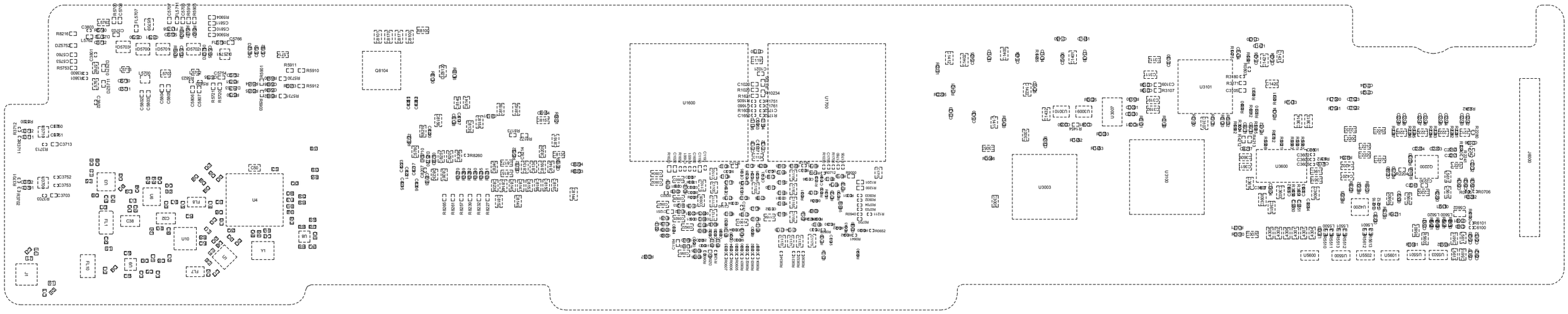
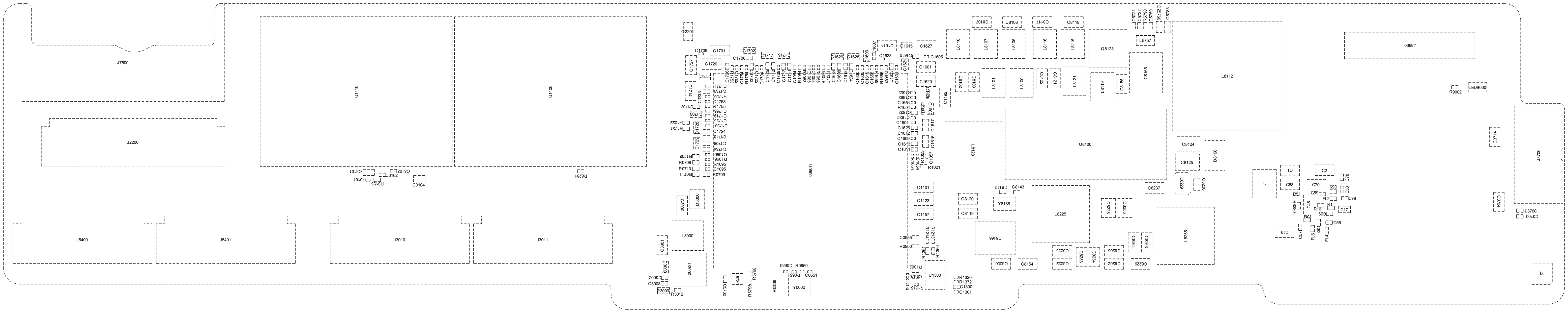
820-2996-11-BOT MLB 位置圖 0908



820-2996-11-TOP MLB 位置圖 0908



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

REV	ECN	DESCRIPTION OF REVISION	CK APPD / DATE
10	0001231154	ENGINEERING RELEASED	2011-09-06

J2 MLB - DVT OK2FAB

LAST_MODIFIED=Tue Sep 6 17:35:11 2011

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27	57	IO FLEX: DOCK COMPONENTS	JOE	01/19/2011
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29	59	IO FLEX: B2B CONNECTOR	JOE	01/19/2011
30	60	CONNECTOR: X26	JOE	01/19/2011
31	61	WLAN BB & POWER	X26_WIFI_MIKE_BT	09/01/2011
32	62	WLAN 2.4GHZ AND ANT	X26_WIFI_MIKE_BT	09/01/2011
33	63	WLAN 5GHZ AND TEST POINTS	X26_WIFI_MIKE_BT	09/01/2011
34	75	POWER: BATTERY CONNECTOR	MADHAVI	01/13/2011
35	80	POWER ALIASES	MADHAVI	01/13/2011
36	81	POWER: AMELIA PMU	MADHAVI	01/13/2011
37	82	POWER: AMELIA PMU	MLB	01/14/2011
38	83	POWER: AMELIA VSS	MADHAVI	01/13/2011
39	90	DEBUG AND MISC	ALEX	10/04/2010
40	93	FCT/ICT TEST/BRACKETS	ALEX	10/04/2010
41	150	CONSTRAINTS: MLB RULES	MIKE	01/21/2011
42	151	CONSTRAINTS: LOW SPEED BUS	MIKE	01/21/2011
43	152	CONSTRAINTS: DISPLAY/AUDIO	MIKE	01/21/2011
44	153	CONSTRAINTS: DDR/FMI	MIKE	01/21/2011
45	154	CONSTRAINTS: POWER / GND	MIKE	01/21/2011
46	155	CONSTRAINTS: DEBUG	MIKE	01/21/2011
47	156	FUNC TEST POINTS	MIKE	01/21/2011
48	157	FUNC TEST POINTS	MIKE	01/21/2011

DRAWING
DRAWING
MLB
Schematic / PCB #'s

SYNC_MASTER=MIKE SYNC_DATE=NA

DRAWING TITLE
SCH,J2,MLB

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H4G

DUAL-CORE ARM CORTEX-A9 W/ SMP 950 MHZ

GPU
QUAD-CORE IMG SGX543-MP2

AUDIO
AE2
ARM A5 CPU

Z2
CSA 31

Z1
CSA 31

GROUNDHOG
CSA 30

LPDDR2
1 GBYTE
4X32-BIT
400MHZ/800MB/S

DISPLAY/
TOUCH PANEL
RESOLUTION: 2048X1536
BACKLIGHT

PMU
AMELIA
I2C 8'H78
CSA 81,82

BATTERY
CSA 75

SPI1
EDP
UART5
DWI
I2C0
I2C1
I2C2
FMI0 FMI1
FMI2 FMI3

HALL EFF
BUTTON FLEX

PROX SENSOR
I2C 8'H58
SENSOR PANEL

COMPASS
I2C 8'H1C
SENSOR PANEL

GYRO
I2C 8'HD0
SENSOR PANEL

ACCELEROMETER
I2C 8'H32
SENSOR PANEL

ALS
I2C 8'H72
VGA FLEX

NAND FLASH
PPN1.0
CSA 14

NAND FLASH
PPN1.0
CSA 14

ISP_I2C1
MIPI1C
ISP_I2C0
MIPI0C

FF CAMERA
VGA FLEX

REAR CAMERA
VA5/8 FLEX

HSIC1_1
UART3
UART6

MIMO
WIFI/BT
BT_I2S
CSA 61-64

WIFI ANT 1

WIFI/BT ANT 2

HSIC0_1
UART1
SPI2

X26
CELLULAR/GPS
HSIC1
USART
IPC
CSA 60

PRIMARY CELLULAR ANT

DIVERSITY CELLULAR ANT

GPS ANT

USB2.0
UART0
DISPLAYPORT
VIDEO DAC

AMP

30-PIN
DOCK
CSA 57

I2S2
I2S0
I2S3

AUDIO CODEC
L63B
VSP
ASP
XSP
LINEOUT
I2C 8'H94
CSA 36

AMP

AMP

SPEAKER

MIC

MUX
US/CHINA
I2C 8'H76

EXT MIC

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BLOCK DIAGRAM: SYSTEM

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Page Notes

Power aliases required by this page:
(NONE)

Signal aliases required by this page:
(NONE)

BOM options provided by this page:

ALL AVAIL BOM OPTIONS

COMMON
ALTERNATE

16GB_PROD
32GB_PROD
64GB_PROD
128GB_PROD

DEVELOPMENT_JTAG
DEVELOPMENT_JTAG_TAP
JTAG_DAP

SPEAKER
INTERNAL_MIC

NAND_IO_1V8
NAND_IO=3V3

SNOTE
DEV
MLB
J2

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

BARCODE LABEL/EEEE CODES

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-7691	1	EEEE FOR 639-2352 (J1 16G)	EEEE_DNKT	CRITICAL	EEEE_J1_16G
825-7691	1	EEEE FOR 639-2058 (J1 32G)	EEEE_DM2N	CRITICAL	EEEE_J1_32G
825-7691	1	EEEE FOR 639-2059 (J1 64G)	EEEE_DM2P	CRITICAL	EEEE_J1_64G
825-7691	1	EEEE FOR 639-2353 (J2 16G)	EEEE_DNKV	CRITICAL	EEEE_J2_16G
825-7691	1	EEEE FOR 639-1572 (J2 32G)	EEEE_DHWV	CRITICAL	EEEE_J2_32G
825-7691	1	EEEE FOR 639-1871 (J2 64G)	EEEE_DKQL	CRITICAL	EEEE_J2_64G
825-7691	1	EEEE FOR 639-1870 (J2 128G)	EEEE_DKQK	CRITICAL	EEEE_J2_128G
825-7691	1	EEEE FOR 639-2844 (J2A 16G)	EEEE_DRJQ	CRITICAL	EEEE_J2A_16G
825-7691	1	EEEE FOR 639-2826 (J2A 32G)	EEEE_DRF6	CRITICAL	EEEE_J2A_32G
825-7691	1	EEEE FOR 639-2827 (J2A 64G)	EEEE_DRF5	CRITICAL	EEEE_J2A_64G

MECHANICAL PARTS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-2105	1	FENCE,NAND,TOP,MLB,J2	PD_FENCE_NAND	CRITICAL	
806-1857	1	FENCE,LARGE,TOP,MLB,J2	PD_FENCE_LARGE	CRITICAL	
806-2349	1	FENCE,SMALLER,TOP,MLB,J2	PD_FENCE_SMALL	CRITICAL	
806-1860	1	FENCE,1,BTM,MLB,J2	PD_FENCE_BTM1	CRITICAL	
806-1865	1	FENCE,2,BTM,MLB,J2	PD_FENCE_BTM2	CRITICAL	
806-2352	1	FENCE,SMALLER,BTM,MLB,J2	PD_FENCE_BTM3	CRITICAL	

SCH AND BOARD P/N

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-8773	1	SCH,MLB,J2	SCH1	CRITICAL	?
820-2996	1	PCBF,MLB,J2	PCB1	CRITICAL	?
085-3058	1	DEV BOM,MLB,J2	DEV1		?

SOC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S0533	1	IC,SOC,H4G,FCBGA1225	U0600	CRITICAL	?

PMU

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S0561	1	IC,PMU,AMELIA,D1974AB	U8100	CRITICAL	?

SDRAM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
333S0579	2	SDRAM,LPDDR2,512MB,SAMSUNG 46NM	U1600,U1700	CRITICAL	?

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
333S0580	333S0579		U1600,U1700	LPDDR2,HYNIX 44NM
333S0581	333S0579		U1600,U1700	LPDDR2,ELPIDA 45NM

NAND

16GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0781	1	HYNIX 26NM PPN1.0 16GB	U1400	CRITICAL	16GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0804	335S0781	16GB_PROD	U1400	TOSHIBA 24NM PPN1.0

32GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0781	2	HYNIX 26NM PPN1.0 16GB	U1400,U1410	CRITICAL	32GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0804	335S0781	32GB_PROD	U1400,U1410	TOSHIBA 24NM PPN1.0

64GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0782	2	HYNIX 26NM PPN1.0 32GB	U1400,U1410	CRITICAL	64GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0805	335S0782	64GB_PROD	U1400,U1410	TOSHIBA 24NM PPN1.0

128GB FLASH CONFIGURATIONS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S0814	2	HYNIX 26NM PPN1.0 64GB	U1400,U1410	CRITICAL	128GB_PROD

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S0806	335S0814	128GB_PROD	U1400,U1410	TOSHIBA 24NM PPN1.0

SYNC MASTER=MIKE SYNC DATE=N/A

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BOM TABLES

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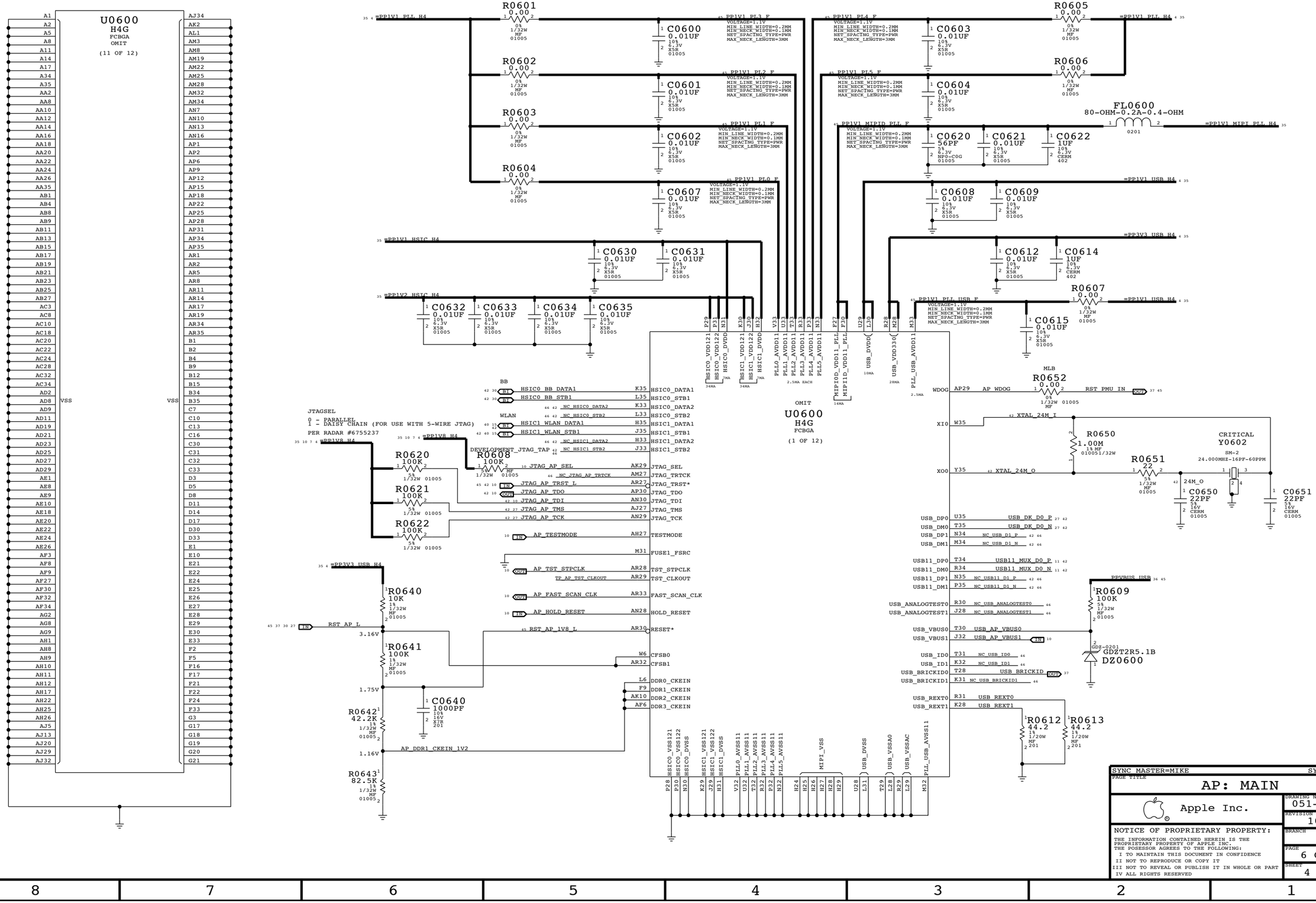
U0600
H4G
FCBGA
OMIT
(11 OF 12)
VSS
R0601 0.00
R0602 0.00
R0603 0.00
R0604 0.00
R0605 0.00
R0606 0.00
R0607 0.00
C0600 0.01UF
C0601 0.01UF
C0602 0.01UF
C0603 0.01UF
C0604 0.01UF
C0607 0.01UF
C0608 0.01UF
C0609 0.01UF
C0615 0.01UF
C0620 56PF
C0621 0.01UF
C0622 1UF
C0630 0.01UF
C0631 0.01UF
C0632 0.01UF
C0633 0.01UF
C0634 0.01UF
C0635 0.01UF
C0612 0.01UF
C0614 1UF
FL0600 80-OHM-0.2A-0.4-OHM
=PP1V1_PLL_H4
=PP1V1_MIPI_PLL_H4
=PP1V1_USB_H4
=PP3V3_USB_H4
=PP1V1_HSIC_H4
=PP1V2_HSIC_H4
PP1V1_PL0_F
PP1V1_PL1_F
PP1V1_PL2_F
PP1V1_PL3_F
PP1V1_PL4_F
PP1V1_PL5_F
PP1V1_MIPID_PLL_F
PP1V1_PLL_USB_F
VOLTAGE=1.1V
MIN_LINE_WIDTH=0.2MM
MIN_NECK_WIDTH=0.1MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3MM
HSIC0_VDD121
HSIC0_VDD122
HSIC0_DVDD
HSIC1_VDD121
HSIC1_VDD122
HSIC1_DVDD
PLL0_AVDD11
PLL1_AVDD11
PLL2_AVDD11
PLL3_AVDD11
PLL4_AVDD11
PLL5_AVDD11
MIPI0D_VDD11_PLL
MIPI1D_VDD11_PLL
USB_DVDD
USB_VDD330
PLL_USB_AVDD11
2.5MA EACH
34MA
14MA
10MA
28MA
2.5MA
JTAGSEL
0 - PARALLEL
1 - DAISY CHAIN (FOR USE WITH 5-WIRE JTAG)
PER RADAR #6755237
DEVELOPMENT_JTAG_TAP
R0620 100K
R0621 100K
R0622 100K
R0608 100K
R0640 10K
R0641 100K
R0642 42.2K
R0643 82.5K
C0640 1000PF
RST_AP_L
AP_DDR1_CKEIN_1V2
BB
WLAN
HSIC0_BB_DATA1
HSIC0_BB_STB1
HSIC1_WLAN_DATA1
HSIC1_WLAN_STB1
JTAG_AP_SEL
JTAG_AP_TRST_L
JTAG_AP_TDO
JTAG_AP_TDI
JTAG_AP_TMS
JTAG_AP_TCK
AP_TESTMODE
AP_TST_STPCLK
AP_FAST_SCAN_CLK
AP_HOLD_RESET
RST_AP_1V8_L
HSIC0_DATA1
HSIC0_STB1
HSIC0_DATA2
HSIC0_STB2
HSIC1_DATA1
HSIC1_STB1
HSIC1_DATA2
HSIC1_STB2
JTAG_SEL
JTAG_TRTCK
JTAG_TRST*
JTAG_TDO
JTAG_TDI
JTAG_TMS
JTAG_TCK
TESTMODE
FUSE1_FSRC
TST_STPCLK
TST_CLKOUT
FAST_SCAN_CLK
HOLD_RESET
RESET*
CFSB0
CFSB1
DDR0_CKEIN
DDR1_CKEIN
DDR2_CKEIN
DDR3_CKEIN
HSIC0_VSS121
HSIC0_VSS122
HSIC0_DVSS
HSIC1_VSS121
HSIC1_VSS122
HSIC1_DVSS
PLL0_AVSS11
PLL1_AVSS11
PLL2_AVSS11
PLL3_AVSS11
PLL4_AVSS11
PLL5_AVSS11
MIPI_VSS
USB_DVSS
USB_VSSA0
USB_VSSAC
PLL_USB_AVSS11
WDOG
AP_WDOG
RST_PMU_IN
MLB
R0652 0.00
XI0
XTAL_24M_I
XO0
XTAL_24M_O
R0650 1.00M
R0651 22
CRITICAL
Y0602
SM-2
24.000MHZ-16PF-60PPM
C0650 22PF
C0651 22PF
USB_DP0
USB_DM0
USB_DP1
USB_DM1
USB_DK_D0_P
USB_DK_D0_N
NC_USB_D1_P
NC_USB_D1_N
USB11_DP0
USB11_DM0
USB11_DP1
USB11_DM1
USB11_MUX_D0_P
USB11_MUX_D0_N
NC_USB11_D1_P
NC_USB11_D1_N
USB_ANALOGTEST0
USB_ANALOGTEST1
NC_USB_ANALOGTEST0
NC_USB_ANALOGTEST1
USB_VBUS0
USB_VBUS1
USB_AP_VBUS0
USB_AP_VBUS1
USB_ID0
USB_ID1
NC_USB_ID0
NC_USB_ID1
USB_BRICKID0
USB_BRICKID1
USB_BRICKID
NC_USB_BRICKID1
USB_REXT0
USB_REXT1
PPVBUS_USB
R0609 100K
GDZT2R5.1B
DZ0600
R0612 44.2
R0613 44.2
SYNC_MASTER=MIKE
SYNC_DATE=N/A
PAGE TITLE
AP: MAIN
Apple Inc.
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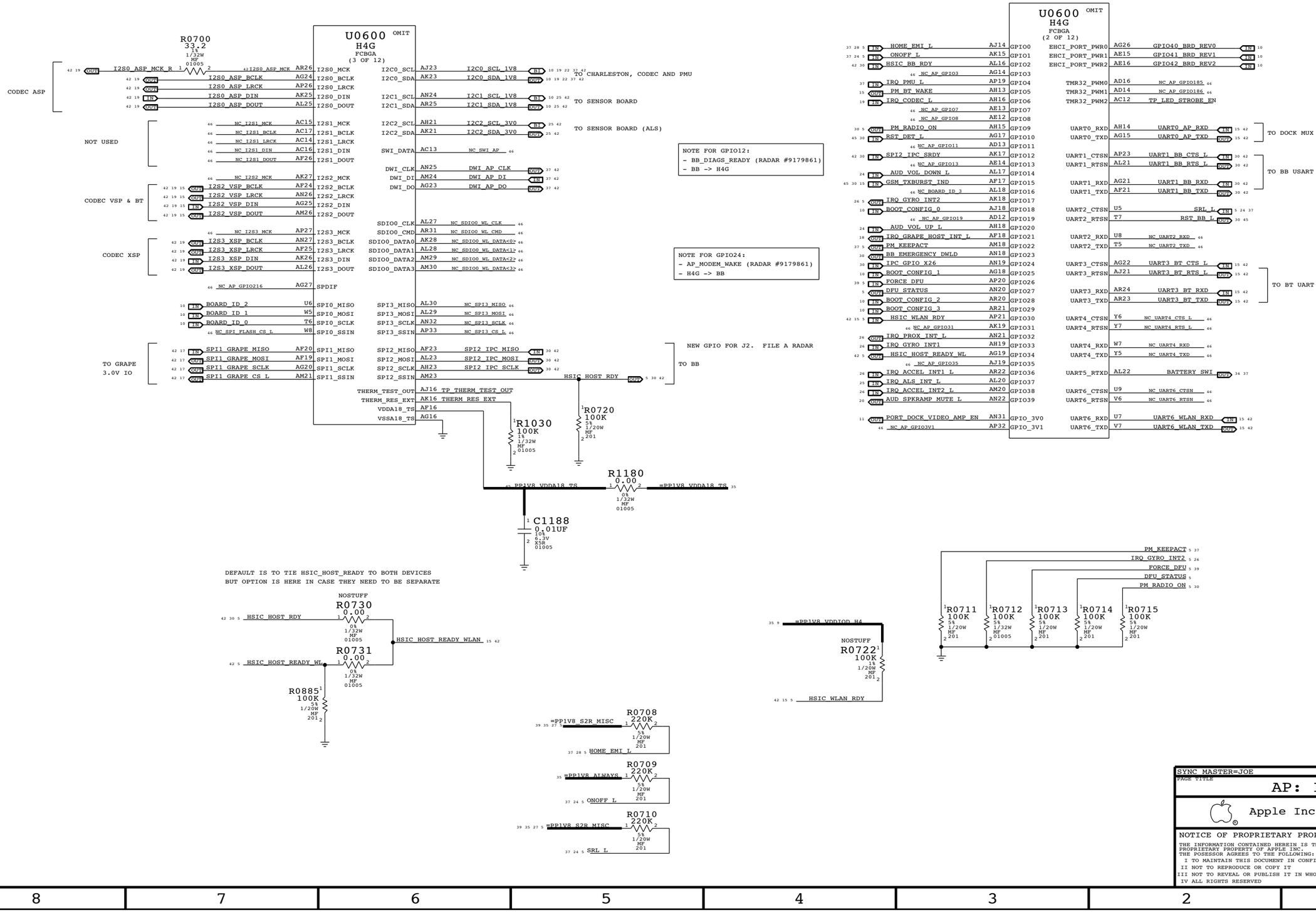
U0600 OMIT
H4G
FCBGA
(3 OF 12)
R0700 33.2 1% 1/32W MF 01005
I2S0_ASP_MCK_R
CODEC ASP
I2S0_ASP_BCLK
I2S0_ASP_LRCK
I2S0_ASP_DIN
I2S0_ASP_DOUT
NOT USED
NC_I2S1_MCK
NC_I2S1_BCLK
NC_I2S1_LRCK
NC_I2S1_DIN
NC_I2S1_DOUT
CODEC VSP & BT
I2S2_VSP_BCLK
I2S2_VSP_LRCK
I2S2_VSP_DIN
I2S2_VSP_DOUT
CODEC XSP
NC_I2S3_MCK
I2S3_XSP_BCLK
I2S3_XSP_LRCK
I2S3_XSP_DIN
I2S3_XSP_DOUT
NC_AP_GPIO216
BOARD_ID_2
BOARD_ID_1
BOARD_ID_0
NC_SPI_FLASH_CS_L
TO GRAPE 3.0V IO
SPI1_GRAPE_MISO
SPI1_GRAPE_MOSI
SPI1_GRAPE_SCLK
SPI1_GRAPE_CS_L
I2S0_MCK
I2S0_BCLK
I2S0_LRCK
I2S0_DIN
I2S0_DOUT
I2S1_MCK
I2S1_BCLK
I2S1_LRCK
I2S1_DIN
I2S1_DOUT
I2S2_MCK
I2S2_BCLK
I2S2_LRCK
I2S2_DIN
I2S2_DOUT
I2S3_MCK
I2S3_BCLK
I2S3_LRCK
I2S3_DIN
I2S3_DOUT
SPDIF
SPI0_MISO
SPI0_MOSI
SPI0_SCLK
SPI0_SSIN
SPI1_MISO
SPI1_MOSI
SPI1_SCLK
SPI1_SSIN
I2C0_SCL
I2C0_SDA
I2C1_SCL
I2C1_SDA
I2C2_SCL
I2C2_SDA
SWI_DATA
DWI_CLK
DWI_DI
DWI_DO
SDIO0_CLK
SDIO0_CMD
SDIO0_DATA0
SDIO0_DATA1
SDIO0_DATA2
SDIO0_DATA3
SPI3_MISO
SPI3_MOSI
SPI3_SCLK
SPI3_SSIN
SPI2_MISO
SPI2_MOSI
SPI2_SCLK
SPI2_SSIN
THERM_TEST_OUT
THERM_RES_EXT
VDDA18_TS
VSSA18_TS
I2C0_SCL_1V8
I2C0_SDA_1V8
I2C1_SCL_1V8
I2C1_SDA_1V8
I2C2_SCL_3V0
I2C2_SDA_3V0
NC_SWI_AP
DWI_AP_CLK
DWI_AP_DI
DWI_AP_DO
NC_SDIO0_WL_CLK
NC_SDIO0_WL_CMD
NC_SDIO0_WL_DATA<0>
NC_SDIO0_WL_DATA<1>
NC_SDIO0_WL_DATA<2>
NC_SDIO0_WL_DATA<3>
NC_SPI3_MISO
NC_SPI3_MOSI
NC_SPI3_SCLK
NC_SPI3_CS_L
SPI2_IPC_MISO
SPI2_IPC_MOSI
SPI2_IPC_SCLK
HSIC_HOST_RDY
TP_THERM_TEST_OUT
THERM_RES_EXT
TO CHARLESTON, CODEC AND PMU
TO SENSOR BOARD
TO SENSOR BOARD (ALS)
NOTE FOR GPIO12:
- BB_DIAGS_READY (RADAR #9179861)
- BB -> H4G
NOTE FOR GPIO24:
- AP_MODEM_WAKE (RADAR #9179861)
- H4G -> BB
NEW GPIO FOR J2. FILE A RADAR
TO BB
R1030 100K 1% 1/32W MF 01005
R0720 100K 5% 1/20W MF 201
R1180 0.00 0% 1/32W MF 01005
C1188 0.01UF 10% 6.3V X5R 01005
=PP1V8_VDDA18_TS
DEFAULT IS TO TIE HSIC_HOST_READY TO BOTH DEVICES
BUT OPTION IS HERE IN CASE THEY NEED TO BE SEPARATE
NOSTUFF
R0730 0.00 0% 1/32W MF 01005
R0731 0.00 0% 1/32W MF 01005
R0885 100K 5% 1/20W MF 201
HSIC_HOST_RDY
HSIC_HOST_READY_WLAN
HSIC_HOST_READY_WL
U0600 OMIT
H4G
FCBGA
(2 OF 12)
HOME_EMI_L
ONOFF_L
HSIC_BB_RDY
IRQ_PMU_L
PM_BT_WAKE
IRQ_CODEC_L
PM_RADIO_ON
RST_DET_L
SPI2_IPC_SRDY
AUD_VOL_DOWN_L
GSM_TXBURST_IND
IRQ_GYRO_INT2
BOOT_CONFIG_0
AUD_VOL_UP_L
IRQ_GRAPE_HOST_INT_L
PM_KEEPACT
BB_EMERGENCY_DWLD
IPC_GPIO_X26
BOOT_CONFIG_1
FORCE_DFU
DFU_STATUS
BOOT_CONFIG_2
BOOT_CONFIG_3
HSIC_WLAN_RDY
IRQ_PROX_INT_L
IRQ_GYRO_INT1
HSIC_HOST_READY_WL
IRQ_ACCEL_INT1_L
IRQ_ALS_INT_L
IRQ_ACCEL_INT2_L
AUD_SPKRAMP_MUTE_L
PORT_DOCK_VIDEO_AMP_EN
NC_AP_GPIO3V1
GPIO0
GPIO1
GPIO2
GPIO3
GPIO4
GPIO5
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO11
GPIO12
GPIO13
GPIO14
GPIO15
GPIO16
GPIO17
GPIO18
GPIO19
GPIO20
GPIO21
GPIO22
GPIO23
GPIO24
GPIO25
GPIO26
GPIO27
GPIO28
GPIO29
GPIO30
GPIO31
GPIO32
GPIO33
GPIO34
GPIO35
GPIO36
GPIO37
GPIO38
GPIO39
GPIO_3V0
GPIO_3V1
EHCI_PORT_PWR0
EHCI_PORT_PWR1
EHCI_PORT_PWR2
TMR32_PWM0
TMR32_PWM1
TMR32_PWM2
UART0_RXD
UART0_TXD
UART1_CTSN
UART1_RTSN
UART1_RXD
UART1_TXD
UART2_CTSN
UART2_RTSN
UART2_RXD
UART2_TXD
UART3_CTSN
UART3_RTSN
UART3_RXD
UART3_TXD
UART4_CTSN
UART4_RTSN
UART4_RXD
UART4_TXD
UART5_RTXD
UART6_CTSN
UART6_RTSN
UART6_RXD
UART6_TXD
NC_AP_GPIO185
NC_AP_GPIO186
TP_LED_STROBE_EN
UART0_AP_RXD
UART0_AP_TXD
UART1_BB_CTS_L
UART1_BB_RTS_L
UART1_BB_RXD
UART1_BB_TXD
SRL_L
RST_BB_L
NC_UART2_RXD
NC_UART2_TXD
UART3_BT_CTS_L
UART3_BT_RTS_L
UART3_BT_RXD
UART3_BT_TXD
NC_UART4_CTS_L
NC_UART4_RTS_L
NC_UART4_RXD
NC_UART4_TXD
BATTERY_SWI
NC_UART6_CTSN
NC_UART6_RTSN
UART6_WLAN_RXD
UART6_WLAN_TXD
TO DOCK MUX
TO BB USART
TO BT UART
PM_KEEPACT
IRQ_GYRO_INT2
FORCE_DFU
DFU_STATUS
PM_RADIO_ON
R0711 100K 5% 1/20W MF 201
R0712 100K 5% 1/32W MF 01005
R0713 100K 5% 1/20W MF 201
R0714 100K 5% 1/20W MF 201
R0715 100K 5% 1/20W MF 201
=PP1V8_VDDIOD_H4
NOSTUFF
R0722 100K 1% 1/20W MF 201
HSIC_WLAN_RDY
=PP1V8_S2R_MISC
HOME_EMI_L
=PP1V8_ALWAYS
ONOFF_L
SRL_L
R0708 220K 5% 1/20W MF 201
R0709 220K 5% 1/20W MF 201
R0710 220K 5% 1/20W MF 201
SYNC_MASTER=JOE
SYNC_DATE=N/A
PAGE TITLE
AP: I/Os
Apple Inc.
DRAWING NUMBER 051-8773
SIZE D
REVISION 10.0.0
BRANCH
PAGE 7 OF 157
SHEET 5 OF 48
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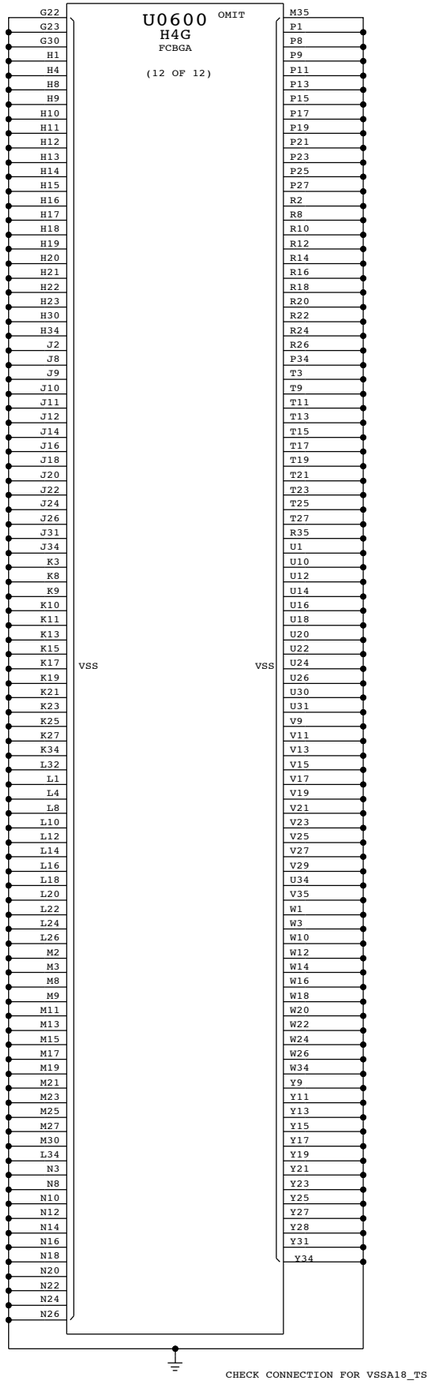

CHECK CONNECTION FOR VSSA18_TS

45 9 6 PPIO_NAND_H4

R0832 100K 5% 1/32W MF 01005
R0836 100K 5% 1/32W MF 01005
R0831 100K 5% 1/32W MF 01005
R0834 100K 5% 1/32W MF 01005

44 12 6 FMI1_CE0_L
44 12 6 FMI1_CE1_L
44 12 6 FMI0_CE0_L
44 12 6 FMI0_CE1_L

45 9 6 PPIO_NAND_H4

NOSTUFF R0800 100K 5% 1/32W MF 01005
NOSTUFF R0801 100K 5% 1/32W MF 01005
NOSTUFF R0802 100K 5% 1/32W MF 01005
NOSTUFF R0803 100K 5% 1/32W MF 01005

44 12 6 FMI0_WE_L
44 12 6 FMI0_RE_N
44 12 6 FMI1_WE_L
44 12 6 FMI1_RE_N

44 12 6 FMI0_ALE
44 12 6 FMI0_CLE
44 12 6 FMI1_ALE
44 12 6 FMI1_CLE

NOSTUFF R0810 100K 5% 1/32W MF 01005
NOSTUFF R0811 100K 5% 1/32W MF 01005
NOSTUFF R0812 100K 5% 1/32W MF 01005
NOSTUFF R0813 100K 5% 1/32W MF 01005

35 28 =PP3V0_IO_MISC

R0804 100K 5% 1/32W MF 01005

FMI2-3_CEN IS 3.0V

U0600 OMIT
H4G
FCBGA
(4 OF 12)

44 12 6	OUTPUT	FMI0_CE0_L	AH31	FMI0_CEN0	FMI2_CEN0	AE35	SPK_ID
44 12 6	OUTPUT	FMI0_CE1_L	AF31	FMI0_CEN1	FMI2_CEN1	AB28	NC_FMI2_CE1_L
46		NC_FMI0_CE2_L	AD28	FMI0_CEN2	FMI2_CEN2	AA28	NC_FMI2_CE2_L
46		NC_FMI0_CE3_L	AG29	FMI0_CEN3	FMI2_CEN3	AB30	NC_FMI2_CE3_L
46		NC_FMI0_CE4_L	Y29	FMI0_CEN4	FMI2_CEN4	AE28	PM_LCDVDD_PWREN
46		NC_FMI0_CE5_L	AH28	FMI0_CEN5	FMI2_CEN5	AF28	NC_FMI2_CE5_L
46		NC_FMI0_CE6_L	AG28	FMI0_CEN6	FMI2_CEN6	AA29	RST_GRAPE_L
46		NC_FMI0_CE7_L	AM31	FMI0_CEN7	FMI2_CEN7	AB31	GRAPE_FW_DNLD_EN_L
44 12	BI	FMI0_AD<0>	AG35	FMI0_IO0	FMI2_IO0	AC31	NC_FMI2_AD<0>
44 12	BI	FMI0_AD<1>	AF35	FMI0_IO1	FMI2_IO1	AB33	NC_FMI2_AD<1>
44 12	BI	FMI0_AD<2>	AH35	FMI0_IO2	FMI2_IO2	AC35	NC_FMI2_AD<2>
44 12	BI	FMI0_AD<3>	AH33	FMI0_IO3	FMI2_IO3	AE34	NC_FMI2_AD<3>
44 12	BI	FMI0_AD<4>	AG31	FMI0_IO4	FMI2_IO4	AD34	NC_FMI2_AD<4>
44 12	BI	FMI0_AD<5>	AG32	FMI0_IO5	FMI2_IO5	AD32	NC_FMI2_AD<5>
44 12	BI	FMI0_AD<6>	AG34	FMI0_IO6	FMI2_IO6	AD35	NC_FMI2_AD<6>
44 12	BI	FMI0_AD<7>	AH32	FMI0_IO7	FMI2_IO7	AD31	NC_FMI2_AD<7>
44 12 6	OUTPUT	FMI0_ALE	AE32	FMI0_ALE	FMI2_ALE	AB34	NC_FMI2_ALE
44 12 6	OUTPUT	FMI0_CLE	AF33	FMI0_CLE	FMI2_CLE	AB32	NC_FMI2_CLE
44 12 6	OUTPUT	FMI0_WE_L	AH34	FMI0_WEN	FMI2_WEN	AB35	NC_FMI2_WE_L
44 12 6	OUTPUT	FMI0_RE_N	AE33	FMI0_REN	FMI2_REN	AD33	NC_FMI2_RE_L
44 12	OUTPUT	FMI0_DQS_P	AG33	FMI0_DQS	FMI2_DQS	AC33	NC_FMI2_DQS
44 12 6	OUTPUT	FMI1_CE0_L	AJ33	FMI1_CEN0	FMI3_CEN0	W31	NC_FMI3_CE0_L
44 12 6	OUTPUT	FMI1_CE1_L	AN33	FMI1_CEN1	FMI3_CEN1	W28	NC_FMI3_CE1_L
46		NC_FMI1_CE2_L	AD30	FMI1_CEN2	FMI3_CEN2	W29	NC_FMI3_CE2_L
46		NC_FMI1_CE3_L	AE30	FMI1_CEN3	FMI3_CEN3	V30	NC_FMI3_CE3_L
46		NC_FMI1_CE4_L	AJ31	FMI1_CEN4	FMI3_CEN4	AG30	NC_FMI3_CE4_L
46		NC_FMI1_CE5_L	AJ30	FMI1_CEN5	FMI3_CEN5	AC30	NC_FMI3_CE5_L
46		NC_FMI1_CE6_L	AL31	FMI1_CEN6	FMI3_CEN6	AH30	NC_FMI3_CE6_L
46		NC_FMI1_CE7_L	AK31	FMI1_CEN7	FMI3_CEN7	AE31	NC_FMI3_CE7_L
44 12	BI	FMI1_AD<0>	AL32	FMI1_IO0	FMI3_IO0	AA34	NC_FMI3_AD<0>
44 12	BI	FMI1_AD<1>	AN35	FMI1_IO1	FMI3_IO1	W33	NC_FMI3_AD<1>
44 12	BI	FMI1_AD<2>	AK32	FMI1_IO2	FMI3_IO2	AA33	NC_FMI3_AD<2>
44 12	BI	FMI1_AD<3>	AK33	FMI1_IO3	FMI3_IO3	V34	NC_FMI3_AD<3>
44 12	BI	FMI1_AD<4>	AL33	FMI1_IO4	FMI3_IO4	AA30	NC_FMI3_AD<4>
44 12	BI	FMI1_AD<5>	AK34	FMI1_IO5	FMI3_IO5	V31	NC_FMI3_AD<5>
44 12	BI	FMI1_AD<6>	AM33	FMI1_IO6	FMI3_IO6	W32	NC_FMI3_AD<6>
44 12	BI	FMI1_AD<7>	AJ35	FMI1_IO7	FMI3_IO7	Y30	NC_FMI3_AD<7>
44 12 6	OUTPUT	FMI1_ALE	AN34	FMI1_ALE	FMI3_ALE	Y33	NC_FMI3_ALE
44 12 6	OUTPUT	FMI1_CLE	AK35	FMI1_CLE	FMI3_CLE	W30	NC_FMI3_CLE
44 12 6	OUTPUT	FMI1_WE_L	AM35	FMI1_WEN	FMI3_WEN	AA32	NC_FMI3_WE_L
44 12 6	OUTPUT	FMI1_RE_N	AL35	FMI1_REN	FMI3_REN	AA31	NC_FMI3_RE_L
44 12	OUTPUT	FMI1_DQS_P	AL34	FMI1_DQS	FMI3_DQS	Y32	NC_FMI3_DQS

20 SPK_ID
46 NC_FMI2_CE1_L
46 NC_FMI2_CE2_L
46 NC_FMI2_CE3_L
16 PM_LCDVDD_PWREN
45 46 NC_FMI2_CE5_L
17 45 RST_GRAPE_L
17 GRAPE_FW_DNLD_EN_L

NEW GPIO FOR J2. FILE A RADAR

CHECK WITH GRAPE ON VOLTAGE FOR THESE TWO SIGNALS

SYNC MASTER=MIKE	SYNC DATE=N/A
PAGE TITLE	AP: NAND
Apple Inc.	DRAWING NUMBER 051-8773 SIZE D
	REVISION 10.0.0
	BRANCH
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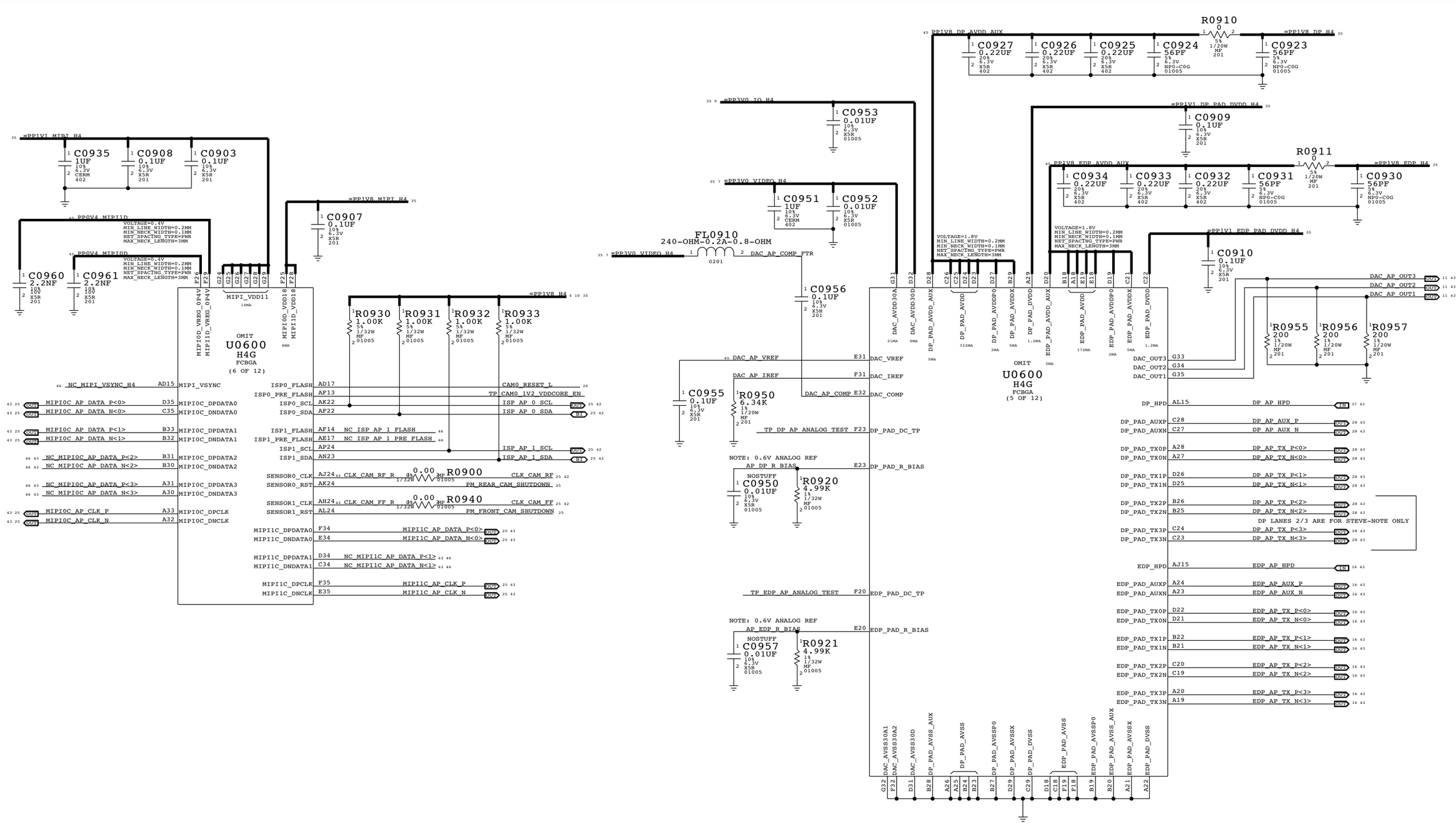

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132S0279	132S0154		C0960,C0961	RADAR:9624625

SYNC MASTER=JOE SYNC DATE=01/13/2011

PAGE TITLE

AP: TV,DP,MIPI

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

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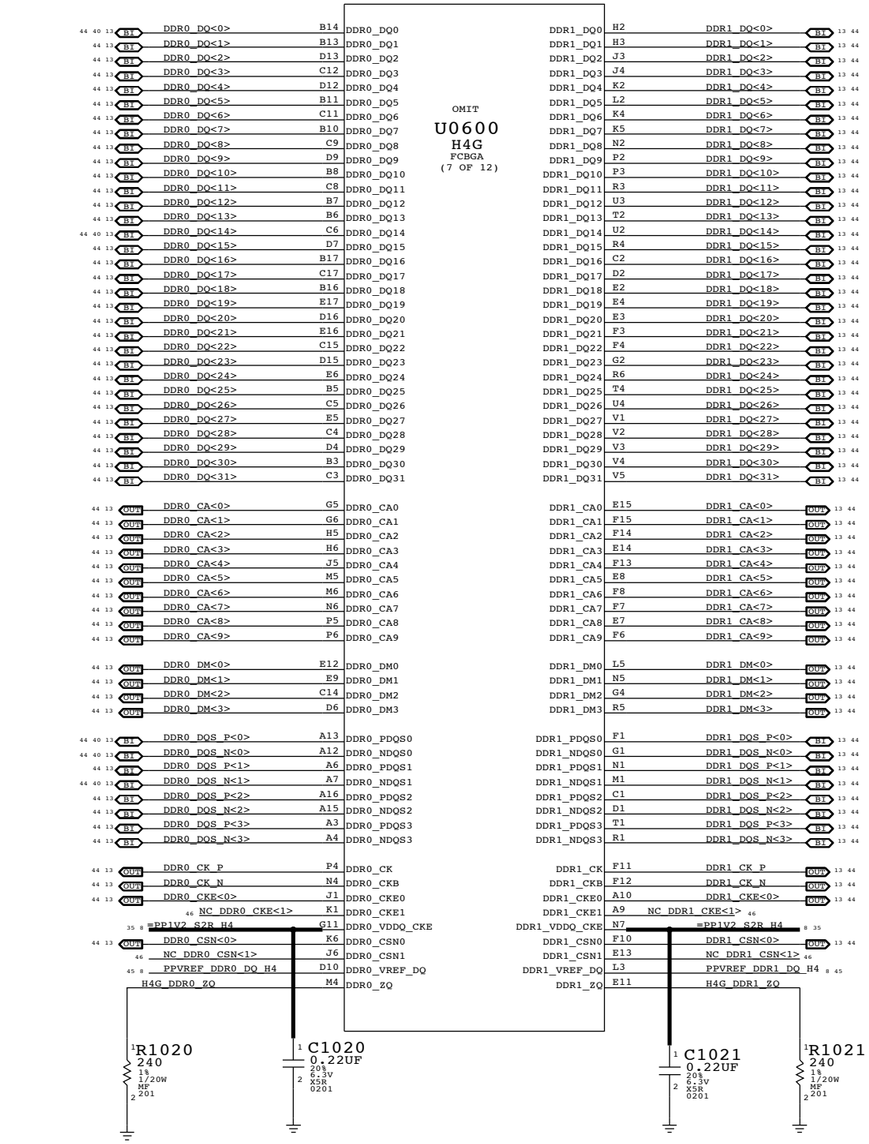

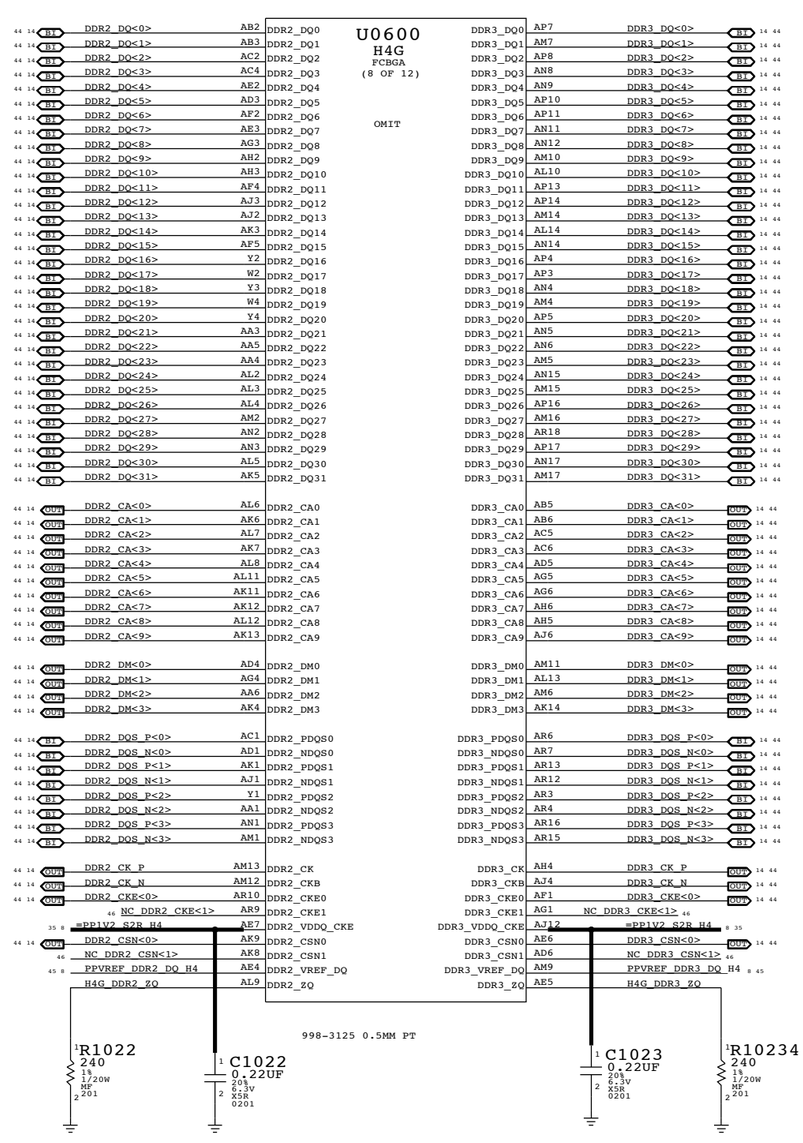

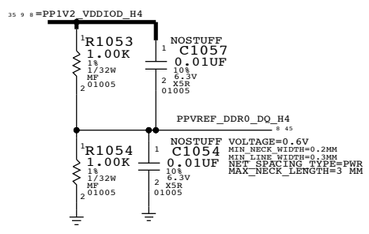

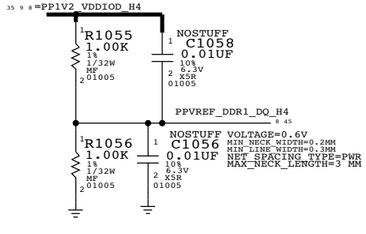

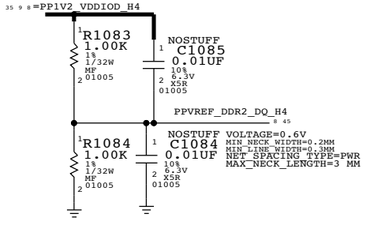

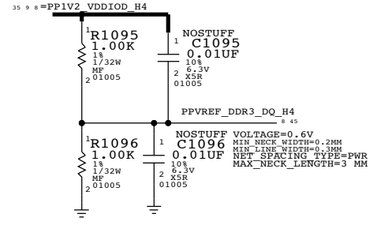

SYNC_MASTER=MIKE SYNC_DATE=N/A

PAGE TITLE

AP: DDR

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

BRANCH

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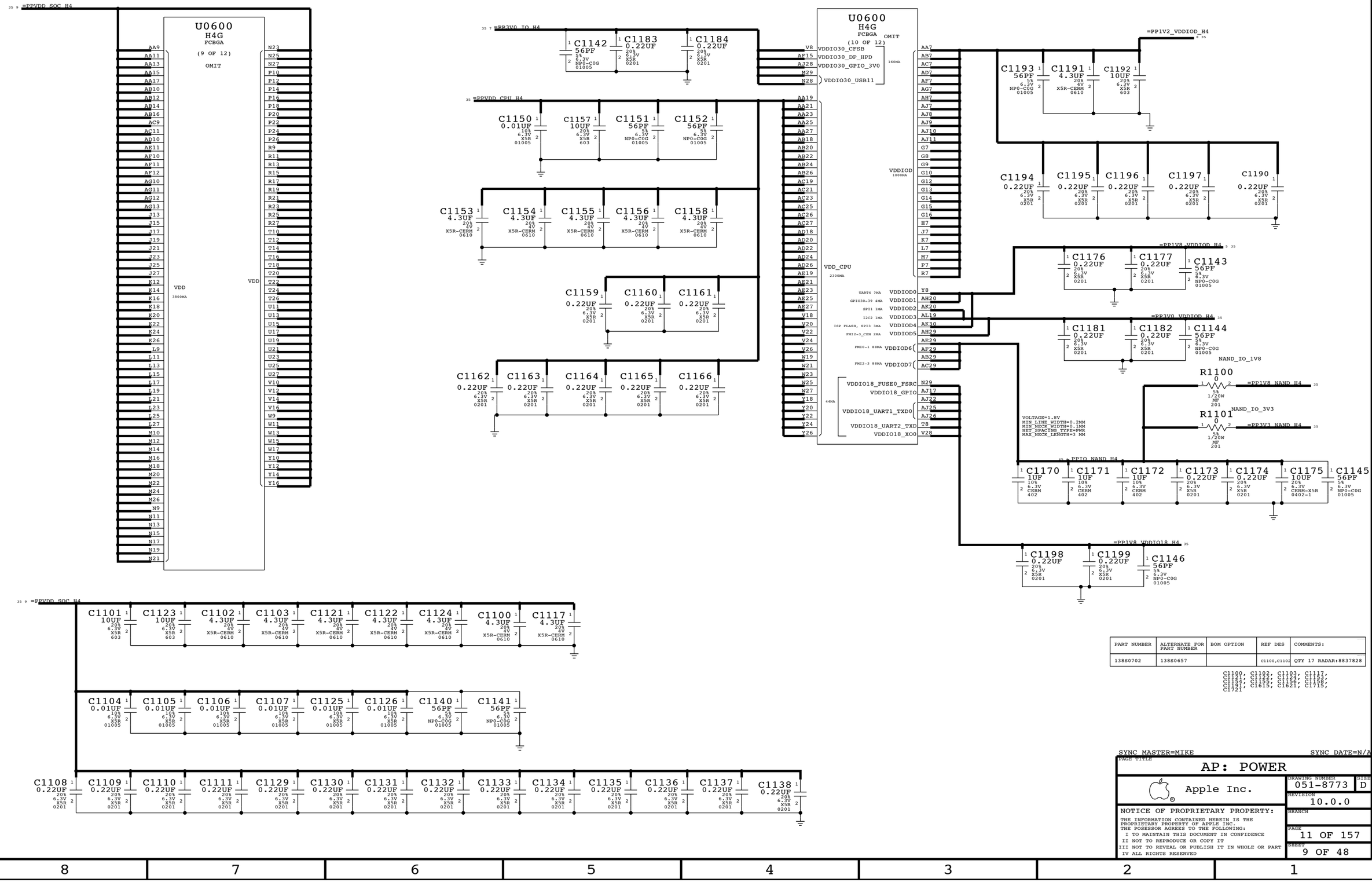

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SYNC MASTER=MIKE SYNC DATE=N/A

PAGE TITLE

AP: POWER

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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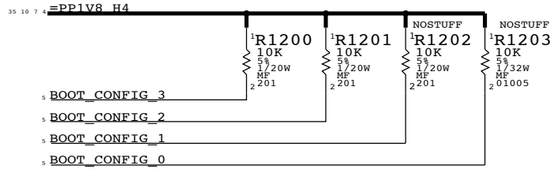
BOOT CONFIG ID

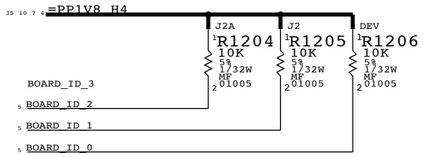


BOOT_CONFIG[3-0]	
1100	FMI0/1 2/2 CS
1101	FMI0/1 4/4 CS
1110	FMI0/1 4/4 CS WITH TEST

S/W READ FLOW

1. SET GPIO AS INPUT
2. DISABLE PU AND ENABLE PD
3. READ

BOARD ID

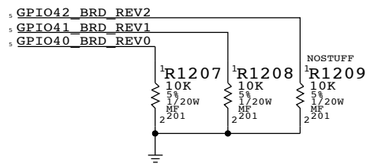


BOARD_ID[3-0]	
0000	J1 AP
0001	J1 DEV
0010	J2 AP
0011	J2 DEV
0100	J2A AP
0101	J2A DEV

S/W READ FLOW

1. SET GPIO AS INPUT
2. DISABLE PU AND ENABLE PD
3. READ

BOARD REVISION



BRD_REV[2-0]	
000	PROTO 0
001	PROTO 1 LOCAL
010	PROTO 1 CHINA
011	PROTO 2
100	EVT

S/W READ FLOW

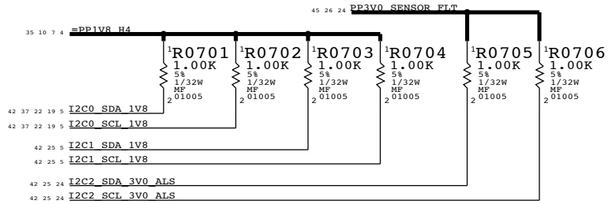
1. SET GPIO AS INPUT
2. ENABLE PU AND DISABLE PD
3. READ

FOR REFERENCE

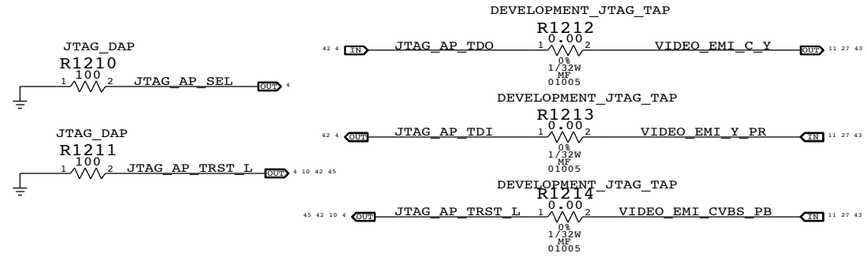
BOOT_CONFIG[3:0]

	0000	SPI0
	0001	SPI1
	0010	SPI0 W/TEST
	0011	SPI1 W/TEST
	0100	FMI0 2CS
	0101	FMI0 4CS
	0110	FMI0 4CS W/TEST
	0111	RESERVED
	1000	FMI1 2 CS
	1001	FMI1 4 CS
	1010	FMI1 4CS W/TEST
CURRENT SETTING ->	1100	FMI0/1 2/2 CS
	1101	FMI0/1 4/4 CS
	1110	FMI0/1 4/4 CS W/TEST
	1111	RESERVED

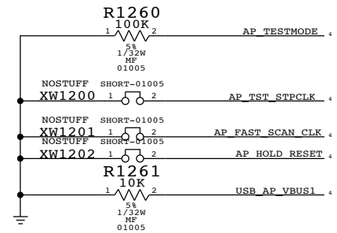
I2C PULL-UPS



JTAG



2-WIRE DAP	SCAN DUMP	PRODUCTION
DEVELOPMENT_JTAG	DEVELOPMENT_JTAG	JTAG_DAP
JTAG_DAP	DEVELOPMENT_JTAG_TAP	



SYNC_MASTER=ALEX SYNC_DATE=N/A

PAGE TITLE

AP: MISC & ALIASES

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

BRANCH

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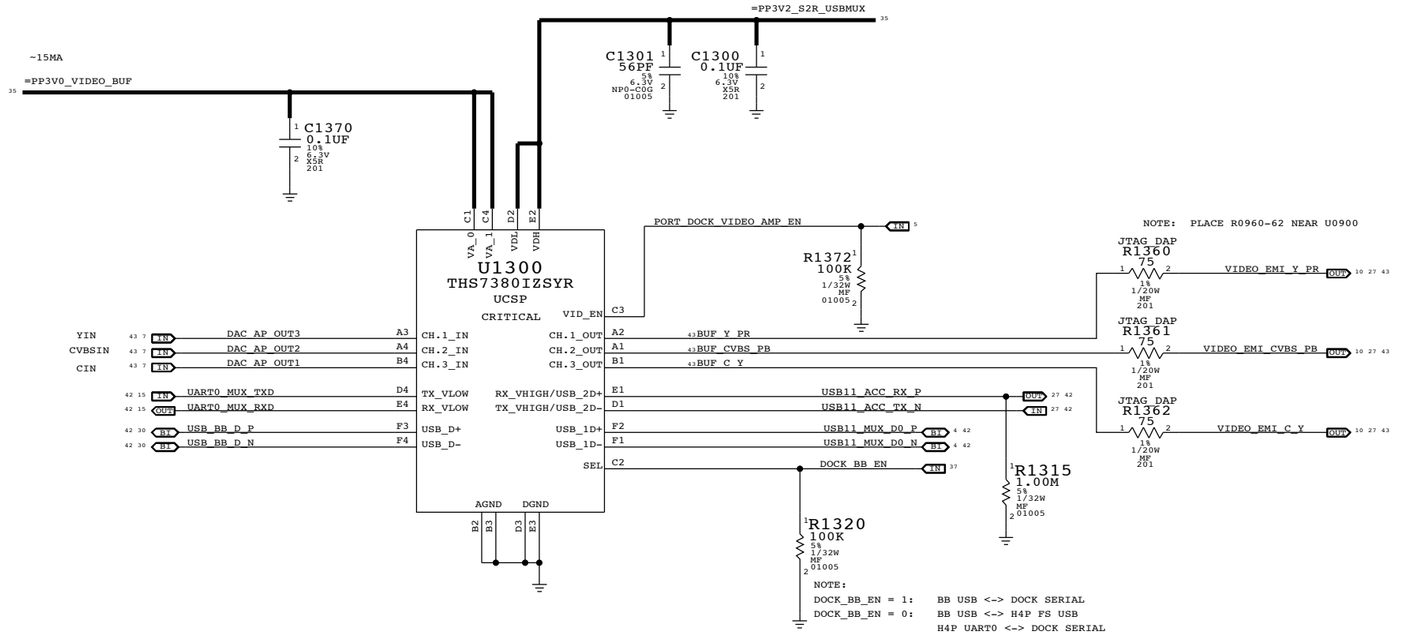
SHEET 10 OF 48



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
343S0539	343S0520		U1300	RADAR:9009078

SYNC MASTER=CHOPIN SYNC DATE=12/10/2010

PAGE TITLE

AP: VIDEO BUFFER,BB USB MUXES

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

BRANCH

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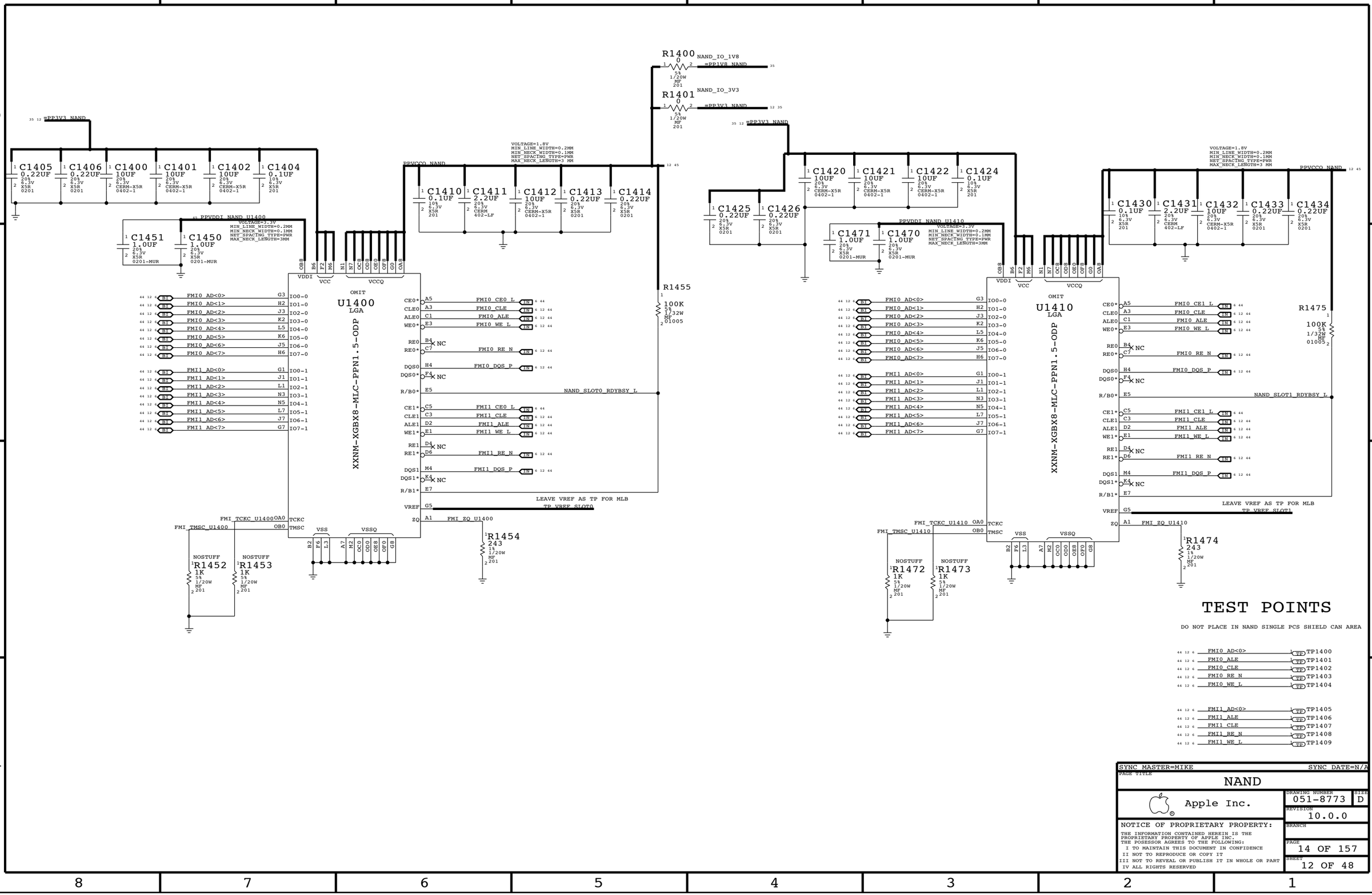

SYNC_MASTER=MIKE SYNC_DATE=N/A

PAGE TITLE

NAND

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

BRANCH

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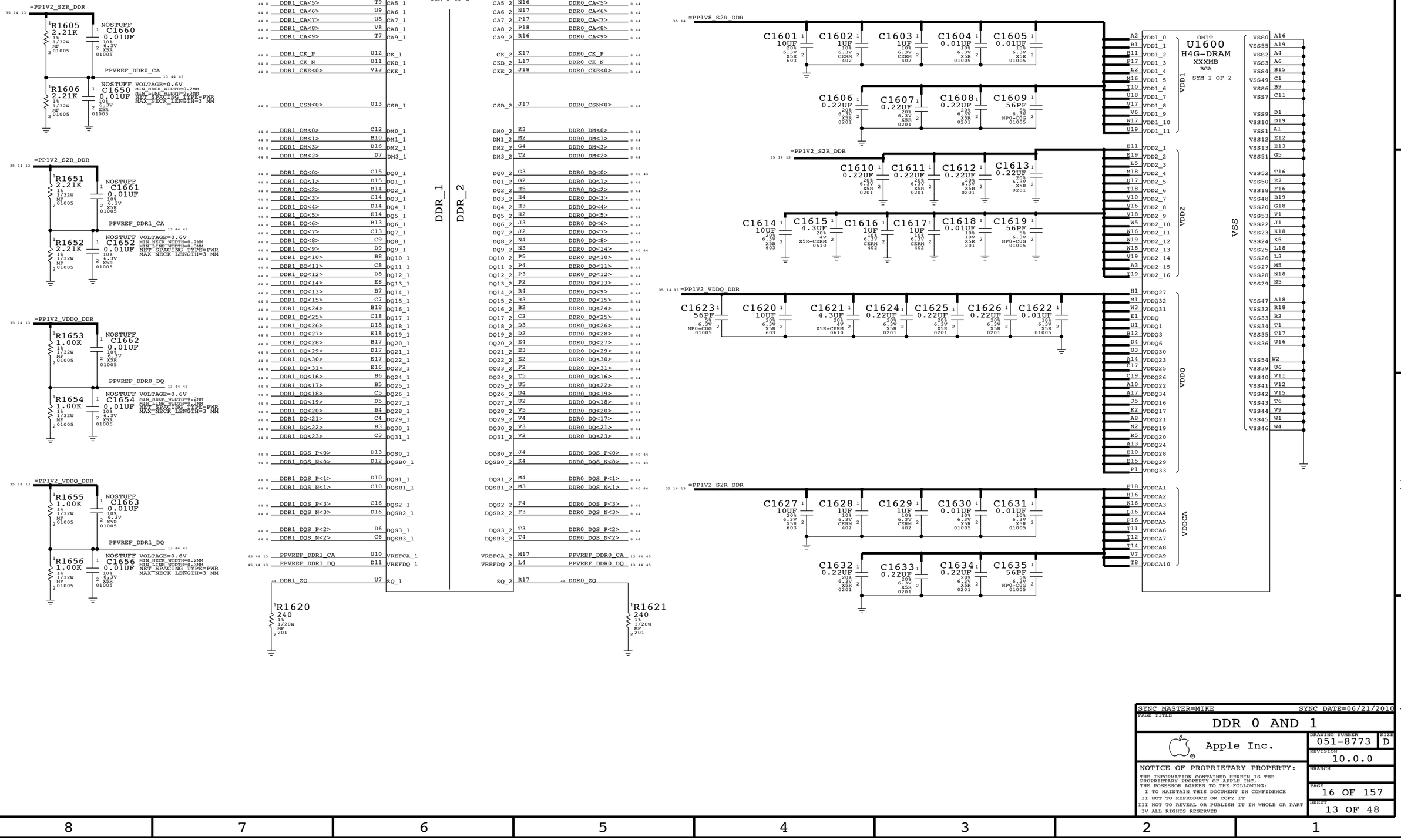
=PP1V2_S2R_DDR
R1605 2.21K 1% 1/32W MF 01005
C1660 0.01UF 10% 6.3V X5R 01005
NOSTUFF
PPVREF_DDR0_CA
R1606 2.21K 1% 1/32W MF 01005
C1650 0.01UF 10% 6.3V X5R 01005
NOSTUFF VOLTAGE=0.6V MIN_NECK_WIDTH=0.2MM MIN_LINE_WIDTH=0.3MM NET_SPACING_TYPE=PWR MAX_NECK_LENGTH=3 MM
=PP1V2_S2R_DDR
R1651 2.21K 1% 1/32W MF 01005
C1661 0.01UF 10% 6.3V X5R 01005
NOSTUFF
PPVREF_DDR1_CA
R1652 2.21K 1% 1/32W MF 01005
C1652 0.01UF 10% 6.3V X5R 01005
NOSTUFF VOLTAGE=0.6V MIN_NECK_WIDTH=0.2MM MIN_LINE_WIDTH=0.3MM NET_SPACING_TYPE=PWR MAX_NECK_LENGTH=3 MM
=PP1V2_VDDQ_DDR
R1653 1.00K 1% 1/32W MF 01005
C1662 0.01UF 10% 6.3V X5R 01005
NOSTUFF
PPVREF_DDR0_DQ
R1654 1.00K 1% 1/32W MF 01005
C1654 0.01UF 10% 6.3V X5R 01005
NOSTUFF VOLTAGE=0.6V MIN_NECK_WIDTH=0.2MM MIN_LINE_WIDTH=0.3MM NET_SPACING_TYPE=PWR MAX_NECK_LENGTH=3 MM
=PP1V2_VDDQ_DDR
R1655 1.00K 1% 1/32W MF 01005
C1663 0.01UF 10% 6.3V X5R 01005
NOSTUFF
PPVREF_DDR1_DQ
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C1656 0.01UF 10% 6.3V X5R 01005
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U1600
H4G-DRAM
XXXMB
BGA
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DDR1_CA<5> T9 CA5_1
DDR1_CA<6> U9 CA6_1
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VREFDQ_2 L4 PPVREF_DDR0_DQ
ZQ_2 R17 DDR0_ZQ
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C1606 0.22UF 20% 6.3V X5R 0201
C1607 0.22UF 20% 6.3V X5R 0201
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C1609 56PF 5% 6.3V NPO-C0G 01005
=PP1V2_S2R_DDR
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C1611 0.22UF 20% 6.3V X5R 0201
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C1614 10UF 20% 6.3V X5R 603
C1615 4.3UF 20% 4V X5R-CERM 0610
C1616 1UF 10% 6.3V CERM 402
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=PP1V2_VDDQ_DDR
C1623 56PF 5% 6.3V NPO-C0G 01005
C1620 10UF 20% 6.3V X5R 603
C1621 4.3UF 20% 4V X5R-CERM 0610
C1624 0.22UF 20% 6.3V X5R 0201
C1625 0.22UF 20% 6.3V X5R 0201
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=PP1V2_S2R_DDR
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C1635 56PF 5% 6.3V NPO-C0G 01005
OMIT
U1600
H4G-DRAM
XXXMB
BGA
SYM 2 OF 2
VDD1
VDD2
VDDQ
VDDCA
VSS
A2 VDD1_0
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B11 VDD1_2
F17 VDD1_3
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T10 VDD1_6
U18 VDD1_7
V17 VDD1_8
V6 VDD1_9
W17 VDD1_10
U19 VDD1_11
E11 VDD2_1
E19 VDD2_2
L5 VDD2_3
M18 VDD2_4
U17 VDD2_5
T18 VDD2_6
V10 VDD2_7
V16 VDD2_8
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H1 VDDQ27
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E1 VDDQ
U1 VDDQ1
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C17 VDDQ25
C19 VDDQ26
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A17 VDDQ34
J5 VDDQ16
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DDR 0 AND 1
Apple Inc.
DRAWING NUMBER 051-8773
SIZE D
REVISION 10.0.0
BRANCH
PAGE 16 OF 157
SHEET 13 OF 48
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NOSTUFF
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C1752 0.01UF 10% 6.3V X5R 01005
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C1754 0.01UF 10% 6.3V X5R 01005
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XXXMB
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R1721 240 1% 1/20W MF 201
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C1706 0.22UF 20% 6.3V X5R 0201
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=PP1V2_S2R_DDR
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=PP1V2_VDDQ_DDR
C1723 56PF 5% 6.3V NPO-C0G 01005
C1720 10UF 20% 6.3V X5R 603
C1721 4.3UF 20% 4V X5R-CERM 0610
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C1735 56PF 5% 6.3V NPO-C0G 01005
OMIT
U1700
H4G-DRAM
XXXMB
BGA
SYM 2 OF 2
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VDD2
VDDQ
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L2 VDD1_4
M16 VDD1_5
T10 VDD1_6
U18 VDD1_7
V17 VDD1_8
V6 VDD1_9
W17 VDD1_10
U19 VDD1_11
E11 VDD2_1
E19 VDD2_2
L5 VDD2_3
M18 VDD2_4
U17 VDD2_5
T18 VDD2_6
V10 VDD2_7
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W18 VDD2_13
V19 VDD2_14
A3 VDD2_15
T19 VDD2_16
H1 VDDQ27
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U1 VDDQ1
B12 VDDQ3
D4 VDDQ6
U3 VDDQ30
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C19 VDDQ26
A10 VDDQ22
A17 VDDQ34
J5 VDDQ16
K2 VDDQ17
A8 VDDQ21
N2 VDDQ19
R5 VDDQ20
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VSS50 E7
VSS18 F16
VSS48 B19
VSS20 G18
VSS53 V1
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VSS23 K18
VSS24 K5
VSS25 L18
VSS26 L3
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VSS28 N18
VSS29 N5
VSS47 A18
VSS32 R18
VSS33 R2
VSS34 T1
VSS35 T17
VSS36 U16
VSS54 W2
VSS39 U6
VSS40 V11
VSS41 V12
VSS42 V15
VSS43 T6
VSS44 V9
VSS45 W1
VSS46 W4
SYNC_MASTER=MIKE
SYNC_DATE=06/21/2010
PAGE TITLE
DDR 2 AND 3
Apple Inc.
DRAWING NUMBER 051-8773
SIZE D
REVISION 10.0.0
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WIFI ALIASES

42 40 4	HSIC1_WLAN_DATA1	MAKE_BASE=TRUE	HSIC_DATA_4330	31 33
42 40 4	HSIC1_WLAN_STB1	MAKE_BASE=TRUE	HSIC_STROBE_4330	31 33
42 5	HSIC_HOST_READY_WLAN	MAKE_BASE=TRUE	WLAN_GPIO1	31 33
42 5	HSIC_WLAN_RDY	MAKE_BASE=TRUE	HSIC_DEVICE_READY	31
45 37	RST_WLAN_L	MAKE_BASE=TRUE	WLAN_ENABLE	31 33
37	PM_WLAN_HOST_WAKE	MAKE_BASE=TRUE	WLAN_GPIO0	31 33
45 37	RST_BT_L	MAKE_BASE=TRUE	BT_RESET_N	31 33
37	PM_BT_HOST_WAKE	MAKE_BASE=TRUE	BT_HOST_WAKE	31 33
5	PM_BT_WAKE	MAKE_BASE=TRUE	BT_WAKE	31 33
42 5	UART3_BT_RXD	MAKE_BASE=TRUE	BT_UART_TXD	31 33
42 5	UART3_BT_TXD	MAKE_BASE=TRUE	BT_UART_RXD	31 33
42 5	UART3_BT_CTS_L	MAKE_BASE=TRUE	BT_UART_RTS_N	31 33
42 5	UART3_BT_RTS_L	MAKE_BASE=TRUE	BT_UART_CTS_N	31 33
42 37	CLK_32K_WLAN	MAKE_BASE=TRUE	CLK32K	32 33
42 19 5	I2S2_VSP_BCLK	MAKE_BASE=TRUE	BT_PCM_CLK	31
42 19 5	I2S2_VSP_DOUT	MAKE_BASE=TRUE	BT_PCM_DIN	31
42 19 5	I2S2_VSP_DIN	MAKE_BASE=TRUE	BT_PCM_DOUT	31
42 19 5	I2S2_VSP_LRCK	MAKE_BASE=TRUE	BT_PCM_SYNC	31
42 5	UART6_WLAN_RXD	MAKE_BASE=TRUE	WLAN_GPIO4	31 33
42 5	UART6_WLAN_TXD	MAKE_BASE=TRUE	WLAN_GPIO3	31 33

UART ALIASES

42 5	UART0_AP_RXD	MAKE_BASE=TRUE	UART0_MUX_RXD	11 42
42 5	UART0_AP_TXD	MAKE_BASE=TRUE	UART0_MUX_TXD	11 42

OBSOLETE ALIASES

	NC_EXT_SMPS_REQ	MAKE_BASE=TRUE	EXT_SMPS_REQ	
	NC_EXT_PWM_REQ	MAKE_BASE=TRUE	EXT_PWM_REQ	
	NC_BT_GPIO5	MAKE_BASE=TRUE	BT_GPIO5	31
	TP_WLAN_GPIO5	MAKE_BASE=TRUE	WLAN_GPIO5	31
45 30 5	GSM_TXBURST_IND	MAKE_BASE=TRUE	LED_DRIVE_GSMB	

NEED TO DOUBLE CHECK IF WE NEED THIS IN IPAD, OR IF THIS MIGHT BE A PHONE SPECIFIC ISSUE

SYNC_MASTER=ALEX SYNC_DATE=09/30/2010

PAGE TITLE
MLB ALIASES/CONNECTIONS

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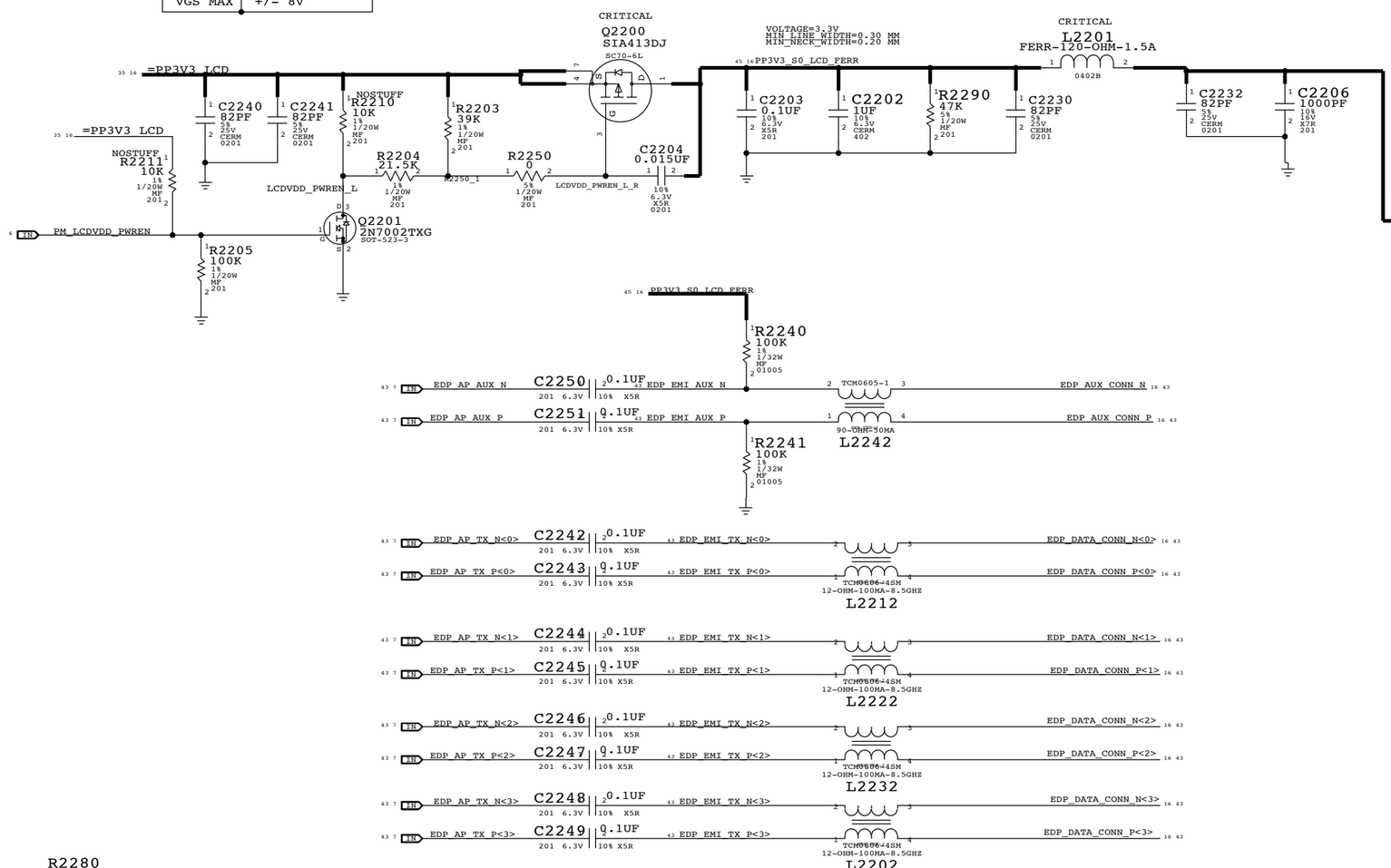
EDP CONNECTOR

SIA413DJ

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

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S0903	376S0796		Q2200	RADAR:8379470
155S0667	155S0583			RADAR:8616060, RADAR: 9015335



SYNC MASTER=JOE SYNC DATE=01/19/2011

PAGE TITLE

VIDEO: EDP CONNECTOR

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S0525	1	IC,ASIC,GROUNDHOG B0,120B BGA	U3003	CRITICAL	

CONNECTORS TO GRAPE FLEX

R3070 0 5% 1/20W MF 201
AG_SHLD_TST_FLEX — AG_SHLD_TST
R3071 0 5% 1/20W MF 201 NOSTUFF
C3070 0.1UF 10% 25V X5R 402

CRITICAL
P/N 518S0828

MT_PANEL_OUT<36> MT_PANEL_OUT<38> MT_PANEL_IN<29> MT_PANEL_IN<27> MT_PANEL_IN<25> MT_PANEL_IN<23> MT_PANEL_IN<21> MT_PANEL_IN<19> MT_PANEL_IN<17> MT_PANEL_IN<15> MT_PANEL_IN<13> MT_PANEL_IN<11> MT_PANEL_IN<9> MT_PANEL_IN<7> MT_PANEL_IN<5> MT_PANEL_IN<3> MT_PANEL_IN<1> AG_SHLD_TST_FLEX
MT_PANEL_OUT<37> MT_PANEL_OUT<39> MT_PANEL_IN<28> MT_PANEL_IN<26> MT_PANEL_IN<24> MT_PANEL_IN<22> MT_PANEL_IN<20> MT_PANEL_IN<18> MT_PANEL_IN<16> MT_PANEL_IN<14> MT_PANEL_IN<12> MT_PANEL_IN<10> MT_PANEL_IN<8> MT_PANEL_IN<6> MT_PANEL_IN<4> MT_PANEL_IN<2> MT_PANEL_IN<0>
F-RT-SM
502250-8037
J3010
MATES WITH LEFTMOST GRAPE FLEX TAIL

CRITICAL
MT_PANEL_OUT<1> MT_PANEL_OUT<3> MT_PANEL_OUT<5> MT_PANEL_OUT<7> MT_PANEL_OUT<9> MT_PANEL_OUT<11> MT_PANEL_OUT<13> MT_PANEL_OUT<15> MT_PANEL_OUT<17> MT_PANEL_OUT<19> MT_PANEL_OUT<21> MT_PANEL_OUT<23> MT_PANEL_OUT<25> MT_PANEL_OUT<27> MT_PANEL_OUT<29> MT_PANEL_OUT<31> MT_PANEL_OUT<33> MT_PANEL_OUT<35>
MT_PANEL_OUT<0> MT_PANEL_OUT<2> MT_PANEL_OUT<4> MT_PANEL_OUT<6> MT_PANEL_OUT<8> MT_PANEL_OUT<10> MT_PANEL_OUT<12> MT_PANEL_OUT<14> MT_PANEL_OUT<16> MT_PANEL_OUT<18> MT_PANEL_OUT<20> MT_PANEL_OUT<22> MT_PANEL_OUT<24> MT_PANEL_OUT<26> MT_PANEL_OUT<28> MT_PANEL_OUT<30> MT_PANEL_OUT<32> MT_PANEL_OUT<34>
F-RT-SM
502250-8037
J3011
MATES WITH RIGHTMOST GRAPE FLEX TAIL

PP18V_GRAPE — C3005 0.1UF 10% 25V X5R 402 — C3007 0.1UF 10% 25V X5R 402 — C3053 0.1UF 10% 25V X5R 402 — =PP3V0_GRAPE_MARIOJ — C3006 0.1UF 10% 6.3V X5R 201
VDDH VCC_DIG

U3003 GROUNDHOG BGA
CRITICAL
OMIT

MUX_IN<0> MUX_IN<1> MUX_IN<2> MUX_IN<3> MUX_IN<4> MUX_IN<5> MUX_IN<6> MUX_IN<7> MUX_IN<8> MUX_IN<9> MUX_IN<10> MUX_IN<11> MUX_IN<12> MUX_IN<13> MUX_IN<14> MUX_IN<15> MUX_IN<16> MUX_IN<17> MUX_IN<18> MUX_IN<19>
B1 MUX0, C1 MUX1, E1 MUX2, F2 MUX3, H1 MUX4, J1 MUX5, J2 MUX6, J3 MUX7, K4 MUX8, H5 MUX9, I5 MUX10, J8 MUX11, J9 MUX12, K8 MUX13, J10 MUX14, I10 MUX15, H10 MUX16, F11 MUX17, C11 MUX18, E10 MUX19
NC A11 MUX20, NC B4 MUX21, NC A5 MUX22, NC A2 MUX23
Z1_BON_L<0> A7 BON_L0, Z1_BON_L<1> B7 BON_L1, Z1_BON_L<2> B8 BON_L2, Z1_BON_L<3> A8 BON_L3, Z1_BON_L<4> C8 BON_L4, Z1_BON_L<5> BON_L5
NC C6, NC D3, NC D4, NC D5, NC D6, NC D8, NC D9, NC E4, NC E8, NC F4, NC F5, NC F8, NC F9, NC G3, NC G4, NC G9, NC H3, NC H4, NC H7, NC H8, NC H9, NC J6, NC K7 — NC
GND: G8 G7 G6 G5 F7 F6 E7 E6 E5 E3 D7 C9

VSTM0 A1 MT_PANEL_OUT<0>, VSTM1 B2 MT_PANEL_OUT<1>, VSTM2 C2 MT_PANEL_OUT<2>, VSTM3 D1 MT_PANEL_OUT<3>, VSTM4 D2 MT_PANEL_OUT<4>, VSTM5 E2 MT_PANEL_OUT<5>, VSTM6 F1 MT_PANEL_OUT<6>, VSTM7 G1 MT_PANEL_OUT<7>, VSTM8 G2 MT_PANEL_OUT<8>, VSTM9 I1 MT_PANEL_OUT<9>, VSTM10 H2 MT_PANEL_OUT<10>, VSTM11 I2 MT_PANEL_OUT<11>, VSTM12 K1 MT_PANEL_OUT<12>, VSTM13 K2 MT_PANEL_OUT<13>, VSTM14 I3 MT_PANEL_OUT<14>, VSTM15 K3 MT_PANEL_OUT<15>, VSTM16 J4 MT_PANEL_OUT<16>, VSTM17 I4 MT_PANEL_OUT<17>, VSTM18 K6 MT_PANEL_OUT<18>, VSTM19 H6 MT_PANEL_OUT<19>, VSTM20 K5 MT_PANEL_OUT<20>, VSTM21 J5 MT_PANEL_OUT<21>, VSTM22 I7 MT_PANEL_OUT<22>, VSTM23 K9 MT_PANEL_OUT<23>, VSTM24 I8 MT_PANEL_OUT<24>, VSTM25 K10 MT_PANEL_OUT<25>, VSTM26 I6 MT_PANEL_OUT<26>, VSTM27 J7 MT_PANEL_OUT<27>, VSTM28 K11 MT_PANEL_OUT<28>, VSTM29 I9 MT_PANEL_OUT<29>, VSTM30 J11 MT_PANEL_OUT<30>, VSTM31 I11 MT_PANEL_OUT<31>, VSTM32 H11 MT_PANEL_OUT<32>, VSTM33 G11 MT_PANEL_OUT<33>, VSTM34 G10 MT_PANEL_OUT<34>, VSTM35 F10 MT_PANEL_OUT<35>, VSTM36 C10 MT_PANEL_OUT<36>, VSTM37 D10 MT_PANEL_OUT<37>, VSTM38 E11 MT_PANEL_OUT<38>, VSTM39 D11 MT_PANEL_OUT<39>
VSTM40 B11 NC, VSTM41 B10 NC, VSTM42 C4 NC, VSTM43 A4 NC, VSTM44 B5 NC, VSTM46 A3 NC, VSTM45 C5 NC, VSTM47 B3 NC
A_AD_R0 A10 Z1_B_ADR<0>, A_AD_R1 B9 Z1_B_ADR<1>, A_AD_R2 A9 Z1_B_ADR<2>

BOOST CONVERTOR

MIN_NECK_MIDTH SHOULD BE 0.4MM

VR_BOOST_L — CRITICAL L3000 4.7UH-700MA-280MOHM (MIN_LINE_WIDTH=0.2MM, MIN_NECK_WIDTH=0.2MM) — VLF — VR_BOOST_SW — CRITICAL D3000 SOD-323 B0520WSXG — PP18V_R_GRAPE (NET_SPACING_TYPE=PWR, MIN_LINE_WIDTH=0.6MM, MIN_NECK_WIDTH=0.25MM, VOLTAGE=18V) — R3066 0.1 1% 1/20W MF 201 — PP18V_GRAPE (MIN_LINE_WIDTH=0.6MM, MIN_NECK_WIDTH=0.2MM, VOLTAGE=18V, NET_SPACING_TYPE=PWR)
LOAD CURRENT ~ 153UA

=PP3V0_GRAPE — C3009 0.1UF 10% 16V X5R 402
C3008 33PF 5% 25V NPO-C0G 201
R3009 1M 1% 1/16W MF-LP 402
C3000 1UF 10% 25V X5R 603-1

CRITICAL U3000 TPS61045 QFN-1
VIN, L, DO, FB, CTRL, SW, THRML PAD, PGND, GND
VR_BOOST_FBK, PM_BOOST_EN
NCX — C3001 2.2UF 10% 6.3V X5R 603
C3002 470PF 10% 16V X5R-X7R 201
R3012 71.5K 1% 1/20W MF 201
AGND_U3000 (MIN_LINE_WIDTH=0.2MM, MIN_NECK_WIDTH=0.2MM) — XW3000 SM

SPI1_GRAPE_SCLK / SPI1_GRAPE_CS_L / SPI1_GRAPE_MOSI / RST_GRAPE_L / SPI1_GRAPE_MISO

=PP3V0_GRAPE — R3025 10K 5% 1/20W MF 201

SPI1_GRAPE_SCLK (MAKE_BASE=TRUE) → GRAPE_SCLK
SPI1_GRAPE_CS_L (MAKE_BASE=TRUE) → GRAPE_CS_L
SPI1_GRAPE_MOSI (MAKE_BASE=TRUE) → GRAPE_MOSI
RST_GRAPE_L (MAKE_BASE=TRUE) → RST_GRAPE_Z1_L
RST_GRAPE_Z2_L
SPI1_GRAPE_MISO (MAKE_BASE=TRUE) → GRAPE_MISO
TO Z2

=PP3V0_GRAPE — R3030 10K 5% 1/20W MF 201 — R3031 10K 5% 1/20W MF 201 — C3030 0.1UF 10% 6.3V X5R 201 — C3031 0.1UF 10% 6.3V X5R 201 — R3032 3.3K 5% 1/20W MF 201 — R3033 10K 5% 1/20W MF 201

CRITICAL
U3007 PQFP1 SN74AVCH4T245RSV
VCCA VCCB
DIR_U3007
SPI1_GRAPE_SCLK → 1A1 / 1B1 Z1_SCLK
SPI1_GRAPE_CS_L → 2A1 / 2B1 Z2_H_CS_L
1DIR, 1OE*
SPI1_GRAPE_MOSI → 1A2 / 1B2 Z1_MISO
2A2 / 2B2 Z1_CS_OE
2DIR, 2OE*
GRAPE_FW_DNLD_EN_L
(A -> B)
GND
APN:311S0485
TO Z1/Z2

Z1_CS_OE / Z2_H_CS_L / Z1_CS_L

=PP3V0_GRAPE — C3050 0.1UF 10% 6.3V X5R 201
CRITICAL
U3010 SN74LVC1G126DRYR-M LLP
OE, A, Y, GND, NC
Z1_CS_OE → OE
Z2_H_CS_L → A
Z1_CS_L ← Y
NC

SPI1_GRAPE_MISO / Z1_MOSI

=PP3V0_GRAPE — C3041 0.1UF 10% 6.3V X5R 201
CRITICAL
U3009 SN74LVC1G125DRYR-M LLP
SPI1_GRAPE_MISO → A
Z1_MOSI ← Y
OE*, NC
Z1_CS_OE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
311S0523	311S0485		U3007	
311S0524	311S0533		U3009	
311S0525	311S0532		U3010	

SYNC_MASTER=RAMSIN SYNC_DATE=12/17/2010
PAGE TITLE
GRAPE: GROUNDHOG,CONN,BOOST

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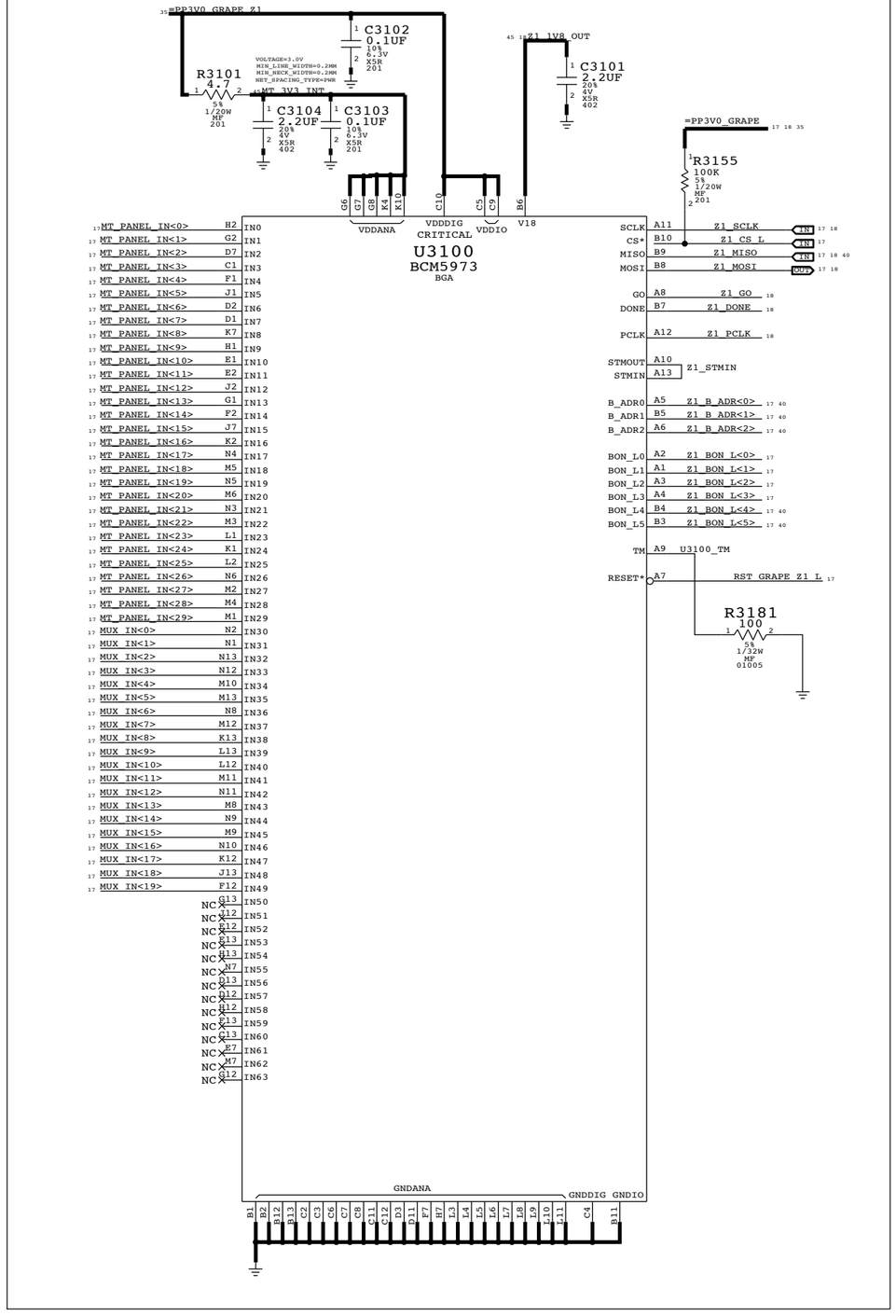
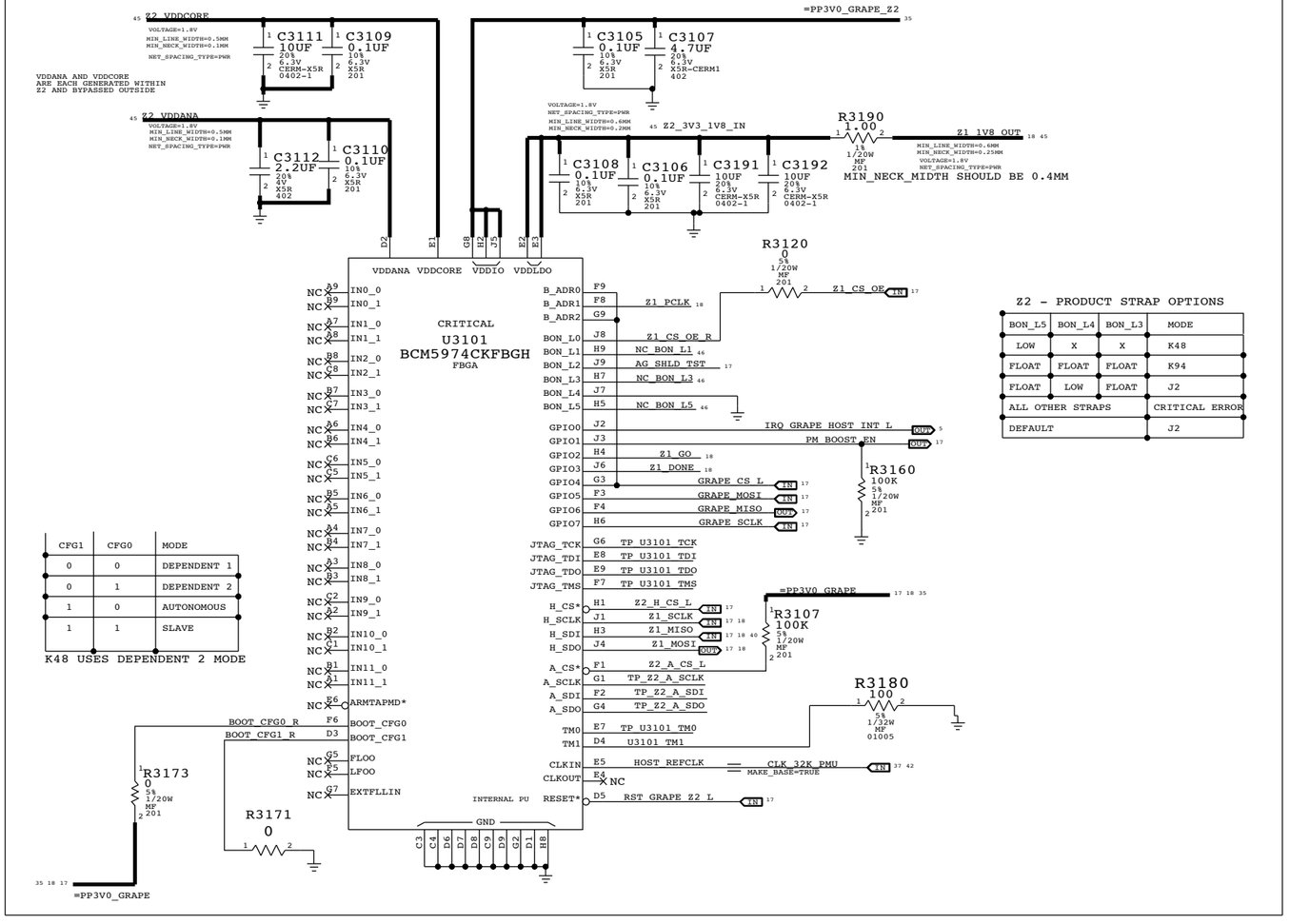
ZEPHYR 1+ ASIC



ARM9 MCU (Z2 BASED)



CFG1	CFG0	MODE
0	0	DEPENDENT 1
0	1	DEPENDENT 2
1	0	AUTONOMOUS
1	1	SLAVE

K48 USES DEPENDENT 2 MODE

Z2 - PRODUCT STRAP OPTIONS

BON_L5	BON_L4	BON_L3	MODE
LOW	X	X	K48
FLOAT	FLOAT	FLOAT	K94
FLOAT	LOW	FLOAT	J2
ALL OTHER STRAPS			CRITICAL ERROR
DEFAULT			J2

SYNC_MASTER=RAMSIN SYNC_DATE=12/17/2010

PAGE TITLE: GRAPE: Z1, Z2

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L63B AUDIO CODEC

APN:338S0940

=PPVCC_MAIN_AUDIO
=PP1V8_AUDIO
=PP1V7_VA_VCP

C3600 1000PF 10% 6.3V X5R-CERM 01005
C3601 0.1UF 20% 4V X5R 01005
C3602 0.1UF 20% 4V X5R 01005
C3603 10UF 20% 6.3V CERM-X5R 0402-1
C3604 0.1UF 10% 6.3V X5R 201
C3605 27PF 5% 16V NPO-COG 01005
C3606 10UF 20% 4V X5R 402
C3607 0.1UF 20% 4V X5R 01005
C3608 4.7UF 20% 4V TANT 402-3

XW3600 SM
XW3601 SM
XW3602 SM
GND_AUDIO_CODEC

CRITICAL
U3600
CS42L63B
WLCSP-1

I2C ADDRESS: 1001010X??

I2C0_SCL_1V8
I2C0_SDA_1V8
IRQ_CODEC_L
RST_L63_L
AUD_MIK_HS1_INT_L
I2S0_ASP_MCK_R
I2S0_ASP_LRCK
I2S0_ASP_BCLK
I2S0_ASP_DOUT
I2S0_ASP_DIN
I2S2_VSP_LRCK
I2S2_VSP_BCLK
I2S2_VSP_DOUT
I2S2_VSP_DIN
I2S3_XSP_LRCK
I2S3_XSP_BCLK
I2S3_XSP_DOUT
I2S3_XSP_DIN
DMIC_SCLK_SENSOR
DMIC_SD_SENSOR

R3601 22 5% 1/32W MF 01005 — I2S_L63_ASP_SDOUT
R3602 22 5% 1/32W MF 01005 — I2S_L63_VSP_SDOUT
R3603 22 5% 1/32W MF 01005 — I2S_L63_XSP_SDOUT
R3608 22 5% 1/32W MF 01005
R3621 22 5% 1/32W MF 01005

SCL
SDA
INT*
RESET*
WAKE*
MCLK
ASP_LRCLK
ASP_SCLK
ASP_SDIN
ASP_SDOUT
VSP_LRCLK
VSP_SLCLK
VSP_SDIN
VSP_SDOUT
XSP_LRCLK
XSP_SCLK
XSP_SDIN/DAC2B_MUTE
XSP_SDOUT
DMIC_SCLK
DMIC_SD
LINEINA
LINEINA_REF
LINEINB
LINEINB_REF
MIC1_BIAS
MIC1
MIC1_REF
MIC1_BIAS_FILT
MIC2_BIAS
MIC2_DETECT
MIC2
MIC2_REF
MIC2_DETECT_REF
MIC2_BIAS_FILT
MIC3A_BIAS
MIC3A
MIC3A_REF
MIC3A_BIAS_FILT
MIC3B_BIAS
MIC3B
MIC3B_REF
MIC3B_BIAS_FILT

NC_LINE_IN1_CODEC
NC_LINE_IN1_REF_CODEC
NC_LINE_IN2_CODEC
NC_LINE_IN2_REF_CODEC
NC_MIC1_BIAS_CODEC
NC_MIC1P_CODEC
NC_MIC1N_CODEC
NC_MIC1_FILT_CODEC
DMIC_SCLK_CODEC
DMIC_SD_CODEC

HP_DETECT
HPOUTB
HPOUTA
HPOUT_REF
LINEOUT1B
LINEOUT1A
LINEOUT1_REF
LINEOUT2A
LINEOUT2A_REF
LINEOUT2B
LINEOUT2B_REF
EAROUT+
EAROUT-
SPEAKEROUTA+
SPEAKEROUTA-
SPEAKEROUTB+
SPEAKEROUTB-
FLYP
FLYC
FLYN
SPEAKER_VQ
FILT+
VD
VL
VP
VA
VCP
GNDD
GNDA
GNDCP
GNDP
GND

HP_DET
HP_R
HP_L
HP_REF
CODEC_LINE_OUT_R
CODEC_LINE_OUT_L
CODEC_LINE_OUT_REF
LEFT_CH_OUT_P
LEFT_CH_OUT_REF
RIGHT_CH_OUT_P
RIGHT_CH_OUT_REF
NC_EAROUT_AP
NC_EAROUT_AN

C3617 2.2UF 20% 10V X5R-CERM 402
C3618 2.2UF 20% 10V X5R-CERM 402
VHP_FLYC
VHP_FLYN
SPKR_VQ
FILT_POS

NOT USING SPEAKER AMPLIFIER WITH SPEAKER LOAD.

+VCP_FILT — VHPPFILT
-VCP_FILT — VHPNFILT

C3609 4.7UF 20% 6.3V X5R-CERM1 402
C3611 4.7UF 20% 6.3V X5R-CERM1 402
C3613 10UF 20% 6.3V CERM-X5R 0402-1
C3614 10UF 20% 6.3V CERM-X5R 0402-1
CRITICAL C3615 4.7UF 20% 6.3V X5R-CERM1 402
2.2UF RECOMMENDED CRITICAL C3616 4.7UF 20% 6.3V X5R-CERM1 402

EXT_MIC_BIAS
HSMIC_C_P
EXT_MIC_P
EXT_MIC_REF
HSMIC_C_N

R3604 1.00K 1% 1/32W MF 01005 — MIC2_DET
R3605 1.00K 1% 1/32W MF 01005

GND_AUDIO_CODEC

MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
MAX_NECK_LENGTH=75 MM

MIN_LINE_WIDTH=1.0MM
MIN_NECK_WIDTH=0.2MM
GND_AUDIO_HP_AMP

SYNC MASTER=KAVITHA	SYNC DATE=02/03/2011
PAGE TITLE: AUDIO: L63B CODEC	
Apple Inc.	DRAWING NUMBER: 051-8773 SIZE: D
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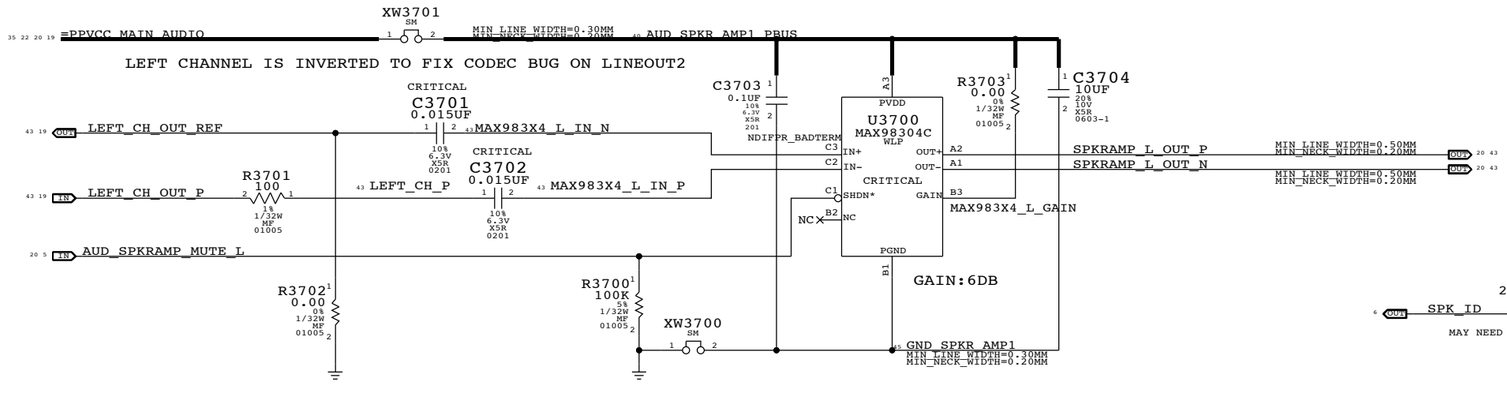
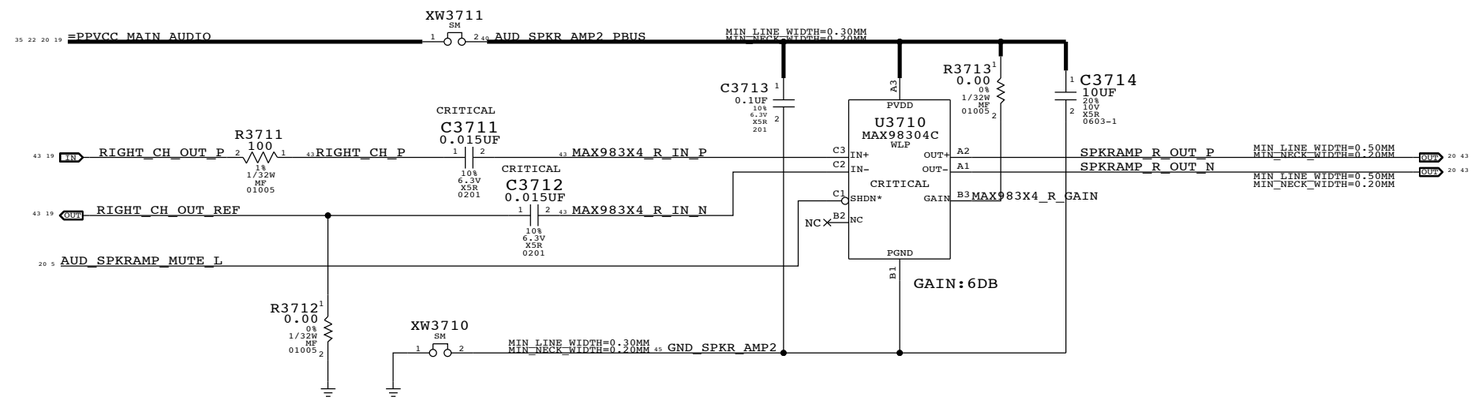
SPEAKER AMPLIFIER

APN:353S3317)
TURN ON TIME: 3.5MS
75HZ +/- XXX% TURN ON DELAY: ?MS

GAIN	VDD	GND
12DB	NC	SHORT
9DB	NC	100K
6DB	SHORT	NC
3DB	100K	NC
0DB	NC	NC



L63 LINEOUT2A IS CONNECTED TO U3700
L63 LINEOUT2B IS CONNECTED TO U3710



SYNC MASTER=KAVITHA	SYNC DATE=02/03/2011
PAGE TITLE	AUDIO: SPEAKER AMP
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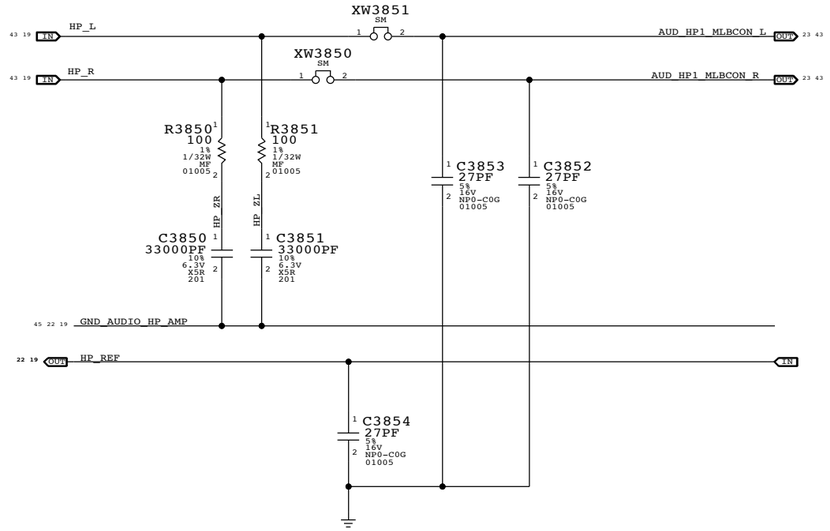
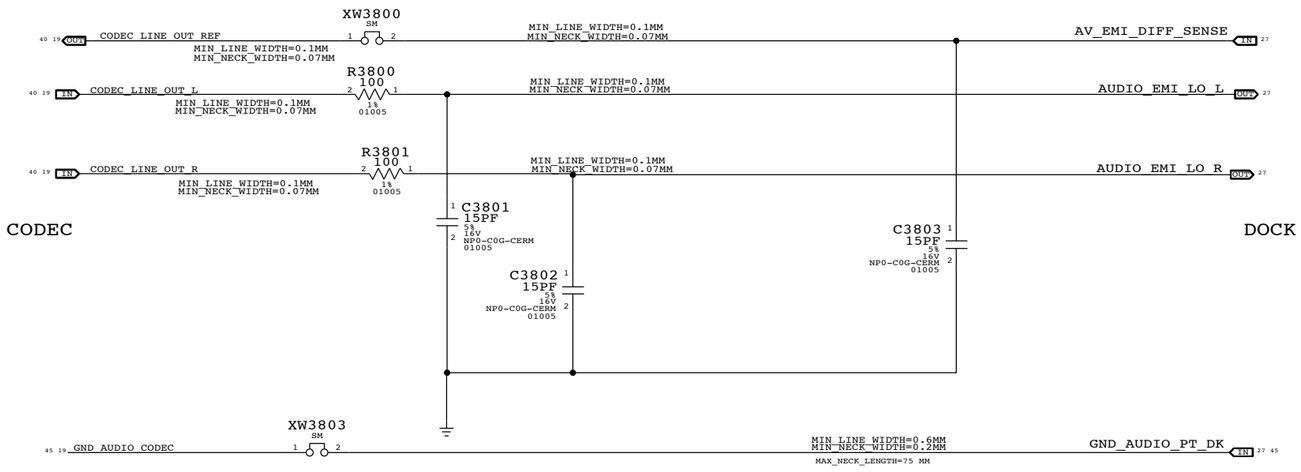
	SHEET 20 OF 48

HEADPHONE OUTPUT ZOBEL NETWORK



DOCK LINE OUTPUT



SYNC_MASTER=KAVITHA SYNC_DATE=02/03/2011

PAGE TITLE

AUDIO: HEADPHONE OUT

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

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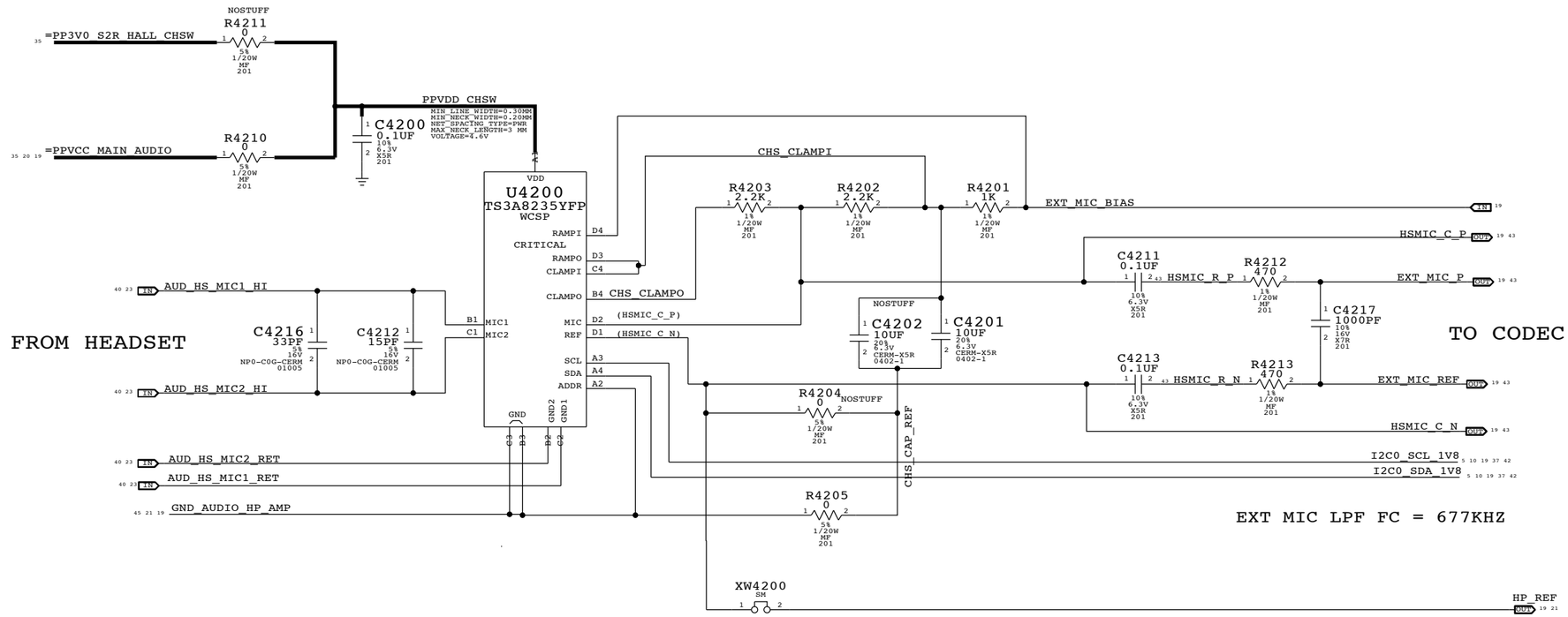
EXTERNAL (HEADSET) MIC INPUT CIRCUITRY



SYNC_MASTER=KAVITHA SYNC_DATE=02/03/2011

PAGE TITLE

AUDIO: DETECT/MIC BIAS

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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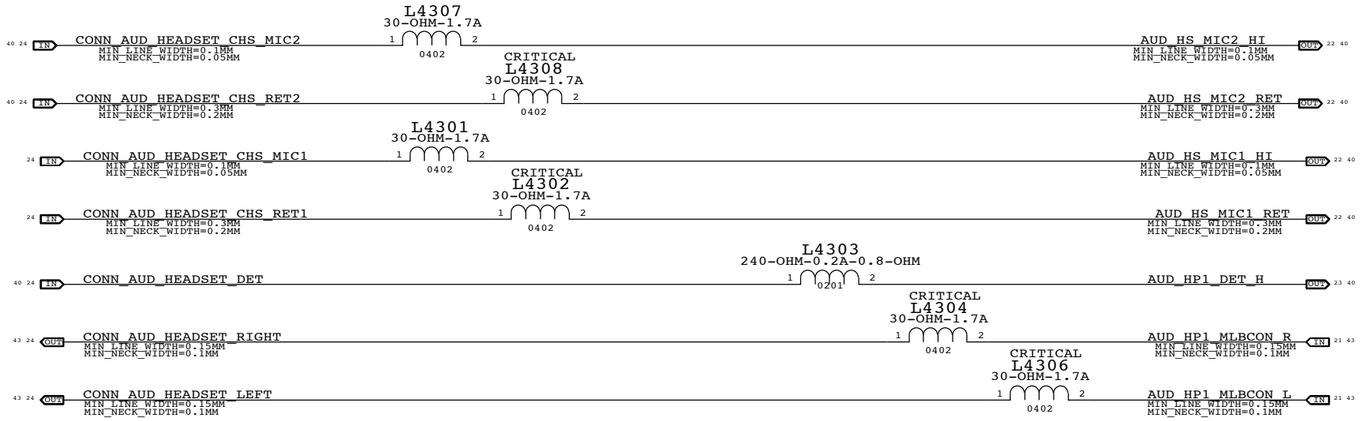
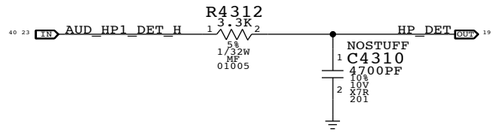
HEADPHONE JACK CONNECTION IS ON FRONT PANEL FLEX, CSA 55/PDF 29

PLACE ALL COMPONENTS NEAR J5401



HEADSET JACK INSERTION DETECT



SYNC_MASTER=KAVITHA SYNC_DATE=02/03/2011

PAGE TITLE

AUDIO: HP/MIC FILTERS

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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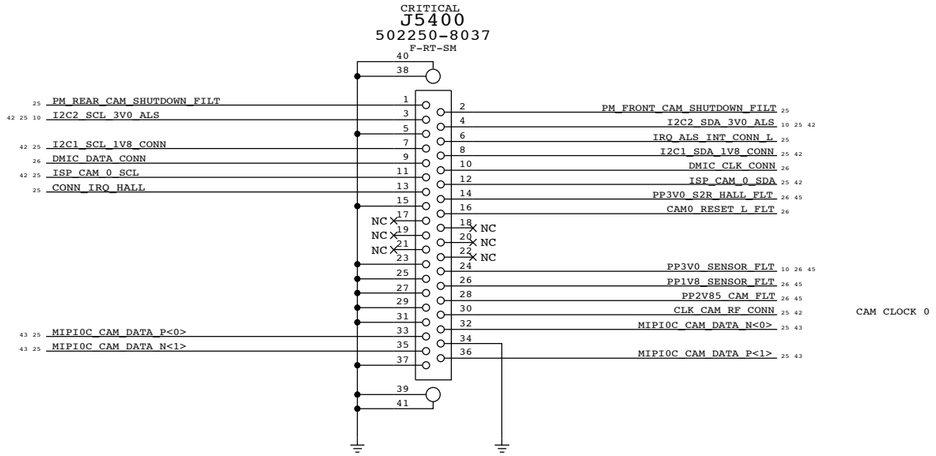
APN: 518S0828

CRITICAL

J5400

502250-8037

F-RT-SM



CAM CLOCK 0

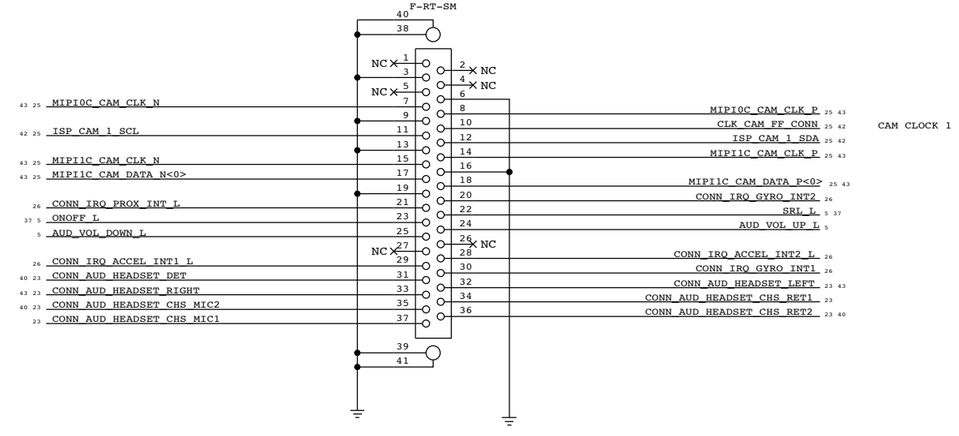
APN: 518S0828

CRITICAL

J5401

502250-8037

F-RT-SM



CAM CLOCK 1

SYNC_MASTER=MARK SYNC_DATE=01/11/2011

PAGE TITLE

CONNECTOR: SENSOR

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

REVISION 10.0.0

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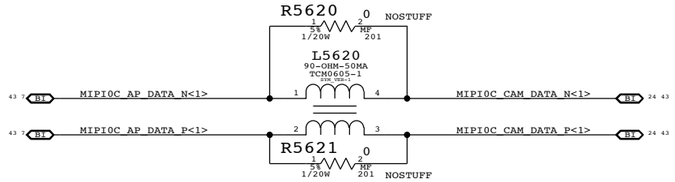

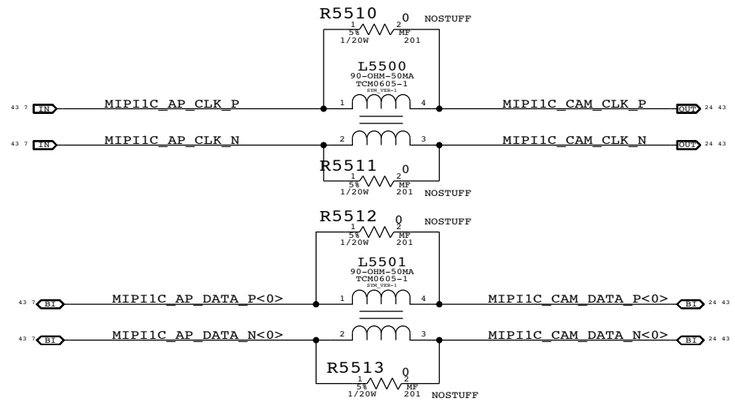

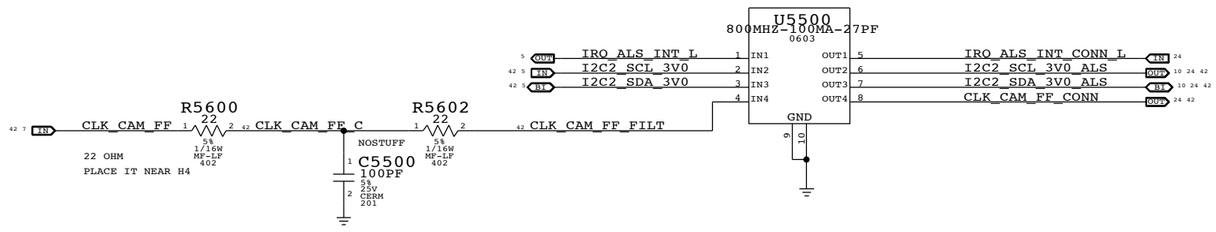

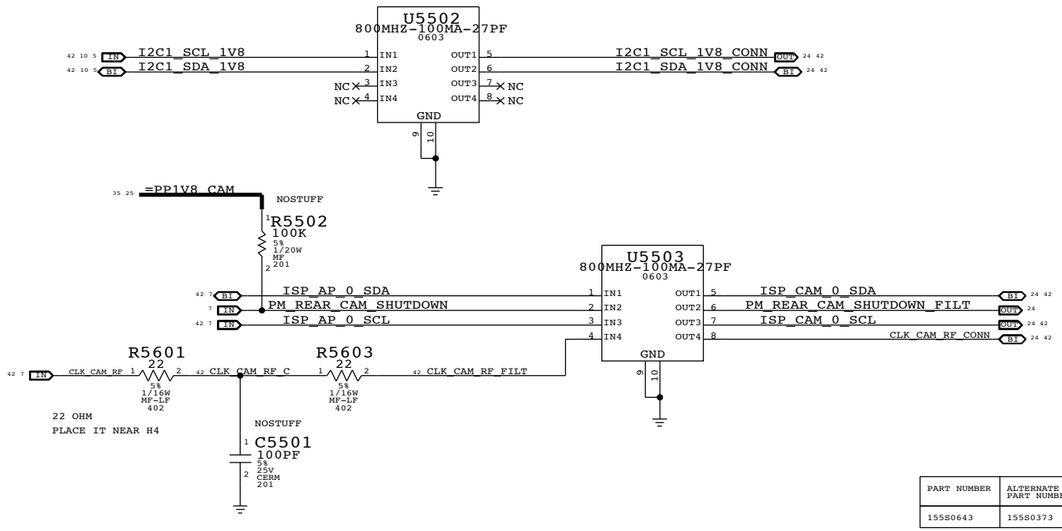

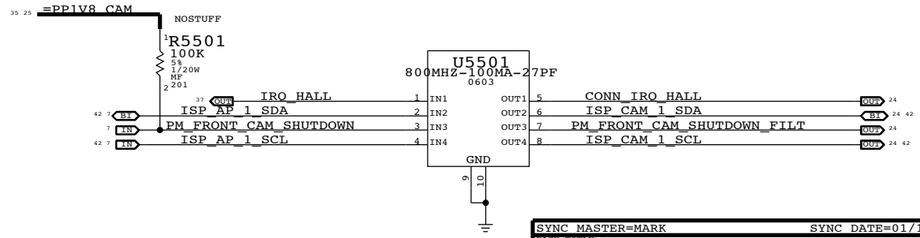

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S0643	155S0373	?	U5502,U5503,U5501,U5500,U5601	RADAR:8376668

SYNC_MASTER=MARK SYNC_DATE=01/11/2011

PAGE TITLE

SENSOR PANEL FILTERS 1

Apple Inc.

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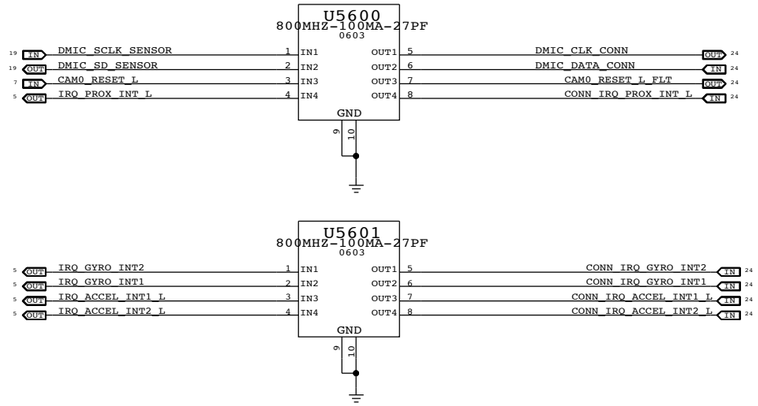

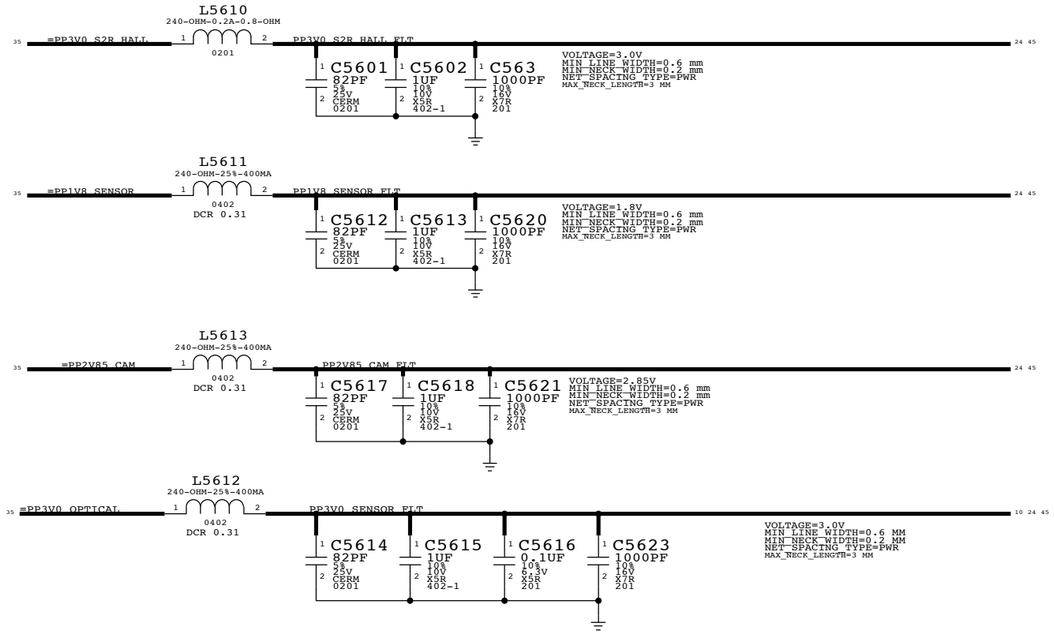

SYNC MASTER=MARK SYNC DATE=01/11/2011

PAGE TITLE

SENSOR PANEL FILTERS 2

Apple Inc.

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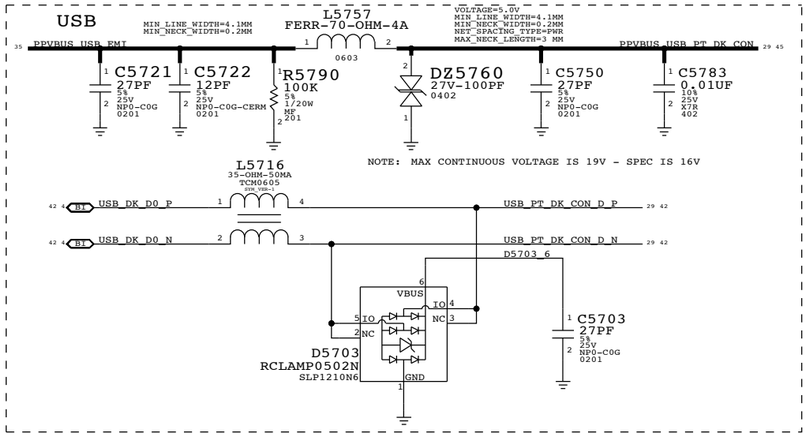
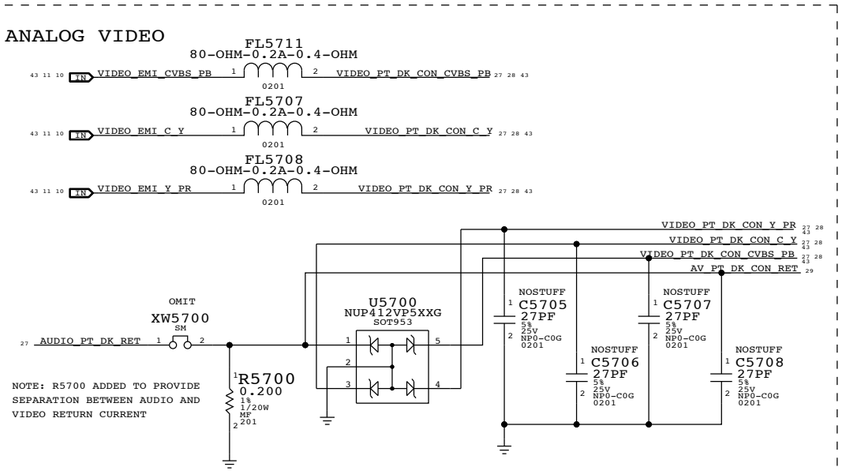
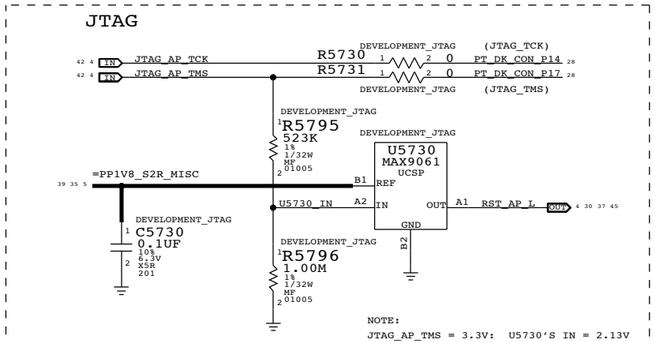
USB



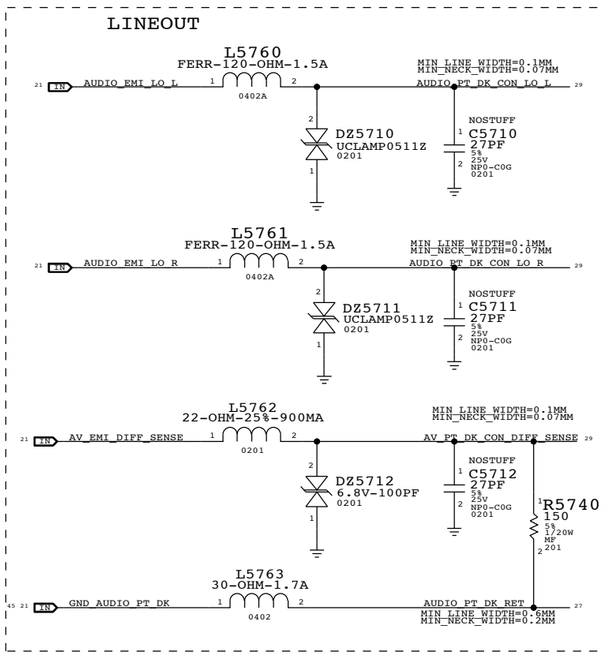
ANALOG VIDEO



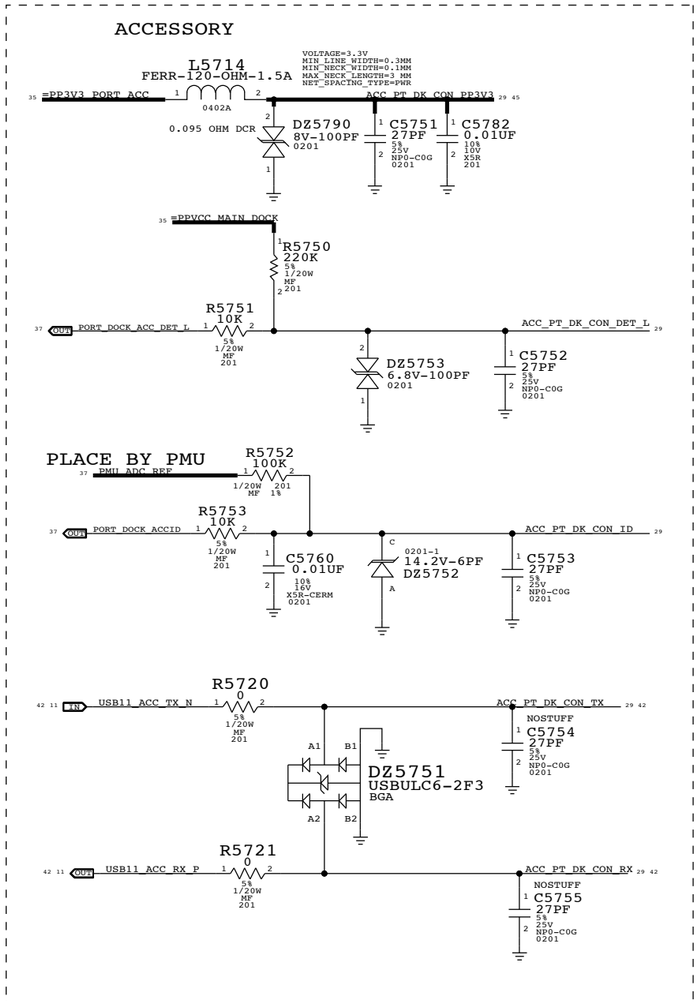
JTAG



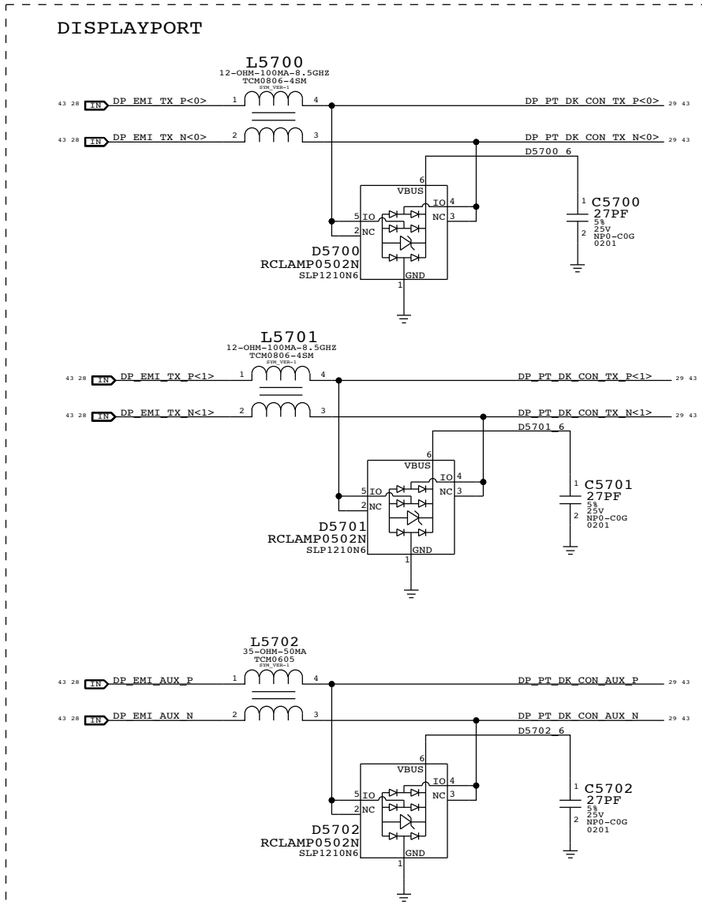
LINEOUT



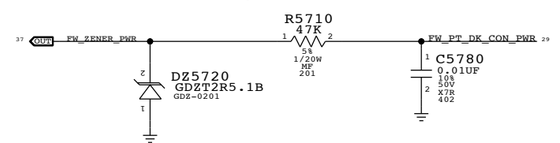
ACCESSORY



DISPLAYPORT



FIREWIRE DETECT/ DISPLAYPORT HPD



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
377S0090	377S0081		DZ5751	RADAR:8972666
377S0111	377S0099		DZ5710,DZ5711	RADAR:8849707
377S0107	377S0066		D5700,D5701,D5702,D5703	RADAR:8947642
155S0625	155S0559		L5700,L5701	RADAR:8423156
377S0116	377S0108		DZ5760	RADAR:8370432
155S0725	155S0276		FL0609, FL5707, FL5708, FL5711	QTY 4 RADAR:9625553
155S0513	155S0320		L5762	RADAR:9625601

SYNC_MASTER=JOE SYNC_DATE=01/19/2011

PAGE TITLE

IO FLEX: DOCK COMPONENTS

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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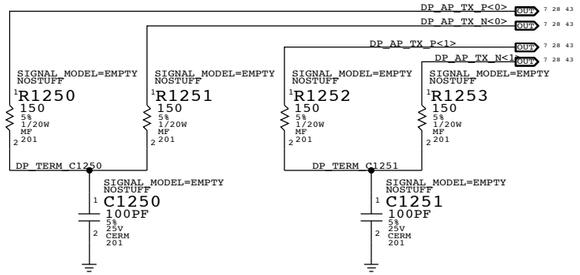
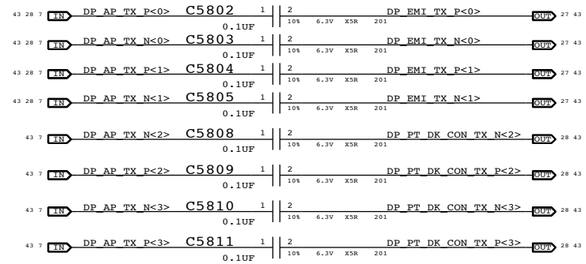
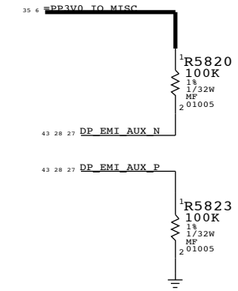
PLACEMENT NOTE: NEAR U0600

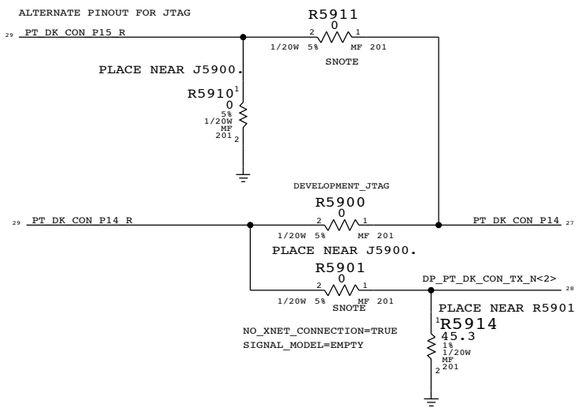


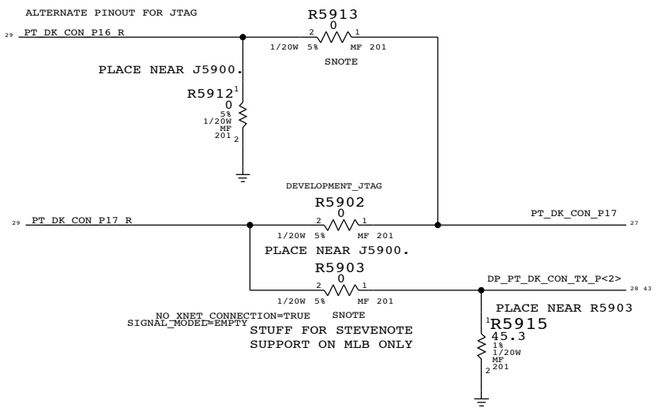
DISPLAYPORT AC COUPLING

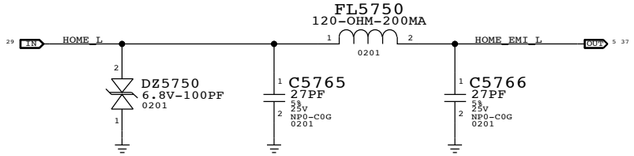


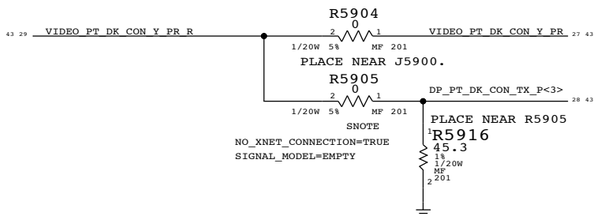


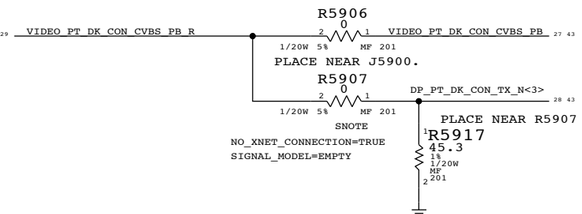
STUFFING OPTIONS FOR DP LANES 2, 3 FOR STEVENOTE.

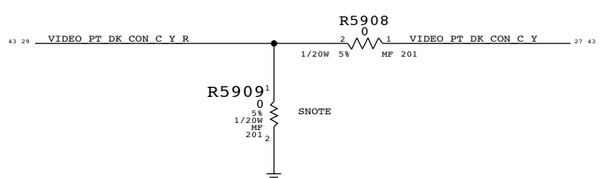












FOR STEVENOTE ON MLB, STUFF ALL OF THE SNOTE BOM OPTIONS. NOSTUFF R5902, R5900,R5908 R5904, R5906, R5914, R5915, R5916, AND R5917. FOR DEV BOARD, STUFF R5918 AND NOSTUFF R5903.

SYNC MASTER=JOE SYNC DATE=01/19/2011

PAGE TITLE

DISPLAY PORT MISC

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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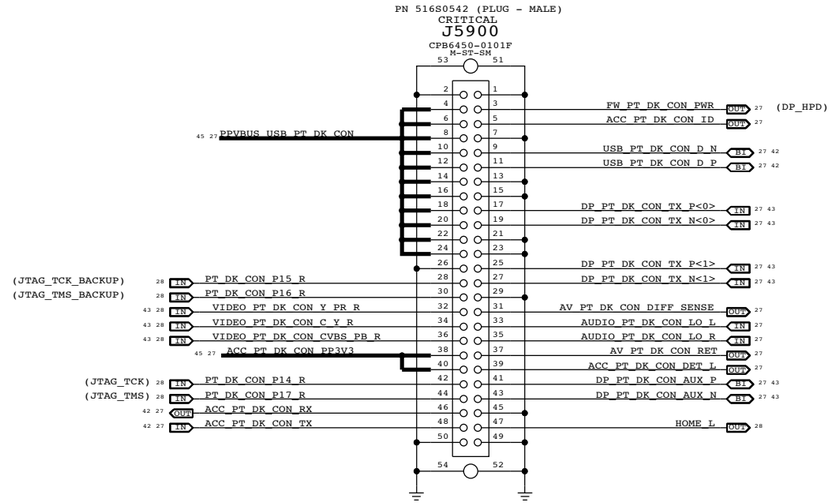

SYNC_MASTER=JOE SYNC_DATE=01/19/2011

PAGE TITLE

IO FLEX: B2B CONNECTOR

Apple Inc.

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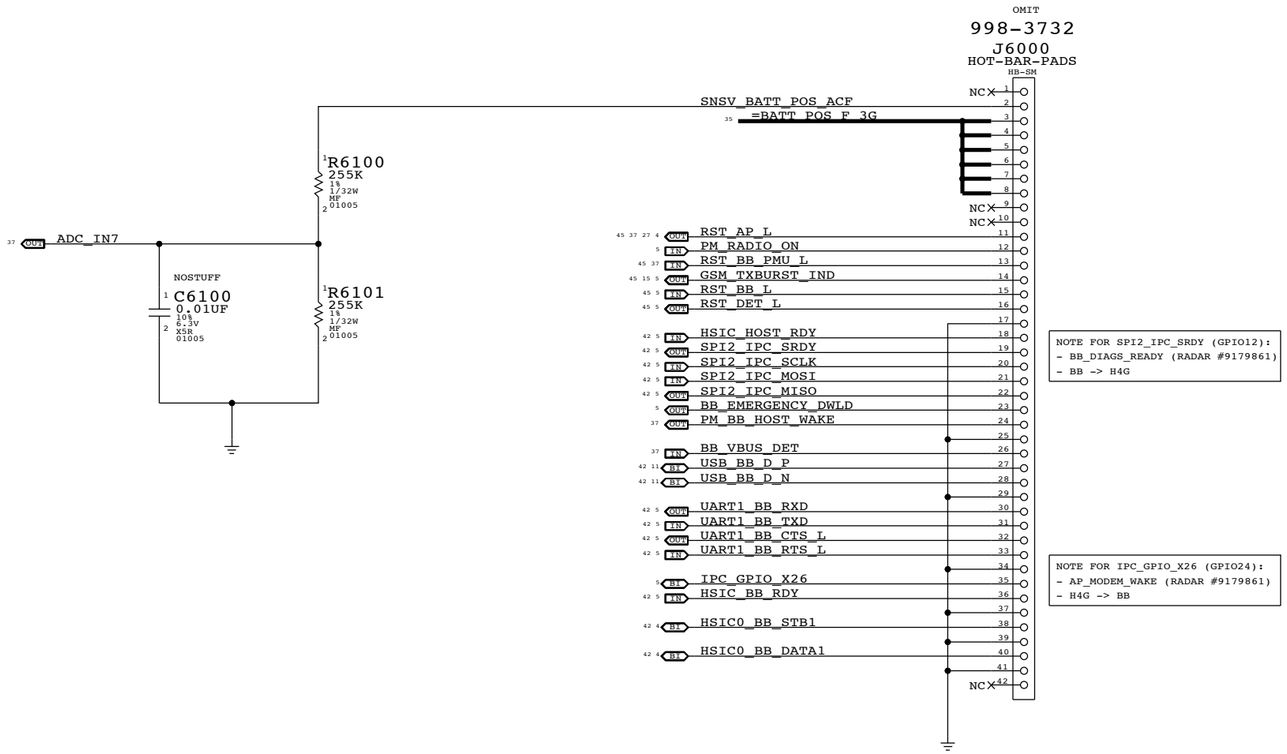
X26 CELLULAR/GPS CONNECTOR



SYNC_MASTER=JOE SYNC_DATE=01/19/2011

PAGE TITLE

CONNECTOR: X26

Apple Inc.

DRAWING NUMBER 051-8773 SIZE D

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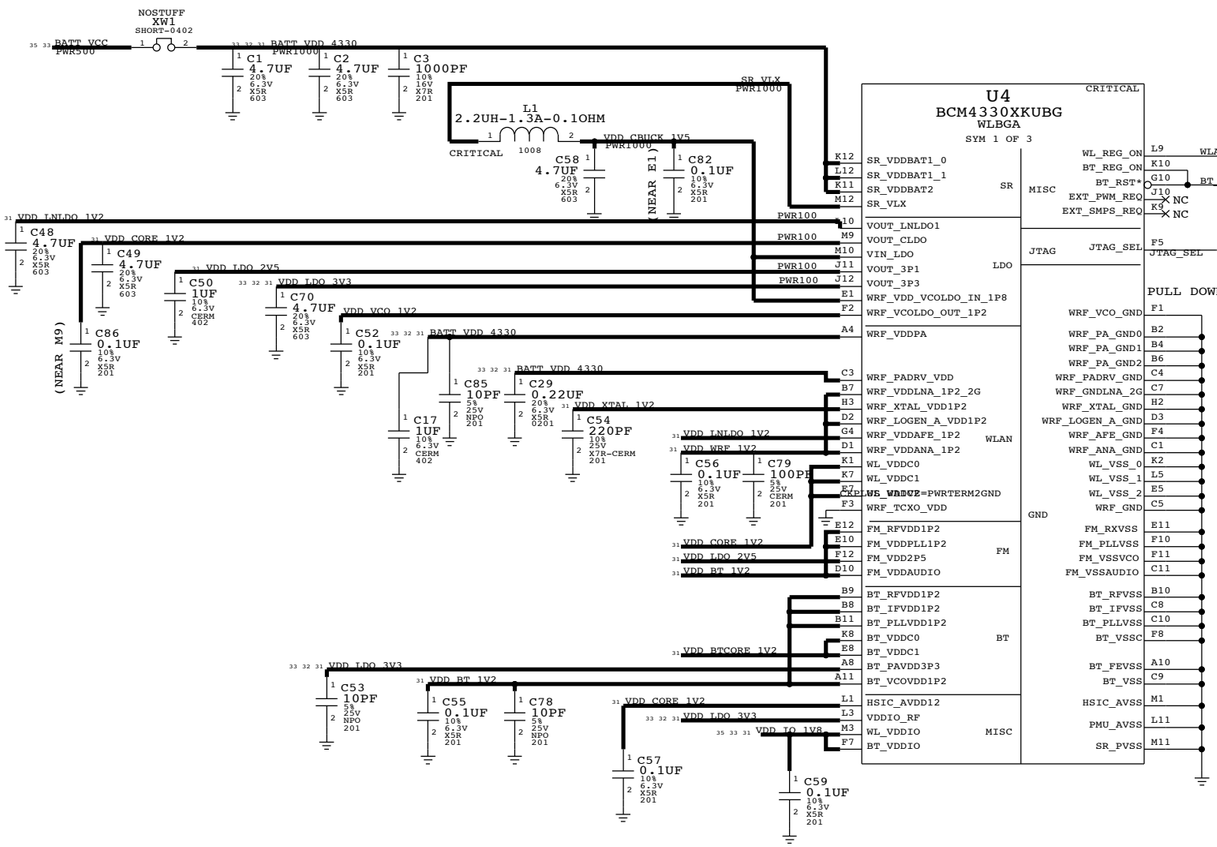
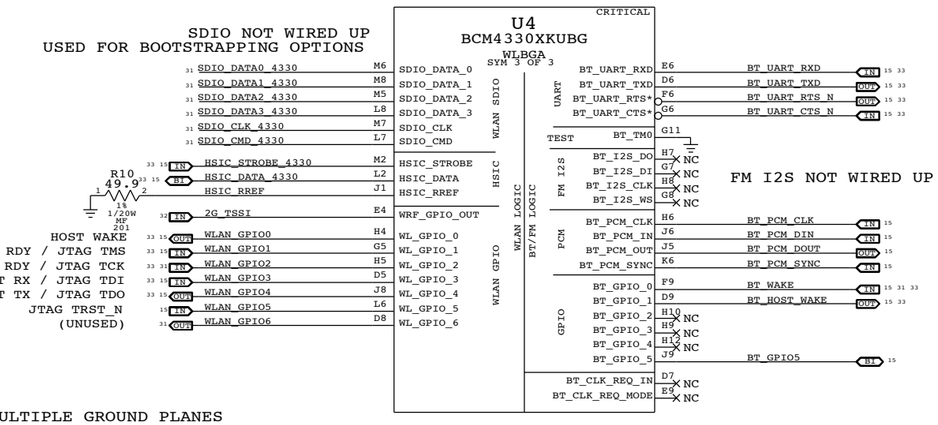
WLAN/BT POWER



RF GUYS HATE MULTIPLE GROUND PLANES
WE HAVE 500MILIAMP BURST RETURN CURRENTS TO BATTERY
GET RFDESIGN OK FOR ANY SEPARATION

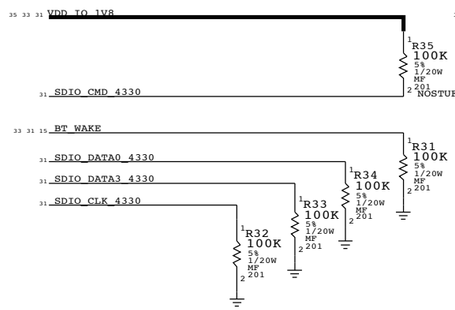
WLAN/BT BASEBAND



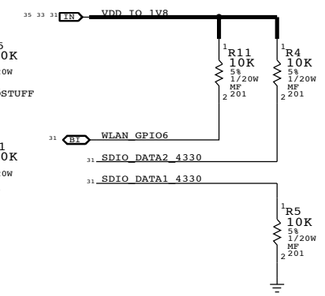
BOOTSTRAPPING OPTIONS

GPIO6	SDIO_DATA2	SDIO_DATA1	MODE	DEF.ARM STATE
0	X	X	SDIO	RESET
1	0	X	GSPI	RESET
1	1	0	HSIC	RUNNING
1	1	1	BOOTLOADERLESS HSIC	RUNNING

PULL-UP/DOWN RESISTORS



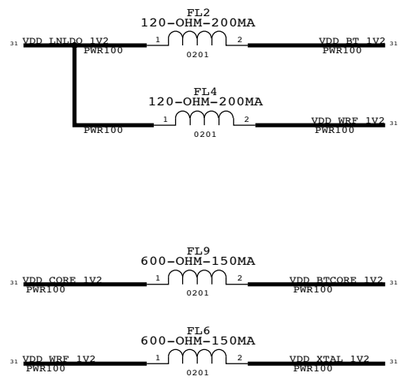
BOOTSTRAP RESISTORS



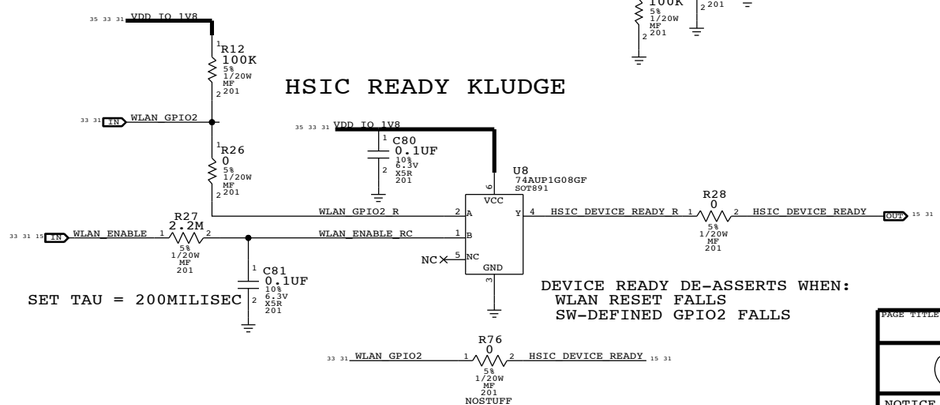
ALTERNATE PARTS AVAILABLE:

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
311S0548	311S0398	ANDGATE_TI	U8	TI
155S0657	155S0537	FERRITE_TY	FL2,FL4	TAIYO YUDEN
155S0337	155S0444	FERRITE_TDK	FL6,FL9	TDK

SUPPLY FILTERING



HSIC READY KLUDGE



SET TAU = 200MILISEC

DEVICE READY DE-ASSERTS WHEN:
WLAN RESET FALLS
SW-DEFINED GPIO2 FALLS

PAGE TITLE: WLAN BB & POWER

Apple Inc.

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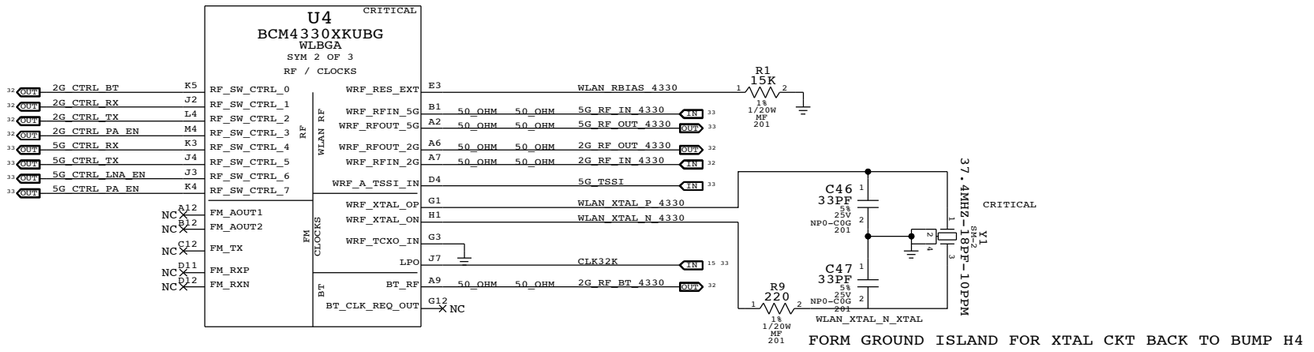
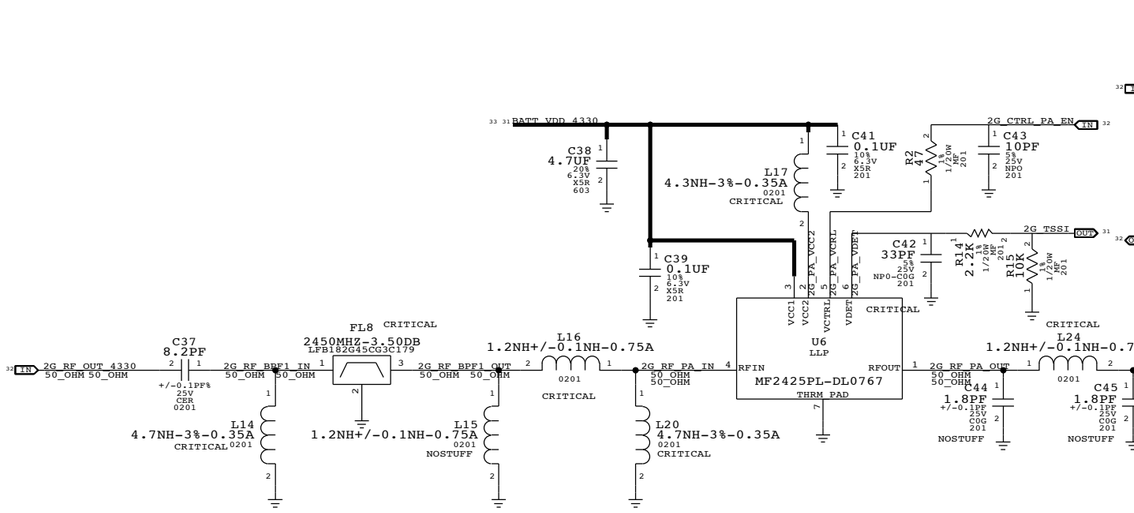
WLAN TRANSCEIVER

RF I/O PLAN

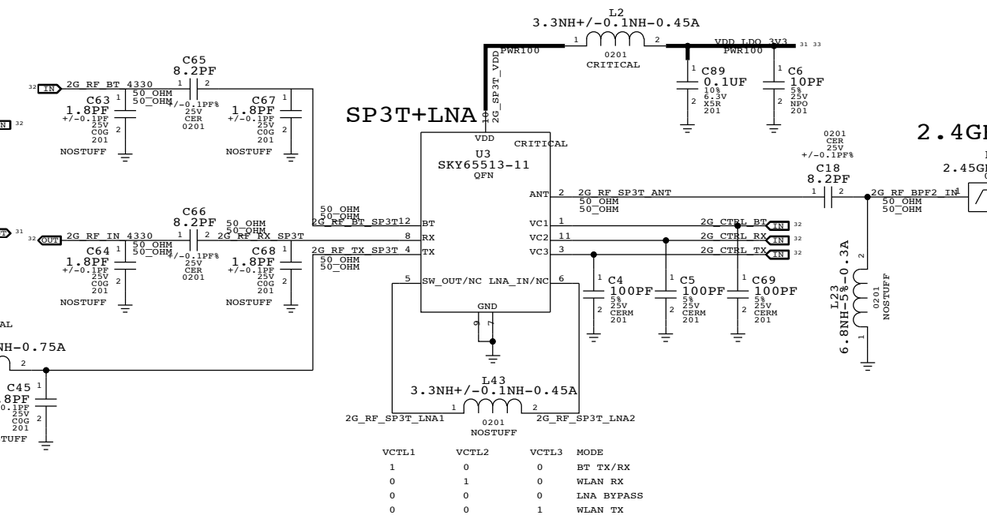
RF_SW_CTRL_0: 2G_CTRL_BT
RF_SW_CTRL_1: 2G_CTRL_RX
RF_SW_CTRL_2: 2G_CTRL_TX
RF_SW_CTRL_3: 2G_CTRL_PA_EN
RF_SW_CTRL_4: 5G_CTRL_RX
RF_SW_CTRL_5: 5G_CTRL_TX
RF_SW_CTRL_6: 5G_CTRL_LNA_EN
RF_SW_CTRL_7: 5G_CTRL_PA_EN



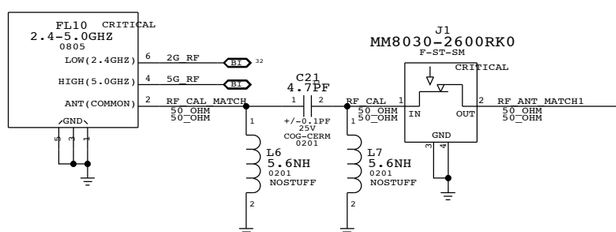
2.4GHZ TX



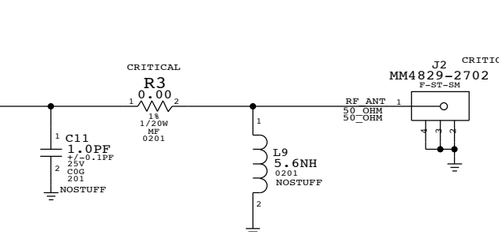
2.4GHZ RX + T/R SWITCH



2.4GHZ/5GHZ DIPLEXER



CONDUCTED TEST PORT



ANTENNA CONNECTOR

PAGE TITLE: WLAN 2.4GHZ AND ANT

Apple Inc.

DRAWING NUMBER: 051-8773
SIZE: D
REVISION: 10.0.0
BRANCH:
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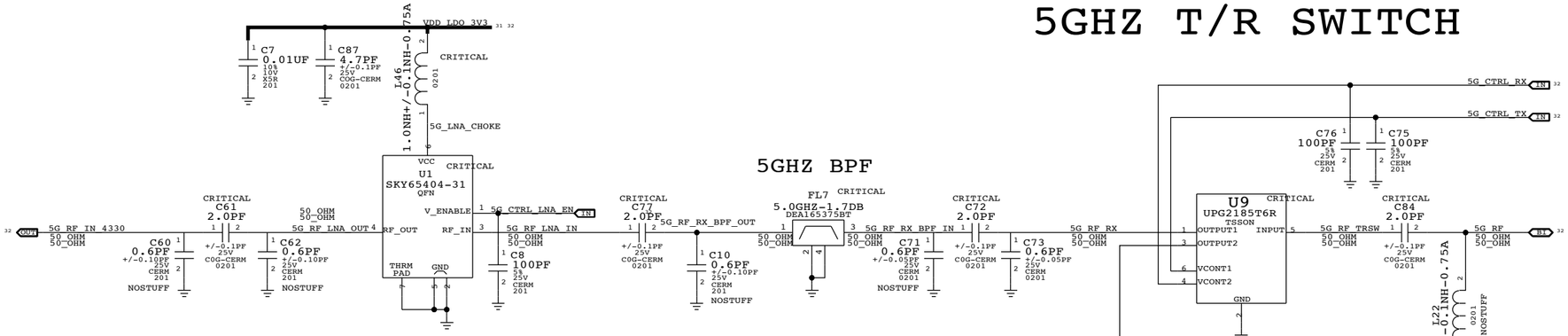
5GHZ FRONT-END CONTROL

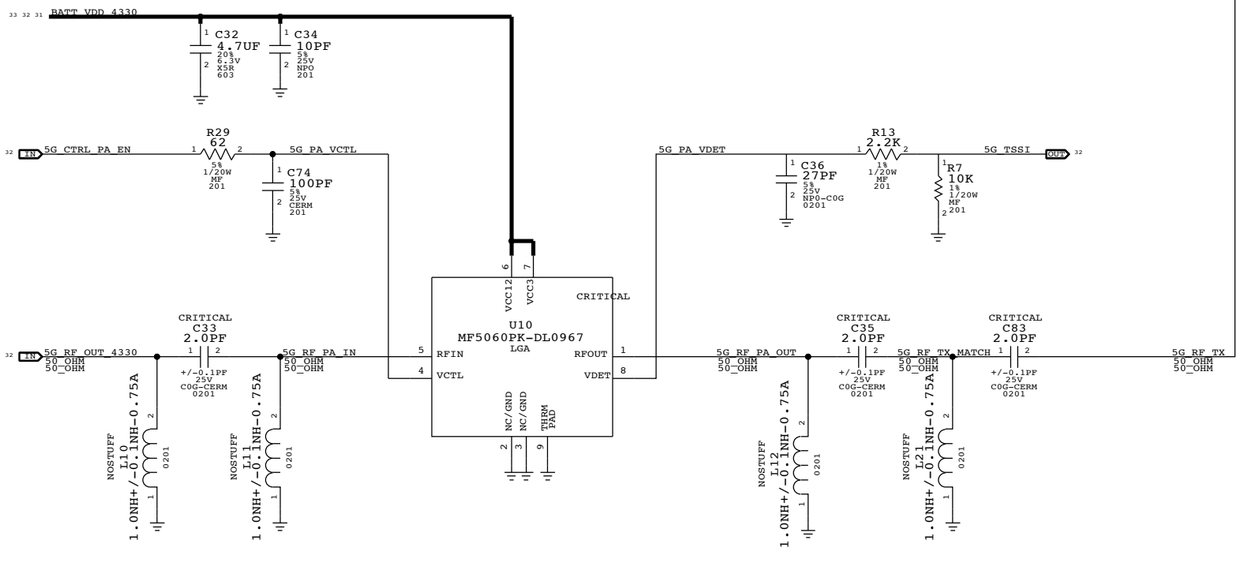
VCRL1	VCTL2	PA_EN	LNA_EN	MODE
1	0	0	1	RX SUPERBYPASS MODE -- 26DB GAIN STEP
0	1	0	1	RX
1	0	1	0	TX

5GHZ LNA



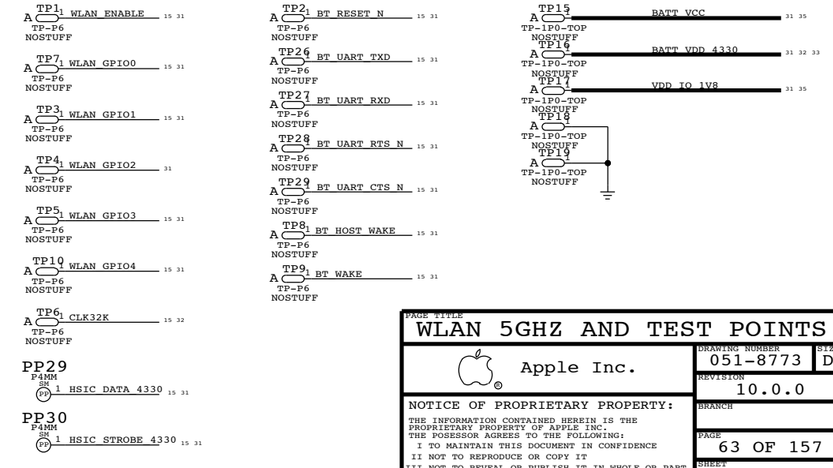
5GHZ T/R SWITCH

5GHZ PA



TEST POINTS

TEST AND PROBE POINTS



PAGE TITLE
WLAN 5GHZ AND TEST POINTS

Apple Inc.

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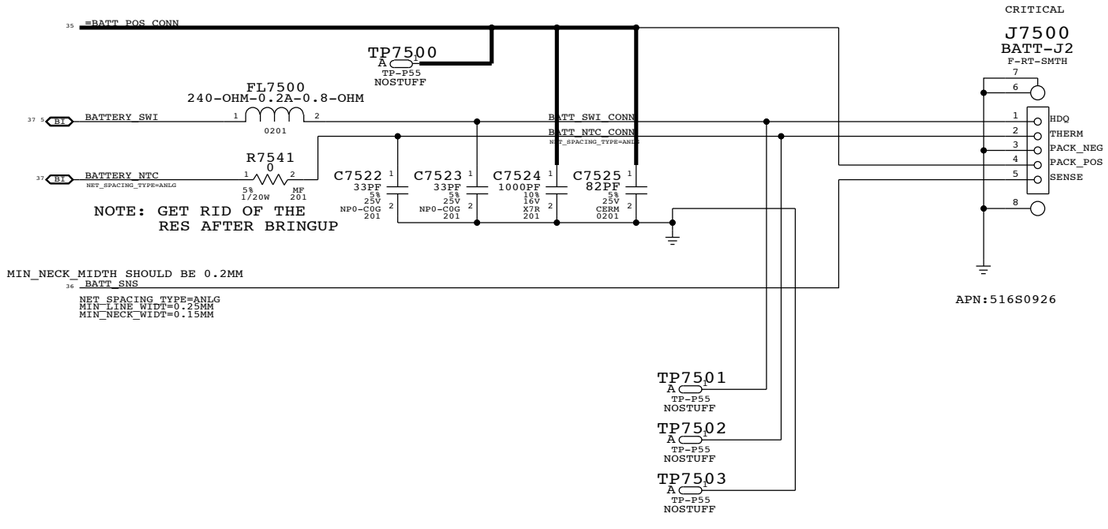

SYNC_MASTER=MADHAVI SYNC_DATE=01/13/2011

PAGE TITLE

POWER: BATTERY CONNECTOR

Apple Inc.

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POWER CONN / ALIAS

LDO RAILS

PROGRAMMABLE ON/OFF

LDO1
45 36 PP3V0_GRAPE
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_GRAPE (17 18)
→ =PP3V0_GRAPE_MARIO1 (17)
→ =PP3V0_GRAPE_Z1 (18)
→ =PP3V0_GRAPE_Z2 (18)

LDO2
45 40 36 PP1V7_VA_VCP
MAKE_BASE=TRUE
VOLTAGE=1.7V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V7_VA_VCP (19)

LDO3
45 36 PP3V0_VIDEO
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_VIDEO_H4 (7)

LDO4
45 36 PP3V0_OPTICAL
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 mm
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_OPTICAL (26)

LDO5
45 36 PP3V2_LDO5
MAKE_BASE=TRUE
VOLTAGE=3.2V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V2_LDO5

LDO6
45 36 PP3V3_ACC
MAKE_BASE=TRUE
VOLTAGE=3.3V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V3_PORT_ACC (27)

LDO7
45 36 PP3V0_VIDEO_BUF
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_VIDEO_BUF (11)

LDO8
45 36 PP3V2_S2R_USBMUX
MAKE_BASE=TRUE
VOLTAGE=3.2V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V2_S2R_USBMUX (11)

LDO9
45 36 PP3V0_IO
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_IO_MISC (6 28)
→ =PP3V0_IO_H4 (7 9)
→ =PP3V0_VDDIOD_H4 (9)

LDO10
45 36 PP3V0_S2R_HALL
MAKE_BASE=TRUE
VOLTAGE=3.0V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP3V0_S2R_HALL (26)
→ =PP3V0_S2R_HALL_CHSW (22)

LDO11
45 36 PP2V85_CAM
MAKE_BASE=TRUE
VOLTAGE=2.85V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP2V85_CAM (26)

LDO12
45 36 PP1V1
MAKE_BASE=TRUE
VOLTAGE=1.1V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V1_PLL_H4 (4)
→ =PP1V1_MIPI_H4 (7)
→ =PP1V1_DP_PAD_DVDD_H4 (7)
→ =PP1V1_USB_H4 (4)
→ =PP1V1_HSIC_H4 (4)
→ =PP1V1_MIPI_PLL_H4 (4)
→ =PP1V1_EDP_PAD_DVDD_H4 (7)

45 36 PP1V8_ALWAYS
MAKE_BASE=TRUE
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.2 MM
MIN_NECK_WIDTH=0.1 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V8_ALWAYS (5)

BUCK RAILS

BUCK0
45 36 PP1V25_CPU
MAKE_BASE=TRUE
VOLTAGE=1.25V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.25 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PPVDD_CPU_H4 (9)

BUCK2
45 36 PP1V2_SOC
MAKE_BASE=TRUE
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.25 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PPVDD_SOC_H4 (9)

BUCK3
45 36 PP1V8_S2R
MAKE_BASE=TRUE
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.15 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V8_S2R_MISC (5 27 39)
→ VDD_IO_1V8 (31 33)
→ =PP1V8_S2R_DDR (13 14)

CPU1V8_SW (BUCK3)
36 45 PP1V8
MAKE_BASE=TRUE
VOLTAGE=1.1V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.2MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V8_CAM (25)
→ =PP1V8_SENSOR (26)
→ =PP1V8_DP_H4 (7)
→ =PP1V8_AUDIO (19)
→ =PP1V8_H4 (4 7 10)
→ =PP1V8_NAND_H4 (9)
→ =PP1V8_MIPI_H4 (7)
→ =PP1V8_NAND (12)
→ =PP1V8_VDDIO18_H4 (9)
→ =PP1V8_EDP_H4 (7)
→ =PP1V8_VDDIOD_H4 (5 9)
→ =PP1V8_VDDA18_TS (5)

WDIG_SW (BUCK3)
45 36 PP1V8_GRAPE
MAKE_BASE=TRUE
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.6 mm
MIN_NECK_WIDTH=0.2 mm
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V8_GRAPE

BUCK4
45 36 PP1V2_S2R
MAKE_BASE=TRUE
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.25 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V2_S2R_H4 (8)
→ =PP1V2_S2R_DDR (13 14)

BUCK4_SW
45 36 PP1V2
MAKE_BASE=TRUE
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 mm
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP1V2_VDDIOD_H4 (8 9)
→ =PP1V2_HSIC_H4 (4)
→ =PP1V2_VDDQ_DDR (13 14)

BUCK5
45 36 PP3V3_OUT
MAKE_BASE=TRUE
VOLTAGE=3.3V
MIN_LINE_WIDTH=0.2MM
MIN_NECK_WIDTH=0.1MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3MM
→ =PP3V3_NAND (12)
→ =PP3V3_USB_H4 (4)
→ =PP3V3_NAND_H4 (9)
→ =PP3V3_LCD (16)

VOUT_LED_A
45 37 PPLED_OUT_A
MAKE_BASE=TRUE
VOLTAGE=20.4V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PPLED_REG_A (16)

VOUT_LED_B
45 37 PPLED_OUT_B
MAKE_BASE=TRUE
VOLTAGE=20.4V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.2 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PPLED_REG_B (16)

CHARGER MAIN

45 37 36 PPVCC_MAIN
MAKE_BASE=TRUE
VOLTAGE=4.7V
MIN_LINE_WIDTH=0.6MM
MIN_NECK_WIDTH=0.1MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PPVCC_MAIN_LED (37)
→ =PPVCC_MAIN_AUDIO (19 20 22)
→ =PPVCC_MAIN_DOCK (27)

BATTERY

45 39 36 PPBATT_VCC
MAKE_BASE=TRUE
VOLTAGE=4.2V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.20 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =BATT_POS_F_3G (30)
→ =BATT_POS_CONN (34)
→ BATT_VCC (31 33) USED BY WIFI_BT

USB POWER INPUT

27 PPVBUS_USB_EMI
→ PPVBUS_USB_DCIN (36 45)
MAKE_BASE=TRUE

LCM_BOOST

45 37 PP5V25_VLCM2
MAKE_BASE=TRUE
VOLTAGE=5.25V
MIN_LINE_WIDTH=0.6 MM
MIN_NECK_WIDTH=0.25 MM
NET_SPACING_TYPE=PWR
MAX_NECK_LENGTH=3 MM
→ =PP5V25_GRAPE_VDDH

GND
MAKE_BASE=TRUE
VOLTAGE=0V
MIN_LINE_WIDTH=0.3MM
MIN_NECK_WIDTH=0.15MM
NET_SPACING_TYPE=GND
MAX_NECK_LENGTH=5 MM

SYNC_MASTER=MADHAVI SYNC_DATE=01/13/2011
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POWER ALIASES

Apple Inc.

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PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0392	197S0299	?	Y8138	RADAR:8788152
152S1452	152S1292	?	L8128	RADAR:8376462

ALTERNATE FOUNDRY

MOSFET	FDMC6676BZ
CHANNEL	P-TYPE
RDS(ON)	27 MOHM @-4.5V
IMAX	6.9 A
VGS MAX	+/- 25V

USB REVERSE VOLTAGE PROTECTION

NOTE: FOR NO BATTERY SITUATION

VCC_MAIN BYPASS

TOTAL CAPS = ~400UF

(DISTRIBUTED AND NO DE-RATING)

(PLACE ONE 10UF CAP AT EACH VDD INPUT)

NOTE: CONCERNED ABOUT ESR > 20MOHM

NOTE: CHANGE SOME 1UF TO 4.7UF

LDO BYPASS

SYNC_MASTER=MADHAVI	SYNC_DATE=01/13/2011
PAGE TITLE	POWER: AMELIA PMU
Apple Inc.	DRAWING NUMBER 051-8773 SIZE D
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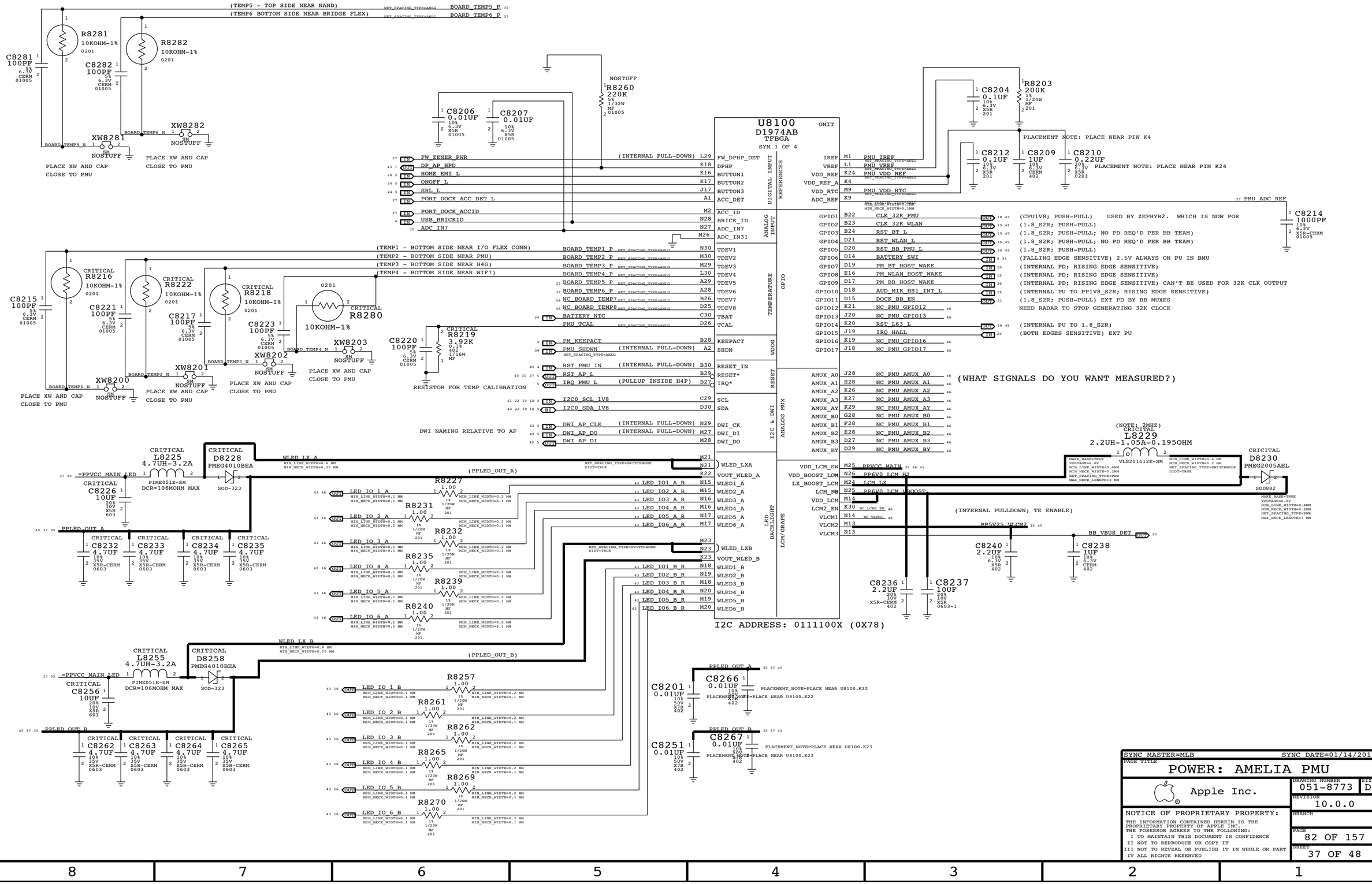
(TEMP5 - TOP SIDE NEAR NAND)
(TEMP6 BOTTOM SIDE NEAR BRIDGE FLEX)
BOARD_TEMP5_P
BOARD_TEMP6_P
R8281 10KOHM-1% 0201
R8282 10KOHM-1% 0201
C8281 100PF 5% 6.3V CERM 01005
C8282 100PF 5% 6.3V CERM 01005
XW8281 NOSTUFF
XW8282 NOSTUFF
PLACE XW AND CAP CLOSE TO PMU
C8206 0.01UF 10% 6.3V X5R 01005
C8207 0.01UF 10% 6.3V X5R 01005
R8260 220K 5% 1/32W MF 01005
NOSTUFF
FW_ZENER_PWR
DP_AP_HPD
HOME_EMI_L
ONOFF_L
SRL_L
PORT_DOCK_ACC_DET_L
PORT_DOCK_ACCID
USB_BRICKID
ADC_IN7
U8100
D1974AB
TFBGA
SYM 1 OF 4
OMIT
FW_DPHP_DET
DPHP
BUTTON1
BUTTON2
BUTTON3
ACC_DET
ACC_ID
BRICK_ID
ADC_IN7
ADC_IN31
TDEV1
TDEV2
TDEV3
TDEV4
TDEV5
TDEV6
TDEV7
TDEV8
TBAT
TCAL
KEEPACT
SHDN
RESET_IN
RESET*
IRQ*
SCL
SDA
DWI_CK
DWI_DI
DWI_DO
WLED_LXA
VOUT_WLED_A
WLED1_A
WLED2_A
WLED3_A
WLED4_A
WLED5_A
WLED6_A
WLED_LXB
VOUT_WLED_B
WLED1_B
WLED2_B
WLED3_B
WLED4_B
WLED5_B
WLED6_B
DIGITAL INPUT
REFERENCES
ANALOG INPUT
TEMPERATURE
WDOG
RESET
I2C & DWI
ANALOG MUX
LED BACKLIGHT
LCM/GRAPE
C8204 0.1UF 10% 6.3V X5R 201
R8203 200K 1% 1/20W MF 201
C8212 0.1UF 10% 6.3V X5R 201
C8209 1UF 10% 6.3V CERM 402
C8210 0.22UF 20% 6.3V X5R 0201
PLACEMENT NOTE: PLACE NEAR PIN K4
IREF
VREF
VDD_REF
VDD_REF_A
VDD_RTC
ADC_REF
PMU_IREF
PMU_VREF
PMU_VDD_REF
PMU_VDD_RTC
PMU_ADC_REF
C8214 1000PF 10% 6.3V X5R-CERM 01005
GPIO1 CLK_32K_PMU (CPU1V8; PUSH-PULL) USED BY ZEPHYR2. WHICH IS NOW POR
GPIO2 CLK_32K_WLAN (1.8_S2R; PUSH-PULL)
GPIO3 RST_BT_L (1.8_S2R; PUSH-PULL; NO PD REQ'D PER BB TEAM)
GPIO4 RST_WLAN_L (1.8_S2R; PUSH-PULL; NO PD REQ'D PER BB TEAM)
GPIO5 RST_BB_PMU_L (1.8_S2R; PUSH-PULL)
GPIO6 BATTERY_SWI (FALLING EDGE SENSITIVE) 2.5V ALWAYS ON PU IN BMU
GPIO7 PM_BT_HOST_WAKE (INTERNAL PD; RISING EDGE SENSITIVE)
GPIO8 PM_WLAN_HOST_WAKE (INTERNAL PD; RISING EDGE SENSITIVE)
GPIO9 PM_BB_HOST_WAKE (INTERNAL PD; RISING EDGE SENSITIVE) CAN'T BE USED FOR 32K CLK OUTPUT
GPIO10 AUD_MIK_HS1_INT_L (INTERNAL PU TO PP1V8_S2R; RISING EDGE SENSITIVE)
GPIO11 DOCK_BB_EN (1.8_S2R; PUSH-PULL) EXT PD BY BB MUXES
GPIO12 NC_PMU_GPIO12 NEED RADAR TO STOP GENERATING 32K CLOCK
GPIO13 NC_PMU_GPIO13
GPIO14 RST_L63_L (INTERNAL PU TO 1.8_S2R)
GPIO15 IRQ_HALL (BOTH EDGES SENSITIVE) EXT PU
GPIO16 NC_PMU_GPIO16
GPIO17 NC_PMU_GPIO17
GPIO
AMUX_A0 NC_PMU_AMUX_A0
AMUX_A1 NC_PMU_AMUX_A1
AMUX_A2 NC_PMU_AMUX_A2
AMUX_A3 NC_PMU_AMUX_A3
AMUX_AY NC_PMU_AMUX_AY
AMUX_B0 NC_PMU_AMUX_B0
AMUX_B1 NC_PMU_AMUX_B1
AMUX_B2 NC_PMU_AMUX_B2
AMUX_B3 NC_PMU_AMUX_B3
AMUX_BY NC_PMU_AMUX_BY
(WHAT SIGNALS DO YOU WANT MEASURED?)
VDD_LCM_SW PPVCC_MAIN
VDD_BOOST_LCM PP6V0_LCM_BT
LX_BOOST_LCM LCM_LX
LCM_FB PP6V0_LCM_VBOOST
VDD_LCM
LCM2_EN NC_LCM2_EN
VLCM1 NC_VLCM1
VLCM2 PP5V25_WLCM2
VLCM3
(INTERNAL PULLDOWN; TE ENABLE)
BB_VBUS_DET
C8240 2.2UF 20% 6.3V X5R 402
C8238 1UF 10% 6.3V CERM 402
C8236 2.2UF 20% 10V X5R-CERM 402
C8237 10UF 20% 10V X5R 0603-1
I2C ADDRESS: 0111100X (0X78)
(TEMP1 - BOTTOM SIDE NEAR I/O FLEX CONN)
(TEMP2 - BOTTOM SIDE NEAR PMU)
(TEMP3 - BOTTOM SIDE NEAR H4G)
(TEMP4 - BOTTOM SIDE NEAR WIFI)
BOARD_TEMP1_P
BOARD_TEMP2_P
BOARD_TEMP3_P
BOARD_TEMP4_P
BOARD_TEMP5_P
BOARD_TEMP6_P
NC_BOARD_TEMP7
NC_BOARD_TEMP8
BATTERY_NTC
PMU_TCAL
C8215 100PF 5% 6.3V CERM 01005
C8221 100PF 5% 6.3V CERM 01005
C8217 100PF 5% 6.3V CERM 01005
C8223 100PF 5% 6.3V CERM 01005
C8220 100PF 5% 6.3V CERM 01005
R8216 CRITICAL 10KOHM-1% 0201
R8222 CRITICAL 10KOHM-1% 0201
R8218 CRITICAL 10KOHM-1% 0201
R8280 CRITICAL 10KOHM-1% 0201
R8219 CRITICAL 3.92K 0.1% 402 1/16W MF
RESISTOR FOR TEMP CALIBRATION
XW8200 NOSTUFF
XW8201 NOSTUFF
XW8202 NOSTUFF
XW8203 NOSTUFF
PLACE XW AND CAP CLOSE TO PMU
PM_KEEPACT
PMU_SHDWN (INTERNAL PULL-DOWN)
RST_PMU_IN (INTERNAL PULL-DOWN)
RST_AP_L
IRQ_PMU_L (PULLUP INSIDE H4P)
I2C0_SCL_1V8
I2C0_SDA_1V8
DWI_AP_CLK (INTERNAL PULL-DOWN)
DWI_AP_DO (INTERNAL PULL-DOWN)
DWI_AP_DI
DWI NAMING RELATIVE TO AP
(NOTE: 2MHZ)
CRICITAL L8229 2.2UH-1.05A-0.195OHM
VLS201612E-SM
CRICITAL D8230 PMEG2005AEL
SOD882
=PPVCC_MAIN_LED
PPLED_OUT_A
PPLED_OUT_B
CRITICAL L8225 4.7UH-3.2A
CRITICAL L8255 4.7UH-3.2A
PIME051E-SM
DCR=106MOHM MAX
CRITICAL D8228 PMEG4010BEA
CRITICAL D8258 PMEG4010BEA
SOD-323
C8226 10UF 20% 10V X5R 603
C8232 4.7UF 10% 35V X5R-CERM 0603
C8233 4.7UF 10% 35V X5R-CERM 0603
C8234 4.7UF 10% 35V X5R-CERM 0603
C8235 4.7UF 10% 35V X5R-CERM 0603
C8256 10UF 20% 10V X5R 603
C8262 4.7UF 10% 35V X5R-CERM 0603
C8263 4.7UF 10% 35V X5R-CERM 0603
C8264 4.7UF 10% 35V X5R-CERM 0603
C8265 4.7UF 10% 35V X5R-CERM 0603
WLED_LX_A
WLED_LX_B
(PPLED_OUT_A)
(PPLED_OUT_B)
R8227 1.00
R8231 1.00
R8232 1.00
R8235 1.00
R8239 1.00
R8240 1.00
R8257 1.00
R8261 1.00
R8262 1.00
R8265 1.00
R8269 1.00
R8270 1.00
LED_IO_1_A
LED_IO_2_A
LED_IO_3_A
LED_IO_4_A
LED_IO_5_A
LED_IO_6_A
LED_IO_1_B
LED_IO_2_B
LED_IO_3_B
LED_IO_4_B
LED_IO_5_B
LED_IO_6_B
C8201 0.01UF 10% 50V X7R 402
C8266 0.01UF 10% 50V X7R 402
C8251 0.01UF 10% 50V X7R 402
C8267 0.01UF 10% 50V X7R 402
PLACEMENT_NOTE=PLACE NEAR U8100.K22
PLACEMENT_NOTE=PLACE NEAR U8100.K23
SYNC_MASTER=MLB
SYNC_DATE=01/14/2011
PAGE TITLE
POWER: AMELIA PMU
Apple Inc.
DRAWING NUMBER 051-8773
SIZE D
REVISION 10.0.0
BRANCH
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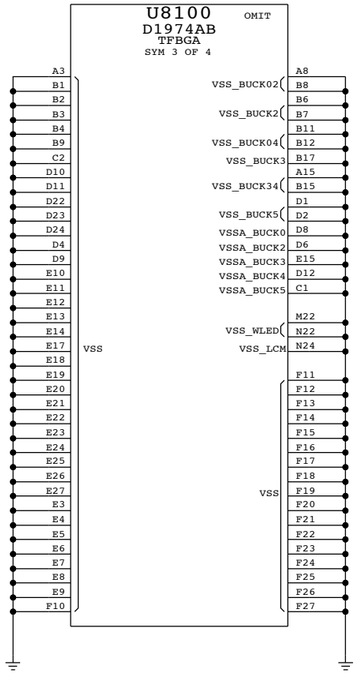

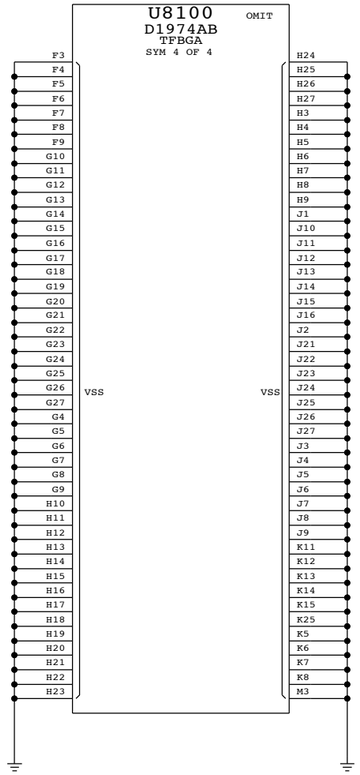

SYNC MASTER=MADHAVI SYNC DATE=01/13/2011

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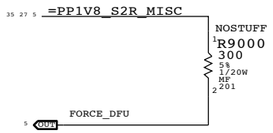

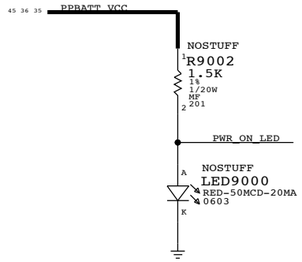

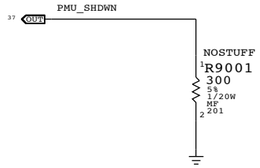

SYNC MASTER=ALEX SYNC DATE=10/04/2010

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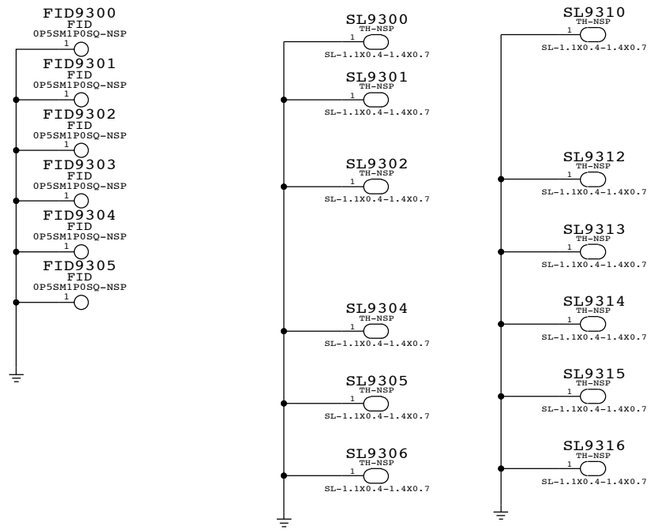
PLATED THROUGH HOLES

DRILL SIZE: 1.1MM X 0.4MM
PLATING SIZE: 1.4MM X 0.7MM



PROBE POINTS

PP0	CODEC_LINE_OUT_REF	19 21
PP1	CODEC_LINE_OUT_R	19 21
PP2	AUD_SPKR_AMP2_PBUS	20
PP3	AUD_SPKR_AMP1_PBUS	20
PP4	CODEC_LINE_OUT_L	19 21
PP5	DDR0_DQS_P<0>	8 13 44
PP6	DDR0_DQ<0>	8 13 44
PP7	DDR0_DQS_N<0>	8 13 44
PP8	DDR0_DQS_N<1>	8 13 44
PP9	DDR0_DQ<14>	8 13 44
PP10	HSIC1_WLAN_DATA1	4 15 42
PP11	HSIC1_WLAN_STB1	4 15 42
PP12	Z1_BON_L<5>	17 18
PP13	Z1_B_ADR<2>	17 18
PP14	Z1_B_ADR<1>	17 18
PP15	Z1_B_ADR<0>	17 18
PP16	Z1_MISO	17 18
PP17	Z1_BON_L<4>	17 18
PP18	PP1V7_VA_VCP	35 36 45
PP19	CONN_AUD_HEADSET_CHS_RET2	23 24
PP20	CONN_AUD_HEADSET_CHS_MIC2	23 24
PP21	CONN_AUD_HEADSET_DET	23 24
PP22	AUD_HP1_DET_H	23
PP23	AUD_HS_MIC2_RET	22 23
PP24	AUD_HS_MIC1_HI	22 23
PP25	AUD_HS_MIC1_RET	22 23
PP26	AUD_HS_MIC2_HI	22 23

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MLB CONSTRAINTS

	BOARD LAYERS	BOARD AREAS	BOARD UNITS (MIL or MM)	ALLEGRO VERSION
TOP	ISL2,ISL3,ISL4,ISL5,ISL6,ISL7,ISL8,ISL9,ISL10,ISL11,BOTTOM	NO_TYPE,BGA,BGA06-06	MM	16.2

PHYSICAL CONSTRAINTS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
DEFAULT	*	Y	=45_OHM_SE	=45_OHM_SE	30 MM	0 MM	0 MM
STANDARD	*	Y	=DEFAULT	=DEFAULT	12.7 MM	=DEFAULT	=DEFAULT

SINGLE-ENDED PHYSICAL RULES
45 OHMS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
45_OHM_SE	ISL1,ISL12	Y	0.110 MM	0.060 MM	3.0 MM		
45_OHM_SE	ISL5,ISL8	Y	0.077 MM	0.060 MM	3.0 MM		
45_OHM_SE	ISL3	Y	0.055 MM	0.050 MM	3.0 MM		
45_OHM_SE	*	N	0.055 MM	0.050 MM	3.0 MM		

50 OHMS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
50_OHM_SE	ISL1,ISL12	Y	0.088 MM	0.050 MM	3.0 MM		
50_OHM_SE	ISL3	Y	0.050 MM	0.050 MM	3.0 MM		
50_OHM_SE	ISL5,ISL8	Y	0.062 MM	0.050 MM	3.0 MM		
50_OHM_SE	*	N	0.050 MM	0.050 MM	3.0 MM		

DIFFERENTIAL PAIR PHYSICAL RULES

90 OHMS

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
90_OHM_DIFF	TOP,BOTTOM	Y	0.085 MM	0.085 MM		0.110 MM	0.110 MM
90_OHM_DIFF	ISL3	Y	0.051 MM	0.051 MM	=STANDARD	0.120 MM	0.120 MM
90_OHM_DIFF	ISL5,ISL8	Y	0.072 MM	0.075 MM	=STANDARD	0.120 MM	0.120 MM

MISC PHYSICAL RULES

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
1:1_DIFFPAIR	*	Y	=STANDARD	=STANDARD	=STANDARD	0.08 MM	0.08 MM
SPEAKER	*	Y	0.3 MM	0.19MM	10 MM	0.08 MM	0.08 MM
LED	*	Y	0.2 MM	0.10MM	10 MM	0.08 MM	0.08 MM

BGA AREA PHYSICAL RULES

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
*	BGA	BGA_PHY

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
BGA_PHY	*	Y	0.060 MM	0.060 MM	=STANDARD	0.076 MM	0.075 MM

SPACING CONSTRAINTS

DEFAULT/BGA SPACING RULES

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
DEFAULT	*	0.100 MM	?
STANDARD	*	=DEFAULT	?
BGA_SPA	*	=DEFAULT	?

REGULAR SPACING RULES

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
1:1_SPACING	*	0.057 MM	?
0P08_SPACING	*	0.080 MM	?
1.5:1_SPACING	*	0.086 MM	?
2:1_SPACING	*	0.114 MM	?
2.5:1_SPACING	*	0.143 MM	?
3:1_SPACING	*	0.171 MM	?
4:1_SPACING	*	0.228 MM	?
5:1_SPACING	*	0.285 MM	?
0P5MM_SPACING	*	0.5 MM	?
0P64MM_SPACING	*	0.64 MM	?

*NOTE: ASSUMING 0.060MM DIELECTRIC THICKNESS

POWER/GND SPACING RULES

SPACING_RULE_SET	LAYER	LINE-TO-LINE SPACING	WEIGHT
PWR_P1SPACING	*	0.1 MM	900
GND_P1SPACING	*	0.1 MM	950
SWITCHNODE	*	0.5 MM	1000
SWITCHNODE	TOP,BOTTOM	0.2 MM	1000

POWER

PHYSICAL_RULE_SET	LAYER	ALLOW ROUTE ON LAYER?	MINIMUM LINE WIDTH	MINIMUM NECK WIDTH	MAXIMUM NECK LENGTH	DIFFPAIR PRIMARY GAP	DIFFPAIR NECK GAP
PWR	*	Y	0.6MM	0.25 MM	10.0 MM		
GND_PH	*	Y	0.6MM	0.075 MM	10.0 MM		

MISC

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
*	*	BGA	BGA_SPA
CLK	*	BGA	BGA_SPA
PWR	*	*	PWR_P1SPACING
GND	*	*	GND_P1SPACING
SWITCHNODE	*	*	SWITCHNODE
ANLG	*	*	3:1_SPACING
LED	*	*	3:1_SPACING

NOTES:

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

SYNC MASTER=MIKE SYNC DATE=01/21/2011

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CONSTRAINTS: MLB RULES

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Clock Signal Constraints

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
CLK_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CLK	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I63	CLK_50S	CLK	CLK_32K_PMU	18 37
I162	CLK_50S	CLK	CLK_32K_WLAN	15 37
I81	CLK_50S	CLK	CLK_32K_GPS	
I88	CLK_50S	CLK	CLK_CAM_FF	7 25
I89	CLK_50S	CLK	CLK_CAM_FF_FILT	25
I95	SE_50S	0P2MM_SPACING	CLK_CAM_FF_CONN	24 25
I96	CLK_50S	CLK	CLK_CAM_RF	7 25
I98	CLK_50S	CLK	CLK_CAM_RF_FILT	25
I225	CLK_50S	CLK	CLK_CAM_RF_CONN	24 25
I135	CLK_50S	CLK	I2S0_ASP_MCK	5
I133	CLK_50S	CLK	I2S0_ASP_MCK_R	5 19
I157	CLK_50S	CLK	CLK_CAM_FF_R	7
I150	CLK_50S	CLK	CLK_CAM_RF_R	7
I235	CLK_50S	CLK	CLK_CAM_FF_C	25
I235	CLK_50S	CLK	CLK_CAM_RF_C	25

UART

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
UART_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
UART	*	*	3:1_SPACING
UART	UART	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I231	UART_50S	UART	UART0_AP_RXD	5 15
I230	UART_50S	UART	UART0_AP_TXD	5 15
I174	UART_50S	UART	UART0_MUX_RXD	11 15
I173	UART_50S	UART	UART0_MUX_TXD	11 15
I178	UART_50S	UART	UART1_BB_CTS_L	5 30
I176	UART_50S	UART	UART1_BB_RTS_L	5 30
I177	UART_50S	UART	UART1_BB_TXD	5 30
I175	UART_50S	UART	UART1_BB_RXD	5 30
I170	UART_50S	UART	UART3_BT_CTS_L	5 15
I167	UART_50S	UART	UART3_BT_RTS_L	5 15
I171	UART_50S	UART	UART3_BT_RXD	5 15
I169	UART_50S	UART	UART3_BT_TXD	5 15
I232	UART_50S	UART	UART6_WLAN_RXD	5 15
I233	UART_50S	UART	UART6_WLAN_TXD	5 15

SPI

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
SPI_50S	*	45_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
SPI	*	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I184	SPI_50S	SPI	SPI1_GRAPE_MISO	5 17
I184	SPI_50S	SPI	SPI1_GRAPE_MOSI	5 17
I184	SPI_50S	SPI	SPI1_GRAPE_SCLK	5 17
I186	SPI_50S	SPI	SPI1_GRAPE_CS_L	5 17
I189	SPI_50S	SPI	SPI2_IPC_MISO	5 30
I188	SPI_50S	SPI	SPI2_IPC_MOSI	5 30
I188	SPI_50S	SPI	SPI2_IPC_SCLK	5 30
I190	SPI_50S	SPI	SPI2_IPC_SRDY	5 30

DWI

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
DWI	*	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I157		DWI	DWI_AP_CLK	5 37
I155		DWI	DWI_AP_DI	5 37
I154		DWI	DWI_AP_DO	5 37

JTAG

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
JTAG	*	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I116		JTAG	JTAG_AP_TCK	4 27
I115		JTAG	JTAG_AP_TMS	4 27
I114		JTAG	JTAG_AP_TDI	4 10
I113		JTAG	JTAG_AP_TDO	4 10
I120		RST	JTAG_AP_TRST_L	4 10 45

I2C

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
I2C_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
I2C	*	*	1.5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I1	I2C_50S	I2C	I2C1_SDA_1V8	5 10 25
I2	I2C_50S	I2C	I2C1_SCL_1V8	5 10 25
I3	I2C_50S	I2C	I2C0_SDA_1V8	5 10 19 22 37
I4	I2C_50S	I2C	I2C0_SCL_1V8	5 10 19 22 37
I61	I2C_50S	I2C	I2C2_SDA_3V0	5 25
I62	I2C_50S	I2C	I2C2_SCL_3V0	5 25
I98	I2C_50S	I2C	ISP_AP_0_SCL	7 25
I99	I2C_50S	I2C	ISP_AP_0_SDA	7 25
I100	I2C_50S	I2C	ISP_AP_1_SCL	7 25
I101	I2C_50S	I2C	ISP_AP_1_SDA	7 25
I102	I2C_50S	I2C	I2C2_SCL_3V0_ALS	10 24 25
I103	I2C_50S	I2C	I2C2_SDA_3V0_ALS	10 24 25
I225	I2C_50S	I2C	I2C1_SCL_1V8_CONN	24 25
I225	I2C_50S	I2C	I2C1_SDA_1V8_CONN	24 25
I125	I2C_50S	I2C	ISP_CAM_1_SCL	24 25
I125	I2C_50S	I2C	ISP_CAM_1_SDA	24 25
I220	I2C_50S	I2C	ISP_CAM_0_SCL	24 25
I220	I2C_50S	I2C	ISP_CAM_0_SDA	24 25

XTAL

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
CRYSTAL	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I92		CRYSTAL	XTAL_24M_I	4
I90		CRYSTAL	XTAL_24M_O	4
I93		CRYSTAL	24M_O	4
I230		CRYSTAL	PMU_XTAL	36
I231		CRYSTAL	PMU_EXTAL	36

I2S

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
I2S_90S	*	45_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
I2S	*	*	3:1_SPACING
I2S	I2S	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I140	I2S_50S	I2S	I2S0_ASP_BCLK	5 19
I145	I2S_50S	I2S	I2S0_ASP_LRCK	5 19
I142	I2S_50S	I2S	I2S0_ASP_DIN	5 19
I141	I2S_50S	I2S	I2S0_ASP_DOUT	5 19
I159	I2S_50S	I2S	I2S_L63_ASP_SDOUT	19
I144	I2S_50S	I2S	I2S2_VSP_BCLK	5 15 19
I148	I2S_50S	I2S	I2S2_VSP_LRCK	5 15 19
I147	I2S_50S	I2S	I2S2_VSP_DIN	5 15 19
I146	I2S_50S	I2S	I2S2_VSP_DOUT	5 15 19
I160	I2S_50S	I2S	I2S_L63_VSP_SDOUT	19
I143	I2S_50S	I2S	I2S3_XSP_BCLK	5 19
I149	I2S_50S	I2S	I2S3_XSP_LRCK	5 19
I136	I2S_50S	I2S	I2S3_XSP_DIN	5 19
I151	I2S_50S	I2S	I2S3_XSP_DOUT	5 19
I161	I2S_50S	I2S	I2S_L63_XSP_SDOUT	19

USB

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
USB_90D	*	90_OHM_DIFF

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
USB	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I5	USB_90D	USB	USB_DK_D0_P	4 27
I6	USB_90D	USB	USB_DK_D0_N	4 27
I7	USB_90D	USB	USB_DK_CON_D0_P	
I8	USB_90D	USB	USB_DK_CON_D0_N	
I82	USB_90D	USB	USB_BB_D_P	11 30
I83	USB_90D	USB	USB_BB_D_N	11 30
I84	USB_90D	USB	USB11_MUX_D0_P	4 11
I85	USB_90D	USB	USB11_MUX_D0_N	4 11
I129	USB_90D	USB	USB11_ACC_TX_N	11 27
I127	USB_90D	USB	USB11_ACC_RX_P	11 27
I171	USB_90D	USB	ACC_PT_DK_CON_TX	27 29
I172	USB_90D	USB	ACC_PT_DK_CON_RX	27 29
I208	USB_90D	USB	EXTRA_USB_D1_N	
I206	USB_90D	USB	EXTRA_USB_D1_P	
I205	USB_90D	USB	NC_USB11_D1_N	4 46
I207	USB_90D	USB	NC_USB11_D1_P	4 46
I208	USB_90D	USB	NC_USB_D1_N	4 46
I209	USB_90D	USB	NC_USB_D1_P	4 46
I210	USB_90D	USB	TP_WLAN_USB_DN	
I211	USB_90D	USB	TP_WLAN_USB_DP	
I212	USB_90D	USB	USB_GPIO_DM	
I214	USB_90D	USB	USB_GPIO_DM_CONN	
I213	USB_90D	USB	USB_GPIO_DP	
I215	USB_90D	USB	USB_GPIO_DP_CONN	
I216	USB_90D	USB	USB_PT_DK_CON_D_N	27 29
I217	USB_90D	USB	USB_PT_DK_CON_D_P	27 29
I218	USB_90D	USB	USB_UART_DM	
I219	USB_90D	USB	USB_UART_DM_CONN	
I222	USB_90D	USB	USB_UART_DP	
I221	USB_90D	USB	USB_UART_DP_CONN	
I223	USB_90D	USB	EXTRA_USB11_D1_N	
I224	USB_90D	USB	EXTRA_USB11_D1_P	

HSIC

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
HSIC	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
HSIC	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
I191	HSIC	HSIC_BB	HSIC0_BB_DATA1	4 30
I192	HSIC	HSIC_BB	HSIC0_BB_STB1	4 30
I193	HSIC	HSIC_WLAN	HSIC1_WLAN_DATA1	4 15 40
I192	HSIC	HSIC_WLAN	HSIC1_WLAN_STB1	4 15 40
I195	HSIC	HSIC	HSIC_BB_RDY	5 30
I196	HSIC	HSIC	HSIC_HOST_RDY	5 30
I197	HSIC	HSIC	HSIC_HOST_READY_WL	5
I198	HSIC	HSIC	HSIC_HOST_READY_WLAN	5 15
I199	HSIC	HSIC	HSIC_WLAN_RDY	5 15
I200	HSIC	HSIC	NC_HSIC0_DATA2	4 46
I201	HSIC	HSIC	NC_HSIC0_STB2	4 46
I202	HSIC	HSIC	NC_HSIC1_DATA2	4 46
I203	HSIC	HSIC	NC_HSIC1_STB2	4 46

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PAGE TITLE
CONSTRAINTS: LOW SPEED BUS

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ANALOG VIDEO CONSTRAINTS

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

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
ANALOG_VIDEO	*	*	5:1_SPACING
ANALOG_VIDEO	ANALOG_VIDEO	*	3:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P213	VID_50S	ANALOG_VIDEO	DAC_AP_OUT1 7 11
P214	VID_50S	ANALOG_VIDEO	DAC_AP_OUT2 7 11
P215	VID_50S	ANALOG_VIDEO	DAC_AP_OUT3 7 11
P232	VID_50S	ANALOG_VIDEO	BUF_C_Y 11
P233	VID_50S	ANALOG_VIDEO	BUF_CVBS_PB 11
P231	VID_50S	ANALOG_VIDEO	BUF_Y_PR 11
P219	VID_50S	ANALOG_VIDEO	VIDEO_EMI_CVBS_PB 10 11 27
P220	VID_50S	ANALOG_VIDEO	VIDEO_EMI_C_Y 10 11 27
P221	VID_50S	ANALOG_VIDEO	VIDEO_EMI_Y_PR 10 11 27
P222	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_CVBS_PB 27 28
P224	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_C_Y 27 28
P223	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_Y_PR 27 28
P526	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_CVBS_PB_R 28 29
P527	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_C_Y_R 28 29
P528	VID_50S	ANALOG_VIDEO	VIDEO_PT_DK_CON_Y_PR_R 28 29

MIPI

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
MIPI_90D	*	90_OHM_DIFF

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
MIPI	*	*	4:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P335	MIPI_90D	MIPI0C	MIPI0C_AP_CLK_P 7 25
P336	MIPI_90D	MIPI0C	MIPI0C_AP_CLK_N 7 25
P334	MIPI_90D	MIPI0C	MIPI0C_CAM_CLK_P 24 25
P332	MIPI_90D	MIPI0C	MIPI0C_CAM_CLK_N 24 25
P331	MIPI_90D	MIPI0C	MIPI0C_AP_DATA_P<0> 7 25
P330	MIPI_90D	MIPI0C	MIPI0C_AP_DATA_N<0> 7 25
P329	MIPI_90D	MIPI0C	MIPI0C_AP_DATA_N<1> 7 25
P327	MIPI_90D	MIPI0C	NC_MIPI0C_AP_DATA_N<2> 7 46
P326	MIPI_90D	MIPI0C	NC_MIPI0C_AP_DATA_N<3> 7 46
P325	MIPI_90D	MIPI0C	MIPI0C_AP_DATA_P<1> 7 25
P324	MIPI_90D	MIPI0C	NC_MIPI0C_AP_DATA_P<2> 7 46
P323	MIPI_90D	MIPI0C	NC_MIPI0C_AP_DATA_P<3> 7 46
P519	CAM_100DVA3	CAM	MIPI0C_CAM_DATA_N<0> 24 25
P518	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_N<1> 24 25
P521	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_N<2>
P520	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_N<3>
P517	CAM_100DVA3	CAM	MIPI0C_CAM_DATA_P<0> 24 25
P522	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_P<1> 24 25
P523	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_P<2>
P524	MIPI_90D	MIPI0C	MIPI0C_CAM_DATA_P<3>
P339	MIPI_90D	MIPI0C	MIPI0C_CAM_CLK_DEBUG_N
P340	MIPI_90D	MIPI0C	MIPI0C_CAM_CLK_DEBUG_P
P337	MIPI_90D	MIPI0C	MIPI0C_CAM_D0_DEBUG_N
P338	MIPI_90D	MIPI0C	MIPI0C_CAM_D0_DEBUG_P
P341	MIPI_90D	MIPI0C	MIPI0C_CAM_D1_DEBUG_N
P342	MIPI_90D	MIPI0C	MIPI0C_CAM_D1_DEBUG_P
P343	MIPI_90D	MIPI0C	MIPI0C_CAM_D2_DEBUG_N
P344	MIPI_90D	MIPI0C	MIPI0C_CAM_D2_DEBUG_P
P345	MIPI_90D	MIPI0C	MIPI0C_CAM_D3_DEBUG_N
P346	MIPI_90D	MIPI0C	MIPI0C_CAM_D3_DEBUG_P
P435	MIPI_90D	MIPI1C	MIPI1C_AP_DATA_P<0> 7 25
P436	MIPI_90D	MIPI1C	MIPI1C_AP_DATA_N<0> 7 25
P438	MIPI_90D	MIPI1C	NC_MIPI1C_AP_DATA_P<1> 7 46
P434	MIPI_90D	MIPI1C	NC_MIPI1C_AP_DATA_N<1> 7 46
P347	MIPI_90D	MIPI1C	MIPI1C_AP_CLK_P 7 25
P348	MIPI_90D	MIPI1C	MIPI1C_AP_CLK_N 7 25
P356	CAM_100DVGA	CAM	MIPI1C_CAM_DATA_P<0> 24 25
P355	CAM_100DVGA	CAM	MIPI1C_CAM_DATA_N<0> 24 25
P352	MIPI_90D	MIPI1C	MIPI1C_CAM_CLK_P 24 25
P350	MIPI_90D	MIPI1C	MIPI1C_CAM_CLK_N 24 25
P416	MIPI_90D	MIPI1C	MIPI1C_CAM_CLK_DEBUG_N
P417	MIPI_90D	MIPI1C	MIPI1C_CAM_CLK_DEBUG_P
P418	MIPI_90D	MIPI1C	MIPI1C_CAM_D0_DEBUG_N
P419	MIPI_90D	MIPI1C	MIPI1C_CAM_D0_DEBUG_P

DISPLAYPORT

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
DP_90D	*	90_OHM_DIFF

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
DP_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
DP	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P410	DP_90D	DP	DP_AP_AUX_N 7 28
P411	DP_90D	DP	DP_AP_AUX_P 7 28
P418	DP_50S	DP	DP_AP_HPD 7 37
P419	DP_90D	DP	DP_AP_TX_N<0> 7 28
P420	DP_90D	DP	DP_AP_TX_N<1> 7 28
P422	DP_90D	DP	DP_AP_TX_P<0> 7 28
P421	DP_90D	DP	DP_AP_TX_P<1> 7 28
P423	DP_90D	DP	DP_EMI_AUX_N 27 28 43
P424	DP_90D	DP	DP_EMI_AUX_P 27 28 43
P425	DP_90D	DP	DP_EMI_TX_N<0> 27 28
P427	DP_90D	DP	DP_EMI_TX_N<1> 27 28
P426	DP_90D	DP	DP_EMI_TX_P<0> 27 28
P428	DP_90D	DP	DP_EMI_TX_P<1> 27 28
P429	DP_90D	DP	DP_PT_DK_CON_AUX_N 27 29 43
P430	DP_90D	DP	DP_PT_DK_CON_AUX_P 27 29 43
P431	DP_90D	DP	DP_PT_DK_CON_TX_N<0> 27 29
P432	DP_90D	DP	DP_PT_DK_CON_TX_N<1> 27 29
P433	DP_90D	DP	DP_PT_DK_CON_TX_P<0> 27 29
P434	DP_90D	DP	DP_PT_DK_CON_TX_P<1> 27 29
P466	DP_90D	DP	DP_AP_TX_N<2> 7 28
P467	DP_90D	DP	DP_AP_TX_N<3> 7 28
P469	DP_90D	DP	DP_AP_TX_P<2> 7 28
P468	DP_90D	DP	DP_AP_TX_P<3> 7 28
P470	DP_90D	DP	DP_EMI_AUX_N 27 28 43
P471	DP_90D	DP	DP_EMI_AUX_P 27 28 43
P472	DP_90D	DP	DP_EMI_TX_N<2>
P473	DP_90D	DP	DP_EMI_TX_N<3>
P474	DP_90D	DP	DP_EMI_TX_P<2>
P475	DP_90D	DP	DP_EMI_TX_P<3>
P476	DP_90D	DP	DP_PT_DK_CON_AUX_N 27 29 43
P477	DP_90D	DP	DP_PT_DK_CON_AUX_P 27 29 43
P478	DP_90D	DP	DP_PT_DK_CON_TX_N<2> 28
P479	DP_90D	DP	DP_PT_DK_CON_TX_N<3> 28
P480	DP_90D	DP	DP_PT_DK_CON_TX_P<2> 28
P481	DP_90D	DP	DP_PT_DK_CON_TX_P<3> 28

BACKLIGHT

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
LED	*	LED

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
LED	*	*	3:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P482	LED	LEDA	LED_IO1_A_R 37
P484	LED	LEDB	LED_IO1_B_R 37
P483	LED	LEDA	LED_IO2_A_R 37
P485	LED	LEDB	LED_IO2_B_R 37
P487	LED	LEDA	LED_IO3_A_R 37
P486	LED	LEDB	LED_IO3_B_R 37
P489	LED	LEDA	LED_IO4_A_R 37
P488	LED	LEDB	LED_IO4_B_R 37
P490	LED	LEDA	LED_IO5_A_R 37
P491	LED	LEDB	LED_IO5_B_R 37
P492	LED	LEDA	LED_IO6_A_R 37
P493	LED	LEDB	LED_IO6_B_R 37
P494	LED	LEDA	LED_IO_1_A 16 37
P495	LED	LEDB	LED_IO_1_B 16 37
P496	LED	LEDA	LED_IO_2_A 16 37
P497	LED	LEDB	LED_IO_2_B 16 37
P498	LED	LEDA	LED_IO_3_A 16 37
P499	LED	LEDB	LED_IO_3_B 16 37
P500	LED	LEDA	LED_IO_4_A 16 37
P501	LED	LEDB	LED_IO_4_B 16 37
P502	LED	LEDA	LED_IO_5_A 16 37
P503	LED	LEDB	LED_IO_5_B 16 37
P504	LED	LEDA	LED_IO_6_A 16 37
P505	LED	LEDB	LED_IO_6_B 16 37

EMBEDDED DISPLAYPORT

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
EDP_90D	*	90_OHM_DIFF

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
EDP_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
EDP	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P435	EDP_90D	EDP	EDP_AP_AUX_N 7 16
P436	EDP_90D	EDP	EDP_AP_AUX_P 7 16
P437	EDP_50S	EDP	EDP_AP_HPD 7 16
P439	EDP_90D	EDP	EDP_AP_TX_N<0> 7 16
P438	EDP_90D	EDP	EDP_AP_TX_N<1> 7 16
P440	EDP_90D	EDP	EDP_AP_TX_N<2> 7 16
P442	EDP_90D	EDP	EDP_AP_TX_N<3> 7 16
P443	EDP_90D	EDP	EDP_AP_TX_P<0> 7 16
P444	EDP_90D	EDP	EDP_AP_TX_P<1> 7 16
P441	EDP_90D	EDP	EDP_AP_TX_P<2> 7 16
P445	EDP_90D	EDP	EDP_AP_TX_P<3> 7 16
P447	EDP_90D	EDP	EDP_AUX_CONN_N 16
P446	EDP_90D	EDP	EDP_AUX_CONN_P 16
P449	EDP_90D	EDP	EDP_DATA_CONN_N<0> 16
P448	EDP_90D	EDP	EDP_DATA_CONN_N<1> 16
P450	EDP_90D	EDP	EDP_DATA_CONN_N<2> 16
P451	EDP_90D	EDP	EDP_DATA_CONN_N<3> 16
P452	EDP_90D	EDP	EDP_DATA_CONN_P<0> 16
P454	EDP_90D	EDP	EDP_DATA_CONN_P<1> 16
P453	EDP_90D	EDP	EDP_DATA_CONN_P<2> 16
P455	EDP_90D	EDP	EDP_DATA_CONN_P<3> 16
P457	EDP_90D	EDP	EDP_EMI_AUX_N 16
P456	EDP_90D	EDP	EDP_EMI_AUX_P 16
P458	EDP_90D	EDP	EDP_EMI_TX_N<0> 16
P460	EDP_90D	EDP	EDP_EMI_TX_N<1> 16
P459	EDP_90D	EDP	EDP_EMI_TX_N<2> 16
P462	EDP_90D	EDP	EDP_EMI_TX_N<3> 16
P461	EDP_90D	EDP	EDP_EMI_TX_P<0> 16
P463	EDP_90D	EDP	EDP_EMI_TX_P<1> 16
P464	EDP_90D	EDP	EDP_EMI_TX_P<2> 16
P465	EDP_90D	EDP	EDP_EMI_TX_P<3> 16

AUDIO/SPEAKER

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
AUDIO	*	1:1_DIFFPAIR
SPEAKER	*	SPEAKER

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
AUDIO	*	*	3:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P509	AUDIO	AUDIO	LEFT_CH_OUT_P 19 20
P507	AUDIO	AUDIO	LEFT_CH_OUT_REF 19 20
P508	AUDIO	AUDIO	LEFT_CH_P 20
P511	AUDIO	AUDIO	MAX983X4_L_IN_N 20
P510	AUDIO	AUDIO	MAX983X4_L_IN_P 20
P531	AUDIO	AUDIO	SPKRAMP_L_OUT_N 20
P530	AUDIO	AUDIO	SPKRAMP_L_OUT_P 20
P513	AUDIO	AUDIO	RIGHT_CH_OUT_REF 19 20
P514	AUDIO	AUDIO	RIGHT_CH_OUT_P 19 20
P529	AUDIO	AUDIO	RIGHT_CH_P 20
P516	AUDIO	AUDIO	MAX983X4_R_IN_P 20
P515	AUDIO	AUDIO	MAX983X4_R_IN_N 20
P532	AUDIO	AUDIO	SPKRAMP_R_OUT_N 20
P533	AUDIO	AUDIO	SPKRAMP_R_OUT_P 20
P512	AUDIO	AUDIO	EXT_MIC_P 19 22
P534	AUDIO	AUDIO	EXT_MIC_REF 19 22
P535	AUDIO	AUDIO	HSMIC_C_P 19 22
P536	AUDIO	AUDIO	HSMIC_C_N 19 22
P540	AUDIO	AUDIO	HSMIC_R_P 22
P537	AUDIO	AUDIO	HSMIC_R_N 22
P539	AUDIO	AUDIO	AUD_HP1_MLBCON_R 21 23
P538	AUDIO	AUDIO	AUD_HP1_MLBCON_L 21 23
P543	AUDIO	AUDIO	CONN_AUD_HEADSET_RIGHT 23 24
P540	AUDIO	AUDIO	CONN_AUD_HEADSET_LEFT 23 24
P542	AUDIO	AUDIO	HP_R 19 21
P541	AUDIO	AUDIO	HP_L 19 21

SYNC_MASTER=MIKE SYNC_DATE=01/21/2011

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DDR

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
DDR_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
DDR	*	*	3:1_SPACING

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
DDR_90D	*	90_OHM_DIFF

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
J224	DDR_50S	DDR	DDR0_CA<9..0>	8 13
J223	DDR_50S	DDR	DDR0_DM<3..0>	8 13
J222	DDR_90D	DDR	DDR0_CK_P	8 13
J221	DDR_90D	DDR	DDR0_CK_N	8 13
J220	DDR_50S	DDR	DDR0_CKE<1..0>	8 13
J224	DDR_50S	DDR	DDR0_CSN<2..0>	8 13
J223	DDR_50S	DDR	DDR0_ZO	13
J235	DDR_50S	DDR0	DDR0_DQ<7..0>	8 13 40
J225	DDR_50S	DDR0	DDR0_DQS_P<0>	8 13 40
J224	DDR_50S	DDR0	DDR0_DQS_N<0>	8 13 40
J233	DDR_50S	DDR1	DDR0_DQ<15..8>	8 13 40
J233	DDR_50S	DDR1	DDR0_DQS_P<1>	8 13
J232	DDR_50S	DDR1	DDR0_DQS_N<1>	8 13 40
J232	DDR_50S	DDR2	DDR0_DQ<23..16>	8 13
J230	DDR_50S	DDR2	DDR0_DQS_P<2>	8 13
J231	DDR_50S	DDR2	DDR0_DQS_N<2>	8 13
J231	DDR_50S	DDR3	DDR0_DQ<31..24>	8 13
J230	DDR_50S	DDR3	DDR0_DQS_P<3>	8 13
J240	DDR_50S	DDR3	DDR0_DQS_N<3>	8 13
E204	DDR_50S	DDR	DDR1_CA<9..0>	8 13
E207	DDR_50S	DDR	DDR1_DM<3..0>	8 13
E205	DDR_90D	DDR	DDR1_CK_P	8 13
E206	DDR_90D	DDR	DDR1_CK_N	8 13
E208	DDR_50S	DDR	DDR1_CKE<1..0>	8 13
E209	DDR_50S	DDR	DDR1_CSN<2..0>	8 13
E208	DDR_50S	DDR	DDR1_ZO	13
E210	DDR_50S	DDR0	DDR1_DQ<7..0>	8 13
E209	DDR_50S	DDR0	DDR1_DQS_P<0>	8 13
E211	DDR_50S	DDR0	DDR1_DQS_N<0>	8 13
E212	DDR_50S	DDR1	DDR1_DQ<15..8>	8 13
E213	DDR_50S	DDR1	DDR1_DQS_P<1>	8 13
E214	DDR_50S	DDR1	DDR1_DQS_N<1>	8 13
E214	DDR_50S	DDR2	DDR1_DQ<23..16>	8 13
E215	DDR_50S	DDR2	DDR1_DQS_P<2>	8 13
E216	DDR_50S	DDR2	DDR1_DQS_N<2>	8 13
E216	DDR_50S	DDR3	DDR1_DQ<31..24>	8 13
E215	DDR_50S	DDR3	DDR1_DQS_P<3>	8 13
E220	DDR_50S	DDR3	DDR1_DQS_N<3>	8 13
E183	DDR_50S	DDR	DDR2_CA<9..0>	8 14
E182	DDR_50S	DDR	DDR2_DM<3..0>	8 14
E180	DDR_90D	DDR	DDR2_CK_P	8 14
E181	DDR_90D	DDR	DDR2_CK_N	8 14
E185	DDR_50S	DDR	DDR2_CKE<1..0>	8 14
E184	DDR_50S	DDR	DDR2_CSN<2..0>	8 14
E188	DDR_50S	DDR	DDR2_ZO	14
E190	DDR_50S	DDR0	DDR2_DQ<7..0>	8 14
E187	DDR_50S	DDR0	DDR2_DQS_P<0>	8 14
E197	DDR_50S	DDR0	DDR2_DQS_N<0>	8 14
E192	DDR_50S	DDR1	DDR2_DQ<15..8>	8 14
E191	DDR_50S	DDR1	DDR2_DQS_P<1>	8 14
E195	DDR_50S	DDR1	DDR2_DQS_N<1>	8 14
E194	DDR_50S	DDR2	DDR2_DQ<23..16>	8 14
E193	DDR_50S	DDR2	DDR2_DQS_P<2>	8 14
E197	DDR_50S	DDR2	DDR2_DQS_N<2>	8 14
E198	DDR_50S	DDR3	DDR2_DQ<31..24>	8 14
E199	DDR_50S	DDR3	DDR2_DQS_P<3>	8 14
E200	DDR_50S	DDR3	DDR2_DQS_N<3>	8 14
E138	DDR_50S	DDR	DDR3_CA<9..0>	8 14
E132	DDR_50S	DDR	DDR3_DM<3..0>	8 14
E141	DDR_90D	DDR	DDR3_CK_P	8 14
E144	DDR_90D	DDR	DDR3_CK_N	8 14
E142	DDR_50S	DDR	DDR3_CKE<1..0>	8 14
E147	DDR_50S	DDR	DDR3_CSN<2..0>	8 14
E148	DDR_50S	DDR	DDR3_ZO	14
E137	DDR_50S	DDR0	DDR3_DQ<7..0>	8 14
E170	DDR_50S	DDR0	DDR3_DQS_P<0>	8 14
E171	DDR_50S	DDR0	DDR3_DQS_N<0>	8 14
E172	DDR_50S	DDR1	DDR3_DQ<15..8>	8 14
E173	DDR_50S	DDR1	DDR3_DQS_P<1>	8 14
E174	DDR_50S	DDR1	DDR3_DQS_N<1>	8 14
E175	DDR_50S	DDR2	DDR3_DQ<23..16>	8 14
E176	DDR_50S	DDR2	DDR3_DQS_P<2>	8 14
E177	DDR_50S	DDR2	DDR3_DQS_N<2>	8 14
E178	DDR_50S	DDR3	DDR3_DQ<31..24>	8 14
E179	DDR_50S	DDR3	DDR3_DQS_P<3>	8 14
E180	DDR_50S	DDR3	DDR3_DQS_N<3>	8 14

NAND

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
NAND_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
NAND	*	*	2:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
E68	NAND_50S	NAND0	FMI0_AD<0>	6 12
E69	NAND_50S	NAND0	FMI0_AD<1>	6 12
E70	NAND_50S	NAND0	FMI0_AD<2>	6 12
E71	NAND_50S	NAND0	FMI0_AD<3>	6 12
E72	NAND_50S	NAND0	FMI0_AD<4>	6 12
E73	NAND_50S	NAND0	FMI0_AD<5>	6 12
E74	NAND_50S	NAND0	FMI0_AD<6>	6 12
E75	NAND_50S	NAND0	FMI0_AD<7>	6 12
E76	NAND_50S	NAND0	FMI0_ALE	6 12
E77	NAND_50S	NAND0	FMI0_CE0_L	6 12
E78	NAND_50S	NAND0	FMI0_CE1_L	6 12
E120	NAND_50S	NAND0	FMI0_CE2_L	
E121	NAND_50S	NAND0	FMI0_CE3_L	
E122	NAND_50S	NAND0	FMI0_CE4_L	
E123	NAND_50S	NAND0	FMI0_CE5_L	
E124	NAND_50S	NAND0	FMI0_CE6_L	
E125	NAND_50S	NAND0	FMI0_CE7_L	
E126	NAND_50S	NAND0	FMI0_CLE	6 12
E127	NAND_50S	NAND0	FMI0_DQS_N	
E128	NAND_50S	NAND0	FMI0_DQS_P	6 12
E129	NAND_50S	NAND0	FMI0_RB0_L	
E130	NAND_50S	NAND0	FMI0_RB1_L	
E131	NAND_50S	NAND0	FMI0_RE_N	6 12
E132	NAND_50S	NAND0	FMI0_RE_P	
E133	NAND_50S	NAND0	FMI0_WE_L	6 12
E134	NAND_50S	NAND0	FMI0_WP_L	
E135	NAND_50S	NAND1	FMI1_AD<0>	6 12
E136	NAND_50S	NAND1	FMI1_AD<1>	6 12
E137	NAND_50S	NAND1	FMI1_AD<2>	6 12
E138	NAND_50S	NAND1	FMI1_AD<3>	6 12
E139	NAND_50S	NAND1	FMI1_AD<4>	6 12
E140	NAND_50S	NAND1	FMI1_AD<5>	6 12
E143	NAND_50S	NAND1	FMI1_AD<6>	6 12
E145	NAND_50S	NAND1	FMI1_AD<7>	6 12
E144	NAND_50S	NAND1	FMI1_ALE	6 12 44
E146	NAND_50S	NAND1	FMI1_CE0_L	6 12
E144	NAND_50S	NAND1	FMI1_CE1_L	6 12
E146	NAND_50S	NAND1	FMI1_CE2_L	
E147	NAND_50S	NAND1	FMI1_CE3_L	
E148	NAND_50S	NAND1	FMI1_CE4_L	
E149	NAND_50S	NAND1	FMI1_CE5_L	
E150	NAND_50S	NAND1	FMI1_CE6_L	
E151	NAND_50S	NAND1	FMI1_CE7_L	
E152	NAND_50S	NAND1	FMI1_CLE	6 12 44
E153	NAND_50S	NAND1	FMI1_DQS_N	
E154	NAND_50S	NAND1	FMI1_DQS_P	6 12
E155	NAND_50S	NAND1	FMI1_RB0_L	
E156	NAND_50S	NAND1	FMI1_RB1_L	
E157	NAND_50S	NAND1	FMI1_RE_N	6 12
E158	NAND_50S	NAND1	FMI1_RE_P	
E160	NAND_50S	NAND1	FMI1_WE_L	6 12 44
E159	NAND_50S	NAND1	FMI1_WP_L	44
E161	NAND_50S	NAND1	FMI1_CLE	6 12 44
E162	NAND_50S	NAND1	FMI1_ALE	6 12 44
E163	NAND_50S	NAND1	FMI1_RE_L	
E164	NAND_50S	NAND1	FMI1_WE_L	6 12 44
E165	NAND_50S	NAND1	FMI1_WP_L	44

NAND DEV

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
E49	NAND_50S	NAND0	SLOT0_FMI0_AD<0>	
E50	NAND_50S	NAND0	SLOT0_FMI0_AD<1>	
E51	NAND_50S	NAND0	SLOT0_FMI0_AD<2>	
E52	NAND_50S	NAND0	SLOT0_FMI0_AD<3>	
E53	NAND_50S	NAND0	SLOT0_FMI0_AD<4>	
E54	NAND_50S	NAND0	SLOT0_FMI0_AD<5>	
E55	NAND_50S	NAND0	SLOT0_FMI0_AD<6>	
E56	NAND_50S	NAND0	SLOT0_FMI0_AD<7>	
E57	NAND_50S	NAND0	SLOT0_FMI0_ALE	
E58	NAND_50S	NAND0	SLOT0_FMI0_CE0_L	
E59	NAND_50S	NAND0	SLOT0_FMI0_CE1_L	
E60	NAND_50S	NAND0	SLOT0_FMI0_CLE	
E62	NAND_50S	NAND0	SLOT0_FMI0_DQS_P	
E61	NAND_50S	NAND0	SLOT0_FMI0_RE_N	
E63	NAND_50S	NAND0	SLOT0_FMI0_WE_L	
E64	NAND_50S	NAND1	SLOT0_FMI1_AD<0>	
E65	NAND_50S	NAND1	SLOT0_FMI1_AD<1>	
E67	NAND_50S	NAND1	SLOT0_FMI1_AD<2>	
E66	NAND_50S	NAND1	SLOT0_FMI1_AD<3>	
E79	NAND_50S	NAND1	SLOT0_FMI1_AD<4>	
E80	NAND_50S	NAND1	SLOT0_FMI1_AD<5>	
E81	NAND_50S	NAND1	SLOT0_FMI1_AD<6>	
E83	NAND_50S	NAND1	SLOT0_FMI1_AD<7>	
E82	NAND_50S	NAND1	SLOT0_FMI1_ALE	
E84	NAND_50S	NAND1	SLOT0_FMI1_CE0_L	
E85	NAND_50S	NAND1	SLOT0_FMI1_CE1_L	
E86	NAND_50S	NAND1	SLOT0_FMI1_CLE	
E87	NAND_50S	NAND1	SLOT0_FMI1_DQS_P	
E88	NAND_50S	NAND1	SLOT0_FMI1_RE_N	
E89	NAND_50S	NAND1	SLOT0_FMI1_WE_L	
E90	NAND_50S	NAND0	SLOT1_FMI0_AD<0>	
E91	NAND_50S	NAND0	SLOT1_FMI0_AD<1>	
E93	NAND_50S	NAND0	SLOT1_FMI0_AD<2>	
E92	NAND_50S	NAND0	SLOT1_FMI0_AD<3>	
E94	NAND_50S	NAND0	SLOT1_FMI0_AD<4>	
E95	NAND_50S	NAND0	SLOT1_FMI0_AD<5>	
E96	NAND_50S	NAND0	SLOT1_FMI0_AD<6>	
E97	NAND_50S	NAND0	SLOT1_FMI0_AD<7>	
E98	NAND_50S	NAND0	SLOT1_FMI0_ALE	
E99	NAND_50S	NAND0	SLOT1_FMI0_CE0_L	
E100	NAND_50S	NAND0	SLOT1_FMI0_CE1_L	
E101	NAND_50S	NAND0	SLOT1_FMI0_CLE	
E102	NAND_50S	NAND0	SLOT1_FMI0_DQS_P	
E103	NAND_50S	NAND0	SLOT1_FMI0_RE_N	
E104	NAND_50S	NAND0	SLOT1_FMI0_WE_L	
E105	NAND_50S	NAND1	SLOT1_FMI1_AD<0>	
E106	NAND_50S	NAND1	SLOT1_FMI1_AD<1>	
E107	NAND_50S	NAND1	SLOT1_FMI1_AD<2>	
E108	NAND_50S	NAND1	SLOT1_FMI1_AD<3>	
E109	NAND_50S	NAND1	SLOT1_FMI1_AD<4>	
E110	NAND_50S	NAND1	SLOT1_FMI1_AD<5>	
E111	NAND_50S	NAND1	SLOT1_FMI1_AD<6>	
E112	NAND_50S	NAND1	SLOT1_FMI1_AD<7>	
E113	NAND_50S	NAND1	SLOT1_FMI1_ALE	
E114	NAND_50S	NAND1	SLOT1_FMI1_CE0_L	
E115	NAND_50S	NAND1	SLOT1_FMI1_CE1_L	
E116	NAND_50S	NAND1	SLOT1_FMI1_CLE	
E117	NAND_50S	NAND1	SLOT1_FMI1_DQS_P	
E118	NAND_50S	NAND1	SLOT1_FMI1_RE_N	
E119	NAND_50S	NAND1	SLOT1_FMI1_WE_L	

DDR VREF

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
VREF	*	*	5:1_SPACING

ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
E166		PWR	PPVREF_DDR0_CA	13 45
E167		PWR	PPVREF_DDR0_DQ	13 45
E168		PWR	PPVREF_DDR1_CA	13 45
E169		PWR	PPVREF_DDR1_DQ	13 45

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PWR

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
PWR	*	PWR_PMU

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
PWR	*	*	3:1_SPACING

	ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P224	3.3V	PP_PWR	PWR	ACC_PT_DK_CON_PP3V3 27 29
B1		PP_PWR	PWR	BUCK0_FB 36
B2		PP_PWR	PWR	BUCK0_LXL 36
B3		PP_PWR	PWR	BUCK0_LXM 36
B4		PP_PWR	PWR	BUCK2_FB 36
B5		PP_PWR	PWR	BUCK2_LXL 36
B6		PP_PWR	PWR	BUCK2_LXM 36
B7		PP_PWR	PWR	BUCK2_LXR 36
B8		PP_PWR	PWR	BUCK3_FB 36
B9		PP_PWR	PWR	BUCK3_LXL 36
B12		PP_PWR	PWR	BUCK3_LXM 36
B11		PP_PWR	PWR	BUCK4_FB 36
B10		PP_PWR	PWR	BUCK4_LXL 36
B13		PP_PWR	PWR	BUCK4_LXM 36
B15		PP_PWR	PWR	BUCK5_FB 36
B14		PP_PWR	PWR	BUCK5_LX 36
B16	0.4V	PP_PWR	PWR	PP0V4_MIPI0D 7
B17	0.4V	PP_PWR	PWR	PP0V4_MIPI1D 7
B11	1.1V	PP_PWR	PWR	PP1V1 35 36
B19	1.2V	PP_PWR	PWR	PP1V2 35 36
B20	1.1V	PP_PWR	PWR	PP1V8 35 36
B21	1.1V	PP_PWR	PWR	PP1V1_MIPID_PLL_F 4
B23	1.1V	PP_PWR	PWR	PP1V1_PL0_F 4
B22	1.1V	PP_PWR	PWR	PP1V1_PL1_F 4
B24	1.1V	PP_PWR	PWR	PP1V1_PL2_F 4
B25	1.1V	PP_PWR	PWR	PP1V1_PL3_F 4
B26	1.1V	PP_PWR	PWR	PP1V1_PL4_F 4
B28	1.1V	PP_PWR	PWR	PP1V1_PL5_F 4
B27	1.1V	PP_PWR	PWR	PP1V1_PLL_USB_F 4
B29	1.25V	PP_PWR	PWR	PP1V25_CPU 35 36
B30	1.2V	PP_PWR	PWR	PP1V2_S2R 35 36
B31	1.2V	PP_PWR	PWR	PP1V2_SOC 35 36
B32	1.7V	PP_PWR	PWR	PP1V7_VA_VCP 35 36 40
B33	1.8V	PP_PWR	PWR	PP1V8_ALWAYS 35 36
B34	1.8V	PP_PWR	PWR	PP1V8_DP_AVDD_AUX 7
B35	1.8V	PP_PWR	PWR	PP1V8_EDP_AVDD_AUX 7
B36	1.8V	PP_PWR	PWR	PP1V8_GRAPE 35 36
B37	1.8V	PP_PWR	PWR	PP1V8_S2R 35 36
B38	1.8V	PP_PWR	PWR	PP1V8_SENSOR_FLT 24 26
B39	1.8V	PP_PWR	PWR	PP1V8_VDDA18_TS 5
B40	2.85V	PP_PWR	PWR	PP2V85_CAM 35 36
B41	2.85V	PP_PWR	PWR	PP2V85_CAM_FLT 24 26
B42	3.0V	PP_PWR	PWR	PP3V0_GRAPE 35 36
B43	3.0V	PP_PWR	PWR	PP3V0_IO 35 36
B44	3.0V	PP_PWR	PWR	PP3V0_OPTICAL 35 36
B45	3.0V	PP_PWR	PWR	PP3V0_S2R_HALL 35 36
B46	3.0V	PP_PWR	PWR	PP3V0_S2R_HALL_FLT 24 26
B47	3.0V	PP_PWR	PWR	PP3V0_SENSOR_FLT 10 24 26
B49	3.0V	PP_PWR	PWR	PP3V0_VIDEO 35 36
B51	3.0V	PP_PWR	PWR	PP3V0_VIDEO_BUF 35 36
B50	3.2V	PP_PWR	PWR	PP3V2_LDO5 35 36
B53	3.2V	PP_PWR	PWR	PP3V2_S2R_USBMUX 35 36
B52	3.3V	PP_PWR	PWR	PP3V3_ACC 35 36
B54	3.3V	PP_PWR	PWR	PP3V3_LCDVDD_SW_F 16
B55	3.3V	PP_PWR	PWR	PP3V3_OUT 35 36
B56	3.3V	PP_PWR	PWR	PP3V3_S0_LCD_FERR 16
B57	5.25V	PP_PWR	PWR	PP5V25_VLCM2 35 37
B58	6.0V	PP_PWR	PWR	PP6V0_LCM_HI 37
B59	6.0V	PP_PWR	PWR	PP6V0_LCM_VBOOST 37
B60	4.2V	PWR500	PWR	PPBATT_VCC 35 36 39
B61	1.8V	PP_PWR	PWR	PPIO_NAND_H4 6 9
B62	20.4V	PP_PWR	PWR	PPLED_BACK_REG_A 16
B63	20.4V	PP_PWR	PWR	PPLED_BACK_REG_B 16
B64	20.4V	PP_PWR	PWR	PPLED_OUT_A 35 37
B65	20.4V	PP_PWR	PWR	PPLED_OUT_B 35 37
B66	6.0V	PP_PWR	PWR	PPVBUS_PROT 36
B67	6.0V	PP_PWR	PWR	PPVBUS_USB 4 36
B68	6.0V	PP_PWR	PWR	PPVBUS_USB_DCIN 35 36
B69	5.0V	PP_PWR	PWR	PPVBUS_USB_PT_DK_CON 27 29
B70	1.8V	PP_PWR	PWR	PPVCCO_NAND 12
B71	4.7V	PP_PWR	PWR	PPVCC_MAIN 35 36 37
B72	0.6V	PP_PWR	PWR	PPVREF_DDR0_CA 13 44
B73	0.6V	PP_PWR	PWR	PPVREF_DDR0_DQ 13 44
B74	0.6V	PP_PWR	PWR	PPVREF_DDR0_DQ_H4 8
B76	0.6V	PP_PWR	PWR	PPVREF_DDR1_CA 13 44
B75	0.6V	PP_PWR	PWR	PPVREF_DDR1_DQ 13 44
B77	0.6V	PP_PWR	PWR	PPVREF_DDR1_DQ_H4 8
B78	0.6V	PP_PWR	PWR	PPVREF_DDR2_CA 14
B79	0.6V	PP_PWR	PWR	PPVREF_DDR2_DQ 14
B81	0.6V	PP_PWR	PWR	PPVREF_DDR2_DQ_H4 8
B80	0.6V	PP_PWR	PWR	PPVREF_DDR3_CA 14
B81	0.6V	PP_PWR	PWR	PPVREF_DDR3_DQ 14
B82	0.6V	PP_PWR	PWR	PPVREF_DDR3_DQ_H4 8
P219	4.6V	PP_PWR	PWR	BATT_POS_RC 36
B84	18V	PP_PWR	PWR	PP18V_GRAPE 17
B85	18V	PP_PWR	PWR	PP18V_R_GRAPE 17
P220		PP_PWR	PWR	DAC_AP_VREF 7
P221	3.3V	PP_PWR	PWR	PPVDDI_NAND_U1400 12
P222		PP_PWR	PWR	VR_BOOST_SW 17
P223		PP_PWR	PWR	VR_BOOST_L 17
P226	3.0V	PP_PWR	PWR	MT_3V3_INT 18 45

	ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
P255	3.0V	PP_PWR	PWR	MT_3V3_INT 18 45
P256	1.8V	PP_PWR	PWR	Z1_1V8_OUT 18
P257	1.8V	PP_PWR	PWR	Z2_VDDCORE 18
P258	1.8V	PP_PWR	PWR	Z2_VDDANA 18
P259	1.8V	PP_PWR	PWR	Z2_3V3_1V8_IN 18

GND

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
GND_PH	*	GND

	ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING		
B192		GND	GND		GND
B200		GND	GND	VOLTAGE=0V	GND_AUDIO_CODEC 19 21
B201		GND	GND	VOLTAGE=0V	GND_AUDIO_HP_AMP 19 21 22
B202		GND	GND	VOLTAGE=0V	GND_AUDIO_PT_DK 21 27
B203		GND	GND	VOLTAGE=0V	GND_SPKR_AMP1 20
B204		GND	GND	VOLTAGE=0V	GND_SPKR_AMP2 20
B205		GND	GND	VOLTAGE=0V	GND_PMU
B206		GND	GND		AGND
P217		GND	GND		AGND_U3000 17

RST

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
RST	*	*	4:1_SPACING

	ELECTRICAL_CONSTRAINT_SET	NET_TYPE PHYSICAL	NET_TYPE SPACING	
B163			RST	BB_TRST_L
B164			RST	DBG_RST
B176			RST	DEBUG_RST_L
B173			RST	GSM_TXBURST_IND 5 15 30
B160			RST	JTAG_AP_TRST_L 4 10 42
B170			RST	RST_AP_1V8_L 4
B166			RST	RST_AP_L 4 27 30 37
B172			RST	RST_BB_L 5 30
B174			RST	RST_BB_PMU_L 30 37
B175			RST	RST_BT_L 15 37
B171			RST	RST_DET_L 5 30
B176			GRAPE	RST_GRAPE_L 6 17
B177			RST	RST_L63_L 19 37
B178			RST	RST_PMU_IN 4 37
B179			RST	RST_WLAN_L 15 37
B181			RST	SIMCRD_RST
B180			RST	TP_WLAN_TRST_L
B182			RST	UD881_RST
B183			RST	UD882_RST

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SNS

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
SNS_50S	*	50_OHM_SE

NET_SPACING_TYPE1	NET_SPACING_TYPE2	AREA_TYPE	SPACING_RULE_SET
SNS	*	*	3:1_SPACING

NET_PHYSICAL_TYPE	AREA_TYPE	PHYSICAL_RULE_SET
SNS_90D	*	90_OHM_DIFF

E58	NC_HSIC0_DATA2	NO_TEST=TRUE	4 42
E59	NC_HSIC0_STB2	NO_TEST=TRUE	4 42
E60	NC_HSIC1_DATA2	NO_TEST=TRUE	4 42
E61	NC_HSIC1_STB2	NO_TEST=TRUE	4 42
E62	NC_JTAG_AP_TRTCK	NO_TEST=TRUE	4
E64	NC_USB_D1_P	NO_TEST=TRUE	4 42
E65	NC_USB_D1_N	NO_TEST=TRUE	4 42
E66	NC_USB11_D1_P	NO_TEST=TRUE	4 42
E67	NC_USB11_D1_N	NO_TEST=TRUE	4 42
E68	NC_USB_ANALOGTEST0	NO_TEST=TRUE	4
E69	NC_USB_ANALOGTEST1	NO_TEST=TRUE	4
E60	NC_USB_ID0	NO_TEST=TRUE	4
E61	NC_USB_ID1	NO_TEST=TRUE	4
E62	NC_USB_BRICKID1	NO_TEST=TRUE	4
E63	NC_I2S1_MCK	NO_TEST=TRUE	5
E64	NC_I2S1_BCLK	NO_TEST=TRUE	5
E65	NC_I2S1_LRCK	NO_TEST=TRUE	5
E66	NC_I2S1_DIN	NO_TEST=TRUE	5
E67	NC_I2S1_DOUT	NO_TEST=TRUE	5
E68	NC_I2S2_MCK	NO_TEST=TRUE	5
E69	NC_I2S3_MCK	NO_TEST=TRUE	5
E70	NC_AP_GPIO216	NO_TEST=TRUE	5
E71	NC_SPI_FLASH_CS_L	NO_TEST=TRUE	5
E72	NC_SWI_AP	NO_TEST=TRUE	5
E73	NC_SDIO0_WL_CLK	NO_TEST=TRUE	5
E74	NC_SDIO0_WL_CMD	NO_TEST=TRUE	5
E75	NC_SDIO0_WL_DATA<0>	NO_TEST=TRUE	5
E76	NC_SDIO0_WL_DATA<1>	NO_TEST=TRUE	5
E77	NC_SDIO0_WL_DATA<2>	NO_TEST=TRUE	5
E78	NC_SDIO0_WL_DATA<3>	NO_TEST=TRUE	5
E81	NC_SPI3_MISO	NO_TEST=TRUE	5
E82	NC_SPI3_MOSI	NO_TEST=TRUE	5
E83	NC_SPI3_SCLK	NO_TEST=TRUE	5
E84	NC_SPI3_CS_L	NO_TEST=TRUE	5
E90	NC_AP_GPIO3	NO_TEST=TRUE	5
E91	NC_AP_GPIO7	NO_TEST=TRUE	5
E92	NC_AP_GPIO8	NO_TEST=TRUE	5
E93	NC_AP_GPIO11	NO_TEST=TRUE	5
E94	NC_AP_GPIO13	NO_TEST=TRUE	5
E95	NC_BOARD_ID_3	NO_TEST=TRUE	5
E96	NC_AP_GPIO19	NO_TEST=TRUE	5
E97	NC_AP_GPIO31	NO_TEST=TRUE	5
E98	NC_AP_GPIO35	NO_TEST=TRUE	5
E99	NC_AP_GPIO3V1	NO_TEST=TRUE	5
E100	NC_AP_GPIO185	NO_TEST=TRUE	5
E101	NC_AP_GPIO186	NO_TEST=TRUE	5
E102	NC_UART2_RXD	NO_TEST=TRUE	5
E103	NC_UART2_TXD	NO_TEST=TRUE	5
E104	NC_UART4_CTS_L	NO_TEST=TRUE	5
E105	NC_UART4_RTS_L	NO_TEST=TRUE	5
E106	NC_UART4_RXD	NO_TEST=TRUE	5
E107	NC_UART4_TXD	NO_TEST=TRUE	5
E108	NC_UART6_CTSN	NO_TEST=TRUE	5
E109	NC_UART6_RTSN	NO_TEST=TRUE	5

E111	NC_FMI0_CE2_L	NO_TEST=TRUE	6
E112	NC_FMI0_CE3_L	NO_TEST=TRUE	6
E113	NC_FMI0_CE4_L	NO_TEST=TRUE	6
E114	NC_FMI0_CE5_L	NO_TEST=TRUE	6
E115	NC_FMI0_CE6_L	NO_TEST=TRUE	6
E116	NC_FMI0_CE7_L	NO_TEST=TRUE	6
E124	NC_FMI1_CE2_L	NO_TEST=TRUE	6
E123	NC_FMI1_CE3_L	NO_TEST=TRUE	6
E122	NC_FMI1_CE4_L	NO_TEST=TRUE	6
E121	NC_FMI1_CE5_L	NO_TEST=TRUE	6
E120	NC_FMI1_CE6_L	NO_TEST=TRUE	6
E119	NC_FMI1_CE7_L	NO_TEST=TRUE	6
E133	NC_FMI2_CE1_L	NO_TEST=TRUE	6
E134	NC_FMI2_CE2_L	NO_TEST=TRUE	6
E135	NC_FMI2_CE3_L	NO_TEST=TRUE	6
E132	NC_FMI2_CE5_L	NO_TEST=TRUE	6
E137	NC_FMI2_AD<0>	NO_TEST=TRUE	6
E138	NC_FMI2_AD<1>	NO_TEST=TRUE	6
E139	NC_FMI2_AD<2>	NO_TEST=TRUE	6
E140	NC_FMI2_AD<3>	NO_TEST=TRUE	6
E141	NC_FMI2_AD<4>	NO_TEST=TRUE	6
E142	NC_FMI2_AD<5>	NO_TEST=TRUE	6
E143	NC_FMI2_AD<6>	NO_TEST=TRUE	6
E144	NC_FMI2_AD<7>	NO_TEST=TRUE	6
E146	NC_FMI2_ALE	NO_TEST=TRUE	6
E145	NC_FMI2_CLE	NO_TEST=TRUE	6
E147	NC_FMI2_WE_L	NO_TEST=TRUE	6
E148	NC_FMI2_RE_L	NO_TEST=TRUE	6
E149	NC_FMI2_DQS	NO_TEST=TRUE	6
E151	NC_FMI3_CE0_L	NO_TEST=TRUE	6
E152	NC_FMI3_CE1_L	NO_TEST=TRUE	6
E159	NC_FMI3_CE2_L	NO_TEST=TRUE	6
E158	NC_FMI3_CE3_L	NO_TEST=TRUE	6
E155	NC_FMI3_CE4_L	NO_TEST=TRUE	6
E154	NC_FMI3_CE5_L	NO_TEST=TRUE	6
E153	NC_FMI3_CE6_L	NO_TEST=TRUE	6
E150	NC_FMI3_CE7_L	NO_TEST=TRUE	6
E161	NC_FMI3_AD<0>	NO_TEST=TRUE	6
E160	NC_FMI3_AD<1>	NO_TEST=TRUE	6
E157	NC_FMI3_AD<2>	NO_TEST=TRUE	6
E162	NC_FMI3_AD<3>	NO_TEST=TRUE	6
E163	NC_FMI3_AD<4>	NO_TEST=TRUE	6
E164	NC_FMI3_AD<5>	NO_TEST=TRUE	6
E165	NC_FMI3_AD<6>	NO_TEST=TRUE	6
E166	NC_FMI3_AD<7>	NO_TEST=TRUE	6
E172	NC_FMI3_ALE	NO_TEST=TRUE	6
E169	NC_FMI3_CLE	NO_TEST=TRUE	6
E168	NC_FMI3_WE_L	NO_TEST=TRUE	6
E171	NC_FMI3_RE_L	NO_TEST=TRUE	6
E170	NC_FMI3_DQS	NO_TEST=TRUE	6
E174	NC_MIPI_VSYNC_H4	NO_TEST=TRUE	7
E177	NC_MIPI0C_AP_DATA_P<2>	NO_TEST=TRUE	7 43
E178	NC_MIPI0C_AP_DATA_N<2>	NO_TEST=TRUE	7 43
E175	NC_MIPI0C_AP_DATA_P<3>	NO_TEST=TRUE	7 43
E176	NC_MIPI0C_AP_DATA_N<3>	NO_TEST=TRUE	7 43
E181	NC_MIPI1C_AP_DATA_P<1>	NO_TEST=TRUE	7 43
E182	NC_MIPI1C_AP_DATA_N<1>	NO_TEST=TRUE	7 43
E183	NC_ISP_AP_1_FLASH	NO_TEST=TRUE	7
E180	NC_ISP_AP_1_PRE_FLASH	NO_TEST=TRUE	7

E189	NC_DDR0_CKE<1>	NO_TEST=TRUE	8
E194	NC_DDR1_CKE<1>	NO_TEST=TRUE	8
E190	NC_DDR2_CKE<1>	NO_TEST=TRUE	8
E192	NC_DDR3_CKE<1>	NO_TEST=TRUE	8
E196	NC_DDR0_CSN<1>	NO_TEST=TRUE	8
E193	NC_DDR1_CSN<1>	NO_TEST=TRUE	8
E198	NC_DDR2_CSN<1>	NO_TEST=TRUE	8
E200	NC_DDR3_CSN<1>	NO_TEST=TRUE	8
E205	NC_PMU_VBUCK0_SW0_G	NO_TEST=TRUE	36
E204	NC_PMU_VBUCK0_SW0_S	NO_TEST=TRUE	36
E226	NC_VBUS_A_OV_L	NO_TEST=TRUE	36
E497	NC_BOARD_TEMP7	NO_TEST=TRUE NET_SPACING_TYPE=ANLG	37
E498	NC_BOARD_TEMP8	NO_TEST=TRUE NET_SPACING_TYPE=ANLG	37
E210	NC_PMU_GPIO12	NO_TEST=TRUE	37
E212	NC_PMU_GPIO13	NO_TEST=TRUE	37
E213	NC_PMU_GPIO16	NO_TEST=TRUE	37
E211	NC_PMU_GPIO17	NO_TEST=TRUE	37
E216	NC_PMU_AMUX_A0	NO_TEST=TRUE	37
E218	NC_PMU_AMUX_A1	NO_TEST=TRUE	37
E217	NC_PMU_AMUX_A2	NO_TEST=TRUE	37
E220	NC_PMU_AMUX_A3	NO_TEST=TRUE	37
E215	NC_PMU_AMUX_AY	NO_TEST=TRUE	37
E223	NC_PMU_AMUX_B0	NO_TEST=TRUE	37
E224	NC_PMU_AMUX_B1	NO_TEST=TRUE	37
E222	NC_PMU_AMUX_B2	NO_TEST=TRUE	37
E221	NC_PMU_AMUX_B3	NO_TEST=TRUE	37
E225	NC_PMU_AMUX_BY	NO_TEST=TRUE	37

E227	NC_BON_L1	NO_TEST=TRUE	18
E228	NC_BON_L3	NO_TEST=TRUE	18
E229	NC_BON_L5	NO_TEST=TRUE	18
E230	NC_EAROUT_AP	NO_TEST=TRUE	19
E231	NC_EAROUT_AN	NO_TEST=TRUE	19
E232	NC_LINE_IN1_CODEC	NO_TEST=TRUE	19
E233	NC_LINE_IN1_REF_CODEC	NO_TEST=TRUE	19
E234	NC_LINE_IN2_CODEC	NO_TEST=TRUE	19
E235	NC_LINE_IN2_REF_CODEC	NO_TEST=TRUE	19
E236	NC_MIC1_BIAS_CODEC	NO_TEST=TRUE	19
E237	NC_MIC1P_CODEC	NO_TEST=TRUE	19
E238	NC_MIC1N_CODEC	NO_TEST=TRUE	19
E239	NC_MIC1_FILT_CODEC	NO_TEST=TRUE	19
E240	NC_D5703_6	NO_TEST=TRUE	
E241	NC_D5700_6	NO_TEST=TRUE	
E242	NC_D5701_6	NO_TEST=TRUE	
E243	NC_D5702_6	NO_TEST=TRUE	
E244	NC_LCM2_EN	NO_TEST=TRUE	37
E245	NC_VLCM1	NO_TEST=TRUE	37

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