

M38 - DVT

11/16/05

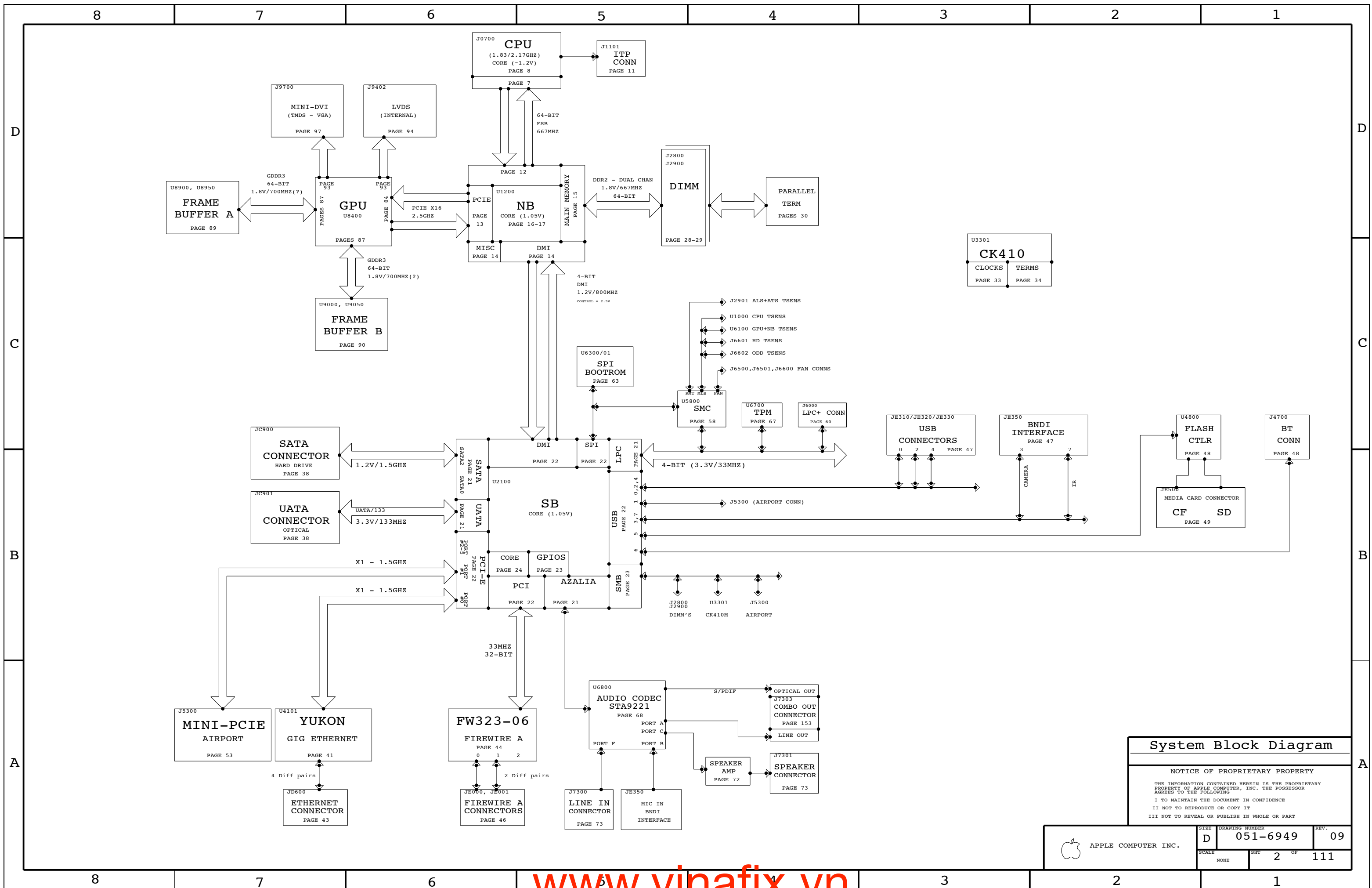
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD	ENG APPD
09		400372	ENGINEERING RELEASED		
				DATE	DATE
				09/16/05	06/22/04

PAGE	DRI	PDF	CIRCUIT
1	JD	JD	1 TABLE OF CONTENTS
2	JD	JD	2 SYSTEM BLOCK DIAGRAM
3	RT	RT	3 POWER BLOCK DIAGRAM
4	JD	JD	4 TABLE ITEMS & REVISION HISTORY
5	JD	JD	5 FUNC TEST
6	RT	RT	6 POWER CONNECTOR / POWER ALIAS
(M42) 7	MS	JD	7 CPU - BUS INTERFACE
(M42) 8	MS	JD	8 CPU - PWR & GND
9	MS	JD	9 CPU - DECAPS
(M42) 10	MS	JD	10 CPU - THERMAL SENSOR
M42 11	MS	JD	11 CPU - ITP CONN
M1 12	PS	JH	12 NB - CPU INTERFACE
M1 13	PS	JH	13 NB - VIDEO INTERFACE
14	PS	JH	14 NB - MISC INTERFACES
M1 15	PS	JH	15 NB - DDR2 INTERFACE
M1 16	PS	JH	16 NB - POWER 1
M1 17	PS	JH	17 NB - POWER 2
M1 18	PS	JH	18 NB - GROUNDS
19	PS	JH	19 NB - DECAPS
M1 20	PS	JH	20 NB - CONFIG STRAPS
21	JD	JD	21 SB - RTC, LAN, AUDIO, ATA, CPU, LPC
22	JD	JD	22 SB - PCIE, SPI, USB, DMI, PCI
23	JD	JD	23 SB - SMB, GPIO, PM, CLKS
24	JD	JD	24 SB - POWERS AND GROUNDS
25	JD	JD	25 SB - DECAPS
26	JD	JD	26 SB - MISC
27	JD	JD	27 SB - SMB BUS CONNECTIONS
28	PS	JD	28 DDR2 - SO-DIMM CONN A
29	PS	JD	29 DDR2 - SO-DIMM CONN B (REVERSED)
30	PS	JD	30 DDR2 - TERMINATION
M1 31	RT	RT	31 DDR2 - VTT SUPPLY
M42 33	JD	JD	33 CLOCKS - GENERATOR
34	JD	JD	34 CLOCKS - TERMINATIONS
38	JD	JD	38 ATA (SATA AND IDE) CONN'S
(M42) 41	JD	JD	41 LAN - YUKON'S PCIE INTERFACE
42	JD	JD	42 LAN - YUKON'S PWR, MISC
43	JD	JD	43 LAN - CONN
44	JD	JD	44 FIREWIRE - FW323-06
45	JD	JD	45 FIREWIRE - DECAPS
46	JD	JD	46 FIREWIRE - CONN'S
47	JD	JD	47 USB - CONN'S
49	JD	JD	49 USB - FLASH CONN

PAGE	DRI	PDF	CIRCUIT
53	JD	JD	43 PCI-E - AIRPORT MINI-PCIE CONN
54	JD	JD	44 PCI-E - UNUSED PORTS
58	MS	MS	45 SMC - H8S2116
59	MS	MS	46 SMC - SMB BUSSES, MISC
60	MS	MS	47 SMC - LPC+ CONN
61	JH	JH	48 SMC - GPU/NB THERMAL SENSOR
RX 63	MS	JD	49 SMC - SPI BOOTROM
65	MS	MS	50 SMC - FANS
66	MS	MS	51 SMC - FANS
67	JD	JD	52 SMC - TPM
SO 68	PT	JD	53 AUDIO - CODEC, VREG, MIC BIAS
SO 72	PT	JD	54 AUDIO - INTERNAL SPEAKER AMP
SO 73	PT	JD	55 AUDIO - I/O CONN'S, EMC
SO 74	PT	JD	56 AUDIO - DETECT TRANSLATORS
RP 75	RT	RT	57 VR - CPU CORE
RP 76	RT	RT	58 VR - CPU I-V SENSE CKT
RP 77	RT	RT	59 VR - "S0" 1.2V & 2.5V (GRAFIX)
RP 78	RT	RT	60 VR - "S0" 1.8V
RP 79	RT	RT	61 VR - "S3" 1.8V
RP 80	RT	RT	62 VR - "S0" 1.5V
RP 81	RT	RT	63 VR - "S0" 1.05V
RP 83	RT	RT	64 VR - "S3" 3.3V AND 5V
JH 84	JH	JH	65 GPU - M56 PCI-E
M1 85	JH	JH	66 GPU - VCORE SUPPLY
M1 86	JH	JH	67 GPU - M56 CORE PWR
M1 87	JH	JH	68 GPU - M56 FRAME BUFFER
M1 88	JH	JH	69 GPU - MISC
M1 89	JH	JH	70 GPU - GDDR SDRAM A
M1 90	JH	JH	71 GPU - GDDR SDRAM B
M1 91	JH	JH	72 GPU - M56 GPIO, DVO, MISC
M1 92	JH	JH	73 GPU - M56 CLOCKS
M1 93	JH	JH	74 GPU - M56 VIDEO INTERFACES
JH 94	JH	JH	75 GPU - INTERNAL DISPLAY CONN'S
JH 95	JH	JH	76 GPU - TP'S
JH 96	JH	JH	77 GPU - TMDS, INVERTER, EXT VGA
JH 97	JH	JH	78 GPU - EXTERNAL DISPLAY CONN'S

<p style="font-size: small;">DIMENSIONS ARE IN MILLIMETERS</p> <p>XX : _____</p> <p>X.XX : _____</p> <p>X.XXX : _____</p> <p>ANGLES : _____</p> <p style="font-size: x-small;">DO NOT SCALE DRAWING</p> <div style="text-align: center;"> <p style="font-size: x-small;">THIRD ANGLE PROJECTION</p> </div>	<p>METRIC</p>	<div style="text-align: right;"> <p>Apple Computer Inc.</p> </div> <p style="font-size: x-small; text-align: center;">NOTICE OF PROPRIETARY PROPERTY</p> <p style="font-size: x-small; text-align: center;">THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING</p> <p style="font-size: x-small; text-align: center;">I TO MAINTAIN THE DOCUMENT IN CONFIDENCE</p> <p style="font-size: x-small; text-align: center;">II NOT TO REPRODUCE OR COPY IT</p> <p style="font-size: x-small; text-align: center;">III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART</p> <div style="text-align: center;"> <p>SCHEM, M38</p> </div>																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">DRAFTER</td> <td style="width: 25%;">DESIGN CK</td> <td style="width: 25%;">MFG APPD</td> <td style="width: 25%;">TITLE</td> </tr> <tr> <td style="width: 25%;">ENG APPD</td> <td style="width: 25%;">DESIGNER</td> <td style="width: 25%;">SCALE</td> <td style="width: 25%;">DRAWING NUMBER</td> </tr> <tr> <td style="width: 25%;">QA APPD</td> <td style="width: 25%;">SCALE</td> <td style="width: 25%;">NONE</td> <td style="width: 25%;">REV. 09</td> </tr> <tr> <td style="width: 25%;">RELEASE</td> <td style="width: 25%;">SCALE</td> <td style="width: 25%;">NONE</td> <td style="width: 25%;">SHT 1 OF 111</td> </tr> </table>		DRAFTER	DESIGN CK	MFG APPD	TITLE	ENG APPD	DESIGNER	SCALE	DRAWING NUMBER	QA APPD	SCALE	NONE	REV. 09	RELEASE	SCALE	NONE	SHT 1 OF 111	<p>MATERIAL/FINISH NOTED AS APPLICABLE</p> <p style="font-size: x-small;">SIZE D</p>
DRAFTER	DESIGN CK	MFG APPD	TITLE															
ENG APPD	DESIGNER	SCALE	DRAWING NUMBER															
QA APPD	SCALE	NONE	REV. 09															
RELEASE	SCALE	NONE	SHT 1 OF 111															

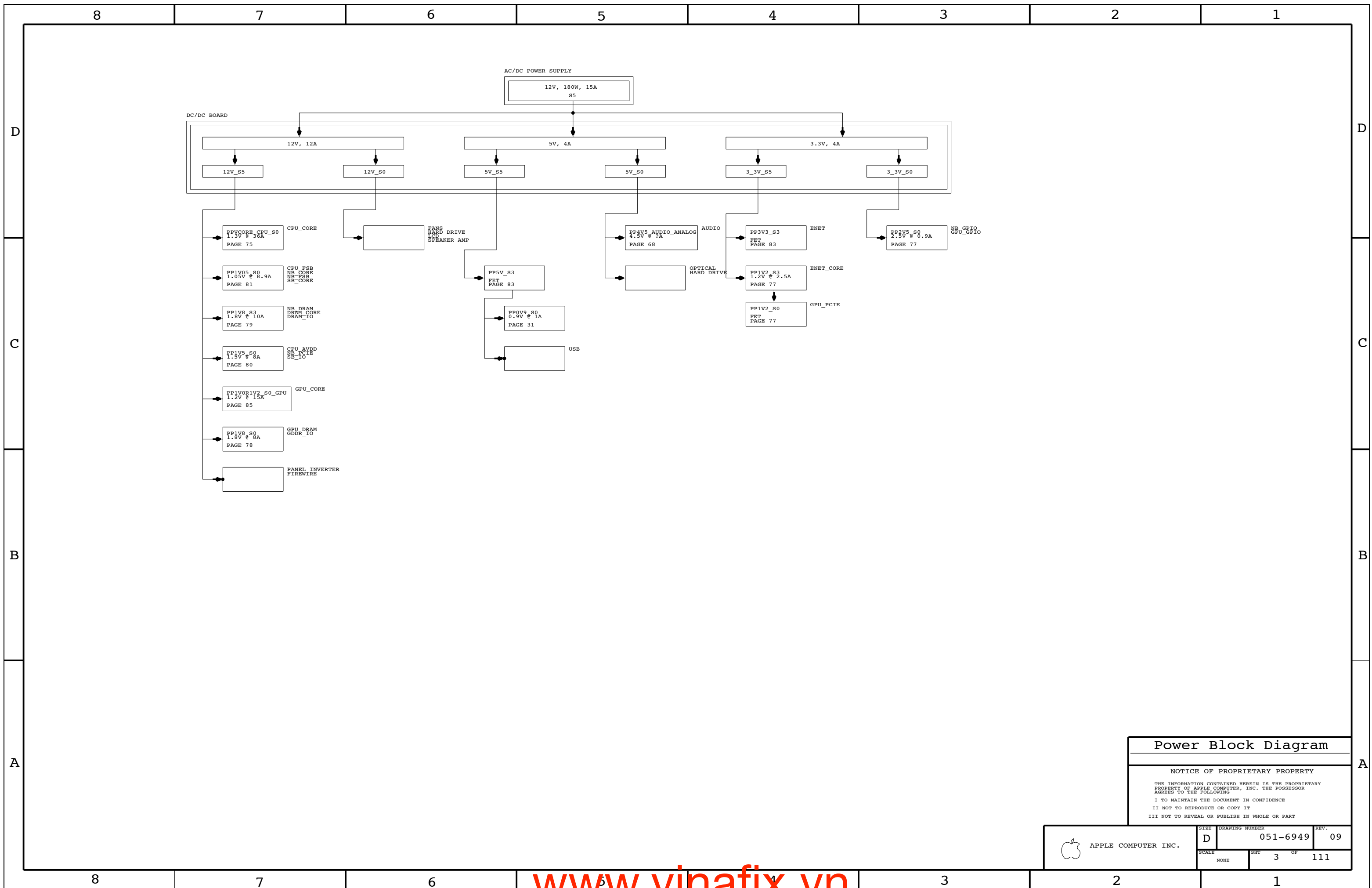


System Block Diagram

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APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 2	OF 111



Power Block Diagram

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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT		OF
NONE	3		111

8

7

6

5

4

3

2

1

COMMON

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
51180025	1	IC,CPU-SKT,479BGA	J0700	CRITICAL	
33880269	1	IC,945GM,NORTHBRIDGE	U1200	CRITICAL	
34380385	1	IC,SB,652BGA	U2100	CRITICAL	
742-0048	1	BAT,COIN,3V,220MAH,CR2032	BT2600	CRITICAL	
35980101	1	IC,CY28445-5,CLK GEN,68PIN QFP	U3301	CRITICAL	
33880270	1	IC,8888053,1GIGABIT ENET XCVR,64P QFN,MO	U4101	CRITICAL	
(33580382) 34181797	1	IC,ENET LAN ROM	U4102	CRITICAL	
33880279	1	IC,FW32306,1394A LINK,TOFP	U4400	CRITICAL	
33880274	1	IC,SMC,HSS/2116,BLANK	U5800	CRITICAL	
34181789	1	IC,TPM,TSSOP,28P	U6700	CRITICAL	LEMENU
35381235	1	IC,CPU VREG,1MVP,TWO PHASE	U7500	CRITICAL	
33880266	1	IC,ATI,M56P,GRAFIX CTRLR,880BGA,LF	U8400	CRITICAL	ATI_B24
33880305	1	IC,ATI,M56P,GRAFIX CTRLR,880BGA,LF	U8400	CRITICAL	ATI_A24
12880078	3	CAP,EL,AL,330UF,20A,16V,10X12.7MM,SMD,LF	C7517,C7518,C7910	CRITICAL	

M38

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-6949	1	PCB,SCHEM,MLB,M38	SCH1		17_INCH_LCD
820-1919	1	PCB,FAB,MLB,M38	MLB1		17_INCH_LCD
(33580384) 34170003	1	EFI ROM,M38	U6301	CRITICAL	17_INCH_LCD
33783241	1	M38/M39 LOW-SPEED CPU (QINY)	CPU	CRITICAL	CPU_M38
33783242	1	M00-SPEED CPU (QINZ)	CPU	CRITICAL	CPU_M00

M39

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-6950	1	PCB,SCHEM,MLB,M39	SCH1		20_INCH_LCD
820-1888	1	PCB,FAB,MLB,M39	MLB1		20_INCH_LCD
(33580384) 34170004	1	EFI ROM,M39	U6301	CRITICAL	20_INCH_LCD
33783243	1	M39 HI-SPEED CPU (QHJJ)	CPU	CRITICAL	CPU_M39

M38 / M39

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
33380354	4	IC,SGRAM,GDDR3,8MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_128M_SAMSUNG
33380358	4	IC,SGRAM,GDDR3,8MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_128M_HYNIX

M39 - CTO

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
33380350	4	IC,SGRAM,GDDR3,16MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_256M_SAMSUNG
33380351	4	IC,SGRAM,GDDR3,16MX32,700MHZ,136FBGA	U8900,U8950,U9000,U9050	CRITICAL	ATI_FB_256M_HYNIX

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
12680096	12680076		C7801	SANYO W16CE680EX 680UF 16V LFP
12680086	12680078		C699,C940,C1900,C1901,C1968	SANYO W6CE330FS 330UF 6.3V LFP
12880080	12880078		C7517,C7518,C7910	SANYO 168VP330H 330UF 16V SMD LFP
19780177	19780020		Y4101	XTAL,25MHZ,50PPM,16PF,3.2X2.5 SMD,LFP
33880302	33880266		U8400	IC,ATI,M36D,GRAFIX CTRLR,880BGA,LF

Table Items

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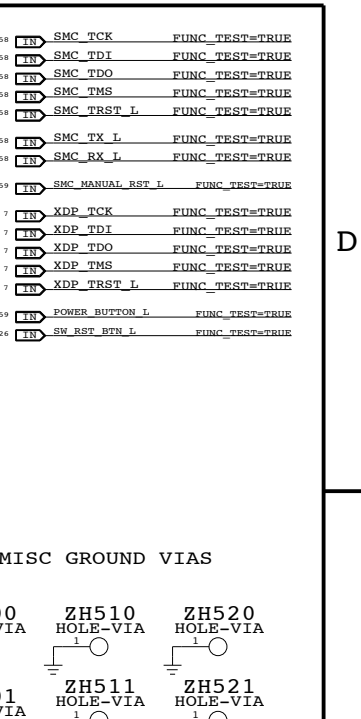
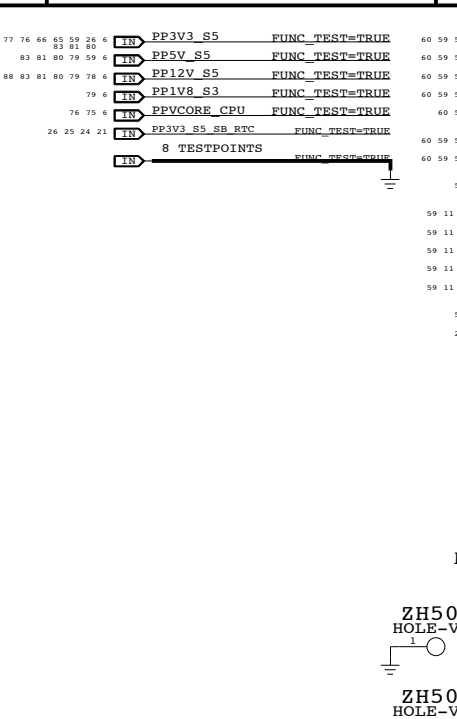
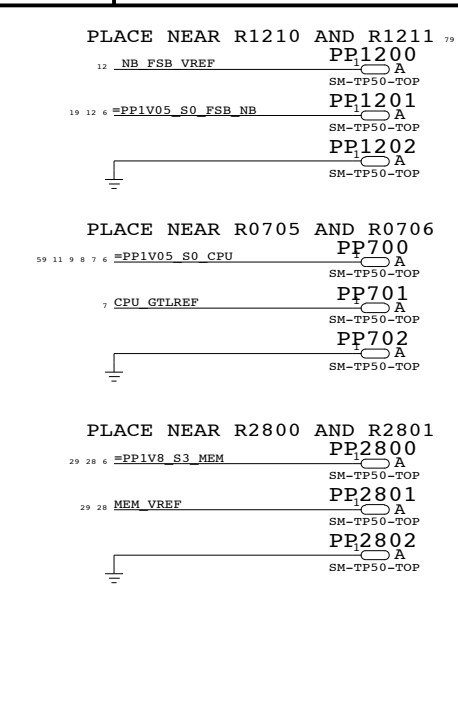
SIZE	DRAWING NUMBER	REV.
D	051-6949	09
SCALE	SHT	OF
NONE	4	111

LAYOUT NOTE: PLACE NEAR J0700
Table with 3 columns: Component Name, Part Number, and Status (e.g., OMIT, F4MM, P4MM).

LAYOUT NOTE: PLACE NEAR U1200
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U8400
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U4101
Table with 3 columns: Component Name, Part Number, and Status.



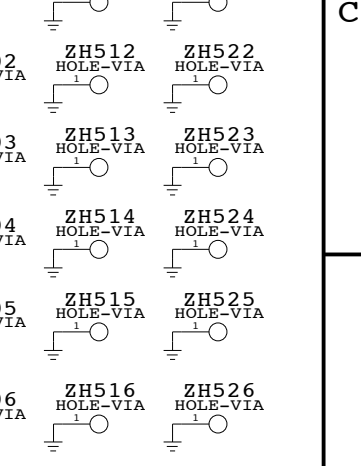
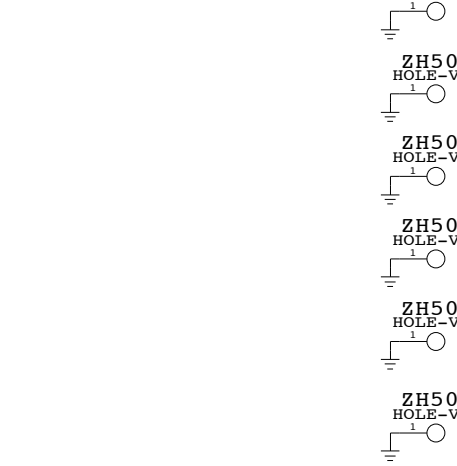
LAYOUT NOTE: PLACE NEAR U2100
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U8900
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U9000
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U8950
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U9050
Table with 3 columns: Component Name, Part Number, and Status.

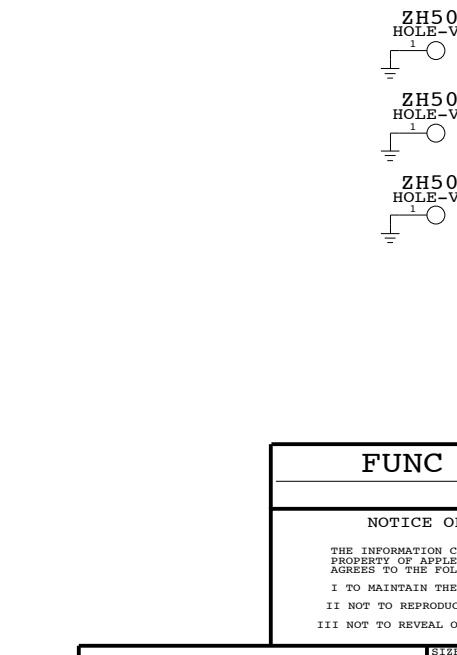
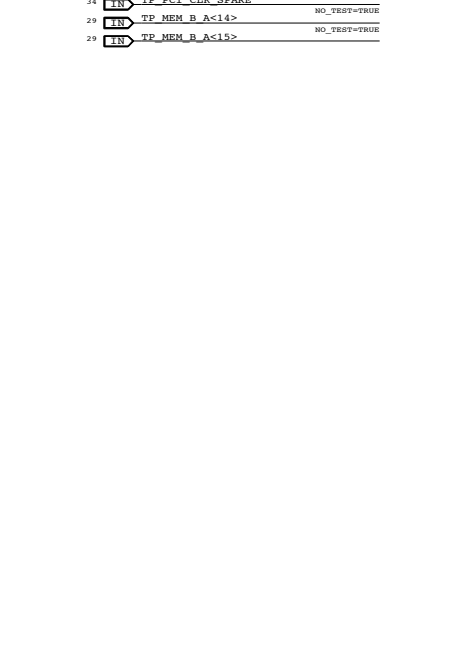


LAYOUT NOTE: PLACE NEAR U8900 (continued)
Table with 3 columns: Component Name, Part Number, and Status.

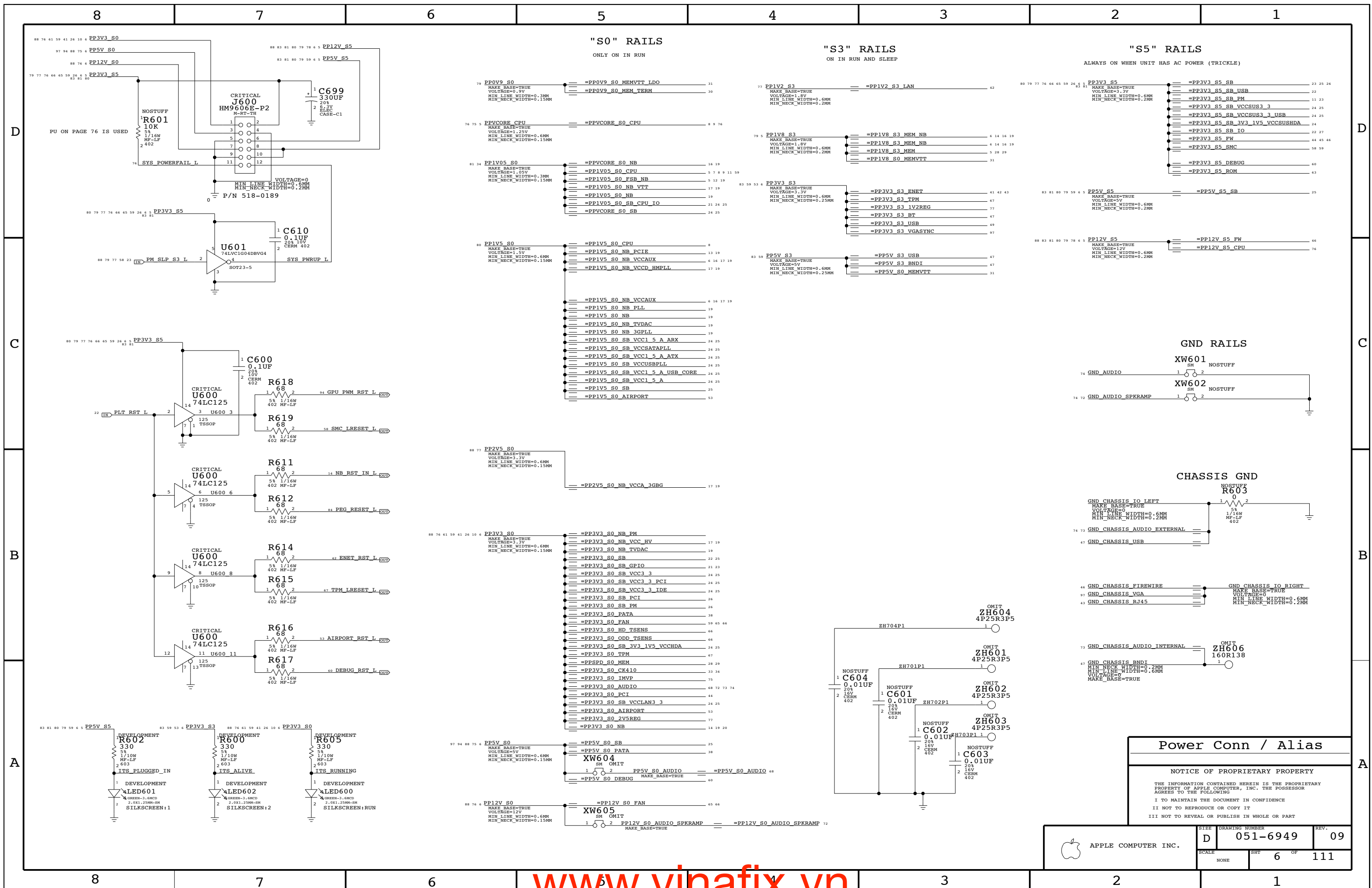
LAYOUT NOTE: PLACE NEAR U9000 (continued)
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U8950 (continued)
Table with 3 columns: Component Name, Part Number, and Status.

LAYOUT NOTE: PLACE NEAR U9050 (continued)
Table with 3 columns: Component Name, Part Number, and Status.



FUNC TEST 1 OF 2
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"S0" RAILS

ONLY ON IN RUN

"S3" RAILS

ON IN RUN AND SLEEP

"S5" RAILS

ALWAYS ON WHEN UNIT HAS AC POWER (TRICKLE)

GND RAILS

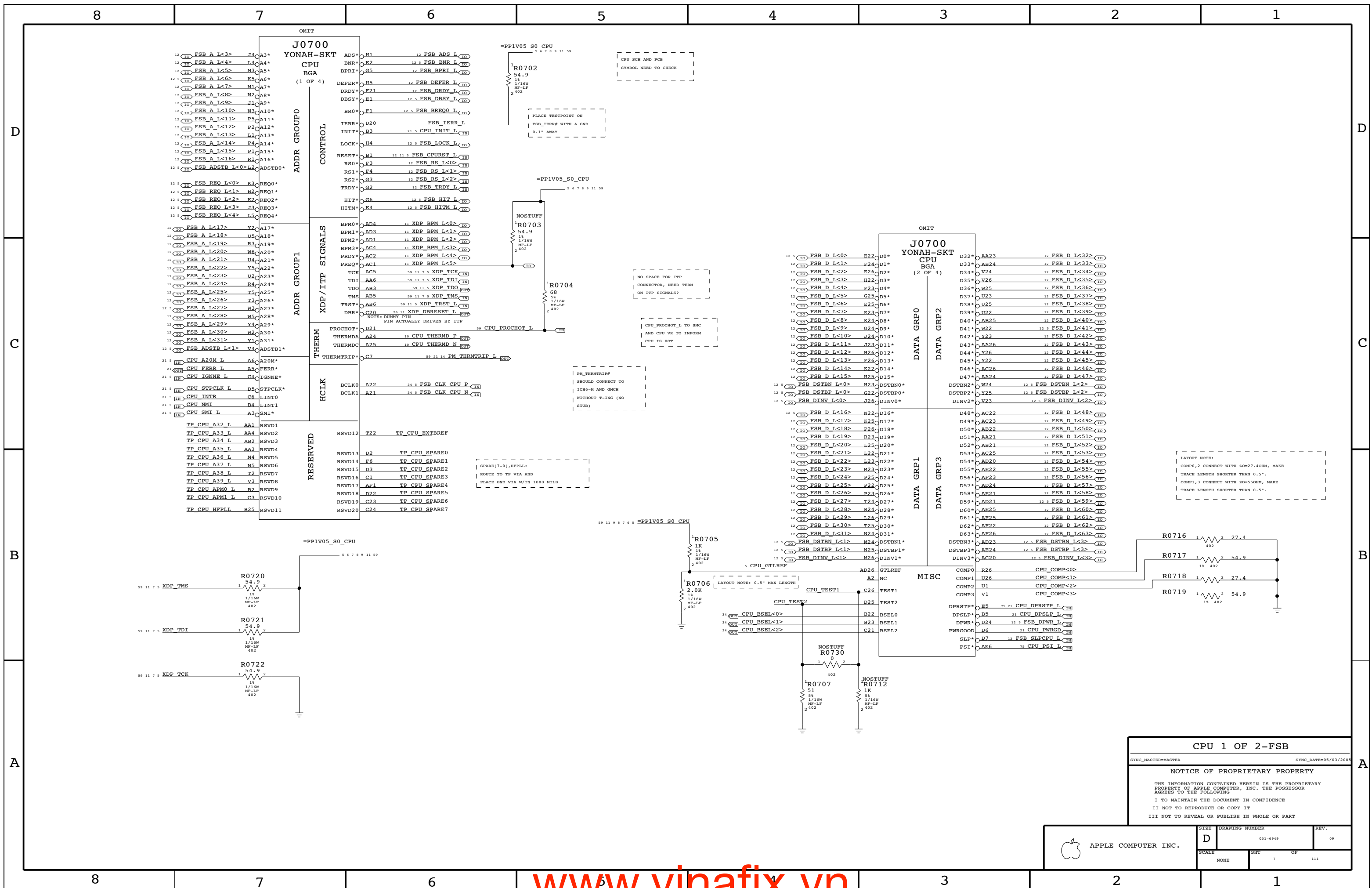
CHASSIS GND

Power Conn / Alias

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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	6 OF	111
NONE			



J0700 YONAH-SKT CPU BGA (1 OF 4)

Signal	Pin	Signal	Pin
FSB A L<3>	J4 A3*	FSB ADS L	H1
FSB A L<4>	L4 A4*	FSB BNR L	E2
FSB A L<5>	M3 A5*	FSB BPRI L	G5
FSB A L<6>	K3 A6*	FSB DEFER L	H5
FSB A L<7>	M1 A7*	FSB DRDY L	E21
FSB A L<8>	N2 A8*	FSB DBSY L	E1
FSB A L<9>	J1 A9*	FSB BREQ L	F1
FSB A L<10>	N3 A10*	FSB IERR L	D20
FSB A L<11>	P5 A11*	CPU INIT L	B3
FSB A L<12>	P2 A12*	FSB LOCK L	H4
FSB A L<13>	L1 A13*	FSB CPURST L	B1
FSB A L<14>	P1 A14*	FSB RS L<0>	F3
FSB A L<15>	F1 A15*	FSB RS L<1>	F4
FSB A L<16>	R1 A16*	FSB RS L<2>	G3
FSB ADSTB L<0>	I2 ADSTB0*	FSB TRDY L	G2
FSB REQ L<0>	K3 REQ0*	FSB HIT L	G6
FSB REQ L<1>	H2 REQ1*	FSB HITM L	E4
FSB REQ L<2>	K2 REQ2*	XDP BPM L<0>	AD4
FSB REQ L<3>	J3 REQ3*	XDP BPM L<1>	AD3
FSB REQ L<4>	L5 REQ4*	XDP BPM L<2>	AD1
FSB A L<17>	Y2 A17*	XDP BPM L<3>	AC4
FSB A L<18>	U5 A18*	XDP BPM L<4>	AC2
FSB A L<19>	R3 A19*	XDP BPM L<5>	AC1
FSB A L<20>	W6 A20*	XDP TCK	AC5
FSB A L<21>	U4 A21*	XDP TDI	AA6
FSB A L<22>	Y2 A22*	XDP TDO	AB3
FSB A L<23>	U2 A23*	XDP TMS	AB5
FSB A L<24>	R4 A24*	XDP TRST L	AB6
FSB A L<25>	T3 A25*	XDP DBRESET L	C20
FSB A L<26>	T3 A26*	CPU PROCHOT L	D21
FSB A L<27>	W3 A27*	CPU THERMD P	A24
FSB A L<28>	W3 A28*	CPU THERMD N	A25
FSB A L<29>	Y4 A29*	CPU THERM N	A25
FSB A L<30>	Y4 A30*	PM THRMTRIP L	C7
FSB A L<31>	Y1 A31*	FSB CLK CPU P	A22
FSB ADSTB L<1>	V4 ADSTB1*	FSB CLK CPU N	A21
CPU A20M L	A6 A20M*	TP_CPU_EXTBREF	T22
CPU FERR L	A5 FERR*	TP_CPU_SPARE0	D2
CPU IGNE L	C4 IGNE*	TP_CPU_SPARE1	F6
CPU STPCLK L	D5 STPCLK*	TP_CPU_SPARE2	D3
CPU INTR	C6 LINT0	TP_CPU_SPARE3	C1
CPU NMI	B4 LINT1	TP_CPU_SPARE4	AF1
CPU SMI L	A3 SMI*	TP_CPU_SPARE5	D22
TP_CPU_A32 L	AA1 RSVD1	TP_CPU_SPARE6	C23
TP_CPU_A33 L	AA4 RSVD2	TP_CPU_SPARE7	C24
TP_CPU_A34 L	AB2 RSVD3		
TP_CPU_A35 L	AA3 RSVD4		
TP_CPU_A36 L	M4 RSVD5		
TP_CPU_A37 L	N5 RSVD6		
TP_CPU_A38 L	T2 RSVD7		
TP_CPU_A39 L	V3 RSVD8		
TP_CPU_APH0 L	B2 RSVD9		
TP_CPU_APM1 L	C3 RSVD10		
TP_CPU_HFLL	B25 RSVD11		

J0700 YONAH-SKT CPU BGA (2 OF 4)

Signal	Pin	Signal	Pin
FSB D L<0>	E22 D0*	FSB D L<32>	AA23
FSB D L<1>	F24 D1*	FSB D L<33>	AB24
FSB D L<2>	E26 D2*	FSB D L<34>	V24
FSB D L<3>	H22 D3*	FSB D L<35>	V26
FSB D L<4>	F24 D4*	FSB D L<36>	W25
FSB D L<5>	G25 D5*	FSB D L<37>	U23
FSB D L<6>	E25 D6*	FSB D L<38>	U25
FSB D L<7>	E24 D7*	FSB D L<39>	U22
FSB D L<8>	E24 D8*	FSB D L<40>	AB25
FSB D L<9>	G24 D9*	FSB D L<41>	W22
FSB D L<10>	J24 D10*	FSB D L<42>	Y23
FSB D L<11>	J23 D11*	FSB D L<43>	AA26
FSB D L<12>	H26 D12*	FSB D L<44>	Y26
FSB D L<13>	F26 D13*	FSB D L<45>	Y22
FSB D L<14>	K22 D14*	FSB D L<46>	AC26
FSB D L<15>	H25 D15*	FSB D L<47>	AA24
FSB DSTBN L<0>	G22 DSTBN0*	FSB DSTBN L<2>	W24
FSB DSTBP L<0>	G22 DSTBP0*	FSB DSTBP L<2>	V25
FSB DINV L<0>	J26 DINV0*	FSB DINV L<2>	V23
FSB D L<16>	N22 D16*	FSB D L<48>	AC22
FSB D L<17>	K25 D17*	FSB D L<49>	AC23
FSB D L<18>	P26 D18*	FSB D L<50>	AB22
FSB D L<19>	R23 D19*	FSB D L<51>	AA21
FSB D L<20>	L24 D20*	FSB D L<52>	AB21
FSB D L<21>	L24 D21*	FSB D L<53>	AC25
FSB D L<22>	L23 D22*	FSB D L<54>	AD20
FSB D L<23>	M23 D23*	FSB D L<55>	AE22
FSB D L<24>	P23 D24*	FSB D L<56>	AE23
FSB D L<25>	P22 D25*	FSB D L<57>	AD24
FSB D L<26>	P22 D26*	FSB D L<58>	AE21
FSB D L<27>	T24 D27*	FSB D L<59>	AD23
FSB D L<28>	R24 D28*	FSB D L<60>	AE25
FSB D L<29>	L26 D29*	FSB D L<61>	AE22
FSB D L<30>	T24 D30*	FSB D L<62>	AE25
FSB D L<31>	N24 D31*	FSB D L<63>	AE26
FSB DSTBN L<1>	N24 DSTBN1*	CPU_COMP<0>	B26
FSB DSTBP L<1>	N23 DSTBP1*	CPU_COMP<1>	U26
FSB DINV L<1>	N26 DINV1*	CPU_COMP<2>	U1
		CPU_COMP<3>	V1
		CPU DPRSTP L	E5
		CPU DSPSLP L	B5
		FSB DPWR L	D24
		CPU PWRGD	D6
		FSB SLPCPU L	D7
		CPU PSI L	AE6

LAYOUT NOTE:
 COMP0,2 CONNECT WITH 50-27.4OHM, MAKE TRACE LENGTH SHORTER THAN 0.5".
 COMP1,3 CONNECT WITH 50-55OHM, MAKE TRACE LENGTH SHORTER THAN 0.5".

CPU 1 OF 2-FSB

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

NOTICE OF PROPRIETARY PROPERTY

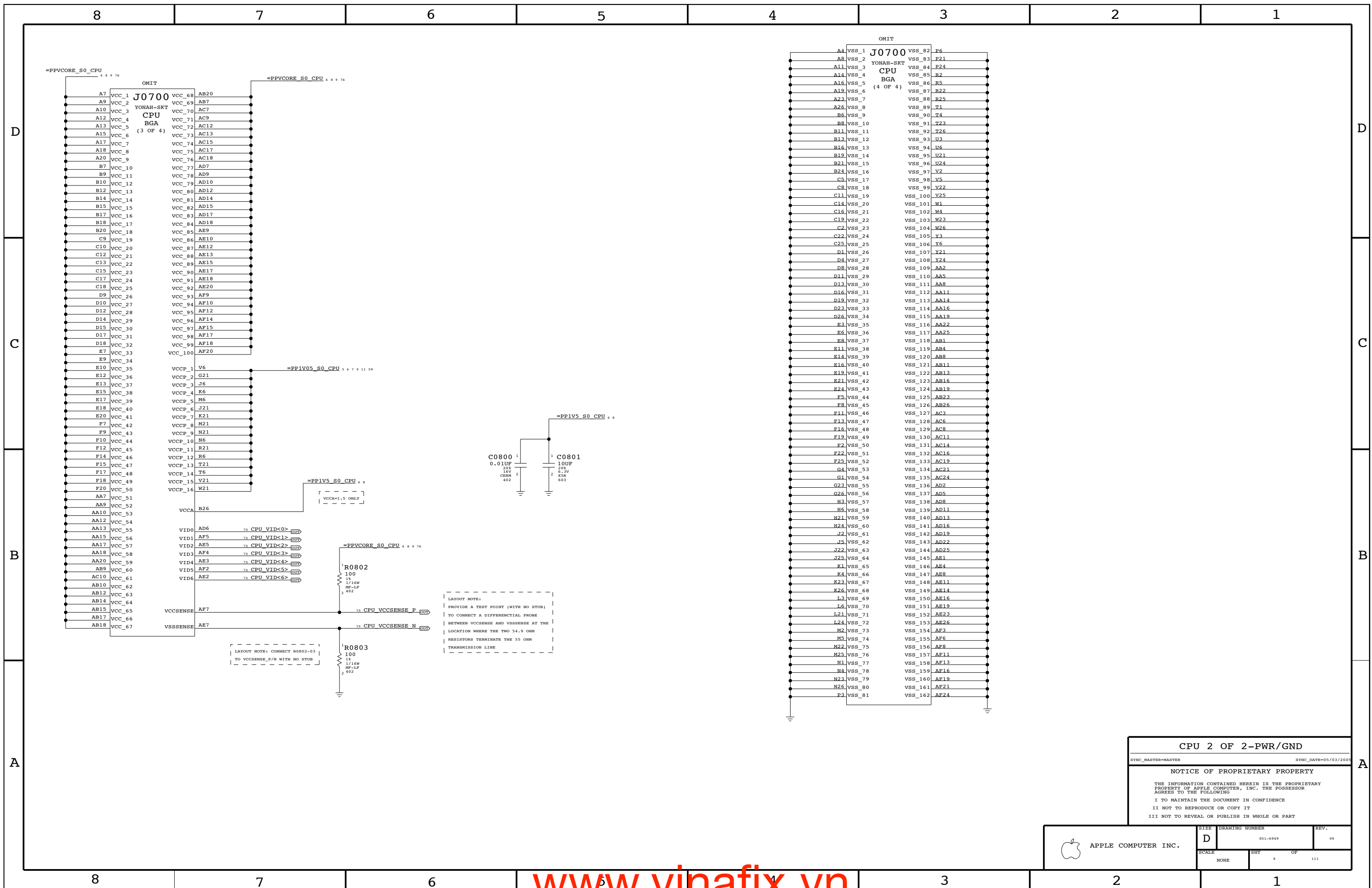
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	D	051-6949	09
SCALE	SHT	OF	111
NONE	7		



CPU 2 OF 2-PWR/GND

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

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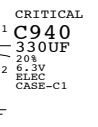
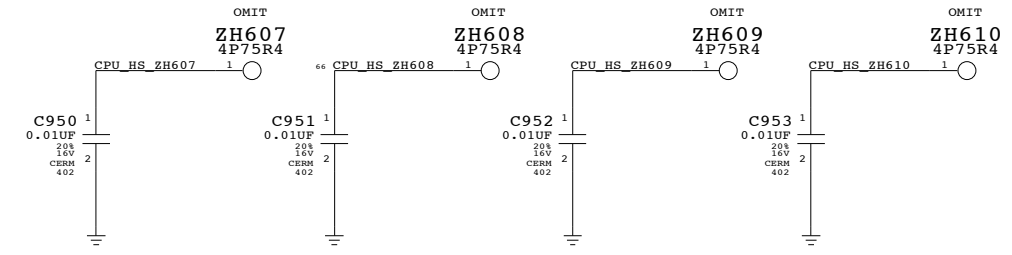
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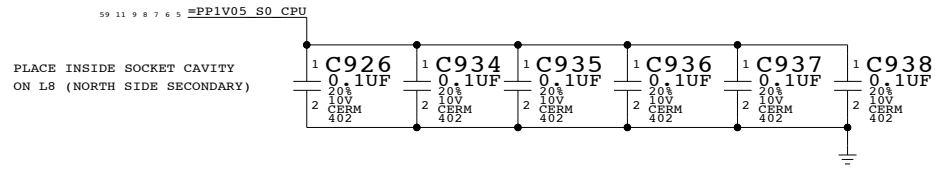
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT		OF
NONE	8		111

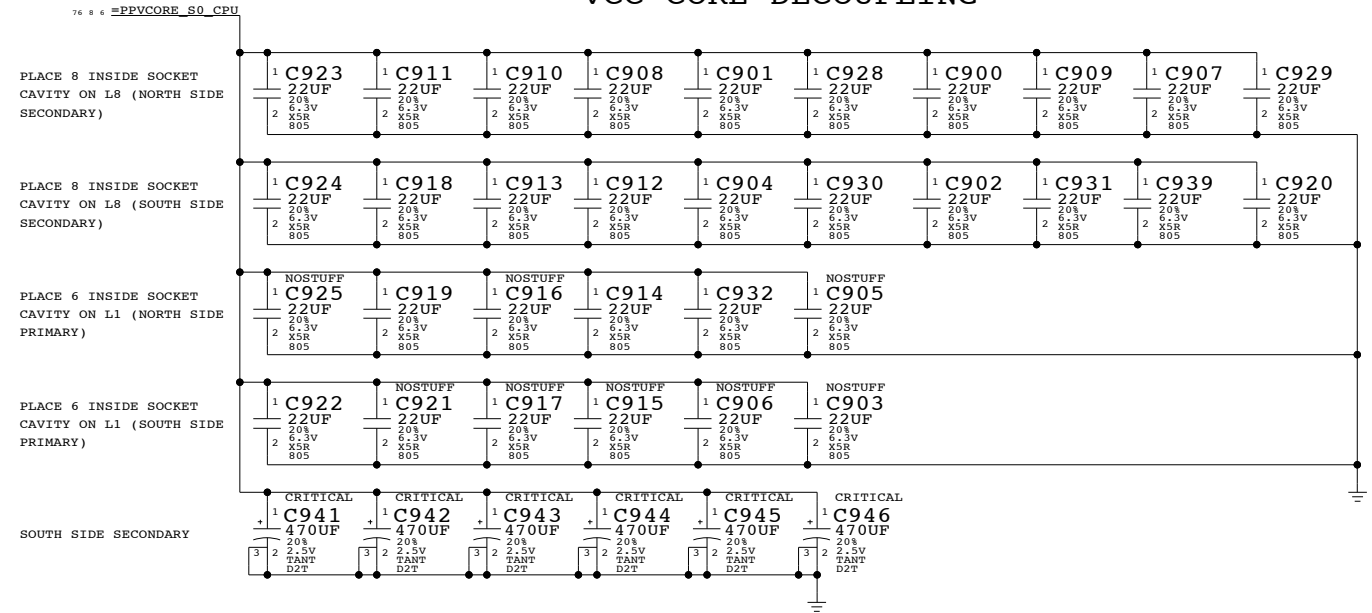
CPU HEATSINK MOUNTING HOLES



VCCP CORE DECOUPLING



VCC CORE DECOUPLING



CPU DECAPS & VID<>

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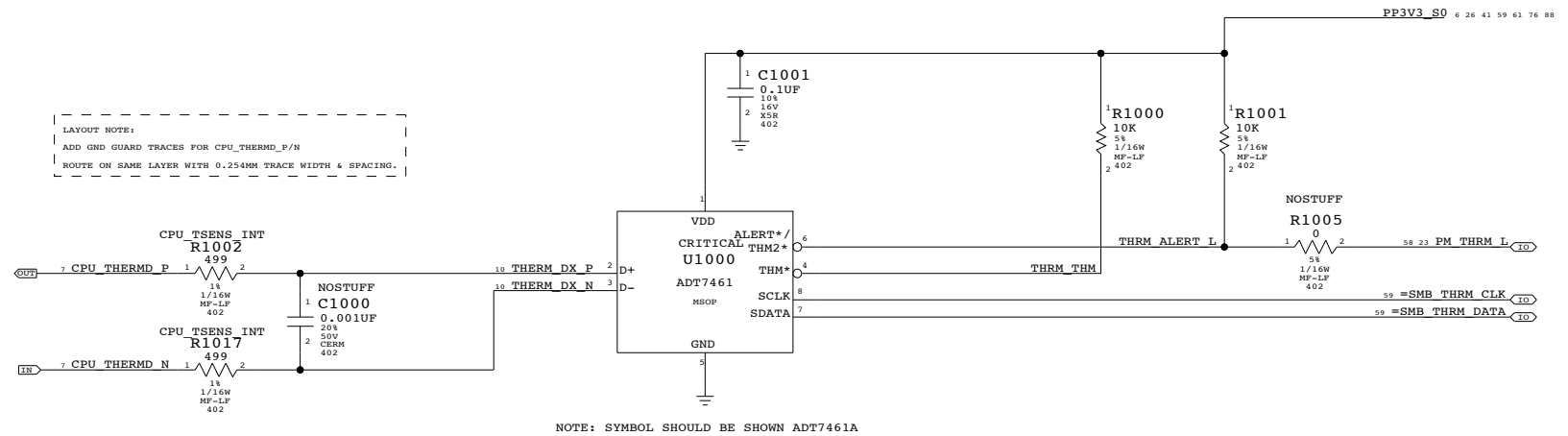
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT 9 OF 111		
NONE			

CPU THERMAL SENSOR

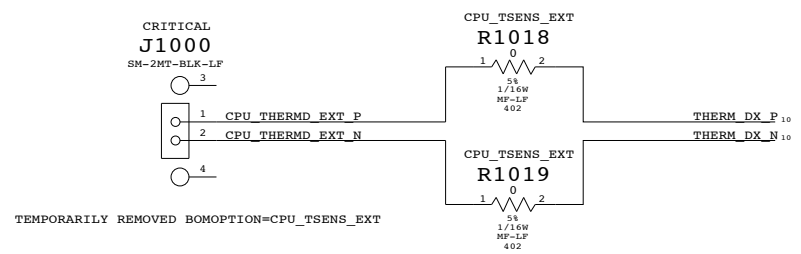
NOTE:
IF CPU T DIODE TO BE READ IN OFF STATE,
THEN THIS SHOULD BE S5

LAYOUT NOTE:
ADD GND GUARD TRACES 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

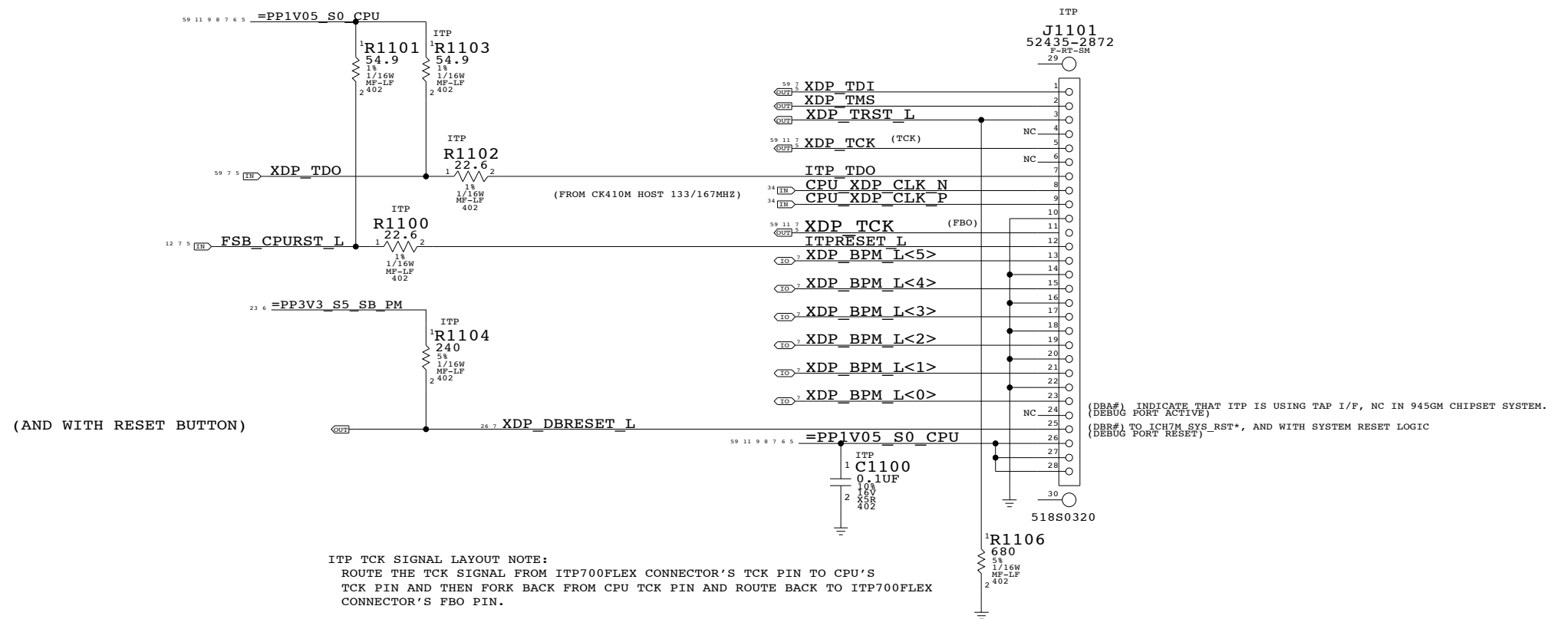
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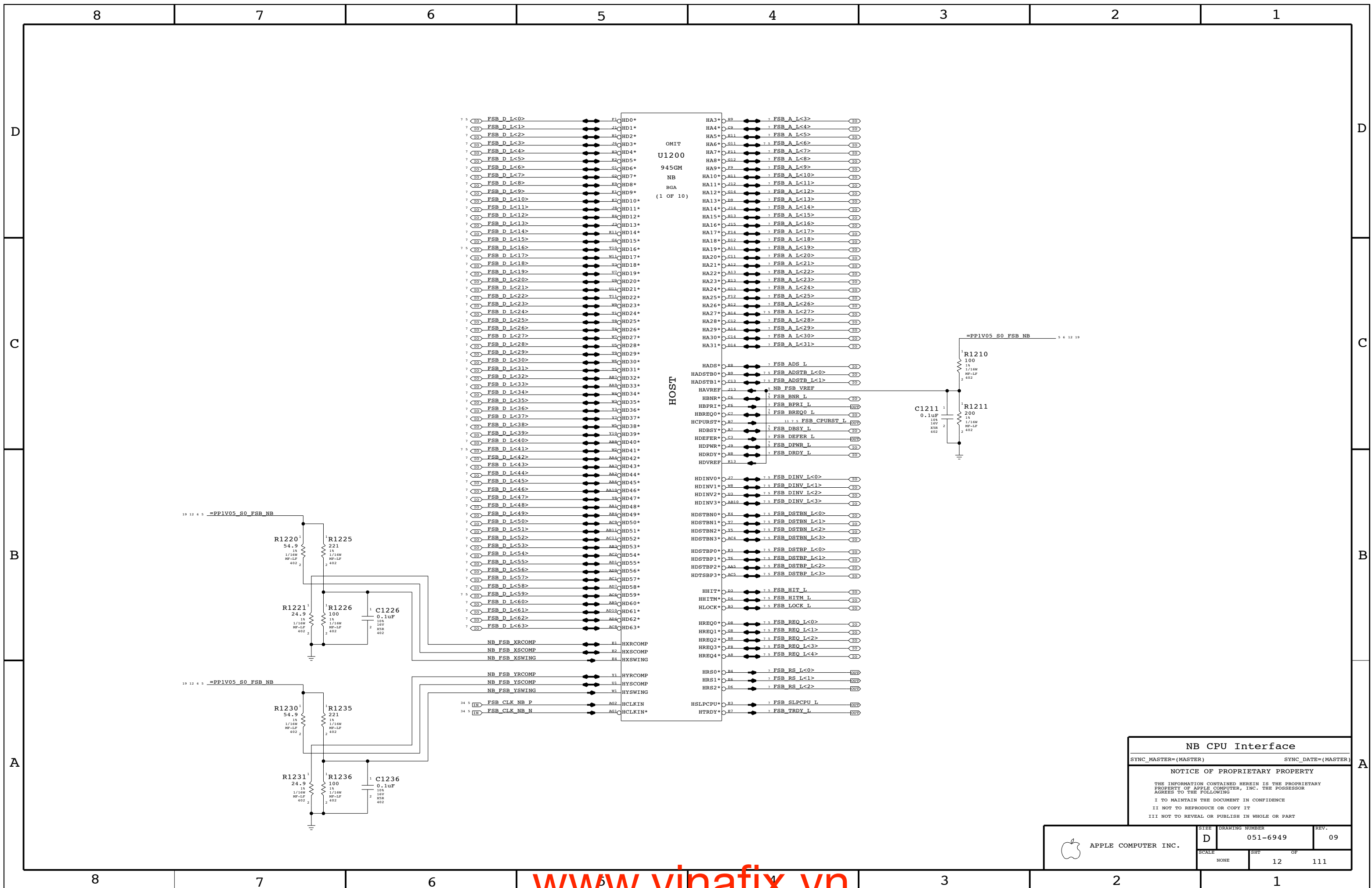
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT		OF
NONE	10		111

CPU ITP700FLEX DEBUG SUPPORT



CPU ITP700FLEX DEBUG
 SYNC_MASTER=MASTER SYNC_DATE=5/23/05
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	D	051-6949	09
SCALE	SHT	OF	111
NONE	11		



NB CPU Interface

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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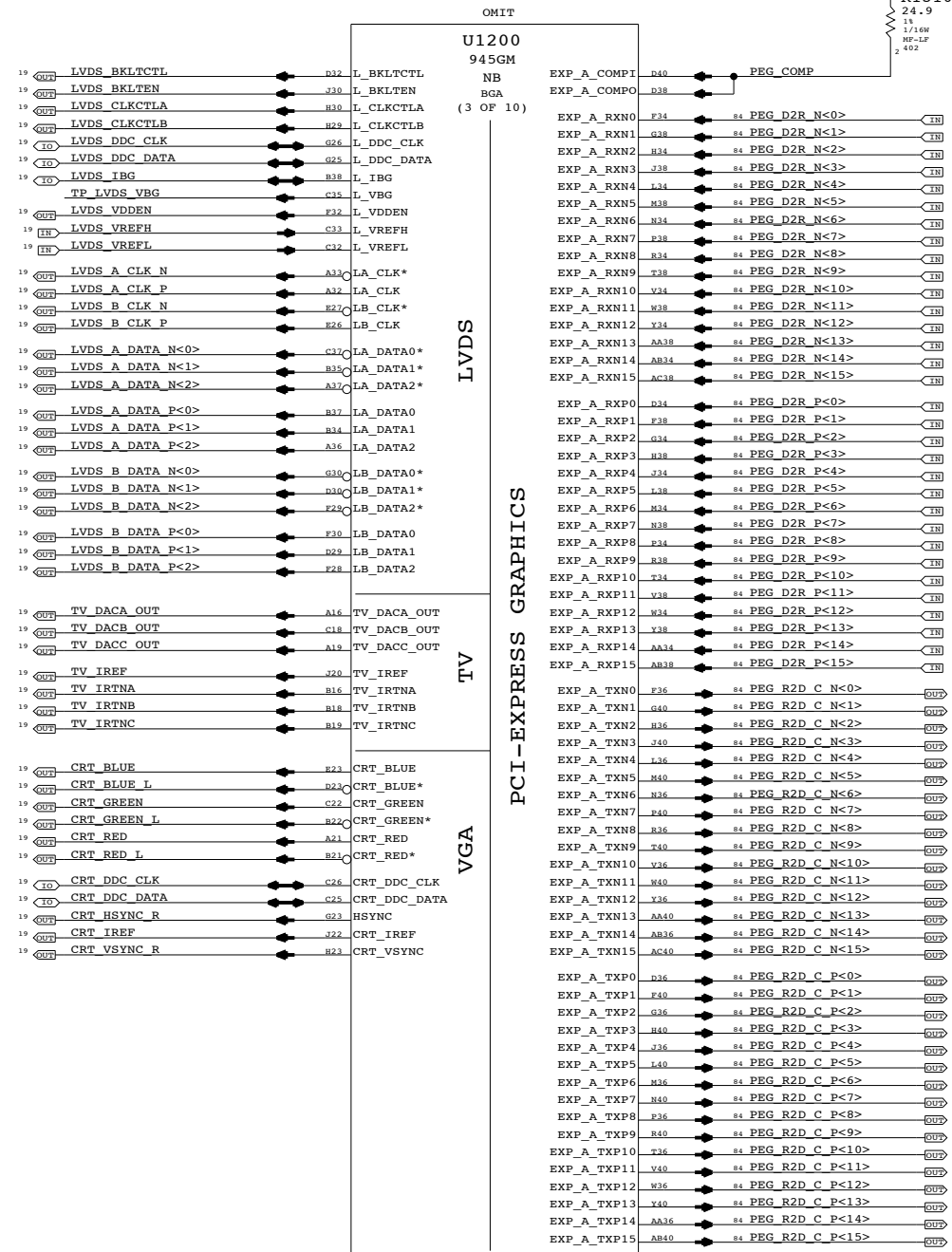
APPLE COMPUTER INC.	SIZE: D	DRAWING NUMBER: 051-6949	REV.: 09
	SCALE: NONE	SHEET: 12	OF: 111

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_TVBG to 1.5V power rail. Tie VSSA_TVBG 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

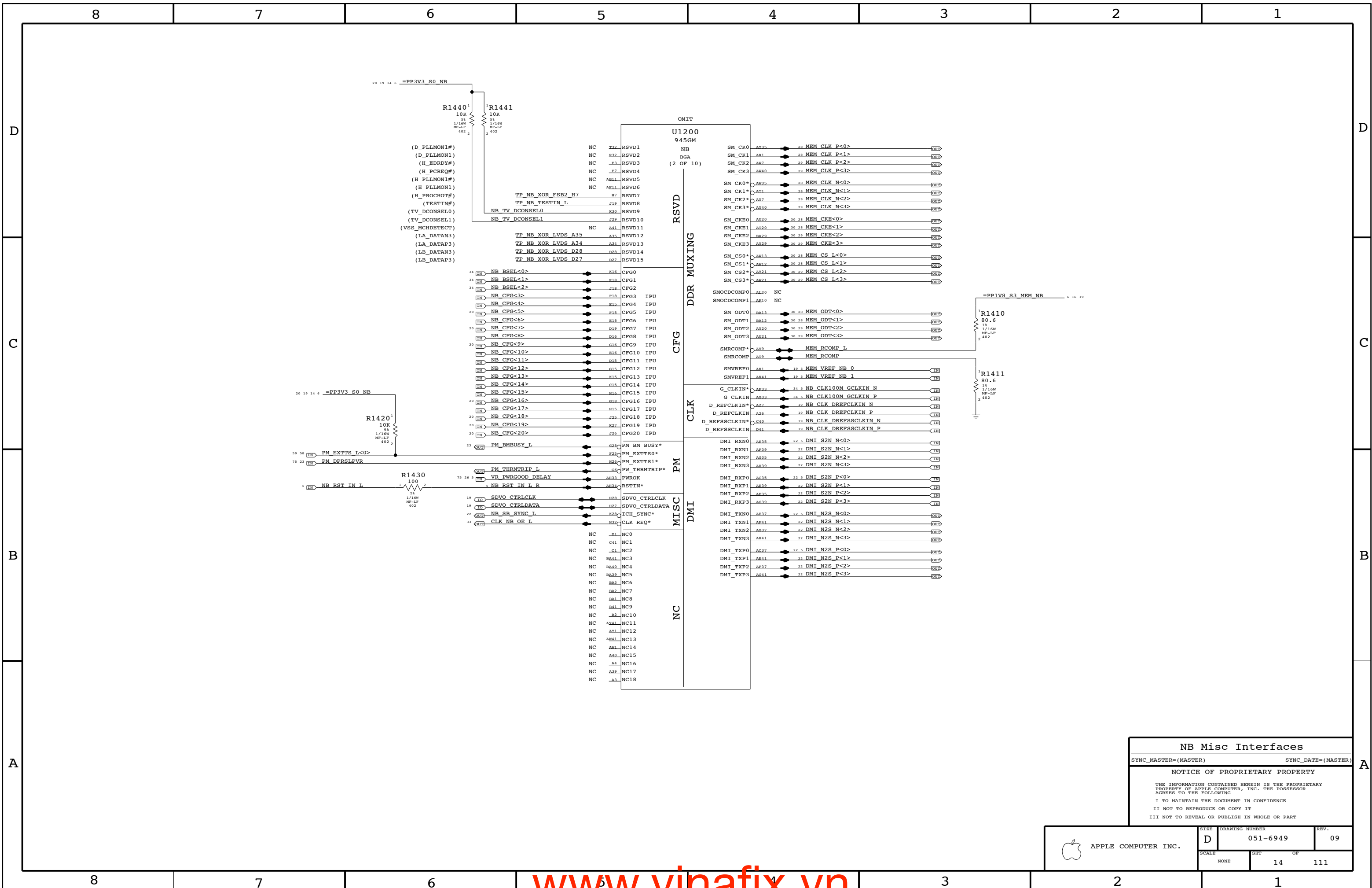
SDVOB_RED#
 SDVOB_GREEN#
 SDVOB_BLUE#
 SDVOB_CLKN
 SDVOC_RED#
 SDVOC_GREEN#
 SDVOC_BLUE#
 SDVOC_CLKN

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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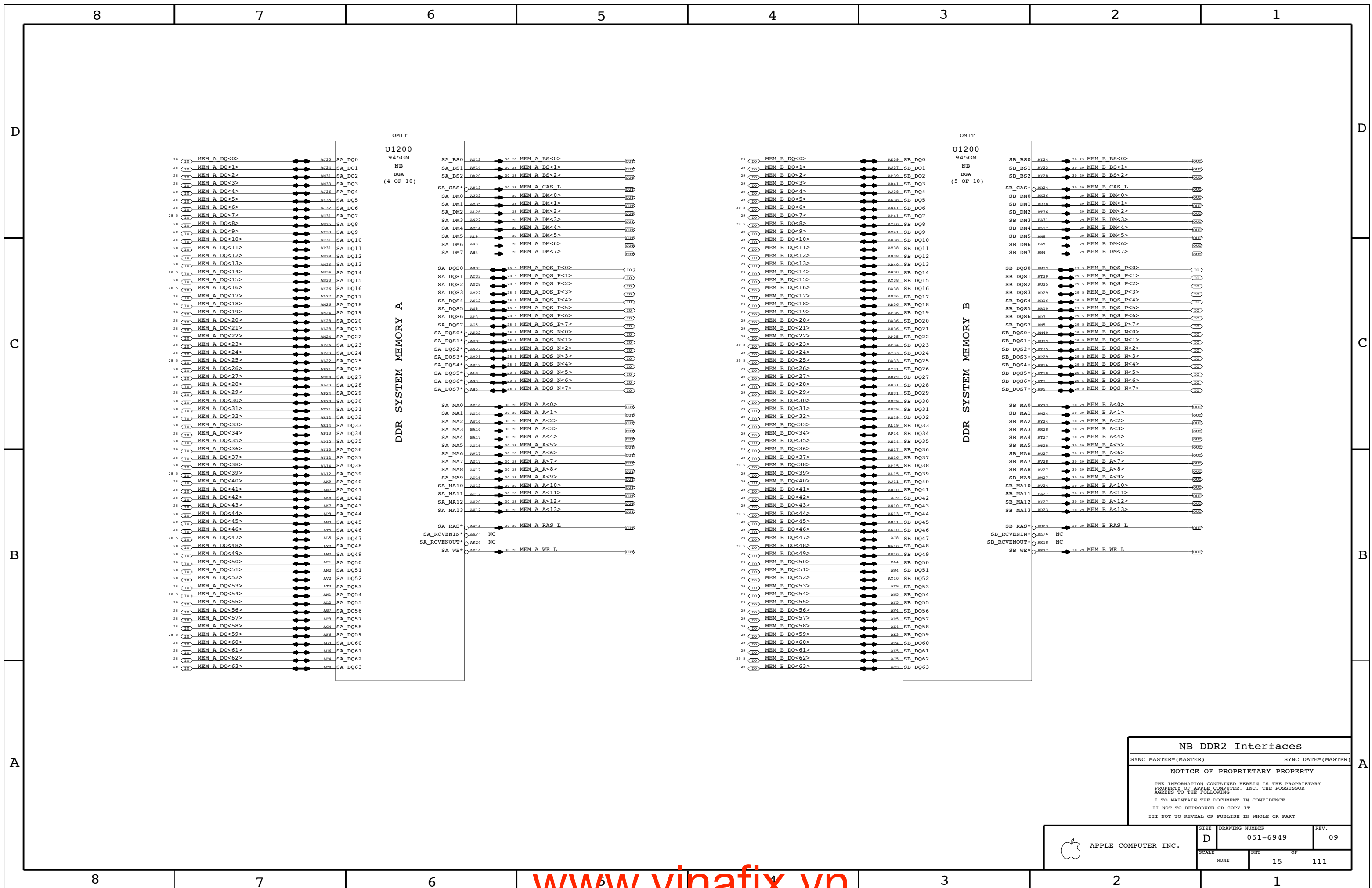
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SCALE	SHT	OF	
NONE	14	111	



NB DDR2 Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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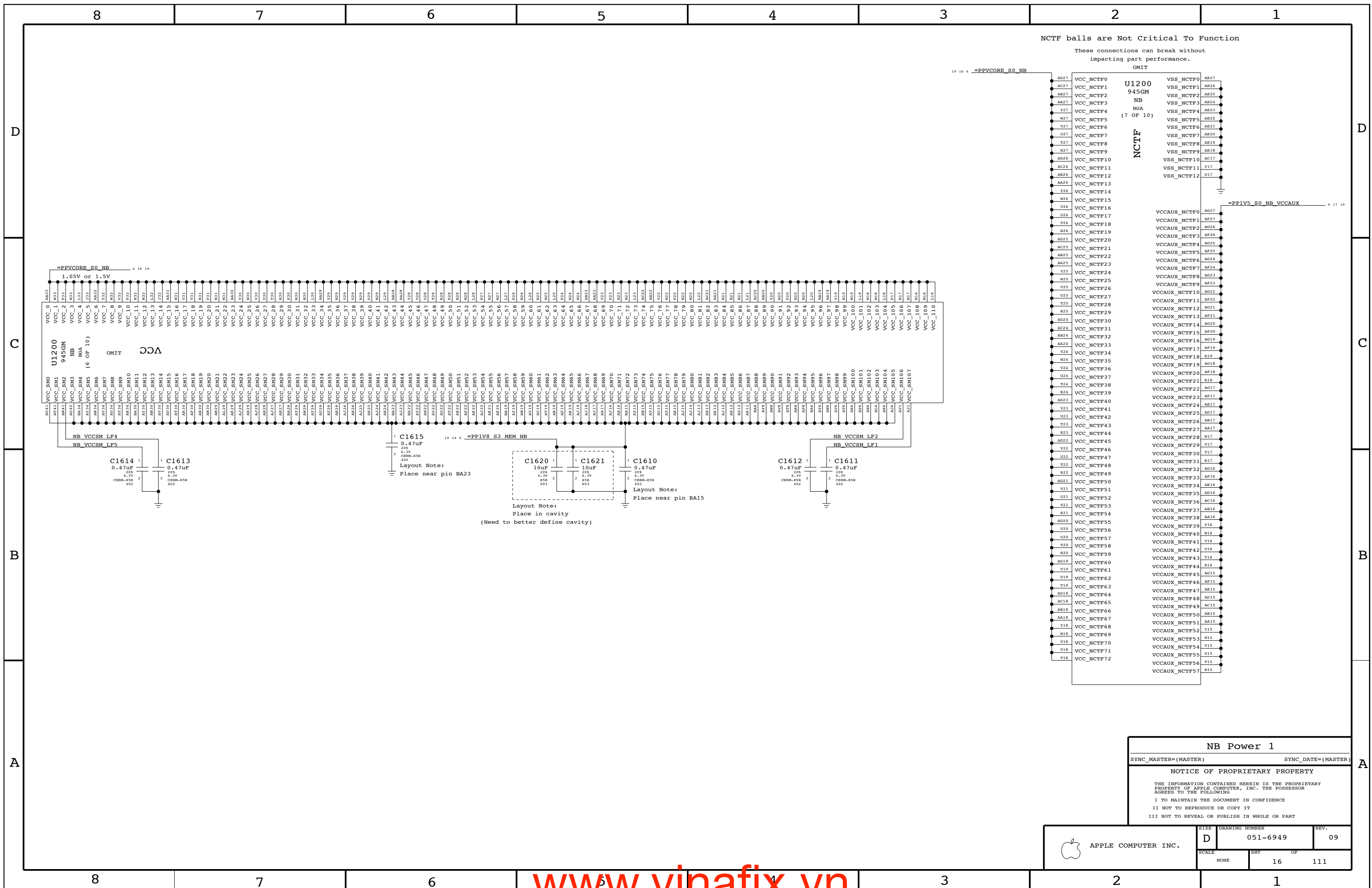
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	SCALE NONE	SHEET 15	OF 111



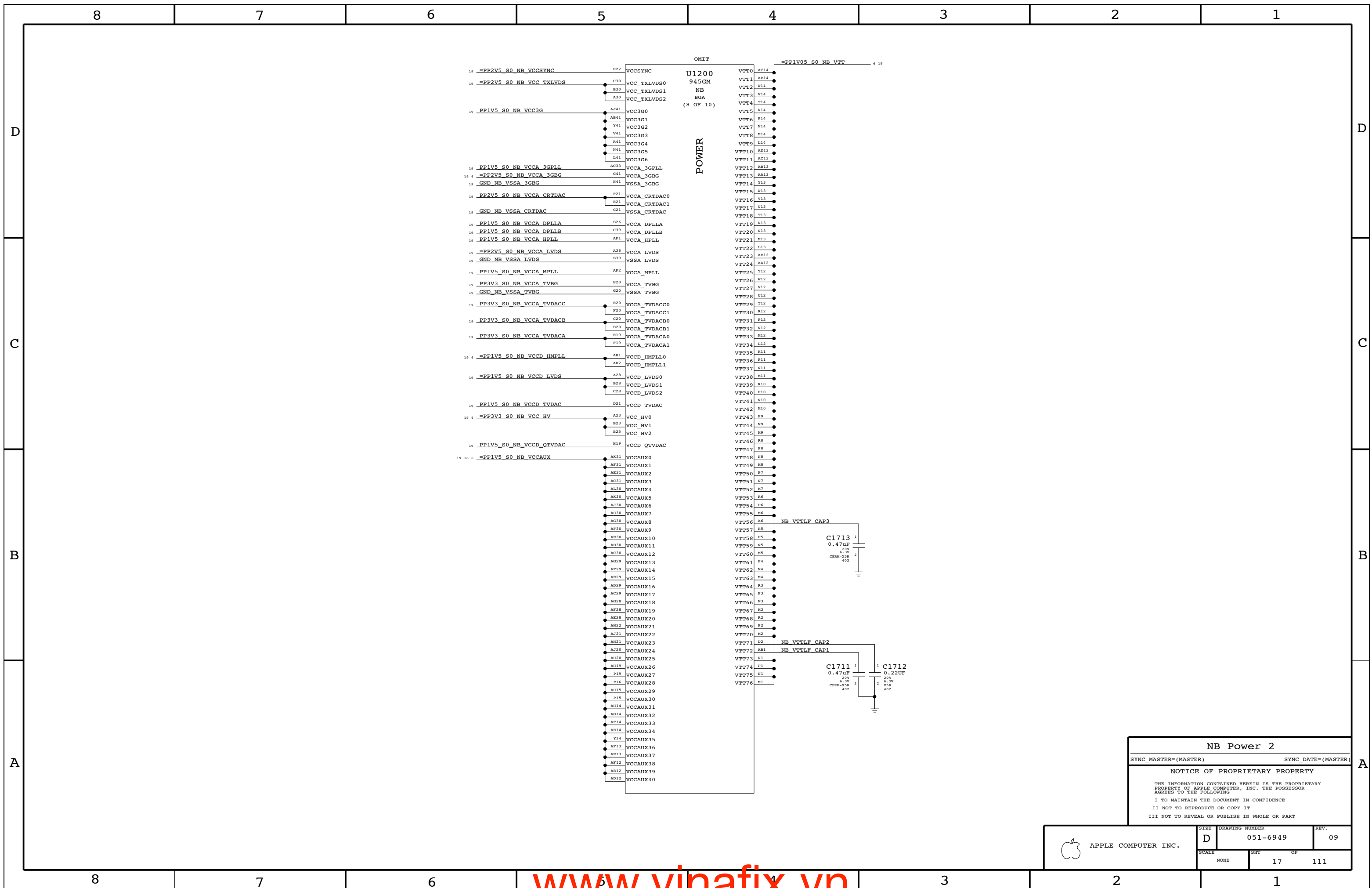
NCTF balls are Not Critical To Function
 These connections can break without impacting part performance.
 OMIT

U1200
 945GM
 NB
 BGA
 (7 OF 10)
 NCTF

VSS_NCTF0
 VSS_NCTF1
 VSS_NCTF2
 VSS_NCTF3
 VSS_NCTF4
 VSS_NCTF5
 VSS_NCTF6
 VSS_NCTF7
 VSS_NCTF8
 VSS_NCTF9
 VSS_NCTF10
 VSS_NCTF11
 VSS_NCTF12
 VCCAUX_NCTF0
 VCCAUX_NCTF1
 VCCAUX_NCTF2
 VCCAUX_NCTF3
 VCCAUX_NCTF4
 VCCAUX_NCTF5
 VCCAUX_NCTF6
 VCCAUX_NCTF7
 VCCAUX_NCTF8
 VCCAUX_NCTF9
 VCCAUX_NCTF10
 VCCAUX_NCTF11
 VCCAUX_NCTF12
 VCCAUX_NCTF13
 VCCAUX_NCTF14
 VCCAUX_NCTF15
 VCCAUX_NCTF16
 VCCAUX_NCTF17
 VCCAUX_NCTF18
 VCCAUX_NCTF19
 VCCAUX_NCTF20
 VCCAUX_NCTF21
 VCCAUX_NCTF22
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 VCCAUX_NCTF26
 VCCAUX_NCTF27
 VCCAUX_NCTF28
 VCCAUX_NCTF29
 VCCAUX_NCTF30
 VCCAUX_NCTF31
 VCCAUX_NCTF32
 VCCAUX_NCTF33
 VCCAUX_NCTF34
 VCCAUX_NCTF35
 VCCAUX_NCTF36
 VCCAUX_NCTF37
 VCCAUX_NCTF38
 VCCAUX_NCTF39
 VCCAUX_NCTF40
 VCCAUX_NCTF41
 VCCAUX_NCTF42
 VCCAUX_NCTF43
 VCCAUX_NCTF44
 VCCAUX_NCTF45
 VCCAUX_NCTF46
 VCCAUX_NCTF47
 VCCAUX_NCTF48
 VCCAUX_NCTF49
 VCCAUX_NCTF50
 VCCAUX_NCTF51
 VCCAUX_NCTF52
 VCCAUX_NCTF53
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 VCCAUX_NCTF55
 VCCAUX_NCTF56
 VCCAUX_NCTF57

NB Power 1
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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SCALE	SHT OF		
NONE	16		111



NB Power 2

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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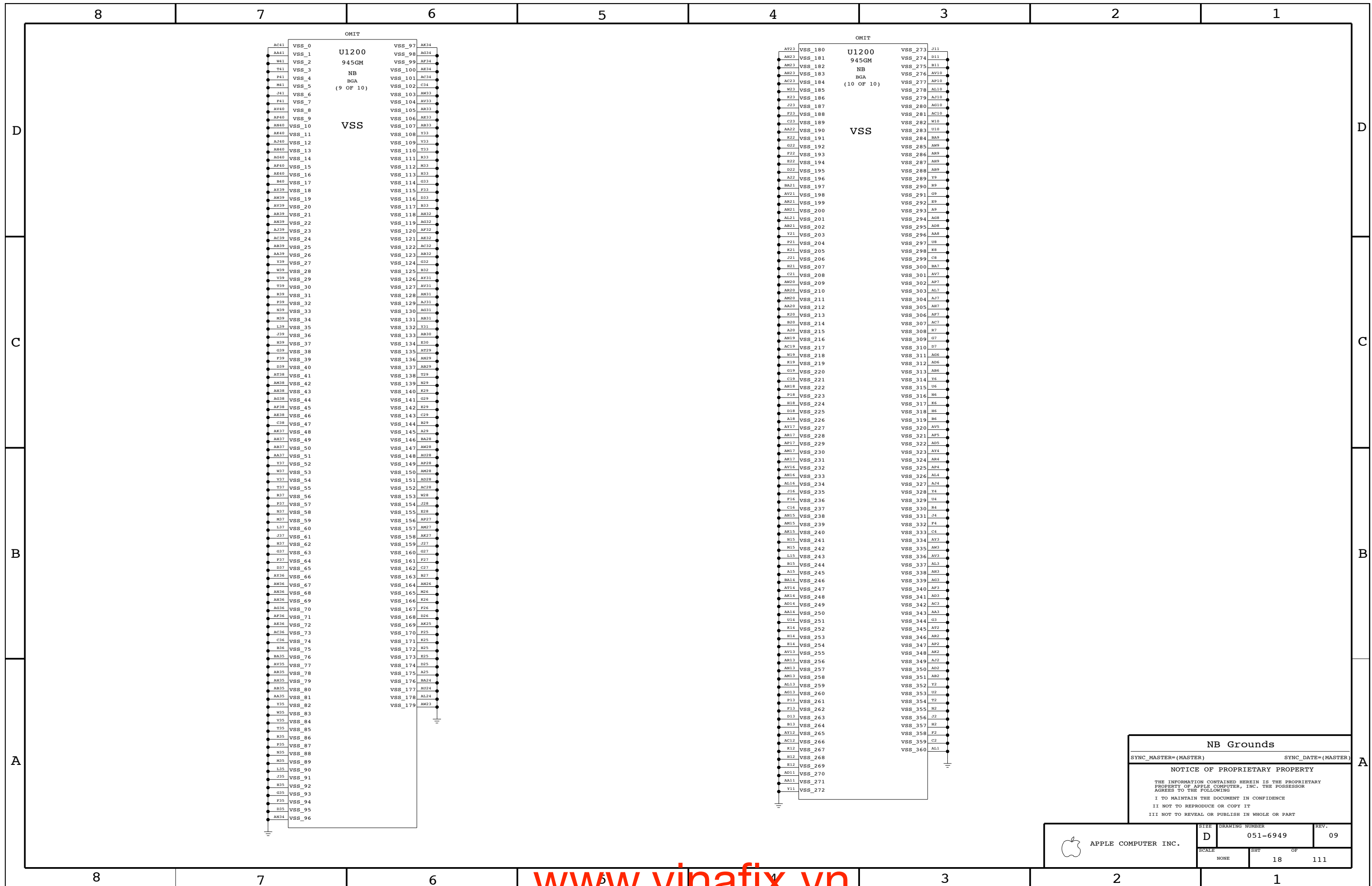
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	SCALE NONE	SHEET 17	OF 111



NB Grounds

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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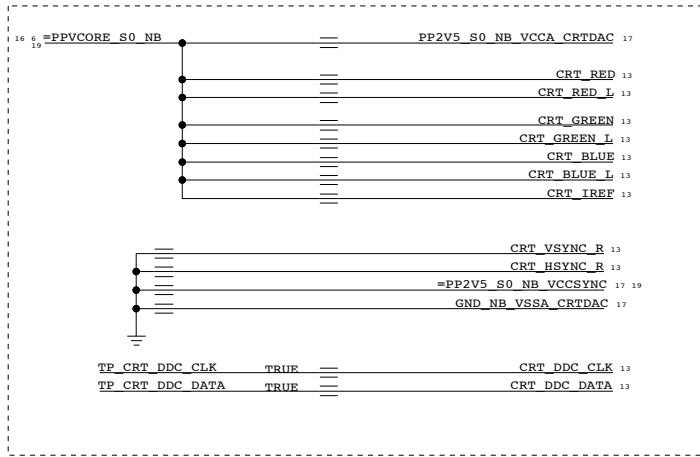
APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 18	OF 111

Power Interface

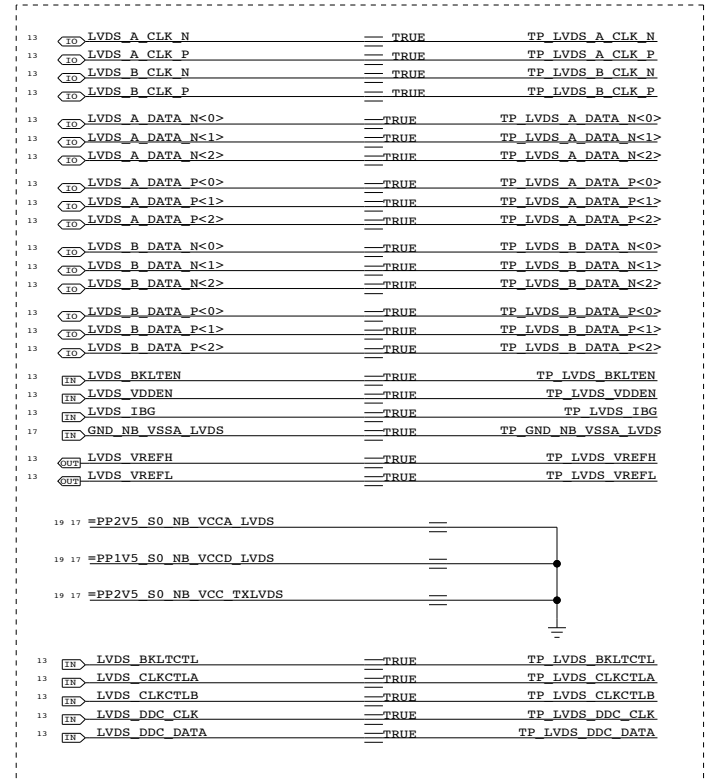
These are the power signals that leave the NB "block"

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

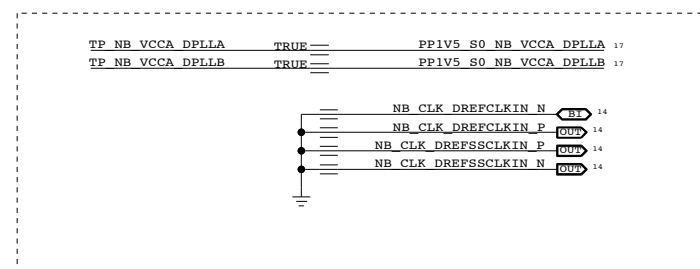
TVOUT DISABLE



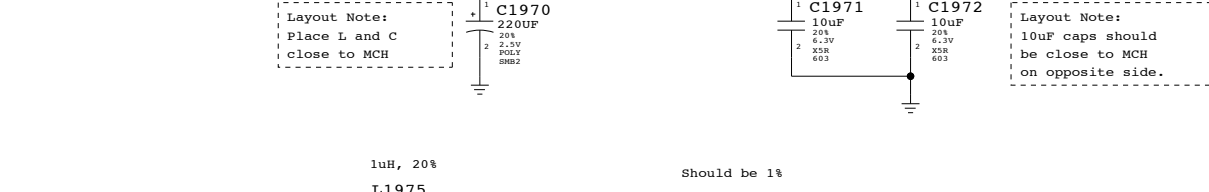
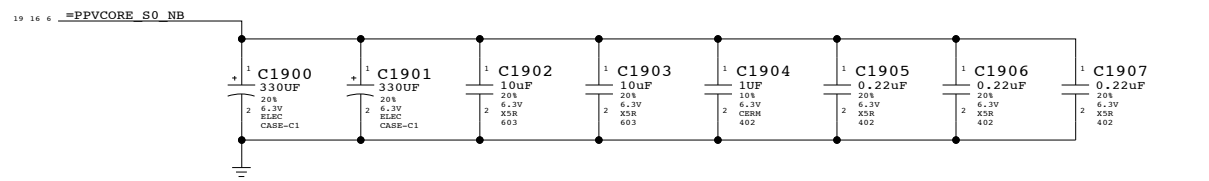
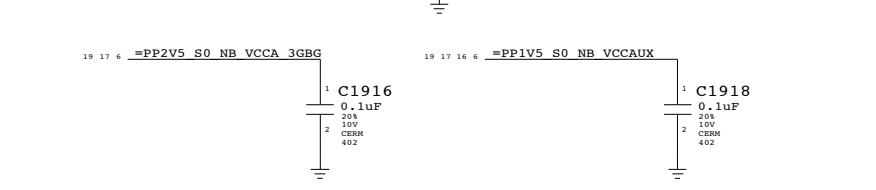
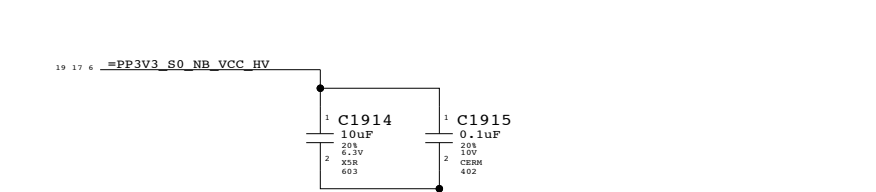
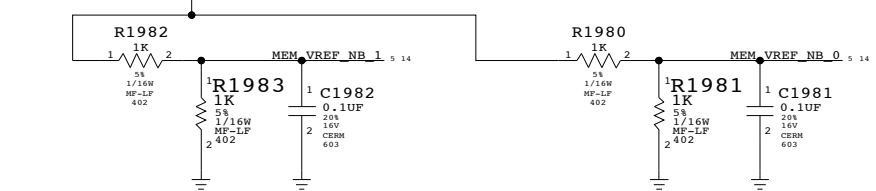
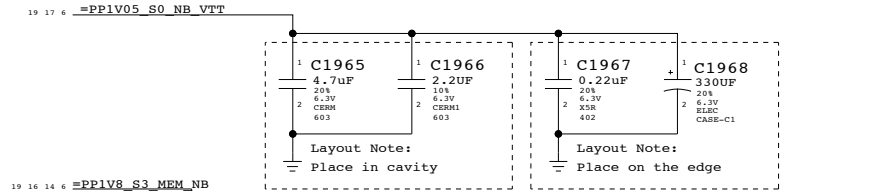
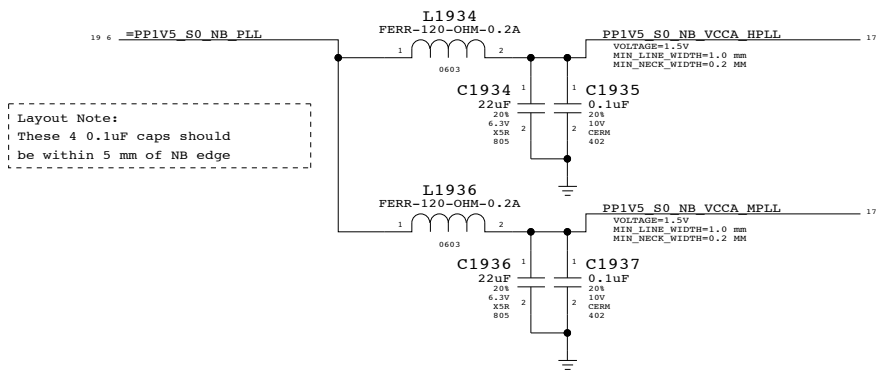
LVDS DISABLE



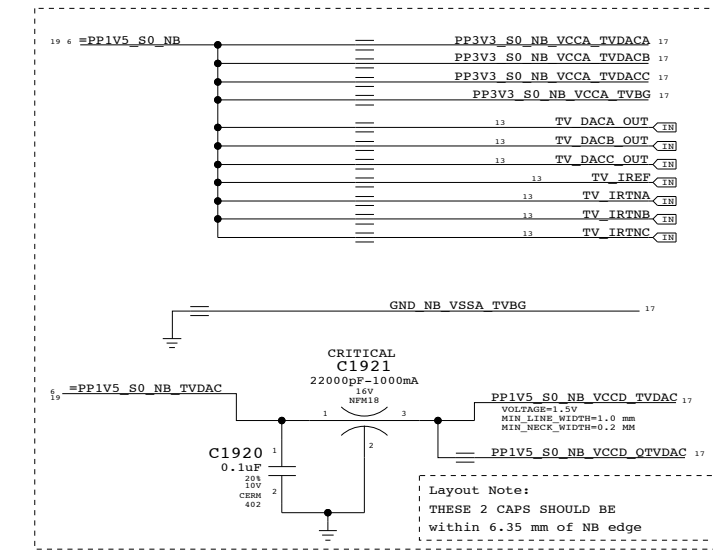
DISPLAY DISABLE



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



TVOUT DISABLE



Layout Note:
Place L and C close to MCH

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

Layout Note:
THESE 2 CAPS SHOULD BE within 6.35 mm of NB edge

NB (GM) Decoupling

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

NOTICE OF PROPRIETARY PROPERTY

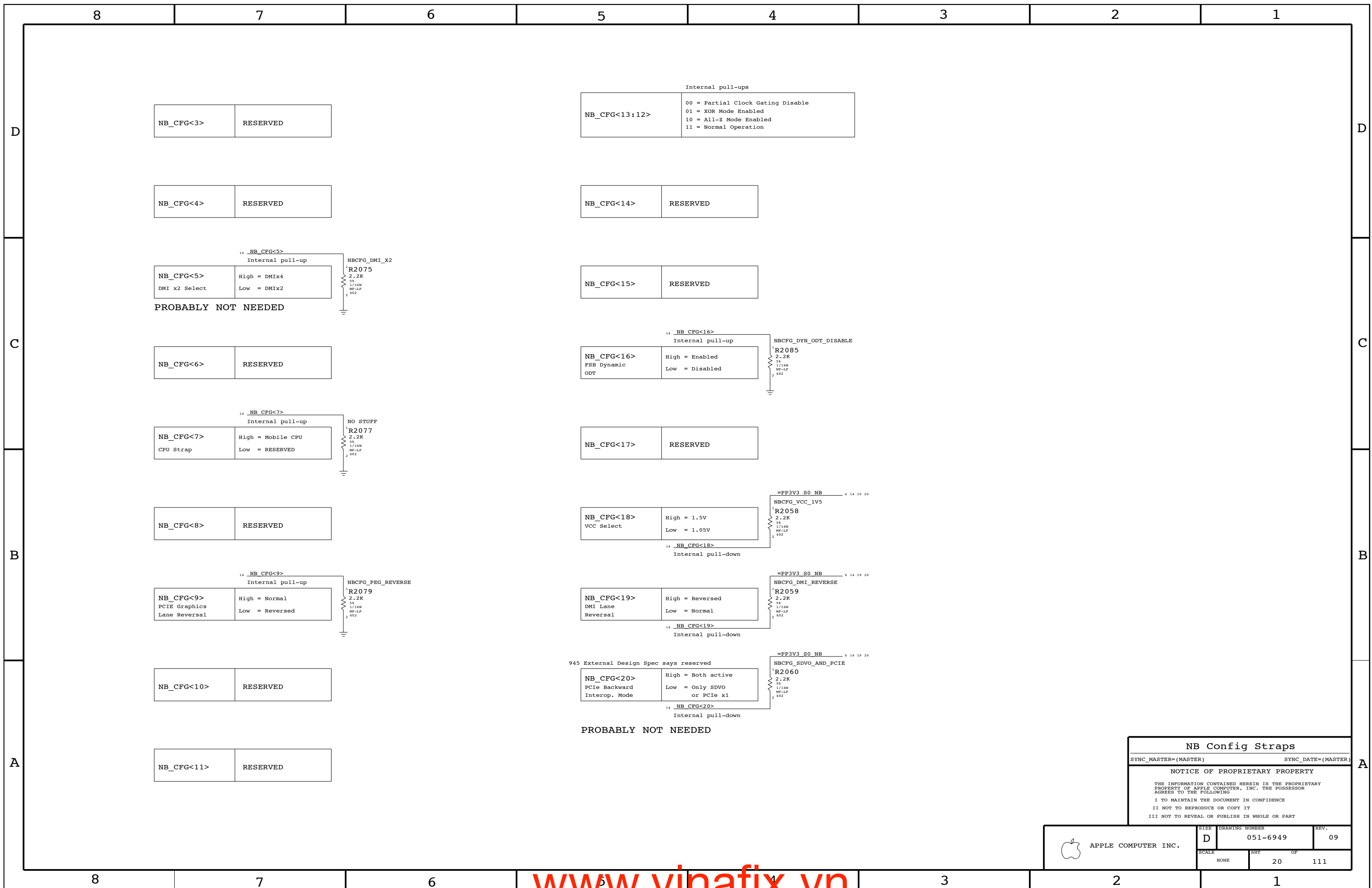
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SCALE	SHT	OF	
NONE	19	111	



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

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

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

14 NB_CFG<5>
Internal pull-up

NB_CFG<5>	High = DMIX4 DMI x2 Select Low = DMIX2
-----------	--

PROBABLY NOT NEEDED

NBCFG_DMI_X2
R2075
2.2K
51
1/10W MF-LF
2 402

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

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

14 NB_CFG<16>
Internal pull-up

NB_CFG<16>	High = Enabled FSB Dynamic ODT Low = Disabled
------------	--

NBCFG_DYN_ODT_DISABLE
R2085
2.2K
51
1/10W MF-LF
2 402

14 NB_CFG<7>
Internal pull-up

NB_CFG<7>	High = Mobile CPU CPU Strap Low = RESERVED
-----------	--

NO STUFF
R2077
2.2K
51
1/10W MF-LF
2 402

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

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

=PP3V3 S0 NB 6 14 19 20
NBCFG_VCC_1V5
R2058
2.2K
51
1/10W MF-LF
2 402

NB_CFG<18>	High = 1.5V VCC Select Low = 1.05V
------------	--

14 NB_CFG<18>
Internal pull-down

14 NB_CFG<9>
Internal pull-up

NB_CFG<9>	High = Normal PCIe Graphics Lane Reversal Low = Reversed
-----------	---

NBCFG_PEG_REVERSE
R2079
2.2K
51
1/10W MF-LF
2 402

=PP3V3 S0 NB 6 14 19 20
NBCFG_DMI_REVERSE
R2059
2.2K
51
1/10W MF-LF
2 402

NB_CFG<19>	High = Reversed DMI Lane Reversal Low = Normal
------------	---

14 NB_CFG<19>
Internal pull-down

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

945 External Design Spec says reserved
=PP3V3 S0 NB 6 14 19 20
NBCFG_SDVO_AND_PCIE
R2060
2.2K
51
1/10W MF-LF
2 402

NB_CFG<20>	High = Both active PCIe Backward Interop. Mode Low = Only SDVO or PCIe x1
------------	---

14 NB_CFG<20>
Internal pull-down

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

PROBABLY NOT NEEDED

NB Config Straps

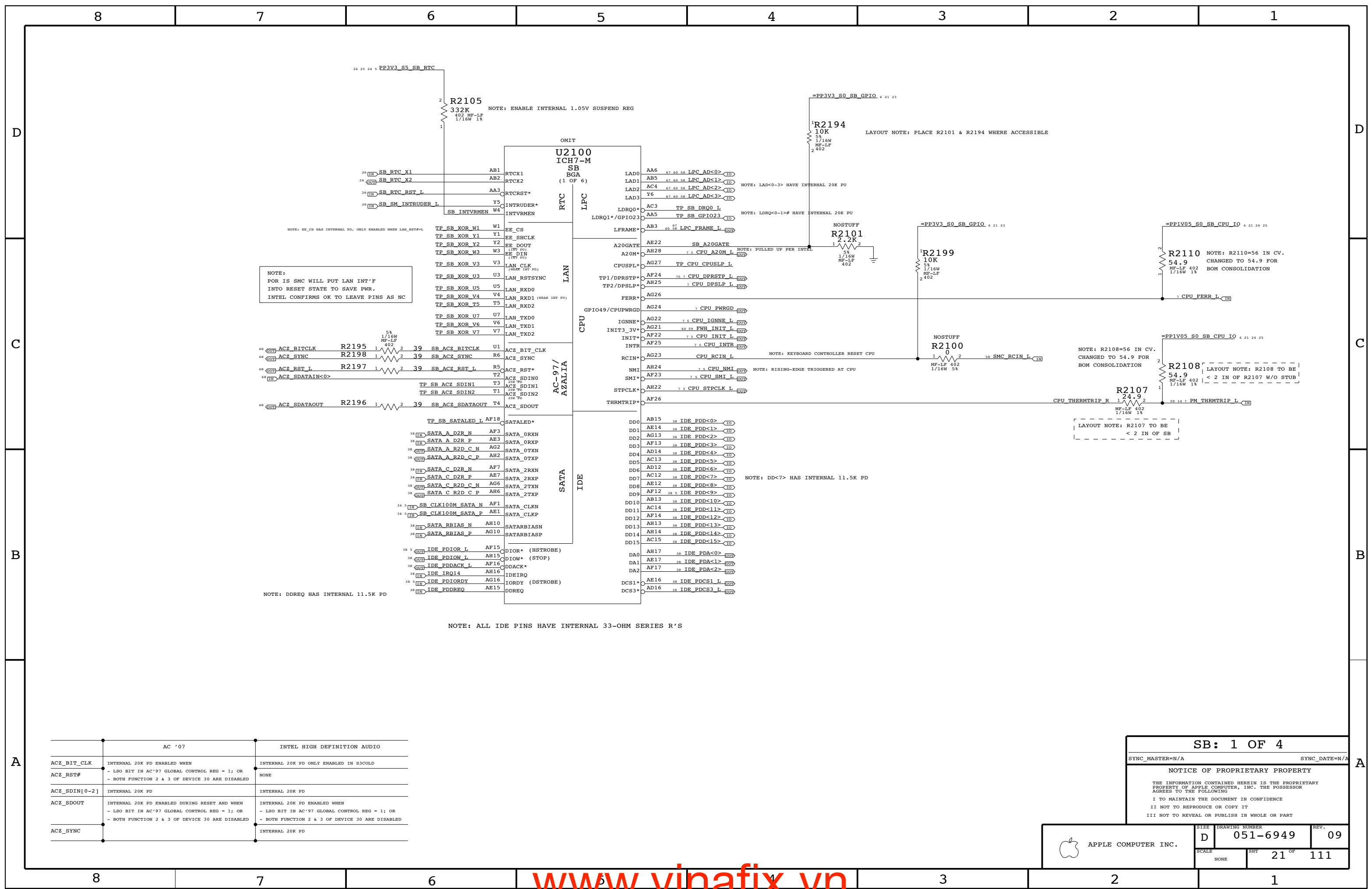
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SCALE	SHT	OF	
NONE	20	111	



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

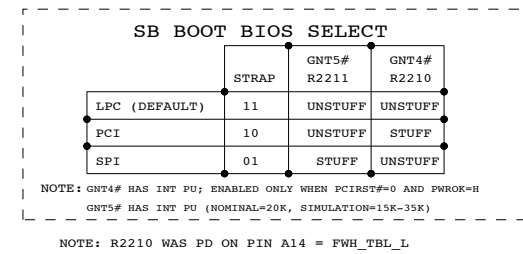
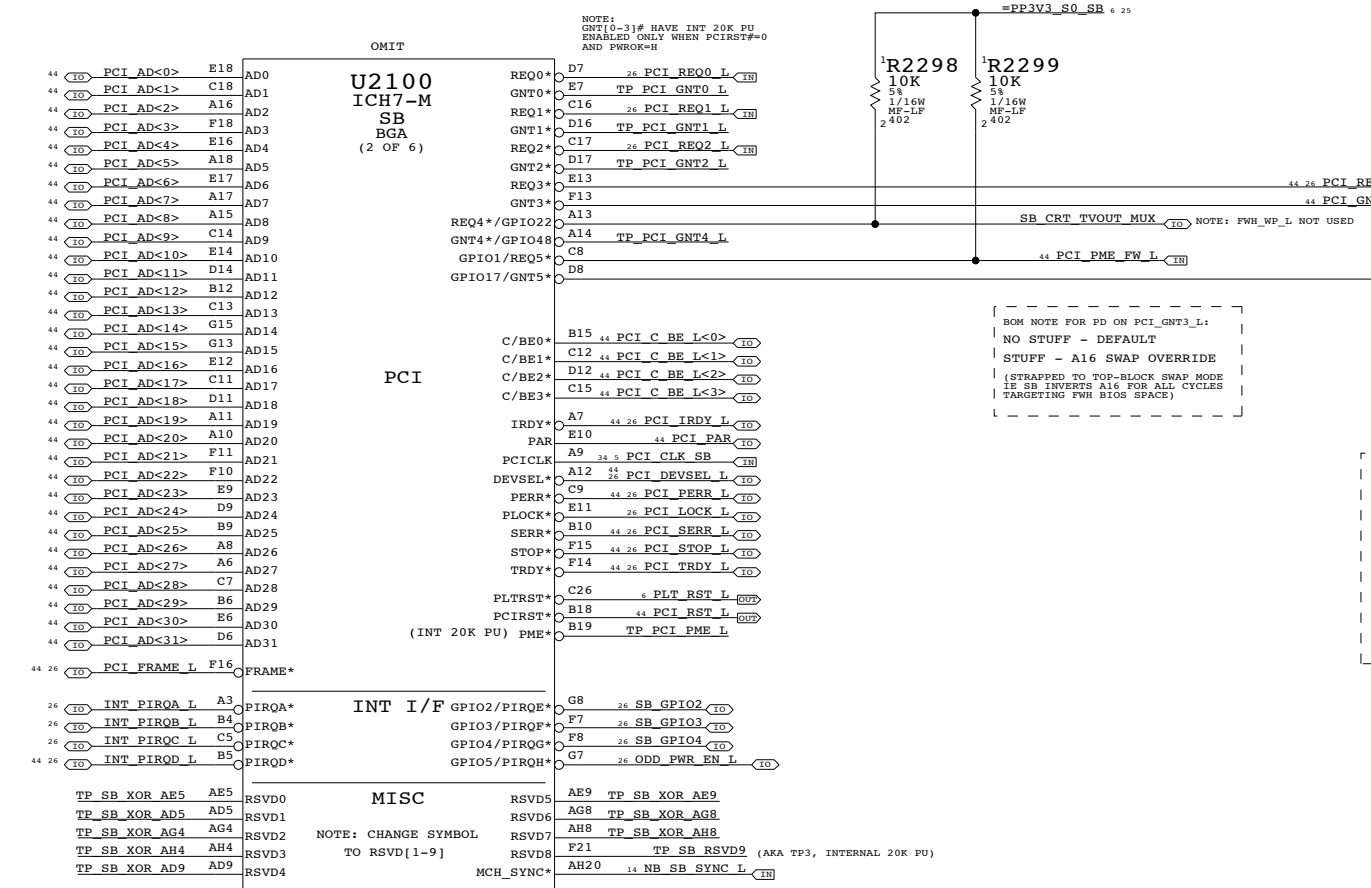
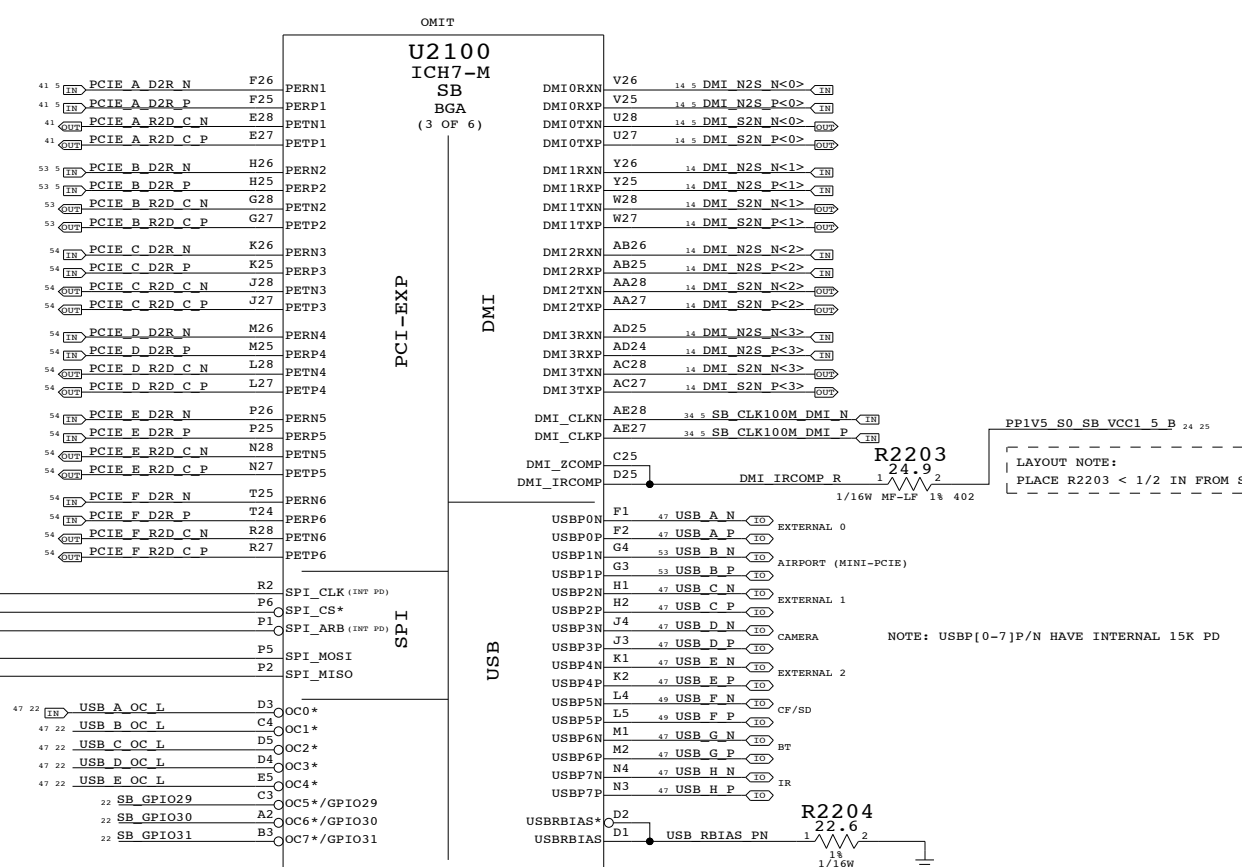
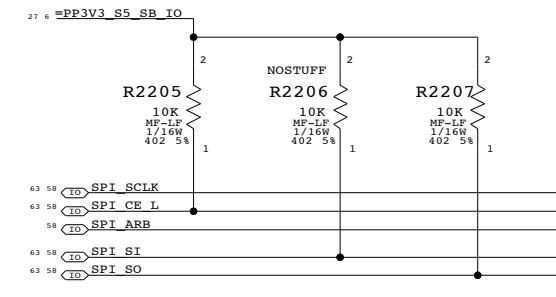
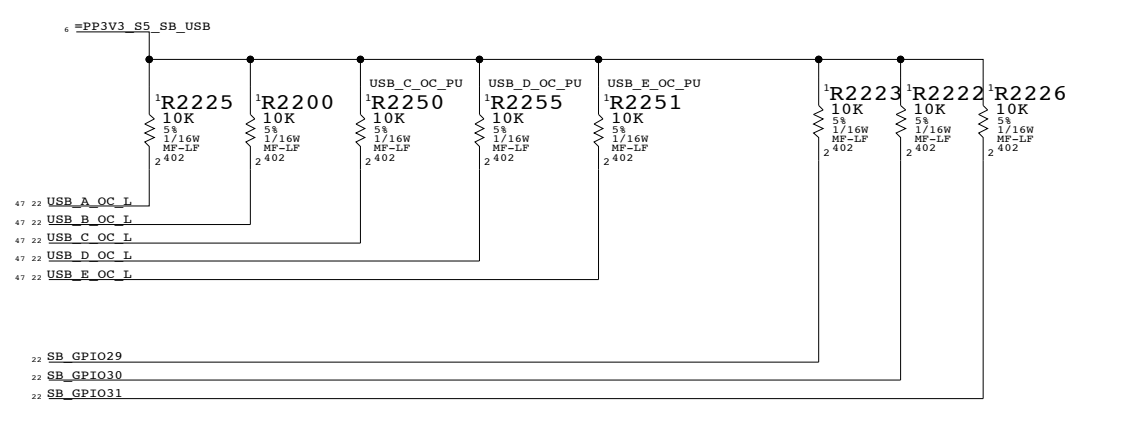
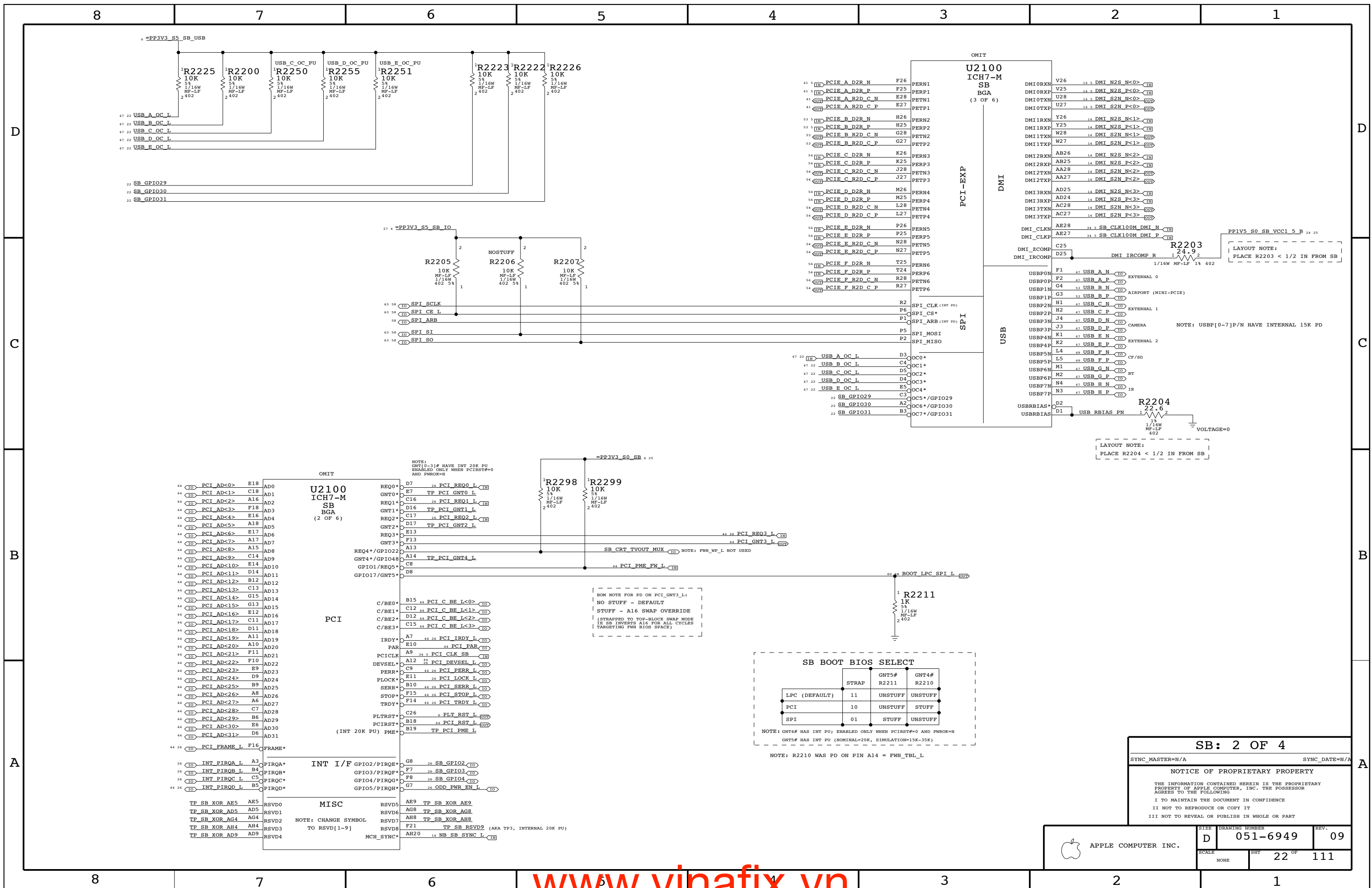
NOTE: DDREQ HAS INTERNAL 11.5K PD

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
ACZ_RST#	NONE
ACZ_SDIN[0-2]	INTERNAL 20K PD
ACZ_SDOUT	INTERNAL 20K PD ENABLED DURING RESET AND WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR - 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	051-6949	09
SCALE	SHT	21 OF	111
NONE			



SB: 2 OF 4

SYNC_MASTER=N/A SYNC_DATE=N/A

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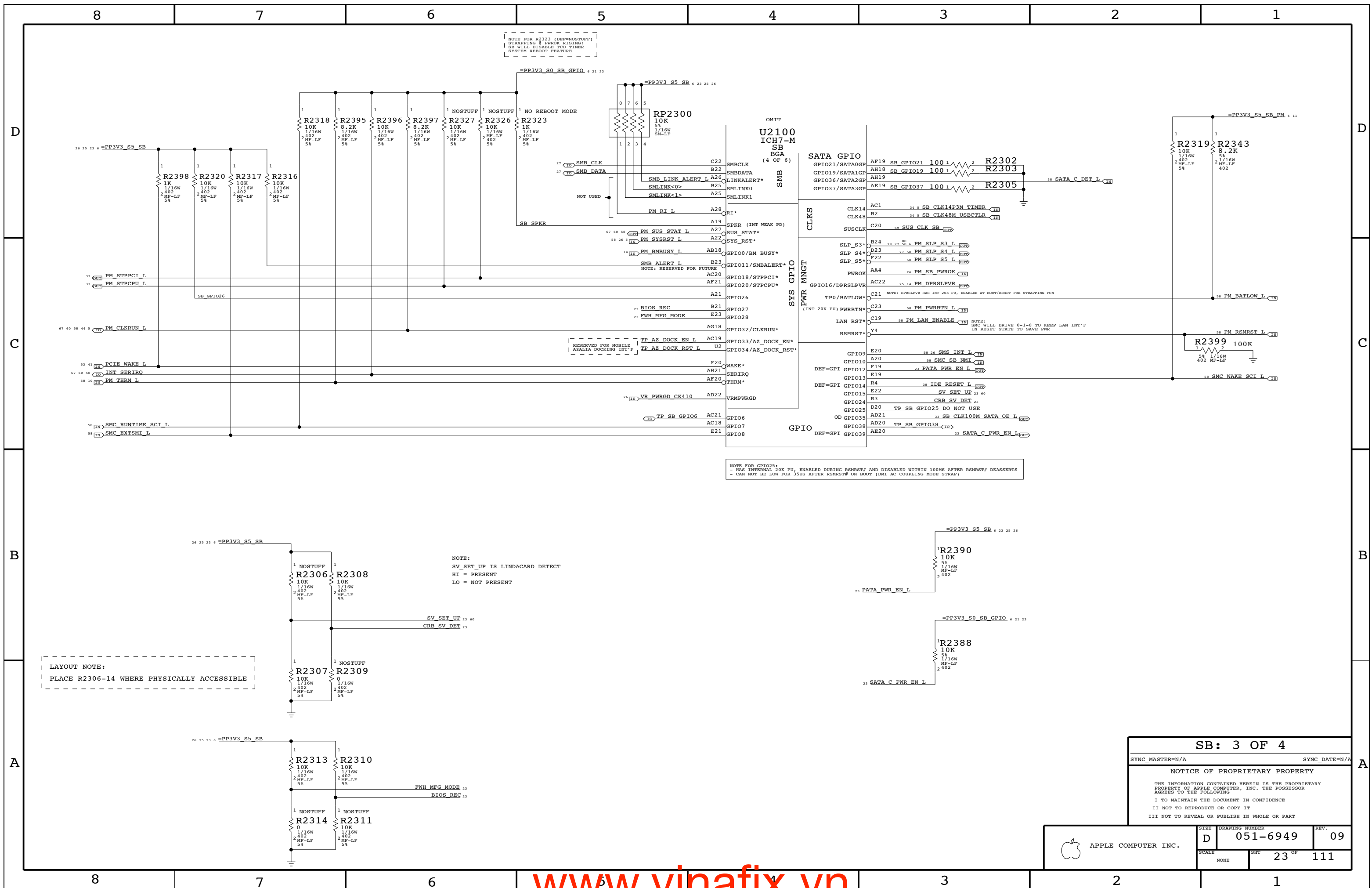
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APPLE COMPUTER INC.

DRAWING NUMBER: 051-6949

REV: 09

SCALE: NONE SHEET: 22 OF 111



NOTE FOR R2323 (DEF=NOSTUFF)
STRAPPING 8 PWROK RISING:
SB WILL DISABLE TOO TIMER
SYSTEM REBOOT FEATURE

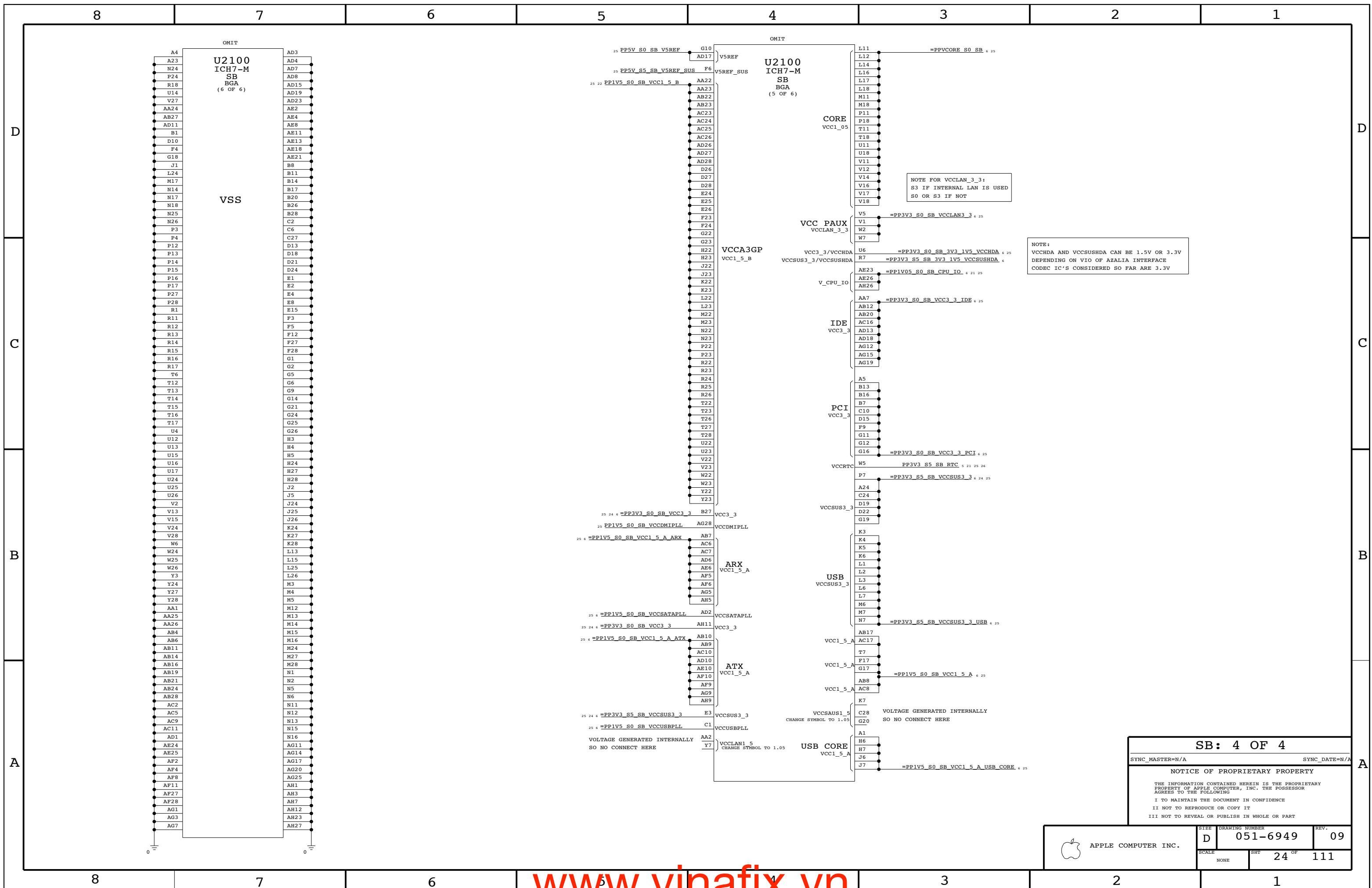
NOTE FOR GPIO25:
- HAS INTERNAL 20K PU, ENABLED DURING RSMRST# AND DISABLED WITHIN 100MS AFTER RSMRST# DEASSERTS
- CAN NOT BE LOW FOR 35US AFTER RSMRST# ON BOOT (DMI AC COUPLING MODE STRAP)

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

LAYOUT NOTE:
PLACE R2306-14 WHERE PHYSICALLY ACCESSIBLE

SB: 3 OF 4
SYNC_MASTER=N/A SYNC_DATE=N/A
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	D	051-6949	09
SCALE	NONE	SHT	23 OF 111

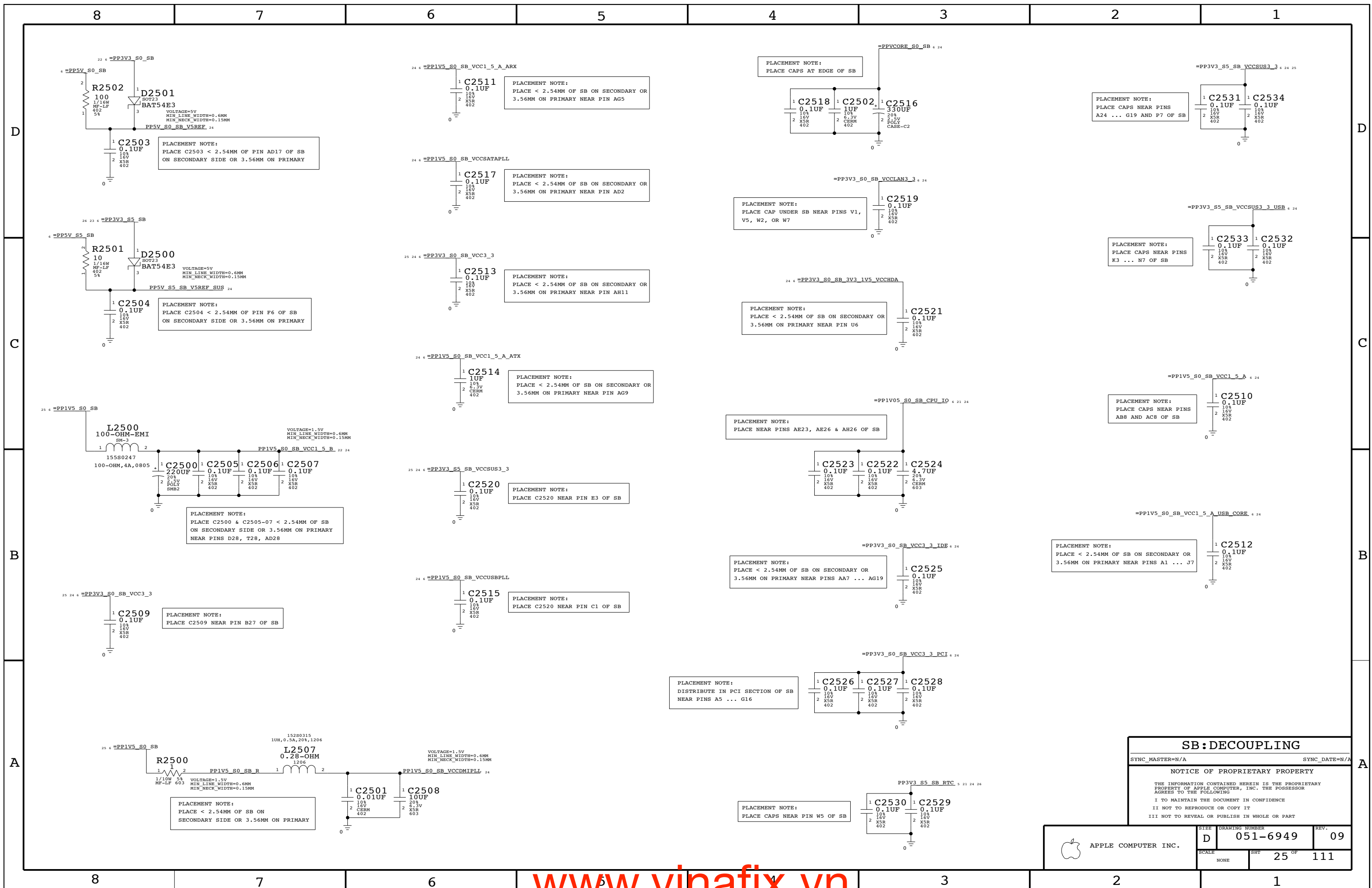


NOTE FOR VCCLAN_3_3:
S3 IF INTERNAL LAN IS USED
S0 OR S3 IF NOT

NOTE:
VCCCHDA AND VCCSUS3_3 CAN BE 1.5V OR 3.3V
DEPENDING ON VIO OF AZALIA INTERFACE
CODEC IC'S CONSIDERED SO FAR ARE 3.3V

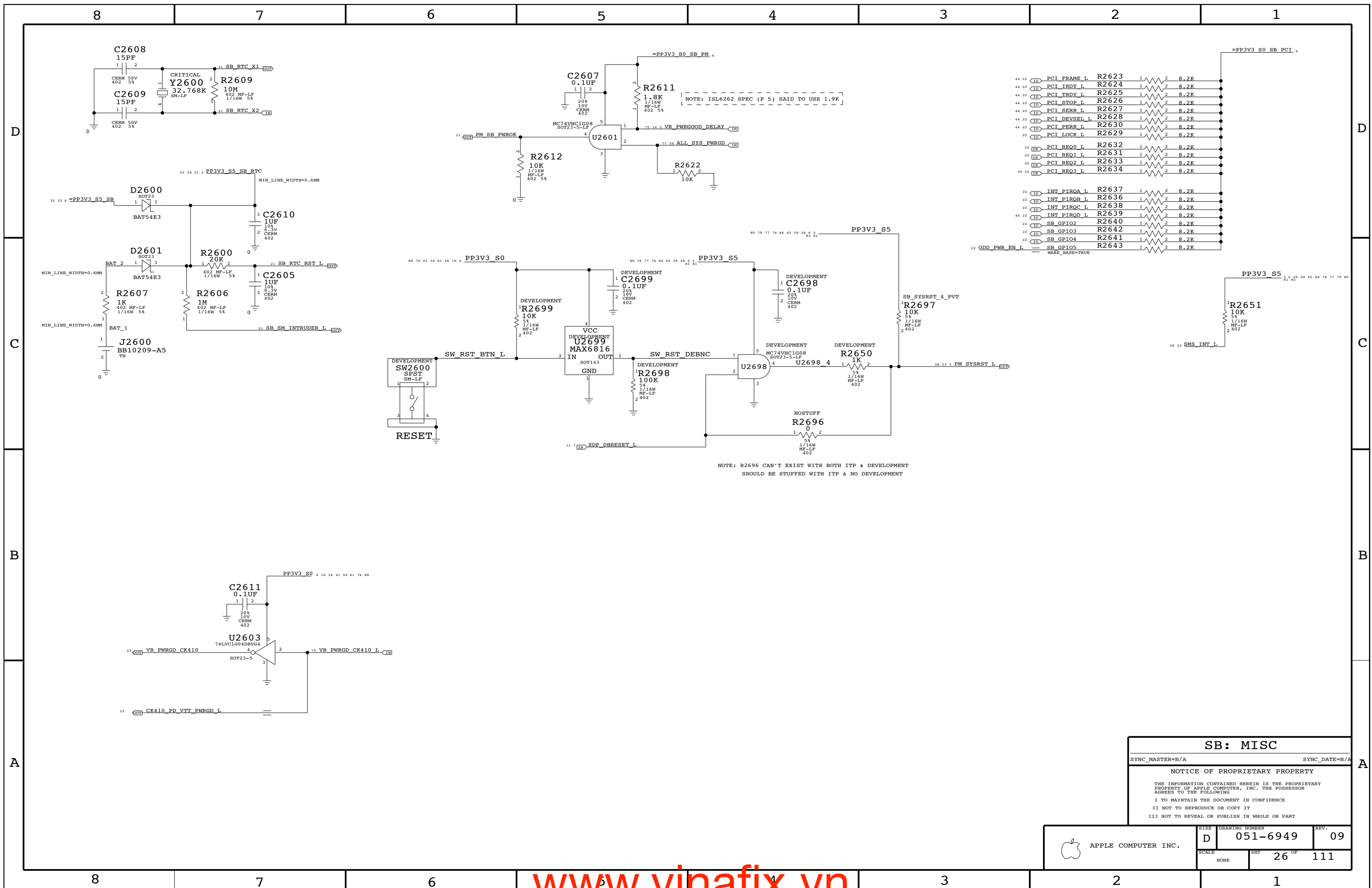
SB: 4 OF 4
SYNC_MASTER=N/A SYNC_DATE=N/A
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	D	051-6949	09
SCALE	SHT	24 OF	111
NONE			



SB: DECOUPLING
 SYNC_MASTER=N/A SYNC_DATE=N/A
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	D	051-6949	09
SCALE	SHT	25 OF	111
NONE			



SB: MISC

SYNC_MASTER=N/A SYNC_DATE=N/A

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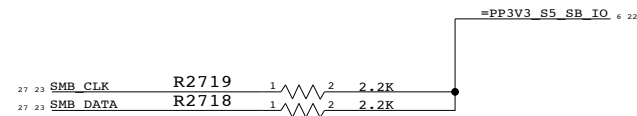
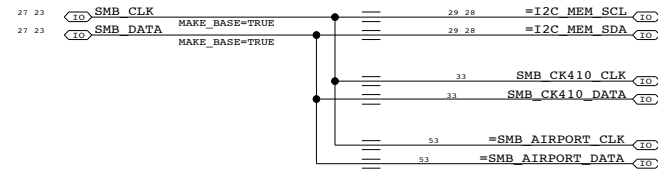
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	SCALE NONE	SHEET 26 OF 111	

SB I2C BUSSES



SB: SMB HUB

SYNC_MASTER=N/A SYNC_DATE=N/A

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	SCALE NONE	SHEET 27 OF	TOTAL SHEETS 111

Page Notes

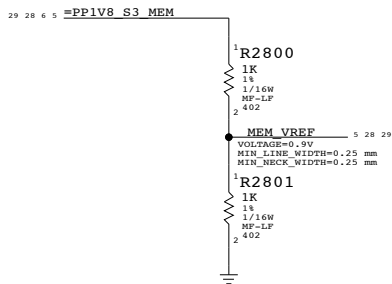
Power aliases required by this page:
 - =PP1V8_S3_MEM
 - =PPSPD_S0_MEM (2.5V - 3.3V)

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

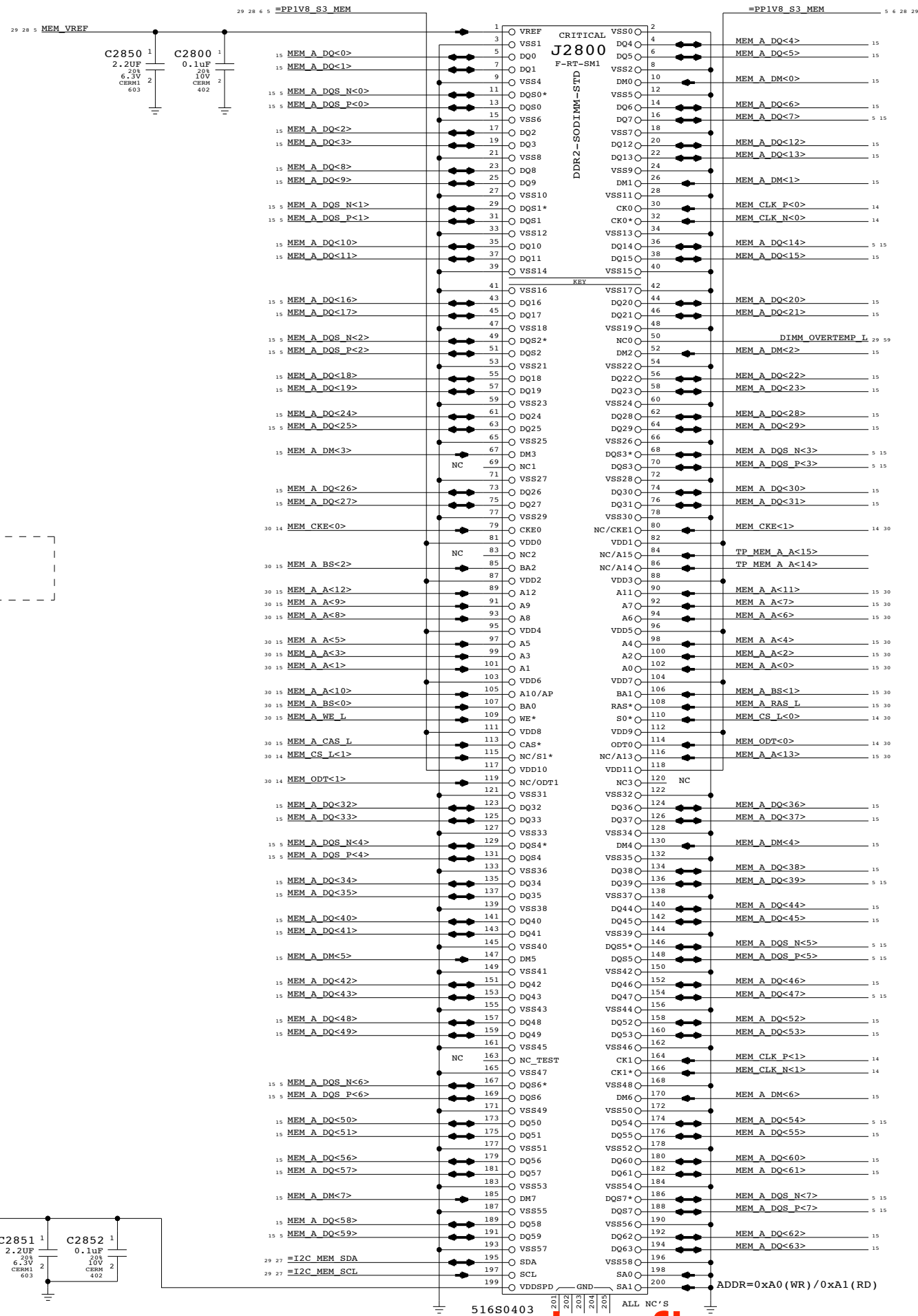
BOM options provided by this page:
 (NONE)

DDR2 VRef

One 0.1uF per connector

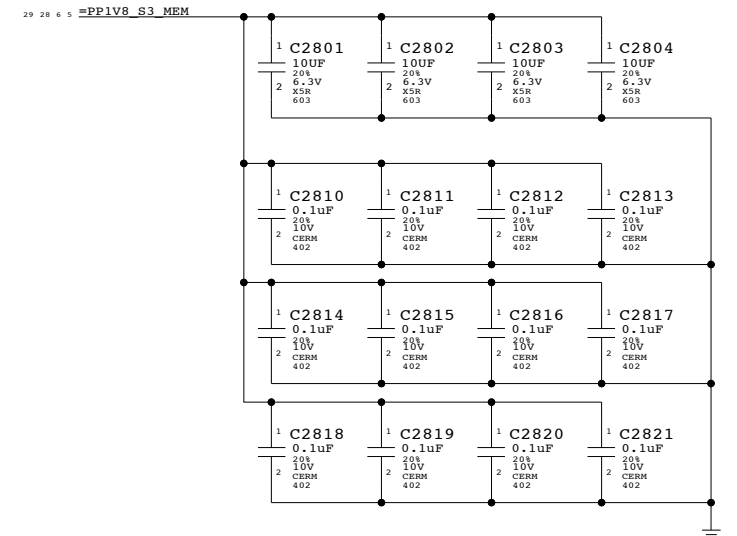


Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors.
 (See Capell Valley pg 47)



DDR2 Bypass Caps

(For return current)



DDR2 SO-DIMM Connector A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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	D	051-6949	09
SCALE	SHT	OF	
NONE	28	111	

Page Notes

Power aliases required by this page:

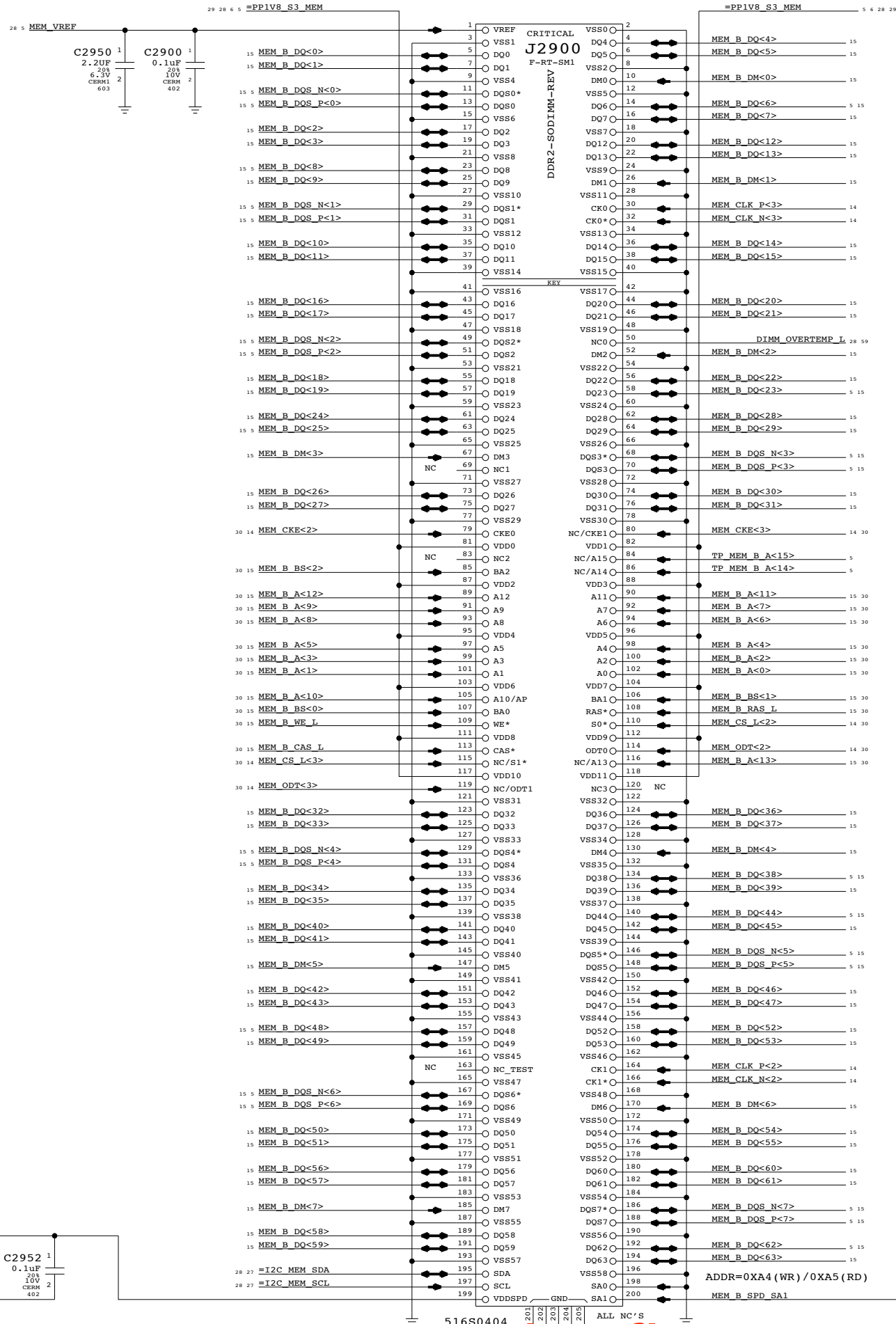
- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:

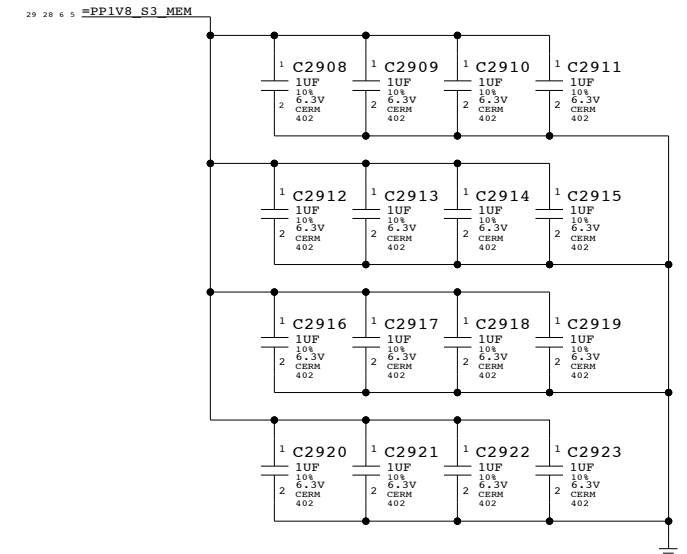
- =I2C_MEM_SCL
- =I2C_MEM_SDA

BOM options provided by this page:
(NONE)

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



DDR2 Bypass Caps (For return current)



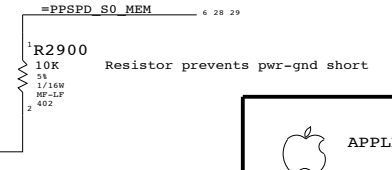
DDR2 SO-DIMM Connector B

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE COMPUTER INC.	SCALE	DRAWING NUMBER	REV.
	NONE	D 051-6949	09
	SHT	OF	
	29	111	

8

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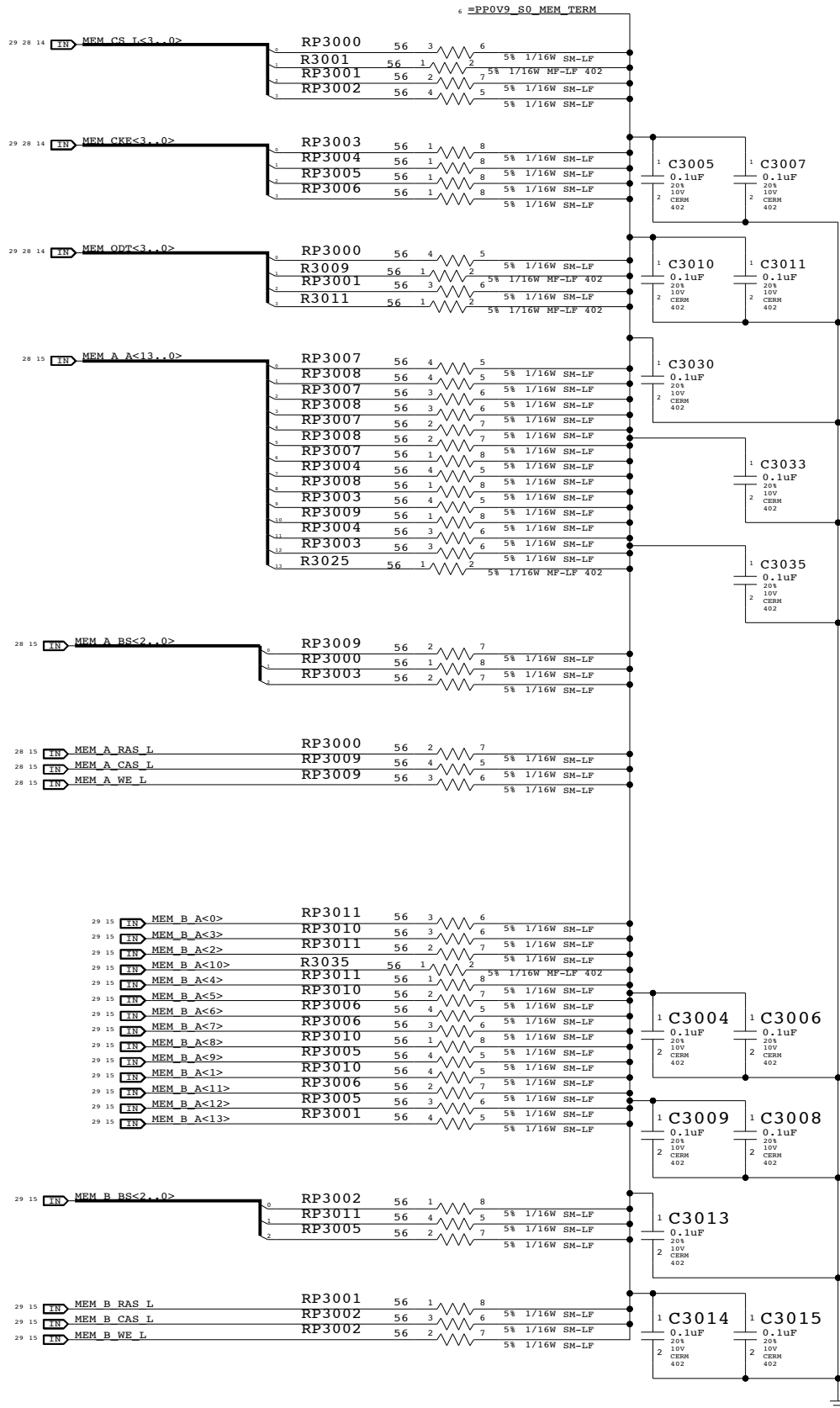
4

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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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT		OF
NONE	30		111

8

7

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4

3

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1

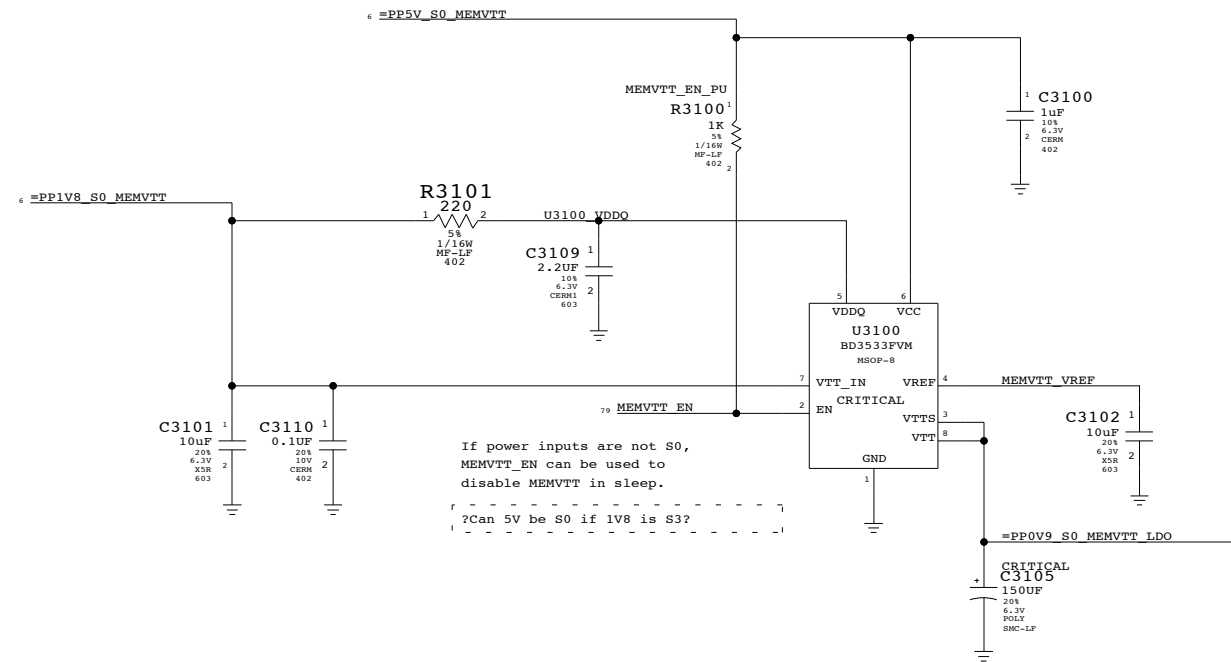
Page Notes

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

Signal aliases required by this page:
 (NONE)

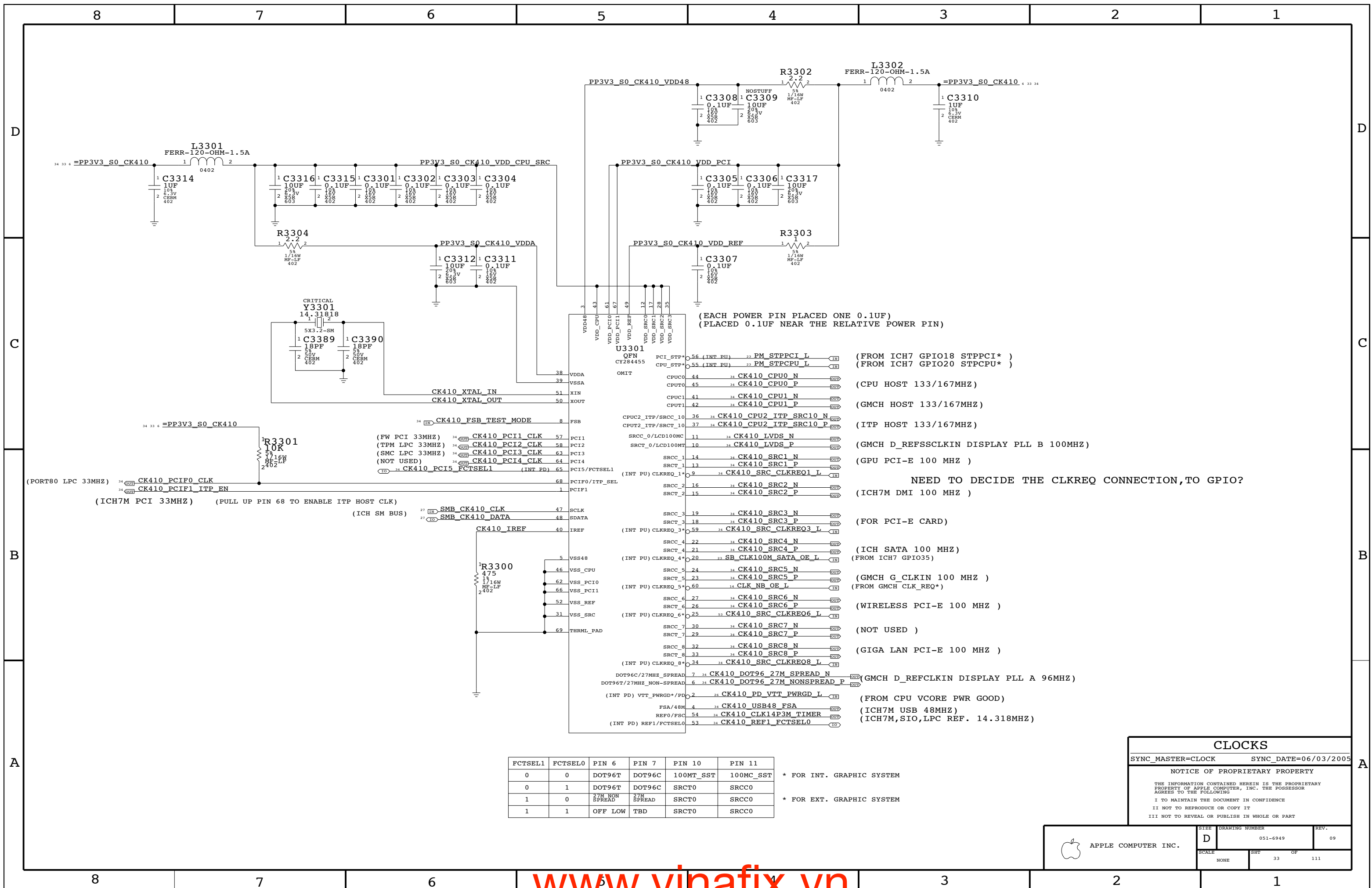
BOM options provided by this page:
 (NONE)

DDR2 Vtt Regulator



Memory Vtt Supply
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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	D	051-6949	09
SCALE	SHT	OF	
NONE	31	111	



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

(FROM ICH7 GPIO18 STPPCI*)
(FROM ICH7 GPIO20 STPCPU*)

(CPU HOST 133/167MHZ)

(GMCH HOST 133/167MHZ)

(ITP HOST 133/167MHZ)

(GMCH D_REFSSCLKIN DISPLAY PLL B 100MHZ)

(GPU PCI-E 100 MHZ)

NEED TO DECIDE THE CLKREQ CONNECTION, TO GPIO?

(ICH7M DMI 100 MHZ)

(FOR PCI-E CARD)

(ICH SATA 100 MHZ)

(FROM ICH7 GPIO35)

(GMCH G_CLKIN 100 MHZ)
(FROM GMCH CLK_REQ*)

(WIRELESS PCI-E 100 MHZ)

(NOT USED)

(GIGA LAN PCI-E 100 MHZ)

(GMCH D_REFCLKIN DISPLAY PLL A 96MHZ)

(FROM CPU VCORE PWR GOOD)

(ICH7M USB 48MHZ)

(ICH7M,SIO,LPC REF. 14.318MHZ)

FCTSEL1	FCTSEL0	PIN 6	PIN 7	PIN 10	PIN 11
0	0	DOT96T	DOT96C	100MT_SST	100MC_SST
0	1	DOT96T	DOT96C	SRCT0	SRCC0
1	0	27M_NON_SPREAD	27M_SPREAD	SRCT0	SRCC0
1	1	OFF LOW	TBD	SRCT0	SRCC0

* FOR INT. GRAPHIC SYSTEM

* FOR EXT. GRAPHIC SYSTEM

CLOCKS

SYNC_MASTER=CLOCK SYNC_DATE=06/03/2005

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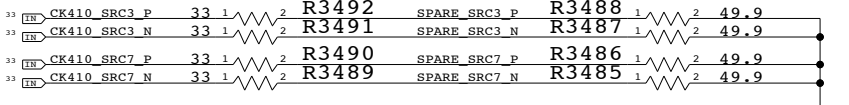
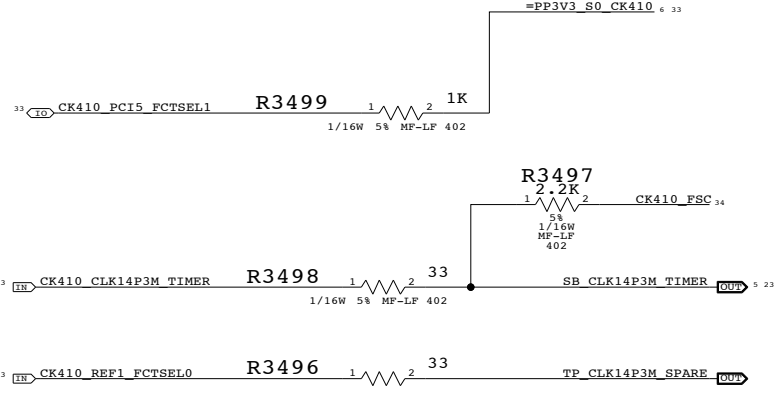
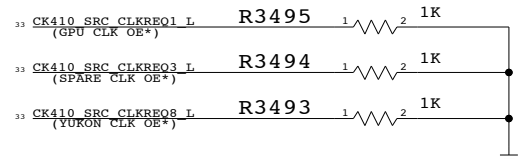
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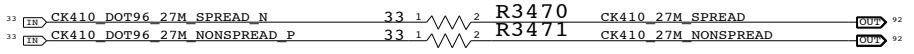
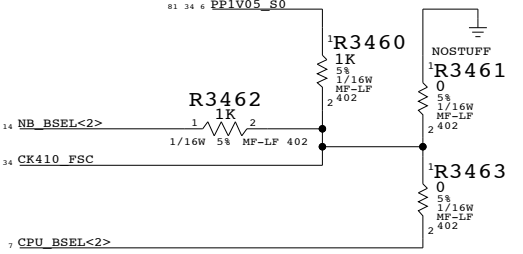
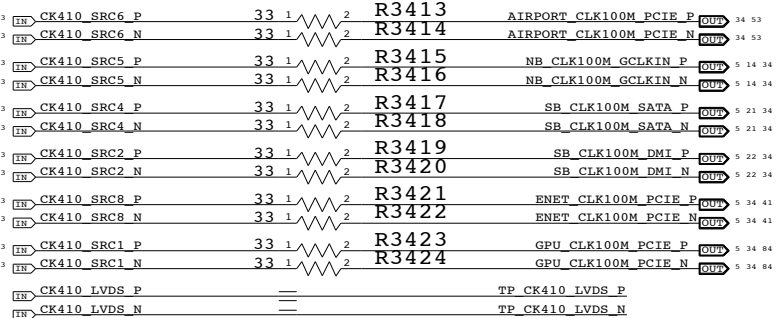
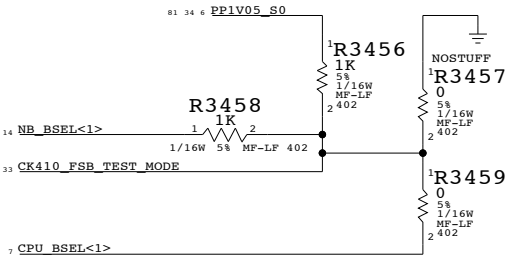
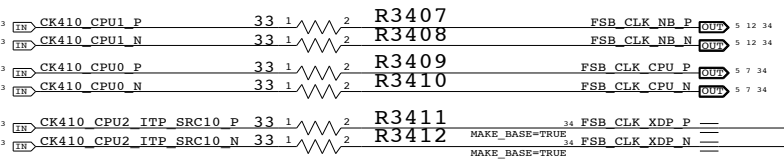
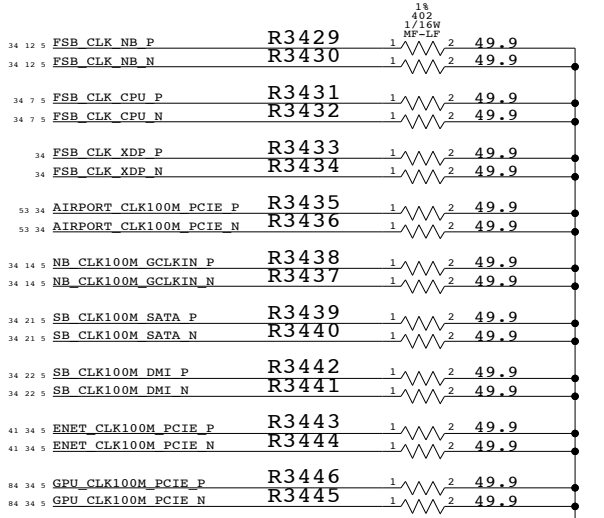
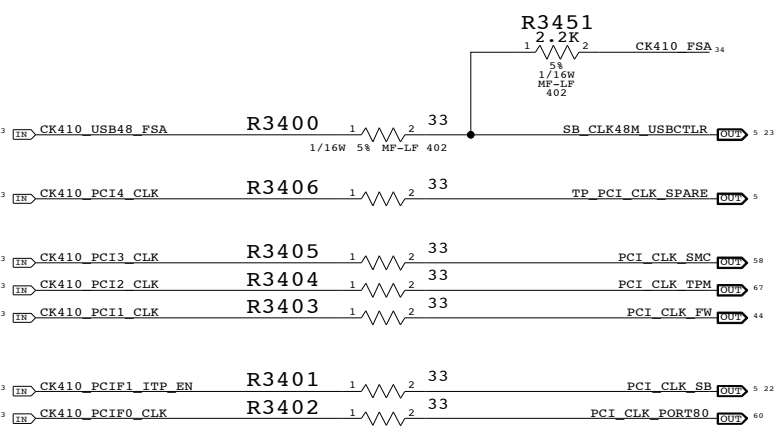
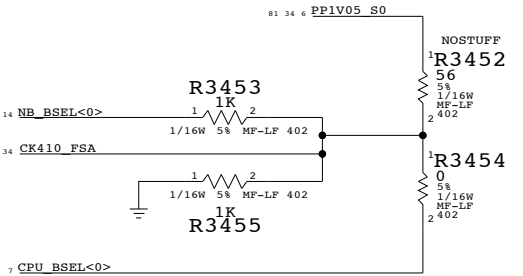
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	OF	REV.
NONE	33	111	

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



FSB FREQUENCY SELECT:

	STUFF	NO STUFF
CPU DRIVEN	R3454 R3455 R3461	R3452 R3453 R3461
533MHZ (133MHZ CPU CLK)	R3452 R3453 R3461	R3454 R3455 R3461
667MHZ (166MHZ CPU CLK)	R3452 R3453 R3461	R3454 R3455 R3461



CLOCKS: TERMINATIONS

SYNC_MASTER=N/A SYNC_DATE=N/A

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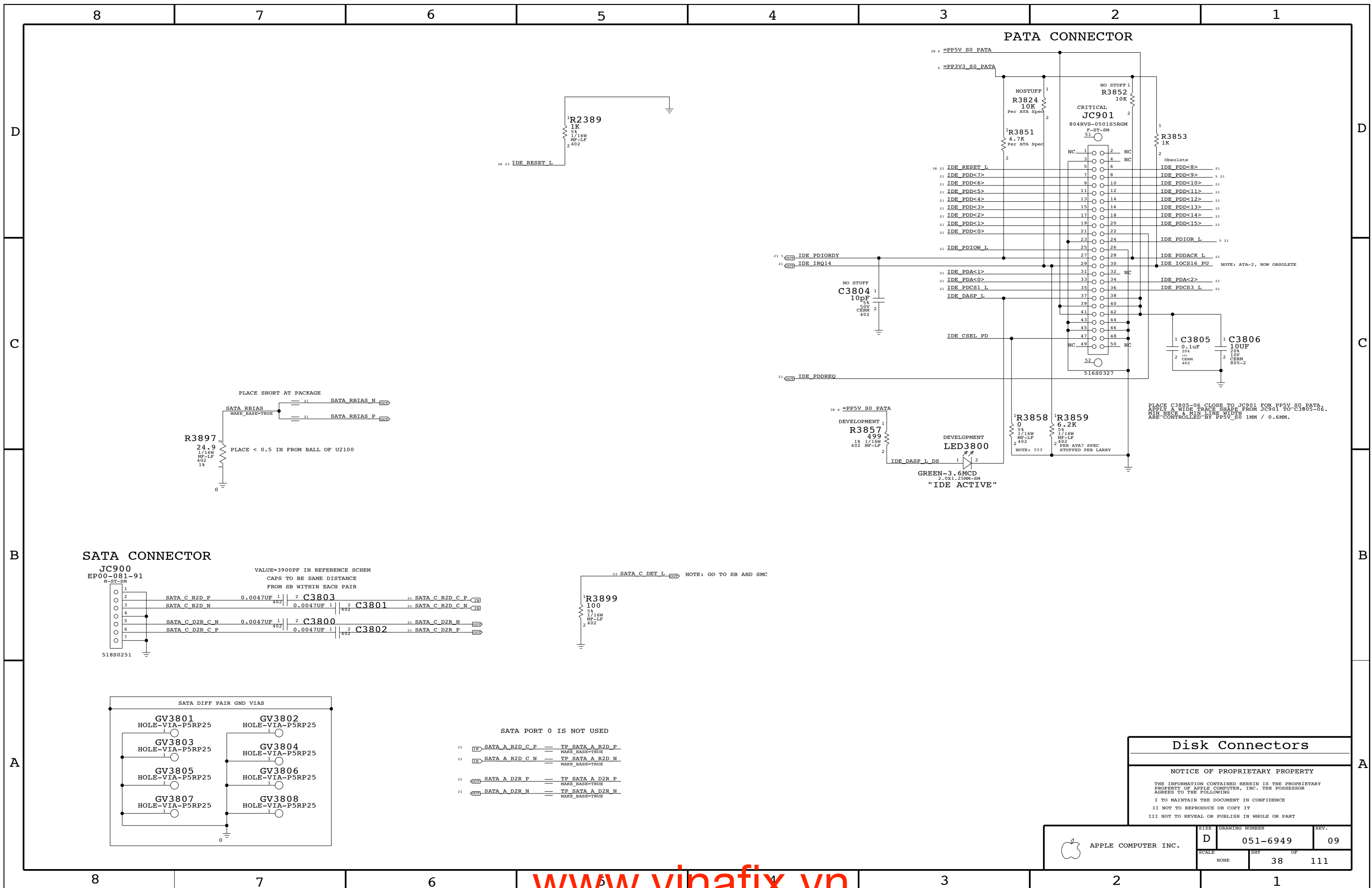
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SCALE	NONE	SHT	34 OF 111



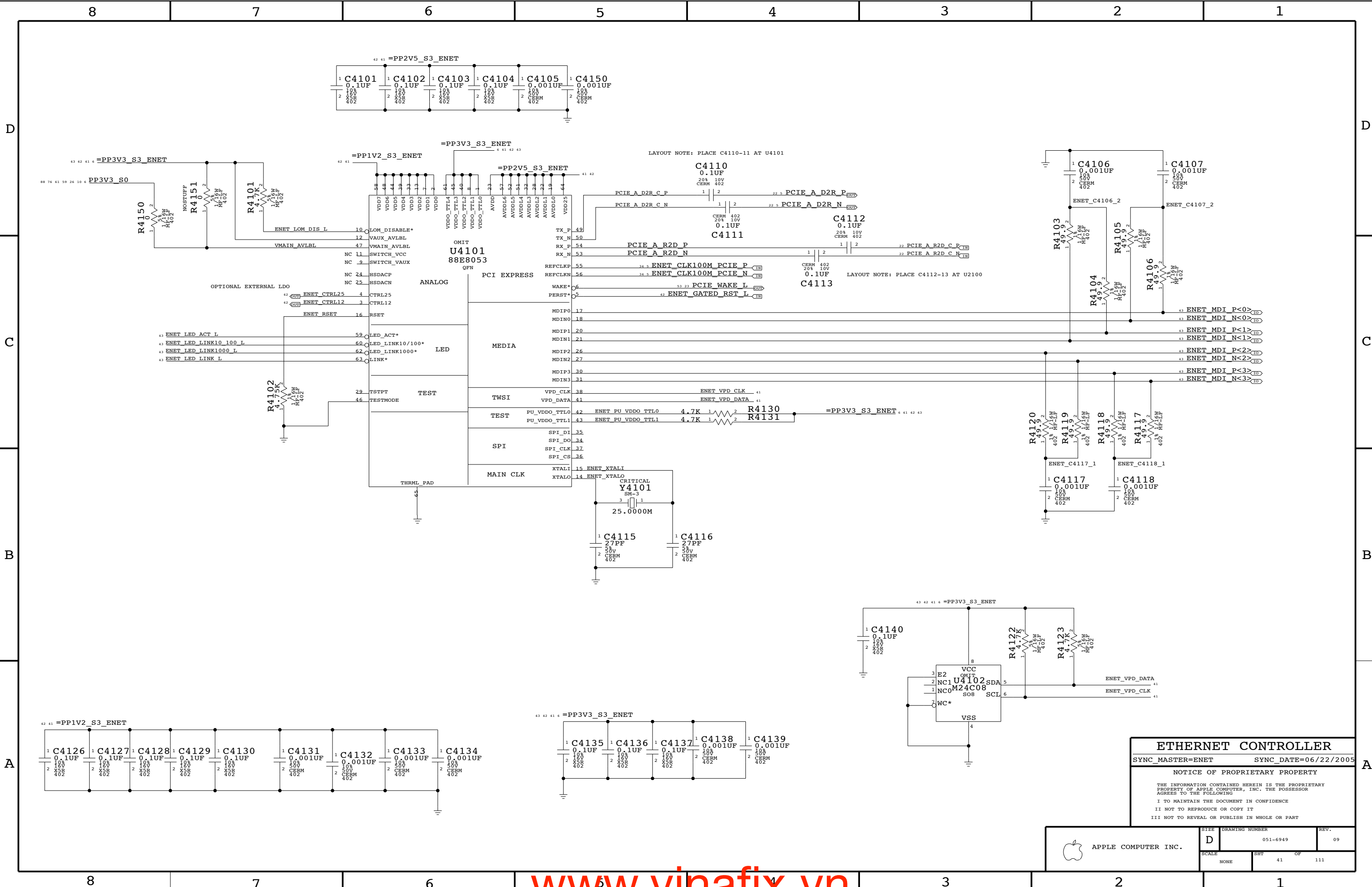
Disk Connectors

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	SCALE NONE	SHEET 38	OF 111



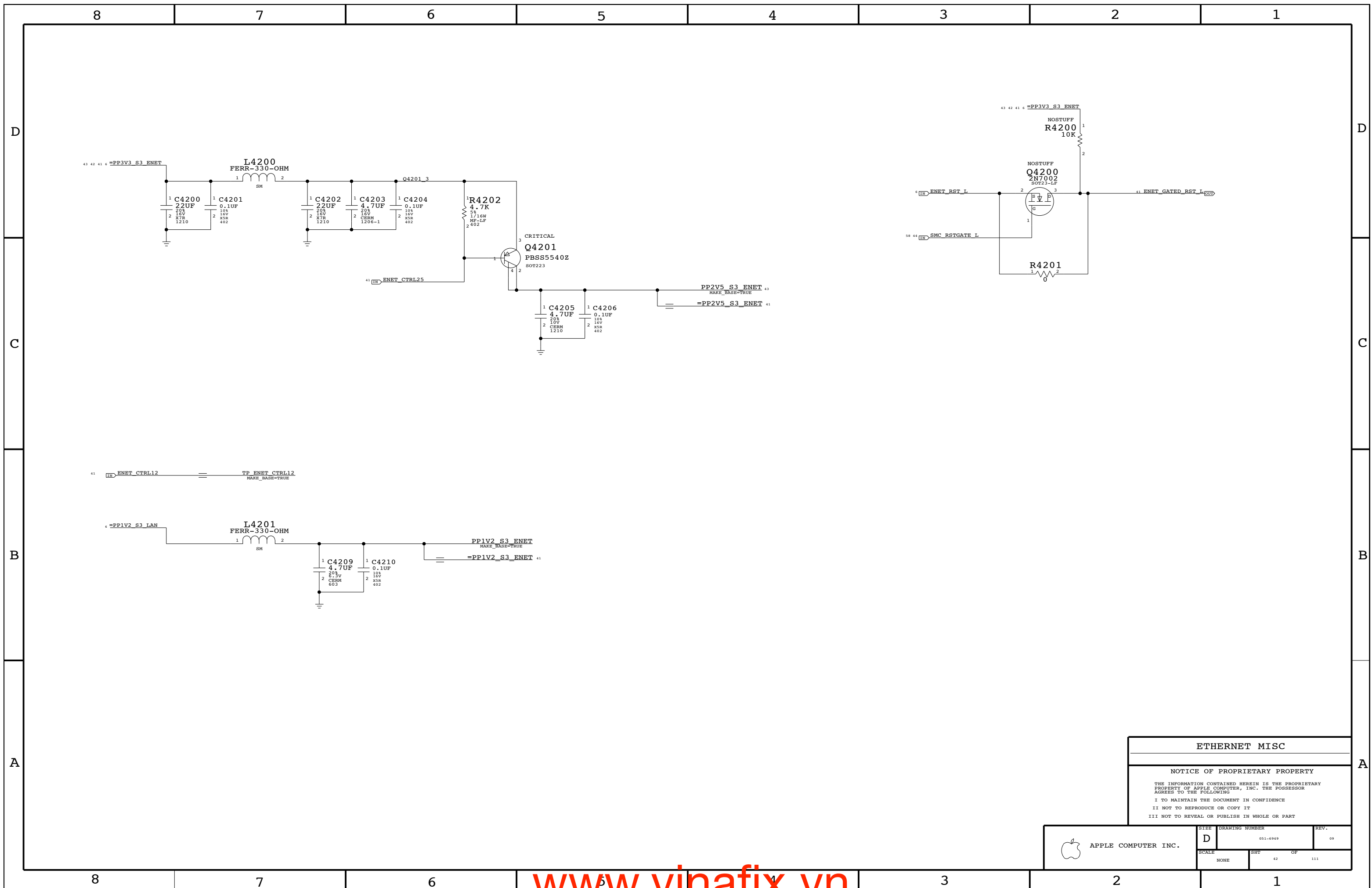
ETHERNET CONTROLLER
 SYNC_MASTER=ENET SYNC_DATE=06/22/2005

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SCALE	NONE	SHT	41 OF 111



ETHERNET MISC

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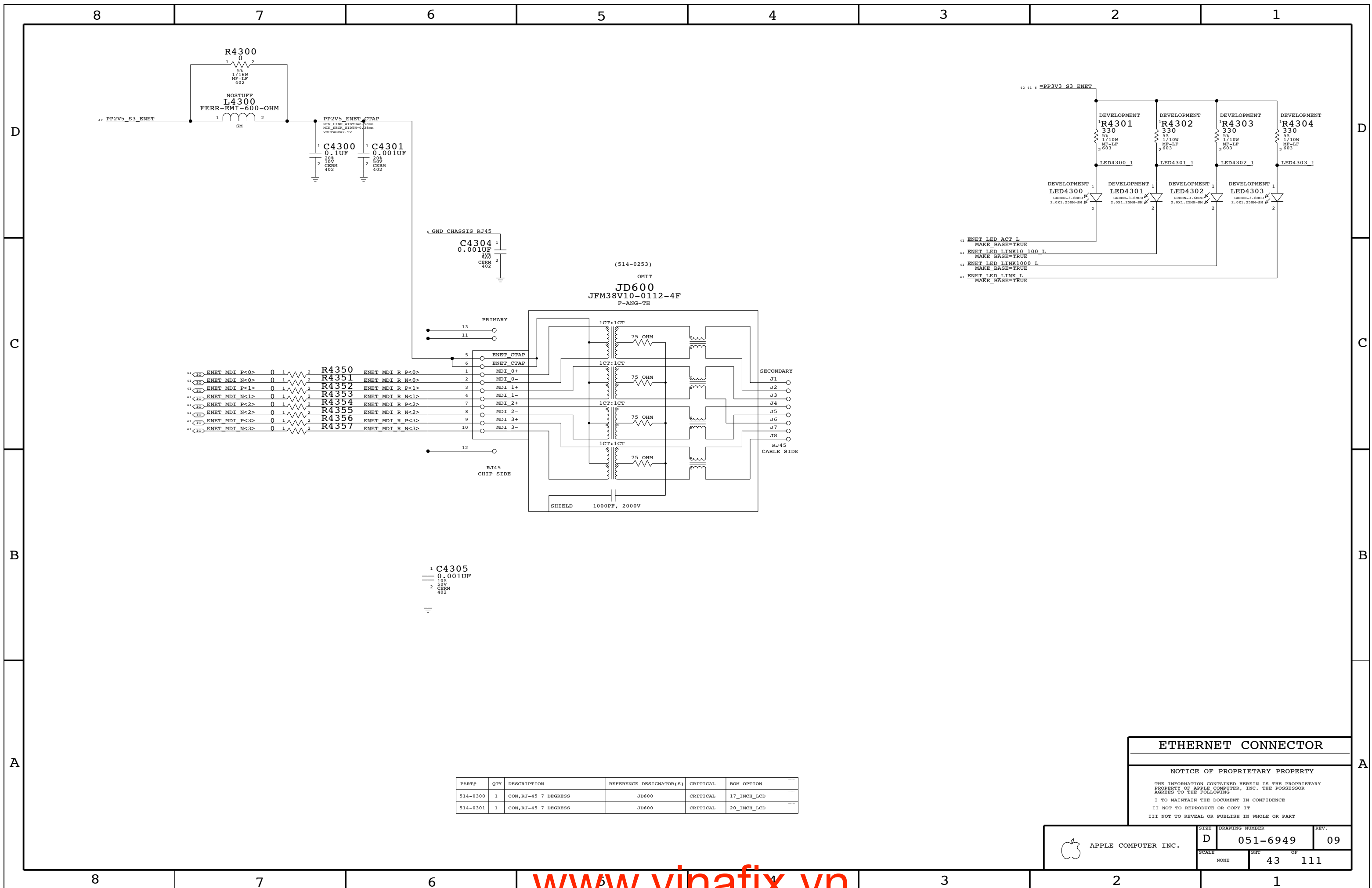
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APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 42	OF 111



ENET MDI P<0>	0	1	2	R4350	ENET MDI R P<0>
ENET MDI N<0>	0	1	2	R4351	ENET MDI R N<0>
ENET MDI P<1>	0	1	2	R4352	ENET MDI R P<1>
ENET MDI N<1>	0	1	2	R4353	ENET MDI R N<1>
ENET MDI P<2>	0	1	2	R4354	ENET MDI R P<2>
ENET MDI N<2>	0	1	2	R4355	ENET MDI R N<2>
ENET MDI P<3>	0	1	2	R4356	ENET MDI R P<3>
ENET MDI N<3>	0	1	2	R4357	ENET MDI R N<3>

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0300	1	CON,RJ-45 7 DEGRESS	JD600	CRITICAL	17_INCH_LCD
514-0301	1	CON,RJ-45 7 DEGRESS	JD600	CRITICAL	20_INCH_LCD

ETHERNET CONNECTOR

NOTICE OF PROPRIETARY PROPERTY

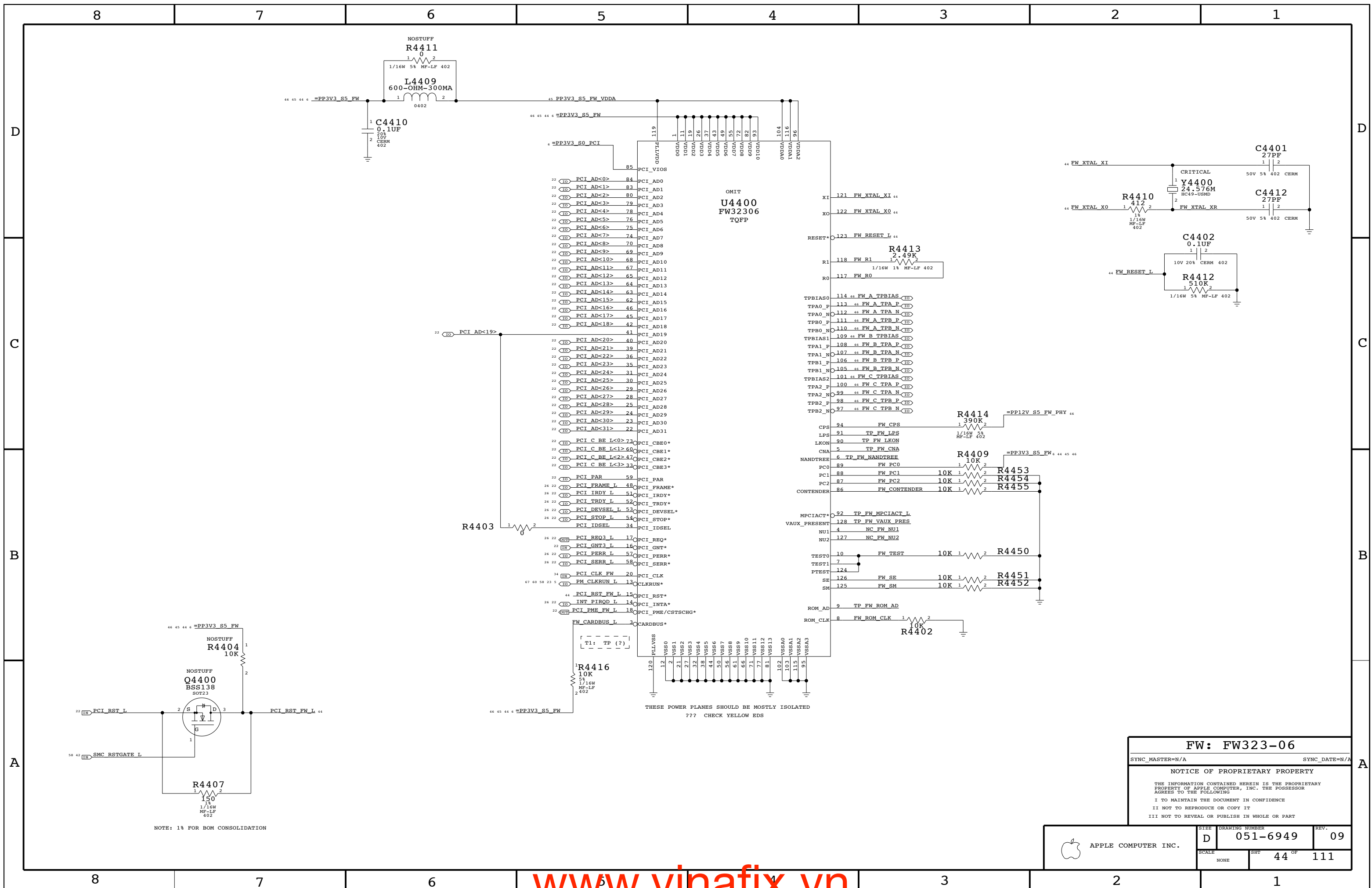
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	D	051-6949	09
SCALE	NONE	SHT	OF
		43	111



FW: FW323-06

SYNC_MASTER=N/A SYNC_DATE=N/A

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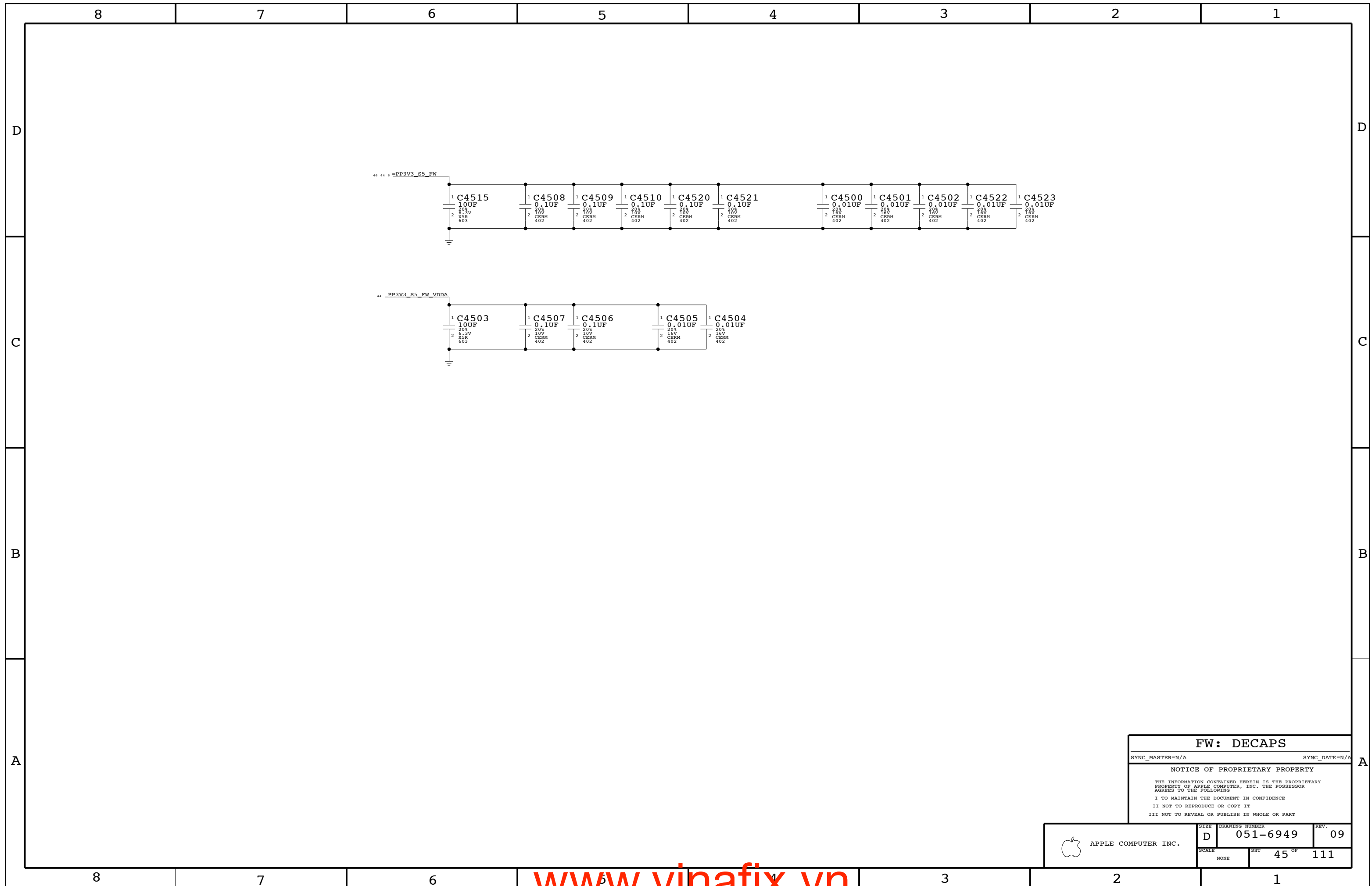
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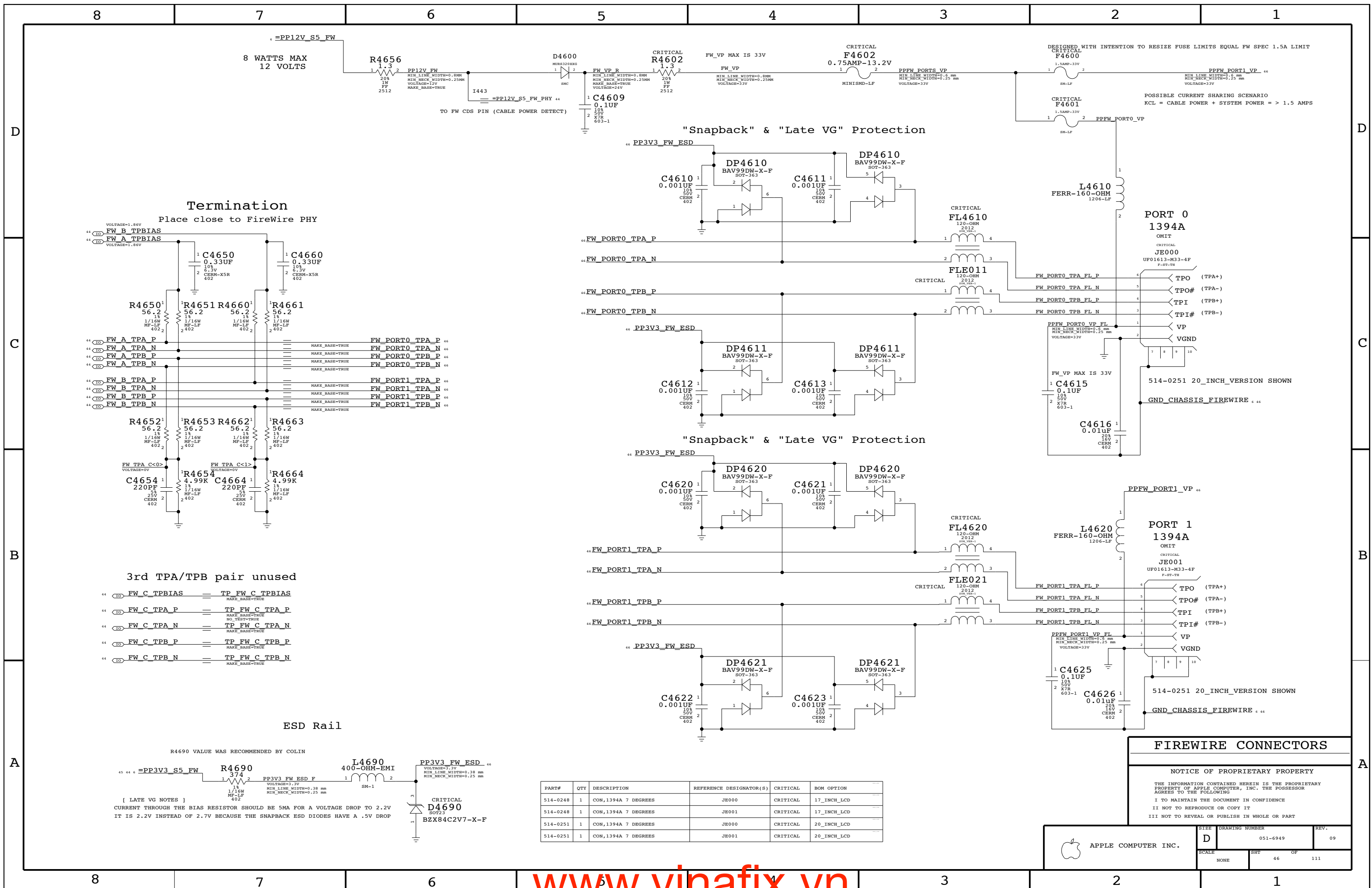
APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 44	OF 111

NOTE: 1% FOR BOM CONSOLIDATION



FW: DECAPS
 SYNC_MASTER=N/A SYNC_DATE=N/A
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	SCALE	SHT	OF
	NONE	45	111



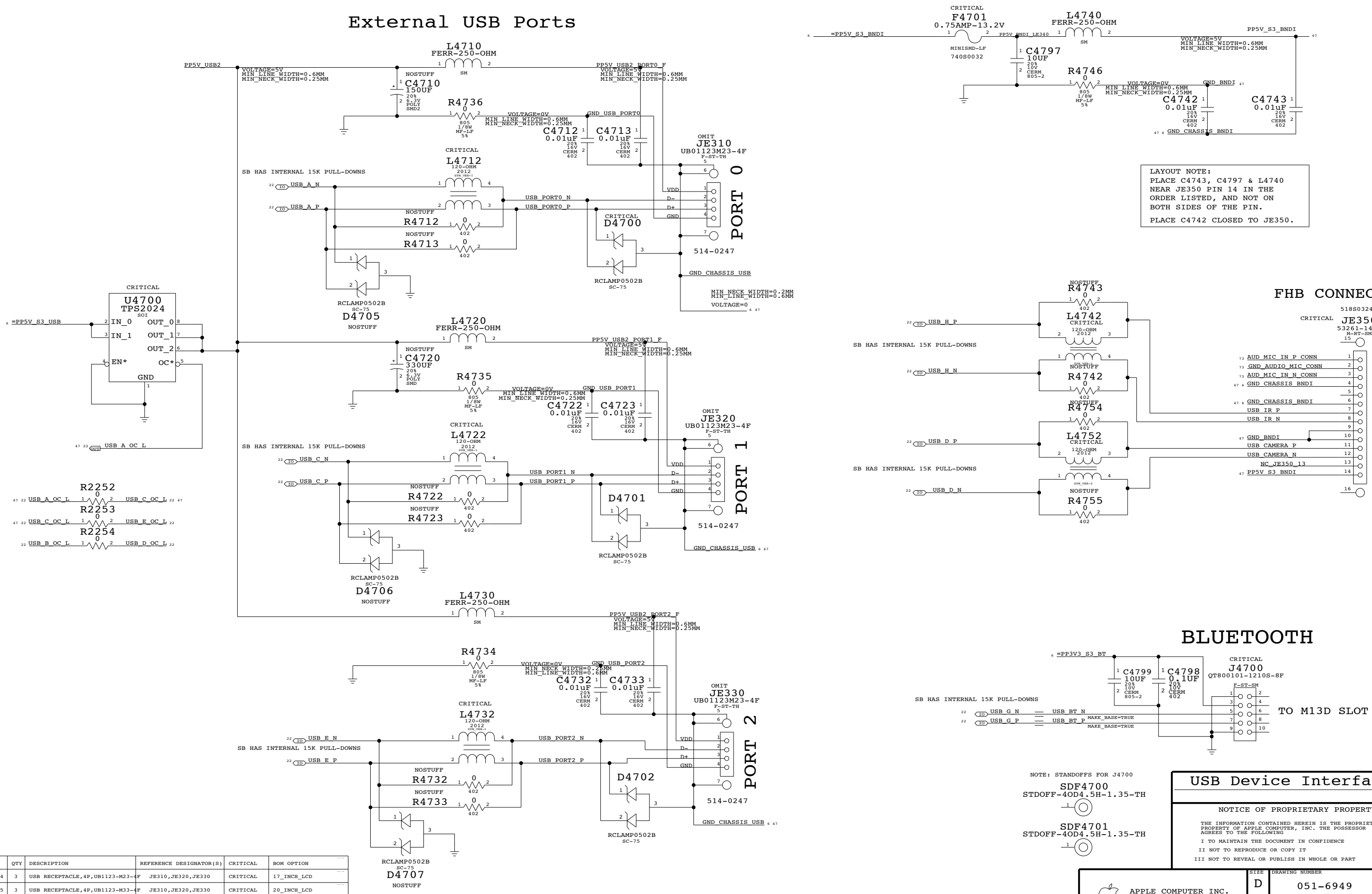
FIREWIRE CONNECTORS

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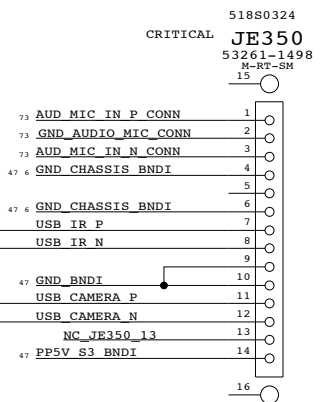
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	OF	111
NONE	46		

External USB Ports

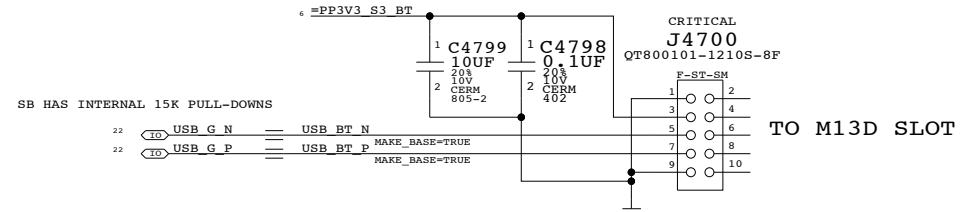


LAYOUT NOTE:
PLACE C4743, C4797 & L4740
NEAR JE350 PIN 14 IN THE
ORDER LISTED, AND NOT ON
BOTH SIDES OF THE PIN.
PLACE C4742 CLOSED TO JE350.

FHB CONNECTOR



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
514-0294	3	USB RECEPTACLE,4P,UB1123-M23-4F	JE310,JE320,JE330	CRITICAL	17_INCH_LCD
514-0295	3	USB RECEPTACLE,4P,UB1123-M33-4F	JE310,JE320,JE330	CRITICAL	20_INCH_LCD

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	OF	
NONE	47	111	

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 APPLE COMPUTER INC.	<small>SIZE</small> D	<small>DRAWING NUMBER</small> 051-6949	<small>REV.</small> 09
	<small>SCALE</small> NONE	<small>SHT</small> 48 OF	<small>111</small>

8

7

6

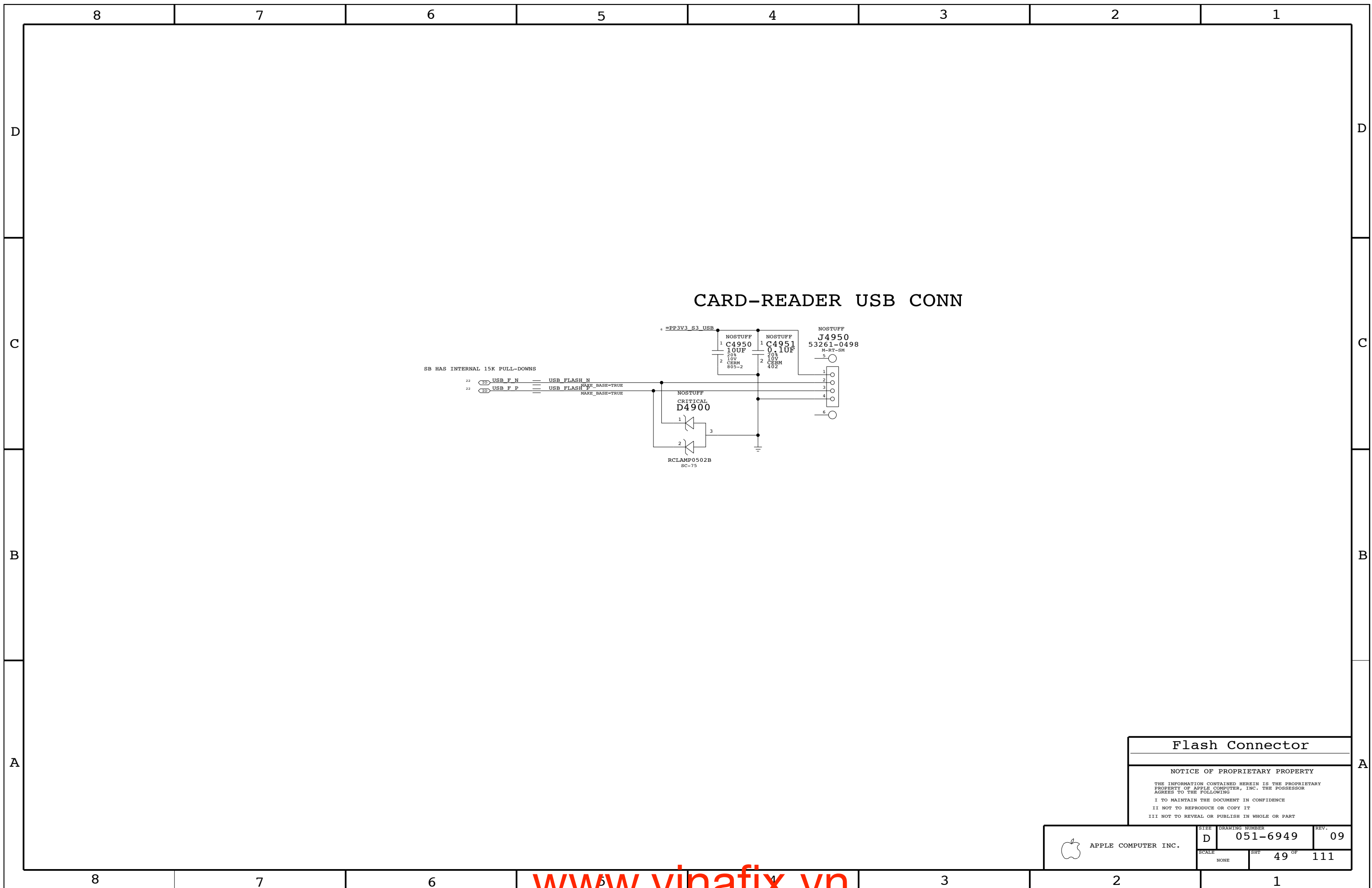
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2

1



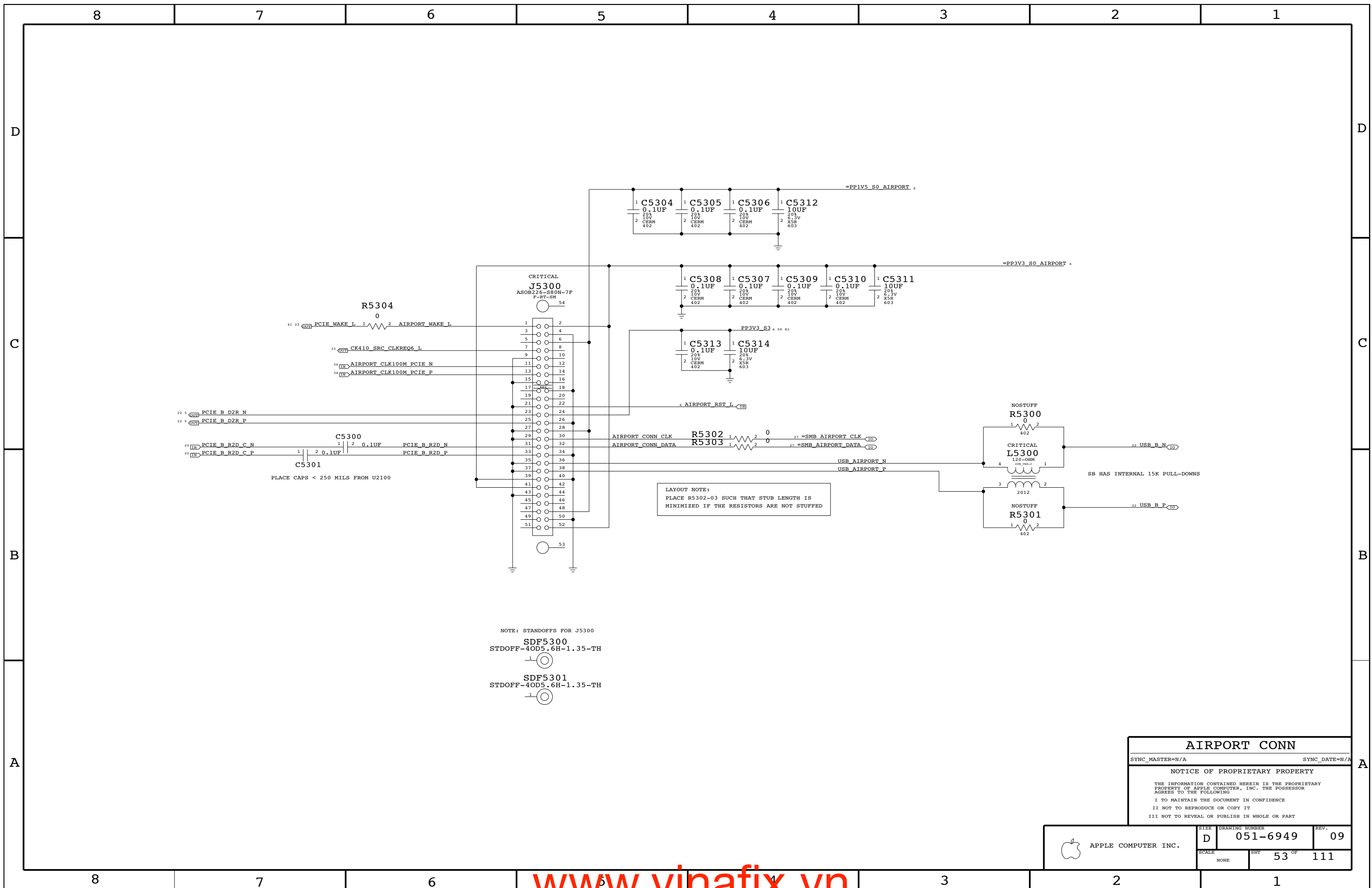
Flash Connector

NOTICE OF PROPRIETARY PROPERTY



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NONE	49		111

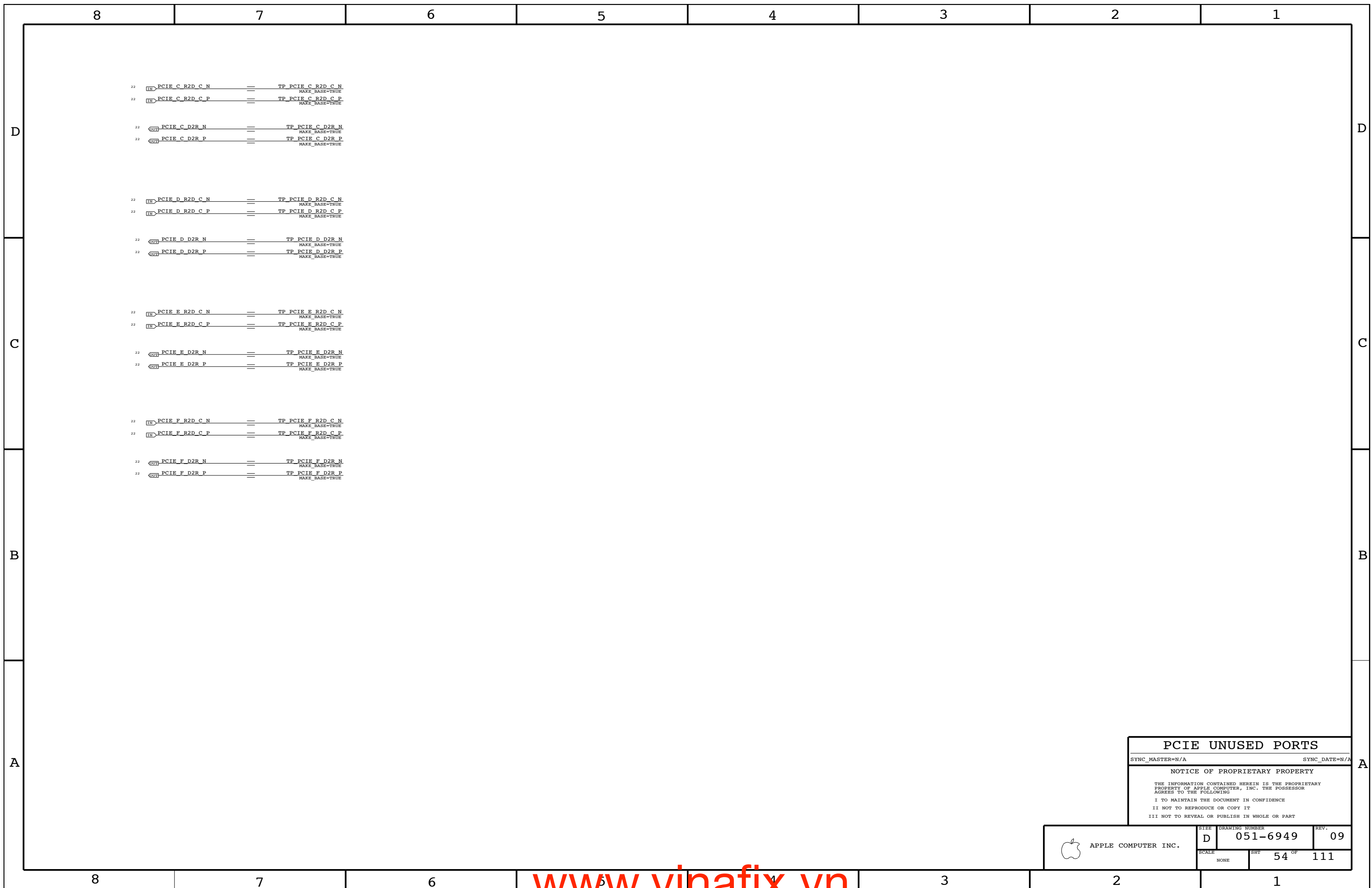


LAYOUT NOTE:
PLACE R5302-03 SUCH THAT STUB LENGTH IS
MINIMIZED IF THE RESISTORS ARE NOT STUFFED

NOTE: STANDOFFS FOR J5300
SDF5300
 STDOFF-4OD5.6H-1.35-TH

SDF5301
 STDOFF-4OD5.6H-1.35-TH


AIRPORT CONN
 SYNC_MASTER=N/A SYNC_DATE=N/A
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SCALE	SHT	OF	
NONE	53	111	



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

22 OUT 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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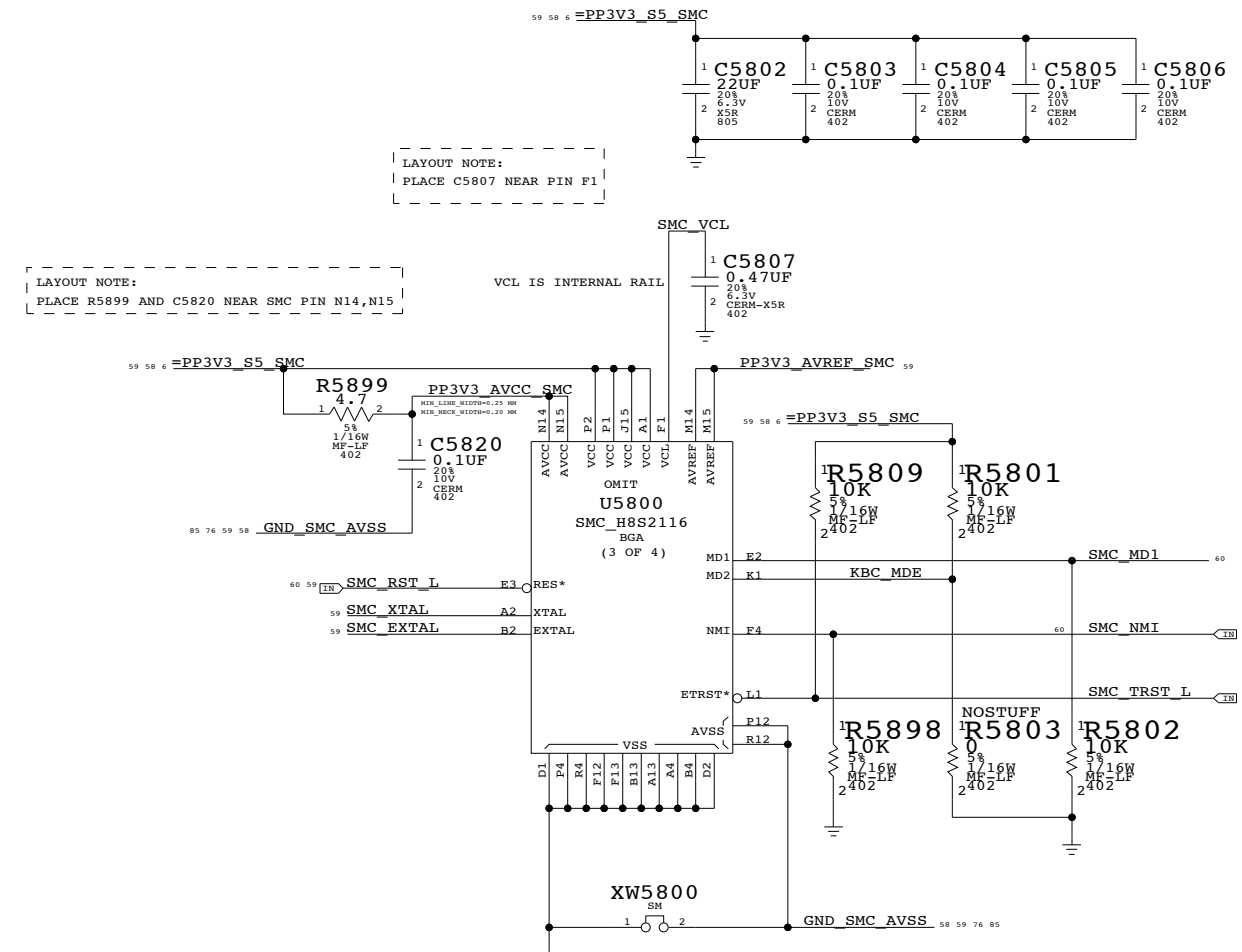
 APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SH1 54	OF 111

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.

23	PM_LAN_ENABLE	B12	P10	OMIT	U5800	P60/KIN0*	L13	SMC_PM_G2_EN	OUT
44	SMC_RSTGATE_L	C13	P11	SMC_H8S2116	BGA	P61/KIN1*	L14	SMC_ADAPTER_EN	OUT
74	ALL_SYS_PWRGD	A15	P12	(1 OF 4)		P62/KIN2*	L15	SPI_ARB	IN
74	RSMRST_PWRGD	B14	P13			P63/KIN3*	K12	SPI_SCLK	IN
23	SMC_SB_NMI	B15	P14			P64/KIN4*	K13	SPI_SI	OUT
23	PM_RSMRST_L	C14	P15			P65/KIN5*	K14	SPI_SO	IN
75	IMVP_VR_ON	D12	P16			P66/IRQ6*/KIN6*	J12	SMC_PROCHOT_3_3_L	IN
23	PM_PWRBTN_L	C15	P17			P67/IRQ7*/KIN7*	J13	SMC_CPU_INIT_3_3_L	IN
59	SMC_P20	D13	P20			P70/AN0	N12	SMC_CPU_ISENSE	IN
59	SMC_P21	D14	P21			P71/AN1	R13	SMC_CPU_VSENSE	IN
59	SMC_P22	D15	P22			P72/AN2	P13	SMC_GPU_ISENSE	IN
59	SMC_P23	E12	P23			P73/AN3	R14	SMC_GPU_VSENSE	IN
59	SMC_BATT_TRICKLE_EN_L	E14	P24			P74/AN4	P14	SMC_DCIN_ISENSE	IN
59	SMC_BATT_CHG_EN	E15	P25			P75/AN5	R15	SMC_PBUS_VSENSE	IN
59	SMC_P26	E13	P26			P76/AN6	N13	SMC_BATT_ISENSE	IN
59	SMC_P27	F14	P27			P77/AN7	P15	SMC_FWIRE_ISENSE	IN
67	LPC_AD<0>	D9	P30/LAD0			P80/PME*	C7	SMC_WAKE_SCI_L	IN
67	LPC_AD<1>	C9	P31/LAD1			P81/GA20	A7	SMC_TPM_GPIO	OUT
67	LPC_AD<2>	A9	P32/LAD2			P82/CLKRUN*	B7	PM_CLKRUN_L	IO
67	LPC_AD<3>	B9	P33/LAD3			P83/LPCPD*	D6	PM_SUS_STAT_L	IN
67	LPC_FRAME_L	D8	P34/LFRAME*			P84/IRQ3*/TXD1	C6	SC_TX_L	OUT
67	SMC_LRESET_L	C8	P35/LRESET*			P85/IRQ4*/RDX1	A6	SMC_RX_L	OUT
31	PCI_CLK_SMC	A8	P36/LCLK			P86/IRQ5*/SCK1/SCL1	B6	SMB_BSB_CLK	IO
67	INT_SERIRQ	D7	P37/SERIRQ			P90/IRQ2*	K4	SMC_ONOFF_L	IN
59	SMC_XDP_TMS_L	A5	P40/TMIO			P91/IRQ1*	J2	SMC_BC_ACOK	IN
59	SMC_XDP_TDI_L	B5	P41/TMO0			P92/IRQ0*	J1	SMC_BS_ALRT_L	IN
59	SMB_BSB_DATA	D5	P42/SDA1			P93/IRQ12*	J3	PM_SLP_S3_L	IN
59	SMC_TPM_PP	C3	P43/TM11/EXSCK1			P94/IRQ13*	J4	PM_SLP_S4_L	IN
59	SMC_XDP_TRST_L	B1	P44/TMO1			P95/IRQ14*	H2	PM_SLP_S5_L	IN
59	SMC_XDP_TCK	C2	P45			P96/EXCL	H1	SMC_SUS_CLK	IN
59	SMC_SYS_LED	D3	P46/PWX0/PWM0			P97/IRQ15*/SDA0	G2	SMC_SMB_0_DATA	IO
59	SMC_SYS_KBDLED	C1	P47/PWX1/PWM1						
60	SMC_TX_L	G1	P50						
60	SMC_RX_L	G4	P51						
59	SMC_SMB_0_CLK	F2	P52/SCL0						

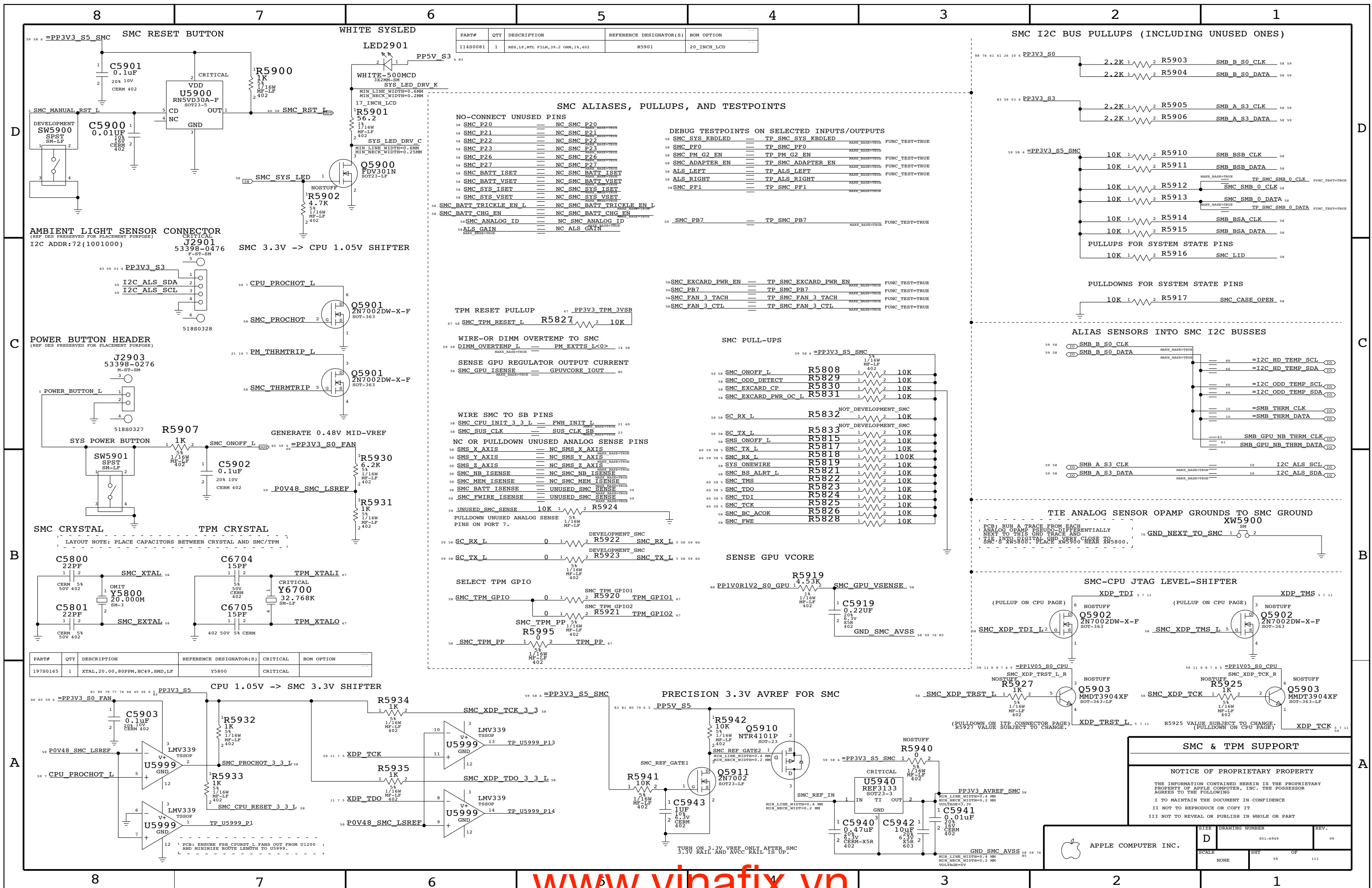
21	SMC_RCIN_L	R3	PA0/KIN8*/PA2DC	OMIT	U5800	PE0	M3	SMC_CASE_OPEN	IN
60	BOOT_LPC_SPI_L	P3	PA1/KIN9*/PA2DD	SMC_H8S2116	BGA	PE1*/ETCK	M2	SMC_TCK	IN
26	PM_SYSRST_L	R2	PA2/KIN10*/PS2AC	(2 OF 4)		PE2*/ETDI	M1	SMC_TDI	IN
67	SMC_TPM_RESET_L	N3	PA3/KIN11*/PS2AD			PE3*/ETDO	L4	SMC_TDO	OUT
54	PM_EXTS_L<0>	R1	PA4/KIN12*/PS2BC			PE4*/ETMS	L2	SMC_TMS	IN
23	PM_THRM_L	N2	PA5/KIN13*/PS2BD			PF0/IRQ8*/PWM2	M7	SMC_PF0	59
59	SYS_ONEWIRE	M4	PA6/KIN14*/PS2CC			PF1/IRQ9*/PWM3	P6	SMC_PF1	59
23	PM_BATLOW_L	N1	PA7/KIN15*/PS2CD			PF2/IRQ10*/TMOY	R6	SMC_LID	IN
23	SMC_EXTSMI_L	B10	PB0/LSMI*			PF3/IRQ11*/TMOX	N6	SMC_CPU_RESET_3_3_L	IN
23	SMC_RUNTIME_SCI_L	A10	PB1/LSCI			PF4/PWM4	M6	SMC_BATT_ISET	OUT
76	SMC_ODD_DETECT	D10	PB2			PF5/PWM5	R5	SMC_BATT_VSET	OUT
76	ISENSE_CAL_EN	A11	PB3			PF6/PWM6	P5	SMC_SYS_ISET	OUT
59	SMC_EXCARD_CP	B11	PB4			PF7/PWM7	N5	SMC_SYS_VSET	OUT
59	SMC_EXCARD_PWR_EN	C11	PB5			PG0/EXIRQ8*/TMIX	P9	SPI_CE_L	IO
59	SMC_EXCARD_PWR_OC_L	A12	PB6			PG1/EXIRQ9*/TM1Y	R9	SMC_XDP_TCK_3_3	IN
59	SMC_XDP_TDO_3_3_L	D11	PB7			PG2/EXIRQ10*/SDA2	N9	SMB_BSA_DATA	IO
65	SMC_FAN_0_CTL	G14	PC0/TIOCA0/WUE8*			PG3/EXIRQ11*/SCL2	P8	SMB_BSA_CLK	IO
65	SMC_FAN_1_CTL	G15	PC1/TIOCB0/WUE9*			PG4/EXIRQ12*/EXSDAA	R8	SMB_A_S3_DATA	IO
65	SMC_FAN_2_CTL	G13	PC2/TIOCC0/TCLKA/WUE10*			PG5/EXIRQ13*/EXSCLA	H8	SMB_A_S3_CLK	IO
65	SMC_FAN_3_CTL	G12	PC3/TIOCD0/TCLKB/WUE11*			PG6/EXIRQ14*/EXSDAB	P7	SMB_B_S0_DATA	IO
65	SMC_FAN_0_TACH	H14	PC4/TIOCA1/WUE12*			PG7/EXIRQ15*/EXSCLB	R7	SMB_B_S0_CLK	IO
65	SMC_FAN_1_TACH	H15	PC5/TIOCB1/TCLKC/WUE13*			PH0/EXIRQ6*	E1	SMC_PROCHOT	OUT
65	SMC_FAN_2_TACH	H13	PC6/TIOCA2/WUE14*			PH1/EXIRQ7*	E3	SMC_THRMTRIP	OUT
65	SMC_FAN_3_TACH	H12	PC7/TIOCB2/TCLKD/WUE15*			PH2/FWE	K2	SMC_FWE	IN
59	SMS_X_AXIS	M11	PD0/AN8			PH3/EXEXCL	C4	SMS_INT_L	OUT
59	SMS_Y_AXIS	P11	PD1/AN9						
59	SMS_Z_AXIS	R11	PD2/AN10						
59	SMC_ANALOG_ID	N11	PD3/AN11						
59	SMC_NB_ISENSE	P10	PD4/AN12						
59	SMC_MEM_ISENSE	R10	PD5/AN13						
59	ALS_LEFT	N10	PD6/AN14						
59	ALS_RIGHT	M10	PD7/AN15						

NC0	E15
NC1	A14
NC2	C12
NC3	C10
NC4	C5
NC5	A3
NC6	B8
NC7	E4
NC8	H4
NC9	M9
NC10	M9
NC11	N8



SMC
SYNC_MASTER=N/A SYNC_DATE=N/A
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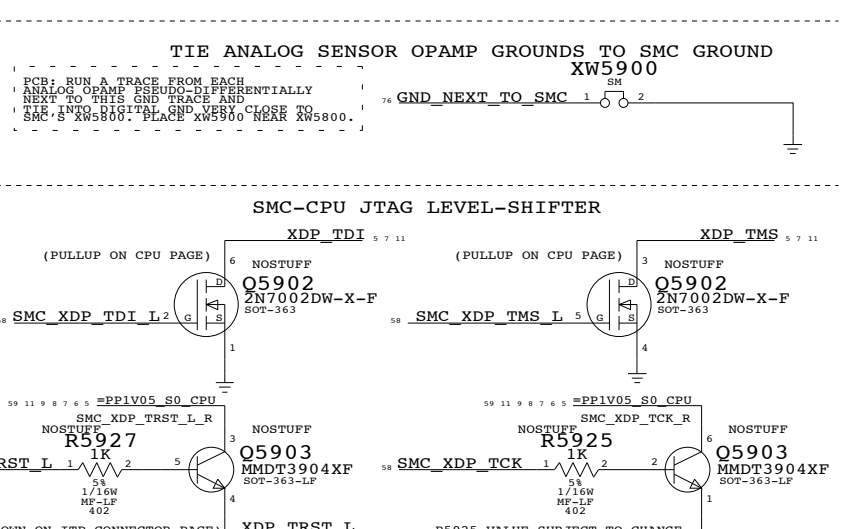
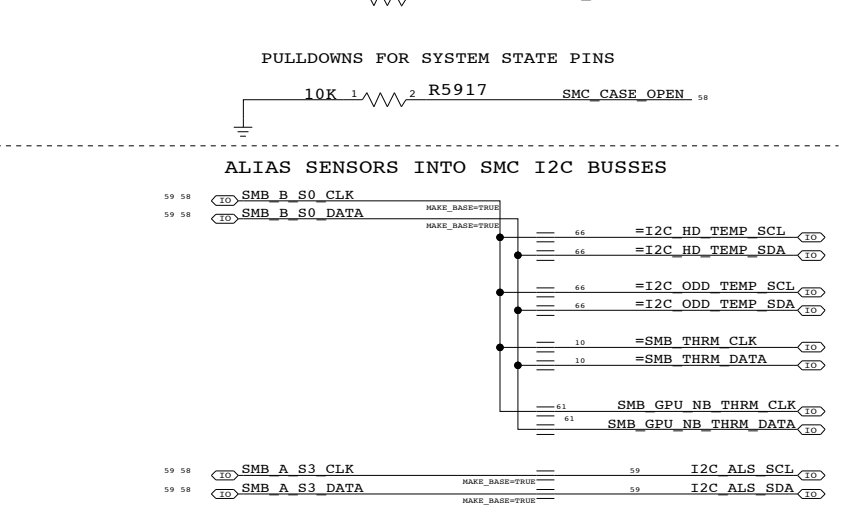
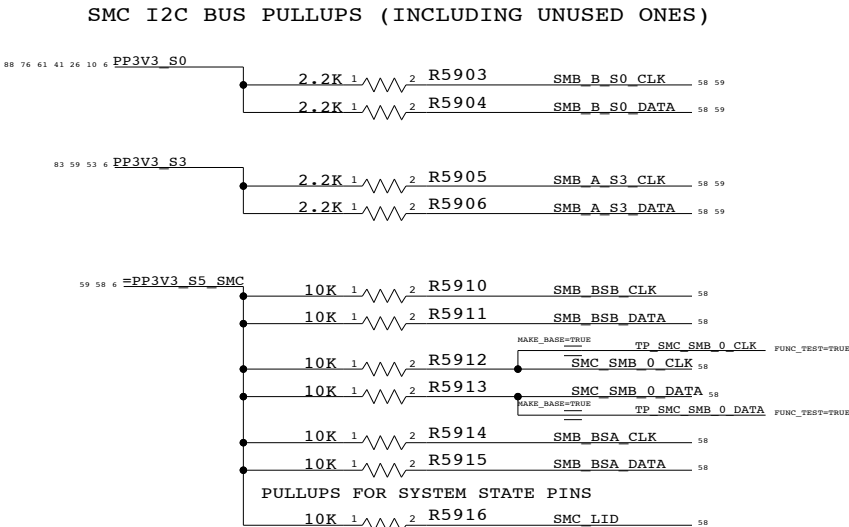
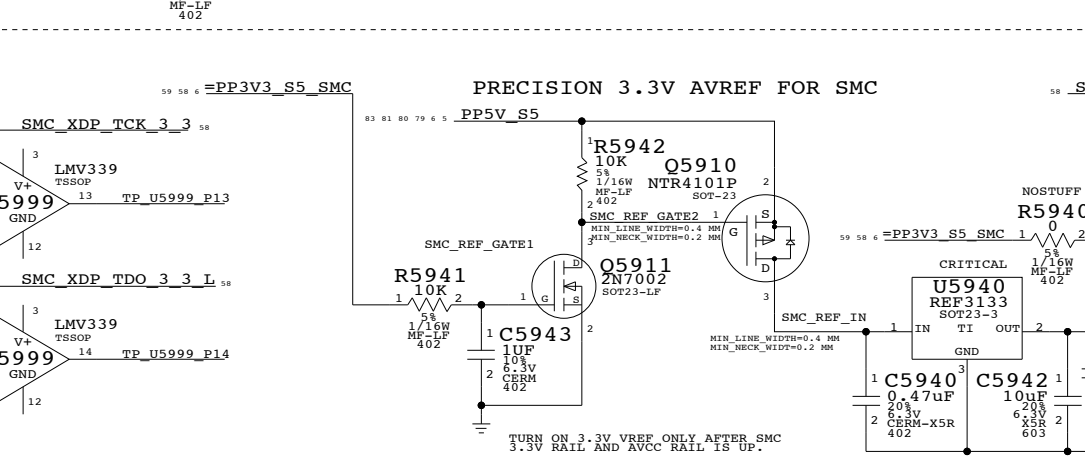
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
11450081	1	RES,LF,WTL FILM,39.2 OHM,18,402	R5901	20_INCH_LCD

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 SMC 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

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

WIRE SMC TO SB PINS		SELECT TPM GPIO	
58 SMC_CPU_INIT_3_3_L	FWH_INIT_L	58 SMC_TPM_GPIO1	SMC_TPM_GPIO1
58 SMC_SUS_CLK	SUS_CLK_SB	58 SMC_TPM_GPIO2	SMC_TPM_GPIO2
58 SMC_SMS_X_AXIS	NC SMC_SMS_X_AXIS	58 SMC_TPM_PP	SMC_TPM_PP
58 SMC_SMS_Y_AXIS	NC SMC_SMS_Y_AXIS		
58 SMC_SMS_Z_AXIS	NC SMC_SMS_Z_AXIS		
58 SMC_NB_ISENSE	NC SMC_NB_ISENSE		
58 SMC_MEM_ISENSE	NC SMC_MEM_ISENSE		
58 SMC_BATT_ISENSE	UNUSED SMC		
58 SMC_FWIRE_ISENSE	UNUSED SMC		
58 UNUSED_SMC_SENSE	10K		
58 PULLDOWN_UNUSED_ANALOG_SENSE	1/16W MF-LF		



SMC & TPM SUPPORT

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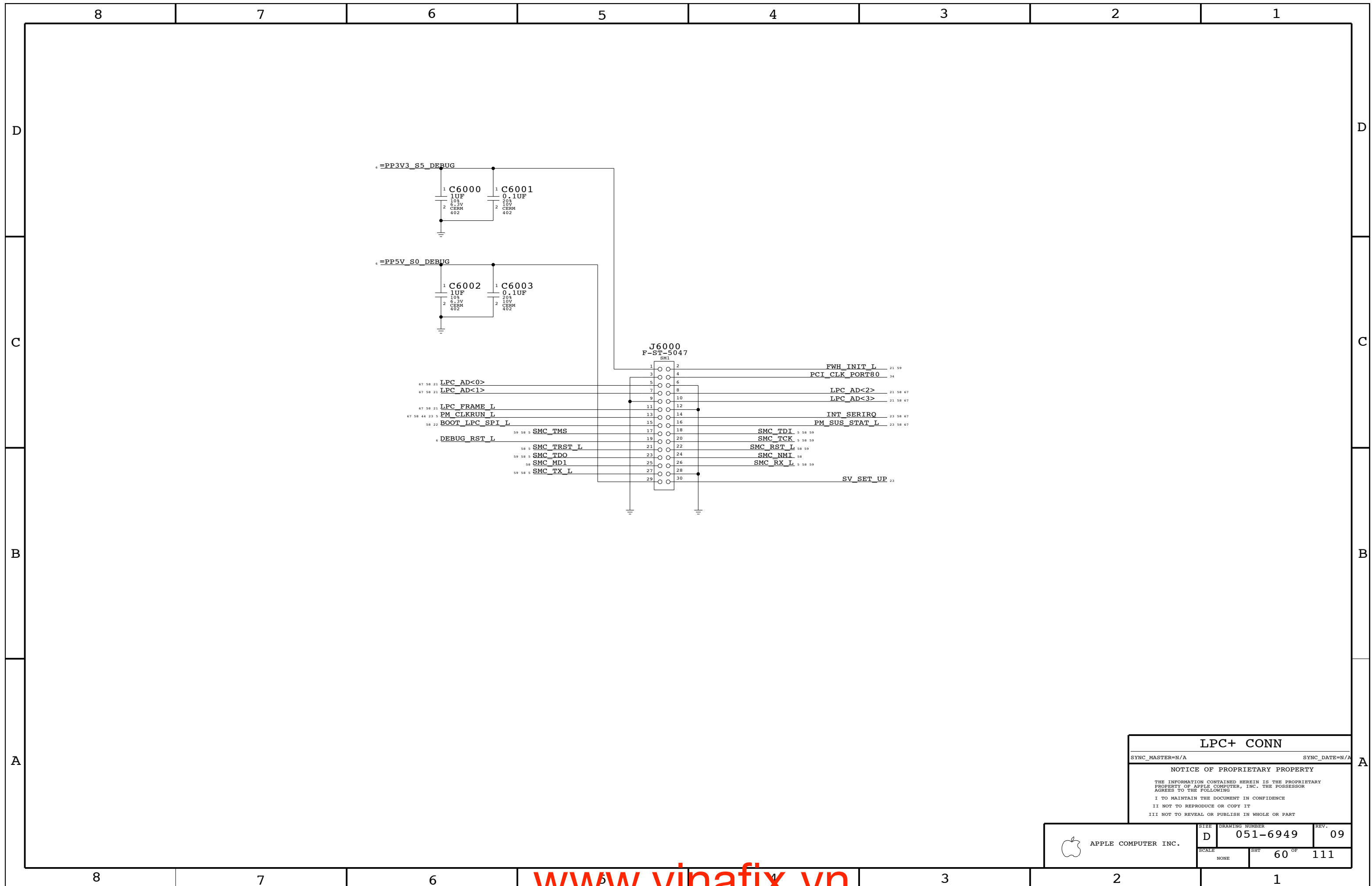
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SCALE	SHT	OF
NONE	59	111

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LPC+ CONN

SYNC_MASTER=N/A SYNC_DATE=N/A

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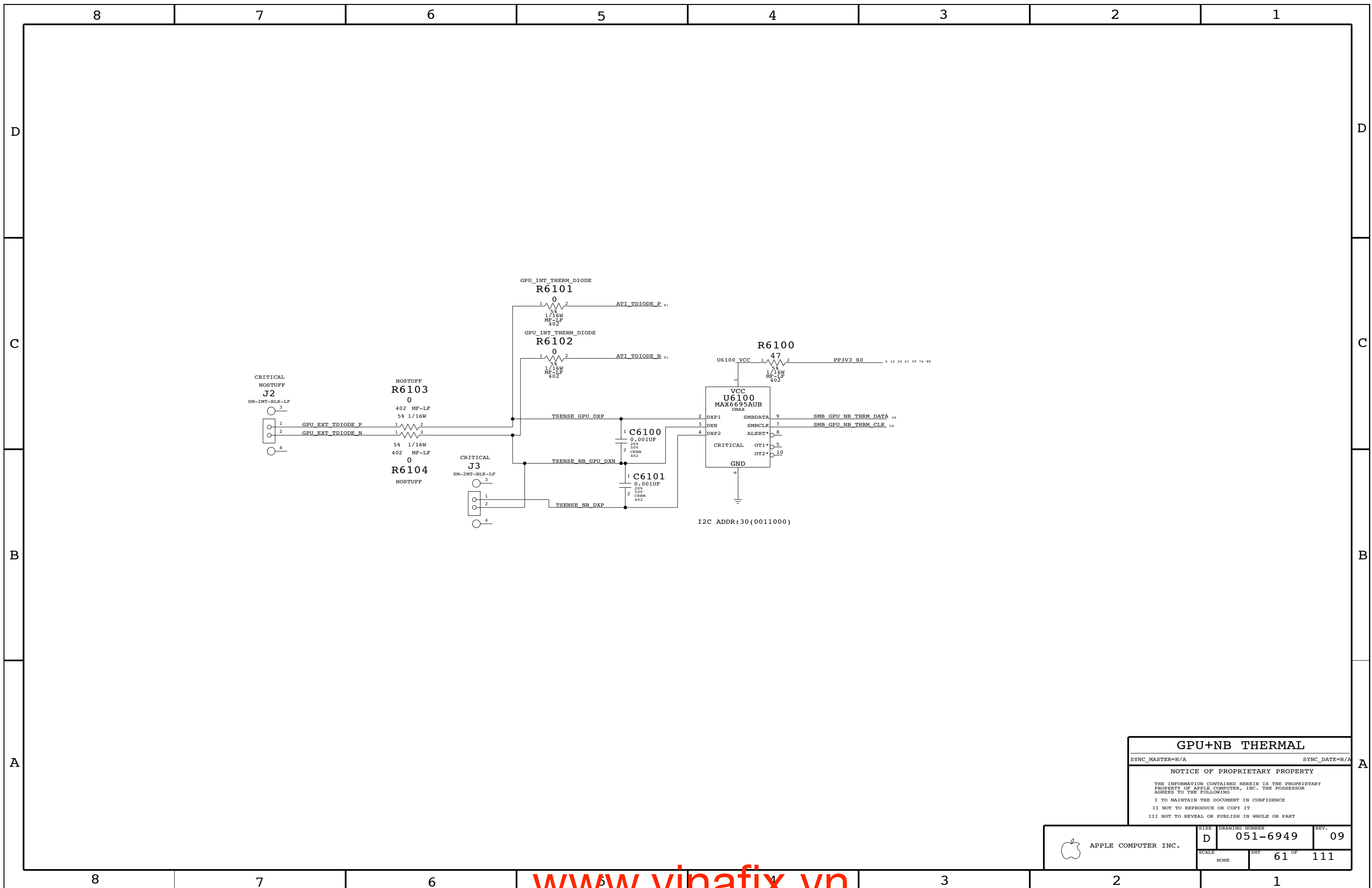
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	SCALE NONE	SHEET 60 OF 111	



GPU+NB THERMAL

SYNC_MASTER=N/A SYNC_DATE=N/A

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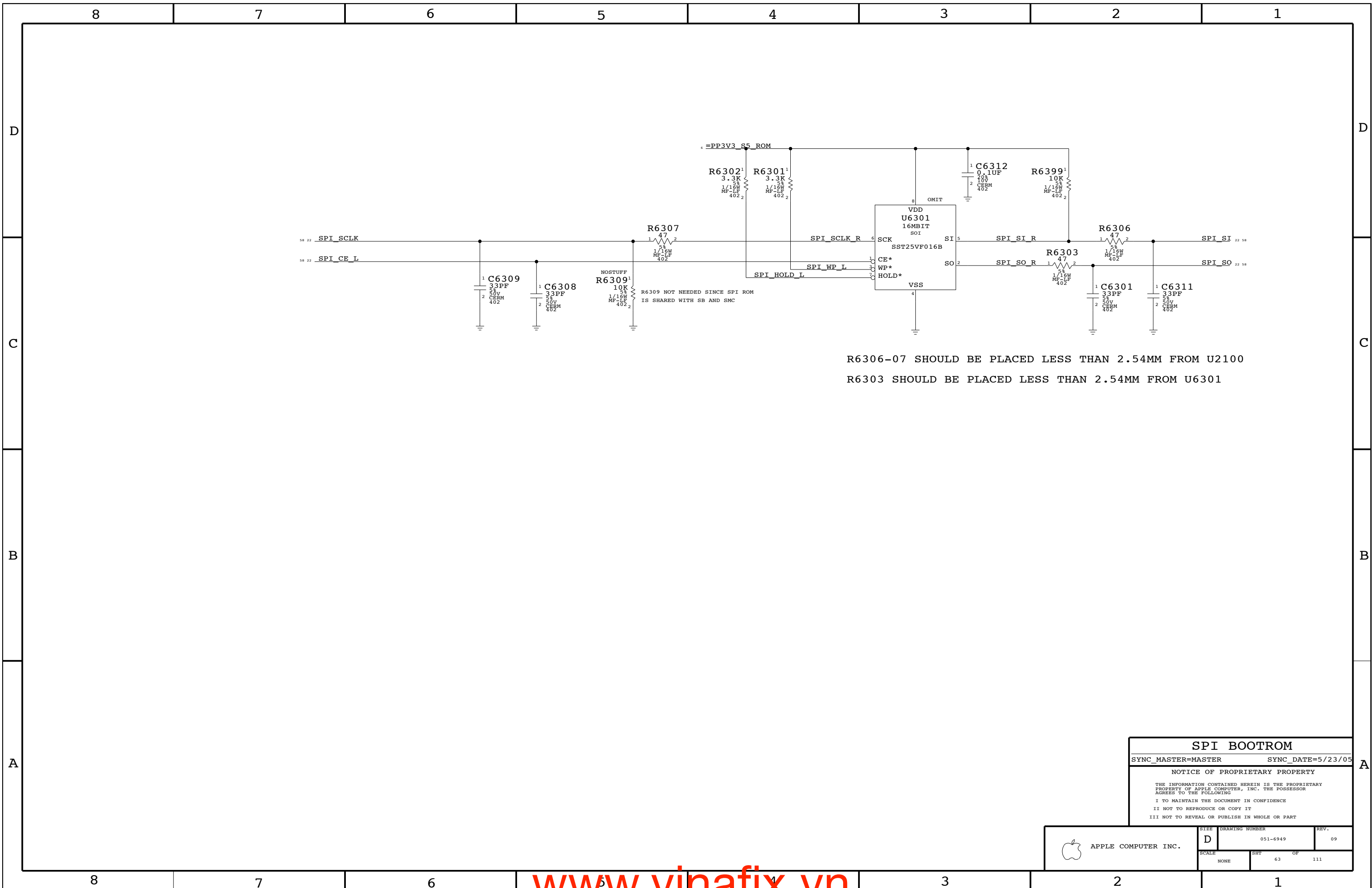
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	SCALE	SHT	OF
	NONE	61	111

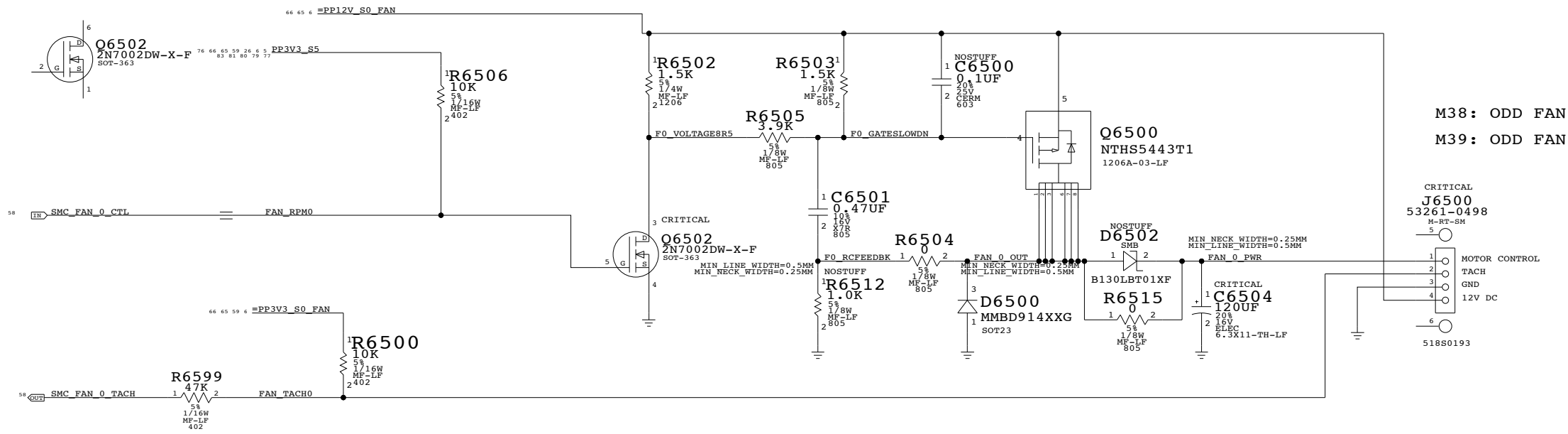


R6306-07 SHOULD BE PLACED LESS THAN 2.54MM FROM U2100
 R6303 SHOULD BE PLACED LESS THAN 2.54MM FROM U6301

SPI BOOTROM
 SYNC_MASTER=MASTER SYNC_DATE=5/23/05
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	SCALE NONE	SHEET 63	OF 111

FAN 0

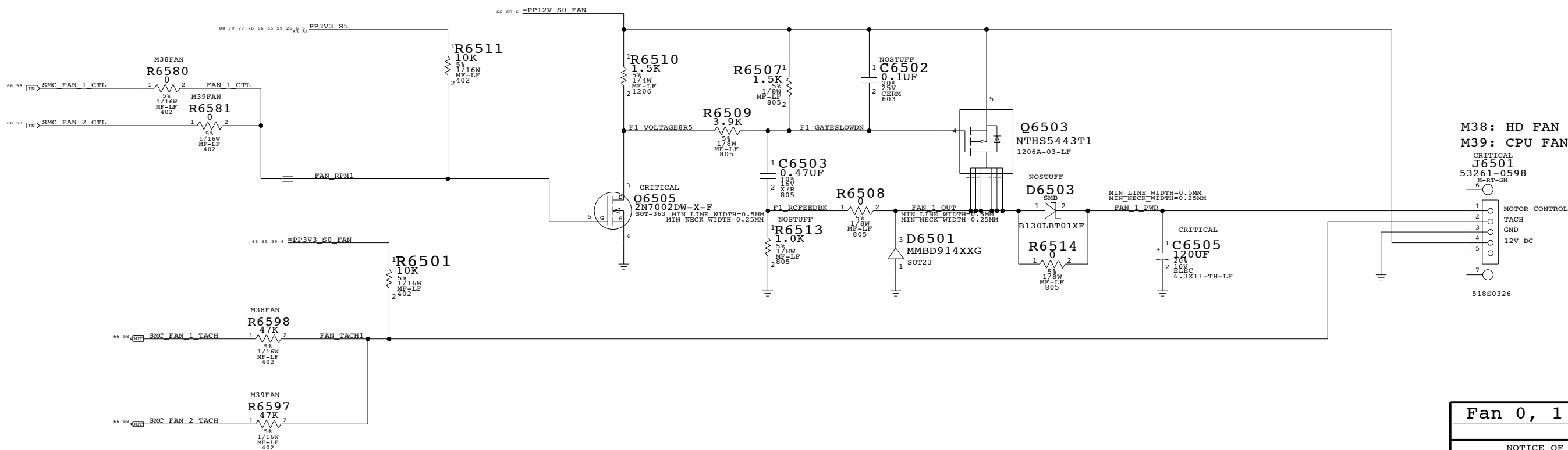


M38: ODD FAN
M39: ODD FAN

CRITICAL
J6500
53261-0498
M-RT-SM

NOTE: ADDED TO PROTECT SMC

FAN 1



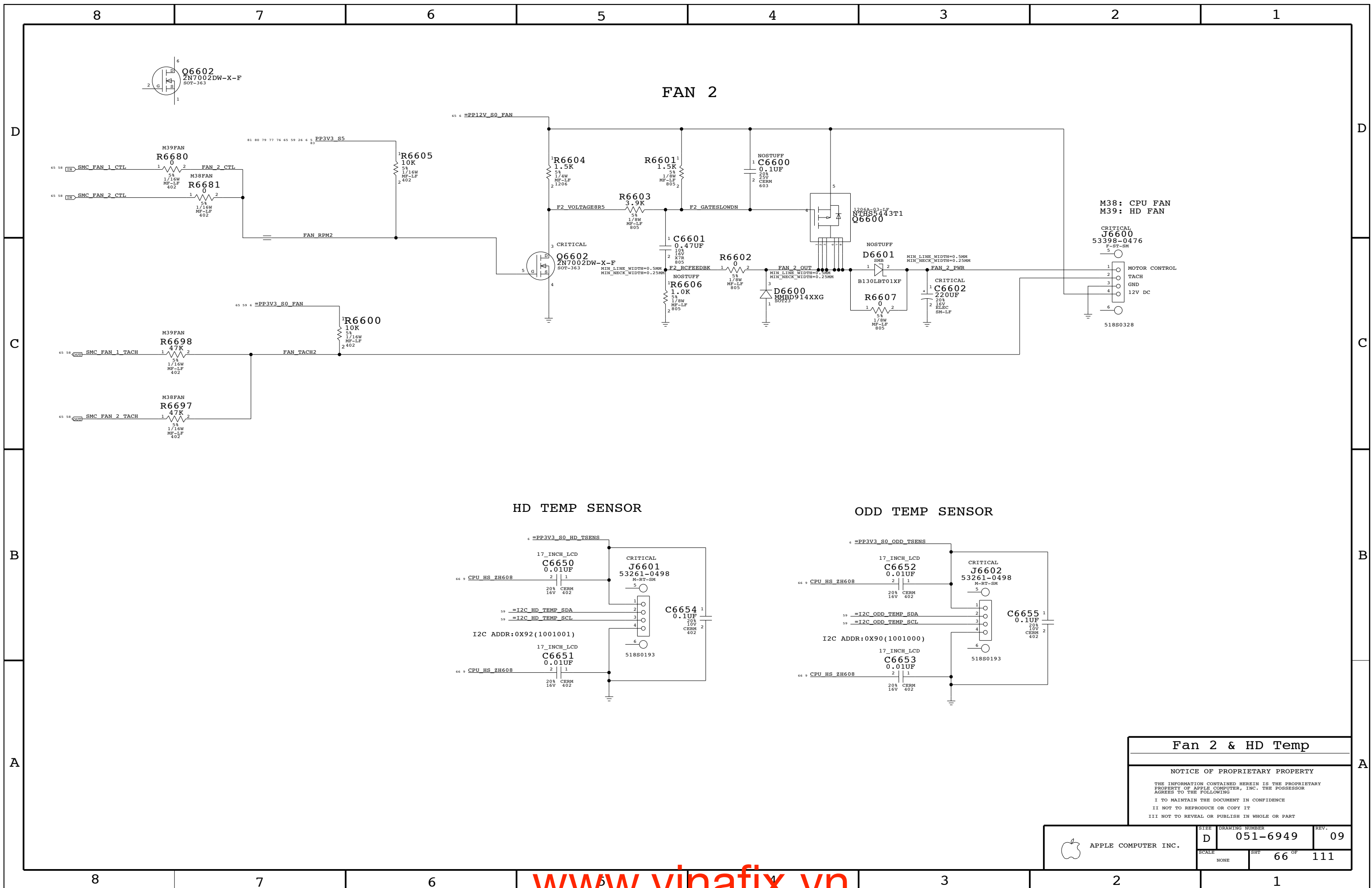
M38: HD FAN
M39: CPU FAN

CRITICAL
J6501
53261-0598
M-RT-SM

Fan 0, 1 & System Temp

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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	NONE	051-6949	09
SCALE		SHT	OF
NONE		65	111



HD TEMP SENSOR

ODD TEMP SENSOR

Fan 2 & HD Temp

NOTICE OF PROPRIETARY PROPERTY

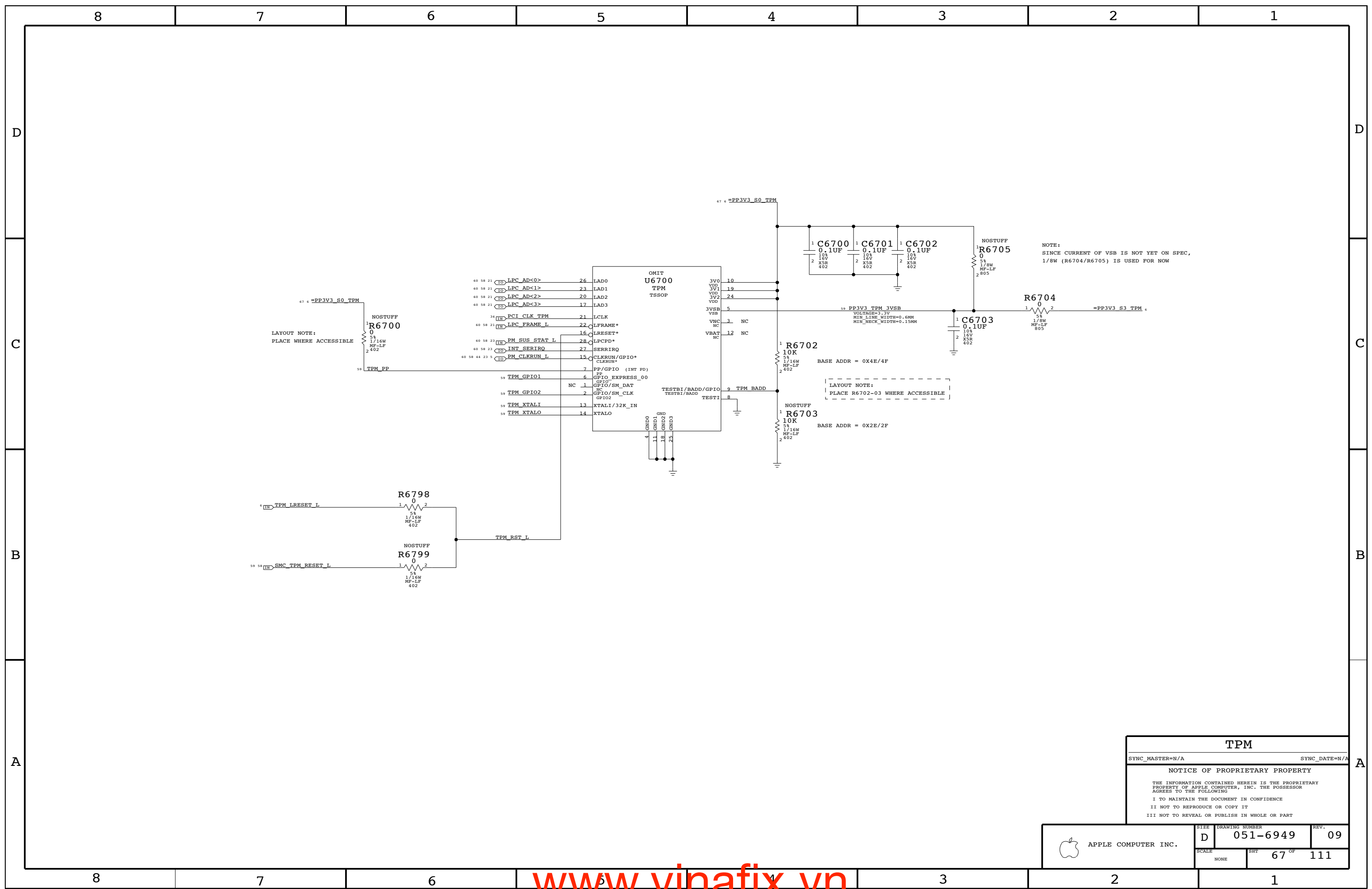
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APPLE COMPUTER INC.	SIZE D SCALE NONE	DRAWING NUMBER 051-6949	REV. 09
	SHEET 66 OF 111		



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

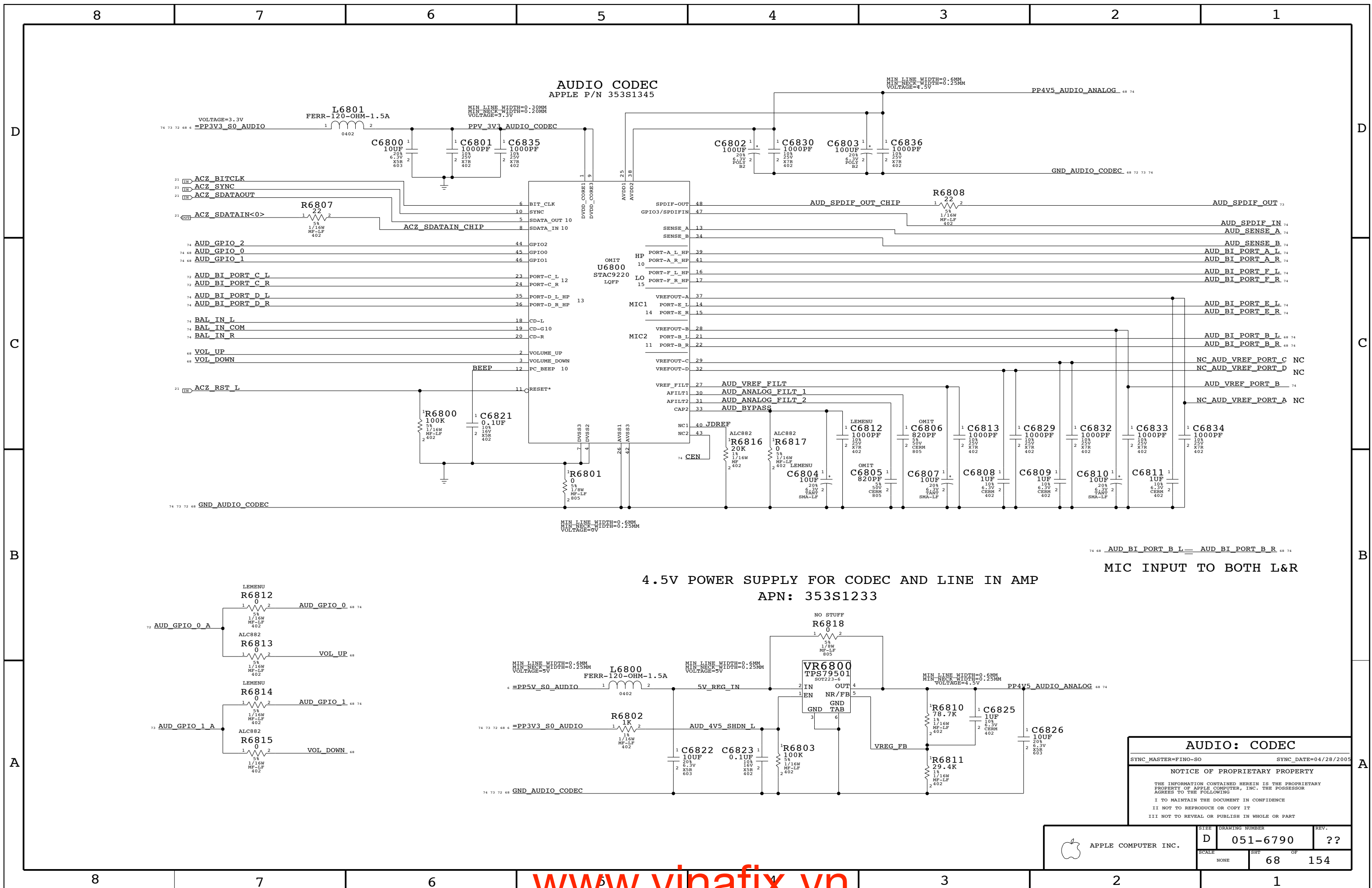
SYNC_MASTER=N/A SYNC_DATE=N/A

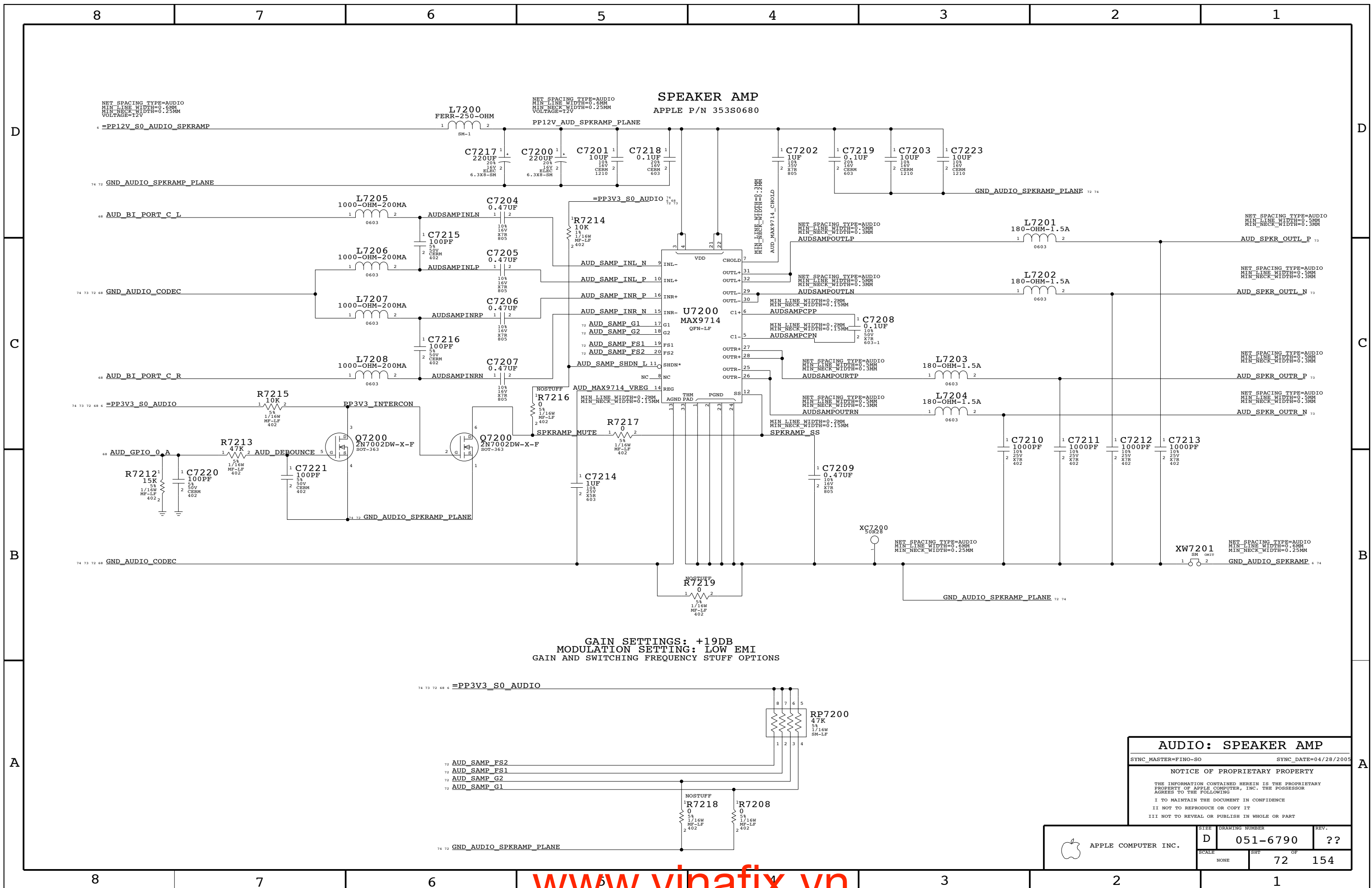
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APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 67 OF 111	



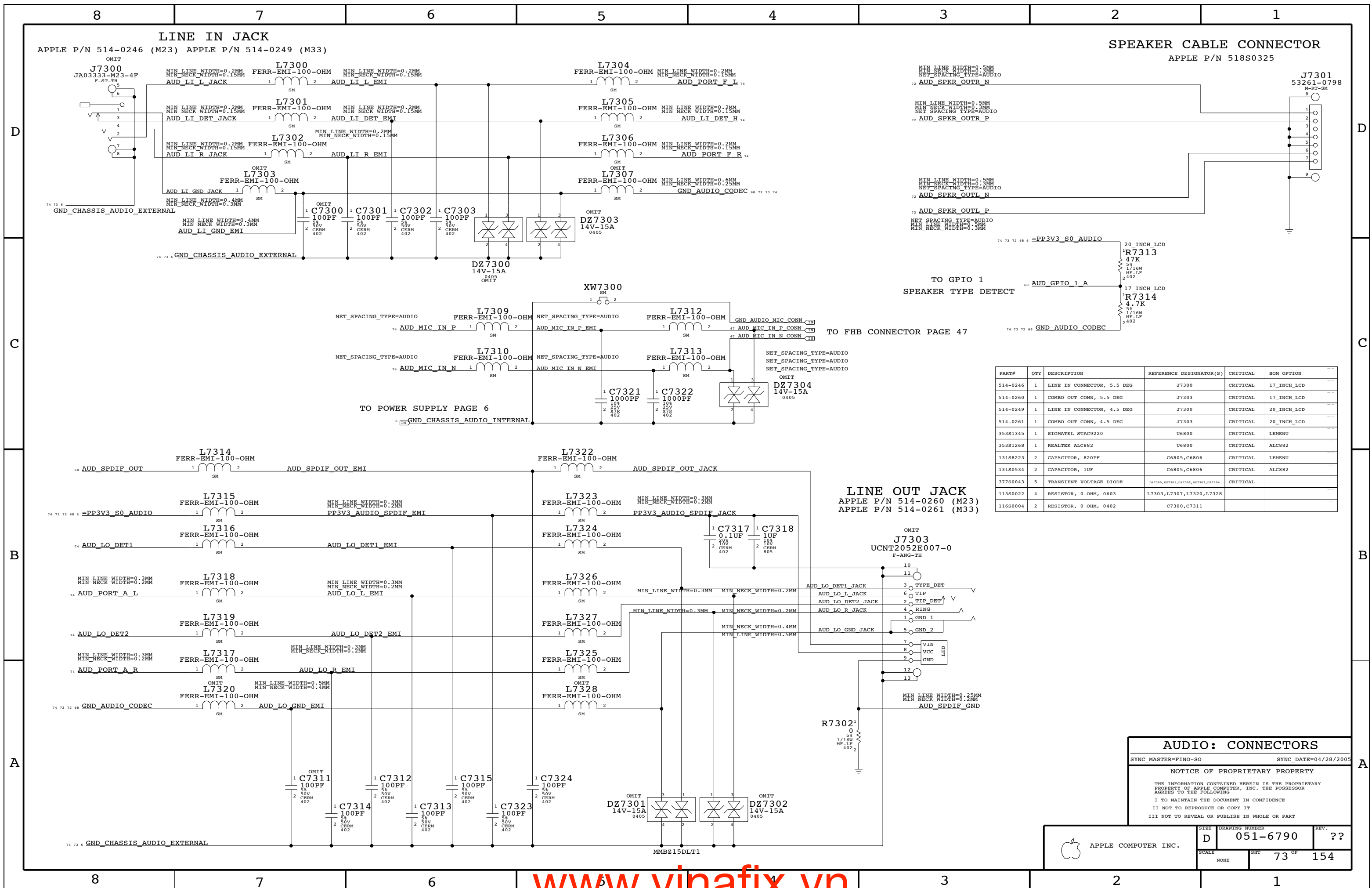


SPEAKER AMP
APPLE P/N 353S0680

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 COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6790	??
SCALE	NONE	SHT	OF
		72	154

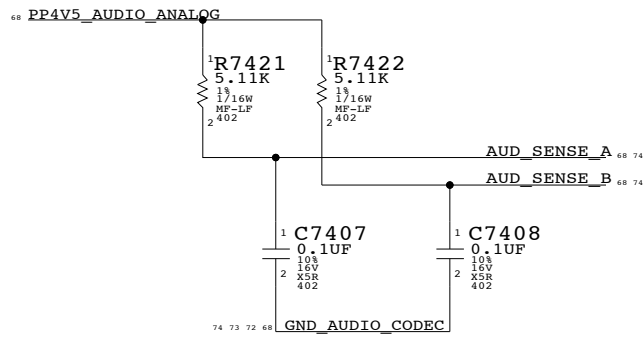


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0246	1	LINE IN CONNECTOR, 5.5 DEG	J7300	CRITICAL	17_INCH_LCD
514-0260	1	COMBO OUT CONN, 5.5 DEG	J7303	CRITICAL	17_INCH_LCD
514-0249	1	LINE IN CONNECTOR, 4.5 DEG	J7300	CRITICAL	20_INCH_LCD
514-0261	1	COMBO OUT CONN, 4.5 DEG	J7303	CRITICAL	20_INCH_LCD
35381345	1	SIGMATEL STAC9220	U6800	CRITICAL	LEMENU
35381268	1	REALTEK ALC882	U6800	CRITICAL	ALC882
13188223	2	CAPACITOR, 820PF	C6805,C6806	CRITICAL	LEMENU
13180534	2	CAPACITOR, 1UF	C6805,C6806	CRITICAL	ALC882
37780043	5	TRANSIENT VOLTAGE DIODE	DZ7300,DZ7301,DZ7302,DZ7303,DZ7304	CRITICAL	
11380022	4	RESISTOR, 0 OHM, 0603	L7303,L7307,L7320,L7328		
11680004	2	RESISTOR, 0 OHM, 0402	C7300,C7311		

AUDIO: CONNECTORS
 SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005
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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6790	??
SCALE	SHT	73 OF	154
NONE			

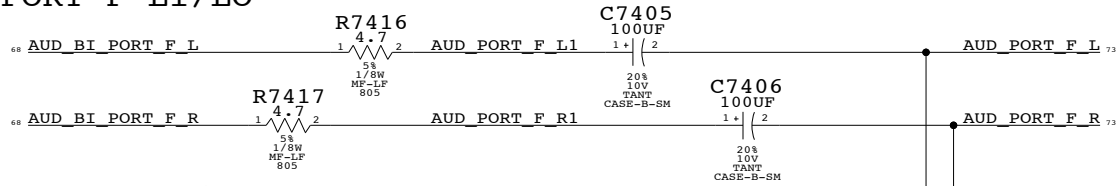
JACK SENSE PULL UPS (PLACE NEXT TO CODEC)



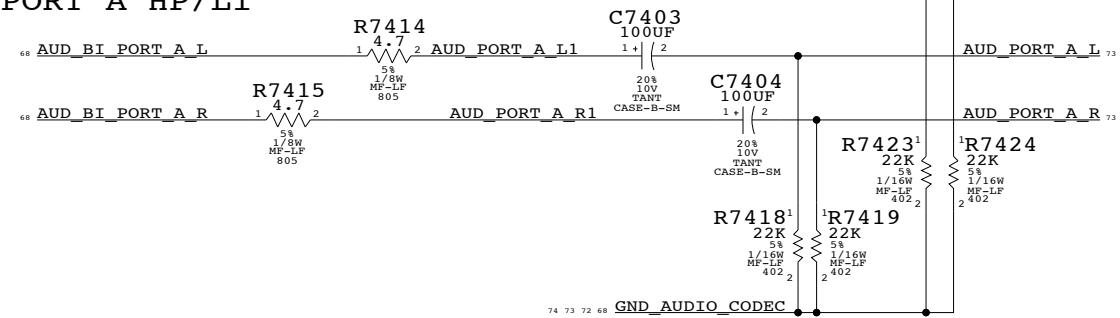
USED PORTS
 PORT A HP/LI
 PORT B MIC IN
 PORT C BI SPEAKERS
 PORT F LI/LO

UNUSED PORTS
 PORT E
 PORT D

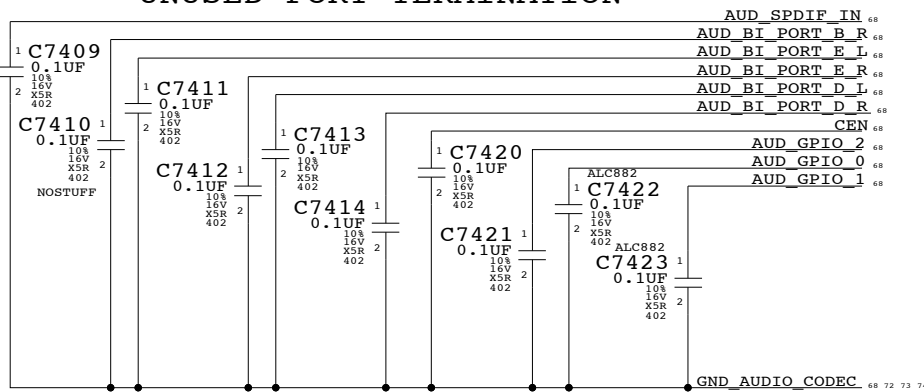
PORT F LI/LO



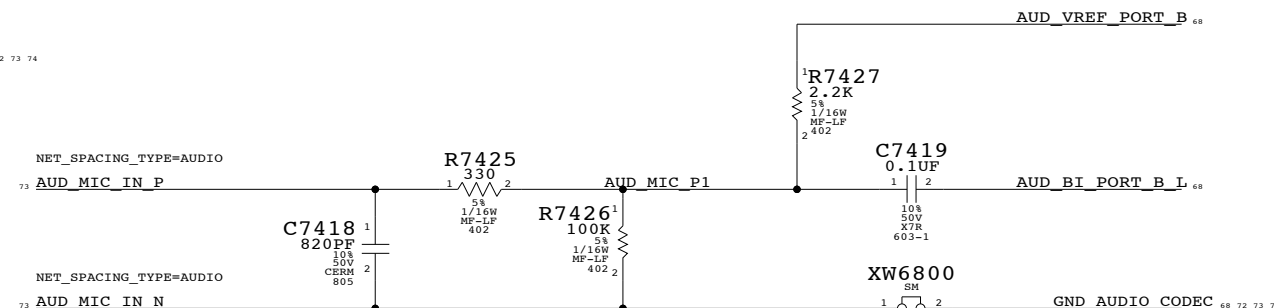
PORT A HP/LI



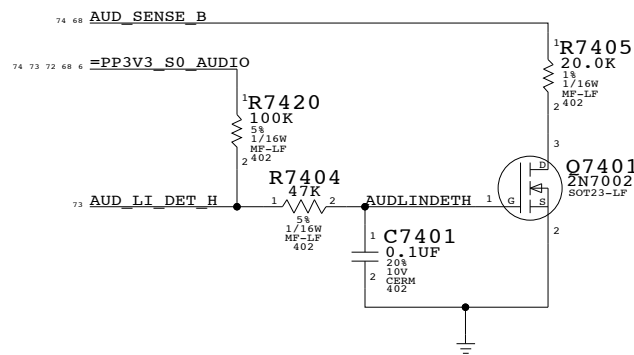
UNUSED PORT TERMINATION



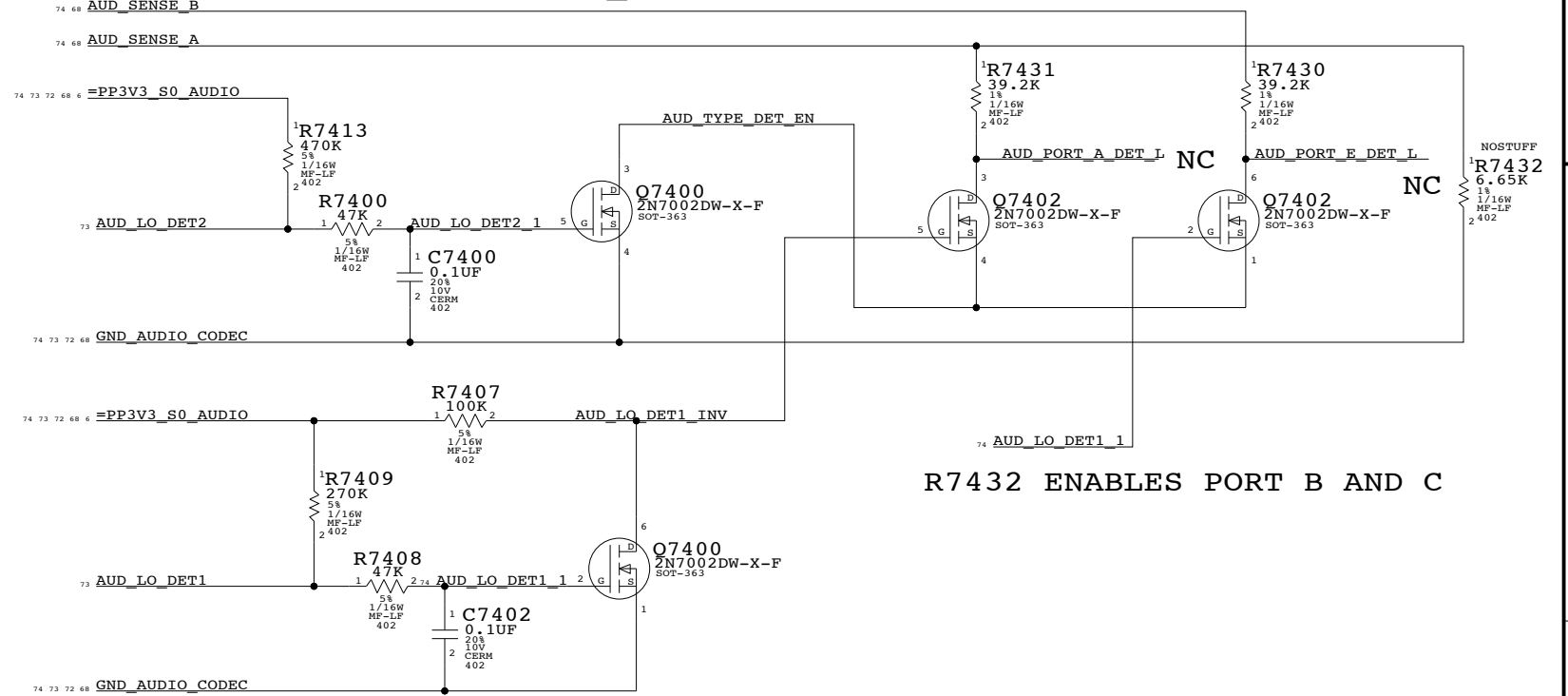
MICROPHONE IMPEDANCE MATCHING CIRCUIT



PORT F (LI/LO) PLUG DETECT

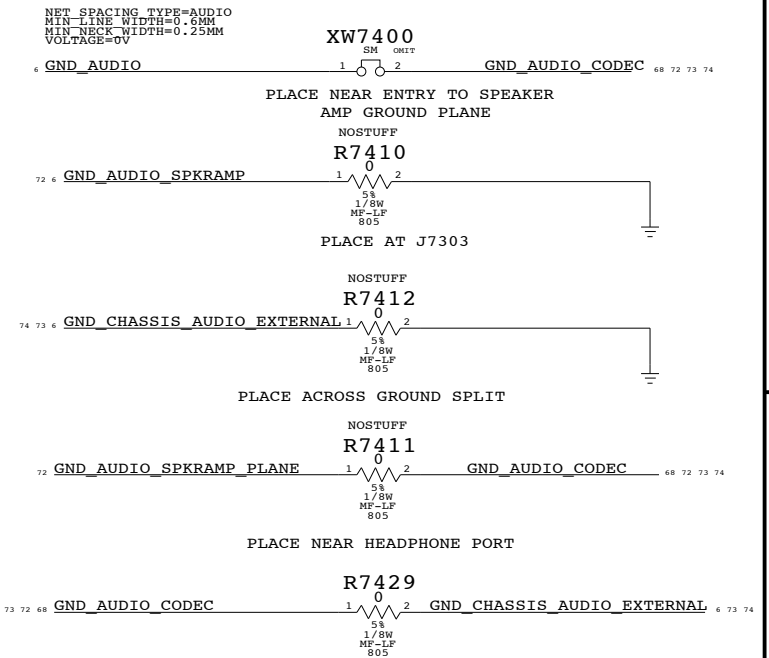


PORT A/H (HP/LI/DIG_OUT) PLUG DETECT (E TELLS H TO COME ON)



R7432 ENABLES PORT B AND C

AUDIO GROUND RETURNS



AUDIO: POWER SUPPLIES

SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005

NOTICE OF PROPRIETARY PROPERTY

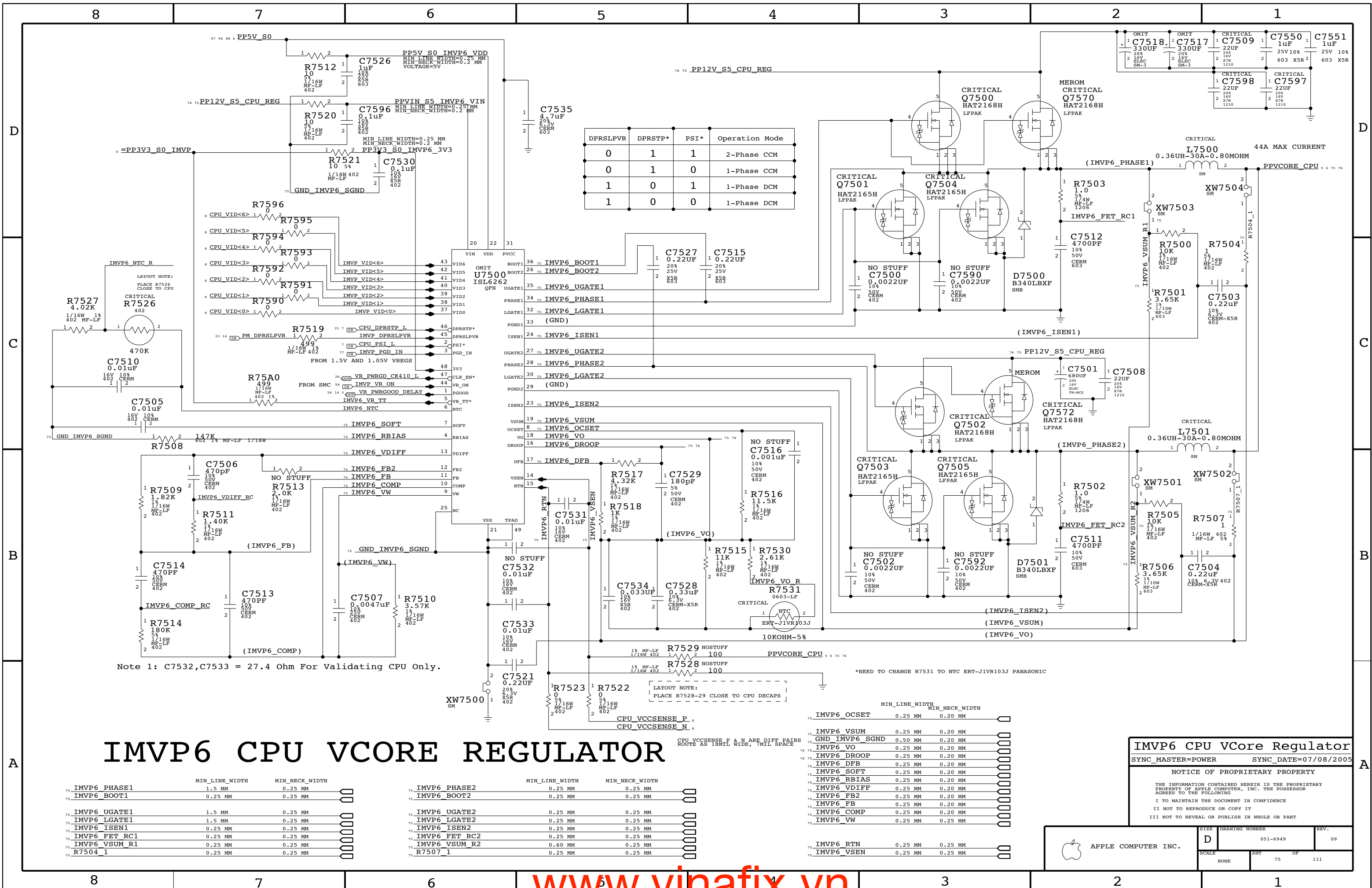
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APPLE COMPUTER INC.	D	051-6790	??
SCALE NONE	SHT 74	OF 154	



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

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

LAYOUT NOTE:
PLACE R7528-29 CLOSE TO CPU DECAPS

*NEED TO CHANGE R7531 TO NTC ERT-J1VR103J PANASONIC

IMVP6 CPU VCore REGULATOR

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6 PHASE1	1.5 MM	0.25 MM
IMVP6 BOOT1	0.25 MM	0.25 MM
IMVP6 UGATE1	1.5 MM	0.25 MM
IMVP6 LGATE1	1.5 MM	0.25 MM
IMVP6 ISEN1	0.25 MM	0.25 MM
IMVP6 FET RC1	0.25 MM	0.25 MM
IMVP6 VSUM R1	0.25 MM	0.25 MM
R7504 1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6 PHASE2	0.25 MM	0.25 MM
IMVP6 BOOT2	0.25 MM	0.25 MM
IMVP6 UGATE2	0.25 MM	0.25 MM
IMVP6 LGATE2	0.25 MM	0.25 MM
IMVP6 ISEN2	0.25 MM	0.25 MM
IMVP6 FET RC2	0.25 MM	0.25 MM
IMVP6 VSUM R2	0.60 MM	0.25 MM
R7507 1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6 OCSET	0.25 MM	0.20 MM
IMVP6 VSUM	0.25 MM	0.20 MM
GND IMVP6_SGND	0.50 MM	0.20 MM
IMVP6 VO	0.25 MM	0.20 MM
IMVP6 DROOP	0.25 MM	0.20 MM
IMVP6 DFB	0.25 MM	0.20 MM
IMVP6 SOFT	0.25 MM	0.20 MM
IMVP6 RBIAS	0.25 MM	0.20 MM
IMVP6 VDIFF	0.25 MM	0.20 MM
IMVP6 FB2	0.25 MM	0.20 MM
IMVP6 FB	0.25 MM	0.20 MM
IMVP6 COMP	0.25 MM	0.20 MM
IMVP6 VW	0.25 MM	0.25 MM
IMVP6 RTN	0.25 MM	0.25 MM
IMVP6 VSEN	0.25 MM	0.25 MM

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

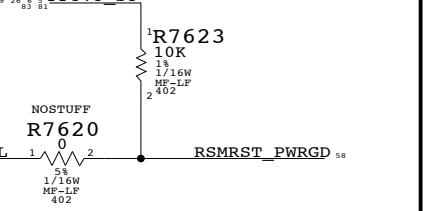
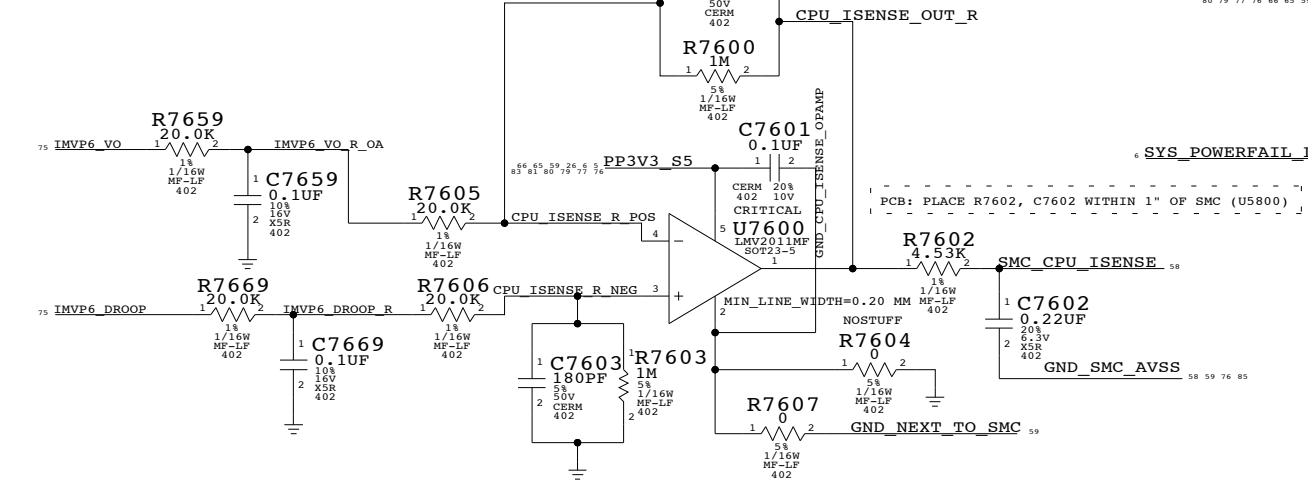
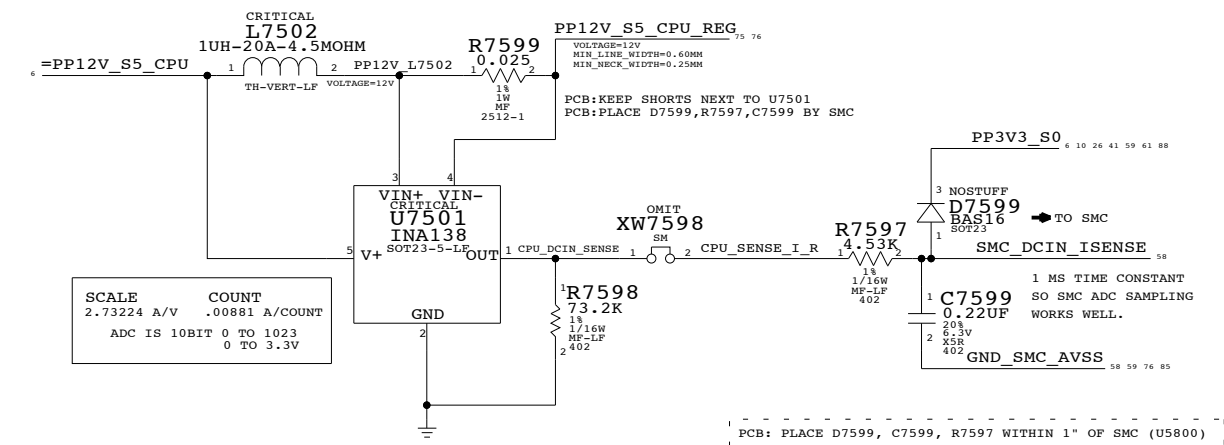
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APPLE COMPUTER INC.	SCALE	SHEET	OF	REV.
	NONE	75	111	09

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

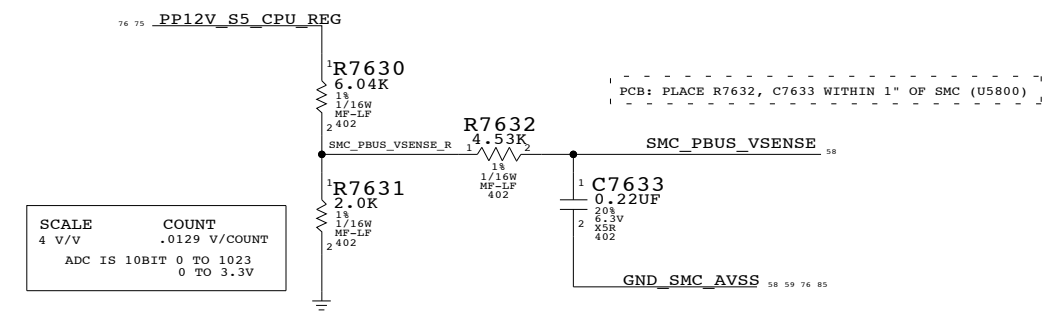
PROCESSOR VCORE CURRENT SENSE
(MEASURING DC/DC INDUCTOR DCR TO DERIVE CPU CURRENT)

SMC PWRGD PULLUP

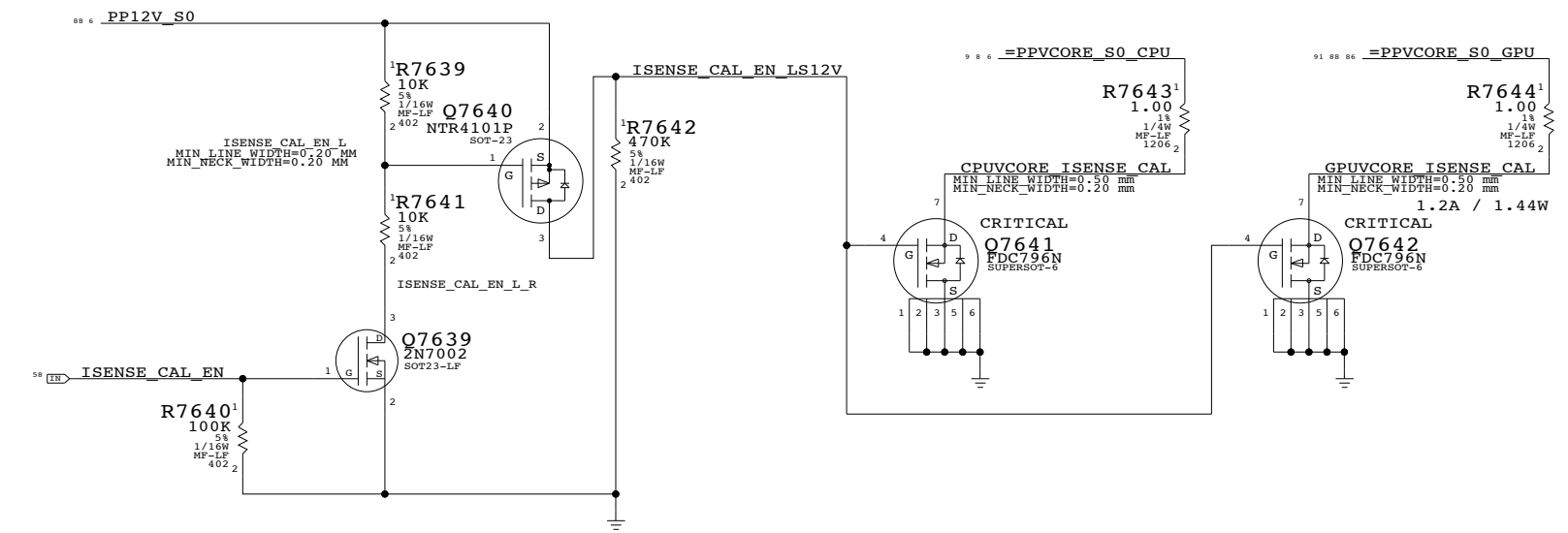


PROCESSOR DCIN VOLTAGE SENSE
(SCALING 12V INPUT VOLTAGE TO SMC)

PROCESSOR VCORE SENSE

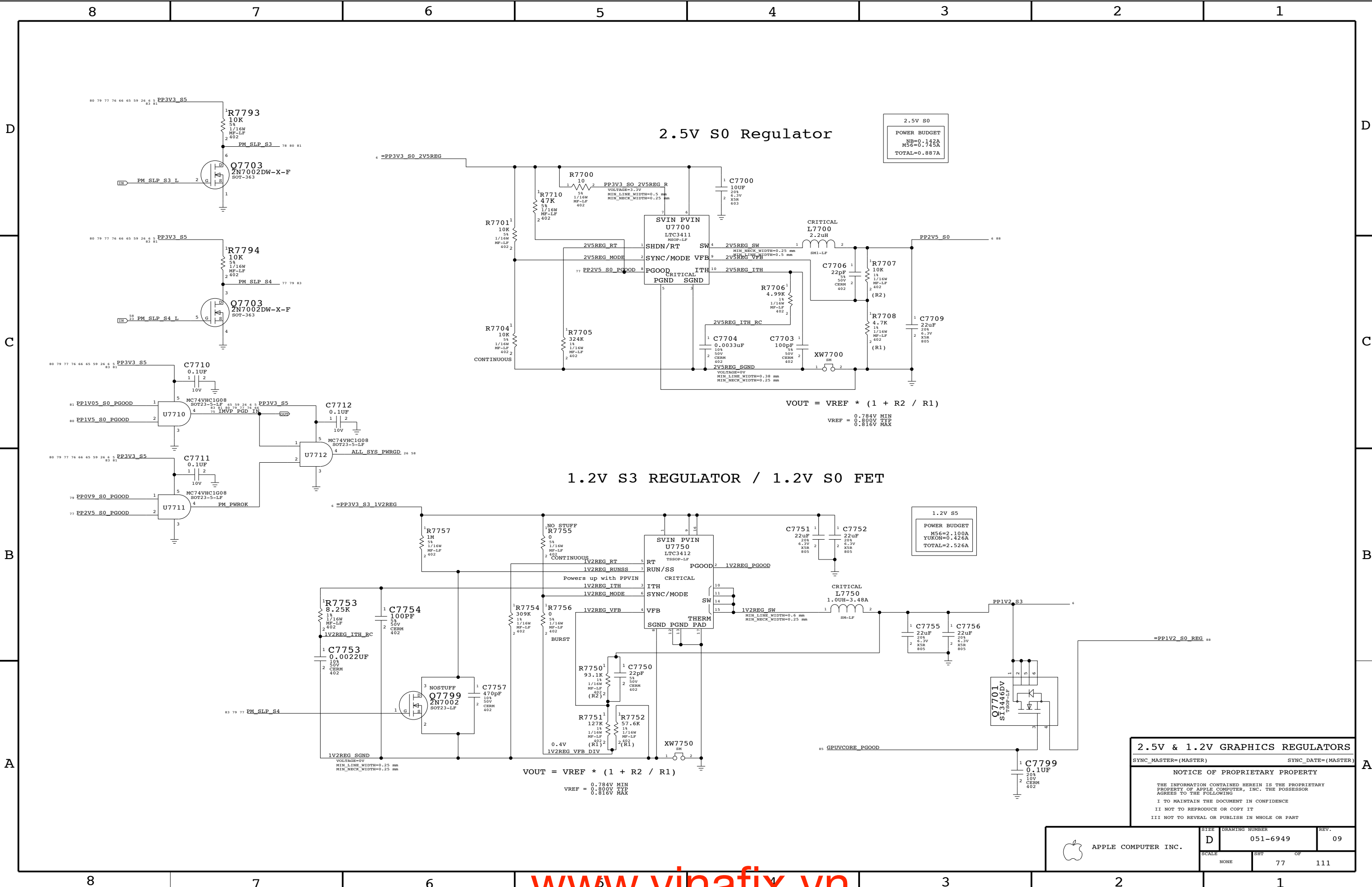


Current Sense Calibration Circuit
Switches in fixed load on power supplies to calibrate current sense circuits



CPU SENSE CIRCUITRIES
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	76 OF	111
NONE			



2.5V S0 Regulator

2.5V S0
POWER BUDGET
NS=0.142A
MS=0.745A
TOTAL=0.887A

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

$$V_{REF} = 0.784V \text{ MIN}$$

$$V_{REF} = 0.800V \text{ TYP}$$

$$V_{REF} = 0.816V \text{ MAX}$$

1.2V S3 REGULATOR / 1.2V S0 FET

1.2V S5
POWER BUDGET
MS=2.100A
YUKON=0.426A
TOTAL=2.526A

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

$$V_{REF} = 0.784V \text{ MIN}$$

$$V_{REF} = 0.800V \text{ TYP}$$

$$V_{REF} = 0.816V \text{ MAX}$$

2.5V & 1.2V GRAPHICS REGULATORS

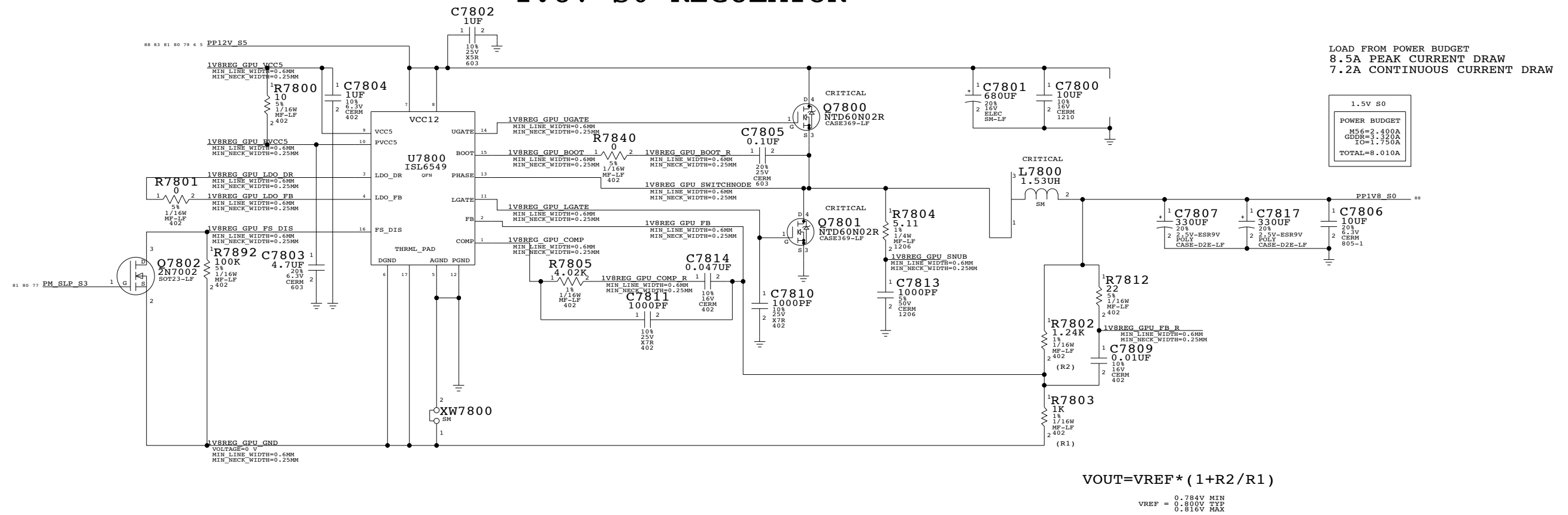
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	OF	
NONE	77	111	

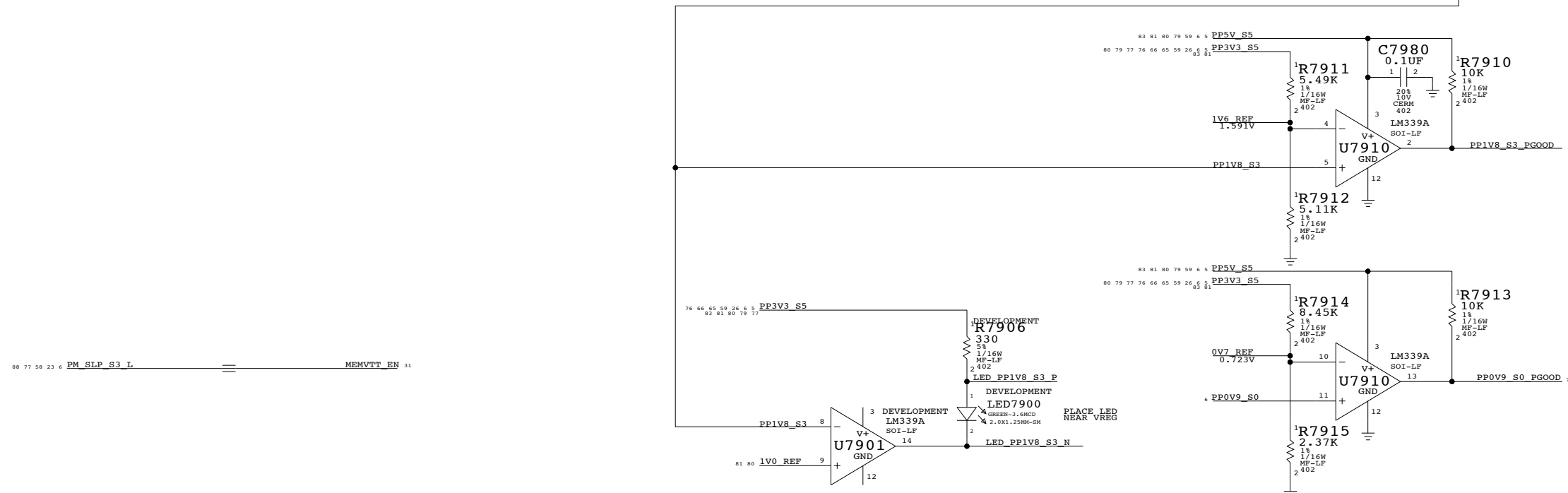
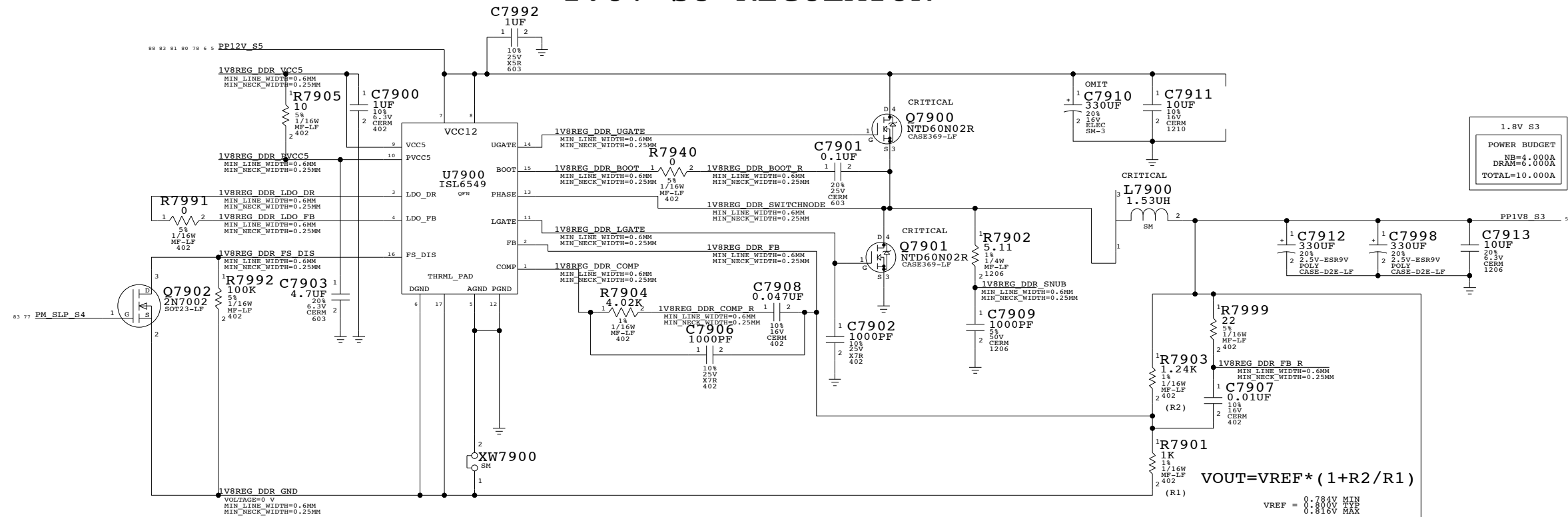
1.8V S0 REGULATOR



1.8V GDDR REGULATOR
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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	D	051-6949	09
SCALE		SHT	OF
NONE		78	111

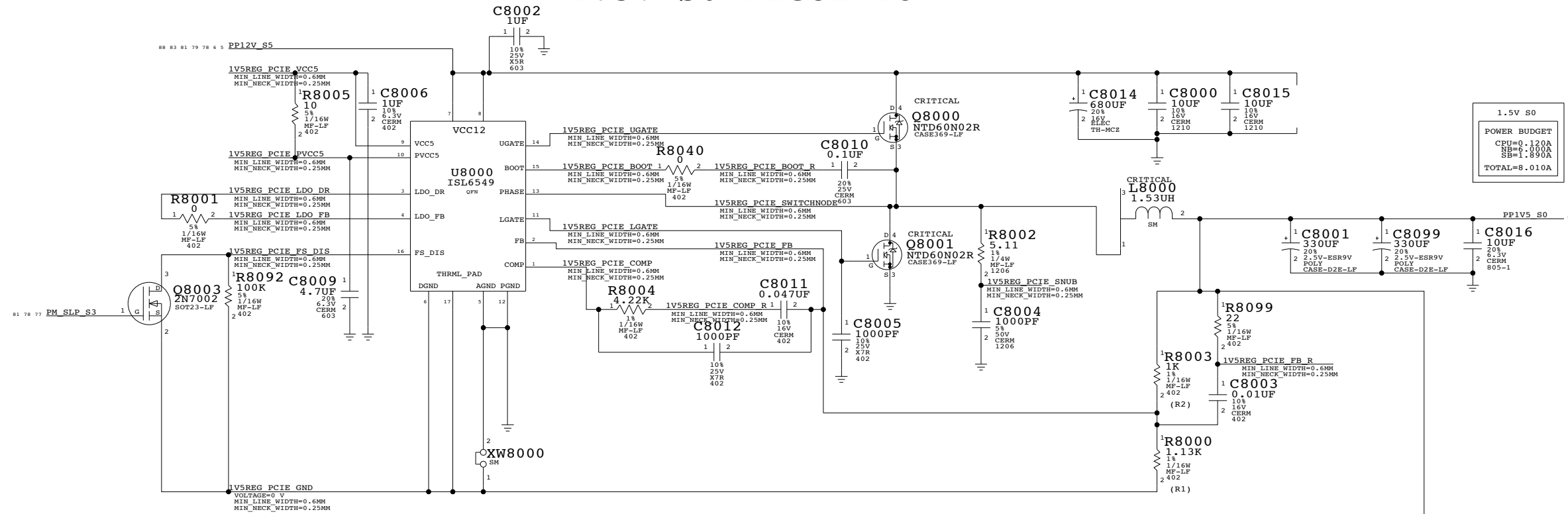
1.8V S3 REGULATOR



1.8V Vreg
 SYNC_MASTER=M23-PC SYNC_DATE=04/12/2005
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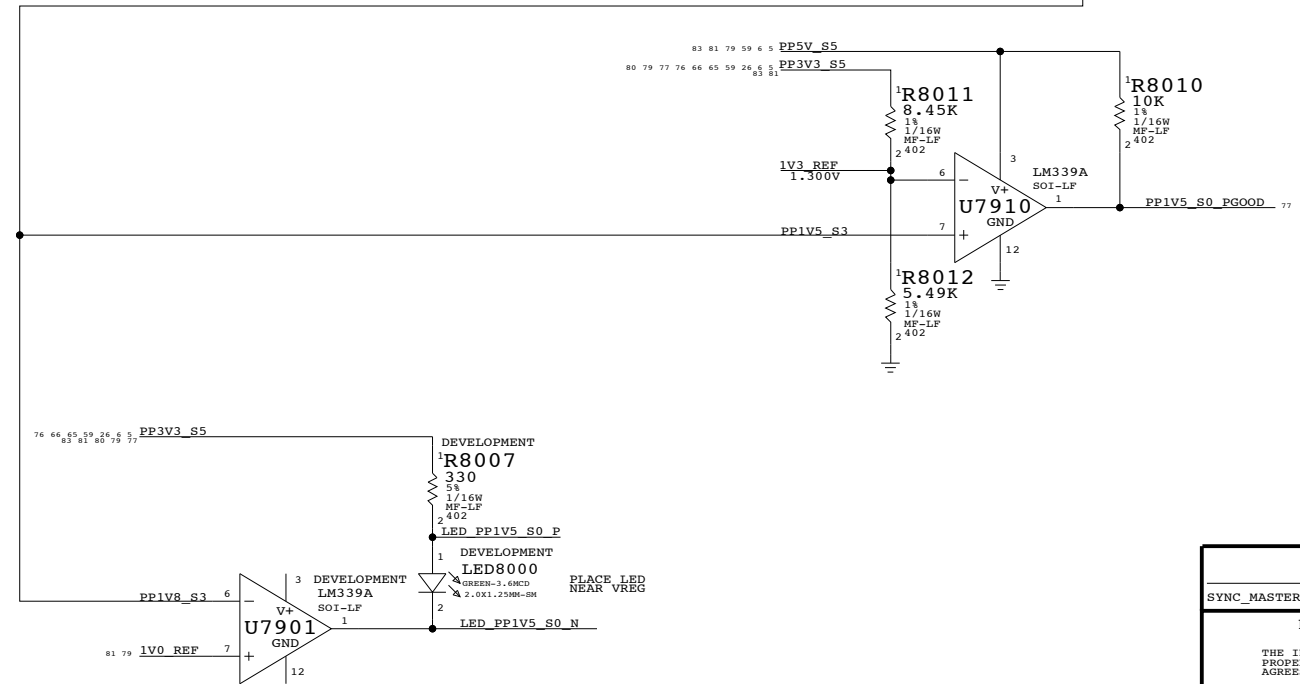
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	79 OF	111
NONE			

1.5V S0 REGULATOR



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

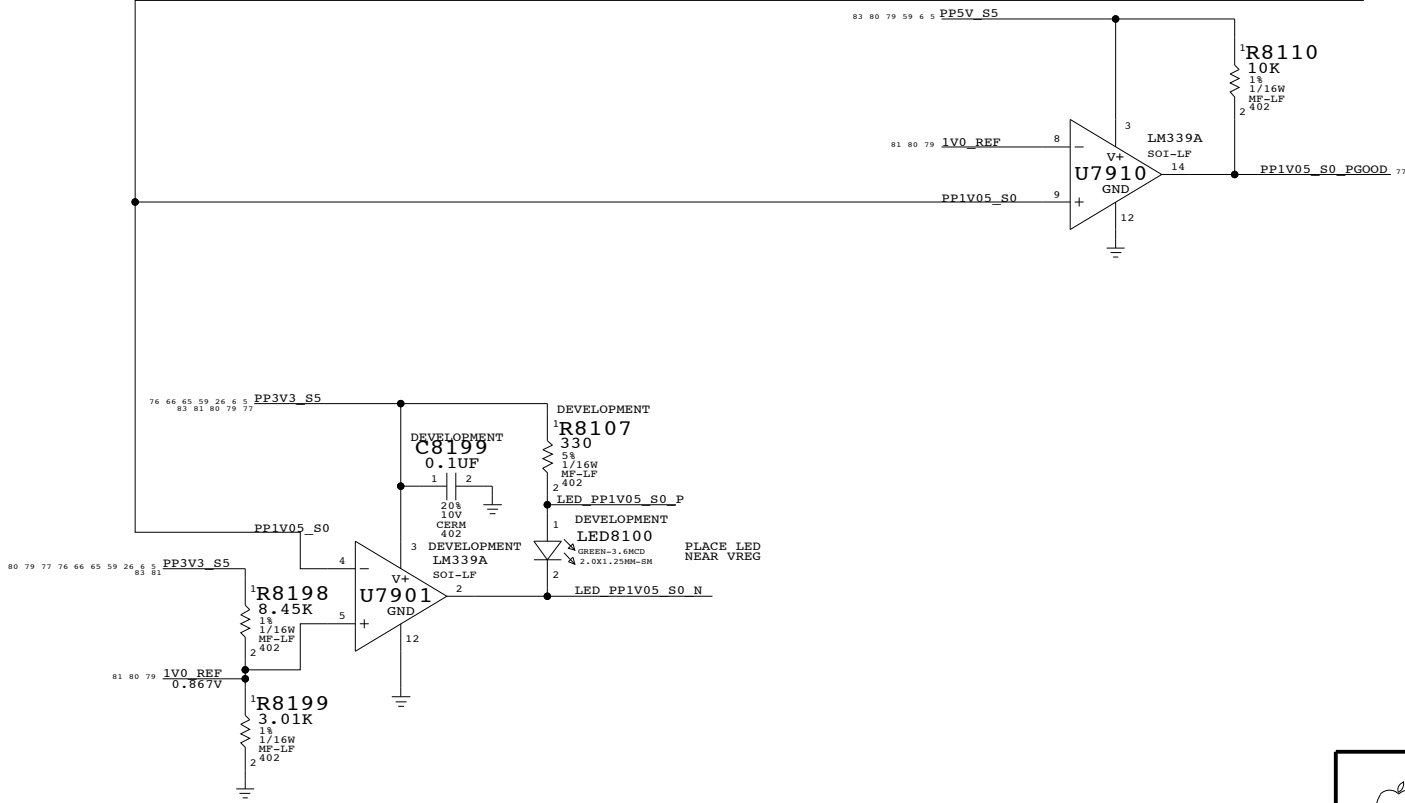
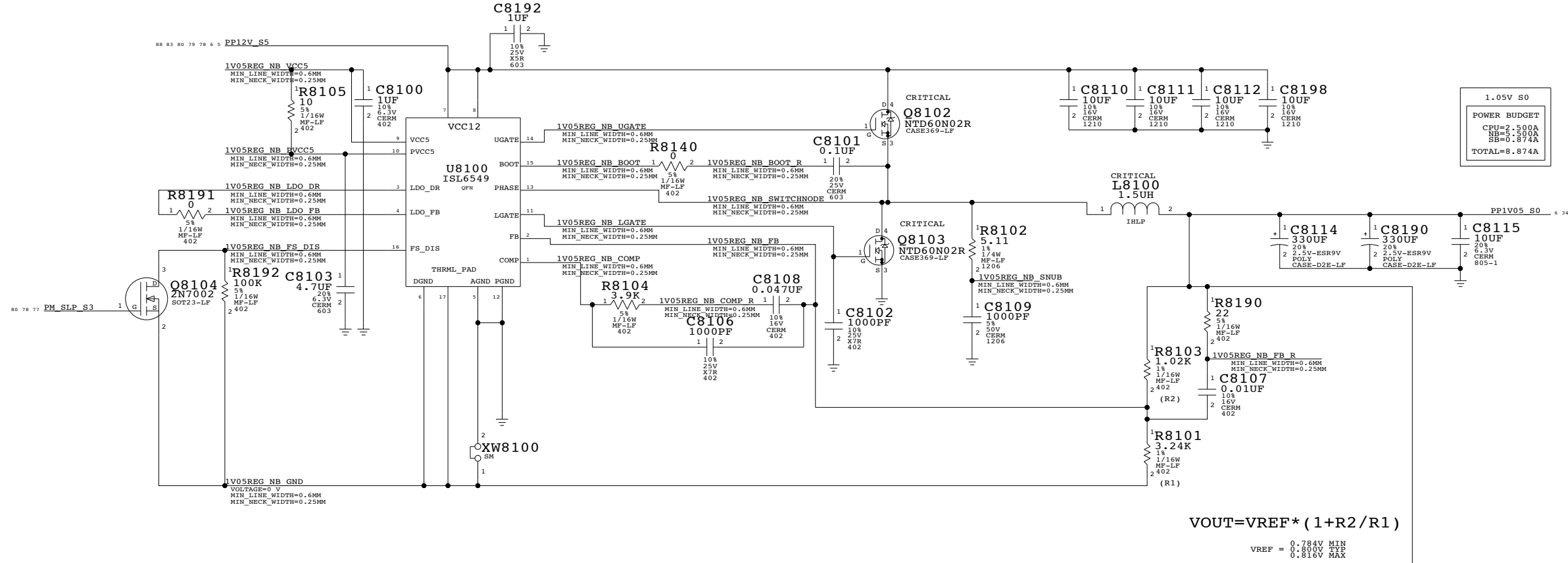
$$V_{REF} = \begin{matrix} 0.784V \text{ MIN} \\ 0.800V \text{ TYP} \\ 0.816V \text{ MAX} \end{matrix}$$



1.5V Vreg
 SYNC_MASTER=FINO-PC SYNC_DATE=05/18/2005
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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT	80 OF	111
NONE			

1.05V S0 REGULATOR



1.05V VREG

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

NOTICE OF PROPRIETARY PROPERTY

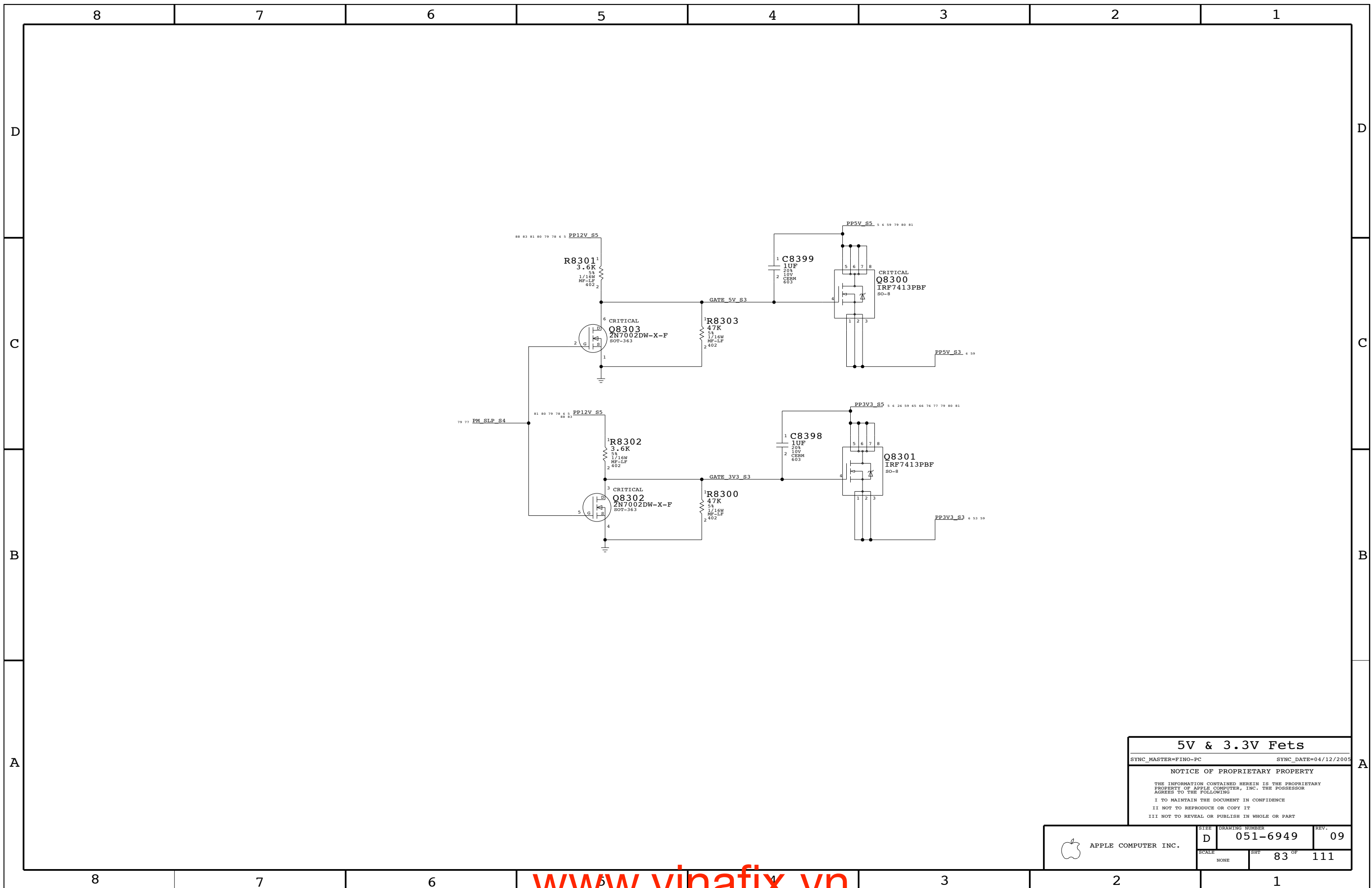
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	D	051-6949	09
SCALE	SHT	81 OF	111
NONE			



5V & 3.3V Fets

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


NOTICE OF PROPRIETARY PROPERTY

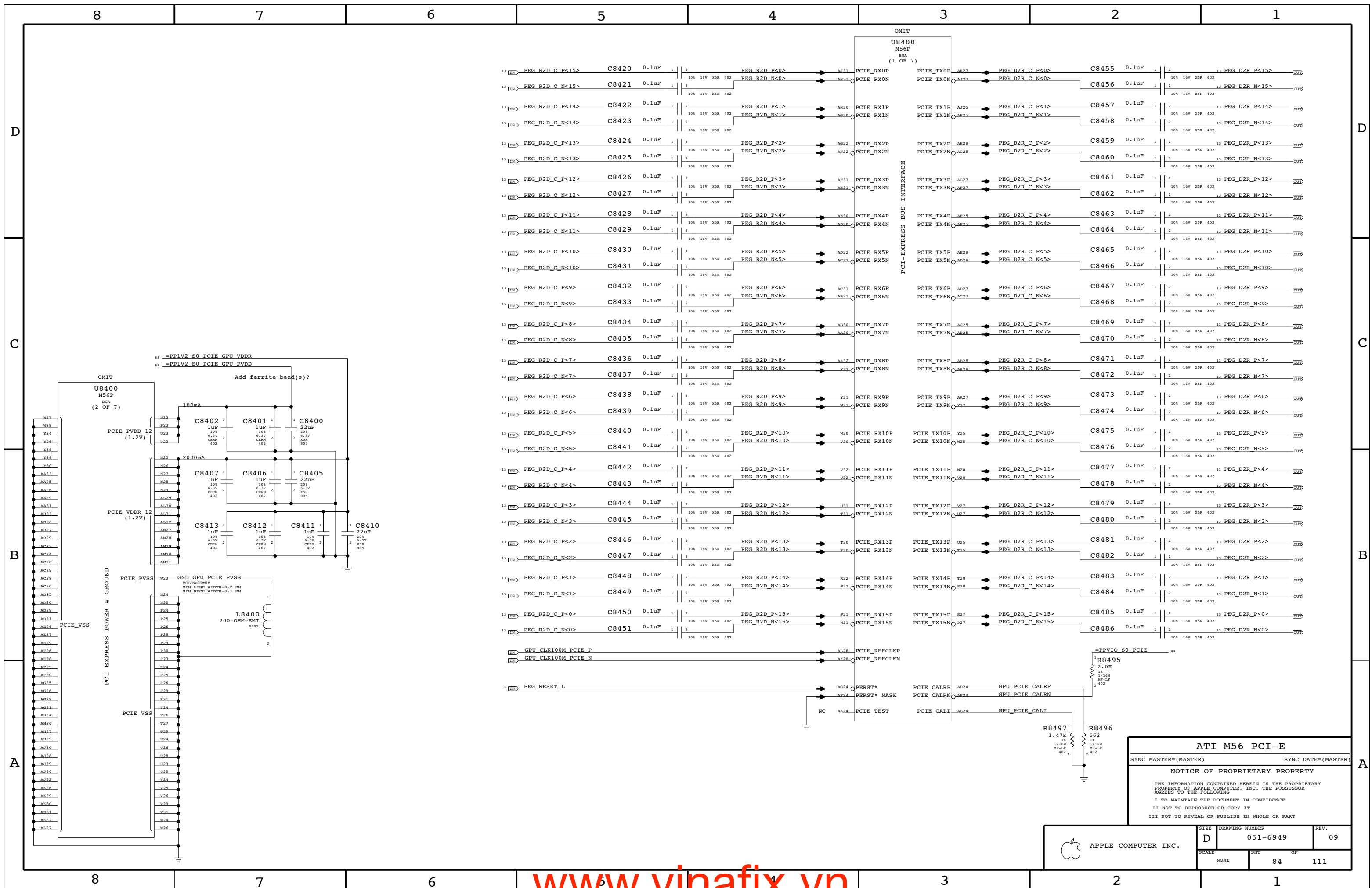
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 APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6949	REV. 09
	SCALE NONE	SHEET 83 OF 111	



IN	Component	Value	IN	Component	Value	IN	Component	Value	IN	Component	Value	
13	PEG_R2D_C_P<15>	C8420	0.1uF	1	2	PEG_R2D_P<0>	AB31	PCIE_RX0P	AE27	PEG_D2R_C_P<0>	C8455	0.1uF
13	PEG_R2D_C_N<15>	C8421	0.1uF	1	2	PEG_R2D_N<0>	AB31	PCIE_RX0N	AE27	PEG_D2R_C_N<0>	C8456	0.1uF
13	PEG_R2D_C_P<14>	C8422	0.1uF	1	2	PEG_R2D_P<1>	AB30	PCIE_RX1P	AE25	PEG_D2R_C_P<1>	C8457	0.1uF
13	PEG_R2D_C_N<14>	C8423	0.1uF	1	2	PEG_R2D_N<1>	AB30	PCIE_RX1N	AE25	PEG_D2R_C_N<1>	C8458	0.1uF
13	PEG_R2D_C_P<13>	C8424	0.1uF	1	2	PEG_R2D_P<2>	AG32	PCIE_RX2P	AE28	PEG_D2R_C_P<2>	C8459	0.1uF
13	PEG_R2D_C_N<13>	C8425	0.1uF	1	2	PEG_R2D_N<2>	AE32	PCIE_RX2N	AE28	PEG_D2R_C_N<2>	C8460	0.1uF
13	PEG_R2D_C_P<12>	C8426	0.1uF	1	2	PEG_R2D_P<3>	AE31	PCIE_RX3P	AE27	PEG_D2R_C_P<3>	C8461	0.1uF
13	PEG_R2D_C_N<12>	C8427	0.1uF	1	2	PEG_R2D_N<3>	AE31	PCIE_RX3N	AE27	PEG_D2R_C_N<3>	C8462	0.1uF
13	PEG_R2D_C_P<11>	C8428	0.1uF	1	2	PEG_R2D_P<4>	AB30	PCIE_RX4P	AE25	PEG_D2R_C_P<4>	C8463	0.1uF
13	PEG_R2D_C_N<11>	C8429	0.1uF	1	2	PEG_R2D_N<4>	AB30	PCIE_RX4N	AE25	PEG_D2R_C_N<4>	C8464	0.1uF
13	PEG_R2D_C_P<10>	C8430	0.1uF	1	2	PEG_R2D_P<5>	AG32	PCIE_RX5P	AE28	PEG_D2R_C_P<5>	C8465	0.1uF
13	PEG_R2D_C_N<10>	C8431	0.1uF	1	2	PEG_R2D_N<5>	AG32	PCIE_RX5N	AE28	PEG_D2R_C_N<5>	C8466	0.1uF
13	PEG_R2D_C_P<9>	C8432	0.1uF	1	2	PEG_R2D_P<6>	AC31	PCIE_RX6P	AE27	PEG_D2R_C_P<6>	C8467	0.1uF
13	PEG_R2D_C_N<9>	C8433	0.1uF	1	2	PEG_R2D_N<6>	AB31	PCIE_RX6N	AE27	PEG_D2R_C_N<6>	C8468	0.1uF
13	PEG_R2D_C_P<8>	C8434	0.1uF	1	2	PEG_R2D_P<7>	AB30	PCIE_RX7P	AC25	PEG_D2R_C_P<7>	C8469	0.1uF
13	PEG_R2D_C_N<8>	C8435	0.1uF	1	2	PEG_R2D_N<7>	AA30	PCIE_RX7N	AB25	PEG_D2R_C_N<7>	C8470	0.1uF
13	PEG_R2D_C_P<7>	C8436	0.1uF	1	2	PEG_R2D_P<8>	AA32	PCIE_RX8P	AE28	PEG_D2R_C_P<8>	C8471	0.1uF
13	PEG_R2D_C_N<7>	C8437	0.1uF	1	2	PEG_R2D_N<8>	Y32	PCIE_RX8N	AE28	PEG_D2R_C_N<8>	C8472	0.1uF
13	PEG_R2D_C_P<6>	C8438	0.1uF	1	2	PEG_R2D_P<9>	Y31	PCIE_RX9P	AA27	PEG_D2R_C_P<9>	C8473	0.1uF
13	PEG_R2D_C_N<6>	C8439	0.1uF	1	2	PEG_R2D_N<9>	W31	PCIE_RX9N	Y27	PEG_D2R_C_N<9>	C8474	0.1uF
13	PEG_R2D_C_P<5>	C8440	0.1uF	1	2	PEG_R2D_P<10>	W30	PCIE_RX10P	Y25	PEG_D2R_C_P<10>	C8475	0.1uF
13	PEG_R2D_C_N<5>	C8441	0.1uF	1	2	PEG_R2D_N<10>	V30	PCIE_RX10N	W25	PEG_D2R_C_N<10>	C8476	0.1uF
13	PEG_R2D_C_P<4>	C8442	0.1uF	1	2	PEG_R2D_P<11>	V32	PCIE_RX11P	W28	PEG_D2R_C_P<11>	C8477	0.1uF
13	PEG_R2D_C_N<4>	C8443	0.1uF	1	2	PEG_R2D_N<11>	U32	PCIE_RX11N	V28	PEG_D2R_C_N<11>	C8478	0.1uF
13	PEG_R2D_C_P<3>	C8444	0.1uF	1	2	PEG_R2D_P<12>	U31	PCIE_RX12P	V27	PEG_D2R_C_P<12>	C8479	0.1uF
13	PEG_R2D_C_N<3>	C8445	0.1uF	1	2	PEG_R2D_N<12>	T31	PCIE_RX12N	U27	PEG_D2R_C_N<12>	C8480	0.1uF
13	PEG_R2D_C_P<2>	C8446	0.1uF	1	2	PEG_R2D_P<13>	T30	PCIE_RX13P	U25	PEG_D2R_C_P<13>	C8481	0.1uF
13	PEG_R2D_C_N<2>	C8447	0.1uF	1	2	PEG_R2D_N<13>	R30	PCIE_RX13N	T25	PEG_D2R_C_N<13>	C8482	0.1uF
13	PEG_R2D_C_P<1>	C8448	0.1uF	1	2	PEG_R2D_P<14>	R32	PCIE_RX14P	T28	PEG_D2R_C_P<14>	C8483	0.1uF
13	PEG_R2D_C_N<1>	C8449	0.1uF	1	2	PEG_R2D_N<14>	F32	PCIE_RX14N	R28	PEG_D2R_C_N<14>	C8484	0.1uF
13	PEG_R2D_C_P<0>	C8450	0.1uF	1	2	PEG_R2D_P<15>	F31	PCIE_RX15P	R27	PEG_D2R_C_P<15>	C8485	0.1uF
13	PEG_R2D_C_N<0>	C8451	0.1uF	1	2	PEG_R2D_N<15>	N31	PCIE_RX15N	R27	PEG_D2R_C_N<15>	C8486	0.1uF
IN	GPU_CLK100M_PCIE_P					PCIE_REFCLKP	AE28	PCIE_REFCLKP				
IN	GPU_CLK100M_PCIE_N					PCIE_REFCLKN	AE28	PCIE_REFCLKN				
IN	PEG_RESET_L					PERST*	AG24	PERST*				
						PERST* MASK	AE24	PERST* MASK				
						PCIE_TEST	AA24	PCIE_TEST				

ATI M56 PCI-E

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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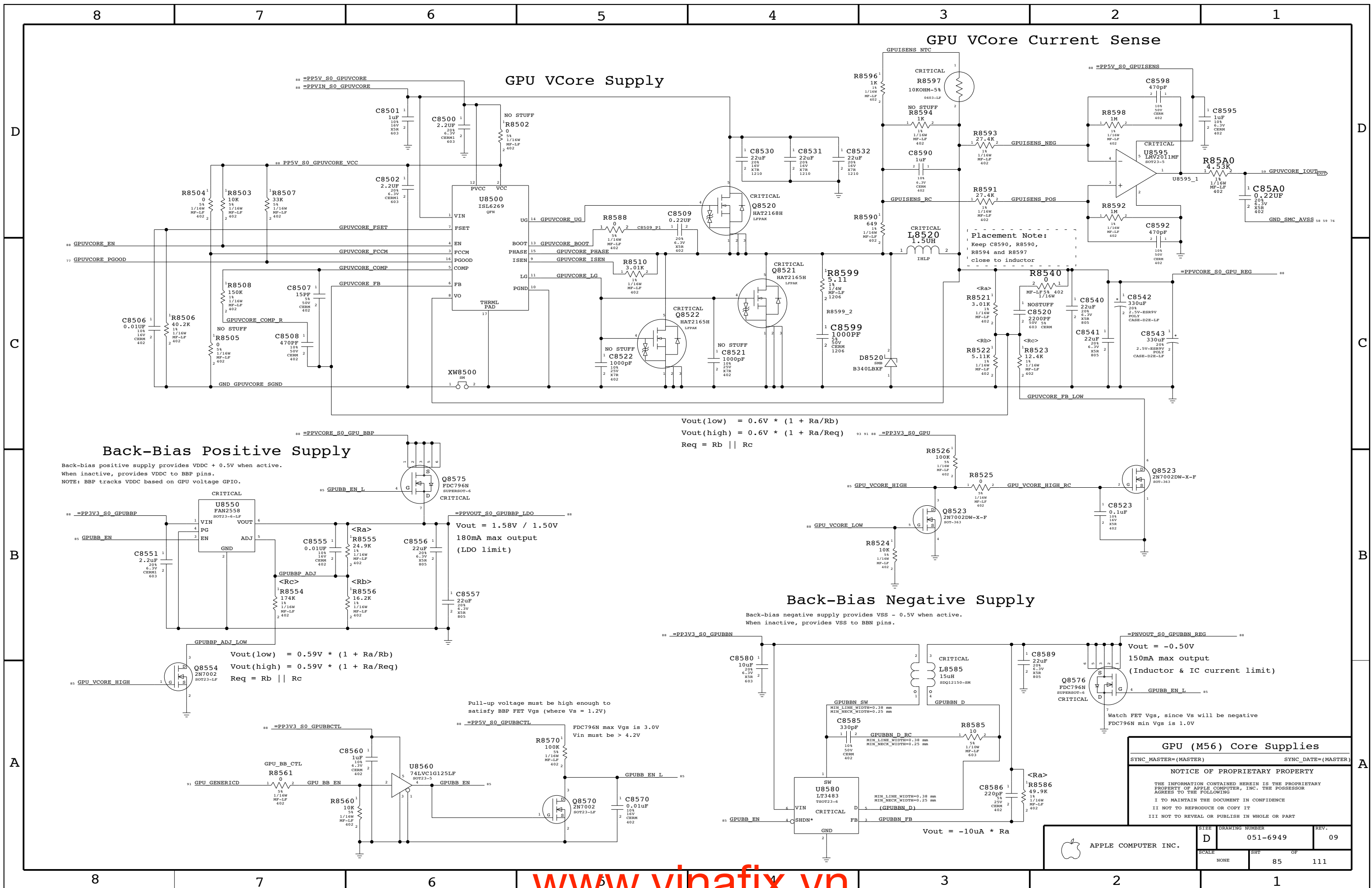
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SCALE	SHT	OF	
NONE	84	111	



GPU VCore Supply

GPU VCore Current Sense

Back-Bias Positive Supply

Back-Bias Negative Supply

Back-bias positive supply provides VDDC + 0.5V when active. When inactive, provides VDDC to BBP pins.
NOTE: BBP tracks VDDC based on GPU voltage GPIO.

Back-bias negative supply provides VSS - 0.5V when active. When inactive, provides VSS to BBN pins.

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

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

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

$$V_{out(LOW)} = 0.59V * (1 + R_a/R_b)$$

$$V_{out(HIGH)} = 0.59V * (1 + R_a/R_{eq})$$

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

Pull-up voltage must be high enough to satisfy BBP FET Vgs (where Vs = 1.2V)
FDC796N max Vgs is 3.0V
Vin must be > 4.2V

GPU (M56) Core Supplies
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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)

8 7 6 5 4 3 2 1

D

C

B

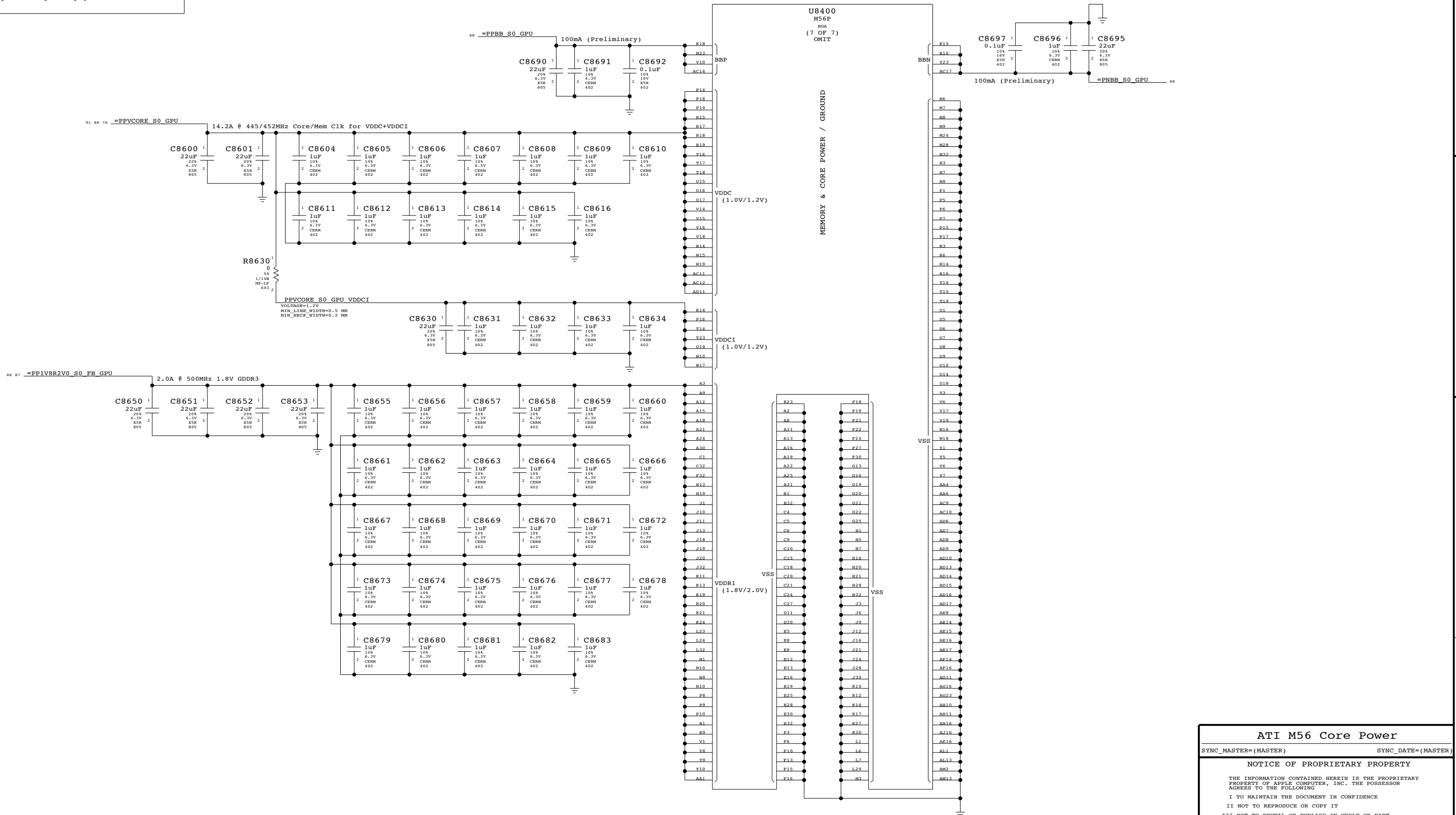
A

D

C

B

A



ATI M56 Core Power

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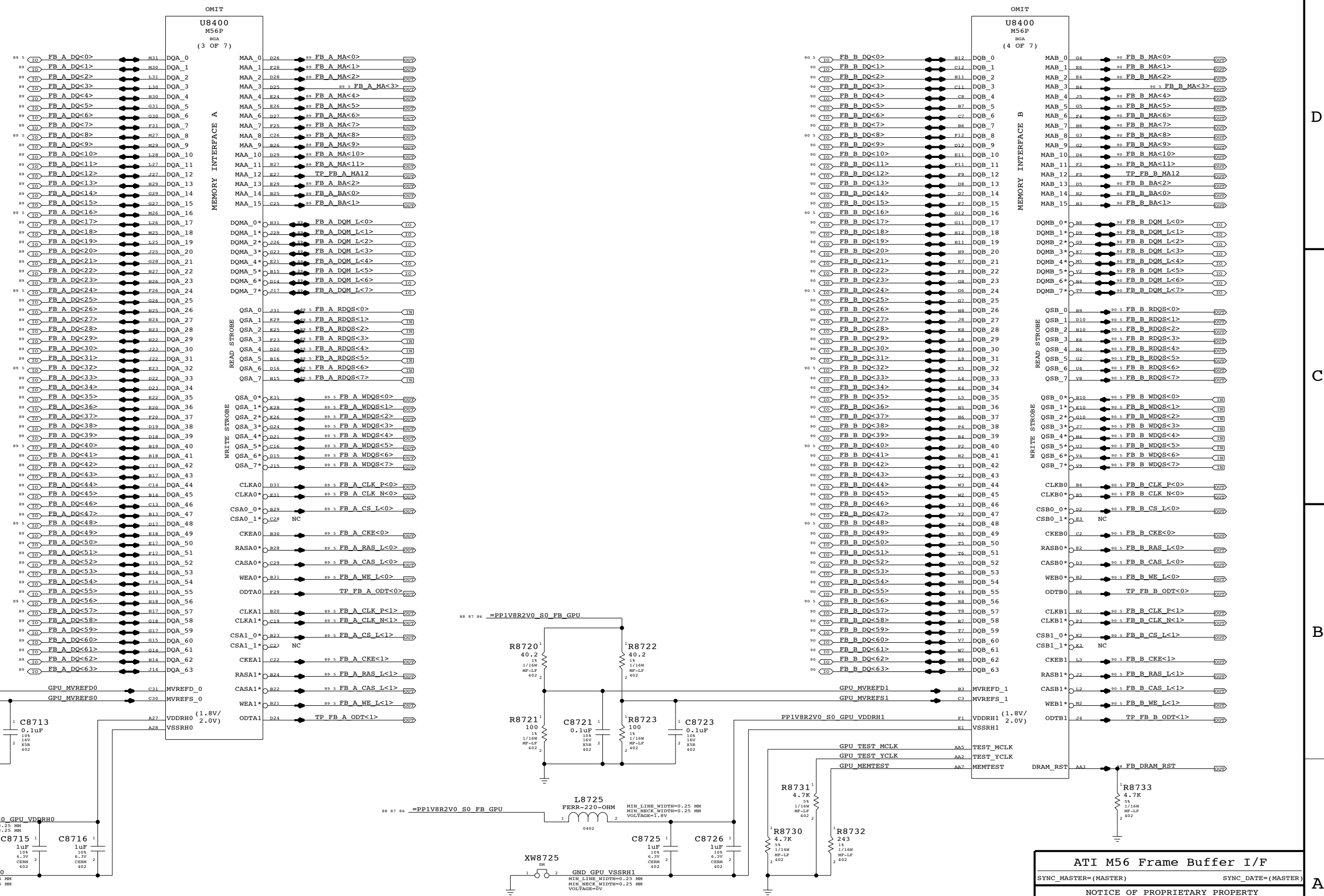
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Page Notes

Power aliases required by this page:
 - =PP1V8R2V0_S0_FB_GPU

Signal aliases required by this page:
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BOM options provided by this page:
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ATI M56 Frame Buffer I/F

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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	D	051-6949	09
SCALE	NONE	SHT	OF
		87	111

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1

"S0" GPU RAILS

ONLY ON IN RUN

M56 GPIOs

=PP3V3_S0_GPU_VDDR3 08 91

59 PP1V0R1V2_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

85 PP3V_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=0.5MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PNBB_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.5MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=0V

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

77 4 PP2V5_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.8V

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

83 81 80 79 78 6 5 PP12V_S5

76 6 PP12V_S0

97 94 75 6 PP5V_S0

85 GPUVCORE_EN 331 1716W 2 R8801 402 MF-LF 5% PM_SLP_S3_I 4 23 58 77 79

87 FB_DRAM_RST MAKE_BASE=TRUE DRAM_RST 5 89 90

94 91 GPU_GPIO_0 10K 1716W 2 R8813 402 MF-LF 5%
 GPIO 0 = TRANSMITTER POWER SAVINGS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_1 10K 1716W 2 R8802 402 MF-LF 5%
 GPIO 1 = TRANSMITTER DE-EMPHASIS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_2 10K 1716W 2 R8803 402 MF-LF 5%

91 GPU_GPIO_3 10K 1716W 2 R8804 402 MF-LF 5%

91 GPU_GPIO_4 10K 1716W 2 R8805 402 MF-LF 5%
 GPIO 4 = DEBUG SIGNALS OUT

91 GPU_GPIO_5 10K 1716W 2 R8806 402 MF-LF 5%

91 GPU_GPIO_6 10K 1716W 2 R8807 402 MF-LF 5%

TP_GPU_GPIO_7 MAKE_BASE=TRUE GPU_GPIO_7 91

91 GPU_GPIO_8 10K 1716W 2 R8808 402 MF-LF 5%

NC_GPU_GPIO_10 MAKE_BASE=TRUE GPU_GPIO_10 91

91 GPU_GPIO_9 10K 1716W 2 R8809 402 MF-LF 5%

91 GPU_GPIO_13 10K 1716W 2 R8812 402 MF-LF 5%

91 GPU_GPIO_12 10K 1716W 2 R8810 402 MF-LF 5%

91 GPU_GPIO_11 10K 1716W 2 R8811 402 MF-LF 5%

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

91 GPU_GPIO_24 10K 1716W 2 R8830 402 MF-LF 5%

91 GPU_GPIO_27 10K 1716W 2 R8831 402 MF-LF 5%

91 GPU_GPIO_28 10K 1716W 2 R8832 402 MF-LF 5%

91 GPU_GPIO_29 10K 1716W 2 R8833 402 MF-LF 5%

85 GPU_VCORE_LOW MAKE_BASE=TRUE GPU_GPIO_15 91

10K 1716W 2 R8850 402 MF-LF 5%
 GPIO 15 = SWITCH CORE VOLTAGE HIGH TO LOW
 EXTERNAL PULL DOWN RECOMMENDED

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

Page Notes

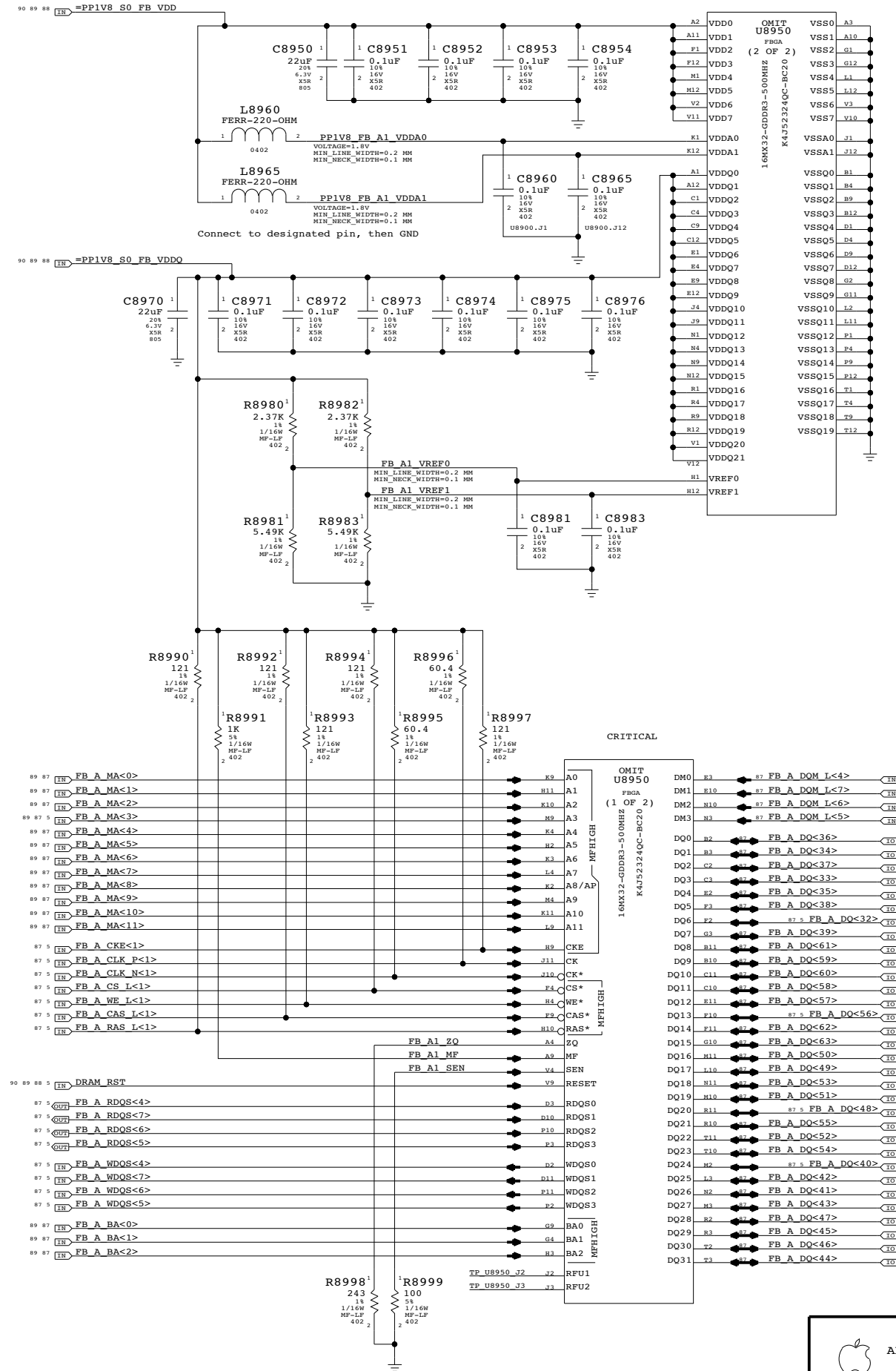
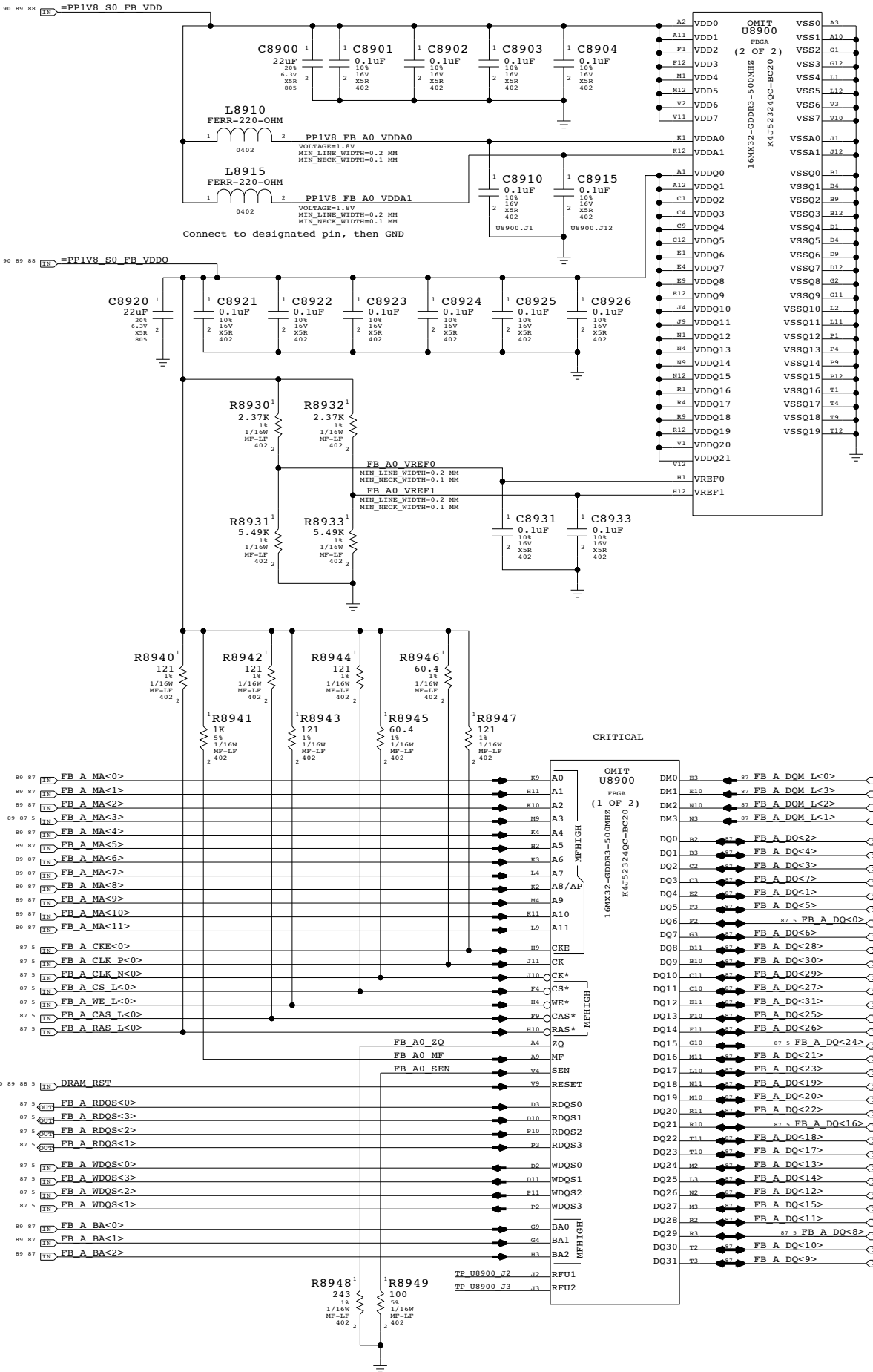
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 - =PP1V8_S0_FB_VDD
 - =PP1V8_S0_FB_VDDQ

Signal aliases required by this page:
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BOM options provided by this page:
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CRITICAL

CRITICAL



GDDR3 Frame Buffer A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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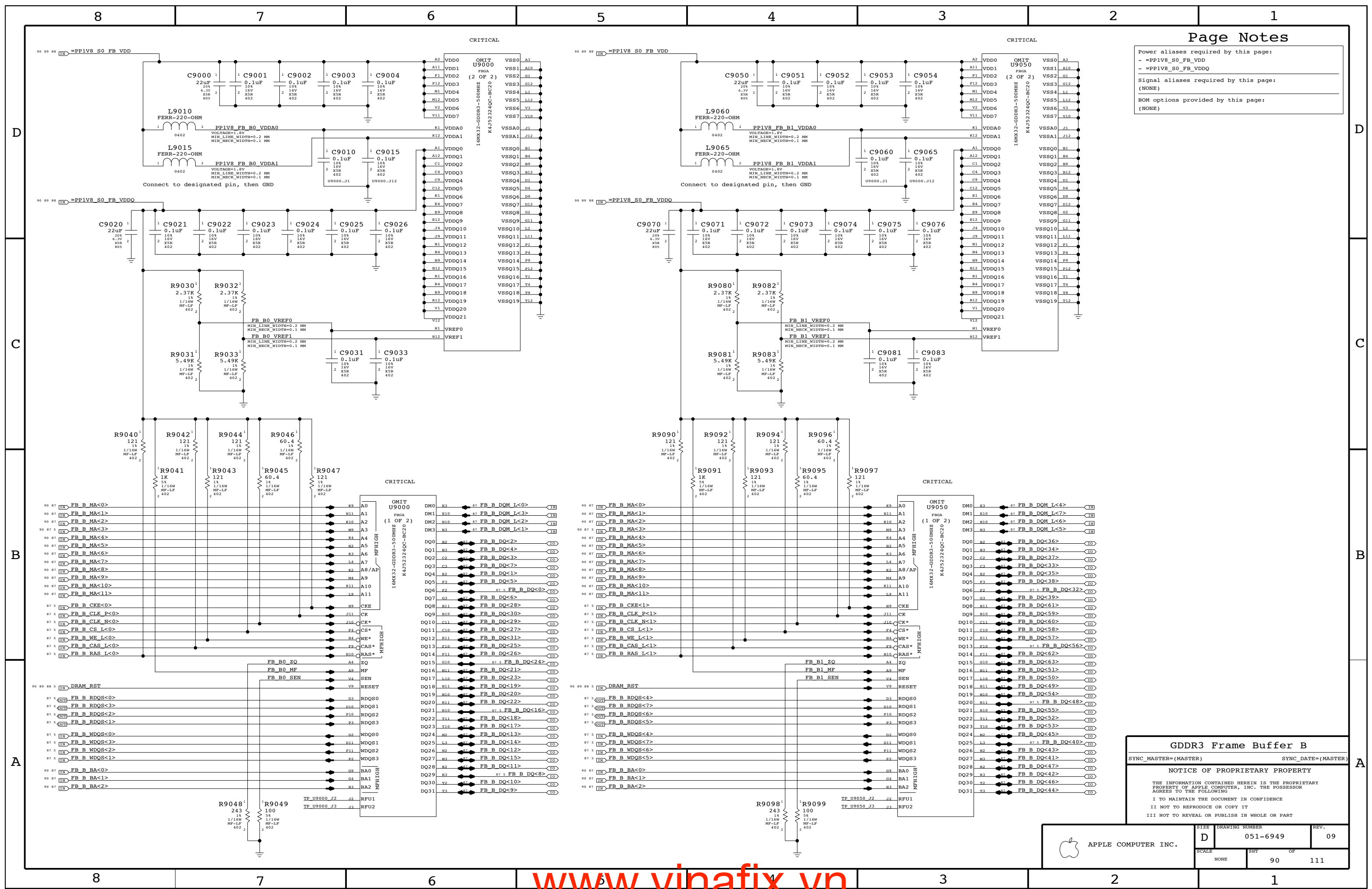
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DRAWING NUMBER	051-6949	REV.	09
	SCALE	SHEET	OF
NONE		89	111

Power aliases required by this page:
 - =PP1V8_S0_FB_VDD
 - =PP1V8_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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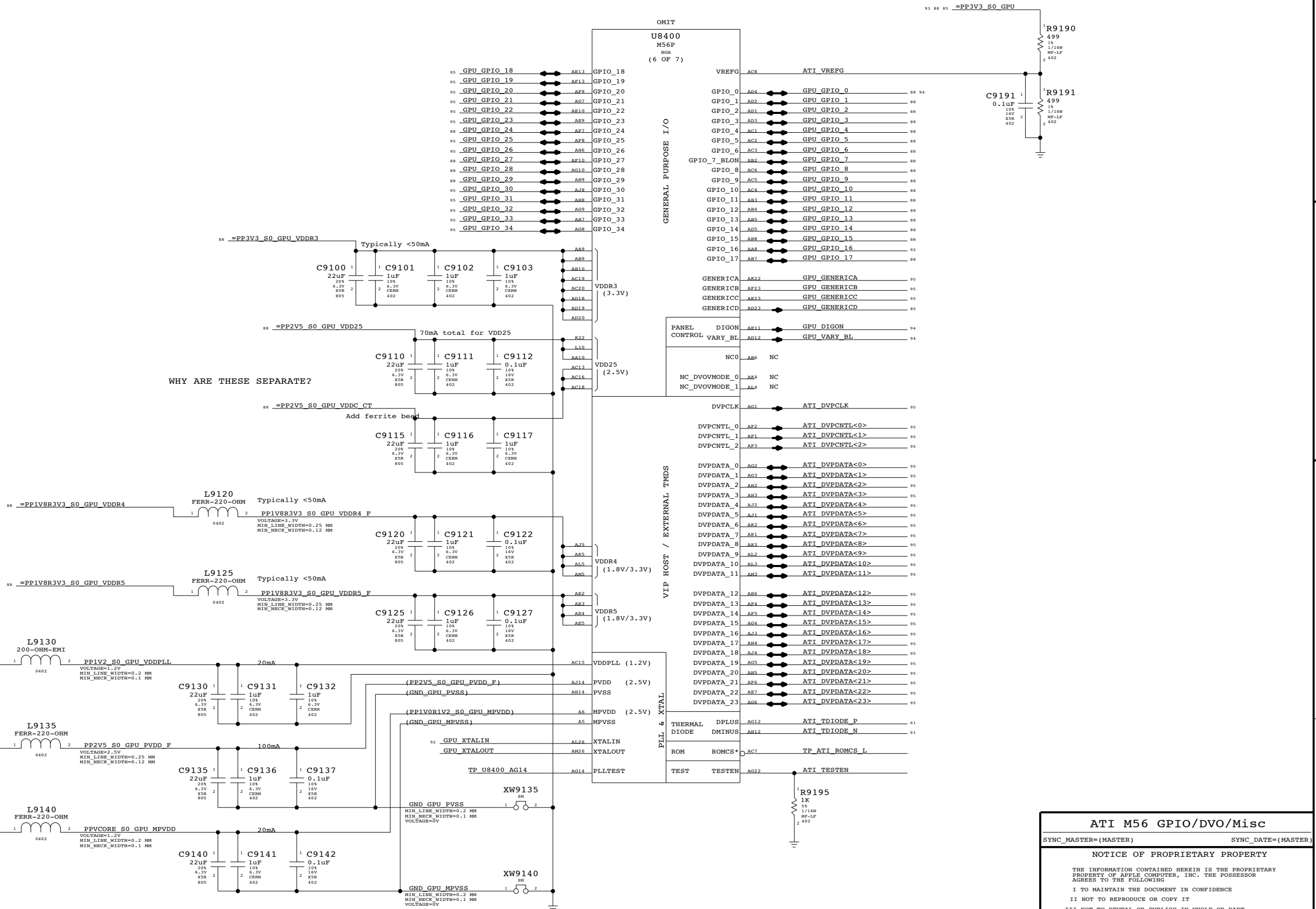
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SHEET		OF	
90		111	

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?

ATI M56 GPIO/DVO/Misc

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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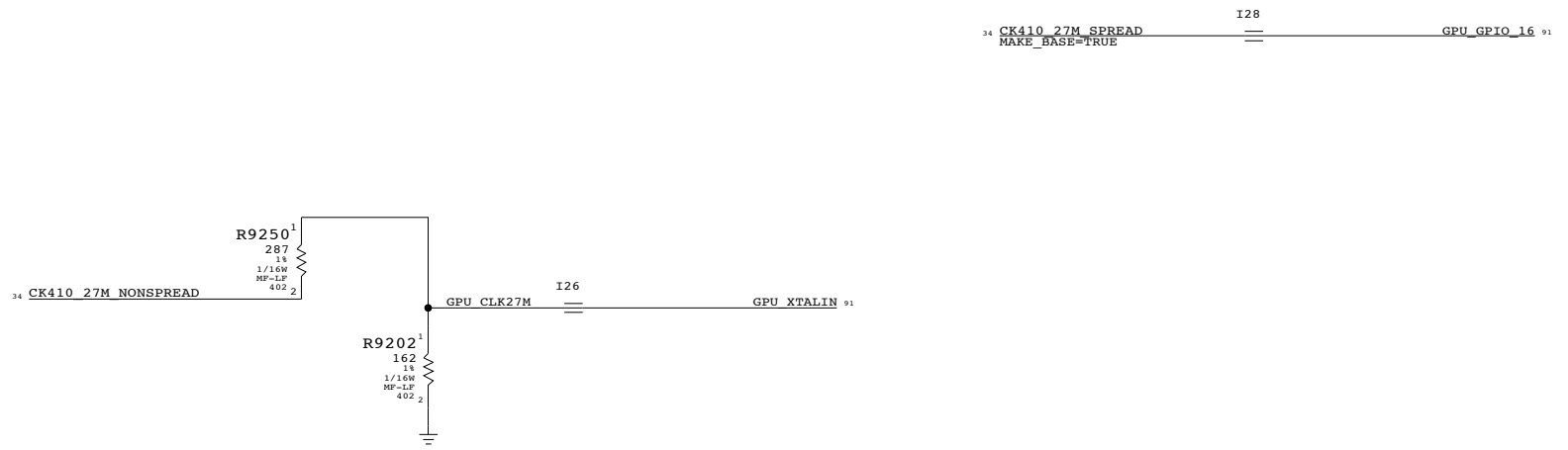
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	OF	
NONE	91	111	

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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NONE		92	111

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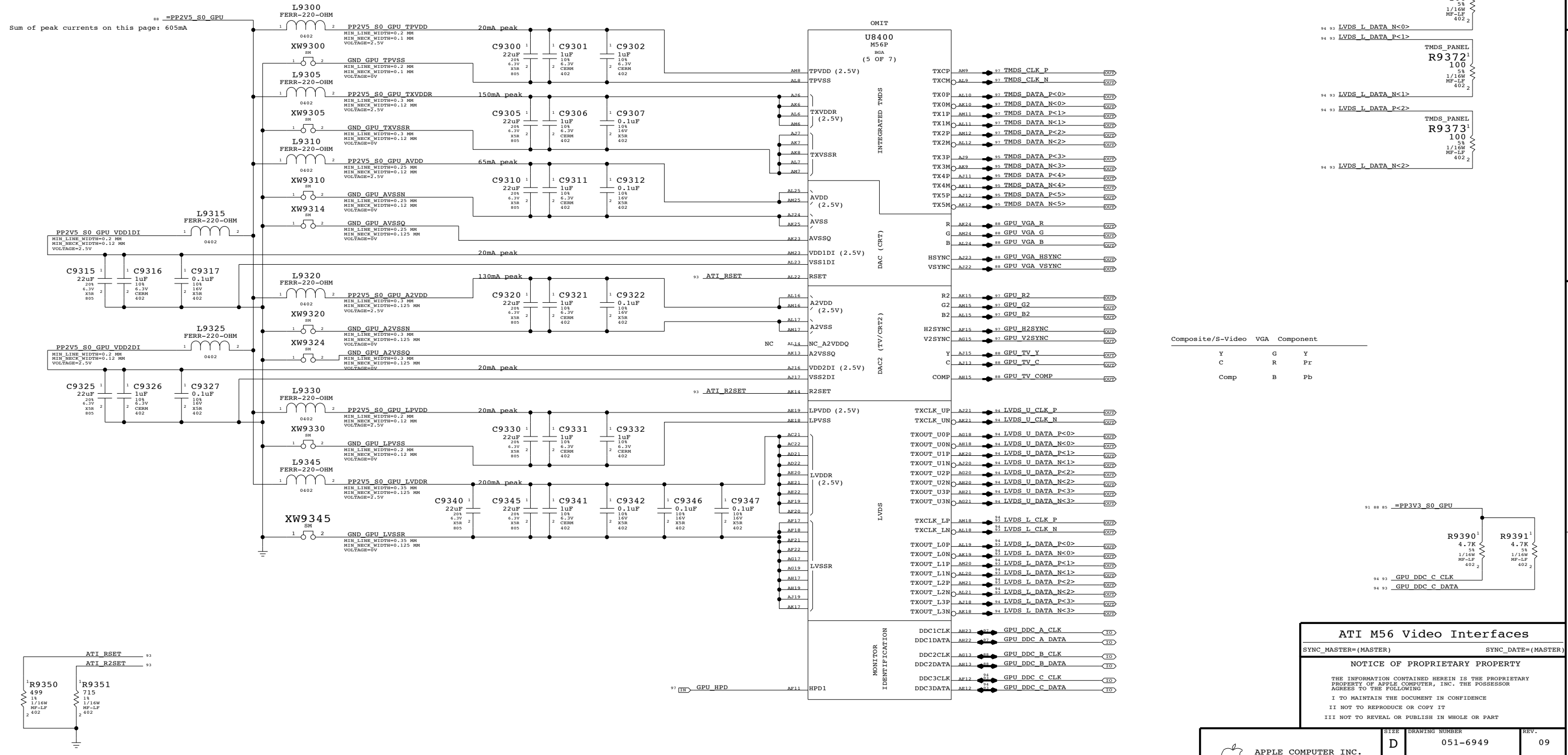
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 - =PP1V8R2V5_S0_GPU_LVDDR

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)

Sum of peak currents on this page: 605mA



ATI M56 Video Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

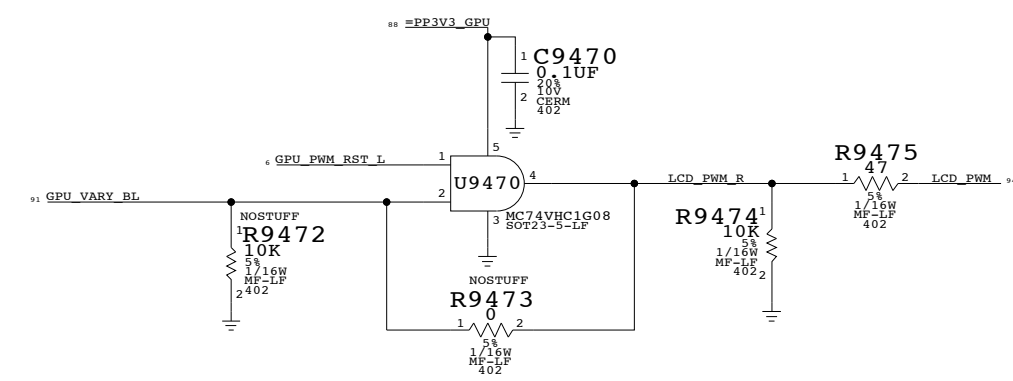
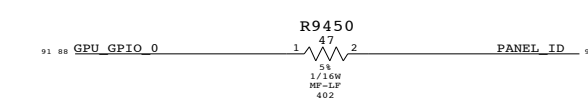
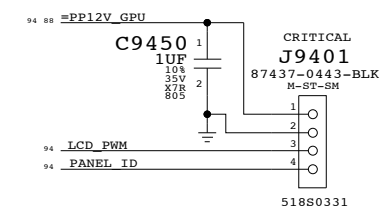
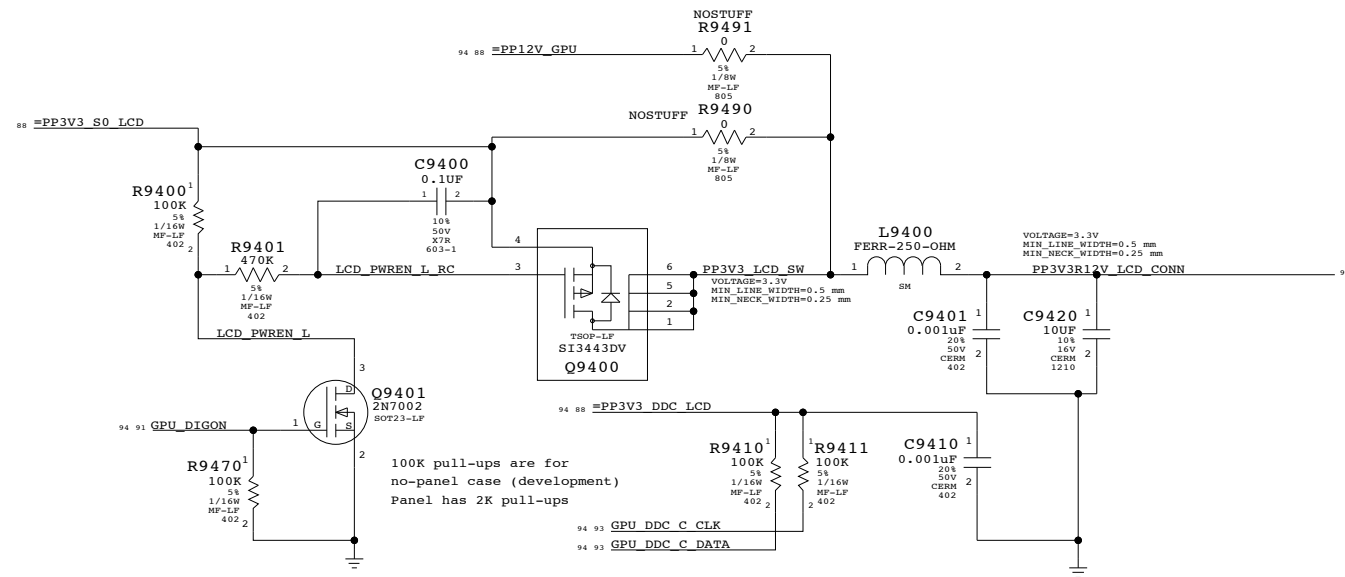
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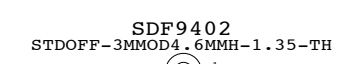
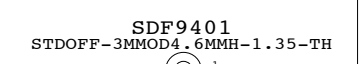
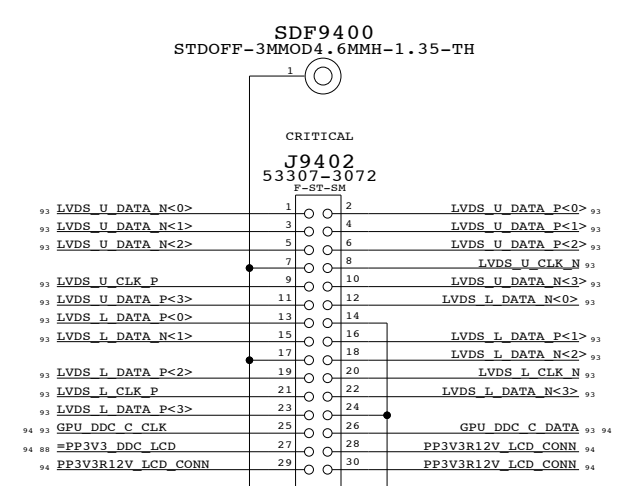
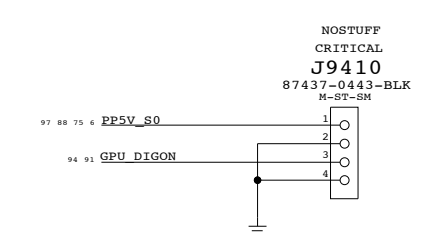
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NONE	93	111	

LCD (LVDS) INTERFACE

INVERTER INTERFACE



GATE TO PREVENT LEAKAGE ONTO PWM
MIGHT BE ABLE TO BYPASS IF SMC DRIVES SIGNAL



NOTE: 3RD STANDOFF FOR LVDS->TMDS CONVERTER BOARD

Internal Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/27/2005
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NONE	94	111	

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D

D

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TP GPU GPIO<33> == GPU_GPIO_33 »
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TP GPU GPIO<32> == GPU_GPIO_32 »
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TP GPU GPIO<31> == GPU_GPIO_31 »
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TP GPU GPIO<26> == GPU_GPIO_26 »
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TP GPU GPIO<22> == GPU_GPIO_22 »
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TP GPU GPIO<21> == GPU_GPIO_21 »
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TP GPU GPIO<20> == GPU_GPIO_20 »
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TP GPU GPIO<19> == GPU_GPIO_19 »
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TP GPU GPIO<18> == GPU_GPIO_18 »
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TP GPU GENERICA == GPU_GENERICA »
 MAKE_BASE=TRUE

TP GPU GENERICB == GPU_GENERICB »
 MAKE_BASE=TRUE

TP GPU GENERICC == GPU_GENERICC »
 MAKE_BASE=TRUE

C

C

B

B

A

A

M56 TPS

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APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6949	09
SCALE	SHT		OF
NONE	95		111

8

7

6

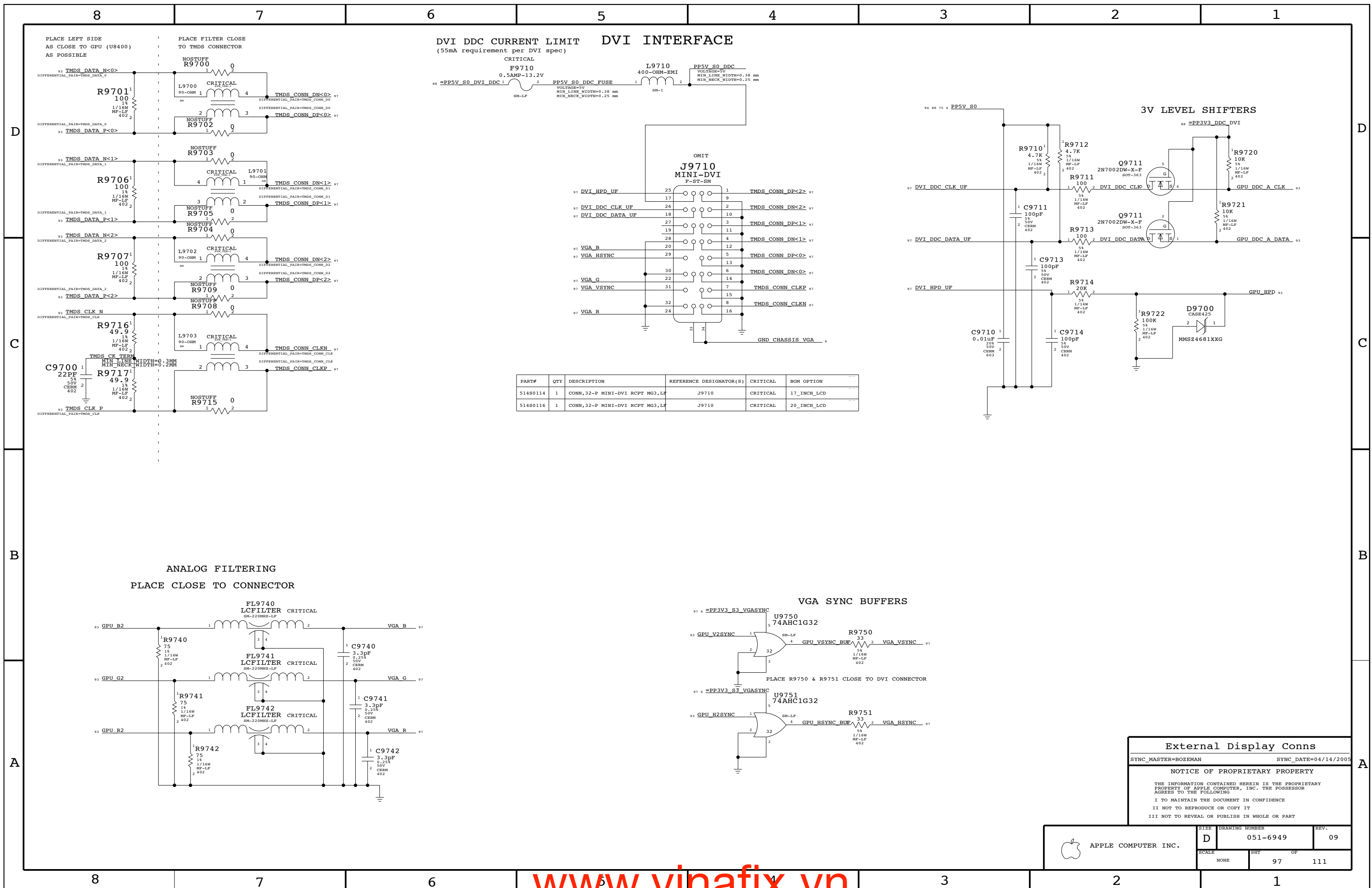
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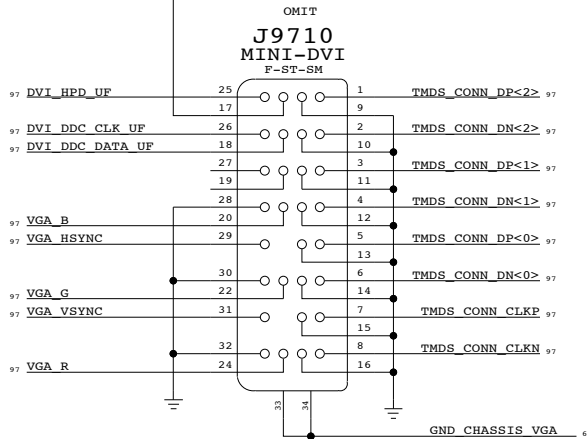
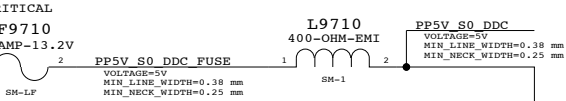
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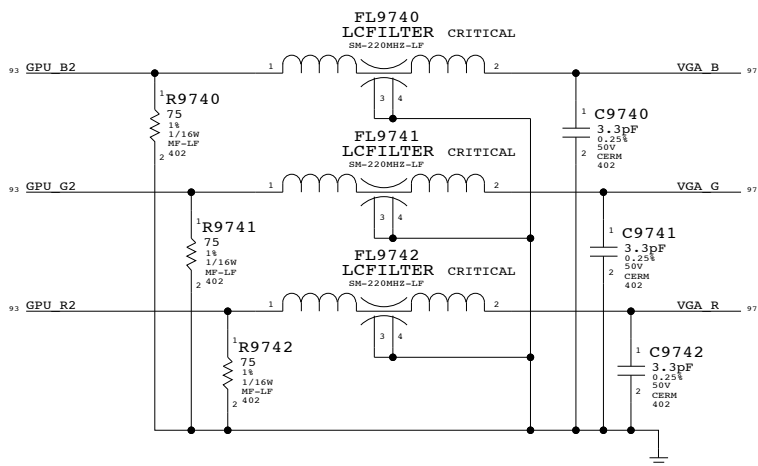
DVI DDC CURRENT LIMIT DVI INTERFACE

(55mA requirement per DVI spec)

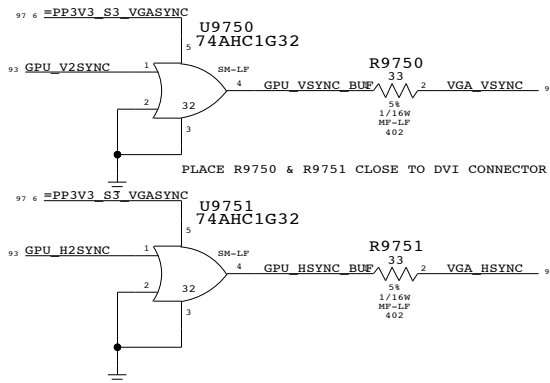


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
51480114	1	CONN, 32-P MINI-DVI RCPT MG3,LF	J9710	CRITICAL	17_INCH_LCD
51480116	1	CONN, 32-P MINI-DVI RCPT MG3,LF	J9710	CRITICAL	20_INCH_LCD

ANALOG FILTERING
PLACE CLOSE TO CONNECTOR



VGA SYNC BUFFERS



External Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/14/2005
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	D	051-6949	09
SCALE	SHT	OF	
NONE	97	111	

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D	SMC_XDP_TRST_L_R	SMC_XDP_TRST_L_R - @m38_lib.M38	59A3	TP_PCI_GNT1_L	TP_PCI_GNT1_L - @m38_lib.M38	22B6		
	SMC_XTAL	SMC_XTAL - @m38_lib.M38	58C3 59B8	TP_PCI_GNT2_L	TP_PCI_GNT2_L - @m38_lib.M38	22B6		
	SMLINK<0>	SMLINK<0> - @m38_lib.M38	23D5	TP_PCI_GNT4_L	TP_PCI_GNT4_L - @m38_lib.M38	22B6		
	SMLINK<1>	SMLINK<1> - @m38_lib.M38	23D5	TP_PCI_PME_L	TP_PCI_PME_L - @m38_lib.M38	22A6		
	SMS_INT_L	SMS_INT_L - @m38_lib.M38	23C3 26C2 58B5	TP_SB_ACZ_SDIN1	TP_SB_ACZ_SDIN1 - @m38_lib.M38	21C6		
	SMS_ONOFF_L	SMS_ONOFF_L - @m38_lib.M38	58A5 59B4	TP_SB_ACZ_SDIN2	TP_SB_ACZ_SDIN2 - @m38_lib.M38	21C6		
	SMS_X_AXIS	SMS_X_AXIS - @m38_lib.M38	58B7 59B6	TP_SB_DR00_L	TP_SB_DR00_L - @m38_lib.M38	21B4		
	SMS_Y_AXIS	NC_SMS_X_AXIS - @m38_lib.M38	59B5	TP_SB_DR00_L	TP_SB_DR00_L - @m38_lib.M38	21B4		
	SMS_Z_AXIS	SMS_Y_AXIS - @m38_lib.M38	58B7 59B6	TP_SB_GPI03	TP_SB_GPI03 - @m38_lib.M38	23C3		
	SMS_Z_AXIS	NC_SMS_Y_AXIS - @m38_lib.M38	59B5	TP_SB_GPI025_DO_NOT_USE	TP_SB_GPI025_DO_NOT_USE - @m38_lib.M38	23C3		
C	SPARE_SRC3_N	SMS_Z_AXIS - @m38_lib.M38	58A7 59B6	TP_SB_GPI038	TP_SB_GPI038 - @m38_lib.M38	23C3		
	SPARE_SRC3_P	NC_SMS_Z_AXIS - @m38_lib.M38	59B5	TP_SB_RSVD9	TP_SB_RSVD9 - @m38_lib.M38	22A6		
	SPARE_SRC7_N	SPARE_SRC3_N - @m38_lib.M38	34D2	TP_SB_SATALED_L	TP_SB_SATALED_L - @m38_lib.M38	21C6		
	SPARE_SRC7_P	SPARE_SRC3_P - @m38_lib.M38	34D2	TP_SB_XOR_AD5	TP_SB_XOR_AD5 - @m38_lib.M38	22A7		
	SPI_ARB	SPARE_SRC7_P - @m38_lib.M38	34D2	TP_SB_XOR_AD9	TP_SB_XOR_AD9 - @m38_lib.M38	22A7		
	SPI_CE_L	SPI_ARB - @m38_lib.M38	22C6 58D5	TP_SB_XOR_AE5	TP_SB_XOR_AE5 - @m38_lib.M38	22A7		
	SPI_HOLD_L	SPI_CE_L - @m38_lib.M38	22C6 58D5 63C7	TP_SB_XOR_AE9	TP_SB_XOR_AE9 - @m38_lib.M38	22A6		
	SPI_SCLK	SPI_HOLD_L - @m38_lib.M38	63C4	TP_SB_XOR_AG4	TP_SB_XOR_AG4 - @m38_lib.M38	22A7		
	SPI_SCLK_R	SPI_SCLK - @m38_lib.M38	22C6 58D5 63C7	TP_SB_XOR_AG8	TP_SB_XOR_AG8 - @m38_lib.M38	22A6		
	SPI_SI	SPI_SCLK_R - @m38_lib.M38	63C4	TP_SB_XOR_AH4	TP_SB_XOR_AH4 - @m38_lib.M38	22A7		
B	SPI_SI_R	SPI_SI - @m38_lib.M38	22C6 58D5 63C1	TP_SB_XOR_AH8	TP_SB_XOR_AH8 - @m38_lib.M38	22A6		
	SPI_SO	SPI_SI_R - @m38_lib.M38	63C3	TP_SB_XOR_T5	TP_SB_XOR_T5 - @m38_lib.M38	21C6		
	SPI_SO_R	SPI_SO - @m38_lib.M38	22C6 58D5 63C1	TP_SB_XOR_U3	TP_SB_XOR_U3 - @m38_lib.M38	21C6		
	SPI_WP_L	SPI_SO_R - @m38_lib.M38	63C3	TP_SB_XOR_U5	TP_SB_XOR_U5 - @m38_lib.M38	21C6		
	SPRRAMP_MUTE	SPI_WP_L - @m38_lib.M38	63C4	TP_SB_XOR_U7	TP_SB_XOR_U7 - @m38_lib.M38	21C6		
	SPRRAMP_SS	SPRRAMP_MUTE - @m38_lib.M38	72B5	TP_SB_XOR_V3	TP_SB_XOR_V3 - @m38_lib.M38	21C6		
	SUS_CLK_SB	SPRRAMP_SS - @m38_lib.M38	72B4	TP_SB_XOR_V4	TP_SB_XOR_V4 - @m38_lib.M38	21C6		
	SV_SET_UP	SUS_CLK_SB - @m38_lib.M38	23C3 59B5	TP_SB_XOR_V6	TP_SB_XOR_V6 - @m38_lib.M38	21C6		
	SW_RST_BTN_L	SMC_SUS_CLK - @m38_lib.M38	58C5 59B6	TP_SB_XOR_V7	TP_SB_XOR_V7 - @m38_lib.M38	21C6		
	SW_RST_DEBNC	SV_SET_UP - @m38_lib.M38	23B6 23C3 60B3	TP_SB_XOR_W1	TP_SB_XOR_W1 - @m38_lib.M38	21C6		
A	SYS_LED_DRV_C	SW_RST_BTN_L - @m38_lib.M38	5D1 26C6	TP_SB_XOR_W3	TP_SB_XOR_W3 - @m38_lib.M38	21C6		
	SYS_LED_DRV_K	SW_RST_DEBNC - @m38_lib.M38	26C4	TP_SB_XOR_Y1	TP_SB_XOR_Y1 - @m38_lib.M38	21C6		
	SYS_ONWIRE	SYS_LED_DRV_C - @m38_lib.M38	59D6	TP_SB_XOR_Y2	TP_SB_XOR_Y2 - @m38_lib.M38	21C6		
	SYS_POWERFAIL_L	SYS_LED_DRV_K - @m38_lib.M38	59D6	TP_U5999_P1	TP_U5999_P1 - @m38_lib.M38	59A7		
	SYSPWRUP_L	SYS_ONWIRE - @m38_lib.M38	58B7 59B4	TP_U5999_P13	TP_U5999_P13 - @m38_lib.M38	59A5		
	THERM_DX_N	SYS_POWERFAIL_L - @m38_lib.M38	6D8 76D2	TP_U5999_P14	TP_U5999_P14 - @m38_lib.M38	59A5		
	THERM_DX_P	SYSPWRUP_L - @m38_lib.M38	6C7	TP_U8400_AG14	TP_U8400_AG14 - @m38_lib.M38	91A5		
	THRM_ALERT_L	THERM_DX_N - @m38_lib.M38	10B5 10C5	TP_U8900_J2	TP_U8900_J2 - @m38_lib.M38	89A7		
	THRM_THM	THERM_DX_P - @m38_lib.M38	10B5 10C5	TP_U8900_J3	TP_U8900_J3 - @m38_lib.M38	89A7		
	TMD5_CHK_TERM	THRM_ALERT_L - @m38_lib.M38	10D3	TP_U8950_J2	TP_U8950_J2 - @m38_lib.M38	89A4		
TMD5_CLK_N	THRM_THM - @m38_lib.M38	10C4	TP_U8950_J3	TP_U8950_J3 - @m38_lib.M38	89A4			
A	TMD5_CLK_P	TMD5_CHK_TERM - @m38_lib.M38	97C8	TP_U9000_J2	TP_U9000_J2 - @m38_lib.M38	90A7		
	TMD5_CONN_CLKN	TMD5_CLK_N - @m38_lib.M38	93C3 97C8	TP_U9000_J3	TP_U9000_J3 - @m38_lib.M38	90A7		
	TMD5_CONN_CLKP	TMD5_CLK_P - @m38_lib.M38	93C3 97C8	TP_U9050_J2	TP_U9050_J2 - @m38_lib.M38	90A4		
	TMD5_CONN_DM<0>	TMD5_CONN_CLKN - @m38_lib.M38	97C4 97C7	TP_U9050_J3	TP_U9050_J3 - @m38_lib.M38	90A4		
	TMD5_CONN_DM<1>	TMD5_CONN_CLKP - @m38_lib.M38	97C4 97C7	TSSENSE_GPU_DXP	TSSENSE_GPU_DXP - @m38_lib.M38	61B5		
	TMD5_CONN_DM<2>	TMD5_CONN_DM<0> - @m38_lib.M38	97C4 97D7	TSSENSE_NB_DXP	TSSENSE_NB_DXP - @m38_lib.M38	61B5		
	TMD5_CONN_DP<0>	TMD5_CONN_DM<1> - @m38_lib.M38	97C4 97D7	TSSENSE_NB_GPU_DNX	TSSENSE_NB_GPU_DNX - @m38_lib.M38	61B5		
	TMD5_CONN_DP<1>	TMD5_CONN_DM<2> - @m38_lib.M38	97C7 97D4	TV_DACA_OUT	TV_DACA_OUT - @m38_lib.M38	13C5 19B1		
	TMD5_CONN_DP<2>	TMD5_CONN_DP<0> - @m38_lib.M38	97C4 97D7	TV_DACC_OUT	TV_DACC_OUT - @m38_lib.M38	13C5 19B1		
	TMD5_CONN_DP<3>	TMD5_CONN_DP<1> - @m38_lib.M38	97C4 97D7	TV_IRTNA	TV_IRTNA - @m38_lib.M38	13C5 19B1		
TMD5_DATA_N<0>	TMD5_CONN_DP<2> - @m38_lib.M38	97C7 97D4	TV_IRTNB	TV_IRTNB - @m38_lib.M38	13C5 19B1			
A	TMD5_DATA_N<1>	TMD5_DATA_N<0> - @m38_lib.M38	93C3 97D8	TV_IRTNC	TV_IRTNC - @m38_lib.M38	13C5 19B1		
	TMD5_DATA_N<2>	TMD5_DATA_N<1> - @m38_lib.M38	93C3 97D8	TV_IREF	TV_IREF - @m38_lib.M38	13C5 19B1		
	TMD5_DATA_N<3>	TMD5_DATA_N<2> - @m38_lib.M38	93C3 97C8	PP3V3_S0_NB_VCCA_TVDBG	PP3V3_S0_NB_VCCA_TVDBG - @m38_lib.M38	17C6 19B1		
	TMD5_DATA_N<4>	TMD5_DATA_N<3> - @m38_lib.M38	93C3 95D6	PP3V3_S0_NB_VCCA_TVDDACC	PP3V3_S0_NB_VCCA_TVDDACC - @m38_lib.M38	17C6 19B1		
	TMD5_DATA_N<5>	TMD5_DATA_N<4> - @m38_lib.M38	93C3 95D6	PP3V3_S0_NB_VCCA_TVDDACB	PP3V3_S0_NB_VCCA_TVDDACB - @m38_lib.M38	17C6 19B1		
	TMD5_DATA_P<0>	TMD5_DATA_N<5> - @m38_lib.M38	93C3 95D6	PP3V3_S0_NB_VCCA_TVDDACA	PP3V3_S0_NB_VCCA_TVDDACA - @m38_lib.M38	17C6 19B1		
	TMD5_DATA_P<1>	TMD5_DATA_P<0> - @m38_lib.M38	93C3 97D8	PP1V5_S0_NB_TVDDAC - @m38_lib.M38	PP1V5_S0_NB_TVDDAC - @m38_lib.M38	6C4 19B2 19D7		
	TMD5_DATA_P<2>	TMD5_DATA_P<1> - @m38_lib.M38	93C3 97C8	PP1V5_S0_AIRPORT - @m38_lib.M38	PP1V5_S0_AIRPORT - @m38_lib.M38	6C4 8B6 8C5		
	TMD5_DATA_P<3>	TMD5_DATA_P<2> - @m38_lib.M38	93C3 97C8	PP1V5_S0_CPU - @m38_lib.M38	PP1V5_S0_CPU - @m38_lib.M38	6C4 53D3		
	TMD5_DATA_P<4>	TMD5_DATA_P<3> - @m38_lib.M38	93C3 95D6	PP1V5_S0_SB - @m38_lib.M38	PP1V5_S0_SB - @m38_lib.M38	6C4 25A8 25C8		
TPM_BAD0	TMD5_DATA_P<4> - @m38_lib.M38	93C3 95D6	PP1V5_S0_SB_VCC1_5_A - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A - @m38_lib.M38	6C4 24A3 25C1			
TPM_GP101	TPM_BAD0 - @m38_lib.M38	67C4	PP1V5_S0_SB_VCC1_5_A_USB_CORE - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A_USB_CORE - @m38_lib.M38	6C4 24A3 25B1			
TPM_GP102	TPM_GP101 - @m38_lib.M38	59B5 67C6	PP1V5_S0_SB_VCCUSBPPLL - @m38_lib.M38	PP1V5_S0_SB_VCCUSBPPLL - @m38_lib.M38	6C4 24A5 25B6			
TPM_LRESET_L	TPM_GP102 - @m38_lib.M38	59B5 67C6	PP1V5_S0_SB_VCC1_5_A_ATX - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A_ATX - @m38_lib.M38	6C4 24A5 25C6			
TPM_PP	TPM_LRESET_L - @m38_lib.M38	6B7 67B7	PP1V5_S0_SB_VCCSATAPLL - @m38_lib.M38	PP1V5_S0_SB_VCCSATAPLL - @m38_lib.M38	6C4 24B5 25D6			
TPM_RST_L	TPM_PP - @m38_lib.M38	59A5 67C6	PP1V5_S0_SB_VCC1_5_A_ARX - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A_ARX - @m38_lib.M38	6C4 24B5 25D6			
TPM_XTALI	TPM_RST_L - @m38_lib.M38	67B6	PP1V5_S0_NB_3GPLL - @m38_lib.M38	PP1V5_S0_NB_3GPLL - @m38_lib.M38	6C4 19A6 19A6			
TPM_XTALO	TPM_XTALI - @m38_lib.M38	59B7 67C6	PP1V5_S0_NB_PLL - @m38_lib.M38	PP1V5_S0_NB_PLL - @m38_lib.M38	6C4 19C8 19D7			
TP_ATI_ROMCS_L	TPM_XTALO - @m38_lib.M38	59B7 67C6	PP1V5_S0_NB_VCCAUX - @m38_lib.M38	PP1V5_S0_NB_VCCAUX - @m38_lib.M38	6C4 6C4 16D1 17B6 19A7 19D7			
TP_AZ_DOCK_EN_L	TP_ATI_ROMCS_L - @m38_lib.M38	91A3	PP1V5_S0_NB_VCCD_HMPLL - @m38_lib.M38	PP1V5_S0_NB_VCCD_HMPLL - @m38_lib.M38	6C4 17C6 19D7			
TP_AZ_DOCK_RST_L	TP_AZ_DOCK_EN_L - @m38_lib.M38	23C5	PP1V5_S0_NB_PCIE - @m38_lib.M38	PP1V5_S0_NB_PCIE - @m38_lib.M38	6C4 13D2 19D7			
TP_CLK14P3M_SPARE	TP_AZ_DOCK_RST_L - @m38_lib.M38	23C5	PP1V5_S0_CPU - @m38_lib.M38	PP1V5_S0_CPU - @m38_lib.M38	6C4 8B6 8C5			
TP_CPU_A32_L	TP_CLK14P3M_SPARE - @m38_lib.M38	34C4	TP_IRTNC	TP_IRTNC - @m38_lib.M38	13C5 19B1			
TP_CPU_A33_L	TP_CPU_A32_L - @m38_lib.M38	7C7	TP_IRTNB	TP_IRTNB - @m38_lib.M38	13C5 19B1			
TP_CPU_A34_L	TP_CPU_A33_L - @m38_lib.M38	7B7	TP_IRTNA	TP_IRTNA - @m38_lib.M38	13C5 19B1			
TP_CPU_A35_L	TP_CPU_A34_L - @m38_lib.M38	7B7	TV_DACC_OUT	TV_DACC_OUT - @m38_lib.M38	13C5 19B1			
TP_CPU_A36_L	TP_CPU_A35_L - @m38_lib.M38	7B7	TV_DACC_OUT	TV_DACC_OUT - @m38_lib.M38	13C5 19B1			
TP_CPU_A37_L	TP_CPU_A36_L - @m38_lib.M38	7B7	PP3V3_S0_NB_VCCA_TVDDACC	PP3V3_S0_NB_VCCA_TVDDACC - @m38_lib.M38	17C6 19B1			
TP_CPU_A38_L	TP_CPU_A37_L - @m38_lib.M38	7B7	PP3V3_S0_NB_VCCA_TVDDACB	PP3V3_S0_NB_VCCA_TVDDACB - @m38_lib.M38	17C6 19B1			
TP_CPU_A39_L	TP_CPU_A38_L - @m38_lib.M38	7B7	PP3V3_S0_NB_VCCA_TVDDACA	PP3V3_S0_NB_VCCA_TVDDACA - @m38_lib.M38	17C6 19B1			
TP_CPU_APM0_L	TP_CPU_A39_L - @m38_lib.M38	7B7	PP1V5_S0_NB_VCCUSBPPLL - @m38_lib.M38	PP1V5_S0_NB_VCCUSBPPLL - @m38_lib.M38	6C4 24A5 25B6			
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TP_CPU_EXTBREF	TP_CPU_CPUSLP_L - @m38_lib.M38	7B6	PP1V5_S0_SB_VCC1_5_A_ARX - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A_ARX - @m38_lib.M38	6C4 24B5 25D6			
TP_CPU_HFPLL	TP_CPU_EXTBREF - @m38_lib.M38	7B7	PP1V5_S0_SB_VCC1_5_A - @m38_lib.M38	PP1V5_S0_SB_VCC1_5_A - @m38_lib.M38	6C4 24A3 25C1			
TP_CPU_SPARE0	TP_CPU_HFPLL - @m38_lib.M38	7B6	PP1V5_S0_SB - @m38_lib.M38	PP1V5_S0_SB - @m38_lib.M38	6C4 25A8 25C8			
TP_CPU_SPARE1	TP_CPU_SPARE0 - @m38_lib.M38	7B6	PP1V5_S0_NB_VCCD_HMPLL - @m38_lib.M38	PP1V5_S0_NB_VCCD_HMPLL - @m38_lib.M38	6C4 17C6 19D7			
TP_CPU_SPARE2	TP_CPU_SPARE1 - @m38_lib.M38	7B6	PP1V5_S0_NB_VCCAUX - @m38_lib.M38	PP1V5_S0_NB_VCCAUX - @m38_lib.M38	6C4 6C4 16D1 17B6 19A7 19D7			
TP_CPU_SPARE3	TP_CPU_SPARE2 - @m38_lib.M38	7B6	PP1V5_S0_TVDDAC - @m38_lib.M38	PP1V5_S0_TVDDAC - @m38_lib.M38	6C4 19B2 19D7			
TP_CPU_SPARE4	TP_CPU_SPARE3 - @m38_lib.M38	7B6	PP1V5_S0_NB_PLL - @m38_lib.M38	PP1V5_S0_NB_PLL - @m38_lib.M38	6C4 19C8 19D7			
TP_CPU_SPARE5	TP_CPU_SPARE4 - @m38_lib.M38	7B6	PP1V5_S0_NB_PCIE - @m38_lib.M38	PP1V5_S0_NB_PCIE - @m38_lib.M38	6C4 13D2 19D7			
TP_CPU_SPARE6	TP_CPU_SPARE5 - @m38_lib.M38	7B6	PP1V5_S0_NB_3GPLL - @m38_lib.M38	PP1V5_S0_NB_3GPLL - @m38_lib.M38	6C4 19A6 19A6			
TP_CPU_SPARE7	TP_CPU_SPARE6 - @m38_lib.M38	7B6						
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TP_LVDS_VBG	TP_FW_VAUX_PRES - @m38_lib.M38	13D5						
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TP_MEM_A_A<15>	TP_MEM_A_A<14> - @m38_lib.M38	28C3						
TP_MEM_B_A<14>	TP_MEM_A_A<15> - @m38_lib.M38	5B4 29C3						
TP_MEM_B_A<15>								

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	C7513	CAP_402	m38[75B7]	C8421	CAP_402	m38[84D5]	C8659	CAP_402	m38[86B5]	C9137	CAP_402	m38[91A5]
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	C7515	CAP_603	m38[75C4]	C8423	CAP_402	m38[84D5]	C8661	CAP_402	m38[86B6]	C9141	CAP_402	m38[91A6]
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	C7518	CAP_P_SM-3	m38[75D2]	C8426	CAP_402	m38[84D5]	C8664	CAP_402	m38[86B5]	C9300	CAP_805	m38[93C6]
	C7521	CAP_402	m38[75A6]	C8427	CAP_402	m38[84D5]	C8665	CAP_402	m38[86B5]	C9321	CAP_402	m38[93C6]
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	C7528	CAP_402	m38[75B5]	C8430	CAP_402	m38[84C5]	C8668	CAP_402	m38[86B6]	C9306	CAP_402	m38[93C6]
	C7529	CAP_402	m38[75B5]	C8431	CAP_402	m38[84C5]	C8669	CAP_402	m38[86B6]	C9307	CAP_402	m38[93C5]
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	C7534	CAP_402	m38[75B5]	C8436	CAP_402	m38[84C5]	C8674	CAP_402	m38[86B6]	C9316	CAP_402	m38[93B8]
	C7535	CAP_603	m38[75D5]	C8437	CAP_402	m38[84C5]	C8675	CAP_402	m38[86B6]	C9317	CAP_402	m38[93B7]
	C7550	CAP_603	m38[75D1]	C8438	CAP_402	m38[84C5]	C8676	CAP_402	m38[86B5]	C9320	CAP_805	m38[93B6]
	C7551	CAP_603	m38[75D1]	C8439	CAP_402	m38[84C5]	C8677	CAP_402	m38[86B5]	C9321	CAP_402	m38[93B6]
	C7590	CAP_402	m38[75C3]	C8440	CAP_402	m38[84B5]	C8678	CAP_402	m38[86B5]	C9322	CAP_402	m38[93B5]
	C7592	CAP_402	m38[75B3]	C8441	CAP_402	m38[84B5]	C8679	CAP_402	m38[86A6]	C9325	CAP_805	m38[93B8]
	C7596	CAP_402	m38[75D6]	C8442	CAP_402	m38[84B5]	C8680	CAP_402	m38[86A6]	C9326	CAP_402	m38[93B8]
	C7597	CAP_1210	m38[75D1]	C8443	CAP_402	m38[84B5]	C8681	CAP_402	m38[86A6]	C9327	CAP_402	m38[93B7]
C7598	CAP_1210	m38[75D1]	C8444	CAP_402	m38[84B5]	C8682	CAP_402	m38[86A5]	C9330	CAP_805	m38[93B6]	
C7599	CAP_402	m38[76D6]	C8445	CAP_402	m38[84B5]	C8683	CAP_402	m38[86A5]	C9331	CAP_402	m38[93B6]	
C7600	CAP_402	m38[76D3]	C8446	CAP_402	m38[84B5]	C8690	CAP_402	m38[86D5]	C9332	CAP_402	m38[93B5]	
C7601	CAP_402	m38[76D3]	C8447	CAP_402	m38[84B5]	C8691	CAP_402	m38[86D5]	C9340	CAP_805	m38[93A6]	
C7602	CAP_402	m38[76D2]	C8448	CAP_402	m38[84B5]	C8692	CAP_402	m38[86D5]	C9341	CAP_402	m38[93A6]	
C7603	CAP_402	m38[76C4]	C8449	CAP_402	m38[84B5]	C8695	CAP_805	m38[86D2]	C9342	CAP_402	m38[93A5]	
C7612	CAP_402	m38[76B2]	C8450	CAP_402	m38[84B5]	C8696	CAP_402	m38[86D3]	C9345	CAP_805	m38[93A6]	
C7633	CAP_402	m38[76C7]	C8451	CAP_402	m38[84B5]	C8697	CAP_402	m38[86D3]	C9346	CAP_402	m38[93A5]	
C7659	CAP_402	m38[76D4]	C8455	CAP_402	m38[84D2]	C8711	CAP_402	m38[87B7]	C9347	CAP_402	m38[93A5]	
C7669	CAP_402	m38[76D4]	C8456	CAP_402	m38[84D2]	C8713	CAP_402	m38[87B7]	C9400	CAP_603-1	m38[94C7]	
C7700	CAP_603	m38[77D4]	C8457	CAP_402	m38[84D2]	C8715	CAP_402	m38[87A7]	C9401	CAP_402	m38[94C6]	
C7703	CAP_402	m38[77C4]	C8458	CAP_402	m38[84D2]	C8716	CAP_402	m38[87A6]	C9410	CAP_402	m38[94C6]	
C7704	CAP_402	m38[77C4]	C8459	CAP_402	m38[84D2]	C8721	CAP_402	m38[87B4]	C9420	CAP_1210	m38[94C5]	
C7706	CAP_402	m38[77C4]	C8460	CAP_402	m38[84D2]	C8723	CAP_402	m38[87B4]	C9450	CAP_805	m38[94C2]	
C7709	CAP_805	m38[77C3]	C8461	CAP_402	m38[84D2]	C8725	CAP_402	m38[87A4]	C9470	CAP_402	m38[94B2]	
C7710	CAP_402	m38[77C7]	C8462	CAP_402	m38[84D2]	C8726	CAP_402	m38[87A3]	C9700	CAP_402	m38[97C8]	
C7711	CAP_402	m38[77B7]	C8463	CAP_402	m38[84D2]	C8900	CAP_805	m38[89D7]	C9710	CAP_603	m38[97C3]	
C7712	CAP_402	m38[77C7]	C8464	CAP_402	m38[84C2]	C8901	CAP_402	m38[89D7]	C9711	CAP_402	m38[97D3]	
C7750	CAP_402	m38[77A5]	C8465	CAP_402	m38[84C2]	C8902	CAP_402	m38[89D7]	C9713	CAP_402	m38[97C2]	
C7751	CAP_805	m38[77B4]	C8466	CAP_402	m38[84C2]	C8903	CAP_402	m38[89D7]	C9714	CAP_402	m38[97C2]	
C7752	CAP_805	m38[77B4]	C8467	CAP_402	m38[84C2]	C8904	CAP_402	m38[89D6]	C9740	CAP_402	m38[97A7]	
C7753	CAP_402	m38[77B7]	C8468	CAP_402	m38[84C2]	C8910	CAP_402	m38[89D7]	C9741	CAP_402	m38[97A6]	
C7754	CAP_402	m38[77B6]	C8469	CAP_402	m38[84C2]	C8915	CAP_402	m38[89D6]	C9742	CAP_402	m38[97A6]	
C7755	CAP_805	m38[77B3]	C8470	CAP_402	m38[84C2]	C8920	CAP_805	m38[89C8]	D2500	DIODE_SCHOT_SOT23	m38[25C8]	
C7756	CAP_805	m38[77B3]	C8471	CAP_402	m38[84C2]	C8921	CAP_402	m38[89C8]	D2501	DIODE_SCHOT_SOT23	m38[25D8]	
C7757	CAP_402	m38[77A6]	C8472	CAP_402	m38[84C2]	C8922	CAP_402	m38[89C7]	D2600	DIODE_SCHOT_SOT23	m38[26D8]	
C7799	CAP_402	m38[77A3]	C8473	CAP_402	m38[84C2]	C8923	CAP_402	m38[89C7]	D2601	DIODE_SCHOT_SOT23	m38[26C8]	
C7800	CAP_1210	m38[78C3]	C8474	CAP_402	m38[84C2]	C8924	CAP_402	m38[89C7]	D4600	DIODE_SMC	m38[46D5]	
C7801	CAP_P_SM-LF	m38[78C4]	C8475	CAP_402	m38[84B2]	C8925	CAP_402	m38[89C7]	D4690	ZENER_SOT23	m38[46A6]	
C7802	CAP_603	m38[78C6]	C8476	CAP_402	m38[84B2]	C8926	CAP_402	m38[89C6]	D4700	DIODE_SCHOT_3P_A_SC-	m38[47C5]	
C7803	CAP_603	m38[78B6]	C8477	CAP_402	m38[84B2]	C8931	CAP_402	m38[89C7]	75			
C7804	CAP_402	m38[78C6]	C8478	CAP_402	m38[84B2]	C8933	CAP_402	m38[89C6]	D4701	DIODE_SCHOT_3P_A_SC-	m38[47B5]	
C7805	CAP_603	m38[78C4]	C8479	CAP_402	m38[84B2]	C8935	CAP_805	m38[89D4]	75			
C7806	CAP_805-1	m38[78B2]	C8480	CAP_402	m38[84B2]	C8951	CAP_402	m38[89D4]	D4702	DIODE_SCHOT_3P_A_SC-	m38[47A5]	
C7807	CAP_P_CASE-D2E-LF	m38[78B3]	C8481	CAP_402	m38[84B2]	C8952	CAP_402	m38[89D4]	75			
C7809	CAP_402	m38[78B3]	C8482	CAP_402	m38[84B2]	C8953	CAP_402	m38[89D3]	D4705	DIODE_SCHOT_3P_A_SC-	m38[47C6]	
C7810	CAP_402	m38[78B4]	C8483	CAP_402	m38[84B2]	C8954	CAP_402	m38[89D3]	75			
C7811	CAP_402	m38[78B5]	C8484	CAP_402	m38[84B2]	C8960	CAP_402	m38[89D3]	D4706	DIODE_SCHOT_3P_A_SC-	m38[47B6]	
C7813	CAP_1206	m38[78B4]	C8485	CAP_402	m38[84B2]	C8965	CAP_402	m38[89D3]	75			
C7814	CAP_402	m38[78B5]	C8486	CAP_402	m38[84B2]	C8970	CAP_805	m38[89C5]	D4707	DIODE_SCHOT_3P_A_SC-	m38[47A6]	
C7817	CAP_P_CASE-D2E-LF	m38[78B2]	C8500	CAP_603	m38[85D6]	C8971	CAP_402	m38[89C4]	75			
C7900	CAP_402	m38[79D6]	C8501	CAP_603	m38[85D6]	C8972	CAP_402	m38[89C4]	D4900	DIODE_SCHOT_3P_A_SC-	m38[49B4]	
C7901	CAP_603	m38[79D5]	C8502	CAP_603	m38[85D6]	C8973	CAP_402	m38[89C4]	75			
C7902	CAP_402	m38[79C5]	C8506	CAP_402	m38[85C8]	C8974	CAP_402	m38[89C4]	D6500	DIODE_SOT23	m38[65C4]	
C7903	CAP_603	m38[79C7]	C8507	CAP_402	m38[85C7]	C8975	CAP_402	m38[89C3]	D6501	DIODE_SOT23	m38[65B4]	
C7906	CAP_402	m38[79C5]	C8508	CAP_402	m38[85C7]	C8976	CAP_402	m38[89C3]	D6502	DIODE_SCHOT_SMB	m38[65C4]	
C7907	CAP_402	m38[79C3]	C8509	CAP_402	m38[85C5]	C8981	CAP_402	m38[89C3]	D6503	DIODE_SCHOT_SMB	m38[65B4]	
C7908	CAP_402	m38[79C5]	C8520	CAP_603	m38[85C3]	C8983	CAP_402	m38[89C3]	D6600	DIODE_SOT23	m38[66C4]	
C7909	CAP_1206	m38[79C4]	C8521	CAP_402	m38[85C4]	C9000	CAP_805	m38[90D7]	D6601	DIODE_SCHOT_SMB	m38[66C3]	
C7910	CAP_P_SM-3	m38[79D4]	C8522	CAP_402	m38[85C5]	C9001	CAP_402	m38[90D7]	D7500	DIODE_SCHOT_SMB	m38[75C3]	
C7911	CAP_1210	m38[79D3]	C8523	CAP_402	m38[85B2]	C9002	CAP_402	m38[90D7]	D7501	DIODE_SCHOT_SMB	m38[75B2]	
C7912	CAP_P_CASE-D2E-LF	m38[79C3]	C8530	CAP_1210	m38[85D4]	C9003	CAP_402	m38[90D7]	D7599	DIODE_SOT23	m38[76D6]	
C7913	CAP_1206	m38[79C2]	C8531	CAP_1210	m38[85D4]	C9004	CAP_402	m38[90D6]	D8520	DIODE_SCHOT_SMB	m38[85C3]	
C7980	CAP_402	m38[79B3]	C8532	CAP_1210	m38[85D4]	C9010	CAP_402	m38[90D7]	D9700	ZENER_CASE425	m38[97C1]	
C7992	CAP_603	m38[79D6]	C8540	CAP_805	m38[85C2]	C9015	CAP_402	m38[90D6]	DP4610	DIODE_DUAL_6P_SOT-36	m38[46D4 46D3]	
C7998	CAP_P_CASE-D2E-LF	m38[79C3]	C8541	CAP_805	m38[85C2]	C9020	CAP_805	m38[90C8]	3			
C8000	CAP_1210	m38[80D3]	C8542	CAP_P_CASE-D2E-LF	m38[85C2]	C9021	CAP_402	m38[90C8]	DP4611	DIODE_DUAL_6P_SOT-36	m38[46C4 46C3]	
C8001	CAP_P_CASE-D2E-LF	m38[80C3]	C8543	CAP_P_CASE-D2E-LF	m38[85C2]	C9022	CAP_402	m38[90C7]	3			
C8002	CAP_603	m38[80D6]	C8551	CAP_603	m38[85B8]	C9023	CAP_402	m38[90C7]	DP4620	DIODE_DUAL_6P_SOT-36	m38[46B4 46B3]	
C8003	CAP_402	m38[80C3]	C8555	CAP_402	m38[85B7]	C9024	CAP_402	m38[90C7]	3			
C8004	CAP_1206	m38[80C4]	C8556	CAP_805	m38[85B6]	C9025	CAP_402	m38[90C7]	DP4621	DIODE_DUAL_6P		

	8	7	6	5	4	3	2	1				
D	Q8103	TRA_NTD60N02R_CASE36 9-LF	m38[81C4]	R2299	RES_402	m38[22B5]	R3446	RES_402	m38[34B1]	R5808	RES_402	m38[59C3]
	Q8104	TRA_2N7002_SOT23-LF	m38[81C7]	R2302	RES_402	m38[23D3]	R3451	RES_402	m38[34C4]	R5809	RES_402	m38[58C2]
	Q8300	TRA_IRF7413_SO-8	m38[83C4]	R2303	RES_402	m38[23D3]	R3452	RES_402	m38[34B7]	R5815	RES_402	m38[59B3]
	Q8301	TRA_IRF7413_SO-8	m38[83B4]	R2305	RES_402	m38[23D3]	R3453	RES_402	m38[34B8]	R5817	RES_402	m38[59B3]
	Q8302	TRA_2N7002DW_SOT-363	m38[83B5]	R2306	RES_402	m38[23B7]	R3454	RES_402	m38[34B7]	R5818	RES_402	m38[59B3]
	Q8303	TRA_2N7002DW_SOT-363	m38[83B5]	R2307	RES_402	m38[23A7]	R3455	RES_402	m38[34B8]	R5819	RES_402	m38[59B3]
	Q8503	TRA_2N7002DW_SOT-363	m38[83C5]	R2308	RES_402	m38[23B7]	R3456	RES_402	m38[34B7]	R5821	RES_402	m38[59B3]
	Q8520	TRA_HAT2165H_LFPAK	m38[85D4]	R2309	RES_402	m38[23A7]	R3457	RES_402	m38[34B7]	R5822	RES_402	m38[59B3]
	Q8521	TRA_HAT2165H_LFPAK	m38[85C4]	R2310	RES_402	m38[23A7]	R3458	RES_402	m38[34B8]	R5823	RES_402	m38[59B3]
	Q8522	TRA_HAT2165H_LFPAK	m38[85C5]	R2311	RES_402	m38[23A7]	R3459	RES_402	m38[34A7]	R5824	RES_402	m38[59B3]
	Q8523	TRA_2N7002DW_SOT-363	m38[85B3 85B2]	R2313	RES_402	m38[23A7]	R3460	RES_402	m38[34A7]	R5825	RES_402	m38[59B3]
	Q8554	TRA_2N7002_SOT23-LF	m38[85A8]	R2314	RES_402	m38[23A7]	R3461	RES_402	m38[34A7]	R5826	RES_402	m38[59B3]
	Q8570	TRA_2N7002_SOT23-LF	m38[85A5]	R2316	RES_402	m38[23D7]	R3462	RES_402	m38[34A8]	R5827	RES_402	m38[59C5]
	Q8575	TRA_FDC796N_SUPERSOT	m38[85B6]	R2317	RES_402	m38[23D7]	R3463	RES_402	m38[34A7]	R5828	RES_402	m38[59B3]
	Q8576	TRA_FDC796N_SUPERSOT	m38[85A2]	R2318	RES_402	m38[23D7]	R3470	RES_402	m38[34A5]	R5829	RES_402	m38[59C3]
	Q9400	TRA_S13443DV_TSOP-LF	m38[94C7]	R2319	RES_402	m38[23D2]	R3471	RES_402	m38[34A5]	R5830	RES_402	m38[59C3]
	Q9401	TRA_2N7002_SOT23-LF	m38[94C7]	R2320	RES_402	m38[23D7]	R3485	RES_402	m38[34D1]	R5831	RES_402	m38[59C3]
	Q9711	TRA_2N7002DW_SOT-363	m38[97D2 97C2]	R2323	RES_402	m38[23D5]	R3486	RES_402	m38[34D1]	R5832	RES_402	m38[59C3]
	R75A0	RES_402	m38[75C7]	R2326	RES_402	m38[23D6]	R3487	RES_402	m38[34D1]	R5833	RES_402	m38[59B3]
	R85A0	RES_402	m38[85D1]	R2327	RES_402	m38[23D6]	R3488	RES_402	m38[34D1]	R5898	RES_402	m38[58C2]
	R600	RES_603	m38[6A7]	R2343	RES_402	m38[23D1]	R3489	RES_402	m38[34D2]	R5899	RES_402	m38[58D3]
	R601	RES_402	m38[6D8]	R2388	RES_402	m38[23A3]	R3490	RES_402	m38[34D2]	R5900	RES_402	m38[59D7]
	R602	RES_603	m38[6A8]	R2389	RES_402	m38[38D5]	R3491	RES_402	m38[34D2]	R5901	RES_402	m38[59D6]
	R603	RES_402	m38[6B1]	R2390	RES_402	m38[23B3]	R3492	RES_402	m38[34D2]	R5902	RES_402	m38[59D7]
	R605	RES_603	m38[6A7]	R2395	RES_402	m38[23D7]	R3493	RES_402	m38[34D7]	R5903	RES_402	m38[59D2]
	R611	RES_402	m38[6B7]	R2396	RES_402	m38[23D6]	R3494	RES_402	m38[34D7]	R5904	RES_402	m38[59D2]
	R612	RES_402	m38[6B7]	R2397	RES_402	m38[23D6]	R3495	RES_402	m38[34D7]	R5905	RES_402	m38[59D2]
	R614	RES_402	m38[6B7]	R2398	RES_402	m38[23D8]	R3496	RES_402	m38[34C5]	R5906	RES_402	m38[59D7]
	R615	RES_402	m38[6B7]	R2399	RES_402	m38[23C1]	R3497	RES_402	m38[34D4]	R5907	RES_402	m38[59D7]
	R616	RES_402	m38[6A7]	R2500	RES_603	m38[25A8]	R3498	RES_402	m38[34D5]	R5910	RES_402	m38[59D2]
	R617	RES_402	m38[6A7]	R2501	RES_402	m38[25C8]	R3499	RES_402	m38[34D5]	R5911	RES_402	m38[59D2]
	R618	RES_402	m38[6C7]	R2502	RES_402	m38[25D8]	R3824	RES_402	m38[38D2]	R5912	RES_402	m38[59D2]
	R619	RES_402	m38[6B7]	R2600	RES_402	m38[26C7]	R3851	RES_402	m38[38D3]	R5913	RES_402	m38[59D2]
	R7072	RES_402	m38[7D6]	R2606	RES_402	m38[26C7]	R3852	RES_402	m38[38D2]	R5914	RES_402	m38[59C2]
	R7073	RES_402	m38[7C6]	R2607	RES_402	m38[26C8]	R3853	RES_402	m38[38D2]	R5915	RES_402	m38[59C2]
	R7074	RES_402	m38[7C5]	R2609	RES_402	m38[26D7]	R3857	RES_402	m38[38B3]	R5916	RES_402	m38[59C2]
	R7075	RES_402	m38[7B4]	R2611	RES_402	m38[26D5]	R3858	RES_402	m38[38B3]	R5917	RES_402	m38[59C2]
	R7076	RES_402	m38[7B5]	R2612	RES_402	m38[26D5]	R3859	RES_402	m38[38B2]	R5919	RES_402	m38[59B4]
	R7077	RES_402	m38[7A4]	R2622	RES_402	m38[26D4]	R3897	RES_402	m38[38B7]	R5920	RES_402	m38[59B5]
	R7078	RES_402	m38[7A3]	R2623	RES_402	m38[26D2]	R3899	RES_402	m38[38B5]	R5921	RES_402	m38[59B5]
	R7079	RES_402	m38[7B1]	R2624	RES_402	m38[26D2]	R4101	RES_402	m38[41D7]	R5922	RES_402	m38[59B5]
	R7079	RES_402	m38[7B1]	R2625	RES_402	m38[26D2]	R4102	RES_402	m38[41C7]	R5923	RES_402	m38[59B5]
	R7079	RES_402	m38[7B1]	R2626	RES_402	m38[26D2]	R4103	RES_402	m38[41C2]	R5924	RES_402	m38[59B5]
	R7079	RES_402	m38[7B1]	R2627	RES_402	m38[26D2]	R4104	RES_402	m38[41C2]	R5925	RES_402	m38[59A1]
	R7079	RES_402	m38[7B1]	R2628	RES_402	m38[26D2]	R4105	RES_402	m38[41C2]	R5927	RES_402	m38[59A3]
	R7079	RES_402	m38[7B1]	R2629	RES_402	m38[26D2]	R4106	RES_402	m38[41C2]	R5930	RES_402	m38[59B6]
	R7079	RES_402	m38[7B1]	R2630	RES_402	m38[26D2]	R4117	RES_402	m38[41B2]	R5931	RES_402	m38[59B6]
	R7079	RES_402	m38[7B1]	R2631	RES_402	m38[26D2]	R4118	RES_402	m38[41B2]	R5932	RES_402	m38[59A7]
	R7079	RES_402	m38[7A7]	R2632	RES_402	m38[26D2]	R4119	RES_402	m38[41B2]	R5933	RES_402	m38[59A7]
	R7079	RES_402	m38[7A4]	R2633	RES_402	m38[26D2]	R4120	RES_402	m38[41B2]	R5934	RES_402	m38[59A6]
	R7079	RES_402	m38[8B7]	R2634	RES_402	m38[26D2]	R4122	RES_402	m38[41A3]	R5935	RES_402	m38[59A6]
	R7079	RES_402	m38[8A7]	R2636	RES_402	m38[26D2]	R4123	RES_402	m38[41A2]	R5940	RES_402	m38[59A3]
	R7079	RES_402	m38[10D3]	R2637	RES_402	m38[26D2]	R4130	RES_402	m38[41C4]	R5941	RES_402	m38[59A5]
	R7079	RES_402	m38[10D3]	R2638	RES_402	m38[26D2]	R4131	RES_402	m38[41C4]	R5942	RES_402	m38[59A4]
	R7079	RES_402	m38[10C6]	R2639	RES_402	m38[26D2]	R4150	RES_402	m38[41C8]	R5995	RES_402	m38[59A5]
	R7079	RES_402	m38[10D3]	R2640	RES_402	m38[26C2]	R4151	RES_402	m38[41D7]	R6100	RES_402	m38[61C4]
	R7079	RES_402	m38[10C6]	R2641	RES_402	m38[26C2]	R4200	RES_402	m38[42D2]	R6101	RES_402	m38[61C5]
	R7079	RES_402	m38[10B6]	R2642	RES_402	m38[26C2]	R4201	RES_402	m38[42C2]	R6102	RES_402	m38[61C5]
	R7079	RES_402	m38[10B6]	R2643	RES_402	m38[26C2]	R4202	RES_402	m38[42D6]	R6103	RES_402	m38[61C6]
	R7079	RES_402	m38[11B5]	R2650	RES_402	m38[26C4]	R4300	RES_402	m38[43D7]	R6104	RES_402	m38[61B6]
	R7079	RES_402	m38[11C5]	R2651	RES_402	m38[26C1]	R4301	RES_603	m38[43D2]	R6301	RES_402	m38[63D4]
	R7079	RES_402	m38[11B4]	R2696	RES_402	m38[26B4]	R4302	RES_603	m38[43D2]	R6302	RES_402	m38[63D4]
	R7079	RES_402	m38[11C5]	R2697	RES_402	m38[26C3]	R4303	RES_603	m38[43D1]	R6303	RES_402	m38[63C2]
	R7079	RES_402	m38[11B5]	R2698	RES_402	m38[26C5]	R4304	RES_603	m38[43D1]	R6306	RES_402	m38[63C2]
	R7079	RES_402	m38[11A3]	R2699	RES_402	m38[26C5]	R4350	RES_402	m38[43C7]	R6307	RES_402	m38[63C5]
	R7079	RES_402	m38[12C3]	R2718	RES_402	m38[27B7]	R4351	RES_402	m38[43C7]	R6309	RES_402	m38[63C5]
	R7079	RES_402	m38[12C3]	R2719	RES_402	m38[27B7]	R4352	RES_402	m38[43C7]	R6399	RES_402	m38[63D3]
	R7079	RES_402	m38[12B7]	R2800	RES_402	m38[28C7]	R4353	RES_402	m38[43C7]	R6500	RES_402	m38[65C7]
	R7079	RES_402	m38[12B7]	R2801	RES_402	m38[28C7]	R4354	RES_402	m38[43C7]	R6501	RES_402	m38[65A7]
	R7079	RES_402	m38[12B7]	R2900	RES_402	m38[29A3]	R4355	RES_402	m38[43C7]	R6502	RES_1206	m38[65D6]
	R7079	RES_402	m38[12B7]	R3001	RES_402	m38[30D4]	R4356	RES_402	m38[43C7]	R6503	RES_805	m38[65D5]
	R7079	RES_402	m38[12A7]	R3009	RES_402	m38[30D4]	R4357	RES_402	m38[43B7]	R6504	RES_805	m38[65C5]
	R7079	RES_402	m38[12A7]	R3011	RES_402	m38[30C4]	R4402	RES_402	m38[44B3]	R6505	RES_805	m38[65D5]
	R7079	RES_402	m38[12A7]	R3025	RES_402	m38[30C4]	R4403	RES_402	m38[44B5]	R6506	RES_402	m38[65D6]
	R7079	RES_402	m38[12A7]	R3035	RES_402	m38[30B4]	R4404	RES_402	m38[44A7]	R6507	RES_805	m38[65B5]
	R7079	RES_402	m38[13D3]	R3100	RES_402	m38[31C5]	R4407	RES_402	m38[44A7]	R6508	RES_805	m38[65B5]
	R7079	RES_402	m38[14C3]	R3101	RES_402	m38[31C5]	R4409	RES_402	m38[44B3]	R6509	RES_805	m38[65B5]
	R7079	RES_402	m38[14C3]	R3300	RES_402	m38[33B6]	R4410	RES_402	m38[44D2]	R6510	RES_1206	m38[65B6]
	R7079	RES_402	m38[14B6]	R3301	RES_402	m38[33B7]	R4411	RES_402	m38[44D6]	R6511	RES_402	m38[65B6]
	R7079	RES_402	m38[14B6]	R3302	RES_402	m38[33D4]	R4412	RES_402	m38[44C1]	R6512	RES_805	m38[65C5]
	R7079	RES_402	m38[14D6]	R3303	RES_402	m38[33C4]	R4413	RES_402	m38[44C3]	R6513	RES_803	m38[65B5]
	R7079	RES_402	m38[14D6]	R3304	RES_402	m38[33C7]	R4414	RES_402	m38[44C3]	R6514	RES_805	m38[65B4]

