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
01		279015	ENGINEERING RELEASED	06/06/03	?

Q59 MLB DVT

LAST_MODIFIED=Wed Sep 17 12:11:39 2003

TABLE OF CONTENTS

POWER RAIL DEFINITIONS

	RUN	SLEEP	SHUTDOWN
+2_5V_MAIN	ON	ON	OFF
+3V_MAIN	ON	ON	OFF
+5V_MAIN	ON	ON	OFF
+5V_SLEEP	ON	OFF	OFF
+12V_MAIN	ON	ON	ON
+12V_SLEEP	ON	OFF	OFF
FW_PWR	ON	ON	OFF
+1.8V_SLEEP	ON	OFF	OFF
+MAXBUS_SLEEP	ON	OFF	OFF

SCHEMATIC AND PCB SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-6497	1	SCHEM,MLB,Q59	SCH1	CRITICAL	
820-1550	1	PCB,MLB,IMACG4	PCB1	CRITICAL	
825-2029	1	LBL,SER #,BARCODE	PCB1		
056-1158	1	DESIGN GUIDE,MCO,IMACG4	PCB1	CRITICAL	
057-0085	1	DFM,PNLZN DWG,MLB,Q59	PCB1	CRITICAL	
630-XXXX	1	630-XXXX,PCBA,H,Q59,EEE XXX	HYNIX		OMIT
630-XXXX	1	630-XXXX,PCBA,S,Q59,EEE XXX	SAMSUNG		OMIT

PCB,UL RECOGNIZED, MIN.130 DEG. C TEMP. RATING AND V-0 FLAME RATING PER UL 796 & UL 94. PCB TO BE SILK-SCREENED WITH UL/CUL RECOGNITION MARK, MANUFACTURER'S UL FILE NUMBER, UL PCB MATERIAL DESIGNATION, TEMPERATURE RATING AND FLAME RATING.

DIMENSIONS ARE IN MILLIMETERS
XX ±
X.XX ±
X.XXX ±
ANGLES ±
DO NOT SCALE DRAWING
THIRD ANGLE PROJECTION

METRIC

DRAFTER | DESIGN CK
ENG APPD | MFG APPD
QA APPD | DESIGNER
RELEASE | SCALE NONE
MATERIAL/FINISH NOTED AS APPLICABLE | SIZE D

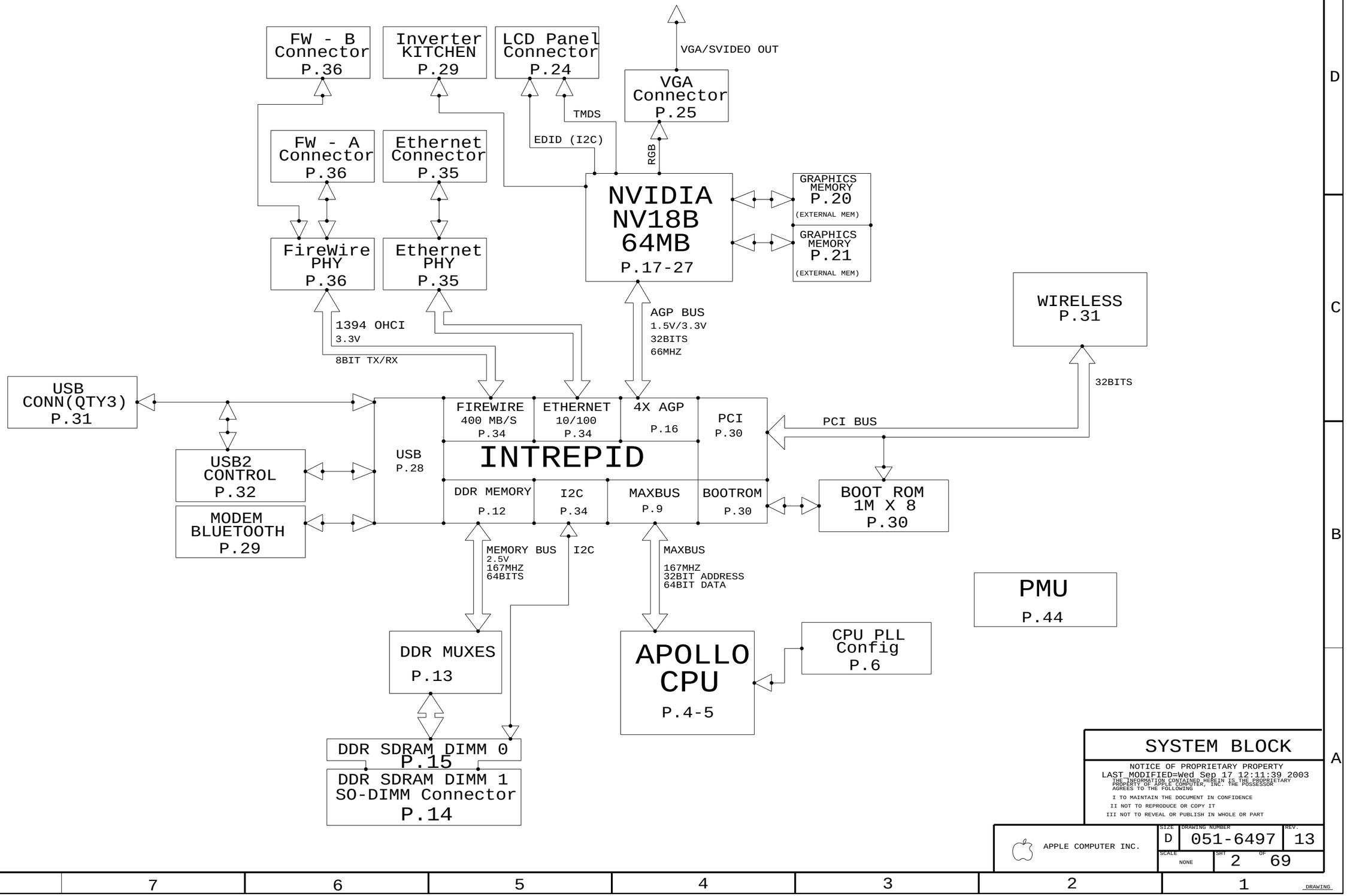
Apple Computer Inc.

TITLE: SCHEM,MLB,Q59

DRAWING NUMBER 051-6497 REV. 13

SHT 1 OF 69

DRAWING



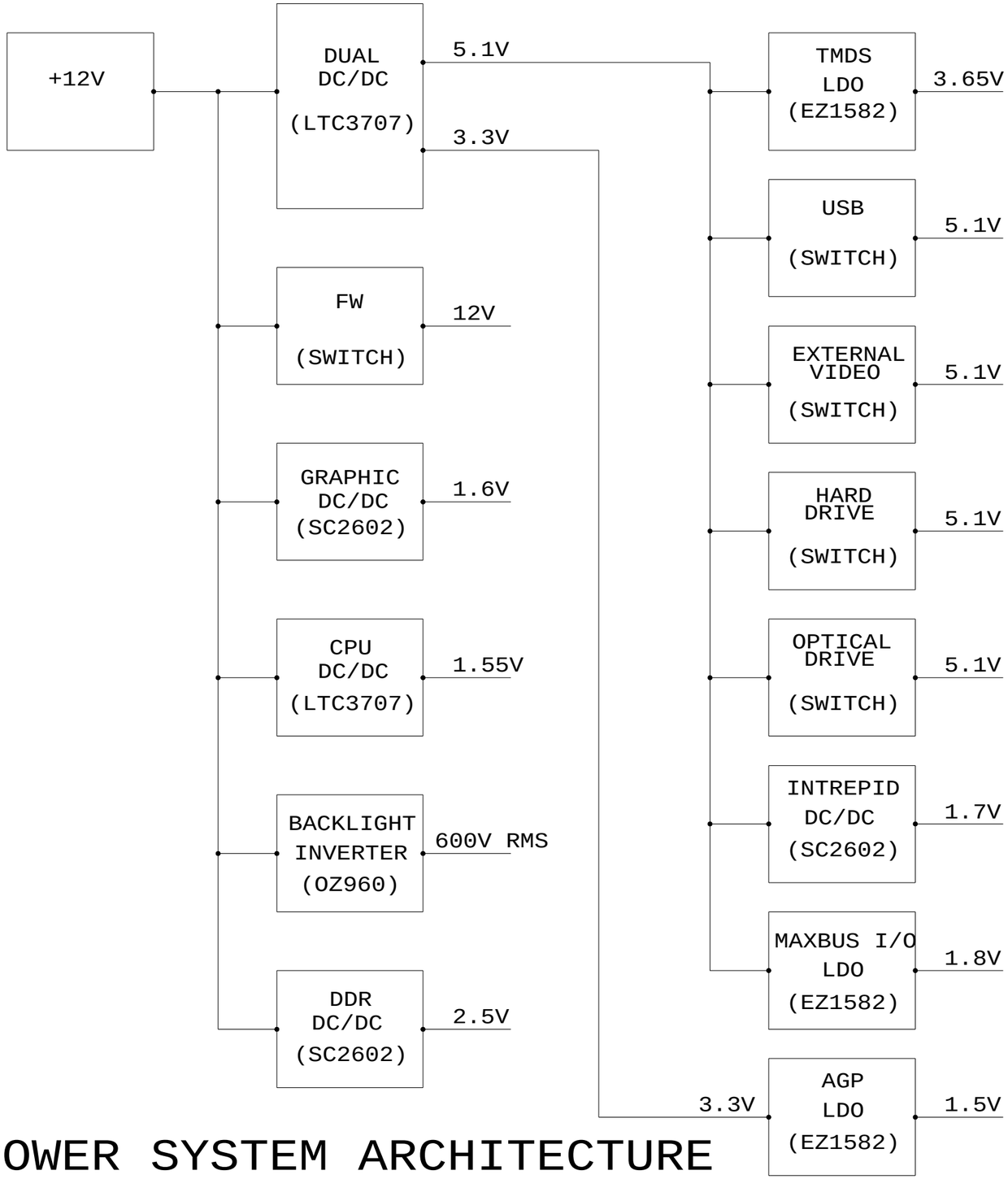
SYSTEM BLOCK

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	2	69

DRAWING



POWER SYSTEM ARCHITECTURE

LAYER	THICKNESS (MILS)	COPPER (OZ)	TRACE WIDTH (MILS)
1 - SIGNAL-TOP	0.7	0.5	4
PREPREG	3	---	
2 - GROUND1	1.4	1	---
PREPREG	3	---	
3 - SIGNAL	0.7	0.5	4
FILLER	17.4	---	
4 - POWER	2.8	2	---
PREPREG	4	---	
5 - POWER	2.8	2	---
FILLER	17.4	---	
6 - SIGNAL	0.7	0.5	4
PREPREG	3	---	
7 - GROUND2	1.4	1	---
PREPREG	3	---	
8 - SIGNAL-BOTTOM	0.7	0.5	4
TOTAL	62.0	---	---

NOSTUFF ZT39 HOLE-VIA-20R10
NOSTUFF ZT46 HOLE-VIA-20R10
NOSTUFF ZT53 HOLE-VIA-20R10
NOSTUFF ZT59 HOLE-VIA-20R10
NOSTUFF ZT64 HOLE-VIA-20R10
NOSTUFF ZT40 HOLE-VIA-20R10
NOSTUFF ZT47 HOLE-VIA-20R10
NOSTUFF ZT54 HOLE-VIA-20R10
NOSTUFF ZT60 HOLE-VIA-20R10
NOSTUFF ZT65 HOLE-VIA-20R10
NOSTUFF ZT41 HOLE-VIA-20R10
NOSTUFF ZT48 HOLE-VIA-20R10
NOSTUFF ZT55 HOLE-VIA-20R10
NOSTUFF ZT61 HOLE-VIA-20R10
NOSTUFF ZT66 HOLE-VIA-20R10
NOSTUFF ZT42 HOLE-VIA-20R10
NOSTUFF ZT49 HOLE-VIA-20R10
NOSTUFF ZT56 HOLE-VIA-20R10
NOSTUFF ZT62 HOLE-VIA-20R10
NOSTUFF ZT67 HOLE-VIA-20R10
NOSTUFF ZT43 HOLE-VIA-20R10
NOSTUFF ZT50 HOLE-VIA-20R10
NOSTUFF ZT57 HOLE-VIA-20R10
NOSTUFF ZT63 HOLE-VIA-20R10
NOSTUFF ZT68 HOLE-VIA-20R10
NOSTUFF ZT44 HOLE-VIA-20R10
NOSTUFF ZT51 HOLE-VIA-20R10
NOSTUFF ZT58 HOLE-VIA-20R10
NOSTUFF ZT45 HOLE-VIA-20R10
NOSTUFF ZT52 HOLE-VIA-20R10

PWR BLOCK,PCB INFO

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 3 OF 69
DRAWING

CPU INTERNAL PLL FILTERING

59D8> 59B6> 52C6> 45D2<> 8C1< 8B7< 4D3< CPU_VCORE_SLEEP

R891 1 470 5% 1/16W MF 402 2

+MAXBUS_SLEEP 6C5< 6D6< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6> 59C8>

CPU_VCORE_SLEEP 4D7< 8B7< 8C1< 45D2<> 52C6> 59B6> 59D8>

R901 1 10 1% 1/16W MF 603 2

52C6> CPU_AVDD

C1036 1 0.1UF 20% 10V CERM 402 2

C1035 1 2.2UF N20P80% 16V CERM 805 2

H8 H10 H12 J7 J9 J11 J13 K8 K10 K12 K14 L7 L9 L11 L13 M8 M10 M12 — VDD

B4 C2 C12 D5 E18 F2 G18 H3 J5 K2 L5 M3 N6 P2 P8 P11 R4 R13 R16 T6 T9 U2 U12 U16 V4 V7 V10 V14 — OVDD

A8 — AVDD

56D3> 9D3< 8B4<> 7C7<	CPU_BR_L	D2	BR*
56D3> 9D3<> 8B4<> 7B7<	CPU_BG_L	M1	BG*
56D3> 9D3<> 8B7<> 7C7<	CPU_TS_L	L4	TS*
7C5< 4A3<	CPU_PULLDOWN	E11	A0
		H1	A1
		C11	A2
		G3	A3
56D3> 9D3<> 8B4<>	CPU_ADDR<0>	F10	A4
56D3> 9D3<> 8B5<>	CPU_ADDR<1>	L2	A5
56D3> 9D3<> 8B4<>	CPU_ADDR<2>	D11	A6
56D3> 9D3<> 8B8<>	CPU_ADDR<3>	D1	A7
56D3> 9D3<> 8B5<>	CPU_ADDR<4>	C16	A8
56D3> 9D3<> 8B7<>	CPU_ADDR<5>	G2	A9
56D3> 9D3<> 8C4<>	CPU_ADDR<6>	D12	A10
56D3> 9D3<> 8B7<>	CPU_ADDR<7>	L3	A11
56D3> 9D3<> 8C5<>	CPU_ADDR<8>	G4	A12
56D3> 9C3<> 8B8<>	CPU_ADDR<9>	T2	A13
56D3> 9C3<> 8B8<>	CPU_ADDR<10>	F4	A14
56D3> 9C3<> 8C4<>	CPU_ADDR<11>	V1	A15
56D3> 9C3<> 8B7<>	CPU_ADDR<12>	J4	A16
56D3> 9C3<> 8B8<>	CPU_ADDR<13>	R2	A17
56D3> 9C3<> 8B7<>	CPU_ADDR<14>	K5	A18
56D3> 9C3<> 8B7<>	CPU_ADDR<15>	W2	A19
56D3> 9C3<> 8B8<>	CPU_ADDR<16>	J2	A20
56D3> 9C3<> 8B8<>	CPU_ADDR<17>	K4	A21
56D3> 9C3<> 8C8<>	CPU_ADDR<18>	N4	A22
56D3> 9C3<> 8B7<>	CPU_ADDR<19>	J3	A23
56D3> 9C3<> 8B8<>	CPU_ADDR<20>	M5	A24
56D3> 9C3<> 8C7<>	CPU_ADDR<21>	P5	A25
56D3> 9C3<> 8C7<>	CPU_ADDR<22>	N3	A26
56D3> 9C3<> 8C8<>	CPU_ADDR<23>	T1	A27
56D3> 9C3<> 8B7<>	CPU_ADDR<24>	V2	A28
56D3> 9C3<> 8B8<>	CPU_ADDR<25>	U1	A29
56D3> 9C3<> 8C8<>	CPU_ADDR<26>	N5	A30
56D3> 9C3<> 8C8<>	CPU_ADDR<27>	W1	A31
56D3> 9C3<> 8C7<>	CPU_ADDR<28>	B12	A32
56D3> 9C3<> 8C8<>	CPU_ADDR<29>	C4	A33
56D3> 9C3<> 8C7<>	CPU_ADDR<30>	G10	A34
56D3> 9C3<> 8C7<>	CPU_ADDR<31>	B11	A35
	NC_CPUAP<0> NO_TEST	C1	AP0
	NC_CPUAP<1> NO_TEST	E3	AP1
	NC_CPUAP<2> NO_TEST	H6	AP2
	NC_CPUAP<3> NO_TEST	F5	AP3
	NC_CPUAP<4> NO_TEST	G7	AP4
56D3> 9B3<> 8B4<> 7A7<	CPU_TT<0>	E5	TT0
56D3> 9B3<> 8B5<> 7A7<	CPU_TT<1>	E6	TT1
56D3> 9B3<> 8B4<> 7A7<	CPU_TT<2>	F6	TT2
56D3> 9B3<> 8B5<> 7A7<	CPU_TT<3>	E9	TT3
56D3> 9B3<> 8B4<> 7A7<	CPU_TT<4>	C5	TT4
56D3> 9B3<> 8B4<> 7B7<	CPU_TBST_L	F11	TBST*
56D3> 9B3<> 8B5<>	CPU_TSIZ<0>	G6	TSIZ0
56D3> 9B3<> 8B5<>	CPU_TSIZ<1>	F7	TSIZ1
56D3> 9B3<> 8B7<	CPU_TSIZ<2>	E7	TSIZ2
		E2	GBL*
56C3> 9B3<> 8B5<> 7A7<	CPU_WT_L	D3	WT*
56C3> 9C3<> 8C5<> 7A7<	CPU_CI_L	J1	CI*
56C3> 9B3<> 8B5<> 7B7<	CPU_AACK_L	R1	AACK*
56C3> 9B3<> 8B8<> 7C7<	CPU_ARTRY_L	N2	ARTRY*
7B5<	CPU_SHD0_L	E4	SHD0*
7B5<	CPU_SHD1_L	H5	SHD1*
56C3> 9B3< 8B8<> 7C7<	CPU_HIT_L	B2	HIT*

INT_V2 R311 0 5% 1/16W MF 402

9C3<> 7B7< 56C3> CPU_INT_GBL_L

56C3> 8B5<> CPU_GBL_L

INT_V1 R312 100 1% 1/16W MF 402

U34
800MHZ
APOLLO_MPC7445_360
BGA
(1 OF 3)
SEE_TABLE

BVSEL	B7		CPU_BUS_VSEL 7C4<
SYSCLK	A10		SYSCLK_CPU 9A4< 56C3>
CLKOUT	H2	NO_TEST	NC_CPU_CLKOUT
PLLCFG0	B8		CPU_PLL_CFG<0> 6C6< 8A8<>
PLLCFG1	C8		CPU_PLL_CFG<1> 6C6< 8A8<>
PLLCFG2	C7		CPU_PLL_CFG<2> 6C6< 8A8<>
PLLCFG3	D7		CPU_PLL_CFG<3> 6C6< 8A8<>
PLL_EXT	A7		CPU_PLL_CFGEXT 6C6< 8A8<>
DBG*	M2		CPU_DBG_L 7B7< 8B8<> 9B1<> 56C3>
DRDY*	R3		CPU_DRDY_L_UF 56C3>
DTI0	G1		CPU_EDTI 7C5<
DTI1	K1		CPU_DTI<0> 8B7<> 9A1<> 56C3>
DTI2	P1		CPU_DTI<1> 8B4<> 9A1<> 56C3>
DTI3	N1		CPU_DTI<2> 8B4<> 9A1<> 56C3>
TDI	B9		JTAG_CPU_TDI 7A5< 8A3<> 59C8>
TDO	A4		JTAG_CPU_TDO 8A3<> 59C8>
TMS	F1		JTAG_CPU_TMS 7A5< 8A3<> 59C8>
TCK	C6		JTAG_CPU_TCK 7D5< 8A3<> 59C8>
TRST*	A5		JTAG_CPU_TRST_L 7C5< 8A3<> 59C8>
LSSDMODE*	E8		CPU_LSSD_MODE 7B5<
L1TSTCLK	G8		CPU_L1TSTCLK 7B4<
L2TSTCLK	B3		CPU_L2TSTCLK 7C4<
TA*	K6		CPU_TA_L 7C7< 8C4<> 9A1<> 56C3>
TEA*	L1		CPU_TEA_L 7B7< 8B5<> 9A1<> 56C3>
TBEN	E1		CPU_TBEN 7C5< 9A3<>
QREQ*	P4		CPU_QREQ_L 7D5< 8B7<> 9B3< 56C3>
QACK*	G5		CPU_QACK_L 8B4<> 9B3<> 56C3>
CKSTP_IN*	A3		CPU_CHKSTP_IN_L 7B5< 59C8>
CKSTP_OUT*	B1		CPU_CHKSTP_OUT_L 7B5< 8A3<> 8D5<> 59C8>
INT*	D4		MPIC_CPU_INT_L 7A5< 8D7<> 28B5>
SMI*	F9		CPU_SMI_L 7A5< 44C4<>
MCP*	C9		CPU_MCP_L 7B5<
SRESET*	A2		CPU_SRESET_L 7A5< 8A3<> 59C6>
HRESET*	D8		CPU_HRESET_L 7A3< 7A5< 7B3< 8A3<> 44C2< 44D2< 59C8>
PMON_IN*	D9		CPU_PMONIN_L 7C5<
PMON_OUT*	A9	NO_TEST	NC_PMON_OUT_L
BMODE0*	G9		CPU_EMODE0_L 7A4<
BMODE1*	F8		CPU_EMODE1_L 7A4<
EXT_QUAL	A11		
TEST0	A12		
TEST1	B6		
TEST2	B10		
TEST3	E10		CPU_PULLUP 7A5<
TEST4	D10		CPU_PULLDOWN 4D7<> 7C5<

IBORG PULLS THIS UP, SPEC SAYS TO GROUND IT FOR SW CONTROL

NOSTUFF R895 1 47 5% 1/16W MF 402 2

RC GLITCH FILTER
PLACE CLOSE TO PIN

R850 1 0 5% 1/16W MF 402 2

NOSTUFF C954 1 10PF 5% 50V CERM 402 2

FILTERS A WAKE FROM SLEEP GLITCH IF NECESSARY

ZH4 275R138 1 ZT9P1

ZH5 TH SL-138X272-292 1 ZT11P1

ZH6 TH SL-138X272-292 1 ZT10P1

ZH7 275R138 1 ZT8P1

C352 1 0.1UF 20% 10V CERM 402 2

C345 1 0.1UF 20% 10V CERM 402 2

C369 1 0.1UF 20% 10V CERM 402 2

C370 1 0.1UF 20% 10V CERM 402 2

GND

B5 C3 D6 D13 E17 F3 G17 H4 H7 H9 H11 H13 J6 J8 J10 J12 K7 K3 K9 K11 K13 L6 L8 L10 L12 M4 M7 M9 M11 M13 N7 P3 P6 P12 R6 R14 R17 T7 T10 U3 U13 U17 V5 V8 V11 V15

INTREPID VERSION 1 PULLS GBL
ALL THE TIME. NEED TO
CUT THE TRACE AND YANK
DOWN HARD FOR SNOOPING.
FIXED IN INTREPID VERSION 2.

CPU MECHANICAL PARTS SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
875-1475	1	PAD,THERMAL,CPU,U34	U341	?	
870-1113	1	HEAT SINK,CPU,Q26,U34	U342	?	DEV
870-1114	1	CLIP,HEAT SINK,CPU,Q26.U34	U343	?	DEV
412-0042	1	SCREW,MACH,3MM W,8MM L,U34	U344	?	DEV
835-0251	1	NUT,3MM,U34	U345	?	DEV

MPC7450 MAXBUS

LAST MODIFIED=Wed Sep 17 12:15:40 2003

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE NONE — SHT 4 OF 69

DRAWING

APOLLO_MPC7445_360

U34
800MHZ
BGA
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NC_CPUCRUD<0>	NO_TEST	F18	NC_F18
NC_CPUCRUD<1>	NO_TEST	F17	NC_F17
NC_CPUCRUD<2>	NO_TEST	F19	NC_F19
NC_CPUCRUD<3>	NO_TEST	H19	NC_H19
NC_CPUCRUD<4>	NO_TEST	H18	NC_H18
NC_CPUCRUD<5>	NO_TEST	H17	NC_H17
NC_CPUCRUD<6>	NO_TEST	H16	NC_H16
NC_CPUCRUD<7>	NO_TEST	E19	NC_E19
NC_CPUCRUD<8>	NO_TEST	D18	NC_D18
NC_CPUCRUD<9>	NO_TEST	F16	NC_F16
NC_CPUCRUD<10>	NO_TEST	G16	NC_G16
NC_CPUCRUD<11>	NO_TEST	D19	NC_D19
NC_CPUCRUD<12>	NO_TEST	F15	NC_F15
NC_CPUCRUD<13>	NO_TEST	G19	NC_G19
NC_CPUCRUD<14>	NO_TEST	E16	NC_E16
NC_CPUCRUD<15>	NO_TEST	D17	NC_D17
NC_CPUCRUD<16>	NO_TEST	D16	NC_D16
NC_CPUCRUD<17>	NO_TEST	P15	NC_P15
NC_CPUCRUD<18>	NO_TEST	L15	NC_L15
NC_CPUCRUD<19>	NO_TEST	N15	NC_N15
NC_CPUCRUD<20>	NO_TEST	P18	NC_P18
NC_CPUCRUD<21>	NO_TEST	N14	NC_N14
NC_CPUCRUD<22>	NO_TEST	M14	NC_M14
NC_CPUCRUD<23>	NO_TEST	M17	NC_M17
NC_CPUCRUD<24>	NO_TEST	N13	NC_N13
NC_CPUCRUD<25>	NO_TEST	N16	NC_N16
NC_CPUCRUD<26>	NO_TEST	M19	NC_M19
NC_CPUCRUD<27>	NO_TEST	M16	NC_M16
NC_CPUCRUD<28>	NO_TEST	P19	NC_P19
NC_CPUCRUD<29>	NO_TEST	N17	NC_N17
NC_CPUCRUD<30>	NO_TEST	M15	NC_M15
NC_CPUCRUD<31>	NO_TEST	L17	NC_L17
NC_CPUCRUD<32>	NO_TEST	L14	NC_L14
NC_CPUCRUD<33>	NO_TEST	K15	NC_K15
NC_CPUCRUD<34>	NO_TEST	J14	NC_J14
NC_CPUCRUD<35>	NO_TEST	J18	NC_J18
NC_CPUCRUD<36>	NO_TEST	J19	NC_J19
NC_CPUCRUD<37>	NO_TEST	J15	NC_J15
NC_CPUCRUD<38>	NO_TEST	K19	NC_K19
NC_CPUCRUD<39>	NO_TEST	J16	NC_J16
NC_CPUCRUD<40>	NO_TEST	H15	NC_H15
NC_CPUCRUD<41>	NO_TEST	L16	NC_L16
NC_CPUCRUD<42>	NO_TEST	P16	NC_P16
NC_CPUCRUD<43>	NO_TEST	M18	NC_M18
NC_CPUCRUD<44>	NO_TEST	L19	NC_L19
NC_CPUCRUD<45>	NO_TEST	L18	NC_L18
NC_CPUCRUD<46>	NO_TEST	K18	NC_K18
NC_CPUCRUD<47>	NO_TEST	J17	NC_J17
NC_CPUCRUD<48>	NO_TEST	K16	NC_K16
NC_CPUCRUD<49>	NO_TEST	C19	NC_C19
NC_CPUCRUD<50>	NO_TEST	D15	NC_D15
NC_CPUCRUD<51>	NO_TEST	G15	NC_G15
NC_CPUCRUD<52>	NO_TEST	C18	NC_C18
NC_CPUCRUD<53>	NO_TEST	A16	NC_A16
NC_CPUCRUD<54>	NO_TEST	B19	NC_B19
NC_CPUCRUD<55>	NO_TEST	A19	NC_A19
NC_CPUCRUD<56>	NO_TEST	D14	NC_D14
NC_CPUCRUD<57>	NO_TEST	E15	NC_E15
NC_CPUCRUD<58>	NO_TEST	B15	NC_B15
NC_CPUCRUD<59>	NO_TEST	B17	NC_B17
NC_CPUCRUD<60>	NO_TEST	C17	NC_C17
NC_CPUCRUD<61>	NO_TEST	C16	NC_C16
NC_CPUCRUD<62>	NO_TEST	G13	NC_G13
NC_CPUCRUD<63>	NO_TEST	E14	NC_E14
NC_CPUCRUD<64>	NO_TEST	H14	NC_H14
NC_CPUCRUD<65>	NO_TEST	G14	NC_G14
NC_CPUCRUD<66>	NO_TEST	C15	NC_C15
NC_CPUCRUD<67>	NO_TEST	A17	NC_A17
NC_CPUCRUD<68>	NO_TEST	G12	NC_G12
NC_CPUCRUD<69>	NO_TEST	F14	NC_F14
NC_CPUCRUD<70>	NO_TEST	F13	NC_F13
NC_CPUCRUD<71>	NO_TEST	E13	NC_E13
NC_CPUCRUD<72>	NO_TEST	B16	NC_B16
NC_CPUCRUD<73>	NO_TEST	A15	NC_A15
NC_CPUCRUD<74>	NO_TEST	C14	NC_C14
NC_CPUCRUD<75>	NO_TEST	A18	NC_A18
NC_CPUCRUD<76>	NO_TEST	A13	NC_A13
NC_CPUCRUD<77>	NO_TEST	F12	NC_F12
NC_CPUCRUD<78>	NO_TEST	A14	NC_A14
NC_CPUCRUD<79>	NO_TEST	G11	NC_G11
NC_CPUCRUD<80>	NO_TEST	C13	NC_C13
NC_CPUCRUD<81>	NO_TEST	N12	NC_N12
NC_CPUCRUD<82>	NO_TEST	N18	NC_N18
NC_CPUCRUD<83>	NO_TEST	K17	NC_K17
NC_CPUCRUD<84>	NO_TEST	N19	NC_N19
NC_CPUCRUD<85>	NO_TEST	B18	NC_B18
NC_CPUCRUD<86>	NO_TEST	E12	NC_E12
NC_CPUCRUD<87>	NO_TEST	B13	NC_B13
NC_CPUCRUD<88>	NO_TEST	B14	NC_B14
NC_CPUCRUD<89>	NO_TEST	A6	NC_A6

APOLLO_MPC7445_360

U34
800MHZ
BGA
(2 OF 3)

56D3> 9D1<> 8C4<>	CPU_DATA<0>	R15	D0
56D3> 9D1<> 8C7<>	CPU_DATA<1>	W15	D1
56D3> 9D1<> 8C8<>	CPU_DATA<2>	T14	D2
56D3> 9D1<> 8C5<>	CPU_DATA<3>	V16	D3
56D3> 9D1<> 8C7<>	CPU_DATA<4>	W16	D4
56D3> 9D1<> 8C8<>	CPU_DATA<5>	T15	D5
56D3> 9D1<> 8C4<>	CPU_DATA<6>	U15	D6
56D3> 9D1<> 8C8<>	CPU_DATA<7>	P14	D7
56D3> 9D1<> 8C5<>	CPU_DATA<8>	V13	D8
56D3> 9D1<> 8C4<>	CPU_DATA<9>	W13	D9
56D3> 9D1<> 8C7<>	CPU_DATA<10>	T13	D10
56D3> 9D1<> 8C5<>	CPU_DATA<11>	P13	D11
56D3> 9D1<> 8C5<>	CPU_DATA<12>	U14	D12
56D3> 9D1<> 8C7<>	CPU_DATA<13>	W14	D13
56D3> 9D1<> 8C8<>	CPU_DATA<14>	R12	D14
56D3> 9D1<> 8C5<>	CPU_DATA<15>	T12	D15
56D3> 9C1<> 8C4<>	CPU_DATA<16>	W12	D16
56D3> 9C1<> 8C7<>	CPU_DATA<17>	V12	D17
56D3> 9C1<> 8C4<>	CPU_DATA<18>	N11	D18
56D3> 9C1<> 8C4<>	CPU_DATA<19>	N10	D19
56D3> 9C1<> 8C4<>	CPU_DATA<20>	R11	D20
56D3> 9C1<> 8C8<>	CPU_DATA<21>	U11	D21
56D3> 9C1<> 8C7<>	CPU_DATA<22>	W11	D22
56D3> 9C1<> 8C8<>	CPU_DATA<23>	T11	D23
56D3> 9C1<> 8D4<>	CPU_DATA<24>	R10	D24
56D3> 9C1<> 8D7<>	CPU_DATA<25>	N9	D25
56D3> 9C1<> 8C5<>	CPU_DATA<26>	P10	D26
56D3> 9C1<> 8C7<>	CPU_DATA<27>	U10	D27
56D3> 9C1<> 8D8<>	CPU_DATA<28>	R9	D28
56D3> 9C1<> 8C8<>	CPU_DATA<29>	W10	D29
56D3> 9C1<> 8C5<>	CPU_DATA<30>	U9	D30
56D3> 9C1<> 8D7<>	CPU_DATA<31>	V9	D31
56D3> 9C1<> 9B7< 8D7<>	CPU_DATA<32>	W5	D32
56D3> 9C1<> 9B7< 8D8<>	CPU_DATA<33>	U6	D33
56D3> 9C1<> 9B7< 8D8<>	CPU_DATA<34>	T5	D34
56D3> 9C1<> 9B7< 8D7<>	CPU_DATA<35>	U5	D35
56D3> 9C1<> 9A7< 8D4<>	CPU_DATA<36>	W7	D36
56D3> 9C1<> 8D5<>	CPU_DATA<37>	R6	D37
56D3> 9C1<> 8D5<>	CPU_DATA<38>	P7	D38
56D3> 9C1<> 8D5<>	CPU_DATA<39>	V6	D39
56D3> 9C1<> 8D7<> 6C4<	CPU_DATA<40>	P17	D40
56D3> 9C1<> 8C4<> 6C4<	CPU_DATA<41>	R19	D41
56D3> 9B1<> 8C5<> 6C4<	CPU_DATA<42>	V18	D42
56D3> 9B1<> 8C4< 6C4<	CPU_DATA<43>	R18	D43
56D3> 9B1<> 8C8<> 6C4<	CPU_DATA<44>	V19	D44
56D3> 9B1<> 8C7<> 6C4<	CPU_DATA<45>	T19	D45
56D3> 9B1<> 8C4<> 6C4<	CPU_DATA<46>	U19	D46
56D3> 9B1<> 8C7< 6C4<	CPU_DATA<47>	W19	D47
56D3> 9D8< 9B1<> 8C5<>	CPU_DATA<48>	U18	D48
56D3> 9D8< 9B1<> 8C4<>	CPU_DATA<49>	W17	D49
56D3> 9D8< 9B1<> 8C8<>	CPU_DATA<50>	W18	D50
56D3> 9D8< 9B1<> 8C8<>	CPU_DATA<51>	T16	D51
56D3> 9C8< 9B1<> 8C5<>	CPU_DATA<52>	T18	D52
56D3> 9C8< 9B1<> 8C7<>	CPU_DATA<53>	T17	D53
56D3> 9C8< 9B1<> 8D7<>	CPU_DATA<54>	W3	D54
56D3> 9C8< 9B1<> 8C5<>	CPU_DATA<55>	V17	D55
56D3> 9B1<> 8D8<>	CPU_DATA<56>	U4	D56
56D3> 9D5< 9B1<> 8D5<>	CPU_DATA<57>	U8	D57
56D3> 9D5< 9B1<> 8D4<>	CPU_DATA<58>	U7	D58
56D3> 9D5< 9B1<> 8D8<>	CPU_DATA<59>	R7	D59
56D3> 9D5< 9B1<> 8D8<>	CPU_DATA<60>	P6	D60
56D3> 9C5< 9B1<> 8D4<>	CPU_DATA<61>	R8	D61
56D3> 9C5< 9B1<> 8D4<>	CPU_DATA<62>	W8	D62
56D3> 9C5< 9B1<> 8D5<>	CPU_DATA<63>	T8	D63
	NC_CPUDP<0> NO_TEST	T3	DP0
	NC_CPUDP<1> NO_TEST	W4	DP1
	NC_CPUDP<2> NO_TEST	T4	DP2
	NC_CPUDP<3> NO_TEST	W9	DP3
	NC_CPUDP<4> NO_TEST	M6	DP4
	NC_CPUDP<5> NO_TEST	V3	DP5
	NC_CPUDP<6> NO_TEST	N8	DP6
	NC_CPUDP<7> NO_TEST	W6	DP7

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BOMOPTIONS FOR UPPER-SET OF RESISTORS

1200@133&1500@167&1333@133&1667@167&1467@133&1833@167&1600@133&2000@167&1733@133&2167@167&1867@133&2333@167&2000@133&2500@167&2133@133&2667@167

667@133&833@167&733@133&917@167&800@133&1000@167&1067@133&1333@167&1333@133&1667@167&1467@133&1833@167&1600@133&2000@167&1867@133&2333@167&2133@133&2667@167

800@133&1000@167&867@133&1083@167&1067@133&1333@167&1200@133&1500@167&1733@133&2167@167&1867@133&2333@167&2133@133&2667@167

667@133&833@167&933@133&1167@167&1200@133&1500@167&1333@133&1667@167&1600@133&2000@167

667@133&833@167&733@133&917@167&800@133&1000@167&867@133&1083@167&1000@133&1250@167&1200@133&1500@167&1467@133&1833@167&1600@133&2000@167&1733@133&2167@167&2000@133&2500@167&2133@133&2667@167

+MAXBUS_SLEEP 4D5< 6C5< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6> 59C8>

SPECIAL CONFIG R382 10K 1% 1/16W MF 402 — CPU_PLL_CFGEXT 4C3< 8A8<>
SPECIAL CONFIG R379 10K 1% 1/16W MF 402 — CPU_PLL_CFG<3> 4C3< 8A8<>
SPECIAL CONFIG R378 10K 1% 1/16W MF 402 — CPU_PLL_CFG<2> 4D3< 8A8<>
SPECIAL CONFIG R376 10K 1% 1/16W MF 402 — CPU_PLL_CFG<1> 4D3< 8A8<>
SPECIAL CONFIG R374 10K 1% 1/16W MF 402 — CPU_PLL_CFG<0> 4D3< 8A8<>

SPECIAL CONFIG R383 1K 1% 1/16W MF 402
SPECIAL CONFIG R381 1K 1% 1/16W MF 402
SPECIAL CONFIG R380 1K 1% 1/16W MF 402
SPECIAL CONFIG R377 1K 1% 1/16W MF 402
SPECIAL CONFIG R375 1K 1% 1/16W MF 402

CPU_PLL_STOP 44B8<

667@133&833@167&733@133&917@167&800@133&1000@167&867@133&1083@167&933@133&1167@167&1000@133&1250@167&1067@133&1333@167

867@133&1083@167&933@133&1167@167&1000@133&1250@167&1200@133&1500@167&1733@133&2167@167&2000@133&2500@167

667@133&833@167&733@133&917@167&933@133&1167@167&1000@133&1250@167&1333@133&1667@167&1467@133&1833@167&1600@133&2000@167&2000@133&2500@167

733@133&917@167&800@133&1000@167&867@133&1083@167&1000@133&1250@167&1067@133&1333@167&1467@133&1833@167&1733@133&2167@167&1867@133&2333@167&2000@133&2500@167&2133@133&2667@167

933@133&1167@167&1067@133&1333@167&1333@133&1667@167&1867@133&2333@167

(STUFF FOR 133 AND 167)

833@167&917@167&1000@167&1083@167&1167@167&1250@167&1333@167&1500@167&1667@167&1833@167&2000@167&2167@167&2333@167&2500@167&2667@167

(STUFF FOR 133 AND 167)

NOSTUFF

667@133&733@133&800@133&867@133&933@133&1000@133&1067@133&1200@133&1333@133&1467@133&1600@133&1733@133&1867@133&2000@133&2133@133

NOSTUFF

R879 10K 1% 1/16W MF 402 — CPU_DATA<40> 5B4<> 8D7<> 9C1<> 56D3>
R878 10K 1% 1/16W MF 402 — CPU_DATA<41> 5B4<> 8C4<> 9C1<> 56D3>
R889 10K 1% 1/16W MF 402 — CPU_DATA<42> 5B4<> 8C5<> 9B1<> 56D3>
R866 10K 1% 1/16W MF 402 — CPU_DATA<43> 5B4<> 8C4< 9B1<> 56D3>
R874 10K 1% 1/16W MF 402 — CPU_DATA<44> 5B4<> 8C8<> 9B1<> 56D3>
R877 10K 1% 1/16W MF 402 — CPU_DATA<45> 5B4<> 8C7<> 9B1<> 56D3>
R875 10K 1% 1/16W MF 402 — CPU_DATA<46> 5B4<> 8C4<> 9B1<> 56D3>
R867 10K 1% 1/16W MF 402 — CPU_DATA<47> 5B4<> 8C7< 9B1<> 56D3>

R363 4.7K 5% 1/16W MF 402
R364 4.7K 5% 1/16W MF 402
R887 4.7K 5% 1/16W MF 402
R357 4.7K 5% 1/16W MF 402
R368 4.7K 5% 1/16W MF 402
R365 4.7K 5% 1/16W MF 402
R367 4.7K 5% 1/16W MF 402
R356 4.7K 5% 1/16W MF 402

INTREPID BOOT STRAPS
BITS 40 - 47

SPARE
SPARE
PLL4MODESEL_NXT[2:0]
000: 166.4 MHZ
001: 149.76 MHZ
010: 133.12 MHZ
011: 99.84 MHZ
100: 83.20 MHZ
INTERNALSPREADEN
0:: INACTIVE
1:: ACTIVE
PCI1_SOURCE_CLOCK
0:: PLL5 (NO SPREAD)
1:: PLL4
PCI0_SOURCE_CLOCK
0:: PLL5 (NO SPREAD)
1:: PLL4

CPU FREQUENCY CONFIGURATION
(SUPPORTED CPU & BUS SPEEDS)

MULTIPLIER	CORE FREQUENCY (AT BUS FREQUENCY) 167MHZ	133MHZ	CPU_PLL_CFG
(BUS-TO-CORE)	(MHZ)		E 0123 HEX
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
9.0X	1500	1200	1 0111 17
10.0X	1667	1333	1 1010 1A
11.0X	1833	1467	1 1001 19
12.0X	2000	1600	1 1011 1B
13.0X	2167	1733	1 0101 15
14.0X	2333	1867	1 1100 1C
15.0X	2500	2000	1 0001 11
16.0X	2667	2133	1 1101 1D

CPU SPEED & BUS RATIO SUPPORT

THE CONFIGURATION RESISTORS BELOW ARE SELF CONFIGURING WHEN THE ENGINEER SELECTS THE APPROPRIATE CPU AND BUS SPEED BOM OPTION, THE APPROPRIATE RESISTORS ARE ARE AUTOMATICALLY SELECTED

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
337S2799	1	IC,APOLLO6,SICOH,1.0GHZ,1.5V+30/-130MV,28W,85C	U34	CRITICAL	1000@167
337S2801	1	IC,APOLLO6,SICOH,1.25GHZ,1.57V+70/-70MV,35W,85C	U34	CRITICAL	1250@167

CPU BUS RATIO BITS

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BMODE <0>	BMODE <1>	MSSCR0 <16:17>	Sys Bus	Vger ID	Addr Drve
L	L	1 1	???	01	yes unavail
L	!hr	1 0	Max	01	yes unavail
L	hr	1 1	???	00	yes unavail
L	H	1 0	Max	00	yes unavail
!hr	L	0 1	MB+	01	yes unavail
!hr	!hr	0 0	60x	01	yes unavail
!hr	hr	0 1	MB+	00	yes unavail
!hr	H	0 0	60x	00	yes unavail
hr	L	1 1	???	01	norm unavail
hr	!hr	1 0	Max	01	norm
hr	hr	1 1	???	00	norm unavail
HR	H	1 0	MAX	00	NORM <- DEFAULT
H	L	0 1	MB+	01	norm unavail
H	!hr	0 0	60x	01	norm
H	hr	0 1	MB+	00	norm unavail
H	H	0 0	60x	00	norm

SIGNAL	TIED	APPLICATION
CPU_EMODE0_L	HIGH	60X BUS MODE
	CPU_HRESET_L	MAX BUS MODE
CPU_BUS_VSEL	CPU_HRESET_L	2.5V INTERFACE
	LOW	1.8V INTERFACE
	CPU_HRESET_H	1.5V INTERFACE
CPU_L3_VSEL	CPU_HRESET_L or L3_OVDD	2.5V INTERFACE
	LOW	1.8V INTERFACE
	CPU_HRESET_H	1.5V INTERFACE

MAXBUS PULL-UPS

59C8> 52C6>
8D1< 8A3<> 7C5< 7C3< 7B3< 7A3< 6D6< 6C5< 4D5< +MAXBUS_SLEEP
46D4< 45D2<> 44D2< 44D1< 44B7< 9D8< 9B7< 8D4<

56D3> 9D3<> 8B7<> 4D7<> CPU_TS_L — R347 10K 1% 1/16W MF 402
56C3> 9A1<> 8C4<> 4C3< CPU_TA_L — R348 10K 1% 1/16W MF 402
56C3> 9B3<> 8B8<> 4A7<> CPU_ARTRY_L — R346 10K 1% 1/16W MF 402
56D3> 9D3< 8B4<> 4D7> CPU_BR_L — R841 10K 1% 1/16W MF 402
56C3> 9B3< 8B8<> 4A7> CPU_HIT_L — R840 10K 1% 1/16W MF 402
56C3> 9B1< 8B5<> 4C2< CPU_DRDY_L — R851 10K 1% 1/16W MF 402
56C3> 9A1<> 8B5<> 4C3< CPU_TEA_L — R845 10K 1% 1/16W MF 402
56C3> 9B3<> 8B5<> 4A7< CPU_AACK_L — R849 10K 1% 1/16W MF 402
56C3> 9B1<> 8B8<> 4C3< CPU_DBG_L — R847 10K 1% 1/16W MF 402
56D3> 9D3<> 8B4<> 4D7< CPU_BG_L — R846 10K 1% 1/16W MF 402
56D3> 9B3<> 8B4<> 4B7> CPU_TBST_L — R349 10K 1% 1/16W MF 402
56C3> 9C3<> 4B8< CPU_INT_GBL_L — R842 10K 1% 1/16W MF 402
56C3> 9C3<> 8C5<> 4A7> CPU_CI_L — R844 10K 1% 1/16W MF 402
56C3> 9B3<> 8B5<> 4B7> CPU_WT_L — RP78 10K 5% 1/16W SM1
56D3> 9B3<> 8B4<> 4B7<> CPU_TT<0> — RP78 10K 5% 1/16W SM1
56D3> 9B3<> 8B5<> 4B7<> CPU_TT<1> — RP78 10K 5% 1/16W SM1
56D3> 9B3<> 8B4<> 4B7<> CPU_TT<2> — R843 10K 1% 1/16W MF 402
56D3> 9B3<> 8B5<> 4B7<> CPU_TT<3> — RP78 10K 5% 1/16W SM1
56D3> 9B3<> 8B4<> 4B7<> CPU_TT<4> — R350 10K 1% 1/16W MF 402

56C3> 9B3< 8B7<> 4C3> CPU_QREQ_L — R848 10K 1% 1/16W MF 402
59C8> 8A3<> 4C3< JTAG_CPU_TCK — R924 10K 1% 1/16W MF 402
59C8> 8A3<> 4C3< JTAG_CPU_TRST_L — R925 200 5% 1/16W MF 402
4B3< CPU_PMONIN_L — RP79 10K 5% 1/16W SM1
4C3< CPU_EDTI — R858 10K 1% 1/16W MF 402
4D7<> 4A3< CPU_PULLDOWN — R859 470 5% 1/16W MF 402

MPC7450 PULL-UPS

8D4< 8D1< 8A3<> 7C7< 7C3< 7B3< 7A3< 6D6< 6C5< 4D5< 59C8> +MAXBUS_SLEEP
52C6> 46D4< 45D2<> 44D2< 44D1< 44B7< 9D8< 9B7<

9A3<> 4C3< CPU_TBEN — R856 10K 1% 1/16W MF 402
4A7<> CPU_SHD0_L — R857 10K 1% 1/16W MF 402
4A7<> CPU_SHD1_L — R860 10K 1% 1/16W MF 402
4B3< CPU_MCP_L — R910 10K 1% 1/16W MF 402
4C3< CPU_LSSD_MODE — R911 10K 1% 1/16W MF 402
59C8> 8D5<> 8A3<> 4B3> CPU_CHKSTP_OUT_L — NOSTUFF R921 1K 1% 1/16W MF 402
59C8> 4B3< CPU_CHKSTP_IN_L — R882 1K 1% 1/16W MF 402
4A3< CPU_PULLUP — R909 1K 1% 1/16W MF 402
59C8> 44D2< 44C2< 8A3<> 7B3< 7A3< 4B3< CPU_HRESET_L — R922 10K 1% 1/16W MF 402
59C6> 8A3<> 4B3< CPU_SRESET_L — RP79 10K 5% 1/16W SM1
28B5> 8D7<> 4B3< MPIC_CPU_INT_L — RP79 10K 5% 1/16W SM1
44C4<> 4B3< CPU_SMI_L — R912 10K 1% 1/16W MF 402
59C8> 8A3<> 4C3< JTAG_CPU_TDI — RP79 10K 5% 1/16W SM1
59C8> 8A3<> 4C3< JTAG_CPU_TMS — R923 10K 1% 1/16W MF 402

NOSTUFF R915 0 5% 1/16W MF 402 — VGER_INV_HRESET 7A3< 7B3< 44D1>
NOSTUFF R913 10K 5% 1/16W MF 402 — +MAXBUS_SLEEP 59C8> 4D5< 6C5< 6D6< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6>
4D3< CPU_BUS_VSEL — R914 200 5% 1/16W MF 402

BUS MODE
0V 1.8V BUS MODE
INV_HRESET 1.5V BUS MODE
OVDD 2.5V BUS MODE

4C3< CPU_L2TSTCLK — R918 10K 1% 1/16W MF 402 — +MAXBUS_SLEEP 59C8> 4D5< 6C5< 6D6< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6>
NOSTUFF R926 0 5% 1/16W MF 402 — CPU_HRESET_L 4B3< 7A3< 7A5< 7B3< 8A3<> 44C2< 44D2< 59C8>
NOSTUFF R919 0 5% 1/16W MF 402 — VGER_INV_HRESET 7A3< 7B3< 7C3< 44D1>
NOSTUFF R920 200 5% 1/16W MF 402

DO NOT USE UNLESS FIX INVERTER BUFFER

NOSTUFF R907 10K 5% 1/16W MF 402 — +MAXBUS_SLEEP 4D5< 6C5< 6D6< 7A3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6> 59C8>
NOSTUFF R906 0 5% 1/16W MF 402 — CPU_HRESET_L 4B3< 7A3< 7A5< 7B3< 8A3<> 44C2< 44D2< 59C8>
NOSTUFF R916 0 5% 1/16W MF 402 — VGER_INV_HRESET 7A3< 7B3< 7C3< 44D1>
4C3< CPU_L1TSTCLK — R917 200 5% 1/16W MF 402

CPUBUS_60X R904 1K 5% 1/16W MF 402 — +MAXBUS_SLEEP 59C8> 4D5< 6C5< 6D6< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6>
4B3< CPU_EMODE0_L — CPUBUS_MAX R905 200 5% 1/16W MF 402 — CPU_HRESET_L 4B3< 7A5< 7B3< 8A3<> 44C2< 44D2< 59C8>
R903 1K 1% 1/16W MF 402 — +MAXBUS_SLEEP 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 4D5< 6C5< 6D6< 7A3< 7B3< 7C3< 44B7< 44D1< 44D2< 45D2<> 46D4< 52C6> 59C8>
4B3< CPU_EMODE1_L — NOSTUFF R902 200 5% 1/16W MF 402 — VGER_INV_HRESET 7B3< 7C3< 44D1>

CPU CONFIG OPTIONS

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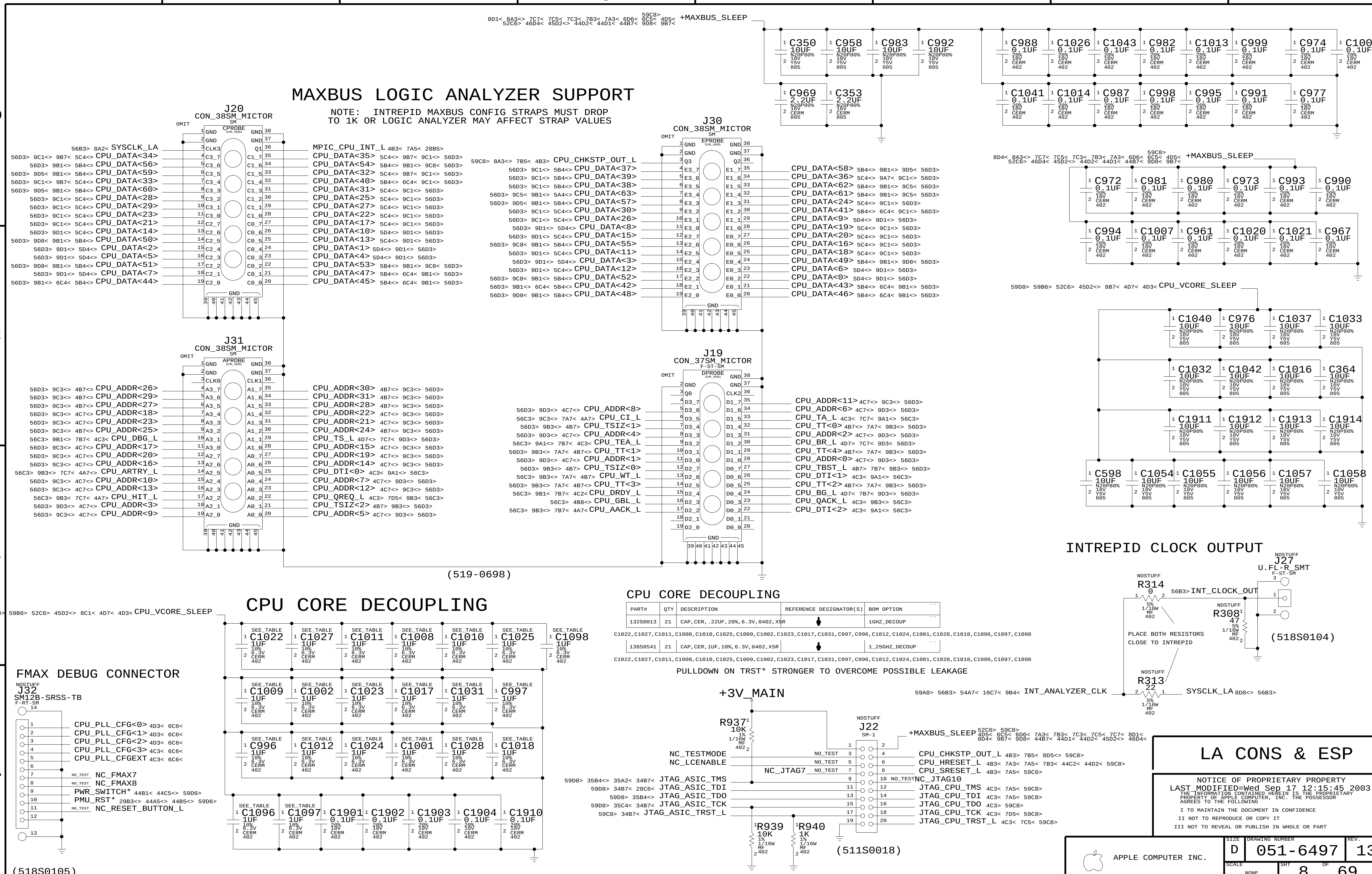

CPU CORE DECOUPLING

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
132S0013	21	CAP,CER,.22UF,20%,6.3V,0402,X5R		1GHZ_DECOUP
138S0541	21	CAP,CER,1UF,10%,6.3V,0402,X5R		1_25GHZ_DECOUP

C1022,C1027,C1011,C1008,C1010,C1025,C1009,C1002,C1023,C1017,C1031,C997,C996,C1012,C1024,C1001,C1028,C1018,C1096,C1097,C1098

PULLDOWN ON TRST* STRONGER TO OVERCOME POSSIBLE LEAKAGE

LA CONS & ESP

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INTREPID BOOT STRAPS

BITS 48 - 63

+MAXBUS_SLEEP

R890 10K	R868 10K	R892 10K	R832 10K	R863 10K	R339 10K	R340 10K	R864 10K	R876 10K	R865 10K	R885 10K	R855 10K	R869 10K	R894 4.7K	R355 4.7K	R893 4.7K
R343 4.7K	R360 4.7K	R352 4.7K	R338 4.7K	R341 4.7K	R359 4.7K	R366 4.7K	R358 4.7K	R886 4.7K	R354 4.7K	R351 4.7K	R870 4.7K				

CPU_DATA<48>	CPU_DATA<57>
CPU_DATA<49>	CPU_DATA<58>
CPU_DATA<50>	CPU_DATA<59>
CPU_DATA<51>	CPU_DATA<60>
CPU_DATA<52>	CPU_DATA<61>
CPU_DATA<53>	CPU_DATA<62>
CPU_DATA<54>	CPU_DATA<63>
CPU_DATA<55>	

- BUF_REF_CLK_OUTENABLE_H: 0:: INACTIVE; 1:: ACTIVE
- SEL_PLL_4EXTSRC: 0:: PLL; 1:: EXTERNAL SOURCE
- EN_PCI_ROM_P: 0:: BOOTROM ON IDE/CARDSLOT; 1:: BOOTROM ON PCI1
- TI 1394B WORKAROUND: 0:: NORMAL 1394B; 1:: TI PHY WORKAROUND
- MAXBUS OUTPUT IMPEDANCE
  - 111: 28.6 OHM
  - 011: 33.3 OHM
  - 101: 40 OHM
  - 001: 50 OHM
  - 110: 66.6 OHM
  - 010: 100 OHM
  - 100: 200 OHM
  - 000: 200 OHM
- SPARE
- SPARE
- ROM_Ovrly_Rng: 0:: 0-1 IDE / 2-3 PCI1; 1:: 0-1 PCI1 / 2-3 IDE
- PCI1_REQ2_L / PCI1_GNT2_L: 0:: REQ/GNT; 1:: GPIOs
- PCI1_REQ1_L / PCI1_GNT1_L: 0:: REQ/GNT; 1:: GPIOs
- PCI1_REQ0_L / PCI1_GNT0_L: 0:: REQ/GNT; 1:: GPIOs
- FIREWIRE PHY INTERFACE: 0:: LEGACY INTERFACE; 1:: B-MODE INTERFACE
- PROCESSOR BUS MODE: 0:: MAX BUS (G4); 1:: 60X BUS (G3)

BITS 32 - 39

+MAXBUS_SLEEP

R833 10K	R852 10K	R862 10K	R854 10K	R853 10K	R342 4.7K	R345 4.7K	R861 4.7K	R353 4.7K	R344 4.7K

CPU_DATA<32>	
CPU_DATA<33>	
CPU_DATA<34>	
CPU_DATA<35>	
CPU_DATA<36>	

- DDR_TPDMODEENABLE_H: 0:: TDI OUTPUT (JTAG)
- ANALYZERCLK_EN_H: 0:: INACTIVE; 1:: ACTIVE
- DDR_TPDEN_POL: 0:: ACTIVE HIGH; 1:: ACTIVE LOW
- EXTPLL_SDWN_POL: 0:: ACTIVE HIGH; 1:: ACTIVE LOW
- SPARE

INTREPID V1.1 IS 133MHZ ONLY

+1_5V_INTREPID_PLL

R720 4.7 5% 1/16W MF 402

C854 0.1UF 20% 10V CERM 402

C1101 0.1UF 20% 10V CERM 402

+1_5V_INTREPID_PLL7

9A2< INT_PLL6_GND

U25 INTREPID BGA SEE_TABLE (ON PAGE 12) (1 OF 9)

CPU_BR_L	E29	BR
CPU_BG_L	E26	BG
CPU_TS_L	B27	TS
CPU_ADDR<0>	D24	A_0
CPU_ADDR<1>	D25	A_1
CPU_ADDR<2>	A27	A_2
CPU_ADDR<3>	E24	A_3
CPU_ADDR<4>	G23	A_4
CPU_ADDR<5>	B26	A_5
CPU_ADDR<6>	A26	A_6
CPU_ADDR<7>	D23	A_7
CPU_ADDR<8>	A25	A_8
CPU_ADDR<9>	E23	A_9
CPU_ADDR<10>	J22	A_10
CPU_ADDR<11>	B25	A_11
CPU_ADDR<12>	H22	A_12
CPU_ADDR<13>	G22	A_13
CPU_ADDR<14>	D22	A_14
CPU_ADDR<15>	B24	A_15
CPU_ADDR<16>	B23	A_16
CPU_ADDR<17>	E22	A_17
CPU_ADDR<18>	J21	A_18
CPU_ADDR<19>	G21	A_19
CPU_ADDR<20>	E21	A_20
CPU_ADDR<21>	A24	A_21
CPU_ADDR<22>	D21	A_22
CPU_ADDR<23>	A23	A_23
CPU_ADDR<24>	H26	A_24
CPU_ADDR<25>	B22	A_25
CPU_ADDR<26>	H21	A_26
CPU_ADDR<27>	A22	A_27
CPU_ADDR<28>	E26	A_28
CPU_ADDR<29>	B21	A_29
CPU_ADDR<30>	D26	A_30
CPU_ADDR<31>	A21	A_31
CPU_CI_L	G26	CI
CPU_INT_GBL_L	A29	GBL
CPU_TBST_L	A28	TBST
CPU_TSIZ<0>	G24	TSIZ_0
CPU_TSIZ<1>	H24	TSIZ_1
CPU_TSIZ<2>	D26	TSIZ_2
CPU_TT<0>	E25	TT_0
CPU_TT<1>	G25	TT_1
CPU_TT<2>	B28	TT_2
CPU_TT<3>	D27	TT_3
CPU_TT<4>	J25	TT_4
CPU_WT_L	D28	WT
CPU_AACK_L	B29	AACK
CPU_ARTRY_L	H23	ARTRY
CPU_HIT_L	B31	HIT
CPU_QREQ_L	A32	QREQ
CPU_QACK_L	G27	QACK
INT_SUSPEND_REQ_L	AK9	SUSPENDREQ
INT_SUSPEND_ACK_L	AM8	SUSPENDACK
INT_CPU_FB_IN	J24	CPU_FB_IN
INT_CPU_FB_OUT	H16	CPU_FB_OUT
INT_ANALYZER_CLKA	G8	ANALYZER_CLK
CPU_CLK_EN	AH9	STOPCPUCLK
INTREPID_ACS_REF	H13	ACS_REF
SYSCLK CPU_UF	J15	CPU_CLK
CPU_TBEN	A31	TBEN

MAXBUS INTERFACE

CPU_DATA<0>	D10	D_0
CPU_DATA<1>	G12	D_1
CPU_DATA<2>	E11	D_2
CPU_DATA<3>	H11	D_3
CPU_DATA<4>	B9	D_4
CPU_DATA<5>	B8	D_5
CPU_DATA<6>	A9	D_6
CPU_DATA<7>	A8	D_7
CPU_DATA<8>	E12	D_8
CPU_DATA<9>	D11	D_9
CPU_DATA<10>	B10	D_10
CPU_DATA<11>	J13	D_11
CPU_DATA<12>	A10	D_12
CPU_DATA<13>	D12	D_13
CPU_DATA<14>	E13	D_14
CPU_DATA<15>	G13	D_15
CPU_DATA<16>	B11	D_16
CPU_DATA<17>	D13	D_17
CPU_DATA<18>	A11	D_18
CPU_DATA<19>	G14	D_19
CPU_DATA<20>	H14	D_20
CPU_DATA<21>	E14	D_21
CPU_DATA<22>	B12	D_22
CPU_DATA<23>	G15	D_23
CPU_DATA<24>	B13	D_24
CPU_DATA<25>	H15	D_25
CPU_DATA<26>	D14	D_26
CPU_DATA<27>	B14	D_27
CPU_DATA<28>	A12	D_28
CPU_DATA<29>	G16	D_29
CPU_DATA<30>	E15	D_30
CPU_DATA<31>	J16	D_31
CPU_DATA<32>	D15	D_32
CPU_DATA<33>	A14	D_33
CPU_DATA<34>	A13	D_34
CPU_DATA<35>	D16	D_35
CPU_DATA<36>	E16	D_36
CPU_DATA<37>	G17	D_37
CPU_DATA<38>	B15	D_38
CPU_DATA<39>	H17	D_39
CPU_DATA<40>	A15	D_40
CPU_DATA<41>	B16	D_41
CPU_DATA<42>	E17	D_42
CPU_DATA<43>	A16	D_43
CPU_DATA<44>	J18	D_44
CPU_DATA<45>	H18	D_45
CPU_DATA<46>	D17	D_46
CPU_DATA<47>	G18	D_47
CPU_DATA<48>	A17	D_48
CPU_DATA<49>	B17	D_49
CPU_DATA<50>	E18	D_50
CPU_DATA<51>	B18	D_51
CPU_DATA<52>	D18	D_52
CPU_DATA<53>	A18	D_53
CPU_DATA<54>	A19	D_54
CPU_DATA<55>	H19	D_55
CPU_DATA<56>	B19	D_56
CPU_DATA<57>	J19	D_57
CPU_DATA<58>	A20	D_58
CPU_DATA<59>	D19	D_59
CPU_DATA<60>	E19	D_60
CPU_DATA<61>	G19	D_61
CPU_DATA<62>	B20	D_62
CPU_DATA<63>	G20	D_63
CPU_DBG_L	A30	DBG
CPU_DRDY_L	G28	DRDY
CPU_DTI<0>	K25	DTI_0
CPU_DTI<1>	D29	DTI_1
CPU_DTI<2>	B30	DTI_2
CPU_TA_L	E27	TA
CPU_TEA_L	E28	TEA

VDD15A_7 (PLL6) H26

VSSA_7 (PLL6) H25

R764 10 5% 1/16W MF 402

R713 0 5% 1/16W MF 402

R712 1K 1% 1/16W MF 402

XW47 SM NO_TEST

VIN = INTREPID VCORE (1.7V)
VOUT = MAXBUS RAIL (1.8V)

CPU_FB_PLUS3

ADDS 2" (0.35 NS) CPU_FBI_PLUS1

ADDS 1" (0.17 NS)

ADDS 3" (0.5 NS)

R772 0 5% 1/16W MF 402

R766 0 5% 1/16W MF 402

R321 0 5% 1/16W MF 402

R777 0 5% 1/16W MF 402

R310 0 5% 1/16W MF 402

R752 470 5% 1/16W MF 402

CPU_FB_PLUS2

CPU_FB_MINUS3

R776 0 5% 1/16W MF 402

R757 0 5% 1/16W MF 402

R319 0 5% 1/16W MF 402

R765 0 5% 1/16W MF 402

CPU_FBO_PLUS1

MAIN LOOP IS 3" (0.5 NS) SHORTER THAN MAXBUS CLOCK

ALLOWS ADJUSTING FB CLOCK FROM -3" (0.5 NS) TO +2" (0.35 NS) IN 1" (0.17 NS) INCREMENTS
PLACE ALL SERPENTINES ON INTERNAL LAYER

INTREPID MAX

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 9 OF 69
DRAWING

INTREPID 1.1 SHOULD ALLOW MAXBUS
RAIL TO TURN OFF IN SLEEP

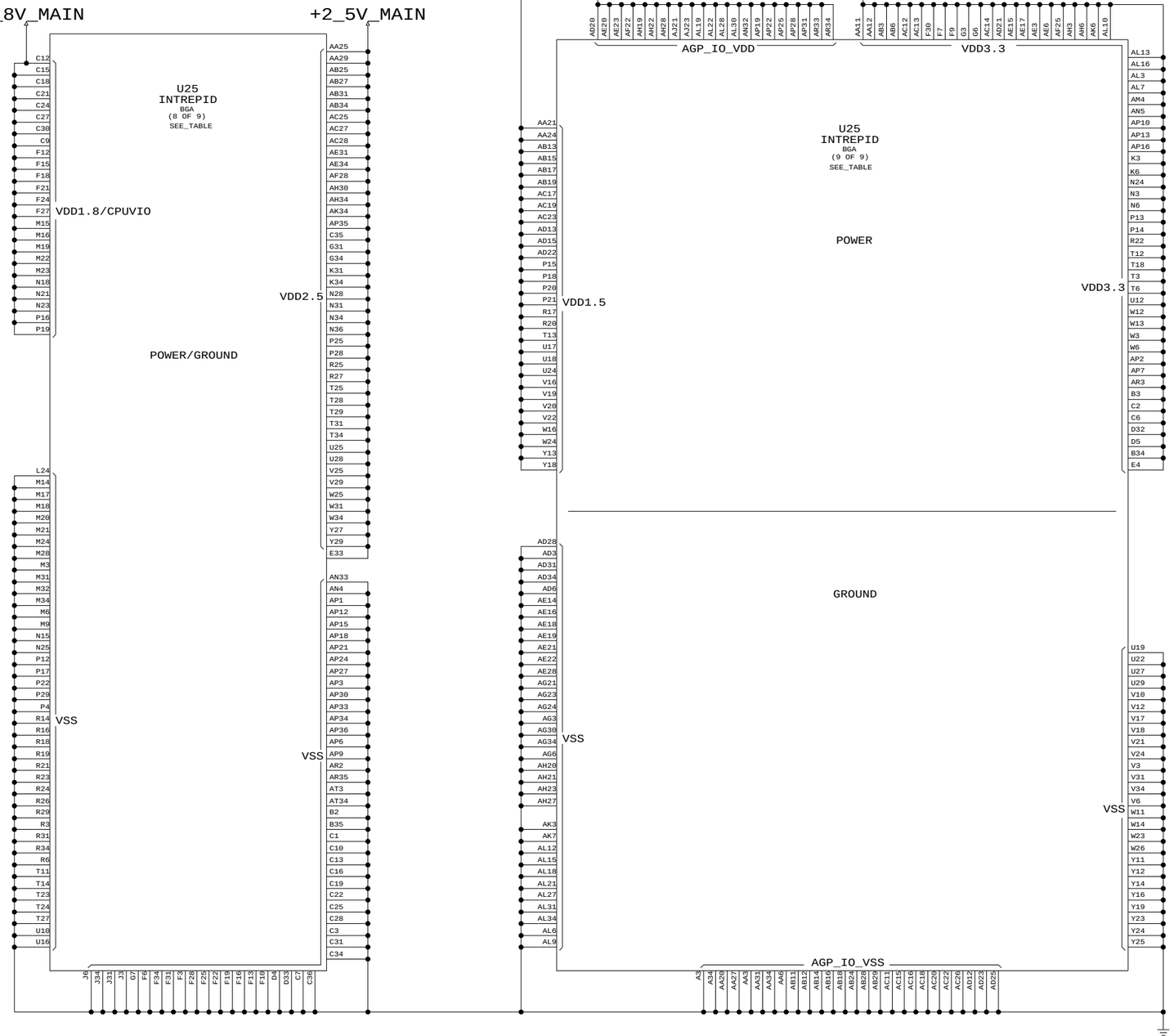
52C3> 46B4<> 17D5< 17A4< 17A3< 16D7< 16C2< 16A8< 11A6< 59C8> +1_5V_AGP

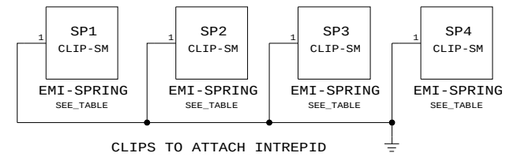
59C8> 47B2<> 46B3< 11D3< +INTREPID_CORE_MAIN

+1_8V_MAIN

+2_5V_MAIN

+3V_MAIN





CLIPS TO ATTACH INTREPID
HEATSINK TO GND AT THE
FOUR CORNERS

INTREPID EMI CLIP SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
870-1125	4	INTREPID EMI CLIP	SP1,SP2,SP3,SP4	?	

INTREPID VERSION SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
343S0198	1	IC,ASIC,INTREPID,V1.X	U25		INT_V1
343S0211	1	IC,ASIC,INTREPID,V2.1	U25	CRITICAL	INT_V2

INTREPID POWER

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 10 OF 69
DRAWING

+1_8V_MAIN — INTREPID MAXBUS DECOUPLING

24 Balls
4 X 10UF (0805)
36 X 0.1UF (0402)

C289 10UF N20P80% 10V Y5V 805 · C291 10UF N20P80% 10V Y5V 805 · C288 10UF N20P80% 10V Y5V 805 · C290 10UF N20P80% 10V Y5V 805

C890 0.1UF · C832 0.1UF · C900 0.1UF · C888 0.1UF · C891 0.1UF · C844 0.1UF · C824 0.1UF · C872 0.1UF · C874 0.1UF · C899 0.1UF
C901 0.1UF · C823 0.1UF · C845 0.1UF · C871 0.1UF · C834 0.1UF · C884 0.1UF · C896 0.1UF · C898 0.1UF · C886 0.1UF
C846 0.1UF · C885 0.1UF · C887 0.1UF · C870 0.1UF · C897 0.1UF · C889 0.1UF · C842 0.1UF · C895 0.1UF · C869 0.1UF · C873 0.1UF
C902 0.1UF · C843 0.1UF · C278 0.1UF · C849 0.1UF · C281 0.1UF · C280 0.1UF · C279 0.1UF

(20% 10V CERM 402)

+2_5V_MAIN — INTREPID DDR DECOUPLING

44 Balls
4 X 10UF (0805)
51 X 0.1UF (0402)

C277 10UF N20P80% 10V Y5V 805 · C271 10UF N20P80% 10V Y5V 805 · C240 10UF N20P80% 10V Y5V 805 · C641 10UF N20P80% 10V Y5V 805

C700 0.1UF · C878 0.1UF · C725 0.1UF · C836 0.1UF · C817 0.1UF · C839 0.1UF · C857 0.1UF · C794 0.1UF · C855 0.1UF · C880 0.1UF
C837 0.1UF · C877 0.1UF · C688 0.1UF · C767 0.1UF · C793 0.1UF · C815 0.1UF · C904 0.1UF · C827 0.1UF · C876 0.1UF · C698 0.1UF
C856 0.1UF · C735 0.1UF · C722 0.1UF · C750 0.1UF · C753 0.1UF · C687 0.1UF · C792 0.1UF · C668 0.1UF · C714 0.1UF · C736 0.1UF
C801 0.1UF · C825 0.1UF · C838 0.1UF · C723 0.1UF · C803 0.1UF · C791 0.1UF · C755 0.1UF · C818 0.1UF · C802 0.1UF · C813 0.1UF
C699 0.1UF · C751 0.1UF · C826 0.1UF · C752 0.1UF · C768 0.1UF · C816 0.1UF · C814 0.1UF · C754 0.1UF · C724 0.1UF · C781 0.1UF
C782 0.1UF

(20% 10V CERM 402)

INTREPID CORE DECOUPLING

59C8> 47B2<> 46B3< 10D6< +INTREPID_CORE_MAIN

30 Balls
4 X 10UF (0805)
29 X 0.1UF (0402)

C702 10UF N20P80% 10V Y5V 805 · C727 10UF N20P80% 10V Y5V 805 · C292 10UF N20P80% 10V Y5V 805 · C841 10UF N20P80% 10V Y5V 805

C787 0.1UF · C789 0.1UF · C749 0.1UF · C797 0.1UF · C719 0.1UF · C800 0.1UF · C810 0.1UF · C766 0.1UF · C731 0.1UF · C732 0.1UF
C764 0.1UF · C831 0.1UF · C833 0.1UF · C765 0.1UF · C808 0.1UF · C763 0.1UF · C780 0.1UF · C798 0.1UF · C779 0.1UF · C790 0.1UF
C746 0.1UF · C730 0.1UF · C721 0.1UF · C788 0.1UF · C734 0.1UF · C748 0.1UF · C811 0.1UF · C747 0.1UF · C799 0.1UF

(20% 10V CERM 402)

+3V_MAIN — INTREPID 3.3V DECOUPLING

57 Balls
4 X 10UF (0805)
66 X 0.1UF (0402)

C655 10UF N20P80% 10V Y5V 805 · C264 10UF N20P80% 10V Y5V 805 · C892 10UF N20P80% 10V Y5V 805 · C637 10UF N20P80% 10V Y5V 805

C745 0.1UF · C830 0.1UF · C775 0.1UF · C717 0.1UF · C829 0.1UF · C806 0.1UF · C691 0.1UF · C762 0.1UF · C777 0.1UF
C796 0.1UF · C867 0.1UF · C866 0.1UF · C863 0.1UF · C868 0.1UF · C812 0.1UF · C821 0.1UF · C822 0.1UF · C893 0.1UF
C720 0.1UF · C728 0.1UF · C809 0.1UF · C680 0.1UF · C894 0.1UF · C643 0.1UF · C656 0.1UF · C689 0.1UF · C774 0.1UF · C828 0.1UF
C850 0.1UF · C743 0.1UF · C761 0.1UF · C707 0.1UF · C883 0.1UF · C807 0.1UF · C776 0.1UF · C744 0.1UF · C718 0.1UF · C712 0.1UF
C835 0.1UF · C729 0.1UF · C881 0.1UF · C676 0.1UF · C716 0.1UF · C805 0.1UF · C644 0.1UF · C645 0.1UF · C865 0.1UF · C882 0.1UF
C708 0.1UF · C681 0.1UF · C678 0.1UF · C682 0.1UF · C879 0.1UF · C903 0.1UF · C673 0.1UF · C679 0.1UF · C677 0.1UF · C660 0.1UF
C657 0.1UF · C851 0.1UF · C875 0.1UF · C659 0.1UF · C690 0.1UF · C658 0.1UF · C852 0.1UF · C646 0.1UF

(20% 10V CERM 402)

+1_5V_AGP — INTREPID AGP I/O DECOUPLING

52C3> 46B4<> 17D5< 17A4< 17A3< 16D7< 16C2< 16A8< 10D6< 59C8>

21 Balls
4 X 10UF (0805)
24 X 0.1UF (0402)

C231 10UF N20P80% 10V Y5V 805 · C232 10UF N20P80% 10V Y5V 805 · C638 10UF N20P80% 10V Y5V 805 · C628 10UF N20P80% 10V Y5V 805

C697 0.1UF · C693 0.1UF · C684 0.1UF · C686 0.1UF · C709 0.1UF · C649 0.1UF · C667 0.1UF · C694 0.1UF · C695 0.1UF · C664 0.1UF
C733 0.1UF · C650 0.1UF · C647 0.1UF · C710 0.1UF · C685 0.1UF · C683 0.1UF · C665 0.1UF · C696 0.1UF · C666 0.1UF · C651 0.1UF
C662 0.1UF · C661 0.1UF · C648 0.1UF · C674 0.1UF · C711 0.1UF · C663 0.1UF

(20% 10V CERM 402)

INTREPID BYPASS

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 11 OF 69
DRAWING

DDR MUX CONNECTIONS

0-ohm resistors to allow rewiring if necessary

SERIES RESISTORS FOR CONTROL SIGNALS

U25 INTREPID BGA (2 OF 9) SEE_TABLE (ON PAGE 12)

DDR MEMORY INTERFACE

53D6< 13C8<>	MEM_DATA<0>	AK32	DDR_DATA_0	H35	MEM_ADDR<0> 12C3< 53D6<
53D6< 13C8<>	MEM_DATA<1>	AK33	DDR_DATA_1	G35	MEM_ADDR<1> 12C3< 53D6<
53D6< 13C8<>	MEM_DATA<2>	AK31	DDR_DATA_2	G36	MEM_ADDR<2> 12C3< 53D6<
53D6< 13C8<>	MEM_DATA<3>	AK35	DDR_DATA_3	F36	MEM_ADDR<3> 12D3< 53D6<
53D6< 13C8<>	MEM_DATA<4>	AK36	DDR_DATA_4	F35	MEM_ADDR<4> 12D3< 53D6<
53D6< 13C8<>	MEM_DATA<5>	AJ32	DDR_DATA_5	E35	MEM_ADDR<5> 12C2< 53D6<
53D6< 13C8<>	MEM_DATA<6>	AJ35	DDR_DATA_6	E36	MEM_ADDR<6> 12D2< 53D6<
53D6< 13C8<>	MEM_DATA<7>	AJ36	DDR_DATA_7	G32	MEM_ADDR<7> 12D3< 53D6<
53D6< 13C8<>	MEM_DATA<8>	AG33	DDR_DATA_8	D36	MEM_ADDR<8> 12D2< 53D6<
53D6< 13C8<>	MEM_DATA<9>	AG35	DDR_DATA_9	H36	MEM_ADDR<9> 12C3< 53D6<
53D6< 13C8<>	MEM_DATA<10>	AH35	DDR_DATA_10	G33	MEM_ADDR<10> 12C3< 53D6<
53D6< 13C8<>	MEM_DATA<11>	AG36	DDR_DATA_11	H33	MEM_ADDR<11> 12B3< 53D6<
53D6< 13C8<>	MEM_DATA<12>	AH36	DDR_DATA_12	D35	MEM_ADDR<12> 12D2< 53D6<
53D6< 13C8<>	MEM_DATA<13>	AH32	DDR_DATA_13	L30	MEM_BA<0> 12B3< 53D6<
53D6< 13C8<>	MEM_DATA<14>	AG32	DDR_DATA_14	M29	MEM_BA<1> 12B3< 53D6<
53D6< 13C8<>	MEM_DATA<15>	AG31	DDR_DATA_15	AN34	MEM_CS_L<0> 12C2< 53C6<
53D6< 13B6<>	MEM_DATA<16>	AE32	DDR_DATA_16	AN36	MEM_CS_L<1> 12C2< 53C6<
53D6< 13B6<>	MEM_DATA<17>	AF35	DDR_DATA_17	AL35	MEM_CS_L<2> 12B2< 53C6<
53D6< 13B6<>	MEM_DATA<18>	AF36	DDR_DATA_18	AL33	MEM_CS_L<3> 12B2< 53C6<
53D6< 13B6<>	MEM_DATA<19>	AE36	DDR_DATA_19	AJ31	MEM_DQS<0> 13C8<> 53D6<
53D6< 13B6<>	MEM_DATA<20>	AE35	DDR_DATA_20	AH31	MEM_DQS<1> 13C8<> 53D6<
53D6< 13B6<>	MEM_DATA<21>	AE33	DDR_DATA_21	AD32	MEM_DQS<2> 13A6<> 53D6<
53D6< 13B6<>	MEM_DATA<22>	AD36	DDR_DATA_22	AB30	MEM_DQS<3> 13A6<> 53D6<
53D6< 13B6<>	MEM_DATA<23>	AD35	DDR_DATA_23	V30	MEM_DQS<4> 13C4<> 53D6<
53D6< 13A6<>	MEM_DATA<24>	AA36	DDR_DATA_24	P32	MEM_DQS<5> 13C4<> 53D6<
53D6< 13A6<>	MEM_DATA<25>	AA35	DDR_DATA_25	N29	MEM_DQS<6> 13B3<> 53D6<
53D6< 13A6<>	MEM_DATA<26>	AA33	DDR_DATA_26	L32	MEM_DQS<7> 13B3<> 53D6<
53D6< 13A6<>	MEM_DATA<27>	AB36	DDR_DATA_27	AJ33	MEM_DQM<0> 13C8<> 53D6<
53D6< 13A6<>	MEM_DATA<28>	AB35	DDR_DATA_28	AH33	MEM_DQM<1> 13C8<> 53D6<
53D6< 13A6<>	MEM_DATA<29>	AC36	DDR_DATA_29	AD33	MEM_DQM<2> 13A6<> 53D6<
53D6< 13A6<>	MEM_DATA<30>	AA32	DDR_DATA_30	AC35	MEM_DQM<3> 13A6<> 53D6<
53D6< 13C4<>	MEM_DATA<31>	AB33	DDR_DATA_31	T35	MEM_DQM<4> 13C4<> 53D6<
53D6< 13C4<>	MEM_DATA<32>	V36	DDR_DATA_32	T33	MEM_DQM<5> 13C4<> 53D6<
53D6< 13C4<>	MEM_DATA<33>	U33	DDR_DATA_33	N32	MEM_DQM<6> 13B3<> 53D6<
53D6< 13C4<>	MEM_DATA<34>	U32	DDR_DATA_34	L33	MEM_DQM<7> 13B3<> 53D6<
53D6< 13C4<>	MEM_DATA<35>	V35	DDR_DATA_35	L29	MEM_RAS_L 12A3< 53C6<
53D6< 13C4<>	MEM_DATA<36>	T36	DDR_DATA_36	H32	MEM_CAS_L 12A3< 53C6<
53D6< 13C4<>	MEM_DATA<37>	U36	DDR_DATA_37	K30	MEM_WE_L 12B3< 53C6<
53D6< 13C4<>	MEM_DATA<38>	U35	DDR_DATA_38	AN35	MEM_CKE<0> 12C2< 53C6<
53D6< 13C4<>	MEM_DATA<39>	T34	DDR_DATA_39	AM35	MEM_CKE<1> 12B2< 53C6<
53D6< 13C4<>	MEM_DATA<40>	P33	DDR_DATA_40	AM36	MEM_CKE<2> 12C2< 53C6<
53D6< 13C4<>	MEM_DATA<41>	R30	DDR_DATA_41	AL36	MEM_CKE<3> 12B2< 53C6<
53D6< 13C4<>	MEM_DATA<42>	P35	DDR_DATA_42	AB32	NC_MEM_MUXSEL_H<0>
53D6< 13C4<>	MEM_DATA<43>	P36	DDR_DATA_43	AE29	53C6< MEM_MUXSEL_H<1>
53D6< 13C4<>	MEM_DATA<44>	R36	DDR_DATA_44	N30	NC_MEM_MUXSEL_L<0>
53D6< 13C4<>	MEM_DATA<45>	R35	DDR_DATA_45	T32	53C6< MEM_MUXSEL_L<1>
53D6< 13C4<>	MEM_DATA<46>	R33	DDR_DATA_46	Y32	53C6< SYSCLK_DDRCLK_A0_UF
53D6< 13C4<>	MEM_DATA<47>	R32	DDR_DATA_47	Y33	53C6< SYSCLK_DDRCLK_A0_L_UF
53D6< 13B3<>	MEM_DATA<48>	N35	DDR_DATA_48	Y35	53C6< SYSCLK_DDRCLK_A1_UF
53D6< 13B3<>	MEM_DATA<49>	M36	DDR_DATA_49	Y36	53C6< SYSCLK_DDRCLK_A1_L_UF
53D6< 13B3<>	MEM_DATA<50>	L35	DDR_DATA_50	Y30	53C6< SYSCLK_DDRCLK_A2_UF
53D6< 13B3<>	MEM_DATA<51>	M35	DDR_DATA_51	W30	53B6< SYSCLK_DDRCLK_A2_L_UF
53D6< 13B3<>	MEM_DATA<52>	M33	DDR_DATA_52	W32	53B6< SYSCLK_DDRCLK_B0_UF
53D6< 13B3<>	MEM_DATA<53>	L36	DDR_DATA_53	W33	53B6< SYSCLK_DDRCLK_B0_L_UF
53D6< 13B3<>	MEM_DATA<54>	N33	DDR_DATA_54	V33	53B6< SYSCLK_DDRCLK_B1_UF
53D6< 13B3<>	MEM_DATA<55>	M30	DDR_DATA_55	V32	53B6< SYSCLK_DDRCLK_B1_L_UF
53D6< 13B3<>	MEM_DATA<56>	J32	DDR_DATA_56	W35	53B6< SYSCLK_DDRCLK_B2_UF
53D6< 13B3<>	MEM_DATA<57>	J33	DDR_DATA_57	W36	NO_TEST 53B6< SYSCLK_DDRCLK_B2_L_UF
53D6< 13B3<>	MEM_DATA<58>	J35	DDR_DATA_58	AA22	INT_MEM_REF
53D6< 13B3<>	MEM_DATA<59>	K32	DDR_DATA_59	Y22	DDR_VREF_0
53D6< 13B3<>	MEM_DATA<60>	K33	DDR_DATA_60	T22	DDR_VREF_1
53D6< 13B3<>	MEM_DATA<61>	J36	DDR_DATA_61		
53D6< 13B3<>	MEM_DATA<62>	K36	DDR_DATA_62		
53D6< 13B3<>	MEM_DATA<63>	K35	DDR_DATA_63		

MEM_MUXSEL_H<1> — R288 47 5% 1/16W MF 402 — MUX_SEL_H 13A3<> 13C4<> 53C6<

MEM_MUXSEL_L<1> — R261 47 5% 1/16W MF 402 — MUX_SEL_L 13A6<> 13C8<> 53C6<

'0'S ARE SAME POLARITY (ACTIVE LO)
'1'S ARE SAME POLARITY (ACTIVE HI)
SEL = 0; HOST=B PORT, A PORT = 100 OHMGND
SEL = 1; HOST=A PORT, B PORT = 100 OHMGND

SYSCLK_DDRCLK_A0_UF	RP102 22 5% 1/16W SM1	SYSCLK_DDRCLK_A0 14D6<> 53C6<	
SYSCLK_DDRCLK_A0_L_UF	RP102 22 5% 1/16W SM1	SYSCLK_DDRCLK_A0_L 14D6<> 53C6<	
SYSCLK_DDRCLK_A1_UF	RP102 22 5% 1/16W SM1	SYSCLK_DDRCLK_A1 14A4<> 53C6<	
SYSCLK_DDRCLK_A1_L_UF	RP102 22 5% 1/16W SM1	SYSCLK_DDRCLK_A1_L 14A4<> 53C6<	
SYSCLK_DDRCLK_A2_UF	RP105 22 5% 1/16W SM1	NO_TEST NC_SYSCLK_DDRCLK_A2 53D6< 12D6<>	MEM_BA<1>
SYSCLK_DDRCLK_A2_L_UF	RP105 22 5% 1/16W SM1	NO_TEST NC_SYSCLK_DDRCLK_A2_L 53D6< 12D6<>	MEM_BA<0>
SYSCLK_DDRCLK_B0_UF	RP105 22 5% 1/16W SM1	SYSCLK_DDRCLK_B0 15B4> 53B6<	53C6< 12C6<> MEM_WE_L
SYSCLK_DDRCLK_B0_L_UF	RP105 22 5% 1/16W SM1	SYSCLK_DDRCLK_B0_L 15B3> 53B6<	53D6< 12D6<> MEM_ADDR<11>
SYSCLK_DDRCLK_B1_UF	RP109 22 5% 1/16W SM1	SYSCLK_DDRCLK_B1 15D6< 53B6<	
SYSCLK_DDRCLK_B1_L_UF	RP109 22 5% 1/16W SM1	SYSCLK_DDRCLK_B1_L 15C6< 53B6<	
SYSCLK_DDRCLK_B2_UF	RP109 22 5% 1/16W SM1	SYSCLK_DDRCLK_B2 15A6< 53B6<	
SYSCLK_DDRCLK_B2_L_UF	RP109 22 5% 1/16W SM1	SYSCLK_DDRCLK_B2_L 15A6< 53B6<	

53D6< 12D6<> MEM_ADDR<4>	RP68 22 5% 1/16W SM1	RAM_ADDR<4> 14B4<> 15C6< 53D6<	
53D6< 12D6<> MEM_ADDR<3>	RP68 22 5% 1/16W SM1	RAM_ADDR<3> 14B6<> 15C4< 53D6<	
53D6< 12D6<> MEM_ADDR<7>	RP68 22 5% 1/16W SM1	RAM_ADDR<7> 14B6<> 15C6< 53D6<	
53D6< 12D6<> MEM_ADDR<10>	RP68 22 5% 1/16W SM1	RAM_ADDR<10> 14B6<> 15B4> 53D6<	
53D6< 12D6<> MEM_ADDR<2>	RP62 22 5% 1/16W SM1	RAM_ADDR<2> 14B4<> 15C6< 53D6<	
53D6< 12D6<> MEM_ADDR<1>	RP62 22 5% 1/16W SM1	RAM_ADDR<1> 14B6<> 15B6< 53D6<	
53D6< 12D6<> MEM_ADDR<0>	RP62 22 5% 1/16W SM1	RAM_ADDR<0> 14B4<> 15B6< 53D6<	
53D6< 12D6<> MEM_ADDR<9>	RP62 22 5% 1/16W SM1	RAM_ADDR<9> 14B6<> 15C6< 53D6<	
53D6< 12D6<> MEM_BA<1>	RP116 22 5% 1/16W SM1	RAM_BA<1> 14B4<> 15B6< 53D6<	
53D6< 12D6<> MEM_BA<0>	RP116 22 5% 1/16W SM1	RAM_BA<0> 14B6<> 15B6< 53D6<	
53D6< 12C6<> MEM_WE_L	RP116 22 5% 1/16W SM1	RAM_WE_L 14B6<> 15B6< 53C6<	
53D6< 12D6<> MEM_ADDR<11>	RP116 22 5% 1/16W SM1	RAM_ADDR<11> 14B4<> 15C4> 53D6<	
53D6< 12C6<> MEM_RAS_L	R697 22 5% 1/16W MF 402	RAM_RAS_L 14B4<> 15B4> 53C6<	
53D6< 12C6<> MEM_CAS_L	R286 22 5% 1/16W MF 402	RAM_CAS_L 14B4<> 15B6< 53C6<	

53D6< 12D6<> MEM_ADDR<12>	RP71 22 5% 1/16W SM1	RAM_ADDR<12> 14B6<> 15C4> 53D6<	
53D6< 12D6<> MEM_ADDR<8>	RP71 22 5% 1/16W SM1	RAM_ADDR<8> 14B4<> 15C4> 53D6<	
53D6< 12D6<> MEM_ADDR<6>	RP71 22 5% 1/16W SM1	RAM_ADDR<6> 14B4<> 15C4> 53D6<	
53D6< 12D6<> MEM_ADDR<5>	RP71 22 5% 1/16W SM1	RAM_ADDR<5> 14B6<> 15C6< 53D6<	
53C6< 12C6<> MEM_CKE<2>	RP51 22 5% 1/16W SM1	RAM_CKE<2> 15B1< 15C6< 53C6<	
53C6< 12C6<> MEM_CS_L<0>	RP51 22 5% 1/16W SM1	RAM_CS_L<0> 14B6<> 53C6<	
53C6< 12C6<> MEM_CKE<0>	RP51 22 5% 1/16W SM1	RAM_CKE<0> 14B4<> 15C1< 53C6<	
53C6< 12C6<> MEM_CS_L<1>	RP51 22 5% 1/16W SM1	RAM_CS_L<1> 14B4<> 53C6<	
53C6< 12C6<> MEM_CS_L<3>	RP52 22 5% 1/16W SM1	RAM_CS_L<3> 15B4> 53C6<	
53C6< 12B6<> MEM_CKE<3>	RP52 22 5% 1/16W SM1	RAM_CKE<3> 15A1< 15C4> 53C6<	
53C6< 12C6<> MEM_CS_L<2>	RP52 22 5% 1/16W SM1	RAM_CS_L<2> 15B4> 53C6<	
53C6< 12B6<> MEM_CKE<1>	RP52 22 5% 1/16W SM1	RAM_CKE<1> 14B6<> 15C1< 53C6<	

R137 10K 1% 1/16W MF 402 NOSTUFF — R214 10K 1% 1/16W MF 402 NOSTUFF

R172 10K 1% 1/16W MF 402 NOSTUFF — R235 10K 1% 1/16W MF 402 NOSTUFF

14A1< INT_MEM_VREF — MIN_LINE_WIDTH=25

+2_5V_MAIN

C14 0.1UF 20% 10V CERM 402

C30 0.1UF 20% 10V CERM 402

LOCATE 2 DECOUPLING CAPS DIRECTLY AT DDR_VREF_X BALLS (U25-Y22 & T22)

+2_5V_MAIN

R82 100 1% 1/16W MF 402

MIN_LINE_WIDTH=20 — DDR_VREF 14D2<> 14D8<> 15D8< 52A6>

R93 100 1% 1/16W MF 402

LOCATE THESE RESISTORS NEAR INTREPID

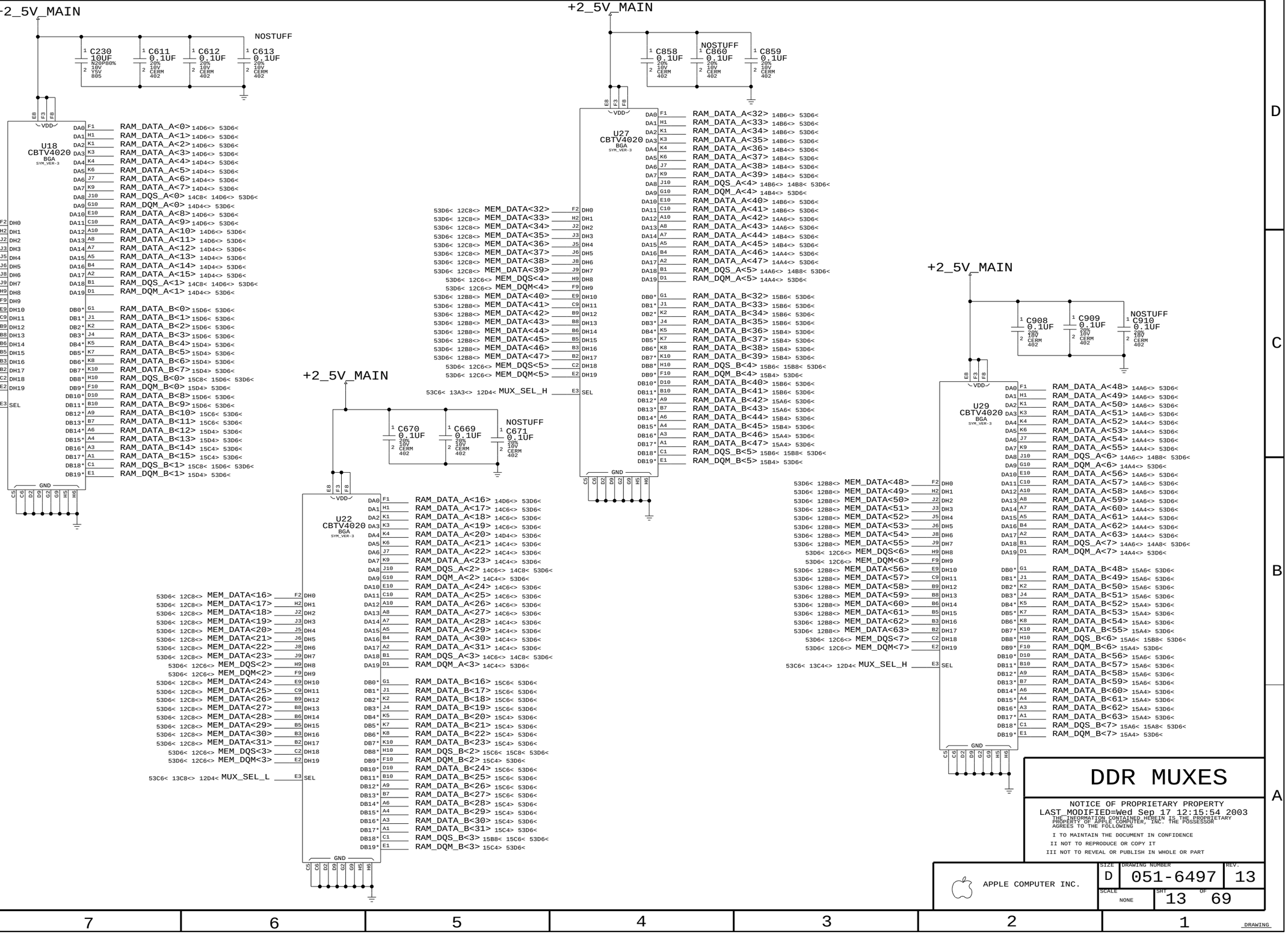
INTREPID DDR CNTRL

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	12	69

DRAWING


+2_5V_MAIN
C230 10UF N20P80% 10V 10V 805
C611 0.1UF 20% 10V CERM 402
C612 0.1UF 20% 10V CERM 402
C613 0.1UF 20% 10V CERM 402
NOSTUFF
U18 CBTV4020 BGA SYM_VER-3
RAM_DATA_A<0> 14D6<> 53D6<
RAM_DATA_A<1> 14D6<> 53D6<
RAM_DATA_A<2> 14D6<> 53D6<
RAM_DATA_A<3> 14D6<> 53D6<
RAM_DATA_A<4> 14D4<> 53D6<
RAM_DATA_A<5> 14D4<> 53D6<
RAM_DATA_A<6> 14D4<> 53D6<
RAM_DATA_A<7> 14D4<> 53D6<
RAM_DQS_A<0> 14C8< 14D6<> 53D6<
RAM_DQM_A<0> 14D4<> 53D6<
RAM_DATA_A<8> 14D6<> 53D6<
RAM_DATA_A<9> 14D6<> 53D6<
RAM_DATA_A<10> 14D6<> 53D6<
RAM_DATA_A<11> 14D6<> 53D6<
RAM_DATA_A<12> 14D4<> 53D6<
RAM_DATA_A<13> 14D4<> 53D6<
RAM_DATA_A<14> 14D4<> 53D6<
RAM_DATA_A<15> 14D4<> 53D6<
RAM_DQS_A<1> 14C8< 14D6<> 53D6<
RAM_DQM_A<1> 14D4<> 53D6<
MEM_DATA<0>
MEM_DATA<1>
MEM_DATA<2>
MEM_DATA<3>
MEM_DATA<4>
MEM_DATA<5>
MEM_DATA<6>
MEM_DATA<7>
MEM_DQS<0>
MEM_DQM<0>
MEM_DATA<8>
MEM_DATA<9>
MEM_DATA<10>
MEM_DATA<11>
MEM_DATA<12>
MEM_DATA<13>
MEM_DATA<14>
MEM_DATA<15>
MEM_DQS<1>
MEM_DQM<1>
MUX_SEL_L
RAM_DATA_B<0> 15D6< 53D6<
RAM_DATA_B<1> 15D6< 53D6<
RAM_DATA_B<2> 15D6< 53D6<
RAM_DATA_B<3> 15D6< 53D6<
RAM_DATA_B<4> 15D4> 53D6<
RAM_DATA_B<5> 15D4> 53D6<
RAM_DATA_B<6> 15D4> 53D6<
RAM_DATA_B<7> 15D4> 53D6<
RAM_DQS_B<0> 15C8< 15D6< 53D6<
RAM_DQM_B<0> 15D4> 53D6<
RAM_DATA_B<8> 15D6< 53D6<
RAM_DATA_B<9> 15D6< 53D6<
RAM_DATA_B<10> 15C6< 53D6<
RAM_DATA_B<11> 15C6< 53D6<
RAM_DATA_B<12> 15D4> 53D6<
RAM_DATA_B<13> 15D4> 53D6<
RAM_DATA_B<14> 15C4> 53D6<
RAM_DATA_B<15> 15C4> 53D6<
RAM_DQS_B<1> 15C8< 15D6< 53D6<
RAM_DQM_B<1> 15D4> 53D6<
GND
+2_5V_MAIN
C858 0.1UF 20% 10V CERM 402
C860 0.1UF 20% 10V CERM 402
C859 0.1UF 20% 10V CERM 402
NOSTUFF
U27 CBTV4020 BGA SYM_VER-3
RAM_DATA_A<32> 14B6<> 53D6<
RAM_DATA_A<33> 14B6<> 53D6<
RAM_DATA_A<34> 14B6<> 53D6<
RAM_DATA_A<35> 14B6<> 53D6<
RAM_DATA_A<36> 14B4<> 53D6<
RAM_DATA_A<37> 14B4<> 53D6<
RAM_DATA_A<38> 14B4<> 53D6<
RAM_DATA_A<39> 14B4<> 53D6<
RAM_DQS_A<4> 14B6<> 14B8< 53D6<
RAM_DQM_A<4> 14B4<> 53D6<
RAM_DATA_A<40> 14B6<> 53D6<
RAM_DATA_A<41> 14B6<> 53D6<
RAM_DATA_A<42> 14A6<> 53D6<
RAM_DATA_A<43> 14A6<> 53D6<
RAM_DATA_A<44> 14B4<> 53D6<
RAM_DATA_A<45> 14B4<> 53D6<
RAM_DATA_A<46> 14A4<> 53D6<
RAM_DATA_A<47> 14A4<> 53D6<
RAM_DQS_A<5> 14A6<> 14B8< 53D6<
RAM_DQM_A<5> 14A4<> 53D6<
MEM_DATA<32>
MEM_DATA<33>
MEM_DATA<34>
MEM_DATA<35>
MEM_DATA<36>
MEM_DATA<37>
MEM_DATA<38>
MEM_DATA<39>
MEM_DQS<4>
MEM_DQM<4>
MEM_DATA<40>
MEM_DATA<41>
MEM_DATA<42>
MEM_DATA<43>
MEM_DATA<44>
MEM_DATA<45>
MEM_DATA<46>
MEM_DATA<47>
MEM_DQS<5>
MEM_DQM<5>
MUX_SEL_H
RAM_DATA_B<32> 15B6< 53D6<
RAM_DATA_B<33> 15B6< 53D6<
RAM_DATA_B<34> 15B6< 53D6<
RAM_DATA_B<35> 15B6< 53D6<
RAM_DATA_B<36> 15B4> 53D6<
RAM_DATA_B<37> 15B4> 53D6<
RAM_DATA_B<38> 15B4> 53D6<
RAM_DATA_B<39> 15B4> 53D6<
RAM_DQS_B<4> 15B6< 15B8< 53D6<
RAM_DQM_B<4> 15B4> 53D6<
RAM_DATA_B<40> 15B6< 53D6<
RAM_DATA_B<41> 15B6< 53D6<
RAM_DATA_B<42> 15A6< 53D6<
RAM_DATA_B<43> 15A6< 53D6<
RAM_DATA_B<44> 15B4> 53D6<
RAM_DATA_B<45> 15B4> 53D6<
RAM_DATA_B<46> 15A4> 53D6<
RAM_DATA_B<47> 15A4> 53D6<
RAM_DQS_B<5> 15B6< 15B8< 53D6<
RAM_DQM_B<5> 15B4> 53D6<
GND
+2_5V_MAIN
C908 0.1UF 20% 10V CERM 402
C909 0.1UF 20% 10V CERM 402
C910 0.1UF 20% 10V CERM 402
NOSTUFF
U29 CBTV4020 BGA SYM_VER-3
RAM_DATA_A<48> 14A6<> 53D6<
RAM_DATA_A<49> 14A6<> 53D6<
RAM_DATA_A<50> 14A6<> 53D6<
RAM_DATA_A<51> 14A6<> 53D6<
RAM_DATA_A<52> 14A4<> 53D6<
RAM_DATA_A<53> 14A4<> 53D6<
RAM_DATA_A<54> 14A4<> 53D6<
RAM_DATA_A<55> 14A4<> 53D6<
RAM_DQS_A<6> 14A6<> 14B8< 53D6<
RAM_DQM_A<6> 14A4<> 53D6<
RAM_DATA_A<56> 14A6<> 53D6<
RAM_DATA_A<57> 14A6<> 53D6<
RAM_DATA_A<58> 14A6<> 53D6<
RAM_DATA_A<59> 14A6<> 53D6<
RAM_DATA_A<60> 14A4<> 53D6<
RAM_DATA_A<61> 14A4<> 53D6<
RAM_DATA_A<62> 14A4<> 53D6<
RAM_DATA_A<63> 14A4<> 53D6<
RAM_DQS_A<7> 14A6< 14A8< 53D6<
RAM_DQM_A<7> 14A4<> 53D6<
MEM_DATA<48>
MEM_DATA<49>
MEM_DATA<50>
MEM_DATA<51>
MEM_DATA<52>
MEM_DATA<53>
MEM_DATA<54>
MEM_DATA<55>
MEM_DQS<6>
MEM_DQM<6>
MEM_DATA<56>
MEM_DATA<57>
MEM_DATA<58>
MEM_DATA<59>
MEM_DATA<60>
MEM_DATA<61>
MEM_DATA<62>
MEM_DATA<63>
MEM_DQS<7>
MEM_DQM<7>
MUX_SEL_H
RAM_DATA_B<48> 15A6< 53D6<
RAM_DATA_B<49> 15A6< 53D6<
RAM_DATA_B<50> 15A6< 53D6<
RAM_DATA_B<51> 15A6< 53D6<
RAM_DATA_B<52> 15A4> 53D6<
RAM_DATA_B<53> 15A4> 53D6<
RAM_DATA_B<54> 15A4> 53D6<
RAM_DATA_B<55> 15A4> 53D6<
RAM_DQS_B<6> 15A6< 15B8< 53D6<
RAM_DQM_B<6> 15A4> 53D6<
RAM_DATA_B<56> 15A6< 53D6<
RAM_DATA_B<57> 15A6< 53D6<
RAM_DATA_B<58> 15A6< 53D6<
RAM_DATA_B<59> 15A6< 53D6<
RAM_DATA_B<60> 15A4> 53D6<
RAM_DATA_B<61> 15A4> 53D6<
RAM_DATA_B<62> 15A4> 53D6<
RAM_DATA_B<63> 15A4> 53D6<
RAM_DQS_B<7> 15A6< 15A8< 53D6<
RAM_DQM_B<7> 15A4> 53D6<
GND
+2_5V_MAIN
C670 0.1UF 20% 10V CERM 402
C669 0.1UF 20% 10V CERM 402
C671 0.1UF 20% 10V CERM 402
NOSTUFF
U22 CBTV4020 BGA SYM_VER-3
RAM_DATA_A<16> 14C6<> 53D6<
RAM_DATA_A<17> 14C6<> 53D6<
RAM_DATA_A<18> 14C6<> 53D6<
RAM_DATA_A<19> 14C6<> 53D6<
RAM_DATA_A<20> 14D4<> 53D6<
RAM_DATA_A<21> 14C4<> 53D6<
RAM_DATA_A<22> 14C4<> 53D6<
RAM_DATA_A<23> 14C4<> 53D6<
RAM_DQS_A<2> 14C6<> 14C8< 53D6<
RAM_DQM_A<2> 14C4<> 53D6<
RAM_DATA_A<24> 14C6<> 53D6<
RAM_DATA_A<25> 14C6<> 53D6<
RAM_DATA_A<26> 14C6<> 53D6<
RAM_DATA_A<27> 14C6<> 53D6<
RAM_DATA_A<28> 14C4<> 53D6<
RAM_DATA_A<29> 14C4<> 53D6<
RAM_DATA_A<30> 14C4<> 53D6<
RAM_DATA_A<31> 14C4<> 53D6<
RAM_DQS_A<3> 14C6<> 14C8< 53D6<
RAM_DQM_A<3> 14C4<> 53D6<
MEM_DATA<16>
MEM_DATA<17>
MEM_DATA<18>
MEM_DATA<19>
MEM_DATA<20>
MEM_DATA<21>
MEM_DATA<22>
MEM_DATA<23>
MEM_DQS<2>
MEM_DQM<2>
MEM_DATA<24>
MEM_DATA<25>
MEM_DATA<26>
MEM_DATA<27>
MEM_DATA<28>
MEM_DATA<29>
MEM_DATA<30>
MEM_DATA<31>
MEM_DQS<3>
MEM_DQM<3>
MUX_SEL_L
RAM_DATA_B<16> 15C6< 53D6<
RAM_DATA_B<17> 15C6< 53D6<
RAM_DATA_B<18> 15C6< 53D6<
RAM_DATA_B<19> 15C6< 53D6<
RAM_DATA_B<20> 15C4> 53D6<
RAM_DATA_B<21> 15C4> 53D6<
RAM_DATA_B<22> 15C4> 53D6<
RAM_DATA_B<23> 15C4> 53D6<
RAM_DQS_B<2> 15C6< 15C8< 53D6<
RAM_DQM_B<2> 15C4> 53D6<
RAM_DATA_B<24> 15C6< 53D6<
RAM_DATA_B<25> 15C6< 53D6<
RAM_DATA_B<26> 15C6< 53D6<
RAM_DATA_B<27> 15C6< 53D6<
RAM_DATA_B<28> 15C4> 53D6<
RAM_DATA_B<29> 15C4> 53D6<
RAM_DATA_B<30> 15C4> 53D6<
RAM_DATA_B<31> 15C4> 53D6<
RAM_DQS_B<3> 15B8< 15C6< 53D6<
RAM_DQM_B<3> 15C4> 53D6<
GND
DDR MUXES
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SIZE D
DRAWING NUMBER 051-6497
REV. 13
SCALE NONE
SHT 13 OF 69
DRAWING

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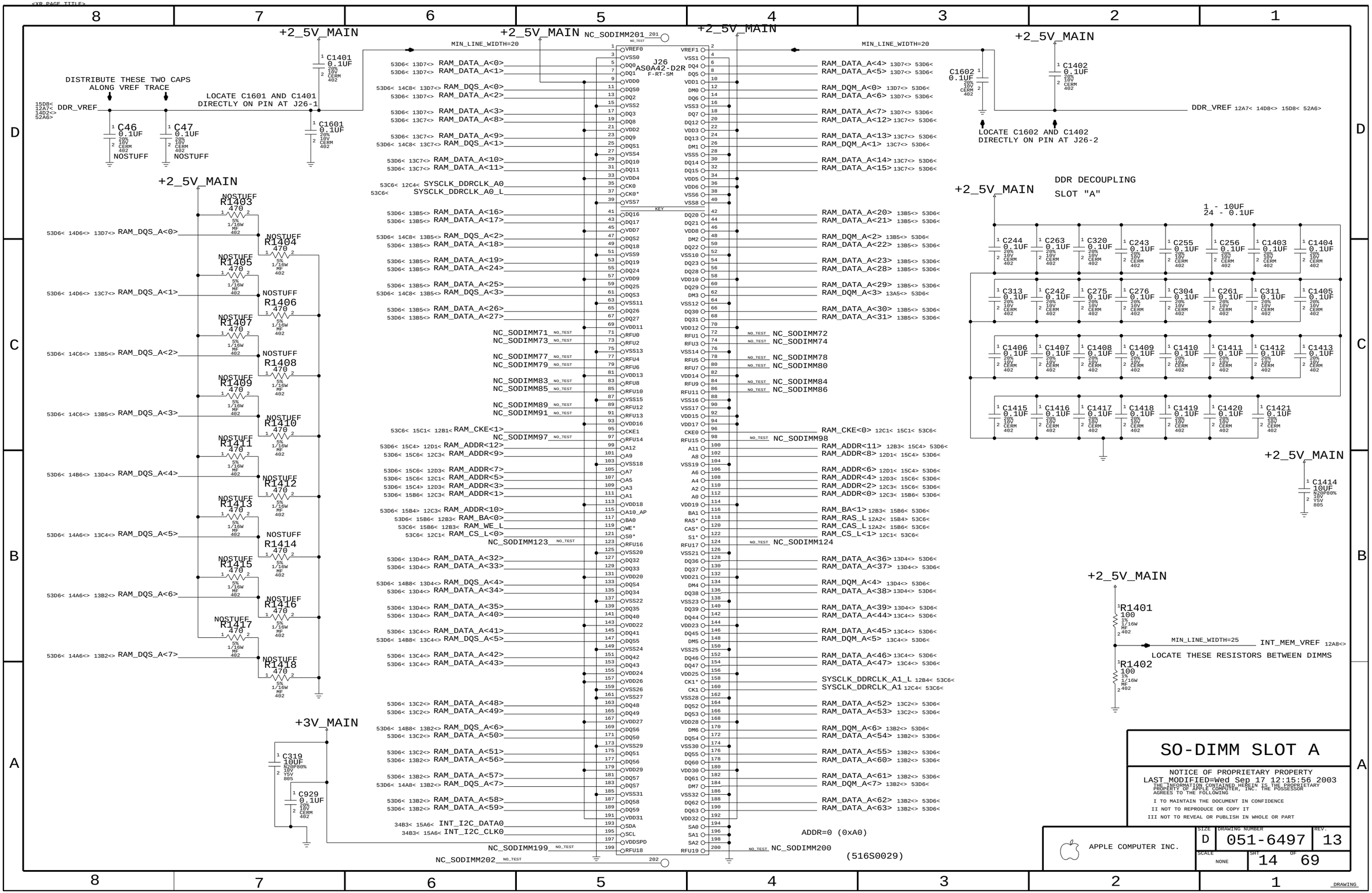


SO-DIMM SLOT A

LAST_MODIFIED=Wed Sep 17 12:15:56 2003

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	14	69

DRAWING

+2_5V_MAIN

LOCATE C1702 AND C1501
DIRECTLY ON PIN J11-1

C1501 0.1UF 20% 10V CERM 402

MIN_LINE_WIDTH=20

DISTRIBUTE THESE THREE CAPS
ALONG VREF TRACE

DDR_VREF

C48 0.1UF 20% 10V CERM 402 NOSTUFF
C49 0.1UF 20% 10V CERM 402 NOSTUFF
C50 0.1UF 20% 10V CERM 402 NOSTUFF

C1702 0.1UF 20% 10V CERM 402

+2_5V_MAIN

NOSTUFF R1503 470 5% 1/16W MF 402
NOSTUFF R1504 470 5% 1/16W MF 402
NOSTUFF R1505 470 5% 1/16W MF 402
NOSTUFF R1506 470 5% 1/16W MF 402
NOSTUFF R1507 470 5% 1/16W MF 402
NOSTUFF R1508 470 5% 1/16W MF 402
NOSTUFF R1509 470 5% 1/16W MF 402
NOSTUFF R1510 470 5% 1/16W MF 402
NOSTUFF R1511 470 5% 1/16W MF 402
NOSTUFF R1512 470 5% 1/16W MF 402
NOSTUFF R1513 470 5% 1/16W MF 402
NOSTUFF R1514 470 5% 1/16W MF 402
NOSTUFF R1515 470 5% 1/16W MF 402
NOSTUFF R1516 470 5% 1/16W MF 402
NOSTUFF R1517 470 5% 1/16W MF 402
NOSTUFF R1518 470 5% 1/16W MF 402

53D6< 15D6< 13C7< RAM_DQS_B<0>
53D6< 15D6< 13B7< RAM_DQS_B<1>
53D6< 15C6< 13A5< RAM_DQS_B<2>
53D6< 15C6< 13A5< RAM_DQS_B<3>
53D6< 15B6< 13C4< RAM_DQS_B<4>
53D6< 15B6< 13B4< RAM_DQS_B<5>
53D6< 15A6< 13B2< RAM_DQS_B<6>
53D6< 15A6< 13A2< RAM_DQS_B<7>

+2_5V_MAIN

R809 1K 1% 1/16W MF 402
R796 1K 1% 1/16W MF 402

M_VDDID
M_SPD_WP

+2_5V_MAIN

J11
TH-DDR-DIMM-71243
SX64 DIMM

	FRONT SIDE		REAR SIDE	
1	VREF		VSS	93
2	DQ0		DQ4	94
3	VSS		DQ5	95
4	DQ1		VDDQ	96
5	DQS0		DM0/DQS9	97
6	DQ2		DQ6	98
7	VDD		DQ7	99
8	DQ3		VSS	100
9	NC		NC	101
10	NC		NC	102
11	VSS		A13	103
12	DQ8		VDDQ	104
13	DQ9		DQ12	105
14	DQS1		DQ13	106
15	VDDQ		DM1/DQS10*	107
16	CK1		VDD	108
17	CK1*		DQ14	109
18	VSS		DQ15	110
19	DQ10		CKE1	111
20	DQ11		VDDQ	112
21	CKE0		BA2	113
22	VDDQ		DQ20	114
23	DQ16		A12	115
24	DQ17		VSS	116
25	DQS2		DQ21	117
26	VSS		A11	118
27	A9		DM2/DQS11	119
28	DQ18		VDD	120
29	A7		DQ22	121
30	VDDQ		A8	122
31	DQ19		DQ23	123
32	A5		VSS	124
33	DQ24		A6	125
34	VSS		DQ28	126
35	DQ25		DQ29	127
36	DQS3		VDDQ	128
37	A4		DM3/DQS12	129
38	VDD		A3	130
39	DQ26		DQ30	131
40	DQ27		VSS	132
41	A2		DQ31	133
42	VSS		NC	134
43	A1		NC	135
44	NC		VDDQ	136
45	NC		CK0	137
46	VDD		CK0*	138
47	NC		VSS	139
48	A0		NC	140
49	NC		A10	141
50	VSS		NC	142
51	NC		VDDQ	143
52	BA1		NC	144
53	DQ32		VSS	145
54	VDDQ		DQ36	146
55	DQ33		DQ37	147
56	DQS4		VDD	148
57	DQ34		DM4/DQS13	149
58	VSS		DQ38	150
59	BA0		DQ39	151
60	DQ35		VSS	152
61	DQ40		DQ44	153
62	VDDQ		RAS*	154
63	WE*		DQ45	155
64	DQ41		VDDQ	156
65	CAS*		S0*	157
66	VSS		S1*	158
67	DQS5		DM5/DQS14	159
68	DQ42		VSS	160
69	DQ43		DQ46	161
70	VDD		DQ47	162
71	NC,S2*		NC,S3*	163
72	DQ48		VDDQ	164
73	DQ49		DQ52	165
74	VSS		DQ53	166
75	CK2*		NC,FETEN	167
76	CK2		VDD	168
77	VDDQ		DM6/DQS15	169
78	DQS6		DQ54	170
79	DQ50		DQ55	171
80	DQ51		VDDQ	172
81	VSS		NC	173
82	VDDID		DQ60	174
83	DQ56		DQ61	175
84	DQ57		VSS	176
85	VDD		DM7/DQS16	177
86	DQS7		DQ62	178
87	DQ58		DQ63	179
88	DQ59		VDDQ	180
89	VSS		SA0	181
90	WP		SA1	182
91	SDA		SA2	183
92	SCL		VVDDSPD	184

53D6< 13C7< RAM_DATA_B<0>
53D6< 13C7< RAM_DATA_B<1>
53D6< 15C8< 13C7< RAM_DQS_B<0>
53D6< 13C7< RAM_DATA_B<2>
53D6< 13C7< RAM_DATA_B<3>
NC_BIGDIMM9 NO_TEST
NC_BIGDIMM10 NO_TEST
53D6< 13C7< RAM_DATA_B<8>
53D6< 13C7< RAM_DATA_B<9>
53D6< 15C8< 13B7< RAM_DQS_B<1>
53B6< 12A4< SYSCLK_DDRCLK_B1
53B6< SYSCLK_DDRCLK_B1_L
53D6< 13C7< RAM_DATA_B<10>
53D6< 13C7< RAM_DATA_B<11>
53C6< 15B1< 12C1< RAM_CKE<2>
53D6< 13A5< RAM_DATA_B<16>
53D6< 13A5< RAM_DATA_B<17>
53D6< 15C8< 13A5< RAM_DQS_B<2>
53D6< 14B6< 12C3< RAM_ADDR<9>
53D6< 13A5< RAM_DATA_B<18>
53D6< 14B6< 12D3< RAM_ADDR<7>
53D6< 13A5< RAM_DATA_B<19>
53D6< 14B6< 12C1< RAM_ADDR<5>
53D6< 13A5< RAM_DATA_B<24>
53D6< 13A5< RAM_DATA_B<25>
53D6< 15B8< 13A5< RAM_DQS_B<3>
53D6< 14B4< 12D3< RAM_ADDR<4>
53D6< 13A5< RAM_DATA_B<26>
53D6< 13A5< RAM_DATA_B<27>
53D6< 14B4< 12C3< RAM_ADDR<2>
53D6< 14B6< 12C3< RAM_ADDR<1>
NC_BIGDIMM44 NO_TEST
NC_BIGDIMM45 NO_TEST
NC_BIGDIMM47 NO_TEST
53D6< 14B4< 12C3< RAM_ADDR<0>
NC_BIGDIMM49 NO_TEST
NC_BIGDIMM51 NO_TEST
53D6< 14B4< 12B3< RAM_BA<1>
53D6< 13C4< RAM_DATA_B<32>
53D6< 13C4< RAM_DATA_B<33>
53D6< 15B8< 13C4< RAM_DQS_B<4>
53D6< 13C4< RAM_DATA_B<34>
53D6< 14B6< 12B3< RAM_BA<0>
53D6< 13C4< RAM_DATA_B<35>
53D6< 13C4< RAM_DATA_B<40>
53C6< 14B6< 12B3< RAM_WE_L
53D6< 13C4< RAM_DATA_B<41>
53C6< 14B4< 12A2< RAM_CAS_L
53D6< 15B8< 13B4< RAM_DQS_B<5>
53D6< 13C4< RAM_DATA_B<42>
53D6< 13C4< RAM_DATA_B<43>
NC_BIGDIMM71 NO_TEST
53D6< 13B2< RAM_DATA_B<48>
53D6< 13B2< RAM_DATA_B<49>
53B6< SYSCLK_DDRCLK_B2_L
53B6< 12A4< SYSCLK_DDRCLK_B2
53D6< 15B8< 13B2< RAM_DQS_B<6>
53D6< 13B2< RAM_DATA_B<50>
53D6< 13B2< RAM_DATA_B<51>
53D6< 13B2< RAM_DATA_B<56>
53D6< 13A2< RAM_DATA_B<57>
53D6< 15A8< 13A2< RAM_DQS_B<7>
53D6< 13A2< RAM_DATA_B<58>
53D6< 13A2< RAM_DATA_B<59>
34B3< 14A6< INT_I2C_DATA0
34B3< 14A6< INT_I2C_CLK0

(516-1001)
DDR SDRAM SLOT B

+2_5V_MAIN

53D6< 13C7< RAM_DATA_B<4>
53D6< 13C7< RAM_DATA_B<5>
53D6< 13C7< RAM_DQM_B<0>
53D6< 13C7< RAM_DATA_B<6>
53D6< 13C7< RAM_DATA_B<7>
NO_TEST NC_BIGDIMM101
NO_TEST NC_BIGDIMM102
NO_TEST NC_BIGDIMM103
53D6< 13C7< RAM_DATA_B<12>
53D6< 13B7< RAM_DATA_B<13>
53D6< 13B7< RAM_DQM_B<1>
53D6< 13B7< RAM_DATA_B<14>
53D6< 13B7< RAM_DATA_B<15>
53D6< 12B1< 15A1< 53C6< RAM_CKE<3>
NO_TEST NC_BIGDIMM113
53D6< 13A5< RAM_DATA_B<20>
53D6< 12D1< 14B6< RAM_ADDR<12>
53D6< 13A5< RAM_DATA_B<21>
53D6< 12B3< 14B4< RAM_ADDR<11>
53D6< 13A5< RAM_DQM_B<2>
53D6< 13A5< RAM_DATA_B<22>
53D6< 12D1< 14B4< RAM_ADDR<8>
53D6< 13A5< RAM_DATA_B<23>
53D6< 12D1< 14B4< RAM_ADDR<6>
53D6< 13A5< RAM_DATA_B<28>
53D6< 13A5< RAM_DATA_B<29>
53D6< 13A5< RAM_DQM_B<3>
53D6< 12D3< 14B6< RAM_ADDR<3>
53D6< 13A5< RAM_DATA_B<30>
53D6< 13A5< RAM_DATA_B<31>
NO_TEST NC_BIGDIMM134
NO_TEST NC_BIGDIMM135
53B6< 12B4< SYSCLK_DDRCLK_B0
53B6< 12B4< SYSCLK_DDRCLK_B0_L
NO_TEST NC_BIGDIMM140
53C3< 14B6< 53D6< RAM_ADDR<10>
NO_TEST NC_BIGDIMM142
NO_TEST NC_BIGDIMM144
53C4< 53D6< RAM_DATA_B<36>
53C4< 53D6< RAM_DATA_B<37>
53C4< 53D6< RAM_DQM_B<4>
53C4< 53D6< RAM_DATA_B<38>
53C4< 53D6< RAM_DATA_B<39>
53C4< 53D6< RAM_DATA_B<44>
53C4< 53D6< RAM_RAS_L 12A2< 14B4< 53C6<
53C4< 53D6< RAM_DATA_B<45>
53B4< 53D6< RAM_CS_L<2>
53B1< 53C6< RAM_CS_L<3>
53B4< 53D6< RAM_DQM_B<5>
53B4< 53D6< RAM_DATA_B<46>
53B4< 53D6< RAM_DATA_B<47>
NO_TEST NC_BIGDIMM163
53B2< 53D6< RAM_DATA_B<52>
53B2< 53D6< RAM_DATA_B<53>
NO_TEST NC_BIGDIMM167
53B2< 53D6< RAM_DQM_B<6>
53B2< 53D6< RAM_DATA_B<54>
53B2< 53D6< RAM_DATA_B<55>
NO_TEST NC_BIGDIMM173
53A2< 53D6< RAM_DATA_B<60>
53A2< 53D6< RAM_DATA_B<61>
53A2< 53D6< RAM_DQM_B<7>
53A2< 53D6< RAM_DATA_B<62>
53A2< 53D6< RAM_DATA_B<63>
RAM_SA0

ADDR = 1 (0XA2)

+3V_MAIN

R825 1K 1% 1/16W MF 402
C943 0.1UF 20% 10V CERM 402
C945 10UF M20P80% 16V Y5V 805

DDR DECOUPLING

+2_5V_MAIN

SLOT "B"

1 - 10UF
24 - 0.1UF

C562 0.1UF 20% 10V CERM 402
C726 0.1UF 20% 10V CERM 402
C936 0.1UF 20% 10V CERM 402
C864 0.1UF 20% 10V CERM 402
C922 0.1UF 20% 10V CERM 402
C624 0.1UF 20% 10V CERM 402
C1502 0.1UF 20% 10V CERM 402
C1513 0.1UF 20% 10V CERM 402
C819 0.1UF 20% 10V CERM 402
C925 0.1UF 20% 10V CERM 402
C741 0.1UF 20% 10V CERM 402
C914 0.1UF 20% 10V CERM 402
C593 0.1UF 20% 10V CERM 402
C602 0.1UF 20% 10V CERM 402
C672 0.1UF 20% 10V CERM 402
C1503 0.1UF 20% 10V CERM 402
C1504 0.1UF 20% 10V CERM 402
C1505 0.1UF 20% 10V CERM 402
C1506 0.1UF 20% 10V CERM 402
C1507 0.1UF 20% 10V CERM 402
C1508 0.1UF 20% 10V CERM 402
C1509 0.1UF 20% 10V CERM 402
C1510 0.1UF 20% 10V CERM 402
C1511 0.1UF 20% 10V CERM 402
C1514 0.1UF 20% 10V CERM 402
C1515 0.1UF 20% 10V CERM 402

+2_5V_MAIN

C1512 10UF M20P80% 16V Y5V 805

+2_5V_MAIN

NOSTUFF R497 10K 1% 1/16W MF 402
NOSTUFF C55 0.1UF 20% 10V CERM 402

RAM_CKE<0> 12C1< 14B4< 53C6<
NOSTUFF
TO SO-DIMM
RAM_CKE<1> 12B1< 14B6< 53C6<
TO BIG DIMM
RAM_CKE<2> 12C1< 15C6< 53C6<
RAM_CKE<3> 12B1< 15C4< 53C6<

+2_5V_MAIN

NOSTUFF R512 1K 1% 1/16W MF 402

CKE_HYNIX C51 0.1UF 20% 10V CERM 402
CKE_HYNIX R405 4.7K 5% 1/16W MF 402
CKE_HYNIX Q42 2N7002 SM
CKE_HYNIX R471 10K 1% 1/16W MF 402
CKE_HYNIX Q54 2N7002 SM
CKE_HYNIX Q41 2N7002 SM
CKE_HYNIX R508 0 5% 1/16W MF 402

44C2< 34C3< INT_PU_RESET_L
15_I286
15_I282

+2_5V_MAIN

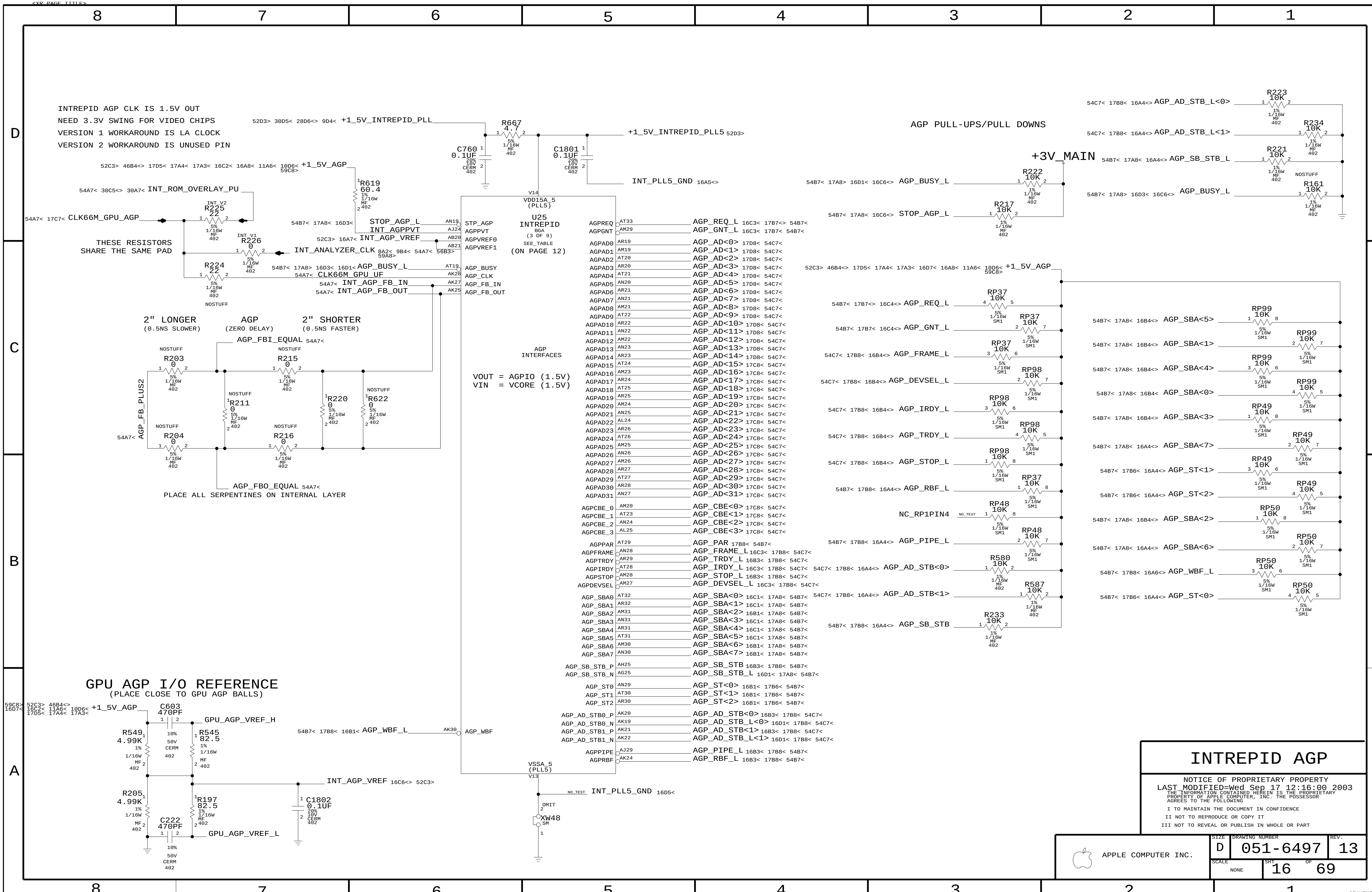
NOSTUFF R507 10K 1% 1/16W MF 402
NOSTUFF C58 0.1UF 20% 10V CERM 402
CKE_HYNIX Q52 2N7002 SM
NOSTUFF R495 10K 1% 1/16W MF 402
CKE_HYNIX Q53 2N7002 SM

BIG DIMM SLOT B

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 15 OF 69	

DRAWING


INTREPID AGP CLK IS 1.5V OUT
NEED 3.3V SWING FOR VIDEO CHIPS
VERSION 1 WORKAROUND IS LA CLOCK
VERSION 2 WORKAROUND IS UNUSED PIN
+1_5V_INTREPID_PLL
R667 4.7
C760 0.1UF
C1801 0.1UF
+1_5V_INTREPID_PLL5
INT_PLL5_GND
+1_5V_AGP
R619 60.4
INT_ROM_OVERLAY_PU
CLK66M_GPU_AGP
R225 22
R226 0
INT_ANALYZER_CLK
THESE RESISTORS SHARE THE SAME PAD
R224 22
NOSTUFF
STOP_AGP_L
INT_AGPPVT
INT_AGP_VREF
AGP_BUSY_L
CLK66M_GPU_UF
INT_AGP_FB_IN
INT_AGP_FB_OUT
U25 INTREPID BGA (3 OF 9) SEE_TABLE (ON PAGE 12)
VDD15A_5 (PLL5)
AGP INTERFACES
VOUT = AGPIO (1.5V)
VIN = VCORE (1.5V)
VSSA_5 (PLL5)
2" LONGER (0.5NS SLOWER)
AGP (ZERO DELAY)
2" SHORTER (0.5NS FASTER)
AGP_FBI_EQUAL
R203 0
R215 0
R211 0
R220 0
R622 0
AGP_FB_PLUS2
R204 0
R216 0
AGP_FBO_EQUAL
PLACE ALL SERPENTINES ON INTERNAL LAYER
AGP_REQ_L
AGP_GNT_L
AGP_AD<0> … AGP_AD<31>
AGP_CBE<0> … AGP_CBE<3>
AGP_PAR
AGP_FRAME_L
AGP_TRDY_L
AGP_IRDY_L
AGP_STOP_L
AGP_DEVSEL_L
AGP_SBA<0> … AGP_SBA<7>
AGP_SB_STB
AGP_SB_STB_L
AGP_ST<0> AGP_ST<1> AGP_ST<2>
AGP_AD_STB<0>
AGP_AD_STB_L<0>
AGP_AD_STB<1>
AGP_AD_STB_L<1>
AGP_PIPE_L
AGP_RBF_L
AGP_WBF_L
AGP PULL-UPS/PULL DOWNS
+3V_MAIN
R223 10K
R234 10K
R221 10K
R161 10K
R222 10K
R217 10K
AGP_BUSY_L
STOP_AGP_L
AGP_SB_STB_L
RP37 10K
RP98 10K
RP49 10K
RP48 10K
RP50 10K
RP99 10K
R580 10K
R587 10K
R233 10K
NC_RP1PIN4
GPU AGP I/O REFERENCE
(PLACE CLOSE TO GPU AGP BALLS)
C603 470PF
GPU_AGP_VREF_H
R549 4.99K
R545 82.5
R205 4.99K
R197 82.5
C222 470PF
GPU_AGP_VREF_L
INT_AGP_VREF
C1802 0.1UF
INT_PLL5_GND
XW48 SM
OMIT
INTREPID AGP
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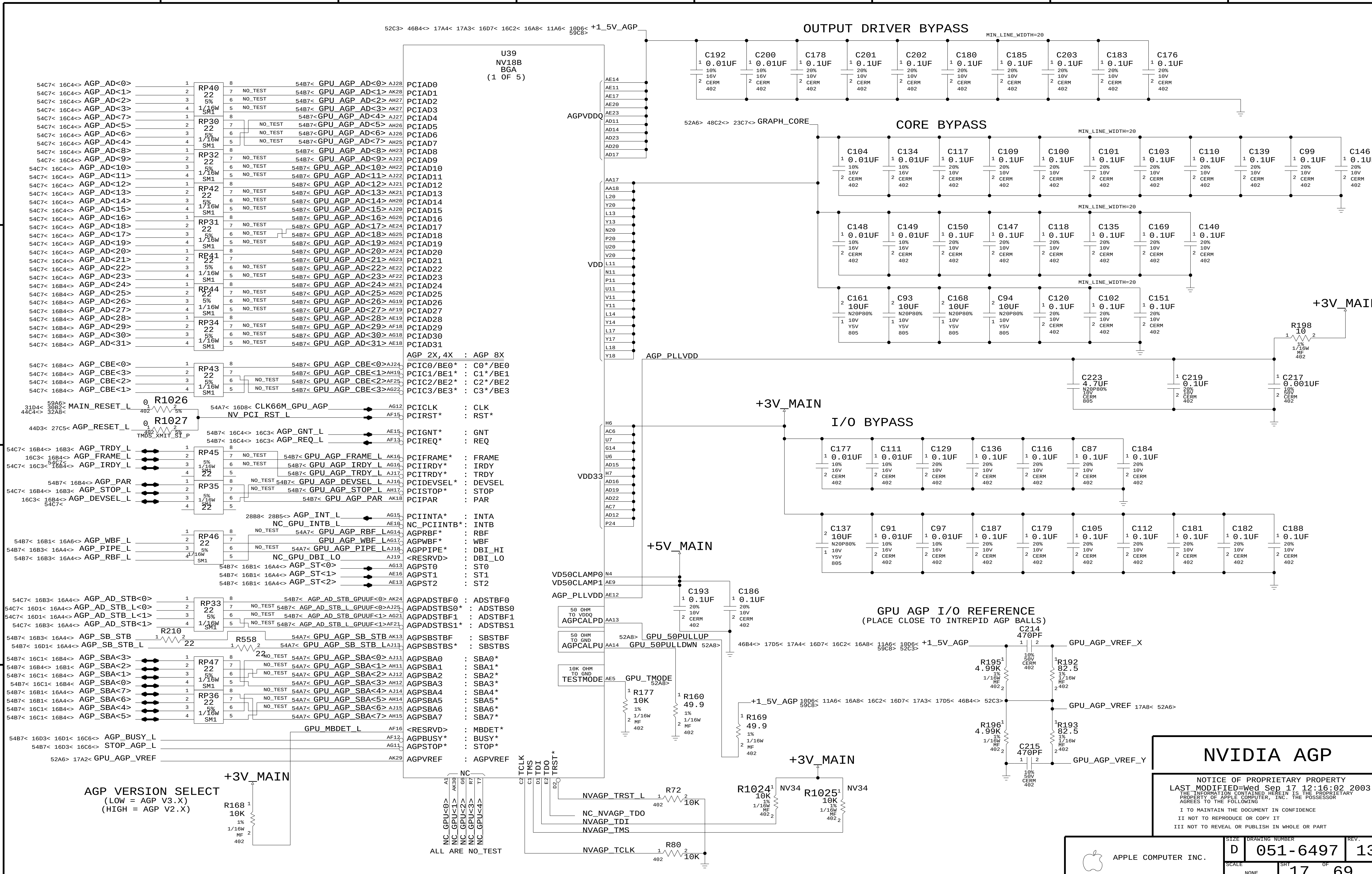

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<XR_PAGE_TITLE>

+2_5V_MAIN

EVENLY DISTRIBUTE 0.01UF & 0.1 UF CAPS AMONGST FBVDDQ PINS ON NV ASIC

C86 0.01UF 10% 16V CERM 402
C84 0.1UF 10% 10V CERM 402
C73 0.1UF 10% 10V CERM 402
C81 0.1UF 10% 10V CERM 402
C90 0.01UF 10% 16V CERM 402
C72 0.1UF 10% 10V CERM 402
C78 0.01UF 10% 16V CERM 402
C98 0.1UF 10% 10V CERM 402
C133 0.1UF 10% 10V CERM 402
C167 0.1UF 10% 10V CERM 402
C159 0.1UF 10% 10V CERM 402
C95 10UF 20% 10V TANT 3528
C75 0.1UF 10% 10V CERM 402
C82 0.1UF 10% 10V CERM 402
C79 0.1UF 10% 10V CERM 402
C115 0.01UF 10% 16V CERM 402
C175 0.1UF 10% 10V CERM 402
C199 0.1UF 10% 10V CERM 402
C83 0.01UF 10% 16V CERM 402
C80 0.1UF 10% 10V CERM 402
C89 0.01UF 10% 16V CERM 402
C96 0.1UF 10% 10V CERM 402
C145 0.1UF 10% 10V CERM 402
C124 10UF 20% 6.3V CERM 805

+2_5V_MAIN

U39 NV18B BGA (3 OF 5)

FBVDDQ

FBD<0> FBD<1> FBD<2> FBD<3> FBD<4> FBD<5> FBD<6> FBD<7> FBD<8> FBD<9> FBD<10> FBD<11> FBD<12> FBD<13> FBD<14> FBD<15> FBD<16> FBD<17> FBD<18> FBD<19> FBD<20> FBD<21> FBD<22> FBD<23> FBD<24> FBD<25> FBD<26> FBD<27> FBD<28> FBD<29> FBD<30> FBD<31> FBD<32> FBD<33> FBD<34> FBD<35> FBD<36> FBD<37> FBD<38> FBD<39> FBD<40> FBD<41> FBD<42> FBD<43> FBD<44> FBD<45> FBD<46> FBD<47> FBD<48> FBD<49> FBD<50> FBD<51> FBD<52> FBD<53> FBD<54> FBD<55> FBD<56> FBD<57> FBD<58> FBD<59> FBD<60> FBD<61> FBD<62> FBD<63>

FBADQM0 FBADQM1 FBADQM2 FBADQM3 FBADQM4 FBADQM5 FBADQM6 FBADQM7

FBA<0> FBA<1> FBA<2> FBA<3> FBA<4> FBA<5> FBA<6> FBA<7> FBA<8> FBA<9> FBA<10> FBA<11> FBA<12>

FBABA<0> FBABA<1>

FBARAS_L FBACAS_L FBAWE_L FBACS0_L NC_FBACS1_L

GPU_FB_VREF

FBVREF

ROMA14 ROMA15 ROMCS*

NC_VTT

NC_VTT<0> NC_VTT<1> NC_VTT<2> NC_VTT<3> NC_VTT<4> NC_VTT<5> NC_VTT<6> NC_VTT<7> NC_VTT<8> NC_VTT<9> NC_VTT<10> NC_VTT<11>

GND

FBADQS0* FBADQS1* FBADQS2* FBADQS3* FBADQS4* FBADQS5* FBADQS6* FBADQS7*

NC_FBDQS_L<0> NC_FBDQS_L<1> NC_FBDQS_L<2> NC_FBDQS_L<3> NC_FBDQS_L<4> NC_FBDQS_L<5> NC_FBDQS_L<6> NC_FBDQS_L<7>

+2_5V_MAIN

R71 49.9 1% 1/16W MF 402

C62 0.1UF 10% 10V CERM 402

FBCAL_PD_VDDQ FBCAL_PU_GND FBCAL_TERM_GND FBCAL_CLK_GND FB_DLLVDD

FBCAL_PD_VDDQ FBCAL_PU_GND 18A5< FBCAL_TERM_GND 18A5< FBCAL_CLK_GND 18A5< FB_DLLVDD 18C6<

FBACKE 18D3> 5SD3>

FBACLK0 FBACLK0* FBACLK1 FBACLK1*

FBACLK0 19C3> 5SC3> FBACLK0_L 19C3> 5SC3> FBACLK1 19D3> 5SC3> FBACLK1_L 19D3> 5SC3>

FBDQS0* FBDQS1* FBDQS2* FBDQS3* FBDQS4* FBDQS5* FBDQS6* FBDQS7*

FBDQS<0> 19A5< 5SC3> FBDQS<1> 19A5< 5SC3> FBDQS<2> 19A5< 5SC3> FBDQS<3> 19A5< 5SC3> FBDQS<4> 19A5< 5SC3> FBDQS<5> 19A5< 5SC3> FBDQS<6> 19A5< 5SC3> FBDQS<7> 19A5< 5SC3>

U39 NV18B BGA (4 OF 5)

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FBDQM<0> FBDQM<1> FBDQM<2> FBDQM<3> FBDQM<4> FBDQM<5> FBDQM<6> FBDQM<7>

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FBCLK0 FBCLK0* FBCLK1 FBCLK1*

FBCLK0 5SB3> 19B3< FBCLK0_L 5SB3> 19B3< FBCLK1 5SB3> 19C3< FBCLK1_L 5SB3> 19B3<

FBD<0> FBD<1> FBD<2> FBD<3> FBD<4> FBD<5> FBD<6> FBD<7> FBD<8> FBD<9> FBD<10> FBD<11> FBD<12> FBD<13> FBD<14> FBD<15> FBD<16> FBD<17> FBD<18> FBD<19> FBD<20> FBD<21> FBD<22> FBD<23> FBD<24> FBD<25> FBD<26> FBD<27> FBD<28> FBD<29> FBD<30> FBD<31> FBD<32> FBD<33> FBD<34> FBD<35> FBD<36> FBD<37> FBD<38> FBD<39> FBD<40> FBD<41> FBD<42> FBD<43> FBD<44> FBD<45> FBD<46> FBD<47> FBD<48> FBD<49> FBD<50> FBD<51> FBD<52> FBD<53> FBD<54> FBD<55> FBD<56> FBD<57> FBD<58> FBD<59> FBD<60> FBD<61> FBD<62> FBD<63>

THERMAL GND

FBCDQS0 FBCDQS1 FBCDQS2 FBCDQS3 FBCDQS4 FBCDQS5 FBCDQS6 FBCDQS7

FBDQS<8> 19A5< 5SB3> FBDQS<9> 19A5< 5SB3> FBDQS<10> 19A5< 5SB3> FBDQS<11> 19A5< 5SB3> FBDQS<12> 19A5< 5SB3> FBDQS<13> 19A5< 5SB3> FBDQS<14> 19A5< 5SB3> FBDQS<15> 19A5< 5SB3>

NC_FBCDQS0* NC_FBCDQS1* NC_FBCDQS2* NC_FBCDQS3* NC_FBCDQS4* NC_FBCDQS5* NC_FBCDQS6* NC_FBCDQS7*

NC_FBDQS_L<8> NC_FBDQS_L<9> NC_FBDQS_L<10> NC_FBDQS_L<11> NC_FBDQS_L<12> NC_FBDQS_L<13> NC_FBDQS_L<14> NC_FBDQS_L<15>

FBCRAS* FBCCAS* FBCWE* FBCCS0* FBCCS1* FBCCKE

FBBRAS_L 18C3< 5SC3> FBBCAS_L 18C3< 5SC3> FBBWE_L 18C3< 5SC3> FBBCS0_L 18C3< 5SC3> NC_FBBCS1_L FBBCKE 18A3< 5SB3>

+3V_MAIN

R52 10 1% 1/16W MF 402

18D7< FB_DLLVDD

C61 4.7UF 20% 6.3V CERM 805
C70 0.1UF 10% 10V CERM 402
C69 0.001UF 10% 50V CERM 402

+2_5V_MAIN

NVIDIA VREF

R36 0 1% 1/16W MF 402

MEMREFN1 MEMREFN2

NOSTUFF R49 0 1% 1/16W MF 402

NOSTUFF R50 0 1% 1/16W MF 402

NOSTUFF U7 TLV431A SOT

NOSTUFF R41 1K 1% 1/16W MF 402

C54 0.1UF 10% 10V CERM 402

NOSTUFF C510 100PF 5% 25V CERM 402

R463 1K 1% 1/16W MF 402

C509 0.1UF 10% 10V CERM 402

18D7< FBCAL_CLK_GND
18D7< FBCAL_TERM_GND
18D7< FBCAL_PU_GND

R95 49.9 1% 1/16W MF 402
R83 0 1% 1/16W MF 402
R88 549 1% 1/16W MF 402

DQM R'S CLOSE TO GPU

OTHER R'S BETWEEN GPU & MEMORY

FBDQM<0> R117 0 RFBDQM<0> 20C6< 5SD3>
FBDQM<1> R111 0 RFBDQM<1> 20C6< 5SD3>
FBDQM<2> R90 0 RFBDQM<2> 20C6< 5SD3>
FBDQM<3> R84 0 RFBDQM<3> 20C6< 5SD3>
FBDQM<4> R164 0 RFBDQM<4> 20C2< 5SD3>
FBDQM<5> R155 0 RFBDQM<5> 20C2< 5SD3>
FBDQM<6> R154 0 RFBDQM<6> 20C2< 5SD3>
FBDQM<7> R143 0 RFBDQM<7> 20C2< 5SD3>

FBACAS_L RP22 22 ZT29 RFBACAS_L 20B2< 20B6< 5SD3>
FBARAS_L RP22 22 ZT20 RFBARAS_L 20B2< 20B6< 5SD3>
FBACS0_L RP22 22 ZT30 RFBACS0_L 20B2< 20B6< 5SC3>
FBAWE_L RP22 22 ZT31 RFBAWE_L 20B2< 20B6< 5SD3>

FBA<0> RP94 22 ZT22 RFBA<0> 20D2< 20D6< 5SD3>
FBA<1> RP94 22 ZT23 RFBA<1> 20C2< 20C6< 5SD3>
FBA<2> RP94 22 ZT34 RFBA<2> 20C2< 20C6< 5SD3>
FBA<3> RP95 22 ZT24 RFBA<3> 20C2< 20C6< 5SD3>
FBA<4> RP95 22 ZT25 RFBA<4> 20C2< 20C6< 5SD3>
FBA<5> RP95 22 ZT37 RFBA<5> 20C2< 20C6< 5SD3>
FBA<6> RP95 22 ZT26 RFBA<6> 20C2< 20C6< 5SD3>
FBA<7> RP23 22 ZT27 RFBA<7> 20C2< 20C6< 5SD3>
FBA<8> RP23 22 ZT38 RFBA<8> 20C2< 20C6< 5SD3>
FBA<9> RP23 22 ZT36 RFBA<9> 20C2< 20C6< 5SD3>
FBA<10> RP23 22 ZT33 RFBA<10> 20C2< 20C6< 5SD3>
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FBA<12> RP93 22 ZT21 NC_RFBA<12>

FBABA<0> RP93 22 ZT32 RFBABA<0> 20C2< 20C6< 5SD3>
FBABA<1> RP93 22 ZT19 RFBABA<1> 20C2< 20C6< 5SD3>

WEAK PULL-DOWN RECOMMENDED BY NVIDIA
R130 22 1% 1/16W MF 402
R131 10K 1% 1/16W MF 402

FBACKE ZT28 RFBACKE 20C2< 20C6< 55C3>

FBDQM<8> R64 0 RFBDQM<8> 21C6< 55C3>
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FBDQM<10> R70 0 RFBDQM<10> 21C6< 55C3>
FBDQM<11> R67 0 RFBDQM<11> 21C6< 55C3>
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FBDQM<13> R56 0 RFBDQM<13> 21C2< 55C3>
FBDQM<14> R58 0 RFBDQM<14> 21C2< 55C3>
FBDQM<15> R59 0 RFBDQM<15> 21C2< 55C3>

FBBCS0_L RP9 22 ZT2 RFBBCS0_L 21B2< 21B6< 55B3>
FBBWE_L RP9 22 ZT5 RFBBWE_L 21B2< 21B6< 55B3>
FBBCAS_L RP9 22 ZT1 RFBBCAS_L 21B2< 21B6< 55B3>
FBBRAS_L RP9 22 ZT3 RFBBRAS_L 21B2< 21B6< 55B3>

FBBA<0> RP85 22 ZT6 RFBBA<0> 21D2< 21D6< 55C3>
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FBBA<2> RP85 22 ZT11 RFBBA<2> 21C2< 21C6< 55C3>
FBBA<3> RP84 22 ZT10 RFBBA<3> 21C2< 21C6< 55C3>
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FBBA<5> RP84 22 ZT17 RFBBA<5> 21C2< 21C6< 55C3>
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WEAK PULL-DOWN RECOMMENDED BY NVIDIA

FBBCKE ZT19 RFBBCKE 21C2< 21C6< 55B3>

R61 10K 1% 1/16W MF 402

NVIDIA FRAME BUFFER

APPLE COMPUTER INC.

SIZE E | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 18 OF 69

DRAWING

PLACE R'S BETWEEN GPU & MEMORY

55D3> 18G8<>	FBD<0>		15	1	8	RP20	RFBD<0>	20C5<> 55D3>
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55D3> 18G8<>	FBD<3>	NO_TEST	15	4	5	RP20	RFBD<3>	20C5<> 55D3>
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55C3> 18E5<>	FBD<109>	NO_TEST	15	2	7	RP86 NV34	RFBD<109>	21C1<> 55C3>
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55C3> 18E5<>	FBD<112>		15	1	8	RP5 NV34	RFBD<112>	21C1<> 55C3>
55C3> 18E5<>	FBD<113>	NO_TEST	15	2	7	RP5 NV34	RFBD<113>	21C1<> 55C3>
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55C3> 18E5<>	FBD<122>	NO_TEST	15	3	6	RP7 NV34	RFBD<122>	21B1<> 55C3>
55C3> 18E5<>	FBD<123>	NO_TEST	15	4	5	RP7 NV34	RFBD<123>	21B1<> 55C3>
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55C3> 18E5<>	FBD<126>	NO_TEST	15	3	6	RP87 NV34	RFBD<126>	21B1<> 55C3>
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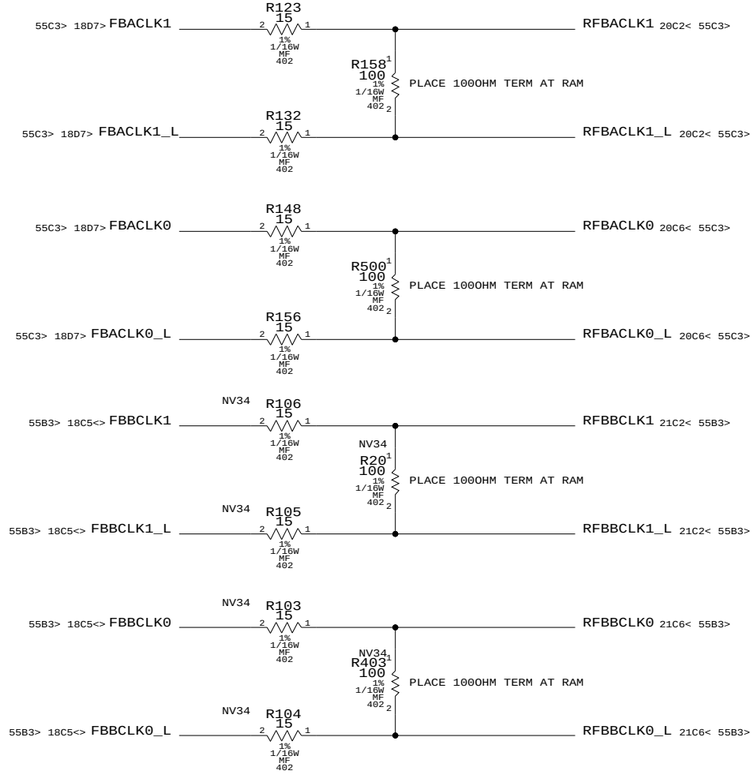
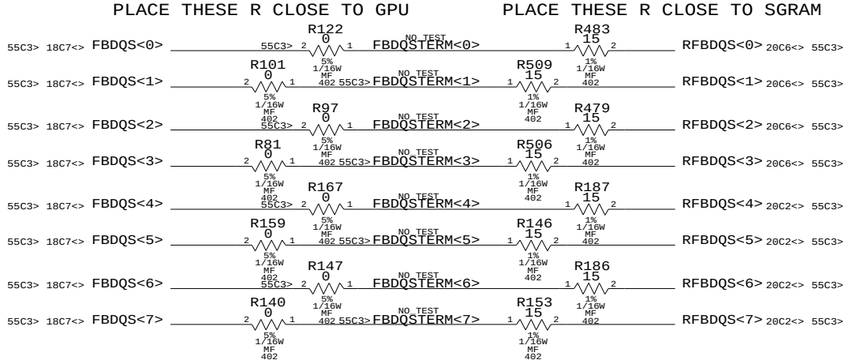
PLACE R'S CLOSE TO GPU



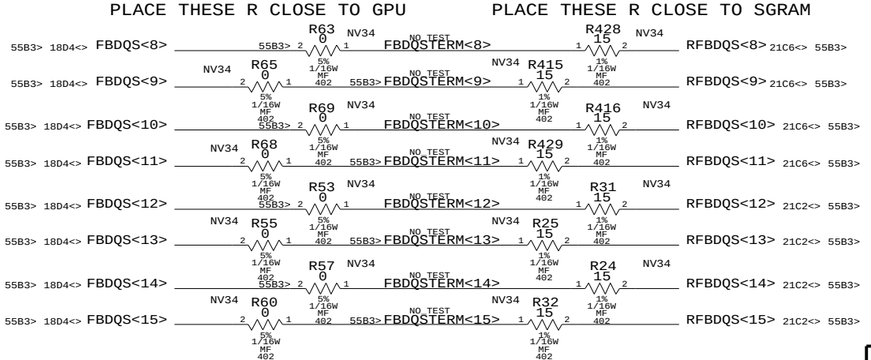
PLACE THESE R CLOSE TO GPU

PLACE THESE R CLOSE TO SGRAM



PLACE THESE R CLOSE TO GPU

PLACE THESE R CLOSE TO SGRAM



FB TERMINATION

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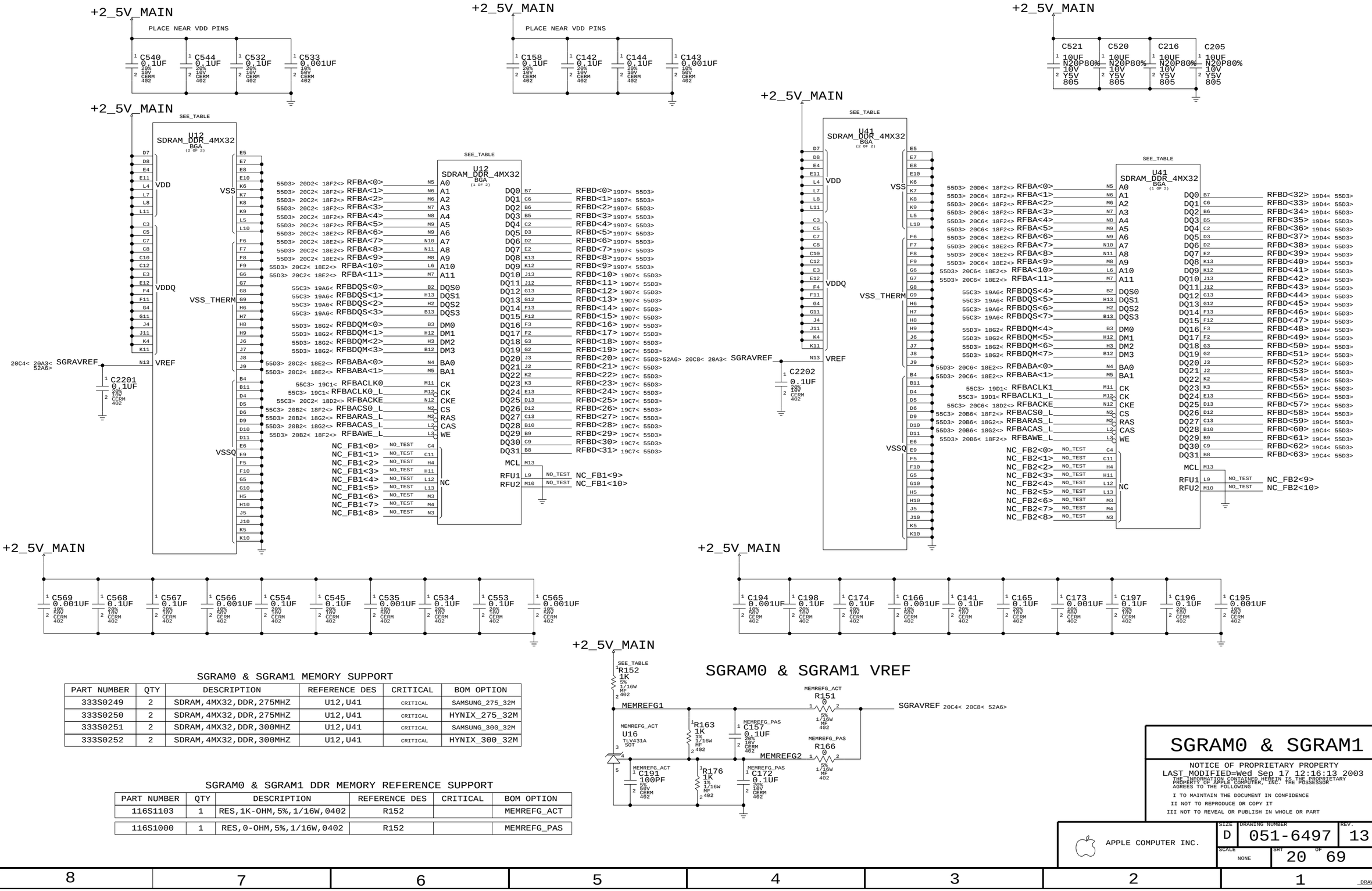
D	051-6497	13

SCALE: NONE

SHT 19 OF 69

DRAWING



SGRAM0 & SGRAM1 MEMORY SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
333S0249	2	SDRAM,4MX32,DDR,275MHZ	U12,U41	CRITICAL	SAMSUNG_275_32M
333S0250	2	SDRAM,4MX32,DDR,275MHZ	U12,U41	CRITICAL	HYNIX_275_32M
333S0251	2	SDRAM,4MX32,DDR,300MHZ	U12,U41	CRITICAL	SAMSUNG_300_32M
333S0252	2	SDRAM,4MX32,DDR,300MHZ	U12,U41	CRITICAL	HYNIX_300_32M

SGRAM0 & SGRAM1 DDR MEMORY REFERENCE SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
116S1103	1	RES,1K-OHM,5%,1/16W,0402	R152		MEMREFG_ACT
116S1000	1	RES,0-OHM,5%,1/16W,0402	R152		MEMREFG_PAS

SGRAM0 & SGRAM1

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APPLE COMPUTER INC.

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D	051-6497	13
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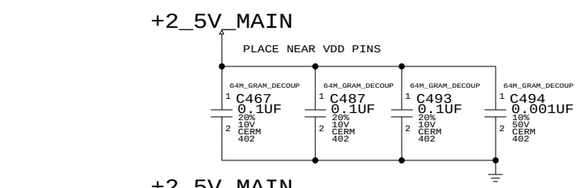
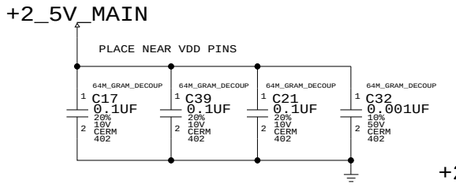
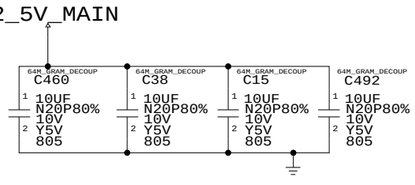
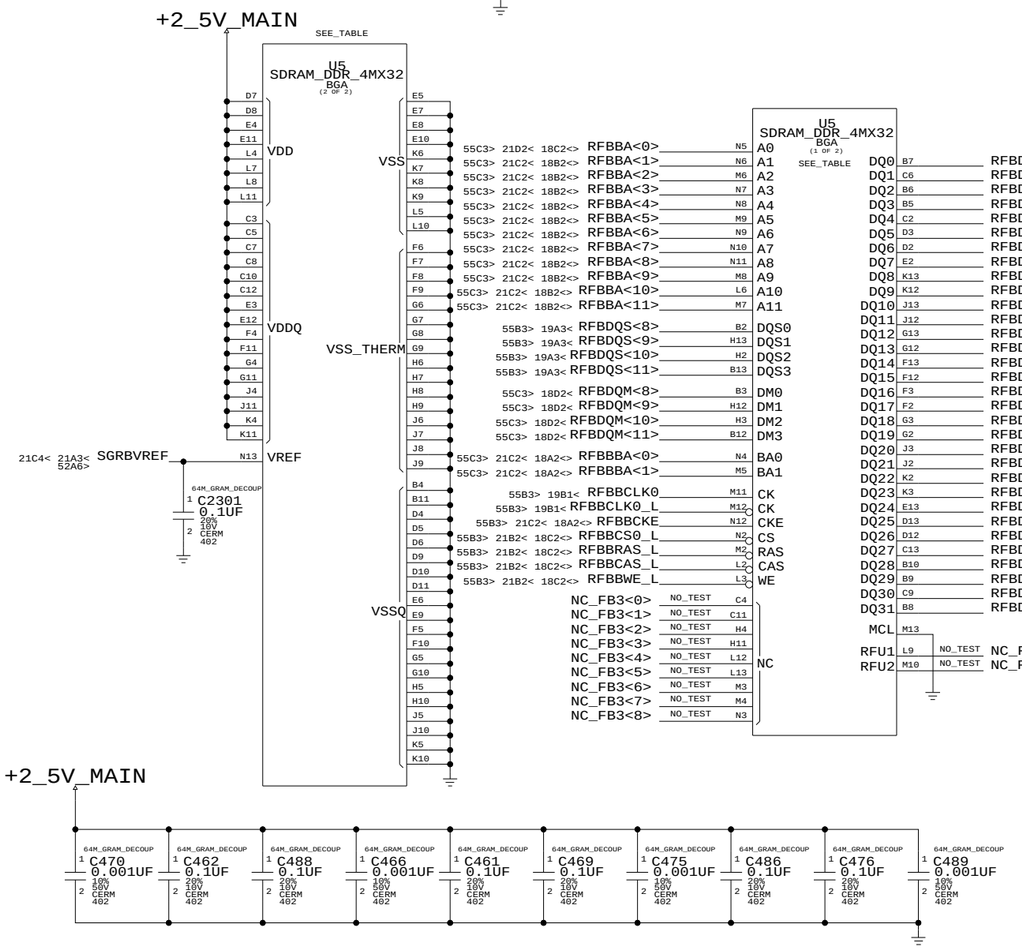
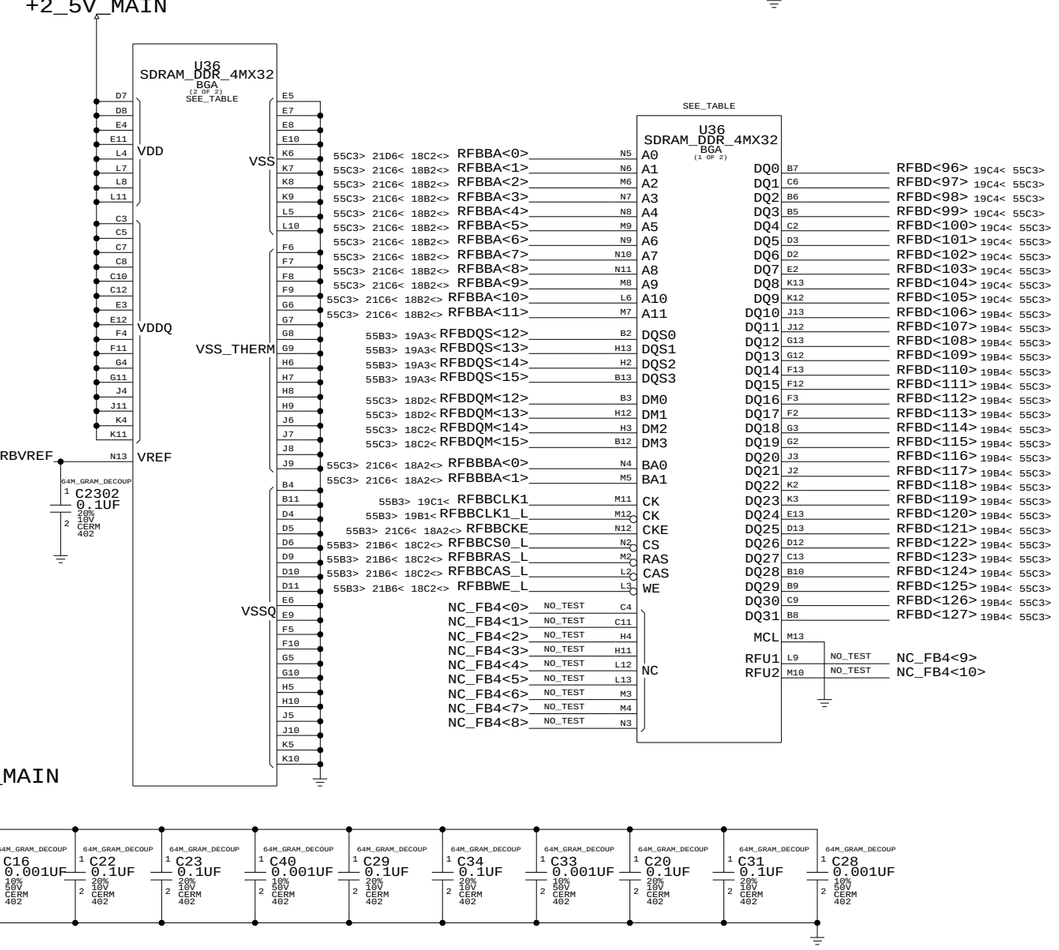
DRAWING









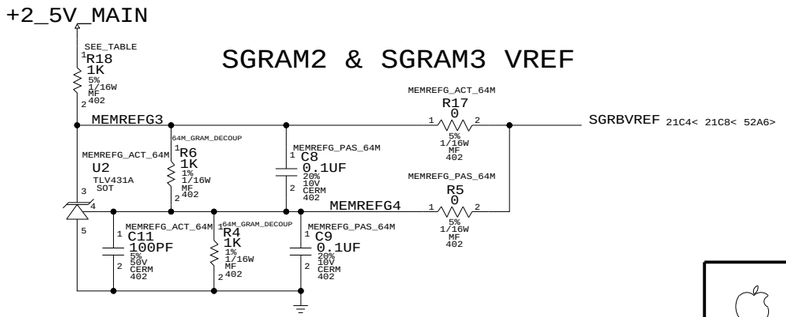


SGRAM0 & SGRAM1 MEMORY SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
333S0249	2	SDRAM,4MX32,DDR,275MHZ	U5,U36	CRITICAL	SAMSUNG_275_64M
333S0250	2	SDRAM,4MX32,DDR,275MHZ	U5,U36	CRITICAL	HYNIX_275_64M
333S0251	2	SDRAM,4MX32,DDR,300MHZ	U5,U36	CRITICAL	SAMSUNG_300_64M
333S0252	2	SDRAM,4MX32,DDR,300MHZ	U5,U36	CRITICAL	HYNIX_300_64M

SGRAM2 & SGRAM3 DDR MEMORY REFERENCE SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
116S1103	1	RES,1K-OHM,5%,1/16W,0402	R18		MEMREFG_ACT_64M
116S1000	1	RES,0-OHM,5%,1/16W,0402	R18		MEMREFG_PAS_64M

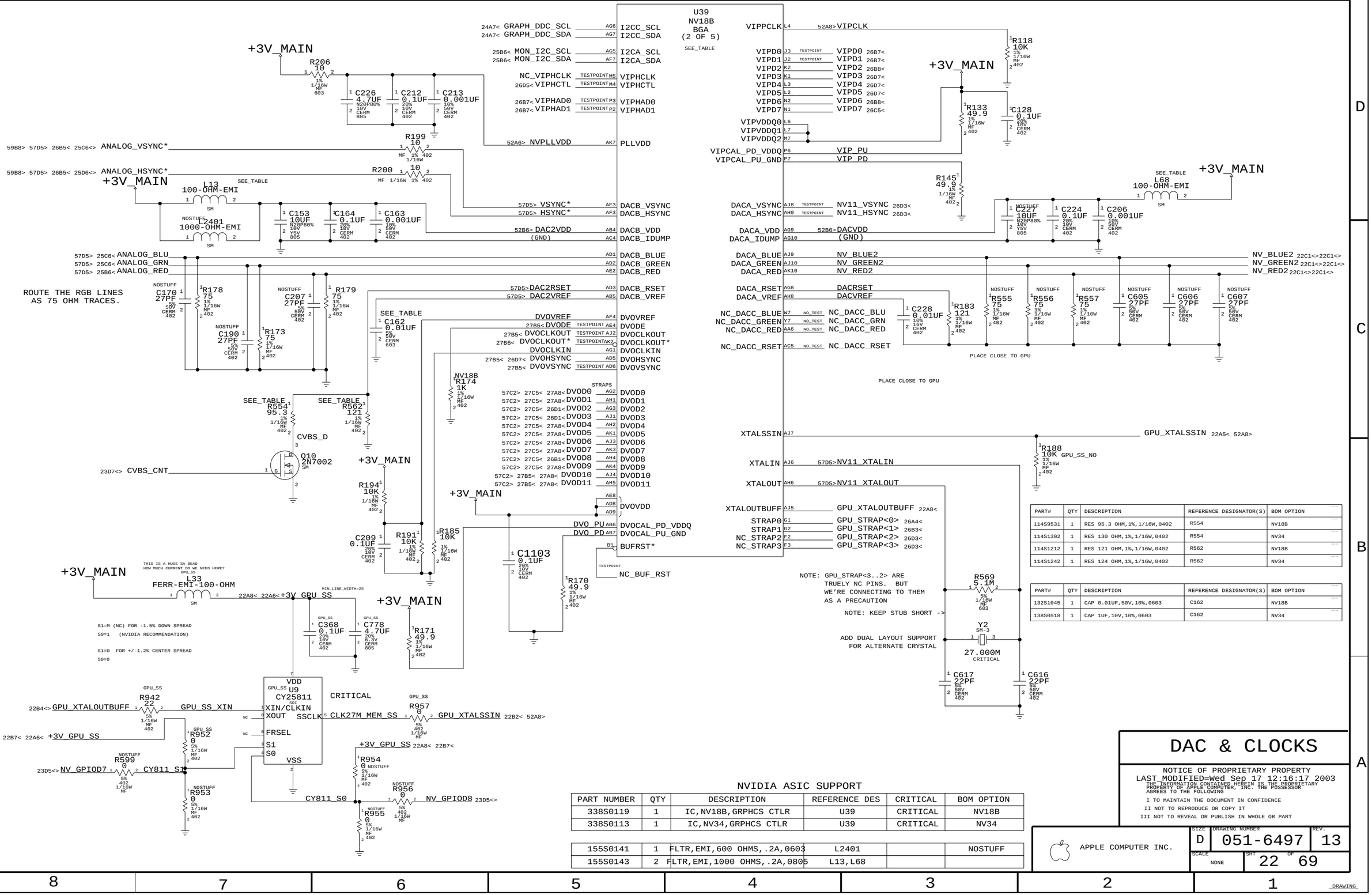


SGRAM2 & SGRAM3

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 21 OF 69	

DRAWING



NVIDIA ASIC SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S0119	1	IC,NV18B,GRPHCS CTLR	U39	CRITICAL	NV18B
338S0113	1	IC,NV34,GRPHCS CTLR	U39	CRITICAL	NV34

155S0141	1	FLTR,EMI,600 OHMS,.2A,0603	L2401		NOSTUFF
155S0143	2	FLTR,EMI,1000 OHMS,.2A,0805	L13,L68		

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S9531	1	RES 95.3 OHM,1%,1/16W,0402	R554	NV18B
114S1302	1	RES 130 OHM,1%,1/16W,0402	R554	NV34
114S1212	1	RES 121 OHM,1%,1/16W,0402	R562	NV18B
114S1242	1	RES 124 OHM,1%,1/16W,0402	R562	NV34

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
132S1045	1	CAP 0.01UF,50V,10%,0603	C162	NV18B
138S0518	1	CAP 1UF,10V,10%,0603	C162	NV34

DAC & CLOCKS

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

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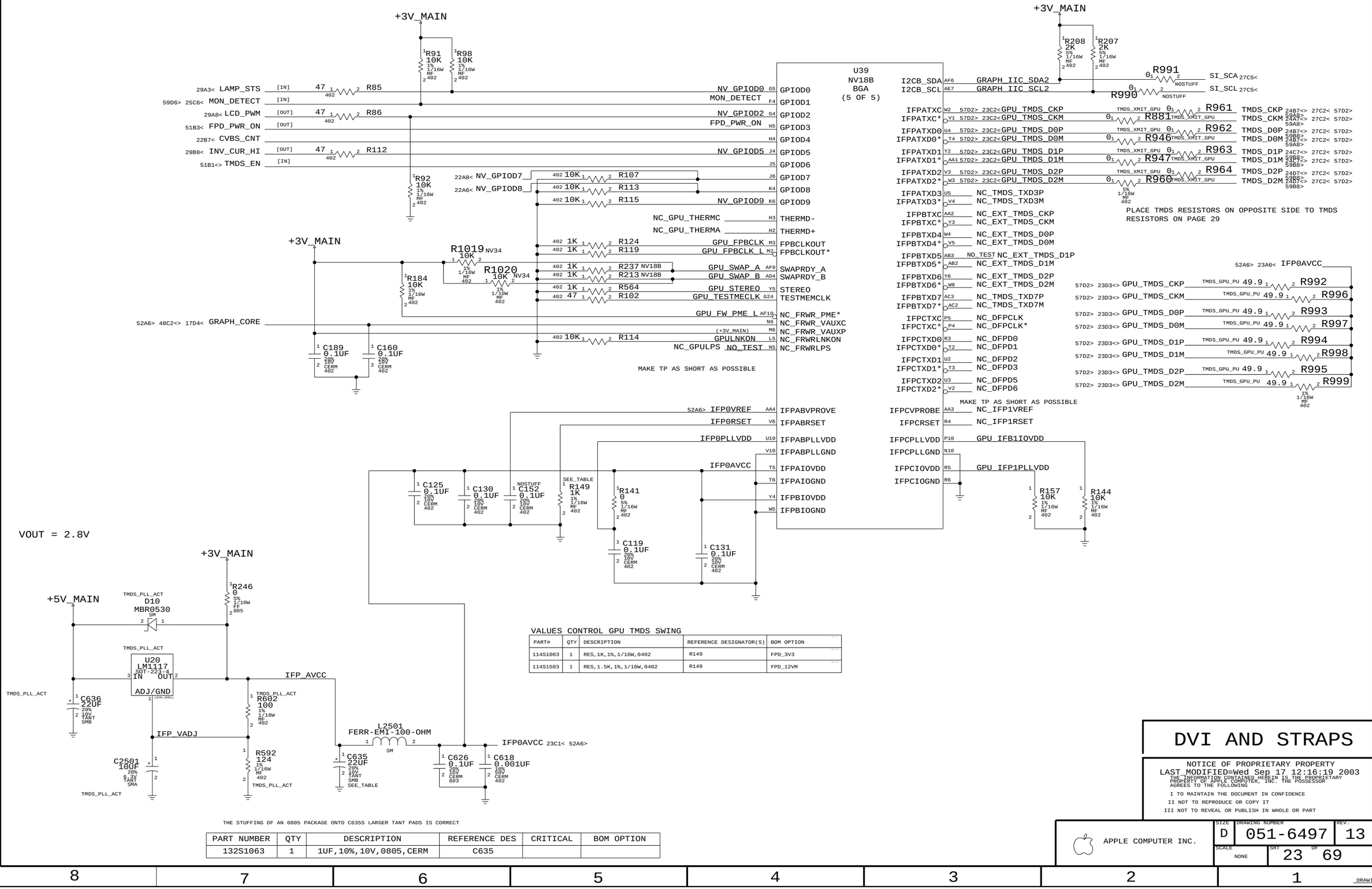
DRAWING



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S1003	1	RES,1K,1%,1/16W,0402	R149	FPD_3V3
114S1503	1	RES,1.5K,1%,1/16W,0402	R149	FPD_12VM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
132S1063	1	1UF,10%,10V,0805,CERM	C635		

DVI AND STRAPS

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D	051-6497	13
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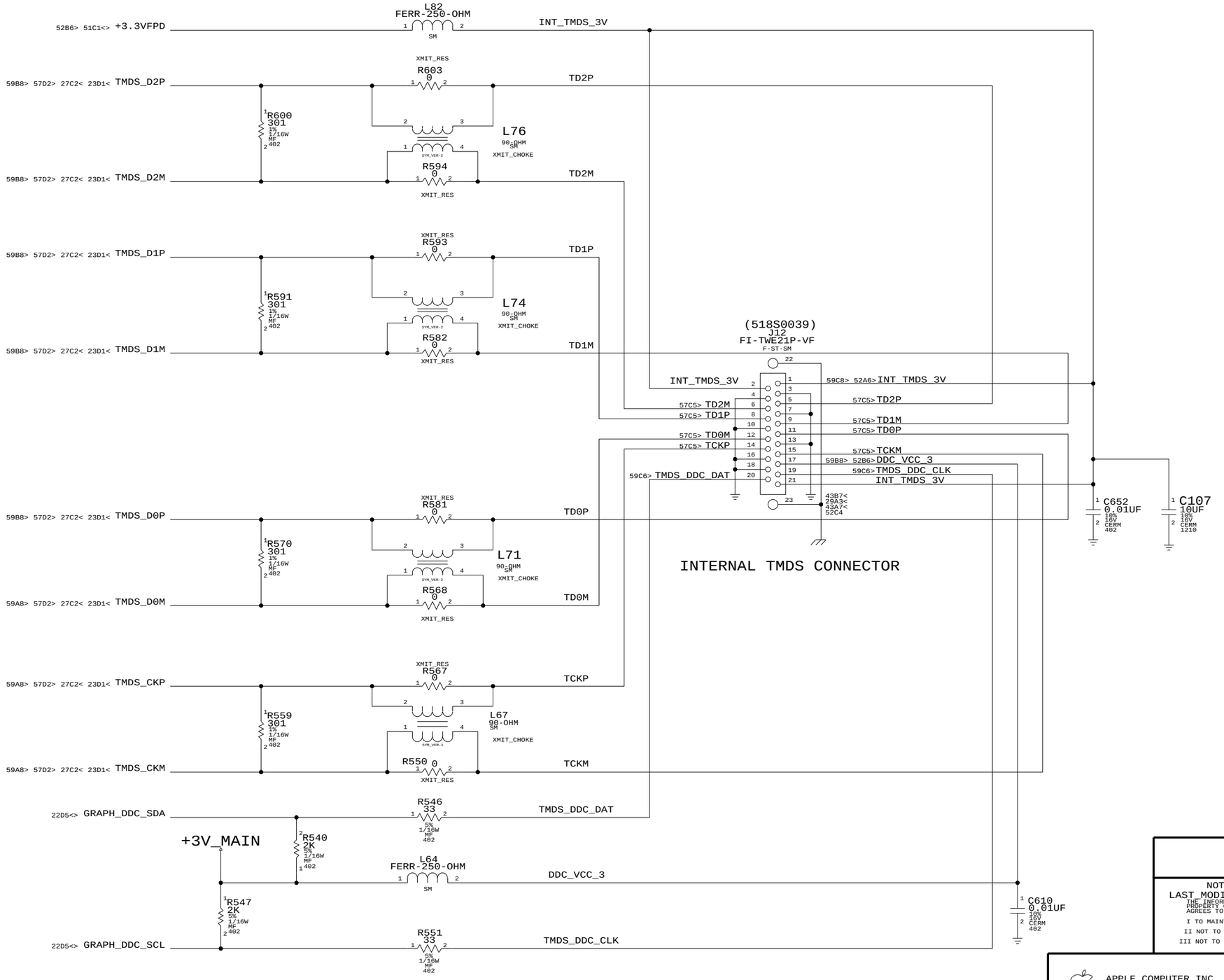
DRAWING

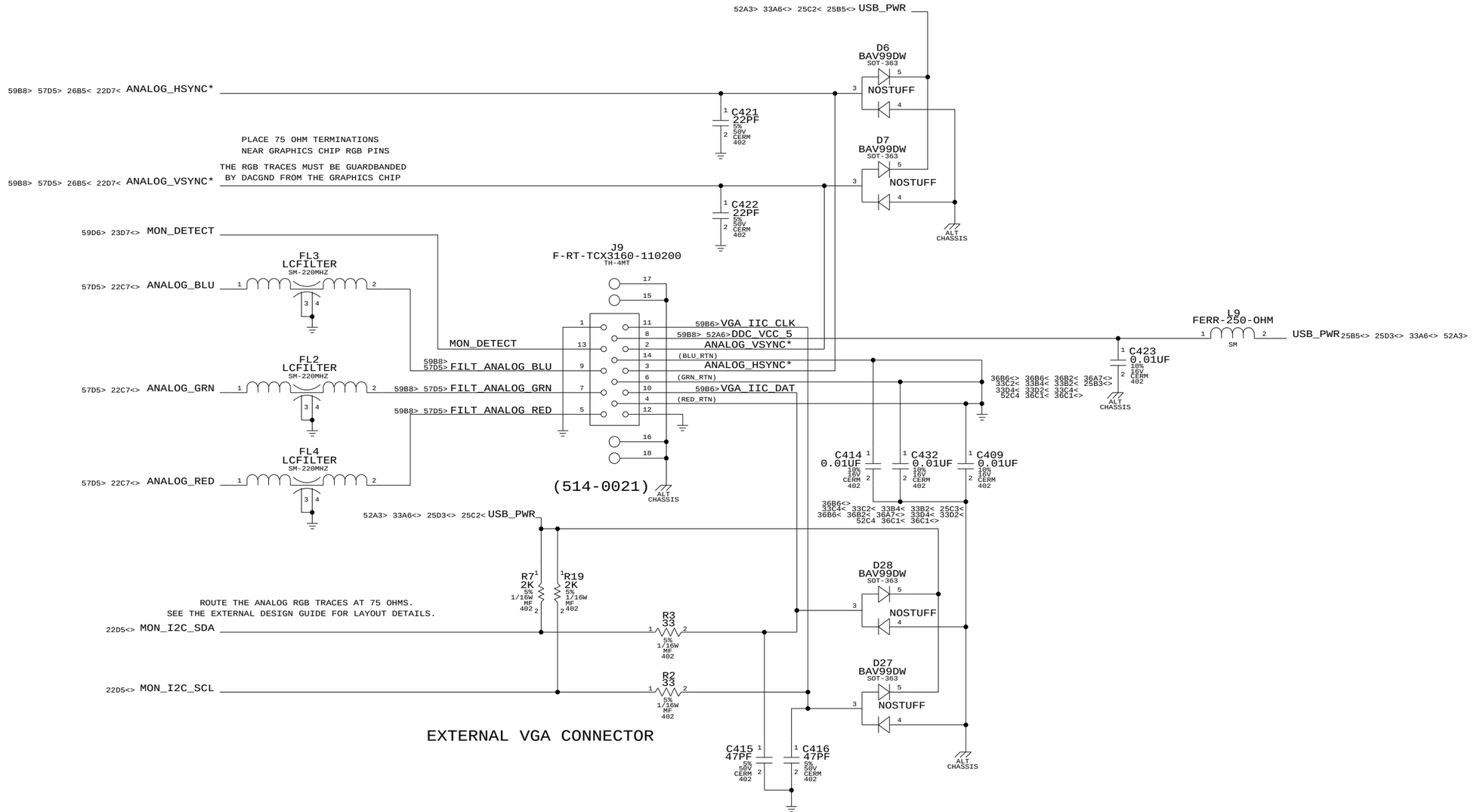


TMDS/LVDS

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 24 OF 69	

DRAWING

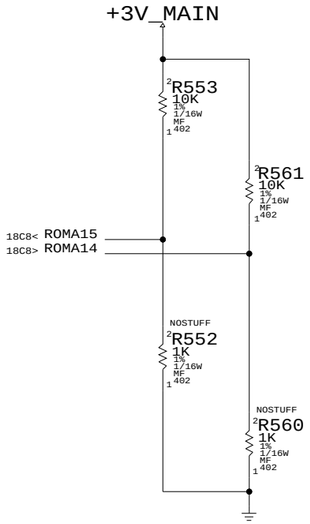


EXTERNAL VGA

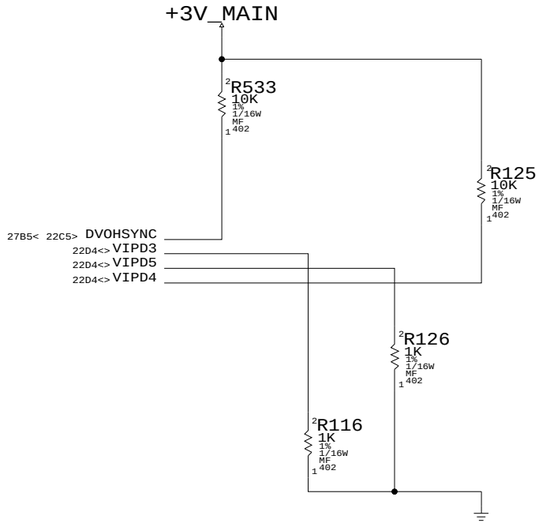
APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 25 OF 69	

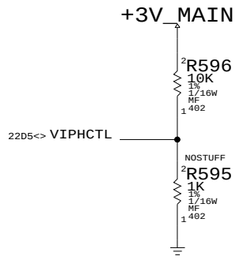
DRAWING



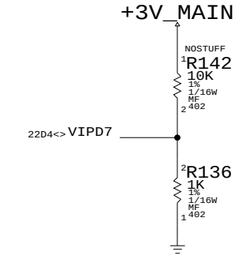
(1) ROM TYPE (OVERRIDDEN IF STRAP1 = 0)
[1..0] = [ROMA15,ROMA14]
00 = PARALLEL
01 = SERIAL AT25F
10 = SERIAL SST45VF
* 11 = SERIAL FUTURE



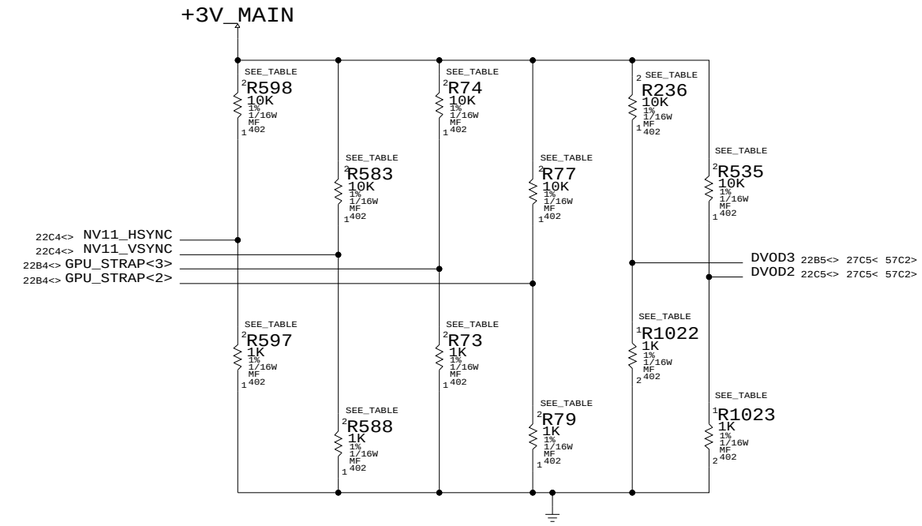
(3) PCI DEVICE ID
[3..0] = [DVOHSYNC,VIPD3,VIPD5,VIPD4]
0010 = 0X112 GEFORCE2 GO
0011 = 0X113 QUADRO2 GO
0100 = 0X114 NV17M
0000 = 0X110 GEFORCE2GO MX (NV11B)
* 1001 = NV18B,NV31,NV34



(5) HOST MODE
[0] = [VIPHCTL]
0 = PCI MODE
* 1 = AGP MODE



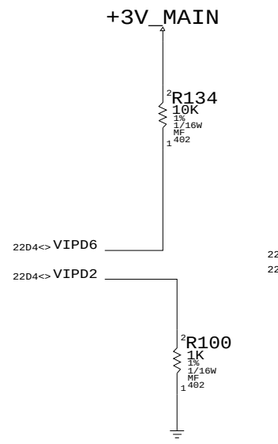
(6) AGP SIDEBAND
[0] = [VIPD7]
* 0 = ENABLE AGP SIDEBAND
1 = DISABLE AGP SIDEBAND



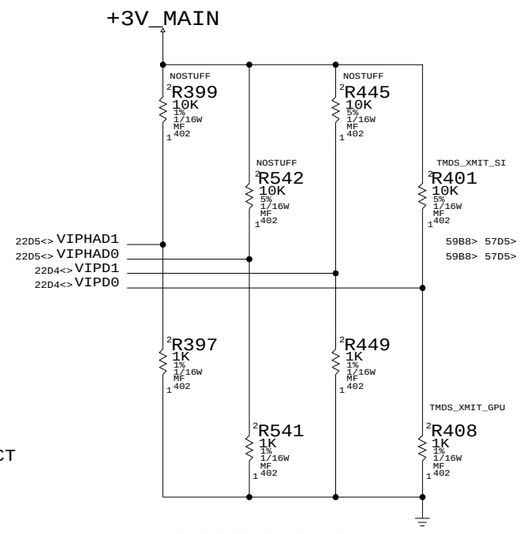
(8) FRAME BUFFER MEMORY TYPE
[3..0] = [NV11_HSYNC,NV11_VSYNC,GPU_STRAP<3>,GPU_STRAP<2>]
1111 = 222MHZ
1101 = 275MHZ SAMSUNG
1100 = 275MHZ HYNIX

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S1004	5	RES,10KOHM,1%,0402	R598,R583,R77,R236,R535		SAMSUNG_NV18B_270
114S1003	1	RES,1KOHM,1%,0402	R73		SAMSUNG_NV18B_270
114S1004	4	RES,10KOHM,1%,0402	R598,R583,R236,R535		HYNIX_NV18B_270
114S1003	2	RES,1KOHM,1%,0402	R73,R79		HYNIX_NV18B_270

114S1004	5	RES,10KOHM,1%,0402	R598,R583,R535,R74,R77		SAMSUNG_NV34_270
114S1003	1	RES,1KOHM,1%,0402	R1022		SAMSUNG_NV34_270
114S1004	4	RES,10KOHM,1%,0402	R583,R74,R77,R535		HYNIX_NV34_270
114S1003	2	RES,1KOHM,1%,0402	R597,R1022		HYNIX_NV34_270

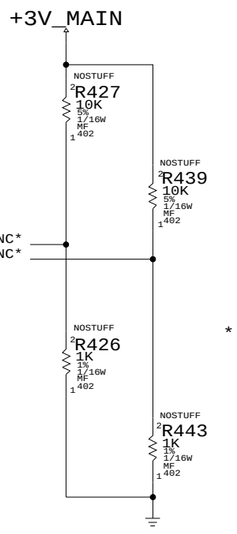


(2) CRYSTAL FREQUENCY SELECT
[1..0] = [VIPD6,VIPD2]
00 = 13.5MHZ
01 = 14.38MHZ
* 10 = 27MHZ
11 = {UNDEFINED}



(4) USER DEFINED STRAPS
[3..0] = [VIPHAD1,VIPHAD0,VIPD1,VIPD0]

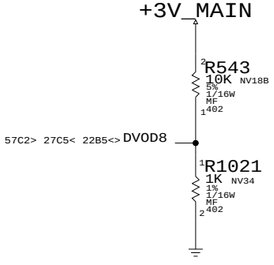
THESE BITS ARE UNDEFINED BUT THEY
MUST BE KEPT LOW DURING RESET



(7) TV MODE
[1..0] = [ANALOG_HSYNC*,ANALOG_VSYNC*]
00 = SECAM
01 = NTSC
10 = PAL
* 11 = DISABLED
(THESE RESISTORS ARE ALL NOSTUFF)

(9) SUB-VENDOR
[0] = [GPU_STRAP<1>]
0 = SYSTEM BIOS (VENDOR & SUBSYSTEM ID=0X0000)
1 = ADAPTER CARD VGA BIOS (VENDOR & SUBSYSTEM ID=0X54-0X57)

(10) PCI ADDRESS BUS
[0] = [GPU_STRAP<0>]
0 = REVERSED
* 1 = NORMAL



FASTWR
0 = ENABLE
1 = DISABLE

NVIDIA STRAPS 1

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SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 26 OF 69	

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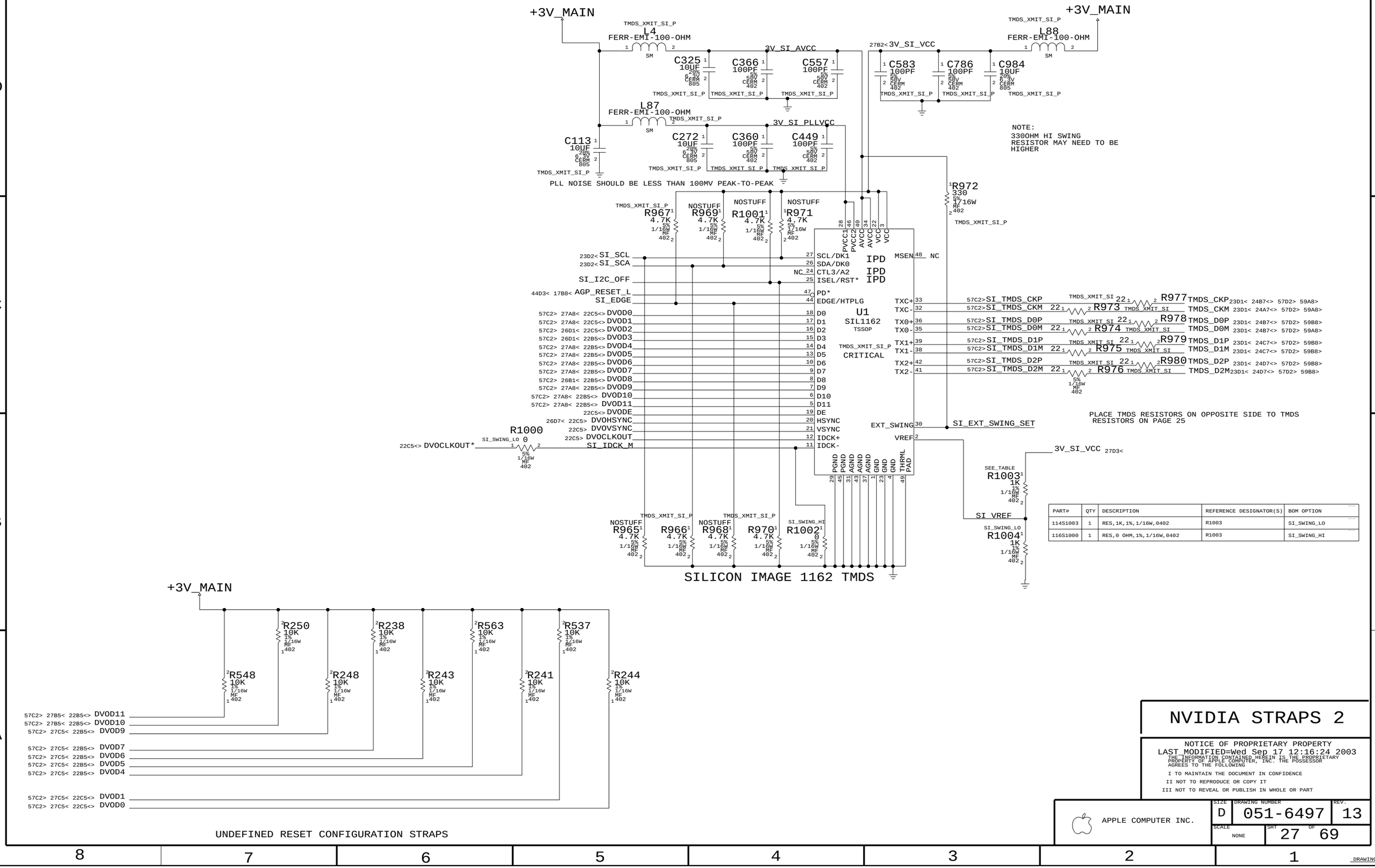

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S1003	1	RES,1K,1%,1/16W,0402	R1003	SI_SWING_LO
116S1000	1	RES,0 OHM,1%,1/16W,0402	R1003	SI_SWING_HI

NVIDIA STRAPS 2

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APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	27	69

+2_5V_MAIN
+1_8V_MAIN
R571 0 1/16W MF 603
R572 0 1/16W MF 603
LT1962_INT_VIN
NC_UT6P7
NC_UT6P6
C234 1UF 10% 10V X5R 603
U19 LT1962-ADJ MSOP
IN OUT ADJ BYP GND SHDN
LT1962 INT ADJ
LT1962 INT BYP
C623 0.01UF 10% 16V CERM 402
R586 15.8K 1% 1/16W MF 402
R590 56.2K 1% 1/16W MF 402
C233 10UF 20% 6.3V CERM 805
52D3> 30D5< 16D6< 9D4< +1_5V_INTREPID_PLL

R630 4.7 5% 1/16W MF 402
C713 0.1UF 20% 10V CERM 402
C3005 0.1UF 20% 10V CERM 402
+1_5V_INTREPID_PLL8 52D3>
R629 4.7 5% 1/16W MF 402
INT_PLL9_GND 28A4<>
+1_5V_INTREPID_PLL4 52D3>
C704 0.1UF 20% 10V CERM 402
C3004 0.1UF 20% 10V CERM 402
R628 4.7 5% 1/16W MF 402
INT_PLL7_GND 28A4<>
+1_5V_INTREPID_PLL3 52D3>
C703 0.1UF 20% 10V CERM 402
C3003 0.1UF 20% 10V CERM 402
R620 4.7 5% 1/16W MF 402
INT_PLL3_GND 28A4<>
+1_5V_INTREPID_PLL2 52D3>
C692 0.1UF 20% 10V CERM 402
C3002 0.1UF 20% 10V CERM 402
R565 4.7 5% 1/16W MF 402
INT_PLL2_GND 28A5<>
+1_5V_INTREPID_PLL1 52D3>
C229 0.1UF 20% 10V CERM 402
C3001 0.1UF 20% 10V CERM 402
INT_PLL1_GND 28A5<>

+3V_MAIN
NC_RPT48P1 NO_TEST
RP39 10K 5% 1/16W SM1
59C6> 29C5<> 28C3<> COMM_GPIO_L
NC_RP3319 NO_TEST
59C6> 29C7<> 28C3<> COMM_TRXC
28C5<> SNF_FSEL
R755 1K 1% 1/16W MF 402
R756 10K 1% 1/16W MF 402
28B5<> VCORE_VGATE

I2C 2 PULL-UPS
+3V_MAIN
59A8> 39B1<> 34B5< 29C7<> 28A3<> INT_I2C_CLK2
R264 4.7K 5% 1/16W MF 402
39B1<> 34B5< 29C7<> 28A3<> 59A8> INT_I2C_DATA2
R641 4.7K 5% 1/16W MF 402
RP117 10K 5% 1/16W SM1
59D6> 29D7<> 28C5<> COMM_SHUTDOWN
RP117 10K 5% 1/16W SM1
35B8< 28B5<> INT_ENET_RST_L
RP117 10K 5% 1/16W SM1
35B4> 28B5<> ENET_ENERGY_DET
RP117 10K 5% 1/16W SM1
NC_RP3324_2 NO_TEST
RP117 10K 5% 1/16W SM1
R1005 10K 1% 1/16W MF 402
33A7> 32B1< 28B3< USB_PWR_FLT*

INTREPID DEBUG HOOKS
PLL TEST FUNCTION
HWPLL_TESTMUXSEL[0:5]
+3V_MAIN
NOSTUFF
R231 1K 1% 1/16W MF 402
R678 1K 1% 1/16W MF 402
R289 1K 1% 1/16W MF 402
R292 1K 1% 1/16W MF 402
R291 1K 1% 1/16W MF 402
R274 1K 1% 1/16W MF 402
R228 1K 1% 1/16W MF 402
R232 1K 1% 1/16W MF 402
INT_MOD_BITCLK 28A3<> 28A8<
INT_MOD_CLKOUT 28A3> 28A8<
INT_MOD_DTO 28A3> 28A8<
INT_MOD_SYNC 28A3<> 28A8< (INTREPID JTAG TDO)
INT_MOD_DTI 28A3< 28A8<
JTAG_INTRP_TDO 34B7> 35B3<
JTAG_ASIC_TDI 8A4<> 34B7< 59D8>
INT_TST_PLLEN_PD 34B7<
NOSTUFF
R574 1K 1% 1/16W MF 402
R276 1K 1% 1/16W MF 402
R708 1K 1% 1/16W MF 402
R735 1K 1% 1/16W MF 402
R727 1K 1% 1/16W MF 402
R661 1K 1% 1/16W MF 402
R577 1K 1% 1/16W MF 402
R573 1K 1% 1/16W MF 402

TOO MANY MODS TO LIST, SEE INTREPID ERS
CONFIGURED FOR INTREPID VERSION 1
VIEW AGP CLOCK OUT LA CLOCK PIN
+3V_MAIN
GPIO & INTERRUPT PULL-UPS
R746 10K 1% 1/16W MF 402
AGP_INT_L 17B6<> 28B5<>
R749 10K 1% 1/16W MF 402
33SLOTB_INT_L
R750 10K 1% 1/16W MF 402
28B5<> UNUSED_EXTINT7 SPARE
R306 10K 1% 1/16W MF 402
28B5<> UNUSED_EXTINT8 SPARE
RP113 10K 5% 1/16W SM1
INT_GPIO9_PU 28B5<>
INT_EXTINT12_PU 28B5<>
INT_EXTINT17_PU 28B5<> 32B6>
INT_EXTINT3_PU 28B5<>
RP74 10K 5% 1/16W SM1
COMM_RING_DET_L 28B5<> 29C5<> 44C5<>
INT_EXTINT13_PU 28B5<> 59D6>
NO_TEST NC_RPT77P6
PMU_INT_L 28B5<> 44B5<>
RP100 10K 5% 1/16W SM1
NO_TEST NC_CBUS_INT_L
PMU_INT_NMI 28B5<> 44C4<>
PMU_REQ_L 28C3> 44C2<
EXTINT14 28B5<>
RP110 10K 5% 1/16W SM1
NO_TEST NC_RP2848
INT_GPIO12_PU 28B5<>
INT_GPIO1_PD 28C5<>
SND_HW_RESET_L 28B5<> 39B4<
R589 10K 1% 1/16W MF 402
USB2_CRUN_L_INT 28B5<> 32A8<
R680 10K 1% 1/16W MF 402
INT_MOD_DTI 28A3< 28C6<
NOSTUFF
RP66 10K 5% 1/16W SM1
INT_MOD_CLKOUT 28A3> 28C6<
INT_MOD_DTO 28A3> 28C6<
INT_MOD_BITCLK 28A3<> 28C6<
INT_MOD_SYNC 28A3<> 28C6<

(518S0104)
J23 U.FL-R_SMT F-ST-SM
CLK18M_INT_EXT 59A6> 44B2<> 32A8< 31C2< PMU_PME_L
44B4<> INT_PROC_SLEEP_REQ_L
44B4<> INT_PEND_PROC_INT
NOSTUFF R666 0 5% 1/16W MF 402
CLK18M_INT_XIN
CLK18M_INT_XOUT
44C4<> SYSTEM_CLK_EN
NOSTUFF R611 51 5% 1/16W MF 402
NOSTUFF R672 10M 5% 1/16W MF 402
44C5<> INT_WATCHDOG_L
R711 0 5% 1/16W MF 402
NC_BRCLKO
Y5 18.432M CRITICAL 8X4.5MM-SM
CLK18M_INT_XO
C784 27PF 5% 50V CERM 402
C840 27PF 5% 50V CERM 402
R710 10K 1% 1/16W MF 402
53A6> INT_REF_CLK_IN_PD

+3V_INTREPID_USB 52A3>
L16 FERR-EMI-100-OHM SM
C785 0.01UF 20% 10V CERM 402
C795 0.1UF 20% 10V CERM 402
C820 4.7UF N20P80% 10V CERM 805

U25 INTREPID (6 OF 9) SEE_TABLE (ON PAGE 12)
GENERAL PURPOSE I/O'S
28D3< SNF_FSEL G5 GPIO0
28A8< INT_GPIO1_PD E1 GPIO1
59D6> 29D7<> 28D1< COMM_SHUTDOWN J7 GPIO2
59A8> 29D5<> COMM_RESET_L F2 GPIO3
36C8< FWPHYRST J8 GPIO4
41A7< SND_HP_MUTE_L H5 GPIO5
43C8< SND_AMP_MUTE_L L9 GPIO6
28B8< INT_GPIO9_PU H4 GPIO9
39B4< 28A8< SND_HW_RESET_L J5 GPIO11
28A8< INT_GPIO12_PU K8 GPIO12
59A6> 28C1< UNUSED_GPIO15 F1 GPIO15
35B8< 28D1< INT_ENET_RST_L K7 GPIO16

59D6> 44C5<> 29C5<> 28B8< COMM_RING_DET_L F33 EXTINT0
44B5<> 28B8< PMU_INT_L E34 EXTINT1
28B8< 17B6<> AGP_INT_L C33 EXTINT2
28B8< INT_EXTINT3_PU D34 EXTINT3
59B6> 40D4< SND_LIN_SENSE_L B33 EXTINT4
35B4> 28C1< ENET_ENERGY_DET A33 EXTINT5
33SLOTB_INT_L E31 EXTINT6
28B8<> UNUSED_EXTINT7 G30 EXTINT7
28B8<> UNUSED_EXTINT8 D31 EXTINT8
44C4<> 28A8< PMU_INT_NMI C32 EXTINT9
28D3< VCORE_VGATE B32 EXTINT10
32A8< USB2_CRUN_L_INT E30 EXTINT11
28B8< INT_EXTINT12_PU J9 EXTINT12
28B8< INT_EXTINT13_PU F4 EXTINT13
28A8< EXTINT14 D1 EXTINT14
59B8> 41A5< SND_HP_SENSE_L E2 EXTINT15
42B8< SND_SPKR_ID H7 EXTINT16
32B6> 28B8< INT_EXTINT17_PU G4 EXTINT17
8D7<> 7A5< 4B3< MPIC_CPU_INT_L D30 CPU_INT
INTERRUPTS

PCIPME
PROCSLEEPREQ
PENDPROCINT

XTAL_IN
XTAL_OUT
STOPXTAL
WATCHDOG
BUF_REF_CLK_OUT
SS_REF_CLK_IN
CLOCKS

USB
SCCTXDA AF9 COMM_TXD_L 29C7<> 59C6>
SCCRTSA AN3 COMM_RTS_L 29D5<> 59C6>
SCCDTRA AF10 COMM_DTR_L 29C7<> 59C6>
SCCRXDA AG11 COMM_RXD 29C5<> 59C6>
SCCGPIOA AG9 COMM_GPIO_L 28D3< 29C5<> 59C6>
VIA SCCTRXCA AT4 COMM_TRXC 28D3< 29C7<> 59C6>
MISO SCCTXDB AR4 PMU_FROM_INT 44C4<>
REQ* SCCTRSB AL5 PMU_REQ_L 28A8< 44C2<
MOSI SCCRXDB AG10 PMU_TO_INT 44C4<>
ACK* SCCGPIOB AP4 PMU_ACK_L 44C4<>
SCK SCCTRXCB AM5 PMU_CLK 44C4<>
USB_VD0_P L8 58B5> 28A3< USB_DAP 402 24 R724 USB1 USB_DAP_F 33B7< 58B5>
USB_VD0_N L7 58B5> 28A3< USB_DAN 402 24 R718 USB1 USB_DAN_F 33B7< 58B5>
USB_VD1_P G2 58B5> 28A3< USB_DBP 402 24 R736 USB1 USB_DBP_F 33C7< 58B5>
USB_VD1_N G1 58B5> 28A3< USB_DBN 402 24 R742 USB1 USB_DBN_F 33C7< 58B5>
USB_PRTPWR0 J4 USB_PWREN_AB_L 28C2<
USB_PWRFLT0 K4 USB_PWR_FLT* 28C1< 32B1< 33A7>
USB_VD2_P H2 58B5> 28A3< USB_DCP 402 24 R723 USB1 USB_DCP_F 33D7< 58B5>
USB_VD2_N H1 58B5> 28A3< USB_DCN 402 24 R728 USB1 USB_DCN_F 33D7< 58B5>
USB_VD3_P M7 USB_DDP 402 24 R694 USB_DDP_F_TERM
USB_VD3_N M8 USB_DDN 402 24 R691 USB_DDN_F_TERM
USB_PRTPWR1 J2 USB_PWREN_CD_L 28C2<
USB_PWRFLT1 J1
USB_VD4_P K5 58B5> USB_DEP 402 22 R762 BT_USB_DP 29D3<> 58B5> 59B6>
USB_VD4_N L5 58B5> USB_DEN 402 22 R763 BT_USB_DM 29D3<> 58A5> 59B6>
USB_VD5_P P8 58A5> USB_DFP 402 22 R271 MODEM_USB_DP 29C5<> 58A5> 59B6>
USB_VD5_N N8 58A5> USB_DFN 402 22 R272 MODEM_USB_DM 29C5<> 58A5> 59B6>
USB_PRTPWR2 M5 USB_PWREN_EF_L 28C2<
USB_PWRFLT2 N7 USB_OC_EF_L 28C2<

USB PULL-UPS
+3V_MAIN
RP60 10K 5% 1/16W SM1
28B3< USB_OC_EF_L
28B3<> USB_PWREN_CD_L
28B3<> USB_PWREN_AB_L
28B3<> USB_PWREN_EF_L

+3V_MAIN
R294 10K 1% 1/16W MF 402
59A6> 28B5<> UNUSED_GPIO15
NOSTUFF R267 10K 1% 1/16W MF 402

AUDIO/I2S
AUD_DTO R4 INT_SND_TO_AUDIO 47 4 RP108 SND_TO_AUDIO 39C4<
AUD_DTI R7 AUDIO_TO_SND AUDIO_TO_SND 39C1<
AUD_SYNC T5 INT_SND_SYNC 47 2 RP108 SND_SYNC 39C1<>
AUD_BITCLK P2 INT_SND_SCLK 47 3 RP108 SND_SCLK 39B1<>
AUD_CLKOUT R5 INT_SND_CLKOUT 47 1 RP108 SND_CLKOUT 39B4<
MOD_DTO R2 INT_MOD_DTO 28A8< 28C6<
MOD_DTI T4 INT_MOD_DTI 28A8< 28C6<
MOD_SYNC R1 INT_MOD_SYNC 28A8< 28C6<
MOD_BITCLK V8 INT_MOD_BITCLK 28A8< 28C6<
MOD_CLKOUT P1 INT_MOD_CLKOUT 28A8< 28C6<
R3001 15K 1% 1/16W MF 402
R3002 15K 1% 1/16W MF 402
R650 15K 1% 1/16W MF 402
R651 15K 1% 1/16W MF 402
R660 10K 1% 1/16W MF 402
R683 10K 1% 1/16W MF 402

IIC
IICCLK_2 AL4 INT_I2C_CLK2 28D1< 29C7<> 34B5< 39B1<> 59A8>
IICDATA_2 AH8 INT_I2C_DATA2 28D1< 29C7<> 34B5< 39B1<> 59A8>

58B5> 28B3<> USB_DAP 402 15K R305 USB2
58B5> 28B3<> USB_DAN 402 15K R396 USB2
58B5> 28B3<> USB_DBP 402 15K R247 USB2
58B5> 28B3<> USB_DBN 402 15K R398 USB2
58B5> 28B3<> USB_DCP 402 15K R333 USB2
58B5> 28B3<> USB_DCN 402 15K R493 USB2

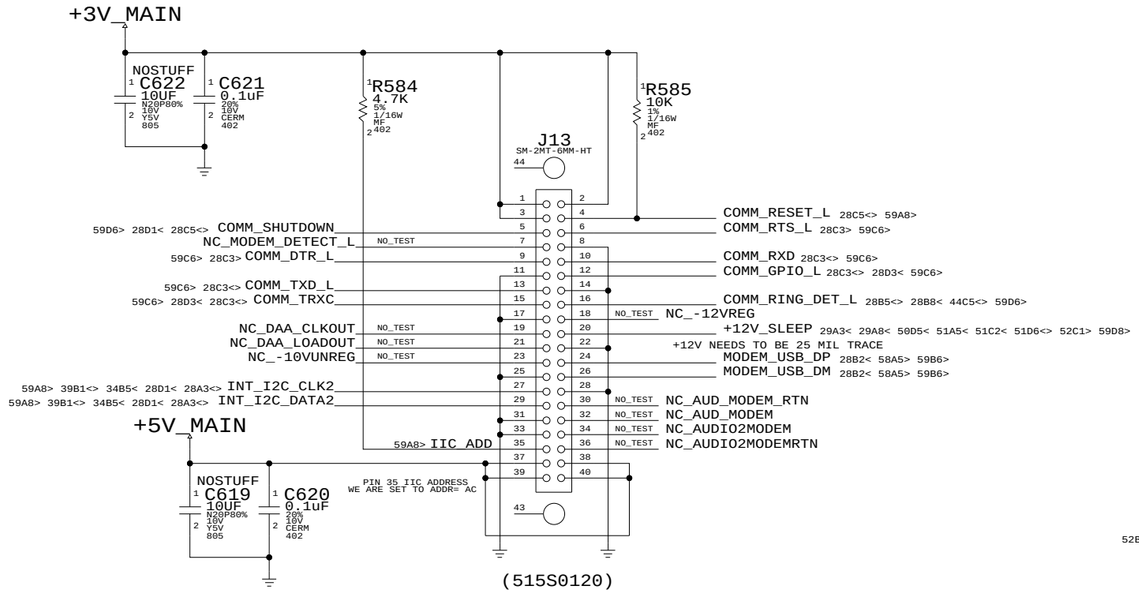
VSSA1 (PLL1) AA15
VSSA2 (PLL2) AJ13
VSSA3 (PLL3) AJ16
VSSA4 (PLL7) AK18
VSSA_8 (PLL9) AH20
VSSU_1 R9
VSSU_2 R8
28C4< INT_PLL1_GND NO_TEST
28D4< INT_PLL2_GND NO_TEST
XW42 XW43 XW44 XW45 XW46 SM
NO_TEST INT_PLL9_GND 28D4<
NO_TEST INT_PLL7_GND 28D4<
NO_TEST INT_PLL3_GND 28D4<

INTREPID GPIO/ SCC/USB/I2S

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV: 13
SCALE NONE | SHT 28 OF 69
DRAWING

MODEM BOARD CONNECTOR

(DASH II)



(515S0120)

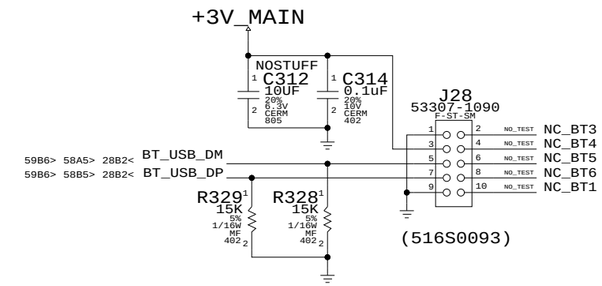
BS2 STDOFF-1970D-236H-TH NC_BS1 NO_TEST

BS1 STDOFF-1970D-236H-TH NC_BS2 NO_TEST

MODEM STANDOFF SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
860-1034	2	STDOFF-19709-236H-TH	BS1,BS2		

BLUETOOTH CONNECTOR



BS3 STDOFF-1970D-236H-TH NC_BS3 NO_TEST

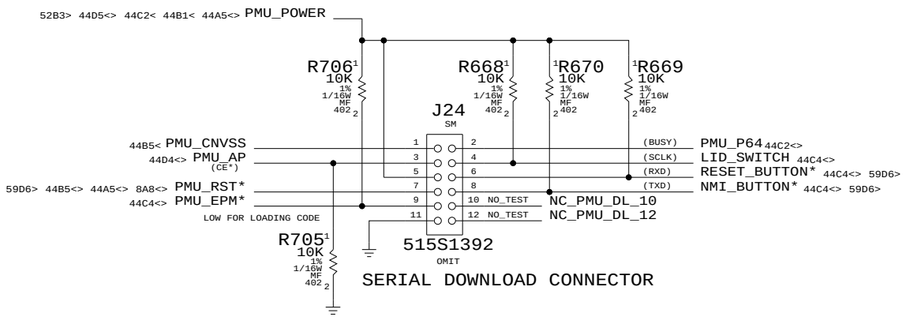
BS4 STDOFF-1970D-236H-TH NC_BS4 NO_TEST

BS4 SHORTEST STANDOFF FURTHEST FROM J28

BLUETOOTH CARD MOUNTING HARDWARE SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
860-0170	1	STDOFF,BLUETOOTH,SHORT	BS4		
860-0171	1	STDOFF,BLUETOOTH,LONG	BS3		

SERIAL DOWNLOAD INTERFACE

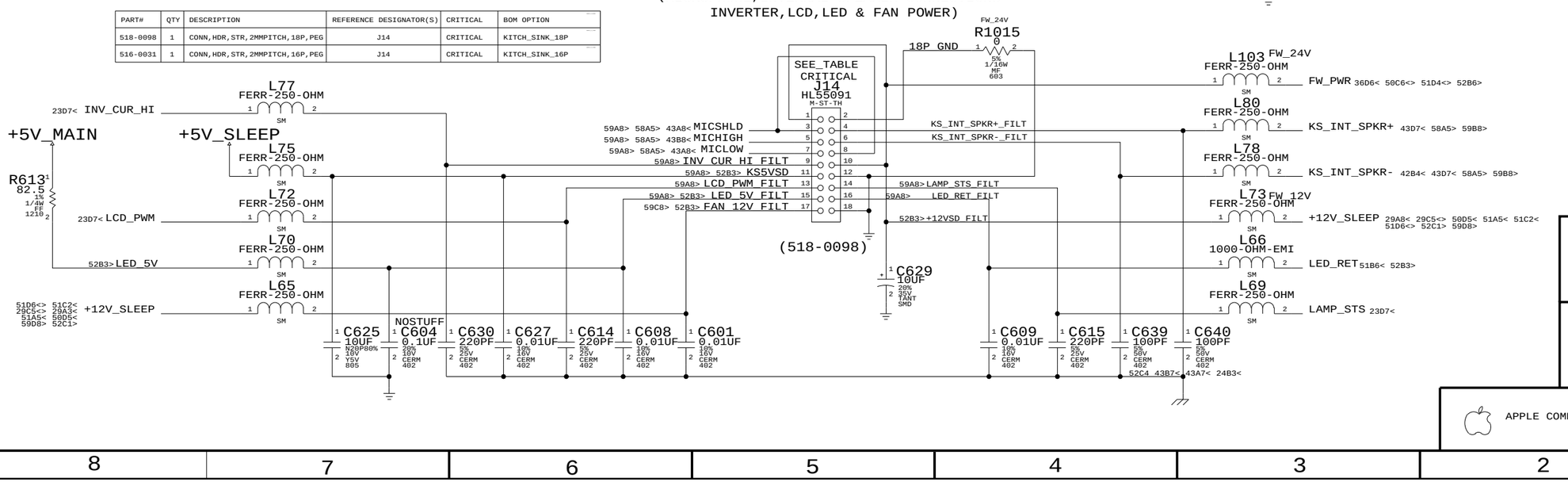


SERIAL DOWNLOAD CONNECTOR

'KITCHEN SINK' CONNECTOR

(MICROPHONE,INTERNAL SPEAKER CONNECTIONS
INVERTER,LCD,LED & FAN POWER)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
518-0098	1	CONN,HDR,STR,2MMPITCH,18P,PEG	J14	CRITICAL	KITCH_SINK_18P
516-0031	1	CONN,HDR,STR,2MMPITCH,16P,PEG	J14	CRITICAL	KITCH_SINK_16P

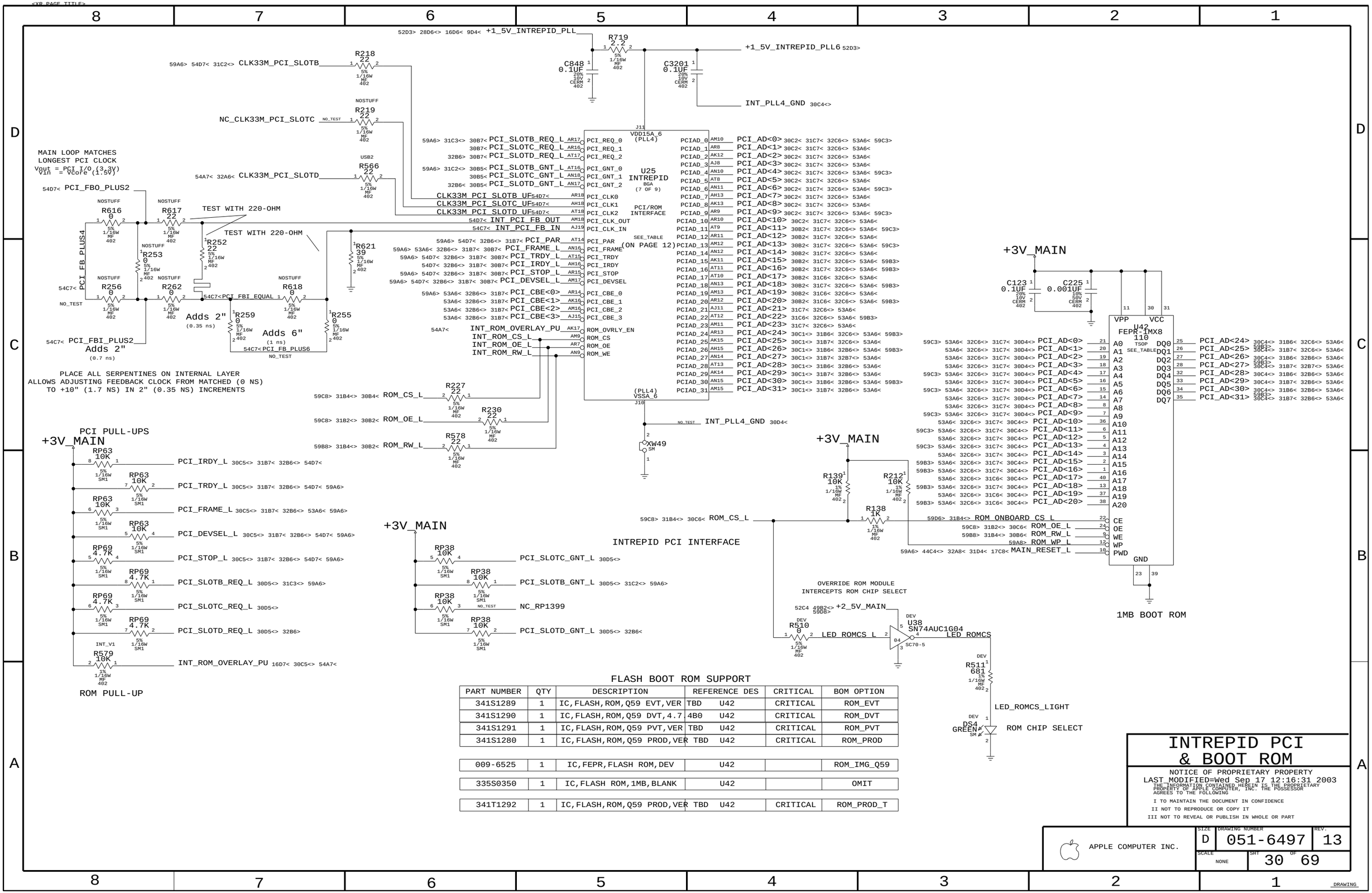


MODEM, BLUETOOTH, KITCHEN SINK & SERIAL DOWNLOAD

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 29 OF 69	

DRAWING



FLASH BOOT ROM SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
341S1289	1	IC,FLASH,ROM,Q59 EVT,VER	TBD U42	CRITICAL	ROM_EVT
341S1290	1	IC,FLASH,ROM,Q59 DVT,4.7	4B0 U42	CRITICAL	ROM_DVT
341S1291	1	IC,FLASH,ROM,Q59 PVT,VER	TBD U42	CRITICAL	ROM_PVT
341S1280	1	IC,FLASH,ROM,Q59 PROD,VER	TBD U42	CRITICAL	ROM_PROD
009-6525	1	IC,FEPR,FLASH ROM,DEV	U42		ROM_IMG_Q59
335S0350	1	IC,FLASH ROM,1MB,BLANK	U42		OMIT
341T1292	1	IC,FLASH,ROM,Q59 PROD,VER	TBD U42	CRITICAL	ROM_PROD_T

INTREPID PCI & BOOT ROM

LAST_MODIFIED=Wed Sep 17 12:16:31 2003

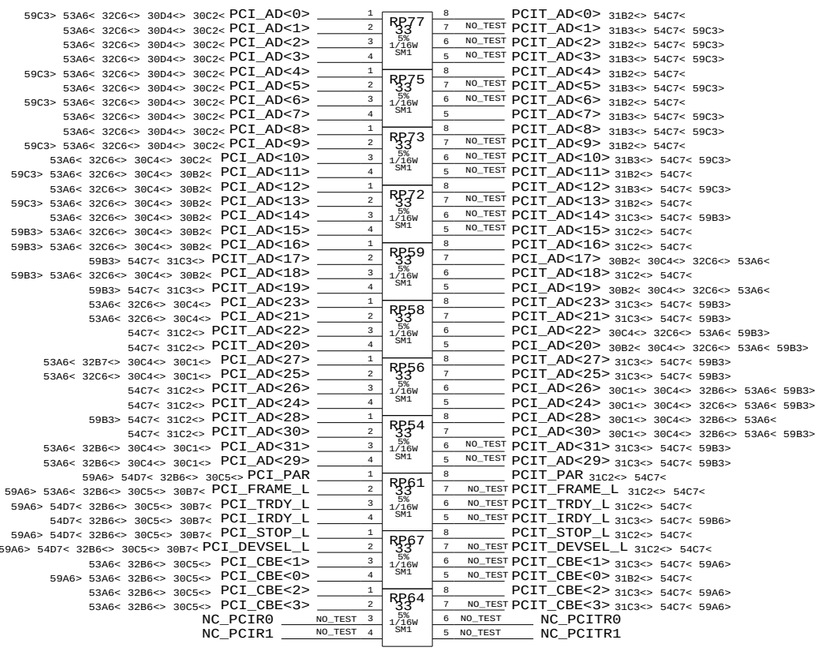
APPLE COMPUTER INC.

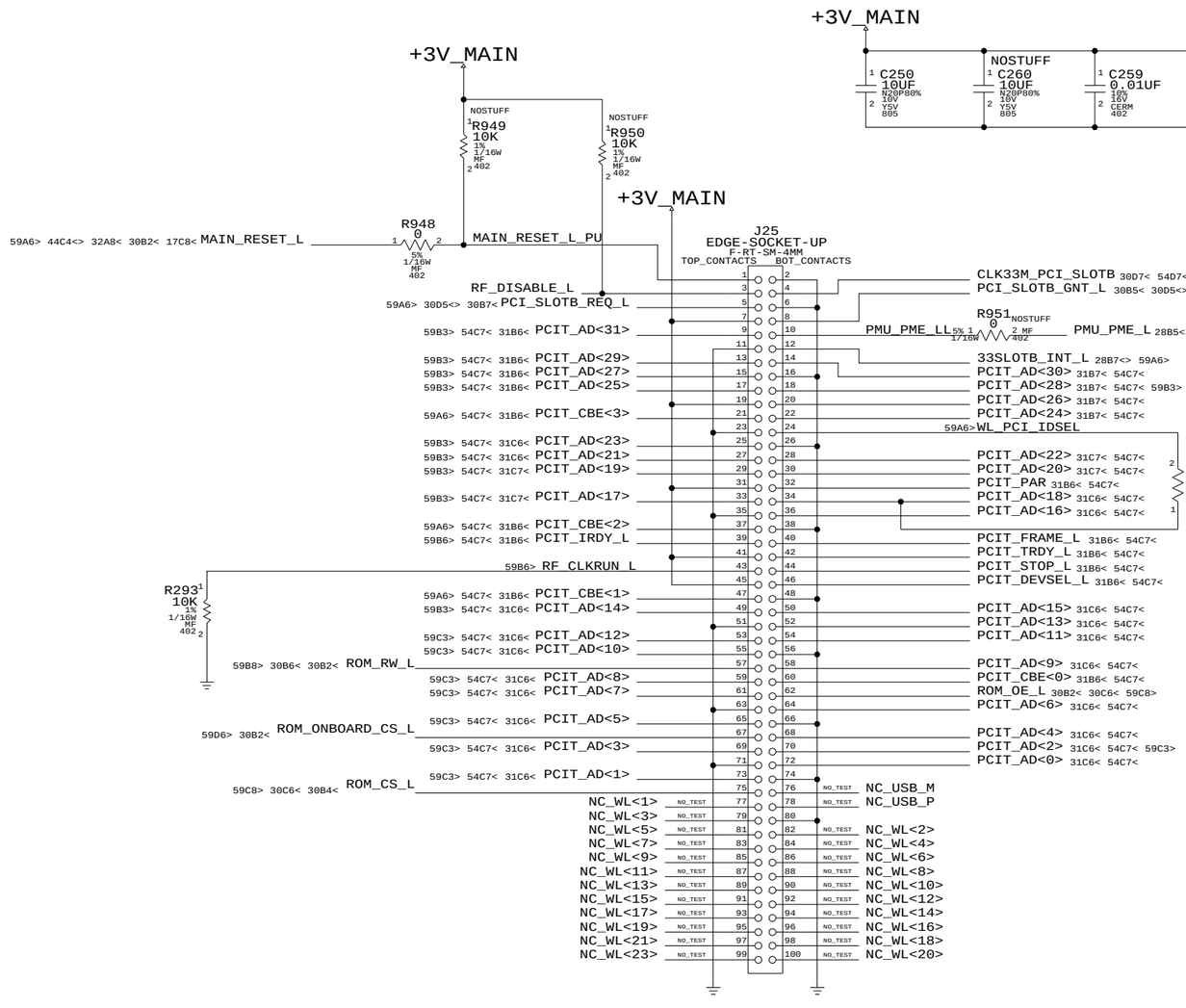
SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE: NONE

SHT 30 OF 69

PLACE RP'S NEAR WIRELESS CONNECTOR





(516S0046)

WIRELESS CARD MOUNTING HARDWARE SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
815-7245	1	WIRELESS CARD GUIDE,J25	J251		
452-0411	2	NUT,HEX,M2 X 1.5H, J25	J252,J253		
452-0412	2	SCREW,M2 X 0.4 X 6.0 L,J25	J254,J255		

WIRELESS PCI

LAST_MODIFIED=Wed Sep 17 12:15:38 2003

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 31 OF 69	

DRAWING

+3V_MAIN

USB2 C519 0.1UF 20% 10V CERM 402
USB2 C522 0.1UF 20% 10V CERM 402
USB2 C527 0.1UF 20% 10V CERM 402
USB2 C547 0.1UF 20% 10V CERM 402
USB2 C523 0.1UF 20% 10V CERM 402
USB2 C541 0.1UF 20% 10V CERM 402
USB2 C548 0.1UF 20% 10V CERM 402
USB2 C555 0.1UF 20% 10V CERM 402
USB2 C559 0.1UF 20% 10V CERM 402
USB2 C546 0.1UF 20% 10V CERM 402
USB2 C516 0.1UF 20% 10V CERM 402
USB2 C537 0.1UF 20% 10V CERM 402
USB2 C536 0.1UF 20% 10V CERM 402
USB2 C515 0.1UF 20% 10V CERM 402
USB2 C570 0.1UF 20% 10V CERM 402
USB2 C530 0.1UF 20% 10V CERM 402
NOSTUFF C517 10UF N20P80% 10V Y5V 805
USB2 C573 10UF N20P80% 10V Y5V 805
NOSTUFF C574 10UF N20P80% 10V Y5V 805
USB2 C531 10UF N20P80% 10V Y5V 805

+3V_MAIN
USB2 L58 100-OHM-EMI SM
52A3> NEC_AVDD
USB2 C526 0.1UF 20% 10V CERM 402
USB2 C529 0.1UF 20% 10V CERM 402
USB2 C511 10UF N20P80% 10V Y5V 805

NOSTUFF R89 100K 1% 1/16W MF 402
NEC_XT2_B
Y7 30.0000M CRITICAL 8X4.5MM-SM USB2
USB2 C77 10PF 5% 50V CERM 402
USB2 C114 10PF 5% 50V CERM 402
USB2 R129 100 1% 1/16W MF 402

H3 M4 C8 P2 P3 P12 A13 A12 A3 E2 N8 L13 J13 H13 F13 D13 G12 H4 D7 — VDD
N10 N12 — AVDD
USB2

59C3> 53A6< 31C7< 30D4<> 30C2<	PCI_AD<0>	M5	AD0	XT1/SCLK	L9 56B3> USB2_XT1
53A6< 31C7< 30D4<> 30C2<	PCI_AD<1>	P5	AD1	XT2	P8 56B3> USB2_XT2
53A6< 31C7< 30D4<> 30C2<	PCI_AD<2>	N5	AD2		
53A6< 31C7< 30D4<> 30C2<	PCI_AD<3>	P4	AD3		
59C3> 53A6< 31C7< 30D4<> 30C2<	PCI_AD<4>	N4	AD4		
53A6< 31C7< 30D4<> 30C2<	PCI_AD<5>	M3	AD5		
59C3> 53A6< 31C7< 30D4<> 30C2<	PCI_AD<6>	N3	AD6		
53A6< 31C7< 30D4<> 30C2<	PCI_AD<7>	M1	AD7		
53A6< 31C7< 30D4<> 30C2<	PCI_AD<8>	L2	AD8		
59C3> 53A6< 31C7< 30D4<> 30C2<	PCI_AD<9>	L1	AD9		
53A6< 31C7< 30C4<> 30C2<	PCI_AD<10>	K2	AD10		
59C3> 53A6< 31C7< 30C4<> 30B2<	PCI_AD<11>	L3	AD11		
53A6< 31C7< 30C4<> 30B2<	PCI_AD<12>	K1	AD12		
59C3> 53A6< 31C7< 30C4<> 30B2<	PCI_AD<13>	K3	AD13		
53A6< 31C7< 30C4<> 30B2<	PCI_AD<14>	J2	AD14		
59B3> 53A6< 31C7< 30C4<> 30B2<	PCI_AD<15>	J1	AD15		
59B3> 53A6< 31C7< 30C4<> 30B2<	PCI_AD<16>	F2	AD16		
53A6< 31C6< 30C4<> 30B2<	PCI_AD<17>	E3	AD17		
59B3> 53A6< 31C7< 30C4<> 30B2<	PCI_AD<18>	E1	AD18		
53A6< 31C6< 30C4<> 30B2<	PCI_AD<19>	D3	AD19		
59B3> 53A6< 31C6< 30C4<> 30B2<	PCI_AD<20>	D1	AD20		
53A6< 31C7< 30C4<>	PCI_AD<21>	D2	AD21		
59B3> 53A6< 31C6< 30C4<>	PCI_AD<22>	C2	AD22		
53A6< 31C7< 30C4<>	PCI_AD<23>	C1	AD23		
59B3> 53A6< 31B6< 30C4<> 30C1<>	PCI_AD<24>	B4	AD24		
53A6< 31B7< 30C4<> 30C1<>	PCI_AD<25>	A4	AD25		
59B3> 53A6< 31B6< 30C4<> 30C1<>	PCI_AD<26>	B5	AD26		
53A6< 31B7< 30C4<> 30C1<> PCI_AD<27>		C4	AD27		
53A6< 31B6< 30C4<> 30C1<>	PCI_AD<28>	A5	AD28		
53A6< 31B7< 30C4<> 30C1<>	PCI_AD<29>	C5	AD29		
59B3> 53A6< 31B6< 30C4<> 30C1<>	PCI_AD<30>	B6	AD30		
53A6< 31B7< 30C4<> 30C1<>	PCI_AD<31>	A6	AD31		
59A6> 53A6< 31B7< 30C5<>	PCI_CBE<0>	M2	CBE0		
53A6< 31B7< 30C5<>	PCI_CBE<1>	J3	CBE1		
53A6< 31B7< 30C5<>	PCI_CBE<2>	F1	CBE2		
53A6< 31B7< 30C5<>	PCI_CBE<3>	C3	CBE3		
59A6> 54D7< 31B7< 30C5<>	PCI_PAR	J4	PAR		
59A6> 53A6< 31B7< 30C5<> 30B7<	PCI_FRAME_L	F3	FRAME		
54D7< 31B7< 30C5<> 30B7<	PCI_IRDY_L	F4	IRDY		
59A6> 54D7< 31B7< 30C5<> 30B7<	PCI_TRDY_L	G1	TRDY		
59A6> 54D7< 31B7< 30C5<> 30B7<	PCI_STOP_L	G3	STOP		
	USB2_IDSEL	B3	IDSEL		
59A6> 54D7< 31B7< 30C5<> 30B7<	PCI_DEVSEL_L	G2	DEVSEL		
30D5<> 30B7<	PCI_SLOTD_REQ_L	C6	REQ		
30D5<> 30B5<	PCI_SLOTD_GNT_L	D6	GNT		
	PCI_SLOTD_PERR_L	H2	PERR		
	33PCI_SLOTD_SERR_L OD	H1	SERR		
28B8< 28B5<>	INT_EXTINT17_PU OD	C7	INTA		
	OD	B7	INTB		
	OD	A7	INTC		
54A7< 30D7<	CLK33M_PCI_SLOTD	A8	PCLK		
59A8> 44D3< 44B8<> 35B8<	IO_RESET_L	B8	VBBRST	RSDM1	M14 56B3> USB2_RSDAM
	USB2_CRUN_L	N6	CRUN	DM1	M13 USB2_DAN_F
	USB2_PME_L OD	D9	PME	DP1	L14 USB2_DAP_F
		C9	VCCRST	RSDP1	K13 56B3> USB2_RSDAP
	NC_USB2_SMI_L OD	L6	SMI	RSDM2	K14 56B3> USB2_RSDBM
		L7	LEGC	DM2	K12 USB2_DBN_F
				DP2	J14 USB2_DBP_F
				RSDP2	J12 56B3> USB2_RSDBP
				RSDM3	H11 56B3> USB2_RSDCM
				DM3	G11 USB2_DCN_F
				DP3	G13 USB2_DCP_F
				RSDP3	G14 56B3> USB2_RSDCP
				RSDM4	F12 NC_USB2_RSDEM
				DM4	F14
				DP4	E12
				RSDP4	E14 NC_USB2_RSDEP
				RSDM5	E13 NC_USB2_RSDFM
				DM5	D14
				DP5	C13
				RSDP5	C14 NC_USB2_RSDFP
				56B3> RREF	P11 USB2_RREF
				OCI1	B12 USB_PWR_FLT*
				OCI2	B11
				OCI3	B10
				OCI4	A10 U_USB_PWR_FLT*
				OCI5	B9
				PPON1	C12 NC_USB2_PPON1
				PPON2	A11 NC_USB2_PPON2
				PPON3	C11 NC_USB2_PPON3
				PPON4	C10 NC_USB2_PPON4
				PPON5	A9 NC_USB2_PPON5
				NC1	P6 USB2_NC1
				NC2	M6 USB2_NC2
				NTEST1	M8 NC_USB2_NTEST1
				SMC	M7 NC_USB2_SMC
				TEB	N7 NC_USB2_TEB
				AMC	P7 NC_USB2_AMC
				TEST	L8 NC_USB2_TEST
				NANDTEST	M10 NC_USB2_NANDTEST
				SRCLK	M9 NC_USB2_SRCLK
				SRDTA	N9 NC_USB2_SRDTA
				SRMOD	P9 NC_USB2_SRMOD
				AVSS(R)	AVSS

U11
NEC_UPD720101_USB2
FBGA

CRITICAL

VSS — B1 N1 P10 N14 H14 B14 A2 B2 N2 M13 B13 M11 L12 H12 D12 G4 J11 F11 D8 — N11 P13 M12

USB2 R464 35.7 1% 1/16W MF 402 — USB2_DAN_F 33B7< 56B3>
USB2 R465 35.7 — USB2_DAP_F 33B7< 56B3>
USB2 R466 35.7 — USB2_DBN_F 33C7< 56B3>
USB2 R467 35.7 — USB2_DBP_F 33C7< 56B3>
USB2 R468 35.7 — USB2_DCN_F 33D7< 56B3>
USB2 R469 35.7 — USB2_DCP_F 33D7< 56B3>

OVERLAP STUFFING OF 35.7OHMS HERE WITH 0OHMS ON SH31 TO MINIMIZE STUBS

USB2 R476 9.09K 1% 1/16W MF 402 — TIED TO BALL N11

+3V_MAIN
USB2 R480 4.7K 5% 1/16W MF 402
USB_PWR_FLT* 28B3< 28C1< 33A7>

+3V_MAIN
USB2 R470 2.2K 5% 1/16W MF 402
USB2 R490 2.2K 5% 1/16W MF 402

+3V_MAIN
USB2 R127 4.7K 5% 1/16W MF 402
USB2 R128 4.7K 5% 1/16W MF 402
USB2 R494 22 5% 1/16W MF 402 — USB2_IDSEL

44B2<> 31C2< 28B5<> 59A6> PMU_PME_L
USB2 R484 0 5% 1/16W 402

28B5<> 28A8< USB2_CRUN_L_INT
R373 0 NOSTUFF 5% 1/16W 402
R78 1K 1% 1/16W MF 402 D3_COLD

+3V_MAIN
R1029 4.7K 5% 1/16W MF 402 D3_HOT

USB2_VCCRST

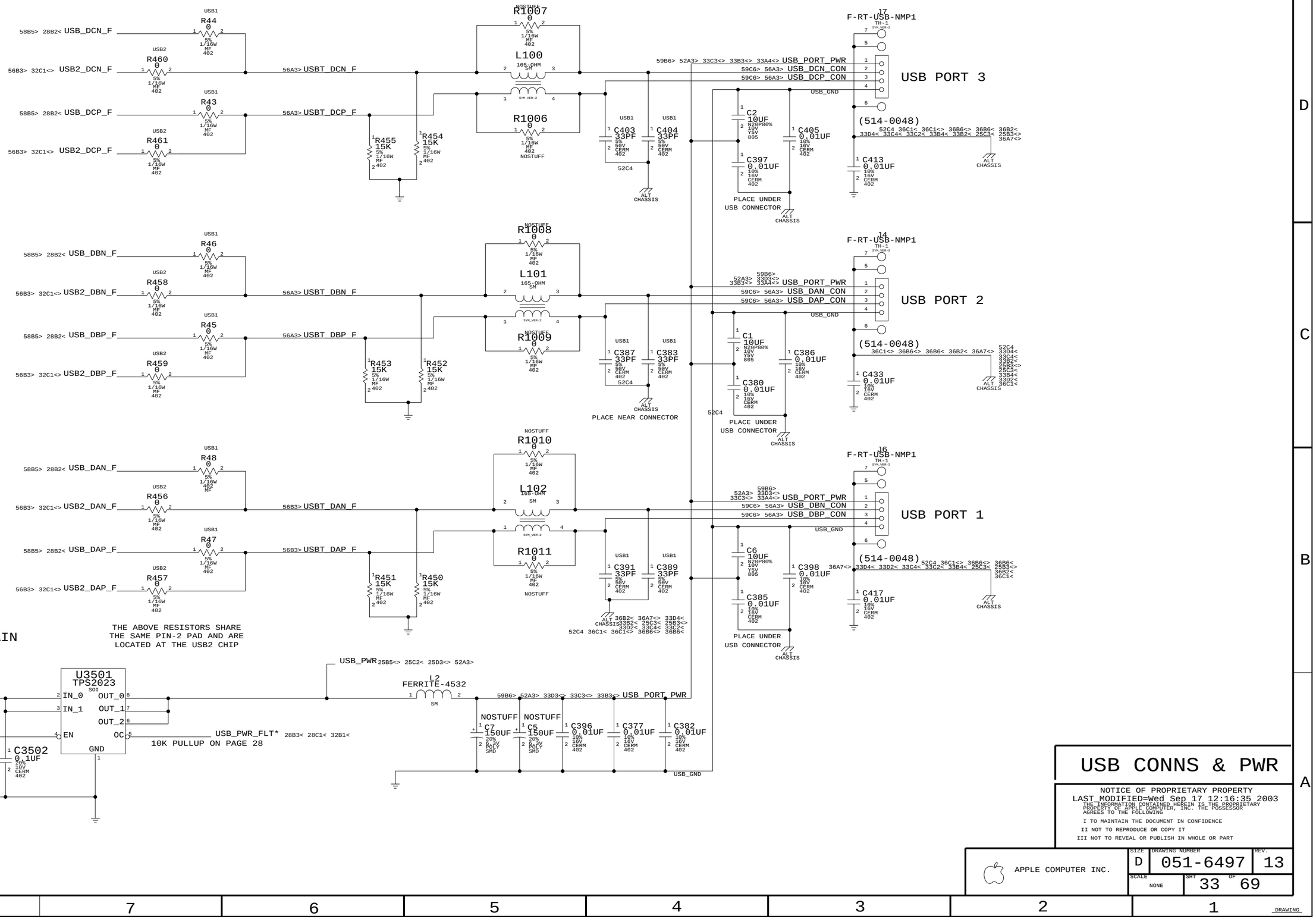
44C4<> 31D4< 30B2< 17C8< 59A6> MAIN_RESET_L
R1028 0 5% 1/16W MF 402 D3_COLD

USB2 CONTROLLER

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 32 OF 69	

DRAWING



USB CONNS & PWR

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 33 OF 69	

DRAWING

CLKENET_LINK_TX
R307 33 5% 1/16W MF 402
ENET_PHY_TX_EN → ENET_LINK_TX_EN
R303 33 5% 1/16W MF 402
ENET_PHY_TX_ER → ENET_LINK_TX_ER
RP70 33 1/16W 5% SM1
ENET_PHY_TXD<0> → ENET_LINK_TXD<0>
ENET_PHY_TXD<1> → ENET_LINK_TXD<1>
ENET_PHY_TXD<2> → ENET_LINK_TXD<2>
ENET_PHY_TXD<3> → ENET_LINK_TXD<3>
NC_ENET_LINK_TXD<4>
NC_ENET_LINK_TXD<5>
NC_ENET_LINK_TXD<6>
NC_ENET_LINK_TXD<7>
CLKENET_LINK_RX
ENET_RX_DV
ENET_RX_ER
ENET_LINK_RXD<0>
ENET_LINK_RXD<1>
ENET_LINK_RXD<2>
ENET_LINK_RXD<3>
RP76 33 1/16W 5% SM1
ENET_LINK_RXD<4>
ENET_LINK_RXD<5>
ENET_LINK_RXD<6>
ENET_LINK_RXD<7>
CLKENET_LINK_GBE_REF
NC_CLKENET_LINK_GTX
ENET_CRS
ENET_COL
ENET_MDIO
ENET_MDC
JTAG_ASIC_TDI
JTAG_INTRP_TDO
JTAG_ASIC_TCK
JTAG_ASIC_TMS
JTAG_ASIC_TRST_L
INT_JTAG_TEI
INT_TST_MONIN_PD
NC_INT_TST_MONOUT_TP (NO_TEST)
INT_TST_PLLEN_PD
R714 1K 1% 1/16W MF 402
NOSTUFF C92 47PF 5% 50V CERM 402

U25 INTREPID BGA (4 OF 9) — SEE_TABLE (ON PAGE 12)

GB ETHERNET: TX_CLK, TX_EN, TX_ER, TXD_0..TXD_7, RX_CLK, RX_DV, RX_ER, RXD_0..RXD_7, GBE_REFCLK, GTX_CLK, CRS, COL, MDIO, MDC

TEST: TDI, TDO, TCK, TMS, TRSTN, TEI, TST_MONIN, TST_MONOUT, TST_PLLEN

MISC: RESET (U5) ← RINT_RESET_L; PURESET (T2) ← RINT_PU_RESET_L

FIREWIRE: PHY_DATA0..PHY_DATA7 ↔ FW_LINK_DATA<0>..<7>; PHY_LPS ← FW_LPS; PHY_CTL0 ← FW_LINK_CNTL<0>; PHY_CTL1 ← FW_LINK_CNTL<1>; PHY_LREQ ← FW_LINK_LREQ; FWR_PCLK ← FW_SCLK; FWR_LCLK ← CLKFW_LINK_LCLK; FW_LINKON ← FW_C_LKON; FW_PINT → R673 1K 1% 1/16W MF 402

R707 47 5% 1/16W MF 402 → INT_RESET_L 35B8< 41A7< 43C7< 44D2<>
R275 47 5% 1/16W MF 402 → INT_PU_RESET_L 15B3< 44C2<>

RP112 22 5% 1/16W SM1; RP65 22 5% 1/16W SM1
FW_D<0> 36C8< 57A5>
FW_D<1> 36C8< 57A5>
FW_D<2> 36B8< 57A5>
FW_D<3> 36B8< 57A5>
FW_D<4> 36B8< 57A5>
FW_D<5> 36B8< 57A5>
FW_D<6> 36B8< 57A5>
FW_D<7> 36B8< 57A5>
(NO_TEST)

R269 22 5% 1/16W MF 402 → FW_CNTL0 36C8< 57A5>
R709 22 5% 1/16W MF 402 → FW_CNTL1 36C8< 57A5>
R702 22 5% 1/16W MF 402 → FW_LREQ 36C8< 57A5>

INT_V2 R257 0 MF 5% 1/16W 402 → INT_I2C_CLK0 14A6<> 15A6<
INT_V2 R254 0 MF 5% 1/16W 402 → INT_I2C_DATA0 14A6<> 15A6<
INT_V1 R637 0 MF 5% 1/16W 402 ← INT_I2C_CLK2 59A8> 39B1<> 29C7<> 28D1< 28A3<>
INT_V1 R647 0 MF 5% 1/16W 402 ← INT_I2C_DATA2 59A8> 39B1<> 29C7<> 28D1< 28A3<>

IIC: IICCLK_0 ↔ INT_I2C_CLK0R; IICDATA_0 ↔ INT_I2C_DATA0R; IICCLK_1 ↔ INT_I2C_CLK1; IICDATA_1 ↔ INT_I2C_DATA1

+3V_MAIN
NOSTUFF J18 M-ST-LK TH
INT_I2C_CLK1
INT_I2C_DATA1
(515-1560)
I2C DEBUG HEADER

INTREPID VERSION 1 HAS AN I2C BUS PROBLEM
USE KEY LARGO'S I2C INSTEAD.
FIXED IN INTREPID VERSION 2

INT_I2C_CLK1 34B1<
INT_I2C_DATA1 34B1<

TEST PULL-DOWNS
R575 1K 1% 1/16W MF 402 ← INT_JTAG_TEI 34B7<
R576 1K 1% 1/16W MF 402 ← INT_TST_MONIN_PD 34B7<
R684 10K 1% 1/16W MF 402 → FW_PINT 34B5<>

I2C 3.3V PULL-UPS
+3V_MAIN
RP119 4.7K 5% 1/16W SM1 ← INT_I2C_CLK0R 34B5<>
RP119 4.7K 5% 1/16W SM1 ← INT_I2C_DATA0R 34B5<>
RP101 4.7K 5% 1/16W SM1 ← INT_I2C_CLK1 34A3<>
RP101 4.7K 5% 1/16W SM1 ← INT_I2C_DATA1 34A3<>

INTREPID ENET & FW

LAST_MODIFIED=Wed Sep 17 12:16:36 2003

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE: NONE — SHT 34 OF 69

DRAWING

PLACE CLOSER TO PIN 22

ENET_DVDD PIN 12 PIN 55

MIN_LINE_WIDTH=20

C57 10UF N20P80% 10V Y5V 805

C67 0.01UF 10% 16V CERM 402

C53 0.1UF 20% 10V CERM 402

PIN 27, 28

MIN_LINE_WIDTH=20

ENET_AVDD 35D2<> 52C6>

C56 0.01UF 10% 16V CERM 402

C44 0.1UF 20% 10V CERM 402

C52 10UF N20P80% 10V Y5V 805

+3V_MAIN

PLACE NEAR PIN 20

PIN 3 PIN 46 PIN 8

MIN_LINE_WIDTH=20

RE-PLACE NEAR PIN 1>

C41 0.1UF 20% 10V CERM 402

C66 0.1UF 20% 10V CERM 402

C37 0.1UF 20% 10V CERM 402

C65 0.1UF 20% 10V CERM 402

C3501 0.1UF 20% 10V CERM 402

C68 10UF N20P80% 10V Y5V 805

NC_UB3P4 NO_TEST

ENET_AVDD 35D4<> 52C6>

C438 0.1UF 20% 10V CERM 402

C434 0.1UF 20% 10V CERM 402

NOTE: 1.5MM SPACE FROM TRACE TO GND

C401 0.1UF 20% 10V CERM 402

J1 TH-NMP-1 SYM_VER-2

C400 0.1UF 20% 10V CERM 402

(514-0030)

MIN_LINE_WIDTH=20

R37 49.9 1% 1/16W MF 402

R40 49.9 1% 1/16W MF 402

R33 49.9 1% 1/16W MF 402

R30 49.9 1% 1/16W MF 402

T1 XFR-100BT MDIX SM

57B5> ENET_TDP

ENET_AVDD

57B5> ENET_TDN

NC_TX1_1 NO_TEST NC1

NC_TX1_2 NO_TEST NC2

57B5> ENET_RDP

ENET_AVDD

57B5> ENET_RDN

TX RX

NC4 NC_TX1_3 NO_TEST

NC3 NC_TX1_4 NO_TEST

57B5> RJ45_TREF

57B5> RJ45_RREF

57B5> RJ45_TXP

57B5> RJ45_TXN

57B5> RJ45_RXP

57B5> RJ45_4_5

57B5> RJ45_RXN

57B5> RJ45_7_8

52C4

R394 75 1% 1/16W MF 402

R393 75 1% 1/16W MF 402

R391 75 1% 1/16W MF 402

R390 75 1% 1/16W MF 402

57B5> RJ45_F_TREF

C3 0.001UF 5% 2KV CERM 1808

R38 33 5% 1/16W MF 402

57C5> 34D7< CLKENET_LINK_TX

NO_TEST 57C5> CLKENET_PHY_TX

57C5> 34C7< CLKENET_LINK_RX

57C5> CLKENET_PHY_RX

RP1 33 5% 1/16W SM1

R34 33 5% 1/16W MF 402

57B5> 34C7< ENET_LINK_RXD<0>

57B5> 34C7< ENET_LINK_RXD<1>

57B5> 34C7< ENET_LINK_RXD<2>

57B5> 34C7< ENET_LINK_RXD<3>

57B5> ENET_PHY_RXD<0>

57B5> ENET_PHY_RXD<1>

57B5> ENET_PHY_RXD<2>

57B5> ENET_PHY_RXD<3>

R29 33 5% 1/16W MF 402

57B5> 34C7< ENET_RX_DV

57B5> ENET_PHY_RX_DV

57B5> ENET_PHY_RX_ER

34C7< ENET_RX_ER

57B5> 34C7< ENET_CRS

57B5> 34B7< ENET_COL

RP15 33 1/16W 5%

57B5> ENET_PHY_CRS

57B5> ENET_PHY_COL

ETHPHYRESET_L

34B7> ENET_MDC

57B5> CLK25M_ENET_XIN

57B5> CLK25M_ENET_XOUT

NOSTUFF

43C7< 34C3< 41A7< 44D2< INT_RESET_L

R75 1K 5% 1/16W MF 402

INT_ENET_RST_L 28B4<

R76 1K 1% 1/16W MF 402

44D3< 32A6< 44B8<> 59A8> IO_RESET_L

D9 1N914 SOT23

CRITICAL Y6 25.0000M 8X4.5MM-SM

C74 27PF 5% 50V CERM 402

C76 27PF 5% 50V CERM 402

ADD DUAL LAYOUT SUPPORT FOR ALTERNATE CRYSTAL

+3V_MAIN

R28 1.5K 1% 1/16W MF 402

34B7<> ENET_MDIO

U37

FLAS-1

TRANSC_BCM5221

CRITICAL

SEE_TABLE

REGVDD REGAVDD DVDD1 DVDD2 AVDD1 AVDD2 OVDD1 OVDD2 REFCLK BIASVDD OVDD/NC

TXC TXD0 TXD1 TXD2 TXD3 TXEN TXER RXC RXD0 RXD1 RXD2 RXD3 RXDV RXER CRS COL RESET* MDC MDIO XTALI XTAL0

NC NC NC NC NC PHYAD0 PHYAD1 PHYAD2 PHYAD3 PHYAD4

TD+ TD- RD+ RD- SD+ SD- NC

FDX JTAG_ASIC_TCK ANEN TESTEN MII_EN LOW_PWR

ENERGY_DET ENET_ENERGY_DET 28B5<> 28C1<

RDAC ENET_RDAC_PD MIN_LINE_WIDTH=20

LNKLED/JTAG_TDI* SPDLED/JTAG_TMS* XMTLED* RCVLED/JTAG_TDO*

JTAG_ENET_TDI 35A2<

JTAG_ASIC_TMS 8A4<> 34B7< 35A2< 59D8>

XMIT_LED 35A2<

JTAG_ASIC_TDO 8A4<> 59D8>

OGND1 OGND2 OGND3/JTAG_EN DGND1 DGND2 AGND1 AGND2 PLLGND BIASGND

PHY ADDRESS 00000

R27 10K 1% 1/16W MF 402

R165 10K 1% 1/16W MF 402

R326 0 5% 1/16W MF 402

JTAG_INTRP_TDO 28C6< 34B7>

R26 10K 1% 1/16W MF 402

R42 1.27K 1% 1/16W MF 402

RP16 10K 5% 1/16W SM1

35C4< FDX

35C4< TESTEN

35B4< LOW_PWR

OGND3 JTAG_EN

+3V_MAIN

R485 4.7K 5% 1/16W MF 402

R486 330 5% 1/16W MF 402 DS3P1 DS1 GREEN SM 10/100

R491 330 5% 1/16W MF 402 DS1P1 DS3 GREEN SM XMIT

R492 330 5% 1/16W MF 402 DS2P1 DS2 GREEN SM LINK

R96 4.7K 5% 1/16W MF 402

59D8> 35B4<> 34B7< 8A4<> JTAG_ASIC_TMS

35B4<> XMIT_LED

35B5<> JTAG_ENET_TDI

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S0127	1	IC,BCM5231,FAST ENET XCVR,64P,TQFP	U37	CRITICAL	ENET_BCM5231

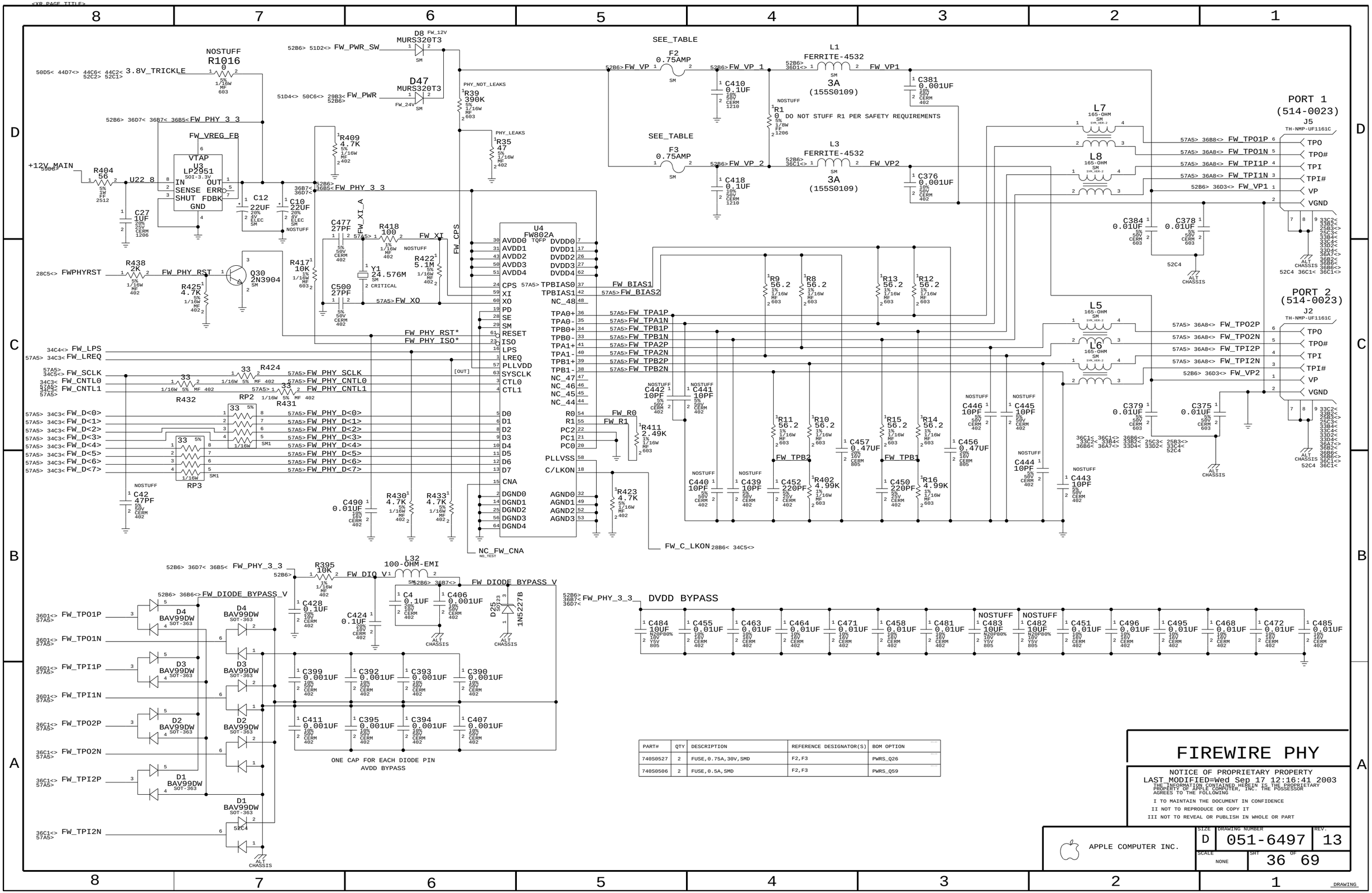
ETHERNET PHY

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE NONE SHT 35 OF 69

DRAWING



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
740S0527	2	FUSE,0.75A,30V,SMD	F2,F3	PWRS_Q26
740S0506	2	FUSE,0.5A,SMD	F2,F3	PWRS_Q59

FIREWIRE PHY

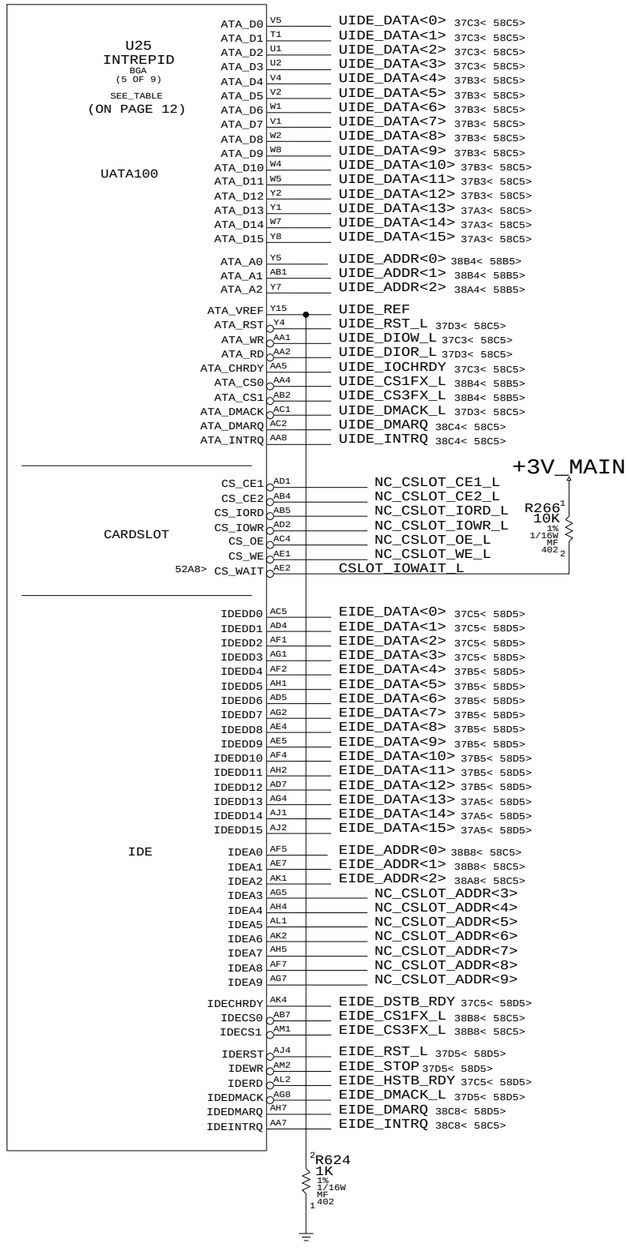
LAST MODIFIED=Wed Sep 17 12:16:41 2003

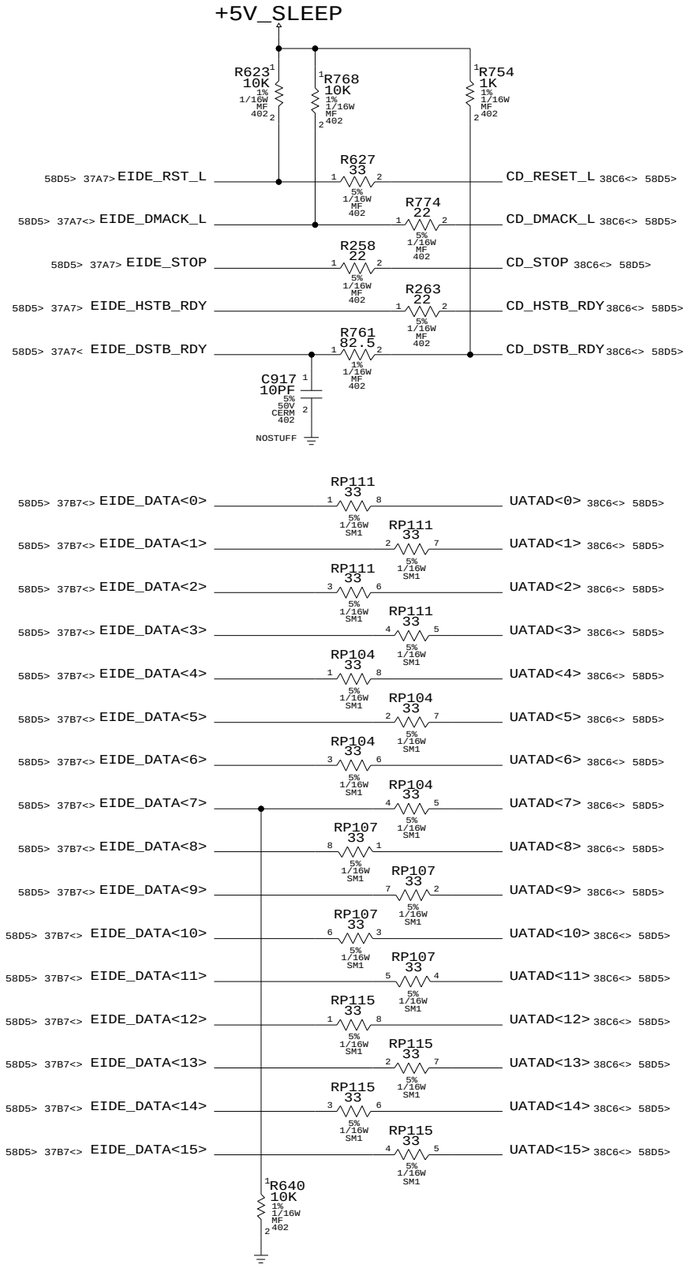
APPLE COMPUTER INC.

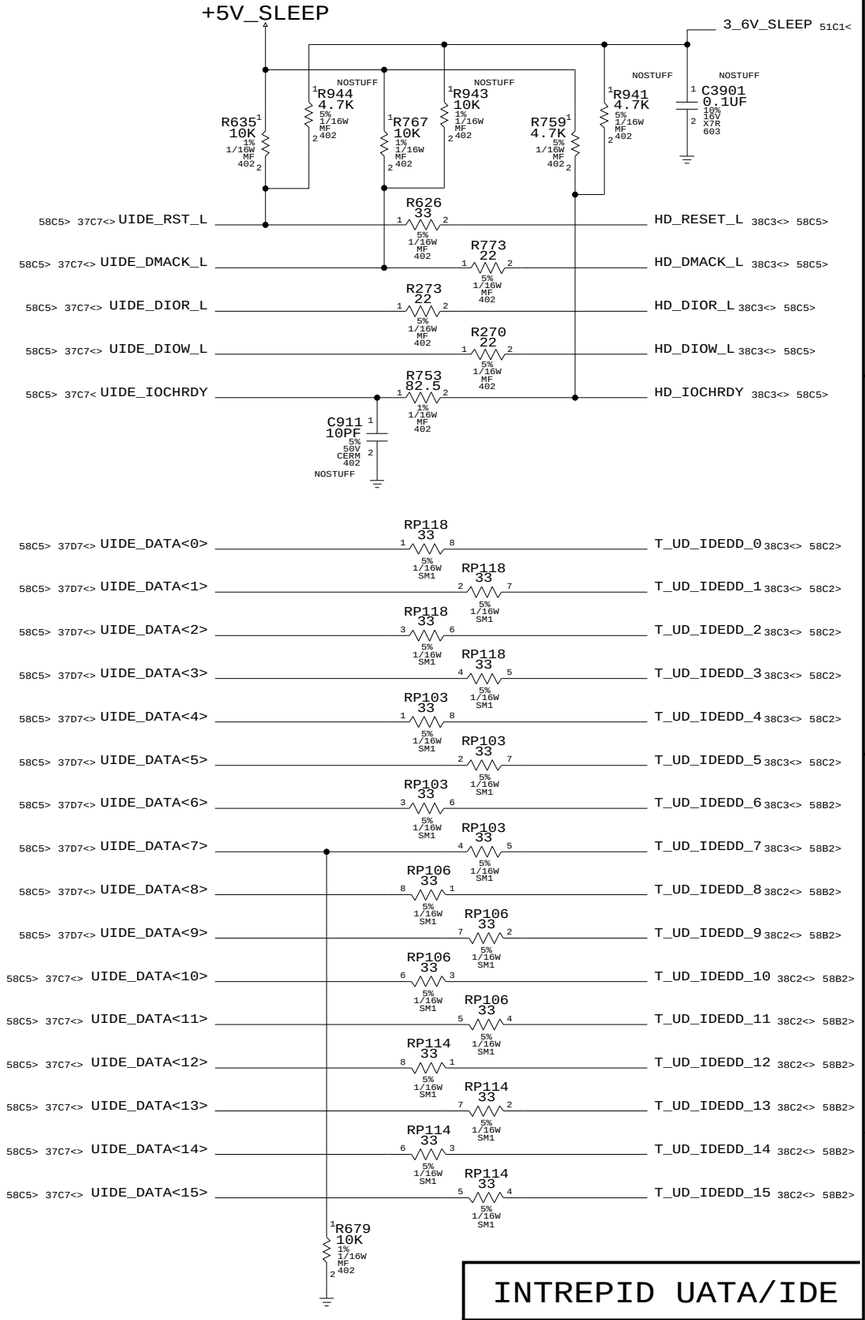
SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE: NONE

SHT 36 OF 69







INTREPID UATA/IDE

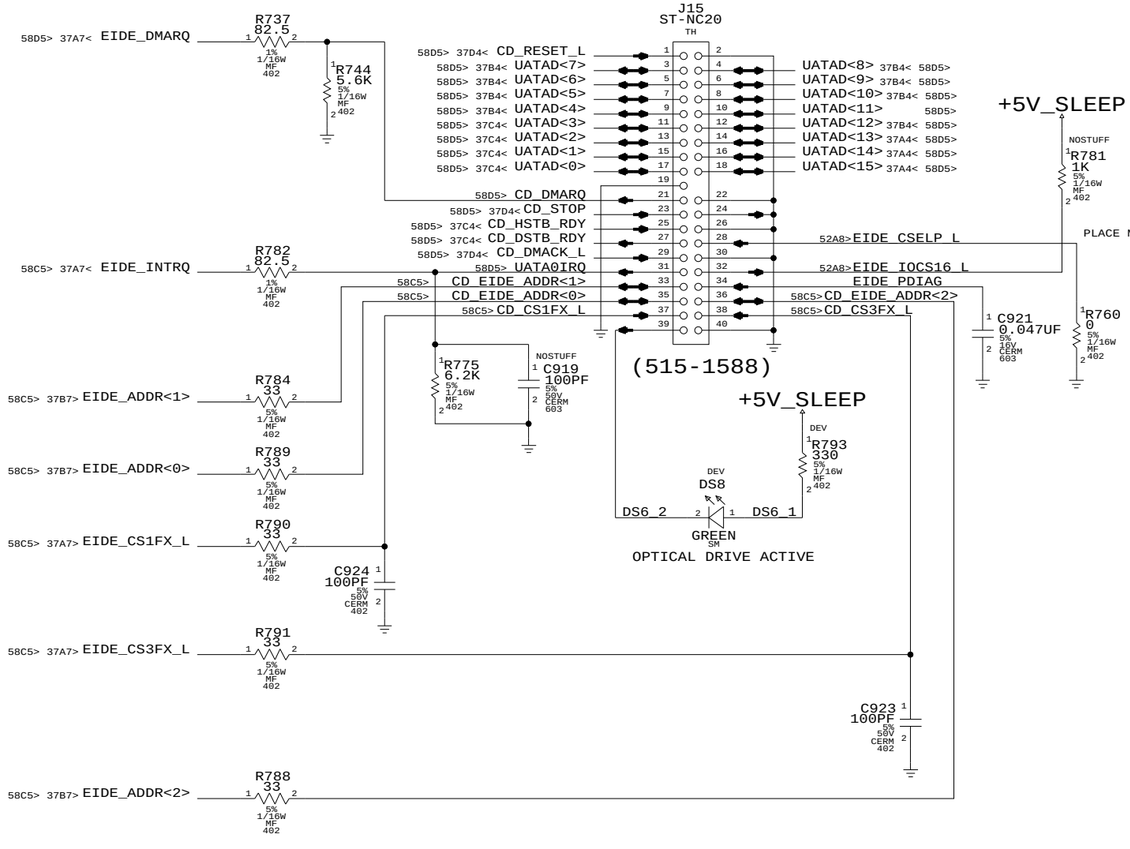
APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 37 OF 69	

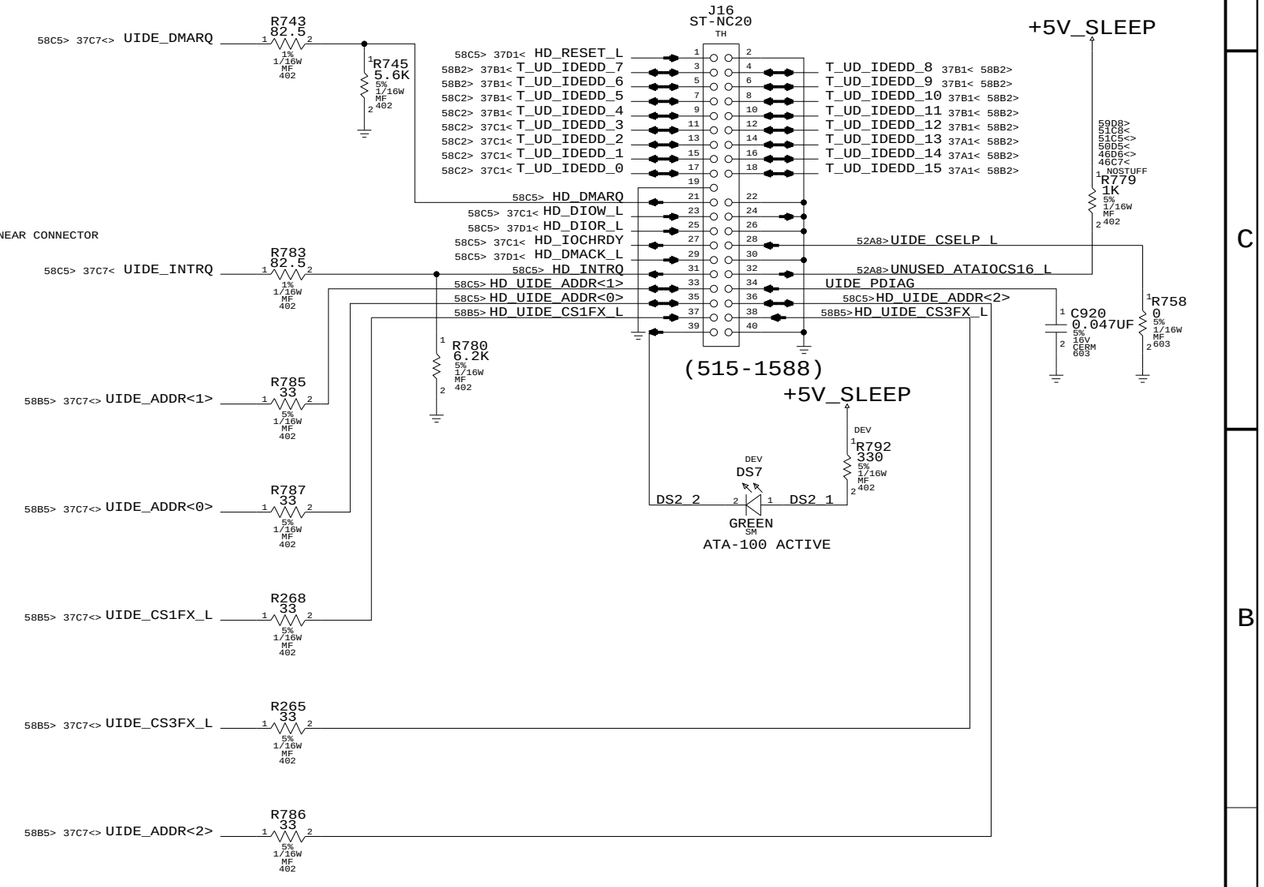
DRAWING

<XR_PAGE_TITLE>

OPTICAL DRIVE INTERFACE



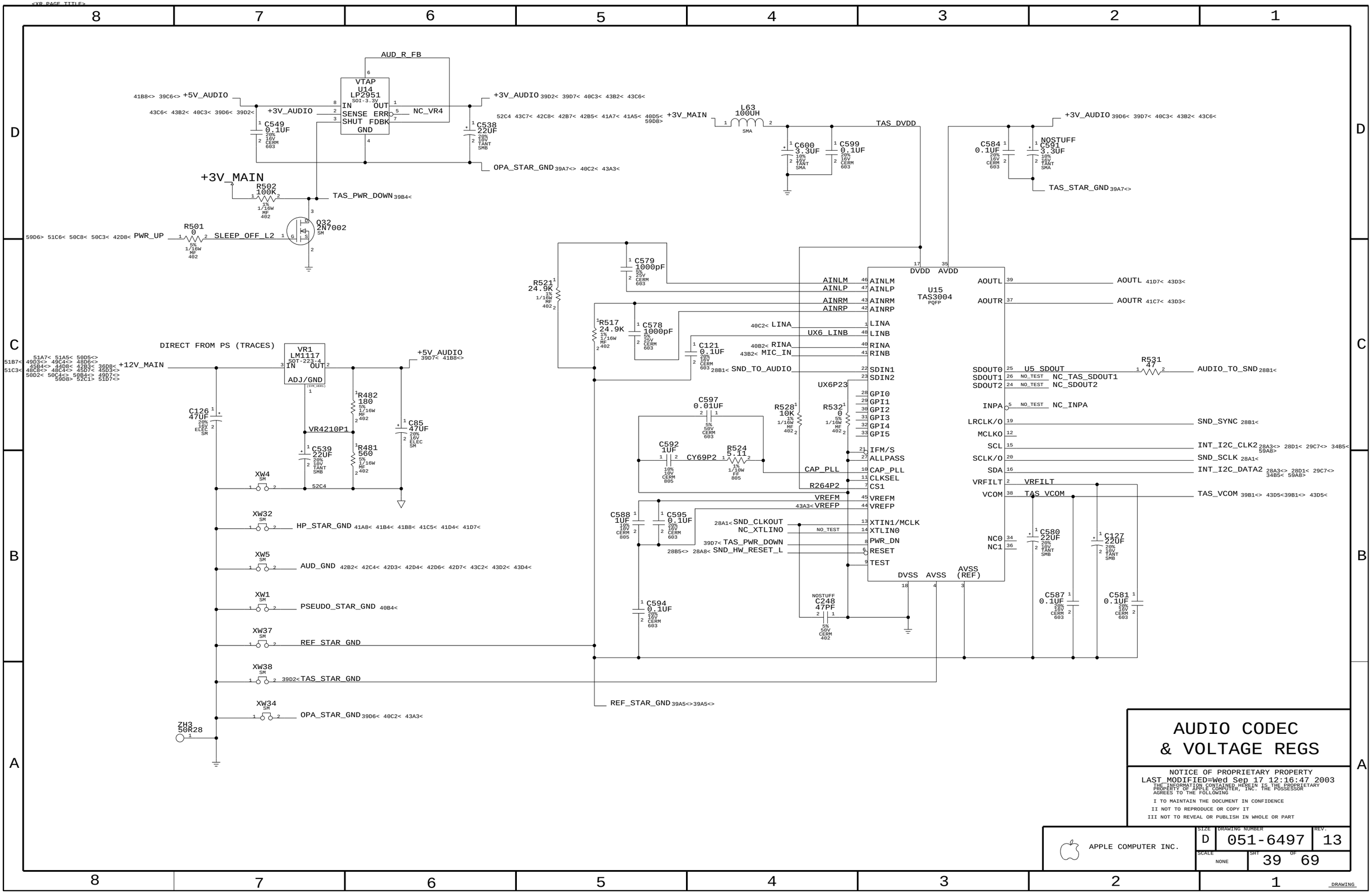
ATA-100 INTERFACE



CD/HD CONS

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6497	13
	SCALE NONE	SHT 38 OF 69	

DRAWING

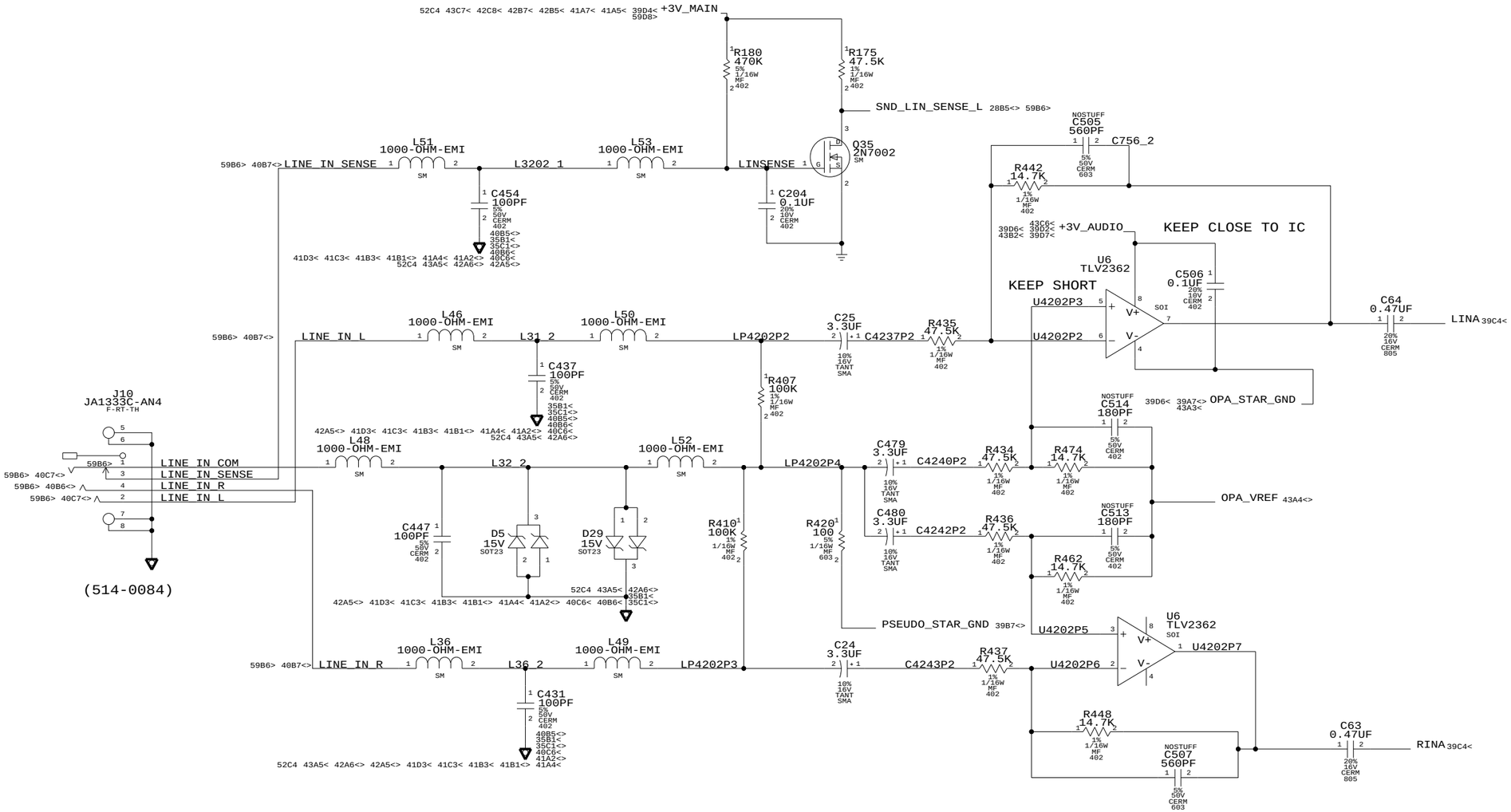


AUDIO CODEC & VOLTAGE REGS

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 39 OF 69	

DRAWING



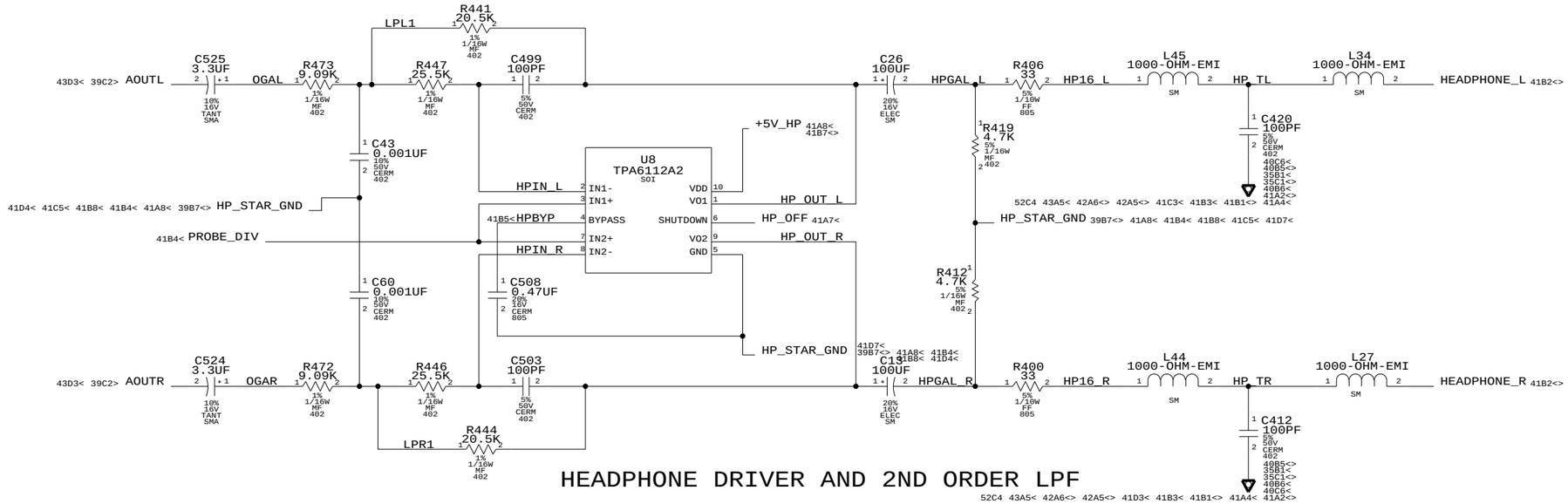
LINE IN BUFFER

APPLE COMPUTER INC.

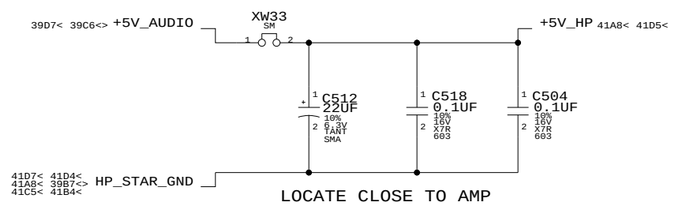
SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	40	69

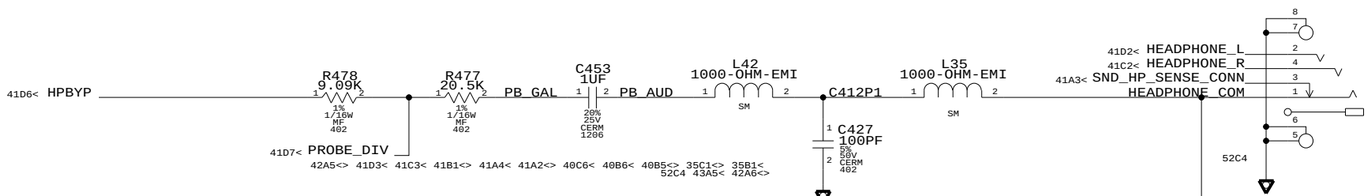
DRAWING



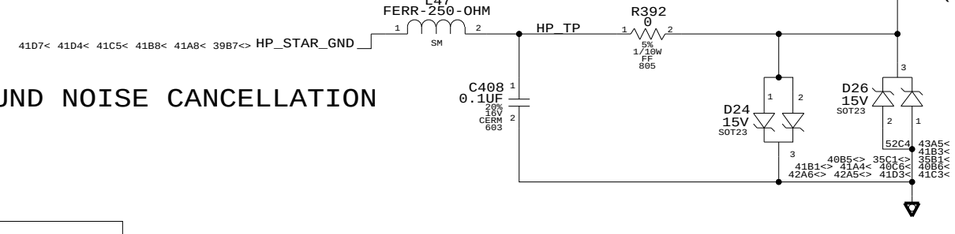
HEADPHONE DRIVER AND 2ND ORDER LPF



POWER SOURCE

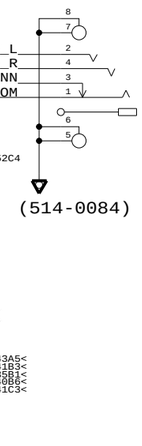


GROUND NOISE CANCELLATION



MUTE & SHUTDOWN

HP DETECT



HEADPHONE OUT AMP

APPLE COMPUTER INC.

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
155S0148	4	FILTR,EMI,160OHM,6A,1206	L90,L91,L93,L96	

TPA_5V IS NOT USED IN THIS SCHEMATIC

SPEAKER AMP

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L97
TB321611B130
42A6<> INT_SPKR+ 1 1206 2 KS_INT_SPKR+ 29A3< 58A5> 59B8>

L98
TB321611B130
42A6<> INT_SPKR- 1 1206 2 KS_INT_SPKR- 29A3< 42B4< 58A5> 59B8>

C1076 1UF 10% 10V CERM 805 — VCOML AUDIO — R986 200 5% 1/16W MF 402 — LINP 42C5<
NET_PHYSICAL_TYPE=AUDIO
C1078 0.047UF 10% 16V CERM 402
39B1<> TAS_VCOM NET_PHYSICAL_TYPE=AUDIO — AUD_GND 39B7<> 42B2< 42C4< 42D3< 42D4< 42D6< 42D7< 43C2< 43D2<
C1079 0.047UF 10% 16V CERM 402
C1077 1UF 10% 10V CERM 805 — VCOMR AUDIO — R987 200 5% 1/16W MF 402 — RINP 42C4<
NET_PHYSICAL_TYPE=AUDIO

41D7< 39C2> AOUTL — C1088 1UF 10% 16V CERM 805 — LINN1 — R989 200 5% 1/16W MF 402 — LINN 42C5<
C1095 0.047UF 10% 16V CERM 402
AUD_GND 39B7<> 42B2< 42C4< 42D3< 42D4< 42D6< 42D7< 43C2< 43D4<
41C7< 39C2> AOUTR — C1087 1UF 10% 16V CERM 805 — RINN1 — R988 200 5% 1/16W MF 402 — RINN 42C4<
C1094 0.047UF 10% 16V CERM 402
AUD_GND 39B7<> 42B2< 42C4< 42D3< 42D4< 42D6< 42D7< 43D2< 43D4<

R4401 0 NOSTUFF 5% 1/16W MF 402 — +3V_MAIN 39D4< 40D5< 41A5< 41A7< 42B5< 42B7< 42C8< 52C4 59D8>
28C5<> SND_AMP_MUTE_L — 1 A
44D2<> 41A7< 35B8< 34C3< INT_RESET_L — 2 B
U48 NC7WZ08 SOI — 8 Y 7 — SND_AMP_M_L 42D3<
4

R4507 330 1/16W 5% MF 402
43B2< 40C3< 39D7< 39D6< 39D2< +3V_AUDIO — MIC_FIX

518S0008

J4501 DF13B-4P-1.25V F-ST-SM NOSTUFF — 5 pins, 6
J4502 DF13B-4P-1.25V F-ST-SM NOSTUFF — 5 pins, 6
43A6<> M1S
43B6<> M1H
43A6<> M1L

NEEDED FOR MIC NOISE
C4502 22UF 20% 10V TANT SMB
R421 2.2K 5% 1/16W MF 402

C542 100PF 5% 50V CERM 402
C556 0.1UF 20% 16V CERM 603 — MIC_IN 39C4<
+3V_AUDIO 39D2< 39D6< 39D7< 40C3< 43C6<

L79 1000-OHM-EMI SM
59A8> 58A5> 29A5<> MICHIGH — 1 — 2 M1FH
C642 47PF 5% 50V CERM 402 — 24B3< 29A3< 52C4 43A7<
R4501 0 5% 1/16W MF 402 — 43B6<> JAZ — NO_TEST — R4504 0 5% 1/16W MF 402 — M1H
L60 1000-OHM-EMI SM — M1HFILT
R414 330 5% 1/16W MF 402 — MIC1
C35 2.2UF 20% 10V CERM 805 — MIC2
R488 2.2K 5% 1/16W MF 402 — MIC3
R489 121K 1% 1/16W MF 402 — MIC4
C478 470PF 10% 50V CERM 402
R413 47.5K 1% 1/16W MF 402

U13 TLV2362 SOI
C551 0.1UF 20% 16V CERM 603

L81 1000-OHM-EMI SM
59A8> 58A5> 29A5<> MICLOW — 1 — 2 M1FL
C675 47PF 5% 50V CERM 402 — 24B3< 29A3< 52C4 43B7<
R4502 0 5% 1/16W MF 402 — 43B6<> ASH — NO_TEST — R4505 0 5% 1/16W MF 402 — M1L
L59 1000-OHM-EMI SM

39B4< VREFP — Q33 2N3904 SM — 1 B, 2 E, 3 C

U13 TLV2362 SOI
MIC5
C550 1UF 10% 10V X5R 603
R498 47.5K 1% 1/16W MF 402

L83 1000-OHM-EMI SM
59A8> 58A5> 29A5<> MICSHLD — 1 — 2 MIC1S1
R4503 0 5% 1/16W MF 402 — KAVAN — 43B6<> NO_TEST — R4506 0 5% 1/16W MF 402 — M1S
R487 0 5% 1/16W MF 402
52C4 42A6<> 42A5<> 41D3< 41C3< 41B3< 41B1< 41A4< 41A2<> 40C6< 40B6< 35B1< 40B5<> 35C1<>

40B3< OPA_VREF
39D6< 39A7<> 40C2< OPA_STAR_GND

PLACE R4501, R4502 AND R4503 NEAR AUDIO

PLACE R4504, R4505 AND R4506 NEAR KITCHENSINK

MIC PREAMP

APPLE COMPUTER INC.

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PMU SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
341S1008	1	PMU,M16C62,64KB,PRMGD	U26		
525-0057	1	CONN,BATTERY HOLDER	BT1		

AGP_RESET_L IS USED AS MAIN_RESET_L FOR SIL1162
THROUGH R1027 AND IS NOT USED IN ANY OTHER DEVICE

IIC BUS PULLUPS

PMU NOT RATED STRONG ENOUGH FOR 1K
MAIN RAIL, TO PREVENT LEAKAGE INTO UNPOWERED DEVICES

PMU POWER MGR

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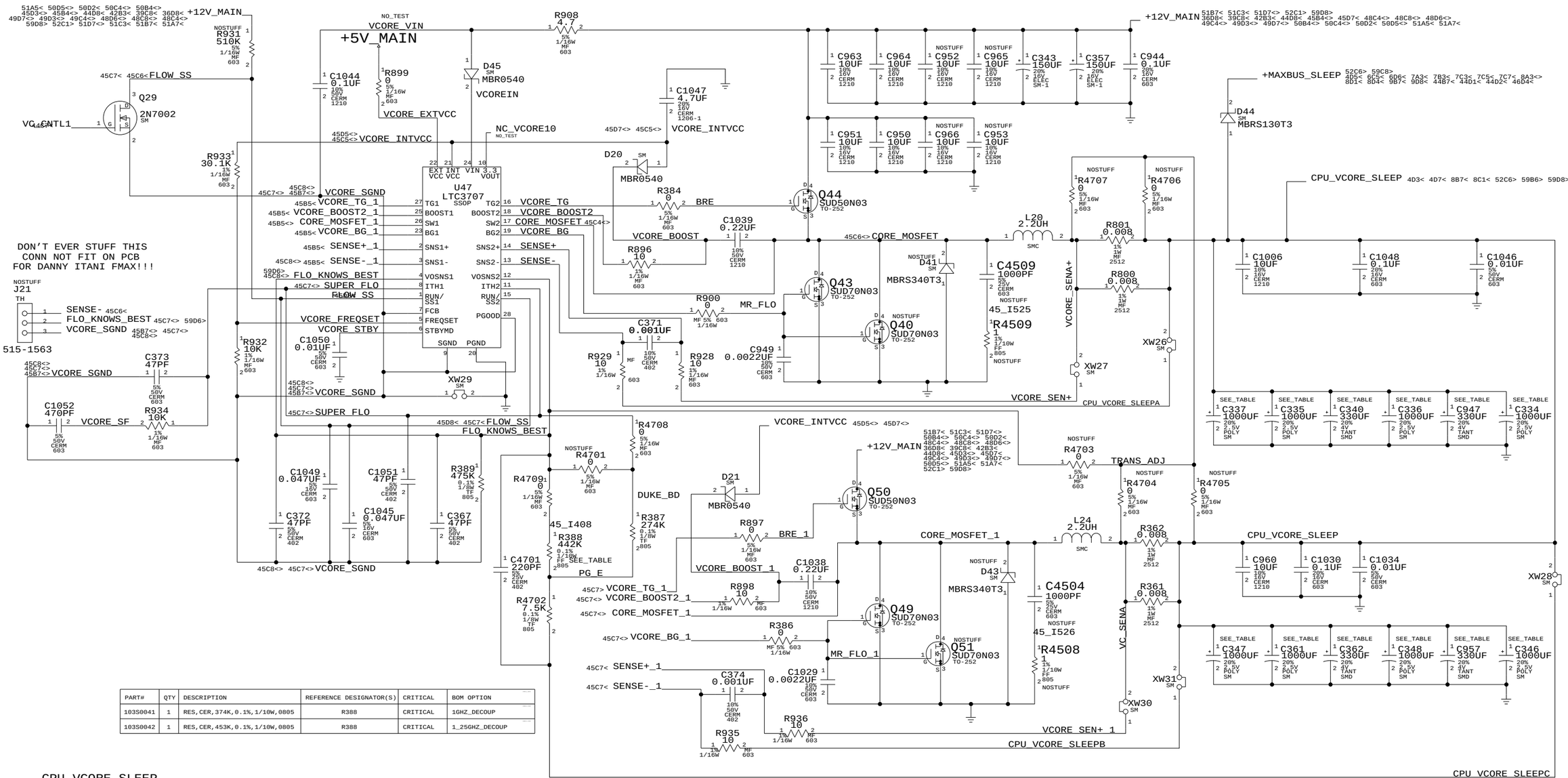

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
103S0041	1	RES,CER,374K,0.1%,1/10W,0805	R388	CRITICAL	1GHZ_DECOUP
103S0042	1	RES,CER,453K,0.1%,1/10W,0805	R388	CRITICAL	1_25GHZ_DECOUP

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
128S0012	4	CAP,TANT,POLY,330UF,4.0V,D4	C340,C947,C362,C957	1_25GHZ_DECOUP
128S0410	8	CAP,TANT,POLY,1000UF,2.5V,D4	C337,C335,C336,C334,C347,C361,C348,C346	1_25GHZ_DECOUP
128S0022	12	CAP,EL,POLY,220UF,20%,2V	C337,C335,C336,C334,C347,C361,C348,C346,C340,C947,C362,C957	1GHZ_DECOUP

KUMA SERVER(1):HARDWARE:KUMA DESIGNS:KUMA POWER SUPPLIES:VCORE WITH AVP TABLES

CPU & AGP VREGS

APPLE COMPUTER INC.

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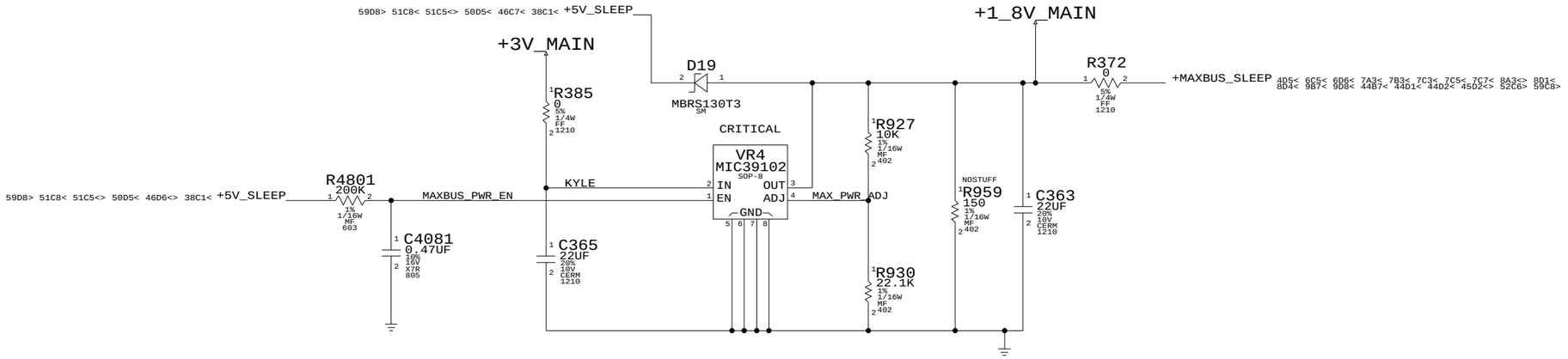
INTREPID MAXBUS & CPU OVDD POWER CONVERTER

(OFF DURING SLEEP)

+MAXBUS_SLEEP 1.8V,+/-2%,.606W

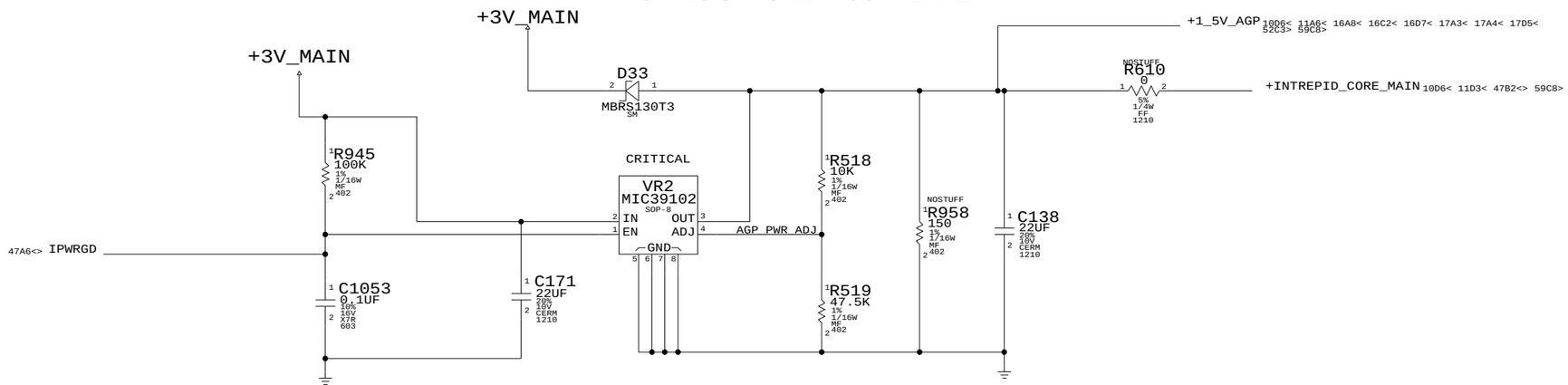


MAXBUS I/O SUPPLY SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S4754	1	RES,FF,47.5K-OHM,1%	R930		MAXIO_1'50V
114S3014	1	RES,FF,30.1K-OHM,1%	R930		MAXIO_1'65V
114S2674	1	RES,FF,26.7K-OHM,1%	R930		MAXIO_1'70V
114S2214	1	RES,FF,22.1K-OHM,1%	R930		MAXIO_1'80V *

+1_5V_AGP 1.5V,+/-5%,.6W

AGP I/O POWER CONVERTER



AGP I/O SUPPLY SUPPORT

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S4754	1	RES,FF,47.5K-OHM,1%	R519		AGPIO_1'50V *
114S3014	1	RES,FF,30.1K-OHM,1%	R519		AGPIO_1'65V
114S2674	1	RES,FF,26.7K-OHM,1%	R519		AGPIO_1'70V
114S2214	1	RES,FF,22.1K-OHM,1%	R519		AGPIO_1'80V

CPU & AGP VREGS

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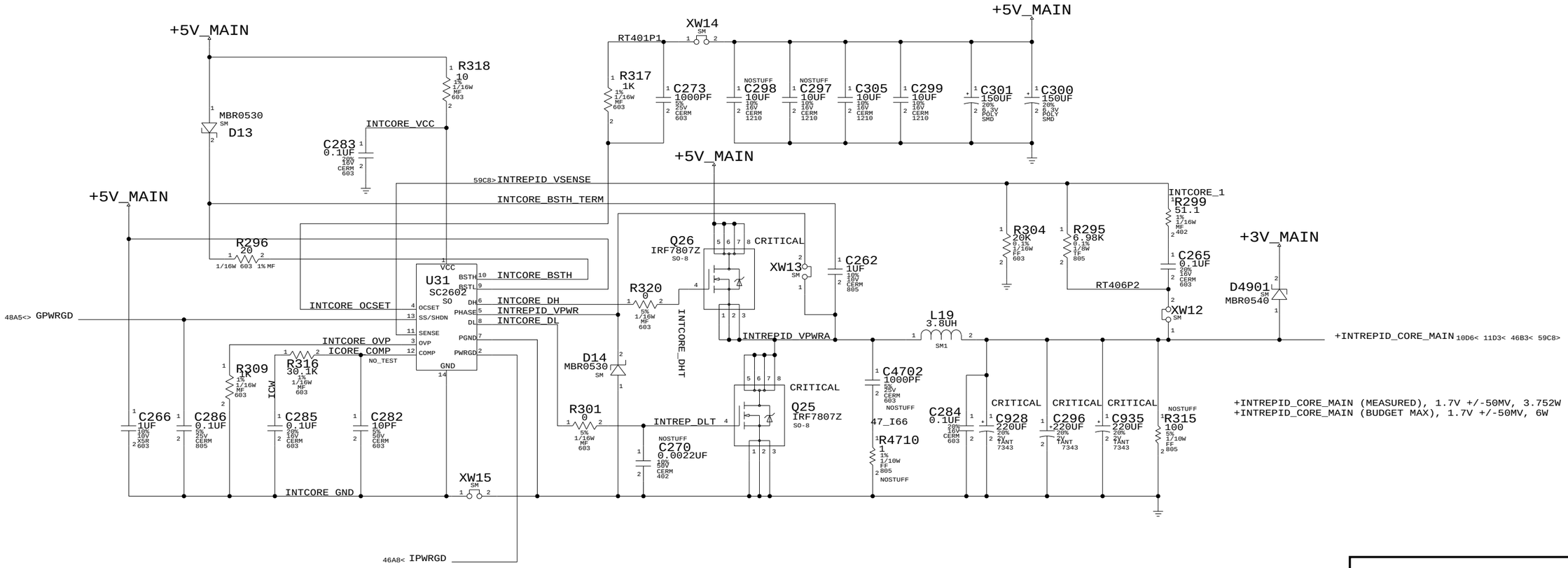

TABLES FOR INTREPID CORE RESISTOR VALUES TO VOLTAGES ARE LOCATED AT
KUMA SERVER(1):HARDWARE:KUMA DESIGNS;KUMA POWER SUPPLIES;ICORE R TOLERANCE

INTREPID CORE

APPLE COMPUTER INC.

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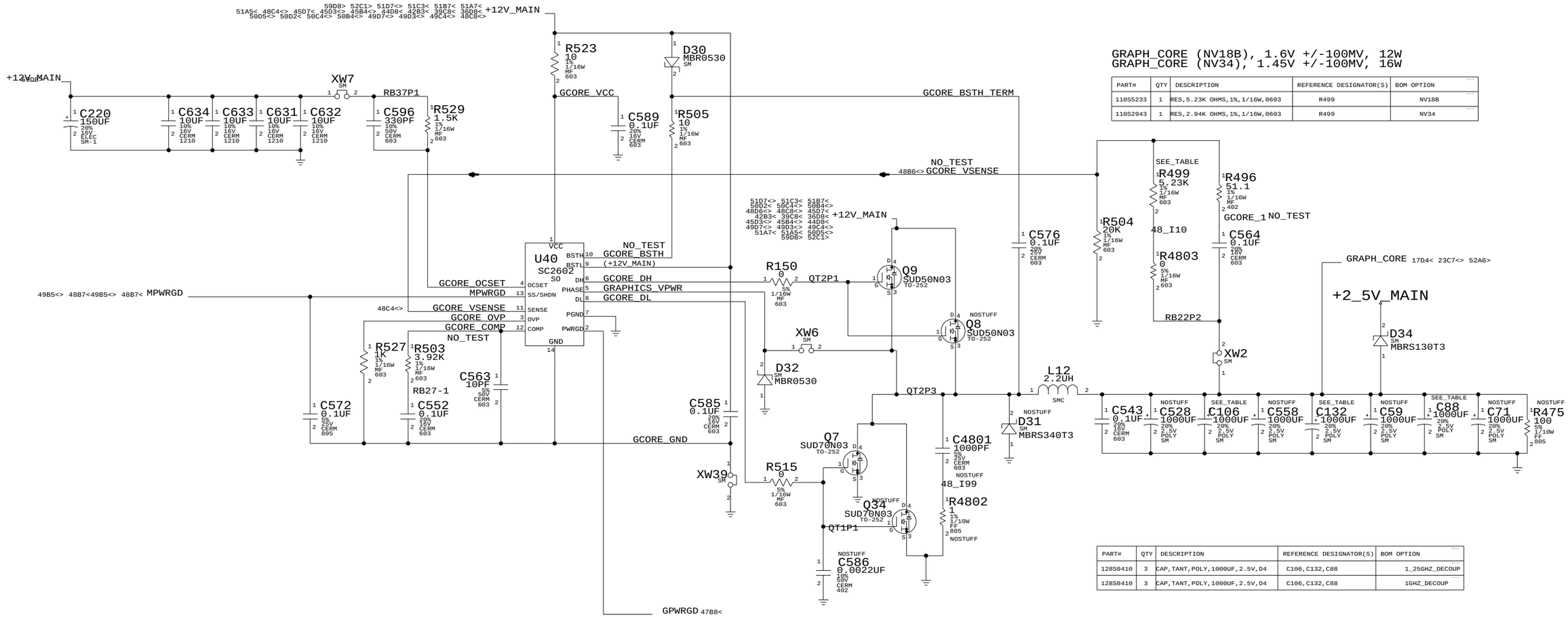

GRAPHICS CORE

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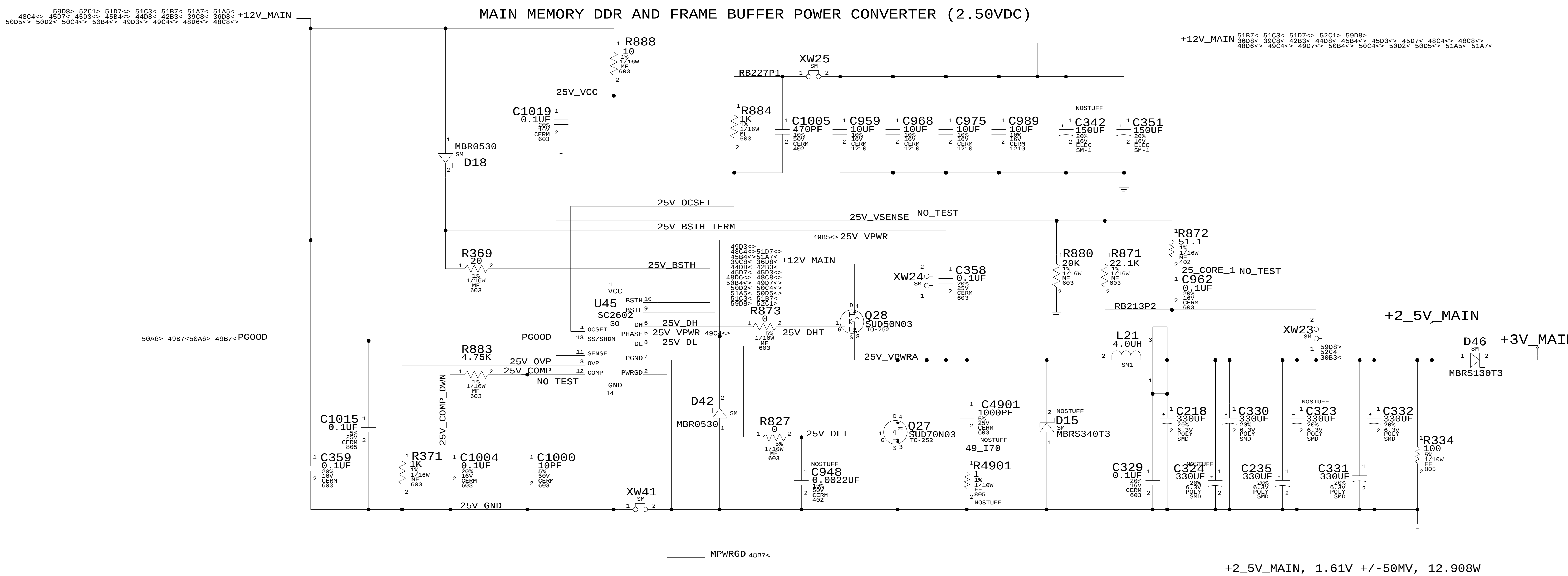
MAIN MEMORY DDR AND FRAME BUFFER POWER CONVERTER (2.50VDC)



MEMORY PS

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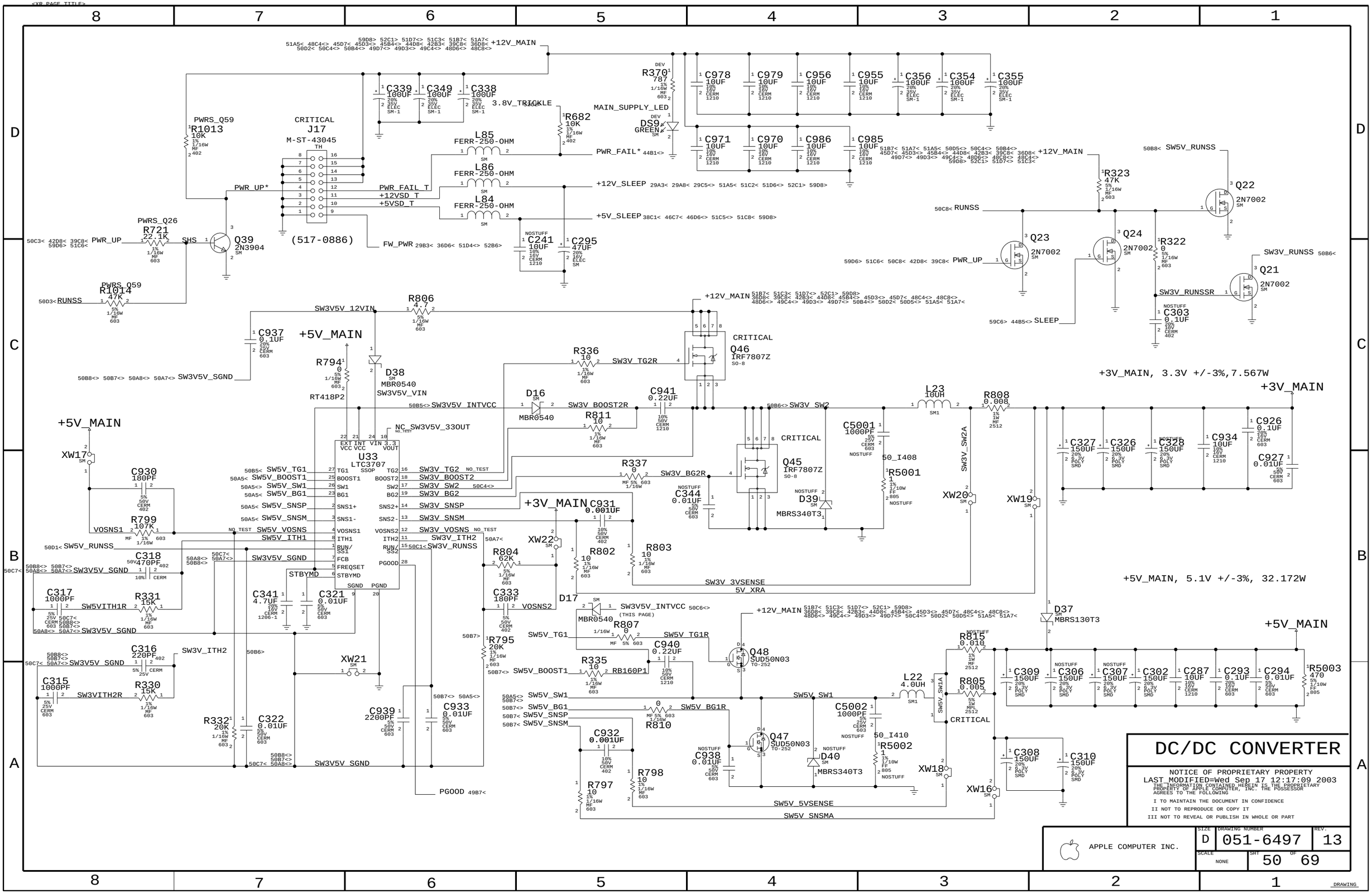

+12V MAIN POWER SWITCH
(OFF DURING SLEEP)

50B4<> 49D7<> 49D3<> 49C4<> 51B7< 45B4<> 44D8< 42B3< 39C8< 36D8< 48D6<> 48C8<> 48C4<> 45D7< 45D3<> 51A7< 51A5< 50D5<> 50D2< 50C4<> 59D8> 52C1> 51C3< +12V_MAIN

R769 470K 5% 1/16W MF 402

Q20 FDC602P SOT-6

+12V_SLEEP 29A3< 29A8< 29C5<> 50D5< 51A5< 51C2< 52C1> 59D8>

C915 0.01UF CERM 10% 16V 402

C918 0.0022UF 10% 50V CERM 402

C269 47UF 20% 16V ELEC SM

SW12V_SLEEP

R770 100K 1% 1/16W MF 402

SW12V_SL

Q14 2N7002 SM

51B6< SLEEP_OFF_L

R739 0 5% 1/16W MF 402

PWR_UP 39C8< 42D8< 50C3< 50C8< 59D6>

FIREWIRE POWER SWITCH
EVALUATE CIRCUIT FOR SURGE PROTECTION FOR Q59C

52B6> 50C6<> 36D6< 29B3< FW_PWR

FW_12V U35 SI4435DY SOI

FW_PWR_SW 36D6< 52B6>

C19 47UF 20% 25V ELEC SM

FW_12V C18 0.01UF CERM 5% 50V 603

C473 0.0022UF 10% 50V CERM 402

Q42P4

FW_12V R23 470K 5% 1/16W MF 603

+5V_MAIN

R21 100K 5% 1/16W MF 603

Q1P3

FW_12V R22 10K 1% 1/16W MF 603

Q1 2N7002 SM

Q1P1

+3.3VFPD (3_6V_SLEEP), 3.6V +/-50MV, 3.32W

TMDS POWER CONVERTER & SWITCH
(OFF DURING SLEEP)

VOLTAGE TO SUPPORT 3.3V AT PANEL
VOLTAGE HERE WILL EXCEED 3.3V

59D8> 52C1> 51D7<> 51B7< 51A7< 51A5< 48C8<> 48C4<> 45D7< 45D3<> 45B4<> 44D8< 42B3< 39C8< 36D8< +12V_MAIN 50D5<> 50D2< 50C4<> 50B4<> 49D7<> 49D3<> 49C4<> 48D6<>

FPD_12VM R1017 0 5% 1/8W FF 1206

+12V_SLEEP 29A3< 29A8< 29C5<> 50D5< 51A5< 51D6<> 52C1> 59D8>

FPD_12VS R1018 0 5% 1/8W FF 1206

FPD_3V3&FPD_12VM Q11 FDC602P SOT-6

+3.3VFPD 24D7< 52B6>

R5301 0 5% 1/16W MF 402 NOSTUFF

3_6V_SLEEP 37D1<

C254 10UF 10% 16V CERM 1210

+5V_MAIN

3_5 HONKER

+5V_MAIN

FPD_3V3 SENSE VR3 EZ1582 SM VPWR VOUT VCTRL VOUT ADJ TAB

52C4 51B4<> 59D8>

59D8> 52C4 51B4<>

R251 102 1% 1/16W MF 402

HONK_ADJ

R601 182 1% 1/16W MF 402

FPD_3V3 C246 150UF 20% 6.3V POLY SMD

FPD_3V3&FPD_12VM C257 0.01UF 402 10% 16V CERM

FPD_3V3&FPD_12VM C252 0.0022UF 10% 50V CERM 402

SWITCH5V_6

R278 100K 1% 1/16W MF 402 FPD_3V3&FPD_12VM

R277 10K 1% 1/16W MF 402 FPD_3V3&FPD_12VM

R279 10K 1% 1/16W MF 402

SWITCH5V_5

TMDS_EN 23D7<>

C654 10UF 10% 16V CERM 1210

C653 10UF 10% 16V CERM 1210

C236 0.022UF 10% 50V CERM 805

NOSTUFF C258 0.01UF 20% 16V CERM 402

R1012 100K 1% 1/16W MF 402 SEE_TABLE

CHOC_BROWNIE

FPD_12VS&FPD_12VM DZ1 1N5227B SOT23

FPD_PWR_ON

FPD_PWR_ON_T

R283 0 5% 1/16W MF 402

Q13 2N7002 SM

FPD_3V3&FPD_12VM

R284 100K 1% 1/16W MF 402

FPD_3V3&FPD_12VM

+5V POWER SWITCH
(OFF DURING SLEEP)

+5V_MAIN

Q037 FDC602P SOT-6

+5V_SLEEP 38C1< 46C7< 46D6<> 50D5< 51C8< 59D8>

C742 0.01UF CERM 10% 16V 402

C773 0.0022UF 10% 50V CERM 402

C238 150UF 20% 6.3V POLY SMD

SWITCH5V_4

R645 470K 5% 1/16W MF 402

R664 100K 1% 1/16W MF 402

SWITCH5V_3

R685 0 5% 1/16W MF 402

51C7< SLEEP_OFF_L

Q38 2N7002 SM

46D6<> 46C7< 38C1< +5V_SLEEP 59D8> 51C5<> 50D5<

DEV R300 330 5% 1/16W MF 402

RUNLED1

DEV DS5 GREEN SM

+5V POWER LED

+5V POWER, SLEEP & TESTPOINT LEDS
(TESTPOINT LED IS USED TO FOR SERVICE AND
IF NOT ILLUMINATED, TELLS USER ITS OK TO ADD MEMORY)

51C3< 51A7< 51A5< 50D5<> 49D3<> 49C4<> 48D6<> 45B4<> 44D8< 42B3< 39C8< 36D8< +12V_MAIN 48C8<> 48C4<> 45D7< 45D3<> 50D2< 50C4<> 50B4<> 49D7<> 59D8> 52C1> 51D7<>

R738 4.7K 5% 1/16W MF 402

LED_RET 29A3< 52B3>

Q017 2N7002 SM

CPU_SLEEPIN

Q15 2N7002

Q016 2N7002 SM

59D6> 44C7<> POWER_UP*

R741 47.5K 1% 1/16W MF 402

+3V_MAIN

DEV R302 330 5% 1/16W MF 402

SLEEPLED_TERM

DS6 GREEN SM DEV

SLEEP_LED_BD

50C4<> 50B4<> 49D7<> 49D3<> 52C1> 45D3<> 45B4<> 44D8< 42B3< 39C8< 36D8< +12V_MAIN 49C4<> 48D6<> 48C8<> 48C4<> 45D7< 51D7<> 51C3< 51B7< 51A5< 50D5<> 50D2< 59D8>

R740 10K 1% 1/16W MF 402

SLEEP2

Q019 2N7002 SM

R751 0 5% 1/16W MF 402

CPU_STATE_LED*

SLEEP1

Q018 2N7002 SM

SLEEP LED

44D6<> BT1

+5V_MAIN

+12V_MAIN

51B7< 51C3< 51D7<> 52C1> 59D8> 36D8< 39C8< 42B3< 44D8< 45B4<> 45D3<> 45D7< 48C4<> 48C8<> 48D6<> 49C4<> 49D3<> 49D7<> 50B4<> 50C4<> 50D2< 50D5<> 51A7<

+12V_SLEEP 29A3< 29A8< 29C5<> 50D5< 51C2< 51D6<> 52C1> 59D8>

NOSTUFF R615 0 5% 1/16W MF 402

NOSTUFF R607 0 5% 1/16W MF 402

NOSTUFF R609 0 5% 1/16W MF 402

NOSTUFF R608 0 5% 1/16W MF 402

RT373P1

R612 787 1% 1/16W MF 603

PWR_LED

NOSTUFF R614 470 5% 1/16W MF 402

BT1_LED

DS10 RED SM

JAZ1 A TH-TP50

GENERAL POWER LED
(NOT ILLUMINATED = OK TO ADD MEMORY)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S1005	1	RES,100K OHM,1%,1/16W,0402,SMD	R1012	FPD_12VM
116S1000	1	RES,0 OHM,5%,1/16W,0402,SMD	R1012	FPD_3V3

+5V/+12V, AUDIO FW & TMDS PWR

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CPU POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+MAXBUS_SLEEP	10	1.8	20
CPU_AVDD	10	1.85	20
CPU_VCORE_SLEEP	10	1.85	20

4D5< 6C5< 6D6< 7A3< 7B3< 7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7< 9D8< 44B7<
4D1< 44D2< 45D2<> 46D4< 59C8>
4D3<
4D3< 4D7< 8B7< 8C1< 45D2<> 59B6> 59D8>

ETHERNET POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
ENET_AVDD	10	2.5	20

35D2<> 35D4<>

FIREWIRE POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
FW_DIO_V	10	3.3	20
FW_DIODE_BYPASS_V	10	3.3	20
FW_PWR	10	24	20
FW_PWR_SW	10	24	20
FW_PHY_3_3	10	3.3	20
FW_VGND	10	0	20
FW_VP	10	12	20
FW_VP1	10	12	20
FW_VP2	10	12	20
FW_VP_1	10	12	20
FW_VP_2	10	12	20

36B6<
36B6<> 36B7<>
29B3< 36D6< 50C6<> 51D4<>
36D6< 51D2<>
36B5< 36B7< 36D7<

36D5<
36D1<> 36D3<>
36C1<> 36D3<>
36D4<
36D4<

GRAPHICS POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+3.3VFPD	10	3.6	20
DAC2VDD	10	3.3	20
DACVDD	10	3.3	20
DDC_VCC_3	10	3.3	20
DDC_VCC_5	10	5	20
DDR_VREF	10	1.25	20
IFP0AVCC	10	3.8	20
IFP0VREF	10	3.8	20
INT_TMDS_3V	10	3.6	20
GPU_AGP_VREF	10	0.75	20
GPU_FB_VREF	10	1.25	20
GRAPH_CORE	10	1.6	20
NVPLLVDD	10	3.3	20
SGRAVREF	10	1.25	20
SGRBVREF	10	1.25	20

24D7< 51C1<>
22C5<
22C4<
24B3<> 59B8>
25C4< 59B8>
12A7< 14D2<> 14D8<> 15D8<
23A6< 23C1<
23B4<>
24C3<> 59C8>
17A2< 17A8<
18C8<
17D4< 23C7<> 48C2<>
22D5<
20A3< 20C4< 20C8<
21A3< 21C4< 21C8<

17B5<> GPU_50PULLUP 1.5
17A5<> GPU_50PULLDWN 0
17A5< GPU_TMODE 0

22B2< 22A5< GPU_XTALSSIN 0
22D4< VIPCLK 0

37B7< CSLOT_IOWAIT_L 3.3
38C6<> EIDE_CSELP_L 0
38C6<> EIDE_IOCS16_L 5
38C2<> UIDE_CSELP_L 0
38C2<> UNUSED_ATAIOCS16_L 5

INTREPID POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+1_5V_INTREPID_PLL	10	1.5	20
+1_5V_INTREPID_PLL1	10	1.5	20
+1_5V_INTREPID_PLL2	10	1.5	20
+1_5V_INTREPID_PLL3	10	1.5	20
+1_5V_INTREPID_PLL4	10	1.5	20
+1_5V_INTREPID_PLL5	10	1.5	20
+1_5V_INTREPID_PLL6	10	1.5	20
+1_5V_INTREPID_PLL7	10	1.5	20
+1_5V_INTREPID_PLL8	10	1.5	20
+1_5V_AGP	10	1.5	20
INT_AGP_VREF	10	0.75	20

9D4< 16D6< 28D6<> 30D5<
28C4<
28D4<
28D4<
28D4<
16D5<
30D4<
9D2<
28D4<
10D6< 11A6< 16A8< 16C2< 16D7< 17A3< 17A4< 17D5< 46B4<> 59C8>
16A7< 16C6<>

MAIN POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+1_8V_MAIN	10	1.8	20
+2_5V_MAIN	10	2.5	20
+3V_MAIN	10	3.3	20
3.8V_TRICKLE	10	3.8	20
+5V_MAIN	10	5	20
+12V_MAIN	10	12	20
+12V_SLEEP	10	12	20
GND	10	0	20
AGND	10	0	20
ANALOGGND	10	0	20
ALTCHGND	10	0	20
CHGND	10	0	20

59D8>
59D8> 49B2<> 30B3<
43C7< 42C8< 42B7< 42B5< 41A7< 41A5< 40D5< 39D4<
59D8>
59D8> 51B4<>
39B7<>
41B3< 41B1<> 41A4< 41A2<> 40C6< 40B6< 40B5<> 35C1<> 35B1<
43A5< 42A6<> 42A5<> 41D3< 41C3<
36B2< 36A7<> 33D4< 33D2< 33C4< 33C2< 33B4< 33B2< 29C3< 25B3<>
36C1< 36C1<> 36B6<> 36B6<
43B7< 43A7< 29A3< 24B3<

+1_8V_MAIN
+2_5V_MAIN
+3V_MAIN
3.8V_TRICKLE
+5V_MAIN
+12V_MAIN
+12V_SLEEP
ALT CHASSIS

36D8< 44C2< 44C6< 44D7<> 50D5< 52C2>
59D8< 44C2< 44C6< 44D7<> 50D5< 52C1>
59D8>
59D8>
59D8>
59D8>
59D8>
59D8>
59D8>
59D8>
59D8>
51D6<> 52C1>
51A5< 51C2<
29C5<> 50D5<
29A3< 29A8<
29A3< 29A8< 29C5<> 50D5<
51A5< 51C2< 51D6<> 52C1>

PMU POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
3.8VH_TRICKLE	10	3.8	20
PMU_AVCC	10	3.5	20
PMU_POWER	10	3.5	20

44C1< 44D7<>
44B5< 44D4<> 59C6>
29C3<> 44A5<> 44B1< 44C2< 44D5<>

SYSTEM POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+12VSD_FILT	10	12	20
FAN_12V_FILT	10	12	20
KS5VSD	10	5	20
LED_5V	10	5	20
LED_5V_FILT	10	5	20
LED_RET	10	0	20
LED_RET_FILT	10	0	20

29A5<>
29A5<> 59C8>
29A5<> 59A8>
29A8<
29A5<> 59A8>
29A3< 51B6<
29A5<> 59A8>

USB POWER CONSTRAINT TABLE

SIG_NAME	MIN_NECK_WIDTH	VOLTAGE	MIN_LINE_WIDTH
+3V_INTREPID_USB	10	3.3	20
NEC_AVDD	10	3.3	20
USB_GND	10	0	20
USB_PORT_PWR	10	5	20
USB_PWR	10	5	20

28C4<
32D5<
33A4<> 33B3<> 33C3<>
33D3<> 59B6>
25B5<> 25C2< 25D3<> 33A6<>

POWER CONSTRAINTS

APPLE COMPUTER INC.
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SIG_NAME	RATSNEST_SCHEDULE RELATIVE_PROPAGATION_DELAY	MAX_VIAS	PROPAGATION_DELAY	STUB_LENGTH	MIN_NECK_WIDTH NET_SPACING_TYPE	MAX_EXPOSED_LENGTH	NO_TEST	FUNC_TEST	PULSE_PARAM
MEM_DATA<0..63>	MEM_GROUP0:G:L:S:0:150	8	L:S::1300		3				167 MHZ
RAM_DATA_A<0..63>	RAM_GROUP0_A:G:L:S:0:180	8	L:S::1800		3				167 MHZ
RAM_DATA_B<0..63>	RAM_GROUP0_B:G:L:S:0:180	2	L:S::2400		3				167 MHZ
MEM_DQS<0..7>	MEM_GROUP0:G:L:S:0:180	3	L:S::1300		3				167 MHZ
RAM_DQS_A<0..7>	RAM_GROUP0_A:G:L:S:0:180	3	L:S::1700		3				167 MHZ
RAM_DQS_B<0..7>	RAM_GROUP0_B:G:L:S:0:180	2	L:S::2400		3				167 MHZ
MEM_DQM<0..7>	MEM_GROUP0:G:L:S:0:180	3	L:S::1300		3				167 MHZ
RAM_DQM_A<0..7>	RAM_GROUP0_A:G:L:S:0:180	3	L:S::1800		3				167 MHZ
RAM_DQM_B<0..7>	RAM_GROUP0_B:G:L:S:0:180	2	L:S::2400		3				167 MHZ
MEM_ADDR<0..12>	MEM_ADDR:G:L:S:0:200	3	L:S::600						
RAM_ADDR<0..12>	RAM_ADDR:G:L:S:0:1300	4	L:S::3500	200					
MEM_BA<0..1>	MEM_ADDR:G:L:S:0:1300	3	L:S::600						
RAM_BA<0..1>	RAM_ADDR:G:L:S:0:1300	4	L:S::4000	200					
MEM_CS_L<0..3>	MEM_ADDR:G:L:S:0:200	3	L:S::600		10 MIL SPACING				
RAM_CS_L<0..1>	RAM_CS_GROUP0:G:L:S:0:400	3	L:S:2000:3500		10 MIL SPACING				
RAM_CS_L<2..3>	RAM_CS_GROUP1:G:L:S:0:350	2	L:S:2000:3500		10 MIL SPACING				
MEM_RAS_L	MEM_ADDR:G:L:S:0 MIL:200 MIL	3	L:S::600 MIL						
MEM_CAS_L	MEM_ADDR:G:L:S:0 MIL:200 MIL	3	L:S::600 MIL						
MEM_WE_L	MEM_ADDR:G:L:S:0 MIL:280 MIL	3	L:S::600 MIL						
RAM_CAS_L	RAM_ADDR:G:L:S:0 MIL:2000 MIL	4	L:S::4000 MIL	200					
RAM_RAS_L	RAM_ADDR:G:L:S:0 MIL:2000 MIL	4	L:S::4000 MIL	200					
RAM_WE_L	RAM_ADDR:G:L:S:0 MIL:2000 MIL	4	L:S::4000 MIL	200					
MEM_CKE<0..3>	MEM_ADDR:G:L:S:0:200	3	L:S::600		10 MIL SPACING				
RAM_CKE<0..1>	RAM_CS_GROUP0:G:L:S:0:400	3	L:S::2500		10 MIL SPACING				
RAM_CKE<2..3>	RAM_CS_GROUP1:G:L:S:0:350	2	L:S::2500		10 MIL SPACING				
MEM_MUXSEL_H<0..1>		3	L:S::1000						
MEM_MUXSEL_L<0..1>		3	L:S::1000						167 MHZ
MUX_SEL_H		4	L:S::2000 MIL	200					167 MHZ
MUX_SEL_L		4	L:S::2000 MIL	200					167 MHZ
SYSCLK_DDRCLK_A0_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A0_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A0	SYSCLK_DDRCLKA0:G:L:S:0 MIL:100 MIL	3	L:S::2600 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A0_L	SYSCLK_DDRCLKA0:G:L:S:0 MIL:100 MIL	3	L:S::2600 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A1_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A1_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A1	SYSCLK_DDRCLKA1:G:L:S:0 MIL:100 MIL	3	L:S::2600 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A1_L	SYSCLK_DDRCLKA1:G:L:S:0 MIL:100 MIL	3	L:S::2600 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A2_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A2_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_A2_L		3	L:S::750 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B0_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B0_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B0	SYSCLK_DDRCLKB0:G:L:S:0 MIL:100 MIL	3	L:S::3500 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B0_L	SYSCLK_DDRCLKB0:G:L:S:0 MIL:100 MIL	3	L:S::3500 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B1_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B1_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B1	SYSCLK_DDRCLKB1:G:L:S:0 MIL:100 MIL	3	L:S::3500 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B1_L	SYSCLK_DDRCLKB1:G:L:S:0 MIL:100 MIL	3	L:S::3200 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B2_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B2_UF		L3	S:500 MIL:850 MIL		8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B2	SYSCLK_DDRCLKB2:G:L:S:0 MIL:100 MIL	3	L:S::3500 MIL	200	8 MIL SPACING	270			167 MHZ
SYSCLK_DDRCLK_B2_L	SYSCLK_DDRCLKB2:G:L:S:0 MIL:100 MIL	3	L:S::3500 MIL	200	8 MIL SPACING	270			167 MHZ
INT_REF_CLK_IN_PD		8	L:S::2500 MIL		10 MIL SPACING	270			66.56 MHZ
PCI_AD<31..0>	MIN_DAISY_CHAIN	6	L:S:6000:8000	500					33 MHZ
PCI_CBE<3..0>	MIN_DAISY_CHAIN	6	L:S:6000:8000	500					33 MHZ
PCI_FRAME_L	MIN_DAISY_CHAIN	L7	S:6000 MIL:8000 MIL	500					33 MHZ

DIGITAL SIGNAL CONSTRAINTS

SIGNAL CONSTRAINTS

APPLE COMPUTER INC.
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<XR_PAGE_TITLE>

SIG_NAME	RATSNEST_SCHEDULE	MAX_VIAS	PROPAGATION_DELAY	STUB_LENGTH	NET_SPACING_TYPE	MAX_EXPOSED_LENGTH	DIFFERENTIAL_PAIR	FUNC_TEST	PULSE_PARAM	
	RELATIVE_PROPAGATION_DELAY									
32B6<> 31B7< 30C5<> 30B7< PCI_IRDY_L	MIN_DAISY_CHAIN	6	S:6000 MIL:8000 MIL	50					33 MHZ	11
59A6> 32B6<> 31B7< 30C5<> 30B7< PCI_TRDY_L	MIN_DAISY_CHAIN	6	S:6000 MIL:8000 MIL	50					33 MHZ	12
59A6> 32B6<> 31B7< 30C5<> 30B7< PCI_DEVSEL_L	MIN_DAISY_CHAIN	6	S:6000 MIL:8000 MIL	50					33 MHZ	13
59A6> 32B6<> 31B7< 30C5<> 30B7< PCI_STOP_L	MIN_DAISY_CHAIN	6	S:6000 MIL:8000 MIL	50					33 MHZ	14
59A6> 32B6<> 31B7< 30C5<> PCI_PAR	MIN_DAISY_CHAIN	6	S:6000 MIL:8000 MIL	50					33 MHZ	15
30D5<> CLK33M_PCI_SLOTB_UF		8	S:600 MIL:1000 MIL	200		450			33 MHZ	16
30D5<> CLK33M_PCI_SLOTC_UF		8	S:600 MIL:1200 MIL	200		450			33 MHZ	17
30D5<> CLK33M_PCI_SLOTD_UF		8	S:600 MIL:1000 MIL	200		450			33 MHZ	18
59A6> 31C2<> 30D7< CLK33M_PCI_SLOTB		5	S:3000 MIL:4000 MIL	200	10 MIL SPACING	450			33 MHZ	19
30C5<> INT_PCI_FB_OUT		4	L:S::1000 MIL	200		450			33 MHZ	110
30D8< PCI_FBO_PLUS2		4	L:S::200 MIL	200		450			33 MHZ	111
30C8< PCI_FB_PLUS4		4	S:1900 MIL:2000 MIL			450			33 MHZ	112
30C8< PCI_FBI_PLUS2		4	S:1900 MIL:2000 MIL	200		450			33 MHZ	113
30C7< PCI_FBI_EQUAL		4	S:2000 MIL:3000 MIL	200		450			33 MHZ	114
30C7< PCI_FB_PLUS6		4	S:5900 MIL:6000 MIL			450			33 MHZ	115
30C5< INT_PCI_FB_IN		4	L:S::1080 MIL	200		450			33 MHZ	116
31C6< 31C3<> 31C2<> 31B7< 31B6< 31B3<> 31B2<> PCIT_AD<31..0>		3	L:S::1000						33 MHZ	117
59C3> 59B3> 31C7< 59A6> 31C3<> 31B6< 31B2<> PCIT_CBE<31..0>		3	L:S::1000						33 MHZ	118
31C2<> 31B6< PCIT_FRAME_L		3	L:S::1000 MIL						33 MHZ	119
59B6> 31C3<> 31B6< PCIT_IRDY_L		3	L:S::1000 MIL						33 MHZ	120
31C2<> 31B6< PCIT_TRDY_L		3	L:S::1000 MIL						33 MHZ	121
31C2<> 31B6< PCIT_DEVSEL_L		3	L:S::1000 MIL						33 MHZ	122
31C2<> 31B6< PCIT_STOP_L		3	L:S::1000 MIL						33 MHZ	123
31C2<> 31B6< PCIT_PAR		3	L:S::1000 MIL						33 MHZ	124
17D8< 17C8< 16C4<> AGP_AD<0..15>	AGP_GROUP0:G:L:S:0:280	5	L:S::4500						266 MHZ	125
17C8< 16B4<> AGP_CBE<0..1>	AGP_GROUP0:G:L:S:0:330	5	L:S::4500						266 MHZ	126
17B8< 16B3< 16A4<> AGP_AD_STB<0>	AGP_GROUP0:G:L:S:0 MIL:330 MIL	4	L:S::4400 MIL	200	8 MIL SPACING	500	AGP_ADSTBDP0		133 MHZ	127
17B8< 16D1< 16A4<> AGP_AD_STB_L<0>	AGP_GROUP0:G:L:S:0 MIL:330 MIL	4	L:S::4400 MIL	200	8 MIL SPACING	500	AGP_ADSTBDP0		133 MHZ	128
17C8< 16C4<> 16B4<> AGP_AD<16..31>	AGP_GROUP0:G:L:S:0:280	5	L:S::4500						266 MHZ	129
17C8< 16B4<> AGP_CBE<2..3>	AGP_GROUP0:G:L:S:0:280	5	L:S::4500						266 MHZ	130
17B8< 16B3< 16A4<> AGP_AD_STB<1>	AGP_GROUP0:G:L:S:0 MIL:280 MIL	4	L:S::4400 MIL	200	8 MIL SPACING	500	AGP_ADSTBDP1		133 MHZ	131
17B8< 16D1< 16A4<> AGP_AD_STB_L<1>	AGP_GROUP0:G:L:S:0 MIL:330 MIL	4	L:S::4400 MIL	200	8 MIL SPACING	500	AGP_ADSTBDP1		133 MHZ	132
17B8< 16C3< 16B4<> AGP_FRAME_L		5	S:4000 MIL:4500 MIL						66 MHZ	133
17B8< 16C3< 16B4<> AGP_IRDY_L		5	S:4000 MIL:4500 MIL						66 MHZ	134
17B8< 16B4<> 16B3< AGP_TRDY_L		5	S:4000 MIL:4500 MIL						66 MHZ	135
17B8< 16C3< 16B4<> AGP_DEVSEL_L		5	S:4000 MIL:4500 MIL						66 MHZ	136
17B8< 16B4<> 16B3< AGP_STOP_L		5	S:4000 MIL:4500 MIL						66 MHZ	137
17B8< 16B4<> AGP_PAR		5	S:4000 MIL:4500 MIL						66 MHZ	138
17A8< 16C1< 16B4< 16B4<> 16B1< 16A4<> AGP_SBA<0..7>		5	L:S:4000:4500							139
17B8< 16B3< 16A4<> AGP_SB_STB	AGP_GROUP99:G:L:S:0 MIL:200 MIL	5	L:S::4500 MIL				AGP_SBSTBB			140
17A8< 16D1< 16A4<> AGP_SB_STB_L	AGP_GROUP99:G:L:S:0 MIL:200 MIL	5	L:S::4500 MIL				AGP_SBSTBB			141
17B6< 16B1< 16A4<> AGP_ST<0..2>		5	L:S:4500:5000							142
17B8< 16B3< 16A4<> AGP_PIPE_L		5	S:4000 MIL:4500 MIL							143
17B8< 16B3< 16A4<> AGP_RBF_L		5	S:4000 MIL:4500 MIL							144
17B7<> 16C4<> 16C3< AGP_REQ_L		5	S:4500 MIL:5000 MIL							145
17B7< 16C4<> 16C3< AGP_GNT_L		5	S:4500 MIL:5000 MIL							146
17B8< 16B1< 16A6<> AGP_WBF_L		5	S:4000 MIL:4500 MIL							147
17A8> 16D3< 16D1< 16C6<> AGP_BUSY_L		5	S:4500 MIL:5000 MIL							148
17A8< 16D3< 16C6<> STOP_AGP_L		5	S:4500 MIL:5000 MIL							149
17D7<> 17D6<> 17C6<> GPU_AGP_AD<0..15>	GPU_AGP_GROUP0:G:L:S:0:100	3	L:S::600						266 MHZ	150
17C6<> GPU_AGP_CBE<0..1>	GPU_AGP_GROUP0:G:L:S:0:100	3	L:S::600						266 MHZ	151
AGP_AD_STB_GPUF<0>	GPU_AGP_STB0:G:L:S:0 MIL:50 MIL	3	L:S::450 MIL		8 MIL SPACING	500	GPU_ADSTBDP0		133 MHZ	152
AGP_AD_STB_L_GPUF<0>	GPU_AGP_STB0:G:L:S:0 MIL:50 MIL	3	L:S::800 MIL		8 MIL SPACING	500	GPU_ADSTBDP0		133 MHZ	153
17C6<> GPU_AGP_AD<16..31>	GPU_AGP_GROUP1:G:L:S:0:100	3	L:S::600						266 MHZ	154
17C6<> GPU_AGP_CBE<2..3>	GPU_AGP_GROUP1:G:L:S:0:100	3	L:S::600						266 MHZ	155
AGP_AD_STB_GPUF<1>	GPU_AGP_STB1:G:L:S:0 MIL:50 MIL	3	L:S::800 MIL		8 MIL SPACING	500	GPU_ADSTBDP1		133 MHZ	156
AGP_AD_STB_L_GPUF<1>	GPU_AGP_STB1:G:L:S:0 MIL:50 MIL	3	L:S::800 MIL		8 MIL SPACING	500	GPU_ADSTBDP1		133 MHZ	157
17B6<> GPU_AGP_FRAME_L		3	L:S:300 MIL:600 MIL						66 MHZ	158
17B6<> GPU_AGP_IRDY_L		3	L:S:300 MIL:600 MIL						66 MHZ	159
17B6<> GPU_AGP_TRDY_L		3	L:S:300 MIL:600 MIL						66 MHZ	160
17B6<> GPU_AGP_DEVSEL_L		3	L:S:300 MIL:600 MIL						66 MHZ	161
17B6<> GPU_AGP_STOP_L		3	L:S:300 MIL:600 MIL						66 MHZ	162
17B6<> GPU_AGP_PAR		3	L:S:300 MIL:600 MIL						66 MHZ	163
17A6<> GPU_AGP_SBA<0..7>		3	L:S:300:600							164
17B6<> GPU_AGP_SB_STB	GPU_AGP_SBSTB:G:L:S:0 MIL:50 MIL	3	L:S:300 MIL:600 MIL				GPU_SBSTBB			165
17A6<> GPU_AGP_SB_STB_L	GPU_AGP_SBSTB:G:L:S:0 MIL:50 MIL	3	L:S:300 MIL:600 MIL				GPU_SBSTBB			166
17B6<> GPU_AGP_PIPE_L		3	L:S:300 MIL:600 MIL							167
17B6<> GPU_AGP_RBF_L		3	L:S:300 MIL:600 MIL							168
16C6<> CLK66M_GPU_UF		3	S:1000 MIL:1100 MIL		10 MIL SPACING	250			66 MHZ	
17C7< 16D8< CLK66M_GPU_AGP		4	S:3700 MIL:3900 MIL	200	10 MIL SPACING	250			66 MHZ	170
16C6<> INT_AGP_FB_OUT		4	S:1400 MIL:1500 MIL	200		250			66 MHZ	171
16B7< AGP_FBO_EQUAL		4	S:900 MIL:1080 MIL	200		250			66 MHZ	172
16B8< AGP_FB_PLUS2		4	S:1900 MIL:2000 MIL			250			66 MHZ	173
16C7< AGP_FBI_EQUAL		4	L:S::200 MIL	200		250			66 MHZ	174
16C6< INT_AGP_FB_IN		4	L:S::1200 MIL	200		250			66 MHZ	175
30C5<> 30A7< 16D7< INT_ROM_OVERLAY_PU		3	S:600 MIL:800 MIL		10 MIL SPACING	250			66 MHZ	176
59A8> 56B3> 16C7> 9B4< 8A2< INT_ANALYZER_CLK		3	L:S::2800 MIL		8 MIL SPACING	250			166 MHZ	177
										178
32A6< 30D7< CLK33M_PCI_SLOTD		4	S:3000 MIL:3500 MIL	200	8 MIL SPACING	250			33 MHZ	179

SIGNAL CONSTRAINTS

LAST_MODIFIED=Wed Sep 17 12:12:37 2003

APPLE COMPUTER INC.

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DIGITAL SIGNALS

RATSNEST_SCHEDULE

GROUP	SIG_NAME	RELATIVE_PROPAGATION_DELAY	MAX VIAS	PROPAGATION_DELAY	STUB_LENGTH	NET_SPACING_TYPE	MAX EXPOSED LENGTH	PULSE PARAM	
	FBD<0..63>	GPU_FBDATA_A:G:L:S:0:225	2	L:S::800				300 MHZ	18E8<> 18F8<> 18G8<> 19C5< 19C8< 19D5< 19D8<
	RFBD<0..63>	RAM_FBDATA_A:G:L:S:0:300	2	L:S::1000				300 MHZ	19C4< 19C7< 19D4< 19D7< 20B1<> 20B5<> 20C1<> 20C5<>
	FBDQM<0..7>	GPU_FBDQM_A:G:L:S:0:200	2	L:S::800				300 MHZ	18D8> 18G3<
	RFBDQM<0..7>	RAM_FBDQM_A:G:L:S:0:200	2	L:S::1000				300 MHZ	18G2< 20C2< 20C6<
	FBA<0..12>	GPU_FBADDR_A:G:L:S:0:200	2	L:S::700				300 MHZ	18C8> 18D8> 18E3< 18F3<
	RFBA<0..11>	RAM_FBADDR_A:G:L:S:0:330	2	L:S::2400	2350			300 MHZ	18E2<> 18F2<> 20C2< 20C6< 20D2< 20D6<
	FBABA<0..1>	GPU_FBADDR_A:G:L:S:0:200	2	L:S::600				300 MHZ	18C8<> 18E3<
	RFBABA<0..1>	RAM_FBADDR_A:G:L:S:0:330	2	L:S::2400	50			300 MHZ	18E2<> 20C2< 20C6<
	FBARAS_L	GPU_FBCNTL_A:G:L:S:0:200	MIL:200 MIL	L:S::400 MIL				300 MHZ	18C8> 18G3<
	FBACAS_L	GPU_FBCNTL_A:G:L:S:0:200	MIL:200 MIL	L:S::400 MIL				300 MHZ	18C8> 18G3<
	FBAWE_L	GPU_FBCNTL_A:G:L:S:0:200	MIL:200 MIL	L:S::400 MIL				300 MHZ	18C8> 18F3<
	FBACS0_L	GPU_FBCNTL_A:G:L:S:0:200	MIL:200 MIL	L:S::400 MIL				300 MHZ	18C8> 18F3<
	FBACKE	GPU_FBCNTL_A:G:L:S:0:200	MIL:200 MIL	L:S::400 MIL	100			300 MHZ	18D3< 18D7<>
	RFBARAS_L	RAM_FBCNTL_A:G:L:S:0:350	MIL:350 MIL	L:S::2700 MIL	50			300 MHZ	18G2<> 20B2< 20B6<
	RFBACAS_L	RAM_FBCNTL_A:G:L:S:0:500	MIL:500 MIL	L:S::2700 MIL	50			300 MHZ	18G2<> 20B2< 20B6<
	RFBAWE_L	RAM_FBCNTL_A:G:L:S:0:500	MIL:500 MIL	L:S::2700 MIL	50			300 MHZ	18F2<> 20B2< 20B6<
	RFBACS0_L	RAM_FBCNTL_A:G:L:S:0:350	MIL:350 MIL	L:S::2700 MIL	50			300 MHZ	18F2<> 20B2< 20B6<
	RFBACKE	RAM_FBCNTL_A:G:L:S:0:500	MIL:500 MIL	L:S::2700 MIL	50			300 MHZ	18D2<> 20C2< 20C6<
	FBDQS<0..7>	GPU_FBDQS_A:G:L:S:0:100	0	L:S::350				300 MHZ	18C7<> 19A8<
	FBDQSTERM<0..7>	FB_DQSTERM_A:G:L:S:0:80	0	L:S::1500		10 MIL SPACING		300 MHZ	19A7<
	RFBDQS<0..7>	RAM_FBDQS_A:G:L:S:0:55	0	L:S::150		10 MIL SPACING		300 MHZ	19A6< 20C2<> 20C6<>
	FBACLK0	GPU_FBCLK_A:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18D7> 19C3<
	FBACLK0_L	GPU_FBCLK_A:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18D7> 19C3<
	FBACLK1	GPU_FBCLK_A:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18D7> 19D3<
	FBACLK1_L	GPU_FBCLK_A:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18D7> 19D3<
	RFBACLK1	RAM_FBCLK_A:G:L:S:0	MIL:80 MIL	L:S::2500 MIL			200	300 MHZ	19D1< 20C2<
	RFBACLK1_L	RAM_FBCLK_A:G:L:S:0	MIL:80 MIL	L:S::2500 MIL			200	300 MHZ	19D1< 20C2<
	RFBACLK0	RAM_FBCLK_A:G:L:S:0	MIL:70 MIL	L:S::2500 MIL			200	300 MHZ	19C1< 20C6<
	RFBACLK0_L	RAM_FBCLK_A:G:L:S:0	MIL:70 MIL	L:S::2500 MIL			200	300 MHZ	19C1< 20C6<
	FBD<64..127>	GPU_FBDATA_B:G:L:S:0:225	2	L:S::800				300 MHZ	18E5<> 18F5<> 18G5<> 19B5< 19B8< 19C5< 19C8<
	RFBD<64..127>	RAM_FBDATA_B:G:L:S:0:325	2	L:S::1000				300 MHZ	19B4< 19B7< 19C4< 19C7< 21B1<> 21B5<> 21C1<> 21C5<>
	FBDQM<8..15>	GPU_FBDQM_B:G:L:S:0:120	1	L:S::800				300 MHZ	18C3< 18D3< 18D5>
	RFBDQM<8..15>	RAM_FBDQM_B:G:L:S:0:120	1	L:S::1000				300 MHZ	18C2< 18D2< 21C2< 21C6<
	FBBA<0..12>	GPU_FBADDR_B:G:L:S:0:120	1	L:S::600				300 MHZ	18A3< 18B3< 18C3< 18C5<> 18D5<>
	RFBBA<0..11>	RAM_FBADDR_B:G:L:S:0:370	1	L:S::2400	50			300 MHZ	18B2<> 18C2<> 21C2< 21C6< 21D2< 21D6<
	FBBBA<0..1>	GPU_FBADDR_B:G:L:S:0:120	1	L:S::600				300 MHZ	18A3< 18C5<>
	RFBBBA<0..1>	RAM_FBADDR_B:G:L:S:0:370	1	L:S::2400	50			300 MHZ	18A2<> 21C2< 21C6<
	FBBRAS_L	GPU_FBCNTL_B:G:L:S:0	MIL:120 MIL	L:S::400 MIL				300 MHZ	18C3< 18D4<>
	FBBCAS_L	GPU_FBCNTL_B:G:L:S:0	MIL:120 MIL	L:S::400 MIL				300 MHZ	18C3< 18D4<>
	FBBWE_L	GPU_FBCNTL_B:G:L:S:0	MIL:120 MIL	L:S::400 MIL				300 MHZ	18C3< 18D4<>
	FBBCS0_L	GPU_FBCNTL_B:G:L:S:0	MIL:120 MIL	L:S::400 MIL				300 MHZ	18C3< 18C4<>
	FBBCKE	GPU_FBCNTL_B:G:L:S:0	MIL:120 MIL	L:S::400 MIL	100			300 MHZ	18A3< 18C4<>
	RFBBRAS_L	RAM_FBCNTL_B:G:L:S:0	MIL:2000 MIL	L:S::3500 MIL	3550			300 MHZ	18C2<> 21B2< 21B6<
	RFBBCAS_L	RAM_FBCNTL_B:G:L:S:0	MIL:2000 MIL	L:S::3500 MIL	3550			300 MHZ	18C2<> 21B2< 21B6<
	RFBBWE_L	RAM_FBCNTL_B:G:L:S:0	MIL:2000 MIL	L:S::3500 MIL	3550			300 MHZ	18C2<> 21B2< 21B6<
	RFBBCS0_L	RAM_FBCNTL_B:G:L:S:0	MIL:2000 MIL	L:S::3500 MIL	3550			300 MHZ	18C2<> 21B2< 21B6<
	RFBBCKE	RAM_FBCNTL_B:G:L:S:0	MIL:2000 MIL	L:S::3500 MIL	3550			300 MHZ	18A2<> 21C2< 21C6<
	FBDQS<8..15>	GPU_FBDQS_B:G:L:S:0:100	0	L:S::350		10 MIL SPACING		300 MHZ	18D4<> 19A5<
	FBDQSTERM<8..15>	FB_FBDQSTERM_B:G:L:S:0:60	0	L:S::1500		10 MIL SPACING		300 MHZ	19A4<
	RFBDQS<8..15>	RAM_FBDQS_B:G:L:S:0:50	0	L:S::150		10 MIL SPACING		300 MHZ	19A3< 21C2<> 21C6<>
	FBBCLK0	GPU_FBCLK_B:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18C5<> 19B3<
	FBBCLK0_L	GPU_FBCLK_B:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18C5> 19B3<
	FBBCLK1	GPU_FBCLK_B:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18C5> 19C3<
	FBBCLK1_L	GPU_FBCLK_B:G:L:S:0	MIL:50 MIL	L:S::150 MIL			200	300 MHZ	18C5> 19B3<
	RFBBCLK1	RAM_FBCLK_B:G:L:S:0	MIL:90 MIL	L:S::2500 MIL			200	300 MHZ	19C1< 21C2<
	RFBBCLK1_L	RAM_FBCLK_B:G:L:S:0	MIL:90 MIL	L:S::2500 MIL			200	300 MHZ	19B1< 21C2<
	RFBBCLK0	RAM_FBCLK_B:G:L:S:0	MIL:90 MIL	L:S::2500 MIL			200	300 MHZ	19B1< 21C6<
	RFBBCLK0_L	RAM_FBCLK_B:G:L:S:0	MIL:90 MIL	L:S::2500 MIL			200	300 MHZ	19B1< 21C6<

SIGNAL CONSTRAINTS

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 55 OF 69
DRAWING

<XR_PAGE_TITLE>

DIGITAL SIGNALS

GROUP		SIG_NAME	RELATIVE_PROPAGATION_DELAY	MAX_VIAS	PROPAGATION_DELAY	STUB_LENGTH	NET_SPACING_TYPE	NO_TEST	PULSE_PARAM	MAX_EXPOSED_LENGTH		
MAXBUS	I1	CPU_ADDR<0..31>	CPU_ADDR_GROUP:G:L:S:0::1250	7	:::5000	250			166 MHZ			4B7<> 4C7<> 8B4<> 8B5<> 8B7<> 8B8<> 8C4<> 8C5<> 8C7<> 8C8<> 9C3<> 9D3<> 9D5< 9D8<
	I2	CPU_DATA<0..63>	CPU_DATA_GROUP:G:L:S:0::1400	7	:::5000	1550			166 MHZ			5A4<> 5B4<> 5C4<> 5D4<> 6C4< 8C4<> 8C4< 8C5<> 8C7<> 8C7< 8C8<> 8D4<> 8D5<> 8D7<> 8D8<> 9A7< 9B1<> 9B7< 9C1<> 9C5< 9C8< 9D1<>
	I4	CPU_BR_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4D7> 7C7< 8B4<> 9D3<
	I3	CPU_BG_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4D7< 7B7< 8B4<> 9D3<>
	I5	CPU_TS_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4D7<> 7C7< 8B7<> 9D3<>
	I6	CPU_TT<0..4>	CPU_CNTL_GROUP:G:L:S:0::1300	7	:::5000	250	10 MIL SPACING		166 MHZ			4B7<> 7A7< 8B4<> 8B5<> 9B3<>
	I7	CPU_TBST_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4B7> 7B7< 8B4<> 9B3<>
	I9	CPU_TSIZ<0..2>	CPU_CNTL_GROUP:G:L:S:0::1260	7	:::5000	250	10 MIL SPACING		166 MHZ			4B7> 8B5<> 8B7< 9B3<>
	I8	CPU_ARTRY_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4A7<> 7C7< 8B8<> 9B3<>
	I10	CPU_AACK_L	CPU_CNTL_GROUP:::1000	7	:::5000	250	10 MIL SPACING		166 MHZ			4A7< 7B7< 8B5<> 9B3<>
	I11	CPU_GBL_L	CPU_CNTL_GROUP:::1000	3	:::1000	250	10 MIL SPACING		166 MHZ			4B8<> 8B5<>
	I12	CPU_INT_GBL_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	5	:::3500	250	10 MIL SPACING		166 MHZ			4B8< 7B7< 9C3<>
	I14	CPU_CI_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4A7> 7A7< 8C5<> 9C3<>
	I13	CPU_HIT_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4A7> 7C7< 8B8<> 9B3<
	I15	CPU_DBG_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::3500	250	10 MIL SPACING		166 MHZ			4C3< 7B7< 8B8<> 9B1<>
	I16	CPU_DRDY_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	5	:::500	250	10 MIL SPACING		166 MHZ			4C2< 7B7< 8B5<> 9B1<
	I17	CPU_WT_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4B7> 7A7< 8B5<> 9B3<>
	I18	CPU_DRDY_L_UF		2	:::5000	250	10 MIL SPACING		166 MHZ			4C3<>
	I19	CPU_DTI<0..2>	CPU_CNTL_GROUP:G:L:S:0::1150	7	:::5000	250	10 MIL SPACING		166 MHZ			4C3< 8B4<> 8B7<> 9A1<>
	I20	CPU_TA_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4C3< 7C7< 8C4<> 9A1<>
	I21	CPU_TEA_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1100 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4C3< 7B7< 8B5<> 9A1<>
	I22	CPU_QREQ_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	7	:::5000	250	10 MIL SPACING		166 MHZ			4C3> 7D5< 8B7<> 9B3<
	I23	CPU_QACK_L	CPU_CNTL_GROUP:G:L:S:0 MIL:1000 MIL	8	:::4000	250	10 MIL SPACING		166 MHZ			4C3< 8B4<> 9B3<>
	I25	SYSCLK_CPU_UF		2	:::150		10 MIL SPACING		166 MHZ	315		9A3<>
	I24	SYSCLK_CPU		4	::2200:2400	200	10 MIL SPACING		166 MHZ	315		4D2< 9A4<
	I26	INT_CPU_FB_OUT		3	:::1000	200			166 MHZ	315		9B3<>
	I27	CPU_FBO_PLUS1		3	:::200	200			166 MHZ	315		9A5<
	I28	CPU_FBI_PLUS1		3	::1400:1500	200			166 MHZ	315		9A5<
	I29	CPU_FB_MINUS3		4	::900:1000	200			166 MHZ	315		9A4<
	I30	INT_CPU_FB_IN		4	:::1000	200			166 MHZ	315		9B3<
	I31	CPU_FB_PLUS2		3	::900:1000				166 MHZ	315		9A5<
	I33	CPU_FB_PLUS3		3	::2900:3000				166 MHZ	315		9A4<
	I32	INT_ANALYZER_CLK		3	:::300				166 MHZ			8A2< 9B4< 16C7< 54A7< 59A8>
	I34	SYSCLK_LA		2	:::2000				166 MHZ			8A2< 8D8<>
	I35	INT_CLOCK_OUT		3	:::3000				166 MHZ			8B2<>
								MIN_LINE_WIDTH		DIFFERENTIAL_PAIR		
	I36	USB2_XT1		3	:::1000	100	10 MIL SPACING		30 MHZ			32C4<
	I37	USB2_XT2_B		3	:::1000	100	10 MIL SPACING		30 MHZ			
	I38	USB2_XT2		3	:::100	100	10 MIL SPACING		30 MHZ			32C4<>
	I40	USB2_RREF		2	:::100							32B4<>
	I39	USB2_RSDAM	USB2_RSDA:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<>
	I41	USB2_RSDAP	USB2_RSDA:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<>
	I42	USB2_RSDBM	USB2_RSDB:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<>
	I43	USB2_RSDBP	USB2_RSDB:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<>
	I45	USB2_RSDCM	USB2_RSDC:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<> RATSNEST_SCEDULE
	I44	USB2_RSDCP	USB2_RSDC:G:L:S:02MIL:20 MIL		:::500		8 MIL SPACING	3.5	480 MHZ			32C4<>
	I46	USB2_DAN_F	USB2_DMA:G:L:S:0 MIL:30 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMA_DP	MIN_DAISY_CHAIN	32C1<> 33B7<
	I47	USB2_DAP_F	USB2_DMA:G:L:S:0 MIL:30 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMA_DP	MIN_DAISY_CHAIN	32C1<> 33B7<
	I48	USB2_DBN_F	USB2_DMB:G:L:S:0 MIL:20 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMB_DP	MIN_DAISY_CHAIN	32C1<> 33C7<
	I50	USB2_DBP_F	USB2_DMB:G:L:S:0 MIL:20 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMB_DP	MIN_DAISY_CHAIN	32C1<> 33C7<
	I49	USB2_DCN_F	USB2_DMC:G:L:S:0 MIL:20 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMC_DP	MIN_DAISY_CHAIN	32C1<> 33D7<
	I51	USB2_DCP_F	USB2_DMC:G:L:S:0 MIL:20 MIL	3	:::1500	50	8 MIL SPACING	3.5	480 MHZ	USB2_DMC_DP	MIN_DAISY_CHAIN	32C1<> 33D7<
	I52	USBT_DAN_F	USB2_DMAT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMAT_DP	MIN_DAISY_CHAIN	33B6<>
	I53	USBT_DAP_F	USB2_DMAT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMAT_DP	MIN_DAISY_CHAIN	33B6<>
	I55	USBT_DBN_F	USB2_DMBT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMBT_DP	MIN_DAISY_CHAIN	33C6<>
	I54	USBT_DBP_F	USB2_DMBT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMBT_DP	MIN_DAISY_CHAIN	33C6<>
	I56	USBT_DCN_F	USB2_DMCT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMCT_DP	MIN_DAISY_CHAIN	33D6<>
	I57	USBT_DCP_F	USB2_DMCT:G:L:S:04MIL:60 MIL		:::3000	2000	8 MIL SPACING	3.5	480 MHZ	USB2_DMCT_DP	MIN_DAISY_CHAIN	33D6<>
	I58	USB_DAN_CON	USB2_CONA:G:L:S:02MIL:30 MIL		:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONA_DP	MIN_DAISY_CHAIN	33C3<> 59C6>
	I59	USB_DAP_CON	USB2_CONA:G:L:S:02MIL:30 MIL		:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONA_DP	MIN_DAISY_CHAIN	33C3<> 59C6>
	I60	USB_DBN_CON	USB2_CONB:G:L:S:02MIL:30 MIL		:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONB_DP	MIN_DAISY_CHAIN	33B3<> 59C6>
	I61	USB_DBP_CON	USB2_CONB:G:L:S:02MIL:30 MIL		:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONB_DP	MIN_DAISY_CHAIN	33B3<> 59C6>
	I63	USB_DCN_CON	USB2_CONC:G:L:S:02MIL:30 MIL		:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONC_DP	MIN_DAISY_CHAIN	33D3<> 59C6>
	I62	USB_DCP_CON	USB2_CONC:G:L:S:0 MIL:30 MIL	2	:::750	50	8 MIL SPACING	3.5	480 MHZ	USB2_CONC_DP	MIN_DAISY_CHAIN	33D3<> 59C6>

SIGNAL CONSTRAINTS

LAST_MODIFIED=Wed Sep 17 12:12:39 2003

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE NONE	SHT 56 OF 69	

DRAWING

DIGITAL SIGNALS

GROUP	SIG_NAME	RELATIVE_PROPAGATION_DELAY	MAX_VIAS	PROPAGATION_DELAY	STUB_LENGTH	NET_SPACING_TYPE	MIN_LINE_WIDTH / MAX_EXPOSED_LENGTH	PULSE_PARAM	
NEW STUFF HERE	VSYNC*		3	L:S::1000 MIL					22C5<>
	ANALOG_VSYNC*		4	L:S::3500 MIL					22D7< 25C6<> 26B5< 59B8>
	HSYNC*		3	L:S::1000 MIL					22C5<>
	ANALOG_HSYNC*		5	L:S::3500 MIL					22D7< 25D6<> 26B5< 59B8>
	ANALOG_BLU		4	L:S::4000 MIL	2400	10 MIL SPACING	5.8		22C7<> 25C6<
	ANALOG_GRN		4	L:S::4000 MIL	2400	10 MIL SPACING	5.8		22C7<> 25C6<
	ANALOG_RED		4	L:S::4000 MIL	2400	10 MIL SPACING	5.8		22C7<> 25B6<
	FILT_ANALOG_RED		2	L:S::500 MIL		10 MIL SPACING	5.8		25C5< 59B8>
	FILT_ANALOG_GRN		2	L:S::500 MIL		10 MIL SPACING	5.8		25C5< 59B8>
	FILT_ANALOG_BLU		2	L:S::500 MIL		10 MIL SPACING	5.8		25C5< 59B8>
	DAC2RSET			L:S::1000 MIL		10 MIL SPACING			22C5<>
	DAC2VREF			L:S::1000 MIL		10 MIL SPACING			22C5<>
	NV11_XTALIN		4	L:S::1000 MIL	100	8 MIL SPACING		27 MHZ	22B4<>
	NV11_XTALOUT		4	L:S::1000 MIL	100	8 MIL SPACING		27 MHZ	22B4<>
	TCKP	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_CLK		24C4<>
	TCKM	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_CLK		24C3<>
	TD0P	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D0		24C3<>
	TD0M	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D0		24C4<>
	TD1P	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D1		24C4<>
	TD1M	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D1		24C3<>
	TD2P	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D2		24C3<>
	TD2M	TMDSFILT:G:L:S:0 MIL:110 MIL			110	8 MIL SPACING	TMDSFILT_D2		24C4<>
	ENET_LINK_TX_EN		4	L:S::1000 MIL				25 MHZ	34D6<>
	ENET_LINK_TX_ER		4	L:S::1000 MIL				25 MHZ	34D6<>
	ENET_LINK_TXD<0..3>		4	L:S::1000				25 MHZ	34C6<>
	ENET_PHY_TX_EN		4	L:S::5600 MIL				25 MHZ	34D7< 35C6<
	ENET_PHY_TX_ER		4	L:S::5600 MIL				25 MHZ	34D7< 35C6<
	ENET_PHY_TXD<0..3>		4	L:S:4600:5600				25 MHZ	34C7< 35C6<>
	CLKENET_LINK_TX		4	L:S:4600 MIL:5600 MIL				25 MHZ	34D7< 35C8<
	CLKENET_PHY_TX		4	L:S::1000 MIL				25 MHZ	35C6<>
	CLKENET_LINK_RX		4	L:S:4600 MIL:5600 MIL				25 MHZ	34C7< 35C8<
	CLKENET_PHY_RX		4	L:S::1000 MIL				25 MHZ	35C6<>
	ENET_PHY_RXD<0..3>		4	L:S::1000				25 MHZ	35B6<> 35C6<>
	ENET_PHY_RX_DV		4	L:S::1000 MIL				25 MHZ	35B6<>
	ENET_PHY_RX_ER		4	L:S::1000 MIL				25 MHZ	35B6<>
	ENET_PHY_CRS		4	L:S::1000 MIL				25 MHZ	35B6<>
	ENET_PHY_COL		4	L:S::1000 MIL				25 MHZ	35B6<>
	ENET_LINK_RXD<0..3>		4	L:S:4600:5600				25 MHZ	34C7< 35B8< 35C8<
	ENET_CRS		4	L:S:4600 MIL:5600 MIL				25 MHZ	34C7< 35B8<
	ENET_COL		4	L:S:4600 MIL:5600 MIL				25 MHZ	34B7< 35B8<
	ENET_RX_DV		4	L:S:4600 MIL:5600 MIL				25 MHZ	34C7< 35B8<
	ENET_RX_ER		4	L:S:4600 MIL:5600 MIL				25 MHZ	34C7< 35B8<
	CLK25M_ENET_XIN		3	L:S::1000 MIL	400	8 MIL SPACING		25 MHZ	35B6<
	CLK25M_ENET_XOUT		3	L:S::1000 MIL	400	8 MIL SPACING		25 MHZ	35B6<>
	ENET_TDP	ETHTD:G:L:S:0 MIL:70 MIL		L:S::4000 MIL	3150	10 MIL SPACING	ETH_TXD	100 MHZ	35C3<>
	ENET_TDN	ETHTD:G:L:S:0 MIL:70 MIL		L:S::4000 MIL	3150	10 MIL SPACING	ETH_TXD	100 MHZ	35C3<>
	ENET_RDP	ETHRD:G:L:S:0 MIL:70 MIL		L:S::4000 MIL	3150	10 MIL SPACING	ETH_RXD	100 MHZ	35C3<>
	ENET_RDN	ETHRD:G:L:S:0 MIL:70 MIL		L:S::4000 MIL	3150	10 MIL SPACING	ETH_RXD	100 MHZ	35C3<>
	RJ45_TXP	RJTXD:G:L:S:0 MIL:70 MIL		L:S::750 MIL		2KV_ISO	RJ45_TXD	100 MHZ	35C1<>
	RJ45_TXN	RJTXD:G:L:S:0 MIL:70 MIL		L:S::750 MIL		2KV_ISO	RJ45_TXD	100 MHZ	35C1<>
	RJ45_RXP	RJRXD:G:L:S:0 MIL:70 MIL		L:S::750 MIL		2KV_ISO	RJ45_RXD	100 MHZ	35C1<>
	RJ45_RXN	RJRXD:G:L:S:0 MIL:70 MIL		L:S::750 MIL		2KV_ISO	RJ45_RXD	100 MHZ	35C1<>
	RJ45_TREF					2KV_ISO			35C2<>
	RJ45_RREF					2KV_ISO			35C2<>
	RJ45_4_5					2KV_ISO			35C1<>
	RJ45_7_8					2KV_ISO			35C1<>
	RJ45_F_TREF					2KV_ISO			35B2<
	FW_LINK_DATA<0..7>		4	L:S::1000					34C4<>
	FW_LINK_CNTL<0..1>		4	L:S::1000				49.152 MHZ	34C4<>
	FW_LINK_LREQ		4	L:S::1000 MIL				49.152 MHZ	34C4<>
	FW_SCLK		4	L:S:3500 MIL:4500 MIL				49.152 MHZ	34C5<> 36C8<
	FW_D<0..7>		4	L:S:3700:4700				49.152 MHZ	34C3< 36B8< 36C8<
	FW_CNTL0		4	L:S:3700 MIL:4700 MIL				49.152 MHZ	34C3< 36C8<
	FW_CNTL1		4	L:S:3700 MIL:4700 MIL				49.152 MHZ	34C3< 36C8<
	FW_LREQ		4	L:S:3700 MIL:4700 MIL				49.152 MHZ	34C3< 36C8<
	FW_PHY_SCLK		4	L:S::500 MIL				49.152 MHZ	36C7<>
	FW_PHY_CNTL0		4	L:S::1000 MIL				49.152 MHZ	36C7<>
	FW_PHY_CNTL1		4	L:S::1000 MIL				49.152 MHZ	36C7<>
	FW_PHY_D<0..7>		4	L:S::1000				49.152 MHZ	36B7<> 36C7<>
	FW_XI		3	L:S::1000 MIL	100	8 MIL SPACING		24.576 MHZ	36C6<
	FW_XO		3	L:S::1000 MIL	100	8 MIL SPACING		24.576 MHZ	36C6<>
	FW_BIAS1								36C5<>
	FW_BIAS2								36C5<>
	FW_TPA1P	FWTPA1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPA1	400 MHZ	36C5<>
	FW_TPA1N	FWTPA1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPA1	400 MHZ	36C5<>
	FW_TPB1P	FWTPB1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPB1	400 MHZ	36C5<>
	FW_TPB1N	FWTPB1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPB1	400 MHZ	36C5<>
	FW_TPA2P	FWTPA2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPA2	400 MHZ	36C5<>
	FW_TPA2N	FWTPA2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPA2	400 MHZ	36C5<>
	FW_TPB2P	FWTPB2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPB2	400 MHZ	36C5<>
	FW_TPB2N	FWTPB2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPB2	400 MHZ	36C5<>
	FW_TPO1P	FWTPO1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPO1	400 MHZ	36B8<> 36D1<>
	FW_TPO1N	FWTPO1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPO1	400 MHZ	36A8<> 36D1<>
	FW_TPI1P	FWTPL1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPL1	400 MHZ	36A8<> 36D1<>
	FW_TPI1N	FWTPL1:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPL1	400 MHZ	36A8<> 36D1<>
	FW_TPO2P	FWTPO2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPO2	400 MHZ	36A8<> 36C1<>
	FW_TPO2N	FWTPO2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPO2	400 MHZ	36A8<> 36C1<>
	FW_TPI2P	FWTPL2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPL2	400 MHZ	36A8<> 36C1<>
	FW_TPI2N	FWTPL2:G:L:S:0 MIL:50 MIL		L:S::1220 MIL	5000		FW_TPL2	400 MHZ	36A8<> 36C1<>

DIGITAL SIGNALS

GROUP	SIG_NAME	RELATIVE_PROPAGATION_DELAY	MAX_VIAS	STUB_LENGTH	NET_SPACING_TYPE	MIN_LINE_WIDTH / MAX_EXPOSED_LENGTH	PULSE_PARAM	
NEW STUFF HERE	TMDS_CKP	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_CLK		23D1< 24B7<> 27C2< 59A8>
	TMDS_CKM	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_CLK		23D1< 24A7<> 27C2< 59A8>
	TMDS_D0P	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D0		23D1< 24B7<> 27C2< 59B8>
	TMDS_D0M	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D0		23D1< 24B7<> 27C2< 59A8>
	TMDS_D1P	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D1		23D1< 24C7<> 27C2< 59B8>
	TMDS_D1M	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D1		23D1< 24C7<> 27C2< 59B8>
	TMDS_D2P	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D2		23D1< 24D7<> 27C2< 59B8>
	TMDS_D2M	TMDS:G:L:S:0 MIL:120 MIL	3	70	8 MIL SPACING	TMDS_D2		23D1< 24D7<> 27C2< 59B8>
	GPU_TMDS_CKP	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_CLK		23C2< 23D3<>
	GPU_TMDS_CKM	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_CLK		23C2< 23D3<>
	GPU_TMDS_D0P	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D0		23C2< 23D3<>
	GPU_TMDS_D0M	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D0		23C2< 23D3<>
	GPU_TMDS_D1P	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D1		23C2< 23D3<>
	GPU_TMDS_D1M	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D1		23C2< 23D3<>
	GPU_TMDS_D2P	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D2		23C2< 23D3<>
	GPU_TMDS_D2M	GTMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	G_TMDS_D2		23C2< 23D3<>
	SI_TMDS_CKP	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_CLK		27C3<>
	SI_TMDS_CKM	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_CLK		27C3<>
	SI_TMDS_D0P	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D0		27C3<>
	SI_TMDS_D0M	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D0		27C3<>
	SI_TMDS_D1P	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D1		27C3<>
	SI_TMDS_D1M	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D1		27C3<>
	SI_TMDS_D2P	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D2		27C3<>
	SI_TMDS_D2M	STMDS:G:L:S:0 MIL:120 MIL	3	50	8 MIL SPACING	S_TMDS_D2		27C3<>
	DVOD0	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22C5<> 27A8< 27C5<
	DVOD1	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22C5<> 27A8< 27C5<
	DVOD2	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22C5<> 26D1< 27C5<
	DVOD3	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 26D1< 27C5<
	DVOD4	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27C5<
	DVOD5	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27C5<
	DVOD6	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27C5<
	DVOD7	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27C5<
	DVOD8	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 26B1< 27C5<
	DVOD9	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27C5<
	DVOD10	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27B5<
	DVOD11	TMDS_XMIT:G:L:S:0 MIL:400 MIL		200			165MHZ	22B5<> 27A8< 27B5<

SIGNAL CONSTRAINTS

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 57 OF 69
DRAWING

DIGITAL SIGNALS (CONT'D)

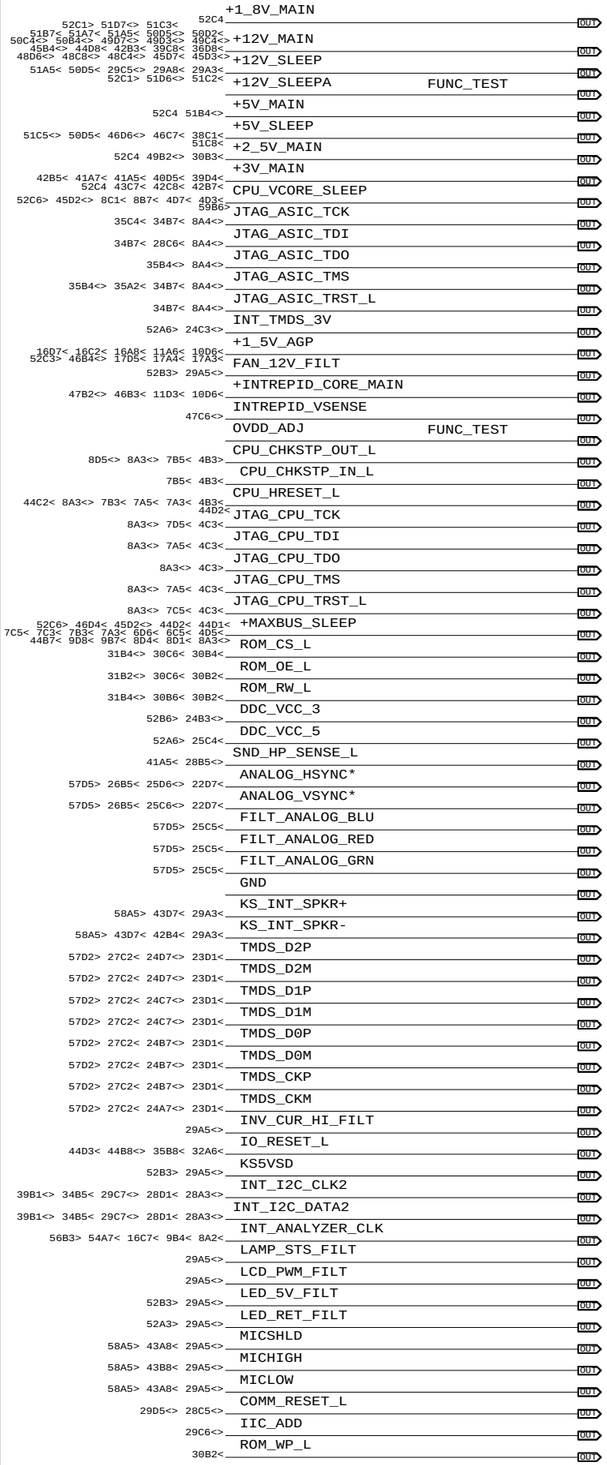
	GROUP	SIG_NAME	RELATIVE_PROPAGATION	MAX_VIAS	PROPAGATION_DELAY	STUB_LENGTH	NET_SPACING_TYPE	MAX_EXPOSED_LENGTH	PULSE_PARAM	
	CD DRIVE BUS	EIDE_RST_L			L:S:3500 MIL:5500 MIL				33 MHZ	37A7> 37D5<
		EIDE_DMACK_L			L:S:3500 MIL:5500 MIL				33 MHZ	37A7<> 37D5<
		EIDE_STOP			L:S::5500 MIL				33 MHZ	37A7> 37D5<
		EIDE_HSTB_RDY			L:S::5500 MIL				33 MHZ	37A7> 37C5<
		EIDE_DSTB_RDY			L:S:3500 MIL:5500 MIL				33 MHZ	37A7< 37C5<
		EIDE_DATA<0..15>			L:S:3500:5500				33 MHZ	37A5< 37B5< 37B7<> 37C5<
		CD_RESET_L			L:S::1000 MIL				33 MHZ	37D4< 38C6<>
		CD_DMACK_L			L:S::4000 MIL				33 MHZ	37D4< 38C6<>
		CD_STOP			L:S::5000 MIL				33 MHZ	37D4< 38C6<>
		CD_HSTB_RDY			L:S::5000 MIL				33 MHZ	37C4< 38C6<>
		CD_DSTB_RDY			L:S::1000 MIL				33 MHZ	37C4< 38C6<>
		UATAD<0..15>			L:S::1000				33 MHZ	37A4< 37B4< 37C4< 38C6<>
		CD_DMARQ			L:S::1000 MIL				33 MHZ	38C6<>
		EIDE_DMARQ			L:S:3500 MIL:5500 MIL				33 MHZ	37A7< 38C8<
		UATA0IRQ			L:S::1000 MIL				33 MHZ	38C6<>
		EIDE_INTRQ			L:S:3500 MIL:5500 MIL				33 MHZ	37A7< 38C8<
		CD_EIDE_ADDR<0..2>			L:S::1000				33 MHZ	38C6<>
		EIDE_ADDR<0..2>			L:S:3500:5500				33 MHZ	37B7> 38A8< 38B8<
		CD_CS1FX_L			L:S::1000 MIL				33 MHZ	38C6<>
		EIDE_CS1FX_L			L:S:3500 MIL:5500 MIL				33 MHZ	37A7> 38B8<
		CD_CS3FX_L			L:S::1000 MIL				33 MHZ	38C6<>
		EIDE_CS3FX_L			L:S:3500 MIL:5500 MIL				33 MHZ	37A7> 38B8<
	HD DRIVE BUS									
		UIDE_RST_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 37D3<
		UIDE_DMACK_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 37D3<
		UIDE_DIOR_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 37D3<
		UIDE_DIOW_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S::55000 MIL				100 MHZ	37C3< 37C7<>
		UIDE_IOCHRDY	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C3< 37C7<
		UIDE_DATA<0..15>	HD_DATA:G:L:S:0:5500		L:S:100:6000				100 MHZ	37A3< 37B3< 37C3< 37C7<> 37D7<>
		HD_RESET_L			L:S::1000 MIL				100 MHZ	37D1< 38C3<>
		HD_DMACK_L			L:S::1000 MIL				100 MHZ	37D1< 38C3<>
		HD_DIOR_L			L:S::5500 MIL				100 MHZ	37D1< 38C3<>
		HD_DIOW_L			L:S::55000 MIL				100 MHZ	37C1< 38C3<>
		HD_IOCHRDY			L:S::1000 MIL				100 MHZ	37C1< 38C3<>
		HD_DMARQ			L:S::1000 MIL				100 MHZ	38C3<>
		UIDE_DMARQ	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 38C4<
		HD_INTRQ			L:S::1000 MIL				100 MHZ	38C3<>
		UIDE_INTRQ	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7< 38C4<
		HD_UIDE_ADDR<0..2>			L:S::1000				100 MHZ	38C2<> 38C3<>
		UIDE_ADDR<0..2>	HD_DATA:G:L:S:0:5500		L:S:100:6000				100 MHZ	37C7<> 38A4< 38B4<
		HD_UIDE_CS1FX_L			L:S::6000 MIL				100 MHZ	38C3<>
		UIDE_CS1FX_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 38B4<
		HD_UIDE_CS3FX_L			L:S::6000 MIL				100 MHZ	38C2<>
		UIDE_CS3FX_L	HD_DATA:G:L:S:0 MIL:5500 MIL		L:S:100 MIL:6000 MIL				100 MHZ	37C7<> 38B4<
		CLK_18M_INT_XOUT	3		L:S::1000	100	8 MIL SPACING		18.432 MHZ	58B5>
		CLK_18M_INT_XOUT	3		L:S::1000	100	8 MIL SPACING		18.432 MHZ	58B5>
		CLK_18M_INT_XOUT	3		L:S::200	50	8 MIL SPACING		18.432 MHZ	58B5>
		USB_DAP	USBA:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DAN	USBA:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DAP_F	USBA_F:G:L:S:0 MIL:500 MIL			100				28B2< 33B7<
		USB_DAN_F	USBA_F:G:L:S:0 MIL:500 MIL			100				28B2< 33B7<
		USB_DBP	USBB:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DBN	USBB:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DBP_F	USBB_F:G:L:S:0 MIL:500 MIL			100				28B2< 33C7<
		USB_DBN_F	USBB_F:G:L:S:0 MIL:500 MIL			100				28B2< 33C7<
		USB_DCP	USBC:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DCN	USBC:G:L:S:0 MIL:500 MIL							28A3< 28B3<>
		USB_DCP_F	USBC_F:G:L:S:0 MIL:500 MIL			100				28B2< 33D7<
		USB_DCN_F	USBC_F:G:L:S:0 MIL:500 MIL			100				28B2< 33D7<
		USB_DEP	USBE:G:L:S:0 MIL:500 MIL							28B3<>
		USB_DEN	USBE:G:L:S:0 MIL:500 MIL							28B3<>
		BT_USB_DP	USBE_F:G:L:S:0 MIL:500 MIL			100				28B2< 29D3<> 59B6>
		BT_USB_DM	USBE_F:G:L:S:0 MIL:500 MIL			100				28B2< 29D3<> 59B6>
		USB_DFP	USBF:G:L:S:0 MIL:500 MIL							28B3<>
		USB_DFN	USBF:G:L:S:0 MIL:500 MIL							28B3<>
		MODEM_USB_DP	USBF_F:G:L:S:0 MIL:500 MIL			100				28B2< 29C5<> 59B6>
		MODEM_USB_DM	USFE_F:G:L:S:0 MIL:500 MIL			100				28B2< 29C5<> 59B6>
		PMU_XO		3	L:S::1000 MIL	100	8 MIL SPACING		10 MHZ	44B5<
		PMU_XI		3	L:S::1000 MIL	100	8 MIL SPACING		10 MHZ	44B5<
		PMU_XT		3	L:S::300 MIL	50	8 MIL SPACING		10 MHZ	44A6<
		PMU_CLKOUT		3	L:S::1000 MIL	100	8 MIL SPACING		32.768 MHZ	44B4<>
		PMU_CLKIN		3	L:S::1000 MIL	100	8 MIL SPACING		32.768 MHZ	44B4<>
		PMU_CLKT		3	L:S::300 MIL	50	8 MIL SPACING		32.768 MHZ	44B2<>
		MICSHLD					10 MIL SPACING			29A5<> 43A8< 59A8>
		MICHIGH					10 MIL SPACING			29A5<> 43B8< 59A8>
		MICLOW					10 MIL SPACING			29A5<> 43A8< 59A8>
		KS_INT_SPKR+					10 MIL SPACING			29A3< 43D7< 59B8>
		KS_INT_SPKR-					10 MIL SPACING			29A3< 42B4< 43D7< 59B8>

SIG_NAME	PROPAGATION_DELAY	PULSE_PARAM	
T_UD_IDEDD_0	L:S::1000 MIL	100 MHZ	37C1< 38C3<>
T_UD_IDEDD_1	L:S::1000 MIL	100 MHZ	37C1< 38C3<>
T_UD_IDEDD_2	L:S::1000 MIL	100 MHZ	37C1< 38C3<>
T_UD_IDEDD_3	L:S::1000 MIL	100 MHZ	37C1< 38C3<>
T_UD_IDEDD_4	L:S::1000 MIL	100 MHZ	37B1< 38C3<>
T_UD_IDEDD_5	L:S::1000 MIL	100 MHZ	37B1< 38C3<>
T_UD_IDEDD_6	L:S::1000 MIL	100 MHZ	37B1< 38C3<>
T_UD_IDEDD_7	L:S::1000 MIL	100 MHZ	37B1< 38C3<>
T_UD_IDEDD_8	L:S::1000 MIL	100 MHZ	37B1< 38C2<>
T_UD_IDEDD_9	L:S::1000 MIL	100 MHZ	37B1< 38C2<>
T_UD_IDEDD_10	L:S::1000 MIL	100 MHZ	37B1< 38C2<>
T_UD_IDEDD_11	L:S::1000 MIL	100 MHZ	37B1< 38C2<>
T_UD_IDEDD_12	L:S::1000 MIL	100 MHZ	37B1< 38C2<>
T_UD_IDEDD_13	L:S::1000 MIL	100 MHZ	37A1< 38C2<>
T_UD_IDEDD_14	L:S::1000 MIL	100 MHZ	37A1< 38C2<>
T_UD_IDEDD_15	L:S::1000 MIL	100 MHZ	37A1< 38C2<>

SIGNAL CONSTRAINTS

APPLE COMPUTER INC.
SIZE D | DRAWING NUMBER 051-6497 | REV. 13
SCALE NONE | SHT 58 OF 69
DRAWING

FUNC_TEST



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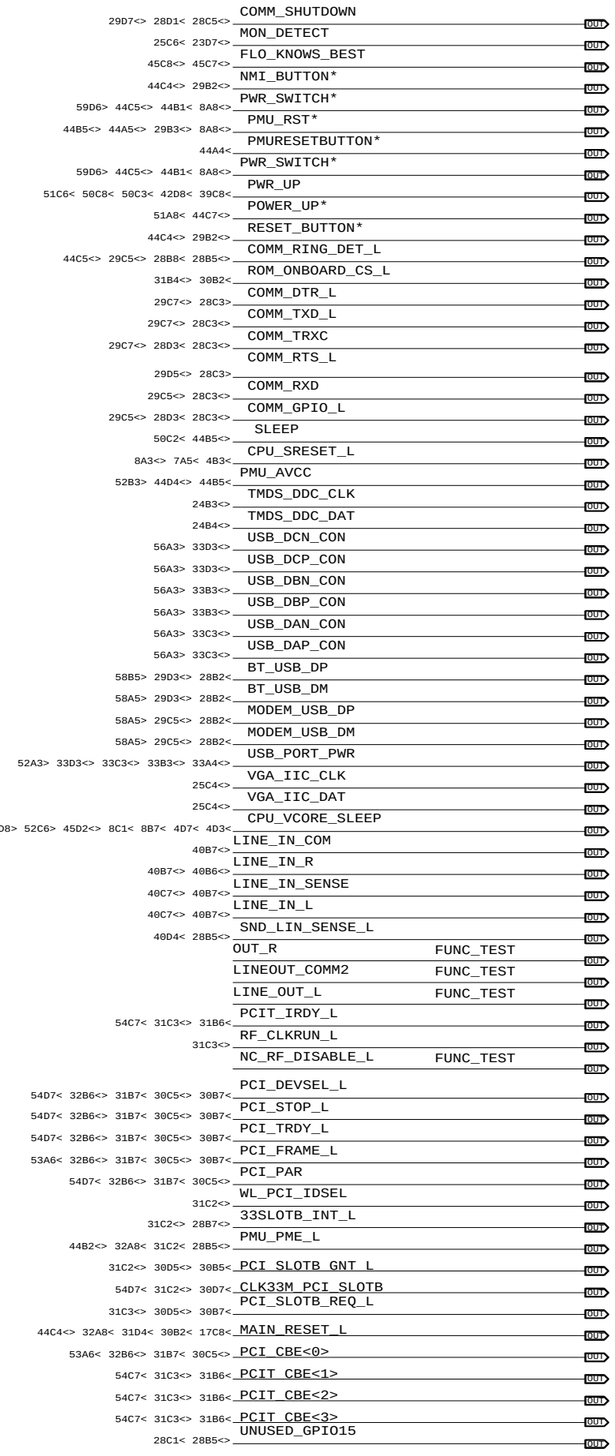

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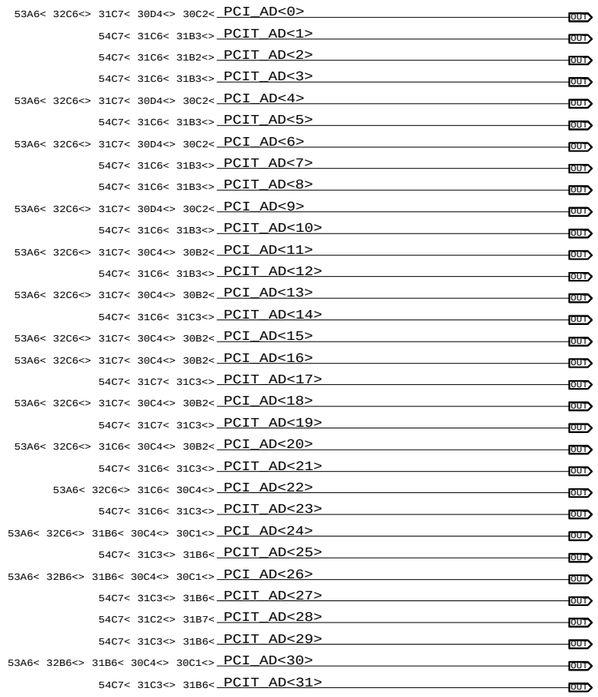

CONSTRINT TABLES

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13
SCALE: NONE	SHT 59 OF 69	

DRAWING

*** Signal Cross-Reference for the entire design ***

+1_5V_AGP 10D6< 11A6< 16A8< 16C2< 16D7<
17A3< 17A4< 17D5< 46B4<> 52C3> 59C8>

+1_5V_INTREPID_PLL 9D4< 16D6< 28D6<> 30D5< 52D3>
+1_5V_INTREPID_PLL1 28C4< 52D3>
+1_5V_INTREPID_PLL2 28D4< 52D3>
+1_5V_INTREPID_PLL3 28D4< 52D3>
+1_5V_INTREPID_PLL4 28D4< 52D3>
+1_5V_INTREPID_PLL5 16D5< 52D3>
+1_5V_INTREPID_PLL6 30D4< 52D3>
+1_5V_INTREPID_PLL7 9D2< 52D3>
+1_5V_INTREPID_PLL8 28D4< 52D3>
+1_8V_MAIN 52C4 59D8>
+2_5V_MAIN 30B3< 49B2<> 52C4 59D8>
+3.3VFPD 24D7< 51C1<> 52B6>
+3V_AUDIO 39D2< 39D6< 39D7< 40C3< 43B2<
43C6<
+3V_GPU_SS 22A6< 22A8< 22B7<
+3V_INTREPID_USB 28C4< 52A3>
+3V_MAIN 39D4< 40D5< 41A5< 41A7< 42B5<
42B7< 42C8< 43C7< 52C4 59D8>
+5VSD_T 50D6<>
+5V_AUDIO 39C6<> 39D7< 41B6<>
+5V_HP 41A8< 41B7<> 41D5<
+5V_MAIN 51B4<> 51B4<> 52C4 59D8>
+5V_SLEEP 38C1< 46C7< 46D6<> 50D5< 51C5<>
51C8< 59D8>
+12VSD_FILT 29A5<> 52B3>
+12VSD_T 50D6<>
+12V_DROPPED 44D8<
+12V_MAIN 36D8< 39C8< 42B3< 44D8< 45B4<>
45D3<> 45D7< 48C4<> 48C8<> 48D6<>
49C4<> 49D3<> 49D7<> 50B4<> 50C4<>
50D2< 50D5<> 51A5< 51A7< 51B7< 51C3<
51D7<> 52C1> 52C1> 59D8>
+12V_SLEEP 29A3< 29A8< 29C5<> 50D5< 51A5<
51C2< 51D6<> 52C1> 52C1> 59D8>
+12V_SLEEPA 59D8>
+12V_TPA 42B2< 42B7< 42C4< 42C5< 42D5<
+INTREPID_CORE_MAIN 10D6< 11D3< 46B3< 47B2<> 59C8>

+MAXBUS_SLEEP 4D5< 6C5< 6D6< 7A3< 7A3< 7B3< 7C3<
7C3< 7C5< 7C7< 8A3<> 8D1< 8D4< 9B7<
9D8< 44B7< 44D1< 44D2< 45D2<> 46D4<
52C6> 59C8>
3.8VH_TRICKLE 44C1< 44D7<> 52B3>
3.8V_TRICKLE 36D8< 44C2< 44C6< 44D7<> 50D5<
52C1> 52C2>
3V_SI_AVCC 27D4<
3V_SI_PLLVCC 27D4<
3V_SI_VCC 27B2< 27D3<
3_5_HONKER 51C4<>
3_6V_SLEEP 37D1< 51C1<
5V_XRA 50B4<>
15_I282 15B2<
15_I286 15B3<
18P_GND 29B5<>
25V_BSTH 49C5<>
25V_BSTH_TERM 49C5<>
25V_COMP 49B6<
25V_COMP_DWN 49B6<
25V_DH 49B5<>
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25V_GND 49B6<>
25V_OCSET 49C5<>
25V_OVP 49B6<>
25V_VCC 49C6<
25V_VPWR 49B5<> 49C4<>
25V_VPWRA 49B4<>
25V_VSENSE 49C4<>
25_CORE_1 49C3<
33PCI_SLOTD_SERR_L 32B6<>
33SLOTB_INT_L 28B7<> 28B7<> 28B7<> 31C2<> 59A6>
42_I291 42B6<
42_I295 42B5<
45_I408 45B6<
45_I525 45C4<
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48_I10 48C3<
48_I99 48B4<
49_I70 49B4<
50_I408 50B3<
50_I410 50A3<
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AGP_GNT_L 16C3< 16C4<> 17B7< 54B7<
AGP_INT_L 17B6<> 28B5<> 28B8<
AGP_IRDY_L 16B4<> 16C3< 17B8< 54C7<
AGP_PAR 16B4<> 17B8< 54B7<
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AGP_PWR_ADJ 46A5<>
AGP_RBF_L 16A4<> 16B3< 17B8< 54B7<
AGP_REQ_L 16C3< 16C4<> 17B7<> 54B7<
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AGP_WBF_L 16A6<> 16B1< 17B8< 54B7<
AINLM 39C4<
AINLP 39C4<
AINRM 39C4<
AINRP 39C4<
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33C4< 33C4< 33D2< 33D4< 36A7<> 36B2<
36B6< 36B6<> 36C1<> 36C1<> 36C1<
52C4
ANALOGGND 35B1< 35C1<> 40B5<> 40B6< 40C6<
40D6< 41A2<> 41A4< 41B1<> 41B3<
41C3< 41D3< 42A5<> 42A6<> 43A5< 52C4

ANALOG_BLU 22C7<> 25C6< 57D5>
ANALOG_GRN 22C7<> 25C6< 57D5>
ANALOG_HSYNC* 22D7< 25D6<> 26B5< 57D5> 59B8>
ANALOG_RED 22C7<> 25B6< 57D5>
ANALOG_VSYNC* 22D7< 25C6<> 26B5< 57D5> 59B8>
ANEN 35C4<
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AOUTR 39C2> 41C7< 43D3<
ASH 43A6<
AUDIO_TO_SND 28B1< 39C1<
AUD_GND 39B7<> 42B2< 42C4< 42D3< 42D4<
42D6< 42D7< 43C2< 43D2< 43D4<
AUD_R_FB 39D6<
BRE 45C5<>
BRE_1 45B5<>
BT1 44D6<> 51A6<
BT1_LED 51A6<
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BT_USB_DP 28B2< 29D3<> 58B5> 59B6>
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C756_2 40D3<>
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C4240P2 40C4<
C4242P2 40B4<
C4243P2 40B4<
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CD_CS3FX_L 38C6<> 58C5>
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CD_DMARQ 38C6<> 58D5>
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CD_EIDE_ADDR<2> 38C6<>
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CD_RESET_L 37D4< 38C6<> 58D5>
CD_STOP 37D4< 38C6<> 58D5>
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CLK18M_INT_XO 28A6<
CLK18M_INT_XOUT 28A5<>
CLK25M_ENET_XIN 35B6< 57B5>
CLK25M_ENET_XOUT 35B6<> 57B5>
CLK27M_MEM_SS 22A6<>
CLK33M_PCI_SLOTB 30D7 31C2<> 54D7< 59A6>
CLK33M_PCI_SLOTB_UF 30D5<> 54D7<
CLK33M_PCI_SLOTC_UF 30D5<> 54D7<
CLK33M_PCI_SLOTD 30D7< 32A6< 54A7<
CLK33M_PCI_SLOTD_UF 30D5<> 54D7<
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CLK66M_GPU_UF 16C6<> 54A7<
CLKENET_LINK_GBE_REF 34C6<
CLKENET_LINK_RX 34C7< 35C8< 57C5>
CLKENET_LINK_TX 34D7< 35C8< 57C5>
CLKENET_PHY_RX 35C6<> 57C5>
CLKENET_PHY_TX 35C6<> 57C5>
CLKFW_LINK_LCLK 34C5<>
CLK_18M_INT_XOUT 58B5> 58B5> 58B5>
COMM_DTR_L 28C3> 29C7<> 59C6>
COMM_GPIO_L 28C3<> 28D3< 29C5<> 59C6>
COMM_RESET_L 28C5<> 29D5<> 59A8>
COMM_RING_DET_L 28B5<> 28B8< 29C5<> 44C5<> 59D6>
COMM_RTS_L 28C3> 29D5<> 59C6>
COMM_RXD 28C3<> 29C5<> 59C6>
COMM_SHUTDOWN 28C5<> 28D1< 29D7<> 59D6>
COMM_TRXC 28C3<> 28D3< 29C7<> 59C6>
COMM_TXD_L 28C3<> 29C7<> 59C6>
CORE_MOSFET 45C4<> 45C6<>
CORE_MOSFET_1 45B5<> 45C7<>
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CPU_BG_L 4D7< 7B7< 8B4<> 9D3<> 56D3>
CPU_BR_L 4D7> 7C7< 8B4<> 9D3< 56D3>
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CPU_CHKSTP_OUT_L 4B3> 7B5< 8A3<> 8D5<> 59C8>
CPU_CI_L 4A7> 7A7< 8C5<> 9C3<> 56C3>
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FW_VP1           36D1<> 36D3<> 52B6>
FW_VP2           36C1<> 36D3<> 52B6>
FW_VP_1          36D4< 52B6>
FW_VP_2          36D4< 52B6>
```

```
FW_VREG_FB       36D7<
FW_XI            36C6< 57A5>
FW_XI_A          36C6<
FW_XO            36C6<> 57A5>
GCORE_1          48C2<
GCORE_BSTH       48C5<>
GCORE_BSTH_TERM  48C3<>
GCORE_COMP       48B6<
GCORE_DH         48B5<>
GCORE_DL         48B5<>
GCORE_GND        48B5<>
GCORE_OCSET      48B6<>
GCORE_OVP        48B6<>
GCORE_VCC        48C6<
GCORE_VSENSE     48B6<> 48C4<>
GPULNKON         23C4<>
GPU_50PULLDWN    17A5<> 52A8>
GPU_50PULLUP     17B5<> 52A8>
GPU_AGP_AD<0>    17D6<>
GPU_AGP_AD<0..15>  54B7<
GPU_AGP_AD<1>    17D6<>
GPU_AGP_AD<2>    17D6<>
GPU_AGP_AD<3>    17D6<>
GPU_AGP_AD<4>    17D7<>
GPU_AGP_AD<5>    17D7<>
GPU_AGP_AD<6>    17D7<>
GPU_AGP_AD<7>    17D7<>
GPU_AGP_AD<8>    17D6<>
GPU_AGP_AD<9>    17D6<>
GPU_AGP_AD<10>   17D6<>
GPU_AGP_AD<11>   17D6<>
GPU_AGP_AD<12>   17D6<>
GPU_AGP_AD<13>   17D6<>
GPU_AGP_AD<14>   17D6<>
GPU_AGP_AD<15>   17C6<>
GPU_AGP_AD<16>   17C6<>
GPU_AGP_AD<16..31>  54B7<
GPU_AGP_AD<17>   17C6<>
GPU_AGP_AD<18>   17C6<>
GPU_AGP_AD<19>   17C6<>
GPU_AGP_AD<20>   17C6<>
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GPU_AGP_AD<28>   17C6<>
GPU_AGP_AD<29>   17C6<>
GPU_AGP_AD<30>   17C6<>
GPU_AGP_AD<31>   17C6<>
GPU_AGP_CBE<0>   17C6<>
GPU_AGP_CBE<0..1>  54B7<
GPU_AGP_CBE<1>   17C6<>
GPU_AGP_CBE<2>   17C6<>
GPU_AGP_CBE<2..3>  54B7<
GPU_AGP_CBE<3>   17C6<>
GPU_AGP_DEVSEL_L  17B6<> 54B7<
GPU_AGP_FRAME_L  17B6<> 54B7<
GPU_AGP_IRDY_L   17B6<> 54B7<
GPU_AGP_PAR      17B6<> 54B7<
GPU_AGP_PIPE_L   17B6<> 54A7<
GPU_AGP_RBF_L    17B6<> 54A7<
GPU_AGP_SBA<0>   17A6<>
GPU_AGP_SBA<0..7>  54A7<
GPU_AGP_SBA<1>   17A6<>
GPU_AGP_SBA<2>   17A6<>
GPU_AGP_SBA<3>   17A6<>
GPU_AGP_SBA<4>   17A6<>
GPU_AGP_SBA<5>   17A6<>
GPU_AGP_SBA<6>   17A6<>
GPU_AGP_SBA<7>   17A6<>
GPU_AGP_SB_STB   17B6<> 54A7<
GPU_AGP_SB_STB_L  17A6<> 54A7<
GPU_AGP_STOP_L   17B6<> 54B7<
GPU_AGP_TRDY_L   17B6<> 54B7<
GPU_AGP_VREF     17A2< 17A8< 52A6>
GPU_AGP_VREF_H   16A7<
GPU_AGP_VREF_L   16A7<
GPU_AGP_VREF_X   17A2<
GPU_AGP_VREF_Y   17A2<
GPU_AGP_WBF_L    17B6<>
GPU_FB_VREF      18C8< 52A6>
GPU_FPBCLK       23C4<>
GPU_FPBCLK_L     23C4<>
GPU_FW_PME_L     23C4<>
GPU_IFB1OVDD     23B3<
GPU_IFP1PLLVDD   23B3<
GPU_MBDET_L      17A6<>
GPU_SS_XIN       22A7<
GPU_STEREO       23C4<>
GPU_STRAP<0>     22B4<> 26A4<
GPU_STRAP<1>     22B4<> 26B3<
GPU_STRAP<2>     22B4<> 26D3<
GPU_STRAP<3>     22B4<> 26D3<
GPU_SWAP_A       23C4<>
GPU_SWAP_B       23C4<>
GPU_TESTMECLK    23C4<>
GPU_TMDS_CKM     23C2< 23D3<> 57D2>
GPU_TMDS_CKP     23C2< 23D3<> 57D2>
GPU_TMDS_D0M     23C2< 23D3<> 57D2>
GPU_TMDS_D0P     23C2< 23D3<> 57D2>
GPU_TMDS_D1M     23C2< 23D3<> 57D2>
GPU_TMDS_D1P     23C2< 23D3<> 57D2>
GPU_TMDS_D2M     23C2< 23D3<> 57D2>
GPU_TMDS_D2P     23C2< 23D3<> 57D2>
GPU_TMODE        17A5< 52A8>
GPU_XTALOUTBUFF  22A8< 22B4<>
GPU_XTALSSIN     22A5< 22B2< 52A8>
```

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GPWRGD           47B8< 48A5<>
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GRAPH_CORE       17D4< 23C7<> 48C2<> 52A6>
GRAPH_DDC_SCL    22D5<> 24A7<
GRAPH_DDC_SDA    22D5<> 24A7<
GRAPH_IIC_SCL2   23D3<>
GRAPH_IIC_SDA2   23D3<>
HD_DIOR_L        37D1< 38C3<> 58C5>
HD_DIOW_L        37C1< 38C3<> 58C5>
HD_DMACK_L       37D1< 38C3<> 58C5>
HD_DMARQ         38C3<> 58C5>
HD_INTRQ         38C3<> 58C5>
HD_IOCHRDY       37C1< 38C3<> 58C5>
HD_RESET_L       37D1< 38C3<> 58C5>
HD_UIDE_ADDR<0>  38C3<>
HD_UIDE_ADDR<0..2>  58C5>
HD_UIDE_ADDR<1>  38C3<>
HD_UIDE_ADDR<2>  38C2<>
HD_UIDE_CS1FX_L  38C3<> 58B5>
HD_UIDE_CS3FX_L  38C2<> 58B5>
HEADPHONE_COM    41B2<>
HEADPHONE_L      41B2<> 41D2<
HEADPHONE_R      41B2<> 41C2<
HONK_ADJ         51B4<>
HP16_L           41D4<
HP16_R           41C4<
HPBYP            41B5< 41D6<
HPGAL_L          41D4<
HPGAL_R          41C4<
HPIN_L           41D6<
HPIN_R           41D6<
HP_OFF           41A7< 41D5<
HP_OUT_L         41D5<>
HP_OUT_R         41D5<>
HP_STAR_GND      39B7<> 41A8< 41B4< 41B8< 41C5<
                 41D4< 41D7<
HP_TL            41D3<
HP_TP            41B3<
HP_TR            41C3<
HSYNC*           22C5<> 57D5>
ICORE_COMP       47B6<
ICW              47B7<
IFP0AVCC         23A6< 23C1< 52A6>
IFP0PLLVDD       23B4<
IFP0RSET         23B4<>
IFP0VREF         23B4<> 52A6>
IFP_AVCC         23A7<>
IFP_VADJ         23A8<
IIC_ADD          29C6<> 59A8>
INTCORE_1        47B3<
INTCORE_BSTH     47B6<>
INTCORE_BSTH_TERM  47B6<>
INTCORE_DH       47B6<>
INTCORE_DHT      47B5<>
INTCORE_DL       47B6<>
INTCORE_GND      47A7<>
INTCORE_OCSET    47B6<>
INTCORE_OVP      47B6<>
INTCORE_VCC      47C7<
INTREPID_ACS_REF  9A3<
INTREPID_VPWR    47B6<>
INTREPID_VPWRA   47B4<>
INTREPID_VSENSE  47C6<> 59C8>
INTREP_DLT       47B5<>
INT_AGPPVT       16C6<>
INT_AGP_FB_IN    16C6< 54A7<
INT_AGP_FB_OUT   16C6<> 54A7<
INT_AGP_VREF     16A7< 16C6<> 52C3>
INT_ANALYZER_CLK  8A2< 9B4< 16C7< 54A7< 56B3> 59A8>

INT_ANALYZER_CLKA  9B3<>
INT_CLOCK_OUT    8B2<> 56B3>
INT_CPU_FB_IN    9B3< 56C3>
INT_CPU_FB_OUT   9B3<> 56C3>
INT_ENET_RST_L   28B5<> 28D1< 35B8<
INT_EXTINT3_PU   28B5<> 28B8<
INT_EXTINT12_PU  28B5<> 28B8<
INT_EXTINT13_PU  28B5<> 28B8<
INT_EXTINT17_PU  28B5<> 28B8< 32B6>
INT_GPIO1_PD     28A8< 28C5<>
INT_GPIO9_PU     28B5<> 28B8<
INT_GPIO12_PU    28A8< 28B5<>
INT_I2C_CLK0     14A6<> 15A6< 34B3<
INT_I2C_CLK0R    34B5<> 34C1<
INT_I2C_CLK1     34A3<> 34B1<
INT_I2C_CLK2     28A3<> 28D1< 29C7<> 34B5< 39B1<>
                 59A8>
INT_I2C_DATA0    14A6<> 15A6< 34B3<
INT_I2C_DATA0R   34B5<> 34C1<
INT_I2C_DATA1    34A3<> 34B1<
INT_I2C_DATA2    28A3<> 28D1< 29C7<> 34B5< 39B1<>
                 59A8>
INT_JTAG_TEI     34B7< 34C1<
INT_MEM_REF      12B6<
INT_MEM_VREF     12A8<> 14A1<
INT_MOD_BITCLK   28A3<> 28A8< 28C6<
INT_MOD_CLKOUT   28A3> 28A8< 28C6<
INT_MOD_DTI      28A3< 28A8< 28C6<
INT_MOD_DTO      28A3> 28A8< 28C6<
INT_MOD_SYNC     28A3<> 28A8< 28C6<
INT_PCI_FB_IN    30C5< 54C7<
INT_PCI_FB_OUT   30C5<> 54D7<
INT_PEND_PROC_INT  28A5> 44B4<>
INT_PLL1_GND     28A5<> 28C4<
INT_PLL2_GND     28A5<> 28D4<
INT_PLL3_GND     28A4<> 28D4<
INT_PLL4_GND     30C4<> 30D4<
INT_PLL5_GND     16A5<> 16D5<
INT_PLL6_GND     9A2<> 9D3<
INT_PLL7_GND     28A4<> 28D4<
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INT_PLL9_GND     28A4<> 28D4<
INT_PROC_SLEEP_REQ_L  28A5< 44B4<>
INT_PU_RESET_L   15B3< 34C3< 44C2<> 44C2<>
INT_REF_CLK_IN_PD  28A6< 53A6<
INT_RESET_L      34C3< 35B8< 41A7< 43C7< 44D2<>
INT_ROM_CS_L     30C5<>
INT_ROM_OE_L     30C5<>
INT_ROM_OVERLAY_PU  16D7< 30A7< 30C5<> 54A7<
INT_ROM_RW_L     30C5<>
INT_SND_CLKOUT   28A3<>
INT_SND_SCLK     28A3<>
INT_SND_SYNC     28B3<>
INT_SND_TO_AUDIO  28B3<>
INT_SPKR+        42A6<> 43D8<
INT_SPKR-        42A6<> 43D8<
INT_SUSPEND_ACK_L  9B3> 44B5<>
INT_SUSPEND_REQ_L  9B3< 44B8<>
INT_TMDS_3V      24C3<> 52A6> 59C8>
INT_TST_MONIN_PD  34B7< 34C1<
INT_TST_PLLEN_PD  28C6< 34B7<
INT_WATCHDOG_L   28A5> 44C5<>
INV_CUR_HI       23D7< 29B8<
INV_CUR_HI_FILT  29A5<> 59A8>
IO_RESET_L       32A6< 35B8< 44B8<> 44D3< 59A8>
IPWRGD           46A8< 47A6<>
JAZ              43B6<
JTAG_ASIC_TCK    8A4<> 34B7< 35C4< 59D8>
JTAG_ASIC_TDI    8A4<> 28C6< 34B7< 59D8>
JTAG_ASIC_TDO    8A4<> 35B4<> 59D8>
JTAG_ASIC_TMS    8A4<> 34B7< 35A2< 35B4<> 59D8>
JTAG_ASIC_TRST_L  8A4<> 34B7< 59C8>
JTAG_CPU_TCK     4C3< 7D5< 8A3<> 59C8>
JTAG_CPU_TDI     4C3< 7A5< 8A3<> 59C8>
JTAG_CPU_TDO     4C3> 8A3<> 59C8>
JTAG_CPU_TMS     4C3< 7A5< 8A3<> 59C8>
JTAG_CPU_TRST_L  4C3< 7C5< 8A3<> 59C8>
JTAG_ENET_TDI    35A2< 35B5<>
JTAG_INTRP_TDO   28C6< 34B7> 35B3<
KAVAN            43A6<
KS5VSD           29A5<> 52B3> 59A8>
KS_INT_SPKR+     29A3< 43D7< 58A5> 59B8>
KS_INT_SPKR+_FILT  29A5<>
KS_INT_SPKR-     29A3< 42B4< 43D7< 58A5> 59B8>
KS_INT_SPKR-_FILT  29A5<>
KYLE             46C6<
L31_2            40C6<
L32_2            40B6<>
L36_2            40B6<
L41_FILT         42B7<>
L43_1            41A4<
L3202_1          40C6<
LAMP_STS         23D7< 29A3<
LAMP_STS_FILT    29A5<> 59A8>
LCD_PWM          23D7< 29A8<
LCD_PWM_FILT     29A5<> 59A8>
LED_5V           29A8< 52B3>
LED_5V_FILT      29A5<> 52B3> 59A8>
LED_RET          29A3< 51B6< 52B3>
LED_RET_FILT     29A5<> 52A3> 59A8>
LED_ROMCS        30B3<>
LED_ROMCS_L      30B4<
LED_ROMCS_LIGHT  30A3<
LID_SWITCH       29B2<> 44C4<>
LINA             39C4< 40C2<
LINEOUT_COMM2    59B6>
LINE_IN_COM      40B7<> 59B6>
LINE_IN_L        40B7<> 40C7<> 59B6>
LINE_IN_R        40B6<> 40B7<> 59B6>
LINE_IN_SENSE    40B7<> 40C7<> 59B6>
LINE_OUT_L       59B6>
LINN             42C5< 43D2<
LINN1            43D2<
LINP             42C5< 43D4<
LINSENSE         40C5<
LOW_PWR          35A5< 35B4<
LO_T1            41A4<
LP4202P2         40C5<
LP4202P3         40B5<
LP4202P4         40B5<
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LPR1             41C6<
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LT1962_INT_BYP   28D7<>
LT1962_INT_VIN   28D7<>
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M1FL             43A7<>
M1H              43B6<> 43B6<>
M1HFILT          43B5<
M1L              43A6<> 43B6<>
M1S              43A6<> 43B6<>
MAIN_RESET_L     17C8< 30B2< 31D4< 32A8< 44C4<>
                 59A6>
MAIN_RESET_L_PU  31D3<>
MAIN_SUPPLY_LED  50D5<
MAXBUS_PWR_EN    46C7<
MAX_PWR_ADJ      46C5<>
MEMREFG1         20A5<>
MEMREFG2         20A4<>
MEMREFG3         21A4<>
MEMREFG4         21A4<>
MEMREFN1         18B8<>
MEMREFN2         18B7<>
MEM_ADDR<0>      12C3< 12D6<>
MEM_ADDR<0..12>  53D6<
MEM_ADDR<1>      12C3< 12D6<>
MEM_ADDR<2>      12C3< 12D6<>
MEM_ADDR<3>      12D3< 12D6<>
MEM_ADDR<4>      12D3< 12D6<>
MEM_ADDR<5>      12C2< 12D6<>
MEM_ADDR<6>      12D2< 12D6<>
```

```
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MEM_ADDR<8>      12D2< 12D6<>
MEM_ADDR<9>      12C3< 12D6<>
MEM_ADDR<10>     12C3< 12D6<>
MEM_ADDR<11>     12B3< 12D6<>
MEM_ADDR<12>     12D2< 12D6<>
MEM_BA<0>        12B3< 12D6<>
MEM_BA<0..1>     53D6<
MEM_BA<1>        12B3< 12D6<>
MEM_CAS_L        12A3< 12C6<> 53C6<
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MEM_CKE<2>       12B6<> 12C2<
MEM_CKE<3>       12B2< 12B6<>
MEM_CS_L<0>      12C2< 12C6<>
MEM_CS_L<0..3>   53C6<
MEM_CS_L<1>      12C2< 12C6<>
MEM_CS_L<2>      12B2< 12B6<>
MEM_CS_L<3>      12B2< 12B6<>
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MEM_DATA<3>      12D8<> 13C8<>
MEM_DATA<4>      12D8<> 13C8<>
MEM_DATA<5>      12D8<> 13C8<>
MEM_DATA<6>      12D8<> 13C8<>
MEM_DATA<7>      12D8<> 13C8<>
MEM_DATA<8>      12D8<> 13C8<>
MEM_DATA<9>      12D8<> 13C8<>
MEM_DATA<10>     12D8<> 13C8<>
MEM_DATA<11>     12D8<> 13C8<>
MEM_DATA<12>     12D8<> 13C8<>
MEM_DATA<13>     12D8<> 13C8<>
MEM_DATA<14>     12C8<> 13C8<>
MEM_DATA<15>     12C8<> 13C8<>
MEM_DATA<16>     12C8<> 13B6<>
MEM_DATA<17>     12C8<> 13B6<>
MEM_DATA<18>     12C8<> 13B6<>
MEM_DATA<19>     12C8<> 13B6<>
MEM_DATA<20>     12C8<> 13B6<>
MEM_DATA<21>     12C8<> 13B6<>
MEM_DATA<22>     12C8<> 13B6<>
MEM_DATA<23>     12C8<> 13B6<>
MEM_DATA<24>     12C8<> 13A6<>
MEM_DATA<25>     12C8<> 13A6<>
MEM_DATA<26>     12C8<> 13A6<>
MEM_DATA<27>     12C8<> 13A6<>
MEM_DATA<28>     12C8<> 13A6<>
MEM_DATA<29>     12C8<> 13A6<>
MEM_DATA<30>     12C8<> 13A6<>
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MEM_DATA<39>     12C8<> 13C4<>
MEM_DATA<40>     12B8<> 13C4<>
MEM_DATA<41>     12B8<> 13C4<>
MEM_DATA<42>     12B8<> 13C4<>
MEM_DATA<43>     12B8<> 13C4<>
MEM_DATA<44>     12B8<> 13C4<>
MEM_DATA<45>     12B8<> 13C4<>
MEM_DATA<46>     12B8<> 13C4<>
MEM_DATA<47>     12B8<> 13C4<>
MEM_DATA<48>     12B8<> 13B3<>
MEM_DATA<49>     12B8<> 13B3<>
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MEM_DATA<51>     12B8<> 13B3<>
MEM_DATA<52>     12B8<> 13B3<>
MEM_DATA<53>     12B8<> 13B3<>
MEM_DATA<54>     12B8<> 13B3<>
MEM_DATA<55>     12B8<> 13B3<>
MEM_DATA<56>     12B8<> 13B3<>
MEM_DATA<57>     12B8<> 13B3<>
MEM_DATA<58>     12B8<> 13B3<>
MEM_DATA<59>     12B8<> 13B3<>
MEM_DATA<60>     12B8<> 13B3<>
MEM_DATA<61>     12B8<> 13B3<>
MEM_DATA<62>     12B8<> 13B3<>
MEM_DATA<63>     12B8<> 13B3<>
MEM_DQM<0>       12C6<> 13C8<>
MEM_DQM<0..7>    53D6<
MEM_DQM<1>       12C6<> 13C8<>
MEM_DQM<2>       12C6<> 13A6<>
MEM_DQM<3>       12C6<> 13A6<>
MEM_DQM<4>       12C6<> 13C4<>
MEM_DQM<5>       12C6<> 13C4<>
MEM_DQM<6>       12C6<> 13B3<>
MEM_DQM<7>       12C6<> 13B3<>
MEM_DQS<0>       12C6<> 13C8<>
MEM_DQS<0..7>    53D6<
MEM_DQS<1>       12C6<> 13C8<>
MEM_DQS<2>       12C6<> 13A6<>
MEM_DQS<3>       12C6<> 13A6<>
MEM_DQS<4>       12C6<> 13C4<>
MEM_DQS<5>       12C6<> 13C4<>
MEM_DQS<6>       12C6<> 13B3<>
MEM_DQS<7>       12C6<> 13B3<>
MEM_MUXSEL_H<0..1>  53C6<
MEM_MUXSEL_H<1>  12B6<>
MEM_MUXSEL_L<0..1>  53C6<
MEM_MUXSEL_L<1>  12B6<>
MEM_RAS_L        12A3< 12C6<> 53C6<
MEM_WE_L         12B3< 12C6<> 53C6<
MIC1             43B5<
```

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C									C
B									B
A									A
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RAM_ADDR<11>     12B3< 14B4<> 15C4>
RAM_ADDR<12>     12D1< 14B6<> 15C4>
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RF_DISABLE_L     31C3<>
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RINN1            43C2<
RINP             42C4< 43D4<
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RJ45_7_8         35C1<> 57B5>
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RJ45_RREF        35C2<> 57B5>
RJ45_RXN         35C1<> 57B5>
RJ45_RXP         35C1<> 57B5>
RJ45_TREF        35C2<> 57B5>
RJ45_TXN         35C1<> 57B5>
RJ45_TXP         35C1<> 57B5>
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ROMA15           18C8< 26D8<
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ROM_OE_L         30B2< 30C6< 31B2<> 59C8>
ROM_ONBOARD_CS_L   30B2< 31B4<> 59D6>
ROM_RW_L         30B2< 30B6< 31B4<> 59B8>
ROM_WP_L         30B2< 59A8>
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RT406P2          47B3<>
RT418P2          50C7<
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RUNSS            50C8< 50D3<
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S3700P2          44A1<>
SB1P1            44A3<
SENSE+           45C6<
SENSE+_1         45B5< 45C7<
SENSE-           45C6< 45C8<>
SENSE-_1         45B5< 45C7<
SGRAVREF         20A3< 20C4< 20C8< 52A6>
SGRBVREF         21A3< 21C4< 21C8< 52A6>
SHS              50C7<
SI_EDGE          27C5<
SI_EXT_SWING_SET  27B3<>
SI_I2C_OFF       27C5<
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SI_SCA           23D2< 27C5<
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SI_TMDS_D0M      27C3<> 57C2>
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SI_TMDS_D1P      27C3<> 57C2>
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SLEEP2           51A7<
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SND_AMP_M_L      42D3< 43C7<>
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SND_HW_RESET_L   28A8< 28B5<> 39B4<
SND_LIN_SENSE_L  28B5<> 40D4< 59B6>
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SND_SPKR_ID_U10  42B8<
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SND_TO_AUDIO     28B1< 39C4<
SNF_FSEL         28C5<> 28D3<
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SPKROUT_L_P      42A8< 42C8<
SPKROUT_R_N      42A8< 42C1<
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SPKR_LM          42A5<>
SPKR_LP          42A5<>
SPKR_RM          42A5<>
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SPKR_RP          42A5<>
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SW3V_VOSNS       50B6<>
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SW5V_TG1R        50B4<>
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SW12V_SL         51C7<
SW12V_SLEEP      51D7<>
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SWITCH5V_5       51B3<
SWITCH5V_6       51B2<>
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SYSCLK_DDRCLK_A0_L_UF  12B6<> 53C6<
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SYSCLK_DDRCLK_A1_L  12B4< 14A4<> 53C6<
SYSCLK_DDRCLK_A1_L_UF  12B6<> 53C6<
SYSCLK_DDRCLK_A1_UF  12B6<> 53C6<
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SYSCLK_DDRCLK_A2_L_UF  12B6<> 53B6<
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SYSCLK_DDRCLK_B1_L_UF  12B6<> 53B6<
SYSCLK_DDRCLK_B1_UF  12B6<> 53B6<
SYSCLK_DDRCLK_B2  12A4< 15A6< 53B6<
SYSCLK_DDRCLK_B2_L  12A4< 15A6< 53B6<
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TCKP             24C4<> 57C5>
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TD0P             24C3<> 57C5>
TD1M             24C3<> 57C5>
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TD2M             24C4<> 57C5>
TD2P             24C3<> 57C5>
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UIDE_DATA<11>    37B3< 37C7<>
UIDE_DATA<12>    37B3< 37C7<>
UIDE_DATA<13>    37A3< 37C7<>
UIDE_DATA<14>    37A3< 37C7<>
UIDE_DATA<15>    37A3< 37C7<>
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UIDE_DIOW_L      37C3< 37C7<> 58C5>
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UIDE_INTRQ       37C7< 38C4< 58C5>
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UIDE_REF         37C7<>
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UNUSED_EXTINT8   28B5<> 28B8<>
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USB2_CRUN_L_INT  28A8< 28B5<> 32A8<
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USB2_DBP_F       32C1<> 33C7< 56B3>
USB2_DCN_F       32C1<> 33D7< 56B3>
USB2_DCP_F       32C1<> 33D7< 56B3>
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USB2_NC2         32B4<>
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USB2_RSDAP       32C4<> 56B3>
USB2_RSDBM       32C4<> 56B3>
USB2_RSDBP       32C4<> 56B3>
USB2_RSDCM       32C4<> 56B3>
USB2_RSDCP       32C4<> 56B3>
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USBT_DAP_F       33B6<> 56B3>
USBT_DBN_F       33C6<> 56A3>
USBT_DBP_F       33C6<> 56A3>
USBT_DCN_F       33D6<> 56A3>
USBT_DCP_F       33D6<> 56A3>
USB_DAN          28A3< 28B3<> 58B5>
USB_DAN_CON      33C3<> 56A3> 59C6>
USB_DAN_F        28B2< 33B7< 58B5>
USB_DAP          28A3< 28B3<> 58B5>
USB_DAP_CON      33C3<> 56A3> 59C6>
USB_DAP_F        28B2< 33B7< 58B5>
USB_DBN          28A3< 28B3<> 58B5>
USB_DBN_CON      33B3<> 56A3> 59C6>
USB_DBN_F        28B2< 33C7< 58B5>
USB_DBP          28A3< 28B3<> 58B5>
USB_DBP_CON      33B3<> 56A3> 59C6>
USB_DBP_F        28B2< 33C7< 58B5>
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USB_DCN_CON      33D3<> 56A3> 59C6>
USB_DCN_F        28B2< 33D7< 58B5>
USB_DCP          28A3< 28B3<> 58B5>
USB_DCP_CON      33D3<> 56A3> 59C6>
USB_DCP_F        28B2< 33D7< 58B5>
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USB_DDP          28B3<>
USB_DDP_F_TERM   28B2<
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USB_DEP          28B3<> 58B5>
USB_DFN          28B3<> 58A5>
USB_DFP          28B3<> 58A5>
USB_GND          52A3>
USB_OC_EF_L      28B3< 28C2<
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USB_PWR          25B5<> 25C2< 25D3<> 33A6<> 52A3>
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USB_PWREN_CD_L   28B3<> 28C2<
USB_PWREN_EF_L   28B3<> 28C2<
USB_PWR_EN       33A8<>
USB_PWR_FLT*     28B3< 28C1< 32B1< 33A7>
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UX6_LINB         39C4<
U_USB_PWR_FLT*   32B4<
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VCORE_BOOST2     45C6<>
VCORE_BOOST2_1   45B5< 45C7<>
VCORE_BOOST_1    45B5<>
VCORE_EXTVCC     45D7<
VCORE_FREQSET    45C7<
VCORE_INTVCC     45C5<> 45D5<> 45D7<>
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VCORE_SEN+_1     45A3<>
VCORE_SENA+      45C3<>
VCORE_SF         45C8<
VCORE_SGND       45B7<> 45C7<> 45C7<> 45C8<> 45C8<>

VCORE_STBY       45C7<>
VCORE_TG         45C6<>
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VCORE_VIN        45D7<>
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VC_SENA          45B3<>
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VGA_IIC_DAT      25C4<> 59B6>
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VREFM            39B4<
VREFP            39B4< 43A3<
VRFILT           39B3<>
VSYNC*           22C5<> 57D5>
WL_PCI_IDSEL     31C2<> 59A6>
XMIT_LED         35A2< 35B4<>
ZT8P1            4A1<>
ZT9P1            4B2<>
ZT10P1           4A2<>
ZT11P1           4B1<>
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APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE	SHT	OF
NONE	64	69

*** Part Cross-Reference for the entire design ***

BS1	PCB_STANDOFF	29B5
BS2	PCB_STANDOFF	29B6
BS3	PCB_STANDOFF	29D1
BS4	PCB_STANDOFF	29D1
BT1	BATTERY	44D6
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C2	CAP	33D4
C3	CAP	35B1
C4	CAP	36B6
C5	CAP_P	33A5
C6	CAP	33B4
C7	CAP_P	33A5
C8	CAP	21A4
C9	CAP	21A4
C10	CAP_P	36D7
C11	CAP	21A4
C12	CAP_P	36D7
C13	CAP_P	41C4
C14	CAP	12A7
C15	CAP	21D2
C16	CAP	21B4
C17	CAP	21D5
C18	CAP	51D3
C19	CAP_P	51D4
C20	CAP	21B2
C21	CAP	21D5
C22	CAP	21B4
C23	CAP	21B4
C24	CAP_P	40B4
C25	CAP_P	40C4
C26	CAP_P	41D4
C27	CAP	36D8
C28	CAP	21B1
C29	CAP	21B3
C30	CAP	12A6
C31	CAP	21B2
C32	CAP	21D4
C33	CAP	21B2
C34	CAP	21B3
C35	CAP	43B5
C36	CAP	42D7
C37	CAP	35D7
C38	CAP	21D2
C39	CAP	21D5
C40	CAP	21B3
C41	CAP	35D8
C42	CAP	36B8
C43	CAP	41D6
C44	CAP	35D4
C45	CAP	42B8
C46	CAP	14D8
C47	CAP	14D8
C48	CAP	15D8
C49	CAP	15D8
C50	CAP	15D7
C51	CAP	15C3
C52	CAP	35D4
C53	CAP	35D5
C54	CAP	18B8
C55	CAP	15C1
C56	CAP	35D4
C57	CAP	35D6
C58	CAP	15B1
C59	CAP_P	48B2
C60	CAP	41C6
C61	CAP	18B6
C62	CAP	18D6
C63	CAP	40B2
C64	CAP	40C2
C65	CAP	35D7
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C67	CAP	35D5
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C88	CAP_P	48B1
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C91	CAP	17B3
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C94	CAP	17C3
C95	CAP	18H5
C96	CAP	18H2
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C104	CAP	17D4
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C106	CAP_P	48B2
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C129	CAP	17B3
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C209	CAP	22B6
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C213	CAP	22D6
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C219	CAP	17C2
C220	CAP_P	48C8
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C223	CAP	17C2
C224	CAP	22C2
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C336	CAP_P	45C2
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C730	CAP	11D3
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C736	CAP	11B5
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C747	CAP	11D1
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C783	CAP	44D5
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C814	CAP	11B6
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C817	CAP	11C6
C818	CAP	11B5
C819	CAP	15D3
C820	CAP	28C3
C821	CAP	11C1
C822	CAP	11C1
C823	CAP	11D7
C824	CAP	11D6
C825	CAP	11B7
C826	CAP	11B7
C827	CAP	11C5
C828	CAP	11C1
C829	CAP	11C2
C830	CAP	11C3
C831	CAP	11D3
C832	CAP	11D7
C833	CAP	11D3
C834	CAP	11D6
C835	CAP	11B3
C836	CAP	11C6
C837	CAP	11C7
C838	CAP	11B7
C839	CAP	11C6
C840	CAP	28A6
C841	CAP	11D4
C842	CAP	11D6
C843	CAP	11C7
C844	CAP	11D6
C845	CAP	11D6
C846	CAP	11D7
C848	CAP	30D5
C849	CAP	11C6
C850	CAP	11B3
C851	CAP	11B3
C852	CAP	11B2
C854	CAP	9D3
C855	CAP	11C5
C856	CAP	11B7
C857	CAP	11C6
C858	CAP	13D4
C859	CAP	13D3
C860	CAP	13D4
C861	CAP	44A1
C862	CAP	44B7
C863	CAP	11C2
C864	CAP	15D2
C865	CAP	11B1
C866	CAP	11C3
C867	CAP	11C3
C868	CAP	11C2
C869	CAP	11D5
C870	CAP	11D6
C871	CAP	11D6
C872	CAP	11D5
C873	CAP	11D5
C874	CAP	11D5
C875	CAP	11B3
C876	CAP	11C5
C877	CAP	11C7
C878	CAP	11C7
C879	CAP	11B2
C880	CAP	11C5
C881	CAP	11B3
C882	CAP	11B1
C883	CAP	11B2
C884	CAP	11D6
C885	CAP	11D7
C886	CAP	11D5
C887	CAP	11D7
C888	CAP	11D6
C889	CAP	11D6
C890	CAP	11D7
C891	CAP	11D6
C892	CAP	11C4
C893	CAP	11C1
C894	CAP	11C2
C895	CAP	11D5
C896	CAP	11D5
C897	CAP	11D6
C898	CAP	11D5
C899	CAP	11D5
C900	CAP	11D7
C901	CAP	11D7
C902	CAP	11C7
C903	CAP	11B2
C904	CAP	11C6
C908	CAP	13C2
C909	CAP	13C2
C910	CAP	13C1
C911	CAP	37C2
C914	CAP	15D2
C915	CAP	51D7
C917	CAP	37C5
C918	CAP	51D6
C919	CAP	38C7
C920	CAP	38C1
C921	CAP	38C5
C922	CAP	15D2
C923	CAP	38B5
C924	CAP	38B7
C925	CAP	15D3
C926	CAP	50C1
C927	CAP	50B1
C928	CAP_P	47B4

C929	CAP	14A7
C930	CAP	50B8
C931	CAP	50B5
C932	CAP	50A5
C933	CAP	50A6
C934	CAP	50B1
C935	CAP_P	47B3
C936	CAP	15D3
C937	CAP	50C7
C938	CAP	50A4
C939	CAP	50A6
C940	CAP	50A5
C941	CAP	50C5
C943	CAP	15A3
C944	CAP	45D3
C945	CAP	15A2
C947	CAP_P	45C1
C948	CAP	49B4
C949	CAP	45C5
C950	CAP	45D4
C951	CAP	45D4
C952	CAP	45D4
C953	CAP	45D4
C954	CAP	4C2
C955	CAP	50D3
C956	CAP	50D4
C957	CAP_P	45B1
C958	CAP	8D4
C959	CAP	49C4
C960	CAP	45B2
C961	CAP	8C2
C962	CAP	49C3
C963	CAP	45D4
C964	CAP	45D4
C965	CAP	45D4
C966	CAP	45D4
C967	CAP	8C1
C968	CAP	49C4
C969	CAP	8D4
C970	CAP	50D4
C971	CAP	50D4
C972	CAP	8D2
C973	CAP	8D1
C974	CAP	8D1
C975	CAP	49C4
C976	CAP	8C1
C977	CAP	8D1
C978	CAP	50D4
C979	CAP	50D4
C980	CAP	8D2
C981	CAP	8D2
C982	CAP	8D2
C983	CAP	8D3
C984	CAP	27D3
C985	CAP	50D3
C986	CAP	50D4
C987	CAP	8D2
C988	CAP	8D3
C989	CAP	49C3
C990	CAP	8D1
C991	CAP	8D1
C992	CAP	8D3
C993	CAP	8D1
C994	CAP	8C2
C995	CAP	8D2
C996	CAP	8A7
C997	CAP	8A6
C998	CAP	8D2
C999	CAP	8D1
C1000	CAP	49B6
C1001	CAP	8A6
C1002	CAP	8A7
C1003	CAP	8D1
C1004	CAP	49B6
C1005	CAP	49C4
C1006	CAP	45C2
C1007	CAP	8C2
C1008	CAP	8B6
C1009	CAP	8A7
C1010	CAP	8B6
C1011	CAP	8B6
C1012	CAP	8A7
C1013	CAP	8D2
C1014	CAP	8D2
C1015	CAP	49B7
C1016	CAP	8C1
C1017	CAP	8A6
C1018	CAP	8A6
C1019	CAP	49C6
C1020	CAP	8C1
C1021	CAP	8C1
C1022	CAP	8B7
C1023	CAP	8A6
C1024	CAP	8A6
C1025	CAP	8B6
C1026	CAP	8D2
C1027	CAP	8B7
C1028	CAP	8A6
C1029	CAP	45B4
C1030	CAP	45B2
C1031	CAP	8A6
C1032	CAP	8C2
C1033	CAP	8C1
C1034	CAP	45B2
C1035	CAP	4D3
C1036	CAP	4D3
C1037	CAP	8C1
C1038	CAP	45B4
C1039	CAP	45C5
C1040	CAP	8C2

C1041	CAP	8D3
C1042	CAP	8C1
C1043	CAP	8D2
C1044	CAP	45D7
C1045	CAP	45B7
C1046	CAP	45C1
C1047	CAP	45D5
C1048	CAP	45C2
C1049	CAP	45B7
C1050	CAP	45C7
C1051	CAP	45B6
C1052	CAP	45C8
C1053	CAP	46A7
C1054	CAP	8B2
C1055	CAP	8B2
C1056	CAP	8B1
C1057	CAP	8B1
C1058	CAP	8B1
C1059	CAP	42C7
C1060	CAP	42C6
C1061	CAP	42A7
C1062	CAP	42A7
C1063	CAP	42C6
C1064	CAP	42C6
C1065	CAP	42A7
C1066	CAP	42C6
C1067	CAP	42A7
C1068	CAP	42D6
C1069	CAP	42D4
C1070	CAP	42C4
C1071	CAP	42C4
C1072	CAP	42C3
C1073	CAP	42C3
C1074	CAP	42C3
C1075	CAP	42C2
C1076	CAP	43D5
C1077	CAP	43D5
C1078	CAP	43D5
C1079	CAP	43D5
C1080	CAP_P	42B3
C1081	CAP_P	42A3
C1082	CAP	42B2
C1083	CAP	42B2
C1084	CAP	42B2
C1085	CAP	42B2
C1086	CAP	42A2
C1087	CAP	43D2
C1088	CAP	43D2
C1089	CAP	42B2
C1090	CAP	42B2
C1091	CAP	42B2
C1092	CAP	42B2
C1093	CAP	42A2
C1094	CAP	43C2
C1095	CAP	43D2
C1096	CAP	8A7
C1097	CAP	8A7
C1098	CAP	8B5
C1099	CAP	42C8
C1100	CAP	42C2
C1101	CAP	9D3
C1102	CAP_P	42B3
C1103	CAP	22B5
C1401	CAP	14D7
C1402	CAP	14D2
C1403	CAP	14C1
C1404	CAP	14C1
C1405	CAP	14C1
C1406	CAP	14C3
C1407	CAP	14C2
C1408	CAP	14C2
C1409	CAP	14C2
C1410	CAP	14C2
C1411	CAP	14C1
C1412	CAP	14C1
C1413	CAP	14C1
C1414	CAP	14B1
C1415	CAP	14C3
C1416	CAP	14C2
C1417	CAP	14C2
C1418	CAP	14C2
C1419	CAP	14C2
C1420	CAP	14C1
C1421	CAP	14C1
C1501	CAP	15D7
C1502	CAP	15D1
C1503	CAP	15D1
C1504	CAP	15D3
C1505	CAP	15D3
C1506	CAP	15D3
C1507	CAP	15D2
C1508	CAP	15D2
C1509	CAP	15D2
C1510	CAP	15D1
C1511	CAP	15D1
C1512	CAP	15D1
C1513	CAP	15D1
C1514	CAP	15C3
C1515	CAP	15C3
C1601	CAP	14D7
C1602	CAP	14D3
C1702	CAP	15D7
C1801	CAP	16D5
C1802	CAP	16A7
C1901	CAP	8A7
C1902	CAP	8A6
C1903	CAP	8A6
C1904	CAP	8A6
C1910	CAP	8A6
C1911	CAP	8C2

C1912	CAP	8C1
C1913	CAP	8C1
C1914	CAP	8C1
C2201	CAP	20C8
C2202	CAP	20C4
C2301	CAP	21C8
C2302	CAP	21C4
C2501	CAP_P	23A8
C3001	CAP	28C5
C3002	CAP	28D5
C3003	CAP	28D5
C3004	CAP	28D4
C3005	CAP	28D4
C3201	CAP	30D4
C3501	CAP	35D6
C3502	CAP	33A8
C3901	CAP	37D1
C4081	CAP	46C7
C4201	CAP	42B6
C4301	CAP	41A6
C4502	CAP_P	43B5
C4504	CAP	45B3
C4509	CAP	45C4
C4701	CAP	45B6
C4702	CAP	47B4
C4801	CAP	48B4
C4901	CAP	49B4
C5001	CAP	50C3
C5002	CAP	50A3
D1	DIODE_DUAL_6P	36A7
D2	DIODE_DUAL_6P	36A7
D3	DIODE_DUAL_6P	36A7
D4	DIODE_DUAL_6P	36B7
D5	ZENER_MMBZ15VDLT1	40B6
D6	DIODE_DUAL_6P	25D4
D7	DIODE_DUAL_6P	25D4
D8	DIODE	36D6
D9	DIODE	35B8
D10	DIODE_SCHOT	23B8
D11	DIODE_SCHOT	44D7
D12	DIODE_SCHOT	44D7
D13	DIODE_SCHOT	47C7
D14	DIODE_SCHOT	47B5
D15	DIODE_SCHOT	49B3
D16	DIODE_SCHOT	50C5
D17	DIODE_SCHOT	50B5
D18	DIODE_SCHOT	49C6
D19	DIODE_SCHOT	46D6
D20	DIODE_SCHOT	45D5
D21	DIODE_SCHOT	45B5
D23	DIODE_SCHOT_3P	42A6
D24	ZENER_MMBZ15VDLT1	41B2
D25	ZENER	36B6
D26	ZENER_MMBZ15VDLT1	41B2
D27	DIODE_DUAL_6P	25B4
D28	DIODE_DUAL_6P	25B4
D29	ZENER_MMBZ15VDLT1	40B5
D30	DIODE_SCHOT	48C5
D31	DIODE_SCHOT	48B3
D32	DIODE_SCHOT	48B5
D33	DIODE_SCHOT	46B6
D34	DIODE_SCHOT	48B2
D35	DIODE_SCHOT	44D6
D36	DIODE_SCHOT	44D6
D37	DIODE_SCHOT	50B2
D38	DIODE_SCHOT	50C6
D39	DIODE_SCHOT	50B4
D40	DIODE_SCHOT	50A4
D41	DIODE_SCHOT	45C4
D42	DIODE_SCHOT	49B5
D43	DIODE_SCHOT	45B4
D44	DIODE_SCHOT	45D2
D45	DIODE_SCHOT	45D6
D46	DIODE_SCHOT	49B1
D47	DIODE	36D6
D48	DIODE_DUAL_SWI	42B6
D4901	DIODE_SCHOT	47B2
DS1	LED	35A2
DS2	LED	35A1
DS3	LED	35A1
DS4	LED	30A3
DS5	LED	51C8
DS6	LED	51A6
DS7	LED	38B2
DS8	LED	38B6
DS9	LED	50D5
DS10	LED	51A4
DZ1	ZENER	51B1
F2	FUSE	36D5
F3	FUSE	36D5
FL2	FILTER_LC	25C6
FL3	FILTER_LC	25C6
FL4	FILTER_LC	25B6
J1	CON_RJ45	35C1
J2	CON_FWVERT_SKT	36C1
J3	CON_F8RT_S_TH1	42B5
J4	CON_F4RT_USB_UPRIGHT	33C3
J5	CON_FWVERT_SKT	36D1
J6	CON_F4RT_USB_UPRIGHT	33B3
J7	CON_F4RT_USB_UPRIGHT	33D3
J8	CON_F4RT_S4MT_TH1	41C1
J9	CON_F14RT_D4MT_TH1	25C5
J10	CON_F4RT_S4MT_TH1	40C7
J11	CON_F184ST_DDRDIMM	15D5
J12	CON_F21ST_D2MT_SM	24C4
J13	CON_M40SM_635	29D6
J14	CON_M18ST_D_TH	29B5
J15	CON_M40ST_NC20	38D6
J16	CON_M40ST_NC20	38D2
J17	CON_M16ST_MICROFIT	50D7

J18	CON_M4ST_LCK	34B4
J19	CON_37SM_MTOR	8C4
J20	CON_38SM_MTOR	8D7
J21	CON_M3ST_LCK	45C8
J22	CON_F20SM_KX	8A4
J23	CON_F1ST_S2MT_SM	28B7
J24	CON_M12ST_SM	29B3
J25	CON_F100RT_LP_SM	31D3
J26	CON_F200RT_DDRDIMM_SM2	14D5
J27	CON_F1ST_S2MT_SM	8B1
J28	CON_F10ST_D_SMA	29D2
J30	CON_38SM_MTOR	8D4
J31	CON_38SM_MTOR	8C7
J32	CON_F12RT_S2MT_SM	8A8
J4501	CON_F4ST_S2MT_SM	43B6
J4502	CON_F4ST_S2MT_SM	43B6
JAZ1	TP	51A5
L1	IND	36D4
L2	IND	33A5
L3	IND	36D4
L4	IND	27D5
L5	FILTER_4P	36C2
L6	FILTER_4P	36C2
L7	FILTER_4P	36D2
L8	FILTER_4P	36D2
L9	IND	25C2
L12	IND	48B3
L13	IND	22D7
L16	IND	28C3
L19	IND	47B4
L20	IND	45C3
L21	IND_3P	49B3
L22	IND_3P	50A3
L23	IND	50C3
L24	IND	45B3
L26	IND	42A6
L27	IND	41C3
L32	IND	36B6
L33	IND	22B7
L34	IND	41D3
L35	IND	41B3
L36	IND	40B6
L39	IND	41A3
L40	IND	42A5
L41	IND	42B7
L42	IND	41B3
L43	IND	41A4
L44	IND	41C3
L45	IND	41D3
L46	IND	40C6
L47	IND	41B3
L48	IND	40C6
L49	IND	40B5
L50	IND	40C5
L51	IND	40D6
L52	IND	40C5
L53	IND	40D5
L56	IND	44A1
L57	IND	44A1
L58	IND	32D6
L59	IND	43A5
L60	IND	43B5
L63	IND	39D4
L64	IND	24A5
L65	IND	29A7
L66	IND	29A3
L67	FILTER_4P	24B5
L68	IND	22D2
L69	IND	29A3
L70	IND	29A7
L71	FILTER_4P	24B5
L72	IND	29A7
L73	IND	29A3
L74	FILTER_4P	24C5
L75	IND	29A7
L76	FILTER_4P	24D5
L77	IND	29B7
L78	IND	29A3
L79	IND	43B7
L80	IND	29B3
L81	IND	43A7
L82	IND	24D5
L83	IND	43A7
L84	IND	50D6
L85	IND	50D6
L86	IND	50D6
L87	IND	27D5
L88	IND	27D2
L89	IND	42C7
L90	IND	42C6
L91	IND	42C6
L92	IND	42C7
L93	IND	42C3
L94	IND	42C2
L95	IND	42C2
L96	IND	42C3
L97	IND	43D7
L98	IND	43D7
L99	IND	42B3
L100	FILTER_4P	33D5
L101	FILTER_4P	33C5
L102	FILTER_4P	33B5
L103	IND	29B3
L2401	IND	22C7
L2501	IND	23A6
LP1	LPAK4P	42A8
Q1	TRA_2N7002	51C3
Q2	TRA_2N7002	42D7
Q3	TRA_2N7002	42C7
Q4	TRA_2N7002	42B8

Q5	TRA_2N7002	41A5	
Q6	TRA_2N7002	42B6	
Q7	TRA_SUD70N03	48B4	
Q8	TRA_SUD50N03	48B4	
Q9	TRA_SUD50N03	48C4	
Q10	TRA_2N7002	22B7	
Q11	TRA_FDC602P	51C2	
Q12	TRA_2N3904	44D7	
Q13	TRA_2N7002	51B2	
Q14	TRA_2N7002	51C7	
Q15	TRA_2N7002	51B7	
Q16	TRA_2N7002	51A7	
Q17	TRA_2N7002	51B6	
Q18	TRA_2N7002	51A7	
Q19	TRA_2N7002	51A6	
Q20	TRA_FDC602P	51D7	
Q21	TRA_2N7002	50C1	
Q22	TRA_2N7002	50D1	
Q23	TRA_2N7002	50C2	
Q24	TRA_2N7002	50C2	
Q25	TRA_IRF7807Z	47B5	
Q26	TRA_IRF7807Z	47B5	
Q27	TRA_SUD70N03	49B4	
Q28	TRA_SUD50N03	49B4	
Q29	TRA_2N7002	45D8	
Q30	TRA_2N3904	36C7	
Q31	TRA_2N7002	41A8	
Q32	TRA_2N7002	39C7	
Q33	TRA_2N3904	43A2	
Q34	TRA_SUD70N03	48B4	
Q35	TRA_2N7002	40D4	
Q36	TRA_2N7002	42D3	
Q37	TRA_FDC602P	51C6	
Q38	TRA_2N7002	51B6	
Q39	TRA_2N3904	50C7	
Q40	TRA_SUD70N03	45C4	
Q41	TRA_2N7002	15B2	
Q42	TRA_2N7002	15C2	
Q43	TRA_SUD70N03	45C4	
Q44	TRA_SUD50N03	45C4	
Q45	TRA_IRF7807Z	50B4	
Q46	TRA_IRF7807Z	50C4	
Q47	TRA_SUD50N03	50A4	
Q48	TRA_SUD50N03	50A4	
Q49	TRA_SUD70N03	45B4	
Q50	TRA_SUD50N03	45B4	
Q51	TRA_SUD70N03	45B4	
Q52	TRA_2N7002	15B2	
Q53	TRA_2N7002	15A2	
Q54	TRA_2N7002	15B2	
R1	RES	36D4	
R2	RES	25B4	
R3	RES	25B4	
R4	RES	21A4	
R5	RES	21A3	
R6	RES	21A4	
R7	RES	25B5	
R8	RES	36C4	
R9	RES	36C4	
R10	RES	36C4	
R11	RES	36C4	
R12	RES	36C3	
R13	RES	36C3	
R14	RES	36C3	
R15	RES	36C3	
R16	RES	36B3	
R17	RES	21A3	
R18	RES	21A4	
R19	RES	25B5	
R20	RES	19C2	
R21	RES	51D3	
R22	RES	51C4	
R23	RES	51D3	
R24	RES	19A3	
R25	RES	19A3	
R26	RES	35B4	
R27	RES	35C4	
R28	RES	35A8	
R29	RES	35B7	
R30	RES	35C3	
R31	RES	19A3	
R32	RES	19A3	
R33	RES	35C4	
R34	RES	35C7	
R35	RES	36D6	
R36	RES	18B8	
R37	RES	35C4	
R38	RES	35C7	
R39	RES	36D6	
R40	RES	35C4	
R41	RES	18B8	
R42	RES	35B4	
R43	RES	33D7	
R44	RES	33D7	
R45	RES	33C7	
R46	RES	33C7	
R47	RES	33B7	
R48	RES	33B7	
R49	RES	18B7	
R50	RES	18B7	
R51	RES	42B7	
R52	RES	18C5	
R53	RES	19A4	
R54	RES	18D3	
R55	RES	19A4	
R56	RES	18D2	
R57	RES	19A4	
R58	RES	18D3	
R59	RES	18C2	
R60	RES	19A4	
R61	RES	18A3	
R62	RES	18A2	
R63	RES	19A4	
R64	RES	18D3	
R65	RES	19A4	
R66	RES	18D2	
R67	RES	18D2	
R68	RES	19A4	
R69	RES	19A4	
R70	RES	18D3	
R71	RES	18D6	
R72	RES	17A5	
R73	RES	26C2	
R74	RES	26D2	
R75	RES	35B8	
R76	RES	35B8	
R77	RES	26D2	
R78	RES	32A7	
R79	RES	26C2	
R80	RES	17A5	
R81	RES	19A7	
R82	RES	12A8	
R83	RES	18A5	
R84	RES	18G2	
R85	RES	23D6	
R86	RES	23D6	
R87	RES	26B3	
R88	RES	18A5	
R89	RES	32D3	
R90	RES	18G3	
R91	RES	23D6	
R92	RES	23D6	
R93	RES	12A8	
R94	RES	26A3	
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R622	RES	16C6	
R623	RES	37D5	
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R627	RES	37D5	
R628	RES	28D5	
R629	RES	28D5	

R630	RES	28D5	R761	RES	37C5	R896	RES	45C5	R1007	RES	33D5	RP19	RPAK4P	19D7	U6	OPAMP_TLV2362 40B3 40C3			
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R678	RES	28C8	R797	RES	50A5	R930	RES	46C5	R1412	RES	14B7	RP54	RPAK4P	31B7	U45	DCDC_SC2602 49C5			
R679	RES	37A2	R798	RES	50A5	R931	RES	45D7	R1413	RES	14B7	RP56	RPAK4P	31B7	U46	SN74LVC1G04 44D1			
R680	RES	28A8	R799	RES	50B8	R932	RES	45C7	R1414	RES	14B7	RP58	RPAK4P	31C7	U47	LTC3707 45C6			
R682	RES	50D5	R800	RES	45C3	R933	RES	45D7	R1415	RES	14B7	RP59	RPAK4P	31C7	U48	NC7WZ08 41A7 43C7			
R683	RES	28A1	R801	RES	45C3	R934	RES	45C8	R1416	RES	14B7	RP60	RPAK4P	28C2	U49	AMP_SN0210045A 42D5			
R684	RES	34C1	R802	RES	50B5	R935	RES	45A5	R1417	RES	14B7	RP61	RPAK4P	31B7	U3501	SWI_TPS2023 33A7			
R685	RES	51B7	R803	RES	50B5	R936	RES	45A5	R1418	RES	14A7	RP62	RPAK4P	12C3	VR1	VREG_LM1117 39C7			
R686	RES	44A7	R804	RES	50B6	R937	RES	8A4	R1503	RES	15C7	RP63	RPAK4P	30B8	VR2	VREG_MIC39102 46B6			
R687	RES	44A7	R805	RES	50A3	R939	RES	8A4	R1504	RES	15C7	RP64	RPAK4P	31B7	VR3	VREG_EZ1582 51B4			
R688	RES	44C2	R806	RES	50C6	R940	RES	8A4	R1505	RES	15C7	RP65	RPAK4P	34C4	VR4	VREG_MIC39102 46C5			
R689	RES	44C3	R807	RES	50B5	R941	RES	37D1	R1506	RES	15C7	RP66	RPAK4P	28A8	XW1	SHORT 39B7			
R690	RES	44D3	R808	RES	50C3	R942	RES	22A7	R1507	RES	15C7	RP67	RPAK4P	31B7	XW2	SHORT8L25_WITH_ALTS 48B2			
R691	RES	28B3	R809	RES	15A8	R943	RES	37D2	R1508	RES	15C7	RP68	RPAK4P	12D3	XW4	SHORT 39B7			
R692	RES	44A3	R810	RES	50A5	R944	RES	37D2	R1509	RES	15C7	RP69	RPAK4P	30B8	XW5	SHORT 39B7			
R693	RES	44D8	R811	RES	50C5	R945	RES	46B7	R1510	RES	15B7	RP70	RPAK4P	34C7	XW6	SHORT8L25_WITH_ALTS 48B4			
R694	RES	28B3	R815	RES	50B3	R946	RES	23D2	R1511	RES	15B7	RP71	RPAK4P	12C2 12D2	XW7	SHORT8L25_WITH_ALTS 48C7			
R697	RES	12A3	R825	RES	15A3	R947	RES	23D2	R1512	RES	15B7	RP72	RPAK4P	31C7	XW12	SHORT8L25_WITH_ALTS 47B3			
R698	RES	44A3	R827	RES	49B5	R948	RES	31D4	R1513	RES	15B7	RP73	RPAK4P	31C7	XW13	SHORT8L25_WITH_ALTS 47B4			
R699	RES	44D3	R832	RES	9D6	R949	RES	31D4	R1514	RES	15B7	RP74	RPAK4P	28A8	XW14	SHORT8L25_WITH_ALTS 47C5			
R700	RES	44D3	R833	RES	9B7	R950	RES	31D3	R1515	RES	15B7	RP75	RPAK4P	31C7	XW15	SHORT8L25_WITH_ALTS 47A6			
R701	RES	44D4	R840	RES	7C7	R951	RES	31C2	R1516	RES	15B7	RP76	RPAK4P	34C7	XW16	SHORT8L25_WITH_ALTS 50A3			
R702	RES	34C4	R841	RES	7C7	R952	RES	22A7	R1517	RES	15A7	RP77	RPAK4P	31C7	XW17	SHORT8L25_WITH_ALTS 50B8			
R705	RES	29B3	R842	RES	7B7	R953	RES	22A7	R1518	RES	15A7	RP78	RPAK4P	7A7	XW18	SHORT8L25_WITH_ALTS 50A3			
R706	RES	29C3	R843	RES	7A7	R954	RES	22A6	R3001	RES	28A2	RP79	RPAK4P	7A5 7C5	XW19	SHORT8L25_WITH_ALTS 50B2			
R707	RES	34D4	R844	RES	7A7	R955	RES	22A6	R3002	RES	28A2	RP80	RPAK4P	19B7	XW20	SHORT8L25_WITH_ALTS 50B3			
R708	RES	28C8	R845	RES	7B7	R956	RES	22A6	R3501	RES	33A8	RP81	RPAK4P	19B7	XW21	SHORT8L25_WITH_ALTS 50A6			
R709	RES	34C3	R846	RES	7B7	R957	RES	22A6	R4201	RES	42B6	RP82	RPAK4P	19B7 19C7 19C7	XW22	SHORT8L25_WITH_ALTS 50B5			
R710	RES	28A5	R847	RES	7B7	R958	RES	46B5	R4202	RES	42C5	RP83	RPAK4P	18B2 18B3 18B3	XW23	SHORT8L25_WITH_ALTS 49B2			
R711	RES	28A6	R848	RES	7D5	R959	RES	46C5	R4203	RES	42B5	RP84	RPAK4P	18B2 18B2 18B3	XW24	SHORT8L25_WITH_ALTS 49C4			
R712	RES	9A3	R849	RES	7B7	R960	RES	23D2	R4301	RES	41A7	RP85	RPAK4P	18B3 18C2 18C3	XW25	SHORT8L25_WITH_ALTS 49C4			
R713	RES	9A4	R850	RES	4C2	R961	RES	23D1	R4401	RES	43C7	RP86	RPAK4P	19B5	XW26	SHORT8L25_WITH_ALTS 45C3			
R714	RES	34B7	R851	RES	7B7	R962	RES	23D1	R4501	RES	43B6	RP87	RPAK4P	19B5	XW27	SHORT8L25_WITH_ALTS 45C3			
R716	RES	44B8	R852	RES	9B7	R963	RES	23D1	R4502	RES	43A6	RP88	RPAK4P	19C5	XW28	SHORT8L25_WITH_ALTS 45B1			
R717	RES	44C3	R853	RES	9B7	R964	RES	23D1	R4503	RES	43A6	RP89	RPAK4P	19C5	XW29	SHORT8L25_WITH_ALTS 45C6			
R718	RES	28B2	R854	RES	9B7	R965	RES	27B5	R4504	RES	43B6	RP90	RPAK4P	19C7	XW30	SHORT8L25_WITH_ALTS 45A3			
R719	RES	30D5	R855	RES	9D6	R966	RES	27B4	R4505	RES	43A6	RP91	RPAK4P	19C7 19D7	XW31	SHORT8L25_WITH_ALTS 45B3			
R720	RES	9D3	R856	RES	7C5	R967	RES	27C5	R4506	RES	43A6	RP92	RPAK4P	19C7	XW32	SHORT 39B7			
R721	RES	50C8	R857	RES	7B5	R968	RES	27B4	R4507	RES	43C5	RP93	RPAK4P	18E2 18E3	XW33	SHORT 41B7			
R722	RES	44C6	R858	RES	7C5	R969	RES	27C4	R4508	RES	45B3	RP94	RPAK4P	18F2 18F3	XW34	SHORT 39A7			
R723	RES	28B2	R859	RES	7C5	R970	RES	27B4	R4509	RES	45C4	RP95	RPAK4P	18F2 18F2 18F3	XW37	SHORT 39B7			
R724	RES	28C2	R860	RES	7B5	R971	RES	27C4	R4701	RES	45B6	RP96	RPAK4P	19C5	XW38	SHORT 39A7			
R725	RES	44B6	R861	RES	9A7	R972	RES	27C3	R4702	RES	45B6	RP97	RPAK4P	19D5	XW39	SHORT8L25_WITH_ALTS 48B5			
R726	RES	44B7	R862	RES	9B7	R973	RES	27C2	R4703	RES	45B3	RP98	RPAK4P	16B3 16C3 16C3	XW41	SHORT8L25_WITH_ALTS 49B5			
R727	RES	28C7	R863	RES	9D6	R974	RES	27C2	R4704	RES	45B3	RP99	RPAK4P	16C1	XW42	SHORT 28A5			
R728	RES	28B2	R864	RES	9D7	R975	RES	27C2	R4705	RES	45B3	RP100	RPAK4P	28A8	XW43	SHORT 28A5			
R729	RES	44C6	R865	RES	9D6	R976	RES	27C2	R4706	RES	45D3	RP101	RPAK4P	34B1	XW44	SHORT 28A5			
R730	RES	44C7	R866	RES	6C4	R977	RES	27C2	R4707	RES	45D3	RP102	RPAK4P	12C5	XW45	SHORT 28A4			
R731	RES	44B6	R867	RES	6C4	R978	RES	27C2	R4708	RES	45C5	RP103	RPAK4P	37B2 37C2	XW46	SHORT 28A4			
R732	RES	44C7	R868	RES	9D7	R979	RES	27C2	R4709	RES	45B6	RP104	RPAK4P	37B4 37B5 37C5	XW47	SHORT 9A2			
R733	RES	44B7	R869	RES	9D5	R980	RES	27C2	R4710	RES	47B4	RP105	RPAK4P	12B5	XW48	SHORT 16A5			
R734	RES	44B7	R870	RES	9C5	R981	RES	42D6	R4801	RES	46C7	RP106	RPAK4P	37B2	XW49	SHORT 30B5			
R735	RES	28C7	R871	RES	49C3	R982	RES	42D6	R4802	RES	48B4	RP107	RPAK4P	37B4 37B4 37B5	Y1	CRYSTAL 36C6			
R736	RES	28B2	R872	RES	49C3	R983	RES	42C4	R4803	RES	48C3	RP108	RPAK4P	28A3 28B3	Y2	CRYSTAL_4PIN 22B3			
R737	RES	38C7	R873	RES	49C5	R984	RES	42D4	R4901	RES	49B4	RP109	RPAK4P	12A5	Y3	CRYSTAL 44A6			
R738	RES	51B7	R874	RES	6C4	R985	RES	42D3	R5001	RES	50B3	RP110	RPAK4P	28A8	Y4	CRYSTAL_4PIN 44B2			
R739	RES	51C7	R875	RES	6C4	R986	RES	43D5	R5002	RES	50A3	RP111	RPAK4P	37C4 37C4 37C5 37C5	Y5	CRYSTAL 28A6			
R740	RES	51A7	R876	RES	9D7	R987	RES	43D5	R5003	RES	50A1	RP112	RPAK4P	34C4	Y6	CRYSTAL 35B7			
R741	RES	51A7	R877	RES	6C4	R988	RES	43C2	R5301	RES	51C1	RP113	RPAK4P	28B8	Y7	CRYSTAL 32D3			
R742	RES	28B2	R878	RES	6C5	R989	RES	43D2	RP1	RPAK4P	35C7	RP114	RPAK4P	37A2 37B2	ZH3	MTGHOLE 39A7			
R743	RES	38C4	R879	RES	6C5	R990	RES	23D2	RP2	RPAK4P	36C7	RP115	RPAK4P	37A4 37A5 37B4 37B5	ZH4	MTGHOLE 4B2			
R744	RES	38C7	R880	RES	49C3	R991	RES	23D2	RP3	RPAK4P	36B7	RP116	RPAK4P	12B3	ZH5	SLOT 4B1			
R745	RES	38C3	R881	RES	23D2	R992	RES	23C1	RP4	RPAK4P	19B5 19C5	RP117	RPAK4P	28C1 28C1 28D1 28D1	ZH6	SLOT 4B2			
R746	RES	28B8	R882	RES	7B5	R993	RES	23C1	RP5	RPAK4P	19B5	RP118	RPAK4P	37C2	ZH7	MTGHOLE 4B1			
R747	RES	28B6	R883	RES	49B6	R994	RES	23C1	RP6	RPAK4P	19B5	RP119	RPAK4P	34C1	ZT1	HOLE_VIA 18C2			
R749	RES	28B8	R884	RES	49C5	R995	RES	23C1	RP7	RPAK4P	19B5	S1	SWI_TACT_2P1 44B2		ZT2	HOLE_VIA 18C2			
R750	RES	28B8	R885	RES	9D6	R996	RES	23C1	RP8	RPAK4P	18A2 18A3 18B2	S2	SWI_TACT 44A3		ZT3	HOLE_VIA 18C2			
R751	RES	51A8	R886	RES	9C6	R997	RES	23C1	RP9	RPAK4P	18C2 18C2 18C3 18C3	SP1	SPRING_CLIP_1P_EMI 10D2		ZT4	HOLE_VIA 18A2			
R752	RES	9A4	R887	RES	6C5	R998	RES	23C1	RP10	RPAK4P	19C7	SP2	SPRING_CLIP_1P_EMI 10D2		ZT5	HOLE_VIA 18C2			
R753	RES	37C2	R888	RES	49D5	R999	RES	23C1	RP11	RPAK4P	19B7	SP3	SPRING_CLIP_1P_EMI 10D1		ZT6	HOLE_VIA 18C2			
R754	RES	37D4	R889	RES	6C5	R1000	RES	27B5	RP12	RPAK4P	19B7	SP4	SPRING_CLIP_1P_EMI 10D1		ZT7	HOLE_VIA 18A2			
R755	RES	28D2	R890	RES	9D7	R1001	RES	27C4	RP13	RPAK4P	19B7	T1	XFR_100BT_MDIX 35C3		ZT8	HOLE_VIA 18C2			
R756	RES	28D2	R891	RES	4D6	R1002	RES	27B4	RP14	RPAK4P	19C7	U1	SIL1162 27C3		ZT9	HOLE_VIA 18B2			
R757	RES	9A4	R892	RES	9D7	R1003	RES	27B3	RP15	RPAK4P	35B7 35B8	U2	SHNTREG_TLV431A 21A4		ZT10	HOLE_VIA 18B2			
R758	RES	38C1	R893	RES	9C7	R1004	RES	27B3	RP16	RPAK4P	35A4	U3	VREG_LP2951 36D7		ZT11	HOLE_VIA 18B2			
R759	RES	37D2	R894	RES	9C7	R1005	RES	28C1	RP17	RPAK4P	19C7	U4	FW802A 36C5		ZT12	HOLE_VIA 18B2			
R760	RES	38C5	R895	RES	4D2	R1006	RES	33D5	RP18	RPAK4P	19D7	U5	SDRAM_DDR_4MX32 21D6 21D7		ZT13	HOLE_VIA 18B2			

ZT14	HOLE_VIA	18B2	
ZT15	HOLE_VIA	18B2	
ZT16	HOLE_VIA	18B2	
ZT17	HOLE_VIA	18B2	
ZT18	HOLE_VIA	18B2	
ZT19	HOLE_VIA	18A2	
ZT20	HOLE_VIA	18G2	
ZT21	HOLE_VIA	18E2	
ZT22	HOLE_VIA	18F2	
ZT23	HOLE_VIA	18F2	
ZT24	HOLE_VIA	18F2	
ZT25	HOLE_VIA	18F2	
ZT26	HOLE_VIA	18F2	
ZT27	HOLE_VIA	18E2	
ZT28	HOLE_VIA	18D2	
ZT29	HOLE_VIA	18G2	
ZT30	HOLE_VIA	18F2	
ZT31	HOLE_VIA	18F2	
ZT32	HOLE_VIA	18E2	
ZT33	HOLE_VIA	18E2	
ZT34	HOLE_VIA	18F2	
ZT35	HOLE_VIA	18E2	
ZT36	HOLE_VIA	18E2	
ZT37	HOLE_VIA	18F2	
ZT38	HOLE_VIA	18E2	
ZT39	HOLE_VIA	3B3	
ZT40	HOLE_VIA	3B3	
ZT41	HOLE_VIA	3B3	
ZT42	HOLE_VIA	3B3	
ZT43	HOLE_VIA	3A3	
ZT44	HOLE_VIA	3A3	
ZT45	HOLE_VIA	3A3	
ZT46	HOLE_VIA	3B3	
ZT47	HOLE_VIA	3B3	
ZT48	HOLE_VIA	3B3	
ZT49	HOLE_VIA	3B3	
ZT50	HOLE_VIA	3A3	
ZT51	HOLE_VIA	3A3	
ZT52	HOLE_VIA	3A3	
ZT53	HOLE_VIA	3B2	
ZT54	HOLE_VIA	3B2	
ZT55	HOLE_VIA	3B2	
ZT56	HOLE_VIA	3B2	
ZT57	HOLE_VIA	3A2	
ZT58	HOLE_VIA	3A2	
ZT59	HOLE_VIA	3B2	
ZT60	HOLE_VIA	3B2	
ZT61	HOLE_VIA	3B2	
ZT62	HOLE_VIA	3B2	
ZT63	HOLE_VIA	3A2	
ZT64	HOLE_VIA	3B1	
ZT65	HOLE_VIA	3B1	
ZT66	HOLE_VIA	3B1	
ZT67	HOLE_VIA	3B1	
ZT68	HOLE_VIA	3A1	

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	051-6497	13

SCALE: NONE

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