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.

K36 MLB SCHEMATIC

REFERENCED FROM M70
8/9/2007

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

K36 EE DRIS:
RX-RAYMOND XU
DK-DINESH KUMAR
RC-RAY CHANG
MK-MARC KLINGELHOFER
LT-LAWRENCE TAN
LD-LINDA DUNN
MM-MARY(YUAN) MA

DVT BUILD

Schematic / PCB #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-7455	1	SCHEM,MLB,K36	SCH	CRITICAL	
820-2279	1	PCBF,MLB,K36	PCB	CRITICAL	

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

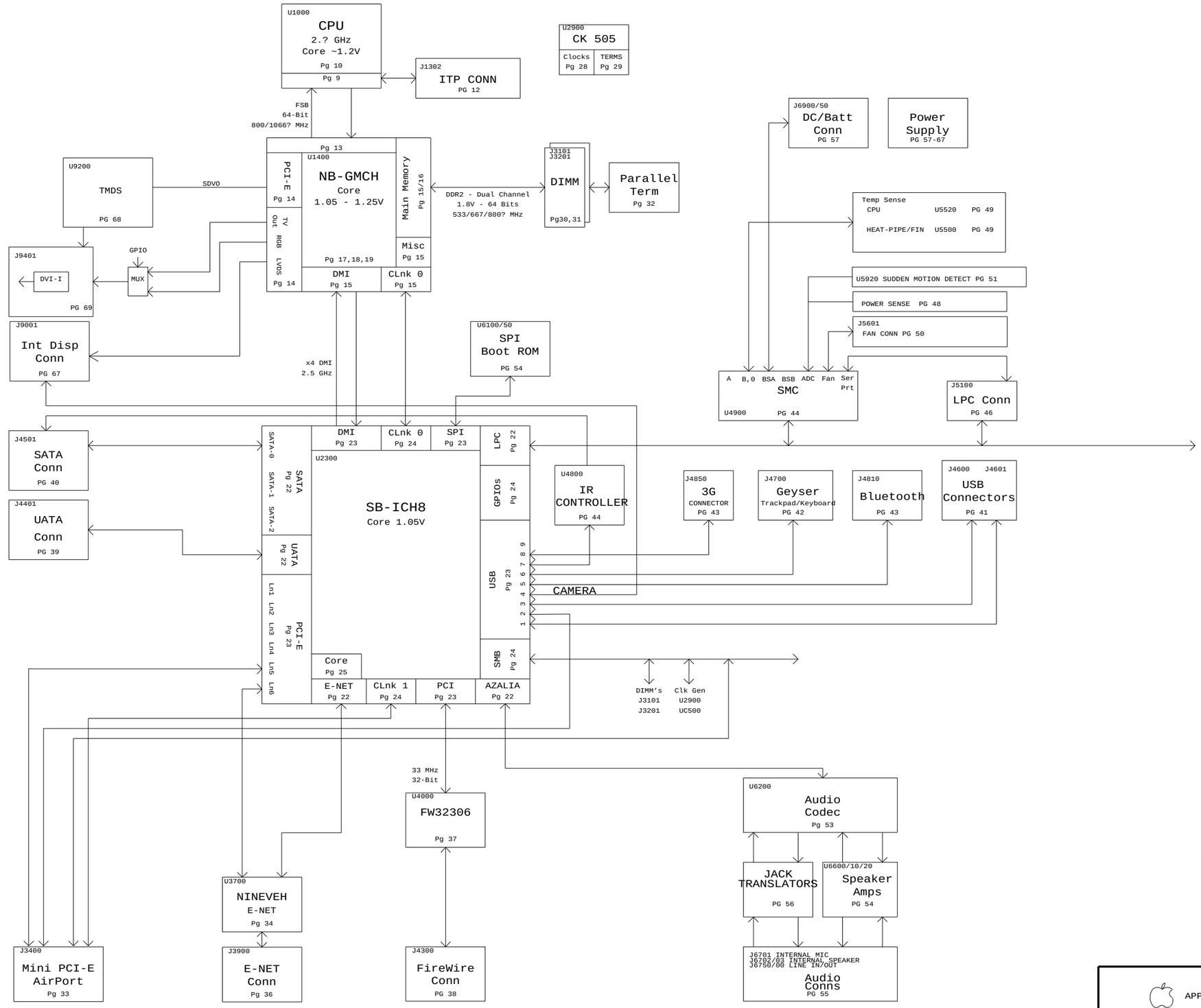
METRIC

DRAFTER		DESIGN CK	
ENG APPD		MFG APPD	
QA APPD		DESIGNER	
RELEASE		SCALE	NONE

MATERIAL/FINISH NOTED AS APPLICABLE
SIZE D

APPLE INC.

TITLE: SCHEM,MLB,K36
DRAWING NUMBER: 051-7455
REV. 01
SHT 1 OF 76



System Block Diagram

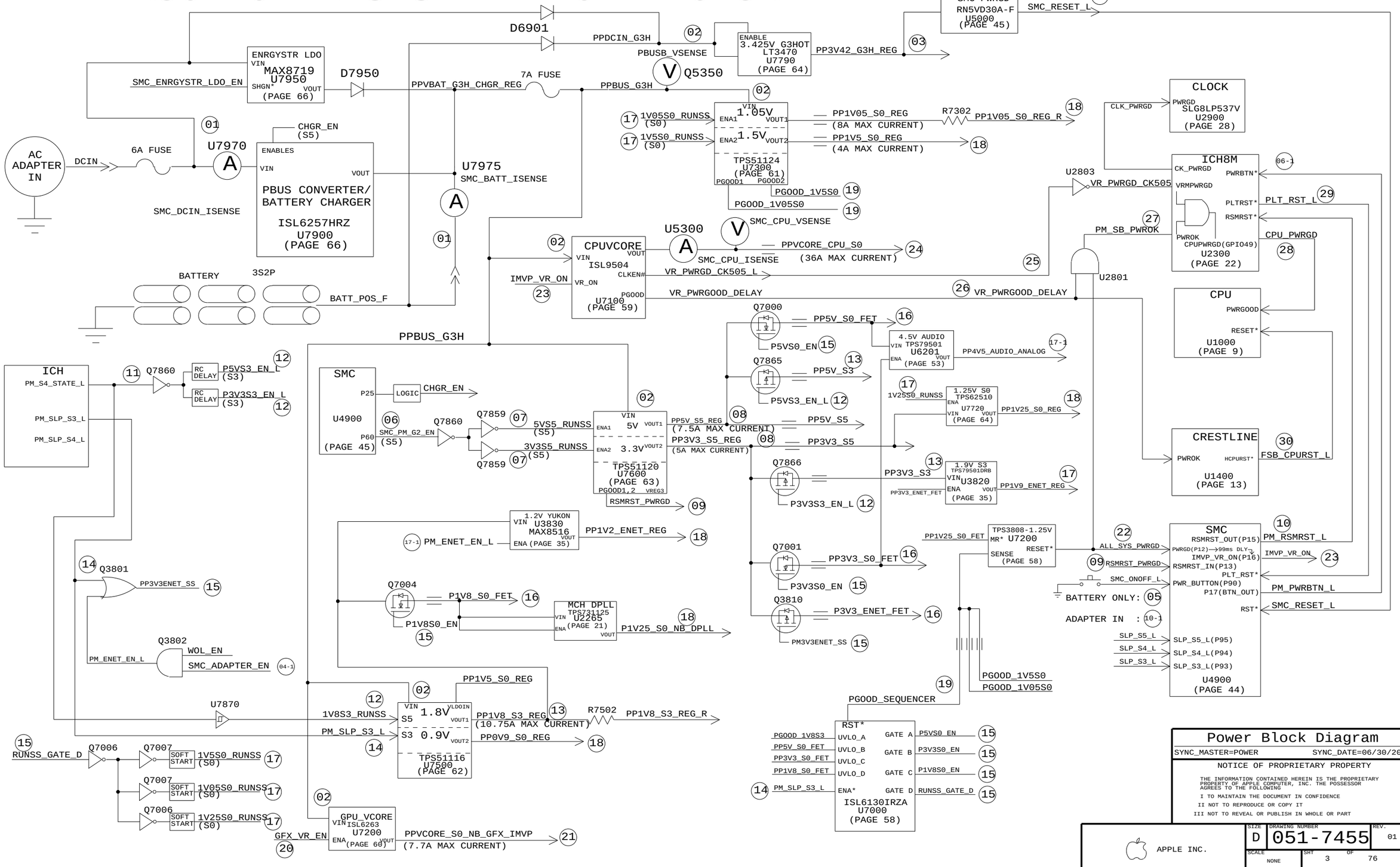
SYNC_MASTER=WFERRY-WF SYNC_DATE=05/11/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	2	76

K36 POWER SYSTEM ARCHITECTURE



Power Block Diagram

SYNC_MASTER=POWER SYNC_DATE=06/30/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 3 OF 76

Page Notes

Power aliases required by this page:
(NONE)

Signal aliases required by this page:
(NONE)

BOM options provided by this page:
(NONE)

BOARD STACK-UP AND CONSTRUCTION

Top		SIGNAL
2		GROUND
3		SIGNAL(High Speed)
4		SIGNAL(High Speed)
5		GROUND
6		POWER
7		POWER
8		GROUND
9		SIGNAL(High Speed)
10		SIGNAL(High Speed)
11		GROUND
BOTTOM		SIGNAL

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
337S3463	1	IC,MDC,SR,E1,2.0G,800FSB,4M,BGA	U1000	CRITICAL	GOOD
337S3500	1	IC,MDC,SR,G0,2.2G,800FSB,4M,BGA	U1000	CRITICAL	BETTER
337S3500	1	IC,MDC,SR,G0,2.2G,800FSB,4M,BGA	U1000	CRITICAL	BEST

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S0448	1	IC,CRESTLINE,GM965,667	U1400	CRITICAL	K36
338S0434	1	IC,ICH8,BGA	U2300	CRITICAL	K36
516-0162	2	IN-LINE SODIMM CONNECTOR	J3101,J3201	CRITICAL	K36

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S2196	1	IC,16MBIT 8PIN SPI SERIAL FLASH,SOIC8	U6100	CRITICAL	K36_PGM
341S2060	1	IC,EEPROM,SERIAL IIC,8KBIT,SO8	U3780	CRITICAL	K36_PGM
341S2198	1	IC,SMC,HS8/2116	U4900	CRITICAL	K36_PGM
341S2093	1	IC,CYPRESS,CY7C63833,ENCORE_II,USB_CONTR	U4800	CRITICAL	K36_PGM

LOCKED BOOTROM PN 341S2197

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:Z55	CRITICAL	GOOD
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:Z56	CRITICAL	BETTER
826-4393	1	LBL,P/N LABEL,PCB,28MMX6MM	EEE:Z57	CRITICAL	BEST

MLB STACKUP

LAYER		THICKNESS (MM)	TRACE WIDTH (MM)
CONFORMAL_COAT		0.018	
L1	SIGNAL(TOP)	0.047	0.1
L1-L2		0.07	
L2	GROUND	0.014	---
L2-L3		0.076	
L3	SIGNAL	0.014	0.079
L3-L4		0.156	
L4	SIGNAL	0.014	0.079
L4-L5		0.076	
L5	GND	0.014	---
L5-L6		0.07	
L6	POWER	0.031	---
L6-L7		0.076	
L7	POWER	0.031	---
L7-L8		0.07	
L8	GROUND	0.014	---
L8-L9		0.076	
L9	SIGNAL	0.014	0.1
L9-L10		0.156	
L10	SIGNAL	0.014	0.1
L10-L11		0.076	
L11	GROUND	0.014	0.1
L11-L12		0.07	
L12	SIGNAL(BOTTOM)	0.047	0.1
CONFORMAL_COAT		0.018	
TOTAL		1.276	---

BOM OPTION

BOMOPTION	K36 GOOD 630-9104 EVT	K36 BETTER 630-9105 EVT	K36 BEST 630-9106 EVT	M70 GOOD 630-7935 CONCEPT
COMMON	V	V	V	V
ALTERNATE	V	V	V	V
ARB_ONLY				
K36	V	V	V	V
LPCPLUS	V	V	V	V
INVERTER_BUF	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	V
INVERTER_UNBUF	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	
ITP	V	V	V	V
NO_REBOOT_MODE				
NBCFG_DMI_REVERSE				
NBCFG_DMI_X2				
NBCFG_DYN_ODT_DISABLE				
NBCFG_PEG_REVERSE				
NBCFG_SDVO_AND_PCIE				
GOOD	V			V
BETTER		V		
BEST			V	
K36_PGM	V	V	V	V
YUKON_EC				
YUKON_ULTRA	V	V	V	V
NORMAL	V	V		V
FANCY			V	
STANDOFF	V	V	V	V
ODD_PWR_CORE	V	V	V	V
ODD_PWR_RESUME				
ISL6126	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	
ISL6130	BOM OPTION REMOVED	BOM OPTION REMOVED	BOM OPTION REMOVED	V

BOM TABLE FOR HF POSCAPS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
128S0147	4	HF VERSION OF 128S0057	C4610,C4611,C6830,C6831	CRITICAL	K36
128S0164	3	HF VERSION OF 128S0073	C2130,C2716,C7543	CRITICAL	K36
128S0148	1	HF VERSION OF 128S0085	C6605	CRITICAL	K36
128S0169	3	HF VERSION OF 128S0111	C7220,C7352,C7542	CRITICAL	K36
128S0160	2	HF VERSION OF 128S0113	C2173,C2700	CRITICAL	K36
128S0150	6	HF VERSION OF 128S0115	C6204 C6205,C7651,C7652,C7691,C7692	CRITICAL	K36
128S0157	1	HF VERSION OF 128S0122	C2220	CRITICAL	K36
128S0162	1	HF VERSION OF 128S0123	C2140	CRITICAL	K36
128S0135	2	HF VERSION OF 128S0129	C6601,C6603	CRITICAL	K36

CONFIGURATION OPTIONS

SYNC_MASTER=SMC SYNC_DATE=07/18/2005

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 4 OF 76

Revision History

M70 PROTO TO EVT CHANGES

- WAKE-ON-WIRELESS SUPPORT - RADAR: 4954357
- ADD ISOLATION BUFFER FOR ODD_RESET_L SIGNAL, ADD 100K PULL-DOWN TO ODD_PWR_EN_L, ADD ‘DRAG’ CIRCUIT TO
PROPERLY DISCHARGE ODD POWER WHEN IT’S TURNED OFF - RADAR: 4923903
- ADD 270K PULL-DOWN RESISTOR ON HTPLG - RADAR: 4888755
- LOWER RDS(ON) MOSFET (FDC606P - APN: 376S0552) FOR ODD AND LCD POWER - RADAR: TBD
- HIGH-PRECISION 0.1% RESISTORS TO INCREASE OUTPUT VOLTAGE REGULATION (5V, 3.3V, PBUS_LDO) ACCURACY - RADAR:4972500
- FIX LINDA CARD POWER ALIAS (NEED TO CONNECT TO PP3V42_G3HOT INSTEAD OF PP3V3_S5) - RADAR: 4927858
- FIX MOJO-CARD SMC TX, RX REVERSAL - RADAR: 4910888
- NO STUFF 3G CONNECTOR CIRCUITRY
- CHANGE BOM STUFFING TO SPEED UP PORT POWER SHUT-OFF RESPONSE TIME DURING ACTIVE LATE-VG EVENT (RADAR: 4985252)
- CHANGE BOM STUFFING TO ENABLE ON-BOARD MICROPHONE CONNECTOR (M42/M42A SOLUTION) INSTEAD OF ROUTING
MICROPHONE THROUGH LVDS CABLE
- CHANGE LOAD CAP STUFFING OPTION FOR RTC AND ETHERNET CRYSTALS TO MEET 5XESR (-R) REQUIREMENT
- CHANGE 10UF, 16V CPU VCORE CAPS TO 10UF, 6.3V CAPS - RADAR: 4952553
- MOVE SMC RESET BUTTON PAD TO TOP SIDE OF MLB - RADAR: 4920913
- MODIFY FIREWIRE CONNECTOR SYMBOL TO SUPPORT MINI-DVI CONNECTOR WITH TAB
- TEST POINT MOVEMENTS REQUESTED BY ICT AND MAC-1 GROUPS - RADAR: 4924481

M70 EVT TO DVT CHANGES

3/5/2007
CSA PAGE 8:
- 4954357 ADD =PP3V3_S3_AIRPORT_AUX BACK TO PP3V3_S3 ALIAS.
CSA PAGE 34:
- 4954357 BREAK OUT =PP3V3_S3_AIRPORT_AUX(J3400,PIN 24) FROM PP3V3_S3_AP_AUX_AGAIN.
- 4954357 MOVE C3409 AND C3410 FROM PP3V3_S3_AP_AUX RAIL TO =PP3V3_S3_AIRPORT_AUX RAIL.
CSA PAGE 49:
- 5040728 STUFF C9421 FOR EMI.
CSA PAGE 62,66,67,68:
- SYNC FROM AUDIO TEAM.
CSA PAGE 67:
- 4999533 SWAP PIN 2 AND PIN 3 OF MIC CONNECTOR, BACK TO M42 PIN OUT.
CSA PAGE 78:
- 5029811 CHANGE Q7940 FROM 376S0326 TO 376S0558.

3/8/2007
CSA PAGE 22:
- 4986074 CHANGE L2205 TO R2205(100OHM,5%,1/10W,0603).
CSA PAGE 25:
- 4924143 CHANGE R2514 FROM 100K PULL-DOWN TO 10K PULL-UP TO 3.3V_S5.
CSA PAGE 77:
- 5040877 SYNC 1P25V REGULATOR CIRCUIT FROM M82. CHANGE R_AND C_TO 0402. CHANGE =PP3V3_S5_P1V25S0 TO =PP3V3_S5_1V25S0,
 C7723 FROM 2.2UF TO 10000PF, C7724 FROM 22PF TO 1000PF, C7728 FROM 2.2NF TO 10000PF,
 AND REVERT REFERENCE DESIGNATORS. (CHANGE FROM TPS62510 TO LTC3412A)

3/12/2007
CSA PAGE 25:
- 4924143 CHANGE R2514 FROM 100K PULL-UP TO 47K PULL-UP.
CSA PAGE 45:
- UPDATE SYMBOL FOR J4501.
CSA PAGE 62,66,67,68:
- SYNC FROM AUDIO TEAM.
CSA PAGE 94:
- 4986074 CHANGE R9469 FOR CRT_TVO_IREF FROM 1.3K TO 1.21K.

3/14/2007
CSA PAGE 47:
- ADD TEXT NOTE TO UPDATE J4700 FROM 516S0251 TO 516S0588 WHEN SYMBOL IS READY.
CSA PAGE 69:
- ADD TEXT NOTE TO UPDATE J6900 FROM 518S0287 TO 518S0526 WHEN SYMBOL IS READY.
CSA PAGE 90:
- DELETE LVDS_VREFH AND LVDS_VREFL TO GROUND TO FIX LVDS GLITCH.
CSA PAGE 94:
- ADD TEXT NOTE TO CHANGE L9404 FROM 155S0303 TO 155S0348 WHEN SYMBOL IS READY.

M70 DVT TO K36 CHANGES

6/29/2007
CSA PAGE 4:
- CHANGE GOOD CPU FROM 337S3471(1.8G) TO 337S3463(2.0G).
- CHANGE BETTER CPU FROM 337S3470(2.0G) TO 337S3464(2.2G).
- CHANGE BEST CPU FROM 337S3469(2.2G) TO 337S3465(2.4G).
- CHANGE U8 FROM 338S0428(800MHz) TO 343S0448(667M).
- CHANGE U6 FROM 338S0427 TO 338S0434.
CSA PAGE 16:
- DISCONNECT GFX_VID<0> TO GND.
- CONNECT GFX_VID<0:3> TO GFX_VID0:3 ON NB.
- ADD R1600 (00HM, 0402) TO CONNECT GFX_VID<4> TO GND.
CSA PAGE 22:
- 5209756 ADD C2207 (0.1UF, 0402).
- SIZING DOWN R2205 FROM 0603 TO 0402 FOR PLACEMENT.
- CHANGE GFX_VID<1:4> TO GFX_VID0:3>.
- CHANGE STRAPPING FROM 0010 ON GFX_VID<1:4> TO 0001 ON GFX_VID<0:3>.
CSA PAGE 39:
- CHANGE J3900 FROM 514S0143 TO 514-0443.
- EDIT BOM OPTION TABLE.
CSA PAGE 46:
- CHANGE U4600 FROM 353S1245 TO 353S1728.
- REMOVE MIN_NECK_WIDTH=0.3MM FROM PP5V_S3_USB2_EXTA/B.
- ADD NOSTUFF R4660 AND R4661.
CSA PAGE 47:
- CHANGE J4700 FROM 516S0251 TO 516S0588.
CSA PAGE 68:
- CHANGE J6900 FROM 518S0287 TO 518S0526.
- REPLACE BATTERY INTERFACE CIRCUIT WITH THE ONE ON M42B ESTAR.
CSA PAGE 94:
- 5040728 CHANGE L9404 FROM 155S0303 TO 155S0348.

7/5/2006
CSA PAGE 4:
- REPLACE ALL M70 WITH K36 (TEXT, BOM OPTIONS, 630 NUMBERS).
CSA PAGE 21:
- CHANGE C2173 FROM 128S0051 TO 128S0113 PER CE.
CSA PAGE 27:
- CHANGE C2700 FROM 128S0051 TO 128S0113 PER CE.
CSA PAGE 28:
- CHANGE J2800 FROM 518S0487 TO 518S0519.
CSA PAGE 45:
- REMOVE R4660 AND R4601 (U4675 BYPASS RESISTORS).
CSA PAGE 48:
- CHANGE J4810 FROM 518S0369 TO 518S0521.
CSA PAGE 55:
- CHANGE D5500 FROM M70 EMC1033 CIRCUIT TO M71 EMC1043 CIRCUIT.
- 15SSD CHANGES FROM 2PIN TO 4PIN.
CSA PAGE 56:
- CHANGE J5601 FROM 518S0369 TO 518S0521.
CSA PAGE 67:
- CHANGE J6702 FROM 518S0487 TO 518S0519.
- CHANGE J6703 FROM 518S0369 TO 518S0521.
CSA PAGE 69:
- CHANGE J9000 FROM 518S0369 TO 518S0521.

7/6/2006
CSA PAGE 8:
- REMOVE NO_TEST=TRUE FOR 1V8S3_COMP, 1V8S3_FSET, 3V3S5_COMP, 3V3S5_FSET, 1V05S0_COMP, 1V05S0_FSET, IMVP6_RBIAS, IMVP6_COMP, 5VS5_RUNSS, 1V5S0_RUNSS.
- REMOVE NO_TEST=TRUE FOR CK505_SRC1_P/N, CK505_SRC3_P/N, CK505_SRC7_N/P_SPN, CK505_SRC1_N/P_SPN, CK505_SRC7_N/P_SPN, CK505_SRC_CLKREQ1/3_L_SPN.
- ADD FUNC_TEST=TRUE FOR THRM_FINSTACK_P/N.
- ADD FUNC_TEST=TRUE FOR PP1V05_S0_R.
CSA PAGE 9:
- REMOVE ALIASES FOR GND_CHASSIS_AUDIO_SPKRCONN,GND_CHASSIS_AUDIO_SHIELD1,GND_CHASSIS_AUDIO_SHIELD2,GND_CHASSIS_AUDIO_SHIELD3,MIC_SHIELD_LVDS_R,MIC_SHLD_CONN.
- REMOVE ALIAS FOR FEMPWR_FWRDN.
- ADD SPN ALIASES FOR TP_CK505_SRC7_N/P.
- ADD SPN ALIASES FOR CK505_PCI2/4_CLK.
CSA PAGE 12:
- REMOVE R1290 TO R1296 ON CPU_VID<0:6>.
CSA PAGE 14:
- DELETE TEXT NOTE AND WITH RESET BUTTON.
CSA PAGE 15:
- RENAME LVDS_VREFH/L TO TP_LVDS_VREFH/L.
CSA PAGE 25:
- ADD R2507 AND R2596 FOR 10K PU ON GPIO6 AND GPIO17(EXTGPU_RST_L).
- CHANGE R2514 TO 100K.
CSA PAGE 28:
- CHANGE L2902 AND L2903 FROM 155S0302 TO 0OHM R2906 AND R2907.
- NOSTUFF C2907, C2910, C2916, C2911, C2914.
- CHANGE R2900, R2901 FROM 2.2OHM TO 0OHM.
- CHANGE R2902 FROM 10HM TO 0OHM.
CSA PAGE 44:
- REMOVE TEXT NOTE WILL CHANGE TO 606P.
CSA PAGE 74:
- RE-DRAW CPU VOLTAGE SENSE RC FILTERING.
CSA PAGE 62:
- RE-CONNECTED (SHDN INPUT OF U6801 SO THAT IT’S CONTROLLED BY U6200 PORTA VREF. - DISCONNECTED GPIO1 AND TERMINATED IT WITH A 10K PULL DOWN.
- ADDED A NO STUFF ENABLE TO CODEC (VOD0 AT GPIO).
- ADDED SMALL 15PF COMPENSATION CAP. TO U6201 FEEDBACK NETWORK (C6224).
CSA PAGE 67:
- CHANGED ALL TRANSIENT SUPPRESSORS TO 6.8V/100PF DEVICES (WERE ORIGINALLY 8V/100PF DEVICES).
- ADDED L6771 AND L6773 TO MIC INPUT EMI FILTER.
- REMOVED DZ6772.
- ADDED R6740 NO STUFF.
CSA PAGE 68:
- CONNECTED MIC_SHLD_CONN TO GND_CHASSIS_AUDIO_MIC THROUGH R6854.
- ADDED R6856 NO STUFF.
CSA PAGE 71:
- RENAME CPU_VID_R<6:0> TO CPU_VID<6:0>.

7/10/2007
CSA PAGE 4:
- BOOTROM PART NUMBER CHANGES FROM 341S2085 TO 341S2196.
- EFI PART NUMBER CHANGES FROM 341S2088 TO 341S2198.
- UPDATE TEE CODES, Z9S FOR GOOD, Z5B FOR BETTER, Z57 FOR BEST.
CSA PAGE 15:
- ADD =PP3V3_S3_SMBUS_SMC_MGMT TO PP3V3_S3.
CSA PAGE 28:
- ADD CRITICAL TO U2900.
CSA PAGE 44:
- ADD CRITICAL TO U4401.
CSA PAGE 46:
- CHANGE U4675 FROM APN 353S1505 TO APN 353S1742. (SMALL PACKAGE)
- ADD R4670 & R4671. (USB BYPASS ROUTING).
CSA PAGE 49:
- REMOVE ALIAS FOR =SMC_SMS_INT TO SMC_PG1 - SIGNAL SHOULD JUST BE CALLED SMC_SMS_INT.
CSA PAGE 50:
- CHANGE R5077 FROM PULL-UP TO A PULL-DOWN RESISTOR AND NAME IT SMC_SMS_INT.
CSA PAGE 52:
- I2C@0.9 BE SMBUS.
- SMB_ME_CLK AND SMB_ME_DATA ON SOUTHBRIDGE DISCONNECTED FROM SMB_MGMT_CLK AND SMB_MGMT_DATA FROM SMC.B
- THE 10K PULL-UP RESISTORS (R5230 AND R5231), AND STILL REMAIN CONNECTED TO PP3V3_S5_SMBUS_SB_ME AND STAY ON THE SB SIDE.
- SMC MANAGEMENT SMBUS CONNECTION:
- ADD TWO NEW 10K PULL-UP RESISTOR (R5232 & R5233) TO =PP3V3_S3_SMBUS_SMC_MGMT_B
- THE PULL-UP RESISTORS SHOULD BE CONNECTED BETWEEN SMB_MGMT_CLK AND SMB_MGMT_DATA TO =I2C_SMS_SCL AND =I2C_SMS_SDA OF THE NEW ACCELEROMETER.
CSA PAGE 59:
- ADD 2ND SMS (U5930).
CSA PAGE 62:
- CHANGED C6210 FROM A CASE-R 10UF TANT. CAP. TO A SMA-LE 3.3UF TANT. CAP.
- MADE NO TEST ATTRIBUTE VISIBLE FOR NET NC_VRP CONNECTED TO PIN 37 OF U6200.
CSA PAGE 67:
- REMOVED NO STUFF RESISTORS R6730, R6731, AND R6732. ALSO REMOVED L6774.
- STUFF R6740.
- MADE DZ6702, DZ6703, DZ6704, DZ6705, DZ6752, DZ6753, DZ6754, DZ6755, DZ6770, DZ6771B CRITICAL.
CSA PAGE 68:
- NO STUFFED R6854
CSA PAGE 75:
- CHANGE R7208 FROM 8.66K TO 15.8K.

7/11/2007
CSA PAGE 9:
- CHANGE Z0901 AND Z0906 FROM 998-1178 TO 998-1186 (NON-PLATED).
CSA PAGE 31:
- STUFF C3110 AND C3111.
CSA PAGE 32:
- STUFF C3210 AND C3211.
CSA PAGE 38:
- UPDATE PN FOR FANCY RJ45 CONNECTOR, 514-0475.
CSA PAGE 50:
- REMOVE R5077 (BECOMES R5931).
CSA PAGE 59:
- ADD R5930, 10K PU ON SMC_SMS_INT.
- ADD R5931 (WAS R5077 BEFORE), 10K PD ON SMC_SMS_INIT.
- STUFF U5930 (DIGITAL ACCELEROMETER) CIRCUIT.

7/12/2007
CSA PAGE 43:
- CHANGE J4300 FROM 514-0289 TO 514-0456 (SAME JEDEC).
- UPDATE BOM OPTION TABLE FOR J4300.
- NORMAL CHANGES FROM 514-0359 TO 514-0456, FANCY CHANGES FROM 514-0316 TO 514-0476.
CSA PAGE 46:
- CHANGE J4600 AND J4601 FROM 514-0288 TO 514-0457 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J4600 AND J4601.
- NORMAL CHANGES FROM 514-0288 TO 514-0457, FANCY CHANGES FROM 514-0315 TO 514-0477.
CSA PAGE 62:
- ADD PAGE TITLE AUDIO: CODEC.
CSA PAGE 67:
- CHANGE J6700 FROM 514-0409 TO 514-0459 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J6700.
- NORMAL CHANGES FROM 514-0409 TO 514-0459 , FANCY CHANGES FROM 514-0411 TO 514-0479.
- CHANGE J6750 FROM 514-0408 TO 514-0458 (DIFFERENT JEDEC, SAME LANDPATTERN).
- UPDATE BOM OPTION TABLE FOR J6750.
- NORMAL CHANGES FROM 514-0408 TO 514-0458, FANCY CHANGES FROM 514-0410 TO 514-0478.
CSA PAGE 78:
- CHANGE L7900 FROM 152S0302 TO 152S0670 FOR CORRECT AVL.
CSA PAGE 94:
- UPDATE BOM OPTION TABLE FOR J9401.
- NORMAL CHANGES FROM 514-0375 TO 514-0480, FANCY CHANGES FROM 514-0376 TO 514-0481.

7/13/2007
CSA PAGE 4:
- CHANGE BEST CPU FROM 337S3465(2.4GHZ) TO 337S3464(2.2GHZ).
CSA PAGE 5:
- CHANGE C3831 AND C3832 FROM 138S0582 TO 138S0554 (DON’T NEED LOW-PROFILE PARTS).

7/17/2007
CSA PAGE 59:
- UPDATE SYMBOL FOR U5930, VENDOR PART NUMBER CHANGES FROM SMB380 TO BMA150.

7/24/2007
CSA PAGE 4:
- CHANGE BETTER AND BEST CPU TO G0 STEPPING PARTS (FROM 337S3464 TO 337S3500).
CSA PAGE 52:
- STUFF R2242 AND NOSTUFF R2247.
CSA PAGE 62:
- CHANGE R9201 AND R9202 FROM 5.23K TO 2.94K.
- CHANGE R9211 AND R9212 FROM 16.5K TO 9.09K.

M70 EVT TO DVT CHANGES

8/9/2007
PER CE, ALL SANYO POSCAPS HAVE NEW HF PART NUMBERS.
- ALL 128S0057 BECOME 128S0147.
- ALL 128S0073 BECOME 128S0164.
- ALL 128S0065 BECOME 128S0148.
- ALL 128S0111 BECOME 128S0169.
- ALL 128S0113 BECOME 128S0166.
- ALL 128S0115 BECOME 128S0159.
- ALL 128S0122 BECOME 128S0157.
- ALL 128S0123 BECOME 128S0162.
- ALL 128S0129 BECOME 128S0135.
- ADD 001 TO ALL ABOVE PARTS SO THE HF PARTS IN BOM TABLE TAKE OVER.
CSA PAGE 4:
- ADD BOM OPTION TABLE FOR ALL SANYO POSCAP TO USE HF PARTS.

Revision History

SYNC_MASTER=N/A SYNC_DATE=N/A

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 5 OF 76	

Functional Test Points

Power Supply NO_TESTs

NO_TEST

L93		IMVP6_RBIAS	59A4 59B7
L94		IMVP6_COMP	59A4 59B7
L95		5VS5_RUNSS	63B5 65C5
L96		1V5S0_RUNSS	58B1 61B5

CLOCK NO_TESTS

NO_TEST

L11	TRUE	CK505_CPU0_N	28C4 29D6 75D3
L11	TRUE	CK505_CPU0_P	28C4 29D6 75D3
L11	TRUE	CK505_CPU1_N	28C4 29D6 75D3
L11	TRUE	CK505_CPU1_P	28C4 29D6 75D3
L11	TRUE	CK505_CPU2_ITP_SRC10_N	28C4 29D6 75D3
L11	TRUE	CK505_CPU2_ITP_SRC10_P	28C4 29D6 75D3
L11	TRUE	CK505_DOT96_27M_N	28A4 29B6 75D3
L11	TRUE	CK505_DOT96_27M_P	28A4 29B6 75D3
L11	TRUE	CK505_LVDS_N	28B4 29C6 75C3
L11	TRUE	CK505_LVDS_P	28B4 29C6 75D3
L11	TRUE	CK505_PCIF1_CLK	28B6 29B6 75D3
L11	TRUE	CK505_SRC2_N	28B4 29C6 75C3
L11	TRUE	CK505_SRC2_P	28B4 29C6 75C3
L11	TRUE	CK505_SRC4_N	28B4 29C6 75C3
L11	TRUE	CK505_SRC4_P	28B4 29C6 75C3
L11	TRUE	CK505_SRC5_N	28B4 29C6 75C3
L11	TRUE	CK505_SRC5_P	28B4 29C6 75C3
L11	TRUE	CK505_SRC6_N	28B4 29B6 75C3
L11	TRUE	CK505_SRC6_P	28B4 29C6 75C3
L11	TRUE	CK505_SRC8_N	28A4 29B6 75C3
L11	TRUE	CK505_SRC8_P	28A4 29B6 75C3

FIREWARE NO_TESTS

NO_TEST

L11	TRUE	FW_B_TPA_N_SPN	8D1
L12	TRUE	FW_B_TPA_P_SPN	8D1
L12	TRUE	FW_B_TPBIAS_SPN	8D1
L12	TRUE	FW_B_TPB_N_SPN	8D1
L12	TRUE	FW_B_TPB_P_SPN	8D1
L12	TRUE	FW_C_TPA_N_SPN	8D1
L12	TRUE	FW_C_TPA_P_SPN	8D1
L12	TRUE	FW_C_TPBIAS_SPN	8D1
L12	TRUE	FW_C_TPB_N_SPN	8D1
L12	TRUE	FW_C_TPB_P_SPN	8D1

LVDS NO_TESTS

NO_TEST

L12	TRUE	LVDS_B_CLK_N_SPN	8D5
L12	TRUE	LVDS_B_CLK_P_SPN	8D5
L12	TRUE	LVDS_B_DATA_N0_SPN	8D5
L12	TRUE	LVDS_B_DATA_N1_SPN	8D5
L12	TRUE	LVDS_B_DATA_N2_SPN	8D5
L12	TRUE	LVDS_B_DATA_P1_SPN	8D5
L12	TRUE	LVDS_B_DATA_P2_SPN	8D5

NO_TEST

L21	TRUE	SMC_FAN_3_TACH	44A4 44A8

Fan Connectors

FUNC_TEST

L12	TRUE	=PP5V_S0_FAN_RT	7A7 50C4
L15	TRUE	FAN_RT_PWM	50B3
L16	TRUE	FAN_RT_TACH	50C3
L15	TRUE	=PP3V3_S0_FAN_RT	7C4 50C4
L15	TRUE	SMC_FAN_1_CTL	44A8 50B4
L15	TRUE	SMC_FAN_1_TACH	44A8 50C4

LPC+ Debug Connector

FUNC_TEST

L20	TRUE	=PP3V42_G3H_LPCPLUS	7B1 46C6
L20	TRUE	=PP5V_S0_LPCPLUS	7A7 46C6
L16	TRUE	LPC_AD<0>	22D4 44C8 46C6
L17	TRUE	LPC_AD<1>	22D4 44C8 46C6
L17	TRUE	LPC_FRAME_L	22D4 44C8 46B6
L17	TRUE	PM_CLKRUN_L	24C8 37A5 44C5 46B6
L17	TRUE	BOOT_LPC_SPI_L	23B5 46B6
L17	TRUE	SMC_TMS	44B5 45C5 46B6
L17	TRUE	DEBUG_RESET_L	27D1 46B6
L17	TRUE	SMC_TRST_L	44C1 46B6
L17	TRUE	SMC_TDO	44B5 45C5 46B6
L17	TRUE	SMC_MD1	44D1 46B6
L17	TRUE	SMC_TX_L	41A8 44B8 44C5 45D5 46B6
L18	TRUE	FWH_INIT_L	46C5
L18	TRUE	PCI_CLK33M_LPCPLUS	29B3 46C4 75C3
L18	TRUE	LPC_AD<2>	22D4 44C8 46C4
L18	TRUE	LPC_AD<3>	22D4 44C8 46C4
L18	TRUE	INT_SERIRQ	24C8 44C8 46B4
L18	TRUE	PM_SUS_STAT_L	24D5 44C5 46B4
L18	TRUE	SMC_TDI	44B5 45C5 46B4
L18	TRUE	SMC_TCK	44B5 45C5 46B4
L18	TRUE	SMC_RESET_L	44C3 45D7 46B4
L18	TRUE	SMC_NMI	44C1 46B4
L17	TRUE	SMC_RX_L	41A8 44B8 44C5 45D5 46B4
L19	TRUE	LINDACARD_GPIO	24A7 24D5 46B4

Other Func Test Points

FUNC_TEST

L19	TRUE	=PP1V05_S0_REG	7D8 61B8

SMBus FUNC_TEST

I182	TRUE	SMBUS_SMC_B_S0_SCL	47C5 76C3
L15	TRUE	SMBUS_SMC_B_S0_SDA	47C5 76C3

FIREWIRE FUNC_TEST

L15	TRUE	PPFW_SWITCH	38D3

SLEEP LED FUNC_TEST

L15	TRUE	SYS_LED_ANODE	40C5 45A3

SMC FUNC_TEST

L15	TRUE	SMC_LID	42C3 44B5 45C5 57A8
L15	TRUE	SMC_MANUAL_RST_L	45D8
L16	TRUE	SMC_CPU_VSENSE	44C5 48B1

Power Supply FUNC_TEST

L16	TRUE	ALL_SYS_PWRGD	27A5 44D8 58A3
L16	TRUE	PPVCORE_S0_CPU	7D7
L20	TRUE	PP1V05_S0_R	7D7
L16	TRUE	PP1V05_S0	7D7 45D2
L16	TRUE	PP1V5_S0	7C7
L16	TRUE	PP1V8_S0	7B7
L16	TRUE	PP3V3_S0	7D4 45D1
L16	TRUE	PP5V_S0	7A7
L16	TRUE	PP1V2_ENET_S0	7B5
L16	TRUE	PP1V8_S3	7B4
L17	TRUE	PP3V3_S3	7A4
L17	TRUE	PP5V_S3	7A4
L17	TRUE	PP3V3_S5	7D1
L17	TRUE	PP5V_S5	7C1
L17	TRUE	PP3V42_G3H	7C1
L17	TRUE	PPBUS_G3H	7B1
L17	TRUE	PP18V5_G3H	7B1
L18	TRUE	PP0V9_S0	7D7
L22	TRUE	PP3V3_S3_BT_F	43D2
L23	TRUE	GND_BT_F	43C2

Battery Digital Connector

FUNC_TEST

L1	TRUE	SMC_BS_ALRT_L	44C5 45C5 57A2
L3	TRUE	SMBUS_BATT_SCL_F	57A5
L4	TRUE	SMBUS_BATT_SDA_F	57A5
L17	TRUE	BATT_POS	57B5
L18	TRUE	BATT_NEG	57A5

Audio FUNC_TEST

L9	TRUE	=PP5V_S0_AUDIO_AMP	7A7 54B8 54C8 54D8
L11	TRUE	=PP5V_S0_AUDIO	7A7 53A7 56C4
L19	TRUE	GND_AUDIO_AMP	8A4
L21	TRUE	GND_AUDIO_CODEC	8B4
L22	TRUE	ACZ_SDATAIN<0>	8A5 53C7
L24	TRUE	ACZ_SDATAOUT	8A5 53C7
L25	TRUE	ACZ_BITCLK	8A5 53C7
L26	TRUE	ACZ_RST_L	8A5 53B7
L45	TRUE	ACZ_SYNC	8A5 53C7

Battery FUNC_TEST

L29	TRUE	SMC_BATT_ISET	44B5 66A8
L32	TRUE	SMC_BATT_CHG_EN	44C8 45B6 66A4
L34	TRUE	SMC_BC_ACOK	66A6 44C5 45B6 57C3 57C7
L33	TRUE	SMC_ADAPTER_EN	45B3 57C4 43C7 35C7 38C6 44D5
L36	TRUE	SMC_BATT_TRICKLE_EN_L	44C8 45B6 66A3
L38	TRUE	SYS_ONEWIRE	44B8 45D5 57C8

USB FUNC_TEST

L44	TRUE	TP_USB_EXCARD_P	8B2
L47	TRUE	TP_USB_EXCARD_N	8B2
L46	TRUE	TP_USB_EXTC_P	8B2
L48	TRUE	TP_USB_EXTC_N	8B2
L22	TRUE	USB2_BT_F_P	43C2
L22	TRUE	USB2_BT_F_N	43C2
L24	TRUE	USB2_3G_F_N	43A4
L24	TRUE	USB2_3G_F_P	43A4

DC-JACK FUNC_TEST

L57	TRUE	ACIN_ENABLE_GATE	57C3 66A6

Battery charger FUNC_TEST

L58	TRUE	PPVBAT_G3H_CHGR_OUT	66B5 66C2

INVERTER CONNECTOR FUNC_TEST

L60	TRUE	PPBUS_ALL_INV_CONN	67D3
L59	TRUE	INV_GND	67D2
L61	TRUE	PP5V_INV_F	67D3
L63	TRUE	INV_BKLIGHT_PWM_L	67D2

MIC FUNC_TEST

L22	TRUE	MIC_HI	55B3 56A6
L22	TRUE	MIC_LO	55B3 56A6
L22	TRUE	MIC_SHIELD	
L23	TRUE	MIC_HI_CONN	55B1 55D3
L23	TRUE	MIC_LO_CONN	55B1 55D3
L23	TRUE	MIC_SHLD_CONN	55A1 55D3 56A6

SPEAKER FUNC_TEST

L22	TRUE	SPKRCONN_L_N_OUT	54C1 55C2
L22	TRUE	SPKRCONN_L_P_OUT	54C1 55C2
L22	TRUE	SPKRCONN_R_N_OUT	54C1 55C2
L22	TRUE	SPKRCONN_R_P_OUT	54C1 55C2
L24	TRUE	SPKRCONN_SUB_N_OUT	54B1 55C2
L24	TRUE	SPKRCONN_SUB_P_OUT	54B1 55C2

THERMAL FUNC_TEST

L23	TRUE	THRM_HEATPIPE_P	49D6
L23	TRUE	THRM_HEATPIPE_N	49D6
L23	TRUE	THRM_DIMM_DX_F_N	49B6
L23	TRUE	THRM_DIMM_DX_F_P	49B6
L24	TRUE	THRM_FINSTACK_P	49C6
L24	TRUE	THRM_FINSTACK_N	49C6

FUNC TEST 1 OF 2

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 6 OF 76

"S0,S0M" RAILS

(REGULATOR OUTPUT CPU VCORE PWR)

59D1 =PPVORE_S0_CPU_REG — PPVCORE_S0_CPU 6B2
MIN_LINE_WIDTH=0.3 mm
MIN_NECK_WIDTH=0.3 MM
VOLTAGE=0.9V
MAKE_BASE=TRUE

(CPU VCOR PWRE) — =PPVCORE_S0_CPU 10B5 10D7 11D7 48B3 48B5

(REGULATOR OUTPUT CPU 0.90V PWR)

62B8 =PP0V9_S0_REG — PP0V9_S0 6A2
MIN_LINE_WIDTH=0.4 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=0.9V
MAKE_BASE=TRUE

(DDR2 TERMINATION 0.9V PWR) — =PP0V9_S3M_MEM_TERM 32D4

61B8 6B2 =PP1V05_S0_REG — PP1V05_S0 6B2 45D2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.05V
MAKE_BASE=TRUE

- =PP1V05_S0_SB_CPU_IO 22D2 25C3 26C4
- =PPVCORE_S0_SB 25D3 26D2

61C7 =PP1V05_S0_REG_R — PP1V05_S0_R 6B2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.05V
MAKE_BASE=TRUE

- =PP1V05_S0_CPU 9B5 9B6 9C5 9D5 10C7 11A3 12B3 12C5
- =PP1V05_S0_NB_PCIE 20D5
- =PPVCORE_S0_NB 17D3 17D7 20B4 20D8
- =PP1V25R1V05_S0_FSB_NB 13B7 29B6 29C6
- =PP1V25R1V05_S0_NB_VTT 18D3 20C8
- =PP1V05_S0M_NB_VCCAXM 17B3 17C1 20D8

6A82 =PP1V25_S0_REG — PP1V25_S0 6B2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.25V
MAKE_BASE=TRUE

- =PP1V25_S0_NB_PLL 7C7 20B4 20D3
- =PP1V25_S0_NB_VCCDMI 18C3 20A8
- =PP1V25_S0_SB_DMI 25C3 26A6
- =PP1V25_S0_NB_VCCAXF 20D4
- =PP1V25_S0_NB_PLL 7C7 20B4 20D3
- =PP1V25_S0_NB_VCC 20A8
- =PP1V25_S0_NB_VCCA 20B8
- =PP1V25_S0_FET 58A3

62C5 61B1 =PP1V5_S0_REG — PP1V5_S0 6B2
MIN_LINE_WIDTH=0.5 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.5V
MAKE_BASE=TRUE

- =PP1V5_S0_CPU 10B7 11B3
- =PP1V5_S0_NB_TVDAC 21D8
- =PP1V5_S0_SB 26A8 26C8 26D6
- =PP1V5_S0_SB_VCC1_5_A_ARX 25B6 26D5
- =PP1V5_S0_SB_VCC1_5_A_ATX 25B6 26C6
- =PP1V5_S0_SB_VCC1_5_A 25B6 26C2
- =PP1V5_S0_SB_VCCUSBPLL 25A6 26B6
- =PP1V5_S0_SB_VCC1_5_A_USB_CORE 25B6 26C2
- =PP1V5_S0_AIRPORT 33D2
- =PP1V5_S0_NB_FOLLOW 21D5

58C4 58B8 =PP1V8_S0_FET — PP1V8_S0 6B2
MIN_LINE_WIDTH=0.4 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE

- =PP1V8_S0_NB_LVDS 21C5
- =PP1V8_S0_NB_DPLL 21A7
- =PP1V8_S0_TMDS 68D6

66C2 =PPVCORE_S0_NB_GFX_IMVP — PPVCORE_S0_NB_GFX
MIN_LINE_WIDTH=0.5 mm
MIN_NECK_WIDTH=0.25 mm
VOLTAGE=1.25V
MAKE_BASE=TRUE

- =PPVCORE_S0_NB_GFX 17B7 17D5 21C5 48B3

58D4 58C8 =PP5V_S0_FET — PP5V_S0 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE

- =PP5V_S0_SB 26D8
- =PP5V_S0_SATA 40C6
- =PP5V_S0_3G 43B5
- =PP5V_S0_LPCPLUS 6D2 46C6
- =PP5V_S0_ISENSECAL 48B8
- =PP5V_S0_FAN_RT 6D2 50C4
- =PP5V_S0_AUDIO 6D1 53A7 56C4
- =PP5V_S0_AUDIO_AMP 6D1 54B8 54C8 54D8
- =PP5V_S0_CPU_IMVP 59D8
- =PP5V_S0_NB_GFX_IMVP 60D2
- =PP5V_S0_LCD 67D7
- =PP5V_S0_TMDS 69D7
- =PP5V_S0_NB_TVDAC 21D6
- =PP5V_S0_IDE_RESET 39B7

58D3 58C4 58C3 58B8 58B3 58A3 =PP3V3_S0_FET — PP3V3_S0 6A2 45D1
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE

- =PP3V3_S0_NB_VCCHV 15B7 15C7 18B3 20A8 21B7
- =PP3V3_S0_NB_FOLLOW 20B2
- =PP3V3_S0_SB_GPIO 22D2 22D7 24B3 24D8
- =PP3V3_S0_SB_VCCGLAN3_3 25A6
- =PP3V3_S0_SB_VCC3_3_PCI 25B3 26B4
- =PP3V3_S0_SB_VCC3_3_IDE 25C3 26B4
- =PP3V3_S0_SB_VCC3_3_VCCPCORE 25C3 26A6 26C6
- =PP3V3_S0_SB_VCC3_3_SATA 25C3 26B8
- =PP3V3_S0_SB_VCC3_3_DMI 25C3 26A8
- =PP3V3_S0_SB 26D8 39C8
- =PP3V3_S0_SB_PM 27B6 27B8
- =PP3V3_S0_RSTBUF 27D4
- =PP3V3_S0_AIRPORT 33C6
- =PP3V3_S0_FW 38C6
- =PP3V3_S0_PATA 39C2
- =PP3V3_S0_SMC_LS 45D4
- =PP3V3_S0_LPCPLUS 46C4
- =PP3V3_S0_SMBUS_SB 47D8
- =PP3V3_S0_SMBUS_SMC_0_S0 47D5
- =PP3V3_S0_SMBUS_SMC_B_S0 47C5
- =PP3V3_S0_THRM_SNR 49C2 49D2
- =PP3V3_S0_FAN_RT 6D2 50C4
- =PP3V3_S0_ENET 8A4
- =PP3V3_S0_AUDIO 53A7 53D7 55D8 56B5
- =PP3V3_S0_IMVP 59D8
- =PP3V3_S0_NB_GFX_IMVP 60C7
- =PP3V3_S0_PDCISENS 60C2 61C5 66C3
- =PP3V3_S0_LCD 67B5 67B7 67C6
- =PP3V3_S0_TMDS 7C4 68B1 68B2 68B7 68C8 68D8 69B7 69C2 69C8
- =PP3V3_S0_CPUPOWER 48D2
- =PP3V3_S0_PBATTISENS 66B3
- =PP3V3R1V5_S0_SB_VCCHDA 25B3 26C4
- =PP3V3_S0_SB_PCI 23A3
- =PP3V3_S0_NB_VCCA_PEG_BG 18C6 20A6
- =PPSPD_S0_MEM 30A7 31A3 31A7
- =PP3V3_S0MWOL_SB_VCCCL3_3 25A6 26B2
- =PP3V3_S0MWOL_SB_VCCLAN3_3 25A3 26D3
- =PP3V3_S0MWOL_SB_CLINK0 24C1
- =PP3V3_S0_CK505 28C8 28D3 28D8 29B2 29D2
- =PP3V3_S0_NB_VCCSYNC 18D6 21B5
- =PP3V3_S0_NB 69C8
- =PP3V3_S0_TMDS 7C4 68B1 68B2 68B7 68C8 68D8 69B7 69C2 69C8

35C1 =PP1V2_ENET_REG — PP1V2_ENET_S0 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.2V
MAKE_BASE=TRUE

- =PP1V2_ENET_PHY 34D6

35D4 PP3V3_ENET_FET — =PP3V3_ENET_PHY 34D6
MIN_LINE_WIDTH=0.9 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE

35D1 35B2 =PP1V9_ENET_REG — PP1V9_ENET_S0
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=2.5V
MAKE_BASE=TRUE

- =PP1V8R2V5_ENET_PHY 34C7
- =PP1V8_S0_YUKON 36D8

"S3" RAILS

62B2 =PP1V8_S3_REG — PP1V8_S3 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE

- =PP1V8_S3_FET 58C5
- =PP1V8_S3_MEMVREF 20A5 20A6
- =PP1V8_S3_MEM 30B2 30D4 30D6 31B2 31D4 31D6
- =PP1V8_ENET_P1V8ENETFET 35C3

62C4 =PP1V8_S3_REG_R — PP1V8_S3_MEM_NB
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.4 mm
VOLTAGE=1.8V
MAKE_BASE=TRUE

- =PP1V8_S3M_MEM_NB 15D2 17D7 20C8 30D2 31D2
- =PP1V8_S3_NB_VCC 20A4

65C3 65A4 =PP3V3_S3_FET — PP3V3_S3 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE

- =PP3V3_S3_AIRPORT_AUX 33C2
- =PP3V3_S3_FW 37D5
- =PP3V3_S3_PCI 37C5
- =PP3V3_S3_BT 43D3
- =PP3V3_S3_SMS 51C7
- =PP3V3_S3_SMBUS_SMC_A_S3 47D3
- =PP3V3_S3_PDCISENS 62A2 62C2
- =PP3V3_S3_ENETPWRCTL 35D7
- =PP3V3_S3_SMBUS_SMC_MGMT 47C3 51B6
- =PP3V3_ENET_P3V3ENETFET 35D3

65B4 =PP5V_S3_FET — PP5V_S3 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE

- =PP5V_S3_SYSLED 40B6 45A4
- =PP5V_S3_GEYSER 42D6
- =PP5V_S3_IR 43D8
- =PP5V_S3_CAMERA 67A5

"S5" RAILS

63B1 =PP3V3_S5_REG — PP3V3_S5 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.3V
MAKE_BASE=TRUE

- =PP3V3_S5_SB_PM 27C5
- =PP3V3_S5_SB_USB 23C8
- =PP3V3_S5_SB_GPIO 24D8
- =PP3V3_S5_SB 24A3 24A8 26D8 35C7
- =PP3V3_S5_FET 58C5 65A5 65C4
- =PP3V3_S5_SB_VCCSUS3_3_USB 25A3 26D2
- =PP3V3_S5_SB_VCCSUS3_3 25A3 26B6 26D2
- =PP3V3_S5_SB_3V3_VCCSUSHDA 25B3 26B2
- =PP3V3_S5_FWLATEVG 38A6 38A8
- =PP3V3_S5_SMBUS_SB_ME 47A7
- =PP3V3_S5_ROM 52C6
- =PP3V3_S5_LCD 67C7
- =PP3V3_S5_SB_CLINK1 24B1
- =PP3V3_S5_1V25S0 64B6
- =PP3V3_S5_AIRPORT_AUX 33C7 33D6 33D7

63B8 =PP5V_S5_REG — PP5V_S5 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=5V
MAKE_BASE=TRUE

- =PP5V_S5_SB 26D8
- =PP5V_S5_PATA 39D6
- =PP5V_S5_USB 41C8
- =PP5V_S5_1V51V05S0 61C4
- =PP5V_S5_1V8S30V9S0 62C5
- =PP5V_S5_PWRCTL 65B6
- =PP5V_S5_FET 58B3 58C6 58D5 65B5

"G3H" RAILS

64C4 =PP3V42_G3H_REG — PP3V42_G3H 6A2
MIN_LINE_WIDTH=0.3 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=3.42V
MAKE_BASE=TRUE

- =PP3V42_G3H_SMC 44D4 45C1 45D4 45D8 51B8
- =PP3V42_G3H_SMCVREF 45C8
- =PP3V42_G3H_SMBUS_SMC_BSA 47C3
- =PP3V42_G3H_ACIN 57C4 66A5 66A8 66B8
- =PP3V42_G3H_LIDSWITCH 57A8
- =PP3V42_G3H_PWRCTL 65C7
- =PP3V42_G3H_SB_RTC 27D7
- =PP3V42_G3H_SMCUSBMUX 41A6
- =PP3V42_G3H_LPCPLUS 6D2 46C6

57D1 =PP18V5_G3H_INRUSH — PP18V5_G3H 6A2
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.20 MM
VOLTAGE=18.5V
MAKE_BASE=TRUE

- =PP18V5_G3H_CHGR 66D8

57D3 =PPDCIN_G3H — PPDCIN_G3H
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=18.5V
MAKE_BASE=TRUE

- =PPVIN_G3H_P3V42G3H 64C6

66C2 =PPBUSA_G3H — PPBUS_G3H 6A2
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
VOLTAGE=18.5V
MAKE_BASE=TRUE

- =PPVIN_S0_NB_DPLL
- =PPBUS_S5_FWPWRSW 38D5
- =PPVIN_S5_CPU_IMVP 48D7 59C2 59D4 59D8
- =PPVIN_S5_NB_GFX_IMVP 60C2
- =PPBUS_S5_INV 67D4
- =PPVIN_S5_1V8S30V9S0 62B3
- =PPVIN_S5_5VS5 63A6 63B6
- =PPVIN_S5_3V3S5 63B3
- =PPVIN_S5_1V5S0 61B3
- =PPVIN_S5_1V05S0 61B5
- =PPVIN_S5_IMVP 45A6

66C2 =PPBUSB_G3H

Power Aliases

SYNC_MASTER=WFERRY SYNC_DATE=06/15/2006

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SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE — SHT 7 OF 76

(EMI PAD FOR INVERTER GONNECTOR)

INVT_CHGND — VOLTAGE=0V, MAKE_BASE=TRUE — ZS0920 EMI-SPRING CLIP-SM-M42

=GND_CHASSIS_3GPOWER

CHASSIS GND

BATTERY,AUDIO,DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_IO Z0906 OMIT 5R2P3-7SQBNP

=GND_BATT_CHGND
=GND_CHASSIS_AUDIO_JACK
=GND_CHASSIS_AUDIO_MIC
=GND_CHASSIS_DIPDIMM_LEFT

SATA,LVDS CONNECTOR CHASSIS GND

GND_CHASSIS_SATA Z0907 OMIT 6P5R2P6-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_LVDS

C0907 0.1UF 10% 16V X5R 402
C0908 0.01UF 10% 16V CERM 402

DCIN CONNECTOR CHASSIS GND

GND_CHASSIS_DCIN Z0902 OMIT 7X7R2P3-5B — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_DCIN_CHGND
=GND_CHASSIS_RJ45
=GND_CHASSIS_TMDS_UPPER

C0930 0.1UF 10% 16V X5R 402

I/O CONNECTOR CHASSIS GND

GND_CHASSIS_IO Z0908 OMIT 5P0R2P3-7BLB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_FW_DOWN
=GND_CHASSIS_USB

C0910 0.1UF 10% 16V X5R 402
C0911 0.01UF 10% 16V CERM 402

DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_CENTER Z0910 OMIT 5R2P3-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_DIPDIMM_CENTER

C0916 0.1UF 10% 16V X5R 402
C0917 0.01UF 10% 16V CERM 402

DIP DIMM CONNECTOR CHASSIS GND

GND_CHASSIS_RIGHT Z0909 OMIT 5R2P3-7SQB — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_DIPDIMM_RIGHT

C0914 0.1UF 10% 16V X5R 402
C0915 0.01UF 10% 16V CERM 402

GND_CHASSIS_CPU Z0901 OMIT 5R2P3-7SQBNP

C0912 0.1UF 10% 16V X5R 402
C0913 0.01UF 10% 16V CERM 402

GND_CHASSIS_FANSCREW Z0911 OMIT 5R2P3-7B

C0918 0.1UF 10% 16V X5R 402
C0919 0.01UF 10% 16V CERM 402

CPU HEATSINK STANDOFF SCREW HOLE

Z0903 OMIT — STDOFF-4.2OD3.95H-5.52R3.37-6B
Z0904 OMIT — STDOFF-4.2OD3.95H-5.52R3.37-7SQB

NB_RIGHT_DOWN_SCREW 1 — R0912 0 5% 1/16W ME-LF 402

Z0903 USE SAME Z0913 NON SHAPE OF A HOOF SYMBOL FOR LAYOUT PLACEMENT
BUT, NEED CHANGE TO HIGH STANDOFF SYMBOL

CPU_THERMAL_SCREW_UP 1 — R0910 0 5% 1/16W ME-LF 402

Z0905 OMIT — STDOFF-4.5OD3.95H-1.1-3.2-TH
Z0921 OMIT — STDOFF-4.5OD3.95H-1.1-3.2-TH

CPU_THERMAL_SCREW_DOWN 1 — R0911 0 5% 1/16W ME-LF 402

CPU_THERMAL_SCREW_RIGHT 1 — R0921 0 5% 1/16W ME-LF 402

LVDS ALIASES

NO-CONNECT UNUSED LVDS INTERFACE PORTS

LVDS_B_CLK_N	LVDS_B_CLK_N_SPN	MAKE_BASE=TRUE
LVDS_B_CLK_P	LVDS_B_CLK_P_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_N<0>	LVDS_B_DATA_N0_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_N<1>	LVDS_B_DATA_N1_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_N<2>	LVDS_B_DATA_N2_SPN	MAKE_BASE=TRUE
TP_LVDS_B_DATAN3	LVDS_B_DATA_N3_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_P<0>	LVDS_B_DATA_P0_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_P<1>	LVDS_B_DATA_P1_SPN	MAKE_BASE=TRUE
LVDS_B_DATA_P<2>	LVDS_B_DATA_P2_SPN	MAKE_BASE=TRUE
TP_LVDS_B_DATAP3	LVDS_B_DATA_P3_SPN	MAKE_BASE=TRUE
TP_LVDS_A_DATAP3	LVDS_A_DATA_P3_SPN	MAKE_BASE=TRUE
TP_LVDS_A_DATAN3	LVDS_A_DATA_N3_SPN	MAKE_BASE=TRUE

PCI_EXPRESS GRAPHICS ALIASES

NO-CONNECT UNUSED SDVO INTERFACE PORTS

PEG_D2R_N<0>	PEG_D2R_N0_SPN	MAKE_BASE=TRUE
PEG_D2R_N<2>	PEG_D2R_N2_SPN	MAKE_BASE=TRUE
PEG_D2R_N<3>	PEG_D2R_N3_SPN	MAKE_BASE=TRUE
PEG_D2R_N<4>	PEG_D2R_N4_SPN	MAKE_BASE=TRUE
PEG_D2R_N<5>	PEG_D2R_N5_SPN	MAKE_BASE=TRUE
PEG_D2R_N<6>	PEG_D2R_N6_SPN	MAKE_BASE=TRUE
PEG_D2R_N<7>	PEG_D2R_N7_SPN	MAKE_BASE=TRUE
PEG_D2R_N<8>	PEG_D2R_N8_SPN	MAKE_BASE=TRUE
PEG_D2R_N<9>	PEG_D2R_N9_SPN	MAKE_BASE=TRUE
PEG_D2R_N<10>	PEG_D2R_N10_SPN	MAKE_BASE=TRUE
PEG_D2R_N<11>	PEG_D2R_N11_SPN	MAKE_BASE=TRUE
PEG_D2R_N<12>	PEG_D2R_N12_SPN	MAKE_BASE=TRUE
PEG_D2R_N<13>	PEG_D2R_N13_SPN	MAKE_BASE=TRUE
PEG_D2R_N<14>	PEG_D2R_N14_SPN	MAKE_BASE=TRUE
PEG_D2R_N<15>	PEG_D2R_N15_SPN	MAKE_BASE=TRUE
PEG_D2R_P<0>	PEG_D2R_P0_SPN	MAKE_BASE=TRUE
PEG_D2R_P<2>	PEG_D2R_P2_SPN	MAKE_BASE=TRUE
PEG_D2R_P<3>	PEG_D2R_P3_SPN	MAKE_BASE=TRUE
PEG_D2R_P<4>	PEG_D2R_P4_SPN	MAKE_BASE=TRUE
PEG_D2R_P<5>	PEG_D2R_P5_SPN	MAKE_BASE=TRUE
PEG_D2R_P<6>	PEG_D2R_P6_SPN	MAKE_BASE=TRUE
PEG_D2R_P<7>	PEG_D2R_P7_SPN	MAKE_BASE=TRUE
PEG_D2R_P<8>	PEG_D2R_P8_SPN	MAKE_BASE=TRUE
PEG_D2R_P<9>	PEG_D2R_P9_SPN	MAKE_BASE=TRUE
PEG_D2R_P<10>	PEG_D2R_P10_SPN	MAKE_BASE=TRUE
PEG_D2R_P<11>	PEG_D2R_P11_SPN	MAKE_BASE=TRUE
PEG_D2R_P<12>	PEG_D2R_P12_SPN	MAKE_BASE=TRUE
PEG_D2R_P<13>	PEG_D2R_P13_SPN	MAKE_BASE=TRUE
PEG_D2R_P<14>	PEG_D2R_P14_SPN	MAKE_BASE=TRUE
PEG_D2R_P<15>	PEG_D2R_P15_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<4>	PEG_R2D_C_N4_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<5>	PEG_R2D_C_N5_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<6>	PEG_R2D_C_N6_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<7>	PEG_R2D_C_N7_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<8>	PEG_R2D_C_N8_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<9>	PEG_R2D_C_N9_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<10>	PEG_R2D_C_N10_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<11>	PEG_R2D_C_N11_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<12>	PEG_R2D_C_N12_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<13>	PEG_R2D_C_N13_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<14>	PEG_R2D_C_N14_SPN	MAKE_BASE=TRUE
PEG_R2D_C_N<15>	PEG_R2D_C_N15_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<4>	PEG_R2D_C_P4_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<5>	PEG_R2D_C_P5_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<6>	PEG_R2D_C_P6_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<7>	PEG_R2D_C_P7_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<8>	PEG_R2D_C_P8_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<9>	PEG_R2D_C_P9_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<10>	PEG_R2D_C_P10_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<11>	PEG_R2D_C_P11_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<12>	PEG_R2D_C_P12_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<13>	PEG_R2D_C_P13_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<14>	PEG_R2D_C_P14_SPN	MAKE_BASE=TRUE
PEG_R2D_C_P<15>	PEG_R2D_C_P15_SPN	MAKE_BASE=TRUE

SATA ALIASES

NO-CONNECT UNUSED SATA INTERFACE PORTS

SATA_B_D2R_N	SATA_B_D2R_N_SPN	MAKE_BASE=TRUE
SATA_B_D2R_P	SATA_B_D2R_P_SPN	MAKE_BASE=TRUE
SATA_B_R2D_C_N	SATA_B_R2D_C_N_SPN	MAKE_BASE=TRUE
SATA_B_R2D_C_P	SATA_B_R2D_C_P_SPN	MAKE_BASE=TRUE
SATA_C_D2R_N	SATA_C_D2R_N_SPN	MAKE_BASE=TRUE
SATA_C_D2R_P	SATA_C_D2R_P_SPN	MAKE_BASE=TRUE
SATA_C_R2D_C_N	SATA_C_R2D_C_N_SPN	MAKE_BASE=TRUE
SATA_C_R2D_C_P	SATA_C_R2D_C_P_SPN	MAKE_BASE=TRUE

PCI_EXP ALIASES

NO-CONNECT UNUSED PCI_EXP INTERFACE PORTS

TP_PCIE_A_D2R_N	PCIE_A_D2R_N_SPN	MAKE_BASE=TRUE
TP_PCIE_A_D2R_P	PCIE_A_D2R_P_SPN	MAKE_BASE=TRUE
TP_PCIE_A_R2D_C_N	PCIE_A_R2D_C_N_SPN	MAKE_BASE=TRUE
TP_PCIE_A_R2D_C_P	PCIE_A_R2D_C_P_SPN	MAKE_BASE=TRUE
TP_PCIE_B_D2R_N	PCIE_B_D2R_N_SPN	MAKE_BASE=TRUE
TP_PCIE_B_D2R_P	PCIE_B_D2R_P_SPN	MAKE_BASE=TRUE
TP_PCIE_B_R2D_C_N	PCIE_B_R2D_C_N_SPN	MAKE_BASE=TRUE
TP_PCIE_B_R2D_C_P	PCIE_B_R2D_C_P_SPN	MAKE_BASE=TRUE
TP_PCIE_EXCARD_D2R_N	PCIE_C_D2R_N_SPN	MAKE_BASE=TRUE
TP_PCIE_EXCARD_D2R_P	PCIE_C_D2R_P_SPN	MAKE_BASE=TRUE
TP_PCIE_EXCARD_R2D_C_N	PCIE_C_R2D_C_N_SPN	MAKE_BASE=TRUE
TP_PCIE_EXCARD_R2D_C_P	PCIE_C_R2D_C_P_SPN	MAKE_BASE=TRUE
TP_PCIE_FW_D2R_N	PCIE_D_D2R_N_SPN	MAKE_BASE=TRUE
TP_PCIE_FW_D2R_P	PCIE_D_D2R_P_SPN	MAKE_BASE=TRUE
TP_PCIE_FW_R2D_C_N	PCIE_D_R2D_C_N_SPN	MAKE_BASE=TRUE
TP_PCIE_FW_R2D_C_P	PCIE_D_R2D_C_P_SPN	MAKE_BASE=TRUE

CLOCK ALIASES

NO-CONNECT UNUSED CLOCK INTERFACE PORTS

TP_CK505_SRC1_N	CK505_SRC1_N_SPN	MAKE_BASE=TRUE
TP_CK505_SRC1_P	CK505_SRC1_P_SPN	MAKE_BASE=TRUE
TP_CK505_SRC3_N	CK505_SRC3_N_SPN	MAKE_BASE=TRUE
TP_CK505_SRC3_P	CK505_SRC3_P_SPN	MAKE_BASE=TRUE
TP_CK505_SRC7_N	CK505_SRC7_N_SPN	MAKE_BASE=TRUE
TP_CK505_SRC7_P	CK505_SRC7_P_SPN	MAKE_BASE=TRUE
CK505_PCI2_CLK	CK505_PCI2_CLK_SPN	MAKE_BASE=TRUE
CK505_PCI4_CLK	CK505_PCI4_CLK_SPN	MAKE_BASE=TRUE
=ENET_CLKREQ_L	ENET_CLKREQ_L	MAKE_BASE=TRUE

SB ALIASES

NO-CONNECT UNUSED CLOCK INTERFACE PORTS

VR_PWRGD_CLKEN	VR_PWRGD_CK505	MAKE_BASE=TRUE
=SB_CLINK_MPWROK	CLINK_MPWROK	MAKE_BASE=TRUE
SB_SATA_CLKREQ_L	SB_CLK100M_SATA_OE_L	MAKE_BASE=TRUE
EXTGPU_RST_L	TP_SB_GPIO17	MAKE_BASE=TRUE

SO-DIMM ALIASES

NO-CONNECT UNUSED ADDRESS INTERFACE PORTS

MEM_A_A<15>	MEM_A_A15_SPN	MAKE_BASE=TRUE
MEM_B_A<15>	MEM_B_A15_SPN	MAKE_BASE=TRUE
TP_MEM_CLKP2	MEM_CLK_P_2_SPN	MAKE_BASE=TRUE
TP_MEM_CLKN2	MEM_CLK_N_2_SPN	MAKE_BASE=TRUE
TP_MEM_CLKP5	MEM_CLK_P_5_SPN	MAKE_BASE=TRUE
TP_MEM_CLKN5	MEM_CLK_N_5_SPN	MAKE_BASE=TRUE

=GND_AUDIO_CODEC — GND_AUDIO_CODEC — XW0801 SM

=GND_AUDIO_AMP — GND_AUDIO_AMP — XW0802 SM

MAKE_BASE=TRUE

Ethernet ALIASES

=PP3V3_S0_ENET — =ENET_VMAIN_AVLBL

=YUKON_EC_PP2V5_ENET

AIRPORT CARD STANDOFF SCREW HOLE

Z0912 OMIT — STDOFF-4.2OD2.15H-1.2-3.2-TH — NC
Z0913 OMIT — STDOFF-4.2OD3.95H-5.52R3.37-6B — NC

HDA ALIASES

HDA_BIT_CLK	ACZ_BITCLK	MAKE_BASE=TRUE
HDA_SYNC	ACZ_SYNC	MAKE_BASE=TRUE
HDA_RST_L	ACZ_RST_L	MAKE_BASE=TRUE
HDA_SDIN0	ACZ_SDATAIN<0>	MAKE_BASE=TRUE
HDA_SDOUT	ACZ_SDATAOUT	MAKE_BASE=TRUE
TP_HDA_SDIN1	HDN_SDIN1_SPN	MAKE_BASE=TRUE
TP_HDA_SDIN2	HDN_SPIN2_SPN	MAKE_BASE=TRUE
TP_HDA_SDIN3	HDN_SPIN3_SPN	MAKE_BASE=TRUE

NB CFG ALIASES

NB_CFG<3>	TP_NB_CFG<3>	MAKE_BASE=TRUE
NB_CFG<4>	TP_NB_CFG<4>	MAKE_BASE=TRUE
NB_CFG<6>	TP_NB_CFG<6>	MAKE_BASE=TRUE
NB_CFG<7>	TP_NB_CFG<7>	MAKE_BASE=TRUE
NB_CFG<8>	TP_NB_CFG<8>	MAKE_BASE=TRUE

GND_CHASSIS_IO1 — VOLTAGE=0V, MAKE_BASE=TRUE

=GND_CHASSIS_TMDS_DOWN
=GND_CHASSIS_FW_UPPER

FIREWIRE ALIASES

NO-CONNECT UNUSED FIREWIRE INTERFACE PORTS

FW_B_TPBIAS	FW_B_TPBIAS_SPN	6B7
FW_B_TPA_P	FW_B_TPA_P_SPN	MAKE_BASE=TRUE 6B7
FW_B_TPA_N	FW_B_TPA_N_SPN	MAKE_BASE=TRUE 6B7
FW_B_TPB_P	FW_B_TPB_P_SPN	MAKE_BASE=TRUE 6B7
FW_B_TPB_N	FW_B_TPB_N_SPN	MAKE_BASE=TRUE 6B7
FW_C_TPBIAS	FW_C_TPBIAS_SPN	MAKE_BASE=TRUE 6B7
FW_C_TPA_P	FW_C_TPA_P_SPN	MAKE_BASE=TRUE 6B7
FW_C_TPA_N	FW_C_TPA_N_SPN	MAKE_BASE=TRUE 6B7
FW_C_TPB_P	FW_C_TPB_P_SPN	MAKE_BASE=TRUE 6B7
FW_C_TPB_N	FW_C_TPB_N_SPN	MAKE_BASE=TRUE 6B7

USB PORT [0] = External USB2.0 Port A

=USB2_EXTA_P — USB2_EXTA_P — USB_EXTA_P 23C2 73B3
=USB2_EXTA_N — USB2_EXTA_N — USB_EXTA_N 23C2 73B3
=EXTAUSB_OC_L — EXTAUSB_OC_L — USB_EXTA_OC_L 23C8

USB PORT [1] = PCI-E Mini Card

=USB2_AIRPORT_P — USB2_AIRPORT_P — USB_MINI_P 23C2 73B3
=USB2_AIRPORT_N — USB2_AIRPORT_N — USB_MINI_N 23C2 73B3

USB PORT [2] = 3G USB

=USB2_3G_P — USB2_3G_P — USB_EXTD_P 23C2
=USB2_3G_N — USB2_3G_N — USB_EXTD_N 23C2

USB PORT [3] = CAMERA

=USB2_CAMERA_P — USB2_CAMERA_P — USB_CAMERA_P 23C2 73B3
=USB2_CAMERA_N — USB2_CAMERA_N — USB_CAMERA_N 23C2 73B3

USB PORT [4] = IR CONTROLLER

=USB2_IR_P — USB_IR_P — USB_IR_P 8C2 23C2 73B3
=USB2_IR_N — USB_IR_N — USB_IR_N 8C2 23C2 73B3

USB PORT [5] = Trackpad(Geyser)

=USB2_GEYSER_P — USB2_GEYSER_P — USB_TPAD_P 23C2 73B3
=USB2_GEYSER_N — USB2_GEYSER_N — USB_TPAD_N 23C2 73B3

USB PORT [6] = BLUETOOTH

=USB2_BT_P — USB_BT_P — USB_BT_P 8C2 23C2 73B3
=USB2_BT_N — USB_BT_N — USB_BT_N 8B2 23C2 73B3

USB PORT [7] = External USB2.0 Port B

=USB2_EXTB_P — USB2_EXTB_P — USB_EXTB_P 23C2 73B3
=USB2_EXTB_N — USB2_EXTB_N — USB_EXTB_N 23C2 73B3
=EXTBUSB_OC_L — EXTBUSB_OC_L — USB_EXTB_OC_L 23C8

USB PORT [8] = Unused

TP_USB_EXCARD_P — USB_EXCARD_P 23C2 73B3
TP_USB_EXCARD_N — USB_EXCARD_N 23C2 73B3

USB PORT [9] = Unused

TP_USB_EXTC_P — USB_EXTC_P 23C2 73B3
TP_USB_EXTC_N — USB_EXTC_N 23C2 73B3

ANALOG SWITCH GPIO

PM_EXTTS_L<0> — DIMM_OVERTEMPA_L 30C4
PM_EXTTS_L<1> — DIMM_OVERTEMPB_L 31C4

NB ALIASES

=GFX_VR_EN	GFX_VR_EN	60C6
=NB_CLINK_MPWROK	CLINK_MPWROK	MAKE_BASE=TRUE 8B3 27A6
=NB_CLK96M_DOT_P	NB_CLK96M_DOT_P	MAKE_BASE=TRUE 29B3 75B3
=NB_CLK96M_DOT_N	NB_CLK96M_DOT_N	MAKE_BASE=TRUE 29B3 75B3
=NB_CLK100M_DPLLSS_P	NB_CLK100M_DPLLSS_P	MAKE_BASE=TRUE 29C3 75B3
=NB_CLK100M_DPLLSS_N	NB_CLK100M_DPLLSS_N	MAKE_BASE=TRUE 29C3 75B3
=NB_TDE_SENSE		
=NB_TDE_FORCE		
=NB_TDB_FORCE		
=NB_TDB_SENSE		

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
860-0876	4	THERMAL STANDOFF	Z0903,Z0904,Z0905,Z0921	STANDOFF
860-0723	1	STANDOFF WIRELESS	Z0912	STANDOFF
860-0749	1	STANDOFF W/THRU HOLES,WIRELESS	Z0913	STANDOFF

SIGNAL ALIAS /RESET

SYNC_MASTER=GPU — SYNC_DATE=07/17/2006

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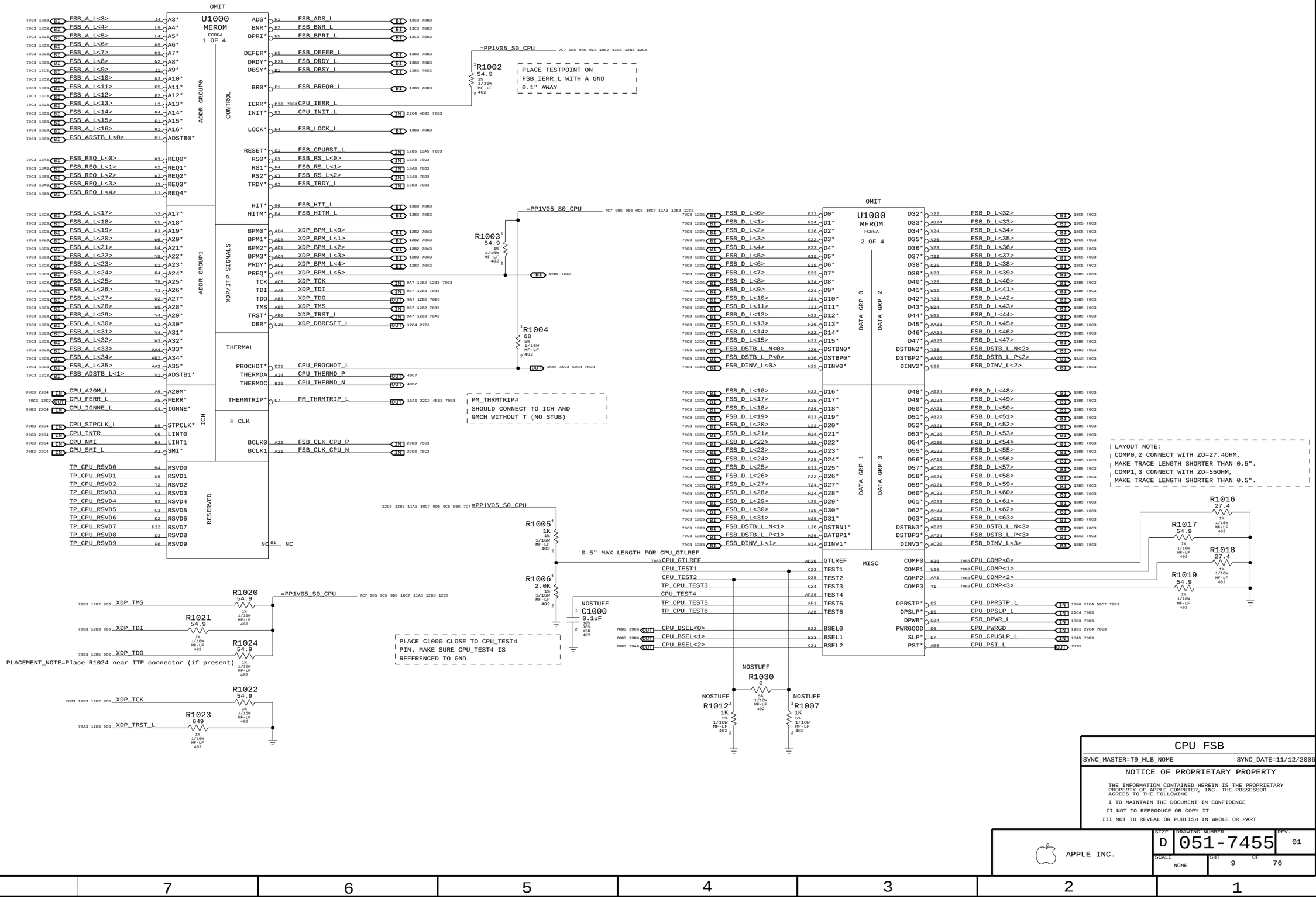
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE — SHT 8 OF 76



CPU FSB

SYNC_MASTER=T9_MLB_NOME SYNC_DATE=11/12/2006

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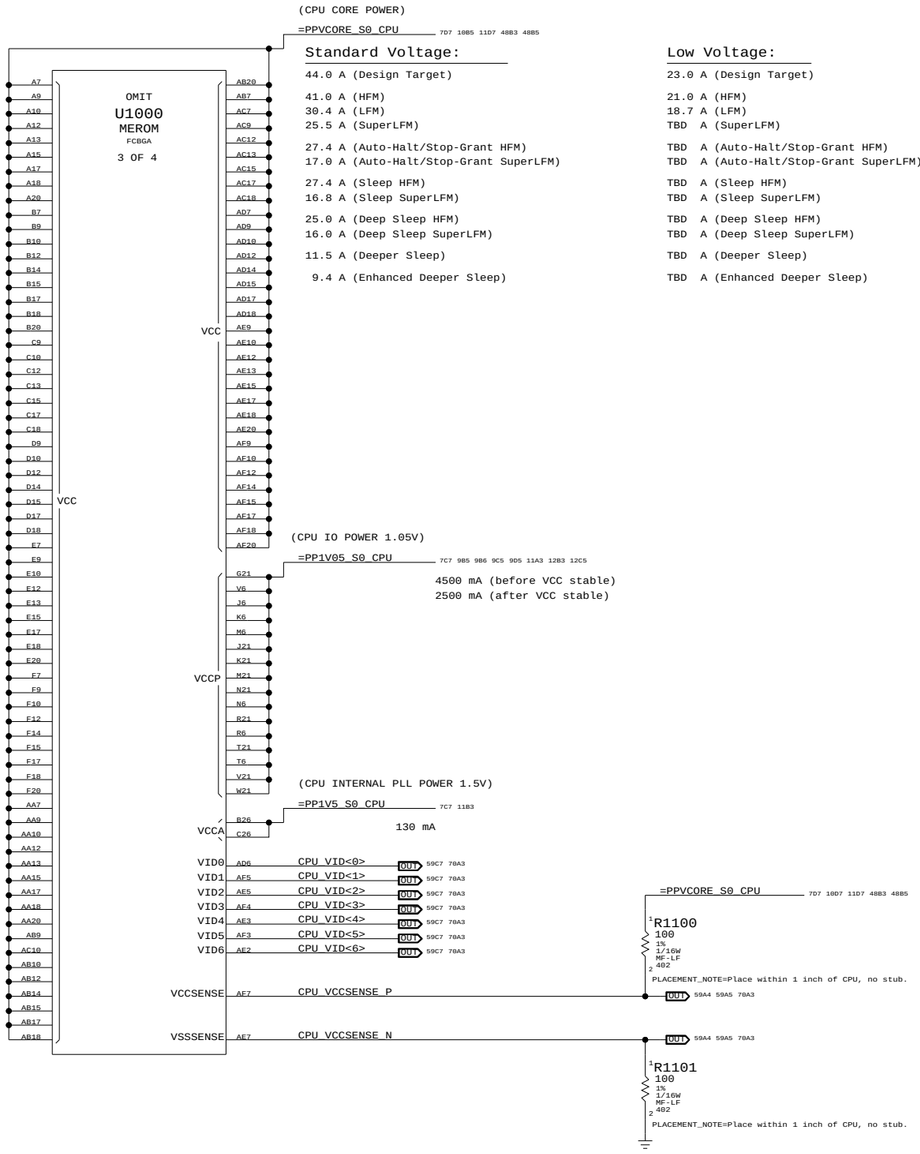
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	9	76



Standard Voltage:

44.0 A (Design Target)

41.0 A (HFM)
30.4 A (LFM)
25.5 A (SuperLFM)

27.4 A (Auto-Halt/Stop-Grant HFM)
17.0 A (Auto-Halt/Stop-Grant SuperLFM)

27.4 A (Sleep HFM)
16.8 A (Sleep SuperLFM)

25.0 A (Deep Sleep HFM)
16.0 A (Deep Sleep SuperLFM)

11.5 A (Deeper Sleep)

9.4 A (Enhanced Deeper Sleep)

Low Voltage:

23.0 A (Design Target)

21.0 A (HFM)
18.7 A (LFM)
TBD A (SuperLFM)

TBD A (Auto-Halt/Stop-Grant HFM)
TBD A (Auto-Halt/Stop-Grant SuperLFM)

TBD A (Sleep HFM)
TBD A (Sleep SuperLFM)

TBD A (Deep Sleep HFM)
TBD A (Deep Sleep SuperLFM)

TBD A (Deeper Sleep)

TBD A (Enhanced Deeper Sleep)

Ultra Low Voltage:

17.0 A (Design Target)

TBD A (HFM)
TBD A (LFM)

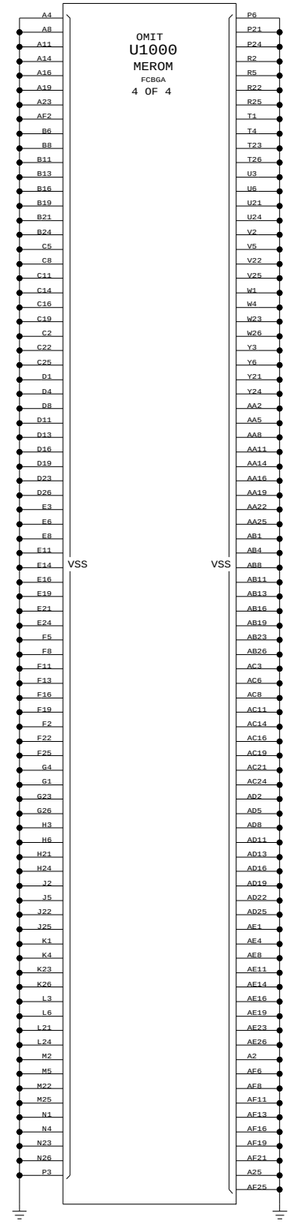
TBD A (Auto-Halt/Stop-Grant HFM)
TBD A (Auto-Halt/Stop-Grant LFM)

TBD A (Sleep HFM)
TBD A (Sleep LFM)

TBD A (Deep Sleep HFM)
TBD A (Deep Sleep LFM)

TBD A (Deeper Sleep)

TBD A (Enhanced Deeper Sleep)



Current numbers from Merom for Santa Rosa EMTS, doc #22221.

CPU Power & Ground

SYNC_MASTER=T9_MLB_NOME SYNC_DATE=11/12/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	10	76

CPU VCORE HF AND BULK DECOUPLING

4x 330uF. 20x 10uF 0805

48B5 48B3 10D7 10B5 7D7 =PPVCORE_S0_CPU

LAYOUT NOTE:
PLACE INSIDE SOCKET CAVITY (ON BOTTOMSIDE)

CRITICAL C1200 10UF 10% 6.3V X5R 805-2
CRITICAL C1201 10UF 10% 6.3V X5R 805-2
CRITICAL C1202 10UF 10% 6.3V X5R 805-2
CRITICAL C1203 10UF 10% 6.3V X5R 805-2
CRITICAL C1204 10UF 10% 6.3V X5R 805-2
CRITICAL C1205 10UF 10% 6.3V X5R 805-2
CRITICAL C1206 10UF 10% 6.3V X5R 805-2
CRITICAL C1207 10UF 10% 6.3V X5R 805-2
CRITICAL C1208 10UF 10% 6.3V X5R 805-2
CRITICAL C1209 10UF 10% 6.3V X5R 805-2

LAYOUT NOTE:
PLACE INSIDE SOCKET CAVITY (ON BOTTOMSIDE)

CRITICAL C1210 10UF 10% 6.3V X5R 805-2
CRITICAL C1211 10UF 10% 6.3V X5R 805-2
CRITICAL C1212 10UF 10% 6.3V X5R 805-2
CRITICAL C1213 10UF 10% 6.3V X5R 805-2
CRITICAL C1214 10UF 10% 6.3V X5R 805-2
CRITICAL C1215 10UF 10% 6.3V X5R 805-2
CRITICAL C1216 10UF 10% 6.3V X5R 805-2
CRITICAL C1217 10UF 10% 6.3V X5R 805-2
CRITICAL C1218 10UF 10% 6.3V X5R 805-2
CRITICAL C1219 10UF 10% 6.3V X5R 805-2

LAYOUT NOTE:
PLACE ON BOTTOMSIDE

CRITICAL C1250 330UF 10% 2.0V TANT D2T
CRITICAL C1251 330UF 10% 2.0V TANT D2T
CRITICAL C1252 330UF 10% 2.0V TANT D2T
CRITICAL C1253 330UF 10% 2.0V TANT D2T

LAYOUT NOTE:
PLACE ON BOTTOMSIDE

C1250, C1251, C1252 AND C1253 NEED TO USE 6mOHM CAPS.

VCCA (CPU AVdd) DECOUPLING

10B7 7C7 =PP1V5_S0_CPU

1x 10uF, 1x 0.01uF

C1280 10uF 20% 6.3V X5R 603
C1281 0.01UF 10% 16V CERM 402

LAYOUT NOTE:
PLACE C1281 NEAR PIN B26 OF U1000

VCCP (CPU I/O) DECOUPLING

12C5 12B3 10C7 9D5 9C5 9B6 9B5 7C7 =PP1V05_S0_CPU

1X 330UF, 6X 0.1UF

CRITICAL C1235 330uF 10% 2.5V TANT D2T
C1236 0.1UF 20% 10V CERM 402
C1237 0.1UF 20% 10V CERM 402
C1238 0.1UF 20% 10V CERM 402
C1239 0.1UF 20% 10V CERM 402
C1240 0.1UF 20% 10V CERM 402
C1241 0.1UF 20% 10V CERM 402

LAYOUT NOTE:
PLACE C1235 CLOSE TO CPU

CPU Decoupling & VID

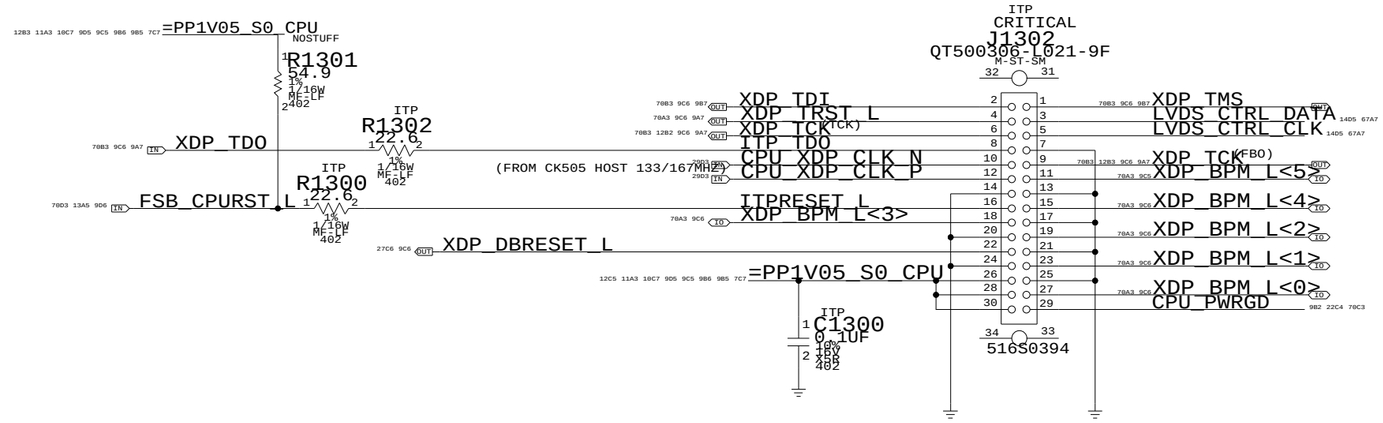
SYNC_MASTER=MSARWAR SYNC_DATE=04/26/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 11 OF 76

CPU ITP700FLEX DEBUG SUPPORT



(DBA#)INDICATE THAT ITP IS USING TAP I/F, NC IN 965GM CHIPSET SYSTEM.
(DEBUG PORT ACTIVE)
(DBR#)TO ICH8M SYS_RST*, AND WITH SYSTEM RESET LOGIC
(DEBUG PORT RESET)

ITP TCK SIGNAL LAYOUT NOTE:
ROUTE THE TCK SIGNAL FROM ITP700FLEX CONNECTOR'S TCK PIN TO CPU'S TCK PIN AND THEN FORK BACK FROM CPU TCK PIN AND ROUTE BACK TO ITP700FLEX CONNECTOR'S FBO PIN.

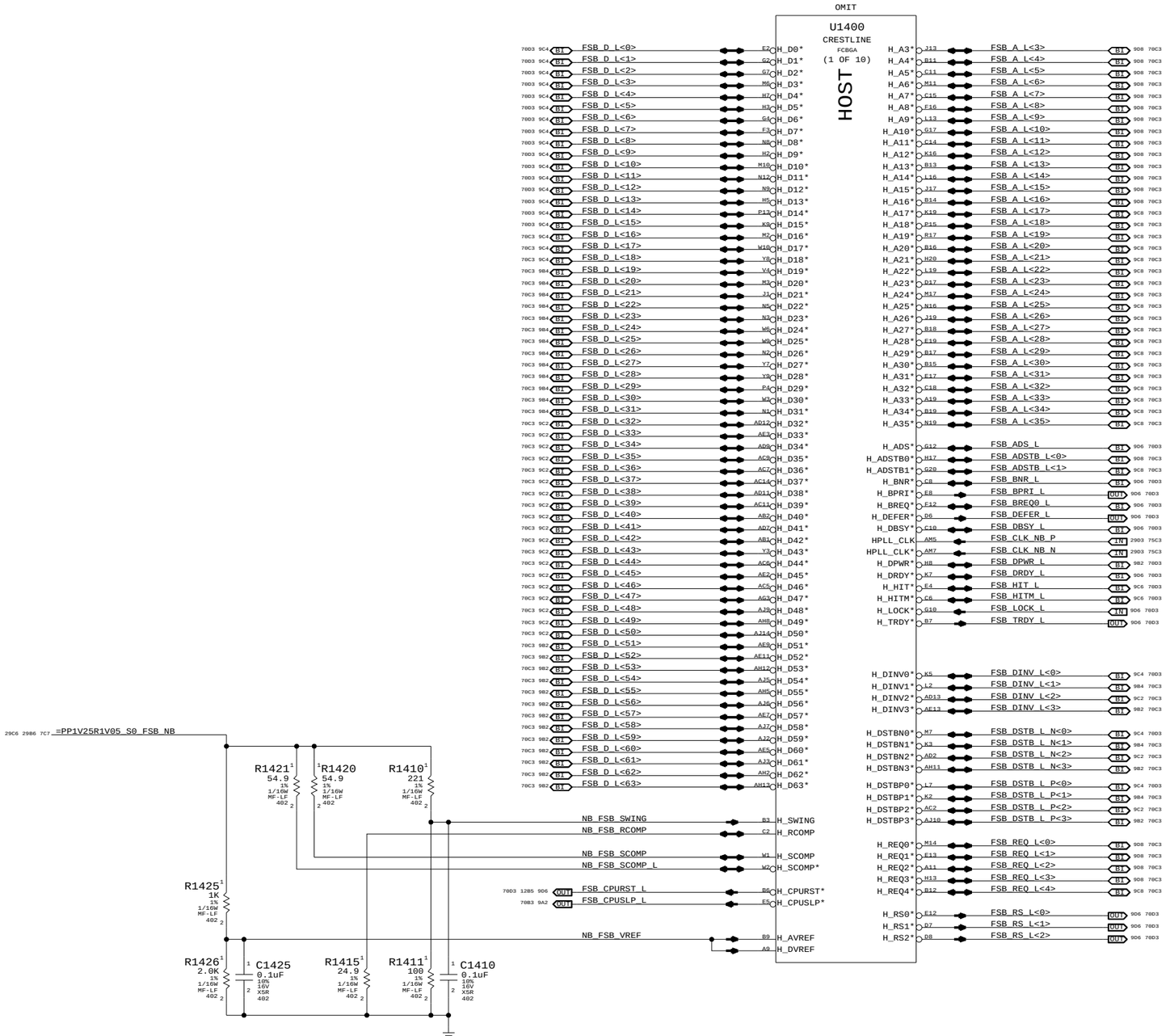
CPU ITP700FLEX DEBUG

SYNC_MASTER=MASTER SYNC_DATE=5/23/05

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	12	76



NB CPU Interface

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	13	76

LVDS Disable

Can leave all signals NC if LVDS is not implemented.
Tie VCC_TX_LVDS and VCCA_LVDS to GND.

If SDVO is used, VCCD_LVDS must remain powered with proper decoupling. Otherwise, tie VCCD_LVDS to GND also.

TV-Out Signal Usage:

Composite: DACA only
S-Video: DACB & DACC only
Component: DACA, DACB & DACC

Unused DAC outputs must remain powered, but can omit filtering components. Unused DAC outputs should connect to GND through 75-ohm resistors.

TV-Out Disable / CRT Enable

Tie TVx_DAC and TVx_RTN to GND. Must power all TVDAC rails. VCCA_TVx_DAC and VCCA_DAC_BG can share filtering with VCCA_CRT_DAC.

CRT Disable / TV-Out Enable

Tie R/R#/G/G#/B/B#, HSYNC and VSYNC to GND. All CRT/TVDAC rails must be powered. All rails must be filtered except for VCCA_CRT.

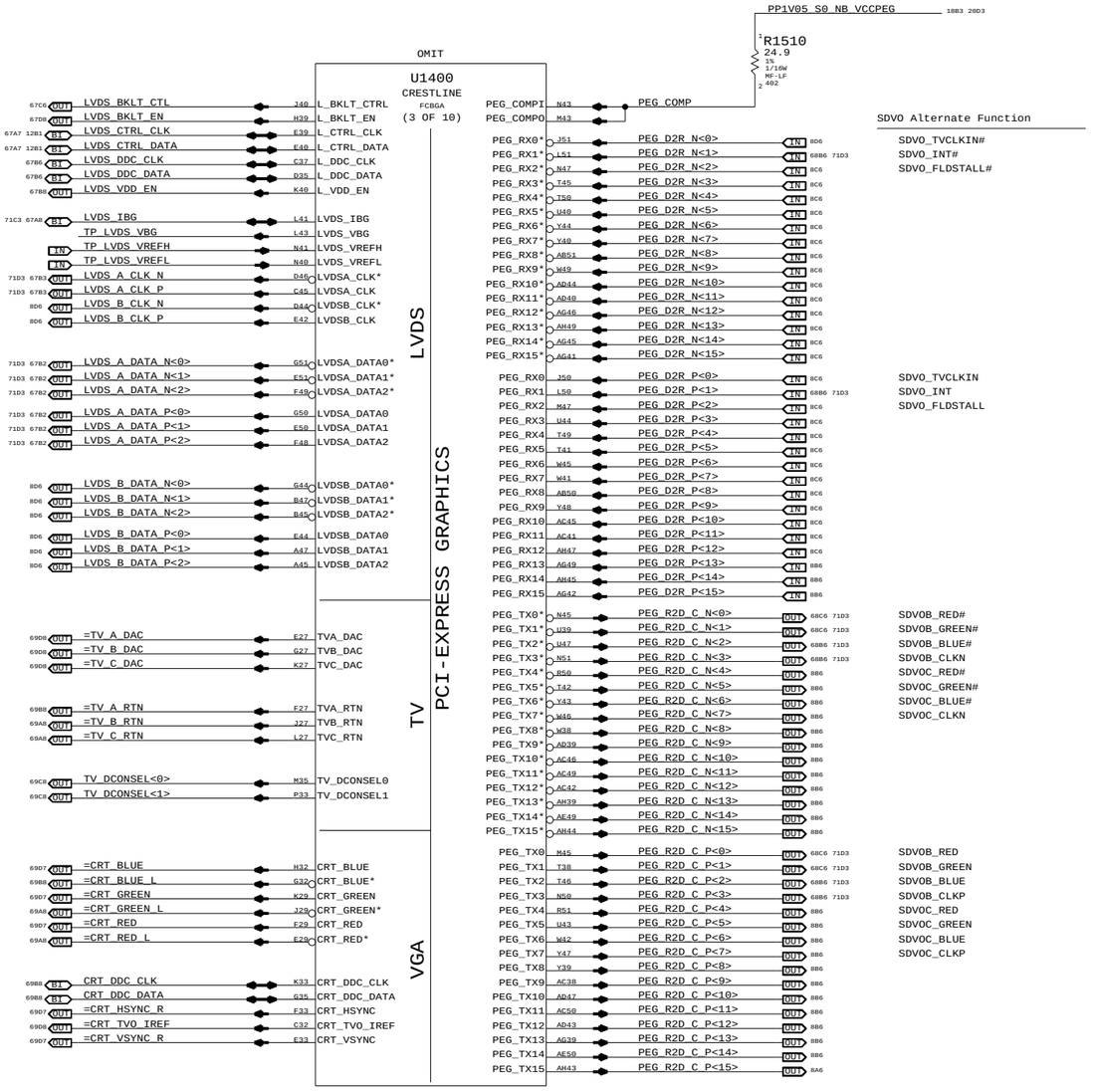
CRT & TV-Out Disable

Tie TVx_DAC, TVx_RTN, R/R#/G/G#/B/B#, HSYNC, VSYNC and CRT_TVO_IREF to GND.
Can tie the following rails to GND:
VCCA_CRT_DAC, VCCA_DAC_BG, VCCA_TVx_DAC, VCCD_CRT, VCCD_QDAC and VCC_SYNC.

NOTE: Must keep VDDC_TVDAC powered and filtered at all times!

Internal Graphics Disable

Follow instructions for LVDS and CRT & TV-Out Disable above.
Can also tie CRT_DDC_*, L_CTRL_*, L_DDC_*, SDVO_CTRL_* and TV_DCONSELx to GND.
Tie DPLL_REF_CLK and DPLL_REF_SSCLK to GND.
Tie DPLL_REF_CLK* and DPLL_REF_SSCLK* to VCC (VCore).
Tie VCCA_DPLLA and VCCA_DPLLB to VCC (VCore).
Tie VCC_AXG and VCC_AXG_NCTF to GND.
Leave GFX_VID<3..0> and GFX_VR_EN as NC.



NB PEG / Video Interfaces

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 14 OF 76	

NB_CFG<3>	RESERVED
NB_CFG<4>	RESERVED
NB_CFG<5> DMI x2 Select	High = DMIx4 Low = DMIx2
NB_CFG<6>	RESERVED
NB_CFG<7>	RESERVED
NB_CFG<8>	RESERVED
NB_CFG<9> PCIe Graphics Lane Reversal	High = Normal Low = Reversed
NB_CFG<10>	RESERVED
NB_CFG<11>	RESERVED
NB_CFG<12>	See Below
NB_CFG<13>	See Below
NB_CFG<14>	RESERVED
NB_CFG<15>	RESERVED
NB_CFG<16> FSB Dynamic ODT	High = Enabled Low = Disabled
NB_CFG<17>	RESERVED
NB_CFG<18>	RESERVED
NB_CFG<19> DMI Lane Reversal	High = Reversed Low = Normal
NB_CFG<20> Concurrent SDVO/PCIe x1	High = Both active Low = Only SDVO or PCIe x16

NB_CFG<13:12>

00 = RESERVED
01 = XOR Mode Enabled
10 = All-Z Mode Enabled
11 = Normal Operation

NB_CFG<5> 15B6
NBCFG_DMI_X2
R1655 3.9K 5% 1/16W MF-LF 402

NB_CFG<9> 15B6
NBCFG_PEG_REVERSE
R1659 3.9K 5% 1/16W MF-LF 402

NB_CFG<16> 15B6
NBCFG_DYN_ODT_DISABLE
R1666 3.9K 5% 1/16W MF-LF 402

=PP3V3_S0_NB_VCCHV 7D4 15B7 15C7 18B3 20A8 21B7
NBCFG_DMI_REVERSE
R1669 3.9K 5% 1/16W MF-LF 402
NB_CFG<19> 15B6

=PP3V3_S0_NB_VCCHV 7D4 15B7 15C7 18B3 20A8 21B7
NBCFG_SDVO_AND_PCIE
R1670 3.9K 5% 1/16W MF-LF 402
NB_CFG<20> 15B6

NB CFG<8:0> used for debug access

NB CFG<13:12> require ICT access

21B7 20A8 18B3 15C7 7D4 =PP3V3_S0_NB_VCCHV
R1630 10K 5% 1/16W MF-LF 402
R1631 10K 5% 1/16W MF-LF 402
44B8 8B2 IN PM_EXTTS_L<0>
44B8 8B2 IN PM_EXTTS_L<1>

OMIT

U1400
CRESTLINE
FCBGA
(2 OF 10)

RSVD
TP_NB_RSVD<1> P36 RSVD1
TP_NB_RSVD<2> P37 RSVD2
TP_NB_RSVD<3> R35 RSVD3
TP_NB_RSVD<4> N35 RSVD4
TP_NB_RSVD<5> AR12 RSVD5
TP_NB_RSVD<6> AR13 RSVD6
TP_NB_RSVD<7> AM12 RSVD7
TP_NB_RSVD<8> AN13 RSVD8
TP_NB_RSVD<9> J12 RSVD9
TP_NB_RSVD<10> AR37 RSVD10
TP_NB_RSVD<11> AM36 RSVD11
TP_NB_RSVD<12> AL36 RSVD12
TP_NB_RSVD<13> AM37 RSVD13
TP_NB_RSVD<14> D20 RSVD14
TP_NB_RSVD<20> H10 RSVD20
TP_NB_RSVD<21> B51 RSVD21
TP_NB_RSVD<22> BJ20 RSVD22
TP_NB_RSVD<23> BK22 RSVD23
TP_NB_RSVD<24> BF19 RSVD24
TP_NB_RSVD<25> BH20 RSVD25
TP_NB_RSVD<26> BK18 RSVD26
TP_NB_RSVD<27> BJ18 RSVD27
8B4 TP_MEM_CLKP2 BF23 SM_CK2
8B4 TP_MEM_CLKN2 BG23 SM_CK2*
8B4 TP_MEM_CLKP5 BC23 SM_CK5
8B4 TP_MEM_CLKN5 BD24 SM_CK5*
72D3 32C6 30C4 OUT MEM_A_A<14> BJ29 SA_MA14
72B3 32A5 31C4 OUT MEM_B_A<14> BE24 SB_MA14
TP_NB_RSVD<34> BH39 RSVD34
TP_NB_RSVD<35> AW20 RSVD35
TP_NB_RSVD<36> BK20 RSVD36
8D6 TP_LVDS_A_DATAN3 C48 RSVD37
8D6 TP_LVDS_A_DATAP3 D47 RSVD38
8D6 TP_LVDS_B_DATAN3 B44 RSVD39
8D6 TP_LVDS_B_DATAP3 C44 RSVD40
TP_NB_RSVD<41> A35 RSVD41
TP_NB_RSVD<42> B37 RSVD42
TP_NB_RSVD<43> B36 RSVD43
TP_NB_RSVD<44> B34 RSVD44
TP_NB_RSVD<45> C34 RSVD45

CFG
70B3 29C8 IN NB_BSEL<0> P27 CFG0
70B3 29B8 IN NB_BSEL<1> N27 CFG1
70B3 29B8 IN NB_BSEL<2> N24 CFG2
8A6 OUT NB_CFG<3> C21 CFG3 IPU
8A6 B1 NB_CFG<4> C23 CFG4 IPU
15D7 B1 NB_CFG<5> F23 CFG5 IPU
8A6 OUT NB_CFG<6> N23 CFG6 IPU
8A6 OUT NB_CFG<7> G23 CFG7 IPU
8A6 OUT NB_CFG<8> J20 CFG8 IPU
15D7 NB_CFG<9> C20 CFG9 IPU
TP_NB_CFG<10> R24 CFG10 IPU
TP_NB_CFG<11> L23 CFG11 IPU
TP_NB_CFG<12> J23 CFG12 IPU
TP_NB_CFG<13> E23 CFG13 IPU
TP_NB_CFG<14> E20 CFG14 IPU
TP_NB_CFG<15> K23 CFG15 IPU
15D7 NB_CFG<16> M20 CFG16 IPU
TP_NB_CFG<17> M24 CFG17 IPU
TP_NB_CFG<18> L32 CFG18 IPD
15C7 NB_CFG<19> N33 CFG19 IPD
15C7 NB_CFG<20> L35 CFG20 IPD

PM
24D5 OUT PM_BMBUSY_L G41 PM_BM_BUSY*
70B3 59C7 22C4 9B2 IN CPU_DPRSTP_L L39 PM_DPRSTP*
L36 PM_EXT_TS0*
J36 PM_EXT_TS1*
59C7 27B5 IN VR_PWRGOOD_DELAY AW49 PWROK
27D1 IN NB_RESET_L AV20 RSTIN*
70B3 45B3 22C2 9C6 OUT PM_THRMTRIP_L N20 THERMTRIP*
70B3 59D8 24C3 IN PM_DPRSLPVR G36 DPRSLPVR

NC
TP_NB_NC<1> BJ51 NC1
TP_NB_NC<2> BK51 NC2
TP_NB_NC<3> BK50 NC3
TP_NB_NC<4> BL50 NC4
TP_NB_NC<5> BL49 NC5
TP_NB_NC<6> BL3 NC6
TP_NB_NC<7> BL2 NC7
TP_NB_NC<8> BK1 NC8
TP_NB_NC<9> BJ1 NC9
TP_NB_NC<10> E1 NC10
TP_NB_NC<11> A5 NC11
TP_NB_NC<12> C51 NC12
TP_NB_NC<13> B50 NC13
TP_NB_NC<14> A50 NC14
TP_NB_NC<15> A49 NC15
TP_NB_NC<16> BK2 NC16

DDR MUXING
SM_CK0 AV29 OUT MEM_CLK_P<0> 30D4 72D3
SM_CK1 BB23 OUT MEM_CLK_P<1> 30A4 72D3
SM_CK3 BA25 OUT MEM_CLK_P<3> 31D4 72B3
SM_CK4 AV23 OUT MEM_CLK_P<4> 31A4 72B3
SM_CK0* AW30 OUT MEM_CLK_N<0> 30D4 72D3
SM_CK1* BA23 OUT MEM_CLK_N<1> 30A4 72D3
SM_CK3* AW25 OUT MEM_CLK_N<3> 31D4 72B3
SM_CK4* AW23 OUT MEM_CLK_N<4> 31A4 72B3
SM_CKE0 BE29 OUT MEM_CKE<0> 30C6 32D6 72D3
SM_CKE1 AY32 OUT MEM_CKE<1> 30C4 32D6 72D3
SM_CKE3 BD39 OUT MEM_CKE<3> 31C6 32D6 72B3
SM_CKE4 BG37 OUT MEM_CKE<4> 31C4 32D5 72B3
SM_CS0* BG20 OUT MEM_CS_L<0> 30B4 32D6 72D3
SM_CS1* BK16 OUT MEM_CS_L<1> 30B6 32D6 72D3
SM_CS2* BG16 OUT MEM_CS_L<2> 31B4 32D6 72B3
SM_CS3* BE13 OUT MEM_CS_L<3> 31B6 32D6 72B3
SM_ODT0 BH18 OUT MEM_ODT<0> 30B4 32D6 72D3
SM_ODT1 BJ15 OUT MEM_ODT<1> 30B6 32D6 72D3
SM_ODT2 BJ14 OUT MEM_ODT<2> 31B4 32D6 72B3
SM_ODT3 BE16 OUT MEM_ODT<3> 31B6 32D6 72B3
SM_RCOMP BL15 MEM_RCOMP
SM_RCOMP* BK14 MEM_RCOMP_L
SM_RCOMP_VOH BK31 MEM_RCOMP_VOH
SM_RCOMP_VOL BL31 MEM_RCOMP_VOL
SM_VREF0 AR49 =PP0V9_S3M_MEM_NBVREFA IN 20A5
SM_VREF1 AW4 =PP0V9_S3M_MEM_NBVREFB IN 20A4

CLK
DPLL_REF_CLK B42 =NB_CLK96M_DOT_P IN 8B2
DPLL_REF_CLK* C42 =NB_CLK96M_DOT_N IN 8B2
DPLL_REF_SSCLK H48 =NB_CLK100M_DPLLSS_P IN 8B2
DPLL_REF_SSCLK* H47 =NB_CLK100M_DPLLSS_N IN 8B2
PEG_CLK K44 NB_CLK100M_PCIE_P IN 29C3 75B3
PEG_CLK* K45 NB_CLK100M_PCIE_N IN 29C3 75B3
Clk used for PEG and DMI

DMI
DMI_RXN0 AN47 DMI_S2N_N<0> IN 23D2 71D3
DMI_RXN1 AJ38 DMI_S2N_N<1> IN 23D2 71D3
DMI_RXN2 AN42 DMI_S2N_N<2> IN 23D2 71D3
DMI_RXN3 AN46 DMI_S2N_N<3> IN 23D2 71D3
DMI_RXP0 AM47 DMI_S2N_P<0> IN 23D2 71D3
DMI_RXP1 AJ39 DMI_S2N_P<1> IN 23D2 71D3
DMI_RXP2 AN41 DMI_S2N_P<2> IN 23D2 71D3
DMI_RXP3 AN45 DMI_S2N_P<3> IN 23D2 71D3
DMI_TXN0 AJ46 DMI_N2S_N<0> OUT 23D2 71D3
DMI_TXN1 AJ41 DMI_N2S_N<1> OUT 23D2 71D3
DMI_TXN2 AM40 DMI_N2S_N<2> OUT 23D2 71D3
DMI_TXN3 AM44 DMI_N2S_N<3> OUT 23D2 71D3
DMI_TXP0 AJ47 DMI_N2S_P<0> OUT 23D2 71D3
DMI_TXP1 AJ42 DMI_N2S_P<1> OUT 23D2 71D3
DMI_TXP2 AM39 DMI_N2S_P<2> OUT 23D2 71D3
DMI_TXP3 AM43 DMI_N2S_P<3> OUT 23D2 71D3

GRAPHICS VID
GFX_VID0 E35 GFX_VID<0> OUT 21B6 60C6
GFX_VID1 A39 GFX_VID<1> OUT 21B6 60C6
GFX_VID2 C38 GFX_VID<2> OUT 21B6 60C6
GFX_VID3 B39 GFX_VID<3> OUT 21B6 60C6
GFX_VR_EN E36 =GFX_VR_EN OUT 8B2
R1600 0 5% 1/16W MF-LF 402
GFX_VID<4> OUT 60C6

ME
CL_CLK AM49 CLINK_NB_CLK B1 24C3 74A3
CL_DATA AK50 CLINK_NB_DATA B1 24C3 74A3
CL_PWROK AT43 =NB_CLINK_MPWROK IN 8B2
CL_RST* AN49 CLINK_NB_RESET_L OUT 24C3 74A3
CL_VREF AM50 74A3 NB_CLINK_VREF

MISC
SDVO_CTRL_CLK H35 SDVO_CTRLCLK B1 68A6
SDVO_CTRL_DATA K36 SDVO_CTRLDATA B1 68A6
CLKREQ* G39 NB_CLKREQ_L OUT 28B4
ICH_SYNC* G40 NB_SB_SYNC_L OUT 24B5
TEST1 A37 NB_TEST1
TEST2 R32 NB_TEST2
R1691 20K 5% 1/16W MF-LF 402
R1690 0 5% 1/16W MF-LF 402

31D2 30D2 28C8 17D7 7A4 =PP1V8_S3M_MEM_NB
R1610 20 1% 1/16W MF-LF 402
R1620 1K 1% 1/16W MF-LF 402
C1623 0.01UF 10% 16V CERM 402
C1622 2.2UF 20% 6.3V CERM1 603
R1622 3.01K 1% 1/16W MF-LF 402
R1611 20 1% 1/16W MF-LF 402
C1625 0.01UF 10% 16V CERM 402
C1624 2.2UF 20% 6.3V CERM1 603
R1624 1K 1% 1/16W MF-LF 402
C1615 0.1uF 20% 10V CERM 402
C1616 0.1uF 20% 10V CERM 402

PP1V25_S0M_NB_VCCAXD 18C3 20A6
R1640 1K 1% 1/16W MF-LF 402
C1640 0.1uF 20% 10V CERM 402
R1641 392 1% 1/16W MF-LF 402

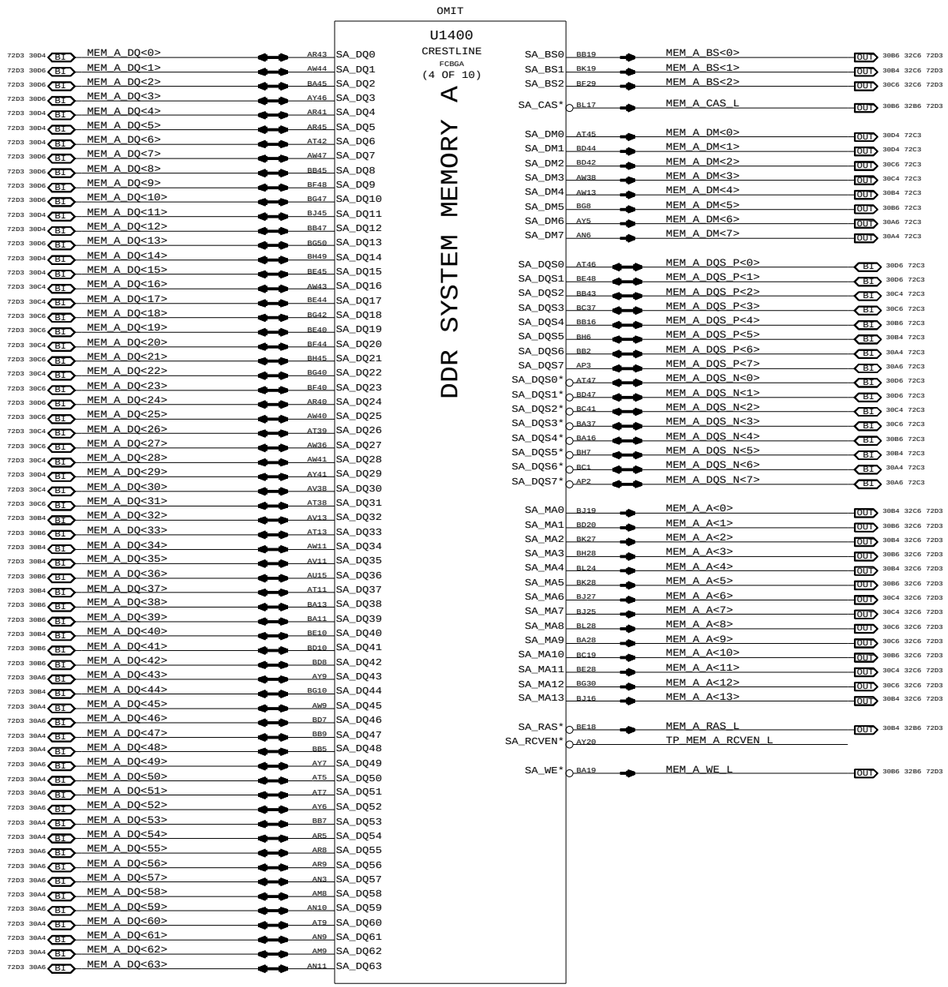
NOTE: GMCH CL_PWROK input must be PWRGD signal for PP3V3_S0M, PP3V3_S0MWOL, PP1V8_S3M, PP1V25_S0M, PP1V05_S0M, PP0V9_S3M and PP0V9_S0M.
If ME/AMT is not used, short CL_PWROK to PWROK.

NB Misc Interfaces

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01
SCALE NONE | SHT 15 OF 76



NB DDR2 Interfaces

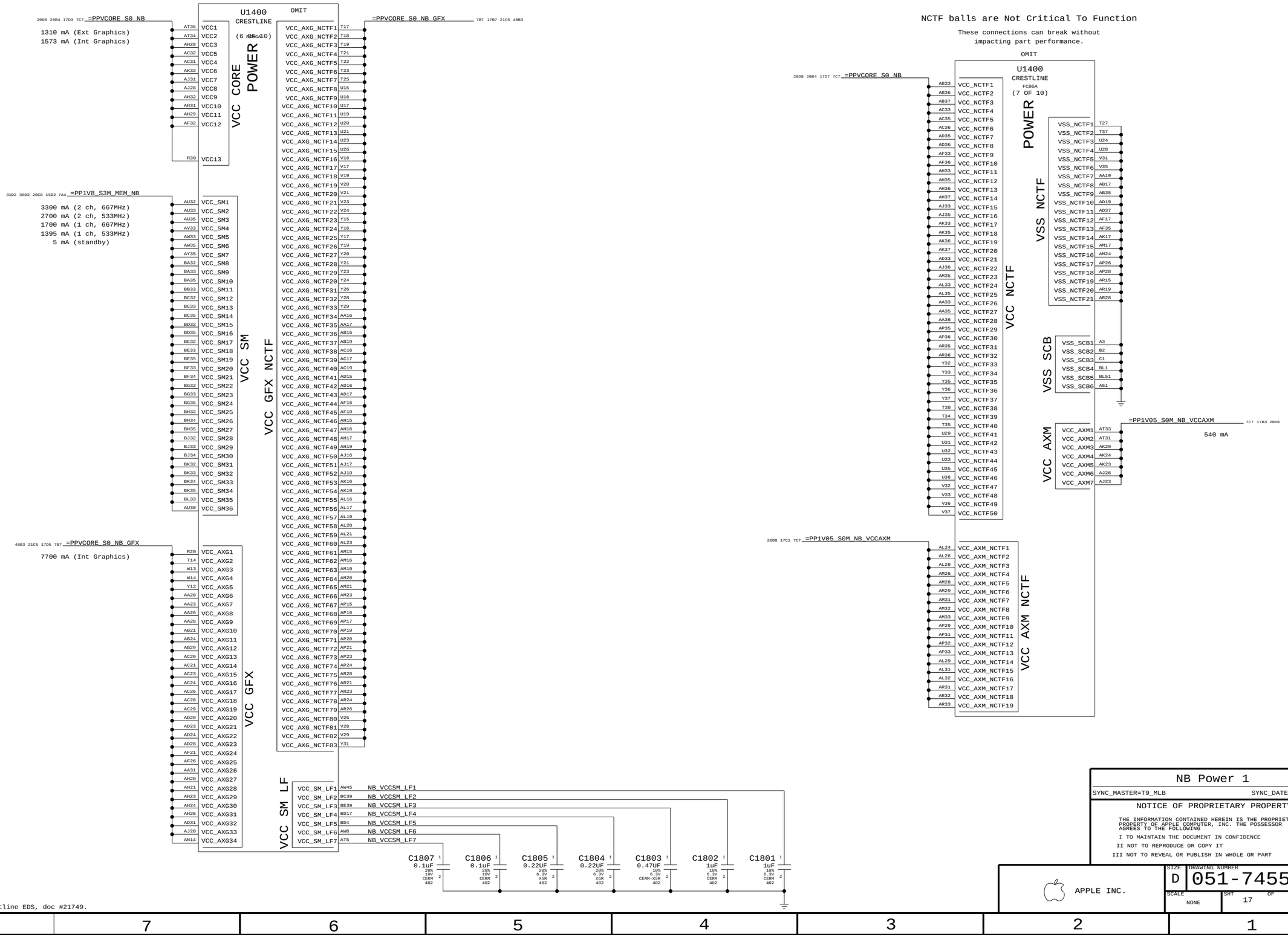
SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 16 OF 76


U1400
CRESTLINE
FCBGA
(7 OF 10)
OMIT
=PPVCORE_S0_NB
1310 mA (Ext Graphics)
1573 mA (Int Graphics)
VCC CORE POWER
VCC1 VCC2 VCC3 VCC5 VCC4 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13
=PPV1V8_S3M_MEM_NB
3300 mA (2 ch, 667MHz)
2700 mA (2 ch, 533MHz)
1700 mA (1 ch, 667MHz)
1395 mA (1 ch, 533MHz)
5 mA (standby)
VCC SM
VCC_SM1 VCC_SM2 VCC_SM3 VCC_SM4 VCC_SM5 VCC_SM6 VCC_SM7 VCC_SM8 VCC_SM9 VCC_SM10 VCC_SM11 VCC_SM12 VCC_SM13 VCC_SM14 VCC_SM15 VCC_SM16 VCC_SM17 VCC_SM18 VCC_SM19 VCC_SM20 VCC_SM21 VCC_SM22 VCC_SM23 VCC_SM24 VCC_SM25 VCC_SM26 VCC_SM27 VCC_SM28 VCC_SM29 VCC_SM30 VCC_SM31 VCC_SM32 VCC_SM33 VCC_SM34 VCC_SM35 VCC_SM36
=PPVCORE_S0_NB_GFX
7700 mA (Int Graphics)
VCC GFX
VCC_AXG1 VCC_AXG2 VCC_AXG3 VCC_AXG4 VCC_AXG5 VCC_AXG6 VCC_AXG7 VCC_AXG8 VCC_AXG9 VCC_AXG10 VCC_AXG11 VCC_AXG12 VCC_AXG13 VCC_AXG14 VCC_AXG15 VCC_AXG16 VCC_AXG17 VCC_AXG18 VCC_AXG19 VCC_AXG20 VCC_AXG21 VCC_AXG22 VCC_AXG23 VCC_AXG24 VCC_AXG25 VCC_AXG26 VCC_AXG27 VCC_AXG28 VCC_AXG29 VCC_AXG30 VCC_AXG31 VCC_AXG32 VCC_AXG33 VCC_AXG34
VCC GFX NCTF
VCC_AXG_NCTF1 VCC_AXG_NCTF2 VCC_AXG_NCTF3 VCC_AXG_NCTF4 VCC_AXG_NCTF5 VCC_AXG_NCTF6 VCC_AXG_NCTF7 VCC_AXG_NCTF8 VCC_AXG_NCTF9 VCC_AXG_NCTF10 VCC_AXG_NCTF11 VCC_AXG_NCTF12 VCC_AXG_NCTF13 VCC_AXG_NCTF14 VCC_AXG_NCTF15 VCC_AXG_NCTF16 VCC_AXG_NCTF17 VCC_AXG_NCTF18 VCC_AXG_NCTF19 VCC_AXG_NCTF20 VCC_AXG_NCTF21 VCC_AXG_NCTF22 VCC_AXG_NCTF23 VCC_AXG_NCTF24 VCC_AXG_NCTF25 VCC_AXG_NCTF26 VCC_AXG_NCTF27 VCC_AXG_NCTF28 VCC_AXG_NCTF29 VCC_AXG_NCTF30 VCC_AXG_NCTF31 VCC_AXG_NCTF32 VCC_AXG_NCTF33 VCC_AXG_NCTF34 VCC_AXG_NCTF35 VCC_AXG_NCTF36 VCC_AXG_NCTF37 VCC_AXG_NCTF38 VCC_AXG_NCTF39 VCC_AXG_NCTF40 VCC_AXG_NCTF41 VCC_AXG_NCTF42 VCC_AXG_NCTF43 VCC_AXG_NCTF44 VCC_AXG_NCTF45 VCC_AXG_NCTF46 VCC_AXG_NCTF47 VCC_AXG_NCTF48 VCC_AXG_NCTF49 VCC_AXG_NCTF50 VCC_AXG_NCTF51 VCC_AXG_NCTF52 VCC_AXG_NCTF53 VCC_AXG_NCTF54 VCC_AXG_NCTF55 VCC_AXG_NCTF56 VCC_AXG_NCTF57 VCC_AXG_NCTF58 VCC_AXG_NCTF59 VCC_AXG_NCTF60 VCC_AXG_NCTF61 VCC_AXG_NCTF62 VCC_AXG_NCTF63 VCC_AXG_NCTF64 VCC_AXG_NCTF65 VCC_AXG_NCTF66 VCC_AXG_NCTF67 VCC_AXG_NCTF68 VCC_AXG_NCTF69 VCC_AXG_NCTF70 VCC_AXG_NCTF71 VCC_AXG_NCTF72 VCC_AXG_NCTF73 VCC_AXG_NCTF74 VCC_AXG_NCTF75 VCC_AXG_NCTF76 VCC_AXG_NCTF77 VCC_AXG_NCTF78 VCC_AXG_NCTF79 VCC_AXG_NCTF80 VCC_AXG_NCTF81 VCC_AXG_NCTF82 VCC_AXG_NCTF83
VCC SM LF
VCC_SM_LF1 VCC_SM_LF2 VCC_SM_LF3 VCC_SM_LF4 VCC_SM_LF5 VCC_SM_LF6 VCC_SM_LF7
NB_VCCSM_LF1 NB_VCCSM_LF2 NB_VCCSM_LF3 NB_VCCSM_LF4 NB_VCCSM_LF5 NB_VCCSM_LF6 NB_VCCSM_LF7
C1807 0.1uF 20% 10V CERM 402
C1806 0.1uF 20% 10V CERM 402
C1805 0.22UF 20% 6.3V X5R 402
C1804 0.22UF 20% 6.3V X5R 402
C1803 0.47UF 10% 6.3V CERM-X5R 402
C1802 1uF 10% 6.3V CERM 402
C1801 1uF 10% 6.3V CERM 402
NCTF balls are Not Critical To Function
These connections can break without impacting part performance.
=PPVCORE_S0_NB
VCC NCTF
VCC_NCTF1 VCC_NCTF2 VCC_NCTF3 VCC_NCTF4 VCC_NCTF5 VCC_NCTF6 VCC_NCTF7 VCC_NCTF8 VCC_NCTF9 VCC_NCTF10 VCC_NCTF11 VCC_NCTF12 VCC_NCTF13 VCC_NCTF14 VCC_NCTF15 VCC_NCTF16 VCC_NCTF17 VCC_NCTF18 VCC_NCTF19 VCC_NCTF20 VCC_NCTF21 VCC_NCTF22 VCC_NCTF23 VCC_NCTF24 VCC_NCTF25 VCC_NCTF26 VCC_NCTF27 VCC_NCTF28 VCC_NCTF29 VCC_NCTF30 VCC_NCTF31 VCC_NCTF32 VCC_NCTF33 VCC_NCTF34 VCC_NCTF35 VCC_NCTF36 VCC_NCTF37 VCC_NCTF38 VCC_NCTF39 VCC_NCTF40 VCC_NCTF41 VCC_NCTF42 VCC_NCTF43 VCC_NCTF44 VCC_NCTF45 VCC_NCTF46 VCC_NCTF47 VCC_NCTF48 VCC_NCTF49 VCC_NCTF50
VSS NCTF
VSS_NCTF1 VSS_NCTF2 VSS_NCTF3 VSS_NCTF4 VSS_NCTF5 VSS_NCTF6 VSS_NCTF7 VSS_NCTF8 VSS_NCTF9 VSS_NCTF10 VSS_NCTF11 VSS_NCTF12 VSS_NCTF13 VSS_NCTF14 VSS_NCTF15 VSS_NCTF16 VSS_NCTF17 VSS_NCTF18 VSS_NCTF19 VSS_NCTF20 VSS_NCTF21
VSS SCB
VSS_SCB1 VSS_SCB2 VSS_SCB3 VSS_SCB4 VSS_SCB5 VSS_SCB6
=PP1V05_S0M_NB_VCCAXM
540 mA
VCC AXM
VCC_AXM1 VCC_AXM2 VCC_AXM3 VCC_AXM4 VCC_AXM5 VCC_AXM6 VCC_AXM7
=PP1V05_S0M_NB_VCCAXM
VCC AXM NCTF
VCC_AXM_NCTF1 VCC_AXM_NCTF2 VCC_AXM_NCTF3 VCC_AXM_NCTF4 VCC_AXM_NCTF5 VCC_AXM_NCTF6 VCC_AXM_NCTF7 VCC_AXM_NCTF8 VCC_AXM_NCTF9 VCC_AXM_NCTF10 VCC_AXM_NCTF11 VCC_AXM_NCTF12 VCC_AXM_NCTF13 VCC_AXM_NCTF14 VCC_AXM_NCTF15 VCC_AXM_NCTF16 VCC_AXM_NCTF17 VCC_AXM_NCTF18 VCC_AXM_NCTF19
Current numbers from Crestline EDS, doc #21549.
NB Power 1
SYNC_MASTER=T9_MLB
SYNC_DATE=10/30/2006
NOTICE OF PROPRIETARY PROPERTY
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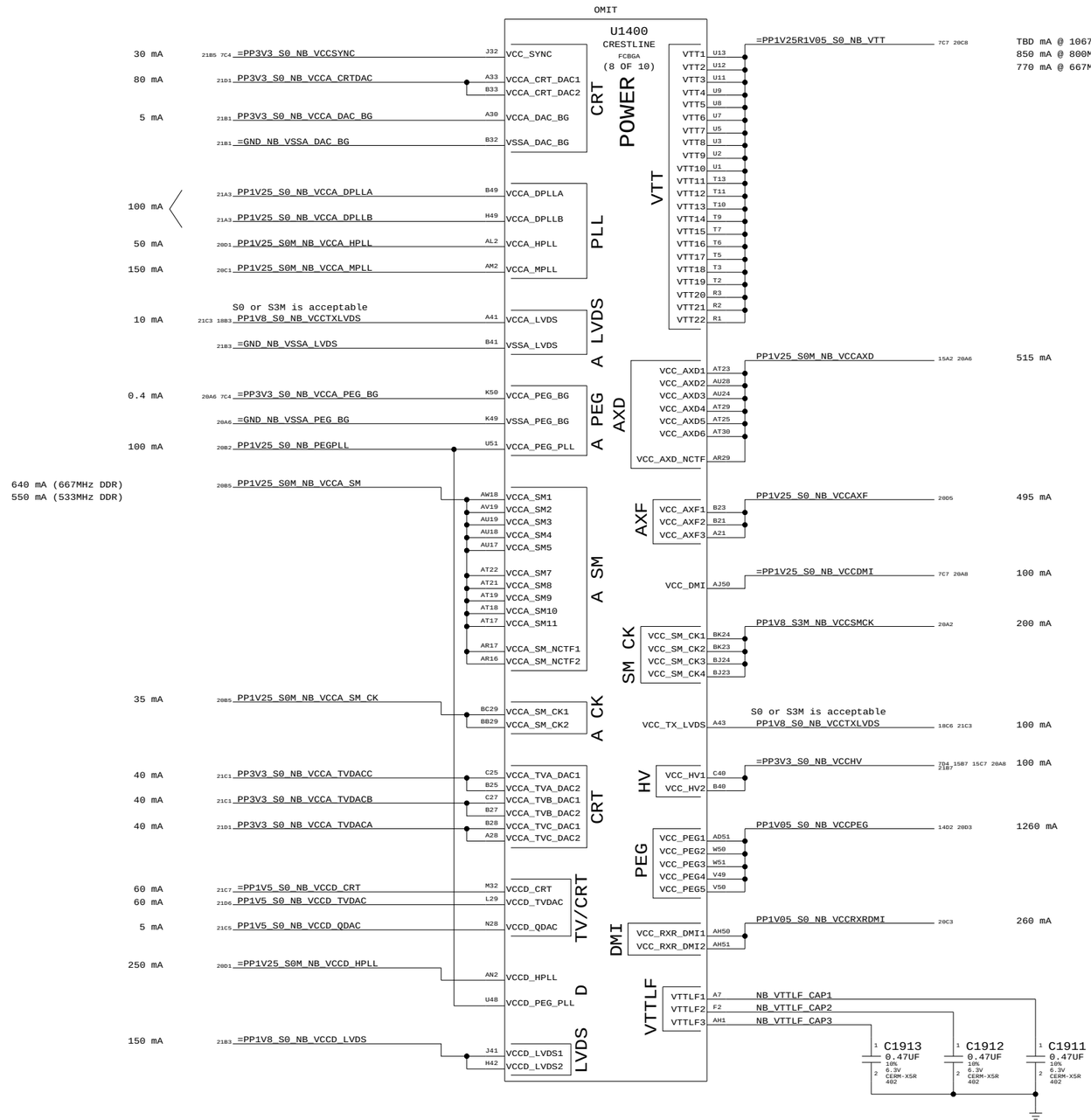
APPLE INC.
SIZE D
DRAWING NUMBER 051-7455
REV. 01
SCALE NONE
SHT 17 OF 76



Current numbers from Crestline EDS, doc #21749.

NB Power 2

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	18	76

OMIT

U1400
CRESTLINE
FCBGA
(9 OF 10)
VSS

A13	VSS1	VSS100	AW24
A15	VSS2	VSS101	AW29
A17	VSS3	VSS102	AW32
A24	VSS4	VSS103	AW5
AA21	VSS5	VSS104	AW7
AA24	VSS6	VSS105	AY10
AA29	VSS7	VSS106	AY24
AB20	VSS8	VSS107	AY37
AB23	VSS9	VSS108	AY42
AB26	VSS10	VSS109	AY43
AB28	VSS11	VSS110	AY45
AB31	VSS12	VSS111	AY47
AC10	VSS13	VSS112	AY50
AC13	VSS14	VSS113	B10
AC3	VSS15	VSS114	B20
AC39	VSS16	VSS115	B24
AC43	VSS17	VSS116	B29
AC47	VSS18	VSS117	B30
AD1	VSS19	VSS118	B35
AD21	VSS20	VSS119	B38
AD26	VSS21	VSS120	B43
AD29	VSS22	VSS121	B46
AD3	VSS23	VSS122	B5
AD41	VSS24	VSS123	B8
AD45	VSS25	VSS124	BA1
AD49	VSS26	VSS125	BA17
AD5	VSS27	VSS126	BA18
AD50	VSS28	VSS127	BA2
AD8	VSS29	VSS128	BA24
AE10	VSS30	VSS129	BB12
AE14	VSS31	VSS130	BB25
AE6	VSS32	VSS131	BB40
AF20	VSS33	VSS132	BB44
AF23	VSS34	VSS133	BB49
AF24	VSS35	VSS134	BB8
AF31	VSS36	VSS135	BC16
AG2	VSS37	VSS136	BC24
AG38	VSS38	VSS137	BC25
AG43	VSS39	VSS138	BC36
AG47	VSS40	VSS139	BC40
AG50	VSS41	VSS140	BC51
AH3	VSS42	VSS141	BD13
AH40	VSS43	VSS142	BD2
AH41	VSS44	VSS143	BD28
AH7	VSS45	VSS144	BD45
AH9	VSS46	VSS145	BD48
AJ11	VSS47	VSS146	BD5
AJ13	VSS48	VSS147	BE1
AJ21	VSS49	VSS148	BE19
AJ24	VSS50	VSS149	BE23
AJ29	VSS51	VSS150	BE30
AJ32	VSS52	VSS151	BE42
AJ43	VSS53	VSS152	BE51
AJ45	VSS54	VSS153	BE8
AJ49	VSS55	VSS154	BF12
AK20	VSS56	VSS155	BF16
AK21	VSS57	VSS156	BF36
AK26	VSS58	VSS157	BG19
AK28	VSS59	VSS158	BG2
AK31	VSS60	VSS159	BG24
AK51	VSS61	VSS160	BG29
AL1	VSS62	VSS161	BG39
AM11	VSS63	VSS162	BG48
AM13	VSS64	VSS163	BG5
AM3	VSS65	VSS164	BG51
AM4	VSS66	VSS165	BH17
AM41	VSS67	VSS166	BH30
AM45	VSS68	VSS167	BH44
AN1	VSS69	VSS168	BH46
AN38	VSS70	VSS169	BH8
AN39	VSS71	VSS170	BJ11
AN43	VSS72	VSS171	BJ13
AN5	VSS73	VSS172	BJ38
AN7	VSS74	VSS173	BJ4
AP4	VSS75	VSS174	BJ42
AP48	VSS76	VSS175	BJ46
AP50	VSS77	VSS176	BK15
AR11	VSS78	VSS177	BK17
AR2	VSS79	VSS178	BK25
AR39	VSS80	VSS179	BK29
AR44	VSS81	VSS180	BK36
AR47	VSS82	VSS181	BK40
AR7	VSS83	VSS182	BK44
AT10	VSS84	VSS183	BK6
AT14	VSS85	VSS184	BK8
AT41	VSS86	VSS185	BL11
AT49	VSS87	VSS186	BL13
AU1	VSS88	VSS187	BL19
AU23	VSS89	VSS188	BL22
AU29	VSS90	VSS189	BL37
AU3	VSS91	VSS190	BL47
AU36	VSS92	VSS191	C12
AU49	VSS93	VSS192	C16
AU51	VSS94	VSS193	C19
AV39	VSS95	VSS194	C28
AV48	VSS96	VSS195	C29
AW1	VSS97	VSS196	C33
AW12	VSS98	VSS197	C36
AW16	VSS99	VSS198	C41

OMIT

U1400
CRESTLINE
FCBGA
(10 OF 10)
VSS

C46	VSS199	VSS287	W11
C50	VSS200	VSS288	W39
C7	VSS201	VSS289	W43
D13	VSS202	VSS290	W47
D24	VSS203	VSS291	W5
D3	VSS204	VSS292	W7
D32	VSS205	VSS293	Y13
D39	VSS206	VSS294	Y2
D45	VSS207	VSS295	Y41
D49	VSS208	VSS296	Y45
E10	VSS209	VSS297	Y49
E16	VSS210	VSS298	Y5
E24	VSS211	VSS299	Y50
E28	VSS212	VSS300	Y11
E32	VSS213	VSS301	P29
E47	VSS214		
F19	VSS215		
F36	VSS216	TDE_SENSE	VSS302 T29
F4	VSS217		
F40	VSS218		
F50	VSS219	TDE_FORCE	VSS303 T31
G1	VSS220		
G13	VSS221		
G16	VSS222	TDB_FORCE	VSS304 T33
G19	VSS223		
G24	VSS224		
G28	VSS225	TDB_SENSE	VSS305 R28
G29	VSS226		
G33	VSS227		
G42	VSS228		
G45	VSS229	VSS306	AA32
G48	VSS230	VSS307	AB32
G8	VSS231	VSS308	AD32
H24	VSS232	VSS309	AF28
H28	VSS233	VSS310	AF29
H4	VSS234	VSS311	AT27
H45	VSS235	VSS312	AV25
J11	VSS236	VSS313	H50
J16	VSS237		
J2	VSS238		
J24	VSS239		
J28	VSS240		
J33	VSS241		
J35	VSS242		
J39	VSS243		
K12	VSS245		
K47	VSS246		
K8	VSS247		
L1	VSS248		
L17	VSS249		
L20	VSS250		
L24	VSS251		
L28	VSS252		
L3	VSS253		
L33	VSS254		
L49	VSS255		
M28	VSS256		
M42	VSS257		
M46	VSS258		
M49	VSS259		
M5	VSS260		
M50	VSS261		
M9	VSS262		
N11	VSS263		
N14	VSS264		
N17	VSS265		
N29	VSS266		
N32	VSS267		
N36	VSS268		
N39	VSS269		
N44	VSS270		
N49	VSS271		
N7	VSS272		
P19	VSS273		
P2	VSS274		
P23	VSS275		
P3	VSS276		
P50	VSS277		
R49	VSS278		
T39	VSS279		
T43	VSS280		
T47	VSS281		
U41	VSS282		
U45	VSS283		
U50	VSS284		
V2	VSS285		
V3	VSS286		

Crestline Thermal Diode Pins

Mainly for investigation. If not used, alias these nets directly to GND.

TDE_SENSE → =NB_TDE_SENSE 8A2

NOTE: TDE = _P

TDE_FORCE → =NB_TDE_FORCE 8A2

TDB_FORCE → =NB_TDB_FORCE 8A2

NOTE: TDB = _N

TDB_SENSE → =NB_TDB_SENSE 8A2

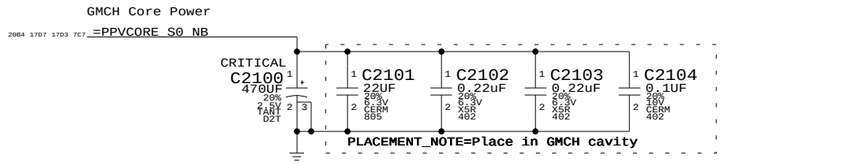
NB Grounds

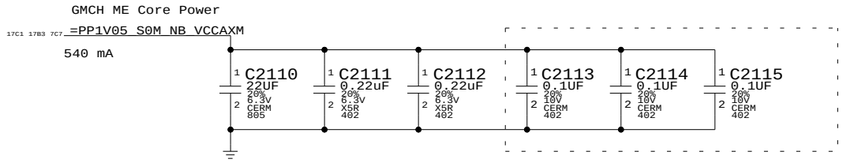
SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

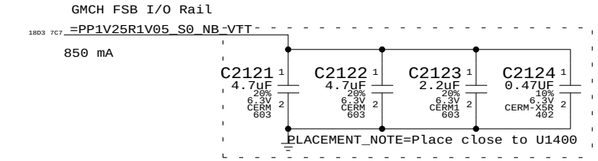
APPLE INC.

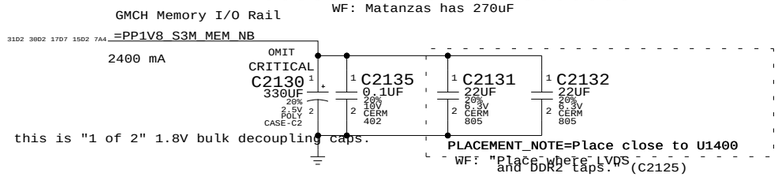
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

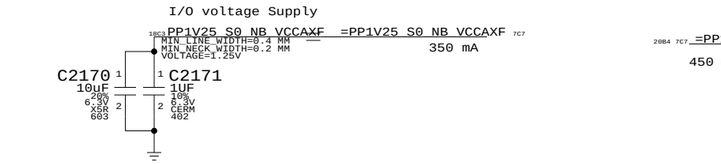
SCALE	SHT	OF
NONE	19	76

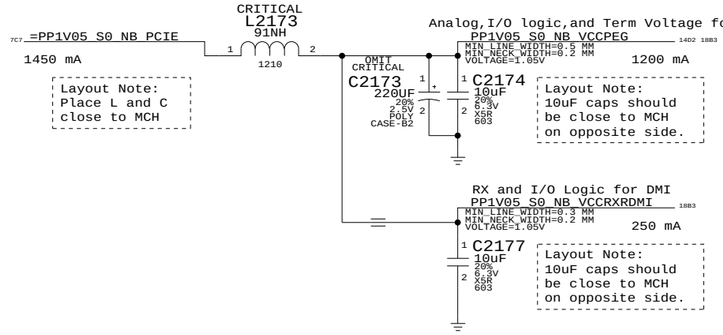


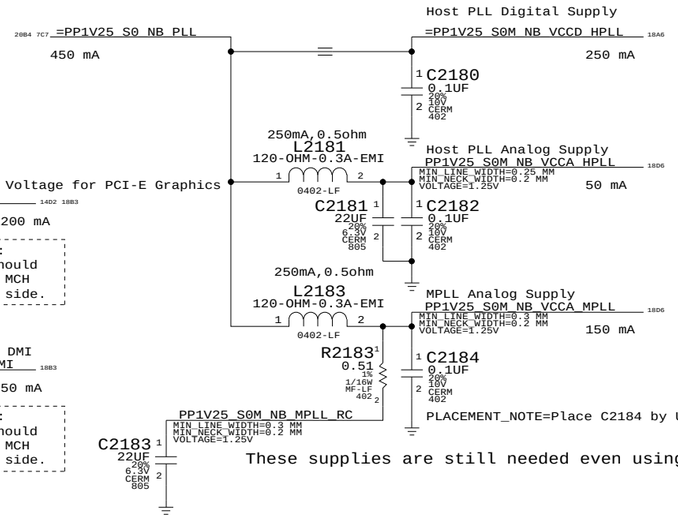


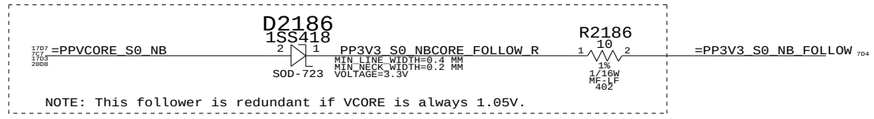


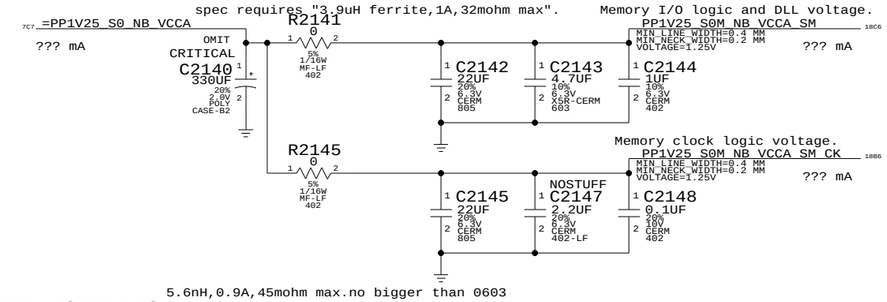


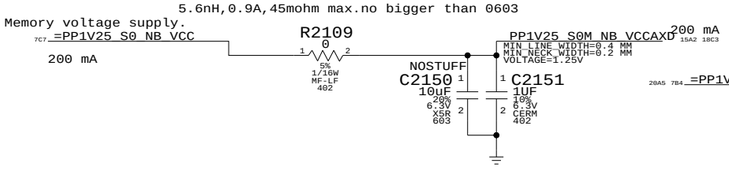


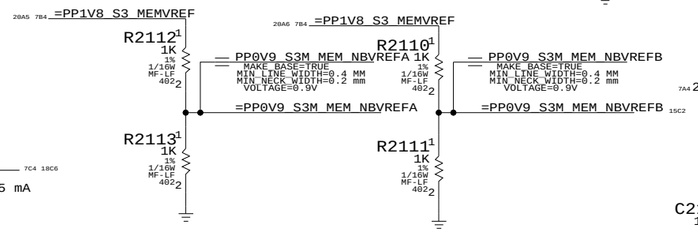


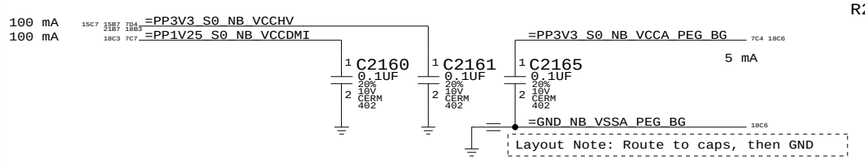


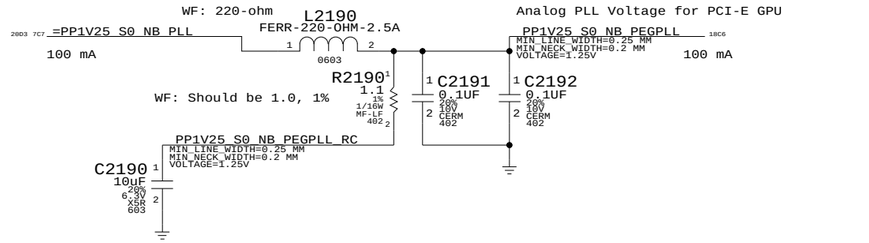


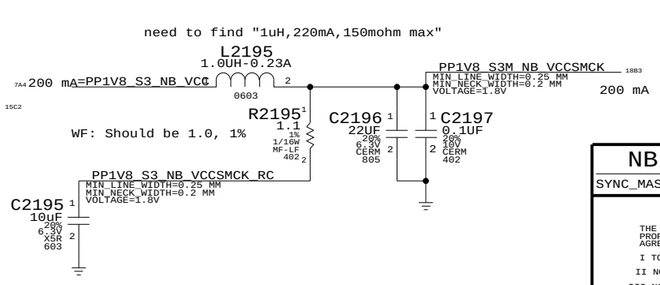












Current numbers from Crestline EDS Addendum, doc #20127.

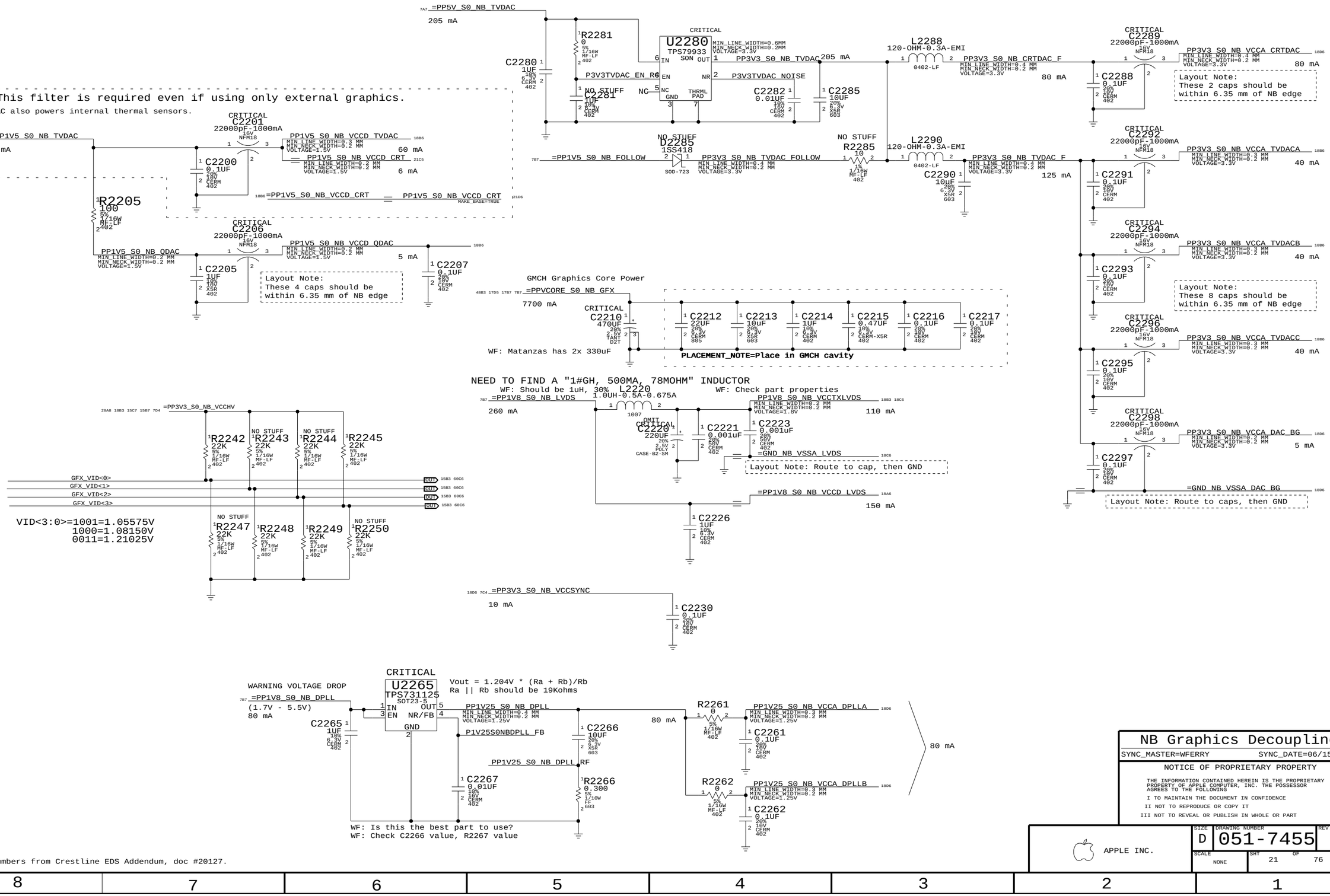
NB Standard Decoupling

SYNC_MASTER=WFERRY SYNC_DATE=06/15/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 20 OF 76


NOTE: This filter is required even if using only external graphics.
VCCD_TVDAC also powers internal thermal sensors.
=PP1V5_S0_NB_TVDAC
65 mA
R2205 100 5% 1/16W MF-LF 402
CRITICAL C2201 22000pF-1000mA 16V NPM18
C2200 0.1UF 20% 10V CERM 402
PP1V5_S0_NB_VCCD_TVDAC
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
60 mA
PP1V5_S0_NB_VCCD_CRT
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
6 mA
=PP1V5_S0_NB_VCCD_CRT
PP1V5_S0_NB_VCCD_CRT
MAKE_BASE=TRUE
PP1V5_S0_NB_QDAC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
CRITICAL C2206 22000pF-1000mA 16V NPM18
C2205 1UF 10% 10V X5R 402
PP1V5_S0_NB_VCCD_QDAC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.5V
5 mA
C2207 0.1UF 20% 10V CERM 402
Layout Note: These 4 caps should be within 6.35 mm of NB edge
=PP5V_S0_NB_TVDAC
205 mA
C2280 1UF 10% 6.3V CERM 402
R2281 0 5% 1/16W MF-LF 402
NO STUFF C2281 1UF 10% 6.3V CERM 402
P3V3TVDAC_EN_R
CRITICAL U2280 TPS79933 SON
MIN_LINE_WIDTH=0.6MM MIN_NECK_WIDTH=0.2MM VOLTAGE=3.3V
IN OUT EN NR NC GND THRML PAD
PP3V3_S0_NB_TVDAC 205 mA
P3V3TVDAC_NOISE
C2282 0.01UF 10% 16V CERM 402
C2285 10UF 20% 6.3V X5R 603
L2288 120-OHM-0.3A-EMI 0402-LF
PP3V3_S0_NB_CRTDAC_F
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
80 mA
CRITICAL C2289 22000pF-1000mA 16V NPM18
C2288 0.1UF 20% 10V CERM 402
PP3V3_S0_NB_VCCA_CRTDAC
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
80 mA
Layout Note: These 2 caps should be within 6.35 mm of NB edge
NO STUFF D2285 1SS418 SOD-723
=PP1V5_S0_NB_FOLLOW
PP3V3_S0_NB_TVDAC_FOLLOW
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
NO STUFF R2285 10 1% 1/16W MF-LF 402
L2290 120-OHM-0.3A-EMI 0402-LF
C2290 10UF 20% 6.3V X5R 603
PP3V3_S0_NB_TVDAC_F
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
125 mA
CRITICAL C2292 22000pF-1000mA 16V NPM18
C2291 0.1UF 20% 10V CERM 402
PP3V3_S0_NB_VCCA_TVDACA
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA
CRITICAL C2294 22000pF-1000mA 16V NPM18
C2293 0.1UF 20% 10V CERM 402
PP3V3_S0_NB_VCCA_TVDACB
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA
Layout Note: These 8 caps should be within 6.35 mm of NB edge
CRITICAL C2296 22000pF-1000mA 16V NPM18
C2295 0.1UF 20% 10V CERM 402
PP3V3_S0_NB_VCCA_TVDACC
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
40 mA
CRITICAL C2298 22000pF-1000mA 16V NPM18
C2297 0.1UF 20% 10V CERM 402
PP3V3_S0_NB_VCCA_DAC_BG
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=3.3V
5 mA
=GND_NB_VSSA_DAC_BG
Layout Note: Route to caps, then GND
GMCH Graphics Core Power
=PPVCORE_S0_NB_GFX
7700 mA
CRITICAL C2210 470UF 20% 2.5V TANT D2T
WF: Matanzas has 2x 330uF
C2212 22UF 20% 6.3V CERM 805
C2213 10UF 20% 6.3V X5R 603
C2214 1UF 10% 6.3V CERM 402
C2215 0.47UF 10% 6.3V CERM-X5R 402
C2216 0.1UF 20% 10V CERM 402
C2217 0.1UF 20% 10V CERM 402
PLACEMENT_NOTE=Place in GMCH cavity
NEED TO FIND A "1#GH, 500MA, 78MOHM" INDUCTOR
WF: Should be 1uH, 30% L2220
1.0UH-0.5A-0.675A
WF: Check part properties
=PP1V8_S0_NB_LVDS
260 mA
OMIT CRITICAL C2229 220UF 20% 2.5V POLY CASE-B2-SM
C2221 0.001uF 10% 50V CERM 402
PP1V8_S0_NB_VCCTXLVDS
MIN_LINE_WIDTH=0.2 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.8V
110 mA
C2223 0.001uF 20% 50V CERM 402
=GND_NB_VSSA_LVDS
Layout Note: Route to cap, then GND
=PP1V8_S0_NB_VCCD_LVDS
150 mA
C2226 1UF 10% 6.3V CERM 402
=PP3V3_S0_NB_VCCHV
R2242 22K 5% 1/16W MF-LF 402
NO STUFF R2243 22K 5% 1/16W MF-LF 402
NO STUFF R2244 22K 5% 1/16W MF-LF 402
R2245 22K 5% 1/16W MF-LF 402
GFX_VID<0>
GFX_VID<1>
GFX_VID<2>
GFX_VID<3>
VID<3:0>=1001=1.05575V
1000=1.08150V
0011=1.21025V
NO STUFF R2247 22K 5% 1/16W MF-LF 402
R2248 22K 5% 1/16W MF-LF 402
R2249 22K 5% 1/16W MF-LF 402
NO STUFF R2250 22K 5% 1/16W MF-LF 402
=PP3V3_S0_NB_VCCSYNC
10 mA
C2230 0.1UF 20% 10V CERM 402
CRITICAL U2265 TPS731125 SOT23-5
Vout = 1.204V * (Ra + Rb)/Rb
Ra || Rb should be 19Kohms
WARNING VOLTAGE DROP
=PP1V8_S0_NB_DPLL
(1.7V - 5.5V)
80 mA
C2265 1UF 10% 6.3V CERM 402
IN OUT EN NR/FB GND
PP1V25_S0_NB_DPLL
MIN_LINE_WIDTH=0.4 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
P1V25S0NBDPLL_FB
C2266 10UF 20% 6.3V X5R 603
PP1V25_S0_NB_DPLL_RF
C2267 0.01UF 10% 16V CERM 402
R2266 0.300 5% 1/10W FF 603
WF: Is this the best part to use?
WF: Check C2266 value, R2267 value
80 mA
R2261 0 5% 1/16W MF-LF 402
PP1V25_S0_NB_VCCA_DPLLA
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
C2261 0.1UF 20% 10V CERM 402
R2262 0 5% 1/16W MF-LF 402
PP1V25_S0_NB_VCCA_DPLLB
MIN_LINE_WIDTH=0.3 MM MIN_NECK_WIDTH=0.2 MM VOLTAGE=1.25V
C2262 0.1UF 20% 10V CERM 402
80 mA
NB Graphics Decoupling
SYNC_MASTER=WFERRY
SYNC_DATE=06/15/2006
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SIZE D
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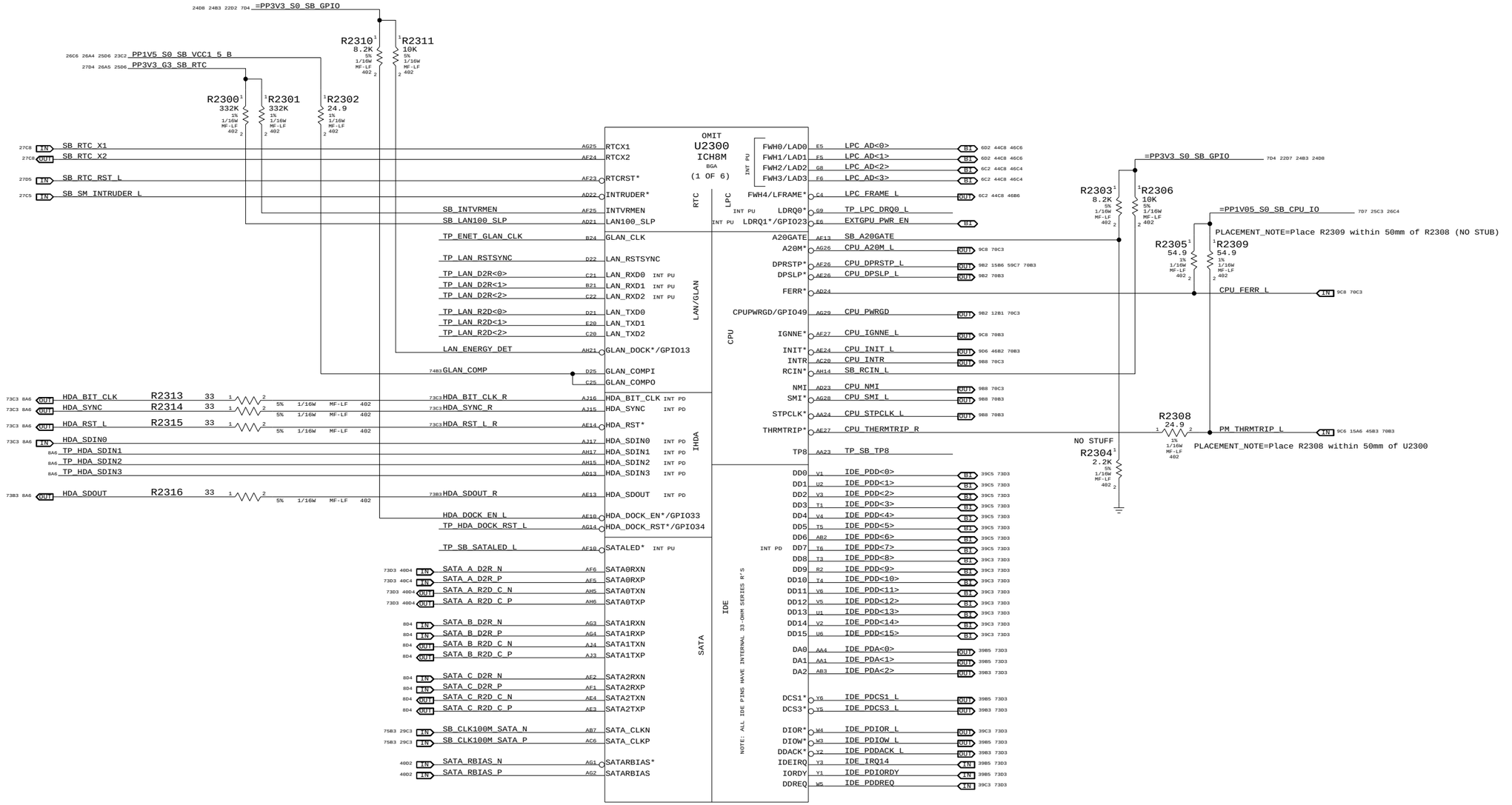
REV. 01
SCALE NONE
SHT 21 OF 76
Current numbers from Crestline EDS Addendum, doc #20127.



	HDA
HDA_BIT_CLK	24.000MHZ CLOCK W/INTERNAL WEAK PD
HDA_RST#	
HDA_SDIN[0-2]	INTEGRATED PDs
HDA_SDOUT	INTEGRATED PD
ACZ_SYNC	INTEGRATED PD

SB Enet, Disk, FSB, LPC

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

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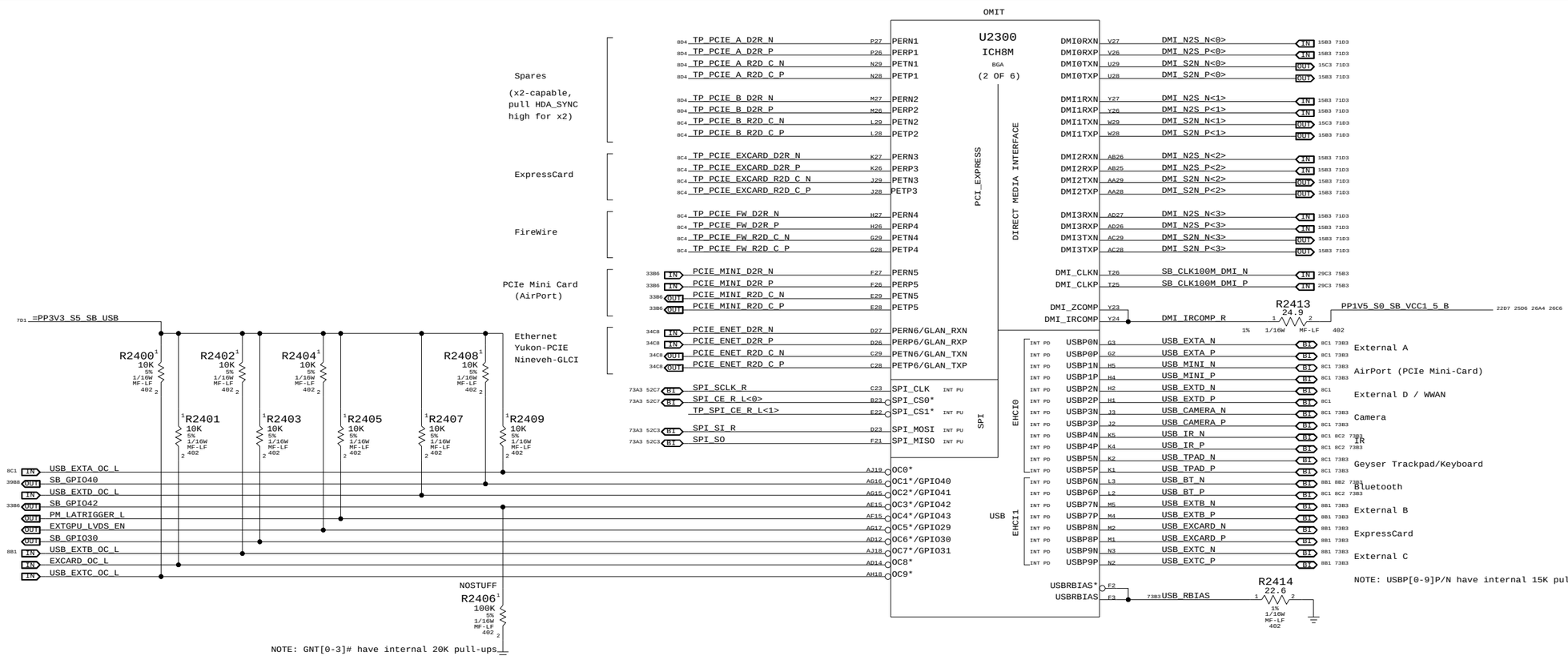
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 22 OF 76



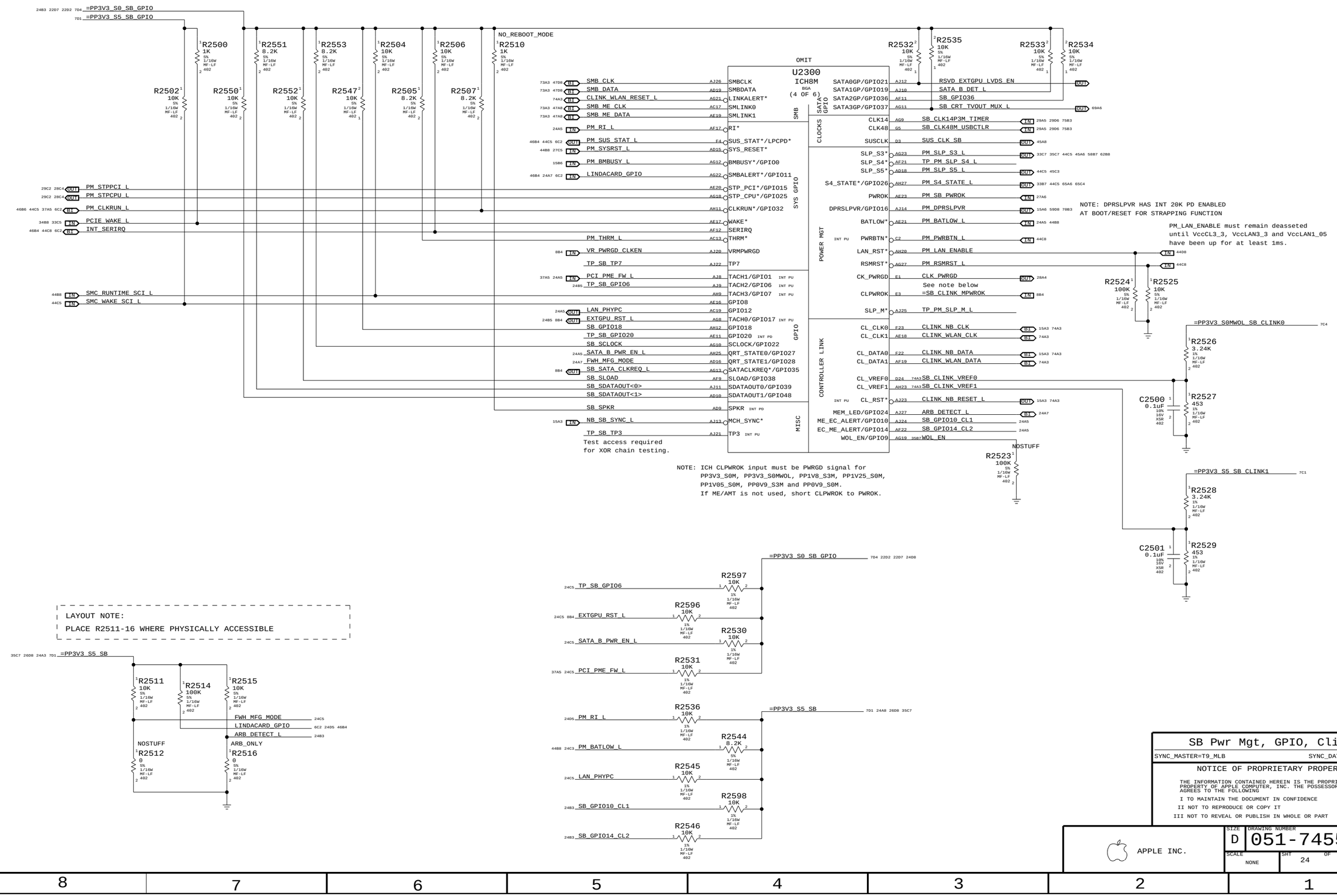
SB PCI, PCIe, DMI, USB

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 23 OF 76

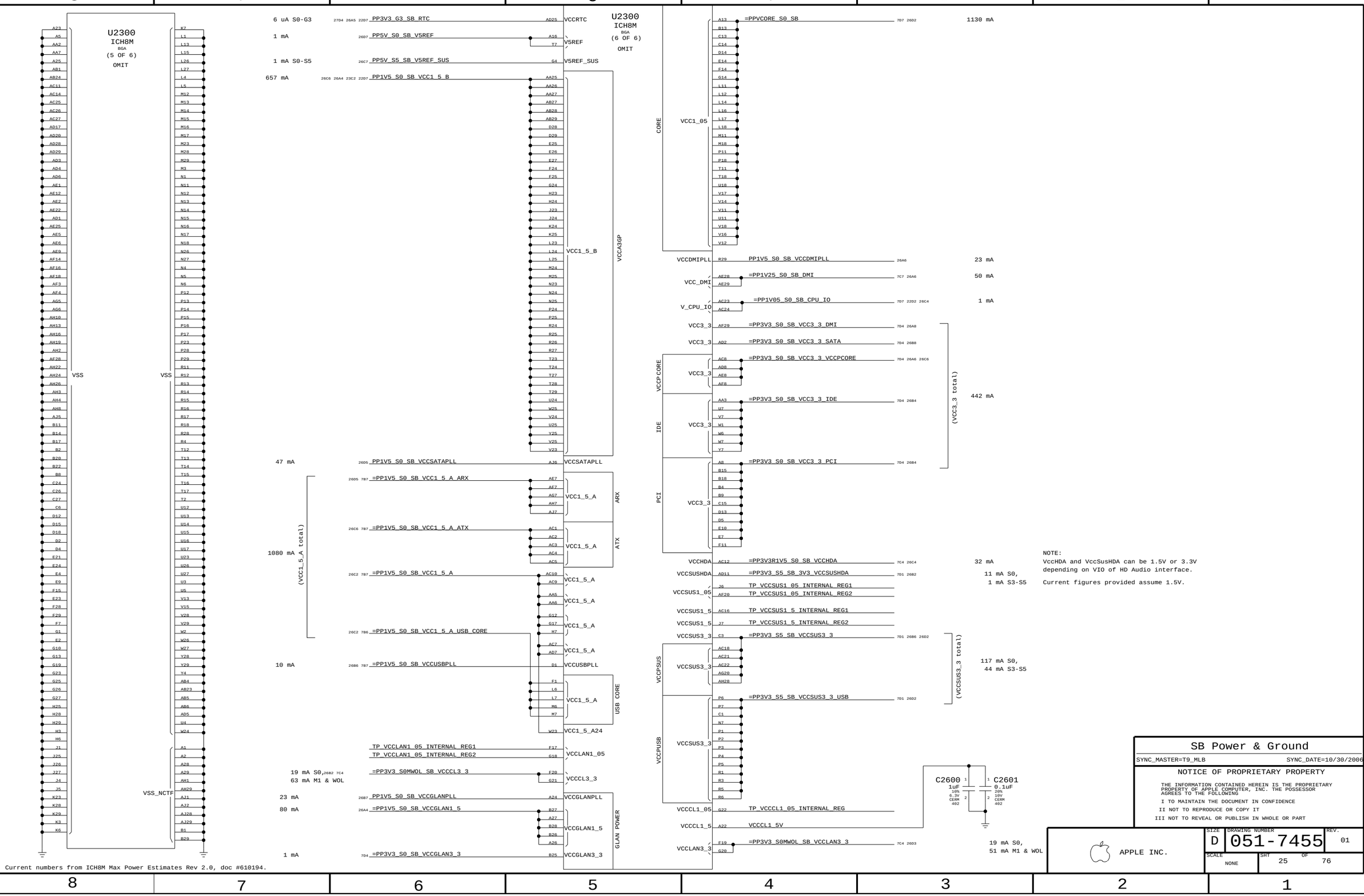


SB Pwr Mgt, GPIO, Clink

SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 24 OF 76	


U2300
ICH8M
BGA
(5 OF 6)
OMIT
VSS
VSS_NCTF
U2300
ICH8M
BGA
(6 OF 6)
OMIT
6 uA S0-G3
PP3V3_G3_SB_RTC
VCCRTC
1 mA
PP5V_S0_SB_V5REF
V5REF
1 mA S0-S5
PP5V_S5_SB_V5REF_SUS
V5REF_SUS
657 mA
PP1V5_S0_SB_VCC1_5_B
VCC1_5_B
VCCA3GP
47 mA
PP1V5_S0_SB_VCCSATAPLL
VCCSATAPLL
=PP1V5_S0_SB_VCC1_5_A_ARX
VCC1_5_A
ARX
=PP1V5_S0_SB_VCC1_5_A_ATX
ATX
1080 mA
(VCC1_5_A total)
=PP1V5_S0_SB_VCC1_5_A
=PP1V5_S0_SB_VCC1_5_A_USB_CORE
10 mA
=PP1V5_S0_SB_VCCUSBPLL
VCCUSBPLL
USB CORE
VCC1_5_A24
TP_VCCLAN1_05_INTERNAL_REG1
TP_VCCLAN1_05_INTERNAL_REG2
VCCLAN1_05
19 mA S0,
63 mA M1 & WOL
=PP3V3_S0MWOL_SB_VCCCL3_3
VCCCL3_3
23 mA
PP1V5_S0_SB_VCCGLANPLL
VCCGLANPLL
80 mA
=PP1V5_S0_SB_VCCGLAN1_5
VCCGLAN1_5
GLAN POWER
1 mA
=PP3V3_S0_SB_VCCGLAN3_3
VCCGLAN3_3
=PPVCORE_S0_SB
1130 mA
CORE
VCC1_05
VCCDMIPLL
PP1V5_S0_SB_VCCDMIPLL
23 mA
=PP1V25_S0_SB_DMI
50 mA
VCC_DMI
1 mA
V_CPU_IO
=PP1V05_S0_SB_CPU_IO
VCC3_3
=PP3V3_S0_SB_VCC3_3_DMI
=PP3V3_S0_SB_VCC3_3_SATA
=PP3V3_S0_SB_VCC3_3_VCCPCORE
VCCP CORE
=PP3V3_S0_SB_VCC3_3_IDE
IDE
442 mA
(VCC3_3 total)
=PP3V3_S0_SB_VCC3_3_PCI
PCI
VCCHDA
=PP3V3R1V5_S0_SB_VCCHDA
32 mA
VCCSUSHDA
=PP3V3_S5_SB_3V3_VCCSUSHDA
11 mA S0,
1 mA S3-S5
VCCSUS1_05
TP_VCCSUS1_05_INTERNAL_REG1
TP_VCCSUS1_05_INTERNAL_REG2
VCCSUS1_5
TP_VCCSUS1_5_INTERNAL_REG1
TP_VCCSUS1_5_INTERNAL_REG2
VCCSUS3_3
=PP3V3_S5_SB_VCCSUS3_3
VCCPSUS
117 mA S0,
44 mA S3-S5
(VCCSUS3_3 total)
=PP3V3_S5_SB_VCCSUS3_3_USB
VCCPUSB
VCCCL1_05
TP_VCCCL1_05_INTERNAL_REG
VCCCL1_5
VCCCL1_5V
VCCLAN3_3
=PP3V3_S0MWOL_SB_VCCLAN3_3
19 mA S0,
51 mA M1 & WOL
C2600
1uF
10%
6.3V
CERM
402
C2601
0.1uF
20%
10V
CERM
402
NOTE:
VccHDA and VccSusHDA can be 1.5V or 3.3V depending on VIO of HD Audio interface.
Current figures provided assume 1.5V.
Current numbers from ICH8M Max Power Estimates Rev 2.0, doc #610194.
SB Power & Ground
SYNC_MASTER=T9_MLB
SYNC_DATE=10/30/2006
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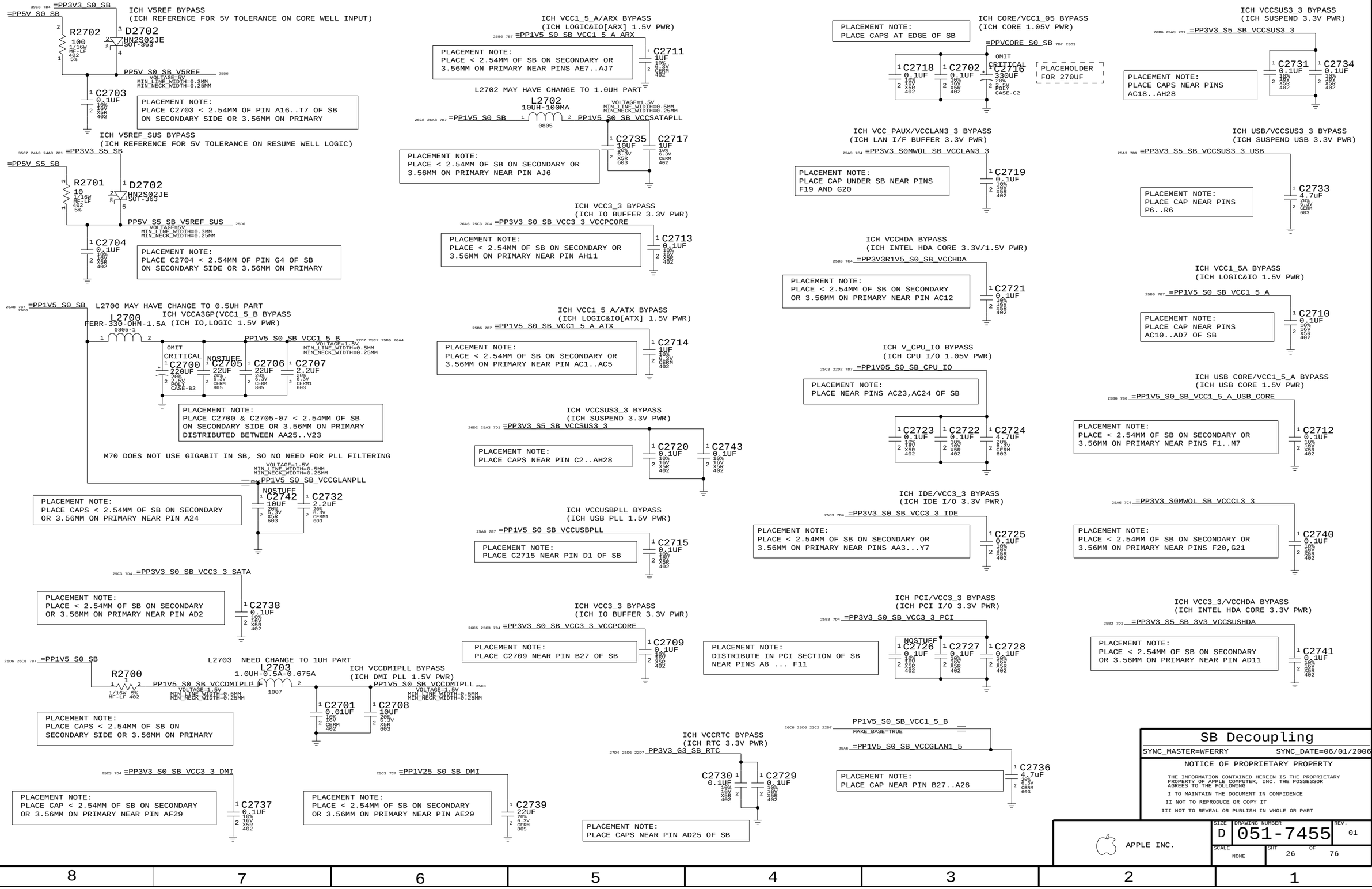
ICH V5REF BYPASS
(ICH REFERENCE FOR 5V TOLERANCE ON CORE WELL INPUT)
=PP3V3_S0_SB
=PP5V_S0_SB
R2702 100 1/16W MF-LF 402 5%
D2702 HN2S02JE SOT-363
PP5V_S0_SB_V5REF
VOLTAGE=5V
MIN_LINE_WIDTH=0.3MM
MIN_NECK_WIDTH=0.25MM
C2703 0.1UF 10% 16V X5R 402
PLACEMENT NOTE:
PLACE C2703 < 2.54MM OF PIN A16..T7 OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY
ICH V5REF_SUS BYPASS
(ICH REFERENCE FOR 5V TOLERANCE ON RESUME WELL LOGIC)
=PP3V3_S5_SB
=PP5V_S5_SB
R2701 10 1/16W MF-LF 402 5%
D2702 HN2S02JE SOT-363
PP5V_S5_SB_V5REF_SUS
VOLTAGE=5V
MIN_LINE_WIDTH=0.3MM
MIN_NECK_WIDTH=0.25MM
C2704 0.1UF 10% 16V X5R 402
PLACEMENT NOTE:
PLACE C2704 < 2.54MM OF PIN G4 OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY
=PP1V5_S0_SB
L2700 MAY HAVE CHANGE TO 0.5UH PART
ICH VCCA3GP(VCC1_5_B BYPASS
FERR-330-OHM-1.5A (ICH IO,LOGIC 1.5V PWR)
0805-1
PP1V5_S0_SB_VCC1_5_B
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
OMIT
CRITICAL
NOSTUFF
C2700 220UF 20% 2.5V POLY CASE-B2
C2705 22UF 20% 6.3V CERM 805
C2706 22UF 20% 6.3V CERM 805
C2707 2.2UF 20% 6.3V CERM1 603
PLACEMENT NOTE:
PLACE C2700 & C2705-07 < 2.54MM OF SB
ON SECONDARY SIDE OR 3.56MM ON PRIMARY
DISTRIBUTED BETWEEN AA25..V23
M70 DOES NOT USE GIGABIT IN SB, SO NO NEED FOR PLL FILTERING
PP1V5_S0_SB_VCCGLANPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
NOSTUFF
C2742 10UF 20% 6.3V X5R 603
C2732 2.2UF 20% 6.3V CERM1 603
PLACEMENT NOTE:
PLACE CAPS < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN A24
=PP3V3_S0_SB_VCC3_3_SATA
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AD2
C2738 0.1UF 10% 16V X5R 402
=PP1V5_S0_SB
L2703 NEED CHANGE TO 1UH PART
R2700 1 1/10W 5% MF-LF 402
L2703 1.0UH-0.5A-0.675A 1007
ICH VCCDMIPLL BYPASS
(ICH DMI PLL 1.5V PWR)
PP1V5_S0_SB_VCCDMIPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
C2701 0.01UF 10% 16V X7R 402
C2708 10UF 20% 6.3V X5R 603
PLACEMENT NOTE:
PLACE CAPS < 2.54MM OF SB ON
SECONDARY SIDE OR 3.56MM ON PRIMARY
=PP3V3_S0_SB_VCC3_3_DMI
PLACEMENT NOTE:
PLACE CAP < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AF29
C2737 0.1UF 10% 16V X5R 402
=PP1V25_S0_SB_DMI
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AE29
C2739 22UF 20% 6.3V CERM 805
ICH VCC1_5_A/ARX BYPASS
(ICH LOGIC&IO[ARX] 1.5V PWR)
=PP1V5_S0_SB_VCC1_5_A_ARX
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS AE7..AJ7
C2711 1UF 10% 6.3V CERM 402
L2702 MAY HAVE CHANGE TO 1.0UH PART
L2702 10UH-100MA 0805
=PP1V5_S0_SB
PP1V5_S0_SB_VCCSATAPLL
VOLTAGE=1.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM
C2735 10UF 20% 6.3V X5R 603
C2717 1UF 10% 6.3V CERM 402
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AJ6
ICH VCC3_3 BYPASS
(ICH IO BUFFER 3.3V PWR)
=PP3V3_S0_SB_VCC3_3_VCCPCORE
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AH11
C2713 0.1UF 10% 16V X5R 402
ICH VCC1_5_A/ATX BYPASS
(ICH LOGIC&IO[ATX] 1.5V PWR)
=PP1V5_S0_SB_VCC1_5_A_ATX
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PIN AC1..AC5
C2714 1UF 10% 6.3V CERM 402
ICH VCCSUS3_3 BYPASS
(ICH SUSPEND 3.3V PWR)
=PP3V3_S5_SB_VCCSUS3_3
PLACEMENT NOTE:
PLACE CAPS NEAR PIN C2..AH28
C2720 0.1UF 10% 16V X5R 402
C2743 0.1UF 10% 16V X5R 402
ICH VCCUSBPLL BYPASS
(ICH USB PLL 1.5V PWR)
=PP1V5_S0_SB_VCCUSBPLL
PLACEMENT NOTE:
PLACE C2715 NEAR PIN D1 OF SB
C2715 0.1UF 10% 16V X5R 402
ICH VCC3_3 BYPASS
(ICH IO BUFFER 3.3V PWR)
=PP3V3_S0_SB_VCC3_3_VCCPCORE
PLACEMENT NOTE:
PLACE C2709 NEAR PIN B27 OF SB
C2709 0.1UF 10% 16V X5R 402
ICH VCCRTC BYPASS
(ICH RTC 3.3V PWR)
PP3V3_G3_SB_RTC
C2730 0.1UF 10% 16V X5R 402
C2729 0.1UF 10% 16V X5R 402
PLACEMENT NOTE:
PLACE CAPS NEAR PIN AD25 OF SB
PLACEMENT NOTE:
PLACE CAPS AT EDGE OF SB
ICH CORE/VCC1_05 BYPASS
(ICH CORE 1.05V PWR)
=PPVCORE_S0_SB
C2718 0.1UF 10% 16V X5R 402
C2702 0.1UF 10% 16V X5R 402
OMIT
CRITICAL
C2716 330UF 20% 2.5V POLY CASE-C2
PLACEHOLDER FOR 270UF
ICH VCC_PAUX/VCCLAN3_3 BYPASS
(ICH LAN I/F BUFFER 3.3V PWR)
=PP3V3_S0MWOL_SB_VCCLAN3_3
PLACEMENT NOTE:
PLACE CAP UNDER SB NEAR PINS
F19 AND G20
C2719 0.1UF 10% 16V X5R 402
ICH VCCHDA BYPASS
(ICH INTEL HDA CORE 3.3V/1.5V PWR)
=PP3V3R1V5_S0_SB_VCCHDA
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AC12
C2721 0.1UF 10% 16V X5R 402
ICH V_CPU_IO BYPASS
(ICH CPU I/O 1.05V PWR)
=PP1V05_S0_SB_CPU_IO
PLACEMENT NOTE:
PLACE NEAR PINS AC23,AC24 OF SB
C2723 0.1UF 10% 16V X5R 402
C2722 0.1UF 10% 16V X5R 402
C2724 4.7UF 20% 6.3V CERM 603
ICH IDE/VCC3_3 BYPASS
(ICH IDE I/O 3.3V PWR)
=PP3V3_S0_SB_VCC3_3_IDE
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS AA3...Y7
C2725 0.1UF 10% 16V X5R 402
ICH PCI/VCC3_3 BYPASS
(ICH PCI I/O 3.3V PWR)
=PP3V3_S0_SB_VCC3_3_PCI
PLACEMENT NOTE:
DISTRIBUTE IN PCI SECTION OF SB
NEAR PINS A8 ... F11
NOSTUFF
C2726 0.1UF 10% 16V X5R 402
C2727 0.1UF 10% 16V X5R 402
C2728 0.1UF 10% 16V X5R 402
PP1V5_S0_SB_VCC1_5_B
MAKE_BASE=TRUE
=PP1V5_S0_SB_VCCGLAN1_5
PLACEMENT NOTE:
PLACE CAP NEAR PIN B27..A26
C2736 4.7UF 20% 6.3V CERM 603
ICH VCCSUS3_3 BYPASS
(ICH SUSPEND 3.3V PWR)
=PP3V3_S5_SB_VCCSUS3_3
PLACEMENT NOTE:
PLACE CAPS NEAR PINS
AC18..AH28
C2731 0.1UF 10% 16V X5R 402
C2734 0.1UF 10% 16V X5R 402
ICH USB/VCCSUS3_3 BYPASS
(ICH SUSPEND USB 3.3V PWR)
=PP3V3_S5_SB_VCCSUS3_3_USB
PLACEMENT NOTE:
PLACE CAP NEAR PINS
P6..R6
C2733 4.7UF 20% 6.3V CERM 603
ICH VCC1_5A BYPASS
(ICH LOGIC&IO 1.5V PWR)
=PP1V5_S0_SB_VCC1_5_A
PLACEMENT NOTE:
PLACE CAP NEAR PINS
AC10..AD7 OF SB
C2710 0.1UF 10% 16V X5R 402
ICH USB CORE/VCC1_5_A BYPASS
(ICH USB CORE 1.5V PWR)
=PP1V5_S0_SB_VCC1_5_A_USB_CORE
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS F1..M7
C2712 0.1UF 10% 16V X5R 402
ICH VCC_PAUX/VCCLAN3_3 BYPASS
(ICH LAN I/F BUFFER 3.3V PWR)
=PP3V3_S0MWOL_SB_VCCCL3_3
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY OR
3.56MM ON PRIMARY NEAR PINS F20,G21
C2740 0.1UF 10% 16V X5R 402
ICH VCC3_3/VCCHDA BYPASS
(ICH INTEL HDA CORE 3.3V PWR)
=PP3V3_S5_SB_3V3_VCCSUSHDA
PLACEMENT NOTE:
PLACE < 2.54MM OF SB ON SECONDARY
OR 3.56MM ON PRIMARY NEAR PIN AD11
C2741 0.1UF 10% 16V X5R 402
SB Decoupling
SYNC_MASTER=WFERRY
SYNC_DATE=06/01/2006
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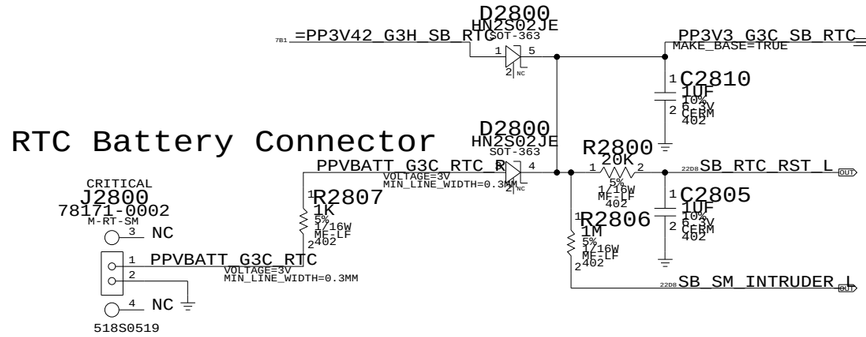
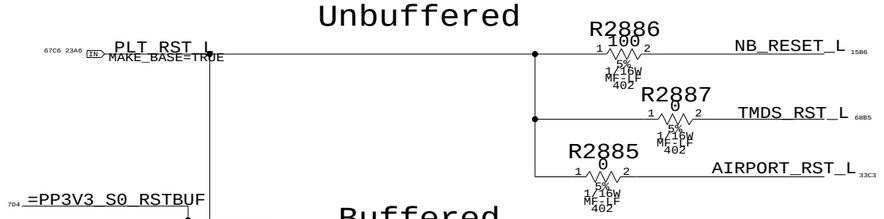
SIZE D
DRAWING NUMBER 051-7455
REV. 01
SCALE NONE
SHT 26 OF 76

Platform Reset Connections

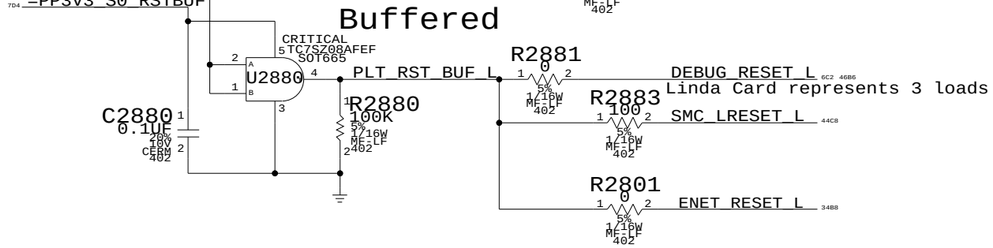
RTC Battery Connector



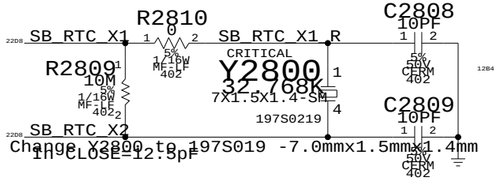
Unbuffered

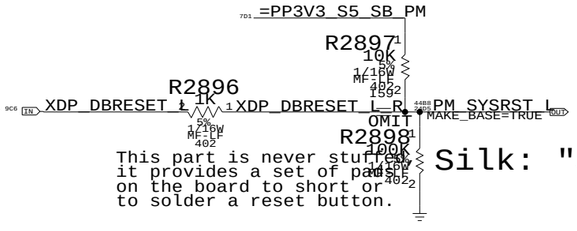


Buffered



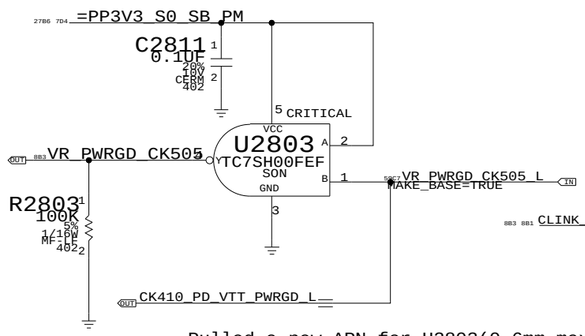
SB RTC Crystal Circuit

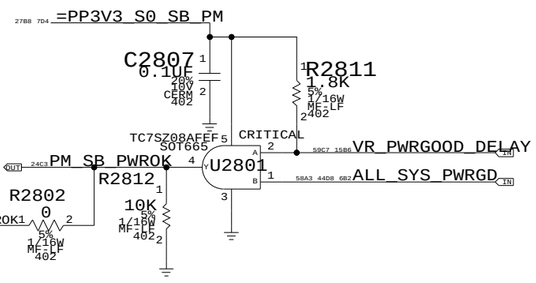




Silk: "SYS RST"

CPU VCORE PSI





Pulled a new APN for U2803(0.6mm max
2-input NAND gate-APN:311S0304
It may take a few days before this is done through
This will allow us to sequence this part under wireless card

Initial resistor values are based on CRB,
but may change after characterization.

SB Misc

SYNC_MASTER=NB SYNC_DATE=07/26/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 27 OF 76

SELIGO RECOMMEND TO REMOVE L2903,R2900,C2907,C2910
R2901,L2902,C2916,C2911,C2914 and R2902

ORIGINAL DESIGN:
USE 155S0302 FOR L2902(R2906) AND L2903(R2907)
STUFF C2907,C2910,C2916,C2911,C2914
USE 2.2OHM FOR R2900,R2901 AND 1OHM FOR R2902

=PP3V3_S0_CK505
L2901 FERR-120-OHM-1.5A 0402-LF
PP3V3_S0_CK505_VDD_CPU_SRC MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
C2900 1UF 10% 6.3V CERM 402
C2901 10UF 20% 6.3V X5R 603
C2902 C2903 C2904 C2905 C2906 0.1UF 10% 16V X5R 402

PP3V3_S0_CK505_VDD48 MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
R2901 0 5% 1/16W MF-LF 402
R2906 0 5% 1/16W MF-LF 402
=PP3V3_S0_CK505
C2909 0.1UF 10% 16V X5R 402
C2910 NOSTUFF 10UF 20% 6.3V X5R 603
C2911 NOSTUFF 1UF 10% 6.3V CERM 402

PP3V3_S0_CK505_VDD_PCI MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
C2912 C2913 0.1UF 10% 16V X5R 402
C2914 NOSTUFF 10UF 20% 6.3V X5R 603

R2907 0 5% 1/16W MF-LF 402
PP3V3_S0_CK505_VDDA_R MIN_LINE_WIDTH=0.5mm VOLTAGE=3.3V MIN_NECK_WIDTH=0.2mm
R2900 0 5% 1/16W MF-LF 402
PP3V3_S0_CK505_VDDA VOLTAGE=3.3V MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm
C2907 NOSTUFF 10UF 20% 6.3V X5R 603
C2908 0.1UF 10% 16V X5R 402

PP3V3_S0_CK505_VDD_REF MIN_LINE_WIDTH=0.5mm MIN_NECK_WIDTH=0.2mm VOLTAGE=3.3V
R2902 0 5% 1/16W MF-LF 402
C2915 0.1UF 10% 16V X5R 402
C2916 NOSTUFF 10UF 20% 6.3V X5R 603

NEED TO CHECK CAP VALUE
CRITICAL
Y2901 14.31818 5X3.2-SM
C2989 C2990 18PF 5% 50V CERM 402

3 VDD_48
43 VDD_CPU
61 67 VDD_PCI
49 VDD_REF
12 17 28 35 VDD_SRC

(EACH POWER PIN PLACED ONE 0.1UF)
(PLACED 0.1UF NEAR THE RELATIVE POWER PIN)

CRITICAL
U2900 SLG2AP101 QFN

38 VDD_A
39 VSS_A
CK505_XTAL_IN 51 XTAL_IN
CK505_XTAL_OUT 50 XTAL_OUT
29B8 IN CK505_FSB_TEST_MODE 8 FS_B/TEST_MODE
75D3 29B6 OUT CK505_PCI1_CLK 57 PCI_1
75D3 8C4 OUT CK505_PCI2_CLK 58 PCI_2
75D3 29A6 OUT CK505_PCI3_CLK 63 PCI_3
75D3 8C4 OUT CK505_PCI4_CLK 64 PCI_4
75D3 29B2 BI CK505_PCI5_FCTSEL1 65 PCI_5/FCT_SEL
(NO INT PD)
68 PCIF_0/ITP_EN
(NO INT PU)
75D3 29B6 6C7 OUT CK505_PCIF1_CLK 1 PCIF_1
47D6 IN =SMBUS_CK505_SCL 47 SCL
47D6 BI =SMBUS_CK505_SDA 48 SDA
CK505_PGMODE 28A4
(INT PU)
5 VSS_48
46 VSS_CPU
62
66 VSS_PCI
52 VSS_REF
31 VSS_SRC
69 THRM_PAD

PCI_STOP* 56 PM_STPPCI_L IN 24C8 29C2
CPU_STOP* 55 PM_STPCPU_L IN 24C8 29C2
CPU_0* 44 CK505_CPU0_N OUT 6C7 29D6 75D3
CPU_0 45 CK505_CPU0_P OUT 6C7 29D6 75D3
CPU_1_MCH* 41 CK505_CPU1_N OUT 6C7 29D6 75D3
CPU_1_MCH 42 CK505_CPU1_P OUT 6C7 29D6 75D3
CPU_ITP*/SRC_10* 36 CK505_CPU2_ITP_SRC10_N OUT 6C7 29D6 75D3
CPU_ITP/SRC_10 37 CK505_CPU2_ITP_SRC10_P OUT 6C7 29D6 75D3
SRC_0*/LCD_CLK* 11 CK505_LVDS_N OUT 6C7 29C6 75C3
SRC_0/LCD_CLK 10 CK505_LVDS_P OUT 6C7 29C6 75D3
SRC_1* 14 TP_CK505_SRC1_N OUT 8C4
SRC_1 13 TP_CK505_SRC1_P OUT 8C4
CLKREQ_1* 9 CK505_SRC_CLKREQ1_L IN 29C2
(INT PU)
SRC_2* 16 CK505_SRC2_N OUT 6C7 29C6 75C3
SRC_2 15 CK505_SRC2_P OUT 6C7 29C6 75C3
SRC_3* 19 TP_CK505_SRC3_N OUT 8C4
SRC_3 18 TP_CK505_SRC3_P OUT 8C4
CLKREQ_3* 59 CK505_SRC_CLKREQ3_L IN 29C2
(INT PU)
SRC_4* 22 CK505_SRC4_N OUT 6C7 29C6 75C3
SRC_4 21 CK505_SRC4_P OUT 6C7 29C6 75C3
CLKREQ_4* 20 SB_CLK100M_SATA_OE_L IN 8B3
(INT PU)
SRC_5* 24 CK505_SRC5_N OUT 6C7 29C6 75C3
SRC_5 23 CK505_SRC5_P OUT 6C7 29C6 75C3
CLKREQ_5* 60 NB_CLKREQ_L IN 15A3
(INT PU)
SRC_6* 27 CK505_SRC6_N OUT 6C7 29B6 75C3
SRC_6 26 CK505_SRC6_P OUT 6C7 29C6 75C3
CLKREQ_6* 25 CK505_SRC_CLKREQ6_L IN 33C5
(INT PU)
SRC_7* 30 TP_CK505_SRC7_N OUT 8C4
SRC_7 29 TP_CK505_SRC7_P OUT 8C4
CLKREQ_7* 40 CK505_PGMODE 28B5
SRC_8* 32 CK505_SRC8_N OUT 6B7 29B6 75C3
SRC_8 33 CK505_SRC8_P OUT 6B7 29B6 75C3
CLKREQ_8* 34 =ENET_CLKREQ_L IN 8C4 34B8
DOT_96*/27M_SS 7 CK505_DOT96_27M_N OUT 6C7 29B6 75D3
DOT_96/27M 6 CK505_DOT96_27M_P OUT 6C7 29B6 75D3
(INT PD)
CKPWRGD/PD* 2 CLK_PWRGD IN 24C3
48M/FS_A 4 CK505_USB48_FSA OUT 29D8 75D3
REF_0/FS_C/TEST_SEL 54 CK505_CLK14P3M_TIMER OUT 29D8 75D3
GPU_STOP* 53 CK505_REF1 BI

=PP3V3_S0_CK505
R2903 10K 5% 1/16W MF-LF 402
(FW PCI 33MHZ)
(TPM LPC 33MHZ)
(SMC LPC 33MHZ)
(PCI SLOT)
(PORT80 LPC 33MHZ)
75D3 29B6 OUT CK505_PCIF0_CLK
(ICH8M PCI 33MHZ)
(PULL UP PIN 68 TO ENABLE ITP HOST CLK)
(ICH SM BUS)

0 = VTT_PWRGD#/PD
1 = CKPWRGD/PD#

U2900 HAS INTERNAL PU ON PGMODE

475 OHM FOR CK410M
COMPATIBILITY
STUFF R2905 FOR CK410M MODE

NOSTUFF
R2905 475 1% 1/16W MF-LF 402

FCTSEL1	PIN 6	PIN 7	PIN 10	PIN 11
0	DOT96T	DOT96C	100MT_SST	100MC_SST
1	27M NON SPREAD	27M SPREAD	SRCT0	SRCC0

* FOR INT. GRAPHIC SYSTEM
* FOR EXT. GRAPHIC SYSTEM

(FROM ICH8M GPIO15 STPPCI*)
(FROM ICH8M GPIO25 STPCPU*)
(CPU HOST 133/167MHZ)
(GMCH HOST 133/167MHZ)
(ITP HOST 133/167MHZ)
(GMCH D_REFSSCLKIN DISPLAY PLL B 100MHZ)
(SLOT F - GPU PCI-E 100 MHZ)
(ICH8M DMI 100 MHZ)
(SLOT D - 4 LANE PCI-E FOR EXPRESSCARD)
(ICH SATA 100 MHZ)
(FROM ICH8M GPIO35)
(GMCH G_CLKIN 100 MHZ)
(FROM GMCH CLK_REQ*)
(WIRELESS PCI-E 100 MHZ)
(DB400 SRC)
(SLOT E)
(GMCH D_REFCLKIN DISPLAY PLL A 96MHZ)
(FROM ICH8M)
(ICH8M USB 48MHZ)
(ICH8M,SIO,LPC REF. 14.318MHZ)

Clock (CK505)
SYNC_MASTER=DSIMON SYNC_DATE=06/06/2006

APPLE INC.
SIZE D | DRAWING NUMBER 051-7455 | REV. 01
SCALE NONE | SHT 28 OF 76

CLK Termination

R3032 33 5% 1/16W MF-LF 402
75D3 28A4 IN CK505_USB48_FSA
SB_CLK48M_USBCTLR OUT 24D3 29A5 75B3

R3033 2.2K 5% 1/16W MF-LF 402
CK505_FSA 29C8 75B3

R3034 33 5% 1/16W MF-LF 402
75D3 28A4 IN CK505_CLK14P3M_TIMER
SB_CLK14P3M_TIMER OUT 24D3 29A5 75B3

R3035 10K 5% 1/16W MF-LF 402
CK505_FSC 29A8 75B3

=PP1V25R1V05_S0_FSB_NB 7C7 13B7 29B6 29C6

(TO MCH FS_A)
R3081 1K 5% 1/16W MF-LF 402
70B3 15C6 OUT NB_BSEL<0>
NOSTUFF R3080 1K 5% 1/16W MF-LF 402
75B3 29D6 CK505_FSA
R3082 0 5% 1/16W MF-LF 402
CPU_BSEL<0> IN 9B4 70B3
(TO ICH8M USB 48MHZ)
R3083 1K 5% 1/16W MF-LF 402
(FROM CPU FS_A)

=PP1V25R1V05_S0_FSB_NB 7C7 13B7 29B6 29C6

(TO MCH FS_B)
R3085 1K 5% 1/16W MF-LF 402
70B3 15C6 OUT NB_BSEL<1>
R3084 1K 5% 1/16W MF-LF 402
28C6 OUT CK505_FSB_TEST_MODE
R3086 0 5% 1/16W MF-LF 402
CPU_BSEL<1> IN 9A4 70B3
NOSTUFF R3087 1K 5% 1/16W MF-LF 402
(FROM CPU FS_B)

=PP1V25R1V05_S0_FSB_NB 7C7 13B7 29B6 29C6

(TO MCH FS_C)
R3089 1K 5% 1/16W MF-LF 402
70B3 15B6 OUT NB_BSEL<2>
NOSTUFF R3088 1K 5% 1/16W MF-LF 402
75B3 29D6 CK505_FSC
R3090 0 5% 1/16W MF-LF 402
CPU_BSEL<2> IN 9A4 70B3
(ICH8M 14.318MHZ)
R3091 1K 5% 1/16W MF-LF 402
(FROM CPU FS_C)

FS_C	FS_B	FS_A	CPU
0	0	0	266M
0	0	1	133M
0	1	1	166M
* 0	1	0	200M
1	1	0	400M
1	1	1	Resrvd
1	0	1	100M
1	0	0	333M

NOSTUFF R3082, R3086, R3090
FOR MANUAL CPU FREQUENCY

CPU speed is currently set to 200MHz

R3000 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU0_P
FSB_CLK_CPU_P OUT 9B6 75C3
R3001 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU0_N
FSB_CLK_CPU_N OUT 9B6 75C3
(CPU HOST 133/167MHZ)

R3002 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU1_P
FSB_CLK_NB_P OUT 13B3 75C3
R3003 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU1_N
FSB_CLK_NB_N OUT 13B3 75C3
(GMCH HOST 133/167MHZ)

R3004 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU2_ITP_SRC10_P
CPU_XDP_CLK_P OUT 12B3
R3005 0 5% 1/16W MF-LF 402
75D3 28C4 6C7 IN CK505_CPU2_ITP_SRC10_N
CPU_XDP_CLK_N OUT 12B3
(ITP HOST 133/167MHZ)

R3006 0 5% 1/16W MF-LF 402
75D3 28B4 6C7 IN CK505_LVDS_P
NB_CLK100M_DPLLSS_P OUT 8B1 75B3
R3007 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_LVDS_N
NB_CLK100M_DPLLSS_N OUT 8A1 75B3
(Int Gfx LVDS 100MHz)

R3010 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC2_P
SB_CLK100M_DMI_P OUT 23C2 75B3
R3011 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC2_N
SB_CLK100M_DMI_N OUT 23D2 75B3
(ICH8M DMI 100MHZ)

R3014 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC4_P
SB_CLK100M_SATA_P OUT 22B6 75B3
R3015 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC4_N
SB_CLK100M_SATA_N OUT 22B6 75B3
(ICH8M SATA 100MHZ)

R3016 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC5_P
NB_CLK100M_PCIE_P OUT 15C3 75B3
R3017 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC5_N
NB_CLK100M_PCIE_N OUT 15C3 75B3
(GMCH PEG/DMI 100MHZ)

R3018 0 5% 1/16W MF-LF 402
75C3 28B4 6B7 IN CK505_SRC6_P
PCIE_CLK100M_MINI_P OUT 33C5 75B3
R3019 0 5% 1/16W MF-LF 402
75C3 28B4 6C7 IN CK505_SRC6_N
PCIE_CLK100M_MINI_N OUT 33C5 75A3
(WIRELESS PCI-E MINI 100MHZ)

R3022 0 5% 1/16W MF-LF 402
75C3 28A4 6B7 IN CK505_SRC8_P
PCIE_CLK100M_ENET_P OUT 34C8
R3023 0 5% 1/16W MF-LF 402
75C3 28A4 6B7 IN CK505_SRC8_N
PCIE_CLK100M_ENET_N OUT 34C8
(FOR YUKON 100MHZ)

R3024 0 5% 1/16W MF-LF 402
75D3 28A4 6C7 IN CK505_DOT96_27M_P
NB_CLK96M_DOT_P OUT 8B1 75B3
R3025 0 5% 1/16W MF-LF 402
75D3 28A4 6C7 IN CK505_DOT96_27M_N
NB_CLK96M_DOT_N OUT 8B1 75B3
(Int GFX DOT 96MHZ)

R3026 33 5% 1/16W MF-LF 402
75D3 28B8 IN CK505_PCIF0_CLK
PCI_CLK33M_LPCPLUS OUT 6C2 48C4 75C3
(PORT80 LPC 33MHZ)

R3027 33 5% 1/16W MF-LF 402
75D3 28B6 6C7 IN CK505_PCIF1_CLK
PCI_CLK33M_SB OUT 23A6 25A5 75B3
(TO ICH8M PCI 33MHZ)

R3028 33 5% 1/16W MF-LF 402
75D3 28B6 IN CK505_PCI1_CLK
PCI_CLK33M_FW OUT 29A5 37A5 75B3
(TO FIREWIRE PCI 33MHZ)

R3030 33 5% 1/16W MF-LF 402
75D3 28B6 IN CK505_PCI3_CLK
PCI_CLK33M_SMC OUT 29A5 44C8 75B3
(TO SMC PCI 33MHZ)

CLKREQ Controls

29B2 28D8 28D3 28C8 7C4 =PP3V3_S0_CK505

R3046 10K 5% 1/16W MF-LF 402
28C4 24C8 PM_STPPCI_L

R3047 10K 5% 1/16W MF-LF 402
28C4 24C8 PM_STPCPU_L

R3050 NOSTUFF 10K 5% 1/16W MF-LF 402
28B4 CK505_SRC_CLKREQ1_L

R3051 NOSTUFF 10K 5% 1/16W MF-LF 402
28B4 CK505_SRC_CLKREQ3_L

29D2 28D8 28D3 28C8 7C4 =PP3V3_S0_CK505

R3067 NOSTUFF 10K 5% 1/16W MF-LF 402
75D3 28B6 B1 CK505_PCI5_FCTSEL1

R3066 10K 5% 1/16W MF-LF 402

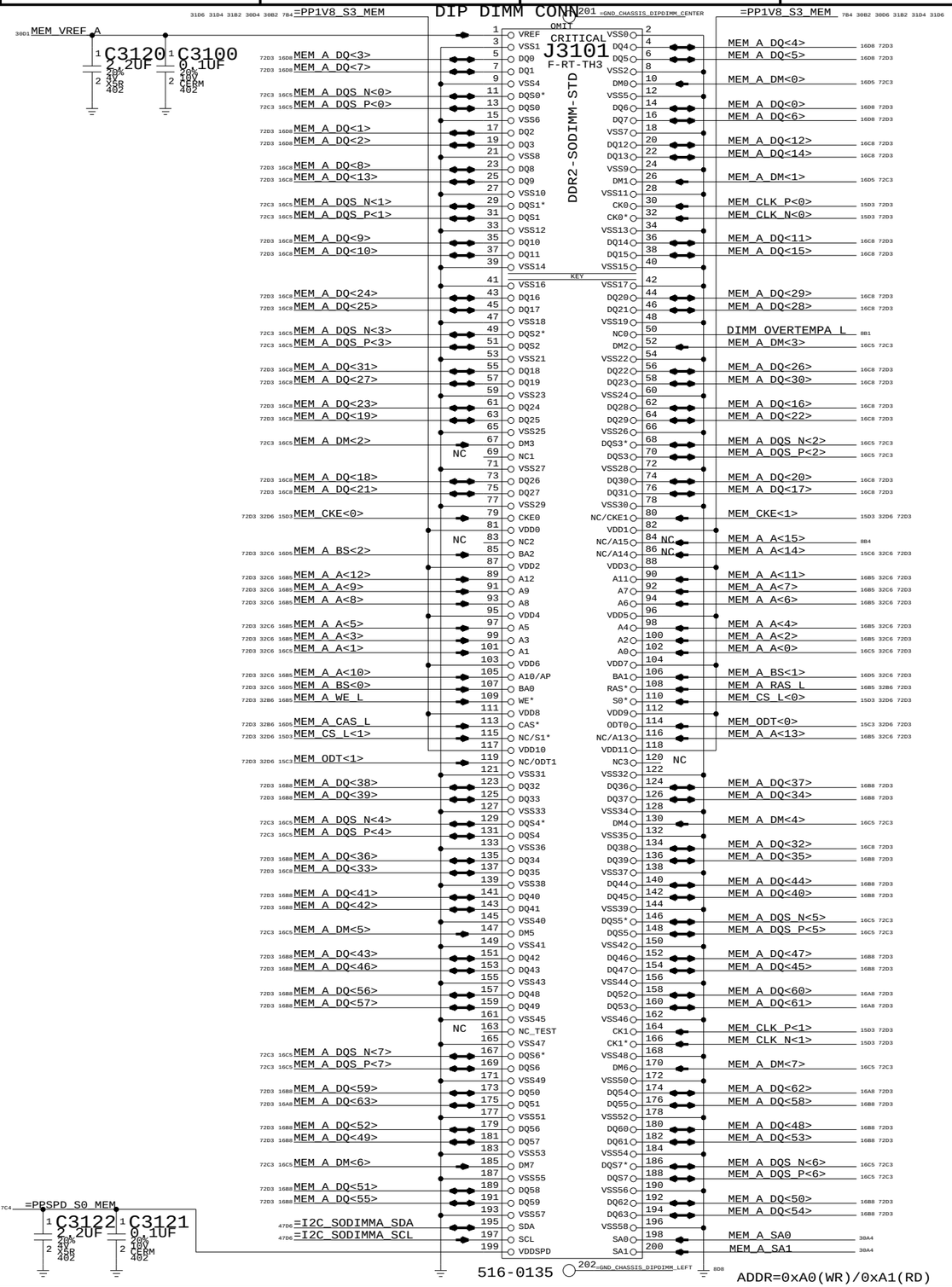
75B3 44C8 29A3 PCI_CLK33M_SMC
75B3 29B3 23A6 PCI_CLK33M_SB
75B3 29D6 24D3 SB_CLK48M_USBCTLR
75B3 29D6 24D3 SB_CLK14P3M_TIMER
75B3 37A5 29B3 PCI_CLK33M_FW

C3000 NOSTUFF 3.3PF ±0.25% 50V CERM 402
C3001 NOSTUFF 3.3PF ±0.25% 50V CERM 402
C3002 NOSTUFF 3.3PF ±0.25% 50V CERM 402
C3003 NOSTUFF 3.3PF ±0.25% 50V CERM 402
C3004 NOSTUFF 3.3PF ±0.25% 50V CERM 402

Place close to CLK Gen
For reducing noise coupling to wireless frequencies

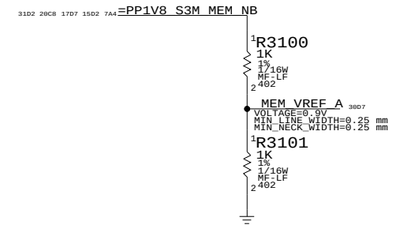
Clock Termination
SYNC_MASTER=DSIMON-WF SYNC_DATE=06/06/2006

APPLE INC.
SIZE D | DRAWING NUMBER 051-7455 | REV. 01
SCALE NONE | SHT 29 OF 76



DDR2 VRef

One 0.1uF per connector



Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors. (See Capell Valley pg 47)

Page Notes

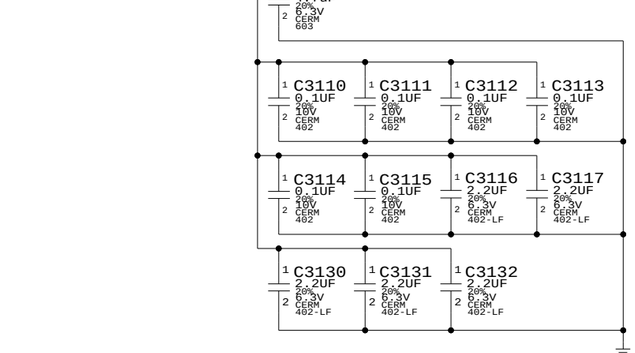
Power aliases required by this page:
- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
- =I2C_MEM_SCL
- =I2C_MEM_SDA

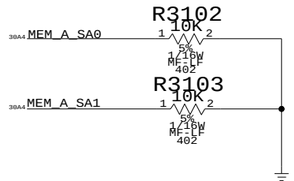
BOM options provided by this page:
(NONE)

DDR2 Bypass Caps

(For return current)



The 4.7uF and 1.0uF caps can be changed to 5x 2.2uF caps, when they get cheaper.



DDR2 SO-DIMM Connector A

SYNC_MASTER=MEMORY SYNC_DATE=06/20/2005

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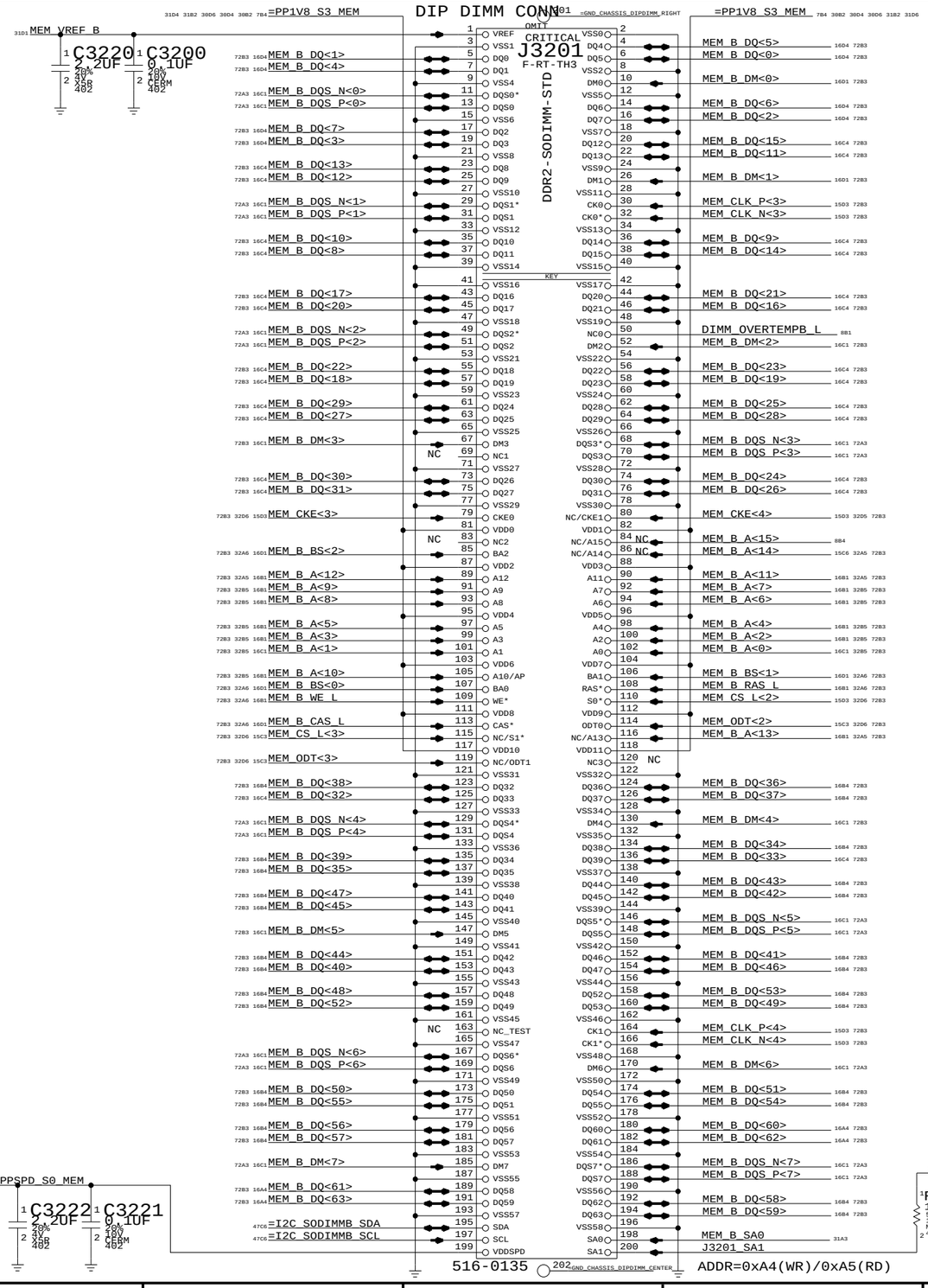
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	30	76



DDR2 VREF (FOR CONNECTOR B)

One 0.1uF per connector

=PP1V8_S3M_MEM_NB

R3201 1K 1% 1/16W MF-LF 402

MEM_VREF_B

VOLTAGE=0.9V
MIN_LINE_WIDTH=0.25 mm
MIN_NECK_WIDTH=0.25 mm

R3202 1K 1% 1/16W MF-LF 402

Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors. (See Capell Valley pg 47)

Page Notes

Power aliases required by this page:
- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

Signal aliases required by this page:
- =I2C_MEM_SCL
- =I2C_MEM_SDA

BOM options provided by this page:
(NONE)

NOTE: This page does not supply VREF. The reference voltage must be provided by another page.

DDR2 Bypass Caps

(For return current)

=PP1V8_S3_MEM

C3209 4.7uF 20% 6.3V CERM 603

C3210 0.1UF 20% 10V CERM 402
C3211 0.1UF 20% 10V CERM 402
C3212 0.1UF 20% 10V CERM 402
C3213 0.1UF 20% 10V CERM 402

C3214 0.1UF 20% 10V CERM 402
C3215 0.1UF 20% 10V CERM 402
C3216 2.2UF 20% 6.3V CERM 402-LF
C3217 2.2UF 20% 6.3V CERM 402-LF

C3230 2.2UF 20% 6.3V CERM 402-LF
C3231 2.2UF 20% 6.3V CERM 402-LF
C3232 2.2UF 20% 6.3V CERM 402-LF

The 4.7uF and 1.0uF caps can be changed to 5x 2.2uF caps, when they get cheaper.

MEM_B_SA0 — R3203 10K 5% 1/16W MF-LF 402

=PPSPD_S0_MEM — R3200 10K 5% 1/16W MF-LF 402

Resistor prevents pwr-gnd short

DDR2 SO-DIMM Connector B		
SYNC_MASTER=MEMORY	SYNC_DATE=06/20/2005	
NOTICE OF PROPRIETARY PROPERTY		
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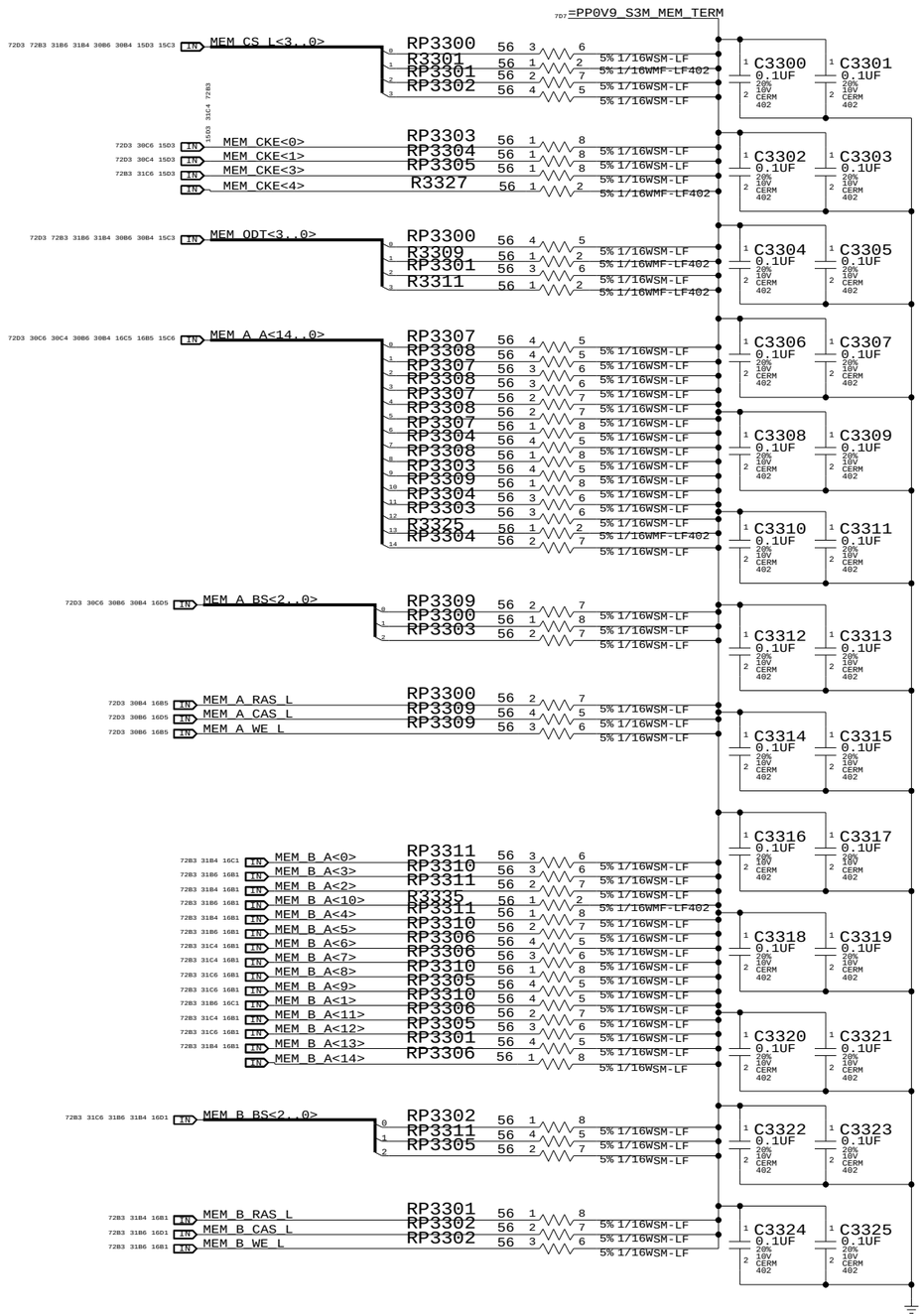
APPLE INC.	SIZE D / DRAWING NUMBER 051-7455 / REV. 01	
	SCALE NONE / SHT 31 OF 76	

One cap for each side of every RPAK, one cap for every two discrete resistors
BOMOPTION shown at the top of each group applies to every part below it



LAYOUT NOTE:PLACE ONE CAP CLOSE TO EVERY TWO PULLUP RESISTORS TERMINATED TO PP0V9_S0_MEM_TERM

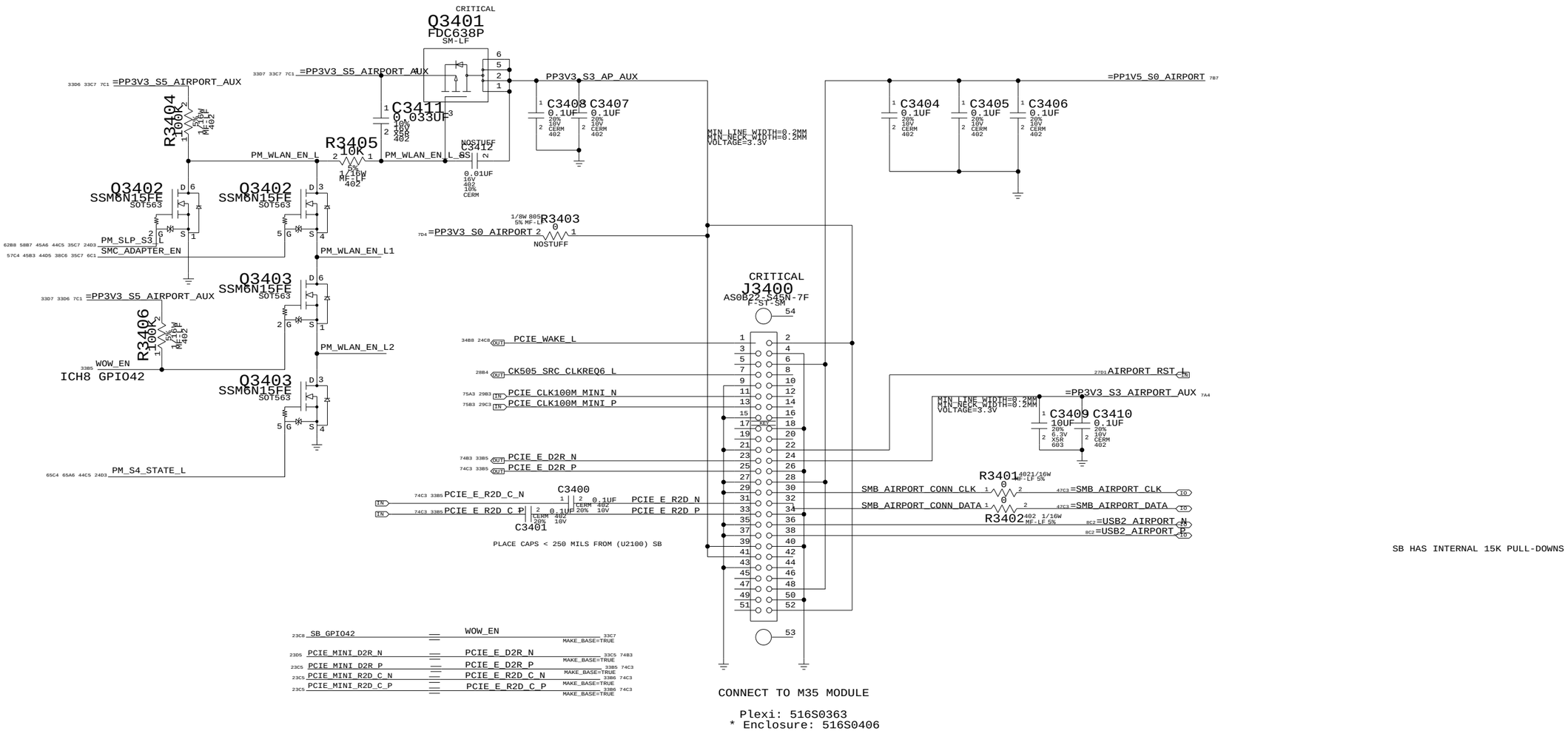
Memory Active Termination

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 32 OF 76



AIRPORT CONN

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	33	76

Page Notes

Power aliases required by this page:
- =PP3V3_ENET_PHY (EC / Ultra)
- =PP1V8R2V5_ENET_PHY (2.5V / 1.8V)
- =YUKON_EC_PP2V5_ENET (2.5V / GND)
- =PP1V2_ENET_PHY

Signal aliases required by this page:
- =ENET_CLKREQ_L (NC/TP for Yukon EC)
- =ENET_VMAIN_AVLBL

BOM options provided by this page:
YUKON_EC - Selects Yukon EC RSET value.
YUKON_ULTRA - Selects Yukon Ultra RSET.

NOTE: Yukon IC and EEPROM are OMITted on this page. Proper part numbers must be called out elsewhere.

NOTE: See bottom of page for instructions for dual Yukon EC / Yukon Ultra schematic support.

=PP1V2_ENET_PHY

Yukon EC		Yukon Ultra	
No link:	171 mA	No link:	130 mA
10 Mbps:	179 mA	10 Mbps:	130 mA
100 Mbps:	203 mA	100 Mbps:	150 mA
1000 Mbps:	426 mA	1000 Mbps:	290 mA

C3700 4.7UF 20% 6.3V CERM 603; C3701 C3702 C3703 C3704 C3705 C3706 C3707 C3708 0.1UF 10% 16V X5R 402

=PP3V3_ENET_PHY

Yukon EC		Yukon Ultra	
No link:	4 mA	No link:	60 mA
10 Mbps:	4 mA	10 Mbps:	70 mA
100 Mbps:	4 mA	100 Mbps:	70 mA
1000 Mbps:	4 mA	1000 Mbps:	80 mA

C3710 4.7UF 20% 6.3V CERM 603; C3711 C3712 C3713 0.1UF 10% 16V X5R 402; C3714 0.001UF 10% 50V CERM 402; C3715 0.001UF 10% 50V CERM 402

L3720 FERR-120-OHM-1.5A 0402-LF

=PP1V8R2V5_ENET_PHY — PP1V8R2V5_ENET_PHY_AVDD MIN_LINE_WIDTH=0.4 mm MIN_NECK_WIDTH=0.22 mm VOLTAGE=1.8V (EC:2.5V)

Yukon EC (2.5V)		Yukon Ultra (1.8V)	
No link:	82 mA	No link:	0 mA
10 Mbps:	108 mA	10 Mbps:	30 mA
100 Mbps:	126 mA	100 Mbps:	40 mA
1000 Mbps:	218 mA	1000 Mbps:	150 mA

C3720 4.7UF 20% 6.3V CERM 603; C3721 C3722 C3723 0.1UF 10% 16V X5R 402; C3724 0.001UF 10% 50V CERM 402

=YUKON_EC_PP2V5_ENET
Yukon EC: Alias to PP1V8R2V5_ENET_PHY_AVDD, add 1x 0.1uF & 1x 0.001uF caps
Yukon Ultra: Alias to GND

PCIE_ENET_D2R_P — C3735 0.1UF 10% 16V X5R 402 — PCIE_ENET_D2R_C_P — 49 TX_P
PCIE_ENET_D2R_N — C3736 0.1UF 10% 16V X5R 402 — PCIE_ENET_D2R_C_N — 50 TX_N
PCIE_ENET_R2D_C_P — C3730 0.1UF 10% 16V X5R 402 (PLACEMENT_NOTE=Place C3730 close to southbridge.) — PCIE_ENET_R2D_P — 54 RX_P
PCIE_ENET_R2D_C_N — C3731 0.1UF 10% 16V X5R 402 (PLACEMENT_NOTE=Place C3731 close to southbridge.) — PCIE_ENET_R2D_N — 53 RX_N
PCIE_CLK100M_ENET_P — 55 REFCLKP
PCIE_CLK100M_ENET_N — 56 REFCLKN
=ENET_CLKREQ_L — Yukon EC: Pin 42 should be NC (or TP) net. — 42 CLKREQ* EC:NO CONNECT
PCIE_WAKE_L — 6 WAKE*
ENET_RESET_L — 5 PERST*

ENET_MDI_P<0> — 17 MDIP0
ENET_MDI_N<0> — 18 MDIN0
ENET_MDI_P<1> — 20 MDIP1
ENET_MDI_N<1> — 21 MDIN1
ENET_MDI_P<2> — 26 MDIP2
ENET_MDI_N<2> — 27 MDIN2
ENET_MDI_P<3> — 30 MDIP3
ENET_MDI_N<3> — 31 MDIN3

SIGNAL_MODEL=EMPTY
R3740 49.9 1% 1/16W MF-LF 402 — ENET_MDI0 — C3740 0.001UF 10% 50V CERM 402
R3741 49.9 1% 1/16W MF-LF 402
R3742 49.9 1% 1/16W MF-LF 402 — ENET_MDI1 — C3742 0.001UF 10% 50V CERM 402
R3743 49.9 1% 1/16W MF-LF 402
R3744 49.9 1% 1/16W MF-LF 402 — ENET_MDI2 — C3744 0.001UF 10% 50V CERM 402
R3745 49.9 1% 1/16W MF-LF 402
R3746 49.9 1% 1/16W MF-LF 402 — ENET_MDI3 — C3746 0.001UF 10% 50V CERM 402
R3747 49.9 1% 1/16W MF-LF 402

CRITICAL Y3750 SM-3.2X2.5MM 25.0000M 16pF — ENET_CLK25M_XTALI — 15 XTALI; ENET_CLK25M_XTALO — 14 XTALO
C3750 15PF 5% 50V CERM 402 — NC
C3751 15PF 5% 50V CERM 402 — NC

U3700 88E8058 QFN — CRITICAL — EC:AVDD 2.5V
NC_32 NC_51 NC_52 NC_57 NC_64 AVDD0 AVDD1 AVDD2 AVDD3 VDDO_TTL0 VDDO_TTL1 VDDO_TTL2 VDDO_TTL3 AVDDH VDD0 VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7

PCI EXPRESS

ANALOG
- LOM_DISABLE* — 10 — ENET_LOM_DIS_L
- VAUX_AVLBL — 12
- SWITCH_VAUX — 9 — NC
- VMAIN_AVLBL — 47 — Must be high in S0 state (can use PP3V3_S0 as input) =ENET_VMAIN_AVLBL (IN 8A3)
- SWITCH_VCC — 11 — NC
- EC:CTRL25 CTRL18 — 4 — TP_YUKON_CTRL18 (OUT)
- CTRL12 — 3 — TP_YUKON_CTRL12 (OUT)
- RSET — 16 — YUKON_RSET

R3760 4.7K 5% 1/10W MF-LF 402

YUKON_ULTRA
R3765 4.99K 1% 1/16W MF-LF 402
If characterization shows eye height is too small, make R3765 smaller

LED
- LED_ACT* — 59 — NC
- LED_LINK10/100* — 60 — NC
- LED_LINK1000* — 62 — NC
- LED_DUPLEX* — 63 — NC

SPI
- (IPU) SPI_DO — 34 — NC
- (IPU) SPI_DI — 35 — NC
- (IPU) SPI_CLK — 37 — NC
- (IPU) SPI_CS — 36 — NC

MEDIA

TWSI
- (IPU) VPD_CLK — 38 — YUKON_VPD_CLK
- (IPU) VPD_DATA — 41 — YUKON_VPD_DATA

TEST/RSVD
- (IPD) TESTMODE — 46
- RSVD_24 — 24 — NC
- RSVD_25 — 25 — NC
- RSVD_29 — 29 — NC
- RSVD_43 — 43 — NC

MAIN CLK — THRML_PAD — 65

VPD ROM
C3780 0.1UF 10% 16V X5R 402
R3780 4.7K 5% 1/10W MF-LF 402
R3781 4.7K 5% 1/10W MF-LF 402
U3780 M24C08 SO8 — CRITICAL
VCC — E2 — NC NC1 — NC NC0 — WC* — VSS
SDA — SCL

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
114S0285	1	RES,4.87K,1%,1/16W,0402,LF	R3760		YUKON_EC

To support Yukon EC and Ultra on the same board:
- Alias =YUKON_EC_PP2V5_ENET to PP1V8R2V5_ENET_PHY_AVDD, add 1x 0.1uF and 1x 0.001uF caps
- Use 0-ohm resistors or variable supply to provide 1.8V or 2.5V to =PP1V8R2V5_ENET_PHY
- Connect =ENET_CLKREQ_L to clock generator via 0-ohm resistor (BOMOPTION: YUKON_ULTRA)
- Use YUKON_EC and YUKON_ULTRA BOMOPTIONs to select stuffed part

Ethernet (Yukon)

SYNC_MASTER=USB SYNC_DATE=10/07/2006

APPLE INC.

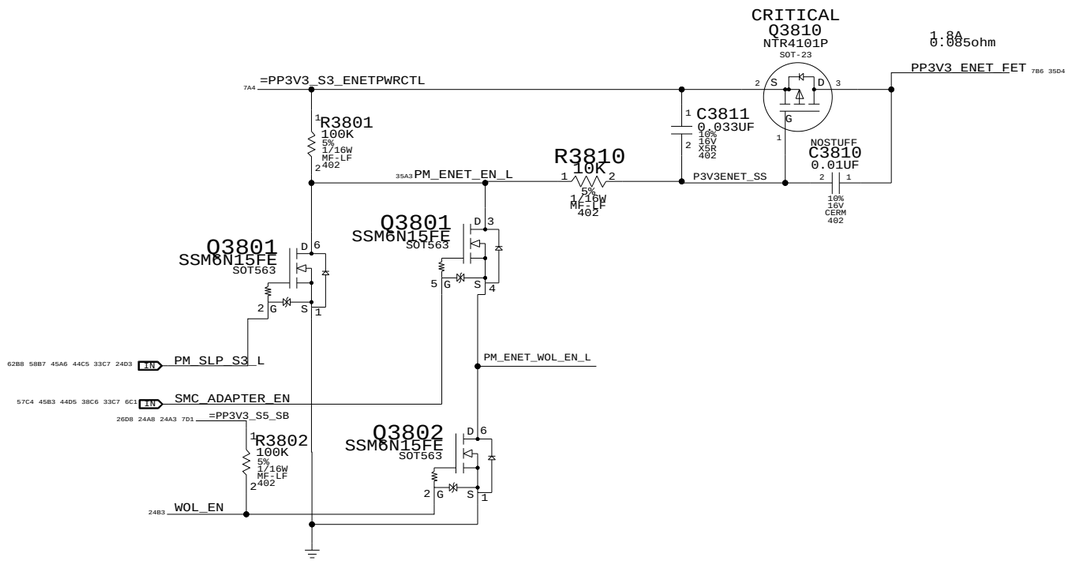
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 34 OF 76

ENET Enable Generation

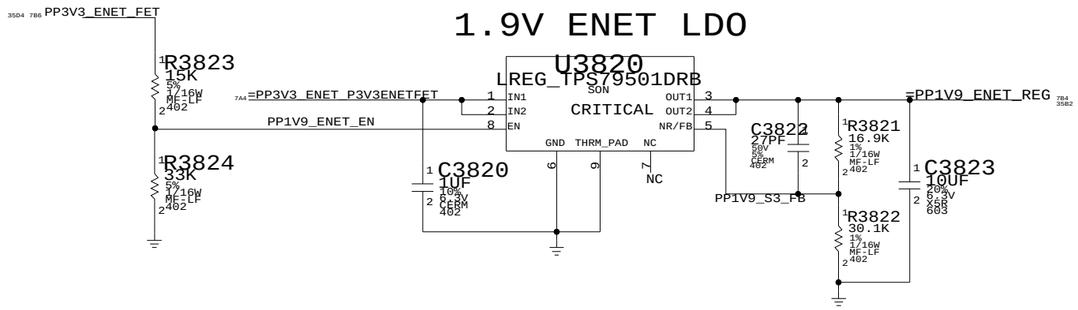
"ENET" = "S0" || AC

3.3V ENET FET



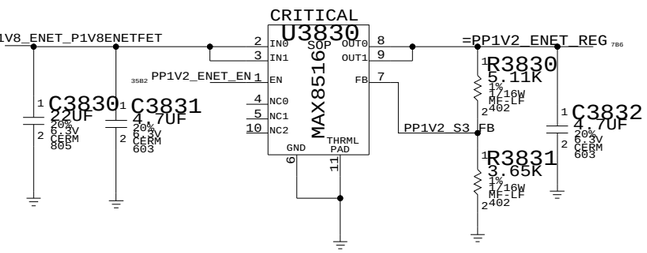
Name	PM_SLP_S3_L	SMC_ADAPTER_EN	PM_ENET_EN_L	PM_ENET_EN	Yukon Power
Logic	S0	AC			Powered by S3
S0 on Battery	High (3.3V)	Low (0V)	Low (0V)	High (3.3V)	Power
S3 on Battery	Low (0V)	Low (0V)	High (3.3V)	Low (0V)	Power
S0 on AC	High (3.3V)	High (3.3V)	Low (0V)	High (3.3V)	Power
S3 on AC	Low (0V)	High (3.3V)	Low (0V)	High (3.3V)	Power
S5 on anything	N/A	N/A	N/A	N/A	No Power

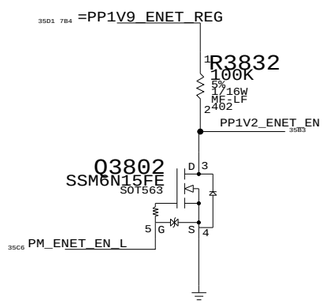
1.9V ENET LDO



Vout = 1.2246V * (1 + R3821 / R3822)

1.2V ENET LDO



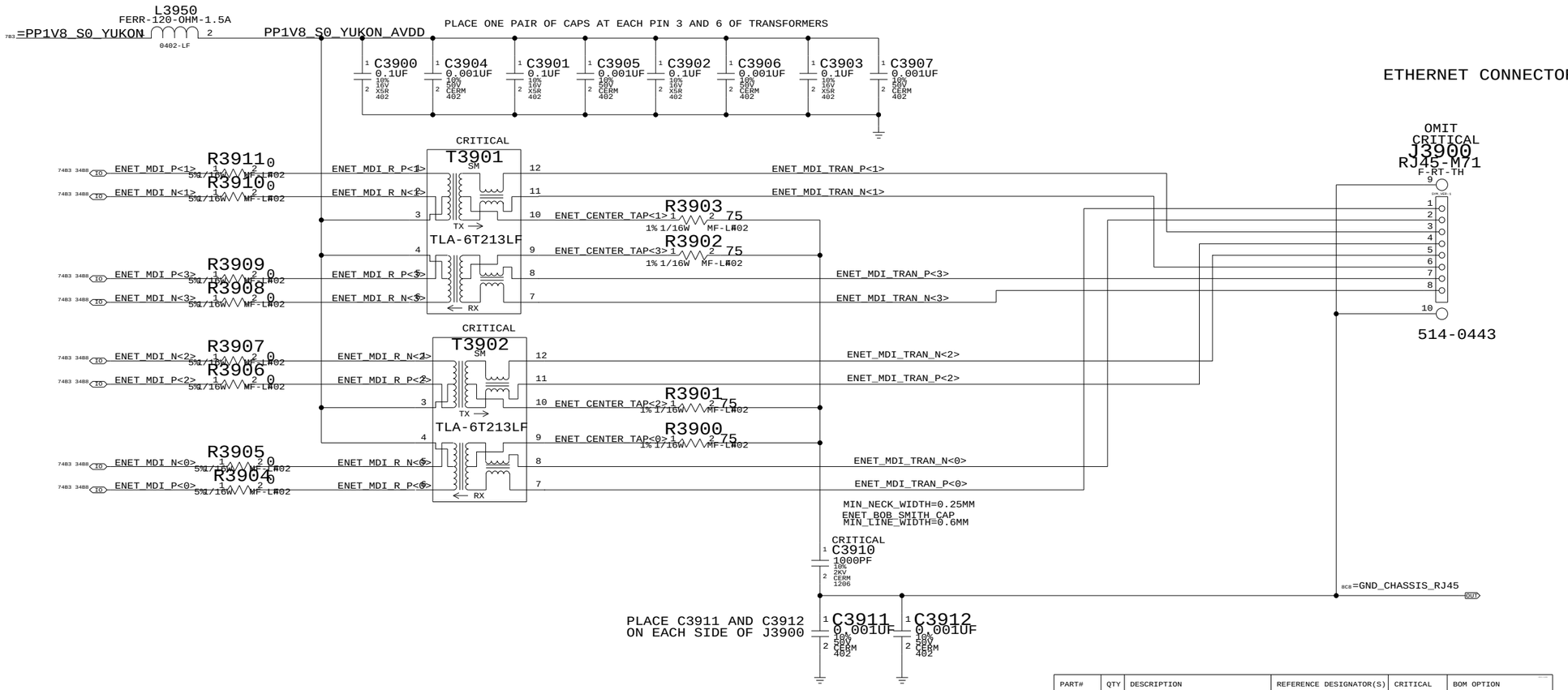


Yukon Power Control

SYNC_MASTER=USB SYNC_DATE=10/07/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 35 OF 76	



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0443	1	CONN,8P RJ-45 JACK,TH,MG3,LF	J3900	CRITICAL	NORMAL
514-0475	1	CONN,8P RJ-45 JACK,TH,BLACK,LF	J3900	CRITICAL	FANCY

ETHERNET CONNECTOR

SYNC_MASTER=USB SYNC_DATE=09/14/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 36 OF 76

PAGE NOTES

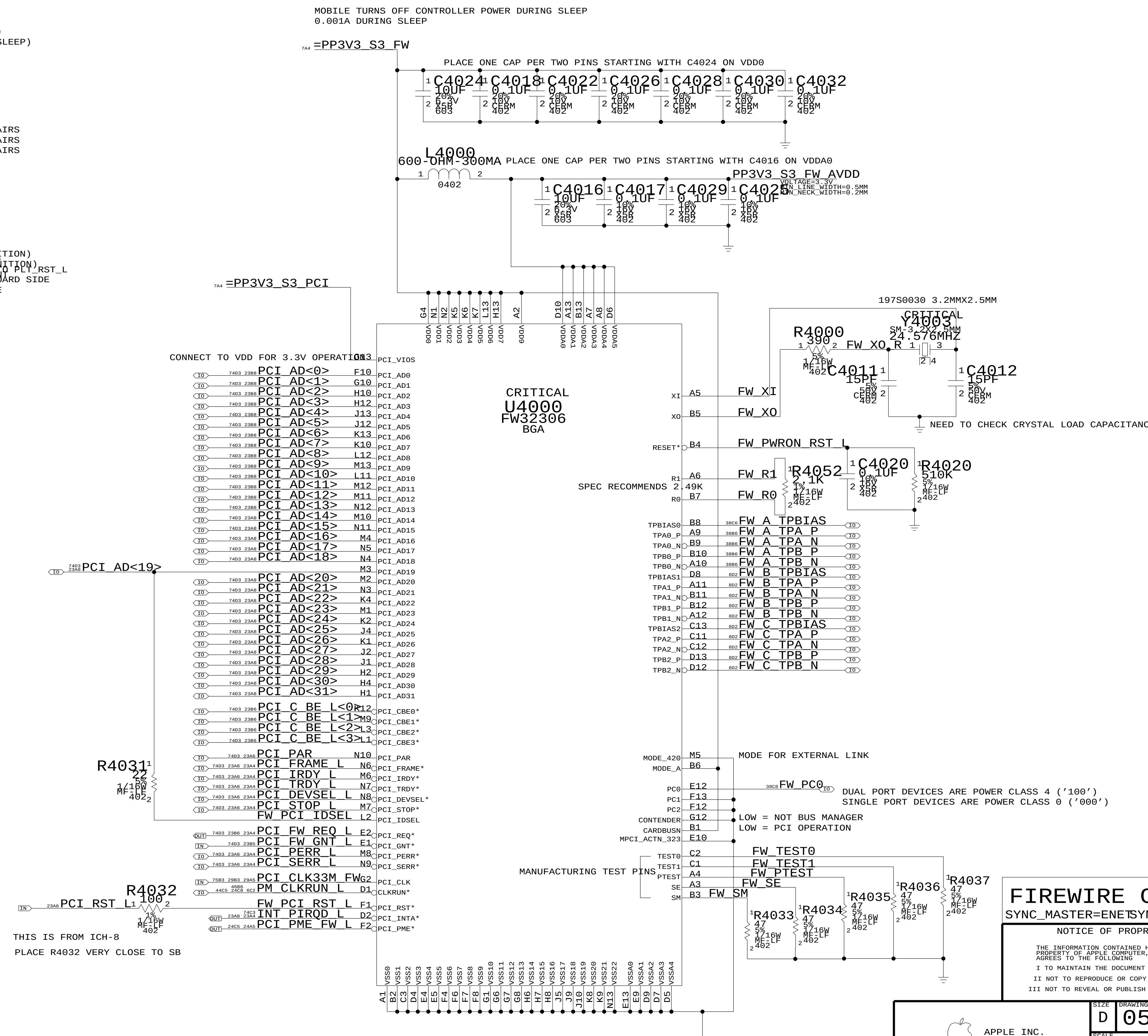
INPUT
- =PP3V3_S0_FW - 3.3V POWER FOR FIREWIRE (MOBILE: OFF DURING SLEEP)
- =PP3V3_S0_PCI - 3.3V POWER FOR PCI FIREWIRE (MOBILE: OFF DURING SLEEP)
- PCI_GNT3_L - PCI GRANT FROM SB
- PCI_CLK_FW - NEED TO REFERENCE TO ALIAS PAGE
- PCI_RST_L - PCI RESET FROM SB
- FW_PC0 - FIREWIRE POWER CLASS IDENTIFIER

INPUT/OUTPUT
- PCI_AD<0..31>,PCI_C_BE_L<0..3>,PCI_FRAME_L,PCI_IRDY_L,PCI_TRDY_L,
- PCI_DEVSEL_L, PCI_STOP_L, PCI_PAR, PCI_PERR_L, PCI_SERR_L
- FW_A_TPA_P/N, FW_A_TPB_P/N, FW_A_TPBIAS - PORT 0 FIREWIRE DIFF PAIRS
- FW_B_TPA_P/N, FW_B_TPB_P/N, FW_B_TPBIAS - PORT 1 FIREWIRE DIFF PAIRS
- FW_C_TPA_P/N, FW_C_TPB_P/N, FW_C_TPBIAS - PORT 2 FIREWIRE DIFF PAIRS

OUTPUT
- PCI_REQ3_L - PCI REQUEST TO SB
- PM_CLKRUN_L - CLOCK-RUN PCI PROTOCOL
- INT_PIRQD_L - INTERRUPT TO SB
- PCI_PME_FW_L - DEDICATED PME FOR FIREWIRE (SB GPIO1)

PAGE HISTORY

- 5/19/2005 - FIRST REVISION OF PAGE
- 6/20/2005 - BGA VERSION OF FW323-06 ADDED
- 6/21/2005 - CHANGED INT* TO INT_PIRQD_L (PER ARCHITECTURAL DEFINITION)
- 6/21/2005 - CHANGED PCI_ID TO AD19 (PER ARCHITECTURAL DEFINITION)
- 6/21/2005 - CHANGED REQ/GNT TO REQ3/GNT3 (PER ARCHITECTURAL DEFINITION)
- 6/22/2005 - ADDED 510K PULL-DOWN ON RST* AND REMOVED CONNECTION TO PLT_RST_L
- 6/22/2005 - CHANGED CLK,PME,DIFF PAIR NAMES TO BE RE-USE COMPLIANT
- 6/22/2005 - REMOVED CONSTRAINT SETS AS THEY WILL BE MANAGED ON BOARD SIDE
- 6/22/2005 - REMOVED C4421 - REDUNDANT
- 6/22/2005 - BRING OUT PC0 CONNECTION TO BE CONNECTED ON PORT PAGE
- 7/26/2005 - CONNECTED PIN E10 TO GND



FIREWIRE CONTROLLER

SYNC_MASTER=ENET SYNC_DATE=08/30/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE | SHT 37 OF 76

Page Notes

INPUT:

=PPBUS_FW - PORT POWER
=PP3V3_S5_FW - DIGITAL POWER
=GND_CHASSIS_FW_PORT0 - CHASSIS GROUND
=FWPWR_PWRON - ADDITIONAL POWER CONTROL

INPUT/OUTPUT:

FW_TPA0_P/N,FW_TPB0_P/N,FW_TPBIAS0 - FIREWIRE DIFF PAIRS

OUTPUT:

FW_PC0 - POWER CLASS IDENTIFIER (SINGLE PORT - TIE LOW)

PAGE HISTORY

5/19/05 - INITIAL REVISION
6/22/05 - CHANGED DIFF PAIR NAMES TO MATCH REUSE
6/22/05 - REMOVED CONSTRAINTS BECAUSE USING ALLEGRO CONST MANAGER
6/22/05 - CONNECTED FW_PC0 FOR SINGLE PORT
7/26/05 - UPDATED LATE-VG POWER RAIL CIRCUIT FROM M1
7/26/05 - CHANGED CONNECTOR PORT NAMING TO PORT0
7/26/05 - SWITCHED TO 514-0124 FOR PRE-PROTO CONNECTOR
7/26/05 - REMOVED R4529 - IT HASN'T BEEN STUFFED FOR MANY PRODUCTS
7/26/05 - CHANGED FL4590 TO 1.1A VERSION
7/26/05 - REMOVED ETHERNET LOW-POWER MODE CIRCUIT
7/26/05 - UPDATED SIGNAL NAMES FOR FW PORT POWER ENABLE

1394b implementation based on Apple
FireWire Design Guide (FWDG 0.6, 5/14/03)

PORT POWER CLASS

0 FOR SINGLE PORT
1 FOR DUAL PORT

37A3 FW_PC0

Enables port power whenever machine AC Adapter is plugged or system at run state with battery only

PPBUS_S5_FWPWRSW_F
VOLTAGE=18.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

CRITICAL
FL4390
1.1A-24V
MINISMDC

7B1 =PPBUS_S5_FWPWRSW

CRITICAL
Q4390
FDC638P
SM-LF

PPFW_SWITCH 6B2
VOLTAGE=19V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

D4390
SM
CRS08
CRITICAL

Cable Power

PPFW_PORT0_VP_F
VOLTAGE=16.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

L4310
FERR-250-OHM
SM

PPFW_PORT0_VP
VOLTAGE=16.5V
MIN_LINE_WIDTH=0.5MM
MIN_NECK_WIDTH=0.25MM

R4390 4.7K 5% 1/16W MF-LF 402
C4390 0.01UF 10% 25V X7R 402
C4310 0.001UF 10% 50V CERM 402

FWPWR_EN_L_DIV
MIN_LINE_WIDTH=0.15MM
MIN_NECK_WIDTH=0.15MM

R4391 3.3K 5% 1/16W MF-LF 402

CRITICAL
D4391
HN2D01JEF
SOT665

FWPWR_EN_L
MIN_LINE_WIDTH=0.15MM
MIN_NECK_WIDTH=0.15MM

R4394 10K 5% 1/16W MF-LF 402

45B3 44D5 35C7 33C7 6C1 57E4 SMC_ADAPTER_EN

FWPWR_ACIN

Q4392
SSM6N15FE
SOT563

"Snapback" & "Late VG" Protection

7D4 =PP3V3_S0_FW

NC

FWPWR_EN

R4395 470K 5% 1/16W MF-LF 402

FWPWR_EN_AND

Q4392
SSM6N15FE
SOT563

38A4 FW_PORTPWR_EN

[LATE VG NOTES]
CURRENT THROUGH THE BIAS RESISTOR SHOULD BE 5MA FOR A VOLTAGE DROP TO 2.2V
IT IS 2.2V INSTEAD OF 2.7V BECAUSE THE SNAPBACK ESD DIODES HAVE A 0.5V DROP

37B3 FW_A_TPBIAS

R4300 56.2 1% 1/16W MF-LF 402
R4301 56.2 1% 1/16W MF-LF 402
C4300 0.33UF 10% 6.3V CERM-X5R 402

37B3 FW_A_TPA_P
37B3 FW_A_TPA_N
37B3 FW_A_TPB_P
37B3 FW_A_TPB_N

R4302 56.2 1% 1/16W MF-LF 402
R4303 56.2 1% 1/16W MF-LF 402

FW_PORT0_TPB

C4301 220PF 5% 25V CERM 402
R4304 4.99K 1% 1/16W MF-LF 402

38A7 PP2V4_FWLATEVG

CRITICAL
D4320
BAV99DW-X-F
SOT-363

C4320 0.01UF 10% 16V CERM 402

CRITICAL
D4321
BAV99DW-X-F
SOT-363

C4321 0.01UF 10% 16V CERM 402

FW_PORT0_TPA_P
FW_PORT0_TPA_N
FW_PORT0_TPB_P
FW_PORT0_TPB_N

CRITICAL
FL4320
TCM2010-100-4P
SM

FW_PORT0_TPA_P_FL
FW_PORT0_TPA_N_FL
FW_PORT0_TPB_P_FL
FW_PORT0_TPB_N_FL

1394A PORT 0 OMIT
CRITICAL
J4300
1394A
F-RT-TH3

TPO (TPA+)
TPO# (TPA-)
TPI (TPB+)
TPI# (TPB-)
VP
VGND

(PPFW_PORT0_VP)
(GND_FW_PORT0_VGND)

514-0456

=GND_CHASSIS_FW_UPPER 8A6

=GND_CHASSIS_FW_DOWN 8C8

CRITICAL
D4322
BAV99DW-X-F
SOT-363

C4322 0.01UF 10% 16V CERM 402

CRITICAL
D4323
BAV99DW-X-F
SOT-363

C4323 0.01UF 10% 16V CERM 402

C4324 0.01UF 10% 50V X7R 603-1
C4325 0.01UF 10% 16V CERM 402

LATE-VG DETECTION CIRCUIT

38A6 7D1 =PP3V3_S5_FWLATEVG

R4350 330 5% 1/16W MF-LF 402

38C5 PP2V4_FWLATEVG
VOLTAGE=5.0V
MIN_LINE_WIDTH=0.35MM
MIN_NECK_WIDTH=0.25MM

NO STUFF
C4352 0.001UF 10% 50V CERM 402

CRITICAL
D4350
SOT23
MMBZ5227B

38A8 7D1 =PP3V3_S5_FWLATEVG

R4351 10K 5% 1/16W MF-LF 402
R4352 10K 1% 1/16W MF-LF 402

C4354 0.1UF 10% 16V X5R 402

R4356 2.0M 5% 1/16W MF-LF 402

CRITICAL
U4350
TLV7211
SC70

PP2V4_FWLATEVG
FWLATEVG_3V_REF

D4351
1SS418
SOD-723

LATEVG_EVENT_L

FW_PORTPWR_EN 38C5

C4353 100PF 5% 50V CERM 402
R4353 80.6K 1% 1/16W MF-LF 402

R4354 200K 1% 1/16W MF-LF 402

PLACEHOLDER FOR SMALL PACKAGE DIODE

C4355 0.33UF 10% 6.3V CERM-X5R 402

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0456	1	CONN,6P 1394A RCPT,MIDPLANE,MG3,LF	J4300	CRITICAL	NORMAL
514-0476	1	CONN,6P 1394A RCPT,MIDPLANE,BLACK,LF	J4300	CRITICAL	FANCY

FIREWIRE PORT

SYNC_MASTER=GPU SYNC_DATE=07/17/2006

NOTICE OF PROPRIETARY PROPERTY

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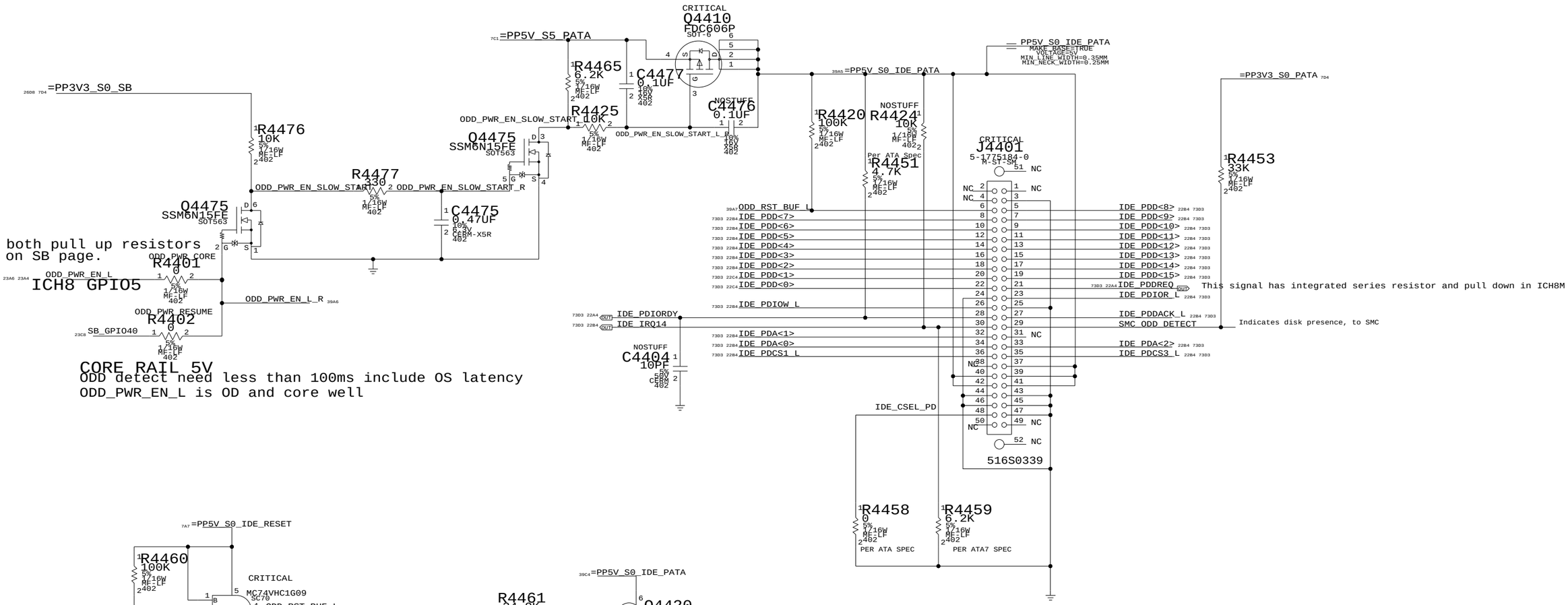
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 38 OF 76



PATA CONNECTOR

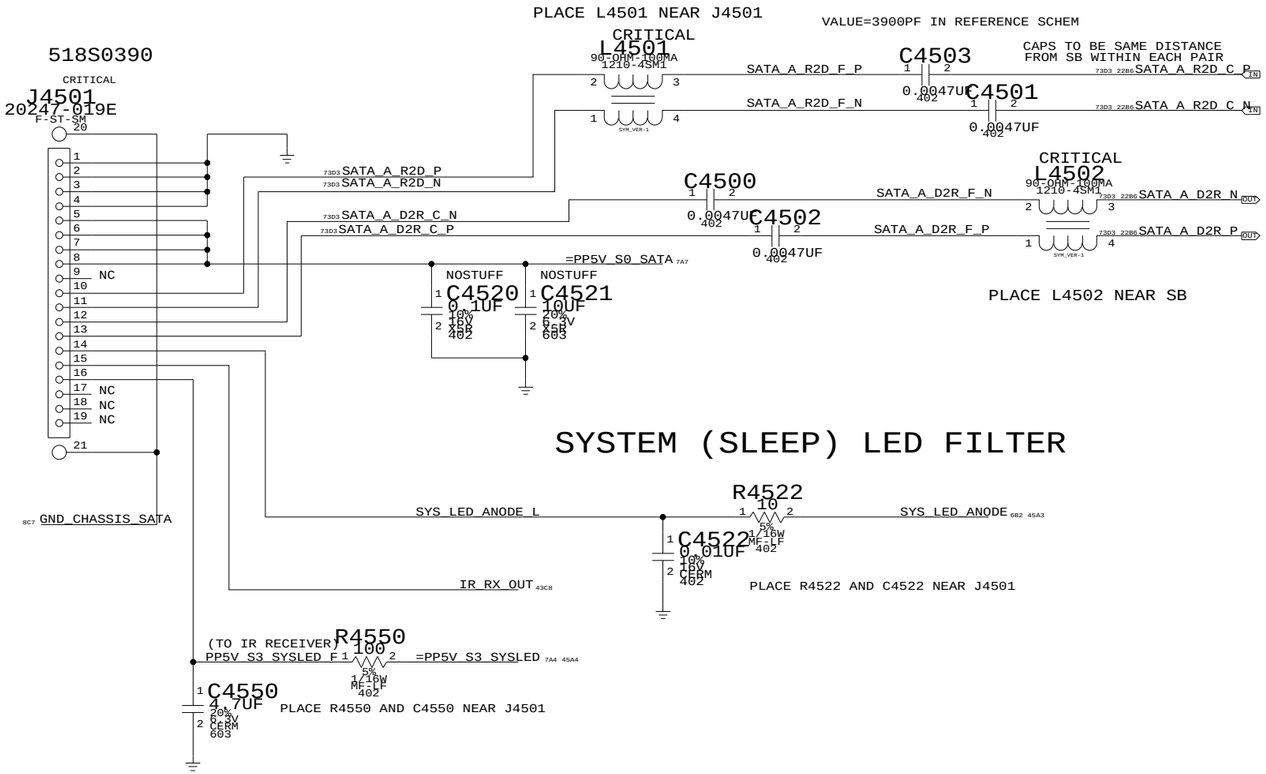
NOTICE OF PROPRIETARY PROPERTY

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

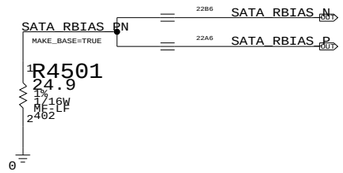
SCALE	SHT	OF
NONE	39	76

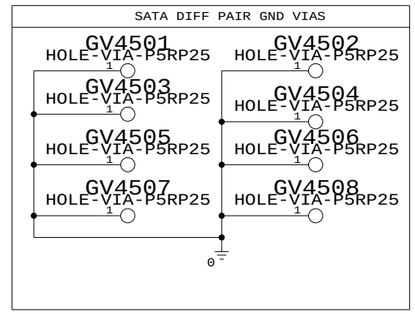
SATA CONNECTOR



SYSTEM (SLEEP) LED FILTER

PLACE NEAR ICH8 PIN





SATA CONNECTOR

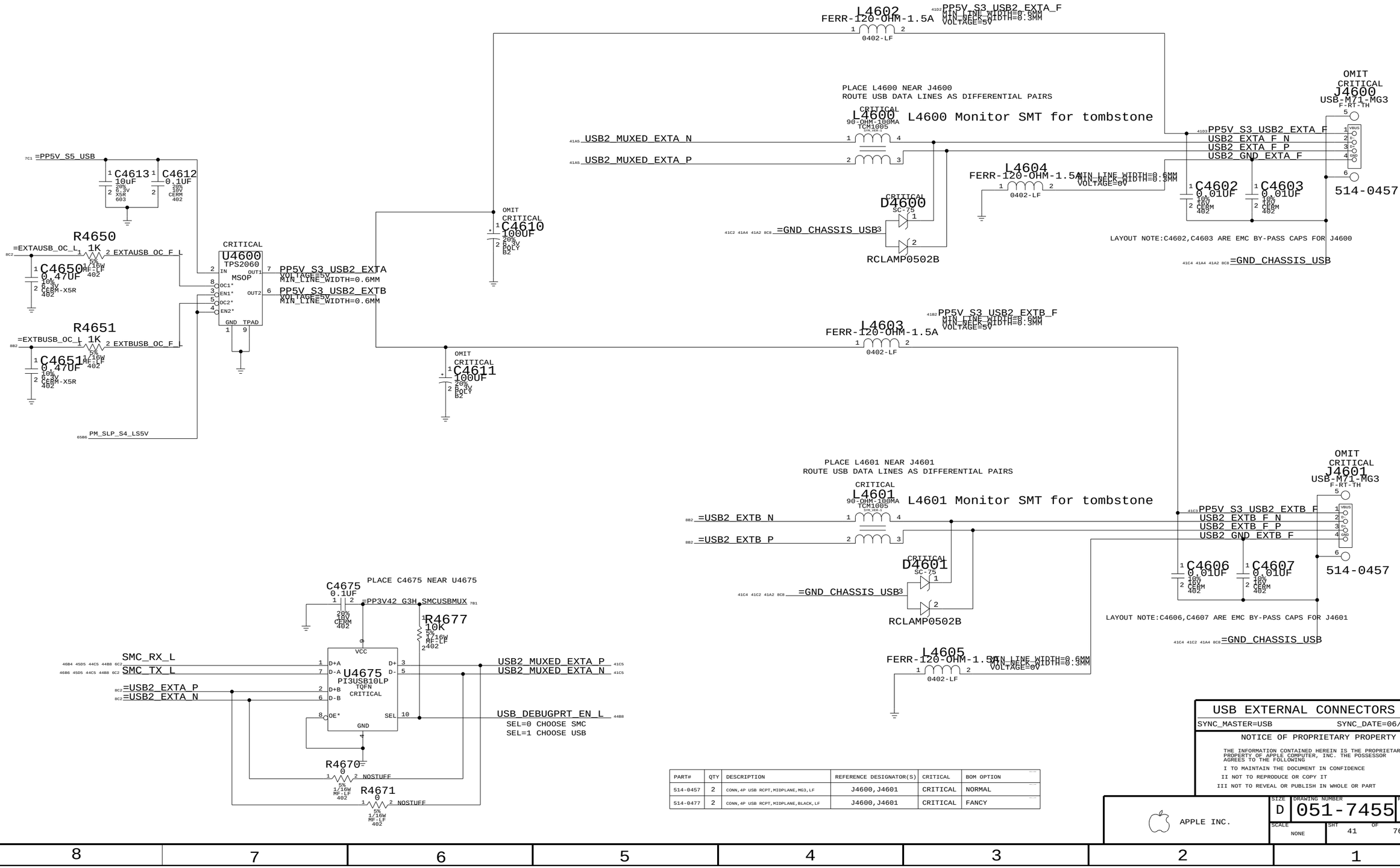
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 40 OF 76

USB 2.0 CONNECTORS



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0457	2	CONN,4P USB RCPT,MIDPLANE,MG3,LF	J4600,J4601	CRITICAL	NORMAL
514-0477	2	CONN,4P USB RCPT,MIDPLANE,BLACK,LF	J4600,J4601	CRITICAL	FANCY

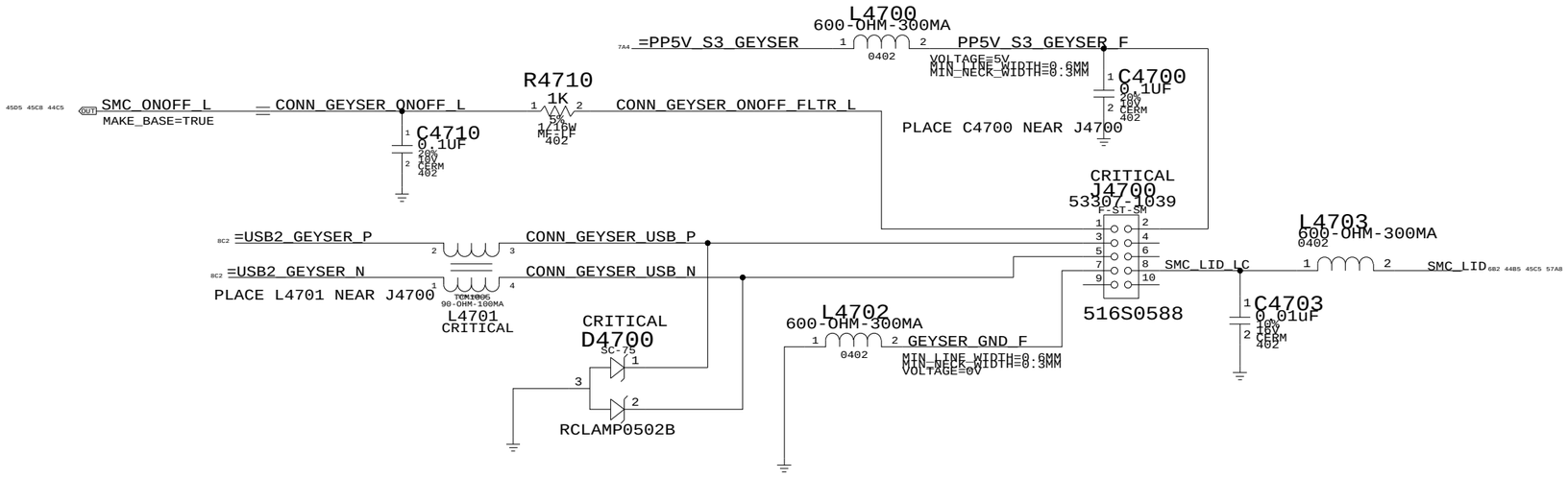
USB EXTERNAL CONNECTORS

SYNC_MASTER=USB SYNC_DATE=06/30/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 41 OF 76	

GEYSER AND DIMM0 REMOTE TEMP SENSORS



CONNECTOR MISC

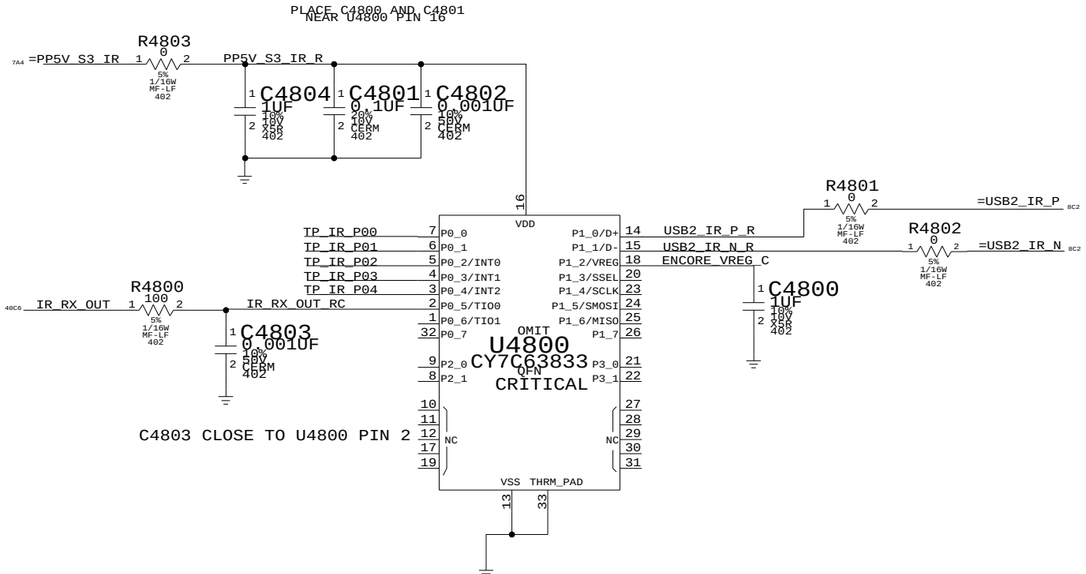
SYNC_MASTER=USB SYNC_DATE=06/29/2006

APPLE INC.

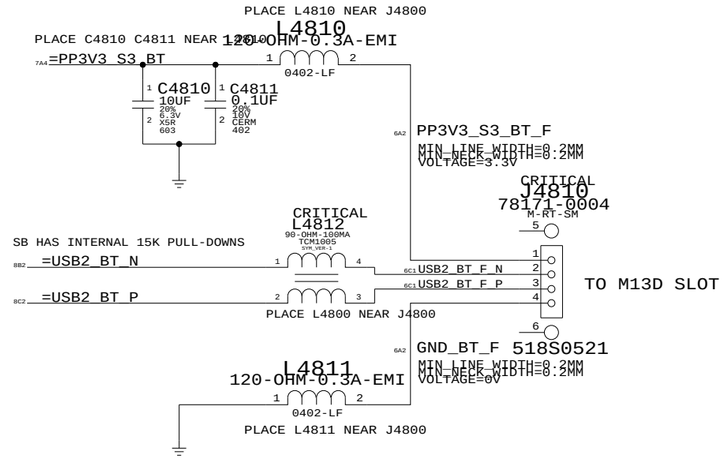
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	42	76

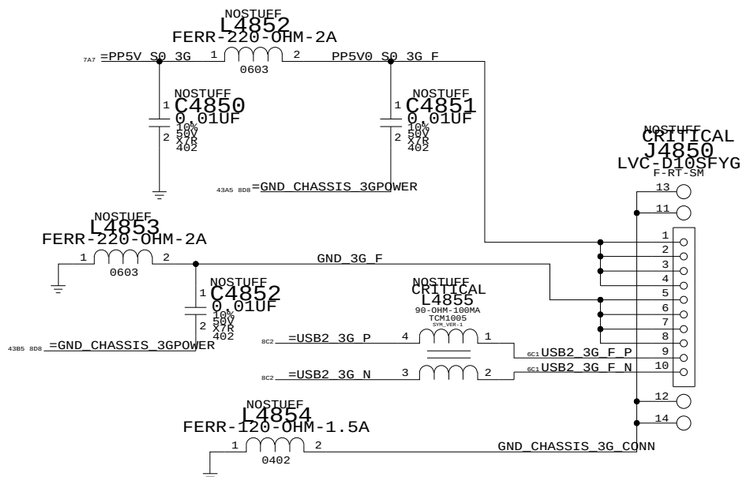
IR CYPRESS ENCORE II USB CONTROLLER



BLUETOOTH



3G CONNECTOR



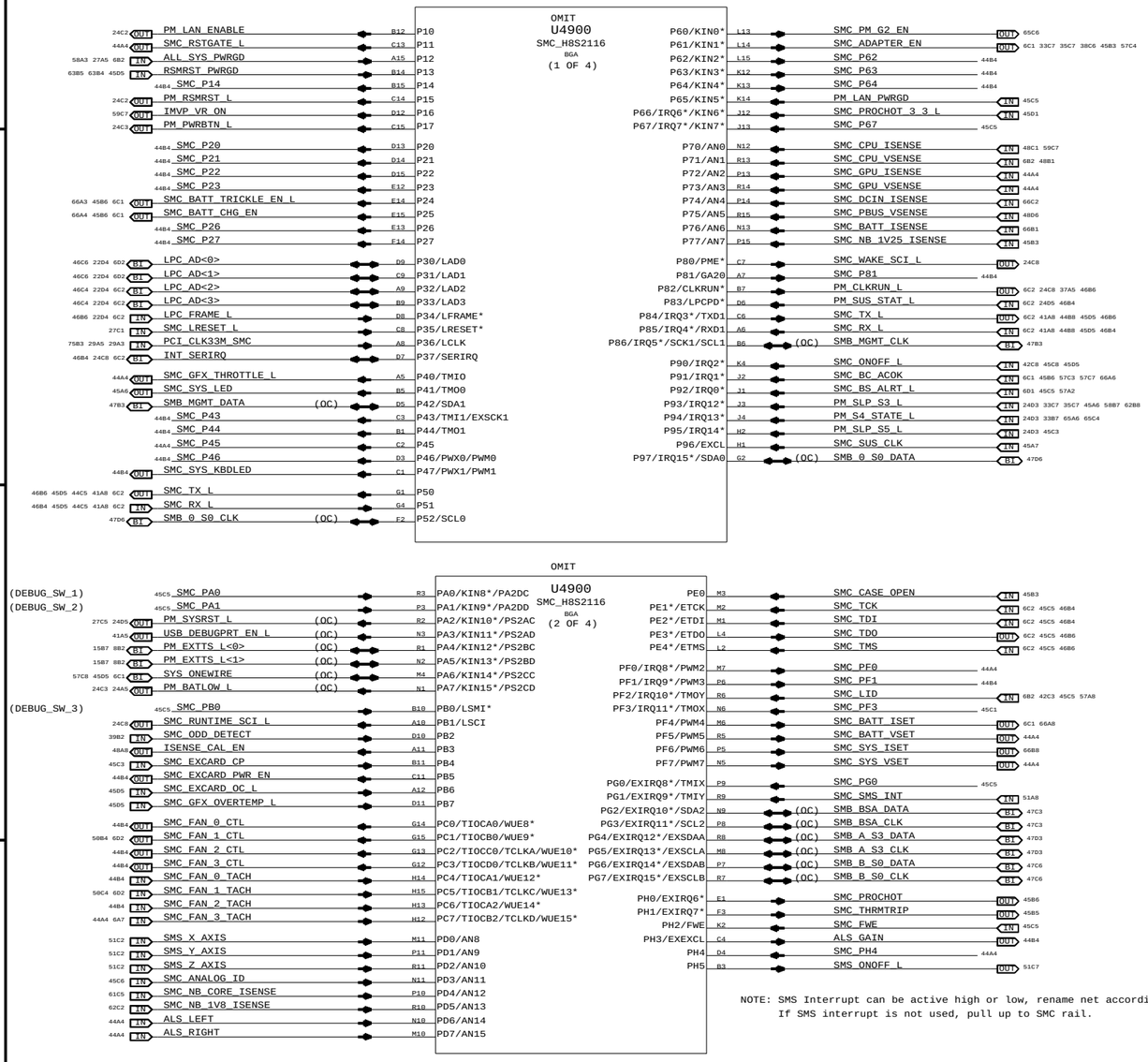
IR CONTROLLER & BT INTERFACE

APPLE INC.

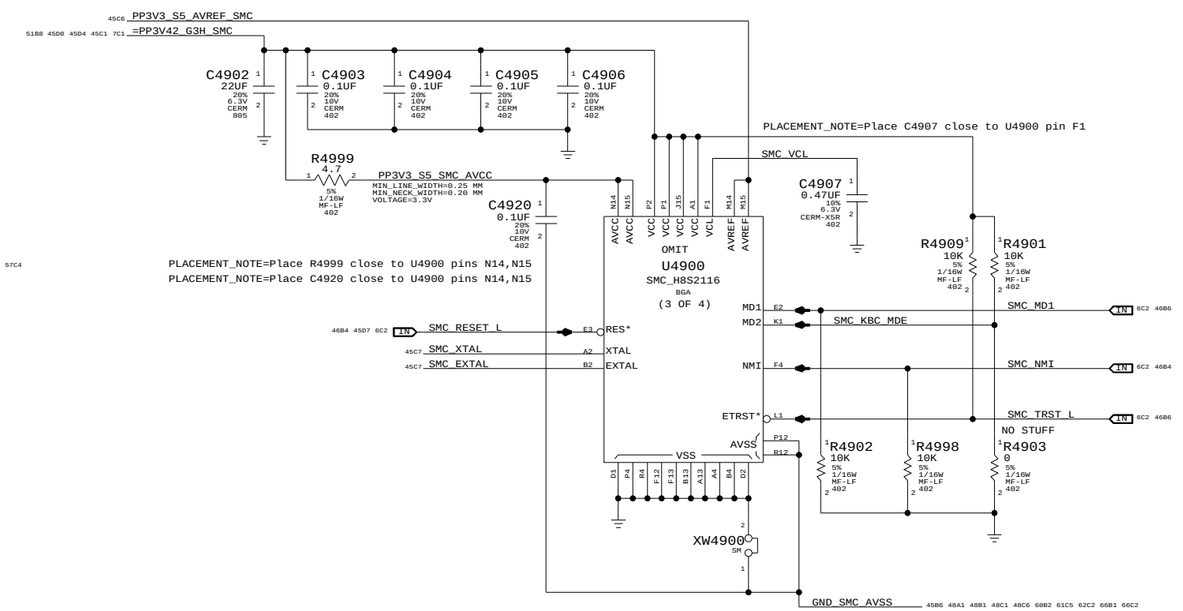
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

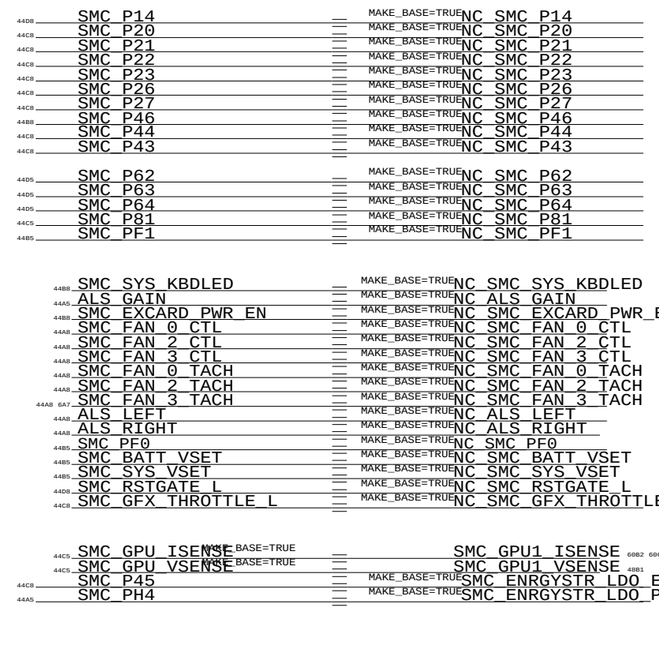
SCALE	SHT	OF
NONE	43	76

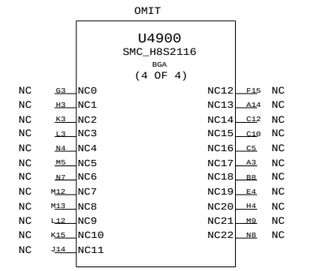
NOTE: Unused pins have "SMC_Pxx" names. Unused pins designed as outputs can be left floating, those designated as inputs require pull-ups.



NOTE: SMS Interrupt can be active high or low, rename net accordingly. If SMS interrupt is not used, pull up to SMC rail.







SMC

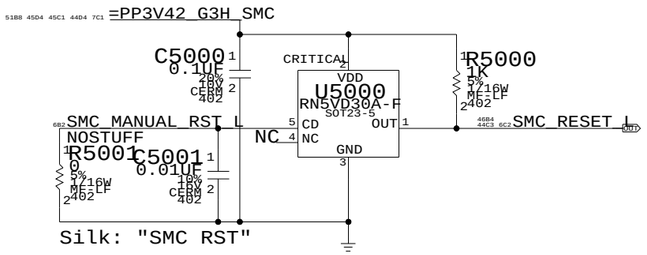
SYNC_MASTER=T9_MLB SYNC_DATE=10/30/2006

APPLE INC.

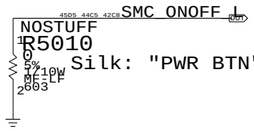
SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 44 OF 76

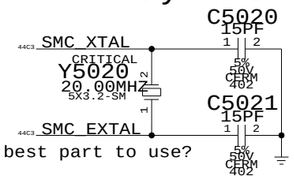
SMC Reset Button / Brownout Detect



Debug Power Button

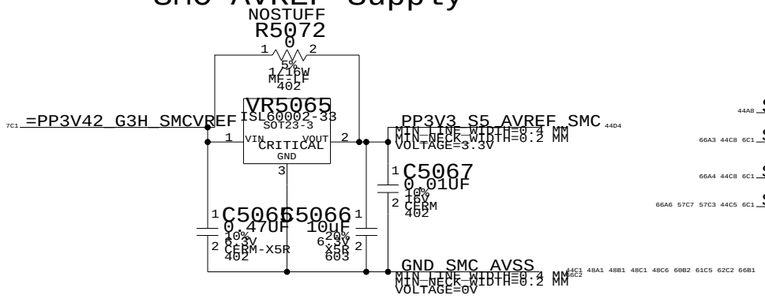


SMC Crystal Circuit



Is this the best part to use?

SMC AVREF Supply



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S1278	353S1381	?	VR5065	TI REF3133

THESE NEED TO BE PULLED TO THE PROPER RAIL:

SMS_INT_L
SMC_TPM_RESET_L

=PP3V3_S0_SMC_LS
SMS_INT_L
SMC_GFX_OVERTEMP_L — R5030 — 10K

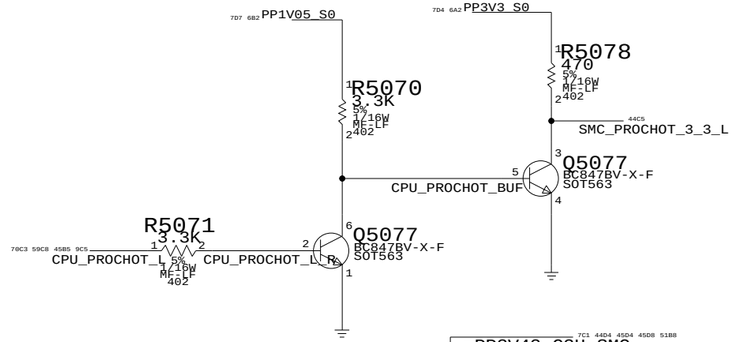
=PP3V42_G3H_SMC

RSMRST_PWRGD	R5094	100K
SMC_ONOFF_L	R5053	10K
SMC_EXCARD_OC_L	R5028	10K
SMC_TX_L	R5080	10K
SMC_RX_L	R5081	100K
SYS_ONEWIRE	R5082	2.0K
SMC_BS_ALRT_L	R5083	470K
SMC_TMS	R5084	10K
SMC_TDO	R5085	10K
SMC_TDI	R5086	10K
SMC_TCK	R5087	10K
SMC_FWE	R5048	10K
SMC_LID	R5073	100K
SMC_ENRGYSTR_LDO_PGOOD	R5095	10K
PM_LAN_PWRGD	R5091	10K
SMC_PA0	R5098	10K
SMC_PA1	R5099	10K
SMC_PB0	R5090	10K
SMC_P67	R5089	10K
SMC_PG0	R5079	10K

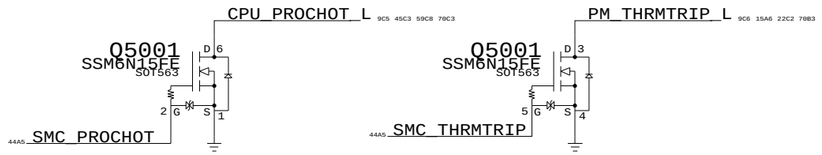
SMC_ANALOG_ID	R5049	10K
SMC_BATT_TRICKLE_EN	R5054	10K
SMC_BATT_CHG_EN	R5055	10K
SMC_BC_ACOK	R5088	470K

R5006	100K	PM_SLP_S5_L
R5024	10K	SMC_EXCARD_CP
R5047	10K	SMC_CASE_OPEN
R5096	10K	SMC_ADAPTER_EN
R5097	10K	SMC_NB_1V25_ISENSE

SMC 1.05V to 3.3V Level Shifting

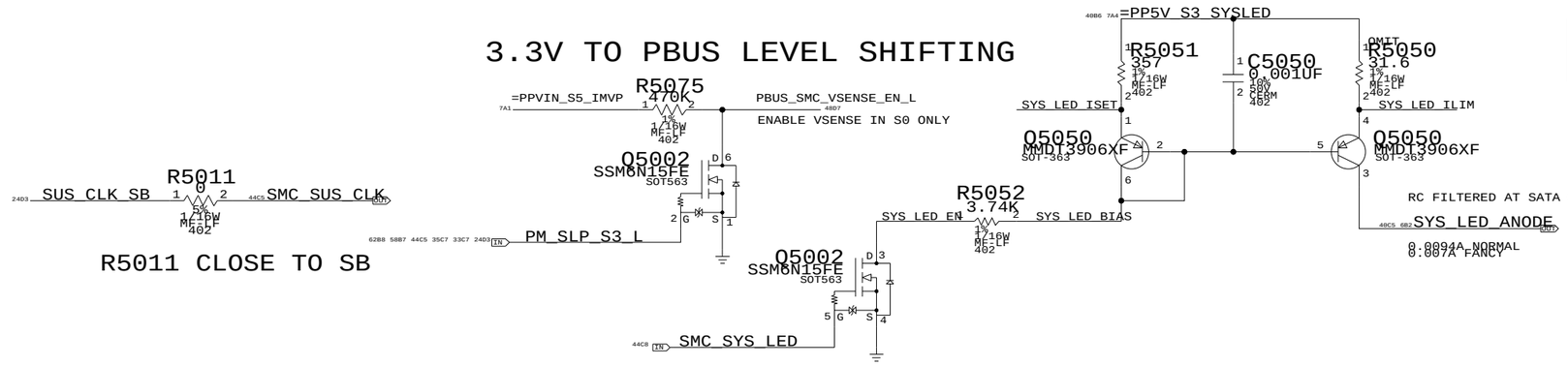


SMC 3.3V to 1.05V Level Shifting



SYSTEM (SLEEP) LED CURRENT DRIVER

3.3V TO PBUS LEVEL SHIFTING



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S0071	1	31.6, 1%, 1/16W, MF-LF, 402	R5050	NORMAL
114S0086	1	44.2, 1%, 1/16W, MF-LF, 402	R5050	FANCY

SMC SUPPORT

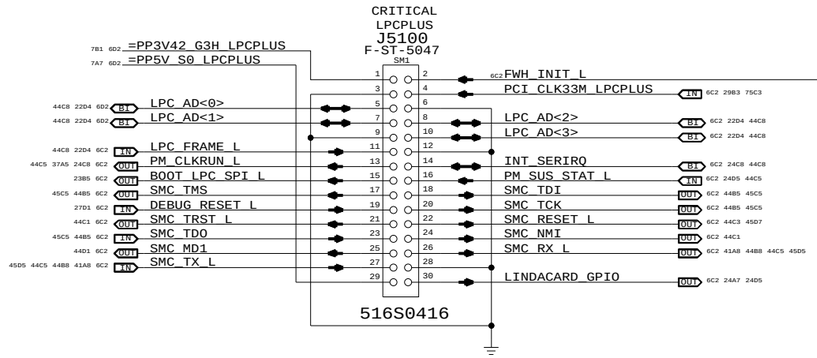
SYNC_MASTER=GPU SYNC_DATE=07/17/2006

APPLE INC.

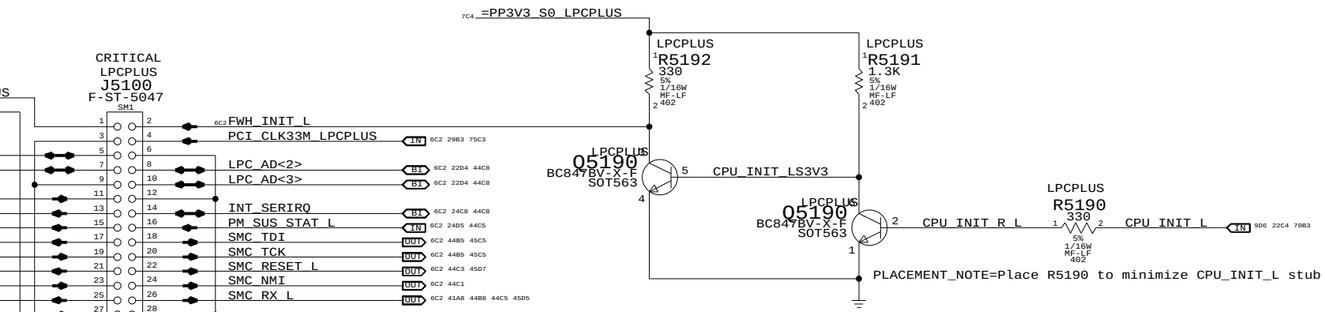
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE — SHT 45 OF 76

LPC+ Connector



FWH_INIT_L Generation



LPC+ Debug Connector

SYNC_MASTER=WFERRY SYNC_DATE=06/01/2006

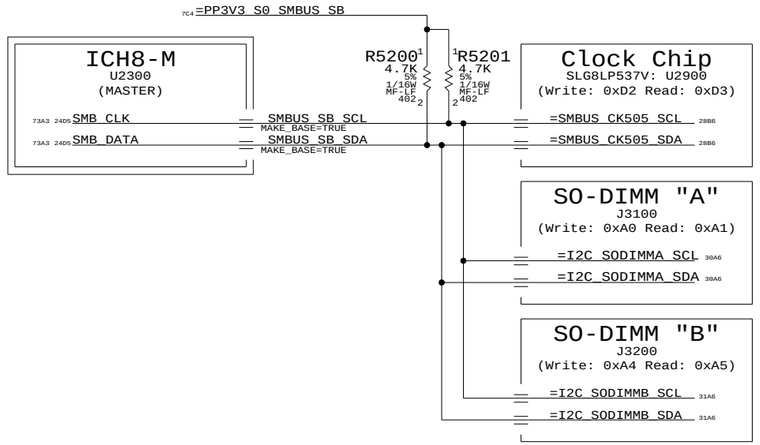
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

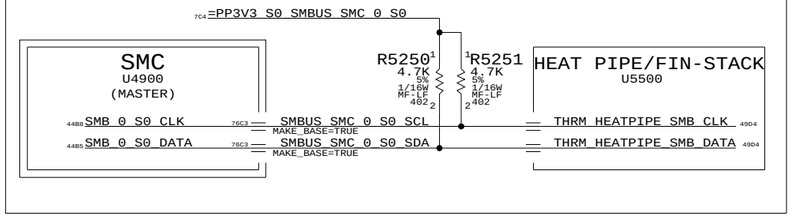
SCALE: NONE

SHT 46 OF 76

ICH8-M SMBus Connections

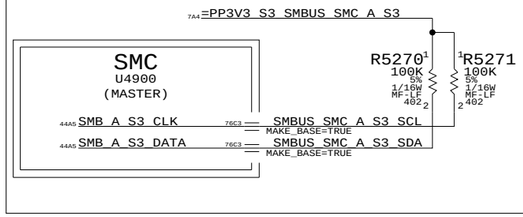


SMC "0" SMBus Connections

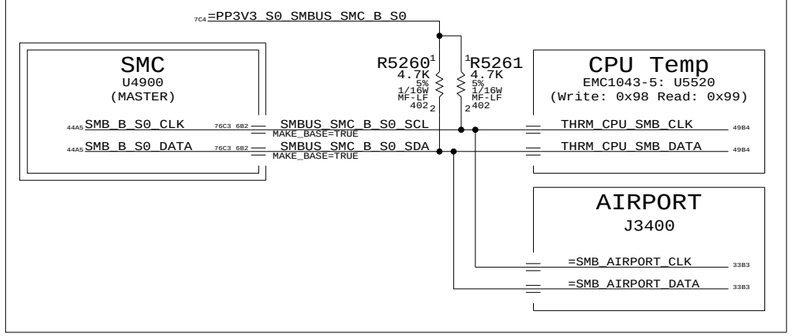


SMC "A" SMBus Connections

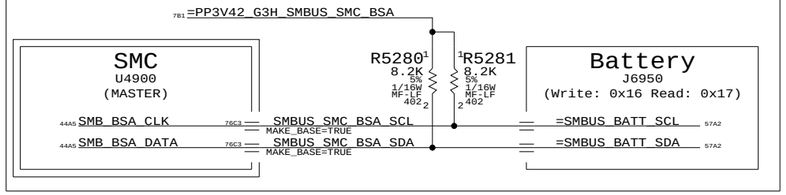
NOTE: SMC RMT bus remains powered and may be active in S3 state



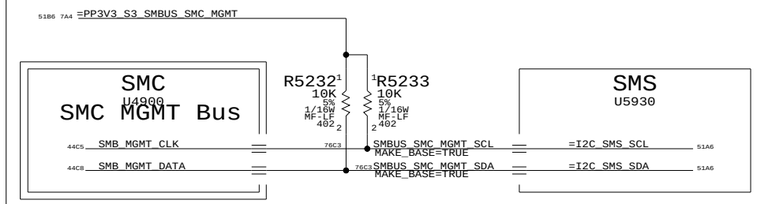
SMC "B" SMBus Connections



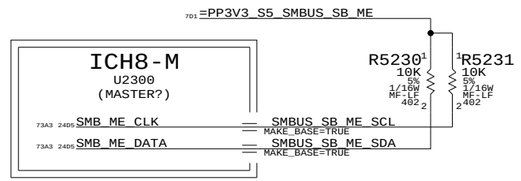
SMC "Battery A" SMBus Connections



SMC "MANAGEMENT" SMBUS CONNECTIONS



ICH8-M ME SMBus Connections



SMBUS CONNECTIONS

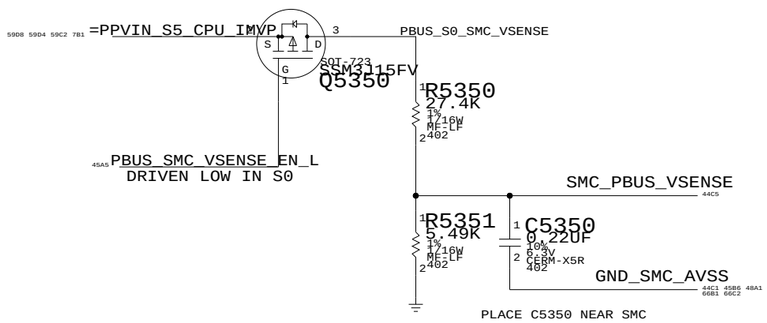
SYNC_MASTER=WFERRY SYNC_DATE=06/01/2006

APPLE INC.

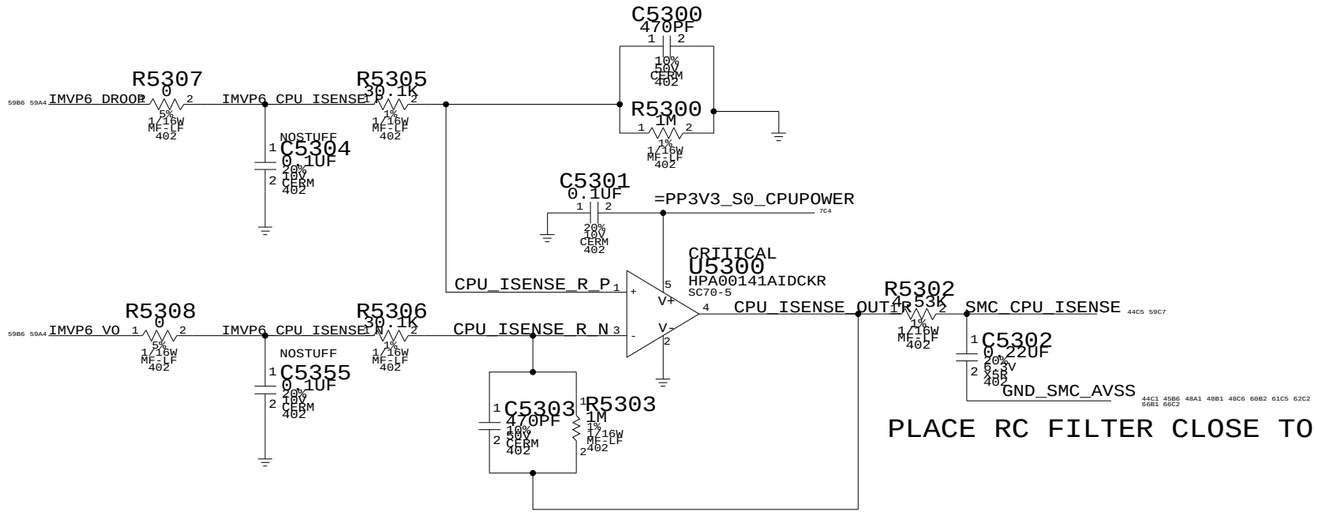
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	47	76

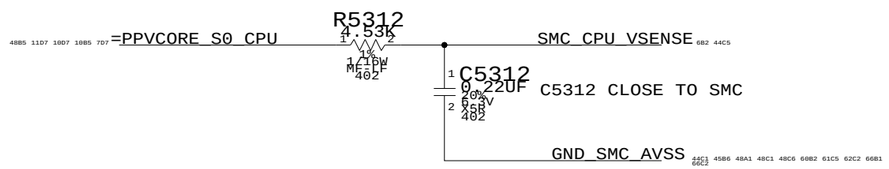
PROCESSOR DCIN VOLTAGE SENSE



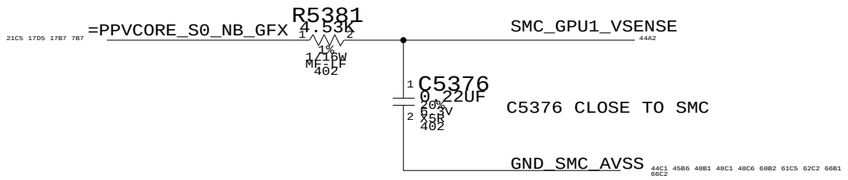
CPU CURRENT SENSE



CPU VOLTAGE SENSE

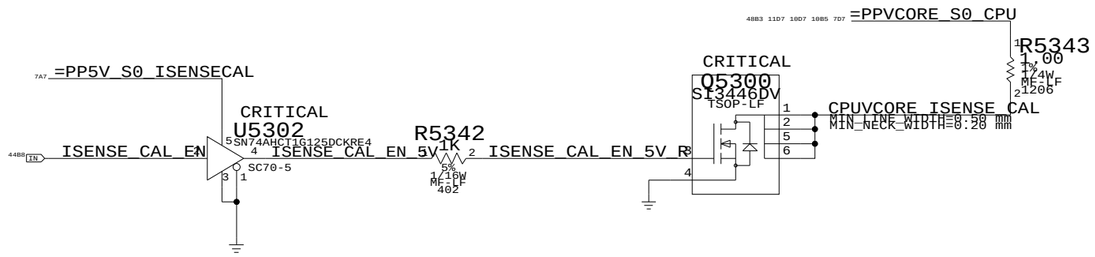


GPU VOLTAGE SENSE



Current Sense Calibration Circuit

Switches in fixed load on power supplies to calibrate current sense circuits



CPU Current & Voltage Sense

SYNC_MASTER=GPU SYNC_DATE=07/17/2006

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APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 48 OF 76

HEAT-PIPE/FIN-STACK TEMPERATURE ZONE

CRITICAL
J5550
78171-0004
M-RT-SM
518S0521

CONNECTOR DRIVES TWO TEMP DIODE JUNCTIONS

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_HEATPIPE_P
6A1 THRM_HEATPIPE_N
PLACE C5510 NEXT TO U5500
C5510 0.0022UF 10% 50V CERM 402

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_FINSTACK_P
6A1 THRM_FINSTACK_N
C5511 0.0022UF 10% 50V CERM 402
PLACE C5511 NEXT TO U5500

CRITICAL
PP3V3_S0_THRM_HEATPIPE_F
PLACE C5501 NEXT TO U5500 VDD
C5501 0.1UF 10% 16V X5R 402
C5502 1UF 10% 6.3V CERM 402
R5501 33 5% 1/16W MF-LF 402
=PP3V3_S0_THRM_SNR 7C4 49C2

PLACE C5501 NEAR U5500 VDD

U5500
EMC1043-5
MSOP
DP1, DN1, DP2, DN2, GND, VDD
SMCLK 47D3 THRM_HEATPIPE_SMB_CLK
SMDATA 47D3 THRM_HEATPIPE_SMB_DATA
ADDR= 1001 100B

(WRITE: 0X98 READ: 0X99)

LAYOUT NOTE:
ADD GND GUARD TRACE FOR CPU_THERMD_P AND CPU_THERMD_N

LAYOUT NOTE:
ROUTE CPU_THERMD_P AND CPU_THERMD_N ON SAME LAYER.
10 MIL TRACE
10 MIL SPACING

CPU TEMPERATURE ZONE

OUT 9C6 CPU_THERMD_P
IN 9C6 CPU_THERMD_N
(TO CPU INTERNAL THERMAL DIODE)
C5520 0.0022UF 10% 50V CERM 402

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

6A1 THRM_DIMM_DX_F_P
6A1 THRM_DIMM_DX_F_N
THRM_DIMM_DX_P
THRM_DIMM_DX_N

CRITICAL
Q5520
BC846BM3T5G
SOT732-3
PLACE UNDER J3101

R5522 10 1% 1/16W MF-LF 402
R5523 10 1% 1/16W MF-LF 402

NOSTUFF
C5524 0.0022UF 10% 50V CERM 402
PLACE C5524 NEXT TO Q5520

C5521 0.0022UF 10% 50V CERM 402

1. ROUTE DXP AND DXN DIFFERENTIALLY
2. ROUTE GROUNDED GAURD TRACES AROUND THE DXP/DXN DIFF PAIR
3. 10 MIL TRACE WIDTHS AND 10MIL SPACING BETWEEN THE GAURD

CRITICAL
PP3V3_S0_THRM_CPU_F
C5522 0.1UF 10% 16V X5R 402
C5523 1UF 10% 6.3V CERM 402
R5524 33 5% 1/16W MF-LF 402
=PP3V3_S0_THRM_SNR 7C4 49D2

PLACE C5522 NEAR U5520 VDD

U5520
EMC1043-5
MSOP
DP1, DN1, DP2, DN2, GND, VDD
SMCLK 47C3 THRM_CPU_SMB_CLK
SMDATA 47C3 THRM_CPU_SMB_DATA
ADDR= 1001 100B

(Write: 0x98 Read: 0x99)

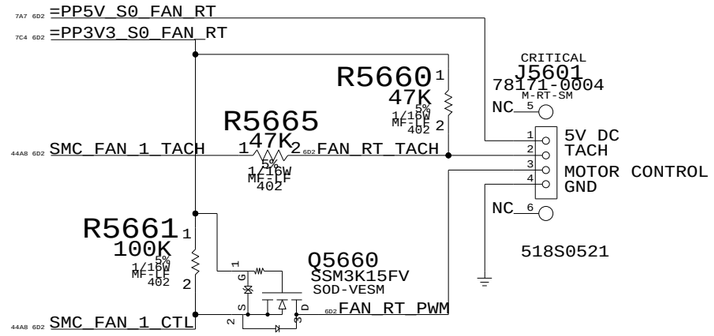
TEMPERATURE SENSE

SYNC_MASTER=GPU SYNC_DATE=06/21/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 49 OF 76



Fan

SYNC_MASTER=ENES SYNC_DATE=11/10/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE

SHT 50 OF 76

PAGE NOTES

INPUT

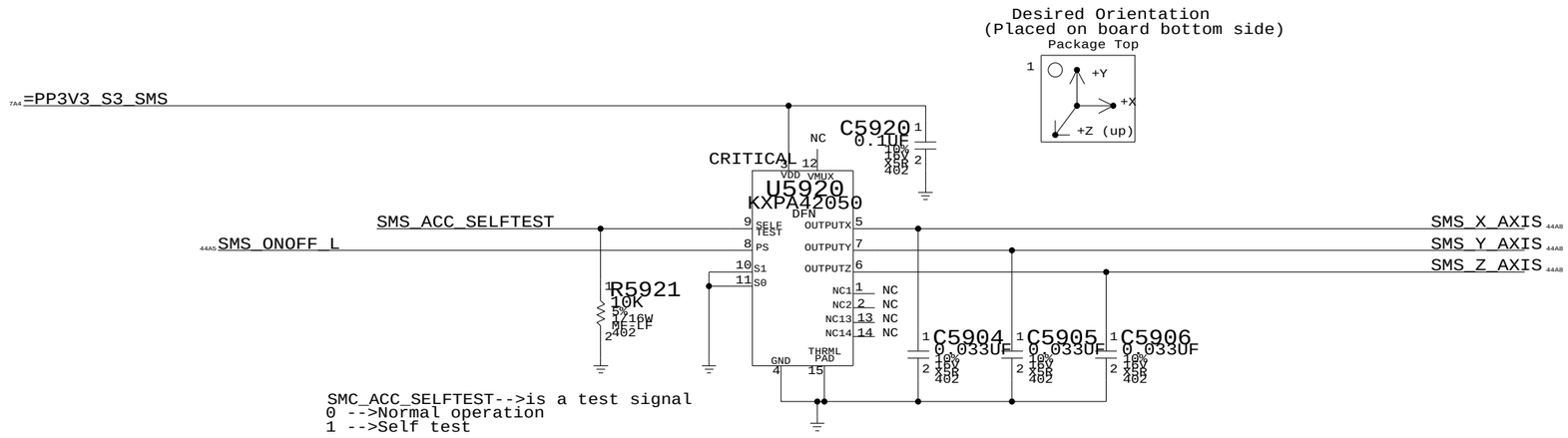
=PP3V3_S3_SMS - 3.3V POWER FOR SMS (STAYS ALIVE IN SLEEP)
SMS_ONOFF_L - CONNECT TO SMC TO BE ABLE TO PUT SMS INTO LOW-POWER MODE

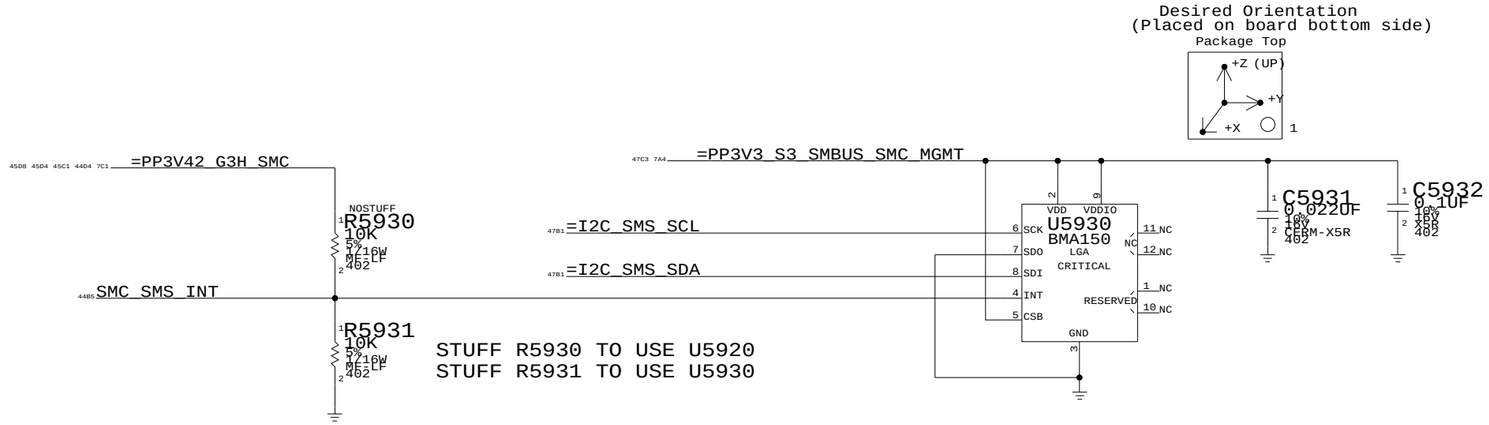
OUTPUT

SMS_ACC_*_AXIS - ACCELEROMETER OUTPUT TO SCU

PAGE HISTORY

5/19/2005 - FIRST REVISION OF PAGE
7/26/2005 - REMOVED BOM TABLE AND UPDATED SYMBOL TO KXM52-2050
7/26/2005 - CONNECTED PD PIN TO SMC'S SMS_ONOFF_L
7/26/2005 -





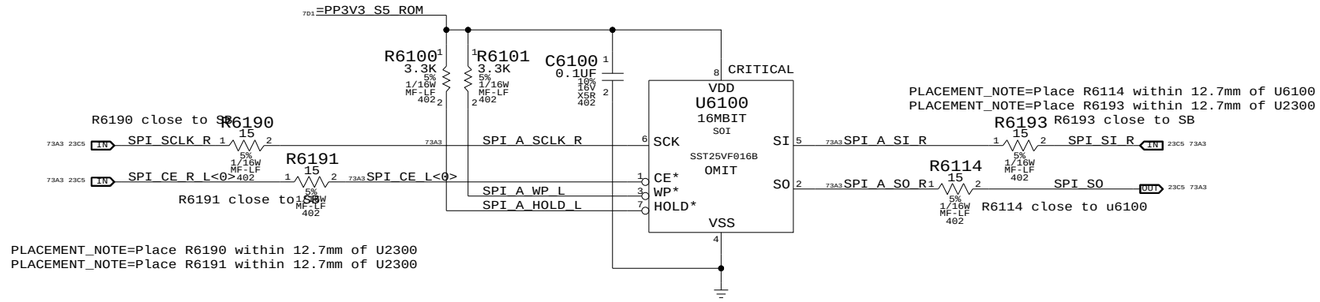
SMS

SYNC_MASTER=SMC SYNC_DATE=08/23/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	51	76



SPI ROMs

SYNC_MASTER=WFERRY SYNC_DATE=04/26/2006

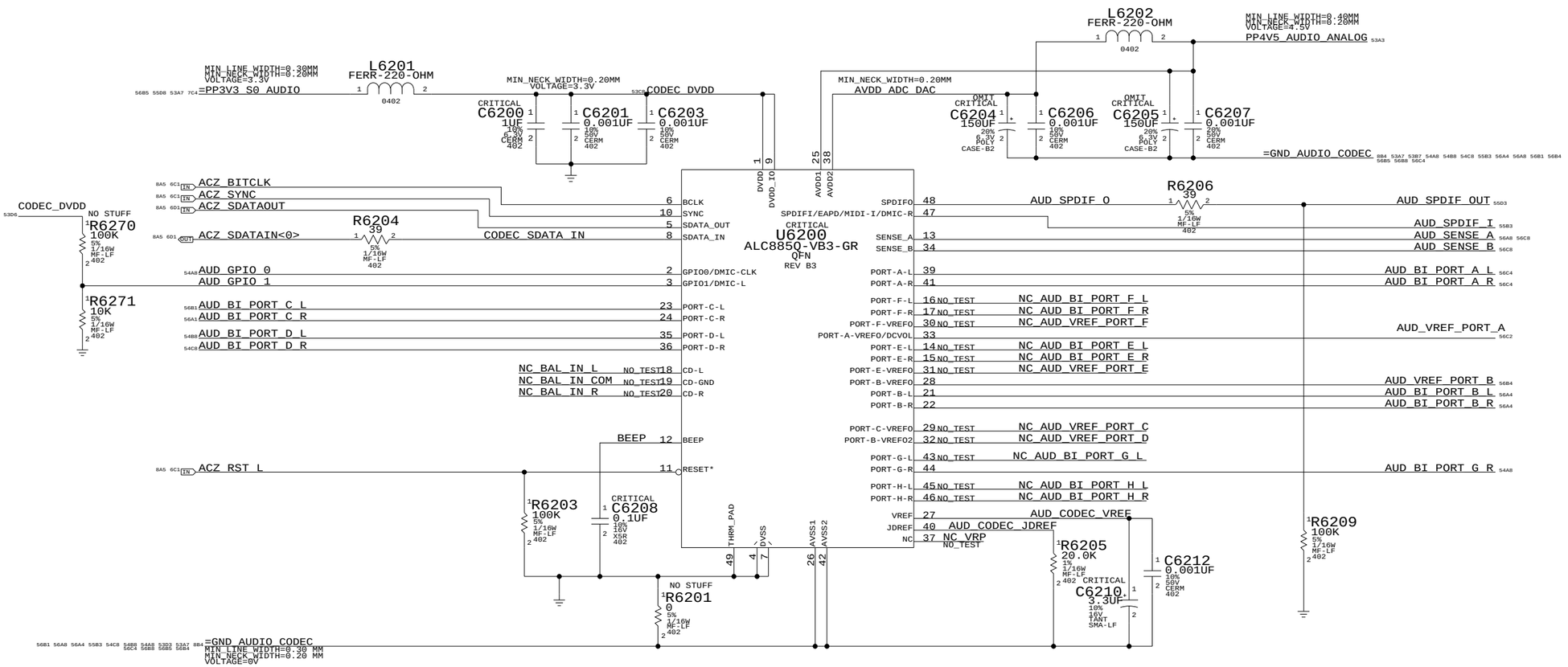
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	52	76

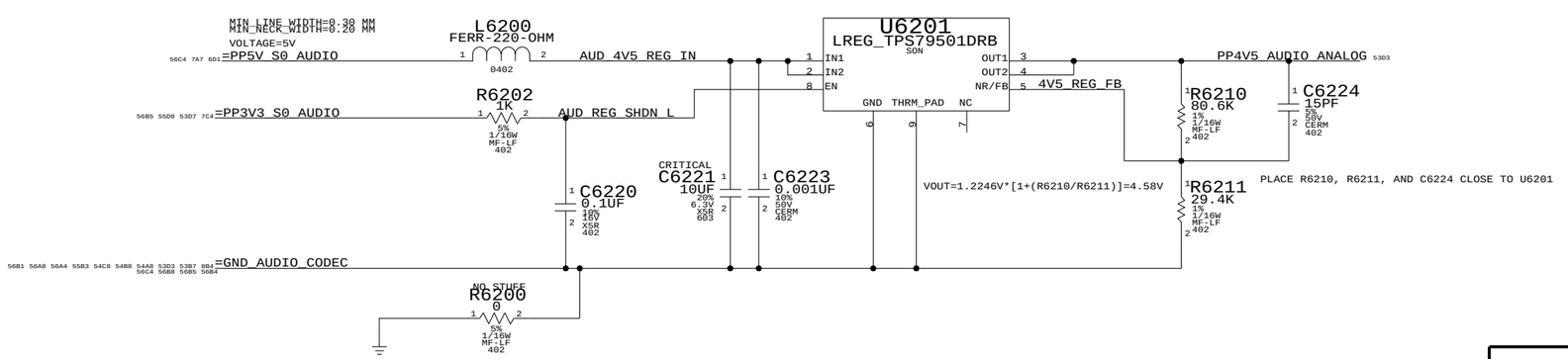
AUDIO CODEC

APPLE P/N 353S1538



AUDIO 4.5V REGULATOR

APPLE P/N 353S1576



AUDIO: CODEC

SYNC_MASTER=M70AUDIO

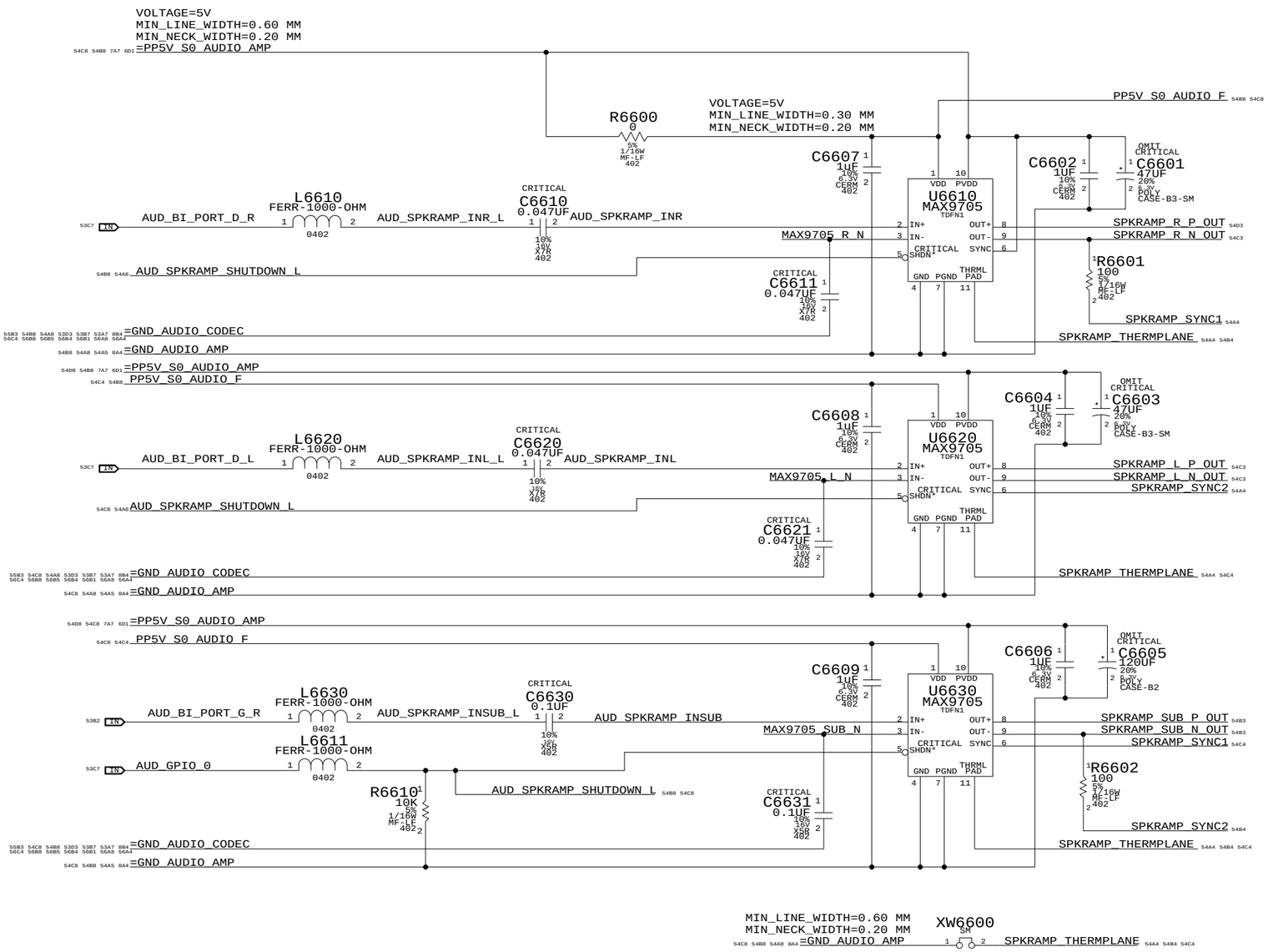
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	53	76

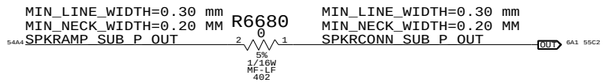
SATELLITE & SUB TWEETER AMPLIFIER APN:353S1595

SATELLITE	169 HZ < FC < 282 HZ
SUB	80 HZ < FC < 132 HZ
GAIN	12DB



RIGHT SATELLITE

LEFT SATELLITE



SUB-TWEETER

AUDIO: SPEAKER AMP

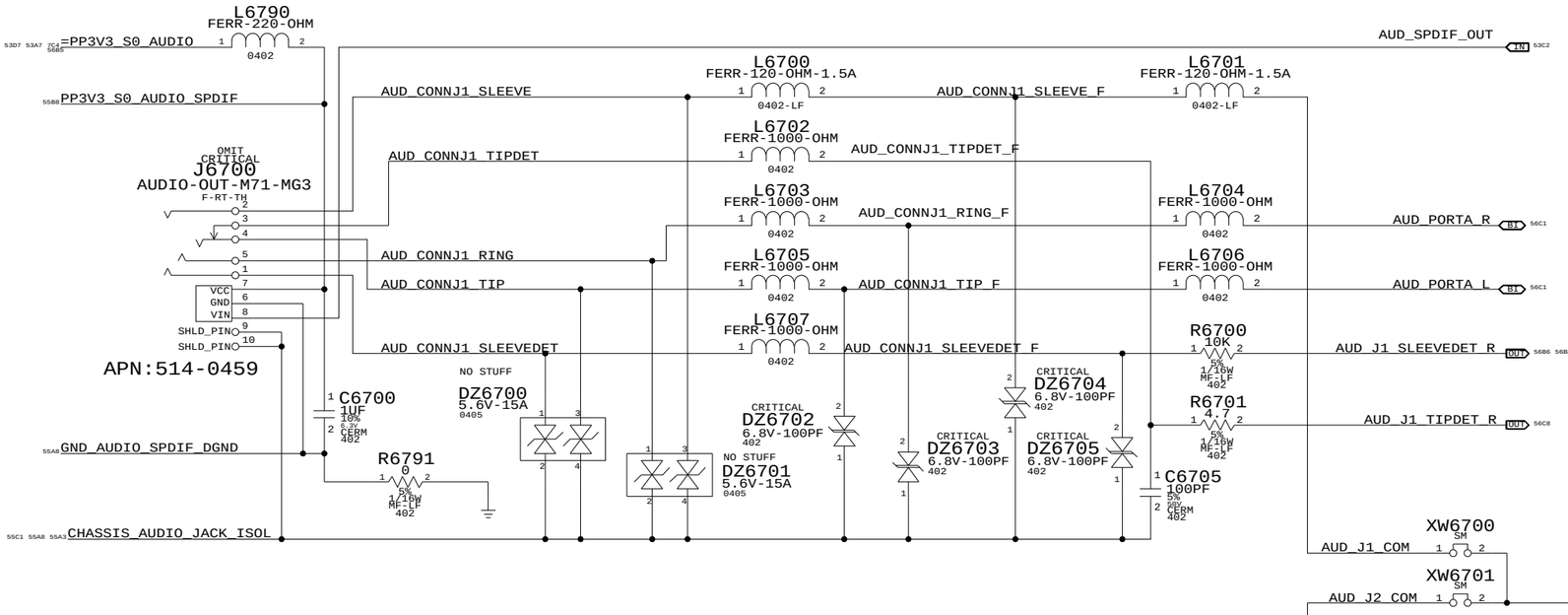
SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

APPLE INC.

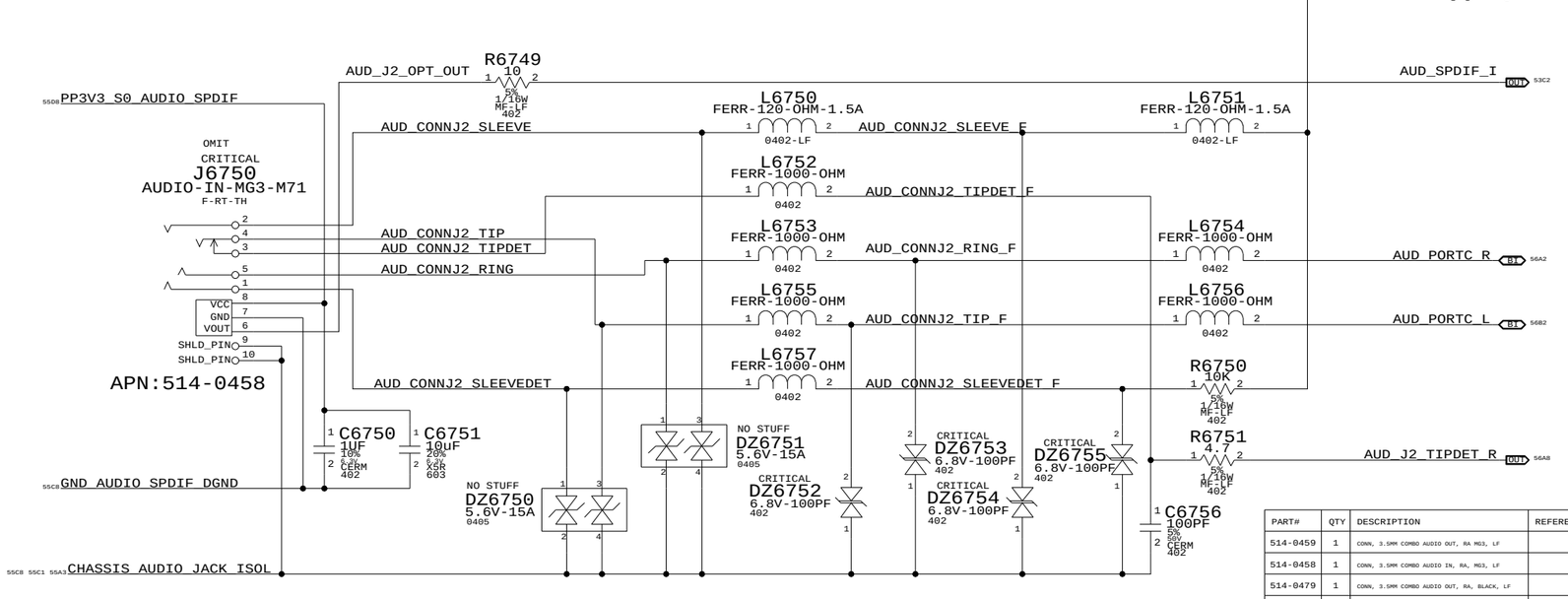
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 54 OF 76

AUDIO JACK 1: LO/HP CONNECTOR, SPDIF TX

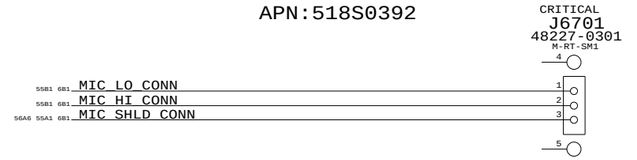


AUDIO JACK 2: LINE IN CONNECTOR, SPDIF RX



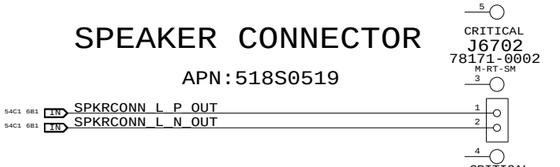
MIC CONNECTOR

APN:518S0392

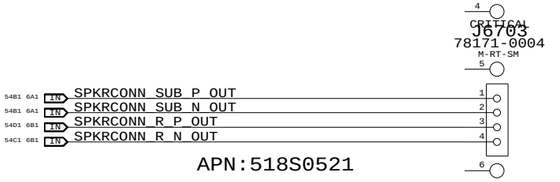


SPEAKER CONNECTOR

APN:518S0519



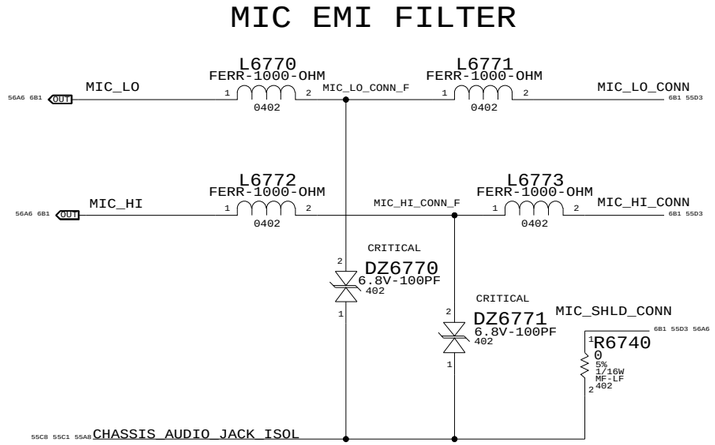
APN:518S0521



XW6705

=GND_CHASSIS_AUDIO_JACK — SM — CHASSIS_AUDIO_JACK_ISOL

MIC EMI FILTER



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0459	1	CONN, 3.5MM COMBO AUDIO OUT, RA MG3, LF	J6700	CRITICAL	NORMAL
514-0458	1	CONN, 3.5MM COMBO AUDIO IN, RA, MG3, LF	J6750	CRITICAL	NORMAL
514-0479	1	CONN, 3.5MM COMBO AUDIO OUT, RA, BLACK, LF	J6700	CRITICAL	FANCY
514-0478	1	CONN, 3.5MM COMBO AUDIO IN, RA, BLACK, LF	J6750	CRITICAL	FANCY

AUDIO: JACK

SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 55 OF 76

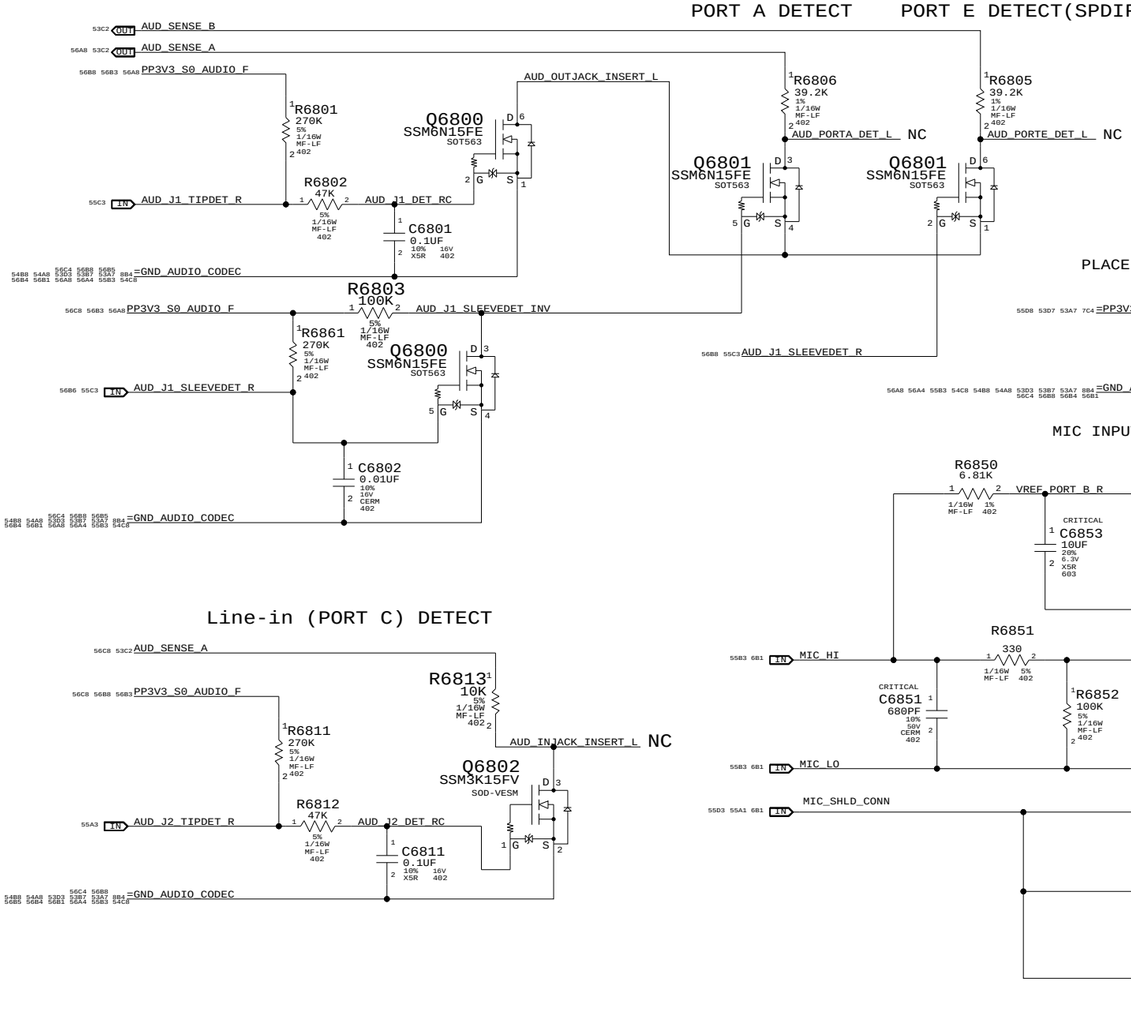
CODEC OUTPUT SIGNAL PATHS

FUNCTION	VOLUME	CONVERTER	PIN COMPLEX	MUTE CONTROL	DET ASSIGNMENT
HP OUT	0X0F (15)	0X05 (5)	0X15 (21,PORTA)	VREF_A(100%)	0X15 (21,PORTA)
SAT SPKR	0X26 (38)	0X25 (37)	0X14 (20,PORTD)	GPIO 0	N/A
SUB SPKR	0X0E (14)	0X04 (4)	0X16 (22,PORTG)	GPIO 0	N/A
SPDIF OUT	N/A	0X06 (6)	0X1E (30,SPDIF OUT)	N/A	0X1B (27,PORTE)

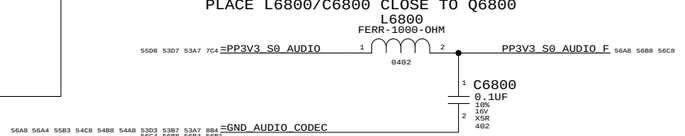
CODEC INPUT SIGNAL PATHS

FUNCTION	MIXER	VOLUME	MUTE CONTROL	CONVERTER	PIN COMPLEX	VREF	DET ASSIGNMENT
LINE IN	0X23 (35)	0X08 (8)	0X08 (8)	0X08 (8)	0X1A (26,PORTC)	N/A	0X1A (26,PORTC)
MIC IN	0X24 (36)	0X07 (7)	0X07 (7)	0X07 (7)	0X18 (24,PORTB)	VREF_B (80%)	N/A
SPDIF IN	N/A	N/A	N/A	0X0A (10)	0X1F (31,SPDIF IN)	N/A	N/A

PORT A DETECT PORT E DETECT(SPDIF DELEGATE)

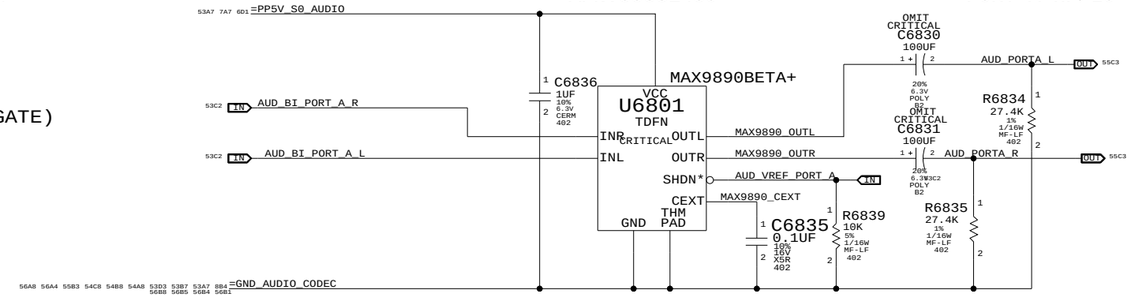


PLACE L6800/C6800 CLOSE TO Q6800

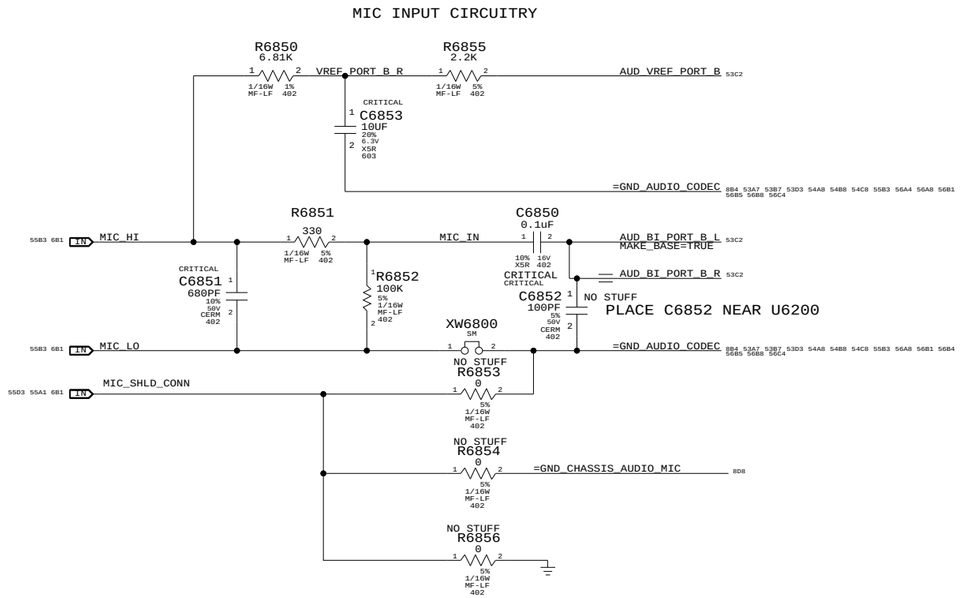


HP/LO DE-POP SWITCH
APN:353S1459

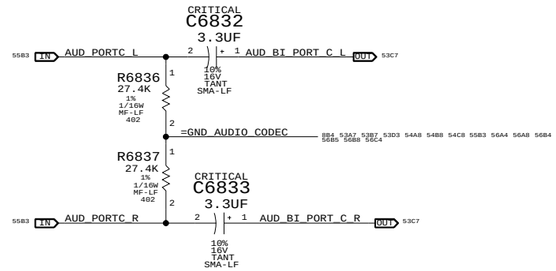
PORT A HP/LO



MIC INPUT CIRCUITRY



PORT C LI



Line-in (PORT C) DETECT

AUDIO: JACK TRANSLATORS

SYNC_MASTER=M70AUDIO SYNC_DATE=03/12/2007

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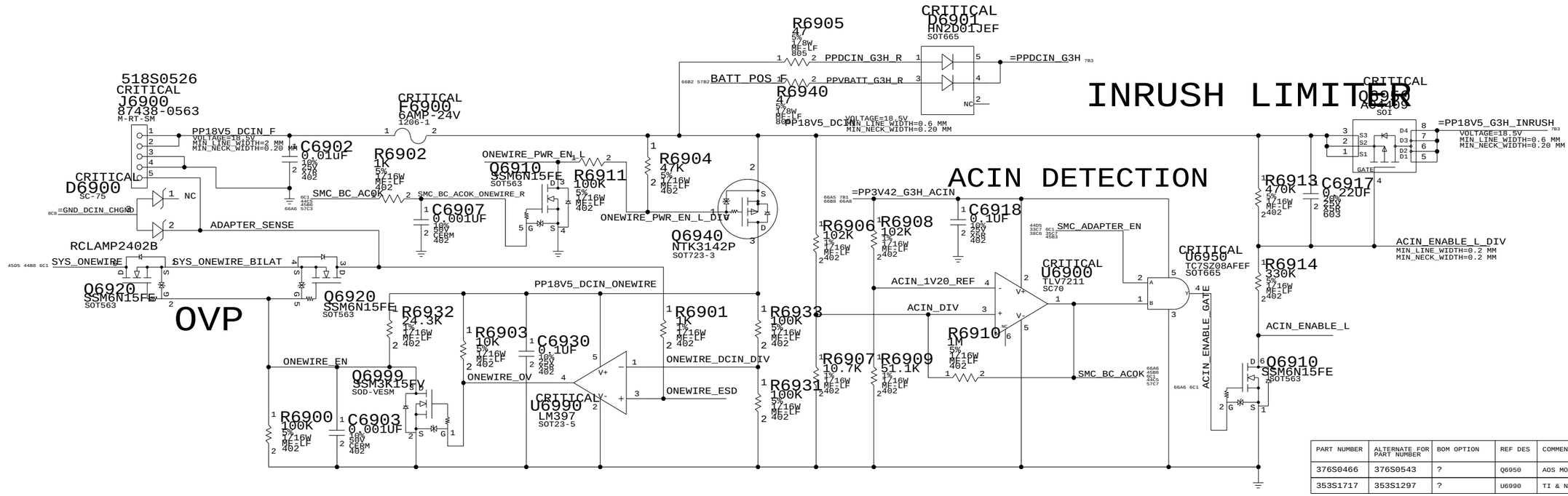
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

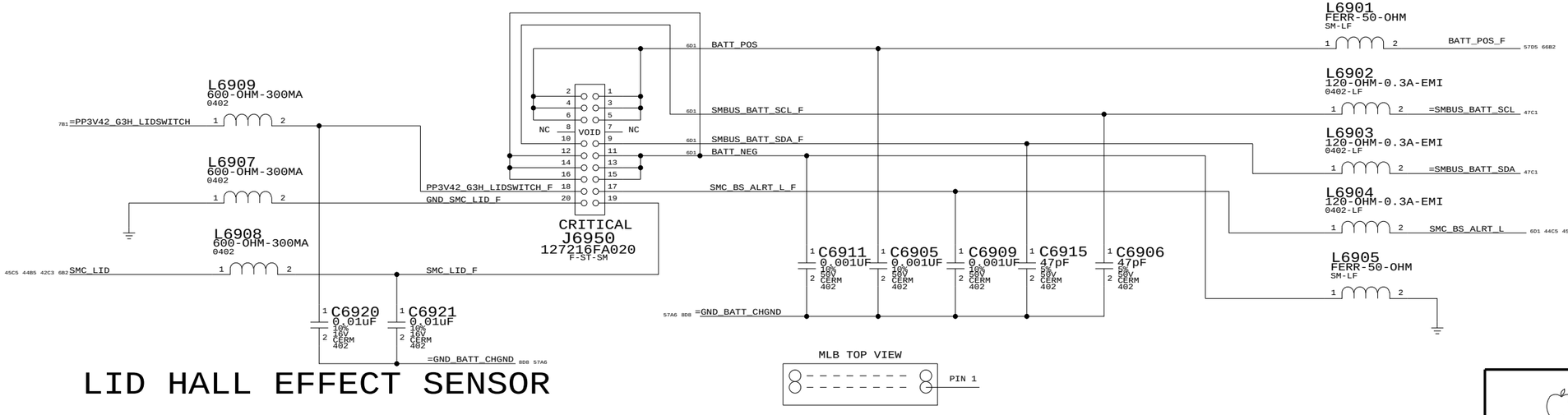
SCALE: NONE SHT 56 OF 76

DC-JACK INTERFACE



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0466	376S0543	?	Q6950	AOS MOSFET
353S1717	353S1297	?	U6990	TI & NATIONAL

BATTERY INTERFACE



LID HALL EFFECT SENSOR

DC-In & Battery Connectors

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE

SHT 57 OF 76

S0 FETS & POWER SEQUENCING

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0448	376S0445	?	Q7000	

5V S0 FET

MOSFET	FDM6296
CHANNEL	N-TYPE
RDS(ON)	15 mOhm @4.5V
LOADING	4.348 A

3.3V S0 FET

MOSFET	FDC655BN
CHANNEL	N-TYPE
RDS(ON)	33 mOhm @4.5V
LOADING	1.810 A

1.8V S0 FET

MOSFET	FDC655BN
CHANNEL	N-TYPE
RDS(ON)	33 mOhm @4.5V
LOADING	0.260 A

1.05V S0 RUN/SS CONTROL

1.25V S0 RUN/SS CONTROL

1.5V S0 RUN/SS CONTROL

DEASSERTED 160MS
AFTER UVLO_D VALID

~26MS

MAKEBASE=TRUE
U7002.3 has int 90K pull-up

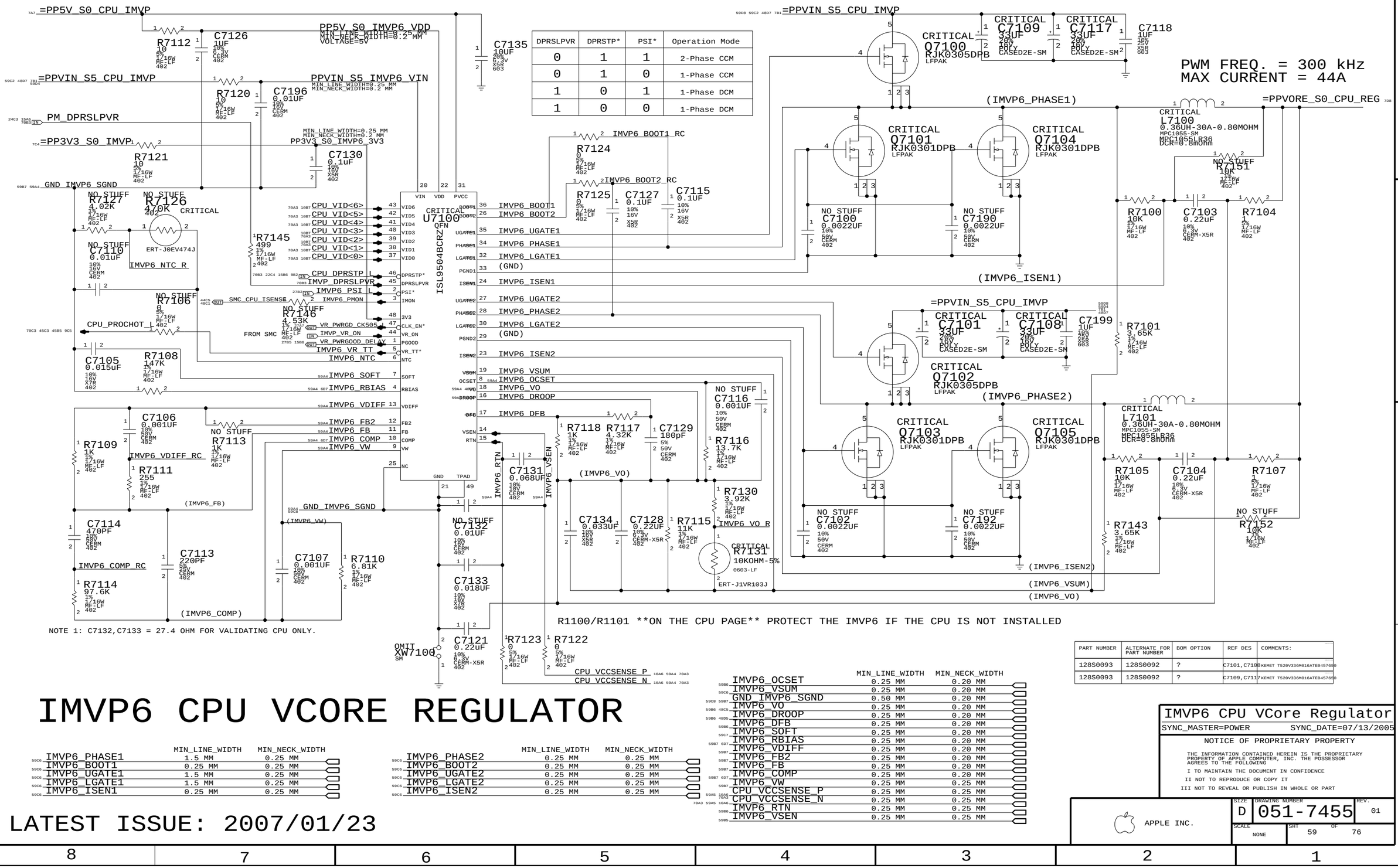
LATEST ISSUE: 2007/01/02

S0 FETS & Power Sequencing
SYNC_MASTER=DSIMON-WF SYNC_DATE=05/31/2006

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 58 OF 76



IMVP6 CPU VCORE REGULATOR

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_PHASE1	1.5 MM	0.25 MM
IMVP6_BOOT1	0.25 MM	0.25 MM
IMVP6_UGATE1	1.5 MM	0.25 MM
IMVP6_LGATE1	1.5 MM	0.25 MM
IMVP6_ISEN1	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_PHASE2	0.25 MM	0.25 MM
IMVP6_BOOT2	0.25 MM	0.25 MM
IMVP6_UGATE2	0.25 MM	0.25 MM
IMVP6_LGATE2	0.25 MM	0.25 MM
IMVP6_ISEN2	0.25 MM	0.25 MM

	MIN_LINE_WIDTH	MIN_NECK_WIDTH
IMVP6_OCSET	0.25 MM	0.20 MM
IMVP6_VSUM	0.25 MM	0.20 MM
GND_IMVP6_SGND	0.50 MM	0.20 MM
IMVP6_VO	0.25 MM	0.20 MM
IMVP6_DROOP	0.25 MM	0.20 MM
IMVP6_DFB	0.25 MM	0.20 MM
IMVP6_SOFT	0.25 MM	0.20 MM
IMVP6_RBIAS	0.25 MM	0.20 MM
IMVP6_VDIFF	0.25 MM	0.20 MM
IMVP6_FB2	0.25 MM	0.20 MM
IMVP6_FB	0.25 MM	0.20 MM
IMVP6_COMP	0.25 MM	0.20 MM
IMVP6_VW	0.25 MM	0.25 MM
CPU_VCCSENSE_P	0.25 MM	0.25 MM
CPU_VCCSENSE_N	0.25 MM	0.25 MM
IMVP6_RTN	0.25 MM	0.25 MM
IMVP6_VSEN	0.25 MM	0.25 MM

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7101,C7108	KEMET T520V336M016ATE045Ø50
128S0093	128S0092	?	C7109,C7117	KEMET T520V336M016ATE045Ø50

IMVP6 CPU VCore Regulator

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

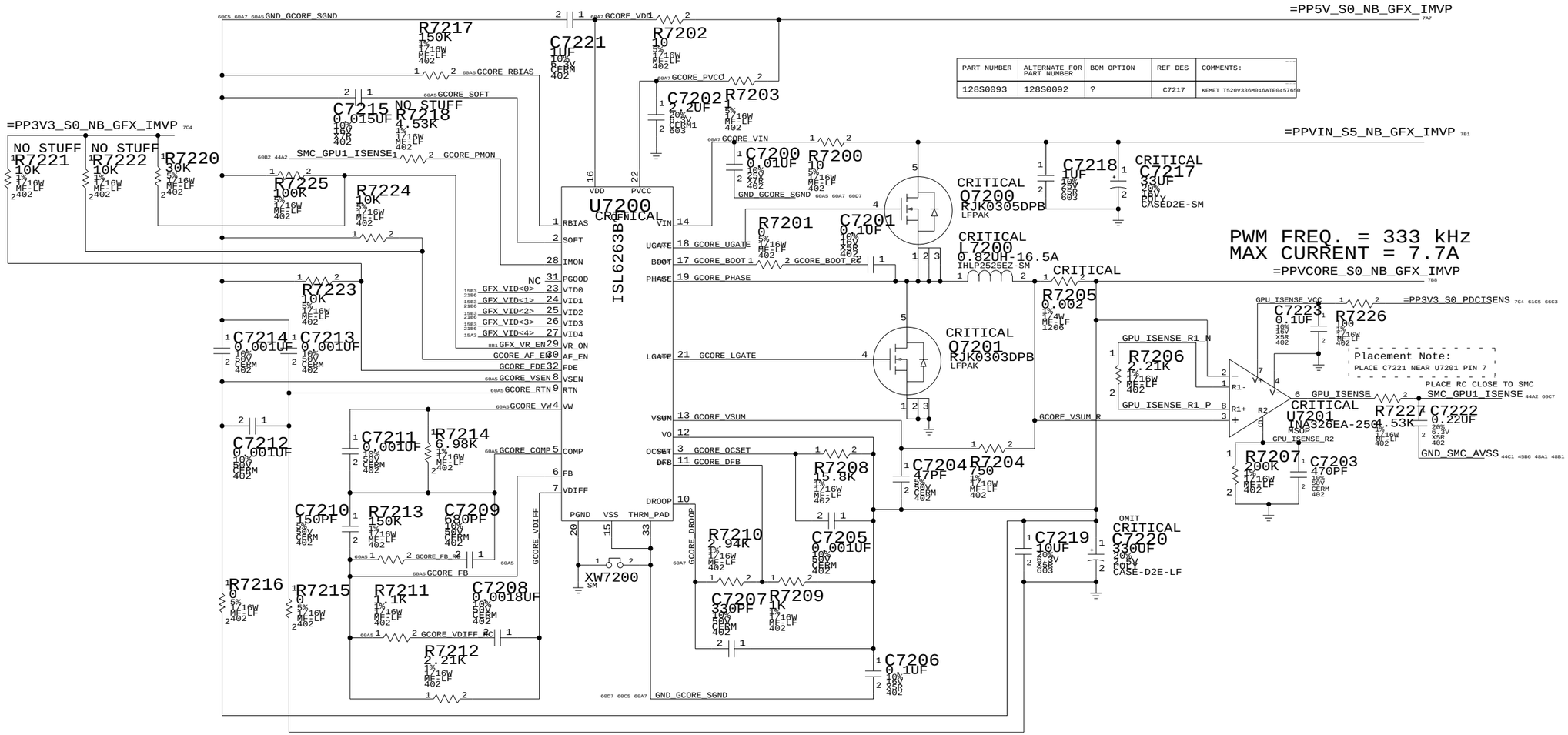
APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 59 OF 76

LATEST ISSUE: 2007/01/23

RENDER VCORE POWER SUPPLY



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7217	KEMET T520V336M016ATE0457600

	MIN_LINE_WIDTH	MIN_NECK_WIDTH	
GCORE_PHASE	1 MM	0.25 MM	103
GCORE_BOOT	0.3 MM	0.25 MM	104
GCORE_UGATE	1 MM	0.25 MM	105
GCORE_LGATE	1 MM	0.25 MM	106
GCORE_BOOT_RC	0.3 MM	0.25 MM	107
GND_GCORE_SGND	0.6 MM	0.25 MM	108
GCORE_VDD	0.3 MM	0.25 MM	109
GCORE_PVCC	0.3 MM	0.25 MM	110
GCORE_VIN	0.3 MM	0.25 MM	111
GCORE_DROOP	0.3 MM	0.25 MM	112
GCORE_VSUM	0.3 MM	0.25 MM	113
GCORE_DFB	0.3 MM	0.25 MM	114

	MIN_LINE_WIDTH	MIN_NECK_WIDTH	
GCORE_OCSET	0.3 MM	0.25 MM	115
GCORE_VW	0.3 MM	0.25 MM	116
GCORE_RTN	0.3 MM	0.25 MM	117
GCORE_VSEN	0.3 MM	0.25 MM	118
GCORE_RBIAS	0.3 MM	0.25 MM	119
GCORE_SOFT	0.3 MM	0.25 MM	120
GCORE_COMP	0.3 MM	0.25 MM	121
GCORE_FB	0.3 MM	0.25 MM	122
GCORE_VDIFF	0.3 MM	0.25 MM	123
GCORE_FB_RC	0.3 MM	0.25 MM	124
GCORE_VDIFF_RC	0.3 MM	0.25 MM	125

Render VCore Supplies

SYNC_MASTER=GPU SYNC_DATE=06/29/2006

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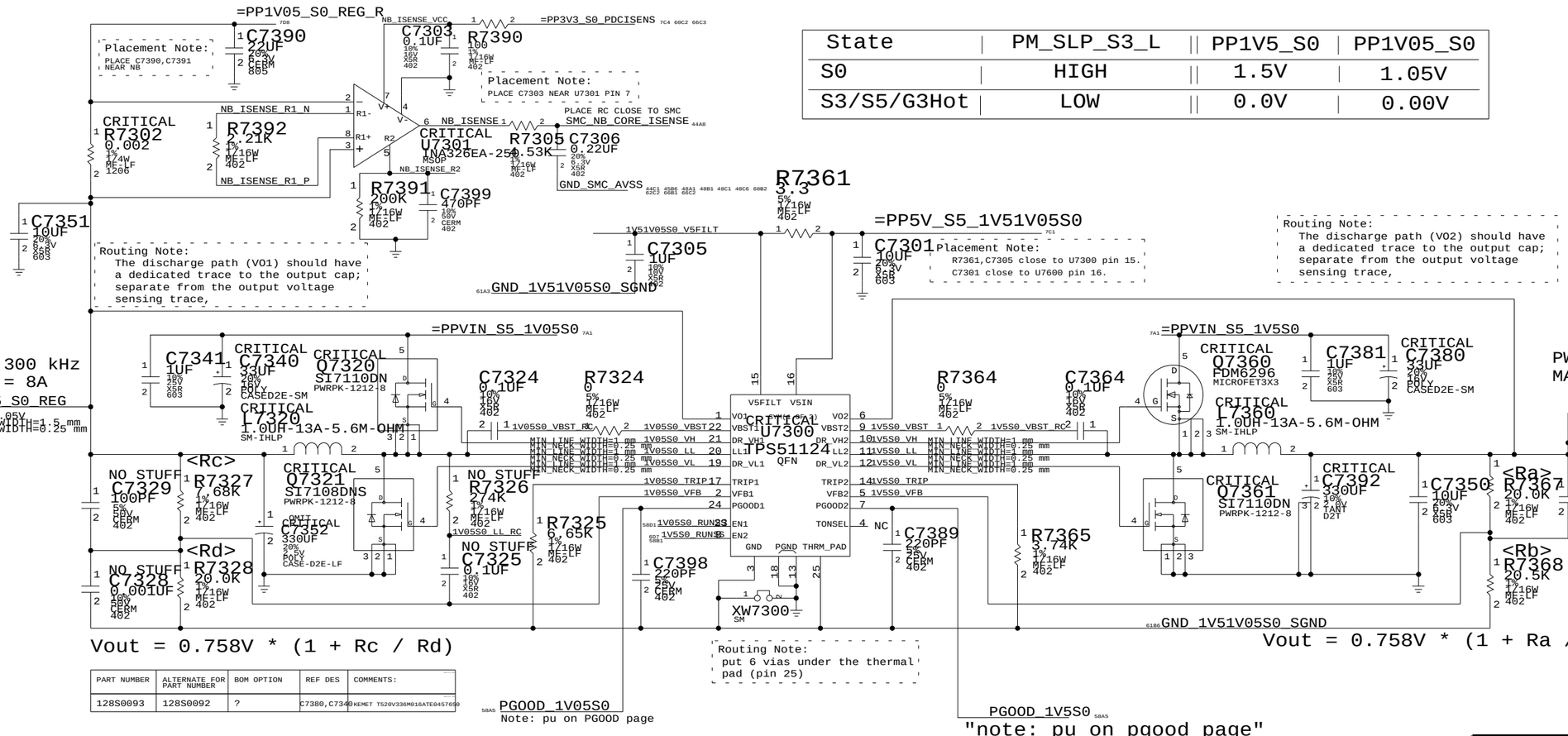
LATEST ISSUE: 2006/12/22

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE	SHT	OF
NONE	60	76

1.5V/1.05V POWER SUPPLY



State	PM_SLP_S3_L	PP1V5_S0	PP1V05_S0
S0	HIGH	1.5V	1.05V
S3/S5/G3Hot	LOW	0.0V	0.00V

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7380,C7340	KEMET T520V336M016ATE045 7650

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0448	376S0445	?	Q7360	

LATEST ISSUE: 2006/12/22

1.5V / 1.05V Supplies

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

APPLE INC.

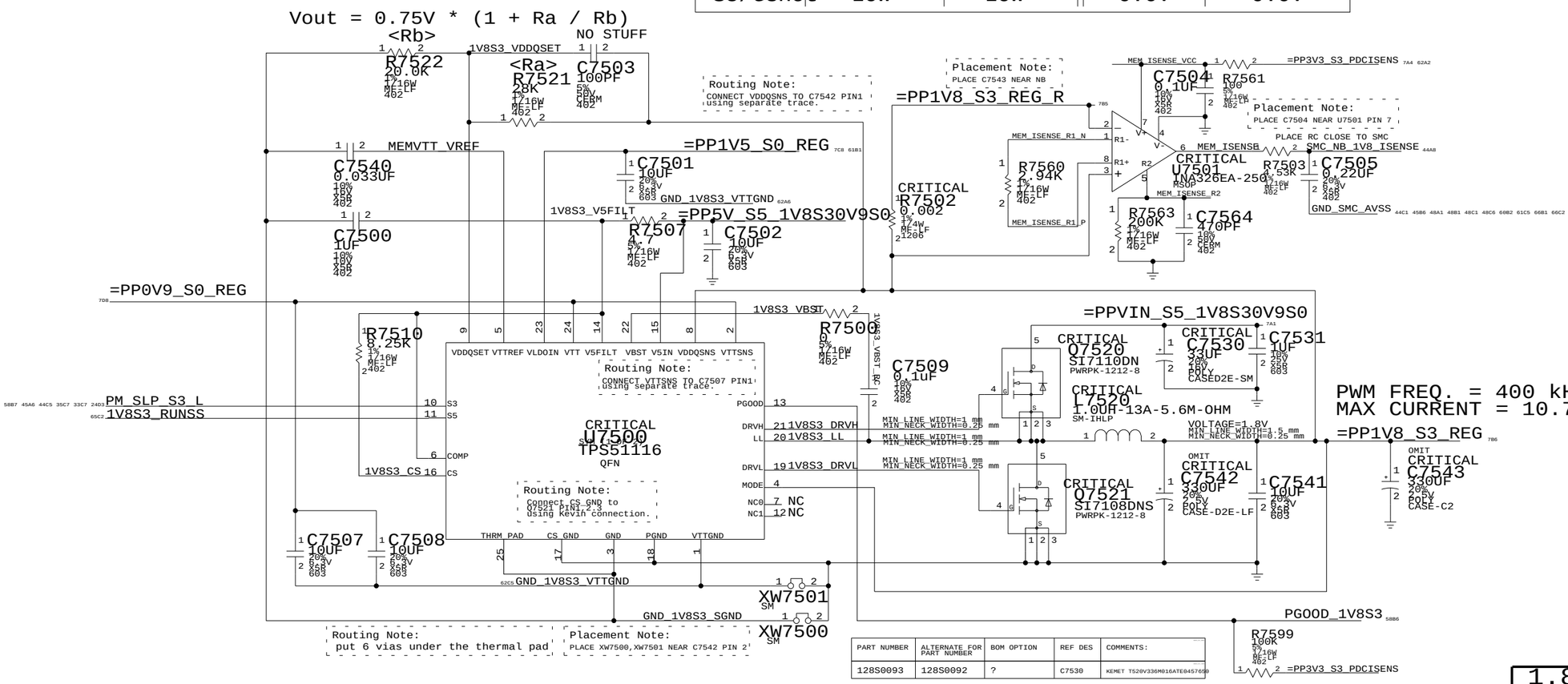
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 61 OF 76

1.8V/0.9V POWER SUPPLY

State	PM_SLP_S4_L	PM_SLP_S3_L	PP1V8_S3	PP0V9_S0
S0	HIGH	HIGH	1.8V	0.9V
S3	HIGH	LOW	1.8V	0.0V
S5/G3Hot	LOW	LOW	0.0V	0.0V



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7530	KEMET T520V336M016ATE0457600

LATEST ISSUE: 2006/12/22

1.8V/0.9V Supplies

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

APPLE INC.

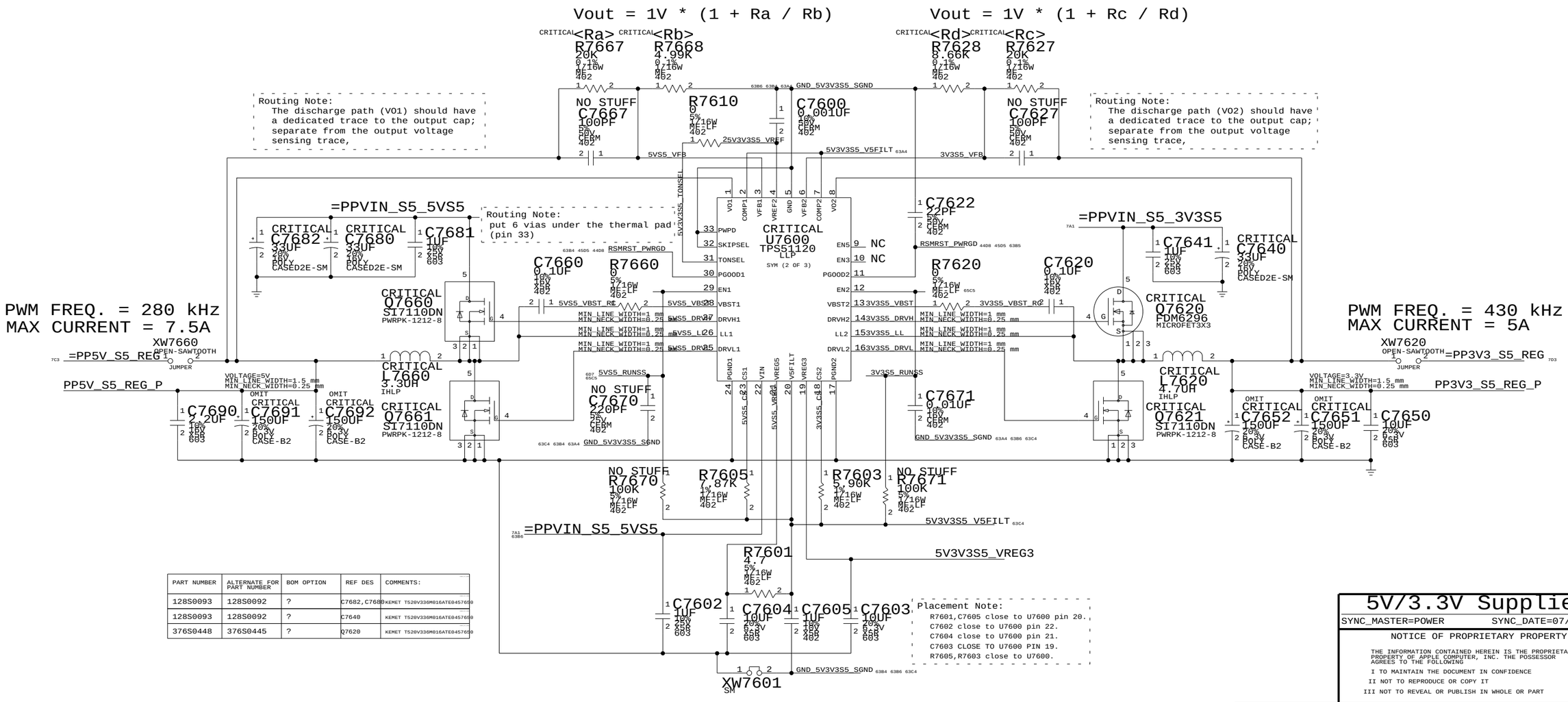
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 62 OF 76

5V/3.3V POWER SUPPLY

State	SMC_PM_G2_EN	PP3V3_G3H	PP5V_S5	PP3V3_S5
G3H	LOW	3.3V	0.0V	0.0V
S0/S3/S5	HIGH	3.3V	5.0V	3.3V



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7682,C7680	KEMET T520V336M016ATE045/E60
128S0093	128S0092	?	C7640	KEMET T520V336M016ATE045/E60
376S0448	376S0445	?	Q7620	KEMET T520V336M016ATE045/E60

LATEST ISSUE: 2006/12/22

5V/3.3V Supplies

SYNC_MASTER=POWER SYNC_DATE=07/13/2005

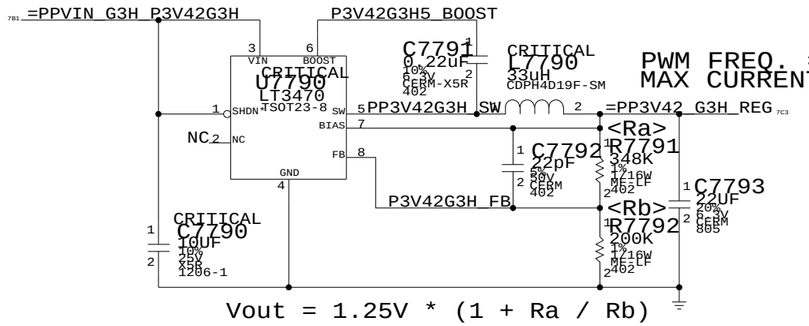
APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

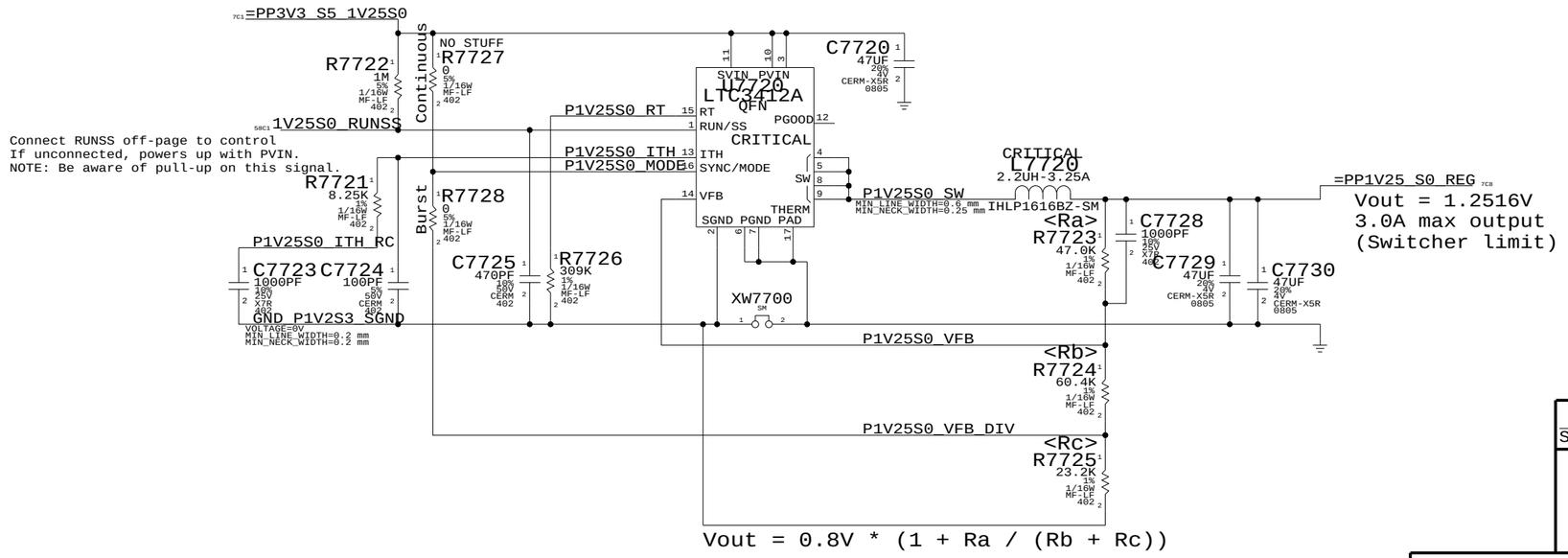
SCALE NONE | SHT 63 OF 76

3.425V G3H SUPPLY

Supply needs to guarantee 3.31V delivered to SMC VRef generator



1.25V S0 REGULATOR



LATEST ISSUE: 2007/3/8

3.42V/1.25V Switcher

SYNC_MASTER=ENETSYNC_DATE=12/06/2005

APPLE INC.

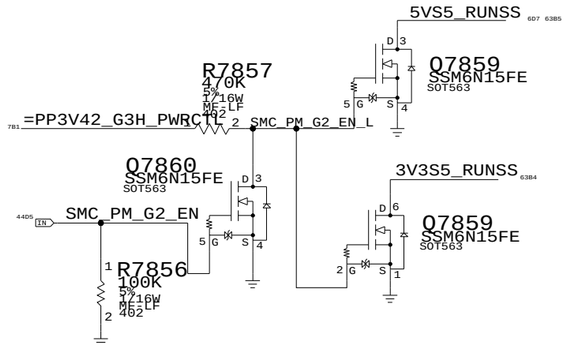
SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

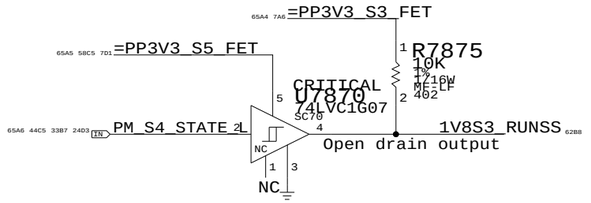
SHT 64 OF 76

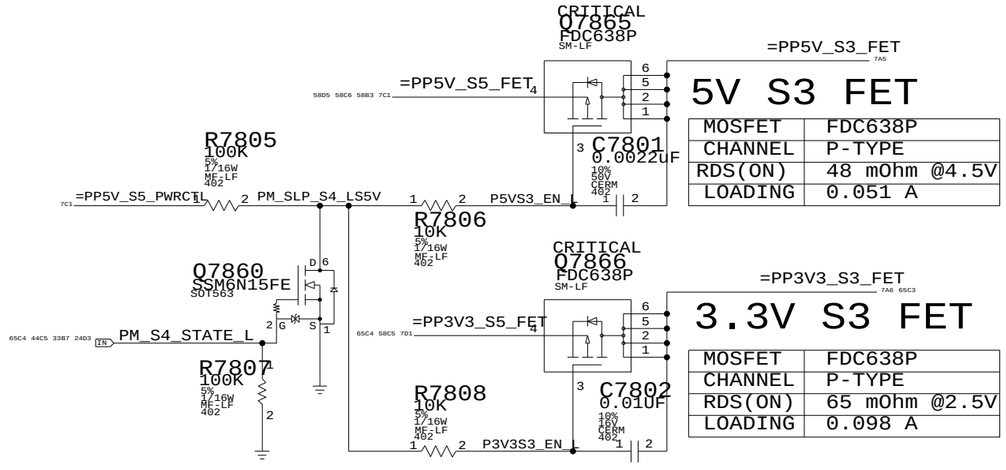
S3 FETS & S3/S5 CONTROL

5V/3.3V S5 RUN/SS CONTROL



1.8V S3 RUN/SS CONTROL





5V S3 FET

MOSFET	FDC638P
CHANNEL	P-TYPE
RDS(ON)	48 mOhm @4.5V
LOADING	0.051 A

3.3V S3 FET

MOSFET	FDC638P
CHANNEL	P-TYPE
RDS(ON)	65 mOhm @2.5V
LOADING	0.098 A

LATEST ISSUE: 2006/12/22

S3 FET & S3/S5 Control

SYNC_MASTER=DSIMANWI DATE=06/12/2006

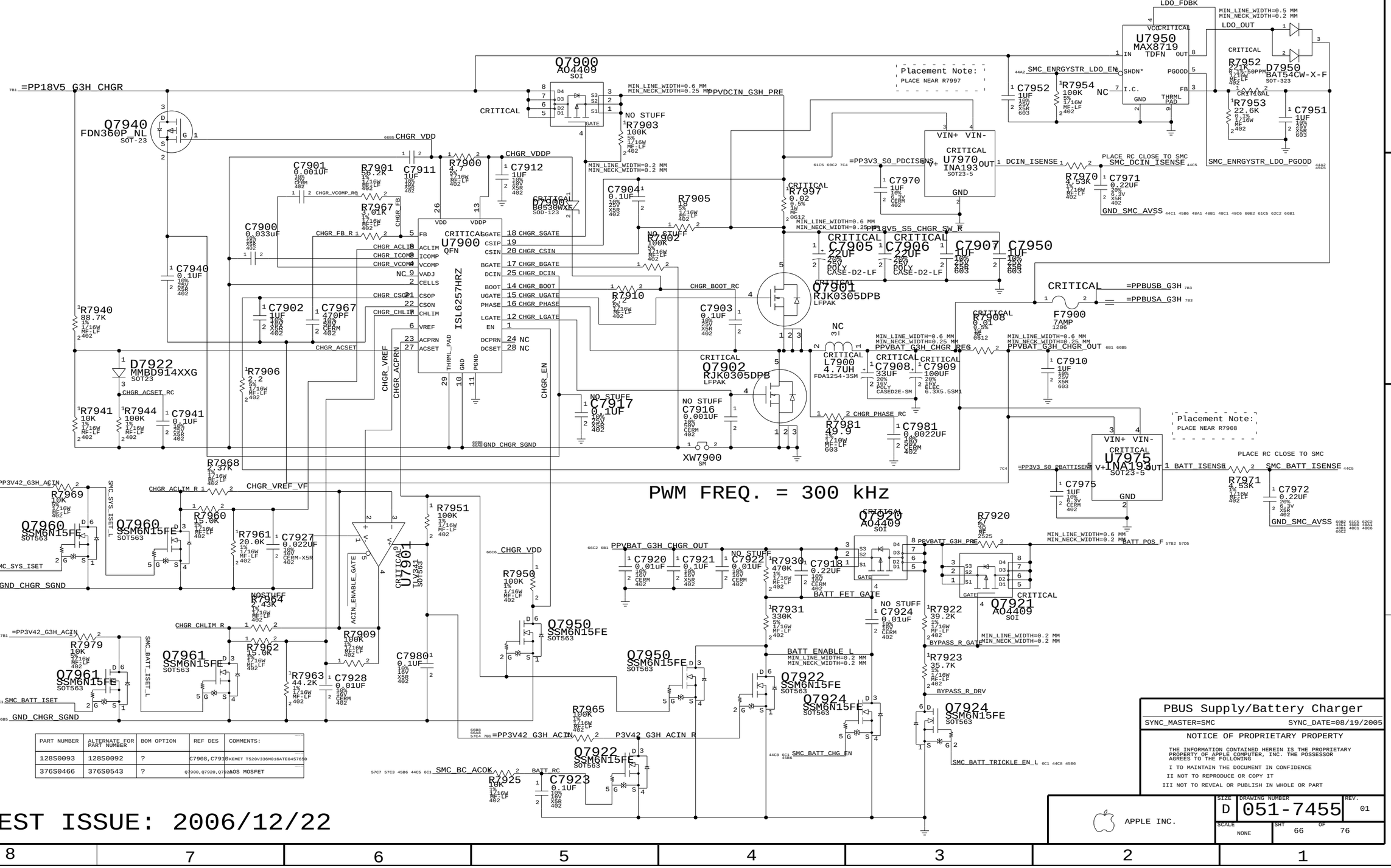
APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE

SHT 65 OF 76

PBUS SUPPLY / BATTERY CHARGER



PWM FREQ. = 300 kHz

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S0093	128S0092	?	C7908,C7910	KEMET T520V336M016ATE045/7650
376S0466	376S0543	?	Q7900,Q7920,Q7922	AOS MOSFET

LATEST ISSUE: 2006/12/22

PBUS Supply/Battery Charger

SYNC_MASTER=SMC SYNC_DATE=08/19/2005

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 66 OF 76

INVERTER CONNECTOR

LCD + CAMERA CONNECTOR

=PP5V_S0_LCD
R9000 100K 5% 1/16W MF-LF 402
R9001 100K 1% 1/16W MF-LF 402
INV_PWREN_F
INV_PWREN_L
Q9006 SSM3K15FV SOD-VESM
LVDS_BKLT_EN
Q9005 NTK3142P SOT723-3
PP5V_INV MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM VOLTAGE=5V
C9014 0.0022UF 10% 50V CERM 402
L9003 FERR-120-OHM-1.5A 0402-LF
=PPBUS_S5_INV
PPBUS_ALL_INV_CONN VOLTAGE=12.6V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
L9002 FERR-120-OHM-1.5A 0402-LF
L9000 120-OHM-0.3A-EMI 0402-LF
PP5V_INV_F VOLTAGE=5V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
L9001 120-OHM-0.3A-EMI 0402-LF
CRITICAL J9000 78171-0004 M-RT-SM
INV_GND
INV_BKLIGHT_PWM
518S0521
=PP3V3_S0_LCD
CRITICAL U9053 TC7SZ08AFEF SOT665
PLT_RST_L
LVDS_BKLT_CTL
BKLIGHT_CTL
C9059 0.1UF 10% 16V X5R 402
C9001 100PF 5% 50V C0G 402
C9002 100PF 5% 50V C0G 402
C9003 100PF 5% 50V C0G 402
C9000 100PF 5% 50V C0G 402
INVT_CHGND
THIS GND CONECTS TO CHASSIS GND

=PP3V3_S5_LCD
R9002 100K 5% 1/16W MF-LF 402
R9023 10K 5% 1/16W MF-LF 402
LCDVDD_PWREN
LCDVDD_PWREN_L_R
Q9004 SSM3K15FV SOD-VESM
LVDS_VDD_EN
CRITICAL Q9003 FDC606P SOT-6
C9013 0.0033UF 10% 50V CERM 402
PP3V3_LCDVDD_SW VOLTAGE=3.3V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
C9011 0.1UF 10% 16V X5R 402
C9012 10UF 20% 6.3V X5R 603
R9014 100K 1% 1/16W MF-LF 402
=PP3V3_S0_LCD
R9008 10K 5% 1/16W MF-LF 402
R9009 10K 5% 1/16W MF-LF 402
LVDS_DDC_CLK
LVDS_DDC_DATA
L9004 FERR-120-OHM-1.5A 0402-LF
L9008 120-OHM-0.3A-EMI 0402-LF
PP3V3_LCDVDD_SW_F VOLTAGE=3.3V MIN_LINE_WIDTH=0.30 MM MIN_NECK_WIDTH=0.20 MM
PP3V3_S0_LCD_F (LVDS DDC POWER) VOLTAGE=3.3V MIN_LINE_WIDTH=0.25 MM MIN_NECK_WIDTH=0.20 MM
C9009 0.001UF 10% 50V CERM 402
CRITICAL J9001 S-05016 2B F-RT-SM
=GND_CHASSIS_LVDS
LVDS_A_DATA_N<0>
LVDS_A_DATA_P<0>
LVDS_A_DATA_N<1>
LVDS_A_DATA_P<1>
LVDS_A_DATA_N<2>
LVDS_A_DATA_P<2>
LVDS_A_CLK_F_N
LVDS_A_CLK_F_P
CRITICAL L9006 90-OHM-200MA SM SYM_VER-1
LVDS_A_CLK_N
LVDS_A_CLK_P
CRITICAL L9007 90-OHM-200MA SM SYM_VER-1
=USB2_CAMERA_P
=USB2_CAMERA_N
USB2_CAMERA_CONN_P
USB2_CAMERA_CONN_N
L9005 FERR-120-OHM-1.5A 0402-LF
=PP5V_S3_CAMERA
PP5V_S3_CAMERA_F VOLTAGE=5V MIN_NECK_WIDTH=0.20 MM MIN_LINE_WIDTH=0.30 MM
MIC_LO_LVDS_CONN
MIC_HI_LVDS_CONN
LCD I/F
CAMERA I/F
C9016 0.001UF 10% 50V CERM 402
C9015 0.001UF 10% 50V CERM 402
C9010 0.001UF 10% 50V CERM 402
C9008 0.001UF 10% 50V CERM 402
Plexi: 516S0212
*Enclosure: 518S0364

LVDS REFERENCE CURRENT,2.37K OHM PULL DOWN RESISTOR NEEDED
R9013 2.37K 1% 1/16W MF-LF 402
LVDS_IBG
NOSTUFF L9010 FERR-1000-OHM 0402
MIC_LO_LVDS
NOSTUFF L9011 FERR-1000-OHM 0402
MIC_HI_LVDS
NOSTUFF L9012 FERR-1000-OHM 0402
MIC_SHIELD_LVDS
CRITICAL DZ9000 8V-100PF 402-1
CRITICAL DZ9001 8V-100PF 402-1
=GND_CHASSIS_LVDS

INVERTER, LVDS, TMDS

SYNC_MASTER=GPU SYNC_DATE=06/23/2006

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SIZE	DRAWING NUMBER	REV.
D	051-7455	01
SCALE: NONE	SHT 67 OF 76	

L9206 FERR-120-OHM-1.5A
=PP3V3_S0_TMDS 0402-LF PP3V3_S0_ANALOG_TMDS_F
VOLTAGE=3.3V MIN_LINE_WIDTH=0.5MM MIN_NECK_WIDTH=0.25MM
C9236 0.001UF 10% 16V X5R CERM 402
C9237 0.001UF 10% 16V X5R CERM 402
C9238 0.1UF 10% 16V X5R 402
C9239 0.1UF 10% 16V X5R 402
C9240 10UF 20% 6.3V X5R 603
ONE 0.1UF AND 1000PF FOR EACH PIN

L9201 FERR-120-OHM-1.5A
=PP1V8_S0_TMDS 0402-LF PP1V8_S0_TMDS_F
VOLTAGE=1.8V MIN_LINE_WIDTH=0.5MM MIN_NECK_WIDTH=0.25MM
C9207 0.1UF 10% 16V X5R 402
C9208 0.001UF 10% 16V X5R CERM 402
C9209 0.1UF 10% 16V X5R 402
C9210 0.001UF 10% 16V X5R CERM 402
C9211 0.1UF 10% 16V X5R 402
C9212 0.001UF 10% 16V X5R CERM 402
C9213 10UF 20% 6.3V X5R 603
ONE 0.1UF AND 1000PF FOR EACH PIN

L9203 FERR-120-OHM-1.5A
=PP3V3_S0_TMDS 0402-LF PP3V3_S0_ANALOG_SDVO_F
VOLTAGE=3.3V MIN_LINE_WIDTH=0.3MM MIN_NECK_WIDTH=0.25MM
C9230 0.001UF 10% 16V X5R CERM 402
C9231 0.1UF 10% 16V X5R 402
C9214 0.1UF 10% 16V X5R 402

L9200 FERR-120-OHM-1.5A
=PP1V8_S0_TMDS 0402-LF PP1V8_S0_ANALOG_SDVO_F
VOLTAGE=1.8V MIN_LINE_WIDTH=0.5MM MIN_NECK_WIDTH=0.25MM
C9200 0.001UF 10% 16V X5R CERM 402
C9201 0.001UF 10% 16V X5R CERM 402
C9202 0.1UF 10% 16V X5R 402
C9203 0.1UF 10% 16V X5R 402
C9204 10UF 20% 6.3V X5R 603
ONE 0.1UF AND 1000PF FOR EACH PIN

L9204 FERR-120-OHM-1.5A
=PP3V3_S0_TMDS 0402-LF PP3V3_S0_PVCC1_TMDS_F
VOLTAGE=3.3V MIN_LINE_WIDTH=0.3MM MIN_NECK_WIDTH=0.25MM
C9232 0.001UF 10% 16V X5R CERM 402
C9233 0.1UF 10% 16V X5R 402
C9206 0.1UF 10% 16V X5R 402

L9205 FERR-120-OHM-1.5A
=PP3V3_S0_TMDS 0402-LF PP3V3_S0_PVCC2_TMDS_F
VOLTAGE=3.3V MIN_LINE_WIDTH=0.3MM MIN_NECK_WIDTH=0.25MM
C9234 0.001UF 10% 16V X5R CERM 402
C9235 0.1UF 10% 16V X5R 402

R9207 49.9 1% 1/16W MF-LF 402 TMDS_TX_P<0>
R9237 49.9 1% 1/16W MF-LF 402 TMDS_TX_N<0>
C9222 0.001UF 10% 16V X5R CERM 402
R9208 49.9 1% 1/16W MF-LF 402 TMDS_TX_P<1>
R9238 49.9 1% 1/16W MF-LF 402 TMDS_TX_N<1>
C9223 0.001UF 10% 16V X5R CERM 402
R9209 49.9 1% 1/16W MF-LF 402 TMDS_TX_P<2>
R9239 49.9 1% 1/16W MF-LF 402 TMDS_TX_N<2>
C9224 0.001UF 10% 16V X5R CERM 402
R9210 49.9 1% 1/16W MF-LF 402 TMDS_TX_CLK_P
R9240 49.9 1% 1/16W MF-LF 402 TMDS_TX_CLK_N
C9225 0.001UF 10% 16V X5R CERM 402

MCH SDVO CHANNEL R,G,B,CLK SIGNAL TO TMDS CHIP
PLACE THE CAP NEAR THE NB SIDE
PEG_R2D_C_P<0>
PEG_R2D_C_N<0>
PEG_R2D_C_P<1>
PEG_R2D_C_N<1>
PEG_R2D_C_P<2>
PEG_R2D_C_N<2>
PEG_R2D_C_P<3>
PEG_R2D_C_N<3>
C9241 C9242 C9243 C9244 C9245 C9246 C9247 C9248 0.1UF 10% 16V X5R 402

PP3V3_S0_ANALOG_SDVO_F
PP1V8_S0_ANALOG_SDVO_F
PP3V3_S0_PVCC2_TMDS_F
PP3V3_S0_PVCC1_TMDS_F
PP3V3_S0_ANALOG_TMDS_F
PP1V8_S0_TMDS_F

CRITICAL
U9200 SIL1362ACLU LQFP
SDVO RCVR CORE
DIFF SIG DATA
I2C MASTER INTER
CONFIG/ PRGRM
TEXT MODE

TMDS_SDR_P TMDS_SDR_N TMDS_SDG_P TMDS_SDG_N TMDS_SDB_P TMDS_SDB_N TMDS_SDC_P TMDS_SDC_N
SDR_P SDR_N SDG_P SDG_N SDB_P SDB_N SDC_P SDC_N
TMDS_INT_P TMDS_INT_N SDI_P SDI_N
TMDS_EXT_RES EXT_RES
TMDS_RST_L RESET*
SDVO_CTRLCLK SDSCL
SDVO_CTRLDATA SDSDA
A1
TMDS_HTPLG_BUF HTPLG
TEST
TX0_P TX0_N TX1_P TX1_N TX2_P TX2_N TXC_P TXC_N
TMDS_TX_P<0> TMDS_TX_N<0> TMDS_TX_P<1> TMDS_TX_N<1> TMDS_TX_P<2> TMDS_TX_N<2> TMDS_TX_CLK_P TMDS_TX_CLK_N
EXT_SWING TMDS_EXT_SWING
SCLDDC TMDS_I2C_SCL
SDADDC TMDS_I2C_SDA
VCC0 VCC1 VCC2 AVCC0 AVCC1 PVCC1 PVCC2 QVCC0 PSVCC1 SPVCC QVCC
GND0 GND1 AGND0 AGND1 AGND2 PGND2 SGND0 SGND1 SPGND

=PP3V3_S0_TMDS
C9221 0.1UF 10% 16V X5R 402
C9205 10UF 20% 6.3V X5R 603
R9204 249 1% 1/16W MF-LF 402
R9205 10K 5% 1/16W MF-LF 402
R9206 10K 5% 1/16W MF-LF 402
TMDS_I2C_SCL AND TMDS_I2C_SDA DON'T NEED TO CONNECT

DVI_HOTPLUG_DET
R9250 100K 5% 1/16W MF-LF 402 "Place R9250 near U2300.F12"
DVI_HOTPLUG_DET

PLACE R9200,U9201 CLOSE TO MINI DVI CONN J9401
R9200 10K 5% 1/16W MF-LF 402 5.5V TOL INPUT
TMDS_HTPLG R2
R9200 INSURES ESD DIODE CURRENT IS SMALL
R9213 270K 5% 1/16W MF-LF 402
CRITICAL
U9201 74LVC1G17DRL SOT-553
NC 3.3V ACTIVE OUTPUT
R9201 2.94K 1% 1/16W MF-LF 402
R9202 2.94K 1% 1/16W MF-LF 402
R9211 9.09K 1% 1/16W MF-LF 402
R9212 9.09K 1% 1/16W MF-LF 402
R9203 1K 5% 1/16W MF-LF 402
C9219 0.1UF 10% 16V X5R 402
C9220 0.1UF 10% 16V X5R 402
TMDS CHIP SDVO INPUT INTERRUPT SIGNAL TO MCH

EXTERNAL TMDS

SYNC_MASTER=GRAPHYNC SYNC_DATE=06/06/2005

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 68 OF 76

NB VIDEO ALIASES

=CRT_TVO_IREF	CRT_TVO_IREF		
=TV_A_DAC	TV_A_DAC	MAKE_BASE=TRUE	
=TV_B_DAC	TV_B_DAC	MAKE_BASE=TRUE	
=TV_C_DAC	TV_C_DAC	MAKE_BASE=TRUE	
=CRT_BLUE	CRT_BLUE	MAKE_BASE=TRUE	
=CRT_GREEN	CRT_GREEN	MAKE_BASE=TRUE	
=CRT_RED	CRT_RED	MAKE_BASE=TRUE	
=CRT_HSYNC_R	CRT_HSYNC_R	MAKE_BASE=TRUE	
=CRT_VSYNC_R	CRT_VSYNC_R	MAKE_BASE=TRUE	

Video Connectors

EXTERNAL VIDEO (VGA) INTERFACE

Isolation required for DVI power switch

TMDS(MINI DVI) INTERFACE

A 1.3K OHM 1% RESISTOR IS REQUIRED BETWEEN CRT_IREF AND GROUND

R9469 1.21K 1% 1/16W MF-LF 402 — CRT_TVO_IREF

CRITICAL F9404 0.5AMP-13.2V SM-LF =PP5V_S0_TMDS (VOLTAGE=5V, MIN_LINE_WIDTH=0.30 MM, MIN_NECK_WIDTH=0.20 MM) → PP5V_S0_TMDS_FUSE (VOLTAGE=5V, MIN_LINE_WIDTH=0.5 MM, MIN_NECK_WIDTH=0.25 MM)

D9401 ISS418 SOD-723

L9444 600-OHM-300MA 0402 → PP5V_S0_DVIPORT (VOLTAGE=5V, MIN_LINE_WIDTH=0.5 MM, MIN_NECK_WIDTH=0.25 MM)

C9404 0.1UF 20% 16V X5R CERM 402 — =GND_CHASSIS_TMDS_UPPER

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
740S0044	740S0028	?	F9404	

=PP3V3_S0_NB

R9466 2.2K 5% 1/16W MF-LF 402 — TV_DCONSEL<0>

R9467 2.2K 5% 1/16W MF-LF 402 — TV_DCONSEL<1>

PP5V_S0_DVIPORT_D

DVI power DIODE on page 95 (D9500)

R9462 2.2K 5% 1/16W MF-LF 402

R9463 2.2K 5% 1/16W MF-LF 402

TMDS_HTPLG

C9410 0.001UF 10% 50V CERM 402

=PP3V3_S0_TMDS

R9421 2.2K 5% 1/16W MF-LF 402 — CRT_DDC_CLK

R9422 2.2K 5% 1/16W MF-LF 402 — CRT_DDC_DATA

Q9401 SSM6N15FE SOT563 — GPU_CRT_DDC_CLK

Q9401 SSM6N15FE SOT563 — GPU_CRT_DDC_DATA

C9411 100PF 5% 50V CERM 402

C9412 100PF 5% 50V CERM 402

NOTE: CRT_DDC_* ARE NOT 5V COMPLIANT

PLACE R9450 R9451 CLOSE TO GMCH

R9450 75 1% 1/16W MF-LF 402 — TV_A_DAC / CRT_BLUE — =TV_A_RTN — =CRT_BLUE_L

R9451 75 1% 1/16W MF-LF 402

=PP3V3_S0_TMDS

C9439 0.1UF 10% 16V X5R 402

EXT_COMPVID_B

CRITICAL U9401 TS3V330 SOP (VCC, GND, EN_L; S1A/S2A/S1B/S2B/S1C/S2C/S1D/S2D; DA/DB/DC/DD; IN)

EXT_Y_G

EXT_C_R

FL9400 210MHZ MEA2010P-SM CRITICAL

PLACE R9452 R9453 CLOSE TO GMCH

R9452 75 1% 1/16W MF-LF 402 — TV_B_DAC / CRT_GREEN — =TV_B_RTN — =CRT_GREEN_L

R9453 75 1% 1/16W MF-LF 402

PLACE R9454 R9455 CLOSE TO GMCH

R9454 75 1% 1/16W MF-LF 402 — TV_C_DAC / CRT_RED — =TV_C_RTN — =CRT_RED_L

R9455 75 1% 1/16W MF-LF 402

SB_CRT_TVOUT_MUX_L

OMIT CRITICAL J9401 MINI-DVI-M42-BLK F-RT-TH

PP5V_S0_DVIPORT

NC, NC

VGA_B, VGA_HSYNC, VGA_G, VGA_VSYNC, VGA_R

TMDS_TX_CONN_P<2>, TMDS_TX_CONN_N<2>, TMDS_TX_CONN_P<1>, TMDS_TX_CONN_N<1>, TMDS_TX_CONN_P<0>, TMDS_TX_CONN_N<0>, TMDS_TX_CONN_CLK_P, TMDS_TX_CONN_CLK_N

514-0376

=GND_CHASSIS_TMDS_UPPER — =GND_CHASSIS_TMDS_DOWN

C9421 0.1UF 10% 16V X5R 402

PLACE THE RESISTOR CLOSE TO GMCH AND THE CAP NEAR CONNECTOR

=PP3V3_S0_TMDS

C9460 0.1UF 20% 16V CERM 402

CRITICAL U9404 SN74LVC2G125DCU

R9460 39 5% 1/16W MF-LF 402 — CRT_HSYNC_R — CRT_HSYNC_LS_R

R9470 39 5% 1/16W MF-LF 402 — CRT_HSYNC_LS — VGA_HSYNC

C9442 33PF 5% 50V CERM 402 NOSTUFF

PLACE THE RESISTOR CLOSE TO GMCH AND THE CAP NEAR THE CONNECTOR

CRITICAL U9404 SN74LVC2G125DCU

R9461 39 5% 1/16W MF-LF 402 — CRT_VSYNC_R — CRT_VSYNC_LS_R

R9471 39 5% 1/16W MF-LF 402 — CRT_VSYNC_LS — VGA_VSYNC

C9443 33PF 5% 50V CERM 402 NOSTUFF

CRITICAL L9405 90-OHM-100MA 1210-4SM1 — TMDS_TX_P<2> / TMDS_TX_N<2>

CRITICAL L9407 90-OHM-100MA 1210-4SM1 — TMDS_TX_P<1> / TMDS_TX_N<1>

CRITICAL L9406 90-OHM-100MA 1210-4SM1 — TMDS_TX_P<0> / TMDS_TX_N<0>

CRITICAL L9404 300-OHM-50MA 1210-4SM1 — TMDS_TX_CLK_P / TMDS_TX_CLK_N

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
514-0480	1	CONN,REC,MINI-DVI,32P,RA,TABS,MG3	J9401	CRITICAL	NORMAL
514-0481	1	CONN,REC,MINI-DVI,32P,RA,TABS,BLK	J9401	CRITICAL	FANCY

MINI-DVI CONNECTOR

SYNC_MASTER=EUGENE SYNC_DATE=05/21/05

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE — SHT 69 OF 76

FSB (Front-Side Bus) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
FSB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
FSB_DSTB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=1:1_DIFFPAIR	=1:1_DIFFPAIR

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_ADDR	*	=3:1_SPACING	?
FSB_ADDR2ADDR	*	=2:1_SPACING	?
FSB_ADSTB	*	=3:1_SPACING	?
FSB_ADDR2ADSTB	*	=3:1_SPACING	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_DATA	*	=3:1_SPACING	?
FSB_DATA2DATA	*	=2:1_SPACING	?
FSB_DSTB	*	=3:1_SPACING	?
FSB_DATA2DSTB	*	=3:1_SPACING	?

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FSB_COMMON	*	=2:1_SPACING	?

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
FSB_ADDR	FSB_ADDR	*	FSB_ADDR2ADDR
FSB_ADDR	FSB_ADSTB	*	FSB_ADDR2ADSTB
FSB_DATA	FSB_DATA	*	FSB_DATA2DATA
FSB_DATA	FSB_DSTB	*	FSB_DATA2DSTB

All FSB signals with impedance requirements are 55-ohm single-ended.
Worst-case spacing is 2:1 within Addr bus, with 3:1 spacing to the ADSTBs.
Worst-case spacing is 2:1 within Data bus, with 3:1 spacing to the DSTBs.
DSTB complementary pairs are spaced 1:1 and routed as differential pairs.

Design Guide recommends each strobe/signal group is routed on the same layer.
Design Guide recommends FSB signals be routed only on internal layers.

NOTE: Design Guide does not indicate FSB spacing to other signals, assumed 3:1.
NOTE: Design Guide allows closer spacing if signal lengths can be shortened.

SOURCE: Santa Rosa Platform DG, Rev 0.9 (#20517), Sections 4.2 & 4.3

CPU 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
CPU_27P4S	*	Y	=27P4_OHM_SE	=27P4_OHM_SE	=27P4_OHM_SE	7 MIL	7 MIL
CPU_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

NOTE: 7 mil gap is for VCCSense pair, which Intel says to route with 7 mil spacing without specifying a target differential impedance.

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CPU_2TO1	*	=2:1_SPACING	?
CPU_COMP	*	25 MIL	?
CPU_GTLREF	*	25 MIL	?
CPU_ITP	*	=2:1_SPACING	?
CPU_VCCSENSE	*	25 MIL	?

DG recommends at least 25 mils, >50 mils preferred

Most CPU signals with impedance requirements are 55-ohm single-ended.
Some signals require 27.4-ohm single-ended impedance.

SOURCE: Santa Rosa Platform DG, Rev 0.9 (#20517), Sections 4.4 & 5.8.2.4

CPU / FSB Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_ADS_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BNR_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BPRI_L	9D6 13C3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_BREQ0_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DBSY_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DEFER_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DPWR_L	9B2 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_DRDY_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_HIT_L	9C6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_HITM_L	9C6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_LOCK_L	9D6 13B3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_RS_L<2..0>	9D6 13A3
FSB_COMMON	FSB_55S	FSB_COMMON	FSB_TRDY_L	9D6 13B3
FSB_CPURST_L	FSB_55S	FSB_COMMON	FSB_CPURST_L	9D6 12B5 13A5
FSB_DATA_GROUP0	FSB_55S	FSB_DATA	FSB_D_L<15..0>	9C4 13C5 13D5
FSB_DATA_GROUP0	FSB_55S	FSB_DATA	FSB_DINV_L<0>	9C4 13B3
FSB_DSTB0	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<0>	9C4 13B3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<0>	9C4 13B3
FSB_DATA_GROUP1	FSB_55S	FSB_DATA	FSB_D_L<31..16>	9B4 9C4 13C5
FSB_DATA_GROUP1	FSB_55S	FSB_DATA	FSB_DINV_L<1>	9B4 13B3
FSB_DSTB1	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<1>	9B4 13B3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<1>	9B4 13B3
FSB_DATA_GROUP2	FSB_55S	FSB_DATA	FSB_D_L<47..32>	9C2 13B5 13C5
FSB_DATA_GROUP2	FSB_55S	FSB_DATA	FSB_DINV_L<2>	9C2 13B3
FSB_DSTB2	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<2>	9C2 13A3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<2>	9C2 13B3
FSB_DATA_GROUP3	FSB_55S	FSB_DATA	FSB_D_L<63..48>	9B2 9C2 13B5
FSB_DATA_GROUP3	FSB_55S	FSB_DATA	FSB_DINV_L<3>	9B2 13B3
FSB_DSTB3	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_P<3>	9B2 13A3
	FSB_DSTB_55S	FSB_DSTB	FSB_DSTB_L_N<3>	9B2 13B3
FSB_ADDR_GROUP0	FSB_55S	FSB_ADDR	FSB_A_L<16..3>	9D8 13C3 13D3
FSB_ADDR_GROUP0	FSB_55S	FSB_ADDR	FSB_REQ_L<4..0>	9C8 9D8 13A3
FSB_ADSTB0	FSB_55S	FSB_ADSTB	FSB_ADSTB_L<0>	9D8 13C3
FSB_ADDR_GROUP1	FSB_55S	FSB_ADDR	FSB_A_L<35..17>	9C8 13C3
FSB_ADSTB1	FSB_55S	FSB_ADSTB	FSB_ADSTB_L<1>	9C8 13C3
CPU_IERR_L	CPU_55S		CPU_IERR_L	9D6
CPU_FERR_L	CPU_55S		CPU_FERR_L	9C8 22C2
CPU_PROCHOT_L	CPU_55S	CPU_2TO1	CPU_PROCHOT_L	9C5 45B5 45C3 59C8
CPU_PWRGD	CPU_55S		CPU_PWRGD	9B2 12B1 22C4
CPU_FROM_SB	CPU_55S		CPU_INTR	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_NMI	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_A20M_L	9C8 22C4
CPU_FROM_SB	CPU_55S		CPU_DPSLP_L	9B2 22C4
CPU_FROM_SB	CPU_55S		CPU_IGNNE_L	9C8 22C4
CPU_INIT_L	CPU_55S		CPU_INIT_L	9D6 22C4 46B2
CPU_FROM_SB	CPU_55S		CPU_SMI_L	9B8 22C4
CPU_FROM_SB	CPU_55S		CPU_STPCLK_L	9B8 22C4
PM_THRMTRIP_L	CPU_55S	CPU_2TO1	PM_THRMTRIP_L	9C6 15A6 22C2 45B3
FSB_CPUSLP_L	CPU_55S		FSB_CPUSLP_L	9A2 13A5
PM_DPRSLPVR	CPU_55S	CPU_2TO1	PM_DPRSLPVR	15A6 24C3 59D8
(See above)	CPU_55S	CPU_2TO1	IMVP_DPRSLPVR	59C7
CPU_BSEL0	CPU_55S	CPU_2TO1	CPU_BSEL<0>	9B4 29C6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<0>	15C6 29C8
CPU_BSEL1	CPU_55S	CPU_2TO1	CPU_BSEL<1>	9A4 29B6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<1>	15C6 29B8
CPU_BSEL2	CPU_55S	CPU_2TO1	CPU_BSEL<2>	9A4 29A6
(See above)	CPU_55S	CPU_2TO1	NB_BSEL<2>	15B6 29B8
CPU_DPRSTP_L	CPU_55S	CPU_2TO1	CPU_DPRSTP_L	9B2 15B6 22C4 59C7
CPU_GTLREF	CPU_55S	CPU_GTLREF	CPU_GTLREF	9B4
CPU_COMP	CPU_55S	CPU_COMP	CPU_COMP<3>	9B3
CPU_COMP	CPU_27P4S	CPU_COMP	CPU_COMP<2>	9B3
CPU_COMP	CPU_55S	CPU_COMP	CPU_COMP<1>	9B3
CPU_COMP	CPU_27P4S	CPU_COMP	CPU_COMP<0>	9B3
XDP_TDI	CPU_55S	CPU_ITP	XDP_TDI	9B7 9C6 12B3
XDP_TDO	CPU_55S	CPU_ITP	XDP_TDO	9A7 9C6 12B5
XDP_TMS	CPU_55S	CPU_ITP	XDP_TMS	9B7 9C6 12B2
XDP_TCK	CPU_55S	CPU_ITP	XDP_TCK	9A7 9C6 12B2 12B3
XDP_TRST_L	CPU_55S	CPU_ITP	XDP_TRST_L	9A7 9C6 12B3
XDP_BPM_L	CPU_55S	CPU_ITP	XDP_BPM_L<4..0>	9C6 12B2 12B3
XDP_BPM_L5	CPU_55S	CPU_ITP	XDP_BPM_L<5>	9C5 12B2
	CLK_FSB_100D	CLK_FSB	XDP_CLK_P	75C3
	CLK_FSB_100D	CLK_FSB	XDP_CLK_N	75C3
(FSB_CPURST_L)	CPU_55S	CPU_ITP	ITP_CPURST_L	
	CPU_55S	CPU_2TO1	CPU_VID<6..0>	10B7 59C7
	CPU_55S	CPU_2TO1	IMVP6_VID<6..0>	
CPU_VCCSENSE	CPU_27P4S	CPU_VCCSENSE	CPU_VCCSENSE_P	10A6 59A4 59A5
CPU_VCCSENSE	CPU_27P4S	CPU_VCCSENSE	CPU_VCCSENSE_N	10A6 59A4 59A5
	CPU_27P4S	CPU_VCCSENSE	IMVP6_VSEN_P	
	CPU_27P4S	CPU_VCCSENSE	IMVP6_VSEN_N	

CPU/FSB Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/08/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 70 OF 76

PCI-Express / DMI Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PCIE_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
DMI_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PCIE	*	20 MIL	?
DMI	*	20 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 7.2, 9.2 & 10.5

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
LVDS_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CRT_50S	*	Y	=50_OHM_SE	=50_OHM_SE	=50_OHM_SE	=STANDARD	=STANDARD
CRT_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT	
LVDS	*	20 MIL	?	
CRT	*	25 MIL	?	DG Says 40 mil spacing minimum
CRT_2CRT	*	20 MIL	?	
CRT_SYNC	*	25 MIL	?	DG Says 30 mil spacing minimum
CRT_SYNC2SYNC	*	20 MIL	?	
TVDAC	*	25 MIL	?	DG Says 40 mil spacing minimum
TVDAC_2TVDAC	*	20 MIL	?	

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CRT	CRT	*	CRT_2CRT
CRT_SYNC	CRT_SYNC	*	CRT_SYNC2SYNC
TVDAC	TVDAC	*	TVDAC_2TVDAC

LVDS signals are 100-ohm +/- 20% differential impedence.
CRT & TVDAC signal single-ended impedence varies by location:
- 37.5-ohm +/- 15% from GMCH to first termination resistor.
- 50-ohm +/- 15% from first to second termination resistor.
- 55-ohm +/- 15% from second termination resistor to connector.

CRT_HSYNC/CRT_VSYNC signals are 55-ohm +/- 15% single-ended impedence.

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 8.1 - 8.3.

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
PEG_R2D	PCIE_100D	PCIE	PEG_D2R_N<1> 14D3 68B6
	PCIE_100D	PCIE	PEG_D2R_P<1> 14C3 68B6
	PCIE_100D	PCIE	PEG_R2D_C_P<3..0> 14B3 68B6 68C6
	PCIE_100D	PCIE	PEG_R2D_C_N<3..0> 14B3 14C3 68B6 68C6
DMI_N2S	DMI_100D	DMI	DMI_N2S_P<3..0> 15B3 23D2
	DMI_100D	DMI	DMI_N2S_N<3..0> 15B3 23D2
DMI_S2N	DMI_100D	DMI	DMI_S2N_P<3..0> 15B3 23D2
	DMI_100D	DMI	DMI_S2N_N<3..0> 15B3 15C3 23D2
LVDS_A_CLK	LVDS_100D	LVDS	LVDS_A_CLK_P 14C5 67B3
LVDS_A_CLK	LVDS_100D	LVDS	LVDS_A_CLK_N 14C5 67B3
LVDS_A_DATA	LVDS_100D	LVDS	LVDS_A_DATA_P<2..0> 14C5 67B2
LVDS_A_DATA	LVDS_100D	LVDS	LVDS_A_DATA_N<2..0> 14C5 67B2
LVDS_A_DATA3	LVDS_100D	LVDS	LVDS_A_DATA_P<3>
LVDS_A_DATA3	LVDS_100D	LVDS	LVDS_A_DATA_N<3>
LVDS_IBG		LVDS	LVDS_IBG 14D5 67A8
CRT_TVO_IREF		CRT	CRT_TVO_IREF 69D7 69D8
CRT_RED	CRT_50S	CRT	CRT_RED 69A8 69D5
CRT_GREEN	CRT_50S	CRT	CRT_GREEN 69A8 69D5
CRT_BLUE	CRT_50S	CRT	CRT_BLUE 69B8 69D5
CRT_SYNC	CRT_55S	CRT_SYNC	CRT_HSYNC_R 69C3 69D5
CRT_SYNC	CRT_55S	CRT_SYNC	CRT_VSYNC_R 69C3 69D5
TV_A_DAC	CRT_50S	TVDAC	TV_A_DAC 69B8 69D7
TV_B_DAC	CRT_50S	TVDAC	TV_B_DAC 69A8 69D7
TV_C_DAC	CRT_50S	TVDAC	TV_C_DAC 69A8 69D7

NB Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 71 OF 76

DDR2 Memory Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
MEM_45S	*	Y	=45_OHM_SE	=45_OHM_SE	=45_OHM_SE	=STANDARD	=STANDARD
MEM_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
MEM_70D	*	Y	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF	=70_OHM_DIFF
MEM_85D	*	Y	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF	=85_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
MEM_CLK2MEM	*	=4:1_SPACING	?
MEM_CTRL2CTRL	*	=2:1_SPACING	?
MEM_CTRL2MEM	*	=3:1_SPACING	?
MEM_CMD2CMD	*	=1.5:1_SPACING	?
MEM_CMD2MEM	*	=3:1_SPACING	?
MEM_DATA2DATA	*	=1.5:1_SPACING	?
MEM_DATA2MEM	*	=3:1_SPACING	?
MEM_DQS2MEM	*	=3:1_SPACING	?
MEM_2OTHER	*	25 MIL	?

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	MEM_CLK	*	MEM_CLK2MEM
MEM_CLK	MEM_CTRL	*	MEM_CLK2MEM
MEM_CLK	MEM_CMD	*	MEM_CLK2MEM
MEM_CLK	MEM_DATA	*	MEM_CLK2MEM
MEM_CLK	MEM_DQS	*	MEM_CLK2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CMD	MEM_CLK	*	MEM_CMD2MEM
MEM_CMD	MEM_CTRL	*	MEM_CMD2MEM
MEM_CMD	MEM_CMD	*	MEM_CMD2CMD
MEM_CMD	MEM_DATA	*	MEM_CMD2MEM
MEM_CMD	MEM_DQS	*	MEM_CMD2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CTRL	MEM_CLK	*	MEM_CTRL2MEM
MEM_CTRL	MEM_CTRL	*	MEM_CTRL2CTRL
MEM_CTRL	MEM_CMD	*	MEM_CTRL2MEM
MEM_CTRL	MEM_DATA	*	MEM_CTRL2MEM
MEM_CTRL	MEM_DQS	*	MEM_CTRL2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_DATA	MEM_CLK	*	MEM_DATA2MEM
MEM_DATA	MEM_CTRL	*	MEM_DATA2MEM
MEM_DATA	MEM_CMD	*	MEM_DATA2MEM
MEM_DATA	MEM_DATA	*	MEM_DATA2DATA
MEM_DATA	MEM_DQS	*	MEM_DATA2MEM

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_CLK	*	*	MEM_2OTHER
MEM_CTRL	*	*	MEM_2OTHER
MEM_CMD	*	*	MEM_2OTHER
MEM_DATA	*	*	MEM_2OTHER
MEM_DQS	*	*	MEM_2OTHER

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MEM_DQS	MEM_CLK	*	MEM_DQS2MEM
MEM_DQS	MEM_CTRL	*	MEM_DQS2MEM
MEM_DQS	MEM_CMD	*	MEM_DQS2MEM
MEM_DQS	MEM_DATA	*	MEM_DQS2MEM
MEM_DQS	MEM_DQS	*	MEM_DQS2MEM

Need to support MEM_*-style wildcards!

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Section 6.2

Memory Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
MEM_A_CLK	MEM_70D	MEM_CLK	MEM_CLK_P<2..0>	15D3 30A4 30D4
	MEM_70D	MEM_CLK	MEM_CLK_N<2..0>	15D3 30A4 30D4
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_CKE<1..0>	15D3 30C4 30C6 32D6
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_CS_L<1..0>	15D3 30B4 30B6 32D6
MEM_A_CNTL	MEM_45S	MEM_CTRL	MEM_ODT<1..0>	15C3 30B4 30B6 32D6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_A<14..0>	15C6 16B5 16C5 30B4 30B6 30C4 30C6 32C6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_BS<2..0>	16D5 30B4 30B6 30C6 32C6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_RAS_L	16B5 30B4 32B6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_CAS_L	16D5 30B6 32B6
MEM_A_CMD	MEM_55S	MEM_CMD	MEM_A_WE_L	16B5 30B6 32B6
MEM_A_DQ_BYTE0	MEM_55S	MEM_DATA	MEM_A_DQ<7..0>	16D8 30D4 30D6
MEM_A_DQ_BYTE1	MEM_55S	MEM_DATA	MEM_A_DQ<15..8>	16C8 30D4 30D6
MEM_A_DQ_BYTE2	MEM_55S	MEM_DATA	MEM_A_DQ<23..16>	16C8 30C4 30C6
MEM_A_DQ_BYTE3	MEM_55S	MEM_DATA	MEM_A_DQ<31..24>	16C8 30C4 30C6 30D4 30D6
MEM_A_DQ_BYTE4	MEM_55S	MEM_DATA	MEM_A_DQ<39..32>	16B8 16C8 30B4 30B6
MEM_A_DQ_BYTE5	MEM_55S	MEM_DATA	MEM_A_DQ<47..40>	16B8 30A4 30A6 30B4 30B6
MEM_A_DQ_BYTE6	MEM_55S	MEM_DATA	MEM_A_DQ<55..48>	16B8 30A4 30A6
MEM_A_DQ_BYTE7	MEM_55S	MEM_DATA	MEM_A_DQ<63..56>	16A8 16B8 30A4 30A6
MEM_A_DM0	MEM_55S	MEM_DATA	MEM_A_DM<0>	16D5 30D4
MEM_A_DM1	MEM_55S	MEM_DATA	MEM_A_DM<1>	16D5 30D4
MEM_A_DM2	MEM_55S	MEM_DATA	MEM_A_DM<2>	16C5 30C6
MEM_A_DM3	MEM_55S	MEM_DATA	MEM_A_DM<3>	16C5 30C4
MEM_A_DM4	MEM_55S	MEM_DATA	MEM_A_DM<4>	16C5 30B4
MEM_A_DM5	MEM_55S	MEM_DATA	MEM_A_DM<5>	16C5 30B6
MEM_A_DM6	MEM_55S	MEM_DATA	MEM_A_DM<6>	16C5 30A6
MEM_A_DM7	MEM_55S	MEM_DATA	MEM_A_DM<7>	16C5 30A4
MEM_A_DQS0	MEM_85D	MEM_DQS	MEM_A_DQS_P<0>	16C5 30D6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<0>	16C5 30D6
MEM_A_DQS1	MEM_85D	MEM_DQS	MEM_A_DQS_P<1>	16C5 30D6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<1>	16C5 30D6
MEM_A_DQS2	MEM_85D	MEM_DQS	MEM_A_DQS_P<2>	16C5 30C4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<2>	16C5 30C4
MEM_A_DQS3	MEM_85D	MEM_DQS	MEM_A_DQS_P<3>	16C5 30C6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<3>	16C5 30C6
MEM_A_DQS4	MEM_85D	MEM_DQS	MEM_A_DQS_P<4>	16C5 30B6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<4>	16C5 30B6
MEM_A_DQS5	MEM_85D	MEM_DQS	MEM_A_DQS_P<5>	16C5 30B4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<5>	16C5 30B4
MEM_A_DQS6	MEM_85D	MEM_DQS	MEM_A_DQS_P<6>	16C5 30A4
	MEM_85D	MEM_DQS	MEM_A_DQS_N<6>	16C5 30A4
MEM_A_DQS7	MEM_85D	MEM_DQS	MEM_A_DQS_P<7>	16C5 30A6
	MEM_85D	MEM_DQS	MEM_A_DQS_N<7>	16C5 30A6
MEM_B_CLK	MEM_70D	MEM_CLK	MEM_CLK_P<5..3>	15D3 31A4 31D4
	MEM_70D	MEM_CLK	MEM_CLK_N<5..3>	15D3 31A4 31D4
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_CKE<4..3>	15D3 31C4 31C6 32D5 32D6
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_CS_L<3..2>	15C3 15D3 31B4 31B6 32D6
MEM_B_CNTL	MEM_45S	MEM_CTRL	MEM_ODT<3..2>	15C3 31B4 31B6 32D6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_A<14..0>	15C6 16B1 16C1 31B4 31B6 31C4 31C6 32A5 32B5
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_BS<2..0>	16D1 31B4 31B6 31C6 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_RAS_L	16B1 31B4 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_CAS_L	16D1 31B6 32A6
MEM_B_CMD	MEM_55S	MEM_CMD	MEM_B_WE_L	16B1 31B6 32A6
MEM_B_DQ_BYTE0	MEM_55S	MEM_DATA	MEM_B_DQ<7..0>	16D4 31D4 31D6
MEM_B_DQ_BYTE1	MEM_55S	MEM_DATA	MEM_B_DQ<15..8>	16C4 31D4 31D6
MEM_B_DQ_BYTE2	MEM_55S	MEM_DATA	MEM_B_DQ<23..16>	16C4 31C4 31C6
MEM_B_DQ_BYTE3	MEM_55S	MEM_DATA	MEM_B_DQ<31..24>	16C4 31C4 31C6
MEM_B_DQ_BYTE4	MEM_55S	MEM_DATA	MEM_B_DQ<39..32>	16B4 16C4 31B4 31B6
MEM_B_DQ_BYTE5	MEM_55S	MEM_DATA	MEM_B_DQ<47..40>	16B4 31A4 31A6 31B4 31B6
MEM_B_DQ_BYTE6	MEM_55S	MEM_DATA	MEM_B_DQ<55..48>	16B4 31A4 31A6
MEM_B_DQ_BYTE7	MEM_55S	MEM_DATA	MEM_B_DQ<63..56>	16A4 16B4 31A4 31A6
MEM_B_DM0	MEM_55S	MEM_DATA	MEM_B_DM<0>	16D1 31D4
MEM_B_DM1	MEM_55S	MEM_DATA	MEM_B_DM<1>	16D1 31D4
MEM_B_DM2	MEM_55S	MEM_DATA	MEM_B_DM<2>	16C1 31C4
MEM_B_DM3	MEM_55S	MEM_DATA	MEM_B_DM<3>	16C1 31C6
MEM_B_DM4	MEM_55S	MEM_DATA	MEM_B_DM<4>	16C1 31B4
MEM_B_DM5	MEM_55S	MEM_DATA	MEM_B_DM<5>	16C1 31A6
MEM_B_DM6	MEM_55S	MEM_DATA	MEM_B_DM<6>	16C1 31A4
MEM_B_DM7	MEM_55S	MEM_DATA	MEM_B_DM<7>	16C1 31A6
MEM_B_DQS0	MEM_85D	MEM_DQS	MEM_B_DQS_P<0>	16C1 31D6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<0>	16C1 31D6
MEM_B_DQS1	MEM_85D	MEM_DQS	MEM_B_DQS_P<1>	16C1 31D6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<1>	16C1 31D6
MEM_B_DQS2	MEM_85D	MEM_DQS	MEM_B_DQS_P<2>	16C1 31C6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<2>	16C1 31C6
MEM_B_DQS3	MEM_85D	MEM_DQS	MEM_B_DQS_P<3>	16C1 31C4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<3>	16C1 31C4
MEM_B_DQS4	MEM_85D	MEM_DQS	MEM_B_DQS_P<4>	16C1 31B6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<4>	16C1 31B6
MEM_B_DQS5	MEM_85D	MEM_DQS	MEM_B_DQS_P<5>	16C1 31A4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<5>	16C1 31B4
MEM_B_DQS6	MEM_85D	MEM_DQS	MEM_B_DQS_P<6>	16C1 31A6
	MEM_85D	MEM_DQS	MEM_B_DQS_N<6>	16C1 31A6
MEM_B_DQS7	MEM_85D	MEM_DQS	MEM_B_DQS_P<7>	16C1 31A4
	MEM_85D	MEM_DQS	MEM_B_DQS_N<7>	16C1 31A4

Memory Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/08/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 72 OF 76

Disk Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
IDE_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SATA_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SATA_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
IDE	*	=1.8:1_SPACING	?
SATA	*	20 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.7 & 10.9

HD Audio Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
HDA_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
HDA	*	=1.8:1_SPACING	?

SOURCE: Napa Platform DG, Rev 0.9 (#17978), Section 10.9.1

USB 2.0 Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
USB_60S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
USB_90D	*	Y	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF	=90_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
USB	*	20 MIL	?
USB_2CLK	*	25 MIL	?

DG says minimum spacing 50 mils to clocks

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Section 10.13.2

Internal Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
SMB_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
SPI_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
SMB	*	=3:1_SPACING	?
SPI	*	=1.8:1_SPACING	?

SOURCE: Santa Platform DG, Rev 1.0 (#21112), Section 10.17

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
IDE_PDD	IDE_55S	IDE	IDE_PDD<15..0> 22B4 22C4 39C3 39C5
IDE_PDA	IDE_55S	IDE	IDE_PDA<2..0> 22B4 39B3 39B5
IDE_PDCS	IDE_55S	IDE	IDE_PDCS1_L 22B4 39B5
IDE_PDCS	IDE_55S	IDE	IDE_PDCS3_L 22B4 39B3
IDE_CNTL	IDE_55S	IDE	IDE_PDIOW_L 22B4 39B5
IDE_PDIOR_L	IDE_55S	IDE	IDE_PDIOR_L 22B4 39C3
IDE_CNTL	IDE_55S	IDE	IDE_PDDACK_L 22B4 39B3
IDE_CNTL	IDE_55S	IDE	IDE_PDDREQ 22A4 39C3
IDE_PDIORDY	IDE_55S	IDE	IDE_PDIORDY 22A4 39B5
IDE_IRQ14	IDE_55S	IDE	IDE_IRQ14 22B4 39B5
IDE_RST_L	IDE_55S	IDE	ODD_RST_5VTOL_L 23B6 39A8
SATA_A_R2D	SATA_100D	SATA	SATA_A_R2D_C_P 22B6 40D4
	SATA_100D	SATA	SATA_A_R2D_C_N 22B6 40D4
	SATA_100D	SATA	SATA_A_R2D_P 40D7
	SATA_100D	SATA	SATA_A_R2D_N 40D7
SATA_A_D2R	SATA_100D	SATA	SATA_A_D2R_P 22B6 40C4
	SATA_100D	SATA	SATA_A_D2R_N 22B6 40D4
	SATA_100D	SATA	SATA_A_D2R_C_P 40C7
	SATA_100D	SATA	SATA_A_D2R_C_N 40D7
HDA_BIT_CLK	HDA_55S	HDA	HDA_BIT_CLK 8A6 22C8
	HDA_55S	HDA	HDA_BIT_CLK_R 22C6
HDA_SYNC	HDA_55S	HDA	HDA_SYNC 8A6 22C8
	HDA_55S	HDA	HDA_SYNC_R 22C6
HDA_RST_L	HDA_55S	HDA	HDA_RST_L 8A6 22C8
	HDA_55S	HDA	HDA_RST_L_R 22C6
HDA_SDIN0	HDA_55S	HDA	HDA_SDIN0 8A6 22C8
HDA_SDOUT	HDA_55S	HDA	HDA_SDOUT 8A6 22B8
	HDA_55S	HDA	HDA_SDOUT_R 22B6
USB_EXTA	USB_90D	USB	USB_EXTA_P 8C1 23C2
	USB_90D	USB	USB_EXTA_N 8C1 23C2
	USB_90D	USB	USB_EXTA_MUXED_P
	USB_90D	USB	USB_EXTA_MUXED_N
USB_MINI	USB_90D	USB	USB_MINI_P 8C1 23C2
	USB_90D	USB	USB_MINI_N 8C1 23C2
USB_3G	USB_90D	USB	USB_3G_P
	USB_90D	USB	USB_3G_N
USB_CAMERA	USB_90D	USB	USB_CAMERA_P 8C1 23C2
	USB_90D	USB	USB_CAMERA_N 8C1 23C2
USB_BT	USB_90D	USB	USB_BT_P 8C1 8C2 23C2
	USB_90D	USB	USB_BT_N 8B1 8B2 23C2
USB_TPAD	USB_90D	USB	USB_TPAD_P 8C1 23C2
	USB_90D	USB	USB_TPAD_N 8C1 23C2
USB_IR	USB_90D	USB	USB_IR_P 8C1 8C2 23C2
	USB_90D	USB	USB_IR_N 8C1 8C2 23C2
USB_EXTB	USB_90D	USB	USB_EXTB_P 8B1 23C2
	USB_90D	USB	USB_EXTB_N 8B1 23C2
USB_EXCARD	USB_90D	USB	USB_EXCARD_P 8B1 23C2
	USB_90D	USB	USB_EXCARD_N 8B1 23C2
USB_EXTC	USB_90D	USB	USB_EXTC_P 8B1 23C2
	USB_90D	USB	USB_EXTC_N 8B1 23C2
USB_RBIAS	USB_60S		USB_RBIAS 23B3
SMB_SB_SCL	SMB_55S	SMB	SMB_CLK 24D5 47D8
SMB_SB_SDA	SMB_55S	SMB	SMB_DATA 24D5 47D8
SMB_SB_ME_SCL	SMB_55S	SMB	SMB_ME_CLK 24D5 47A8
SMB_SB_ME_SDA	SMB_55S	SMB	SMB_ME_DATA 24D5 47A8
SPI_SCLK	SPI_55S	SPI	SPI_SCLK_R 23C5 52C7
	SPI_55S	SPI	SPI_A_SCLK_R 52C5
SPI_SI	SPI_55S	SPI	SPI_SI_R 23C5 52C3
	SPI_55S	SPI	SPI_A_SI_R 52C4
SPI_SO	SPI_55S	SPI	SPI_SO 23C5 52C3
	SPI_55S	SPI	SPI_A_SO_R 52C4
SPI_CE_L0	SPI_55S	SPI	SPI_CE_R_L<0> 23C5 52C7
	SPI_55S	SPI	SPI_CE_L<0> 52C6
SPI_CE_L1	SPI_55S	SPI	SPI_CE_R_L<1>

SB Constraints (1 of 2)

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 73 OF 76

PCI Bus Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PCI_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PCI	*	=2:1_SPACING	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.18.1 & 10.19

Platform LAN (Nineveh) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
LAN_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
ENET_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
GLAN_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
ENET_CLK	*	=2.5:1_SPACING	?
ENET_GLAN	*	20 MILS	?
ENET_LAN	*	=1.5:1_SPACING	?
ENET_MDI	*	25 MILS	?

DG says 30 mils min separation.

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.27.1.5-7, 10.29 & 10.30

Controller Link (AMT) Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
CLINK_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
CLINK_12MIL	*	Y	12 MILS	5 MILS	300 MILS	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CLINK	*	=1.8:1_SPACING	?
CLINK_VREF	*	12 MILS	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 10.27.1.5-7, 10.29 & 10.30

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
PCI_AD	PCI_55S	PCI	PCI_AD<18..0>	23A8 23B8 37B5 37C5
PCI_AD19	PCI_55S	PCI	PCI_AD<19>	23A8 37B6
PCI_AD20	PCI_55S	PCI	PCI_AD<20>	23A8 37B5
PCI_AD	PCI_55S	PCI	PCI_AD<31..21>	23A8 37B5
PCI_AD	PCI_55S	PCI	PCI_PAR	23A6 37B5
PCI_C_BE_L	PCI_55S	PCI	PCI_C_BE_L<3..0>	23B6 37B5
PCI_CNTL	PCI_55S	PCI	PCI_IRDY_L	23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_DEVSEL_L	23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_PERR_L	23A4 23A6 37A5
PCI_LOCK_L	PCI_55S	PCI	PCI_LOCK_L	23A4 23A6
PCI_CNTL	PCI_55S	PCI	PCI_SERR_L	23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_STOP_L	23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_TRDY_L	23A4 23A6 37A5
PCI_CNTL	PCI_55S	PCI	PCI_FRAME_L	23A4 23A6 37A5
PCI_FW_REQ_L	PCI_55S	PCI	PCI_FW_REQ_L	23A4 23B6 37A5
PCI_FW_GNT_L	PCI_55S	PCI	PCI_FW_GNT_L	23B5 37A5
PCI_REQ1_L	PCI_55S	PCI	PCI_REQ1_L	23A4 23B6
PCI_GNT1_L	PCI_55S	PCI	PCI_GNT1_L	
PCI_REQ2_L	PCI_55S	PCI	PCI_REQ2_L	23A4 23B6
PCI_GNT2_L	PCI_55S	PCI	PCI_GNT2_L	
INT_PIRQA_L	PCI_55S	PCI	INT_PIRQA_L	23A4 23A8
INT_PIRQB_L	PCI_55S	PCI	INT_PIRQB_L	23A4 23A8
INT_PIRQC_L	PCI_55S	PCI	INT_PIRQC_L	23A4 23A8
INT_PIRQD_L	PCI_55S	PCI	INT_PIRQD_L	23A4 23A8 37A5
INT_PIRQE_L	PCI_55S	PCI	INT_PIRQE_L	23A4 23A6
INT_PIRQF_L	PCI_55S	PCI	INT_PIRQF_L	23A4 23A6
PCIE_E_R2D	PCIE_100D	PCIE	PCIE_E_R2D_C_P	33B5 33B6
	PCIE_100D	PCIE	PCIE_E_R2D_C_N	33B5 33B6
PCIE_E_D2R	PCIE_100D	PCIE	PCIE_E_D2R_P	33B5
	PCIE_100D	PCIE	PCIE_E_D2R_N	33B5 33C5
GLAN_COMP			GLAN_COMP	22C6
ENET_LAN	LAN_55S	ENET_LAN	LAN_RSTSYNC	
ENET_LAN	LAN_55S	ENET_LAN	LAN_R2D<2..0>	
ENET_LAN	LAN_55S	ENET_LAN	LAN_D2R<2..0>	
ENET_GLAN_CLK	LAN_55S	ENET_CLK	ENET_GLAN_CLK_R	
	LAN_55S	ENET_CLK	ENET_GLAN_CLK	
ENET_MDI0	ENET_100D	ENET_MDI	ENET_MDI_P<0>	34B8 36B7
	ENET_100D	ENET_MDI	ENET_MDI_N<0>	34B8 36B7
ENET_MDI1	ENET_100D	ENET_MDI	ENET_MDI_P<1>	34B8 36C7
	ENET_100D	ENET_MDI	ENET_MDI_N<1>	34B8 36C7
ENET_MDI2	ENET_100D	ENET_MDI	ENET_MDI_P<2>	34B8 36B7
	ENET_100D	ENET_MDI	ENET_MDI_N<2>	34B8 36C7
ENET_MDI3	ENET_100D	ENET_MDI	ENET_MDI_P<3>	34B8 36C7
	ENET_100D	ENET_MDI	ENET_MDI_N<3>	34B8 36C7
CLINK_NB	CLINK_55S	CLINK	CLINK_NB_CLK	15A3 24C3
CLINK_NB	CLINK_55S	CLINK	CLINK_NB_DATA	15A3 24C3
CLINK_NB_RESET_L	CLINK_55S	CLINK	CLINK_NB_RESET_L	15A3 24C3
CLINK_WLAN	CLINK_55S	CLINK	CLINK_WLAN_CLK	24C3
CLINK_WLAN	CLINK_55S	CLINK	CLINK_WLAN_DATA	24C3
CLINK_WLAN_RESET_L	CLINK_55S	CLINK	CLINK_WLAN_RESET_L	24D5
NB_CLINK_VREF	CLINK_12MIL	CLINK_VREF	NB_CLINK_VREF	15A4
SB_CLINK_VREF0	CLINK_12MIL	CLINK_VREF	SB_CLINK_VREF0	24C3
SB_CLINK_VREF1	CLINK_12MIL	CLINK_VREF	SB_CLINK_VREF1	24C3

SB Constraints (2 of 2)

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

APPLE INC.

SIZE D | DRAWING NUMBER 051-7455 | REV. 01

SCALE NONE | SHT 74 OF 76

Clock 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
CLK_FSB_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CLK_PCIE_100D	*	Y	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF	=100_OHM_DIFF
CLK_MED_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
CLK_SLOW_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
CLK_FSB	*	25 MIL	?
CLK_PCIE	*	20 MIL	?
CLK_MED	*	20 MIL	?
CLK_SLOW	*	10 MIL	?

SOURCE: Santa Rosa Platform DG, Rev 1.0 (#21112), Sections 14.1 - 14.6

Clock Net Properties

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	SPACING		
CK505_CPU	CLK_FSB_100D	CLK_FSB	CK505_CPU0_P	6C7 28C4 29D6
CK505_CPU	CLK_FSB_100D	CLK_FSB	CK505_CPU0_N	6C7 28C4 29D6
CK505_NB	CLK_FSB_100D	CLK_FSB	CK505_CPU1_P	6C7 28C4 29D6
CK505_NB	CLK_FSB_100D	CLK_FSB	CK505_CPU1_N	6C7 28C4 29D6
CK505_ITP	CLK_FSB_100D	CLK_FSB	CK505_CPU2_ITP_SRC10_P	6C7 28C4 29D6
CK505_ITP	CLK_FSB_100D	CLK_FSB	CK505_CPU2_ITP_SRC10_N	6C7 28C4 29D6
CK505_PCIF0	CLK_MED_55S	CLK_MED	CK505_PCIF0_CLK	28B8 29B6
CK505_PCIF1	CLK_MED_55S	CLK_MED	CK505_PCIF1_CLK	6C7 28B6 29B6
CK505_PCI1	CLK_MED_55S	CLK_MED	CK505_PCI1_CLK	28B6 29B6
CK505_PCI2	CLK_MED_55S	CLK_MED	CK505_PCI2_CLK	8C4 28B6
CK505_PCI3	CLK_MED_55S	CLK_MED	CK505_PCI3_CLK	28B6 29A6
CK505_PCI4	CLK_MED_55S	CLK_MED	CK505_PCI4_CLK	8C4 28B6
CK505_PCI5	CLK_MED_55S	CLK_MED	CK505_PCI5_FCTSEL1	28B6 29B2
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	CK505_USB48_FSA	28A4 29D8
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	CK505_CLK14P3M_TIMER	28A4 29D8
CK505_DOT96	CLK_PCIE_100D	CLK_PCIE	CK505_DOT96_27M_P	6C7 28A4 29B6
	CLK_PCIE_100D	CLK_PCIE	CK505_DOT96_27M_N	6C7 28A4 29B6
CK505_LVDS	CLK_PCIE_100D	CLK_PCIE	CK505_LVDS_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_LVDS_N	6C7 28B4 29C6
CK505_SRC1	CLK_PCIE_100D	CLK_PCIE	CK505_SRC1_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC1_N	
CK505_SRC2	CLK_PCIE_100D	CLK_PCIE	CK505_SRC2_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC2_N	6C7 28B4 29C6
CK505_SRC3	CLK_PCIE_100D	CLK_PCIE	CK505_SRC3_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC3_N	
CK505_SRC4	CLK_PCIE_100D	CLK_PCIE	CK505_SRC4_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC4_N	6C7 28B4 29C6
CK505_SRC5	CLK_PCIE_100D	CLK_PCIE	CK505_SRC5_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC5_N	6C7 28B4 29C6
CK505_SRC6	CLK_PCIE_100D	CLK_PCIE	CK505_SRC6_P	6C7 28B4 29C6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC6_N	6C7 28B4 29B6
CK505_SRC7	CLK_PCIE_100D	CLK_PCIE	CK505_SRC7_P	
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC7_N	
CK505_SRC8	CLK_PCIE_100D	CLK_PCIE	CK505_SRC8_P	6B7 28A4 29B6
	CLK_PCIE_100D	CLK_PCIE	CK505_SRC8_N	6B7 28A4 29B6
(CK505_CPU)	CLK_FSB_100D	CLK_FSB	FSB_CLK_CPU_P	9B6 29D3
(CK505_CPU)	CLK_FSB_100D	CLK_FSB	FSB_CLK_CPU_N	9B6 29D3
(CK505_NB)	CLK_FSB_100D	CLK_FSB	FSB_CLK_NB_P	13B3 29D3
(CK505_NB)	CLK_FSB_100D	CLK_FSB	FSB_CLK_NB_N	13B3 29D3
(CK505_ITP)	CLK_FSB_100D	CLK_FSB	XDP_CLK_P	70A3
(CK505_ITP)	CLK_FSB_100D	CLK_FSB	XDP_CLK_N	70A3
(CK505_PCIF0)	CLK_MED_55S	CLK_MED	PCI_CLK33M_LPCPLUS	6C2 29B3 46C4
(CK505_PCIF1)	CLK_MED_55S	CLK_MED	PCI_CLK33M_SB	23A6 29A5 29B3
(CK505_PCI1)	CLK_MED_55S	CLK_MED	PCI_CLK33M_FW	29A5 29B3 37A5
(CK505_PCI2)	CLK_MED_55S	CLK_MED	PCI_CLK33M_TPM	
(CK505_PCI3)	CLK_MED_55S	CLK_MED	PCI_CLK33M_SMC	29A3 29A5 44C8
			CK505 PCI4 is project-specific	
			CK505 PCI5 is project-specific	
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	SB_CLK48M_USBCTLR	24D3 29A5 29D6
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	SB_CLK14P3M_TIMER	24D3 29A5 29D6
(CPU_BSEL0)	CLK_MED_55S	CLK_MED	CK505_FSA	29C8 29D6
(CPU_BSEL2)	CLK_MED_55S	CLK_MED	CK505_FSC	29A8 29D6
(CK505_DOT96)	CLK_PCIE_100D	CLK_PCIE	NB_CLK96M_DOT_P	8B1 29B3
(CK505_DOT96)	CLK_PCIE_100D	CLK_PCIE	NB_CLK96M_DOT_N	8B1 29B3
(CK505_LVDS)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_DPLLSS_P	8B1 29C3
(CK505_LVDS)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_DPLLSS_N	8A1 29C3
(CK505_SRC1)	CLK_PCIE_100D	CLK_PCIE	PEG_CLK100M_P	
(CK505_SRC1)	CLK_PCIE_100D	CLK_PCIE	PEG_CLK100M_N	
(CK505_SRC2)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_DMI_P	23C2 29C3
(CK505_SRC2)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_DMI_N	23D2 29C3
(CK505_SRC3)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_EXCARD_P	
(CK505_SRC3)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_EXCARD_N	
(CK505_SRC4)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_SATA_P	22B6 29C3
(CK505_SRC4)	CLK_PCIE_100D	CLK_PCIE	SB_CLK100M_SATA_N	22B6 29C3
(CK505_SRC5)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_PCIE_P	15C3 29C3
(CK505_SRC5)	CLK_PCIE_100D	CLK_PCIE	NB_CLK100M_PCIE_N	15C3 29C3
(CK505_SRC6)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_MINI_P	29C3 33C5
(CK505_SRC6)	CLK_PCIE_100D	CLK_PCIE	PCIE_CLK100M_MINI_N	29B3 33C5
			CK505 SRC7 is project-specific	
			CK505 SRC8 is project-specific	

Clock Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE: NONE SHT 75 OF 76

FireWire Interface Constraints

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
FW_55S	*	Y	=55_OHM_SE	=55_OHM_SE	=55_OHM_SE	=STANDARD	=STANDARD
FW_110D	*	Y	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF	=110_OHM_DIFF

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
FW	*	=2:1_SPACING	?
FW_TP	*	=3:1_SPACING	?

FireWire Net Properties

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
FW_D_CTL	FW_55S	FW	FW_LINK<7..0>
FW_D_CTL	FW_55S	FW	FW_CTL<1..0>
FW_LCLK	CLK_MED_55S	CLK_MED	CLKFW_LINK_LCLK
	CLK_MED_55S	CLK_MED	CLKFW_PHY_LCLK
FW_PCLK	CLK_MED_55S	CLK_MED	CLKFW_LINK_PCLK
	CLK_MED_55S	CLK_MED	CLKFW_PHY_PCLK
FW_LKON	FW_55S	FW	FW_LKON
	FW_55S	FW	FW_LKON_R
FW_LPS	FW_55S	FW	FW_LPS
FW_LREQ	FW_55S	FW	FW_LREQ
FW_PINT	FW_55S	FW	FW_PINT
FWPHY_CLK98P304M_XI	CLK_MED_55S	CLK_MED	CLK98P304M_FW_XI_R
	CLK_MED_55S	CLK_MED	CLK98P304M_FW_XI
FW_0_TPA	FW_110D	FW_TP	FW_0_TPA_P
FW_0_TPA	FW_110D	FW_TP	FW_0_TPA_N
FW_0_TPB	FW_110D	FW_TP	FW_0_TPB_P
	FW_110D	FW_TP	FW_0_TPB_N
FW_1_TPA	FW_110D	FW_TP	FW_1_TPA_P
FW_1_TPA	FW_110D	FW_TP	FW_1_TPA_N
FW_1_TPB	FW_110D	FW_TP	FW_1_TPB_P
	FW_110D	FW_TP	FW_1_TPB_N
Port 2 Not Used			

SMC SMBus Net Properties

NET_TYPE			
ELECTRICAL_CONSTRAINT_SET	PHYSICAL	SPACING	
SMBUS_SMC_A_S3_SCL	SMB_55S	SMB	SMBUS_SMC_A_S3_SCL 47D2
SMBUS_SMC_A_S3_SDA	SMB_55S	SMB	SMBUS_SMC_A_S3_SDA 47D2
SMBUS_SMC_B_S0_SCL	SMB_55S	SMB	SMBUS_SMC_B_S0_SCL 68Z 47C5
SMBUS_SMC_B_S0_SDA	SMB_55S	SMB	SMBUS_SMC_B_S0_SDA 68Z 47C5
SMBUS_SMC_0_S0_SCL	SMB_55S	SMB	SMBUS_SMC_0_S0_SCL 47D5
SMBUS_SMC_0_S0_SDA	SMB_55S	SMB	SMBUS_SMC_0_S0_SDA 47D5
SMBUS_SMC_BSA_SCL	SMB_55S	SMB	SMBUS_SMC_BSA_SCL 47C2
SMBUS_SMC_BSA_SDA	SMB_55S	SMB	SMBUS_SMC_BSA_SDA 47C2
SMBUS_SMC_MGMT_SCL	SMB_55S	SMB	SMBUS_SMC_MGMT_SCL 47B2
SMBUS_SMC_MGMT_SDA	SMB_55S	SMB	SMBUS_SMC_MGMT_SDA 47B2

FireWire & SMC Constraints

SYNC_MASTER=WFERRY SYNC_DATE=06/12/2006

APPLE INC.

SIZE	DRAWING NUMBER	REV.
D	051-7455	01

SCALE NONE SHT 76 OF 76