

8

7

6

5

4

3

2

1

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

REV	ZONE	ECN	DESCRIPTION OF CHANGE	CK APPD	ENG APPD
				DATE	DATE
A				?	?



# SCHEM, BUZZ, M1

## EVT

### 10/09/05

PDF PAGE	CSA PAGE	CONTENTS	SYNC MASTER	DATE
1	1	Table of Contents		
2	2	Block Diagram		
3	4	BOM Configuration	(Master)	(Master)
4	6	Aliases	(Master)	(Master)
5	51	Left USB Port	(Master)	(Master)
6	53	ExpressCard Connector	(Master)	(Master)
7	54	PCI-E MiniCard Connector	(Master)	(Master)
8	55	MLB I/O Board Connector	(Master)	(Master)
9	68	AUDIO: CODEC	AUDIO_REF	10/04/2005
10	72	AUDIO: SPEAKER AMPLIFIER	M1_AUDIO_REF	10/04/2005
11	73	AUDIO: CONNECTORS	M1_AUDIO_REF	10/04/2005
12	74	AUDIO: JACK TRANSLATORS	M1_AUDIO_REF	10/04/2005
13	78	3.3V Supply	(Master)	(Master)
14	82	DC-In & Battery Connectors	(Master)	(Master)
15	83	PBus Supply & Batt. Charger	(Master)	(Master)
16	84	Current & Thermal Sensors	(Master)	(Master)
17	85	Cross Reference Page		
18	86	Cross Reference Page		

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-6951	1	SCHEM, BUZZ, M1	SCH1		
820-1699	1	PCBF, BUZZ, M1	PCB1		

DIMENSIONS ARE IN MILLIMETERS		<b>METRIC</b>		 <b>Apple Computer Inc.</b>	
XX : _____	_____	DRAPPER	DESIGN CK	<b>NOTICE OF PROPRIETARY PROPERTY</b> THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING: I TO MAINTAIN THE DOCUMENT IN CONFIDENCE II NOT TO REPRODUCE OR COPY IT III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART	
X.XX : _____	_____	ENG APPD	MFG APPD		
X.XXX : _____	_____	QA APPD	DESIGNER		
ANGLES : _____	_____	RELEASE	SCALE		
DO NOT SCALE DRAWING		NONE		<b>SCHEM, BUZZ, M1</b>	
 THIRD ANGLE PROJECTION		MATERIAL/FINISH NOTED AS APPLICABLE			
				DRAWING NUMBER	REV
				051-6951	03003
				SHT 1 OF 18	

8

7

6

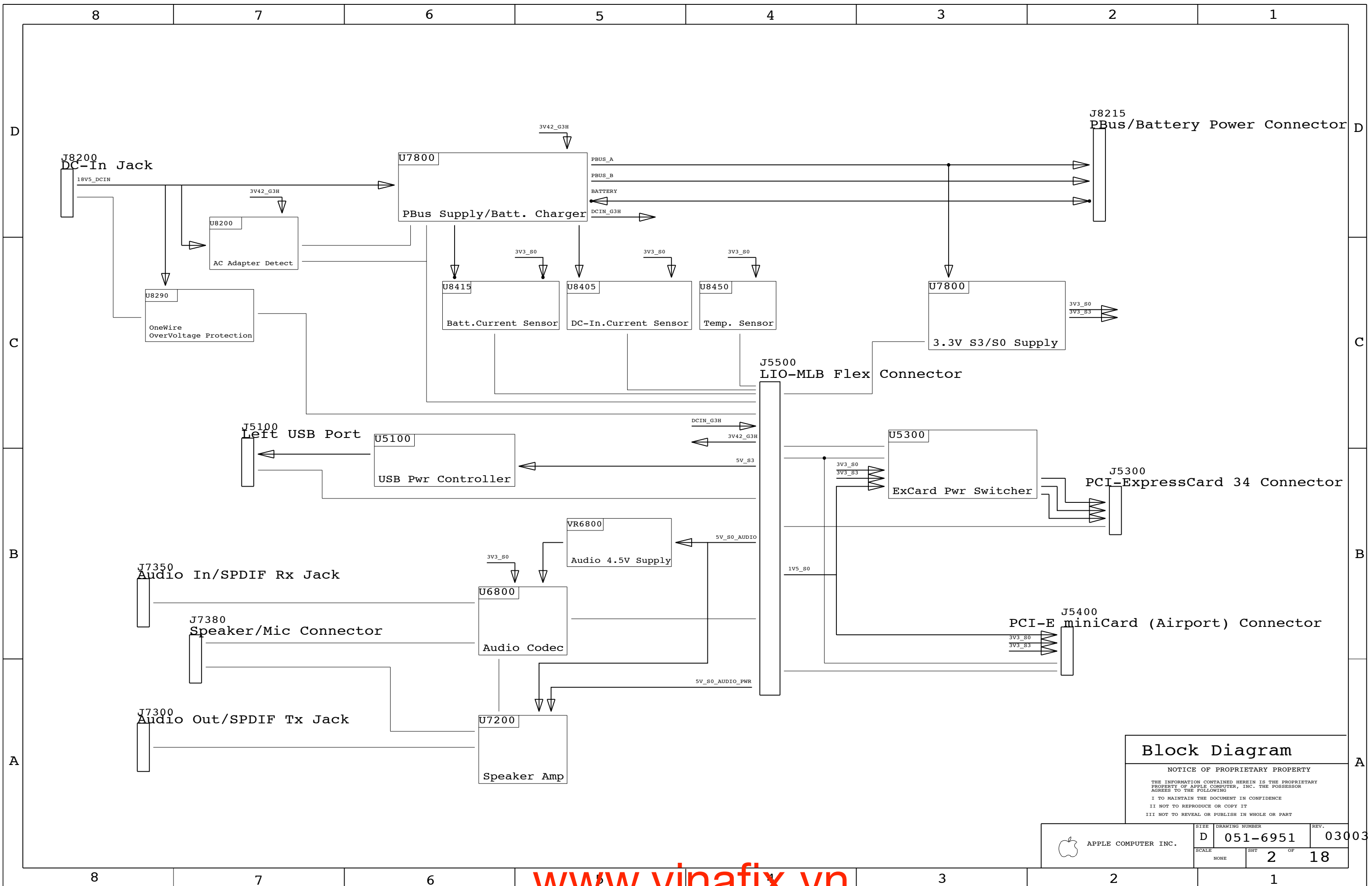
5

4

3

2

1



**Block Diagram**

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

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
	SCALE	SHT	OF
	NONE	2	18

8

7

6

5

4

3

2

1

BOM NUMBER	BOM NAME	BOM OPTIONS
630-7249	PCBA,BUZZ,M1	075-0144,075-0145
075-0144	PROJ_PTS,BUZZ,M1	COMMON,EXCARD_3CNTL,ONEWIRE_DIV,STA9221
075-0145	LEMENU_PTS,BUZZ,M1	LEMENU

Phantom BOM #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
075-0144	1	PROJ_PTS,BUZZ,M1	BOM1		075-0144
075-0145	1	LEMENU_PTS,BUZZ,M1	BOM2		075-0145

D

D

C

C


B

B

A

A

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

 APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT	OF	
NONE	3	18	

8

7

6

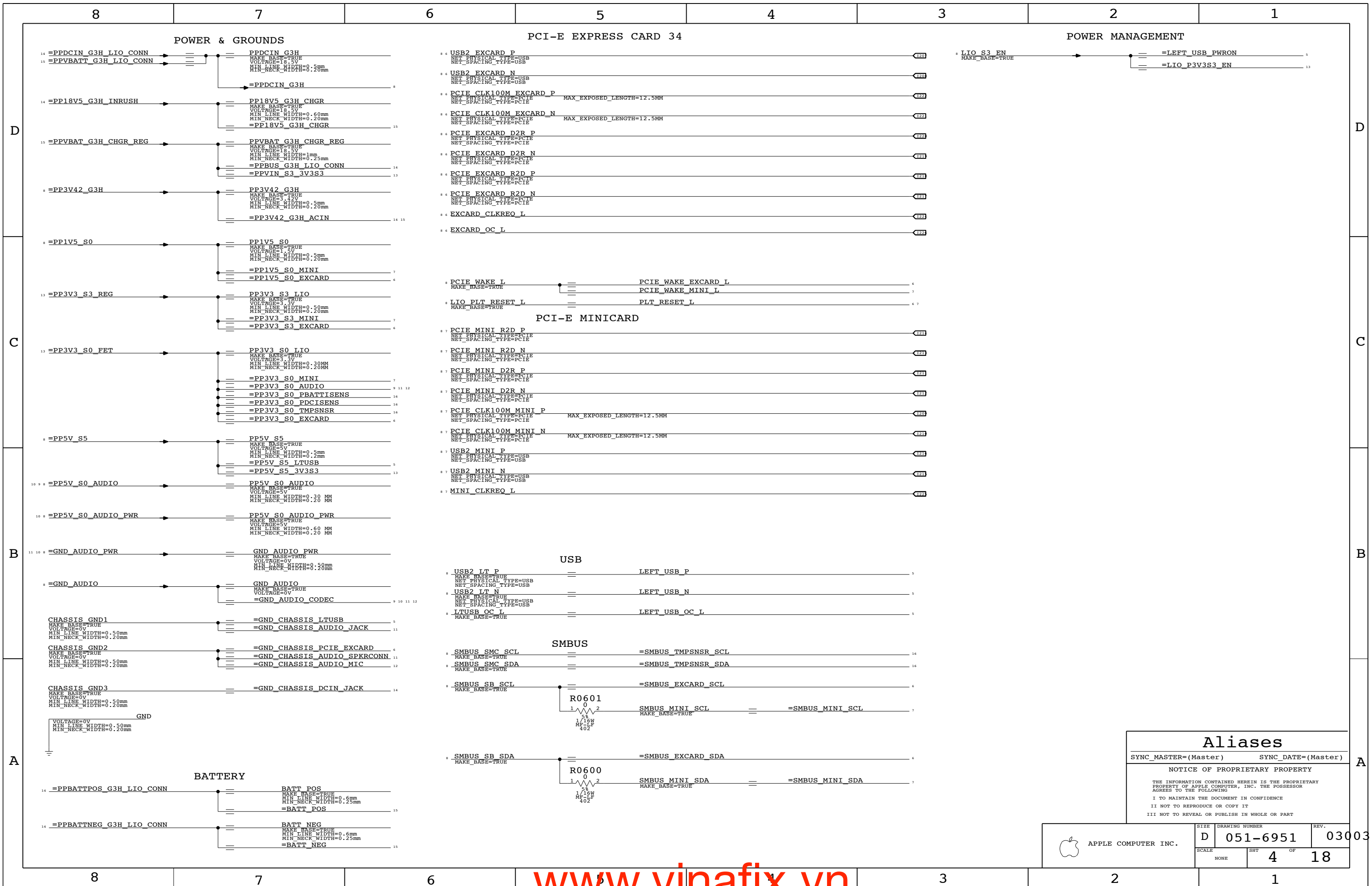
5

4

3

2

1



**Aliases**

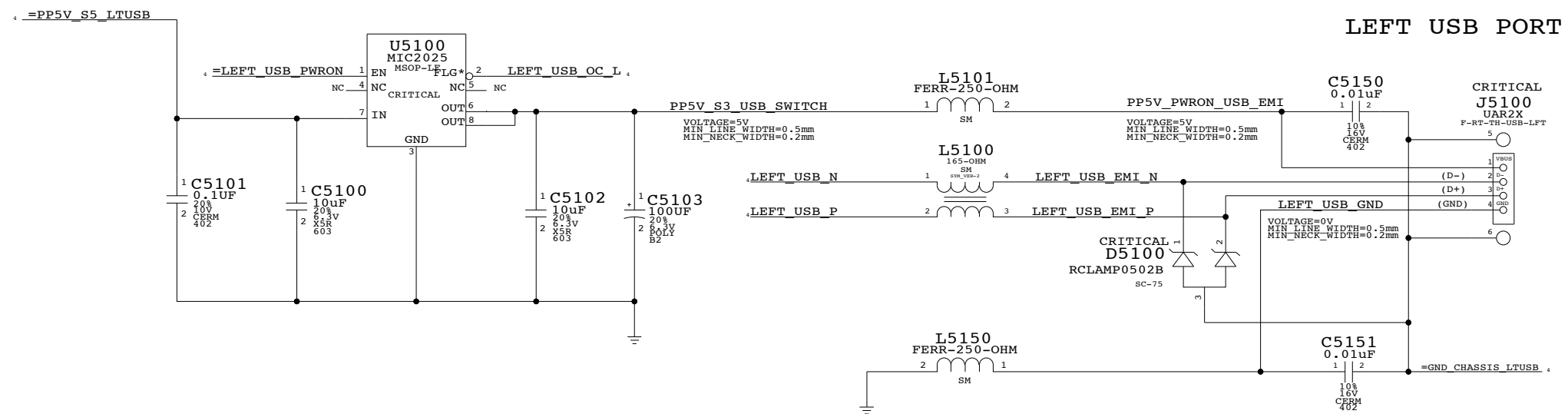
SYNC\_MASTER=(Master)      SYNC\_DATE=(Master)

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 <b>D</b>	DRAWING NUMBER <b>051-6951</b>	REV. <b>03003</b>
	SCALE NONE	SHT <b>4</b>	OF <b>18</b>



FIXME - make sure this ESD protection is approved by Yellow

PUT L5100, L5101, AND L5150 ACROSS THE MOAT

**Left USB Port**

SYNC\_MASTER=(Master)      SYNC\_DATE=(Master)

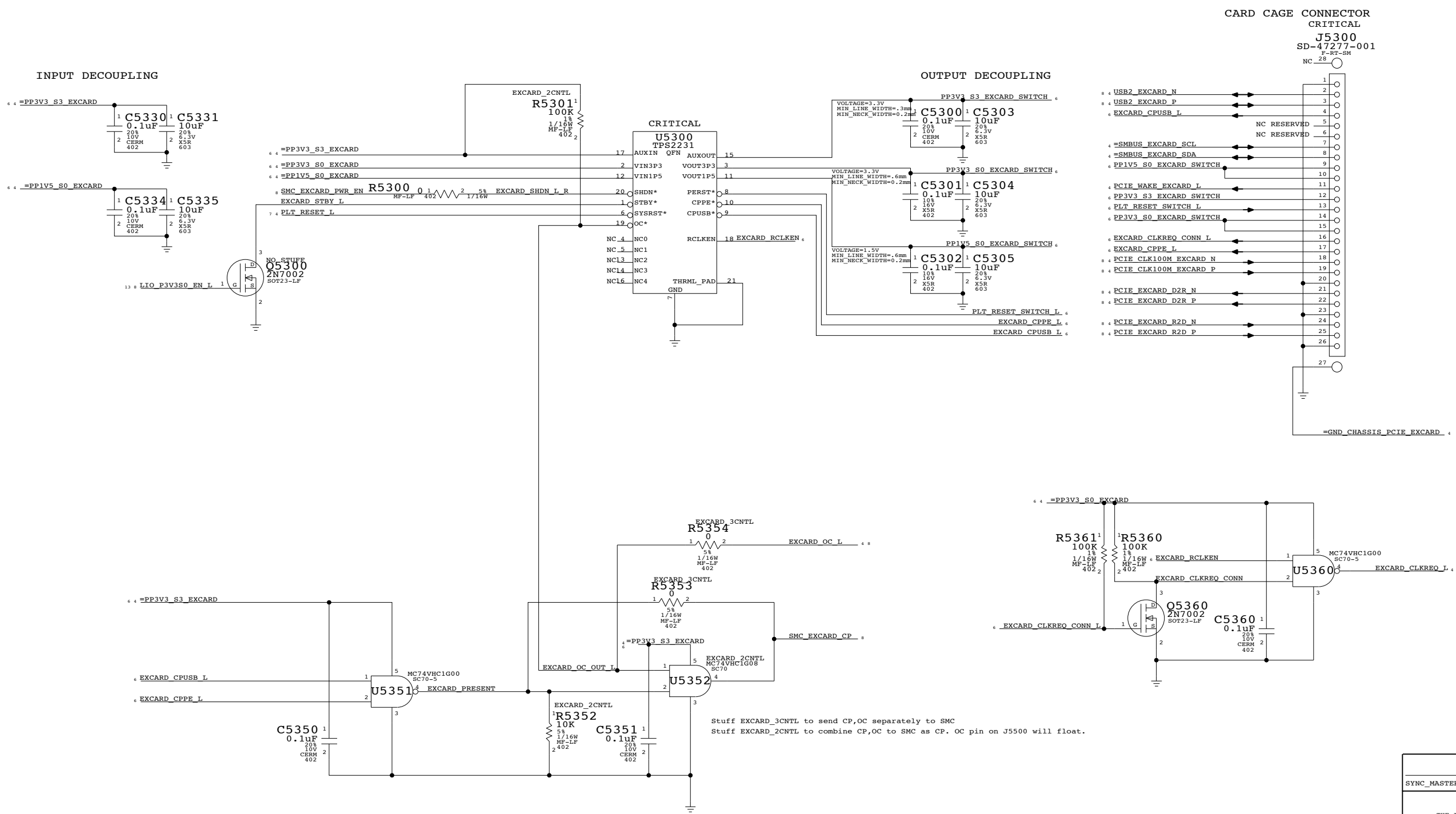
**NOTICE OF PROPRIETARY PROPERTY**

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

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

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT		OF
NONE	5		18

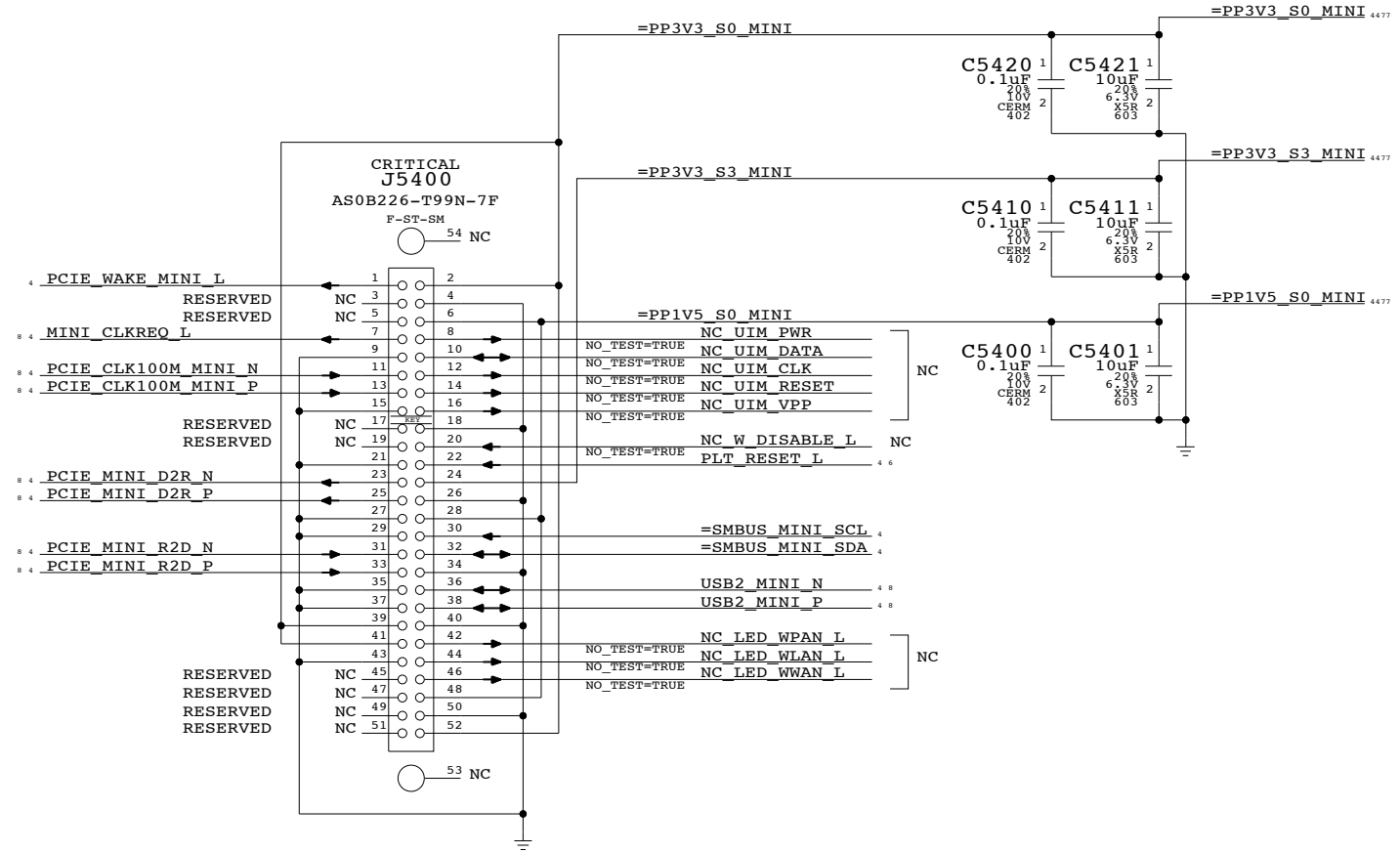
# PCI-EXPRESS CARD 34 TOP MOUNT CONNECTOR



**ExpressCard Connector**  
 SYNC\_MASTER=(Master) SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	NONE	SHT	6 OF 18

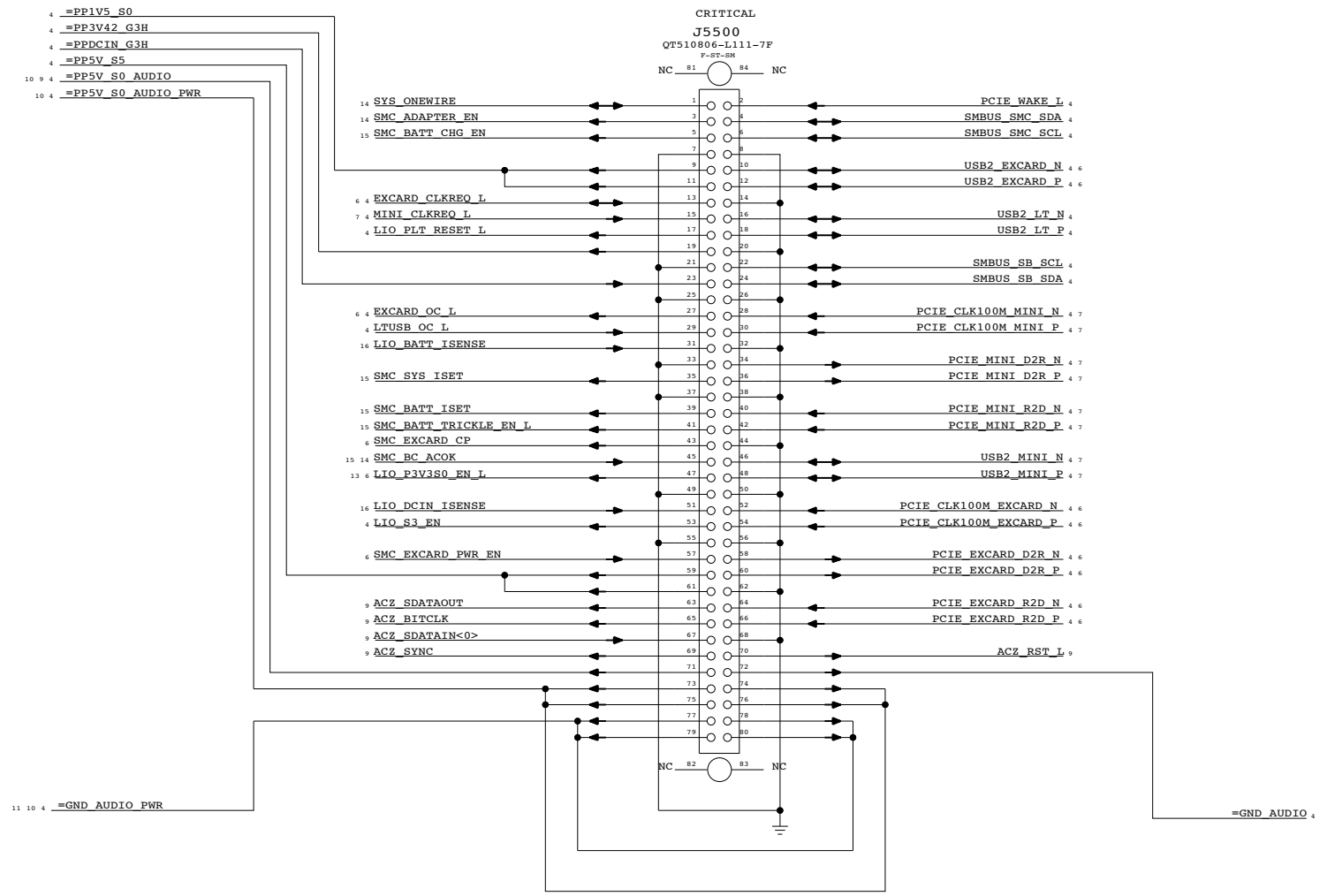
# PCI-EXPRESS MINI CARD CONNECTOR



PCI-E MiniCard Connector  
 SYNC\_MASTER=(Master) SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT 7 OF 18		
NONE			

# Left I/O Board Connector



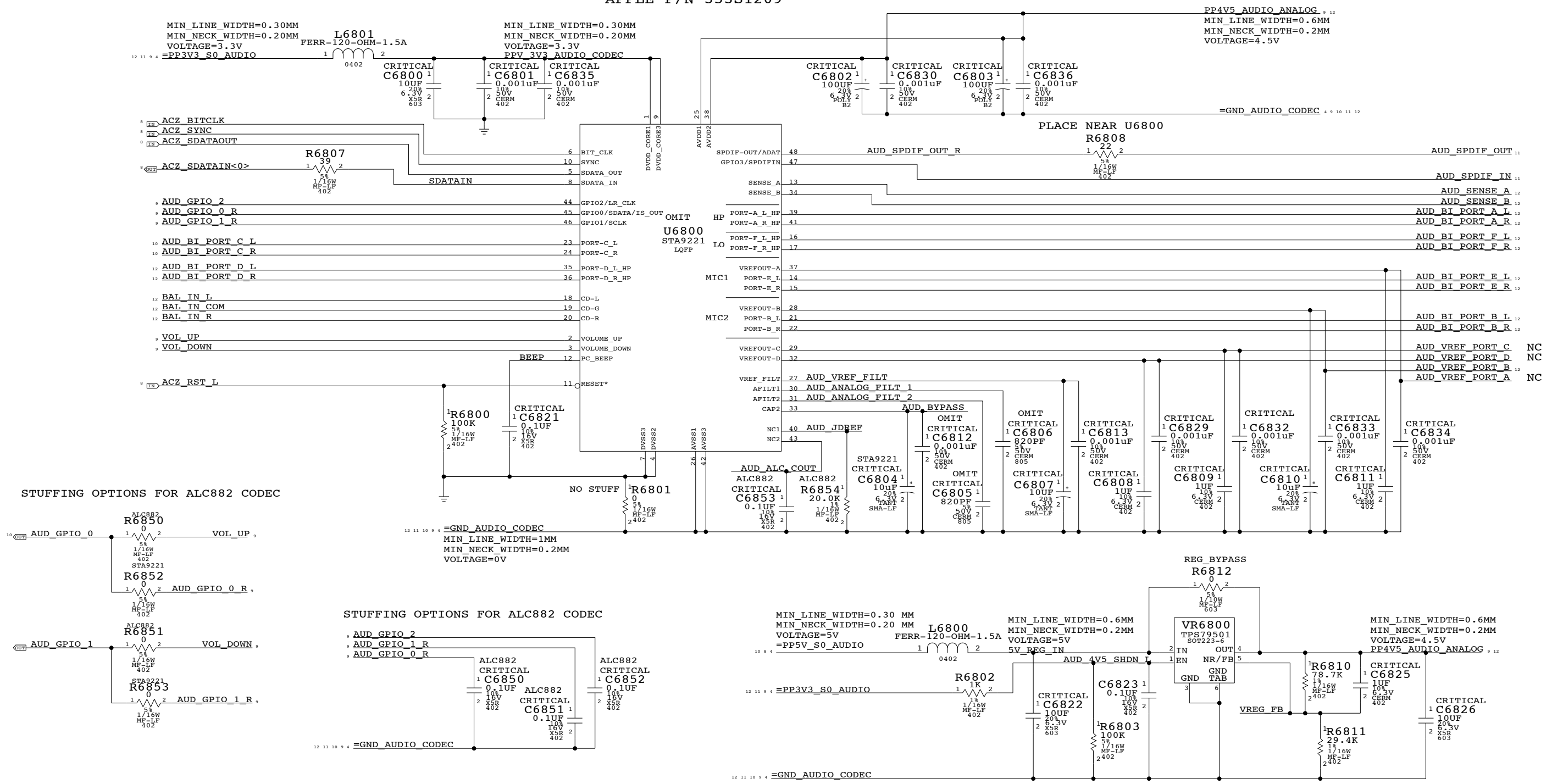
MLB I/O Board Connector  
 SYNC\_MASTER=(Master) SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
	SCALE	SHT	OF
	NONE	8	18



# AUDIO CODEC

## APPLE P/N 353S1209



### 4.5V POWER SUPPLY FOR CODEC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S1209	1	Sigmatel STA9221 CODEC	U6800	CRITICAL	LEMENU
131S8223	1	820pF NPO Capacitor	C6805	CRITICAL	STA9221
131S8223	1	820pF NPO Capacitor	C6806	CRITICAL	STA9221
132S0045	1	0.001uF 50V 10% X7R Capacitor	C6812	CRITICAL	STA9221
353S1268	1	Realtek ALC882 CODEC	U6800	CRITICAL	ALC882
138S0541	1	1uF 10V X7R Capacitor	C6805	CRITICAL	ALC882
138S0541	1	1uF 10V X7R Capacitor	C6806	CRITICAL	ALC882
116S0004	1	0 ohms 0402 Resistor	C6812	CRITICAL	ALC882

**AUDIO: CODEC**

SYNC\_MASTER=AUDIO\_REF    SYNC\_DATE=10/04/2005

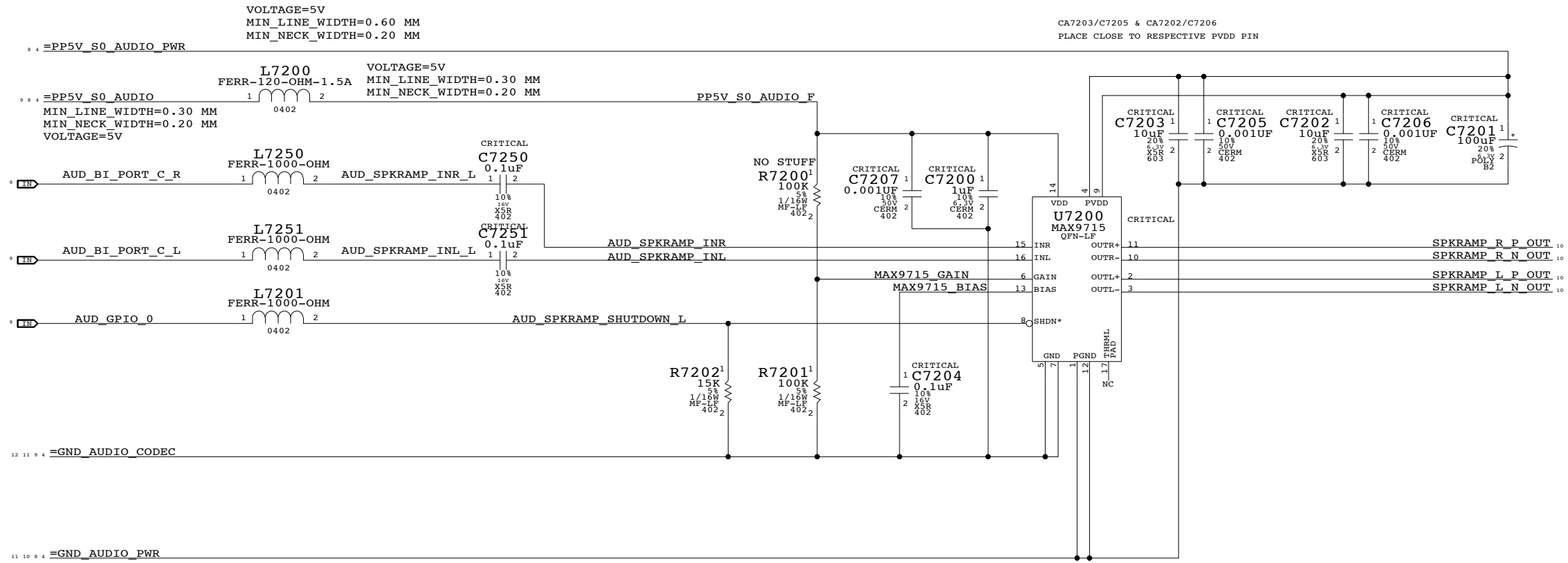
NOTICE OF PROPRIETARY PROPERTY

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

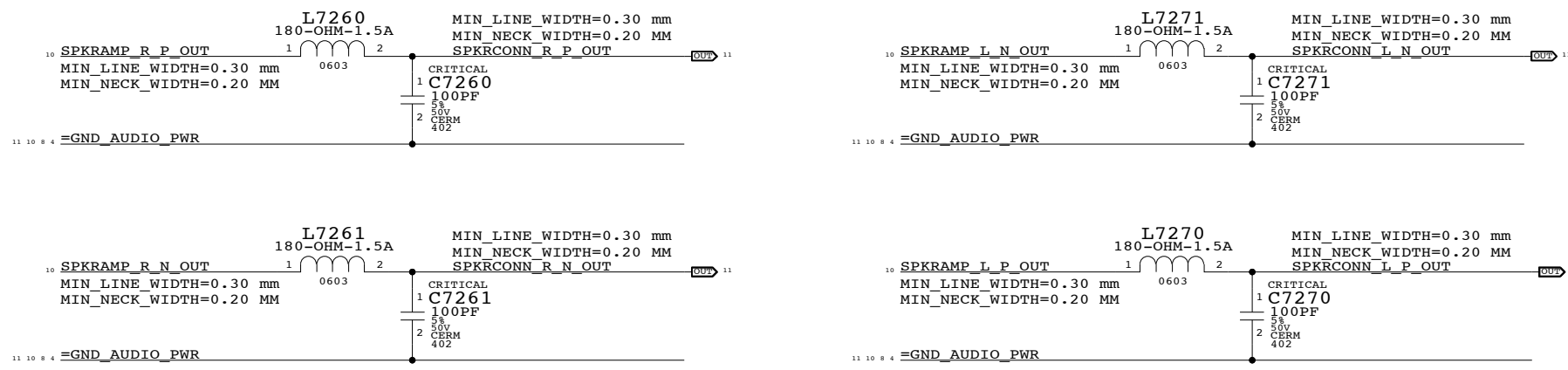
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE <b>D</b>	DRAWING NUMBER <b>051-6951</b>	REV. <b>03003</b>
	SCALE NONE	SHT <b>9</b>	OF <b>18</b>

STEREO SPEAKER AMPLIFIERS (MAX9715)  
 APN: 353S1283  
 Gain = 10.5dB  
 118 < FC < 245Hz



EMI FILTERS FOR AMPLIFIER OUTPUTS

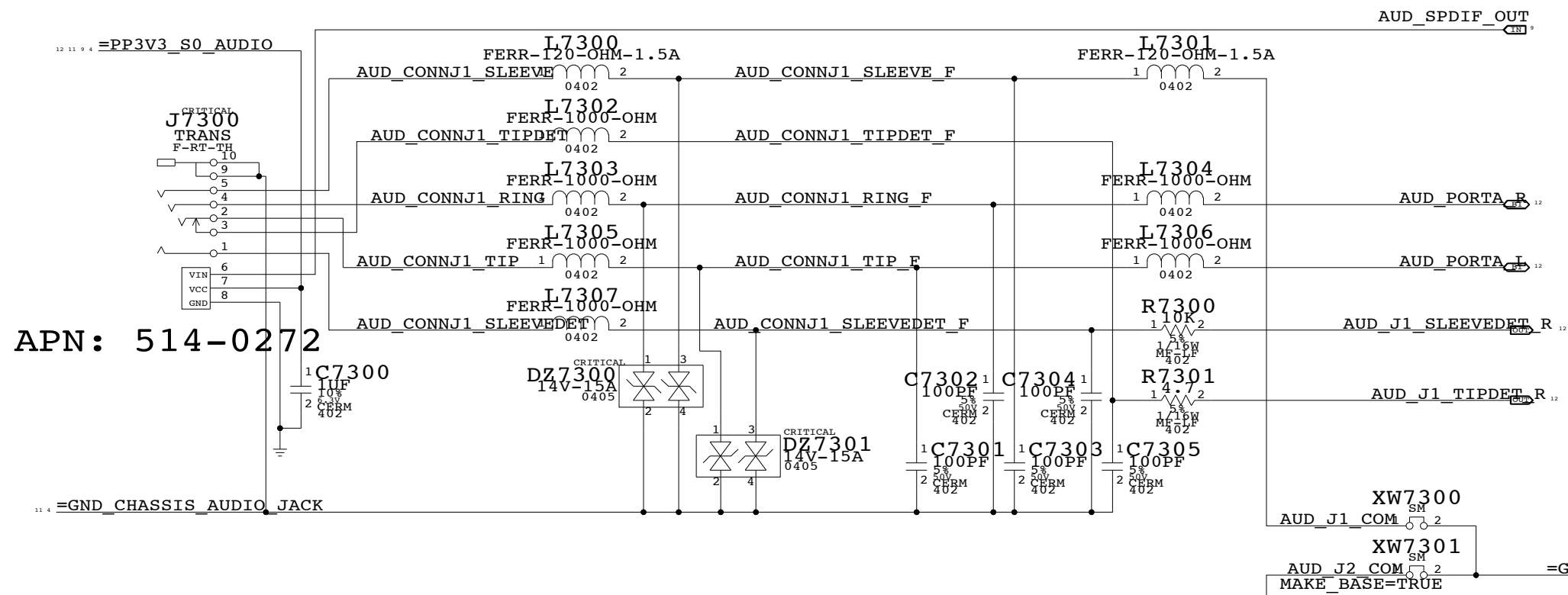


AUDIO: SPEAKER AMPLIFIER

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

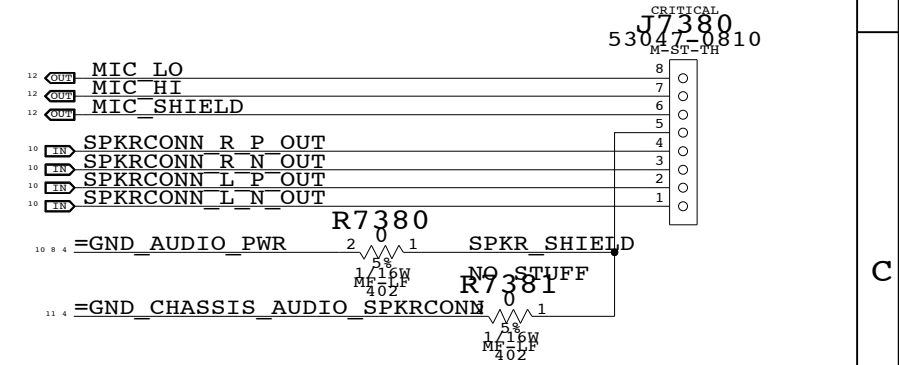
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	NONE	SHT	10 OF 18

# AUDIO JACK 1/DEFAULT LO/HP CONNECTOR, SPDIF TX

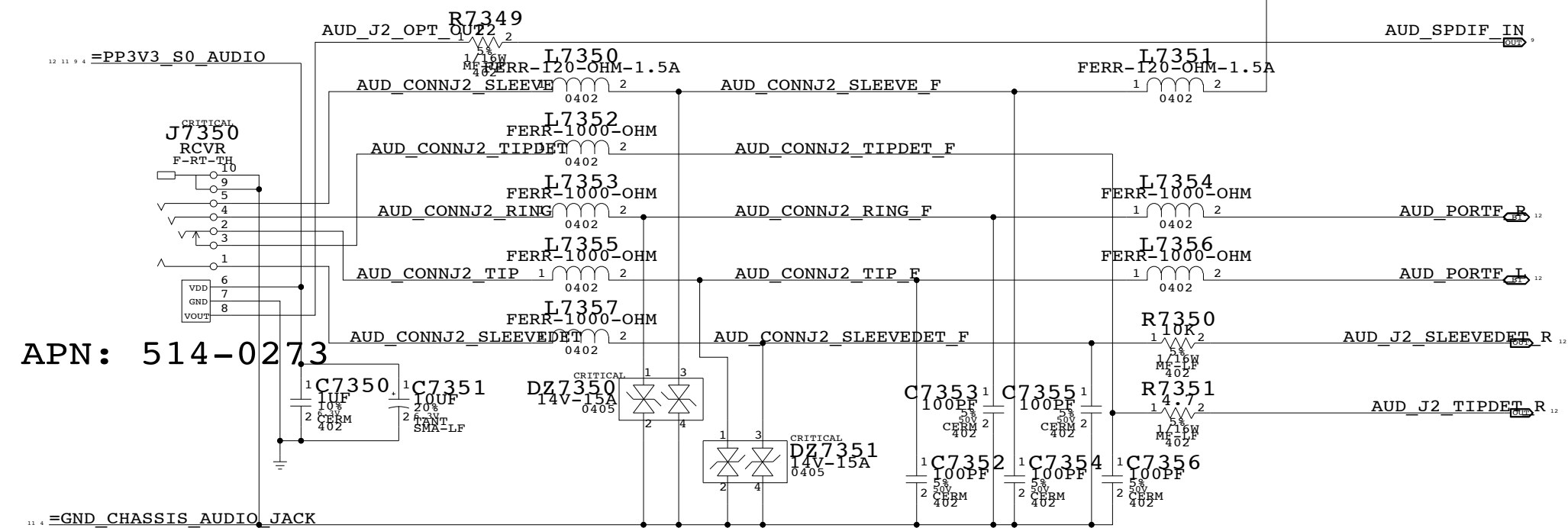


APN: 514-0272

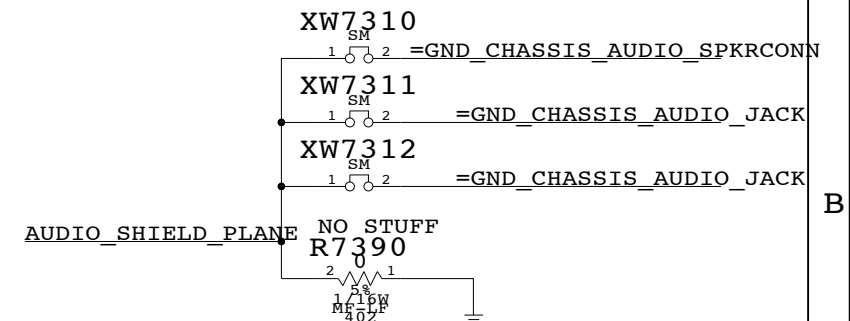
# SPEAKER/MIC CONNECTOR APN: 518-0216



# AUDIO JACK 2/DEFAULT LINE IN CONNECTOR, SPDIF RX



APN: 514-0273



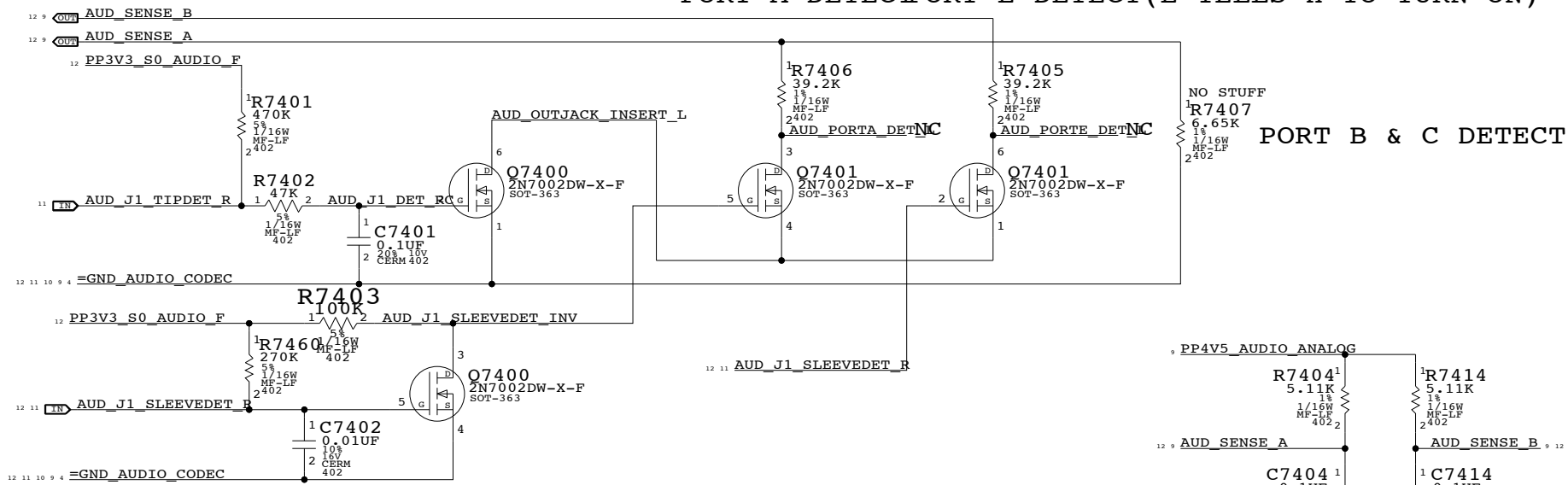
# AUDIO SHIELD (FILLED SHAPE)

## AUDIO: CONNECTORS

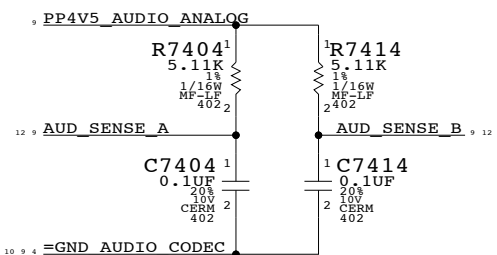
NOTICE OF PROPRIETARY PROPERTY  
THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING  
I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
II NOT TO REPRODUCE OR COPY IT  
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT		OF
NONE	11		18

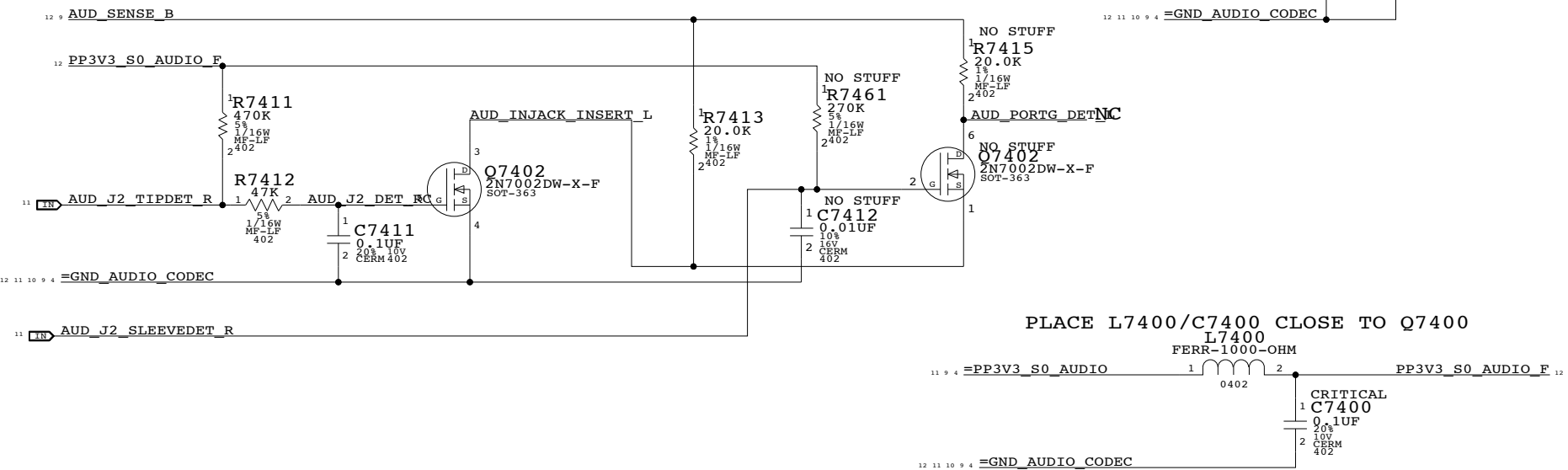
PORT A DETECT PORT E DETECT (E TELLS H TO TURN ON)



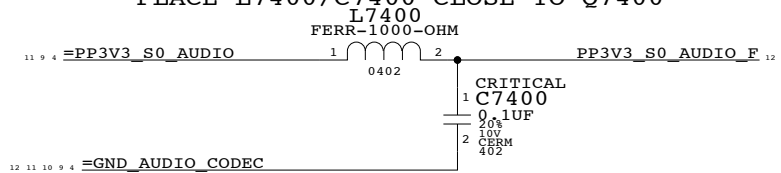
PORT B & C DETECT



PORT F DETECT PORT G DETECT



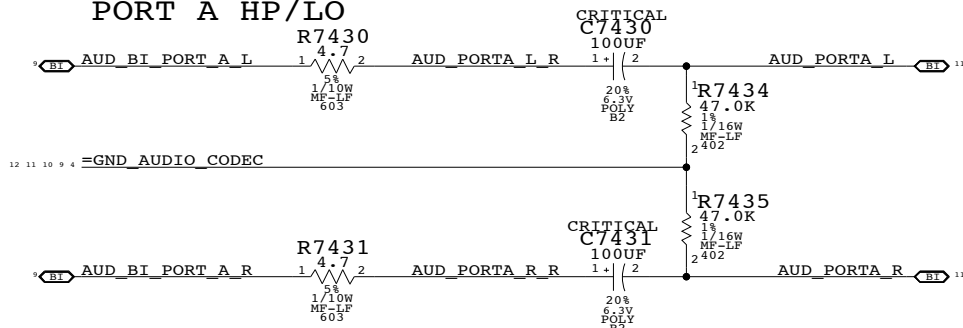
PLACE L7400/C7400 CLOSE TO Q7400



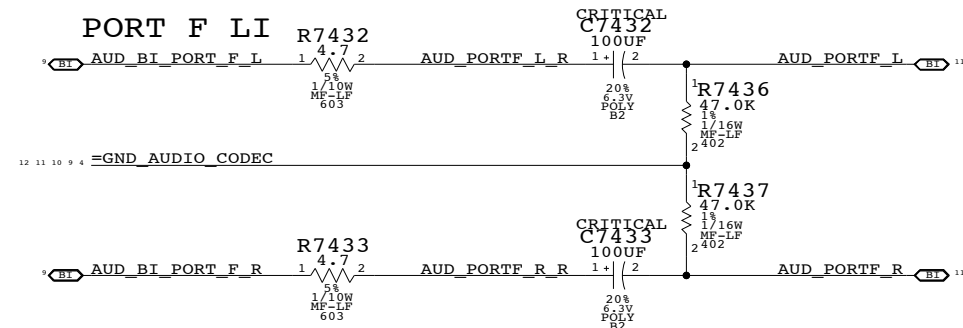
CODEC PORT ASSIGNMENTS

- PORT A : HEADPHONE/LINE OUT
- PORT B : MICROPHONE ON BOTH CH
- PORT C : SPEAKER AMP
- PORT D : UNUSED
- PORT E : SW USES TO TRIGGER DIGITAL OUT
- PORT F : LINE IN
- CD INPUT : UNUSED

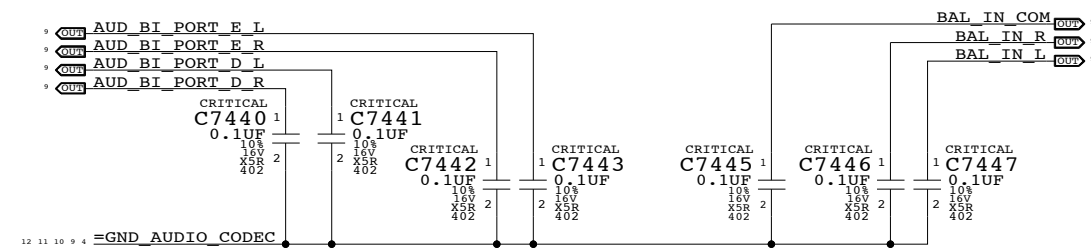
PORT A HP/LO



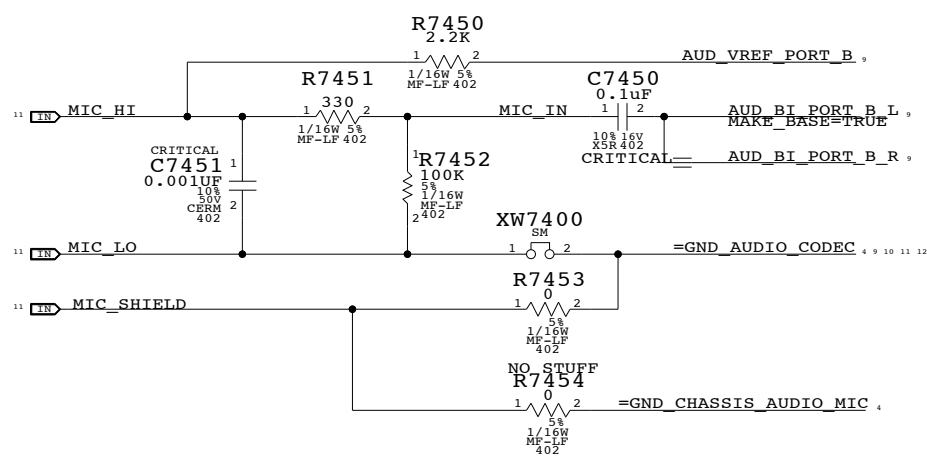
PORT F LI



UNUSED CODEC ANALOG PORT TERMINATIONS



MIC INPUT CIRCUITRY



AUDIO: JACK TRANSLATORS

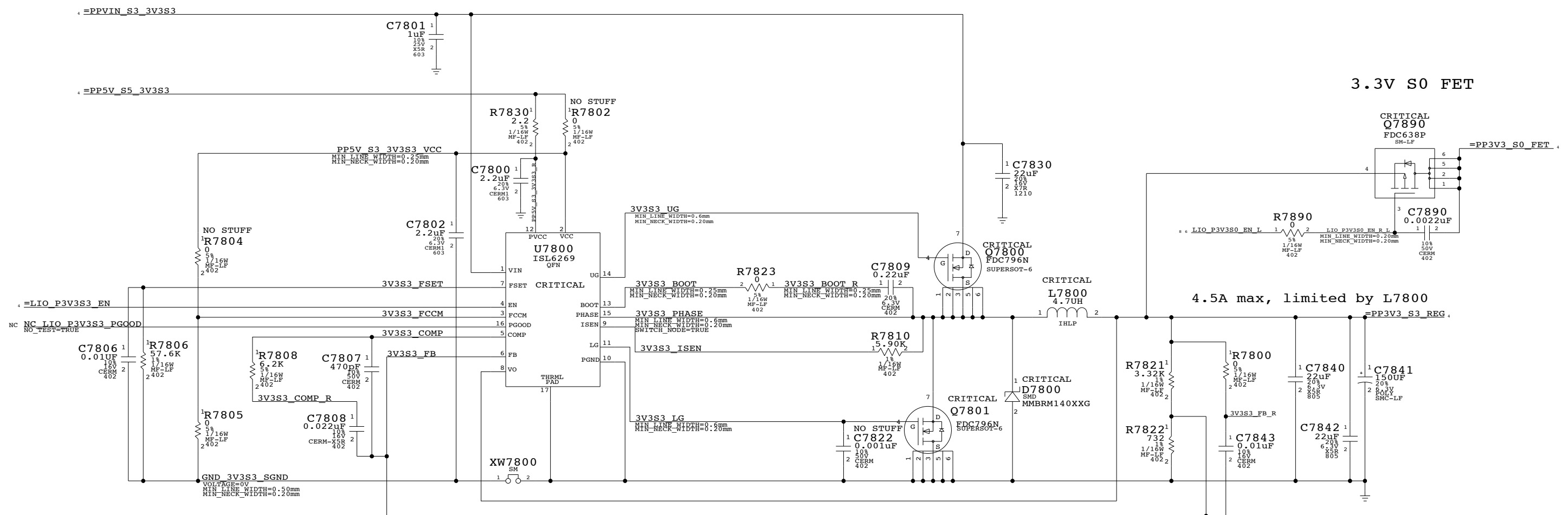
SYNC\_MASTER=M1\_AUDIO\_REF SYNC\_DATE=10/04/2005

NOTICE OF PROPRIETARY PROPERTY

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

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	NONE	SHT	12 OF 18

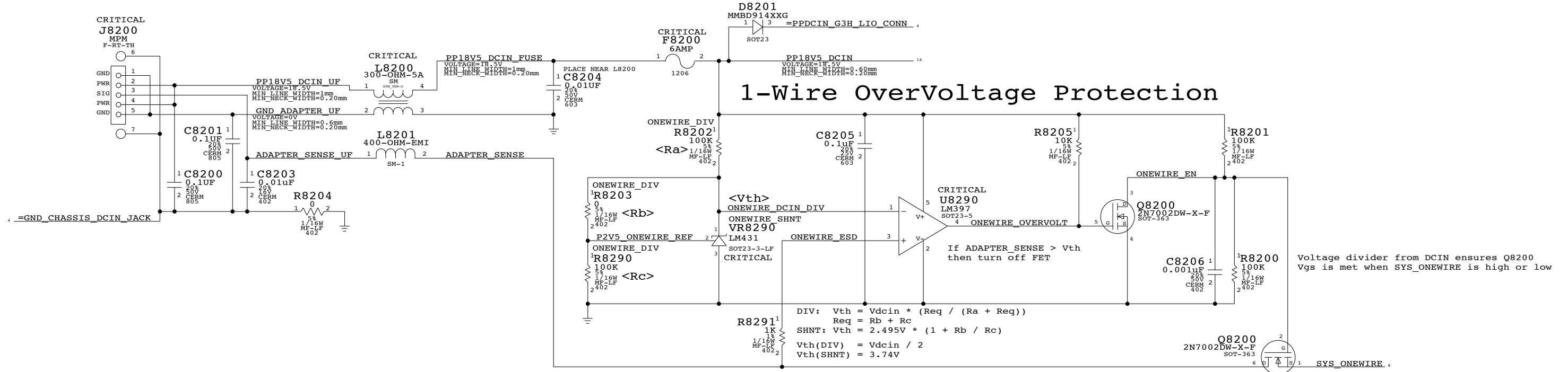
# 3.3V S3/S0 Power Supply



**3.3V Supply**  
 SYNC\_MASTER=(Master) SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT	OF	
NONE	13	18	

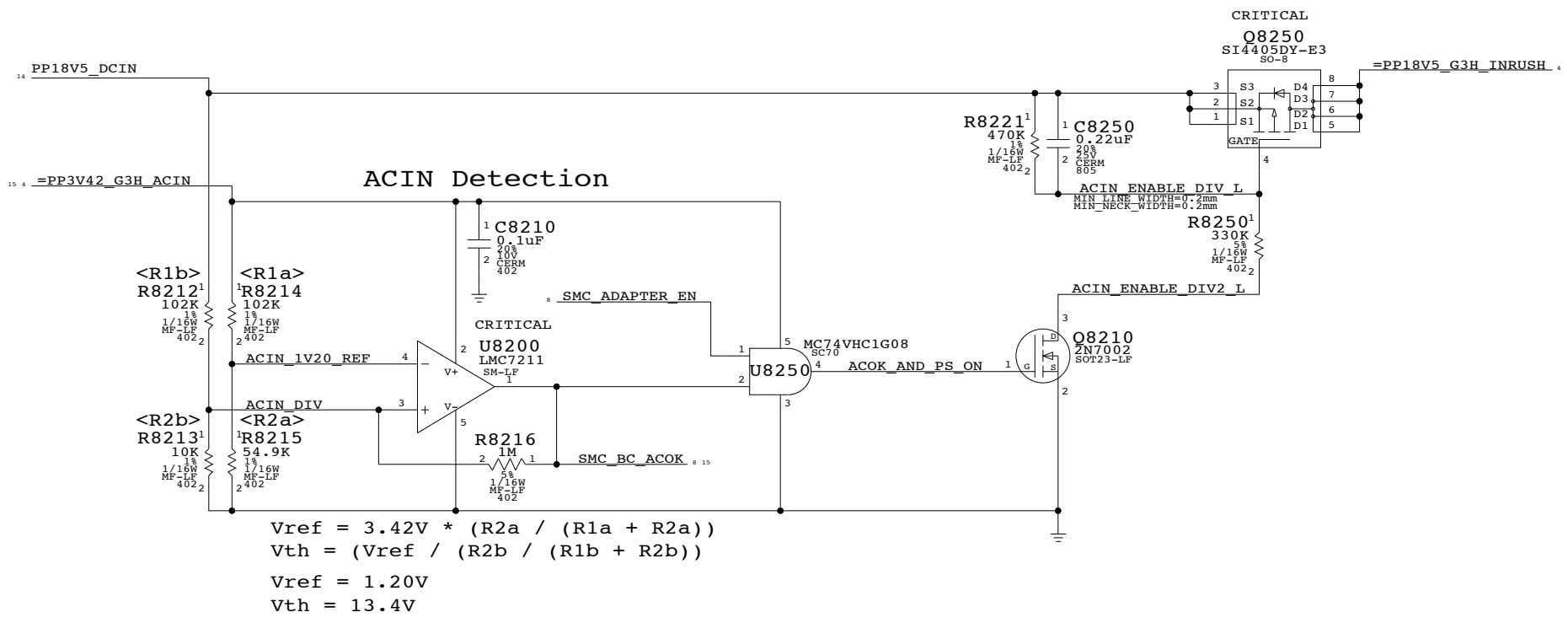
# DC Power Jack



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
116S0085	1	RES, 6.2K, 5%, 1/16W, 0402, LF	R8202		ONEWIRE_SHNT
114S0315	1	RES, 10K, 1%, 1/16W, 0402, LF	R8203		ONEWIRE_SHNT
114S0343	1	RES, 20K, 1%, 1/16W, 0402, LF	R8290		ONEWIRE_SHNT

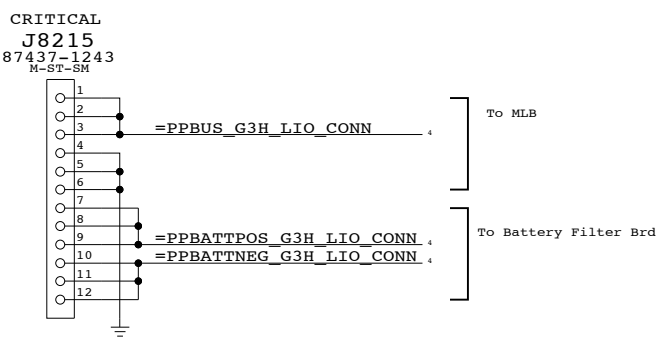
ONEWIRE SHNT BOM option allows the use of an adjustable shunt voltage regulator to provide the reference to the LM397 comparator. This allows the protection circuit to enforce a ~3.7V max signal on ADAPTER\_SENSE instead of the voltage divider DCIN/2 approach.  
R8202 value ensures 1mA current for DCIN >= 13.4V per LM431 spec.

# Inrush Limiter



$V_{ref} = 3.42V * (R2a / (R1a + R2a))$   
 $V_{th} = (V_{ref} / (R2b / (R1b + R2b)))$   
 $V_{ref} = 1.20V$   
 $V_{th} = 13.4V$

# Left I/O Power Connector

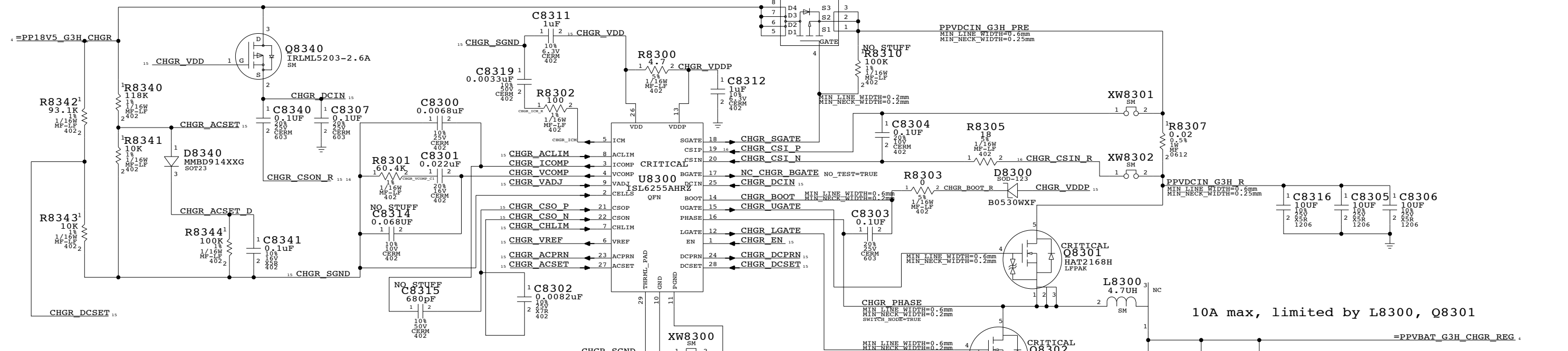


**DC-In & Battery Connectors**  
 SYNC\_MASTER=(Master) SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

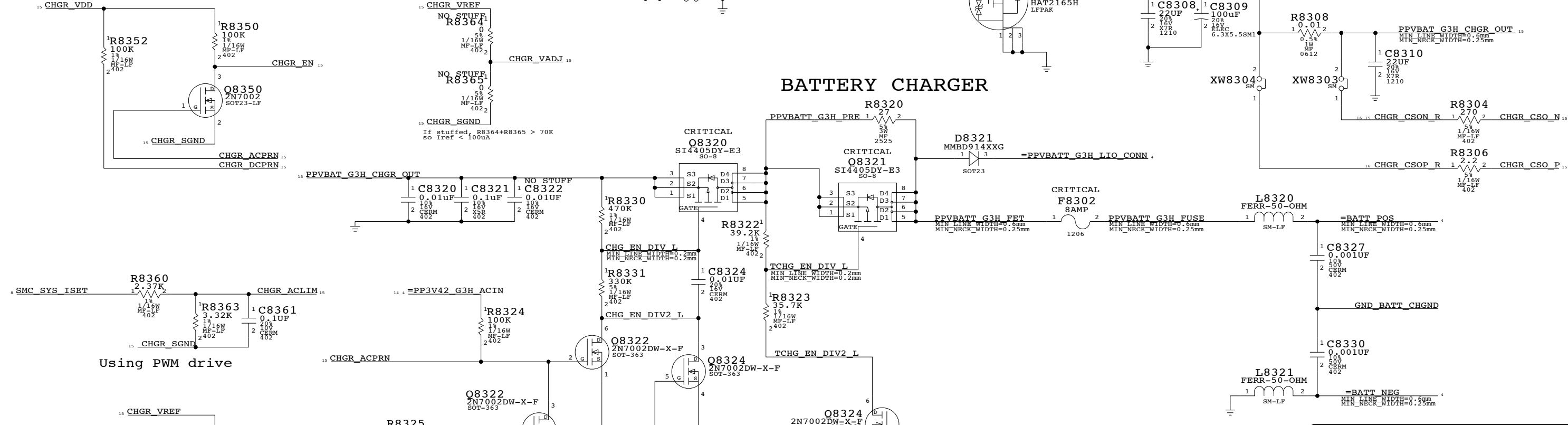
APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	NONE	SHT	14 OF 18

# PBUS SUPPLY

CRITICAL  
Q8300  
SI4405DY-E3  
SO-8



# BATTERY CHARGER



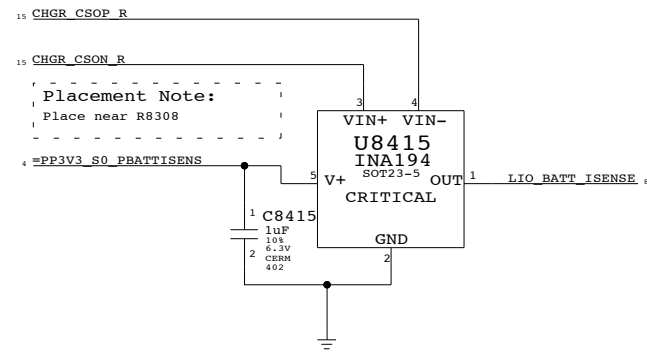
Using PWM drive

Using PWM drive

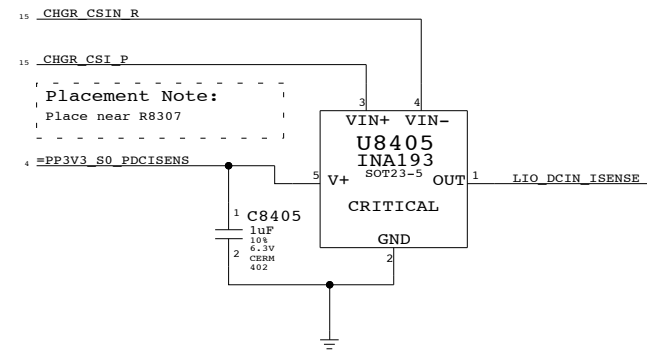
**PBus Supply & Batt. Charger**  
 SYNC\_MASTER=(Master)      SYNC\_DATE=(Master)  
**NOTICE OF PROPRIETARY PROPERTY**  
 THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING:  
 I TO MAINTAIN THE DOCUMENT IN CONFIDENCE  
 II NOT TO REPRODUCE OR COPY IT  
 III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	NONE	SHT	15 OF 18

### Battery Current Sense

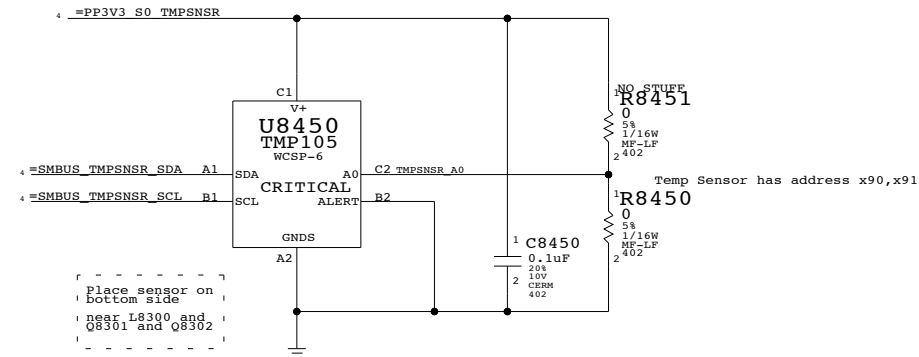


### DCIn Current Sense



### TMP105 Thermal Sensor

TMP105 will change to TMP106 for DVT



#### Current & Thermal Sensors

SYNC\_MASTER=(Master) SYNC\_DATE=(Master)

#### NOTICE OF PROPRIETARY PROPERTY

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

APPLE COMPUTER INC.	SIZE	DRAWING NUMBER	REV.
	D	051-6951	03003
SCALE	SHT	OF	
NONE	16	18	





Main assembly table with columns 1-8 and rows A-D. Columns 1-4 contain part numbers and descriptions. Columns 5-8 contain callouts like 'buzz[XXXX]'.

Title: Cref Part Report  
Design: buzz  
Date: Oct 9 1:38:13 2005