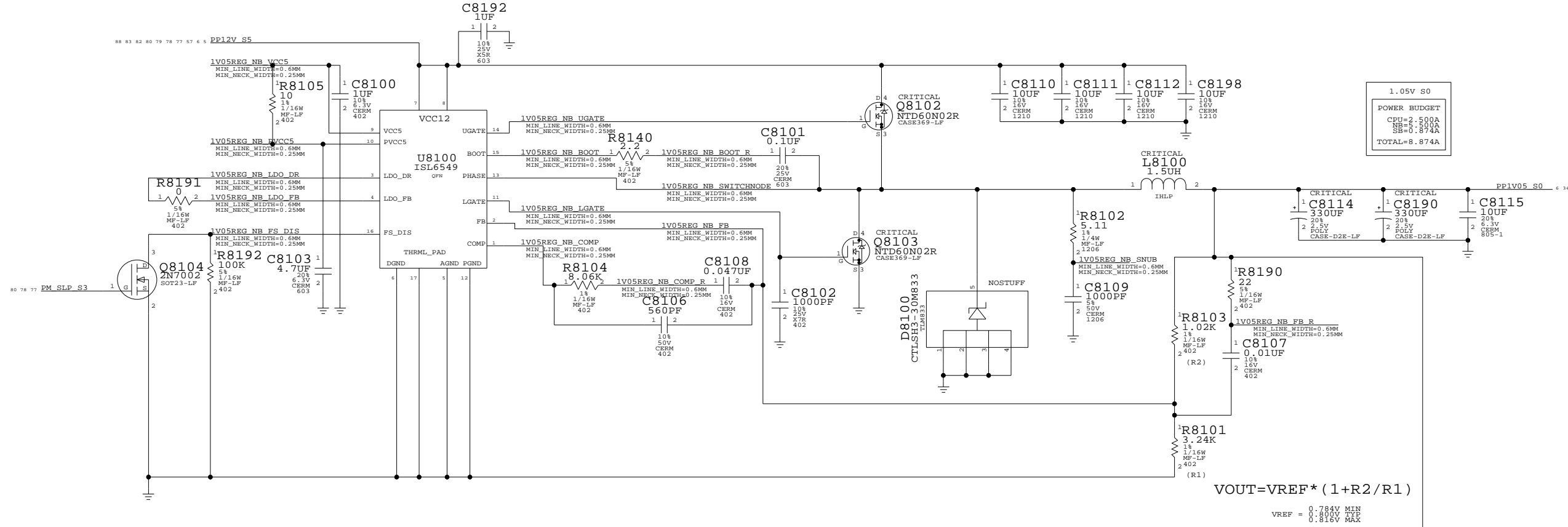
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	80 OF	111
NONE			

1.05V S0 REGULATOR



1.05V VREG

SYNC_MASTER=M38-RT SYNC_DATE=05/18/2005

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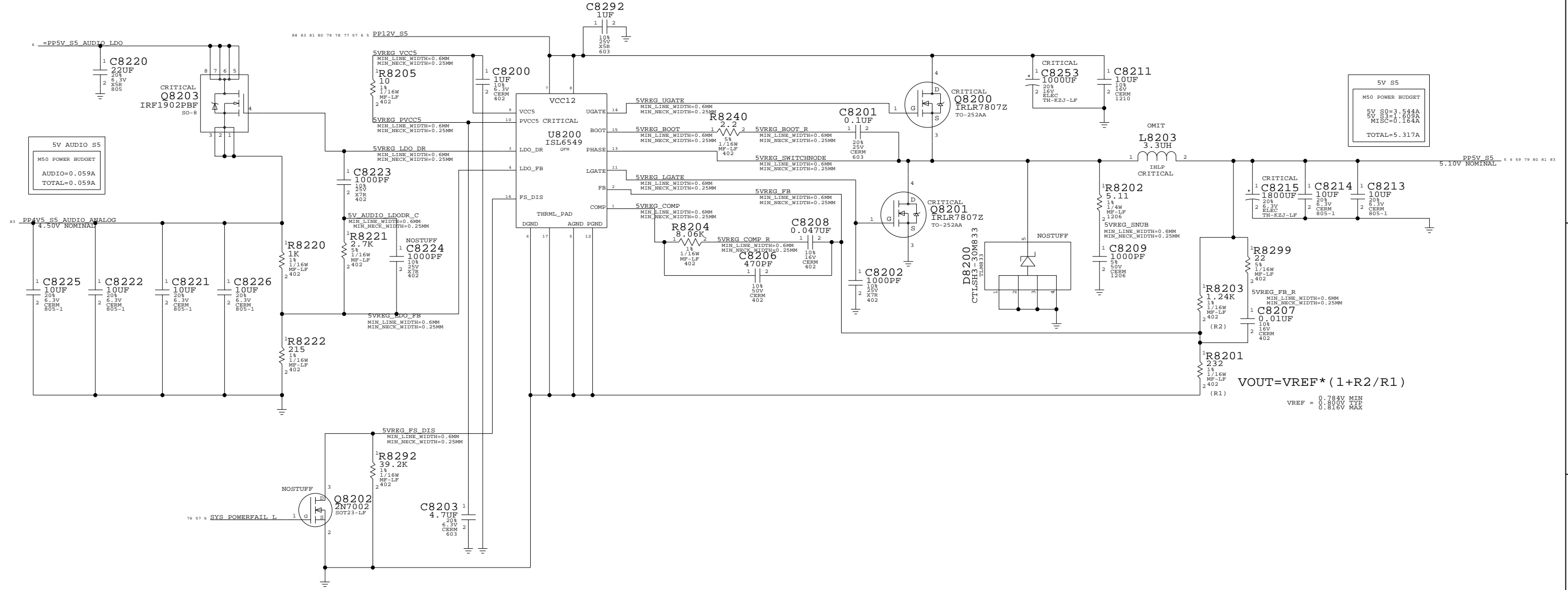
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II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	81 OF	111
NONE			

5V S5 AND 5V AUDIO S5 REGULATOR



5V AUDIO S5
M50 POWER BUDGET
AUDIO=0.059A
TOTAL=0.059A

5V S5
M50 POWER BUDGET
5V S5=3.544A
5V S5=1.809A
MISC=0.164A
TOTAL=5.317A

$V_{OUT} = V_{REF} * (1 + R2/R1)$
 $V_{REF} = 0.784V \text{ MIN}$
 $V_{REF} = 0.800V \text{ TYP}$
 $V_{REF} = 0.816V \text{ MAX}$

5V DC/DC 4.5V

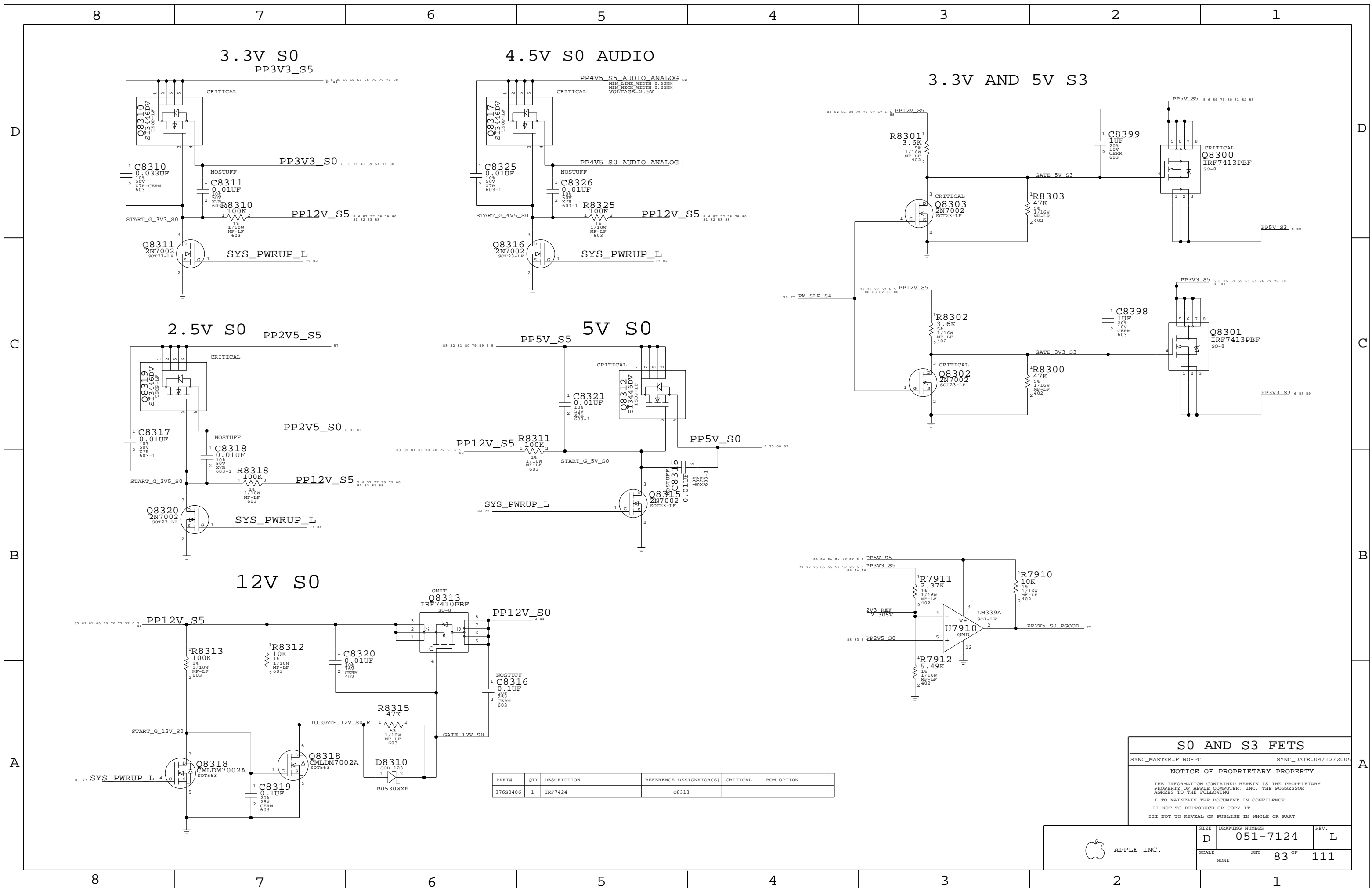
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE D	DRAWING NUMBER 051-7124	REV. L
	SCALE NONE	SHT 82 OF	111



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
376S0406	1	IRF7424	Q8313		

S0 AND S3 FETS

SYNC_MASTER=FINO-PC SYNC_DATE=04/12/2005

NOTICE OF PROPRIETARY PROPERTY

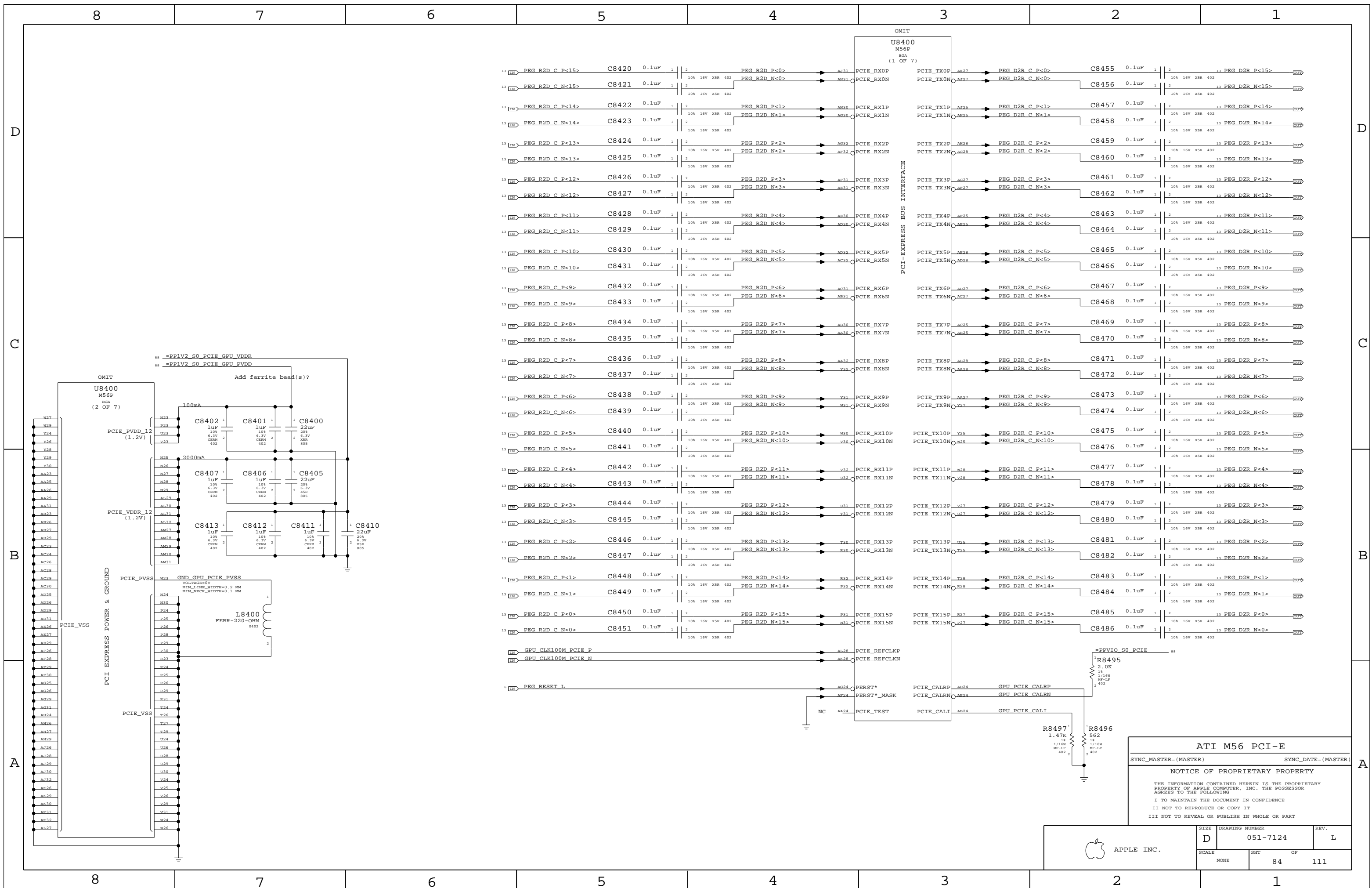
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 APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	83 OF	111
NONE			



ATI M56 PCI-E

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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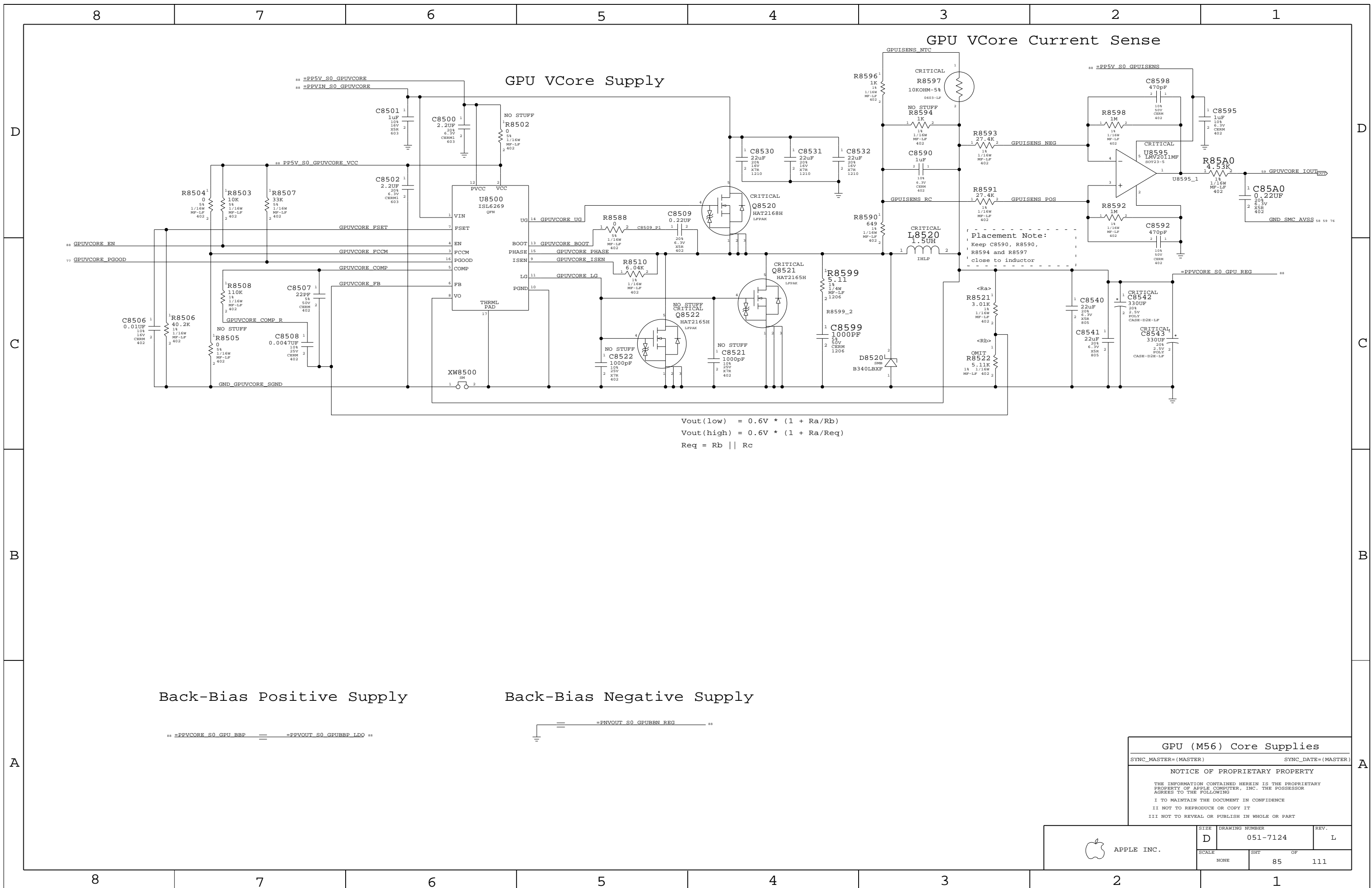
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 APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	84		111



GPU VCore Supply

GPU VCore Current Sense

Back-Bias Positive Supply

Back-Bias Negative Supply

$$V_{out}(low) = 0.6V * (1 + R_a/R_b)$$

$$V_{out}(high) = 0.6V * (1 + R_a/R_{eq})$$

$$R_{eq} = R_b || R_c$$

Placement Note:
 Keep C8590, R8590,
 R8594 and R8597
 close to inductor

GPU (M56) Core Supplies
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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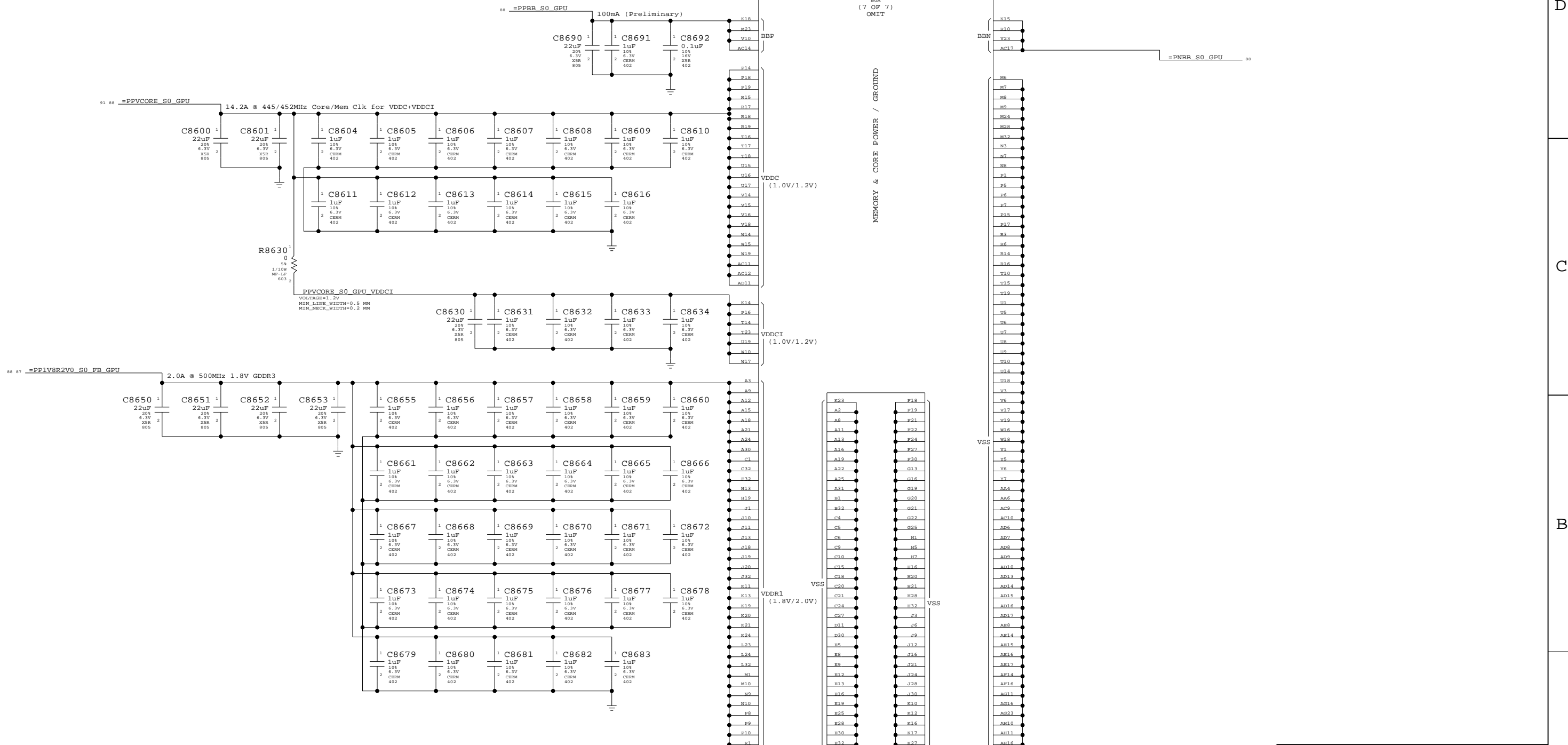
APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	85	111	

Page Notes

Power aliases required by this page:
 - =PP1V5_GPU_VDD15
 - =PP1VR1V3_GPU_VCORE

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)



ATI M56 Core Power

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	86	111	

Page Notes

Power aliases required by this page:
- =PP1V8R2V0_S0_FB_GPU
Signal aliases required by this page:
(NONE)
BOM options provided by this page:
(NONE)

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OMIT

U8400
M56P
BGA
(3 OF 7)

MEMORY INTERFACE A

READ STROBE

WRITE STROBE

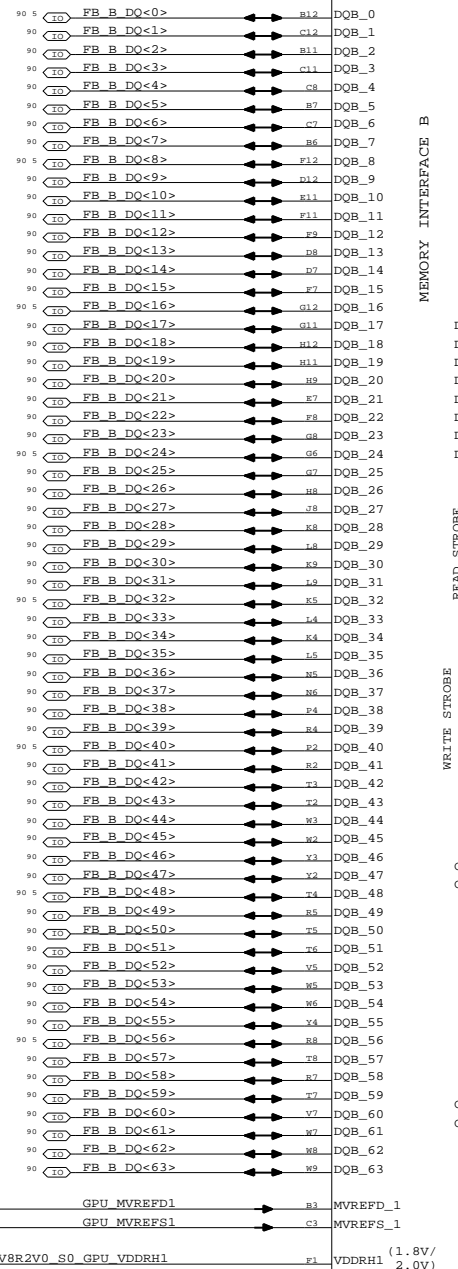
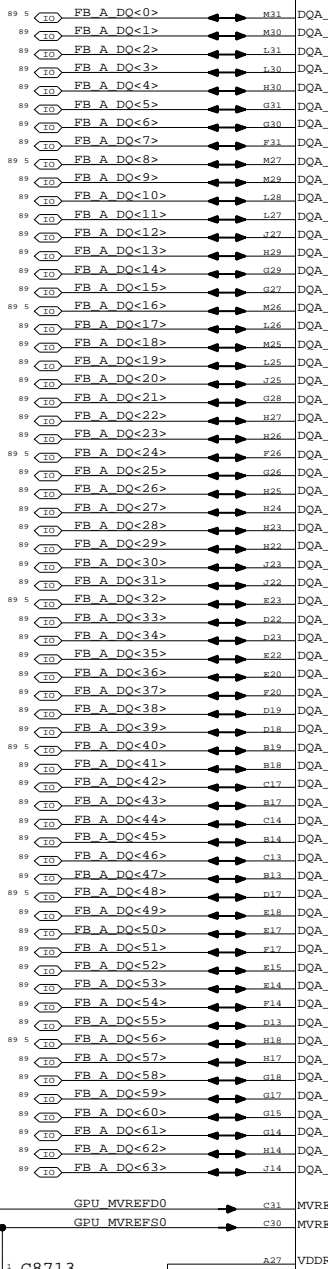
OMIT

U8400
M56P
BGA
(4 OF 7)

MEMORY INTERFACE B

READ STROBE

WRITE STROBE



D

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B

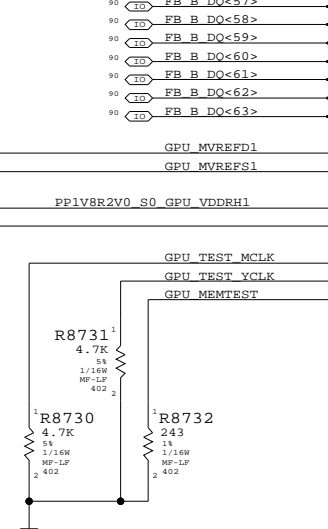
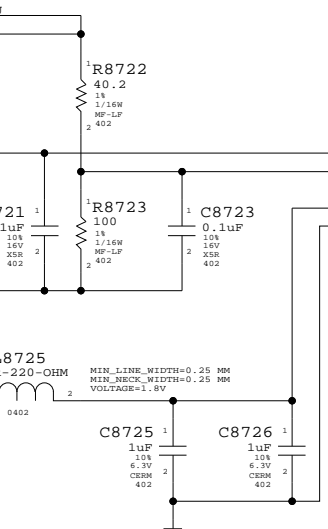
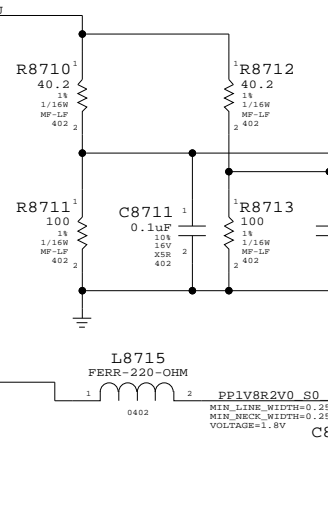
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88 87 86 =PP1V8R2V0_S0_FB_GPU

88 87 86 =PP1V8R2V0_S0_FB_GPU

88 87 86 =PP1V8R2V0_S0_FB_GPU

88 87 86 =PP1V8R2V0_S0_FB_GPU



ATI M56 Frame Buffer I/F
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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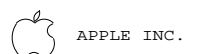


Table with columns: SIZE (D), DRAWING NUMBER (051-7124), REV. (L), SCALE (NONE), SHEET (87), OF (111)

8

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"S0" GPU RAILS

ONLY ON IN RUN

59 EP1V0R1V2_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

85 PP5V_S0_GPUVCORE_VCC
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

PP1V2_GPU_IO_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PPBB_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PNBB_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.2MM
 VOLTAGE=0

83 76 61 59 41 26 10 6 PP3V3_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

83 6 PP2V5_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PP1V8R2V0_S0_FB_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.8V

83 82 81 80 79 78 77 57 6 5 PP12V_S5
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

83 6 PP12V_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

97 83 76 6 PP5V_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

85 GPUVCORE_EN
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

87 FB_DRAM_RST
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

M56 GPIOs

94 91 GPU_GPIO_0
 10K 1/16W 2 R8813
 402 MF-LF 5%
 GPIO 0 = TRANSMITTER POWER SAVINGS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_1
 10K 1/16W 2 R8802
 402 MF-LF 5%
 GPIO 1 = TRANSMITTER DE-EMPHASIS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_2
 NOSTUFF R8803
 10K 1/16W 2 402 MF-LF 5%

91 GPU_GPIO_3
 NOSTUFF R8804
 10K 1/16W 2 402 MF-LF 5%

91 GPU_GPIO_4
 NOSTUFF R8805
 10K 1/16W 2 402 MF-LF 5%
 GPIO 4 = DEBUG SIGNALS OUT

91 GPU_GPIO_5
 10K 1/16W 2 R8806
 402 MF-LF 5%

91 GPU_GPIO_6
 NOSTUFF R8807
 10K 1/16W 2 402 MF-LF 5%

TP_GPU_GPIO_7
 MAKE_BASE=TRUE
 GPU_GPIO_7 91

91 GPU_GPIO_8
 NOSTUFF R8808
 10K 1/16W 2 402 MF-LF 5%

NC_GPU_GPIO_10
 MAKE_BASE=TRUE
 GPU_GPIO_10 91

91 GPU_GPIO_9
 NOSTUFF R8809
 10K 1/16W 2 402 MF-LF 5%

91 GPU_GPIO_13
 NOSTUFF R8812
 10K 1/16W 2 402 MF-LF 5%

91 GPU_GPIO_12
 10K 1/16W 2 R8810
 402 MF-LF 5%

91 GPU_GPIO_11
 NOSTUFF R8811
 10K 1/16W 2 402 MF-LF 5%

GPIO 9,13,12,11 = ROM ID CFG
 INTERNAL PULL DOWN
 0010 = 256 M APERATURE SIZE

91 GPU_GPIO_24
 ATI_FB_256M
 10K 1/16W 2 R8830
 402 MF-LF 5%

91 GPU_GPIO_27
 ATI_FB_HYNIX
 10K 1/16W 2 R8831
 402 MF-LF 5%

91 GPU_GPIO_28
 10K 1/16W 2 R8832
 402 MF-LF 5%

91 GPU_GPIO_29
 TMD5_PANEL
 10K 1/16W 2 R8833
 402 MF-LF 5%

GPU_VCORE_LOW
 MAKE_BASE=TRUE
 GPU_GPIO_15 91

10K 1/16W 2 R8850
 402 MF-LF 5%

GPIO 15 = SWITCH CORE VOLTAGE HIGH TO LOW
 EXTERNAL PULL DOWN RECOMMENDED

=PP3V3_S0_GPU_VDDR3 88 91

TP_GPU_GPIO_14
MAKE_BASE=TRUE
GPU_GPIO_14 91

TP_GPU_GPIO_17
MAKE_BASE=TRUE
GPU_GPIO_17 91

TP_GPU_VGA_R
MAKE_BASE=TRUE
GPU_VGA_R 93

TP_GPU_VGA_G
MAKE_BASE=TRUE
GPU_VGA_G 93

TP_GPU_VGA_B
MAKE_BASE=TRUE
GPU_VGA_B 93

TP_GPU_VGA_HSYNC
MAKE_BASE=TRUE
GPU_VGA_HSYNC 93

TP_GPU_VGA_VSYNC
MAKE_BASE=TRUE
GPU_VGA_VSYNC 93

TP_GPU_TV_Y
MAKE_BASE=TRUE
GPU_TV_Y 93

TP_GPU_TV_COMP
MAKE_BASE=TRUE
GPU_TV_COMP 93

TP_GPU_TV_C
MAKE_BASE=TRUE
GPU_TV_C 93

TP_GPU_DDC_B_CLK
MAKE_BASE=TRUE
GPU_DDC_B_CLK 93

TP_GPU_DDC_B_DATA
MAKE_BASE=TRUE
GPU_DDC_B_DATA 93

GPU MISC

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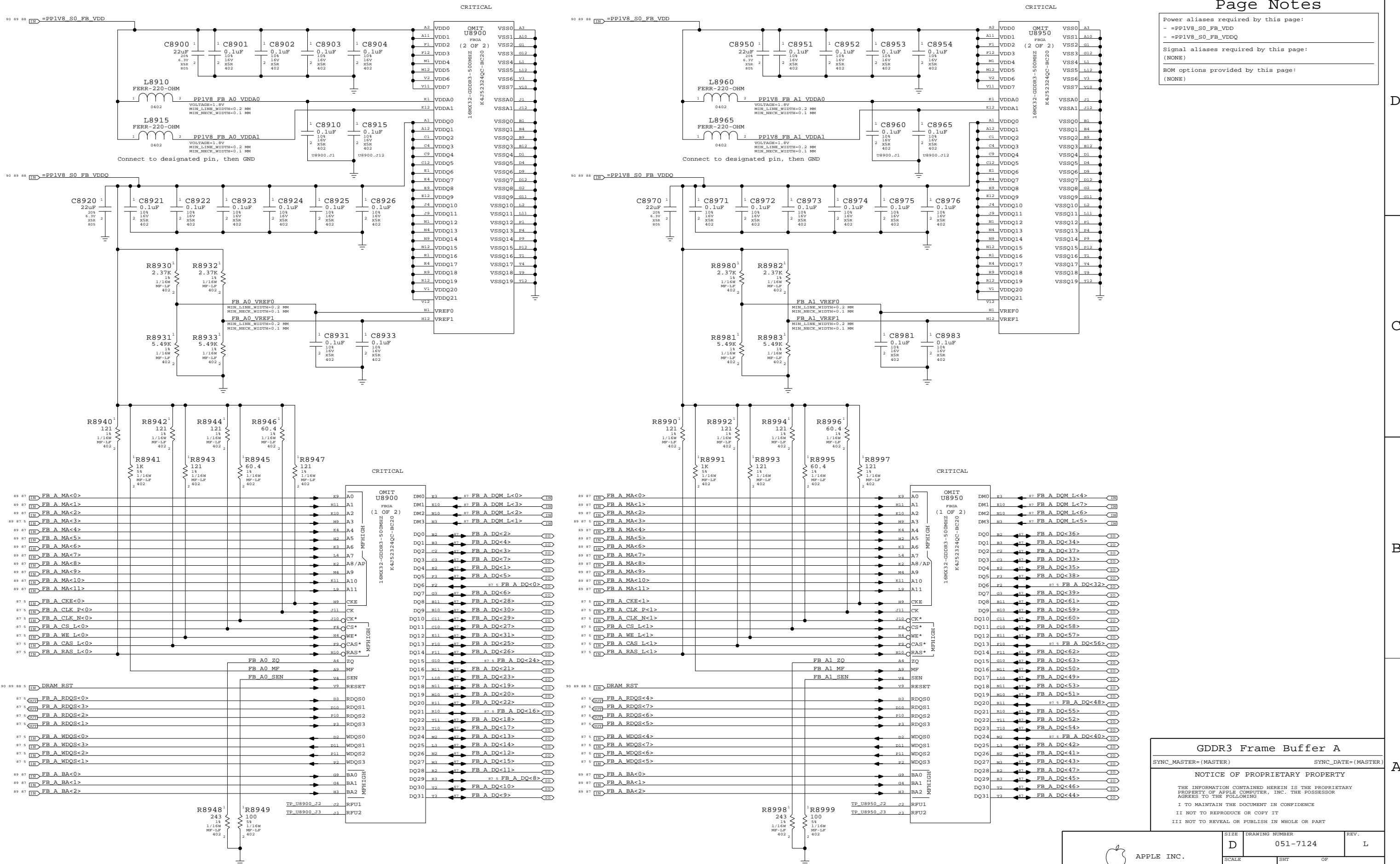
2

1

Power aliases required by this page:
 - PPIV8_S0_FB_VDD
 - PPIV8_S0_FB_VDDQ

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)



GDDR3 Frame Buffer A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

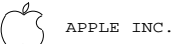
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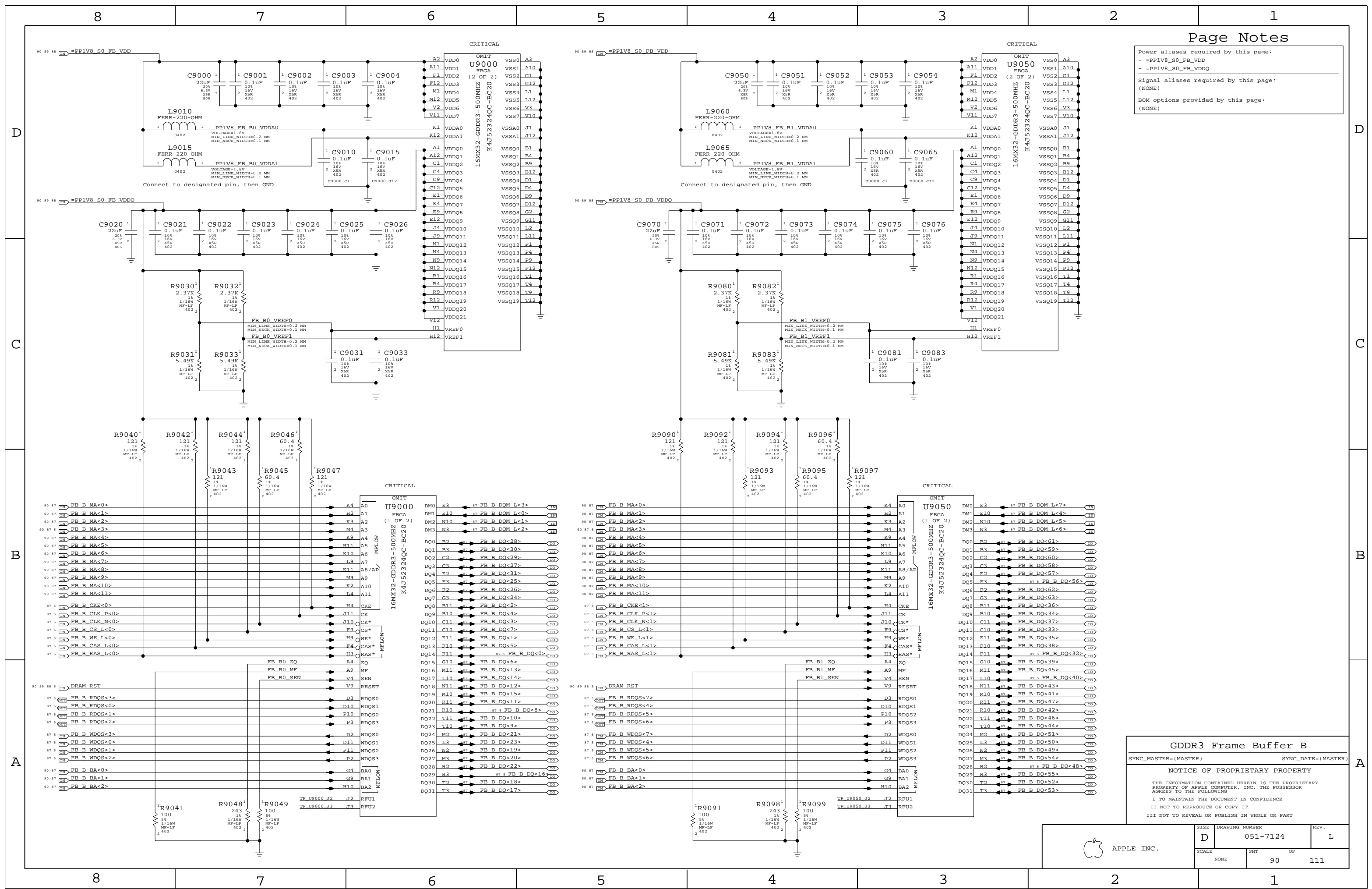


SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	89	111

Power aliases required by this page:
 - =PPIV8_S0_FB_VDD
 - =PPIV8_S0_FB_VDDQ

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)



GDDR3 Frame Buffer B

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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SIZE D	DRAWING NUMBER 051-7124		REV. L
	SCALE NONE	SHT 90	OF 111

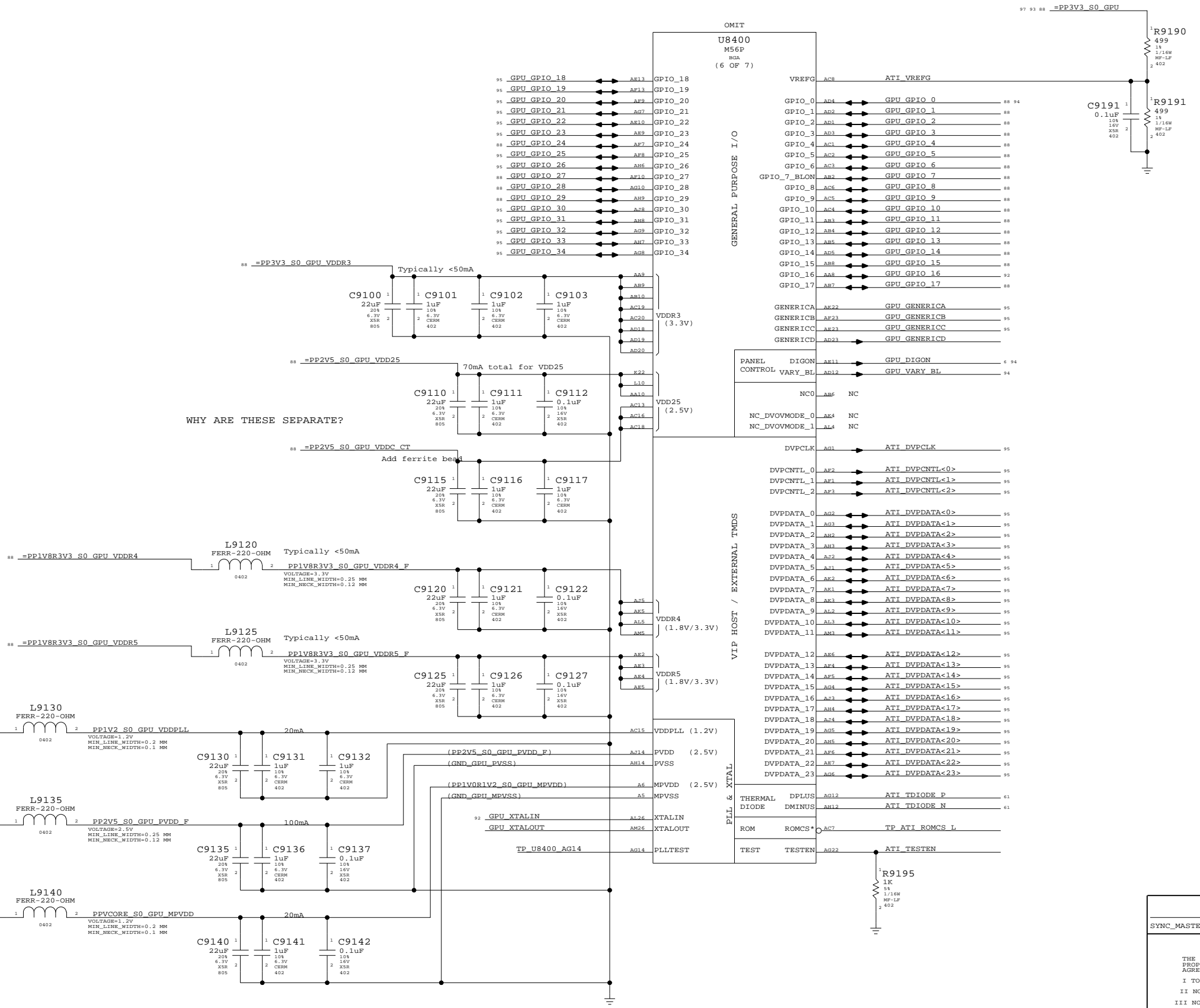


Page Notes

Power aliases required by this page:
 - =PP3V3_GPU_GPIOS
 - =PP2V5_PVDD
 - =PP1V8_GPU_LVDS_PLL

Signal aliases required by this page:
 - =I2C_GPU_TMDS_SDA - I2C data line for external TMDS transmitters
 - =I2C_GPU_TMDS_SCL - I2C clock line for external TMDS transmitters

BOM options provided by this page:
 (NONE)



WHY ARE THESE SEPARATE?

Typically <50mA
 C9100 22uF 20A 6.3V XSR 805
 C9101 1uF 10A 6.3V CERM 402
 C9102 1uF 10A 6.3V CERM 402
 C9103 1uF 10A 6.3V CERM 402

70mA total for VDD25
 C9110 22uF 20A 6.3V XSR 805
 C9111 1uF 10A 6.3V CERM 402
 C9112 0.1uF 10A 16V XSR 402

Add ferrite bead
 C9115 22uF 20A 6.3V XSR 805
 C9116 1uF 10A 6.3V CERM 402
 C9117 1uF 10A 6.3V CERM 402

Typically <50mA
 L9120 FERR-220-OHM
 C9120 22uF 20A 6.3V XSR 805
 C9121 1uF 10A 6.3V CERM 402
 C9122 0.1uF 10A 16V XSR 402

Typically <50mA
 L9125 FERR-220-OHM
 C9125 22uF 20A 6.3V XSR 805
 C9126 1uF 10A 6.3V CERM 402
 C9127 0.1uF 10A 16V XSR 402

20mA
 L9130 FERR-220-OHM
 C9130 22uF 20A 6.3V XSR 805
 C9131 1uF 10A 6.3V CERM 402
 C9132 1uF 10A 6.3V CERM 402

100mA
 L9135 FERR-220-OHM
 C9135 22uF 20A 6.3V XSR 805
 C9136 1uF 10A 6.3V CERM 402
 C9137 0.1uF 10A 16V XSR 402

20mA
 L9140 FERR-220-OHM
 C9140 22uF 20A 6.3V XSR 805
 C9141 1uF 10A 6.3V CERM 402
 C9142 0.1uF 10A 16V XSR 402

ATI M56 GPIO/DVO/Misc
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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	D	051-7124	L
SCALE	SHT	OF	
NONE	91	111	

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Page Notes

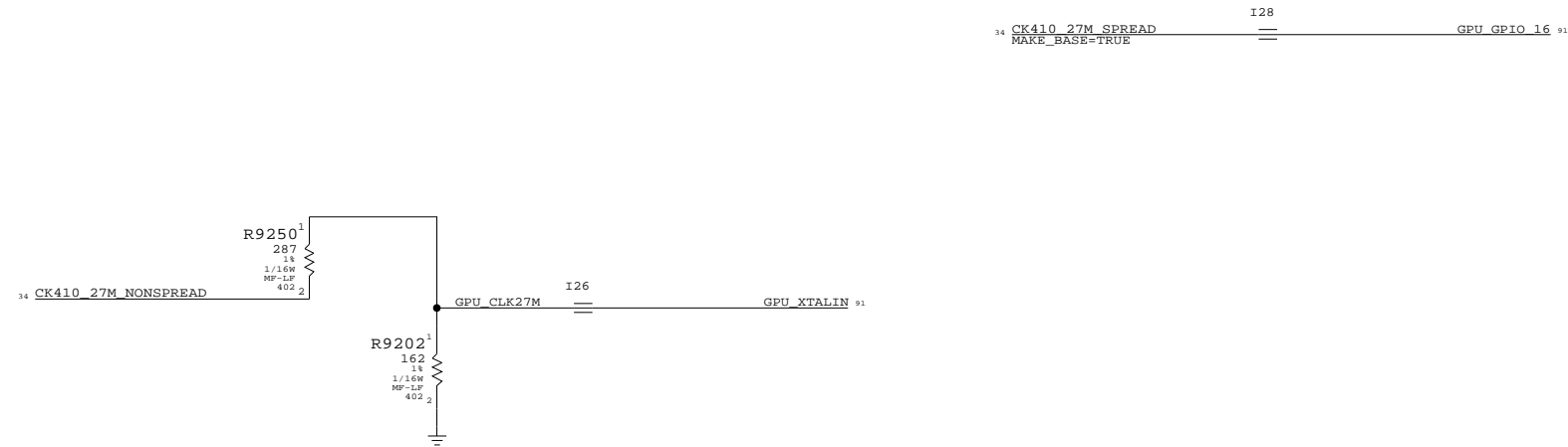
Power aliases required by this page:

- =PP3V3_GPU_CLOCKS - =PP3V3_GPU_PWRSEQ
- =PPVIN_GPU_LVDDR_LDO - =PP2V5_GPU_PWRSEQ
- =PP2V5_GPU_LVDDR_LDO - =PP1V8_GPU_PWRSEQ
- =PP1V5_GPU_PWRSEQ

Signal aliases required by this page:
(NONE)

BOM options provided by this page:

- GPU_SS - GPU_LVDDR_2V8



GPU CLOCKS

SYNC_MASTER=BOZEMAN SYNC_DATE=05/21/2005

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SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	92	111

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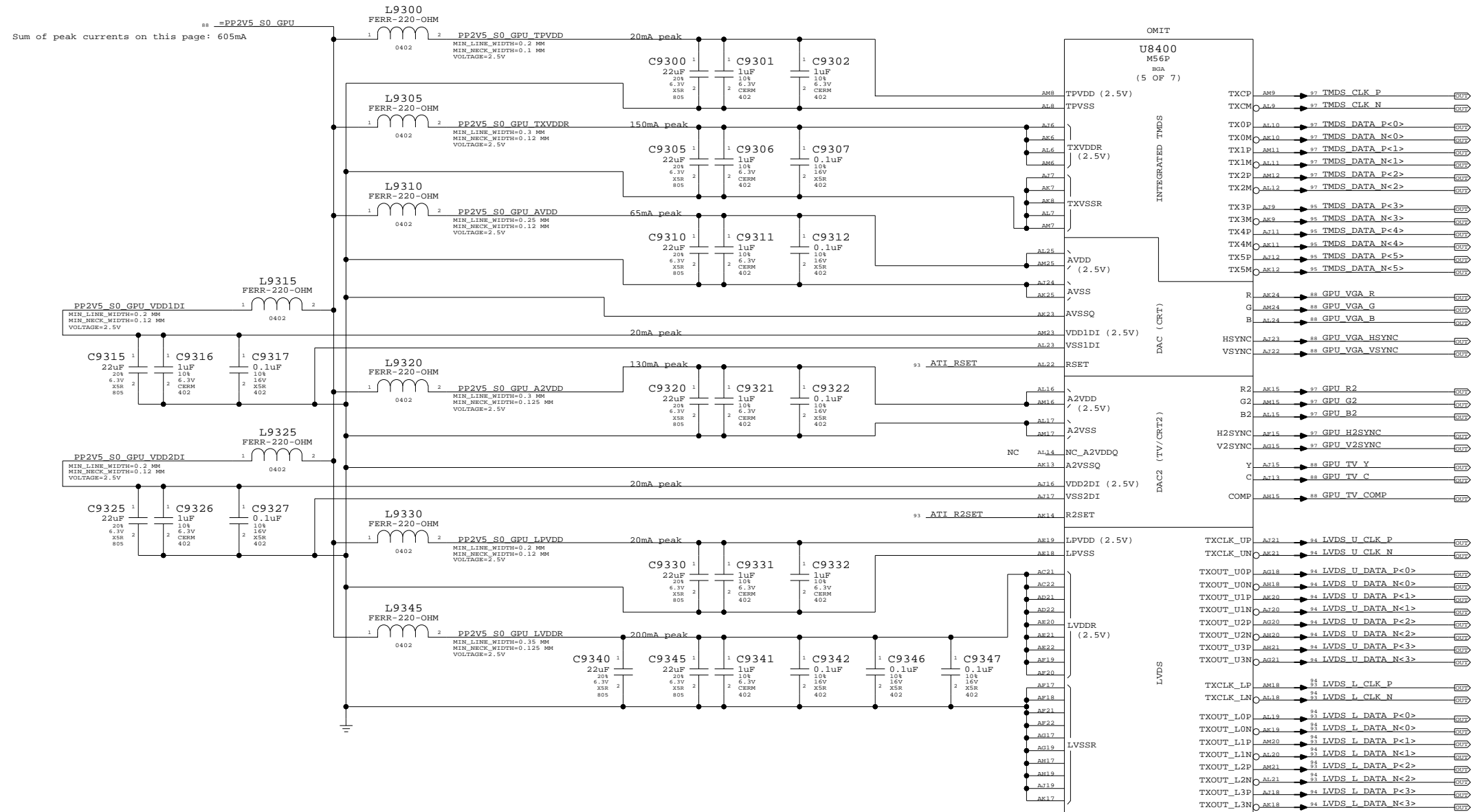
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Power aliases required by this page:
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 - =PP1V8R2V5_S0_GPU_LVDDR

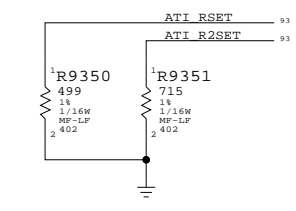
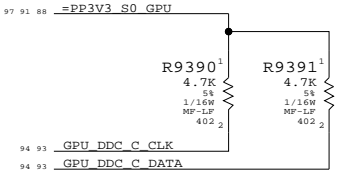
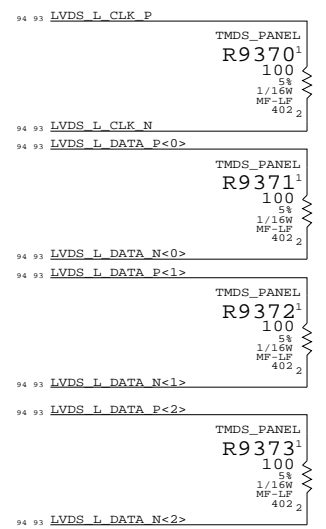
Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)

TERMINATION FOR TMDS USAGE OF LVDS PINS
 PLACE CLOSE TO GPU (U8400)



Composite/S-Video	VGA	Component
Y	G	Y
C	R	Pr
Comp	B	Pb



ATI M56 Video Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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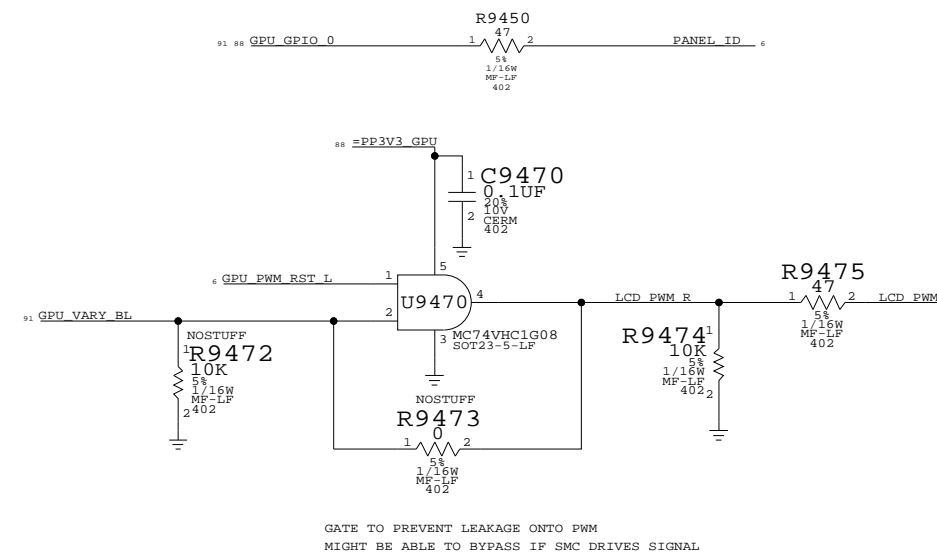
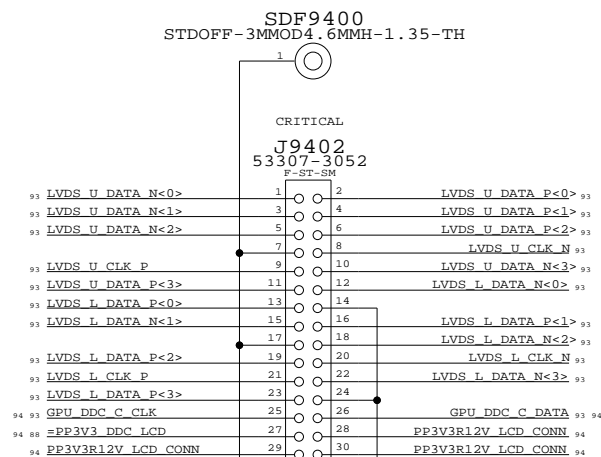
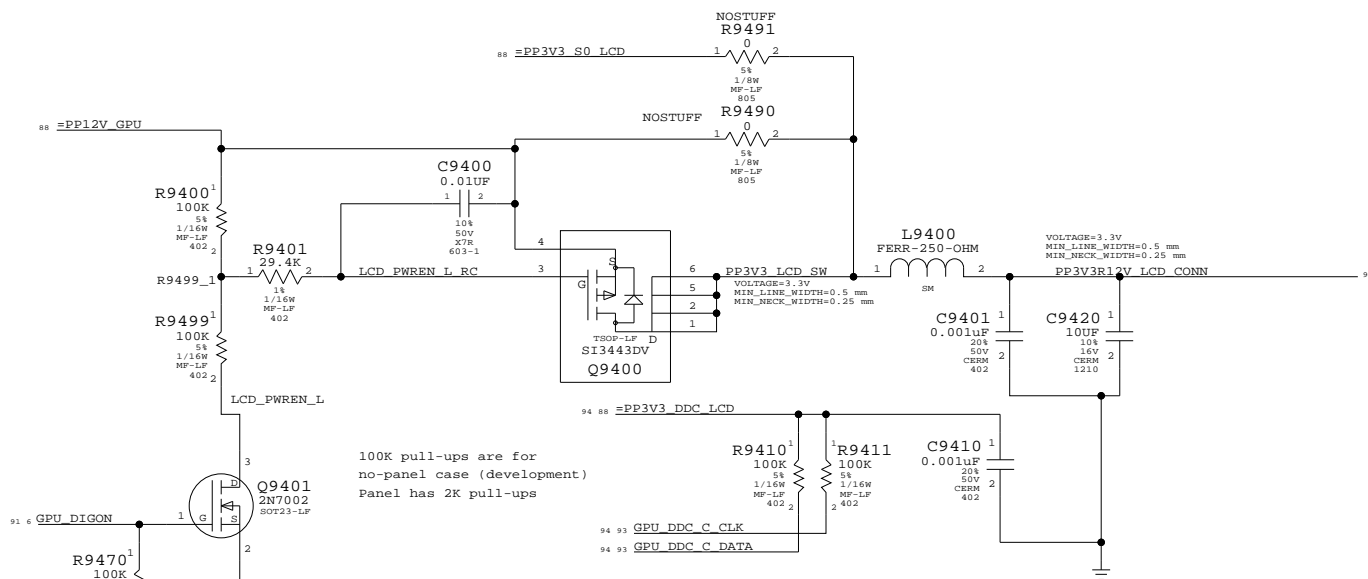
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APPLE INC.	SCALE	SHT	OF	REV.
	NONE	93	111	L

LCD (LVDS) INTERFACE



Internal Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/27/2005
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	94	111	

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D

TP TMSD DATA P<3> == TMSD DATA P<3> 93
 MAKE_BASE=TRUE

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 MAKE_BASE=TRUE

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TP ATI DVPCNTL<0> == ATI DVPCNTL<0> 91
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TP ATI DVPCNTL<1> == ATI DVPCNTL<1> 91
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TP ATI DVPCNTL<2> == ATI DVPCNTL<2> 91
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TP GPU GPIO<34> == GPU_GPIO_34 91
 MAKE_BASE=TRUE

TP GPU GPIO<33> == GPU_GPIO_33 91
 MAKE_BASE=TRUE

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 MAKE_BASE=TRUE

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 MAKE_BASE=TRUE

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 MAKE_BASE=TRUE

TP GPU GPIO<23> == GPU_GPIO_23 91
 MAKE_BASE=TRUE

TP GPU GPIO<22> == GPU_GPIO_22 91
 MAKE_BASE=TRUE

TP GPU GPIO<21> == GPU_GPIO_21 91
 MAKE_BASE=TRUE

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TP GPU GPIO<19> == GPU_GPIO_19 91
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TP GPU GPIO<18> == GPU_GPIO_18 91
 MAKE_BASE=TRUE

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 MAKE_BASE=TRUE

TP GPU GENERIC B == GPU_GENERIC B 91
 MAKE_BASE=TRUE

TP GPU GENERIC C == GPU_GENERIC C 91
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C

C

B

B

A

A

8

7

6

5

4

3

2

1

M56 TPS

NOTICE OF PROPRIETARY PROPERTY

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APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7124	L
SCALE	SHT	OF
NONE	95	111

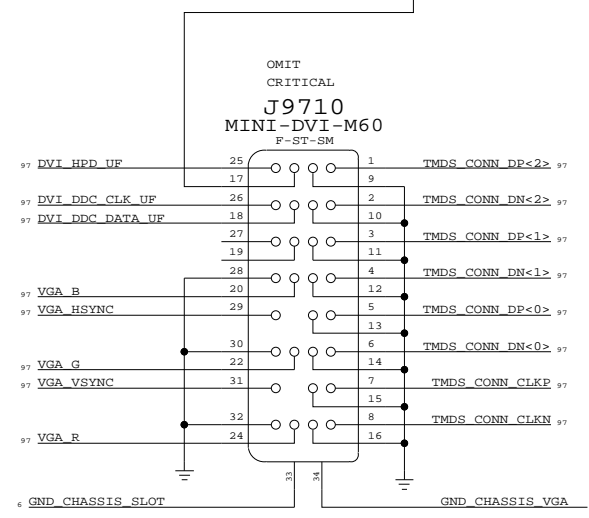
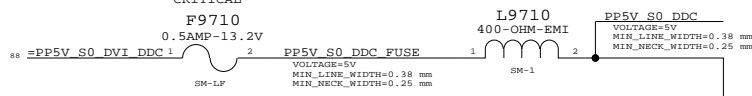
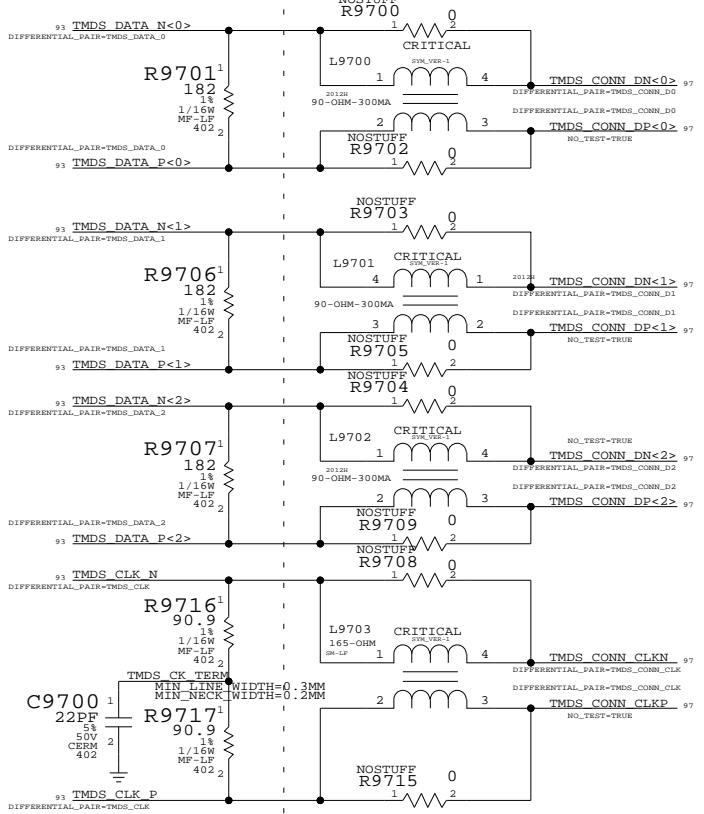
PLACE LEFT SIDE
AS CLOSE TO GPU (U8400)
AS POSSIBLE

PLACE FILTER CLOSE
TO TMD5 CONNECTOR

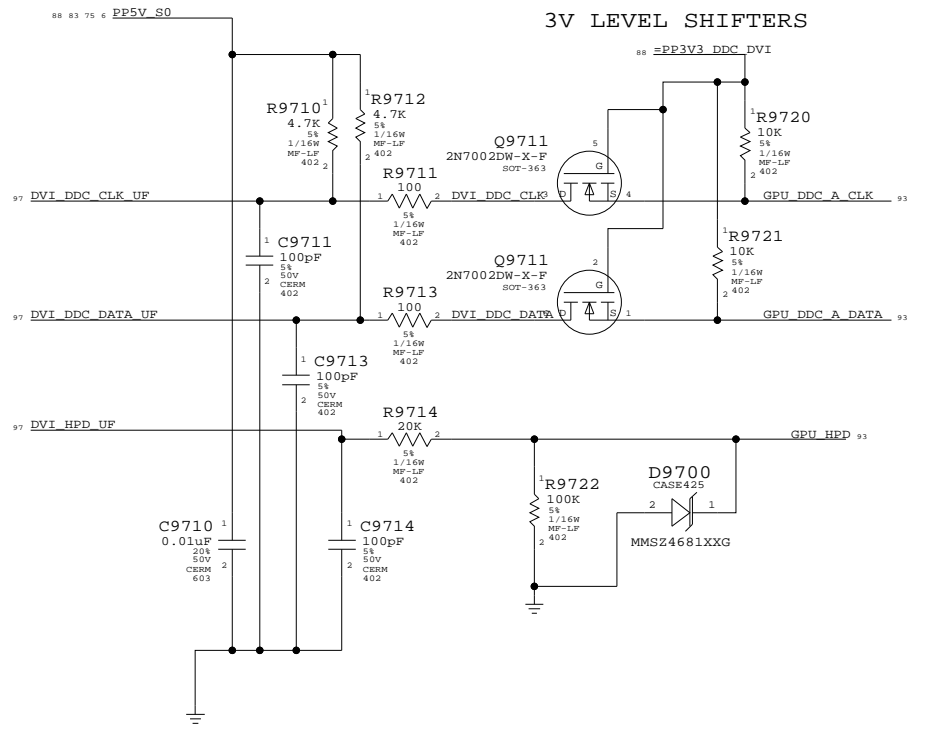
DVI DDC CURRENT LIMIT DVI INTERFACE

(55mA requirement per DVI spec)

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
740S0044	740S0028		F9710	FUSE

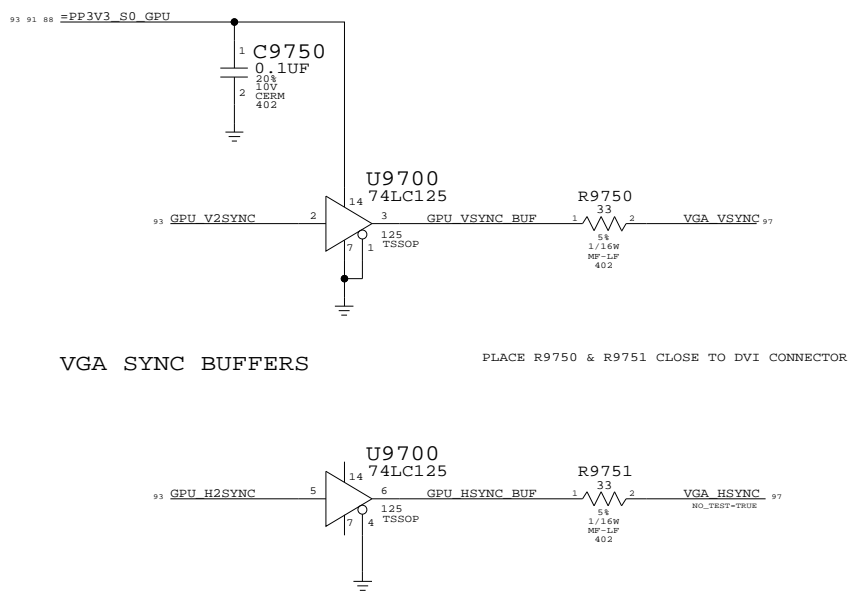
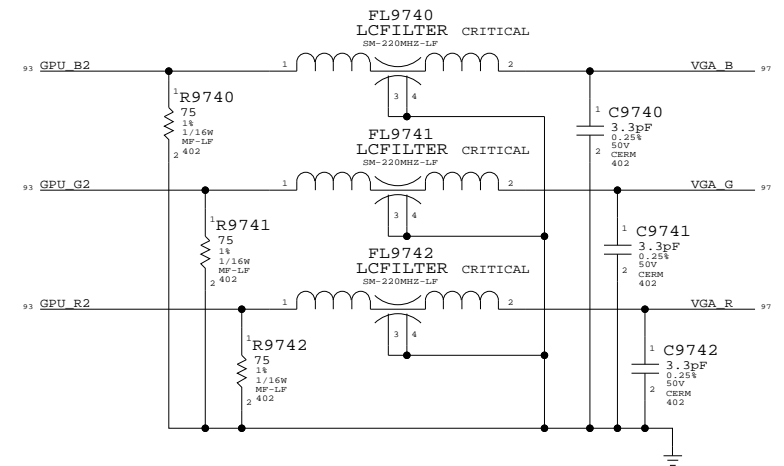


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
514S0125	1	M39 MINI-DVI CONN	J9710	



ANALOG FILTERING

PLACE CLOSE TO CONNECTOR



External Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/14/2005
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7124	L
SCALE	SHT	OF	
NONE	97	111	

Table with columns 1-8 and rows A-D. Each cell contains a list of identifiers and addresses, such as 'MEM_DQ<2>' and '1507 28D6'. The table is organized into a grid with 'A' at the bottom and 'D' at the top, and '1' on the right and '8' on the left.

8			7			6			5			4			3			2			1								
<p>Title: Cref Part Report Design: m60 Date: Jun 23 16:28:15 2006</p>																					C2513 CAP_402 m60[25C6] C2514 CAP_402 m60[25C6] C2515 CAP_402 m60[25B6] C2516 CAP_P_CASE-C2 m60[25D3] C2517 CAP_402 m60[25D6] C2518 CAP_402 m60[25D4] C2519 CAP_402 m60[25D3] C2520 CAP_402 m60[25B6] C2521 CAP_402 m60[25C3] C2522 CAP_402 m60[25B3] C2523 CAP_402 m60[25B4] C2524 CAP_603 m60[25B3] C2525 CAP_402 m60[25B3] C2526 CAP_402 m60[25A4] C2527 CAP_402 m60[25A3] C2528 CAP_402 m60[25A3] C2529 CAP_402 m60[25A3] C2530 CAP_402 m60[25A3] C2531 CAP_402 m60[25D1] C2532 CAP_402 m60[25C1] C2533 CAP_402 m60[25C1] C2534 CAP_402 m60[25D1] C2605 CAP_402 m60[26C7] C2607 CAP_402 m60[26D5] C2608 CAP_402 m60[26D8] C2609 CAP_402 m60[26D8] C2610 CAP_402 m60[26C7] C2611 CAP_402 m60[26B7] C2698 CAP_402 m60[26C4] C2699 CAP_402 m60[26C5] C2800 CAP_402 m60[28D6] C2801 CAP_603 m60[28B2] C2802 CAP_603 m60[28B2] C2803 CAP_603 m60[28B1] C2804 CAP_603 m60[28B1] C2810 CAP_402 m60[28B2] C2811 CAP_402 m60[28B2] C2812 CAP_402 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8			7			6			5			4			3			2			1								

D

C

B

A

D

C

B

A

Table with 9 columns (8-1) and multiple rows, containing alphanumeric codes and technical specifications. The table is organized into sections labeled A, B, C, and D vertically and 8-1 horizontally.

D

D

C

C

B

B

A

A

Table with columns labeled 1 through 8 and rows labeled A through D. The table contains a grid of alphanumeric data points, including alphanumeric strings and numeric values in various formats.

D

D

C

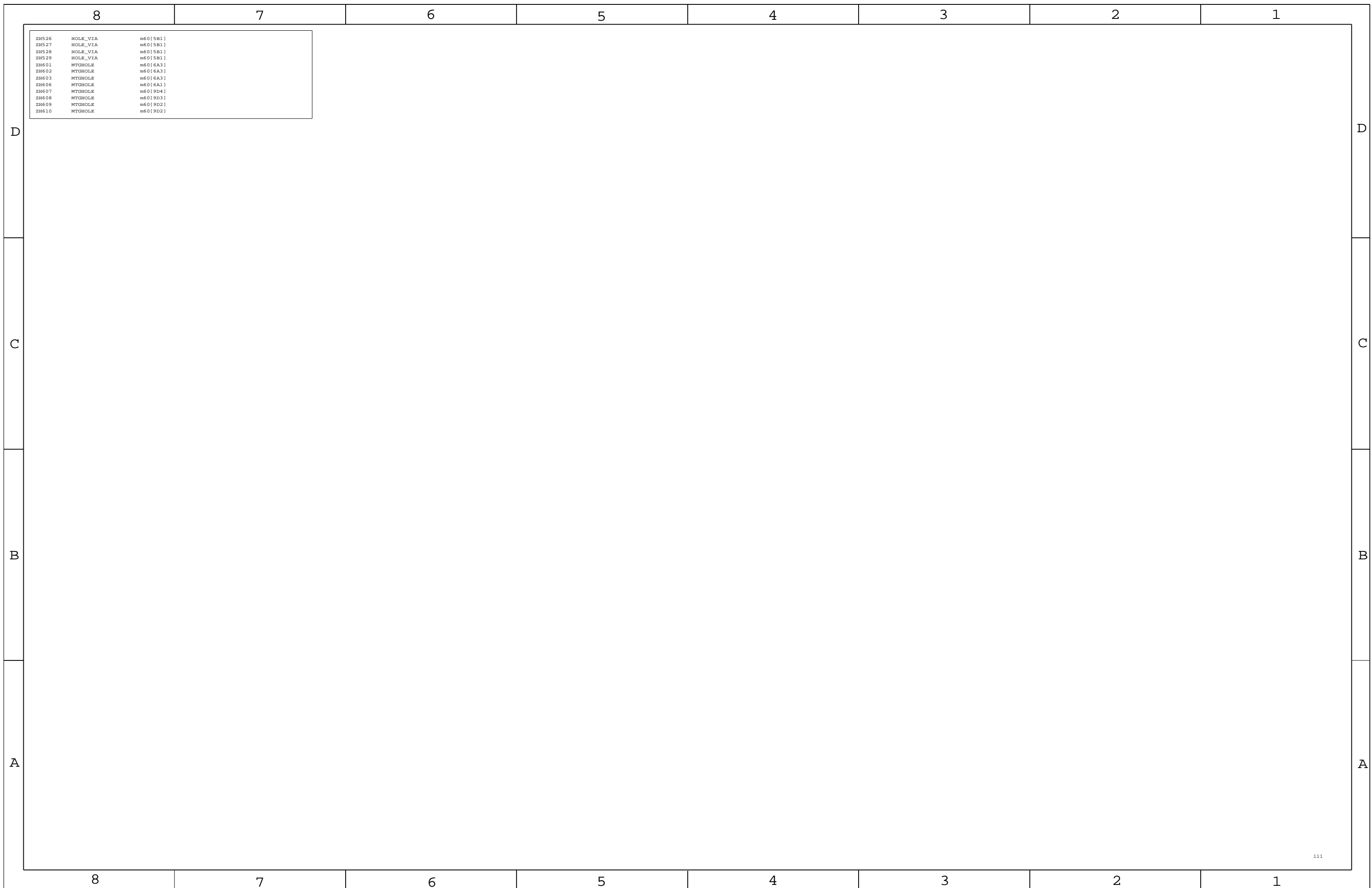
C

B

B

A

A



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ZH529	HOLE_VIA	m60[5B1]
ZH601	MTGHOLE	m60[6A3]
ZH602	MTGHOLE	m60[6A3]
ZH603	MTGHOLE	m60[6A3]
ZH606	MTGHOLE	m60[6A1]
ZH607	MTGHOLE	m60[9D4]
ZH608	MTGHOLE	m60[9D3]
ZH609	MTGHOLE	m60[9D2]
ZH610	MTGHOLE	m60[9D2]