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.

HeFei YIFEI MAC FIX

LAST_MODIFICATION=Fri Dec 20 23:04:51 2019

REV	ECN	DESCRIPTION OF REVISION	CK APPD / DATE
6	0021443899	ENGINEERING RELEASED	2019-12-20

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Schematic / PCB #'s

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
051-05198	1	SCHEM,MLB-WELL,X1795	SCH	CRITICAL	SCH
820-01949	1	PCBF,MLB-WELL,X1795	PCB	CRITICAL	PCB

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SYNC_MASTER=myEE SYNC_DATE=03/01/2019

DRAWING TITLE: SCHEM,MLB-WELL,X1795

Apple Inc.

DRAWING NUMBER: 051-05198 SIZE: D

REVISION: 6.0.0

BRANCH: evt-3

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Module Parts

CPU

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
998-17651	1	SOCKET,CPU,CFL-U	U0500	CRITICAL	CPU:SOCKET	
337S00709	1	CPU,ICLUN,QS3R,ES2,B4,1.4,0.7,BGA1344	U0500	CRITICAL	CPU:QS3R	MM#:999D89
337S00710	1	CPU,ICLUN,QS3P,ES2,B4,1.4,0.7,BGA1344	U0500	CRITICAL	CPU:QS3P	MM#:999D87
337S00711	1	CPU,ICLUN,QS3N,ES2,B4,1.8,0.9,BGA1344	U0500	CRITICAL	CPU:QS3N	MM#:999D86
337S00712	1	CPU,ICLUN,QS3Q,ES2,B4,1.8,0.9,BGA1344	U0500	CRITICAL	CPU:QS3Q	MM#:999D88
337S00713	1	CPU,ICLUN,QS3M,ES2,B4,1.8,0.9,BGA1344	U0500	CRITICAL	CPU:QS3M	MM#:999D85
337S00778	1	CPU,ICLUN,QSHZ,QS,D2,2.0,1.05,BGA1344	U0500	CRITICAL	CPU:BTR	P1a D2
337S00777	1	CPU,ICLUN,QSHY,QS,D2,2.3,1.1,BGA1344	U0500	CRITICAL	CPU:BST	P1a D2
337S00804	1	CPU,ICLUN,QSHZ,QS,D2,2.0,1.05,BGA1344	U0500	CRITICAL	PRQ:BTR	MM#:999H22
337S00803	1	CPU,ICLUN,QSHZ,QS,D2,2.3,1.1,BGA1344	U0500	CRITICAL	PRQ:BST	MM#:999H21

P0a and P1a, the same D2

P1B:PRQ:BTR/BST
EVT:PRQ:BTR/BST

SOC

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
339S00370	1	POP,SOC,GIBRALTAR+1GB 20NM,M,B0,CSP1406	U3900	CRITICAL	SOC:B0_1G
339S00372	1	POP,SOC,GIBRALTAR+2GB 20NM,M,B0,CSP1406	U3900	CRITICAL	SOC:B0_2G

SOC Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00371	339S00370	SOC:B0_1G	ALL	Hynix 1GB SCK
339S00375	339S00370	SOC:B0_1G	ALL	Micron 1GB ATK
339S00376	339S00370	SOC:B0_1G	ALL	Hynix 1GB ATK
339S00373	339S00372	SOC:B0_2G	ALL	Hynix 2GB SCK
339S00377	339S00372	SOC:B0_2G	ALL	Micron 2GB ATK
339S00378	339S00372	SOC:B0_2G	ALL	Hynix 2GB ATK

BURNSIDE BRIDGE

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S00561	4	IC,TBT,BURNSIDE BRIDGE,PRQ,A1,BGA105	U2800_X,U2800_R,U2800_W,U2800_T	CRITICAL	BBR_TR:QSA1

ACE2

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S02158	4	IC,CD3217,ACE2,B2,USB PWR SW W/HV,BGA123	U3100_X,U3100_R,U3100_W,U3100_T	CRITICAL	ACE2:B2

353S01960 in P0a

PMU

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S00267	1	IC,PMU-A,D2449A0C,CALPE,CSP324,&X28X7.32	U7800	CRITICAL	

CHARGER IC

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S01525	1	IC,ISL9248HIB0Z,PMU,SUONA,WCSP40,2.1X3.3	U7000	CRITICAL	

AMR

677-10581 in P0a

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
677-19902	2	SUBASSY (T&R) PCBA,AMR INTERPOSER,X1795	J4800, J4801	CRITICAL	

OCARINA

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
338S00410	1	IC,PMU,OCARINA,D2499A0,OPT-AG,WLCSP56	U9000	CRITICAL	

WIRELESS(Harpoon)

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
339S00609	1	IC,MODULE,HARPOON,ES7.9,LGA385,Murata	U3730	CRITICAL	

HARPOON Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00610	339S00609		U3730	USI

Programmables

BBR ROMs

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
335S00133	1	IC,SPI SERIAL FLASH,8MBITS,3.0V,USON8	U3060	CRITICAL	BBR_XT_ROM:BLANK	left
335S00133	1	IC,SPI SERIAL FLASH,8MBITS,3.0V,USON8	UB260	CRITICAL	BBR_WR_ROM:BLANK	right
341S01381	1	IC,TBT-XT,(V18.3) NEW-PROTO-0,X1412	U3060	CRITICAL	BBR_XT_ROM:P0	
341S01382	1	IC,TBT-WR (V18.3) NEW-PROTO-0,X1412	UB260	CRITICAL	BBR_WR_ROM:P0	
341S01633	1	ROM,TBT-XT (Vxxxx) DFR-B,X1795	U3060	CRITICAL	BBR_XT_ROM:PVT	
341S01634	1	ROM,TBT-WR (Vxxxx) DFR-B,X1795	UB260	CRITICAL	BBR_WR_ROM:PVT	

BBR ROM Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00232	335S00133	BT_ROM:BLANK	U3060,UB260	Macronix

	U3060	UB260
P1	341S01411	341S01412
P0a	341S01466	341S01467
P1a	341S01511	341S01512
P1b	341S01511	341S01512
EVT	341S01511	341S01512

BT ROM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00256	1	IC,SPI SERIAL FLASH,2MBIT,1.8V,DFN8	U3750	CRITICAL	BT_ROM:BLANK
341S01342	1	IC,BT SFLASH ROM (V22_shared)	U3750	CRITICAL	BT_ROM:P0
341S01644	1	IC,BT SFLASH ROM (V39) X1795	U3750	CRITICAL	BT_ROM:PVT

BT ROM Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00248	335S00256	BT_ROM:BLANK	U3750	Macronix
335S00255	335S00256	BT_ROM:BLANK	U3750	Adesto

P1 BT ROM:341S01417
P0a BT ROM:341S01434, same as in J152
P1a BT ROM:341S01501, same as in J152
P1b BT ROM:341S01501, same as in P1a
EVT BT ROM:341S01501, same as in P1a

WIFI ROM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
335S00214	1	IC,EEPROM,SER,UWIRE,16K,1.8V,DFN8	U3710	CRITICAL	WIFI_ROM:BLANK
341S01645	1	IC,WIFI ROM (V01) WW1,X1795	U3710	CRITICAL	WIFI_ROM:PVT

WIFI ROM Alternate Parts

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00216	335S00214	WIFI_ROM:BLANK	U3710	Rohm

P1a WIFI ROM 341S00725
P1b WIFI ROM 341S00725
EVT WIFI ROM 341S00725

Strategic Silicon

PART#	STRATEGIC VALUE	COMMENT
337S00456	08	CPU
333S00069	01	MEMORY
333S00070	01	MEMORY
333S00125	01	MEMORY
333S00126	01	MEMORY
333S00166	08	MEMORY
333S00167	08	MEMORY
339S00370	09	pSOC
339S00372	09	pSOC
338S00267	08	CALPE
335S00321	10	NAND
335S00322	10	NAND
335S00324	09	NAND
335S00325	09	NAND
335S00327	09	NAND
335S00329	09	NAND
335S00330	09	NAND
335S00332	09	NAND
338S00285	08	OCARINA
353S01442	05	ACE
338S00408	08	TITAN RIDGE
353S01188	09	DEBUG MUX2
353S01525	06	SUONA
353S00928	06	IMVP8
353S00526	07	TPS62180
353S01077	02	ISL95870HRUZ
353S01629	08	TAS5770L
338S00253	09	SECURE ELEMENT
353S4415	01	BACKLIGHT CONTROLLER
353S01320	08	MIPI SWITCH
338S1163	01	ACCELEROMETER

SYNC_MASTER=myEE SYNC_DATE=03/01/2018

PAGE TITLE

BOM Configuration

Apple Inc.

DRAWING NUMBER 051-05198 SIZE D
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BOM Groups

BOM GROUP	BOM OPTIONS
X1795_COMMON	SCH,PCB,ALTERNATE,COMMON,X1795_COMMON1,X1795_COMMON2,X1795_COMMON3,X1795_PROGPARTS
X1795_COMMON1	X1795_USBC,SYSDET:FET,BOARD_ID,BOARD_REV:110
X1795_COMMON2	EDP_ENABLE,XDP:YES,SKIP_5V3V3:AUDIBLE,RF_TUNING
X1795_COMMON3	LOADRC:YES,SE:PROD_2019
X1795_PROGPARTS	BBR_XT_ROM:PVT,BBR_WR_ROM:PVT,WIFI_ROM:PVT,BT_ROM:PVT
X1795_DEVEL:ENG	ALTERNATE,ESPI_DBG,DBGLED,USBC_DBG,XDP_CONN:YES,WIFI_DBG,SSD_DBG,FAN_DBG,DEBUG_BUTTON,LOADISNS,SENSOR:DEV,BOOTCFG0
X1795_DEVEL:DVT	ALTERNATE,USBC_DBG,XDP_CONN:YES,WIFI_DBG
X1795_DEVEL:PVT	ALTERNATE
USBC_MLB_TBT_OPTS	BBR_FORCE_PWR:ACE,BBR_GP6:BBR_S0
USBC_MLB_TBT	BBR_X_PWR:SWSW_VOUTLV,BBR_T_PWR:SWSW_VOUTLV,BBR_PERST:PLTRST,BBR_RST:SPLIT
X1795_USBC	BBR_TR:QSA1,ACE2:B2,USBC_MLB_TBT,USBC_MLB_TBT_OPTS
CMPT:THRSSD	POLY:33UF
CMPT:512GSSD	POLY:27UF

board_rev TABLE

P0a NO DFR:	000
P0a with DFR:	001
P1a NO DFR:	010
P1a with DFR:	011
P1b with DFR:	100
evt-01:	101
evt-02:	101
DFR:	110

BOM Variants

BOM NUMBER	BOM NAME	BOM OPTIONS
685-00325	COMMON BOM,MLB-WELL,X1795	X1795_COMMON
985-01186	DEV BOM,MLB-WELL,X1795	X1795_DEVEL:ENG
939-08546	PCBA,MLB-WELL,NO CPU,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE
939-08545	PCBA,MLB-WELL,CPU SOCKET,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,CPU:SOCKET

P0: DC1 CPU SOCKET, DC2 NO CPU

Variable BOM Groups
Development/Base BOMs

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
685-00325	1	COMMON BOM,MLB-WELL,X1795	BASE	CRITICAL	BASE_BOM
985-01186	1	DEV BOM,MLB-WELL,X1795	DEVEL	CRITICAL	DEVEL_BOM

APN POLY CAPS

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
128S00093	41	TANT,PLOY,NEC 33uF, 16V	.....	CRITICAL	POLY:33UF
128S00093	15	TANT,PLOY,NEC 33uF, 16V	.....	CRITICAL	POLY:33UF
128S00106	41	TANT,PLOY,NEC 27uF, 18V	.....	CRITICAL	POLY:27UF
128S00106	15	TANT,PLOY,NEC 27uF, 18V	.....	CRITICAL	POLY:27UF

DRAM

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
333S00180	4	IC,SDRAM,LPDDR4x-4266,16GBIT,19NM,HYN,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:HY_8G
333S00205	4	IC,SDRAM,LPDDR4x-4266,16GBIT,18NM,MIC,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:MI_8G
333S00218	4	IC,SDRAM,LPDDR4x-4266,16GBIT,19NM,SS,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:SS_8G
333S00181	4	IC,SDRAM,LPDDR4x-4266,32GBIT,21NM,HYN,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:HY_16G
333S00206	4	IC,SDRAM,LPDDR4x-4266,32GBIT,18NM,MIC,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:MI_16G
333S00219	4	IC,SDRAM,LPDDR4x-4266,32GBIT,19NM,SS,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:SS_16G
333S00204	4	IC,SDRAM,LPDDR4x-3733,64GBIT,19NM,HYN,H,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:HY_32G
333S00207	4	IC,SDRAM,LPDDR4x-4266,64GBIT,19NM,MIC,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:MI_32G
333S00220	4	IC,SDRAM,LPDDR4x-4266,64GBIT,16NM,MIC,BGA200	U2300_1,U2300_2,U2300_3,U2300_4	CRITICAL	DRAM:SS_32G

Main DRAM SPD Straps

BOM GROUP	BOM OPTIONS	NOTE
DRAMCFG:HY_8G	DRAM:HY_8G,RAMCFG3_L,RAMCFG2_L,RAMCFG1_L,RAMCFG0_L	0x10
DRAMCFG:MI_8G	DRAM:MI_8G,RAMCFG3_L,RAMCFG2_L,RAMCFG1_L	0x11
DRAMCFG:SS_8G	DRAM:SS_8G,RAMCFG3_L,RAMCFG2_L,RAMCFG0_L	0x12
DRAMCFG:HY_16G	DRAM:HY_16G,RAMCFG3_L,RAMCFG1_L,RAMCFG0_L	0x14
DRAMCFG:MI_16G	DRAM:MI_16G,RAMCFG3_L,RAMCFG1_L	0x15
DRAMCFG:SS_16G	DRAM:SS_16G,RAMCFG3_L,RAMCFG0_L	0x16
DRAMCFG:HY_32G	DRAM:HY_32G,RAMCFG2_L,RAMCFG1_L,RAMCFG0_L	0x18
DRAMCFG:MI_32G	DRAM:MI_32G,RAMCFG2_L,RAMCFG1_L	0x19
DRAMCFG:SS_32G	DRAM:SS_32G,RAMCFG2_L,RAMCFG0_L	0x1A

CPU DRAM CFG Chart

CAPACITY	CFG 3	CFG 2
8	0	0
16	0	1
32	1	0
RSVD	1	1

VENDOR	CFG 1	CFG 0
HYNIX	0	0
MICRON	0	1
SAMSUNG	1	0
RSVD	1	1

PAGE TITLE

BOM Configuration

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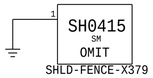
BOARD MECHANICALS

Shield Cans - BOTTOM SIDE

BURNSIDE BRIDGE - LEFT (U2800_T) - 806-12859

BURNSIDE BRIDGE - RIGHT (U2800_W) - 806-12859

LPDDR4 (U2300_1 ~ U2300_4) - 806-20740

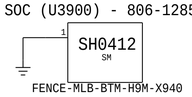


removed NAND - TOP SOUTH (U8600)
removed NAND - BOTTOM SOUTH (U8700)
removed NAND - TOP NORTH (U8800)
removed NAND - BOTTOM NORTH (U8900)

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
806-24474	1	J214 LPDDR shielding can	SH0415	CRITICAL	
806-24476	2	SHIELD FENCE,BURNSIDE BRIDGE,X1413	SH0418,SH0420	CRITICAL	

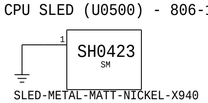
Shield Cans - TOP SIDE

SOC (U3900) - 806-12855

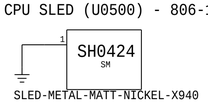


DIPLEXERS - 806-12854

CPU SLED (U0500) - 806-14839

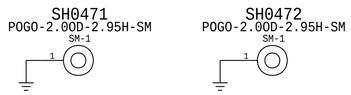


CPU SLED (U0500) - 806-14839

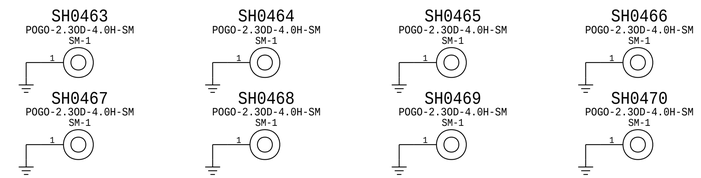


POGO PINS

LIO and RIO -2X (870-09666)

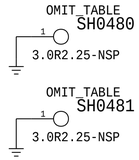


AROUND THE FAN AND CENTER - 8X (870-09667)

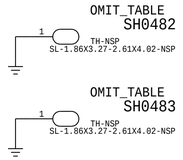


PLATED HOLES

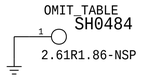
Detail D
2X (998-19890)



Detail E
2X (998-19891)



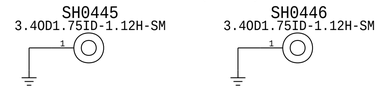
Detail J
1X (998-19892)



Cowling Bosses - BOTTOM SIDE

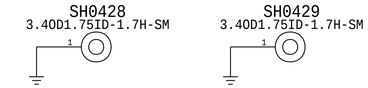
remove DFR TOUCH CONN (J4402) - 860-00414

USB-C CONN - LIO (J3300) - 860-00392

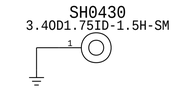


DFR DISPLAY CONN (J4401) - 860-00412

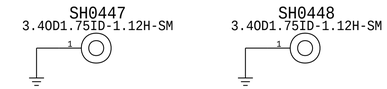
REMOVE SH0426/SH0427
IPD CONN (J4501) - 860-00412



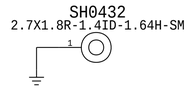
DFR (J5110) - 860-01484



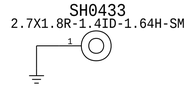
USB-C CONN - RIO (JB500) - 860-00392



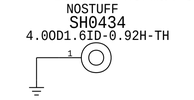
AUDIO JACK CONN (J6600) - 860-00829



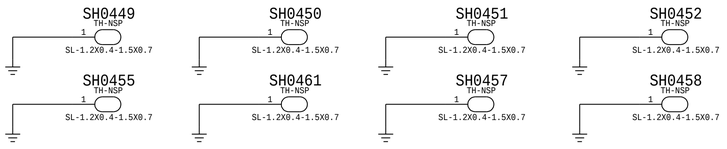
MESA CONN (J4900) - 860-00829



Bottom Thermal Stage Boss - 860-01604

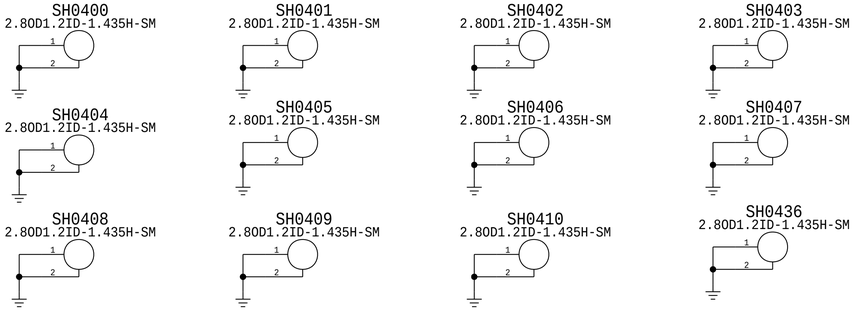


Shield CAN Alignment Slots 14X - 998-04440 (1.2mm X 0.4mm)



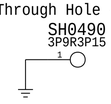
TOP Rubber Mount Standoffs - 13X - (860-00430)

REMOVE SH0414

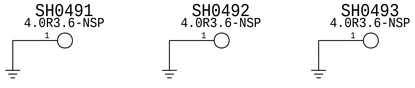


Thermal Stage Mounting Holes

Plated Through Hole - 3.15mm - APN 998-0845

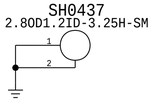


Plated Through Hole - 3.6mm - APN 998-03850



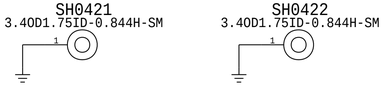
Bottom Rubber Mount Standoffs

- 1X - (860-00476)



Cowling Bosses - TOP SIDE

eDP CONN (J8500) - 860-00415



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SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: PD Parts

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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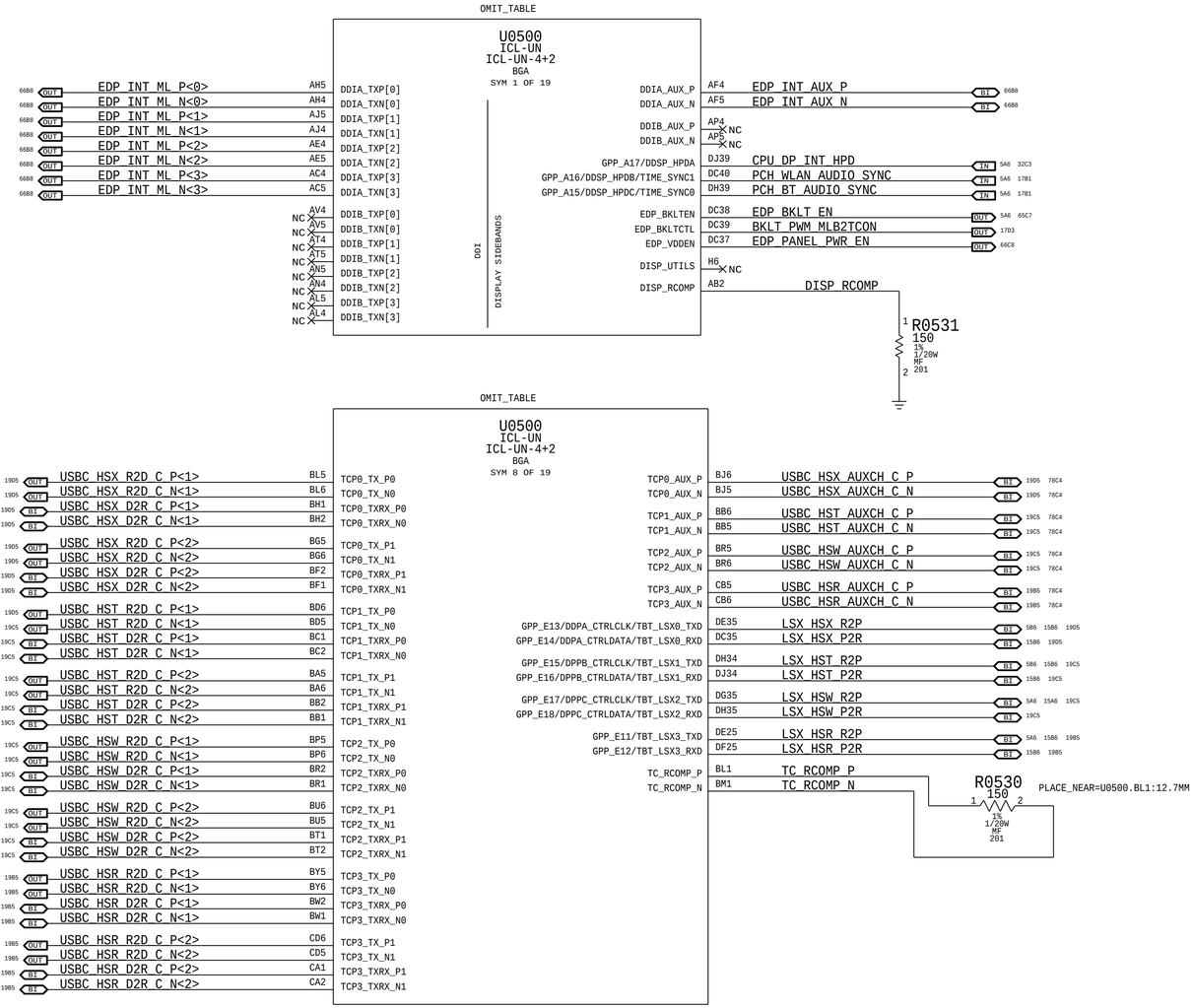
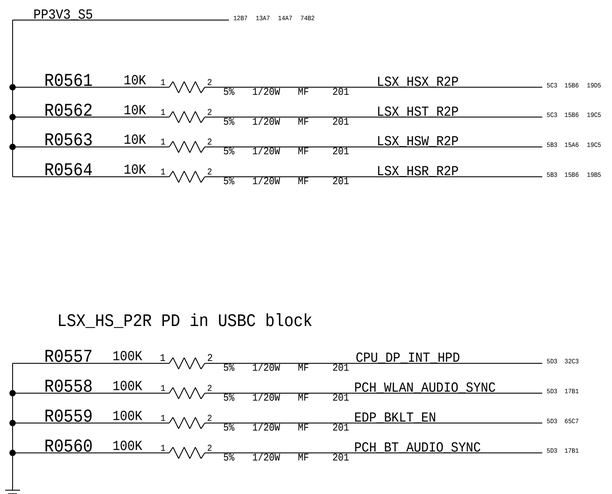
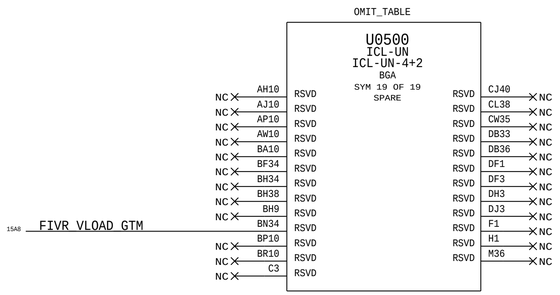
SHEET: 4 OF 109





LSX_HS_P2R PD in USBC block



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DESIGN: X502/DEV_MLB_U
LAST CHANGE: Tue Apr 28 20:32:21 2015

PAGE TITLE
CPU GFX and USB Type-C

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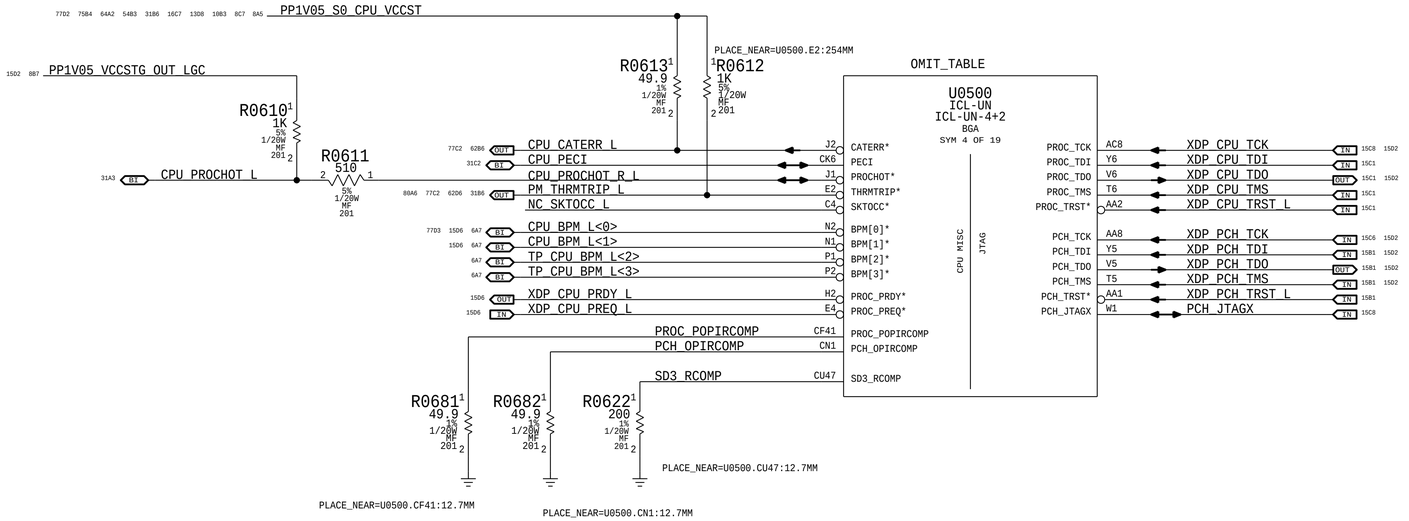

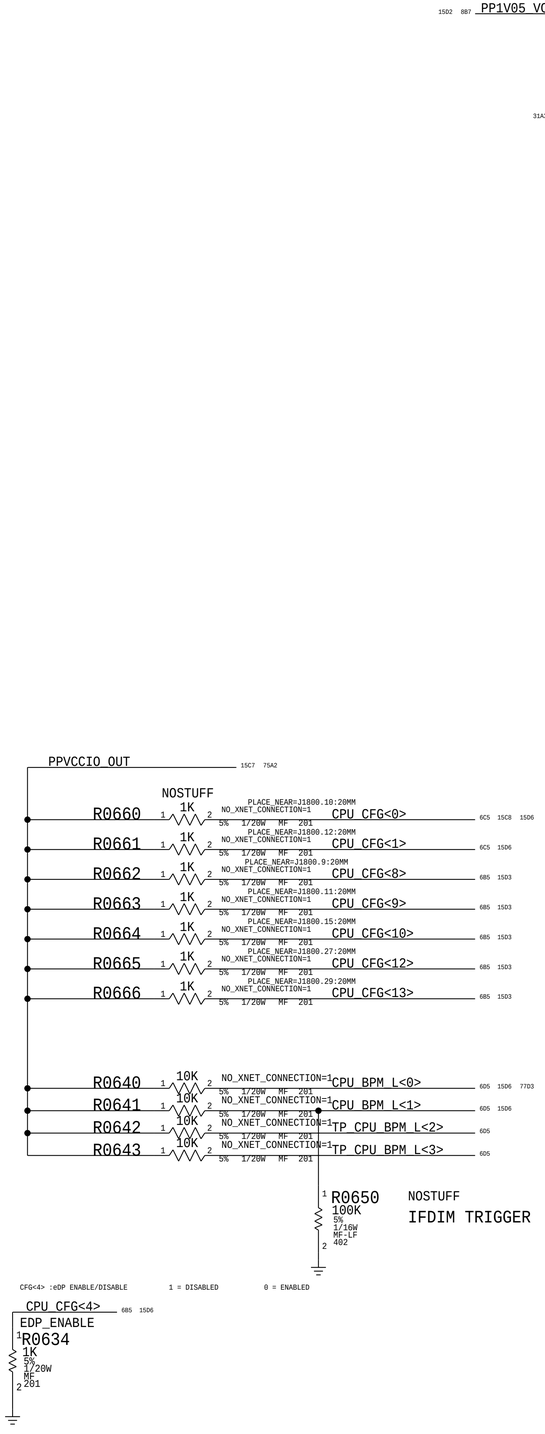

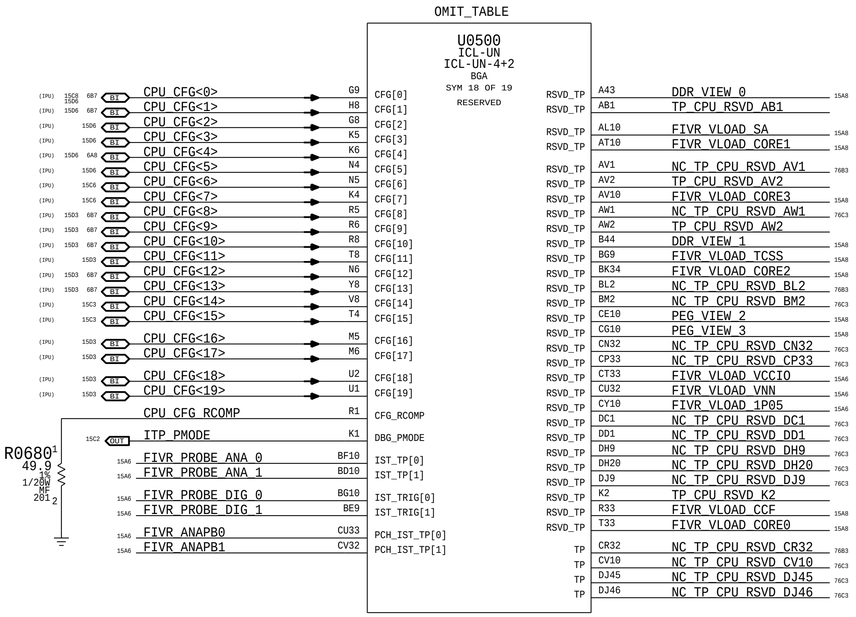

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LAST CHANGE: Mon Apr 27 22:56:39 2015

PAGE TITLE
CPU MISC/JTAG/CFG/RSVD

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DRAWING NUMBER 051-05198
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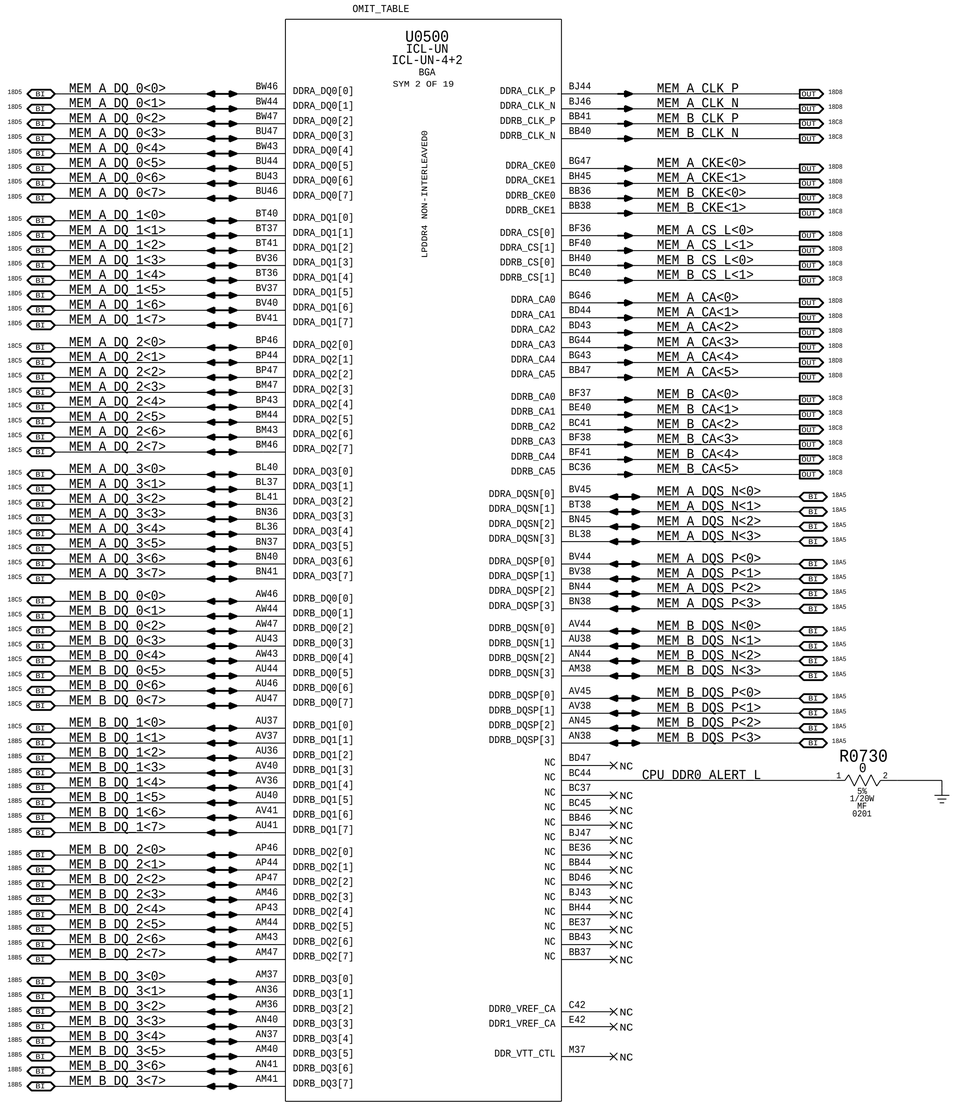

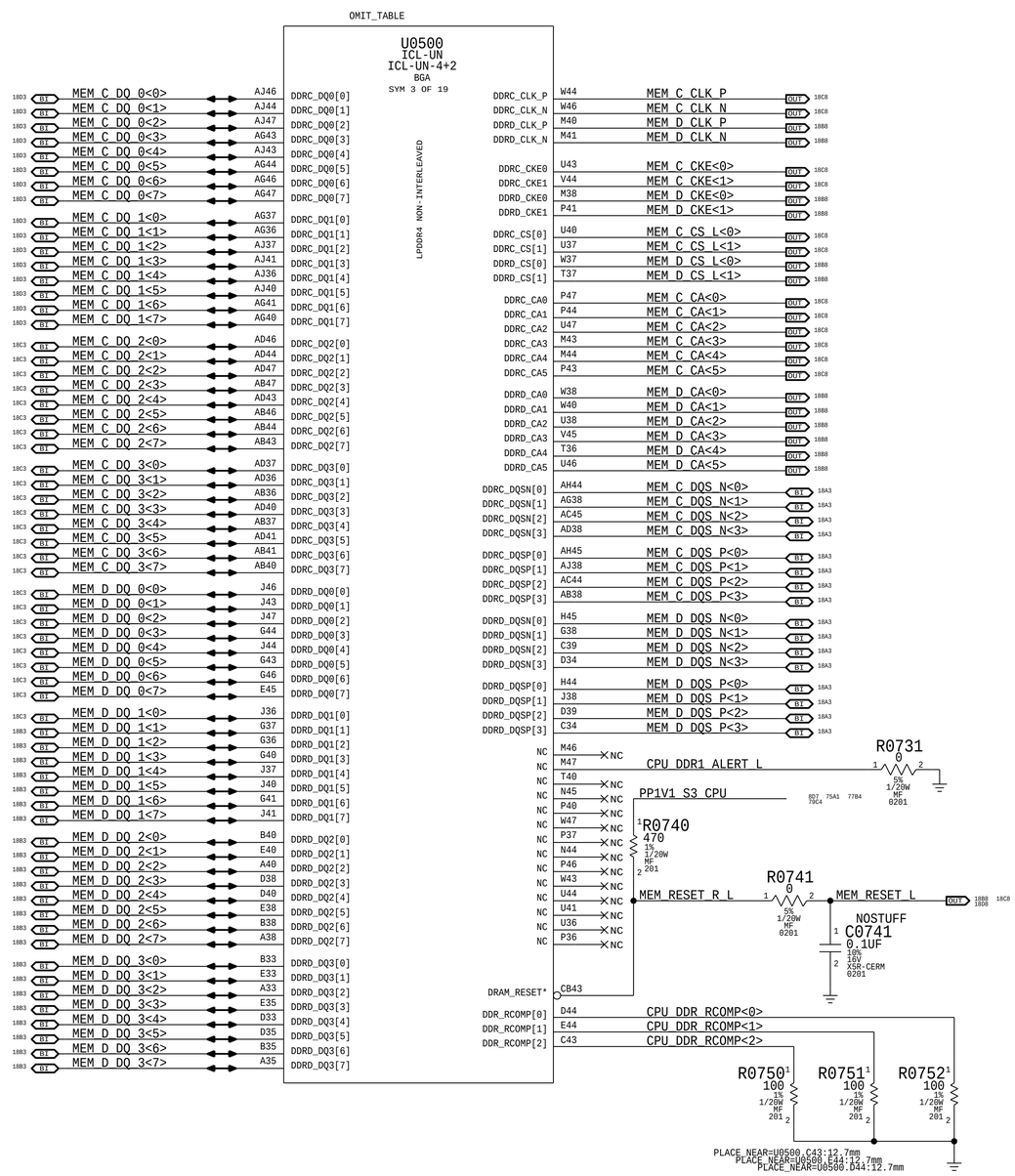

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CPU LPDDR4x Interface

Apple Inc.

DRAWING NUMBER 051-05198 SIZE D

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BRANCH evt-3

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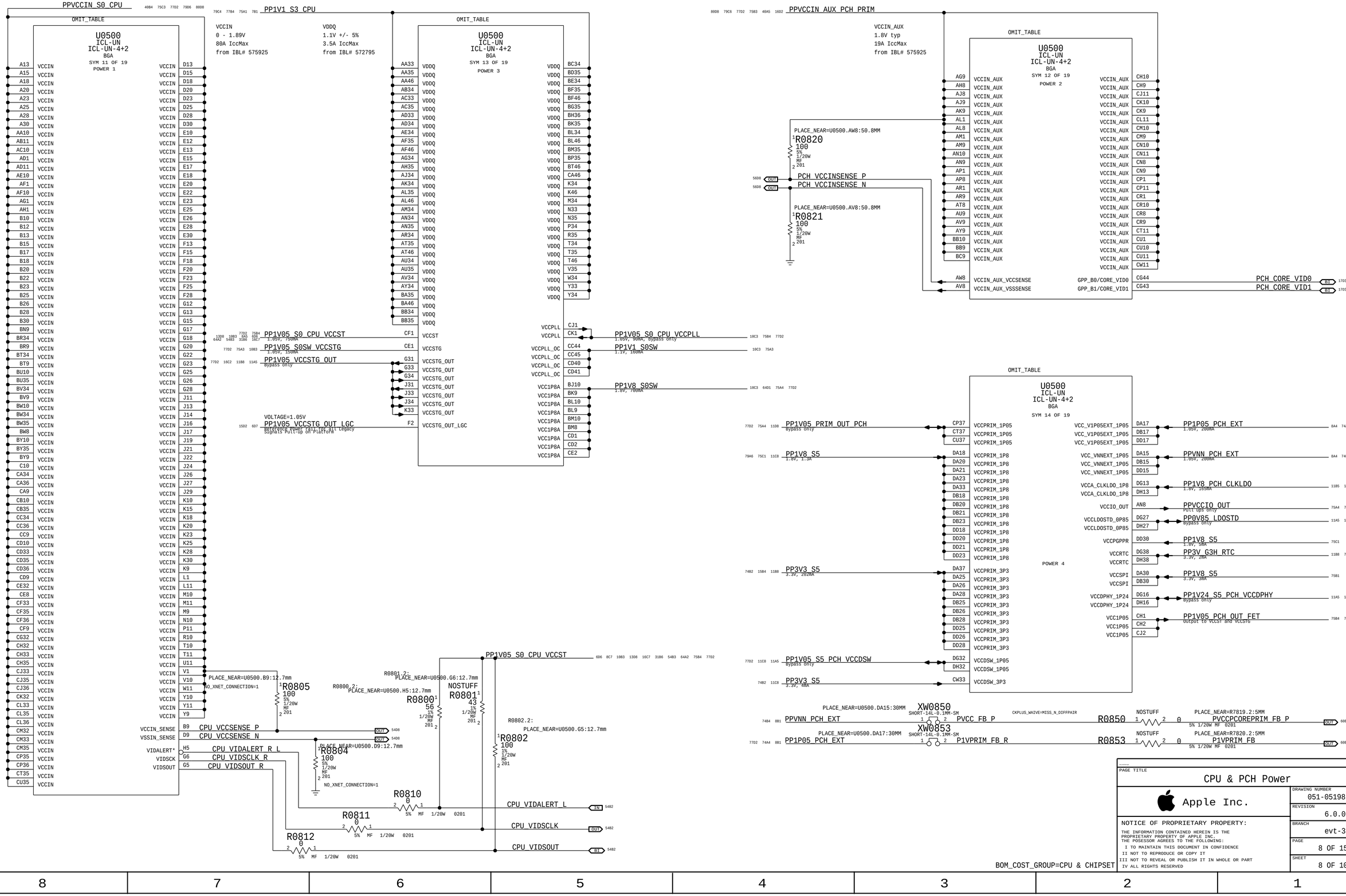
SHEET 7 OF 109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OMIT_TABLE
U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 11 OF 19
POWER 1
PP1V1_S3_CPU
VCCIN
0 - 1.89V
80A IccMax
from IBL# 575925
VDDQ
1.1V +/- 5%
3.5A IccMax
from IBL# 572795
SYM 13 OF 19
POWER 3
PPVCCIN_AUX_PCH_PRIM
VCCIN_AUX
1.8V typ
19A IccMax
from IBL# 575925
SYM 12 OF 19
POWER 2
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R0820
100
5%
1/20W
MF
201
PCH_VCCINSENSE_P
PCH_VCCINSENSE_N
PLACE_NEAR=U0500.AV8:50.8MM
R0821
PCH_CORE_VID0
PCH_CORE_VID1
PP1V05_S0_CPU_VCCST
PP1V05_S0SW_VCCSTG
1.05V, 150mA
PP1V05_VCCSTG_OUT
Bypass Only
VOLTAGE=1.05V
PP1V05_VCCSTG_OUT_LGC
Requires PowerTrain for all Legacy Signals Pull-Up on Platform
PP1V05_S0_CPU_VCCPLL
1.05V, 300mA, Bypass Only
PP1V1_S0SW
1.1V, 100mA
PP1V8_S0SW
1.8V, 700mA
PP1V05_PRIM_OUT_PCH
PP1V8_S5
1.8V, 1.3A
PP3V3_S5
3.3V, 202mA
PP1V05_S5_PCH_VCCDSW
PP3V3_S5
3.3V, 48A
SYM 14 OF 19
POWER 4
PP1P05_PCH_EXT
1.05V, 200mA
PPVNN_PCH_EXT
1.05V, 200mA
PP1V8_PCH_CLKLDO
1.8V, 165mA
PPVCCIO_OUT
Pull Ups Only
PP0V85_LDOSTD
Bypass Only
PP1V8_S5
1.8V, 5mA
PP3V_G3H_RTC
3.3V, 2mA
PP1V8_S5
3.3V, 3mA
PP1V24_S5_PCH_VCCDPHY
Bypass Only
PP1V05_PCH_OUT_FET
Output to VCCST and VCCSTG
PLACE_NEAR=U0500.AW8:30MM
XW0850
SHORT-14L-0.1MM-SM
PPVNN_PCH_EXT
PVCC_FB_P
CKPLUS_WAIVE=MISS_N_DIFFPAIR
R0850
NOSTUFF
PLACE_NEAR=R7819.2:5MM
PVCCPCOREPRIM_FB_P
5% 1/20W MF 0201
PLACE_NEAR=U0500.DA17:30MM
XW0853
PP1P05_PCH_EXT
P1VPRIM_FB_R
R0853
PLACE_NEAR=R7820.2:5MM
P1VPRIM_FB
VCCIN_SENSE
VSSIN_SENSE
VIDALERT*
VIDSCK
VIDSOUT
CPU_VCCSENSE_P
CPU_VCCSENSE_N
CPU_VIDALERT_R_L
CPU_VIDSCLK_R
CPU_VIDSOUT_R
PLACE_NEAR=U0500.B9:12.7MM
NO_XNET_CONNECTION=1
R0805
R0804
R0800
R0801
R0802
R0810
R0811
R0812
CPU_VIDALERT_L
CPU_VIDSCLK
CPU_VIDSOUT
BOM_COST_GROUP=CPU & CHIPSET
PAGE TITLE
CPU & PCH Power
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OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 15 OF 19
GND1

A3	VSS	AT6
A5	VSS	AT42
A6	VSS	AT45
A9	VSS	AV6
A12	VSS	AV42
A17	VSS	AV46
A22	VSS	AW4
A26	VSS	AW5
A45	VSS	AW6
A46	VSS	AW35
AA4	VSS	AY1
AA5	VSS	AY2
AA6	VSS	AY36
AA9	VSS	AY37
AA42	VSS	AY38
AA45	VSS	AY40
AC1	VSS	AY41
AC2	VSS	B2
AC6	VSS	B4
AC9	VSS	B6
AC42	VSS	B7
AC46	VSS	B31
AD2	VSS	B34
AD35	VSS	B36
AE6	VSS	B39
AE8	VSS	B42
AE9	VSS	B46
AE36	VSS	B47
AE37	VSS	BA4
AE38	VSS	BA8
AE40	VSS	BA42
AE41	VSS	BA45
AF2	VSS	BB4
AF6	VSS	BB8
AF8	VSS	BC38
AF42	VSS	BC42
AF45	VSS	BC46
AG2	VSS	BD4
AH2	VSS	BD8
AH6	VSS	BE1
AH42	VSS	BE2
AH46	VSS	BE38
AJ6	VSS	BE41
AJ35	VSS	BF4
AK1	VSS	BF5
AK2	VSS	BF6
AK36	VSS	BF8
AK37	VSS	BF42
AK38	VSS	BF45
AK40	VSS	BG4
AK41	VSS	BG8
AL2	VSS	BH37
AL6	VSS	BH41
AL42	VSS	BH42
AL45	VSS	BH46
AM2	VSS	BJ1
AN6	VSS	BJ2
AN42	VSS	BJ4
AN46	VSS	BJ8
AP2	VSS	BJ35
AP6	VSS	BK36
AP35	VSS	BK37
AR2	VSS	BK38
AR36	VSS	BK40
AR37	VSS	BK41
AR38	VSS	BL4
AR40	VSS	BL8
AR41	VSS	BL42
AT1	VSS	BL45
AT2	VSS	BM4

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 16 OF 19
GND2

BM5	VSS	CK2
BM6	VSS	CK8
BN1	VSS	CL37
BN2	VSS	CL42
BN42	VSS	CL45
BN46	VSS	CL46
BP4	VSS	CM4
BP8	VSS	CM8
BR4	VSS	CM36
BR8	VSS	CM37
BR35	VSS	CM38
BR36	VSS	CM40
BR37	VSS	CM41
BR38	VSS	CN6
BR40	VSS	CN42
BR41	VSS	CN46
BT42	VSS	CP2
BT45	VSS	CP38
BU4	VSS	CR2
BU8	VSS	CR6
BV1	VSS	CT36
BV2	VSS	CT38
BV42	VSS	CT42
BV46	VSS	CT45
BW4	VSS	CT46
BW5	VSS	CU2
BW6	VSS	CU6
BW36	VSS	CU8
BW37	VSS	CU9
BW38	VSS	CU36
BW40	VSS	CV6
BW41	VSS	CV42
BY4	VSS	CV46
BY8	VSS	CW36
C1	VSS	CW37
C7	VSS	CW38
C31	VSS	CW40
C36	VSS	CY6
C47	VSS	CY12
CA37	VSS	CY14
CA42	VSS	CY16
CA45	VSS	CY17
CB1	VSS	CY19
CB2	VSS	CY21
CB4	VSS	CY22
CB8	VSS	CY24
CC42	VSS	CY25
CC46	VSS	CY27
CD4	VSS	CY29
CD8	VSS	CY30
CD38	VSS	CY32
CE4	VSS	D6
CE5	VSS	D7
CE6	VSS	D12
CF2	VSS	D17
CF37	VSS	D22
CF42	VSS	D26
CF46	VSS	D46
CG8	VSS	D47
CH4	VSS	DA6
CH8	VSS	DA10
CH36	VSS	DA13
CH42	VSS	DA31
CH46	VSS	DA35
CJ37	VSS	DA42
CJ38	VSS	DA45
CJ41	VSS	DA46
	VSS	DB13
	VSS	DB31

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 17 OF 19
GND 3

DB37	VSS	G30
DB43	VSS	G47
DB47	VSS	H4
DC6	VSS	H9
DC10	VSS	H10
DC44	VSS	H42
DC45	VSS	H46
DC46	VSS	K8
DD12	VSS	K13
DD13	VSS	K17
DD31	VSS	K22
DD33	VSS	K26
DE7	VSS	K31
DE9	VSS	K42
DE10	VSS	K45
DE13	VSS	L2
DE16	VSS	L33
DE18	VSS	L35
DE21	VSS	L36
DE24	VSS	L37
DE27	VSS	L38
DE30	VSS	L40
DE32	VSS	L41
DE38	VSS	M4
DE41	VSS	M8
DE46	VSS	N8
DE47	VSS	N9
DF4	VSS	N42
DF45	VSS	N46
DG7	VSS	P38
DG47	VSS	R2
DH1	VSS	R4
DH4	VSS	R9
DH7	VSS	T9
DH42	VSS	T38
DH45	VSS	T41
DH47	VSS	T42
DJ4	VSS	T45
DJ6	VSS	U34
DJ42	VSS	V2
DJ44	VSS	V4
E1	VSS	V9
E5	VSS	V33
E9	VSS	V42
E36	VSS	V46
F12	VSS	W2
F17	VSS	W36
F22	VSS	W41
F26	VSS	Y4
F30	VSS	Y35
F31	VSS	Y36
F33	VSS	Y37
F34	VSS	Y38
F39	VSS	Y40
G4	VSS	Y41
G10	VSS	

BOM_COST_GROUP=CPU & CHIPSET

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PAGE TITLE

CPU & PCH Grounds

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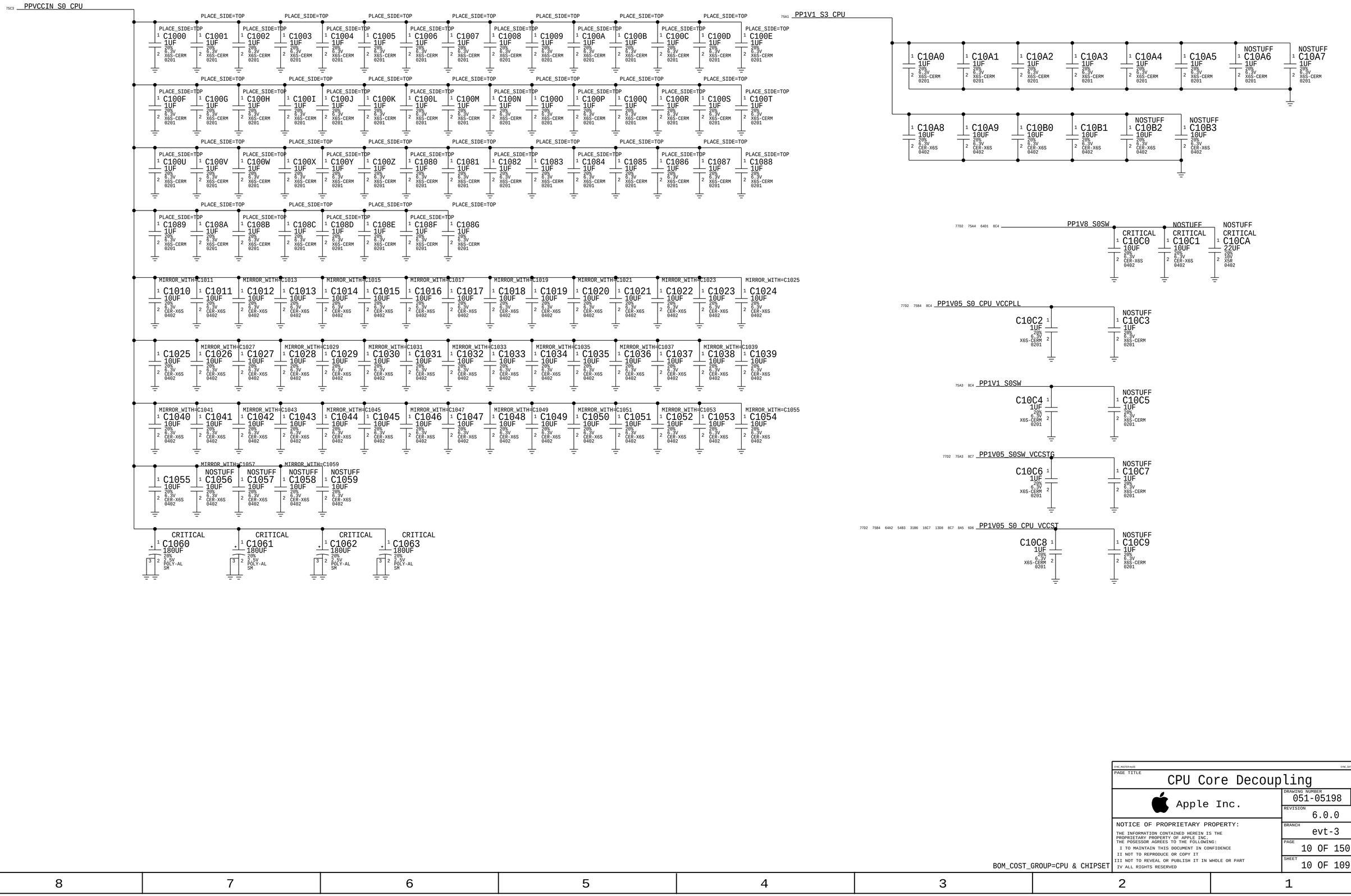
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75A1 PP1V1 S3 CPU
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C1001 1UF 20% 6.3V X6S-CERM 0201
C1002 1UF 20% 6.3V X6S-CERM 0201
C1003 1UF 20% 6.3V X6S-CERM 0201
C1004 1UF 20% 6.3V X6S-CERM 0201
C1005 1UF 20% 6.3V X6S-CERM 0201
C1006 1UF 20% 6.3V X6S-CERM 0201
C1007 1UF 20% 6.3V X6S-CERM 0201
C1008 1UF 20% 6.3V X6S-CERM 0201
C1009 1UF 20% 6.3V X6S-CERM 0201
C100A 1UF 20% 6.3V X6S-CERM 0201
C100B 1UF 20% 6.3V X6S-CERM 0201
C100C 1UF 20% 6.3V X6S-CERM 0201
C100D 1UF 20% 6.3V X6S-CERM 0201
C100E 1UF 20% 6.3V X6S-CERM 0201
C100F 1UF 20% 6.3V X6S-CERM 0201
C100G 1UF 20% 6.3V X6S-CERM 0201
C100H 1UF 20% 6.3V X6S-CERM 0201
C100I 1UF 20% 6.3V X6S-CERM 0201
C100J 1UF 20% 6.3V X6S-CERM 0201
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C100L 1UF 20% 6.3V X6S-CERM 0201
C100M 1UF 20% 6.3V X6S-CERM 0201
C100N 1UF 20% 6.3V X6S-CERM 0201
C100O 1UF 20% 6.3V X6S-CERM 0201
C100P 1UF 20% 6.3V X6S-CERM 0201
C100Q 1UF 20% 6.3V X6S-CERM 0201
C100R 1UF 20% 6.3V X6S-CERM 0201
C100S 1UF 20% 6.3V X6S-CERM 0201
C100T 1UF 20% 6.3V X6S-CERM 0201
C100U 1UF 20% 6.3V X6S-CERM 0201
C100V 1UF 20% 6.3V X6S-CERM 0201
C100W 1UF 20% 6.3V X6S-CERM 0201
C100X 1UF 20% 6.3V X6S-CERM 0201
C100Y 1UF 20% 6.3V X6S-CERM 0201
C100Z 1UF 20% 6.3V X6S-CERM 0201
C1080 1UF 20% 6.3V X6S-CERM 0201
C1081 1UF 20% 6.3V X6S-CERM 0201
C1082 1UF 20% 6.3V X6S-CERM 0201
C1083 1UF 20% 6.3V X6S-CERM 0201
C1084 1UF 20% 6.3V X6S-CERM 0201
C1085 1UF 20% 6.3V X6S-CERM 0201
C1086 1UF 20% 6.3V X6S-CERM 0201
C1087 1UF 20% 6.3V X6S-CERM 0201
C1088 1UF 20% 6.3V X6S-CERM 0201
C1089 1UF 20% 6.3V X6S-CERM 0201
C108A 1UF 20% 6.3V X6S-CERM 0201
C108B 1UF 20% 6.3V X6S-CERM 0201
C108C 1UF 20% 6.3V X6S-CERM 0201
C108D 1UF 20% 6.3V X6S-CERM 0201
C108E 1UF 20% 6.3V X6S-CERM 0201
C108F 1UF 20% 6.3V X6S-CERM 0201
C108G 1UF 20% 6.3V X6S-CERM 0201
C10A0 1UF 20% 6.3V X6S-CERM 0201
C10A1 1UF 20% 6.3V X6S-CERM 0201
C10A2 1UF 20% 6.3V X6S-CERM 0201
C10A3 1UF 20% 6.3V X6S-CERM 0201
C10A4 1UF 20% 6.3V X6S-CERM 0201
C10A5 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10A6 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10A7 1UF 20% 6.3V X6S-CERM 0201
C10A8 10UF 20% 6.3V CER-X6S 0402
C10A9 10UF 20% 6.3V CER-X6S 0402
C10B0 10UF 20% 6.3V CER-X6S 0402
C10B1 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C10B2 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C10B3 10UF 20% 6.3V CER-X6S 0402
MIRROR_WITH=C1011
MIRROR_WITH=C1013
MIRROR_WITH=C1015
MIRROR_WITH=C1017
MIRROR_WITH=C1019
MIRROR_WITH=C1021
MIRROR_WITH=C1023
MIRROR_WITH=C1025
C1010 10UF 20% 6.3V CER-X6S 0402
C1011 10UF 20% 6.3V CER-X6S 0402
C1012 10UF 20% 6.3V CER-X6S 0402
C1013 10UF 20% 6.3V CER-X6S 0402
C1014 10UF 20% 6.3V CER-X6S 0402
C1015 10UF 20% 6.3V CER-X6S 0402
C1016 10UF 20% 6.3V CER-X6S 0402
C1017 10UF 20% 6.3V CER-X6S 0402
C1018 10UF 20% 6.3V CER-X6S 0402
C1019 10UF 20% 6.3V CER-X6S 0402
C1020 10UF 20% 6.3V CER-X6S 0402
C1021 10UF 20% 6.3V CER-X6S 0402
C1022 10UF 20% 6.3V CER-X6S 0402
C1023 10UF 20% 6.3V CER-X6S 0402
C1024 10UF 20% 6.3V CER-X6S 0402
C1025 10UF 20% 6.3V CER-X6S 0402
MIRROR_WITH=C1027
MIRROR_WITH=C1029
MIRROR_WITH=C1031
MIRROR_WITH=C1033
MIRROR_WITH=C1035
MIRROR_WITH=C1037
MIRROR_WITH=C1039
C1026 10UF 20% 6.3V CER-X6S 0402
C1027 10UF 20% 6.3V CER-X6S 0402
C1028 10UF 20% 6.3V CER-X6S 0402
C1029 10UF 20% 6.3V CER-X6S 0402
C1030 10UF 20% 6.3V CER-X6S 0402
C1031 10UF 20% 6.3V CER-X6S 0402
C1032 10UF 20% 6.3V CER-X6S 0402
C1033 10UF 20% 6.3V CER-X6S 0402
C1034 10UF 20% 6.3V CER-X6S 0402
C1035 10UF 20% 6.3V CER-X6S 0402
C1036 10UF 20% 6.3V CER-X6S 0402
C1037 10UF 20% 6.3V CER-X6S 0402
C1038 10UF 20% 6.3V CER-X6S 0402
C1039 10UF 20% 6.3V CER-X6S 0402
MIRROR_WITH=C1041
MIRROR_WITH=C1043
MIRROR_WITH=C1045
MIRROR_WITH=C1047
MIRROR_WITH=C1049
MIRROR_WITH=C1051
MIRROR_WITH=C1053
MIRROR_WITH=C1055
C1040 10UF 20% 6.3V CER-X6S 0402
C1041 10UF 20% 6.3V CER-X6S 0402
C1042 10UF 20% 6.3V CER-X6S 0402
C1043 10UF 20% 6.3V CER-X6S 0402
C1044 10UF 20% 6.3V CER-X6S 0402
C1045 10UF 20% 6.3V CER-X6S 0402
C1046 10UF 20% 6.3V CER-X6S 0402
C1047 10UF 20% 6.3V CER-X6S 0402
C1048 10UF 20% 6.3V CER-X6S 0402
C1049 10UF 20% 6.3V CER-X6S 0402
C1050 10UF 20% 6.3V CER-X6S 0402
C1051 10UF 20% 6.3V CER-X6S 0402
C1052 10UF 20% 6.3V CER-X6S 0402
C1053 10UF 20% 6.3V CER-X6S 0402
C1054 10UF 20% 6.3V CER-X6S 0402
MIRROR_WITH=C1057
MIRROR_WITH=C1059
C1055 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C1056 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C1057 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C1058 10UF 20% 6.3V CER-X6S 0402
NOSTUFF C1059 10UF 20% 6.3V CER-X6S 0402
CRITICAL C1060 180UF 20% 2.5V POLY-AL SM
CRITICAL C1061 180UF 20% 2.5V POLY-AL SM
CRITICAL C1062 180UF 20% 2.5V POLY-AL SM
CRITICAL C1063 180UF 20% 2.5V POLY-AL SM
7702 75A4 6401 8C4 PP1V8_S0SW
CRITICAL C10C0 10UF 20% 6.3V CER-X6S 0402
NOSTUFF CRITICAL C10C1 10UF 20% 6.3V CER-X6S 0402
NOSTUFF CRITICAL C10CA 22UF 20% 10V X5R 0402
7702 7584 8C4 PP1V05_S0_CPU_VCCPLL
C10C2 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10C3 1UF 20% 6.3V X6S-CERM 0201
75A3 8C4 PP1V1_S0SW
C10C4 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10C5 1UF 20% 6.3V X6S-CERM 0201
7702 75A3 8C7 PP1V05_S0SW_VCCSTG
C10C6 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10C7 1UF 20% 6.3V X6S-CERM 0201
77D2 75B4 64A2 54B3 3186 16C7 13D8 8C7 8A5 606 PP1V05_S0_CPU_VCCSI
C10C8 1UF 20% 6.3V X6S-CERM 0201
NOSTUFF C10C9 1UF 20% 6.3V X6S-CERM 0201
BOM_COST_GROUP=CPU & CHIPSET
PAGE TITLE
CPU Core Decoupling
Apple Inc.
DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 10 OF 150
SHEET 10 OF 109
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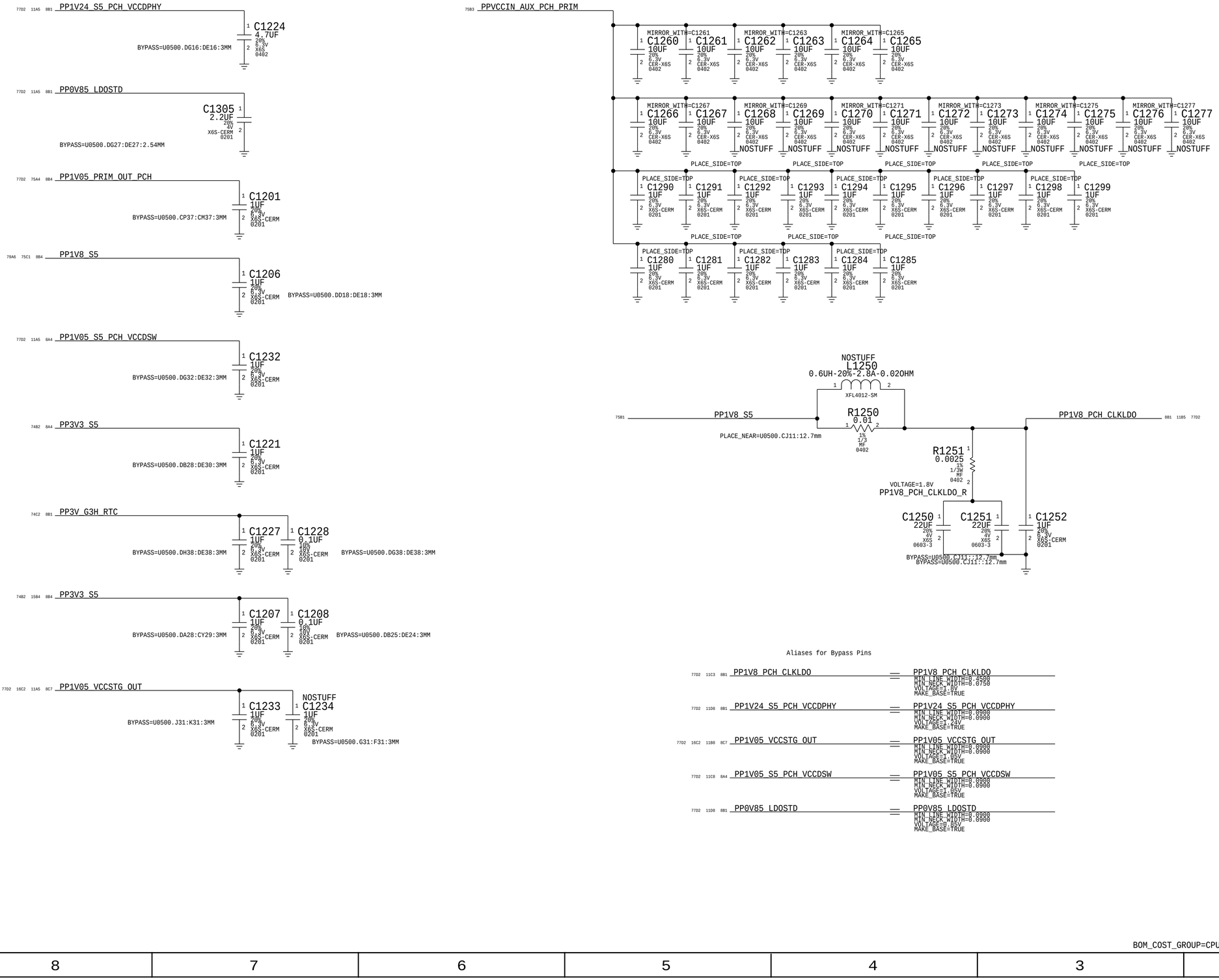


PAGE TITLE

PCH Decoupling

Apple Inc.

DRAWING NUMBER 051-05198

SIZE D

REVISION 6.0.0

BRANCH evt-3

PAGE 12 OF 150

SHEET 11 OF 109

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 5 OF 20

20C3 12A6	IN	PCH_UART_BT_D2R	DJ37	GPP_D8/UART0A_RXD			
20D5 12A6	OUT	PCH_UART_BT_R2D	DH37	GPP_D9/UART0A_TXD			
20D5 12A6	OUT	PCH_UART_BT_RTS_L	DF39	GPP_D10/UART0A_RTS*	SMBUS,SML1WK	GPP_A7/SMBCLK	CM43
20C3 12A6	IN	PCH_UART_BT_CTS_L	DE39	GPP_D11/UART0A_CTS*		GPP_A8/SMBDATA	CM47
						GPP_A9/SMBALERT*	CN45
77D4 19C3 12A6	IN	PCH_UART_DEBUG_D2R_1	DF37	GPP_B17/UART2A_RXD		GPP_E9/SML0CLK	DE28
77D4 19C3 12A6	OUT	PCH_UART_DEBUG_R2D_1	DE37	GPP_B18/UART2A_TXD		GPP_E10/SML0DATA	DF28
					UART	GPP_A0/ESPI_IO0	CU40
						GPP_A1/ESPI_IO1	CU38
						GPP_A2/ESPI_IO2	CP40
						GPP_A3/ESPI_IO3	CU41
						GPP_A4/ESPI_CS*	CP41
						GPP_A5/ESPI_CLK	CT40
						GPP_A6/ESPI_RESET*	CT41

						SMBUS_PCH_CLK	OUT 15C6 36D8
						SMBUS_PCH_DATA	BI 15C6 36D8
						NC_PCH_GPP_A9	
						PCH_I2C_UPC_SCL	OUT 15B6 36B6
						PCH_I2C_UPC_SDA	BI 15B6 36B6
						ESPI_IO<0>	BI 24A7 24B6
						ESPI_IO<1>	BI 24A7 24B6
						ESPI_IO<2>	BI 24A7 24B6
						ESPI_IO<3>	BI 24A7 24B6
						ESPI_CS_L	OUT 24A7 24B6
						ESPI_CLK60M_R	
						ESPI_RESET_L	OUT 24B6

1 — 22 R1327 5% 1/20W MF 201 — 2 — ESPI_CLK60M — OUT 24B6

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 6 OF 19

21C1 21B3	OUT	PCH_BT_ROM_BOOT_L	CU43	GPP_A10/CPU_GP0			
76C3		NC_TP_PCH_GPP_A11	CU44	GPP_A11/CPU_GP1			
76C3		NC_TP_PCH_GPP_A19	CR46	GPP_A19/PCHHOT*			
21C3 1706 17D2	OUT	PCH_WLAN_PERST_L	CH44	GPP_B3/CPU_GP2			
80A7 2406 17D6	OUT	SOC_PERST_L	CH45	GPP_B4/CPU_GP3			
36B6 36B3 19D3	BI	PCH_UPC_I2C_INT_L	CA41	GPP_B11/PMCALERT*			
19C3 12A6		JTAG_ISP_TCK	DC42	GPP_C1			
19C3 12A6		JTAG_ISP_TDI	DB41	GPP_C2			
23D6 12A6	IN	PCH_SOC_SYNC	DG41	GPP_C7			
76C3		NC_TP_PCH_GPP_C8	DH41	GPP_C8			
76D3		NC_TP_PCH_GPP_C9	DE42	GPP_C9			
76C3		NC_TP_PCH_GPP_C10	DF44	GPP_C10			
19C3 12A6	OUT	PCH_BBR_FORCE_PWR	DG44	GPP_C13			
19C3 12B6		JTAG_TBT_W_TMS	DA40	GPP_D17			
19C3 12B6		JTAG_TBT_R_TMS	DA41	GPP_D18			
76D3		NC_TP_PCH_GPP_D19	DA38	GPP_D19			
76D3		NC_TP_PCH_GPP_D20	DB38	GPP_D20			
15B8 12A6		XDP_PCH_STRP_GPP_E0	DF34	GPP_E0			
15B8 12B6		XDP_PCH_STRP_CNV_DISABLE	DE31	GPP_E1			
15B8 12A6		XDP_MEM_OK	DE34	GPP_E2			
15B8 12A6		XDP_PCH_STRP_SPIROM_SAF	DG30	GPP_E3			
15B8		XDP_PCH_OBSDATA_B0	DH31	GPP_E4			
15B8		XDP_PCH_OBSDATA_B1	DH28	GPP_E5			
15B8 12A6		XDP_PCH_OBSDATA_B2	DJ31	GPP_E6			
15B8		XDP_PCH_OBSDATA_B3	DJ28	GPP_E7			
15A8		XDP_PCH_OBSFN_C0	DH30	GPP_E8			
15A6		FIVR_DIGPB_1	DF31	GPP_E19/PCIE_LNK_DOWN			
76D3		NC_TP_PCH_GPP_E20	DJ25	GPP_E20			
76D3		NC_TP_PCH_GPP_E21	DH24	GPP_E21			
76D3		NC_TP_PCH_GPP_E22	DH25	GPP_E22			
76D3		NC_TP_PCH_GPP_E23	DG24	GPP_E23			

					GPP_G0	MLB_RAMCFG0	CB46
					GPP_G7	JTAG_TBT_T_TMS	CF45
					GPP_G6	JTAG_TBT_X_TMS	CE47
					GPP_G2	MLB_RAMCFG1	CB47
					GPP_G3	MLB_RAMCFG2	CE43
					GPP_G4	MLB_RAMCFG3	CE44
					GPP_G5	MLB_RAMCFG4	CE46
					GPP_H3	TBT_POC_RESET	CV44
					GPP_H4	JTAG_ISP_TDO	CV45
					GPP_H5	NC_TP_PCH_GPP_H5	CY46
					GPP_H8	DP_INT_HPD_MASK	CY47
					GPP_H18	NC_TP_PCH_GPP_H18	CY43
					GPP_H19	NC_TP_PCH_GPP_H19	CY44
					GPP_H21	NC_TP_PCH_GPP_H21	DA36
					GPP_H22	NC_TP_PCH_GPP_H22	DB35
					GPP_R5	NC_TP_PCH_GPP_R5	DB40
					GPP_R6	NC_TP_PCH_GPP_R6	CW41
					GPD2/LAN_WAKE*	PCH_LAN_WAKE_L	CF38
					GPD7	PCH_STRP_GPD7	CL40

						MLB_RAMCFG0	12A5
						JTAG_TBT_T_TMS	12B6 19C3
						JTAG_TBT_X_TMS	12B6 19C3
						MLB_RAMCFG1	12A5
						MLB_RAMCFG2	12A5
						MLB_RAMCFG3	12A5
						MLB_RAMCFG4	12A5
						TBT_POC_RESET	OUT 12A6 19C3
						JTAG_ISP_TDO	12B6 19C3
						NC_TP_PCH_GPP_H5	76D3
						DP_INT_HPD_MASK	IN 32A6 32C3
						NC_TP_PCH_GPP_H18	76D3
						NC_TP_PCH_GPP_H19	76D3
						NC_TP_PCH_GPP_H21	76D3
						NC_TP_PCH_GPP_H22	76D3
						NC_TP_PCH_GPP_R5	76D3
						NC_TP_PCH_GPP_R6	76D3
						PCH_LAN_WAKE_L	12A6
						PCH_STRP_GPD7	12A6 19C3

PP3V3_S5 — 5B7 13A7 14A7 74B2

R1355	10K	5%	1/20W	MF	201	JTAG_TBT_X_TMS	12C2 19C3
R1356	10K	5%	1/20W	MF	201	JTAG_TBT_T_TMS	12C2 19C3
R1357	10K	5%	1/20W	MF	201	JTAG_TBT_W_TMS	12C5 19C3
R1358	10K	5%	1/20W	MF	201	JTAG_TBT_R_TMS	12C5 19C3
R1359	10K	5%	1/20W	MF	201	JTAG_ISP_TDO	12C2 19C3
R1376	100K	5%	1/20W	MF	201	XDP_PCH_STRP_CNV_DISABLE	12C5 15B8
R1351	100K	5%	1/20W	MF	201	PCH_LAN_WAKE_L	12C2

PP1V8_S5 — 14A7 17B7 24A8 75B1

R1352	47K	5%	1/20W	MF	201	PCH_UART_DEBUG_D2R_1	12D5 19C3 77D4
R1353	47K	5%	1/20W	MF	201	PCH_UART_DEBUG_R2D_1	12D5 19C3 77D4
R1362	47K	5%	1/20W	MF	201	PCH_UART_BT_D2R	12D5 20C3
R1363	47K	5%	1/20W	MF	201	PCH_UART_BT_R2D	12D5 20D5
R1364	47K	5%	1/20W	MF	201	PCH_UART_BT_RTS_L	12D5 20D5
R1365	47K	5%	1/20W	MF	201	PCH_UART_BT_CTS_L	12D5 20C3
R1367	1K	5%	1/20W	MF	201	XDP_PCH_STRP_SPIROM_SAF	12B5 15B8
R1377	100K	5%	1/20W	MF	201	XDP_PCH_OBSDATA_B2	12B5 15B8
R1371	100K	5%	1/20W	MF	201	PCH_STRP_GPD7	12C2 19C3
R1370	100K	5%	1/20W	MF	201	XDP_MEM_OK	12B5 15B8
R1368	100K	5%	1/20W	MF	201	XDP_PCH_STRP_GPP_E0	12C5 15B8
R1369	100K	5%	1/20W	MF	201	PCH_BBR_FORCE_PWR	12C5 19C3
R1360	100K	5%	1/20W	MF	201	JTAG_ISP_TCK	12C5 19C3
R1361	100K	5%	1/20W	MF	201	JTAG_ISP_TDI	12C5 19C3
R1374	100K	5%	1/20W	MF	201	PCH_SOC_SYNC	12C5 23D6
R1375	100K	5%	1/20W	MF	201	TBT_POC_RESET	12C2 19C3

NOSTUFF: R1371, R1370, R1368

MEMORY CONFIGURATION STRAPS.

PCH INTERNAL PULL-UPS ARE TO 1.8V.

12C2 MLB_RAMCFG0 — RAMCFG4_L R1334 1K 5% 1/20W NE 201
12C2 MLB_RAMCFG1 — RAMCFG3_L R1333 1K 5% 1/20W NE 201
12C2 MLB_RAMCFG2 — RAMCFG2_L R1332 1K 5% 1/20W NE 201
12C2 MLB_RAMCFG3 — RAMCFG1_L R1331 1K 5% 1/20W NE 201
12C2 MLB_RAMCFG4 — RAMCFG0_L R1330 1K 5% 1/20W NE 201

BOM GROUP	BOM OPTIONS
RAMCFG_SLOT	RAMCFG4_L,RAMCFG3_L,RAMCFG2_L,RAMCFG1_L,RAMCFG0_L

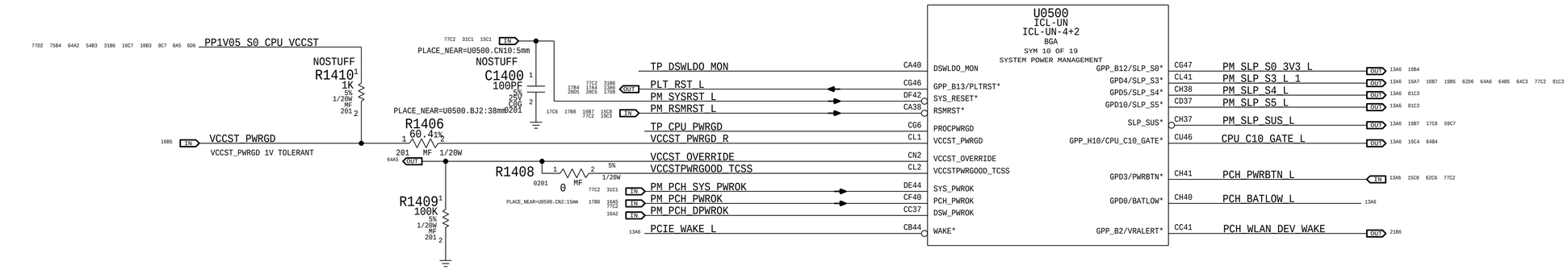
BOM_COST_GROUP=CPU & CHIPSET

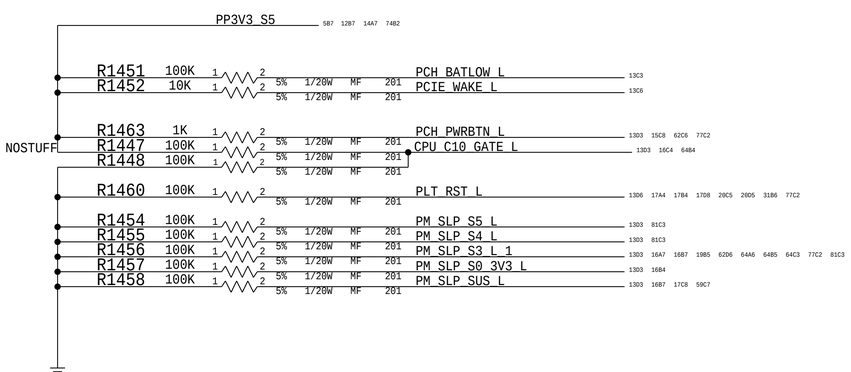
DESIGN: X502/MLB
LAST CHANGE: Tue Feb 2 13:18:21 2016

PAGE TITLE: PCH SPI/SMB/UART/GPIO

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 13 OF 150
SHEET: 12 OF 109





BOM_COST_GROUP=CPU & CHIPSET

DESIGN: X502/MLB
LAST CHANGE: Tue Apr 5 13:08:54 2016

PAGE TITLE
PCH Power Management

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 14 OF 150
SHEET 13 OF 109

PCIe Port Assignments:

SOC lane 0
SOC lane 1
SOC lane 2
SOC lane 3
AirPort
EXT A (SS,DCI)
Fixture USB-A

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 7 OF 19

2607 IN	PCIE_SOC_D2R_N<0>	DA1	PCIE1_RXN
2607 IN	PCIE_SOC_D2R_P<0>	DA2	PCIE1_RXP
3206 OUT	PCIE_SOC_R2D_C_N<0>	CV8	PCIE1_TXN
3206 OUT	PCIE_SOC_R2D_C_P<0>	CV9	PCIE1_TXP
2607 IN	PCIE_SOC_D2R_N<1>	DB1	PCIE2_RXN
2607 IN	PCIE_SOC_D2R_P<1>	DB2	PCIE2_RXP
3206 OUT	PCIE_SOC_R2D_C_N<1>	CY8	PCIE2_TXN
3206 OUT	PCIE_SOC_R2D_C_P<1>	CY9	PCIE2_TXP
2607 IN	PCIE_SOC_D2R_N<2>	CU5	PCIE3_RXN
2607 IN	PCIE_SOC_D2R_P<2>	CU4	PCIE3_RXP
3206 OUT	PCIE_SOC_R2D_C_N<2>	DA12	PCIE3_TXN
3206 OUT	PCIE_SOC_R2D_C_P<2>	DB12	PCIE3_TXP
2607 IN	PCIE_SOC_D2R_N<3>	CV4	PCIE4_RXN/USB30_3_RXN
2607 IN	PCIE_SOC_D2R_P<3>	CV5	PCIE4_RXP/USB30_3_RXP
3206 OUT	PCIE_SOC_R2D_C_N<3>	DF11	PCIE4_TXN/USB30_3_TXN
3206 OUT	PCIE_SOC_R2D_C_P<3>	DE11	PCIE4_TXP/USB30_3_TXP
2101 IN	PCH_PCIE_WLAN_D2R_N	CY4	PCIE5_RXN/USB30_2_RXN
2101 IN	PCH_PCIE_WLAN_D2R_P	CY5	PCIE5_RXP/USB30_2_RXP
2101 OUT	PCH_PCIE_WLAN_R2D_C_N	DH10	PCIE5_TXN/USB30_2_TXN
2101 OUT	PCH_PCIE_WLAN_R2D_C_P	DG10	PCIE5_TXP/USB30_2_TXP
NC		DA5	PCIE6_RXN/USB30_1_RXN
NC		DA4	PCIE6_RXP/USB30_1_RXP
NC		DJ11	PCIE6_TXN/USB30_1_TXN
NC		DH11	PCIE6_TXP/USB30_1_TXP
NC		CV1	PCIE7_RXN
NC		CV2	PCIE7_RXP
NC		DA9	PCIE7_TXN
NC		DA8	PCIE7_TXP
1903 IN	USB3_BSSB_D2R_N	CW2	USB30_4_RXN/PCIE8_RXN
1903 IN	USB3_BSSB_D2R_P	CW1	USB30_4_RXP/PCIE8_RXP
1903 OUT	USB3_BSSB_R2D_C_N	DC8	USB30_4_TXN/PCIE8_TXN
1903 OUT	USB3_BSSB_R2D_C_P	DC9	USB30_4_TXP/PCIE8_TXP
78A6 76B3 IN	USB3_EXTC_D2R_N	DC5	USB31_1_RXN
78A8 76B3 IN	USB3_EXTC_D2R_P	DC4	USB31_1_RXP
78A6 76B3 OUT	USB3_EXTC_R2D_C_N	DH14	USB31_1_TXN
78A8 76B3 OUT	USB3_EXTC_R2D_C_P	DJ14	USB31_1_TXP
78A6 IN	USB3_EXTD_D2R_N	DE5	USB31_2_RXN
78A8 IN	USB3_EXTD_D2R_P	DE4	USB31_2_RXP
78A6 OUT	USB3_EXTD_R2D_C_N	DF14	USB31_2_TXN
78A8 OUT	USB3_EXTD_R2D_C_P	DE14	USB31_2_TXP
	PCH_PCIE_RCOMP_N	DD2	PCIE_RCOMPN
	PCH_PCIE_RCOMP_P	DC2	PCIE_RCOMPP

PCIE/USB3/SATA
USB2

EXT USB-A
PLACE_NEAR=U0500.CE6:12.7mm
R1504 100 1% 1/20W MF 201

USB2N_1	DF20	USB2_TBT_X_N	BT 19D5
USB2P_1	DE20	USB2_TBT_X_P	BT 19D5
USB2N_2	DH18	USB2_TBT_T_N	BT 19C5
USB2P_2	DG18	USB2_TBT_T_P	BT 19C5
USB2N_3	DE23	USB2_TBT_W_N	BT 19B5
USB2P_3	DF23	USB2_TBT_W_P	BT 19B5
USB2N_4	DJ17	USB2_TBT_R_N	BT 19B5
USB2P_4	DH17	USB2_TBT_R_P	BT 19B5
USB2N_5	DJ23	USB_FIXT1_N	BT 76B3 78A6
USB2P_5	DH23	USB_FIXT1_P	BT 76B3 78A8
USB2N_6	DF17	USB_FIXT2_N	BT 76B3 78A6
USB2P_6	DE17	USB_FIXT2_P	BT 76B3 78A8
GPP_A12/USB_OC1*	CR44	XDP_USB_EXTD_OC_L	14A6
GPP_A13/USB_OC2*	CN44	XDP_USB_EXTC_OC_L	14A6 15B1
GPP_A14/USB_OC3*	CR47	XDP_USB_EXTB_OC_L	14A6
GPP_A18/USB_OC0*	CR43	XDP_USB_EXTA_OC_L	14A6

X RP
T RP
W RP
R RP
TP for Fixture
TP for Fixture

USB2_COMP	DJ20	PCH_USB2_COMP	
USB_ID	DH21		
USB_VBUSSENSE	DG21	PCH_USB2_VBUSSENSE	

GROUNDED PER CFL EDS.

R1581 10K 5% 1/20W MF 201
R1501 113 1% 1/20W MF 201
PLACE_NEAR=U0500.DJ20:12.7MM

ANY CLKREQ CAN MAP TO ANY CLK.
ANY CLKREQ OR CLK CAN MAP TO ANY PCIE PORT.
UNUSED CLKREQS AND CLKS SHOULD BE DISABLED.
PER SKYLAKE PDG, SKYLAKE PCH EDS.

PP3V3_S5 5B7 12B7 13A7 74B2

NOSTUFF R1550 100K 5% 1/20W MF 201 XDP_USB_EXTA_OC_L 14C3
R1551 100K 5% 1/20W MF 201 XDP_USB_EXTB_OC_L 14C3
R1552 100K 5% 1/20W MF 201 XDP_USB_EXTC_OC_L 14C3 15B1
NOSTUFF R1553 100K 5% 1/20W MF 201 XDP_USB_EXTD_OC_L 14D3

PP1V8_S5 12A7 17B7 24A8 75B1

NOSTUFF R1533 47K 5% 1/20W MF 201 SOC_CLKREQ_BUF_L 14A6 15A2 17B5
R1534 47K 5% 1/20W MF 201 PCH_WLAN_CLKREQ_L 14A6 17C8
R1535 1K 5% 1/20W MF 201 PCH_STRP_NO_REBOOT 14A6

R1520 60.4 1% 1/20W MF 201 PCH_DIFFCLK_BIASREF 14A3
PLACE_NEAR=U0500.DF9:25.4mm

OMIT_TABLE

U0500
ICL-UN
ICL-UN-4+2
BGA
SYM 9 OF 19
CLOCK SIGNALS

	NC_PCIE_CLK100M0P	CR4	CLKOUT_PCIE_P0
	NC_PCIE_CLK100M0N	CR5	CLKOUT_PCIE_N0
	NC_DEBUG_CLKREQ_L	CM46	GPP_B5/SRCCLKREQ0*
78D8 2103 OUT	PCH_PCIE_CLK100M_WLAN_P	CH5	CLKOUT_PCIE_P1
78D8 2103 OUT	PCH_PCIE_CLK100M_WLAN_N	CH6	CLKOUT_PCIE_N1
17C8 14A6 IN	PCH_WLAN_CLKREQ_L	CK46	GPP_B6/SRCCLKREQ1*
	NC_PCIE_CLK100M2P	CM6	CLKOUT_PCIE_P2
	NC_PCIE_CLK100M2N	CM5	CLKOUT_PCIE_N2
14A6	PCH_STRP_NO_REBOOT	CK47	GPP_B7/SRCCLKREQ2*
	NC_PCIE_CLK100M3P	CK5	CLKOUT_PCIE_P3
	NC_PCIE_CLK100M3N	CK4	CLKOUT_PCIE_N3
	NC_ENETSD_CLKREQ_L	CK43	GPP_B8/SRCCLKREQ3*
	NC_PCIE_CLK100M4P	CG5	CLKOUT_PCIE_P4
	NC_PCIE_CLK100M4N	CG4	CLKOUT_PCIE_N4
	NC_GPU_CLKREQ_L	CK44	GPP_B9/SRCCLKREQ4*
78D8 26C6 OUT	PCIE_CLK100M_SOC_P	CN5	CLKOUT_PCIE_P5
78D8 26C6 OUT	PCIE_CLK100M_SOC_N	CN4	CLKOUT_PCIE_N5
17B5 15A2 14A6 IN	SOC_CLKREQ_BUF_L	CM44	GPP_B10/SRCCLKREQ5*

GPP_B10 PU is on XDP page

XTAL_IN	DH6	PCH_CLK38M4_XTALIN	IN 16C8
XTAL_OUT	DF6	PCH_CLK38M4_XTALOUT	OUT 16D8
XCLK_BIASREF	DF9	PCH_DIFFCLK_BIASREF	14A6
RTCX1	DB46	PMU_CLK32K_PCH_1V0	
RTCX2	DB44	NC	
SRTCRST*	CC38	PCH_RTC_RESET_L	IN 17D3
RTCRST*	CC40	PCH_RTC_RESET_L	IN 27C3 17D3 62C3

R1573 100K 1% 1/20W MF 201
PMU_CLK32K_PCH IN 62D7
PLACE_NEAR=U0500.DB46:5MM
PLACE_NEAR=U0500.DB46:5MM
R1572 127K 1% 1/20W MF 201

BOM_COST_GROUP=CPU & CHIPSET

DESIGN: X502/MLB
LAST CHANGE: Thu Jun 18 20:05:18 2015

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PCH PCIE/USB/CLKS

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Primary / Merged (CPU/PCH) Micro2-XDP

NOSTUFF R1801 1K 5% 1/20W MF 201 — SKL/KBL/CFL PULL CFG<3> LOW WHEN XDP PRESENT — NO_XNET_CONNECTION — PLACE_NEAR=U0500.K5:2.54MM

PP1V05_PCH_OUT_FET (75B3)

XDP_CONN:YES J1800 DF40RC-60DP-0.4V M-ST-SM1 — 518S0847

NOTE: This is not the standard XDP pinout. Use with 921-0133 Adapter Flex to support chipset debug.

XDP_PIN			
XDP_PRESENT_CPU_L	1584		
XDP_CPU_PREQ_L	6D5	BI	
XDP_CPU_PRDY_L	6D5	IN	
CPU_CFG<0>	15C8 6C5 6B7	IN	
CPU_CFG<1>	6C5 6B7	IN	
CPU_CFG<2>	6C5	IN	
CPU_CFG<3>	6C5	IN	
CPU_BPM_L<0>	77D3 6D5 6A7	IN	
CPU_BPM_L<1>	6D5 6A7	IN	
CPU_CFG<4>	6B5 6A8	IN	
CPU_CFG<5>	6B5	IN	
CPU_CFG<6>	6B5	IN	
CPU_CFG<7>	6B5	IN	
XDP_PM_RSMRST_L			
XDP_CPU_PWRBTN_L			
XDP_HOOK2			
XDP_HOOK3			
SMBUS_PCH_DATA	3608 12D3	BI	
SMBUS_PCH_CLK	3608 12D2	BI	
XDP_PCH_TCK	15D2 602	OUT	

OBSFN_A			
OBSFN_A0			
OBSFN_A1			
OBSDATA_A0			
OBSDATA_A1			
OBSDATA_A2			
OBSDATA_A3			
OBSFN_B0			
OBSFN_B1			
OBSDATA_B0			
OBSDATA_B1			
OBSDATA_B2			
OBSDATA_B3			
HOOK0			
HOOK1			
VCC_OBS_AB			
HOOK2			
HOOK3			
SDA			
SCL			
TCK1			
TCK0			

OBSFN_C			
OBSFN_C0			
OBSFN_C1			
OBSDATA_C0			
OBSDATA_C1			
OBSDATA_C2			
OBSDATA_C3			
OBSFN_D0			
OBSFN_D1			
OBSDATA_D0			
OBSDATA_D1			
OBSDATA_D2			
OBSDATA_D3			
ITPCLK/HOOK4			NC
ITPCLK#/HOOK5			NC
VCC_OBS_CD			
RESET#/HOOK6			
DBR#/HOOK7			
TDO			
TRSTn			
TDI			
TMS			
XDP_PRESENT#			

CPU_CFG			
CPU_CFG<17>		IN	6B5
CPU_CFG<16>		IN	6B5
CPU_CFG<8>		IN	6B5 6B7
CPU_CFG<9>		IN	6B5 6B7
CPU_CFG<10>		IN	6B5 6B7
CPU_CFG<11>		IN	6B5
CPU_CFG<19>		IN	6B5
CPU_CFG<18>		IN	6B5
CPU_CFG<12>		IN	6B5 6B7
CPU_CFG<13>		IN	6B5 6B7
CPU_CFG<14>		IN	6B5
CPU_CFG<15>		IN	6B5
PPVCC_OBS_CD			
ITP_PMODE			
XDP_DBRESET_L			

PPVCCIO_OUT (75A2) — R1860 0 NOSTUFF — R1861 0 XDP:YES — 5% 1/20W MF 0201

VOLTAGE=1.05V

PP1V05_VCCSTG_OUT_LGC (8B7 6G7)

XDP_PCH_TDO	15B1 602	R1890 100	XDP:YES	PLACE_NEAR=U0500.V5:28MM
XDP_PCH_TDI	15B1 602	R1891 51	XDP:YES	PLACE_NEAR=U0500.Y5:28MM
XDP_PCH_TMS	15B1 602	R1892 51	XDP:YES	PLACE_NEAR=U0500.T5:28MM
XDP_CPU_TDO	15C1 602	R1810 100	XDP:YES	PLACE_NEAR=U0500.V6:28MM
XDP_CPU_TCK	15C8 602	R1813 51	XDP:YES	PLACE_NEAR=U0500.AC8:28MM
XDP_PCH_TCK	15C6 602	R1897 51	NOSTUFF	PLACE_NEAR=U0500.AA8:28MM

All: 5% 1/20W MF 201

R1830 1K 5% 1/20W MF 201 — XDP:YES R1806 0 5% 1/20W MF 0201 — PLACE_NEAR=J1800.45:28MM — PM_SYSRST_L (BI 1306 31C1 77C2)

PM_RSMRST_L (IN 19C3 17C6 17B8 16B7 13D6 77C2) — R1800 1K XDP:YES — PLACE_NEAR=U0500.CA38:18MM

PCH_PWRBTN_L (OUT 77C2 62C6 13D3 13A6) — R1802 10 — PLACE_NEAR=U0500.CH41:8MM

PPVCCIO_OUT (75A2 6B7) — R1872 150 XDP:YES NO_XNET_CONNECTION

DEBUG:STUFF R1840 TO DELIBERATELY STALL AFTER RESET

CPU_CFG<0> (1D6 6C5 6B7) — R1840 1K NOSTUFN — R1841 1K — PP1V8_S5 (7581 1584 1583) — R1871 1K NO_XNET_CONNECTION

Hook3 Components do not have XDP BOMOPTION because they serve as CLKREQ_L PU

SOC_CLKREQ_BUF_L (OUT 15A4) — R1870 1K — PLACE_NEAR=J1800.42:28MM

XDP_CPU_TCK (OUT 15D2 602) — PLACE_NEAR=J1800.44:28MM

PCH_JTAGX (OUT 602) — R1835 0 XDP:YES — PLACE_NEAR=J1800.58:28MM

C1804 0.1UF 10% 10V X5R-CERM 0201 — PLACE_NEAR=J1800.43:28MM

C1800 0.1UF 10% 10V X5R-CERM 0201 — PLACE_NEAR=J1800.47:28MM

C1801 0.1UF 10% 10V X5R-CERM 0201 — C1806 0.1UF 10% 10V X5R-CERM 0201

ROUTE IN STAR TOPOLOGY FROM XDP CONNECTOR.

R1821 0	XDP_CPU_TDO	IN	602 15D2	PLACE_NEAR=J1800.51:2.54MM
R1822 0	XDP_CPU_TRST_L	OUT	602	PLACE_NEAR=J1800.53:2.54MM
R1823 0	XDP_CPU_TDI	OUT	602	PLACE_NEAR=J1800.55:2.54MM
R1824 0	XDP_CPU_TMS	OUT	602	PLACE_NEAR=J1800.57:2.54MM

All: 5% 1/20W MF 0201

XDP_PCH_TDO	IN	602 15D2
XDP_PCH_TRST_L	OUT	602
XDP_PCH_TDI	OUT	602 15D2
XDP_PCH_TMS	OUT	602 15D2

PP1V8_S5 (7581 15C7 1583) — NOSTUFF R1850 100K 5% 1/20W MF 201 — XDP_PRESENT1_L — R1873 1K XDP:YES — 5% 1/20W MF 201 — XDP_USB_EXTC_OC_L (OUT 14A6 14C3)

NEED TO CONNECT TO VCCST, *STG POWER LOGIC

PP1V8_S5 (7581 15C7 15B4) — C1870 0.1UF 10% 10V X5R-CERM 0201 XDP:YES

PP3V3_S5 (74B2 11B8 8B4) — NO_XNET_CONNECTION — R1876 10K XDP:YES — 5% 1/20W MF 201

XDP_PRESENT_CPU_L (15D6) — R1874 0 XDP:YES — MF 0201 5% 1/20W — XDP_PRESENT2_L

U1870 74AUP1G07GF SOT891 (VCC, A, Y, GND; NC, NC, NC, NC) — R1875 100K XDP:YES — 5% 1/20W MF 201

XDP_PRESENT_L (OUT 24C6 64A5)

Per Intel comments
POD_PRESENT2_N going to logic control

SOC_CLKREQ_BUF_L (15C8) = SOC_CLKREQ_BUF_L (14A6 17B5) MAKE_BASE=TRUE

Per Intel comments HOOK3
HOOK3 connected to GPP_B10

PCH XDP Signals

These signals do not connect to the Primary (Merged) XDP connector in this architecture.
The PDG puts them on a secondary XDP connector that is only needed in some PCH debugging situation.
They are listed here to show their secondary XDP functions and to provide test points for signals that are not used elsewhere.

PCH/XDP Signals

12C5 12A6	BI	XDP_PCH_STRP_GPP_E0	OBSDATA_A0	TP	TP-P6	1	TP1840
12C5 12B6	BI	XDP_PCH_STRP_CNV_DISABLE	OBSDATA_A1	TP	TP-P6	1	TP1841
12B5 12A6	BI	XDP_MEM_OK	OBSDATA_A2	TP	TP-P6	1	TP1842
12B5 12A6	BI	XDP_PCH_STRP_SPIROM_SAF	OBSDATA_A3	TP	TP-P6	1	TP1843
12B5	BI	XDP_PCH_OBSDATA_B0	OBSDATA_B0	TP	TP-P6	1	TP1868
12B5	BI	XDP_PCH_OBSDATA_B1	OBSDATA_B1	TP	TP-P6	1	TP1869
12B5 12A6	BI	XDP_PCH_OBSDATA_B2	OBSDATA_B2	TP	TP-P6	1	TP1870
12B5	BI	XDP_PCH_OBSDATA_B3	OBSDATA_B3	TP	TP-P6	1	TP1871
12B5	BI	XDP_PCH_OBSFN_C0	OBSFN_C0	TP	TP-P6	1	TP1867
3686 12D2	BI	PCH_I2C_UPC_SCL	OBSDATA_C0	TP	TP-P6	1	TP1844
3686 12D2	BI	PCH_I2C_UPC_SDA	OBSDATA_C1	TP	TP-P6	1	TP1845
19B5 5B3	BI	LSX_HSR_R2P	OBSDATA_C2	TP	TP-P6	1	TP1846
19B5 5B3	BI	LSX_HSR_P2R	OBSDATA_C3	TP	TP-P6	1	TP1847
19D5 5C3 5B6	BI	LSX_HSX_R2P	OBSDATA_C4	TP	TP-P6	1	TP1848
19D5 5C3	BI	LSX_HSX_P2R	OBSDATA_C5	TP	TP-P6	1	TP1849
19C5 5C3 5B6	BI	LSX_HST_R2P	OBSDATA_C6	TP	TP-P6	1	TP1850
19C5 5B3	BI	LSX_HST_P2R	OBSDATA_C7	TP	TP-P6	1	TP1851
19C5 5B3 5A6	BI	LSX_HSW_R2P	OBSFN_C1	TP	TP-P6	1	TP1852

Other Debug Signals

6B3	BI	PEG_VIEW_2		TP	TP-P6	1	TP1872
6B3	BI	PEG_VIEW_3		TP	TP-P6	1	TP1878
6C3	BI	DDR_VIEW_0		TP	TP-P6	1	TP1879
6B3	BI	DDR_VIEW_1		TP	TP-P6	1	TP1880
6B3	BI	FIVR_VLOAD_CORE0		TP	TP-P6	1	TP1881
6B3	BI	FIVR_VLOAD_CORE1		TP	TP-P6	1	TP1882
6B3	BI	FIVR_VLOAD_CORE2		TP	TP-P6	1	TP1883
6B3	BI	FIVR_VLOAD_CORE3		TP	TP-P6	1	TP1884
6B3	BI	FIVR_VLOAD_CCF		TP	TP-P6	1	TP1885
6C3	BI	FIVR_VLOAD_SA		TP	TP-P6	1	TP1886
6B3	BI	FIVR_VLOAD_TCSS		TP	TP-P6	1	TP1887
5A6	BI	FIVR_VLOAD_GTM		TP	TP-P6	1	TP1888
6B5	BI	FIVR_PROBE_ANA_0		TP	TP-P6	1	TP1889
6B5	BI	FIVR_PROBE_ANA_1		TP	TP-P6	1	TP1890
6B5	BI	FIVR_PROBE_DIG_0		TP	TP-P6	1	TP1891
6B5	BI	FIVR_PROBE_DIG_1		TP	TP-P6	1	TP1892
6B3	BI	FIVR_VLOAD_1P05		TP	TP-P6	1	TP1893
6B3	BI	FIVR_VLOAD_VCCIO		TP	TP-P6	1	TP1894
6B3	BI	FIVR_VLOAD_VNN		TP	TP-P6	1	TP1895
6A5	BI	FIVR_ANAPB0		TP	TP-P6	1	TP1896
6A5	BI	FIVR_ANAPB1		TP	TP-P6	1	TP1897
12B5	BI	FIVR_DIGPB_1		TP	TP-P6	1	TP1898

BOM_COST_GROUP=DEBUG

PAGE TITLE: CPU/PCH Merged XDP

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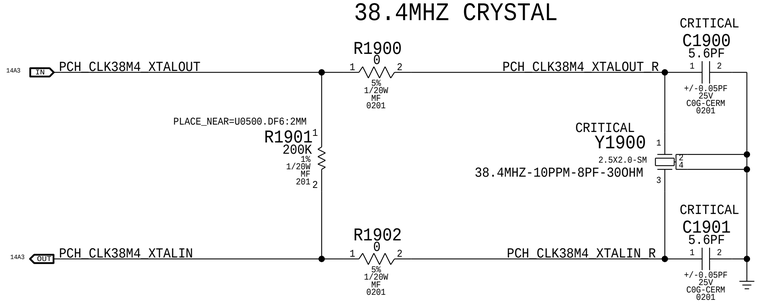
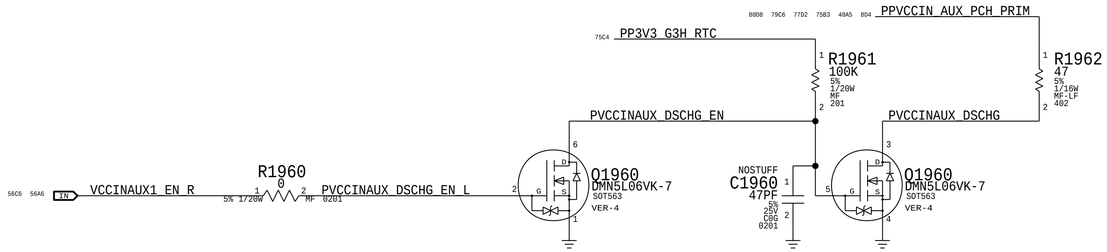
38.4MHZ CRYSTAL



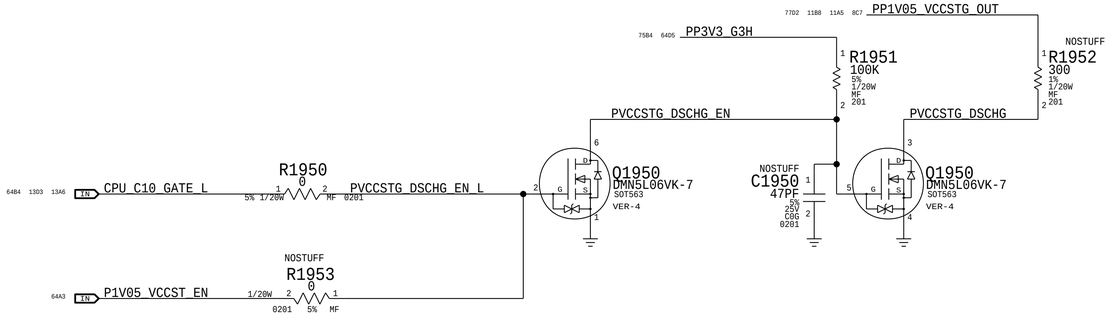
VCCIN_AUX DISCHARGE

Ensure VCCIN_AUX decays below 200mV within 100ms (PDG requirement tPCH35)

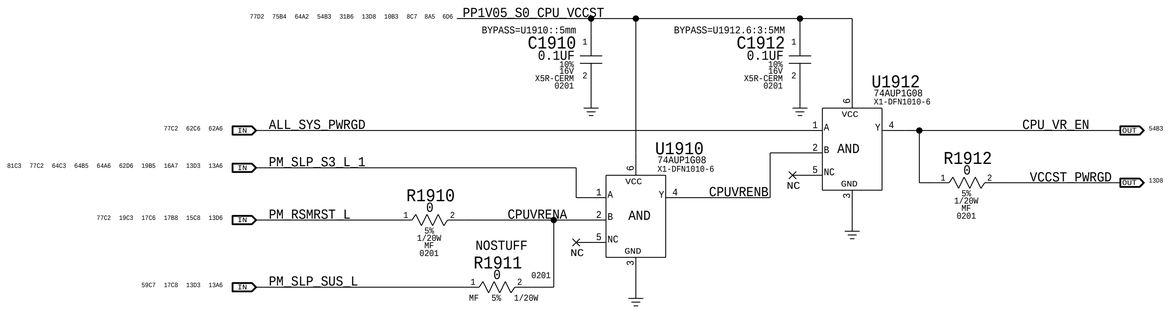


VCCSTG_OUT DISCHARGE

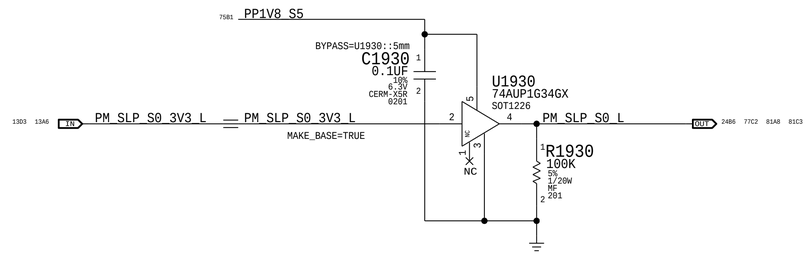
Ensure VCCSTG_OUT <= VCCST during power-down (required at all times)



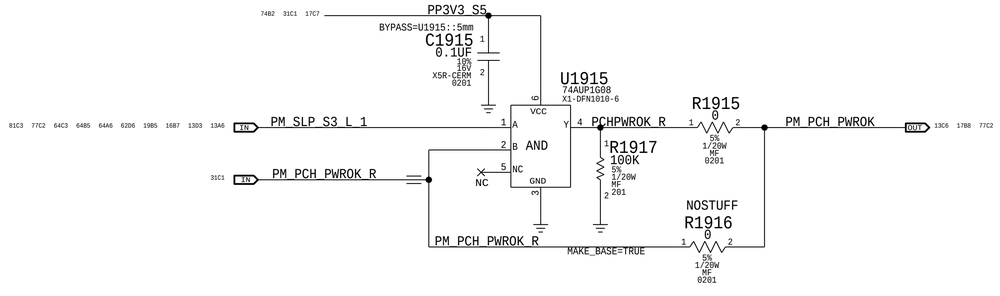
VCCIN VR EN and VCCST_PWRGD Generation



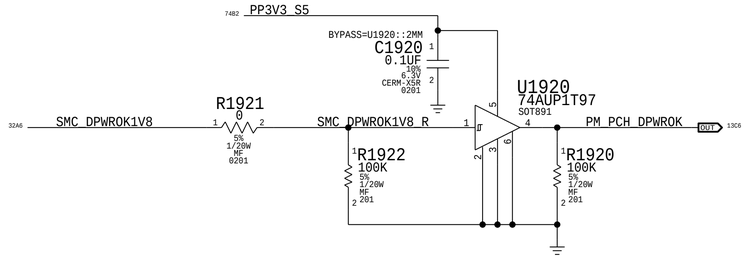
SLP_S0# 1.8V Level Shifter



PCH_PWROK Generation



DSW_PWROK 3.3V Level Shifter



BOM_COST_GROUP=CPU & CHIPSET

SYNC_MASTER=J214_DAVID SYNC_DATE=03/20/2019

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Chipset Shared Support

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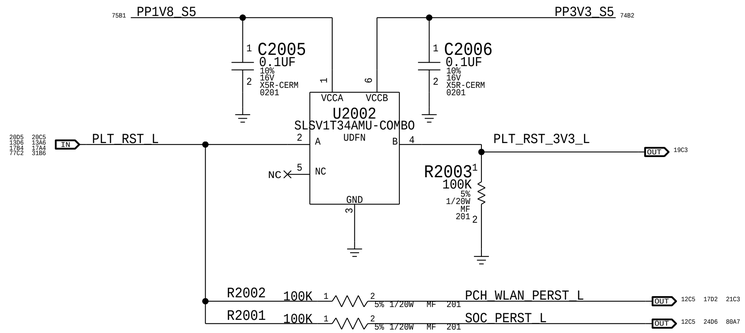
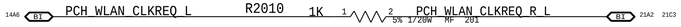
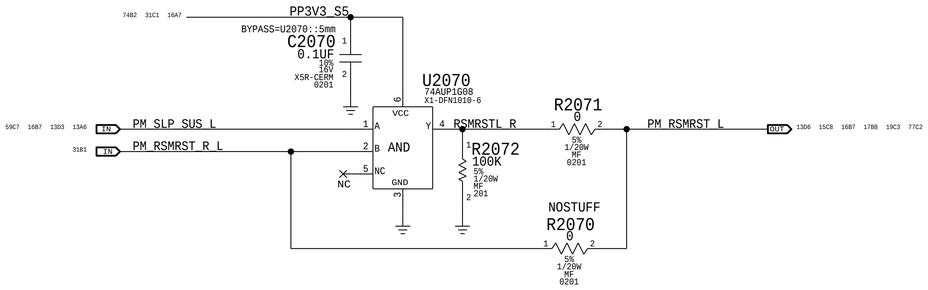
Platform Reset Connections



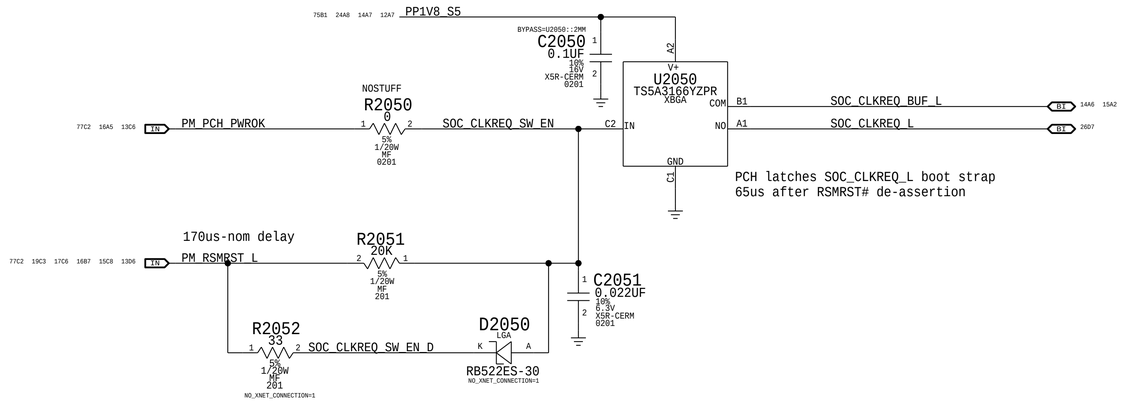


RSMRST override

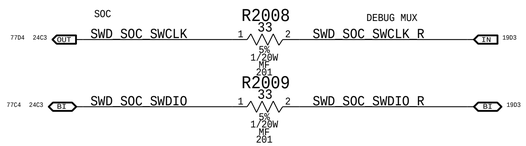
Force PCH-side RSMRST low if SLP_SUS is low, in case of uncontrolled shutdown



SOC_CLKREQ_L ISOLATION SWITCH & DELAY

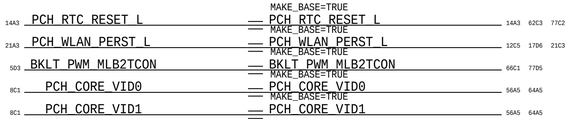


SOC SWD <=> DEBUG MUX PATH

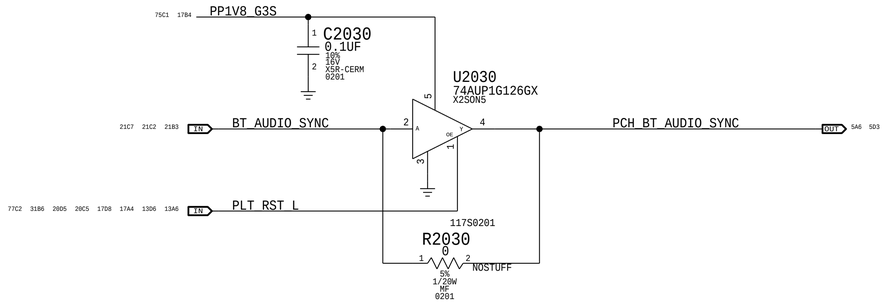


REMOVED J2001 ESPI ANALYZER CONNECTOR etc

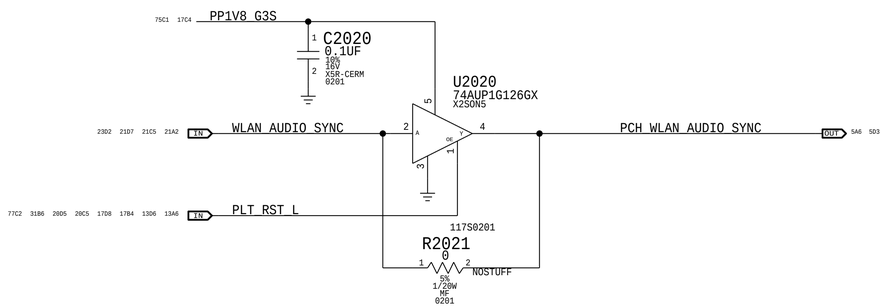
SIGNAL ALIASES



BT_AUDIO_SYNC ISOLATION BUFFER



WLAN_AUDIO_SYNC ISOLATION BUFFER



BOM_COST_GROUP=CPU & CHIPSET

PAGE TITLE: Chipset Support 2

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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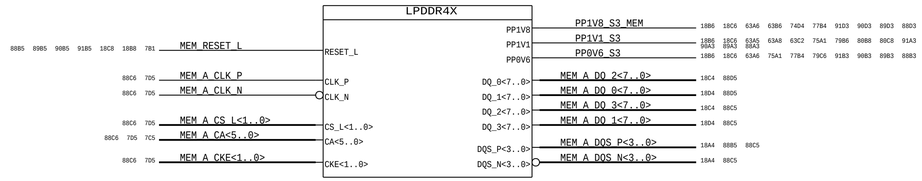
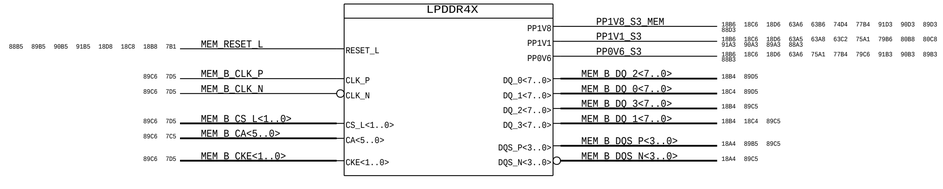
LPDDR4x SUB CHANNELS

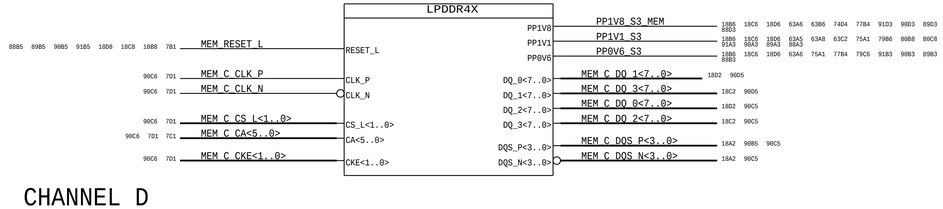
CHANNEL A



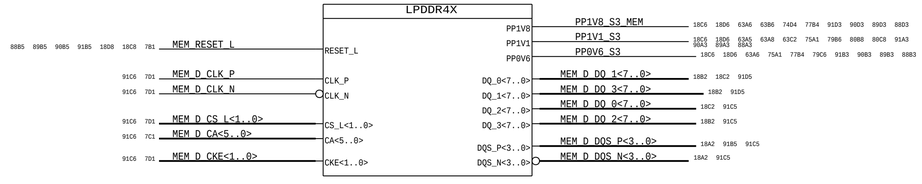
CHANNEL B



CHANNEL C



CHANNEL D



Memory Bit & Byte Swizzle

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BOM_COST_GROUP=DRAM

Current LPDDR4x APNs for BOM:

Hynix (MPN -- APN):
H9HCNNN8KMALHR-NEE; 333S00180
H9HCNNNCPMALHR-NEE; 333S00181
H9HCNNNFAMALTR-NNE; PENDING

Micron (MPN -- APN):
MT53E512M32D2NP-046 WT:E, PENDING
MT53E1G32D4NQ-046 WT:E, PENDING
MT53E2G32D8QD-046 WT:E, PENDING

Samsung (MPN -- APN):
K4UBE3D4AM-MGCJT00; 333S00194
K4UCE3Q4AM-AGCJT00; 333S00195

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: LPDDR4x Channels / Aliasing

Apple Inc.

DRAWING NUMBER: 051-05198 SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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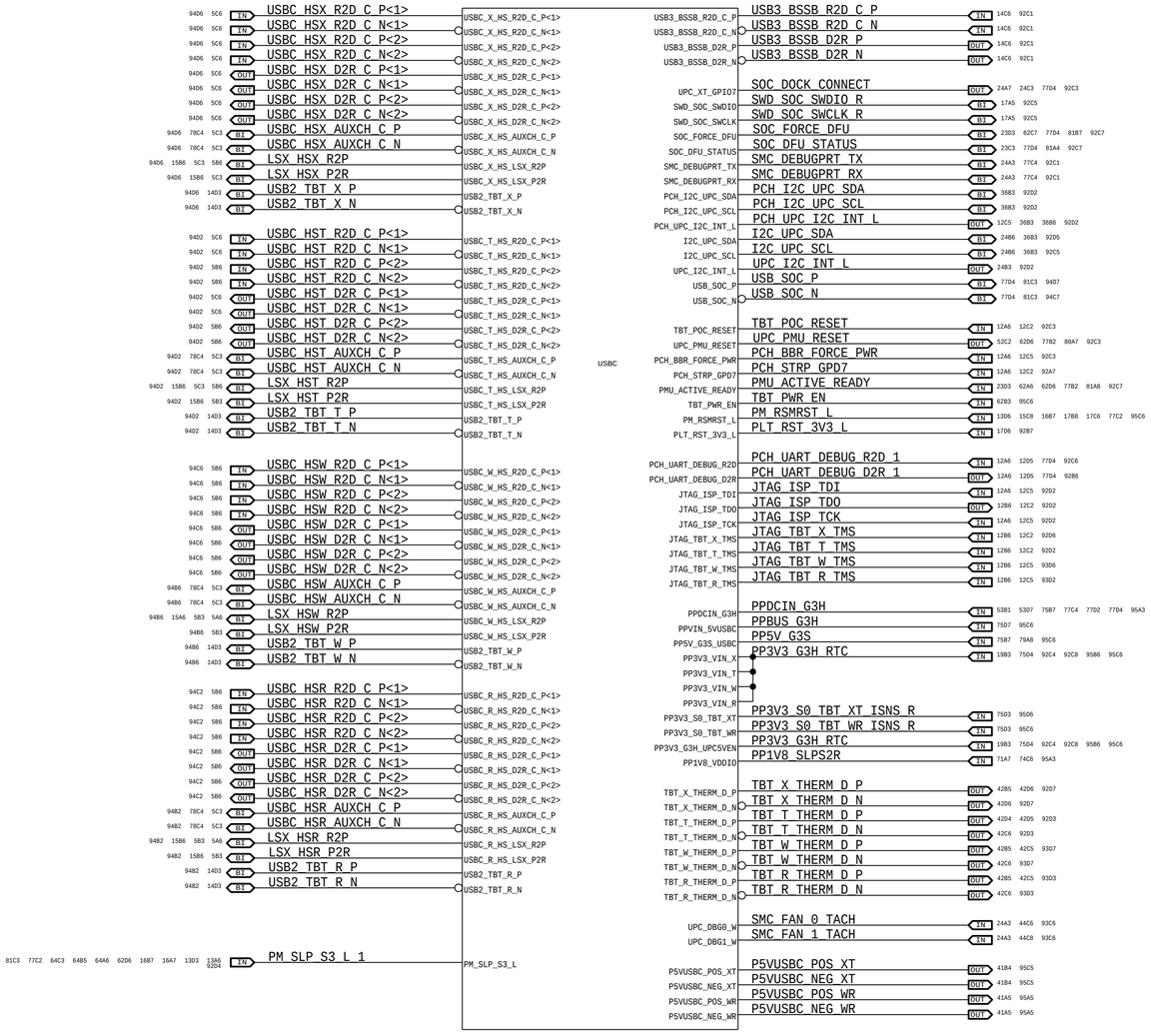

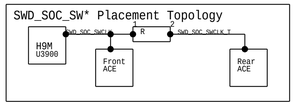

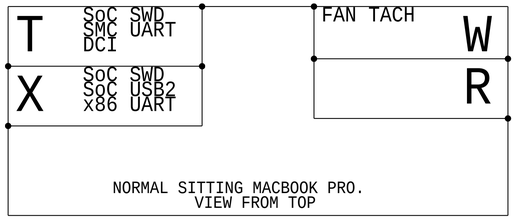

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T	FLOAT (7)	PU (3)	0x3F	0x6B	0x3F	0x6B
W	OVERRIDE OTP (3)	OVERRIDE OTP (3)	0x3B	0x6B	0x3B	0x6B
R	OVERRIDE OTP (4)	OVERRIDE OTP (3)	0x3C	0x6B	0x3C	0x6B

ALL 4 BURNSIDE BRIDGE I2C ADDRESS = 0x18

BOM_COST_GROUP=TBT

PAGE TITLE

USB-C

Apple Inc.

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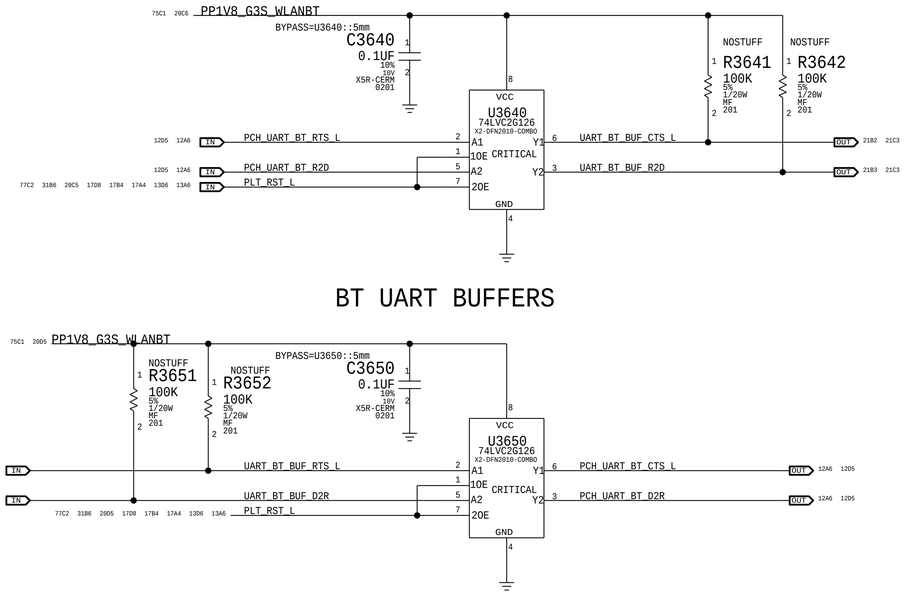

BT UART BUFFERS

radar 47644489

311S00437 in P0 BOM
311S00112 in P1 BOM

BOM_COST_GROUP=WIRELESS

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE

WIFI/BT: Support

Apple Inc.

DRAWING NUMBER 051-05198 SIZE D

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TP3700 TP-P5 WLAN_JTAG_SEL
TP3701 TP-P5 WLAN_JTAG_TCK
TP3702 TP-P5 WLAN_JTAG_TDI
TP3703 TP-P5 AP_PCIE_WAKE_L
TP3704 TP-P5 WLAN_JTAG_TRST_L

TP3715 TP-P5 WLAN_AUDIO_SYNC
TP3716 TP-P5 WLAN_HOST_WAKE

TP3718 TP-P5 BT_AUDIO_SYNC
TP3719 TP-P5 BT_GPIO_4

TP3721 TP-P5 BT_DEV_WAKE
TP3722 TP-P5 BT_HOST_WAKE

TP3724 TP-P5 WLAN_JTAG_TMS
TP3725 TP-P5 WLAN_JTAG_TDO

PP3V3_G3S_WLANBT

C3724 10UF 20% 6.3V CERM-X5R 0402-4 PLACE_NEAR=U3730.63:2MM
C3725 10UF 20% 6.3V CERM-X5R 0402-4 PLACE_NEAR=U3730.89:2MM
C3721 10UF 20% 6.3V CERM-X5R 0402-4 PLACE_NEAR=U3730.74:2MM
C3722 10UF 20% 6.3V CERM-X5R 0402-4 PLACE_NEAR=U3730.35:2MM

PP3V3_G3S_WLANBT

C3713 12PF 5% 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.09:1MM
C3714 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.09:1MM
C3715 12PF 5% 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.74:1MM
C3716 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.74:1MM
C3717 12PF 5% 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.63:1MM
C3718 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.63:1MM
C3719 12PF 5% 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.35:1MM
C3720 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE PLACE_NEAR=U3730.35:1MM

PP1V8_G3S_WLANBT

C3723 0.1UF 10% 6.3V CERM-X5R 0201 PLACE_NEAR=U3730.3:1MM
CC800 12PF 5% 25V NP0-C0G 0201 DESENSE
CC801 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE

VDDBAT_HPC 29
VDDBAT_LP 30
VDD3P3_BT 28
VDD3P3_PAD 42
VDD3P3_FEM_CORE0 35
VDD3P3_FEM_CORE1 89
VDD3P3_FEM_CORE2 74
VDDIO_RFSW 63
VDDIO_PMU 2
VDD3P3_SOBOTP 18
VDDIO_DIG 17
3

50_G_0_MATCH 91
50_A_0_MATCH 87
50_G_1_MATCH 76
50_A_1_MATCH 72
50_G_2_MATCH 49
50_A_2_MATCH 65
NC 44
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WLAN_JTAG_TCK 81
WLAN_JTAG_TDI 82
WLAN_JTAG_TMS 83
WLAN_JTAG_TRST_L 84
WLAN_JTAG_TDO 85
UART_WLAN_R2D 93
UART_WLAN_D2R 94
UART_WLAN_D2R_CTS_L 95
UART_WLAN_R2D_RTS_L 96
SPROM_DOUT 67
SPROM_DIN 68
SPROM_CLK 69
SPROM_CS 70
NC_WLAN_GPIO_13 97
WLAN_CONTEXT_B 100
WLAN_AUDIO_SYNC 99
WLAN_SROM_STRAP 98
TP_WLAN_PMU_TEST 159
NC_WLAN_GPIO_14 161
WLAN_CONTEXT_A 163
WLAN_HOST_WAKE 78
PCH_WLAN_DEV_WAKE 79

2G_ANT_CORE0
5G_ANT_CORE0
2G_ANT_CORE1
5G_ANT_CORE1
2G_ANT_CORE2
5G_ANT_CORE2
BT_ONLY_ANT
WL_JTAG_SEL
WL_JTAG_TCK (GPIO2, 100K IPU VDDIO)
WL_JTAG_TDI (GPIO4, IPD)
WL_JTAG_TMS (GPIO3, 100K IPU VDDIO)
WL_JTAG_TRST (GPIO6, ACTIVE LOW)
WL_JTAG_TDO (GPIO5)
WL_UART_RX (100K IPU VDDIO)
WL_UART_TX (EXT PU NEEDED)
WL_UART_RTS (ACTIVE LOW, EXT PU NEEDED)
WL_UART_CTS (ACTIVE LOW, 100K IPU VDDIO)
WL_SPROM_MO
WL_SPROM_MI
WL_SPROM_CLK
WL_SPROM_CS (ACTIVE HIGH)
WL_GPIO_13 (NC)
WL_GPIO_21 (MOTION CONTEXT B)
WL_GPIO_20 (WIFI TIME SYNC, EXT PD NEEDED)
WL_GPIO_17 (ACTIVE LOW SROM PRESENCE)
WL_PMU_TEST_O (NOTE DEFINED)
WL_GPIO_14 (NC)
WL_GPIO_12 (MOTION CONTEXT A)
WL_HOST_WAKE (EXT PULL NEEDED)
WL_DEV_WAKE (IPD)

OMIT_TABLE
U3730
LBEE5ZZ1HP-049
LGA
SYM 1 OF 3
CRITICAL
339S00404

PP1V8_G3S_WLANBT

R3715 100K 5% 1/20W MF 201
R3714 100K 5% 1/20W MF 201
R3717 100K 5% 1/20W MF 201

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PCIE_REFCLK_N 5 PCH_PCIE_CLK100M_WLAN_N
PCIE_TX_P 9 PCH_PCIE_WLAN_D2R_C_P
PCIE_TX_N 8 PCH_PCIE_WLAN_D2R_C_N
PCIE_RX_P 12 PCH_PCIE_WLAN_R2D_P
PCIE_RX_N 11 PCH_PCIE_WLAN_R2D_N
PCIE_CLKREQ* (EXT PU NEEDED) 14 PCH_WLAN_CLKREQ_R_L
PCIE_WAKE* 15 AP_PCIE_WAKE_L
PERST* (EXT PU NEEDED) 16 PCH_WLAN_PERST_L
BT_UART_RX (IPU VDDIO) 54 UART_BT_BUF_R2D
BT_UART_TX (EXT PU NEEDED) 55 UART_BT_BUF_D2R
BT_UART_CTS (ACTIVE LOW, IPU VDDIO) 56 UART_BT_BUF_CTS_L
BT_UART_RTS (ACTIVE LOW, EXT PU NEEDED) 57 UART_BT_BUF_RTS_L
BT_GPIO_2/BT_SF_STRAP (40K IPD) 53 BT_ROM_BOOT_HPN_L
BT_JTAG_STRAP (NOT DEFINED) 60 NC
BT_SF_CS (ACTIVE LOW) 36 BT_SPI2_CSN
BT_SF_CLK 37 BT_SPI2_CLK
BT_SF_MISO 38 BT_SPI2_MISO
BT_SF_MOSI 39 BT_SPI2_MOSI
BT_I2S_WS (I2S:IPD, UART:IPU) 40 UART_BT_LH_R2D
BT_I2S_DO (I2S:EXT PD NEEDED, UART:NONE?) 41 TP_I2S_BT_D2R
BT_I2S_CLK (I2S:IPD, UART:NONE) 123 UART_BT_LH_D2R
BT_I2S_DI (I2S:IPD, UART:NONE) 124 TP_I2S_BT_R2D
BT_GPIO_3 (BT TIME STAMP) 59 BT_AUDIO_SYNC
BT_GPIO_4 (BT TIME SYNC) (RSVD) 58 BT_GPIO_4
BT_DEV_WAKE (IPD) 61 BT_DEV_WAKE
BT_HOST_WAKE (EXT PULL NEEDED) 62 BT_HOST_WAKE

C3707 0.1UF 10% 6.3V X6S 0201 U3730.9:2MM PCH_PCIE_WLAN_D2R_P
C3706 0.1UF 10% 6.3V X6S 0201 U3730.8:2MM PCH_PCIE_WLAN_D2R_N
C3709 0.1UF 10% 6.3V X6S 0201 U0500.DG10:2MM PCH_PCIE_WLAN_R2D_C_P
C3708 0.1UF 10% 6.3V X6S 0201 U0500.DG10:2MM PCH_PCIE_WLAN_R2D_C_N
132S0395

PP1V8_S5

R3780 10K 5% 1/20W MF 201
R3785 0 5% 1/20W MF 0201 (PCH) PCH_BT_ROM_BOOT_L

PP1V8_G3S_WLANBT

R3716 100K 5% 1/20W MF 201

BT_AUDIO_SYNC MAKE_BASE=TRUE

WIFI_DBG
J3740 505070-1222 M-ST-SM

UART_BT_BUF_R2D 1 — 2 UART_BT_BUF_D2R
PCH_BT_ROM_BOOT_L 3 — 4 UART_BT_BUF_CTS_L
BT_DEV_WAKE 5 — 6 UART_BT_BUF_RTS_L
BT_HOST_WAKE 7 — 8 UART_BT_LH_R2D
BT_PWR_EN 9 — 10 UART_BT_LH_D2R
BT_AUDIO_SYNC 11 — 12 NC
13 14 15 16

DEBUG CONNECTORS

J3750 505070-1222 M-ST-SM

UART_WLAN_R2D 1 — 2 UART_WLAN_D2R
NC 3 — 4 UART_WLAN_R2D_RTS_L
NC 5 — 6 UART_WLAN_D2R_CTS_L
WLAN_HOST_WAKE 7 — 8 PCH_WLAN_CLKREQ_R_L
WLAN_PWR_EN 9 — 10 WLAN_AUDIO_SYNC
PCH_WLAN_PERST_L 11 — 12 PMU_CLK32K_WLANBT
13 14 15 16
WIFI_DBG

BLUETOOTH SERIAL FLASH

PP1V8_G3S_WLANBT

R3751 100K 5% 1/20W MF 201
R3752 100K 5% 1/20W MF 201
R3753 10K 5% 1/20W MF 201
R3754 1K 5% 1/20W MF 201

C3710 0.1UF 10% 6.3V CERM-X5R 0201 PLACE_NEAR=U3750.8:2MM
C3712 10UF 20% 6.3V CERM-X5R 0402-4 PLACE_NEAR=U3750.8:4MM

U3750 2MBIT USON W25Q20EWUXIE OMIT_TABLE

BT_SPI2_CLK → CLK
BT_SPI2_CSN
BT_SFLASH_CS_L → CS*
DI(IO0) BT_SPI2_MOSI
DO(IO1) BT_SPI2_MISO
WP*(IO2)
HOLD*(IO3)
GND EPAD
BT_SFLASH_WP_L
BT_SFLASH_HOLD_L

BOOT_STRAPS

WLAN_SROM_STRAP R3705 10K 5% 1/20W MF 201
WLAN_JTAG_SEL R3700 10K 5% 1/20W MF 201

WLAN_SROM_STRAP:
LOW: SROM Enabled
HIGH: SROM Disabled

WLAN_JTAG_SEL:
LOW: Some JTAG are GPIOs
HIGH: JTAG Enabled

PP3V3_G3S_WLANBT

R3701 1K 5% 1/20W MF 201
R3702 10K 5% 1/20W MF 201
C3711 0.1UF 10% 6.3V CERM-X5R 0201 PLACE_NEAR=U3710.8:2MM

U3710 CAS93C86B UDFN8 OMIT_TABLE

SPROM_CS
SPROM_DOUT DI
SPROM_CS_R CS
SPROM_CLK SK
NC PE
DO SPROM_DIN
ORG WIFI_SROM_ORG
GND EPAD

R3712 10K 5% 1/20W MF 201

WLAN SERIAL EEPROM

L3701 2.2UH-1.2A 0806 PLACE_NEAR=L3701.2:1MM PLACE_NEAR=U3730.23:4MM
P1V5_WLANBT_VLX → PP1V5_WLANBT_C → PP1V5_WLANBT
DIDT=TRUE SWITCH_NODE=TRUE
MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 VOLTAGE=1.5V
C3701 7.5UF 20% 4V 0402-THICKSTNCL PLACE_NEAR=L3701.2:1MM

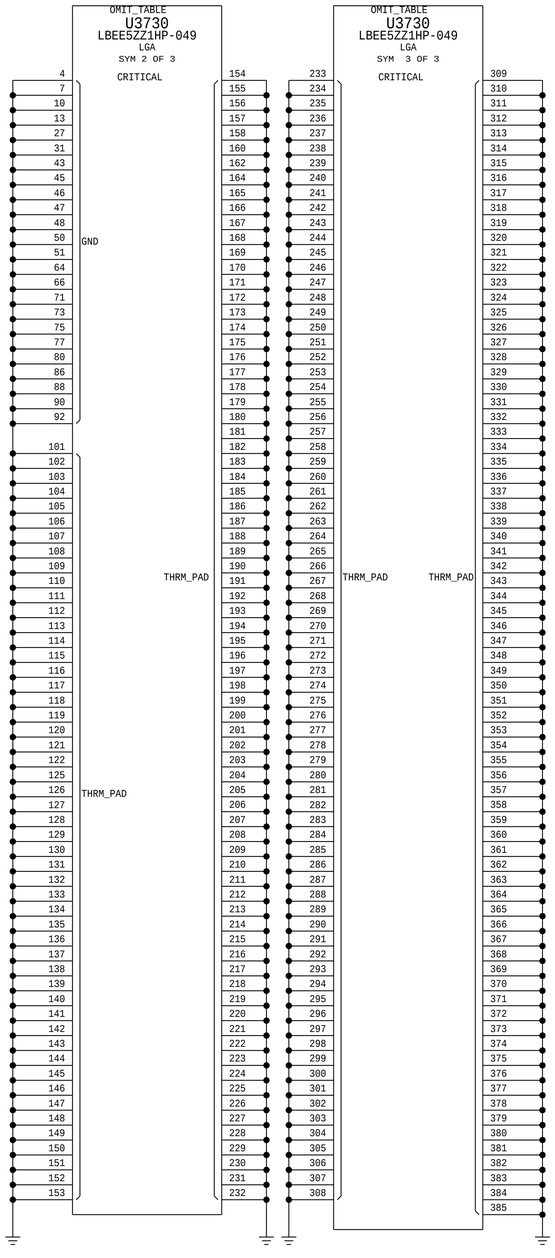
L3702 1UH-20%-4.1A-0.0480HM 2520-1 PLACE_NEAR=L3730.25:4MM
P1V2_WLANBT_VLX → PP1V2_WLANBT_C → PP1V2_WLANBT
DIDT=TRUE SWITCH_NODE=TRUE
MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 VOLTAGE=1.2V
C3702 7.5UF 20% 4V 0402-THICKSTNCL PLACE_NEAR=L3702.2:1MM

L3703 2.2UH-1.2A 0806 PLACE_NEAR=L3730.24:4MM
PVIN_RFLDO_WLANBT_VLX → PPVIN_RFLDO_WLANBT_C → PPVIN_RFLDO_WLANBT
DIDT=TRUE SWITCH_NODE=TRUE
MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 VOLTAGE=1.8V
C3703 7.5UF 20% 4V 0402-THICKSTNCL PLACE_NEAR=L3703.1:1MM

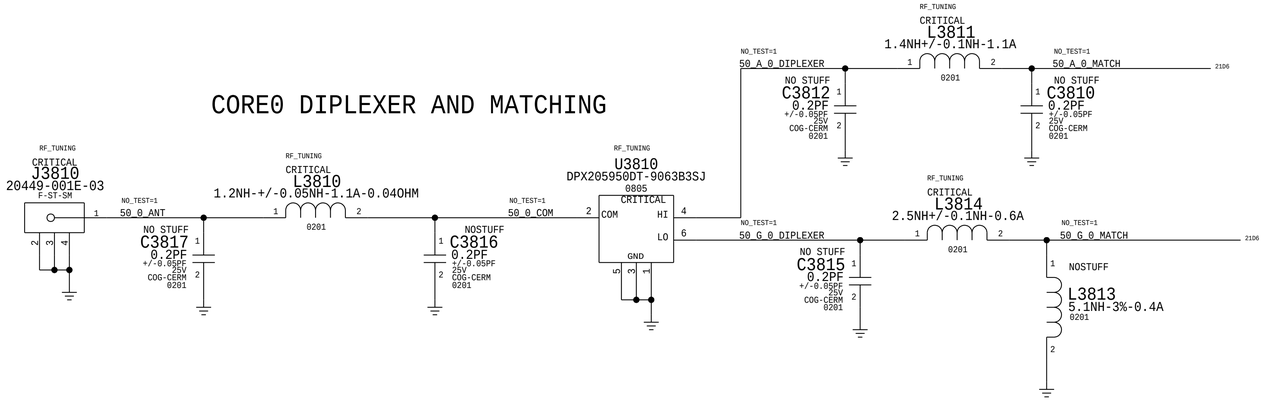
PMU_CLK32K_WLANBT → PMU_CLK32K_WLANBT MAKE_BASE=TRUE
WLAN_JTAG_TDI → WLAN_JTAG_TDI MAKE_BASE=TRUE

BOM_COST_GROUP=WIRELESS

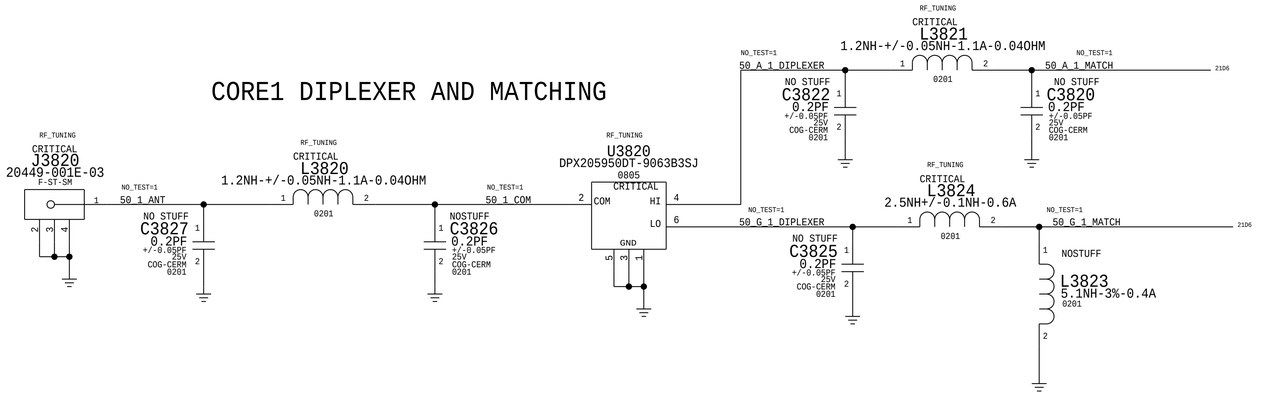
PAGE TITLE	WIFI/BT: MODULE 1
Apple Inc.	DRAWING NUMBER 051-05198 SIZE D
	REVISION 6.0.0
	BRANCH evt-3
	PAGE 37 OF 150
	SHEET 21 OF 109



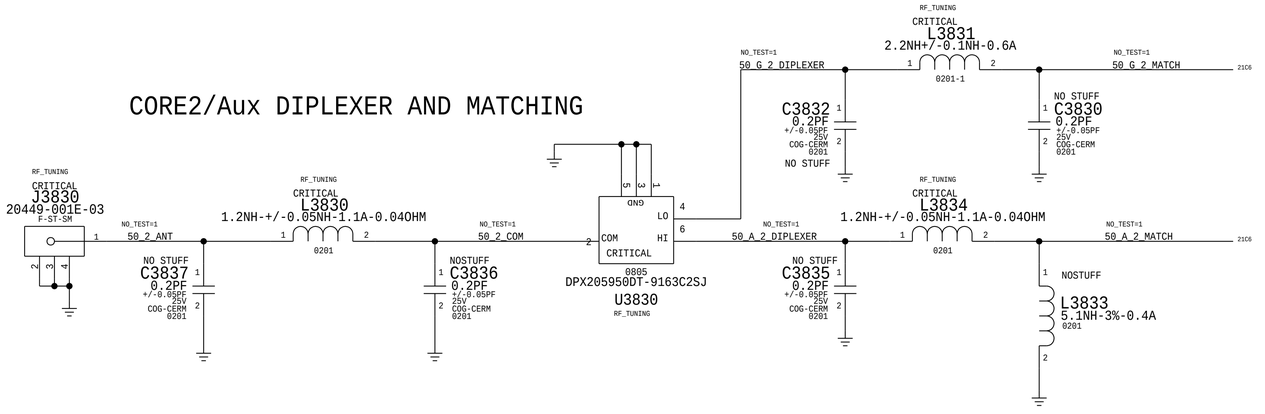
CORE0 DIPLEXER AND MATCHING



CORE1 DIPLEXER AND MATCHING



CORE2/Aux DIPLEXER AND MATCHING



BOM_COST_GROUP=WIRELESS

PAGE TITLE: WIFI/BT: MODULE 2

Apple Inc.

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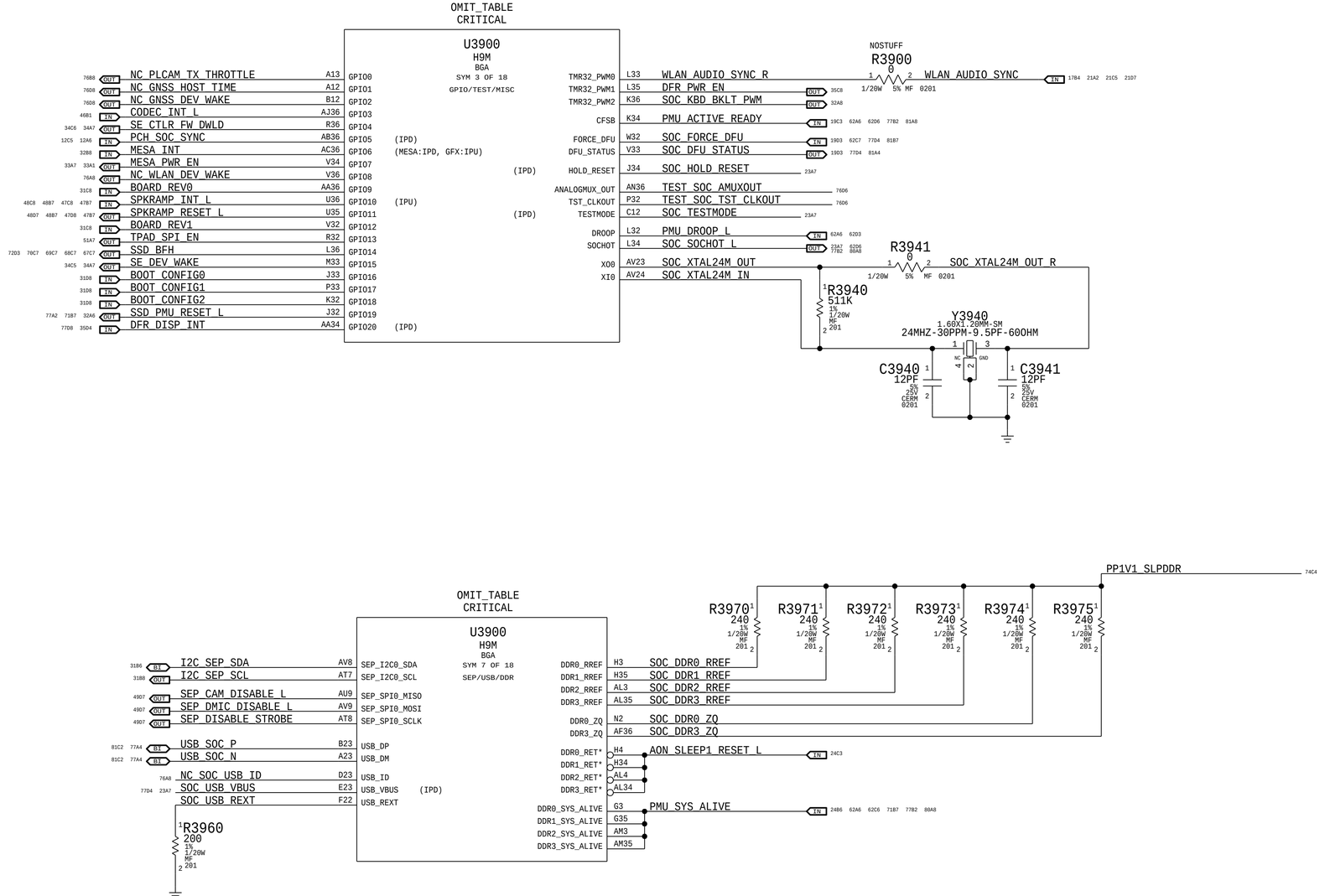
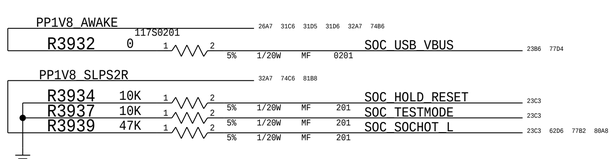
Note 1) IPU represents SW configured state, not HW default





BOM_COST_GROUP=SOC

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: SoC GPIO/SEP/USB/DDR/Test

Apple Inc.

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OMIT_TABLE
CRITICAL

U3900
H9M
BGA
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AOP

NC_WLAN_CONTEXT_A	D3	AOP_FUNC[0]		AOP_PDM_CLK0	P6	PDM_DMIC_CLK0_R	32B8 OUT
NC_WLAN_CONTEXT_B	F4	AOP_FUNC[1]		AOP_PDM_CLK1	K2	PDM_DMIC_CLK1_R	32B8 OUT
NC_GYRO_INT1	M6	AOP_FUNC[2]	(IPD)	AOP_PDM_CLK2	J6	TP_SMC_FIXTURE_MODE_L	76D6 77B2 IN
NC_GYRO_INT2	D4	AOP_FUNC[3]	(IPD)	AOP_PDM_CLK3	L6	NC_PLCAM_PROX_INT_L	76C8 IN
SE_HOST_WAKE_R	F3	AOP_FUNC[4]		AOP_PDM_CLK4	L5	NC_PLCAM_ROMEO_B2B_DETECT	76C8 IN
SOC_PERST_L	K6	AOP_FUNC[5]					
NC_ALTIMETER_INT	E4	AOP_FUNC[6]	(IPD)	AOP_PDM_DATA0	J5	PDM_DMIC_DATA0	49D1 IN
NC_SPI_GYRO_CS_L	J3	AOP_FUNC[7]		AOP_PDM_DATA1	K4	PDM_DMIC_DATA1	49C1 IN
NC_SPI_ALTIMETER_CS_L	H6	AOP_FUNC[8]					
				AOP_SPI_MOSI	D2	NC_SPI_AOP_SENSOR_MOSI_R	
NC_I2C_AOP_SCL	N6	AOP_I2C0_SCL		AOP_SPI_SCLK	F2	NC_SPI_AOP_SENSOR_CLK_R	
NC_I2C_AOP_SDA	G5	AOP_I2C0_SDA		AOP_SPI_MISO	E2	NC_SPI_AOP_SENSOR_MISO	

OMIT_TABLE
CRITICAL

U3900
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BGA
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AON

DFR_TOUCH_INT_L	AL6	AON_GPIO0		JTAG_TCK	AK6	SWD_SOC_SWCLK	IN 17A6 77D4
CPU_SMC_THRMTRIP_L	AE6	AON_GPIO1	(IPU)	JTAG_TMS	AN5	SWD_SOC_SWDIO	BI 17A6 77C4
NC_SMC_GFX_SELF_THROTTLE	AT5	AON_GPIO2	(IPD)	JTAG_TDI	AH6	TP_JTAG_SOC_TDI	77C4
NC_SMC_TOPBLK_SWP_L	AN4	AON_GPIO3		JTAG_TDO	AP4	TP_JTAG_SOC_TDO	77C4
XDP_PRESENT_L	AK4	AON_GPIO4		JTAG_TRST*	AJ6	TP_JTAG_SOC_TRST_L	77C4
CODEC_RESET_L	AV5	AON_GPIO5		JTAG_SEL	AC6	SOC_JTAG_SEL (DAP=0, TAP=1)	24A7
BT_DEV_WAKE	AR3	AON_GPIO6					
NC_PCIEDN_WAKE_L	AG6	AON_GPIO7	(IPU)	DOCK_CONNECT	AN2	SOC_DOCK_CONNECT	IN 19D3 24A7 77D4
NC_ENET_LOW_PWR	AU5	AON_GPIO8		AON_SWD0_TMS	AJ4	NC_SWD_WLAN_SWDIO	BI 76A8
TPAD_SPI_INT_L	AP2	AON_GPIO9		AON_SWD1_TMS	AH4	NC_MESA_MENUKEY_L	IN 76D8
NC_SDCONN_STATE_CHANGE_L	AR4	AON_GPIO10	(IPU)	AON_SWD01_TCK	AJ2	NC_SWD_WLAN_SWDCLK	OUT 76A8
NC_ENET_MEDIA_SENSE	AN3	AON_GPIO11	(IPD)	WDOG	AJ5	SOC_WDOG	OUT 62D6 77B2 80A7
PMU_INT_L	AT6	AON_GPIO12	(IPU)	AON_SLEEP1_RESET*	AF6	AON_SLEEP1_RESET_L	OUT 23B3
SPMI_CLK_R	AD6	AON_SPMI_SCLK					
SPMI_DATA_R	AR2	AON_SPMI_SDATA					
PMU_CLK32K_SOC	AR5	RT_CLK32768					
SOC_COLD_RESET_L	AK2	COLD_RESET*					
	AK3	CFSB_AON					

PLACE_NEAR=U3900.AD6:5MM
PLACE_NEAR=U7800.MY7:5MM

SPMI_CLK — R4036 20 1 2 5% 1/20W MF 201
SPMI_DATA — R4037 20 1 2 5% 1/20W MF 201

R4039 4.7K 1 2 5% 1/20W MF 201

OMIT_TABLE
CRITICAL

U3900
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SMC

ESPI_IO<0>	V2	SMC_ESPI_IO0		SMC_GPIO0	Y4	CODEC_WAKE_L	IN 46B1
ESPI_IO<1>	U3	SMC_ESPI_IO1		SMC_GPIO1	Y8	BT_HOST_WAKE	IN 21B3 21C7
ESPI_IO<2>	U4	SMC_ESPI_IO2		SMC_GPIO2	Y5	WLAN_HOST_WAKE	IN 21A3 21B6 21D7
ESPI_IO<3>	V8	SMC_ESPI_IO3		SMC_GPIO3	AA2	DP_INT_HPD_MASK	OUT 32A8
ESPI_CLK60M	U2	SMC_ESPI_CLK	(IPD)	SMC_GPIO4	Y7	SMC_LID_RIGHT	IN 32C3
ESPI_CS_L	V7	SMC_ESPI_CS*		SMC_GPIO5	Y6	NC_PCC_EVENT	IN 76D8
ESPI_RESET_L	V6	SMC_ESPI_RESET*	(IPD)	SMC_GPIO6	AB2	NC_TPAD_VIBE_L	OUT 76A8
				SMC_GPIO7	AD5	TPAD_KBD_WAKE_L	IN 32B8
SMC_PECI_RX	M5	SMC_PECI_IN	(IPD)	SMC_GPIO8	AD2	SMC_LID_LEFT	BI 32D2
SMC_PECI_TX	T6	SMC_PECI_OUT		SMC_GPIO9	AB4	SMC_DPWROK1V8	OUT 32A8
SMC_PCH_PWROK	W7	PCH_PWROK		SMC_GPIO10	AC2	NC_DISP_GCON_INT_L	IN 76D8
SMC_PCH_SYS_PWROK	W8	SYS_PWROK		SMC_GPIO11	AC3	NC_SOC_PCH_GCON_INT_L	OUT 76D8
				SMC_GPIO12	AA8	TPAD_ACTUATOR_DISABLE_L	BI 32A8
SMC_RSMRST_L	W6	RSMRST*		SMC_GPIO13	AB3	NC_TBT_WAKE_L	IN 76A6
SMC_SYSRST_L	W4	SYS_RESET*	(IPU)	SMC_GPIO14	AE2	UPC_I2C_INT_L	IN 19C3
PM_SLP_S0_L	AA4	SLP_S0B	(IPU)	SMC_GPIO15	L4	DP_INT_HPD_L	IN 32A8
SMC_PROCHOT_L	R5	PROCHOT*					
PMU_SYS_ALIVE	AA6	SYS_ALIVE					
				SMC_ADC0	AG2	SMC_CPU_HS_ISENSE	IN 44D2
I2C_UPC_SCL	M3	SMC_I2C0_SCL		SMC_ADC1	AC4	SMC_PBUS_VSENSE	IN 44D2
I2C_UPC_SDA	J4	SMC_I2C0_SDA		SMC_ADC2	AH3	SMC_BMON_ISENSE	IN 44D2
				SMC_ADC3	AD4	SMC_DCIN_ISENSE	IN 44D2
I2C_SNS0_S0_SCL	N4	SMC_I2C1_SCL		SMC_ADC4	AB6	SMC_DCIN_VSENSE	IN 44D2
I2C_SNS0_S0_SDA	P4	SMC_I2C1_SDA		SMC_ADC5	AH2	SMC_PP3V3_WLANBT_ISENSE	IN 44D2
				SMC_ADC6	AG4	SMC_CPUVCCIN_ISENSE	IN 44D2
I2C_SNS1_S0_SCL	U5	SMC_I2C2_SCL		SMC_ADC7	AC5	SMC_CPUVCCIN_VSENSE	IN 44D2
I2C_SNS1_S0_SDA	M2	SMC_I2C2_SDA					
				REFP_ADC	AF4	PP1V25_SLPS2R_SMC_AVREF	31A6
I2C_DISP_SCL	U6	SMC_I2C3_SCL		REFM_ADC	AG3	GND_SMC_AVSS	
I2C_DISP_SDA	R4	SMC_I2C3_SDA					
				SMC_PWM0	J2	SMC_FAN_0_PWM	OUT 44C6
I2C_PWR_SCL	P3	SMC_I2C4_SCL		SMC_TACH0	L3	SMC_FAN_0_TACH	IN 19B3 44C6
I2C_PWR_SDA	T4	SMC_I2C4_SDA					
				SMC_PWM1	R6	SMC_FAN_1_PWM	OUT 44C8
I2C_SNS_G3S_SCL	R2	SMC_I2C5_SCL		SMC_TACH1	L2	SMC_FAN_1_TACH	IN 19B3 44C8
I2C_SNS_G3S_SDA	P2	SMC_I2C5_SDA					
				SMC_PWM2	M4	NC_SMC_LED_ONEWIRE	BI 76B8
I2C_SSD_SCL	R3	SMC_I2C6_SCL	(IPU)	SMC_UART0_RXD	V4	SMC_DEBUGPRT_RX	IN 19D3 77C4
I2C_SSD_SDA	T2	SMC_I2C6_SDA		SMC_UART0_TXD	V5	SMC_DEBUGPRT_TX	OUT 19D3 77C4
				SWD_OUT0_TCK	AE3	SSD0_SWCLK	OUT 32B8 67C7 68C7 69C7 70C7 72D5
				SWD_OUT0_TMS	AA5	SSD0_SWDIO	BI 32B8 67C7 68C7 69C7 70C7 72D5
				SWD_OUT1_TCK	AF2	NC_SSD1_SWCLK_UART_R2D	OUT 76B8
				SWD_OUT1_TMS	AA7	NC_SSD1_SWDIO_UART_D2R	BI 76B8

XW4089
SM
PLACE_NEAR=U3900.AF3:4MM

PP1V8_S5

R4046	10K	5%	1/20W	MF	201	SOC_JTAG_SEL	24C3
R4047	100K	5%	1/20W	MF	201	SOC_DOCK_CONNECT	19D3 24C3 77D4
R4054	100K	5%	1/20W	MF	201	ESPI_IO<0>	1202 24B6
R4055	100K	5%	1/20W	MF	201	ESPI_IO<1>	1202 24B6
R4056	100K	5%	1/20W	MF	201	ESPI_IO<2>	1202 24B6
R4057	100K	5%	1/20W	MF	201	ESPI_IO<3>	1202 24B6
R4059	100K	5%	1/20W	MF	201	ESPI_CS_L	1202 24B6

BOM_COST_GROUP=SOC

SYNC_MASTER=myEE
SYNC_DATE=03/01/2019

PAGE TITLE
SoC AOP/AON/SMC

Apple Inc.

DRAWING NUMBER 051-05198
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OMIT_TABLE
CRITICAL

U3900
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ISP

78D6 66A6	IN	MIPI_FTCAM_DATA_P<0>	B27	MIPI0C_DATA0_P				
78D6 66A6	IN	MIPI_FTCAM_DATA_N<0>	A27	MIPI0C_DATA0_N				
76D6	IN	GND	B25	MIPI0C_DATA1_P				
76D6	IN	GND	A25	MIPI0C_DATA1_N				
78D6 66B6	IN	MIPI_FTCAM_CLK_P	B26	MIPI0C_CLK_P				
78D6 66B6	IN	MIPI_FTCAM_CLK_N	A26	MIPI0C_CLK_N				
76D6	IN	GND	B28	MIPI1C_DATA0_P				
76D6	IN	GND	A28	MIPI1C_DATA0_N				
76D6	IN	GND	B30	MIPI1C_DATA1_P				
76D6	IN	GND	A30	MIPI1C_DATA1_N				
76D6	IN	GND	B29	MIPI1C_CLK_P				
76D6	IN	GND	A29	MIPI1C_CLK_N				
35D1	OUT	MIPI_DFR_DATA_P	B33	MIPID_DATA0_P				
35C1	OUT	MIPI_DFR_DATA_N	A33	MIPID_DATA0_N				
35D1	OUT	MIPI_DFR_CLK_P	B32	MIPID_CLK_P				
35D1	OUT	MIPI_DFR_CLK_N	A32	MIPID_CLK_N				
		SOC_MIPI0C_REXT	F23	MIPI0C_REXT				
		SOC_MIPI1C_REXT	F26	MIPI1C_REXT				
		SOC_MIPID_REXT	F27	MIPID_REXT				
						ISP_I2C0_SDA	AF32	I2C_FTCAM_SDA
						ISP_I2C0_SCL	AH36	I2C_FTCAM_SCL
						ISP_I2C1_SDA	AB32	NC_I2C_PLCAM_SDA
						ISP_I2C1_SCL	AG32	NC_I2C_PLCAM_SCL
						SENSOR0_CLK	AK35	NC_FTCAM_CLK12M_R
						SENSOR0_RST	AK34	NC_FTCAM_RESET_L
						SENSOR0_ISTRB	AJ33	DFR_TOUCH_RESET_L
						SENSOR1_CLK	AD33	NC_PLCAM_RX_CLK12M_R
						SENSOR1_RST	AC32	NC_PLCAM_RX_RESET_L
						SENSOR1_ISTRB	AC34	DFR_DISP_RESET_L
						SENSOR2_CLK	AD32	NC_PLCAM_TX_CLK12M_R
						SENSOR2_RST	AJ32	NC_PLCAM_TX_RESET_L
					(IPD)	SENSOR_INT	AA33	NC_PLCAM_TX_INT
					(IPD)	DISP_TE	H32	DFR_DISP_TE
						DISP_VSYNC	T36	BOARD_REV2
						CLK32K_OUT	AK33	DFR_TOUCH_CLK32K_RESET_L

37D8	BI	I2C_SPKRAMP_L_SDA	AE35	I2C0_SDA				
37D8	OUT	I2C_SPKRAMP_L_SCL	AD35	I2C0_SCL				
37C8	BI	I2C_SPKRAMP_R_SDA	AF34	I2C1_SDA				
37C8	OUT	I2C_SPKRAMP_R_SCL	AG35	I2C1_SCL				
37C8	BI	I2C_CODEC_SDA	M34	I2C2_SDA				
37C8	OUT	I2C_CODEC_SCL	R33	I2C2_SCL				
37B8	BI	I2C_ALS_SDA	Y32	I2C3_SDA				
37B8	OUT	I2C_ALS_SCL	AE34	I2C3_SCL				
37A8	BI	I2C_DFR_SDA	T34	I2C4_SDA				
37A8	OUT	I2C_DFR_SCL	U32	I2C4_SCL				
37D6	BI	NC_I2C_SOC_5_SDA	R35	I2C5_SDA				
37D6	OUT	NC_I2C_SOC_5_SCL	U33	I2C5_SCL				
77B7 48C3	IN	SPKR_ID1	P34	I2C6_SDA	(IPU)			
77C7 47C3	IN	SPKR_ID0	R34	I2C6_SCL	(IPU)			
77C4 76D6	IN	TP_SOC_DEBUGPRT_RX	Y33	UART0_RXD	(IPU)			
77C4 76D6	OUT	TP_SOC_DEBUGPRT_TX	Y34	UART0_TXD				
34C6 34A7	IN	UART_SE_D2R	B15	UART1_RXD				
34C6 34A7	OUT	UART_SE_R2D	A15	UART1_TXD				
34C6 34A7	IN	UART_SE_D2R_CTS_L	C15	UART1_CTS*				
34C6 34A7	OUT	UART_SE_R2D_RTS_L	D15	UART1_RTS*				
76A8	IN	NC_UART_BT_D2R	J36	UART2_RXD				
76A8	OUT	NC_UART_BT_R2D	J35	UART2_TXD				
76A8	IN	NC_UART_BT_D2R_CTS_L	N32	UART2_CTS*				
76A8	OUT	NC_UART_BT_R2D_RTS_L	M32	UART2_RTS*				
21C3 21B2	IN	UART_BT_LH_D2R	M36	UART3_RXD				
21C3 21B2	OUT	UART_BT_LH_R2D	N36	UART3_TXD				
76A8	IN	NC_UART_GNSS_D2R_CTS_L	M35	UART3_CTS*				
76A8	OUT	NC_UART_GNSS_R2D_RTS_L	U34	UART3_RTS*				
21C6 21B2	IN	UART_WLAN_D2R	B14	UART4_RXD				
21C6 21B3	OUT	UART_WLAN_R2D	A14	UART4_TXD				
21C6 21A2	IN	UART_WLAN_D2R_CTS_L	C14	UART4_CTS*				
21C6 21A2	OUT	UART_WLAN_R2D_RTS_L	C13	UART4_RTS*				
						SPI0_MISO	AR9	SPI_SOCROM_MISO
						SPI0_MOSI	AR7	SPI_SOCROM_MOSI_R
						SPI0_SCLK	AU7	SPI_SOCROM_CLK_R
						SPI0_SSIN	AT9	SPI_SOCROM_CS_L
					(IPU)	SPI1_MISO	P36	SPI_TPAD_MISO
						SPI1_MOSI	N34	SPI_TPAD_MOSI_R
						SPI1_SCLK	P35	SPI_TPAD_CLK_R
						SPI1_SSIN	T32	SPI_TPAD_CS_L
						SPI2_MISO	A19	SPI_MESA_MISO
						SPI2_MOSI	A20	SPI_MESA_MOSI_R
						SPI2_SCLK	C19	SPI_MESA_CLK_R
						SPI2_SSIN	A18	WLAN_JTAG_TDI
						SPI3_MISO	C17	SPI_DFR_MISO
						SPI3_MOSI	C18	SPI_DFR_MOSI_R
						SPI3_SCLK	B18	SPI_DFR_CLK_R
						SPI3_SSIN	A17	SPI_DFR_CS_L
					(IPD)	I2S0_DIN	AC33	I2S_SPKRAMP_L_D2R
						I2S0_DOUT	AG34	I2S_SPKRAMP_L_R2D_R
						I2S0_BCLK	AA32	I2S_SPKRAMP_L_BCLK_R
						I2S0_LRCK	AG33	I2S_SPKRAMP_L_LRCLK
						I2S0_MCK	AR35	NC_DFR_TOUCH_RSVD
					(IPD)	I2S1_DIN	B20	I2S_SPKRAMP_R_D2R
						I2S1_DOUT	C20	I2S_SPKRAMP_R_R2D_R
						I2S1_BCLK	C21	I2S_SPKRAMP_R_BCLK_R
						I2S1_LRCK	A21	I2S_SPKRAMP_R_LRCLK
						I2S1_MCK	D21	NC_PCHROM_SW_EN
					(IPD)	I2S2_DIN	AH34	I2S_CODEC_D2R
						I2S2_DOUT	AB34	I2S_CODEC_R2D_R
						I2S2_BCLK	AF33	I2S_CODEC_BCLK_R
						I2S2_LRCK	AH35	I2S_CODEC_LRCLK
						I2S2_MCK	AR33	NC_I2S_CODEC_MCLK
					(IPD)	I2S3_DIN	AD36	NC_I2S_HAWKING_D2R
						I2S3_DOUT	AB35	NC_I2S_CODEC1_R2D_R
						I2S3_BCLK	AE36	NC_I2S_HAWKING_BCLK_R
						I2S3_LRCK	W34	NC_I2S_HAWKING_LRCLK
						I2S3_MCK	AG36	NC_I2S_CODEC1_MCLK

R4100 4.02K 1% 1/20W MF 201
R4101 4.02K 1% 1/20W MF 201
R4102 4.02K 1% 1/20W MF 201

R4171 20 1% 1/20W MF 201 SPI_SOCROM_MOSI
R4172 20 1% 1/20W MF 201 SPI_SOCROM_CLK

PLACE_NEAR=U3900.AB7:5MM
PLACE_NEAR=U3900.AU7:5MM

BOM_COST_GROUP=SOC

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: SoC ISP/I2C/UART/SPI/I2S

Apple Inc.

DRAWING NUMBER: 051-05198
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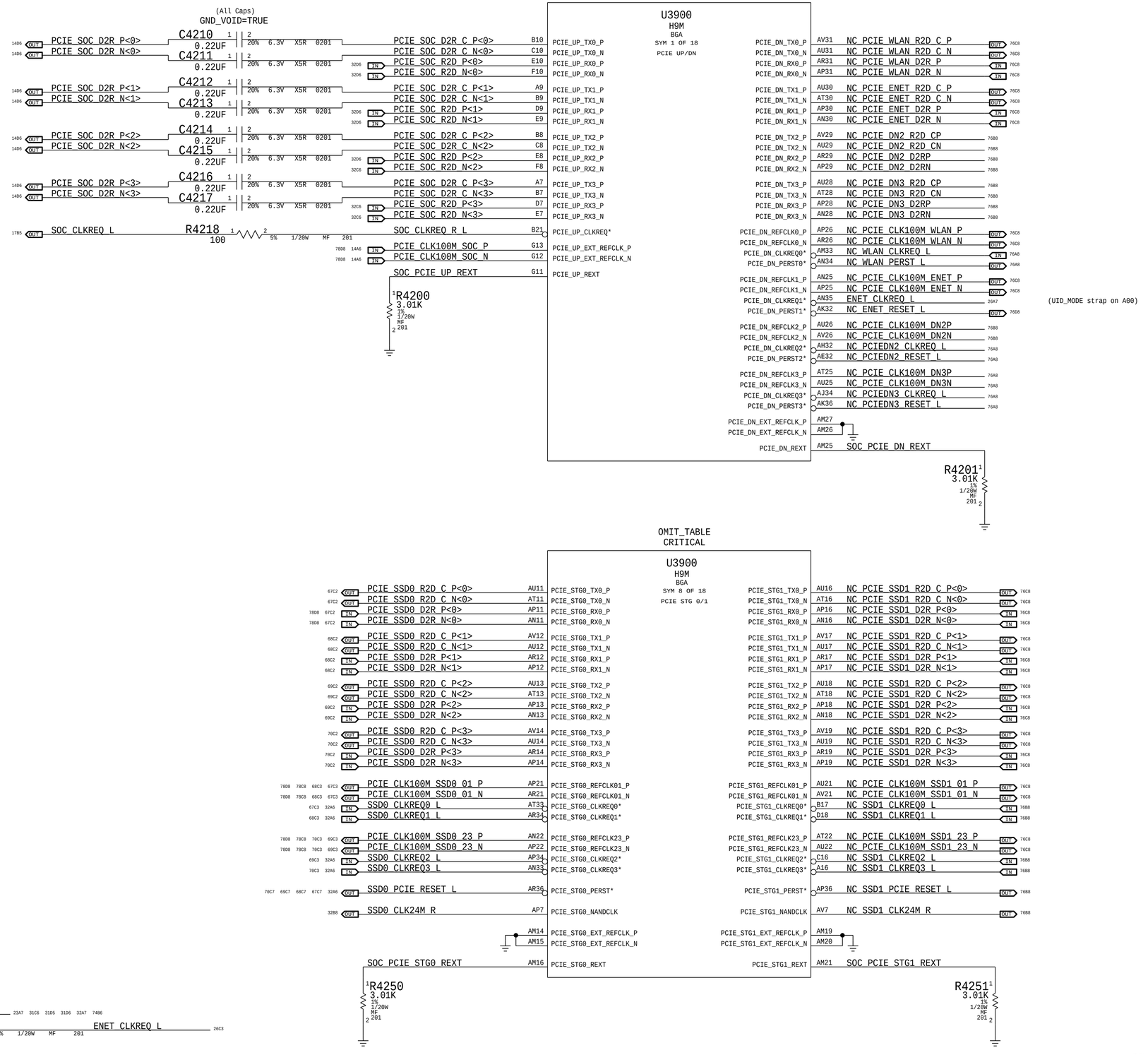
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U3900
H9M
BGA
SYM 1 OF 18
PCIE UP/DN
(All Caps)
GND_VOID=TRUE
C4210 1 2 0.22UF 20% 6.3V X5R 0201
C4211 1 2 0.22UF 20% 6.3V X5R 0201
C4212 1 2 0.22UF 20% 6.3V X5R 0201
C4213 1 2 0.22UF 20% 6.3V X5R 0201
C4214 1 2 0.22UF 20% 6.3V X5R 0201
C4215 1 2 0.22UF 20% 6.3V X5R 0201
C4216 1 2 0.22UF 20% 6.3V X5R 0201
C4217 1 2 0.22UF 20% 6.3V X5R 0201
R4218 1 2 100 5% 1/20W MF 201
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PCIE_SOC_D2R_N<0>
PCIE_SOC_D2R_P<1>
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PCIE_SOC_D2R_P<3>
PCIE_SOC_D2R_N<3>
SOC_CLKREQ_L
PCIE_SOC_D2R_C_P<0> B10
PCIE_SOC_D2R_C_N<0> C10
PCIE_SOC_R2D_P<0> E10
PCIE_SOC_R2D_N<0> F10
PCIE_SOC_D2R_C_P<1> A9
PCIE_SOC_D2R_C_N<1> B9
PCIE_SOC_R2D_P<1> D9
PCIE_SOC_R2D_N<1> E9
PCIE_SOC_D2R_C_P<2> B8
PCIE_SOC_D2R_C_N<2> C8
PCIE_SOC_R2D_P<2> E8
PCIE_SOC_R2D_N<2> F8
PCIE_SOC_D2R_C_P<3> A7
PCIE_SOC_D2R_C_N<3> B7
PCIE_SOC_R2D_P<3> D7
PCIE_SOC_R2D_N<3> E7
SOC_CLKREQ_R_L B21
PCIE_CLK100M_SOC_P G13
PCIE_CLK100M_SOC_N G12
SOC_PCIE_UP_REXT G11
R4200 3.01K 1% 1/20W MF 201
PCIE_UP_TX0_P
PCIE_UP_TX0_N
PCIE_UP_RX0_P
PCIE_UP_RX0_N
PCIE_UP_TX1_P
PCIE_UP_TX1_N
PCIE_UP_RX1_P
PCIE_UP_RX1_N
PCIE_UP_TX2_P
PCIE_UP_TX2_N
PCIE_UP_RX2_P
PCIE_UP_RX2_N
PCIE_UP_TX3_P
PCIE_UP_TX3_N
PCIE_UP_RX3_P
PCIE_UP_RX3_N
PCIE_UP_CLKREQ*
PCIE_UP_EXT_REFCLK_P
PCIE_UP_EXT_REFCLK_N
PCIE_UP_REXT
PCIE_DN_TX0_P AV31 NC_PCIE_WLAN_R2D_C_P
PCIE_DN_TX0_N AU31 NC_PCIE_WLAN_R2D_C_N
PCIE_DN_RX0_P AR31 NC_PCIE_WLAN_D2R_P
PCIE_DN_RX0_N AP31 NC_PCIE_WLAN_D2R_N
PCIE_DN_TX1_P AU30 NC_PCIE_ENET_R2D_C_P
PCIE_DN_TX1_N AT30 NC_PCIE_ENET_R2D_C_N
PCIE_DN_RX1_P AP30 NC_PCIE_ENET_D2R_P
PCIE_DN_RX1_N AN30 NC_PCIE_ENET_D2R_N
PCIE_DN_TX2_P AV29 NC_PCIE_DN2_R2D_CP
PCIE_DN_TX2_N AU29 NC_PCIE_DN2_R2D_CN
PCIE_DN_RX2_P AR29 NC_PCIE_DN2_D2RP
PCIE_DN_RX2_N AP29 NC_PCIE_DN2_D2RN
PCIE_DN_TX3_P AU28 NC_PCIE_DN3_R2D_CP
PCIE_DN_TX3_N AT28 NC_PCIE_DN3_R2D_CN
PCIE_DN_RX3_P AP28 NC_PCIE_DN3_D2RP
PCIE_DN_RX3_N AN28 NC_PCIE_DN3_D2RN
PCIE_DN_REFCLK0_P AP26 NC_PCIE_CLK100M_WLAN_P
PCIE_DN_REFCLK0_N AR26 NC_PCIE_CLK100M_WLAN_N
PCIE_DN_CLKREQ0* AM33 NC_WLAN_CLKREQ_L
PCIE_DN_PERST0* AN34 NC_WLAN_PERST_L
PCIE_DN_REFCLK1_P AN25 NC_PCIE_CLK100M_ENET_P
PCIE_DN_REFCLK1_N AP25 NC_PCIE_CLK100M_ENET_N
PCIE_DN_CLKREQ1* AN35 ENET_CLKREQ_L
PCIE_DN_PERST1* AK32 NC_ENET_RESET_L
PCIE_DN_REFCLK2_P AU26 NC_PCIE_CLK100M_DN2P
PCIE_DN_REFCLK2_N AV26 NC_PCIE_CLK100M_DN2N
PCIE_DN_CLKREQ2* AH32 NC_PCIEDN2_CLKREQ_L
PCIE_DN_PERST2* AE32 NC_PCIEDN2_RESET_L
PCIE_DN_REFCLK3_P AT25 NC_PCIE_CLK100M_DN3P
PCIE_DN_REFCLK3_N AU25 NC_PCIE_CLK100M_DN3N
PCIE_DN_CLKREQ3* AJ34 NC_PCIEDN3_CLKREQ_L
PCIE_DN_PERST3* AK36 NC_PCIEDN3_RESET_L
PCIE_DN_EXT_REFCLK_P AM27
PCIE_DN_EXT_REFCLK_N AM26
PCIE_DN_REXT AM25 SOC_PCIE_DN_REXT
R4201 3.01K 1% 1/20W MF 201
(UID_MODE strap on A00)
OMIT_TABLE
CRITICAL
U3900
H9M
BGA
SYM 8 OF 18
PCIE STG 0/1
PCIE_STG0_TX0_P
PCIE_STG0_TX0_N
PCIE_STG0_RX0_P
PCIE_STG0_RX0_N
PCIE_STG0_TX1_P
PCIE_STG0_TX1_N
PCIE_STG0_RX1_P
PCIE_STG0_RX1_N
PCIE_STG0_TX2_P
PCIE_STG0_TX2_N
PCIE_STG0_RX2_P
PCIE_STG0_RX2_N
PCIE_STG0_TX3_P
PCIE_STG0_TX3_N
PCIE_STG0_RX3_P
PCIE_STG0_RX3_N
PCIE_STG0_REFCLK01_P
PCIE_STG0_REFCLK01_N
PCIE_STG0_CLKREQ0*
PCIE_STG0_CLKREQ1*
PCIE_STG0_REFCLK23_P
PCIE_STG0_REFCLK23_N
PCIE_STG0_CLKREQ2*
PCIE_STG0_CLKREQ3*
PCIE_STG0_PERST*
PCIE_STG0_NANDCLK
PCIE_STG0_EXT_REFCLK_P
PCIE_STG0_EXT_REFCLK_N
PCIE_STG0_REXT
PCIE_STG1_TX0_P AU16 NC_PCIE_SSD1_R2D_C_P<0>
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PCIE_STG1_RX3_P AR19 NC_PCIE_SSD1_D2R_P<3>
PCIE_STG1_RX3_N AP19 NC_PCIE_SSD1_D2R_N<3>
PCIE_STG1_REFCLK01_P AU21 NC_PCIE_CLK100M_SSD1_01_P
PCIE_STG1_REFCLK01_N AV21 NC_PCIE_CLK100M_SSD1_01_N
PCIE_STG1_CLKREQ0* B17 NC_SSD1_CLKREQ0_L
PCIE_STG1_CLKREQ1* D18 NC_SSD1_CLKREQ1_L
PCIE_STG1_REFCLK23_P AT22 NC_PCIE_CLK100M_SSD1_23_P
PCIE_STG1_REFCLK23_N AU22 NC_PCIE_CLK100M_SSD1_23_N
PCIE_STG1_CLKREQ2* C16 NC_SSD1_CLKREQ2_L
PCIE_STG1_CLKREQ3* A16 NC_SSD1_CLKREQ3_L
PCIE_STG1_PERST* AP36 NC_SSD1_PCIE_RESET_L
PCIE_STG1_NANDCLK AV7 NC_SSD1_CLK24M_R
PCIE_STG1_EXT_REFCLK_P AM19
PCIE_STG1_EXT_REFCLK_N AM20
PCIE_STG1_REXT AM21 SOC_PCIE_STG1_REXT
PCIE_SSD0_R2D_C_P<0>
PCIE_SSD0_R2D_C_N<0>
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PCIE_SSD0_D2R_N<3>
PCIE_CLK100M_SSD0_01_P
PCIE_CLK100M_SSD0_01_N
SSD0_CLKREQ0_L
SSD0_CLKREQ1_L
PCIE_CLK100M_SSD0_23_P
PCIE_CLK100M_SSD0_23_N
SSD0_CLKREQ2_L
SSD0_CLKREQ3_L
SSD0_PCIE_RESET_L
SSD0_CLK24M_R
SOC_PCIE_STG0_REXT
R4250 3.01K 1% 1/20W MF 201
R4251 3.01K 1% 1/20W MF 201
PP1V8_AWAKE
R4232 47K 5% 1/20W MF 201
ENET_CLKREQ_L
BOM_COST_GROUP=SOC
SYNC_MASTER=myEE
SYNC_DATE=03/01/2019
PAGE TITLE
SoC PCIe
Apple Inc.
DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
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Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3

7406 3208 PPVDDCPU_AWAKE
0.625V - 1.06V
11.6A Max

OMIT_TABLE
CRITICAL

U3900
H9M
BGA
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AA12	VDD_CPU	VDD_CPU_SRAM	AA10
AA14	VDD_CPU	VDD_CPU_SRAM	AB17
AA16	VDD_CPU	VDD_CPU_SRAM	AC10
AB11	VDD_CPU	VDD_CPU_SRAM	R10
AB13	VDD_CPU	VDD_CPU_SRAM	T17
AB15	VDD_CPU	VDD_CPU_SRAM	U10
AC12	VDD_CPU	VDD_CPU_SRAM	V11
AC14	VDD_CPU	VDD_CPU_SRAM	V13
AC16	VDD_CPU	VDD_CPU_SRAM	V15
AD11	VDD_CPU	VDD_CPU_SRAM	W10
AD13	VDD_CPU	VDD_CPU_SRAM	Y11
AD15	VDD_CPU	VDD_CPU_SRAM	Y13
AD17	VDD_CPU	VDD_CPU_SRAM	Y15
AE10	VDD_CPU		
AE12	VDD_CPU		
AE14	VDD_CPU		
AE16	VDD_CPU		
AE18	VDD_CPU		
P11	VDD_CPU		
P13	VDD_CPU		
P15	VDD_CPU		
P17	VDD_CPU		
R12	VDD_CPU		
R14	VDD_CPU		
R16	VDD_CPU		
T11	VDD_CPU		
T13	VDD_CPU		
T15	VDD_CPU		
U12	VDD_CPU		
U14	VDD_CPU		
U16	VDD_CPU		
V17	VDD_CPU		
W12	VDD_CPU		
W14	VDD_CPU		
W16	VDD_CPU		
Y17	VDD_CPU		
		VDD_CPU_SENSE	N18
		VSS_CPU_SENSE	N17

VDD_CPU_SENSE N18 SOC_VDDCPU_SENSE → OUT 62C3 78D4
VSS_CPU_SENSE N17 NC_SOC_VSSCPU_SENSE 76A8

C4300 9.1UF 20% 4V CERM 0402
C4301 9.1UF 20% 4V CERM 0402
C4302 9.1UF 20% 4V CERM 0402
C4303 9.1UF 20% 4V CERM 0402
C4304 9.1UF 20% 4V CERM 0402
C4305 9.1UF 20% 4V CERM 0402
C4306 9.1UF 20% 4V CERM 0402
C4307 9.1UF 20% 4V CERM 0402
C4308 9.1UF 20% 4V CERM 0402
C4309 9.1UF 20% 4V CERM 0402
C4320 4.3UF 20% 4V CERM 0402
C4321 4.3UF 20% 4V CERM 0402
C4322 4.3UF 20% 4V CERM 0402
C4323 4.3UF 20% 4V CERM 0402
C4324 4.3UF 20% 4V CERM 0402
C4330 4.3UF 20% 4V CERM 0402
C4331 4.3UF 20% 4V CERM 0402
C4332 4.3UF 20% 4V CERM 0402
C4333 4.3UF 20% 4V CERM 0402
C4334 4.3UF 20% 4V CERM 0402

PPVDDCPUSRAM_AWAKE 74D6
0.8V - 1.06V
0.9A Max

C4350 9.1UF 20% 4V CERM 0402
C4351 9.1UF 20% 4V CERM 0402
C4352 9.1UF 20% 4V CERM 0402
C4353 9.1UF 20% 4V CERM 0402
C4354 9.1UF 20% 4V CERM 0402
C4357 9.1UF 20% 4V CERM 0402
C4355 4.3UF 20% 4V CERM 0402
C4356 4.3UF 20% 4V CERM 0402
C4360 4.3UF 20% 4V CERM 0402

OMIT_TABLE
CRITICAL

U3900
H9M
BGA
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7406 3208 PP0V82_SLPDDR
5.6A Max

AA20	VDD_SOC	VDD_SOC	J22
AA22	VDD_SOC	VDD_SOC	J24
AA24	VDD_SOC	VDD_SOC	J26
AA26	VDD_SOC	VDD_SOC	J28
AA28	VDD_SOC	VDD_SOC	L10
AC18	VDD_SOC	VDD_SOC	L12
AC20	VDD_SOC	VDD_SOC	L14
AC22	VDD_SOC	VDD_SOC	L16
AC24	VDD_SOC	VDD_SOC	L18
AC26	VDD_SOC	VDD_SOC	L20
AC28	VDD_SOC	VDD_SOC	L22
AE20	VDD_SOC	VDD_SOC	L24
AE22	VDD_SOC	VDD_SOC	L26
AE24	VDD_SOC	VDD_SOC	L28
AE26	VDD_SOC	VDD_SOC	N10
AE28	VDD_SOC	VDD_SOC	N12
AG10	VDD_SOC	VDD_SOC	N14
AG12	VDD_SOC	VDD_SOC	N16
AG14	VDD_SOC	VDD_SOC	N20
AG16	VDD_SOC	VDD_SOC	N22
AG18	VDD_SOC	VDD_SOC	N24
AG20	VDD_SOC	VDD_SOC	N26
AG22	VDD_SOC	VDD_SOC	N28
AG24	VDD_SOC	VDD_SOC	R18
AG26	VDD_SOC	VDD_SOC	R20
AG28	VDD_SOC	VDD_SOC	R22
AJ10	VDD_SOC	VDD_SOC	R24
AJ12	VDD_SOC	VDD_SOC	R26
AJ14	VDD_SOC	VDD_SOC	R28
AJ16	VDD_SOC	VDD_SOC	U18
AJ18	VDD_SOC	VDD_SOC	U20
AJ20	VDD_SOC	VDD_SOC	U22
AJ22	VDD_SOC	VDD_SOC	U24
AJ24	VDD_SOC	VDD_SOC	U26
AJ26	VDD_SOC	VDD_SOC	U28
AJ28	VDD_SOC	VDD_SOC	W20
J10	VDD_SOC	VDD_SOC	W22
J12	VDD_SOC	VDD_SOC	W24
J14	VDD_SOC	VDD_SOC	W26
J16	VDD_SOC	VDD_SOC	W28
J18	VDD_SOC	VDD_SOC_SENSE	AD27
J20	VDD_SOC	VSS_SENSE	AD28

VDD_SOC_SENSE AD27 NC_SOC_VDDSOC_SENSE 76A8
VSS_SENSE AD28 NC_SOC_VSSSOC_SENSE 76A8

C4370 9.1UF 20% 4V CERM 0402
C4371 9.1UF 20% 4V CERM 0402
C4372 9.1UF 20% 4V CERM 0402
C4373 9.1UF 20% 4V CERM 0402
C4380 4.3UF 20% 4V CERM 0402
C4381 4.3UF 20% 4V CERM 0402
C4385 4.3UF 20% 4V CERM 0402
C4386 4.3UF 20% 4V CERM 0402

BOM_COST_GROUP=SOC

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3

Power Rails

- PP1V1_SLPDDR: 0.86A Max
- PP0V9_SLPDDR: 1.9A Max
- PP1V1_SLPDDR: 8mA Max
- PP1V1_SLPDDR_SOC_VDDIOPLLDDR_F: MIN_LINE_WIDTH=0.2000, MIN_NECK_WIDTH=0.1000, VOLTAGE=1.1V
- PP1V1_SLPS2R: Current included in VDD2
- PP0V9_SLPDDR: 9mA Max
- PP0V9_SLPDDR: 5mA Max
- PP0V9_SLPDDR: 25mA Max
- PP0V8_SLPS2R: 102mA Max
- PP0V9_SLPDDR: 330mA Max
- PP0V9_SLPDDR: 330mA Max
- PP0V9_SLPDDR: 330mA Max
- PP0V9_SLPDDR: 330mA Max
- PP0V9_SLPDDR: 45mA Max
- PP0V9_SLPDDR_SOC_PCIEREFBUF: MIN_LINE_WIDTH=0.2000, MIN_NECK_WIDTH=0.1000, VOLTAGE=0.9V

U3900 H9M BGA

OMIT_TABLE
CRITICAL

SYM 13 OF 18

C2	VDDIO11_DDR0	VDDIO11_PLL_DDR	G9
E1	VDDIO11_DDR0	VDDIO11_PLL_DDR	G29
G1	VDDIO11_DDR0	VDDIO11_PLL_DDR	AM9
H8	VDDIO11_DDR0	VDDIO11_PLL_DDR	AK30
J9	VDDIO11_DDR0		
K8	VDDIO11_DDR0	VDDIO11_RET_DDR	G4
L9	VDDIO11_DDR0	VDDIO11_RET_DDR	G34
M8	VDDIO11_DDR0	VDDIO11_RET_DDR	AM4
N9	VDDIO11_DDR0	VDDIO11_RET_DDR	AM34
P1	VDDIO11_DDR0		
R1	VDDIO11_DDR0		
U1	VDDIO11_DDR0		
C36	VDDIO11_DDR1		
E37	VDDIO11_DDR1		
G37	VDDIO11_DDR1		
H30	VDDIO11_DDR1		
J29	VDDIO11_DDR1		
K30	VDDIO11_DDR1		
L29	VDDIO11_DDR1		
M30	VDDIO11_DDR1		
N29	VDDIO11_DDR1		
P37	VDDIO11_DDR1		
R37	VDDIO11_DDR1		
U37	VDDIO11_DDR1		
AB1	VDDIO11_DDR2		
AD1	VDDIO11_DDR2		
AE1	VDDIO11_DDR2		
AF9	VDDIO11_DDR2		
AG8	VDDIO11_DDR2		
AH9	VDDIO11_DDR2		
AJ8	VDDIO11_DDR2		
AK9	VDDIO11_DDR2		
AL8	VDDIO11_DDR2		
AM1	VDDIO11_DDR2		
AP1	VDDIO11_DDR2		
AT2	VDDIO11_DDR2		
AB37	VDDIO11_DDR3		
AD30	VDDIO11_DDR3		
AD37	VDDIO11_DDR3		
AE29	VDDIO11_DDR3		
AE37	VDDIO11_DDR3		
AF30	VDDIO11_DDR3		
AG29	VDDIO11_DDR3		
AH30	VDDIO11_DDR3		
AJ29	VDDIO11_DDR3		
AM37	VDDIO11_DDR3		
AP37	VDDIO11_DDR3		
AT36	VDDIO11_DDR3		

U3900 H9M BGA

SYM 12 OF 18
OMIT_TABLE
CRITICAL

AB19	VDD_FIXED	VDD_FIXED	K19
AB21	VDD_FIXED	VDD_FIXED	K21
AB23	VDD_FIXED	VDD_FIXED	K23
AB25	VDD_FIXED	VDD_FIXED	K25
AB27	VDD_FIXED	VDD_FIXED	K27
AD19	VDD_FIXED	VDD_FIXED	M11
AD21	VDD_FIXED	VDD_FIXED	M13
AD23	VDD_FIXED	VDD_FIXED	M15
AD25	VDD_FIXED	VDD_FIXED	M17
AF11	VDD_FIXED	VDD_FIXED	M19
AF13	VDD_FIXED	VDD_FIXED	M21
AF15	VDD_FIXED	VDD_FIXED	M23
AF17	VDD_FIXED	VDD_FIXED	M25
AF19	VDD_FIXED	VDD_FIXED	M27
AF21	VDD_FIXED	VDD_FIXED	P19
AF23	VDD_FIXED	VDD_FIXED	P21
AF25	VDD_FIXED	VDD_FIXED	P23
AF27	VDD_FIXED	VDD_FIXED	P25
AH11	VDD_FIXED	VDD_FIXED	P27
AH13	VDD_FIXED	VDD_FIXED	T19
AH15	VDD_FIXED	VDD_FIXED	T21
AH17	VDD_FIXED	VDD_FIXED	T23
AH19	VDD_FIXED	VDD_FIXED	T25
AH21	VDD_FIXED	VDD_FIXED	T27
AH23	VDD_FIXED	VDD_FIXED	V19
AH25	VDD_FIXED	VDD_FIXED	V21
AH27	VDD_FIXED	VDD_FIXED	V23
AK11	VDD_FIXED	VDD_FIXED	V25
K11	VDD_FIXED	VDD_FIXED	V27
K13	VDD_FIXED	VDD_FIXED	Y19
K15	VDD_FIXED	VDD_FIXED	Y21
K17	VDD_FIXED	VDD_FIXED	Y23
		VDD_FIXED	Y25
		VDD_FIXED	Y27
W18	VDD_FIXED_CPU		
G22	VDD_FIXED_USB		
H23	VDD_FIXED_MIPI		
H25	VDD_FIXED_MIPI		
H27	VDD_FIXED_MIPI		
AB9	VDD_LOW		
AD9	VDD_LOW		
P9	VDD_LOW		
T9	VDD_LOW		
V9	VDD_LOW		
Y9	VDD_LOW		
H11	VDD_FIXED_UP_PCIE_ANA		
H13	VDD_FIXED_UP_PCIE_ANA		
H15	VDD_FIXED_UP_PCIE_ANA		
J15	VDD_FIXED_UP_PCIE_CLK		
J11	VDD_FIXED_UP_PCIE_CLK		
J13	VDD_FIXED_UP_PCIE_CLK		
VDD_FIXED_STG0_PCIE_ANA	AL14		
VDD_FIXED_STG0_PCIE_ANA	AL16		
VDD_FIXED_STG0_PCIE_ANA	AL12		
VDD_FIXED_STG0_PCIE_CLK	AK13		
VDD_FIXED_STG0_PCIE_CLK	AK15		
VDD_FIXED_STG0_PCIE_CLK	AK17		
VDD_FIXED_STG1_PCIE_ANA	AL18		
VDD_FIXED_STG1_PCIE_ANA	AL20		
VDD_FIXED_STG1_PCIE_ANA	AL22		
VDD_FIXED_STG1_PCIE_CLK	AK19		
VDD_FIXED_STG1_PCIE_CLK	AK21		
VDD_FIXED_STG1_PCIE_CLK	AL17		
VDD_FIXED_DN_PCIE_ANA	AL26		
VDD_FIXED_DN_PCIE_ANA	AL28		
VDD_FIXED_DN_PCIE_ANA	AL30		
VDD_FIXED_DN_PCIE_CLK	AK25		
VDD_FIXED_DN_PCIE_CLK	AK27		
VDD_FIXED_DN_PCIE_CLK	AK29		
VDD_FIXED_PCIE_REFBUF	AK23		
VDD_FIXED_PCIE_REFBUF	AJ15		
VDD_FIXED_PCIE_REFBUF	AL24		
VDD_FIXED_PCIE_REFBUF	AJ21		
VDD_FIXED_PCIE_REFBUF	AJ27		

Components

- R4460 5.1 1% 1/20W MF 0201
- L4460 120-OHM-25%-0.48A-0.21DCR 0201
- C4450 2.2UF 20% 4V X6S-CERM 0201
- C4451 2.2UF 20% 4V X6S-CERM 0201
- C4452 2.2UF 20% 4V X6S-CERM 0201
- C4453 2.2UF 20% 4V X6S-CERM 0201
- C4454 2.2UF 20% 4V X6S-CERM 0201
- C4455 2.2UF 20% 4V X6S-CERM 0201
- C4456 2.2UF 20% 4V X6S-CERM 0201
- C4457 2.2UF 20% 4V X6S-CERM 0201
- C4460 0.22UF 20% 6.3V X6S-CERM 0201
- C4461 0.22UF 20% 6.3V X6S-CERM 0201
- C4462 0.22UF 20% 6.3V X6S-CERM 0201
- C4463 0.22UF 20% 6.3V X6S-CERM 0201
- C4470 2.2UF 20% 4V X6S-CERM 0201
- C4471 2.2UF 20% 4V X6S-CERM 0201
- C4472 2.2UF 20% 4V X6S-CERM 0201
- C4473 2.2UF 20% 4V X6S-CERM 0201
- C4400 9.1UF 20% 4V CERM 0402
- C4401 9.1UF 20% 4V CERM 0402
- C4402 9.1UF 20% 4V CERM 0402
- C4405 4.3UF 20% 4V CERM 0402
- C4406 4.3UF 20% 4V CERM 0402
- C4410 4.3UF 20% 4V CERM 0402
- C4411 4.3UF 20% 4V CERM 0402
- C4420 4.3UF 20% 4V CERM 0402
- C4423 2.2UF 20% 4V X6S-CERM 0201
- C4425 4.3UF 20% 4V CERM 0402
- C4426 4.3UF 20% 4V CERM 0402
- C4430 4.3UF 20% 4V CERM 0402
- C4431 4.3UF 20% 4V CERM 0402
- C4435 4.3UF 20% 4V CERM 0402
- C4436 4.3UF 20% 4V CERM 0402
- C4440 4.3UF 20% 4V CERM 0402
- C4441 4.3UF 20% 4V CERM 0402
- C4445 4.3UF 20% 4V CERM 0402
- R4445 0 5% 1/20W MF 0201

BOM_COST_GROUP=SOC

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: SoC Power 2

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 44 OF 150
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Current estimates @ 105C & 2GB from Gibraltar Power Specification Rev 0.5.3

OMIT_TABLE
CRITICAL

U3900
H9M
BGA
SYM 14 OF 18

PP1V8_SLPS2R
134mA Max
C4500 2.2UF 20% 4V X6S-CERM 0201
C4501 2.2UF 20% 4V X6S-CERM 0201
C4502 2.2UF 20% 4V X6S-CERM 0201
C4503 2.2UF 20% 4V X6S-CERM 0201

PP1V8_SLPS2R
20mA Max
C4510 2.2UF 20% 4V X6S-CERM 0201
C4511 4.3UF 20% 4V CERM 0402
C4512 4.3UF 20% 4V CERM 0402
C4513 0.1UF 10% 6.3V X6S 0201

PP1V8_SLPS2R
1mA Max
R4515 49.9 1% 1/20W MF 201
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
PP1V8_SLPS2R_SOC_LPADC_RC

PP1V8_SLPS2R
1mA Max
R4519 49.9 1% 1/20W MF 201
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
PP1V8_SLPS2R_SOC_LPOSC_RC

C4519 2.2UF 20% 4V X6S-CERM 0201
C4515 20UF 20% 2.5V X6S-CERM 0402

PP1V8_AWAKE
40mA Max
C4521 2.2UF 20% 4V X6S-CERM 0201
C4522 2.2UF 20% 4V X6S-CERM 0201
C4523 2.2UF 20% 4V X6S-CERM 0201
C4524 4.3UF 20% 4V CERM 0402
C4525 4.3UF 20% 4V CERM 0402
C4526 4.3UF 20% 4V CERM 0402
C4527 4.3UF 20% 4V CERM 0402

PP1V8_AWAKE
2mA Max
R4530 0 5% 1/29W MF 0201
C4530 1UF 20% 6.3V X6S-CERM 0201
PP1V8_AWAKE_SOC_TSADC_RC
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000

PP1V8_AWAKE
7mA Max
C4535 2.2UF 20% 4V X6S-CERM 0201
C4536 0.1UF 10% 6.3V X6S 0201

PP1V8_AWAKE
20mA Max
C4540 0.1UF 10% 6.3V X6S 0201

PP1V8_AWAKE
1mA Max
R4545 49.9 1% 1/20W MF 201
PP1V8_AWAKE_SOC_FMON_RC
VOLTAGE=1.8V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
C4545 1UF 20% 6.3V X6S-CERM 0201

VDD1 (A4, AV34, AV4, B35, W1, W37, Y1, Y37)
VDDIO18_AOP1 (AA9, P8, R9, T8, U9, W9)
VDDIO18_AOP2 (AC9, AD8, AE9)
VDD18_LPADC (AB8)
VDD18_LPOSC (AB10)
VDDIO18_GRP1 (AA29, AB30, AC29, P30, R29, T30, U29, V30, W29, Y30)
VDDIO18_GRP2 (G16, G18, G20, H17, H19, H21)
VDDIO18_GRP3 (AK31, AM31)
VDDIO18_GRP4 (AL11, AM10)
VDD18_TSADC (AA18, P16, AD16, AF18, H28)
VDDIO18_MIPI (G23, G25, G27)
VDD18_USB (H22)
VDD18_FMON (AF12)
VDD18_EFUSE1 (AM30)
VDDIO18_EFUSE2 (AK12)

VDD12_CPU_UVD (Y18) ← PP1V2_AWAKE 10mA Max
C4550 2.2UF 20% 4V X6S-CERM 0201
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000

R4555 0 5% 1/20W MF 0201 ← PP1V2_AWAKE 13mA Max
C4555 0.1UF 10% 6.3V X6S 0201

VDD12_PLL_CPU (V18) ← PP1V2_AWAKE_SOC_PLLCPU_F
R4560 0 5% 1/20W MF 0201 ← PP1V2_AWAKE 80mA Max
C4560 0.1UF 10% 6.3V X6S 0201
C4561 0.1UF 10% 6.3V X6S 0201
C4562 2.2UF 20% 4V X6S-CERM 0201

VDD12_PCIE_REFBUF (AK24, AM23) ← PP1V2_AWAKE_SOC_PCIEREFBUF_F
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000

VDD12_DN_PCIE (AM29)
VDD12_UP_PCIE (G14)
VDD12_STG0_PCIE (AM13)
VDD12_STG1_PCIE (AM18) ← PP1V2_AWAKE_SOC_PCIEPLL_F
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
R4565 0 5% 1/20W MF 0201 ← PP1V2_AWAKE 60mA Max
C4565 2.2UF 20% 4V X6S-CERM 0201
C4566 2.2UF 20% 4V X6S-CERM 0201
C4567 2.2UF 20% 4V X6S-CERM 0201
C4568 2.2UF 20% 4V X6S-CERM 0201

VDD12_PLL_SOC (AC23, AD24, AE23) ← PP1V2_AWAKE_SOC_PLLSOC_F
VOLTAGE=1.2V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
R4570 0 5% 1/20W MF 0201 ← PP1V2_AWAKE 31mA Max
C4570 0.1UF 10% 6.3V X6S 0201
C4571 0.1UF 10% 6.3V X6S 0201
C4572 2.2UF 20% 4V X6S-CERM 0201

VDD2 (AG1, AG37, AJ1, AJ37, AK1, AK37, AU3, AU34, AU35, AU4, B3, B4, C34, D34, J1, J37, K1, K37, M1, M37, W3, W35, Y3, Y35) ← PP1V1_SLPS2R 1.74A Max
C4580 2.2UF 20% 4V X6S-CERM 0201
C4581 2.2UF 20% 4V X6S-CERM 0201
C4582 2.2UF 20% 4V X6S-CERM 0201
C4583 2.2UF 20% 4V X6S-CERM 0201

VDD11_XTAL (AN23) ← PP1V1_SLPDDR_SOC_XTAL_F
VOLTAGE=1.1V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
R4590 5.1 1% 1/20W MF 0201
L4590 FERR-2400OHM-25%-350MA 0201 ← PP1V1_SLPDDR 4mA Max
C4590 0.1UF 10% 6.3V X6S 0201
C4591 2.2UF 20% 4V X6S-CERM 0201

VDD33_USB (F21) ← PP3V3_AWAKE 12mA Max
C4595 0.1UF 10% 6.3V X6S 0201

BOM_COST_GROUP=SOC

SYNC_MASTER=myEE
SYNC_DATE=03/01/2019
PAGE TITLE: SoC Power 3

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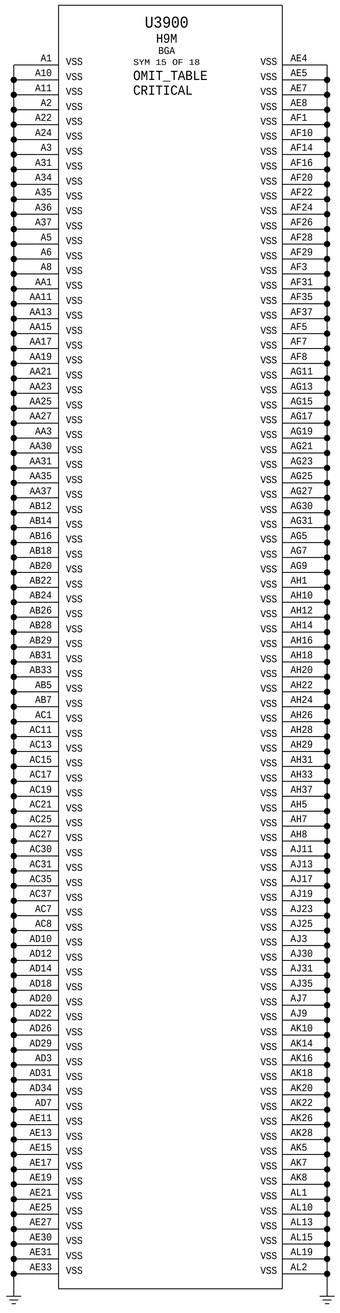
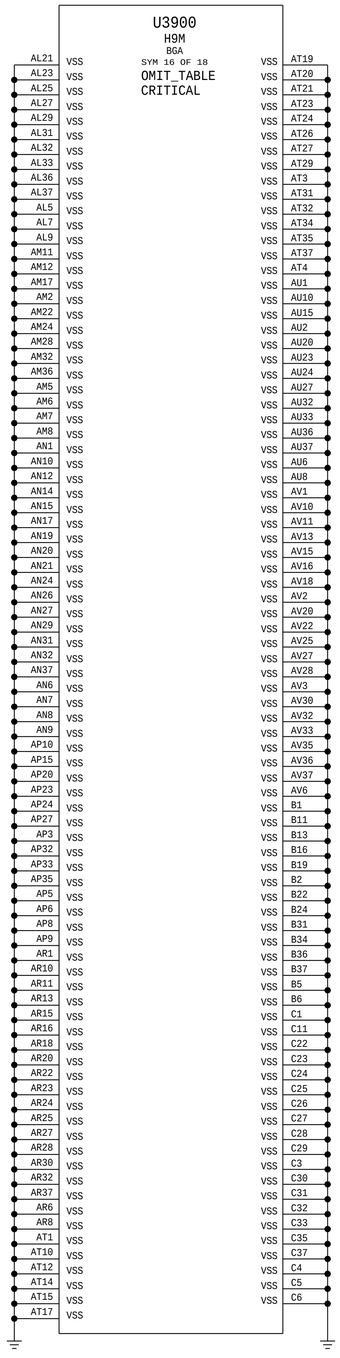
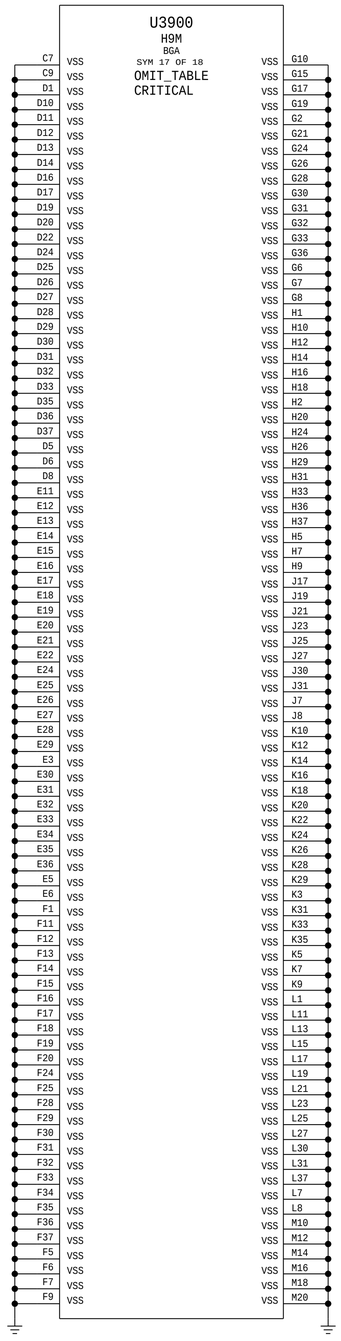
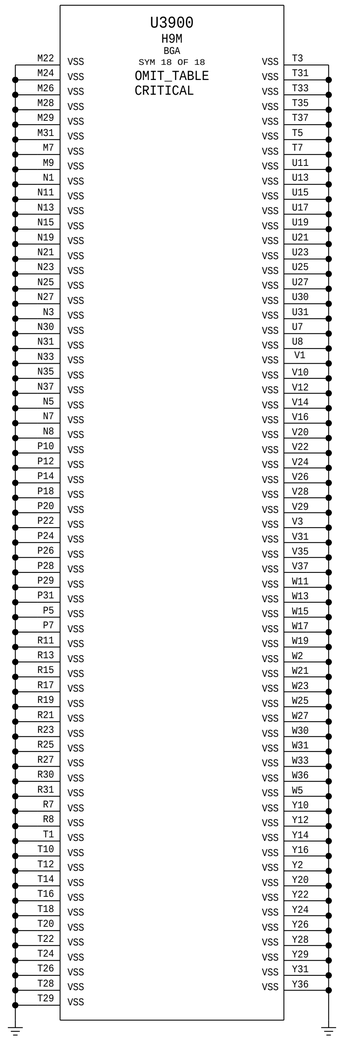
DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 45 OF 150
SHEET: 29 OF 109









BOM_COST_GROUP=SOC

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE

SoC Ground

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DRAWING NUMBER 051-05198 SIZE D

REVISION 6.0.0

BRANCH evt-3

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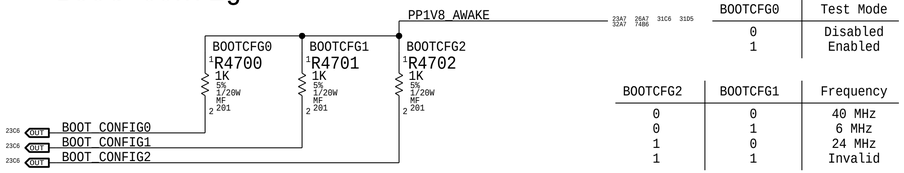
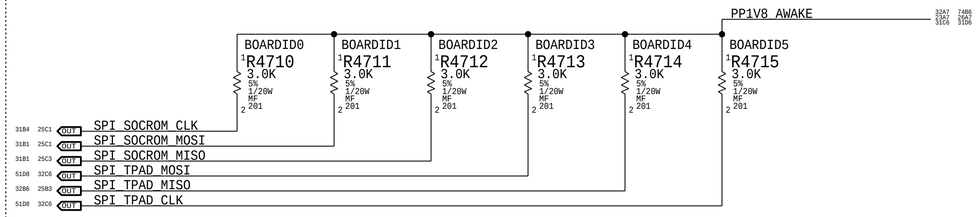
Boot Config



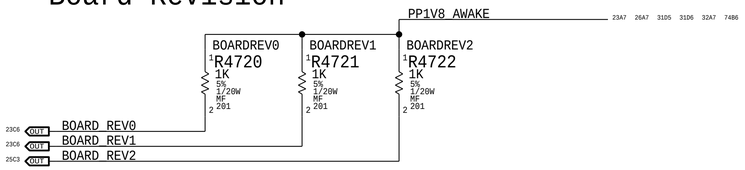
BOOTCFG0	Test Mode
0	Disabled
1	Enabled

BOOTCFG2	BOOTCFG1	Frequency
0	0	40 MHz
0	1	6 MHz
1	0	24 MHz
1	1	Invalid

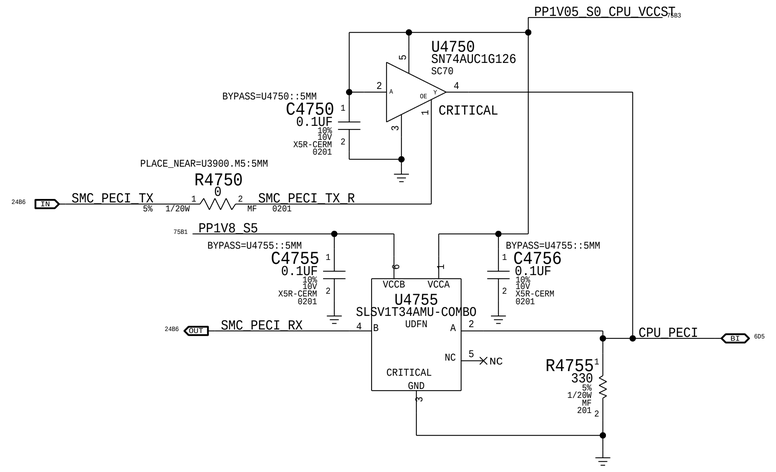
Board ID



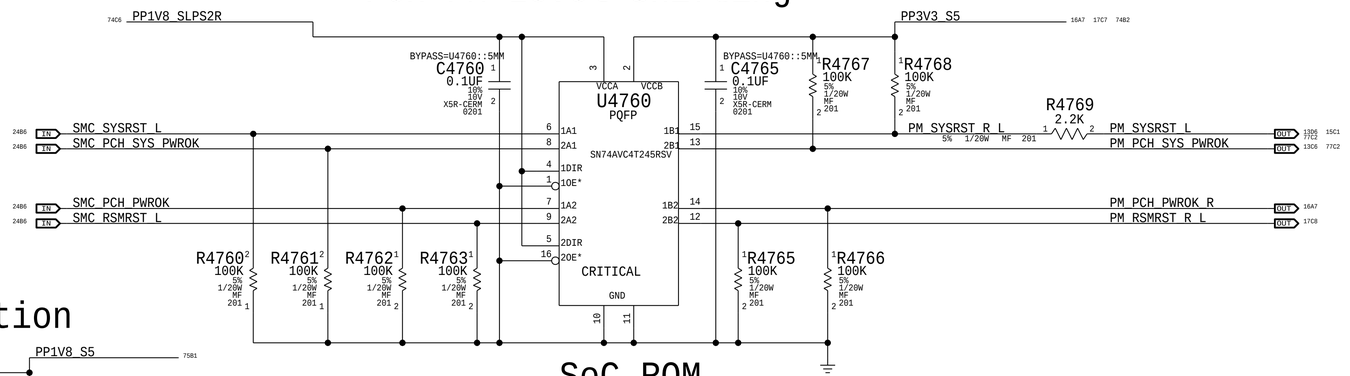
Board Revision



PECI Level Shifting

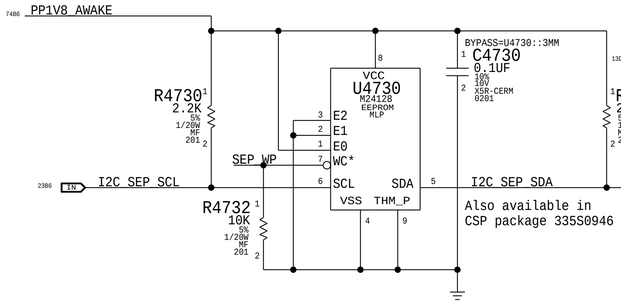


PCH PM Level Shifting

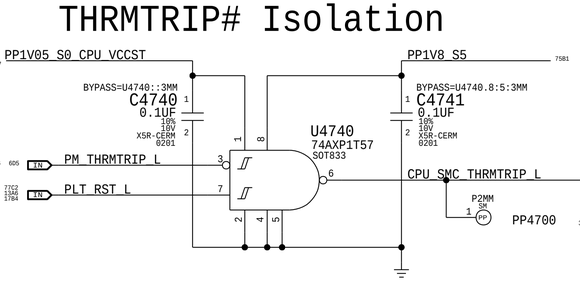


SEP EEPROM

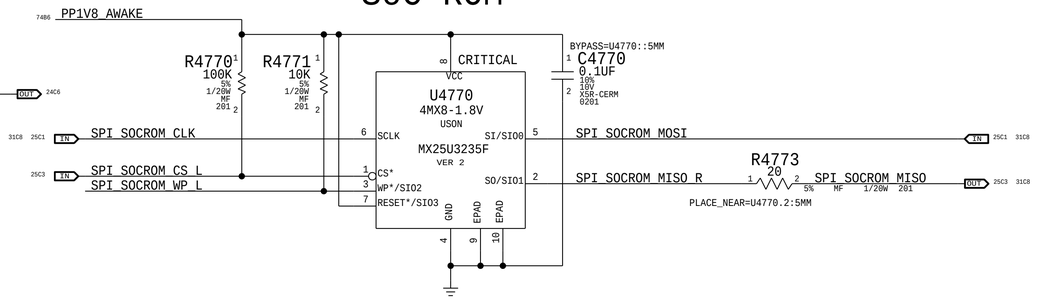
(Write: 0xA2, Read 0xA3)



THRMTRIP# Isolation

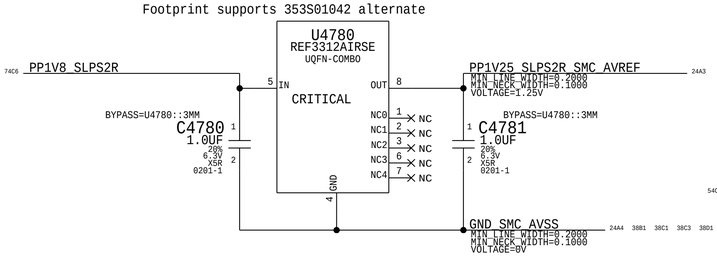


SoC ROM



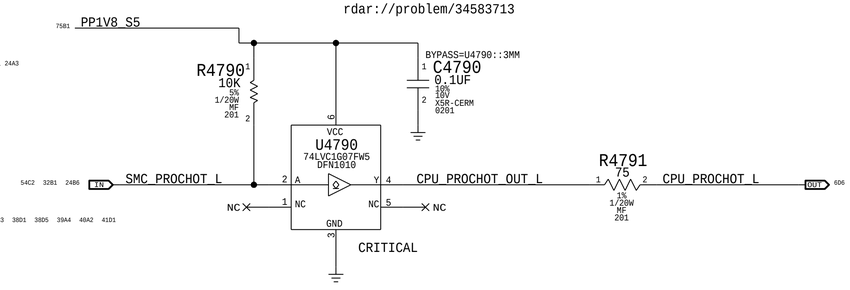
SMC AVREF Supply

Footprint supports 353S01042 alternate



PROCHOT# Level Shifting

rdar://problem/34583713



BOM_COST_GROUP=SOC

SYNC_MASTER=myEE
SYNC_DATE=03/01/2019

PAGE TITLE

SoC Shared Support

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
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Alternate Feedback Sense

XW4820 (SM) — PLACE_NEAR=U3900.AA12:5MM
PPVDDCPU_AWAKE (74D6 27D7) — 1 — 2 — PVDDCPUAWAKE_FB_R
R4820 — NOSTUFF — PLACE_NEAR=R7806.1:5MM — 1 — 2 — 0 — PVDDCPUAWAKE_FB — OUT (69C4)
5% 1/20W MF 0201

XW4821 (SHORT-LS-SM) — PLACE_NEAR=U3900.AA20:5MM
PP0V82_SLPDDR (74D6 27B7) — 1 — 2 — P0V8SLPDDR_FB_R
R4821 — PLACE_NEAR=R7812.1:5MM — 1 — 2 — 0 — P0V8SLPDDR_FB — OUT (69C4)
5% 1/20W MF 0201

layer 5 short - for routing

PCIe Up R2D AC Caps

(All Caps Except C4822, C4823)
GND_VOID=TRUE

14C6	IN	PCIE_SOC_R2D_C_P<0>	C4820 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_P<0> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_N<0>	C4821 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_N<0> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_P<1>	C4822 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_P<1> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_N<1>	C4823 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_N<1> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_P<2>	C4824 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_P<2> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_N<2>	C4825 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_N<2> OUT 26D6
14C6	IN	PCIE_SOC_R2D_C_P<3>	C4826 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_P<3> OUT 26D6
14D6	IN	PCIE_SOC_R2D_C_N<3>	C4827 0.22UF 20% 6.3V X5R 0201	PCIE_SOC_R2D_N<3> OUT 26D6

GPIO Source Termination

25B3	IN	I2S_SPKRAMP_L_R2D_R	R4843 20 5% 1/20W MF 201	I2S_SPKRAMP_L_R2D	OUT 47B8 47C8
25B3	IN	I2S_SPKRAMP_L_BCLK_R	R4844 20 5% 1/20W MF 201	I2S_SPKRAMP_L_BCLK	OUT 47B8 47C8
47C8 47B8	IN	I2S_SPKRAMP_L_LRCLK_R	R4863 20 5% 1/20W MF 201	I2S_SPKRAMP_L_LRCLK	OUT 25B3
25B3	IN	I2S_SPKRAMP_R_R2D_R	R4845 20 5% 1/20W MF 201	I2S_SPKRAMP_R_R2D	OUT 48B8 48C8
25B3	IN	I2S_SPKRAMP_R_BCLK_R	R4846 20 5% 1/20W MF 201	I2S_SPKRAMP_R_BCLK	OUT 48B8 48C8
48C8 48B8	IN	I2S_SPKRAMP_R_LRCLK_R	R4864 20 5% 1/20W MF 201	I2S_SPKRAMP_R_LRCLK	OUT 25B3
25A3	IN	I2S_CODEC_R2D_R	R4847 20 5% 1/20W MF 201	I2S_CODEC_R2D	OUT 46B1 78D4
25A3	IN	I2S_CODEC_BCLK_R	R4848 20 5% 1/20W MF 201	I2S_CODEC_BCLK	OUT 46B1 78D4
78D4 46B1	IN	I2S_CODEC_LRCLK_R	R4865 20 5% 1/20W MF 201	I2S_CODEC_LRCLK	OUT 25A3
25B3	IN	SPI_TPAD_MOSI_R	R4851 20 5% 1/20W MF 201	SPI_TPAD_MOSI	OUT 31C8 51D8
25B3	IN	SPI_TPAD_CLK_R	R4852 20 5% 1/20W MF 201	SPI_TPAD_CLK	OUT 31C8 51D8
51D8	IN	SPI_TPAD_MISO_R	R4867 20 5% 1/20W MF 201	SPI_TPAD_MISO	OUT 25B3 31C8
25B3	IN	SPI_MESA_MOSI_R	R4853 20 5% 1/20W MF 201	SPI_MESA_MOSI	OUT 33D3
25B3	IN	SPI_MESA_CLK_R	R4854 20 5% 1/20W MF 201	SPI_MESA_CLK	OUT 33D3
77C8 35D5	IN	SPI_DFR_MISO_R	R4866 20 5% 1/20W MF 201	SPI_DFR_MISO	OUT 25B3
25B3	IN	SPI_DFR_MOSI_R	R4855 20 5% 1/20W MF 201	SPI_DFR_MOSI	OUT 35D7 77D8
25B3	IN	SPI_DFR_CLK_R	R4856 20 5% 1/20W MF 201	SPI_DFR_CLK	OUT 35D5 77C8
26A6	IN	SSD0_CLK24M_R	R4857 20 5% 1/20W MF 201	SSD0_CLK24M	OUT 32A6 67C2 69C1
24D3	IN	PDM_DMIC_CLK0_R	R4859 20 5% 1/20W MF 201	PDM_DMIC_CLK0	OUT 49C6 77D7
24D3	IN	PDM_DMIC_CLK1_R	R4860 20 5% 1/20W MF 201	PDM_DMIC_CLK1	OUT 49C6 77D7

PLACE_NEAR=U3900.AG34:5MM … PLACE_NEAR=U3900.AV7:5MM

SOC Overloaded GPIOs

24C6	DFR_TOUCH_INT_L	MAKE_BASE=TRUE	DFR_TOUCH_INT_L 35B7 35C5 77C8
23C6	MESA_INT	MAKE_BASE=TRUE	MESA_INT 33D8
24B3	TPAD_KBD_WAKE_L	MAKE_BASE=TRUE	TPAD_KBD_WAKE_L 51B3 51D2 77A8
72D5 70C7 69C7 68C7 67C7	24A3 SSD0_SWCLK	MAKE_BASE=TRUE	SSD0_SWCLK
72D5 70C7 69C7 68C7 67C7	24A3 SSD0_SWDIO	MAKE_BASE=TRUE	SSD0_SWDIO
24C6	TPAD_SPI_INT_L	MAKE_BASE=TRUE	TPAD_SPI_INT_L 51C4
24B3	TPAD_ACTUATOR_DISABLE_L	MAKE_BASE=TRUE	TPAD_ACTUATOR_DISABLE_L 51B4
24B3	SMC_DPWROK1V8	MAKE_BASE=TRUE	SMC_DPWROK1V8 16A5

Platform-Specific GPIOs

24B3	DP_INT_HPD_L	MAKE_BASE=TRUE	DP_INT_HPD_L 32C5
24B3	DP_INT_HPD_MASK	MAKE_BASE=TRUE	DP_INT_HPD_MASK 12C2 32C3
23D3	SOC_KBD_BKLT_PWM	MAKE_BASE=TRUE	SOC_KBD_BKLT_PWM 65B8

Project Specific Pull-Ups

PP1V8_SLPS2R (23A7 74C6 81B8)	R4895	100K 5% 1/20W MF 201	SSD_PMU_RESET_L	23C6 71B7 77A2
PP1V8_AWAKE (23A7 26A7 31C6 31D5 31D6 74B6)	R4883	47K 5% 1/20W MF 201	SSD0_CLKREQ0_L	26A6 67C3
	R4884	47K 5% 1/20W MF 201	SSD0_CLKREQ1_L	26A6 68C3
	R4887	47K 5% 1/20W MF 201	SSD0_CLKREQ2_L	26A6 69C3
	R4888	47K 5% 1/20W MF 201	SSD0_CLKREQ3_L	26A6 70C3
	R4885	100K 5% 1/20W MF 201	SSD0_PCIE_RESET_L	26A6 67C7 68C7 69C7 70C7
	R4886	47K 5% 1/20W MF 201	SSD0_CLK24M	32B6 67C2 69C1
	R4870	47K 5% 1/20W MF 201	I2S_SPKRAMP_R_D2R	25B3

Lid Detect Sensors

J4800 INTERPOSER-AMR-MLB SMT-PAD — OMIT_TABLE
LID_OPEN_LEFT (77A4 49D6) — PP1V8_SLPS2R (32D3 32D4 74C6)
R4804 10K 5% 1/20W MF 201
SMC_LID_LEFT — OUT 24B3
SMC_LID_LEFT — MAKE_BASE=TRUE

74C6 32D4 PP1V8_SLPS2R
BYPASS=U4802::5MM
C4802 0.1UF 10% 6.3V CERM-X5R 0201
U4802 74LVC1G32 SOT891
IPD_LID_OPEN — OUT 95D8 51D2 77A4 77A8
NC

Clamshell Open = High
Clamshell Closed = Low

J4801 INTERPOSER-AMR-MLB SMT-PAD — OMIT_TABLE
LID_OPEN_RIGHT (77A4 49D6) — PP1V8_SLPS2R (32D3 32D4 74C6)
R4805 10K 5% 1/20W MF 201
SMC_LID_RIGHT — OUT 24B3
SMC_LID_RIGHT — MAKE_BASE=TRUE

HPD KSF Comp Circuit

R4830 needs to be characterized and adjusted if necessary

77D5 66C1 IN DP_INT_HPD — R4830 4.7K 5% 1/20W MF 201 — CPU_DP_INT_HPD OUT 5A6 5D3
32A6 DP_INT_HPD_L
Q4830 DMN33D8LV SOT563 VER-1 (D S G) — DP_INT_HPD_MASK IN 12C2 32A6

PBUS Droop Circuit

74B2 32C3 32B2 PP3V3_S5 — BYPASS=U4800::5MM
C4803 0.1UF 10% 6.3V CERM-X5R 0201
R4806 100K 5% 1/20W MF 201
76C3 IN UVP_DIS_L

U4800 SLG4AP41473 STQFN
ENABLE, COMP_INPUT, VDD, GND
DUMMY_OUTPU_COMP — NC
VREF_1V2 — PBUS_DIVIDER_REF
CRITICAL
CPU_THROTTLE* — SMC_PROCHOT_L — OUT 54C2 54B6 51A6
GPU_THROTTLE* — NC
THROTTLE*_TEST_OUTPUT — NC
NC, NC, NC — NC

NOSTUFF C4805 0.1UF 10% 6.3V CERM-X5R 0201

74B2 32C3 PP3V3_S5
BYPASS=U4801::5MM
C4804 0.1UF 10% 6.3V CERM-X5R 0201
CRITIAL
U4801 LMV331 SC70-5
VCC+, GND
PBUS_DIVIDER_OUT
PBUS_DIVIDER

127K/(127K+665K)=0.16
PPBUS_G3H 75D7
R4802 665K 0.1% 1/20W TK 0201
R4800 127K 0.1% 1/20W MF 0201

BOM GROUP	BOM OPTIONS
BOARD_REV:000	
BOARD_REV:001	BOARDREV0
BOARD_REV:010	BOARDREV1
BOARD_REV:011	BOARDREV1,BOARDREV0
BOARD_REV:100	BOARDREV2
BOARD_REV:101	BOARDREV2,BOARDREV0
BOARD_REV:110	BOARDREV2,BOARDREV1
BOARD_REV:111	BOARDREV2,BOARDREV1,BOARDREV0

BOM GROUP	BOM OPTIONS
BOARD_ID	BOARDID1,BOARDID2,BOARDID3,BOARDID4,BOARDID5

BOM_COST_GROUP=SOC

SYNC_MASTER=HyEE — SYNC_DATE=03/31/2019
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ISOLATE FROM OTHER COMPONENTS/NETS AS MUCH AS POSSIBLE

ESD Filters

R4912 0 5% 1/20W MF 0201
33A1 2583 OUT SPI_MESA_MISO 1 2 SPI_MESA_MISO_CONN 33D4 77D7
C4952 56PF 5% 25V NP0-C0G 0201

R4953 680 5% 1/20W MF 201
3286 OUT MESA_INT 1 2 MESA_INT_CONN 33D4 77D7
C4953 100PF 5% 25V C0G 0201

R4954 680 5% 1/20W MF 201
33B7 33A1 MESA_BOOST_EN 1 2 MESA_BOOST_EN_CONN 33D4 77D7
C4954 100PF 5% 25V C0G 0201

T151 FLEX CONNECTOR

PLUG (516S00115) - X434/ X435 Jumper
RECEPTACLE (516S00203) - MLB

77D7 33B3 PP3V0_MESA_FILT_CONN
J4900 505066-1222 F-ST-SM1
14 13 16 15

77D7 77B2 33C4	PMU_ONOFF_R_L_CONN	2	1 PP1V8_MESA_FILT_CONN 33A4 77D7
77D7 33D4	SPI_MESA_MOSI_CONN	4	3 Connects to Apache GPIO0
77D7 33D4	SPI_MESA_CLK_CONN	6	5 SPI_MESA_MISO_CONN 33D6 77D7
		8	7 MESA_INT_CONN 33D6 77D7
		10	9 MESA_BOOST_EN_CONN 33C6 77D7
		12	11 PP16V0_MESA_FILT_CONN 33C3 77D7

ISOLATE FROM OTHER COMPONENTS/NETS AS MUCH AS POSSIBLE

ESD Filters

R4950 0 5% 1/20W MF 0201
77D7 33D6 SPI_MESA_MOSI_CONN 2 1 SPI_MESA_MOSI IN 32B6
C4950 56PF 5% 25V NP0-C0G 0201

R4951 56 5% 1/20W MF 201
77D7 33D6 SPI_MESA_CLK_CONN 2 1 SPI_MESA_CLK IN 3286
C4951 56PF 5% 25V NP0-C0G 0201

R4911 0 5% 1/20W MF 0201
77D7 77B2 33D6 PMU_ONOFF_R_L_CONN 2 1 PMU_ONOFF_R_L
C4955 100PF 5% 25V C0G 0201

75B4 33C8 33B8 33A8 PP3V3_G3H_RTC_MESA
C4956 0.1UF 10% 16V X5R-CERM 0201
74C6 PP1V8_SLPS2R
R4971 100K 5% 1/20W MF 201
U4901 74AUP1T97 SOT891
PMU_ONOFF_BUF_L
R4915 0 5% 1/20W MF 0201
PMU_ONOFF_L OUT 52C4 62A6 62C3 81C5

Output Voltage	16.0V +/- 2%
Iout (max avg)	6mA
OCP (min)	13 mA
Active Discharge	15 mA sink
Max Output Cap	0.5uF @ 16V

Mesa Power Sequencing Requirements

Power On: 1V8 -> 3V3 -> 16V0

MOJAVE 16V BOOST

PLACE_NEAR=U4900:5MM
L4901 1.0UH-0.4A-0.636OHM 0402
MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0900 VOLTAGE=3.3V DIDT=TRUE
75B4 33D2 33B8 33A8 PP3V3_G3H_RTC_MESA
PP3V3_G3H_MESA_SW
BYPASS=U4900.A2::3MM
C4910 10UF 20% 6.3V X5R CERM 0402-9
33C7 33A1 MESA_BOOST_EN

U4900 LM3638A0 BGA
B1 SW
A2 VIN
B2 EN_M
A3 EN_S
C2 LDOIN
VOUT C3
PMID C1
PGND AGND A1 B3

Load Cap:6.6uF nom
EDP:13.75mA
MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=16V
PP16V0_MESA
C4924 2.2UF 20% 25V X5R 0402-3
C4925 2.2UF 20% 25V X5R 0402-3
C4926 56PF 5% 25V NP0-C0G 0201
BYPASS=U4900.C3::3MM
BYPASS=U4900.C3::4MM
BYPASS=U4900.C3::5MM

VOLTAGE=17V
PP17V0_MOJAVE_LDOIN
C4923 2.2UF 20% 25V X5R 0402-3

EMC Filter

FL4900 80-OHM-25%-500MA 0201
MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=16V
PP16V0_MESA_FILT_CONN 33D4 77D7
C4927 100PF 5% 25V C0G 0201

Output Voltage	3.0V +/- 2%
Iout (max avg)	250mA
Dropout Voltage	155mV
OCP (min)	250 mA
Active Discharge	280 Ohm Typ

3.0V MESA

U4910 NCP160AMX300 XDFN-COMBO-THICKSTNCL
IN OUT EN GND EPAD
75B4 33D2 33C8 33A8 PP3V3_G3H_RTC_MESA
33A6 33A2 PP1V8_MESA
C4911 1UF 10% 10V X5R-CERM 0402
BYPASS=U4910.4::3MM
C4916 1UF 10% 10V X5R-CERM 0402
BYPASS=U4910.1::3MM

MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=3.0V
Load Cap:14.3uF nom
EDP:100mA
PP3V0_MESA

EMC Filter

FL4910 80-OHM-25%-500MA 0201
MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=3.0V
PP3V0_MESA_FILT_CONN 33D6 77D7
C4920 2.2UF 20% 6.3V X5R-CERM 0201
C4921 2.2UF 20% 6.3V X5R-CERM 0201
C4922 2.2UF 20% 6.3V X5R-CERM 0201
C4928 0.1UF 10% 16V X5S-CERM 0201
C4929 100PF 5% 25V C0G 0201

Output Voltage	1.825V +/- 2%
Iout (max avg)	250mA
Dropout Voltage	50mV Typ @ 100mA
OCP (min)	250 mA
Active Discharge	230 Ohm Typ
Max Output Cap	10uF

1.8V MESA

U4920 LP5907SNX-1.825 X2SON-COMBO-THICKSTNCL
VIN VOUT EN GND EPAD
75B4 33D2 33C8 33B8 PP3V3_G3H_RTC_MESA
33A1 23C6 IN MESA_PWR_EN
C4912 1UF 10% 10V X5R-CERM 0402
BYPASS=U4920.4::3MM
C4914 1UF 10% 10V X5R-CERM 0402
BYPASS=U4920.1::3MM

MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=1.825V
Load Cap:3.4uF nom
EDP:0.5mA
33B7 33A2 PP1V8_MESA

EMC Filter

FL4920 80-OHM-25%-500MA 0201
MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1200 VOLTAGE=1.825V
PP1V8_MESA_FILT_CONN 33D4 77D7
C4918 2.2UF 20% 6.3V X5R-CERM 0201
C4917 100PF 5% 25V C0G 0201

PP1V8_G3S 75C1
R4922 100K 5% 1/20W MF 201 MESA_PWR_EN 23C6 33A7
PP1V8_MESA 33A6 33B7
R4924 100K 5% 1/20W MF 201 SPI_MESA_MISO 2583 33D8
R4923 100K 5% 1/20W MF 201 MESA_BOOST_EN 33B7 33C7

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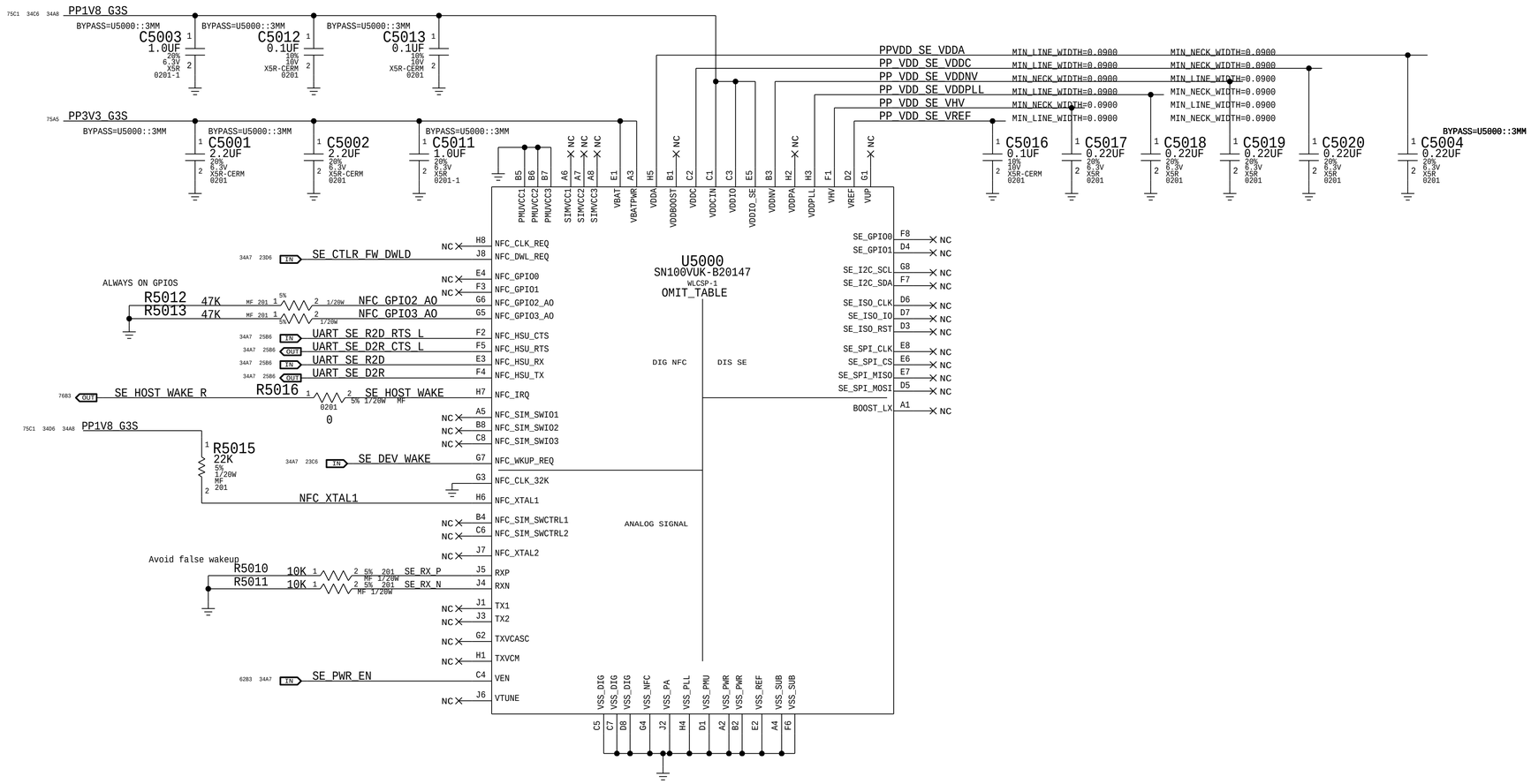
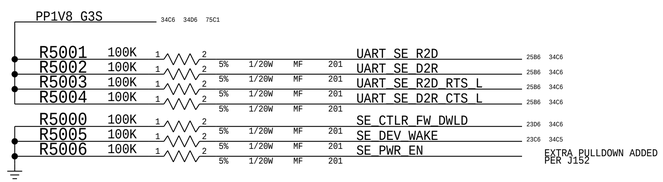
VENUS



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
998-15216	1	IC,SN100V,VENUS,DEV KEY,B2,S/W-M,WLCSP72	U5000	CRITICAL	SE:DEV_2019
338S00445	1	IC,SN100V,VENUS,PROD KEY,B2,SW-N,WLCSP72	U5000	CRITICAL	SE:PROD_2019



BOM_COST_GROUP=SOC

PAGE TITLE: Secure Element

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T139 Support

Touch Conn

J5100
AA07-S022VA1
F-ST-SM

Disp Conn

J5110
DF40SG(1.5)-26DS-0.4V
F-ST-SM

Q5100
DMP31D0UFB4
DFN1006H4-3

R5102 100K 5% 1/20W MF 201
IPD_LID_OPEN → R5102 → IPD_LID_OPEN_R

L5100
1.2UH-20%-0.12A-1.17OHM
0402
PP5V_G3S → PP5V_G3S_DFR_FILT
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=5.14V

C5100 4.7UF 20% 25V X5R 0402
C5101 4.7UF 20% 25V X5R 0402
BYPASS=J5100.22::10MM
BYPASS=J5100.22::10MM

C5104 NOSTUFF 0.1UF 10% 6.3V X5R 0201
BYPASS=J5100.21::10MM

DFR_TOUCH_LID_OPEN_L
TP_DFR_TOUCH_GPIO2
TP_DFR_TOUCH_PANEL_DETECT
DFR_DISP_VSYNC (Cumulus IPD)
SPI_DFR_CS_L
SPI_DFR_MOSI
SPI_DFR_MISO_R
SPI_DFR_CLK
I2C_DFR_SCL_R
I2C_DFR_SDA_R
DFR_TOUCH_INT_L
DFR_TOUCH_CLK32K_RESET_L
DFR_TOUCH_RESET_L
TP_DFR_TOUCH_ROM_WC

U5100
NCP160AMX180
XDFN-COMBO-THICKSTNCL
IN, EN, OUT, GND, EPAD

PP3V3_G3H_DFR → C5102 1UF 10% 10V X5R-CERM 0402
BYPASS=U5100.4::3MM

R5107 100K 5% 1/20W MF 201
C5105 1UF 20% 10V CER-X5R 0201

R5101 1K 5% 1/20W MF 201
DFR_PWR_EN → DFR_PWR_EN_R

Load Cap: 3.5uF nom
EDP: 57mA
PP1V8_DFR → C5103 1UF 10% 10V X5R-CERM 0402
BYPASS=U5100.1::3MM

R5110 7.5K 1% 1/20W MF 201
P1V8_DFR_R

U5111
SLG5AP1449V
STDFN
ON, D, S, GND

EDP: 145mA
Load Cap: 22.2uF nom

PP3V3_G3H_DFR → C5110 0.1UF 10% 6.3V X5R 0201
BYPASS=J5110.22::3MM

C5111 1UF 10% 10V X5R-CERM 0402
BYPASS=J5110.17::3MM

VOLTAGE=3.3V
MIN_NECK_WIDTH=0.0900
MIN_LINE_WIDTH=0.0900
PP3V3_G3HSW_DFR
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.8V

DFR_DISP_TE
DFR_DISP_INT
DFR_DISP_RESET_L
MIPI_DFR_CLK_FILT_CONN_P
MIPI_DFR_CLK_FILT_CONN_N
MIPI_DFR_DATA_FILT_CONN_P
MIPI_DFR_DATA_FILT_CONN_N

PLACE_NEAR=J5110:5MM
PLACE_NEAR=J5110:5MM

L5110
3.25-OHM-0.1A-2.4GHZ
TAM0605-4SM
MIPI_DFR_CLK_P
MIPI_DFR_CLK_N

L5111
3.25-OHM-0.1A-2.4GHZ
TAM0605-4SM
MIPI_DFR_DATA_P
MIPI_DFR_DATA_N

PP1V8_DFR → R5103 4.7K 5% 1/20W MF 201
R5104 100K 5% 1/20W MF 201
R5105 100K 5% 1/20W MF 201
R5106 100K 5% 1/20W MF 201
R5111 100K 5% 1/20W MF 201

Output Voltage	1.8V +/- 2%
Iout (max avg)	250mA
Dropout Voltage	250mV
OCP (min)	250 mA
Active Discharge	280 Ohm Typ

Slew Rate	2.5V/ms
RDS(on)	40 mOhm Typ 55 mOhm Max
Current	1A Max
Active Discharge	150 Ohm Typ

BOM_COST_GROUP=T139

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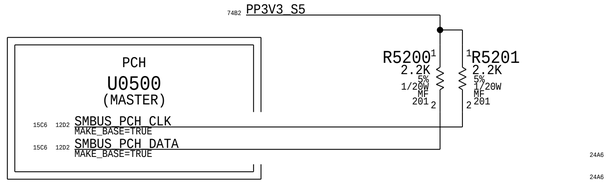
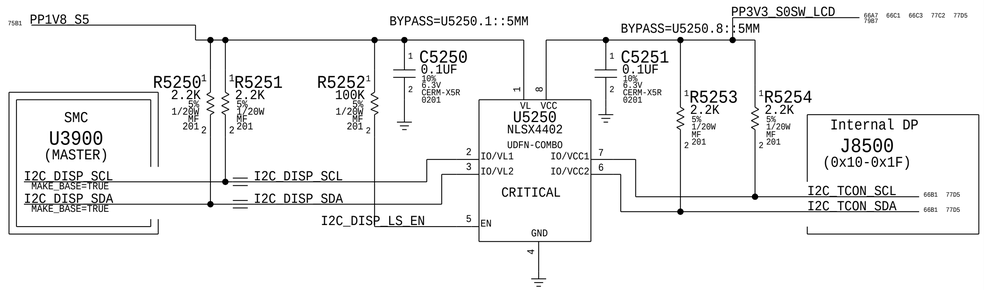
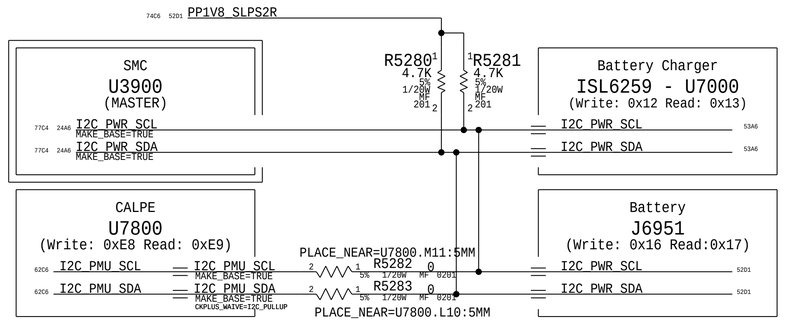
PCH S0 "SMBus 0" Connections



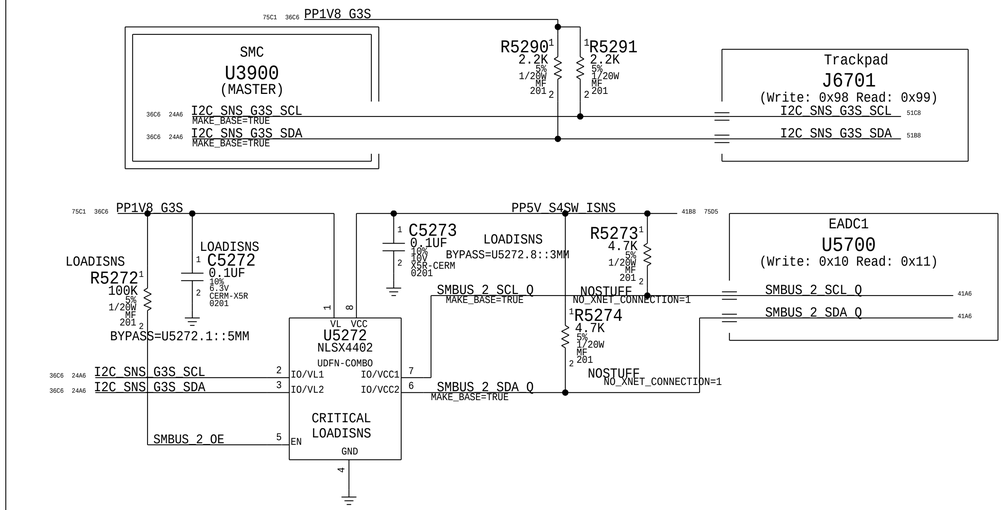
SMC I2C "3" S0 Connections



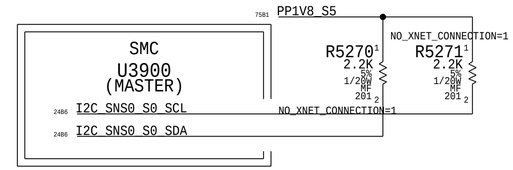
SMC I2C "4" G3H Connections



SMC I2C "5" G3S Connections



SMC I2C "1" S0 Connections



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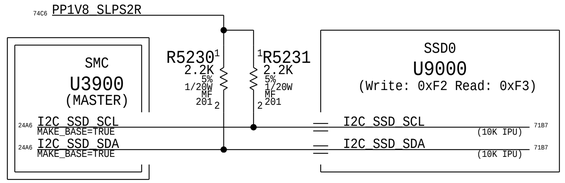

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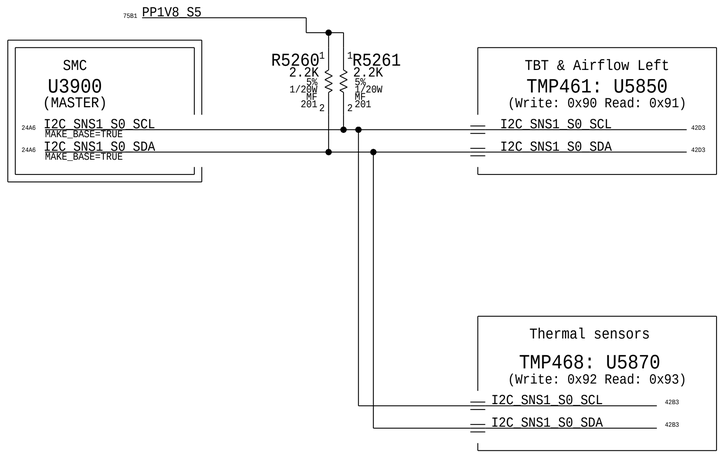
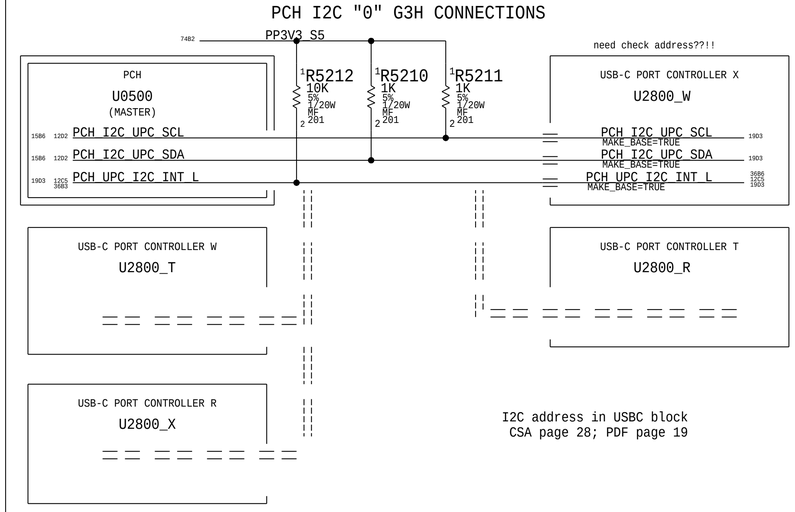
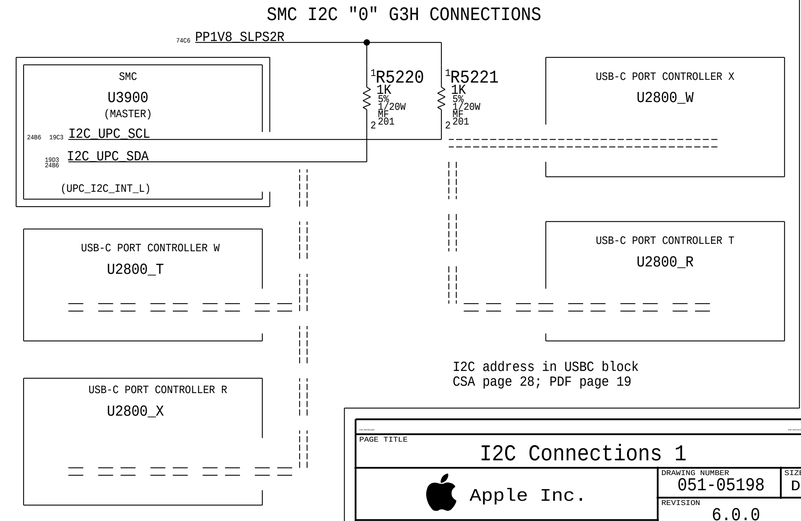


PCH I2C "0" G3H CONNECTIONS



SMC I2C "0" G3H CONNECTIONS



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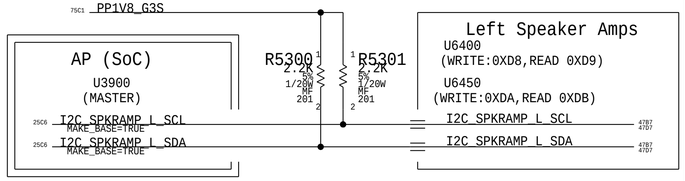
AP I2C "0" G3S Connections



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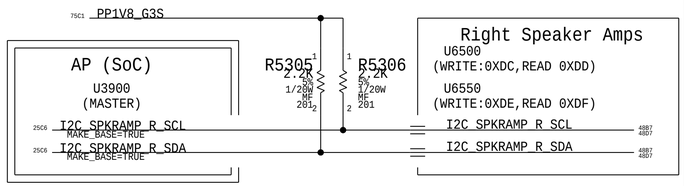
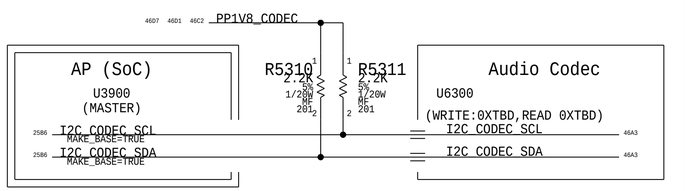
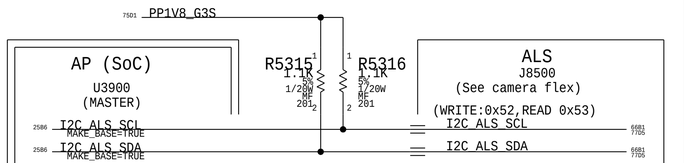


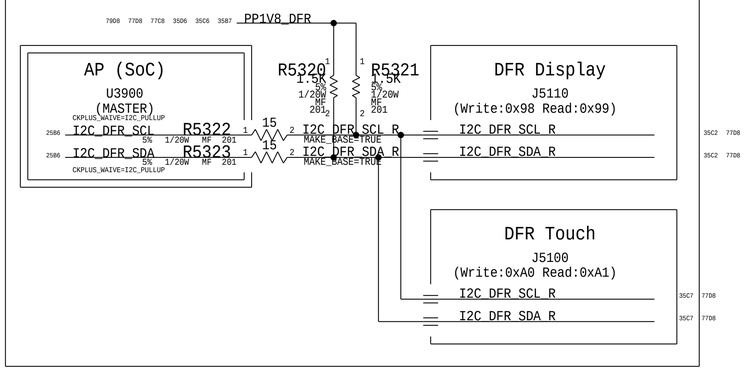
AP I2C "2" Codec Connections



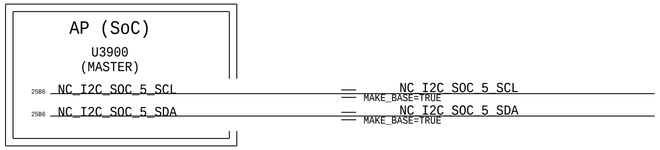
AP I2C "3" G3S Connections



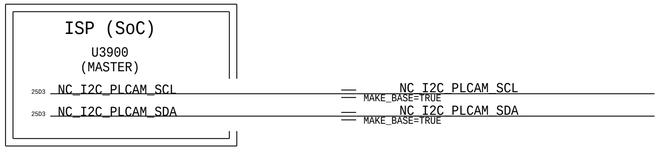
AP I2C "4" DFR Connections



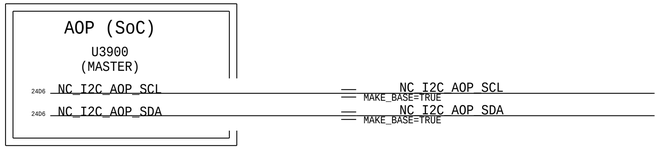
AP I2C "5" Awake Connections



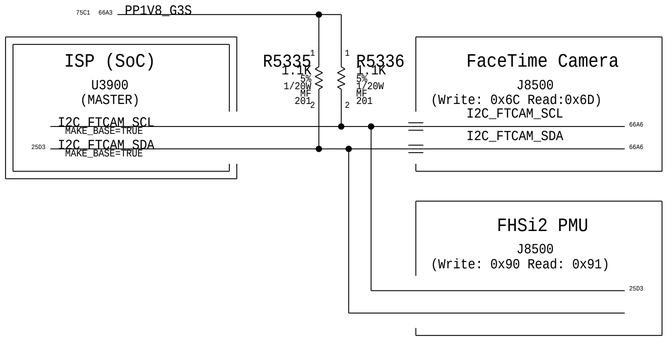
ISP I2C "1" G3S Connections



AOP I2C "0" G3S Connections



ISP I2C "0" G3S Connections



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ACE XA	I2C0	0X70/1
ACE XB	I2C0	0X7E/F
ACE TA	I2C0	0X40/1
ACE TB	I2C0	0X4E/F
NC.	I2C1	
Temp. Sensor Left	I2C2	0X90/1
Temp. Sensor Right	I2C2	0X96/7
Plateform Thermal Sensor	I2C2	0X92/3
PCH	I2C2	0X88/9
TCON	I2C3	0X10-1F
Charger	I2C4	0X12/3
Battery	I2C4	0X16/7
Calpe	I2C4	0XE8/9
Trackpad	I2C5	0X98/9
EADC1	I2C5	0X10/1
EADC2	I2C5	0X12/3
SSD	I2C6	0XF2/3
SoC IF		
Left Spkr Amp.(U6400)	I2C0	0XD8/9
Left Spkr Amp.(U6450)	I2C0	0XDA/B
Right Spkr Amp.(U6500)	I2C1	0XDC/D
Right Spkr Amp.(U6550)	I2C1	0XDE/F
Audio Codec	I2C2	0X90/1
ALS	I2C3	0X52/3
DFR Display	I2C4	0X98/9
DFR Touch	I2C4	0XA0/1
NC.	I2C5	
Spkr ID1	I2C6	
Spkr ID0	I2C6	
SIP IF		
FT Camera	I2C0	0X6C/D
FHSi2	I2C0	0X90/1
NC.	I2C1	
AOP IF		
NC.	I2C0	

BOM_COST_GROUP=SMC

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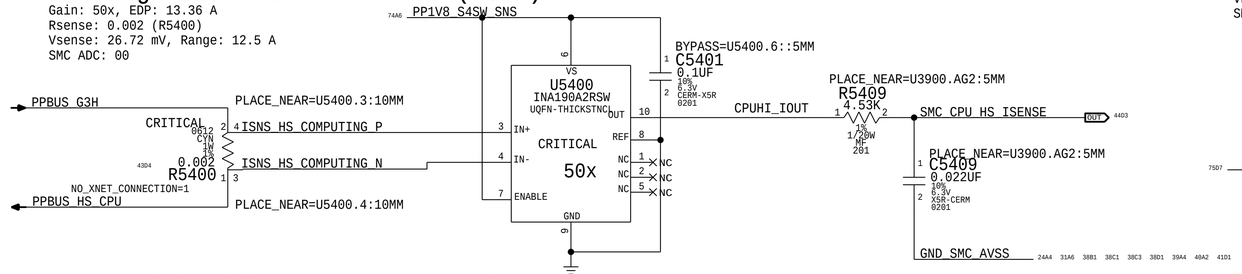
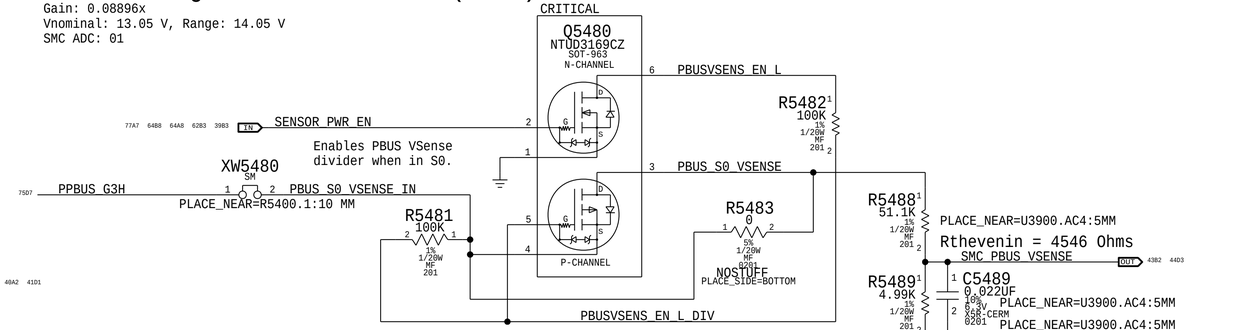
CPU High Side Current Sense (IC0R)

Gain: 50x, EDP: 13.36 A
Rsense: 0.002 (R5400)
Vsense: 26.72 mV, Range: 12.5 A
SMC ADC: 00



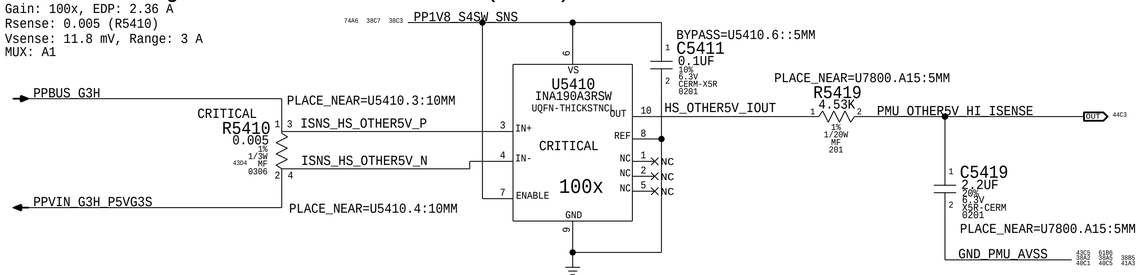
PBUS Voltage Sense & Enable (VP0R)

Gain: 0.08896x
Vnominal: 13.05 V, Range: 14.05 V
SMC ADC: 01



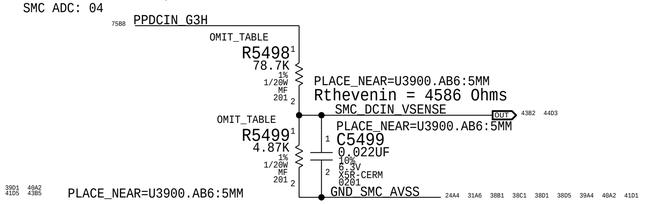
OTHER 5V High Side Current Sense (IO5R)

Gain: 100x, EDP: 2.36 A
Rsense: 0.005 (R5410)
Vsense: 11.8 mV, Range: 3 A
MUX: A1



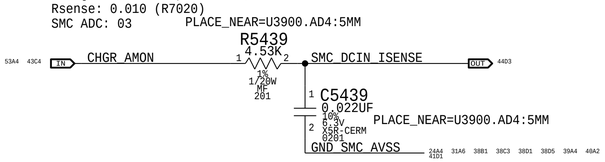
DC In Voltage Sense & Enable (VD0R)

Gain: 0.05827x
Vnominal: 20 V, Range: 21.46 V
SMC ADC: 04



DC-IN (AMON) Current Sense (ID0R)

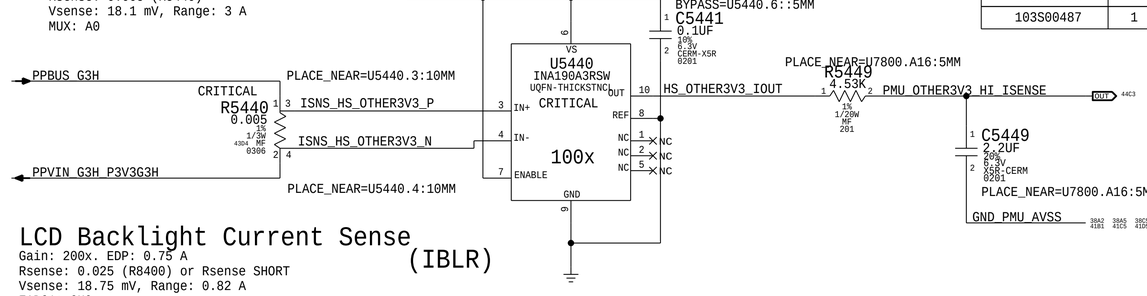
Charger Gain: 20x, EDP: 4.6 A
Rsense: 0.010 (R7020)
SMC ADC: 03



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
103S00085	1	RES,MF,78.7K,0.1%,50PPM,25V,1/20W,0201	R5498	CRITICAL	
103S00487	1	RES,TK,4.87KOHMS,0.1%,1/20W,0201	R5499	CRITICAL	

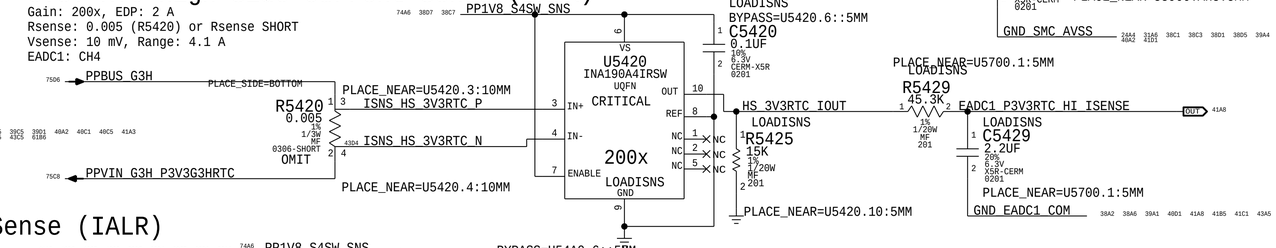
OTHER 3.3V High Side Current Sense (IO3R)

Gain: 100x, EDP: 3.62 A
Rsense: 0.005 (R5440)
Vsense: 18.1 mV, Range: 3 A
MUX: A0



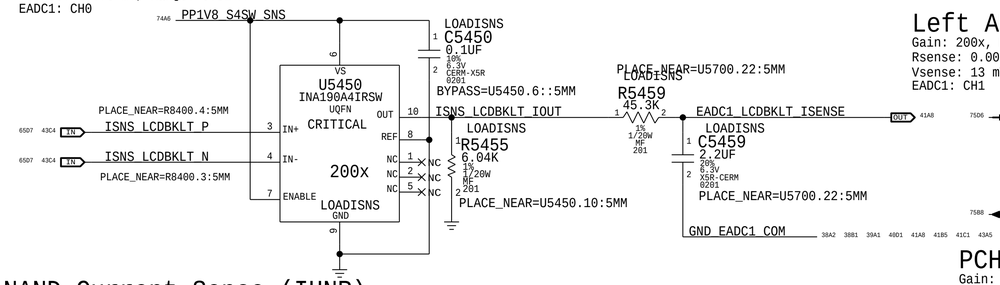
3.3V RTC High Side Current Sense (IR3R)

Gain: 200x, EDP: 2 A
Rsense: 0.005 (R5420) or Rsense SHORT
Vsense: 10 mV, Range: 4.1 A
EADC1: CH4



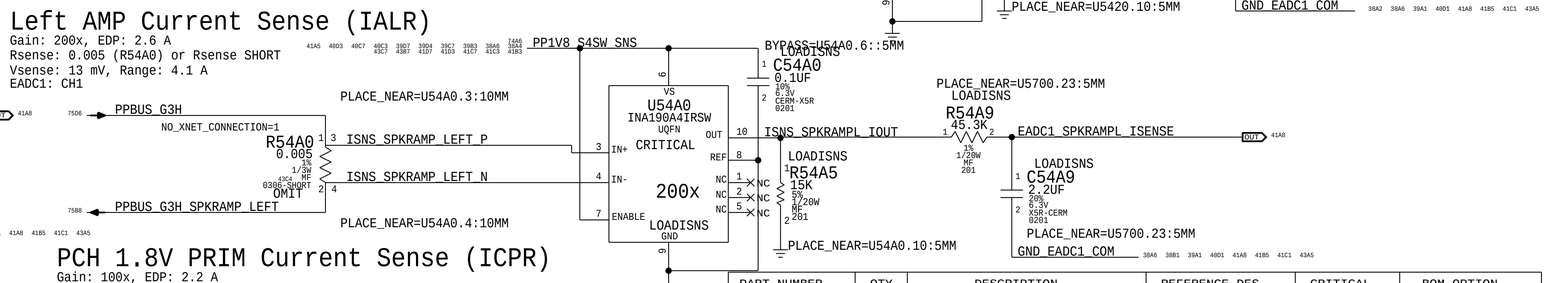
LCD Backlight Current Sense (IBLR)

Gain: 200x. EDP: 0.75 A
Rsense: 0.025 (R8400) or Rsense SHORT
Vsense: 18.75 mV, Range: 0.82 A
EADC1: CH0



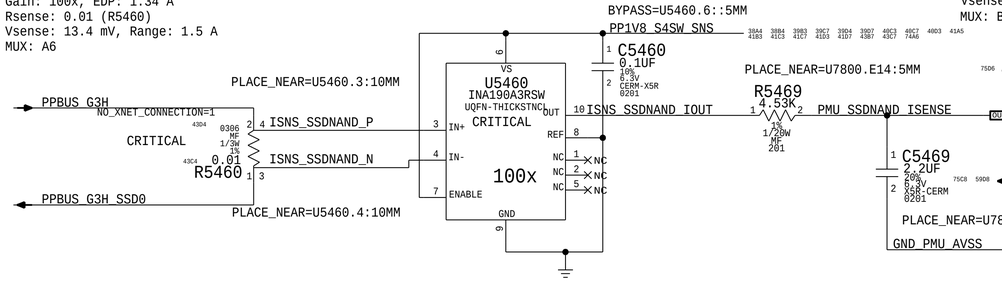
Left AMP Current Sense (IALR)

Gain: 200x, EDP: 2.6 A
Rsense: 0.005 (R54A0) or Rsense SHORT
Vsense: 13 mV, Range: 4.1 A
EADC1: CH1



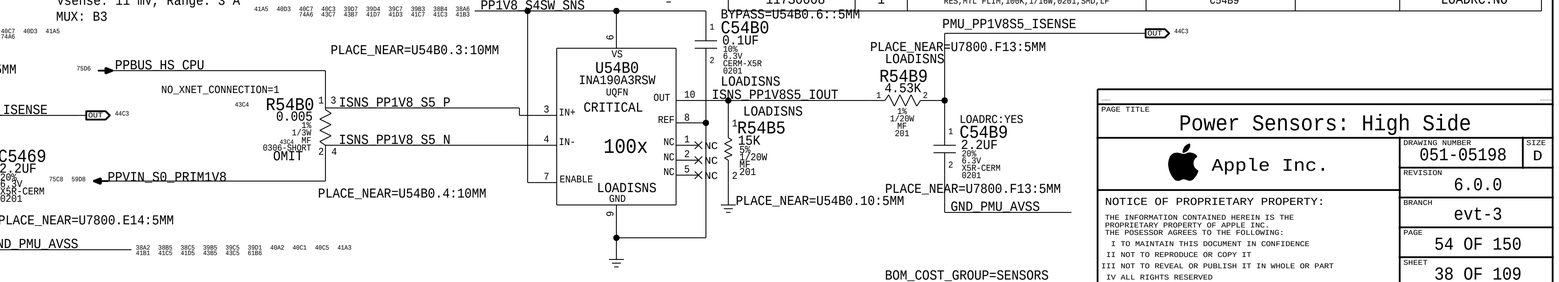
NAND Current Sense (IHNR)

Gain: 100x, EDP: 1.34 A
Rsense: 0.01 (R5460)
Vsense: 13.4 mV, Range: 1.5 A
MUX: A6



PCH 1.8V PRIM Current Sense (ICPR)

Gain: 100x, EDP: 2.2 A
Rsense: 0.005 (R54B0) or Rsense SHORT
Vsense: 11 mV, Range: 3 A
MUX: B3



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	1	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C54B9		LOADRC:NO

Charger (BMON) Current Sense (IPBR)

Charger Gain: 12x, EDP: 20.83 A
Rsense: 0.005 (R7060)
SMC ADC: 02

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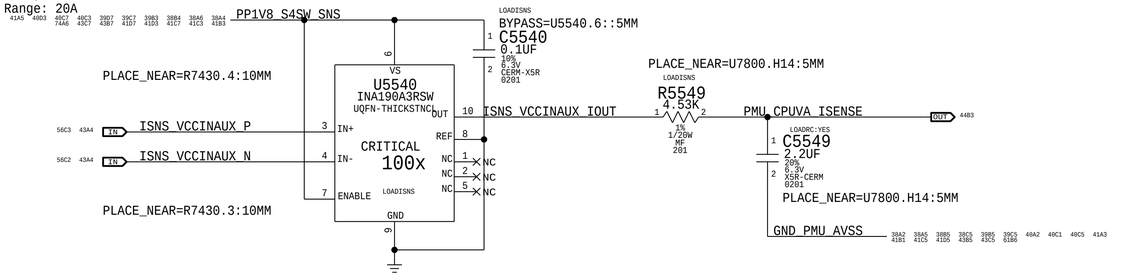
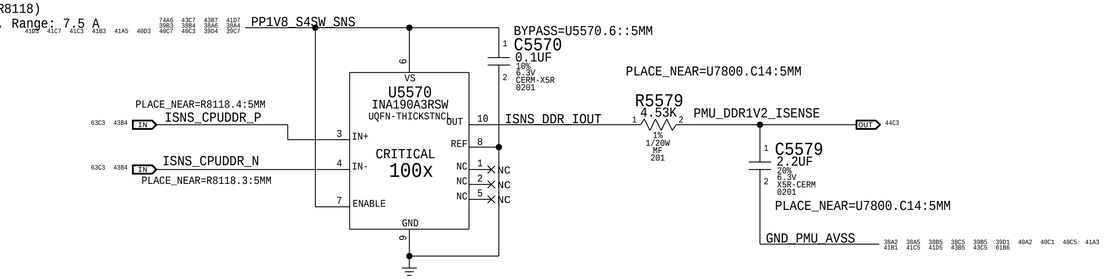
CPU VCCIN_AUX 1.8V Current Sense (ICAC)

Gain: 100x, EDP: 19 A
Rsense: 0.00075 (R7430)
Vsense: 14.25 mV, Range: 20A
MUX: B2



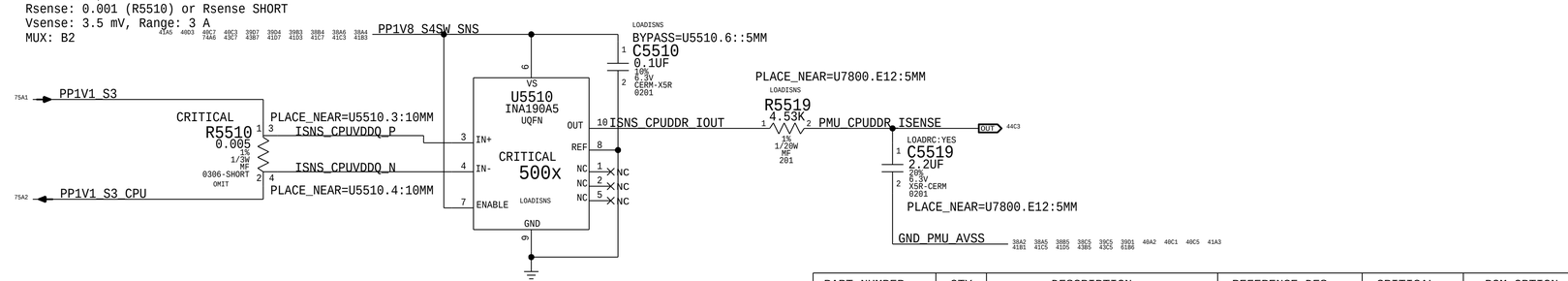
DDR 1.1V S3 (CPU & Memory) Current Sense (IM0C)

Gain: 100x, EDP: 6.9 A
Rsense: 0.002 (R8118)
Vsense: 13.8 mV, Range: 7.5 A
MUX: A4

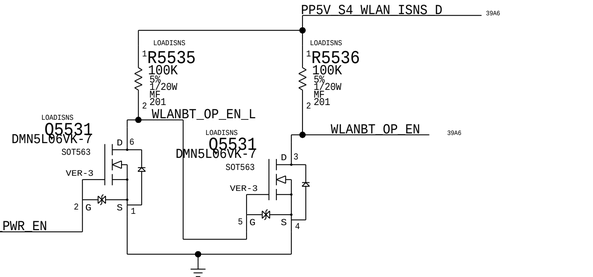


CPU DDR 1.1V S3 (CPU Only) Current Sense (IMCC)

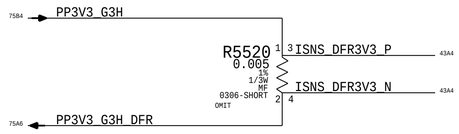
Gain: 500x, EDP: 3.5 A
Rsense: 0.001 (R5510) or Rsense SHORT
Vsense: 3.5 mV, Range: 3 A
MUX: B2



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	1	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5519		LOADRC:NO
117S0008	0	RES,MTL FLIM,100K,1/16W,0201,SMD,LF			LOADRC:NO
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5539,C5549		LOADRC:NO

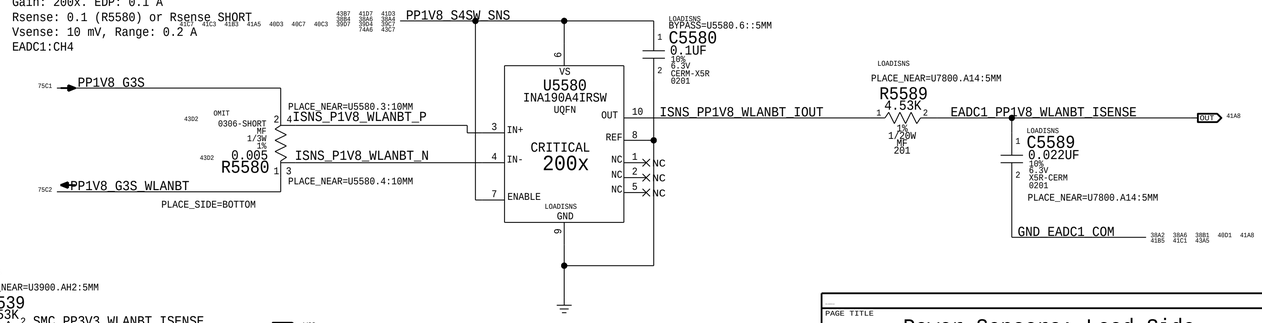


DFR Current Sense



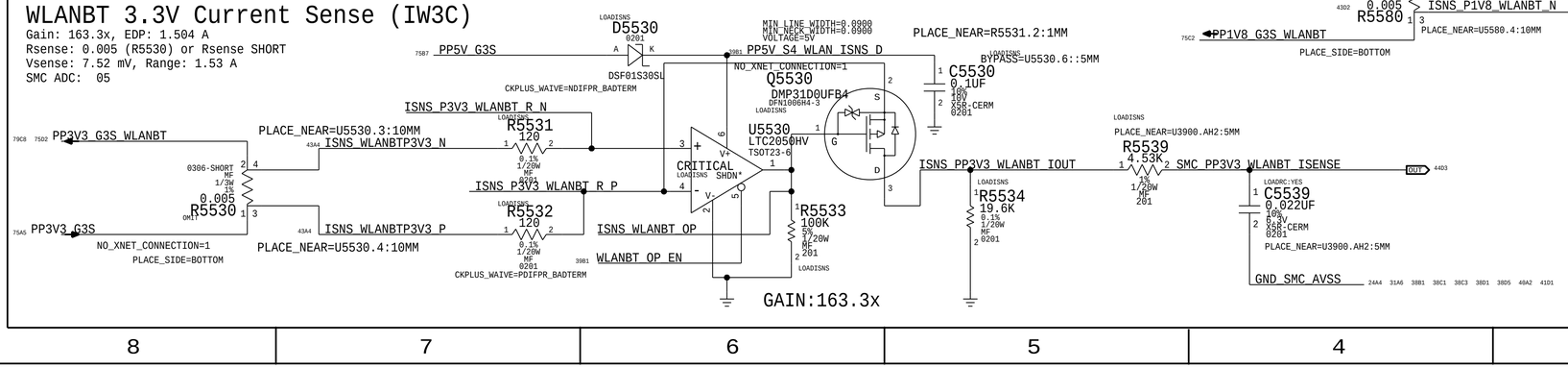
WLANBT 1.8V Current Sense (IW2C)

Gain: 200x. EDP: 0.1 A
Rsense: 0.1 (R5580) or Rsense SHORT
Vsense: 10 mV, Range: 0.2 A
EADC1:CH4



WLANBT 3.3V Current Sense (IW3C)

Gain: 163.3x, EDP: 1.504 A
Rsense: 0.005 (R5530) or Rsense SHORT
Vsense: 7.52 mV, Range: 1.53 A
SMC ADC: 05



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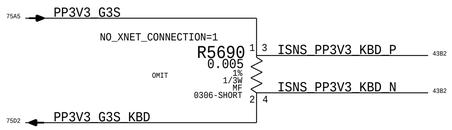
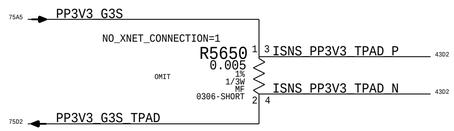
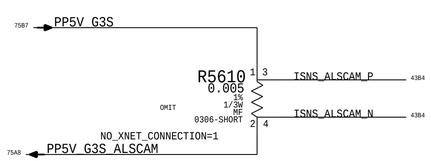
Keyboard 3V Current Sense



Trackpad 3V Current Sense

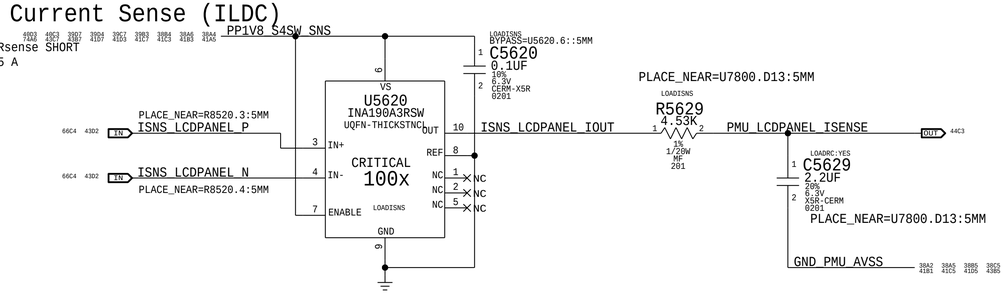


ALS/Camera Current Sense (ICMC)



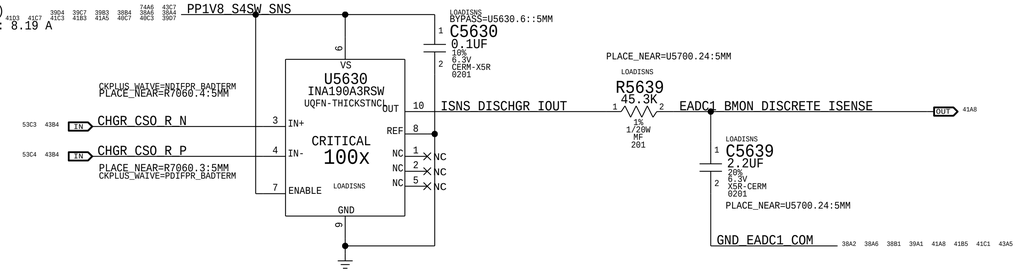
LCD Panel 3V Current Sense (ILDC)

Gain: 100x. EDP: 1 A
RSENSE: 0.01 (R8520) or Rsense SHORT
Vsense: 10 mV, Range: 1.5 A
MUX: B0



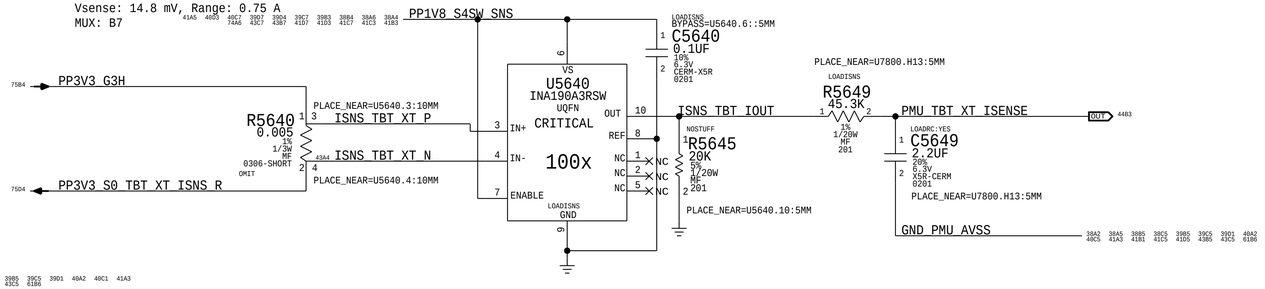
Battery Discrete Current Sense (IP0R)

Gain: 100x. EDP: 8 A
Rsense: 0.005 (R7060)
Vsense: 40 mV, Range: 8.19 A
EADC2: CH5

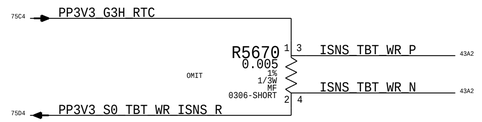


Thunderbolt TBT Current Left (IULC)

Gain: 100x. EDP: 0.74 A
Rsense: 0.02 (R5640) or Rsense SHORT
Vsense: 14.8 mV, Range: 0.75 A
MUX: B7



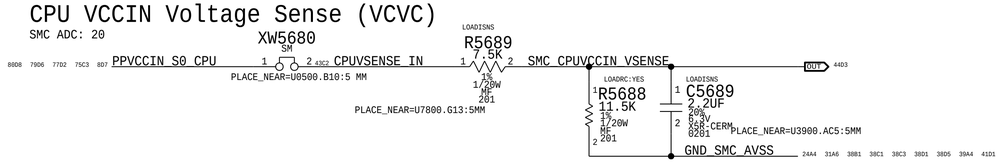
Thunderbolt TBT Current Right



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5649,C5629		LOADRC:NO
117S0008	0	RES,MTL FLIM,100K,1/16W,0201,SMD,LF			LOADRC:NO
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	R5608,R5688		LOADRC:NO

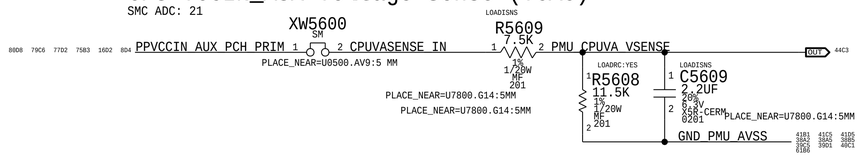
CPU VCCIN Voltage Sense (VCVC)

SMC ADC: 20



CPU VCCIN_AUX Voltage Sense (VCAC)

SMC ADC: 21



BOM_COST_GROUP=SENSORS

PAGE TITLE: Power Sensors: Extended

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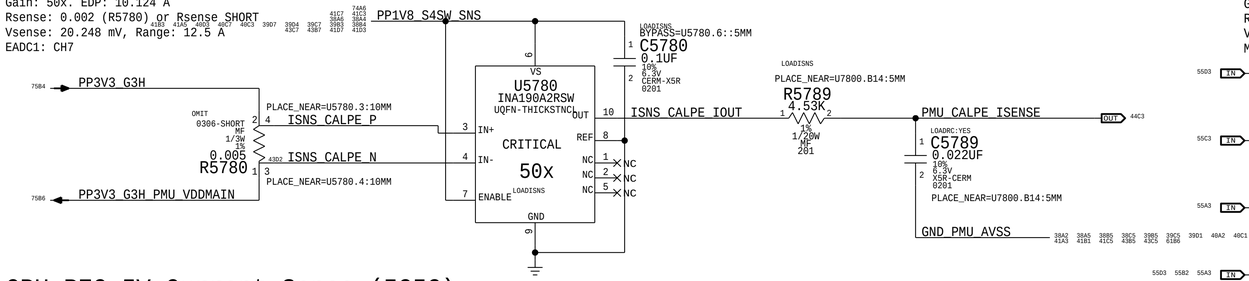
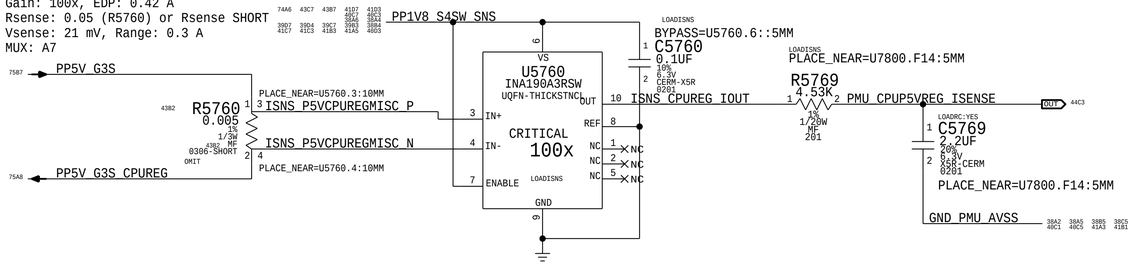
CALPE 3.3V INPUT Current Left (IP3C)

Gain: 50x. EDP: 10.124 A
Rsense: 0.002 (R5780) or Rsense SHORT
Vsense: 20.248 mV, Range: 12.5 A
EADC1: CH7



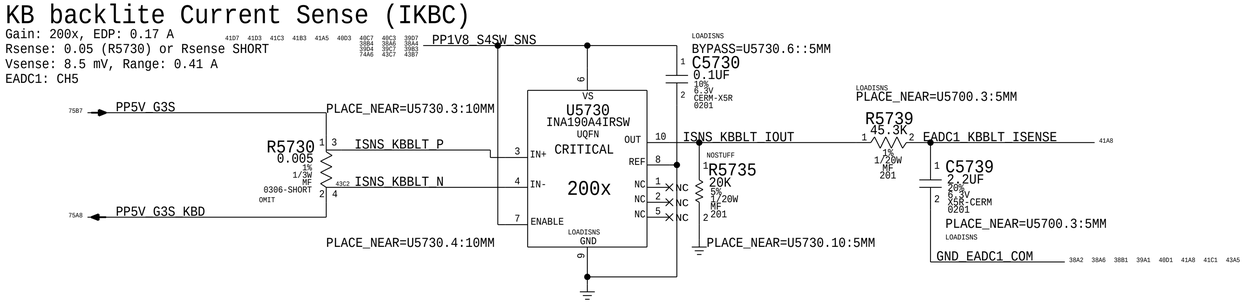
CPU REG.5V Current Sense (IC5C)

Gain: 100x, EDP: 0.42 A
Rsense: 0.05 (R5760) or Rsense SHORT
Vsense: 21 mV, Range: 0.3 A
MUX: A7



KB backlite Current Sense (IKBC)

Gain: 200x, EDP: 0.17 A
Rsense: 0.05 (R5730) or Rsense SHORT
Vsense: 8.5 mV, Range: 0.41 A
EADC1: CH5



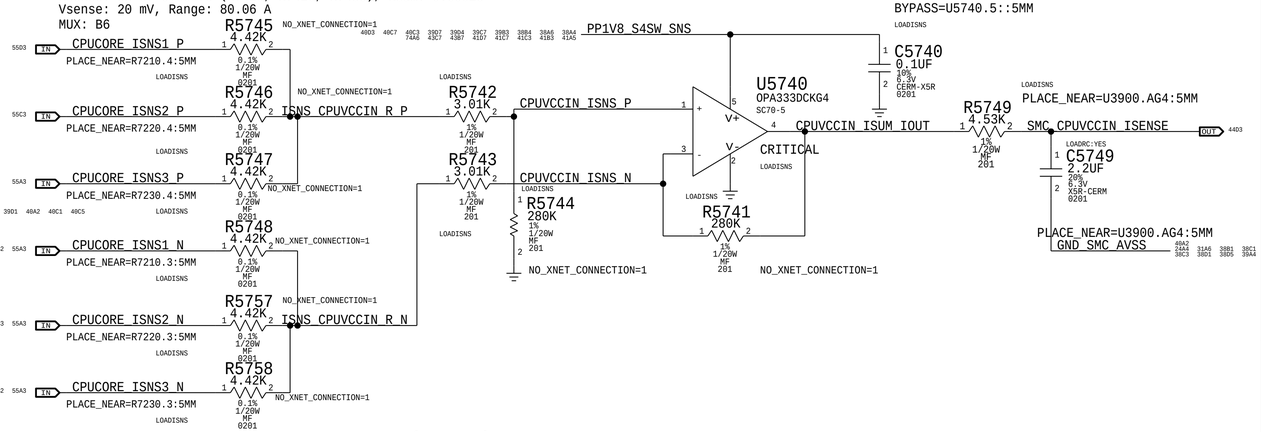
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	2	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5789,C5769		LOADRC:NO
117S0008	0	RES,MTL FLIM,100K,1/16W,0201,SMD,LF			LOADRC:NO
117S0008	1	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5749		LOADRC:NO

EADC1

(Write: 0x10 Read: 0x11)

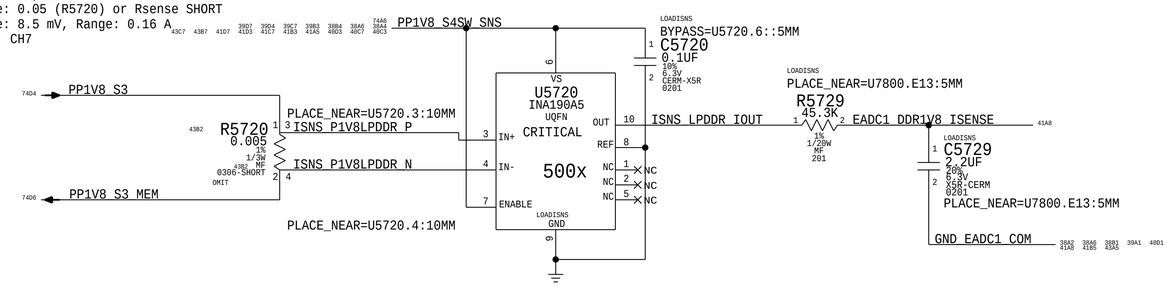
CPU VCCin Current Sense (ICVC)

Gain: 62.45x, EDP: 80 A
Rsense: 3x of 0.00075 (R7410, R7420, R7430), Rsum: 0.00025
Vsense: 20 mV, Range: 80.06 A
MUX: B6



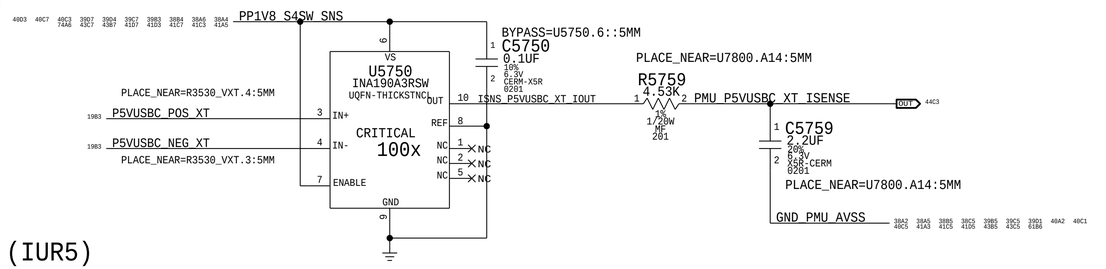
LPDDR 1.8V Current Sense (IM1C)

Gain: 500x, EDP: 0.17 A
Rsense: 0.05 (R5720) or Rsense SHORT
Vsense: 8.5 mV, Range: 0.16 A
EADC1: CH7



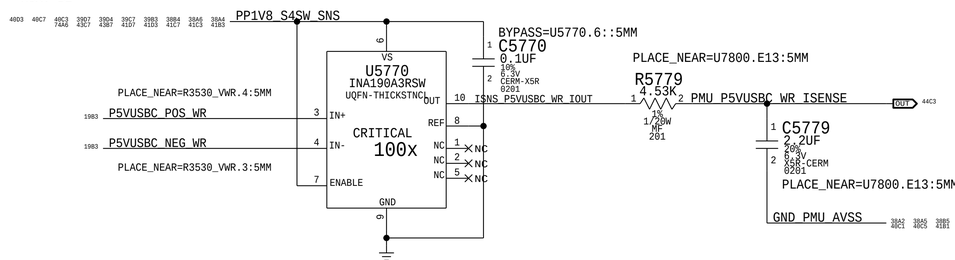
USBC LEFT 5V Current Sense (IUL5)

Gain: 100x, EDP: 6.6 A
Rsense: 0.002 (R3530_VXT)
Vsense: 13.2 mV, Range: 7.5 A
MUX: A2



USBC RIGHT 5V Current Sense (IUR5)

Gain: 100x, EDP: 6.6 A
Rsense: 0.002 (R3530_VWR)
Vsense: 13.2 mV, Range: 7.5 A
MUX: B1



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PAGE TITLE: Power Sensors: Extended 2

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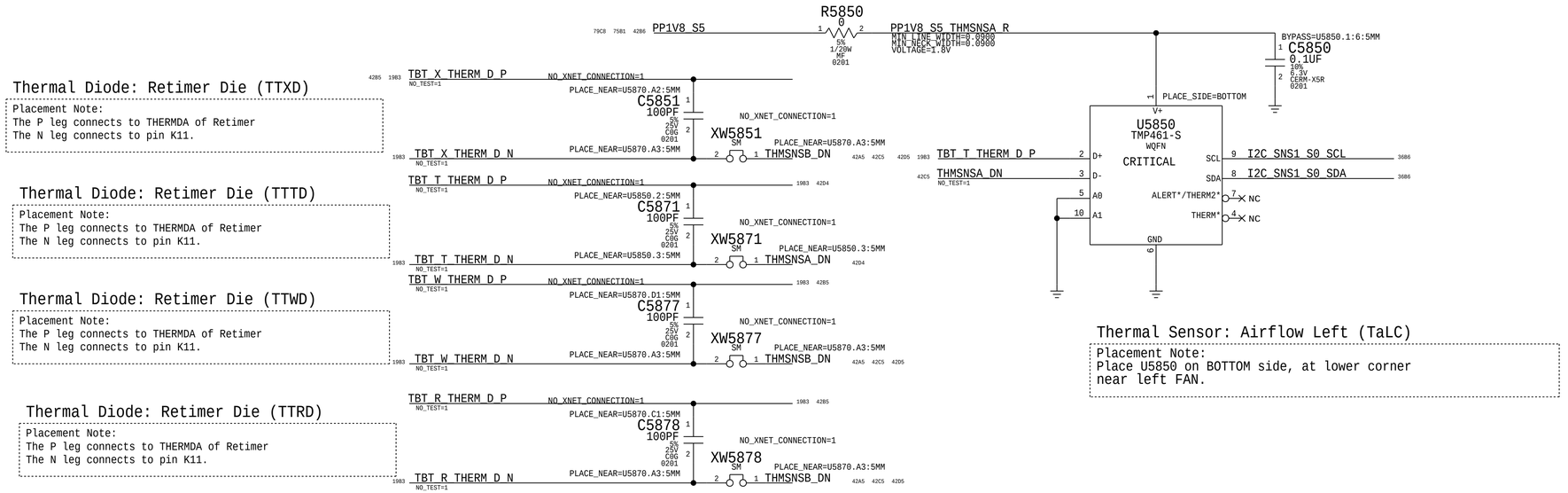
Thermal Sensor A
TBT/USB/DP Retimer Die

I2C Write: 0x90, I2C Read: 0x91



Thermal Diode: Retimer Die (TTXD)

Placement Note:
The P leg connects to THERMDA of Retimer
The N leg connects to pin K11.

Thermal Diode: Retimer Die (TTTD)

Placement Note:
The P leg connects to THERMDA of Retimer
The N leg connects to pin K11.

Thermal Diode: Retimer Die (TTWD)

Placement Note:
The P leg connects to THERMDA of Retimer
The N leg connects to pin K11.

Thermal Diode: Retimer Die (TTRD)

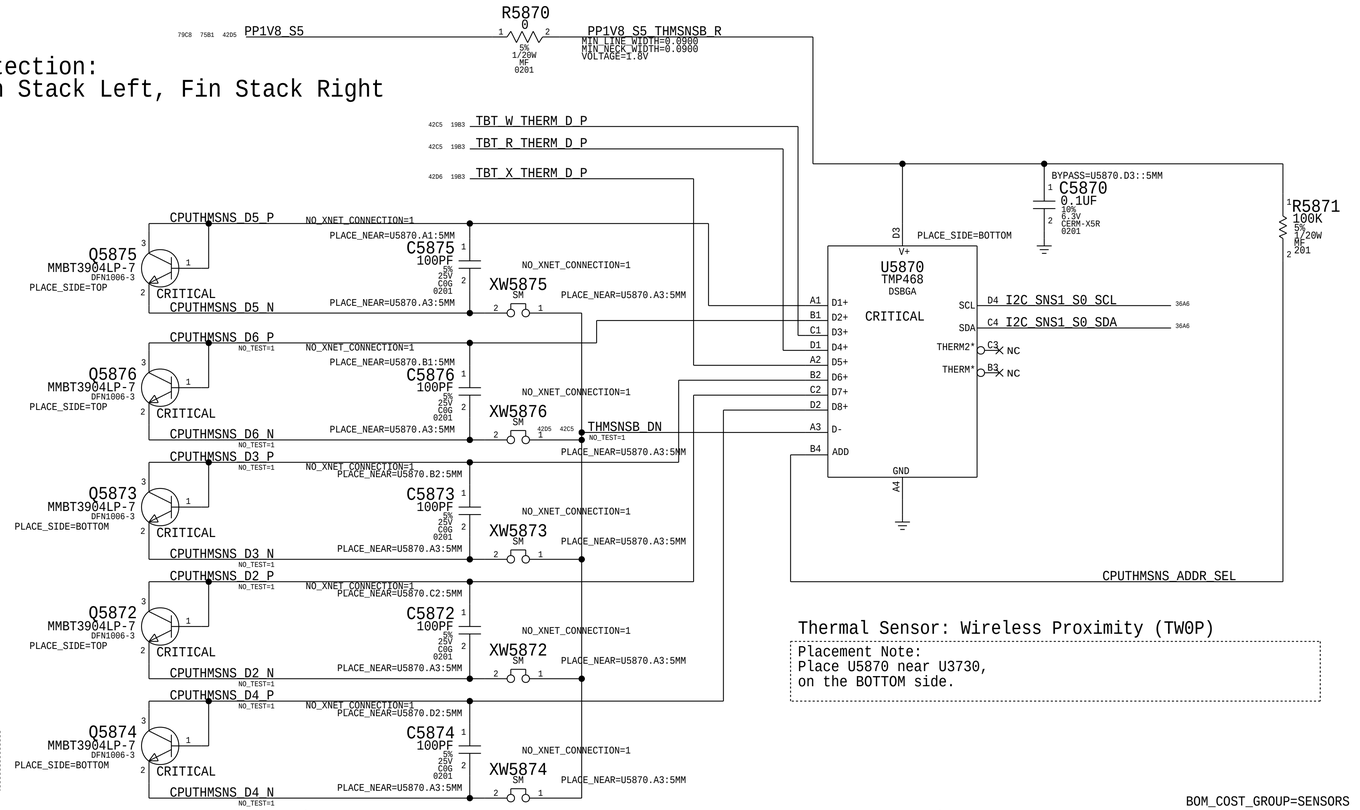
Placement Note:
The P leg connects to THERMDA of Retimer
The N leg connects to pin K11.

Thermal Sensor: Airflow Left (TaLC)

Placement Note:
Place U5850 on BOTTOM side, at lower corner
near left FAN.

Thermal Sensor B & CPU High Peak Detection:
CPU Proximity, Memory Proximity, Fin Stack Left, Fin Stack Right

U5870 I2C Address: TMP468 is 0x92/0x93.



Thermal Diode: Fin Stack Left (Th2H)

Placement Note:
Place Q5875, Airflow thermal indicator, above
the X100, on the TOP side.

Thermal Diode: Fin Stack Right (Th1H)

Placement Note:
Place Q5876 at corner near right Fan,
on the TOP side.

Thermal Diode: Memory Proximity (TM0P)

Placement Note:
Place Q5873 between two rows of Memory devices,
between channel A and B, on the BOTTOM side.

CPU PROXIMITY (TC0P)

Placement note:
Place Q5872 on TOP under CPU

Thermal Sensor: Airflow Right (TaRC)

Placement Note:
Place Q5874 on BOTTOM side, at lower corner
near right FAN.

Thermal Sensor: Wireless Proximity (TW0P)

Placement Note:
Place U5870 near U3730,
on the BOTTOM side.

BOM_COST_GROUP=SENSORS

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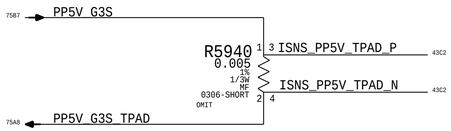
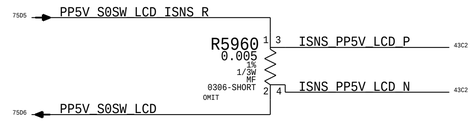
Trackpad 5V Current Sense



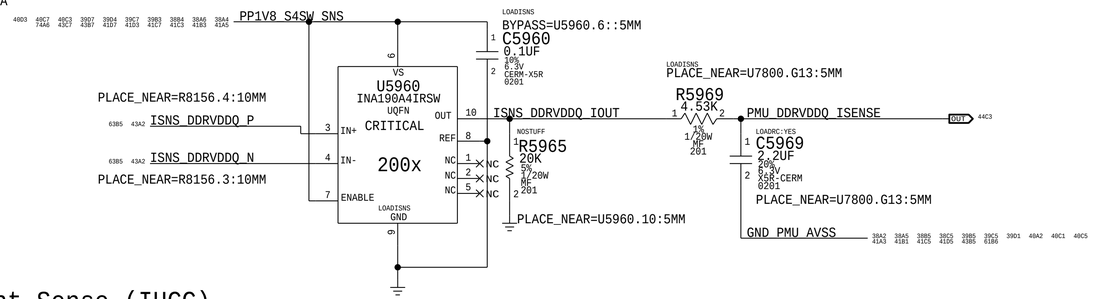
LCD Panel 5V Current Sense



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0008	1	RES,MTL FLIM,100K,1/16W,0201,SMD,LF	C5969		LOADRC:NO

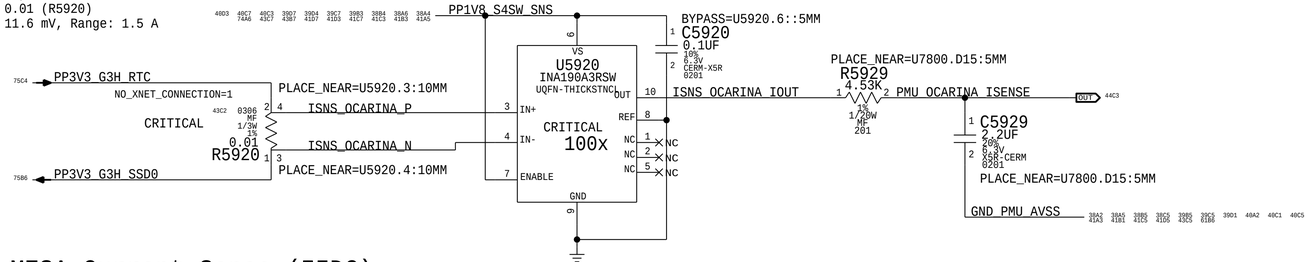
DDR VDDQ 0.6V Current Sense (IMQC)

Gain: 200x, EDP: 0.9 A
Rsense: 0.005 (R5960) or Rsense SHORT
Vsense: 4.5 mV, Range: 1.5 A
MUX: B4



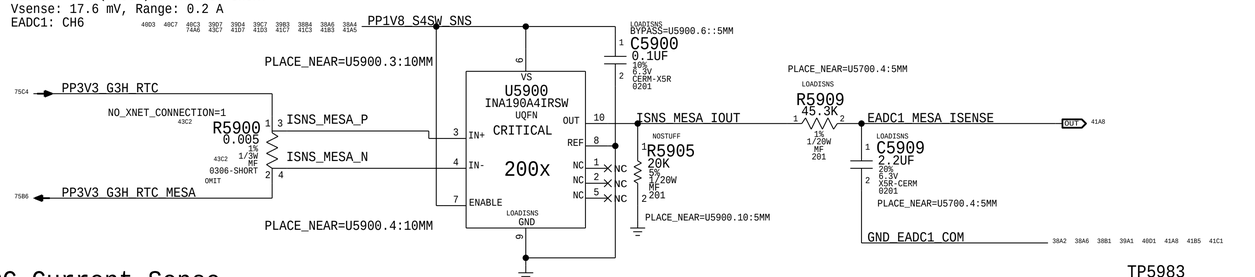
Ocarina Current Sense (IHCC)

Gain: 100x, EDP: 1.16 A
Rsense: 0.01 (R5920)
Vsense: 11.6 mV, Range: 1.5 A
MUX: A5



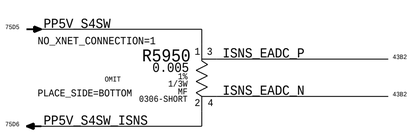
MESA Current Sense (IIDC)

Gain: 200x, EDP: 0.176 A
Rsense: 0.1 (R5900) or Rsense SHORT
Vsense: 17.6 mV, Range: 0.2 A
EADC1: CH6



EADC Current Sense

EDP: 6m A
Rsense: 0.1 (R5950) or Rsense SHORT
Vsense: 0.6 mV



TP5983 PLACE_SIDE=TOP
TP5984 PLACE_SIDE=TOP
TP5985 PLACE_SIDE=TOP
TP5986 PLACE_SIDE=TOP

Probe Points for Power Validation

TP5901	ISNS HS COMPUTING P	38D8	PLACE_SIDE=TOP PLACE_NEAR=R5400:5MM
TP5902	ISNS HS COMPUTING N	38D8	PLACE_SIDE=TOP PLACE_NEAR=R5400:5MM
TP5903	ISNS HS OTHER5V P	38C7	PLACE_SIDE=TOP PLACE_NEAR=R5410:5MM
TP5904	ISNS HS OTHER5V N	38C7	PLACE_SIDE=TOP PLACE_NEAR=R5410:5MM
TP5905	ISNS HS OTHER3V3 P	38B7	PLACE_SIDE=TOP PLACE_NEAR=R5440:5MM
TP5906	ISNS HS OTHER3V3 N	38B7	PLACE_SIDE=TOP PLACE_NEAR=R5440:5MM
TP5907	ISNS HS 3V3RTC P	38B4	PLACE_SIDE=TOP PLACE_NEAR=R5420:5MM
TP5908	ISNS HS 3V3RTC N	38B4	PLACE_SIDE=TOP PLACE_NEAR=R5420:5MM
TP5909	ISNS SSDNAND P	38A8	PLACE_SIDE=TOP PLACE_NEAR=R5460:5MM
TP5910	ISNS SSDNAND N	38A8	PLACE_SIDE=TOP PLACE_NEAR=R5460:5MM
TP5911	ISNS LCDBKLT P	65D7 38B8	PLACE_SIDE=TOP PLACE_NEAR=R8400:30MM
TP5912	ISNS LCDBKLT N	65D7 38B8	PLACE_SIDE=TOP PLACE_NEAR=R8400:30MM
TP5913	ISNS SPKRAMP LEFT P	38B4	PLACE_SIDE=TOP PLACE_NEAR=R54A0:5MM
TP5914	ISNS SPKRAMP LEFT N	38B4	PLACE_SIDE=TOP PLACE_NEAR=R54A0:5MM
TP5915	ISNS PP1V8 S5 P	38A4	PLACE_SIDE=TOP PLACE_NEAR=R54B0:5MM
TP5916	ISNS PP1V8 S5 N	38A4	PLACE_SIDE=TOP PLACE_NEAR=R54B0:5MM
TP5917	CHGR CSI R P	53C6	PLACE_SIDE=TOP PLACE_NEAR=R7020:5MM
TP5918	CHGR CSI R N	53C5	PLACE_SIDE=TOP PLACE_NEAR=R7020:5MM
TP5919	CHGR AMON	53A4 38C2	PLACE_SIDE=TOP
TP5981			PLACE_SIDE=TOP PLACE_NEAR=TP5919:5MM
TP5920	CHGR CSO R P	53C4 40D4	PLACE_SIDE=TOP PLACE_NEAR=R7060:30MM
TP5921	CHGR CSO R N	53C3 40D4	PLACE_SIDE=TOP PLACE_NEAR=R7060:30MM
TP5922	CHGR BMON	53A4 38C2	PLACE_SIDE=TOP
TP5982			PLACE_SIDE=TOP PLACE_NEAR=TP5922:5MM
TP5923	ISNS ALSCAM P	40A7	PLACE_SIDE=TOP PLACE_NEAR=R5610:5MM
TP5924	ISNS ALSCAM N	40A7	PLACE_SIDE=TOP PLACE_NEAR=R5610:5MM
TP5925	ISNS CPUDDR P	63C3 39C8	PLACE_SIDE=TOP PLACE_NEAR=R8118:5MM
TP5926	ISNS CPUDDR N	63C3 39C8	PLACE_SIDE=TOP PLACE_NEAR=R8118:5MM
TP5927	ISNS CPUVDDQ P	39B7	PLACE_SIDE=TOP PLACE_NEAR=R5510:5MM
TP5928	ISNS CPUVDDQ N	39B7	PLACE_SIDE=TOP PLACE_NEAR=R5510:5MM
TP5929	ISNS DFR3V3 P	39B7	PLACE_SIDE=TOP PLACE_NEAR=R5520:5MM
TP5930	ISNS DFR3V3 N	39B7	PLACE_SIDE=TOP PLACE_NEAR=R5520:5MM
TP5931	ISNS WLANBTP3V3 P	39A7	PLACE_SIDE=TOP PLACE_NEAR=R5530:5MM
TP5932	ISNS WLANBTP3V3 N	39A7	PLACE_SIDE=TOP PLACE_NEAR=R5530:5MM
TP5933	ISNS VCCINAUX P	56C3 39D4	PLACE_SIDE=TOP PLACE_NEAR=R7430:5MM
TP5934	ISNS VCCINAUX N	56C2 39D4	PLACE_SIDE=TOP PLACE_NEAR=R7430:5MM
TP5935	ISNS CPUVCCIN R P	41D4	PLACE_SIDE=TOP PLACE_NEAR=R5742:10MM
TP5936	ISNS CPUVCCIN R N	41D4	PLACE_SIDE=TOP PLACE_NEAR=R5743:10MM
TP5937	ISNS TBT XT P	40C4	PLACE_SIDE=TOP PLACE_NEAR=R5640:5MM
TP5938	ISNS TBT XT N	40C4	PLACE_SIDE=TOP PLACE_NEAR=R5640:5MM
TP5939	ISNS LCDPANEL P	66C4 40C7	PLACE_SIDE=TOP PLACE_NEAR=R8520:5MM
TP5940	ISNS LCDPANEL N	66C4 40C7	PLACE_SIDE=TOP PLACE_NEAR=R8520:5MM
TP5941	ISNS PP3V3 TPAD P	40B7	PLACE_SIDE=TOP PLACE_NEAR=R5650:10MM
TP5942	ISNS PP3V3 TPAD N	40B7	PLACE_SIDE=TOP PLACE_NEAR=R5650:10MM
TP5943	ISNS P1V8 WLANBT P	39A4	PLACE_SIDE=TOP PLACE_NEAR=R5580:5MM
TP5944	ISNS P1V8 WLANBT N	39A4	PLACE_SIDE=TOP PLACE_NEAR=R5580:5MM
TP5945	ISNS CALPE P	41D7	PLACE_SIDE=TOP PLACE_NEAR=R5780:5MM
TP5946	ISNS CALPE N	41D7	PLACE_SIDE=TOP PLACE_NEAR=R5780:5MM
TP5947	ISNS KBBLT P	41C7	PLACE_SIDE=TOP PLACE_NEAR=R5730:5MM
TP5948	ISNS KBBLT N	41B7	PLACE_SIDE=TOP PLACE_NEAR=R5730:5MM
TP5953	ISNS PP5V TPAD P	43D7	PLACE_SIDE=TOP PLACE_NEAR=R5940:10MM
TP5954	ISNS PP5V TPAD N	43D7	PLACE_SIDE=TOP PLACE_NEAR=R5940:10MM
TP5955	ISNS PP5V LCD P	43D5	PLACE_SIDE=TOP PLACE_NEAR=R5960:5MM
TP5956	ISNS PP5V LCD N	43D5	PLACE_SIDE=TOP PLACE_NEAR=R5960:5MM
TP5957	ISNS OCARINA P	43B7	PLACE_SIDE=TOP PLACE_NEAR=R5920:5MM
TP5958	ISNS OCARINA N	43B7	PLACE_SIDE=TOP PLACE_NEAR=R5920:5MM
TP5959	ISNS MESA P	43B7	PLACE_SIDE=TOP PLACE_NEAR=R5900:5MM
TP5960	ISNS MESA N	43A7	PLACE_SIDE=TOP PLACE_NEAR=R5900:5MM
TP5961	CPUVSENSE IN	40B4	PLACE_SIDE=TOP PLACE_NEAR=XW5680:5MM
TP5962	CPUVASENSE IN	40A4	PLACE_SIDE=TOP PLACE_NEAR=XW5600:5MM
TP5963	SMC DCIN VSENSE	44D3 38C3	PLACE_SIDE=TOP PLACE_NEAR=R5498:5MM
TP5964	SMC PBUS VSENSE	44D3 38D1	PLACE_SIDE=TOP PLACE_NEAR=R5488:5MM
TP5965	ISNS PP3V3 KBD P	40D7	PLACE_SIDE=TOP PLACE_NEAR=R5690:5MM
TP5966	ISNS PP3V3 KBD N	40D7	PLACE_SIDE=TOP PLACE_NEAR=R5690:5MM
TP5967	ISNS P5VCPUREGMISC P	41C8	PLACE_SIDE=TOP PLACE_NEAR=R5760:5MM
TP5968	ISNS P5VCPUREGMISC N	41C8	PLACE_SIDE=TOP PLACE_NEAR=R5760:5MM
TP5969	ISNS P1V8LPDDR P	41C3	PLACE_SIDE=TOP PLACE_NEAR=R5720:5MM
TP5970	ISNS P1V8LPDDR N	41C3	PLACE_SIDE=TOP PLACE_NEAR=R5720:5MM
TP5973	ISNS EADC P	43A7	PLACE_SIDE=TOP PLACE_NEAR=R5950:5MM
TP5974	ISNS EADC N	43A7	PLACE_SIDE=TOP PLACE_NEAR=R5950:5MM
TP5975	ISNS DDRVDDQ P	6385 43C7	PLACE_SIDE=TOP PLACE_NEAR=R8156:5MM
TP5976	ISNS DDRVDDQ N	6385 43C7	PLACE_SIDE=TOP PLACE_NEAR=R8156:5MM
TP5977	ISNS TBT WR P	40B3	PLACE_SIDE=TOP PLACE_NEAR=R5670:5MM
TP5978	ISNS TBT WR N	40B3	PLACE_SIDE=TOP PLACE_NEAR=R5670:5MM

BOM_COST_GROUP=SENSORS

PAGE TITLE: Power Sensors:Extended 3

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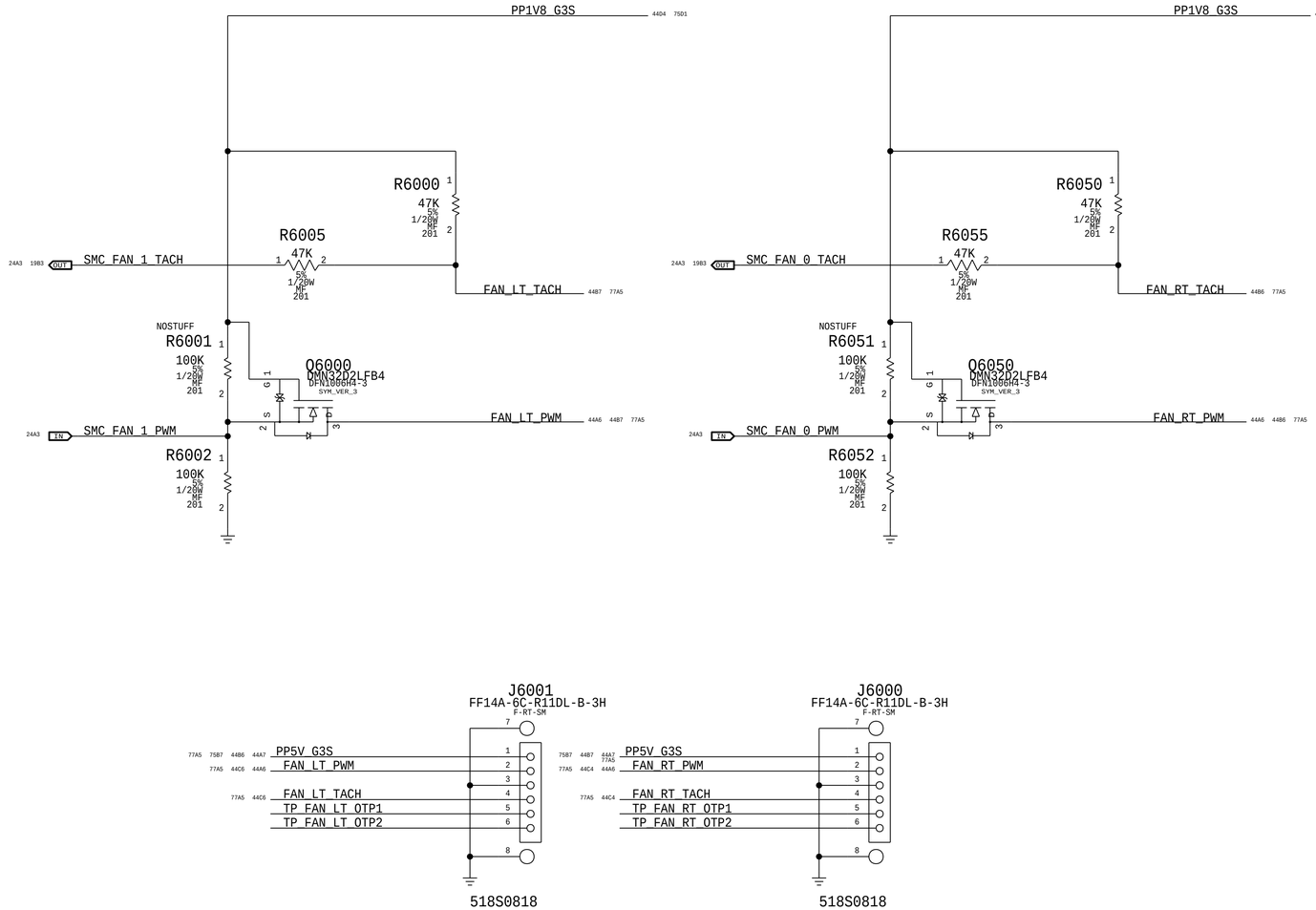
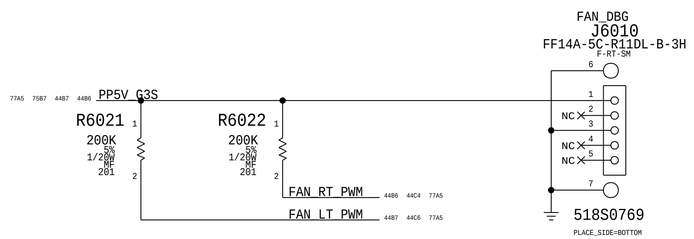
FAN CONTROL





SMC ADC Assignments

38D5	IN	SMC_CPU_HS_ISENSE	SMC_CPU_HS_ISENSE	OUT	24B3
43B2 38D1	IN	SMC_PBUS_VSENSE	SMC_PBUS_VSENSE	OUT	24B3
38C1	IN	SMC_BMON_ISENSE	SMC_BMON_ISENSE	OUT	24B3
38C1	IN	SMC_DCIN_ISENSE	SMC_DCIN_ISENSE	OUT	24B3
43B2 38C3	IN	SMC_DCIN_VSENSE	SMC_DCIN_VSENSE	OUT	24B3
39A4	IN	SMC_PP3V3_WLANBT_ISENSE	SMC_PP3V3_WLANBT_ISENSE	OUT	24B3
41D1	IN	SMC_CPUVCCIN_ISENSE	SMC_CPUVCCIN_ISENSE	OUT	24B3
40B2	IN	SMC_CPUVCCIN_VSENSE	SMC_CPUVCCIN_VSENSE	OUT	24A3

All: MAKE_BASE=TRUE

KBL-U NB Assignments

CPUGT ISNS	ADC5
IACORE ISNS	ADC6

Desktop Assignments

GPU_AUX	ADC0
GPU_CORE	ADC1
12V VSNS	ADC2
12V ISNS	ADC3
Same	ADC4-7

PMU ADC Assignments

38C5	IN	PMU_OTHER3V3_HI_ISENSE	PMU_OTHER3V3_HI_ISENSE	OUT	62C6
38C5	IN	PMU_OTHER5V_HI_ISENSE	PMU_OTHER5V_HI_ISENSE	OUT	62C6
41B1	IN	PMU_P5VUSBC_XT_ISENSE	PMU_P5VUSBC_XT_ISENSE	OUT	62C6
41D5	IN	PMU_CALPE_ISENSE	PMU_CALPE_ISENSE	OUT	62C6
39C5	IN	PMU_DDR1V2_ISENSE	PMU_DDR1V2_ISENSE	OUT	62C6
43B5	IN	PMU_OCARINA_ISENSE	PMU_OCARINA_ISENSE	OUT	62C6
38A5	IN	PMU_SSDNAND_ISENSE	PMU_SSDNAND_ISENSE	OUT	62C6
41C5	IN	PMU_CPUP5VREG_ISENSE	PMU_CPUP5VREG_ISENSE	OUT	62C6
		NC_PMU_AMUX_AY	NC_PMU_AMUX_AY	OUT	62C6
40C5	IN	PMU_LCDPANEL_ISENSE	PMU_LCDPANEL_ISENSE	OUT	62C6
41A3	IN	PMU_P5VUSBC_WR_ISENSE	PMU_P5VUSBC_WR_ISENSE	OUT	62C6
39C5	IN	PMU_CPUDDR_ISENSE	PMU_CPUDDR_ISENSE	OUT	62C6
38A2	IN	PMU_PP1V8S5_ISENSE	PMU_PP1V8S5_ISENSE	OUT	62C6
43C5	IN	PMU_DDRVDDQ_ISENSE	PMU_DDRVDDQ_ISENSE	OUT	62B6
40A2	IN	PMU_CPUVA_VSENSE	PMU_CPUVA_VSENSE	OUT	62B6
3901	IN	PMU_CPUVA_ISENSE	PMU_CPUVA_ISENSE	OUT	62B6
40C1	IN	PMU_TBT_XT_ISENSE	PMU_TBT_XT_ISENSE	OUT	62B6
		NC_PMU_AMUX_BY	NC_PMU_AMUX_BY	OUT	62B6

All: MAKE_BASE=TRUE

BOM_COST_GROUP=FAN

PAGE TITLE: Fans/SMC/AMUX Support

Apple Inc.

DRAWING NUMBER: 051-05198 SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 60 OF 150
SHEET: 44 OF 109

BOM_COST_GROUP=AUDIO

DESIGN: X502/DEV_MLB_U

LAST CHANGE: Wed Feb 18 17:12:24 2015

SYNC_MASTER=mv03 SYNC_DATE=03/31/2015

PAGE TITLE

Audio Placeholder

Apple Inc.

DRAWING NUMBER 051-05198

SIZE D

REVISION 6.0.0

BRANCH evt-3

PAGE 62 OF 150

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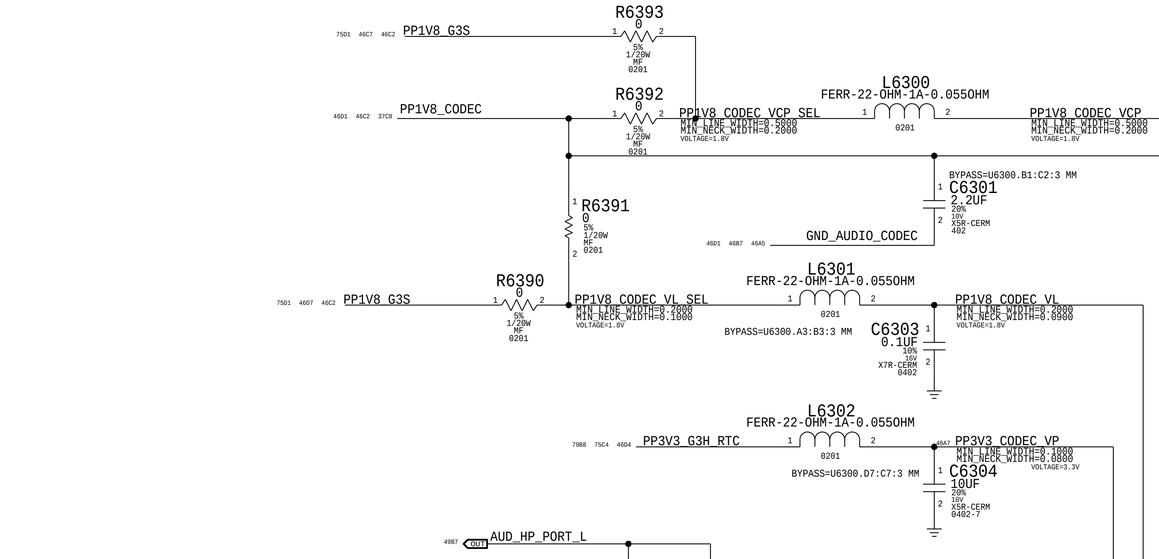
AUDIO JACK CODEC I2C ADDRESS		
AD1	AD0	ADDRESS
GND	GND	0x48 <--
GND	1.8V	0x49
1.8V	GND	0x4A
1.8V	1.8V	0x4B



DESIGN: X502/DEV_MLB_U
LAST CHANGE: Wed Feb 18 17:31:01 2015

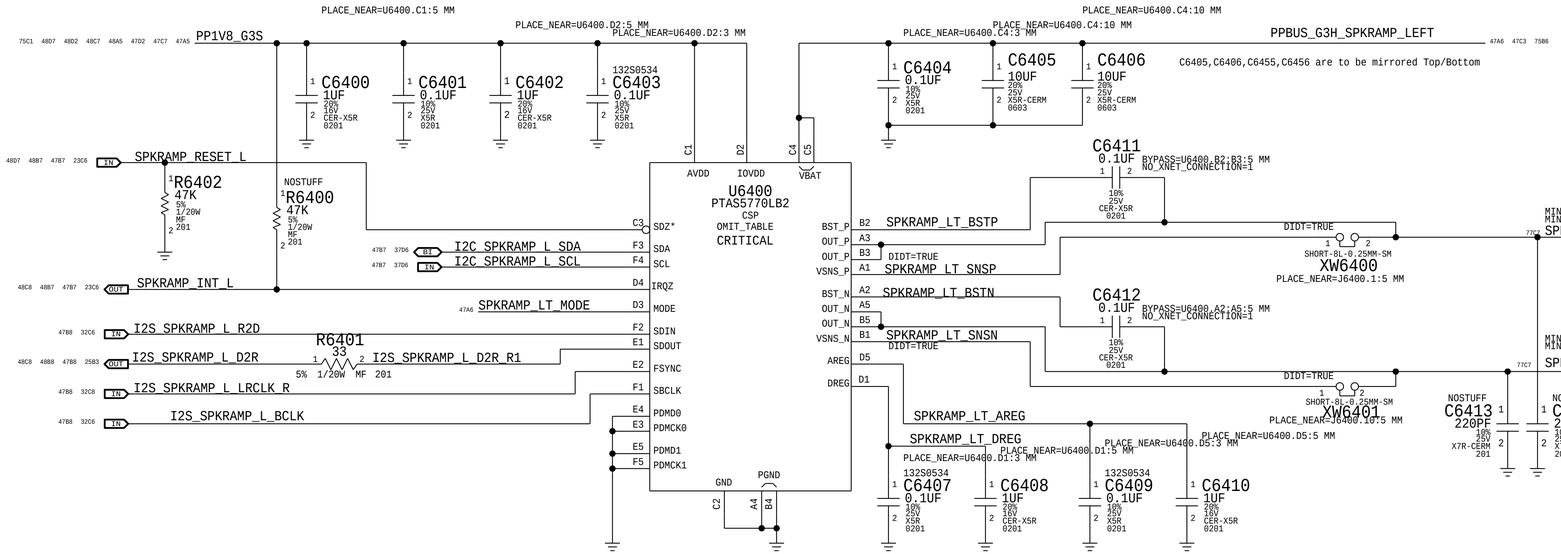
PAGE TITLE: Audio Jack Codec

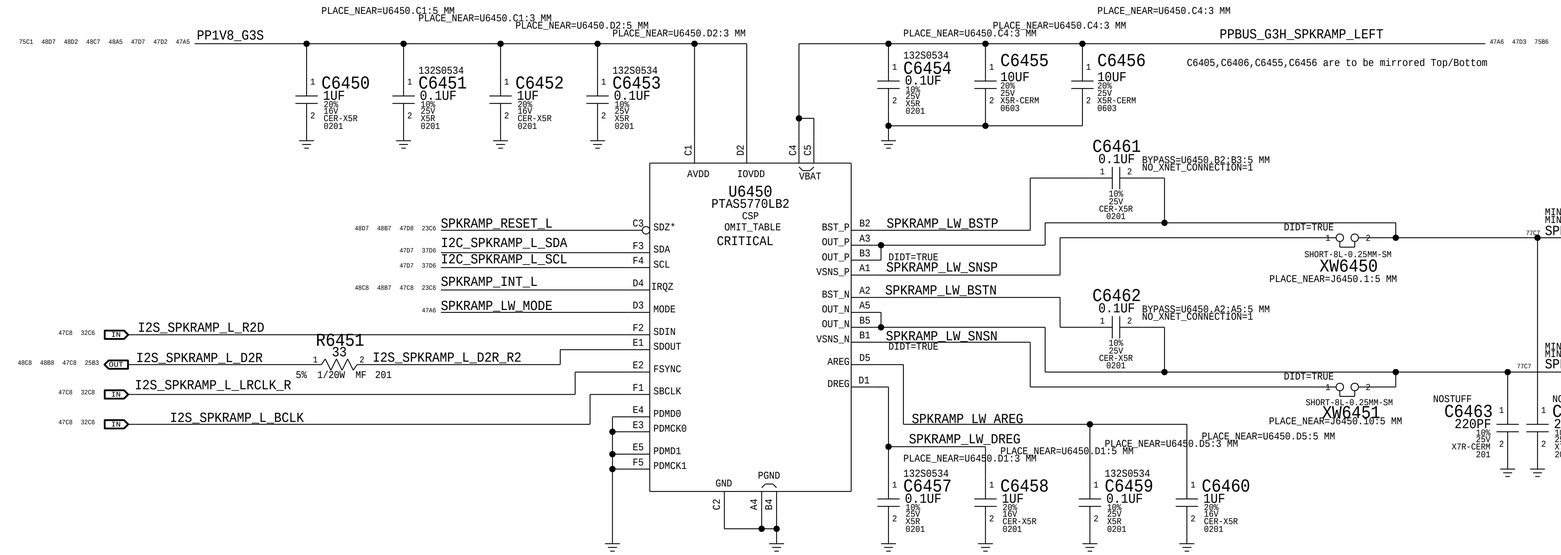
Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 63 OF 150
SHEET: 46 OF 109

2X MONO SPEAKER LEFT AMPLIFIERS

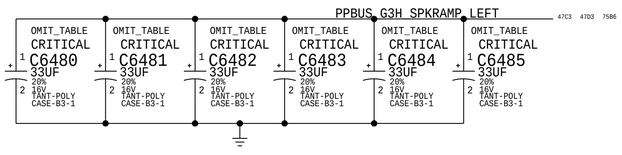
APN: 353S01252
GAIN: 0DBFS = xxVRMS

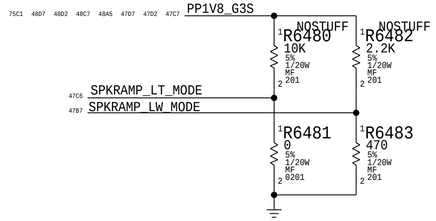




PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S01871	1	IC,TAS5770L,C0,CLASS D AMP,CSP30	U6400	CRITICAL	
353S01871	1	IC,TAS5770L,C0,CLASS D AMP,CSP30	U6450	CRITICAL	

LEFT BULK CAPACITANCE





MODE PIN	I2C ADDR	CHANNEL
GND	0x31	L TW
470 to GND	0x32	L WF
470 to IOVDD	0x33	R TW
2k2 to GND	0x34	R WF
2k2 to IOVDD	0x35	
10k to GND	0x36	
10k to IOVDD	0x37	
47k to IOVDD	0x38	

BOM_COST_GROUP=AUDIO

PAGE TITLE
Audio Left Amplifiers

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 64 OF 150
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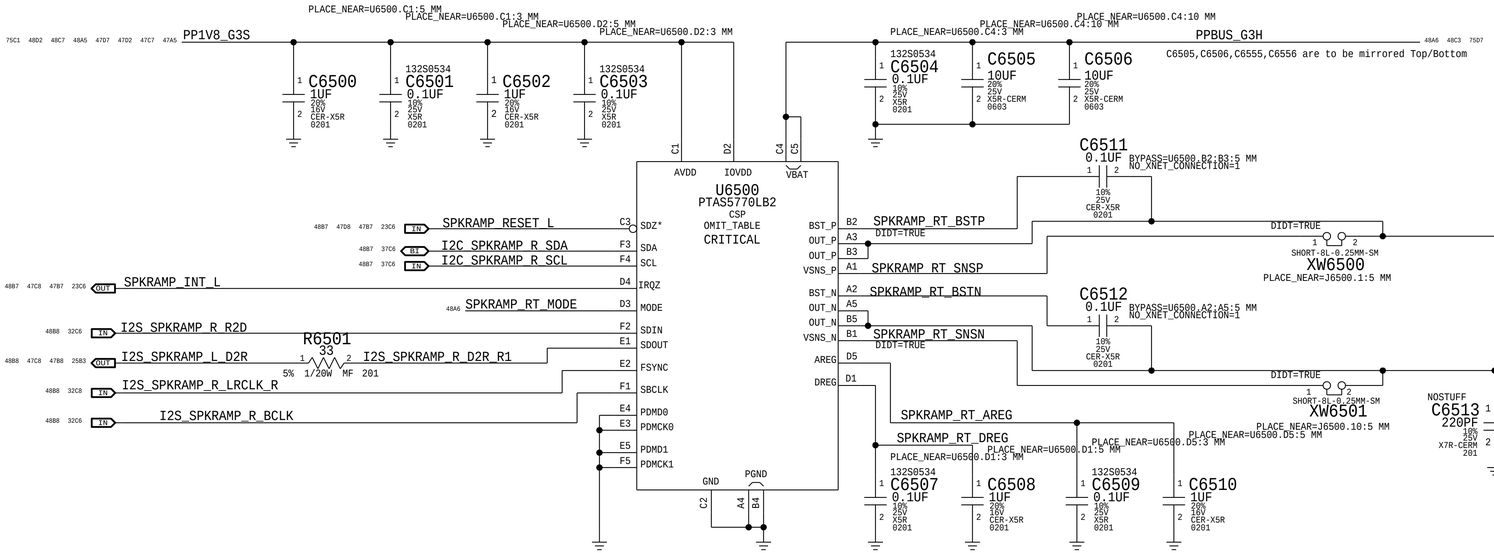
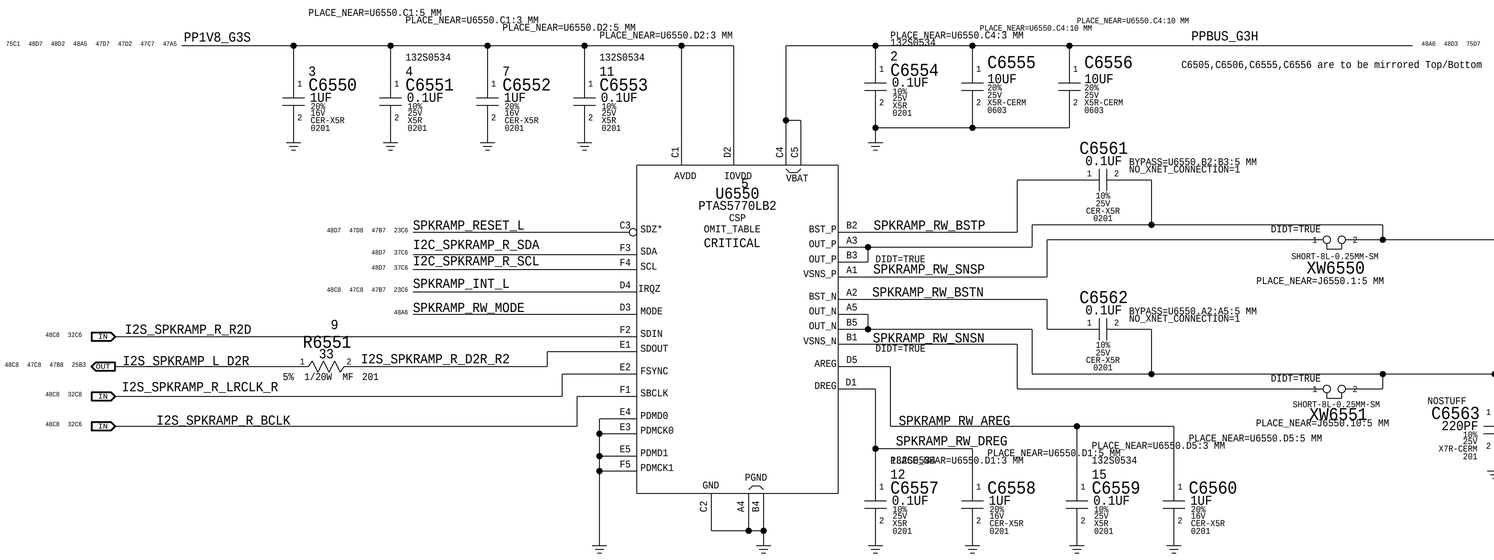
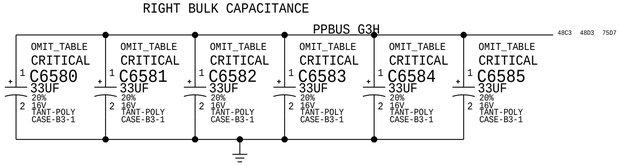
2X MONO SPEAKER RIGHT AMPLIFIERS

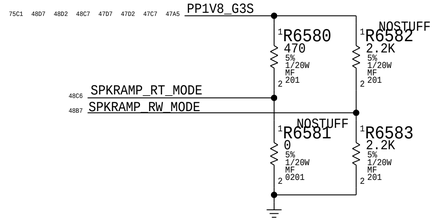
APN: 353S01252
GAIN: 0DBFS = xxVRMS



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
353S01871	1	IC,TAS5770L,CD,CLASS D AMP,CSP30	U6500	CRITICAL	
353S01871	1	IC,TAS5770L,CD,CLASS D AMP,CSP30	U6550	CRITICAL	







MODE PIN	I2C ADDR	CHANNEL
GND	0x31	L TW
470 to GND	0x32	L WF
470 to IOVDD	0x33	R TW
2k2 to GND	0x34	R WF
2k2 to IOVDD	0x35	
10k to GND	0x36	
10k to IOVDD	0x37	
47k to IOVDD	0x38	

BOM_COST_GROUP=AUDIO

PAGE TITLE: Audio Right Amplifiers

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
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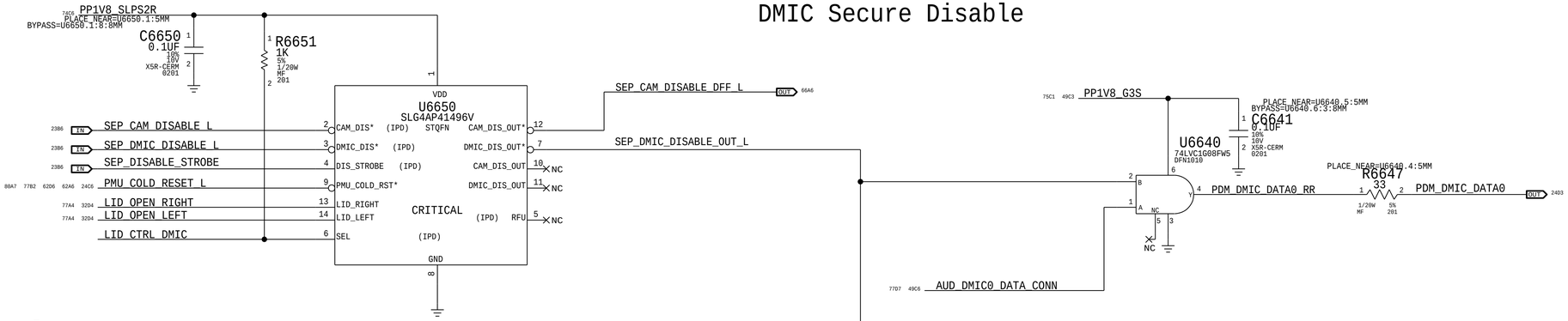
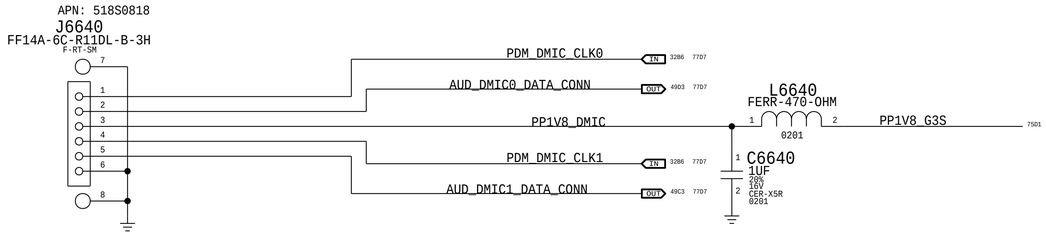
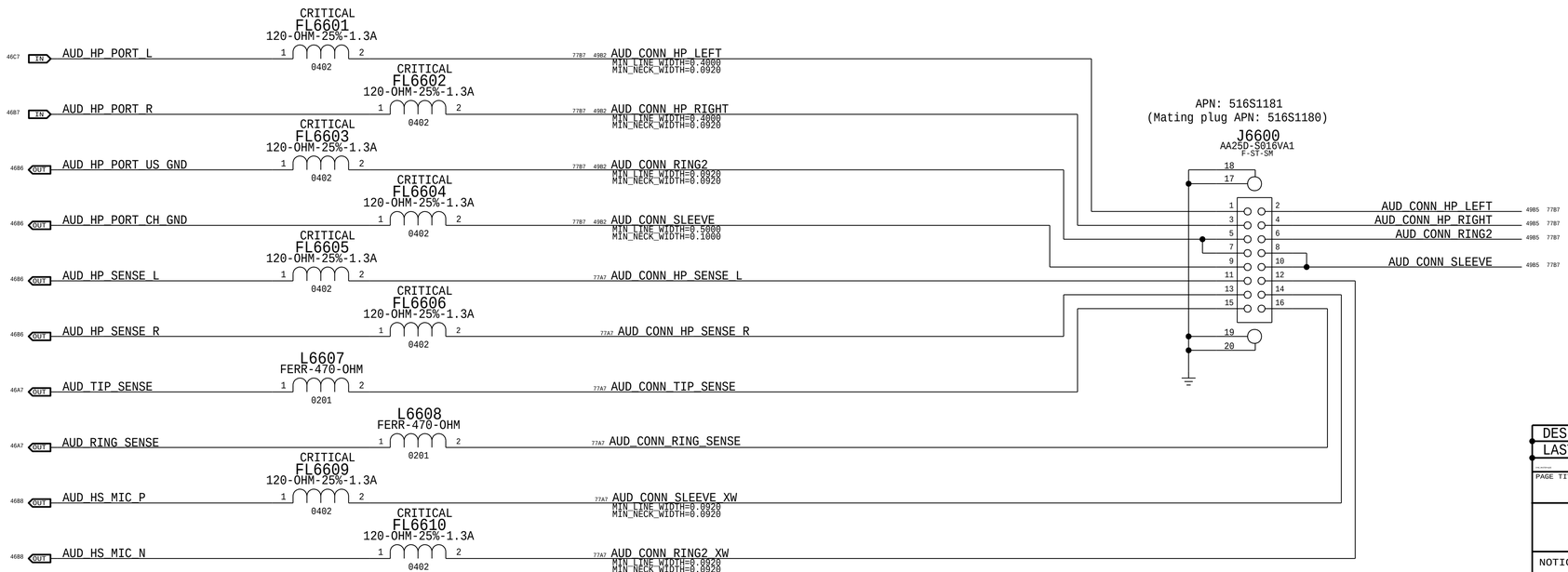
DMIC Secure Disable



Digital Mic Flex Connector



Audio Jack Flex Connector



BOM_COST_GROUP=AUDIO

DESIGN: X502/DEV_MLB_U
LAST CHANGE: Wed Feb 18 17:12:24 2015

PAGE TITLE
Audio Flex Connectors

Apple Inc.

DRAWING NUMBER 051-05198
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3.3V RSLOC ISOLATION KEYS/ASIC RESET

PP3V3_G3H_RTC
PLACE_NEAR=U6703.10:5MM
PLACE_NEAR=U6703.10:2MM
C6750 1.0UF 20% 10V X5R-CERM 0201-1
C6751 0.1UF 10% 10V X5R-CERM 0201
PP1V8_G3S
R6750 0 5% 1/20W MF 0201
U6703 SLG4AP4815V TQFN
VDD
OUT123_EN
OE
KBD_RIGHT_SHIFT_KEY
KBD_LEFT_OPTION_KEY
KBD_CONTROL_KEY
IN_1
IN_2
IN_3
OUT_1
OUT_2
OUT_3
OUT_ALL#
KBD_RIGHT_SHIFT_L
KBD_LEFT_OPTION_L
KBD_CONTROL_L
RSLOC_RST_L
R6752 33 1% 1/20W MF 201
PMU_RSLOC_RST_L
GND
EPAD
343S00073
IN_1/IN_2/IN_3 = 100K INTERNAL PULLDOWN
OUT_1/OUT_2/OUT_3 = 12.5K INTERNAL PULL-UP

R6703 0 5% 1/20W MF 0201 1720MW MF 5%
PP3V3_G3H_RTC
PP3V3_G3H_RSLOC
MIN_NECK_WIDTH=0.1200
MIN_LINE_WIDTH=0.2000
VOLTAGE=3.3V
KBD_INT_L
I2C_KBD_SDA
I2C_KBD_SCL
DZ6710 ESD8472MUT5G X3DFN2-1
DZ6711 ESD8472MUT5G X3DFN2-1
DZ6712 ESD8472MUT5G X3DFN2-1

PP3V3_G3S_KBD
PP1V8_G3S
R6771 100K 5% 1/20W MF 201
EEPROM_WC_L
376S1128
Q6770 DMN32D2LFB4 DFN1006H4-3 SYM_VER_3
WC_L
R6770 10K 5% 1/20W MF 201
U6700 4KB-1.8V-5.5V M24C04-R MLP8
VCC
WC*
SCL
E1
E2
SDA
NC
VSS
EPAD
IOXP_I2C_SDA
IOXP_I2C_SCL
335S00254
C6770 1.0UF 20% 10V X5R-CERM 0201-1
C6771 0.1UF 10% 10V X5R-CERM 0201
PLACE_NEAR=U6700.8:5mm
PLACE_NEAR=U6700.1:5mm

MEMBRANE ZIF CONNECTOR

518S0752
FF14A-30C-R11DL-B-3H
J6700 CRITICAL 0.5T-1DR
PP1V8_G3S
KBD_ID1
NC
KBD_DRIVE_Y2
KBD_DRIVE_Y1
KBD_DRIVE_Y3
KBD_DRIVE_Y4
KBD_SENSE_X0
KBD_SENSE_X1
KBD_SENSE_X2
KBD_SENSE_X5
KBD_SENSE_X3
KBD_SENSE_X9
KBD_SENSE_X12
KBD_SENSE_X4
KBD_SENSE_X11
KBD_SENSE_X10
KBD_SENSE_X6
KBD_SENSE_X7
KBD_SENSE_X8
KBD_DRIVE_Y5
KBD_DRIVE_Y6
KBD_DRIVE_Y7
KBD_DRIVE_Y0
KBD_CAP_CATHODE
PP3V3_G3H_RSLOC
KBD_RIGHT_SHIFT_KEY
KBD_LEFT_OPTION_KEY
KBD_CONTROL_KEY

KEYBOARD INTERFACE - IO EXPANDER

PP3V3_G3S_KBD
PP1V8_G3S
R6720 10K 5% 1/20W MF 201
R6721 1K 1% 1/20W MF 201
C6720 1.0UF 20% 10V X5R-CERM 0201-1
R6722 100K 5% 1/20W MF 201
C6721 0.1UF 10% 10V X5R-CERM 0201
C6722 0.1UF 10% 10V X5R-CERM 0201
R6730 R6731 R6732 R6733 R6734 R6735 R6736 R6737 R6738 R6739 R6740 R6741 R6742 10K 5% 1/20W MF 201
U6702 PCAL6416A HWQFN
VDD/I2C-BUS
VDD/P
IOXP2_INT_L
IOXP2_ADDR
IOXP_I2C_SCL
IOXP_I2C_SDA
IOXP2_RESET_L
INT*
ADDR
SCL
SDA
RESET*
P0_0 KBD_SENSE_X0
P0_1 KBD_SENSE_X1
P0_2 KBD_SENSE_X2
P0_3 KBD_SENSE_X3
P0_4 KBD_SENSE_X4
P0_5 KBD_SENSE_X5
P0_6 KBD_SENSE_X6
P0_7 KBD_SENSE_X7
P1_0 KBD_SENSE_X8
P1_1 KBD_SENSE_X9
P1_2 KBD_SENSE_X10
P1_3 KBD_SENSE_X11
P1_4 KBD_SENSE_X12
P1_5 KBD_CONTROL_L
P1_6 KBD_LEFT_OPTION_L
P1_7 KBD_RIGHT_SHIFT_L
C6723 0.1UF 10% 10V X5R-CERM 0201
311S0665
VSS
THRM PAD
WRITE ADDRESS = 0X42
READ ADDRESS = 0X43
R6723 33 1% 1/20W MF 201
KBD_INT_L
IOXP2_INT_L

PP3V3_G3S_KBD
R6710 1.3K 1% 1/20W MF 201
R6711 1.3K 1% 1/20W MF 201
R6712 33 1% 1/20W MF 201
R6713 33 1% 1/20W MF 201
R6714 10K 5% 1/20W MF 201
R6715 100K 5% 1/20W MF 201
138S0706 C6710 1.0UF 20% 10V X5R-CERM 0201-1
132S0320 C6712 0.1UF 10% 10V X5R-CERM 0201
138S0847 C6713 0.1UF 10% 10V X5R-CERM 0201
C6714 10UF 20% 10V X5R-CERM 0402-7
PP1V8_G3S
U6701 PCAL6416A HWQFN
VDD/I2C-BUS
VDD/P
IOXP1_INT_L
I2C_KBD_SCL
I2C_KBD_SDA
IOXP_I2C_SCL
IOXP_I2C_SDA
IOXP1_RESET_L
INT*
ADDR
SCL
SDA
RESET*
P0_0 KBD_DRIVE_Y0
P0_1 KBD_DRIVE_Y1
P0_2 KBD_DRIVE_Y2
P0_3 KBD_DRIVE_Y3
P0_4 KBD_DRIVE_Y4
P0_5 KBD_DRIVE_Y5
P0_6 KBD_DRIVE_Y6
P0_7 KBD_DRIVE_Y7
P1_0 NC
P1_1 NC
P1_2 HW_ID1
P1_3 EEPROM_WC_L
P1_4 NC
P1_5 NC
P1_6 KBD_ID_DETECT1
P1_7 CAPSLOCK_LED_EN
C6711 0.1UF 10% 10V X5R-CERM 0201
VSS
THRM PAD
311S0665
WRITE ADDRESS = 0X40
READ ADDRESS = 0X41

KBD_ID PIN		CONNECTION ON MEMBRANE KBD
ANSI	FLOAT	NC
ISO	HIGH	PP1V8_G3S
JIS	GND	GND

R6717 1K 5%
R6719 1K 5%
R6718 1.00 1% MF-LF
KBD_ID_DETECT1
KBD_ID1
HW_ID1
KBD_CAPSLOCK_LED
KBD_CAP_CATHODE

PP3V3_G3S_KBD
C6705 1.0UF 20% 10V X5R-CERM 0201-1
PLACE_NEAR=U6705.3:5mm
U6705 FAN5622 SSOT23
VIN
CTRL
ISET
GND
LED1
LED2
R6761 1K 1% MF 1/20W
R6762 200K 5% 1/20W MF 201
R6760 19.1K 1% 1/20W MF 201
LED_CTRL
LED_ISET
KBD_CAPSLOCK_LED

DZ6701 PESD3V3L5UF SOT886
PLACE_NEAR=J6701.1:5MM
PP3V3_G3H_RSLOC
KBD_CONTROL_KEY
KBD_LEFT_OPTION_KEY
KBD_RIGHT_SHIFT_KEY
PLACE_NEAR=J6701.19:5MM

DZ6702 PESD3V3L5UF SOT886
PLACE_NEAR=J6701.6:5MM
KBD_CAP_CATHODE
KBD_DRIVE_Y0
KBD_DRIVE_Y6
KBD_DRIVE_Y5
KBD_DRIVE_Y7

DZ6703 PESD3V3L5UF SOT886
PLACE_NEAR=J6701.11:5MM
KBD_SENSE_X8
KBD_SENSE_X7
KBD_SENSE_X6
KBD_ID1

DZ6704 PESD3V3L5UF SOT886
KBD_SENSE_X10
KBD_SENSE_X11
KBD_SENSE_X4
KBD_SENSE_X9
KBD_SENSE_X12

DZ6706 PESD3V3L5UF SOT886
PLACE_NEAR=J6701.25:5MM
KBD_DRIVE_Y4
KBD_DRIVE_Y3
KBD_DRIVE_Y1
KBD_DRIVE_Y2

DZ6705 PESD3V3L5UF SOT886
PLACE_NEAR=J6701.20:5MM
KBD_SENSE_X3
KBD_SENSE_X5
KBD_SENSE_X2
KBD_SENSE_X0
KBD_SENSE_X1

BOM_COST_GROUP=KEYBOARD

PAGE TITLE
Keyboard & Trackpad 1
Apple Inc.
DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
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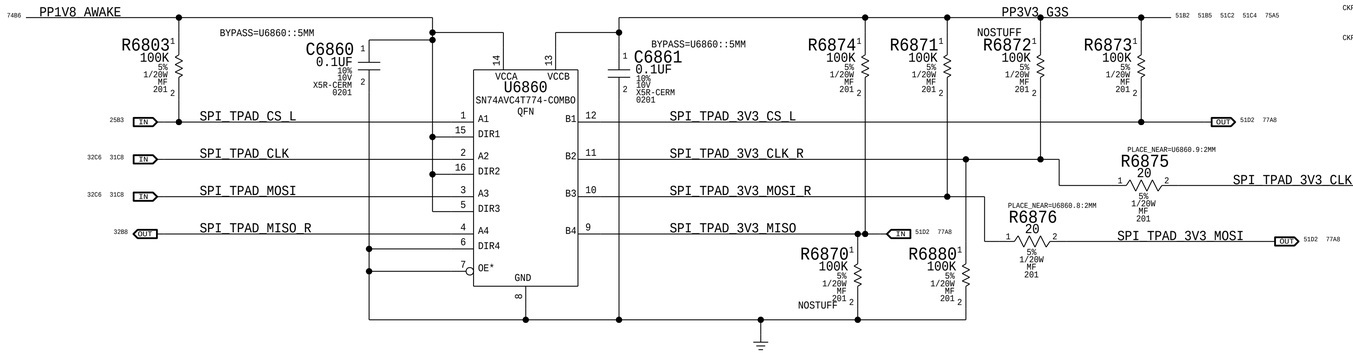
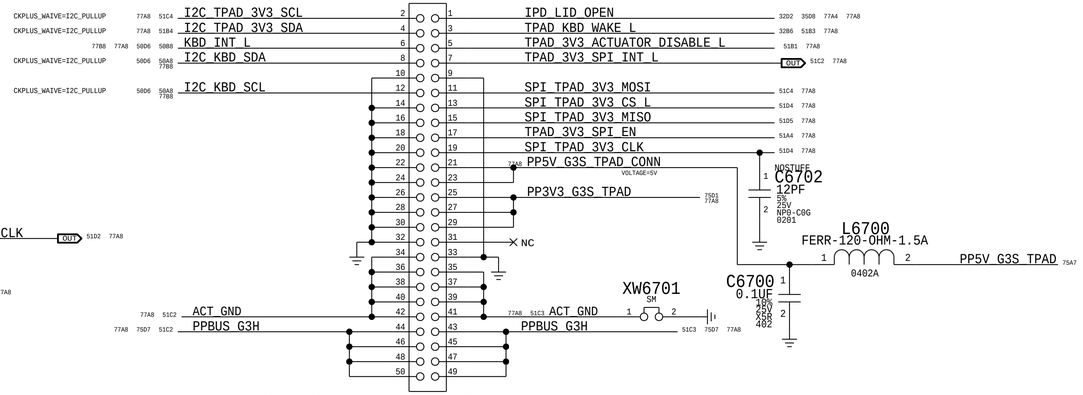
Trackpad Level Shifting

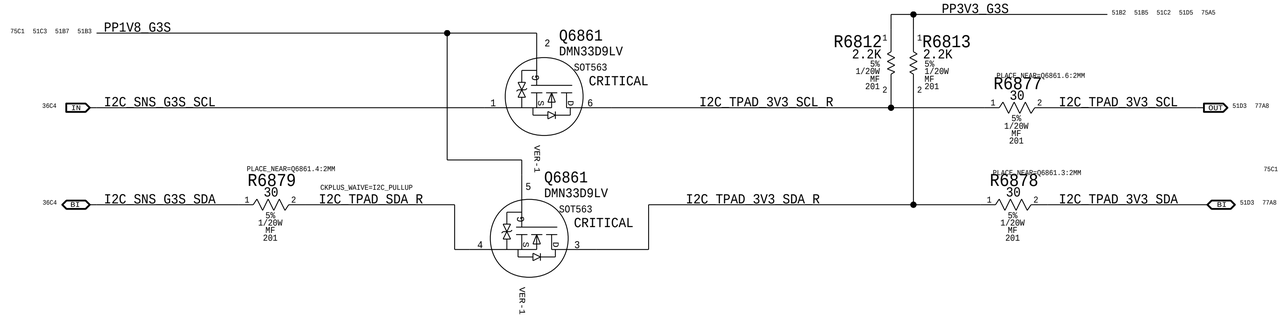


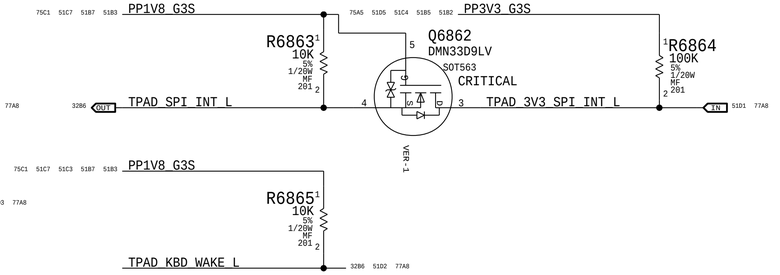
TPAD CONNECTOR

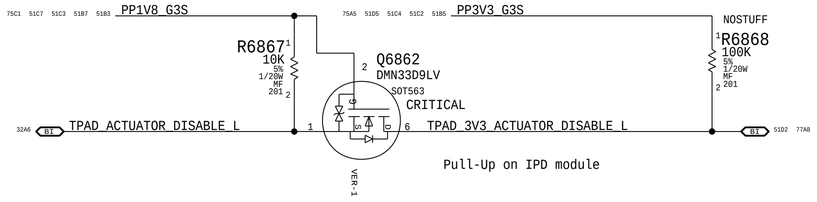
J6701
DF40C-50DS-0.4V-51
F-ST-SM



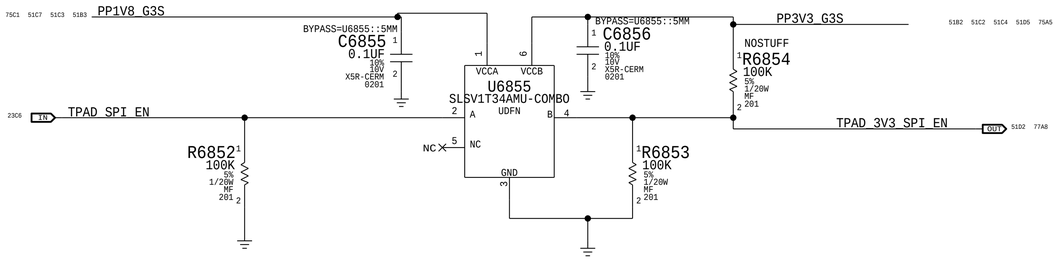
516S00187, MATE WITH 516S00188







Pull-Up on IPD module



BOM_COST_GROUP=TRACKPAD

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

PAGE TITLE: Keyboard & Trackpad 2

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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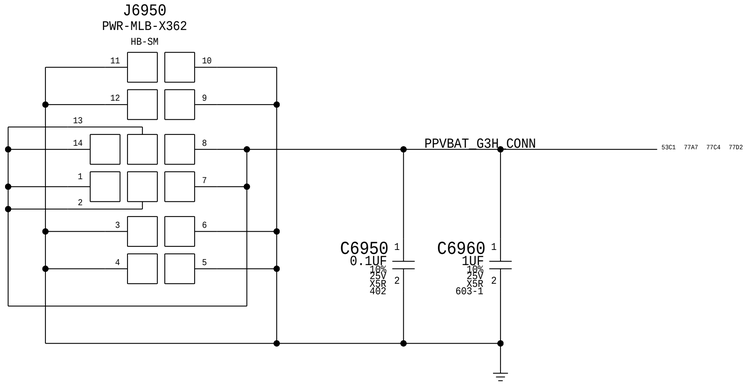
J79 Battery Hotbar Flex Pads



BMU POWER FLEX HOTBAR'd TO THE MLB:

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
632-00566	1	PCBA,FLEX,BMU PWR,X362	J6950	CRITICAL	

APN: 518S0818

J6951
FF14A-6C-R11DL-B-3H
F-RT-SM

R6951 1 4.7K 5% 1/20W MF 201
R6952 1 4.7K 5% 1/20W MF 201

PP3V3_G3H_RTC 75C4

Q6950
DMN33D9LV
SOT563
CRITICAL

PP1V8_SLPS2R 3603 74C6

I2C_PWR_SCL → IN 3601

I2C_PWR_SDA → BT 3601

VER-1

SYS_DETECT_L 77D2 77A7
SMBUS_3V3_BATT_SCL 77A7
SMBUS_3V3_BATT_SDA 77A7
TP_BMON_IOUT 76A3

SYSDET:AON
R6950 1 10K 5% 1/20W MF 201

D6950
RCLAMP3552T
SLP1006N3T
CRITICAL

SYSDET:FET
Q6955
DMN32D2LFB4
DFN1006H4-3
SYM_VER_2

PP3V3_G3H_RTC 75C4

SYSDET:FET
R6955 1 10K 5% 1/20W MF 201

SYS_DETECT 77B4

SYSDET:FET
SW6950
SOX-152HNT
SM

PLACE_SIDE=BOTTOM

Press switch to de-energize G3H rail on battery only.

SMC Reset Circuit

Right Shift & Left Option Control
followed by ON OFF button press.

PP3V3_G3H_RTC 75C4

132S0534
BYPASS=U6940::3MM
C6940 1 0.1UF 10% 25V X5R 0201

U6940
SLG4AP41183
STQFN
CRITICAL

PMU_ONOFF_L IN 81C7 81C5 62C3 62A6 33C1
PMU_RSLOC_RST_L IN 81D7 81D5 77B8 62C3 62A6 59C6

BTN1 BTN2 RESET VDD GND

CHGR_RST_IN_R

R6940 1K 5% 1/20W MF 201 → CHGR_RST_IN OUT 53A6

R6941 1K 5% 1/20W MF 201 → UPC_PMU_RESET OUT 19C3 62D6 77B2 80A7

NC NC NC NC NC NC NC NC NC NC NC NC

3.3V G3H VR

PPVIN_G3H_P3V3G3HRTC 75C6

R6900 1 0 0% 1/4W MF 0603 2

PPVIN_G3H_P3V3G3HRTC_R

CRITICAL C6900 2.2UF 20% 25V X5R-CERM 0402-1
CRITICAL C6902 2.2UF 20% 25V X5R-CERM 0402-1
OMIT_TABLE CRITICAL C6907 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE CRITICAL C6908 33UF 20% 16V TANT-POLY CASE-B3-1
CRITICAL C6905 2.2UF 20% 25V X5R-CERM 0402-1
MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1500 VOLTAGE=12
CRITICAL C6906 2.2UF 20% 25V X5R-CERM 0402-1
C6901 0.1UF 10% 25V X6S-CERM 0201
C6909 0.1UF 10% 25V X6S-CERM 0201

U6903
TPS62180
BGA
CRITICAL

VIN1 VIN1 VIN1 VIN2 VIN2 VIN2 EN SS/TR
SW1 SW1 SW1 SW2 SW2 SW2 VO PG FB
AGND PGND PGND PGND PGND PGND

R6907 2 0 5% 1/20W MF 0201 1
77B2 53B8 53A4 IN CHGR_EN_MVR → CHGR_EN_MVR_R

P3V3G3HRTC_SS

C6903 1 0.033UF 10% 50V X7R 0402 2

XW6900 SM

GND_P3V3G3HRTC_AGND
VOLTAGE=0V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000

PP3V3_G3H_RTC_REG_R 52B3

R6908 100K 5% 1/20W MF 201

CRITICAL L6900 1UH-20%-4.8A-0.032OHM 1210
CRITICAL L6901 1UH-20%-4.8A-0.032OHM 1210

P3V3G3HRTC_PHASE1 DIDT=TRUE
P3V3G3HRTC_PHASE2 DIDT=TRUE
P3V3G3HRTC_PGOOD
P3V3G3HRTC_FB

R6912 1 10 5% 1/20W MF 201 2

P3V3G3HRTC_FB_R

R6913 1 0 5% 1/20W MF 0201 2
<Ra>

C6910 1 220PF 10% 16V CER-X7R 0201
P3V3G3HRTC_RA_R

R6910 1 365K 0.1% 1/20W TF 0201 2
<Rb>

R6911 1 113K 0.1% 1/20W MF 0201 2

For tuning

Vout = 3.384V
6A Max Output
f = 1.25 MHZ

PP3V3_G3H_RTC_REG_R 52B4

CRITICAL C6912 150UF 20% 6.3V TANT CASE-B-SM

Vout = 0.8 * (1 + <Ra>/<Rb>) = 3.384V

MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.2000 VOLTAGE=3.3

CRITICAL C6914 10UF 20% 10V X5R-CERM 0402-1
CRITICAL C6915 10UF 20% 10V X5R-CERM 0402-1
CRITICAL C6916 150UF 20% 6.3V TANT CASE-B-SM
CRITICAL C6917 150UF 20% 6.3V TANT CASE-B-SM
CRITICAL C6918 10UF 20% 10V X5R-CERM 0402-1
CRITICAL C6919 10UF 20% 10V X5R-CERM 0402-1

DESENSE C6920 12PF 5% 25V NP0-C0G 0201
DESENSE C6921 3.0PF +/-0.1PF 25V NP0-C0G 0201

R6934 1 0 0% 1/4W MF 0603 2
R6935 1 0 0% 1/4W MF 0603

PP3V3_G3H_RTC 75D6 77B2

BOM_COST_GROUP=PLATFORM POWER

PAGE TITLE
DC-In & Battery Connectors

Apple Inc.

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REVISION 6.0.0
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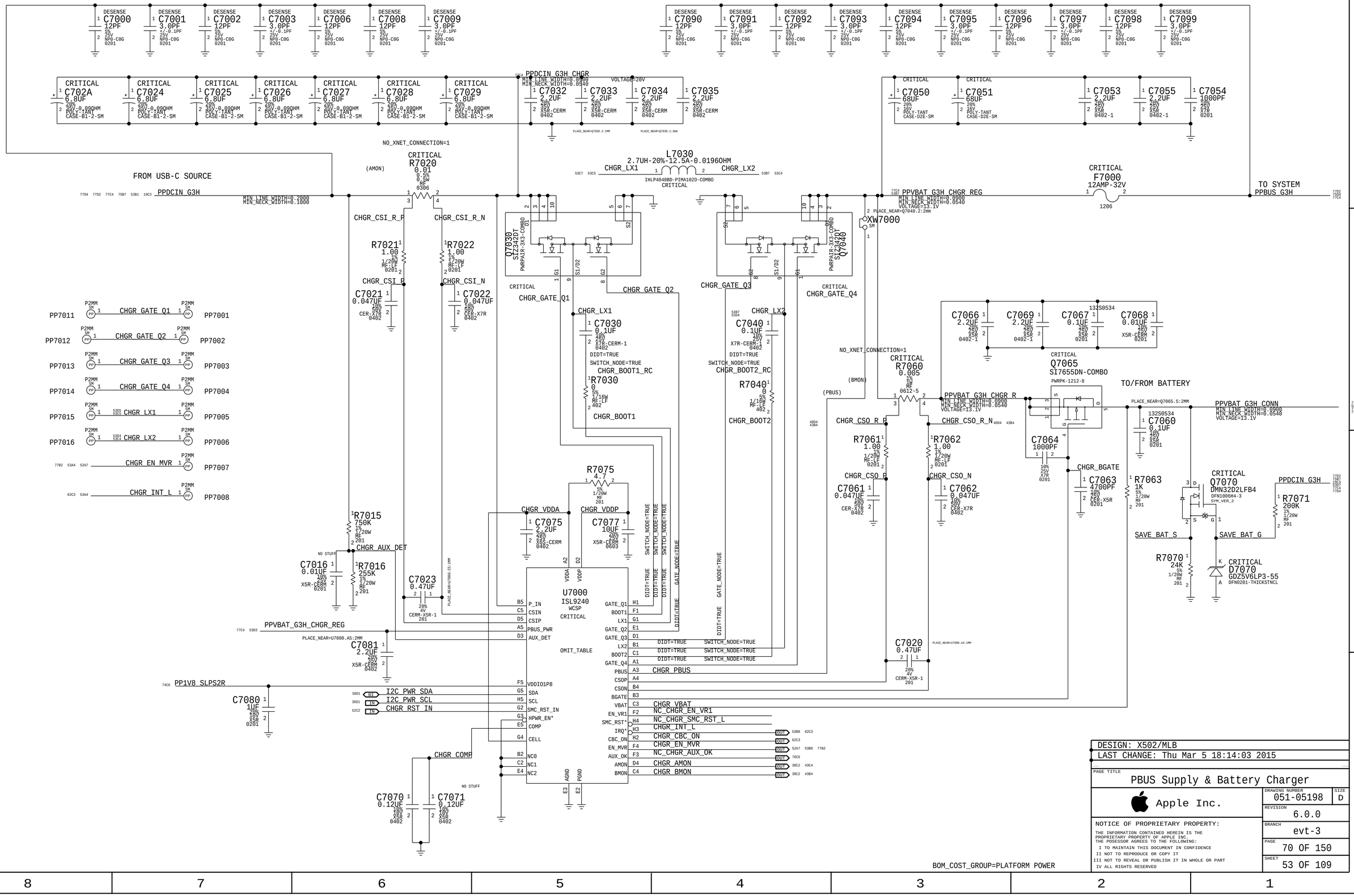
C7000 12PF
C7001 3.0PF
C7002 12PF
C7003 3.0PF
C7006 12PF
C7008 12PF
C7009 3.0PF
C7090 12PF
C7091 3.0PF
C7092 12PF
C7093 3.0PF
C7094 12PF
C7095 3.0PF
C7096 12PF
C7097 3.0PF
C7098 12PF
C7099 3.0PF
C702A 6.8UF
C7024 6.8UF
C7025 6.8UF
C7026 6.8UF
C7027 6.8UF
C7028 6.8UF
C7029 6.8UF
C7032 2.2UF
C7033 2.2UF
C7034 2.2UF
C7035 2.2UF
C7050 68UF
C7051 68UF
C7053 2.2UF
C7055 2.2UF
C7054 1000PF
PPDCIN G3H CHGR
VOLTAGE=20V
FROM USB-C SOURCE
PPDCIN G3H
NO_XNET_CONNECTION=1
R7020 0.01
L7030 2.7UH-20%-12.5A-0.01960HM
IHLP4040BD-PIMA102D-COMBO
CHGR_LX1
CHGR_LX2
PPVBAT G3H CHGR REG
F7000 12AMP-32V
TO SYSTEM
PPBUS G3H
XW7000
R7021 1.00
R7022 1.00
CHGR_CSI_R_P
CHGR_CSI_R_N
CHGR_CSI_P
CHGR_CSI_N
C7021 0.047UF
C7022 0.047UF
Q7030 SI7234DP
PWRPAIR-3X3-COMBO
Q7040 SI7234DP
CHGR_GATE_Q1
CHGR_GATE_Q2
CHGR_GATE_Q3
CHGR_GATE_Q4
C7030 0.1UF
C7040 0.1UF
R7030 0
R7040 0
CHGR_BOOT1
CHGR_BOOT2
CHGR_BOOT1_RC
CHGR_BOOT2_RC
C7066 2.2UF
C7069 2.2UF
C7067 0.1UF
C7068 0.01UF
132S0534
Q7065 SI7655DN-COMBO
PWRPK-1212-8
TO/FROM BATTERY
PPVBAT G3H CHGR R
PPVBAT G3H CONN
C7060 0.1UF
R7060 0.005
CHGR_CSO_R_P
CHGR_CSO_R_N
CHGR_CSO_P
CHGR_CSO_N
R7061 1.00
R7062 1.00
C7061 0.047UF
C7062 0.047UF
C7064 1000PF
C7063 4700PF
CHGR_BGATE
R7063 1K
Q7070 DMN32D2LFB4
DFN1006H4-3
SYM_VER_2
SAVE_BAT_S
SAVE_BAT_G
PPDCIN_G3H
R7071 200K
R7070 24K
D7070 GDZ5V6LP3-55
DFN0201-THICKSTNCL
R7075 4.7
C7075 2.2UF
C7077 10UF
CHGR_VDDA
CHGR_VDDP
R7015 750K
R7016 255K
CHGR_AUX_DET
C7016 0.01UF
C7023 0.47UF
PPVBAT_G3H_CHGR_REG
C7081 2.2UF
C7020 0.47UF
C7080 1UF
PP1V8_SLPS2R
U7000 ISL9240 WCSP CRITICAL
OMIT_TABLE
P_IN
CSIN
CSIP
PBUS_PWR
AUX_DET
VDDIO1P8
SDA
SCL
SMC_RST_IN
HPWR_EN*
COMP
CELL
NC0
NC1
NC2
AGND
PGND
VDDA
VDDP
GATE_Q1
BOOT1
LX1
GATE_Q2
GATE_Q3
LX2
BOOT2
GATE_Q4
PBUS
CSOP
CSON
BGATE
VBAT
EN_VR1
SMC_RST*
IRQ*
CBC_ON
EN_MVR
AUX_OK
AMON
BMON
I2C_PWR_SDA
I2C_PWR_SCL
CHGR_RST_IN
CHGR_COMP
C7070 0.12UF
C7071 0.12UF
NO STUFF
PP7011 CHGR_GATE_Q1 PP7001
PP7012 CHGR_GATE_Q2 PP7002
PP7013 CHGR_GATE_Q3 PP7003
PP7014 CHGR_GATE_Q4 PP7004
PP7015 CHGR_LX1 PP7005
PP7016 CHGR_LX2 PP7006
CHGR_EN_MVR PP7007
CHGR_INT_L PP7008
CHGR_PBUS
CHGR_VBAT
NC_CHGR_EN_VR1
NC_CHGR_SMC_RST_L
CHGR_INT_L
CHGR_CBC_ON
CHGR_EN_MVR
NC_CHGR_AUX_OK
CHGR_AMON
CHGR_BMON
BOM_COST_GROUP=PLATFORM POWER
DESIGN: X502/MLB
LAST CHANGE: Thu Mar 5 18:14:03 2015
PAGE TITLE
PBUS Supply & Battery Charger
Apple Inc.
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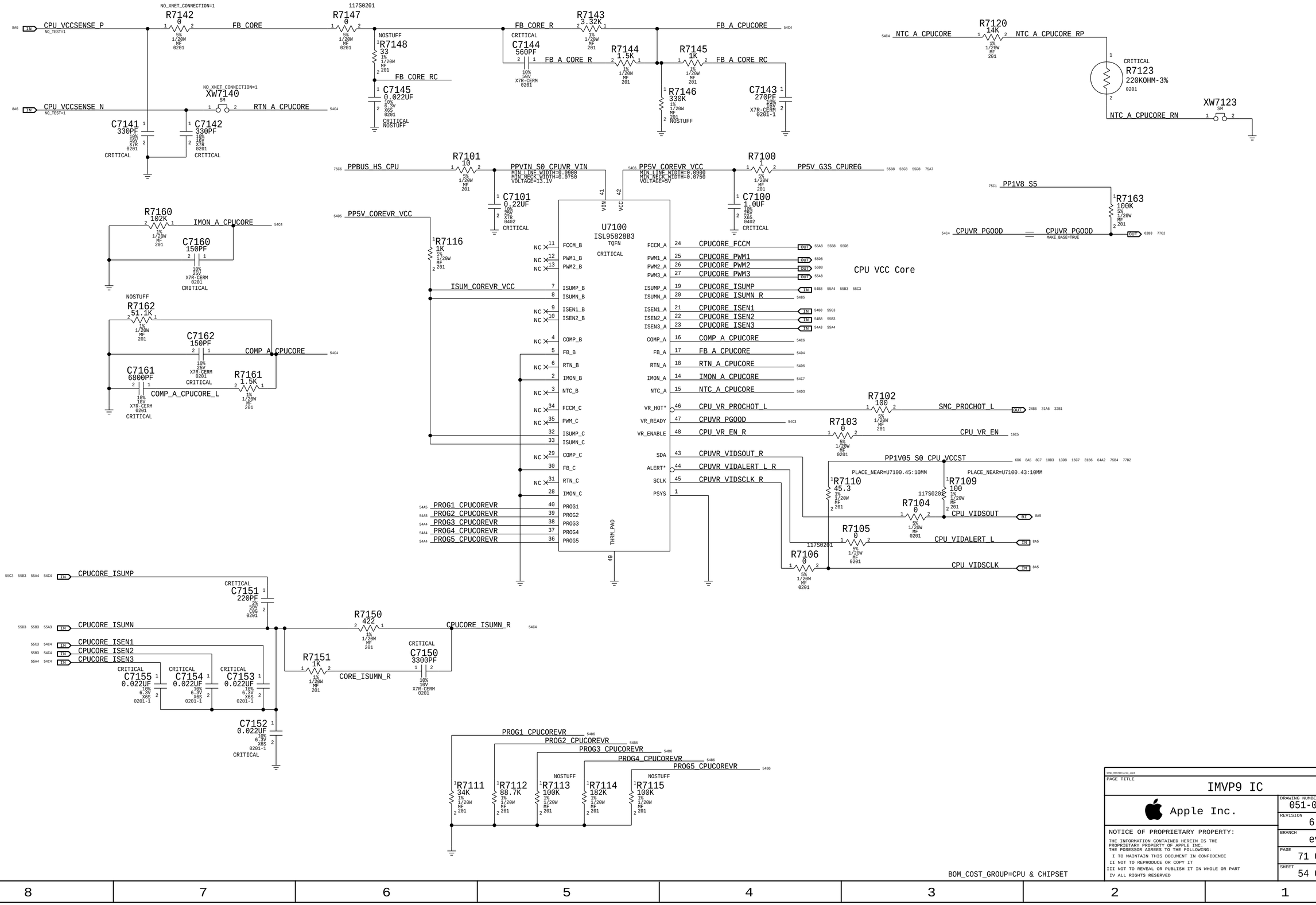

PAGE TITLE	IMVP9 IC
Apple Inc.	DRAWING NUMBER 051-05198 · SIZE D
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Vout = 0 - 1.8V
IccMax = 80A
F = 750kHz

CPU VCC Phase 1

PPBUS_HS_CPU
PP5V_G3S_CPUREG
R7215 1 5% 1/10W MF-LF 402
C7217 2.2UF 20% 25V X6S-CERM 0402
VOLTAGE=5V
PP5V_MAIN_VCORE1
C7216 2.2UF 20% 25V X6S-CERM 0402
PVCCCORE_PH1_AGND
U7210 FDMF5808A PQFN-COMBO-THICKSTNCL OMIT_TABLE 353S00519 353S00831
VIN VCC PVCC BOOT PHASE SW FCCM PWM GL0 GL1 GH AGND PGND NC
PP7213 P2MM SM
CPUCORE_FCCM
CPUCORE_PWM1
XW7210 SM
PVCCCORE_PH1_AGND
PLACE_NEAR=U7210.32:2MM
CPUCORE_SW1 MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 DIDT=TRUE SWITCH_NODE=TRUE
CRITICAL L7210 0.22UH-20%-44A-0.0019OHM PILA082D-SM
PPVCC_CPU_PH1 MIN_LINE_WIDTH=0.8000 MIN_NECK_WIDTH=0.0900 VOLTAGE=1.5V
R7218 2.2 5% 1/10W MF-LF 603 NOSTUFF
CPUCORE_SW1_SNUB DIDT=TRUE SWITCH_NODE=TRUE
C7218 0.001UF 10% 50V X7R-CERM 0402 NOSTUFF
CPUCORE_BOOT1 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
R7219 0 5% 1/16W MF-LF 402
PP7211 P2MM SM
CPUCORE1_GL0 DIDT=TRUE GATE_NODE=TRUE
PP7212 P2MM SM
CPUCORE1_GH DIDT=TRUE SWITCH_NODE=TRUE
CPUCORE_BP1 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
C7219 0.22UF 10% 25V X7R 0402
CPUCORE_PHASE1
CRITICAL R7210 0.00075 1% 1W MF 0612-1
NO_XNET_CONNECTION=1
PPVCCIN_S0_CPU
OMIT_TABLE C7210 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7211 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7212 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7213 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7240 33UF 20% 16V TANT-POLY CASE-B3-1
C7214 2.2UF 20% 25V X6S-CERM 0402
C7215 2.2UF 20% 25V X6S-CERM 0402
CPUCORE_ISNS1_P
CPUCORE_ISNS1_N
R7211 2.2 1% 1/20W MF 201
CPUCORE_ISUMN
R7212 1K 1% 1/20W MF 201
R7213 100K 1% 1/20W MF 201
R7214 100K 1% 1/20W MF 201
CPUCORE_ISNS2_N
CPUCORE_ISEN1
R7216 100K 1% 1/20W MF 201
CPUCORE_ISNS3_N
CPUCORE_ISUMP

CPU VCC Phase 2

PPBUS_HS_CPU
PP5V_G3S_CPUREG
R7225 1 5% 1/10W MF-LF 402
C7227 2.2UF 20% 25V X6S-CERM 0402
VOLTAGE=5V
PP5V_MAIN_VCORE2
C7226 2.2UF 20% 25V X6S-CERM 0402
PVCCCORE_PH2_AGND
U7220 FDMF5808A PQFN-COMBO-THICKSTNCL OMIT_TABLE 353S00519 353S00831
VIN VCC PVCC BOOT PHASE SW FCCM PWM GL0 GL1 GH AGND PGND NC
CPUCORE_FCCM
CPUCORE_PWM2
XW7220 SM
PVCCCORE_PH2_AGND
PLACE_NEAR=U7220.32:2MM
CPUCORE_SW2 MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 DIDT=TRUE SWITCH_NODE=TRUE
CRITICAL L7220 0.22UH-20%-44A-0.0019OHM PILA082D-SM
PPVCC_CPU_PH2 MIN_LINE_WIDTH=0.8000 MIN_NECK_WIDTH=0.0900 VOLTAGE=1.5V
R7228 2.2 5% 1/10W MF-LF 603 NOSTUFF
CPUCORE_SW2_SNUB DIDT=TRUE SWITCH_NODE=TRUE
C7228 0.001UF 10% 50V X7R-CERM 0402 NOSTUFF
CPUCORE_BOOT2 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
R7229 0 5% 1/10W MF-LF 402
PP7221 P2MM SM
CPUCORE2_GL0 DIDT=TRUE GATE_NODE=TRUE
PP7222 P2MM SM
CPUCORE2_GH DIDT=TRUE SWITCH_NODE=TRUE
CPUCORE_BP2 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
C7229 0.22UF 10% 25V X7R 0402
CPUCORE_PHASE2
CRITICAL R7220 0.00075 1% 1W MF 0612-1
NO_XNET_CONNECTION=1
OMIT_TABLE C7220 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7221 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7222 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7223 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7241 33UF 20% 16V TANT-POLY CASE-B3-1
C7224 2.2UF 20% 25V X6S-CERM 0402
C7225 2.2UF 20% 25V X6S-CERM 0402
CPUCORE_ISNS2_P
CPUCORE_ISNS2_N
R7221 2.2 1% 1/20W MF 201
CPUCORE_ISUMN
R7222 1K 1% 1/20W MF 201
R7223 100K 1% 1/20W MF 201
R7224 100K 1% 1/20W MF 201
CPUCORE_ISNS1_N
CPUCORE_ISEN2
R7226 100K 1% 1/20W MF 201
CPUCORE_ISNS3_N
CPUCORE_ISUMP

CPU VCC Phase 3

PPBUS_HS_CPU
PP5V_G3S_CPUREG
R7235 1 5% 1/10W MF-LF 402
C7237 2.2UF 20% 25V X6S-CERM 0402
VOLTAGE=5V
PP5V_MAIN_VCORE3
C7236 2.2UF 20% 25V X6S-CERM 0402
PVCCCORE_PH3_AGND
U7230 FDMF5808A PQFN-COMBO-THICKSTNCL OMIT_TABLE 353S00519 353S00831
VIN VCC PVCC BOOT PHASE SW FCCM PWM GL0 GL1 GH AGND PGND NC
CPUCORE_FCCM
CPUCORE_PWM3
XW7230 SM
PVCCCORE_PH3_AGND
PLACE_NEAR=U7230.32:2MM
CPUCORE_SW3 MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0540 DIDT=TRUE SWITCH_NODE=TRUE
CRITICAL L7230 0.22UH-20%-44A-0.0019OHM PILA082D-SM
PPVCC_CPU_PH3 MIN_LINE_WIDTH=0.8000 MIN_NECK_WIDTH=0.0750 VOLTAGE=1.5V
R7238 2.2 5% 1/10W MF-LF 603 NOSTUFF
CPUCORE_SW3_SNUB DIDT=TRUE SWITCH_NODE=TRUE
C7238 0.001UF 10% 50V X7R-CERM 0402 NOSTUFF
CPUCORE_BOOT3 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
R7239 0 5% 1/10W MF-LF 402
PP7231 P2MM SM
CPUCORE3_GL0 DIDT=TRUE GATE_NODE=TRUE
PP7232 P2MM SM
CPUCORE3_GH DIDT=TRUE SWITCH_NODE=TRUE
CPUCORE_BP3 MIN_LINE_WIDTH=0.2500 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
C7239 0.22UF 10% 25V X7R 0402
CPUCORE_PHASE3
CRITICAL R7230 0.00075 1% 1W MF 0612-1
NO_XNET_CONNECTION=1
OMIT_TABLE C7230 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7231 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7232 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7233 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE C7242 33UF 20% 16V TANT-POLY CASE-B3-1
C7234 2.2UF 20% 25V X6S-CERM 0402
C7235 2.2UF 20% 25V X6S-CERM 0402
CPUCORE_ISNS3_P
CPUCORE_ISNS3_N
R7231 2.2 1% 1/20W MF 201
CPUCORE_ISUMN
R7232 1K 1% 1/20W MF 201
R7233 100K 1% 1/20W MF 201
R7234 100K 1% 1/20W MF 201
CPUCORE_ISNS1_N
CPUCORE_ISEN3
R7236 100K 1% 1/20W MF 201
CPUCORE_ISNS2_N
CPUCORE_ISUMP

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
353S00519	3	IC,SIC621,DRMOS,IMVP-8,60A,PQFN31,5X5	U7210, U7220, U7230	CRITICAL	

BOM_COST_GROUP=CPU & CHIPSET

SYNC_MASTER=myEE
SYNC_DATE=03/01/2019
PAGE TITLE
IMVP9 POWER BLOCK
Apple Inc.
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REVISION 6.0.0
BRANCH evt-3
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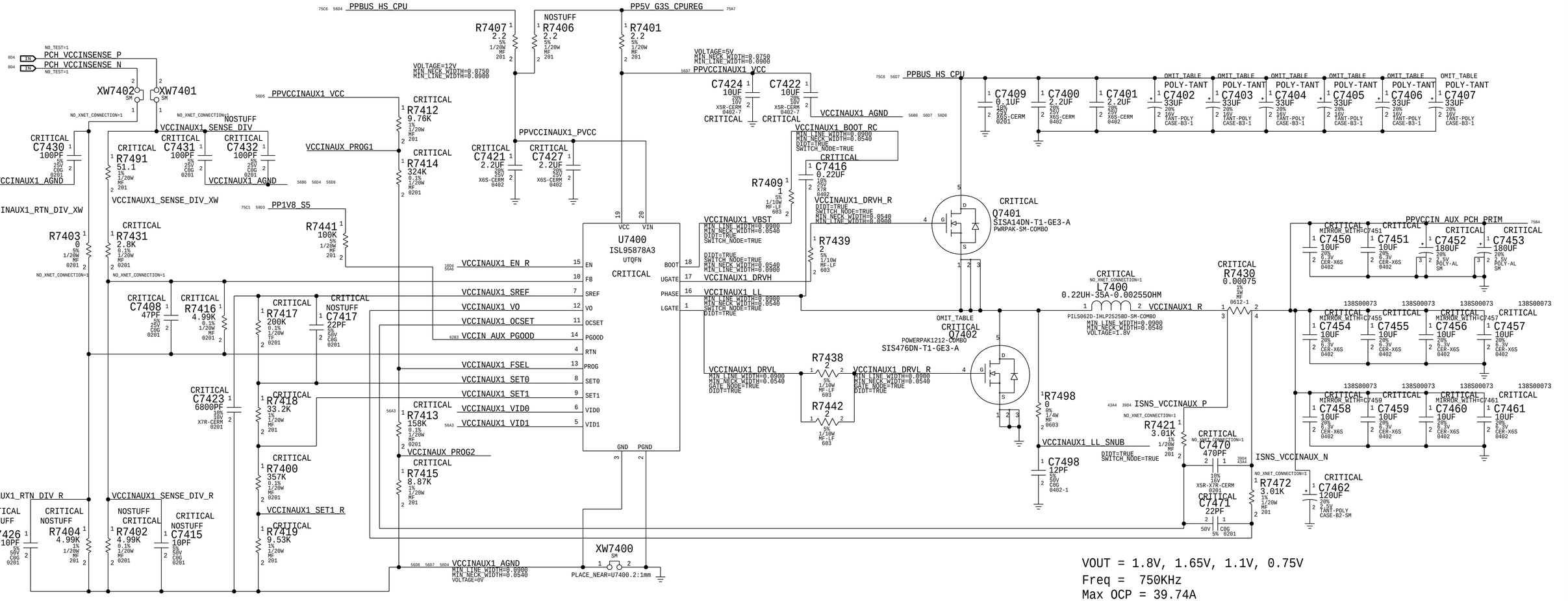
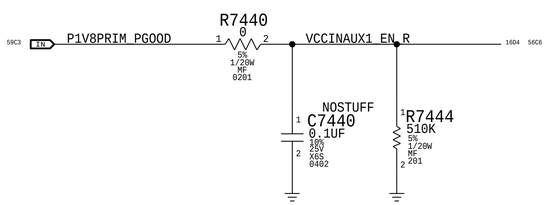
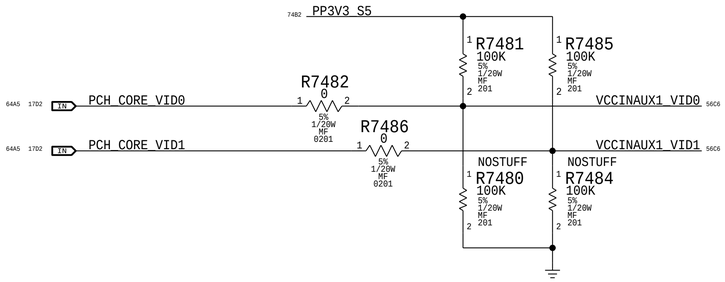


VOUT = 1.8V, 1.65V, 1.1V, 0.75V
Freq = 750KHz
Max OCP = 39.74A
Nom OCP = 32.89A
Min OCP = 26.51A
IccMax = 22A

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
376S00397	1	NFET,30V,39.3A,2.19MOHM,3.3X3.3 DFN8	Q7402	CRITICAL	





PCH VID1	PCH VID0	VOUT
1	1	1.8
1	0	1.65
0	1	1.1
0	0	0.0

BOM_COST_GROUP=PLATFORM POWER

PAGE TITLE: VR: VCCIN_AUX ISL

Apple Inc.

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PAGE TITLE

EMPTY

Apple Inc.

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5V G3S
5.14V Norm

PPVIN_G3H_P5VG3S

C7600 33UF 20% 16V TANT-POLY CASE-B3-1 (OMIT TABLE CRITICAL)
C7601 2.2UF 20% 25V X6S-CERM 0402
C7602 2.2UF 20% 25V X6S-CERM 0402
C7603 12PF 5% 25V NP0-C0G 0201

PPVIN_G3H_P3V3G3H

C7650 1.0UF 10% 25V X5R 0402

PP5V_G3S

PP5V_S5_LDO
VOUT = 5V
2.0A MAX OUTPUT
C7651 10UF 20% 10V X5S-CERM 0402-7 CRITICAL

PP5V_G3S
VOUT = 5.14V
2.4A MAX OUTPUT
F = 500 KHZ

L7600 2.2UH-20%-4.5A-0.043OHM IHLP1616BZ-PIMA042T-COMBO (OMIT TABLE)

U7600 DMN3013LDG POWERDI3333
D1, G1, S1/D2, G2, S2

C7606 2.2UF 20% 25V X6S-CERM 0402
C7607 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7608 2.2UF 20% 25V X6S-CERM 0402
C7605 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL

P5VG3S_TG
MIN_LINE_WIDTH=0.6000
MIN_NECK_WIDTH=0.2000
SWITCH_NODE=TRUE
DIDT=TRUE

P5VG3S_VBST_R
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
DIDT=TRUE
SWITCH_NODE=TRUE

R7651 0 5% 1/20W MF 0201 (SKIP_5V3V3:AUDIBLE)
R7650 0 5% 1/20W MF 0201 (SKIP_5V3V3:INAUDIBLE)
R7665 1 5% 1/20W MF 201
R7609 0 5% 1/20W MF 0201
C7609 0.1UF 10% 25V X6S-CERM 0201

P5VP3V3_VREG3
P5VP3V3_VREF2
P5VP3V3_SKIPSEL

U7650 TPS51980B QFN
CRITICAL
VSW 2, VIN 23, VREG5 29, VREG3 22, VREF2 13
SKIPSEL1 6, SKIPSEL2 19, OCSEL 14
VBST1 31, DRVH1 1, SW1 32, DRVL1 30, CSP1 7, CSN1 8
MODE 11, VFB1 9, COMP1 10, EN1 4, PGOOD1 5
EN 12, VBST2 26, DRVH2 24, SW2 25, DRVL2 27, CSP2 18, CSN2 17
RF 3, VFB2 16, COMP2 15, EN2 21, PGOOD2 20
GND, THRM_PAD 28, 33

C7652 0.22UF 10% 16V CERM 402
C7653 2.2UF 20% 6.3V X5R-CERM 402

P5V_P3V3G3H_LDO_EN
P3V3G3H_VBST
P3V3G3H_DRVH
P3V3G3H_SW
P3V3G3H_DRVL
P3V3G3H_CSP2
P3V3G3H_CSN2
P3V3G3H_RF
P3V3G3H_VFB2
P3V3G3H_COMP2
P3V3G3H_EN_R
P3V3MAIN_PGOOD

P5VG3S_VSW
P5VG3S_VBST
P5VG3S_DRVH
P5VG3S_SW
P5VG3S_DRVL
P5VG3S_CSP1
P5VG3S_CSN1
P5VG3S_VFB1
P5VG3S_COMP1
P5VG3S_EN_R
P5VG3S_PGOOD

R7674 1 5% 1/10W MF-LF 603 (NO STUFF)
P5VG3S_SNUBR
C7673 0.1UF 10% 6.3V X6S 0201
R7673 698 1% 1/20W MF 201
C7674 0.0033UF 10% 16V X7R-CERM 0402 (NO STUFF)
R7672 4.87K 1% 1/20W MF 201
R7675 3.92K 1% 1/20W MF 201
R7676 10K 1% 1/20W MF 201 (NO STUFF)
C7678 270PF 10% 16V X7R-CERM 0201-1
C7679 4700PF 10% 16V X7R 201
XW7675 SM
XW7671 SM
XW7670 SM
XW7650 SM
PLACE_NEAR=U7650.28:1MM

P5VG3S_VFB1_R
P5VG3S_CSP1_R
P5VG3S_COMP1_R
P5VG3S_VFB1_RR
P5VG3S_CSN1_R

R7677 200 1% 1/20W MF 201
R7678 41.2K 0.1% 1/16W MF 0402
R7679 10K 0.1% 1/16W MF 0402

GND_5V3V3_AGND
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=0V

R7655 200K 1% 1/20W MF 201
R7695 3.92K 1% 1/20W MF 201 (NO STUFF)
R7696 10K 1% 1/20W MF 201
C7699 2700PF 10% 16V X7R 0201
C7698 330PF 10% 16V X7R 0201
P3V3G3H_COMP2_R

3.3V Main
3.36V Norm

C7682 12PF 5% 25V NP0-C0G 0201
C7660 33UF 20% 16V TANT-POLY CASE-B3-1 (OMIT TABLE CRITICAL)
C7661 33UF 20% 16V TANT-POLY CASE-B3-1 (OMIT TABLE CRITICAL)
C7662 33UF 20% 16V TANT-POLY CASE-B3-1 (OMIT TABLE CRITICAL)
C7675 33UF 20% 16V TANT-POLY CASE-B3-1 (OMIT TABLE CRITICAL)
C7664 2.2UF 20% 25V X6S-CERM 0402
C7663 2.2UF 20% 25V X6S-CERM 0402

P3V3G3H_TG
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
DIDT=TRUE
SWITCH_NODE=TRUE

P3V3G3H_VBST_R
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
DIDT=TRUE
SWITCH_NODE=TRUE

R7685 1 5% 1/20W MF 201
R7669 0 5% 1/20W MF 0201
C7671 0.1UF 10% 25V X6S-CERM 0201

U7660 CSD58873Q3D Q3D
VIN 1, TG 3, TGR 4, VSW 7, BG 5, PGND 9

L7660 1.0UH-20%-14A-0.0107OHM PIMB062D-SM

PP3V3_G3H
VOUT = 3.36V
11.4A MAX OUTPUT
F = 500 KHZ

C7665 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7667 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7672 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7666 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7668 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C7676 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL

P3V3G3H_VSW
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
DIDT=TRUE
SWITCH_NODE=TRUE

R7686 1 5% 1/20W MF 0201
R7694 10 5% 1/10W MF-LF 603 (NO STUFF)
C7693 0.1UF 10% 6.3V X6S 0201
R7693 1.37K 1% 1/20W MF 201
P3V3G3H_DRVL_R
P3V3G3H_SNUBR
C7694 0.001UF 10% 50V X7R-CERM 0402 (NO STUFF)
R7692 3.83K 1% 1/20W MF 201
P3V3G3H_CSP2_R

XW7695 SM
XW7691 SM
XW7690 SM
C7669 2.2UF 20% 25V X6S-CERM 0402
C7670 2.2UF 20% 25V X6S-CERM 0402
P3V3G3H_VFB2_R
P3V3G3H_VFB2_RR
R7697 931 1% 1/20W MF 201
R7698 110K 0.1% 1/16W MF 402
R7699 47K 0.1% 1/16W MF 0402

PP1V8_G3S
R7670 100K 5% 1/20W MF 201
P5VG3S_PGOOD

PP3V3_G3H
R7690 100K 5% 1/20W MF 201
P3V3MAIN_PGOOD

DESENSE C7610 12PF 5% 25V NP0-C0G 0201
DESENSE C7611 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7612 12PF 5% 25V NP0-C0G 0201
DESENSE C7613 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7614 12PF 5% 25V NP0-C0G 0201
DESENSE C7615 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7616 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7683 12PF 5% 25V NP0-C0G 0201
DESENSE C7684 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7685 12PF 5% 25V NP0-C0G 0201
DESENSE C7686 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C7687 12PF 5% 25V NP0-C0G 0201
DESENSE C7688 3.0PF +/-0.1PF 25V NP0-C0G 0201

R7652 3.3K 1% 1/20W MF 201
C7642 1000PF 10% 25V X7R 0201
P5V_P3V3G3H_LDO_EN

P5VG3S_EN
R7691 0 1/20W 5% MF 0201
P5VG3S_EN_R
C7641 2.2UF 20% 6.3V X6S 0201 (NO STUFF)
R7681 47K 5% 1/20W MF 201

PMU_PVDDMAIN_EN
R7653 47K 5% 1/20W MF 201
R7671 0 1/20W 5% MF 0201 (NO STUFF)
P3V3G3H_EN_R
C7640 2.2UF 20% 6.3V X6S 0201 (NO STUFF)

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
152S00182	1	IND,PWR,2.2UH,20%,4.5A,43MOHM,4X4MM	L7600	CRITICAL	

BOM_COST_GROUP=PLATFORM POWER

PAGE TITLE: Power - 5V 3.3V Supply

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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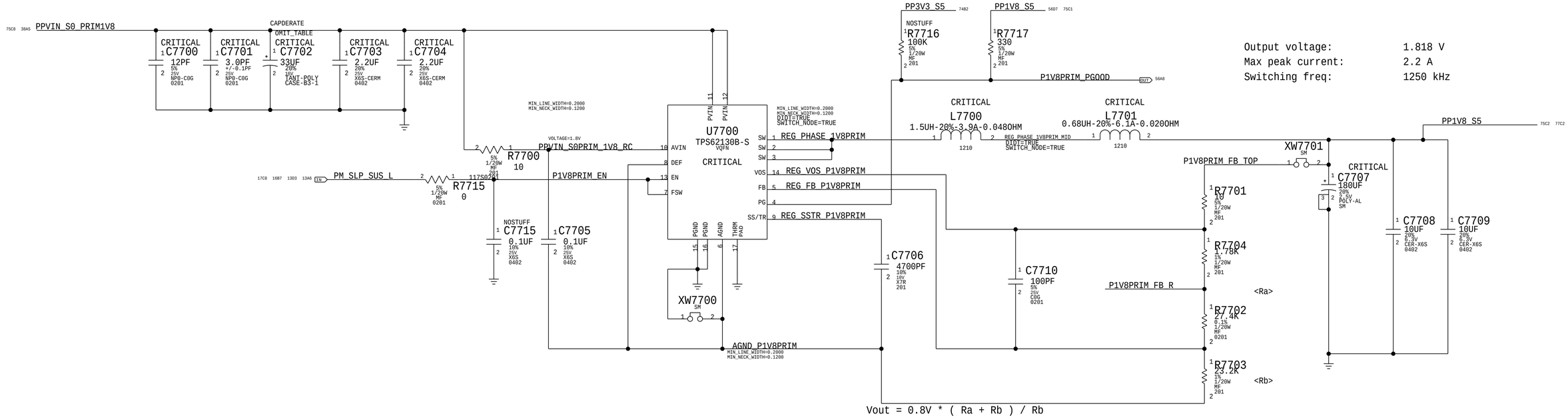
SHEET: 58 OF 109



BOM_COST_GROUP=CPU & CHIPSET

PAGE TITLE
VR: VCCPRIM_1P8

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
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Note : Design based on Calpe ERS - D2449-A0-110-00_0v3.pdf (Radar# 24696002)
System Block Diagram - T290 Power System Architecture . v9
Optimize componentS for individual projects based on EDP(A)

PP3V3_G3H_PMU_VDDMAIN

C7801 10UF 20% 6.3V CER-X6S 0402
C7802 10UF 20% 6.3V CER-X6S 0402
C7803 10UF 20% 6.3V CER-X6S 0402
C7804 10UF 20% 6.3V CER-X6S 0402
C7805 10UF 20% 6.3V CER-X6S 0402
C7895 10UF 20% 6.3V CER-X6S 0402
C7810 10UF 20% 6.3V CER-X6S 0402
C7809 10UF 20% 6.3V CER-X6S 0402
C7808 10UF 20% 6.3V CER-X6S 0402
C7807 10UF 20% 6.3V CER-X6S 0402
C7806 10UF 20% 6.3V CER-X6S 0402
C7891 1UF 20% 6.3V X6S-CERM 0201
C7892 1UF 20% 6.3V X6S-CERM 0201
C7893 1UF 20% 6.3V X6S-CERM 0201
C7894 1UF 20% 6.3V X6S-CERM 0201
C78A0 1UF 20% 6.3V X6S-CERM 0201
C78A1 1UF 20% 6.3V X6S-CERM 0201
C78A2 1UF 20% 6.3V X6S-CERM 0201
C78A3 1UF 20% 6.3V X6S-CERM 0201
C78A4 1UF 20% 6.3V X6S-CERM 0201
C78A5 1UF 20% 6.3V X6S-CERM 0201
C78A6 1UF 20% 6.3V X6S-CERM 0201
C78A7 1UF 20% 6.3V X6S-CERM 0201
C78A8 1UF 20% 6.3V X6S-CERM 0201
C78A9 1UF 20% 6.3V X6S-CERM 0201
C78B0 1UF 20% 6.3V X6S-CERM 0201
C78B1 1UF 20% 6.3V X6S-CERM 0201
DESENSE C78B2 12PF 5% 25V NP0-C0G 0201
DESENSE C78B3 12PF 5% 25V NP0-C0G 0201
DESENSE C78B4 12PF 5% 25V NP0-C0G 0201
DESENSE C78B5 12PF 5% 25V NP0-C0G 0201
DESENSE C78B6 12PF 5% 25V NP0-C0G 0201
DESENSE C78B7 12PF 5% 25V NP0-C0G 0201
DESENSE C78B8 12PF 5% 25V NP0-C0G 0201
NOSTUFF C7860 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7861 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7862 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7863 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7864 20UF 20% 2.5V X6S-CERM 0402

PPVNN_PCH_EXT
Vout = 0.7V - 1V
Iout_Max = 4A
F = 3MHz

NOSTUFF C7865 20UF 20% 2.5V X6S-CERM 0402
C7866 20UF 20% 2.5V X6S-CERM 0402
C7867 20UF 20% 2.5V X6S-CERM 0402
C7868 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7869 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC895 12PF 5% 25V NP0-C0G 0201
NOSTUFF C7889 20UF 20% 2.5V X6S-CERM 0402
C7890 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7870 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7871 20UF 20% 2.5V X6S-CERM 0402

PP1P05_PCH_EXT
Vout = 1V
Iout_Max = 6A
F = 3MHz

C7872 20UF 20% 2.5V X6S-CERM 0402
C7873 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7874 20UF 20% 2.5V X6S-CERM 0402
C7875 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7876 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7899 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7898 20UF 20% 2.5V X6S-CERM 0402
C7877 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7878 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7879 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7880 20UF 20% 2.5V X6S-CERM 0402
C7881 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7882 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7883 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7884 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7885 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7886 20UF 20% 2.5V X6S-CERM 0402
NOSTUFF C7887 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC821 12PF 5% 25V NP0-C0G 0201
DESENSE CC822 12PF 5% 25V NP0-C0G 0201

Note : All Bucks are default Local Sense

Buck 0,2,7,9 and 10 need to have option for Remote Sense for Future Use.

CRITICAL
OMIT_TABLE

U7800
CALPE-PMU
BGA
SYM 2 OF 4

Resistor Divider from PBUS
VDD_HI < 3.1V
PMU_VDD_HI
PP1V8_SLPS2R_PMUVDDGPIO
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
VOLTAGE=1.8V
C7800 0.1UF 10% 6.3V X6S 0201

P5 VDD_MAIN_E
D10 VDD_MAIN_N
P9 VDD_MAIN_S
K14 VDD_MAIN_W
K13 VDD_HI
J11 VDD_GPIO
C1 C2 C3 VDD_BUCK0_01
G1 G2 G3 VDD_BUCK0_23
R1 R2 VDD_BUCK16
L1 L2 L3 VDD_BUCK2
B16 B17 B18 VDD_BUCK3
A7 B7 VDD_BUCK4
A11 B11 VDD_BUCK5
F17 F18 VDD_BUCK7
K16 K17 K18 VDD_BUCK8
P16 P17 P18 VDD_BUCK910
T1 NC BUCK6_LX0
T2 NC
R7 BUCK6_IN
T4 NC BUCK6_FB
E17 E18 BUCK7_LX0
G17 G18 BUCK7_LX1
F15 BUCK7_RTP
G15 BUCK7_RTN
L16 L17 L18 BUCK8_LX0
J16 J17 J18 BUCK8_LX1
L14 BUCK8_FB
P12 R12 T12 U12 V12 BUCK8_IN
N16 N17 N18 BUCK9_LX0
P14 BUCK9_RTP
N14 BUCK9_RTN
R16 R17 R18 BUCK10_LX0
R14 BUCK10_FB

0.47UH-20%-4.8A-0.034OHM
L7819
CRITICAL
0806-COMBO
SWITCH_NODE=TRUE DIDT=TRUE
PVCCPCOREPRIM_SW0 MIN_LINE_WIDTH=0.1750 MIN_NECK_WIDTH=0.2000
NOSTUFF L7820 CRITICAL 0806-COMBO PVCCPCOREPRIM_SW1 MIN_LINE_WIDTH=0.1750 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
0.47UH-20%-4.8A-0.034OHM
R7819 0 PLACE_NEAR=L7819.1:5MM 0201 5% MF 1/20W
PVCCPCOREPRIM_FB_P
PVCCPCOREPRIM_FB_N
R7821 0 0201 5% MF 1/20W PLACE_NEAR=U7800.N15:5MM
CRITICAL L7821 0806-COMBO P1VPRIM_SW0 MIN_LINE_WIDTH=0.1750 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
0.47UH-20%-4.8A-0.034OHM
NOSTUFF L7822 0.47UH-20%-4.8A-0.034OHM CRITICAL 0806-COMBO P1VPRIM_SW1 MIN_LINE_WIDTH=0.1750 MIN_NECK_WIDTH=0.2000 DIDT=TRUE SWITCH_NODE=TRUE
PLACE_NEAR=L7822.1:5MM
R7820 0 0201 5% MF 1/20W
P1VPRIM_FB
PP1P05_PCH_EXT

CRITICAL L7806 1UH-20%-3.8A-0.055OHM 2016-COMBO
BUCK0_LX0 B1 B2 B3 PVDDCPUAWAKE_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7807 0.22UH-20%-6.7A-0.023OHM PINA20121T-SM
BUCK0_LX1 D1 D2 D3 PVDDCPUAWAKE_SW1 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7808 0.22UH-20%-6.7A-0.023OHM PINA20121T-SM
BUCK0_LX2 F1 F2 F3 PVDDCPUAWAKE_SW2 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7809 0.22UH-20%-6.7A-0.023OHM PINA20121T-SM
BUCK0_LX3 H1 H2 H3 PVDDCPUAWAKE_SW3 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
BUCK0_FB G5 PVDDCPUAWAKE_FB
R7806 0 0201 1/20W 5% MF PLACE_NEAR=L7806.2:5MM

PPVDDCPU_AWAKE
Vout = 0.625V - 1.06V
Iout_Max = 13.4A
F = 2MHz & 4MHz
C7821 C7822 C7823 C7824 C7825 20UF 20% 2.5V X6S-CERM 0402-1
C7812 C7811 C7826 C7827 C7828 C7813 20UF 20% 2.5V X6S-CERM 0402-1
DESENSE CC807 CC808 CC809 CC810 12PF 5% 25V NP0-C0G 0201

L7810 1.0UH-20%-2.6A-0.095OHM 0805-COMBO
BUCK1_LX0 P1 P2 PVDDCPUSRAMAWAKE_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
BUCK1_FB R4 PVDDCPUSRAMAWAKE_FB
R7811 0 5% MF 0201 1/20W PLACE_NEAR=L7810.2:5MM

PPVDDCPUSRAM_AWAKE
Vout = 0.8V - 1.06V
Iout_Max = 1A
F = 3MHz
C7829 C7830 10UF 20% 4V X6S 0402-1
DESENSE CC811 12PF 5% 25V NP0-C0G 0201

L7811 1UH-20%-4.7A-0.04OHM 2520
BUCK2_LX0 K1 K2 K3 P0V8SLPDDR_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7812 0.47UH-20%-4.8A-0.034OHM 0806-COMBO
BUCK2_LX1 M1 M2 M3 P0V8SLPDDR_SW1 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
NOSTUFF R7812 0 5% 0201 1/20W
BUCK2_FB L5 P0V8SLPDDR_FB PLACE_NEAR=L7812.2:5MM

PP0V82_SLPDDR
Vout = 0.82V
Iout_Max = 6A
F = 3MHz
C7833 C7834 C7835 C7836 C7837 C7838 C7814 C7815 C7832 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC812 CC813 12PF 5% 25V NP0-C0G 0201

L7813 1UH-20%-3.8A-0.055OHM 2016-COMBO
BUCK3_LX0 C16 C17 C18 P1V8SLPS2R_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
BUCK3_FB D1 P1V8SLPS2R_FB
R7813 0 5% MF 1/20W 0201 PLACE_NEAR=L7813.2:5MM
BUCK3_IN R9 T10 T9 U10 U9 V10 V9 PP1V8_SLPS2R

PP1V8_SLPS2R
Vout = 1.8V
Iout_Max = 2.5A
F = 3MHz
C7839 C7840 C7841 C7842 C7843 C7844 C7845 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC814 12PF 5% 25V NP0-C0G 0201

CRITICAL L7814 1UH-20%-3.8A-0.055OHM 2016-COMBO
BUCK4_LX0 A8 B8 P1V1SLPS2R_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7815 0.47UH-20%-4.8A-0.034OHM 0806-COMBO
BUCK4_LX1 A6 B6 P1V1SLPS2R_SW1 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
R7814 0 1/20W MF 5% 0201 PLACE_NEAR=L7815.2:5MM
BUCK4_FB D7 P1V1SLPS2R_FB
BUCK4_IN P7

PP1V1_SLPS2R
Vout = 1.1V
Iout_Max = 4A
F = 3MHz
C7846 C7847 C7848 C7849 C7850 C7851 C7816 C7817 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC815 CC816 12PF 5% 25V NP0-C0G 0201

L7816 1UH-20%-3.8A-0.055OHM 2016-COMBO
BUCK5_LX0 A10 B10 P0V9SLPDDR_SW0 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
CRITICAL L7817 0.47UH-20%-4.8A-0.034OHM 0806-COMBO
BUCK5_LX1 A12 B12 P0V9SLPDDR_SW1 SWITCH_NODE=TRUE MIN_NECK_WIDTH=0.2000 MIN_LINE_WIDTH=0.1750 DIDT=TRUE
R7816 0 1/20W 0201 MF 5% PLACE_NEAR=L7816.2:5MM
BUCK5_FB D12 P0V9SLPDDR_FB

PP0V9_SLPDDR
Vout = 0.9V
Iout_Max = 4A
F = 3MHz
C7852 C7853 C7854 C7855 C7856 C7818 C7819 20UF 20% 2.5V X6S-CERM 0402
DESENSE CC817 CC818 12PF 5% 25V NP0-C0G 0201

Supplied Current

BUCK3_SW1	T8	PP1V8_AWAKE	0.3A
BUCK3_SW2	T11	PP1V8_SLPS2R_PMUVDDGPIO	0.3A
BUCK3_SW3	V11	NC_PPBUCK3_SW3	1.0A
BUCK3_SW4	V8	PP1V8_S3	1.0A
BUCK3_SW5	R8	NC_PPBUCK3_SW5	0.5A
BUCK4_SW1	P6	NC	0.5A
BUCK6_SW1	R6	NC	0.3A
BUCK8_SW1	P13	NC_PPBUCK8_SW1	0.3A
BUCK8_SW2	R13	NC_PPBUCK8_SW2	0.3A

BOM_COST_GROUP=PLATFORM POWER

SYNC_MASTER=myEE SYNC_DATE=03/01/2019
PAGE TITLE
PMIC BUCKS AND SWs

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
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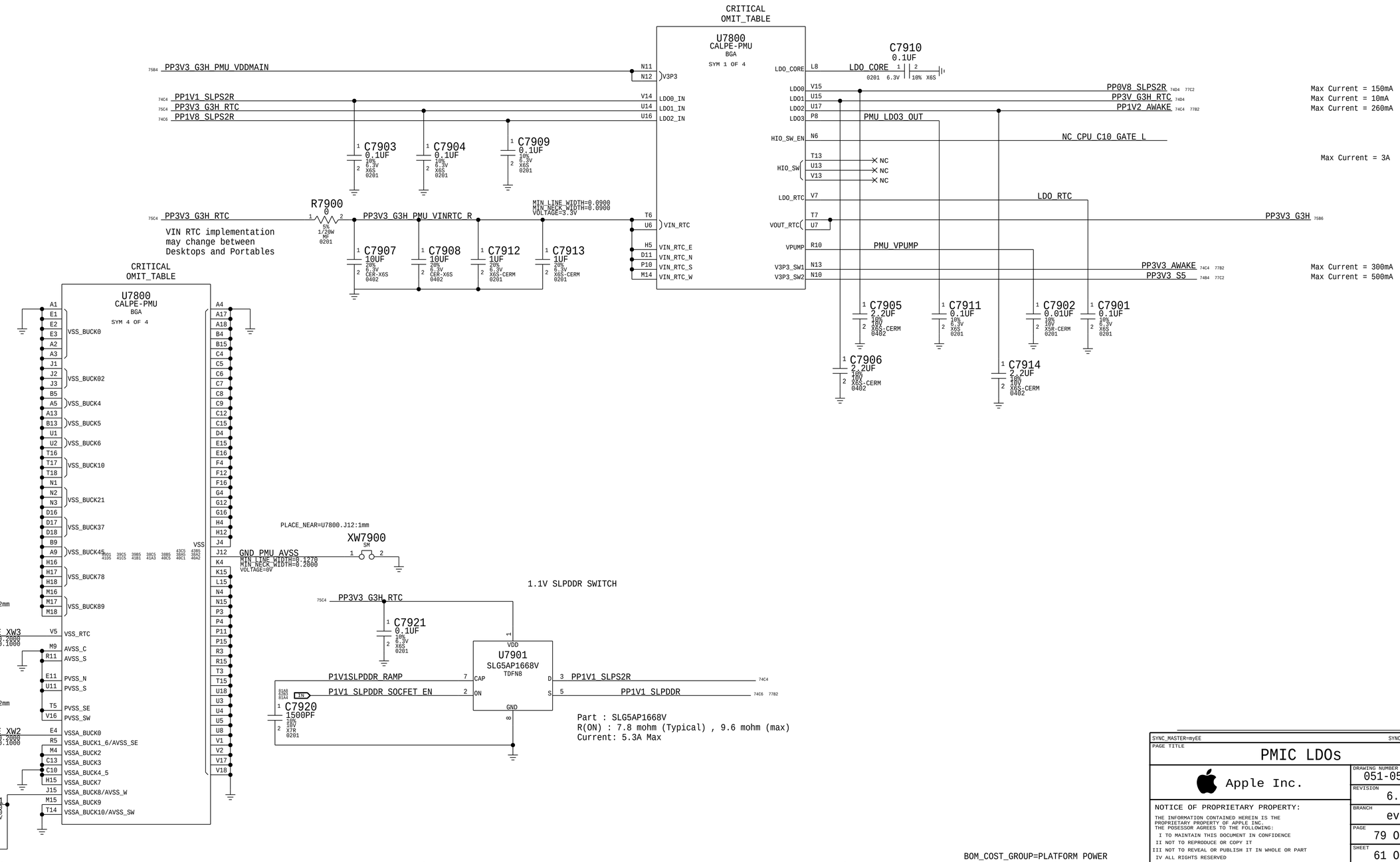
CRITICAL
OMIT_TABLE
U7800
CALPE-PMU
BGA
SYM 1 OF 4
PP3V3_G3H_PMU_VDDMAIN
N11
N12
V3P3
PP1V1_SLPS2R
PP3V3_G3H_RTC
PP1V8_SLPS2R
V14
U14
U16
LDO0_IN
LDO1_IN
LDO2_IN
C7903
0.1UF
C7904
0.1UF
C7909
0.1UF
R7900
0
PP3V3_G3H_RTC
PP3V3_G3H_PMU_VINRTC_R
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=3.3V
T6
U6
VIN_RTC
H5
D11
P10
M14
VIN_RTC_E
VIN_RTC_N
VIN_RTC_S
VIN_RTC_W
C7907
10UF
C7908
10UF
C7912
1UF
C7913
1UF
VIN RTC implementation
may change between
Desktops and Portables
C7910
0.1UF
LDO_CORE
L8
LDO0
LDO1
LDO2
LDO3
V15
U15
U17
P8
PP0V8_SLPS2R
PP3V_G3H_RTC
PP1V2_AWAKE
PMU_LDO3_OUT
HIO_SW_EN
N6
NC_CPU_C10_GATE_L
HIO_SW
T13
U13
V13
NC
LDO_RTC
V7
VOUT_RTC
T7
U7
PP3V3_G3H
VPUMP
R10
PMU_VPUMP
V3P3_SW1
V3P3_SW2
N13
N10
PP3V3_AWAKE
PP3V3_S5
C7905
2.2UF
C7911
0.1UF
C7902
0.01UF
C7901
0.1UF
C7906
2.2UF
C7914
2.2UF
Max Current = 150mA
Max Current = 10mA
Max Current = 260mA
Max Current = 3A
Max Current = 300mA
Max Current = 500mA
CRITICAL
OMIT_TABLE
U7800
CALPE-PMU
BGA
SYM 4 OF 4
VSS_BUCK0
VSS_BUCK02
VSS_BUCK4
VSS_BUCK5
VSS_BUCK6
VSS_BUCK10
VSS_BUCK21
VSS_BUCK37
VSS_BUCK45
VSS_BUCK78
VSS_BUCK89
VSS
PLACE_NEAR=U7800.J12:1mm
XW7900
SM
GND_PMU_AVSS
MIN_LINE_WIDTH=0.1270
MIN_NECK_WIDTH=0.2000
VOLTAGE=0V
1.1V SLPDDR SWITCH
PP3V3_G3H_RTC
C7921
0.1UF
U7901
SLG5AP1668V
TDFN8
VDD
CAP
ON
GND
P1V1SLPDDR_RAMP
P1V1_SLPDDR_SOCFET_EN
EN
PP1V1_SLPS2R
PP1V1_SLPDDR
C7920
1500PF
Part : SLG5AP1668V
R(ON) : 7.8 mohm (Typical) , 9.6 mohm (max)
Current: 5.3A Max
PLACE_NEAR=U7800.V5:2mm
XW7903
SHORT-14L-0.1MM-SM
GND_CALPE_XW3
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
VOLTAGE=0V
VSS_RTC
AVSS_C
AVSS_S
PVSS_N
PVSS_S
PVSS_SE
PVSS_SW
PLACE_NEAR=U7800.E4:2mm
XW7902
SHORT-14L-0.1MM-SM
GND_CALPE_XW2
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
VOLTAGE=0V
For SI
VSSA_BUCK0
VSSA_BUCK1_6/AVSS_SE
VSSA_BUCK2
VSSA_BUCK3
VSSA_BUCK4_5
VSSA_BUCK7
VSSA_BUCK8/AVSS_W
VSSA_BUCK9
VSSA_BUCK10/AVSS_SW
PLACE_NEAR=U7800.J15:2mm
XW7901
SHORT-14L-0.1MM-SM
GND_CALPE_XW1
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.0900
VOLTAGE=0V
For SI
PP7901
P3MM
SM
BOM_COST_GROUP=PLATFORM POWER
SYNC_MASTER=myEE
SYNC_DATE=03/01/2019
PAGE TITLE
PMIC LDOs
Apple Inc.
DRAWING NUMBER
051-05198
SIZE
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REVISION
6.0.0
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CRITICAL
OMIT_TABLE

U7800
CALPE-PMU
BGA
SYM 3 OF 4

SOC_WDOG	F5	RESET_IN1 (IPD)		
SOC_SOCHOT_L	E5	RESET_IN2		
UPC_PMU_RESET	K5	RESET_IN3 (IPD)		
PM_THRMTRIP_L	K6	RESET_IN4		
NC_GPU_THRMTRIP	N5	RESET_IN5 (IPD)		
PMU_COLD_RESET_L	L13	RESET*		
PM_SLP_S3_L_1	M12	SYS_SLEEP*		
PMU_ACTIVE_READY	J5	ACTIVE_RDY		
PMU_CLK32K_SOC_R	H6	CLKOUT0_32K		
PMU_CLK32K_PCH_R	H7	CLKOUT1_32K		
PMU_CLK32K_WLANBT	J7	CLKOUT2_32K		
NC_PMU_CLK32K_GNSS_R	K7	CLKOUT3_32K		
NC_PMU_CLK32K	K8	CLKOUT4_32K		
PMU_SYS_ALIVE	L11	SYS_ALIVE		
PMU_FORCE_DFU	D6	FORCE_DFU		
PMU_INT_L	L9	IRQ*		
I2C_PMU_SCL	M11	SCL		
I2C_PMU_SDA	L10	SDA		
SPMI_CLK	M8	SCLK		
SPMI_DATA	M7	SDATA		
ALL_SYS_PWRGD	K11	SYS_ACTIVE		
PCH_PWRBTN_L	C11	SYS_BTN		
PMU_OTHER3V3_HI_ISENSE	A16	AMUX_A0		
PMU_OTHER5V_HI_ISENSE	A15	AMUX_A1		
PMU_P5VUSBC_XT_ISENSE	A14	AMUX_A2		
PMU_CALPE_ISENSE	B14	AMUX_A3		
PMU_DDR1V2_ISENSE	C14	AMUX_A4		
PMU_OCARINA_ISENSE	D15	AMUX_A5		
PMU_SSDNAND_ISENSE	E14	AMUX_A6		
PMU_CPUP5VREG_ISENSE	F14	AMUX_A7		
NC_PMU_AMUX_AY	J14	AMUX_AY		
PMU_LCDPANEL_ISENSE	D13	AMUX_B0		
PMU_P5VUSBC_WR_ISENSE	E13	AMUX_B1		
PMU_CPUDDR_ISENSE	E12	AMUX_B2		
PMU_PP1V8S5_ISENSE	F13	AMUX_B3		
PMU_DDRVDDQ_ISENSE	G13	AMUX_B4		
PMU_CPUVA_VSENSE	G14	AMUX_B5		
PMU_CPUVA_ISENSE	H14	AMUX_B6		
PMU_TBT_XT_ISENSE	H13	AMUX_B7		
NC_PMU_AMUX_BY	J13	AMUX_BY		
	N9	LS_BID1 (IPU)	NC	
	M10	LS_BID2 (IPU)	NC	
CPU_CATERR_L	L6	SYS_ERR*		
PMU_VDD_MAX	N8	VDD_MAX		
	E6	VDD_OTP		
	L12	IREF	PMU_IREF	
	K12	VREF	PMU_VREF	
PMU_DROOP_L	L7	VDROOP		
SOC_VDDCPU_SENSE	M5	VDROOP_DET		
CHGR_CBC_ON	D9	CHG_CBC_ON		
CHGR_INT_L	J6	NCHG_INT		
GND	L4	CHG_POK		
PMU_PVDDMAIN_EN	D5	VPWR_EN		
PCH_RTC_RESET_L	M13	LDO1_POK		
	D8	PFN	NC	
GND	V6	VIN_BBAT		
PMU_ONOFF_L	N7	BUTTON1		(IPU)
PMU_RSLOC_RST_L	M6	BUTTON2		(IPU)
P3V3MAIN_PGOOD	E9	GPIO1		
NC_P3V3G3W_EN	E8	GPIO2		
NC_P3V3G3W_PGOOD	E7	GPIO3		
P5VG3S_EN	F6	GPIO4		
P5VG3S_PGOOD	F7	GPIO5		
P3V3G3S_EN	F8	GPIO6		
P1V8G3S_EN	F9	GPIO7		
CPUVR_PGOOD	F10	GPIO8		
VCCIN_AUX_PGOOD	G10	GPIO9		
PVCCST_EN	G9	GPIO10		
PVDDQ_EN	G8	GPIO11		
PVDDQ_PGOOD	G7	GPIO12		
AUD_PWR_EN	G6	GPIO13		
WLAN_PWR_EN	H8	GPIO14		
BT_PWR_EN	H9	GPIO15		
SE_PWR_EN	J9	GPIO16		
SENSOR_PWR_EN	J8	GPIO17		
PVCCPLLOC_EN	K9	GPIO18		
NC_PVCCE0PIO_EDRAM_PGOOD	K10	GPIO19		
NC_PEARL_PWREN_P2V7NAND_EN	J10	GPIO20		
UVP_DIS_L	H10	GPIO21		
NC_NAND_RESET_L_SD_PWR_EN	H11	GPIO22		
NC_NAND_WP_L_ENET_PWR_EN	G11	GPIO23		
TBT_PWR_EN	F11	GPIO24		
P1V1_SLPDDR_SOCFET_EN	E10	GPIO25		

R8012 33 5% 1/20W MF 201
R8011 33 5% 1/20W MF 201
R8010 2.2K 5% 1/20W MF 201
R8013 0 1/20W 5% MF 0201
R8018 1M 5% 1/20W MF 201
R8001 200K 1% 1/20W MF 201
C8001 0.1UF 10% 6.3V X6S 0201
C8002 22PF 5% 25V C0G 0201
C8003 22PF 5% 25V C0G 0201
C8004 0.1UF 10% 6.3V X6S 0201
Y8001 32.768KHZ-20PPM-12.5PF 1.60X1.00-SM NOSTUFF

PMU_CLK32K_SOC
PMU_CLK32K_PCH
SOC_FORCE_DFU
Use SOC's Internal Pull Up

PMU_XTAL1_R
PMU_XTAL1
PMU_XTAL2

PP3V3_G3H_RTC
PP1V8_AWAKE
PP1V8_S5
PP1V8_SLPS2R

R8002 10K PMU_COLD_RESET_L
R8003 10K PMU_SYS_ALIVE
R8006 10K PMU_DROOP_L
R8005 10K ALL_SYS_PWRGD
R8015 10K PMU_ONOFF_L
R8014 10K PMU_RSLOC_RST_L
R8007 47K NOSTUFF PMU_ACTIVE_READY

Caution : AMUX programmed with Gain 1 should not have inputs greater than 1.5V

To be Grounded on Portables Only, RC on Coin Cell on Desktops

VDD_HI Threshold Select

PPBUS_G3H
R8050 887K 0.1% 1/20W TK 0201
PMU_VDD_HI
NOSTUFF C8051 220PF 10% 16V CER-X7R 0201
R8051 357K 1% 1/20W MF 201

BOM_COST_GROUP=PLATFORM POWER

SYNC_MASTER=myEE SYNC_DATE=03/01/2010

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Apple Inc.

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C8172~C8176 5x 33uF added per SPF

C8184~C8188 added per desense after SPF 5x addition

rdr57808314

VDD2 1.1V S3 VR

PP1V1_S3

R8123 0 0201 MF 1/20W 5% — MIN_LINE_WIDTH=0.1160, VOLTAGE=5V, MIN_NECK_WIDTH=0.0600

PP5V_G3S_CPUREG — PP5V_VDD2_V5IN

BYPASS=U8100.12::1mm

C8103 10UF 20% 16V X5R-CERM 0402-1

C8102 10UF 20% 16V X5R-CERM 0402-1

BYPASS=U8100.2::1mm

C8114 10UF 20% 16V X5R-CERM 0402-1

R8130 2.2 5% 1/20W MF 201 — P1V1_BOOT_RC: MIN_LINE_WIDTH=0.1160, MIN_NECK_WIDTH=0.0600, DIDT=TRUE, SWITCH_NODE=TRUE

C8130 0.1UF 10% 25V X6S-CERM 0201

VLDOIN

P1V1_VBST: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, DIDT=TRUE, SWITCH_NODE=TRUE

R8133 1 5% 1/20W MF 201 — P1V1_DRVH_R: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, SWITCH_NODE=TRUE, DIDT=TRUE

P1V1_DRVH: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, SWITCH_NODE=TRUE, DIDT=TRUE

P1V1_SW: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, SWITCH_NODE=TRUE, DIDT=TRUE

R8132 1 5% 1/20W MF 201 — P1V1_DRVL_R: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, GATE_NODE=TRUE, DIDT=TRUE

P1V1_DRVL: MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, GATE_NODE=TRUE, DIDT=TRUE

P1V1S3_PGOOD

U8100 TPS51916 QFN CRITICAL

12	V5IN	VBST	15
17	S3	DRVH	14
16	S5	SW	13
6	VREF	DRVL	11
8	REFIN	PGOOD	20
19	MODE	VDDQSNS	9
18	TRIP	VTT	3
		VTTSNS	1
		VTTREF	5
		PGND	10
		GND	7
		VTT GND PAD	4
		THRM PAD	21

PVDDQ_EN

R8140 0 0201 MF 1/20W 5%

PD_P1V1_S3_EN

PVDD2_EN_R

P1V1REG_VREF — MIN_LINE_WIDTH=0.1160, MIN_NECK_WIDTH=0.0600

PVDD2_REFIN

P1V1REG_MODE

P1V1REG_TRIP

BYPASS=U8100.6::1mm

R8111 3.57K 1% 1/20W MF 201

C8115 0.1UF 10% 6.3V X6S 0201

PLACE_NEAR=U8100.19::3mm

P1V1REG_VREF_R

R8117 27.4K 0.1% 1/20W MF 0201

PLACE_NEAR=U8100.19::3mm

R8122 1K 5% 1/20W MF 201

R8113 47K 1% 1/20W MF 201

R8114 51.1K 1% 1/20W MF 201

PLACE_NEAR=U8100.18::3mm

PLACE_NEAR=U8100.5::5mm

R8112 48.7K 0.1% 1/20W MF 0201

BYPASS=U8100.8::1mm

C8116 0.01UF 10% 16V X7R-CERM 0201

P1V1REG_AGND — MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, VOLTAGE=0V

PGND GND VTT GND THRM PAD

PPVTT_S0_DDR_LDO — VOLTAGE=0.6V

PPVTT_VTTREF — VOLTAGE=0.6V

XW9100 SM

C8140 0.22UF 10% 6.3V CERM 402

PLACE_NEAR=U8100.21::1mm

PPBUS_HS_CPU

C8172 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8173 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8109 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8100 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8101 2.2UF 20% 25V X6S-CERM 0402 — OMIT_TABLE, CRITICAL

C8104 2.2UF 20% 25V X6S-CERM 0402 — OMIT_TABLE, CRITICAL

C8111 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8174 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8175 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

C8176 33UF 20% 16V TANT-POLY CASE-B3-1 — OMIT_TABLE, CRITICAL

CRITICAL Q8100 CSD58873Q3D Q3D

VIN TG TGR VSW BG PGND

MIN_NECK_WIDTH=0.0540, MIN_LINE_WIDTH=0.0900, SWITCH_NODE=TRUE, DIDT=TRUE

NOSTUFF

R8110 2.2 5% 1/10W MF-LF 603

P1V1_LL_SNUB — DIDT=TRUE, SWITCH_NODE=TRUE, NOSTUFF

C8110 0.001UF 10% 50V X7R-CERM 0402

DESENSE CC824 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE C8184 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE C8185 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE CC823 12PF 5% 25V NP0-C0G 0201

DESENSE C8186 12PF 5% 25V NP0-C0G 0201

DESENSE C8187 12PF 5% 25V NP0-C0G 0201

DESENSE C8188 12PF 5% 25V NP0-C0G 0201

L8100 0.68UH-20%-15A-0.0092OHM PIMA062T-SM CRITICAL

P1V1_PHASE

R8118 0.002 1% 1/2W MF 0306

P1V1_S3_REG_R — MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0540, VOLTAGE=1.2V

ISNS_CPUDDR_P (OUT)

ISNS_CPUDDR_N (OUT)

CRITICAL C8105 330UF 20% 2.5V TANT CASE-B2-SM-1

CRITICAL C8106 330UF 20% 2.5V TANT CASE-B2-SM-1

CRITICAL C8107 330UF 20% 2.5V TANT CASE-B2-SM-1

CRITICAL C8112 10UF 20% 4V X6S 0402-1

CRITICAL C8113 10UF 20% 4V X6S 0402-1

CRITICAL C8108 220UF 20% 2V ELEC SM-COMBO

DESENSE C8181 3.0PF +/-0.1PF 25V NP0-C0G 0201

PLACE_NEAR=C8108.1:1mm

XW8110 SM

PLACE_NEAR=C8107.1:1mm

R8141 10 5% 1/20W MF 201 — P1V1_SNS — P1V1_SNS_R: MIN_LINE_WIDTH=0.1000, MIN_NECK_WIDTH=0.1000

Vout = 1.1V
7.0A MAX OUTPUT
F = 400 KHZ

PP1V1_S3

DESENSE CC827 12PF 5% 25V NP0-C0G 0201

DESENSE CC828 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE C8180 3.0PF +/-0.1PF 25V NP0-C0G 0201

R8176 10 5% 1/16W MF-LF 402 — PP1V1_S3

P1V1_BLDR_L

Q8171 DMN5L06TK SOT523 SYM_VER_1 — MEM_BLDR_EN

VDDQ 0.6V S3 VR

PP3V3_G3H — PP1V8_S3_MEM

R8191 100K 5% 1/20W MF 201

CRITICAL C8150 10UF 20% 6.3V CER-X6S 0402

CRITICAL C8151 10UF 20% 6.3V CER-X6S 0402

CRITICAL C8160 10UF 20% 6.3V CER-X6S 0402

CRITICAL C8161 10UF 20% 6.3V CER-X6S 0402

CRITICAL C8163 10UF 20% 6.3V CER-X6S 0402

CRITICAL C8164 10UF 20% 6.3V CER-X6S 0402

NOSTUFF CRITICAL C8162 100UF 20% 6.3V POLY-TANT CASE-A3

PVDDQ_EN

R8190 10K 5% 1/20W MF 201

U8150 MAX15053B BGA CRITICAL

B2	SKIP	IN	A3
B3	EN	LX	A2
C2	SS/REFIN	PGOOD	C3
C1	FB		
B1	COMP		
	GND		A1

R8155 0 5% 1/20W MF 0201 — P0V6_S3_SKIP

P1V1S3_PGOOD

R8154 0 5% 1/20W MF 0201

P0V6_S3_EN

P0V6_S3_SS

P0V6_S3_FB

P0V6_S3_COMP

R8153 6.81K 1% 1/20W MF 201

CRITICAL C8153 47PF 5% 25V C0G 0201

CRITICAL C8154 0.015UF 10% 16V X7R-CERM 0402

CRITICAL C8152 2700PF 10% 16V X7R 0201

P0V6_S3_COMP_RC

P0V6_S3_SW — SWITCH_NODE=TRUE, DIDT=TRUE

PVDDQ_PGOOD (OUT)

R8159 0 0% 1/16W MF-LF 0402 — ISNS_DDRVDDQ_P, ISNS_DDRVDDQ_N

P0V6_S3_SNUB — DIDT=TRUE, SWITCH_NODE=TRUE

C8159 3.0PF +/-0.1PF 50V C0G-CERM 0402

152S00344 CRITICAL L8150 1UH-20%-4.7A-0.040HM 2520

VOLTAGE=0.6V PP0V6_S3_REG_R R8156 0.005 1% 1/3W MF 0306

XW8150 SM

P0V6_S3_FB_TOP

R8150 10 5% 1/20W MF 201

P0V6_S3_FB_R

<Ra> R8151 90.9 1% 1/20W MF 201

P0V6_S3_FB

<Rb> R8152 10K 1% 1/20W MF 201

CRITICAL C8155 180UF 20% 2.5V POLY-AL SM

CRITICAL C8158 180UF 20% 2.5V POLY-AL SM

CRITICAL C8156 10UF 20% 4V X6S 0402-1

CRITICAL C8157 10UF 20% 4V X6S 0402-1

DESENSE C8182 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE C8183 3.0PF +/-0.1PF 25V NP0-C0G 0201

PLACE_NEAR=C8155.1:3mm

Vout = 0.6V
0.9A MAX OUTPUT
F = 1 MHZ

PP0V6_S3

Bleeder/Discharge Circuit

R8175 5.1 5% 1/16W MF 402 — P0V6_BLDR_L

PP3V3_G3H

R8170 100K 5% 1/20W MF 201

Q8170 DMN5L06VK-7 SOT563 VER-4 — MEM_BLDR_EN

NOSTUFF C8170 47PF 5% 25V C0G 0201

R8171 0 5% 1/20W MF 0201 — PVDDQ_EN — MEM_BLDR_EN_L

Q8170 DMN5L06VK-7 SOT563 VER-4

Vout = 0.6*(1+Ra/Rb) = 0.606V

PP1V8_S3_MEM

CRITICAL D8100 PMEG3010EB/S500 SOD523

CRITICAL D8101 PMEG3010EB/S500 SOD523

PP1V1_S3

CRITICAL D8102 PMEG3010EB/S500 SOD523

CRITICAL D8103 PMEG3010EB/S500 SOD523

PP1V1_S3 — PP0V6_S3

BOM_COST_GROUP=PLATFORM POWER

PAGE TITLE: TBT 5V REGULATOR

Apple Inc.

DRAWING NUMBER: 051-05198 — SIZE: D

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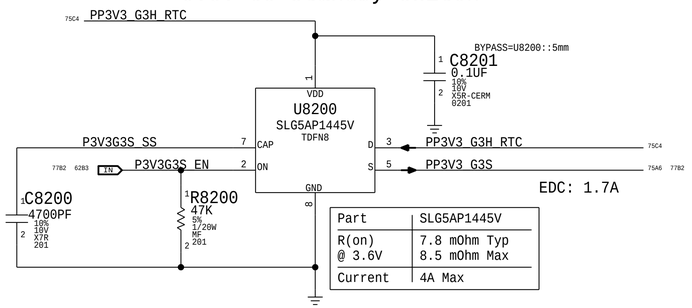
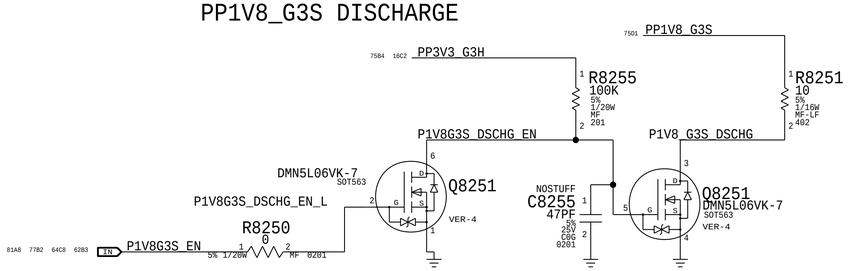
Note: Load switches may be larger than necessary

3.3V G3 Standby Switch

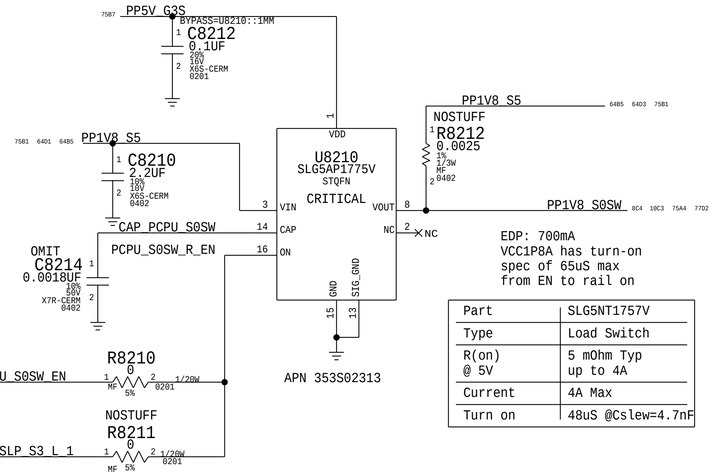


Part	SLG5AP1445V
R(on)	7.8 mOhm Typ
@ 3.6V	8.5 mOhm Max
Current	4A Max

PP1V8_G3S DISCHARGE



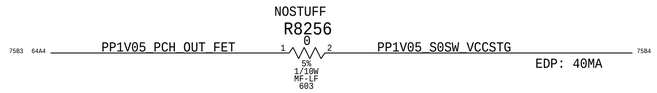
VCC1P8A Switch



EDP: 700mA
VCC1P8A has turn-on spec of 65uS max from EN to rail on

Part	SLG5NT1757V
Type	Load Switch
R(on) @ 5V	5 mOhm Typ up to 4A
Current	4A Max
Turn on	48uS @Cslew=4.7nF

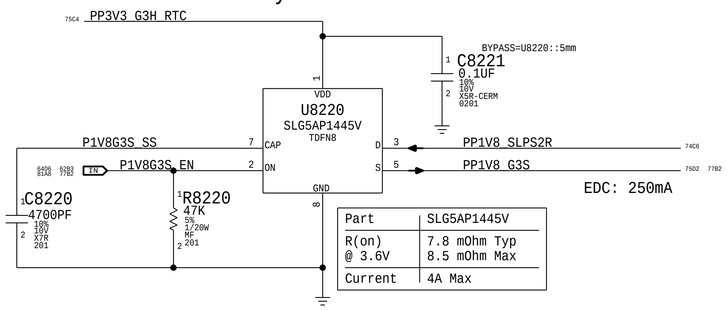
1.05 VCCSTG "SWITCH"



EDP: 40MA

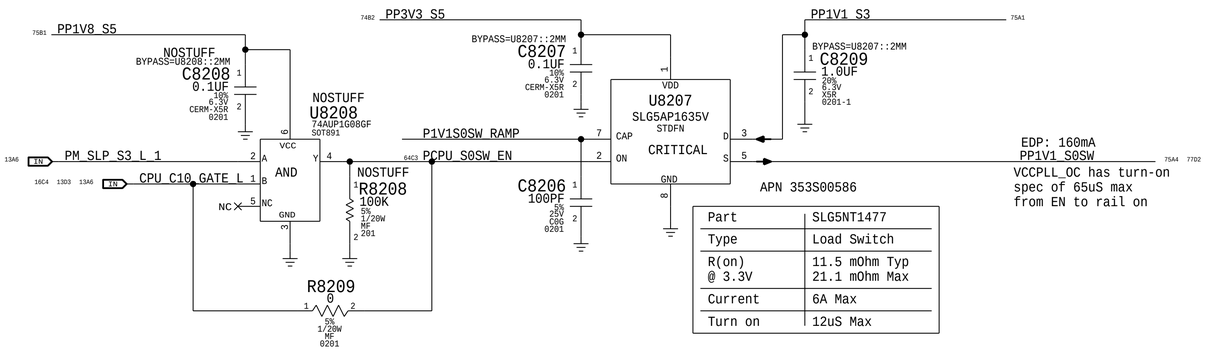
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
131S00451	1	CAP,COG,1.8NF,2%,50V,0402	C8214	CRITICAL	

1.8V G3 Standby Switch



Part	SLG5AP1445V
R(on)	7.8 mOhm Typ
@ 3.6V	8.5 mOhm Max
Current	4A Max

1.2V S0SW VCCPLL_OC Switch

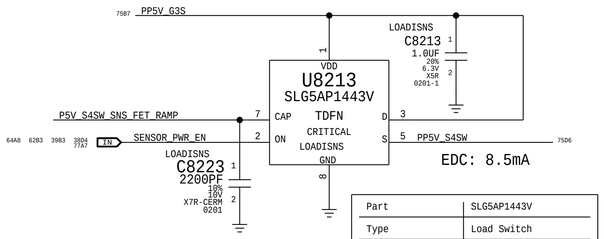


EDP: 160mA
VCCPLL_OC has turn-on spec of 65uS max from EN to rail on

APN 353S00586

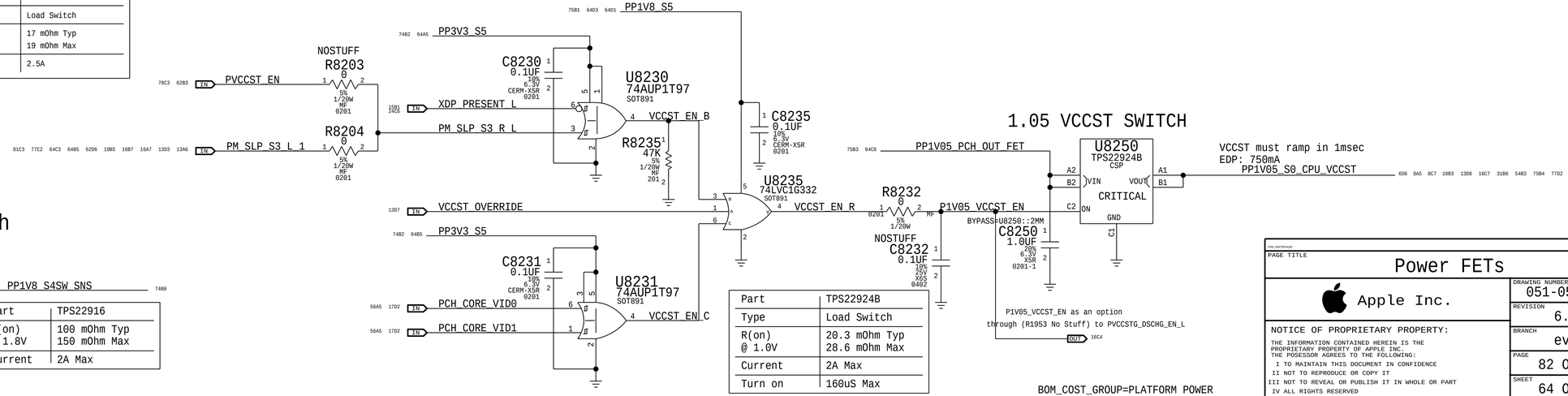
Part	SLG5NT1477
Type	Load Switch
R(on) @ 3.3V	11.5 mOhm Typ 21.1 mOhm Max
Current	6A Max
Turn on	12uS Max

5V Sensor Switch



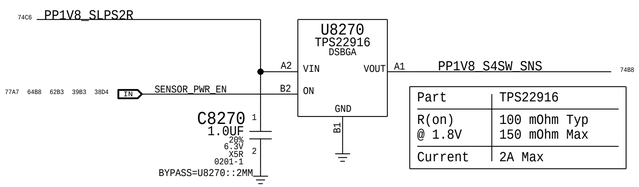
Part	SLG5AP1443V
Type	Load Switch
R(on)	17 mOhm Typ 19 mOhm Max
Current	2.5A

1.05 VCCST SWITCH



Part	TPS22924B
Type	Load Switch
R(on) @ 1.0V	20.3 mOhm Typ 28.6 mOhm Max
Current	2A Max
Turn on	160uS Max

1.8V Sensor Switch



Part	TPS22916
R(on) @ 1.8V	100 mOhm Typ 150 mOhm Max
Current	2A Max

BOM_COST_GROUP=PLATFORM POWER

PAGE TITLE

Power FETs

Apple Inc.

DRAWING NUMBER	SIZE
051-05198	D
REVISION	
6.0.0	
BRANCH	
evt-3	
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Page Notes

Power aliases required by this page:
- =PPVIN_S0SW_LCDBKLTFET (9-12.6V LCD BACKLIGHT INPUT)
- =PP5V_S0_BKLT (5V BACKLIGHT DRIVER INPUT)

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
116S0004	1	RES,MTL FILM,0 ohm, 1A MAX,0402,SMD	L8420	CRITICAL	

740S0159
CRITICAL
F8400
3AMP-32V
0603-COMBO
PPBUS_G3H
PPVIN_S0SW_LCDBKLT_F
R8400 0.025 1% 1W MF 0612-1
107S00034
PPVIN_S0SW_LCDBKLT_R
C8400 1000PF 10% 16V X7R-1 0201
R8401 80.6K 1% 1/16W MF-LF 402
CRITICAL
Q8400
FDC638APZ_SBMS001
SSOT6-HF
NOSTUFF C8401 0.001UF 10% 50V X7R-CERM 0402
PPVIN_S0SW_LCDBKLT
MIN_LINE_WIDTH=0.1500
MIN_NECK_WIDTH=0.2000
VOLTAGE=12.6V
MAKE_BASE=TRUE
ISNS_LCDBKLT_P
ISNS_LCDBKLT_N
LCDBKLT_EN_L
R8402 63.4K 1% 1/16W MF-LF 402
PP5V_G3S
R8444 10 5% 1/16W MF-LF 402
R8445 10 5% 1/16W MF-LF 402
PP5V_S0_BKLT_A
PP5V_S0_BKLT_D
C8440 4.7UF 20% 25V X5R 0402
C8441 4.7UF 20% 25V X5R 0402
PLACE_NEAR=U8400.5:5MM
PLACE_NEAR=U8400.18:5MM
GND_BKLT_SGND
R8440 1M 5% 1/20W MF 201
U8400
LLP
LP8548B1SQ_-04
VDDD
VDDA
SD
VSENSE_N
VSENSE_P
SENSE_OUT
EN
PWM_KEYB
SCL (IPU)
SDA (IPU)
GND_SW
GND_SW2
GNDD
GNDA
THRM PAD
BKLT_SD
BKLT_SENSE_OUT
PLACE_NEAR=Q8401.5:3MM
CRITICAL
L8410
15UH-20%-1.9A-0.24OHM
PIME062D-SM
152S00253
PLACE_NEAR=L8410.1:5MM
C8410 4.7UF 10% 25V X5S-CERM 0603
C8411 4.7UF 10% 25V X5S-CERM 0603
C8412 0.1UF 10% 25V X5R 402
PLACEMENT_NOTE:
SANDWICH C8210 AND C8211
PLACE_NEAR=L8410.2:3MM
371S00180 (Combo)
CRITICAL
D8410
POWERD123-COMBO
DFLS2100
DESENSE
C8476 12PF 5% 100V C0G 0201
DIDT=TRUE
SWITCH_NODE=TRUE
PPVIN_SW_LCDBKLT_SW
LCDBKLT_FET_DRV_R
CRITICAL
Q8401
SI7812DN
PWRPK-1212-8
PLACE_NEAR=U8400.1:3MM
R8433 10 1% 1/16W MF-LF 402
MIN_LINE_WIDTH=0.6000
MIN_NECK_WIDTH=0.2000
VOLTAGE=5V
GATE_NODE=TRUE
DIDT=TRUE
LCDBKLT_SW
LCDBKLT_FB
LCDBKLT_FET_DRV
BKLT_ISET_KEYB
BKLT_KEYB1
BKLT_KEYB2
KBDBKLT_SW2
PPVOUT_BKLT_FB2
R8435 10 1% 1/16W MF-LF 402
R8436 10 1% 1/16W MF-LF 402
KBDLED_CATHODE1
KBDLED_CATHODE2
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.2000
VOLTAGE=40V
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.2500
SWITCH_NODE=TRUE
DIDT=TRUE
R8454 31.6K 1% 1/20W MF 201
XW8400 SM
GND_BKLT_SGND
MIN_LINE_WIDTH=0.4000
MIN_NECK_WIDTH=0.1000
VOLTAGE=0V
D8450 SOD123W PMEG6010ER/S500
XW8450 SM
PLACE_NEAR=C8458.1:10MM
PPVOUT_S0_KBDLED_R
R8446 0 5% 1/16W MF-LF 402
C8458 2.2UF 10% 50V X5R 0603
C8459 2.2UF 10% 50V X5R 0603
C8455 0.001UF 10% 50V X7R-CERM 0402
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1200
VOLTAGE=40V
C8453 2.2UF 10% 50V X5R 0603
C8454 2.2UF 10% 50V X5R 0603
C8490 12PF 5% 100V CERM 0402
C8491 12PF 5% 100V CERM 0402
C8456 2.2UF 10% 50V X5R 0603
C8457 2.2UF 10% 50V X5R 0603
C8493 2.2UF 10% 50V X5R 0603
C8494 2.2UF 10% 50V X5R 0603
L8450
10UH-20%-1.4A-0.17OHM
PST041H-SM
PP5V_G3S_KBD
C8452 2.2UF 10% 25V X5R-CERM 603
C8450 0.1UF 10% 16V X5R-CERM 0201
C8451 2.2UF 10% 25V X5R-CERM 603
DESENSE
NO STUFF
C8495 12PF 5% 100V C0G 0201
OMIT_TABLE
DESENSE
L8420
47-OHM-25%-300MA
0402
CRITICAL
PPVOUT_S0_LCDBKLT_F
PPVOUT_S0_LCDBKLT
PLACE_NEAR=D8410.K:5MM
C8460 2.2UF 10% 100V X5R 1206
C8461 2.2UF 10% 100V X5R 1206
C8462 2.2UF 10% 100V X5R 1206
C8463 2.2UF 10% 100V X5R 1206
C8464 2.2UF 10% 100V X5R 1206
C8465 2.2UF 10% 100V X5R 1206
C8466 2.2UF 10% 100V X5R 1206
C8467 2.2UF 10% 100V X5R 1206
C8468 2.2UF 10% 100V X5R 1206
C8469 2.2UF 10% 100V X5R 1206
C8470 2.2UF 10% 100V X5R 1206
C8471 2.2UF 10% 100V X5R 1206
C8472 2.2UF 10% 100V X5R 1206
C8473 2.2UF 10% 100V X5R 1206
DESENSE C8474 12PF 5% 100V C0G 0201
DESENSE C8475 12PF 5% 100V C0G 0201
J214 DISPLAY
Vout = 46V Typ, 55V Max
Iout = 0.12A Typ, 0.15A Max
Fs = 625kHz Typ (+/- 7%)
XW8410 SM
PLACE_NEAR=D8410.K:2MM
LCDBKLT_TB_XWR
R8431 18.2K 1% 1/16W MF-LF 402
R8432 150K 1% 1/16W MF-LF 402
NOSTUFF C8430 100PF 5% 50V C0G-CERM 0603
PPVOUT_S0_KBDLED
MIN_LINE_WIDTH=0.4000
MIN_NECK_WIDTH=0.2000
VOLTAGE=40V
Right Flex(viewed from TOP)
J8400
FF14A-6C-R11DL-B-3H
Middle Flex(viewed from TOP)
J8402
FF14A-10C-R11DL-B-3H
Left Flex(viewed from TOP)
J8401
FF14A-6C-R11DL-B-3H
KBDLED_CATHODE1_R
KBDLED_CATHODE2_R
EDP_BKLT_EN
BKLT_EN_R
R8442 0 5% 1/20W MF 0201
C8442 33PF 5% 25V NP0-C0G 0201
NO STUFF
GND_BKLT_SGND
PP3V3_G3S
C8483 0.1UF 10% 16V X5R-CERM 0201
U8472
74AUP1T97GM
SOT886
SOC_KBD_BKLT_PWM
SOC_KBD_BKLT_PWM_R
BKLT_PWM_KEYB_3V3
R8482 0 5% 1/16W MF 402
R8481 100K 1% 1/20W MF 201
R8480 100K 1% 1/20W MF 201
PLACE_NEAR=U8472.6:5MM
PP5V_G3S
R8452 1.8K 5% 1/20W MF 201
R8453 1.8K 5% 1/20W MF 201
PLACE_NEAR=U8400.15:10MM
I2C_BKLT_SCL
I2C_BKLT_SDA
R8450 0 5% 1/20W MF 0201
R8451 0 5% 1/20W MF 0201
BKLT_SCL
BKLT_SDA
I2C ID DEDICATED.ONLY CONNECTS TO JERRY
PLACE_NEAR=U8400.16:10MM
PLATFORM_RESET NO LONGER GATES THE BKLT_EN AS BOTH COME FROM PCH NOW

LINE WIDTHS

PP5V_S0_BKLT_A
MIN_LINE_WIDTH=2.0000
MIN_NECK_WIDTH=0.2000
VOLTAGE=5V

PP5V_S0_BKLT_D
MIN_LINE_WIDTH=2.0000
MIN_NECK_WIDTH=0.2000
VOLTAGE=5V

BKLT_SD
MIN_LINE_WIDTH=0.2500
MIN_NECK_WIDTH=0.2000

PBUS LINE WIDTHS

PPVIN_S0SW_LCDBKLT_F
MIN_LINE_WIDTH=2.0000
MIN_NECK_WIDTH=0.2000
VOLTAGE=12.9V

PPVIN_S0SW_LCDBKLT_R
MIN_LINE_WIDTH=2.0000
MIN_NECK_WIDTH=0.2000
VOLTAGE=12.9V

PPVIN_S0SW_LCDBKLT
MIN_LINE_WIDTH=0.1500
MIN_NECK_WIDTH=0.2000
VOLTAGE=12.9V

LCD BKLT LINE WIDTHS

LCDBKLT_FET_DRV_R
MIN_LINE_WIDTH=0.6000
MIN_NECK_WIDTH=0.2000
VOLTAGE=5V
GATE_NODE=TRUE
DIDT=TRUE

PPVIN_SW_LCDBKLT_SW
MIN_LINE_WIDTH=2.0000
MIN_NECK_WIDTH=0.2000
VOLTAGE=5V
SWITCH_NODE=TRUE
DIDT=TRUE

PPVOUT_S0_LCDBKLT
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.1500
VOLTAGE=5V

PPVOUT_S0_LCDBKLT_F
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.1500
VOLTAGE=5V

BOM_COST_GROUP=DISPLAY

PAGE TITLE: LCD Backlight Driver

Apple Inc.

DRAWING NUMBER: 051-05198
SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 84 OF 150
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LCD PANEL INTERFACE (eDP) + Camera (MIPI)

Camera Secure Disable

LCD Panel HPD & AUX strapping

MIPIC FILTERING

J8500
20759-042E-02
F-ST-SM

HOST SIDE

U8502
NX3DV642GU
QFN-COMBO

S	OUTPUT
L	Camera Disable
H	Camera Enable

Alternate: OnSemi FSA642 (353S01346)

I2C pulls value need to be determine after charz

BOM_COST_GROUP=DISPLAY

PAGE TITLE: eDP Display Connector

Apple Inc.

DRAWING NUMBER: 051-05198 | SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
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S4E0

R8683 / C8683

PP0V9_SSD0 — R8683 0 5% 1/20W MF 0201 — PP0V9_SSD0_S4E0_VDD_PLL (VOLTAGE=0.9V) — 67D6

C8683 4.7UF 20% 4V CER-X5R 0201 — OMIT_TABLE

PLACE_NEAR=R8683.1:10MM

EXTERNAL VREF

PPVCCQ_ANI_SSD0 — R8681 2K 1% 1/20W MF 201 — C8681 0.01UF 10% 10V X7R 0201-1 — NOSTUFF

R8680 0 5% 1/29W MF 0201 — SSD0_S4E0_ANI1_VREF — SSD0_S4E0_ANI0_VREF (67D4) — NOSTUFF

R8682 2K 1% 1/20W MF 201 — C8682 0.01UF 10% 10V X7R 0201-1 — NOSTUFF

U8600

NAND-S4E-S5E-MCP-STUDY-COMBO
LGA
OMIT_TABLE

PP1V8_IO_SSD0		
PPVCCQ_ANI_SSD0		
PP0V9_SSD0		
PP2V5_NAND_SSD0		
PP0V9_SSD0_S4E0_VDD_PLL		
SSD0_S4E0_VPP		
SSD0_S4E0_ANI1_VREF		67D3
SSD0_S4E0_ANI0_VREF		67D1
SSD0_S4E0_AVDD18_PLL		67A2
SSD0_S4E0_PCI_AVDD_H		67A2
PP0V9_SSD0		
NOSTUFF R8630 0 5% 1/20W MF 0201		
SSD0_OCARINA_LPB_L	B3	EXT_D0/BOOT0
SSD_BFH	C4	EXT_D1/BOOT1
SSD0_S4E_BOOT2	B5	EXT_D2/BOOT2/SPINAND_SCLK
SSD0_S4E0_SWD_UID0	C6	EXT_D3/SWD_UID0/SPINAND_MISO
SSD0_S4E_UART_RX	B7	EXT_D4/UART_RX
SSD0_S4E0_SWD_UID1	C8	EXT_D5/SWD_UID1/SPINAND_MOSI
SSD0_S4E0_UART_TX	B9	EXT_D6/UART_TX
SSD0_OCARINA_PFN_L	B11	EXT_D7/SPF
SSD0_PCIE_RESET_L	E8	EXT_NCE/PERST*
SSD0_SWDIO	D7	EXT_NRE/JTAG_TMS
SSD0_SWCLK	E6	EXT_NWE/JTAG_TCK
SSD0_S4E0_JTAG_TDO	E4	EXT_RNB/JTAG_TDO
SSD0_S4E0_JTAG_TDI	D5	EXT_CLE/JTAG_TDI
SSD0_S4E_JTAG_SEL	D9	EXT_ALE/JTAG_SEL
SSD0_S4E0_DROOP_L	T3	DROOP_N
SSD0_WP_L	G2	WP_N
VSS		

PP1V8_IO_SSD0 — R8602 47K 1% 1/20W MF 201 — NOSTUFF R8603 47K 1% 1/20W MF 201

May need 10K pull down on JTAG_SEL (pending meeting)

R8620 100K 1% 1/20W MF 201

R8608 100K 1% 1/20W MF 201

R8609 100K 1% 1/20W MF 201

R8640

R8640 49.9 0.1% 1/20W MF 0201 — R8640 May change pending CLK Rise Time/SI Calc

CLK_24M	M3	SSD0_CLK24M_01	SSD0_CLK24M
PCIE_REFCLK_P	K11	PCIE_CLK100M_SSD0_01_P	
PCIE_REFCLK_M	J12	PCIE_CLK100M_SSD0_01_N	
PCIE_CLKREQ_N	P5	SSD0_CLKREQ0_L	
PCI_RESREF	H7	SSD0_S4E0_PCIE_RESREF	
PCIE_RX0_P	M11	PCIE_SSD0_R2D_P<0>	PCIE_SSD0_R2D_C_P<0>
PCIE_RX0_M	N12	PCIE_SSD0_R2D_N<0>	PCIE_SSD0_R2D_C_N<0>
PCIE_TX0_P	R12	PCIE_SSD0_D2R_C_P<0>	PCIE_SSD0_D2R_P<0>
PCIE_TX0_M	T11	PCIE_SSD0_D2R_C_N<0>	PCIE_SSD0_D2R_N<0>
RESET*	L4	SSD0_OCARINA_RESET_L	
TRST*	G10	SSD0_S4E_JTAG_TRST_L	
ZQ_C	K3	SSD0_S4E0_ZQ_C	
ZQ_N	C10	SSD0_S4E0_ZQ_L	

C8603 0.22UF 10% 6.3V X5R-CERM 0201 — GND_VCCQ=TRUE

C8604 0.22UF 10% 6.3V X5R-CERM 0201 — GND_VCCQ=TRUE

C8601 0.22UF 10% 6.3V X5R-CERM 0201 — GND_VCCQ=TRUE

C8602 0.22UF 10% 6.3V X5R-CERM 0201 — GND_VCCQ=TRUE

R8604 3.01K 1% 1/20W MF 201 — OMIT_TABLE

C8651 10PF 5% 25V C0G 0201 — OMIT_TABLE

R8605 300 1% 1/20W MF 201

R8606 100 1% 1/20W MF 201 — OMIT_TABLE

R8600 100K 1% 1/20W MF 201

PLACE_NEAR=U8600.C10:15MM

PLACE_NEAR=U8600.K3:15MM

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES,3.01KOHM,1%,1/20W,0201	R8604	CRITICAL	SSD:S4E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8604	CRITICAL	SSD:S5E
118S0011	1	RES,100OHM,1%,1/20W,0201	R8606	CRITICAL	SSD:S4E
118S0273	1	RES,300OHM,1%,1/20W,0201	R8606	CRITICAL	SSD:S5E
117S0201	3	RES,0OHM,1/20W,0201	R8610,R8611,R8683	CRITICAL	SSD:S4E
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8610,R8683	CRITICAL	SSD:S5E
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8611	CRITICAL	SSD:S5E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8604	CRITICAL	SSD:S5E_1V2
118S0273	1	RES,300OHM,1%,1/20W,0201	R8606	CRITICAL	SSD:S5E_1V2
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8610,R8683	CRITICAL	SSD:S5E_1V2
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8611	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8651	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8651	CRITICAL	SSD:S5E

S4E VDD

PP0V9_SSD0

C8610 10UF 20% 6.3V CERM-X6S 0402

C8611 2.2UF 20% 6.3V X5R-CERM 0201

C8612 2.2UF 20% 6.3V X5R-CERM 0201

C8613 0.1UF 10% 16V X5R-CERM 0201

C8614 0.1UF 10% 16V X5R-CERM 0201

C8615 0.1UF 10% 16V X5R-CERM 0201

DESENSE CC879 12PF 5% 25V NP0-C0G 0201

DESENSE CC882 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE CC883 12PF 5% 25V NP0-C0G 0201

DESENSE CC880 3.0PF +/-0.1PF 25V NP0-C0G 0201

S4E VDDIO

PPVCCQ_ANI_SSD0

C8632 10UF 20% 6.3V CERM-X6S 0402

4.3UF 20% 4V CERM 0402

C8636

C8637 2.2UF 20% 6.3V X5R-CERM 0201

DESENSE CC845 12PF 5% 25V NP0-C0G 0201

DESENSE CC838 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE CC839 12PF 5% 25V NP0-C0G 0201

DESENSE CC844 3.0PF +/-0.1PF 25V NP0-C0G 0201

VCC CAP

PP2V5_NAND_SSD0

C8648 10UF 20% 6.3V CERM-X6S 0402

C8649 2.2UF 20% 6.3V X5R-CERM 0201

C8650 2.2UF 20% 6.3V X5R-CERM 0201

DESENSE CC861 12PF 5% 25V NP0-C0G 0201

DESENSE CC862 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE CC863 12PF 5% 25V NP0-C0G 0201

DESENSE CC864 3.0PF +/-0.1PF 25V NP0-C0G 0201

DESENSE CC865 12PF 5% 25V NP0-C0G 0201

DESENSE CC866 3.0PF +/-0.1PF 25V NP0-C0G 0201

PP1V8_IO_SSD0

C8684 2.2UF 20% 6.3V X5R-CERM 0201

C8687 2.2UF 20% 6.3V X5R-CERM 0201

R8610 0 5% 1/20W MF 0201 — OMIT_TABLE — SSD0_S4E0_PCI_AVDD_H (67D4)

C8644 0.1UF 10% 16V X5R-CERM 0201

C8645 4.7UF 20% 4V CER-X5R 0201

PP1V8_IO_SSD0

R8611 0 5% 1/20W MF 0201 — OMIT_TABLE — SSD0_S4E0_AVDD18_PLL (67D4)

C8646 0.1UF 10% 16V X5R-CERM 0201

C8647 2.2UF 20% 6.3V CER-X5R 0201

BOM_COST_GROUP=SSD

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S4E1

R8783 0 5% 1/20W MF 0201
PP0V9 SSD0 — PP0V9_SSD0_S4E1_VDD_PLL VOLTAGE=0.9V
C8783 4.7UF 20% 6V CER-X5R 0201 OMIT_TABLE
PLACE_NEAR=R8783.1:10MM

PP1V8_IO_SSD0
PPVCCQ_ANI_SSD0
PP2V5_NAND_SSD0
PP0V9_SSD0_S4E1_VDD_PLL
SSD0_S4E1_VPP
PP0V9_SSD0
SSD0_S4E1_ANI1_VREF
SSD0_S4E1_ANI0_VREF
SSD0_S4E1_AVDD18_PLL
SSD0_S4E1_PCI_AVDD_H

NOSTUFF R8730 0 5% 1/20W MF 0201

PP1V8_IO_SSD0 — R8708 100K 1% 1/20W MF 201
PP1V8_IO_SSD0 — R8702 47K 1% 1/20W MF 201
R8709 100K 1% 1/20W MF 201

SSD0_OCARINA_LPB_L	B3	EXT_D0/BOOT0
SSD_BFH	C4	EXT_D1/BOOT1
SSD0_S4E_BOOT2	B5	EXT_D2/BOOT2/SPINAND_SCLK
SSD0_S4E1_SWD_UID0	C6	EXT_D3/SWD_UID0/SPINAND_MISO
SSD0_S4E_UART_RX	B7	EXT_D4/UART_RX
SSD0_S4E1_SWD_UID1	C8	EXT_D5/SWD_UID1/SPINAND_MOSI
SSD0_S4E1_UART_TX	B9	EXT_D6/UART_TX
SSD0_OCARINA_PFN_L	B11	EXT_D7/SPF
SSD0_PCIE_RESET_L	E8	EXT_NCE/PERST*
SSD0_SWDIO	D7	EXT_NRE/JTAG_TMS
SSD0_SWCLK	E6	EXT_NWE/JTAG_TCK
SSD0_S4E1_JTAG_TDO	E4	EXT_RNB/JTAG_TDO
SSD0_S4E0_JTAG_TDO	D5	EXT_CLE/JTAG_TDI
SSD0_S4E_JTAG_SEL	D9	EXT_ALE/JTAG_SEL
SSD0_S4E1_DROOP_L	T3	DROOP_N
SSD0_WP_L	G2	WP_N

U8700
NAND-S4E-S5E-MCP-STUDY-COMBO
LGA
OMIT_TABLE

F3 VPP, R4 VDD_PLL, L12 B4 E12 D3 VCC, P9 N2 E10 E2 VDDIO_2/NAND, T5 K9 J2 VDDIO_1/GPIO, R8 R6 L8 L6 E8 G6 VDD, J4 G12 ANI1_VREF ANI0_VREF, L2 AVDD18_PLL, J8 H9 J6 M9 H6 PCI_VDD_2 PCI_VDD_1 PCI_AVDD_H PCI_AVDD_CLK_2 PCI_AVDD_CLK_1

CLK_IN	M3	SSD0_CLK24M_01
PCIE_REFCLK_P	K11	PCIE_CLK100M_SSD0_01_P
PCIE_REFCLK_M	J12	PCIE_CLK100M_SSD0_01_N
PCIE_CLKREQ_N	P5	SSD0_CLKREQ1_L
PCI_RESREF	H7	SSD0_S4E1_PCIE_RESREF
PCIE_RX0_P	M11	PCIE_SSD0_R2D_P<1>
PCIE_RX0_M	N12	PCIE_SSD0_R2D_N<1>
PCIE_TX0_P	R12	PCIE_SSD0_D2R_C_P<1>
PCIE_TX0_M	T11	PCIE_SSD0_D2R_C_N<1>
RESET*	L4	SSD0_OCARINA_RESET_L
TRST*	G10	SSD0_S4E_JTAG_TRST_L
ZQ_C	K3	SSD0_S4E1_ZQ_C
ZQ_N	C10	SSD0_S4E1_ZQ_L

C8703 0.22UF 10% 6.3V X5R-CERM 0201 — PCIE_SSD0_R2D_P<1> → PCIE_SSD0_R2D_C_P<1>
C8704 0.22UF 10% 6.3V X5R-CERM 0201 — PCIE_SSD0_R2D_N<1> → PCIE_SSD0_R2D_C_N<1>
C8701 0.22UF 10% 6.3V X5R-CERM 0201 — PCIE_SSD0_D2R_C_P<1> → PCIE_SSD0_D2R_P<1>
C8702 0.22UF 10% 6.3V X5R-CERM 0201 — PCIE_SSD0_D2R_C_N<1> → PCIE_SSD0_D2R_N<1>
R8704 3.01K 1% 1/20W MF 201 OMIT_TABLE — C8785 10PF 5% 25V C0G 0201 OMIT_TABLE

R8705 300 1% 1/20W MF 201
R8706 100 1% 1/20W MF 201 OMIT_TABLE
PLACE_NEAR=U8700.C10:15MM
PLACE_NEAR=U8700.K3:15MM

VSS

EXTERNAL VREF

PPVCCQ_ANI_SSD0
R8781 2K 1% 1/20W MF 201 NOSTUFF — C8781 0.01UF 10% 10V X7R 0201-1 NOSTUFF
R8780 0 5% 1/20W MF 0201 NOSTUFF — SSD0_S4E1_ANI1_VREF → SSD0_S4E1_ANI0_VREF
R8782 2K 1% 1/20W MF 201 NOSTUFF — C8782 0.01UF 10% 10V X7R 0201-1 NOSTUFF

S4E VDDIO

PPVCCQ_ANI_SSD0
C8732 10UF 20% 6.3V CERM-X6S 0402
C8736 4.3UF 20% 4V CERM 0402
C8737 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC847 12PF 5% 25V NP0-C0G 0201
DESENSE CC836 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC837 12PF 5% 25V NP0-C0G 0201
DESENSE CC846 3.0PF +/-0.1PF 25V NP0-C0G 0201

S4E VDD

PP0V9_SSD0
C8710 10UF 20% 6.3V CERM-X6S 0402
C8711 2.2UF 20% 6.3V X5R-CERM 0201
C8712 2.2UF 20% 6.3V X5R-CERM 0201
C8713 0.1UF 10% 16V X5R-CERM 0201
C8714 0.1UF 10% 16V X5R-CERM 0201
C8715 0.1UF 10% 16V X5R-CERM 0201
DESENSE CC875 12PF 5% 25V NP0-C0G 0201
DESENSE CC886 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC877 12PF 5% 25V NP0-C0G 0201
DESENSE CC888 3.0PF +/-0.1PF 25V NP0-C0G 0201

PP1V8_IO_SSD0
C8784 2.2UF 20% 6.3V X5R-CERM 0201
C8787 2.2UF 20% 6.3V X5R-CERM 0201

VCC CAP

PP2V5_NAND_SSD0
C8748 10UF 20% 6.3V CERM-X6S 0402
C8749 2.2UF 20% 6.3V X5R-CERM 0201
C8750 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC867 12PF 5% 25V NP0-C0G 0201
DESENSE CC868 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC869 12PF 5% 25V NP0-C0G 0201
DESENSE CC870 3.0PF +/-0.1PF 25V NP0-C0G 0201

PP1V8_IO_SSD0
R8710 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E1_PCI_AVDD_H
C8744 0.1UF 10% 16V X5R-CERM 0201
C8745 4.7UF 20% 4V CER-X5R 0201
R8711 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E1_AVDD18_PLL
C8746 0.1UF 10% 16V X5R-CERM 0201
C8747 2.2UF 20% 6.3V CER-X5R 0201
BOM_COST_GROUP=SSD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES,3.01KOHM,1%,1/20W,0201	R8704	CRITICAL	SSD:S4E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8704	CRITICAL	SSD:S5E
118S0011	1	RES,100OHM,1%,1/20W,0201	R8706	CRITICAL	SSD:S4E
118S0273	1	RES,300OHM,1%,1/20W,0201	R8706	CRITICAL	SSD:S5E
117S0201	3	RES,0OHM,1/20W,0201	R8710,R8711,R8783	CRITICAL	SSD:S4E
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8710,R8783	CRITICAL	SSD:S5E
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8711	CRITICAL	SSD:S5E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8704	CRITICAL	SSD:S5E_1V2
118S0273	1	RES,300OHM,1%,1/20W,0201	R8706	CRITICAL	SSD:S5E_1V2
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8710,R8783	CRITICAL	SSD:S5E_1V2
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8711	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,18PF,5%,25V,C0G,0201	C8785	CRITICAL	SSD:S5E
131S00003	1	CAP,CER,18PF,5%,25V,C0G,0201	C8785	CRITICAL	SSD:S5E_1V2

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S4E2

Need BLM02AX100SN1 FB for S5E BOM options to be added later

R8883 0 5% 1/20W MF 201 — PP0V9_SSD0 → PP0V9_SSD0_S4E2_VDD_PLL VOLTAGE=0.9V
C8883 4.7UF 20% 4V CER-X5R 0201 — PLACE_NEAR=R8883.1:10MM
OMIT_TABLE

PP1V8_IO_SSD0
R8809 100K 1% 1/20W MF 201
R8802 47K 1% 1/20W MF 201
R8808 100K 1% 1/20W MF 201
NOSTUFF R8830 0 5% 1/20W MF 0201

PP1V8_IO_SSD0
PPVCCQ_ANI_SSD0
PP2V5_NAND_SSD0
PP0V9_SSD0_S4E2_VDD_PLL
SSD0_S4E2_VPP
PP0V9_SSD0
SSD0_S4E2_ANI1_VREF
SSD0_S4E2_ANI0_VREF
SSD0_S4E2_AVDD18_PLL
SSD0_S4E2_PCI_AVDD_H

U8800
NAND-S4E-S5E-MCP-STUDY-COMBO
LGA
OMIT_TABLE

SSD0_OCARINA_LPB_L	B3	EXT_D0/BOOT0
SSD_BFH	C4	EXT_D1/BOOT1
SSD0_S4E_BOOT2	B5	EXT_D2/BOOT2/SPINAND_SCLK
SSD0_S4E2_SWD_UID0	C6	EXT_D3/SWD_UID0/SPINAND_MISO
SSD0_S4E_UART_RX	B7	EXT_D4/UART_RX
SSD0_S4E2_SWD_UID1	C8	EXT_D5/SWD_UID1/SPINAND_MOSI
SSD0_S4E2_UART_TX	B9	EXT_D6/UART_TX
SSD0_OCARINA_PFN_L	B11	EXT_D7/SPF
SSD0_PCIE_RESET_L	E8	EXT_NCE/PERST*
SSD0_SWDIO	D7	EXT_NRE/JTAG_TMS
SSD0_SWCLK	E6	EXT_NWE/JTAG_TCK
SSD0_S4E2_JTAG_TDO	E4	EXT_RNB/JTAG_TDO
SSD0_S4E1_JTAG_TDO	D5	EXT_CLE/JTAG_TDI
SSD0_S4E_JTAG_SEL	D9	EXT_ALE/JTAG_SEL
SSD0_S4E2_DROOP_L	T3	DROOP_N
SSD0_WP_L	G2	WP_N

VPP, VDD_PLL, VCC, VDDIO_2/NAND, VDDIO_1/GPIO, VDD, ANI1_VREF, ANI0_VREF, AVDD18_PLL, PCI_VDD_2, PCI_VDD_1, PCI_AVDD_H, PCI_AVDD_CLK_2, PCI_AVDD_CLK_1, VSS

R8840 May change pending CLK Rise Time/SI Calc

R8840 49.9 0.1% 1/20W MF 0201 — SSD0_CLK24M_23 → SSD0_CLK24M (IN 32A6 32B6 67C2)

PCIE_REFCLK_P	PCIE_CLK100M_SSD0_23_P	26A6 70C3 78C8 78D8
PCIE_REFCLK_M	PCIE_CLK100M_SSD0_23_N	26A6 70C3 78C8 78D8
PCIE_CLKREQ_N	SSD0_CLKREQ2_L	26A6 32A6
PCI_RESREF	SSD0_S4E2_PCIE_RESREF	
PCIE_RX0_P	PCIE_SSD0_R2D_P<2>	→ PCIE_SSD0_R2D_C_P<2> 26B6
PCIE_RX0_M	PCIE_SSD0_R2D_N<2>	→ PCIE_SSD0_R2D_C_N<2> 26B6
PCIE_TX0_P	PCIE_SSD0_D2R_C_P<2>	→ PCIE_SSD0_D2R_P<2> 26B6
PCIE_TX0_M	PCIE_SSD0_D2R_C_N<2>	→ PCIE_SSD0_D2R_N<2> 26B6
RESET*	SSD0_OCARINA_RESET_L	71B7 77A2 68C3 70C3
TRST*	SSD0_S4E_JTAG_TRST_L	67C4 68C2 70C2 72D3
ZQ_C	SSD0_S4E2_ZQ_C	
ZQ_N	SSD0_S4E2_ZQ_L	

R8804 3.01K 1% 1/20W MF 201 OMIT_TABLE
C8885 10PF 5% 25V C0G 0201 OMIT_TABLE
C8803 0.22UF 10% 6.3V X5R-CERM 0201
C8804 0.22UF 10% 6.3V X5R-CERM 0201
C8801 0.22UF 10% 6.3V X5R-CERM 0201
C8802 0.22UF 10% 6.3V X5R-CERM 0201
R8805 300 1% 1/20W MF 201 — PLACE_NEAR=U8800.C10:15MM
R8806 100 1% 1/20W MF 201 OMIT_TABLE — PLACE_NEAR=U8800.K3:15MM

EXTERNAL VREF

PPVCCQ_ANI_SSD0
R8881 2K 1% 1/20W MF 201 NOSTUFF
C8881 0.01UF 10% 10V X7R 0201-1 NOSTUFF
R8880 0 5% 1/20W MF 0201 NOSTUFF
SSD0_S4E2_ANI1_VREF ↔ SSD0_S4E2_ANI0_VREF
R8882 2K 1% 1/20W MF 201 NOSTUFF
C8882 0.01UF 10% 10V X7R 0201-1 NOSTUFF

S4E VDDIO

PPVCCQ_ANI_SSD0
C8832 10UF 20% 6.3V CERM-X6S 0402
4.3UF 20% 4V CERM 0402
C8836
C8837 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC843 12PF 5% 25V NP0-C0G 0201
DESENSE CC840 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC841 12PF 5% 25V NP0-C0G 0201
DESENSE CC842 3.0PF +/-0.1PF 25V NP0-C0G 0201

S4E VDD

PP0V9_SSD0
C8810 10UF 20% 6.3V CERM-X6S 0402
C8811 2.2UF 20% 6.3V X5R-CERM 0201
C8812 2.2UF 20% 6.3V X5R-CERM 0201
C8813 0.1UF 10% 16V X5R-CERM 0201
C8814 0.1UF 10% 16V X5R-CERM 0201
C8815 0.1UF 10% 16V X5R-CERM 0201
DESENSE CC885 12PF 5% 25V NP0-C0G 0201
DESENSE CC872 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC881 12PF 5% 25V NP0-C0G 0201
DESENSE CC884 3.0PF +/-0.1PF 25V NP0-C0G 0201

PP1V8_IO_SSD0
C8884 2.2UF 20% 6.3V X5R-CERM 0201
C8887 2.2UF 20% 6.3V X5R-CERM 0201

VCC CAP

PP2V5_NAND_SSD0
C8848 10UF 20% 6.3V CERM-X6S 0402
C8849 2.2UF 20% 6.3V X5R-CERM 0201
C8850 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC857 12PF 5% 25V NP0-C0G 0201
DESENSE CC858 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC859 12PF 5% 25V NP0-C0G 0201
DESENSE CC860 3.0PF +/-0.1PF 25V NP0-C0G 0201

R8810 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E2_PCI_AVDD_H
C8844 0.1UF 10% 16V X5R-CERM 0201
C8845 4.7UF 20% 4V CER-X5R 0201
PP1V8_IO_SSD0
R8811 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E2_AVDD18_PLL
C8846 0.1UF 10% 16V X5R-CERM 0201
C8847 2.2UF 20% 6.3V CER-X5R 0201

BOM_COST_GROUP=SSD

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES,3.01KOHM,1%,1/20W,0201	R8804	CRITICAL	SSD:S4E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8804	CRITICAL	SSD:S5E
118S0011	1	RES,100OHM,1%,1/20W,0201	R8806	CRITICAL	SSD:S4E
118S0273	1	RES,300OHM,1%,1/20W,0201	R8806	CRITICAL	SSD:S5E
117S0201	3	RES,0OHM,1/20W,0201	R8810,R8811,R8883	CRITICAL	SSD:S4E
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8810,R8883	CRITICAL	SSD:S5E
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8811	CRITICAL	SSD:S5E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8804	CRITICAL	SSD:S5E_1V2
118S0273	1	RES,300OHM,1%,1/20W,0201	R8806	CRITICAL	SSD:S5E_1V2
155S00161	2	FERR BD,180OHM,0.05 DCR,0201	R8810,R8883	CRITICAL	SSD:S5E_1V2
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8811	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8885	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8885	CRITICAL	SSD:S5E

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Apple Inc.

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REVISION 6.0.0
BRANCH evt-3
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Need BLM02AX100SN1 FB for SSE BOM options to be added later

R8983 0 5% 1/20W MF 0201 OMIT_TABLE
PP0V9_SSD0 — PP0V9_SSD0_S4E3_VDD_PLL VOLTAGE=0.9V
C8983 4.7UF 20% 4V CER-X5R 0201
PLACE_NEAR=R8983.1:10MM

PP1V8_IO_SSD0
R8908 100K 1% 1/20W MF 0201
R8909 100K 1% 1/20W MF 0201
NOSTUFF R8930 0 5% 1/20W MF 0201

PP1V8_IO_SSD0 — R8902 47K 1% 1/20W MF 0201

SSD0_OCARINA_LPB_L — B3 — EXT_D0/BOOT0
SSD_BFH — C4 — EXT_D1/BOOT1
SSD0_S4E_BOOT2 — B5 — EXT_D2/BOOT2/SPINAND_SCLK
SSD0_S4E3_SWD_UID0 — C6 — EXT_D3/SWD_UID0/SPINAND_MISO
SSD0_S4E_UART_RX — B7 — EXT_D4/UART_RX
SSD0_S4E3_SWD_UID1 — C8 — EXT_D5/SWD_UID1/SPINAND_MOSI
SSD0_S4E3_UART_TX — B9 — EXT_D6/UART_TX
SSD0_OCARINA_PFN_L — B11 — EXT_D7/SPF
SSD0_PCIE_RESET_L — E8 — EXT_NCE/PERST*
SSD0_SWDIO — D7 — EXT_NRE/JTAG_TMS
SSD0_SWCLK — E6 — EXT_NWE/JTAG_TCK
SSD0_S4E3_JTAG_TDO — E4 — EXT_RNB/JTAG_TDO
SSD0_S4E2_JTAG_TDO — D5 — EXT_CLE/JTAG_TDI
SSD0_S4E_JTAG_SEL — D9 — EXT_ALE/JTAG_SEL
SSD0_S4E3_DROOP_L — T3 — DROOP_N
SSD0_WP_L — G2 — WP_N

PP1V8_IO_SSD0 — F3 VPP
PP0V9_SSD0_S4E3_VDD_PLL — R4 VDD_PLL
SSD0_S4E3_VPP — R2
L12 G4 E12 D3 — VCC
P9 N2 E10 E2 — VDDIO_2/NAND
T5 K9 J2 — VDDIO_1/GPIO
R8 R6 L8 G8 G6 — VDD
J4 G12 L2 — ANI1_VREF / ANI0_VREF / AVDD18_PLL
J8 N8 J6 M9 N6 — PCI_VDD_2 / PCI_VDD_1 / PCI_AVDD_H / PCI_AVDD_CLK_2 / PCI_AVDD_CLK_1

PP1V8_IO_SSD0 — H7 — SSD0_S4E3_PCIE_RESREF
PP2V5_NAND_SSD0
PP0V9_SSD0
SSD0_S4E3_ANI1_VREF
SSD0_S4E3_ANI0_VREF
SSD0_S4E3_AVDD18_PLL
SSD0_S4E3_PCI_AVDD_H

U8900
NAND-S4E-S5E-MCP-STUDY-COMBO
LGA
OMIT_TABLE

CLK_IN — M3 — SSD0_CLK24M_23 (IN) 69C3
PCIE_REFCLK_P — K11 — PCIE_CLK100M_SSD0_23_P 26A6 69C3 78C8 78D8
PCIE_REFCLK_M — J12 — PCIE_CLK100M_SSD0_23_N 26A6 69C3 78C8 78D8
PCIE_CLKREQ_N — P5 — SSD0_CLKREQ3_L 26A6 32A6

PCIE_RX0_P — M11 — PCIE_SSD0_R2D_P<3> — C8903 0.22UF — PCIE_SSD0_R2D_C_P<3> 26B6
PCIE_RX0_M — N12 — PCIE_SSD0_R2D_N<3> — C8904 0.22UF — PCIE_SSD0_R2D_C_N<3> 26B6
PCIE_TX0_P — R12 — PCIE_SSD0_D2R_C_P<3> — C8901 0.22UF — PCIE_SSD0_D2R_P<3> 26B6
PCIE_TX0_M — T11 — PCIE_SSD0_D2R_C_N<3> — C8902 0.22UF — PCIE_SSD0_D2R_N<3> 26B6
(C8903/C8904/C8901/C8902: 0.22UF 10% 6.3V X5R-CERM 0201)

R8904 3.01K 1% 1/20W MF 0201 OMIT_TABLE
C8985 10PF 5% 25V C0G 0201 OMIT_TABLE

RESET* — L4 — SSD0_OCARINA_RESET_L
TRST* — G10 — SSD0_S4E_JTAG_TRST_L — 67C4 68C2 69C2 72D3
ZQ_C — K3 — SSD0_S4E3_ZQ_C
ZQ_N — C10 — SSD0_S4E3_ZQ_L

R8905 300 1% 1/20W MF 0201
PLACE_NEAR=U8900.C10:15MM
R8906 100 1% 1/20W MF 0201 OMIT_TABLE
PLACE_NEAR=U8900.K3:15MM

VSS
U12 U10 U8 U6 U4 U2 T13 T9 T7 T1 R10 P13 P11 P7 P3 P1 N10 N4 M13 M7 M5 M1 L10 K13 K7 K5 K1 J10 H13 H11 H9 H5 H3 H1 F13 F11 F9 F7 F5 F1 D13 D11 D1 C12 C2 B13 B1 A12 A10 A8 A6 A4 A2

EXTERNAL VREF

PPVCCQ_ANI_SSD0
R8981 2K 1% 1/20W MF 0201 NOSTUFF — C8981 0.01UF 10% 10V X7R 0201-1 NOSTUFF
R8980 0 5% 1/20W MF 0201 NOSTUFF
SSD0_S4E3_ANI1_VREF — SSD0_S4E3_ANI0_VREF
R8982 2K 1% 1/20W MF 0201 NOSTUFF — C8982 0.01UF 10% 10V X7R 0201-1 NOSTUFF

S4E VDD

PP0V9_SSD0
C8910 10UF 20% 6.3V CERM-X6S 0402
C8911 2.2UF 20% 6.3V X5R-CERM 0201
C8912 2.2UF 20% 6.3V X5R-CERM 0201
C8913 0.1UF 10% 16V X5R-CERM 0201
C8914 0.1UF 10% 16V X5R-CERM 0201
C8915 0.1UF 10% 16V X5R-CERM 0201
DESENSE CC889 12PF 5% 25V NP0-C0G 0201
DESENSE CC874 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC887 12PF 5% 25V NP0-C0G 0201
DESENSE CC876 3.0PF +/-0.1PF 25V NP0-C0G 0201

S4E VDDIO

PPVCCQ_ANI_SSD0
C8932 10UF 20% 6.3V CERM-X6S 0402
C8936 4.3UF 20% 4V CERM 0402
C8937 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC833 12PF 5% 25V NP0-C0G 0201
DESENSE CC850 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC835 12PF 5% 25V NP0-C0G 0201
DESENSE CC848 3.0PF +/-0.1PF 25V NP0-C0G 0201

PP1V8_IO_SSD0
C8984 2.2UF 20% 6.3V X5R-CERM 0201
C8987 2.2UF 20% 6.3V X5R-CERM 0201

R8910 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E3_PCI_AVDD_H
C8944 0.1UF 10% 16V X5R-CERM 0201
C8945 4.7UF 20% 4V CER-X5R 0201
PP1V8_IO_SSD0
R8911 0 5% 1/20W MF 0201 OMIT_TABLE — SSD0_S4E3_AVDD18_PLL
C8946 0.1UF 10% 16V X5R-CERM 0201
C8947 2.2UF 20% 6.3V CER-X5R 0201

BOM_COST_GROUP=SSD

VCC CAP

PP2V5_NAND_SSD0
C8948 10UF 20% 6.3V CERM-X6S 0402
C8949 2.2UF 20% 6.3V X5R-CERM 0201
C8950 2.2UF 20% 6.3V X5R-CERM 0201
C8951 2.2UF 20% 6.3V X5R-CERM 0201
C8952 2.2UF 20% 6.3V X5R-CERM 0201
DESENSE CC853 12PF 5% 25V NP0-C0G 0201
DESENSE CC854 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE CC855 12PF 5% 25V NP0-C0G 0201
DESENSE CC856 3.0PF +/-0.1PF 25V NP0-C0G 0201

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
118S0279	1	RES,3.01KOHM,1%,1/20W,0201	R8904	CRITICAL	SSD:S4E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8904	CRITICAL	SSD:S5E
118S0011	1	RES,100OHM,1%,1/20W,0201	R8906	CRITICAL	SSD:S4E
118S0273	1	RES,300OHM,1%,1/20W,0201	R8906	CRITICAL	SSD:S5E
117S0201	3	RES,0OHM,1/20W,0201	R8910,R8911,R8983	CRITICAL	SSD:S4E
155S00161	2	FERR BD,180HM,0.05 DCR,0201	R8910,R8983	CRITICAL	SSD:S5E
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8911	CRITICAL	SSD:S5E
998-16042	1	RES,200OHM,0.1%,1/20W,0201	R8904	CRITICAL	SSD:S5E_1V2
118S0273	1	RES,300OHM,1%,1/20W,0201	R8906	CRITICAL	SSD:S5E_1V2
155S00161	2	FERR BD,180HM,0.05 DCR,0201	R8910,R8983	CRITICAL	SSD:S5E_1V2
118S0794	1	RES,MF,2 OHM,1%,1/20W,0201	R8911	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8985	CRITICAL	SSD:S5E_1V2
131S00003	1	CAP,CER,10PF,5%,25V,C0G,0201	C8985	CRITICAL	SSD:S5E

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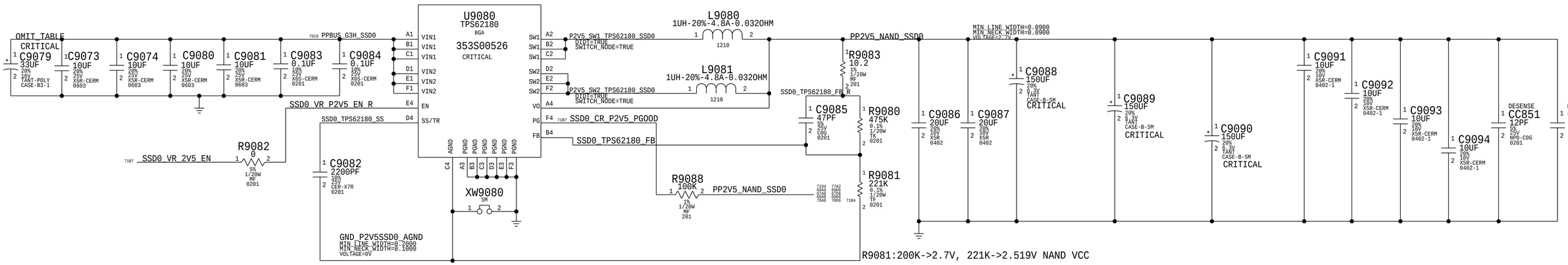

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
117S0201	2	RES,MF,1A MAX,0.004OHM,5%,0201,BLACK	R9012,R9017	CRITICAL	SSD:S4E
117S0201	2	RES,MF,1A MAX,0.004OHM,5%,0201,BLACK	R9012,R9017	CRITICAL	SSD:S5E
107S0118	1	RES,FILM,0.001OHM,1W,1%,1206	R9015	CRITICAL	SSD:S4E
107S0118	1	RES,FILM,0.001OHM,1W,1%,1206	R9015	CRITICAL	SSD:S5E

PAGE TITLE
OCARINA PMIC & NAND VCC VR

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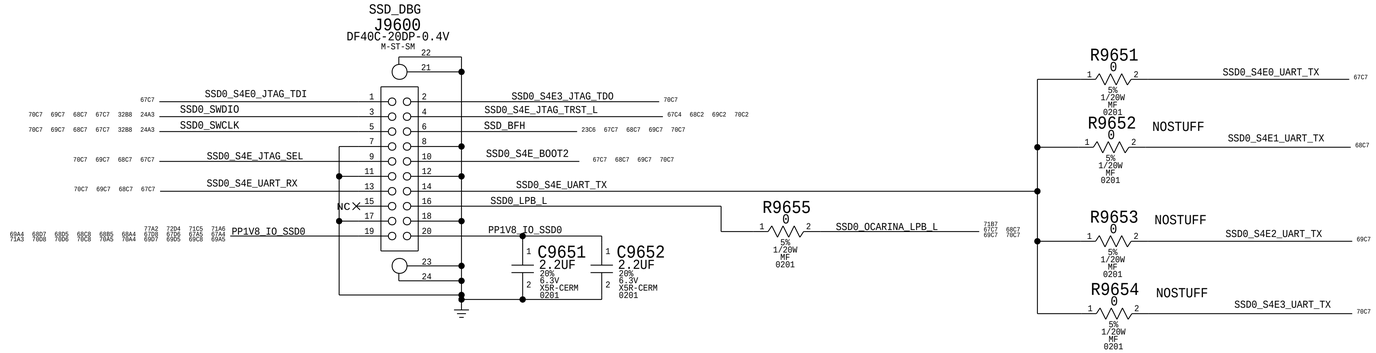
SSD0



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SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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SSD Support

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BOM_COST_GROUP=GRAPHICS

Display Mux

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PMIC Buck0 - SoC VDD_CPU

77B2 60D1 PPVDDCPU_AWAKE

Sourced from 3V3 G3H
Enabled by

PPVDDCPU_AWAKE
MIN_LINE_WIDTH=0.4000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.05V
MAKE_BASE=TRUE

PPVDDCPU_AWAKE 27D7 32D8

PMIC Buck1 - SoC VDD_CPU_SRAM

77B2 60C1 PPVDDCPUSRAM_AWAKE

Sourced from 3V3 G3H
Enabled by

PPVDDCPUSRAM_AWAKE
MIN_LINE_WIDTH=0.4000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.05V
MAKE_BASE=TRUE

PPVDDCPUSRAM_AWAKE 27D1

PMIC Buck2 - SoC VDD_SOC

77C2 60C1 PP0V82_SLPDDR

Sourced from 3V3 G3H
Enabled by

PP0V82_SLPDDR
MIN_LINE_WIDTH=0.7000
MIN_NECK_WIDTH=0.0900
VOLTAGE=0.82V
MAKE_BASE=TRUE

PP0V82_SLPDDR 27B7 32D8

PMIC BUCK3 - SoC AOP/SMC/VDD1

77C2 60B1 61B4 PP1V8_SLPS2R

Sourced from 3V3 G3H
Enabled by

PP1V8_SLPS2R
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1000
VOLTAGE=1.8V
MAKE_BASE=TRUE

PP1V8_SLPS2R 19B3 71A7
PP1V8_SLPS2R 60B3
PP1V8_SLPS2R 64C6
PP1V8_SLPS2R 61C7
PP1V8_SLPS2R 31C4
PP1V8_SLPS2R 62A7
PP1V8_SLPS2R 49D6
PP1V8_SLPS2R 31A8
PP1V8_SLPS2R 23A7 32A7 81B8
PP1V8_SLPS2R 29C7
PP1V8_SLPS2R 29C7
PP1V8_SLPS2R 29C7
PP1V8_SLPS2R 29D7
PP1V8_SLPS2R 53A7
PP1V8_SLPS2R 36D3 52D1
PP1V8_SLPS2R 36C8
PP1V8_SLPS2R 36B3
PP1V8_SLPS2R 32D3 32D4
PP1V8_SLPS2R 64A8
PP1V8_SLPS2R 33D2

PMIC BUCK3 SW 1

77C2 60A2 81A4 PP1V8_AWAKE

Sourced from PP1V8_SLPS2R
Enabled by

PP1V8_AWAKE
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.8V
MAKE_BASE=TRUE

PP1V8_AWAKE 62B7
PP1V8_AWAKE 31B8
PP1V8_AWAKE 29B7
PP1V8_AWAKE 29B8
PP1V8_AWAKE 29A7
PP1V8_AWAKE 29B7
PP1V8_AWAKE 29B6
PP1V8_AWAKE 23A7 26A7 31C6 31D5 31D6 32A7
PP1V8_AWAKE 31B4
PP1V8_AWAKE 51D8

U8270 - 3V3 Sensors

64A6 PP1V8_S4SW_SNS

Sourced from 1V8_SLPS2R
Enabled by SENSOR_PWR_EN

PP1V8_S4SW_SNS
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=3.3V
MAKE_BASE=TRUE

PP1V8_S4SW_SNS 38C3 38C7 38D7
PP1V8_S4SW_SNS 38A4 41A5 38A6 41A3 38B4 41C3 39B3 41C7 39C7 41D3 39D4 41D7 39D7 43B7 40C3 43C7 40C7 40D3
PP1V8_S4SW_SNS 38B8
PP1V8_S4SW_SNS 38D7

PMIC BUCK3 SW 4 - VDD1

60A2 PP1V8_S3

Sourced from PP1V8_SLPS2R
Enabled by

PP1V8_S3
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.1000
VOLTAGE=1.8V
MAKE_BASE=TRUE

PP1V8_S3 41C4
PP1V8_S3 77D2

41C4 PP1V8_S3_MEM

PP1V8_S3_MEM
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.8V
MAKE_BASE=TRUE

PP1V8_S3_MEM 18B6 18C6 18D6 63A6 63B6 77B4

PMIC Buck4 - SDRAM VDD2

77C2 60B1 PP1V1_SLPS2R

Sourced from 3V3_G3H
Enabled by

PP1V1_SLPS2R
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.1V
MAKE_BASE=TRUE

PP1V1_SLPS2R 61A4
PP1V1_SLPS2R 61C7
PP1V1_SLPS2R 28D1
PP1V1_SLPS2R 29B2

U7901 - VDDIO_DDR & PLL

77B2 61A4 PP1V1_SLPDDR

Sourced from
Enabled by

PP1V1_SLPDDR
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.1V
MAKE_BASE=TRUE

PP1V1_SLPDDR 23B2
PP1V1_SLPDDR 28D6
PP1V1_SLPDDR 28D2
PP1V1_SLPDDR 29A2

PMIC Buck5 - VDD_FIXED

77B2 60A1 PP0V9_SLPDDR

Sourced from 3V3_G3H
Enabled by

PP0V9_SLPDDR
MIN_LINE_WIDTH=0.3000
MIN_NECK_WIDTH=0.0900
VOLTAGE=0.9V
MAKE_BASE=TRUE

PP0V9_SLPDDR 28C8
PP0V9_SLPDDR 28B7
PP0V9_SLPDDR 28B8
PP0V9_SLPDDR 28A3 28A8 28B3
PP0V9_SLPDDR 28B7

PMIC Buck7 - VCCPRIM_CORE

77C2 60B8 PPVNN_PCH_EXT

Sourced from 3V3_G3H
Enabled by

PPVNN_PCH_EXT
MIN_LINE_WIDTH=0.5000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.05V
MAKE_BASE=TRUE

PPVNN_PCH_EXT 8A4 8B1

PMIC Buck8

77C2 60B8 60A6 PP1P05_PCH_EXT

Sourced from 3V3_G3H
Enabled by

PP1P05_PCH_EXT
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.05V
MAKE_BASE=TRUE

PP1P05_PCH_EXT 8A4 8B1 77D2

PMIC LDO0 - VDD_LOW

77C2 61C2 PP0V8_SLPS2R

Sourced from PP1V1_SLP2R
Enabled by

PP0V8_SLPS2R
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.05V
MAKE_BASE=TRUE

PP0V8_SLPS2R 20A7

PMIC LDO1 - PCH VCCRTC

61C2 PP3V_G3H_RTC

Sourced from PP3V3_G3H
Enabled by

PP3V_G3H_RTC
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.0900
VOLTAGE=3V
MAKE_BASE=TRUE

PP3V_G3H_RTC 8B1 11B8
PP3V_G3H_RTC 77C2

PMIC LDO2 - PCIE_REFBUF/PLL

77B2 61C2 PP1V2_AWAKE

Sourced from PP1V8_SLPS2R
Enabled by

PP1V2_AWAKE
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.0900
VOLTAGE=1.2V
MAKE_BASE=TRUE

PP1V2_AWAKE 29D3
PP1V2_AWAKE 29C1 29C2
PP1V2_AWAKE 29C2
PP1V2_AWAKE 29B2

PMIC V3P3 SW 1 - USB

77B2 61C2 PP3V3_AWAKE

Sourced from 3V3_G3H
Enabled by

PP3V3_AWAKE
MIN_LINE_WIDTH=0.1000
MIN_NECK_WIDTH=0.0900
VOLTAGE=3.3V
MAKE_BASE=TRUE

PP3V3_AWAKE 29A3

PMIC V3P3 SW 2 -

77C2 61C2 PP3V3_S5

Sourced from 3V3_G3H
Enabled by

PP3V3_S5
MIN_LINE_WIDTH=0.0900
MIN_NECK_WIDTH=0.0900
VOLTAGE=3.3V
MAKE_BASE=TRUE

PP3V3_S5 59D4
PP3V3_S5 8B4 11B8 15B4
PP3V3_S5 16A7 17C7 31C1
PP3V3_S5 5B7 12B7 13A7 14A7
PP3V3_S5 36D8
PP3V3_S5 8A4 11C8
PP3V3_S5 17D6
PP3V3_S5 64C3
PP3V3_S5 81D4
PP3V3_S5 36B5
PP3V3_S5 16A4
PP3V3_S5 64A5 64B5
PP3V3_S5 56B4
PP3V3_S5 32B2 32C3

Digital Ground

GND
VOLTAGE=0V
MIN_LINE_WIDTH=0.0600
MIN_NECK_WIDTH=0.0700

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Power Aliases - 1

Apple Inc.

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PBUS Rails

U7000 - PBUS

PPBUS_G3H
- PPBUS_G3H (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=13.1V, MAKE_BASE=TRUE)
- PPBUS_G3H ×19
- PPBUS_HS_CPU
- PPBUS_S0_PRIM1V8
- PPVIN_G3H_P5VG3S
- PPVIN_G3H_P3V3G3H
- PPVIN_G3H_P3V3G3HRTC
- PPBUS_G3H_SSD0
- PPBUS_G3H_SPKRAMP_LEFT
- PPDCIN_G3H

5V Rails

U7600 - 5V G3S

PP5V_G3S
- Sourced from PBus
- Enabled by P5VG3S_EN
- PP5V_G3S ×19
- PP5V_G3S_CPUREG
- PP5V_G3S_TPAD
- PP5V_G3S_KBD
- PP5V_G3S_ALSCAM

5V Rails Continued

PP5V_S4SW
- PP5V_S4SW (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=5V, MAKE_BASE=TRUE)
- PP5V_S4SW ×19
- PP5V_S4SW_ISNS
- PP5V_S0SW_LCD_ISNS_R
- PP5V_S0SW_LCD

U7550 - 5V LDO - UNUSED

PP5V_S5_LDO
- PP5V_S5_LDO (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=5V, MAKE_BASE=TRUE)
- PP5V_S5_LDO ×19

3V3 Rails

U6960 - 3V3_G3H_RTC

PP3V3_G3H_RTC
- Sourced from PBus
- Enabled by CHGR_EN_MVR
- PP3V3_G3H_RTC (MIN_LINE_WIDTH=0.2000, MIN_NECK_WIDTH=0.0550, VOLTAGE=3.4V, MAKE_BASE=TRUE)
- PP3V3_G3H_RTC ×19
- PP3V3_G3H_SSD0
- PP3V3_G3H_RTC_MESA
- PP3V3_G3H
- PP3V3_G3H_PMU_VDDMAIN
- PP3V3_G3H_DFR

U7660 - 3V3_G3H

PP3V3_G3H
- Sourced from PBus
- Enabled by PMU_VDDMAIN_EN
- VOUT_RTC sourced from PP3V3_G3H_RTC input to PMIC
- PP3V3_G3H ×19

U8200 - 3V3_G3S

PP3V3_G3S
- Sourced from 3V3_G3H_RTC
- Enabled by P3V3G3S_EN
- PP3V3_G3S (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=3.3V, MAKE_BASE=TRUE)
- PP3V3_G3S ×19

3V3 Rails Continued

PP3V3_S0_TBT_XT_ISNS_R
- PP3V3_S0_TBT_XT_ISNS_R (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0700, VOLTAGE=3.4V, MAKE_BASE=TRUE)

PP3V3_S0_TBT_WR_ISNS_R
- PP3V3_S0_TBT_WR_ISNS_R (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=3.3V, MAKE_BASE=TRUE)

U8305 - 3V3_TBT_X_S0
- Sourced from 3V3_G3H
- Enabled by TBT_PWR_EN

U8303 - 3V3_TBT_T_S0

Removed due to USBC block

U8321 - 3V3_TBT_W_S0
- Sourced from 3V3_G3H_RTC
- Enabled by TBT_PWR_EN

U8331 - 3V3_TBT_R_S0
- Sourced from 3V3_G3H_RTC
- Enabled by TBT_PWR_EN

CPU/PCH Rails

U7100, U7210, U7220 (IMVP9) - VCCIN

PPVCCIN_S0_CPU
- Sourced from PBus
- Enabled by CPU_VR_EN
- PPVCCIN_S0_CPU (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)
- PPVCCIN_S0_CPU ×19

PCH VCC1P05 -> CPU VCCSTG / VCCST SW

PP1V05_PCH_OUT_FET
- Sourced from VCC1P05
- Enabled by CPU_C10_GATE_L
- PP1V05_PCH_OUT_FET (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)
- PP1V05_PCH_OUT_FET ×19

PCH VCC1P05 OUT PLL -> CPU VCCPLL

PP1V05_S0_CPU_VCCPLL
- PP1V05_S0_CPU_VCCPLL (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)

U7400 - VCCINAUX

PPVCCIN_AUX_PCH_PRIM
- PPVCCIN_AUX_PCH_PRIM (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.8V, MAKE_BASE=TRUE)
- PPVCCIN_AUX_PCH_PRIM ×19

U8350 - VCCST

PP1V05_S0_CPU_VCCST
- PP1V05_S0_CPU_VCCST (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)
- PP1V05_S0_CPU_VCCST ×19

U8255 - CPU VCCSTG

PP1V05_S0SW_VCCSTG
- Sourced from VCC1P05
- Enabled by CPU_C10_GATE_L
- PP1V05_S0SW_VCCSTG (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)
- PP1V05_S0SW_VCCSTG ×19

U8207 - VCCPLL OC SW

PP1V1_S0SW
- Sourced from PP1V2_S3
- Enabled by CPU_C10_GATE_L && PVCCPLLOC_EN
- PP1V1_S0SW (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.1V, MAKE_BASE=TRUE)
- PP1V1_S0SW ×19

U8310 - VCCA

PP1V8_S0SW
- PP1V8_S0SW (MIN_LINE_WIDTH=0.7000, MIN_NECK_WIDTH=0.0750, VOLTAGE=1.8V, MAKE_BASE=TRUE)

U5000 - 1V05 PRIM PCH

PP1V05_PRIM_OUT_PCH
- PP1V05_PRIM_OUT_PCH (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.05V, MAKE_BASE=TRUE)

PPVCCIO_OUT
- PPVCCIO_OUT (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.8V, MAKE_BASE=TRUE)
- PPVCCIO_OUT ×19

3V3 Rails Continued

PP3V3_G3S_WLANBT
- PP3V3_G3S_WLANBT (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=3.3V, MAKE_BASE=TRUE)
- PP3V3_G3S_WLANBT ×19

PP3V3_G3S_TPAD
- PP3V3_G3S_TPAD (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=3.3V, MAKE_BASE=TRUE)
- PP3V3_G3S_TPAD ×19

PP3V3_G3S_KBD
- PP3V3_G3S_KBD (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=3.3V, MAKE_BASE=TRUE)
- PP3V3_G3S_KBD ×19

1V8 Rails

U8220 - 1V8_G3S

PP1V8_G3S
- Sourced from 1V8 SLEEPS2R
- Enabled by P1V8G3S_EN
- PP1V8_G3S (MIN_LINE_WIDTH=0.1000, MIN_NECK_WIDTH=0.2000, VOLTAGE=1.8V, MAKE_BASE=TRUE)
- PP1V8_G3S ×19
- PP1V8_G3S_WLANBT

U7700 - 1V8_S5

PP1V8_S5
- PP1V8_S5 (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.8V, MAKE_BASE=TRUE)
- PP1V8_S5 ×19

Memory Rails

U8100 - VDD2

PP1V1_S3
- Sourced from PBUS
- Enabled by PVDDQ_EN
- PP1V1_S3 (MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0900, VOLTAGE=1.1V, MAKE_BASE=TRUE)
- PP1V1_S3 ×19
- PP1V1_S3_CPU
- PP0V6_S3

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Unused SoC Signals

2406	NC_ALTIMETER_INT	MAKE_BASE=TRUE	NC_ALTIMETER_INT
2483	NC_DISP_GCON_INT_L	MAKE_BASE=TRUE	NC_DISP_GCON_INT_L
2583	NC_DFR_TOUCH_RSVD	MAKE_BASE=TRUE	NC_DFR_TOUCH_RSVD
2406	NC_ENET_LOW_PWR	MAKE_BASE=TRUE	NC_ENET_LOW_PWR
2406	NC_ENET_MEDIA_SENSE	MAKE_BASE=TRUE	NC_ENET_MEDIA_SENSE
26C3	NC_ENET_RESET_L	MAKE_BASE=TRUE	NC_ENET_RESET_L
2503	NC_FTCAM_CLK12M_R	MAKE_BASE=TRUE	NC_FTCAM_CLK12M_R
2503	NC_FTCAM_RESET_L	MAKE_BASE=TRUE	NC_FTCAM_RESET_L
2306	NC_GNSS_DEV_WAKE	MAKE_BASE=TRUE	NC_GNSS_DEV_WAKE
2306	NC_GNSS_HOST_TIME	MAKE_BASE=TRUE	NC_GNSS_HOST_TIME
25A3	NC_I2S_CODEC_MCLK	MAKE_BASE=TRUE	NC_I2S_CODEC_MCLK
25A3	NC_I2S_CODEC1_MCLK	MAKE_BASE=TRUE	NC_I2S_CODEC1_MCLK
25A3	NC_I2S_CODEC1_R2D_R	MAKE_BASE=TRUE	NC_I2S_CODEC1_R2D_R
25A3	NC_I2S_HAWKING_BCLK_R	MAKE_BASE=TRUE	NC_I2S_HAWKING_BCLK_R
25A3	NC_I2S_HAWKING_D2R	MAKE_BASE=TRUE	NC_I2S_HAWKING_D2R
25A3	NC_I2S_HAWKING_LRCLK	MAKE_BASE=TRUE	NC_I2S_HAWKING_LRCLK
24C3	NC_MESA_MENUKEY_L	MAKE_BASE=TRUE	NC_MESA_MENUKEY_L
2483	NC_PCC_EVENT	MAKE_BASE=TRUE	NC_PCC_EVENT
2483	NC_SOC_PCH_GCON_INT_L	MAKE_BASE=TRUE	NC_SOC_PCH_GCON_INT_L
26C3	NC_PCIE_CLK100M_ENET_N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_ENET_N
26C3	NC_PCIE_CLK100M_ENET_P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_ENET_P
26A3	NC_PCIE_CLK100M_SSD1_01_N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_SSD1_01_N
2683	NC_PCIE_CLK100M_SSD1_01_P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_SSD1_01_P
26A3	NC_PCIE_CLK100M_SSD1_23_N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_SSD1_23_N
26A3	NC_PCIE_CLK100M_SSD1_23_P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_SSD1_23_P
26C3	NC_PCIE_CLK100M_WLAN_N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_WLAN_N
2603	NC_PCIE_CLK100M_WLAN_P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_WLAN_P
2603	NC_PCIE_ENET_D2R_N	MAKE_BASE=TRUE	NC_PCIE_ENET_D2R_N
2603	NC_PCIE_ENET_D2R_P	MAKE_BASE=TRUE	NC_PCIE_ENET_D2R_P
2603	NC_PCIE_ENET_R2D_C_N	MAKE_BASE=TRUE	NC_PCIE_ENET_R2D_C_N
2603	NC_PCIE_ENET_R2D_C_P	MAKE_BASE=TRUE	NC_PCIE_ENET_R2D_C_P
2683	NC_PCIE_SSD1_D2R_N<3..0>	MAKE_BASE=TRUE	NC_PCIE_SSD1_D2R_N<3..0>
2683	NC_PCIE_SSD1_D2R_P<3..0>	MAKE_BASE=TRUE	NC_PCIE_SSD1_D2R_P<3..0>
2683	NC_PCIE_SSD1_R2D_C_N<3..0>	MAKE_BASE=TRUE	NC_PCIE_SSD1_R2D_C_N<3..0>
2683	NC_PCIE_SSD1_R2D_C_P<3..0>	MAKE_BASE=TRUE	NC_PCIE_SSD1_R2D_C_P<3..0>
2603	NC_PCIE_WLAN_D2R_N	MAKE_BASE=TRUE	NC_PCIE_WLAN_D2R_N
2603	NC_PCIE_WLAN_D2R_P	MAKE_BASE=TRUE	NC_PCIE_WLAN_D2R_P
2603	NC_PCIE_WLAN_R2D_C_N	MAKE_BASE=TRUE	NC_PCIE_WLAN_R2D_C_N
2603	NC_PCIE_WLAN_R2D_C_P	MAKE_BASE=TRUE	NC_PCIE_WLAN_R2D_C_P
24C6	NC_PCIEDN_WAKE_L	MAKE_BASE=TRUE	NC_PCIEDN_WAKE_L
2403	NC_PLCAM_PROX_INT_L	MAKE_BASE=TRUE	NC_PLCAM_PROX_INT_L
2403	NC_PLCAM_ROMEO_B2B_DETECT	MAKE_BASE=TRUE	NC_PLCAM_ROMEO_B2B_DETECT
2503	NC_PLCAM_RX_CLK12M_R	MAKE_BASE=TRUE	NC_PLCAM_RX_CLK12M_R
2503	NC_PLCAM_RX_RESET_L	MAKE_BASE=TRUE	NC_PLCAM_RX_RESET_L
2503	NC_PLCAM_TX_CLK12M_R	MAKE_BASE=TRUE	NC_PLCAM_TX_CLK12M_R
2503	NC_PLCAM_TX_INT	MAKE_BASE=TRUE	NC_PLCAM_TX_INT
2503	NC_PLCAM_TX_RESET_L	MAKE_BASE=TRUE	NC_PLCAM_TX_RESET_L
2306	NC_PLCAM_TX_THROTTLE	MAKE_BASE=TRUE	NC_PLCAM_TX_THROTTLE
24C6	NC_SDCONN_STATE_CHANGE_L	MAKE_BASE=TRUE	NC_SDCONN_STATE_CHANGE_L
24C6	NC_SMC_GFX_SELF_THROTTLE	MAKE_BASE=TRUE	NC_SMC_GFX_SELF_THROTTLE
24A3	NC_SMC_LED_ONEWIRE	MAKE_BASE=TRUE	NC_SMC_LED_ONEWIRE
24C6	NC_SMC_TOPBLK_SWP_L	MAKE_BASE=TRUE	NC_SMC_TOPBLK_SWP_L
2406	NC_SPI_ALTIMETER_CS_L	MAKE_BASE=TRUE	NC_SPI_ALTIMETER_CS_L
26A3	NC_SSD1_CLK24M_R	MAKE_BASE=TRUE	NC_SSD1_CLK24M_R
26A3	NC_SSD1_CLKREQ0_L	MAKE_BASE=TRUE	NC_SSD1_CLKREQ0_L
26A3	NC_SSD1_CLKREQ1_L	MAKE_BASE=TRUE	NC_SSD1_CLKREQ1_L
26A3	NC_SSD1_CLKREQ2_L	MAKE_BASE=TRUE	NC_SSD1_CLKREQ2_L
26A3	NC_SSD1_CLKREQ3_L	MAKE_BASE=TRUE	NC_SSD1_CLKREQ3_L
26A3	NC_SSD1_PCIE_RESET_L	MAKE_BASE=TRUE	NC_SSD1_PCIE_RESET_L
24A3	NC_SSD1_SWCLK_UART_R2D	MAKE_BASE=TRUE	NC_SSD1_SWCLK_UART_R2D
24A3	NC_SSD1_SWDIO_UART_D2R	MAKE_BASE=TRUE	NC_SSD1_SWDIO_UART_D2R
2583	NC_PCHROM_SW_EN	MAKE_BASE=TRUE	NC_PCHROM_SW_EN
2603	NC_PCIE_DN2_R2D_CP	MAKE_BASE=TRUE	NC_PCIE_DN2_R2D_CP
2603	NC_PCIE_DN2_R2D_CN	MAKE_BASE=TRUE	NC_PCIE_DN2_R2D_CN
2603	NC_PCIE_DN2_D2RP	MAKE_BASE=TRUE	NC_PCIE_DN2_D2RP
2603	NC_PCIE_DN2_D2RN	MAKE_BASE=TRUE	NC_PCIE_DN2_D2RN
2603	NC_PCIE_DN3_R2D_CP	MAKE_BASE=TRUE	NC_PCIE_DN3_R2D_CP
2603	NC_PCIE_DN3_R2D_CN	MAKE_BASE=TRUE	NC_PCIE_DN3_R2D_CN
2603	NC_PCIE_DN3_D2RP	MAKE_BASE=TRUE	NC_PCIE_DN3_D2RP
2603	NC_PCIE_DN3_D2RN	MAKE_BASE=TRUE	NC_PCIE_DN3_D2RN
26C3	NC_PCIE_CLK100M_DN2P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_DN2P
26C3	NC_PCIE_CLK100M_DN2N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_DN2N
26C3	NC_PCIEDN2_CLKREQ_L	MAKE_BASE=TRUE	NC_PCIEDN2_CLKREQ_L
26C3	NC_PCIEDN2_RESET_L	MAKE_BASE=TRUE	NC_PCIEDN2_RESET_L
26C3	NC_PCIE_CLK100M_DN3P	MAKE_BASE=TRUE	NC_PCIE_CLK100M_DN3P
26C3	NC_PCIE_CLK100M_DN3N	MAKE_BASE=TRUE	NC_PCIE_CLK100M_DN3N
26C3	NC_PCIEDN3_CLKREQ_L	MAKE_BASE=TRUE	NC_PCIEDN3_CLKREQ_L
26C3	NC_PCIEDN3_RESET_L	MAKE_BASE=TRUE	NC_PCIEDN3_RESET_L
2386	NC_SOC_USB_ID	MAKE_BASE=TRUE	NC_SOC_USB_ID
27A3	NC_SOC_VDDSOC_SENSE	MAKE_BASE=TRUE	NC_SOC_VDDSOC_SENSE
27C3	NC_SOC_VSSCPU_SENSE	MAKE_BASE=TRUE	NC_SOC_VSSCPU_SENSE
27A3	NC_SOC_VSSSOC_SENSE	MAKE_BASE=TRUE	NC_SOC_VSSSOC_SENSE
24B3	NC_TPAD_VIBE_L	MAKE_BASE=TRUE	NC_TPAD_VIBE_L
25A6	NC_UART_GNSS_D2R_CTS_L	MAKE_BASE=TRUE	NC_UART_GNSS_D2R_CTS_L
25A6	NC_UART_GNSS_R2D_RTS_L	MAKE_BASE=TRUE	NC_UART_GNSS_R2D_RTS_L
26C3	NC_WLAN_CLKREQ_L	MAKE_BASE=TRUE	NC_WLAN_CLKREQ_L
2306	NC_WLAN_DEV_WAKE	MAKE_BASE=TRUE	NC_WLAN_DEV_WAKE
26C3	NC_WLAN_PERST_L	MAKE_BASE=TRUE	NC_WLAN_PERST_L
24C3	NC_SWD_WLAN_SWDIO	MAKE_BASE=TRUE	NC_SWD_WLAN_SWDIO
24C3	NC_SWD_WLAN_SWDCLK	MAKE_BASE=TRUE	NC_SWD_WLAN_SWDCLK
2586	NC_UART_BT_D2R	MAKE_BASE=TRUE	NC_UART_BT_D2R
2586	NC_UART_BT_R2D	MAKE_BASE=TRUE	NC_UART_BT_R2D
2586	NC_UART_BT_D2R_CTS_L	MAKE_BASE=TRUE	NC_UART_BT_D2R_CTS_L
2586	NC_UART_BT_R2D_RTS_L	MAKE_BASE=TRUE	NC_UART_BT_R2D_RTS_L

TP SoC Signals

7782 2403	TP_SMC_FIXTURE_MODE_L	MAKE_BASE=TRUE	TP_SMC_FIXTURE_MODE_L	
77C4 25B6	TP_SOC_DEBUGPRT_RX	MAKE_BASE=TRUE	TP_SOC_DEBUGPRT_RX	
77C4 25B6	TP_SOC_DEBUGPRT_TX	MAKE_BASE=TRUE	TP_SOC_DEBUGPRT_TX	
23C3	TEST_SOC_AMUXOUT	MAKE_BASE=TRUE	TEST_SOC_AMUXOUT	78C4
23C3	TEST_SOC_TST_CLKOUT	MAKE_BASE=TRUE	TEST_SOC_TST_CLKOUT	78B4

SoC Aliases

2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	
2506	GND	MAKE_BASE=TRUE	

Unused PMIC Signals

53A4	NC_CHGR_AUX_OK	MAKE_BASE=TRUE	NC_CHGR_AUX_OK
6206	NC_GPU_THRMTRIP	MAKE_BASE=TRUE	NC_GPU_THRMTRIP
6283	NC_PVCCEOPIO_EDRAM_PGOOD	MAKE_BASE=TRUE	NC_PVCCEOPIO_EDRAM_PGOOD
6283	NC_NAND_RESET_L_SD_PWR_EN	MAKE_BASE=TRUE	NC_NAND_RESET_L_SD_PWR_EN
6283	NC_NAND_WP_L_ENET_PWR_EN	MAKE_BASE=TRUE	NC_NAND_WP_L_ENET_PWR_EN
6283	NC_PEARL_PWREN_P2V7NAND_EN	MAKE_BASE=TRUE	NC_PEARL_PWREN_P2V7NAND_EN
6206	NC_PMU_CLK32K_GNSS_R	MAKE_BASE=TRUE	NC_PMU_CLK32K_GNSS_R
62C3	NC_P3V3G3W_EN	MAKE_BASE=TRUE	NC_P3V3G3W_EN
62C3	NC_P3V3G3W_PGOOD	MAKE_BASE=TRUE	NC_P3V3G3W_PGOOD
6206	NC_PMU_CLK32K	MAKE_BASE=TRUE	NC_PMU_CLK32K
60A2	NC_PPBUCK8_SW1	MAKE_BASE=TRUE	NC_PPBUCK8_SW1
60A2	NC_PPBUCK8_SW2	MAKE_BASE=TRUE	NC_PPBUCK8_SW2
60A2	NC_PPBUCK3_SW3	MAKE_BASE=TRUE	NC_PPBUCK3_SW3
60A2	NC_PPBUCK3_SW5	MAKE_BASE=TRUE	NC_PPBUCK3_SW5

PMIC Aliases

6283	UVP_DIS_L	MAKE_BASE=TRUE	UVP_DIS_L	32C3
62C3	GND	MAKE_BASE=TRUE		
62C9	GND	MAKE_BASE=TRUE		

used SoC Signals

24D6	SE_HOST_WAKE_R	MAKE_BASE=TRUE	SE_HOST_WAKE_R	34C6

Unused SoC Signals cont'd

2483	NC_TBT_WAKE_L	MAKE_BASE=TRUE	NC_TBT_WAKE_L	

TP points with NO_TEST=1

12C2	NC_TP_PCH_GPP_R6	NO_TEST=1	NC_TP_PCH_GPP_R6	
12C2	NC_TP_PCH_GPP_R5	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_R5	
12C2	NC_TP_PCH_GPP_H5	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_H5	
12C2	NC_TP_PCH_GPP_H22	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_H22	
12C2	NC_TP_PCH_GPP_H21	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_H21	
12C2	NC_TP_PCH_GPP_H19	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_H19	
12C2	NC_TP_PCH_GPP_H18	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_H18	
12B5	NC_TP_PCH_GPP_E23	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_E23	
12B5	NC_TP_PCH_GPP_E22	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_E22	
12B5	NC_TP_PCH_GPP_E21	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_E21	
12B5	NC_TP_PCH_GPP_E20	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_E20	
12C5	NC_TP_PCH_GPP_D20	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_D20	
12C5	NC_TP_PCH_GPP_D19	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_D19	
12C5	NC_TP_PCH_GPP_C9	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_C9	
12C5	NC_TP_PCH_GPP_C8	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_C8	
12C5	NC_TP_PCH_GPP_C10	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_C10	
12C5	NC_TP_PCH_GPP_A19	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_A19	
12C5	NC_TP_PCH_GPP_A11	MAKE_BASE=TRUE NO_TEST=1	NC_TP_PCH_GPP_A11	
		MAKE_BASE=TRUE		
6B3	NC_TP_CPU_RSVD_DJ9	NO_TEST=1	NC_TP_CPU_RSVD_DJ9	
6A3	NC_TP_CPU_RSVD_DJ46	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DJ46	
6A3	NC_TP_CPU_RSVD_DJ45	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DJ45	
6B3	NC_TP_CPU_RSVD_DH9	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DH9	
6B3	NC_TP_CPU_RSVD_DH20	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DH20	
6B3	NC_TP_CPU_RSVD_DD1	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DD1	
6B3	NC_TP_CPU_RSVD_DC1	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_DC1	
6A3	NC_TP_CPU_RSVD_CV10	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_CV10	
6B3	NC_TP_CPU_RSVD_CP33	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_CP33	
6B3	NC_TP_CPU_RSVD_CN32	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_CN32	
6B3	NC_TP_CPU_RSVD_BM2	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_BM2	
6B3	NC_TP_CPU_RSVD_AW1	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_AW1	
6B3	NC_TP_CPU_RSVD_AV1	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_AV1	
6A3	NC_TP_CPU_RSVD_CR32	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_CR32	
6B3	NC_TP_CPU_RSVD_BL2	MAKE_BASE=TRUE NO_TEST=1	NC_TP_CPU_RSVD_BL2	
		MAKE_BASE=TRUE		
78A8 14C6	USB3_EXTC_R2D_C_P	NO_TEST=1	USB3_EXTC_R2D_C_P	
78A6 14C6	USB3_EXTC_R2D_C_N	MAKE_BASE=TRUE NO_TEST=1	USB3_EXTC_R2D_C_N	
		MAKE_BASE=TRUE		
78A8 14C6	USB3_EXTC_D2R_P	NO_TEST=1	USB3_EXTC_D2R_P	
78A6 14C6	USB3_EXTC_D2R_N	MAKE_BASE=TRUE NO_TEST=1	USB3_EXTC_D2R_N	
		MAKE_BASE=TRUE		
78A8 14D3	USB_FIXT1_P	NO_TEST=1	USB_FIXT1_P	
78A6 14D3	USB_FIXT1_N	MAKE_BASE=TRUE NO_TEST=1	USB_FIXT1_N	
		MAKE_BASE=TRUE		
78A8 14D3	USB_FIXT2_P	NO_TEST=1	USB_FIXT2_P	
78A6 14D3	USB_FIXT2_N	MAKE_BASE=TRUE NO_TEST=1	USB_FIXT2_N	
		MAKE_BASE=TRUE		

NC nets with test points

5203	TP_BMON_IOUT	MAKE_BASE=TRUE	TP_BMON_IOUT

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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Signal Aliases

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Functional Test Points

J5110 - DFR Display Connector

35C4	IN	DFR_DISP_VSYNC	FUNC_TEST=TRUE
	IN	DFR_DISP_TE	FUNC_TEST=TRUE
	IN	DFR_DISP_INT	FUNC_TEST=TRUE
	IN	DFR_DISP_RESET_L	FUNC_TEST=TRUE
	IN	PP3V3_G3HSW_DFR	FUNC_TEST=TRUE
	IN	MIPI_DFR_CLK_FILT_CONN_P	FUNC_TEST=TRUE
	IN	MIPI_DFR_CLK_FILT_CONN_N	FUNC_TEST=TRUE
	IN	MIPI_DFR_DATA_FILT_CONN_P	FUNC_TEST=TRUE
	IN	MIPI_DFR_DATA_FILT_CONN_N	FUNC_TEST=TRUE
	IN	PP1V8_DFR	FUNC_TEST=TRUE
	IN	I2C_DFR_SCL_R	FUNC_TEST=TRUE
	IN	I2C_DFR_SDA_R	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

7 TPs

J5100 - DFR Touch Connector

	IN	DFR_TOUCH_LID_OPEN_L	FUNC_TEST=TRUE
	IN	SPI_DFR_CS_L	FUNC_TEST=TRUE
	IN	SPI_DFR_MOSI	FUNC_TEST=TRUE
	IN	I2C_DFR_SCL_R	FUNC_TEST=TRUE
	IN	I2C_DFR_SDA_R	FUNC_TEST=TRUE
	IN	DFR_TOUCH_RESET_L	FUNC_TEST=TRUE
	IN	PP1V8_DFR	FUNC_TEST=TRUE
35C7	IN	PP5V_G3S_DFR_FILT	FUNC_TEST=TRUE
	IN	DFR_DISP_VSYNC	FUNC_TEST=TRUE
	IN	SPI_DFR_MISO_R	FUNC_TEST=TRUE
	IN	SPI_DFR_CLK	FUNC_TEST=TRUE
	IN	DFR_TOUCH_INT_L	FUNC_TEST=TRUE
	IN	DFR_TOUCH_CLK32K_RESET_L	FUNC_TEST=TRUE
	IN	TP_DFR_TOUCH_GPIO2	FUNC_TEST=TRUE
	IN	TP_DFR_TOUCH_PANEL_DETECT	FUNC_TEST=TRUE
	IN	TP_DFR_TOUCH_PANEL_DETECT	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

6 TPs

J6700 - Keyboard Connector

50D8	IN	KBD_CONTROL_KEY	FUNC_TEST=TRUE
50D8	IN	KBD_LEFT_OPTION_KEY	FUNC_TEST=TRUE
50D8	IN	KBD_RIGHT_SHIFT_KEY	FUNC_TEST=TRUE
50D5	IN	PP3V3_G3H_RSLOC	FUNC_TEST=TRUE
50C4	IN	KBD_CAP_CATHODE	FUNC_TEST=TRUE
50C3	IN	KBD_DRIVE_Y0	FUNC_TEST=TRUE
50C3	IN	KBD_DRIVE_Y6	FUNC_TEST=TRUE
50C2	IN	KBD_DRIVE_Y7	FUNC_TEST=TRUE
50C2	IN	KBD_DRIVE_Y5	FUNC_TEST=TRUE
50C2	IN	KBD_SENSE_X8	FUNC_TEST=TRUE
50C2	IN	KBD_SENSE_X7	FUNC_TEST=TRUE
50C2	IN	KBD_SENSE_X6	FUNC_TEST=TRUE
50C2	IN	KBD_ID1	FUNC_TEST=TRUE
50C8 7787	IN	PP3V3_G3S_KBD	FUNC_TEST=TRUE
51D3	IN	I2C_KBD_SDA	FUNC_TEST=TRUE
51D3	IN	KBD_INT_L	FUNC_TEST=TRUE
51D3	IN	I2C_KBD_SCL	FUNC_TEST=TRUE
62A6 81D7	IN	PMU_RSLOC_RST_L	FUNC_TEST=TRUE
50D6	IN	KBD_RIGHT_SHIFT_L	FUNC_TEST=TRUE
50D6	IN	KBD_LEFT_OPTION_L	FUNC_TEST=TRUE
50D6	IN	KBD_CONTROL_L	FUNC_TEST=TRUE
	IN	CAPSLOCK_LED_EN	FUNC_TEST=TRUE
58A8	IN	KBD_CAPSLOCK_LED	FUNC_TEST=TRUE
58A8	IN	KBD_ID_DETECT1	FUNC_TEST=TRUE
58A8	IN	HW_ID1	FUNC_TEST=TRUE
50D4	IN	EEPROM_WC_L	FUNC_TEST=TRUE
50D3	IN	WC_L	FUNC_TEST=TRUE

J6701 - Trackpad Connector

50D6 7788	IN	KBD_INT_L	FUNC_TEST=TRUE
51D3	IN	I2C_TPAD_3V3_SDA	FUNC_TEST=TRUE
51D3	IN	I2C_TPAD_3V3_SCL	FUNC_TEST=TRUE
75D1	IN	PP3V3_G3S_TPAD	FUNC_TEST=TRUE
51D2	IN	PP5V_G3S_TPAD_CONN	FUNC_TEST=TRUE
51C3	IN	ACT_GND	FUNC_TEST=TRUE
51C3	IN	PPBUS_G3H	FUNC_TEST=TRUE
51D4	IN	SPI_TPAD_3V3_CLK	FUNC_TEST=TRUE
51D2	IN	TPAD_3V3_SPI_EN	FUNC_TEST=TRUE
51D5	IN	SPI_TPAD_3V3_MISO	FUNC_TEST=TRUE
51D4	IN	SPI_TPAD_3V3_CS_L	FUNC_TEST=TRUE
51D2	IN	SPI_TPAD_3V3_MOSI	FUNC_TEST=TRUE
51D1	IN	TPAD_3V3_SPI_INT_L	FUNC_TEST=TRUE
51D2	IN	TPAD_3V3_ACTUATOR_DISABLE_L	FUNC_TEST=TRUE
51B3	IN	TPAD_KBD_WAKE_L	FUNC_TEST=TRUE
77A4	IN	IPD_LID_OPEN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

6 TPs

J4900 - Mesa Connector

3306 3304	IN	PP3V0_MESA_FILT_CONN	FUNC_TEST=TRUE
	IN	SPI_MESA_MISO_CONN	FUNC_TEST=TRUE
3306 3304	IN	MESA_INT_CONN	FUNC_TEST=TRUE
3304 3306	IN	MESA_BOOST_EN_CONN	FUNC_TEST=TRUE
3304 3304	IN	PP1V8_MESA_FILT_CONN	FUNC_TEST=TRUE
3306 3304	IN	SPI_MESA_MOSI_CONN	FUNC_TEST=TRUE
3306 3304	IN	PMU_ONOFF_R_L_CONN	FUNC_TEST=TRUE
3306 3304	IN	SPI_MESA_CLK_CONN	FUNC_TEST=TRUE
3304 33C3	IN	PP16V0_MESA_FILT_CONN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

3 TPs
2 TPs
2 TPs

J6640 - MIC Connector

49C6 3286	IN	PDM_DMIC_CLK0	FUNC_TEST=TRUE
4903 49C6	IN	AUD_DMIC0_DATA_CONN	FUNC_TEST=TRUE
49C6	IN	PP1V8_DMIC	FUNC_TEST=TRUE
	IN	PDM_DMIC_CLK1	FUNC_TEST=TRUE
49C6 49C3	IN	AUD_DMIC1_DATA_CONN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs

J6400 - Left Tweeter Connector

4703	IN	SPKRCONN_LT_OUTP	FUNC_TEST=TRUE
47C3	IN	SPKRCONN_LT_OUTN	FUNC_TEST=TRUE
47C3 2586	IN	SPKR_ID0	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs
1 TPs
2 TPs

J6450 - Left Woofer Connector

47B3	IN	SPKRCONN_LW_OUTP	FUNC_TEST=TRUE
47B3	IN	SPKRCONN_LW_OUTN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs

J6700 - Keyboard Connector Cont'd

50C2 50B5 50A4	IN	KBD_SENSE_X10	FUNC_TEST=TRUE
	IN	KBD_SENSE_X11	FUNC_TEST=TRUE
50D2 50C6 50A3	IN	KBD_SENSE_X4	FUNC_TEST=TRUE
50D2 50B5 50A3	IN	KBD_SENSE_X12	FUNC_TEST=TRUE
50D2 50B5 50A4	IN	KBD_SENSE_X9	FUNC_TEST=TRUE
50D2 50C6 50B2	IN	KBD_SENSE_X3	FUNC_TEST=TRUE
50D2 50C6 50B1	IN	KBD_SENSE_X5	FUNC_TEST=TRUE
50D2 50C6 50A1	IN	KBD_SENSE_X2	FUNC_TEST=TRUE
50D2 50C6 50A1	IN	KBD_SENSE_X1	FUNC_TEST=TRUE
50D2 50C6 50A2	IN	KBD_SENSE_X0	FUNC_TEST=TRUE
50D2 50B2 50A6	IN	KBD_DRIVE_Y4	FUNC_TEST=TRUE
50D2 50B1 50A6	IN	KBD_DRIVE_Y3	FUNC_TEST=TRUE
50D2 50B1 50A6	IN	KBD_DRIVE_Y1	FUNC_TEST=TRUE
50D2 50B1 50A6	IN	KBD_DRIVE_Y2	FUNC_TEST=TRUE
50C8 50B8 50A5	IN	PP3V3_G3S_KBD	FUNC_TEST=TRUE

J6500 - Right Tweeter Connector

48D3	IN	SPKRCONN_RT_OUTP	FUNC_TEST=TRUE
48C3	IN	SPKRCONN_RT_OUTN	FUNC_TEST=TRUE
48C3 2586	IN	SPKR_ID1	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs

J6550 - Right Woofer Connector

48B3	IN	SPKRCONN_RW_OUTP	FUNC_TEST=TRUE
48B3	IN	SPKRCONN_RW_OUTN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs

J6600 - Audio Jack Connector

4985 49B2	IN	AUD_CONN_HP_LEFT	FUNC_TEST=TRUE
4985 49B2	IN	AUD_CONN_HP_RIGHT	FUNC_TEST=TRUE
	IN	AUD_CONN_RING2	FUNC_TEST=TRUE
4985 49B2	IN	AUD_CONN_SLEEVE	FUNC_TEST=TRUE
4985	IN	AUD_CONN_HP_SENSE_L	FUNC_TEST=TRUE
49A5	IN	AUD_CONN_HP_SENSE_R	FUNC_TEST=TRUE
49A5	IN	AUD_CONN_TIP_SENSE	FUNC_TEST=TRUE
49A5	IN	AUD_CONN_RING_SENSE	FUNC_TEST=TRUE
49A5	IN	AUD_CONN_SLEEVE_XW	FUNC_TEST=TRUE
49A5	IN	AUD_CONN_RING2_XW	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs
1 TPs
1 TPs
8 TPs
8 TPs
4 TPs

J6950 - Battery Connector

77C4 53C1	IN	PPVBAT_G3H_CONN	FUNC_TEST=TRUE
7702		GND	FUNC_TEST=TRUE

8 TPs

J6951 - Battery Sense Connector

77D2 5203	IN	SYS_DETECT_L	FUNC_TEST=TRUE
5203	IN	SMBUS_3V3_BATT_SCL	FUNC_TEST=TRUE
5203	IN	SMBUS_3V3_BATT_SDA	FUNC_TEST=TRUE
64B8 64A8 62B3 39B3 38D4	IN	SENSOR_PWR_EN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

1 TPs

J8500 - eDP Connector

2 TPs 66C3 66A7 65D1 65A3 77B4	IN	PPVOUT_S0_LCDBKLT	FUNC_TEST=TRUE
6681 66A3	IN	I2C_FTCAM_ISOL_SCL	FUNC_TEST=TRUE
6681 66A3	IN	I2C_FTCAM_ISOL_SDA	FUNC_TEST=TRUE
6681 37B6	IN	I2C_ALS_SCL	FUNC_TEST=TRUE
1 TPs 6681 37B6	IN	I2C_ALS_SDA	FUNC_TEST=TRUE
6681 36D3	IN	I2C_TCON_SCL	FUNC_TEST=TRUE
6681 36D3	IN	I2C_TCON_SDA	FUNC_TEST=TRUE
6681 65A7	IN	I2C_BKLT_SCL	FUNC_TEST=TRUE
1 TPs 66C1 65A7	IN	I2C_BKLT_SDA	FUNC_TEST=TRUE
66C1 1702	IN	BKLT_PWM_MLB2TCON	FUNC_TEST=TRUE
66C1	IN	TP_LCD_IRQ_L	FUNC_TEST=TRUE
66C1 32C5	IN	DP_INT_HPD	FUNC_TEST=TRUE
66C5 66C1	IN	EDP_PANEL_PWR_BUF_EN	FUNC_TEST=TRUE
79B7 77C2 66C3 66C1 66A7 36D4	IN	PP3V3_S0SW_LCD	FUNC_TEST=TRUE
79B7 77C2 7505 66B3	IN	PP5V_S0SW_LCD	FUNC_TEST=TRUE
1 TPs 79B8 6601 66B1	IN	PP5V_G3S_ALSCAM_F	FUNC_TEST=TRUE
78C5 6601 66B3	IN	MIPI_FTCAM_CLK_ISOL_FILT_CONN_P	FUNC_TEST=TRUE
78C5 6601 66B3	IN	MIPI_FTCAM_CLK_ISOL_FILT_CONN_N	FUNC_TEST=TRUE
78C5 6601 66B3	IN	MIPI_FTCAM_DATA_ISOL_FILT_CONN_P<0>	FUNC_TEST=TRUE
78C5 6601 66B3	IN	MIPI_FTCAM_DATA_ISOL_FILT_CONN_N<0>	FUNC_TEST=TRUE
6686 66B3	IN	EDP_INT_ML_P<3>	FUNC_TEST=TRUE
	IN	EDP_INT_ML_N<3>	FUNC_TEST=TRUE
6686 66B3	IN	EDP_INT_ML_P<2>	FUNC_TEST=TRUE
6686 66B3	IN	EDP_INT_ML_N<2>	FUNC_TEST=TRUE
66C3 6686	IN	EDP_INT_ML_P<1>	FUNC_TEST=TRUE
66C3 6686	IN	EDP_INT_ML_N<1>	FUNC_TEST=TRUE
66C3 6686	IN	EDP_INT_ML_P<0>	FUNC_TEST=TRUE
	IN	EDP_INT_ML_N<0>	FUNC_TEST=TRUE
66C3 6686 66A7	IN	EDP_INT_AUX_P	FUNC_TEST=TRUE
66C3 6686 66A7	IN	EDP_INT_AUX_N	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

8 TPs

J3300 - Left USB-C Connector

PP20V_USBC_X_VBUS TEST POINT IN USBC BLOCK

GND — FUNC_TEST=TRUE — 4 TPs

USBC_X_CC1/2_CONN TEST POINT IN USBC BLOCK

USBC_X_SBU1/2 TEST POINT IN USBC BLOCK

PP20V_USBC_T_VBUS TEST POINT IN USBC BLOCK

GND — FUNC_TEST=TRUE — 4 TPs

USBC_T_CC1/2_CONN TEST POINT IN USBC BLOCK
TP_USBC_PP20V_T TEST POINT IN USBC BLOCK
TP_USBC_PP20V_X TEST POINT IN USBC BLOCK
TP_USBC_PP20V_W TEST POINT IN USBC BLOCK
TP_USBC_PP20V_R TEST POINT IN USBC BLOCK

USBC_X_SBU1/2 TEST POINT IN USBC BLOCK

JB500 - Right USB-C Connector

PP20V_USBC_W_VBUS TEST POINT IN USBC BLOCK

GND — FUNC_TEST=TRUE — 4 TPs

USBC_W_CC1/2_CONN TEST POINT IN USBC BLOCK

PP20V_USBC_R_VBUS TEST POINT IN USBC BLOCK

GND — FUNC_TEST=TRUE — 4 TPs

USBC_R_CC1/2_CONN TEST POINT IN USBC BLOCK

J6000 & J6001 - Fan

44C6 44B7	IN	FAN_LT_TACH	FUNC_TEST=TRUE
44C6 44B7 44A6	IN	FAN_LT_PWM	FUNC_TEST=TRUE
44C4 44B6	IN	FAN_RT_TACH	FUNC_TEST=TRUE
44C4 44B6 44A6	IN	FAN_RT_PWM	FUNC_TEST=TRUE
7587 44B7 44B6 44A7	IN	PP5V_G3S	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

J8400 - J8402 - KBD BLC

65B2	IN	PPVOUT_S0_KBDLED	FUNC_TEST=TRUE
	IN	KBDLED_CATHODE1	FUNC_TEST=TRUE
	IN	KBDLED_CATHODE2	FUNC_TEST=TRUE
65C2	IN	KBDLED_CATHODE1_R	FUNC_TEST=TRUE
65A2	IN	KBDLED_CATHODE2_R	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

8 TPs 65C3 65B2

DFU/SOC/FCT DMM/Power Sequence

77D4 77C4 75B7 53D7 53B1 19C3	IN	PPDCIN_G3H	FUNC_TEST=TRUE
77C4 77A7 53C1 52D5	IN	PPVBAT_G3H_CONN	FUNC_TEST=TRUE
77C4 7508 53D1	IN	PPBUS_G3H	FUNC_TEST=TRUE
77A7 52D3	IN	SYS_DETECT_L	FUNC_TEST=TRUE
80D8 79D6 75C3 40B4 8D7	IN	PPVCCIN_S0_CPU	FUNC_TEST=TRUE
80D8 79C6 75B3 40A5 16D2 8D4	IN	PPVCCIN_AUX_PCH_PRIM	FUNC_TEST=TRUE
77D2 11C8 11A5 8A4	IN	PP1V05_S5_PCH_VCCDSW	FUNC_TEST=TRUE
77D2 11C8 11A5 8A4	IN	PP1V05_S5_PCH_VCCDSW	FUNC_TEST=TRUE
74A4 8B1 8A4	IN	PP1P05_PCH_EXT	FUNC_TEST=TRUE
75A4 8B1	IN	PPVCCIO_OUT	FUNC_TEST=TRUE
11C3 11B5 8B1	IN	PP1V8_PCH_CLKLDO	FUNC_TEST=TRUE
16C2 11B8 11A5 8C7	IN	PP1V05_VCCSTG_OUT	FUNC_TEST=TRUE
75B4 10C3 8C4	IN	PP1V05_S0_CPU_VCCPLL	FUNC_TEST=TRUE
6 TPs 75A4 6401 10C3 8C4	IN	PP1V8_S0SW	FUNC_TEST=TRUE
75A3 10B3 8C7	IN	PP1V05_S0SW_VCCSTG	FUNC_TEST=TRUE
75A4 64B1	IN	PP1V1_S0SW	FUNC_TEST=TRUE
11D8 11A5 8B1	IN	PP1V05_S0_CPU_VCCST	FUNC_TEST=TRUE
11D8 11A5 8B1	IN	PP1V24_S5_PCH_VCCDPHY	FUNC_TEST=TRUE
74D4	IN	PP0V85_LDOSTD	FUNC_TEST=TRUE
77B4 75B2 63D7 63D1	IN	PP1V8_S3	FUNC_TEST=TRUE
75A4 11D8 8B4	IN	PP1V1_S3	FUNC_TEST=TRUE
75B4 8B1	IN	PP1V05_PRIM_OUT_PCH	FUNC_TEST=TRUE
74B6 60B8 60A6	IN	PP1V05_PCH_OUT_FET	FUNC_TEST=TRUE
74B6 60B8	IN	PP1P05_PCH_EXT	FUNC_TEST=TRUE
74B4 61C2	IN	PPVNN_PCH_EXT	FUNC_TEST=TRUE
75C2 59C1	IN	PP3V3_S5	FUNC_TEST=TRUE
74C2	IN	PP1V8_S5	FUNC_TEST=TRUE
79B7 77D5 66C3 66C1 66A7 36D4	IN	PP3V3_G3H_RTC	FUNC_TEST=TRUE
79B7 77D5 7505 66B3	IN	PP3V3_S0SW_LCD	FUNC_TEST=TRUE
62C6 62A6 16C7	IN	PP5V_S0SW_LCD	FUNC_TEST=TRUE
62C3 1702 14A3	IN	ALL_SYS_PWRGD	FUNC_TEST=TRUE
31C1 15C1 13D6	IN	PCH_RTC_RESET_L	FUNC_TEST=TRUE
17B8 16A5 13C6	IN	PM_SYSRST_L	FUNC_TEST=TRUE
31C1 13C6	IN	PM_PCH_PWROK	FUNC_TEST=TRUE
19C3 17C6 17B8 16B7 15C8 13D6	IN	PM_PCH_SYS_PWROK	FUNC_TEST=TRUE
16B7 16A7 13D3 13A6 64B5 64A6 62D6 19D5	IN	PM_RSMRST_L	FUNC_TEST=TRUE
81C3 81A8 24B6 16B2	IN	PM_SLP_S3_L_1	FUNC_TEST=TRUE
	IN	PM_SLP_S0_L	FUNC_TEST=TRUE
62C6	IN	PLT_RST_L	FUNC_TEST=TRUE
62C6 15C8 13D3 13A6	IN	PM_THRMTRIP_L	FUNC_TEST=TRUE
62D5	IN	PCH_PWRBTN_L	FUNC_TEST=TRUE
62B6 6D5	IN	CPU_PROCHOT_R_L	FUNC_TEST=TRUE
62B3 54C2	IN	CPU_CATERR_L	FUNC_TEST=TRUE
81B4 74C8 60B1	IN	CPUVR_PGOOD	FUNC_TEST=TRUE
81A4 74B8 60A2	IN	PP1V8_SLPS2R	FUNC_TEST=TRUE
74C6 60B1	IN	PP1V8_AWAKE	FUNC_TEST=TRUE
74D4 61C2	IN	PP1V1_SLPS2R	FUNC_TEST=TRUE
74D8 60C1	IN	PP0V8_SLPS2R	FUNC_TEST=TRUE
74C4 61C2	IN	PP0V82_SLPDDR	FUNC_TEST=TRUE
74D8 60C1	IN	PP3V3_AWAKE	FUNC_TEST=TRUE
74C6 60A1	IN	PPVDDCPUSRAM_AWAKE	FUNC_TEST=TRUE
74C6 61A4	IN	PP0V9_SLPDDR	FUNC_TEST=TRUE
74C4 61C2	IN	PP1V1_SLPDDR	FUNC_TEST=TRUE
74D8 60D1	IN	PP1V2_AWAKE	FUNC_TEST=TRUE
88A7 62D6 62A6 49D6 24C6	IN	PPVDDCPU_AWAKE	FUNC_TEST=TRUE
88A8 71B7 62C6 62A6 24B6 23A3	IN	PMU_COLD_RESET_L	FUNC_TEST=TRUE
81A8 62D6 62A6 23D3 19C3	IN	PMU_SYS_ALIVE	FUNC_TEST=TRUE
53B8 53A4 52A7	IN	PMU_ACTIVE_READY	FUNC_TEST=TRUE
7506 52B1	IN	CHGR_EN_MVR	FUNC_TEST=TRUE
62C3 58A5	IN	PP3V3_G3H_RTC	FUNC_TEST=TRUE
75B6 58D1 58B5	IN	PMU_PVDDMAIN_EN	FUNC_TEST=TRUE
76D6 24D3	IN	PP3V3_G3H	FUNC_TEST=TRUE
80A7 62D6 24C3	IN	TP_SMC_FIXTURE_MODE_L	FUNC_TEST=TRUE
80A8 62D6 23C3 23A7	IN	SOC_WDOG	FUNC_TEST=TRUE
80A7 62D6 52C2 19C3	IN	SOC_SOCHOT_L	FUNC_TEST=TRUE
77D7 33D6 33C4	IN	UPC_PMU_RESET	FUNC_TEST=TRUE
64D8 62B3	IN	PMU_ONOFF_R_L_CONN	FUNC_TEST=TRUE
75A6 64D6	IN	P3V3G3S_EN	FUNC_TEST=TRUE
62B3 58A7	IN	PP3V3_G3S	FUNC_TEST=TRUE
75B8 58D5 58C8	IN	P5VG3S_EN	FUNC_TEST=TRUE
81A8 64D6 64C8 62B3	IN	PP5V_G3S	FUNC_TEST=TRUE
7502 64C6	IN	P1V8G3S_EN	FUNC_TEST=TRUE
	IN	PP1V8_G3S	FUNC_TEST=TRUE

DFU/SOC/FCT DEBUG

23B6 23A7	IN	SOC_USB_VBUS	FUNC_TEST=TRUE
81B7 62C7 23D3 19D3	IN	SOC_FORCE_DFU	FUNC_TEST=TRUE
81A4 23C3 19D3	IN	SOC_DFU_STATUS	FUNC_TEST=TRUE
7 TPs 24C3 24A7 19D3	IN	SOC_DOCK_CONNECT	FUNC_TEST=TRUE
1 TPs			

75B4 64A2 54B3 31B6 16C7 13D8 10B3 8C7 8A5 6D6			
81C3 19C3	IN	USB_SOC_P	FUNC_TEST=TRUE
81C3 19C3	IN	USB_SOC_N	FUNC_TEST=TRUE
19C3 12D5 12A6	IN	PCH_UART_DEBUG_R2D_1	FUNC_TEST=TRUE
19C3 12D5 12A6	IN	PCH_UART_DEBUG_D2R_1	FUNC_TEST=TRUE
24C3 17A6	IN	SWD_SOC_SWCLK	FUNC_TEST=TRUE
24C3 17A6	IN	SWD_SOC_SWDIO	FUNC_TEST=TRUE
24C3	IN	TP_JTAG_SOC_TDI	FUNC_TEST=TRUE
24C3	IN	TP_JTAG_SOC_TDO	FUNC_TEST=TRUE
24C3	IN	TP_JTAG_SOC_TRST_L	FUNC_TEST=TRUE
24A3 19D3	IN	SMC_DEBUGPRT_TX	FUNC_TEST=TRUE
24A3 19D3	IN	SMC_DEBUGPRT_RX	FUNC_TEST=TRUE
76D6 25B6	IN	TP_SOC_DEBUGPRT_TX	FUNC_TEST=TRUE
76D6 25B6	IN	TP_SOC_DEBUGPRT_RX	FUNC_TEST=TRUE
3603 24A6	IN	I2C_PWR_SCL	FUNC_TEST=TRUE
3603 24A6	IN	I2C_PWR_SDA	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

4 TPs

DFU/SOC/FCT DISCHARGE

PP20V_USBC_X_VBUS TEST POINT IN USBC BLOCK
PP20V_USBC_T_VBUS TEST POINT IN USBC BLOCK
PP20V_USBC_W_VBUS TEST POINT IN USBC BLOCK
PP20V_USBC_W_VBUS TEST POINT IN USBC BLOCK

77D4 7702 75B7 53D7 53B1 19C3	IN	PPDCIN_G3H	FUNC_TEST=TRUE
7702 77A7 53C1 52D5	IN	PPVBAT_G3H_CONN	FUNC_TEST=TRUE
7702 7508 53D1	IN	PPBUS_G3H	FUNC_TEST=TRUE
53D5	IN	PPDCIN_G3H_CHGR	FUNC_TEST=TRUE
53D3 53B7	IN	PPVBAT_G3H_CHGR_REG	FUNC_TEST=TRUE
52C2	IN	SYS_DETECT	FUNC_TEST=TRUE
77D5 66C3 66A7 65D1 65A3	IN	PPVOUT_S0_LCDBKLT	FUNC_TEST=TRUE

Memory Power

4 TPs 81A8 63D8 63B8 63A3 62B3	IN	PVDDQ_EN	FUNC_TEST=TRUE
63B5 62B3	IN	PVDDQ_PGOOD	FUNC_TEST=TRUE
77D2 75B2 6307 63D1	IN	PP1V1_S3	FUNC_TEST=TRUE
79C4 75A1 8D7 7B1	IN	PP1V1_S3_CPU	FUNC_TEST=TRUE
74D4 63B6 63A6 18D6 18C6 18B6	IN	PP1V8_S3_MEM	FUNC_TEST=TRUE
79C5 75A1 63A6 18D6 18C6 18B6	IN	PP0V6_S3	FUNC_TEST=TRUE
4 TPs		GND	FUNC_TEST=TRUE

6 TPs

Wireless/BT Power

79C7 75D1 21D6 21D3 21A7	IN	PP3V3_G3S_WLANBT	FUNC_TEST=TRUE
75C1	IN	PP1V8_G3S_WLANBT	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

2 TPs

Hall Effect

49D6 32D4	IN	LID_OPEN_LEFT	FUNC_TEST=TRUE
49D6 32D4	IN	LID_OPEN_RIGHT	FUNC_TEST=TRUE
77A8 51D2 35D8 32D2	IN	IPD_LID_OPEN	FUNC_TEST=TRUE
		GND	FUNC_TEST=TRUE

1 TPs

FCT request

35C5	IN	P1V8_DFR_R	FUNC_TEST=TRUE
62D7 24C6	IN	PMU_CLK32K_SOC	FUNC_TEST=TRUE
81C2 23B6	IN	USB_SOC_P	FUNC_TEST=TRUE
81C2 23B6	IN	USB_SOC_N	FUNC_TEST=TRUE

31B6 20D5 20C5 17D8 17B4 17A4 13C6 13A6			
80A6 62D6 31B6 6D5			
62C6 15C8 13D3 13A6			
6D5			
62B6 6D5			
62B3 54C2			
81B4 74C8 60B1			
81A4 74B8 60A2			
74C6 60B1			
74D4 61C2			
74D8 60C1			
74C4 61C2			
74D8 60C1			
74C6 60A1			
74C6 61A4			
74C4 61C2			
74D8 60D1			
69A4 68D7 68D5 68C8 68B5 68A4 67D7 67A5 67A3			
70B8 69D8 69D4 69B8 68D8 68D4 68B8 67D8 67B8			
71D4 71B4 70D6 70A8 69D6 69A8 68D6 68A8 67D6 67A8			
71B7 71A4			
71B7 70C8 69C7 68C7 67C7			
71B7 70C3 69C3 68C3 67C3			
71B7 32A6 23C6	IN	SSD_PMU_RESET_L	FUNC_TEST=TRUE
71C5 71A5 73A3 67D5 67A5 67A3 69D2 69C3 69A5	IN	PP1V8_IO_SSD0	FUNC_TEST=TRUE
	IN	PP0V9_SSD0	FUNC_TEST=TRUE
	IN	PP2V5_NAND_SSD0	FUNC_TEST=TRUE
	IN	SSD0_OCARINA_WP_L	FUNC_TEST=TRUE
	IN	SSD0_OCARINA_PFN_L	FUNC_TEST=TRUE
	IN	SSD0_OCARINA_RESET_L	FUNC_TEST=TRUE

TP9820 — TP-PS — A

1D6 6D5 6A7 N27D5	IN	CPU_BPM_L<0>	FUNC_TEST=TRUE

SYNC_MASTER=myEE
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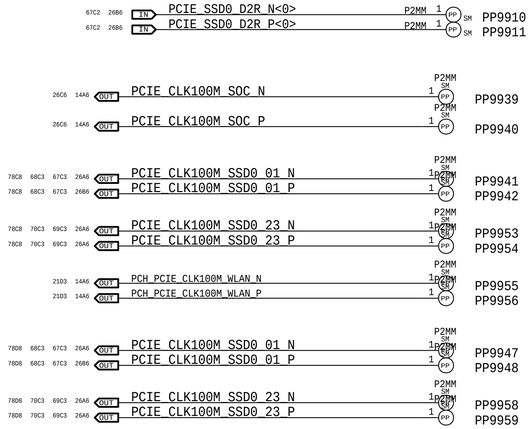
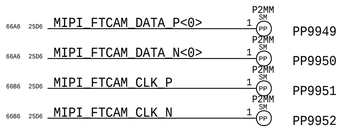
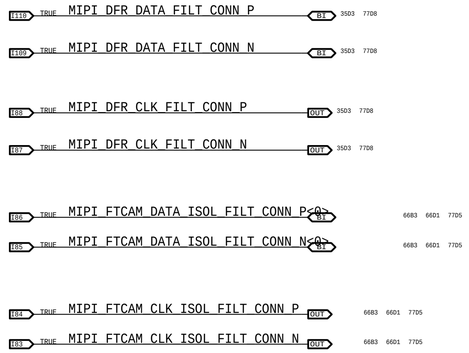
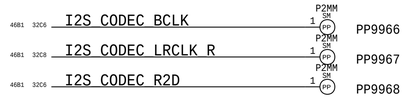




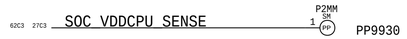


SAR Fusion Sensor Debug removed

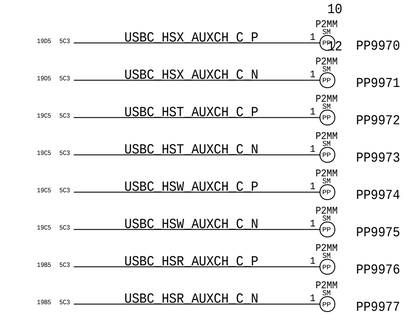
AUDIO CODEC



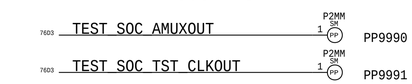
SOC SENSE



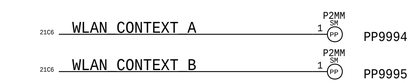
ACE-TR AUX/LS



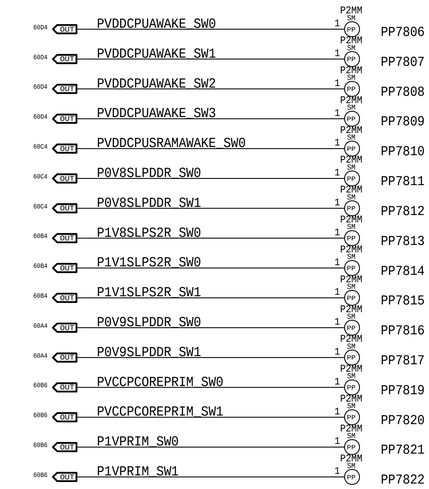
SoC PPs



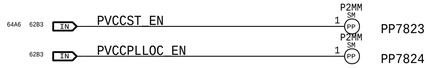
WIRELESS PPs



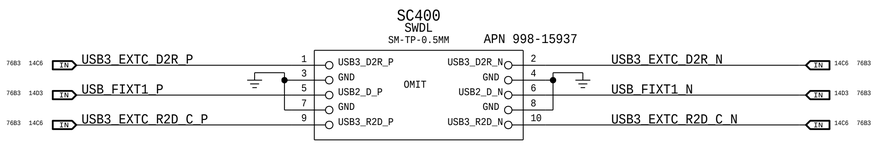
PMIC Switch Nodes

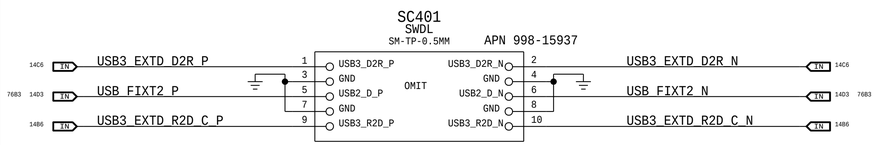


PMIC GPIOs



Probe Block Grid - DFU/SOC





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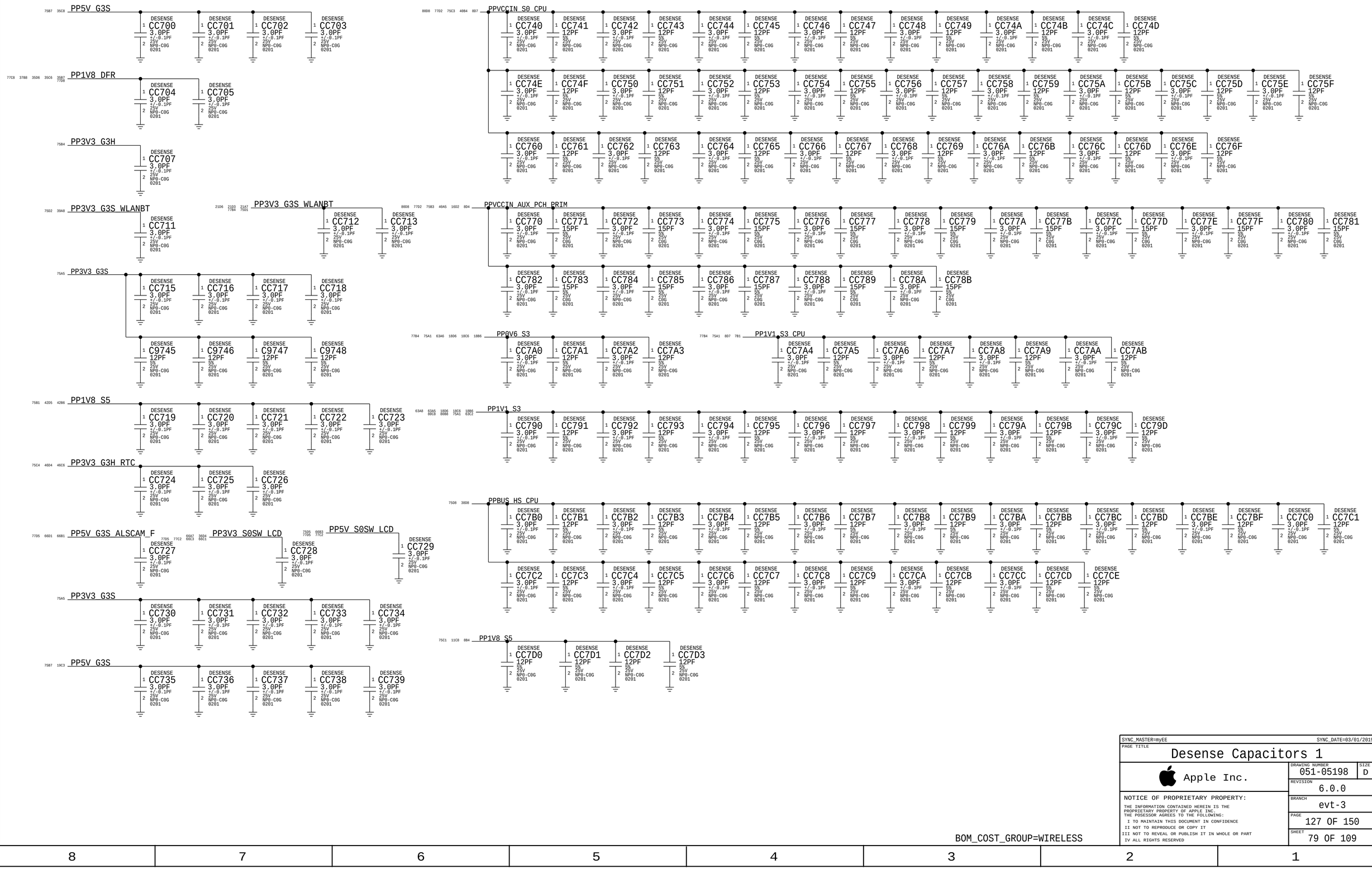

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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PPVCCIN S0 CPU

79D6 77D2 75C3 40B4 8D7

DESENSE CC8A0 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8A1 12PF 5% 25V NP0-C0G 0201
DESENSE CC8A2 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8A3 12PF 5% 25V NP0-C0G 0201
DESENSE CC8A4 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8A5 12PF 5% 25V NP0-C0G 0201
DESENSE CC8A6 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8A7 12PF 5% 25V NP0-C0G 0201
DESENSE CC8A8 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8A9 12PF 5% 25V NP0-C0G 0201
DESENSE CC8AA 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8AB 12PF 5% 25V NP0-C0G 0201

PPVCCIN AUX PCH PRIM

79C6 7702 75B3 40A5 16D2 8D4

DESENSE CC8B0 15PF 5% 25V C0G 0201
DESENSE CC8B1 15PF 5% 25V C0G 0201
DESENSE CC8B2 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8B3 15PF 5% 25V C0G 0201
DESENSE CC8B4 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8B5 15PF 5% 25V C0G 0201
DESENSE CC8B6 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8B7 12PF 5% 100V CERM 0402
DESENSE CC8B8 12PF 5% 100V CERM 0402
DESENSE CC8B9 12PF 5% 100V CERM 0402
DESENSE CC8BA 12PF 5% 100V CERM 0402

PP1V1_S3

63C2 63A8 63A5 18D6 8088 18C6 79B6 18B6 75A1

DESENSE CC8C0 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8C1 12PF 5% 25V NP0-C0G 0201
DESENSE CC8C2 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8C3 12PF 5% 25V NP0-C0G 0201
DESENSE CC8C4 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8C5 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8C6 12PF 5% 25V NP0-C0G 0201
DESENSE CC8C7 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8C8 12PF 5% 25V NP0-C0G 0201
DESENSE CC8C9 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8CA 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8CB 12PF 5% 25V NP0-C0G 0201
DESENSE CC8CC 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8CD 12PF 5% 25V NP0-C0G 0201
DESENSE CC8CE 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8CF 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8D0 12PF 5% 25V NP0-C0G 0201
DESENSE CC8D1 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8D2 12PF 5% 25V NP0-C0G 0201
DESENSE CC8D3 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8E0 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8E1 12PF 5% 25V NP0-C0G 0201
DESENSE CC8E2 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8E3 12PF 5% 25V NP0-C0G 0201
DESENSE CC8E4 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8E5 12PF 5% 25V NP0-C0G 0201

PP1V1_S3

63A8 63A5 18D6 8088 18C6 79B6 18B6 75A1 63C2

DESENSE CC8F0 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F1 12PF 5% 25V NP0-C0G 0201
DESENSE CC8F2 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8FB 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F3 12PF 5% 25V NP0-C0G 0201
DESENSE CC8F4 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F5 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F6 12PF 5% 25V NP0-C0G 0201
DESENSE CC8F7 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F8 3.0PF ±/-0.1PF 25V NP0-C0G 0201
DESENSE CC8F9 12PF 5% 25V NP0-C0G 0201
DESENSE CC8FA 3.0PF ±/-0.1PF 25V NP0-C0G 0201

PMU_SYS_ALIVE

77B2 71B7 62C6 62A6 24B6 23A3

DESENSE CC80A 100PF 5% 25V C0G 0201

PMU_COLD_RESET_L

62A6 49D6 77B2 24C6 62D6

DESENSE CC80B 100PF 5% 25V C0G 0201

SOC_WDOG

62D6 24C3 77B2

DESENSE CC80C 100PF 5% 25V C0G 0201

PM_THRMTRIP_L

62D6 31B6 6D5 77C2

DESENSE CC80D 100PF 5% 25V C0G 0201

SOC_SOCHOT_L

77B2 62D6 23C3 23A7

DESENSE CC80E 100PF 5% 25V C0G 0201

SOC_PERST_L

24D6 17D6 12C5

DESENSE CC80F 100PF 5% 25V C0G 0201

UPC_PMU_RESET

62D6 52C2 19C3 77B2

DESENSE CC80G 100PF 5% 25V C0G 0201

BOM_COST_GROUP=WIRELESS

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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Debug Power "Buttons"

DEBUG_BUTTON
PLACE_SIDE=BOTTOM
SILK_PART=RSLOC
CRITICAL
RE028
SKSGPCE010
SM
GND
PMU_RSLOC_RST_L
OUT 50C6 52C4 62A6 62C3 77B8 81D5

NOSTUFF
SILK_PART=RSLOC
PLACE_SIDE=TOP
RE029
0
0% 1/4W MF 0603
PMU_RSLOC_RST_L
OUT 50C6 52C4 62A6 62C3 77B8 81D7

DEBUG_BUTTON
PLACE_SIDE=BOTTOM
SILK_PART=PWR_BTN
CRITICAL
RE030
SKSGPCE010
SM
GND
PMU_ONOFF_L
OUT 33C1 52C4 62A6 62C3 81C5

NOSTUFF
SILK_PART=PWR_BTN
PLACE_SIDE=TOP
RE031
0
0% 1/4W MF 0603
PMU_ONOFF_L
OUT 33C1 52C4 62A6 62C3 81C7

NOSTUFF
SILK_PART=FORCE_DFU
PLACE_SIDE=TOP
RE032
0
0% 1/4W MF 0603
SOC_FORCE_DFU
OUT 19D3 23D3 62C7 77D4
32A7 23A7 74C6 PP1V8_SLPS2R

Power State Debug LEDs

(For development only)

74B2 PP3V3_S5

DBGLED RE091 20K 5% 1/20W MF 201
DBGLED RE092 20K 5% 1/20W MF 201
DBGLED RE093 20K 5% 1/20W MF 201
DBGLED RE095 20K 5% 1/20W MF 201

DBGLED_S4
DBGLED_S3
DBGLED_S0I3
DBGLED_S0

DBGLED DE091 GRN-90MCD-5MA-2.85V 0402 PLACE_SIDE=BOTTOM SILK_PART=STBY_ON
DBGLED DE092 GRN-90MCD-5MA-2.85V 0402 PLACE_SIDE=BOTTOM SILK_PART=S3_ON
DBGLED DE093 GRN-90MCD-5MA-2.85V 0402 PLACE_SIDE=BOTTOM SILK_PART=S0I3_ON
DBGLED DE095 GRN-90MCD-5MA-2.85V 0402 PLACE_SIDE=BOTTOM SILK_PART=S0_ON

DBGLED_S4_D
DBGLED_S3_D
DBGLED_S0I3_D
DBGLED_S0_D

DBGLED QE090 DMN5L06VK-7 SOT563 VER-3
DBGLED QE090 DMN5L06VK-7 SOT563 VER-3
DBGLED QE091 DMN5L06VK-7 SOT563 VER-3
DBGLED QE091 DMN5L06VK-7 SOT563 VER-3

13D3 13A6 IN PM_SLP_S5_L
13D3 13A6 IN PM_SLP_S4_L
77C2 64C3 64B5 64A6 62D6 19B5 16B7 16A7 13D3 13A6 81A8 77C2 24B6 16B2 IN PM_SLP_S3_L_1
IN PM_SLP_S0_L

77D4 19C3 USB_SOC_P — USB_SOC_P 23B6 77A4
MAKE_BASE=TRUE

77D4 19C3 USB_SOC_N — USB_SOC_N 23B6 77A4
MAKE_BASE=TRUE

System State LEDs
See color table on next page

75C4 PP3V3_G3H_RTC
DBGLED RE022 0 5% 1/20W MF 0201
P3V3_G3H_RTC_DEBUG_LED_R
DBGLED CE007 0.1UF 10% 16V X5R-CERM 0201 BYPASS=UE020::5mm

DBGLED RE027 0 5% 1/20W MF 0201
62A6 23D3 15C2 62D6 IN PMU_ACTIVE_READY
PMU_ACTIVE_READY_R

DBGLED RE015 0 5% 1/20W MF 0201
62B3 61A6 81A4 IN P1V1_SLPDDR_SOCFET_EN
P1V1_SLPDDR_SOCFET_EN_R

DBGLED RE016 0 5% 1/20W MF 0201
77C2 24B6 16B2 81C3 IN PM_SLP_S0_L
PM_SLP_S0_R_L

DBGLED RE017 0 5% 1/20W MF 0201
63B8 63A3 62B3 63D6 77B4 IN PVDDQ_EN
PVDDQ_EN_LED

DBGLED RE018 0 5% 1/20W MF 0201
64D6 64C8 62B3 77B2 IN P1V8G3S_EN
P1V8_G3S_EN_R

DBGLED UE020 SLG4AP41990 STQFN CRITICAL
VDD
PMU_ACTIVE_READY (IPD) (OD) R
P1V1_SLPDDR_SCFET_EN (IPD) (OD) G
PM_SLP_S0* (IPD) (OD) B
PVDDQ_EN (IPD)
P1V8G3S_EN (IPD)
GND
RFU1 RFU2 RFU3 RFU4 NC NC NC NC

DBGLED RE019 2.1K 1% 1/20W MF 201
SSTATE_RED
SSTATE_RED_R

DBGLED RE020 5.1K 1% 1/20W MF 201
SSTATE_GREEN
SSTATE_GREEN_R

DBGLED RE021 4.75K 1% 1/20W MF 201
SSTATE_BLUE
SSTATE_BLUE_R

DBGLED DE000 LTST-C32JBGEW SM
R G B

SOC State LEDs

77C2 74C8 60B1 PP1V8_SLPS2R
DBGLED QE000 DMN5L06VK-7 SOT563 VER-5

81A8 62B3 61A6 P1V1_SLPDDR_SOCFET_EN
DBGLED QE000 DMN5L06VK-7 SOT563 VER-5

74B8 60A2 77C3 PP1V8_AWAKE
DBGLED QE001 DMN5L06VK-7 SOT563 VER-5

23C3 19D3 77D4 IN SOC_DFU_STATUS
DBGLED QE001 DMN5L06VK-7 SOT563 VER-5

SOC_RED_SLPS2R
SOC_GREEN_DDR
SOC_BLUE_AWAKE
SOC_AMBER_DFU

DBGLED RE023 2.1K 1% 1/20W MF 201
SOC_RED_R

DBGLED RE024 5.1K 1% 1/20W MF 201
SOC_GREEN_R

DBGLED RE025 4.75K 1% 1/20W MF 201
SOC_BLUE_R

DBGLED RE026 5.1K 1% 1/20W MF 201
SOC_AMBER_R

DBGLED DE001 LTST-C32JBGEW SM
R G B

DFU LED
DBGLED DE002 AMBER-605NM-35-56MCD LTST-C281KFKT-SM

BOM_COST_GROUP=DEBUG

SYNC_MASTER=myEE SYNC_DATE=03/01/2019
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DEBUG LED STATUS TABLE

DE000

LED COLOR	SYSTEM STATE	SOC STATE	CPU STATE
Breathing RED	SHUTDOWN (G3H)	SLPS2R	OFF
RED	Standby (G3S)	SLPS2R	OFF
YELLOW	Standby (G3S)	AWAKE	OFF
WHITE	SLEEP	SLPS2R	S0i
BLUE	SLEEP	AWAKE	S0i
GREEN	ACTIVE	AWAKE	S0
Magenta	INVALID	INVALID	INVALID

DE001

LED COLOR	SOC STATE
RED	SLPS2R
YELLOW	SLPDDR
WHITE	AWAKE

GREEN LEDS

	x86 State				
LED STATE	S5	S4	S3	S0i	S0
SLP_S5#		ON	ON	ON	ON
SLP_S4#			ON	ON	ON
SLP_S3#				ON	ON
SLP_S0#	ON				ON

Obsolete

UE020 SAK Truth Table:

INPUTS					OUTPUTS (OD)			
PMU_ACT_RDY	SLP_SCFET_EN	SLP_S0_L	VDDQ_EN	1V8G3S_EN	R	G	B	COLOR
0	0	0	0	0	BLINK	1	1	Blinking Red
0	0	0	0	1	0	1	1	Red
0	0	0	1	0	0	1	0	Magenta
0	0	0	1	1	0	0	0	White
0	0	1	0	0	0	1	0	Magenta
0	0	1	0	1	0	1	0	Magenta
0	0	1	1	0	0	1	0	Magenta
0	0	1	1	1	0	1	0	Magenta
0	1	0	0	0	0	1	0	Magenta
0	1	0	0	1	0	1	0	Magenta
0	1	0	1	0	0	1	0	Magenta
0	1	0	1	1	0	1	0	Magenta
0	1	1	0	0	0	1	0	Magenta
0	1	1	0	1	0	1	0	Magenta
0	1	1	1	0	0	1	0	Magenta
0	1	1	1	1	0	1	0	Magenta
1	0	0	0	0	0	1	0	Magenta
1	0	0	0	1	0	1	0	Magenta
1	0	0	1	0	0	1	0	Magenta
1	0	0	1	1	0	1	0	Magenta
1	0	1	0	0	0	1	0	Magenta
1	0	1	0	1	0	1	0	Magenta
1	0	1	1	0	0	1	0	Magenta
1	0	1	1	1	0	1	0	Magenta
1	1	0	0	0	BLINK	0	1	Blinking Green & Yellow
1	1	0	0	1	0	0	1	Yellow
1	1	0	1	0	0	1	0	Magenta
1	1	0	1	1	1	1	0	Blue
1	1	1	0	0	0	1	0	Magenta
1	1	1	0	1	0	1	0	Magenta
1	1	1	1	0	0	1	0	Magenta
1	1	1	1	1	1	0	1	Green

SYNC_MASTER=myEE SYNC_DATE=03/01/2019

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BOM Variants

EVT BOM release CPU:PRQ-BST

BOM NUMBER	BOM NAME	BOM OPTIONS
639-10425	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:HY_1T_S4E
639-10426	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:HY_1T_S4E
639-10427	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:HY_1T_S4E
639-10428	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:HY_1T_S4E
639-10429	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:HY_1T_S4E
639-10430	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:HY_1T_S4E
639-10431	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:HY_1T_S4E
639-10432	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:HY_1T_S4E
639-10433	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:HY_1T_S4E
639-10434	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:HY_2T_S4E
639-10435	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:HY_2T_S4E
639-10436	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:HY_2T_S4E
639-10437	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:HY_2T_S4E
639-10438	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:HY_2T_S4E
639-10439	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:HY_2T_S4E
639-10440	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:HY_2T_S4E
639-10441	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:HY_2T_S4E
639-10442	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:HY_2T_S4E
639-10324	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:HY_4T_S4E
639-10325	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:HY_4T_S4E
639-10326	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:HY_4T_S4E
639-10327	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:HY_4T_S4E
639-10308	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:HY_4T_S4E
639-10328	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:HY_4T_S4E
639-10329	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:HY_4T_S4E
639-10330	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:HY_4T_S4E
639-10331	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:HY_4T_S4E
639-10443	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:HY_512G_S4E
639-10444	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:HY_512G_S4E
639-10445	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:HY_512G_S4E
639-10446	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:HY_512G_S4E
639-10447	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:HY_512G_S4E
639-10448	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:HY_512G_S4E
639-10449	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:HY_512G_S4E
639-10450	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:HY_512G_S4E
639-10451	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:HY_512G_S4E
639-10452	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:TS_1T_S4E
639-10453	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:TS_1T_S4E
639-10454	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:TS_1T_S4E
639-10455	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:TS_1T_S4E
639-10456	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:TS_1T_S4E
639-10457	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:TS_1T_S4E
639-10294	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:TS_1T_S4E
639-10458	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:TS_1T_S4E
639-10459	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:TS_1T_S4E
639-10460	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:TS_512G_S4E
639-10461	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:TS_512G_S4E
639-10462	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:TS_512G_S4E
639-10463	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:TS_512G_S4E
639-10464	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:TS_512G_S4E
639-10465	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:TS_512G_S4E
639-10466	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:TS_512G_S4E
639-10467	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:TS_512G_S4E
639-10468	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:TS_512G_S4E

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BOM NUMBER	BOM NAME	BOM OPTIONS
639-10478	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:WD_2T_S4E
639-10479	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:WD_2T_S4E
639-10480	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:WD_2T_S4E
639-10481	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:WD_2T_S4E
639-10482	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:WD_2T_S4E
639-10483	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:WD_2T_S4E
639-10484	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:WD_2T_S4E
639-10485	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:WD_2T_S4E
639-10486	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:WD_2T_S4E
639-10317	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:WD_4T_S4E
639-10318	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:WD_4T_S4E
639-10319	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:WD_4T_S4E
639-10320	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:WD_4T_S4E
639-10321	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:WD_4T_S4E
639-10322	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:WD_4T_S4E
639-10307	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:WD_4T_S4E
639-10323	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:WD_4T_S4E
639-10295	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:WD_4T_S4E
639-10487	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:WD_512G_S4E
639-10488	PCBA,MLB-WELL,CPU-BST-PRQ,MU-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_8G,NANDCFG:WD_512G_S4E
639-10489	PCBA,MLB-WELL,CPU-BST-PRQ,SS-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_8G,NANDCFG:WD_512G_S4E
639-10490	PCBA,MLB-WELL,CPU-BST-PRQ,HY-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_16G,NANDCFG:WD_512G_S4E
639-10491	PCBA,MLB-WELL,CPU-BST-PRQ,MU-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_16G,NANDCFG:WD_512G_S4E
639-10492	PCBA,MLB-WELL,CPU-BST-PRQ,SS-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_16G,NANDCFG:WD_512G_S4E
639-10493	PCBA,MLB-WELL,CPU-BST-PRQ,HY-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_32G,NANDCFG:WD_512G_S4E
639-10494	PCBA,MLB-WELL,CPU-BST-PRQ,MU-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:MI_32G,NANDCFG:WD_512G_S4E
639-10495	PCBA,MLB-WELL,CPU-BST-PRQ,SS-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:SS_32G,NANDCFG:WD_512G_S4E

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939-09452	PCBA,MLB-WELL,CPU-BST-PRQ,HY-8G,TS-512G-SUB1,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BST,DRAMCFG:HY_8G,NANDCFG:TS_512G_SUB1_S4E
939-09487	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,TS-512G-SUB1,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:TS_512G_SUB1_S4E
939-09488	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,WD-512G-SUB1,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:WD_512G_SUB1_S4E
939-09494	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,TS-512G-SUB1,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:TS_512G_SUB1_S4E
939-09511	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,TS-512G-SUB1,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:TS_512G_SUB1_S4E
639-10382	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,TS-512G-SUB2,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:TS_512G_SUB2_S4E
639-10420	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,WD-512G-SUB2,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:WD_512G_SUB2_S4E

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	BOM NUMBER	BOM NAME	BOM OPTIONS
	639-10338	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:HY_1T_S4E
	639-10339	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:HY_1T_S4E
	639-10340	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:HY_1T_S4E
LB1	639-10291	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:HY_1T_S4E
	639-10341	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:HY_1T_S4E
	639-10342	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:HY_1T_S4E
	639-10343	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:HY_1T_S4E
	639-10344	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:HY_1T_S4E
	639-10345	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,HY-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:HY_1T_S4E
	639-10346	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:HY_2T_S4E
	639-10347	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:HY_2T_S4E
	639-10348	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:HY_2T_S4E
	639-10349	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:HY_2T_S4E
	639-10350	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:HY_2T_S4E
	639-10351	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:HY_2T_S4E
LB4	639-10302	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:HY_2T_S4E
	639-10352	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:HY_2T_S4E
	639-10353	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,HY-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:HY_2T_S4E
	639-10354	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:HY_4T_S4E
	639-10355	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:HY_4T_S4E
	639-10356	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:HY_4T_S4E
	639-10357	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:HY_4T_S4E
	639-10358	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:HY_4T_S4E
	639-10359	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:HY_4T_S4E
	639-10360	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:HY_4T_S4E
	639-10296	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:HY_4T_S4E
	639-10361	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,HY-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:HY_4T_S4E
	639-10362	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:HY_512G_S4E
	639-10363	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:HY_512G_S4E
	639-10364	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:HY_512G_S4E
	639-10365	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:HY_512G_S4E
	639-10366	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:HY_512G_S4E
	639-10367	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:HY_512G_S4E
	639-10368	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:HY_512G_S4E
	639-10369	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:HY_512G_S4E
	639-10370	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,HY-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:HY_512G_S4E
MINI1	639-10306	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:TS_1T_S4E
	639-10309	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:TS_1T_S4E
	639-10310	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:TS_1T_S4E
	639-10311	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:TS_1T_S4E
	639-10312	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:TS_1T_S4E
	639-10313	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:TS_1T_S4E
	639-10314	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:TS_1T_S4E
	639-10315	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:TS_1T_S4E
	639-10316	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,TS-1T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:TS_1T_S4E
	639-10371	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:TS_512G_S4E
	639-10372	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:TS_512G_S4E
	639-10373	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:TS_512G_S4E
	639-10374	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:TS_512G_S4E
	639-10375	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:TS_512G_S4E
	639-10376	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:TS_512G_S4E
	639-10377	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:TS_512G_S4E
	639-10378	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:TS_512G_S4E
	639-10379	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,TS-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:TS_512G_S4E

EVT BOM release CPU:PRQ-BTR

BOM NUMBER	BOM NAME	BOM OPTIONS
639-10389	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:WD_2T_S4E
639-10390	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:WD_2T_S4E
639-10391	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:WD_2T_S4E
639-10392	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:WD_2T_S4E
639-10393	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:WD_2T_S4E
639-10394	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:WD_2T_S4E
639-10395	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:WD_2T_S4E
639-10396	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:WD_2T_S4E
639-10397	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,WD-2T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:WD_2T_S4E
639-10398	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:WD_4T_S4E
639-10399	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:WD_4T_S4E
639-10400	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:WD_4T_S4E
639-10401	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:WD_4T_S4E
639-10402	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:WD_4T_S4E
639-10403	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:WD_4T_S4E
639-10404	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:WD_4T_S4E
639-10405	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:WD_4T_S4E
639-10406	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,WD-4T,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:WD_4T_S4E
639-10407	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_8G,NANDCFG:WD_512G_S4E
639-10408	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_8G,NANDCFG:WD_512G_S4E
639-10409	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-8G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_8G,NANDCFG:WD_512G_S4E
639-10410	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_16G,NANDCFG:WD_512G_S4E
639-10411	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_16G,NANDCFG:WD_512G_S4E
639-10412	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-16G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_16G,NANDCFG:WD_512G_S4E
639-10413	PCBA,MLB-WELL,CPU-BTR-PRQ,HY-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:HY_32G,NANDCFG:WD_512G_S4E
639-10414	PCBA,MLB-WELL,CPU-BTR-PRQ,MU-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:MI_32G,NANDCFG:WD_512G_S4E
639-10415	PCBA,MLB-WELL,CPU-BTR-PRQ,SS-32G,WD-512G,X1795	BASE_BOM,DEVEL_BOM,ALTERNATE,PRQ:BTR,DRAMCFG:SS_32G,NANDCFG:WD_512G_S4E

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Apple Inc.

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Alternate Parts

System EE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
103S0321	103S0276		ALL	
103S00248	103S00247		ALL	8.06K 0.1% RESISTOR
103S00250	103S00249		ALL	18.2K 0.1% RESISTOR
107S0284	107S00021	SENSOR:DEV	ALL	TFT w/ Yageo
107S00101	107S00005	SENSOR:DEV	ALL	Cyntec w/ Yageo
107S00102	107S00017	SENSOR:DEV	ALL	Cyntec w/ Yageo
107S0276	107S00020	SENSOR:DEV	ALL	Cyntec w/ TFT
107S00100	107S00057		ALL	Cyntec w/ TFT
107S00297	107S00344		ALL	rdr47657689/7932 89002/4 100K THERMISTOR
138S00084	138S00060		ALL	
138S00117	138S00071		ALL	
138S0714	138S0713		ALL	Murata w/ Samsung
138S0715	138S0732		ALL	Murata w/ Samsung
138S0706	138S0739		ALL	NEC w/ Vishay
138S0945	138S0739		ALL	NEC w/ Rohm
138S00049	138S0831	ANY	ALL	
138S00181	138S0835		ALL	rdr47657616
138S00104	138S0978		ALL	Murata w/ Taiyo
138S00056	138S1100		ALL	
152S00369	152S00268		ALL	Cyntec w/ NEC
152S00403	152S00322		ALL	Murata w/ Chillisin
152S00864	152S00851		ALL	
152S00434	152S1829		ALL	
155S0665	155S00232		ALL	
155S00018	155S0664		ALL	Murata w/ Taiyo
155S0914	155S0897		ALL	
155S00190	155S0897		ALL	
197S00046	197S00036		ALL	Epson w/ TXC
197S00047	197S00036		ALL	Kyocera w/ TXC
197S00048	197S00036		ALL	Murata w/ TXC
197S00120	197S00118		ALL	
311S0426	311S00007		ALL	
311S00104	311S00091	ANY	ALL	
311S00156	311S00129		ALL	
311S00196	311S00195		ALL	
311S00060	311S0273		ALL	
311S00121	311S0398		ALL	rdr47643734
311S00138	311S0436		ALL	
311S00013	311S0508		ALL	NXP w/ Diodes
335S00270	335S00203		ALL	
335S00213	335S0888		ALL	
353S00878	353S00599		ALL	
353S00879	353S00754		ALL	
353S00750	353S00877		ALL	
353S01041	353S01042		ALL	
353S01346	353S01320		ALL	
371S00190	371S00085		ALL	rdr47657476

System EE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S1080	376S0820		ALL	
376S00146	376S1061		ALL	NXP w/ Diodes
376S00282	376S1128		ALL	
377S0077	377S0183		ALL	Infineon w/ ST

Keyboard

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	
138S0739	138S0706		ALL	rdr52917381	Q6710 etc
138S0945	138S0706		ALL	rdr52917381	Q6710 etc
377S0184	377S0155		ALL	rdr52918994	DZ6710/1/2

Audio

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
138S0700	138S0641		ALL	Murata w/ SS&Taiyo
138S0660	138S0684		ALL	
138S1103	138S0719		ALL	
155S0694	155S0387		ALL	
155S0660	155S0513		ALL	
155S00034	155S0706		ALL	Taiyo w/ Murata
311S0271	311S00008		ALL	

BLC

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	
107S00033	107S00034		ALL		
138S0738	138S1101		ALL	Samsung alt to Murata	
138S0846	138S0811		ALL	Samsung alt to Murata	
152S00359	152S00253		ALL	Chilisin alt to Cyntec	
376S1053	376S0604		ALL	Diodes alt to Fairchild	
376S1106	376S0678		ALL	Fairchild alt to Vishay	
740S00041	740S0159		ALL		
152S00812	152S1701		ALL	rdr 51541757	L8450
371S00217	371S00079		ALL	rdr 51541757	D8450
138S00087	138S1086		ALL	rdr 51541757	C8453,etc
371S00077	371S00180		ALL	D8410	

WIRELESS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
138S00024	138S0986		ALL	
152S00769	152S00659		ALL	
152S00770	152S0857		ALL	
155S00067	155S00401		ALL	

USBC BLOCK

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
152S01090	152S01085		ALL	
377S00166	377S00106		ALL	rdr47565127
377S00165	377S00031		ALL	rdr47657749
138S0852	138S0818		ALL	rdr47616715
138S00116	138S00071		ALL	rdr47625423

DC-DC

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
107S00015	107S00011		ALL	
107S00087	107S00029		ALL	TFT w/ Yageo
107S00071	107S00053		ALL	
107S00139	107S0178		ALL	
107S0249	107S0251		ALL	
128S00026	128S00011		ALL	
128S00031	128S00011		ALL	
128S00087	128S00011		ALL	
128S0302	128S00038		ALL	
128S00039	128S00038		ALL	
128S00094	128S00067		ALL	rdr47625024
128S00065	128S00067		ALL	
128S00069	128S00067		ALL	
128S0364	128S0264		ALL	Kemet w/ Panasonic
132S00012	132S0401		ALL	
132S00064	132S0409		ALL	
138S00077	138S00035		ALL	
138S00093	138S00035		ALL	
138S00111	138S00036		ALL	
138S00047	138S00073		ALL	
138S00097	138S0750		ALL	
138S0775	138S0860		ALL	
138S0789	138S0941		ALL	Murata w/ SS
152S00363	152S00048		ALL	Cyntec w/ Vishay
152S00388	152S00182		ALL	
152S00703	152S00182		ALL	
152S00383	152S00198		ALL	
152S00680	152S00198		ALL	
152S00398	152S00204		ALL	
152S00368	152S00269		ALL	
152S00724	152S00311		ALL	
152S00786	152S00344		ALL	
152S00725	152S00590		ALL	
152S00726	152S00592		ALL	
353S00831	353S00519		ALL	
353S01831	353S00519		ALL	
353S02192	353S00519		ALL	rdr52925387//U7210,etc
376S00204	376S00203		ALL	
376S00226	376S00203		ALL	
376S00227	376S00203		ALL	
376S00373	376S1038		ALL	
376S00281	376S1147		ALL	
376S00007	376S1179		ALL	
376S00228	376S1179		ALL	
740S0144	740S0118		ALL	
740S00028	740S0118		ALL	
376S00388	376S1112		ALL	rdr47655415
132S00176	132S0640		ALL	rdr47638536
371S00220	371S00181		ALL	rdr47616194

POLY CAP ALTs

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S00103	128S00093	POLY:33UF	ALL	33UF rdr47540033
128S00009	128S00093	POLY:33UF	ALL	33UF
128S00107	128S00106	POLY:27UF	ALL	27UF
128S00110	128S00106	POLY:27UF	ALL	27UF

System EE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:	
152S01024	152S00386		ALL	rdr47616316	
376S00036	376S00328		ALL	rdr47624421	
376S00321	376S00397		ALL	rdr49224226	
152S00439	152S00237		ALL	rdr47624585	
152S00997	152S00476		ALL	rdr47624709	
128S0352	128S0631		ALL	rdr47615697	
152S01012	152S01011		ALL	rdr	
376S1187	376S00304		ALL	rdr47625081	
138S00229	138S00107		ALL	rdr47616835	
138S0786	138S0705		ALL	Murata w/ Samsung	
138S0746	138S0705		ALL	rdr47625279	
152S01023	152S00384		ALL	rdr47616530	
107S00101	107S00005		ALL	rdr47615262	
107S0276	107S00020		ALL	rdr47615349	
138S0914	138S00109		ALL	rdr47615887	
376S00074	376S00309		ALL	rdr47645573	
311S00096	311S00040		ALL	rdr47646617	
138S00139	138S00138		ALL	rdr47616026	
138S00164	138S00138		ALL	rdr47616026	
353S4376	353S3384		ALL	rdr47645195	
138S0931	138S0933		ALL	rdr47639616	
371S00074	371S0602		ALL	rdr47645369	
311S0398	311S00121		ALL	rdr47643734	
311S00177	311S00178		ALL	rdr47643915	
311S0562	311S0372		ALL	rdr47644278	
311S0437	311S00112		ALL	rdr47644489	
371S00064	371S00193		ALL	rdr48944134	
705S00044	705S00009		ALL	rdr48937018	
311S00239	311S0315		ALL	rdr48937850	
376S00399	376S0855		ALL	rdr	
376S00401	376S00398		ALL	rdr	Q6861 etc
376S00403	376S00398		ALL	rdr	Q6861 etc
372S00033	372S0183		ALL	rdr50212437	Q5874 etc
197S00244	197S00227		ALL	rdr52598787	Y1900
197S00258	197S00227		ALL	rdr52598787	
311S0596	311S0593		ALL	rdr52917700	U8472
353S01615	353S4160		ALL	rdr52861967	U8400
107S00016	107S0118	SSD:S4E	ALL	rdr54314890	R9015
107S00016	107S0118	SSD:S5E	ALL	rdr54314890	
116S00006	116S0175		ALL	rdr55262183	R8159
131S00134	131S00041		ALL	rdr55225545	C8490 etc
335S00410	335S00254		ALL	rdr52918703	U6700
377S00186	377S00060		ALL	rdr56920619	DZ3300* etc

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NAND U8600

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
998-17175	1	NAND,3DV4,64GBT,S4E,256G,H,SUBX,SLGA110	U8600	CRITICAL	NAND_U8600:2DP_SUB1_HY	256G STALE
998-17176	1	NAND,3DV4,64GBT,S4E,256G,H,SUBY,SLGA110	U8600	CRITICAL	NAND_U8600:2DP_SUB2_HY	256G STALE
998-16394	1	NAND,3DV4,64GBT,S4E,256G,T,SUBX,SLGA110	U8600	CRITICAL	NAND_U8600:2DP_SUB1_TS	256G STALE
998-16395	1	NAND,3DV5,64GBT,S4E,256G,T,SUBY,SLGA110	U8600	CRITICAL	NAND_U8600:2DP_SUB2_TS	256G STALE
998-16396	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8600	CRITICAL	NAND_U8600:4DP_SUB1_TS	512G 998
998-16397	1	NAND,3DV4,128GBT,S4E,256G,T,SUBY,SLGA110	U8600	CRITICAL	NAND_U8600:4DP_SUB2_TS	512G 998
998-16945	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8600	CRITICAL	NAND_U8600:4DP_SUB1_WD	512G 998
998-16970	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBY,SBGA11	U8600	CRITICAL	NAND_U8600:4DP_SUB2_WD	512G 998
335S00394	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8600	CRITICAL	NAND_U8600:4DP_TS	
335S00378	1	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8600	CRITICAL	NAND_U8600:4DP_HY	
335S00389	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8600	CRITICAL	NAND_U8600:4DP_WD	
335S00395	1	NAND,3DV4,192GBT,XXX,S4E,256G,T,SLGA110	U8600	CRITICAL	NAND_U8600:6DP_TS	
335S00407	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SBGA110	U8600	CRITICAL	NAND_U8600:6DP_WD	
335S00398	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SLGA110	U8600	CRITICAL	NAND_U8600:6DP_HY	
335S00379	1	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8600	CRITICAL	NAND_U8600:8DP_HY	
335S00396	1	NAND,3DV4,256GBT,S4E,256G,T,SUBX,SLGA110	U8600	CRITICAL	NAND_U8600:8DP_TS	
335S00397	1	NAND,3DV4,320GBT,XXX,S4E,256G,T,SLGA110	U8600	CRITICAL	NAND_U8600:10DP_TS	
335S00399	1	NAND,3DV4,320GBT,XXX,S4E,256G,H,SLGA110	U8600	CRITICAL	NAND_U8600:10DP_HY	
335S00380	1	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8600	CRITICAL	NAND_U8600:16DP_HY	
335S00391	1	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8600	CRITICAL	NAND_U8600:16DP_WD	
335S00433	1	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8600	CRITICAL	NAND_U8600:16DP_2_WD	
335S00444	1	NAND,3DV5,1024GBT,XXX,S4E,512G,H,SLGA110	U8600	CRITICAL	NAND_U8600:16DP_2_HY	

NAND U8700

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
998-17175	1	NAND,3DV4,64GBT,S4E,256G,H,SUBX,SLGA110	U8700	CRITICAL	NAND_U8700:2DP_SUB1_HY	256G STALE
998-17176	1	NAND,3DV4,64GBT,S4E,256G,H,SUBY,SLGA110	U8700	CRITICAL	NAND_U8700:2DP_SUB2_HY	256G STALE
998-16394	1	NAND,3DV4,64GBT,S4E,256G,T,SUBX,SLGA110	U8700	CRITICAL	NAND_U8700:2DP_SUB1_TS	256G STALE
998-16395	1	NAND,3DV5,64GBT,S4E,256G,T,SUBY,SLGA110	U8700	CRITICAL	NAND_U8700:2DP_SUB2_TS	256G STALE
998-16396	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8700	CRITICAL	NAND_U8700:4DP_SUB1_TS	512G 998
998-16397	1	NAND,3DV4,128GBT,S4E,256G,T,SUBY,SLGA110	U8700	CRITICAL	NAND_U8700:4DP_SUB2_TS	512G 998
998-16945	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8700	CRITICAL	NAND_U8700:4DP_SUB1_WD	512G 998
998-16970	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBY,SBGA11	U8700	CRITICAL	NAND_U8700:4DP_SUB2_WD	512G 998
335S00394	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8700	CRITICAL	NAND_U8700:4DP_TS	
335S00378	1	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8700	CRITICAL	NAND_U8700:4DP_HY	
335S00389	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8700	CRITICAL	NAND_U8700:4DP_WD	
335S00395	1	NAND,3DV4,192GBT,XXX,S4E,256G,T,SLGA110	U8700	CRITICAL	NAND_U8700:6DP_TS	
335S00407	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SBGA110	U8700	CRITICAL	NAND_U8700:6DP_WD	
335S00398	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SLGA110	U8700	CRITICAL	NAND_U8700:6DP_HY	
335S00379	1	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8700	CRITICAL	NAND_U8700:8DP_HY	
335S00396	1	NAND,3DV4,256GBT,S4E,256G,T,SUBX,SLGA110	U8700	CRITICAL	NAND_U8700:8DP_TS	
335S00397	1	NAND,3DV4,320GBT,XXX,S4E,256G,T,SLGA110	U8700	CRITICAL	NAND_U8700:10DP_TS	
335S00399	1	NAND,3DV4,320GBT,XXX,S4E,256G,H,SLGA110	U8700	CRITICAL	NAND_U8700:10DP_HY	
335S00380	1	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8700	CRITICAL	NAND_U8700:16DP_HY	
335S00391	1	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8700	CRITICAL	NAND_U8700:16DP_WD	
335S00433	1	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8700	CRITICAL	NAND_U8700:16DP_2_WD	
335S00444	1	NAND,3DV5,1024GBT,XXX,S4E,512G,H,SLGA110	U8700	CRITICAL	NAND_U8700:16DP_2_HY	

NAND U8800

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
998-17175	1	NAND,3DV4,64GBT,S4E,256G,H,SUBX,SLGA110	U8800	CRITICAL	NAND_U8800:2DP_SUB1_HY	256G STALE
998-17176	1	NAND,3DV4,64GBT,S4E,256G,H,SUBY,SLGA110	U8800	CRITICAL	NAND_U8800:2DP_SUB2_HY	256G STALE
998-16394	1	NAND,3DV4,64GBT,S4E,256G,T,SUBX,SLGA110	U8800	CRITICAL	NAND_U8800:2DP_SUB1_TS	256G STALE
998-16395	1	NAND,3DV5,64GBT,S4E,256G,T,SUBY,SLGA110	U8800	CRITICAL	NAND_U8800:2DP_SUB2_TS	256G STALE
998-16396	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8900	CRITICAL	NAND_U8900:4DP_SUB1_TS	512G 998
998-16397	1	NAND,3DV4,128GBT,S4E,256G,T,SUBY,SLGA110	U8900	CRITICAL	NAND_U8900:4DP_SUB2_TS	512G 998
998-16945	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8900	CRITICAL	NAND_U8900:4DP_SUB1_WD	512G 998
998-16970	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBY,SBGA11	U8900	CRITICAL	NAND_U8900:4DP_SUB2_WD	512G 998
335S00394	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8800	CRITICAL	NAND_U8800:4DP_TS	
335S00378	1	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8800	CRITICAL	NAND_U8800:4DP_HY	
335S00389	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8800	CRITICAL	NAND_U8800:4DP_WD	
335S00395	1	NAND,3DV4,192GBT,XXX,S4E,256G,T,SLGA110	U8800	CRITICAL	NAND_U8800:6DP_TS	
335S00407	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SBGA110	U8800	CRITICAL	NAND_U8800:6DP_WD	
335S00398	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SLGA110	U8800	CRITICAL	NAND_U8800:6DP_HY	
335S00379	1	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8800	CRITICAL	NAND_U8800:8DP_HY	
335S00396	1	NAND,3DV4,256GBT,S4E,256G,T,SUBX,SLGA110	U8800	CRITICAL	NAND_U8800:8DP_TS	
335S00397	1	NAND,3DV4,320GBT,XXX,S4E,256G,T,SLGA110	U8800	CRITICAL	NAND_U8800:10DP_TS	
335S00399	1	NAND,3DV4,320GBT,XXX,S4E,256G,H,SLGA110	U8800	CRITICAL	NAND_U8800:10DP_HY	
335S00380	1	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8800	CRITICAL	NAND_U8800:16DP_HY	
335S00391	1	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8800	CRITICAL	NAND_U8800:16DP_WD	
335S00433	1	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8800	CRITICAL	NAND_U8800:16DP_2_WD	
335S00444	1	NAND,3DV5,1024GBT,XXX,S4E,512G,H,SLGA110	U8800	CRITICAL	NAND_U8800:16DP_2_HY	

NAND U8900

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION	
998-17175	1	NAND,3DV4,64GBT,S4E,256G,H,SUBX,SLGA110	U8900	CRITICAL	NAND_U8900:2DP_SUB1_HY	256G STALE
998-17176	1	NAND,3DV4,64GBT,S4E,256G,H,SUBY,SLGA110	U8900	CRITICAL	NAND_U8900:2DP_SUB2_HY	256G STALE
998-16394	1	NAND,3DV4,64GBT,S4E,256G,T,SUBX,SLGA110	U8900	CRITICAL	NAND_U8900:2DP_SUB1_TS	256G STALE
998-16395	1	NAND,3DV5,64GBT,S4E,256G,T,SUBY,SLGA110	U8900	CRITICAL	NAND_U8900:2DP_SUB2_TS	256G STALE
998-16396	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8800	CRITICAL	NAND_U8800:4DP_SUB1_TS	512G 998
998-16397	1	NAND,3DV4,128GBT,S4E,256G,T,SUBY,SLGA110	U8800	CRITICAL	NAND_U8800:4DP_SUB2_TS	512G 998
998-16945	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8800	CRITICAL	NAND_U8800:4DP_SUB1_WD	512G 998
998-16970	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBY,SBGA11	U8800	CRITICAL	NAND_U8800:4DP_SUB2_WD	512G 998
335S00394	1	NAND,3DV4,128GBT,S4E,256G,T,SUBX,SLGA110	U8900	CRITICAL	NAND_U8900:4DP_TS	
335S00378	1	NAND,3DV4,128GBT,S4E,256G,H,SLGA110	U8900	CRITICAL	NAND_U8900:4DP_HY	
335S00389	1	NAND,3DV4,128GBT,S4E,256G,SD,SUBX,BGA110	U8900	CRITICAL	NAND_U8900:4DP_WD	
335S00395	1	NAND,3DV4,192GBT,XXX,S4E,256G,T,SLGA110	U8900	CRITICAL	NAND_U8900:6DP_TS	
335S00407	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SBGA110	U8900	CRITICAL	NAND_U8900:6DP_WD	
335S00398	1	NAND,3DV4,192GBT,XXX,S4E,256G,H,SLGA110	U8900	CRITICAL	NAND_U8900:6DP_HY	
335S00379	1	NAND,3DV4,256GBT,S4E,256G,H,SLGA110	U8900	CRITICAL	NAND_U8900:8DP_HY	
335S00396	1	NAND,3DV4,256GBT,S4E,256G,T,SUBX,SLGA110	U8900	CRITICAL	NAND_U8900:8DP_TS	
335S00397	1	NAND,3DV4,320GBT,XXX,S4E,256G,T,SLGA110	U8900	CRITICAL	NAND_U8900:10DP_TS	
335S00399	1	NAND,3DV4,320GBT,XXX,S4E,256G,H,SLGA110	U8900	CRITICAL	NAND_U8900:10DP_HY	
335S00380	1	NAND,3DV4,512GBT,S4E,256G,H,SLGA110	U8900	CRITICAL	NAND_U8900:16DP_HY	
335S00391	1	NAND,3DV4,512GBT,XXX,S4E,256G,SD,SLGA110	U8900	CRITICAL	NAND_U8900:16DP_WD	
335S00433	1	NAND,3DV4,1TBT,XXX,S4E,512G,SD,SLGA110	U8900	CRITICAL	NAND_U8900:16DP_2_WD	
335S00444	1	NAND,3DV5,1024GBT,XXX,S4E,512G,H,SLGA110	U8900	CRITICAL	NAND_U8900:16DP_2_HY	

NAND/SOC Configs

BOM GROUP	BOM OPTIONS
NANDCFG:TS_512G_S4E	NAND_U8600:6DP_TS,NAND_U8700:6DP_TS,NAND_U8800:4DP_TS,NAND_U8900:4DP_TS,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:WD_512G_S4E	NAND_U8600:6DP_WD,NAND_U8700:6DP_WD,NAND_U8800:4DP_WD,NAND_U8900:4DP_WD,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:HY_512G_S4E	NAND_U8600:6DP_HY,NAND_U8700:6DP_HY,NAND_U8800:4DP_HY,NAND_U8900:4DP_HY,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:TS_1T_S4E	NAND_U8600:10DP_TS,NAND_U8700:10DP_TS,NAND_U8800:8DP_TS,NAND_U8900:8DP_TS,SOC:B0_2G,SSD:S4E,CMPT:THRSSD
NANDCFG:HY_1T_S4E	NAND_U8600:10DP_HY,NAND_U8700:10DP_HY,NAND_U8800:8DP_HY,NAND_U8900:8DP_HY,SOC:B0_2G,SSD:S4E,CMPT:THRSSD
NANDCFG:WD_2T_S4E	NAND_U8600:16DP_WD,NAND_U8700:16DP_WD,NAND_U8800:16DP_WD,NAND_U8900:16DP_WD,SOC:B0_2G,SSD:S4E,CMPT:THRSSD
NANDCFG:HY_2T_S4E	NAND_U8600:16DP_HY,NAND_U8700:16DP_HY,NAND_U8800:16DP_HY,NAND_U8900:16DP_HY,SOC:B0_2G,SSD:S4E,CMPT:THRSSD
NANDCFG:WD_4T_S4E	NAND_U8600:16DP_2_WD,NAND_U8700:16DP_2_WD,NAND_U8800:16DP_2_WD,NAND_U8900:16DP_2_WD,SOC:B0_2G,SSD:S4E,CMPT:THRSSD
NANDCFG:HY_4T_S4E	NAND_U8600:16DP_2_HY,NAND_U8700:16DP_2_HY,NAND_U8800:16DP_2_HY,NAND_U8900:16DP_2_HY,SOC:B0_2G,SSD:S4E,CMPT:THRSSD

256G STALE starting P1B

NANDCFG:TS_256G_SUB1_S4E	NAND_U8600:4DP_SUB1_TS,NAND_U8700:2DP_SUB1_TS,NAND_U8800:2DP_SUB1_TS,NAND_U8900:2DP_SUB1_TS,SOC:B0_1G,SSD:S4E
NANDCFG:HY_256G_SUB1_S4E	NAND_U8600:4DP_HY,NAND_U8700:2DP_SUB1_HY,NAND_U8800:2DP_SUB1_HY,NAND_U8900:2DP_SUB1_HY,SOC:B0_1G,SSD:S4E
NANDCFG:HY_256G_SUB2_S4E	NAND_U8600:4DP_HY,NAND_U8700:2DP_SUB2_HY,NAND_U8800:2DP_SUB2_HY,NAND_U8900:2DP_SUB2_HY,SOC:B0_1G,SSD:S4E

998 NAND/SOC Configs

BOM GROUP	BOM OPTIONS
NANDCFG:TS_512G_SUB1_S4E	NAND_U8600:6DP_TS,NAND_U8700:6DP_TS,NAND_U8800:4DP_SUB1_TS,NAND_U8900:4DP_SUB1_TS,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:TS_512G_SUB2_S4E	NAND_U8600:6DP_TS,NAND_U8700:6DP_TS,NAND_U8800:4DP_SUB2_TS,NAND_U8900:4DP_SUB2_TS,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:WD_512G_SUB1_S4E	NAND_U8600:6DP_WD,NAND_U8700:6DP_WD,NAND_U8800:4DP_SUB1_WD,NAND_U8900:4DP_SUB1_WD,SOC:B0_1G,SSD:S4E,CMPT:512GSSD
NANDCFG:WD_512G_SUB2_S4E	NAND_U8600:6DP_WD,NAND_U8700:6DP_WD,NAND_U8800:4DP_SUB2_WD,NAND_U8900:4DP_SUB2_WD,SOC:B0_1G,SSD:S4E,CMPT:512GSSD

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Confluence:
https://confluence.appsit.apple.com/confluence/display/J214EE/Mac+HW+EE+Home

Kismet:
AFP://KISMET.APPLE.COM/KISMET-PROJECTS/J214

Useful Wiki Links:
Schematic Conventions - https://hmts.ecs.apple.com/wiki/index.php/User:Wferry/SchConventions
Schematic Design Wiki - https://hmts.ecs.apple.com/wiki/index.php/Schematic_Design

J214 HW Radar:
<rdar://component/XXXXXX> J214 HW EE | Proto 0
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BLOCK Table

SOURCE PROJECT	SUB-DESIGN NAME	VERSION	HARD/ SOFT	SYNC_DATE/TIME
J214.MIHIR_MARATHE	MLB_WELL.LPDDR4X	1.9.2	S	2019_09_25_18:49:11
J214.ASARHANGNEJAD	MLB_WELL.USBC	5.0.8	S	2019_12_10_14:41:47
J214.ASARHANGNEJAD	MLB_WELL.USBC_CONNECTOR	5.0.8	S	2019_12_10_14:42:14
J214.ASARHANGNEJAD	MLB_WELL.USBC_SW	5.0.8	S	2019_12_10_14:42:37
J214.ASARHANGNEJAD	MLB_WELL.USBC_VR	5.0.8	S	2019_12_10_14:43:28
J214.ASARHANGNEJAD	MLB_WELL.ACE2BBR	5.0.8	S	2019_12_10_14:43:02

SYNC_MASTER=ALEE SYNC_DATE=05/15/2020

PAGE TITLE
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REVISION 6.0.0
BRANCH evt-3
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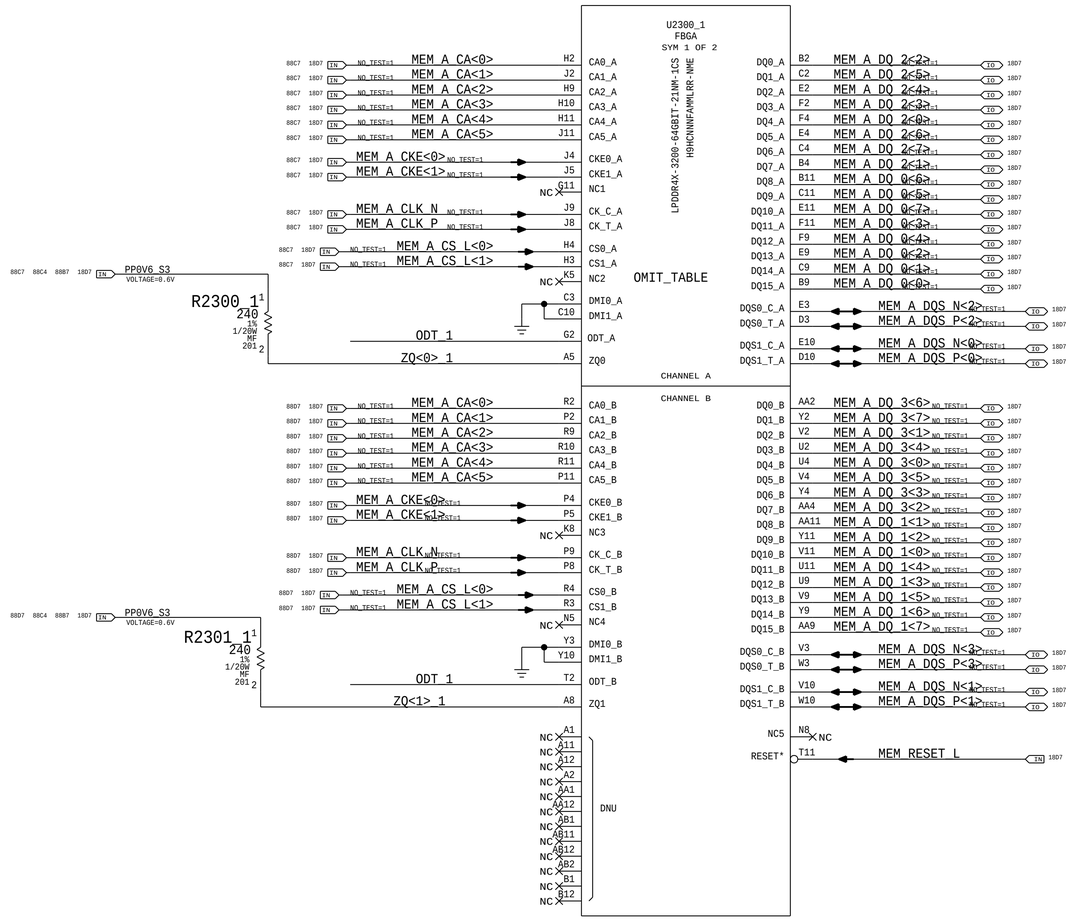
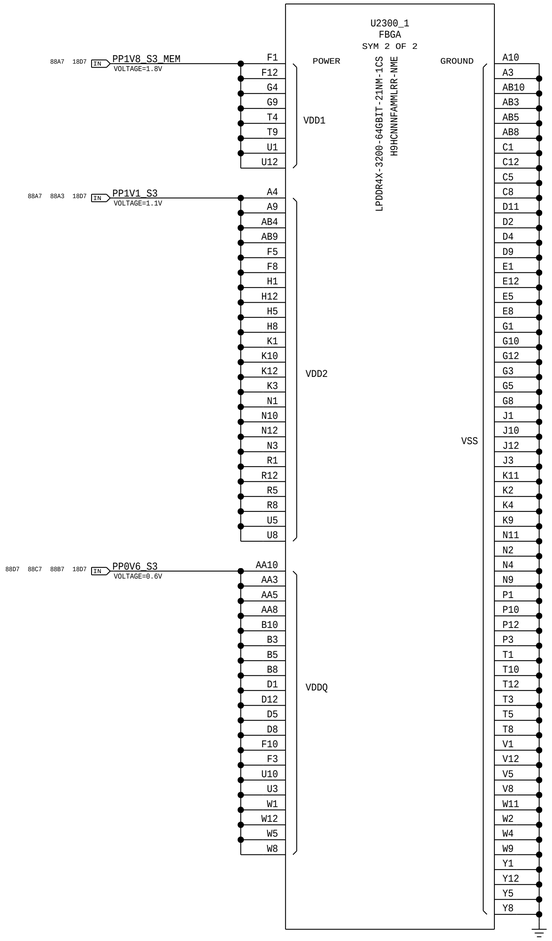
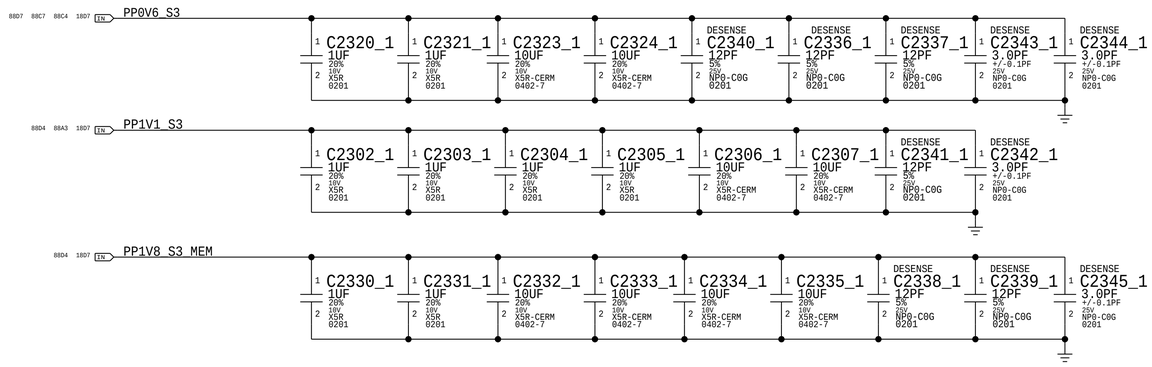
SHEET 87 OF 109

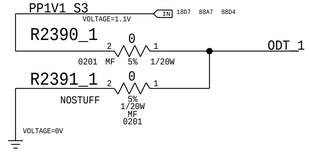
LPDDR4x SUB CHANNEL







H9HCNNNFAMMLRR 3.3.23 NOTE 4: ODT_CA PIN IGNORED BY
LPDDR4X DEVICES, CONNECT TO VALID-LOGIC LEVEL EITHER VDD2 OR VSS



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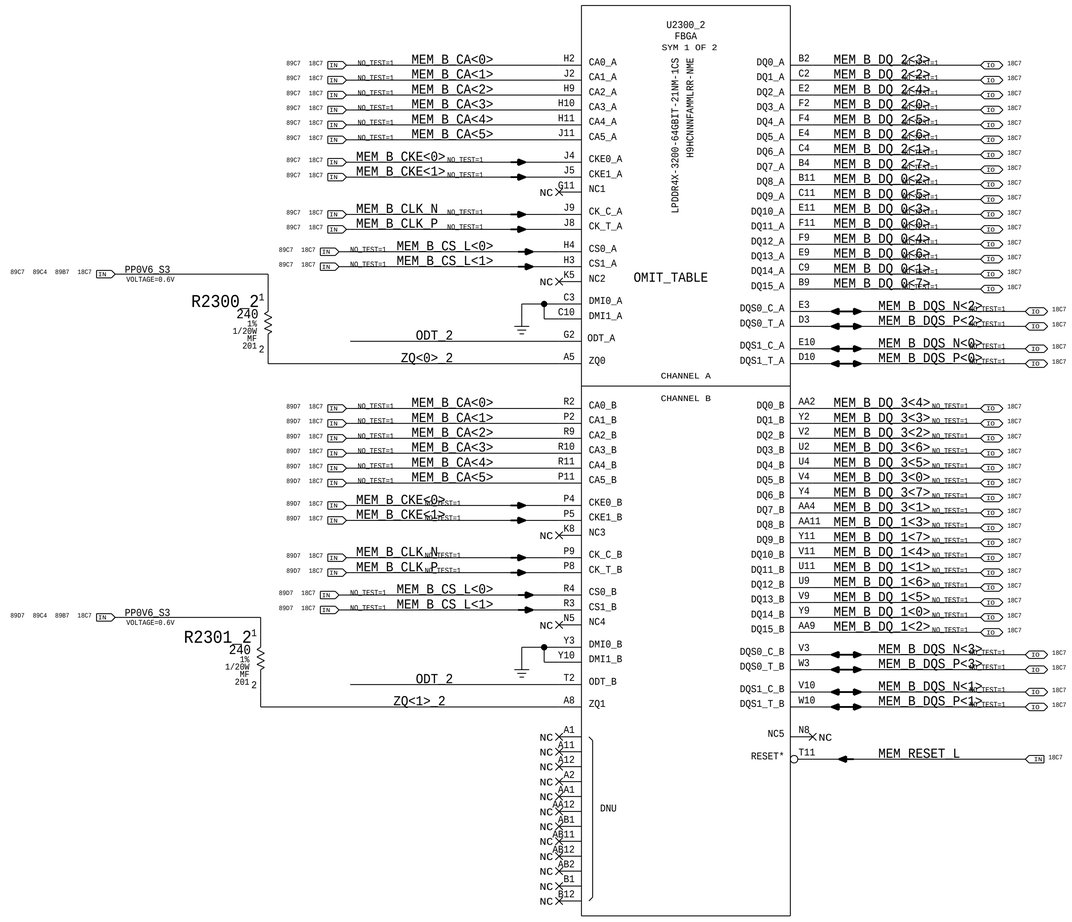
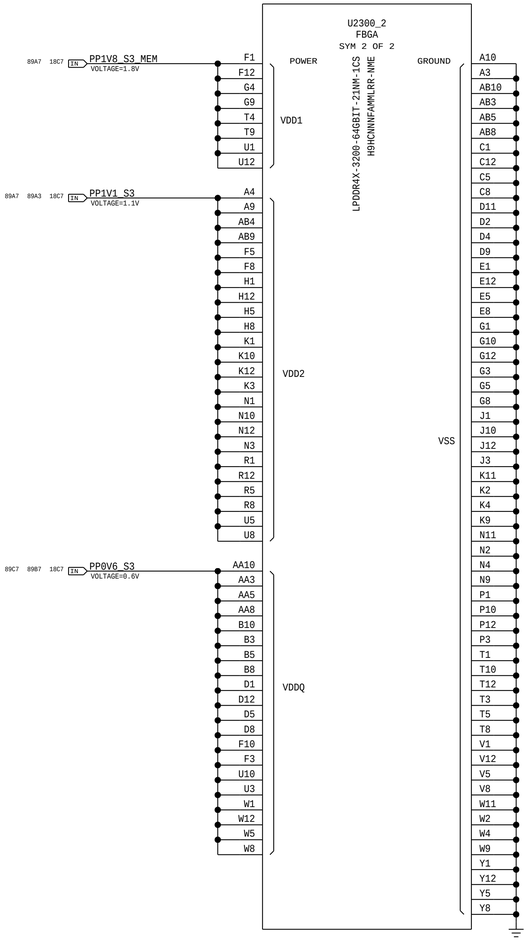
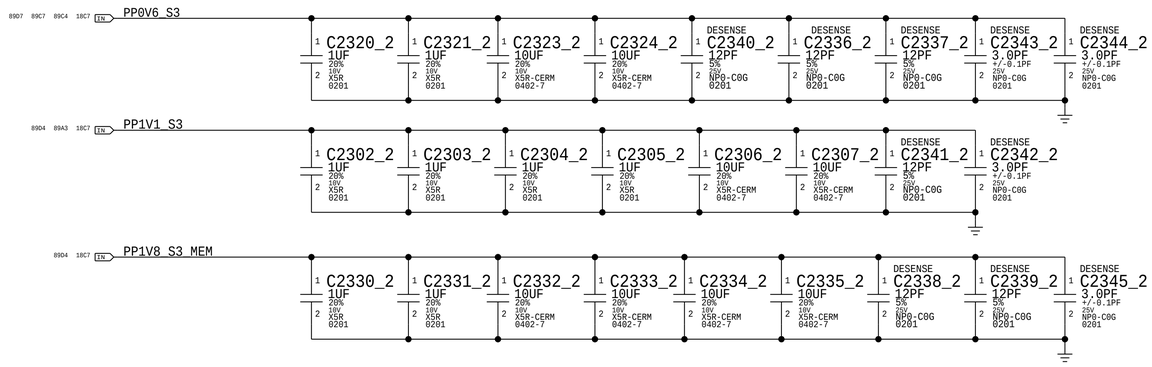
LPDDR4x SUB CHANNEL







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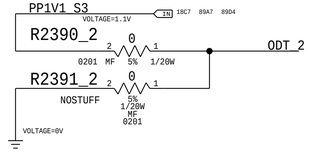

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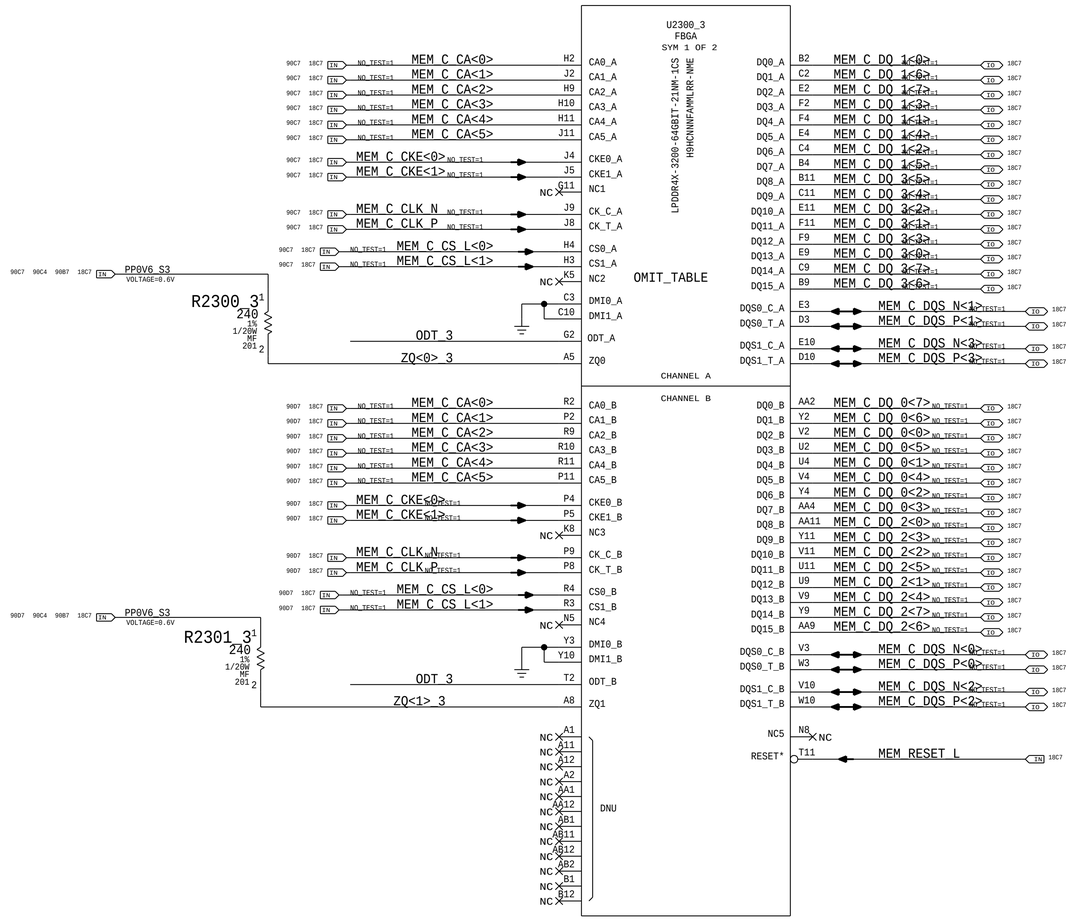
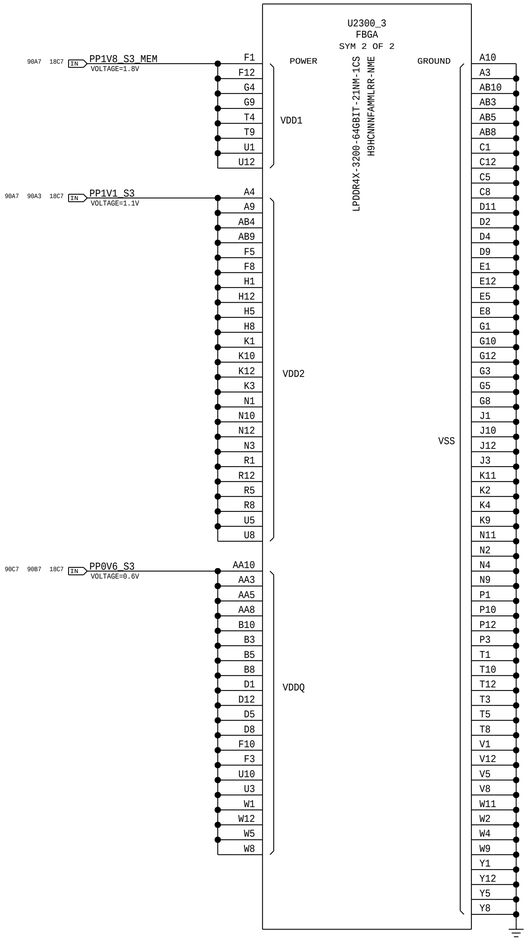
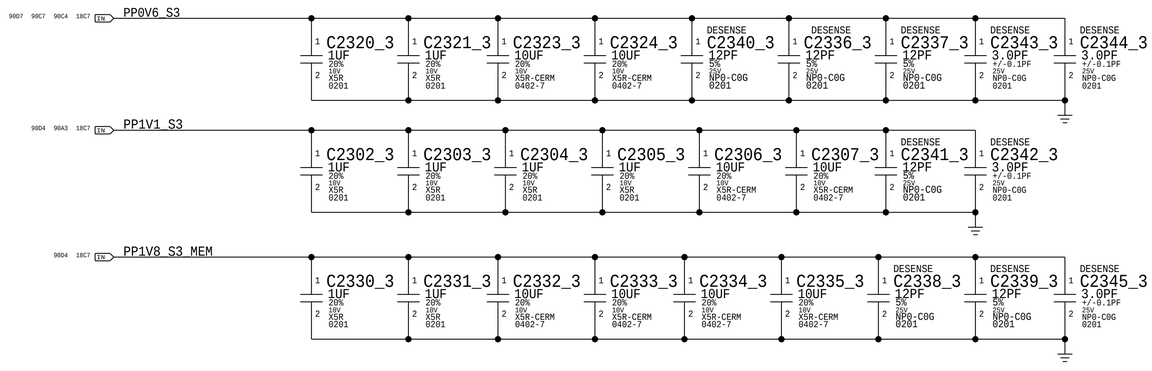
LPDDR4x SUB CHANNEL







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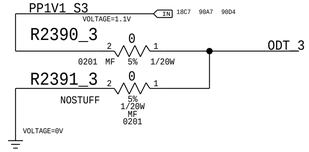

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Apple Inc.	DRAWING NUMBER 051-05198 · SIZE D
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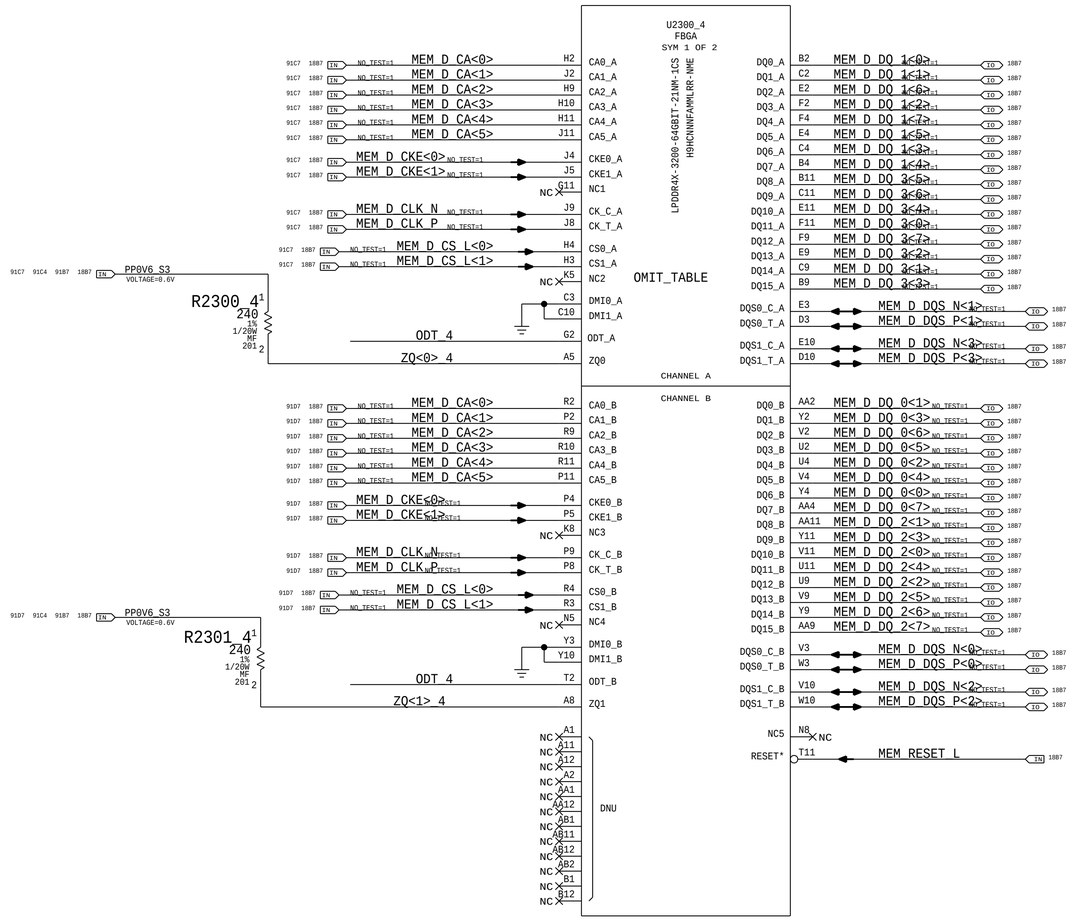
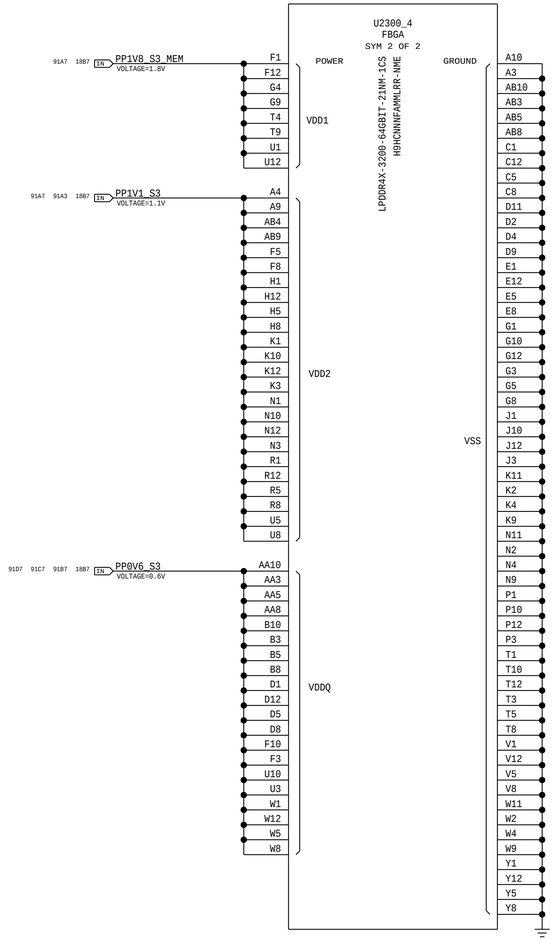
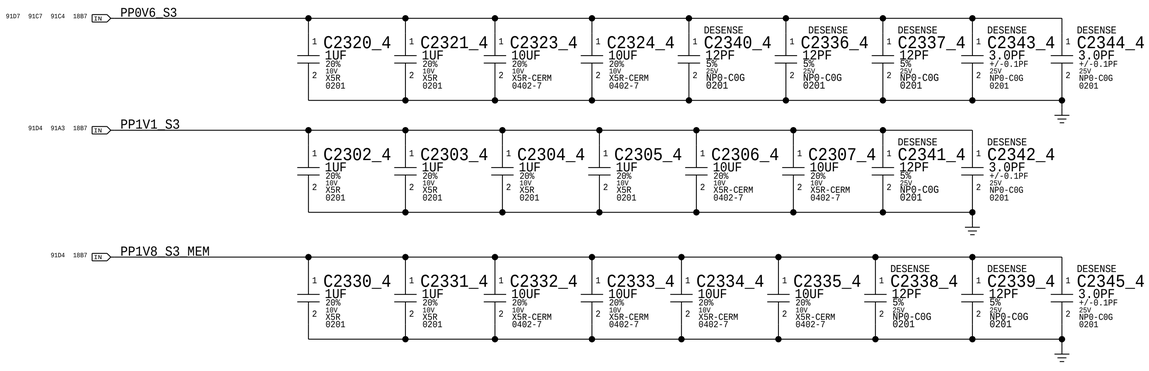
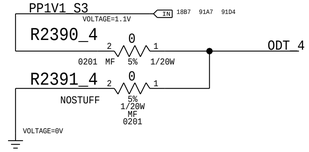
LPDDR4x SUB CHANNEL







H9HCNNNFAMMLRR 3.3.23 NOTE 4: ODT_CA PIN IGNORED BY
LPDDR4X DEVICES, CONNECT TO VALID-LOGIC LEVEL EITHER VDD2 OR VSS



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Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)

Port-X

BBR

ACE2BBR

ACE2

PP3V3_TBT_X_SX
PP3V3_UPC_X_LDO
PP3V3_TBT_X_S0
PM_SLP_S3_L_1
PP3V3_G3H_RTC
R3042 10K 5% 1/20W MF 201 — TBT_XT_FLASH_BUSY_L — TBT_X_THERM_D_P — TBT_X_THERM_D_N
R2850 100K 5% 1/20W MF 201 — TBT_X_GPIO_5
R2842 100K 5% 1/20W MF 201 — TBT_X_GPIO_6
R2841 100K 5% 1/20W MF 201 — NOSTUFF
R2851 100K 5% 1/20W MF 201 — NOSTUFF
R2843 100K 5% 1/20W MF 201 — NOSTUFF — TBT_X_FLASH_SHARE_EN
R3044 2.2K 5% 1/20W MF 201 — TBT_X_FLASH_MSTR_H_SLV_L
R2845 100K 5% 1/20W MF 201 — NOSTUFF — TBT_X_GPIO_12
TBT_XT_PERST_L — USBC_X_RESET_L
R3032 100K 5% 1/20W MF 201 — UPC_X_RESET
TBT_POC_RESET — USBC_X_RST_L
UPC_X_SER_DBG — PMU_ACTIVE_READY
R3107 10K 5% 1/20W MF 201 — I2C_UPC_X_INTM_L
R3034 100K 5% 1/20W MF 201 — UPC_XT_5V_EN
R3070 10K 5% 1/20W MF 201 — UPC_X_FORCE_PWR — UPC_X_FAULT_L
PCH_BBR_FORCE_PWR
SOC_DOCK_CONNECT
UPC_PMU_RESET
SOC_DFU_STATUS
SOC_FORCE_DFU
R3108 1M 5% 1/20W MF 201 — I2C_UPC_X_SDAM
R3109 1M 5% 1/20W MF 201 — I2C_UPC_X_SCLM
TP_DP_X_HPD

JTAG_ISP_TDI
JTAG_TBT_X_TMS
JTAG_ISP_TCK
JTAG_ISP_TDO
TBT_X_SPI_MOSI
TBT_X_SPI_MISO
TBT_X_SPI_CS_L
TBT_X_SPI_CLK
TBT_X_FORCE_PWR

GND_I2C_ADDR PRIMARY ONLY

PCH_I2C_UPC_SDA
PCH_I2C_UPC_SCL
PCH_UPC_I2C_INT_L
I2C_UPC_XT_SDA2 — R3057 33 1/20W MF 201 5% — I2C_UPC_SDA — TO SMC
I2C_UPC_XT_SCL2 — R3058 33 1/20W MF 201 5% — I2C_UPC_SCL — TO SMC
UPC_I2C_INT_L — TO SMC
PLACE_NEAR=U3100_X:13mm
PLACE_NEAR=U3100_X:13mm

REAR PORT: CONNECT UPC SPI TO ROM
FRONT PORT: GROUND UPC SPI

UPC_X_SWD_DATA
UPC_X_SWD_CLK

UPC_XT_UART_RX — R3105 1M 5% 1/20W MF 201
UPC_XT_UART_TX
SPARE_UPC_X_DBG — R3022 100K 5% 1/20W MF 201

BOTTOM U3100_X:5MM — R3110 33 5% 1/20W MF 201 — SWD_SOC_SWCLK_R
BOTTOM U3100_X:5MM — R3111 20 5% 1/20W MF 201 — SWD_SOC_SWDIO_R
SWD_SOC_SWCLK_X — BOTTOM U3100_X:5MM — R3010 0 5% 1/20W MF 0201 — SWD_SOC_SWCLK_T
SWD_SOC_SWDIO_X — BOTTOM U3100_X:5MM — R3011 0 5% 1/20W MF 0201 — SWD_SOC_SWDIO_T
PCH_UART_DEBUG_R2D_1
PCH_UART_DEBUG_D2R_1

Port-T

BBR

ACE2BBR

ACE2

PP3V3_TBT_T_SX
PP3V3_UPC_T_LDO
PP3V3_TBT_T_S0
PM_SLP_S3_L_1
PP3V3_G3H_RTC
R2950 100K 5% 1/20W MF 201 — TBT_T_GPIO_5
R2942 100K 5% 1/20W MF 201 — TBT_T_GPIO_6
R2941 100K 5% 1/20W MF 201 — NOSTUFF
R2951 100K 5% 1/20W MF 201 — NOSTUFF
R2943 100K 5% 1/20W MF 201 — NOSTUFF — TBT_T_FLASH_SHARE_EN
R3047 100K 5% 1/20W MF 201 — NOSTUFF — TBT_T_FLASH_MSTR_H_SLV_L
R2945 100K 5% 1/20W MF 201 — TBT_T_GPIO_12
TBT_XT_PERST_L — USBC_T_RESET_L
R3033 100K 5% 1/20W MF 201 — UPC_T_RESET
TBT_POC_RESET — USBC_T_RESET_L
R3071 100K 5% 1/20W MF 201 — UPC_T_SER_DBG — PD_UPC_T_GPIO1
R3207 10K 5% 1/20W MF 201 — I2C_UPC_T_INTM_L
UPC_XT_5V_EN
R3072 10K 5% 1/20W MF 201 — UPC_T_FORCE_PWR — UPC_T_FAULT_L
PCH_BBR_FORCE_PWR
SOC_DOCK_CONNECT
R3074 100K 5% 1/20W MF 201 — UPC_PMU_RESET
R3075 100K 5% 1/20W MF 201 — PD_UPC_T_GPIO10
R3208 1M 5% 1/20W MF 201 — I2C_UPC_T_SDAM
R3209 1M 5% 1/20W MF 201 — I2C_UPC_T_SCLM
TP_DP_T_HPD

JTAG_ISP_TDI
JTAG_TBT_T_TMS
JTAG_ISP_TCK
JTAG_ISP_TDO
TBT_T_SPI_MOSI
TBT_T_SPI_MISO
TBT_T_SPI_CS_L
TBT_T_SPI_CLK
TBT_T_FORCE_PWR

NC_UPC_T_I2C_ADDR NO_TEST=1
PCH_I2C_UPC_SDA
PCH_I2C_UPC_SCL
PCH_UPC_I2C_INT_L
I2C_UPC_XT_SDA2
I2C_UPC_XT_SCL2
UPC_I2C_INT_L — TO SMC

UPC_T_SPI_CLK
UPC_T_SPI_MOSI
UPC_T_SPI_MISO
UPC_T_SPI_CS_L

UPC_T_SWD_DATA
UPC_T_SWD_CLK

UPC_XT_UART_TX — R3205 1M 5% 1/20W MF 201 — 117S0201
UPC_XT_UART_RX
USB3_BSSB_D2R_R_P — 0 0201 MF 1/20W 5% — R3012 — USB3_BSSB_D2R_P — 117S0201
USB3_BSSB_D2R_R_N — 0 0201 MF 1/20W 5% — R3013 — USB3_BSSB_D2R_N
USB3_BSSB_R2D_P — 0.1UF 0201 X5R-CERM 16V 10% — C3010 — USB3_BSSB_R2D_C_P — GND_VOID=TRUE NO_TEST=1
USB3_BSSB_R2D_N — 0.1UF 0201 X5R-CERM 16V 10% — C3011 — USB3_BSSB_R2D_C_N — GND_VOID=TRUE NO_TEST=1
SWD_SOC_SWCLK_T
SWD_SOC_SWDIO_T
SMC_DEBUGPRT_R_TX — 0 0201 MF 1/20W 5% — R3016 — SMC_DEBUGPRT_TX
SMC_DEBUGPRT_R_RX — 0 0201 MF 1/20W 5% — R3017 — SMC_DEBUGPRT_RX

ACE ARKANOID CONN

J3000 USBC_DBG 505070-1222 M-ST-SM PLACE_SIDE=BOTTOM

TBT_POC_RESET — PCH_UPC_I2C_INT_L
I2C_UPC_SCL — PCH_I2C_UPC_SDA
I2C_UPC_SDA — PCH_I2C_UPC_SCL
UPC_I2C_INT_L — UPC_X_SER_DBG
TBT_XT_SPI_CLK_DBG — UPC_XT_SPI_CS_DBG
UPC_XT_UART_TX — UPC_XT_UART_RX

AARDVARKANOID CONN

J3002 USBC_DBG 505070-1222 M-ST-SM PLACE_SIDE=BOTTOM

SPI ACE
PP3V3_UPC_T_LDO — TBT_XT_SPI_CS_L
UPC_T_SWD_DATA — TBT_XT_SPI_CLK
UPC_T_SWD_CLK — TBT_XT_SPI_MOSI
TBT_XT_SPI_MISO — UPC_X_SWD_CLK
PCH_I2C_UPC_SDA — UPC_X_SWD_DATA
PCH_I2C_UPC_SCL — PP3V3_UPC_X_LDO
UART ACE

BRIDGE ARKANOID CONN

J3001 USBC_DBG 505070-1222 M-ST-SM PLACE_SIDE=BOTTOM

6/4/2/1/3/5 -> X BRIDGE

TBT_X_FORCE_PWR — I2C_UPC_X_INTM_L
PP3V3_TBT_X_S0 — I2C_UPC_X_SCLM
PP0V9_TBT_X_LC — I2C_UPC_X_SDAM
TBT_XT_PERST_L — TBT_T_FORCE_PWR
PP3V3_TBT_T_S0 — I2C_UPC_T_INTM_L
I2C_UPC_T_SDAM — I2C_UPC_T_SCLM

7 -> BOTH X , T BRIDGE
9/11/12/10/8 -> T BRIDGE

R2031 100K 1/20W 201 5% MF — BBR_PERST:PLTRST — PLT_RST_3V3_L — TBT_XT_PERST_L
117S0201
R3056 0 0201 1/20W 5% MF — BBR_PERST:GPD_7 — PCH_STRP_GPD7

USBC_T_RESET_L — MAKE_BASE=TRUE
SPI ACE
R3441 0 5% 1/20W MF 0201 — 117S0201 — Bridges — BBR_RST:SHARED
UART ACE
R3440 0 0201 MF 1/20W 5% — USBC_T_RESET_L — USBC_X_RESET_L — BBR_RST:SPLIT

BBR_FORCE_PWR:ACE — R3050 0 0201 MF 1/20W 5% — UPC_X_FORCE_PWR — TBT_X_FORCE_PWR
R3051 0 0201 MF 1/20W 5% — BBR_FORCE_PWR:PCH — PCH_BBR_FORCE_PWR
R3053 0 0201 MF 1/20W 5% — BBR_FORCE_PWR:PCH
BBR_FORCE_PWR:ACE — R3052 0 0201 MF 1/20W 5% — UPC_T_FORCE_PWR — TBT_T_FORCE_PWR

PP3V3_UPC_T_LDO
R3060 3.3K 5% 1/20W MF 201
R3061 3.3K 5% 1/20W MF 201
R3063 3.3K 5% 1/20W MF 201
R3062 3.3K 5% 1/20W MF 201
C3060 1UF 10% 6.3V CERM 402
U3060 8MBIT-3.0V W25Q80DVUXIE USON — VCC DI(IO0) DO(IO1) CLK CS* WP*(IO2) HOLD*(IO3) GND EPAD
OMIT_TABLE CRITICAL
TBT_XT_SPI_CLK
TBT_XT_SPI_CS_L
TBT_XT_ROM_WP_L
TBT_XT_ROM_HOLD_L
TBT_XT_SPI_MOSI
TBT_XT_SPI_MISO

ROM
TBT_XT_SPI_CLK — R3094 100 5% 1/20W MF 201 — TBT_XT_SPI_CLK_DBG
TBT_XT_SPI_CS_L — R3095 15 5% 1/20W MF 201 — UPC_T_SPI_CLK
R3096 15 5% 1/20W MF 201 — UPC_T_SPI_CS_L
R3097 15 5% 1/20W MF 201 — UPC_T_SPI_MOSI
R3098 15 5% 1/20W MF 201 — UPC_T_SPI_MISO
R3090 15 5% 1/20W MF 201 — TBT_X_SPI_CLK
R3091 15 5% 1/20W MF 201 — TBT_X_SPI_CS_L
R3092 15 5% 1/20W MF 201 — TBT_X_SPI_MOSI
R3093 15 5% 1/20W MF 201 — TBT_X_SPI_MISO
R3099 15 5% 1/20W MF 201 — TBT_T_SPI_CLK
R309A 15 5% 1/20W MF 201 — TBT_T_SPI_CS_L
R309B 15 5% 1/20W MF 201 — TBT_T_SPI_MOSI
R309C 15 5% 1/20W MF 201 — TBT_T_SPI_MISO

BOM_COST_GROUP=TBT

SYNC_MASTER=t290 icl yn
SYNC_DATE=02/01/2018

PAGE TITLE: USB-C COMM + DEBUG X-T

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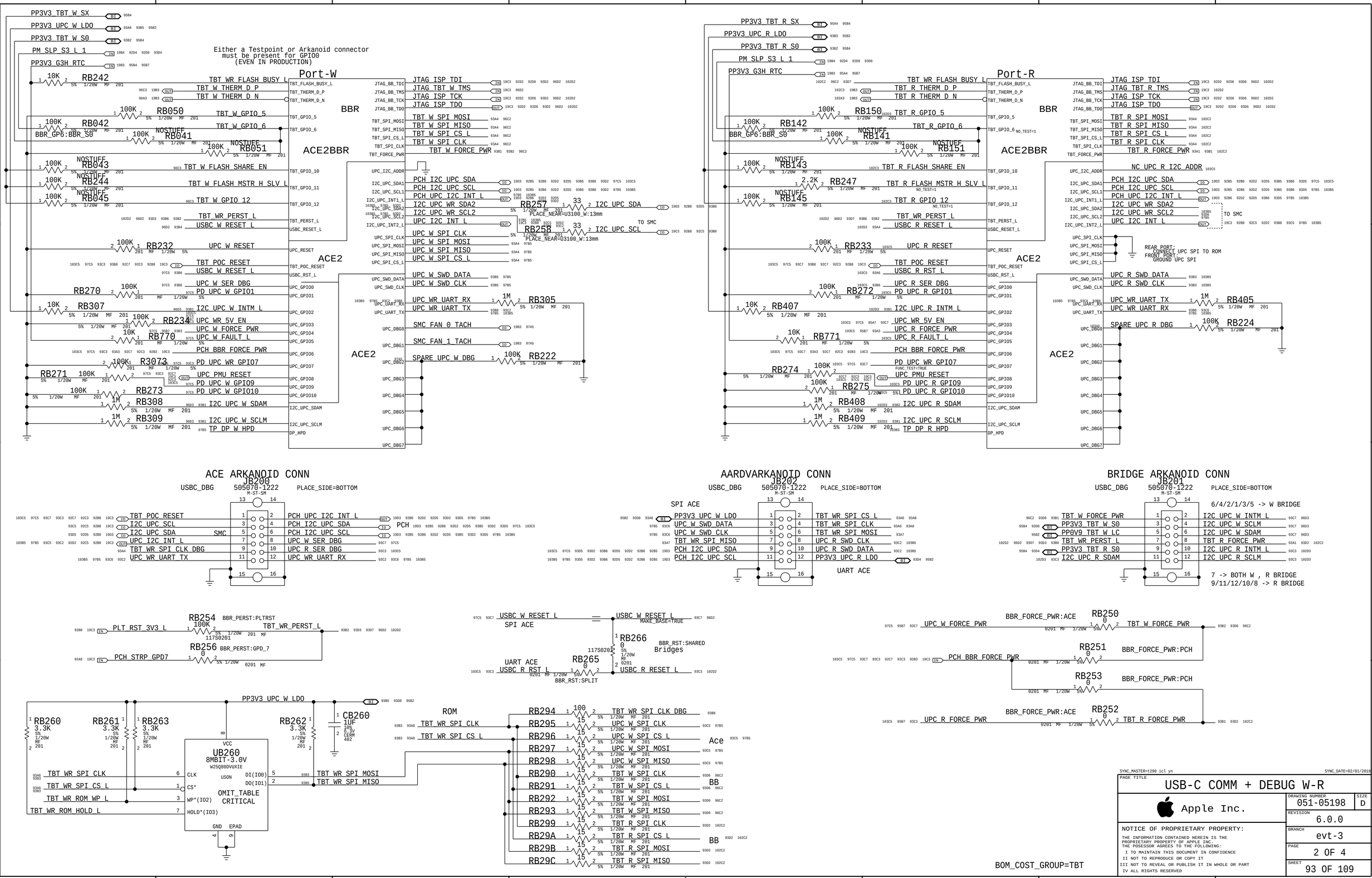
Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)
Port-W
BBR
ACE2BBR
ACE2
ACE2
PP3V3_TBT_W_SX
PP3V3_UPC_W_LDO
PP3V3_TBT_W_S0
PM_SLP_S3_L_1
PP3V3_G3H_RTC
BBR_GP6:BBR_S0
TBT_WR_FLASH_BUSY_L
TBT_W_THERM_D_P
TBT_W_THERM_D_N
TBT_W_GPIO_5
TBT_W_GPIO_6
TBT_W_FLASH_SHARE_EN
TBT_W_FLASH_MSTR_H_SLV_L
TBT_W_GPIO_12
TBT_WR_PERST_L
USBC_W_RESET_L
UPC_W_RESET
TBT_POC_RESET
USBC_W_RESET_L
UPC_W_SER_DBG
PD_UPC_W_GPIO1
I2C_UPC_W_INTM_L
UPC_W_5V_EN
UPC_W_FORCE_PWR
UPC_W_FAULT_L
PCH_BBR_FORCE_PWR
PD_UPC_W_GPIO7
UPC_PMU_RESET
PD_UPC_W_GPIO9
PD_UPC_W_GPIO10
I2C_UPC_W_SDAM
I2C_UPC_W_SCLM
TP_DP_W_HPD
JTAG_ISP_TDI
JTAG_ISP_TCK
JTAG_ISP_TDO
TBT_W_SPI_MOSI
TBT_W_SPI_MISO
TBT_W_SPI_CS_L
TBT_W_SPI_CLK
TBT_W_FORCE_PWR
PCH_I2C_UPC_SDA
PCH_I2C_UPC_SCL
PCH_UPC_I2C_INT_L
I2C_UPC_WR_SDA2
I2C_UPC_WR_SCL2
UPC_I2C_INT_L
UPC_W_SPI_CLK
UPC_W_SPI_MOSI
UPC_W_SPI_MISO
UPC_W_SPI_CS_L
UPC_W_SWD_DATA
UPC_W_SWD_CLK
UPC_WR_UART_RX
UPC_WR_UART_TX
SMC_FAN_0_TACH
SMC_FAN_1_TACH
SPARE_UPC_W_DBG
RB257 33 I2C_UPC_SDA
PLACE_NEAR=U3100_W:13mm
RB258 33 I2C_UPC_SCL
PLACE_NEAR=U3100_W:13mm
TO SMC
PP3V3_TBT_R_SX
PP3V3_UPC_R_LDO
PP3V3_TBT_R_S0
PM_SLP_S3_L_1
PP3V3_G3H_RTC
BBR_GP6:BBR_S0
Port-R
BBR
ACE2BBR
ACE2
ACE2
TBT_WR_FLASH_BUSY_L
TBT_R_THERM_D_P
TBT_R_THERM_D_N
TBT_R_GPIO_5
TBT_R_GPIO_6
TBT_R_FLASH_SHARE_EN
TBT_R_FLASH_MSTR_H_SLV_L
TBT_R_GPIO_12
TBT_WR_PERST_L
USBC_R_RESET_L
UPC_R_RESET
TBT_POC_RESET
USBC_R_RST_L
UPC_R_SER_DBG
PD_UPC_R_GPIO1
I2C_UPC_R_INTM_L
UPC_WR_5V_EN
UPC_R_FORCE_PWR
UPC_R_FAULT_L
PCH_BBR_FORCE_PWR
PD_UPC_WR_GPIO7
UPC_PMU_RESET
PD_UPC_R_GPIO9
PD_UPC_R_GPIO10
I2C_UPC_R_SDAM
I2C_UPC_R_SCLM
TP_DP_R_HPD
JTAG_ISP_TDI
JTAG_TBT_R_TMS
JTAG_ISP_TCK
JTAG_ISP_TDO
TBT_R_SPI_MOSI
TBT_R_SPI_MISO
TBT_R_SPI_CS_L
TBT_R_SPI_CLK
TBT_R_FORCE_PWR
NC_UPC_R_I2C_ADDR
PCH_I2C_UPC_SDA
PCH_I2C_UPC_SCL
PCH_UPC_I2C_INT_L
I2C_UPC_WR_SDA2
I2C_UPC_WR_SCL2
UPC_I2C_INT_L
TO SMC
REAR PORT:
CONNECT UPC SPI TO ROM
FRONT PORT
GROUND UPC SPI
UPC_R_SWD_DATA
UPC_R_SWD_CLK
UPC_WR_UART_TX
UPC_WR_UART_RX
SPARE_UPC_R_DBG
ACE ARKANOID CONN
JB200
USBC_DBG 505070-1222 PLACE_SIDE=BOTTOM
M-ST-SM
TBT_POC_RESET
I2C_UPC_SCL
I2C_UPC_SDA
UPC_I2C_INT_L
TBT_WR_SPI_CLK_DBG
UPC_WR_UART_TX
PCH_UPC_I2C_INT_L
PCH_UPC_I2C_SDA
PCH_I2C_UPC_SCL
UPC_W_SER_DBG
UPC_R_SER_DBG
UPC_WR_UART_RX
SMC
PCH
AARDVARKANOID CONN
JB202
USBC_DBG 505070-1222 PLACE_SIDE=BOTTOM
M-ST-SM
SPI ACE
PP3V3_UPC_W_LDO
UPC_W_SWD_DATA
UPC_W_SWD_CLK
TBT_WR_SPI_MISO
PCH_I2C_UPC_SDA
PCH_I2C_UPC_SCL
TBT_WR_SPI_CS_L
TBT_WR_SPI_CLK
TBT_WR_SPI_MOSI
UPC_R_SWD_CLK
UPC_R_SWD_DATA
PP3V3_UPC_R_LDO
UART ACE
BRIDGE ARKANOID CONN
JB201
USBC_DBG 505070-1222 PLACE_SIDE=BOTTOM
M-ST-SM
6/4/2/1/3/5 -> W BRIDGE
TBT_W_FORCE_PWR
PP3V3_TBT_W_S0
PP0V9_TBT_W_LC
TBT_WR_PERST_L
PP3V3_TBT_R_S0
I2C_UPC_R_SDAM
I2C_UPC_W_INTM_L
I2C_UPC_W_SCLM
I2C_UPC_W_SDAM
TBT_R_FORCE_PWR
I2C_UPC_R_INTM_L
I2C_UPC_R_SCLM
7 -> BOTH W , R BRIDGE
9/11/12/10/8 -> R BRIDGE
RB254 100K PLT_RST_3V3_L TBT_WR_PERST_L BBR_PERST:PLTRST
RB256 0 PCH_STRP_GPD7 BBR_PERST:GPD_7
USBC_W_RESET_L
USBC_W_RESET_L
MAKE_BASE=TRUE
RB266 0 BBR_RST:SHARED Bridges
SPI ACE
UART ACE
RB265 0 USBC_R_RST_L USBC_R_RESET_L
BBR_RST:SPLIT
BBR_FORCE_PWR:ACE RB250 0 UPC_W_FORCE_PWR TBT_W_FORCE_PWR
RB251 0 PCH_BBR_FORCE_PWR BBR_FORCE_PWR:PCH
RB253 0 BBR_FORCE_PWR:PCH
BBR_FORCE_PWR:ACE RB252 0 UPC_R_FORCE_PWR TBT_R_FORCE_PWR
PP3V3_UPC_W_LDO
RB260 3.3K
RB261 3.3K
RB263 3.3K
RB262 3.3K
CB260 1UF 10V CERM 402
UB260 8MBIT-3.0V W25Q80DVUXIE
VCC
USON
CLK
CS*
WP*(IO2)
HOLD*(IO3)
DI(IO0)
DO(IO1)
GND
EPAD
OMIT_TABLE CRITICAL
TBT_WR_SPI_CLK
TBT_WR_SPI_CS_L
TBT_WR_ROM_WP_L
TBT_WR_ROM_HOLD_L
TBT_WR_SPI_MOSI
TBT_WR_SPI_MISO
ROM
Ace
BB
BB
RB294 100 TBT_WR_SPI_CLK_DBG
RB295 15 UPC_W_SPI_CLK
RB296 15 UPC_W_SPI_CS_L
RB297 15 UPC_W_SPI_MOSI
RB298 15 UPC_W_SPI_MISO
RB290 15 TBT_W_SPI_CLK
RB291 15 TBT_W_SPI_CS_L
RB292 15 TBT_W_SPI_MOSI
RB293 15 TBT_W_SPI_MISO
RB299 15 TBT_R_SPI_CLK
RB29A 15 TBT_R_SPI_CS_L
RB29B 15 TBT_R_SPI_MOSI
RB29C 15 TBT_R_SPI_MISO
BOM_COST_GROUP=TBT
SYNC_MASTER=t290 icl yn
SYNC_DATE=02/01/2018
PAGE TITLE
USB-C COMM + DEBUG W-R
Apple Inc.
DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 2 OF 4
SHEET 93 OF 109
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Port-X

SUBDESIGN_SUFFIX=X

MIN_LINE_WIDTH=0.0000
MIN_NECK_WIDTH=0.0000

PP20V_USBC_X_VBUS

USBC_X_R2D_CR_P<1>
USBC_X_R2D_CR_N<1>
USBC_X_R2D_CR_P<2>
USBC_X_R2D_CR_N<2>
USBC_X_D2R_P<1>
USBC_X_D2R_N<1>
USBC_X_D2R_P<2>
USBC_X_D2R_N<2>
USBC_X_USB_TOP_P
USBC_X_USB_TOP_N
USBC_X_USB_BOT_P
USBC_X_USB_BOT_N
USBC_X_SBU1
USBC_X_SBU2
USBC_X_CC1
USBC_X_CC2
USBC_RPD_G1
USBC_RPD_G2

ACE2BBR

USBC_HS_R2D_C_P<1>
USBC_HS_R2D_C_N<1>
USBC_HS_R2D_C_P<2>
USBC_HS_R2D_C_N<2>
USBC_HS_D2R_C_P<1>
USBC_HS_D2R_C_N<1>
USBC_HS_D2R_C_P<2>
USBC_HS_D2R_C_N<2>
USBC_HS_AUXCH_C_P
USBC_HS_AUXCH_C_N
USBC_HS_LSX_R2P
USBC_HS_LSX_P2R
USB2_TBT_P
USB2_TBT_N
USB_UPC_2_P
USB_UPC_2_N
USB_UPC_3_P
USB_UPC_3_N

USBC_HSX_R2D_C_P<1>
USBC_HSX_R2D_C_N<1>
USBC_HSX_R2D_C_P<2>
USBC_HSX_R2D_C_N<2>
USBC_HSX_D2R_C_P<1>
USBC_HSX_D2R_C_N<1>
USBC_HSX_D2R_C_P<2>
USBC_HSX_D2R_C_N<2>
USBC_HSX_AUXCH_C_P
USBC_HSX_AUXCH_C_N
LSX_HSX_R2P
LSX_HSX_P2R
USB2_TBT_X_P
USB2_TBT_X_N

USB_SOC_P
USB_SOC_N

R3018 0 5% 1/16W MF-LF 402 NO_TEST=1
R3019 0 5% 1/16W MF-LF 402 NO_TEST=1

USB_UPC_X2_P
USB_UPC_X2_N

R3023 100K 5% 1/20W MF 201

SPARE_UPC_X

SUBDESIGN_SUFFIX=CXT

PP20V_USBC_A_VBUS
USBC_A_R2D_CR_P<1>
USBC_A_R2D_CR_N<1>
USBC_A_R2D_CR_P<2>
USBC_A_R2D_CR_N<2>
USBC_A_D2R_P<1>
USBC_A_D2R_N<1>
USBC_A_D2R_P<2>
USBC_A_D2R_N<2>
USBC_A_USB_TOP_P
USBC_A_USB_TOP_N
USBC_A_USB_BOT_P
USBC_A_USB_BOT_N
USBC_A_SBU1
USBC_A_SBU2
USBC_A_CC1
USBC_A_CC2

PP20V_USBC_B_VBUS
USBC_B_R2D_CR_P<1>
USBC_B_R2D_CR_N<1>
USBC_B_R2D_CR_P<2>
USBC_B_R2D_CR_N<2>
USBC_B_D2R_P<1>
USBC_B_D2R_N<1>
USBC_B_D2R_P<2>
USBC_B_D2R_N<2>
USBC_B_USB_TOP_P
USBC_B_USB_TOP_N
USBC_B_USB_BOT_P
USBC_B_USB_BOT_N
USBC_B_SBU1
USBC_B_SBU2
USBC_B_CC1
USBC_B_CC2

USBC_CONNECTOR

MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.2000

FUNC_TEST=TRUE

MIN_LINE_WIDTH=0.0000
MIN_NECK_WIDTH=0.0000

PP20V_USBC_T_VBUS
USBC_T_R2D_CR_P<1>
USBC_T_R2D_CR_N<1>
USBC_T_R2D_CR_P<2>
USBC_T_R2D_CR_N<2>
USBC_T_D2R_P<1>
USBC_T_D2R_N<1>
USBC_T_D2R_P<2>
USBC_T_D2R_N<2>
USBC_T_USB_TOP_P
USBC_T_USB_TOP_N
USBC_T_USB_BOT_P
USBC_T_USB_BOT_N
USBC_T_SBU1
USBC_T_SBU2
USBC_T_CC1
USBC_T_CC2

MIN_LINE_WIDTH=0.0000
MIN_NECK_WIDTH=0.0000

Port-T

SUBDESIGN_SUFFIX=T

PP20V_USBC_VBUS
USBC_R2D_CR_P<1>
USBC_R2D_CR_N<1>
USBC_R2D_CR_P<2>
USBC_R2D_CR_N<2>
USBC_D2R_P<1>
USBC_D2R_N<1>
USBC_D2R_P<2>
USBC_D2R_N<2>
USBC_USB_TP
USBC_USB_TN
USBC_USB_BP
USBC_USB_BN
USBC_SBU1
USBC_SBU2
USBC_CC1
USBC_CC2
USBC_RPD_G1
USBC_RPD_G2

ACE2BBR

USBC_HS_R2D_C_P<1>
USBC_HS_R2D_C_N<1>
USBC_HS_R2D_C_P<2>
USBC_HS_R2D_C_N<2>
USBC_HS_D2R_C_P<1>
USBC_HS_D2R_C_N<1>
USBC_HS_D2R_C_P<2>
USBC_HS_D2R_C_N<2>
USBC_HS_AUXCH_C_P
USBC_HS_AUXCH_C_N
USBC_HS_LSX_R2P
USBC_HS_LSX_P2R
USB2_TBT_P
USB2_TBT_N
USB_UPC_2_P
USB_UPC_2_N
USB_UPC_3_P
USB_UPC_3_N

USBC_HST_R2D_C_P<1>
USBC_HST_R2D_C_N<1>
USBC_HST_R2D_C_P<2>
USBC_HST_R2D_C_N<2>
USBC_HST_D2R_C_P<1>
USBC_HST_D2R_C_N<1>
USBC_HST_D2R_C_P<2>
USBC_HST_D2R_C_N<2>
USBC_HST_AUXCH_C_P
USBC_HST_AUXCH_C_N
LSX_HST_R2P
LSX_HST_P2R
USB2_TBT_T_P
USB2_TBT_T_N

SPARE_UPC_T 201 MF 1/20W 100K 5% R3028

Port-W

SUBDESIGN_SUFFIX=W

PP20V_USBC_W_VBUS
USBC_W_R2D_CR_P<1>
USBC_W_R2D_CR_N<1>
USBC_W_R2D_CR_P<2>
USBC_W_R2D_CR_N<2>
USBC_W_D2R_P<1>
USBC_W_D2R_N<1>
USBC_W_D2R_P<2>
USBC_W_D2R_N<2>
USBC_W_USB_TOP_P
USBC_W_USB_TOP_N
USBC_W_USB_BOT_P
USBC_W_USB_BOT_N
USBC_W_SBU1
USBC_W_SBU2
USBC_W_CC1
USBC_W_CC2
USBC_RPD_G1
USBC_RPD_G2

ACE2BBR

USBC_HS_R2D_C_P<1>
USBC_HS_R2D_C_N<1>
USBC_HS_R2D_C_P<2>
USBC_HS_R2D_C_N<2>
USBC_HS_D2R_C_P<1>
USBC_HS_D2R_C_N<1>
USBC_HS_D2R_C_P<2>
USBC_HS_D2R_C_N<2>
USBC_HS_AUXCH_C_P
USBC_HS_AUXCH_C_N
USBC_HS_LSX_R2P
USBC_HS_LSX_P2R
USB2_TBT_P
USB2_TBT_N
USB_UPC_2_P
USB_UPC_2_N
USB_UPC_3_P
USB_UPC_3_N

USBC_HSW_R2D_C_P<1>
USBC_HSW_R2D_C_N<1>
USBC_HSW_R2D_C_P<2>
USBC_HSW_R2D_C_N<2>
USBC_HSW_D2R_C_P<1>
USBC_HSW_D2R_C_N<1>
USBC_HSW_D2R_C_P<2>
USBC_HSW_D2R_C_N<2>
USBC_HSW_AUXCH_C_P
USBC_HSW_AUXCH_C_N
LSX_HSW_R2P
LSX_HSW_P2R
USB2_TBT_W_P
USB2_TBT_W_N

RB223 100K 5% 1/20W MF 201

SPARE_UPC_W

SUBDESIGN_SUFFIX=CWR

PP20V_USBC_A_VBUS
USBC_A_R2D_CR_P<1>
USBC_A_R2D_CR_N<1>
USBC_A_R2D_CR_P<2>
USBC_A_R2D_CR_N<2>
USBC_A_D2R_P<1>
USBC_A_D2R_N<1>
USBC_A_D2R_P<2>
USBC_A_D2R_N<2>
USBC_A_USB_TOP_P
USBC_A_USB_TOP_N
USBC_A_USB_BOT_P
USBC_A_USB_BOT_N
USBC_A_SBU1
USBC_A_SBU2
USBC_A_CC1
USBC_A_CC2

PP20V_USBC_B_VBUS
USBC_B_R2D_CR_P<1>
USBC_B_R2D_CR_N<1>
USBC_B_R2D_CR_P<2>
USBC_B_R2D_CR_N<2>
USBC_B_D2R_P<1>
USBC_B_D2R_N<1>
USBC_B_D2R_P<2>
USBC_B_D2R_N<2>
USBC_B_USB_TOP_P
USBC_B_USB_TOP_N
USBC_B_USB_BOT_P
USBC_B_USB_BOT_N
USBC_B_SBU1
USBC_B_SBU2
USBC_B_CC1
USBC_B_CC2

USBC_CONNECTOR

MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.0000

PP20V_USBC_R_VBUS
USBC_R_R2D_CR_P<1>
USBC_R_R2D_CR_N<1>
USBC_R_R2D_CR_P<2>
USBC_R_R2D_CR_N<2>
USBC_R_D2R_P<1>
USBC_R_D2R_N<1>
USBC_R_D2R_P<2>
USBC_R_D2R_N<2>
USBC_R_USB_TOP_P
USBC_R_USB_TOP_N
USBC_R_USB_BOT_P
USBC_R_USB_BOT_N
USBC_R_SBU1
USBC_R_SBU2
USBC_R_CC1
USBC_R_CC2

MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.0000

Port-R

SUBDESIGN_SUFFIX=R

PP20V_USBC_VBUS
USBC_R2D_CR_P<1>
USBC_R2D_CR_N<1>
USBC_R2D_CR_P<2>
USBC_R2D_CR_N<2>
USBC_D2R_P<1>
USBC_D2R_N<1>
USBC_D2R_P<2>
USBC_D2R_N<2>
USBC_USB_TP
USBC_USB_TN
USBC_USB_BP
USBC_USB_BN
USBC_SBU1
USBC_SBU2
USBC_CC1
USBC_CC2
USBC_RPD_G1
USBC_RPD_G2

ACE2BBR

USBC_HS_R2D_C_P<1>
USBC_HS_R2D_C_N<1>
USBC_HS_R2D_C_P<2>
USBC_HS_R2D_C_N<2>
USBC_HS_D2R_C_P<1>
USBC_HS_D2R_C_N<1>
USBC_HS_D2R_C_P<2>
USBC_HS_D2R_C_N<2>
USBC_HS_AUXCH_C_P
USBC_HS_AUXCH_C_N
USBC_HS_LSX_R2P
USBC_HS_LSX_P2R
USB2_TBT_P
USB2_TBT_N
USB_UPC_2_P
USB_UPC_2_N
USB_UPC_3_P
USB_UPC_3_N

USBC_HSR_R2D_C_P<1>
USBC_HSR_R2D_C_N<1>
USBC_HSR_R2D_C_P<2>
USBC_HSR_R2D_C_N<2>
USBC_HSR_D2R_C_P<1>
USBC_HSR_D2R_C_N<1>
USBC_HSR_D2R_C_P<2>
USBC_HSR_D2R_C_N<2>
USBC_HSR_AUXCH_C_P
USBC_HSR_AUXCH_C_N
LSX_HSR_R2P
LSX_HSR_P2R
USB2_TBT_R_P
USB2_TBT_R_N

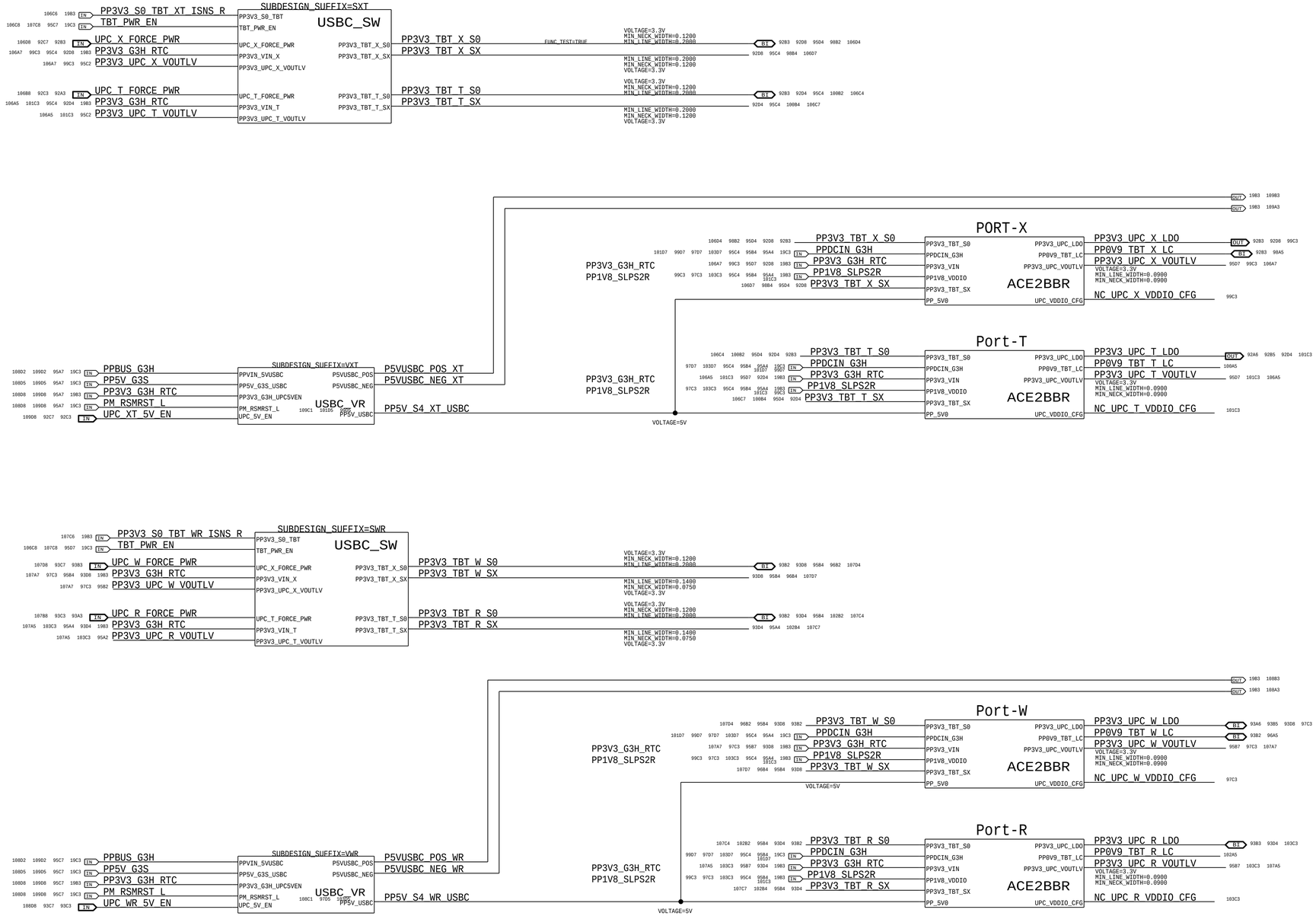
SPARE_UPC_R 201 MF 1/20W 100K 5% RB225

LAST CHANGE: Wed Apr 1 22:57:37 2015

PAGE TITLE
USB-C CONNECTOR

Apple Inc.

DRAWING NUMBER 051-05198
SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 3 OF 4
SHEET 94 OF 109



SYNC_MASTER=t290 icl yn

SYNC_DATE=02/01/2018

PAGE TITLE

USB-C VRs AND POWER

Apple Inc.

DRAWING NUMBER 051-05198

SIZE D

REVISION 6.0.0

BRANCH evt-3

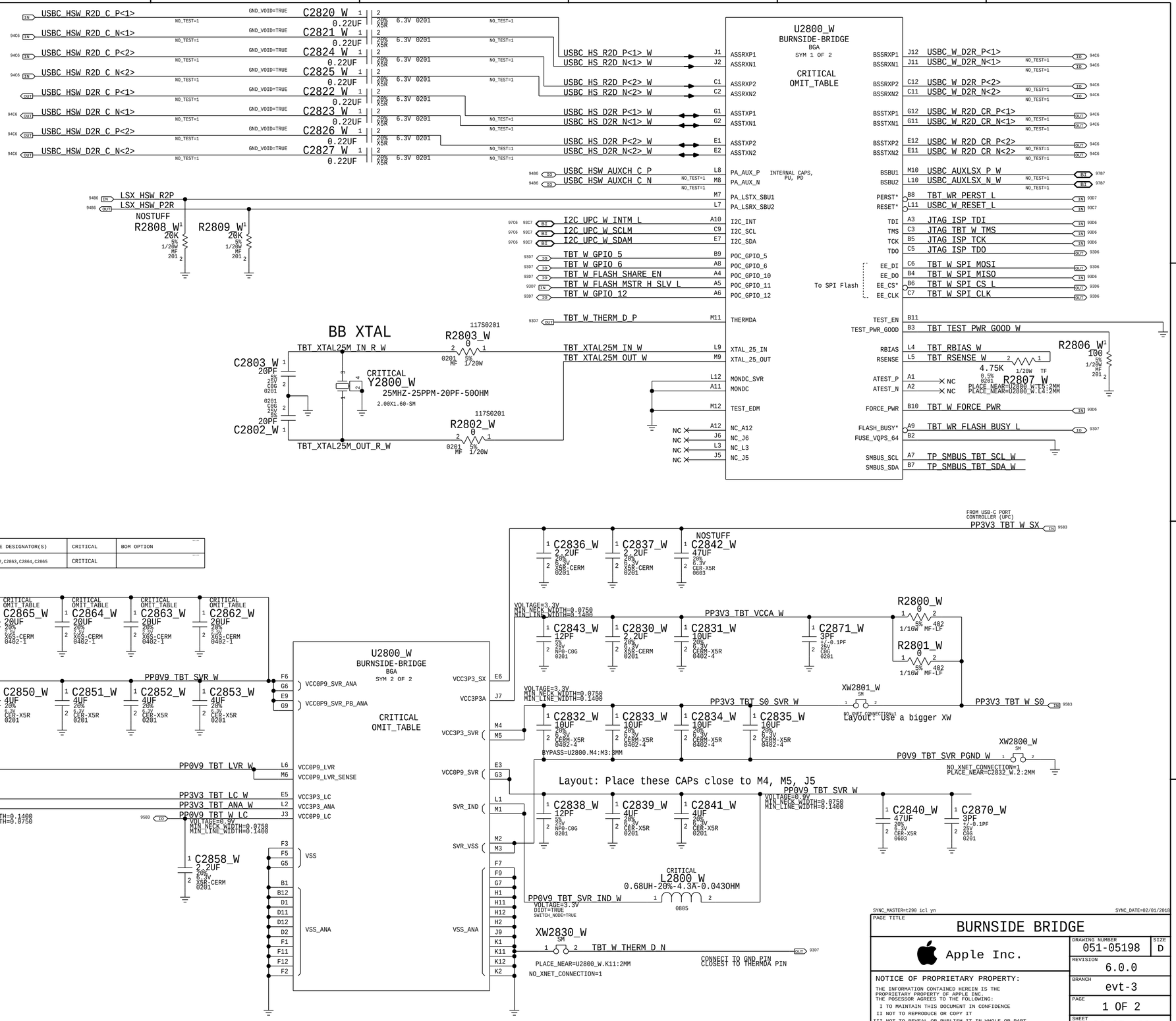
PAGE 4 OF 4

SHEET 95 OF 109

USBC HIGH-SPEED 1 AC COUPLING

BURNSIDE BRIDGE I2C ADDRESS = 0x18

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00035	4	CAP,CER,20UF,20%,2.5V,X6S,HRZTL,0402	C2862,C2863,C2864,C2865	CRITICAL	



SYNC_MASTER=t290 icl yn SYNC_DATE=02/01/2018

PAGE TITLE

BURNSIDE BRIDGE

Apple Inc.

DRAWING NUMBER 051-05198 SIZE D

REVISION 6.0.0

BRANCH evt-3

PAGE 1 OF 2

SHEET 96 OF 109

ACE2 USB-C PORT CONTROLLER (UPC)

FUSES FOR UPC

CRITICAL
0603-1
F3100_W
6A-32V

9583 IN PPDCIN_G3H — MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1000 VOLTAGE=20V — 1 2 — PPHV_INT_G3H_W — MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0750 VOLTAGE=20V

PLACE_NEAR=U3100_W.G2:5MM

MAX 100uF TOTAL ON RAIL

9583 IO PP5V_S4_WR_USBC
CAP FOR PP_5V0 ON VR PAGE

VOLTAGE=20V MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.0750

PP20V_USBC_W_VBUS — IO 94C6 97C2

C3101_W 1UF 10% 35V X5R 0402

CRITICAL
D3100_W DSN2 NSR20F40NX_G

PP3V3_G3H_RTC — IO 9583

C3100_W 10UF 20% 6.3V CERM-X5R 0402-1

PP1V8_SLPS2R — IO 9583

C3102_W 1.0UF 20% 6.3V X5R 0201-1

K9 L10 M9 N10 K11 L12 M11 N12 N14 M13 — PP_5V0 / PP_CABLE
G2 G4 H1 H3 J2 J4 K1 K3 L2 L4 M1 M3 N2 N4 — PP_HV
G6 G8 H5 H7 J6 J8 K5 K7 L6 L8 M5 M7 N6 N8 — VBUS

CRITICAL
OMIT_TABLE

U3100_W
CD3217B12ACE
FCBGA

DIGITAL CORE I/O & CONTROL

93C7 IN	UPC_W_RESET	B13	HRESET
93C7 IN	TBT_POC_RESET	A14	MRESET
93C7 OUT	USBC_W_RESET_L	B17	RESET*
93C7 IN	UPC_W_SER_DBG	A2	GPIO0
		B1	
93C7 IN	PD_UPC_W_GPIO1	D1	GPIO1
96D4 93C7 IN	I2C_UPC_W_INTM_L	F1	GPIO2
93C7 OUT	UPC_WR_5V_EN	C2	GPIO3
93C7 OUT	UPC_W_FORCE_PWR	E2	GPIO4
93C7 OUT	UPC_W_FAULT_L	B3	GPIO5
93C7 IN	PCH_BBR_FORCE_PWR	C4	GPIO6
93C7 OUT	PD_UPC_WR_GPIO7	D3	GPIO7
93C7 OUT	UPC_PMU_RESET	E4	GPIO8
93C7 IO	PD_UPC_W_GPIO9	F3	GPIO9
93C7 IO	PD_UPC_W_GPIO10	F7	GPIO10
	PP3V3_UPC_W_LDO	A18	BUSPOWER
GND_I2C_ADDR PRIMARY ONLY IN	GND	M19	I2C_ADDR (IPU-BOOT)
	UPC_R_OSC_W	M21	R_OSC
96D4 93C7 IO	I2C_UPC_W_SDAM	A16	I2CM_SDA_CNFG
96D4 93C7 IO	I2C_UPC_W_SCLM	B15	I2CM_SCL_CNFG
9306 IO	PCH_I2C_UPC_SDA	B5	I2C_SDA1
9306 IO	PCH_I2C_UPC_SCL	A4	I2C_SCL1
9306 OUT	PCH_UPC_I2C_INT_L	D7	I2C_IRQ1*
9306 IO	I2C_UPC_WR_SDA2	B7	I2C_SDA2
9306 IO	I2C_UPC_WR_SCL2	A6	I2C_SCL2
9306 OUT	UPC_I2C_INT_L	C8	I2C_IRQ2*
9306 OUT	UPC_W_SPI_CLK	B9	SPI_CLK
9306 OUT	UPC_W_SPI_MOSI	B11	SPI_MOSI
9306 IN	UPC_W_SPI_MISO	A10	SPI_MISO
9306 OUT	UPC_W_SPI_CS_L	A8	SPI_SSZ
9306 IO	UPC_W_SWD_DATA	E20	SWD_DATA (IPU)
9306 IO	UPC_W_SWD_CLK	E16	SWD_CLK (IPU)
9306 IN	UPC_WR_UART_RX	B19	UART_RX
9306 OUT	UPC_WR_UART_TX	A20	UART_TX
	USB_UPC_1_P_W	H19	USB_RP1_P
	USB_UPC_1_N_W (NO_TEST=1)	H21	USB_RP1_N
9486 IO	SPARE_UPC_W (NO_TEST=1)	G20	USB_RP2_P
9486 IO	SPARE_UPC_W	G22	USB_RP2_N
9486 IO	SPARE_UPC_W	F19	USB_RP3_P
9486 IO	SPARE_UPC_W	F21	USB_RP3_N
	USBC_AUXLSX_P_W	J12	AUX_P
	USBC_AUXLSX_N_W	H11	AUX_N
93C7 OUT	TP_DP_W_HPD	C12	HPD
9306 IO	SMC_FAN_0_TACH	G12	DEBUG0
9306 IO	SMC_FAN_1_TACH	F11	DEBUG1
9306 IO	SPARE_UPC_W_DBG	E8	DEBUG2
9306 IO	SPARE_UPC_W_DBG	E12	DEBUG3
9306 IO	SPARE_UPC_W_DBG	G16	DEBUG4
9306 IO	SPARE_UPC_W_DBG	F15	DEBUG5
9306 IO	SPARE_UPC_W_DBG	D15	DEBUG6
9386 IO	SPARE_UPC_W_DBG	D19	DEBUG7

Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)

CRITICAL
R3103_W 15K 0.1% 1/20W TF-LF 0201

GND_I2C_ADDR PRIMARY ONLY

TO SMC

REAR PORT: CONNECT UPC SPI TO ROM
FRONT PORT: GROUND UPC SPI

PLACE_NEAR=U3100_W.H19:5MM
9486 IO USB2_TBT_W_P — NO_TEST=1 — R3100_W 0 1/20W 5% 0201 MF
9486 IO USB2_TBT_W_N — NO_TEST=1 — R3101_W 0 1/20W 5% 0201 MF
PLACE_NEAR=U3100_W.H21:5MM

P2MM SM PP9970_W — 9601 B1 — NO_TEST=1 — USBC_AUXLSX_P_W
P2MM SM PP9971_W — 9601 B4 — NO_TEST=1 — USBC_AUXLSX_N_W

P4MM SM PP7901_W — 93C7 OUT — TP_DP_W_HPD

POWER

VIN_3V3	C20		
VDDIO	A12		
VDDIO_CFG	D11	NC_UPC_W_VDDIO_CFG	IO 9583
LDO_3V3	C22	PP3V3_UPC_W_LDO	IO 9582 97C8
	D21		
VIN_LV	L20	VOLTAGE=3.3V MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0600	
VOUT_LV	L18	PP3V3_UPC_W_VOUTLV	117S0201 OUT 9583
VRET	C16	UPC_X_VRET_W	0 R3120_W 5% 1/20W MF 0201
SS	L22	UPC_SS_W	
LDO_CORE	E22	PP1V5_UPC_LDO_CORE_W	VOLTAGE=1.5V MIN_NECK_WIDTH=0.0750 MIN_LINE_WIDTH=0.2000
VBUS_OPT	D5	PP20V_USBC_W_VBUS	
PP_HV_OPT	F5	PPHV_INT_G3H_W	

C3108_W 10UF 20% 6.3V CERM-X5R 0402-1
C3106_W 1.0UF 20% 6.3V X5R 0201-1
C3109_W 0.68UF 5% 6.3V X5S 0402
C3105_W 10UF 20% 6.3V CERM-X5R 0402-1

TYPE-C

C_CC1	M15	USBC_W_CC1	FUNC_TEST=TRUE — IO 9486
	N16		
C_CC2	M17	USBC_W_CC2	FUNC_TEST=TRUE — IO
	N18		
RPD_G1	L14	USBC_W_CC1	IO 9486
RPD_G2	L16	USBC_W_CC2	IO 9486
C_USB_TP	K19	USBC_W_USB_TOP_P	IO 9486
C_USB_TN	K21	USBC_W_USB_TOP_N	NO_TEST=1 IO 9486
C_USB_BP	J20	USBC_W_USB_BOT_P	NO_TEST=1 IO 9486
C_USB_BN	J22	USBC_W_USB_BOT_N	NO_TEST=1 IO 9486
C_SBU1	J16	USBC_W_SBU1	IO 9486
C_SBU2	H15	USBC_W_SBU2	IO 9486

C3113_W 220PF 10% 16V CER-X7R 0201 — IO 9486 94B6
C3114_W 220PF 10% 16V CER-X7R 0201

PORT_MUX

GND

GND_OPT	C18	
GND_OPT	E18	
GND_OPT	D17	
GND_OPT	G18	

GND: A22 H9 N20 B21 K15 N22

T SoC SWD SMC UART DCI
X SoC SWD SoC USB2 x86 UART

FAN TACH W R

Port	I2C_ADDR	I2CM_CNFG	I2C1_OA	I2C1_AA	I2C2_OA	I2C2_AA
X	GND (0)	PU (3)	0x38	0x6B	0x38	0x6B
T	FLOAT (7)	PU (3)	0x3F	0x6B	0x3F	0x6B
W	OVERRIDE OTP (3)	OVERRIDE OTP (3)	0x3B	0x6B	0x3B	0x6B
R	OVERRIDE OTP (4)	OVERRIDE OTP (3)	0x3C	0x6B	0x3C	0x6B

BOM_COST_GROUP=USB-C

SYNC_MASTER=t290 icl yn — SYNC_DATE=02/01/2018
PAGE TITLE: ACE2 CONTROLLER

Apple Inc.

DRAWING NUMBER 051-05198 — SIZE D
REVISION 6.0.0
BRANCH evt-3
PAGE 2 OF 2
SHEET 97 OF 109

USBC HIGH-SPEED 1 AC COUPLING

BURNSIDE BRIDGE I2C ADDRESS = 0x18

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00035	4	CAP,CER,20UF,20%,2.5V,X6S,HRZTL,0402	C2862,C2863,C2864,C2865	CRITICAL	

BOM_COST_GROUP=TBT

SYNC_MASTER=t290 icl yn	SYNC_DATE=02/01/2018
PAGE TITLE	BURNSIDE BRIDGE
Apple Inc.	DRAWING NUMBER 051-05198 SIZE D
	REVISION 6.0.0
	BRANCH evt-3
	PAGE 1 OF 2
	SHEET 98 OF 109

ACE2 USB-C PORT CONTROLLER (UPC)

FUSES FOR UPC

CRITICAL
0603-1
F3100_X
6A-32V
PLACE_NEAR=U3100_X.G2:5MM

95C3 IN PPDCIN_G3H — MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1000 VOLTAGE=20V

PPHV_INT_G3H_X — MAX 100uF TOTAL ON RAIL — MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0750 VOLTAGE=20V

95C3 IO PP5V_S4_XT_USBC — CAP FOR PP_5V0 ON VR PAGE

VOLTAGE=20V MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0750

PP20V_USBC_X_VBUS (IO 94D6 99C2)

C3101_X 1UF 10% 35V X5R 0402

CRITICAL
D3100_X DSN2 NSR20F40NX_G

PP3V3_G3H_RTC (IO 95C3)

C3100_X 10UF 20% 6.3V CERM-X5R 0402-1

PP1V8_SLPS2R (IO 95C3)

C3102_X 1.0UF 20% 6.3V X5R 0201-1

K9 L10 M9 N10 K11 L12 M11 N12 N14 M13 — PP_5V0 / PP_CABLE
G2 G4 H1 H3 J2 J4 K1 K3 L2 L4 M1 M3 N2 N4 — PP_HV
G6 G8 H5 H7 J6 J8 K5 K7 L6 L8 M5 M7 N6 N8 — VBUS

CRITICAL
OMIT_TABLE

U3100_X
CD3217B12ACE
FCBGA

DIGITAL CORE I/O & CONTROL

92C7 IN	UPC_X_RESET	B13	HRESET
92C7 IN	TBT_POC_RESET	A14	MRESET
92C7 OUT	USBC_X_RST_L	B17	RESET*
92C7 IN	UPC_X_SER_DBG	A2	GPIO0
		B1	
92C7 IN	PMU_ACTIVE_READY	D1	GPIO1
98D4 92C7 IN	I2C_UPC_X_INTM_L	F1	GPIO2
92C7 OUT	UPC_XT_5V_EN	C2	GPIO3
92C7 OUT	UPC_X_FORCE_PWR	E2	GPIO4
92C7 OUT	UPC_X_FAULT_L	B3	GPIO5
92C7 IN	PCH_BBR_FORCE_PWR	C4	GPIO6
92C7 OUT	SOC_DOCK_CONNECT	D3	GPIO7
92C7 OUT	UPC_PMU_RESET	E4	GPIO8
92C7 IO	SOC_DFU_STATUS	F3	GPIO9
92C7 IO	SOC_FORCE_DFU	F7	GPIO10
	PP3V3_UPC_X_LDO	A18	BUSPOWER
GND_I2C_ADDR PRIMARY ONLY IN	GND	M19	I2C_ADDR (IPU-BOOT)
	UPC_R_OSC_X	M21	R_OSC
98D4 92C7 IO	I2C_UPC_X_SDAM	A16	I2CM_SDA_CNFG
98D4 92C7 IO	I2C_UPC_X_SCLM	B15	I2CM_SCL_CNFG
92D6 IO	PCH_I2C_UPC_SDA	B5	I2C_SDA1
92D6 IO	PCH_I2C_UPC_SCL	A4	I2C_SCL1
92D6 OUT	PCH_UPC_I2C_INT_L	D7	I2C_IRQ1*
92D6 IO	I2C_UPC_XT_SDA2	B7	I2C_SDA2
92D6 IO	I2C_UPC_XT_SCL2	A6	I2C_SCL2
92C6 OUT	UPC_I2C_INT_L	C8	I2C_IRQ2*
OUT	GND	B9	SPI_CLK
OUT	GND	B11	SPI_MOSI
IN	GND	A10	SPI_MISO
OUT	GND	A8	SPI_SSZ
92D6 IO	UPC_X_SWD_DATA	E20	SWD_DATA (IPU)
92D6 IO	UPC_X_SWD_CLK	E16	SWD_CLK (IPU)
92C6 IN	UPC_XT_UART_RX	B19	UART_RX
92C6 OUT	UPC_XT_UART_TX	A20	UART_TX
	USB_UPC_1_P_X	H19	USB_RP1_P
NO_TEST=1	USB_UPC_1_N_X	H21	USB_RP1_N
94D6 IO	USB_UPC_X2_P	G20	USB_RP2_P
94D6 IO	USB_UPC_X2_N	G22	USB_RP2_N
94D6 IO	SPARE_UPC_X	F19	USB_RP3_P
94D6 IO	SPARE_UPC_X	F21	USB_RP3_N
	USBC_AUXLSX_P_X	J12	AUX_P
	USBC_AUXLSX_N_X	H11	AUX_N
92C7 OUT	TP_DP_X_HPD	C12	HPD
92C6 IO	SPARE_UPC_X_DBG	G12	DEBUG0
92D6 IO	SPARE_UPC_X_DBG	F11	DEBUG1
92D6 IO	SPARE_UPC_X_DBG	E8	DEBUG2
92D6 IO	SPARE_UPC_X_DBG	E12	DEBUG3
92D6 IO	SWD_SOC_SWCLK_X	G16	DEBUG4
92D6 IO	SWD_SOC_SWDIO_X	F15	DEBUG5
92D6 IO	PCH_UART_DEBUG_R2D_1	D15	DEBUG6
9286 IO	PCH_UART_DEBUG_D2R_1	D19	DEBUG7

POWER

VIN_3V3	C20	
VDDIO	A12	
VDDIO_CFG	D11	NC_UPC_X_VDDIO_CFG (IO 95C3)
LDO_3V3	C22	PP3V3_UPC_X_LDO (IO 95C3 99C8)
	D21	
VIN_LV	L20	VOLTAGE=3.3V MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.0750
VOUT_LV	L18	PP3V3_UPC_X_VOUTLV (117S0201 OUT 95C3)
VRET	C16	UPC_X_VRET_X — 0 — R3120_X 5% 1/20W MF 0201
SS	L22	UPC_SS_X
LDO_CORE	E22	PP1V5_UPC_LDO_CORE_X (VOLTAGE=1.5V MIN_NECK_WIDTH=0.0750 MIN_LINE_WIDTH=0.2000)
VBUS_OPT	D5	PP20V_USBC_X_VBUS
PP_HV_OPT	F5	PPHV_INT_G3H_X

C3108_X 10UF 20% 6.3V CERM-X5R 0402-1
C3106_X 1.0UF 20% 6.3V X5R 0201-1
C3109_X 0.68UF 5% 6.3V X5S 0402
C3105_X 10UF 20% 6.3V CERM-X5R 0402-1

TYPE-C

C_CC1	M15	USBC_X_CC1	FUNC_TEST=TRUE
	N16		
C_CC2	M17	USBC_X_CC2	FUNC_TEST=TRUE
	N18		
RPD_G1	L14	USBC_X_CC1 (IO 94D6)	
RPD_G2	L16	USBC_X_CC2 (IO 94D6)	
C_USB_TP	K19	USBC_X_USB_TOP_P (IO 94D6)	
C_USB_TN	K21	USBC_X_USB_TOP_N (NO_TEST=1 IO 94D6)	
C_USB_BP	J20	USBC_X_USB_BOT_P (NO_TEST=1 IO 94D6)	
C_USB_BN	J22	USBC_X_USB_BOT_N (NO_TEST=1 IO 94D6)	
C_SBU1	J16	USBC_X_SBU1 (IO 94D6)	
C_SBU2	H15	USBC_X_SBU2 (IO 94D6)	

C3113_X 220PF 10% 16V CER-X7R 0201
C3114_X 220PF 10% 16V CER-X7R 0201

PORT_MUX

GND_OPT	C18	
GND_OPT	E18	
GND_OPT	D17	
GND_OPT	G18	

GND

A22 H9 N20 B21 K15 N22

CRITICAL
R3103_X 15K 0.1% 1/20W TF-LF 0201 — TO SMC

REAR PORT: CONNECT UPC SPI TO ROM
FRONT PORT: GROUND UPC SPI

PLACE_NEAR=U3100_X.H21:5MM
USB2_TBT_X_P — R3100_X 0 1/20W 5% 0201 MF — NO_TEST=1
USB2_TBT_X_N — R3101_X 0 1/20W 5% 0201 MF — NO_TEST=1
PLACE_NEAR=U3100_X.H21:5MM

P2MM SM PP1 PP9970_X — USBC_AUXLSX_P_X (NO_TEST=1)
P2MM SM PP1 PP9971_X — USBC_AUXLSX_N_X (NO_TEST=1)
P4MM SM PP1 PP7901_X — TP_DP_X_HPD

Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)

T	SoC SWD, SMC UART, DCI
X	SoC SWD, SoC USB2, x86 UART

W	FAN TACH
R	

Port	I2C_ADDR	I2CM_CNFG	I2C1_OA	I2C1_AA	I2C2_OA	I2C2_AA
X	GND (0)	PU (3)	0x38	0x6B	0x38	0x6B
T	FLOAT (7)	PU (3)	0x3F	0x6B	0x3F	0x6B
W	OVERRIDE OTP (3)	OVERRIDE OTP (3)	0x3B	0x6B	0x3B	0x6B
R	OVERRIDE OTP (4)	OVERRIDE OTP (3)	0x3C	0x6B	0x3C	0x6B

BOM_COST_GROUP=USB-C

SYNC_MASTER=t290 icl yn — SYNC_DATE=02/01/2018
PAGE TITLE: ACE2 CONTROLLER
Apple Inc.
DRAWING NUMBER: 051-05198 — SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 2 OF 2
SHEET: 99 OF 109

USBC HIGH-SPEED 1 AC COUPLING

BURNSIDE BRIDGE I2C ADDRESS = 0x18

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00035	4	CAP,CER,20UF,20%,2.5V,X6S,HRZTL,0402	C2862,C2863,C2864,C2865	CRITICAL	

BOM_COST_GROUP=TBT

PAGE TITLE	BURNSIDE BRIDGE
DRAWING NUMBER	051-05198
SIZE	D
REVISION	6.0.0
BRANCH	evt-3
PAGE	1 OF 2
SHEET	100 OF 109

SYNC_MASTER=t290 icl yn
SYNC_DATE=02/01/2018

ACE2 USB-C PORT CONTROLLER (UPC)

FUSES FOR UPC

CRITICAL
0603-1
F3100_T
6A-32V

95C3 IN PPDCIN_G3H — MIN_LINE_WIDTH=0.2000, MIN_NECK_WIDTH=0.1000, VOLTAGE=20V

PPHV_INT_G3H_T — MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0750, VOLTAGE=20V

PLACE_NEAR=U3100_T.G2:5MM

MAX 100uF TOTAL ON RAIL

95C3 IO PP5V_S4_XT_USBC

CAP FOR PP_5V0 ON VR PAGE

VOLTAGE=20V, MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0750

PP20V_USBC_T_VBUS (IO 94D3 101C2)

C3101_T 1UF 10% 35V X5R 0402

CRITICAL
D3100_T 05N2
NSR20F40NX_G

PP3V3_G3H_RTC (IO 95C3)

C3100_T 10UF 20% 6.3V CERM-X5R 0402-1

PP1V8_SLPS2R (IO 95C3)

C3102_T 1.0UF 20% 6.3V X5R 0201-1

PP_5V0 (K9, L10, M9, N10, K11, L12, M11, N12) | PP_CABLE (N14, M13) | PP_HV (G2, G4, H1, H3, J2, J4, K1, K3, L2, L4, M1, M3, N2, N4) | VBUS (G6, G8, H5, H7, J6, J8, K5, K7, L6, L8, M5, M7, N6, N8)

CRITICAL
OMIT_TABLE

U3100_T
CD3217B12ACE
FCBGA

DIGITAL CORE I/O & CONTROL

92C3 IN	UPC_T_RESET	B13	HRESET
92C3 IN	TBT_POC_RESET	A14	MRESET
92C3 OUT	USBC_T_RESET_L	B17	RESET*
92C3 IN	UPC_T_SER_DBG	A2	GPIO0
		B1	
92C3 IN	PD_UPC_T_GPIO1	D1	GPIO1
10004 92C3 IN	I2C_UPC_T_INTM_L	F1	GPIO2
92C3 OUT	UPC_XT_5V_EN	C2	GPIO3
92C3 OUT	UPC_T_FORCE_PWR	E2	GPIO4
92C3 OUT	UPC_T_FAULT_L	B3	GPIO5
92C3 IN	PCH_BBR_FORCE_PWR	C4	GPIO6
92C3 OUT	SOC_DOCK_CONNECT	D3	GPIO7
92C3 OUT	UPC_PMU_RESET	E4	GPIO8
92C3 IO	PD_UPC_T_GPIO9	F3	GPIO9
92C3 IO	PD_UPC_T_GPIO10	F7	GPIO10
	PP3V3_UPC_T_LDO	A18	BUSPOWER
9202 GND_I2C_ADDR PRIMARY ONLY IN	NC_UPC_T_I2C_ADDR	M19	I2C_ADDR (IPU-BOOT)
	UPC_R_OSC_T	M21	R_OSC
10004 92C3 IO	I2C_UPC_T_SDAM	A16	I2CM_SDA_CNFG
10004 92C3 IO	I2C_UPC_T_SCLM	B15	I2CM_SCL_CNFG
9202 IO	PCH_I2C_UPC_SDA	B5	I2C_SDA1
9202 IO	PCH_I2C_UPC_SCL	A4	I2C_SCL1
9202 OUT	PCH_UPC_I2C_INT_L	D7	I2C_IRQ1*
9202 IO	I2C_UPC_XT_SDA2	B7	I2C_SDA2
9202 IO	I2C_UPC_XT_SCL2	A6	I2C_SCL2
9202 OUT	UPC_I2C_INT_L	C8	I2C_IRQ2*
92C2 OUT	UPC_T_SPI_CLK	B9	SPI_CLK
92C2 OUT	UPC_T_SPI_MOSI	B11	SPI_MOSI
92C2 IN	UPC_T_SPI_MISO	A10	SPI_MISO
92C2 OUT	UPC_T_SPI_CS_L	A8	SPI_SSZ
92C2 IO	UPC_T_SWD_DATA	E20	SWD_DATA (IPU)
92C2 IO	UPC_T_SWD_CLK	E16	SWD_CLK (IPU)
92C2 IN	UPC_XT_UART_TX	B19	UART_RX
92C2 OUT	UPC_XT_UART_RX	A20	UART_TX
	USB_UPC_1_P_T	H19	USB_RP1_P
	USB_UPC_1_N_T (NO_TEST=1)	H21	USB_RP1_N
9402 IO	SPARE_UPC_T	G20	USB_RP2_P
9402 IO	SPARE_UPC_T	G22	USB_RP2_N
9402 IO	SPARE_UPC_T	F19	USB_RP3_P
9402 IO	SPARE_UPC_T	F21	USB_RP3_N
	USBC_AUXLSX_P_T	J12	AUX_P
	USBC_AUXLSX_N_T	H11	AUX_N
92C3 OUT	TP_DP_T_HPD	C12	HPD
92C2 IO	USB3_BSSB_D2R_R_P	G12	DEBUG0
92C2 IO	USB3_BSSB_D2R_R_N	F11	DEBUG1
92C2 IO	USB3_BSSB_R2D_P	E8	DEBUG2
92C2 IO	USB3_BSSB_R2D_N	E12	DEBUG3
92C2 IO	SWD_SOC_SWCLK_T	G16	DEBUG4
92C2 IO	SWD_SOC_SWDIO_T	F15	DEBUG5
92C2 IO	SMC_DEBUGPRT_R_TX	D15	DEBUG6
92C2 IO	SMC_DEBUGPRT_R_RX	D19	DEBUG7

POWER

VIN_3V3	C20	
VDDIO	A12	
VDDIO_CFG	D11	NC_UPC_T_VDDIO_CFG (IO 95C3)
LDO_3V3	C22, D21	PP3V3_UPC_T_LDO (IO 95C3 101C6)
VIN_LV	L20	VOLTAGE=3.3V, MIN_LINE_WIDTH=0.0900, MIN_NECK_WIDTH=0.0800
VOUT_LV	L18	PP3V3_UPC_T_VOUTLV (117S0201 OUT 95C3)
VRET	C16	UPC_X_VRET_T — R3120_T 0 5% 1/20W MF 0201
SS	L22	UPC_SS_T
LDO_CORE	E22	PP1V5_UPC_LDO_CORE_T — VOLTAGE=1.5V, MIN_NECK_WIDTH=0.0750, MIN_LINE_WIDTH=0.2000
VBUS_OPT	D5	PP20V_USBC_T_VBUS
PP_HV_OPT	F5	PPHV_INT_G3H_T

C3108_T 10UF 20% 6.3V CERM-X5R 0402-1
C3106_T 1.0UF 20% 6.3V X5R 0201-1
C3109_T 0.68UF 5% 6.3V X6S 0402
C3105_T 10UF 20% 6.3V CERM-X5R 0402-1

TYPE-C

C_CC1	M15, N16	USBC_T_CC1	FUNC_TEST=TRUE (IO 94D3)
C_CC2	M17, N18	USBC_T_CC2	FUNC_TEST=TRUE (IO)
RPD_G1	L14	USBC_T_CC1	IO 94C3
RPD_G2	L16	USBC_T_CC2	IO 94C3
C_USB_TP	K19	USBC_T_USB_TOP_P	IO 94D3
C_USB_TN	K21	USBC_T_USB_TOP_N	NO_TEST=1, IO 94D3
C_USB_BP	J20	USBC_T_USB_BOT_P	NO_TEST=1, IO 94D3
C_USB_BN	J22	USBC_T_USB_BOT_N	NO_TEST=1, IO 94D3
C_SBU1	J16	USBC_T_SBU1	IO 94D3
C_SBU2	H15	USBC_T_SBU2	IO 94D3

C3113_T 220PF 10% 16V CER-X7R 0201
C3114_T 220PF 10% 16V CER-X7R 0201

PORT_MUX

GND_OPT	C18	
GND_OPT	E18	
GND_OPT	D17	
GND_OPT	G18	

GND

A22, H9, N20, B21, K15, N22

CRITICAL
R3103_T 15K 0.1% 1/20W TF-LF 0201
TO SMC

REAR PORT: CONNECT UPC SPI TO ROM
FRONT PORT: GROUND UPC SPI

PLACE_NEAR=U3100_T.H19:5MM
USB2_TBT_T_P — R3100_T 0 1/20W 5% 0201 MF — NO_TEST=1
USB2_TBT_T_N — R3101_T 0 1/20W 5% 0201 MF — NO_TEST=1
PLACE_NEAR=U3100_T.H21:5MM

P2MM SM PP9970_T (10001 B1, 10001 B4) — NO_TEST=1
P2MM SM PP9971_T
P4MM SM PP7901_T

Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)

T SoC SWD, SMC UART, DCI
X SoC SWD, SoC USB2, x86 UART

FAN TACH W R

Port	I2C_ADDR	I2CM_CNFG	I2C1_OA	I2C1_AA	I2C2_OA	I2C2_AA
X	GND (0)	PU (3)	0x38	0x6B	0x38	0x6B
T	FLOAT (7)	PU (3)	0x3F	0x6B	0x3F	0x6B
W	OVERRIDE OTP (3)	OVERRIDE OTP (3)	0x3B	0x6B	0x3B	0x6B
R	OVERRIDE OTP (4)	OVERRIDE OTP (3)	0x3C	0x6B	0x3C	0x6B

BOM_COST_GROUP=USB-C

SYNC_MASTER=t290 icl yn — SYNC_DATE=02/01/2018

PAGE TITLE: ACE2 CONTROLLER

Apple Inc.

DRAWING NUMBER: 051-05198 — SIZE: D
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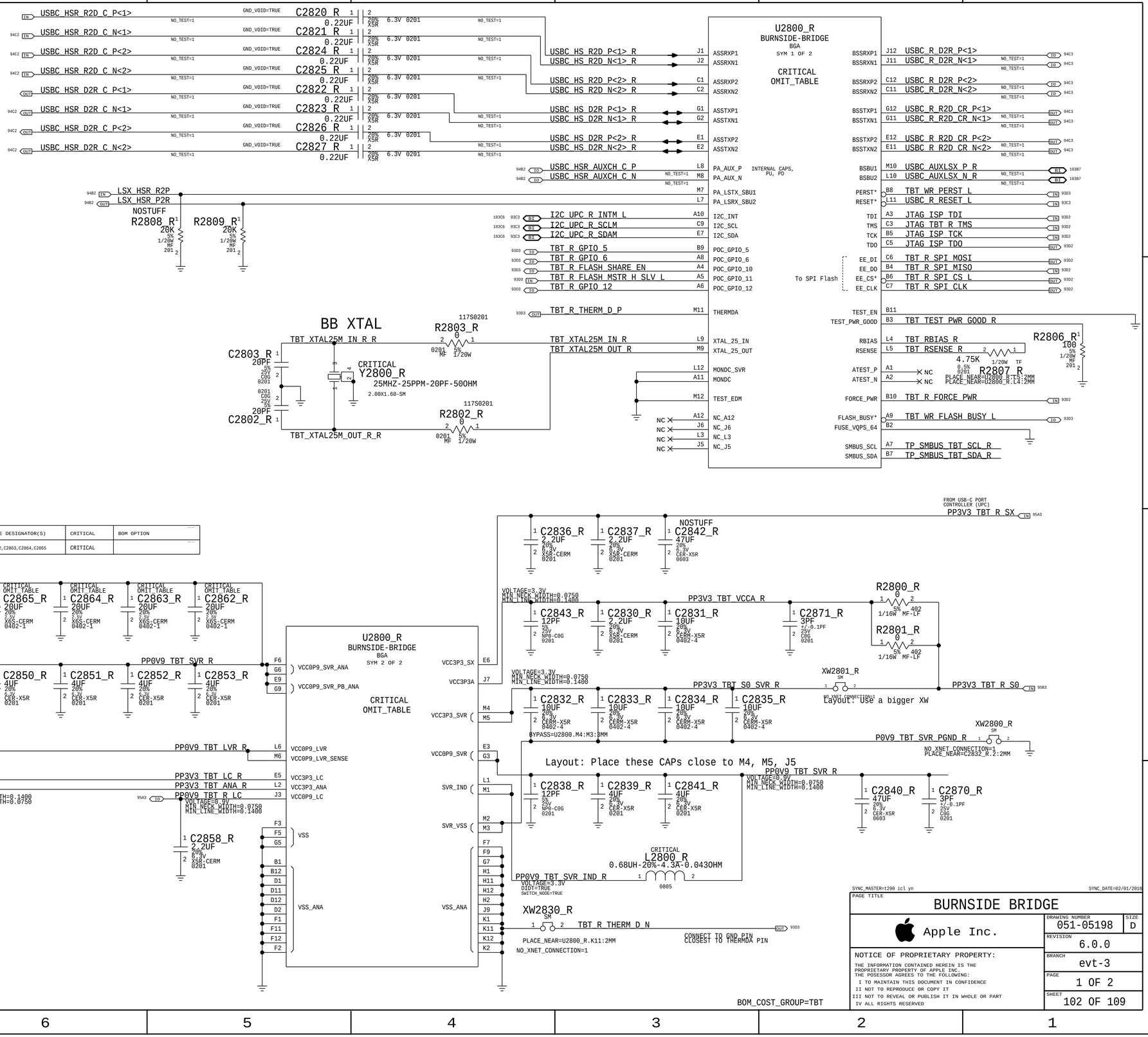
USBC HIGH-SPEED 1 AC COUPLING

BURNSIDE BRIDGE I2C ADDRESS = 0x18

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
138S00035	4	CAP,CER,20UF,20%,2.5V,X6S,HRZTL,0402	C2862,C2863,C2864,C2865	CRITICAL	



SYNC_MASTER=t290 icl yn

SYNC_DATE=02/01/2018

PAGE TITLE

BURNSIDE BRIDGE

Apple Inc.

DRAWING NUMBER 051-05198

SIZE D

REVISION 6.0.0

BRANCH evt-3

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SHEET 102 OF 109

ACE2 USB-C PORT CONTROLLER (UPC)

FUSES FOR UPC

CRITICAL
0603-1
F3100_R
6A-32V

95A3 IN PPDCIN_G3H — MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.1000 VOLTAGE=20V — F3100_R (1 2) — PPHV_INT_G3H_R — MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0750 VOLTAGE=20V

PLACE_NEAR=U3100_R.G2:5MM

MAX 100uF TOTAL ON RAIL

VOLTAGE=20V MIN_LINE_WIDTH=0.2000 MIN_NECK_WIDTH=0.0750

PP20V_USBC_R_VBUS — IO 94C3 103C2

C3101_R 1UF 10% 35V X5R 0402 — CRITICAL — D3100_R DSN2 NSR20F40NX_G

PP3V3_G3H_RTC — IO 95A3

C3100_R 10UF 20% 6.3V CERM-X5R 0402-1

PP1V8_SLPS2R — IO 95A3

C3102_R 1.0UF 20% 6.3V X5R 0201-1

95A3 IO PP5V_S4_WR_USBC

CAP FOR PP_5V0 ON VR PAGE

K9 L10 M9 N10 K11 L12 M11 N12 N14 M13 G2 G4 H1 H3 J2 J4 K1 K3 L2 L4 M1 M3 N2 N4 G6 G8 H5 H7 J6 J8 K5 K7 L6 L8 M5 M7 N6 N8

PP_5V0 | PP_CABLE | PP_HV | VBUS

CRITICAL
OMIT_TABLE

U3100_R
CD3217B12ACE
FCBGA

DIGITAL CORE I/O & CONTROL

93C3 IN	UPC_R_RESET	B13	HRESET
93C3 IN	TBT_POC_RESET	A14	MRESET
93C3 OUT	USBC_R_RST_L	B17	RESET*
93C3 IN	UPC_R_SER_DBG	A2	GPIO0
		B1	
93C3 IN	PD_UPC_R_GPIO1	D1	GPIO1
102D4 93C3 IN	I2C_UPC_R_INTM_L	F1	GPIO2
93C3 OUT	UPC_WR_5V_EN	C2	GPIO3
93C3 OUT	UPC_R_FORCE_PWR	E2	GPIO4
93C3 OUT	UPC_R_FAULT_L	B3	GPIO5
93C3 IN	PCH_BBR_FORCE_PWR	C4	GPIO6
93C3 OUT	PD_UPC_WR_GPIO7	D3	GPIO7
93C3 OUT	UPC_PMU_RESET	E4	GPIO8
93C3 IO	PD_UPC_R_GPIO9	F3	GPIO9
93C3 IO	PD_UPC_R_GPIO10	F7	GPIO10
	PP3V3_UPC_R_LDO	A18	BUSPOWER
9302 GND_I2C_ADDR PRIMARY ONLY IN	NC_UPC_R_I2C_ADDR	M19	I2C_ADDR — IPU-BOOT
	UPC_R_OSC_R	M21	R_OSC
102D4 93C3 IO	I2C_UPC_R_SDAM	A16	I2CM_SDA_CNFG
102D4 93C3 IO	I2C_UPC_R_SCLM	B15	I2CM_SCL_CNFG
9302 IO	PCH_I2C_UPC_SDA	B5	I2C_SDA1
9302 IO	PCH_I2C_UPC_SCL	A4	I2C_SCL1
9302 OUT	PCH_UPC_I2C_INT_L	D7	I2C_IRQ1*
9302 IO	I2C_UPC_WR_SDA2	B7	I2C_SDA2
9302 IO	I2C_UPC_WR_SCL2	A6	I2C_SCL2
93C2 OUT	UPC_I2C_INT_L	C8	I2C_IRQ2*
OUT	GND	B9	SPI_CLK
OUT	GND	B11	SPI_MOSI
IN	GND	A10	SPI_MISO
OUT	GND	A8	SPI_SSZ
93C2 IO	UPC_R_SWD_DATA	E20	SWD_DATA — IPU
93C2 IO	UPC_R_SWD_CLK	E16	SWD_CLK — IPU
93C2 IN	UPC_WR_UART_TX	B19	UART_RX
93C2 OUT	UPC_WR_UART_RX	A20	UART_TX
	USB_UPC_1_P_R	H19	USB_RP1_P
	USB_UPC_1_N_R (NO_TEST=1)	H21	USB_RP1_N
9482 IO	SPARE_UPC_R	G20	USB_RP2_P
9482 IO	SPARE_UPC_R	G22	USB_RP2_N
9482 IO	SPARE_UPC_R	F19	USB_RP3_P
9482 IO	SPARE_UPC_R	F21	USB_RP3_N
	USBC_AUXLSX_P_R	J12	AUX_P
	USBC_AUXLSX_N_R	H11	AUX_N
93C3 OUT	TP_DP_R_HPD	C12	HPD
93C2 IO	SPARE_UPC_R_DBG	G12	DEBUG0
93C2 IO	SPARE_UPC_R_DBG	F11	DEBUG1
93C2 IO	SPARE_UPC_R_DBG	E8	DEBUG2
93C2 IO	SPARE_UPC_R_DBG	E12	DEBUG3
93C2 IO	SPARE_UPC_R_DBG	G16	DEBUG4
93C2 IO	SPARE_UPC_R_DBG	F15	DEBUG5
93C2 IO	SPARE_UPC_R_DBG	D15	DEBUG6
9382 IO	SPARE_UPC_R_DBG	D19	DEBUG7

POWER

VIN_3V3	C20	
VDDIO	A12	
VDDIO_CFG	D11	NC_UPC_R_VDDIO_CFG — IO 95A3
LDO_3V3	C22, D21	PP3V3_UPC_R_LDO — IO 9582 9826
VIN_LV	L20	VOLTAGE=3.3V MIN_LINE_WIDTH=0.0900 MIN_NECK_WIDTH=0.0800
VOUT_LV	L18	PP3V3_UPC_R_VOUTLV — 117S0201 OUT 95A3
VRET	C16	UPC_X_VRET_R — 0 — R3120_R 5% 1/20W MF 0201
SS	L22	UPC_SS_R
LDO_CORE	E22	PP1V5_UPC_LDO_CORE_R — VOLTAGE=1.5V MIN_NECK_WIDTH=0.0750 MIN_LINE_WIDTH=0.2000
VBUS_OPT	D5	PP20V_USBC_R_VBUS
PP_HV_OPT	F5	PPHV_INT_G3H_R

C3108_R 10UF 20% 6.3V CERM-X5R 0402-1
C3106_R 1.0UF 20% 6.3V X5R 0201-1
C3109_R 0.68UF 5% 6.3V X5S 0402
C3105_R 10UF 20% 6.3V CERM-X5R 0402-1

TYPE-C

C_CC1	M15, N16	USBC_R_CC1	FUNC_TEST=TRUE — IO 9483
C_CC2	M17, N18	USBC_R_CC2	FUNC_TEST=TRUE — IO
RPD_G1	L14	USBC_R_CC1	IO 9483
RPD_G2	L16	USBC_R_CC2	IO 9483
C_USB_TP	K19	USBC_R_USB_TOP_P	IO 9483
C_USB_TN	K21	USBC_R_USB_TOP_N	NO_TEST=1 IO 9483
C_USB_BP	J20	USBC_R_USB_BOT_P	NO_TEST=1 IO 9483
C_USB_BN	J22	USBC_R_USB_BOT_N	NO_TEST=1 IO 9483
C_SBU1	J16	USBC_R_SBU1	IO 9483
C_SBU2	H15	USBC_R_SBU2	IO 9483

C3113_R 220PF 10% 16V CER-X7R 0201 — 94B3
C3114_R 220PF 10% 16V CER-X7R 0201

GND

GND_OPT	C18	
GND_OPT	E18	
GND_OPT	D17	
GND_OPT	G18	

GND: A22 H9 N20 B21 K15 N22

PORT_MUX

9302 GND_I2C_ADDR PRIMARY ONLY	CRITICAL R3103_R 15K 0.1% 1/20W TF-LF 0201	TO SMC
94B2 IO	USB2_TBT_R_P — NO_TEST=1 — R3100_R 0 1/20W 5% 0201 MF — PLACE_NEAR=U3100_R.H19:5MM	
94B2 IO	USB2_TBT_R_N — NO_TEST=1 — R3101_R 0 1/20W 5% 0201 MF — PLACE_NEAR=U3100_R.H21:5MM	
102D1	P2MM SM PP9970_R — B1 — NO_TEST=1	
102D1	P2MM SM PP9971_R — B1 — NO_TEST=1	
	P4MM SM PP7901_R	

REAR PORT:
CONNECT UPC SPI TO ROM
FRONT PORT:
GROUND UPC SPI

Either a Testpoint or Arkanoid connector must be present for GPIO0 (EVEN IN PRODUCTION)

T	SoC SWD SMC UART DCI
X	SoC SWD SoC USB2 x86 UART

W	FAN TACH
R	

Port	I2C_ADDR	I2CM_CNFG	I2C1_OA	I2C1_AA	I2C2_OA	I2C2_AA
X	GND (0)	PU (3)	0x38	0x6B	0x38	0x6B
T	FLOAT (7)	PU (3)	0x3F	0x6B	0x3F	0x6B
W	OVERRIDE OTP (3)	OVERRIDE OTP (3)	0x3B	0x6B	0x3B	0x6B
R	OVERRIDE OTP (4)	OVERRIDE OTP (3)	0x3C	0x6B	0x3C	0x6B

BOM_COST_GROUP=USB-C

SYNC_MASTER=t290 icl yn — SYNC_DATE=02/01/2018

PAGE TITLE
ACE2 CONTROLLER

Apple Inc.

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PP20V_USBC_T_VBUS
VOLTAGE=20V
MIN_LINE_WIDTH=0.0000
MIN_NECK_WIDTH=0.1500
FUNC_TEST=TRUE
CC1
USBC_T_CC1
DZ3352_CXT
ESDL20-1BF4
PLACE_NEAR=J3300_CXT.3:5mm
D3386_CXT
SESDL2011
USBC_T_R2D_CR_N<1>
R3371_CXT
USBC_B_R2D_C_N<1>_CXT
0.22UF
C3391_CXT
USBC_B_R2D_N<1>_CXT
R3348_CXT
220K
TBT_R2D0
USBC_T_R2D_CR_P<1>
D3371_CXT
R3370_CXT
USBC_B_R2D_C_P<1>_CXT
C3390_CXT
USBC_B_R2D_P<1>_CXT
R3349_CXT
D3372_CXT
USBC_T_R2D_N<1>
R3352_CXT
USBC_B_D2R_R_N<1>_CXT
0.33UF
C3381_CXT
USBC_B_D2R_CR_N<1>_CXT
R3350_CXT
TBT_D2R0
USBC_T_R2D_P<1>
D3373_CXT
R3353_CXT
USBC_B_D2R_R_P<1>_CXT
C3380_CXT
USBC_B_D2R_CR_P<1>_CXT
R3351_CXT
SBU2
USBC_T_SBU2
DZ3350_CXT
USB2 BOT
D3349_CXT
ESD8011
USBC_T_USB_BOT_N
USBC_T_USB_BOT_P
D3354_CXT
D3328_CXT
USBC_X_USB_BOT_N
USBC_X_USB_BOT_P
D3312_CXT
DZ3303_CXT
SBU1
USBC_X_SBU1
D3374_CXT
USBC_X_R2D_CR_P<2>
R3373_CXT
USBC_A_R2D_C_P<2>_CXT
C3373_CXT
USBC_A_R2D_P<2>_CXT
R3328_CXT
TBT_R2D1
USBC_X_R2D_CR_N<2>
D3375_CXT
R3372_CXT
USBC_A_R2D_C_N<2>_CXT
C3372_CXT
USBC_A_R2D_N<2>_CXT
R3329_CXT
D3376_CXT
USBC_X_D2R_P<2>
R3326_CXT
USBC_A_D2R_R_P<2>_CXT
C3383_CXT
USBC_A_D2R_CR_P<2>_CXT
R3324_CXT
TBT_D2R1
USBC_X_D2R_N<2>
D3377_CXT
R3327_CXT
USBC_A_D2R_R_N<2>_CXT
C3382_CXT
USBC_A_D2R_CR_N<2>_CXT
R3325_CXT
DZ3301_CXT
CC2
PLACE_NEAR=J3300.53:5mm
USBC_X_CC2
PP20V_USBC_X_VBUS
FUNC_TEST=TRUE
MIN_NECK_WIDTH=0.1500
MIN_LINE_WIDTH=0.0000
VOLTAGE=20V
D3305_CXT
TVS2200
WSON
IN
GND
EPAD
TP_USBC_PP20V_B_CXT
FUNC_TEST=TRUE
J3300_CXT
20875-056E-01
F-ST-SM
PWR
SIGNAL
TP_USBC_PP20V_A_CXT
FUNC_TEST=TRUE
D3303_CXT
TVS2200
WSON
PP20V_USBC_VBUS_*
C3360_CXT
C3366_CXT
C3361_CXT
C3363_CXT
C3364_CXT
C3365_CXT
3.0PF
12PF
DESENSE
0201
PLACE_NEAR=J3300.6:5mm
USBC_T_CC2
DZ3351_CXT
CC2
D3382_CXT
USBC_T_R2D_CR_N<2>
R3354_CXT
USBC_B_R2D_N<2>_CXT
C3392_CXT
USBC_B_R2D_C_N<2>_CXT
R3376_CXT
TBT_R2D1
USBC_T_R2D_CR_P<2>
D3383_CXT
R3358_CXT
USBC_B_R2D_P<2>_CXT
C3393_CXT
USBC_B_R2D_C_P<2>_CXT
R3377_CXT
D3358_CXT
USB2 TOP
USBC_T_USB_TOP_P
USBC_T_USB_TOP_N
D3360_CXT
R3356_CXT
USBC_B_D2R_CR_N<2>_CXT
C3386_CXT
USBC_B_D2R_R_N<2>_CXT
R3359_CXT
TBT_D2R1
USBC_T_D2R_P<2>
D3385_CXT
R3355_CXT
USBC_B_D2R_CR_P<2>_CXT
C3387_CXT
USBC_B_D2R_R_P<2>_CXT
R3357_CXT
DZ3353_CXT
SBU1
USBC_T_SBU1
USBC_X_SBU2
DZ3300_CXT
SBU2
D3378_CXT
USBC_X_R2D_CR_P<1>
R3319_CXT
USBC_A_R2D_C_P<1>_CXT
C3370_CXT
USBC_A_R2D_P<1>_CXT
R3374_CXT
TBT_R2D0
USBC_X_R2D_CR_N<1>
D3379_CXT
R3318_CXT
USBC_A_R2D_C_N<1>_CXT
C3371_CXT
USBC_A_R2D_N<1>_CXT
R3375_CXT
D3304_CXT
USBC_X_USB_TOP_P
USBC_X_USB_TOP_N
D3329_CXT
USB2 BOT
R3321_CXT
USBC_A_D2R_CR_P<1>_CXT
C3384_CXT
USBC_A_D2R_R_P<1>_CXT
R3323_CXT
D3380_CXT
USBC_X_D2R_P<1>
R3320_CXT
USBC_A_D2R_CR_N<1>_CXT
C3385_CXT
USBC_A_D2R_R_N<1>_CXT
R3322_CXT
TBT_D2R0
USBC_X_D2R_N<1>
D3381_CXT
DZ3302_CXT
PLACE_NEAR=J3300.52:5mm
USBC_X_CC1
CC1
C3310_CXT
C3316_CXT
C3311_CXT
C3313_CXT
C3314_CXT
C3315_CXT
BOM_COST_GROUP=USB-C
LAST CHANGE: Wed Apr 1 22:57:37 2015
PAGE TITLE
USB-C CONNECTOR A
Apple Inc.
DRAWING NUMBER
051-05198
SIZE
D
REVISION
6.0.0
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PP20V_USBC_R_VBUS
VOLTAGE=20V
MIN_LINE_WIDTH=0.2000
MIN_NECK_WIDTH=0.1500
FUNC_TEST=TRUE
PP20V_USBC_VBUS_*
D3305_CWR
TVS2200
WSON
DESENSE
C3360_CWR
3.0PF
+/-0.1PF
25V
NP0-C0G
0201
C3366_CWR
C3361_CWR
12PF
5%
C3363_CWR
C3364_CWR
C3365_CWR
TP_USBC_PP20V_B_CWR
FUNC_TEST=TRUE
CC1
USBC_R_CC1
DZ3352_CWR
ESDL20-1BF4
PLACE_NEAR=J3300.3:5mm
D3386_CWR
SESDL2011
DSN2-THICKSTNCL
USBC_R_R2D_CR_N<1>
R3371_CWR
USBC_B_R2D_C_N<1>_CWR
0.22UF
C3391_CWR
USBC_B_R2D_N<1>_CWR
R3348_CWR
220K
TBT_R2D0
USBC_R_R2D_CR_P<1>
D3371_CWR
R3370_CWR
USBC_B_R2D_C_P<1>_CWR
C3390_CWR
USBC_B_R2D_P<1>_CWR
R3349_CWR
D3372_CWR
USBC_R_D2R_N<1>
R3352_CWR
USBC_B_D2R_R_N<1>_CWR
0.33UF
C3381_CWR
USBC_B_D2R_CR_N<1>_CWR
TBT_D2R0
USBC_R_D2R_P<1>
D3373_CWR
R3353_CWR
USBC_B_D2R_R_P<1>_CWR
C3380_CWR
USBC_B_D2R_CR_P<1>_CWR
R3350_CWR
R3351_CWR
SBU2
USBC_R_SBU2
DZ3350_CWR
D3349_CWR
ESD8011
X3DFN2-THICKSTNCL
USB2 BOT
USBC_R_USB_BOT_N
USBC_R_USB_BOT_P
D3354_CWR
D3328_CWR
USBC_W_USB_BOT_N
USBC_W_USB_BOT_P
D3312_CWR
DZ3303_CWR
SBU1
USBC_W_SBU1
D3374_CWR
USBC_W_R2D_CR_P<2>
R3373_CWR
USBC_A_R2D_C_P<2>_CWR
C3373_CWR
USBC_A_R2D_P<2>_CWR
R3328_CWR
TBT_R2D1
USBC_W_R2D_CR_N<2>
D3375_CWR
R3372_CWR
USBC_A_R2D_C_N<2>_CWR
C3372_CWR
USBC_A_R2D_N<2>_CWR
R3329_CWR
D3376_CWR
USBC_W_D2R_P<2>
R3326_CWR
USBC_A_D2R_R_P<2>_CWR
C3383_CWR
USBC_A_D2R_CR_P<2>_CWR
R3324_CWR
TBT_D2R1
USBC_W_D2R_N<2>
D3377_CWR
R3327_CWR
USBC_A_D2R_R_N<2>_CWR
C3382_CWR
USBC_A_D2R_CR_N<2>_CWR
R3325_CWR
DZ3301_CWR
CC2
PLACE_NEAR=J3300.53:5mm
USBC_W_CC2
J3300_CWR
20875-056E-01
F-ST-SM
PWR
SIGNAL
GND
TP_USBC_PP20V_A_CWR
FUNC_TEST=TRUE
PP20V_USBC_W_VBUS
FUNC_TEST=TRUE
MIN_NECK_WIDTH=0.1500
MIN_LINE_WIDTH=0.2000
VOLTAGE=20V
D3303_CWR
TVS2200
WSON
C3310_CWR
C3316_CWR
C3311_CWR
C3313_CWR
C3314_CWR
C3315_CWR
BOM_COST_GROUP=USB-C
PLACE_NEAR=J3300.6:5mm
USBC_R_CC2
DZ3351_CWR
CC2
D3382_CWR
USBC_R_R2D_CR_N<2>
R3354_CWR
USBC_B_R2D_N<2>_CWR
R3376_CWR
USBC_B_R2D_C_N<2>_CWR
C3392_CWR
TBT_R2D1
USBC_R_R2D_CR_P<2>
D3383_CWR
R3358_CWR
USBC_B_R2D_P<2>_CWR
R3377_CWR
USBC_B_R2D_C_P<2>_CWR
C3393_CWR
USB2 TOP
USBC_R_USB_TOP_P
USBC_R_USB_TOP_N
D3358_CWR
D3360_CWR
USBC_R_D2R_N<2>
R3356_CWR
USBC_B_D2R_CR_N<2>_CWR
R3359_CWR
USBC_B_D2R_R_N<2>_CWR
C3386_CWR
TBT_D2R1
USBC_R_D2R_CR_P<2>
D3384_CWR
R3355_CWR
USBC_B_D2R_CR_P<2>_CWR
R3357_CWR
USBC_B_D2R_R_P<2>_CWR
C3387_CWR
USBC_R_D2R_P<2>
D3385_CWR
DZ3353_CWR
SBU1
USBC_R_SBU1
USBC_W_SBU2
DZ3300_CWR
SBU2
R3319_CWR
USBC_A_R2D_P<1>_CWR
R3374_CWR
USBC_A_R2D_C_P<1>_CWR
C3370_CWR
USBC_R_R2D_CR_P<1>
TBT_R2D0
USBC_A_R2D_N<1>_CWR
R3318_CWR
USBC_A_R2D_C_N<1>_CWR
C3371_CWR
USBC_R_R2D_CR_N<1>
D3379_CWR
R3375_CWR
D3304_CWR
USBC_W_USB_TOP_P
USBC_W_USB_TOP_N
USB2 BOT
D3329_CWR
R3321_CWR
USBC_A_D2R_CR_P<1>_CWR
R3323_CWR
USBC_A_D2R_R_P<1>_CWR
C3384_CWR
TBT_D2R0
USBC_W_D2R_P<1>
D3380_CWR
R3320_CWR
USBC_A_D2R_CR_N<1>_CWR
R3322_CWR
USBC_A_D2R_R_N<1>_CWR
C3385_CWR
USBC_W_D2R_N<1>
D3381_CWR
DZ3302_CWR
CC1
PLACE_NEAR=J3300.52:5mm
USBC_W_CC1
LAST CHANGE: Wed Apr 1 22:57:37 2015
PAGE TITLE
USB-C CONNECTOR A
Apple Inc.
DRAWING NUMBER
051-05198
SIZE
D
REVISION
6.0.0
BRANCH
evt-3
PAGE
1 OF 1
SHEET
105 OF 109
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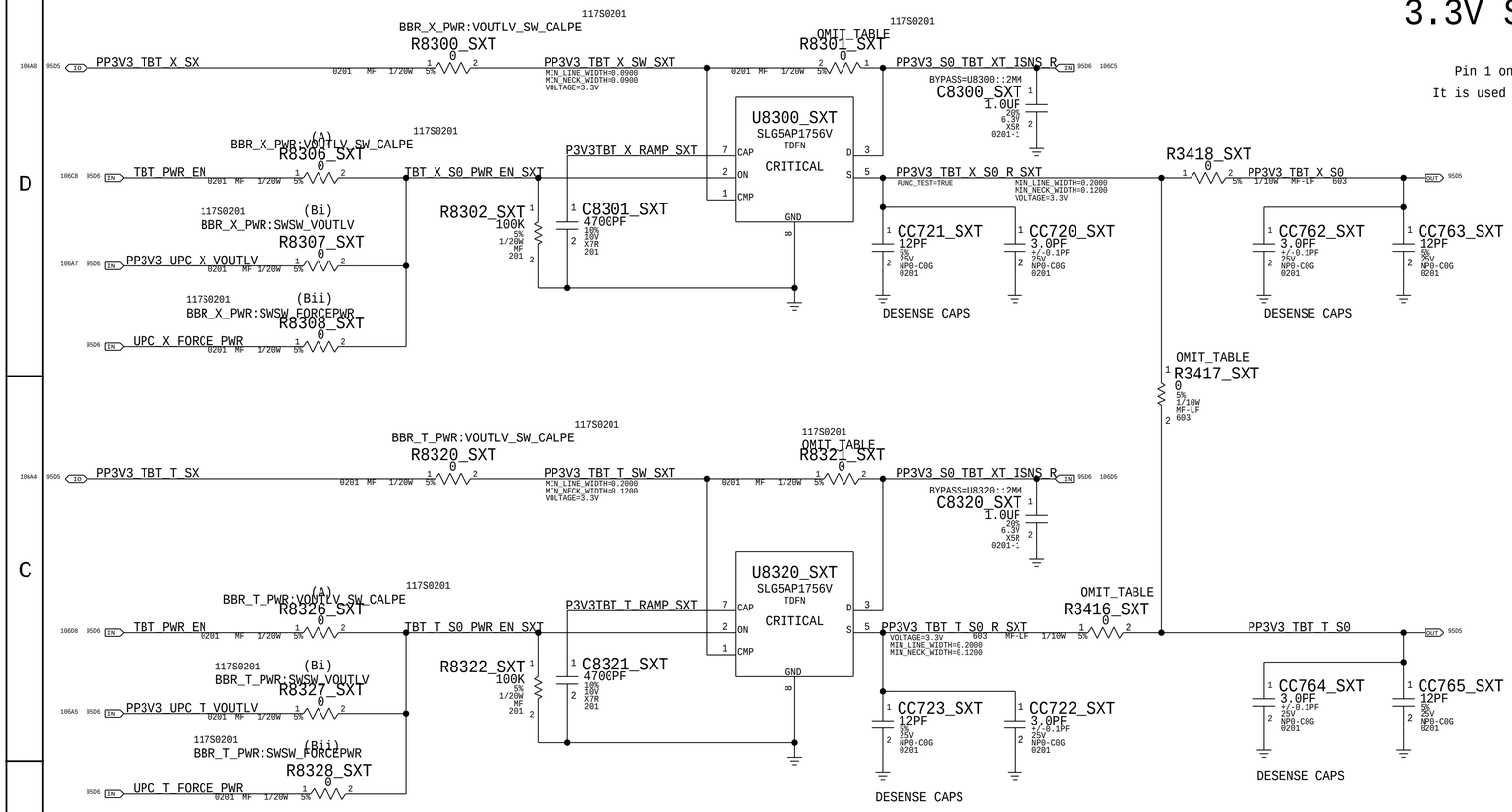
3.3V S0SW TBT Switch

Pin 1 on SLG5AP1756V is a comparator input.
It is used to sense the presense of the SX rail.

Part	SLG5AP1756V
Type	Load Switch
R(on) @ 4A	7.8 mOhm Typ TBD mOhm Max
Current	4A Max



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8301		BBR_X_PWR:SWSW_VOUTLV
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8301		BBR_X_PWR:SWSW_FORCEPWR

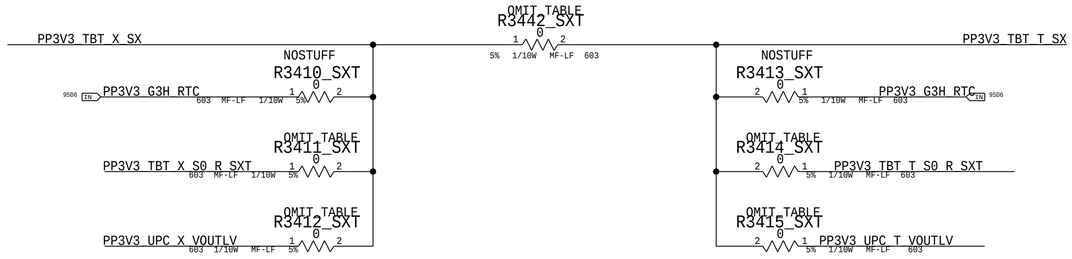
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8321		BBR_T_PWR:SWSW_VOUTLV
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8321		BBR_T_PWR:SWSW_FORCEPWR

	BOMOPTION	BBR XA SX Rail	BBR XA S0 Rail	Load Switch Enable
a	VOUTLV_SW_CALPE	ACE2 VOUT_LV	LD-SW	CALPE/SMC
bi	SWSW_VOUTLV	LD-SW	LD-SW	ACE2 VOUT_LV
bii	SWSW_FORCEPWR	LD-SW	LD-SW	ACE2/PCH FORCEPWR

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
113S0022	1	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3412		BBR_X_PWR:VOUTLV_SW_CALPE
113S0022	1	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3411		BBR_X_PWR:SWSW_VOUTLV
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3411,R3412		BBR_X_PWR:SWSW_FORCEPWR

	BOMOPTION	BBR XA SX Rail	BBR XA S0 Rail	Load Switch Enable
a	VOUTLV_SW_CALPE	ACE2 VOUT_LV	LD-SW	CALPE/SMC
bi	SWSW_VOUTLV	LD-SW	LD-SW	ACE2 VOUT_LV
bii	SWSW_FORCEPWR	LD-SW	LD-SW	ACE2/PCH FORCEPWR
c	BBR_XA_PWR	BBR XA SX Rail	BBR XA S0 Rail	---

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3415,R3416		BBR_T_PWR:VOUTLV_SW_CALPE
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3414,R3416		BBR_T_PWR:SWSW_VOUTLV
113S0022	3	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3414,R3415,R3416		BBR_T_PWR:SWSW_FORCEPWR
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3417,R3442		BBR_T_PWR:BBR_X_PWR



BOM_COST_GROUP=TBT

SYNC_MASTER=CPU_CARD_ICL_Y SYNC_DATE=06/08/2018

PAGE TITLE: Power FETs TBT S0

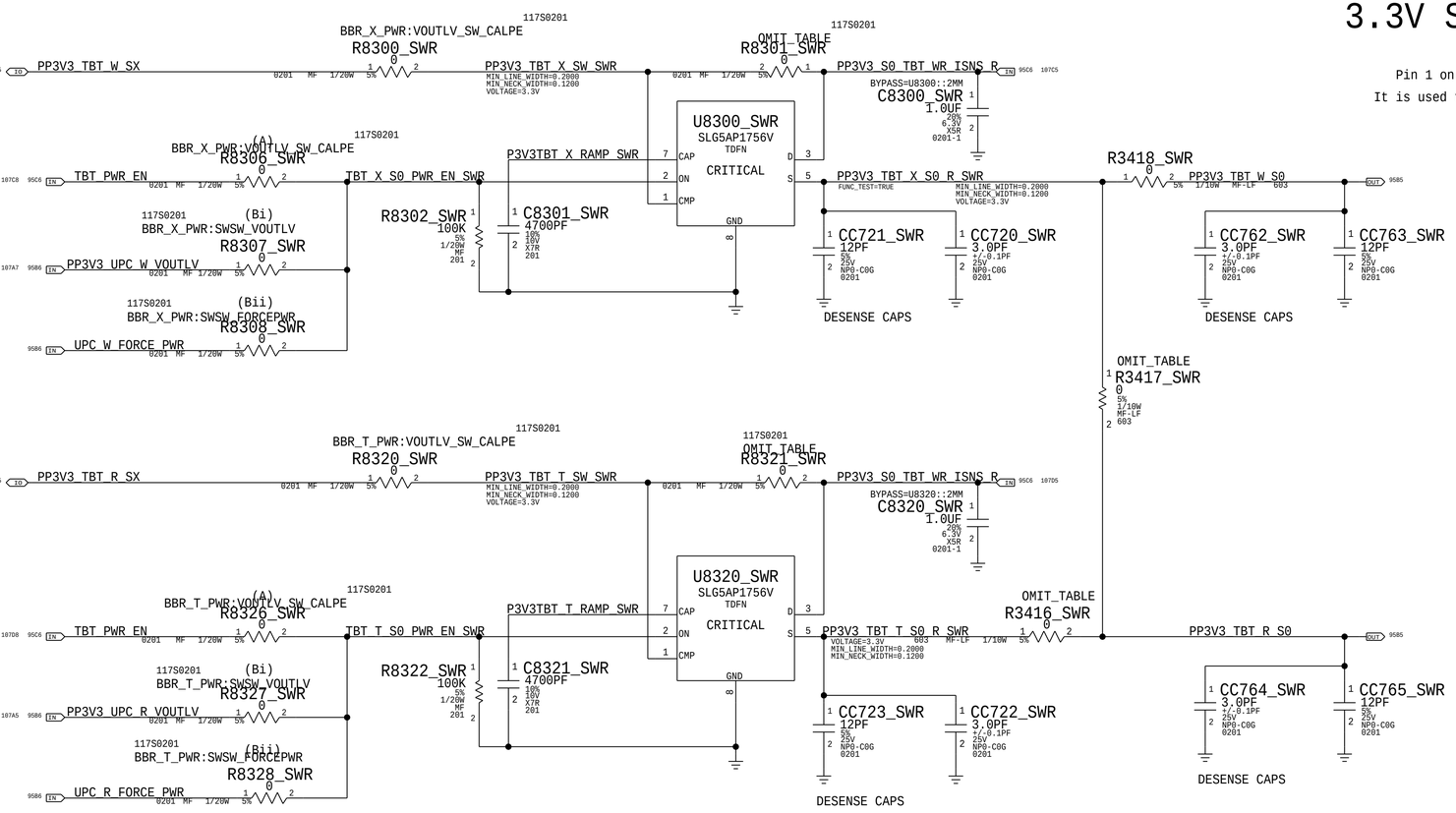
Apple Inc.

DRAWING NUMBER: 051-05198 SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 1 OF 1
SHEET: 106 OF 109

3.3V S0SW TBT Switch

Pin 1 on SLG5AP1756V is a comparator input.
It is used to sense the presense of the SX rail.

Part	SLG5AP1756V
Type	Load Switch
R(on) @ 4A	7.8 mOhm Typ TBD mOhm Max
Current	4A Max



PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8301		BBR_X_PWR:SWSW_VOUTLV
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8301		BBR_X_PWR:SWSW_FORCEPWR

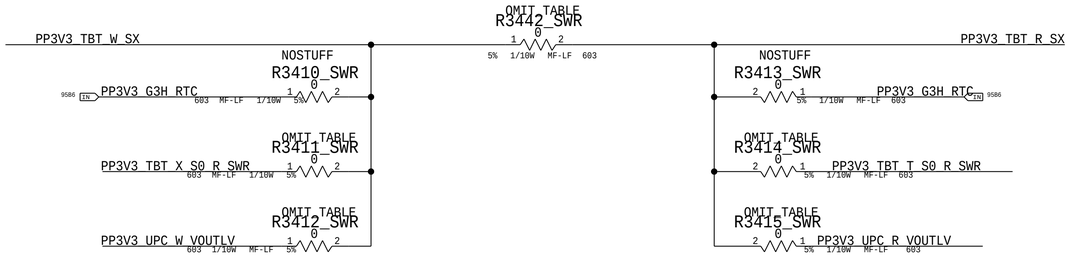
PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8321		BBR_T_PWR:SWSW_VOUTLV
117S0201	1	RES,MF,1A MAX,0.0 OHM,5%,0201,BLACK	R8321		BBR_T_PWR:SWSW_FORCEPWR

	BOMOPTION	BBR XA SX Rail	BBR XA S0 Rail	Load Switch Enable
a	VOUTLV_SW_CALPE	ACE2 VOUT_LV	LD-SW	CALPE/SMC
bi	SWSW_VOUTLV	LD-SW	LD-SW	ACE2 VOUT_LV
bii	SWSW_FORCEPWR	LD-SW	LD-SW	ACE2/PCH FORCEPWR

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
113S0022	1	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3412		BBR_X_PWR:VOUTLV_SW_CALPE
113S0022	1	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3411		BBR_X_PWR:SWSW_VOUTLV
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3411,R3412		BBR_X_PWR:SWSW_FORCEPWR

	BOMOPTION	BBR XA SX Rail	BBR XA S0 Rail	Load Switch Enable
a	VOUTLV_SW_CALPE	ACE2 VOUT_LV	LD-SW	CALPE/SMC
bi	SWSW_VOUTLV	LD-SW	LD-SW	ACE2 VOUT_LV
bii	SWSW_FORCEPWR	LD-SW	LD-SW	ACE2/PCH FORCEPWR
c	BBR_XA_PWR	BBR XA SX Rail	BBR XA S0 Rail	---

PART NUMBER	QTY	DESCRIPTION	REFERENCE DES	CRITICAL	BOM OPTION
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3415,R3416		BBR_T_PWR:VOUTLV_SW_CALPE
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3414,R3416		BBR_T_PWR:SWSW_VOUTLV
113S0022	3	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3414,R3415,R3416		BBR_T_PWR:SWSW_FORCEPWR
113S0022	2	RES,MF,1A MAX,0OHM,5,0603,SMD,LF	R3417,R3442		BBR_T_PWR:BBR_X_PWR



BOM_COST_GROUP=TBT

SYNC_MASTER=CPU_CARD_ICL_Y SYNC_DATE=06/08/2018

PAGE TITLE: Power FETs TBT S0

Apple Inc.

DRAWING NUMBER: 051-05198 SIZE: D
REVISION: 6.0.0
BRANCH: evt-3
PAGE: 1 OF 1
SHEET: 107 OF 109

Vout = 5.230V
Freq = 500 kHz
Max OCP = 15.71A
Nom OCP = 12.2A
Min OCP = 7.94A
IccMax = 6.6A

UPC 5V EN QUALIFIER

PP5V_G3S
PP3V3_G3H_RTC
C3540_VWR 0.1UF 10% 16V X5R-CERM 0201
U3540_VWR 74LVC1G08FZ4 DFN1410-CDM8D
PM_RSMRST_L
UPC_WR_5V_EN
UPC_5V_EN_R_VWR
R3540_VWR 0 5% 1/20W MF 0201
117S0201 NOSTUFF

PP5V_USBC_VCC_VWR
R3501_VWR 2.2 5% 1/20W MF 201
R3506_VWR 2.2 5% 1/20W MF 201
PP5V_USBC_PVCC_VWR NO_TEST=1
C3521_VWR 10UF 20% 16V X5R-CERM 0402-7

P5VUSBC_BOOT_RC_VWR
R3509_VWR 2.2 5% 1/20W MF 201
C3516_VWR 0.1UF 10% 16V X7R-CERM 0402
P5VUSBC_VBST_VWR
C3522_VWR 2.2UF 10% 10V X6S-CERM 0402

U3500_VWR ISL95870AHRUZ-_R5749 UTQFN CRITICAL
VCC PVCC GND PGND
EN FB SREF VO OCSET PGOOD RTN FSEL SET0 SET1 VID0 VID1
BOOT UGATE PHASE LGATE
353S01281

Q3501_VWR FDPC1012S LLP
V+ V+ SW SW HSG LSG GND GND GND GND
VER-2

P5VUSBC_DRVH_VWR
R3539_VWR 0 5% 1/20W MF 0201 117S0201
P5VUSBC_DRVH_R_VWR
P5VUSBC_SW_VWR
P5VUSBC_DRVL_VWR

P5VUSBC_SENSE_DIV_VWR
P5VUSBC_SREF_VWR
P5VUSBC_VO_VWR
P5VUSBC_OCSET_VWR
P5VUSBC_PGOOD_VWR
P5VUSBC_RTN_DIV_VWR
P5VUSBC_FSEL_VWR
P5VUSBC_SET0_VWR
P5VUSBC_SET1_VWR

XW3501_VWR
XW3502_VWR
P5VUSBC_SENSE_DIV_XW_VWR
P5VUSBC_RTN_DIV_XW_VWR
R3503_VWR 27.4K 0.1% 1/20W MF 0201
R3531_VWR 27.4K 0.1% 1/20W MF 0201
R3517_VWR 191K 0.1% 1/20W MF 0201
C3517_VWR 22PF 5% 50V C0G 0201
R3518_VWR 95.3K 0.1% 1/20W MF 0201
P5VUSBC_SET_R_VWR
R3500_VWR 11K 1% 1/20W MF 201
C3523_VWR 0.1UF 10% 16V X5R-CERM 0201
R3513_VWR 0 5% 1/20W MF 0201 NOSTUFF
XW3500_VWR SM
PLACE_NEAR=U3500_VWR.3:1mm

C3526_VWR 10PF 5% 50V C0G 0201
R3504_VWR 10K 0.1% 1/20W MF 0201-1
R3502_VWR 10K 0.1% 1/20W MF 0201-1
C3515_VWR 10PF 5% 50V C0G 0201
P5VUSBC_AGND_VWR

L3500_VWR 1.5UH-20%-12.5A-0.017OHM PIMB062D-SM
P5VUSBC_R_VWR
R3530_VWR 0.002 1% 1/2W MF 0306 CRITICAL
PP5V_S4_WR_USBC

C3504_VWR 33UF 20% 16V TANT-POLY CASE-B3-1 OMIT_TABLE CRITICAL
C3503_VWR 33UF 20% 16V TANT-POLY CASE-B3-1 OMIT_TABLE CRITICAL
C3502_VWR 33UF 20% 16V TANT-POLY CASE-B3-1 OMIT_TABLE CRITICAL
PPBUS_G3H
C3500_VWR 2.2UF 20% 25V X5R-CERM 0402-1
C3501_VWR 2.2UF 20% 25V X5R-CERM 0402-1
CC893_VWR 12PF 5% 25V NP0-C0G 0201 DESENSE
CC894_VWR 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE
C3508_VWR 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C3507_VWR 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C3509_VWR 150UF 20% 6.3V TANT-POLY CASE-B1S-1 CRITICAL
C3505_VWR 2.2UF 20% 25V X5R-CERM 0402-1
C3506_VWR 2.2UF 20% 25V X5R-CERM 0402-1

PLACE C3510, C3511 NEAR REG
PLACE C3512, C3513 NEAR ACES
C3510_VWR 12PF 5% 25V NP0-C0G 0201 DESENSE
C3511_VWR 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE
C3512_VWR 12PF 5% 25V NP0-C0G 0201 DESENSE
C3513_VWR 3.0PF +/-0.1PF 25V NP0-C0G 0201 DESENSE

P5VUSBC_POS_WR
P5VUSBC_NEG_WR
R3521_VWR 2.87K 1% 1/20W MF 201
C3570_VWR 2200PF 10% 25V CER-X7R 0201
R3572_VWR 2.87K 1% 1/20W MF 201

P5VUSBC_PGOOD_VWR
P2MM SM
PP3500_VWR

BOM_COST_GROUP=USB-C

PAGE TITLE	TBT 5V REGULATOR
	Apple Inc.
DRAWING NUMBER	051-05198
SIZE	D
REVISION	6.0.0
BRANCH	evt-3
PAGE	1 OF 1
SHEET	108 OF 109

Vout = 5.230V
Freq = 500 kHz
Max OCP = 15.71A
Nom OCP = 12.2A
Min OCP = 7.94A
IccMax = 6.6A

UPC 5V EN QUALIFIER

PP5V_G3S
PP3V3_G3H_RTC
C3540_VXT 0.1UF 10% 16V X5R-CERM 0201
U3540_VXT 74LVC1G08F24 DFN1410-COMBO
PM_RSMRST_L
UPC_XT_5V_EN
UPC_5V_EN_R_VXT
R3540_VXT 0 5% 1/20W MF 0201
117S0201 NOSTUFF

R3501_VXT 2.2 5% 1/20W MF 201
R3506_VXT 2.2 5% 1/20W MF 201
PP5V_USBC_VCC_VXT
PP5V_USBC_PVCC_VXT
C3521_VXT 10UF 20% 16V X5R-CERM 0402-7
C3522_VXT 2.2UF 10% 10V X5S-CERM 0402

XW3501_VXT
XW3502_VXT
P5VUSBC_SENSE_DIV_XW_VXT
P5VUSBC_RTN_DIV_XW_VXT
R3503_VXT 27.4K 0.1% 1/20W MF 0201
R3531_VXT 27.4K 0.1% 1/20W MF 0201

U3500_VXT
ISL95870AHRUZ-_R5749
UTQFN
CRITICAL

15	EN	BOOT	18
10	FB	UGATE	17
7	SREF	PHASE	16
12	VO	LGATE	1
11	OCSET		
14	PGOOD		
4	RTN		
13	FSEL		
8	SET0		
9	SET1		
6	VID0		
5	VID1		
19	VCC		
20	PVCC		
3	GND		
2	PGND		

P5VUSBC_SENSE_DIV_VXT
P5VUSBC_SREF_VXT
P5VUSBC_VO_VXT
P5VUSBC_OCSET_VXT
P5VUSBC_PGOOD_VXT
P5VUSBC_RTN_DIV_VXT
P5VUSBC_FSEL_VXT
P5VUSBC_SET0_VXT
P5VUSBC_SET1_VXT
P5VUSBC_SET_R_VXT
R3500_VXT 11K 1% 1/20W MF 201
R3517_VXT 191K 0.1% 1/20W MF 0201
C3517_VXT 22PF 5% 50V C0G 0201
R3518_VXT 95.3K 0.1% 1/20W MF 0201
C3523_VXT 0.1UF 10% 16V X5R-CERM 0201
C3526_VXT 10PF 5% 50V C0G 0201
R3504_VXT 10K 0.1% 1/20W MF 0201-1
R3502_VXT 10K 0.1% 1/20W MF 0201-1
C3515_VXT 10PF 5% 50V C0G 0201
P5VUSBC_AGND_VXT
R3513_VXT 0 5% 1/20W MF 0201 NOSTUFF
353S01281
XW3500_VXT SM PLACE_NEAR=U3500_VXT.3:1mm

R3509_VXT 2.2 5% 1/20W MF 201
P5VUSBC_BOOT_RC_VXT
C3516_VXT 0.1UF 10% 16V X7R-CERM 0402
P5VUSBC_VBST_VXT
P5VUSBC_DRVH_VXT
R3539_VXT 0 5% 1/20W MF 0201 117S0201
P5VUSBC_DRVH_R_VXT
P5VUSBC_SW_VXT
P5VUSBC_DRVL_VXT

Q3501_VXT FDPC1012S LLP
VER-2

L3500_VXT 1.5UH-20%-12.5A-0.0170HM PIMB062D-SM
P5VUSBC_R_VXT
CRITICAL R3530_VXT 0.002 5% 1/2W MF 0306

OMIT_TABLE CRITICAL C3504_VXT 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE CRITICAL C3503_VXT 33UF 20% 16V TANT-POLY CASE-B3-1
OMIT_TABLE CRITICAL C3502_VXT 33UF 20% 16V TANT-POLY CASE-B3-1
PPBUS_G3H
C3500_VXT 2.2UF 20% 25V X5R-CERM 0402-1
C3501_VXT 2.2UF 20% 25V X5R-CERM 0402-1
DESENSE CC893_VXT 12PF 5% 25V NP0-C0G 0201
DESENSE CC894_VXT 3.0PF +/-0.1PF 25V NP0-C0G 0201
CRITICAL C3508_VXT 150UF 20% 6.3V TANT-POLY CASE-B1S-1
CRITICAL C3507_VXT 150UF 20% 6.3V TANT-POLY CASE-B1S-1
CRITICAL C3509_VXT 150UF 20% 6.3V TANT-POLY CASE-B1S-1
PP5V_S4_XT_USBC
C3505_VXT 2.2UF 20% 25V X5R-CERM 0402-1
C3506_VXT 2.2UF 20% 25V X5R-CERM 0402-1

PLACE C3510, C3511 NEAR REG
PLACE C3512, C3513 NEAR ACES
DESENSE C3510_VXT 12PF 5% 25V NP0-C0G 0201
DESENSE C3511_VXT 3.0PF +/-0.1PF 25V NP0-C0G 0201
DESENSE C3512_VXT 12PF 5% 25V NP0-C0G 0201
DESENSE C3513_VXT 3.0PF +/-0.1PF 25V NP0-C0G 0201

P5VUSBC_POS_XT
P5VUSBC_NEG_XT
R3521_VXT 2.87K 1% 1/20W MF 201
C3570_VXT 2200PF 10% 25V CER-X7R 0201
R3572_VXT 2.87K 1% 1/20W MF 201

P5VUSBC_PGOOD_VXT
P2MM SM
PP3500_VXT

BOM_COST_GROUP=USB-C

PAGE TITLE: TBT 5V REGULATOR

Apple Inc.

DRAWING NUMBER	051-05198
SIZE	D
REVISION	6.0.0
BRANCH	evt-3
PAGE	1 OF 1
SHEET	109 OF 109