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		229127	ENGINEERING RELEASED	07/22/02	?

PAGE	CONTENTS

SUTRO
DVT
11/27/2002

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-6282	1	SCHEM,SUTRO,P84	SCH1	
820-1388	1	PCBF,SUTRO,P84	PCB1	

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,SUTRO,P84

DRAWING NUMBER 405595 REV. 0A

SHT 1 OF 8

PCB SPECS

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

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

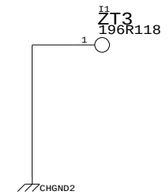
SEE PCB CAD FILES FOR MORE SPECIFIC INFO.

BOARD STACK-UP AND CONSTRUCTION

20R10 TH VIA OR VIA IN PAD

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

BOARD HOLES



PCB BOARD STANDOFFS

BOARD INFORMATION

NOTICE OF PROPRIETARY PROPERTY

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

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

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE NONE | SHT 2 OF 8

LEFT USB PORT

PUT R19, R23 AND L4 ACROSS THE MOAT

PLACE R3-R7, R24, C4-C6,Q4, PD1 CLOSE TO U2

LEFT USB / SENSOR CONNECTOR

MAX4236_IN- AND MAX4236_IN+ NEED TO BE MATCHED

NO STUFF

CRITICAL

USB & ALS

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE	SHT	OF
NONE	3	8

POWER CONNECTOR

CRITICAL
J4
87437-0833
M-ST-SM
CHARGE_LED_L
+ADAPTER
ADAPTER_DET
DC_PLUG_GND
R18
1K
5%
1/10W
MF
402
CHARGE_LED_L_ESD
R22
470
5%
1/16W
MF
402
ADAPTER_DET_F

CHARGE LED SUPPORT

+ADAPTER
R13
1.74K
1%
1/4W
FF
1210
R17
470K
5%
1/16W
MF
402
CHARGE_LED_D
Q1
2N7002DW
SOT-363
CHARGE_LED_DRV
CHARGE_LED_S
Q3
2N7002
SM
C9
0.01UF
20%
50V
CERM
603
R10
1K
1%
1/4W
FF
1210
R8
1M
5%
1/16W
MF
402
C7
100PF
5%
50V
CERM
402

DC POWER JACK

CRITICAL
J1
JPD1133-WO1
F-RT-TH
+ADAPTER_UF
DC_PLUG_TIP
ADAPTER_GND
ADAPTER_RING
R12
330K
5%
1/16W
MF
402
ADAPTER_DET_G
Q1
2N7002DW
SOT-363
C8
0.1UF
20%
10V
CERM
402
R11
150K
5%
1/16W
MF
402
DC_PLUG_GND
L3
FERR-50-OHM
SM
+ADAPTER_FUSE
F1
5AMP-125V
SM-2
+ADAPTER
L2
FERR-50-OHM
SM
DC_PLUG_GND
R1
6.34K
1%
1/16W
MF
402
ADAPTER_DET_UF
L1
400-OHM-EMI
SM-1
ADAPTER_DET_U
R2
0
5%
1/16W
MF
402
C2
0.01UF
20%
50V
CERM
603
SOT23
1N5233B
D1
C3
0.01UF
20%
50V
CERM
603
CHGND1

PLACE C2, C3 AND R2 CLOSE TO J1

PLACE L1, L2 AND L3 CLOSE TO J1

DC POWER INTERFACE

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE	SHT	OF
NONE	4	8

CR-5

RIVISION HISTORY

11/04/02 - CHANGED FROM BS120 TO BS520
CHANGED FROM GND TO DC_PLUG_GND FOR THE DC ADAPTER CIRCUIT
CHANGED FROM +3V_SLEEP TO +3V_MAIN FOR THE ALS CIRCUIT

ALS SIGNALS

GROUP	SIG_NAME	DELAY_RULE	MATCHED DELAY	STUB_LENGTH	MIN_LINE_WIDTH	NET_SPACING_TYPE	MAX_VIAS
ALS							
	LIGHT_SENSOR				MIN_LINE_WIDTH=20		
	GAIN_SETTING1				MIN_LINE_WIDTH=20		
	MAX4236_IN+				MIN_LINE_WIDTH=20		
	MAX4236_IN-				MIN_LINE_WIDTH=20		
	MAX4236_OUT				MIN_LINE_WIDTH=20		
	ALS_GAIN				MIN_LINE_WIDTH=5		
	ALS_OUT				MIN_LINE_WIDTH=10		

Differential Signals

GROUP	SIG_NAME	DIFFERENTIAL_PAIR	MATCHED_DELAY	MIN_LINE_WIDTH	NET_SPACING_TYPE		MAX_VIAS
USB							
	USB_DM_L	USB_D1	USB_DM:J1.4:L4.1:20	MIN_LINE_WIDTH=5	10 MIL SPACING		3
	USB_DP_L	USB_D1	USB_DP:J1.3:L4.2:20	MIN_LINE_WIDTH=5	10 MIL SPACING		3
	USB_DM_EMI_L	USB_D1_EMI	USB_D1_EMI:L4.4:J3.2:20	MIN_LINE_WIDTH=5	10 MIL SPACING		3
	USB_DP_EMI_L	USB_D1_EMI	USB_D1_EMI:L4.3:J3.3:20	MIN_LINE_WIDTH=5	10 MIL SPACING		3

FOR USB DIFFERENTIAL TRACES (ZSINGLE=45 OHM +- 10%,ZDIFF=90 OHM +- 15%)		
	MICROSTRIP (OUTER LAYERS)	STRIPLINE (INTERNAL LAYERS)
TRACE WIDTH	4 MIL	5 MIL
SEPARATION OF TRACES	8 MIL	10 MIL

SIGNAL CONSTRAINTS - PAGE 3

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE: NONE | SHT 5 OF 8

POWER NET CONSTRAINTS

GROUP	SIG_NAME	VOLTAGE	MIN_LINE_WIDTH	MIN_NECK_WIDTH	
ADAPTER	+5V_MAIN	VOLTAGE=5V	MIN_LINE_WIDTH=25	MIN_NECK_WIDTH=10	
	+3V_MAIN	VOLTAGE=3.3V	MIN_LINE_WIDTH=25	MIN_NECK_WIDTH=10	
	+ADAPTER_UF	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10	4
	+ADAPTER_FUSE	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10	4
	+ADAPTER	VOLTAGE=24V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10	4
	ADAPTER_GND	VOLTAGE=0V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10	4
	CHARGE_LED_D	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	4
	CHARGE_LED_S	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	4
	DC_PLUG_TIP	VOLTAGE=	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	4
	DC_PLUG_GND	VOLTAGE=0V	MIN_LINE_WIDTH=100	MIN_NECK_WIDTH=10	4
USB	+5V_USB_VDD	VOLTAGE=5V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	3
	+5V_USB_L	VOLTAGE=5V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	3
	+5V_USB_EMI_L	VOLTAGE=5V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	3
	LEFT_USB_GND	VOLTAGE=0V	MIN_LINE_WIDTH=20	MIN_NECK_WIDTH=10	3

VOLTAGE=0V MIN_LINE_WIDTH=100 MIN_NECK_WIDTH=10 /GND

SIGNAL CONSTRAINTS - PAGE 4

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE	SHT	OF
NONE	6	8

CR-7

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

+3V_MAIN	6D6
+5V_MAIN	6D6
+5V_USB_EMI_L	3D3 6C6
+5V_USB_L	3D5 6C6
+5V_USB_VDD	3D6 6C6
+ADAPTER	4B3 4C3 4C5 4C7 6D6
+ADAPTER_FUSE	4B4 6D6
+ADAPTER_UF	4B6 6D6
/GND	6C6
ADAPTER_DET	4C7
ADAPTER_DET_F	4C6
ADAPTER_DET_G	4C6
ADAPTER_DET_U	4B5
ADAPTER_DET_UF	4B6
ADAPTER_GND	4B6 6C6
ADAPTER_RING	4B6
ALS_GAIN	3B4 5C8
ALS_OUT	3B3 5C8
CHARGE_LED_D	4C3 6C6
CHARGE_LED_DRV	4C4
CHARGE_LED_L	4C7
CHARGE_LED_L_ESD	4C5
CHARGE_LED_S	4C3 6C6
DC_PLUG_GND	4B3 4B5 4C6 6C6
DC_PLUG_TIP	4B6 6C6
GAIN_SETTING1	3A7 5C8
LEFT_USB_GND	3C2 6C6
LIGHT_SENSOR	3B7 5C8
MAX4236_IN+	3B5 5C8
MAX4236_IN-	3B5 5C8
MAX4236_OUT	3B5 5C8
OCI	3B4 3C6
PWRON	3B4 3C6
USB_DM_EMI_L	3C3 5D2
USB_DM_L	3B4 3C4 5D2
USB_DP_EMI_L	3C3 5D2
USB_DP_L	3B3 3C4 5D2
USB_ENABLE_H	3C8
USB_ENABLE_L	3D7
USB_EN_B	3C6

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE NONE | SHT 7 OF 8

CR-0

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

C1	CAP_P	3C5
C2	CAP	4B6
C3	CAP	4B5
C4	CAP	3B6
C5	CAP	3B6
C6	CAP	3A5
C7	CAP	4B3
C8	CAP	4B6
C9	CAP	4C4
C10	CAP	3C6
C11	CAP	3D2
C12	CAP	3C6
C13	CAP	3C3
C14	CAP	3C3
C15	CAP	3C2
D1	ZENER	4B6
F1	FUSE	4B4
J1	CON_F3RT_S2MT_TH3	4B7
J2	CON_F12ST_D4MT_SM1	3B3
J3	CON_F4RT_S2MT_TH	3C2
J4	CON_M8ST_S_SM	4C7
L1	IND	4B5
L2	IND	4B3
L3	IND	4B5
L4	FILTER_4P	3C4
PD1	PHOTODIODE_2P	3B7
Q1	TRA_2N7002DW	4C3 4C5
Q3	TRA_2N7002	4C4
Q4	TRA_2N7002DW	3A7
Q5	TRA_SI3443DV	3D7
Q6	TRA_2N7002	3C7
R1	RES	4B6
R2	RES	4B6
R3	RES	3B5
R4	RES	3A6
R5	RES	3A6
R6	RES	3B6
R7	RES	3B7
R8	RES	4C3
R10	RES	4C3
R11	RES	4B5
R12	RES	4C5
R13	RES	4C3
R15	RES	3C8
R16	RES	3C6
R17	RES	4C4
R18	RES	4C5
R19	RES	3D3
R20	RES	3C4
R21	RES	3C4
R22	RES	4C6
R23	RES	3C2
R24	RES	3A4
R25	RES	3C7
U1	LM3526	3D5
U2	OPAMP_MAX4236EUTT	3B5
ZT3	MTGHOLE	2D2

APPLE COMPUTER INC.

SIZE	DRAWING NUMBER	REV.
D	405595	0A

SCALE NONE

SHT 8 OF 8