

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

DATE

ENG APPD

DATE

A

554161

PRODUCTION RELEASED

12/18/07

?

SCHEM, LIO, M87, MBP15

12/18/07

PVT

PDF PAGE

CSA PAGE

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SYNC MASTER

DATE

1

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(Master)

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(Master)

(Master)

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ExpressCard Connector

(Master)

(Master)

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MLB I/O Board Connector

(Master)

(Master)

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Current & Thermal Sensors

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(Master)

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AUDIO:CODEC

LENGO_M87_AUDIO

11/01/2007

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AUDIO: HEADPHONE AMP

LENGO_M87_AUDIO

11/01/2007

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AUDIO:SPEAKER AMP

LENGO_M87_AUDIO

11/01/2007

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AUDIO: JACKS

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11/01/2007

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LENGO_M87_AUDIO

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DC-In & Battery Connectors

(Master)

(Master)

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5V/3.3V SUPPLY

<MASTER>

<MASTER>

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PBus Supply & Batt. Charger

(Master)

(Master)

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Inverter Connector

SPLIT_INVERTER

12/06/2006

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LCD Backlight Support

M88_MLB

07/05/2007

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99

Cross Reference Page

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Cross Reference Page

PART#

QTY

DESCRIPTION

REFERENCE DESIGNATOR(S)

CRITICAL

BOM OPTION

051-7447

1

SCHEM, DUBLIN, M87

SW1

CRITICAL

820-2273

1

PCBF, DUBLIN, M87

PCB1

CRITICAL

DIMENSIONS ARE IN MILLIMETERS

XX ±

X.XX ±

X.XXX ±

ANGLES ±

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

METRIC

DRAFTER

ENG APPD

QA APPD

RELEASE

DESIGN CK

MFG APPD

DESIGNER

SCALE

MATERIAL/FINISH NOTED AS APPLICABLE

SIZE D

APPLE INC.

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TITLE

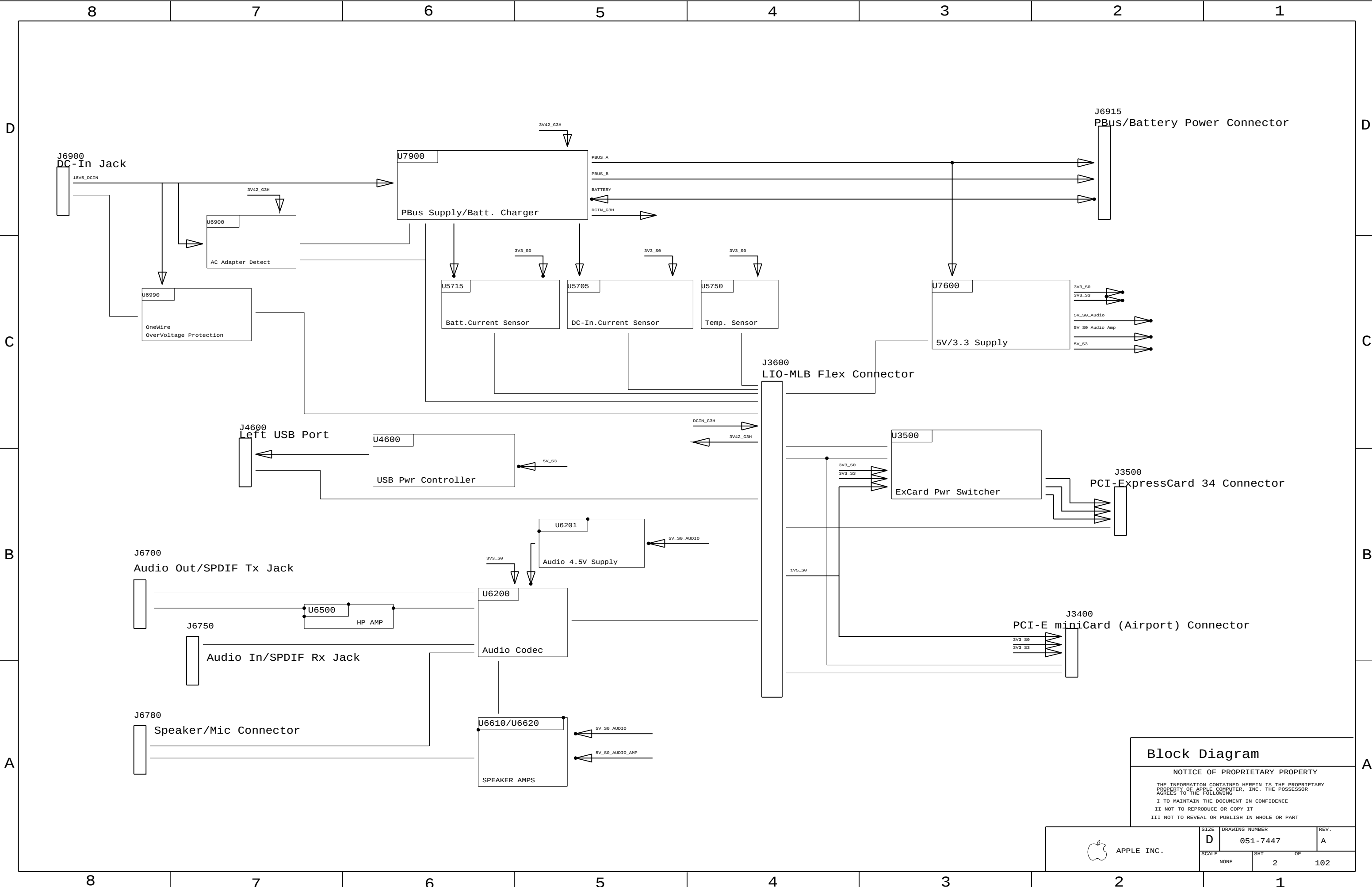
SCHEM, DUBLIN, M87

DRAWING NUMBER

051-7447

REV. A

SHT 1 OF 102



Block Diagram

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SIZE	DRAWING NUMBER	REV.
D	051-7447	A
SCALE	SHT	OF
NONE	2	102

BOM NUMBER	BOM NAME	BOM OPTIONS
630-9094	PCBA, DUBLIN, M87	ALTERNATE, COMMON, M87_COMMON, EEE_Z3M

BOM GROUP	BOM OPTIONS
M87_COMMON	BKLT_3V_SIG, COMBOJACK

Bar Code Label / EEE #'s

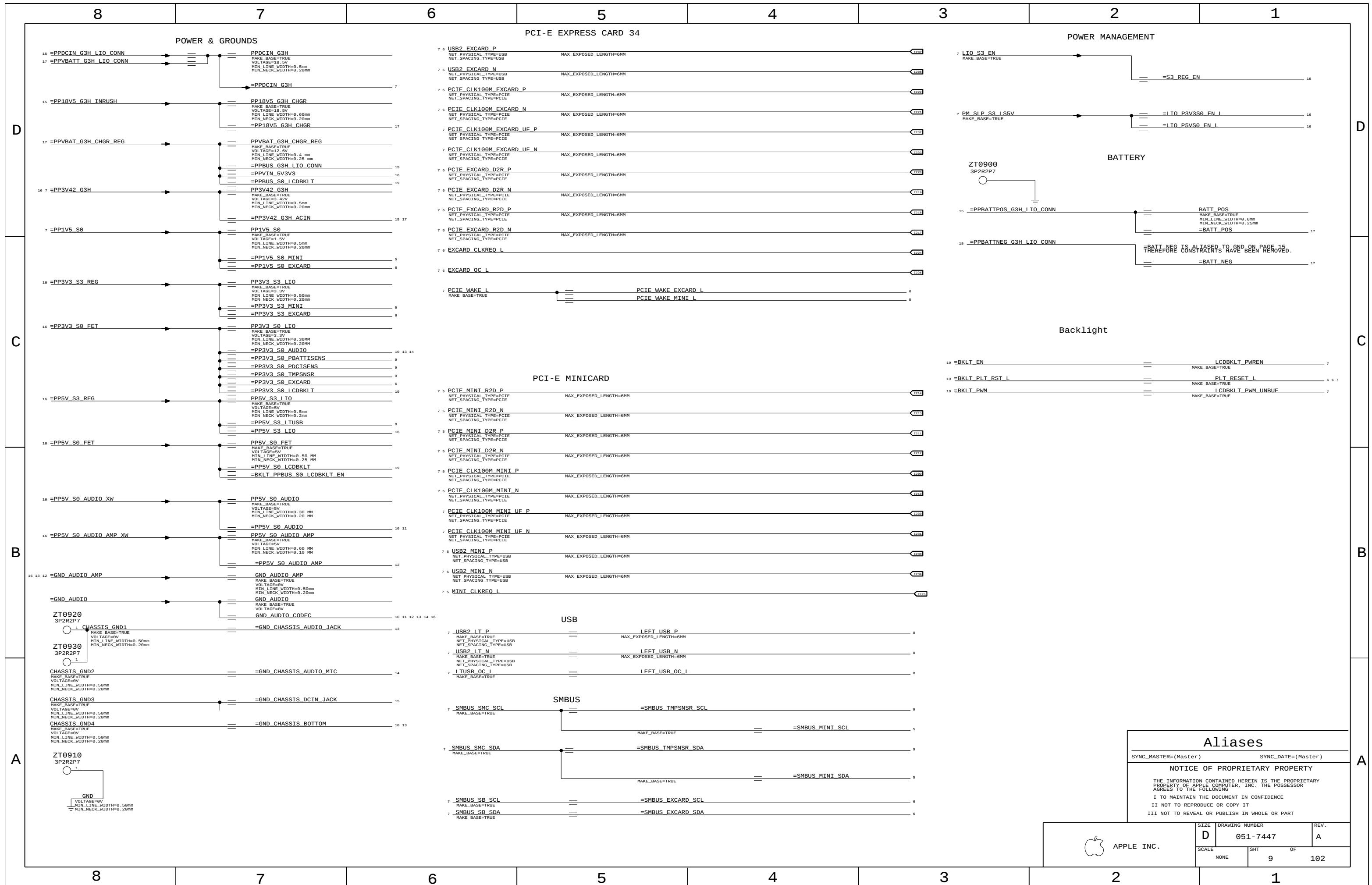
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
000-0041	1	PLACEHOLDER FOR EEE/CCC INFO	[EEE:Z3M]	CRITICAL	EEE_Z3M

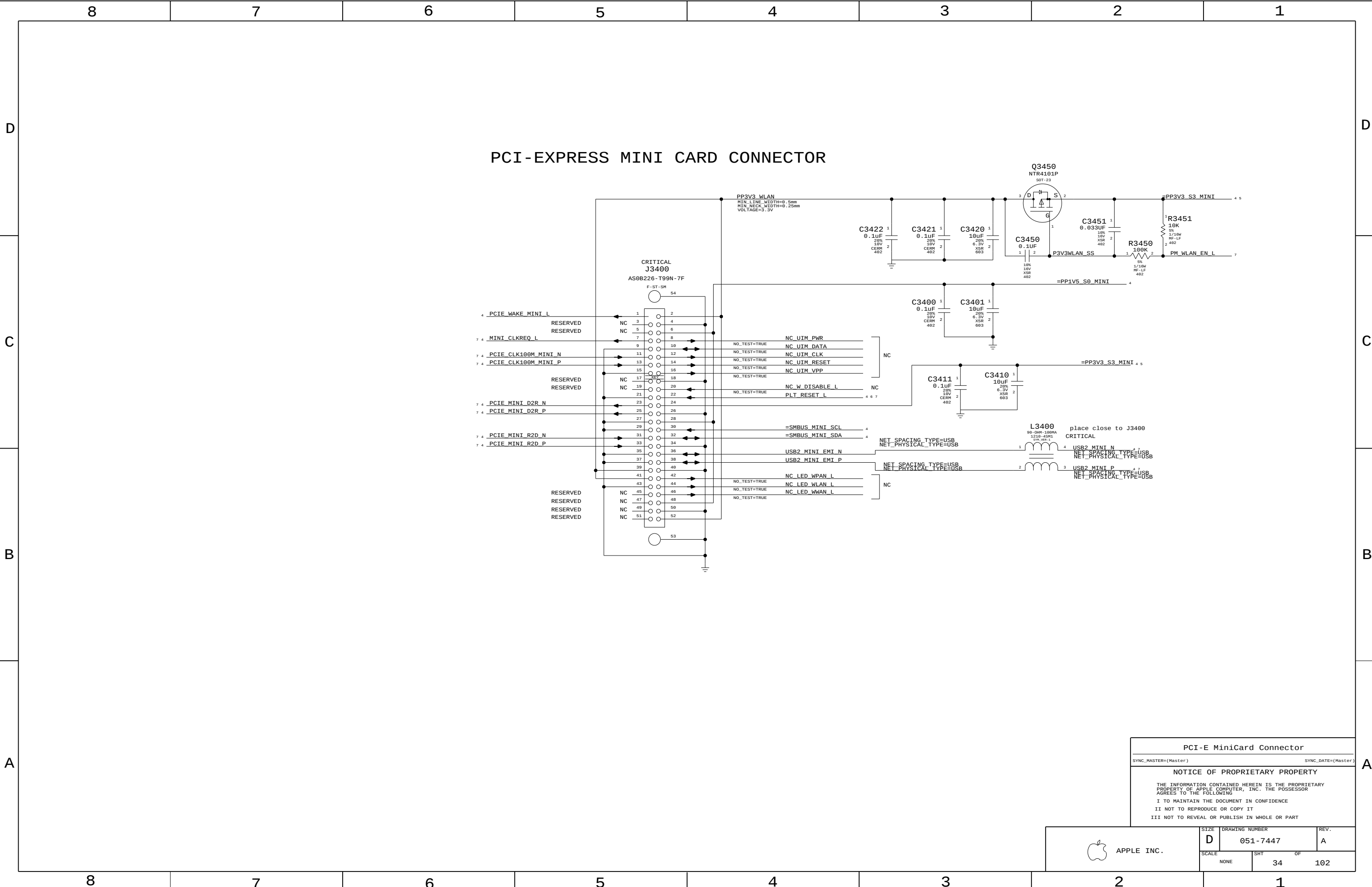
Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
37650448	37650445		ALL	SI7806ACN for FSM6296
12850061	12850061		ALL	150uF, 6, 3V, 250MHZ, C2
12850093	12850092		ALL	33uF, 16V, 450MHZ, D2E
35351717	35351297		ALL	LM397, COMPARATOR
37650560	37650532		ALL	SI7980DN for SI7913DN

BOM Configuration	
SYNCH_MASTER=(Master)	SYNCH_DATE=(Master)
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 APPLE INC.	SIZE	DRAWING NUMBER		REV.
	D	051-7447		A
	SCALE	SHT	OF	
	NONE	4	102	





PCI-E MiniCard Connector

SYNC_MASTER={Master} SYNC_DATE={Master}

NOTICE OF PROPRIETARY PROPERTY

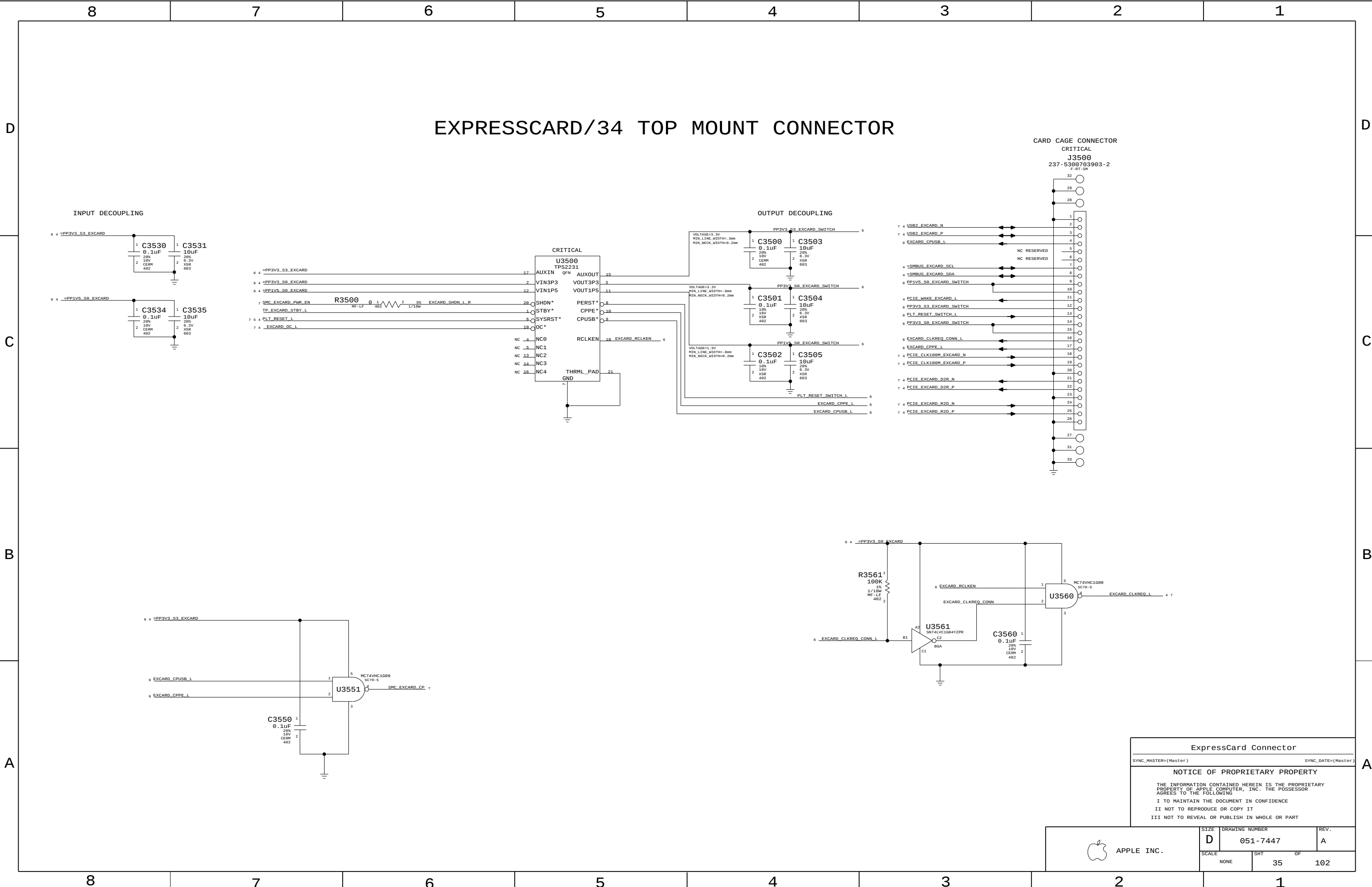
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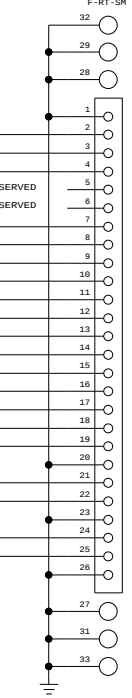
III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART

APPLE INC.	SIZE	DRAWING NUMBER	REV.
	D	051-7447	A
SCALE		SHT	OF
NONE		34	102

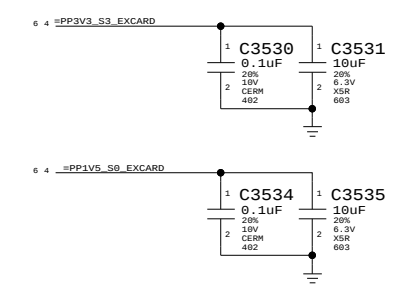


EXPRESSCARD/34 TOP MOUNT CONNECTOR

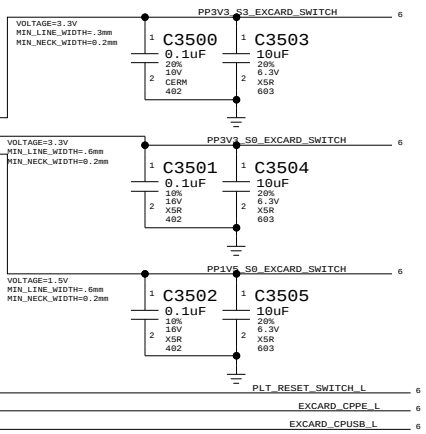
CARD CAGE CONNECTOR
CRITICAL
J3500
237-5300703903-2
P-RT-204



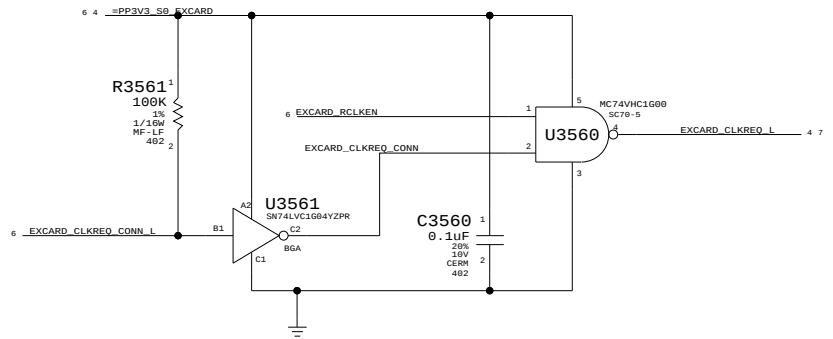
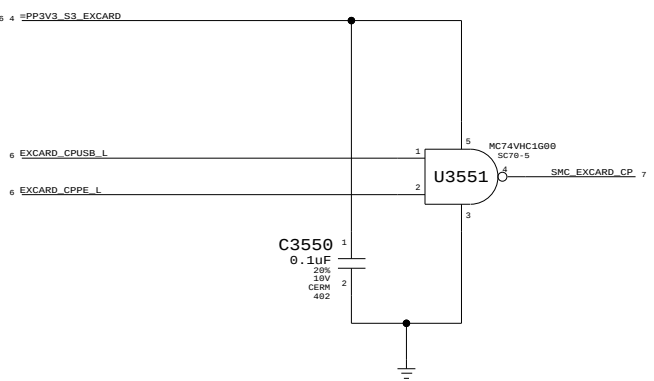
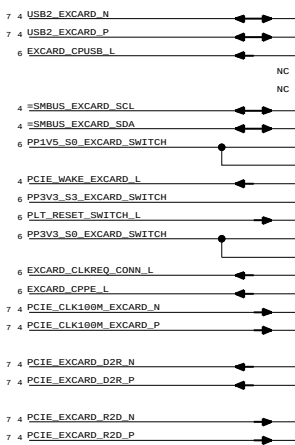
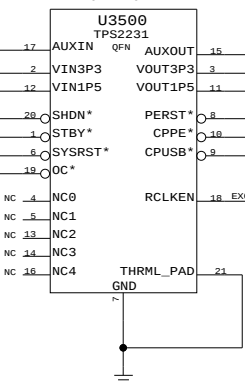
INPUT DECOUPLING



OUTPUT DECOUPLING



CRITICAL



ExpressCard Connector

SYNC_MASTER=(Master) SYNC_DATE=(Master)

NOTICE OF PROPRIETARY PROPERTY

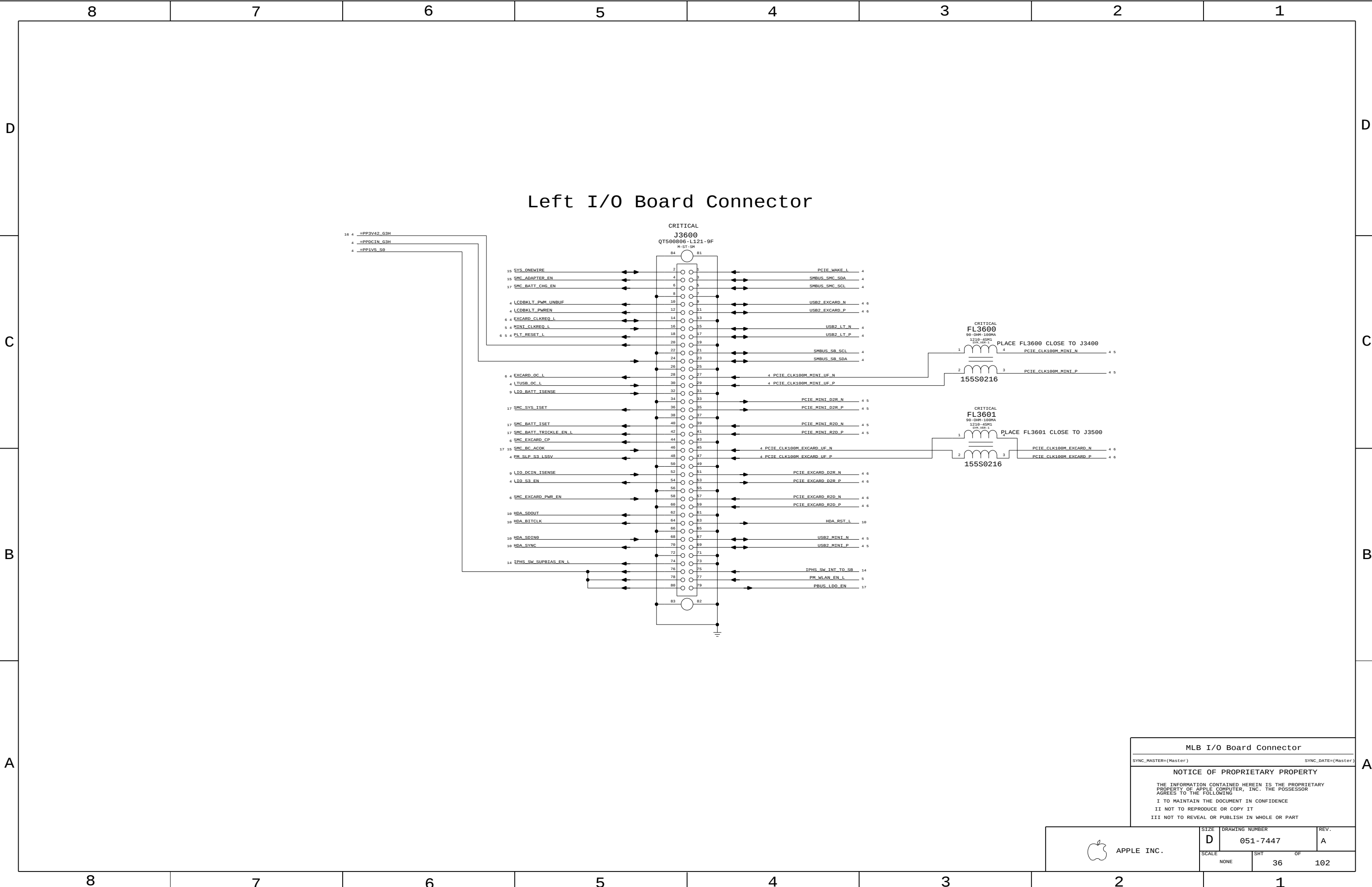
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7447	REV. A
	SCALE NONE	SHT 35	OF 102



MLB I/O Board Connector

SYNC_MASTER=(Master) SYNC_DATE=(Master)

NOTICE OF PROPRIETARY PROPERTY

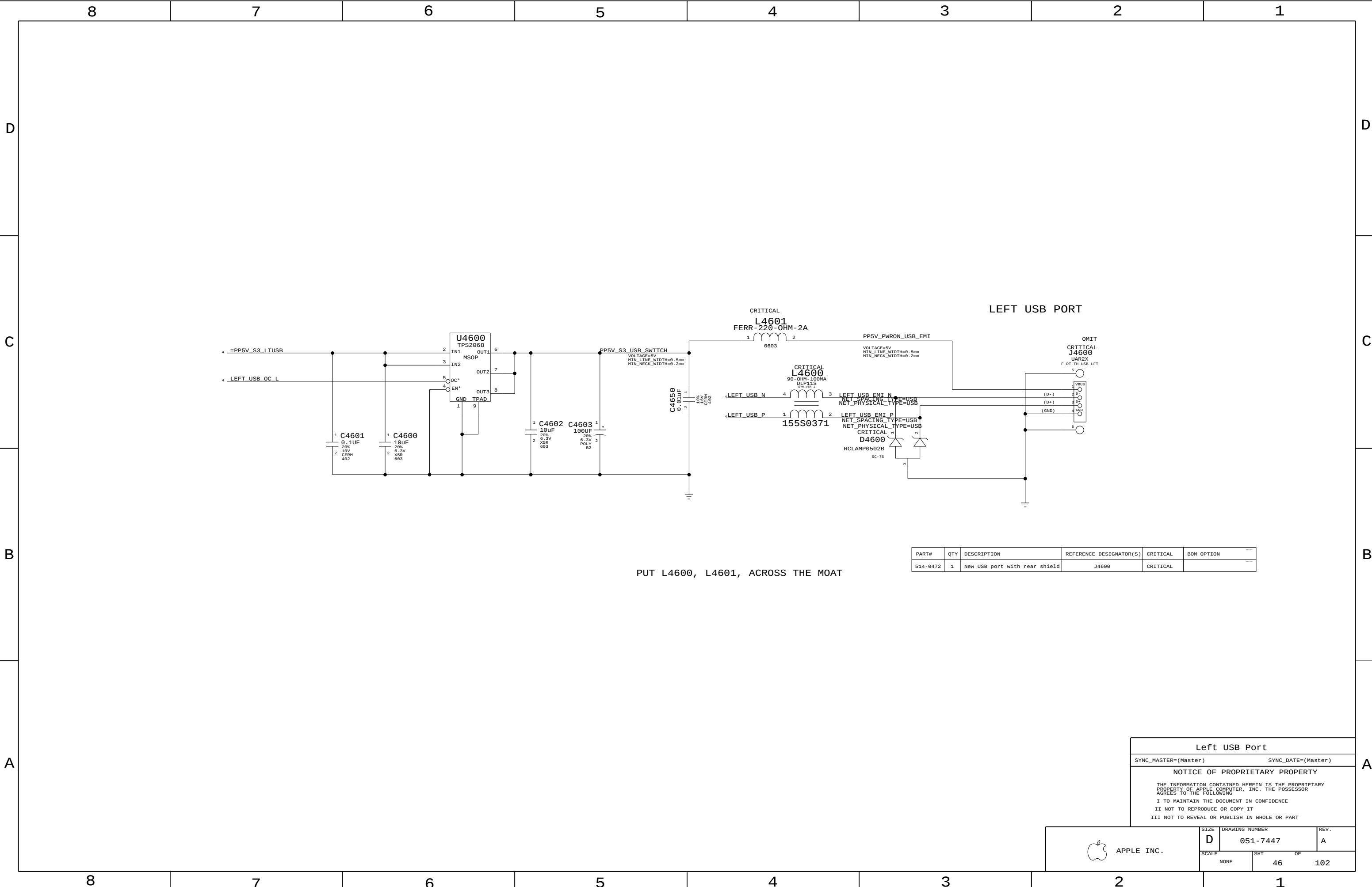
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7447	REV. A
	SCALE NONE	SHT 36	OF 102



Left USB Port

SYNC_MASTER=(Master) SYNC_DATE=(Master)

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APPLE INC.

SIZE D

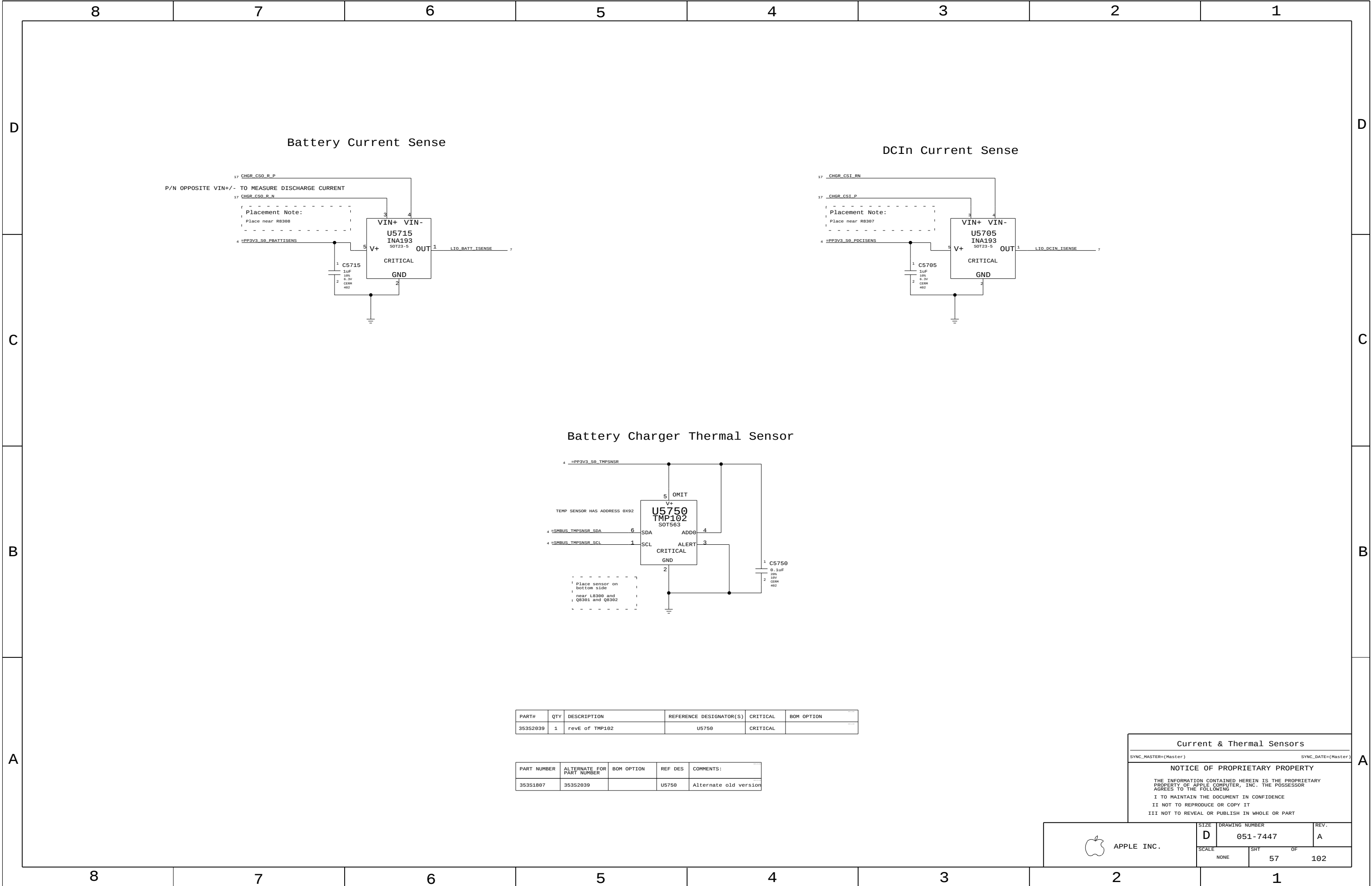
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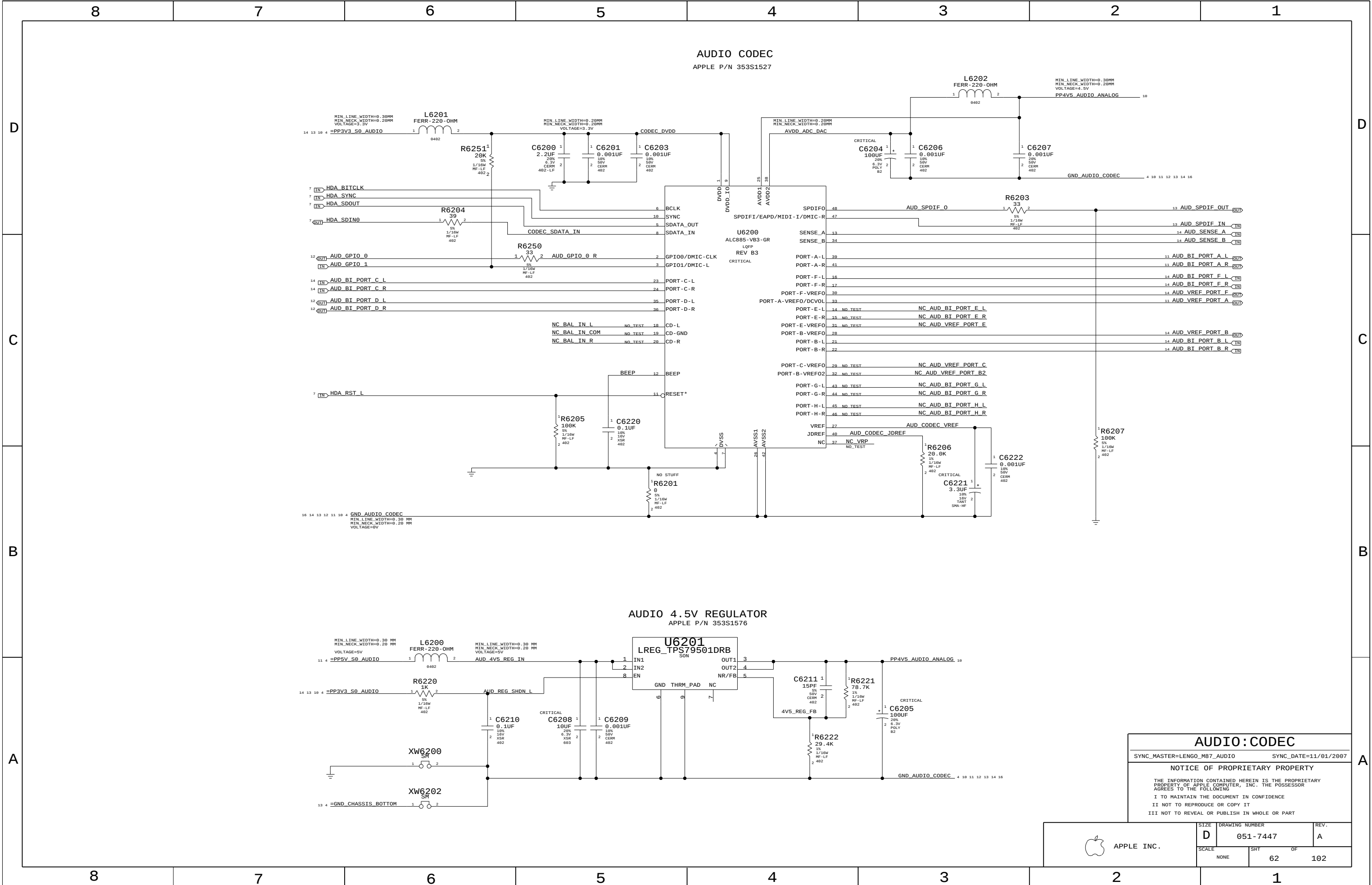
REV. A

SCALE NONE

SHT 46

OF 102





D

C

B

A

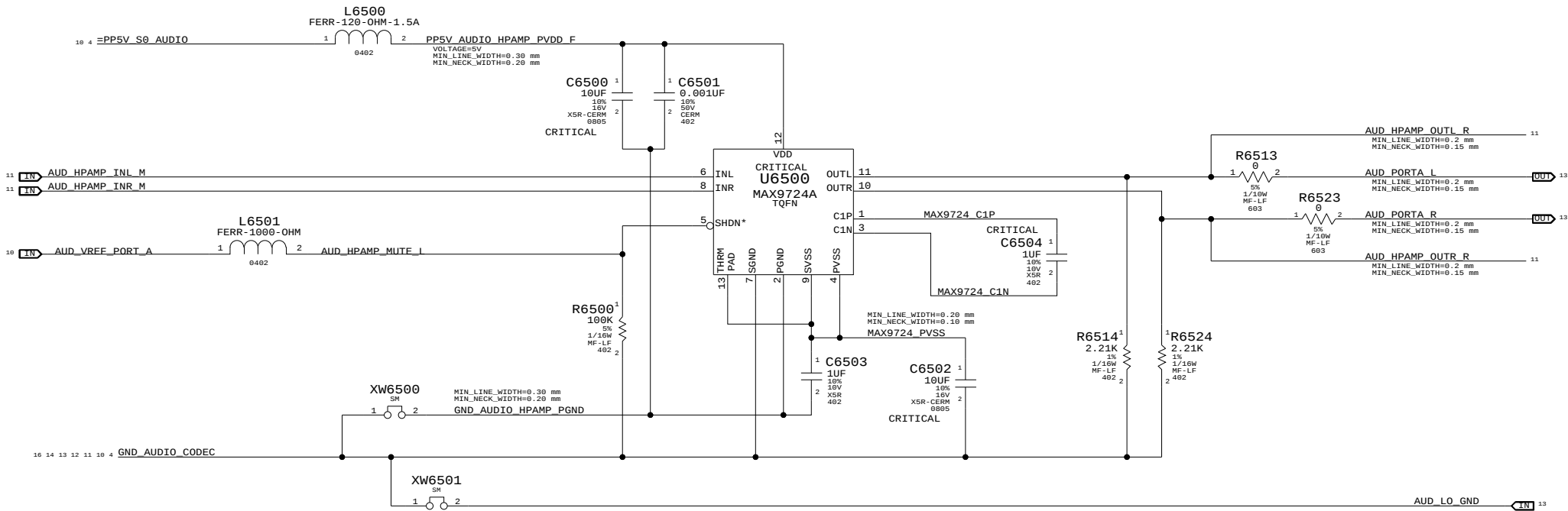
D

C

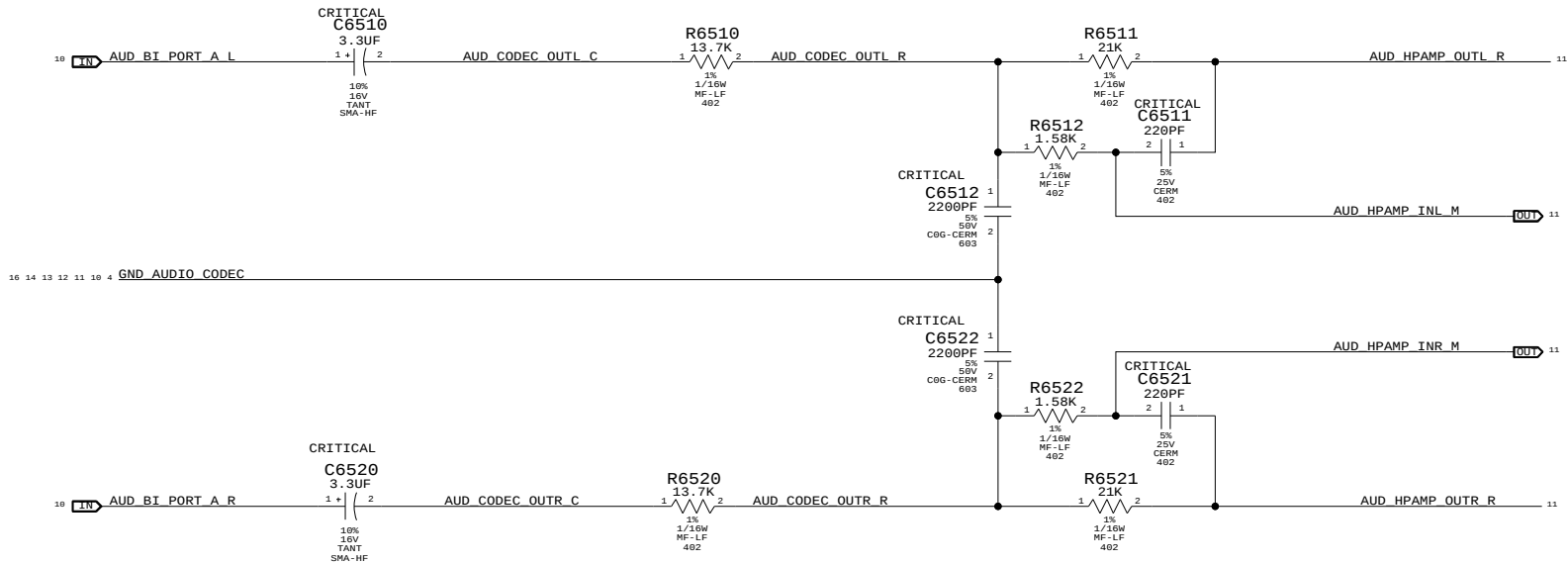
B

A

Headphone Amplifier (MAX9724A)
APN:353S1637
VOLTAGE GAIN:1.53



2nd Order DAC Filter
HP:3.52 HZ LP:39 KHZ



AUDIO: HEADPHONE AMP

SYNC_MASTER=LENGO_M87_AUDIO SYNC_DATE=11/01/2007

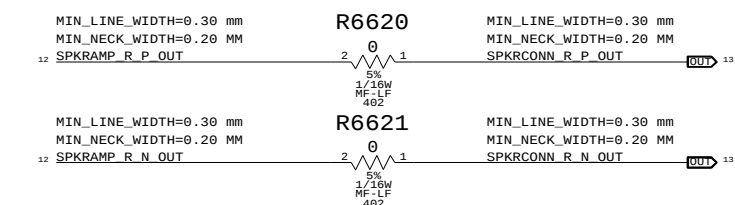
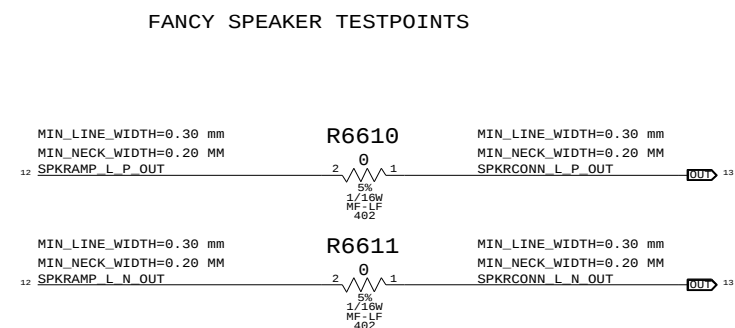
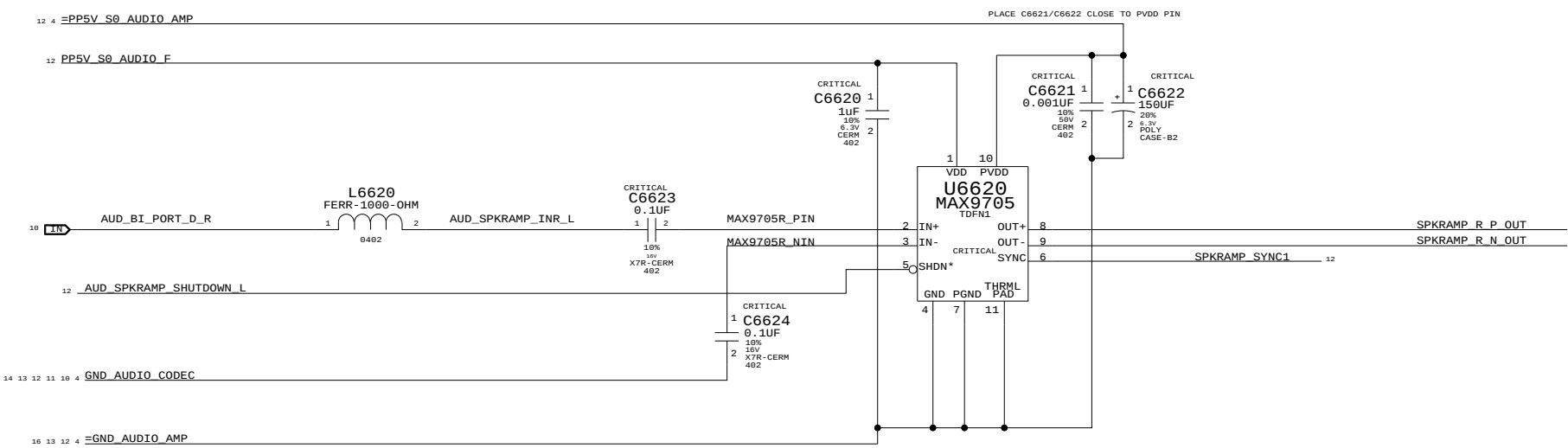
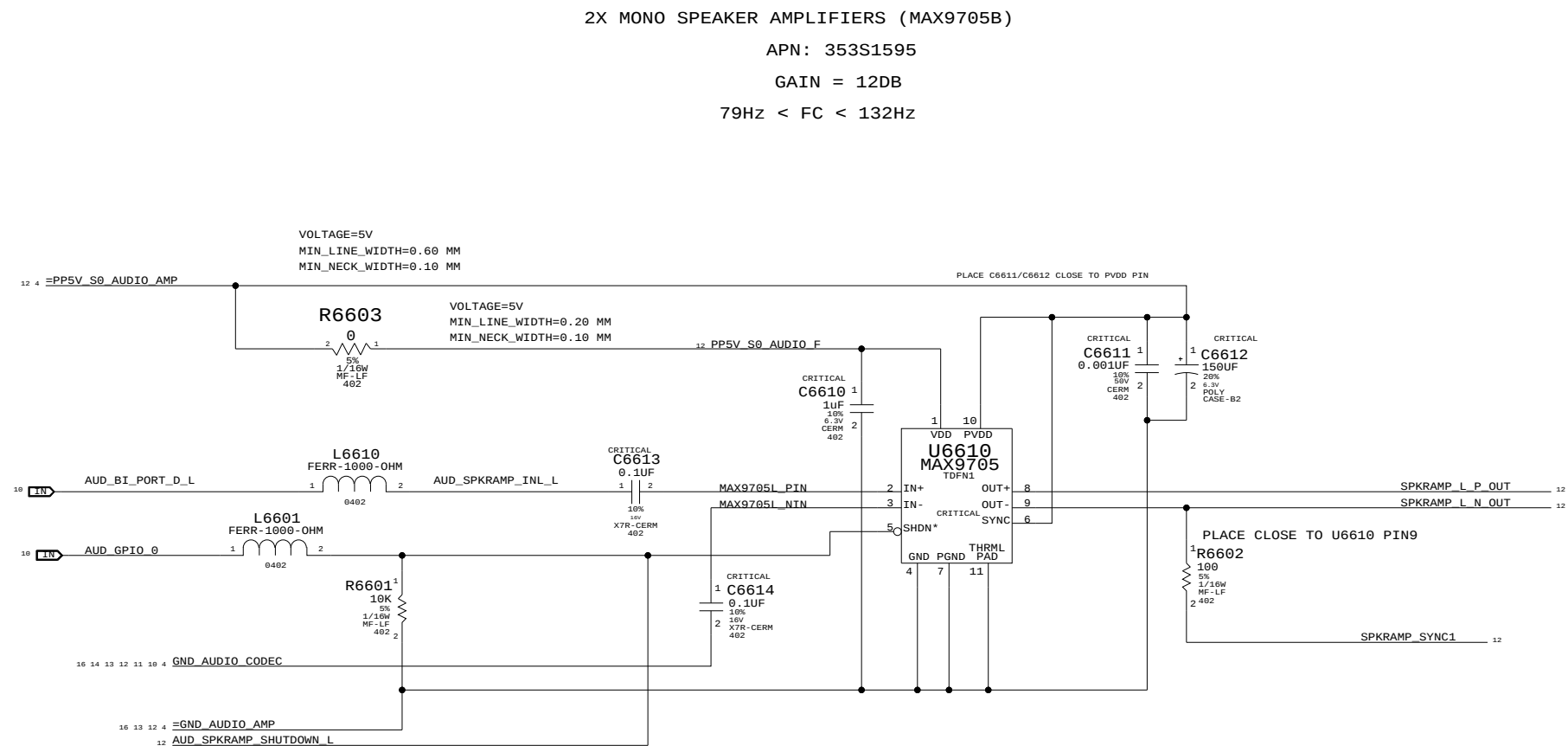
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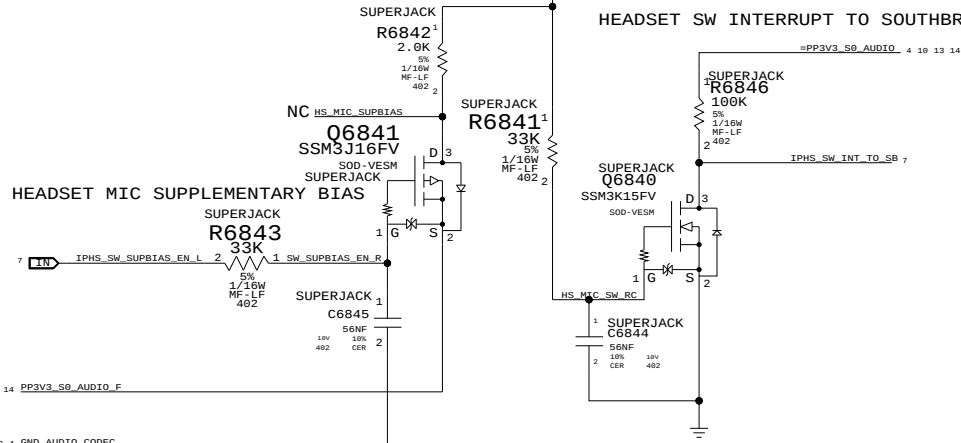
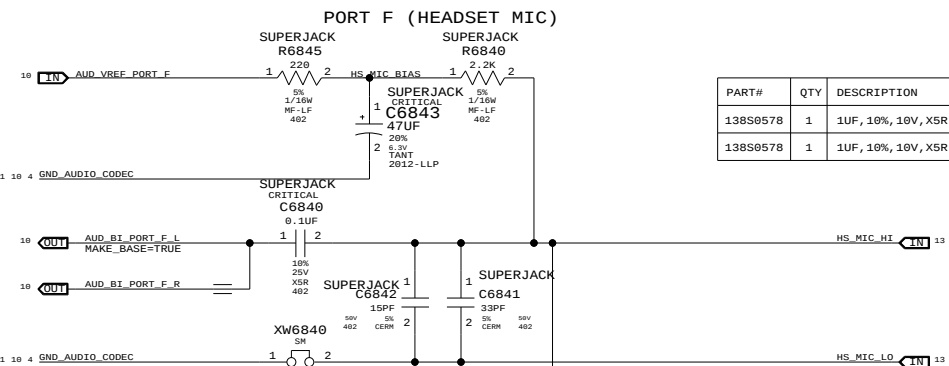
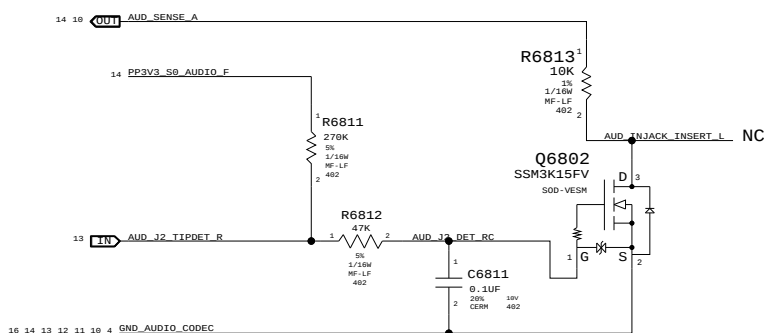
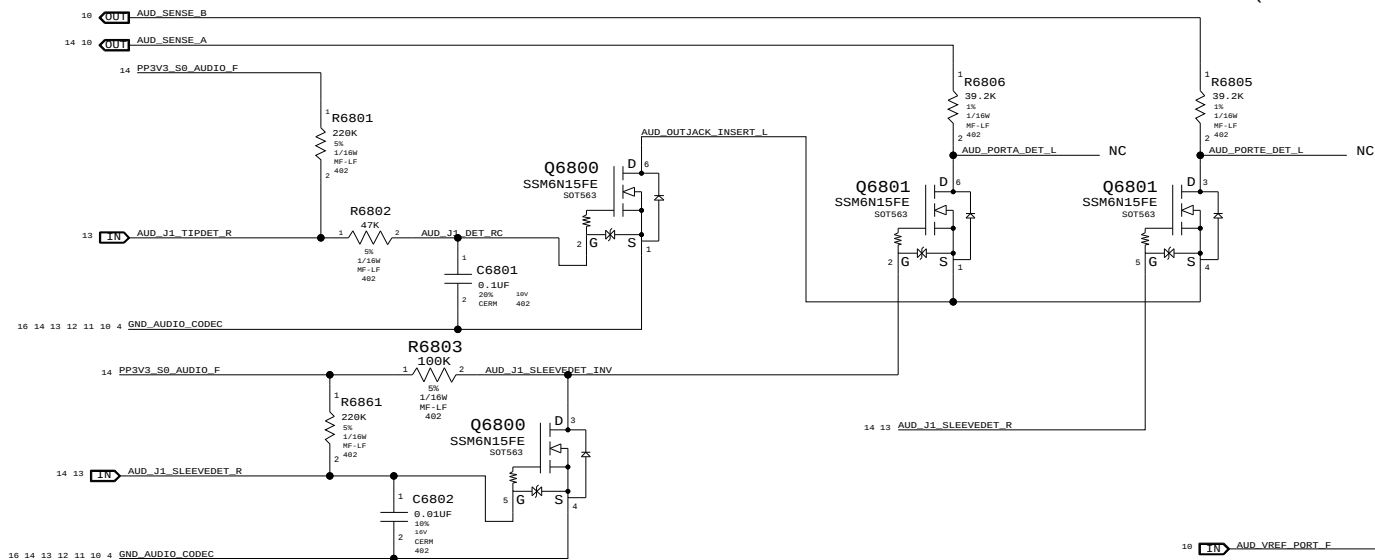
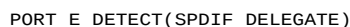
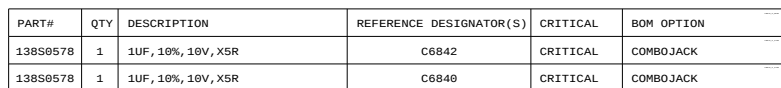
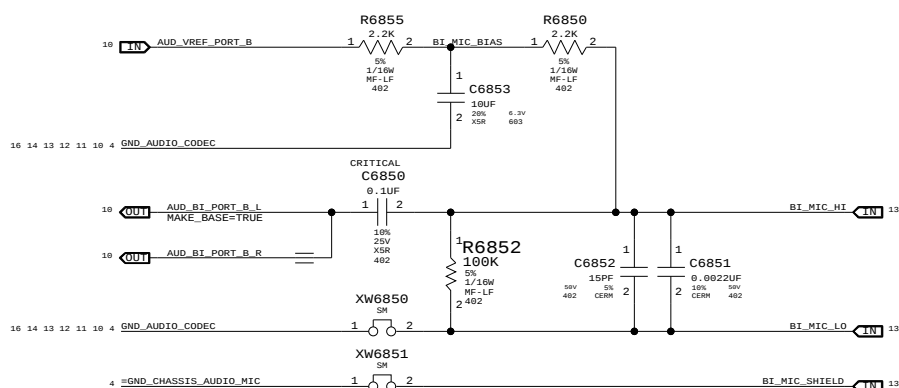
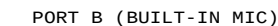
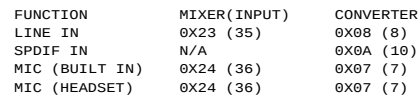
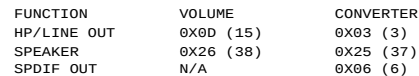
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7447	A
SCALE	SHT	OF
NONE	65	102



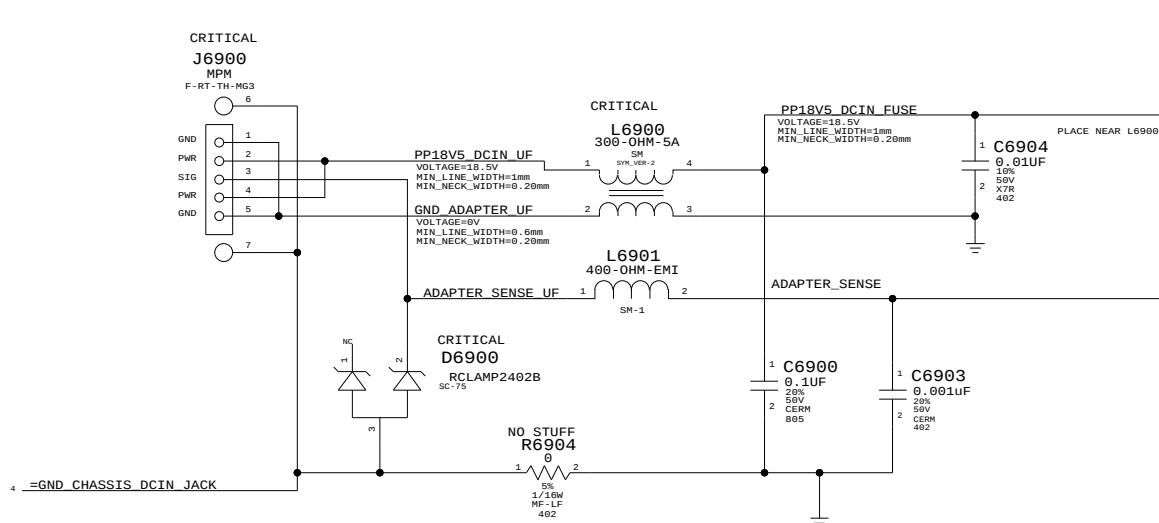
AUDIO:SPEAKER AMP	
SYNC_MASTER=LENGO_M87_AUDIO	SYNC_DATE=11/01/2007
NOTICE OF PROPRIETARY PROPERTY	
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	D	051-7447	A
	SCALE	SHT OF	
	NONE	66	102



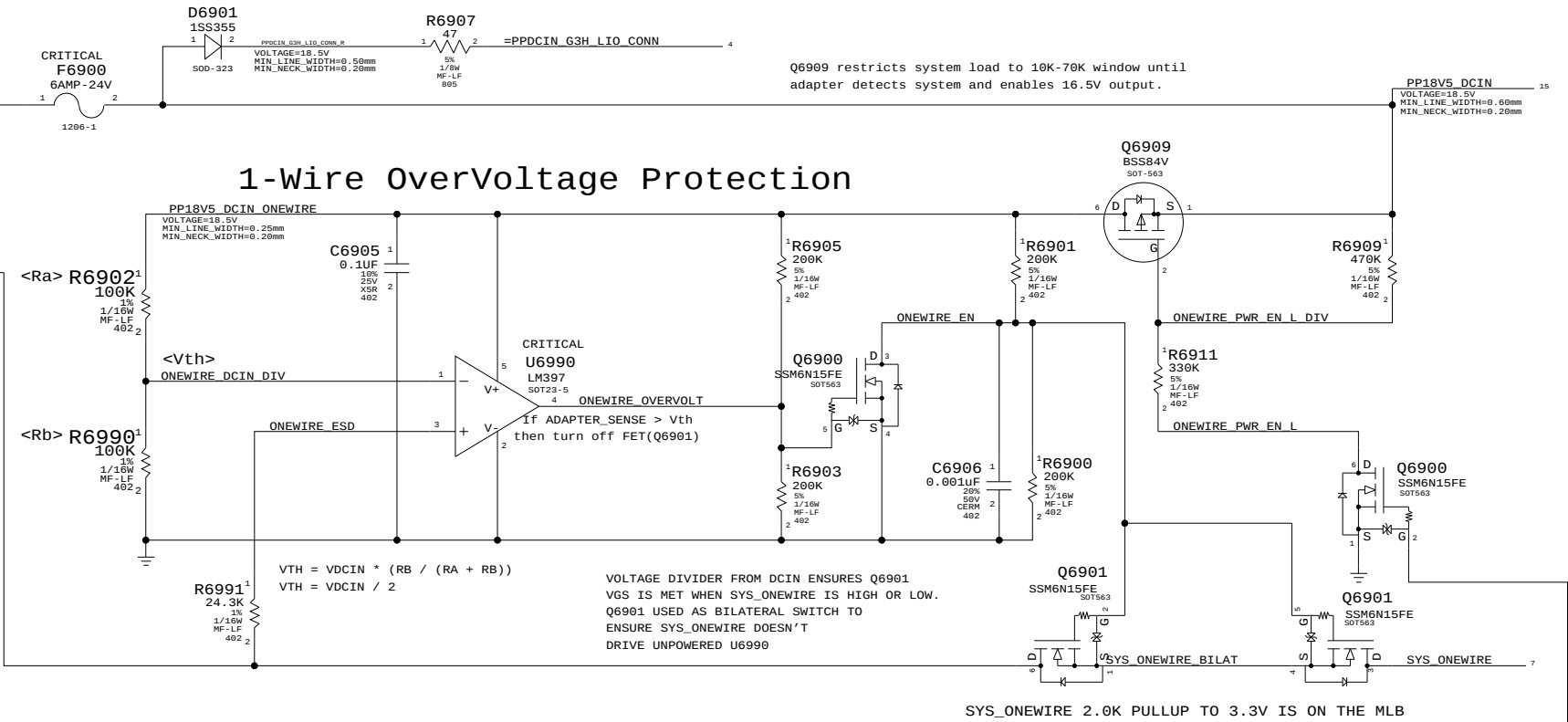
AUDIO: JACK TRANSLATORS	
SYNCH_MASTER=LENGO_M87_A870	SYNCH_DATE=11/01/2007
NOTICE OF PROPRIETARY PROPERTY	
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DC Power Jack



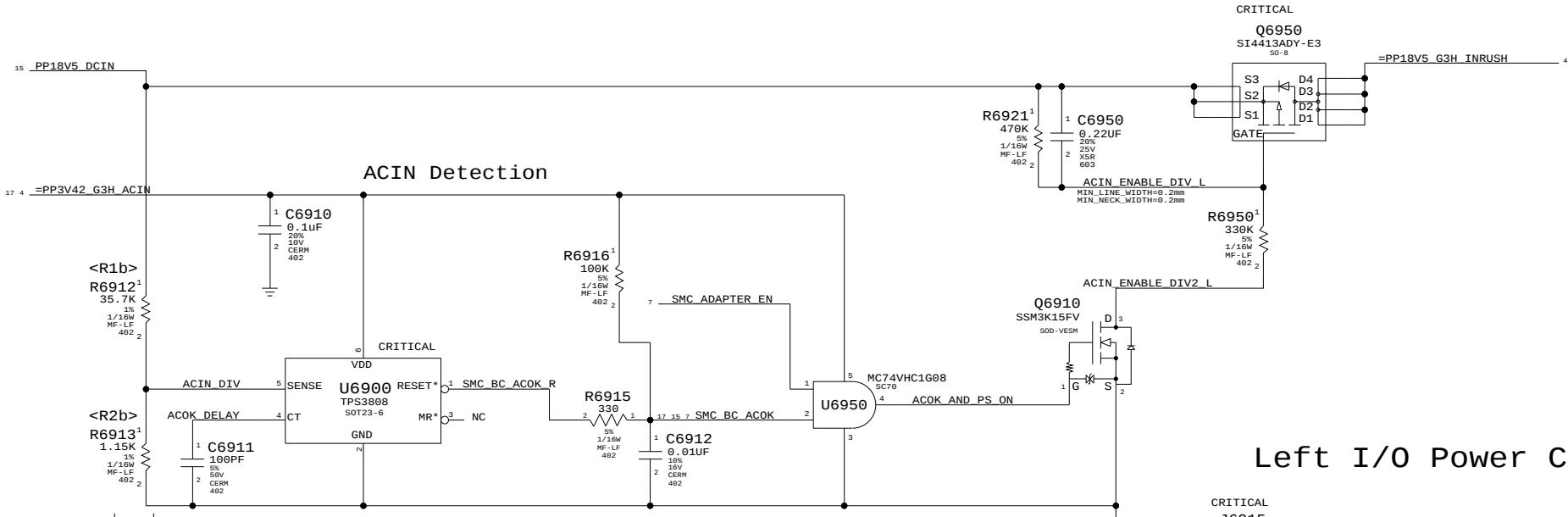
R6904 should be stuffed if GND_CHASSIS_DCIN_JACK does not have another connection to digital GND in the system, such as in an acrylic. The chassis ground will otherwise float and can send transients onto ADAPTER_SENSE when AC is connected.

1-Wire OverVoltage Protection



Q6909 restricts system load to 10K-70K window until adapter detects system and enables 16.5V output.

Inrush Limiter

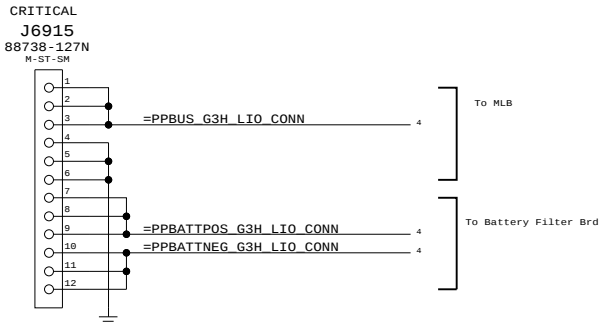


System must provide 10K-70K impedance to A52 adapter for system load detection. REQ OF R6912 & R6913 IS 36.9K.

$$V_{th} = (V_{ref} / (R_{2b} / (R_{1b} + R_{2b})))$$
$$V_{REF} = 0.405V$$
$$V_{TH} = 13.0V$$

Assuming 1% variance for R6912-R6913 and 3.42V:
Worst case Vth: min: 12.47V, max: 13.54V

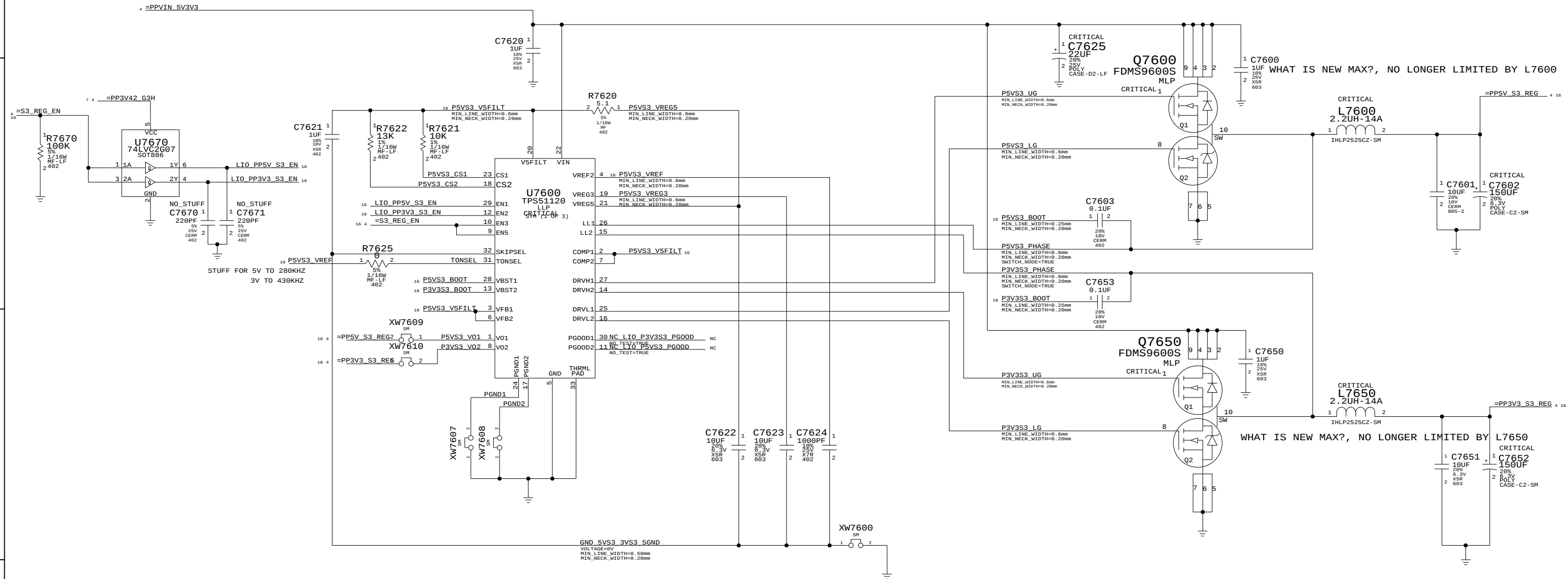
Left I/O Power Connector



DC-In & Battery Connectors		
SYNC_MASTER=(Master)		SYNC_DATA=(Master)
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APPLE INC.	SIZE D	DRAWING NUMBER 051-7447	REV. A
	SCALE NONE	SHT 69	OF 102

5V/3.3V POWER SUPPLY



5V S0 FET
Q7610
FDC697P

PLACE XW7601 TO XW76010 CLOSE TO 5V SWITCHER AND S0 FET

3.3V S0 FET

Q7611
FDC697P

5V/3.3V SUPPLY

SYNC_MASTER=<MASTER> SYNC_DATE=<MASTER>

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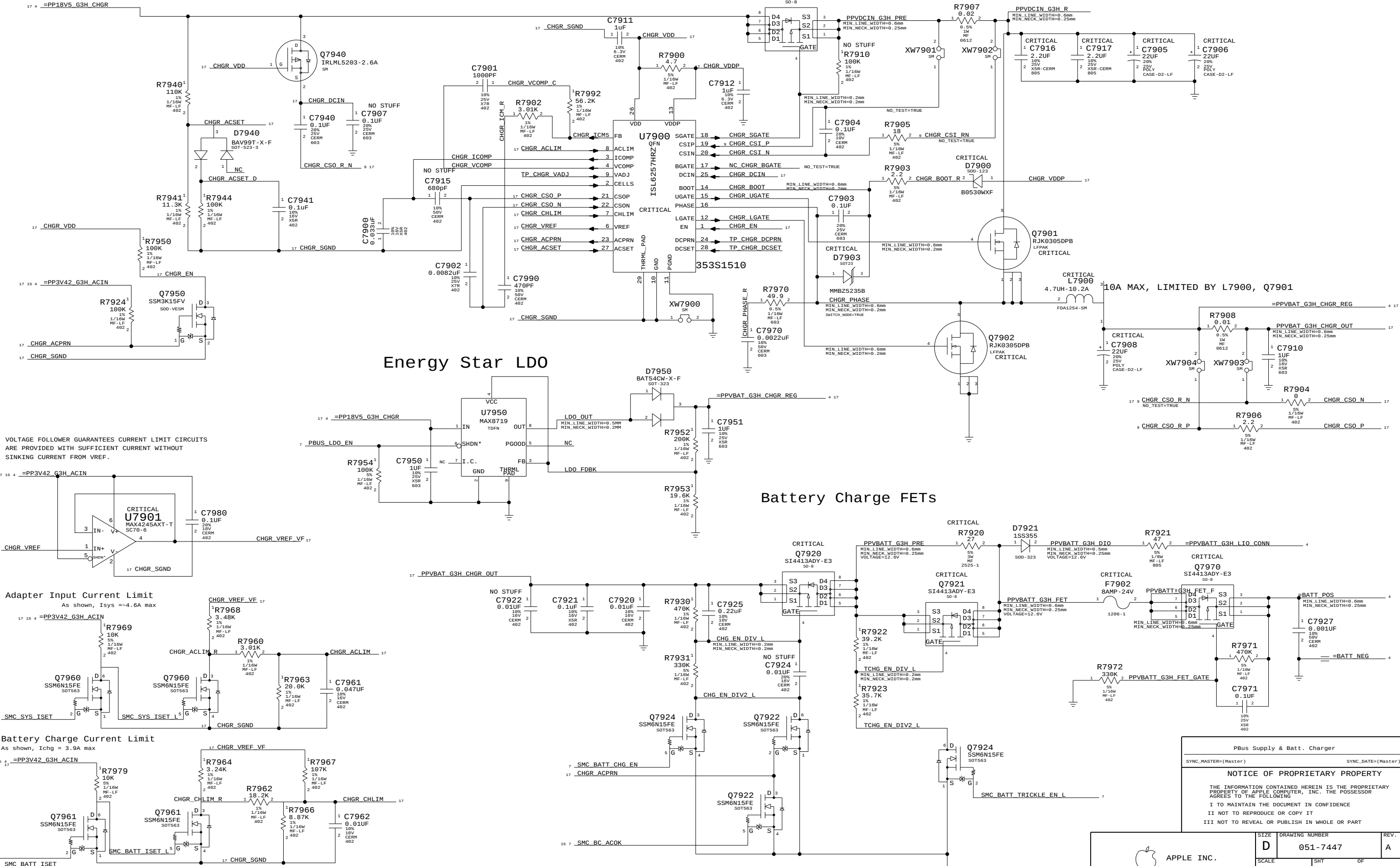
APPLE INC.

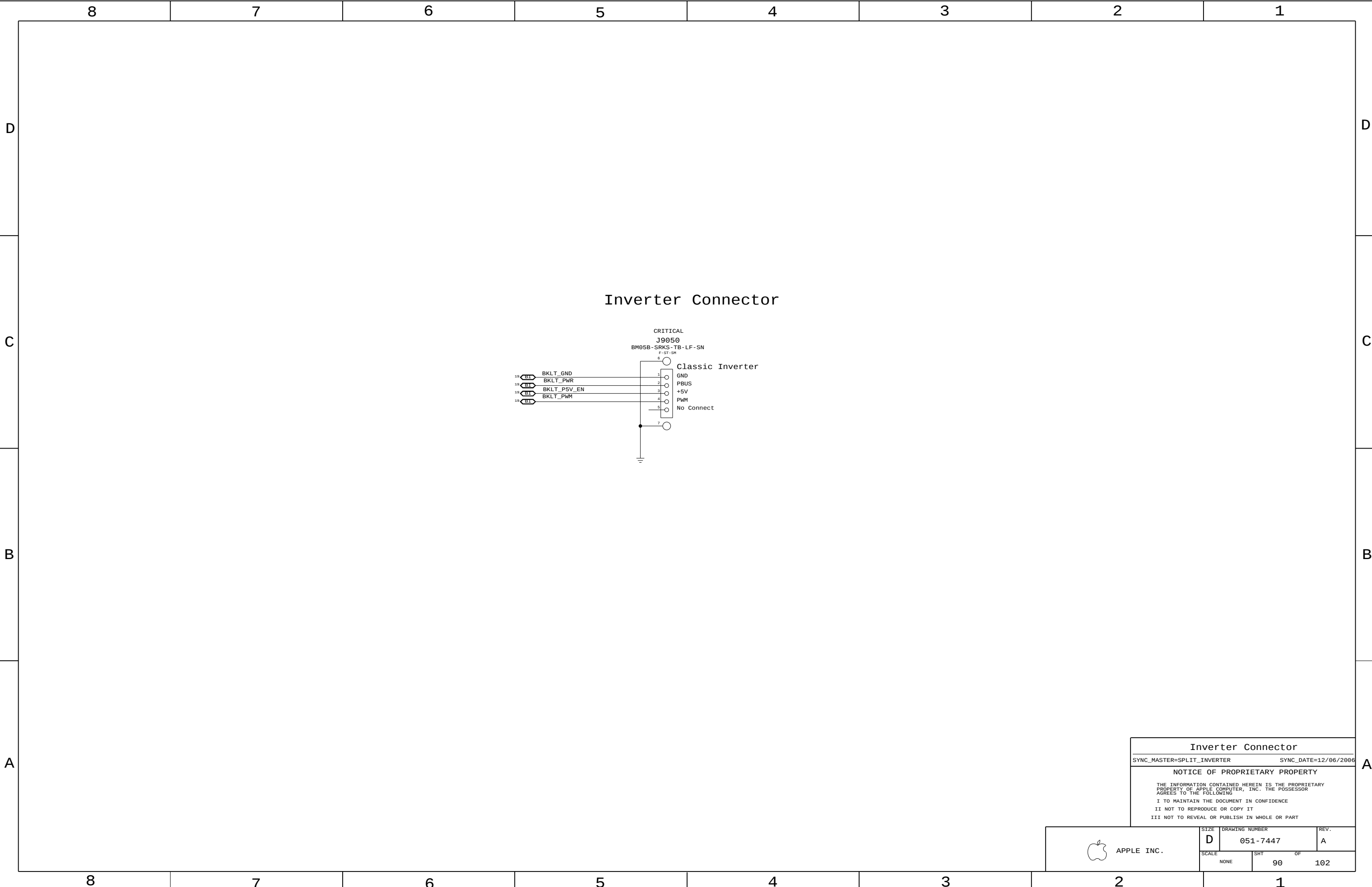
SIZE	DRAWING NUMBER	REV.
D	051-7447	A
SCALE	SHT	OF
NONE	76	102

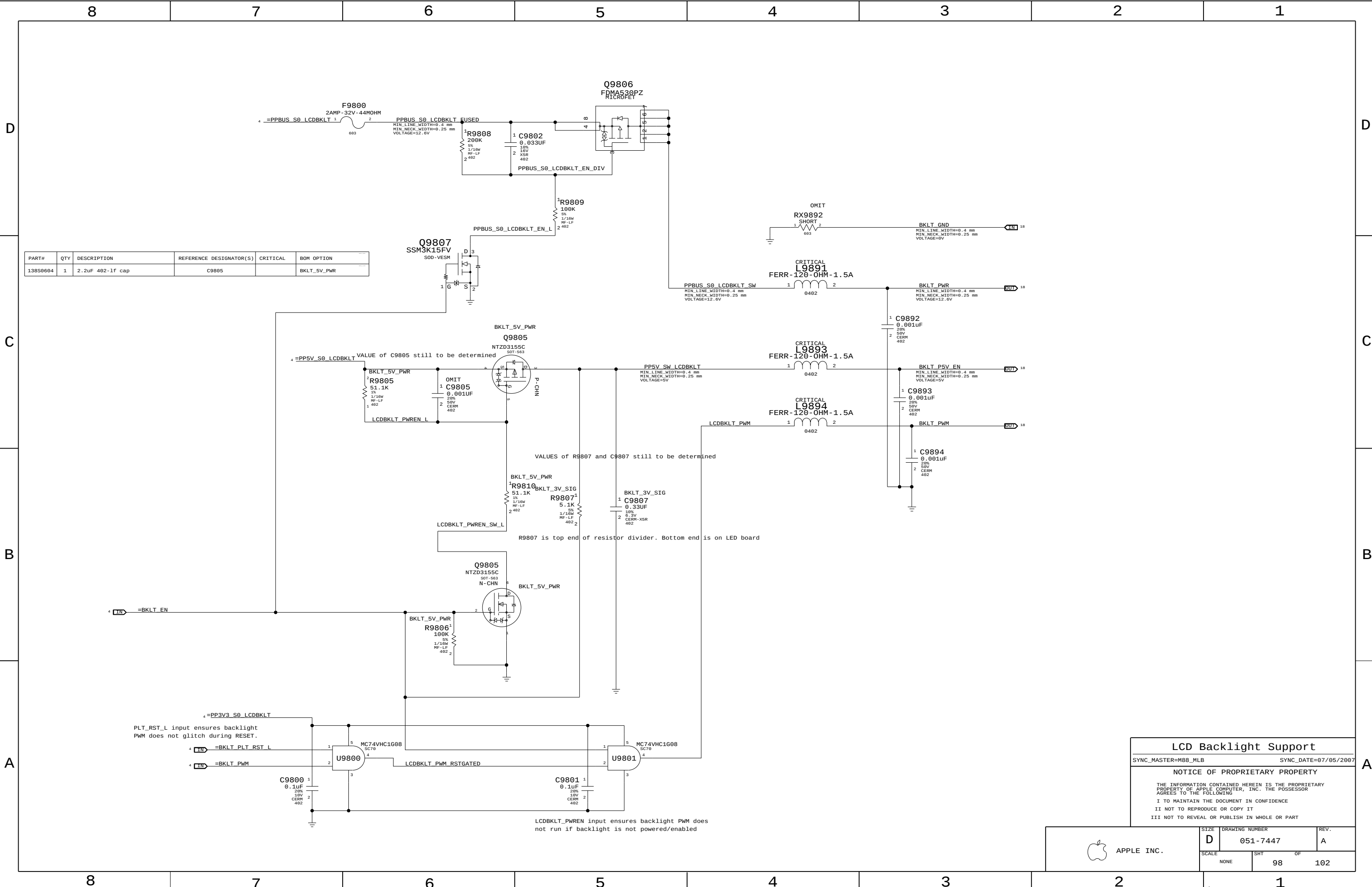
PBus Supply & Battery Charger

Energy Star LDO

Battery Charge FETs







LCD Backlight Support

SYNC_MASTER=M88_MLBSYNC_DATE=07/05/2007

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 APPLE INC.	SIZE	DRAWING NUMBER		REV.
	D	051-7447		A
SCALE		SHT	OF	
NONE		98	102	

[illegible]

8			7			6			5			4			3			2			1		
D	U9900	BD9828FV_SSOP	l1o[20C5]																		D		
	XW6200	SHORT_SM	l1o[10A6]																				
	XW6202	SHORT_SM	l1o[10A6]																				
	XW6500	SHORT_SM	l1o[11C6]																				
	XW6501	SHORT_SM	l1o[11C5]																				
	XW6701	SHORT_SM	l1o[13A3]																				
	XW6710	SHORT_SM	l1o[13B2]																				
	XW6711	SHORT_SM	l1o[13B2]																				
	XW6712	SHORT_SM	l1o[13B2]																				
	XW6800	SHORT_SM	l1o[14C3]																				
	XW7600	SHORT_SM	l1o[16A4]																				
	XW7601	SHORT_SM	l1o[16A6]																				
	XW7602	SHORT_SM	l1o[16A6]																				
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	XW7607	SHORT_SM	l1o[16B6]																				
	XW7608	SHORT_SM	l1o[16B6]																				
	XW7609	SHORT_SM	l1o[16B6]																				
	XW7610	SHORT_SM	l1o[16B6]																				
	XW7900	SHORT_SM	l1o[17C5]																				
	XW7901	SHORT_SM	l1o[17D3]																				
	XW7902	SHORT_SM	l1o[17D3]																				
	XW7903	SHORT_SM	l1o[17C2]																				
	XW7904	SHORT_SM	l1o[17C2]																				
	XW9900	SHORT_SM	l1o[20D5]																				
	ZT0900	MTGHOLE	l1o[4D3]																				
	ZT0910	MTGHOLE	l1o[4A8]																				
	ZT0920	MTGHOLE	l1o[4B8]																				
	ZT0930	MTGHOLE	l1o[4A8]																				
	C																			C			