

VICE MLB

2/4/2010 PVT K48-DRI

REV	ECN	DESCRIPTION OF REVISION	CK APPD	DATE
B	0000854735	PRODUCTION RELEASED		2010-02-04

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.

PDF	CSA	CONTENTS	SYNC MASTER	DATE	PDF	CSA	CONTENTS	SYNC MASTER	DATE
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15	17	Power Conn / Alias	MARK	12/04/2009	46	106	PHYSICAL/SPACING RULES	MIAMI	09/16/2009
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20	24	3.3V SUPPLY	MARK	12/04/2009	51	117	Cross Reference Page		
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23	30	GRAPE 1 OF 2	JAMES	12/21/2009					
24	31	GRAPE 2 OF 2	JAMES	12/21/2009					
25	32	LVDS CONNECTOR	MIAMI	09/16/2009					
26	34	MOTION, GYRO, COMPASS/THERM	MIAMI	09/16/2009					
27	35	USB MUX/BRK DET	MIAMI	09/16/2009					
28	36	L61 AUDIO INTERFACE	AUDIO	12/04/2009					
29	37	AUDIO: SPEAKER AMP	AUDIO	12/04/2009					
30	38	AUDIO: HEADPHONE OUT	AUDIO	12/04/2009					
31	39	AUDIO: LINE OUT DOCK ESD CIRCUIT	AUDIO	12/04/2009					

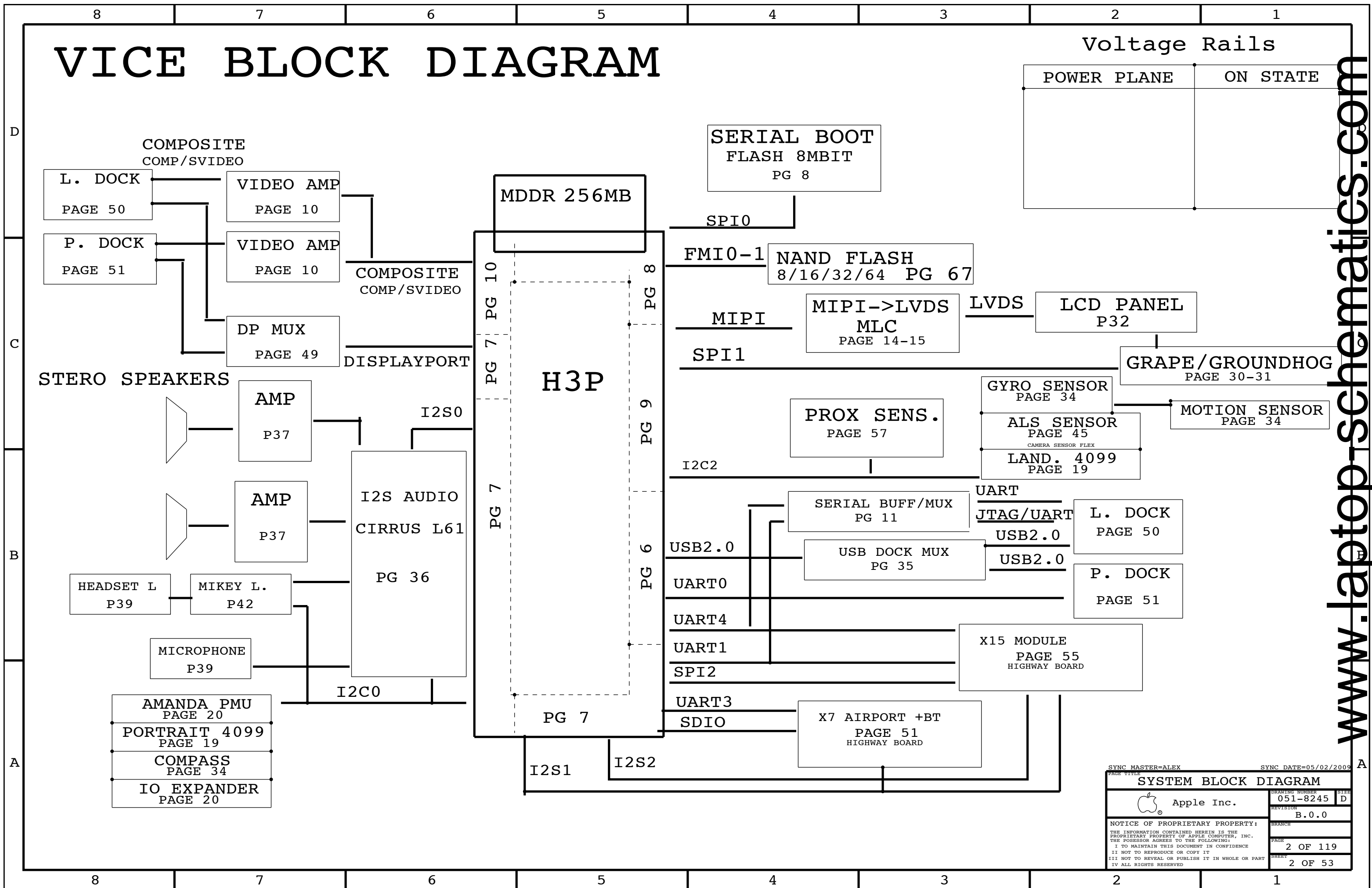
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DRAWING TITLE		VICE MLB	
Apple Inc.	DRAWING NUMBER	051-8245	SIZE
	REVISION	B.0.0	D
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VICE BLOCK DIAGRAM

Voltage Rails

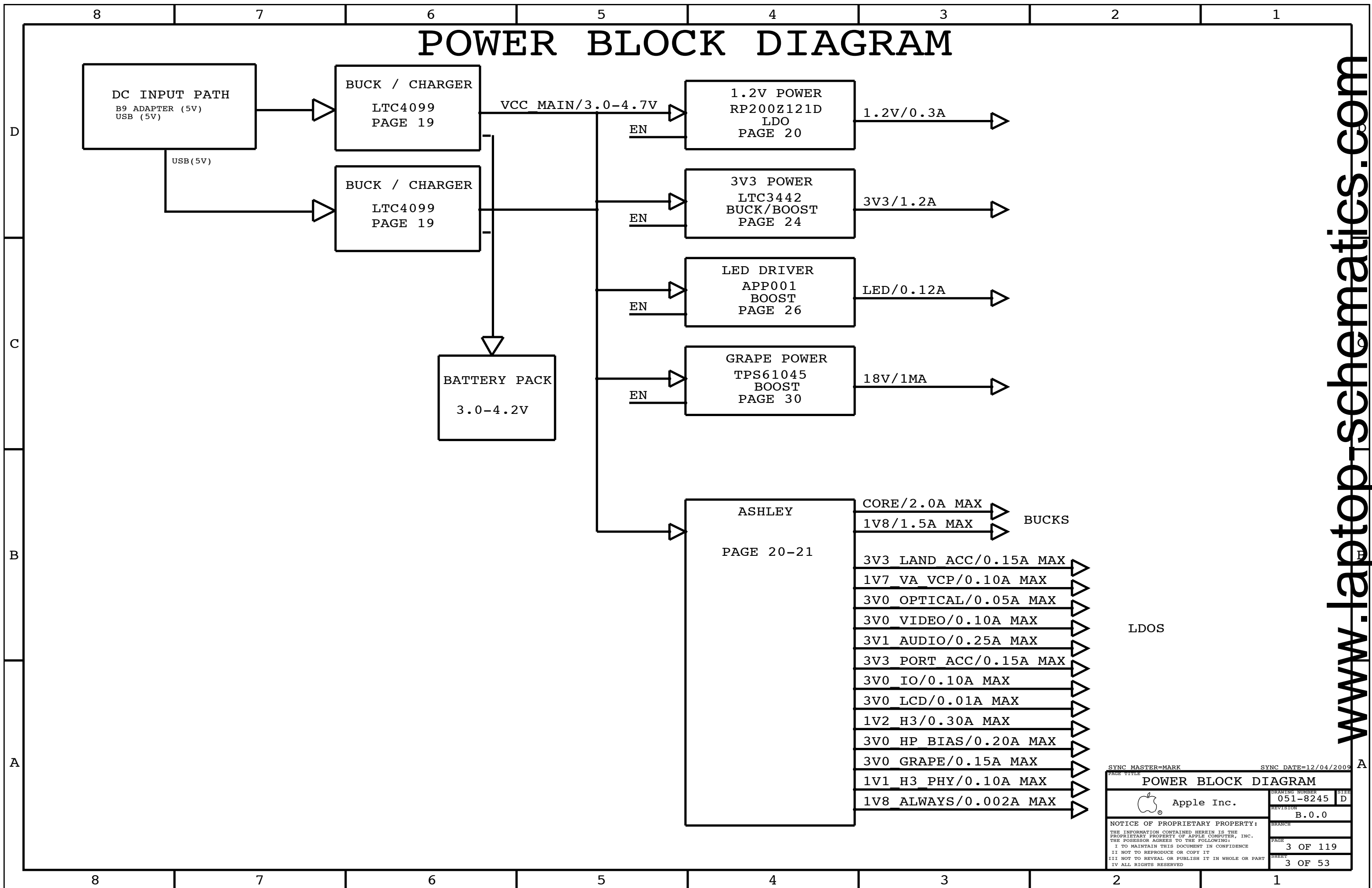
POWER PLANE	ON STATE



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SYSTEM BLOCK DIAGRAM			
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POWER BLOCK DIAGRAM



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POWER BLOCK DIAGRAM			
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Page Notes

Power aliases required by this page:
(NONE)

Signal aliases required by this page:
(NONE)

BOM options provided by this page:

ALL AVAIL BOM OPTIONS

COMMON
ALTERNATE
DEMUX
32GB_FLASH_SAM
32GB_FLASH
16GB_FLASH
16GB_FLASH_TOSH
8GB_FLASH
8GB_FLASH_SAM
BKLT_PLL
CAMERA
JTAG_2_WIRE
JTAG_1_WIRE
PRODUCTION
DEVELOPMENT
ADD19
MIKEY
INTERNAL_MIC
LANDSCAPE_DOCK
LEFT_HS
LINE_OUT_1
LINE_OUT_2
PORTRAIT_DOCK

SPEAKER

ADD DEVELOPMENT AND OTHER BOMS ONCE YOU GET BOM NUMBERS

BOM GROUP	BOM OPTIONS
BASIC	COMMON, ALTERNATE
AUDIO	LEFT_HS, SPEAKER, INTERNAL_MIC

USE SCHUTIL BOMCONFIG TO GENERATE CONFIG FILE.
PUT CONFIG FILE AT SAME LEVEL AS .CPM FILE
USE "READ BOM-CONFIG" BUTTON ON DMS TO READ IN BOMS

BOM OPTIONS

PROGRAMMABLE PARTS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
-------	-----	-------------	-------------------------	------------

SCH AND BOARD P/N

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
051-8245	1	SCHM,VICE,MLB,K48	SCH1	
820-2740	1	PCBA,VICE,MLB,K48	PCB1	

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
085-1028	1	DEV,VICE,MLB,K48	DEV1	K48_DEV
085-1133	1	DEV,VICE,MLB,K48H	DEV1	K48M_DEV


VICE
BOM
OPTIONS

USE 825-6447
NEED MORE LINE ITEMS FOR OTHER CONFIGURATIONS
BARCODE LABEL/EEE CODES

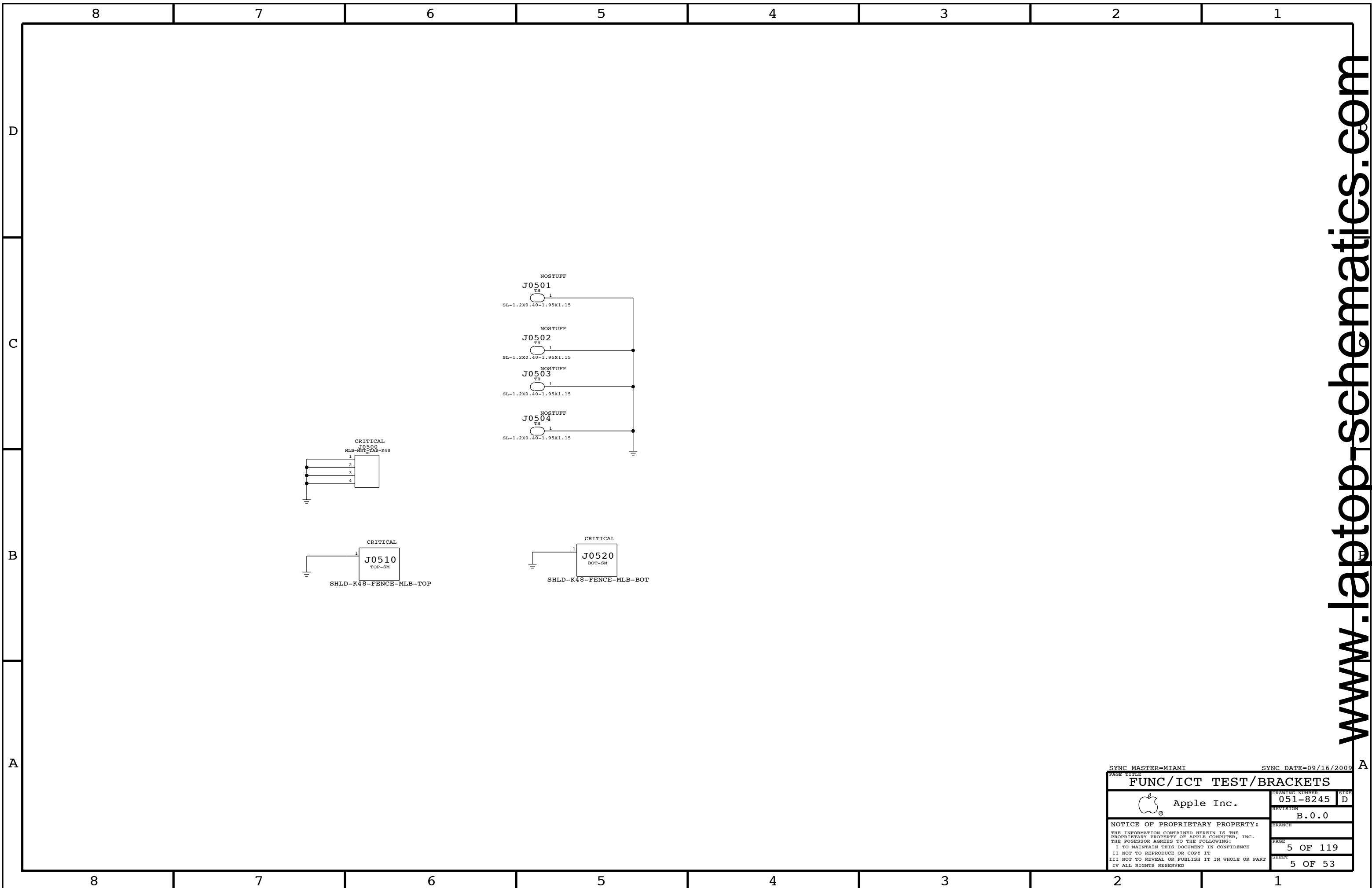
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-7456	1	EEE FOR 639-0455 (16G)	EEE_BWY	CRITICAL	EEE_16G
825-7456	1	EEE FOR 639-0601 (32G)	EEE_D66	CRITICAL	EEE_32G
825-7456	1	EEE FOR 639-0598 (64G)	EEE_D61	CRITICAL	EEE_64G
825-7456	1	EEE FOR 639-0602 (16G)M	EEE_D67	CRITICAL	EEE_16G_M
825-7456	1	EEE FOR 639-0599 (32G)M	EEE_D62	CRITICAL	EEE_32G_M
825-7456	1	EEE FOR 639-0600 (64G)M	EEE_D63	CRITICAL	EEE_64G_M

SYNC MASTER=MIAMI SYNC DATE=08/06/2009

PAGE TITLE: CONFIGURATION OPTIONS

 Apple Inc.	DRAWING NUMBER	051-8245	SIZE	D
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SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
PAGE TITLE FUNC/ICT TEST/BRACKETS			
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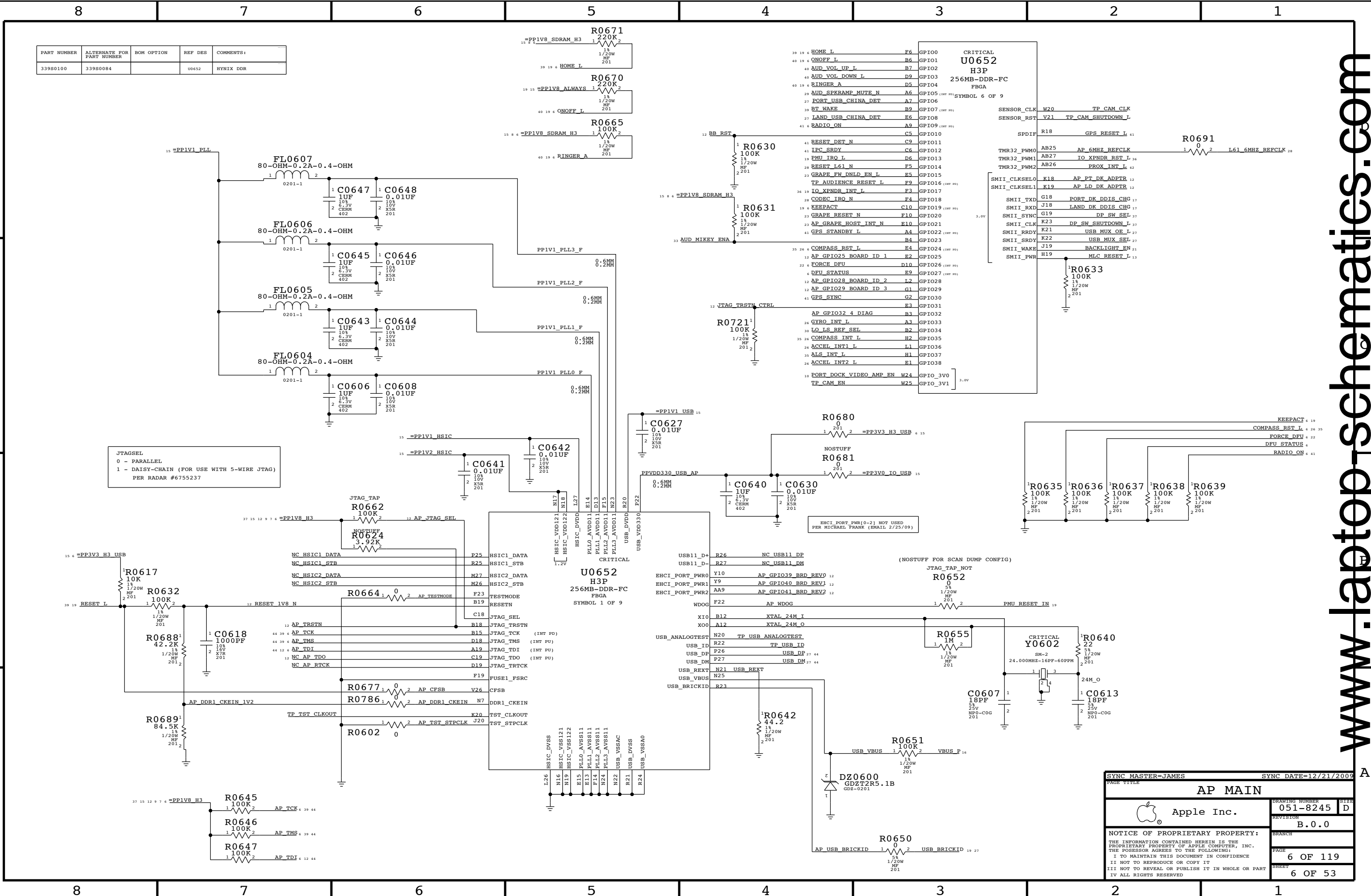
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S0100	339S0084		U0652	HYNIX DDR

D

C

B

A

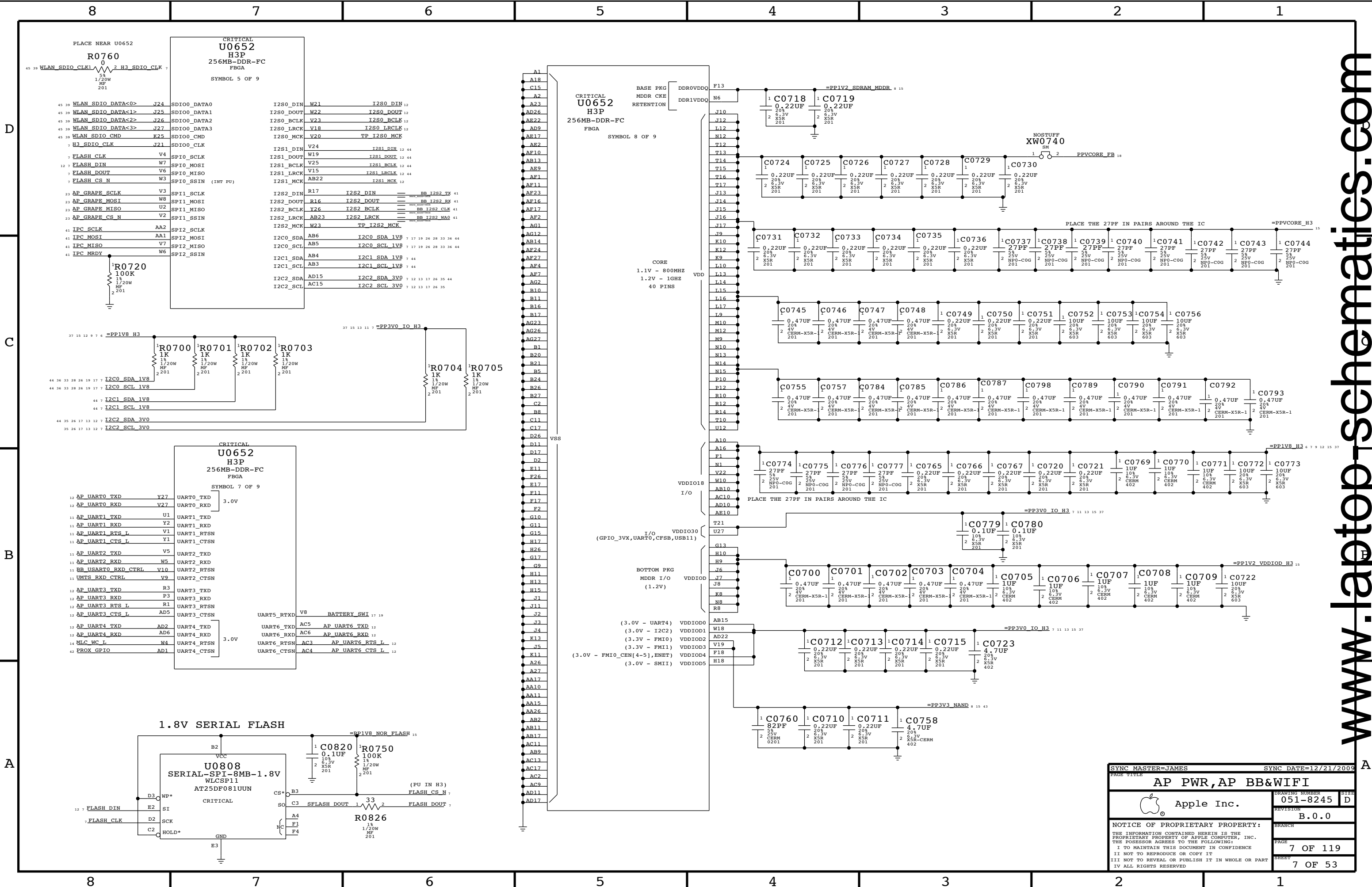


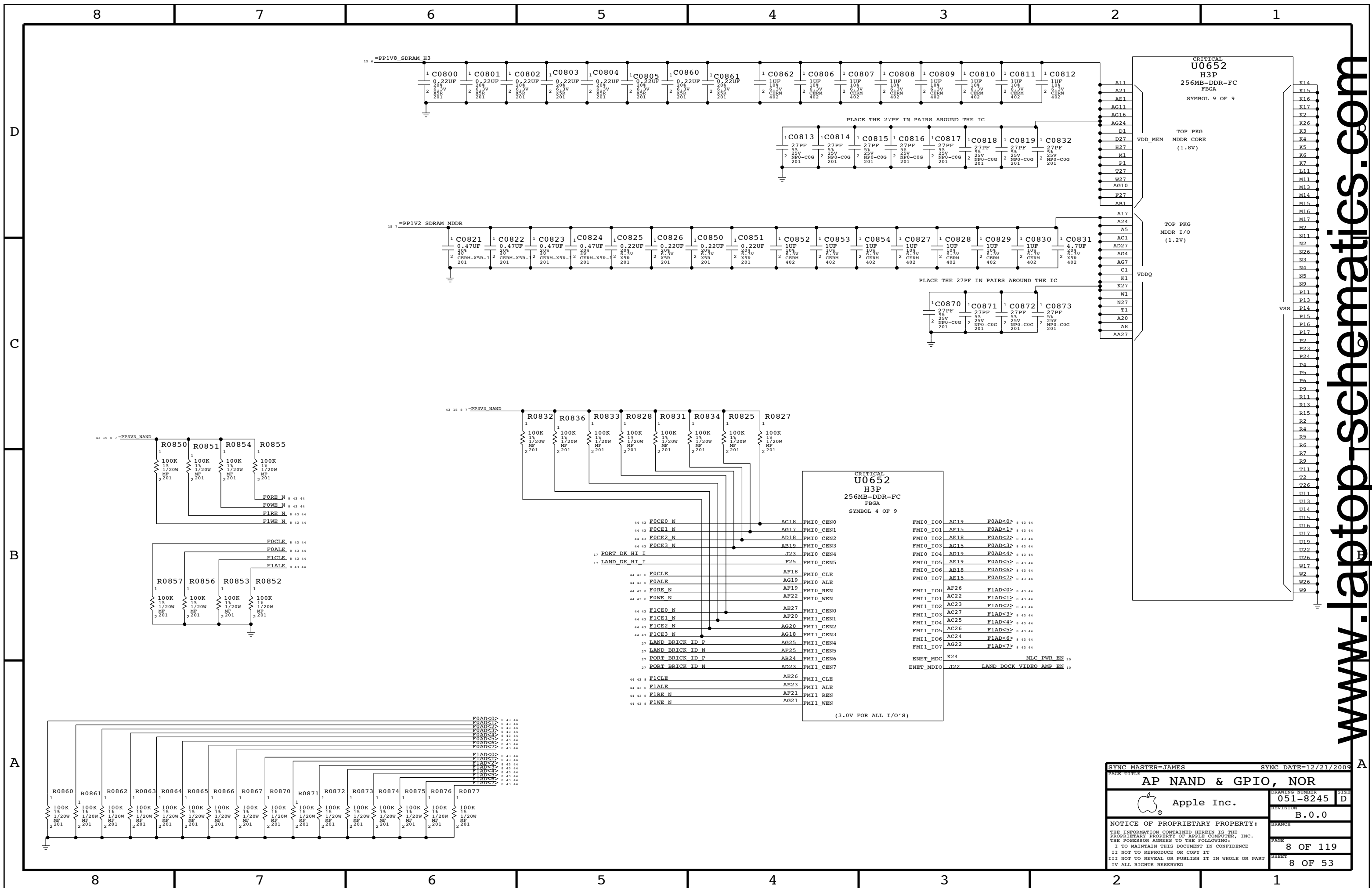
JTAGSEL
 0 - PARALLEL
 1 - DAISY-CHAIN (FOR USE WITH 5-WIRE JTAG)
 PER RADAR #6755237

EHCI PORT PWR(0-2) NOT USED
 PER MICHAEL FRANK (EMAIL 2/25/09)

PAGE TITLE		SYNC DATE=12/21/2009	
AP MAIN			
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SYNC MASTER=JAMES SYNC DATE=12/21/2009

AP NAND & GPIO, NOR

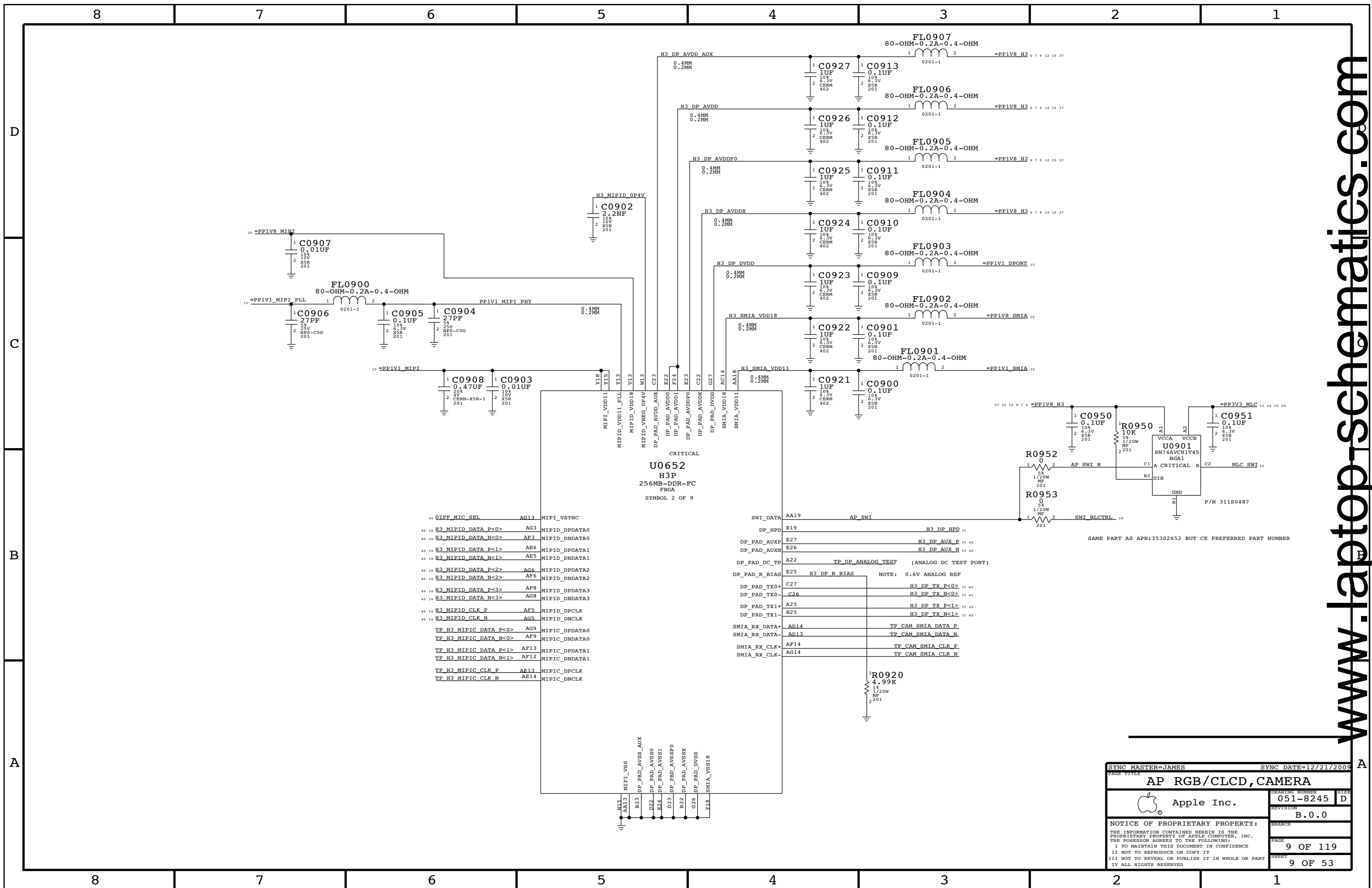
Apple Inc.

DRAWING NUMBER: 051-8245 SIZE: D

REVISION: B.0.0

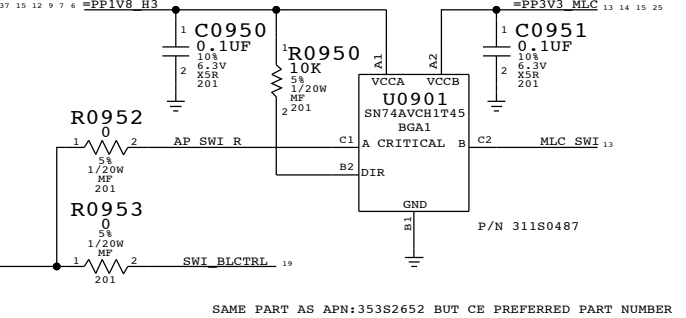
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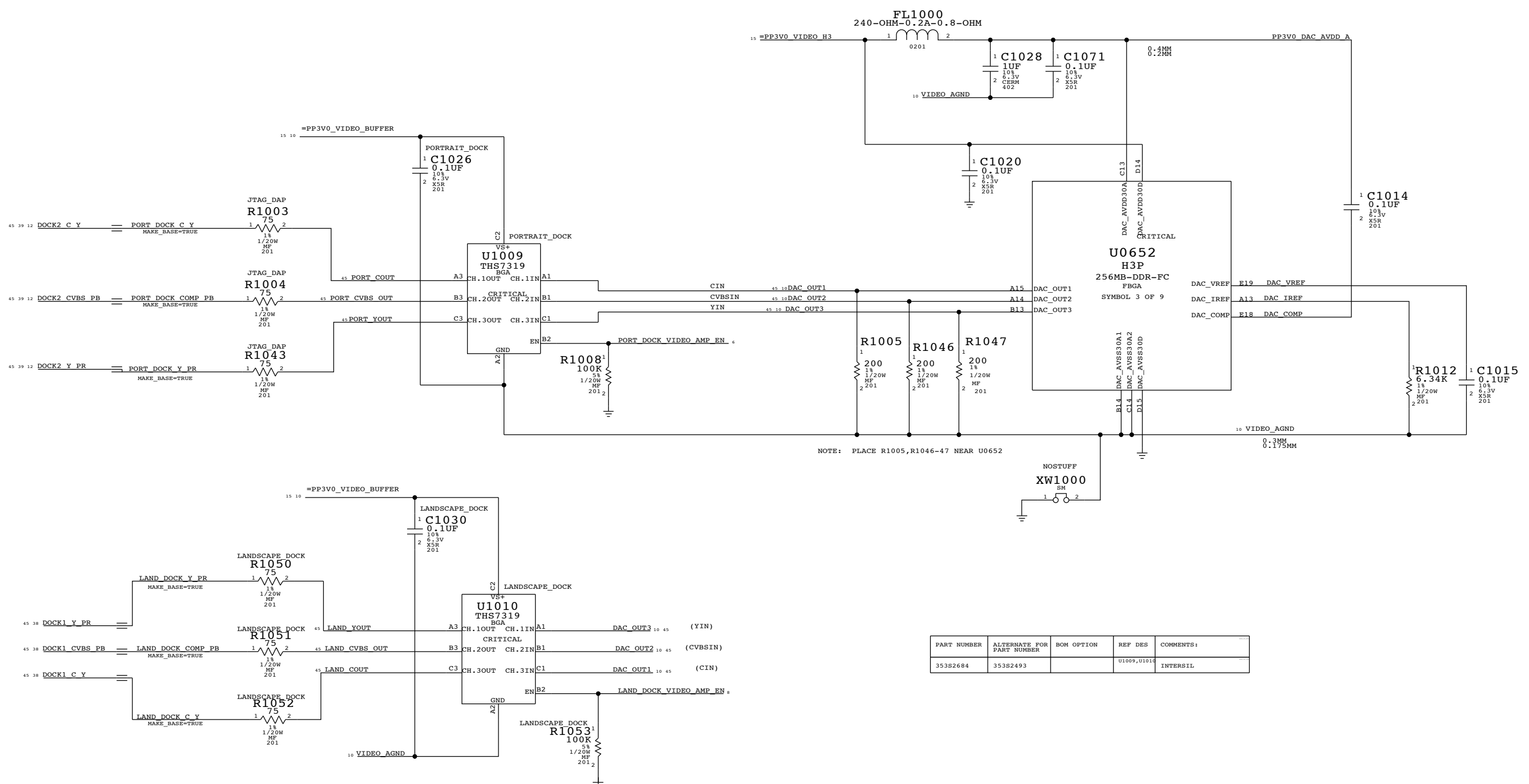
34 DIFF MIC SEL	AG13	MIPDI_VSYNC
45 H3 MIPID DATA P<0>	AG3	MIPID_DPDATA0
45 H3 MIPID DATA N<0>	AF3	MIPID_DNDATA0
45 H3 MIPID DATA P<1>	AE6	MIPID_DPDATA1
45 H3 MIPID DATA N<1>	AE5	MIPID_DNDATA1
45 H3 MIPID DATA P<2>	AG6	MIPID_DPDATA2
45 H3 MIPID DATA N<2>	AF6	MIPID_DNDATA2
45 H3 MIPID DATA P<3>	AF8	MIPID_DPDATA3
45 H3 MIPID DATA N<3>	AG8	MIPID_DNDATA3
45 H3 MIPID CLK P	AF5	MIPID_DPCLK
45 H3 MIPID CLK N	AG5	MIPID_DNCLK
TP H3 MIPIC DATA P<0>	AG9	MIPIC_DPDATA0
TP H3 MIPIC DATA N<0>	AF9	MIPIC_DNDATA0
TP H3 MIPIC DATA P<1>	AF13	MIPIC_DPDATA1
TP H3 MIPIC DATA N<1>	AF12	MIPIC_DNDATA1
TP H3 MIPIC CLK P	AE13	MIPIC_DPCLK
TP H3 MIPIC CLK N	AE14	MIPIC_DNCLK

CRITICAL
U0652
H3P
256MB-DDR-FC
FBGA
 SYMBOL 2 OF 9



SYNC MASTER=JAMES		SYNC DATE=12/21/2009	
PAGE TITLE			
AP RGB/CLCD, CAMERA			
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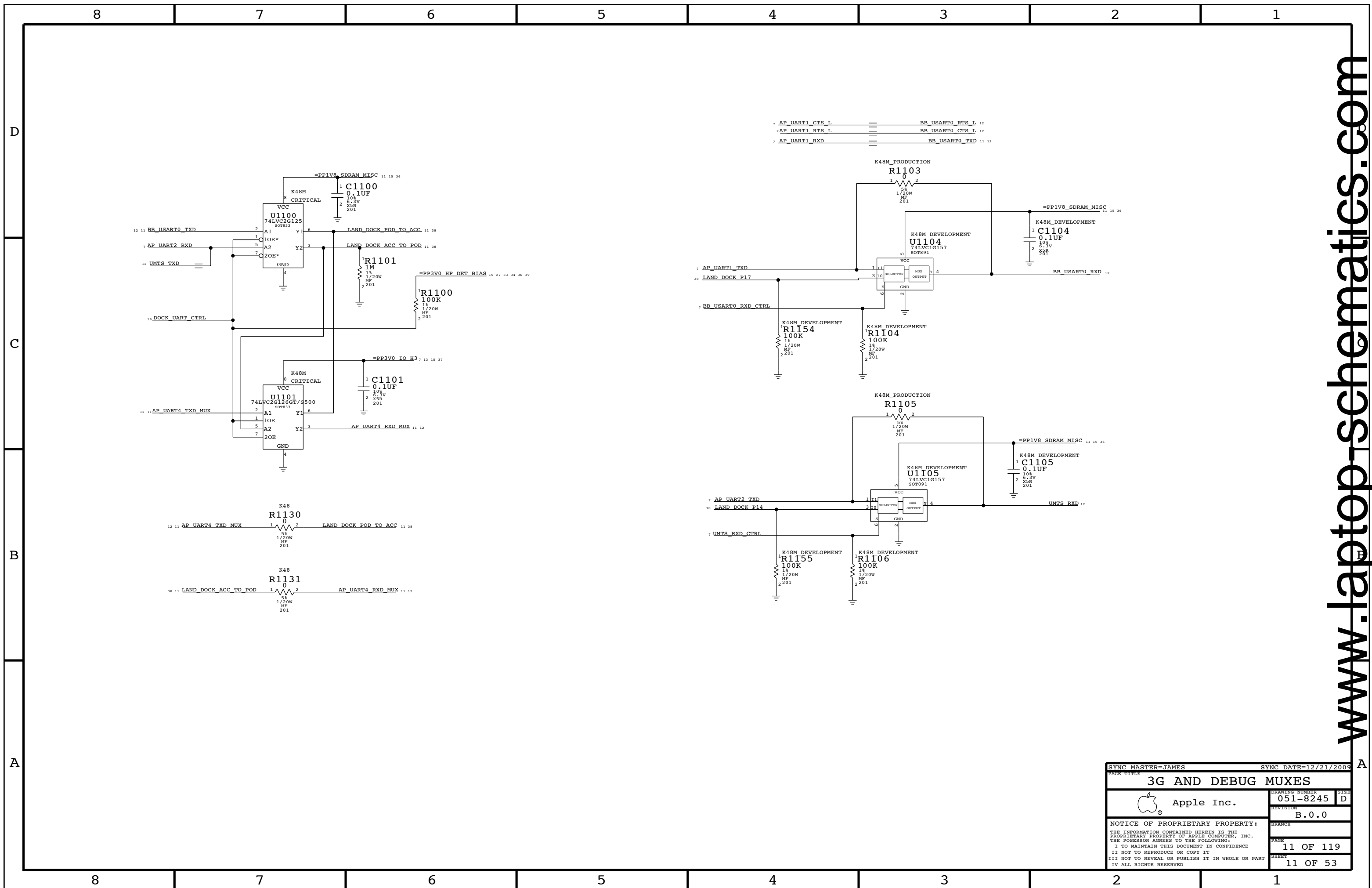
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NOTE: PLACE R1005,R1046-47 NEAR U0652

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S2684	353S2493		U1009,U1010	INTERSIL

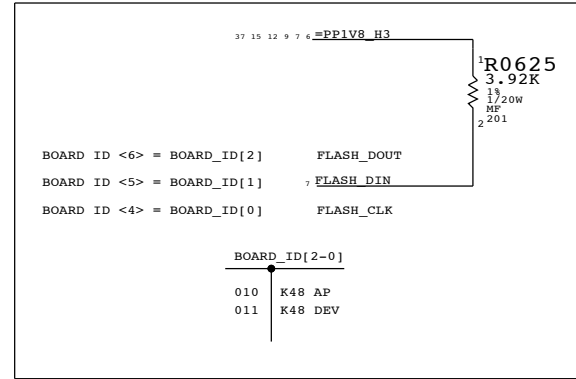
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AP TVOUT			
Apple Inc.		DRAWING NUMBER	051-8245
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3G AND DEBUG MUXES			
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BOARD ID



ALIASES FROM PAGE 7

- 7 I2S0 DIN == AUD I2S_SDOUT L61 28
- 7 I2S0 DOUT == AUD I2S_SDIN L61 28
- 7 I2S0 BCLK == AUD I2S_BITCLK L61 28
- 7 I2S0 LRCLK == AUD I2S_LRC L61 28
- 44 I2S1 DIN == BB I2S1_RX 32 41
- 44 I2S1 DOUT == BB I2S1_TX 32 41
- 44 I2S1 BCLK == BB I2S1_CLK 32 41
- 44 I2S1 LRCLK == BB I2S1_WAG 32 41
- 7 I2S1 MCK == L61 I2S_MCLK 28
- 7 AP_UART0_TXD == PORT_DOCK_POD_TO_ACC 39
- 7 AP_UART0_RXD == PORT_DOCK_ACC_TO_POD 39
- 7 AP_UART6_TXD == GPS_UART_RX 41
- 7 AP_UART6_RXD == GPS_UART_TX 41
- 7 AP_UART6_RTS_L == GPS_UARTS_CTS_L 41
- 7 AP_UART6_CTS_L == GPS_UARTS_RTS_L 41

ALIASES FROM PAGE 11

- 11 BB_USART0_TXD == BB_USART0_TXD_CONN 41
- 11 BB_USART0_RXD == BB_USART0_RXD_CONN 41
- 11 BB_USART0_RTS_L == BB_USART0_RTS_L_CONN 41
- 11 BB_USART0_CTS_L == BB_USART0_CTS_L_CONN 41
- 11 UMTS_TXD == UMTS_TXD_CONN 41
- 11 UMTS_RXD == UMTS_RXD_CONN 41
- 7 AP_UART4_TXD == AP_UART4_TXD_MUX 11
- 7 AP_UART4_RXD == AP_UART4_RXD_MUX 11
- 12 AP_GPIO41_BRD_REV2 == BB_FLASH_ACTIVE 41

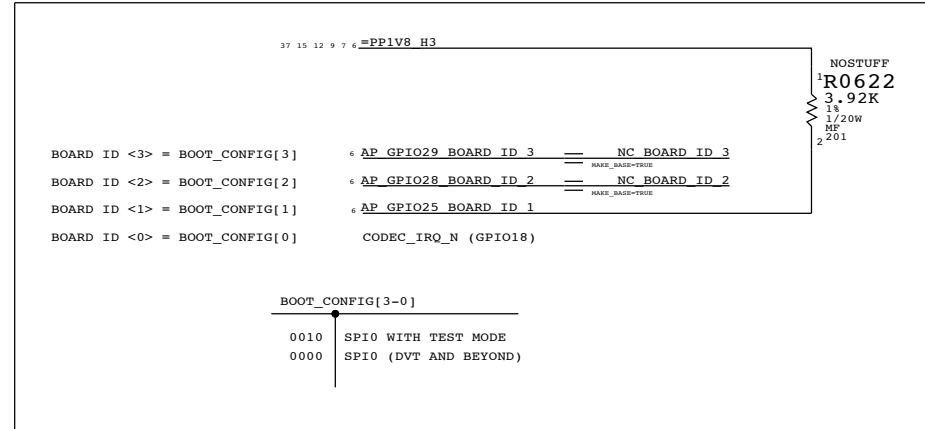
ALIASES FROM PAGE 50

- 39 LAND_USB_PWR == USB_PWR_A 16
- MAKE_BASE=TRUE

ALIASES FROM PAGE 51

- 39 CONN_AP_UART3_RTS_L == AP_UART3_RTS_L 7
- MAKE_BASE=TRUE
- 39 CONN_AP_UART3_CTS_L == AP_UART3_CTS_L 7
- MAKE_BASE=TRUE
- 39 CONN_AP_UART3_TXD == AP_UART3_TXD 7
- MAKE_BASE=TRUE
- 39 CONN_AP_UART3_RXD == AP_UART3_RXD 7
- MAKE_BASE=TRUE

BOOT CONFIG ID

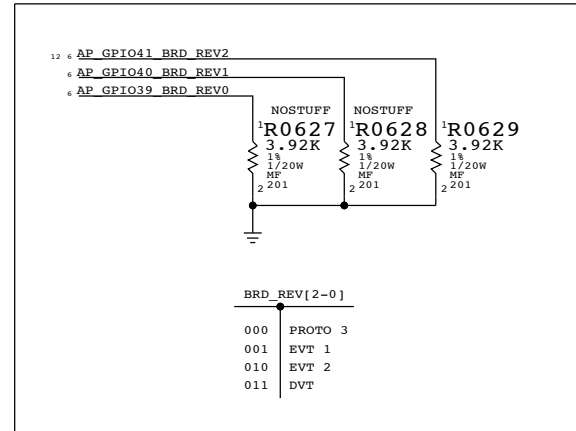


- 6 BB_RST == BB_RST_RADIO 41

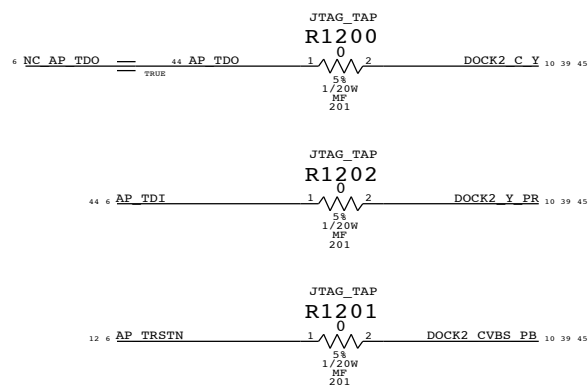
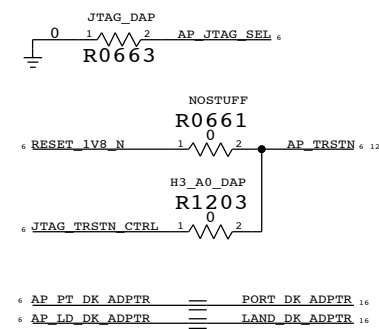
ALIASES FOR PAGE 57

- 42 PROX_SDA_3V0 == I2C2_SDA_3V0 7 13 17 26 35 44
- 42 PROX_SCL_3V0 == I2C2_SCL_3V0 7 13 17 26 35
- 42 PROX_ACSHIELD_CONN == PROX_ACSHIELD 42

BOARD REVISION



NOTE: JTAG SCAN DUMP



FOR REFERENCE

CURRENT SETTING ->	BOOT_CONFIG[3:0] 0000 SPI0 0001 SPI1 0010 SPI0 W/TEST 0011 SPI1 W/TEST 0100 FMIO 2CS 0101 FMIO 4CS 0110 FMIO 4CS W/TEST 0111 RESERVED 1000 FMII 2 CS 1001 FMII 4 CS 1010 FMII 4CS W/TEST 1100 FMIO/1 2/2 CS 1101 FMIO/1 4/4 CS 1110 FMIO/1 4/4 CS W/TEST 1111 RESERVED	BOARD_ID[2:0] 010 K48AP 011 K48 DEV
	BOARD_REV[2:0] 000 PROTO3	

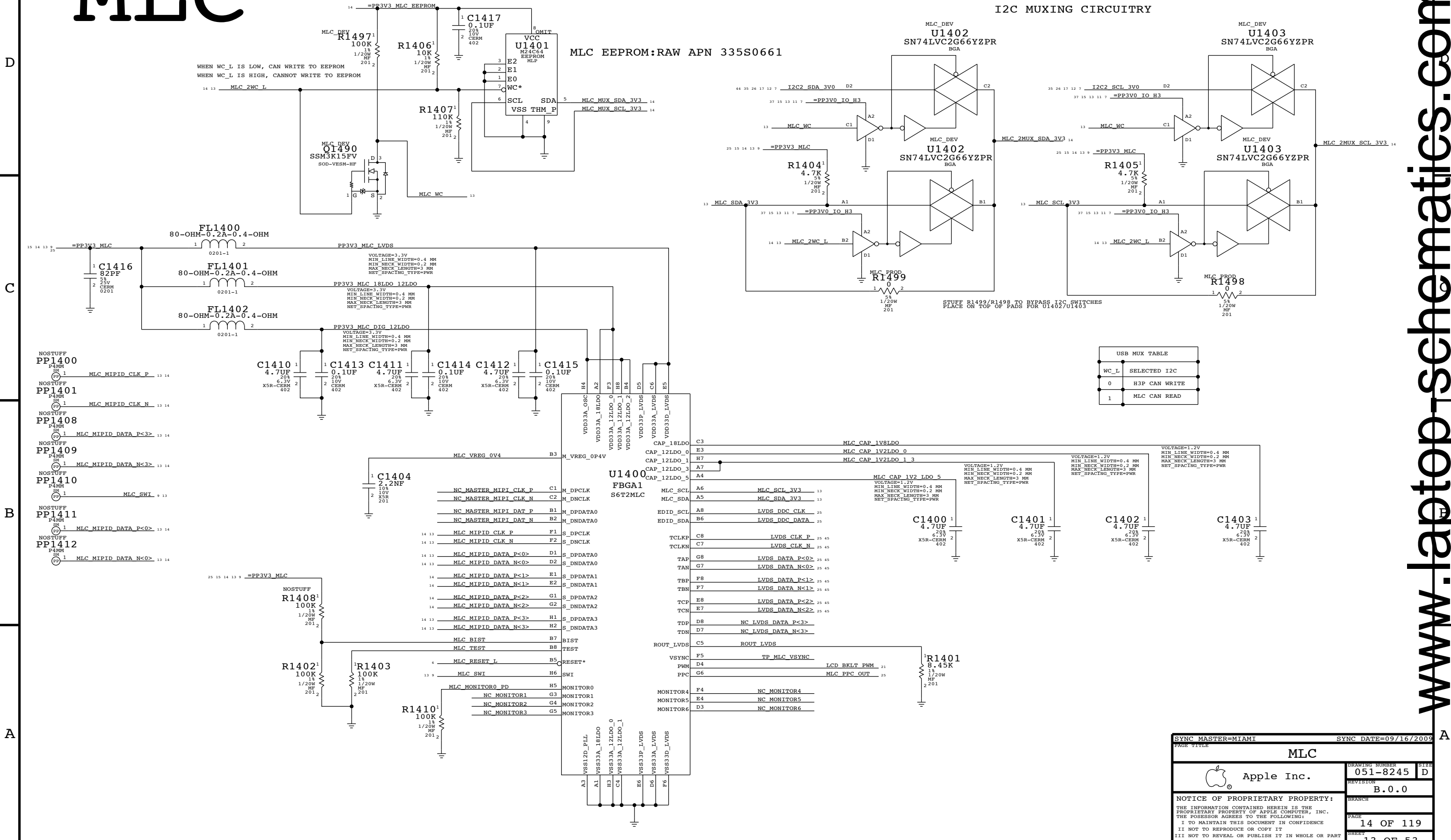
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AP MISC & ALIASES			
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MLC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
34182604	1	MLC EEPROM 54MHZ LVDS,2MHZ SW	U1401	CRITICAL	54MHZ_PANEL
34182606	1	MLC EEPROM 100MHZ LVDS,2MHZ SW	U1401	CRITICAL	100MHZ_PANEL

MLC EEPROM:RAW APN 335S0661

I2C MUXING CIRCUITRY



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MLC			
Apple Inc.		DRAWING NUMBER	SIZE
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D

C

B

A


MLC ALIASES

```

45 9 H3 MIPID_CLK_P == MLC MIPID_CLK_P 13
45 9 H3 MIPID_CLK_N MAKE_BASE=TRUE == MLC MIPID_CLK_N 13
      MAKE_BASE=TRUE
45 9 H3 MIPID_DATA_P<0> == MLC MIPID_DATA_P<0> 13
45 9 H3 MIPID_DATA_N<0> MAKE_BASE=TRUE == MLC MIPID_DATA_N<0> 13
      MAKE_BASE=TRUE
45 9 H3 MIPID_DATA_P<1> == MLC MIPID_DATA_P<1> 13
45 9 H3 MIPID_DATA_N<1> MAKE_BASE=TRUE == MLC MIPID_DATA_N<1> 13
      MAKE_BASE=TRUE
45 9 H3 MIPID_DATA_P<2> == MLC MIPID_DATA_P<2> 13
45 9 H3 MIPID_DATA_N<2> MAKE_BASE=TRUE == MLC MIPID_DATA_N<2> 13
      MAKE_BASE=TRUE
45 9 H3 MIPID_DATA_P<3> == MLC MIPID_DATA_P<3> 13
45 9 H3 MIPID_DATA_N<3> MAKE_BASE=TRUE == MLC MIPID_DATA_N<3> 13
      MAKE_BASE=TRUE

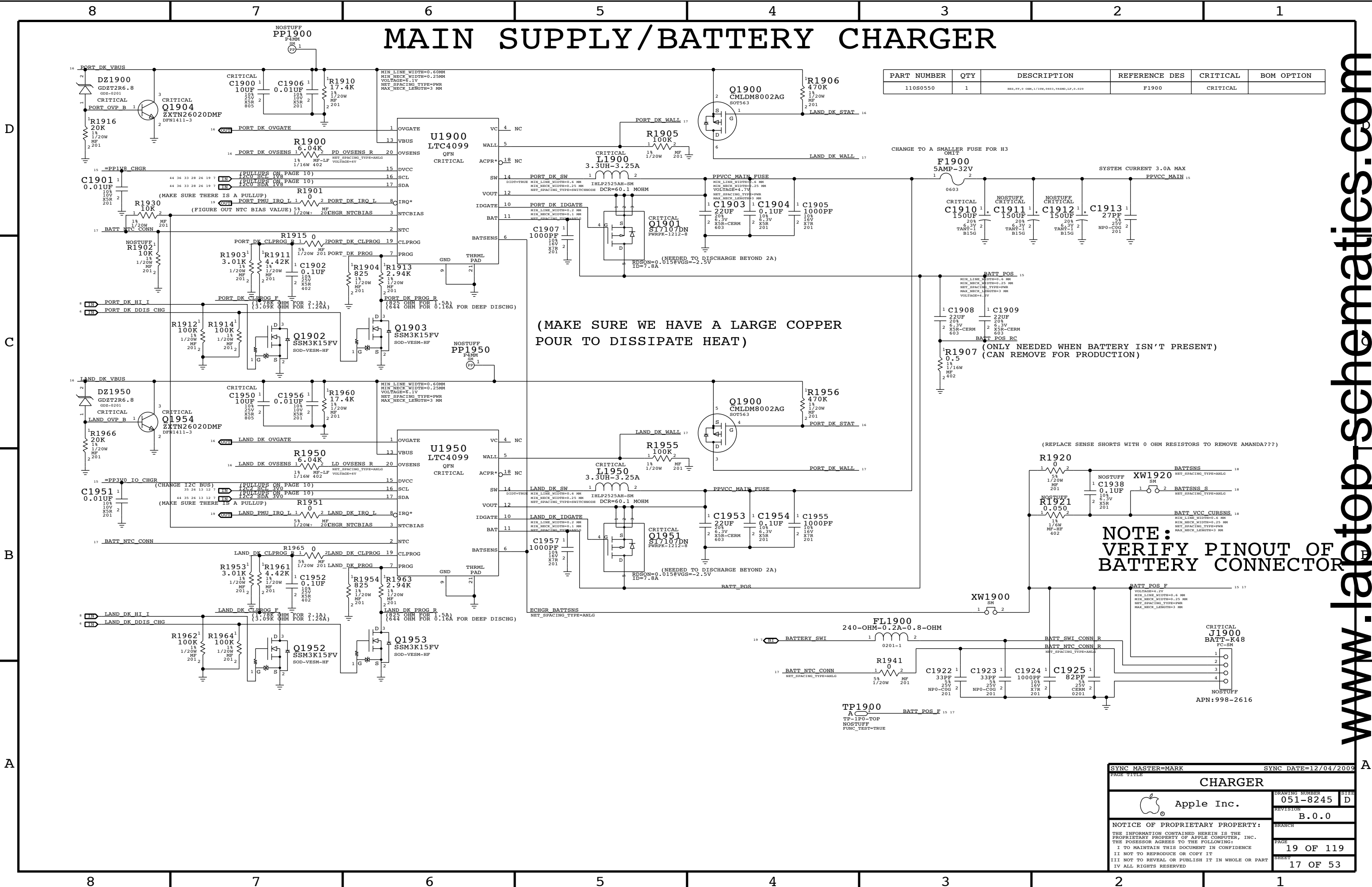
13 MLC_MUX_SDA_3V3 == MLC_2MUX_SDA_3V3 13
13 MLC_MUX_SCL_3V3 MAKE_BASE=TRUE == MLC_2MUX_SCL_3V3 13
      MAKE_BASE=TRUE
13 MLC_2WC_L == MLC_WC_L 7
13 =PP3V3_MLC_EEPROM MAKE_BASE=TRUE ==PP3V3_MLC 9 13 15 25
      MAKE_BASE=TRUE
    
```

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SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
PAGE TITLE			
MLC ALIASES			
 Apple Inc.	DRAWING NUMBER	051-8245	SIZE
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		PAGE	15 OF 119
		SHEET	14 OF 53

MAIN SUPPLY/BATTERY CHARGER

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
11080550	1	REG.PP.0 00M,1/100,000,1000M,LP.0.020	F1900	CRITICAL	

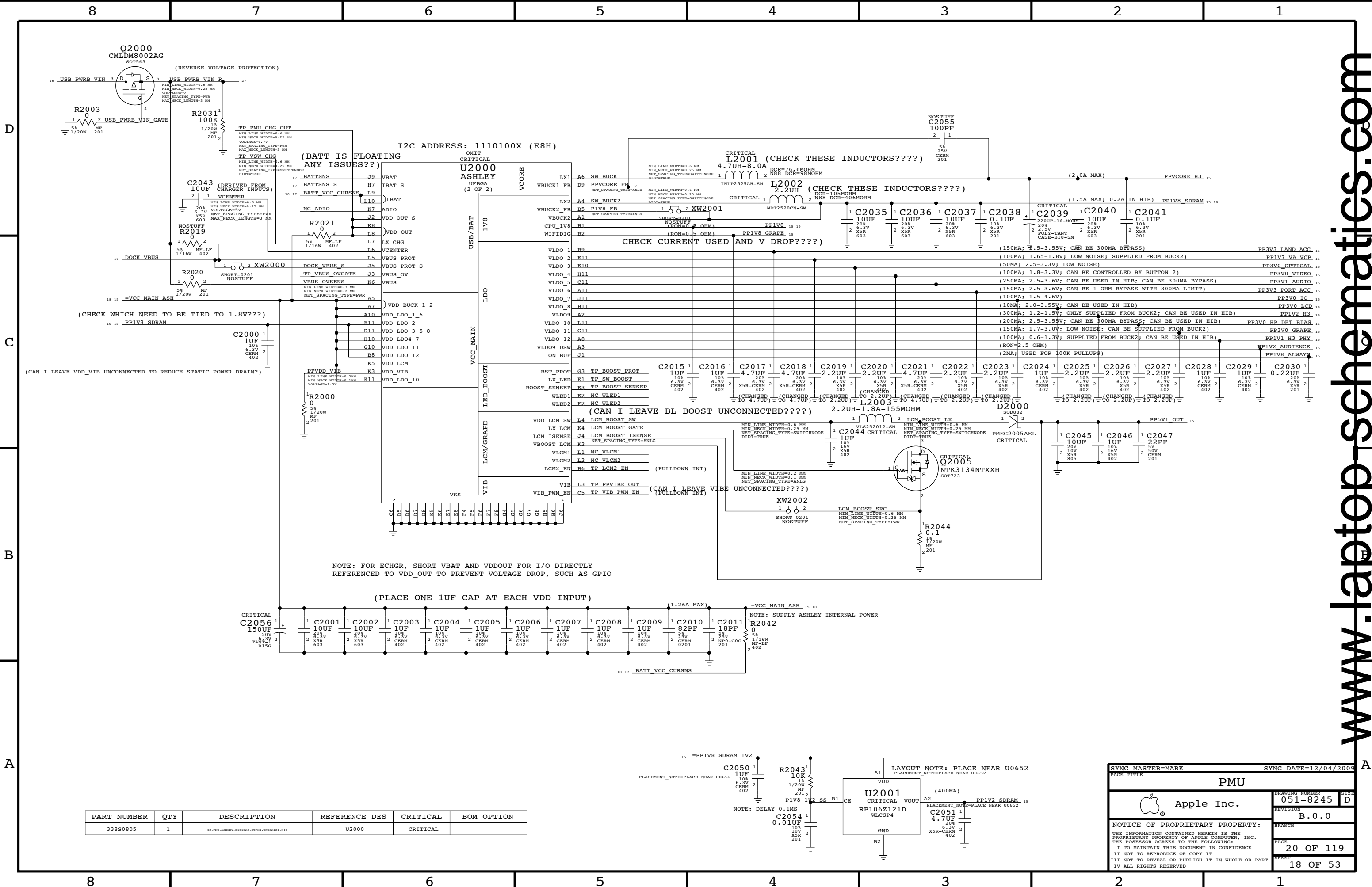


(MAKE SURE WE HAVE A LARGE COPPER POUR TO DISSIPATE HEAT)

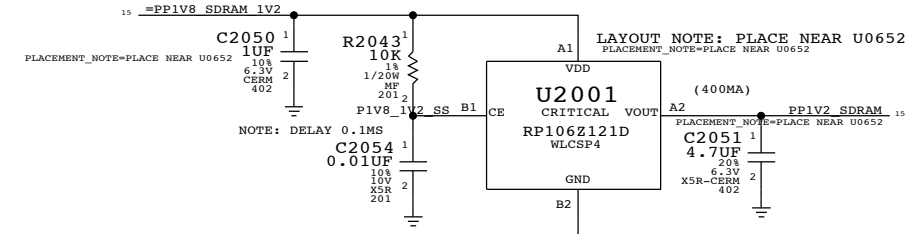
NOTE: VERIFY PINOUT OF BATTERY CONNECTOR

SYNC MASTER=MARK		SYNC DATE=12/04/2009	
PAGE TITLE: CHARGER			
Apple Inc.		DRAWING NUMBER	SIZE
		051-8245	D
		REVISION	
		B.0.0	
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PAGE		SHEET	
19 OF 119		17 OF 53	

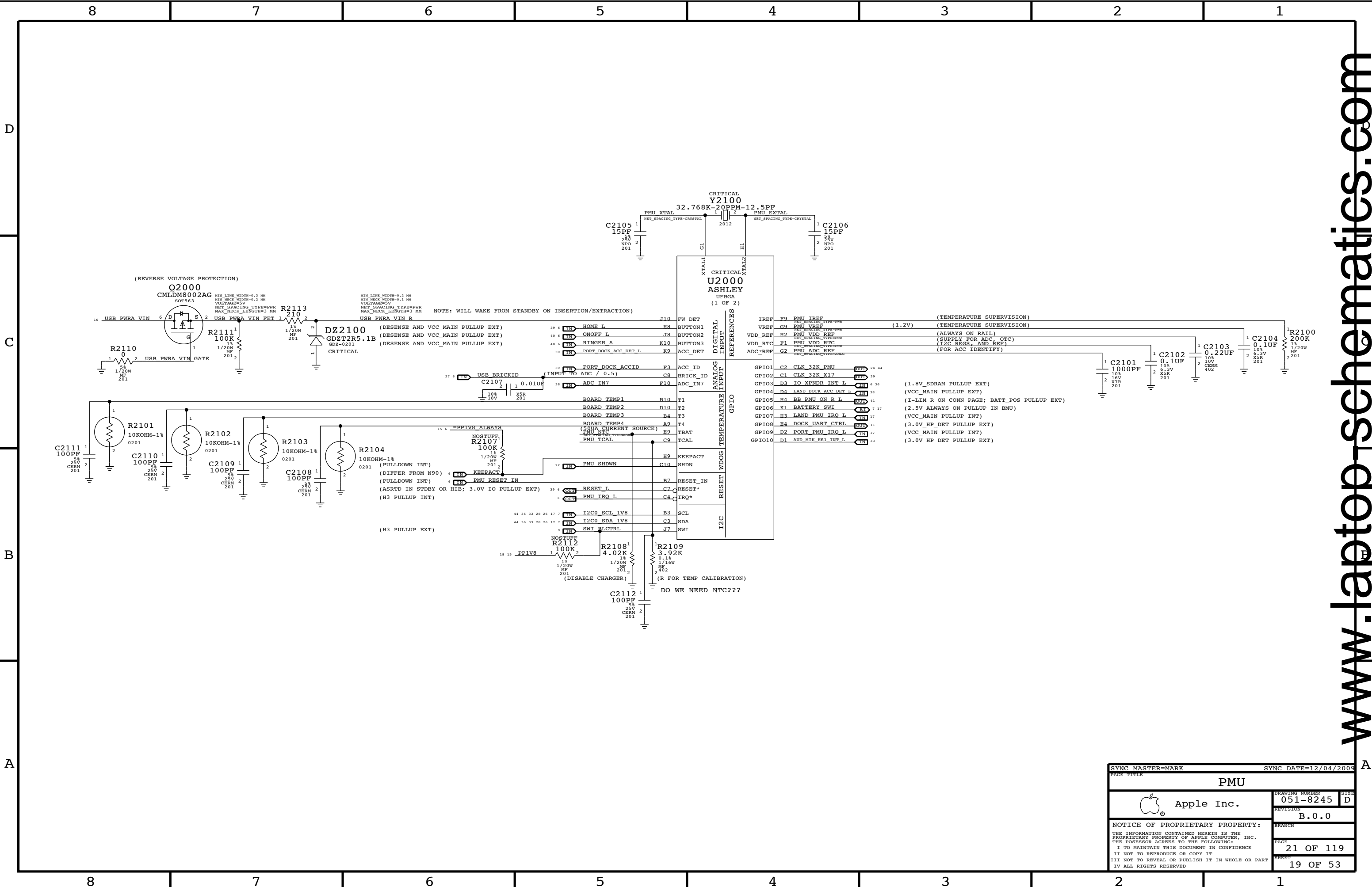
www.laptop-schematics.com



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
33880805	1	IC, PMU, ASHLEY, U2000, UFBGA, U2000, U2000	U2000	CRITICAL	

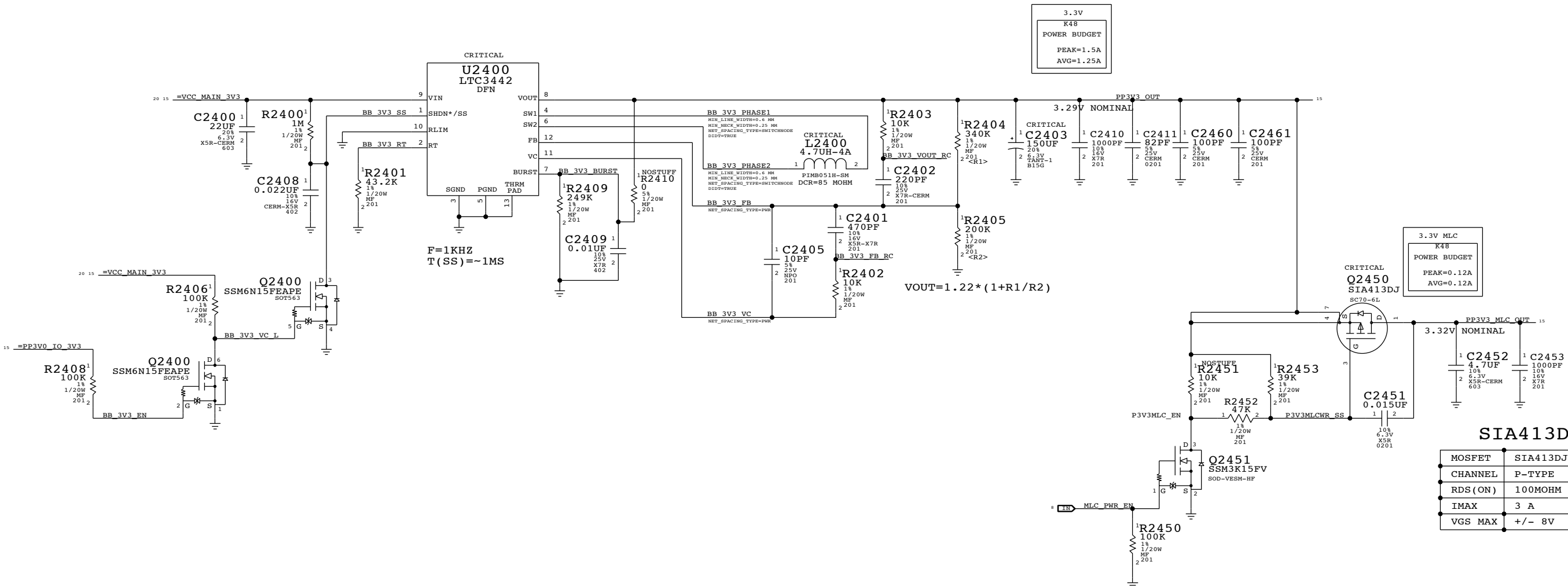


PAGE TITLE		SYNC DATE=12/04/2009	
		DRAWING NUMBER	051-8245
		REVISION	B.0.0
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SYNC MASTER=MARK		SYNC DATE=12/04/2009	
PMU			
Apple Inc.		DRAWING NUMBER	SIZE
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		REVISION	
		BRANCH	
		PAGE	21 OF 119
		SHEET	19 OF 53

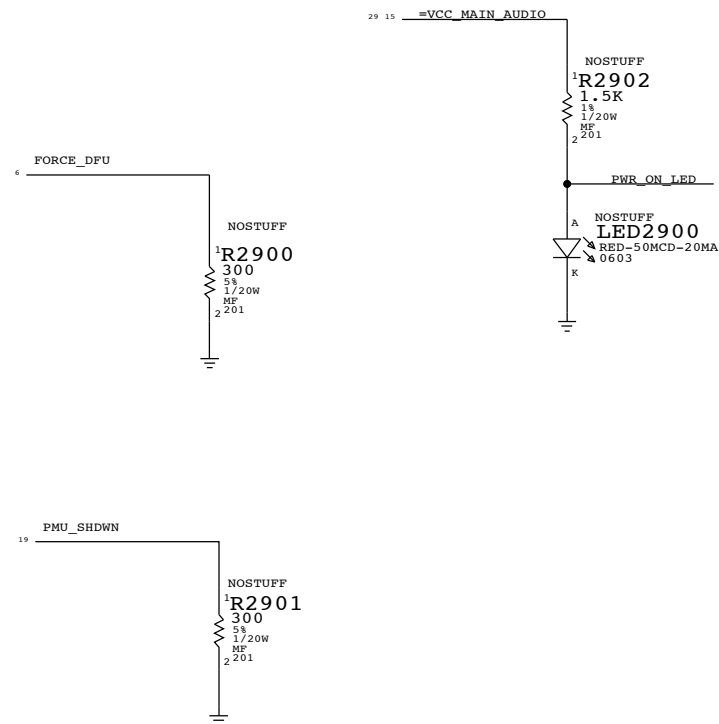
3.3V SUPPLY



PAGE TITLE		DRAWING NUMBER		SIZE
3.3V SUPPLY		051-8245		D
Apple Inc.		REVISION		B.0.0
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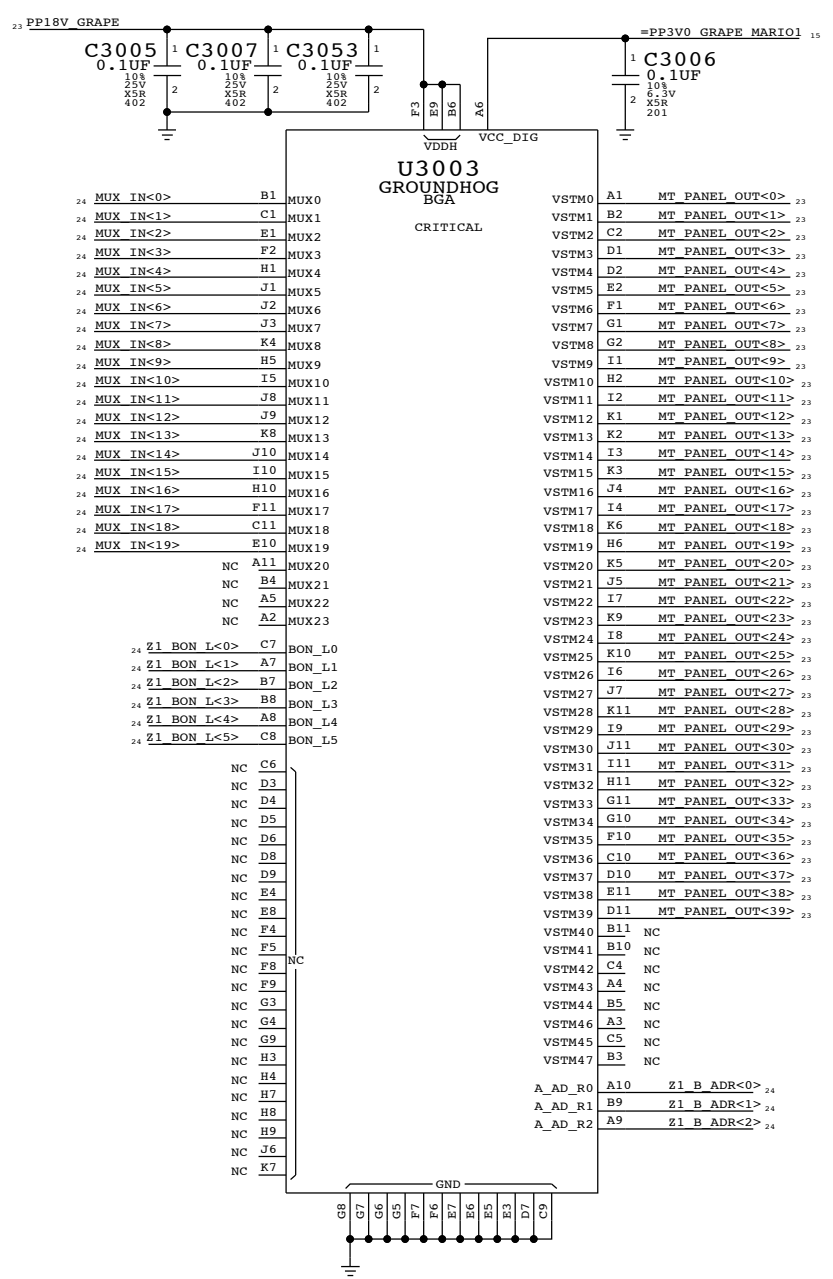
DEBUG RESET ACCESS



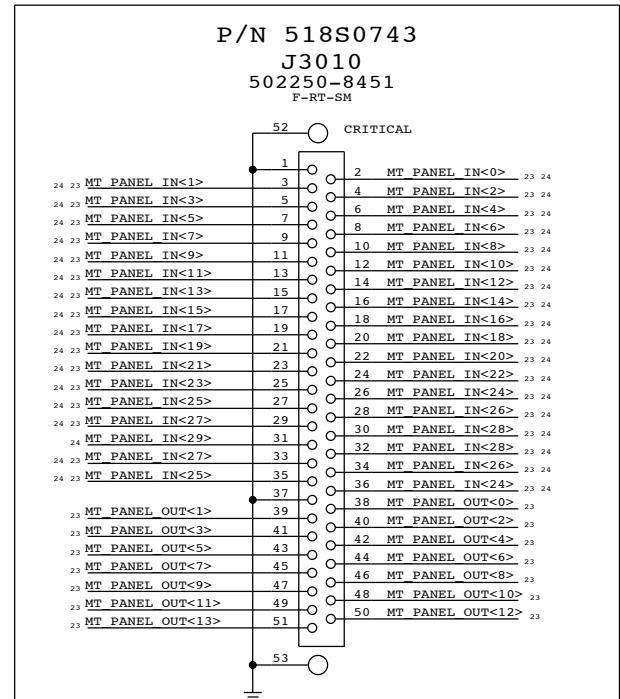
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PAGE TITLE		DRAWING NUMBER		SIZE
DEBUG RESET ACCESS		051-8245		D
REVISION		BRANCH		
B.0.0				
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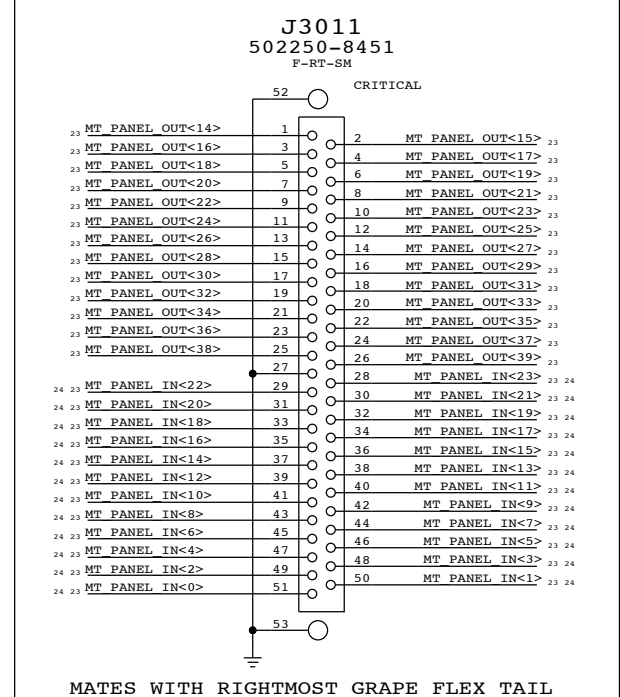
SYNC MASTER=MIAMI SYNC DATE=09/16/2009



CONNECTORS TO GRAPE FLEX

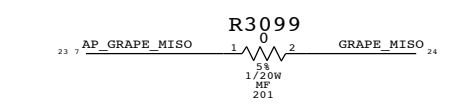
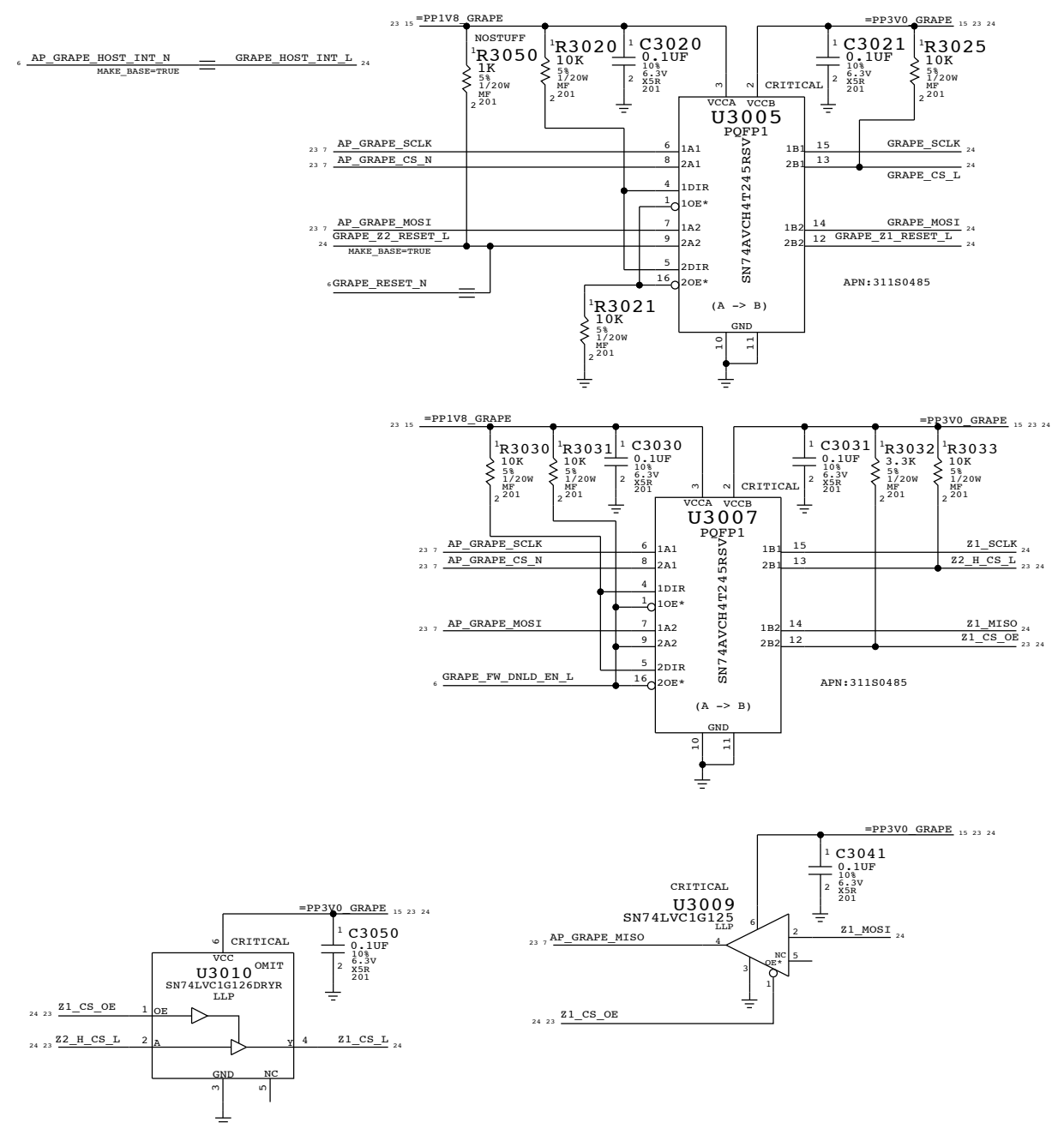
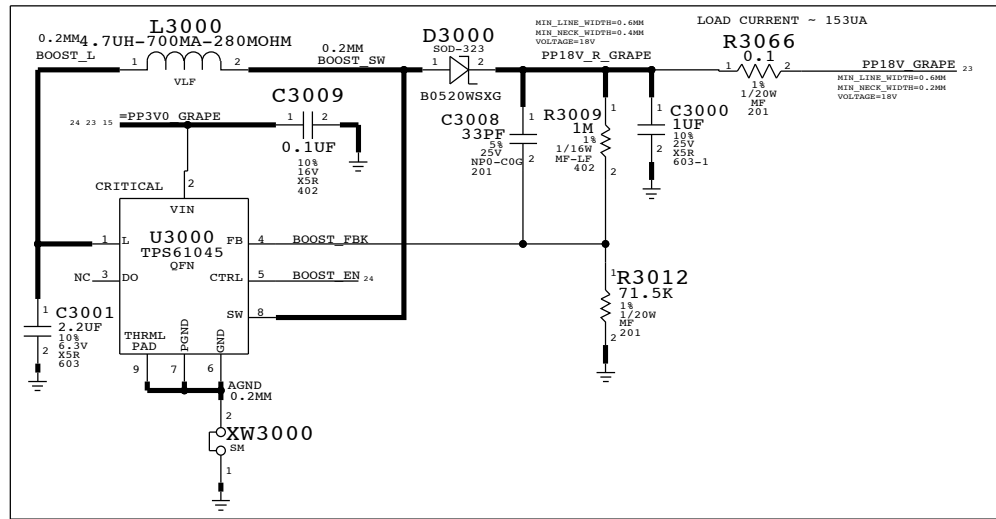


MATES WITH LEFTMOST GRAPE FLEX TAIL



MATES WITH RIGHTMOST GRAPE FLEX TAIL

BOOST CONVERTOR



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
311S0506	1	IC, SNGL 3-STATE BUFFER, 5-PIN, DRY	U3010	CRITICAL	

SYNC MASTER=JAMES SYNC DATE=12/21/2009

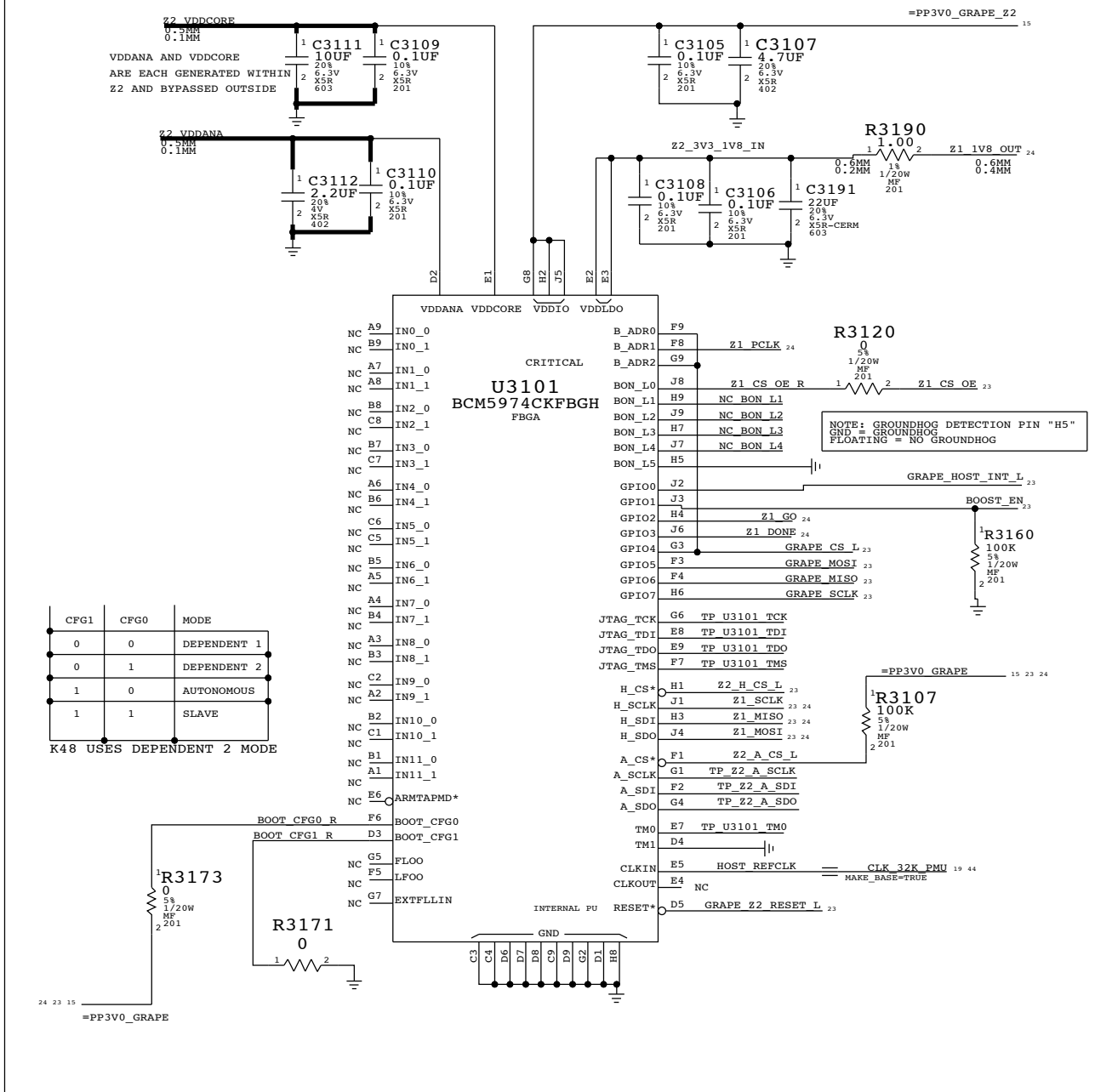
GRAPE 1 OF 2

Apple Inc.
DRAWING NUMBER: 051-8245
REVISION: B.0.0

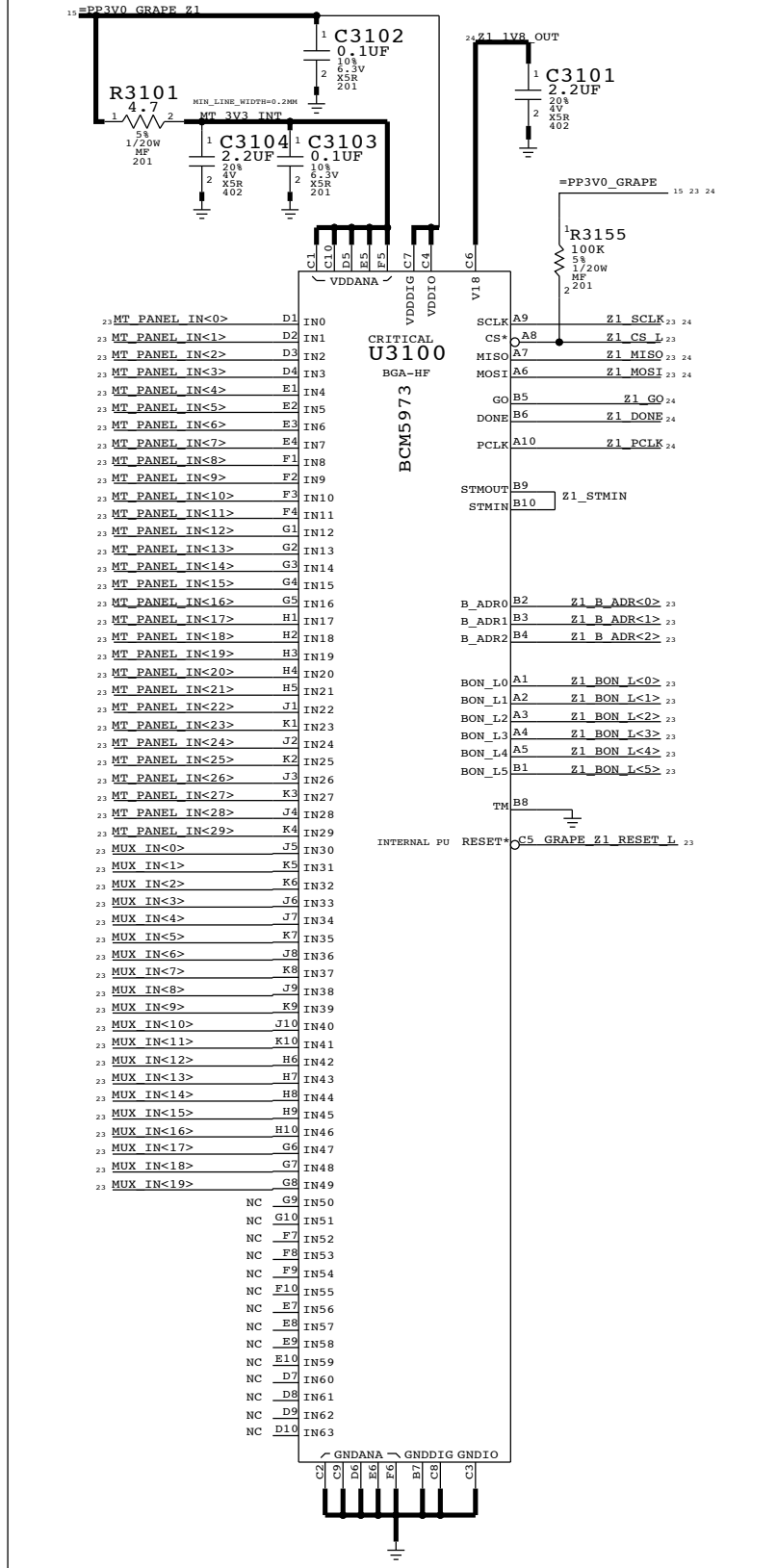
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ARM9 MCU (Z2 BASED)



ZEPHYR 1+ ASIC



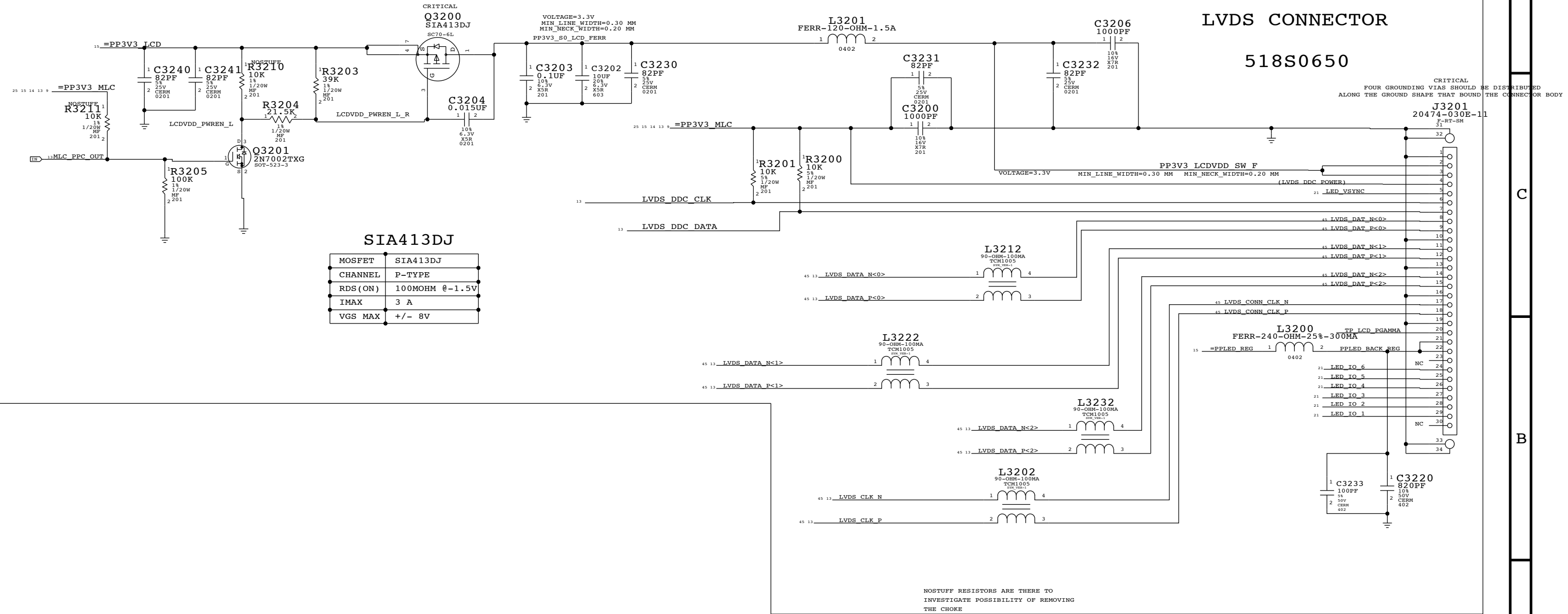
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GRAPE 2 OF 2		051-8245		D
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LVDS CONNECTOR

SIMILAR TO M97



SIA413DJ

MOSFET	SIA413DJ
CHANNEL	P-TYPE
RDS (ON)	100MOHM @-1.5V
IMAX	3 A
VGS MAX	+/- 8V

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SYNC MASTER=MIAMI SYNC DATE=09/16/2009

LVDS CONNECTOR

Apple Inc.

051-8245 D

REVISION B.0.0

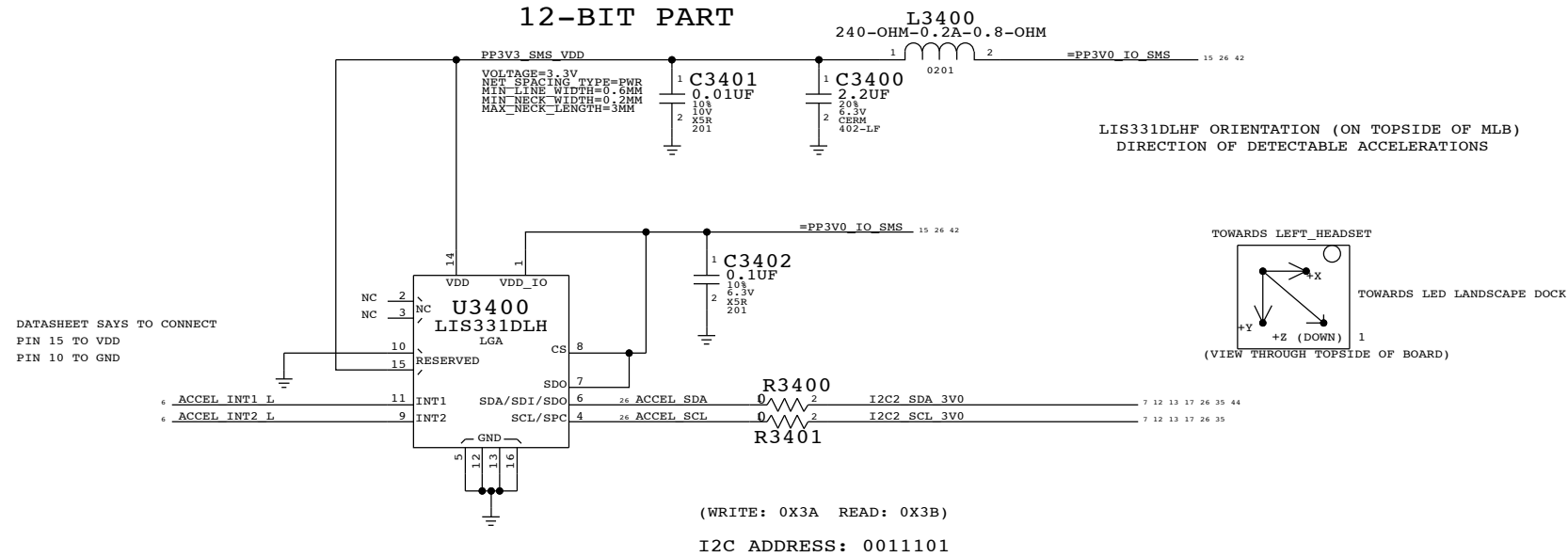
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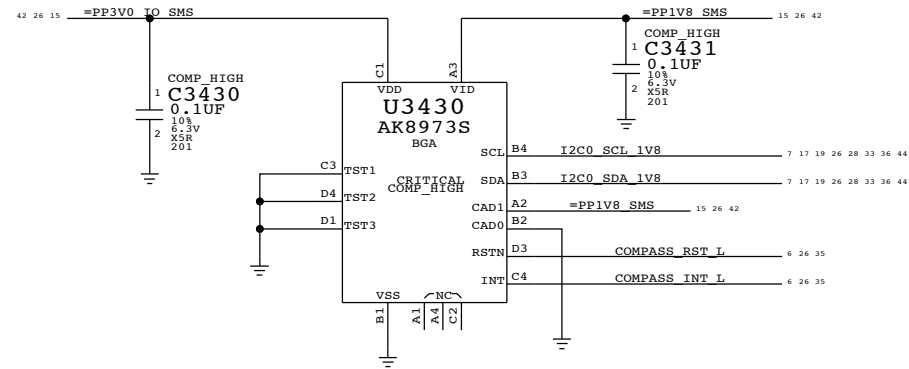
MOTION/GYRO/COMPASS SENSORS

ST MICRO LIS331DLHF MOTION SENSOR 12-BIT PART



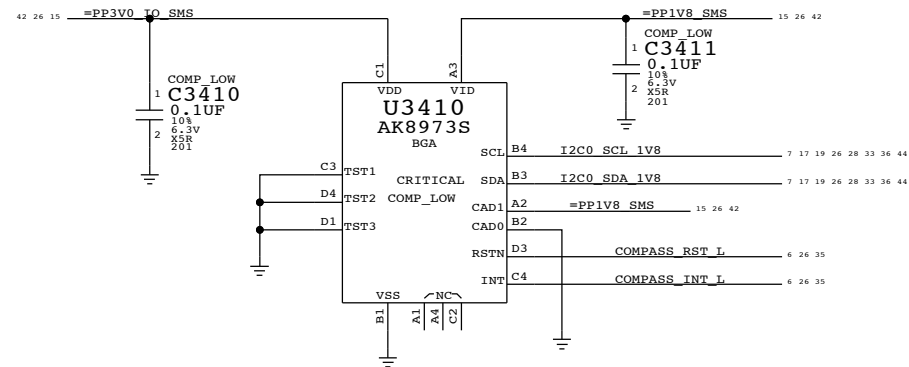
COMPASS HIGH

(HAS THERMAL SENSOR IN IT)
I2C ADDR: 0011110
WRITE: 0X3C READ: 0X3D



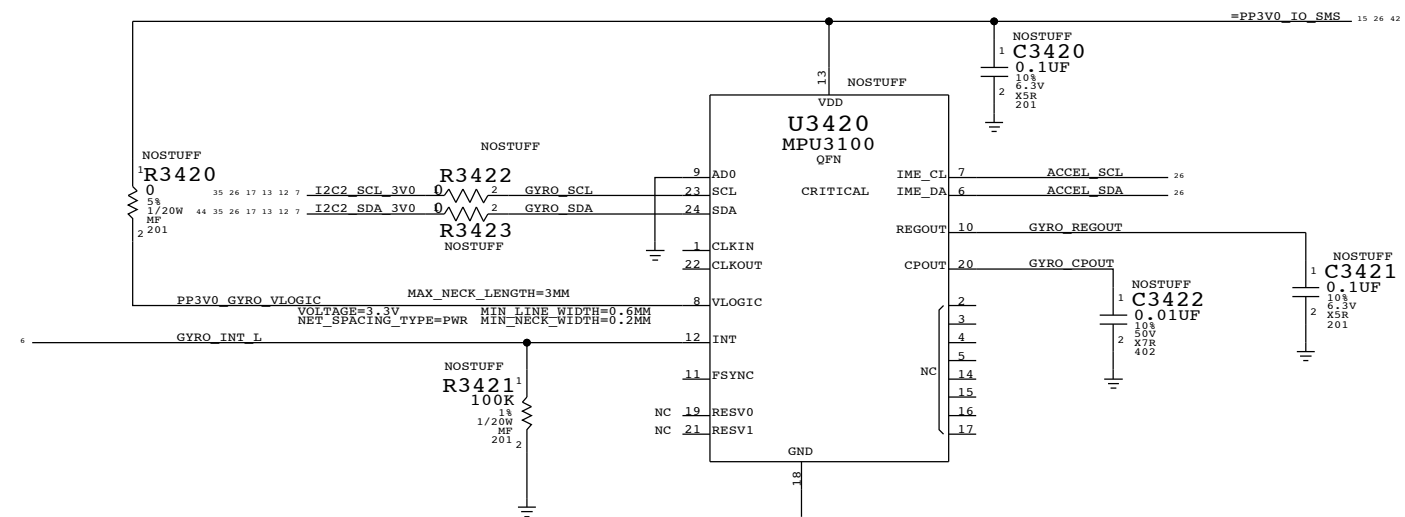
COMPASS LOW

(HAS THERMAL SENSOR IN IT)
I2C ADDR: 0011110
WRITE: 0X3C READ: 0X3D



GYRO

(WRITE: 0XD0 READ: 0XD1)
I2C ADDRESS: 1101000



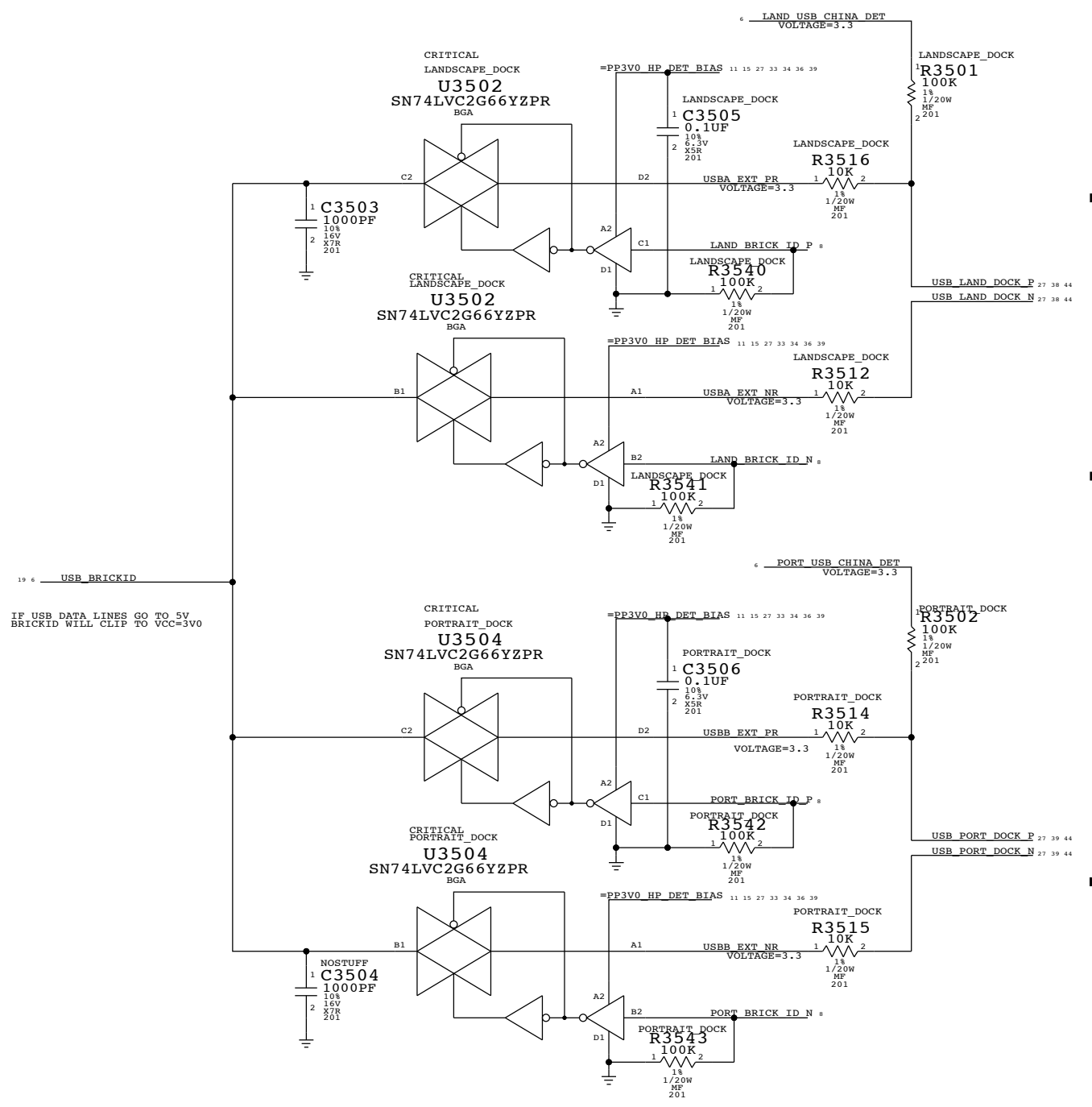
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PAGE TITLE		SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
MOTION, GYRO, COMPASS/THERM					
Apple Inc.		DRAWING NUMBER	051-8245	SIZE	D
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USB MUX/BRICK DETECTION

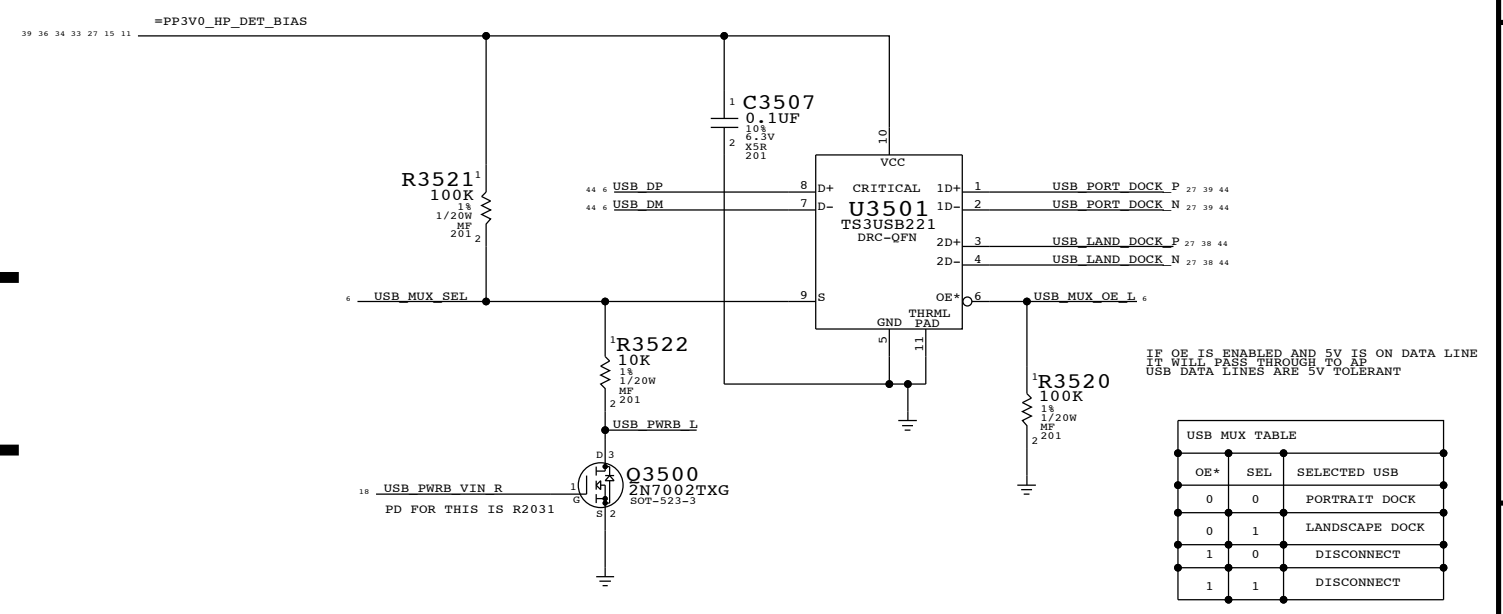
www.laptop-schematics.com

MAKE SURE RESISTORS ARE ON TOP OF TRACE TO REDUCE STUB



IF USB DATA LINES GO TO 5V BRICKID WILL CLIP TO VCC=3V0

USB MUX FOR DOCK USB



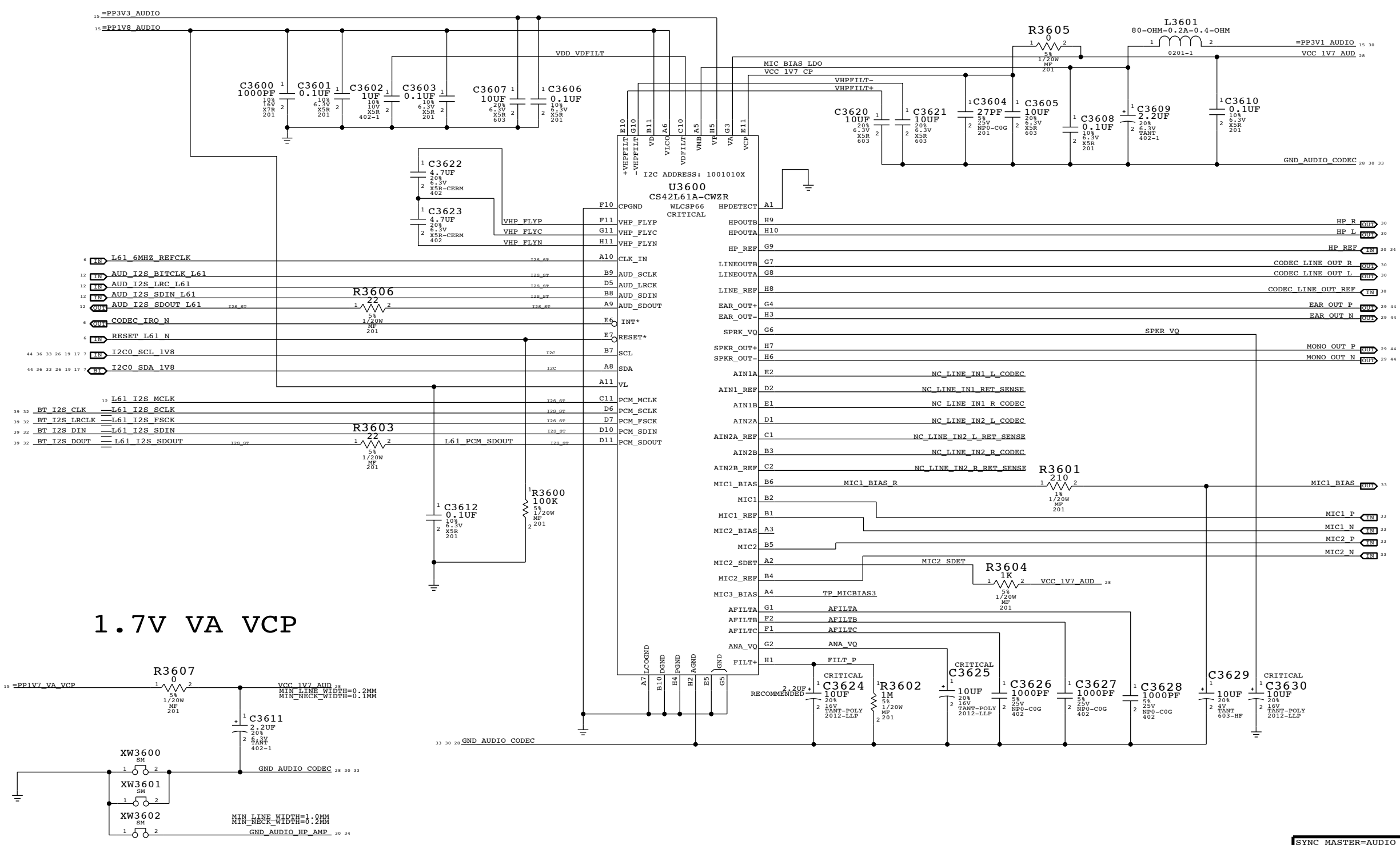
USB MUX TABLE		
OE*	SEL	SELECTED USB
0	0	PORTRAIT DOCK
0	1	LANDSCAPE DOCK
1	0	DISCONNECT
1	1	DISCONNECT

SYNC MASTER=MIAMI SYNC DATE=09/16/2009

PAGE TITLE USB MUX/BRK DET		
Apple Inc.	DRAWING NUMBER	051-8245
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		PAGE 35 OF 119
		SHEET 27 OF 53

L61 AUDIO CODEC

APN:338S0589



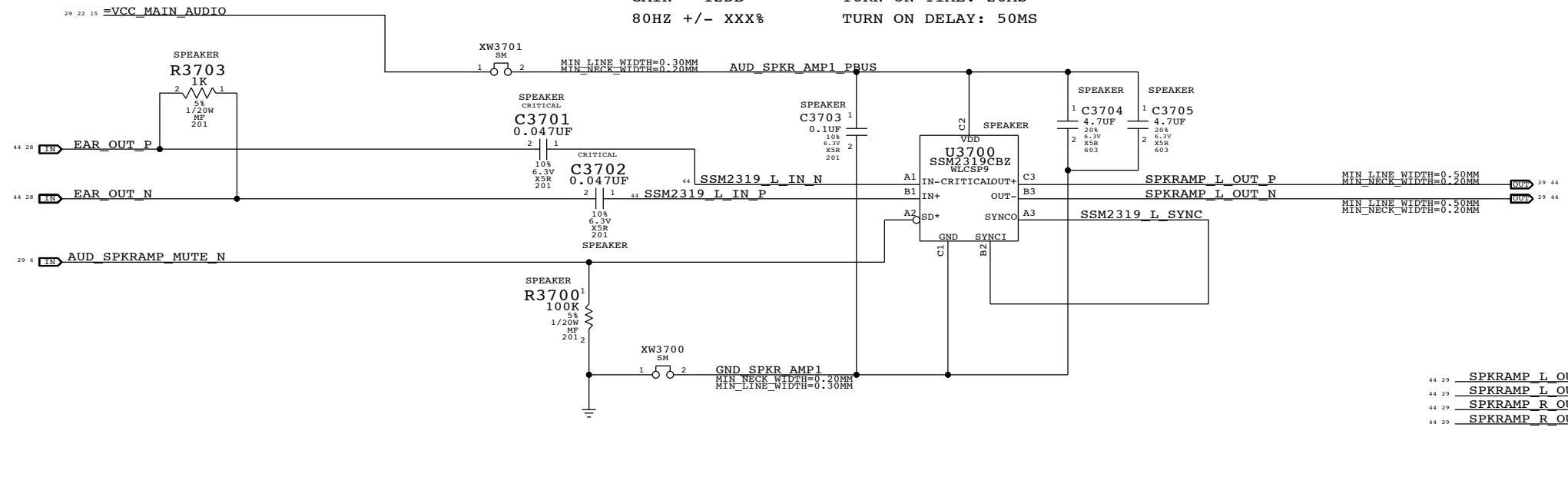
1.7V VA VCP

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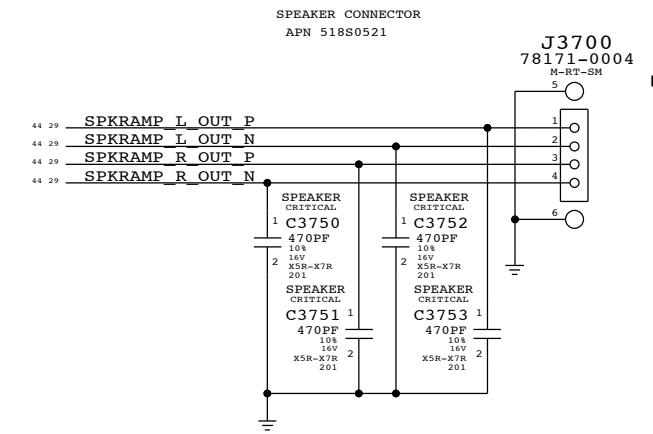
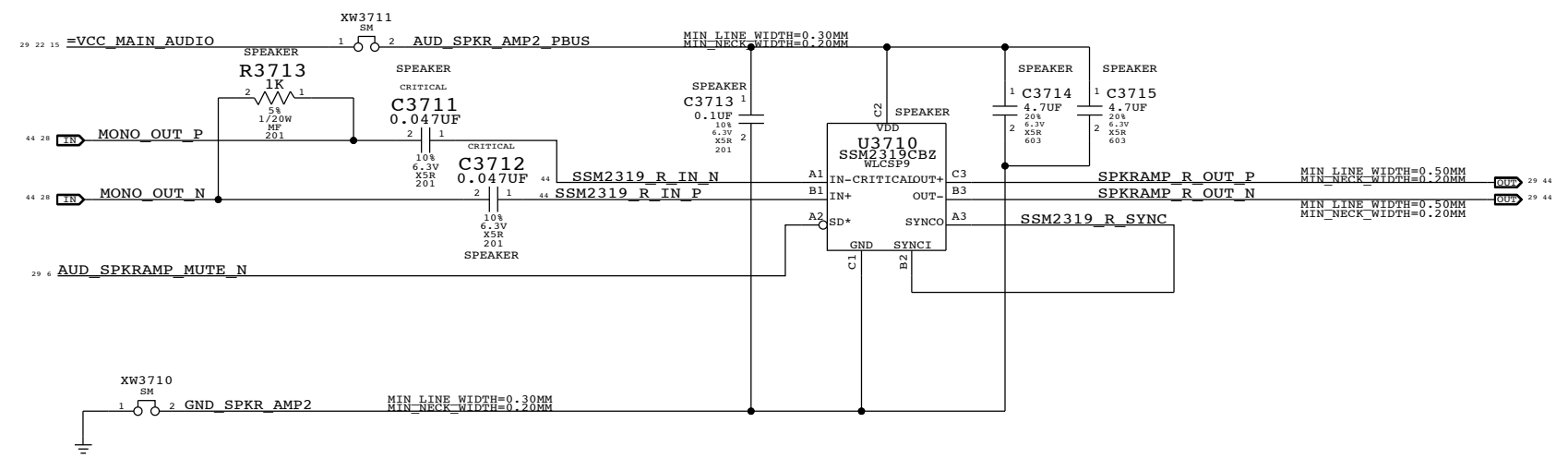
SYNC MASTER=AUDIO		SYNC DATE=12/04/2009	
L61 AUDIO INTERFACE			
Apple Inc.		DRAWING NUMBER	051-8245
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SPEAKER AMPLIFIER

SSM2319 APN:353S2136
GAIN = 12DB TURN ON TIME: 28MS
80HZ +/- XXX% TURN ON DELAY: 50MS

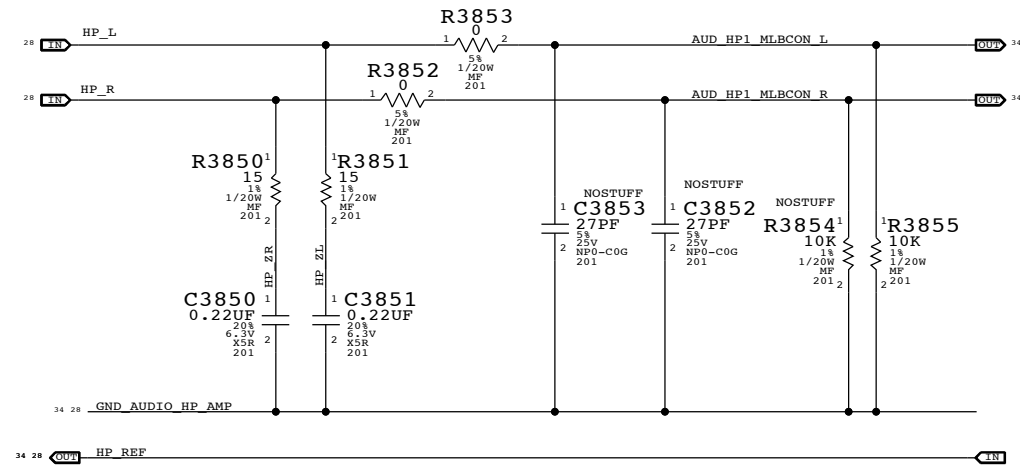


L61 RECEIVER OUTPUT IS CONNECTED TO U3700
L61 SPEAKER OUTPUT IS CONNECTED TO U3710

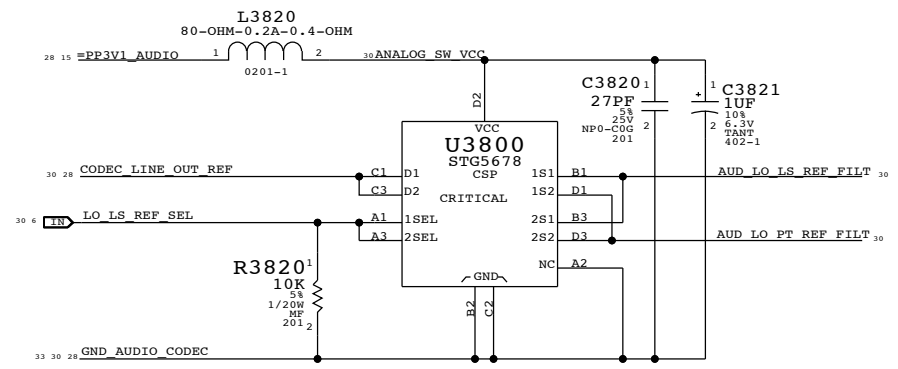


PAGE TITLE		SYNC DATE=12/04/2009	
AUDIO: SPEAKER AMP			
Apple Inc.	DRAWING NUMBER	051-8245	SIZE
	REVISION	B.0.0	D
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HEADPHONE OUTPUT ZOBEL NETWORK



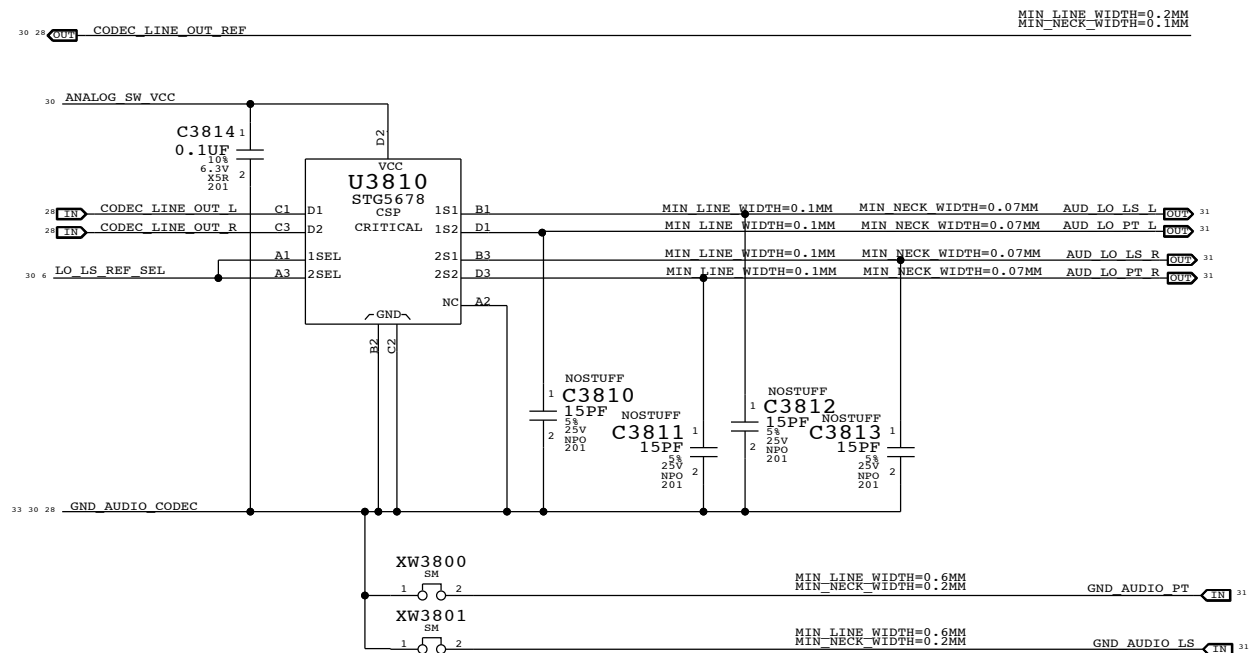
LINE OUTPUT REF SENSE DOCK SELECTOR



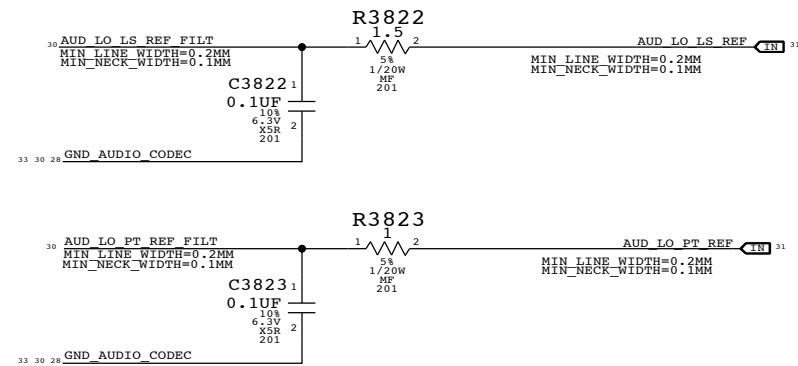
OUTPUT REF SENSE LINE SHOULD BE SWITCHED TO ACTIVE PORT
 LO_LS_REF_SEL = 0: PORTRAIT DOCK SELECTED
 LO_LS_REF_SEL = 1: LANDSCAPE DOCK SELECTED

LINE OUTPUT DOCK SELECTOR

LO_LS_REF_SEL = 0: DAC OUTPUT CONNECTED TO PORTRAIT DOCK
 LO_LS_REF_SEL = 1: DAC OUTPUT CONNECTED TO LANDSCAPE DOCK



LINE OUTPUT REF SENSE FILTER



PAGE TITLE		SYNC DATE=12/04/2009	
AUDIO: HEADPHONE OUT			
Apple Inc.	DRAWING NUMBER	051-8245	SIZE D
	REVISION	B.0.0	
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B

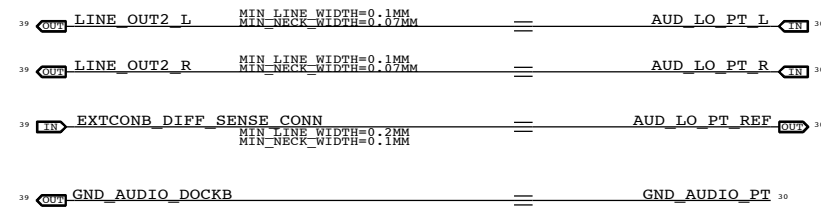
A

DOCKS OUTPUTS

NOTE: PORTRAIT DOCK IS PRIMARY DOCK

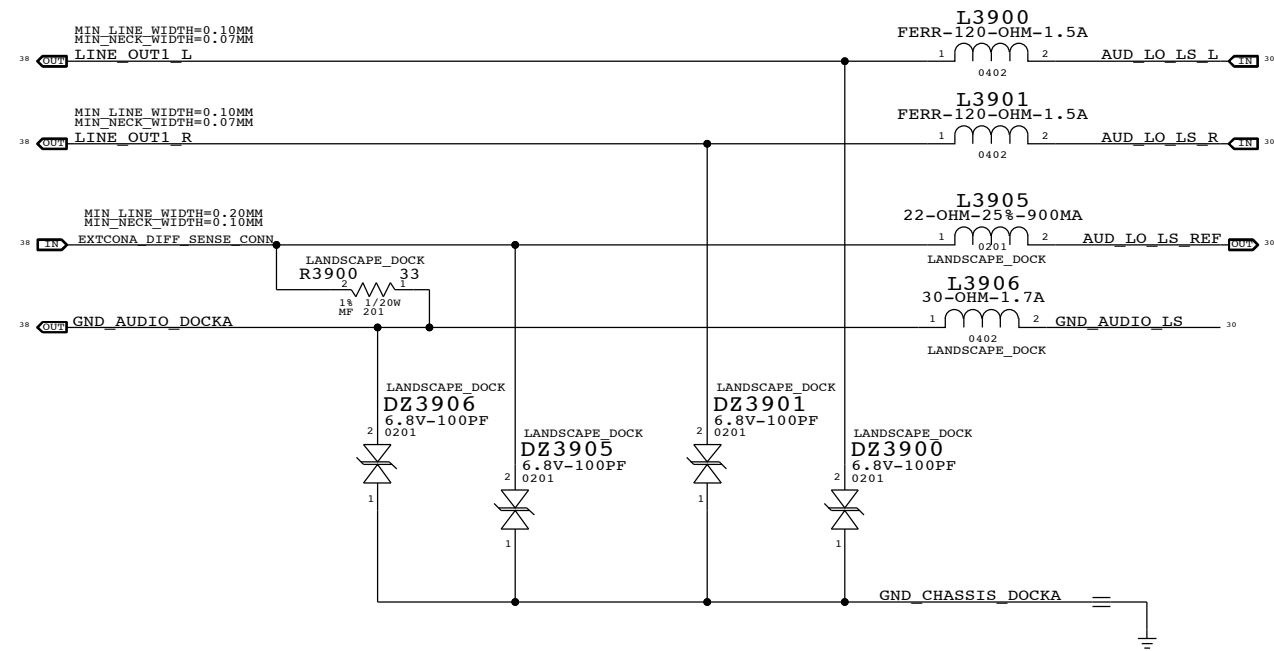
PORTRAIT DOCK LINE OUTPUT

TO PORTRAIT DOCK MLB CONNECTOR



LANDSCAPE DOCK LINE OUTPUT ESD CIRCUIT

TO LANDSCAPE DOCK MLB CONNECTOR



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PAGE TITLE		SYNC DATE=12/04/2009	
AUDIO: LINE OUT DOCK ESD CIRCUIT			
DRAWING NUMBER		SIZE	
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REVISION		BRANCH	
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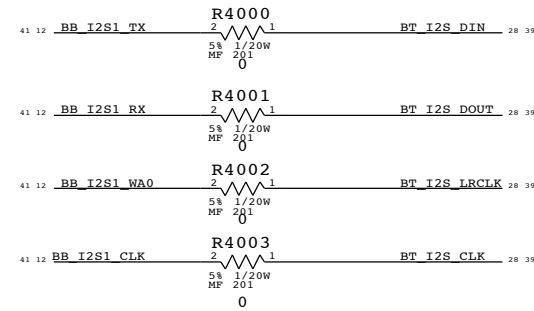
B

B


A

A

AUDIENCE BYPASS SHUNTS



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PAGE TITLE		SYNC DATE=12/04/2009	
AUDIO: AUDIENCE			
 Apple Inc.	DRAWING NUMBER	051-8245	SIZE
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		SHEET	32 OF 53

8

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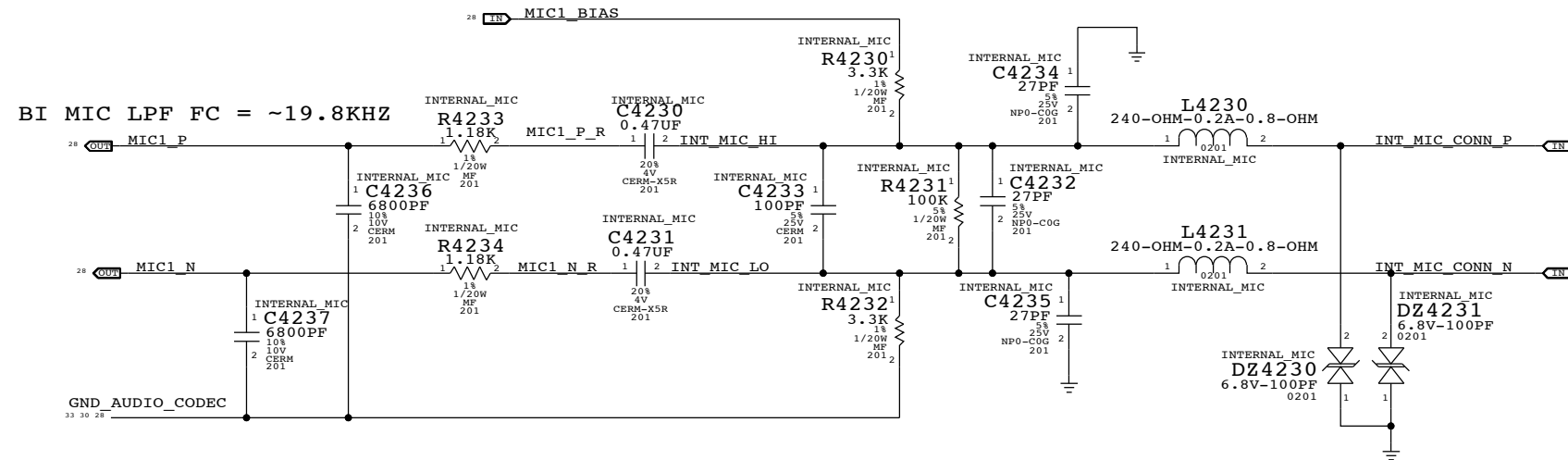
D

C

B

A

INTERNAL (BUILT-IN) ANALOG MIC BIAS & FILTER



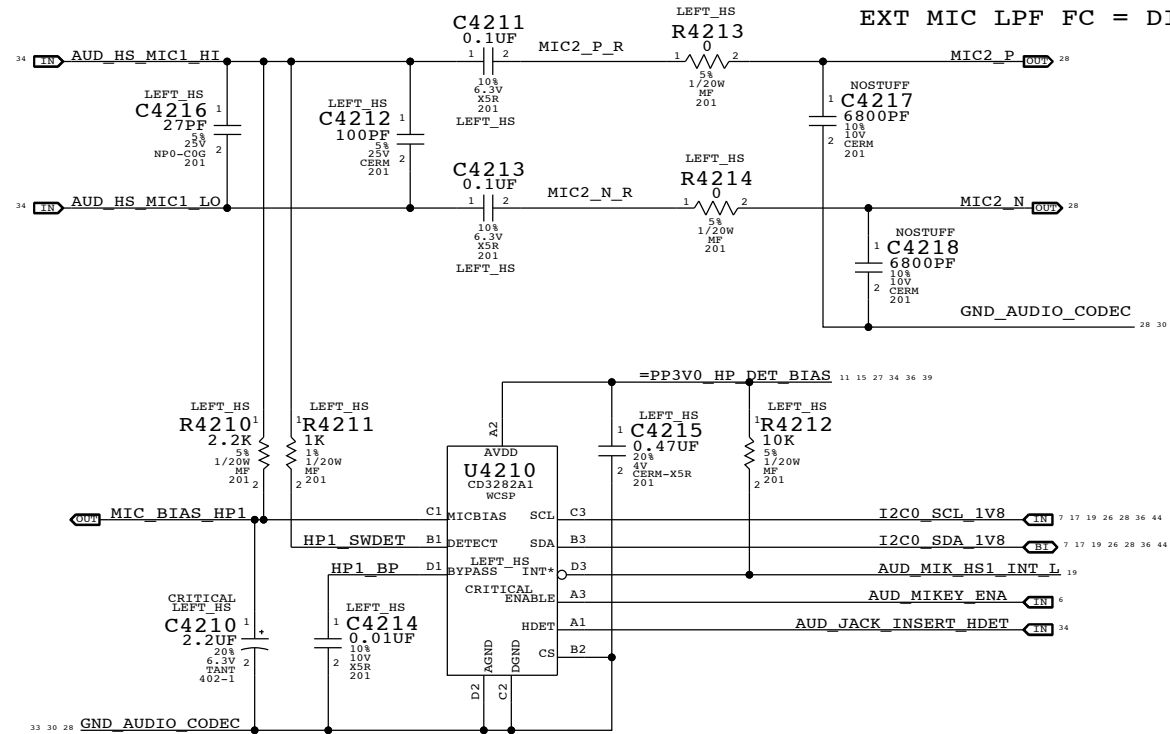
EXTERNAL MIC INPUT CIRCUITRY

APN: 353S2640

I2C ADD: READ=72H, WRITE=73H

NOTE: INT IS OPEN DRAIN, PULL UP ON MIKEY SIDE

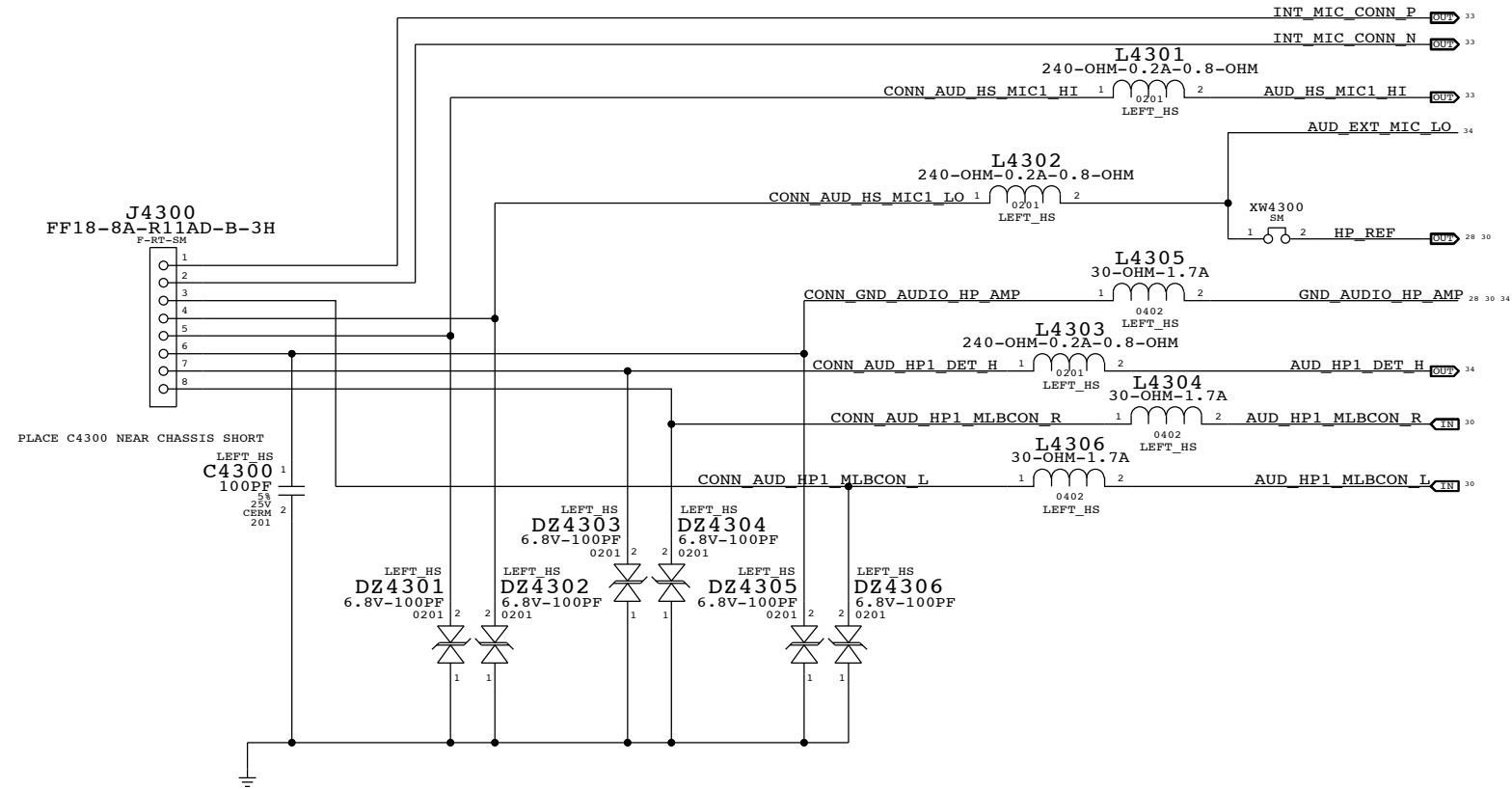
EXT MIC LPF FC = DISABLED



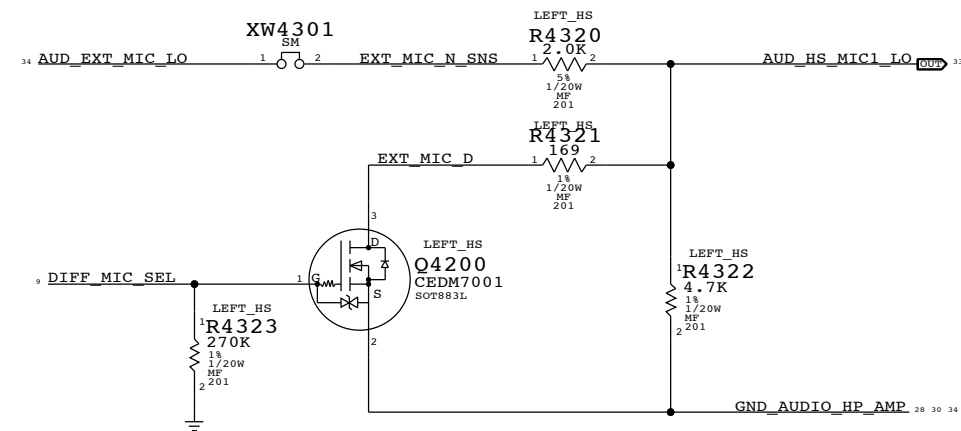
PAGE TITLE		SYNC MASTER=AUDIO		SYNC DATE=12/04/2009	
AUDIO: DETECT/MIC BIAS					
DRAWING NUMBER		051-8245		SIZE	
REVISION		B.0.0		D	
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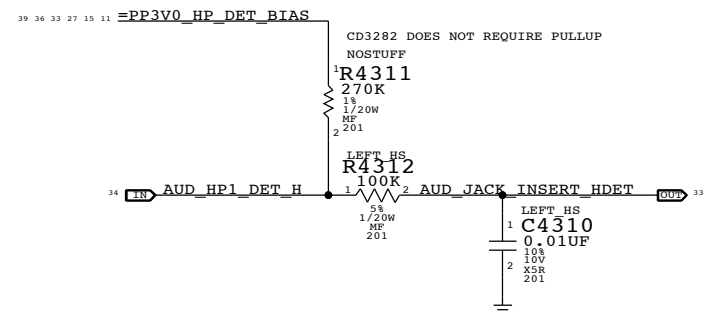
JACK 1 MLB CONNECTOR: HEADPHONE/HS_MIC/INT_MIC
 APN: 518S0693



HEADSET HP/MIC CROSSTALK MITIGATION (NOT USED)



HEADSET JACK INSERTION DETECT



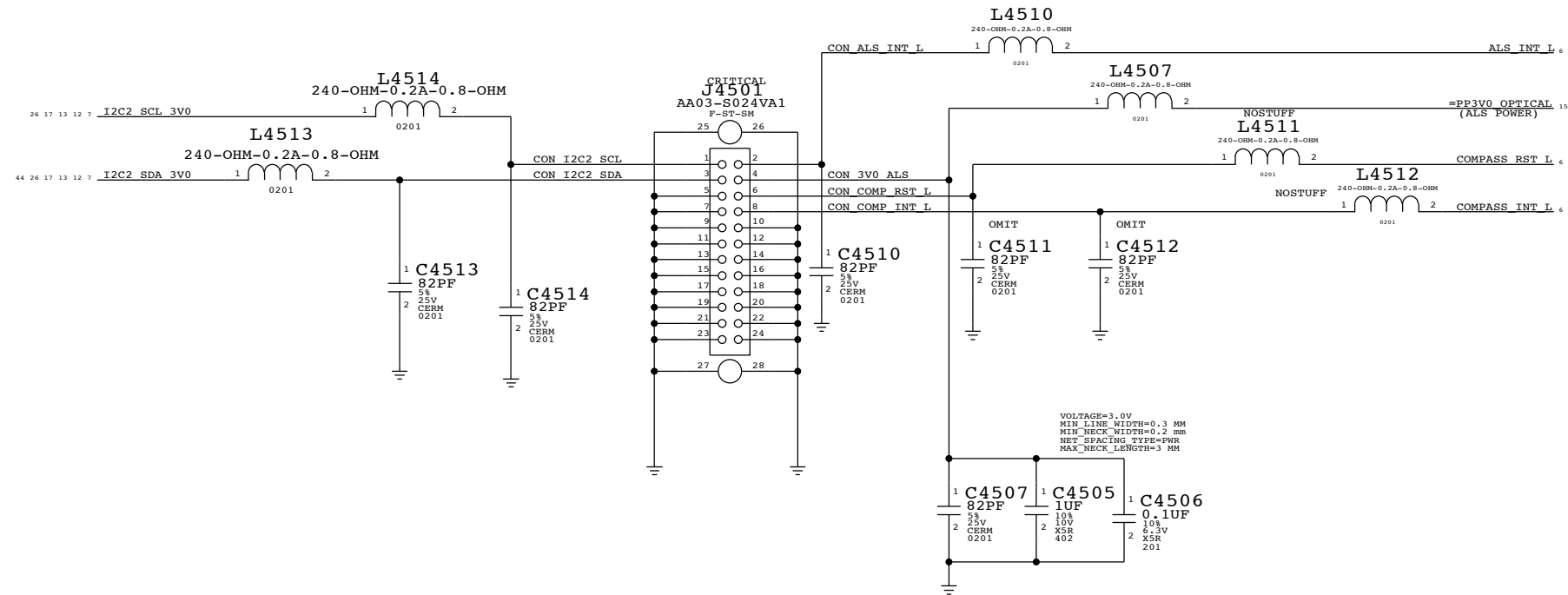
www.laptop-schematics.com

PAGE TITLE		SYNC DATE=12/04/2009	
AUDIO: HP CONN			
Apple Inc.	DRAWING NUMBER	051-8245	SIZE
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ALS CONN.

FPC CONNECTOR

APN: 516S0498



VOLTAGE=3.0V
MIN LINE WIDTH=0.3 MM
MIN NECK WIDTH=0.2 MM
NET SPACING TYP=0.5MM
MAX NECK LENGTH=3 MM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
11780002	2	0-OHM, 5%, 1/20W, MF, 0201	C4511, C4512	

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SYNC MASTER=MIAMI SYNC DATE=09/16/2009

ALS CONNECTOR

Apple Inc. DRAWING NUMBER: 051-8245 SIZE: D

REVISION: B.0.0

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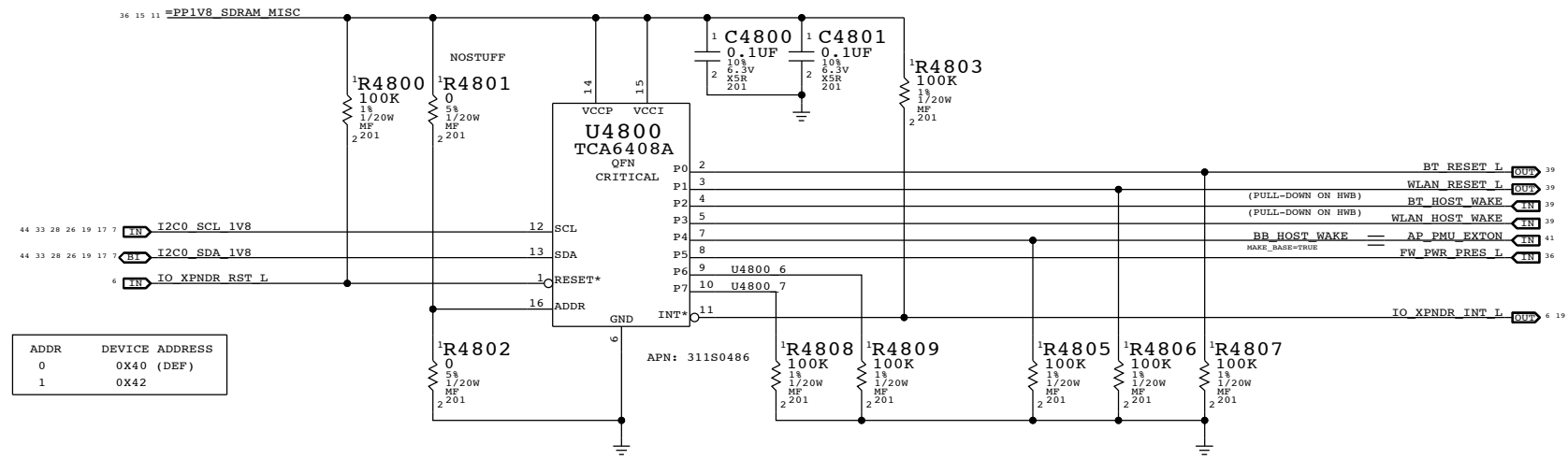
BRANCH: PAGE: 45 OF 119 SHEET: 35 OF 53

D

C

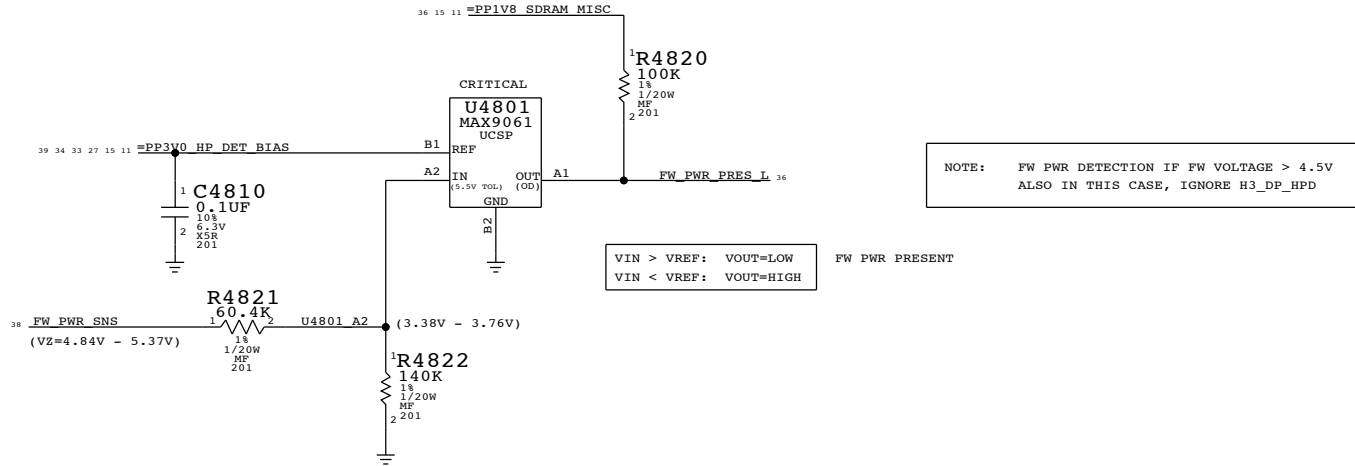
B

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THIS IS SAME AS PREVIOUS, BUT CE APPROVED APN NUMBER (SAME PART)

ADDR	DEVICE ADDRESS
0	0X40 (DEF)
1	0X42

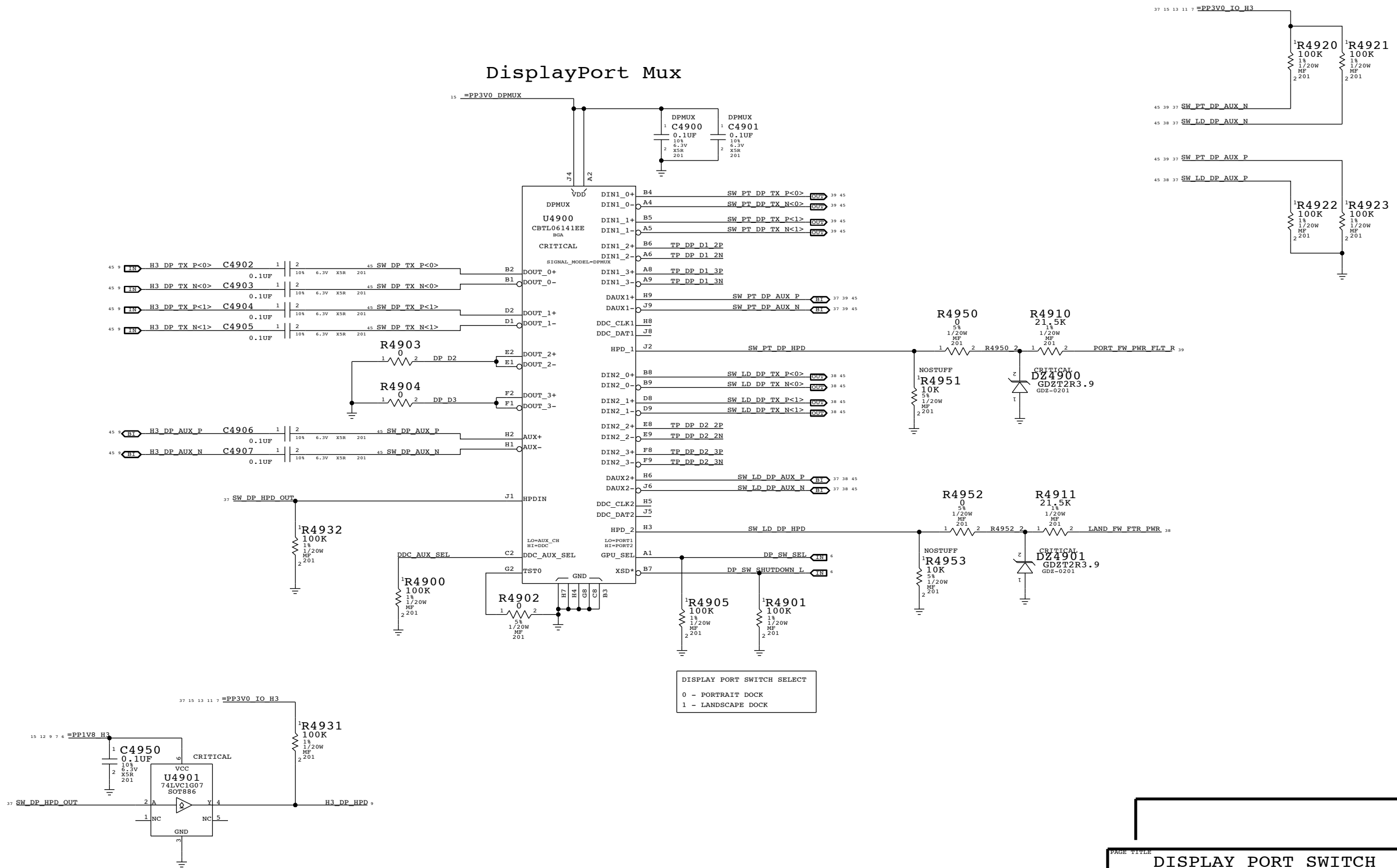


NOTE: FW PWR DETECTION IF FW VOLTAGE > 4.5V
ALSO IN THIS CASE, IGNORE H3_DP_HPD

VIN > VREF: VOUT=LOW FW PWR PRESENT
VIN < VREF: VOUT=HIGH

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PAGE TITLE		
I/O EXPANDER		
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PAGE TITLE		
DISPLAY PORT SWITCH		
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SHEET	37 OF 53	

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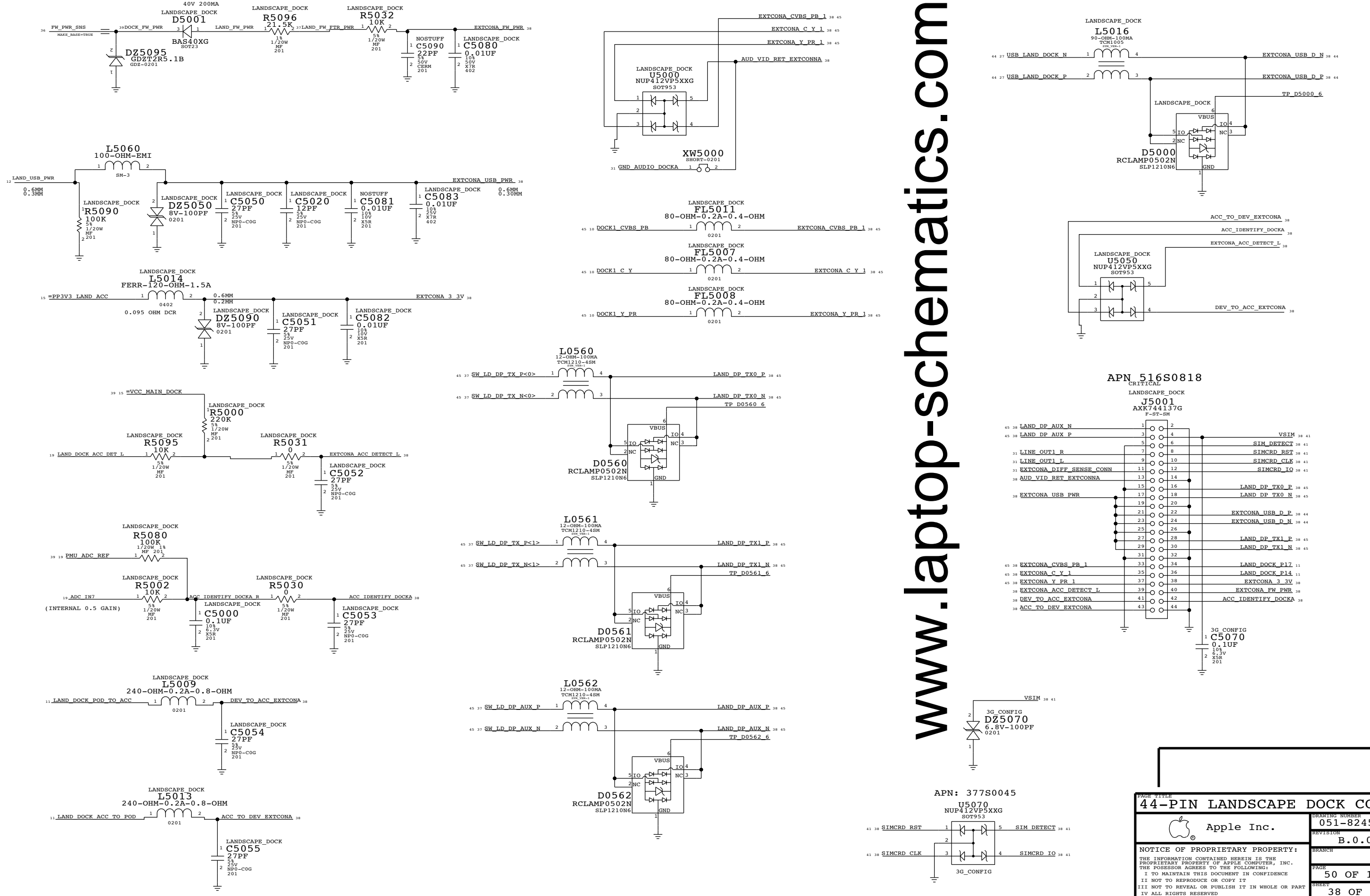
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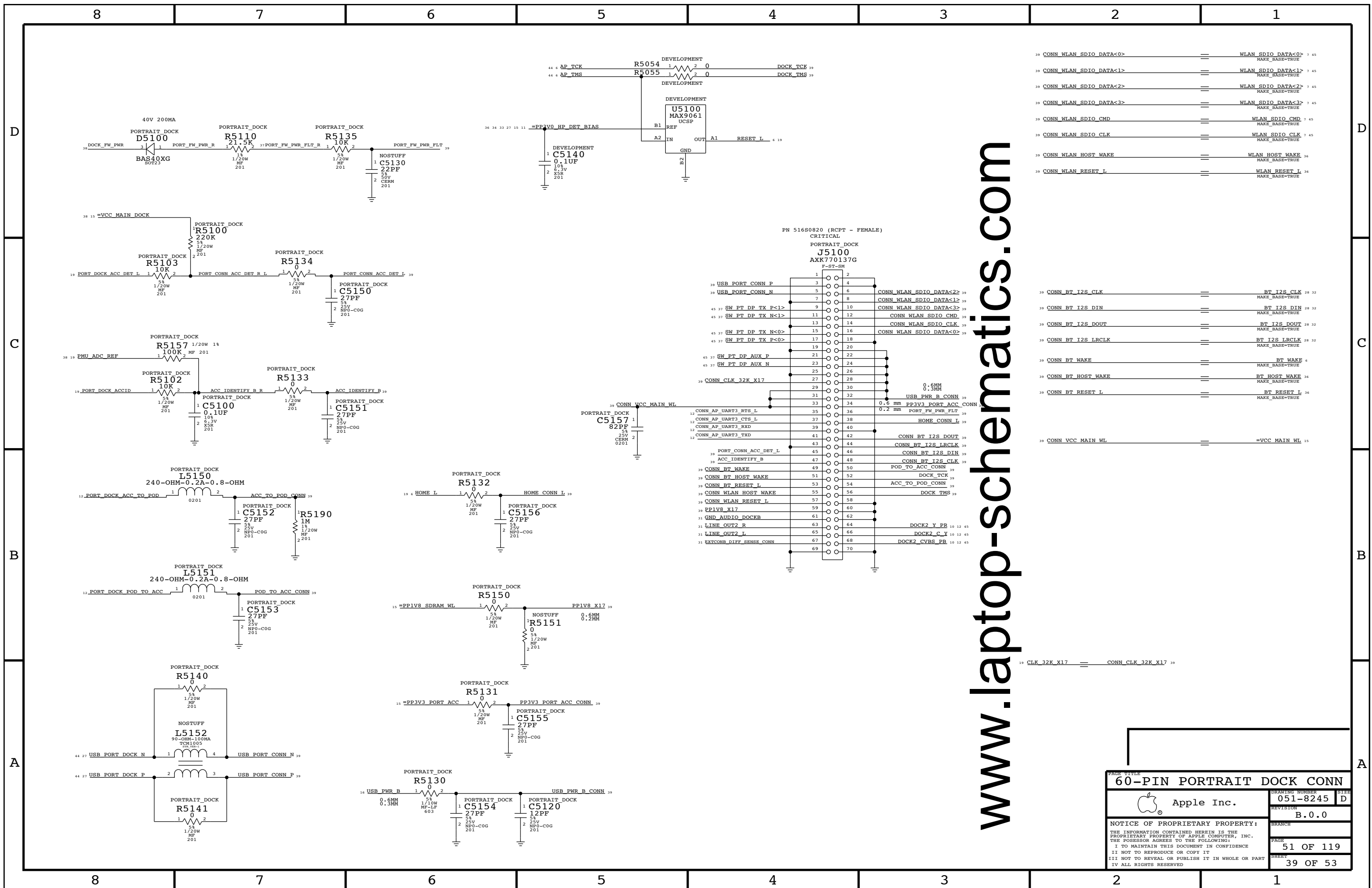
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PAGE TITLE		DRAWING NUMBER		SIZE
44-PIN LANDSCAPE DOCK CONN		051-8245		D
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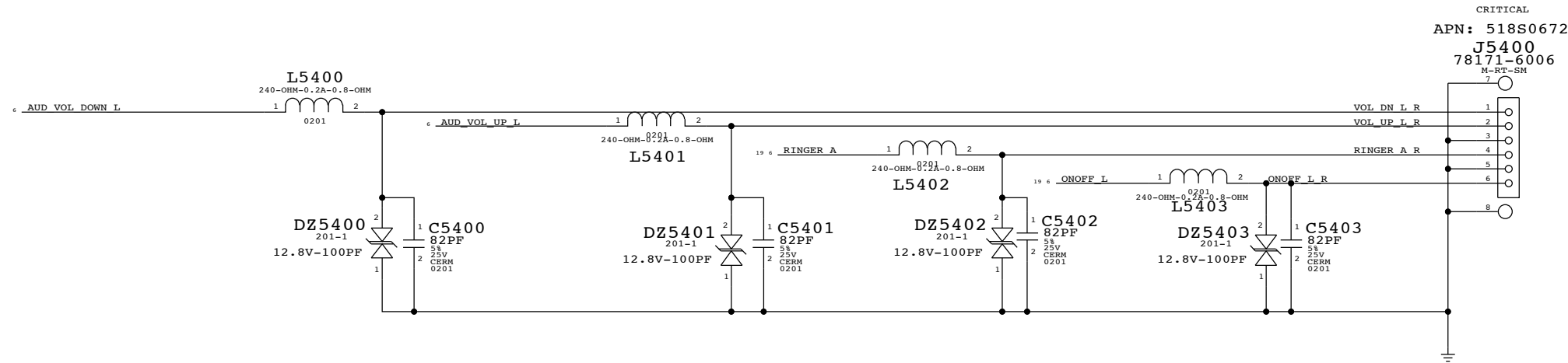


39	CONN WLAN SDIO DATA<0>	==	WLAN SDIO DATA<0>	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN SDIO DATA<1>	==	WLAN SDIO DATA<1>	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN SDIO DATA<2>	==	WLAN SDIO DATA<2>	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN SDIO DATA<3>	==	WLAN SDIO DATA<3>	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN SDIO CMD	==	WLAN SDIO CMD	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN SDIO CLK	==	WLAN SDIO CLK	7 45
			MAKE_BASE=TRUE	
39	CONN WLAN HOST WAKE	==	WLAN HOST WAKE	36
			MAKE_BASE=TRUE	
39	CONN WLAN RESET L	==	WLAN RESET L	36
			MAKE_BASE=TRUE	
39	CONN BT I2S_CLK	==	BT I2S_CLK	28 32
			MAKE_BASE=TRUE	
39	CONN BT I2S DIN	==	BT I2S DIN	28 32
			MAKE_BASE=TRUE	
39	CONN BT I2S DOUT	==	BT I2S DOUT	28 32
			MAKE_BASE=TRUE	
39	CONN BT I2S LRCLK	==	BT I2S LRCLK	28 32
			MAKE_BASE=TRUE	
39	CONN BT WAKE	==	BT WAKE	6
			MAKE_BASE=TRUE	
39	CONN BT_HOST WAKE	==	BT_HOST WAKE	36
			MAKE_BASE=TRUE	
39	CONN BT RESET L	==	BT RESET L	36
			MAKE_BASE=TRUE	
39	CONN VCC MAIN WL	==	=VCC MAIN WL	15

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60-PIN PORTRAIT DOCK CONN		
	DRAWING NUMBER	051-8245
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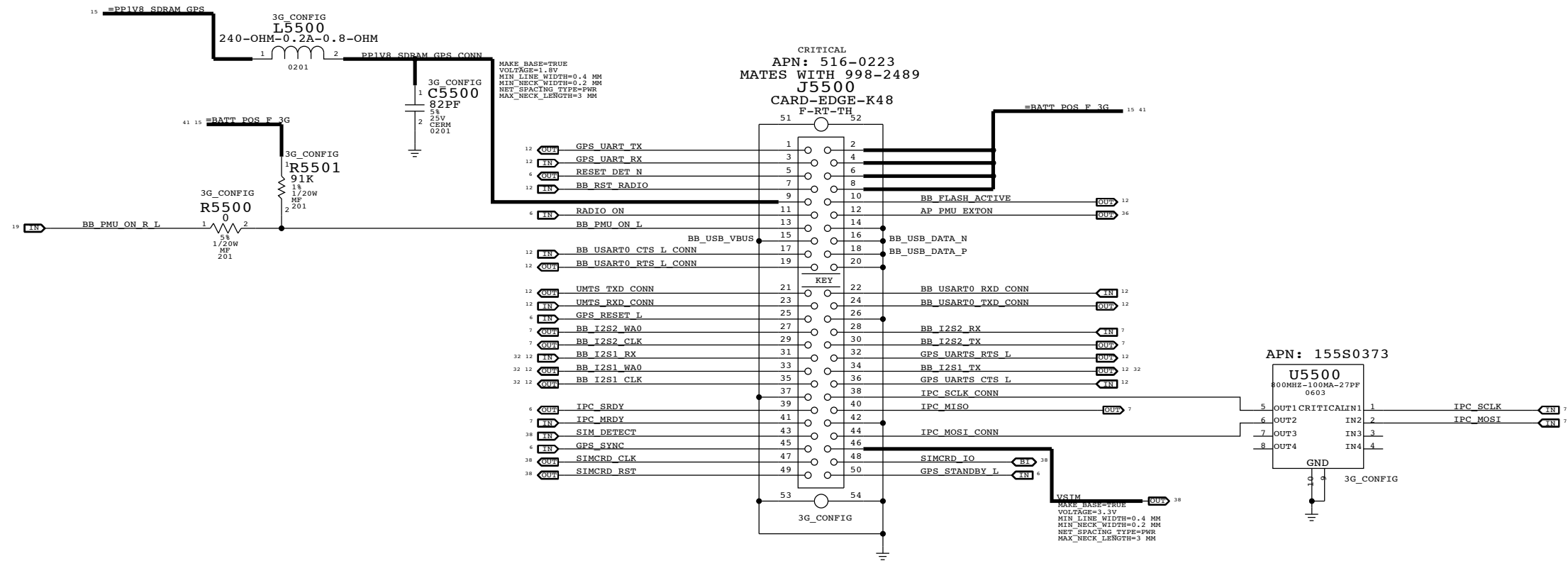
BUTTON CONNECTOR



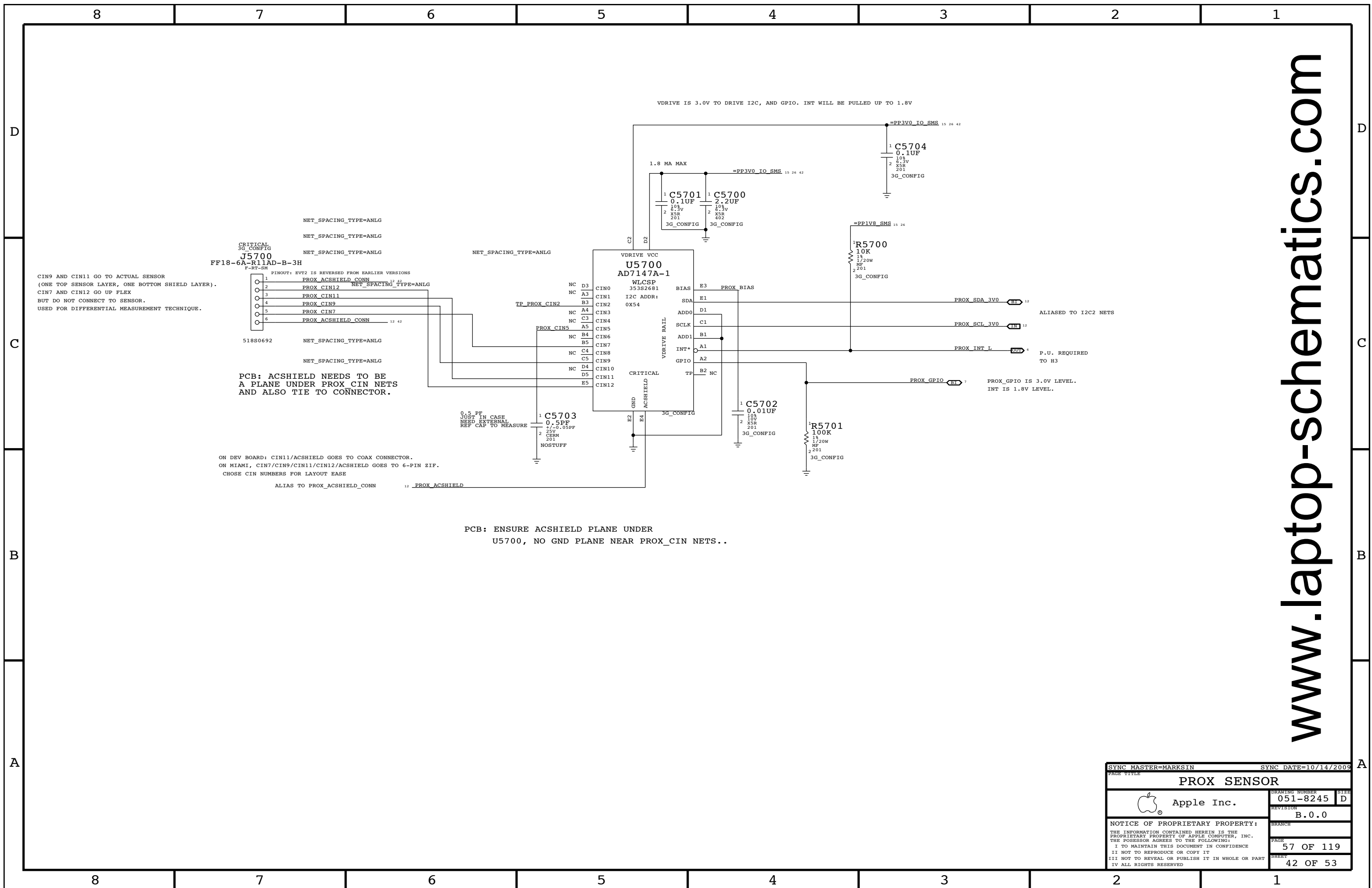
CRITICAL
 APN: 518S0672
J5400
 78171-6006
 M-RT-SM

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SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
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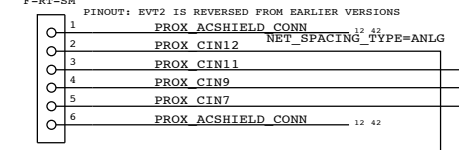
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3G CONNECTOR			
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VDRIVE IS 3.0V TO DRIVE I2C, AND GPIO. INT WILL BE PULLED UP TO 1.8V

CIN9 AND CIN11 GO TO ACTUAL SENSOR
(ONE TOP SENSOR LAYER, ONE BOTTOM SHIELD LAYER).
CIN7 AND CIN12 GO UP FLEX
BUT DO NOT CONNECT TO SENSOR.
USED FOR DIFFERENTIAL MEASUREMENT TECHNIQUE.

NET_SPACING_TYPE=ANLG
NET_SPACING_TYPE=ANLG
NET_SPACING_TYPE=ANLG
NET_SPACING_TYPE=ANLG



518S0692 NET_SPACING_TYPE=ANLG
NET_SPACING_TYPE=ANLG

PCB: ACSHIELD NEEDS TO BE
A PLANE UNDER PROX CIN NETS
AND ALSO TIE TO CONNECTOR.

ON DEV BOARD: CIN11/ACSHIELD GOES TO COAX CONNECTOR.
ON MIAMI, CIN7/CIN9/CIN11/CIN12/ACSHIELD GOES TO 6-PIN ZIF.
CHOSE CIN NUMBERS FOR LAYOUT EASE

ALIAS TO PROX_ACSHIELD_CONN 12 _PROX_ACSHIELD

PCB: ENSURE ACSHIELD PLANE UNDER
U5700, NO GND PLANE NEAR PROX_CIN NETS..

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SYNC MASTER=MARKSIN		SYNC DATE=10/14/2009	
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16GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
335S0648	2	TOSHIBA 43NM 8GB	U6700,U6710	16GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0683	335S0648	16GB_PROD	U6700,U6710	SAMSUNG 35NM 8GB

32GB FLASH CONFIGURATIONS

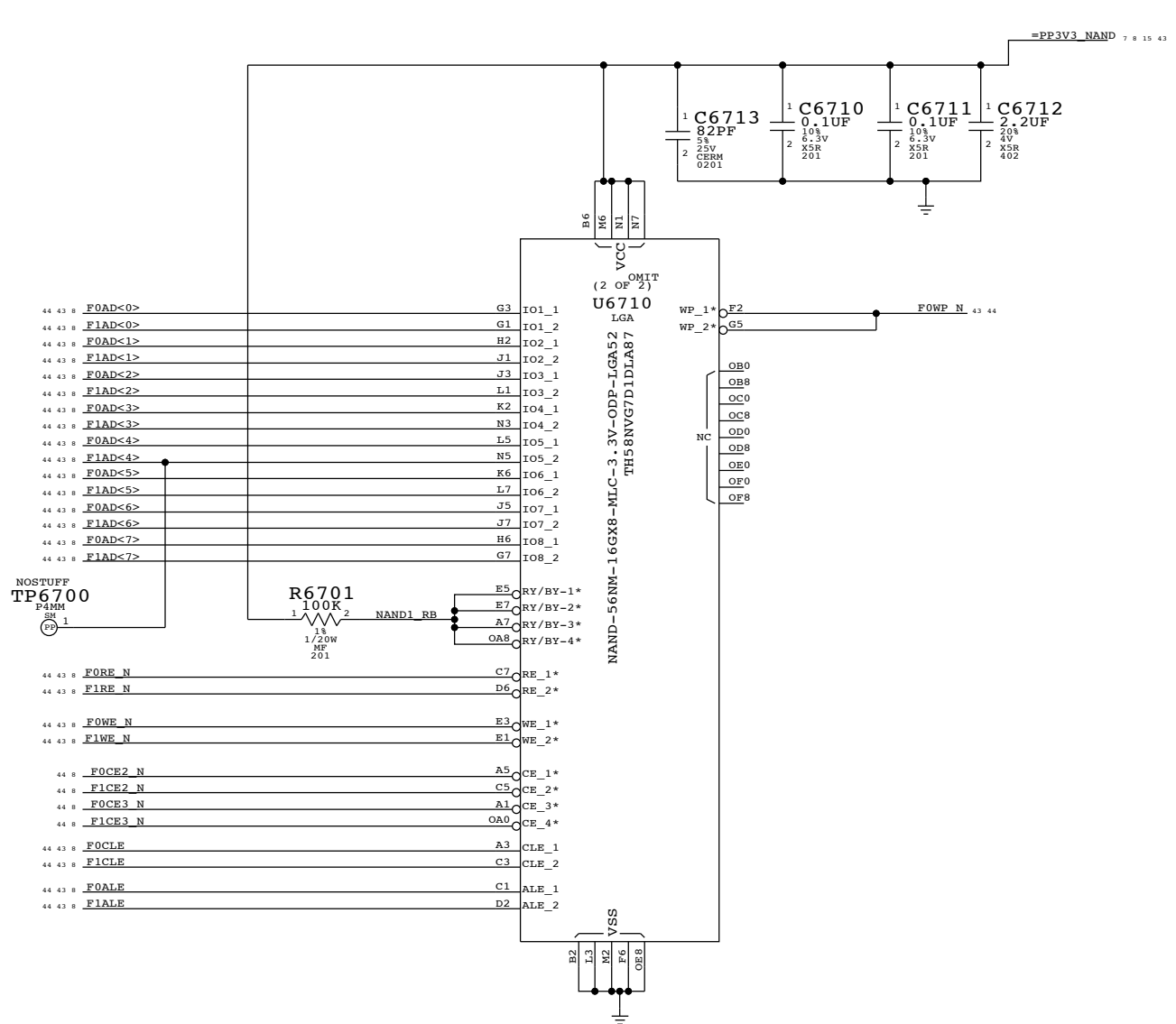
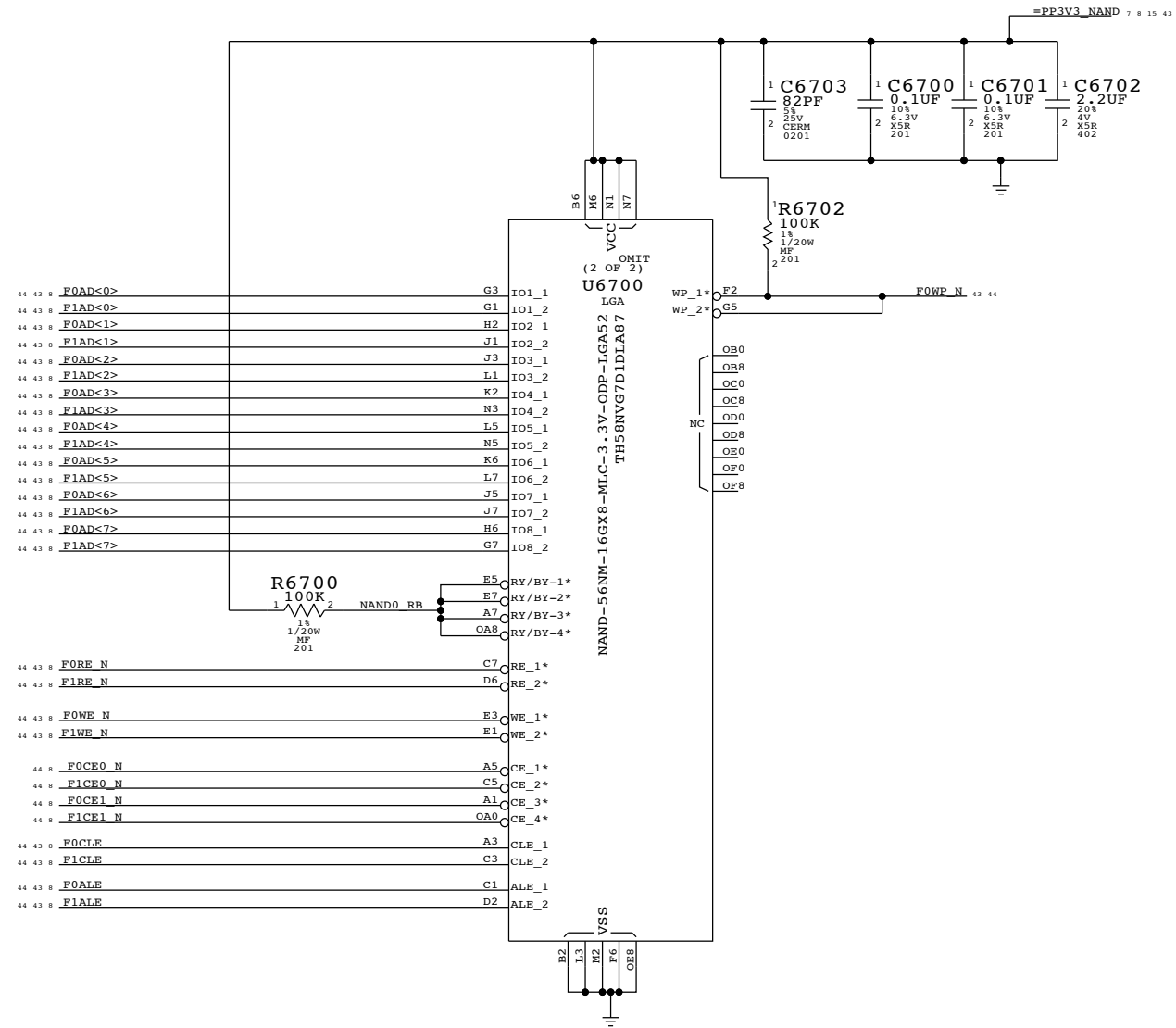
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
335S0649	2	TOSHIBA 43NM 16GB	U6700,U6710	32GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0682	335S0649	32GB_PROD	U6700,U6710	SAMSUNG 35NM 16GB

64GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
335S0650	2	TOSHIBA 43NM 32GB	U6700,U6710	64GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0665	335S0650	64GB_PROD	U6700,U6710	SAMSUNG 35NM 32GB



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FLASH			
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Clock Signal Constraints

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
CLK_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CLK	*	*	0P5MM_SPACING

USB 2.0 Interface Constraints

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
USB_90D	*	90_OHM_DIFF

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
USB	*	*	0P5MM_SPACING

OTHER CONSTRAINTS

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
I2C_50S	*	50_OHM_SE
NAND_50S	*	50_OHM_SE
AUDIO	*	1:1_DIFFPAIR
SPEAKER	*	SPEAKER


NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
NAND	*	*	1.5:1_SPACING
I2C	*	*	1.5:1_SPACING
AUDIO	*	*	3:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE		NET_NAME	NET_VALUE
	PHYSICAL	SPACING		
E116		JTAG	AP_TCK	6 39
E117		JTAG	AP_TMS	6 39
E118		JTAG	AP_TDI	6 12
E119		JTAG	AP_TDO	12
E120		JTAG	AP_RTCK	
E18	USB	USB_90D	USB_LAND DOCK_P	27 38
E19	USB	USB_90D	USB_LAND DOCK_N	27 38
E20	USB	USB_90D	USB_PORT DOCK_P	27 39
E21	USB	USB_90D	USB_PORT DOCK_N	27 39
E22		USB_90D	EXTCONA USB D_P	38
E23		USB_90D	EXTCONA USB D_N	38
E24	USB	USB_90D	USB_DP	6 27
E25	USB	USB_90D	USB_DM	6 27
E227			I2S1_DOUT	7 12
E228			I2S1_DIN	7 12
E229			I2S1_BCLK	7 12
E230			I2S1_LRCLK	7 12
E231			I2S1_MCLK	
E283		CLK_50S	CLK_32K_PMU	19 24
E349		NAND_50S	F1AD<7..0>	8 43
E350		NAND_50S	F0AD<7..0>	8 43
E351		NAND_50S	F0CE0_N	8 43
E352		NAND_50S	F0CE1_N	8 43
E353		NAND_50S	F0CE2_N	8 43
E354		NAND_50S	F0CE3_N	8 43
E355		NAND_50S	F0CLE	8 43
E356		NAND_50S	F0ALE	8 43
E357		NAND_50S	F0RE_N	8 43
E358		NAND_50S	F0WE_N	8 43
E359		NAND_50S	F0WP_N	43
E361		NAND_50S	F1CE0_N	8 43
E362		NAND_50S	F1CE1_N	8 43
E363		NAND_50S	F1CE2_N	8 43
E364		NAND_50S	F1CE3_N	8 43
E365		NAND_50S	F1CLE	8 43
E366		NAND_50S	F1ALE	8 43
E367		NAND_50S	F1RE_N	8 43
E368		NAND_50S	F1WE_N	8 43
E369		NAND_50S	F1WP_N	
E388	SPEAKER	AUDIO	SPKRAMP_L_OUT_P	29
E389	SPEAKER	AUDIO	SPKRAMP_L_OUT_N	29
E390	SPEAKER	AUDIO	SPKRAMP_R_OUT_P	29
E391	SPEAKER	AUDIO	SPKRAMP_R_OUT_N	29
E392	SPEAKER_ECS	AUDIO	EAR_OUT_P	28 29
E393	AUDIO	AUDIO	EAR_OUT_N	28 29
E399	AUDIO	AUDIO	SSM2319_L_IN_P	29
E400	AUDIO	AUDIO	SSM2319_L_IN_N	29
E406	SPEAKER_ECS	AUDIO	MONO_OUT_P	28 29
E407	AUDIO	AUDIO	MONO_OUT_N	28 29
E408	AUDIO	AUDIO	SSM2319_R_IN_P	29
E409	AUDIO	AUDIO	SSM2319_R_IN_N	29

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I2C BUS NET PROPERTIES

ELECTRICAL_CONSTRAINT_SET	NET_TYPE		NET_NAME	NET_VALUE
	PHYSICAL	SPACING		
E116	I2C1_ECS	I2C_50S	I2C1_SDA_1V8	7
E117	I2C1_ECS	I2C_50S	I2C1_SCL_1V8	7
E118	I2C0_ECS	I2C_50S	I2C0_SDA_1V8	7 17 19 26 28 33 36
E119	I2C0_ECS	I2C_50S	I2C0_SCL_1V8	7 17 19 26 28 33 36
E120	I2C2_ECS	I2C_50S	I2C2_SDA_3V0	7 12 13 17 26 35 44
E121	I2C2_ECS	I2C_50S	I2C2_SCL_3V0	7 12 13 17 26 35 44

SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
CONSTRAINTS			
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Video Signal Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
VID_50S	*	Y	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
LVDS_100D	*	90_OHM_DIFF
MIPI_100D	*	90_OHM_DIFF
SMIA_100D	*	90_OHM_DIFF
DP_100D	*	90_OHM_DIFF

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
ANALOG_VIDEO	*	*	2.5:1_SPACING
LVDS	*	*	4:1_SPACING
MIPI	*	*	4:1_SPACING
SMIA	*	*	4:1_SPACING
DP	*	*	4:1_SPACING

SDIO SIGNAL CONSTRAINTS

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
SDIO_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
SDIO	*	*	1.5:1_SPACING

ANALOG VIDEO CONSTRAINTS

ELECTRICAL_CONSTRAINT_SET	PHYSICAL	NET_TYPE	SPACING	
E230	VID_50S	ANALOG_VIDEO	DAC_OUT1	10
E231	VID_50S	ANALOG_VIDEO	DAC_OUT2	10
E232	VID_50S	ANALOG_VIDEO	DAC_OUT3	10
E233	VID_50S	ANALOG_VIDEO	LAND_YOUT	10
E234	VID_50S	ANALOG_VIDEO	LAND_CVBS_OUT	10
E235	VID_50S	ANALOG_VIDEO	LAND_COUT	10
E236	VID_50S	ANALOG_VIDEO	PORT_YOUT	10
E237	VID_50S	ANALOG_VIDEO	PORT_CVBS_OUT	10
E238	VID_50S	ANALOG_VIDEO	PORT_COUT	10
E239	VID_50S	ANALOG_VIDEO	DOCK1_CVBS_PB	10 38
E240	VID_50S	ANALOG_VIDEO	DOCK1_C_Y	10 38
E241	VID_50S	ANALOG_VIDEO	DOCK1_Y_PR	10 38
E242	VID_50S	ANALOG_VIDEO	EXTCONA_CVBS_PB 1	38
E243	VID_50S	ANALOG_VIDEO	EXTCONA_C_Y 1	38
E244	VID_50S	ANALOG_VIDEO	EXTCONA_Y_PR 1	38
E245	VID_50S	ANALOG_VIDEO	DOCK2_CVBS_PB	10 12 39
E246	VID_50S	ANALOG_VIDEO	DOCK2_C_Y	10 12 39
E247	VID_50S	ANALOG_VIDEO	DOCK2_Y_PR	10 12 39

MIPI, SMIA AND DISPLAYPORT BUS CONSTRAINTS

ELECTRICAL_CONSTRAINT_SET	PHYSICAL	NET_TYPE	SPACING	
E248	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA P<0> 9 14
E249	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA N<0> 9 14
E250	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA P<1> 9 14
E251	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA N<1> 9 14
E252	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA P<2> 9 14
E253	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA N<2> 9 14
E254	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA P<3> 9 14
E255	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID DATA N<3> 9 14
E256	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID CLK P 9 14
E257	MIPI_ECS	MIPI_100D	MIPI	H3 MIPID CLK N 9 14
E258	SMIA_ECS	SMIA_100D	SMIA	CAM SMIA DATA P
E259	SMIA_ECS	SMIA_100D	SMIA	CAM SMIA DATA N
E260	SMIA_ECS	SMIA_100D	SMIA	CAM SMIA CLK P
E261	SMIA_ECS	SMIA_100D	SMIA	CAM SMIA CLK N
E262	SMIA_ECS	SMIA_100D	SMIA	CONN SMIA CLK P
E263	SMIA_ECS	SMIA_100D	SMIA	CONN SMIA CLK N
E264	DP_H3_ECS	DP_100D	DP	H3 DP TX P<0> 9 37
E265	DP_H3_ECS	DP_100D	DP	H3 DP TX N<0> 9 37
E266	DP_H3_ECS	DP_100D	DP	H3 DP TX P<1> 9 37
E267	DP_H3_ECS	DP_100D	DP	H3 DP TX N<1> 9 37
E268	DP_H3_ECS	DP_100D	DP	H3 DP AUX P 9 37
E269	DP_H3_ECS	DP_100D	DP	H3 DP AUX N 9 37
E270	DP_H3_ECS	DP_100D	DP	SW DP TX P<0> 37
E271	DP_H3_ECS	DP_100D	DP	SW DP TX N<0> 37
E272	DP_H3_ECS	DP_100D	DP	SW DP TX P<1> 37
E273	DP_H3_ECS	DP_100D	DP	SW DP TX N<1> 37
E274	DP_H3_ECS	DP_100D	DP	SW DP AUX P 37
E275	DP_H3_ECS	DP_100D	DP	SW DP AUX N 37
E276	DP_PORT_ECS	DP_100D	DP	SW_PT DP TX P<0> 37 39
E277	DP_PORT_ECS	DP_100D	DP	SW_PT DP TX N<0> 37 39
E278	DP_PORT_ECS	DP_100D	DP	SW_PT DP TX P<1> 37 39
E279	DP_PORT_ECS	DP_100D	DP	SW_PT DP TX N<1> 37 39
E280	DP_PORT_ECS	DP_100D	DP	SW_PT DP AUX P 37 39
E281	DP_PORT_ECS	DP_100D	DP	SW_PT DP AUX N 37 39
E282	DP_LAND_ECS	DP_100D	DP	SW_LD DP TX P<0> 37 38
E283	DP_LAND_ECS	DP_100D	DP	SW_LD DP TX N<0> 37 38
E284	DP_LAND_ECS	DP_100D	DP	SW_LD DP TX P<1> 37 38
E285	DP_LAND_ECS	DP_100D	DP	SW_LD DP TX N<1> 37 38
E286	DP_LAND_ECS	DP_100D	DP	SW_LD DP AUX P 37 38
E287	DP_LAND_ECS	DP_100D	DP	SW_LD DP AUX N 37 38
E288	DP_LAND_ECS	DP_100D	DP	LAND DP TX0 P 38
E289	DP_LAND_ECS	DP_100D	DP	LAND DP TX0 N 38
E290	DP_LAND_ECS	DP_100D	DP	LAND DP TX1 P 38
E291	DP_LAND_ECS	DP_100D	DP	LAND DP TX1 N 38
E292	DP_LAND_ECS	DP_100D	DP	LAND DP AUX P 38
E293	DP_LAND_ECS	DP_100D	DP	LAND DP AUX N 38


LVDS CONSTRAINTS

ELECTRICAL_CONSTRAINT_SET	PHYSICAL	NET_TYPE	SPACING	
E294	LVDS_ECS	LVDS_100D	LVDS	LVDS DATA P<2..0> 13 25
E295	LVDS_ECS	LVDS_100D	LVDS	LVDS DATA N<2..0> 13 25
E296	LVDS_ECS	LVDS_100D	LVDS	LVDS CLK P 13 25
E297	LVDS_ECS	LVDS_100D	LVDS	LVDS CLK N 13 25
E298	LVDS_ECS	LVDS_100D	LVDS	LVDS CONN CLK P 25
E299	LVDS_ECS	LVDS_100D	LVDS	LVDS CONN CLK N 25
E300	LVDS_ECS	LVDS_100D	LVDS	LVDS DAT P<2..0> 25
E301	LVDS_ECS	LVDS_100D	LVDS	LVDS DAT N<2..0> 25

HX SDIO CONSTRAINTS

ELECTRICAL_CONSTRAINT_SET	PHYSICAL	NET_TYPE	SPACING	
E302	WLAN_SDIO_ECS	SDIO_50S	SDIO	WLAN SDIO CLK 7 39
E303	WLAN_SDIO_CMD_ECS	SDIO_50S	SDIO	WLAN SDIO CMD 7 39
E304	WLAN_SDIO_ECS	SDIO_50S	SDIO	WLAN SDIO DATA<3..0> 7 39

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SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
MORE CONSTRAINTS			
 Apple Inc.		DRAWING NUMBER	051-8245
		REVISION	B.0.0
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		SHEET	45 OF 53

MIAMI BOARD-SPECIFIC SPACING & PHYSICAL CONSTRAINTS (10-LAYER)

BOARD LAYERS		BOARD AREAS		BOARD UNITS (MIL OR MM)	ALLEGRO VERSION
TOP, ISL2, ISL3, ISL4, ISL5, ISL6, ISL7, ISL8, ISL9, BOTTOM		NO_TYPE, BGA		MM	15.2

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
DEFAULT	*	Y	=50_OHM_SE	=50_OHM_SE	30 MM	0 MM	0 MM
STANDARD	*	Y	=DEFAULT	=DEFAULT	12.7 MM	=DEFAULT	=DEFAULT

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
50_OHM_SE	TOP, BOTTOM	Y	0.230 MM	0.070 MM	3.0 MM		
50_OHM_SE	ISL2, ISL9	Y	0.076 MM	0.070 MM	3.0 MM		
50_OHM_SE	ISL4, ISL7	Y	0.076 MM	0.070 MM	3.0 MM		
50_OHM_SE	*	N	0.070 MM	0.070 MM	3.0 MM		

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
BGA	*	Y	0.075 MM	0.075 MM	=STANDARD	0.076 MM	0.075 MM

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
90_OHM_DIFF	*	Y	=STANDARD	=STANDARD	=STANDARD	=STANDARD	=STANDARD
90_OHM_DIFF	ISL4, ISL7	Y	0.070 MM	0.070 MM		0.200 MM	0.100 MM
90_OHM_DIFF	TOP, BOTTOM	Y	0.070 MM	0.070 MM		0.200 MM	0.200 MM

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
1:1_DIFFPAIR	*	Y	=STANDARD	=STANDARD	=STANDARD	0.075 MM	0.075 MM
SPEAKER	*	Y	0.3 MM	0.19MM	10 MM	0.075 MM	0.075 MM

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
DEFAULT	*	0.08 MM	?
STANDARD	*	=DEFAULT	?
BGA	*	=DEFAULT	?

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
*	BGA	BGA

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
*	*	BGA	BGA
CLK	*	BGA	BGA
PWR	*	*	PWR_P1SPACING
GND	*	*	GND_P1SPACING
SWITCHNODE	*	*	SWITCHNODE
PWR	*	*	PWR_P1SPACING
ANLG	*	*	3:1_SPACING
CRYSTAL	*	*	3:1_SPACING
JTAG	*	*	2:1_SPACING
I2S_ST	*	*	2:1_SPACING
I2S_ST	I2S_ST	*	1.5:1_SPACING

NOTES:

- 0.075 MM ~ 3 MIL
- 0.089 MM ~ 3.5 MIL
- 0.102 MM ~ 4 MIL
- 0.114 MM ~ 4.5 MIL
- 0.125 MM ~ 5 MIL
- 0.140 MM ~ 5.5 MIL
- 0.15 MM ~ 6 MIL
- 0.18 MM ~ 7 MIL
- 0.2 MM ~ 8 MIL
- 0.25 MM ~ 10 MIL
- 0.3 MM ~ 12 MIL
- 0.33 MM ~ 13 MIL
- 0.4 MM ~ 16 MIL
- 1.0 MM = 39.37 MIL

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
1:1_SPACING	*	0.075 MM	?
1.5:1_SPACING	*	0.114 MM	?
1.8:1_SPACING	*	0.136 MM	?
2:1_SPACING	*	0.152 MM	?
2.5:1_SPACING	*	0.190 MM	?
3:1_SPACING	*	0.228 MM	?
4:1_SPACING	*	0.304 MM	?
0P64MM_SPACING	*	0.64 MM	?
0P5MM_SPACING	*	0.5 MM	?
PWR_P1SPACING	*	0.1 MM	900
GND_P1SPACING	*	0.1 MM	950
SWITCHNODE	*	0.5 MM	1000
SWITCHNODE	TOP, BOTTOM	0.2 MM	1000

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SYNC MASTER=MIAMI		SYNC DATE=09/16/2009	
PHYSICAL/SPACING RULES			
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TP_LVDS_DATAP3 TP_LVDS_DATAP3 - @lost_lib.LOST 9C6
TP_LVDS_VSYNC_OUT TP_LVDS_VSYNC_OUT - @lost_lib.LOST 5D6 32C2
TP_PCIE_PER1_N TP_PCIE_PER1_N - @lost_lib.LOST 9B4
TP_PCIE_PER1_P TP_PCIE_PER1_P - @lost_lib.LOST 9B4
TP_PCIE_PER2_N TP_PCIE_PER2_N - @lost_lib.LOST 9B4
TP_PCIE_PER2_P TP_PCIE_PER2_P - @lost_lib.LOST 9B4
TP_PCIE_PET1_N TP_PCIE_PET1_N - @lost_lib.LOST 9B4
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TP_PCIE_PET2_P TP_PCIE_PET2_P - @lost_lib.LOST 9B4
TP_SCART_CVBS TP_SCART_CVBS - @lost_lib.LOST 94C5
TP_SCART_VGA_B TP_SCART_VGA_B - @lost_lib.LOST 94C5
TP_SCART_VGA_G TP_SCART_VGA_G - @lost_lib.LOST 94C5
TP_SCART_VGA_R TP_SCART_VGA_R - @lost_lib.LOST 94C5
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TP_SCH_RESVRD0 TP_SCH_RESVRD0 - @lost_lib.LOST 9D4
TP_SCH_RESVRD8 TP_SCH_RESVRD8 - @lost_lib.LOST 9D4
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TP_SCH_SD1_CLK TP_SCH_SD1_CLK - @lost_lib.LOST 9B6
TP_SCH_SD2_CLK TP_SCH_SD2_CLK - @lost_lib.LOST 9B6
TP_U0600_G28 TP_U0600_G28 - @lost_lib.LOST 6B5
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TP_U0600_U30 TP_U0600_U30 - @lost_lib.LOST 6B5
TP_U0600_V27 TP_U0600_V27 - @lost_lib.LOST 6B5
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TP_USB_D_N TP_USB_D_N - @lost_lib.LOST 10D7 103B4
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TP_WL_TRST_L TP_WL_TRST_L - @lost_lib.LOST 96B3
TVCLK_N TVCLK_N - @lost_lib.LOST 94B7 101B4
TVCLK_P TVCLK_P - @lost_lib.LOST 94B7 101B4
TVOUT_DOCKS_EN TVOUT_DOCKS_EN - @lost_lib.LOST 10B4 10C2 75B8
U6700_R1 U6700_R1 - @lost_lib.LOST 67B6
U6700_R2 U6700_R2 - @lost_lib.LOST 67B6
U6700_R3 U6700_R3 - @lost_lib.LOST 67B6
U6700_R4 U6700_R4 - @lost_lib.LOST 67B6
U6710_R1 U6710_R1 - @lost_lib.LOST 67B3
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U6710_R4 U6710_R4 - @lost_lib.LOST 67B3
USBA_EXT_NR USBA_EXT_NR - @lost_lib.LOST 35D6
USBA_EXT_PR USBA_EXT_PR - @lost_lib.LOST 35D6
USBA_GATE USBA_GATE - @lost_lib.LOST 18D3
USBA_GATE_D USBA_GATE_D - @lost_lib.LOST 18C3
USBA_PWR_DETECT_L USBA_PWR_DETECT_L - @lost_lib.LOST 18D2 28B8
USBA_PWR_SLCT USBA_PWR_SLCT - @lost_lib.LOST 18C2 28C8
USBB_EXT_NR USBB_EXT_NR - @lost_lib.LOST 35B6
USBB_EXT_PR USBB_EXT_PR - @lost_lib.LOST 35C6
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USBCC USBCC - @lost_lib.LOST 10B5 28B5
USB_BT_N USB_BT_N - @lost_lib.LOST 10D7 97C5 103C4
USB_BT_P USB_BT_P - @lost_lib.LOST 10D7 97C5 103C4
USB_CAMERA_CONN_N USB_CAMERA_CONN_N - @lost_lib.LOST 5B6 46C6 103D4
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USB_CAMERA_P USB_CAMERA_P - @lost_lib.LOST 10D7 46C6 103D4
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USB_C_P USB_C_P - @lost_lib.LOST 10D7 35A4 103D4
USB_DOCKS_MUX_N USB_DOCKS_MUX_N - @lost_lib.LOST 10D7
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USB_FLASH_CON_P USB_FLASH_CON_P - @lost_lib.LOST 65C5 103D4
USB_FLASH_N USB_FLASH_N - @lost_lib.LOST 10D7 65B6 103D4
USB_FLASH_P USB_FLASH_P - @lost_lib.LOST 10D7 65C6 103D4
USB_GRAPE_N USB_GRAPE_N - @lost_lib.LOST 10D7 30D4 103C4
USB_GRAPE_P USB_GRAPE_P - @lost_lib.LOST 10D7 30D4 103C4
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USB_LAND_DOCK_P USB_LAND_DOCK_P - @lost_lib.LOST 35A3 35D5 50D3 103D4
USB_PORT_DOCK_N USB_PORT_DOCK_N - @lost_lib.LOST 35A3 35C5 51D3 103D4
USB_PORT_DOCK_P USB_PORT_DOCK_P - @lost_lib.LOST 35A3 35C5 51D3 103D4
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USB_PWR_B USB_PWR_B - @lost_lib.LOST 18C3 51D7
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VCORE_BG VCORE_BG - @lost_lib.LOST 20C5
VCORE_BOOST VCORE_BOOST - @lost_lib.LOST 20C5
VCORE_BOOST_RCD VCORE_BOOST_RCD - @lost_lib.LOST 20D4
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VCORE_FBP VCORE_FBP - @lost_lib.LOST 20C6
VCORE_GND VCORE_GND - @lost_lib.LOST 20A4 20B6 20C8
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VCORE_RAMP VCORE_RAMP - @lost_lib.LOST 20B5
VCORE_SS VCORE_SS - @lost_lib.LOST 20C6
VCORE_TG VCORE_TG - @lost_lib.LOST 20C5
VCORE_TTRIP VCORE_TTRIP - @lost_lib.LOST 20C6
VCORE_VCCA VCORE_VCCA - @lost_lib.LOST 20D6
VCORE_VREF VCORE_VREF - @lost_lib.LOST 20C4 20C8
VR_PWRGD_CLKEN_L VR_PWRGD_CLKEN_L - @lost_lib.LOST 20A7 20C4
VSSAPCIEBG VSSAPCIEBG - @lost_lib.LOST 12B2
WL_HOST_WAKE WL_HOST_WAKE - @lost_lib.LOST 28A8 96B3
WL_RESET_L WL_RESET_L - @lost_lib.LOST 28D5 96B3
WL_WAKE_L WL_WAKE_L - @lost_lib.LOST 29B4
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XTAL_FLASH_OUT XTAL_FLASH_OUT - @lost_lib.LOST 66C6
Y9400_2 Y9400_2 - @lost_lib.LOST 94A7
Y_PR Y_PR - @lost_lib.LOST 75B8 94B3 101B7
Z1_V18_OUT Z1_V18_OUT - @lost_lib.LOST 31D4 31D5
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Z1_BON_L<1> Z1_BON_L<1> - @lost_lib.LOST 30C8 31C3
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Z1_BON_L<5> Z1_BON_L<5> - @lost_lib.LOST 30D6 31C3
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Z1_B_ADDR<2> Z1_B_ADDR<2> - @lost_lib.LOST 30C8 30D6 30D7 31C3
Z1_CS_L Z1_CS_L - @lost_lib.LOST 31C6 31D3
Z1_DONE Z1_DONE - @lost_lib.LOST 31C3 31C6
Z1_GO Z1_GO - @lost_lib.LOST 31C3 31C6
Z1_MISO Z1_MISO - @lost_lib.LOST 31B6 31C3
Z1_MOSI Z1_MOSI - @lost_lib.LOST 31B6 31C3
Z1_PCLK Z1_PCLK - @lost_lib.LOST 31C3 31C6
Z1_SCLK Z1_SCLK - @lost_lib.LOST 31C6 31D3
Z1_STWIN Z1_STWIN - @lost_lib.LOST 31C3
Z2_3V3_V18_IN Z2_3V3_V18_IN - @lost_lib.LOST 31D6
Z2_VDDANA Z2_VDDANA - @lost_lib.LOST 31D8
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D

C

B

A

D

C

B

A

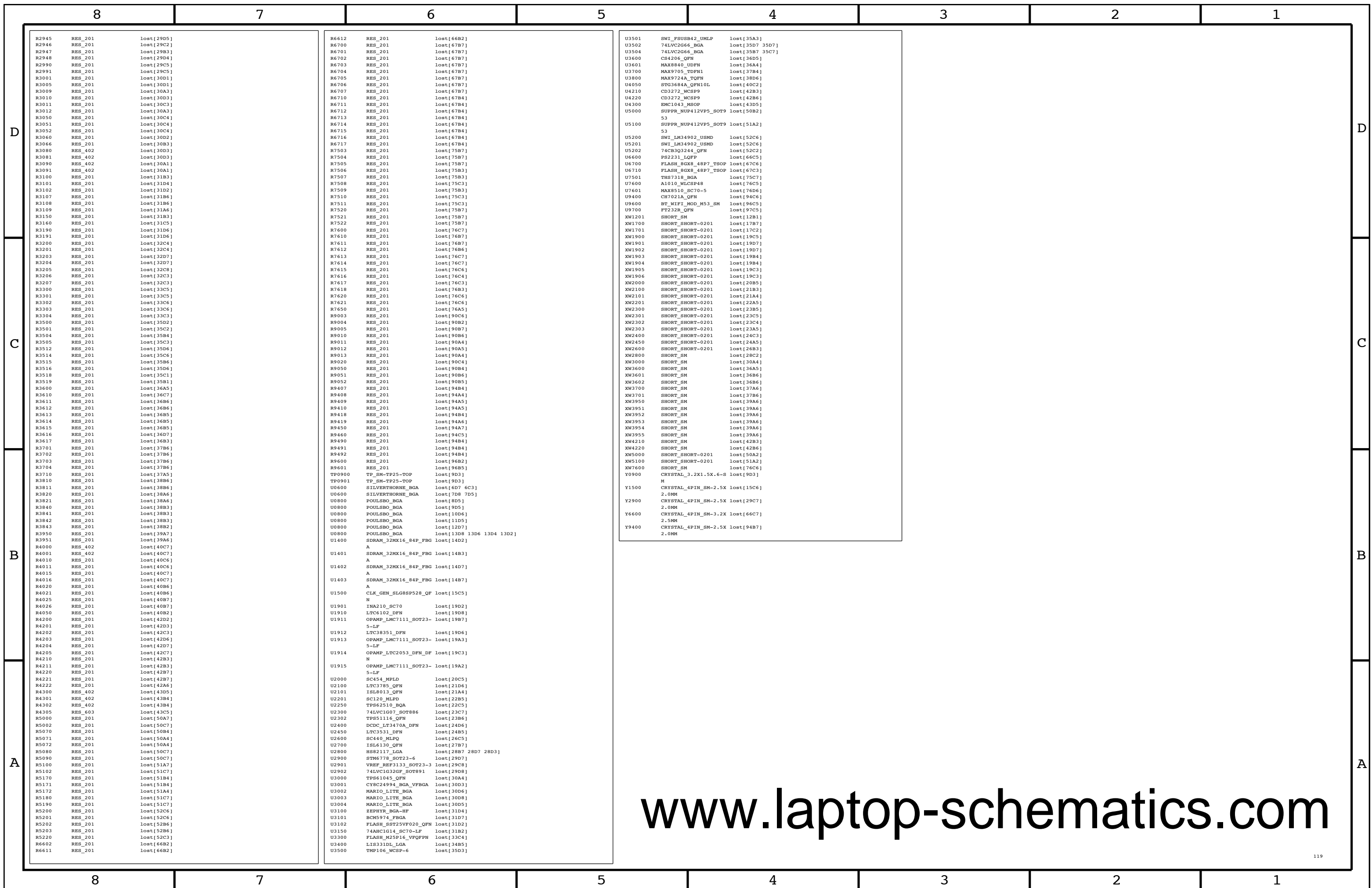
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Title: Cref Part Report
Design: lost
Date: Feb 19 11:01:06 2008

C0500	CAP_1210	lost[501]
C0501	CAP_1210	lost[501]
C0502	CAP_1210	lost[501]
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C0507	CAP_1210	lost[501]
C0508	CAP_1210	lost[501]
C0509	CAP_1210	lost[501]
C0600	CAP_201	lost[686]
C0601	CAP_201	lost[684]
C0700	CAP_402	lost[704]
C0701	CAP_402	lost[703]
C0702	CAP_201	lost[703]
C0703	CAP_402	lost[703]
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C0705	CAP_402	lost[704]
C0706	CAP_402	lost[703]
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C0719	CAP_402	lost[706]
C0750	CAP_402	lost[703]
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C4211	CAP_201	lost[4



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R2946	RES_201	lost[29C2]
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R2948	RES_201	lost[29D4]
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R3206	RES_201	lost[32C3]
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R3302	RES_201	lost[33C6]
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R4203	RES_201	lost[42D6]
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R4220	RES_201	lost[42B7]
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R4222	RES_201	lost[42A6]
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R4302	RES_402	lost[43B4]
R4305	RES_603	lost[43C5]
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R5002	RES_201	lost[50C7]
R5070	RES_201	lost[50B4]
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R7618	RES_201	lost[76B3]
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R9005	RES_201	lost[90B7]
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R9051	RES_201	lost[90B6]
R9052	RES_201	lost[90B5]
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R9408	RES_201	lost[94A4]
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R9601	RES_201	lost[96B5]
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TP0901	TP_SM-TP25-TOP	lost[9D3]
U0600	SILVERTHORNE_BGA	lost[6D7 6C3]
U0600	SILVERTHORNE_BGA	lost[7D8 7D5]
U0800	POULSBO_BGA	lost[8D5]
U0800	POULSBO_BGA	lost[9D5]
U0800	POULSBO_BGA	lost[10D6]
U0800	POULSBO_BGA	lost[11D5]
U0800	POULSBO_BGA	lost[12D7]
U0800	POULSBO_BGA	lost[13D8 13D6 13D4 13D2]
U1400	SDRAM_32MX16_84P_FBG	lost[14D2]
U1401	SDRAM_32MX16_84P_FBG	lost[14B3]
U1402	SDRAM_32MX16_84P_FBG	lost[14D7]
U1403	SDRAM_32MX16_84P_FBG	lost[14B7]
U1500	CLK_GEN_SLG8SP528_QF	lost[15C5]
U1901	INA210_SC70	lost[19D2]
U1910	LTC6102_DFN	lost[19D8]
U1911	OPAMP_LMC7111_SOT23--	lost[19B7]
U1912	LTC38351_DFN	lost[19D6]
U1913	OPAMP_LMC7111_SOT23--	lost[19A3]
U1914	OPAMP_LTC2053_DFN_DF	lost[19C3]
U1915	OPAMP_LMC7111_SOT23--	lost[19A2]
U2000	SC454_MPLD	lost[20C5]
U2100	LTC3785_QFN	lost[21D6]
U2101	ISL8013_QFN	lost[21A4]
U2201	SC120_MLDP	lost[22B5]
U2250	TPS62510_BQA	lost[22C5]
U2300	74LVC1G07_SOT886	lost[23C7]
U2302	TPS51116_QFN	lost[23B6]
U2400	DCDC_LTC470A_DFN	lost[24D6]
U2450	LTC3531_DFN	lost[24B5]
U2600	SC440_MLPO	lost[26C5]
U2700	ISL6130_QFN	lost[27B7]
U2800	HS82117_LGA	lost[28B7 28D7 28D3]
U2900	STM6778_SOT23-6	lost[29D7]
U2901	VREF_REF3133_SOT23-3	lost[29C8]
U2902	74LVC1G32CF_SOT891	lost[29D8]
U3000	TPS61045_QFN	lost[30A4]
U3001	CY8C24994_BGA_VFBGA	lost[30D3]
U3002	MARIO_LITE_BGA	lost[30D6]
U3003	MARIO_LITE_BGA	lost[30D8]
U3004	MARIO_LITE_BGA	lost[30D5]
U3100	ZEPHYR_BGA-HF	lost[31D4]
U3101	BCM5974_FBGA	lost[31D7]
U3102	FLASH_SST25VF020_QFN	lost[31D2]
U3150	74AHC1G14_SC70-LF	lost[31B2]
U3300	FLASH_M25P16_VFQFPN	lost[33C4]
U3400	LIS331DL_LGA	lost[34B5]
U3500	TMP106_WCSP-6	lost[35D3]

U3501	SWI_FSUSB42_UMLP	lost[35A3]
U3502	74LVC2G66_BGA	lost[35D7 35D7]
U3504	74LVC2G66_BGA	lost[35B7 35C7]
U3600	CS4206_QFN	lost[36D5]
U3601	MAX8840_UDFN	lost[36A4]
U3700	MAX9705_TDFN1	lost[37B4]
U3800	MAX9724A_TQFN	lost[38D6]
U4050	STG3684A_QFN10L	lost[40C2]
U4210	CD3272_WCSP9	lost[42B3]
U4220	CD3272_WCSP9	lost[42B6]
U4300	EMC1043_MSOP	lost[43D5]
U5000	SUPPR_NUP412VP5_SOT9	lost[50B2]
U5100	SUPPR_NUP412VP5_SOT9	lost[51A2]
U5200	SWI_LM34902_USMD	lost[52C6]
U5201	SWI_LM34902_USMD	lost[52C6]
U5202	74CB303244_QFN	lost[52C2]
U6600	PS2231_IQFP	lost[66C5]
U6700	FLASH_8GX8_48P7_TSOP	lost[67C6]
U6710	FLASH_8GX8_48P7_TSOP	lost[67C3]
U7501	THS7318_BGA	lost[75C7]
U7600	A1010_WLCSP48	lost[76C5]
U7601	MAX8510_SC70-5	lost[76D6]
U9400	CH7021A_QFN	lost[94C6]
U9600	BT_WIFI_MOD_M53_SM	lost[96C5]
U9700	FT232R_QFN	lost[97C5]
XW1201	SHORT_SM	lost[12B1]
XW1700	SHORT_SHORT-0201	lost[17B7]
XW1701	SHORT_SHORT-0201	lost[17C2]
XW1900	SHORT_SHORT-0201	lost[19C5]
XW1901	SHORT_SHORT-0201	lost[19D7]
XW1902	SHORT_SHORT-0201	lost[19D7]
XW1903	SHORT_SHORT-0201	lost[19B4]
XW1904	SHORT_SHORT-0201	lost[19B4]
XW1905	SHORT_SHORT-0201	lost[19C3]
XW1906	SHORT_SHORT-0201	lost[19C3]
XW2000	SHORT_SHORT-0201	lost[20B5]
XW2100	SHORT_SHORT-0201	lost[21B3]
XW2101	SHORT_SHORT-0201	lost[21A4]
XW2201	SHORT_SHORT-0201	lost[22A5]
XW2300	SHORT_SHORT-0201	lost[23B5]
XW2301	SHORT_SHORT-0201	lost[23C5]
XW2302	SHORT_SHORT-0201	lost[23C4]
XW2303	SHORT_SHORT-0201	lost[23A5]
XW2400	SHORT_SHORT-0201	lost[24C3]
XW2450	SHORT_SHORT-0201	lost[24A5]
XW2600	SHORT_SHORT-0201	lost[26B3]
XW2800	SHORT_SM	lost[28C2]
XW3000	SHORT_SM	lost[30A4]
XW3600	SHORT_SM	lost[36A5]
XW3601	SHORT_SM	lost[36B6]
XW3602	SHORT_SM	lost[36B6]
XW3700	SHORT_SM	lost[37A6]
XW3701	SHORT_SM	lost[37B6]
XW3950	SHORT_SM	lost[39A6]
XW3951	SHORT_SM	lost[39A6]
XW3952	SHORT_SM	lost[39A6]
XW3953	SHORT_SM	lost[39A6]
XW3954	SHORT_SM	lost[39A6]
XW3955	SHORT_SM	lost[39A6]
XW4210	SHORT_SM	lost[42B3]
XW4220	SHORT_SM	lost[42B6]
XW5000	SHORT_SHORT-0201	lost[50A2]
XW5100	SHORT_SHORT-0201	lost[51A2]
XW7600	SHORT_SM	lost[76C6]
Y0900	CRYSTAL_3.2X1.5X.6-S	lost[9D3]
Y1500	CRYSTAL_4PIN_SM-2.5X	lost[15C6]
Y2900	CRYSTAL_4PIN_SM-2.5X	lost[29C7]
Y6600	CRYSTAL_4PIN_SM-3.2X	lost[66C7]
Y9400	CRYSTAL_4PIN_SM-2.5X	lost[94B7]

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