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.

J211: MLB-A

LAST_MODIFICATION=Sun Sep 30 23:53:52 2018

REV	ECN	DESCRIPTION OF REVISION	CK APPD / DATE
8	0014250233	ENGINEERING RELEASED	2018-10-01

SCH AND BOARD P/N

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
051-04263	1	SCHEM,MLB-A,YN,J211	SCH1	CRITICAL	
820-01591	1	PCBF,MLB-A,YN,J211	PCB1	CRITICAL	

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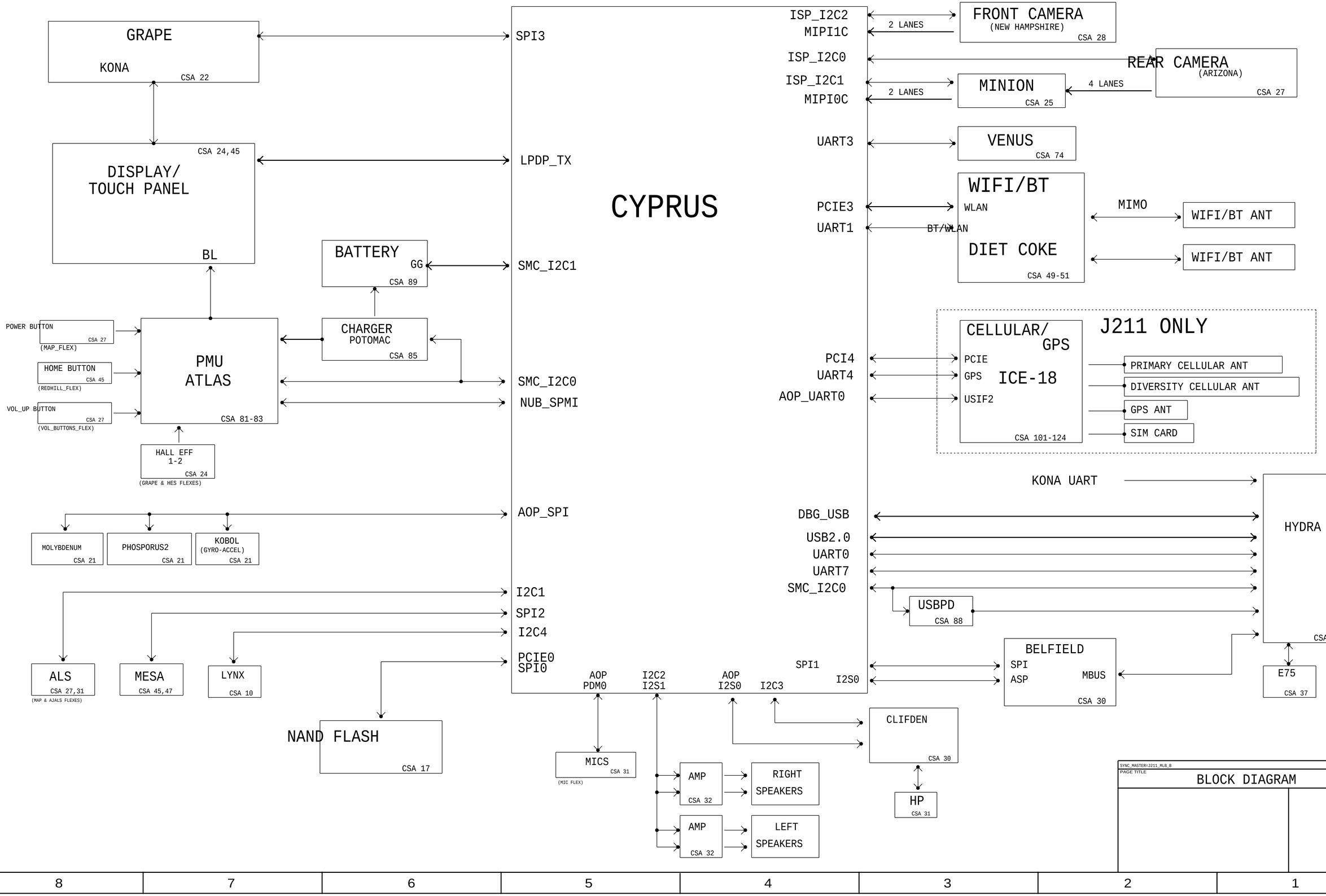
SYNC_MASTER=J207_MLB_B_ARUBA SYNC_DATE=03/05/2018

DRAWING TITLE

SCHEM,MLB-A,YN,J210


GRAPE
KONA
CSA 22
DISPLAY/
TOUCH PANEL
CSA 24,45
BL
BATTERY
GG
CSA 89
CHARGER
POTOMAC
CSA 85
POWER BUTTON
CSA 27
(MAP_FLEX)
HOME BUTTON
CSA 45
(REDHILL_FLEX)
VOL_UP BUTTON
CSA 27
(VOL_BUTTONS_FLEX)
PMU
ATLAS
CSA 81-83
HALL EFF
1-2
CSA 24
(GRAPE & HES FLEXES)
SPI3
LPDP_TX
SMC_I2C1
SMC_I2C0
NUB_SPMI
CYPRUS
ISP_I2C2
MIPI1C
2 LANES
FRONT CAMERA
(NEW HAMPSHIRE)
CSA 28
ISP_I2C0
REAR CAMERA
(ARIZONA)
CSA 27
ISP_I2C1
MIPI0C
2 LANES
MINION
CSA 25
4 LANES
UART3
VENUS
CSA 74
PCIE3
UART1
BT/WLAN
WIFI/BT
WLAN
DIET COKE
CSA 49-51
MIMO
WIFI/BT ANT
WIFI/BT ANT
J211 ONLY
PCI4
UART4
AOP_UART0
CELLULAR/
GPS
PCIE
GPS
ICE-18
USIF2
CSA 101-124
PRIMARY CELLULAR ANT
DIVERSITY CELLULAR ANT
GPS ANT
SIM CARD
KONA UART
HYDRA
CSA 35
AOP_SPI
DBG_USB
USB2.0
UART0
UART7
SMC_I2C0
USBPD
CSA 88
I2C1
SPI2
I2C4
PCIE0
SPI0
SPI1
I2S0
BELFIELD
SPI
ASP
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CSA 30
E75
CSA 37
AOP
PDM0
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I2S1
AOP
I2S0
I2C3
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CSA 21
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CSA 21
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(GYRO-ACCEL)
CSA 21
ALS
CSA 27,31
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MESA
CSA 45,47
LYNX
CSA 10
NAND FLASH
CSA 17
MICS
CSA 31
(MIC FLEX)
AMP
CSA 32
RIGHT
SPEAKERS
AMP
CSA 32
LEFT
SPEAKERS
HP
CSA 31
SYNC_MASTER=J211_MLB_B
SYNC_DATE=09/30/2018
PAGE TITLE
BLOCK DIAGRAM

CKPLUS WAIVE TABLE

CKPLUS RULE EXCEPTIONS	REQUIRED
SCHEMATIC DEFINED CONSTRAINTS (YES/NO)	NO

ALTERNATES

	PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	371S0730	371S00172			D82P0
155S00200		155S00400		FL2860	
	155S00194	155S00400			FL2860
	128S00067	128S00094			C81C0-2
	128S00069	128S00094			C81C0-2
	155S0755	155S00341			FL2700-2,FL4540,FL4710
	131S00172	131S00164			220PF,16V,01005
131S00173		131S00164		C2743,C2801,...	
	376S00159	376S00311			Q8061
	377S0116	377S00132			DZ3540
	138S00116	138S00071			C810D-E,...
	138S00117	138S00071			C810D-E,...
	138S00143	138S00144			C81A0-4,...
	138S00163	138S00144			C81A0-4,...
138S00138		138S00139		C133A-B,...	
	138S00164	138S00139			C133A-B,...
	138S00084	138S00060			C8563-69,...
	152S01037	152S00887			L8101-03,...
	132S00229	132S00010			C8555-57
152S00963		152S00885		L8190,A0	
	197S00120	197S00118			Y0600
	372S0194	372S0187			Q3790,Q8990
	376S00319	376S00104			Q2201
	376S00182	376S00126			Q8580
	155S0664	155S00018			FL2742,48,...

SOC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
339S00544	1	POP,CYPRUS+3GB 18NM,B1,M,DEV,CSP1262	U0600	CRITICAL	

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00545	339S00544	U0600		HYNIX
339S00546	339S00544		U0600	SAMSUNG

NAND

BEST FLASH CONFIGURATIONS (64GB)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00286	1	NAND,3DV3,64GBT,S4E,256G,SD,SLGA110	U1700	CRITICAL	BEST

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00359	335S00286		U1700	TOSHIBA

ULTIMATE FLASH CONFIGURATIONS (128GB)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00357	1	NAND,3DV3,128GBT,S4E,256G,T,SLGA110	U1700	CRITICAL	ULTIMATE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00246	335S00357		U1700	WD

SUPREME FLASH CONFIGURATIONS (256GB)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00247	1	NAND,3DV3,256GBT,S4E,256G,SD,SLGA110	U1700	CRITICAL	SUPREME

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00358	335S00247		U1700	TOSHIBA

EXTREME FLASH CONFIGURATIONS (512GB)

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
335S00339	1	NAND,3DV4,512GBT,S4E,512G,SD,SLGA110	U1700	CRITICAL	EXTREME

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
335S00343	335S00339		U1700	HYNIX

CCG2

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S01186	1	PRGM ASSY,IC,CCG2,FW,CYPRESS,V0.3,CSP20	U8809	CRITICAL	

SENSORS

KOBOL

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00367	1	IC,KOBOL,BMI222AA,LGA16	U2150	CRITICAL	KOBOL

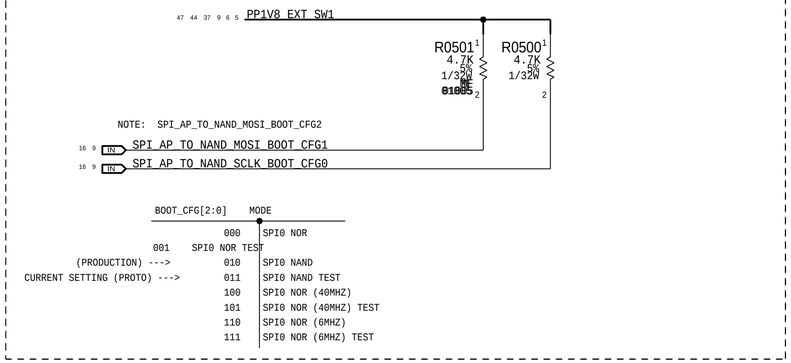
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

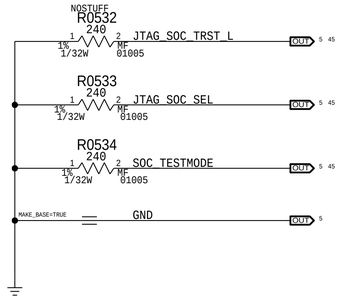
PAGE TITLE

BOM TABLES

BOOT CONFIG ID



BOOT_CFG[2:0]	MODE
000	SPI0 NOR
001	SPI0 NOR TEST
(PRODUCTION) ---> 010	SPI0 NAND
CURRENT SETTING (PROTO) ---> 011	SPI0 NAND TEST
100	SPI0 NOR (40MHZ)
101	SPI0 NOR (40MHZ) TEST
110	SPI0 NOR (6MHZ)
111	SPI0 NOR (6MHZ) TEST



I2C0

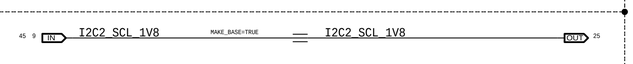
NOT USED

I2C1

DEVICE	8-BIT	7-BIT
ALS - C4	0X52	0X29
ALS - C3	0X72	0X39

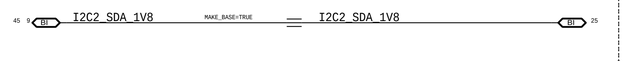
I2C2

DEVICE	8-BIT	7-BIT
SKR AMP CN R	0X72	0X39
SKR AMP CN L	0X74	0X3A



I2C3

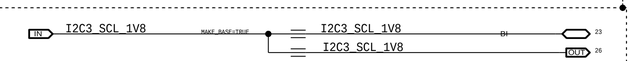
DEVICE	8-BIT	7-BIT
CODEC	0X90	0X48
HYDRA	0X34	0X1A



I2C4

LYNX

DEVICE	8-BIT	7-BIT
	0XXX	0XXX



AOP I2C M0

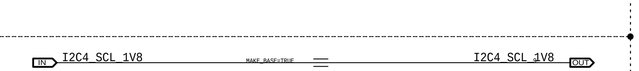
NOT USED

AOP I2C M1

NOT USED

ISP I2C0

DEVICE	8-BIT	7-BIT
RCAM	0X20	0X10



ISP I2C1

DEVICE	8-BIT	7-BIT
MINION	0X??	0X??

ISP I2C2

DEVICE	8-BIT	7-BIT
FCAM	0X20	0X10

ISP I2C3

NOT USED

SMC I2C0

DEVICE	8-BIT	7-BIT
ATLAS	0X78	0X3C
POTOMAC	0XEA	0X75
USBPD	0X24	0X12

SMC I2C1

DEVICE	8-BIT	7-BIT
GASGAUGE	0XAA	0X55

BI

SYNC_MASTER=J211_MLB_B
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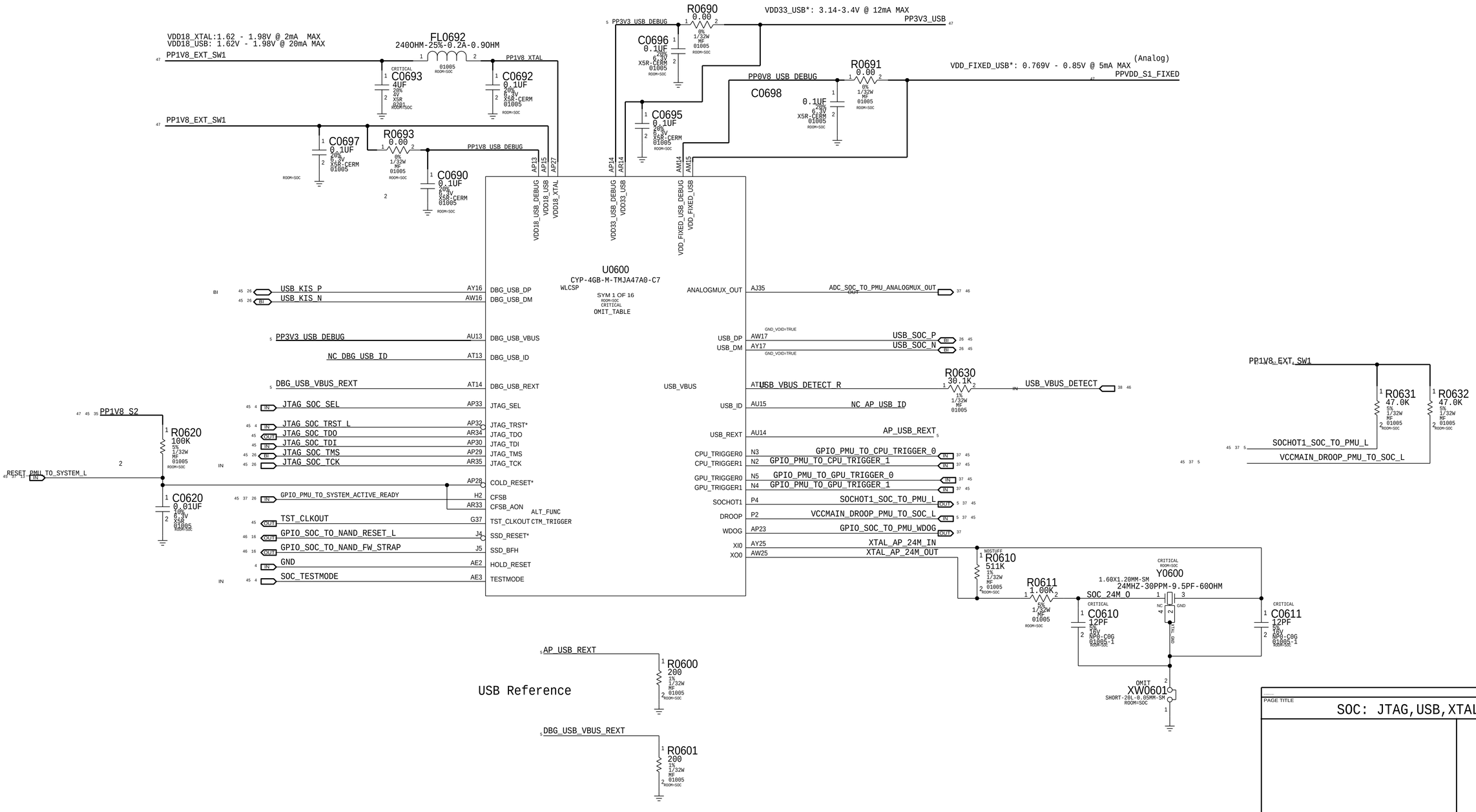
PAGE TITLE

SOC: MISC & ALIASES

SOC - USB, JTAG, XTAL



SOC - PCIE

VDD12_PCIE:1.14V - 1.26V @ 60mA MAX
VDD12_PCIE_REFBUF:1.08V - 1.26V @ 20mA MAX

PP1V2_SOC → R0795 0.00 (0% 1/32W MF 01005 ROOM=SOC) → PP1V2_SOC_PCIE_REFBUF
C0799 2.2UF (CRITICAL, 20% 6.3V X5R-CERM 0201 ROOM=SOC)
C0798 0.1UF (20% 6.3V X5R-CERM 01005 ROOM=SOC)

VDD_FIXED_PCIE:0.769V - 0.85V @ 60mA MAX
VDD_FIXED_PCIE_REFBUF:0.769V - 0.85V @ 50mA MAX
PPVDD_S1_FIXED
R0794 0.00 (0% 1/32W MF 01005 ROOM=SOC)
C0793 0.1UF (20% 6.3V X5R-CERM 01005 ROOM=SOC)
C0791 2.2UF (CRITICAL, 20% 6.3V X5R-CERM 0201)
PP0V8_SOC_FIXED_PCIE_REFBUF
C0794 0.1UF (20% 6.3V X5R-CERM 01005 ROOM=SOC)

VDD12_PCIE
VDD12_PCIE_REFBUF
VDD_FIXED_PCIE0
VDD_FIXED_PCIE1
VDD_FIXED_PCIE_REFBUF

U0600
CYP-4GB-M-TMJA47A0-C7
WLCSP
SYM 2 OF 16

PCIE LINK 0

PCIE_NAND1_TO_SOC_CLKREQ_L	U37	PCIE_CLKREQ0*	
PCIE_SOC_TO_NAND1_REFCLK_P	AW19	PCIE_REF_CLK0_P	
PCIE_SOC_TO_NAND1_REFCLK_N	AY19	PCIE_REF_CLK0_N	
PCIE_NAND1_TO_SOC_TX_P	AY27	PCIE_RX0_P	
PCIE_NAND1_TO_SOC_TX_N	AW27	PCIE_RX0_N	
PCIE_SOC_TO_NAND1_TX_P	C0700 0.22UF (CRITICAL, 10% CER-X5R 01005 6.3V GND_VOID=TRUE)		
PCIE_SOC_TO_NAND1_TX_N	C0701 0.22UF (CRITICAL, 10% CER-X5R 01005 6.3V GND_VOID=TRUE)		
PCIE_SOC_TO_NAND1_TX_C_P	AU26	PCIE_TX0_P	
PCIE_SOC_TO_NAND1_TX_C_N	AV26	PCIE_TX0_N	
PCIE_SOC_TO_NAND1_RESET_L	T36	PCIE_PERST0*	

PCIE LINK 3

PCIE_CLKREQ3*	U34	PCIE_WLAN_TO_SOC_CLKREQ_L	
PCIE_REF_CLK3_P	AY22	PCIE_SOC_TO_WLAN_REFCLK_P	
PCIE_REF_CLK3_N	AW22	PCIE_SOC_TO_WLAN_REFCLK_N	
PCIE_RX3_P	AY33	PCIE_WLAN_TO_SOC_TX_P	
PCIE_RX3_N	AW33	PCIE_WLAN_TO_SOC_TX_N	
PCIE_TX3_P	AU32	PCIE_SOC_TO_WLAN_TX_C_P	C0702 0.1UF (CRITICAL, 20% XSR-CERM 01005 6.3V GND_VOID=TRUE) → PCIE_SOC_TO_WLAN_TX_P
PCIE_TX3_N	AV32	PCIE_SOC_TO_WLAN_TX_C_N	C0703 0.1UF (CRITICAL, 20% XSR-CERM 01005 6.3V GND_VOID=TRUE) → PCIE_SOC_TO_WLAN_TX_N
PCIE_PERST3*	R37	PCIE_SOC_TO_WLAN_RESET_L	

NAND LINK | LINK3

NC_PCIE1_CLKREQ1_L	U36	PCIE_CLKREQ1*	
NC_PCIE1_REF_CLK_P	AW20	PCIE_REF_CLK1_P	
NC_PCIE1_REF_CLK_N	AY20	PCIE_REF_CLK1_N	
NC_PCIE1_RX1_P	AY29	PCIE_RX1_P	
NC_PCIE1_RX1_N	AW29	PCIE_RX1_N	
NC_PCIE1_TX1_P	AU28	PCIE_TX1_P	
NC_PCIE1_TX1_N	AV28	PCIE_TX1_N	
NC_PCIE1_PERST1_L	T35	PCIE_PERST1*	

PCIE_CLKREQ2*	U35	NC_PCIE2_CLKREQ2_L	
PCIE_REF_CLK2_P	AW21	NC_PCIE2_REF_CLK_P	
PCIE_REF_CLK2_N	AY21	NC_PCIE2_REF_CLK_N	
PCIE_RX2_P	AY31	NC_PCIE2_RX1_P	
PCIE_RX2_N	AW31	NC_PCIE2_RX1_N	
PCIE_TX2_P	AU30	NC_PCIE2_TX1_P	
PCIE_TX2_N	AV30	NC_PCIE2_TX1_N	
PCIE_PERST2*	T34	NC_PCIE2_PERST2_L	

LINK1 | LINK2

PCIE_RCAL_POS → AR31 → R0740 200 (1% 1/32W MF 01005 ROOM=SOC) → PCIE_RCAL_NEG
C0740 10PF (CRITICAL, 5% 16V CERM 01005 ROOM=SOC)
PCIE_RCAL_P
PCIE_RCAL_N

PCIE_CLKREQ4*	T37	NC_PCIE_AP_BI_BB_CLKREQ_L	
PCIE_REF_CLK4_P	AY23	NC_90_PCIE_AP_TO_BB_REFCLK_P	
PCIE_REF_CLK4_N	AW23	NC_90_PCIE_AP_TO_BB_REFCLK_N	
PCIE_RX4_P	AY35	NC_90_PCIE_BB_TO_AP_TX_P	
PCIE_RX4_N	AW35	NC_90_PCIE_BB_TO_AP_TX_N	
PCIE_TX4_P	AU34	NC_90_PCIE_AP_TO_BB_TX_P	
PCIE_TX4_N	AV34	NC_90_PCIE_AP_TO_BB_TX_N	
PCIE_PERST4*	R35	NC_PCIE_AP_TO_BB_PERST_L	

LINK4

PCIE LINK 4

PCIe BB CLKREQ PU on BB domain

PCIe Clock Request Pull-Ups

PP1V8_EXT_SW1
R0700 100K (5% 1/32W MF 01005 ROOM=SOC)
R0730 100K (5% 1/32W MF 01005 ROOM=SOC)
PCIE_NAND1_TO_SOC_CLKREQ_L
PCIE_WLAN_TO_SOC_CLKREQ_L

PCIe Reset Pull-Downs

PCIE_SOC_TO_WLAN_RESET_L
PCIE_SOC_TO_NAND1_RESET_L
R0701 100K (5% 1/32W MF 01005 ROOM=SOC)
R0731 100K (5% 1/32W MF 01005 ROOM=SOC)

SYNC_MASTER=J211_MLB_B
SYNC_DATE=09/30/2018
PAGE TITLE
SOC: PCIE

SOC - MIPI

(Analog)
VDD_FIXED_MIPID 0.769V - 0.85V @ 95mA MAX
VDD_FIXED_MIPIC 0.769V - 0.85V @ 10mA MAX
VDD_FIXED_MIPID_PLL 0.769V - 0.85V @ 45mA MAX

VDD18_MIPID:1.62V - 1.98V @ 37mA MAX
VDD18_MIPIC:1.62V - 1.98V @ 7mA MAX

47 PPVDD_S1_FIXED

C0891 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C0890 0.1UF 20% 6.3V X5R-CERM 01005
C0896 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0895 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC

PP1V8_EXT_SW1 47

F17 VDD_FIXED_MIPIC
AM9 VDD_FIXED_MIPID
AP9 VDD_FIXED_MIPID_PLL
G18 VDD18_MIPIC
AL10 VDD18_MIPID

U0600
CYP-4GB-M-TMJA47A0-C7
WLCSP
SYM 3 OF 16

MIPI lanes can all flip polarity for routing purposes

46 20 IN MIPI_MINION_TO_SOC_DATA_P<0>	B9	MIPI0C_DPDATA0	< CANT SWAP DUE TO BiDi
46 20 IN MIPI_MINION_TO_SOC_DATA_N<0>	A9	MIPI0C_DNDATA0	
46 20 IN MIPI_MINION_TO_SOC_DATA_P<1>	A11	MIPI0C_DPDATA1	
46 20 IN MIPI_MINION_TO_SOC_DATA_N<1>	B11	MIPI0C_DNDATA1	
46 20 IN MIPI_MINION_TO_SOC_CLK_P	B10	MIPI0C_DPCLK	
46 20 IN MIPI_MINION_TO_SOC_CLK_N	A10	MIPI0C_DNCLK	
7 MIPI0C_REXT	D11	MIPI0C_REXT	
7 MIPI1C_REXT	D10	MIPI1C_REXT	
46 22 IN MIPI_NH_CAM_TO_SOC_DATA_P<0>	A8	MIPI1C_DPDATA0	
46 22 IN MIPI_NH_CAM_TO_SOC_DATA_N<0>	B8	MIPI1C_DNDATA0	
46 22 IN MIPI_NH_CAM_TO_SOC_DATA_P<1>	B6	MIPI1C_DPDATA1	
46 22 IN MIPI_NH_CAM_TO_SOC_DATA_N<1>	A6	MIPI1C_DNDATA1	
46 22 IN MIPI_NH_CAM_TO_SOC_CLK_P	A7	MIPI1C_DPCLK	
46 22 IN MIPI_NH_CAM_TO_SOC_CLK_N	B7	MIPI1C_DNCLK	
AY8	AY8	MIPID_DPDATA0	
AW8	AW8	MIPID_DNDATA0	< CANT SWAP DUE TO BiDi
AW7	AW7	MIPID_DPDATA1	
AY7	AY7	MIPID_DNDATA1	
AW5	AW5	MIPID_DPDATA2	
AY5	AY5	MIPID_DNDATA2	
AW4	AW4	MIPID_DPDATA3	
AY4	AY4	MIPID_DNDATA3	
AY6	AY6	MIPID_DPCLK	
AW6	AW6	MIPID_DNCLK	
28 OUT GPIO_SOC_TO_KONA_DISPLAY_BSYNC0	AG4	DISP_TOUCH_BSYNC0	
28 OUT GPIO_SOC_TO_KONA_DISPLAY_BSYNC1	AH3	DISP_TOUCH_BSYNC1	
NC_DISP_TOUCH_EB	AH4	DISP_TOUCH_EB	
AU9	AU9	MIPID_REXT	
NC_DISP_I2C_SCL	AG3	DISP_I2C_SCL	ALT FUNC's DISP_SPMI_SCLK
NC_DISP_I2C_SDA	AG2	DISP_I2C_SDA	DISP_SPMI_SDATA
NC_DISP_POL	AE5	DISP_POL	
NC_DISP_TE	AA2	DISP_TE	

INTENDED FOR MIPI DISPLAY WITH COMMAND MODE
BUT ALSO A GPIO

	A16	ISP_I2C0_SCL	ISP_I2C0_SCL_1V8 OUT 4 7
	C21	ISP_I2C0_SDA	ISP_I2C0_SDA_1V8 BI 4 7
	A17	ISP_I2C1_SCL	ISP_I2C1_SCL_1V8 OUT 4 7
ISP_I2C1_SDA	B20		ISP_I2C1_SDA_1V8 BI 4 7
ISP_I2C2_SCL	A18		ISP_I2C2_SCL_1V8 OUT 4 7
	C22	ISP_I2C2_SDA	ISP_I2C2_SDA_1V8 BI 4 7
	A19	ISP_I2C3_SCL	NC_ISP_I2C3_SCL
	A20	ISP_I2C3_SDA	NC_ISP_I2C3_SDA

ALT FUNC's
SIO_LEAP_MADI_IN and AOP_LEAP_MADI_IN
SIO_LEAP_MADI_OUT and AOP_LEAP_MADI_OUT
MTR_ADC_DOUT and SOC_DEBUG2
MTR_ADC_CLKOUT and SOC_DEBUG3
PLL_DIGOBS_IN_0 and ISP_FCAM_SPMI_SDATA
PLL_DIGOBS_IN_1 and ISP_FCAM_SPMI_SCLK
ISP_SPMI_SDATA
ISP_SPMI_SCLK

	A23	ISP_GPIO_0	GPIO_SOC_TO_FRONT_CAM_SHTDWN_L OUT 22 45
	A22	ISP_GPIO_1	GPIO_SOC_TO_REAR_CAM_SHTDWN_L OUT 21
	A21	ISP_GPIO_2	PP_SOC_DEBUG2 46
	B22	ISP_GPIO_3	NC_ISP_GPIO_3
	A15	ISP_GPIO_4	PP_SOC_DEBUG3
SENSOR3_CLK	B19	ISP_GPIO_5	GPIO_SOC_TO_MINION_SHTDWN_L OUT 20
	C20	ISP_GPIO_6	NC_ISP_GPIO_6
	A13	ISP_GPIO_7	GPIO_SOC_TO_MINION_CRESET_L OUT 20 45
	B13	ISP_GPIO_8	GPIO_MINION_TO_SOC_CONFIG_DONE IN 20 45 46
	D20	ISP_GPIO_9	NC_ISP_GPIO_9

NOSTUFF R0860 0.00 0% 1/32W MF 01005

SENSOR0_CLK	A14	CLK_SOC_TO_REAR_CAM_12MHZ_R	R0812 33 5% 1/32W MF 01005 — CLK_SOC_TO_REAR_CAM_12MHZ OUT 21; C0812 15PF 5% 16V NP0-C0G 01005-1
SENSOR1_CLK	B14	CLK_SOC_TO_FRONT_CAM_12MHZ_R	R0811 33 5% 1/32W MF 01005 — CLK_SOC_TO_FRONT_CAM_12MHZ OUT 22 45; C0811 15PF 5% 16V NP0-C0G 01005-1
SENSOR2_CLK	B17	CLK_SOC_TO_MINION_12MHZ_R	R0813 33 5% 1/32W MF 01005 — CLK_SOC_TO_MINION_12MHZ OUT 20 46

47 45 36 PP1V8_CAM

R0801 681 1% 1/32W MF 01005
R0802 681 1% 1/32W MF 01005
R0803 1.00K 1% 1/32W MF 01005
R0804 1.00K 1% 1/32W MF 01005
R0805 681 1% 1/32W MF 01005
R0806 681 1% 1/32W MF 01005

7 4 ISP_I2C0_SCL_1V8
7 4 ISP_I2C0_SDA_1V8
7 4 ISP_I2C1_SCL_1V8
7 4 ISP_I2C1_SDA_1V8
7 4 ISP_I2C2_SCL_1V8
7 4 ISP_I2C2_SDA_1V8

MIPI Reference

7 MIPI0C_REXT
7 MIPI1C_REXT

R0850 200 1% 1/32W MF 01005 ROOM=SOC
R0851 200 1% 1/32W MF 01005

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018
PAGE TITLE
SOC: MIPI

SOC - LPDP

VDD12_PLL_LPDP 1.14V - 1.26V @ 9mA MAX
VDD12_LPDP_RX 1.14V - 1.26V @ 115mA MAX
PP1V2_SOC

C0990 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C0991 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C0992 0.1UF 20% 6.3V X5R-CERM 01005 ROOM=SOC
C0993 0.01UF 10% 6.3V X5R 01005 ROOM=SOC
C0994 15PF 5% 16V NP0-C0G 01005-1 ROOM=SOC
Desense for Wifi frequencies

GND'd offpage
GND'd offpage

(Analog)
VDD_FIXED_PLL_LPDP 0.769V - 0.85V @ 3mA MAX
VDD_FIXED_LPDP_RX 0.769V - 0.85V @ 30mA MAX
PPVDD_S1_FIXED

C0995 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC
C0996 2.2UF 20% 6.3V X5R-CERM 0201 ROOM=SOC

F27 VDD12_LPDP_TX
F29 VDD12_LPDP_RX
AM10 VDD12_PLL_LPDP
AM11 VDD_FIXED_PLL_LPDP
AK12 VDD_FIXED_LPDP_TX
G28 VDD_FIXED_LPDP_RX

U0600
CYP-4GB-M-TMJA47A0-C7
WLCSP
SYM 4 OF 16

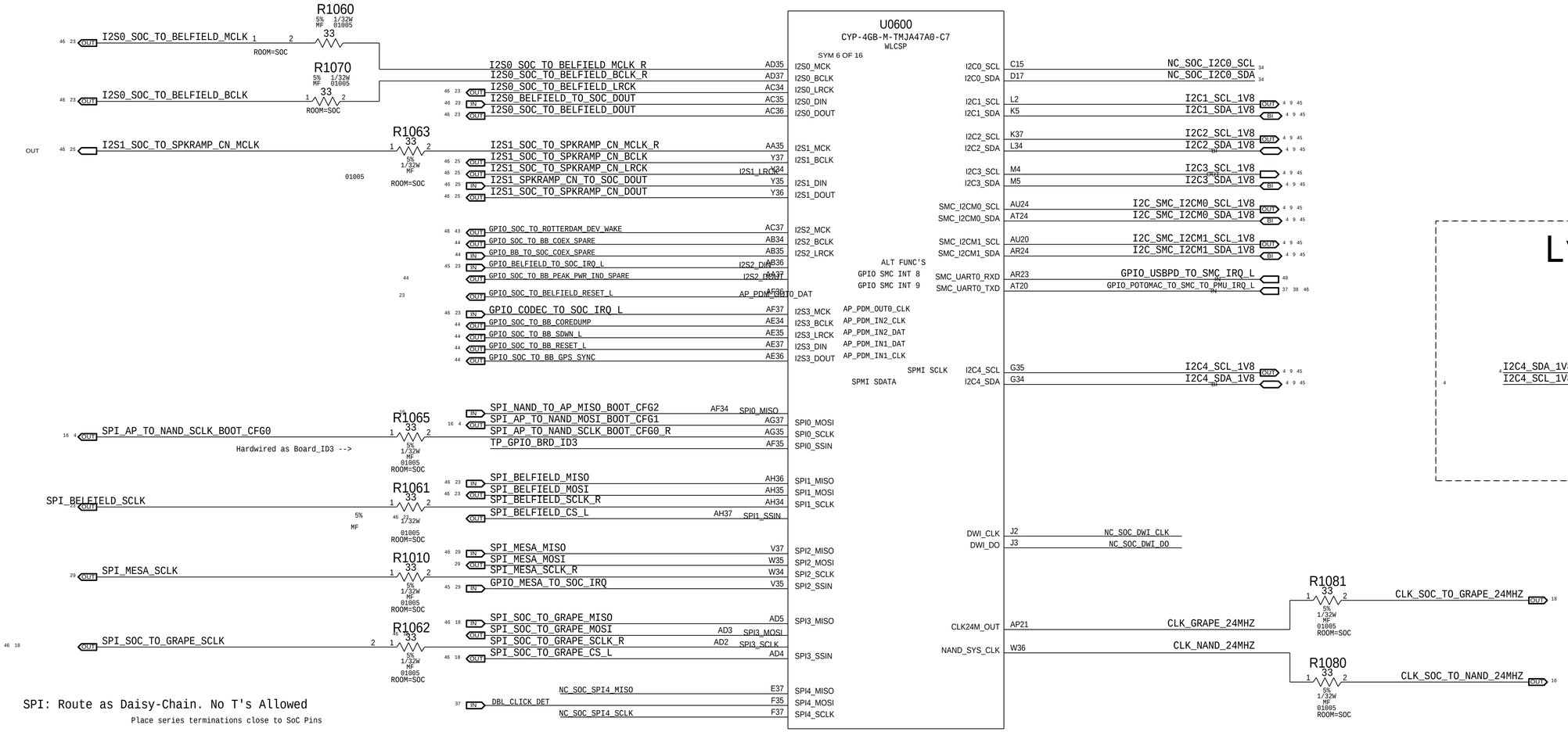
A25	LPDPRX_RX_D0_P		LPDP_TX0P	AY14	LPDP_SOC_TO_TCON_DATA_P<0> OUT 28
B25	LPDPRX_RX_D0_N		LPDP_TX0N	AW14	LPDP_SOC_TO_TCON_DATA_N<0> OUT 28
B26	LPDPRX_RX_D1_P		LPDP_TX1P	AY13	LPDP_SOC_TO_TCON_DATA_P<1> OUT 28
C26	LPDPRX_RX_D1_N		LPDP_TX1N	AW13	LPDP_SOC_TO_TCON_DATA_N<1> OUT 28
A27	LPDPRX_RX_D2_P		LPDP_TX2P	AY12	LPDP_SOC_TO_TCON_DATA_P<2> OUT 28
B27	LPDPRX_RX_D2_N		LPDP_TX2N	AW12	LPDP_SOC_TO_TCON_DATA_N<2> OUT 28
B28	LPDPRX_RX_D3_P		LPDP_TX3P	AY11	LPDP_SOC_TO_TCON_DATA_P<3> OUT 28
C28	LPDPRX_RX_D3_N		LPDP_TX3N	AW11	LPDP_SOC_TO_TCON_DATA_N<3> OUT 28
B30	LPDPRX_RX_D4_P				
C30	LPDPRX_RX_D4_N				
A31	LPDPRX_RX_D5_P		LPDP_AUX_P	AY10	LPDP_SOC_TO_TCON_AUX_P BI 28
B31	LPDPRX_RX_D5_N		LPDP_AUX_N	AW10	LPDP_SOC_TO_TCON_AUX_N BI 28
B32	LPDPRX_RX_D6_P				
C32	LPDPRX_RX_D6_N		EDP_HPD	AF2	LPDP_TCON_TO_SOC_HPD IN 28 45
			DP_WAKEUP	AF4	NC_DP_WAKEUP
A33	LPDPRX_RX_D7_P				
B33	LPDPRX_RX_D7_N				
NC_LPDP_D0_AUX	D23	LPDPRX_AUX_D0_P			
NC_LPDP_D1_AUX	D24	LPDPRX_AUX_D1_P			
NC_LPDP_D2_AUX	C24	LPDPRX_AUX_D2_P			
NC_LPDP_D3_AUX	D25	LPDPRX_AUX_D3_P			
NC_LPDP_D4_AUX	D27	LPDPRX_AUX_D4_P			
NC_LPDP_D5_AUX	D29	LPDPRX_AUX_D5_P			
NC_LPDP_D6_AUX	D31	LPDPRX_AUX_D6_P			
NC_LPDP_D7_AUX	D33	LPDPRX_AUX_D7_P			
NC_LPDPRX_RCAL_POS	A29	LPDPRX_RCAL_P	LPDP_RCAL_P	AU10	LPDP_RCAL_POS
NC_LPDPRX_RCAL_NEG	B29	LPDPRX_RCAL_N	LPDP_RCAL_N	AT10	LPDP_RCAL_NEG

OK PER SANJEEV MAHESHWARI (3/9/18)

R0901 200 1% 1/32W MF 01005 ROOM=SOC
C0902 10PF 5% 16V CERM 01005 ROOM=SOC

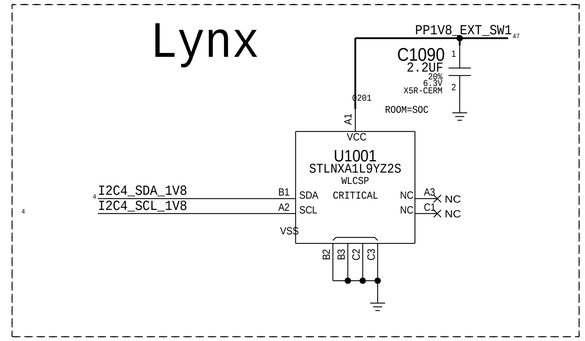
PAGE TITLE
SOC: LPDP

SOC - SERIAL INTERFACES

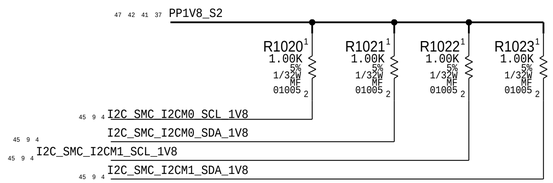


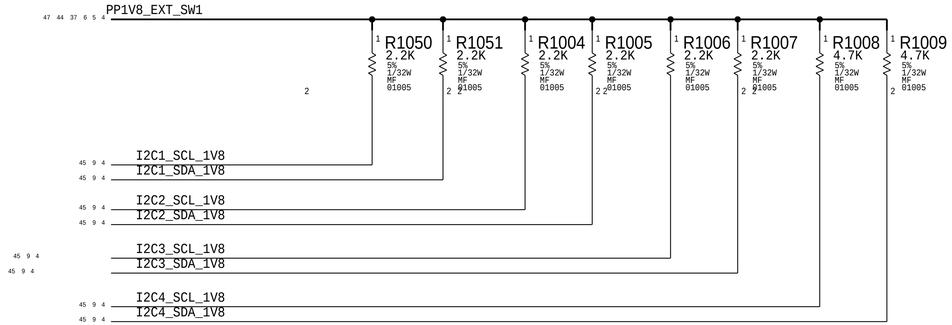
SPI: Route as Daisy-Chain. No T's Allowed

Place series terminations close to SoC Pins



SMC I2C PULL-UPS

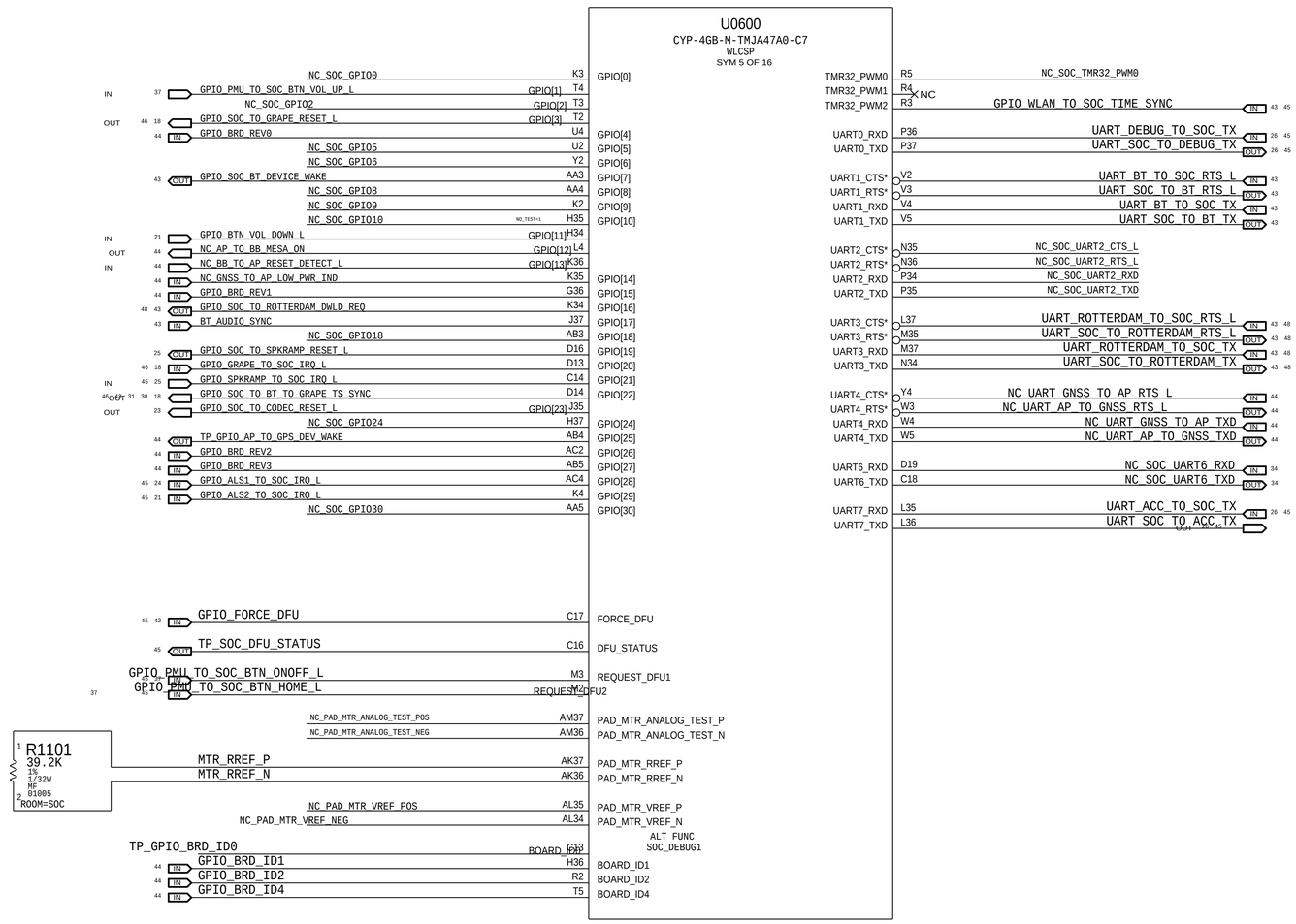




PAGE TITLE

SOC: SERIAL

SOC - GPIO INTERFACES



PAGE TITLE

SOC: GPIO & UART

SOC - AOP

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

SOC: AOP

SOC - CPU, GPU & SOC RAILS

1.06V @ 13.8A MAX
0.905V @ 8.9A MAX
0.527V @ 1.6A MAX
PPVDD_CPU

Remote sense XW's for Buck0 Buck1 and Buck11 live off page for dev board compapability

U0600
CYP-4GB-M-TMJA47A0-C7
WLCSP
SYM 8 OF 16

VDD_PCPU
VDD_GPU
VDD_LOW
VDD_LOW_ULPPLL
VDD_LOW_FLPPLL
VDD_CPU_SRAM
VDD_GPU_SRAM
VDD_ECPU

VDD_LOW: 0.691V - 0.756V @ 220mA MAX
VDD_LOW_ULPPLL: 0.691V - 0.756V @ 0.3mA MAX
VDD_LOW_FLPPLL: 0.691V - 0.756V @ 0.03mA MAX
PP0V75_S2_AOP

PP0V7_VDD_LOW_ULPPLL_R
PP0V7_VDD_LOW_FLPPLL_R

1.02V @ 2.1A MAX
0.975V @ 1.4A MAX
0.765V @ 0.33A MAX
PPVDD_CPU_SRAM

1.06V @ 1.6A MAX
0.725V @ 1.1A MAX
0.685V @ 1.03A MAX
PPVDD_GPU_SRAM

1.06V @ 10.5A MAX
0.725V @ 6.3A MAX
0.570V @ 3.1A MAX
PPVDD_GPU

1.00V @ 2.9A MAX
0.750V @ 1.9A MAX
0.07V @ 1.14A MAX
PPVDD_ECPU

VDD_FIXED_PCPU: 0.769 - 0.85V @ 5mA
VDD_FIXED_MTR 0.769V - 0.85V @ 1mA
VDD_FIXED_ECPU: 0.769V - 0.85V @ 5mA
PPVDD_S1_FIXED

VDD_FIXED_PLL_SOC: 0.81V @ 9mA
VDD_FIXED_PLL_ANE: 0.81V @ 5mA
VDD_FIXED_PLL_GPU: 0.81V @ 5mA
VDD_FIXED_PLL_DDR*: 0.81V @ 8mA

VDD12_PLL_SOC: 1.14 - 1.26V @ 8mA MAX
VDD12_PLL_ANE: 1.14 - 1.26V @ 4mA MAX
VDD12_PLL_PCPU: 1.14 - 1.26V @ 4mA MAX
VDD12_PLL_ECPU: 1.14 - 1.26V @ 4mA MAX
VDD12_PLL_GPU: 1.14 - 1.26V @ 4mA MAX
PP1V2_SOC

0.783V @ 4.2A MAX
0.661V @ 2.6A MAX
0.595V @ 2.1A MAX
PPVDD_S1_SOC

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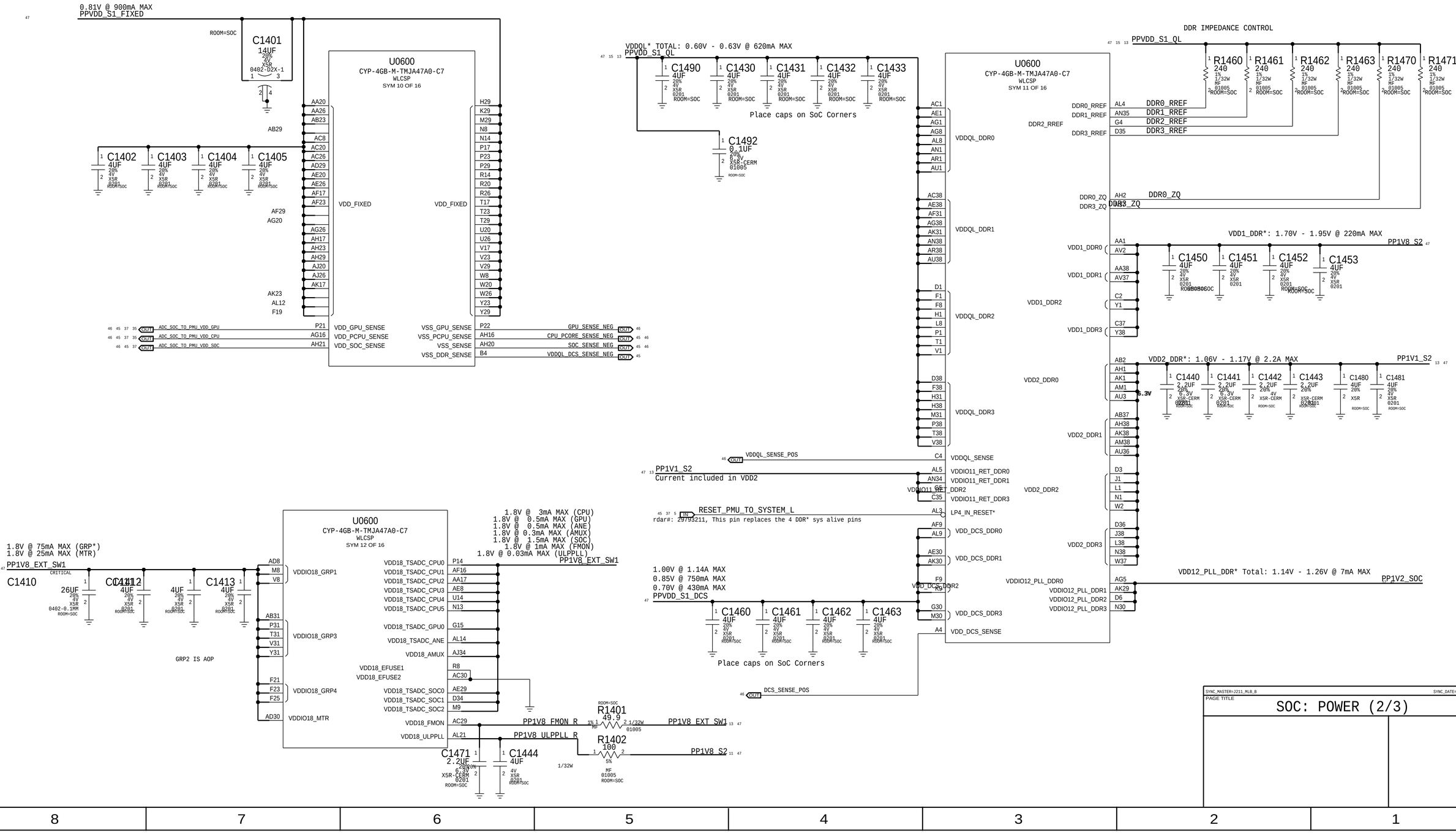
CYP-4GB-M-TMJA47A0-C7
WLCSP
SYM 9 OF 16

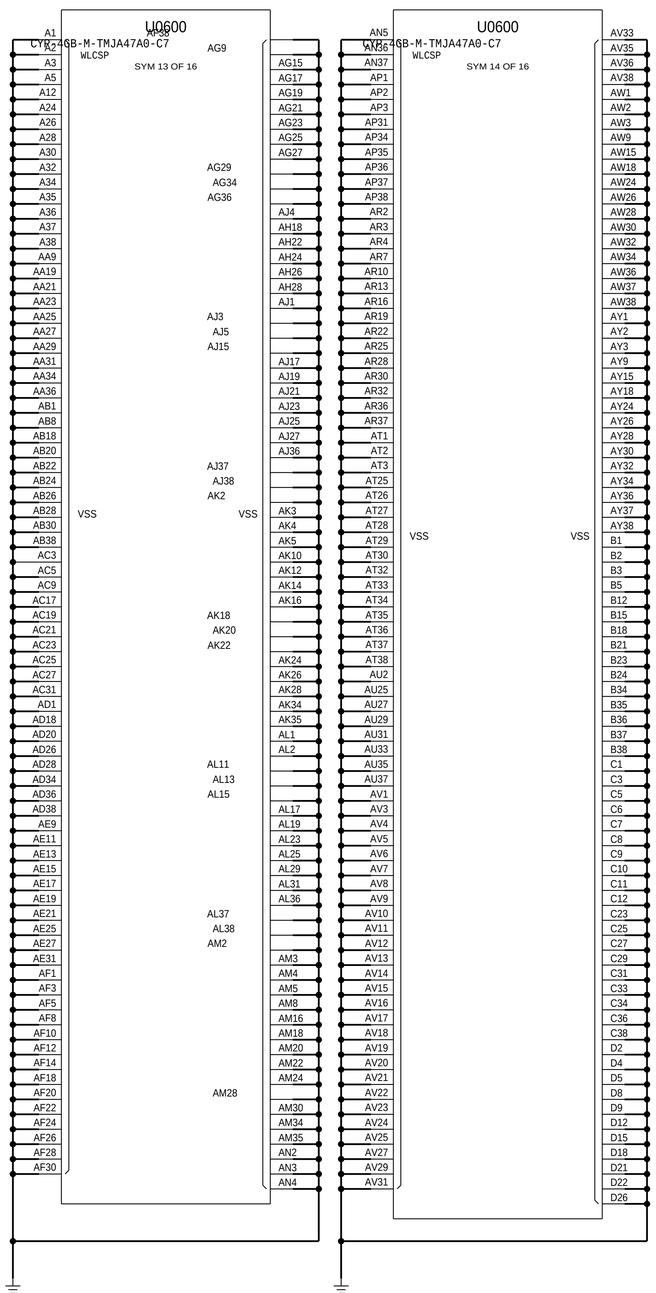
VDD_SOC

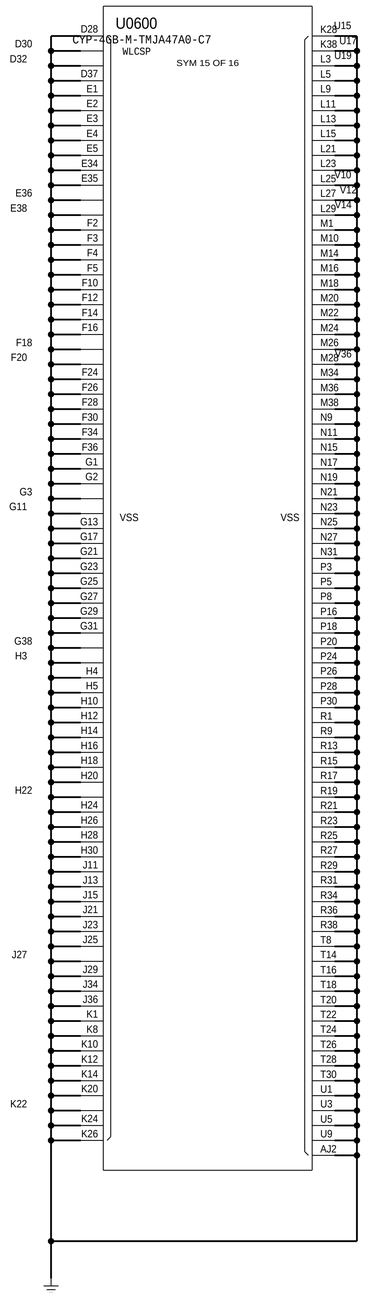
SYNC_MASTER=J211_MLB_B	SYNC_DATE=09/30/2018
PAGE TITLE	
SOC: POWER (1/3)	

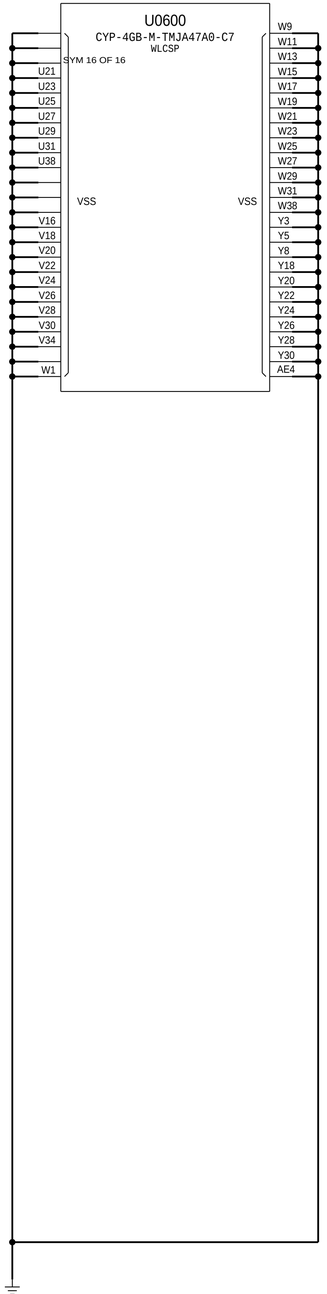
SOC - CPU, GPU & SOC RAILS



SOC - POWER SUPPLIES





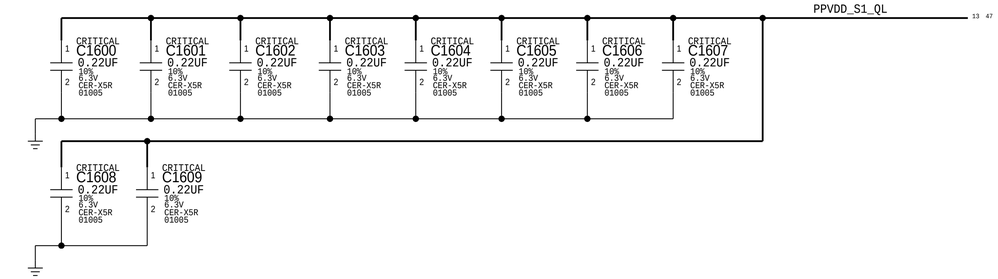


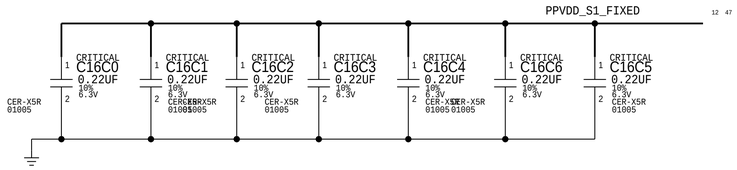
PAGE TITLE

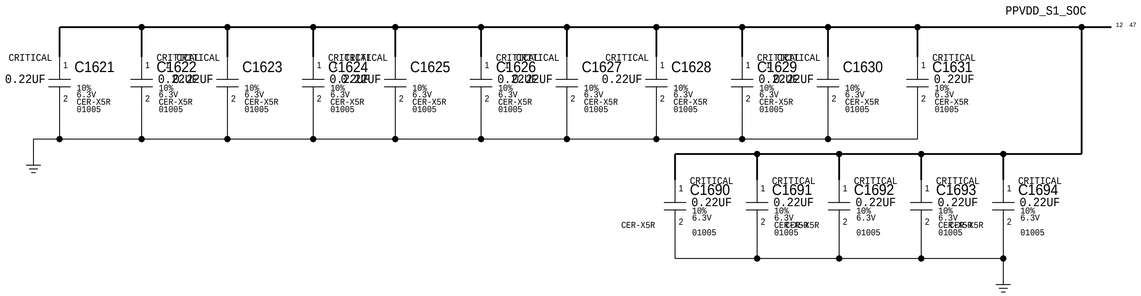
SOC: POWER (3/3)

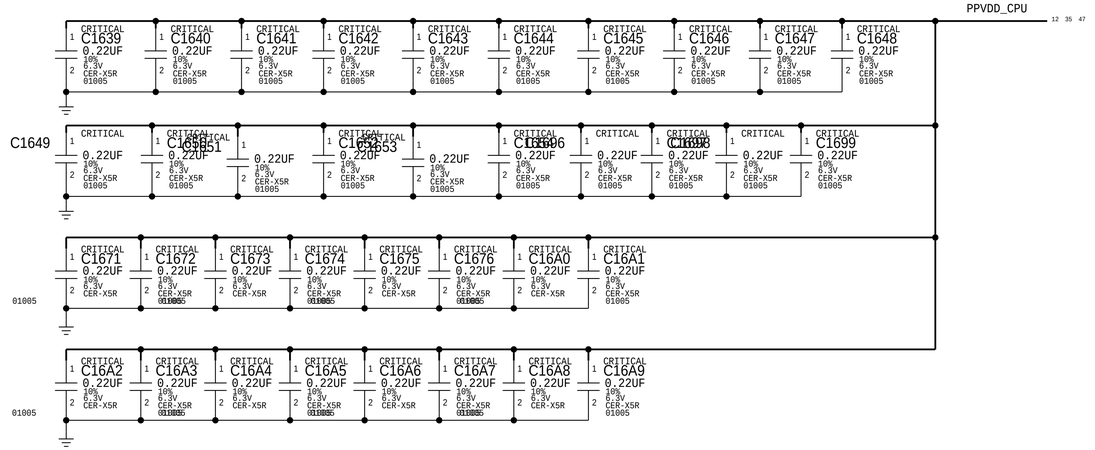
BOTTOM SIDE SOC CAPS

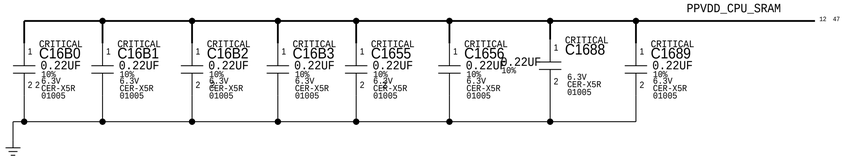
0.1UF = 132S00238 (0201, 0.11MM)

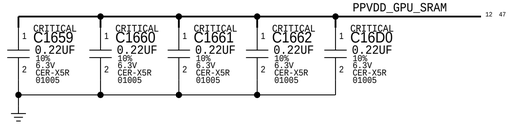


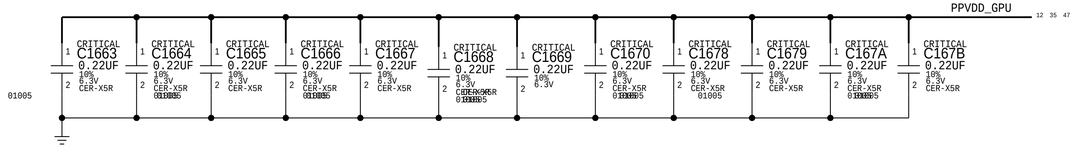


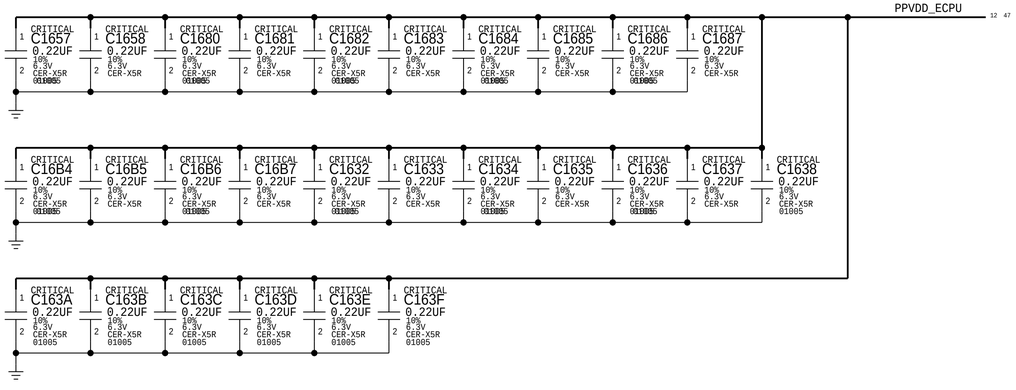










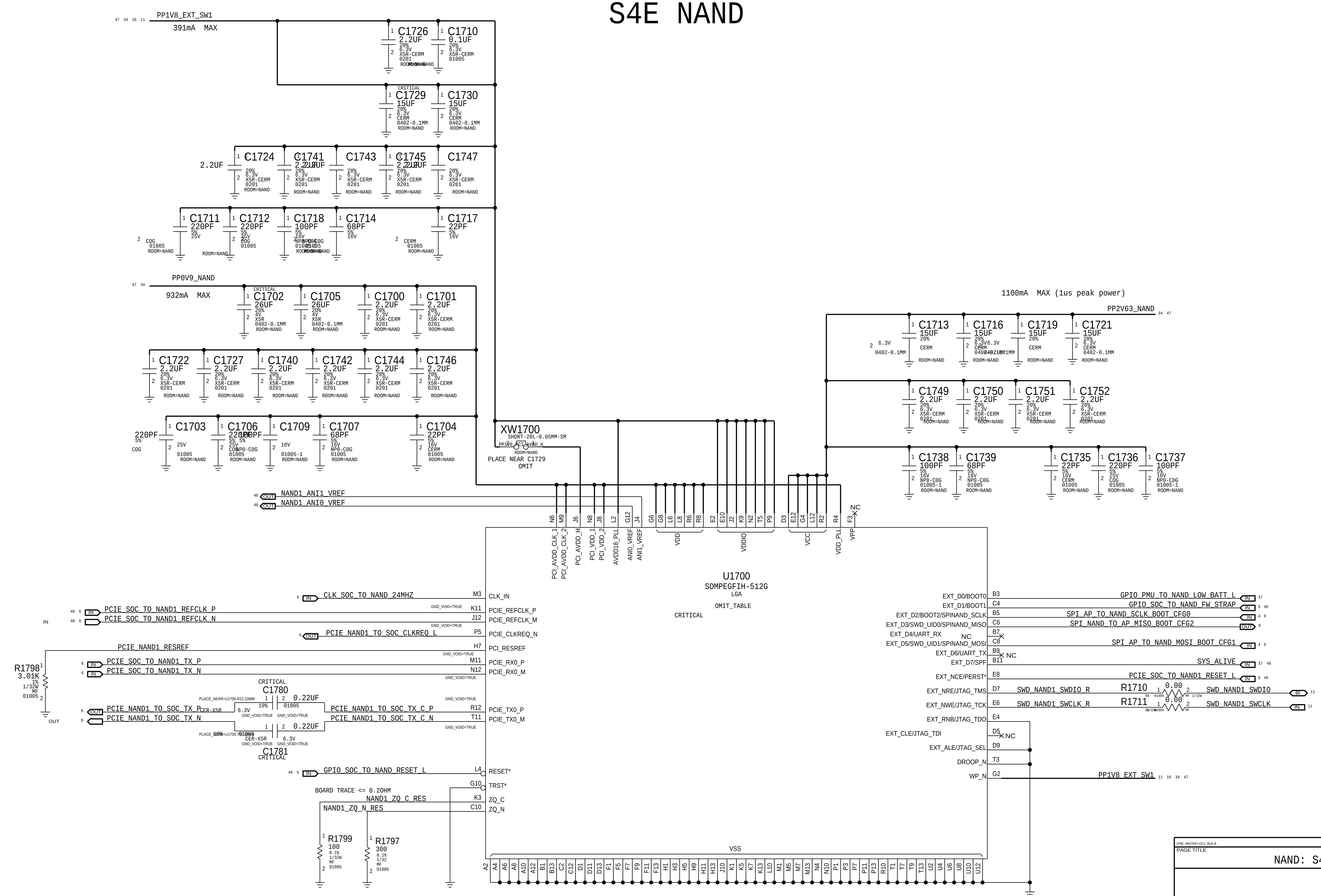


SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

SOC: BOTTOM SIDE DECAPS

S4E NAND



SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

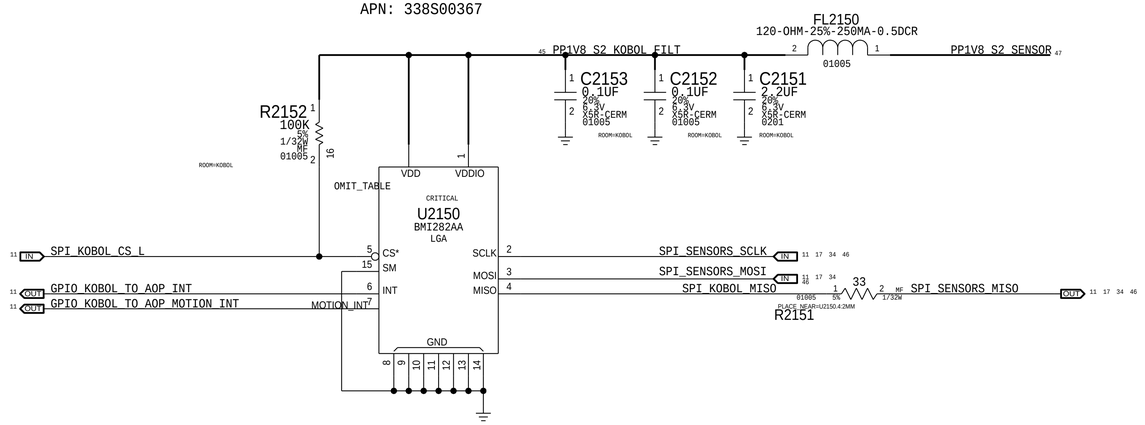
NAND: S4E NAND

SENSORS

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S00016	155S0686		FL2120,ECT	RDAR://PROBLEM/15809407

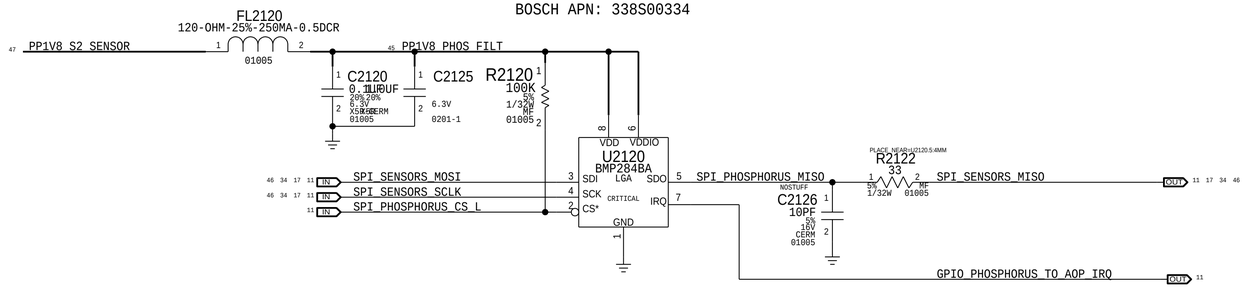
KOBOL - ACCEL & GYRO

APN: 338S00367



PHOSPHORUS2

BOSCH APN: 338S00334



PAGE TITLE

SENSOR: KOBOL, PHOS2

KONA

U2200 BCM15900B0K — BGA — SYM 1 OF 2 — CRITICAL

E11	AUXADC_REF		
G12	AUXBUF_AIO_INPUT_3V		
F13	AUXBUF_AIO_OUTPUT		
D10	GPIO_ADC_00	PAD_I_TOUCH0	J5 GRAPE_TX<0>
D12	GPIO_ADC_01	PAD_I_TOUCH1	H3 GRAPE_TX<1>
D11	GPIO_ADC_02	PAD_I_TOUCH2	J2 GRAPE_TX<2>
F12	GPIO_ADC_03	PAD_I_TOUCH3	J3 GRAPE_TX<3>
E10	GPIO_ADC_04	PAD_I_TOUCH4	J4 GRAPE_TX<4>
F10	GPIO_ADC_05	PAD_I_TOUCH5	K5 GRAPE_TX<5>
G10	GPIO_ADC_06	PAD_I_TOUCH6	K4 GRAPE_TX<6>
G9	GPIO_ADC_07	PAD_I_TOUCH7	K3 GRAPE_TX<7>
F8	GPIO_08	PAD_I_TOUCH8	M5 GRAPE_TX<8>
H11	GPIO_09	PAD_I_TOUCH9	L5 GRAPE_TX<9>
J9	GPIO_10	PAD_I_TOUCH10	M1 GRAPE_TX<10>
H9	GPIO_11	PAD_I_TOUCH11	K1 GRAPE_TX<11>
F7	GPIO_12	PAD_I_TOUCH12	L6 GRAPE_TX<12>
J10	GPIO_13	PAD_I_TOUCH13	N1 GRAPE_TX<13>
A6	GPIO_14	PAD_I_TOUCH14	P6 GRAPE_TX<14>
C6	GPIO_15	PAD_I_TOUCH15	N6 GRAPE_TX<15>
D9	GPIO_16	PAD_I_TOUCH16	R7 GRAPE_TX<16>
E8	GPIO_17	PAD_I_TOUCH17	N7 GRAPE_TX<17>
C9	GPIO_18	PAD_I_TOUCH18	R8 GRAPE_TX<18>
C5	GPIO_19	PAD_I_TOUCH19	M6 GRAPE_TX<19>
A7	H_INT*	PAD_I_TOUCH20	P7 GRAPE_TX<20>
A8	H_SCLK	PAD_I_TOUCH21	M7 GRAPE_TX<21>
A9	H_SDI	PAD_I_TOUCH22	N9 GRAPE_TX<22>
B8	H_SDO	PAD_I_TOUCH23	P9 GRAPE_TX<23>
B6	H_CS*	PAD_I_TOUCH24	M9 GRAPE_TX<24>
B5	H_ALT_CS*	PAD_I_TOUCH25	R9 GRAPE_TX<25>
A5	I2C_SCL	PAD_I_TOUCH26	N10 GRAPE_TX<26>
A4	I2C_SDA	PAD_I_TOUCH27	M10 GRAPE_TX<27>
A12	KMSI_MISO	PAD_I_TOUCH28	R10 GRAPE_TX<28>
B13	KMSI_MOSI	PAD_I_TOUCH29	P10 GRAPE_TX<29>
B12	KMSI_STRB_IN	PAD_I_TOUCH30	D2 GRAPE_TX<30>
A13	KMSI_STRB_OUT	PAD_I_TOUCH31	D1 GRAPE_TX<31>
C14	PSE_SYNC	PAD_I_TOUCH32	C2 GRAPE_RX<0>
B14	BOOST_ATEST	PAD_I_TOUCH33	C1 GRAPE_RX<1>
A15	BOOST_FBIN	PAD_I_TOUCH34	B1 GRAPE_RX<2>
B15	BOOST_ISENSE	PAD_I_TOUCH35	P3 GRAPE_RX<3>
D13	BOOST_NGATE	PAD_I_TOUCH36	N2 GRAPE_RX<4>
C15	BOOST_VBAT	PAD_I_TOUCH37	P1 GRAPE_RX<5>
D14	BOOST_VBAT_EN	PAD_I_TOUCH38	P2 GRAPE_RX<6>
E9	JTAG_RTCK	PAD_I_TOUCH39	P4 GRAPE_RX<7>
J7	JTAG_TCK	PAD_I_TOUCH40	G3 GRAPE_RX<8>
E7	JTAG_TMS	PAD_I_TOUCH41	D4 GRAPE_RX<9>
G7	JTAG_TDI	PAD_I_TOUCH42	D3 GRAPE_RX<10>
H8	JTAG_TDO	PAD_I_TOUCH43	G4 GRAPE_RX<11>
G6	JTAG_TRST*	PAD_I_TOUCH44	E4 GRAPE_RX<12>
C7	JTAG_SRST*	PAD_I_TOUCH45	E3 GRAPE_RX<13>
H7	RESET*	PAD_I_TOUCH46	F1 GRAPE_RX<14>
K9	TEST_MODE	PAD_I_TOUCH47	F4 GRAPE_RX<15>
K7	BOOT_CFG_0	PAD_I_TOUCH48	F3 GRAPE_RX<16>
J8	BOOT_CFG_1	PAD_I_TOUCH49	H5 GRAPE_RX<17>
R5	AFE_IO_BGBIAS	PAD_I_TOUCH50	F2 GRAPE_RX<18>
J15	XTALN	PAD_I_TOUCH51	G2 GRAPE_RX<19>
K15	XTALP	PAD_I_TOUCH52	G1 GRAPE_RX<20>
J13	XTAL_O_CLK_EXT	PAD_I_TOUCH53	H1 GRAPE_RX<21>
B4	IFO_CLK_EXT	PAD_I_TOUCH54	P11 GRAPE_RX<22>
		PAD_I_TOUCH55	N15 GRAPE_RX<23>
		PAD_I_TOUCH56	N12 GRAPE_RX<24>
		PAD_I_TOUCH57	P13 GRAPE_RX<25>
		PAD_I_TOUCH58	P12 GRAPE_RX<26>
		PAD_I_TOUCH59	R12 GRAPE_RX<27>
		PAD_I_TOUCH60	N13 GRAPE_RX<28>
		PAD_I_TOUCH61	M12 GRAPE_RX<29>
		PAD_I_TOUCH62	R13 GRAPE_RX<30>
		PAD_I_TOUCH63	L13 GRAPE_RX<31>
		PAD_I_TOUCH64	P14 GRAPE_RX<32>
		PAD_I_TOUCH65	M14 GRAPE_RX<33>
		PAD_I_TOUCH66	M13 GRAPE_RX<34>
		PAD_I_TOUCH67	N14 GRAPE_RX<35>
		PAD_I_TOUCH68	M15 GRAPE_RX<36>
		PAD_I_TOUCH69	R14 GRAPE_RX<37>
		PAD_I_SELFCAPEXT	N5 NC
		PAD_O_GUARDBUFFER	N4 NC
		CORE_PMU_O_AON_TEST_PMU	C11 NC

U2200 BCM15900B0K — BGA — SYM 2 OF 2 — CRITICAL

B3	AFE_I_VDDHV15_EXT	AUXBUF_AVSS	F14
C4	AFE_I_VDDHV15_EXT	AUXADC_AVSS	C10
L7	AFE_I_VDDHV15_EXT	VSS	D6
E5	AFE_I_VDDHV15_EXT	VSS	D8
M11	AFE_I_VDDHV15_EXT	VSS	F6
H2	AFE_I_VDDHV15_EXT	VSS	F9
K6	AFE_I_VDDHV15_EXT	VSS	G8
L1	AFE_I_VDDHV15_EXT	VSS	H10
L9	AFE_I_VDDHV15_EXT	VSS	K8
M3	AFE_I_VDDHV15_EXT	VSS	A14
E2	AFE_I_VDDHV15_EXT	VSS	E14
N3	AFE_I_VDDHV15_EXT	VSS	A1
L12	AFE_I_VDDHV15_EXT	VSS	A3
G5	AFE_I_VDDHV15_EXT	VSS	B7
R15	AFE_I_VDDHV15_EXT	VSS	H12
E13	BOOST_VDDA	VSS	H13
C12	OTP_TMON_I_VDDA_3P3_EXT	VSS	K11
R1	AFE_PMU_I_VDDA_3P3_EXT	VSS	K12
G13	AUXBUF_PMU_I_VDDA_3P3_EXT	VSS	K13
G14	AUXBUF_PMU_I_VDDHV_AUX_EXT	VSS	D15
G15	AUXBUF_PMU_O_VDD_AUX_CAP	VSS	E15
C3	AFE_I_VDDANA_3P3_AFE_PMU	VSS	F15
D5	AFE_I_VDDANA_3P3_AFE_PMU	VSS	G11
H6	AFE_I_VDDANA_3P3_AFE_PMU	VSS	J11
L4	AFE_I_VDDANA_3P3_AFE_PMU	VSS	J12
L3	AFE_I_VDDANA_3P3_AFE_PMU	VSS	K10
L8	AFE_I_VDDANA_3P3_AFE_PMU	XTAL_AVSS	H15
M2	AFE_I_VDDANA_3P3_AFE_PMU	XTAL_AVSS	K14
R11	AFE_I_VDDANA_3P3_AFE_PMU	CORE_PMU_I_AVSS	B10
M8	AFE_I_VDDANA_3P3_AFE_PMU	AUXBUF_PMU_I_AVSS	H14
N8	AFE_I_VDDANA_3P3_AFE_PMU	PAD_I_AVSS	B2
J6	AFE_I_VDDANA_3P3_AFE_PMU	PAD_I_AVSS	E1
L11	AFE_I_VDDANA_3P3_AFE_PMU	PAD_I_AVSS	J1
L14	AFE_I_VDDANA_3P3_AFE_PMU	PAD_I_AVSS	N11
R6	AFE_I_VDDANA_3P3_AFE_PMU	PAD_I_AVSS	L2
R2	AFE_PMU_O_VDDANA_3P3_PMU	PAD_I_AVSS	P15
R4	AFE_PMU_O_AVDD1P2_CAP	PAD_I_AVSS	K2
J14	XTAL_PLL_AVDD1P8_I_VDDLDO_1P8_EXT	PAD_I_AVSS	L10
F11	AUXADC_AVDDC_I_VDDIO_1P8_3P3_EXT	PAD_I_AVSS	L15
E12	AUXADC_AVDD_I_VDDIO_1P8_3P3_EXT	PAD_I_AVSS	M4
R3	AFE_PMU_I_VDDLDO_1P8_EXT	PAD_I_AVSS	P5
B9	AON_PAD_I_VDDIO_1P8_3P3_EXT	PAD_I_AVSS	P8
D7	AON_PAD_I_VDDIO_1P8_3P3_EXT	PAD_I_AVSS	H4
E6	AON_PAD_I_VDDIO_1P8_3P3_EXT		
A2	I2C_PAD_I_VDDIO_1P8_3P3_EXT		
C13	CORE_PAD_I_VDDIO_1P8_3P3_EXT		
C8	CORE_PAD_I_VDDIO_1P8_3P3_EXT		
B11	CORE_PMU_I_AON_VDDIO_1P8_3P3_EXT		
A10	CORE_PMU_I_VDDLDO_1P8_EXT		
A11	CORE_PMU_O_VDDCORE_1P2_CAP		

MARKED AS CRITICAL DUE TO PART ISSUES IN THE PAST W/0201

CRITICAL R2222 3.3 5% 1/10W MF-LF 402 — PP15V0_TOUCH → PP15V0_TOUCH_FILT (VOLTAGE=15V)

CRITICAL C2221 0.47UF 20% 25V CER-X5R 0201; C2222 0.47UF 20% 25V CER-X5R 0201; C2223 0.47UF 20% 25V CER-X5R 0201; C2232 0.47UF 20% 25V CER-X5R 0201

C2233 0.47UF 20% 25V CER-X5R 0201; C2234 0.47UF 20% 25V CER-X5R 0201; C2235 0.47UF 20% 25V CER-X5R 0201; C2236 100PF 5% 25V C0G 0201; C2237 12PF 5% 25V NP0-C0G 0201

L2204 FERR-220-OHM 0402 — PP3V3_GRAPE → PP3V3_GRAPE_FILT (VOLTAGE=3.3V)

C2238 100PF 5% 25V C0G 0201; C2239 12PF 5% 25V NP0-C0G 0201; C2224 0.47UF 20% 25V CER-X5R 0201; C2225 0.22UF 20% 10V CERM-X5R 0201; C2231 0.22UF 20% 10V CERM-X5R 0201

PP2V8_KONA_M_VDDANA → C2278 10PF 5% 25V C0G 0201; C2279 5% 25V NP0-C0G 0201; C2201 0.1UF 10% 10V X5R-CERM 0201; C2202 10% 10V X5R-CERM 0201

C2203 0.1UF 10% 10V X5R-CERM 0201; C2204 0.1UF 10% 10V X5R-CERM; C2205 0.1UF 10% 10V X5R-CERM 0201; C2206 2.2UF 10% 10V X5R-CERM

KONA_M_VDDADC_CAP → C2229 1UF 10% 10V X5R-CERM 0402

CRITICAL L2203 FERR-220-OHM 0402 — PP1V8_GRAPE_XTAL_FILT

CRITICAL C2227 0.1UF 10% 25V X5R 0201; C2228 0.22UF 20% 10V CERM-X5R 0201

PP1V8_GRAPE → C2248 100PF 5% 25V C0G 0201; C2249 12PF 5% 25V NP0-C0G 0201; C2207 2.2UF 10% 10V X5R-CERM 0402; C2208 0.1UF 10% 6.3V CERM-X5R 0201; C2209 0.1UF 10% 6.3V CERM-X5R 0201; C2210 0.1UF 10% 6.3V CERM-X5R 0201

R2281 100 1% 1/20W MF 201 — PP1V8_GRAPE_AON_RC

CRITICAL C2281 2.2UF 10% 10V X5R-CERM 0402

KONA_M_VDDCORE_CAP → CRITICAL C2218 1UF 10% 10V X5R-CERM 0402; C2219 0.1UF 10% 6.3V CERM-X5R 0201

R2205 0.00 0% 1/32W MF 01005 — SPI_SOC_TO_GRAPE_CS_L → KONA_M_GPIO_15

TODO: CHECK BSYNC CONNECTIVITY

R2214 1.00M 5% 1/32W MF 01005 — PP3V3_GRAPE_FILT

C2216 20PF 5% 16V C0G 01005; C2217 20PF 5% 16V C0G 01005; XW2201 SHORT-8L-0.091MM-SM — CLK_SOC_TO_GRAPE_24MHZ → CLK_TOUCH_24MHZ_C; CLK_KONA_M_24MHZ

R2211 10K 5% 1/32W MF 01005 — KONA_BOOT0_M, KONA_BOOT1_M

GPIO_SOC_TO_BT_TO_GRAPE_TS_SYNC; GPIO_TOUCH_TO_BT_SYNC; TP_KONA_GPIO_ADC_03; UART_DEBUG_TO_GRAPE_TX; UART_GRAPE_TO_DEBUG_TX; GPIO_SOC_TO_GRAPE_RESET_L; KONA_M_TEST_MODE; GPIO_SOC_TO_GRAPE_BSYNC0; GPIO_SOC_TO_GRAPE_BSYNC1; GPIO_TOUCH_TO_SOC_IRQ_L; SPI_SOC_TO_GRAPE_SCLK; SPI_SOC_TO_GRAPE_MOSI; SPI_SOC_TO_GRAPE_MISO; SPI_SOC_TO_GRAPE_CS_L; SWD_GRAPE_SWCLK; SWD_GRAPE_SWDIO

BOOT OPTION

PP1V8_GRAPE → R2203 10K 5% 1/32W MF 01005 (NOSTUFF) → KONA_BOOT1_M; R2202 10K 5% 1/32W MF 01005 (NOSTUFF) → KONA_BOOT0_M

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
	138S0700	C2206,ETC	RDAR://PROBLEM/20618071	
376S00191	376S00061		Q2202	

371S00118	371S00175		D2201	
371S00117	371S00175		D2201	

15V BOOST

CRITICAL Q2201 SIA445EDJ SC70-6L — PPVCC_MAIN → KONA_BOOST_MAIN_GATED

R2207 10K 5% 1/32W MF 01005; C2211 1UF 20% 16V CER-X5R 0201; CRITICAL C2226 0.1UF 10% 25V X5R 0201; C2220 10UF 20% 10V X5R-CERM 0402-7

R2208 0.15 1% 1/8W MF 0402 — KONA_BOOST_MAIN_R; XW2204 SHORT-8L-0.091MM-SM

CRITICAL L2201 22UH-20%-0.61A-0.60HM VLF504010-SM — KONA_BOOST_LX; XW2203 SHORT-8L-0.091MM-SM

CRITICAL D2201 ZLLS350TA-55 — PP15V0_TOUCH

CRITICAL C2213 10UF 20% 25V X5R-CERM 0603; C2215 10UF 20% 25V X5R-CERM 0603; C2268 220PF 10% 25V X7R-CERM 0201; XW2205 SHORT-8L-0.091MM-SM — KONA_BOOST_FBIN

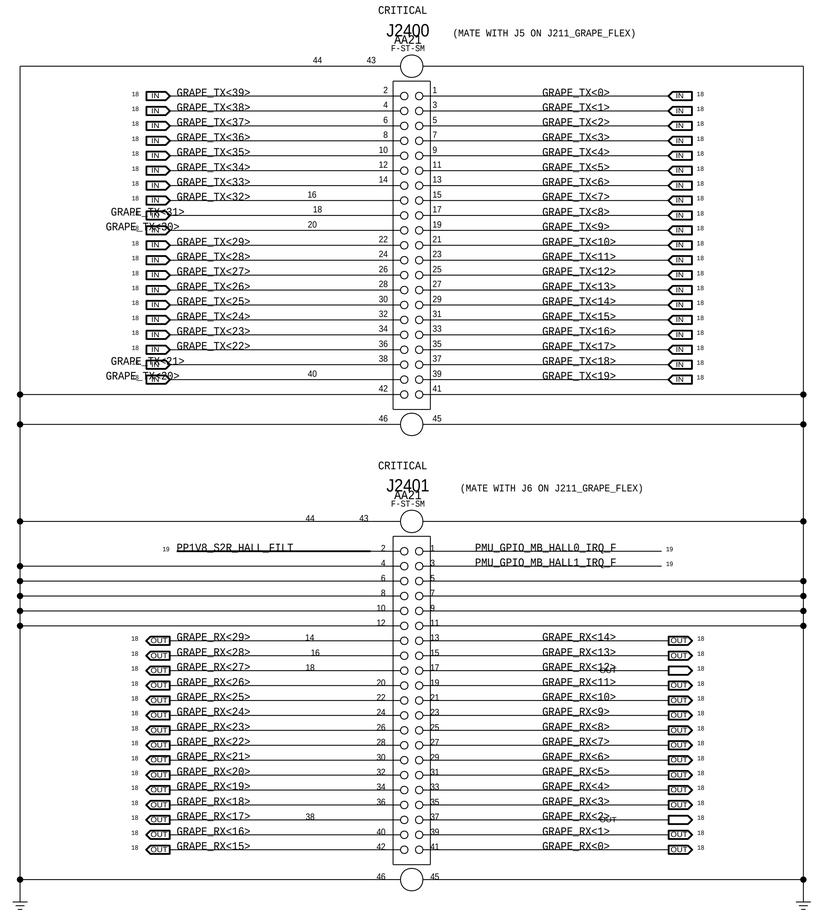
CRITICAL Q2202 CSD17381F4 0402

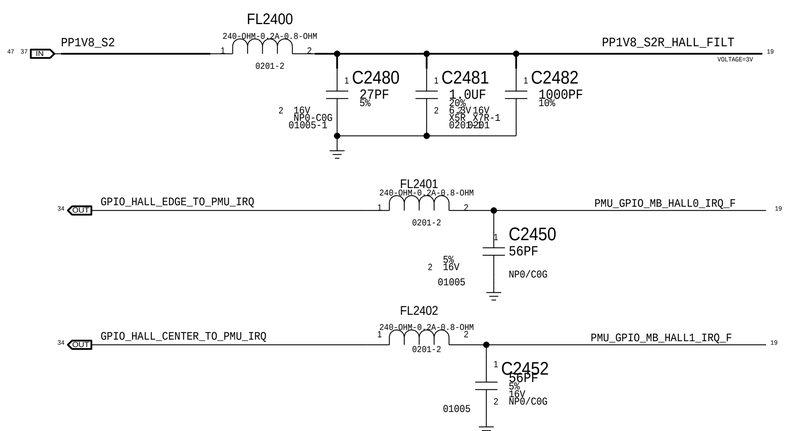
R2206 1.00K 5% 1/32W MF 01005 — KONA_BOOST_EN → KONA_BOOST_EN_R

KONA_BOOST_VBAT; KONA_BOOST_ISENSE; KONA_BOOST_NGATE

SYNC_MASTER=J211_MLB_B	SYNC_DATE=09/30/2018
PAGE TITLE	TOUCH: KONA

TOUCH CONNECTOR





SYNC_MASTER=J211_MLB_B
SYNC_DATE=09/30/2018

PAGE TITLE

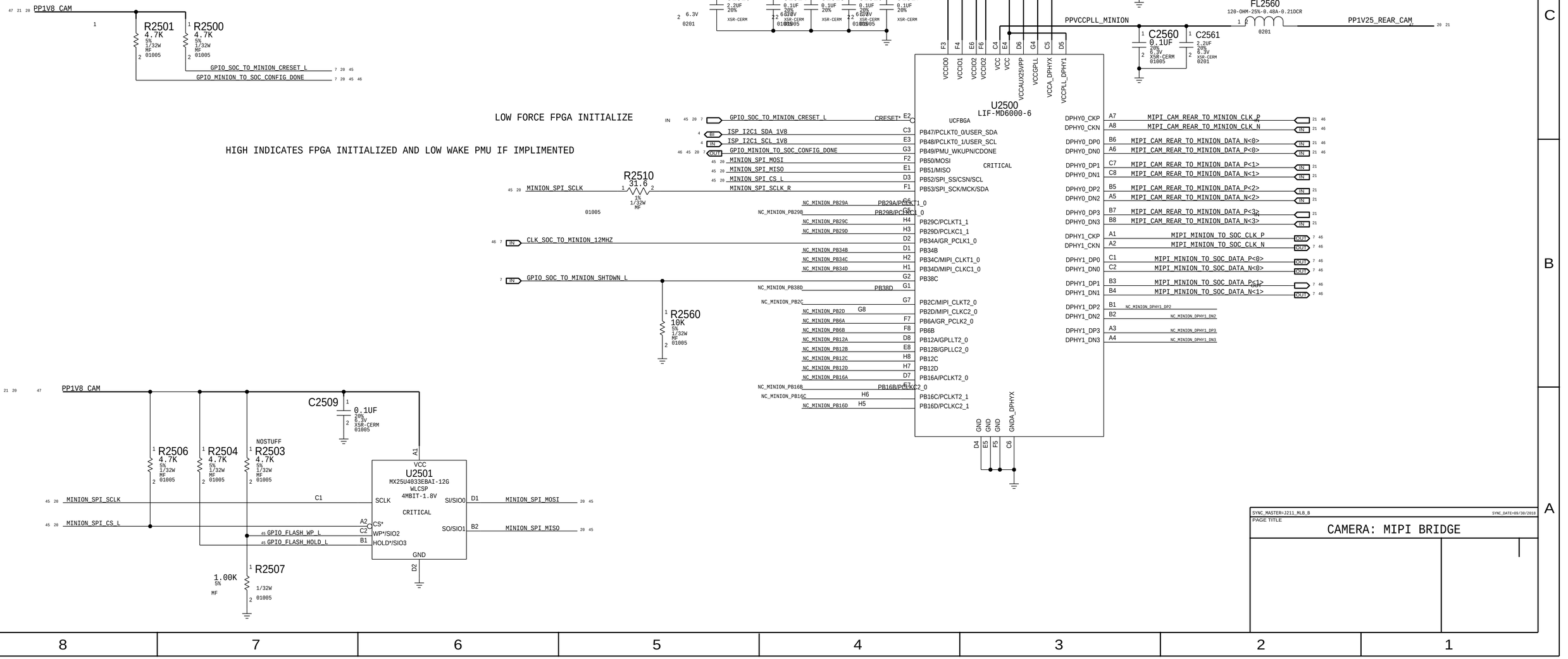
TOUCH: GRAPE CONN

MINION

VCCIO: NOM 1.8V
VCC: NOM 1.2V (1.25V CAMERA RAIL IS ACCEPTABLE)
VCCAUX: NOM 2.5V (2.6V CAMERA RAIL IS ACCEPTABLE)

LOW FORCE FPGA INITIALIZE

HIGH INDICATES FPGA INITIALIZED AND LOW WAKE PMU IF IMPLIMENTED



SYNC_MASTER=J211_MLB_B	SYNC_DATE=09/30/2018
PAGE TITLE	
CAMERA: MIPI BRIDGE	

REAR CAM, ALS-PWR-BUTTON, VOLUME-BUTTON FLEXES

REAR CAMERA CONNECTOR

CRITICAL
U2700
400MHZ-0.1A-27PF
1208
IN1 IN2 IN3 IN4 OUT1 OUT2 OUT3 OUT4 GND
CLK_SOC_TO_REAR_CAM_12MHZ
GPIO_SOC_TO_REAR_CAM_SHTDWN_L
ISP_I2C0_SDA_1V8
ISP_I2C0_SCL_1V8
ISP_REAR_CAM_SHTDWN_FILT_L
ISP_REAR_CAM_SDA_FILT
ISP_REAR_CAM_SCL_FILT

APN: 516S00073
PLUG: 516S0750
CRITICAL
J2750
AA07A-S026VA1
F-ST-SM1

CRITICAL
L2750
FERR-150OHM-25%-200MA
01005
CLK_SOC_TO_REAR_CAM_CLK_LC
CLK_REAR_CAM_CONN

ISP_REAR_CAM_SHTDWN_FILT_L
ISP_REAR_CAM_SDA_FILT
ISP_REAR_CAM_SCL_FILT
PP1V8_CAM_REAR_FILT
PP2V6_CAM_REAR_AF_FILT
PP1V25_CAM_REAR_FILT
PP2V9_AVDD_CAM_REAR_FILT

CRITICAL
L2713
MIPI_CAM_REAR_TO_MINION_DATA_N<3>
MIPI_CAM_REAR_TO_MINION_DATA_P<3>
MIPI_CAM_REAR_DATA_FILT_N<3>
MIPI_CAM_REAR_DATA_FILT_P<3>
EXCX4CE
90-OHM-0.1A

R2750
100K
5%
1/32W
MF
01005

CRITICAL
L2710
MIPI0C_CAM_REAR_DATA_FILT_N<0>
MIPI0C_CAM_REAR_DATA_FILT_P<0>
MIPI_CAM_REAR_TO_MINION_DATA_N<0>
MIPI_CAM_REAR_TO_MINION_DATA_P<0>

CRITICAL
L2711
MIPI_CAM_REAR_DATA_FILT_N<1>
MIPI_CAM_REAR_DATA_FILT_P<1>
MIPI_CAM_REAR_TO_MINION_DATA_N<1>
MIPI_CAM_REAR_TO_MINION_DATA_P<1>

CRITICAL
L2720
MIPI_CAM_REAR_CLK_FILT_N
MIPI_CAM_REAR_CLK_FILT_P
MIPI_CAM_REAR_TO_MINION_CLK_N
MIPI_CAM_REAR_TO_MINION_CLK_P

CRITICAL
L2712
MIPI_CAM_REAR_DATA_FILT_N<2>
MIPI_CAM_REAR_DATA_FILT_P<2>
MIPI_CAM_REAR_TO_MINION_DATA_N<2>
MIPI_CAM_REAR_TO_MINION_DATA_P<2>

PP2V9_AVDD_CAM_REAR_FILT

FL2701
80-OHM-25%-0.5A-0.13DCR
0201
PP2V9_REAR_CAM
PP2V9_AVDD_CAM_REAR_FILT
C2700 56PF 5% 16V NP0/C0G 01005
C2701 1.0UF 20% 6.3V X5R 0201-1
C2702 1000PF 10% 6.3V X5R-CERM 01005

FL2704
80-OHM-25%-0.5A-0.13DCR
0201
PP2V6_REAR_CAM_AF
PP2V6_CAM_REAR_AF_FILT
C2703 56PF 5% 16V NP0/C0G 01005
C2704 1.0UF 20% 6.3V 0201-1
C2705 1000PF 10% 6.3V X5R-CERM 01005

FL2702
80-OHM-25%-0.5A-0.13DCR
0201
PP1V8_CAM
PP1V8_CAM_REAR_FILT
C2706 56PF 5% 16V NP0/C0G 01005
C2707 1.0UF 20% 6.3V X5R 0201-1
C2708 1000PF 10% 6.3V X5R-CERM 01005

FL2703
FERR-22-OHM-1A-0.0550HM
0201
PP1V25_REAR_CAM
PP1V25_CAM_REAR_FILT
C2709 56PF 5% 16V NP0/C0G 01005
C2710 1.0UF 20% 6.3V X5R 0201-1
C2711 1000PF 10% 6.3V X5R-CERM 01005

ALS_PWR_BUTTON_FLEX CONN

MLB 516S00186
ALS_PWR_BUTTON_FLEX 516S00185

J2700
BM28P0.6-6DS/2-0.35V
F-ST-SM
CRITICAL
PWR/GND SIGNAL
PP3V0_ALS2_CONN
GPIO_BTN_ONOFF_L_CONN
I2C_ALS2_SDA_CONN
I2C_ALS2_SCL_CONN
GPIO_ALS2_TO_SOC_IRQ_L_CONN

FL2700
240OHM-25%-0.2A-0.9OHM
01005
GPIO_BTN_ONOFF_L
GPIO_BTN_ONOFF_R_L
R2773
100
MF 5% 1/32W 01005
GPIO_BTN_ONOFF_L_CONN
CRITICAL
DZ2773
0201
12.8V-100PF

FL2739
70-OHM-300MA
01005-1
GPIO_ALS2_TO_SOC_IRQ_L
GPIO_ALS2_TO_SOC_IRQ_L_CONN
CKPLUS_WAIVE=I2C_PULLUP

FL2740
70-OHM-300MA
01005-1
I2C1_SDA_1V8
I2C_ALS2_SDA_CONN
CKPLUS_WAIVE=I2C_PULLUP

FL2741
70-OHM-300MA
01005-1
I2C1_SCL_1V8
I2C_ALS2_SCL_CONN
CKPLUS_WAIVE=I2C_PULLUP

FL2742
80-OHM-25%-0.5A-0.13DCR
0201
PP3V0_ALS
PP3V0_ALS2_CONN
C2742 10UF 20% 6.3V X5R 0201-1
C2743 0.1UF 10% 16V X5R 01005

VOLUME_BUTTON_FLEX CONNECTOR

MLB 516S00186
VOLUME_BUTTON_FLEX 516S00185

J2760
BM28P0.6-6DS/2-0.35V
F-ST-SM
PWR/GND SIGNAL
GPIO_BTN_VOL_UP_L_CONN
GPIO_BTN_VOL_DOWN_L_CONN

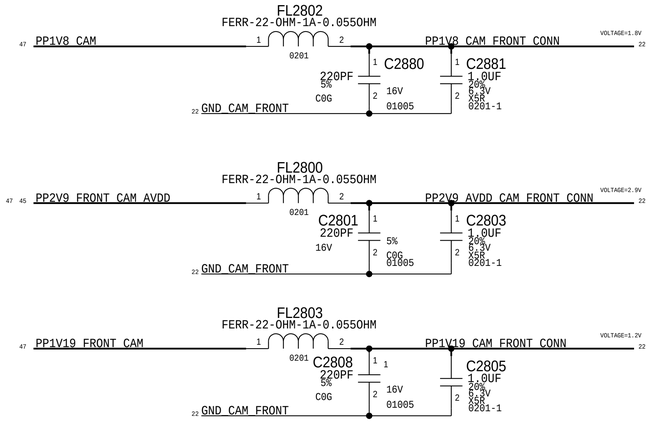
FL2771
240OHM-25%-0.2A-0.9OHM
01005
GPIO_BTN_VOL_DOWN_L
GPIO_BTN_VOL_DOWN_R_L
R2771
100
MF 5% 1/32W 01005
GPIO_BTN_VOL_DOWN_L_CONN
DZ2771
0201
12.8V-100PF

FL2772
240OHM-25%-0.2A-0.9OHM
01005
GPIO_BTN_VOL_UP_L
GPIO_BTN_VOL_UP_R_L
R2772
100
MF 5% 1/32W 01005
GPIO_BTN_VOL_UP_L_CONN
DZ2772
0201
12.8V-100PF

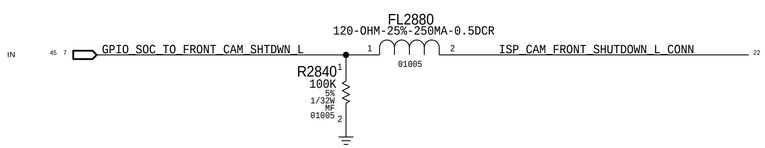
SYNC_MASTER=J211_MLB_B
SYNC_DATE=09/30/2018
PAGE TITLE
FLEX CONNS: RCAM, ALS-PWR-BTN, VOL-BTN

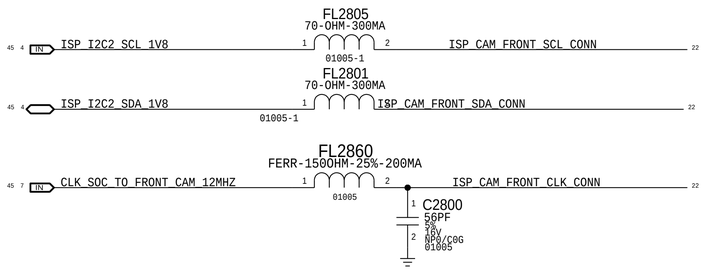
FRONT CAMERA (NH)

POWER FILTERS



IO FILTERS

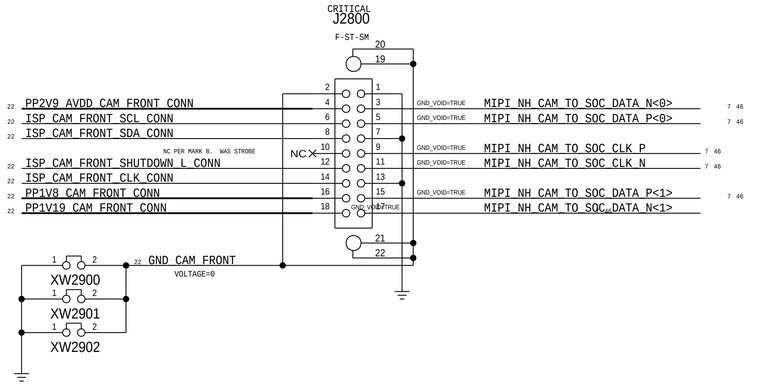




FRONT CAMERA CONNECTOR

MATCHES J120_FRONT_CAM_FLEX_051-01272_2.0.0

FLEX SIDE: 516S00194
MLB SIDE: 516S00193



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

CAMERA: FRONT

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
155S00338	155S00402			L3000-5

CLIFDEN

47 23 PP1V8_S2_EXT_SW2

R3098 10K 5% 1/32W MF 01005

R3099 10K 5% 1/32W MF 01005

23 9 GPIO_SOC_TO_BELFIELD_RESET_L

23 10 GPIO_SOC_TO_CODEC_RESET_L

47 PP1V7_S2_VA_VCP

C3001 4.7UF 20% 6.3V X5R 402

C3003 0.1UF 10% 6.3V CERM-X5R 0201

C3009 2.2UF 20% X5R-CERM 0201

C3051 2.2UF 20% 6.3V X5R-CERM 0201

23 GND_AUDIO_CODEC

L83_PVCP

L83_NVCP

C3008 4.7UF 20% 6.3V X5R 402

C3007 4.7UF 20% 6.3V X5R 402

47 23 PPVCC_MAIN

R3019 10K 5% 1/32W MF 01005

VL_SEL

GPIO_CODEC_TO_SOC_IRQ_L

GPIO_CODEC_TO_PMU_WAKE_L

GPIO_SOC_TO_CODEC_RESET_L

NC

I2S_AOP_TO_CODEC_LRCK

I2S_AOP_TO_CODEC_DOUT

I2S_CODEC_TO_AOP_DOUT

R3011 22 5% 1/32W MF 01005

I2S_CLIFDEN_TO_AOP_DOUT_R

I2S_AOP_TO_CODEC_BCLK

I2C3_SDA_1V8

I2C3_SCL_1V8

C3005 4.7UF 20% 6.3V X5R 402

L83_FLYP

C3006 4.7UF 20% 6.3V X5R 402

L83_FLYC

L83_FLYN

L83_FILT

C3010 10UF 20% 16V X5R-CERM 0402-3

VOLTAGE=0V

U3000 CS42L83A WLCSP-SKT

E6	+VCP_FILT	B6	VCP
G6	-VCP_FILT	B1	VA
F6	GNDCP	A3	VD_FILT
C4	VL_SEL	A2	VL
D4	DIGLDO_PDN*	B7	VP
B7	INT*		
C6	WAKE*		
C5	RESET*		
A6	SPDIF_TX		
D3	SWIRE_SEL		
B5	ASP_LRCK/FSYNC		
A5	SWIRE_SD/ASP_SDIN		
A4	ASP_SDOUT		
B4	SWIRE_CLK/ASP_SCLK		
C3	AD0		
B2	AD1		
A1	SDA		
A2	SCL		
E7	FLYP		
F7	FLYC		
G7	FLYN		
C1	FILT_P		
D2	GNDA		
C2	GNDHS		
G1	GNDD		
C7	GNDD		
B6	GNDD		
B3	GNDL		

XW3000 SM

PLACE_NEAR=U3000.A3:5MM

PP1V8_S2_EXT_SW2 23 47

C3002 0.1UF 20% 6.3V X5R-CERM 01005

PPVCC_MAIN 23 47

C3004 0.1UF 20% 6.3V 2CERM-X5R 0201

C3040 10UF 20% CERM-X5R 0402-9

C3041 10UF 20% 6.3V CERM-X5R 0402-9

C3042 10UF 20% CERM-X5R 0402-9

D5	HPSENSA		
E5	HPOUTA	CODEC_HP_LEFT	
F5	HPSENSB		
G5	HPOUTB	CODEC_HP_RIGHT	
F1	HS4	CODEC_HP_HS4	
E2	HS_CLAMP2		
E1	HSIN+	CODEC_HP_HSINP	
G2	HS3	CODEC_HP_HS3	
F2	HS_CLAMP1		
D1	HSIN-	CODEC_HP_HSINN	
F4	HS4_REF	CODEC_HP_HS4_REF	
G4	HS3_REF	CODEC_HP_HS3_REF	
G3	RING_SENSE	NC	
E4	TIP_SENSE	CODEC_HP_DET	
F3	HSBIAS_FILT	HSBIAS_FILT	
E3	HSBIAS_FILT_REF	HSBIAS_FILT_REF	

XW3006 SHORT-10L-0.1MM-SM NO_XNET_CONNECTION=1

XW3007 SM NO_XNET_CONNECTION=1

C3012 4.7UF 20% 6.3V X5R 402

R3020 3.3K 5% 1/32W MF 01005

CODEC_HP_DET_R

R3021 1.00K 5% 1/32W MF 01005

R3022 1.00K 5% 1/32W MF 01005

L3000 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_LEFT_CONN (OUT)

L3001 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_RIGHT_CONN (OUT)

L3002 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_HS4_CONN (IN)

L3003 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_HS3_CONN (IN)

RDAR//PROBLEM/26018872

L3004 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_HS4_REF_CONN (IN)

L3005 FERR-330HM-25%-1.5A 0201 CRITICAL — CODEC_HP_HS3_REF_CONN (IN)

L3020 240-OHM-0.2A-0.8-OHM 0201-2 — CODEC_HP_HEADSET_DET_CONN (IN)

C3020 4700PF 10% 6.3V X5R 01005 NOSTUFF

BELFIELD

47 29 PPVCC_MAIN

C3062 0.1UF 10% 16V X5R-CERM 0201

PP1V8_S2_EXT_SW2 23 47

C3061 0.1UF 20% 6.3V X5R-CERM 01005

U3050 CS46L10 WLCSP CRITICAL

D5	VP		
B5	VD		
A5	VD_FILT		
D2	WAKE*	GPIO_BELFIELD_TO_PMU_WAKE_L	OUT 45 37
D3	INT*	GPIO_BELFIELD_TO_SOC_IRQ_L	OUT 45 9
D4	RESET*	GPIO_SOC_TO_BELFIELD_RESET_L	IN 23 9
B1	MCLK	I2S0_SOC_TO_BELFIELD_MCLK	IN 46 9
A1	SCLK	I2S0_SOC_TO_BELFIELD_BCLK	IN 46 9
B2	LRCK/FSYNC	I2S0_SOC_TO_BELFIELD_LRCK	IN 46 9
A2	AD2/SDOUT	I2S0_BELFIELD_TO_SOC_DOUT	OUT 46 9
A3	SDIN	I2S0_SOC_TO_BELFIELD_DOUT	IN 46 9
B3	AD0/CS_L	SPI_BELFIELD_CS_L	IN 46 9
A4	SCL/CCLK	SPI_BELFIELD_SCLK	IN 9
C4	AD1/MOSI	SPI_BELFIELD_MOSI	IN 46 9
B4	SDA/MISO	SPI_BELFIELD_MISO	OUT 46 9
D1	D+	BELFIELD_MBUS_P	
C1	D-	BELFIELD_MBUS_N	
C2	MBUS_REF	BELFIELD_MBUS_REF	IN 26
C3	DIGLDO_PDN		
C5	GND		

R3030 12 5% 1/20W MF 201

R3031 12 5% 1/20W MF 201

C3030 100PF 5% 16V NP0-C0G 01005-1 NO_XNET_CONNECTION=1

C3031 100PF 5% 16V NP0-C0G 01005 NOSTUFF NO_XNET_CONNECTION=1

C3032 100PF 5% 16V NP0-C0G 01005-1 NO_XNET_CONNECTION=1

MIKEY_HYDRA_P (BI 26 45)

MIKEY_HYDRA_N (BI 26 45)

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

AUDIO: CLIFDEN, BELFIELD

DMIC FLEX CONN & ALS1 FILTERS

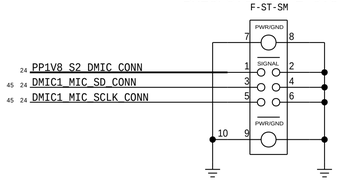
MLB 516S00186

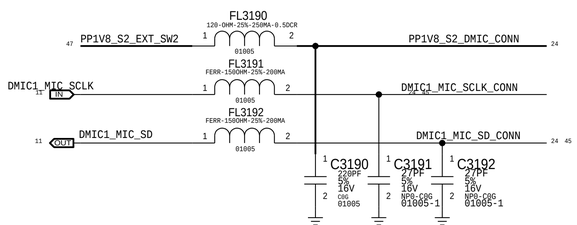
MIC_CELL_FLEX 516S00185

J3110

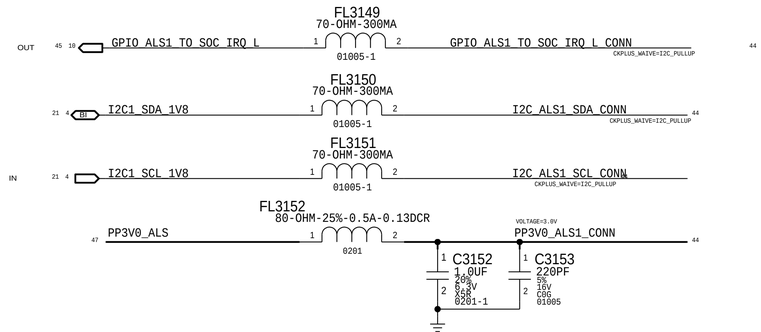
BM28P0.6-6DS/2-0.35V

F-ST-SM





BUS	ROUTING	SELECT	LOCATION	DATA ASSERTS ON	DATA LATCHED ON
DMIC1	MIC1	HIGH	CENTER SPLINE	CLK RISING EDGE	CLK FALLING EDGE
	MIC2	LOW	REAR	CLK FALLING EDGE	CLK RISING EDGE

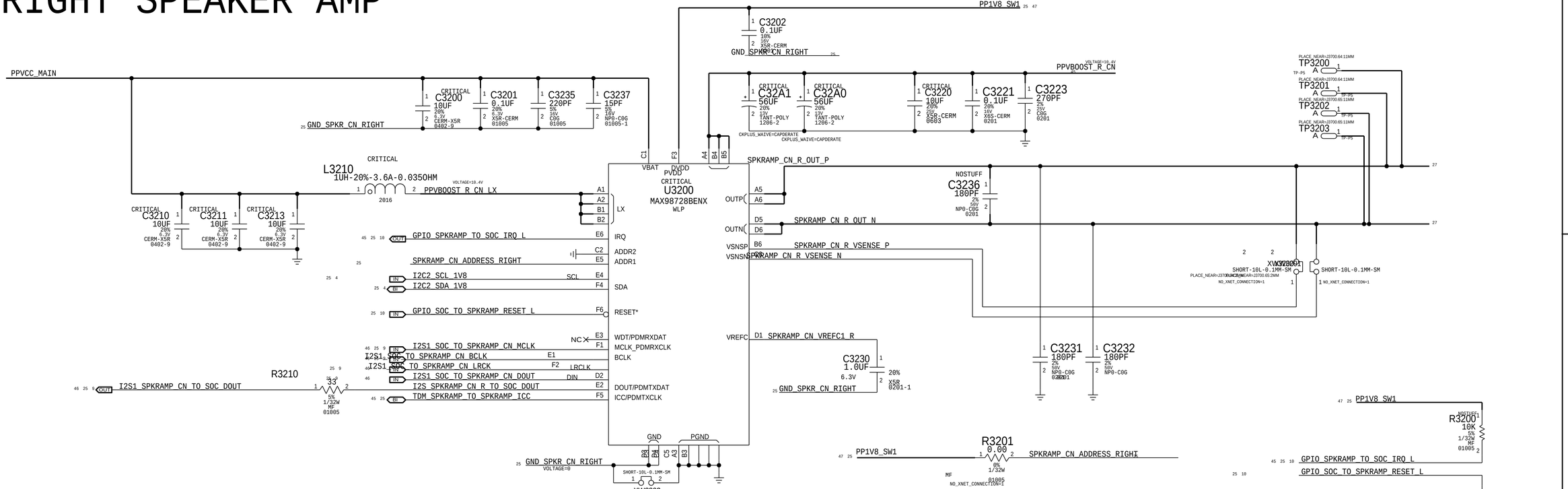


SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

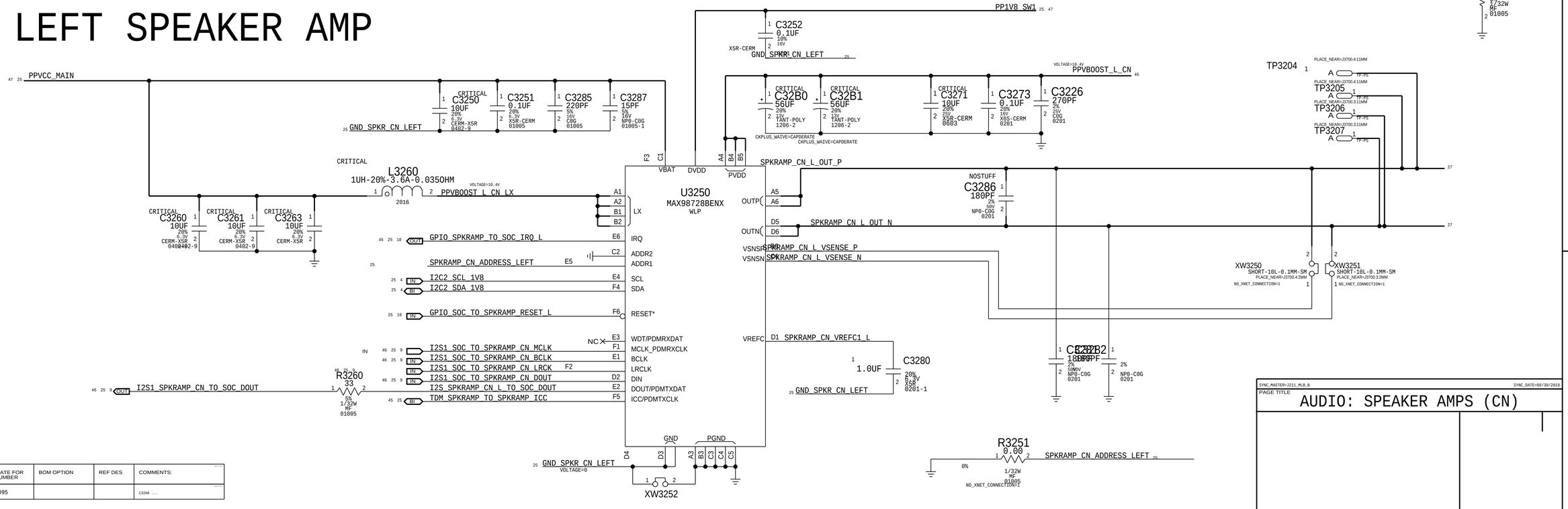
PAGE TITLE

FLEX CONN: DMIC, ALS1 FILTERS

CN RIGHT SPEAKER AMP



CN LEFT SPEAKER AMP



PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
128S00073	128S00095			C3248 ...

SYNC_MASTER=J211_MLB_B — SYNC_DATE=09/30/2018

PAGE TITLE

AUDIO: SPEAKER AMPS (CN)

HYDRA

PPVBUS_USB_EMI
C3543 15PF 5% 50V C0G 0201
R3540 100K 5% 1/20W MF 201 NOSTUFF

C3544 0.01UF 10% 25V X5R-CERM 0201
DZ3540 27V-100PF-4A 0402 CRITICAL
C3790 0.022UF 10% 50V X7R 0402
Q3790 ZXTN3035CLP DFN10063 CRITICAL
R3790 3.0K 1% 1/32W MF 01005
C3570 12PF 5% 25V NP0-C0G 0201
PPVBUS_E75_USB_CONN
E75_TR_B

PP3V3_ACC
C3510 0.22UF 20% 6.3V X5R 0201
C3511 15PF 5% 16V NP0-C0G 01005-1
C3512 10UF 20% 6.3V CERM-X5R 0402-2 CRITICAL

PP3V0_S2_HYDRA
C3515 1.0UF 20% 6.3V X5R 0201-1
C3516 0.22UF 20% 6.3V X5R 0201
C3517 15PF 5% 16V NP0-C0G 01005-1

PP1V8_S2
C3520 0.22UF 20% 6.3V X5R 0201
C3521 15PF 5% 16V NP0-C0G 01005-1

INRUSH LIMITER SURGE RATED
R3501 10 1% 1/20W MF 201
PPVBUS_PROT
PPVDD_HYDRA_PROT
C3540 8.2PF +/-0.5PF 50V C0G-CERM 201
C3541 1UF 10% 25V X5R 0402

U3500 CBTL1612A1 WLCSP CRITICAL
VDD1V8 H4
VDD3V0 H5
ACC_PWR EXTERNAL_ONLY A6
B6 C5 D6 E5
P_IN G6
ACC1 A5 PPOUT_E75_ACC_ID1
ACC1 B5
ACC1 C5
ACC1 D5
ACC1 E5
ACC2 A7 PPOUT_E75_ACC_ID2
ACC2 B7
ACC2 C7
ACC2 D7
ACC2 E7
DP1 C3 E75_DPAIR1_P
DN1 C4 E75_DPAIR1_N
DP2 A3 E75_DPAIR2_P
DN2 A4 E75_DPAIR2_N
CON_DET_L G3 HYDRA_E75_ACC_DET_L
POW_GATE_EN* HYDRA_PWR_SW_EN_L
SWITCH_EN E4 GPIO_PMU_TO_SYSTEM_ACTIVE_READY
HOST_RESET F6 RESET_HYDRA_TO_PMU
SDA G5 I2C3_SDA_1V8
SCL G4 I2C3_SCL_1V8
INT F7 GPIO_HYDRA_TO_SMC_IRQ
BYPASS F5 BYPASS_TS
DVSS H6 H7 E3 G7 H1
DVSS1 F4

L3550 FERR-120-OHM-3A 0603
PPOUT_E75_ACC_ID1_CONN
DZ3550 14.2V-6PF 0201-1
C3551 15PF 5% 16V NP0-C0G 01005-1
KEEP ACCID1/2 MAXIMUM CAPACITANCE OF END TO END SIGNAL TO 350PF

L3560 FERR-120-OHM-3A 0603
PPOUT_E75_ACC_ID2_CONN
DZ3560 14.2V-6PF 0201-1 5% CRITICAL
C3561 15PF 16V NP0-C0G-CERM 01005 NOSTUFF
C3571 12PF 5% 25V NP0-C0G 0201

R3590 10K 5% 1/32W MF 01005
E75_ACC_DET_R_L
FL3590 120-OHM-25%-250MA-0.5DCR 01005
E75_ACC_DET_CONN_L
C3590 15PF 5% 16V NP0-C0G-CERM 01005 NOSTUFF
DZ3590 ESD8472MUT5G X3DFN2-1 CRITICAL

HYDRA_TO_PMU_BRICKID
R3542 0.00 0% 1/32W 01005 MF
HYDRA_TO_PMU_BRICKID_R
C3542 0.01UF 10% 6.3V X5R 01005
L3580 15NH-250MA 0201
L3581 15NH-250MA 0201
USB_SOC_P
USB_SOC_N
GND_VOID=TRUE
CRITICAL

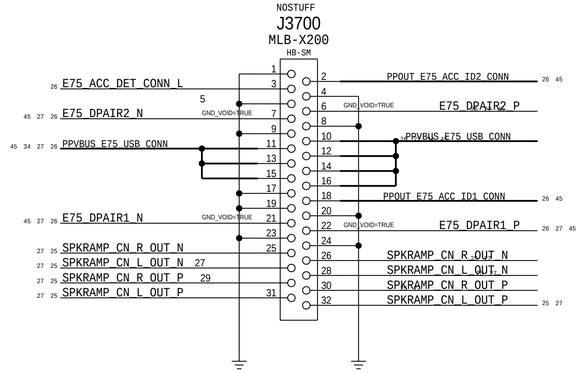
HYDRA TX IS AN INPUT AND ITS RX IS AN OUT
FORCE_DFU IS PFET OPEN DRAIN

MIKEY_HYDRA_P C2 DIG_DP
MIKEY_HYDRA_N D2 DIG_DN
USB_KIS_P D3 USB1_DP
USB_KIS_N D4 USB1_DN
HYDRA_TO_PMU_BRICKID_R F3 BRICK_ID
USB_SOC_IND_P B3 USB0_DP
USB_SOC_IND_N B4 USB0_DN
UART_SOC_TO_ACC_TX D1 UART0_TX
UART_ACC_TO_SOC_TX C1 UART0_RX
UART_SOC_TO_DEBUG_TX F2 UART1_TX
UART_DEBUG_TO_SOC_TX E2 UART1_RX
UART_GRAPE_TO_DEBUG_TX B1 UART2_TX
UART_DEBUG_TO_GRAPE_TX A1 UART2_RX
JTAG_SOC_TCK E1 JTAG_CLK
JTAG_SOC_TMS F1 JTAG_DIO
HYDRA_TO_SOC_FORCE_DFU H2 FORCE_DFU
TP_HYDRA_EXT_SW_EN G2 EXT_SW_EN
USB_TO_SOC_DOCK_CONNECT G1 DOCK_CONNECT
CCG2_TO_HYDRA_CC B2 CC0
A2 CC1

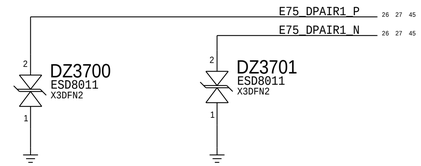
XW3500 SHORT-10L-0.25MM-SM
BELFIELD_MBUS_REF
C3500 1.0UF 20% 6.3V X5R 0201-1

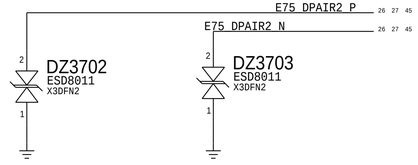
SYNC_MASTER=J211_M1B_B
SYNC_DATE=09/30/2018
PAGE TITLE
IO: HYDRA

HOTBAR CONNECTOR TO I/0 FLEX



NEW -> 998-7178 36-PIN CONN (CON_36HB_D1)
OLD -> 998-5933 32-PIN CONN (CON_32HB_D)



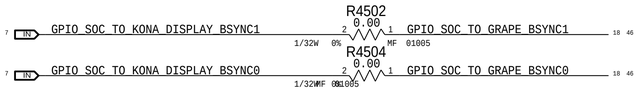


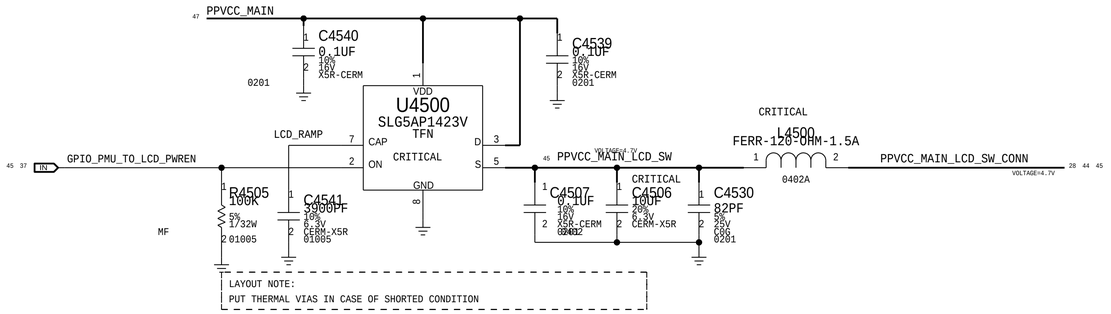
SYNC_MASTER=2211_MLB_E SYNC_DATE=09/30/2018

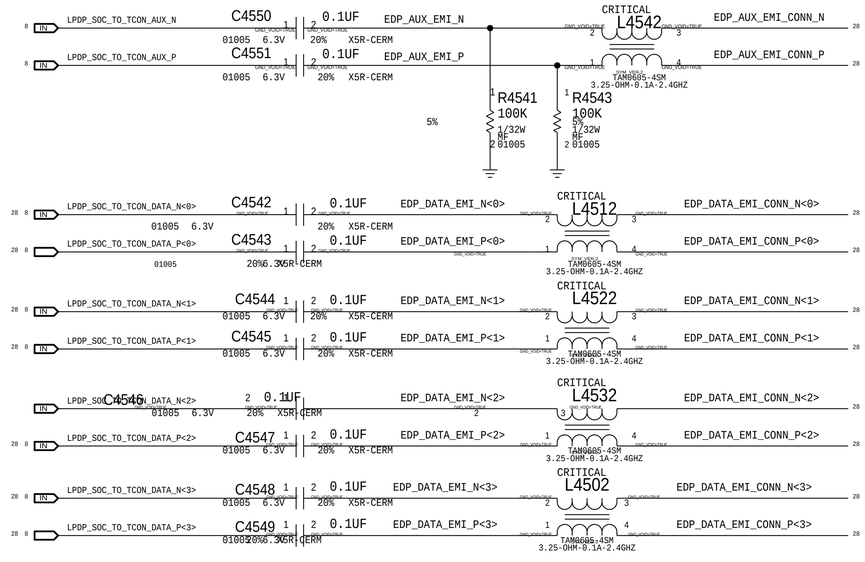
PAGE TITLE

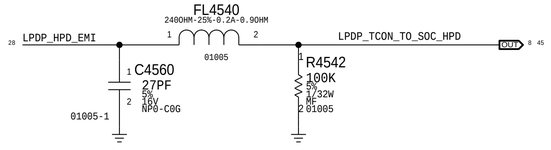
IO: HOTBAR

DISPLAY CONNECTOR

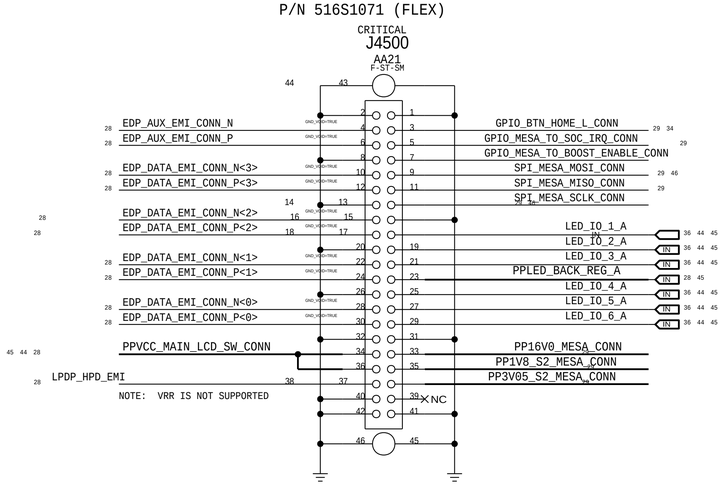


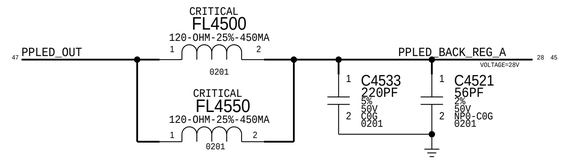






P/N 516S1070 (MLB)
P/N 516S1071 (FLEX)





PART NUMBER PART NUMBER	ALTERNATE FOR	BOM OPTIONS	COMMENTS:	
155S0914	155S0897			L4502,12,22,32,42

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

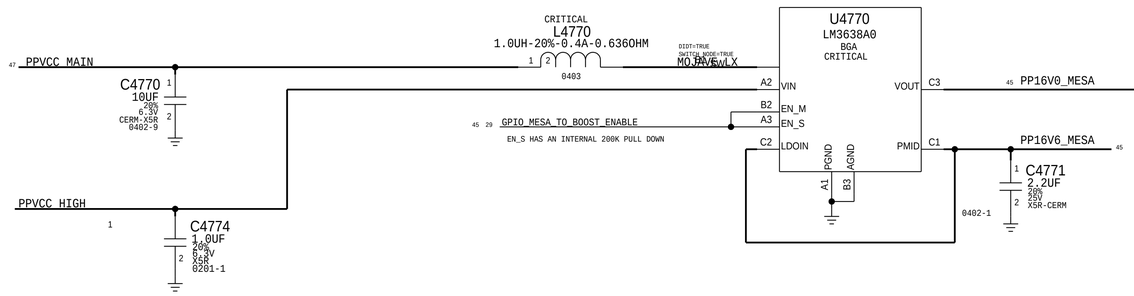
DISPLAY: FILTERS & CONN

MESA & HOME BUTTON

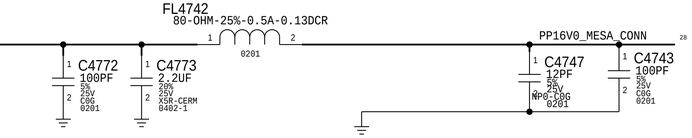
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
132S00088	132S0639		C4746, ETC	RDAR://PROBLEM/26928883

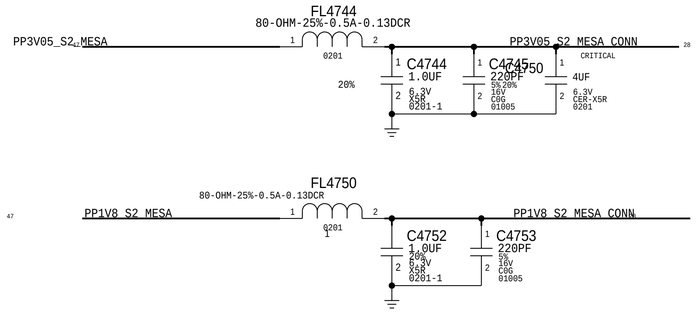
MOJAVE

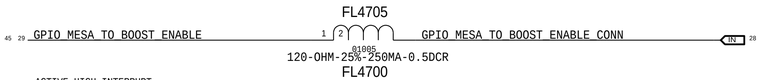
USING A0 (APN 353S00671)

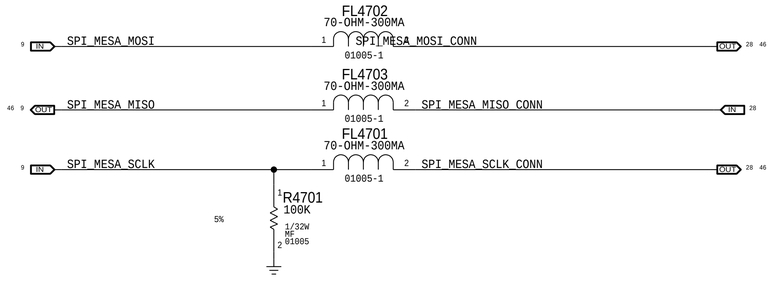


FILTERS

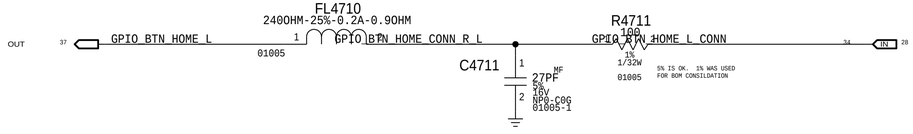








HOME BUTTON FILTERS



SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

SENSOR: MESA

WLAN SYMBOL IO PORTS

POWER

48 43 32 31 IO PPVCC_MAIN
VOLTAGE=3.8

43 IO PP1V8_S2_EXT_SW2
VOLTAGE=1.8

CONTROL

43 31 IO GPIO_PMU_TO_WLAN_REG_ON
43 31 IO GPIO_PMU_TO_BT_REG_ON
43 31 IO GPIO_SOC_BT_DEVICE_WAKE

CLOCKS

43 31 IO CLK_PMU_TO_WLAN_32K
GPIO_WLAN_TO_SOC_TIME_SYNC

WLAN PCIE

43 31 IO PCIE_SOC_TO_WLAN_REFCLK_P
43 31 IO PCIE_SOC_TO_WLAN_REFCLK_N
43 31 IO PCIE_SOC_TO_WLAN_TX_P
43 31 IO PCIE_SOC_TO_WLAN_TX_N
43 31 IO PCIE_WLAN_TO_SOC_TX_C_P
43 31 IO PCIE_WLAN_TO_SOC_TX_C_N
IO 43 31 PCIE_SOC_TO_WLAN_RESET_L
IO 43 31 PCIE_WLAN_TO_SOC_CLKREQ_L
IO 43 31 GPIO_WLAN_TO_PMU_HOST_WAKE

BLWLAN UART

43 31 IO UART_SOC_TO_BT_TX
43 31 IO UART_BT_TO_SOC_TX
43 31 IO UART_SOC_TO_BT_RTS_L
43 31 IO UART_BT_TO_SOC_RTS_L

AOP

IO 43 31 GPIO_AOP_TO_WLAN_CONTEXT_A
IO 43 31 GPIO_AOP_TO_WLAN_CONTEXT_B

COEX

44 31 IO NC_UART_COEX_BB_TO_WLAN_TXD
44 31 IO NC_UART_COEX_WLAN_TO_BB_TXD

RF

IO 50_PRX_LAA_LNA2_OUT
IO 50_PRX_LAA_LNA1_OUT

RFFE

IO LAT_LAA_RFFE_VIO
32 30 IO UAT_LAA_RFFE_CLK
32 30 IO UAT_LAA_RFFE_DATA
32 IO UAT_LAA_RFFE_VIO
32 30 IO UAT_LAA_RFFE_CLK
32 30 IO UAT_LAA_RFFE_DATA

PENCIL

10 46 43 31 18 IO GPIO_SOC_TO_BT_TO_GRAPE_TS_SYNC
46 43 31 18 IO GPIO_TOUCH_TO_BT_SYNC
43 31 IO NC_BT_TO_SCORPIUS_TX_IND
43 31 IO NC_GPIO_WLAN_TO_SCORPIUS_TX_IND

SYNC_MASTER=WIFI_MLB_0.33.0 SYNC_DATE=09/26/2018

PAGE TITLE

J210+J211 WiFi+BT_GNSS

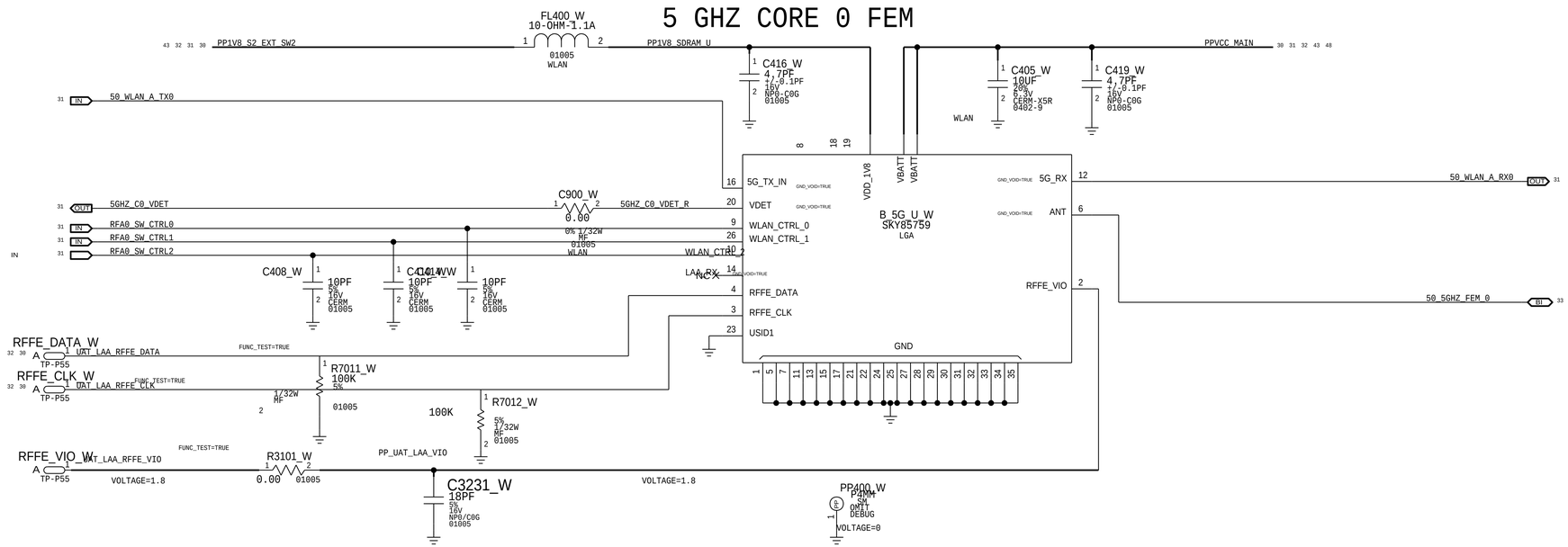
J210+J211: DIET COKE PRIMARY MODULE

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
339S00551	339S00540		U_WLAN_W	USI

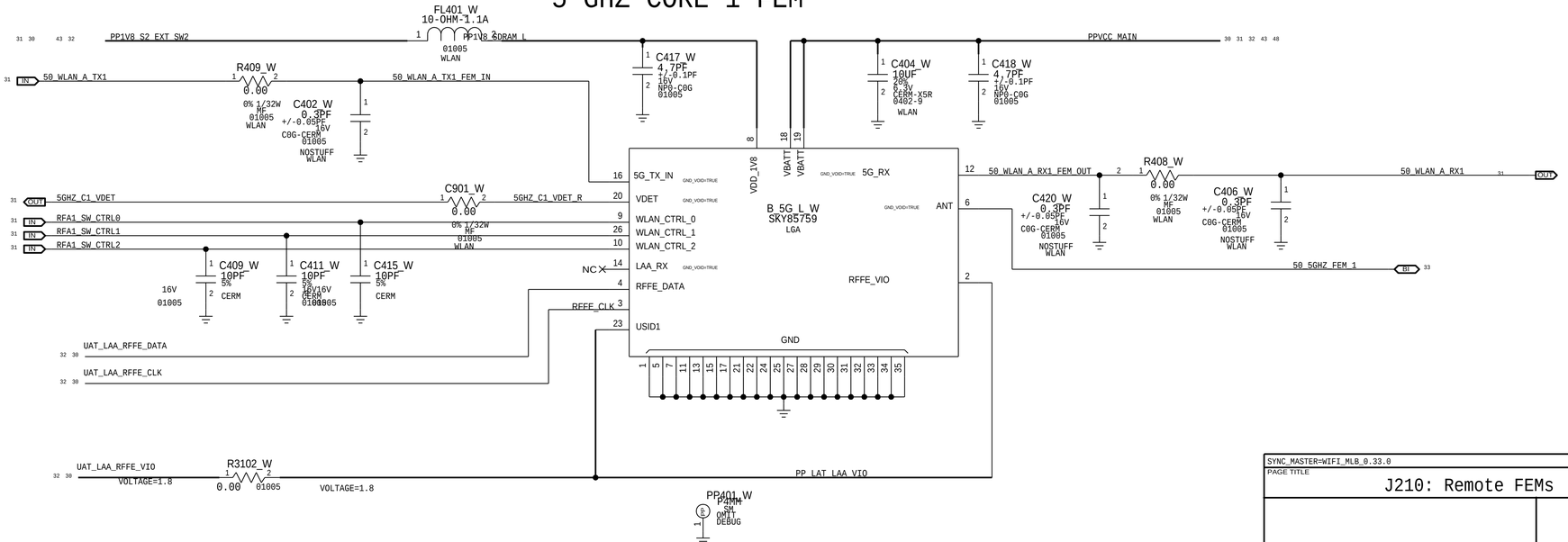
SYNC_MASTER=WIFI_MLB_0.33.0 SYNC_DATE=09/26/2018

J210: DIET COKE REMOTE FEMS

5 GHZ CORE 0 FEM



5 GHZ CORE 1 FEM



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
152S00427	1	IND,2.0NH,+/-0.1NH,700MA,SHQ,01005	R238_W	
1117S0161	1	RES,MF,0 OHM,1/32W,01005	R235_W	
1 117S0161	1	RES,MF,0 OHM, 1/32,01005	R236_W	
117S0161	1	RES,MF,0 OHM, 1/32,01005	R233_W	
131S00339	1	CAP,C0G,0.2PF,+/-0.05PF,01005	C242_W	NOSTUFF

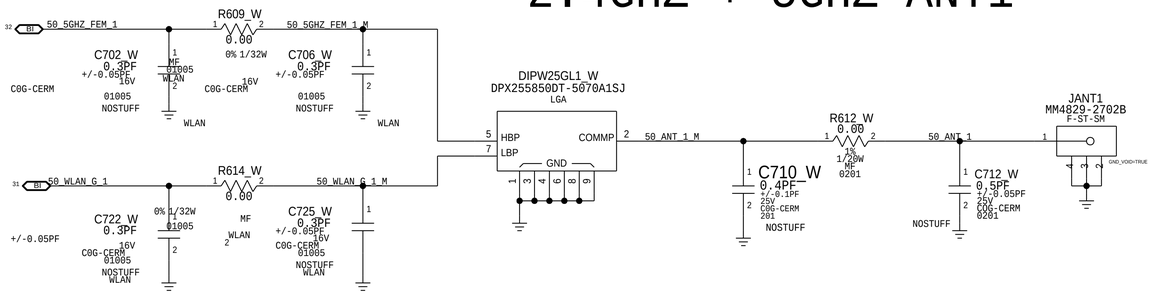
SYNC_MASTER=WIFI_MLB_0.33.0 SYNC_DATE=09/26/2018

PAGE TITLE

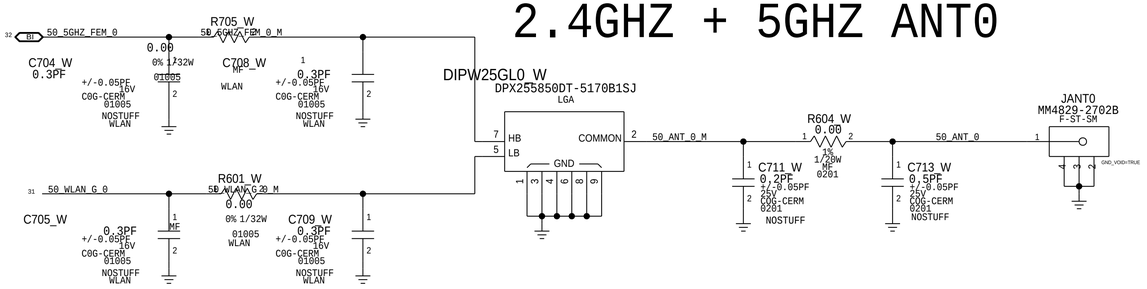
J210: Remote FEMs

J210: FRONT END

2.4GHZ + 5GHZ ANT1



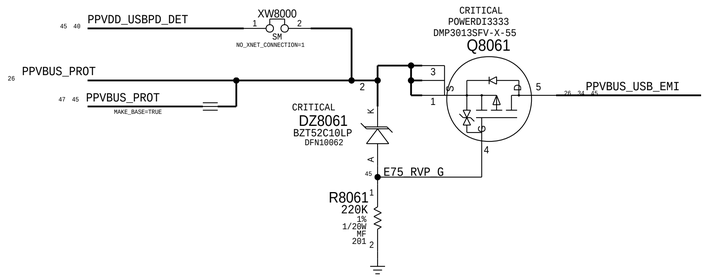
2.4GHZ + 5GHZ ANT0

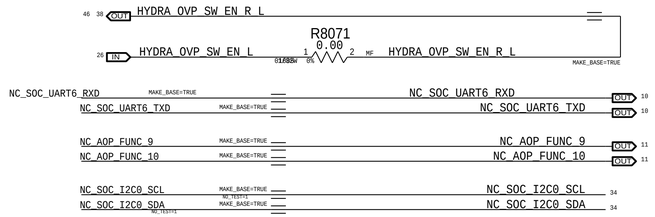


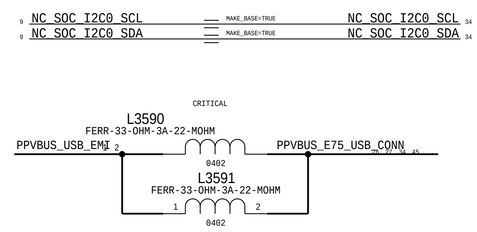
SYNC_MASTER=WIFI_MLB_0.33.0 SYNC_DATE=09/26/2018

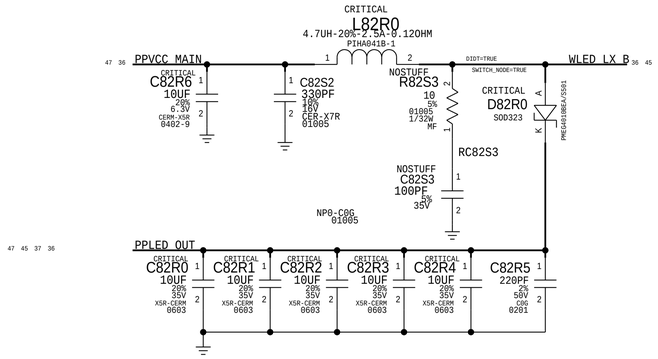
PAGE TITLE

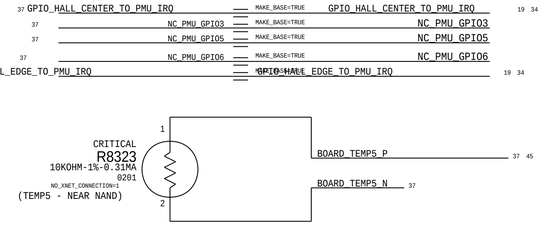
J210: Front End

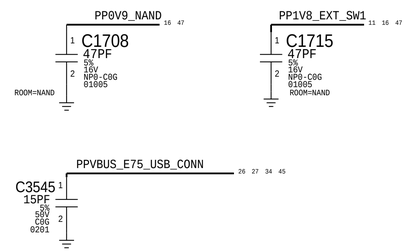


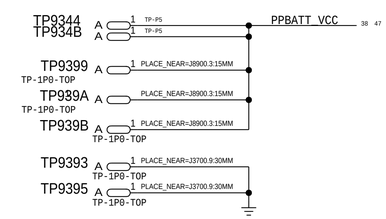


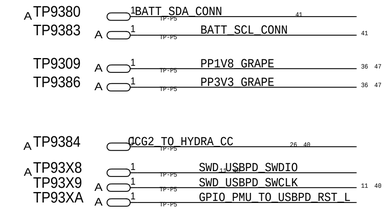


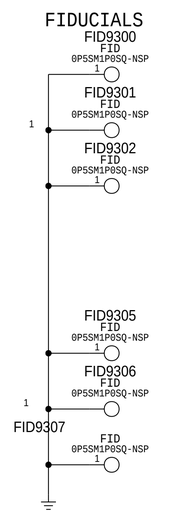




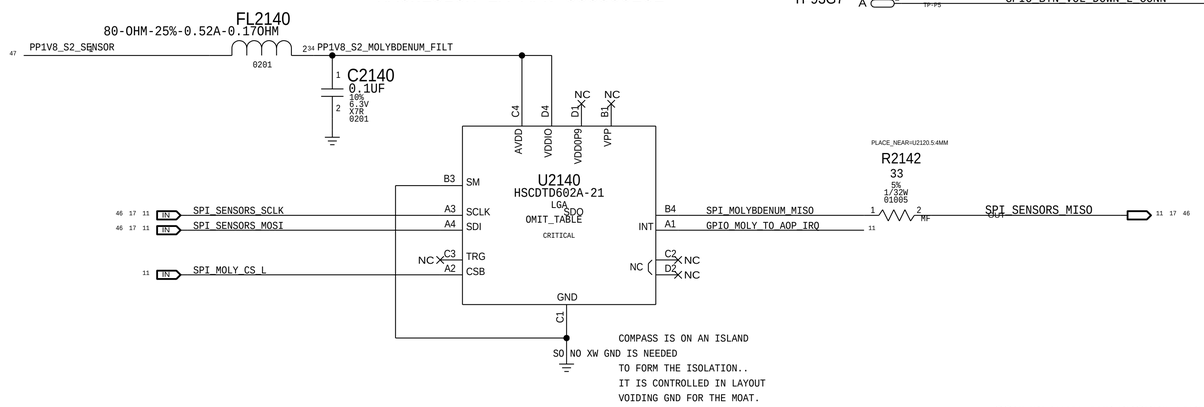








MOLYBDENUM-21 APN 338S00449
MAGNESIUM-2A APN 338S00282



ATLAS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S00282	1	IC,PMU,ATLAS,D2652A0,OTP-BC,CSP400	U8100	CRITICAL	

POTOMAC

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
343S00286	1	IC,CHRGR,POTOMAC,D2654A0,OTP-DC,CSP182	U8500	CRITICAL	

COMPASS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
338S00282	1	IC,COMPASS,MAGNESIUM,601A-2A,FLGA14	U2140	CRITICAL	MAGNESIUM
338S00449	1	IC,COMPASS,MOLYBDENUM,SPI-21,FLGA14	U2140	CRITICAL	MOLYBDENUM

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:

SYNC_MASTER=J211_MLB_B
SYNC_DATE=09/30/2019

PAGE TITLE

J210-J211 UNIQUE

ATLAS BUCKS

OMIT_TABLE

U8100
D2652
WLCSP
D2652A0F0VFAVBC2
SYM 1 OF 5

POWER SUPPLY FOR BUCKS
SWITCHING LX NODES
VDDMAIN SUPPLY

PPVCC_MAIN
PPVCC_MAIN
PPVCC_MAIN
PP2V63_NAND
ATLAS_VDD_RTC
PPVCC_MAIN

PPVDD_CPU
PPVDD_GPU
PPVDD_S1_SOC
PP1V8_S2
PP1V1_S2
PPVDD_S1_FIXED
PP2V63_NAND
PPVDD_CPU_SRAM
PPVDD_GPU_SRAM
PPVDD_S1_DCS
PPVDD_S1_QL
PPVDD_ECPU

ADC_SOC_TO_PMU_VDD_CPU
ADC_SOC_TO_PMU_VDD_GPU

ATLAS LDOS (2/3)

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
138S0703	138S0648		C8233,ECT	ALT FOR 4.7UF,6.3V,0402

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

POWER: ATLAS (2/3)

ATLAS (3/3)

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
118S0764	118S0717		R8340	RDAR://PROBLEM/8380367
107S0150	107S0208		R8321-R8328	RDAR://PROBLEM/8380367

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

POWER: ATLAS (3/3)

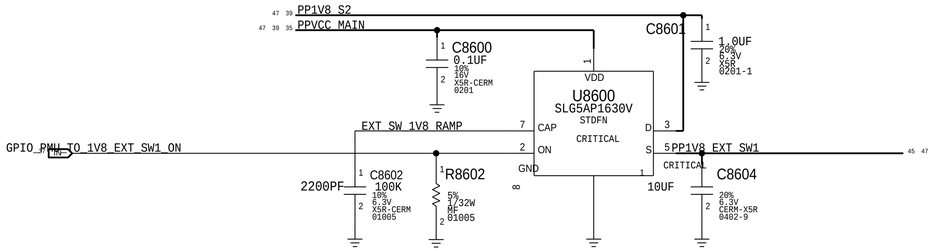
POTOMAC/RENO

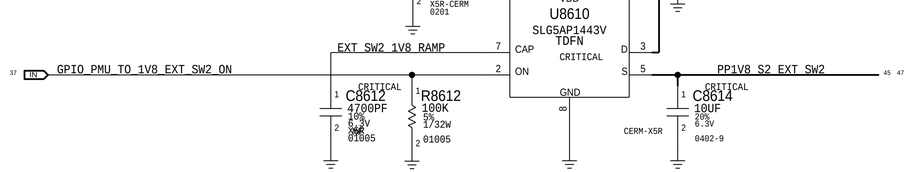
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
376S00071	376S00070		Q8581,ECT	RDAR://PROBLEM/20277540

U8500
D2559A0P0V2AVAC2
WLCSP
OMIT_TABLE

PAGE TITLE
POWER: CHARGER

EXTERNAL POWER SWITCHES



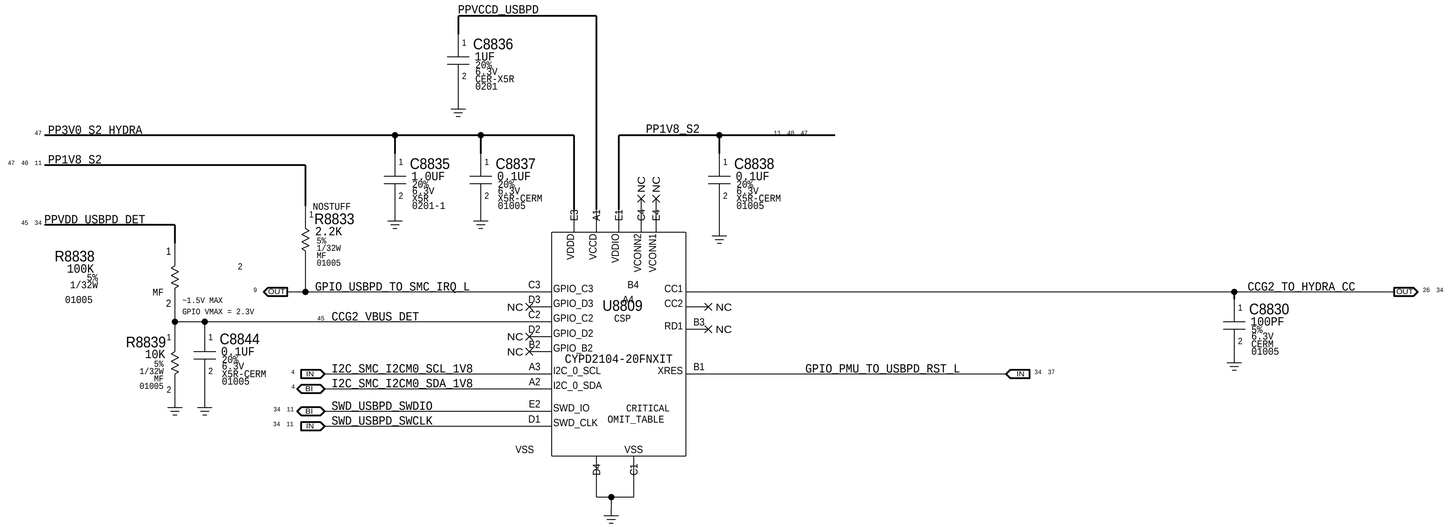


SYNC_MASTER=J251_MLB_B SYNC_DATE=09/30/2016

PAGE TITLE

POWER: EXTERNAL SWITCHES

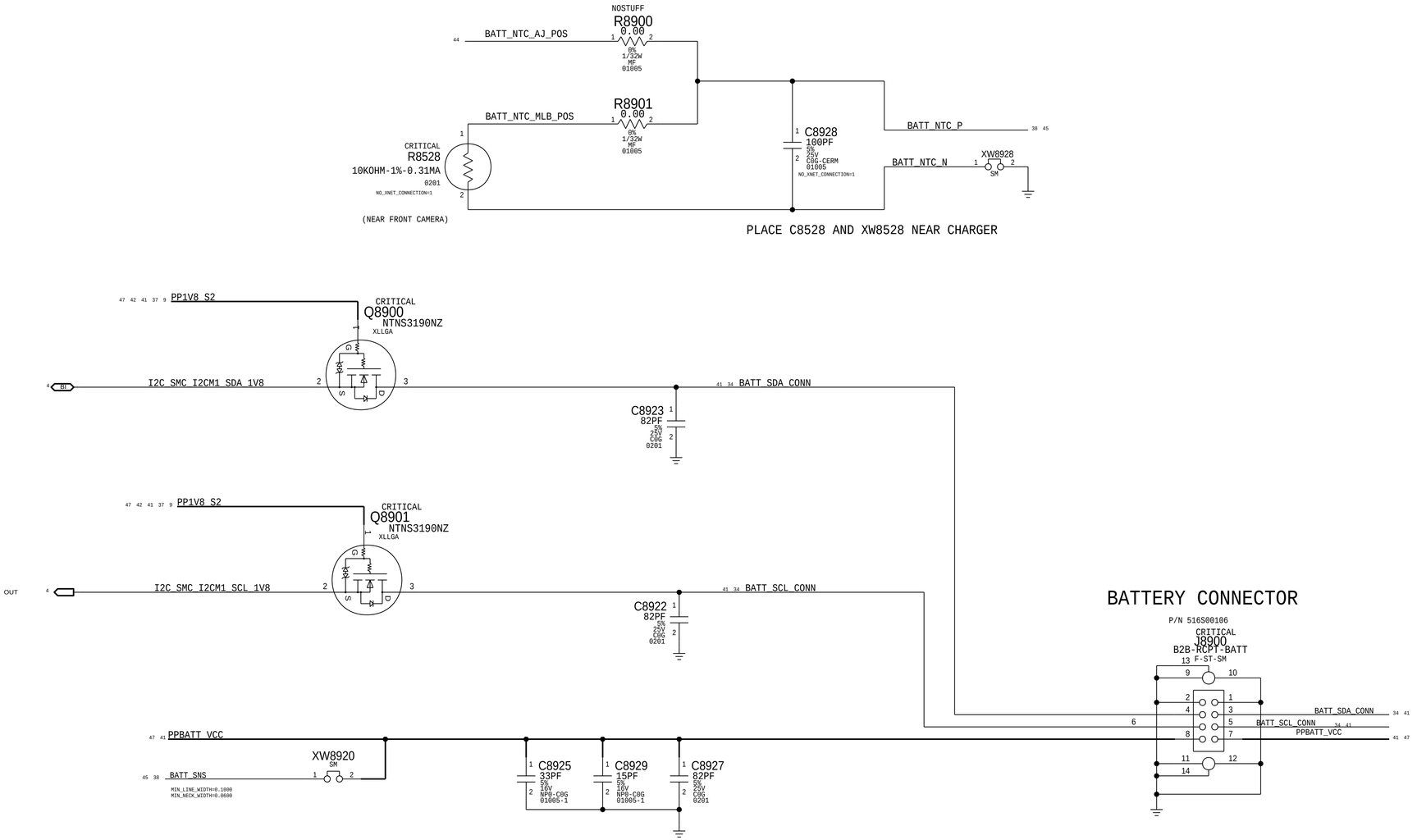
USBPD



SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018

PAGE TITLE

POWER: USB PD



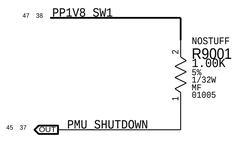
SYNC_MASTER=J211_MLB_B

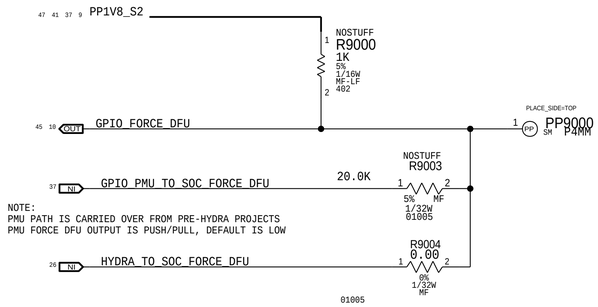
SYNC_DATE=09/30/2018

PAGE TITLE

POWER: BATTERY CONN

DEBUG RESET ACCESS





SYNC_MASTER=J251_MLB_B
SYNC_DATE=09/30/2018

PAGE TITLE

SOC: DEBUG

WLAN/BT ALIASES

WLAN

POWER

47 PPVCC_MAIN ═══ PPVCC_MAIN 30 31 32 48
47 PP1V8_S2_EXT_SW2 ═══ PP1V8_S2_EXT_SW2 30 31 32

GPIOS

45 37 IN GPIO_PMU_TO_WLAN_REG_ON MAKE_BASE=TRUE ═══ GPIO_PMU_TO_WLAN_REG_ON OUT 30 31
45 37 OUT GPIO_WLAN_TO_PMU_HOST_WAKE MAKE_BASE=TRUE ═══ GPIO_WLAN_TO_PMU_HOST_WAKE IN 30 31
CLK_PMU_TO_WLAN_32K MAKE_BASE=TRUE ═══ CLK_PMU_TO_WLAN_32K
37 IN MAKE_BASE=TRUE ═══ OUT 30 31
45 11 IN GPIO_AOP_TO_WLAN_CONTEXT_A MAKE_BASE=TRUE ═══ GPIO_AOP_TO_WLAN_CONTEXT_A OUT 30 31
45 11 IN GPIO_AOP_TO_WLAN_CONTEXT_B MAKE_BASE=TRUE ═══ GPIO_AOP_TO_WLAN_CONTEXT_B OUT 30 31
45 10 OUT GPIO_WLAN_TO_SOC_TIME_SYNC MAKE_BASE=TRUE ═══ GPIO_WLAN_TO_SOC_TIME_SYNC IN 30 31
NC_GPIO_WLAN_TO_SCORPIUS_TX_IND MAKE_BASE=TRUE ═══ NC_GPIO_WLAN_TO_SCORPIUS_TX_IND IN 30 31

UART (SHARED WITH BT)

PCIE

PCIE_SOC_TO_WLAN_REFCLK_P MAKE_BASE=TRUE ═══ PCIE_SOC_TO_WLAN_REFCLK_P OUT 30 31
6 IN PCIE_SOC_TO_WLAN_REFCLK_N MAKE_BASE=TRUE ═══ PCIE_SOC_TO_WLAN_REFCLK_N OUT 30 31
6 IN PCIE_SOC_TO_WLAN_TX_P MAKE_BASE=TRUE ═══ PCIE_SOC_TO_WLAN_TX_P OUT 30 31
6 IN PCIE_SOC_TO_WLAN_TX_N MAKE_BASE=TRUE ═══ PCIE_SOC_TO_WLAN_TX_N OUT 30 31
43 PCIE_WLAN_TO_SOC_TX_C_P MAKE_BASE=TRUE ═══ PCIE_WLAN_TO_SOC_TX_C_P IN 30 31
43 PCIE_WLAN_TO_SOC_TX_C_N MAKE_BASE=TRUE ═══ PCIE_WLAN_TO_SOC_TX_C_N IN 30 31
46 6 OUT PCIE_WLAN_TO_SOC_CLKREQ_L MAKE_BASE=TRUE ═══ PCIE_WLAN_TO_SOC_CLKREQ_L IN 30 31
46 6 IN PCIE_SOC_TO_WLAN_RESET_L MAKE_BASE=TRUE ═══ PCIE_SOC_TO_WLAN_RESET_L OUT 30 31

GND_VOID=TRUE

46 6 PCIE_WLAN_TO_SOC_TX_P — C9160 1 2 0.1UF PCIE_WLAN_TO_SOC_TX_C_P
6.3V 20% 01005 X5R-CERM

46 6 PCIE_WLAN_TO_SOC_TX_N — C9161 1 2 0.1UF PCIE_WLAN_TO_SOC_TX_C_N 43
20% 6.3V X5R-CERM 01005 GND_VOID=TRUE

BLUETOOTH

SOC GPIOS

DIETCOKE COMBINES BT AND WLAN WAKE TO PMU

45 37 IN GPIO_PMU_TO_BT_REG_ON MAKE_BASE=TRUE ═══ GPIO_PMU_TO_BT_REG_ON OUT 30 31
10 IN GPIO_SOC_BT_DEVICE_WAKE MAKE_BASE=TRUE ═══ GPIO_SOC_BT_DEVICE_WAKE OUT 30 31

UART

10 IN UART_SOC_TO_BT_TX MAKE_BASE=TRUE ═══ UART_SOC_TO_BT_TX OUT 30 31
10 IN UART_SOC_TO_BT_RTS_L MAKE_BASE=TRUE ═══ UART_SOC_TO_BT_RTS_L OUT 30 31
UART_BT_TO_SOC_TX MAKE_BASE=TRUE ═══ UART_BT_TO_SOC_TX
37 OUT MAKE_BASE=TRUE ═══ IN 30 31
10 OUT UART_BT_TO_SOC_RTS_L MAKE_BASE=TRUE ═══ UART_BT_TO_SOC_RTS_L IN 30 31
46 43 31 30 18 10 IN GPIO_SOC_TO_BT_TO_GRAPE_TS_SYNC MAKE_BASE=TRUE ═══ GPIO_SOC_TO_BT_TO_GRAPE_TS_SYNC OUT 10 18 30 31 43 46
46 43 31 30 18 IN GPIO_TOUCH_TO_BT_SYNC MAKE_BASE=TRUE ═══ GPIO_TOUCH_TO_BT_SYNC OUT 18 30 31 43 46
NC_BT_TO_SCORPIUS_TX_IND MAKE_BASE=TRUE ═══ NC_BT_TO_SCORPIUS_TX_IND IN 30 31
10 OUT BT_AUDIO_SYNC MAKE_BASE=TRUE ═══ BT_AUDIO_SYNC IN 31

ROTTERDAM

POWER

PPVCC_MAIN = PP_VDD_MAIN (VCCMAIN ROTTERDAM CONNECTED THROUGH RADIO PPVCC_MAIN ALIAS)

47 PP1V8_S2_EXT_SW2 ═══ PP1V8_S2_EXT_SW2 48

GPIOS

48 43 9 IN GPIO_SOC_TO_ROTTERDAM_DEV_WAKE MAKE_BASE=TRUE ═══ GPIO_SOC_TO_ROTTERDAM_DEV_WAKE OUT 9 43 48
48 43 10 IN GPIO_SOC_TO_ROTTERDAM_DWLD_REQ MAKE_BASE=TRUE ═══ GPIO_SOC_TO_ROTTERDAM_DWLD_REQ OUT 10 43 48
37 IN GPIO_PMU_TO_ROTTERDAM_EN MAKE_BASE=TRUE ═══ GPIO_PMU_TO_ROTTERDAM_EN OUT 48

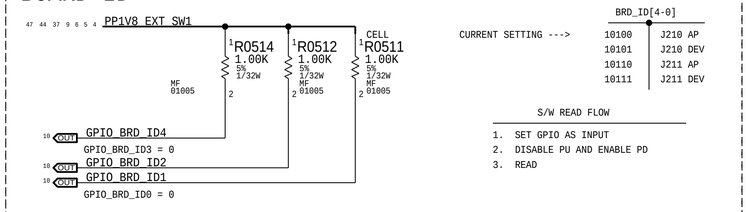
UART

48 43 10 IN UART_SOC_TO_ROTTERDAM_TX MAKE_BASE=TRUE ═══ UART_SOC_TO_ROTTERDAM_TX OUT 10 43 48
48 43 10 OUT UART_ROTTERDAM_TO_SOC_TX MAKE_BASE=TRUE ═══ UART_ROTTERDAM_TO_SOC_TX IN 10 43 48
48 43 10 IN UART_SOC_TO_ROTTERDAM_RTS_L MAKE_BASE=TRUE ═══ UART_SOC_TO_ROTTERDAM_RTS_L OUT 10 43 48
48 43 10 OUT UART_ROTTERDAM_TO_SOC_RTS_L MAKE_BASE=TRUE ═══ UART_ROTTERDAM_TO_SOC_RTS_L IN 10 43 48

SYNC_MASTER=J211_MLB_B SYNC_DATE=09/30/2018
PAGE TITLE
ALIASES: WLAN/BT

BASEBAND

BOARD ID



CURRENT SETTING --->

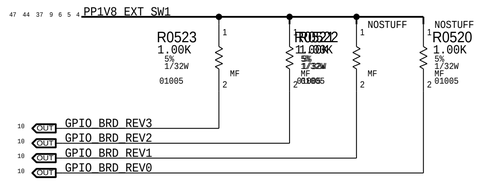
BRD_ID[4-0]	
10100	J210 AP
10101	J210 DEV
10110	J211 AP
10111	J211 DEV

S/W READ FLOW

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

BOARD REVISION

NOTE: STUFFING RESISTOR MEANS 1



CURRENT SETTING --->

BRD_REV[3-0]	
1111	P1 - RCAM SUPPORT
1110	P1 - RCAM SUPPORT
1101	P2 (SKIPPED)
1100	EVT
1011	TBD
1010	TBD

S/W READ FLOW

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

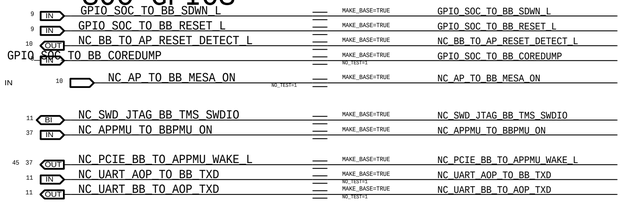
MECHANICAL PARTS

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
806-17487	1	FENCE,MLB,KONA,YY,J210	TOUCH_FENCE	CRITICAL	
806-17514	1	FENCE,MLB,KONA,AP,YN,J210	AP_FENCE	CRITICAL	

BARCODE LABEL/EEEE CODES

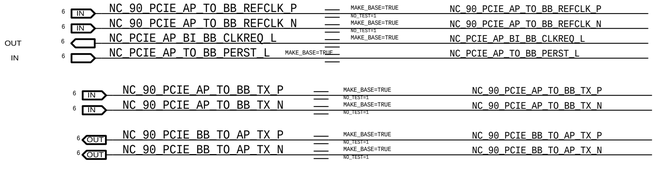
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
825-7691	1	EEEE FOR (MLB A BEST)	EEEE_KLDT	CRITICAL	BEST
825-7691	1	EEEE FOR (MLB A ULTIMATE)	EEEE_LFLV	CRITICAL	ULTIMATE
825-7691	1	EEEE FOR (MLB A SUPREME)	EEEE_KLDS	CRITICAL	SUPREME
825-7691	1	EEEE FOR (MLB A EXTREME)	EEEE_KLD3	CRITICAL	EXTREME

SOC GPIOS



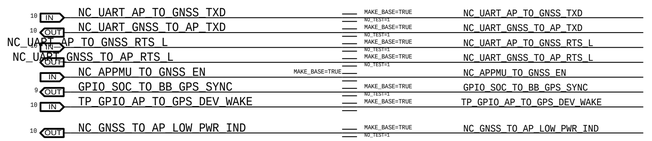
POWER

PCIE



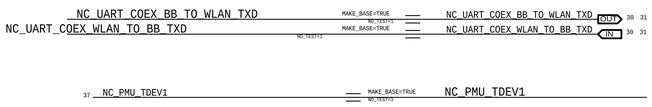
PMU ADC

GPS



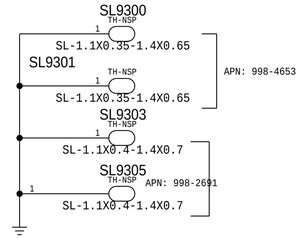
SPARE GPIOS

COEX UART: BB - WLAN



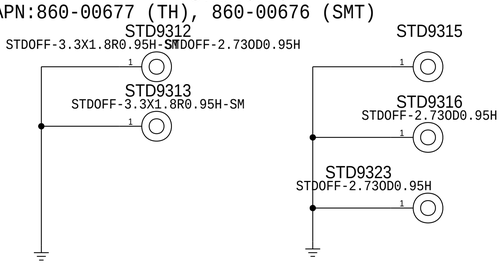
CAN MOUNTING HOLES

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

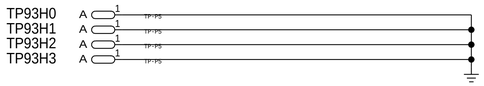


STANDOFFS

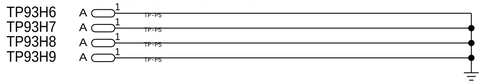
APN:860-00677 (TH), 860-00676 (SMT)

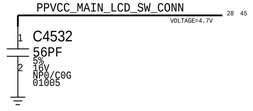


BASEBAND

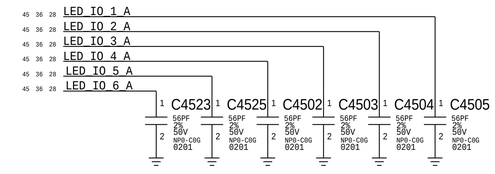


BASEBAND - SIM CARD

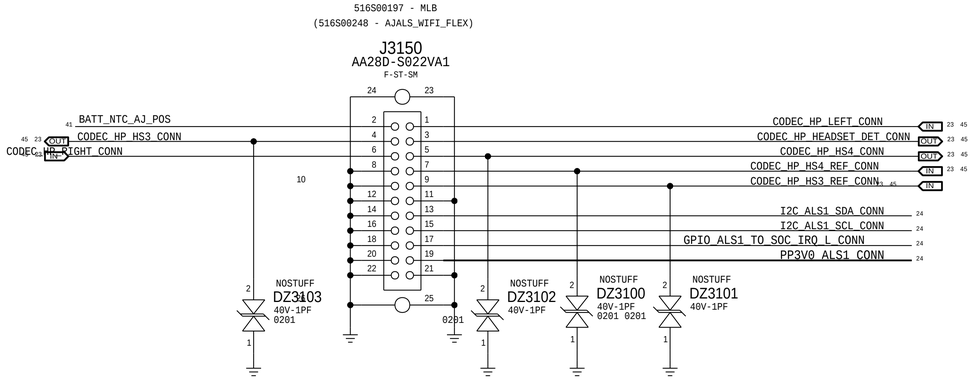




LED DRIVER FILTERS



516S00197 - MLB
(516S00248 - AJALS_WIFI_FLEX)



ALTERNATES

PART NUMBER		ALTERNATE FOR PART NUMBER	BOM OPTION	COMMENTS:	
	131S00299	131S00118			
	132S00232	132S00014			
	138S00148	138S00149			
	138S00150	138S00149			
138S00151		138S00149			
138S00086		138S0884			
	155S0660	155S0513			
	371S0685	371S00176			
	376S1245	376S1102			

SYNC_MASTER=J211_MLB_B
SYNC_DATE=06/21/2018
PAGE TITLE
WIFI UNIQUE & ALIASES/MISC

SMT TEST FIXTURE TP

POWER - BUCKS

TP9301 PPVDD_CPU 35 47
TP9302 PPVDD_GPU 35 47
TP9303 PPVDD_S1_SOC 35 47
TP9304 PP1V8_S2 5 35 47
TP9305 PP1V8_SW1 36 47
TP9306 PP1V8_EXT_SW1 39 47
TP9307 PP1V8_CAM 7 36 47
TP9308 PP1V8_S2_EXT_SW2 39 47
TP9311 PP1V1_S2 35 47
TP9313 PPVDD_S1_FIXED 35 47
TP9316 PP2V63_NAND 35 47
TP9319 PPVDD_CPU_SRAM 35 47
TP9320 PPVDD_GPU_SRAM 35 47
TP9321 PPVDD_ECPU 35 47
TP938C PPVDD_S1_DCS 35 47
TP938D PPVDD_S1_QL 35 47

POWER - LDOS

TP9322 PP3V0_S2_HYDRA 36 47
TP9323 PP1V7_S2_VA_VCP 36 47
TP9324 PP2V6_REAR_CAM_AF 36 47
TP9325 PP3V0_ALS 36 47
TP9327 PP3V3_ACC 36 47
TP9328 PP3V3_USB 36 47
TP9329 PP3V05_S2_MESA 36 47
TP9330 PP1V19_FRONT_CAM 36 47
TP9331 PP0V9_NAND 36 47
TP9333 PP2V9_REAR_CAM 36 47
TP9334 PP1V2_SOC 36 47
TP9335 PP0V75_S2_AOP 36 47
TP9336 PP1V8_S2_MESA 36 47

POWER - OTHER

TP9340 PPVCENTER 38
TP9341 PPVBUS_PROT 34 47
TP9342 PPVCC_HIGH 38 47
TP9343 PP1V8_ALWAYS 37 47
TP9345 PPLED_OUT 34 36 37 47
TP9346 PPVCC_MAIN 38 45 47
TP9347 PPVCC_MAIN 38 45 47
TP9348 PPBATT_POS_RC 38
TP934A PP16V0_MESA 29

POWER - CAMERA (NH)

TP9352 PP2V9_FRONT_CAM_AVDD 22 47

POWER - DISPLAY

TP9360 PPVCC_MAIN_LCD_SW_CONN 28 44
TP9361 PPVCC_MAIN_LCD_SW 28

POWER - BACKLIGHT

TP9362 PPLED_BACK_REG_A 28 45
TP9368 PPLED_BACK_REG_A 28 45
TP9363 LED_IO_1_A 28 36 44
TP9364 LED_IO_2_A 28 36 44
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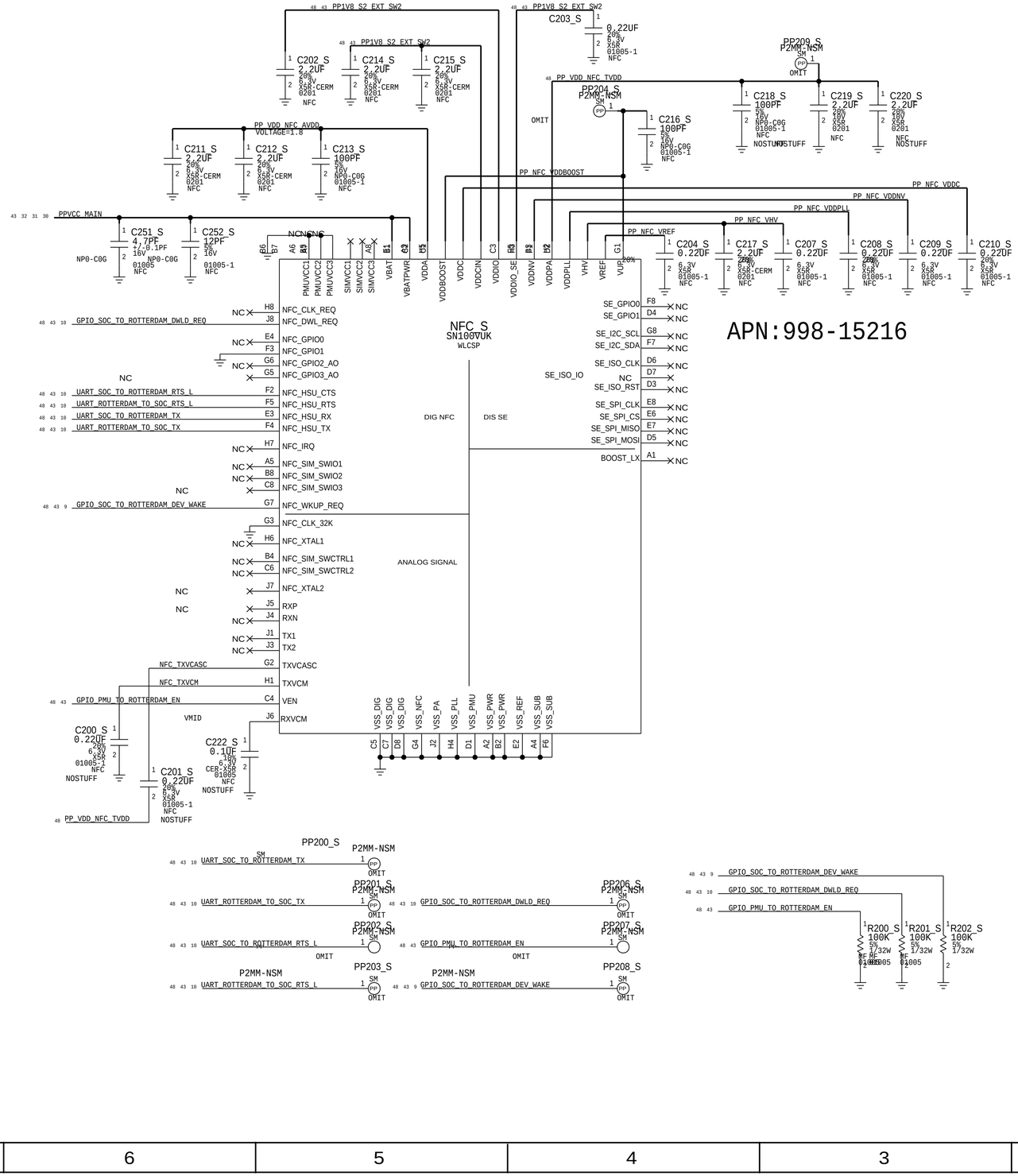

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