

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 DATE	ENG APPD DATE
B		293301	PRODUCTION RELEASED	09/11/03	?

PAGE	CONTENTS
1	TITLE PAGE AND CONTENTS
2	SYSTEM BLOCK DIAGRAM
3	POWER BLOCK DIAGRAM
4	PCB NOTES AND HOLES
5	MPC7450 MAXBUS INTERFACE
6	MPC7450 DATA
7	CPU PLL AND CONFIGURATION STRAPS
8	INTREPID MAXBUS AND BOOT STRAPS
9	INTREPID MEMORY INTERFACE / BOOT ROM
10	DDR MEMORY MUXES
11	200PIN DDR MEMORY SODIMM CONNECTORS
12	INTREPID AGP 4X/PCI
13	INTREPID ENET/FW/UATA/EIDE INTERFACES
14	INTREPID GPIO/SERIAL/USB INTERFACES/SSCG
15	INTREPID POWER RAILS
16	INTREPID DECOUPLING
17	CARDBUS CONTROLLER (PCI1510)
18	M10 AGP & CLOCKS
19	M10 LVDS/TMDS/VGA/GPIO & GPU VCORE
20	SIL1162 TMDS TRANSMITTER
21	M10 ANALOG, POWER, GND

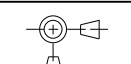
PAGE	CONTENTS
22	VIDEO CONNECTORS - INVERTER, DVI, S-VIDEO DUAL-CHANNEL LVDS
23	LMU, LIGHT SENSOR, BOOTBANGER, SLEEP LED SPIDEY - KBD,TPAD,HALL EFFECT,PWR BUTTON
24	INTERNAL CONNECTORS - DVD, CARDSLOT, HARD DRIVE, LEFT USB/BLUETOOTH
25	FAN CONTROLLER, MODEM, SOUND SERIAL DEBUG (JOLLY ROGER, PWR/NMI/RESET)
26	USB 2.0
27	MARVELL GIGABIT ETHERNET PHY
28	FIREWIRE A/B PHY
29	FIREWIRE A/B CONNECTORS, PORT POWER LIMITER
30	PMU (POWER MANAGEMENT UNIT)
31	BATTERY CHARGER AND CONNECTOR
32	12.8V SYSTEM POWER SUPPLY / PMU POWER SUPPLY
33	3.3V / 5V SYSTEM POWER SUPPLIES
34	CPU CORE VOLTAGE POWER SUPPLY
35	1.5V/ 1.8V / 2.5V SYSTEM POWER SUPPLIES
36	SIGNAL CONSTRAINTS (1 OF 3) - DIGITAL/CLK
37	SIGNAL CONSTRAINTS (2 OF 3) - DIGITAL/DIFF
38	SIGNAL CONSTRAINTS (3 OF 3) - POWER NETS
39	FUNCTIONAL TEST POINTS
40	REVISION HISTORY (1 OF 1)
41-42	SIGNAL NAMES
43-44	COMPONENT LOCATIONS

SCHEM, MLB, PB17 "

09/04/2003

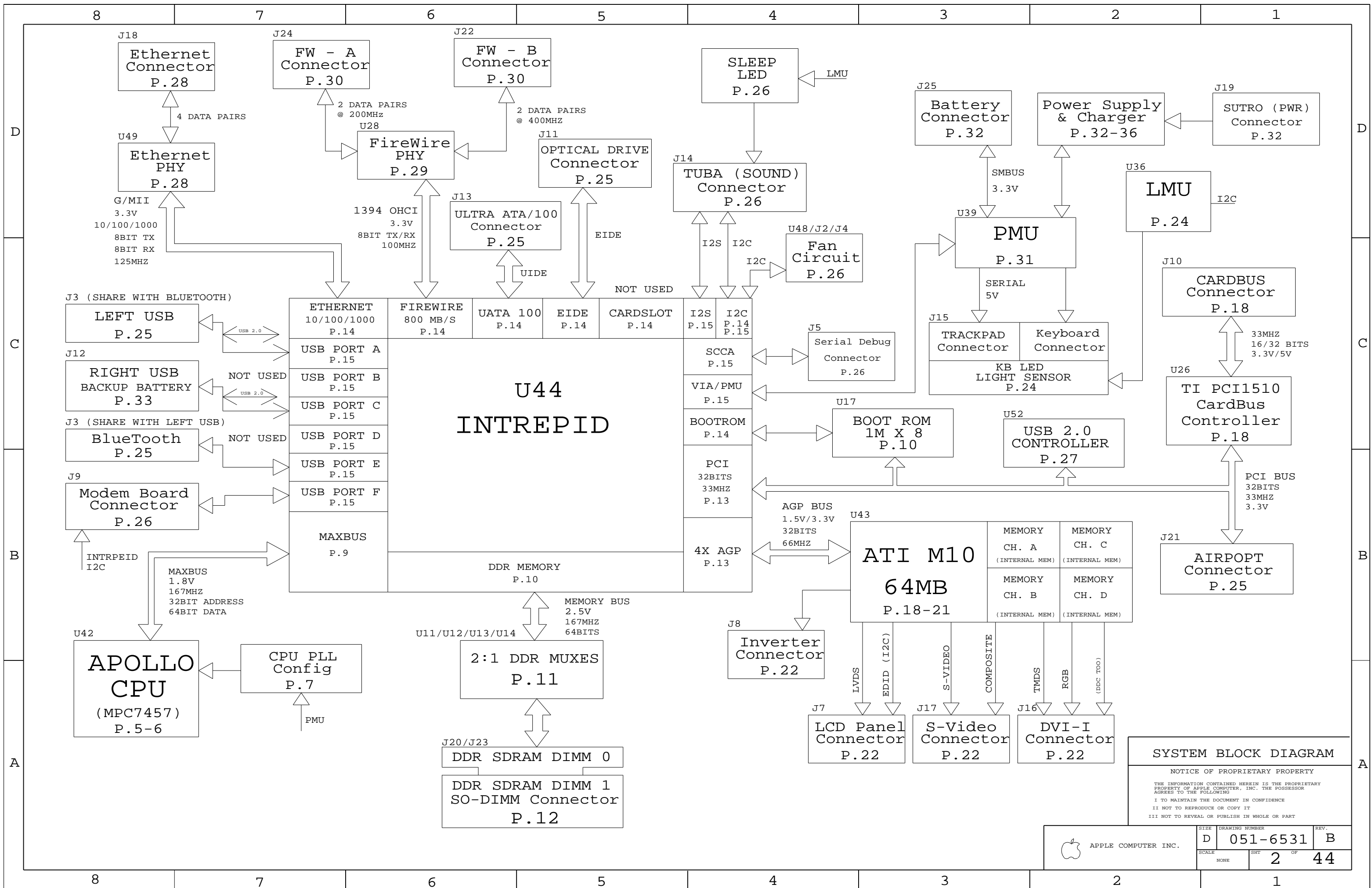
BOM OPTIONS	STUFF	NO STUFF
D3_HOT		✓
D3_COLD	✓	
GPU_SS	✓	
GPU_SWITCH	✓	
SERIAL_DEBUG		✓
VCORE_OFFSET	✓	
1_8V_MAXBUS	✓	
1_5V_MAXBUS		✓
NEC_USB	✓	
INTREPID_USB		✓
BBANG		✓
NO_BBANG	✓	
ATI_MEMIO_HI	✓	
ATI_MEMIO_LO		✓
SSCG		✓
NO_SSCG	✓	
5V_HD_LOGIC	✓	
3V_HD_LOGIC		✓
EXT_TMDS	✓	
INT_TMDS		✓
NO_4XVCORE	✓	

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-6531	1	SCHEM,MLB,PB17 INCH	SCH1	
820-1524	1	PCBF,MLB,PB17 INCH	PCB1	

DIMENSIONS ARE IN MILLIMETERS		METRIC		Apple Computer Inc.	
xx : _____	_____	DRAPTR	DESIGN CK	NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART	
x.xx : _____	_____	ENG APPD	MFG APPD		
x.xxx : _____	_____	QA APPD	DESIGNER		
ANGLES : _____	_____	RELEASE	SCALE		
DO NOT SCALE DRAWING		NONE		TITLE	
 THIRD ANGLE PROJECTION		MATERIAL/FINISH NOTED AS APPLICABLE		SIZE D	SCHEM, MLB, PB17 INCH
				DRAWING NUMBER	REV. B
				051-6531	
				SHT 1 OF 44	

D
C
B
A

D
C
B
A

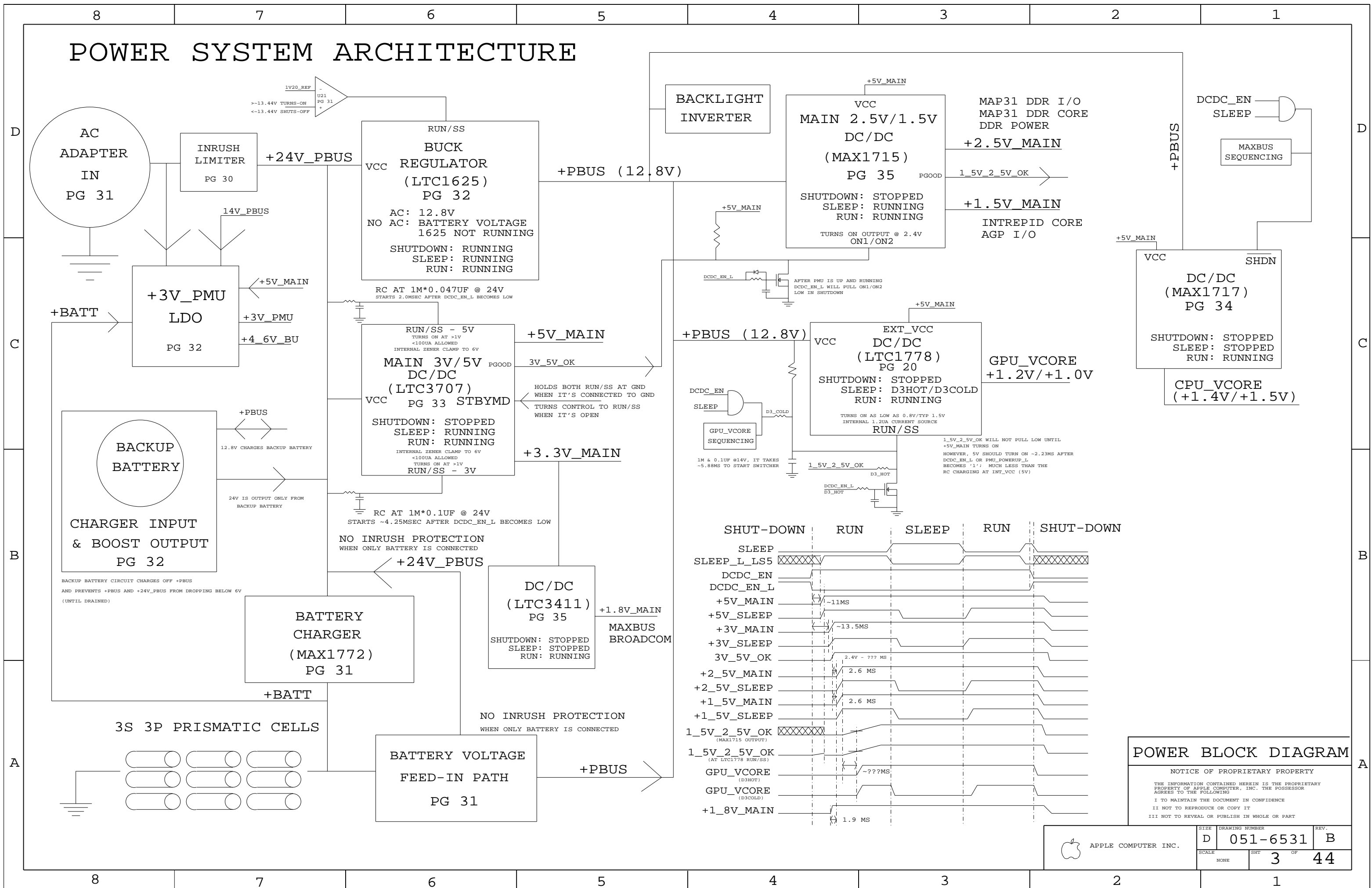


SYSTEM BLOCK DIAGRAM

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	NONE	D 051-6531	B
SCALE		SHT	OF
NONE		2	44

POWER SYSTEM ARCHITECTURE



POWER BLOCK DIAGRAM

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	3 OF 44

PCB SPECS

THICKNESS : 1.2 MM / 0.047 IN
 1/2 OZ CU THICKNESS: 0.7 MILS
 1.0 OZ CU THICKNESS: 1.4 MILS

IMPEDANCE : 50 OHMS +/- 10%
 DIELECTRIC: FR-4
 LAYER COUNT: 12
 SIGNAL TRACE WIDTH: 4 MILS
 SIGNAL TRACE SPACING: 4 MILS
 PREPREG THICKNESS: 2-3 MILS

SEE PCB CAD FILES FOR MORE SPECIFIC INFO.

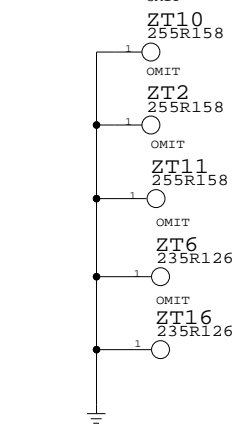
BOARD STACK-UP AND CONSTRUCTION

20R10 TH VIA OR VIA IN PAD

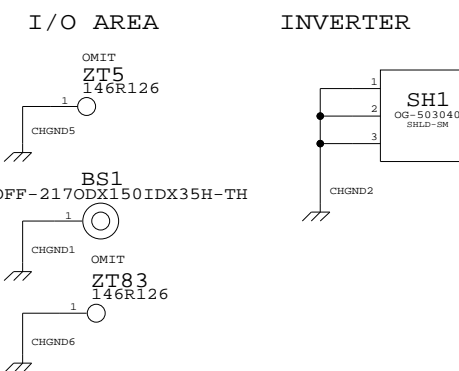
1	SIGNAL (1/3 OZ + COPPER PLATING)
2	PREPREG (3MIL) GROUND (1/2 OZ)
3	LAMINATE (4MIL) SIGNAL (1/2 OZ)
4	PREPREG (3MIL) SIGNAL (1/2 OZ)
5	LAMINATE (4MIL) GROUND (1/2 OZ)
6	PREPREG (2MIL) CUT POWER PLANE(1 OZ)
7	LAMINATE (3MIL) CUT POWER PLANE(1 OZ)
8	PREPREG (2MIL) GROUND (1/2 OZ)
9	LAMINATE (4MIL) SIGNAL (1/2 OZ)
10	PREPREG (3MIL) SIGNAL (1/2 OZ)
11	LAMINATE (4MIL) GROUND (1/2 OZ)
12	PREPREG (3MIL) SIGNAL (1/3 OZ + COPPER PLATING)

BOARD HOLES

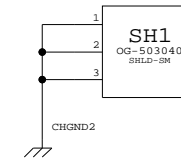
ASICS HEATSINK MOUNTS



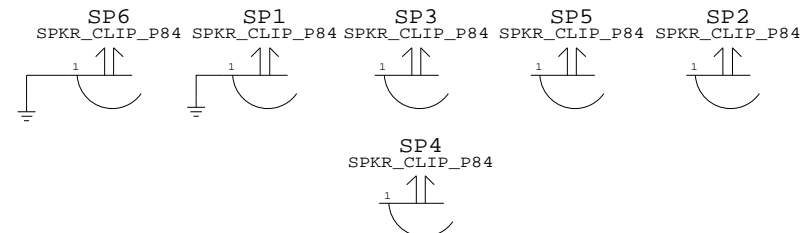
CHASSIS MOUNTS



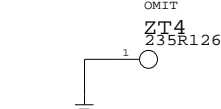
INVERTER



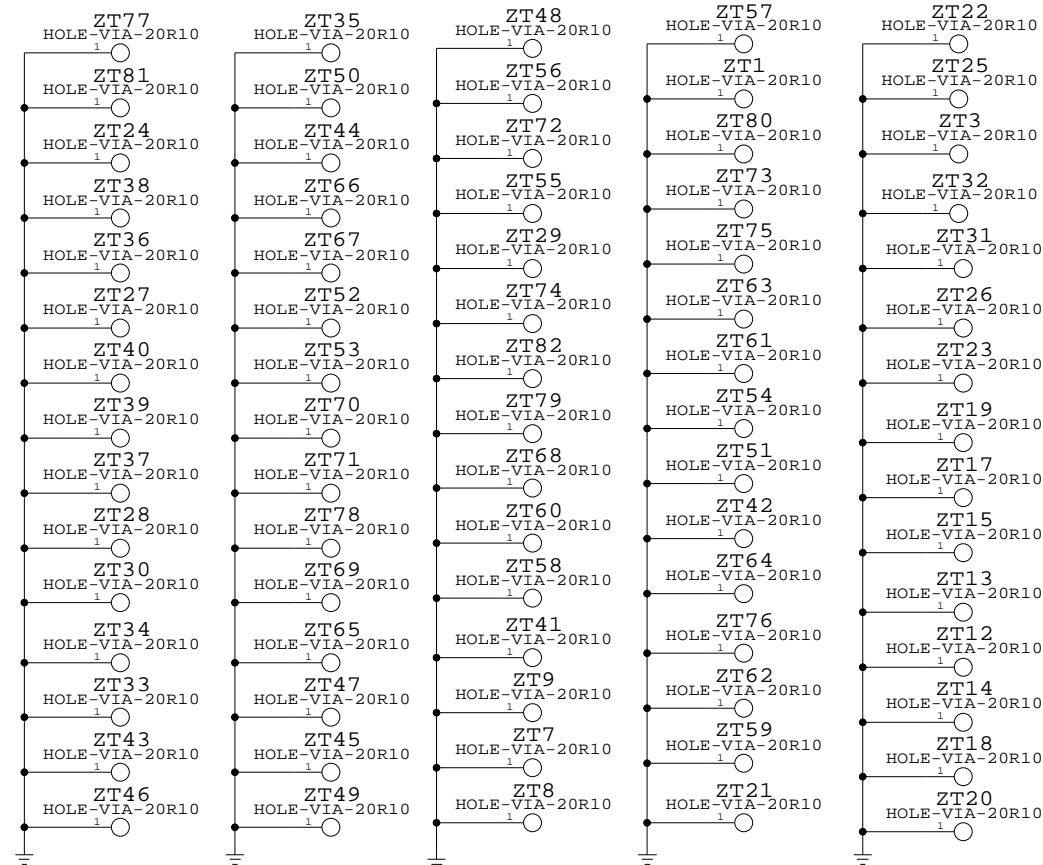
SPEAKER CLIPS



CONDUCTIVE MOUNTS



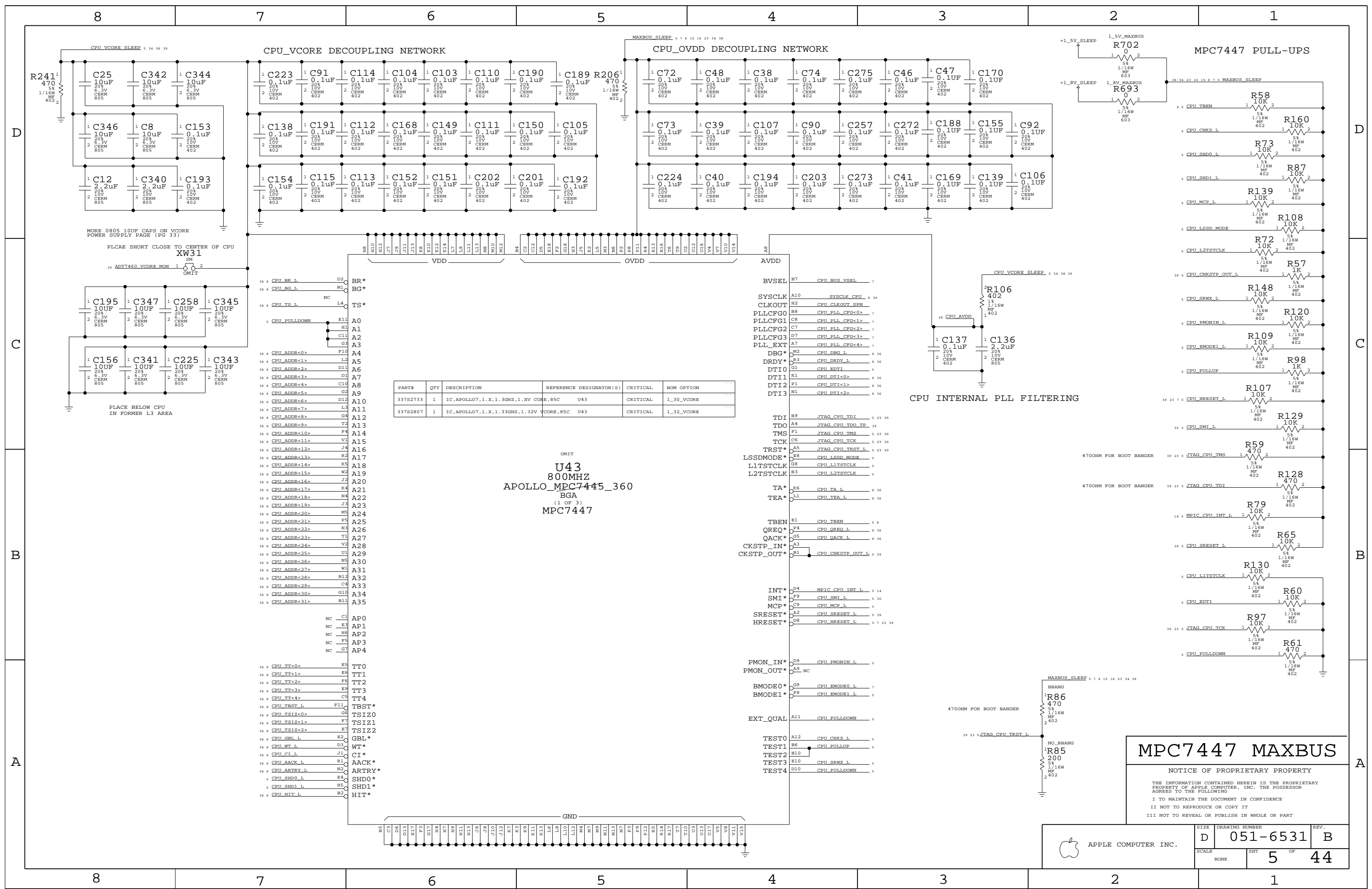
GROUND VIAS



BOARD INFORMATION

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	4 OF 44



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
33782733	1	IC, APOLLO7, 1. X, 1.3GHZ, 1.1V CORE, 85C	U43	CRITICAL	1_30_VCORE
33782807	1	IC, APOLLO7, 1. X, 1.3GHZ, 1.32V VCORE, 85C	U43	CRITICAL	1_32_VCORE

OMIT
U43
800MHZ
APOLLO_MPC7445_360
BGA
 (1 OF 3)
MPC7447

MPC7447 MAXBUS

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6531	REV. B
	SCALE NONE	SHEET 5	OF 44

8

7

6

5

4

3

2

1

BOOT BANGER - LMU PERFORMS THIS FUNCTION IF NEEDED
SEE PAGE 22

```

36 CPU_DATA<0> R15 D0
36 CPU_DATA<1> W15 D1
36 CPU_DATA<2> T14 D2
36 CPU_DATA<3> V16 D3
36 CPU_DATA<4> W16 D4
36 CPU_DATA<5> T15 D5
36 CPU_DATA<6> U15 D6
36 CPU_DATA<7> P14 D7
36 CPU_DATA<8> V13 D8
36 CPU_DATA<9> W13 D9
36 CPU_DATA<10> T13 D10
36 CPU_DATA<11> P13 D11
36 CPU_DATA<12> U14 D12
36 CPU_DATA<13> W14 D13
36 CPU_DATA<14> R12 D14
36 CPU_DATA<15> T12 D15
36 CPU_DATA<16> W12 D16
36 CPU_DATA<17> V12 D17
36 CPU_DATA<18> N11 D18
36 CPU_DATA<19> N10 D19
36 CPU_DATA<20> R11 D20
36 CPU_DATA<21> U11 D21
36 CPU_DATA<22> W11 D22
36 CPU_DATA<23> T11 D23
36 CPU_DATA<24> R10 D24
36 CPU_DATA<25> N9 D25
36 CPU_DATA<26> P10 D26
36 CPU_DATA<27> U10 D27
36 CPU_DATA<28> R9 D28
36 CPU_DATA<29> W10 D29
36 CPU_DATA<30> U9 D30
36 CPU_DATA<31> V9 D31
36 CPU_DATA<32> W5 D32
36 CPU_DATA<33> U6 D33
36 CPU_DATA<34> T5 D34
36 CPU_DATA<35> U5 D35
36 CPU_DATA<36> W7 D36
36 CPU_DATA<37> R6 D37
36 CPU_DATA<38> P7 D38
36 CPU_DATA<39> V6 D39
36 CPU_DATA<40> P17 D40
36 CPU_DATA<41> R19 D41
36 CPU_DATA<42> V18 D42
36 CPU_DATA<43> R18 D43
36 CPU_DATA<44> V19 D44
36 CPU_DATA<45> T19 D45
36 CPU_DATA<46> U19 D46
36 CPU_DATA<47> W19 D47
36 CPU_DATA<48> U18 D48
36 CPU_DATA<49> W17 D49
36 CPU_DATA<50> W18 D50
36 CPU_DATA<51> T16 D51
36 CPU_DATA<52> T18 D52
36 CPU_DATA<53> T17 D53
36 CPU_DATA<54> W3 D54
36 CPU_DATA<55> V17 D55
36 CPU_DATA<56> U4 D56
36 CPU_DATA<57> U8 D57
36 CPU_DATA<58> U7 D58
36 CPU_DATA<59> R7 D59
36 CPU_DATA<60> P6 D60
36 CPU_DATA<61> R8 D61
36 CPU_DATA<62> W5 D62
36 CPU_DATA<63> T8 D63

```

OMIT
U43
800MHZ
BGA
(2 OF 3)

APOLLO_MPC7445_360

```

NC_T3 DP0
NC_W4 DP1
NC_T4 DP2
NC_W9 DP3
NC_M6 DP4
NC_V3 DP5
NC_N8 DP6
NC_W6 DP7

```

```

NC_F18 NC_F18
NC_F17 NC_F17
NC_F19 NC_F19
NC_H19 NC_H19
NC_H18 NC_H18
NC_H17 NC_H17
NC_H16 NC_H16
NC_E19 NC_E19
NC_D18 NC_D18
NC_F16 NC_F16
NC_G16 NC_G16
NC_D19 NC_D19
NC_F15 NC_F15
NC_G19 NC_G19
NC_E16 NC_E16
NC_D17 NC_D17
NC_D16 NC_D16

```

OMIT
U43
800MHZ
BGA
(3 OF 3)

APOLLO_MPC7445_360

```

NC_P15 NC_P15
NC_L15 NC_L15
NC_N15 NC_N15
NC_P18 NC_P18
NC_N14 NC_N14
NC_M14 NC_M14
NC_M17 NC_M17
NC_N13 NC_N13
NC_N16 NC_N16
NC_M19 NC_M19
NC_M16 NC_M16
NC_P19 NC_P19
NC_N17 NC_N17
NC_M15 NC_M15
NC_L17 NC_L17
NC_L14 NC_L14
NC_K15 NC_K15
NC_J14 NC_J14
NC_J18 NC_J18
NC_J19 NC_J19
NC_J15 NC_J15
NC_K19 NC_K19
NC_J16 NC_J16
NC_H15 NC_H15
NC_L16 NC_L16
NC_P16 NC_P16
NC_M18 NC_M18
NC_L19 NC_L19
NC_L18 NC_L18
NC_K18 NC_K18
NC_J17 NC_J17
NC_K16 NC_K16
NC_C19 NC_C19
NC_D15 NC_D15
NC_G15 NC_G15
NC_C18 NC_C18
NC_A16 NC_A16
NC_B19 NC_B19
NC_A19 NC_A19
NC_D14 NC_D14
NC_E15 NC_E15
NC_B15 NC_B15
NC_B17 NC_B17
NC_C17 NC_C17
NC_C16 NC_C16
NC_G13 NC_G13
NC_E14 NC_E14
NC_H14 NC_H14
NC_G14 NC_G14
NC_C15 NC_C15
NC_A17 NC_A17
NC_G12 NC_G12
NC_F14 NC_F14
NC_F13 NC_F13
NC_E13 NC_E13
NC_B16 NC_B16
NC_A15 NC_A15
NC_C14 NC_C14
NC_A18 NC_A18
NC_A13 NC_A13
NC_F12 NC_F12
NC_A14 NC_A14
NC_G11 NC_G11
NC_C13 NC_C13

```

```

NC_N12 NC_N12
NC_N18 NC_N18
NC_K17 NC_K17
NC_N19 NC_N19
NC_B18 NC_B18
NC_E12 NC_E12
NC_B13 NC_B13
NC_B14 NC_B14
NC_A6 NC_A6

```

MPC7447 / BBANG

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	OF
		6	44

8

7

6

5

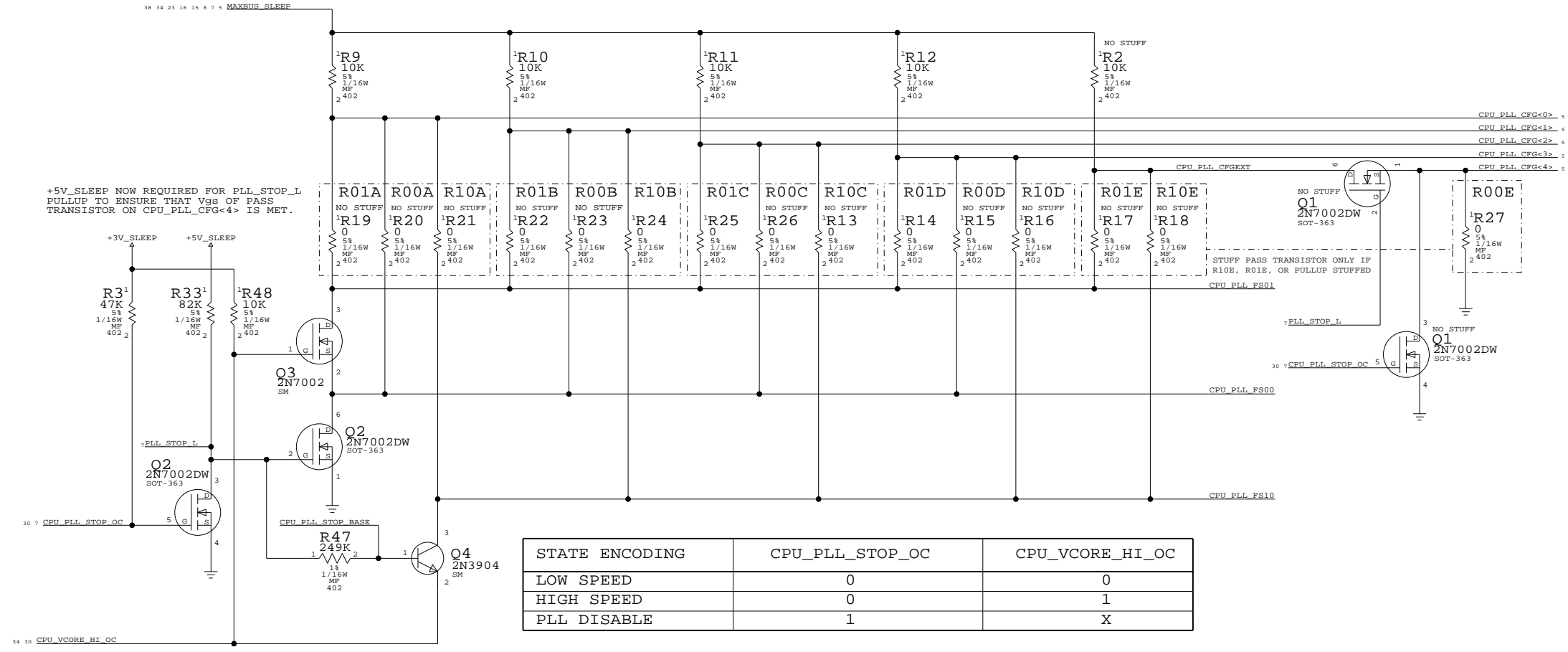
4

3

2

1

CPU PLL CONFIG CIRCUITRY



STATE ENCODING	CPU_PLL_STOP_OC	CPU_VCORE_HI_OC
LOW SPEED	0	0
HIGH SPEED	0	1
PLL DISABLE	1	X

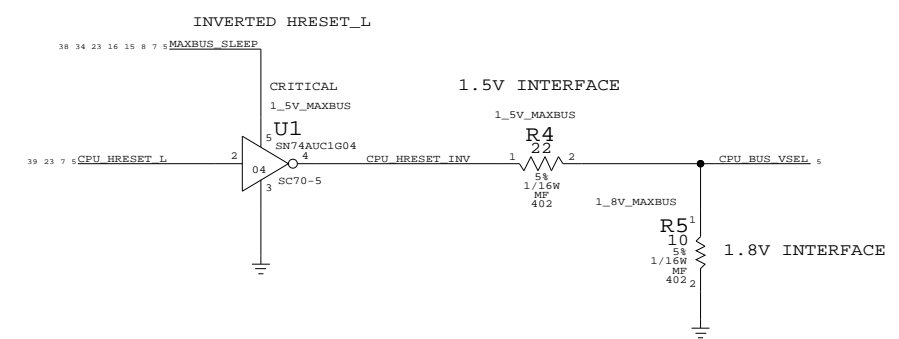
CPU FREQUENCY CONFIGURATION

APOLLO 7

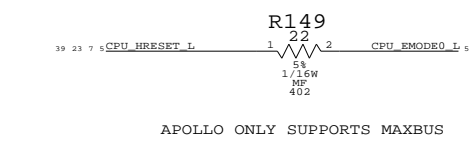
MULTIPLIER (Bus-to-Core)	CORE FREQUENCY (AT BUS FREQUENCY)		CPU_PLL_CFG E ABCD HEX
	167MHZ	133MHZ	
0.0X	PLL OFF		0 1111 0F
1.0X	PLL BYPASS		0 0011 03
2.0X	333	267	0 0100 04
3.0X	500	400	0 1000 08
4.0X	667	533	0 1010 0A
5.0X	833	667	0 1011 0B
5.5X	917	733	0 1001 09
6.0X	1000	800	0 1101 0D
6.5X	1083	867	0 0101 05
7.0X	1167	933	0 0010 02
7.5X	1250	1000	0 0001 01
8.0X	1333	1067	0 1100 0C
8.5X	1417	1133	0 0110 06
9.0X	1500	1200	1 0111 17
9.5X	1583	1267	0 0111 07
10.0X	1667	1333	1 1010 1A
10.5X	1750	1400	1 1000 18
11.0X	1833	1467	1 1001 19
11.5X	1917	1533	0 0000 00
12.0X	2000	1600	1 1011 1B
12.5X	2083	1667	1 1111 1F
13.0X	2167	1733	1 0101 15
13.5X	2250	1800	0 1110 0E
14.0X	2333	1867	1 1100 1C
15.0X	2500	2000	1 0001 11
16.0X	2667	2133	1 1101 1D
17.0X	2833	2267	1 0000 10
18.0X	3000	2400	1 0010 12
20.0X	3333	2667	1 0011 13
21.0X	3500	2800	1 0100 14
24.0X	4000	3200	1 0110 16
28.0X	4667	3733	1 1110 1E

CPU CONFIGURATION

MAXBUS VSEL



BUSTYPE SELECT



DESKTOP HAD PROBLEM USING INVERTER TO INVERT HRESET_L
NEED TO CHARACTERIZE

SIGNAL	TIED	APPLICATION
CPU_EMODE0_L (PROCESSOR)	HIGH	60X BUS MODE
	CPU_HRESET_L	MAX BUS MODE
CPU_BUS_VSEL (PROCESSOR)	CPU_HRESET_L	2.5V INTERFACE
	LOW	1.8V INTERFACE
	CPU_HRESET_INV	1.5V INTERFACE

CPU CONFIGURATION

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.

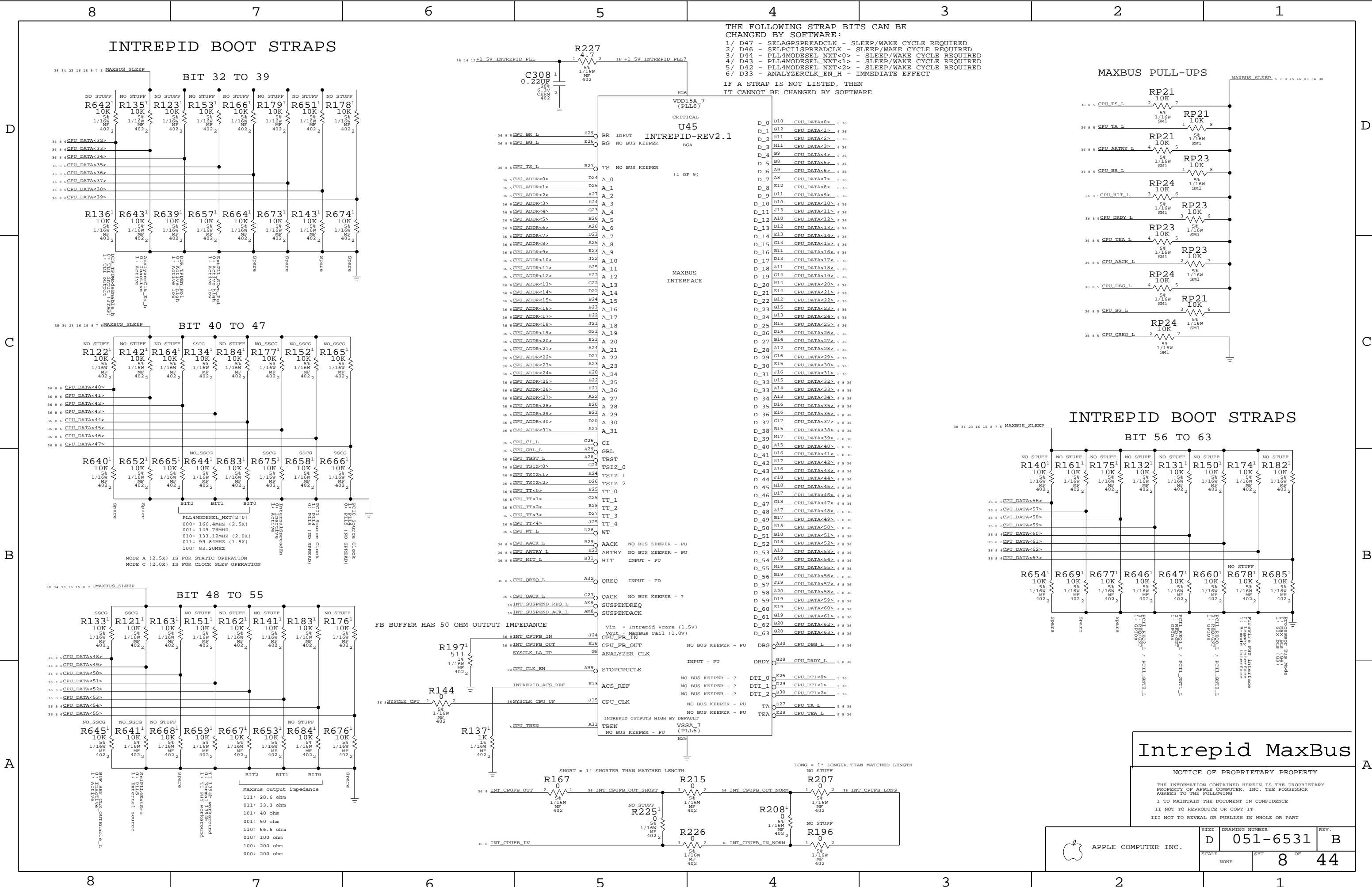
SIZE	DRAWING NUMBER	REV.
D	051-6531	B
SCALE	SHT	7 OF 44
NONE		

INTREPID BOOT STRAPS

THE FOLLOWING STRAP BITS CAN BE CHANGED BY SOFTWARE:

- 1/ D47 - SELAGPSPREADCLK - SLEEP/WAKE CYCLE REQUIRED
- 2/ D46 - SELPCILSPREADCLK - SLEEP/WAKE CYCLE REQUIRED
- 3/ D44 - PLL4MODESEL_NXT<0> - SLEEP/WAKE CYCLE REQUIRED
- 4/ D43 - PLL4MODESEL_NXT<1> - SLEEP/WAKE CYCLE REQUIRED
- 5/ D42 - PLL4MODESEL_NXT<2> - SLEEP/WAKE CYCLE REQUIRED
- 6/ D33 - ANALYZERCLK_EN_H - IMMEDIATE EFFECT

IF A STRAP IS NOT LISTED, THEN IT CANNOT BE CHANGED BY SOFTWARE



Intrepid MaxBus

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:

- TO MAINTAIN THE DOCUMENT IN CONFIDENCE
- NOT TO REPRODUCE OR COPY IT
- NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	8 OF 44

SERIES RESISTORS FOR CLOCK/CONTROL SIGNALS

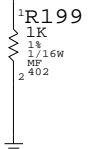
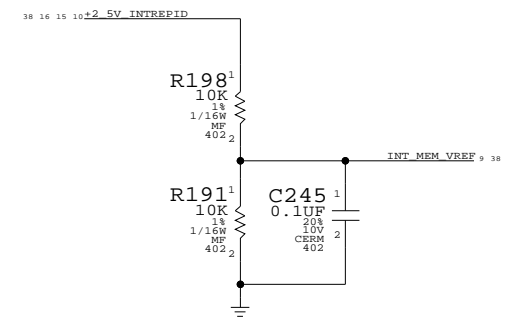
PINS ARE SWAPABLE FOR RPAKS

MEM_DATA<0>	AK32	DDR_DATA_0	DDR_A_0	H35	MEM_ADDR<0>
MEM_DATA<1>	AK33	DDR_DATA_1	DDR_A_1	G35	MEM_ADDR<1>
MEM_DATA<2>	AK31	DDR_DATA_2	DDR_A_2	G36	MEM_ADDR<2>
MEM_DATA<3>	AK35	DDR_DATA_3	DDR_A_3	F36	MEM_ADDR<3>
MEM_DATA<4>	AK36	DDR_DATA_4	DDR_A_4	F35	MEM_ADDR<4>
MEM_DATA<5>	AJ32	DDR_DATA_5	DDR_A_5	E35	MEM_ADDR<5>
MEM_DATA<6>	AJ35	DDR_DATA_6	DDR_A_6	E36	MEM_ADDR<6>
MEM_DATA<7>	AJ36	DDR_DATA_7	DDR_A_7	G32	MEM_ADDR<7>
MEM_DATA<8>	AG33	DDR_DATA_8	DDR_A_8	D36	MEM_ADDR<8>
MEM_DATA<9>	AG35	DDR_DATA_9	DDR_A_9	H36	MEM_ADDR<9>
MEM_DATA<10>	AH35	DDR_DATA_10	DDR_A_10	G33	MEM_ADDR<10>
MEM_DATA<11>	AG36	DDR_DATA_11	DDR_A_11	H33	MEM_ADDR<11>
MEM_DATA<12>	AH36	DDR_DATA_12	DDR_A_12	D35	MEM_ADDR<12>
MEM_DATA<13>	AH32	DDR_DATA_13	DDR_BA_0	L30	MEM_BA<0>
MEM_DATA<14>	AG32	DDR_DATA_14	DDR_BA_1	M29	MEM_BA<1>
MEM_DATA<15>	AG31	DDR_DATA_15	DDRC_S_0	AN34	MEM_CS_L<0>
MEM_DATA<16>	AE32	DDR_DATA_16	DDRC_S_1	AN36	MEM_CS_L<1>
MEM_DATA<17>	AF35	DDR_DATA_17	DDRC_S_2	AL35	MEM_CS_L<2>
MEM_DATA<18>	AF36	DDR_DATA_18	DDRC_S_3	AL33	MEM_CS_L<3>
MEM_DATA<19>	AE36	DDR_DATA_19	DDR_DQS_0	AJ31	MEM_DQS<0>
MEM_DATA<20>	AE35	DDR_DATA_20	DDR_DQS_1	AH31	MEM_DQS<1>
MEM_DATA<21>	AE33	DDR_DATA_21	DDR_DQS_2	AD32	MEM_DQS<2>
MEM_DATA<22>	AD36	DDR_DATA_22	DDR_DQS_3	AB30	MEM_DQS<3>
MEM_DATA<23>	AD35	DDR_DATA_23	DDR_DQS_4	V30	MEM_DQS<4>
MEM_DATA<24>	AA36	DDR_DATA_24	DDR_DQS_5	F32	MEM_DQS<5>
MEM_DATA<25>	AA35	DDR_DATA_25	DDR_DQS_6	M29	MEM_DQS<6>
MEM_DATA<26>	AA33	DDR_DATA_26	DDR_DQS_7	L32	MEM_DQS<7>
MEM_DATA<27>	AB36	DDR_DATA_27	DDR_DM_0	AJ33	MEM_DQM<0>
MEM_DATA<28>	AB35	DDR_DATA_28	DDR_DM_1	AH33	MEM_DQM<1>
MEM_DATA<29>	AC36	DDR_DATA_29	DDR_DM_2	AD33	MEM_DQM<2>
MEM_DATA<30>	AA32	DDR_DATA_30	DDR_DM_3	AC35	MEM_DQM<3>
MEM_DATA<31>	AB33	DDR_DATA_31	DDR_DM_4	F35	MEM_DQM<4>
MEM_DATA<32>	V36	DDR_DATA_32	DDR_DM_5	F33	MEM_DQM<5>
MEM_DATA<33>	U33	DDR_DATA_33	DDR_DM_6	G32	MEM_DQM<6>
MEM_DATA<34>	U32	DDR_DATA_34	DDR_DM_7	L33	MEM_DQM<7>
MEM_DATA<35>	V35	DDR_DATA_35	DDRRAS	L29	MEM_RAS_L
MEM_DATA<36>	T30	DDR_DATA_36	DDRCAS	H32	MEM_CAS_L
MEM_DATA<37>	U36	DDR_DATA_37	DDRWE	K30	MEM_WE_L
MEM_DATA<38>	U35	DDR_DATA_38	DDRCKE0	AN35	MEM_CKE<0>
MEM_DATA<39>	T36	DDR_DATA_39	DDRCKE1	AM35	MEM_CKE<1>
MEM_DATA<40>	F33	DDR_DATA_40	DDRCKE2	AM36	MEM_CKE<2>
MEM_DATA<41>	R30	DDR_DATA_41	DDRCKE3	AL36	MEM_CKE<3>
MEM_DATA<42>	F35	DDR_DATA_42	DDR_SELHI_0	AB32	MEM_MUXSEL_H<0>
MEM_DATA<43>	F36	DDR_DATA_43	DDR_SELHI_1	AE29	MEM_MUXSEL_H<1>
MEM_DATA<44>	R36	DDR_DATA_44	DDR_SELLO_0	N30	MEM_MUXSEL_L<0>
MEM_DATA<45>	R35	DDR_DATA_45	DDR_SELLO_1	T32	MEM_MUXSEL_L<1>
MEM_DATA<46>	R33	DDR_DATA_46	DDR_MCLK_0_P	Y32	SYSCLK_DDRCLK_A0_UF
MEM_DATA<47>	R32	DDR_DATA_47	DDR_MCLK_0_N	Y33	SYSCLK_DDRCLK_A0_L_UF
MEM_DATA<48>	N35	DDR_DATA_48	DDR_MCLK_1_P	Y35	SYSCLK_DDRCLK_A1_UF
MEM_DATA<49>	M36	DDR_DATA_49	DDR_MCLK_1_N	Y36	SYSCLK_DDRCLK_A1_L_UF
MEM_DATA<50>	L35	DDR_DATA_50	DDR_MCLK_2_P	Y30	INT_DDRCLK2_P_TP
MEM_DATA<51>	M35	DDR_DATA_51	DDR_MCLK_2_N	Y30	INT_DDRCLK2_N_TP
MEM_DATA<52>	M33	DDR_DATA_52	DDR_MCLK_3_P	W32	SYSCLK_DDRCLK_B0_UF
MEM_DATA<53>	L36	DDR_DATA_53	DDR_MCLK_3_N	W33	SYSCLK_DDRCLK_B0_L_UF
MEM_DATA<54>	N33	DDR_DATA_54	DDR_MCLK_4_P	Y32	SYSCLK_DDRCLK_B1_UF
MEM_DATA<55>	M30	DDR_DATA_55	DDR_MCLK_4_N	Y32	SYSCLK_DDRCLK_B1_L_UF
MEM_DATA<56>	J32	DDR_DATA_56	DDR_MCLK_5_P	W35	INT_DDRCLK5_P_TP
MEM_DATA<57>	J33	DDR_DATA_57	DDR_MCLK_5_N	W36	INT_DDRCLK5_N_TP
MEM_DATA<58>	J35	DDR_DATA_58	DDR_REF	AA22	INT_MEM_REF_H
MEM_DATA<59>	K32	DDR_DATA_59	DDR_VREF_0	Y22	INT_MEM_VREF
MEM_DATA<60>	K33	DDR_DATA_60	DDR_VREF_1	T22	
MEM_DATA<61>	J36	DDR_DATA_61			
MEM_DATA<62>	K36	DDR_DATA_62			
MEM_DATA<63>	K35	DDR_DATA_63			

CRITICAL
U45
INTREPID-REV2.1
BSA
(2 OF 9)

DDR MEMORY INTERFACE

MEM_VREF



CLOCKS

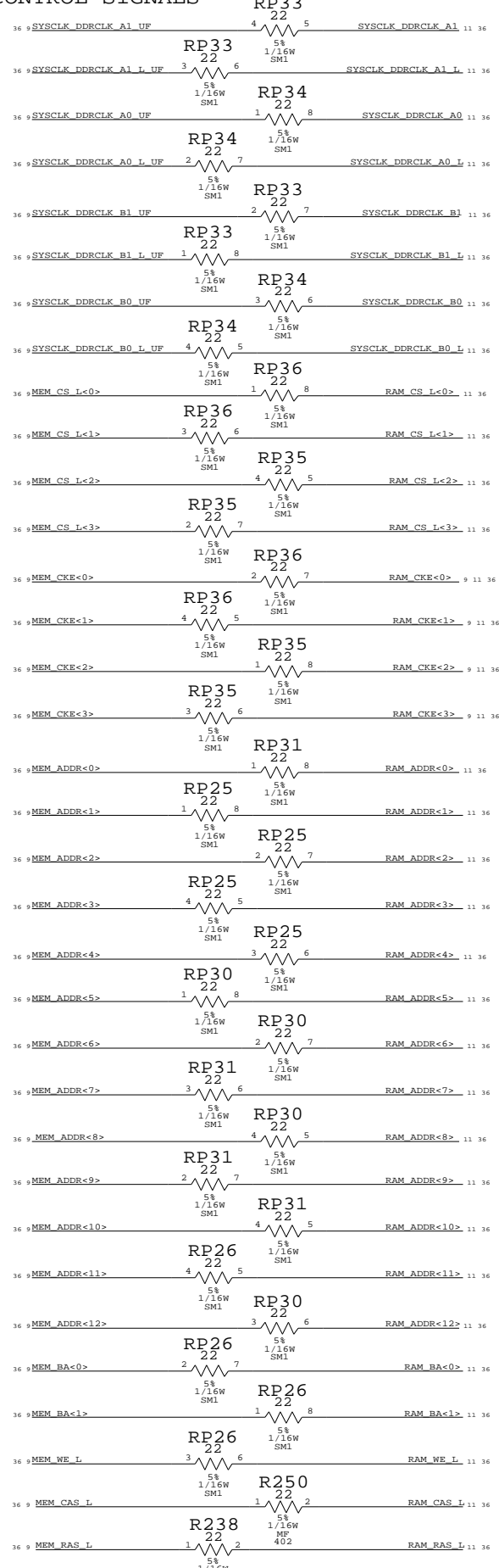
CS

CKE

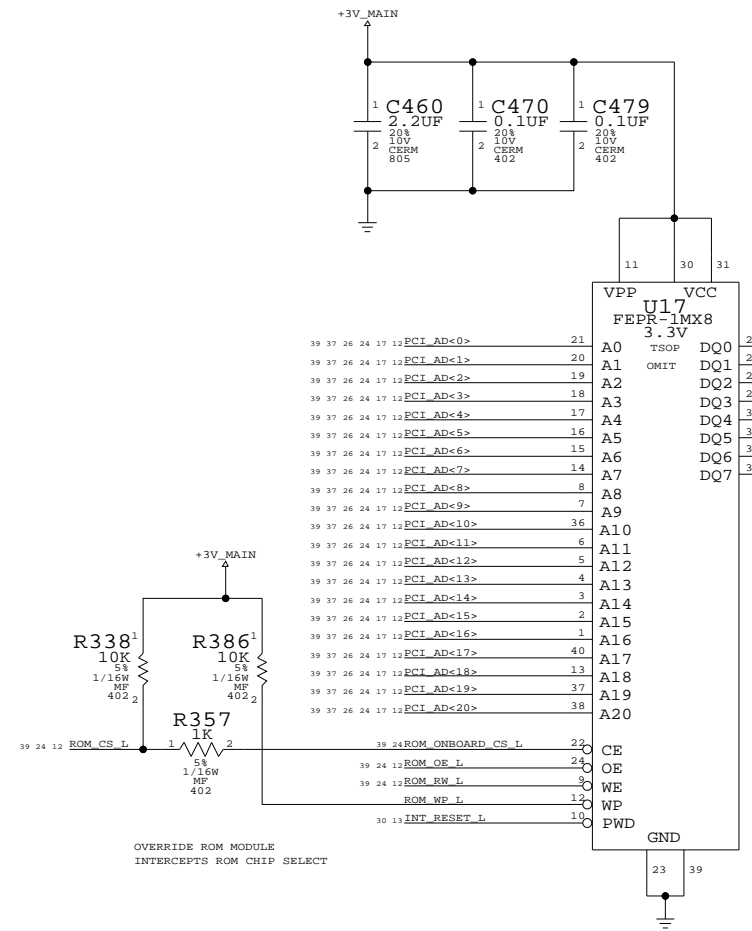
ADDR

BA

CNTL

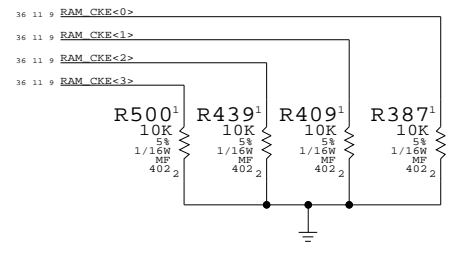


1MB BOOT ROM



OVERWRITE ROM MODULE
INTERCEPTS ROM CHIP SELECT

PULL-DOWN RESISTORS TO ENSURE
CKE STAYS LOW AFTER INTREPID
2.5V I/O SHUTS OFF

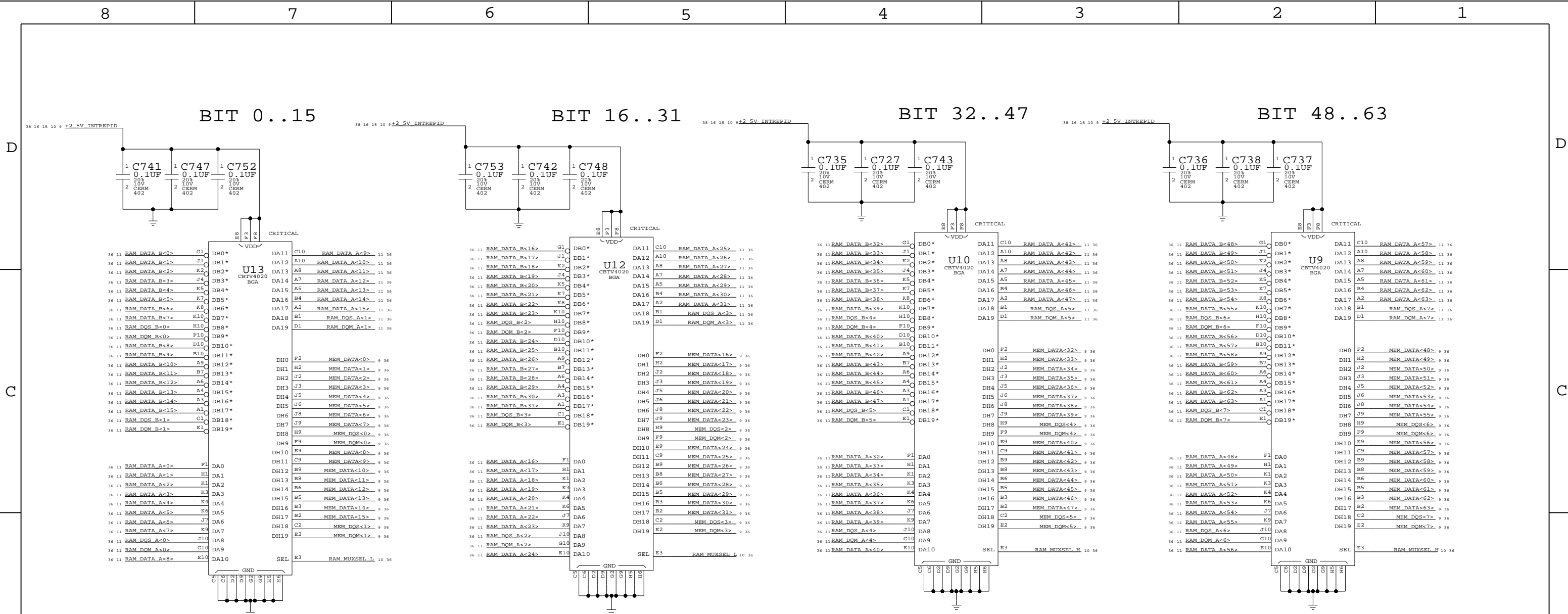


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S1336	1	BOOTROM,P84	U17	CRITICAL	?

INT - DDR/BOOTROM

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SCALE	DRAWING NUMBER	REV.
	NONE	D 051-6531	B
		SHT	OF
		9	44



SEL = LOW; HOST = B PORT; A PORT = 100OHM TO GND
 SEL = HIGH; HOST = A PORT; B PORT = 100OHM TO GND
 MEM_MUXSEL_H<0> AND MEM_MUXSEL_L<0> ARE ACTIVE LOW
 MEM_MUXSEL_H<1> AND MEM_MUXSEL_L<1> ARE ACTIVE HIGH

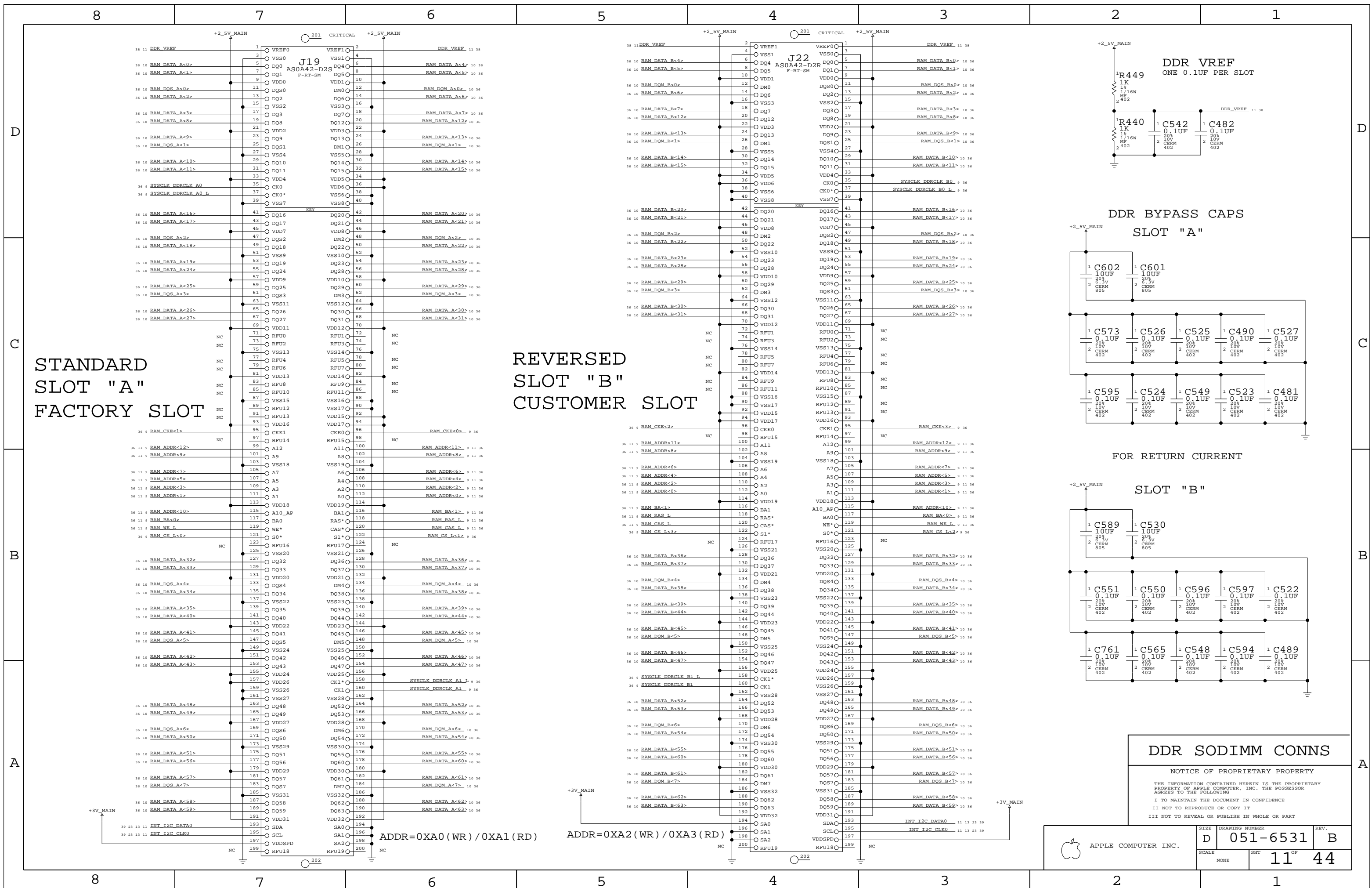
ADDED 0 OHM RESISTORS IN CASE POLARITY IS WRONG



16BIT 2:1 DDR MUXES

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	10 ^{OF} 44	
NONE			



STANDARD
SLOT "A"
FACTORY SLOT

REVERSED
SLOT "B"
CUSTOMER SLOT

DDR VREF
ONE 0.1UF PER SLOT

DDR BYPASS CAPS
SLOT "A"

FOR RETURN CURRENT

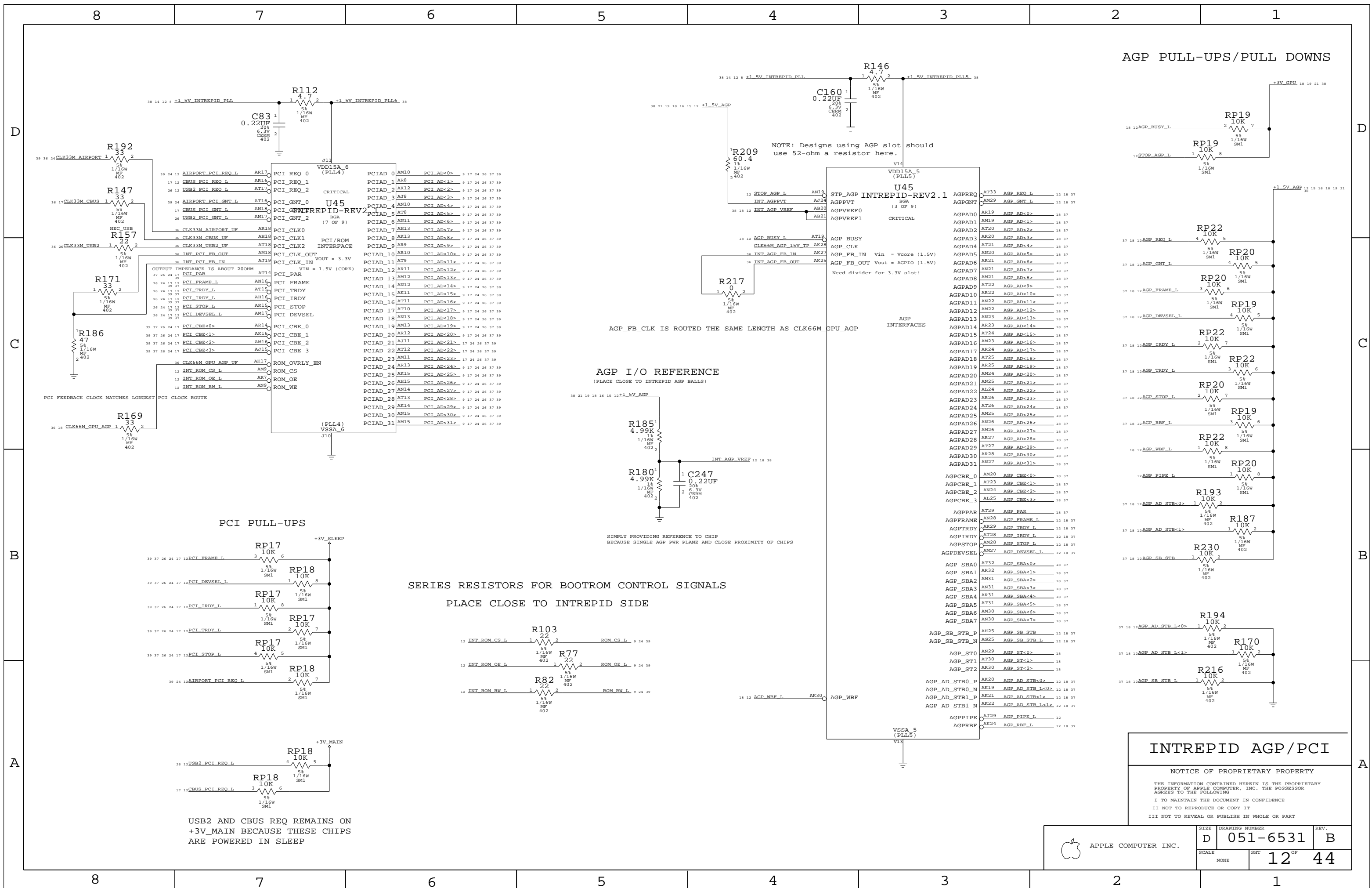
SLOT "B"

DDR SODIMM CONNS

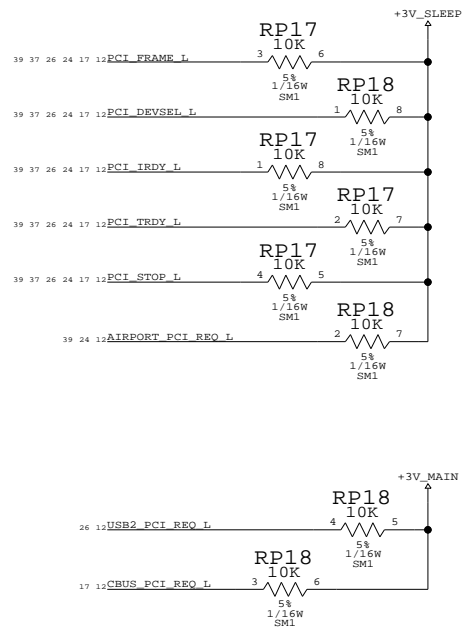
NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6531	REV. B
	SCALE NONE	SHT 11 OF 44	

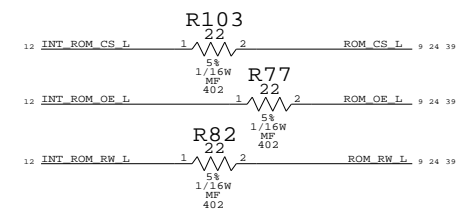


PCI PULL-UPS

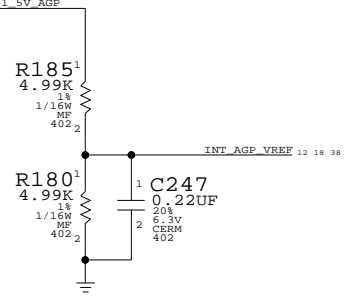


USB2 AND CBUS REQ REMAINS ON +3V_MAIN BECAUSE THESE CHIPS ARE POWERED IN SLEEP

SERIES RESISTORS FOR BOOTROM CONTROL SIGNALS
PLACE CLOSE TO INTREPID SIDE



AGP I/O REFERENCE
(PLACE CLOSE TO INTREPID AGP BALLS)



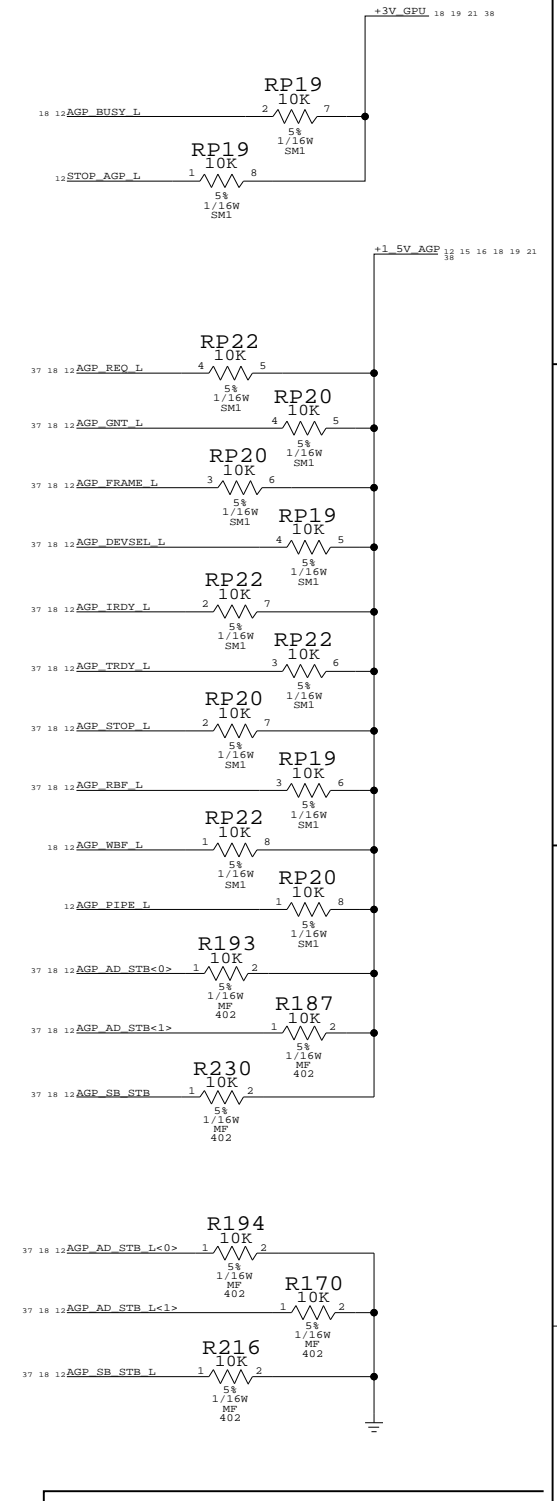
SIMPLY PROVIDING REFERENCE TO CHIP BECAUSE SINGLE AGP PWR PLANE AND CLOSE PROXIMITY OF CHIPS

NOTE: Designs using AGP slot should use 52-ohm a resistor here.

Need divider for 3.3V slot!

AGP INTERFACES

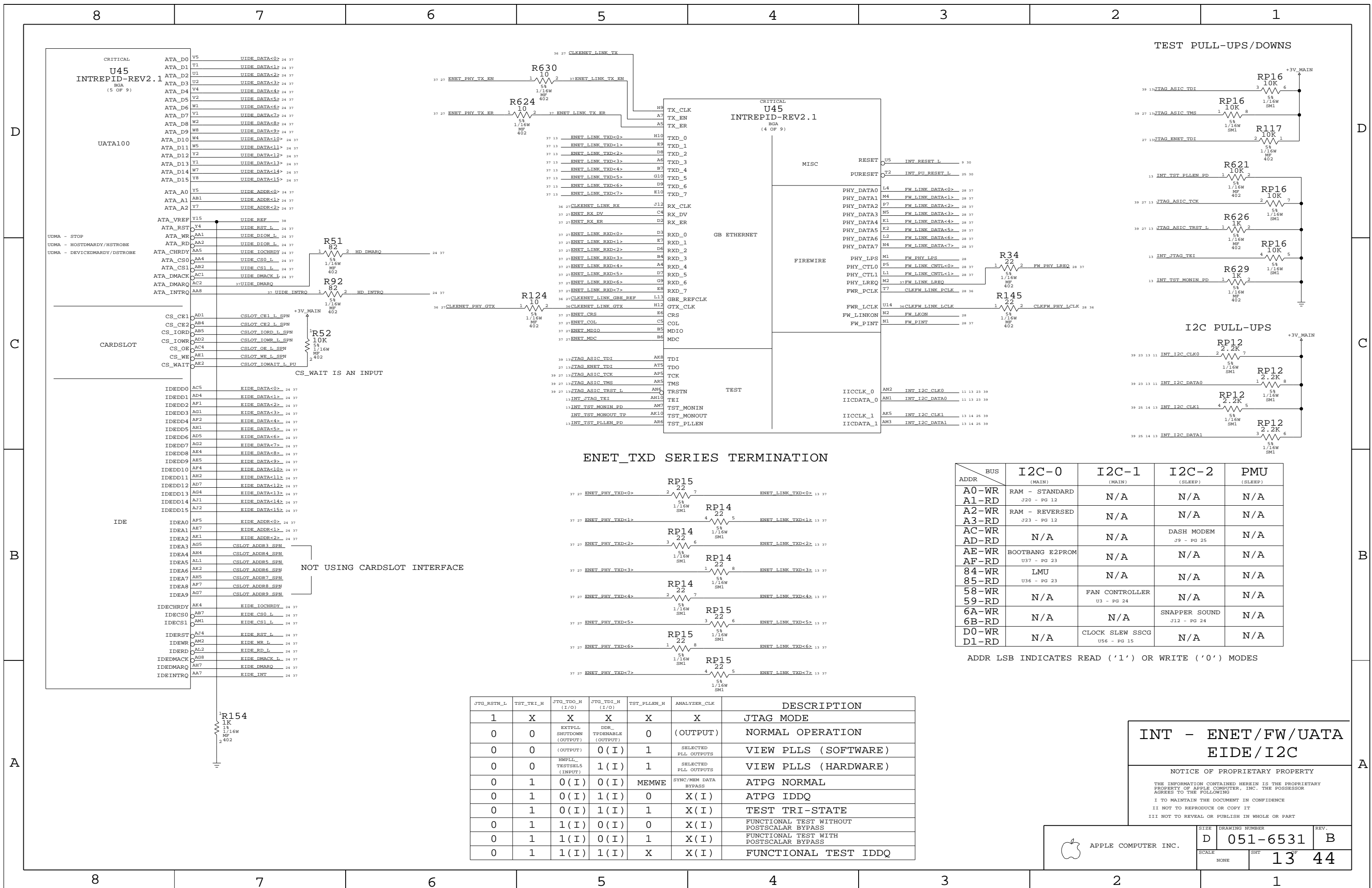
AGP PULL-UPS/PULL DOWNS



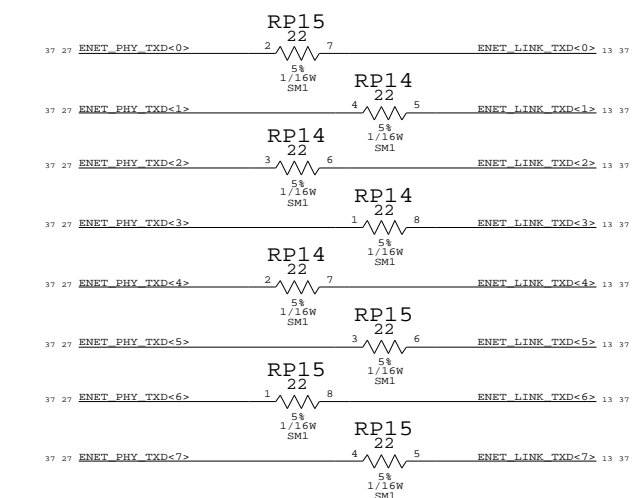
INTREPID AGP/PCI

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART



ENET_TXD SERIES TERMINATION



JTAG_RSTN_L	TST_TEI_H	JTAG_TDO_H (I/O)	JTAG_TDI_H (I/O)	TST_PLLEN_H	ANALYZER_CLK	DESCRIPTION
1	X	X	X	X	X	JTAG MODE
0	0	EXTPLL SHUTDOWN (OUTPUT)	DDR_TPDENABLE (OUTPUT)	0	(OUTPUT)	NORMAL OPERATION
0	0	(OUTPUT)	0 (I)	1	SELECTED PLL OUTPUTS	VIEW PLLS (SOFTWARE)
0	0	HWPLL_TESTSEL5 (INPUT)	1 (I)	1	SELECTED PLL OUTPUTS	VIEW PLLS (HARDWARE)
0	1	0 (I)	0 (I)	MEMWE	SYNC/MEM DATA BYPASS	ATPG NORMAL
0	1	0 (I)	1 (I)	0	X (I)	ATPG IDDQ
0	1	0 (I)	1 (I)	1	X (I)	TEST TRI-STATE
0	1	1 (I)	0 (I)	0	X (I)	FUNCTIONAL TEST WITHOUT POSTSCALAR BYPASS
0	1	1 (I)	0 (I)	1	X (I)	FUNCTIONAL TEST WITH POSTSCALAR BYPASS
0	1	1 (I)	1 (I)	X	X (I)	FUNCTIONAL TEST IDDQ

BUS	I2C-0 (MAIN)	I2C-1 (MAIN)	I2C-2 (SLEEP)	PMU (SLEEP)
A0-WR	RAM - STANDARD	N/A	N/A	N/A
A1-RD	J20 - PG 12	N/A	N/A	N/A
A2-WR	RAM - REVERSED	N/A	N/A	N/A
A3-RD	J23 - PG 12	N/A	N/A	N/A
AC-WR	N/A	N/A	DASH MODEM	N/A
AD-RD	N/A	N/A	J9 - PG 25	N/A
AE-WR	BOOTBANG E2PROM	N/A	N/A	N/A
AF-RD	U37 - PG 23	N/A	N/A	N/A
84-WR	LMU	N/A	N/A	N/A
85-RD	U36 - PG 23	N/A	N/A	N/A
58-WR	N/A	FAN CONTROLLER	N/A	N/A
59-RD	N/A	U3 - PG 24	N/A	N/A
6A-WR	N/A	N/A	SNAPPER SOUND	N/A
6B-RD	N/A	N/A	J12 - PG 24	N/A
D0-WR	N/A	CLOCK SLEW SSCG	N/A	N/A
D1-RD	N/A	U56 - PG 15	N/A	N/A

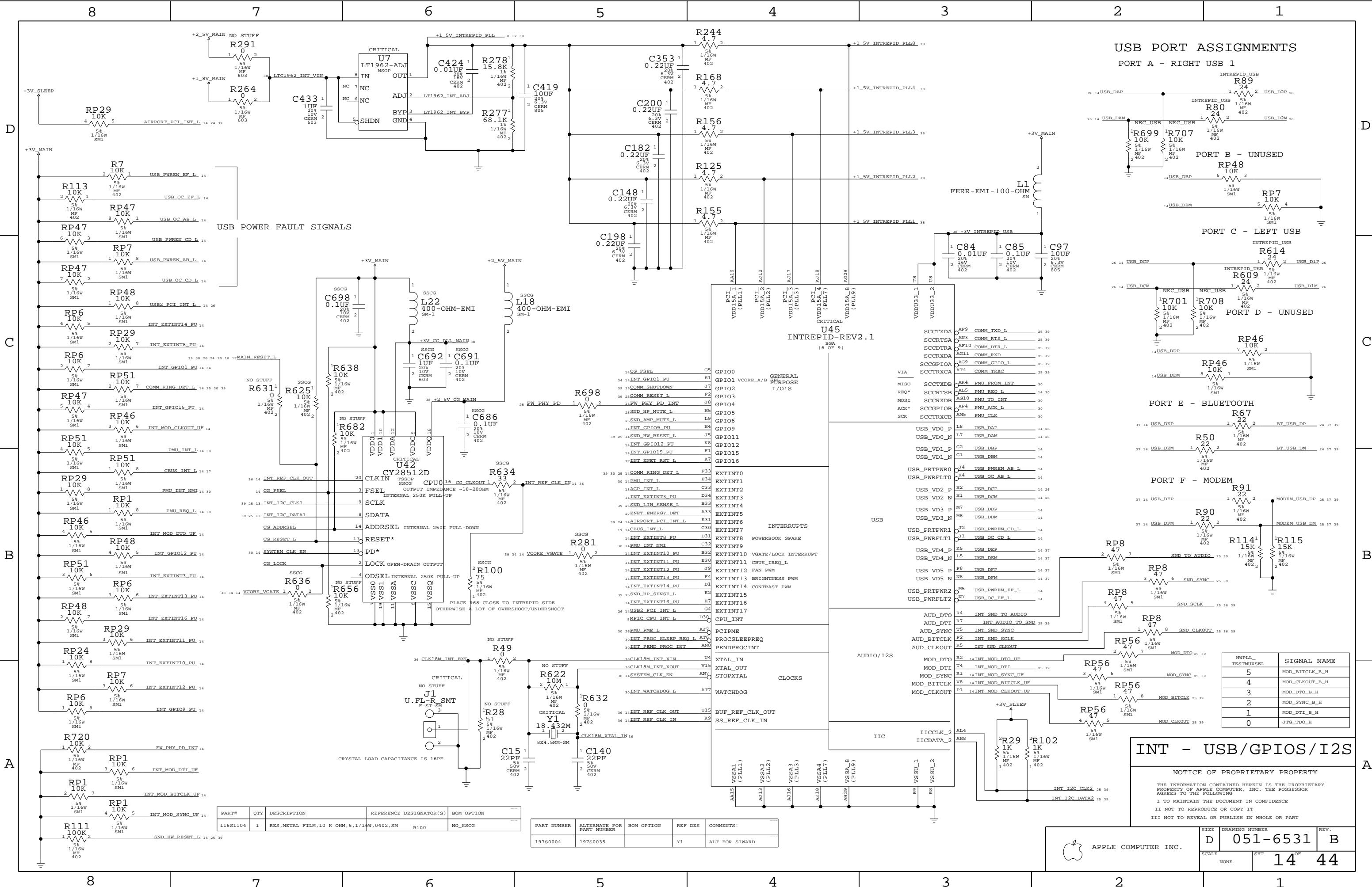
ADDR LSB INDICATES READ ('1') OR WRITE ('0') MODES

INT - ENET/FW/UATA EIDE/I2C

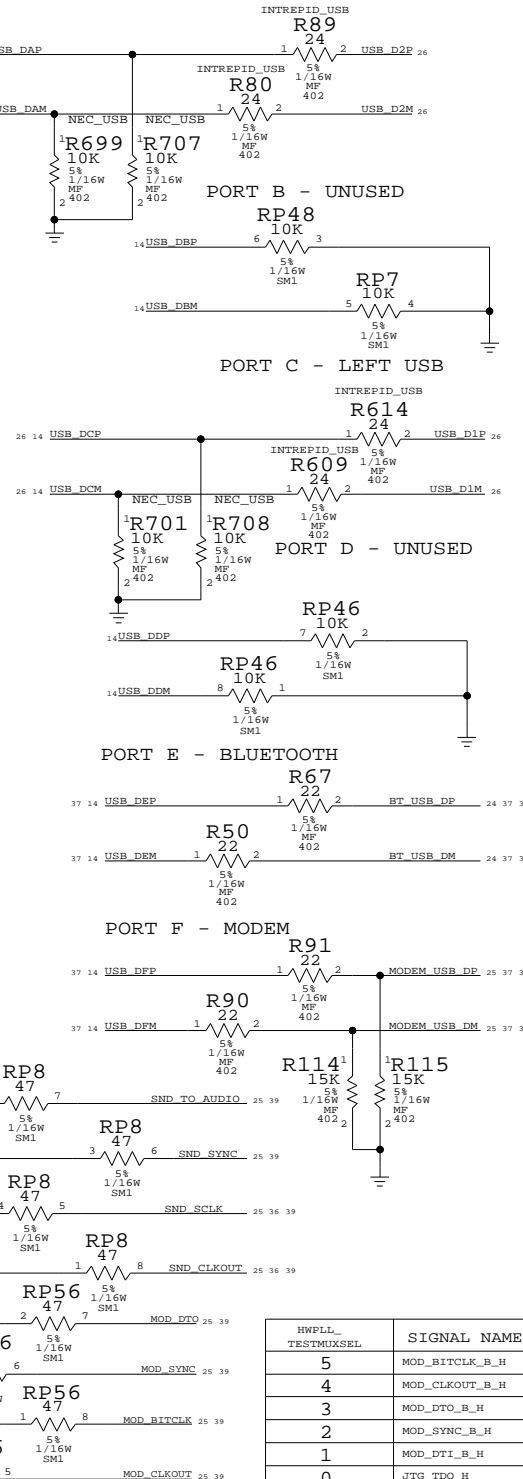
NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

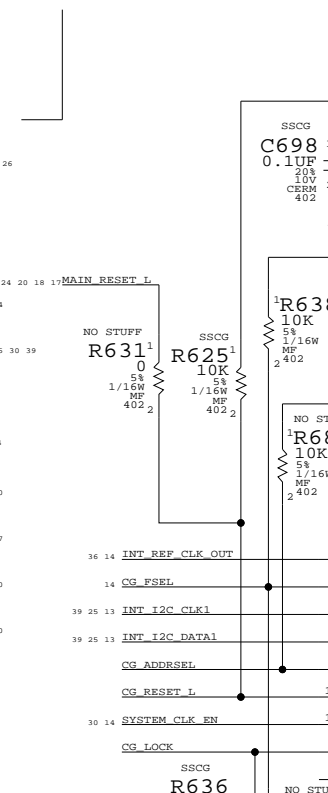
APPLE COMPUTER INC. DRAWING NUMBER: D 051-6531 B SCALE: NONE SHEET: 13 OF 44



USB PORT ASSIGNMENTS



USB POWER FAULT SIGNALS



INT - USB/GPIOS/I2S

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

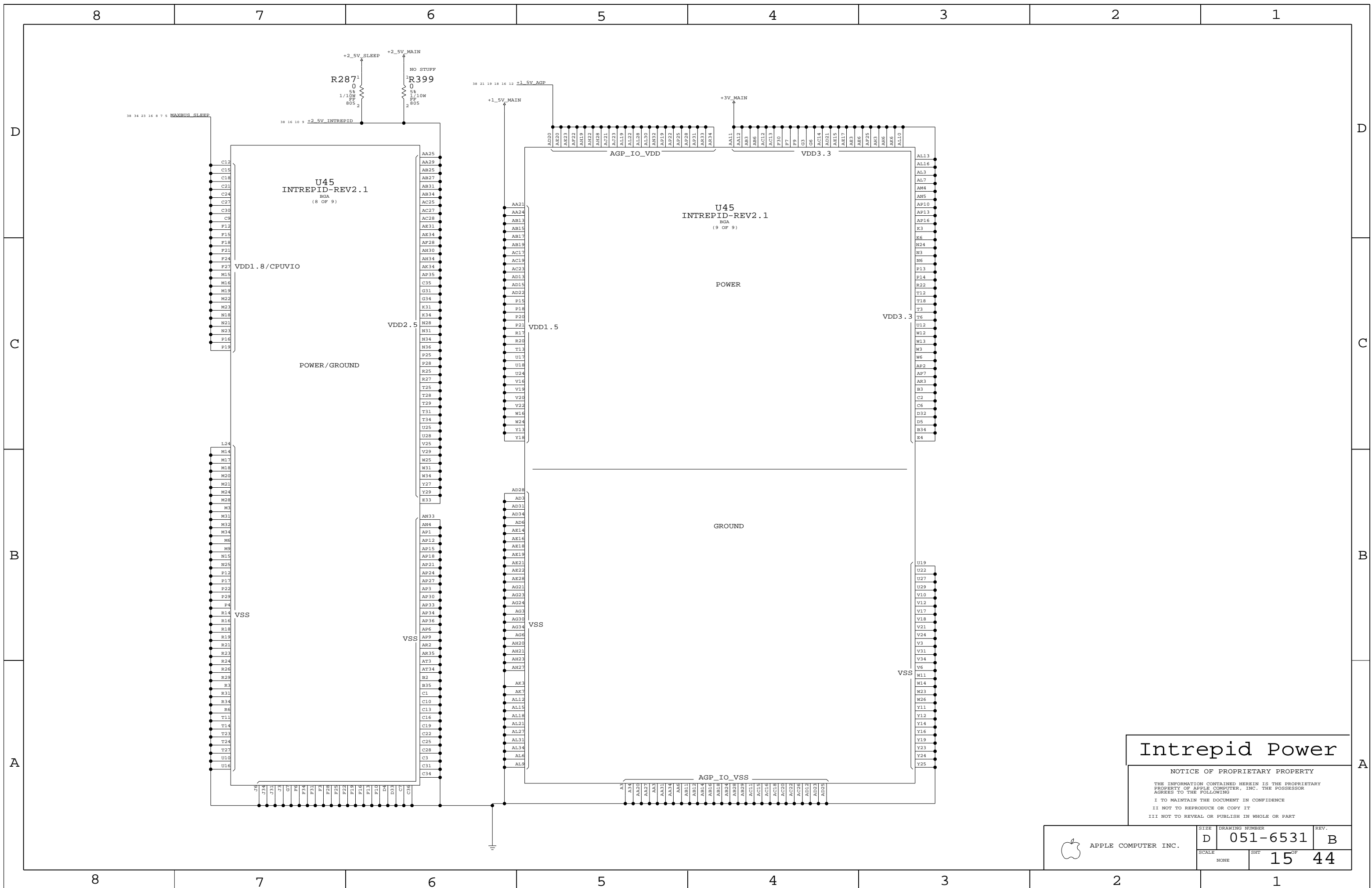
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
116S1104	1	RES, METAL FILM, 10 K OHM, 5, 1/16W, 0402, SM	R100	NO_SSCG

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0004	197S0035		Y1	ALT FOR SIWARD

APPLE COMPUTER INC.

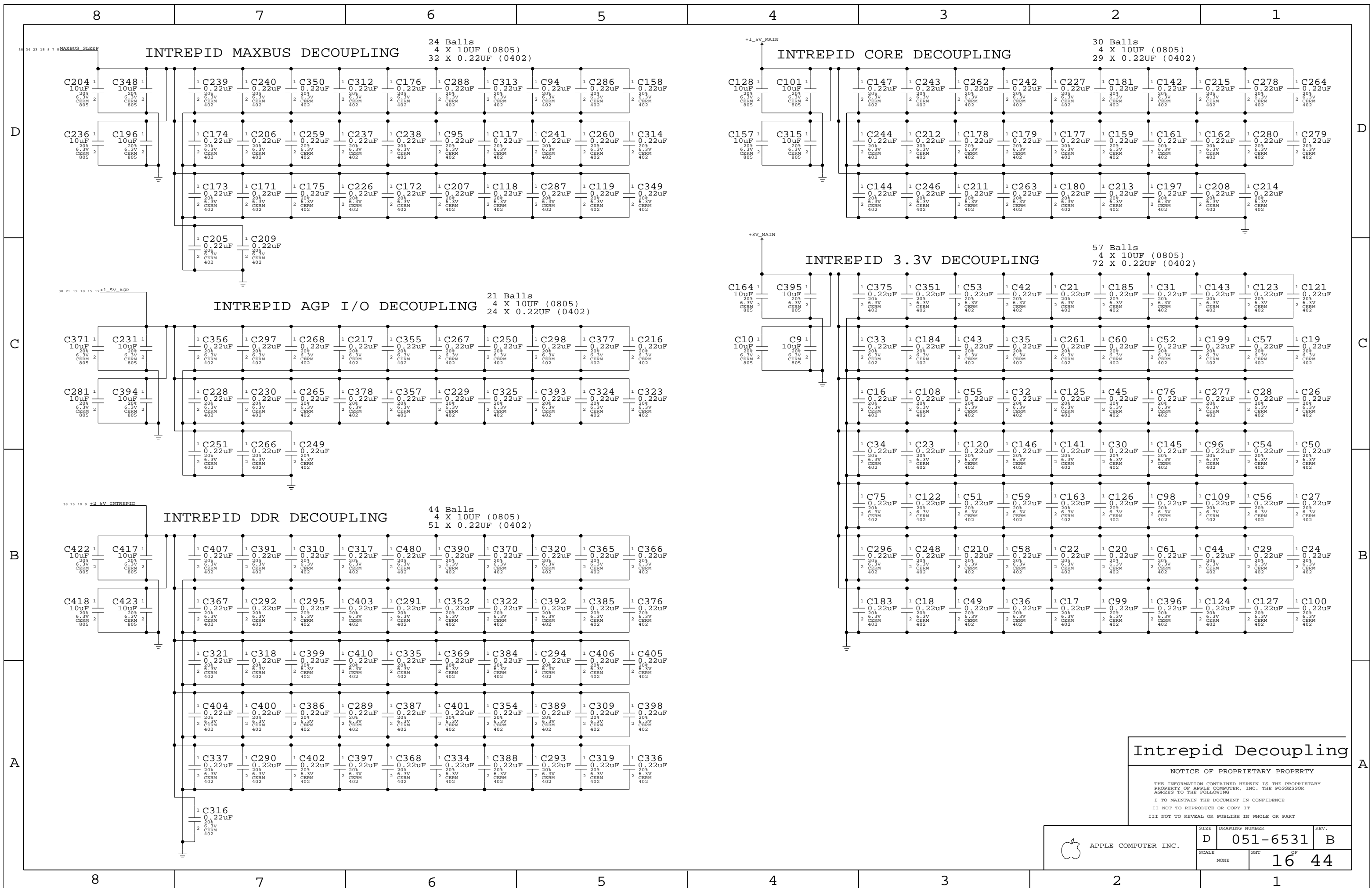
SIZE	D	DRAWING NUMBER	051-6531	REV.	B
SCALE	NONE	SHT	14	OF	44



Intrepid Power

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	NONE	15 OF 44	B

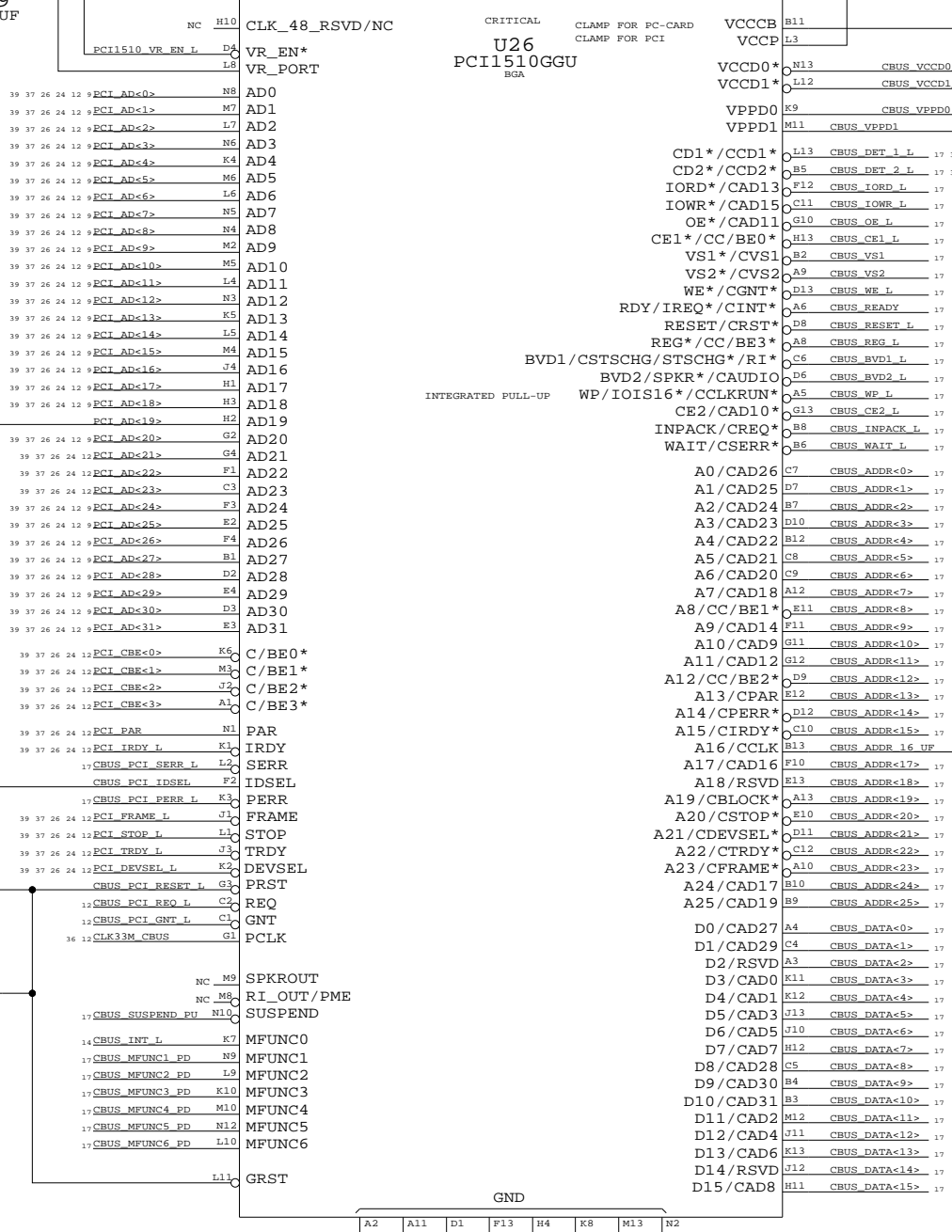
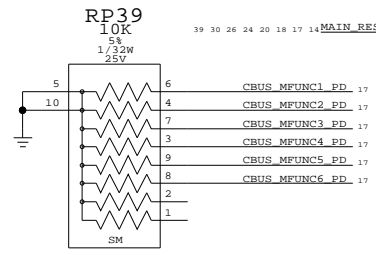
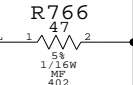
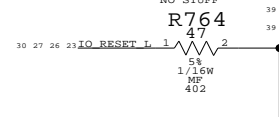
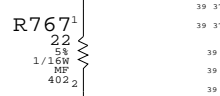
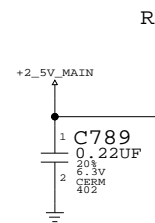
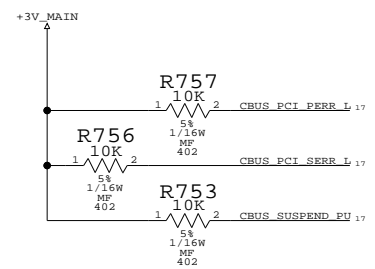


Intrepid Decoupling

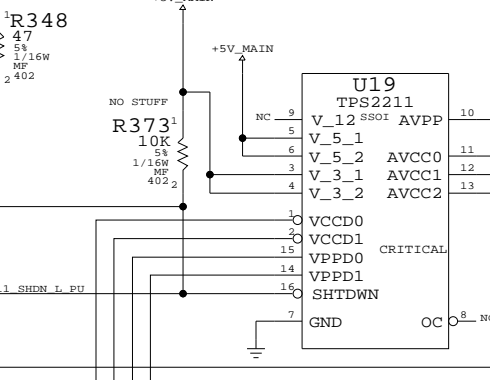
NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	NONE	D 051-6531	B
SCALE		SHT	OF
NONE		16	44

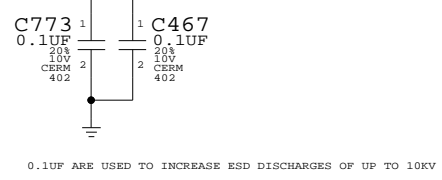
PCI1510 PULL-UPS



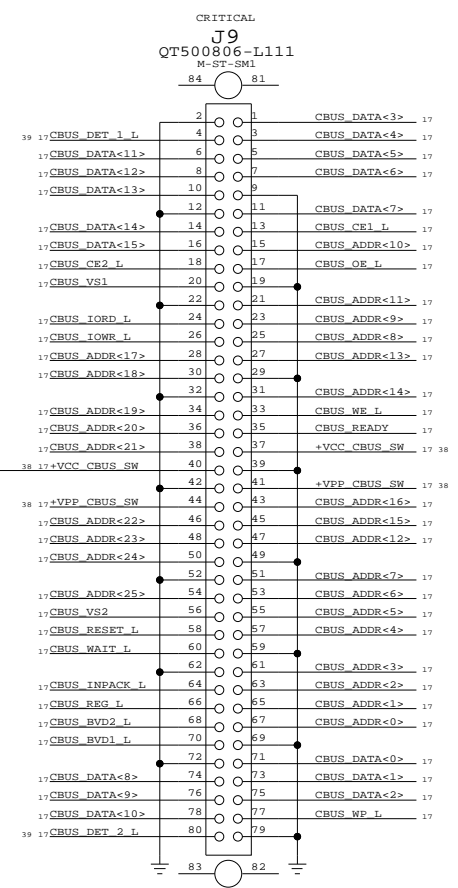
THIS PROPERLY SHUTS DOWN CARDBUS POWER FOR PSUEDO-D3COLD



MAKE SURE VCC AND VPP ARE WIDE PLANE/TRACES TO MINIMIZE INDUCTANCE!



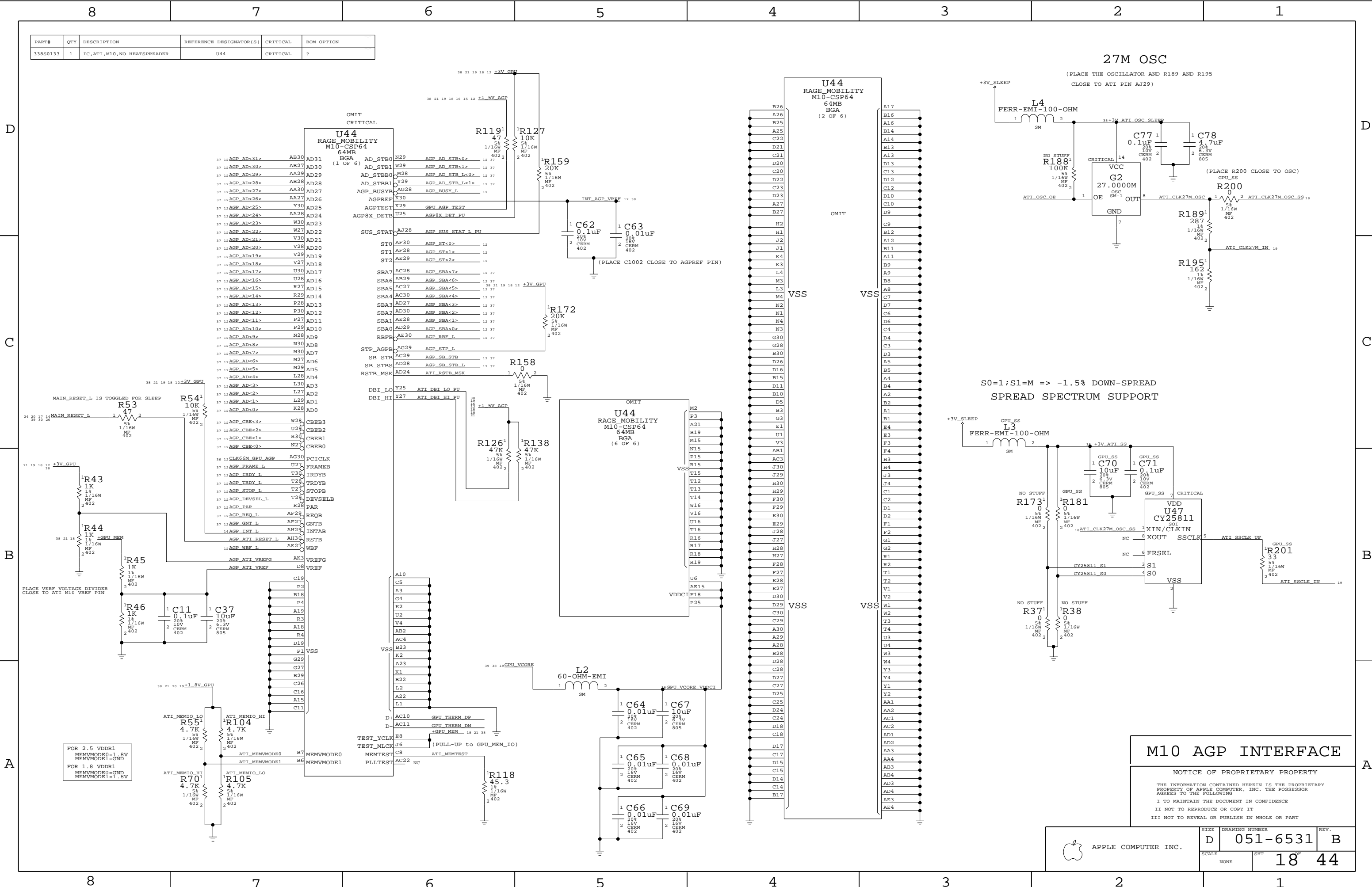
PC CARD/CARDBUS CONNECTOR



CARDBUS NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

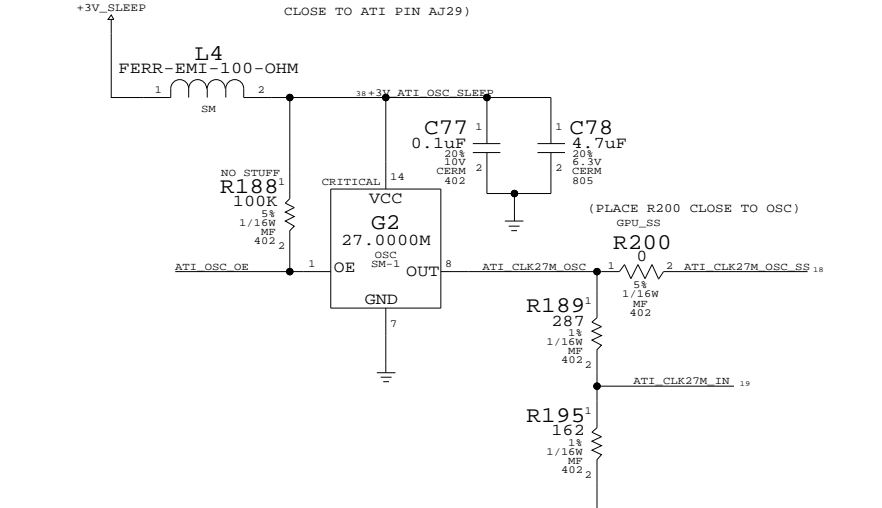
Table with columns for Apple Computer Inc., Drawing Number (D 051-6531), Scale (NONE), and Sheet (17 of 44).

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S0133	1	IC, ATI, M10, NO HEATSPREADER	U44	CRITICAL	7

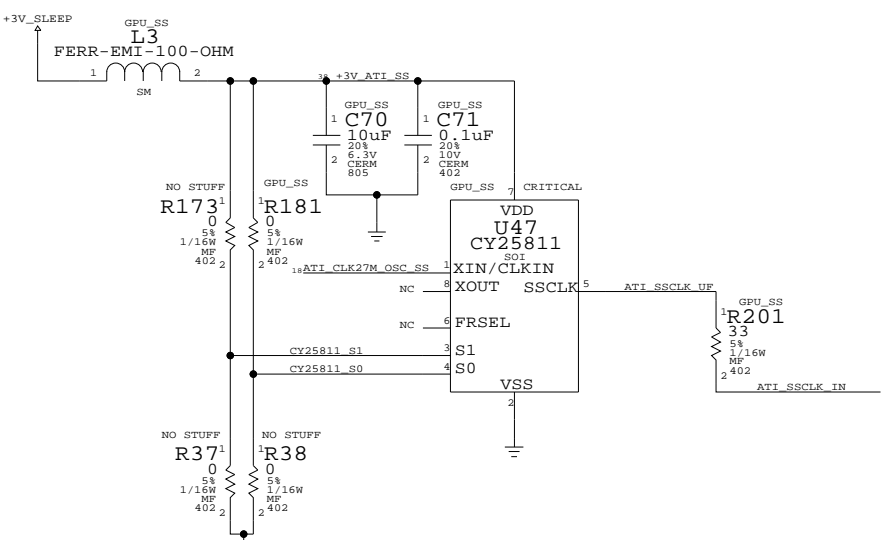


27M OSC

(PLACE THE OSCILLATOR AND R189 AND R195 CLOSE TO ATI PIN AJ29)



S0=1;S1=M => -1.5% DOWN-SPREAD
SPREAD SPECTRUM SUPPORT



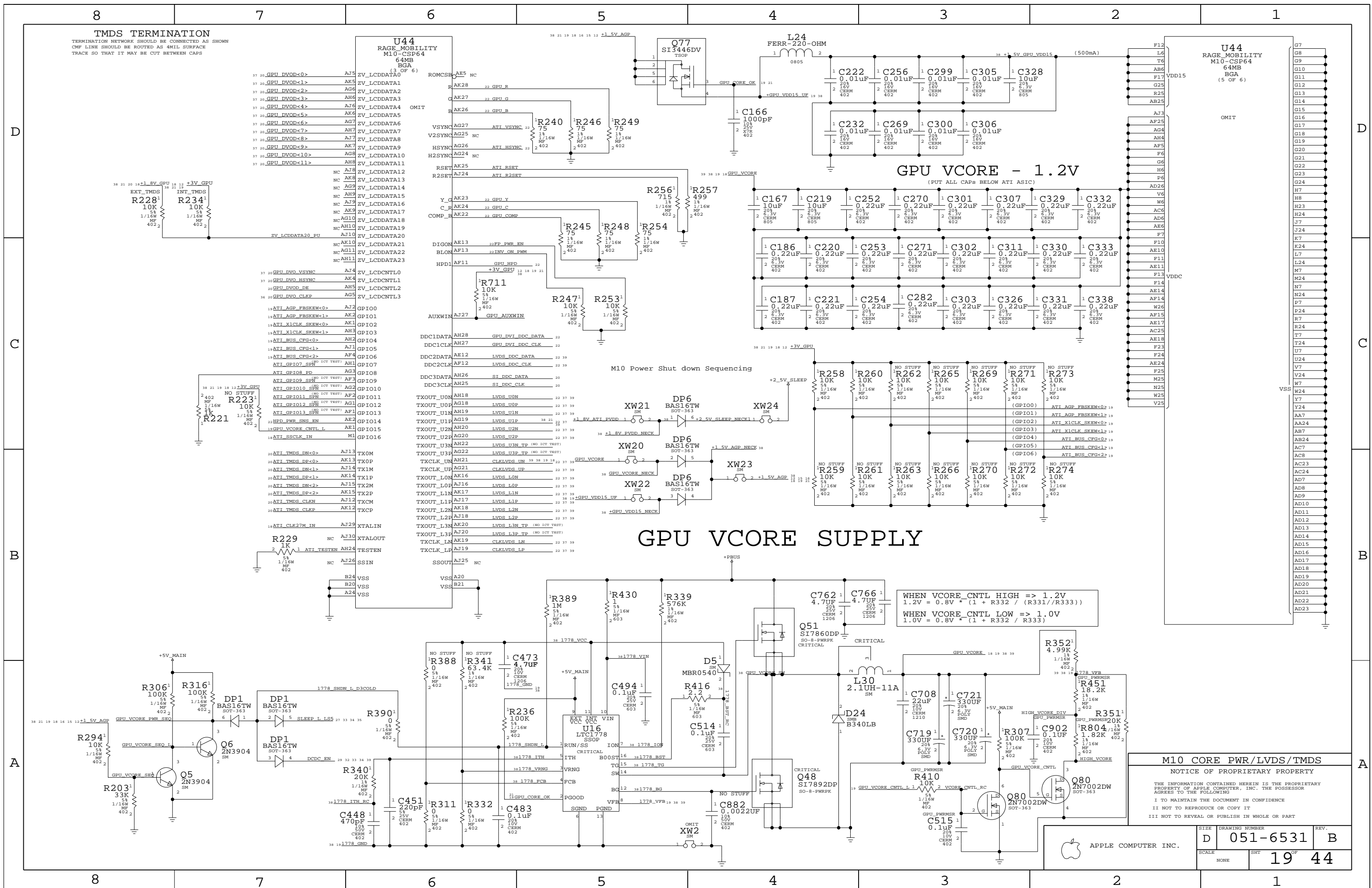
M10 AGP INTERFACE

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	18 OF 44	
NONE			

FOR 2.5 VDDR1
MEMVMODE0=1.8V
MEMVMODE1=GND

FOR 1.8 VDDR1
MEMVMODE0=GND
MEMVMODE1=1.8V



TMDS TERMINATION
 TERMINATION NETWORK SHOULD BE CONNECTED AS SHOWN
 CMP LINE SHOULD BE ROUTED AS 4MIL SURFACE
 TRACE SO THAT IT MAY BE CUT BETWEEN CAPS

U44 RAGE MOBILITY M10-CSP64 64MB BGA (5 OF 6)

37 GPU_DVOD<0>	AJ5	ZV_LCDDATA0
37 GPU_DVOD<1>	AK5	ZV_LCDDATA1
37 GPU_DVOD<2>	AG6	ZV_LCDDATA2
37 GPU_DVOD<3>	AH6	ZV_LCDDATA3
37 GPU_DVOD<4>	AJ6	ZV_LCDDATA4
37 GPU_DVOD<5>	AK6	ZV_LCDDATA5
37 GPU_DVOD<6>	AG7	ZV_LCDDATA6
37 GPU_DVOD<7>	AH7	ZV_LCDDATA7
37 GPU_DVOD<8>	AJ7	ZV_LCDDATA8
37 GPU_DVOD<9>	AK7	ZV_LCDDATA9
37 GPU_DVOD<10>	AG8	ZV_LCDDATA10
37 GPU_DVOD<11>	AH8	ZV_LCDDATA11
NC	AJ8	ZV_LCDDATA12
NC	AK8	ZV_LCDDATA13
NC	AG9	ZV_LCDDATA14
NC	AH9	ZV_LCDDATA15
NC	AJ9	ZV_LCDDATA16
NC	AK9	ZV_LCDDATA17
NC	AG10	ZV_LCDDATA18
NC	AH10	ZV_LCDDATA19
NC	AJ10	ZV_LCDDATA20
NC	AK10	ZV_LCDDATA21
NC	AG11	ZV_LCDDATA22
NC	AH11	ZV_LCDDATA23
37 GPU_DVO_VSYNC	AJ4	ZV_LCDCNTL0
37 GPU_DVO_HSYNC	AK4	ZV_LCDCNTL1
37 GPU_DVO_DE	AH5	ZV_LCDCNTL2
36 GPU_DVO_CLKP	AG5	ZV_LCDCNTL3
19 ATI_AGP_FBSKEW<0>	AJ2	GPIO0
19 ATI_AGP_FBSKEW<1>	AK2	GPIO1
19 ATI_X1CLK_SKEW<0>	AK1	GPIO2
19 ATI_X1CLK_SKEW<1>	AH3	GPIO3
19 ATI_BUS_CFG<0>	AH2	GPIO4
19 ATI_BUS_CFG<1>	AJ1	GPIO5
19 ATI_BUS_CFG<2>	AF4	GPIO6
ATI_GPIO7_SPN	AH1	GPIO7
ATI_GPIO8_SPN	AG3	GPIO8
ATI_GPIO9_SPN	AF3	GPIO9
ATI_GPIO10_SPN	AG2	GPIO10
ATI_GPIO11_SPN	AF2	GPIO11
ATI_GPIO12_SPN	AG1	GPIO12
ATI_GPIO13_SPN	AF1	GPIO13
HPD_PWR_SNS_EN	AE2	GPIO14
GPU_VCORE_CNTL_L	AE1	GPIO15
ATI_SSCLK_IN	M1	GPIO16
20 ATI_TMDS_DN<0>	AJ13	TX0M
20 ATI_TMDS_DP<0>	AK13	TX0P
20 ATI_TMDS_DN<1>	AJ14	TX1M
20 ATI_TMDS_DP<1>	AK14	TX1P
20 ATI_TMDS_DN<2>	AJ15	TX2M
20 ATI_TMDS_DP<2>	AK15	TX2P
20 ATI_TMDS_CLKN	AJ12	TXCM
20 ATI_TMDS_CLKP	AK12	TXCP
18 ATI_CLK27M_IN	AJ29	XTALIN
NC	AJ30	XTALOUT
ATI_TESTEN	AH24	TESTEN
NC	AJ26	SSIN
B24	VSS	VSS
B20	VSS	VSS
A24	VSS	VSS

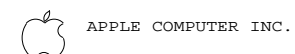
GPU Vcore SUPPLY

WHEN Vcore_CNTL HIGH => 1.2V
 $1.2V = 0.8V * (1 + R332 / (R331/R333))$
 WHEN Vcore_CNTL LOW => 1.0V
 $1.0V = 0.8V * (1 + R332 / R333)$

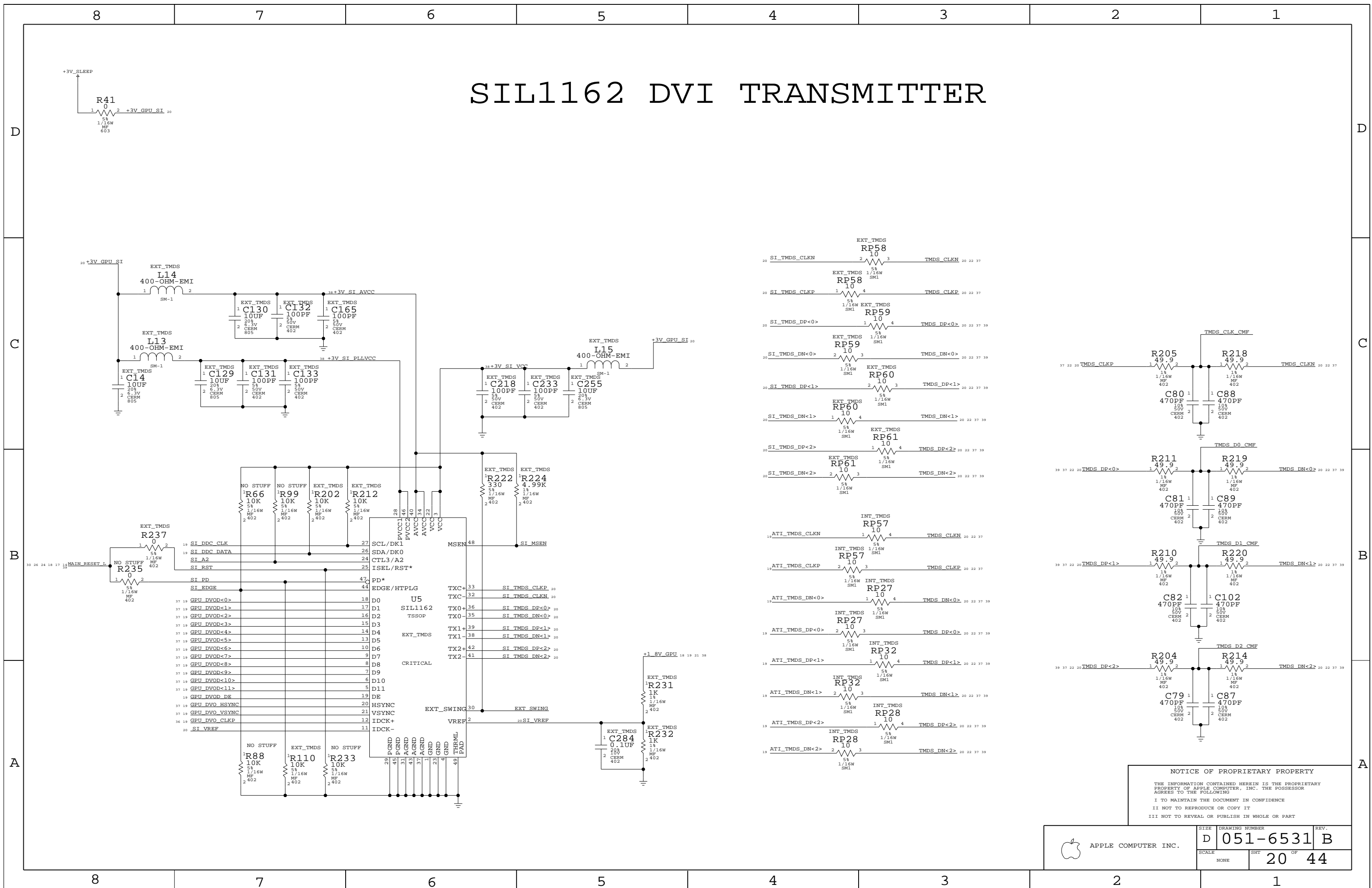
M10 CORE PWR/LVDS/TMDS
 NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

SIZE	DRAWING NUMBER	REV.
D	051-6531	B
SCALE	SHT	19 OF 44
NONE		

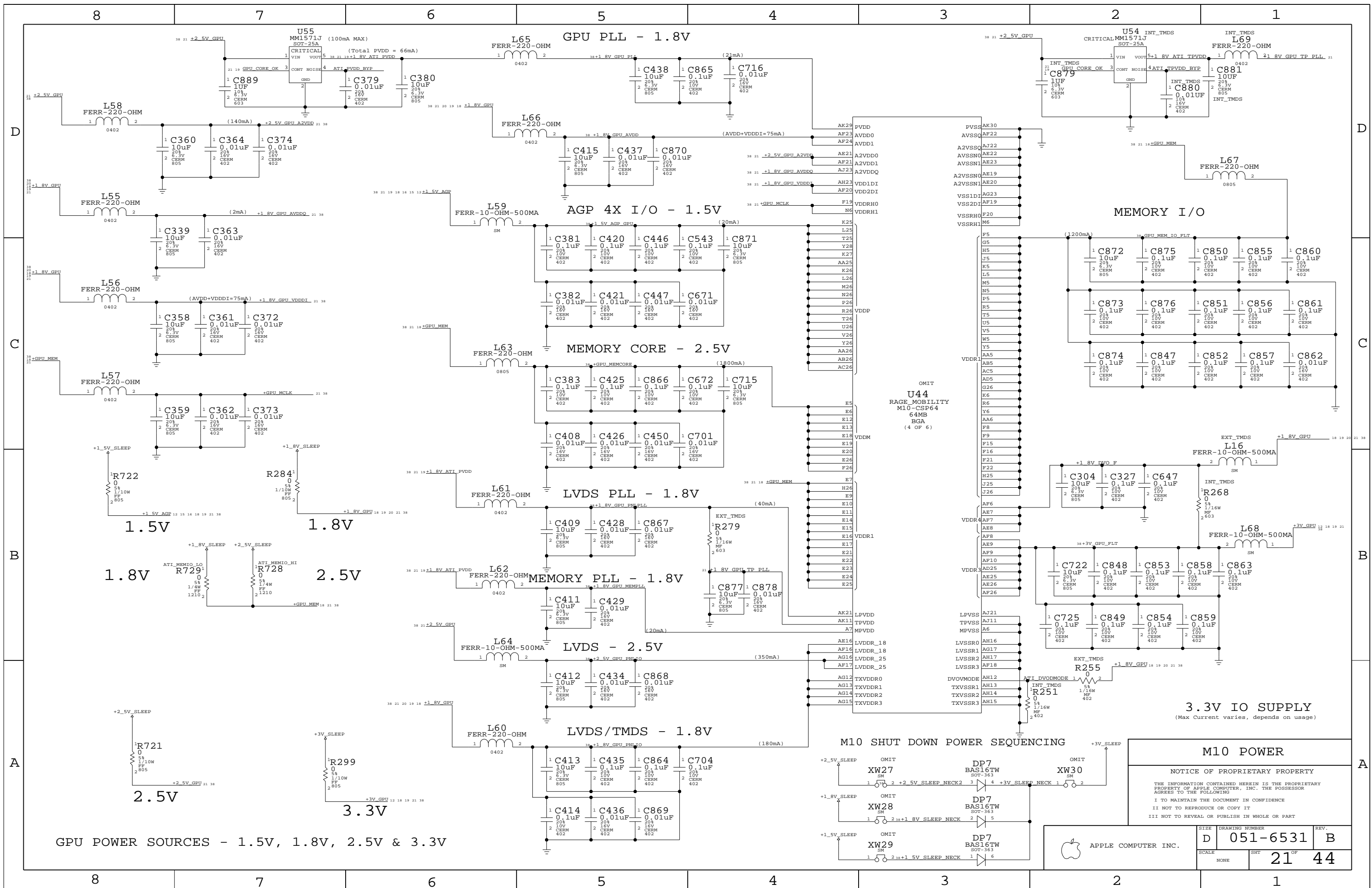


SIL1162 DVI TRANSMITTER



NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	NONE	051-6531	B
SCALE		SHT	OF
NONE		20	44



GPU POWER SOURCES - 1.5V, 1.8V, 2.5V & 3.3V

3.3V IO SUPPLY
(Max Current varies, depends on usage)

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

SIZE	DRAWING NUMBER	REV.
D	051-6531	B
SCALE	SHT	OF
NONE	21	44



ANALOG FILTERING PLACE CLOSE TO CONNECTOR

EXTERNAL VIDEO (DVI) INTERFACE

Power key detect path when system is shutdown or asleep... DDC_CLK is isolated from NV17M during SHUTDOWN...

DVI POWER SWITCH

D

D

C

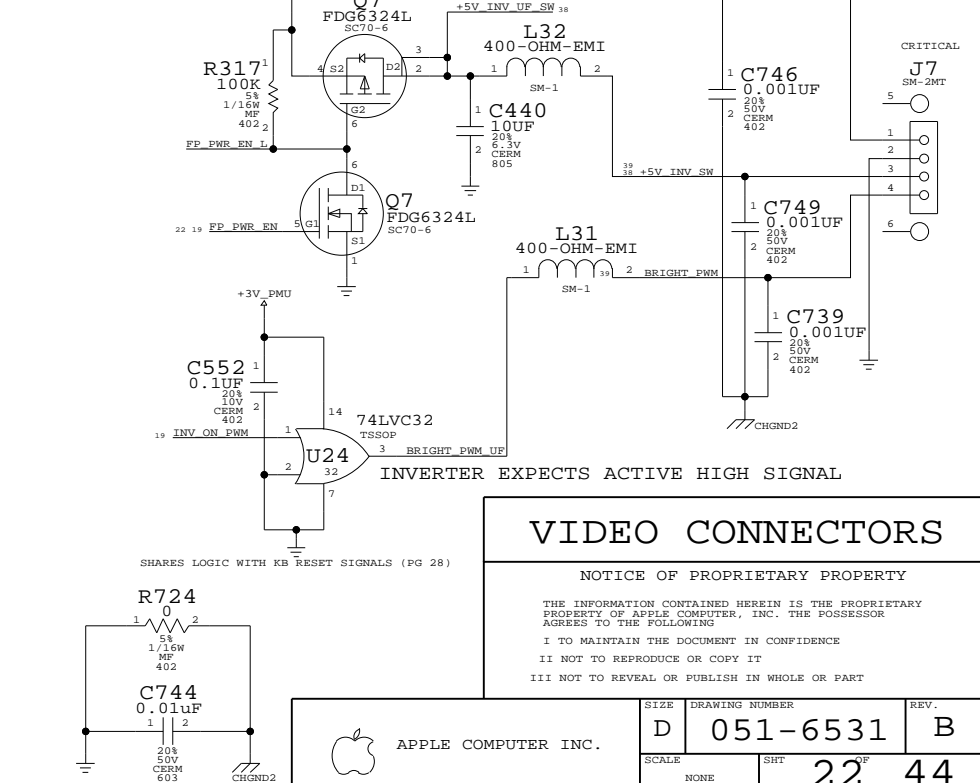
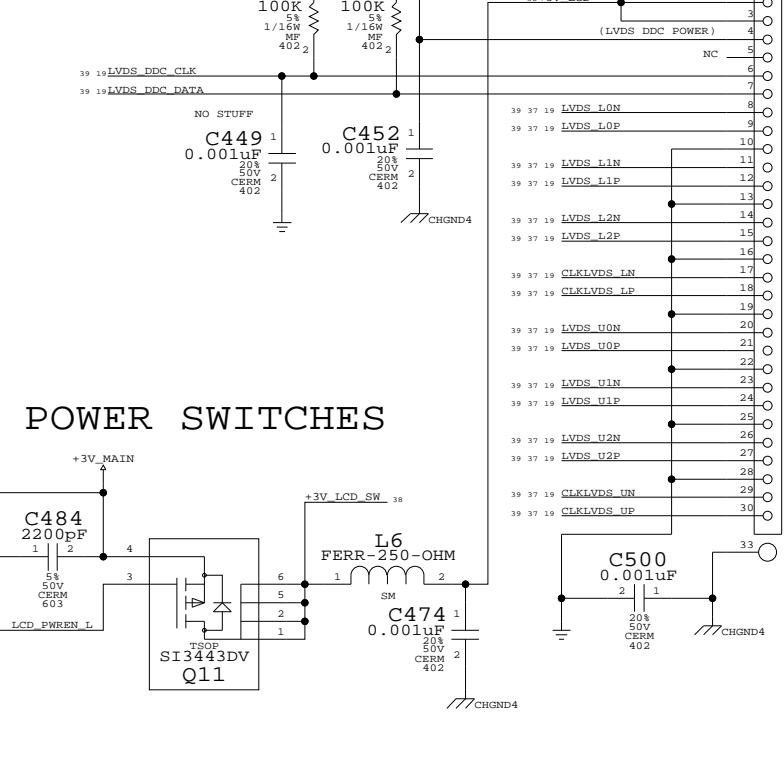
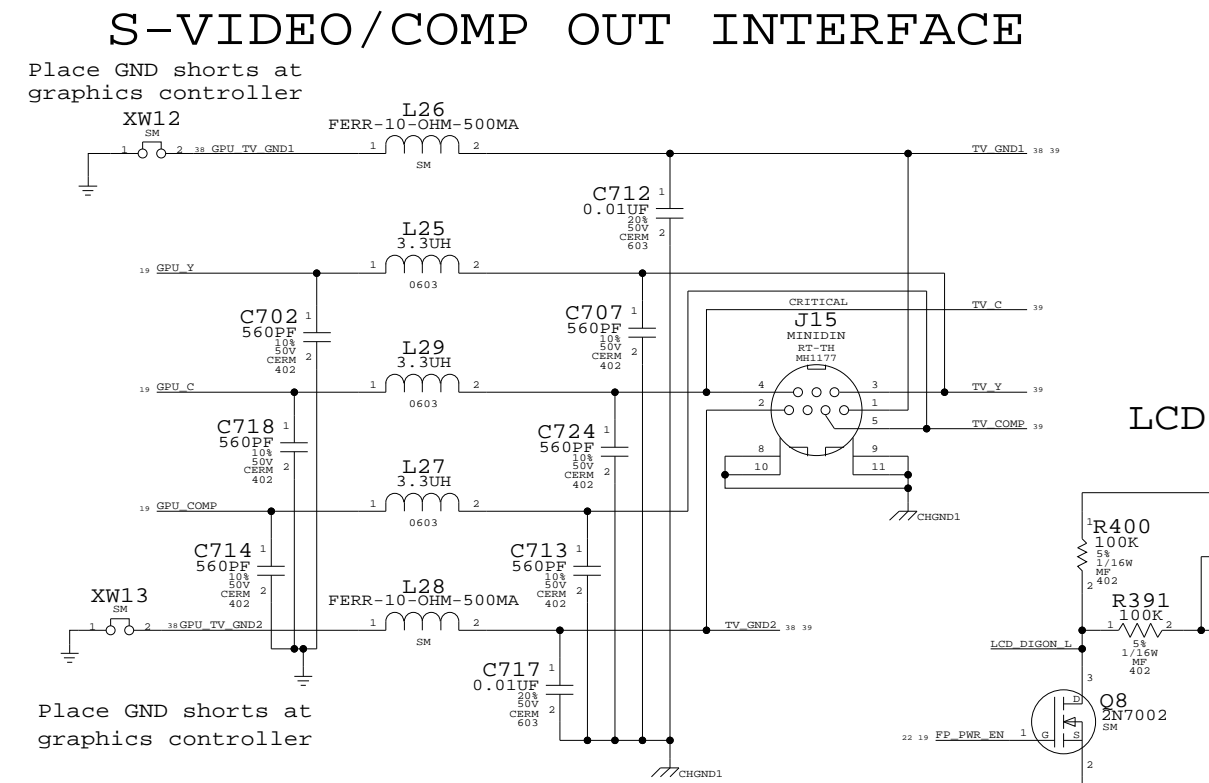
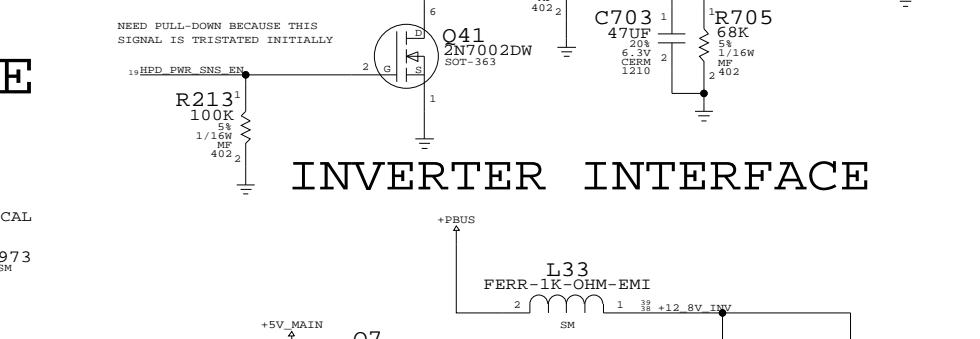
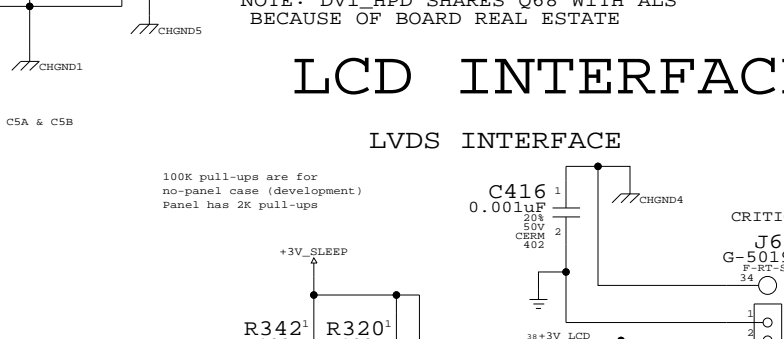
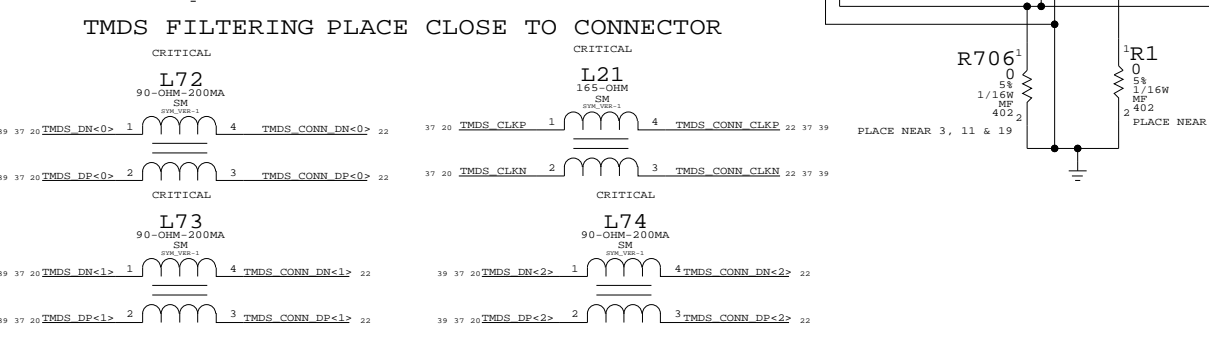
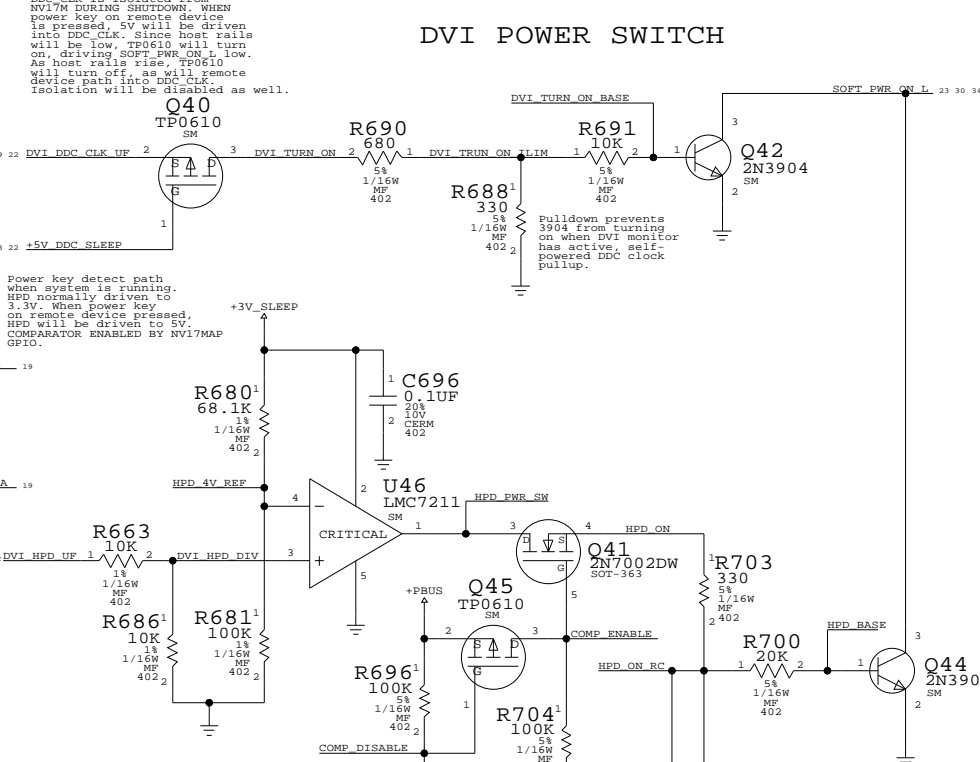
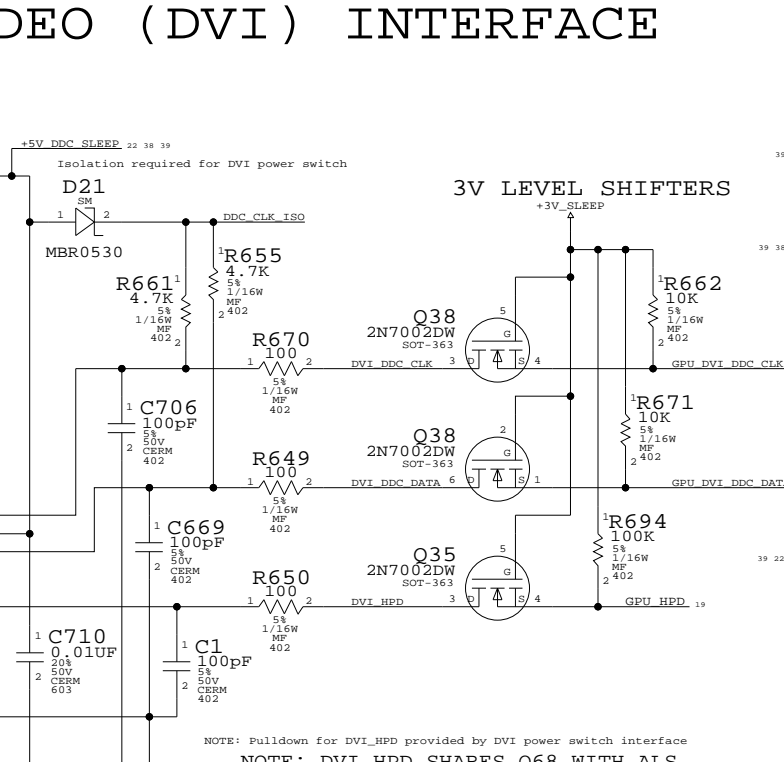
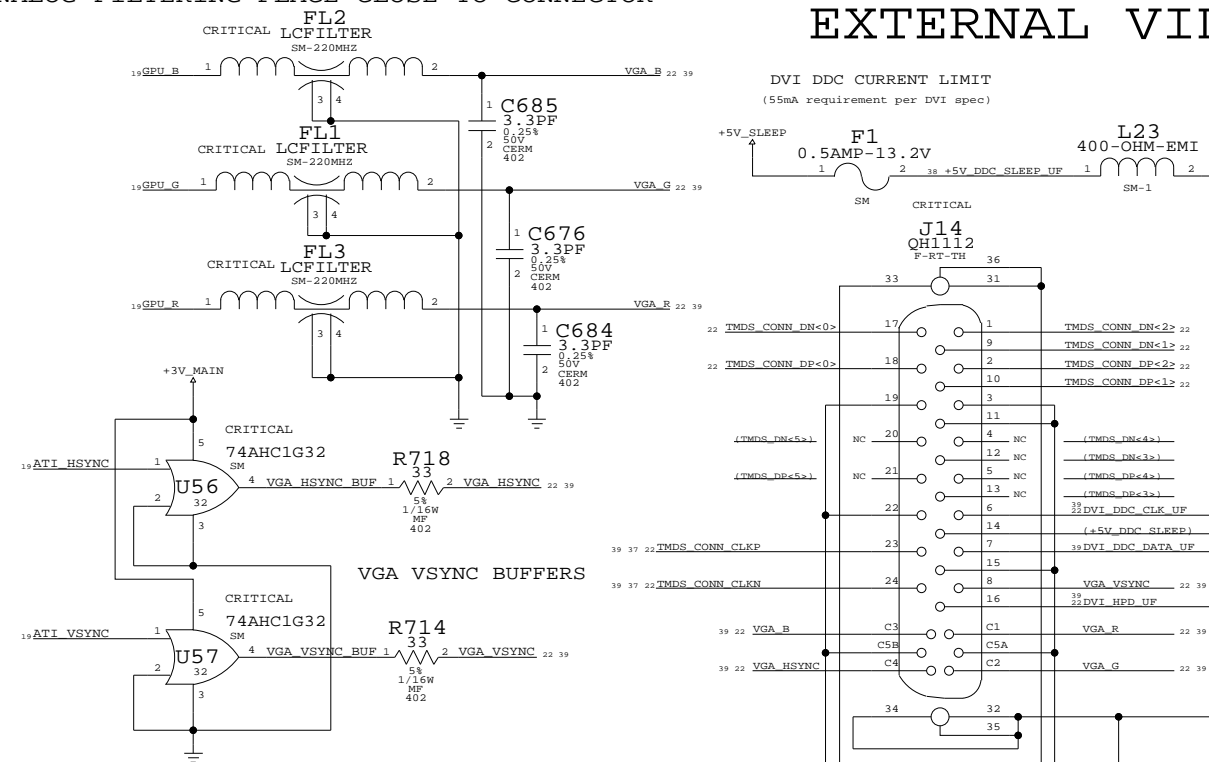
C

B

B

A

A



Place GND shorts at graphics controller

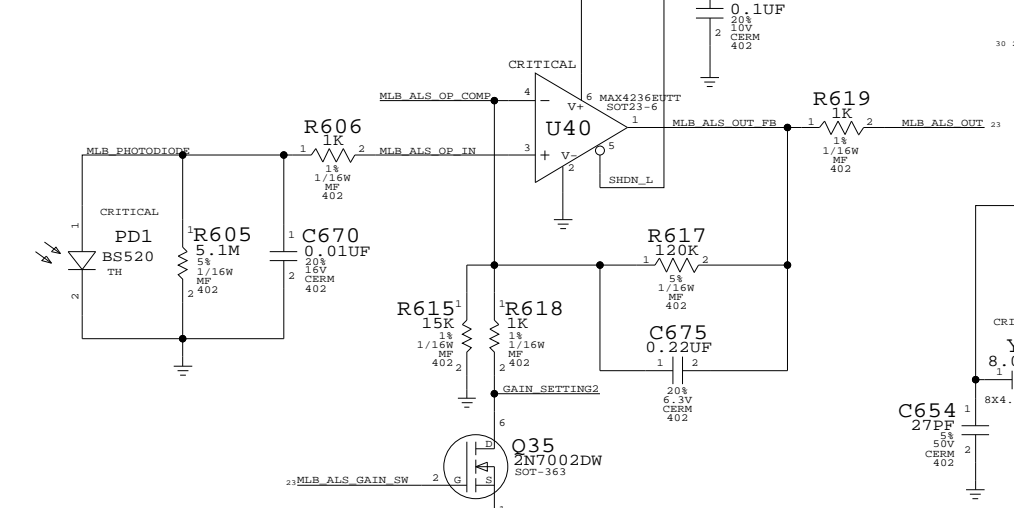
Place GND shorts at graphics controller

NOTICE OF PROPRIETARY PROPERTY THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

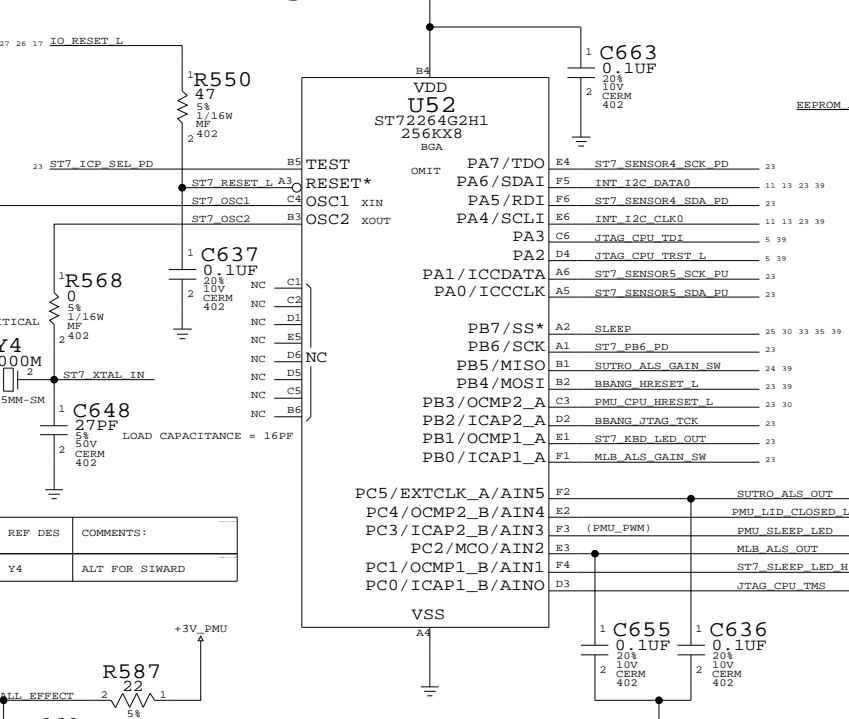
Table with columns for SIZE, DRAWING NUMBER, REV., SCALE, and SHEET NUMBER. Includes Apple logo and drawing number 051-6531 B.

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S1194	1	IC,LMU,P84	U52	CRITICAL	?

MLB - ALS SENSOR

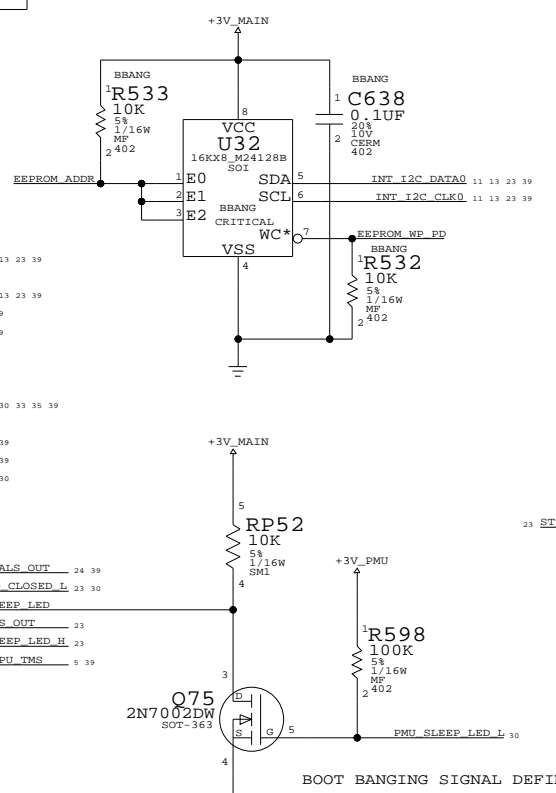


LMU

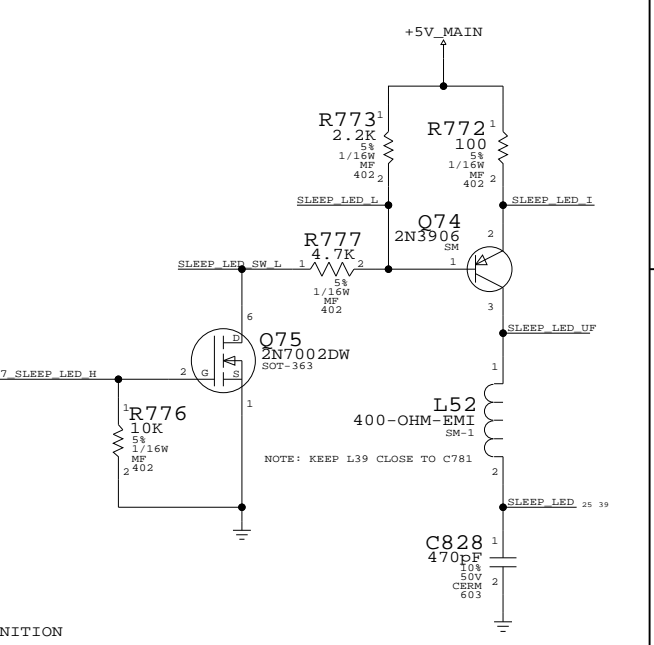


PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0008	197S0040		Y4	ALT FOR SIMARD

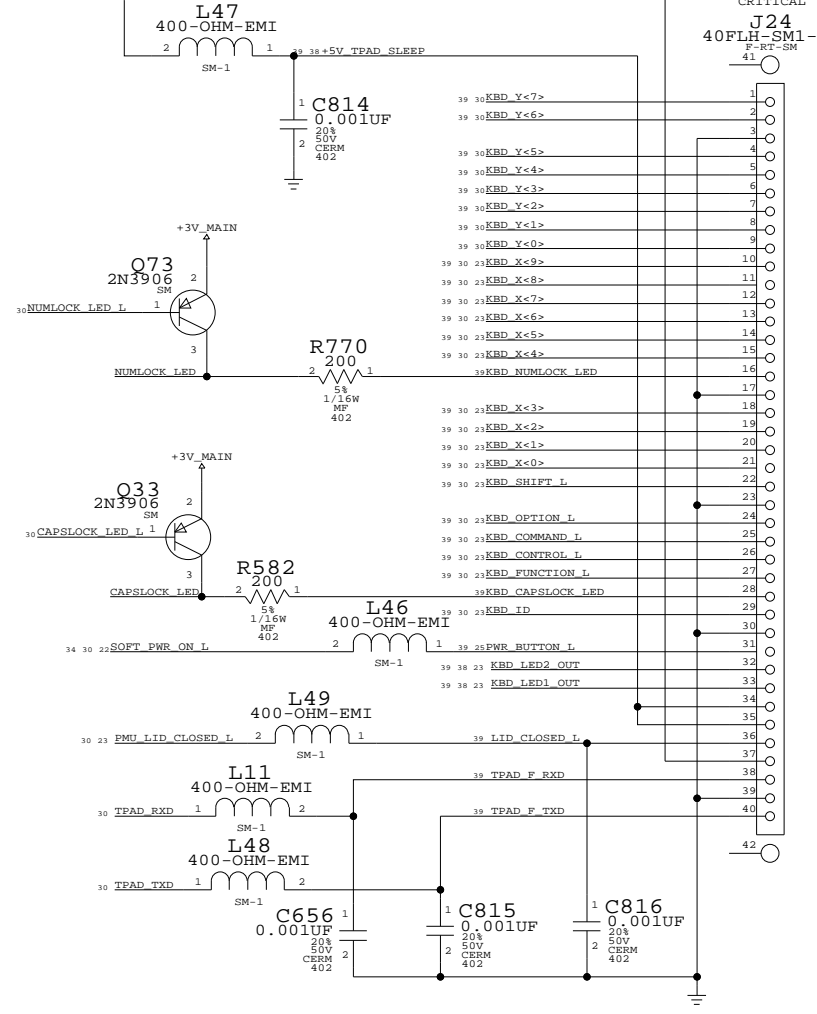
BOOT BANGER E2PROM



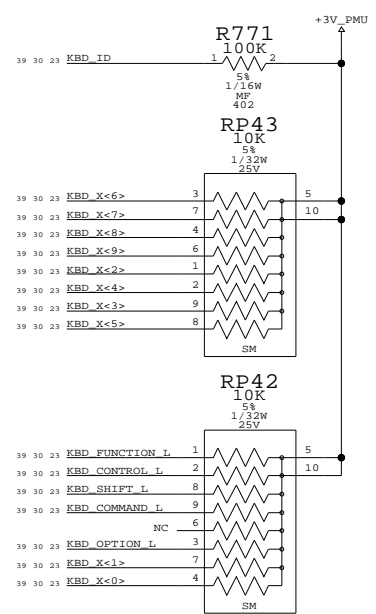
SLEEP LED



SPIDEY FLEX

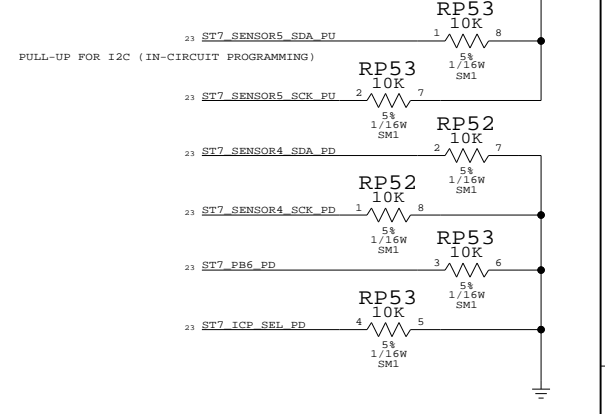


KEYBOARD PULLUPS

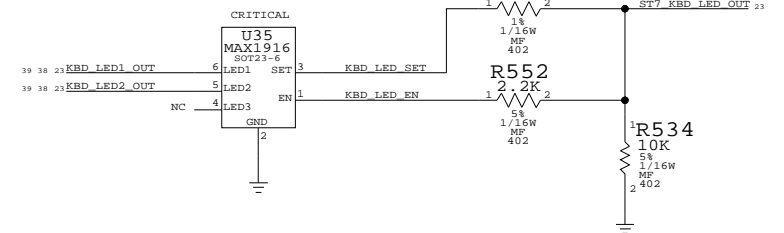


- BOOT BANGING SIGNAL DEFINITION**
- 1/ B Bang_HRESET_L (OPEN COLLECTOR OUTPUT - 10K PULLUP ON MLB)
 - 2/ PMU_HRESET_L (3V INPUT INTO LMU)
 - 3/ B Bang_JTAG_TCK (REGULAR OUTPUT)
 - 4/ JTAG_CPU_TMS (OPEN COLLECTOR OUTPUT - 470OHM PULLUP ON MLB)
 - 5/ JTAG_CPU_TDI (OPEN COLLECTOR OUTPUT - 470OHM PULLUP ON MLB)
 - 6/ JTAG_CPU_TRST_L (OPEN COLLECTOR OUTPUT - 470OHM PULLUP ON MLB)

LMU PULL-DOWNS



KB LED DRIVER



LMU/BOOTBANGER/SPIDEY

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

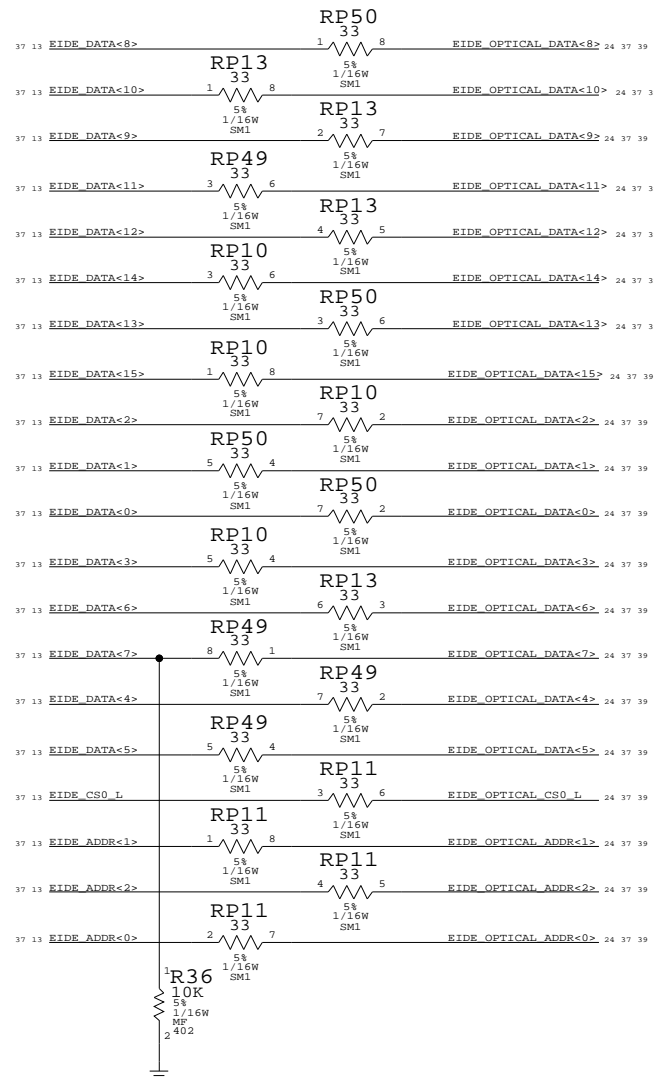
II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

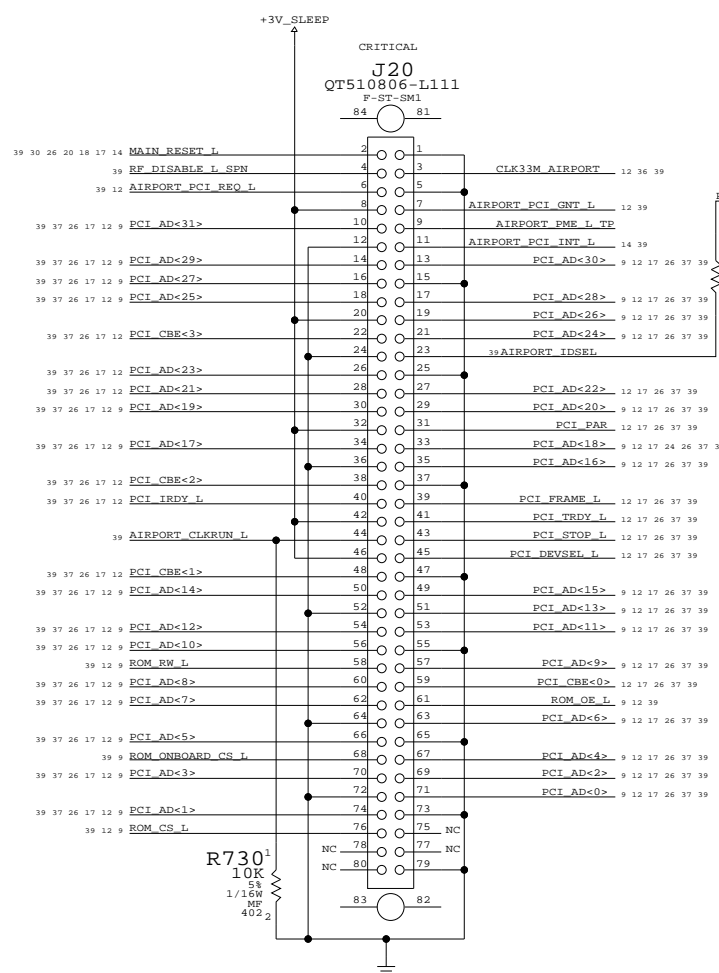
APPLE COMPUTER INC.	SCALE	SHT	REV.
	NONE	23	B
DRAWING NUMBER		REV.	
D 051-6531		B	
SCALE		SHT	
NONE		23	

HARD DRIVE INTERFACE (UATA100)

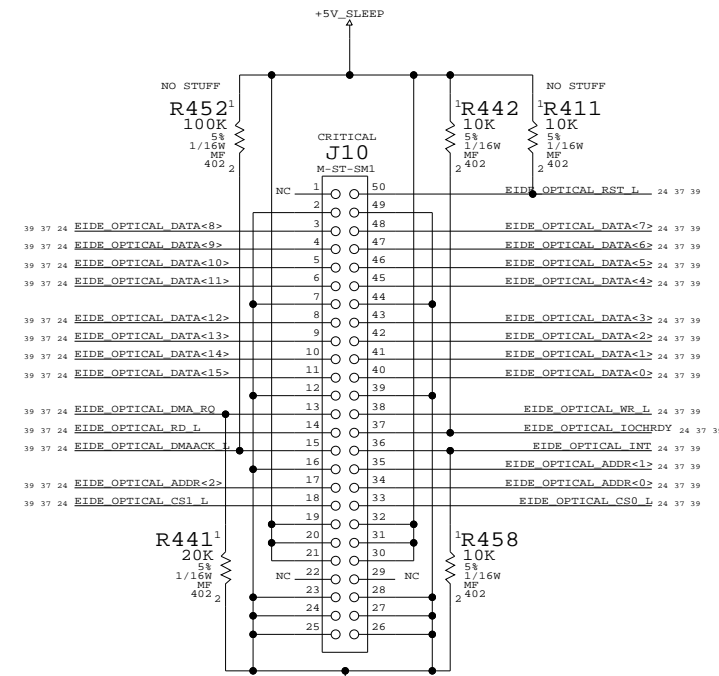
EIDE SERIES TERMINATION
PLACE TERMINATORS NEAR INTREPID



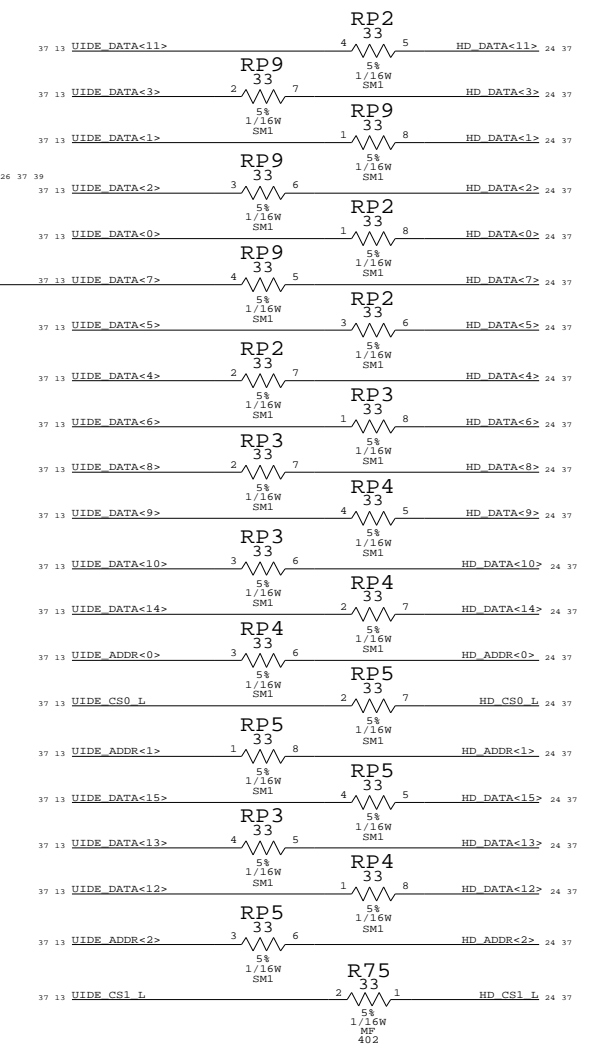
WIRELESS INTERFACE



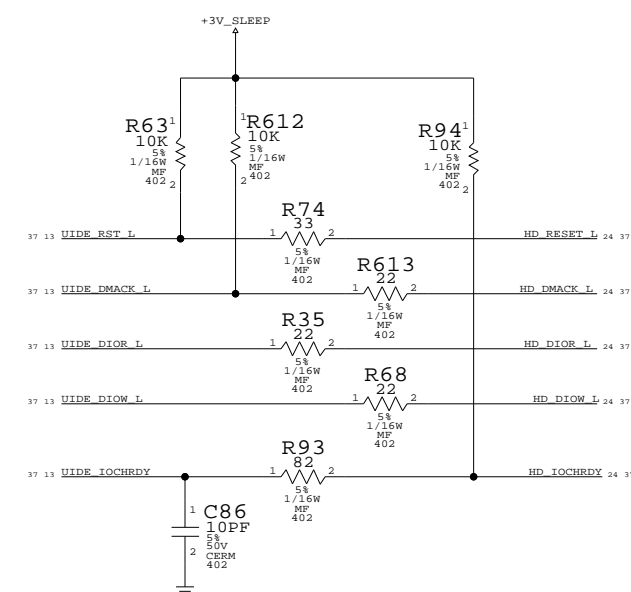
OPTICAL DRIVE INTERFACE (EIDE)



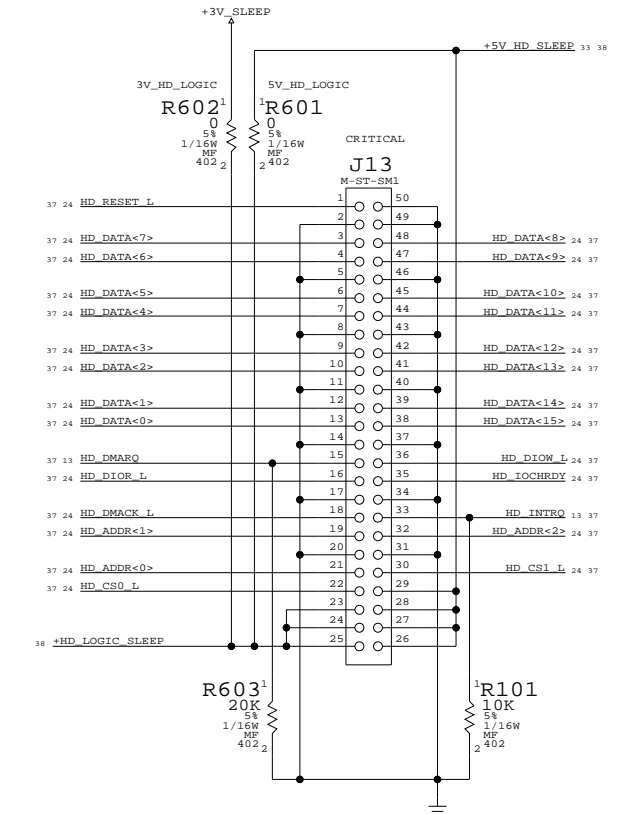
PLACE SERIES R CLOSE TO INTERPID



PLACE PULLUP RESISTORS CLOSE TO INTREPID

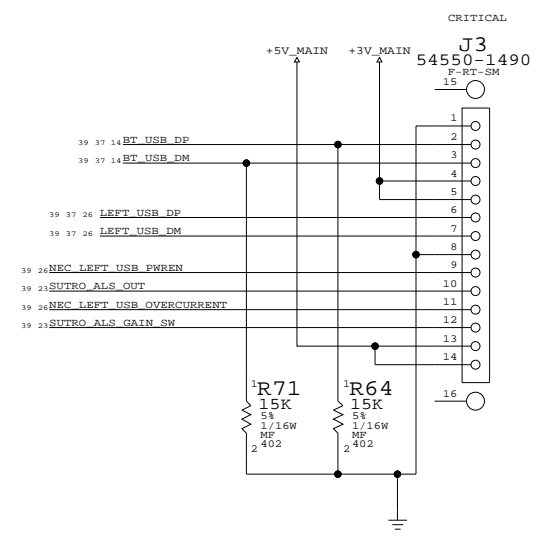


IOCHRDY - UATA100 REQUIRES PULL-UP TO 3.3V



ANY SEQUENCING REQUIREMENT BETWEEN
+5V_HD_SLEEP AND +3V_SLEEP?

BLUETOOTH/LEFT-SIDE USB

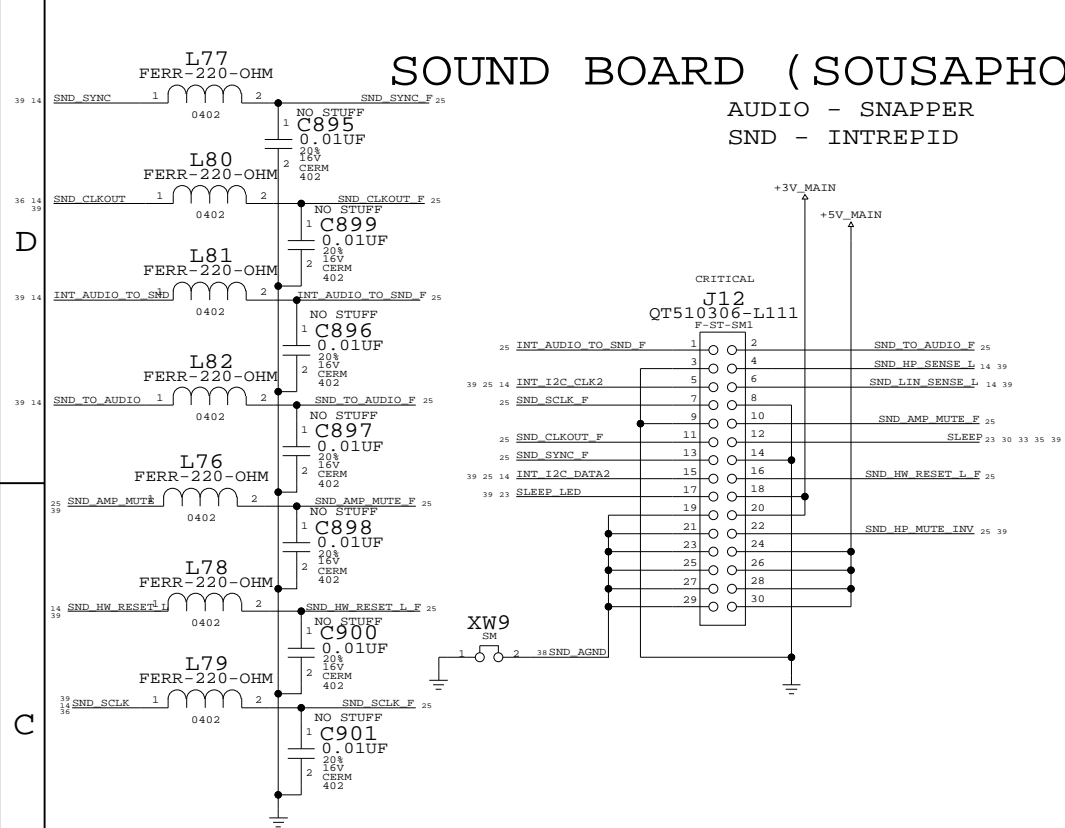


INTERNAL I/O CONNECTORS

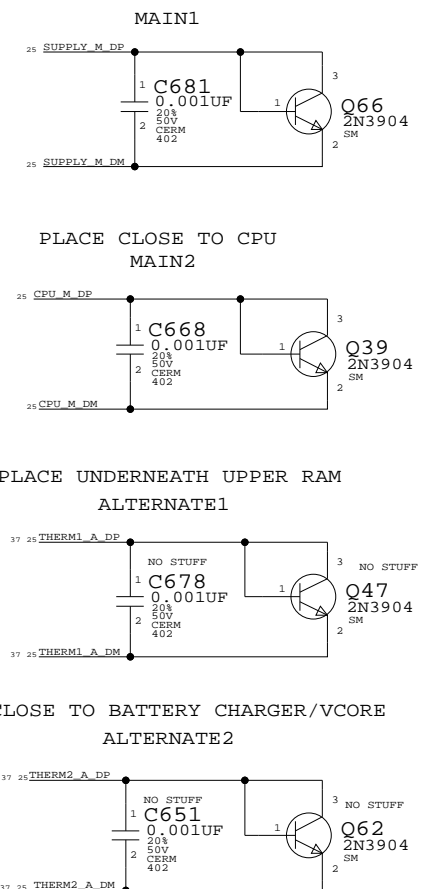
NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	24 OF 44

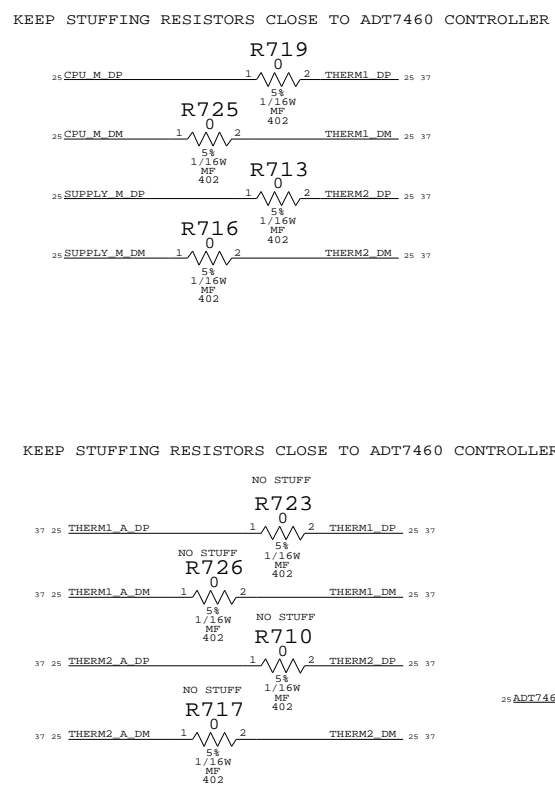
SOUND BOARD (SOUSAPHONE)



PLACE XW9 CLOSE TO 5V SWITCHER (U27)
PLACE CAPS AS CLOSE TO THERMISTORS AS POSSIBLE
PLACE IN BETWEEN 3/5/1.5/2.5V PWR SUPPLY

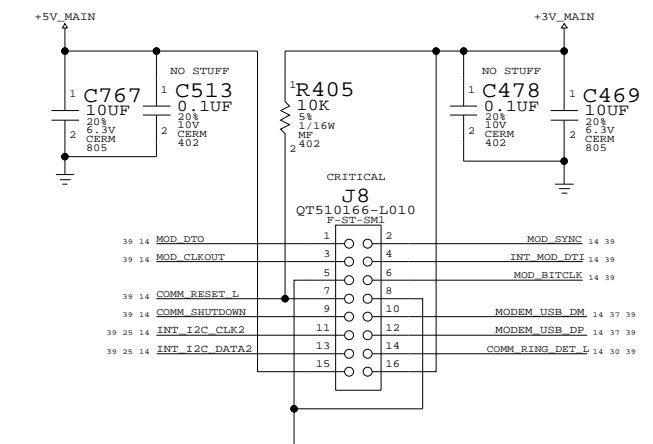


FAN INTERFACE

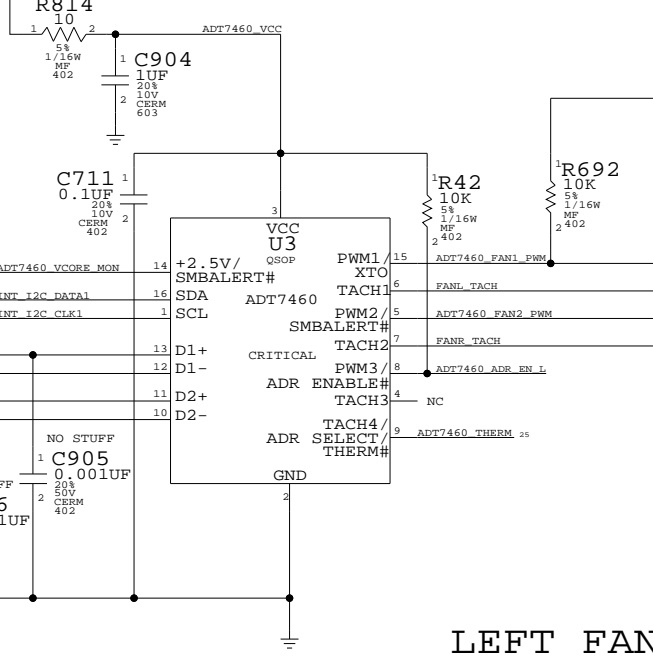


MODEM

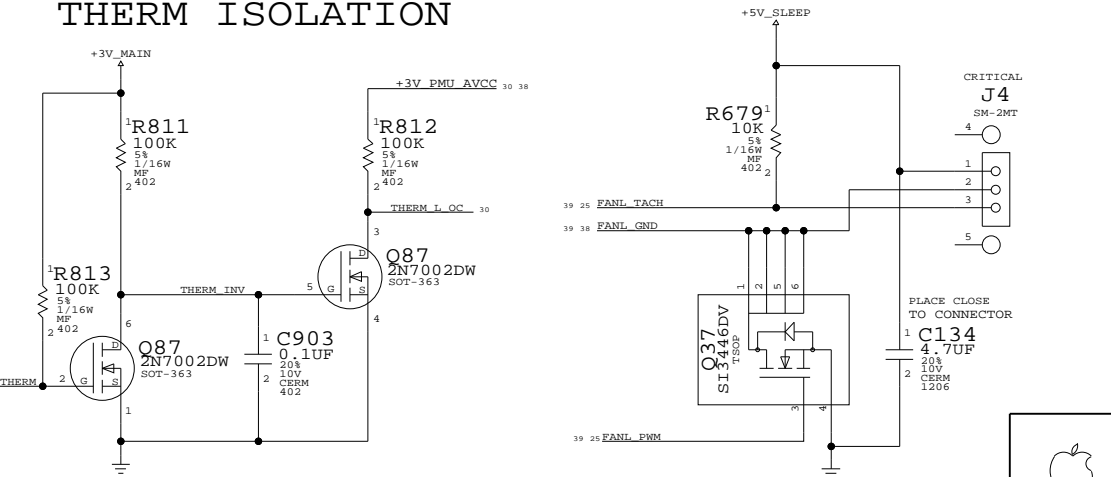
SUPPORTS BOTH THE LAST DASH AND Q52 SOFT MODEM



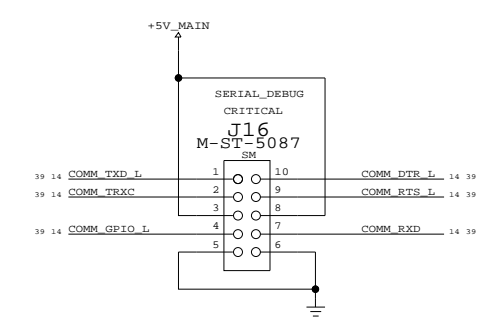
FAN CONTROLLER



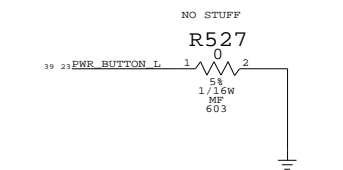
LEFT FAN (CPU)



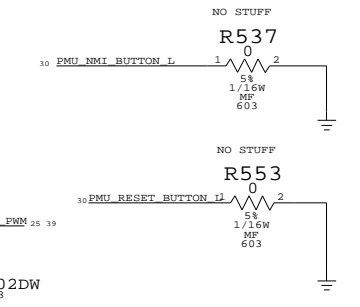
SERIAL DEBUG INTERFACE



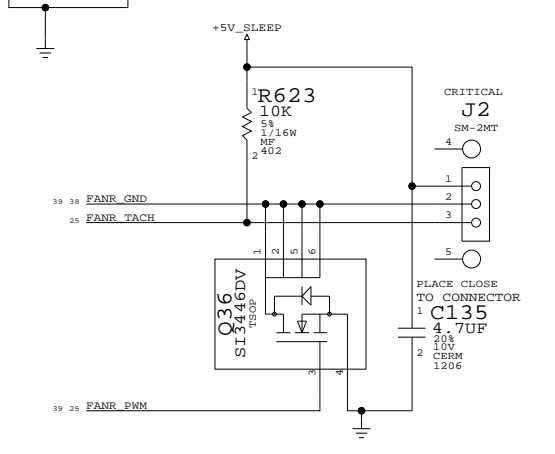
DEBUG POWER BUTTON



DEBUG JUMPERS



RIGHT FAN (GPU)



FAN/MODEM/SOUND/SLEEP LED/DEBUG

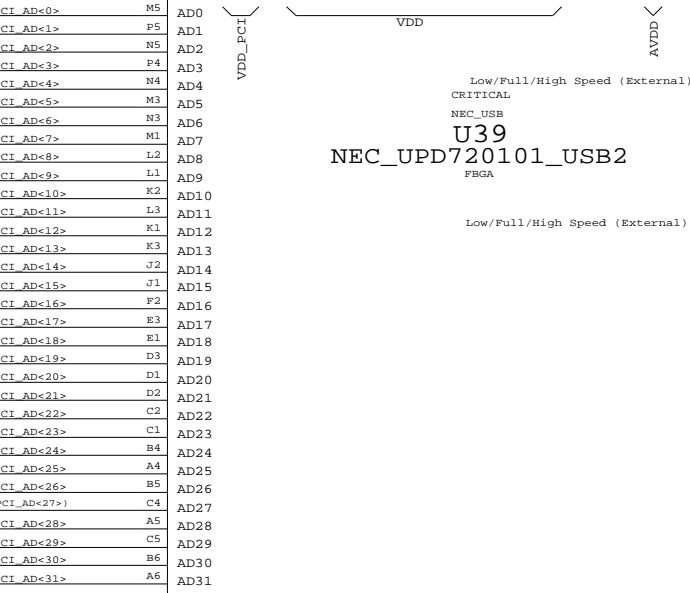
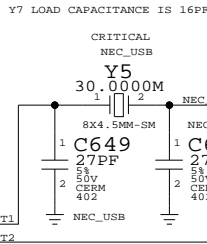
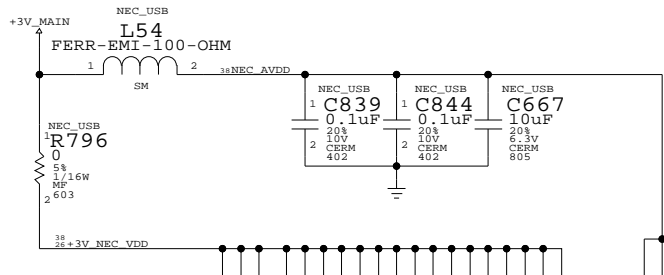
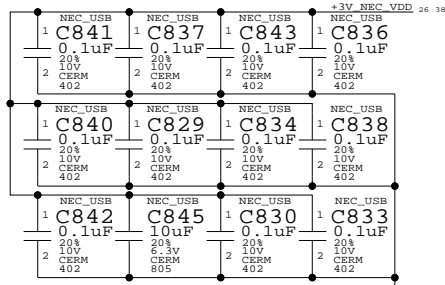
NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	25	OF 44
NONE			

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0608	197S0038	NEC_USB	YS	ALT FOR SIWARD

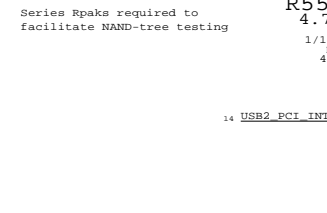
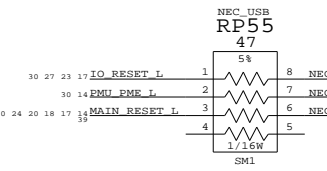
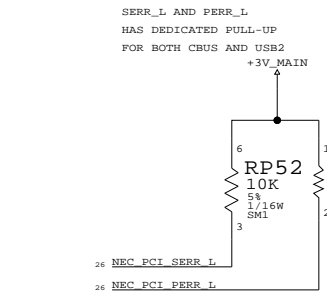
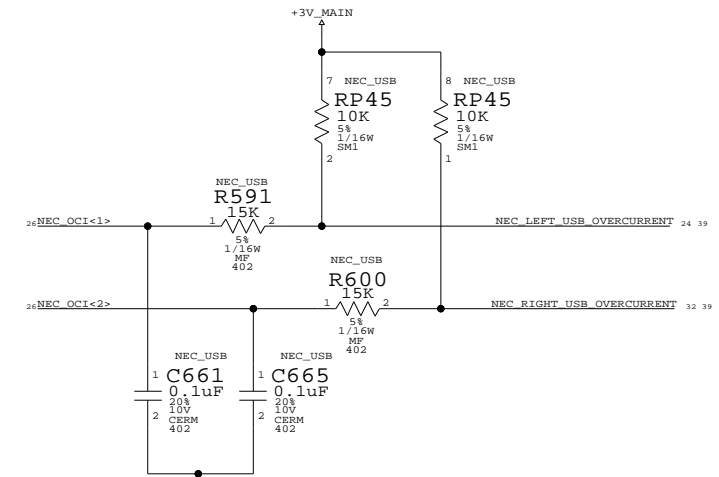


Low/Full/High Speed (External)
CRITICAL
NEC_USB
U39
NEC_UPD720101_USB2
Low/Full/High Speed (External)

LEFT PORT
RIGHT PORT
OUT PPON1
OUT PPON2
OUT PPON3
OUT PPON4
OUT PPON5
NC1
NC2
IPD NTEST1
IPD SMC
IPD TEB
IPD AMC
IPD TEST
NANDTEST
AVSS(R)
AVSS

INTREPID USB CONSTRAINTS

- USB_DAM USB_DA 5 MIL SEACING 14
- USB_DAP USB_DA 5 MIL SEACING 14
- USB_DCM USB_DC 5 MIL SEACING 14
- USB_DCP USB_DC 5 MIL SEACING 14
- USB_DIM USB_D1 5 MIL SEACING 14 26
- USB_DIP USB_D1 5 MIL SEACING 14 26
- USB_D2M USB_D2 5 MIL SEACING 14 26
- USB_D2P USB_D2 5 MIL SEACING 14 26



PLACE NEAR J3

SUTRO CONNECTOR

PLACE NEAR J12

BUBBA CONNECTOR

USB 2.0

NOTICE OF PROPRIETARY PROPERTY

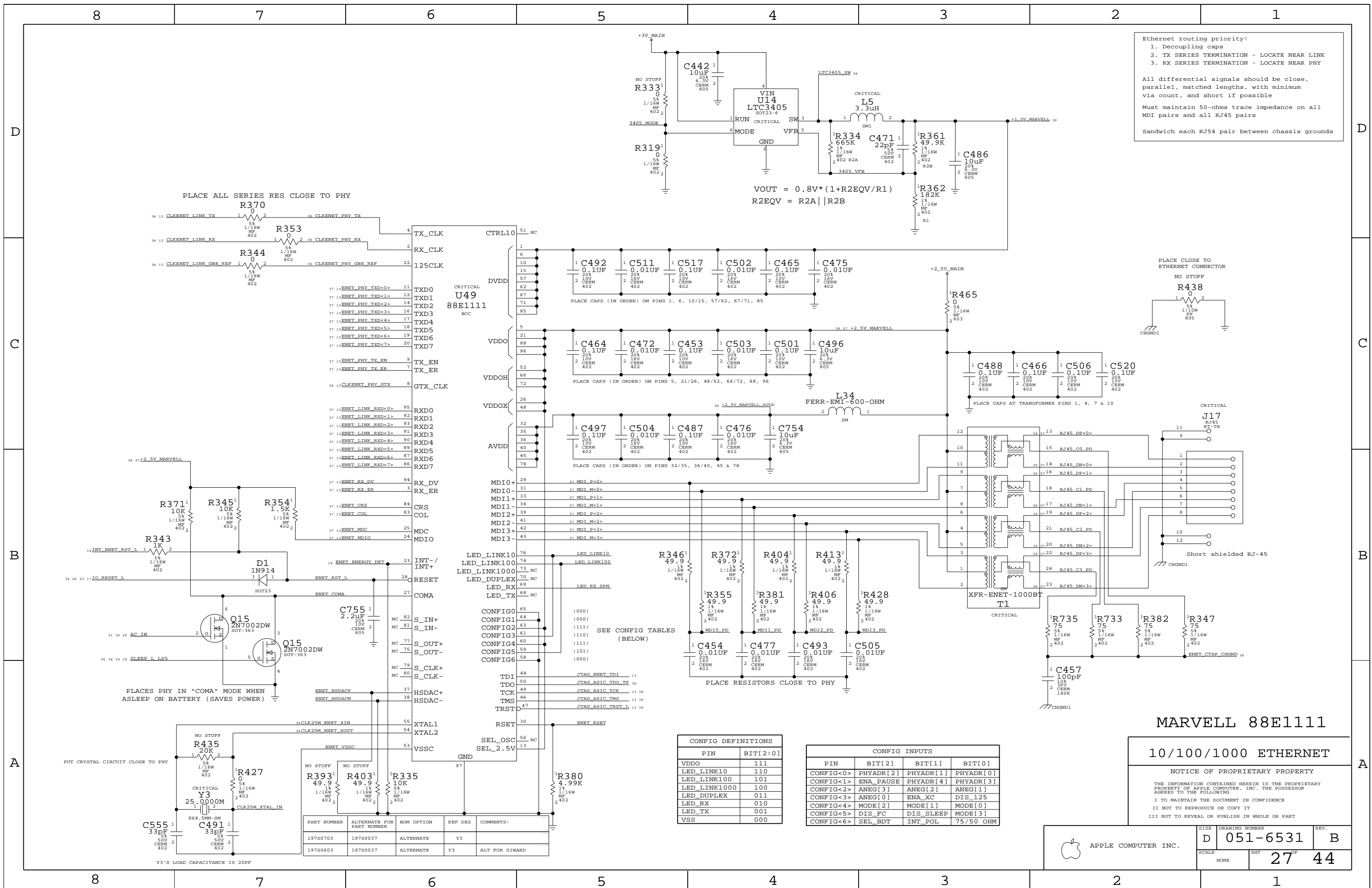
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SCALE	DRAWING NUMBER	REV.
	NONE	D 051-6531	B
		SHT	26 OF 44



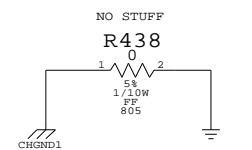
Ethernet routing priority:
 1. Decoupling caps
 2. TX SERIES TERMINATION - LOCATE NEAR LINK
 3. RX SERIES TERMINATION - LOCATE NEAR PHY

All differential signals should be close, parallel, matched lengths, with minimum via count, and short if possible

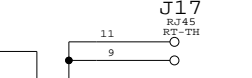
Must maintain 50-ohms trace impedance on all MDI pairs and all RJ45 pairs

Sandwich each RJ54 pair between chassis grounds

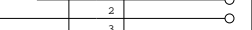
PLACE CLOSE TO ETHERNET CONNECTOR



CRITICAL



Short shielded RJ-45



CHGND1

ENET_CTAP_CHGND 38

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CHGND1

CONFIG DEFINITIONS	
PIN	BIT[2:0]
VDDO	111
LED_LINK10	110
LED_LINK100	101
LED_LINK1000	100
LED_DUPLEX	011
LED_RX	010
LED_TX	001
VSS	000

CONFIG INPUTS			
PIN	BIT[2]	BIT[1]	BIT[0]
CONFIG<0>	PHYADR[2]	PHYADR[1]	PHYADR[0]
CONFIG<1>	ENA_PAUSE	PHYADR[4]	PHYADR[3]
CONFIG<2>	ANEG[3]	ANEG[2]	ANEG[1]
CONFIG<3>	ANEG[0]	ENA_XC	DIS_125
CONFIG<4>	MODE[2]	MODE[1]	MODE[0]
CONFIG<5>	DIS_FC	DIS_SLEEP	MODE[3]
CONFIG<6>	SEL_BDT	INT_POL	75/50 OHM

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
197S0703	197S0037	ALTERNATE	Y3	
197S0603	197S0037	ALTERNATE	Y3	ALT FOR SIWARD

MARVELL 88E1111

10/100/1000 ETHERNET

NOTICE OF PROPRIETARY PROPERTY

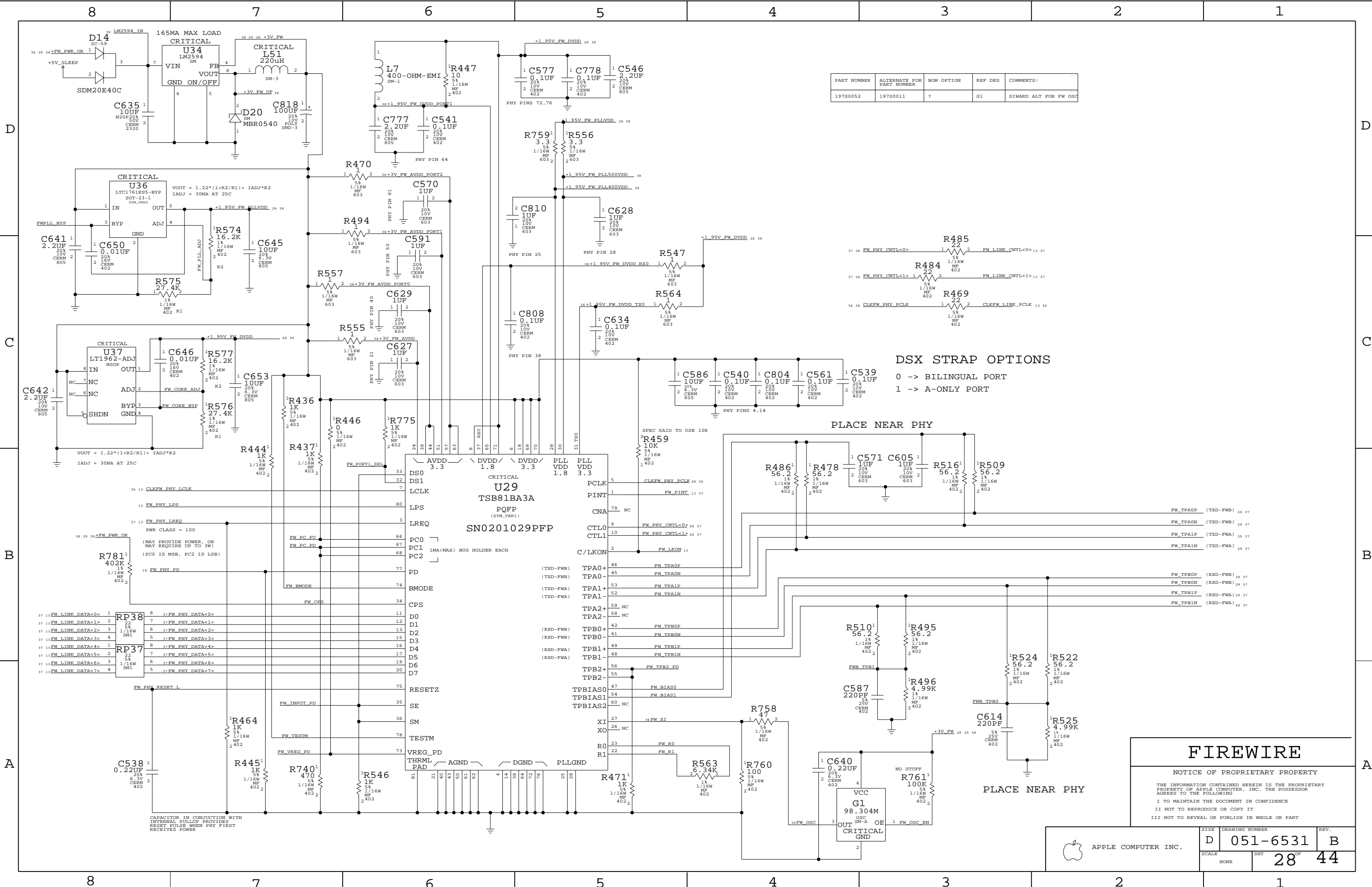
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE D	DRAWING NUMBER 051-6531	REV. B
	SCALE NONE	SHT 27	OF 44



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS
197S0052	197S0011	?	G1	SIWARD ALT FOR FW OSC

DSX STRAP OPTIONS
 0 -> BILINGUAL PORT
 1 -> A-ONLY PORT

PLACE NEAR PHY

PLACE NEAR PHY

FIREWIRE

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

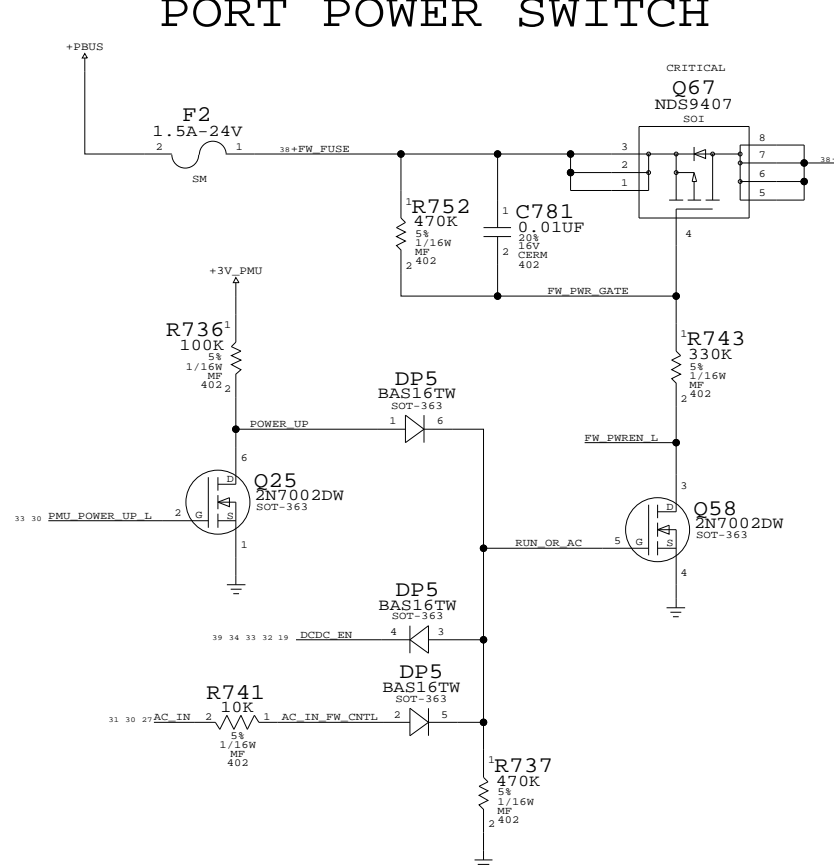
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

SCALE NONE	SIZE D	DRAWING NUMBER 051-6531	REV. B
	SHEET 28		TOTAL SHEETS 44



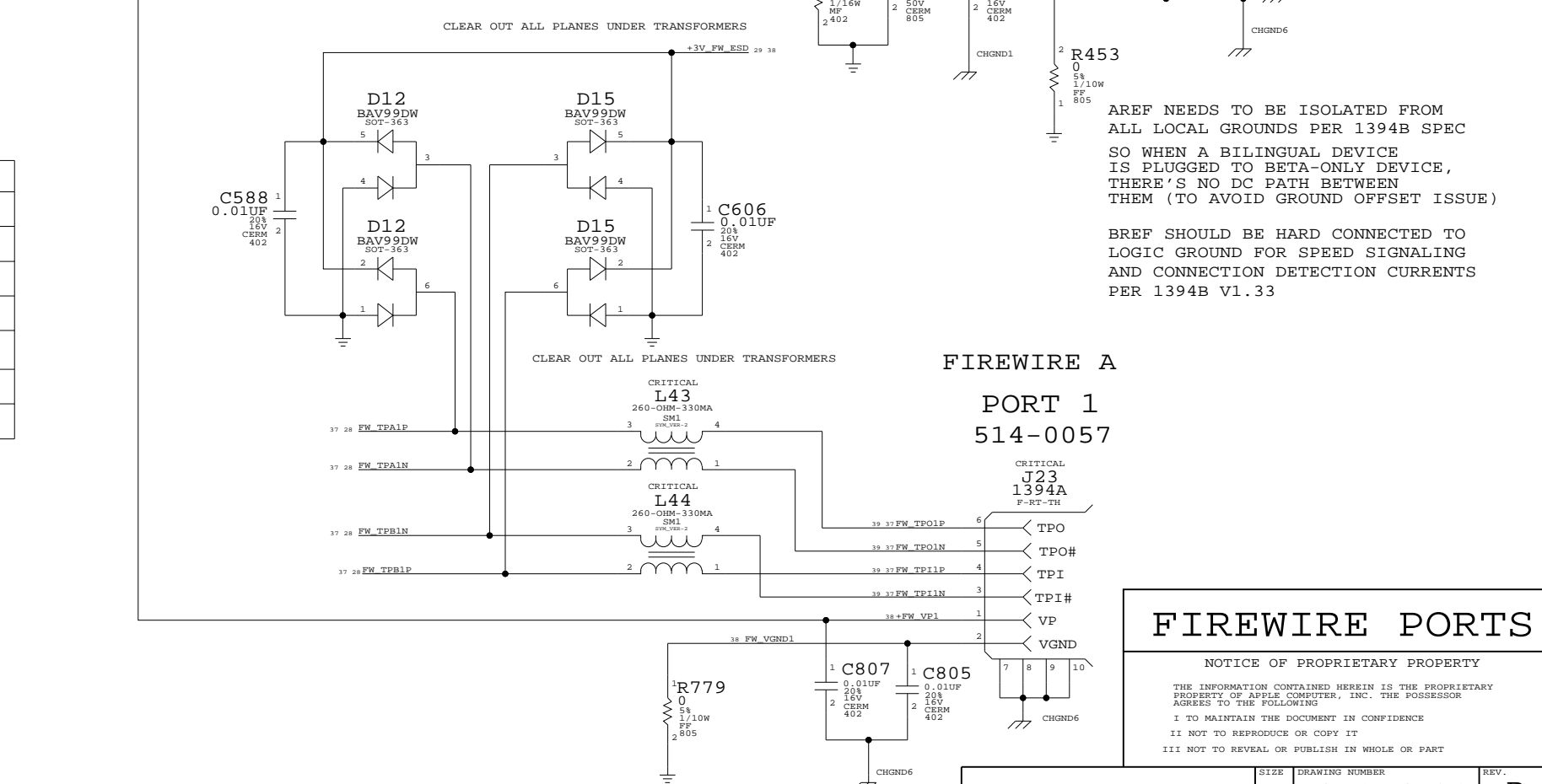
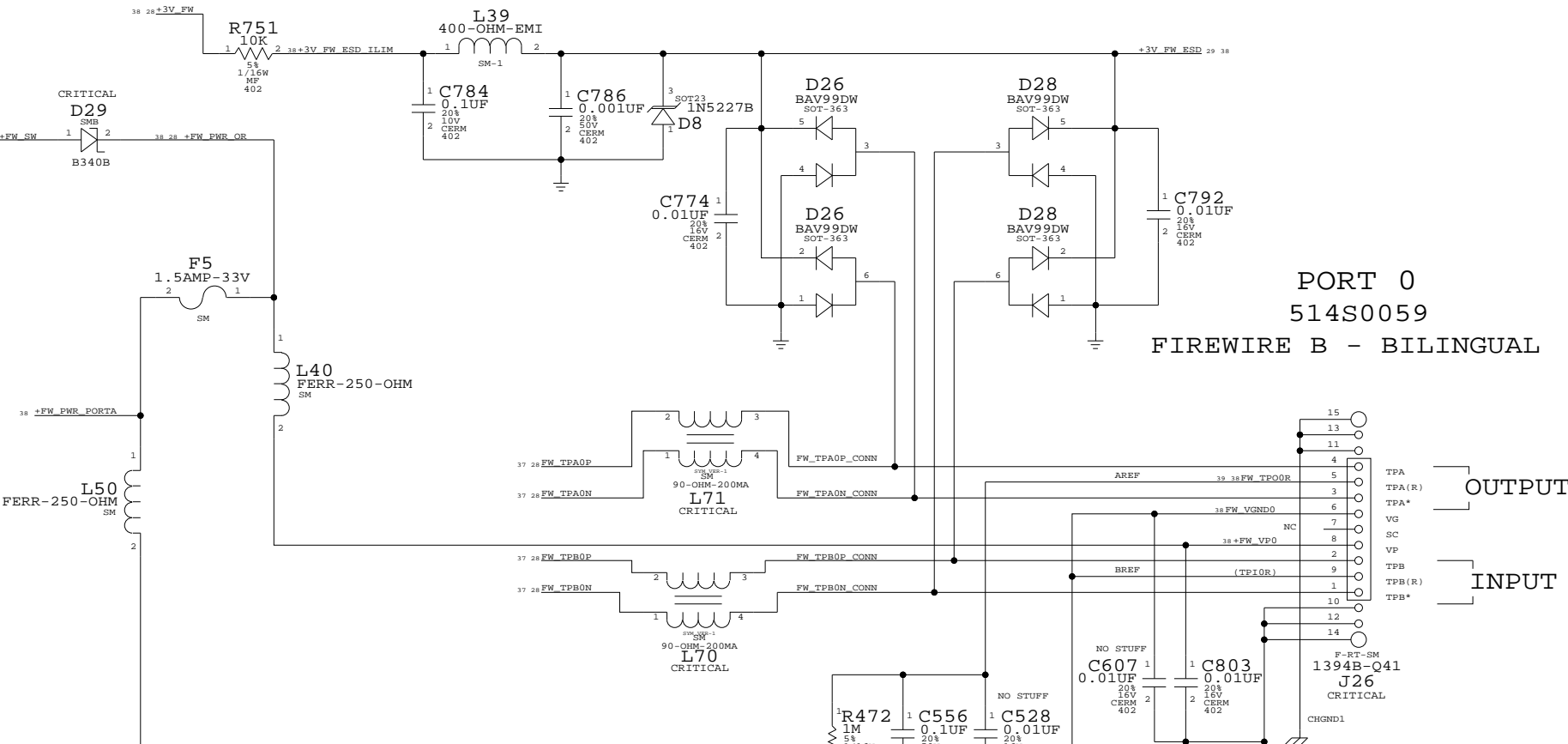
APPLE COMPUTER INC.

PORT POWER SWITCH



ENABLES PORT POWER WHEN MACHINE IS RUNNING OR WHEN ASLEEP ON AC

STATE	PMU_POWER_UP_L	POWER_UP	DCDC_EN	AC_IN	LTC4210_ON
SHUTDOWN (AC)	1	0	0	1	OFF
SLEEP (AC)	1	0	1	1	ON
RUN (AC)	0	1	1	1	ON
SHUTDOWN (BATT)	1	0	0	0	OFF
SLEEP (BATT)	1	0	1	0	OFF (PULL-DOWN RESISTOR)
RUN (BATT)	0	1	1	0	ON
	2.99V	+3V_PMU	+4_6V_BU	+3V_PMU	



FIREWIRE PORTS

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE

II NOT TO REPRODUCE OR COPY IT

III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

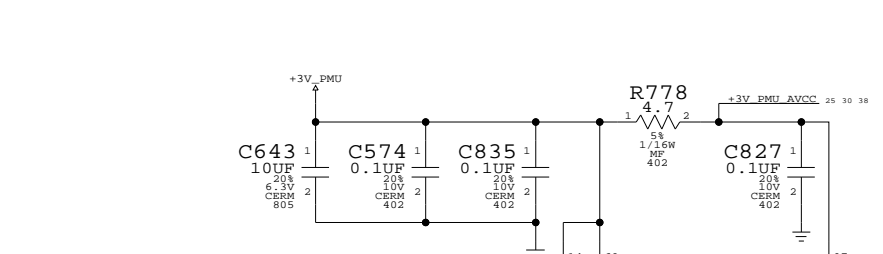
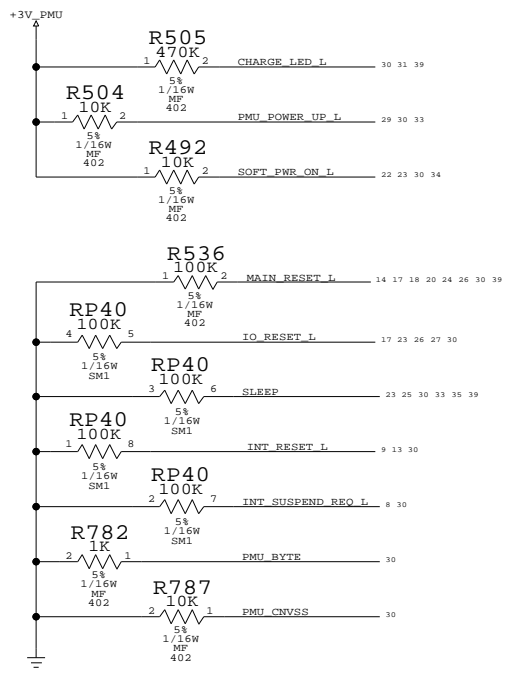
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	29 OF 44

D

C

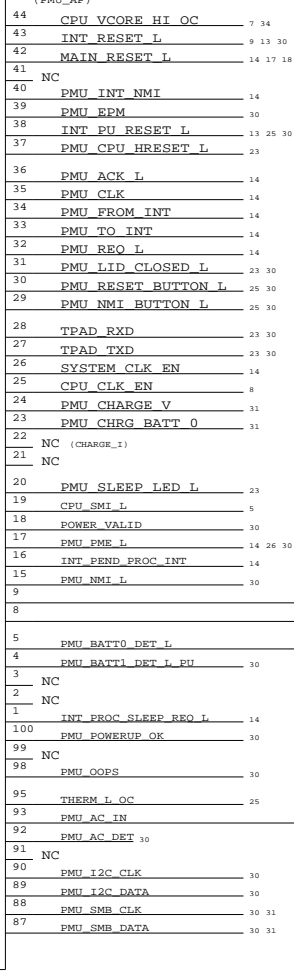
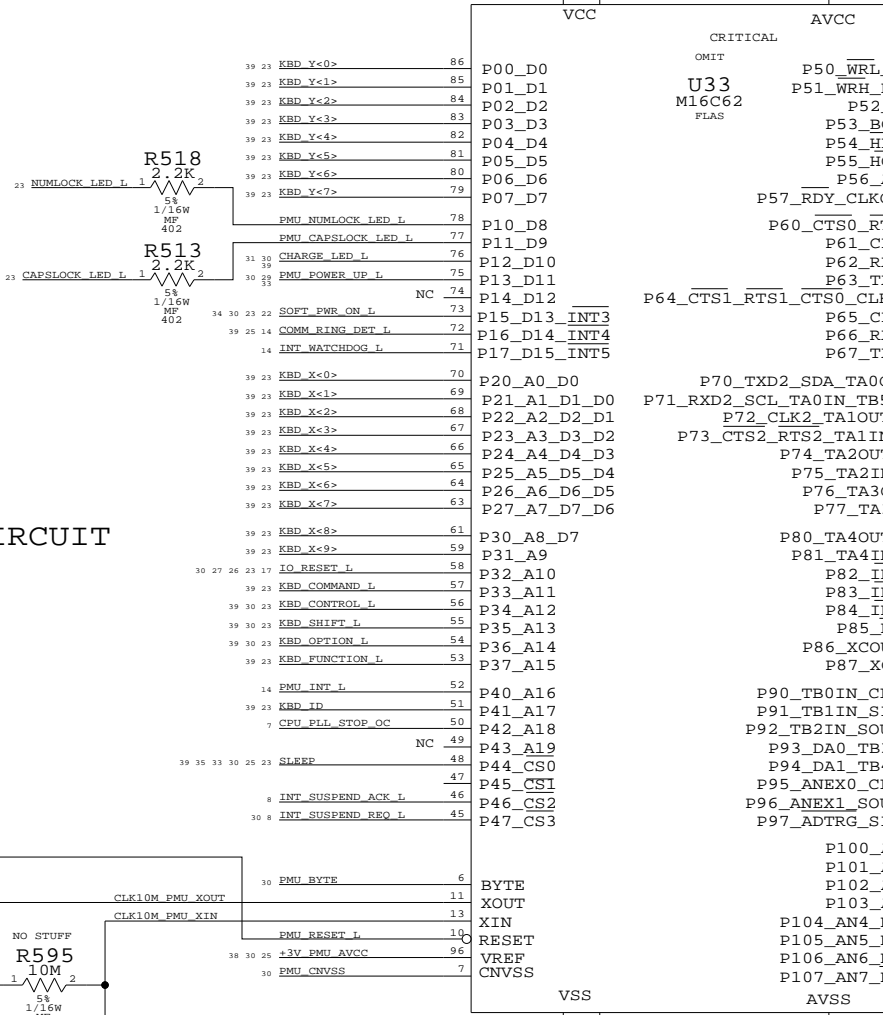
B

A

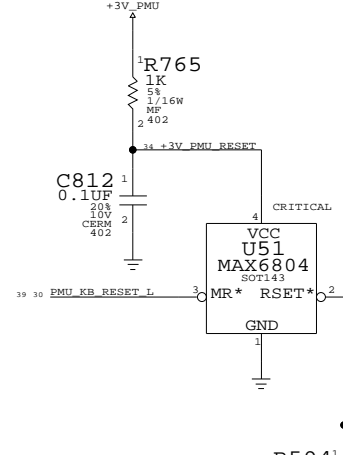


PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
341S1008	1	IC, PMU, V81B	U33	

CPU VCORE HI_OC/PMU_AP should have a pull-down for coming out of reset. MLB will have a pull-up to +3V_MAIN or +3V_SLEEP, which will act as our pull-down since both are off during PMU reset.



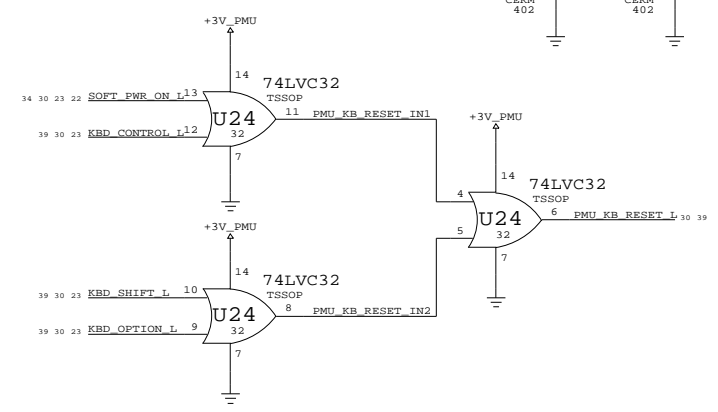
UNDERVOLTAGE RESET CIRCUIT



Keep crystal subcircuit close to PMU.
Y6'S LOAD CAPACITANCE IS 12PF

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0704	197S0041		Y6	ALT CRYSTAL SIZE
197S0604	197S0041		Y6	ALT FOR SIWARD

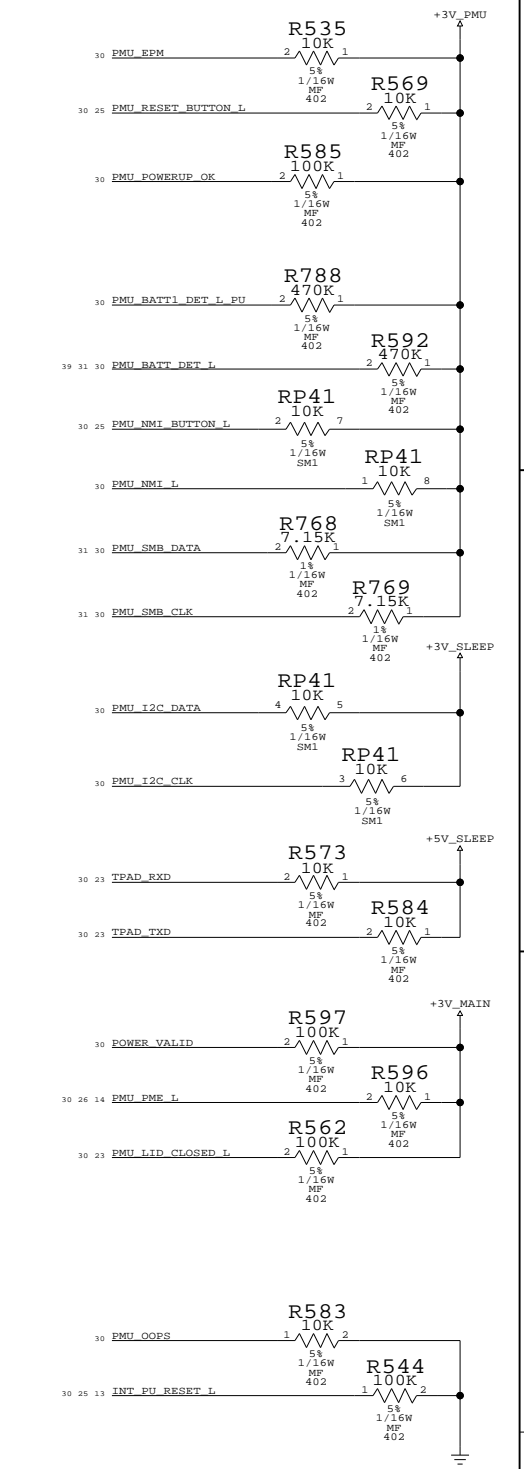
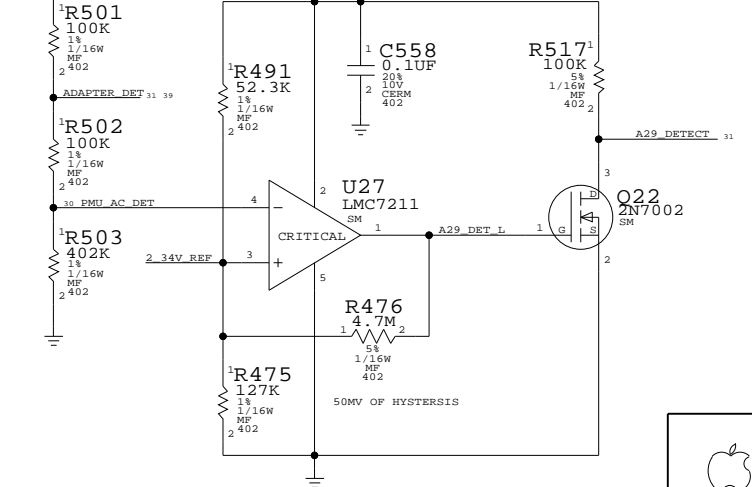
PMU KEYBOARD RESET CIRCUIT



Q11 ADAPTER DETECTION SCHEME

CASE	ADAPTER	PIN VOLT	ID VOLT RANGE	SYSTEM STATUS
1	Q11 (65W)	2.007V-2.066V	1.65V-2.31V	RECOGNIZES AS Q11 FULL FUNCTIONS
2	A29 (45W)	2.558V-2.661V	2.31V-2.97V	RECOGNIZES AS A29 LIMITED FUNCTIONS
3	AIRLINE	0.589V-0.663V	0.33V-0.99V	FULL FUNCTIONS NO BATTERY CHARGING
4	HOOPER	3.19V-3.28V	2.97V-3.30V	RECOGNIZES AS HOOPER LIMITED FUNCTIONS

A29 DETECT CIRCUIT



PMU

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

DC POWER INPUT

(POWER JACK, ETC. ON SEPARATE BOARD)

J18 87438-0833

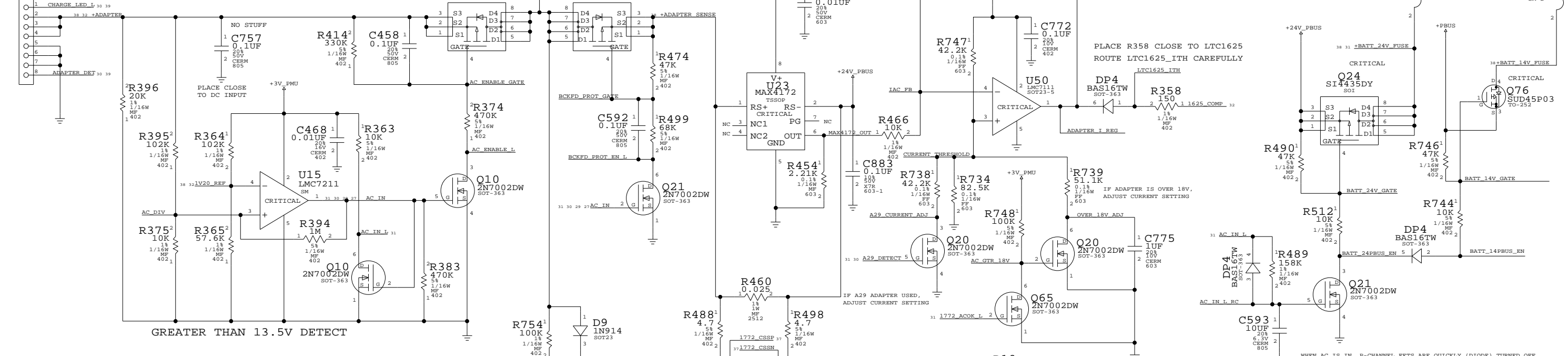
DC INRUSH LIMITER

PLACE U23 NEXT TO R460

U23 SENSE VOLTAGE DROP ACROSS R460

1MSEC INTEGRATION TIME

BATTERY SWITCH-OVER CIRCUIT

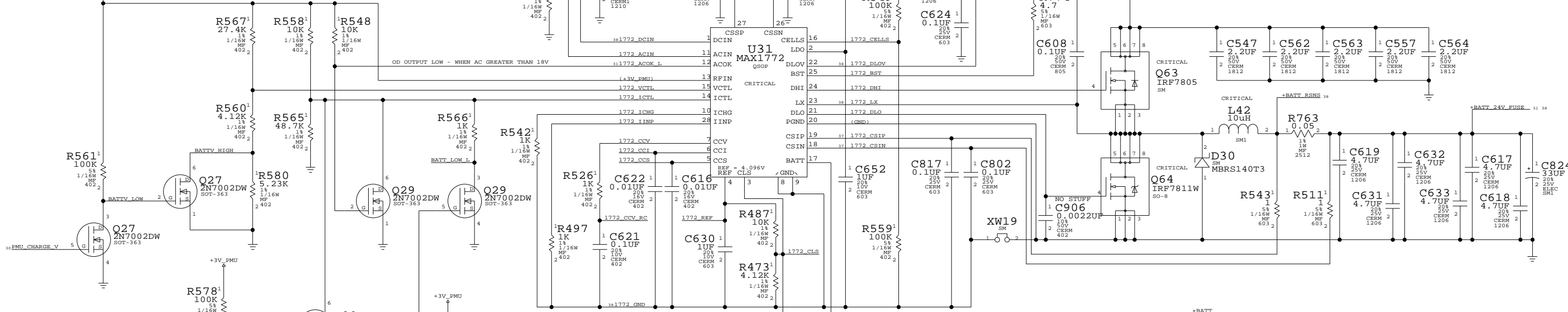


SWITCHER VOLTAGE CONTROL

PMU SELECTS BETWEEN TWO VOLTAGES

SWITCHER CURRENT CONTROL

CHARGE DISABLED BY PMU OR INPUT VOLTAGE <18V



BATTERY CONNECTOR

J25 87438-0833

BATTERY CHARGER

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

Table with columns: DRAWING NUMBER (D 051-6531), REV. (B), SCALE (NONE), SHEET (31 OF 44), and APPLE COMPUTER INC. logo.

Formulas for V_BATT and I_CHG calculations based on cell voltage and current.

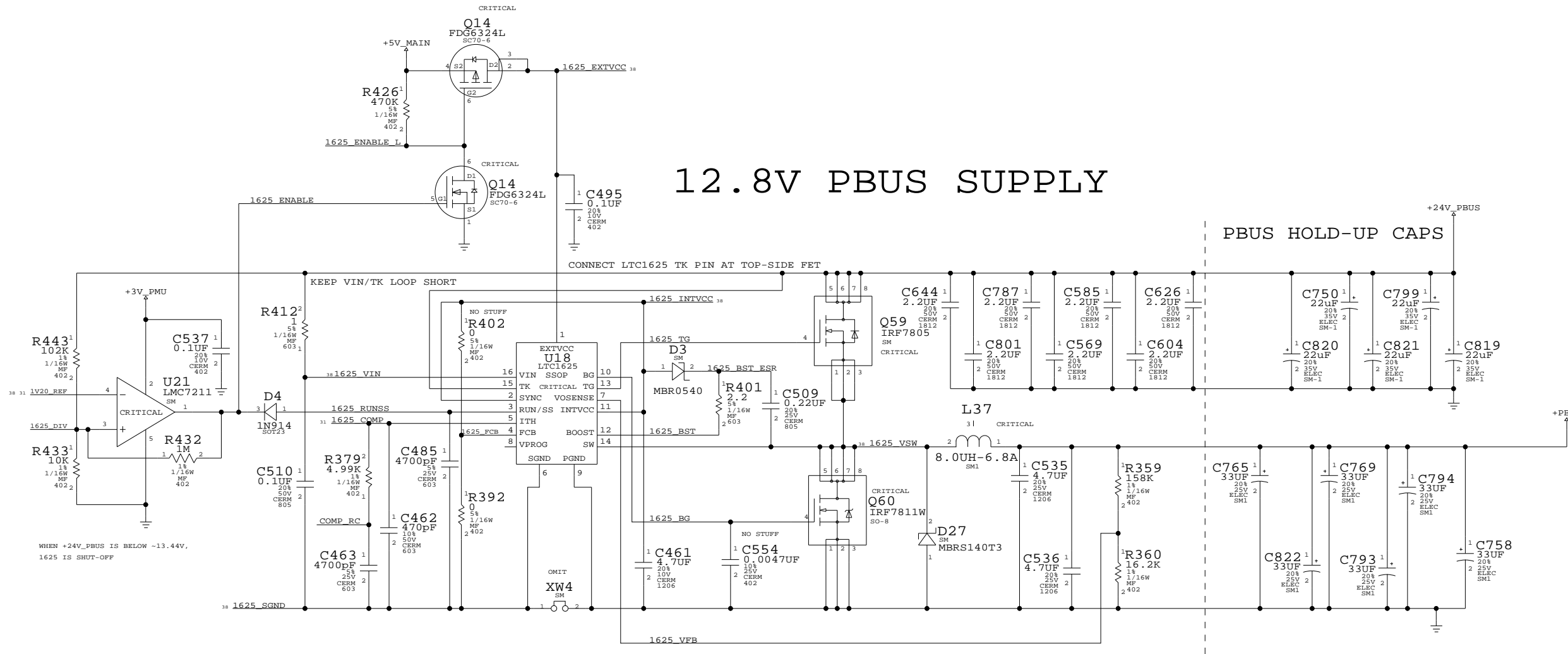
D

C

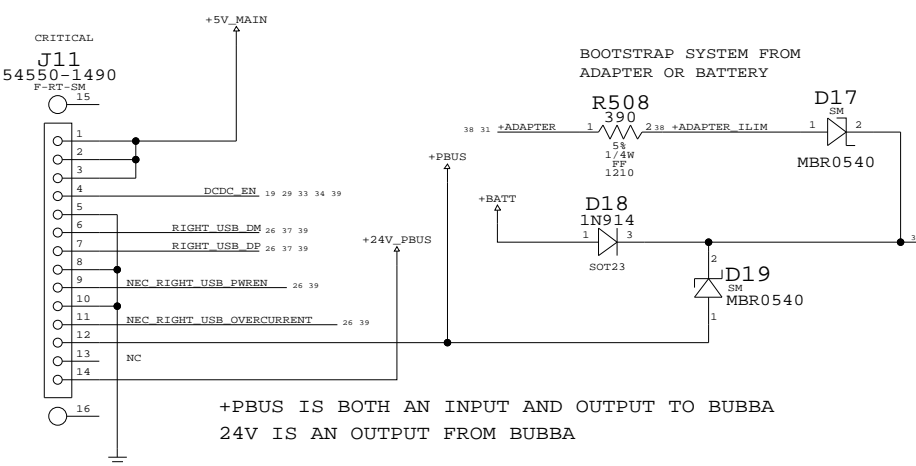
B

A

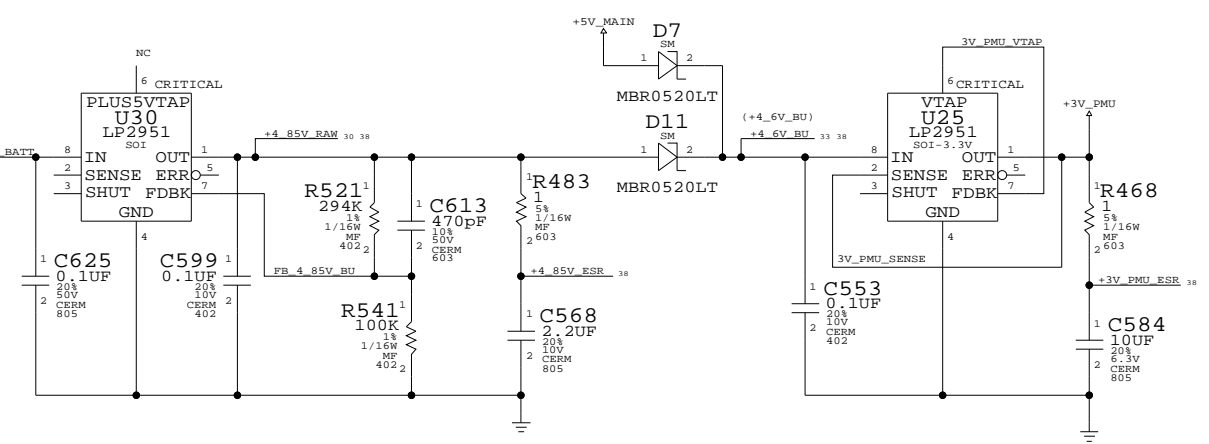
12.8V PBUS SUPPLY



BACKUP BATTERY / USB CONNECTOR



PMU SUPPLY

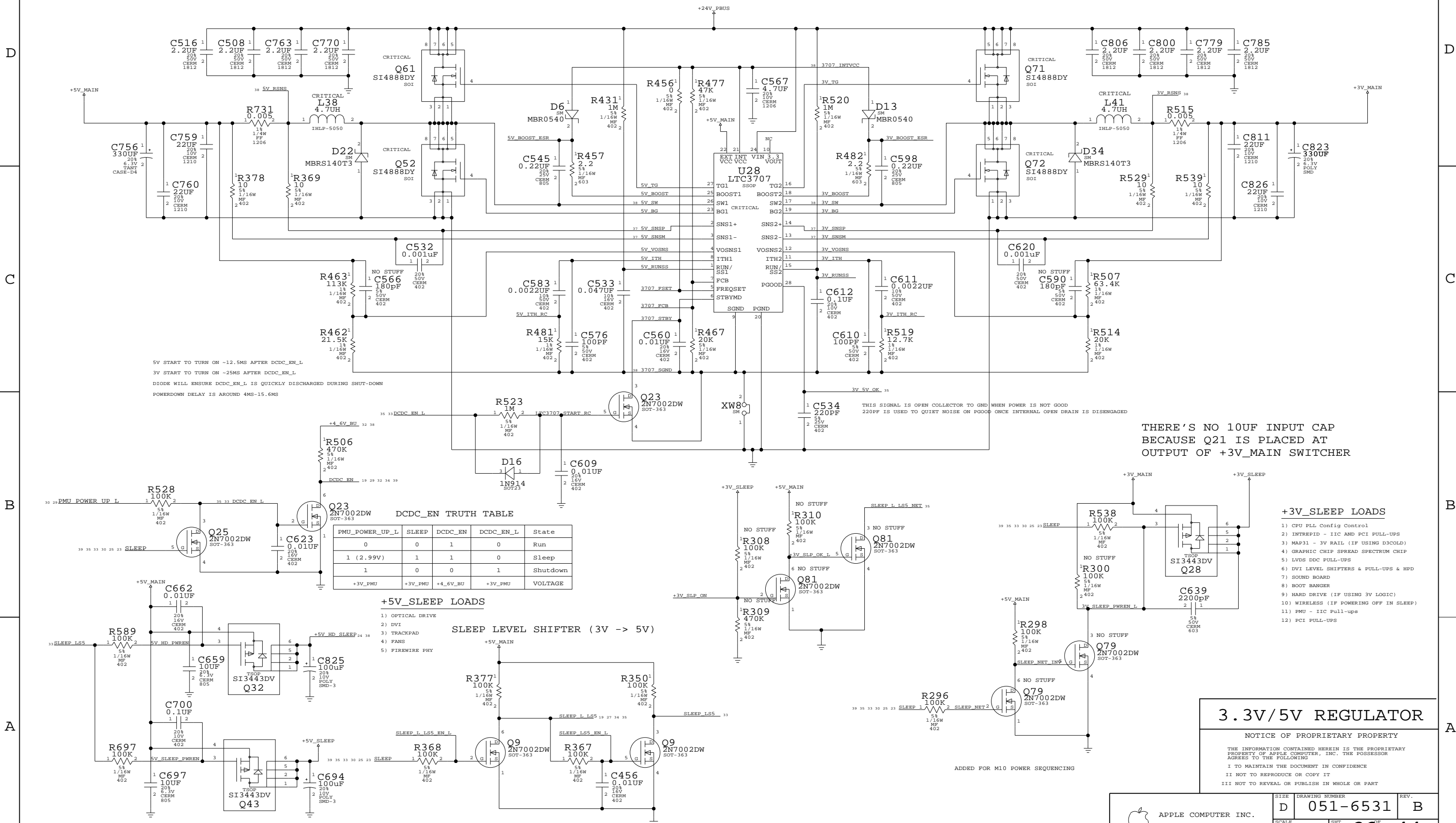


12.8V REGULATOR

NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	32 44	
NONE			

3.3V/5V MAIN SUPPLY



DCDC_EN TRUTH TABLE

PMU_POWER_UP_L	SLEEP	DCDC_EN	DCDC_EN_L	State
0	0	1	0	Run
1 (2.99V)	1	1	0	Sleep
1	0	0	1	Shutdown
+3V_PMU	+3V_PMU	+4.6V_BU	+3V_PMU	VOLTAGE

- +5V_SLEEP LOADS**
- 1) OPTICAL DRIVE
 - 2) DVI
 - 3) TRACKPAD
 - 4) FANS
 - 5) FIREWIRE PHY
- SLEEP LEVEL SHIFTER (3V -> 5V)**

- +3V_SLEEP LOADS**
- 1) CPU PLL Config Control
 - 2) INTREPID - IIC AND PCI PULL-UPS
 - 3) MAP31 - 3V RAIL (IF USING D3COLD)
 - 4) GRAPHIC CHIP SPREAD SPECTRUM CHIP
 - 5) LVDS DDC PULL-UPS
 - 6) DVI LEVEL SHIFTERS & PULL-UPS & HPD
 - 7) SOUND BOARD
 - 8) BOOT BANGER
 - 9) HARD DRIVE (IF USING 3V LOGIC)
 - 10) WIRELESS (IF POWERING OFF IN SLEEP)
 - 11) PMU - IIC Pull-ups
 - 12) PCI PULL-UPS

3.3V/5V REGULATOR

NOTICE OF PROPRIETARY PROPERTY

THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING

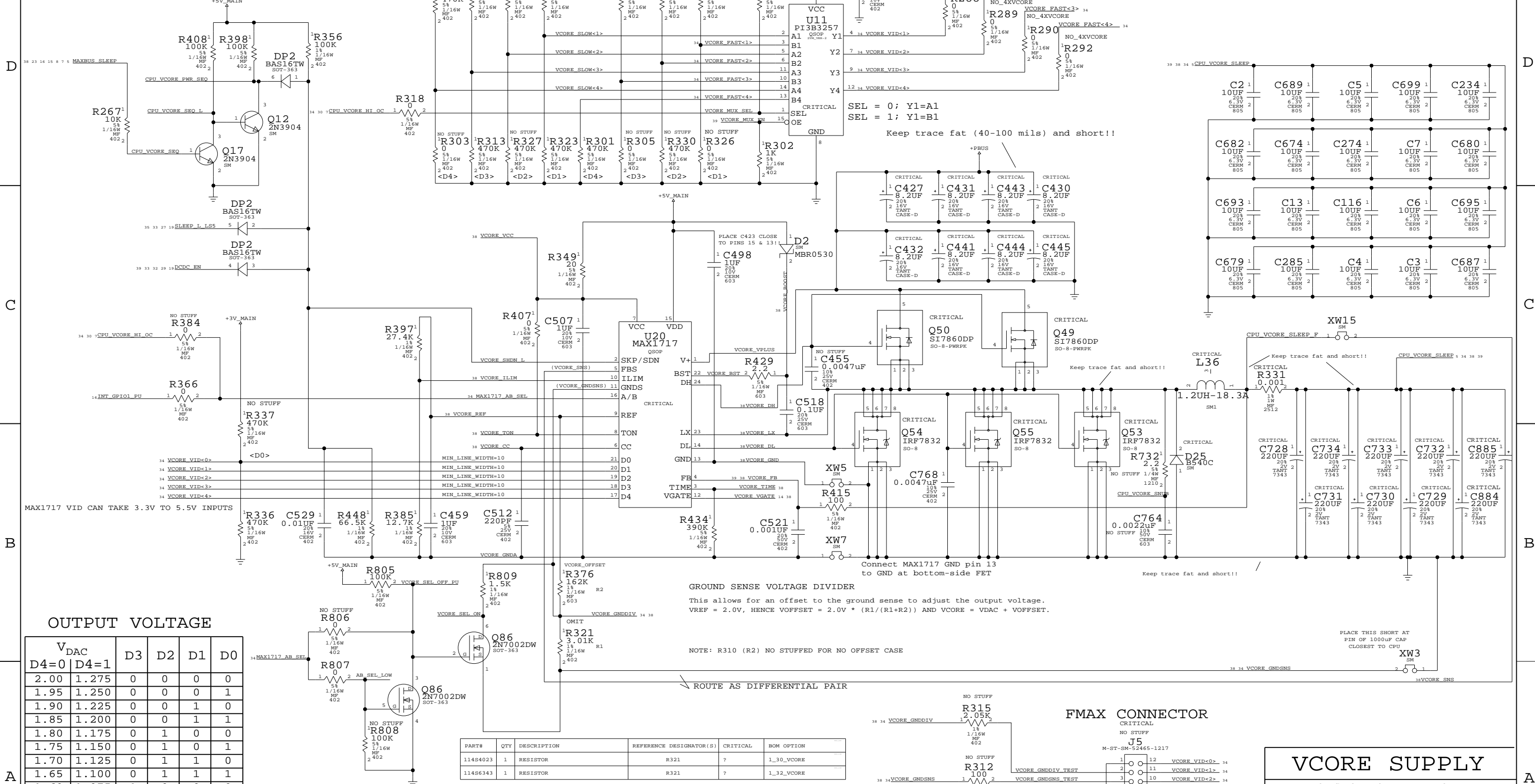
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	33 44	
NONE			

VCORE POWER SEQUENCING

CPU core follows CPU I/O voltage (approx. 7ms delay)

1.175V -> 1.025V 1.30V -> 1.10V



OUTPUT VOLTAGE

V _{DAC}		D3	D2	D1	D0
D4=0	D4=1				
2.00	1.275	0	0	0	0
1.95	1.250	0	0	0	1
1.90	1.225	0	0	1	0
1.85	1.200	0	0	1	1
1.80	1.175	0	1	0	0
1.75	1.150	0	1	0	1
1.70	1.125	0	1	1	0
1.65	1.100	0	1	1	1
1.60	1.075	1	0	0	0
1.55	1.050	1	0	0	1
1.50	1.025	1	0	1	0
1.45	1.000	1	0	1	1
1.40	0.975	1	1	0	0
1.35	0.950	1	1	0	1
1.30	0.925	1	1	1	0
NO CPU	NO CPU	1	1	1	1

FOR V-STEP:

D<4..0>	A/B_ =	
	Hi/Fast	Lo/Slow
<= 1K PU	1	0
>= 100K PD	1	1
>= 100K PD	0	1
<= 1K PD	0	0

When A/B_ is high (fast): D4-D0 read as-is
 When A/B_ is low (slow): <=1K-ohm -> 0
 >=100K-ohm -> 1

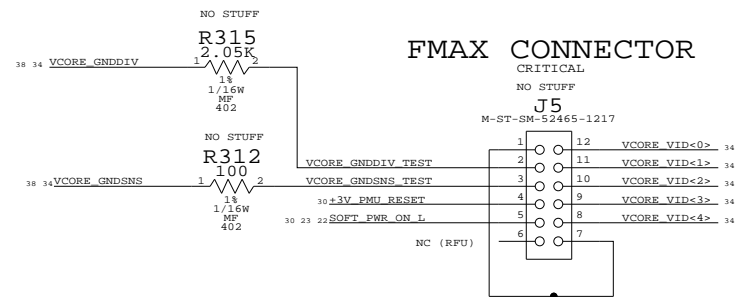
If all pull-ups are >=100K and all pull-downs are <=1K, V_A = V_B.

GROUND SENSE VOLTAGE DIVIDER
 This allows for an offset to the ground sense to adjust the output voltage.
 V_{REF} = 2.0V, HENCE V_{OFFSET} = 2.0V * (R1/(R1+R2)) AND V_{CORE} = V_{DAC} + V_{OFFSET}.

NOTE: R310 (R2) NO STUFFED FOR NO OFFSET CASE

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
11484023	1	RESISTOR	R321	?	1_30_VCORE
11486343	1	RESISTOR	R321	?	1_32_VCORE

FMAX CONNECTOR

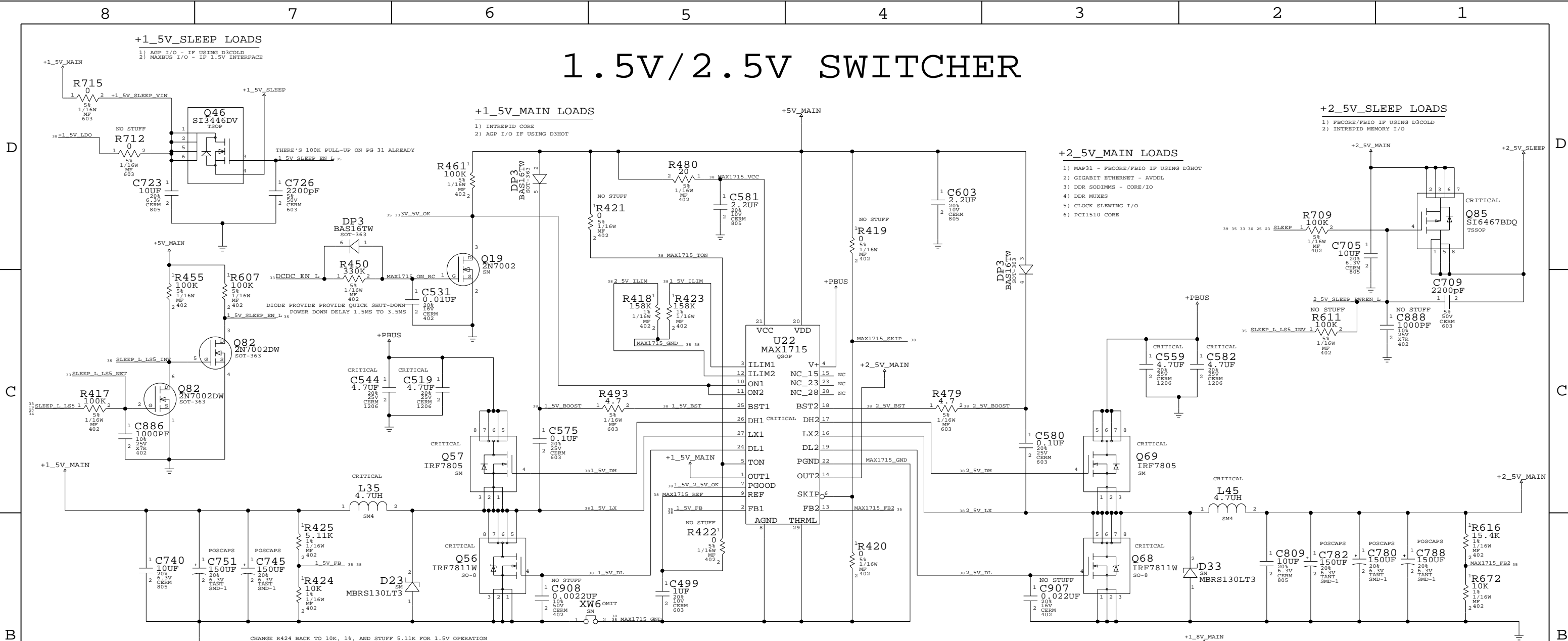


VCORE SUPPLY

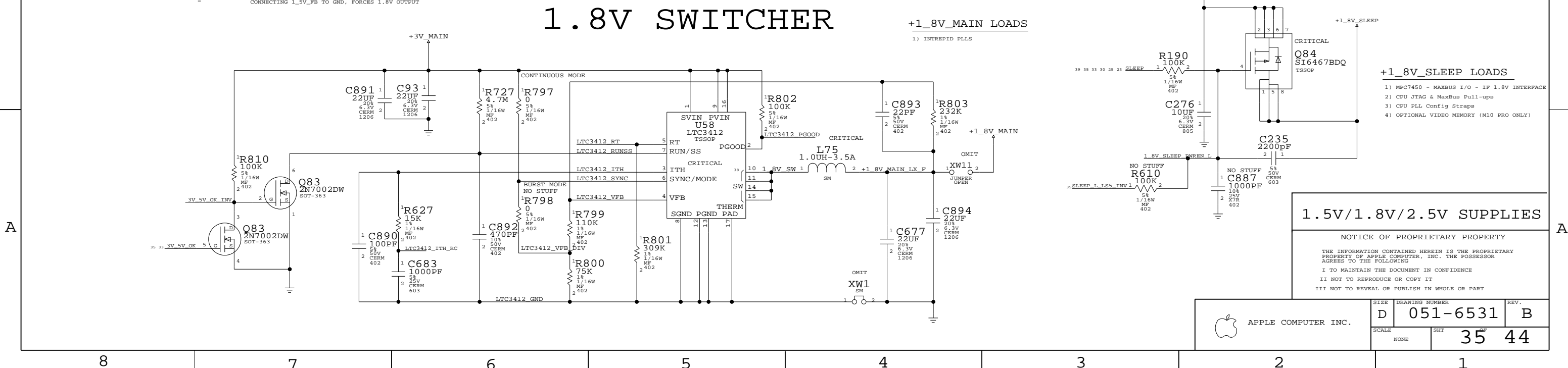
NOTICE OF PROPRIETARY PROPERTY
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
 II NOT TO REPRODUCE OR COPY IT
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	SHT	34 OF 44	
NONE			

1.5V/2.5V SWITCHER



1.8V SWITCHER

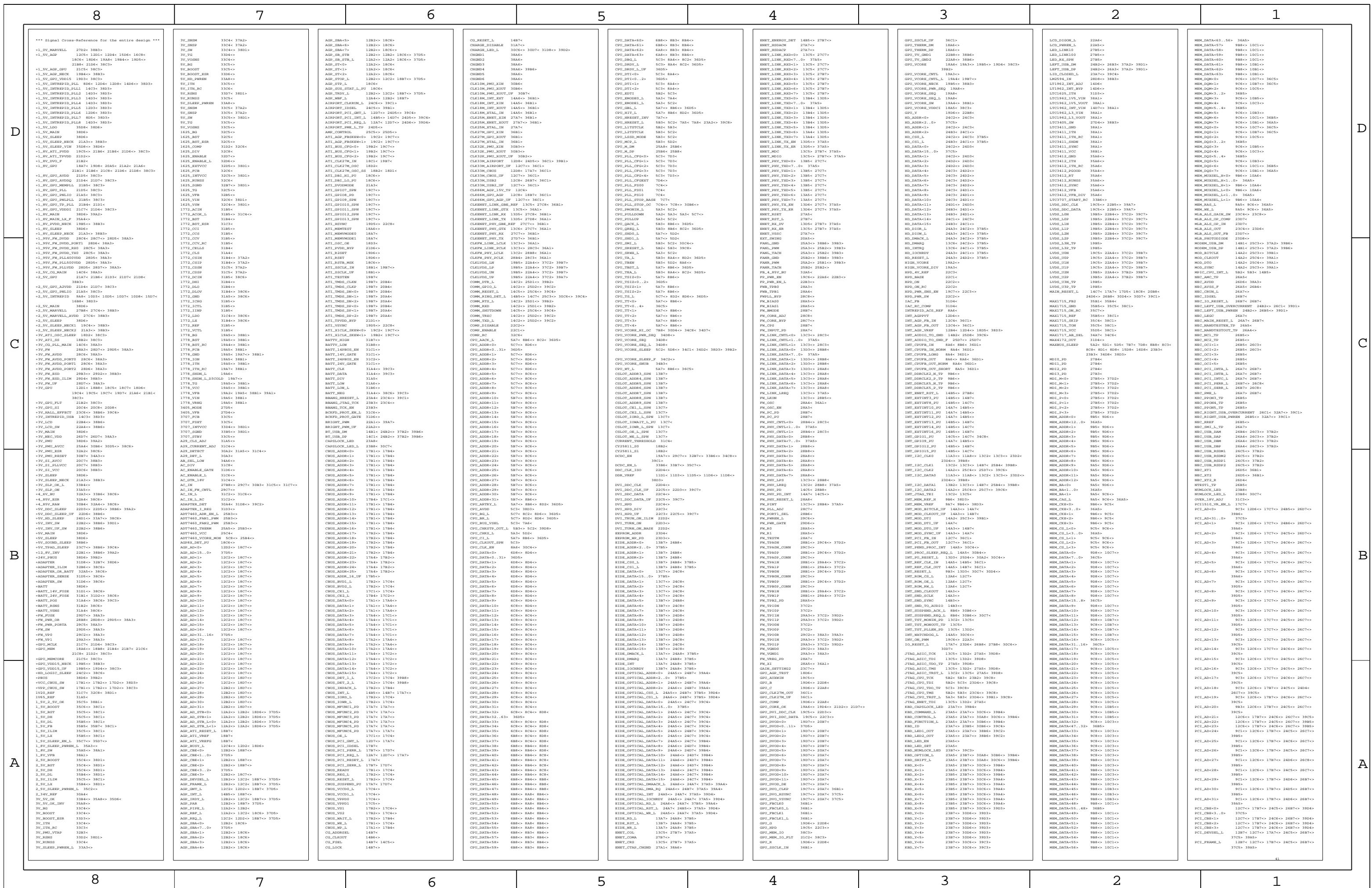


FUNCTIONAL TEST POINTS

8	7	6	5	4	3	2	1
FUNC_TEST=YES JTAG ASIC_TMS 13 27	FUNC_TEST=YES TMS_CONN_CLKP 22 37	FUNC_TEST=YES TV_C 22	FUNC_TEST=YES PCI_AD<7> 9 12 17 24 26 37	FUNC_TEST=YES PCI_PAR 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_CS0_L 24 37	FUNC_TEST=YES KBD_X<9> 23 30	FUNC_TEST=YES +5V_INV_SW 22 38
FUNC_TEST=YES JTAG ASIC_TDI 13	FUNC_TEST=YES VGA_R 22	FUNC_TEST=YES TV_Y 22	FUNC_TEST=YES PCI_AD<8> 9 12 17 24 26 37	FUNC_TEST=YES PCI_CBE<0> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_CS1_L 24 37	FUNC_TEST=YES KBD_Y<0> 23 30	FUNC_TEST=YES LEFT_USB_DM 24 26 37
FUNC_TEST=YES JTAG ASIC_TDO_TP 27	FUNC_TEST=YES VGA_G 22	FUNC_TEST=YES TV_COMP 22	FUNC_TEST=YES PCI_AD<9> 9 12 17 24 26 37	FUNC_TEST=YES PCI_CBE<1> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_RST_L 24 37	FUNC_TEST=YES KBD_Y<1> 23 30	FUNC_TEST=YES LEFT_USB_DP 24 26 37
FUNC_TEST=YES JTAG ASIC_TCK 13 27	FUNC_TEST=YES VGA_B 22	FUNC_TEST=YES SND_TO_AUDIO 14 25	FUNC_TEST=YES PCI_AD<10> 9 12 17 24 26 37	FUNC_TEST=YES PCI_CBE<2> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_WR_L 24 37	FUNC_TEST=YES KBD_Y<2> 23 30	FUNC_TEST=YES RIGHT_USB_DM 26 32 37
FUNC_TEST=YES JTAG ASIC_TRST_L 13 27	FUNC_TEST=YES VGA_VSYNC 22	FUNC_TEST=YES SND_SYNC 14 25	FUNC_TEST=YES PCI_AD<11> 9 12 17 24 26 37	FUNC_TEST=YES PCI_CBE<3> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_LOCHRDY 24 37	FUNC_TEST=YES KBD_Y<3> 23 30	FUNC_TEST=YES RIGHT_USB_DP 26 32 37
FUNC_TEST=YES CPU_CHKSTP_OUT_L 5	FUNC_TEST=YES VGA_HSYNC 22	FUNC_TEST=YES SND_CLKOUT 14 25 36	FUNC_TEST=YES PCI_AD<12> 9 12 17 24 26 37	FUNC_TEST=YES AIRPORT_PCI_REQ_L 12 24	FUNC_TEST=YES EIDE_OPTICAL_INT 24 37	FUNC_TEST=YES KBD_Y<4> 23 30	FUNC_TEST=YES NEC_LEFT_USB_PWREN 24 26
FUNC_TEST=YES CPU_SRESET_L 5	FUNC_TEST=YES DVI_DDC_CLK_UP 22	FUNC_TEST=YES DVI_DDC_CLK_UP 22	FUNC_TEST=YES PCI_AD<13> 9 12 17 24 26 37	FUNC_TEST=YES AIRPORT_PCI_GNT_L 12 24	FUNC_TEST=YES TPAD_F_TXD 23	FUNC_TEST=YES KBD_Y<5> 23 30	FUNC_TEST=YES NEC_LEFT_USB_OVERCURRENT 24 26
FUNC_TEST=YES CPU_HRESET_L 5 7 23	FUNC_TEST=YES DVI_DDC_DATA_UP 22	FUNC_TEST=YES DVI_DDC_DATA_UP 22	FUNC_TEST=YES PCI_AD<14> 9 12 17 24 26 37	FUNC_TEST=YES AIRPORT_PCI_INT_L 14 24	FUNC_TEST=YES TPAD_F_RXD 23	FUNC_TEST=YES KBD_Y<6> 23 30	FUNC_TEST=YES NEC_RIGHT_USB_PWREN 26 32
FUNC_TEST=YES JTAG_CPU_TMS 5 23	FUNC_TEST=YES DVI_HPD_UP 22	FUNC_TEST=YES INT_AUDIO_TO_SND 14 25	FUNC_TEST=YES PCI_AD<15> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<0> 24 37	FUNC_TEST=YES LID_CLOSED_L 23	FUNC_TEST=YES KBD_Y<7> 23 30	FUNC_TEST=YES NEC_RIGHT_USB_OVERCURRENT 26 32
FUNC_TEST=YES JTAG_CPU_TDI 5 23	FUNC_TEST=YES LVDS_L0N 19 22 37	FUNC_TEST=YES SND_SCLK 14 25 36	FUNC_TEST=YES PCI_AD<16> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<1> 24 37	FUNC_TEST=YES COMM_RESET_L 14 25	FUNC_TEST=YES KBD_NUMLOCK_LED 23	FUNC_TEST=YES DCDC_EN 19 29 32 33 34
FUNC_TEST=YES JTAG_CPU_TDO_TP 5	FUNC_TEST=YES LVDS_L0P 19 22 37	FUNC_TEST=YES SND_HW_RESET_L 14 25	FUNC_TEST=YES PCI_AD<17> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<2> 24 37	FUNC_TEST=YES COMM_SHUTDOWN 14 25	FUNC_TEST=YES +BATT_POS 31 38	FUNC_TEST=YES BRANG_HRESET_L 23
FUNC_TEST=YES JTAG_CPU_TCK 5 23	FUNC_TEST=YES LVDS_L1N 19 22 37	FUNC_TEST=YES SND_HP_SENSE_L 14 25	FUNC_TEST=YES PCI_AD<18> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<3> 24 37	FUNC_TEST=YES COMM_RING_DET_L 14 25 30	FUNC_TEST=YES BATT_CLK 31	FUNC_TEST=YES KBD_LED2_OUT 23 38
FUNC_TEST=YES JTAG_CPU_TEST_L 5 23 39	FUNC_TEST=YES LVDS_L1P 19 22 37	FUNC_TEST=YES SND_L1N_SENSE_L 14 25	FUNC_TEST=YES PCI_AD<19> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<4> 24 37	FUNC_TEST=YES KBD_ID 23 30	FUNC_TEST=YES BATT_DATA 31	FUNC_TEST=YES MAIN_RESET_L 14 17 18 20 24 26 30
	FUNC_TEST=YES LVDS_L2N 19 22 37	FUNC_TEST=YES INT_I2C_DATA2 14 25	FUNC_TEST=YES PCI_AD<20> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<5> 24 37	FUNC_TEST=YES +SV_TPAD_SLEEP 23 38	FUNC_TEST=YES BATT_NEG 31 38	FUNC_TEST=YES RF_DISABLE_L_SPN 24
	FUNC_TEST=YES LVDS_L2P 19 22 37	FUNC_TEST=YES INT_I2C_CLK2 14 25	FUNC_TEST=YES PCI_AD<21> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<6> 24 37	FUNC_TEST=YES +3V_HALL_EFFECT 23 38	FUNC_TEST=YES PMU_BATT_DET_L 30 31	FUNC_TEST=YES AIRPORT_CLKRUN_L 24
	FUNC_TEST=YES CLKLVDS_IN 19 22 37	FUNC_TEST=YES CHGND4 38	FUNC_TEST=YES PCI_AD<22> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<7> 24 37	FUNC_TEST=YES KBD_CAPSLOCK_LED 23	FUNC_TEST=YES FANR_GND 25 38	FUNC_TEST=YES ROM_RW_L 9 12 24
	FUNC_TEST=YES CLKLVDS_LP 19 22 37	FUNC_TEST=YES SLEEP_LED 23 25	FUNC_TEST=YES PCI_AD<23> 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<8> 24 37	FUNC_TEST=YES KBD_FUNCTION_L 23 30	FUNC_TEST=YES COMM_RTS_L 14 25	FUNC_TEST=YES ROM_ONBOARD_CS_L 9 24
FUNC_TEST=YES INT_I2C_CLK0 11 13 23	FUNC_TEST=YES LVDS_U0N 19 22 37		FUNC_TEST=YES PCI_AD<24> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<9> 24 37	FUNC_TEST=YES KBD_CONTROL_L 23 30	FUNC_TEST=YES FANL_GND 25 38	FUNC_TEST=YES ROM_CS_L 9 12 24
FUNC_TEST=YES INT_I2C_DATA0 11 13 23	FUNC_TEST=YES LVDS_U0P 19 22 37		FUNC_TEST=YES PCI_AD<25> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<10> 24 37	FUNC_TEST=YES KBD_COMMAND_L 23 30	FUNC_TEST=YES FANL_TACH 25	FUNC_TEST=YES CLK33M_AIRPORT 12 24 36
FUNC_TEST=YES INT_I2C_CLK1 13 14 25	FUNC_TEST=YES LVDS_U1N 19 22 37	FUNC_TEST=YES BT_USB_DM 14 24 37	FUNC_TEST=YES PCI_AD<26> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<11> 24 37	FUNC_TEST=YES KBD_OPTION_L 23 30	FUNC_TEST=YES FANR_PWM 25	FUNC_TEST=YES AIRPORT_IDSEL 24
FUNC_TEST=YES INT_I2C_DATA1 13 14 25	FUNC_TEST=YES LVDS_U1P 19 22 37	FUNC_TEST=YES BT_USB_DP 14 24 37	FUNC_TEST=YES PCI_AD<27> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<12> 24 37	FUNC_TEST=YES KBD_SHIFT_L 23 30	FUNC_TEST=YES FANL_PWM 25	FUNC_TEST=YES ROM_0E_L 9 12 24
FUNC_TEST=YES CBUS_DET_1_L 17	FUNC_TEST=YES LVDS_U2N 19 22 37	FUNC_TEST=YES MODEM_USB_DM 14 25 37	FUNC_TEST=YES PCI_AD<28> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<13> 24 37	FUNC_TEST=YES KBD_X<0> 23 30	FUNC_TEST=YES RJ45_DP<0> 27 37	FUNC_TEST=YES INT_MOD_DTI 14 25
FUNC_TEST=YES CBUS_DET_2_L 17	FUNC_TEST=YES LVDS_U2P 19 22 37	FUNC_TEST=YES MODEM_USB_DP 14 25 37	FUNC_TEST=YES PCI_AD<29> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<14> 24 37	FUNC_TEST=YES KBD_X<1> 23 30	FUNC_TEST=YES RJ45_DP<1> 27 37	FUNC_TEST=YES +24V_PBUS 38
FUNC_TEST=YES TMS_DN<0> 20 22 37	FUNC_TEST=YES CLKLVDS_UN 19 22 37	FUNC_TEST=YES PCI_AD<0> 9 12 17 24 26 37	FUNC_TEST=YES PCI_AD<30> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DATA<15> 24 37	FUNC_TEST=YES KBD_X<2> 23 30	FUNC_TEST=YES RJ45_DP<2> 27 37	FUNC_TEST=YES GPU_VCORE 18 19 38
FUNC_TEST=YES TMS_DP<0> 20 22 37	FUNC_TEST=YES CLKLVDS_UP 19 22 37	FUNC_TEST=YES PCI_AD<1> 9 12 17 24 26 37	FUNC_TEST=YES PCI_AD<31> 9 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DMA_REQ 24 37	FUNC_TEST=YES KBD_X<3> 23 30	FUNC_TEST=YES RJ45_DP<3> 27 37	FUNC_TEST=YES CPU_VCORE_SLEEP 5 34 38
FUNC_TEST=YES TMS_DN<1> 20 22 37	FUNC_TEST=YES LVDS_DDC_CLK 19 22	FUNC_TEST=YES PCI_AD<2> 9 12 17 24 26 37	FUNC_TEST=YES PCI_FRAME_L 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_RD_L 24 37	FUNC_TEST=YES KBD_X<4> 23 30	FUNC_TEST=YES RJ45_DP<4> 27 37	FUNC_TEST=YES MOD_BITCLK 14 25
FUNC_TEST=YES TMS_DP<1> 20 22 37	FUNC_TEST=YES LVDS_DDC_DATA 19 22	FUNC_TEST=YES PCI_AD<3> 9 12 17 24 26 37	FUNC_TEST=YES PCI_TREDY_L 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_DMAACK_L 24 37	FUNC_TEST=YES KBD_X<5> 23 30	FUNC_TEST=YES RJ45_DP<5> 27 37	FUNC_TEST=YES MOD_CLKOUT 14 25
FUNC_TEST=YES TMS_DN<2> 20 22 37	FUNC_TEST=YES BRIGHT_PWM 22	FUNC_TEST=YES PCI_AD<4> 9 12 17 24 26 37	FUNC_TEST=YES PCI_IRDY_L 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_ADDR<0> 24 37	FUNC_TEST=YES KBD_X<6> 23 30	FUNC_TEST=YES RJ45_DP<6> 27 37	FUNC_TEST=YES MOD_DTD 14 25
FUNC_TEST=YES TMS_DP<2> 20 22 37	FUNC_TEST=YES TV_GND1 22 38	FUNC_TEST=YES PCI_AD<5> 9 12 17 24 26 37	FUNC_TEST=YES PCI_DEVSEL_L 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_ADDR<1> 24 37	FUNC_TEST=YES KBD_X<7> 23 30	FUNC_TEST=YES RJ45_DP<7> 27 37	FUNC_TEST=YES +1.8V_MAIN 38
FUNC_TEST=YES TMS_CONN_CLKN 22 37	FUNC_TEST=YES TV_GND2 22 38	FUNC_TEST=YES PCI_AD<6> 9 12 17 24 26 37	FUNC_TEST=YES PCI_STOP_L 12 17 24 26 37	FUNC_TEST=YES EIDE_OPTICAL_ADDR<2> 24 37	FUNC_TEST=YES KBD_X<8> 23 30	FUNC_TEST=YES RJ45_DP<8> 27 37	FUNC_TEST=YES +3V_PMU 38
				FUNC_TEST=YES SND_AMP_MUTE 25	FUNC_TEST=YES SRCLK_TP 26	FUNC_TEST=YES RJ45_DP<9> 27 37	FUNC_TEST=YES SLEEP 23 25 30 33 35
				FUNC_TEST=YES SND_HP_MUTE_INV 25	FUNC_TEST=YES SRMOD_TP 26	FUNC_TEST=YES RJ45_DP<10> 27 37	FUNC_TEST=YES +5V_DDC_SLEEP 22 38
					FUNC_TEST=YES TEB_TP 26	FUNC_TEST=YES RJ45_DP<11> 27 37	FUNC_TEST=YES +12.8V_INV 22 38
					FUNC_TEST=YES TEST_TP 26	FUNC_TEST=YES VCORE_VID1 29 38	FUNC_TEST=YES 1778_VFB 19 38
						FUNC_TEST=YES VCORE_VID2 29 38	
						FUNC_TEST=YES VCORE_VID3 29 38	
						FUNC_TEST=YES VCORE_VID4 29 38	
						FUNC_TEST=YES VCORE_MUX_EN 34	

NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6531	B
SCALE	NONE	SHT	39 OF 44

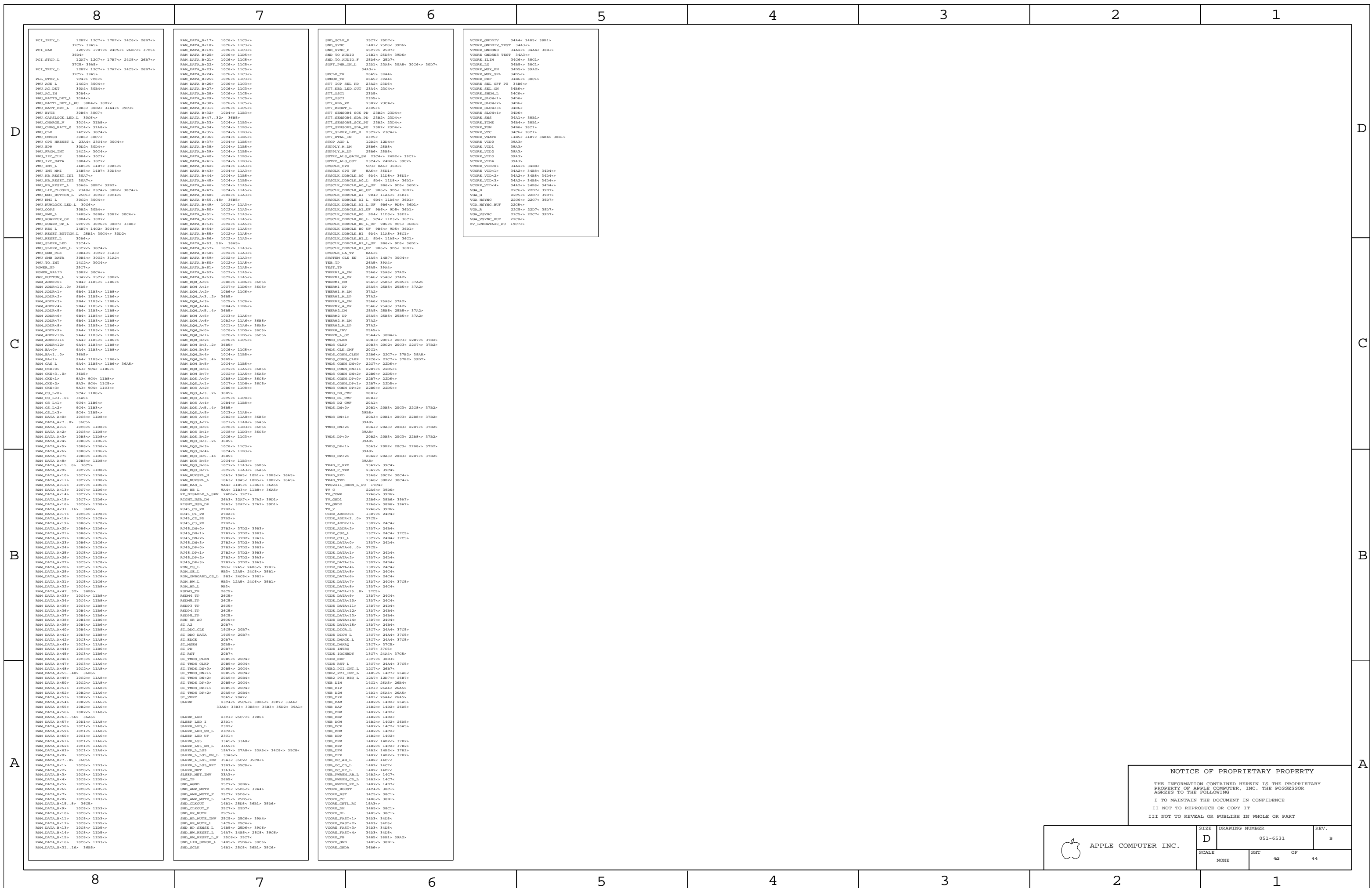


B

A

B

A



NOTICE OF PROPRIETARY PROPERTY
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE
II NOT TO REPRODUCE OR COPY IT
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

SCALE	DRAWING NUMBER	REV.
NONE	SHEET	OF
	42	44



APPLE COMPUTER INC.

Grid with columns 1-8 and rows A-D. Each cell contains a list of component identifiers like 85371 RES 27.