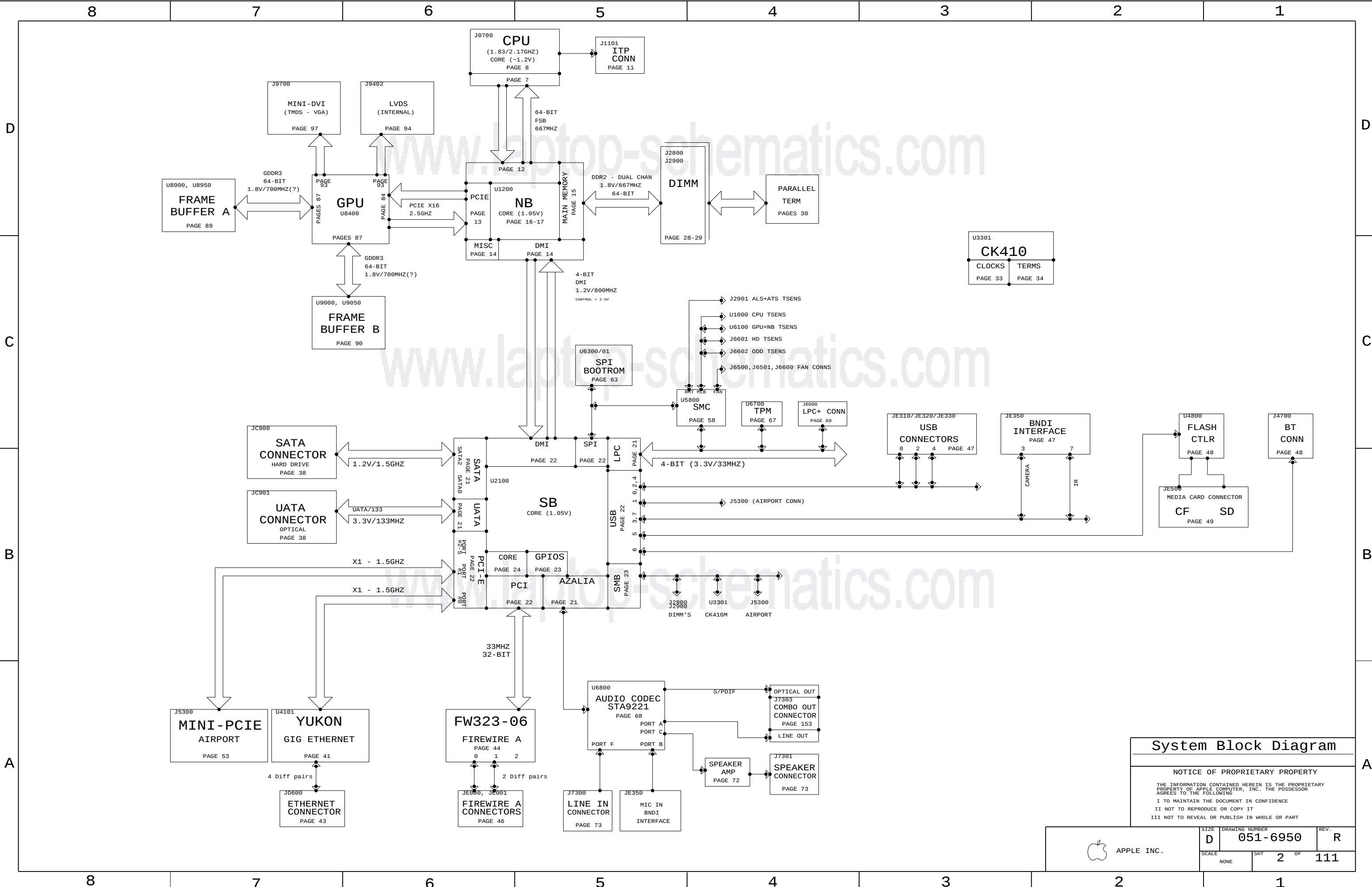
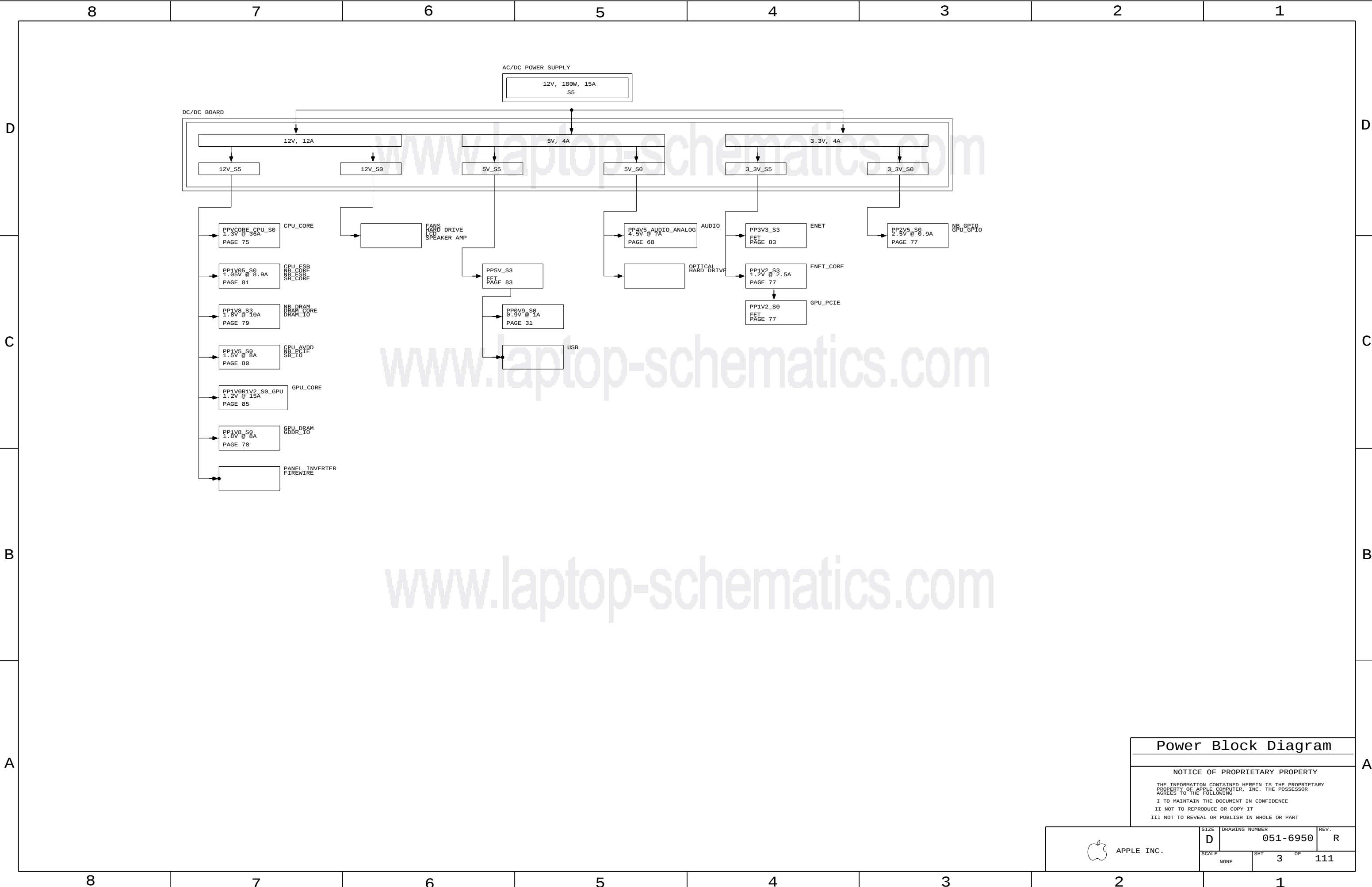


8		7		6		5		4		3		2		1																
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.														REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD	ENG APPD											
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.																		DATE	DATE											
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.																		02/07/08	06/22/04											
SCHEMATIC, "Kriolo", MLB														02/07/08																
D	PAGE	DRI	PDF	CIRCUIT										RX	PAGE	DRI	PDF	CIRCUIT												
	1	JD	JD	1	TABLE OF CONTENTS										53	JD	JD	43	PCI-E - AIRPORT MINI-PCIE CONN											
	2	JD	JD	2	SYSTEM BLOCK DIAGRAM										54	JD	JD	44	PCI-E - UNUSED PORTS											
	3	RT	RT	3	POWER BLOCK DIAGRAM										58	MS	MS	45	SMC - H8S2116											
	4	JD	JD	4	TABLE ITEMS & REVISION HISTORY										59	MS	MS	46	SMC - SMB BUSSES, MISC											
	5	JD	JD	5	FUNC TEST										60	MS	MS	47	SMC - LPC+ CONN											
	6	RT	RT	6	POWER CONNECTOR / POWER ALIAS										61	JH	JH	48	SMC - GPU/NB THERMAL SENSOR											
	(M42)	7	MS	JD	7	CPU - BUS INTERFACE										63	MS	JD	49	SMC - SPI BOOTROM										
	(M42)	8	MS	JD	8	CPU - PWR & GND										65	MS	MS	50	SMC - FANS										
		9	MS	JD	9	CPU - DECAPS										66	MS	MS	51	SMC - FANS										
	(M42)	10	MS	JD	10	CPU - THERMAL SENSOR										67	JD	JD	52	SMC - TPM										
C	M42	11	MS	JD	11	CPU - ITP CONN										S0	68	PT	JD	53	AUDIO - CODEC,VREG,MIC BIAS									
	M1	12	PS	JH	12	NB - CPU INTERFACE										S0	72	PT	JD	54	AUDIO - INTERNAL SPEAKER AMP									
	M1	13	PS	JH	13	NB - VIDEO INTERFACE										S0	73	PT	JD	55	AUDIO - I/O CONN'S,EMC									
		14	PS	JH	14	NB - MISC INTERFACES										S0	74	PT	JD	56	AUDIO - DETECT TRANSLATORS									
	M1	15	PS	JH	15	NB - DDR2 INTERFACE										RP	75	RT	RT	57	VR - CPU CORE									
	M1	16	PS	JH	16	NB - POWER 1										RP	76	RT	RT	58	VR - CPU I-V SENSE CKT									
	M1	17	PS	JH	17	NB - POWER 2										RP	77	RT	RT	59	VR - "S0" 1.2V & 2.5V (GRAFIX)									
	M1	18	PS	JH	18	NB - GROUNDS										RP	78	RT	RT	60	VR - "S0" 1.8V									
		19	PS	JH	19	NB - DECAPS										RP	79	RT	RT	61	VR - "S3" 1.8V									
	M1	20	PS	JH	20	NB - CONFIG STRAPS										RP	80	RT	RT	62	VR - "S0" 1.5V									
		21	JD	JD	21	SB - RTC, LAN, AUDIO, ATA, CPU, LPC										RP	81	RT	RT	63	VR - "S0" 1.05V									
B		22	JD	JD	22	SB - PCIE, SPI, USB, DMI, PCI										RP	83	RT	RT	64	VR - "S3" 3.3V AND 5V									
		23	JD	JD	23	SB - SMB, GPIO, PM, CLKS										JH	84	JH	JH	65	GPU - M56 PCI-E									
		24	JD	JD	24	SB - POWERS AND GROUNDS										M1	85	JH	JH	66	GPU - VCORE SUPPLY									
		25	JD	JD	25	SB - DECAPS										M1	86	JH	JH	67	GPU - M56 CORE PWR									
		26	JD	JD	26	SB - MISC										M1	87	JH	JH	68	GPU - M56 FRAME BUFFER									
		27	JD	JD	27	SB - SMB BUS CONNECTIONS										M1	88	JH	JH	69	GPU - MISC									
		28	PS	JD	28	DDR2 - SO-DIMM CONN A										M1	89	JH	JH	70	GPU - GDDR SDRAM A									
		29	PS	JD	29	DDR2 - SO-DIMM CONN B (REVERSED)										M1	90	JH	JH	71	GPU - GDDR SDRAM B									
		30	PS	JD	30	DDR2 - TERMINATION										M1	91	JH	JH	72	GPU - M56 GPIO, DVO, MISC									
	M1	31	RT	RT	31	DDR2 - VTT SUPPLY										M1	92	JH	JH	73	GPU - M56 CLOCKS									
	M42	33	JD	JD	32	CLOCKS - GENERATOR										M1	93	JH	JH	74	GPU - M56 VIDEO INTERFACES									
A		34	JD	JD	33	CLOCKS - TERMINATIONS										JH	94	JH	JH	75	GPU - INTERNAL DISPLAY CONN'S									
		38	JD	JD	34	ATA (SATA AND IDE) CONN'S										JH	95	JH	JH	76	GPU - TP'S									
	(M42)	41	JD	JD	35	LAN - YUKON'S PCIE INTERFACE										JH	96	JH	JH	77	GPU - TMDS, INVERTER, EXT VGA									
		42	JD	JD	36	LAN - YUKON'S PWR, MISC										JH	97	JH	JH	78	GPU - EXTERNAL DISPLAY CONN'S									
		43	JD	JD	37	LAN - CONN																								
		44	JD	JD	38	FIREWIRE - FW323-06																								
		45	JD	JD	39	FIREWIRE - DECAPS																								
		46	JD	JD	40	FIREWIRE - CONN'S																								
		47	JD	JD	41	USB - CONN'S																								
		49	JD	JD	42	USB - FLASH CONN																								
	8		7		6		5		4		3		2		1															

DIMENSIONS ARE IN MILLIMETERS				METRIC				APPLE INC.			
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ANGLES ± _____				MFG APPD				IT NOT TO REPRODUCE OR COPY IT			
DO NOT SCALE DRAWING				QA APPD				IT NOT TO REVEAL OR PUBLISH IN WHOLE OR PART			
				RELEASE				TITLE			
				SCALE				SCHEM, "Kriolo", MLB			
				NONE				DRAWING NUMBER			
				MATERIAL/FINISH NOTED AS APPLICABLE				051-6950			
				SIZE D				REV. R			
								SHT 1 OF 111			

THIRD ANGLE PROJECTION	
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Power Block Diagram

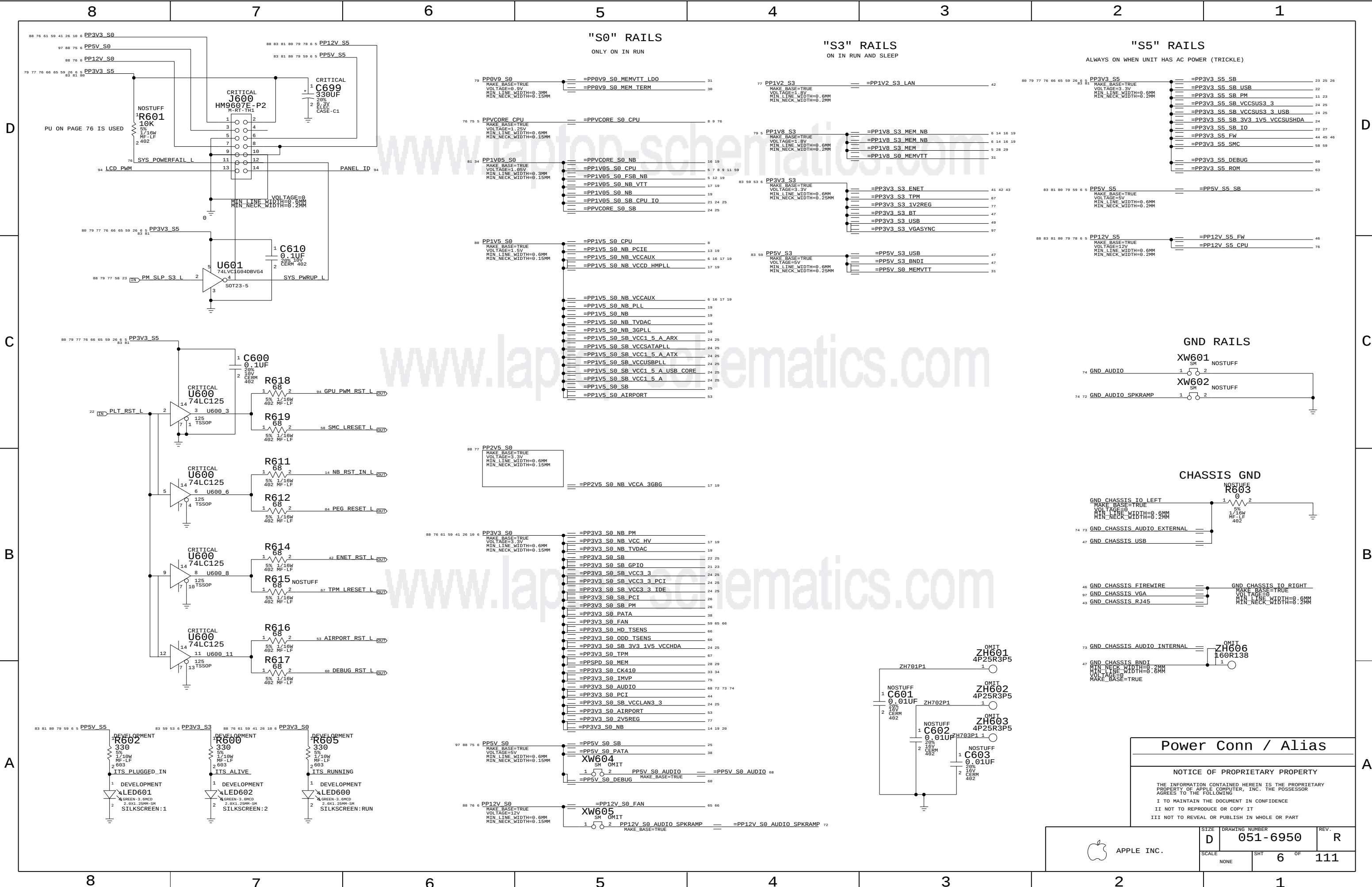
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D	051-6950	R
SCALE	SHT	OF
NONE	3	111

[illegible]



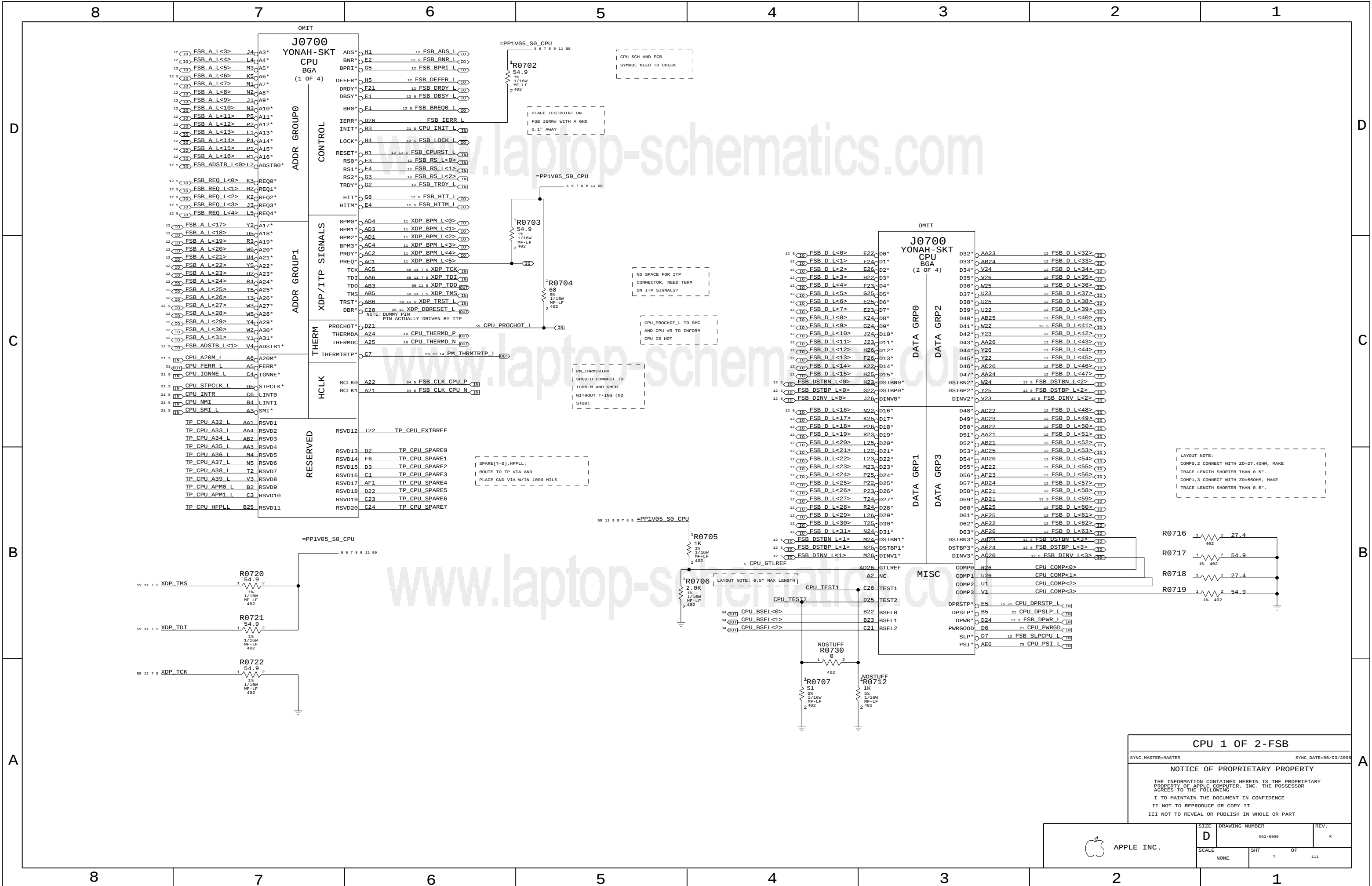
Power Conn / Alias

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SCALE	SHT	OF
NONE	6	111



CPU 1 OF 2-FSB

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

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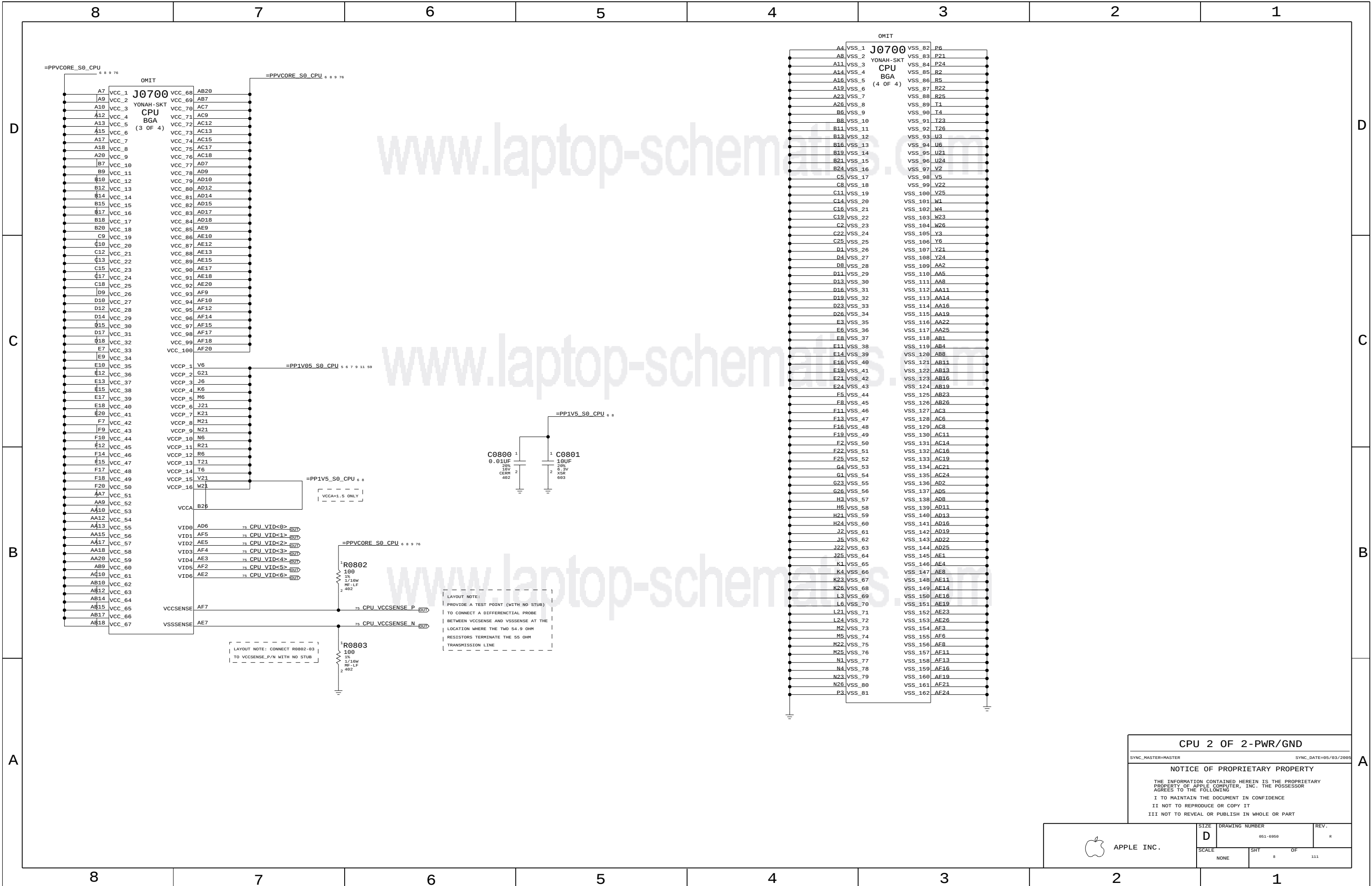
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SIZE D	DRAWING NUMBER 001-6950		REV. R
	SCALE NONE	SHT 7	OF 111



CPU 2 OF 2-PWR/GND

SYNC_MASTER=MASTER

SYNC_DATE=05/03/2005

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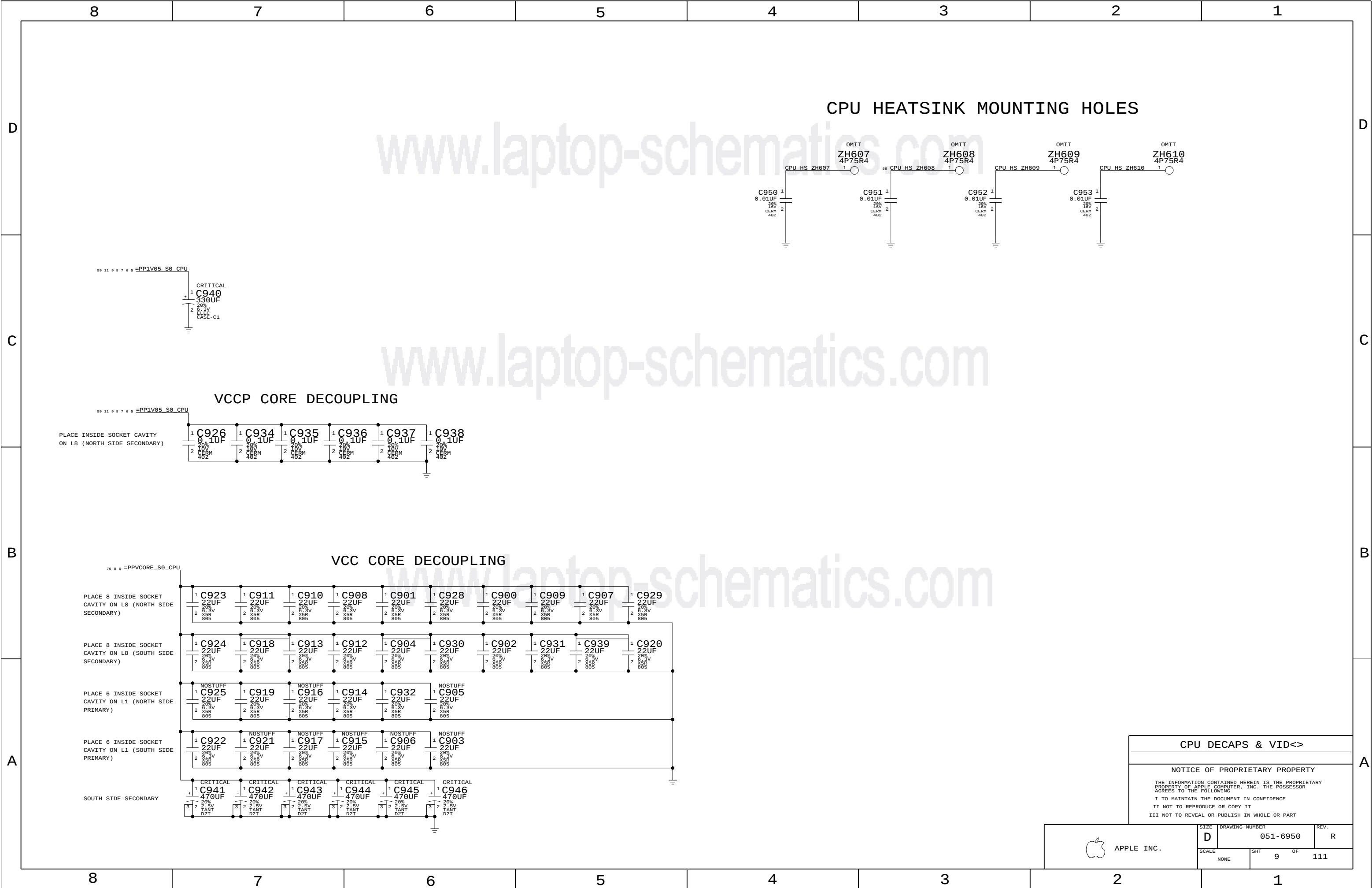
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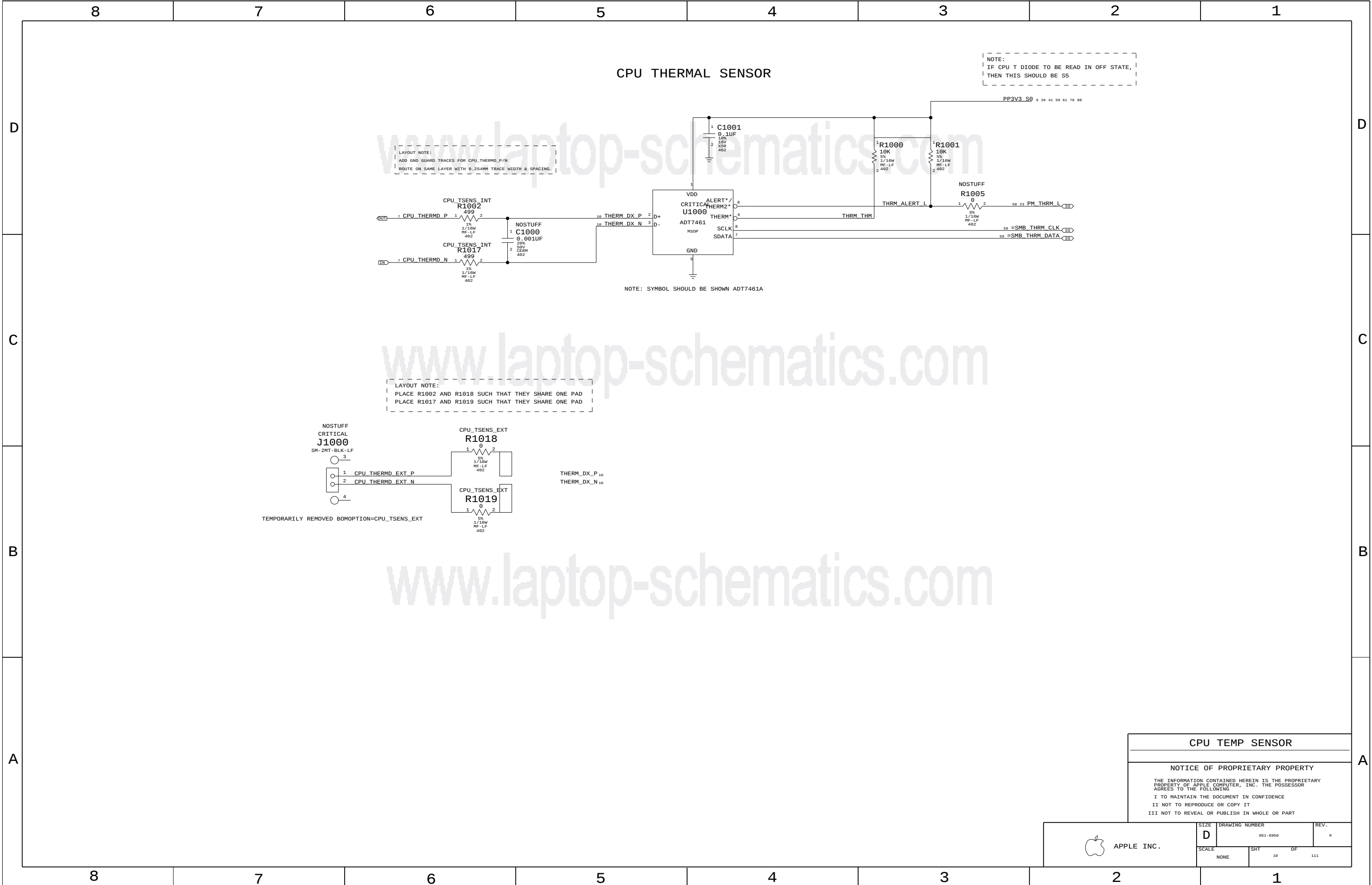
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SCALE		SHT	OF
NONE		8	111





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CPU ITP700FLEX DEBUG SUPPORT

(AND WITH RESET BUTTON)

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

CPU ITP700FLEX DEBUG

SYNC_MASTER=MASTER SYNC_DATE=5/23/05

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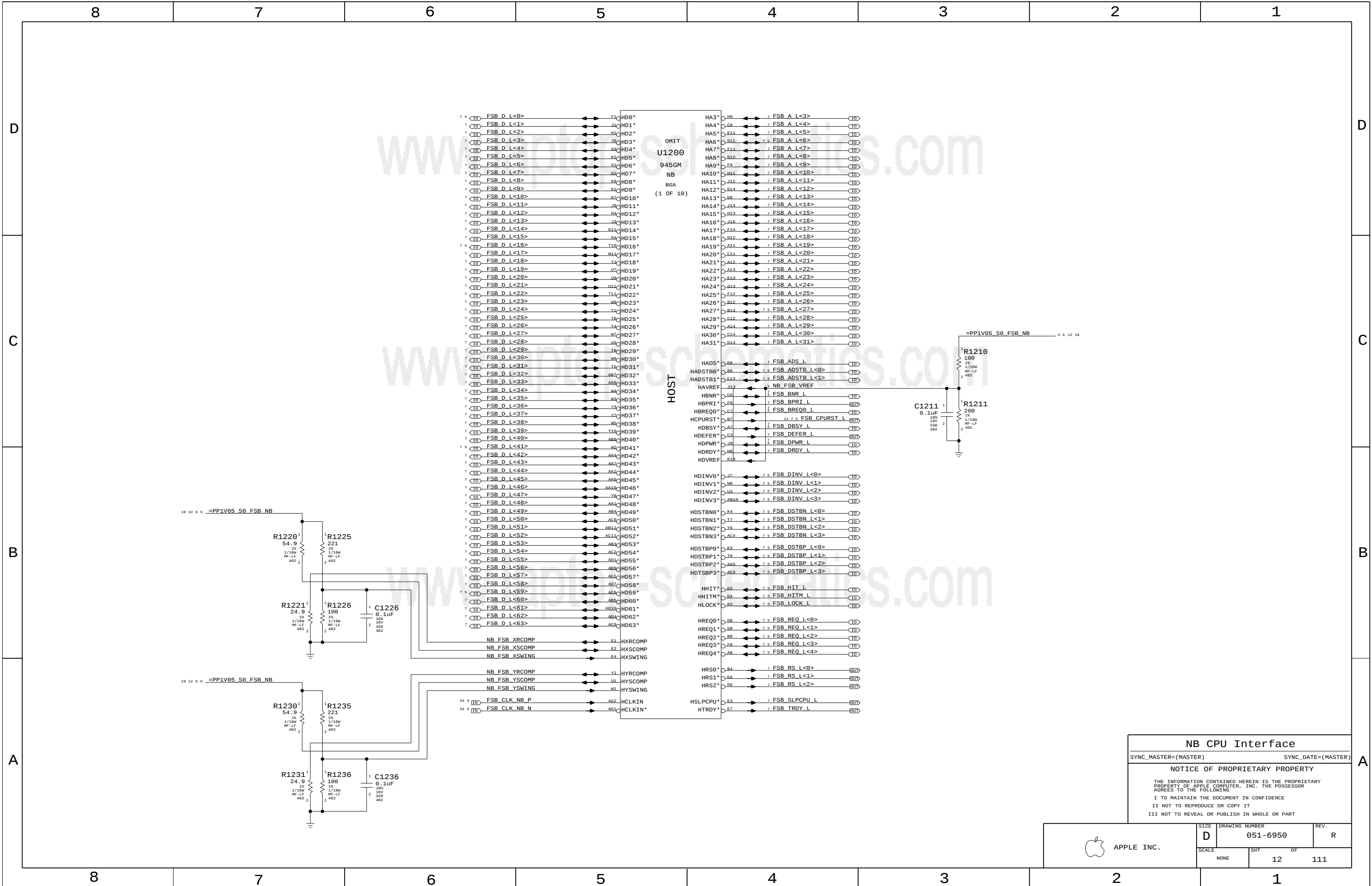
SIZE D

DRAWING NUMBER 051-6950

REV. R

SCALE NONE

SHT 11 OF 111



NB CPU Interface

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

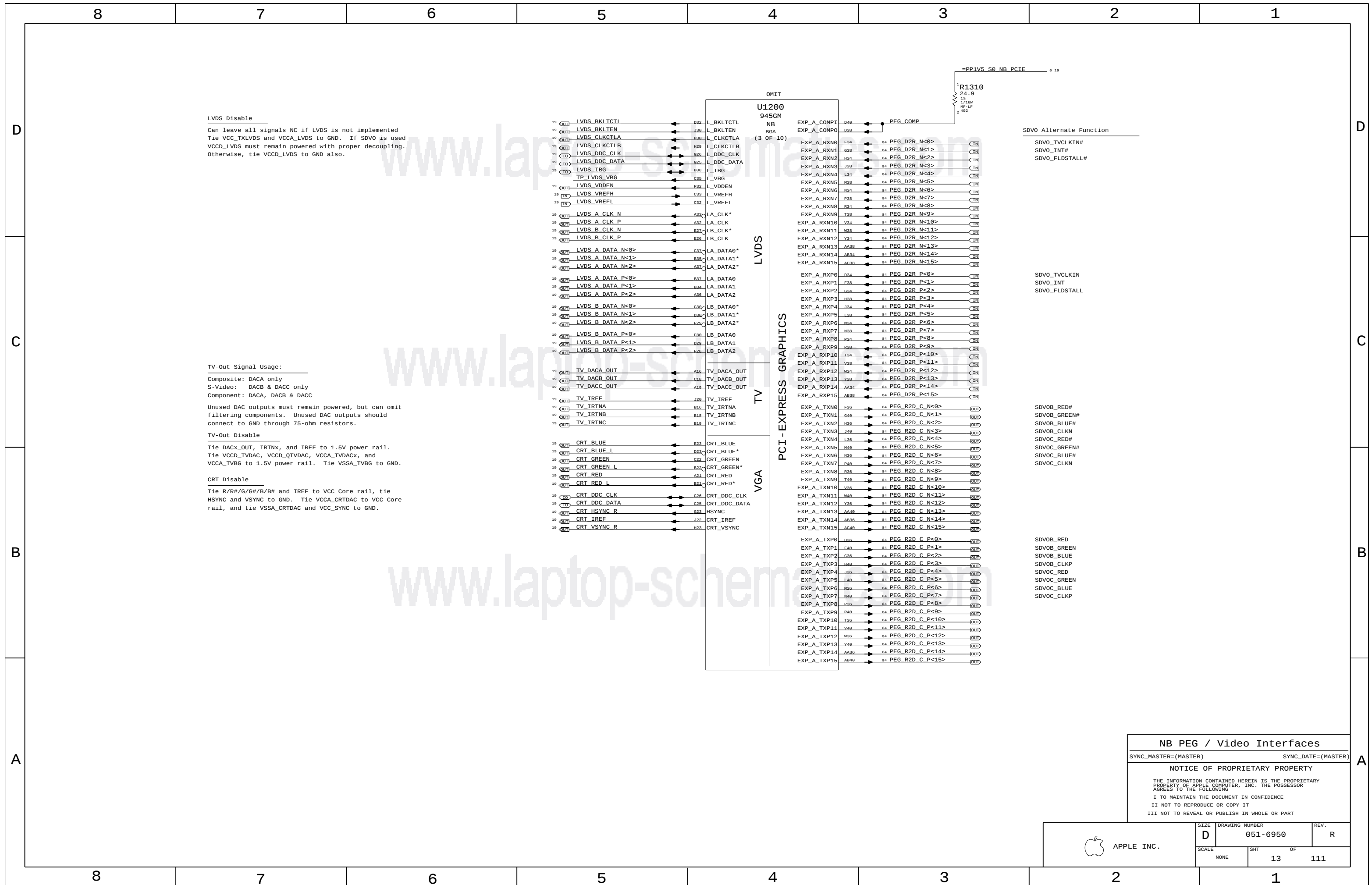
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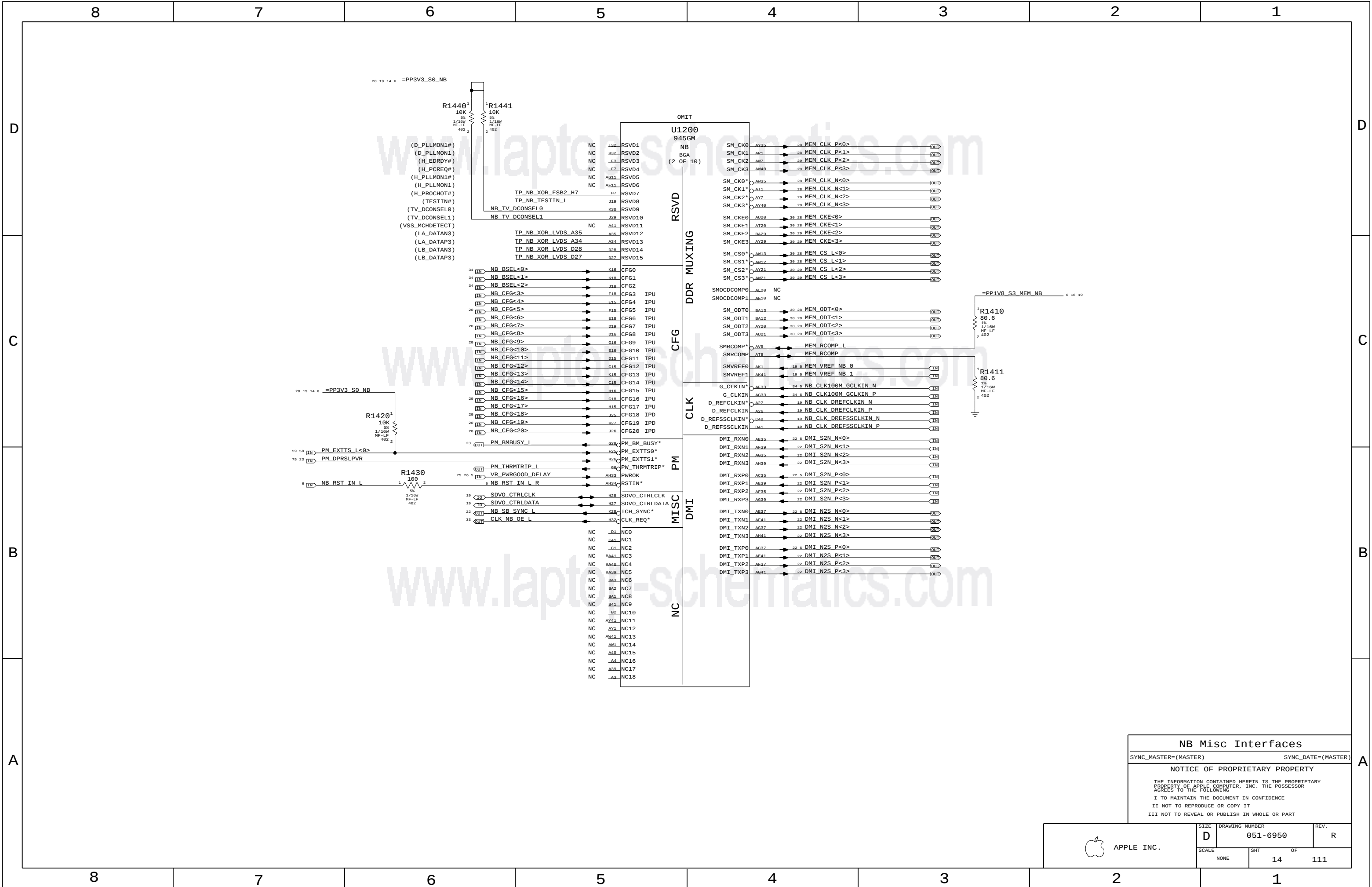
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NB Misc Interfaces

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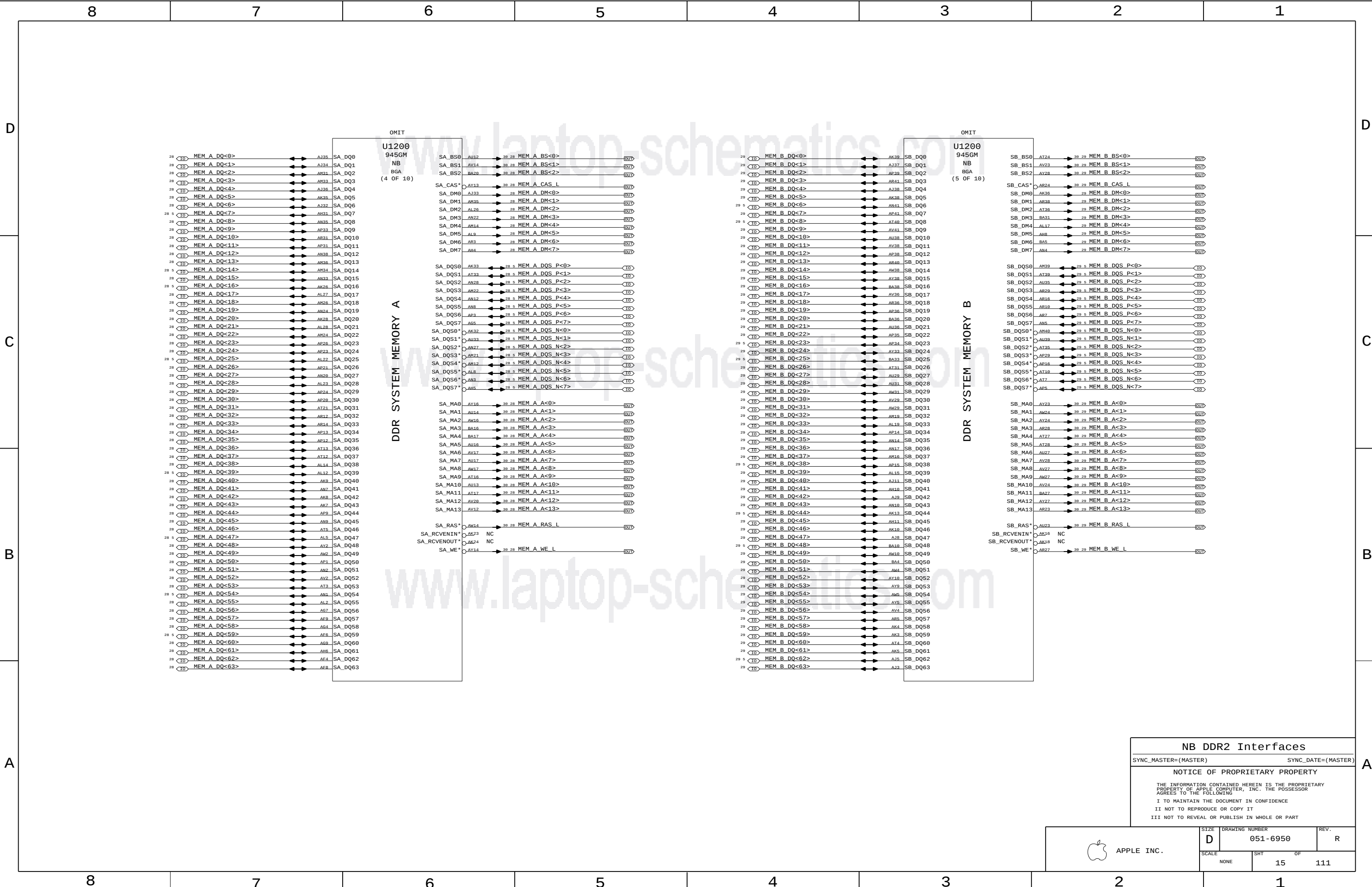
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NB DDR2 Interfaces

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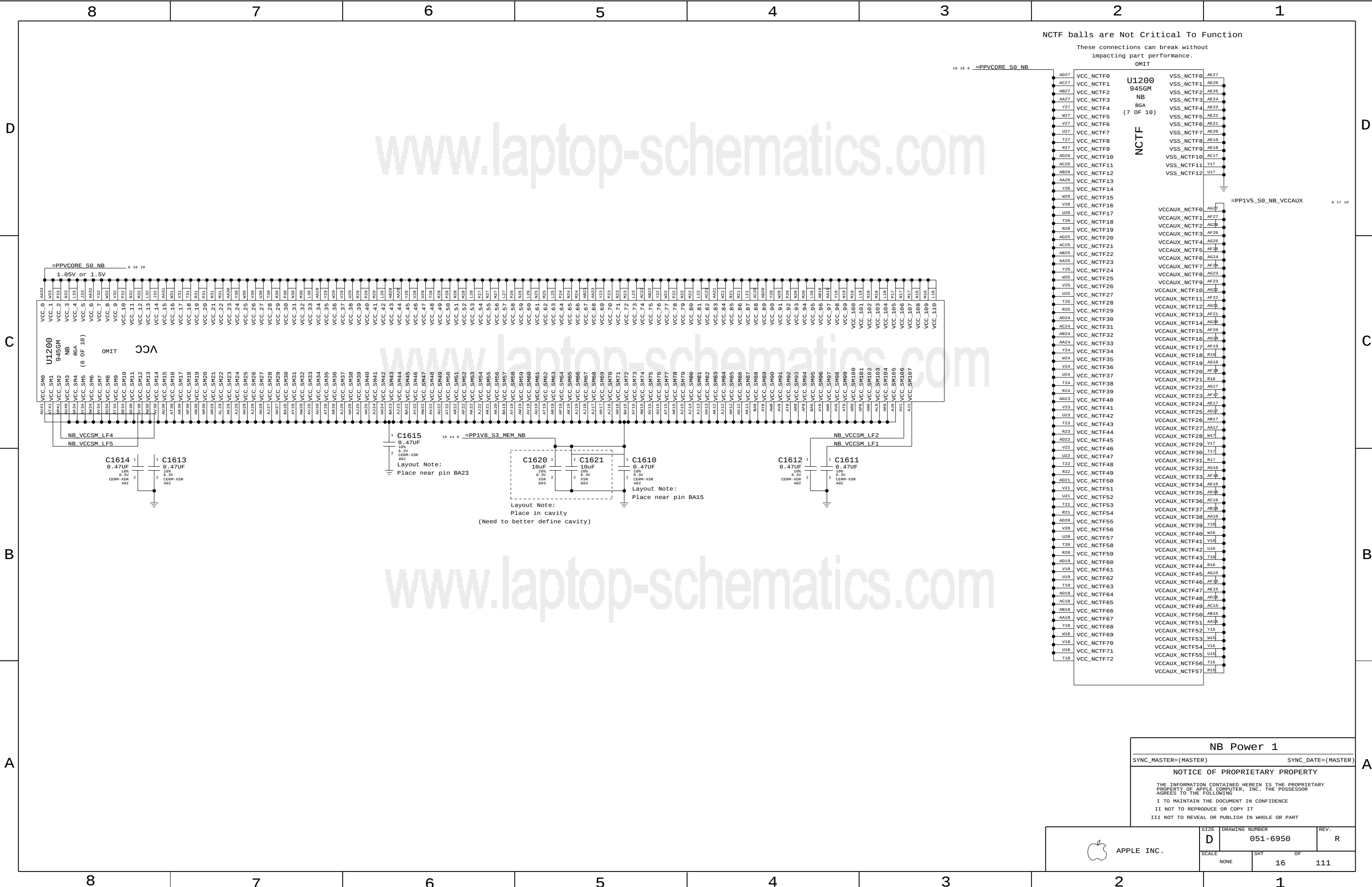
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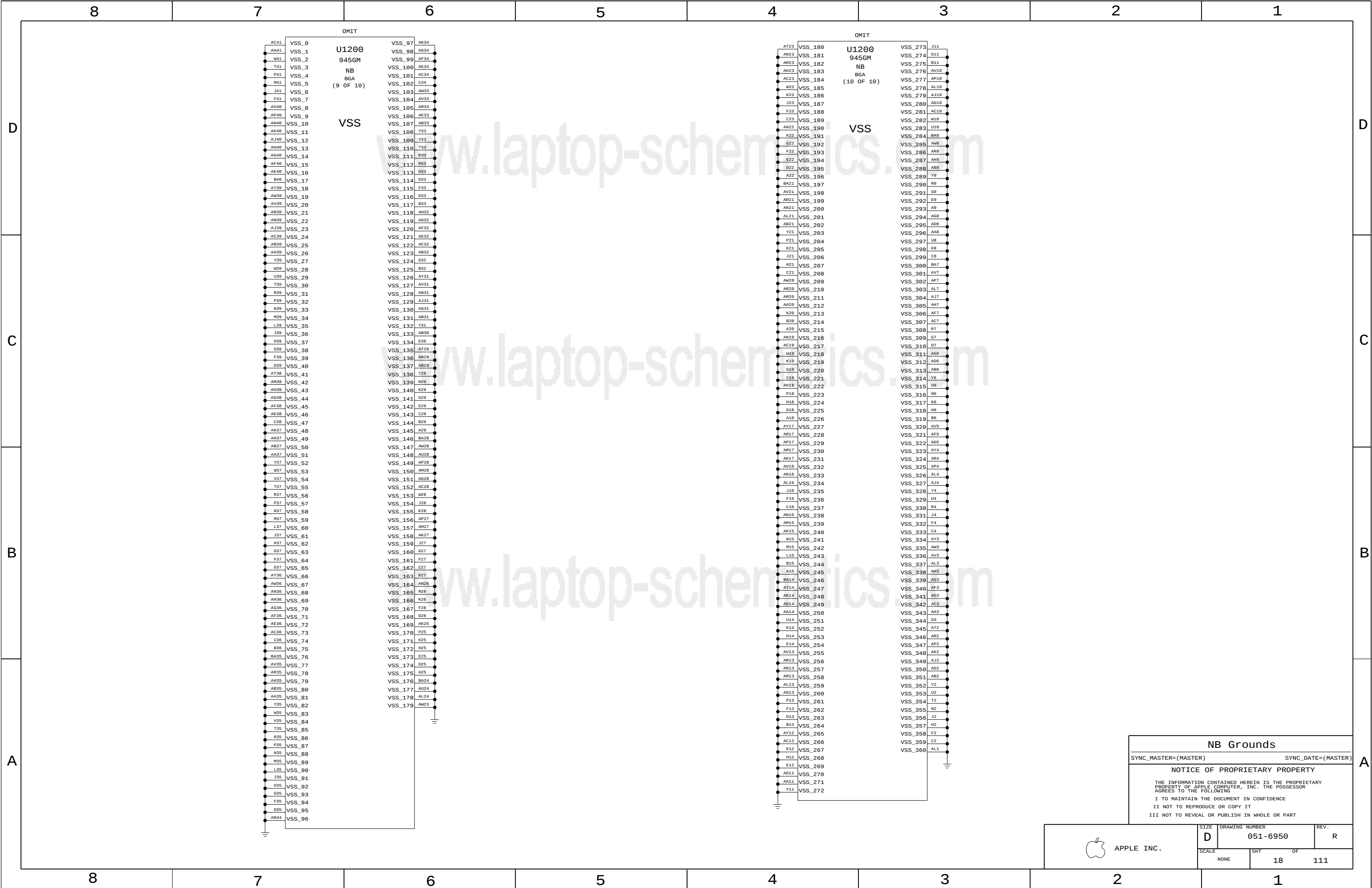
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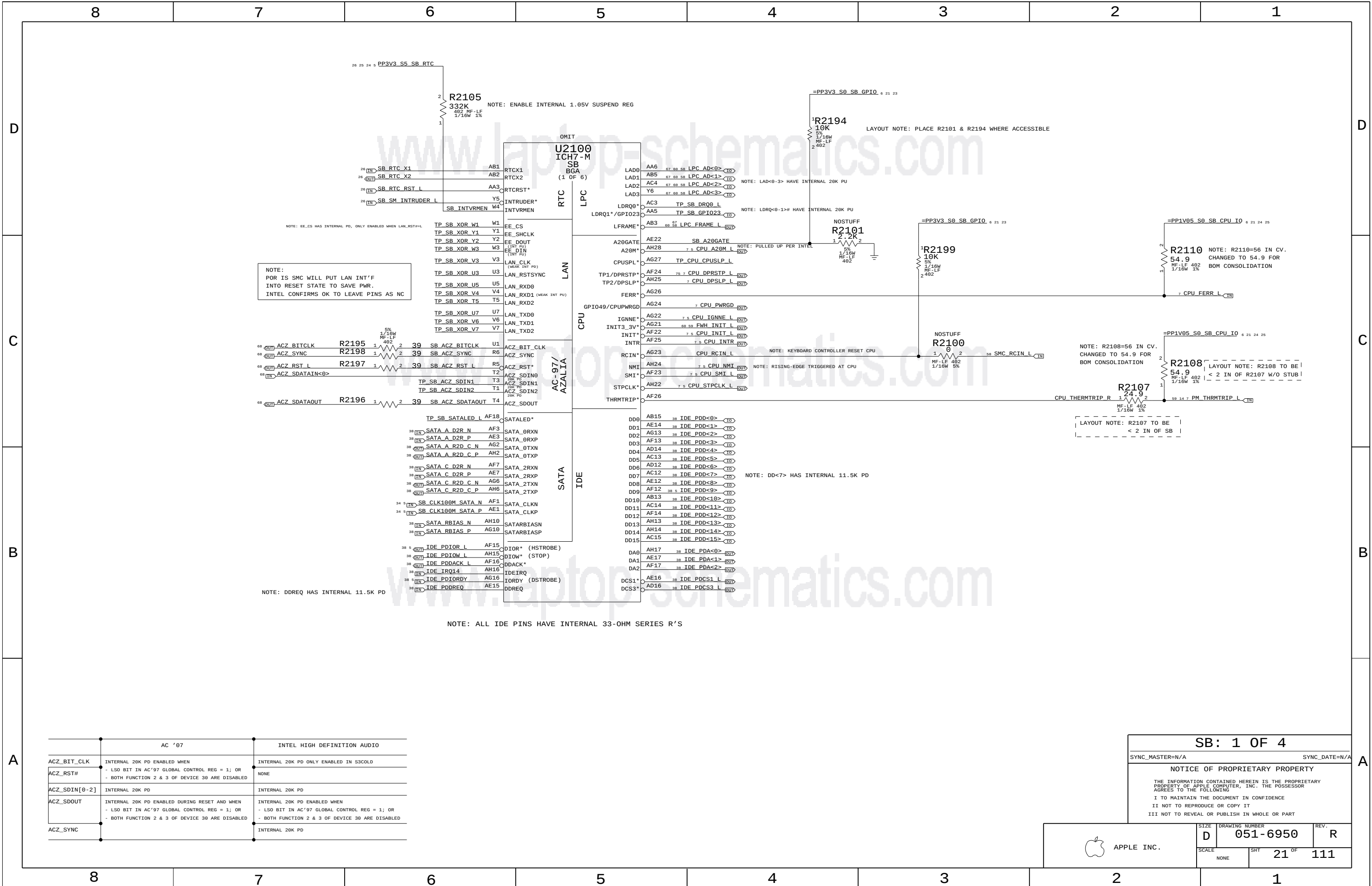
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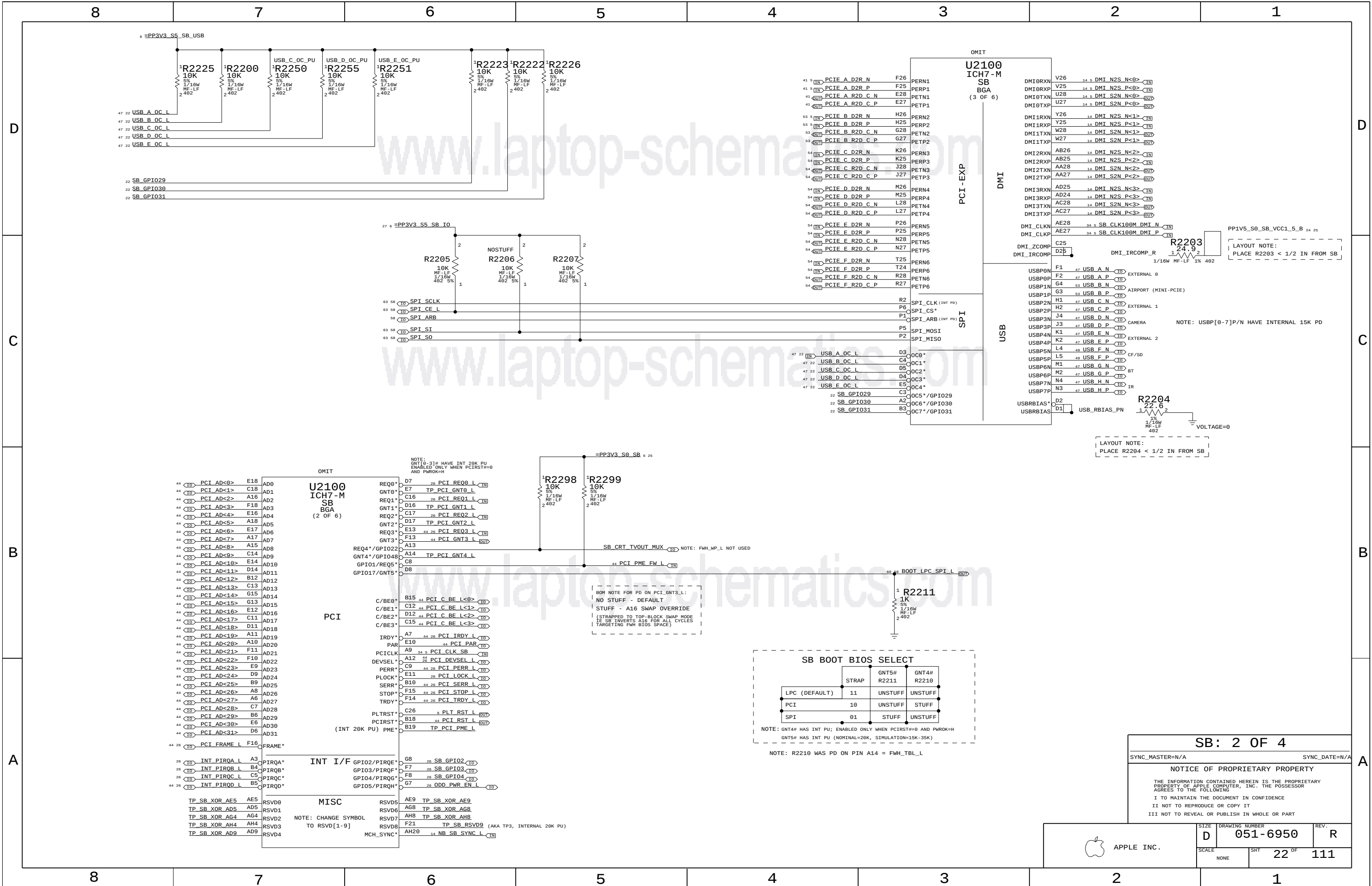
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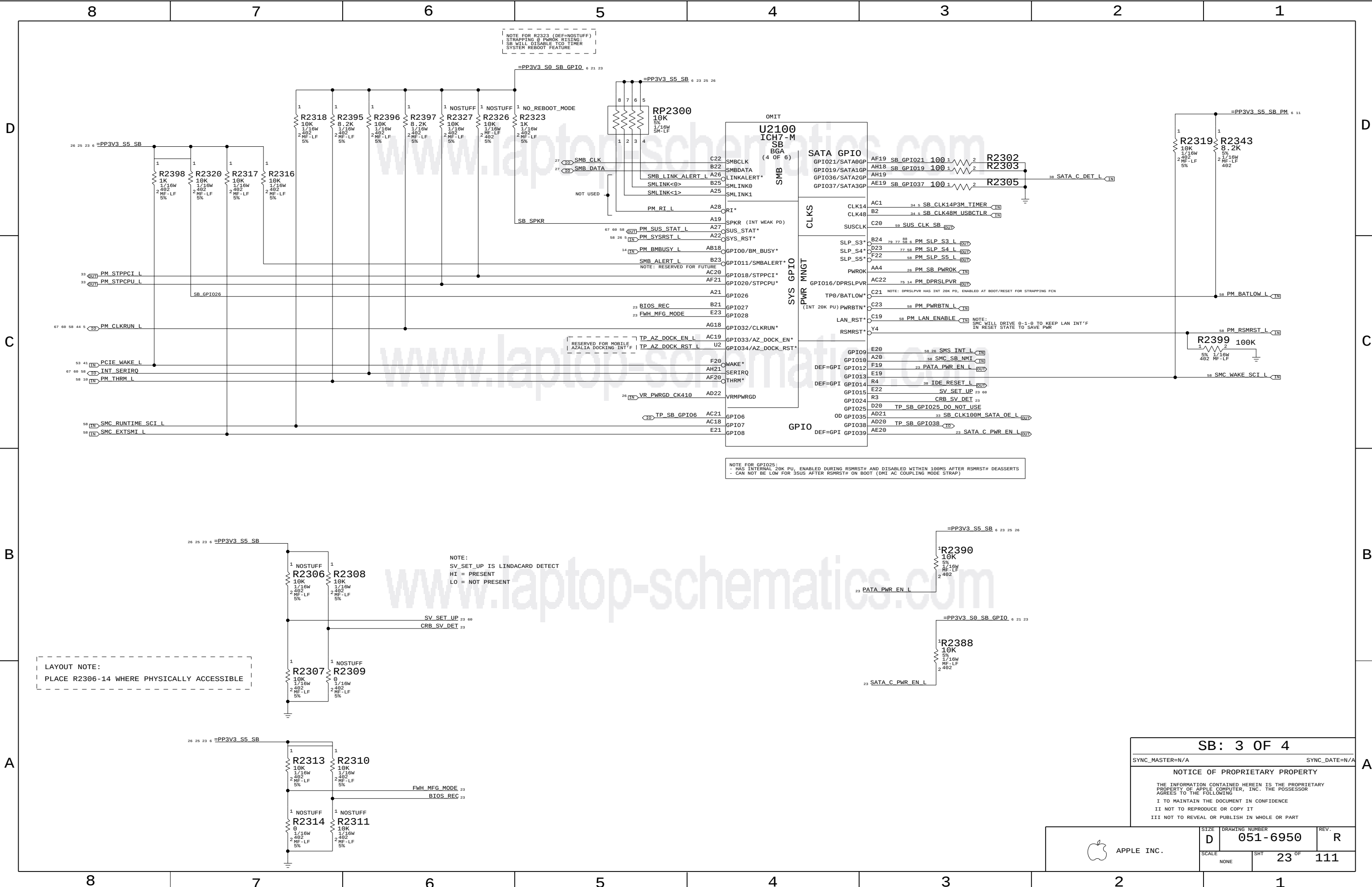
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART











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 (DML AC COUPLING MODE STRAP)

LAYOUT NOTE:
PLACE R2306-14 WHERE PHYSICALLY ACCESSIBLE

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

SB: 3 OF 4

SYNC_MASTER=N/A SYNC_DATE=N/A

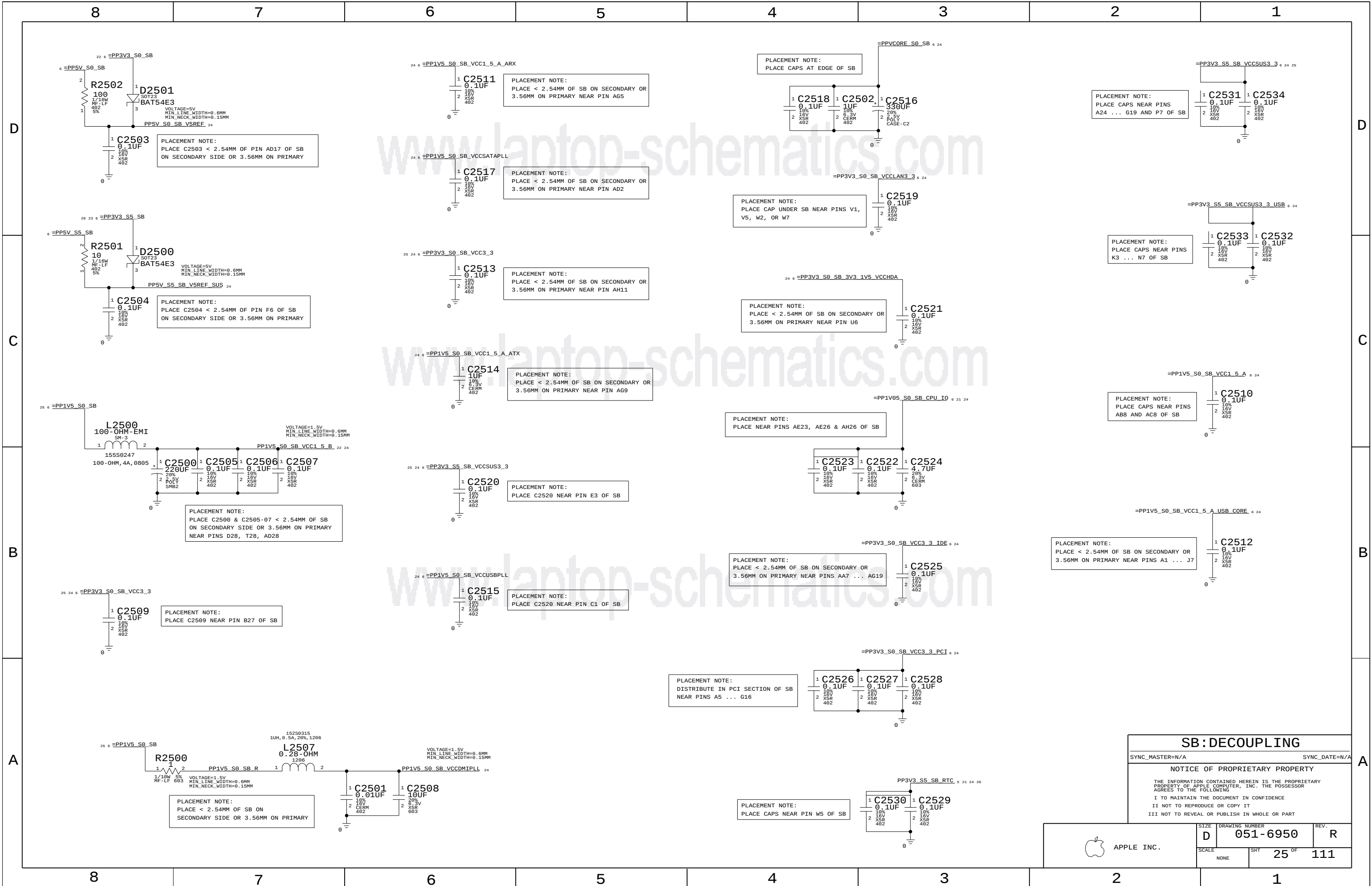
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SB: DECOUPLING

SYNC_MASTER=N/A SYNC_DATE=N/A

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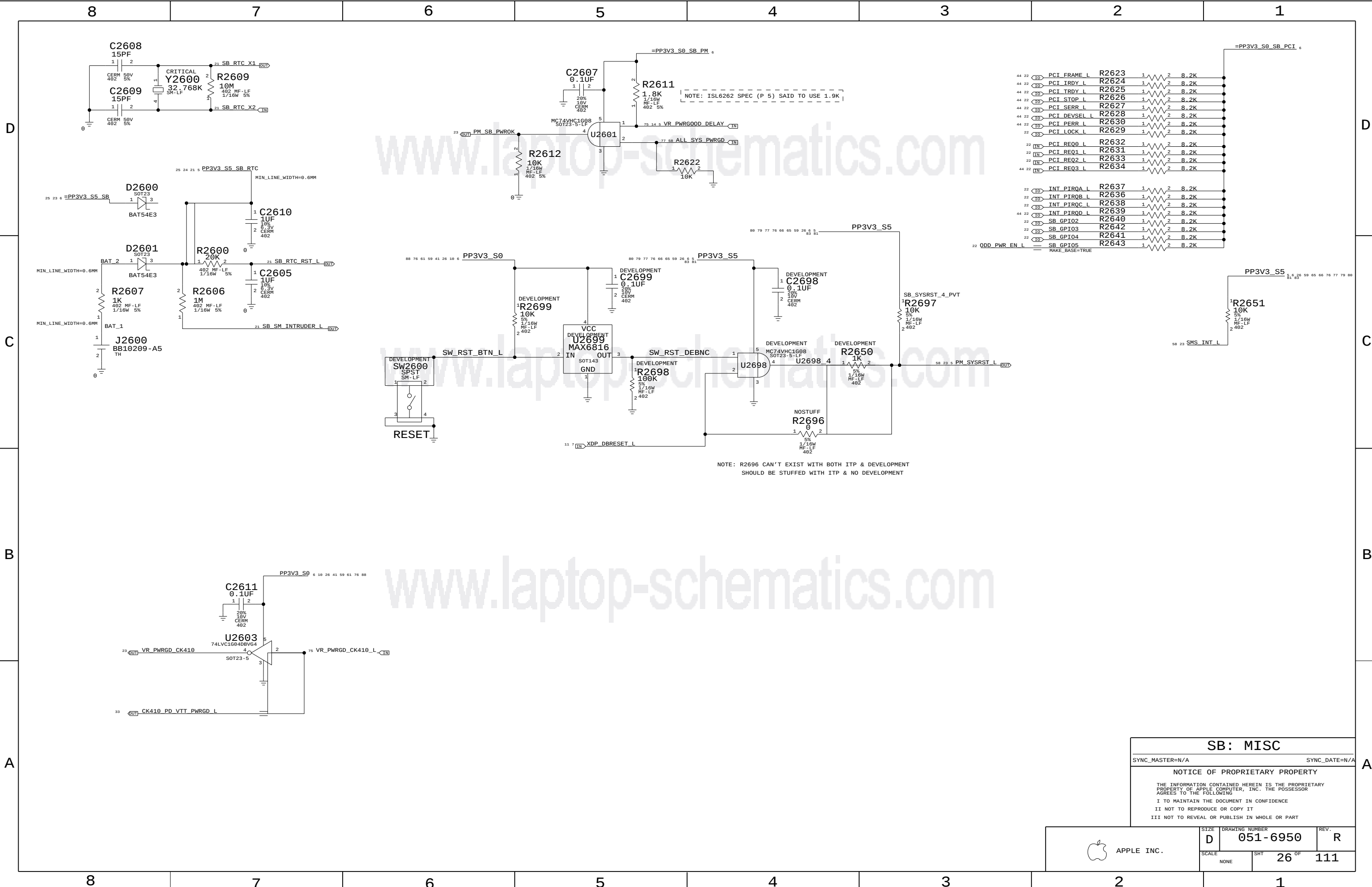
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	D	051-6950	R
SCALE		SHT	25 OF 111
NONE			



SB: MISC

SYNC_MASTER=N/A SYNC_DATE=N/A

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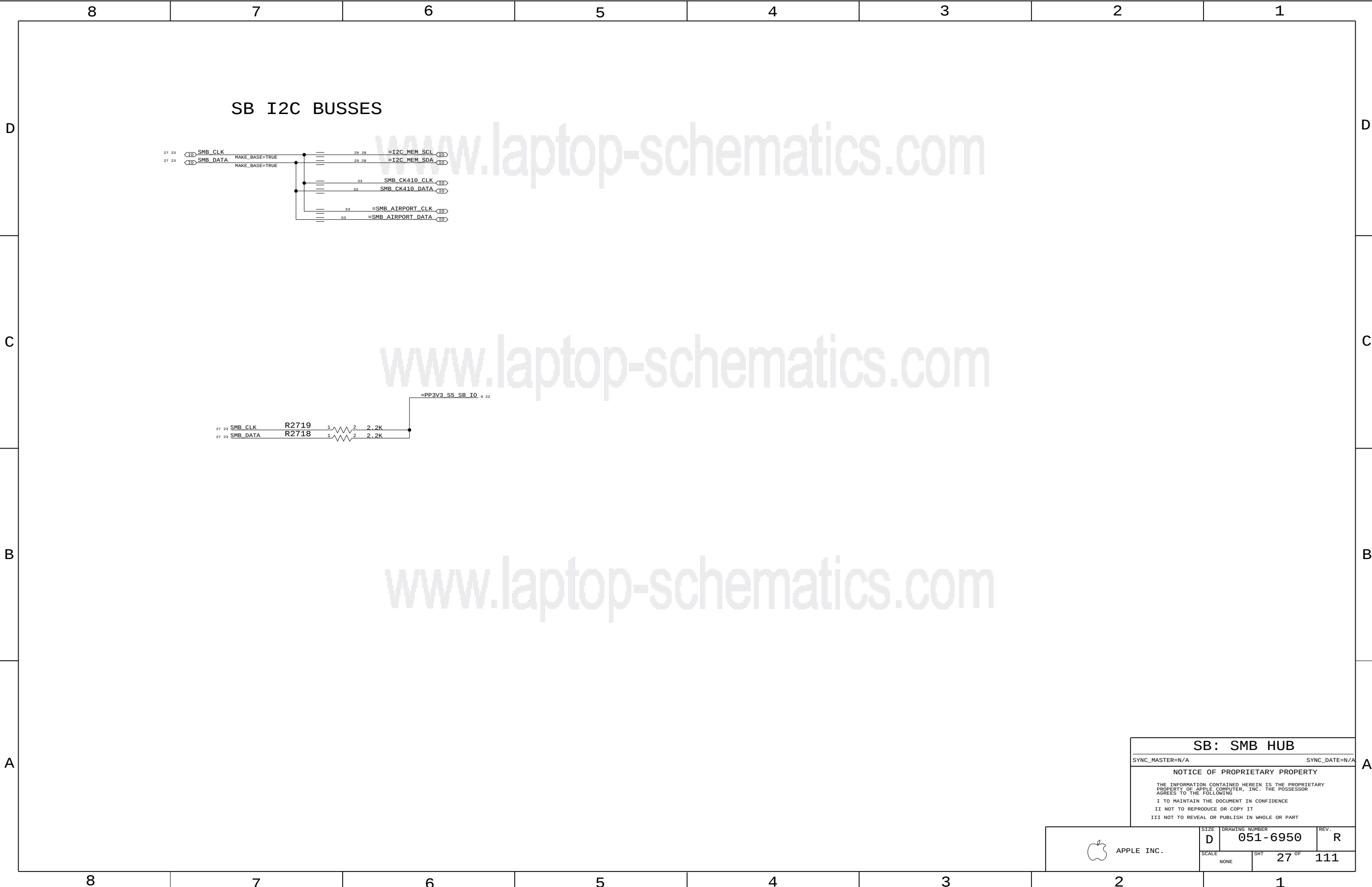
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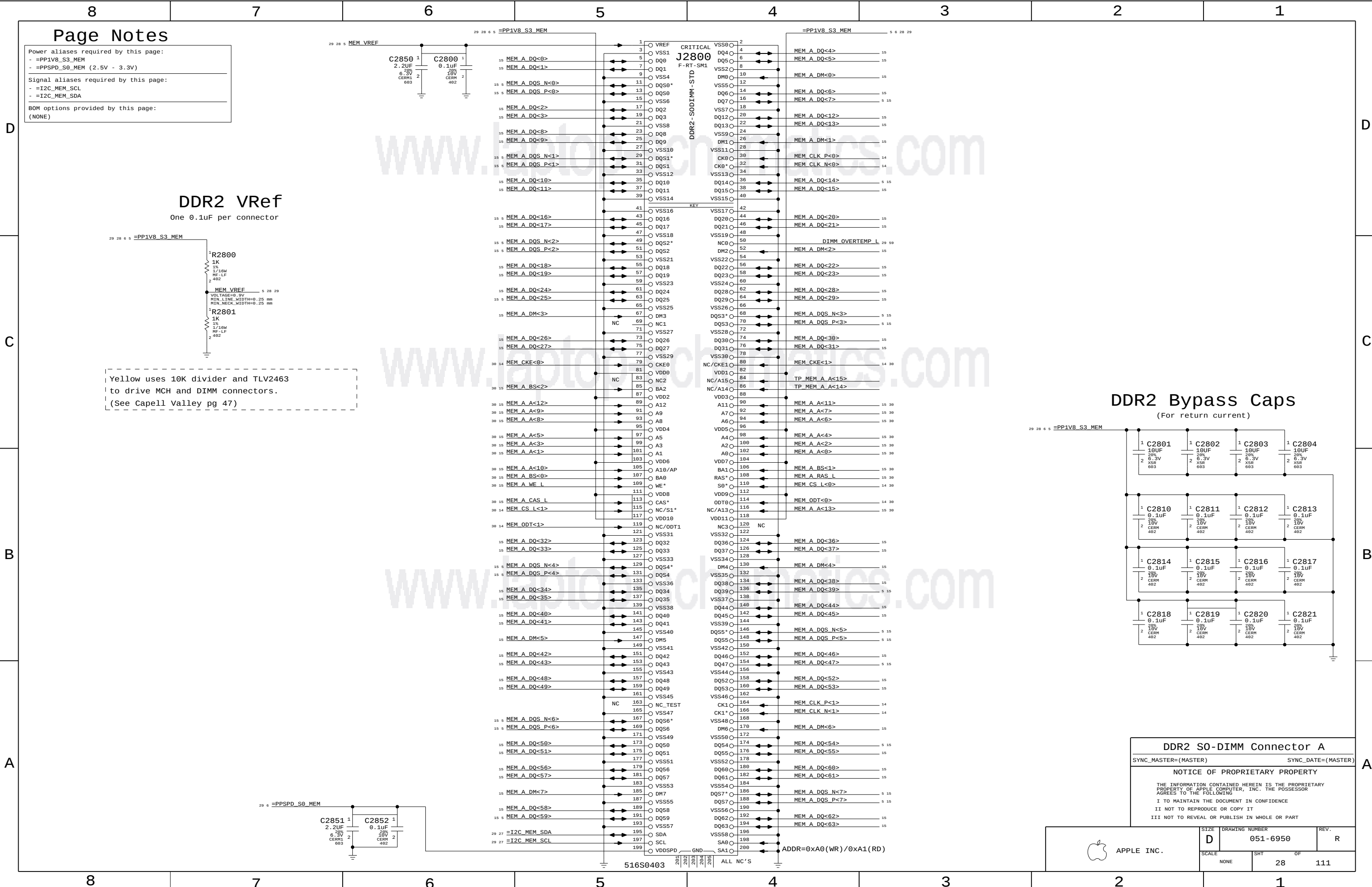
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE		SHT	26 OF 111
NONE			





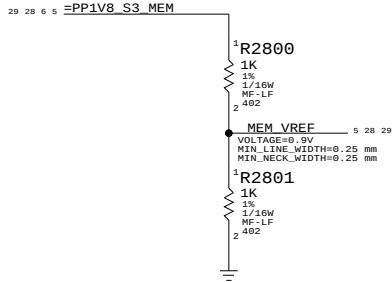
Page Notes

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

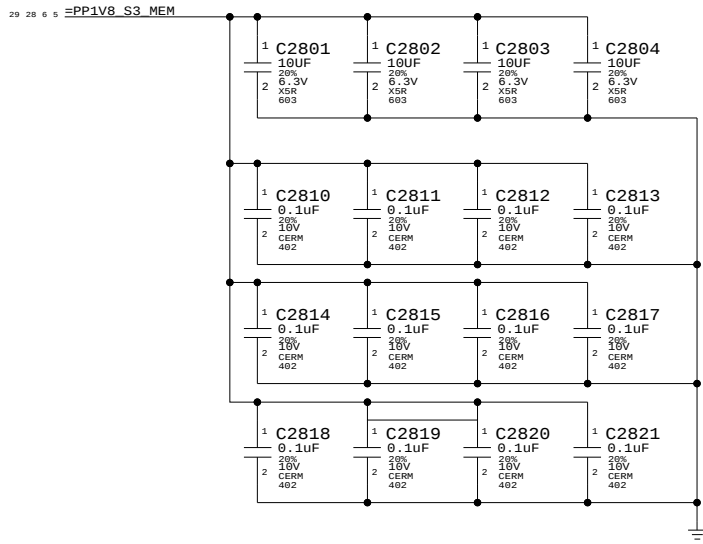
BOM options provided by this page:
(NONE)

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 S0-DIMM Connector A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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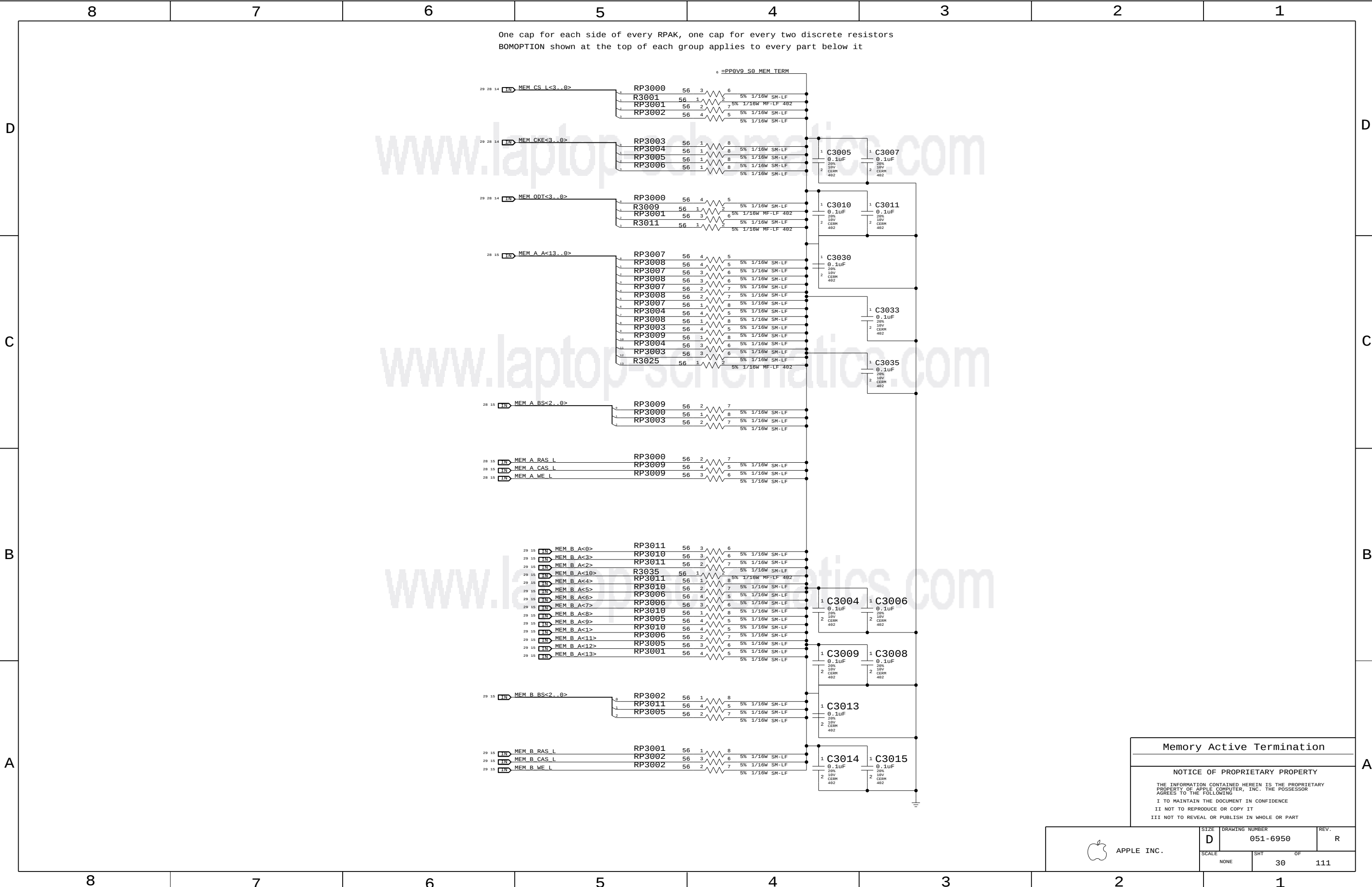
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NONE		28	111



Memory Active Termination

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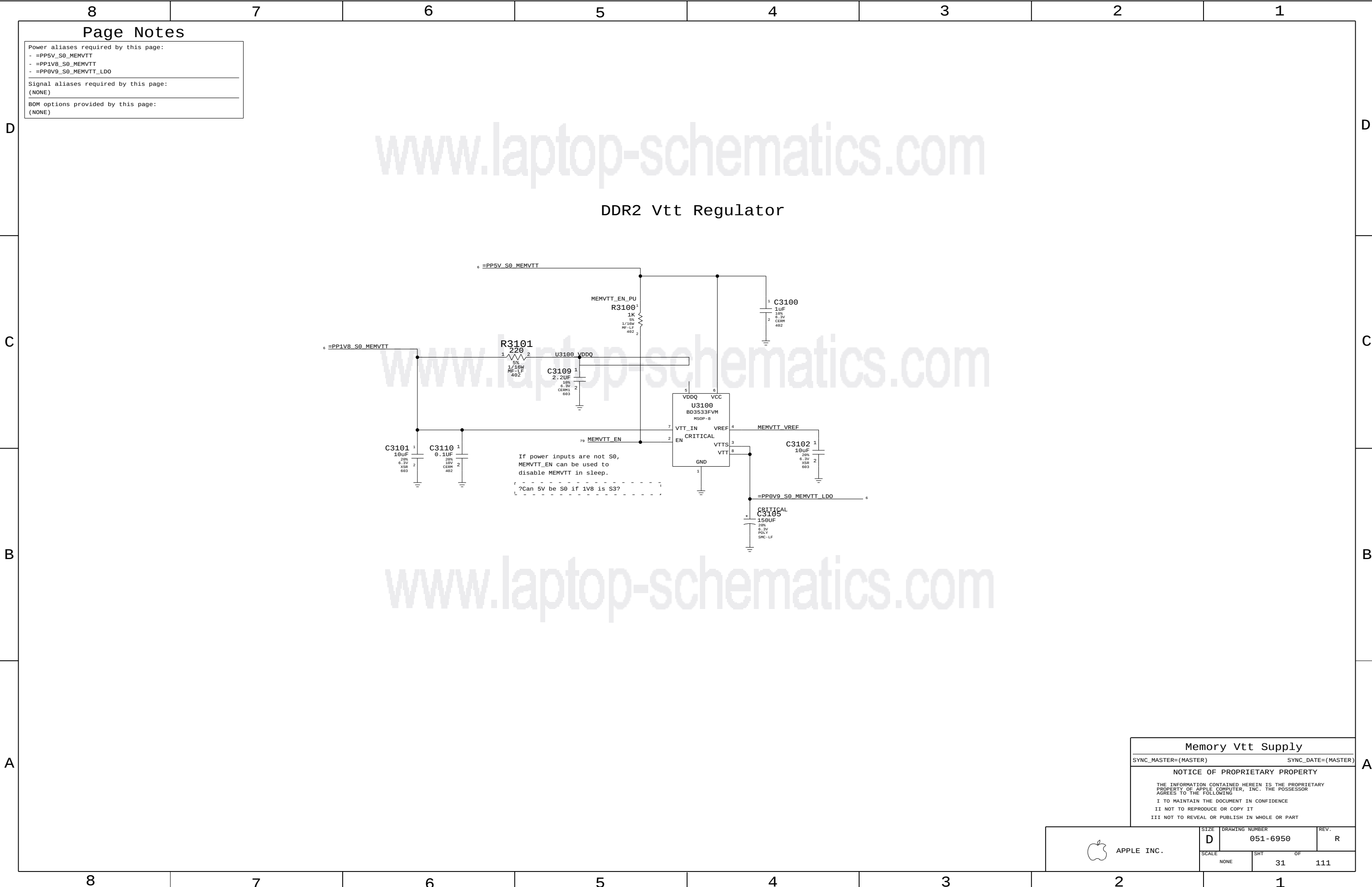
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SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	OF
NONE	30	111



Memory Vtt Supply

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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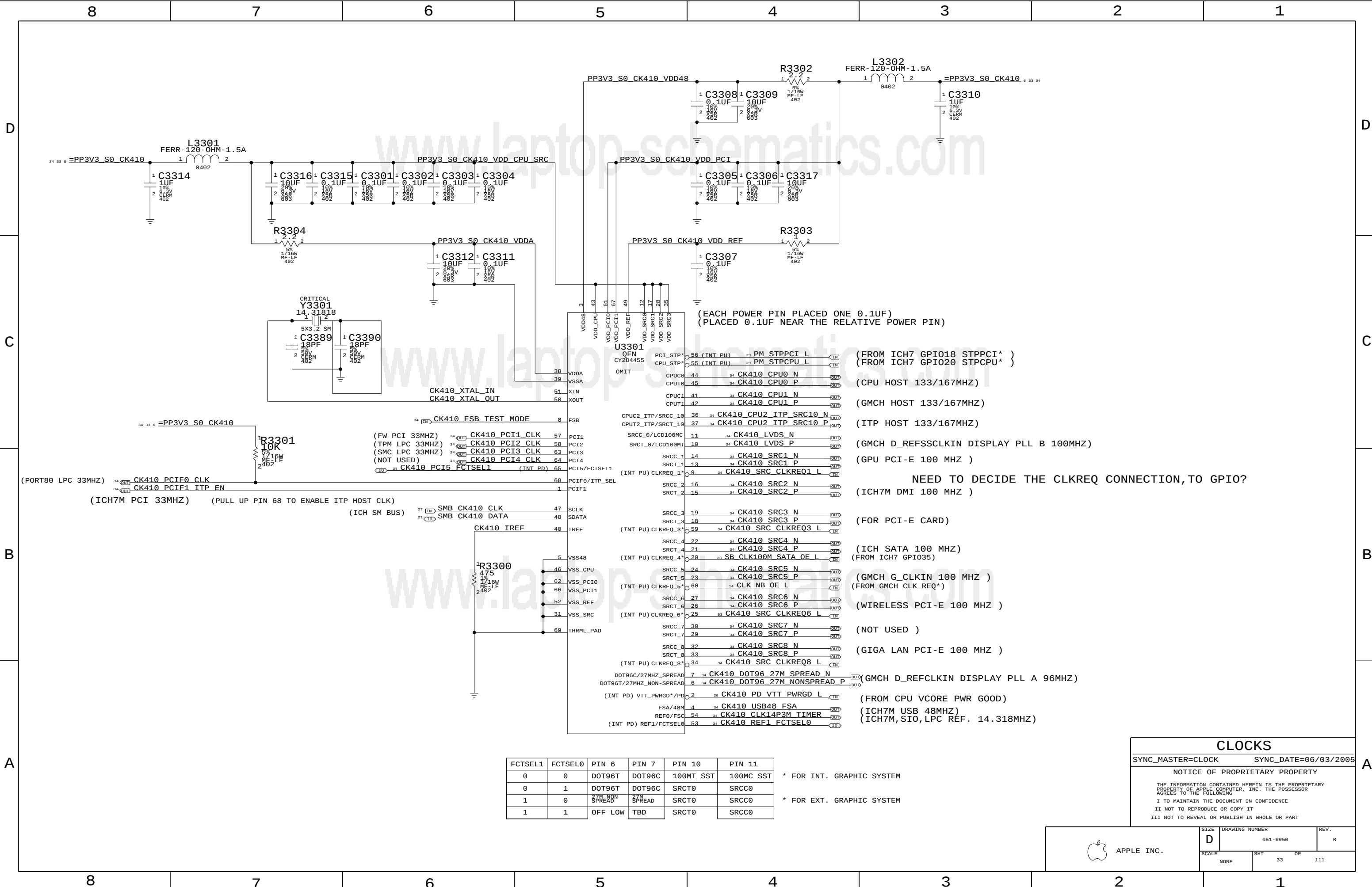
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	D	051-6950	R
SCALE		SHT	OF
NONE		31	111



(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

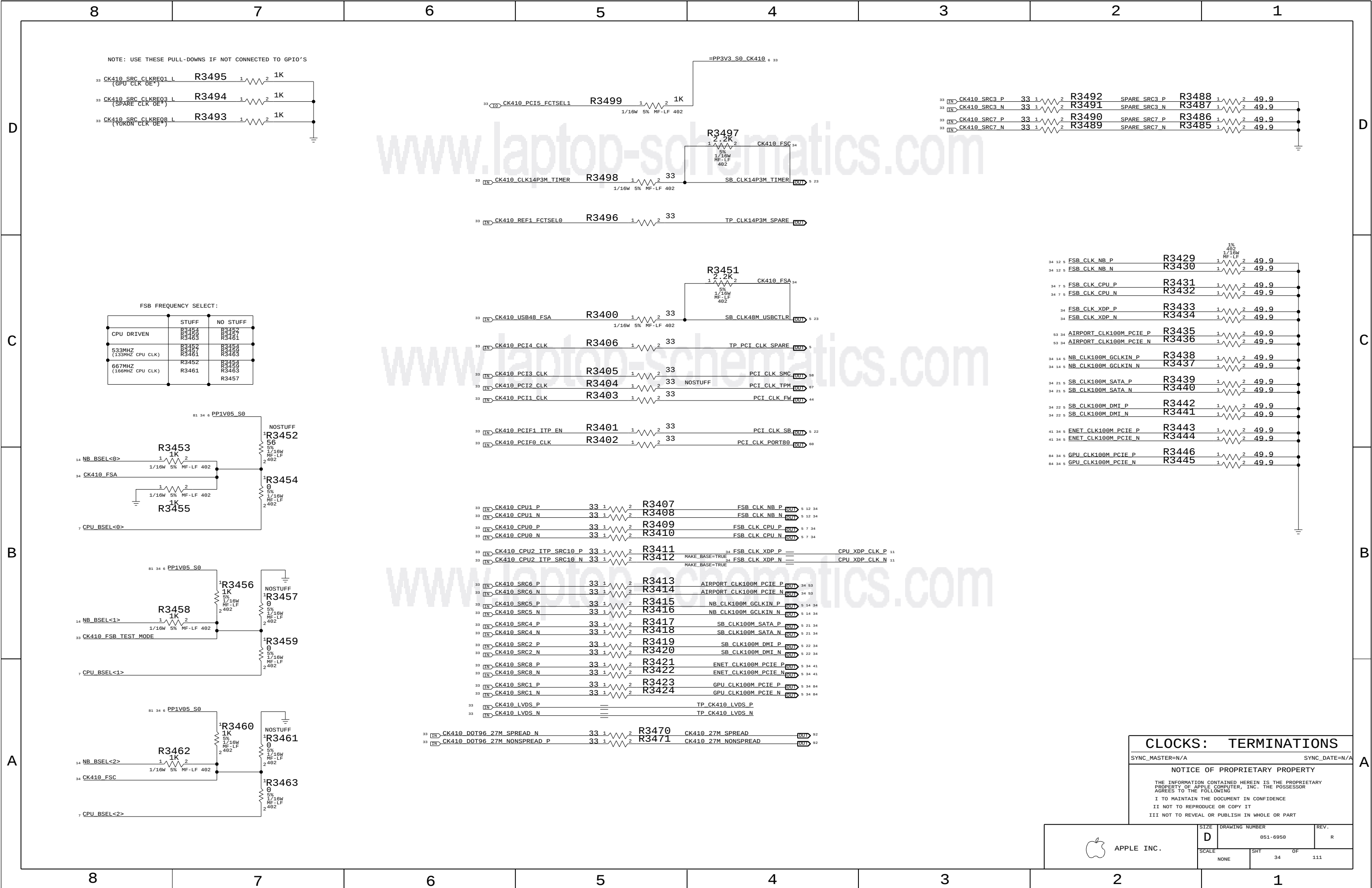
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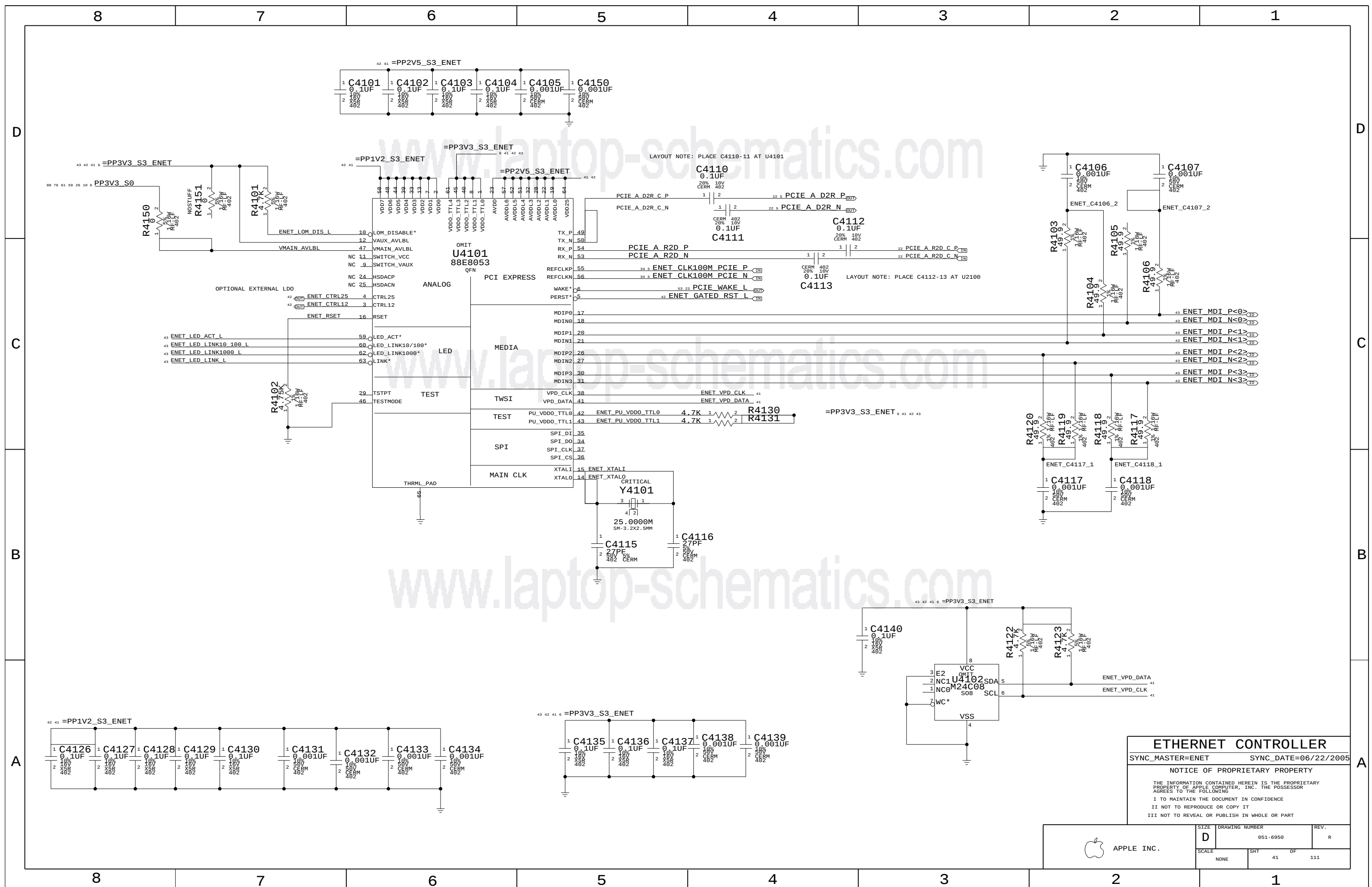
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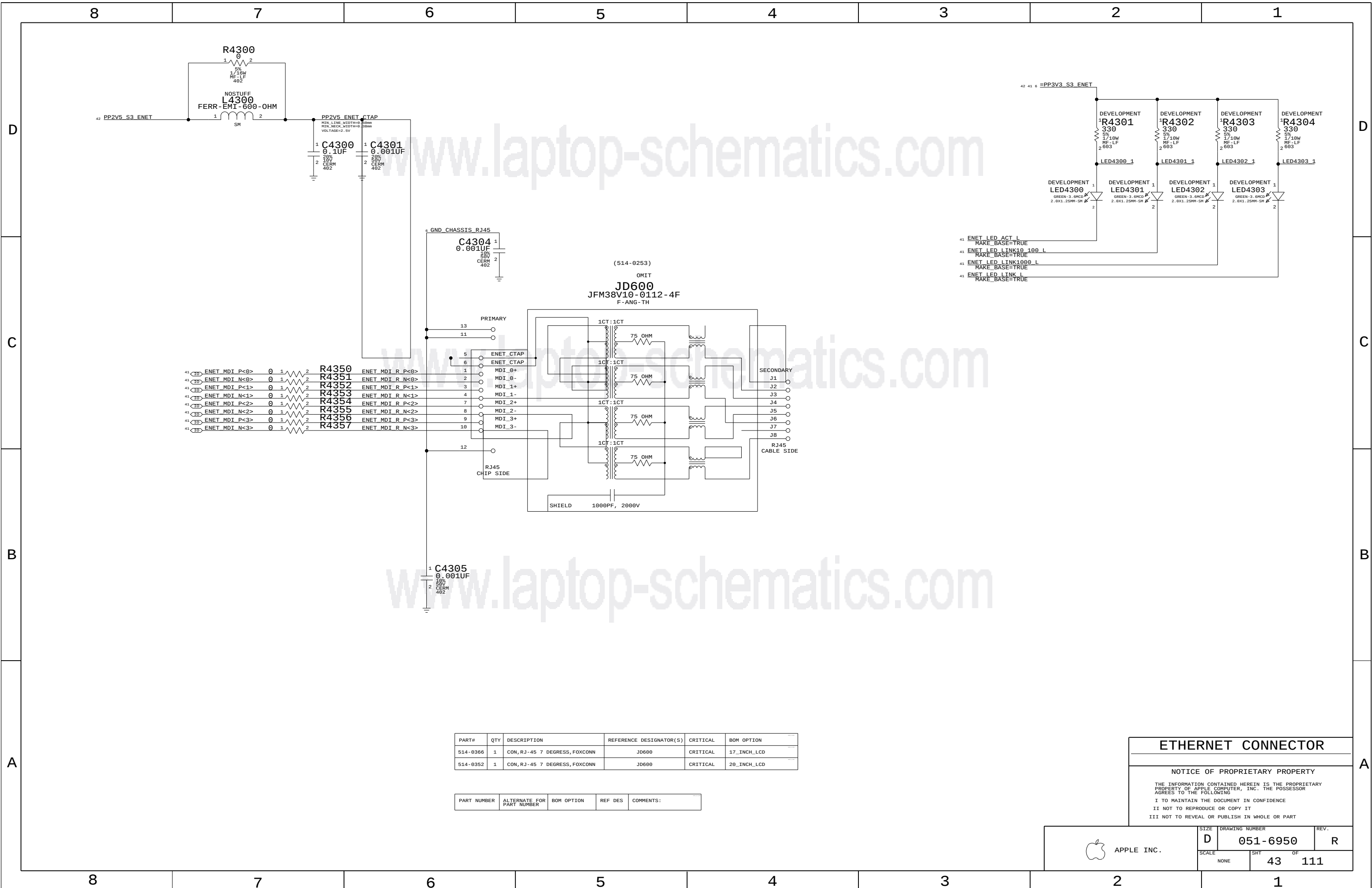


APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	OF
NONE	33	111







PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0366	1	CON, RJ-45 7 DEGRESS, FOXCONN	JD600	CRITICAL	17_INCH_LCD
514-0352	1	CON, RJ-45 7 DEGRESS, FOXCONN	JD600	CRITICAL	20_INCH_LCD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:

ETHERNET CONNECTOR

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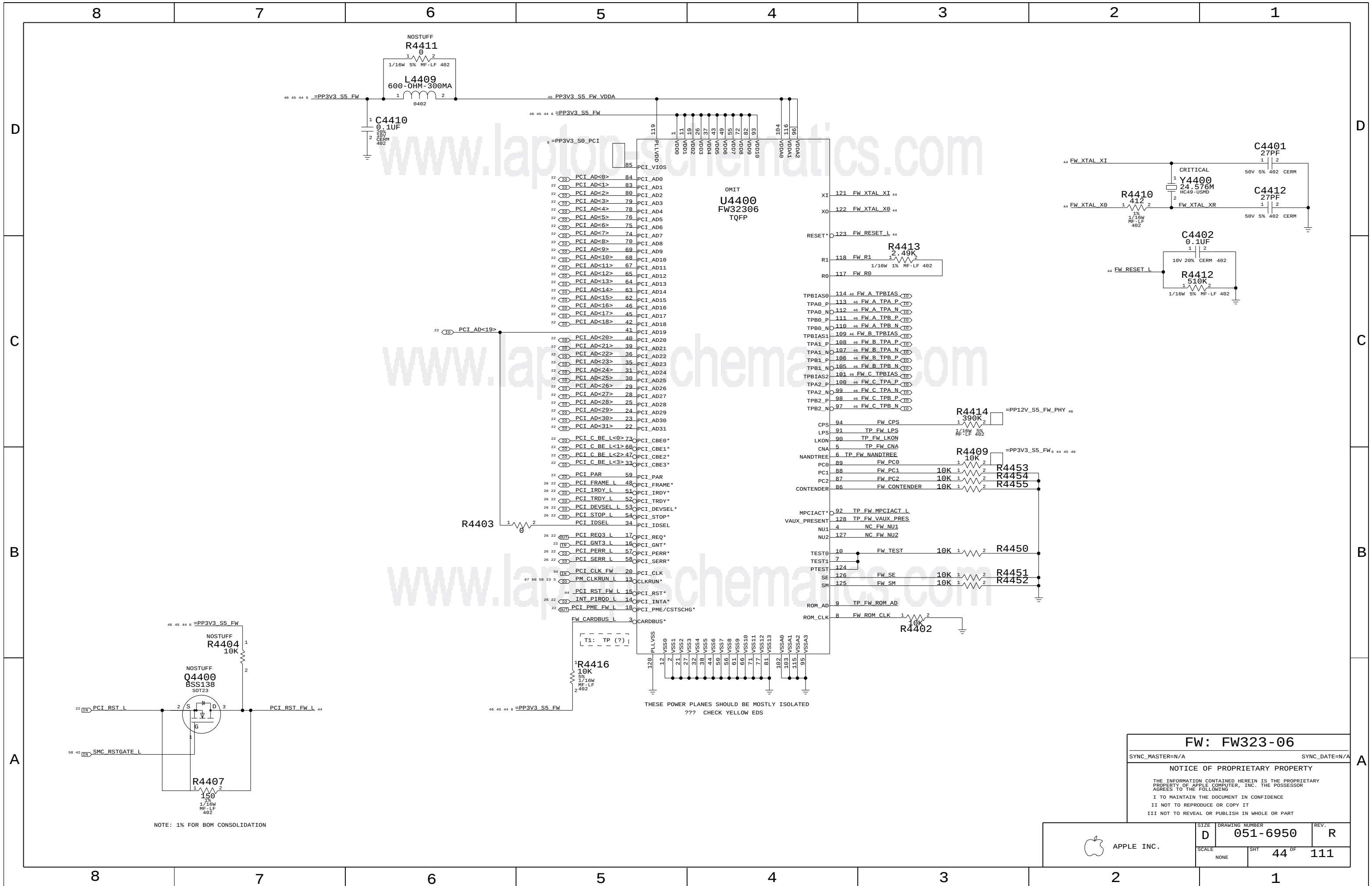
SIZE D

DRAWING NUMBER 051-6950

REV. R

SCALE NONE

SHT 43 OF 111



FW: FW323-06

SYNC_MASTER=N/A SYNC_DATE=N/A

NOTICE OF PROPRIETARY PROPERTY

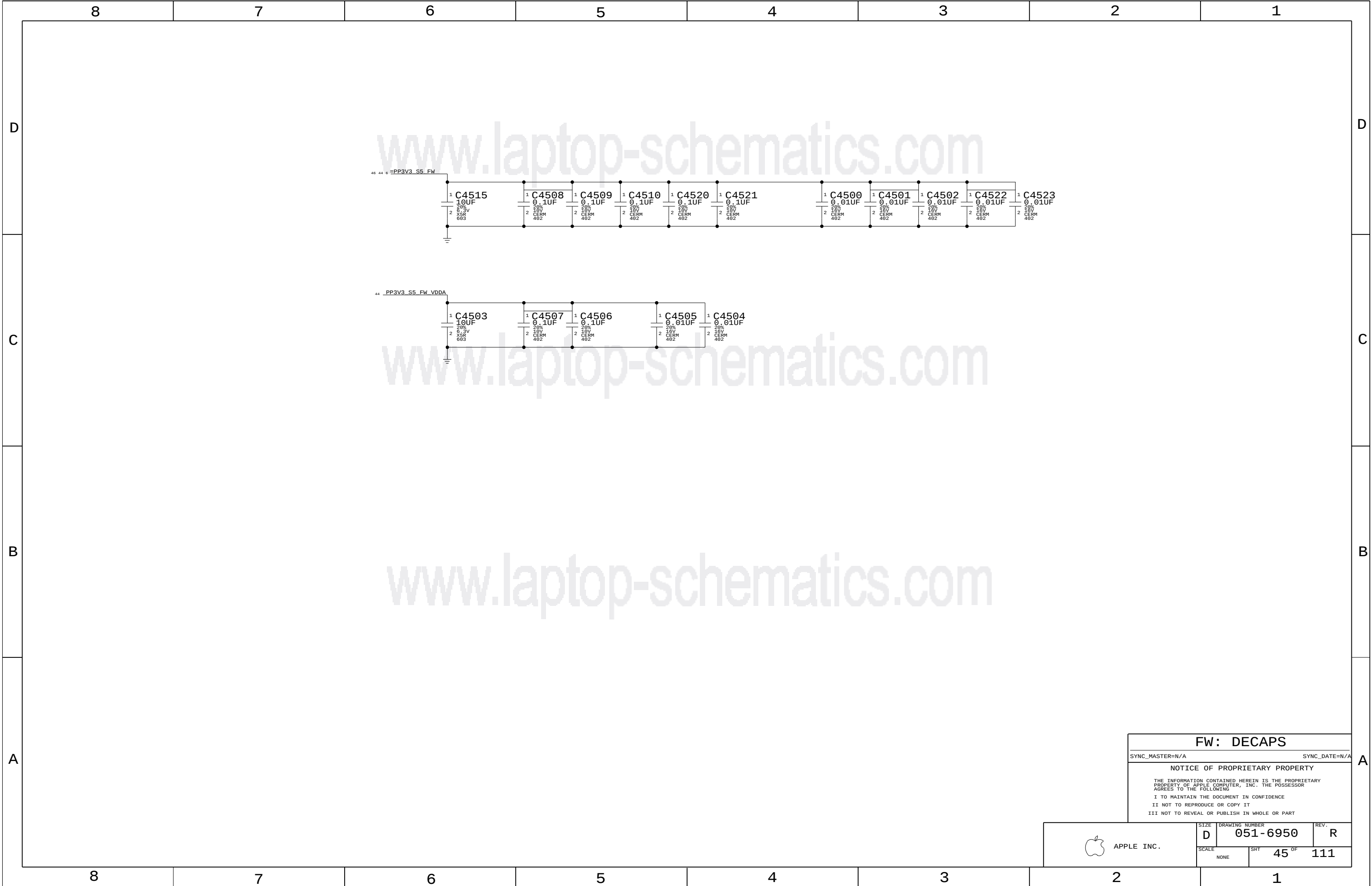
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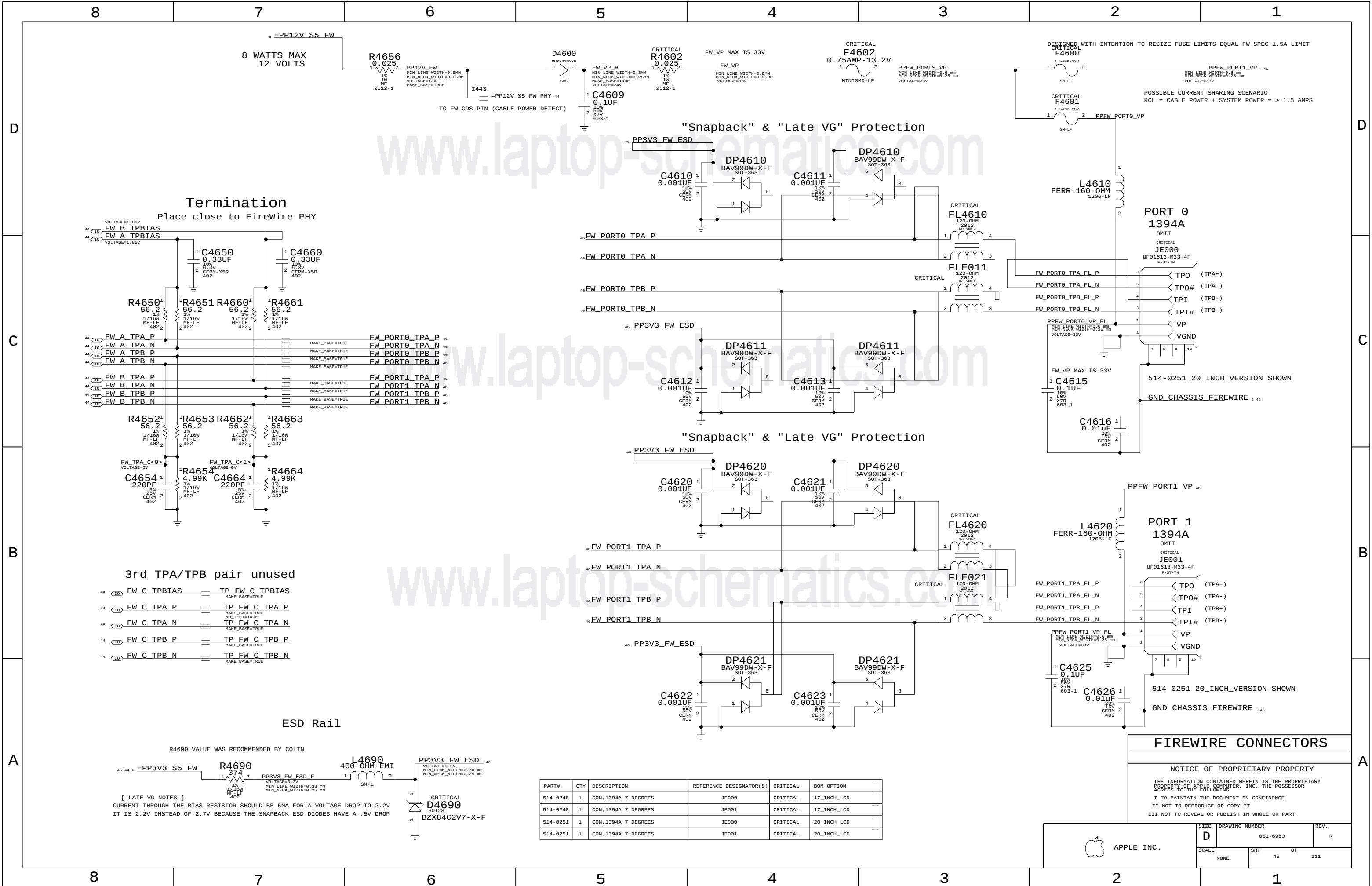
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE	SHT		
	44 OF 111		





PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0248	1	CON, 1394A 7 DEGREES	JE000	CRITICAL	17_INCH_LCD
514-0248	1	CON, 1394A 7 DEGREES	JE001	CRITICAL	17_INCH_LCD
514-0251	1	CON, 1394A 7 DEGREES	JE000	CRITICAL	20_INCH_LCD
514-0251	1	CON, 1394A 7 DEGREES	JE001	CRITICAL	20_INCH_LCD

FIREWIRE CONNECTORS

NOTICE OF PROPRIETARY PROPERTY

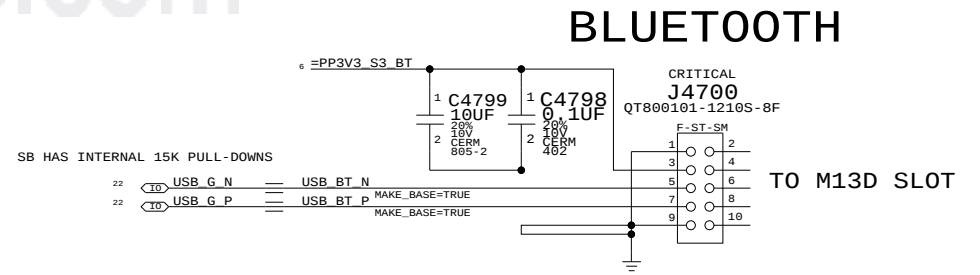
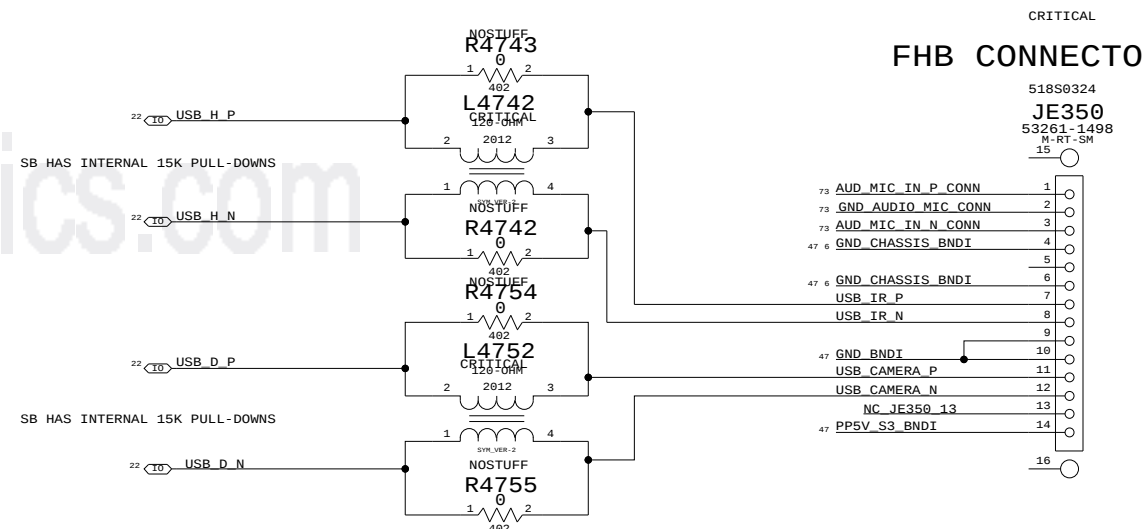
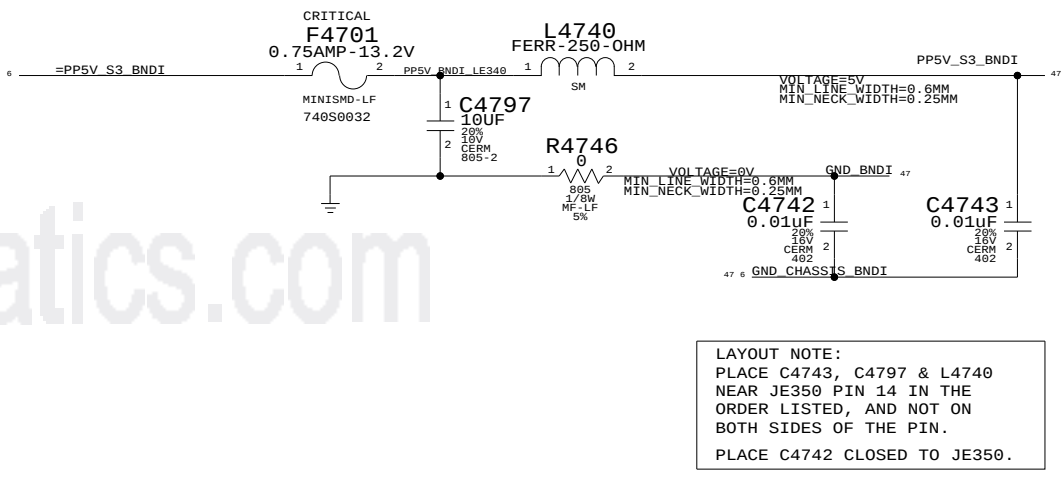
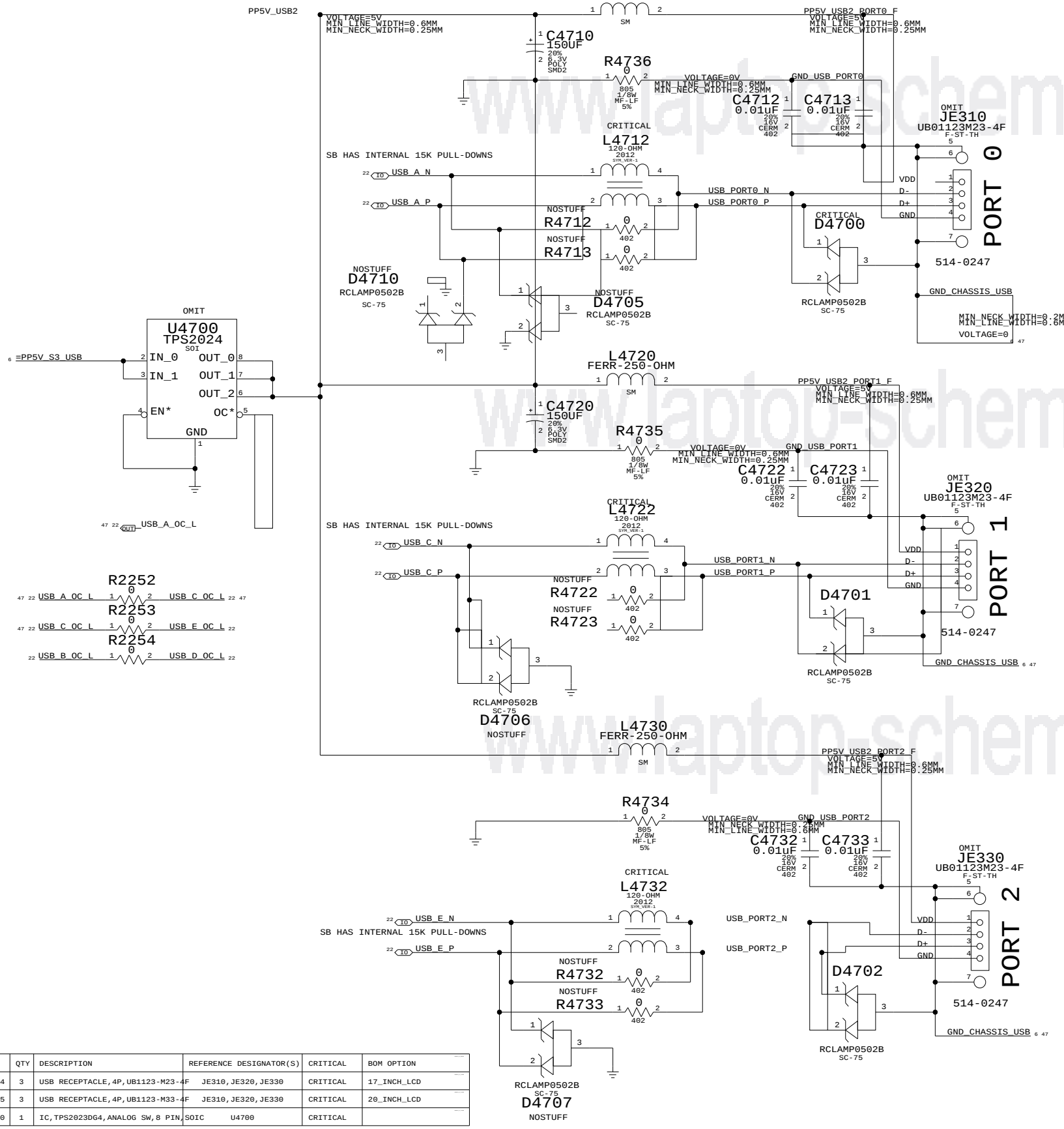
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External USB Ports



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
353S1370	1	IC, TPS2023DG4, ANALOG SW, 8 PIN, SOIC	U4700	CRITICAL	

APPLE INC.	SIZE	DRAWING NUMBER		REV.
	D	051-6950		R
SCALE		NONE	SHT	OF
		47	111	

8

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SIZE	

SCA

DRAWING NUMBER
051 -

SHT	12	0
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REV.

111

APPLE INC.

SCA

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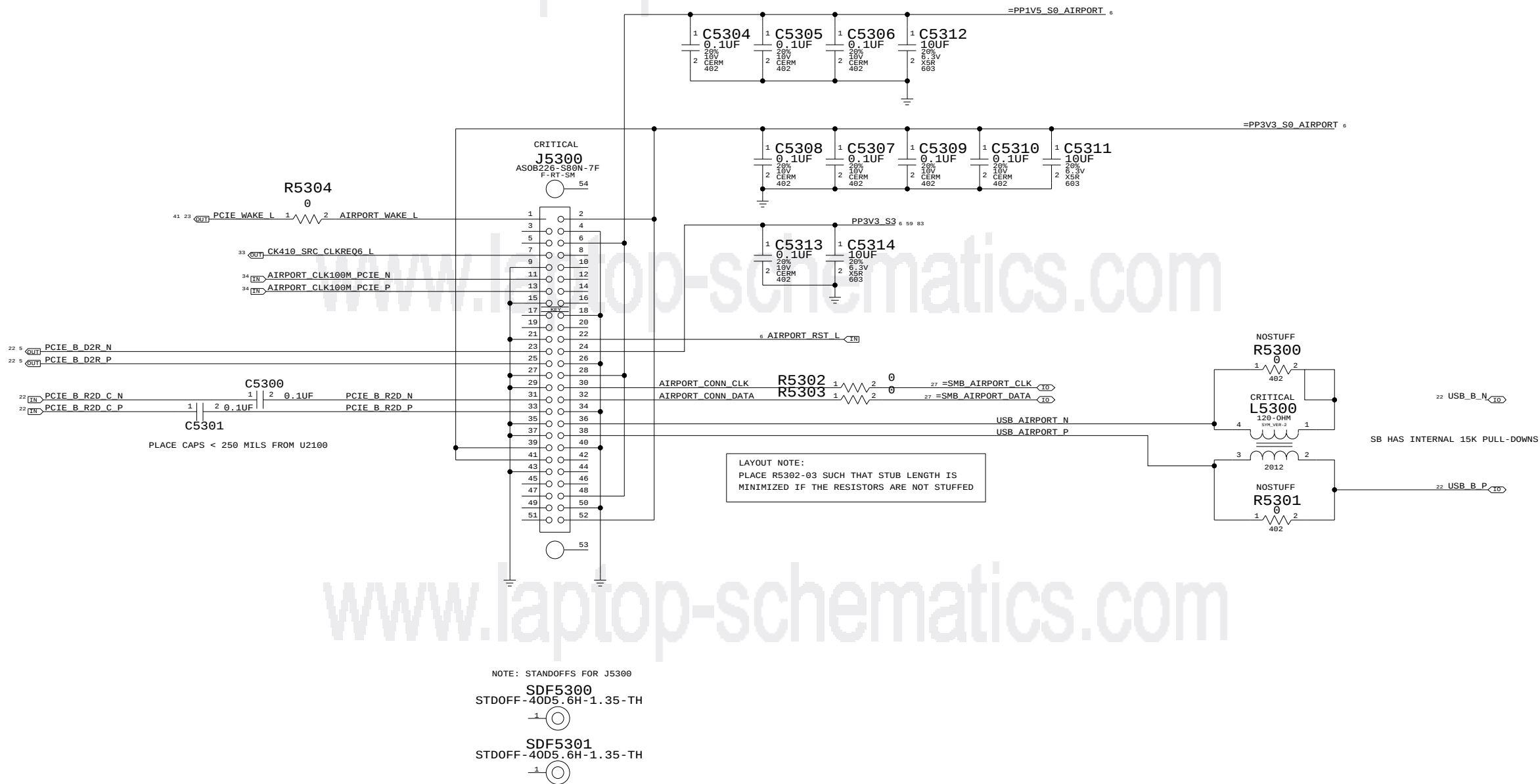
SHT

48

111

111

www.laptop-schematics.com



AIRPORT CONN

SYNC_MASTER=N/A

SYNC_DATE=N/A

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APPLE INC.

SCALE
NONE

D

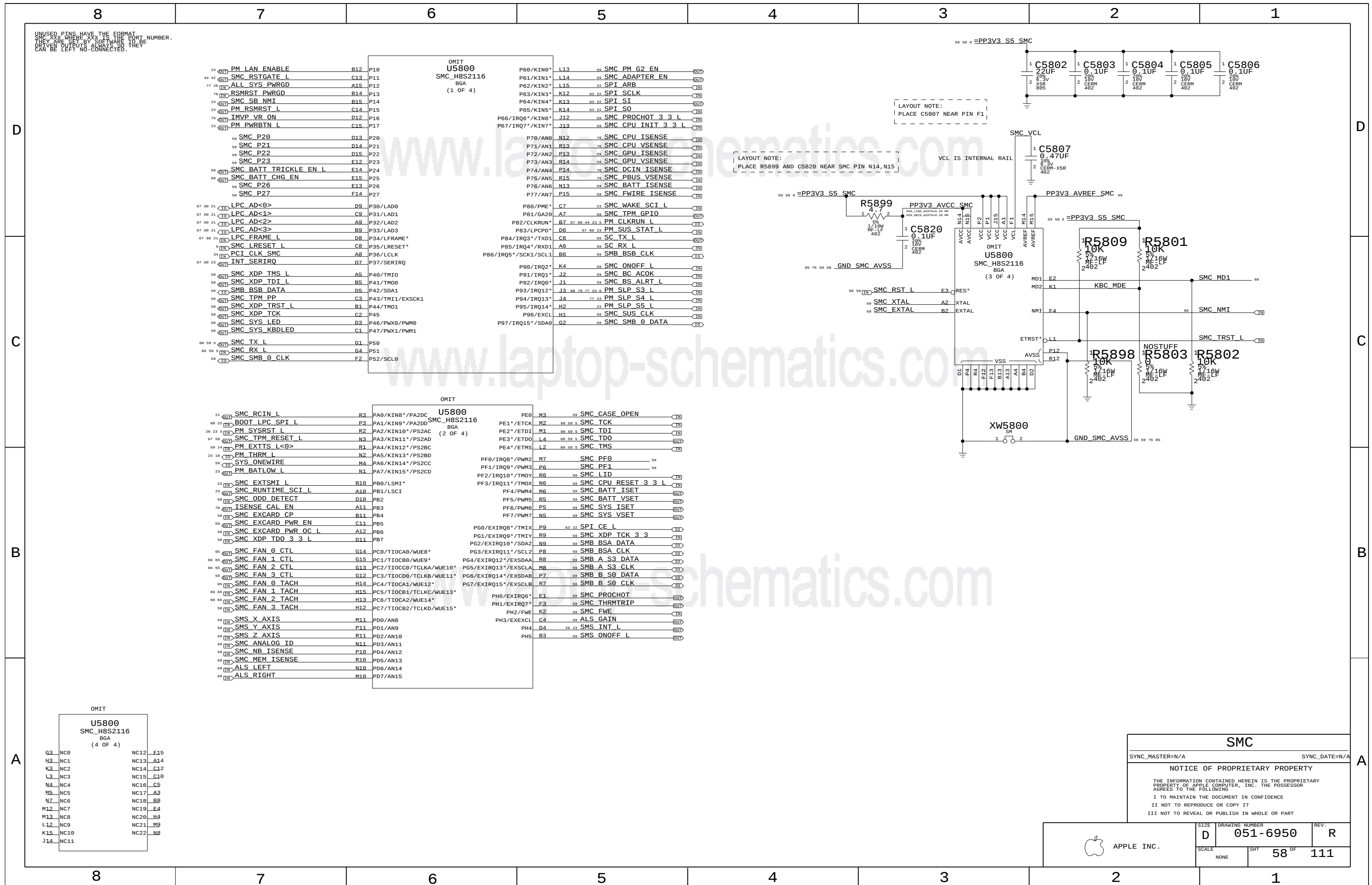
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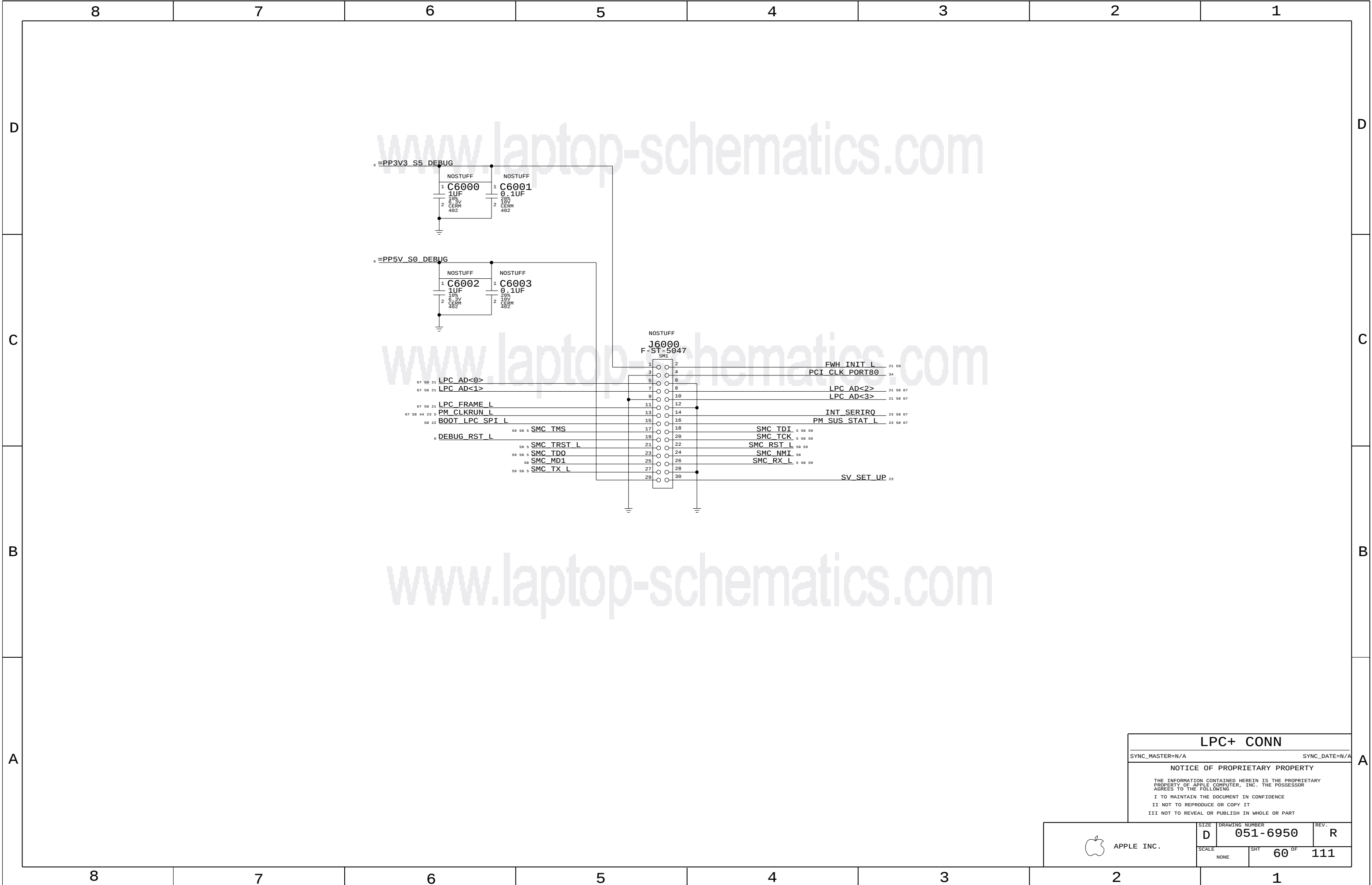
SHT
53

R

REV.

111





LPC+ CONN

SYNC_MASTER=N/A

SYNC_DATE=N/A

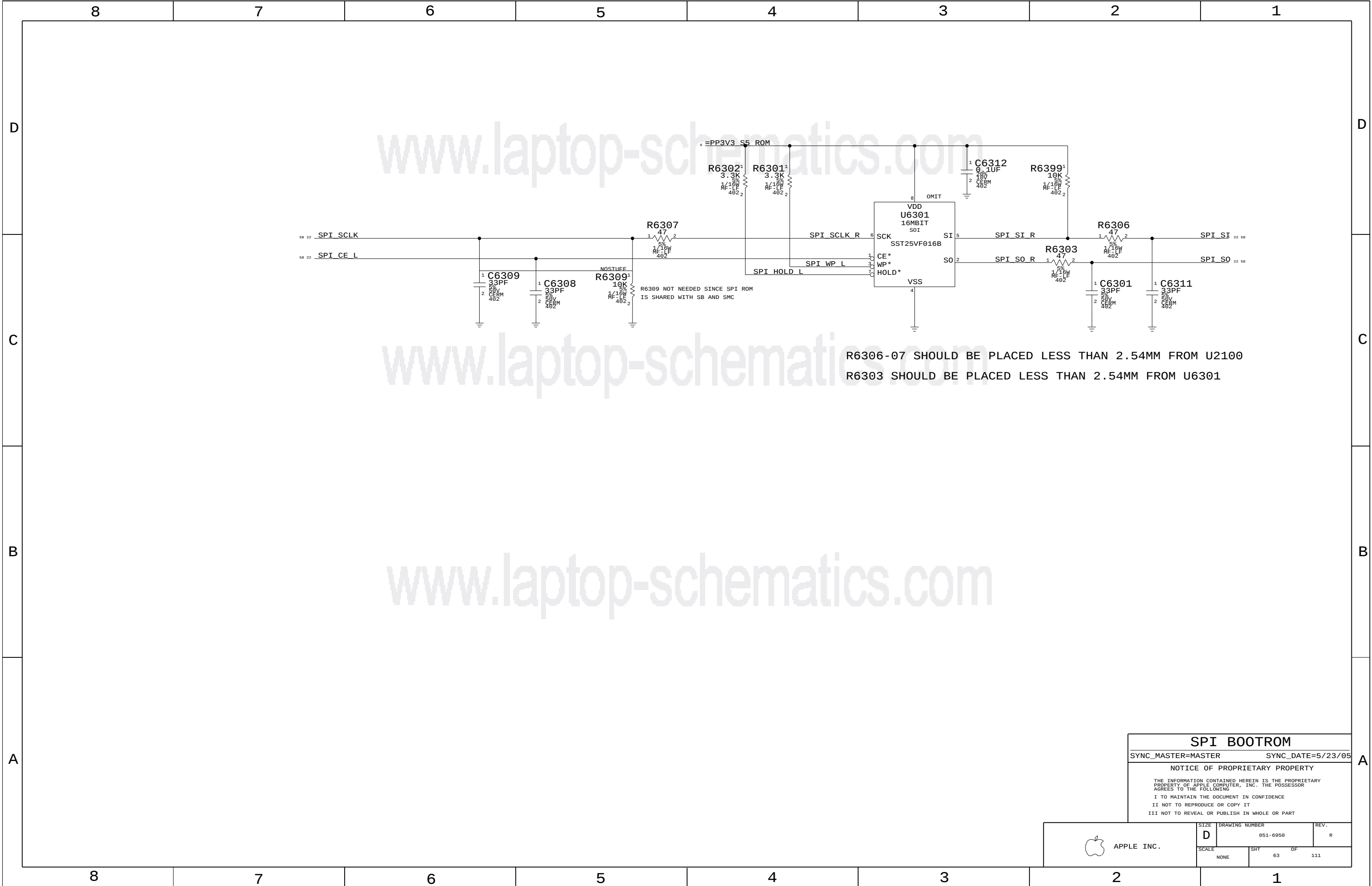
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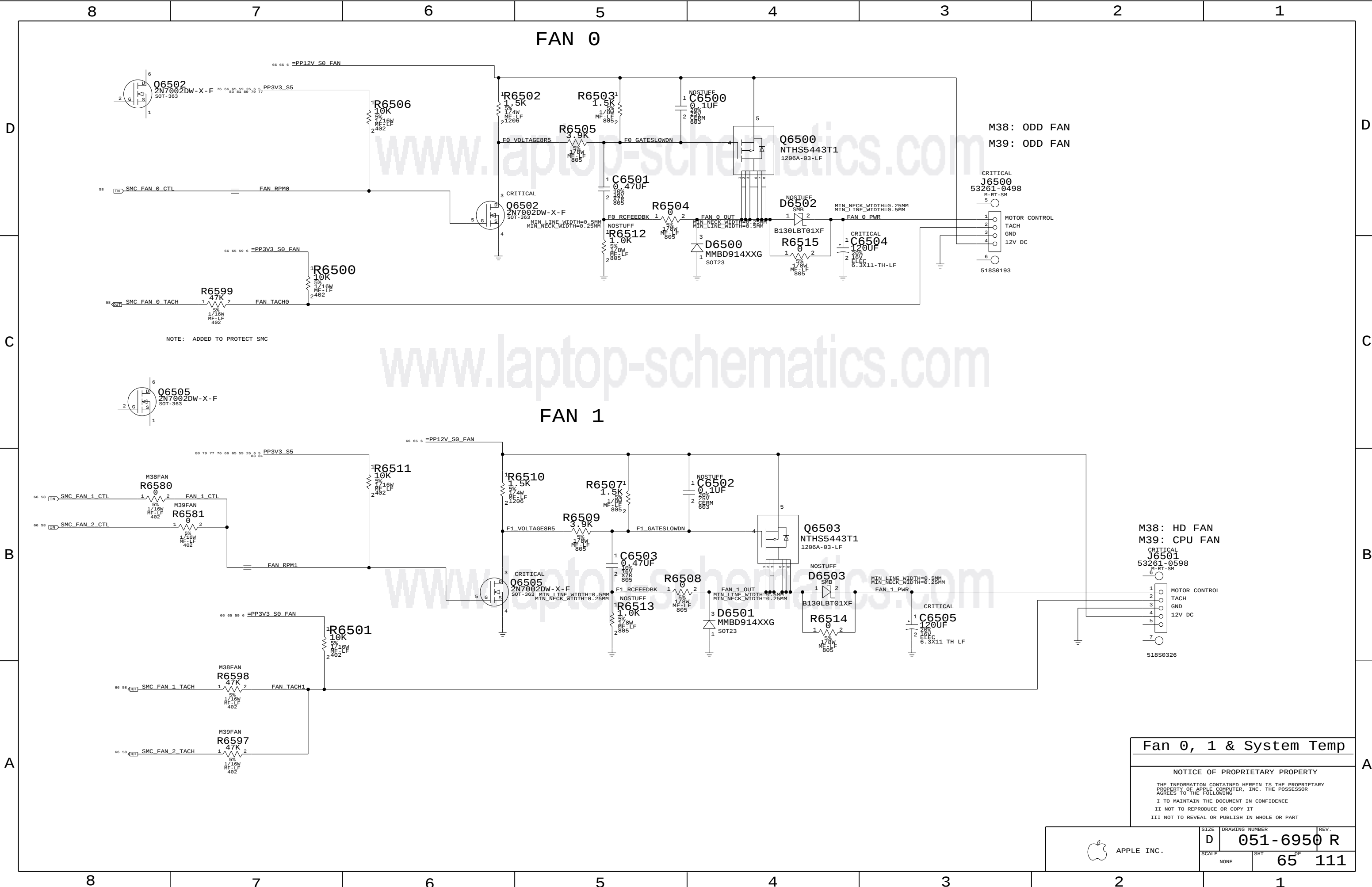
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SPI BOOTROM		
SYNC_MASTER=MASTER		SYNC_DATE=5/23/05
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SIZE D	DRAWING NUMBER 051-6950	REV. R
	SCALE NONE	SHT 63
OF 111		





Fan 0, 1 & System Temp

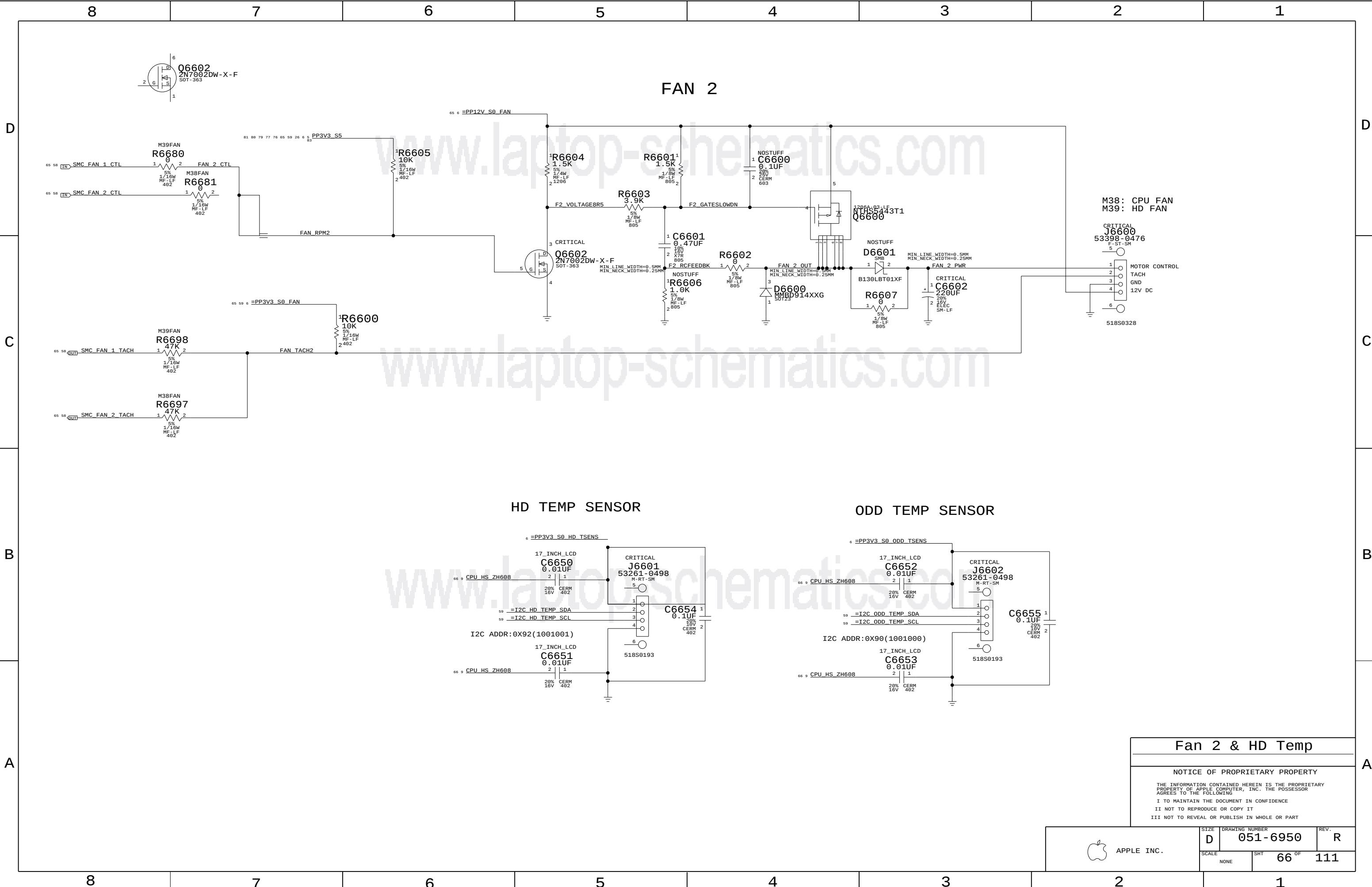
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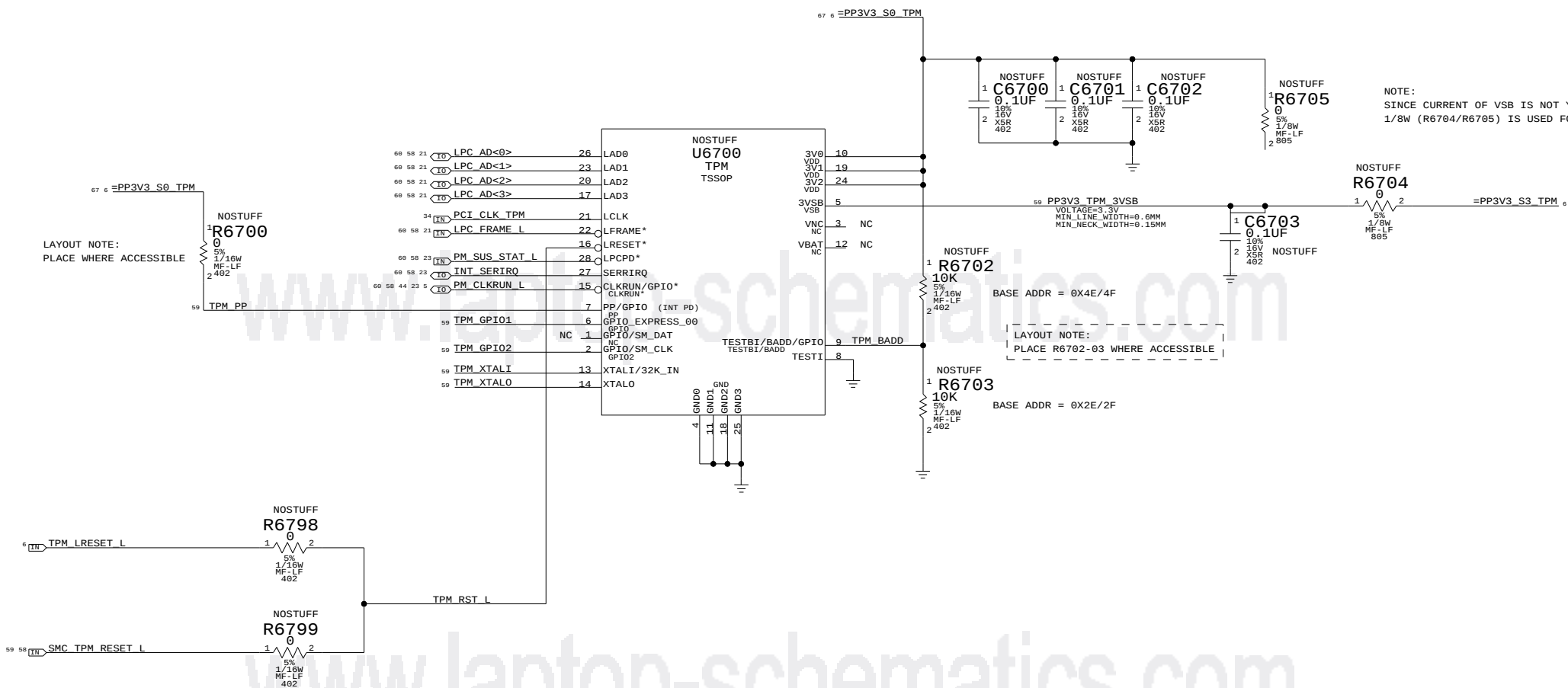
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	
NONE	65	111



APPLE INC.

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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

NOTICE OF PROPRIETARY PROPERTY

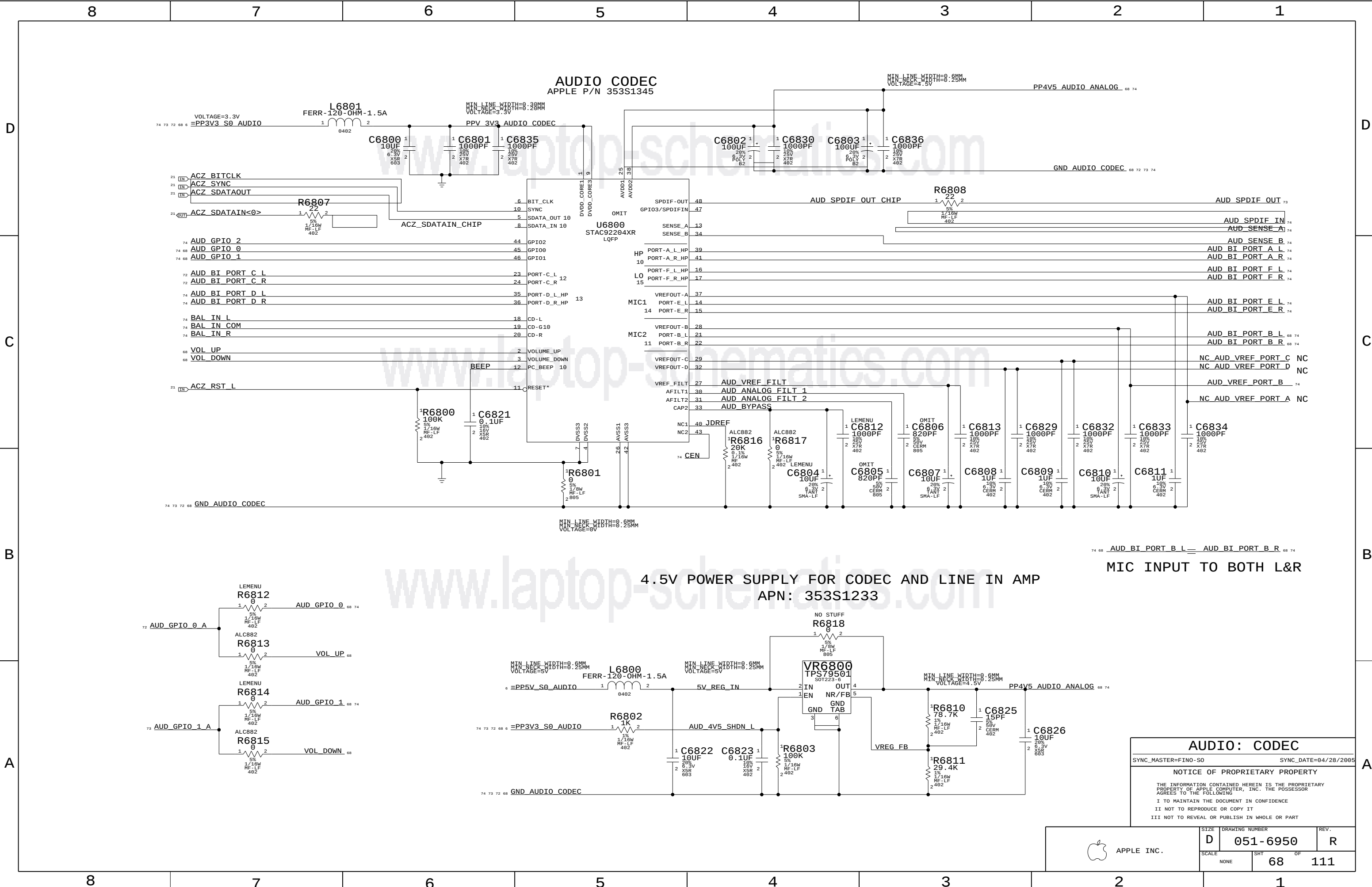
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE		SHT	67 OF 111
NONE			



AUDIO CODEC
APPLE P/N 353S1345

PP4V5 AUDIO ANALOG 68 74

GND AUDIO CODEC 68 72 73 74

AUD SPDIF OUT CHIP

AUD SPDIF OUT 73

AUD SPDIF IN 74

AUD SENSE A 74

AUD SENSE B 74

AUD BI PORT A L 74

AUD BI PORT A R 74

AUD BI PORT F L 74

AUD BI PORT F R 74

AUD BI PORT E L 74

AUD BI PORT E R 74

AUD BI PORT B L 68 74

AUD BI PORT B R 68 74

NC AUD VREF_PORT_C NC

NC AUD VREF_PORT_D NC

AUD VREF_PORT_B 74

NC AUD VREF_PORT_A NC

74 68 AUD BI PORT B L = AUD BI PORT B R 68 74

MIC INPUT TO BOTH L&R

4.5V POWER SUPPLY FOR CODEC AND LINE IN AMP
APN: 353S1233

AUDIO: CODEC

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

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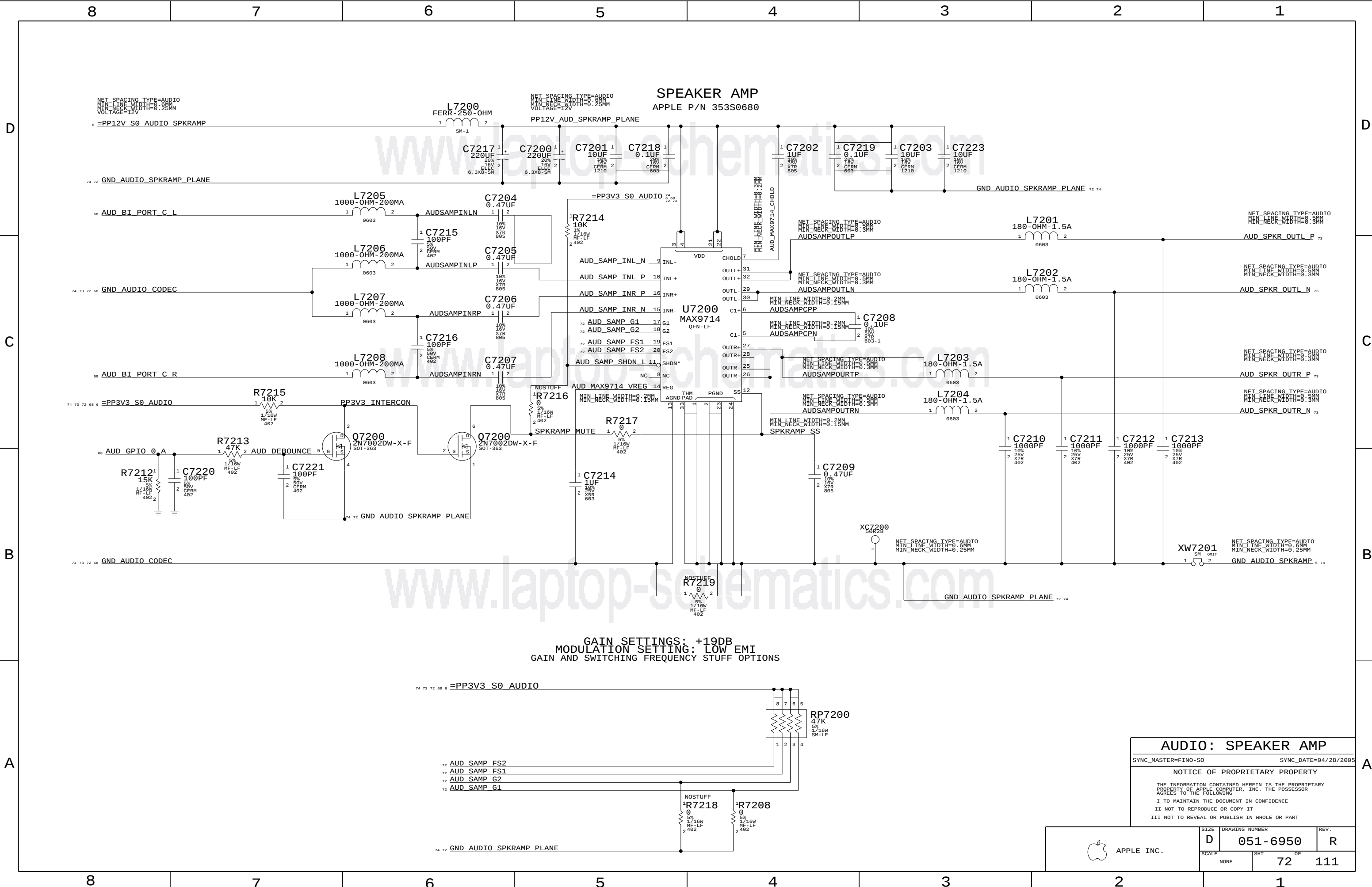


APPLE INC.

SIZE DRAWING NUMBER REV.

D 051-6950 R

SCALE NONE SHT 68 OF 111



AUDIO: SPEAKER AMP

SYNC_MASTER=FINO-S0 SYNC_DATE=04/28/2005

NOTICE OF PROPRIETARY PROPERTY

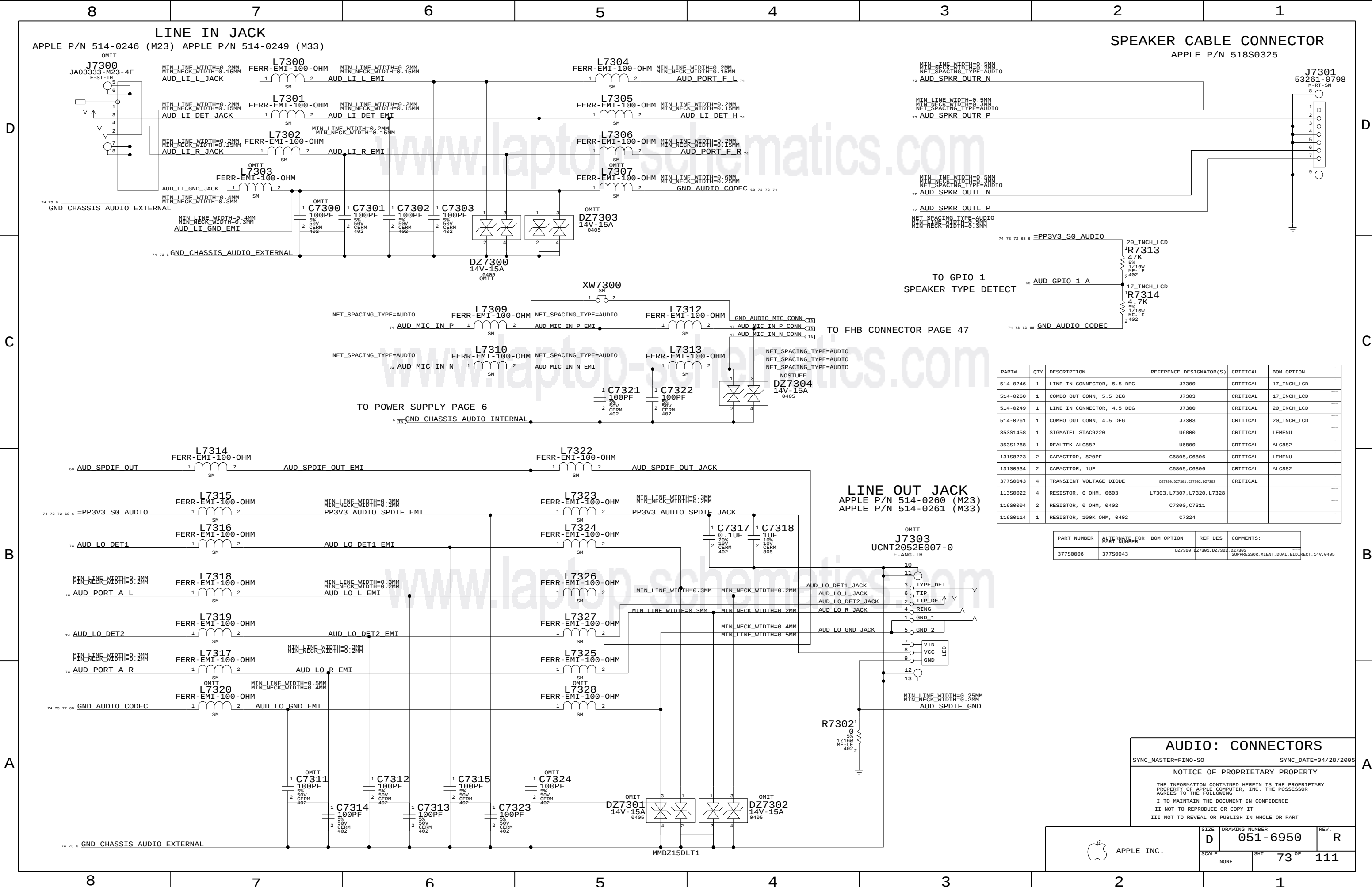
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE	SHT OF		
	NONE 72 111		



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
353S1458	1	SIGMATEL STAC9220	U6800	CRITICAL	LEMENU
353S1268	1	REALTEK ALC882	U6800	CRITICAL	ALC882
131S8223	2	CAPACITOR, 820PF	C6805,C6806	CRITICAL	LEMENU
131S0534	2	CAPACITOR, 1UF	C6805,C6806	CRITICAL	ALC882
377S0043	4	TRANSIENT VOLTAGE DIODE	DZ7300,DZ7301,DZ7302,DZ7303	CRITICAL	
113S0022	4	RESISTOR, 0 OHM, 0603	L7303,L7307,L7320,L7328		
116S0004	2	RESISTOR, 0 OHM, 0402	C7300,C7311		
116S0114	1	RESISTOR, 100K OHM, 0402	C7324		

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
377S0006	377S0043		DZ7300,DZ7301,DZ7302,DZ7303	SUPPRESSOR,XIENT,DUAL,BIDIRECT,14V,0405

AUDIO: CONNECTORS

SYNC_MASTER=F1N0-S0SYNC_DATE=04/28/2005

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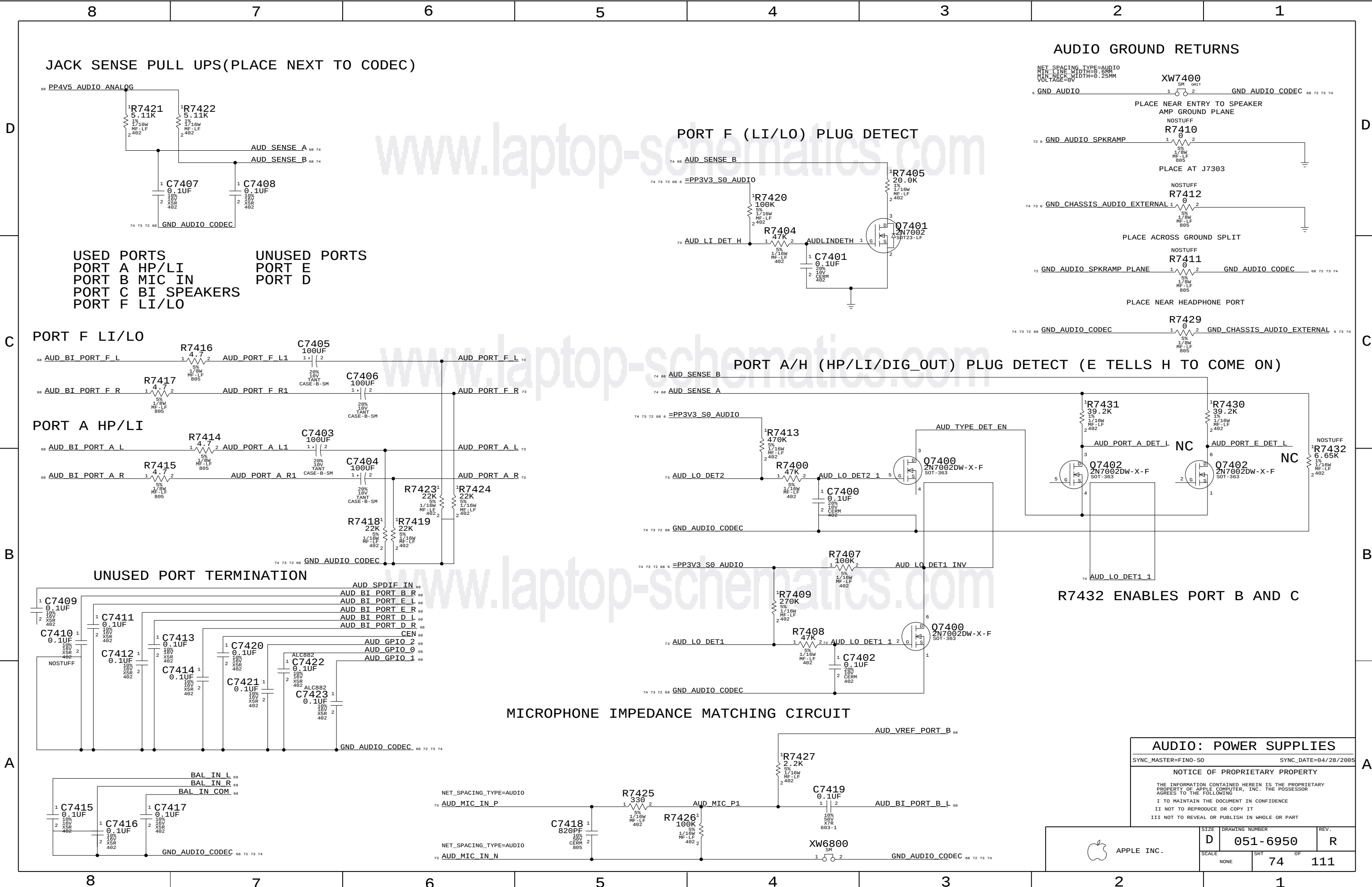
APPLE INC.

D51-6950R

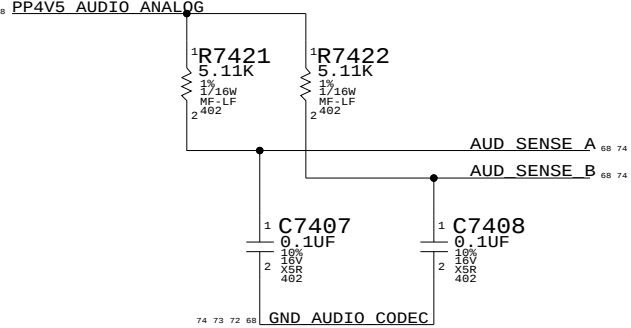
SCALE: NONE

SHT: 73

OF: 111



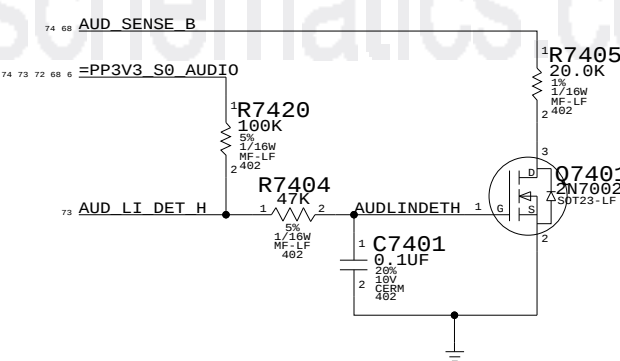
JACK SENSE PULL UPS(PLACE NEXT TO CODEC)



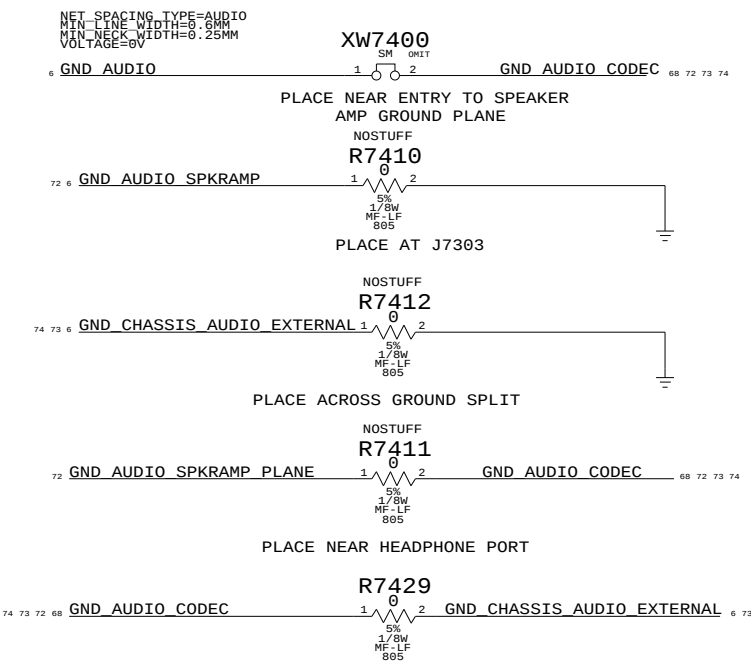
USED PORTS
PORT A HP/LI
PORT B MIC IN
PORT C BI SPEAKERS
PORT F LI/LO

UNUSED PORTS
PORT E
PORT D

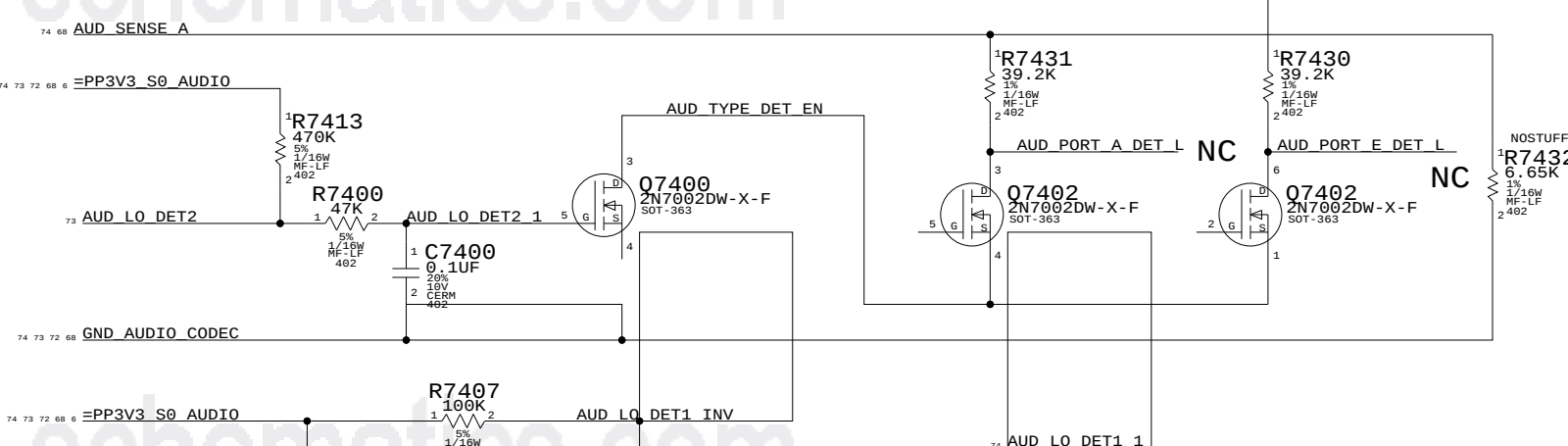
PORT F (LI/LO) PLUG DETECT



AUDIO GROUND RETURNS

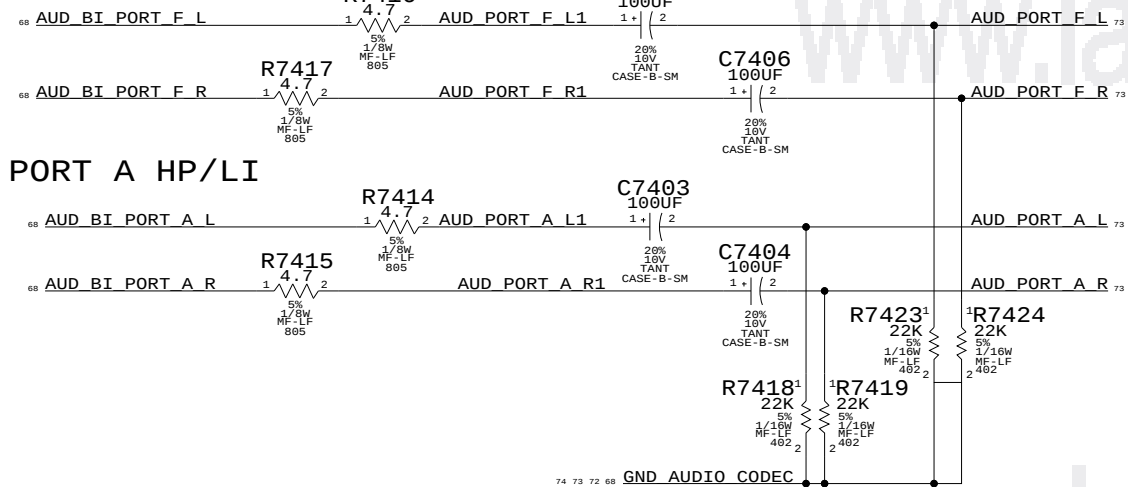


PORT A/H (HP/LI/DIG_OUT) PLUG DETECT (E TELLS H TO COME ON)

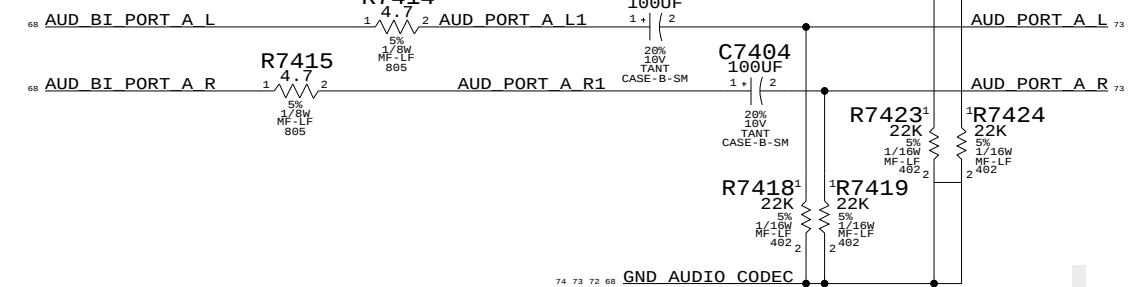


R7432 ENABLES PORT B AND C

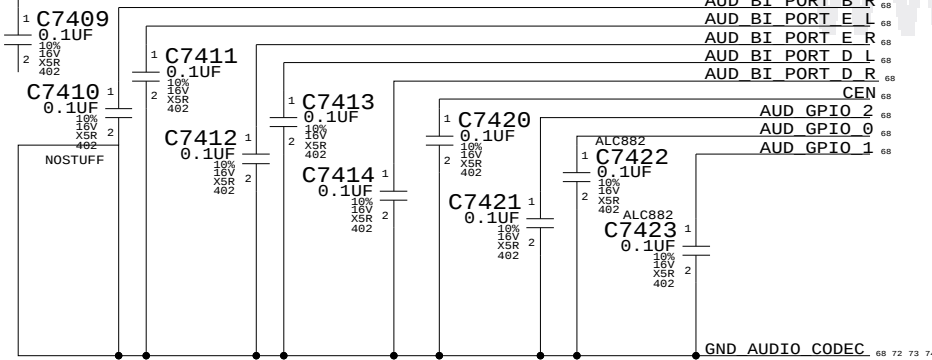
PORT F LI/LO



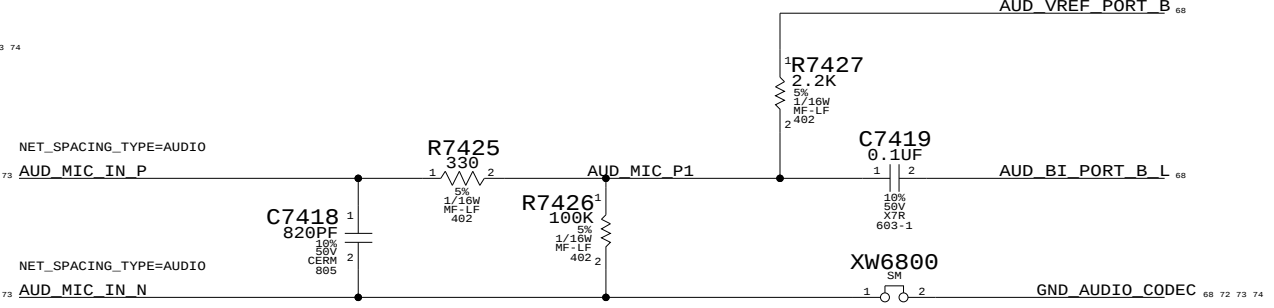
PORT A HP/LI



UNUSED PORT TERMINATION

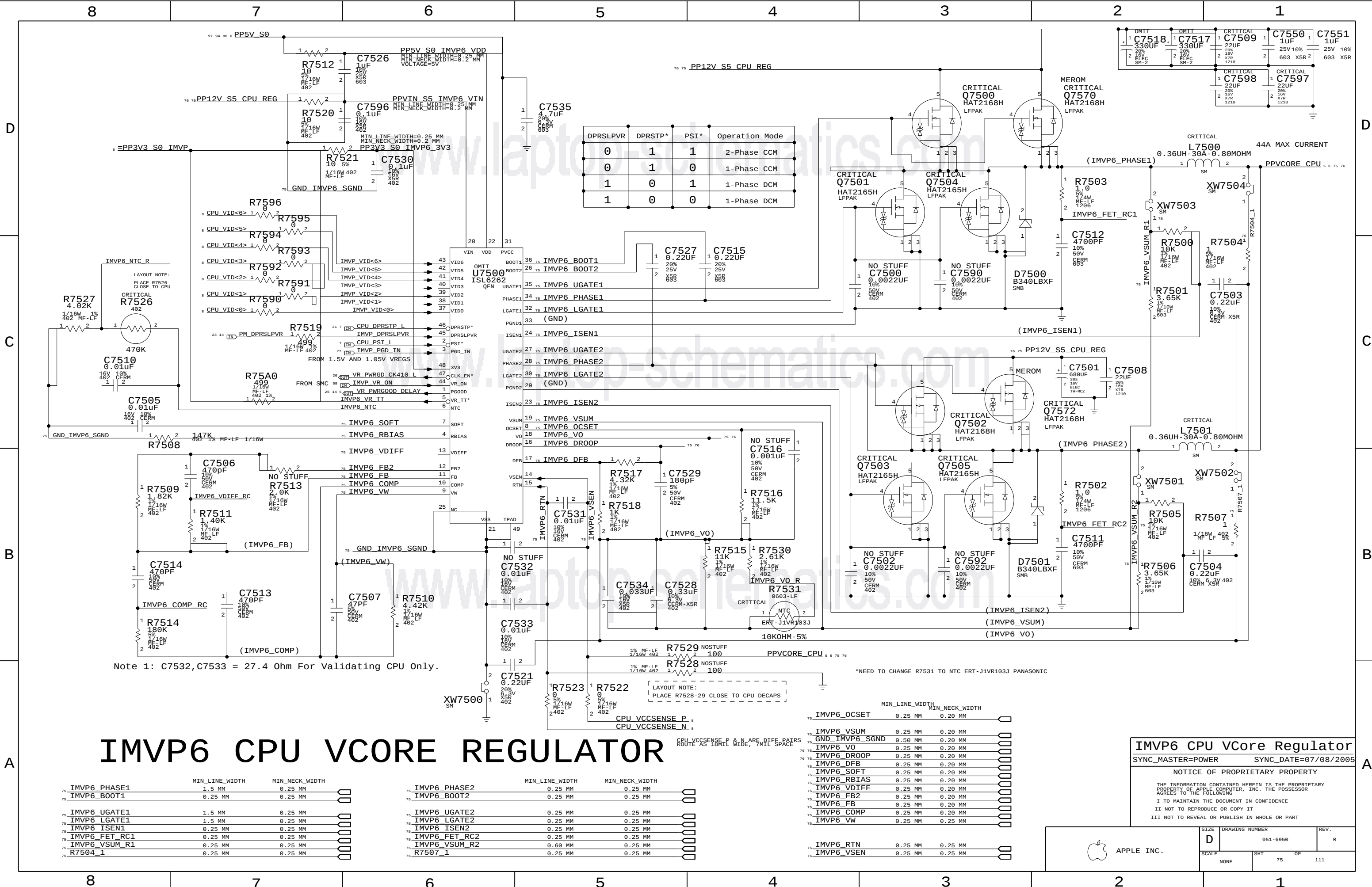


MICROPHONE IMPEDANCE MATCHING CIRCUIT



AUDIO: POWER SUPPLIES		
SYNC_MASTER=FINO-SO		SYNC_DATE=04/28/2005
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE		SHT	OF
NONE		74	111



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

IMVP6_PHASE1	IMVP6_PHASE2	IMVP6_VSUM	IMVP6_V0
0	1	1	1
1	0	0	0

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

*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_V0	0.25 MM	0.20 MM
IMVP6_DR00P	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_RTIN	0.25 MM	0.25 MM
IMVP6_VSEN	0.25 MM	0.25 MM

IMVP6 CPU VCore Regulator

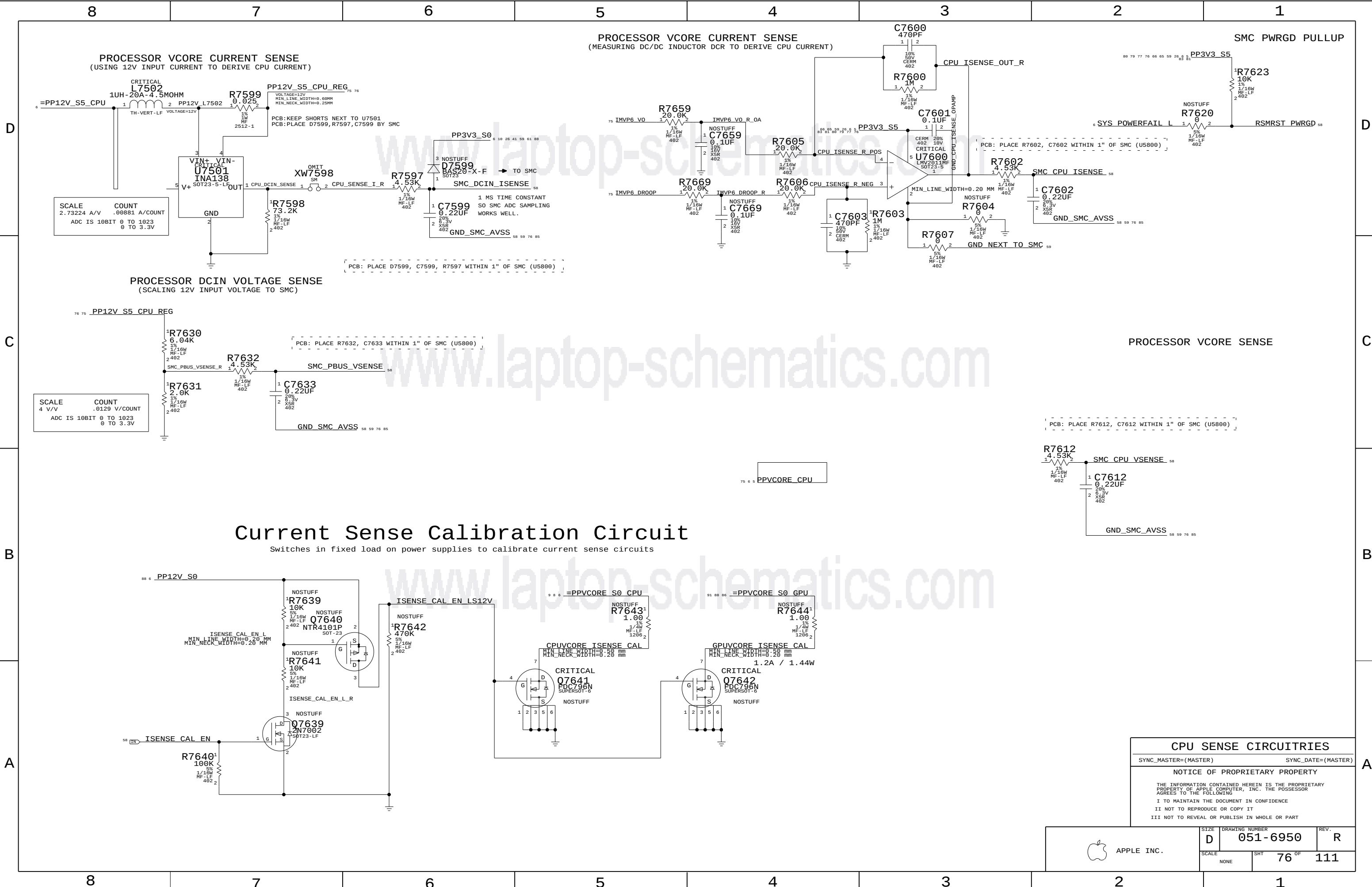
SYNC_MASTER=POWER SYNC_DATE=07/08/2005

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D	051-6950	R
SCALE	SHT	OF
NONE	75	111



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)

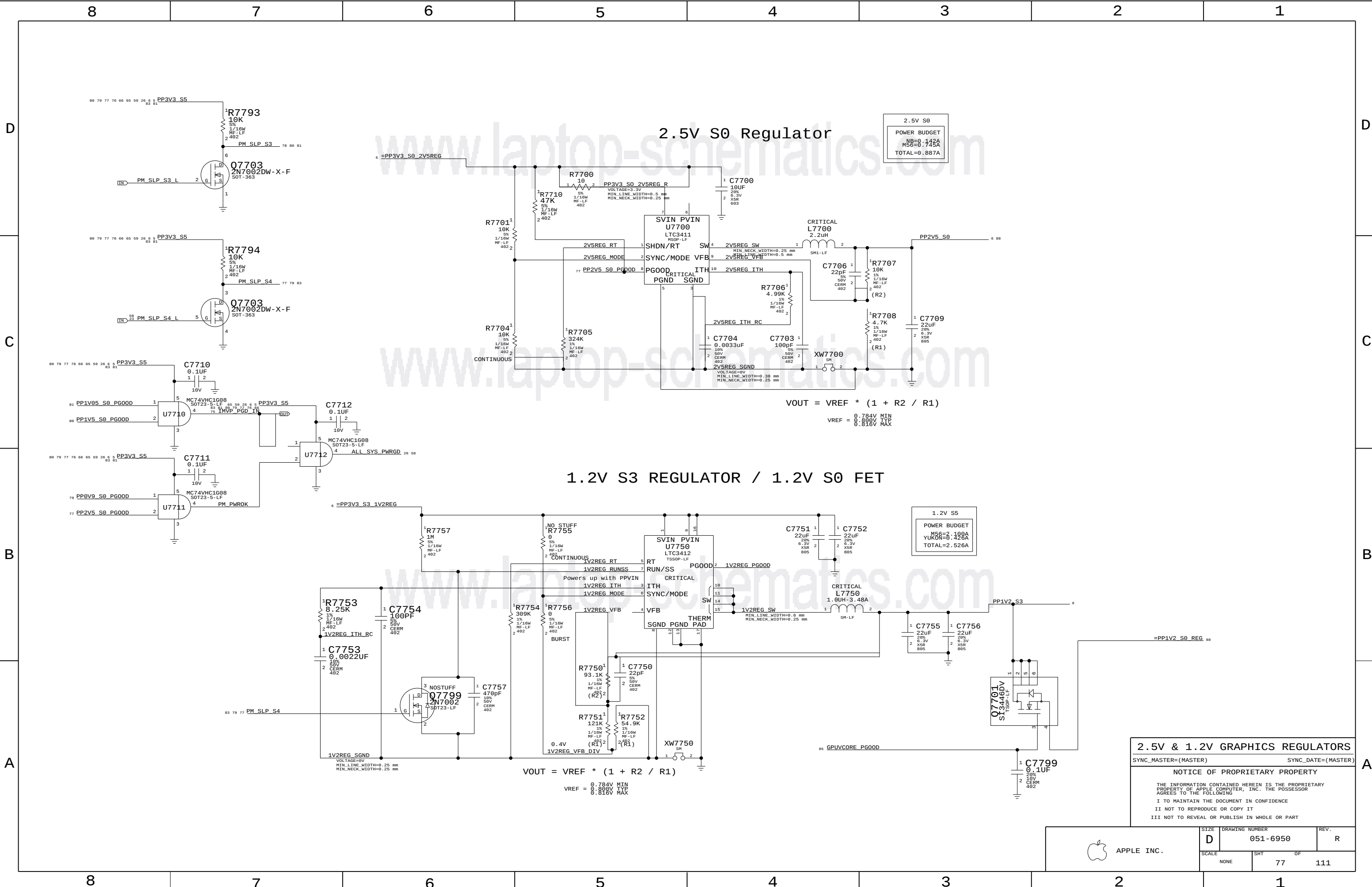
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SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	76 OF 111
NONE		



2.5V S0 Regulator

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

$$VOUT = VREF * (1 + R2 / R1)$$
$$VREF = 0.784V \text{ MIN}$$
$$0.816V \text{ MAX}$$

1.2V S3 REGULATOR / 1.2V S0 FET

1.2V S5
POWER BUDGET
NR=0.142A
YUKOR=0.188A
TOTAL=2.526A

$$VOUT = VREF * (1 + R2 / R1)$$
$$VREF = 0.784V \text{ MIN}$$
$$0.809V \text{ TYP}$$
$$0.816V \text{ MAX}$$

2.5V & 1.2V GRAPHICS REGULATORS

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

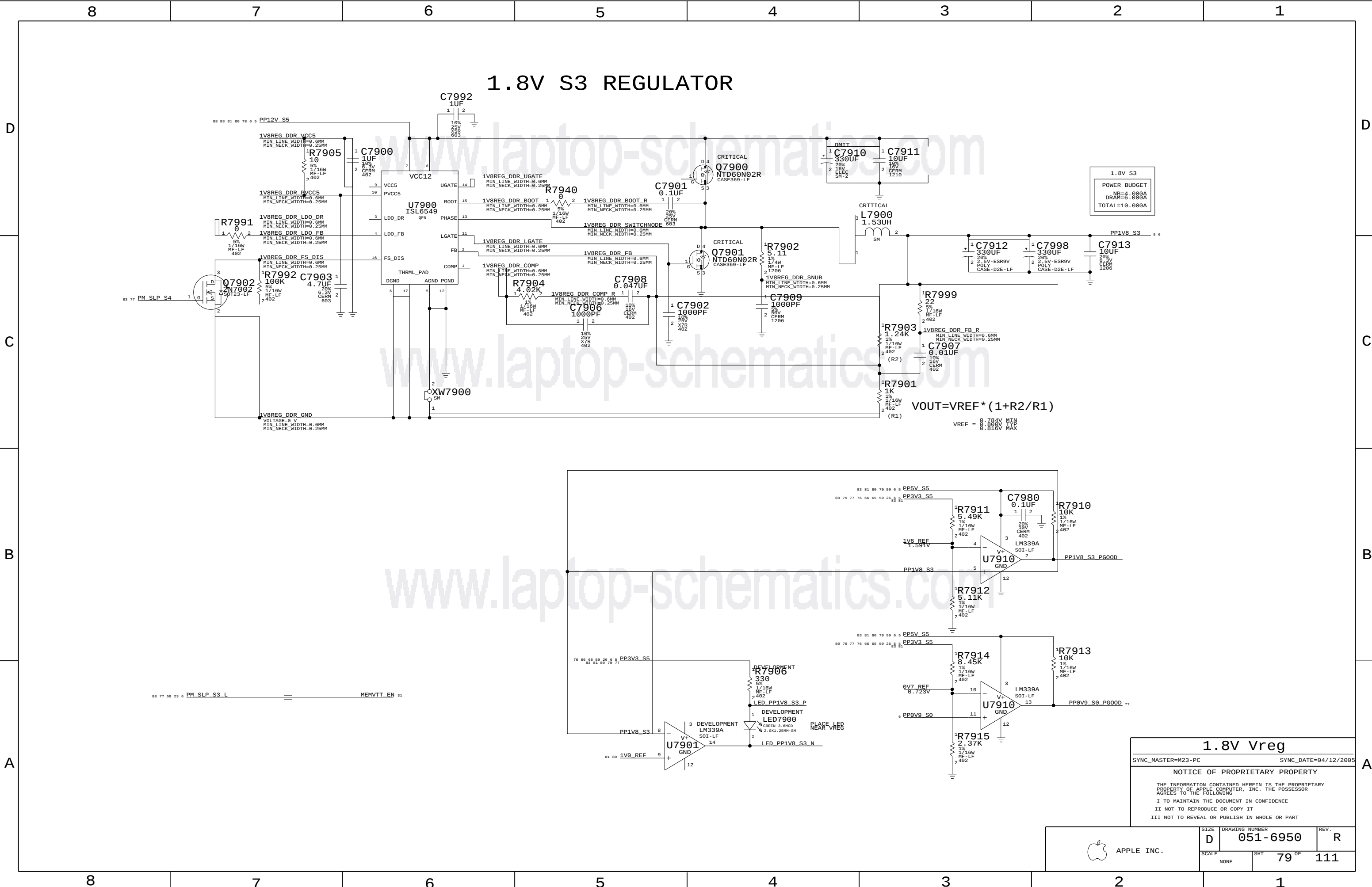
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SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	OF
NONE	77	111



1.8V S3 REGULATOR

1.8V S3	
POWER BUDGET	
NR=4	DR=4
TOTAL=10.000A	

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

VREF = 0.784V MIN
0.800V TYP
0.816V MAX

1.8V Vreg

SYNC_MASTER=M23-PC SYNC_DATE=04/12/2005

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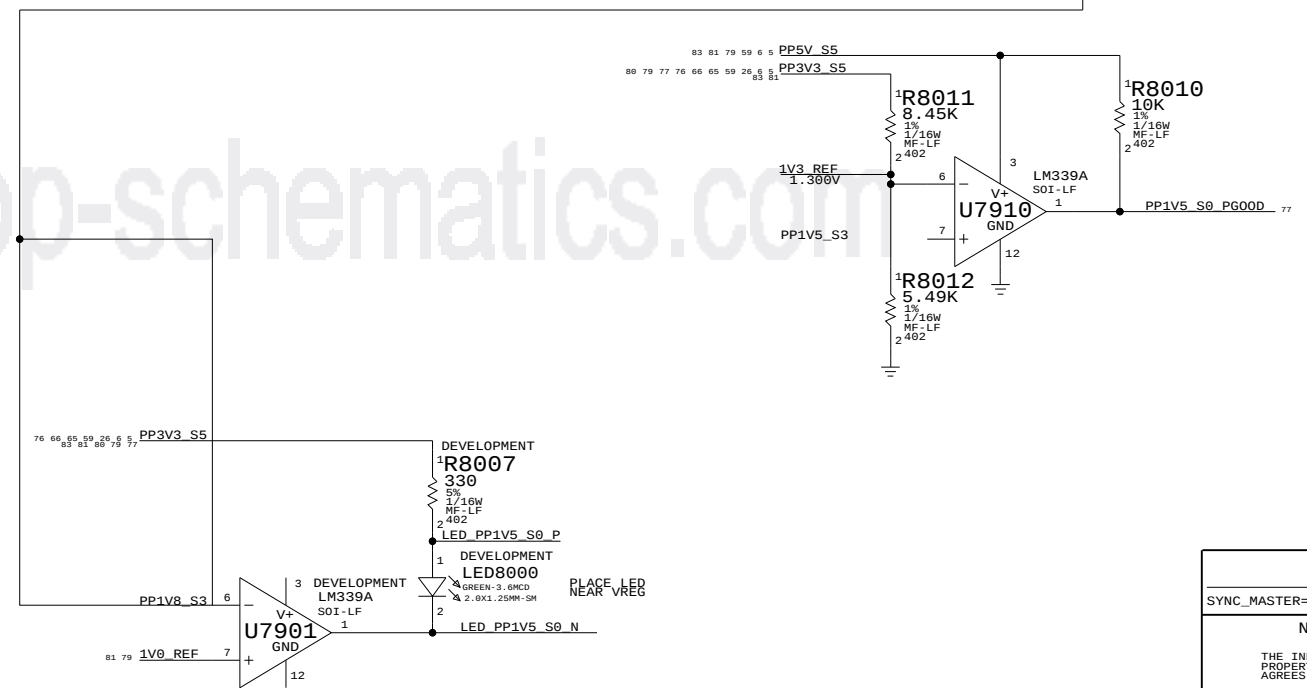
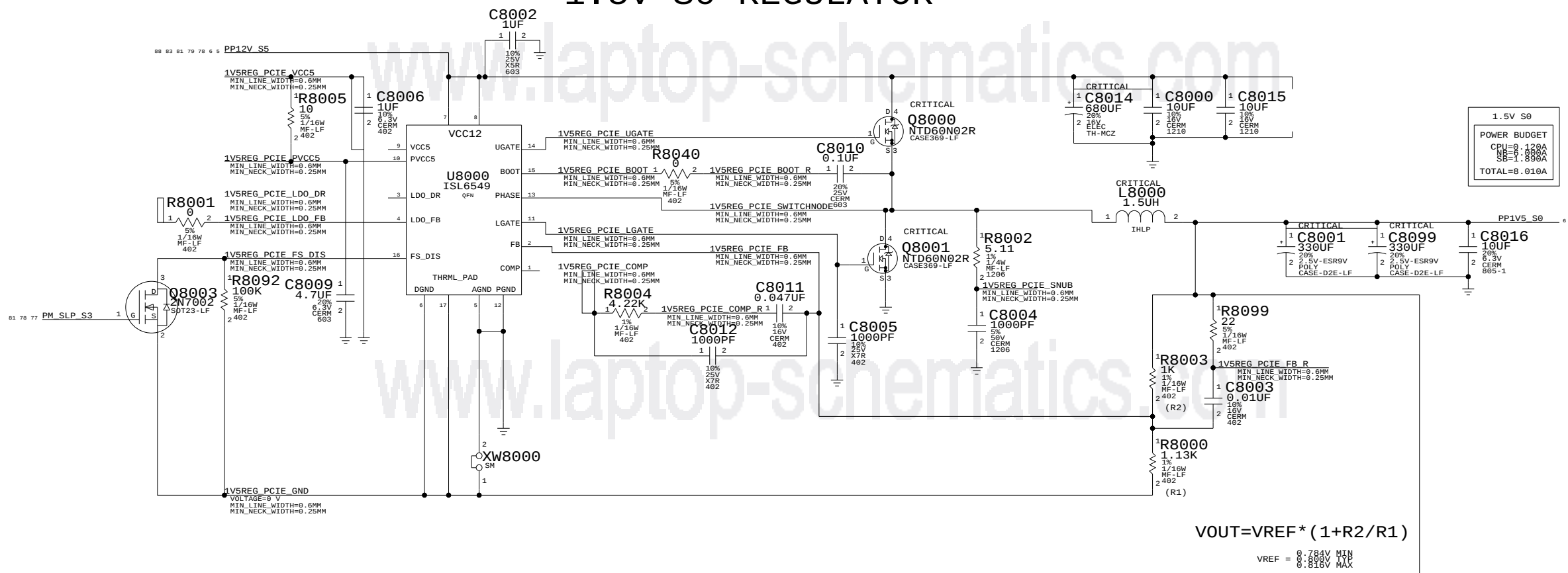
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.	SIZE D	DRAWING NUMBER 051-6950	REV. R
	SCALE NONE	SHT 79 OF 111	

D
C
B
A

D
C
B
A

1.5V S0 REGULATOR



1.5V Vreg

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

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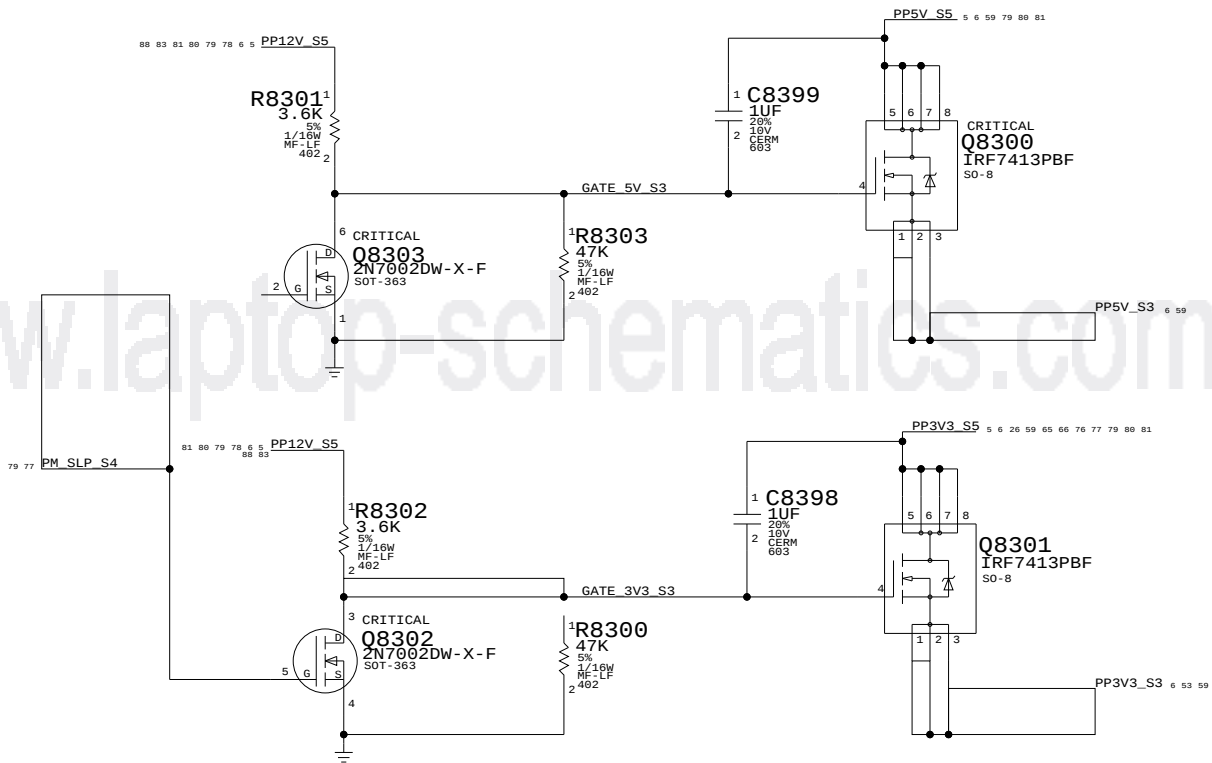
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APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6950	R
SCALE		SHT	80 OF 111
NONE			

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5V & 3.3V Fets

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

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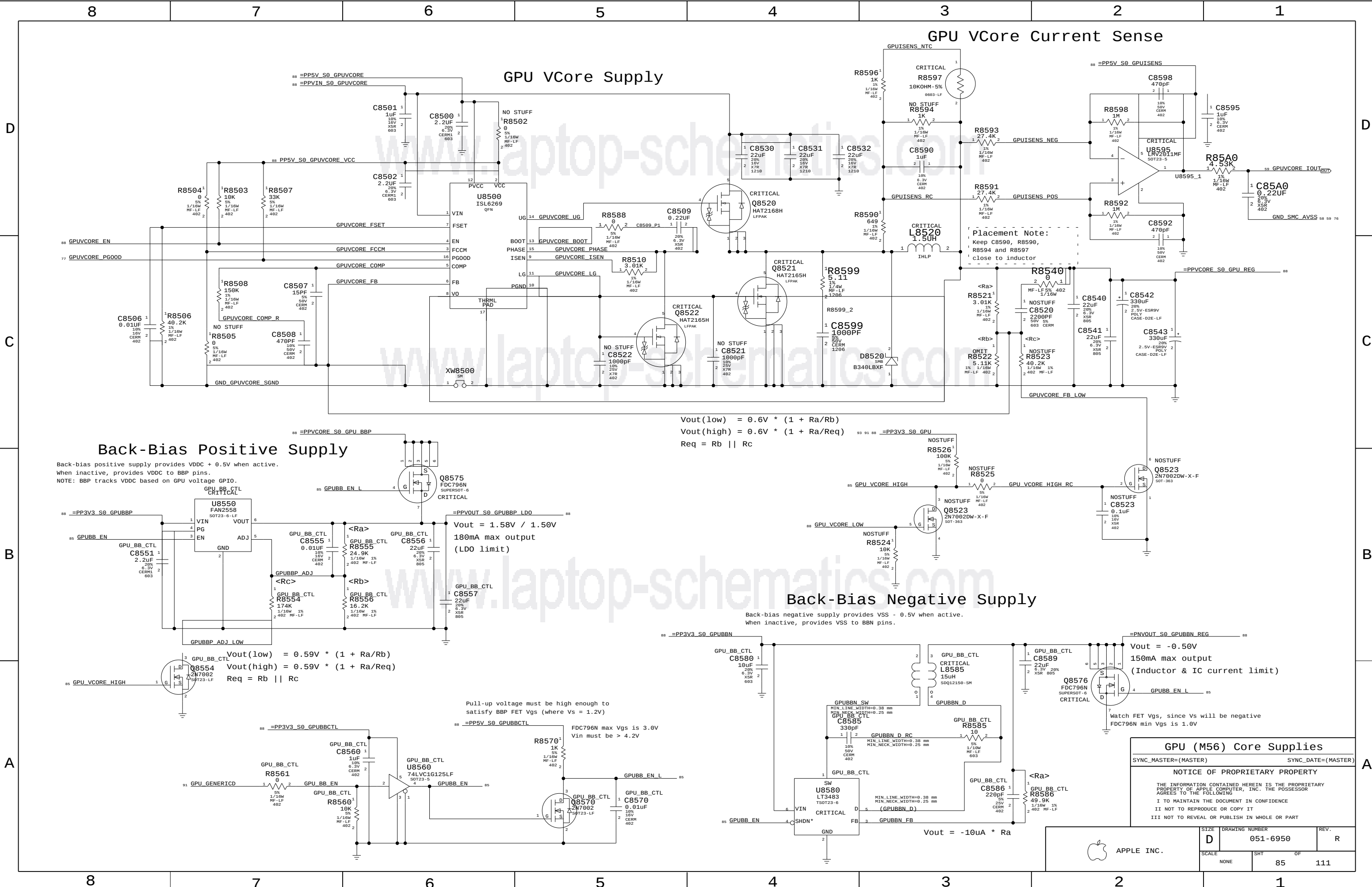
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SIZE	DRAWING NUMBER	REV.
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SCALE	SHT	83 OF 111
NONE		



GPU VCore Supply

GPU VCore Current Sense

Back-Bias Positive 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

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

GPU (M56) Core Supplies

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	OF
NONE	85	111

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Page Notes

Power aliases required by this page:

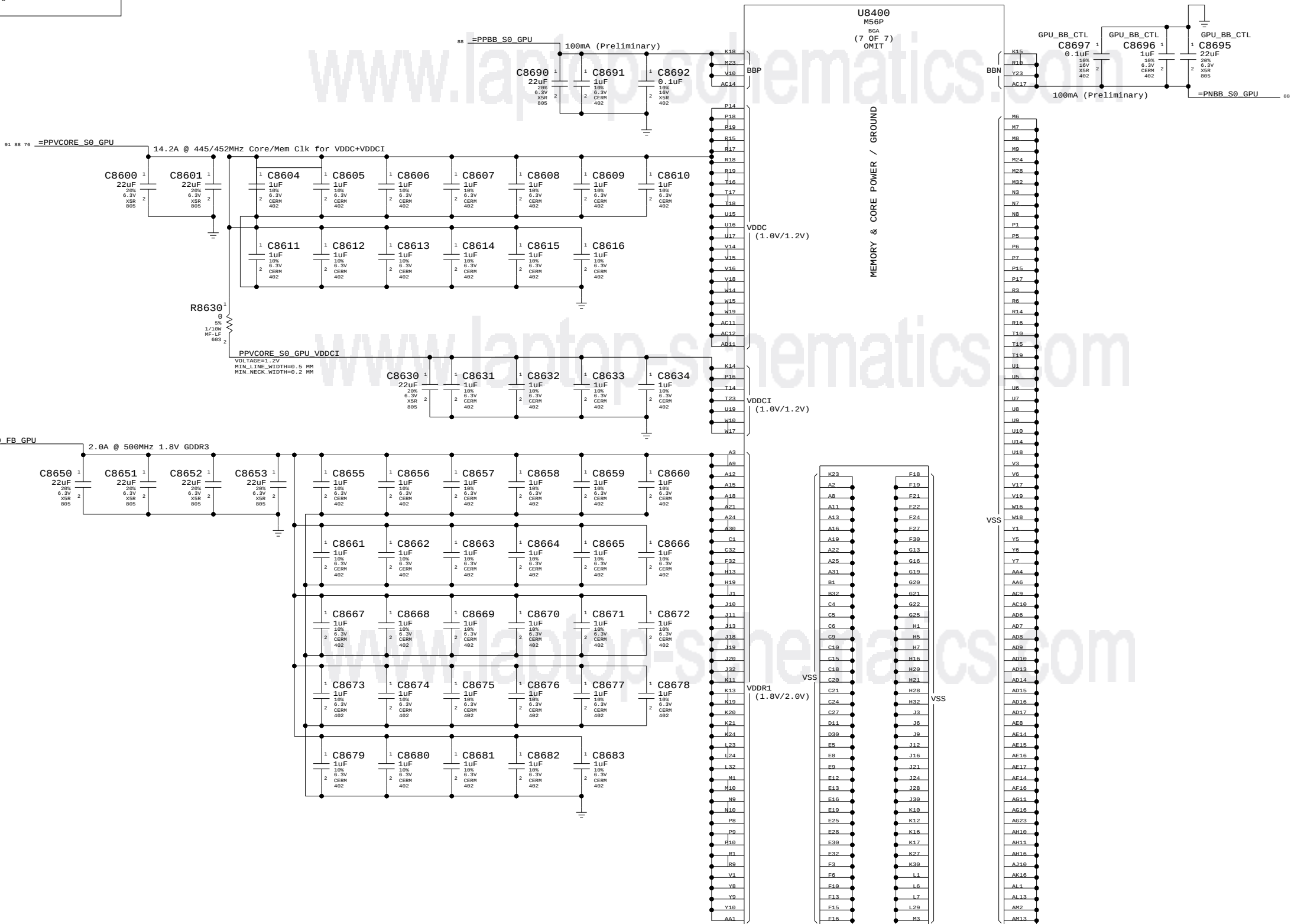
- =PP1V5_GPU_VDD15
- =PP1VR1V3_GPU_VCORE

Signal aliases required by this page:

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BOM options provided by this page:

(NONE)



ATI M56 Core Power

SYNC_MASTER=(MASTER)

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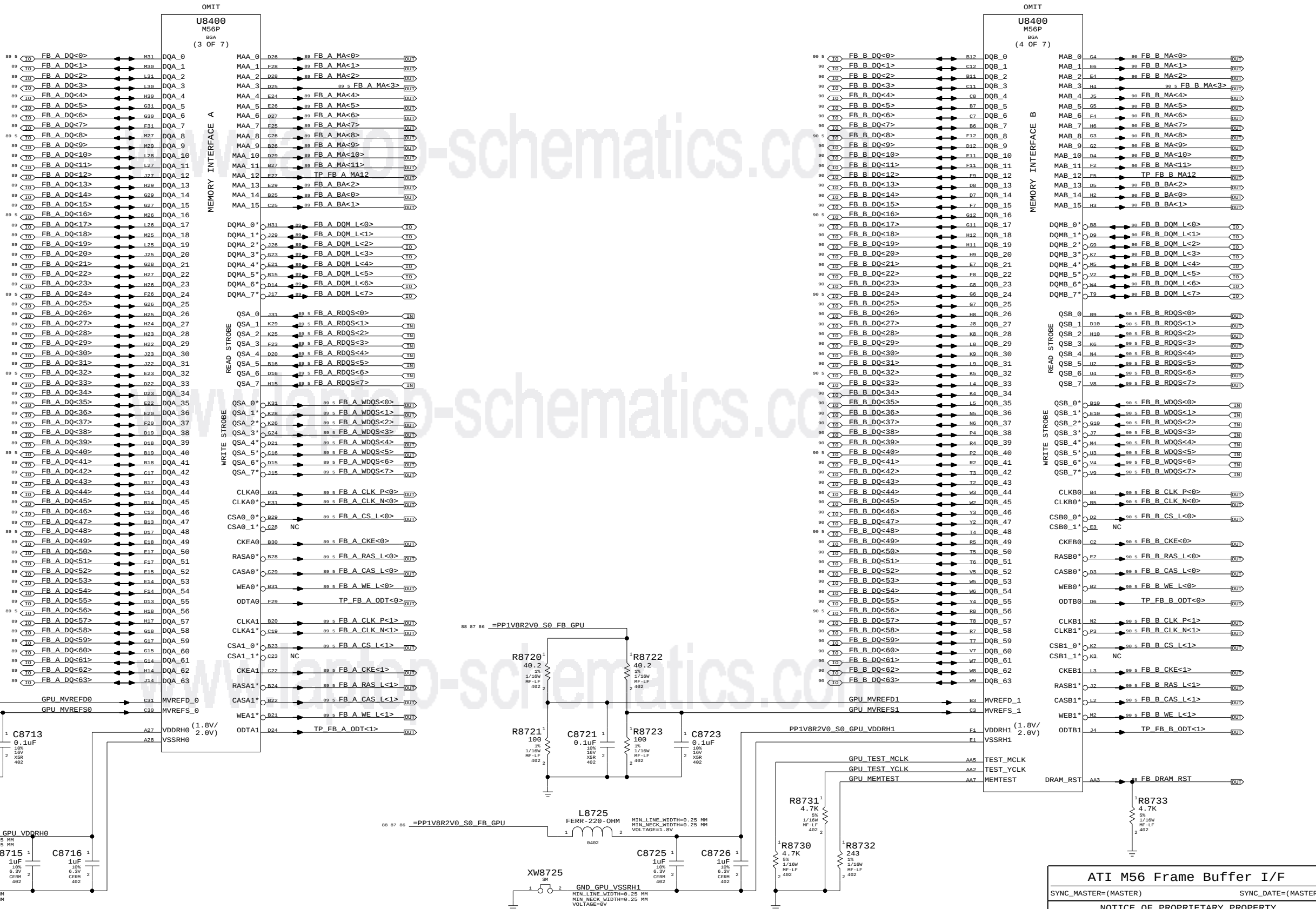
111

Page Notes

Power aliases required by this page:
- =PP1V8R2V0_S0_FB_GPU

Signal aliases required by this page:
(NONE)

BOM options provided by this page:
(NONE)



ATI M56 Frame Buffer I/F

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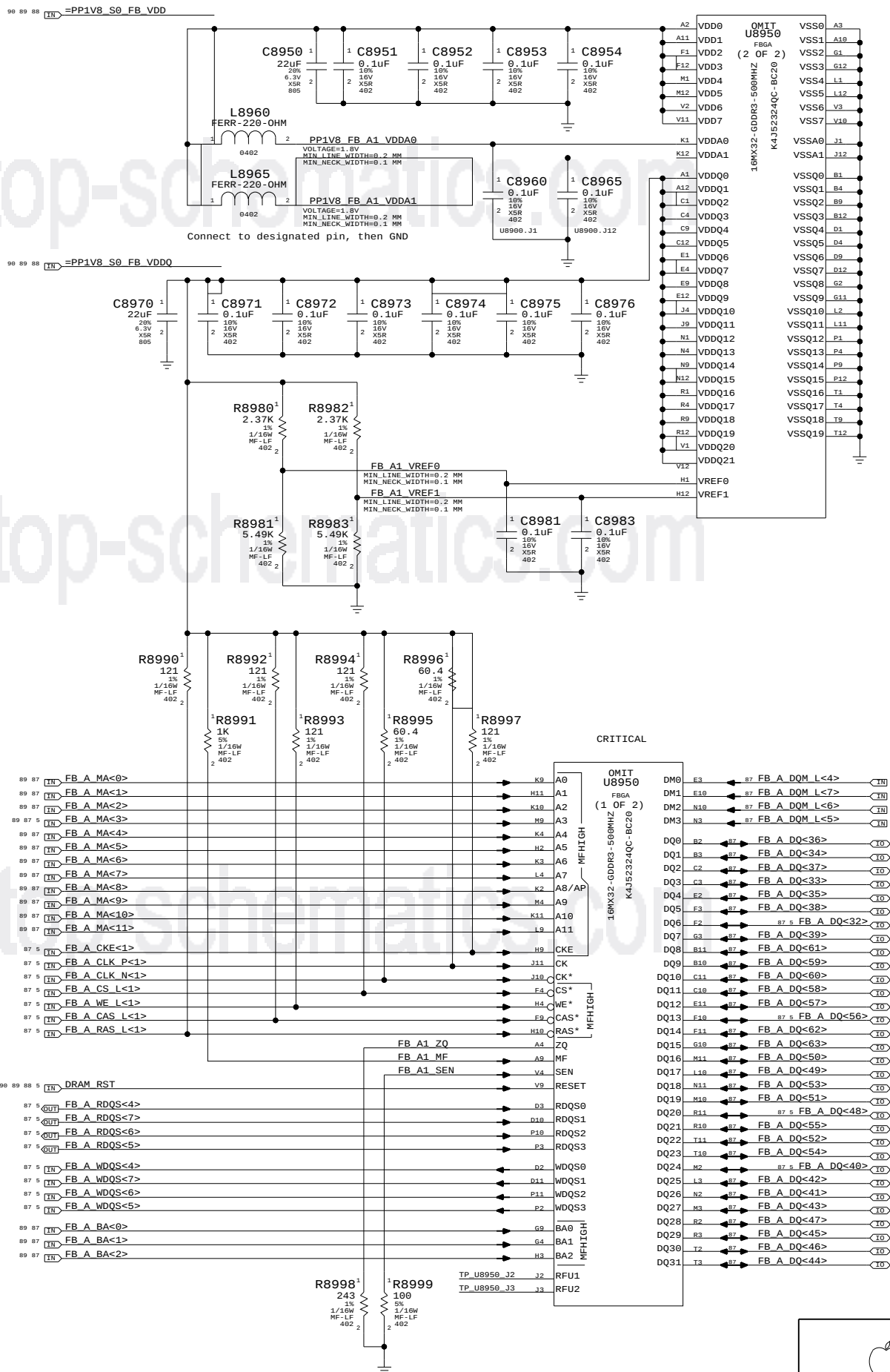
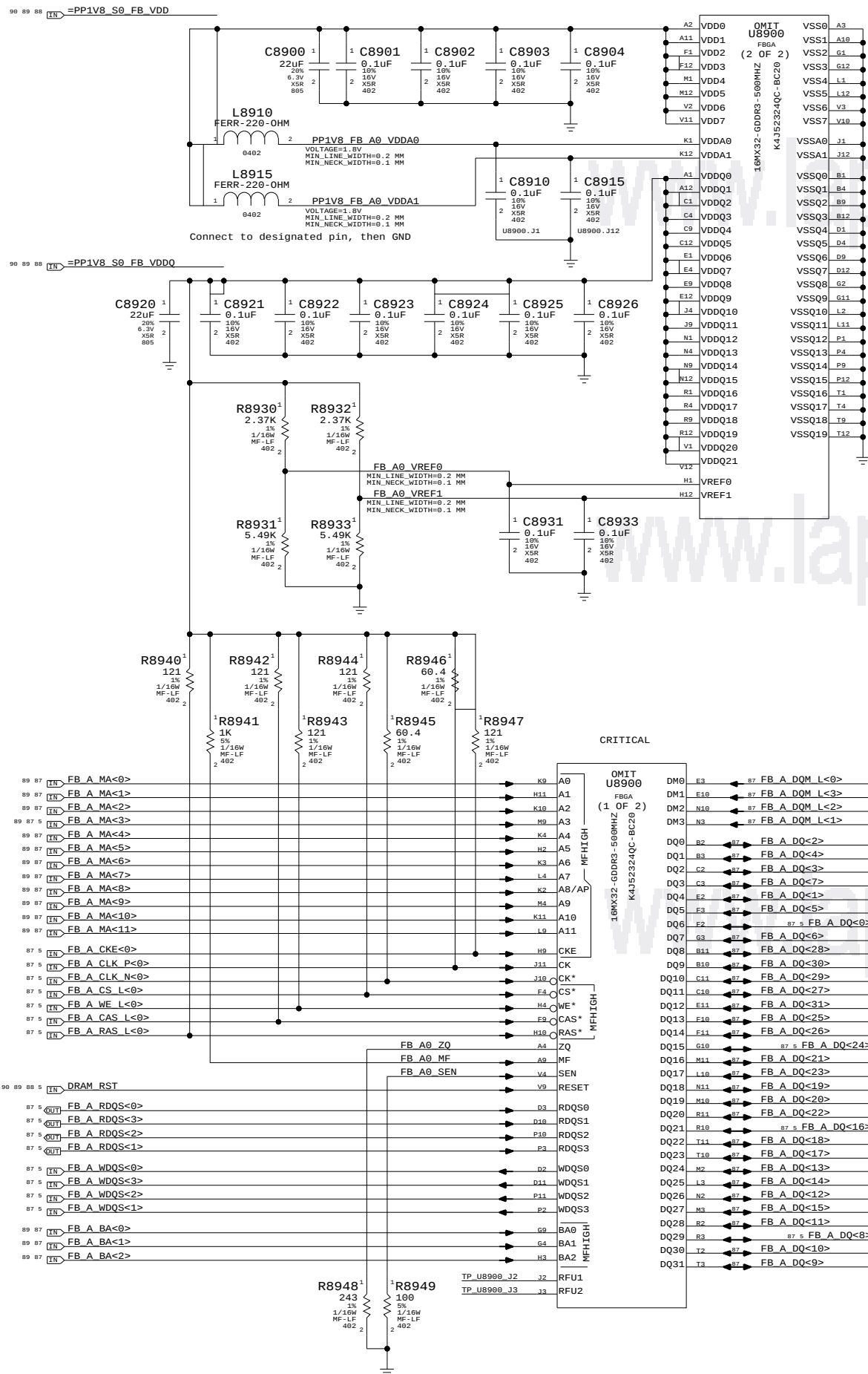
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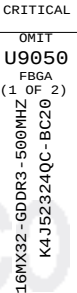
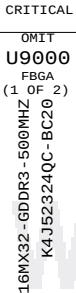
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SIZE D DRAWING NUMBER 051-6950 REV. R

SCALE NONE SHT 87 OF 111



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II NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

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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)

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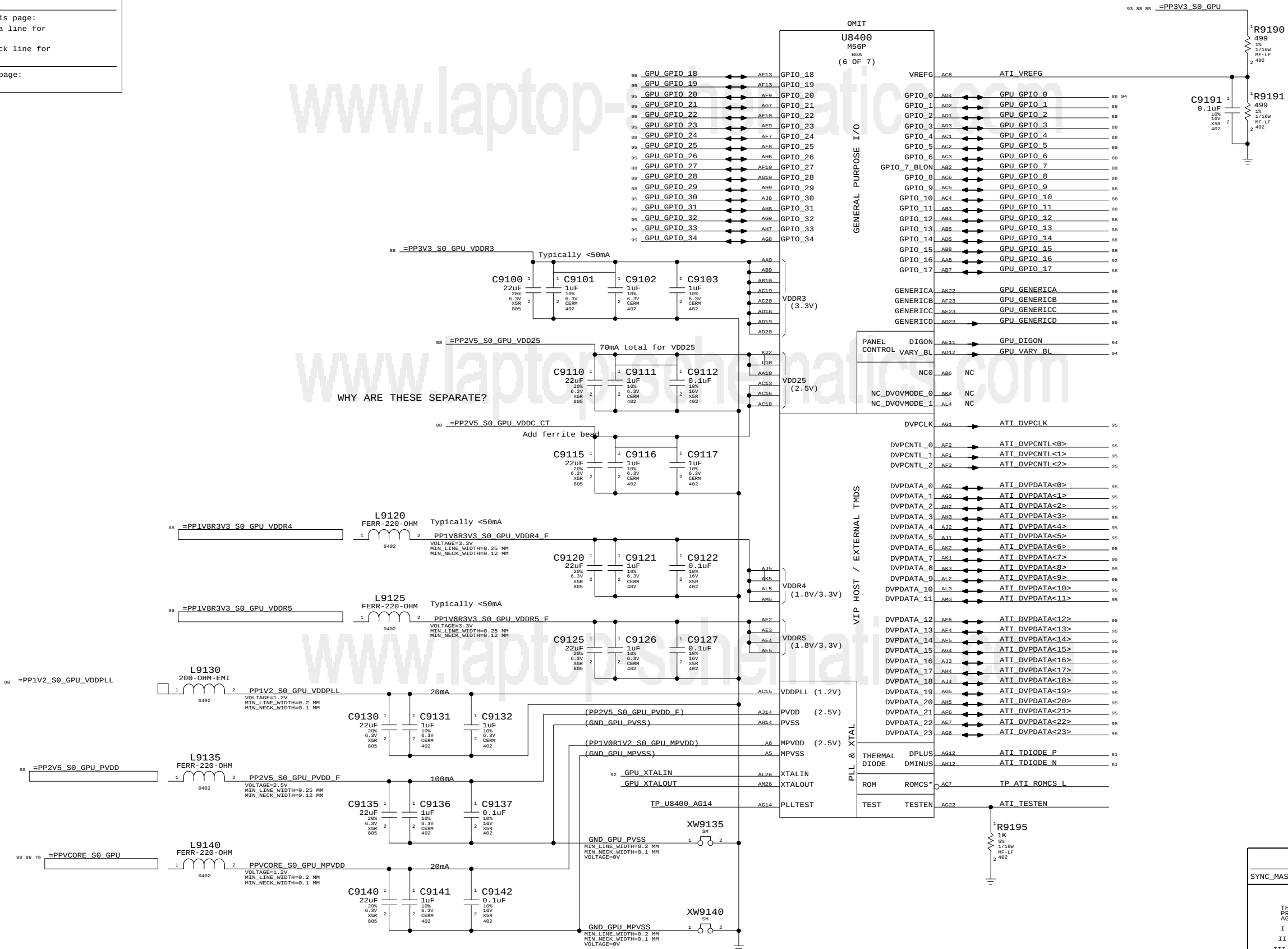
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ATI M56 GPIO/DVO/Misc

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SIZE D DRAWING NUMBER 051-6950 REV. R

SCALE NONE SHT 91 OF 111

Page Notes

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- =PP1V8R2V5_S0_GPU_LVDDR

Signal aliases required by this page:

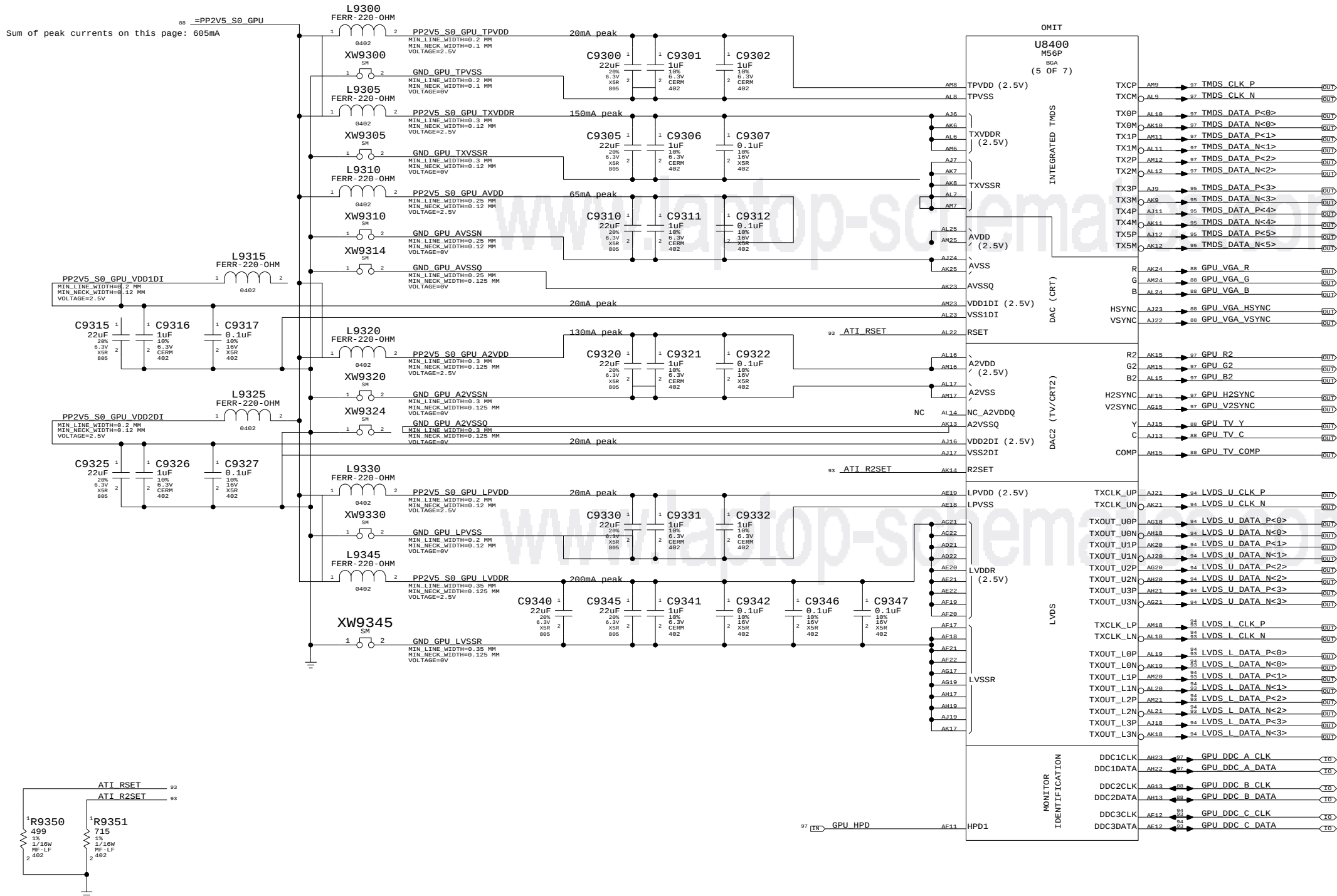
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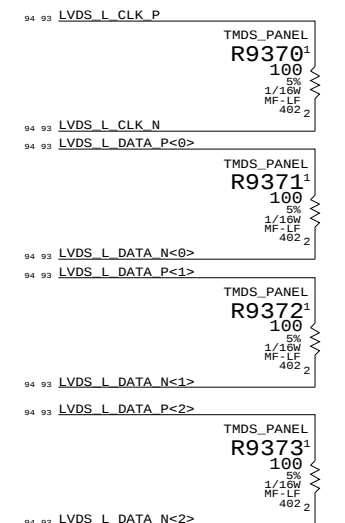
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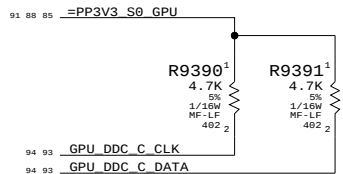
88 =PP2V5_S0_GPU



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



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



ATI M56 Video Interfaces

SYNC_MASTER=(MASTER)

SYNC_DATE=(MASTER)

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SIZE

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NONE

DRAWING NUMBER

051-6950

SHT

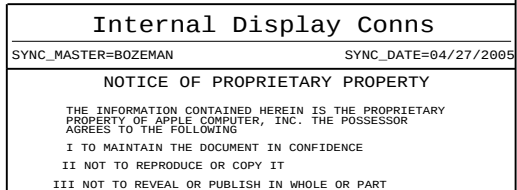
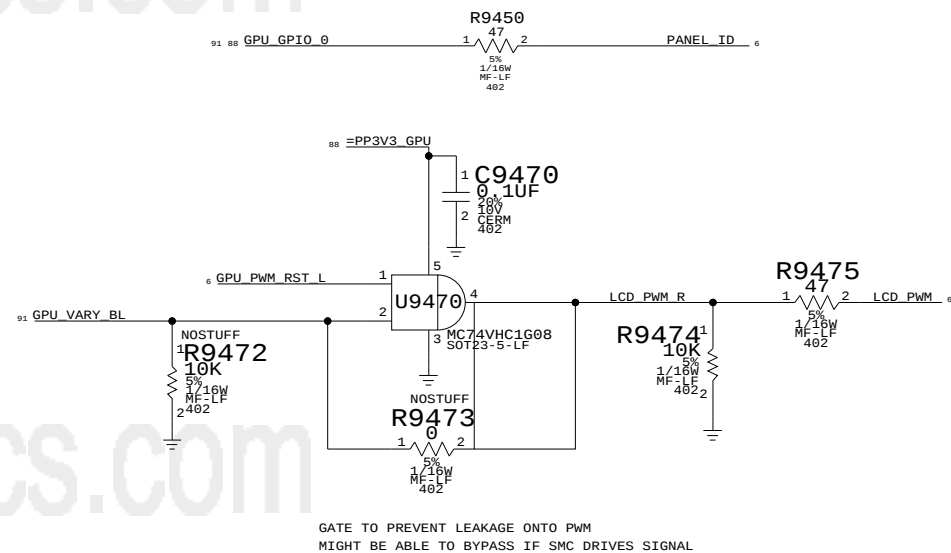
93

REV.

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OF

111





M56 TPS

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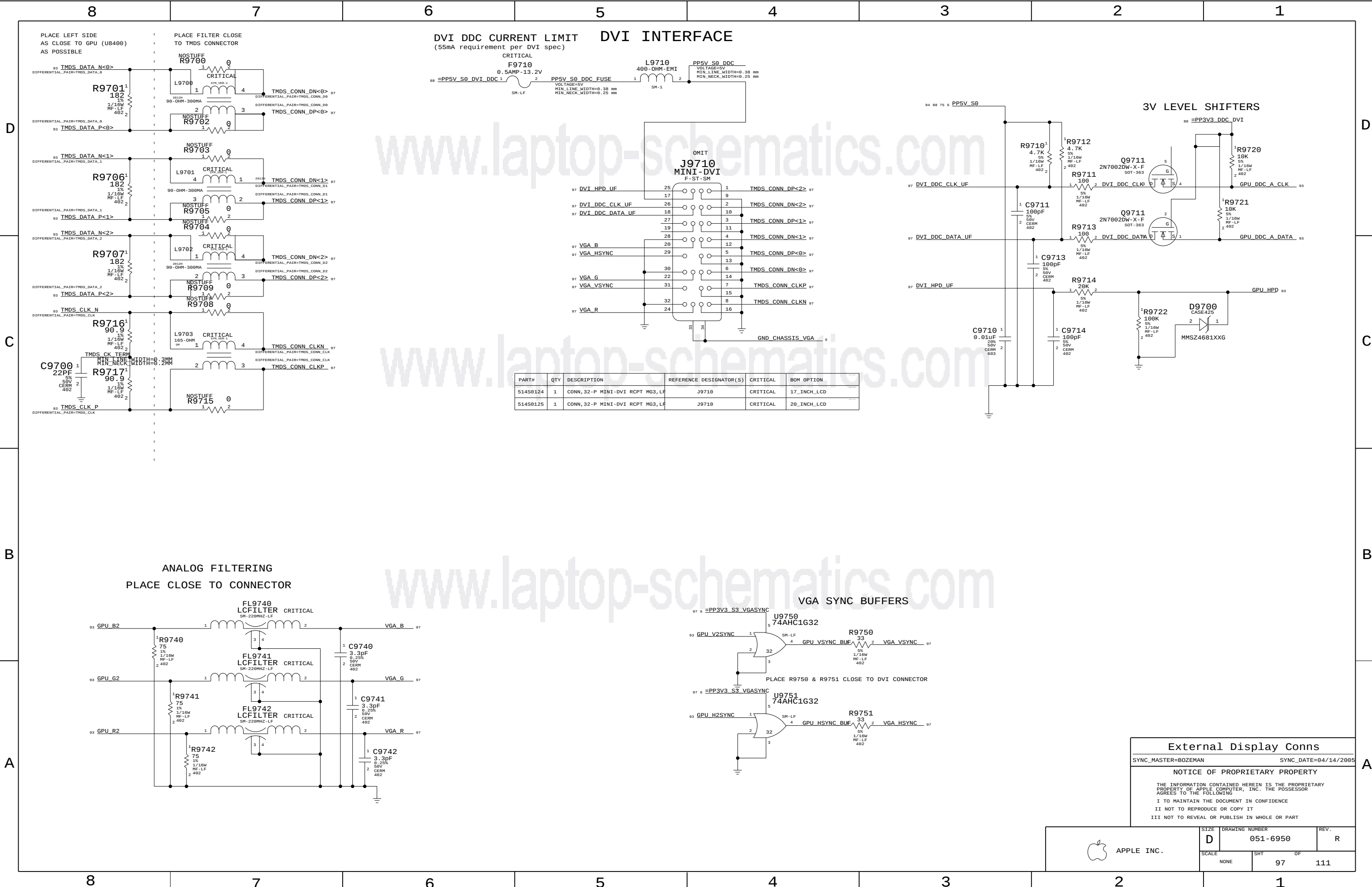
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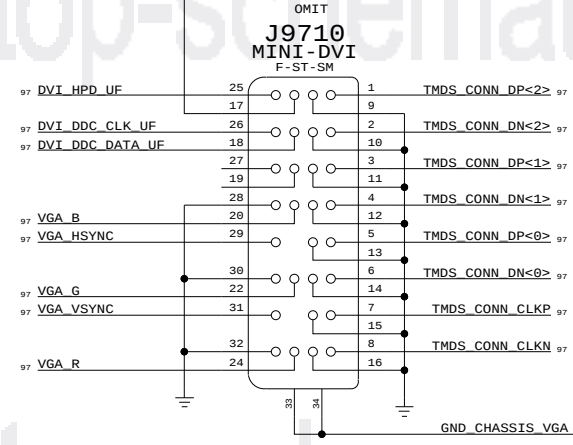
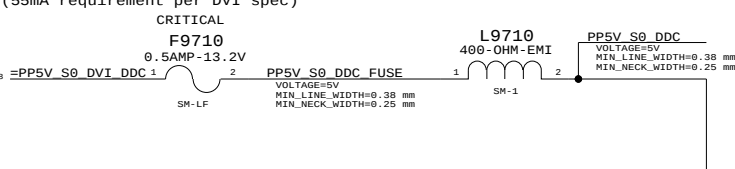
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SIZE	DRAWING NUMBER	REV.
D	051-6950	R
SCALE	SHT	95 OF 111
NONE		

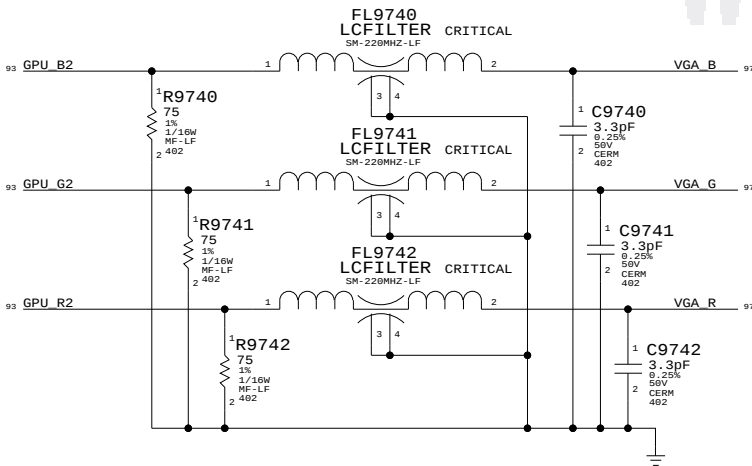


DVI DDC CURRENT LIMIT DVI INTERFACE

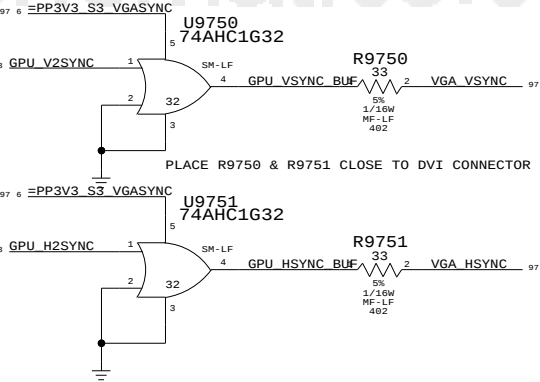


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514S0124	1	CONN, 32-P MINI-DVI RCPT M63, LF	J9710	CRITICAL	17_INCH_LCD
514S0125	1	CONN, 32-P MINI-DVI RCPT M63, LF	J9710	CRITICAL	20_INCH_LCD

ANALOG FILTERING
PLACE CLOSE TO CONNECTOR



VGA SYNC BUFFERS



External Display Conns

SYNC_MASTER=BOZEMAN SYNC_DATE=04/14/2005

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SCALE	SHT	OF
NONE	97	111

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	Q8302	TRA_2N7002DW_S0T-363	m39[83B5]					R2307	RES_402	m39[23A7]						R3455	RES_402	m39[34B8]						R5819	RES_402	m39[59B3]					
	Q8303	TRA_2N7002DW_S0T-363	m39[83C5]					R2308	RES_402	m39[23B7]						R3456	RES_402	m39[34B7]						R5821	RES_402	m39[59B3]					
	Q8520	TRA_HAT2168H_LFPAK	m39[85D4]					R2309	RES_402	m39[23A7]						R3457	RES_402	m39[34B7]						R5822	RES_402	m39[59B3]					
	Q8521	TRA_HAT2165H_LFPAK	m39[85C4]					R2310	RES_402	m39[23A7]						R3458	RES_402	m39[34B8]						R5823	RES_402	m39[59B3]					
	Q8522	TRA_HAT2165H_LFPAK	m39[85C5]					R2311	RES_402	m39[23A7]						R3459	RES_402	m39[34A7]						R5824	RES_402	m39[59B3]					
	Q8523	TRA_2N7002DW_S0T-363	m39[85B3 85B2]					R2313	RES_402	m39[23A7]						R3460	RES_402	m39[34A7]						R5825	RES_402	m39[59B3]					
	Q8554	TRA_2N7002_S0T23-LF	m39[85A8]					R2314	RES_402	m39[23A7]						R3461	RES_402	m39[34A7]						R5826	RES_402	m39[59B3]					
	Q8570	TRA_2N7002_S0T23-LF	m39[85A5]					R2316	RES_402	m39[23D7]						R3462	RES_402	m39[34A8]						R5827	RES_402	m39[59C5]					
	Q8575	TRA_FDC796N_SUPERSOT	m39[85B6]					R2317	RES_402	m39[23D7]						R3463	RES_402	m39[34A7]						R5828	RES_402	m39[59B3]					
Q8576	TRA_FDC796N_SUPERSOT	m39[85A2]					R2318	RES_402	m39[23D7]						R3470	RES_402	m39[34A5]						R5829	RES_402	m39[59C3]						
Q9400	TRA_SI3443DV_TSOP-LF	m39[94C7]					R2319	RES_402	m39[23D2]						R3471	RES_402	m39[34A5]						R5830	RES_402	m39[59C3]						
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Q9711	TRA_2N7002DW_S0T-363	m39[97D2 97C2]					R2323	RES_402	m39[23D5]						R3486	RES_402	m39[34D1]						R5832	RES_402	m39[59C3]						
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R0704	RES_402	m39[7C5]					R2609	RES_402	m39[26D7]						R3857	RES_402	m39[38B3]						R5916	RES_402	m39[59C2]						
R0705	RES_402	m39[7B4]					R2611	RES_402	m39[26D5]						R3858	RES_402	m39[38B3]						R5917	RES_402	m39[59C2]						
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R0712	RES_402	m39[7A3]																													

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	R7410	RES_805	m39[74D2]	R7992	RES_402	m39[79C7]	R8996	RES_402	m39[89B4]	R9097	RES_402	m39[90B4]	U7700	LTC3411_MSOP-LF	m39[77D5]		U7710	MC74VHC1G08_SOT23-5	m39[77C7]				
	R7411	RES_805	m39[74C2]	R7999	RES_402	m39[79C3]	R8997	RES_402	m39[89B4]	R9098	RES_402	m39[90A4]	U7711	MC74VHC1G08_SOT23-5	m39[77B7]		U7712	MC74VHC1G08_SOT23-5	m39[77B7]				
	R7412	RES_805	m39[74D2]	R8000	RES_402	m39[80C3]	R8998	RES_402	m39[89A4]	R9099	RES_402	m39[90A4]	U7750	LTC3412_TSSOP-LF	m39[77B5]		U7800	ISL6549_QFN	m39[78C6]				
	R7413	RES_402	m39[74B4]	R8001	RES_402	m39[80C7]	R8999	RES_402	m39[89A4]	R9100	RES_402	m39[91D2]	U7900	ISL6549_QFN	m39[79D6]		U7901	COMPARATOR_LM339A_SO	m39[79A5]				
	R7414	RES_805	m39[74B7]	R8002	RES_1206	m39[80C4]	R9030	RES_402	m39[89C7]	R9101	RES_402	m39[91D2]	U7901	I-LF			U7901	COMPARATOR_LM339A_SO	m39[80A4]				
	R7415	RES_805	m39[74B8]	R8003	RES_402	m39[80C3]	R9031	RES_402	m39[89C7]	R9195	RES_402	m39[91A3]	U7901	I-LF			U7901	COMPARATOR_LM339A_SO	m39[81A5]				
	R7416	RES_805	m39[74C7]	R8004	RES_402	m39[80C5]	R9032	RES_402	m39[89C7]	R9202	RES_402	m39[92C6]	U7910	COMPARATOR_LM339A_SO	m39[79A3 79B3]		U7910	COMPARATOR_LM339A_SO	m39[79A3 79B3]				
	R7417	RES_805	m39[74C8]	R8005	RES_402	m39[80D7]	R9033	RES_402	m39[90C7]	R9250	RES_402	m39[92C6]	U7910	I-LF			U7910	COMPARATOR_LM339A_SO	m39[80B2]				
B	R7418	RES_402	m39[74B6]	R8007	RES_402	m39[80A4]	R9040	RES_402	m39[90B8]	R9350	RES_402	m39[93A8]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[80B2]					
	R7419	RES_402	m39[74B6]	R8010	RES_402	m39[80B2]	R9041	RES_402	m39[90A8]	R9351	RES_402	m39[93A8]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[80B2]					
	R7420	RES_402	m39[74D4]	R8011	RES_402	m39[80B3]	R9042	RES_402	m39[90B7]	R9370	RES_402	m39[93D1]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7421	RES_402	m39[74D8]	R8012	RES_402	m39[80B3]	R9043	RES_402	m39[90B7]	R9371	RES_402	m39[93D1]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7422	RES_402	m39[74D7]	R8040	RES_402	m39[80C5]	R9044	RES_402	m39[90B7]	R9372	RES_402	m39[93C1]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7423	RES_402	m39[74B6]	R8092	RES_402	m39[80C7]	R9045	RES_402	m39[90B4]	R9472	RES_402	m39[94B3]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7424	RES_402	m39[74B6]	R8099	RES_402	m39[80C3]	R9046	RES_402	m39[90B7]	R9473	RES_402	m39[94B2]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7425	RES_402	m39[74A5]	R8101	RES_402	m39[81C3]	R9047	RES_402	m39[90B7]	R9474	RES_402	m39[94B2]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7426	RES_402	m39[74A4]	R8102	RES_1206	m39[81C4]	R9048	RES_402	m39[90A7]	R9475	RES_402	m39[94B1]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7427	RES_402	m39[74A4]	R8103	RES_402	m39[81C3]	R9049	RES_402	m39[90A7]	R9490	RES_805	m39[94C6]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
A	R7429	RES_805	m39[74C2]	R8104	RES_402	m39[81C5]	R9080	RES_402	m39[90C4]	R9491	RES_805	m39[94D6]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7430	RES_402	m39[74C1]	R8105	RES_402	m39[81D7]	R9081	RES_402	m39[90C4]	R9700	RES_402	m39[97D7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7431	RES_402	m39[74C2]	R8107	RES_402	m39[81A4]	R9082	RES_402	m39[90C4]	R9701	RES_402	m39[97D8]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7432	RES_402	m39[74B1]	R8110	RES_402	m39[81B3]	R9083	RES_402	m39[90C4]	R9702	RES_402	m39[97D7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7500	RES_402	m39[75C2]	R8140	RES_402	m39[81C5]	R9090	RES_402	m39[90B5]	R9703	RES_402	m39[97D7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7501	RES_603	m39[75C2]	R8190	RES_402	m39[81C3]	R9091	RES_402	m39[90A4]	R9704	RES_402	m39[97C7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7502	RES_1206	m39[75B2]	R8191	RES_402	m39[81C7]	R9092	RES_402	m39[90B4]	R9705	RES_402	m39[97C7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7503	RES_1206	m39[75D2]	R8192	RES_402	m39[81C7]	R9093	RES_402	m39[90B4]	R9706	RES_402	m39[97D8]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7504	RES_402	m39[75C1]	R8198	RES_402	m39[81A5]	R9094	RES_402	m39[90B4]	R9707	RES_402	m39[97C8]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					
	R7505	RES_402	m39[75B2]	R8199	RES_402	m39[81A5]	R9095	RES_402	m39[90B4]	R9708	RES_402	m39[97C7]	U7910	I-LF		U7910	COMPARATOR_LM339A_SO	m39[81B3]					

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8			7			6			5			4			3			2			1		
D	XW9330	SHORT_SM	m39[93B7]																	D			
	XW9345	SHORT_SM	m39[93A7]																				
	Y2600	CRYSTAL_4PIN_SM-LF	m39[2608]																				
	Y3301	CRYSTAL_5X3.2-SM	m39[33C7]																				
	Y4101	CRYSTAL_4PIN_SM-3.2X2.5MM	m39[41B5]																				
	Y4400	CRYSTAL_HC49-USMD	m39[44D2]																				
	Y5000	CRYSTAL_SM-3	m39[59B0]																				
	Y6700	CRYSTAL_4PIN_SM-LF	m39[59B7]																				
	ZH500	HOLE_VIA	m39[5C1]																				
	ZH501	HOLE_VIA	m39[5C1]																				
C	ZH502	HOLE_VIA	m39[5C1]																	C			
	ZH503	HOLE_VIA	m39[5C1]																				
	ZH504	HOLE_VIA	m39[5B1]																				
	ZH505	HOLE_VIA	m39[5B1]																				
	ZH506	HOLE_VIA	m39[5B1]																				
	ZH507	HOLE_VIA	m39[5B1]																				
	ZH508	HOLE_VIA	m39[5B1]																				
	ZH509	HOLE_VIA	m39[5B1]																				
	ZH510	HOLE_VIA	m39[5C1]																				
	ZH511	HOLE_VIA	m39[5C1]																				
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	ZH529	HOLE_VIA	m39[5B1]																				
	ZH601	MTGHOLE	m39[6A3]																				
	ZH602	MTGHOLE	m39[6A3]																				
A	ZH603	MTGHOLE	m39[6A3]																	A			
	ZH606	MTGHOLE	m39[6A1]																				
	ZH607	MTGHOLE	m39[9D4]																				
	ZH608	MTGHOLE	m39[9D3]																				
	ZH609	MTGHOLE	m39[9D2]																				
	ZH610	MTGHOLE	m39[9D2]																				
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