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The following material is FLEX confidential and proprietary covered under mutual NDA



Revision History

REV	DESCRIPTION
0.1	EVT1.0 first release for review

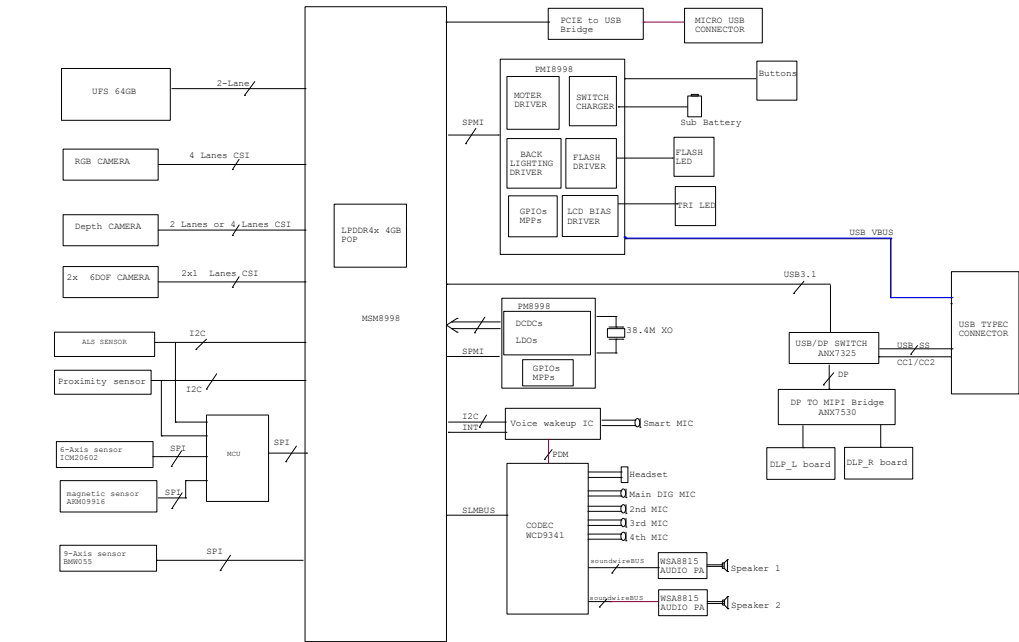
Board Change History

SCHEMATIC MCN	HW VERSION	REVISION	DESCRIPTION OF CHANGE

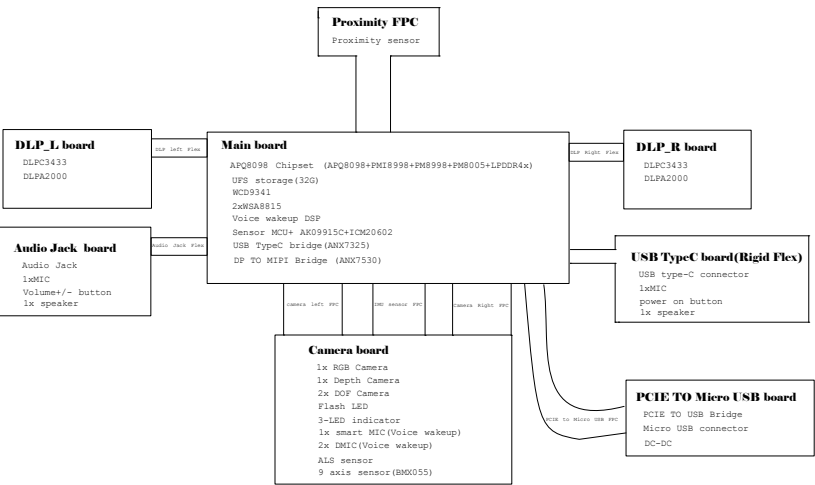
Revision History



Schematic Block Diagram



PCB split definition:



Block Diagram



MSM8998 GPIO Configuration for Irongate HMD					
GPIO_0	ANX7401_INTF	GPIO_41	6DOF_FRAME_SYNC	GPIO_82	MCU_SPI1_MISO
GPIO_1	ANX7401_RESET_N	GPIO_42	6DOFL_STROBE	GPIO_83	MCU_SPI1_CS
GPIO_2	BLSP1_I2C_SDA	GPIO_43	VOICE_LCD_I2C6_SDA	GPIO_84	MCU_SPI1_SCK
GPIO_3	BLSP1_I2C_SCL	GPIO_44	VOICE_LCD_I2C6_SCL	GPIO_85	VOICE_SPI_MOSI
GPIO_4	MSM_UART_TX	GPIO_45	NC	GPIO_86	VOICE_SPI_MISO
GPIO_5	MSM_UART_RX	GPIO_46	ANX7325_INTF_TO_AP	GPIO_87	VOICE_SPI_CS_N
GPIO_6	ANX7530_FWR_EN	GPIO_47	MICRO_USB_VBUS_EN	GPIO_88	VOICE_SPI_CLK
GPIO_7	ANX7530_RST_EN	GPIO_48	MICRO_USB_VBUS_OCB_EN	GPIO_89	VOICE_RESET_N
GPIO_8	ANX7401_FWR_EN	GPIO_49	NC	GPIO_90	ANX7401_1P8_EN
GPIO_9	ANX7401_CABLE_DET	GPIO_50	USBC_DET_TO_AP	GPIO_91	VOICE_WAKE_UP_N
GPIO_10	BLSP4_I2C_SDA	GPIO_51	NC	GPIO_92	NC
GPIO_11	BLSP4_I2C_SCL	GPIO_52	CAM_6DOF_2P8_EN	GPIO_93	CAM_6DOF_1P8_EN
GPIO_12	NC	GPIO_53	CODEC_INT2	GPIO_94	ANX7325_FWR_EN
GPIO_13	CAM_MCLK0	GPIO_54	CODEC_INT1	GPIO_95	NC
GPIO_14	CAM_MCLK1	GPIO_55	APPS_I2C7_SDA	GPIO_96	NC
GPIO_15	CAM_MCLK2	GPIO_56	APPS_I2C7_SCL	GPIO_97	NC
GPIO_16	CAM_MCLK3	GPIO_57	FORCE_USB_BOOT	GPIO_98	NC
GPIO_17	CCI_I2C_SDA0	GPIO_58	DLP_L_HOST_IRQ	GPIO_99	NC
GPIO_18	CCI_I2C_SCL0	GPIO_59	DLP_R_HOST_IRQ	GPIO_100	NC
GPIO_19	CCI_I2C_SDA1	GPIO_60	BLSP11_I2C_SDA	GPIO_101	GRFC4
GPIO_20	CCI_I2C_SCL1	GPIO_61	BLSP11_I2C_SCL	GPIO_102	GRFC5
GPIO_21	TOF_START	GPIO_62	MCU_SOC_INT	GPIO_103	GRFC6
GPIO_22	FL_STROBE_TRIG	GPIO_63	ANX7530_INT	GPIO_104	GRFC7
GPIO_23	TOF_EN_ILLUM	GPIO_64	CODEC_RESET_N	GPIO_105	NC
GPIO_24	TOF_VSEL_EN	GPIO_65	CODEC_SPI_S_DIN	GPIO_106	NC
GPIO_25	DEP_3P65_EN	GPIO_66	CODEC_SPI_S_DOUT	GPIO_107	NC
GPIO_26	NC	GPIO_67	CODEC_SPI_S_CSN	GPIO_108	NC
GPIO_27	NC	GPIO_68	CODEC_SPI_S_CLK	GPIO_109	GPIO109_WSA_R_EN
GPIO_28	CAM2_RSTN	GPIO_69	NC	GPIO_110	NC
GPIO_29	CAM1_STBYN	GPIO_70	LPASS_SLIMBUS_CLK	GPIO_111	GPIO111_WSA_L_EN
GPIO_30	CAM1_RSTN	GPIO_71	LPASS_SLIMBUS_DATA0	GPIO_112	NC
GPIO_31	DLP_L_PROJ_ON	GPIO_72	LPASS_SLIMBUS_DATA1	GPIO_113	UIM_BATT_ALARM
GPIO_32	DLP_R_PROJ_ON	GPIO_73	NC	GPIO_114	NC
GPIO_33	MCU_RST_N	GPIO_74	NC	GPIO_115	CONFIG_FWR_1P8
GPIO_34	6DOF_ULPM	GPIO_75	HARDWARE_ID_1	GPIO_116	NC
GPIO_35	PCIE_RESET_N	GPIO_76	HARDWARE_ID_2	GPIO_117	NC
GPIO_36	PCIE_CLKREQ_N	GPIO_77	HARDWARE_ID_3	GPIO_118	NC
GPIO_37	PCIE_WAKE_N	GPIO_78	NC	GPIO_119	NC
GPIO_38	CC_DIR (GND)	GPIO_79	NC	GPIO_120	PS_INT_N
GPIO_39	USB_BRIDGE_RESET_N	GPIO_80	NC	GPIO_121	NC
GPIO_40	6DOFR_STROBE	GPIO_81	MCU_SPI1_MOSI	GPIO_122	NC

GPIO_137	NC
GPIO_138	NC
GPIO_139	NC
GPIO_140	NC
GPIO_141	NC
GPIO_142	NC
GPIO_143	AMX7530_IP0_EN
GPIO_144	NC
GPIO_145	NC
GPIO_146	PCIE_FWR_EN
GPIO_147	NC
GPIO_148	6DOFL_SHUTDOWN_L
GPIO_149	6DOFR_SHUTDOWN_R

## PMI8998 GPIO Configuration for Irongate HMD

GPIO_1	NC	GPIO_6	NC	GPIO_11	NC
GPIO_2	NC	GPIO_7	NC	GPIO_12	DIV_CLK3
GPIO_3	NC	GPIO_8	NC	GPIO_13	NC
GPIO_4	NC	GPIO_9	GND	GPIO_14	NC
GPIO_5	NC	GPIO_10	NC		

## PM8998 GPIO Configuration for Irongate HMD

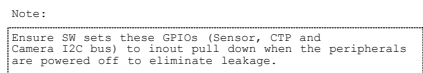
GPIO_1	UIM_BATT_ALARM	GPIO_12	NC	GPIO_23	NC
GPIO_2	NC	GPIO_13	NC	GPIO_24	Option
GPIO_3	NC	GPIO_14	DIV_CLK2	GPIO_25	Option
GPIO_4	SSC_FWR_EN	GPIO_15	NC	GPIO_26	PM_SLB
GPIO_5	NC	GPIO_16	DIV_CLK3		
GPIO_6	VOL_UP_N	GPIO_17	NC		
GPIO_7	NC	GPIO_18	NC		
GPIO_8	NC	GPIO_19	NC		
GPIO_9	NC	GPIO_20	CAM_REAR_ON		
GPIO_10	NC	GPIO_21	NC		
GPIO_11	NC	GPIO_22	NC		

## WCD9341 GPIO Configuration for Irongate HMD

GPIO_0	GND	GPIO_2	WSA_R_EN	GPIO_4	GND
GPIO_1	WSA_L_EN	GPIO_3	GND		

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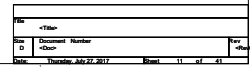
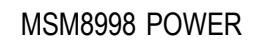


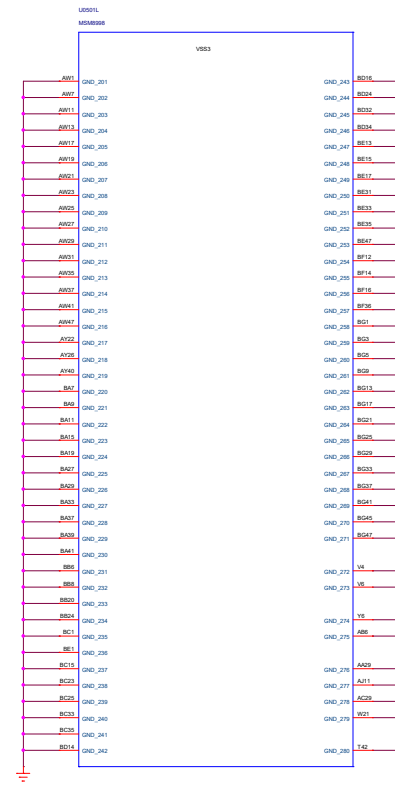
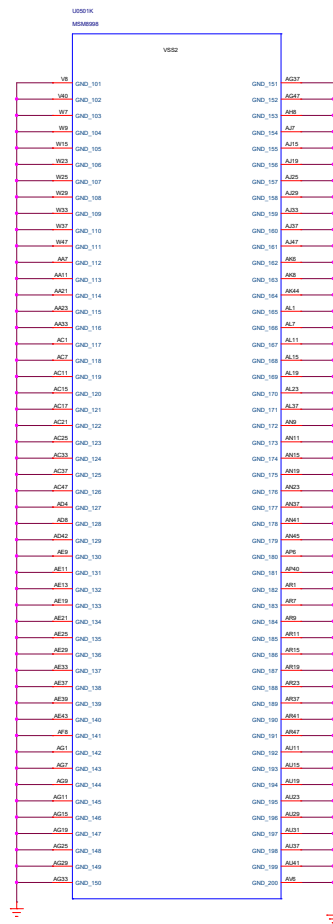
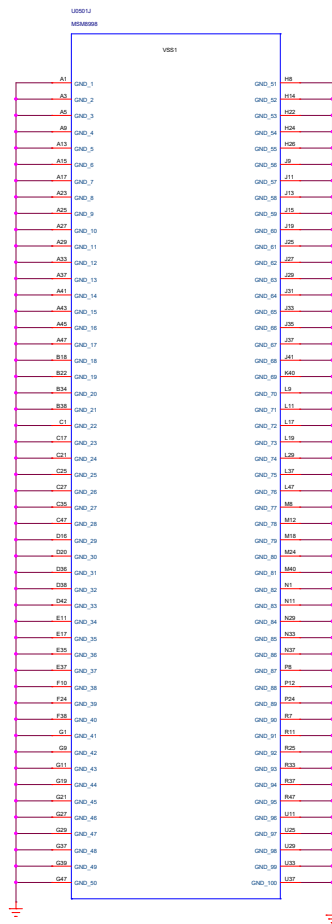










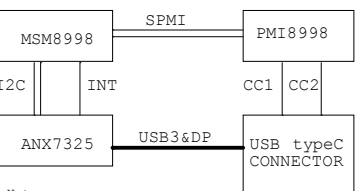


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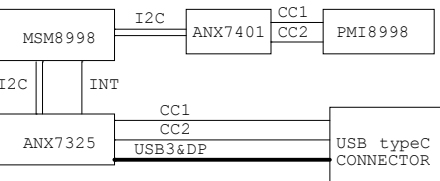
graph TD
    MSM8998[MSM8998] --- SPI[SPI] --- PMI8998[PMI8998]
    MSM8998 --- I2C[I2C] --- ANX7325[ANX7325]
    MSM8998 --- INT[INT] --- ANX7325
    MSM8998 --- CC1[CC1] --- USB[USB typeC CONNECTOR]
    MSM8998 --- CC2[CC2] --- USB
    MSM8998 --- USB3DP[USB3&DP] --- USB

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## USB TYPE C BACKUP SOLUTION 1

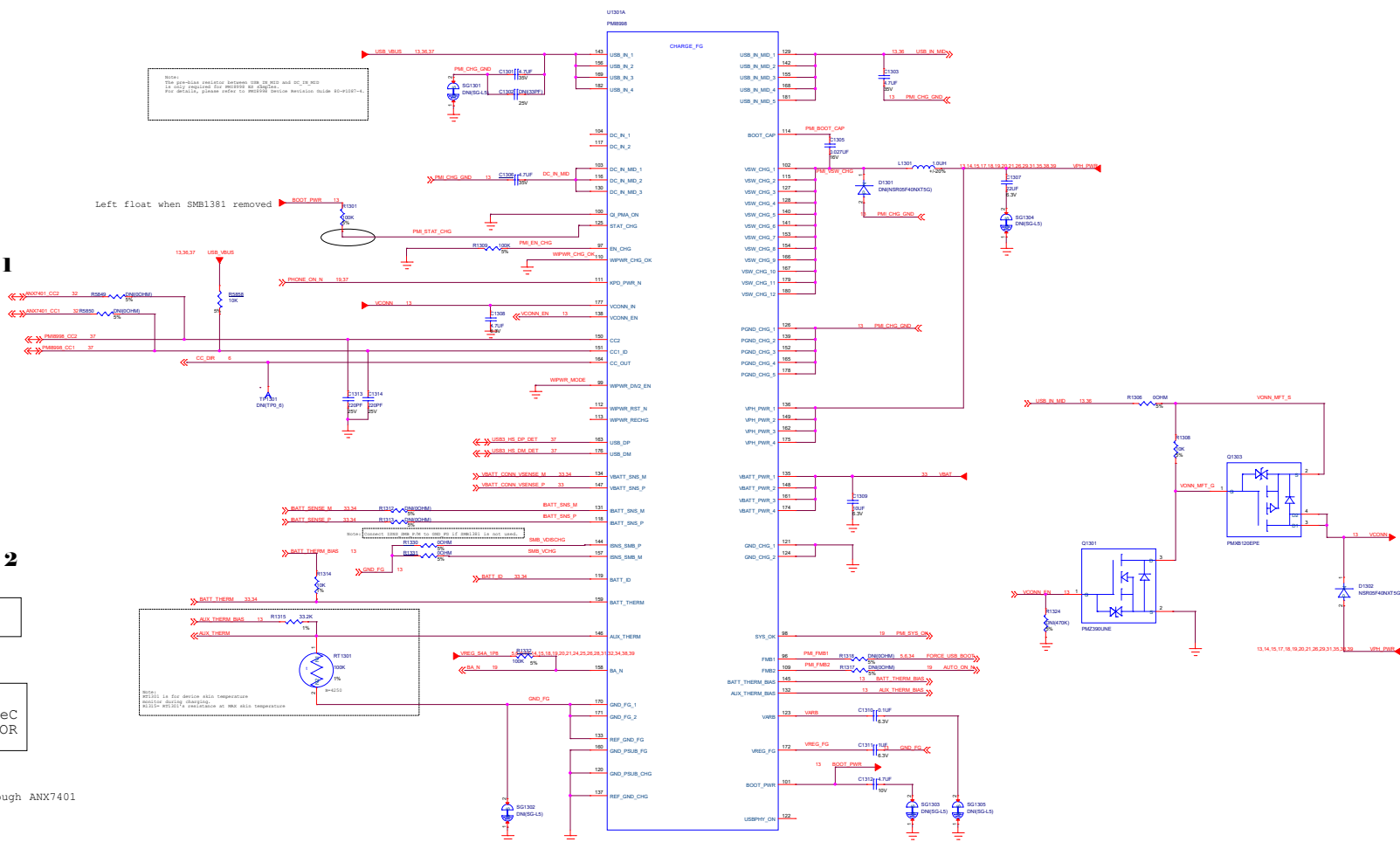


## USB TYPEC BACKUP SOLUTION 2



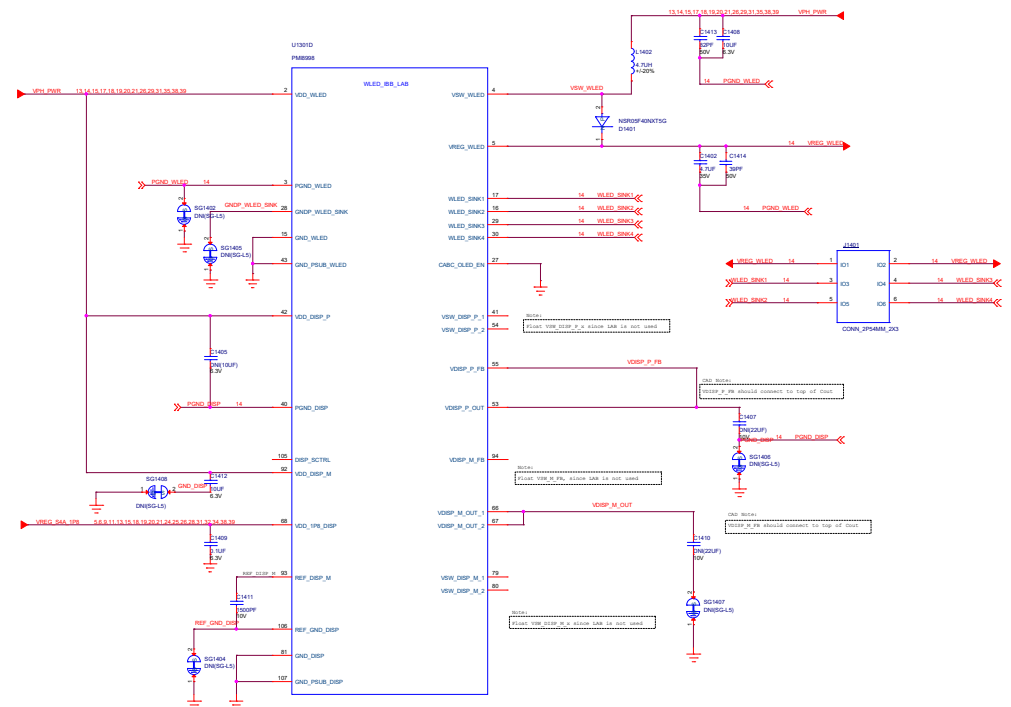
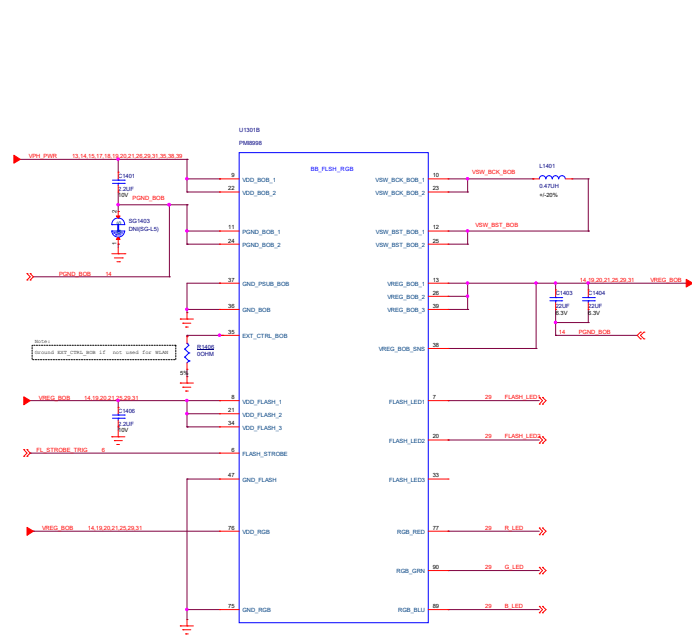
Note:

1. PMI8998 working under TypeC mode
2. Float PMI8998 GPIO4
3. ANX7325 forward the PD information to PMI8998 through ANX7401



PMI8998\_Charge\_FG

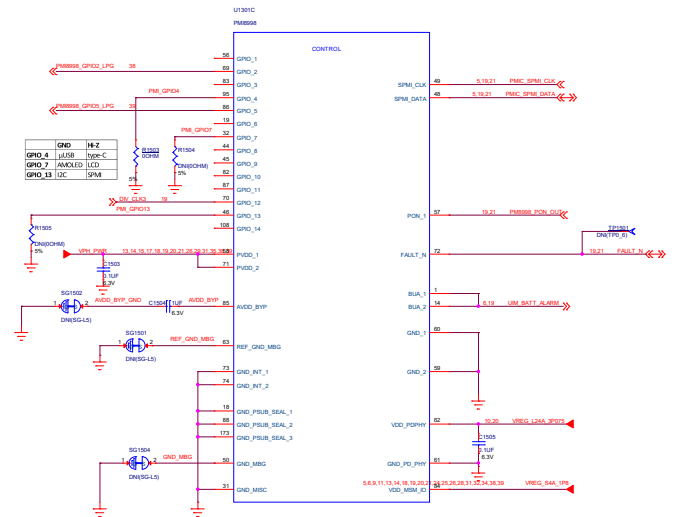
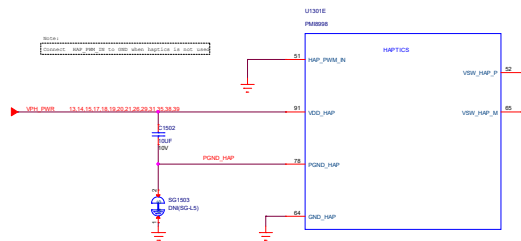




PM18998\_Buck\_Boost\_Flash



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PMi8998 CLKS\_GPIO

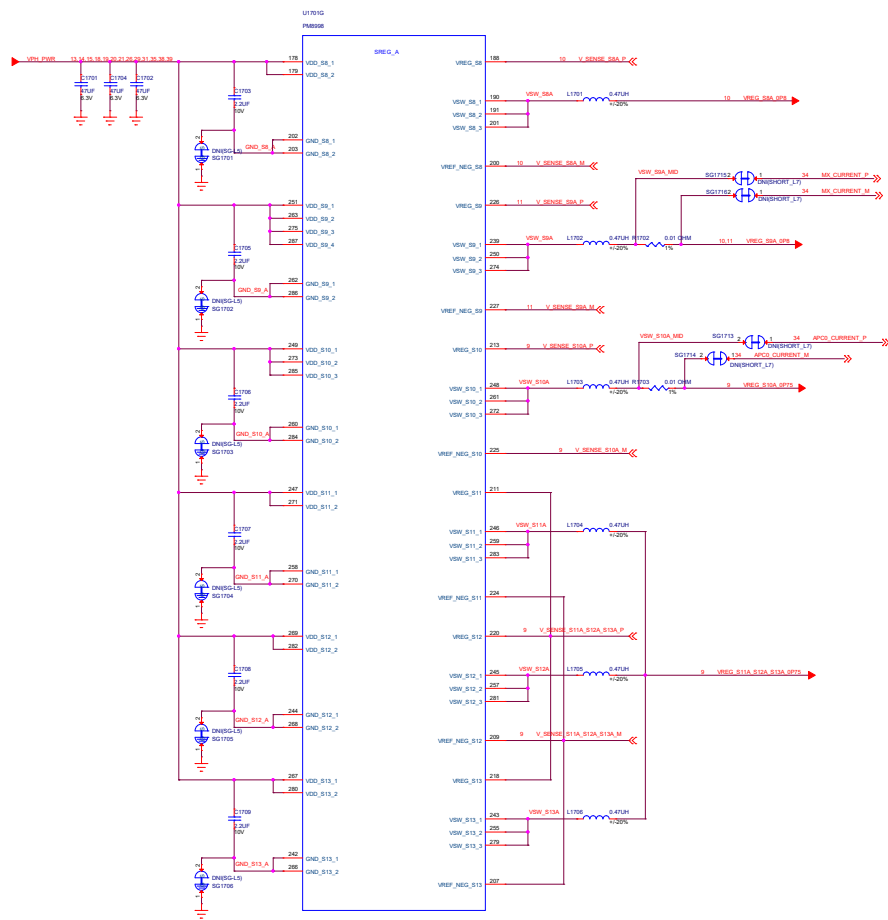


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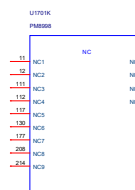
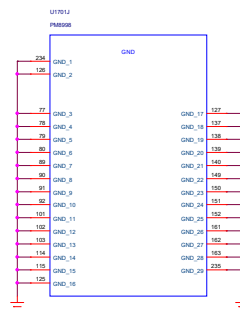
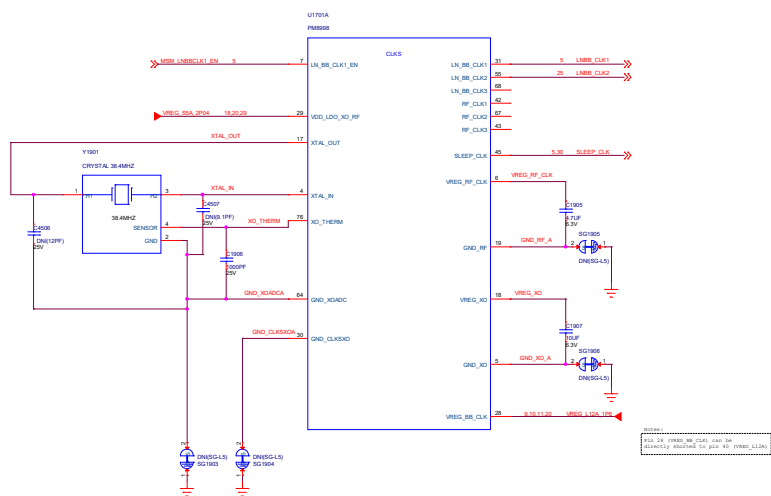
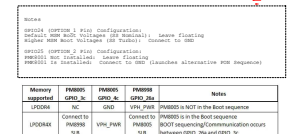
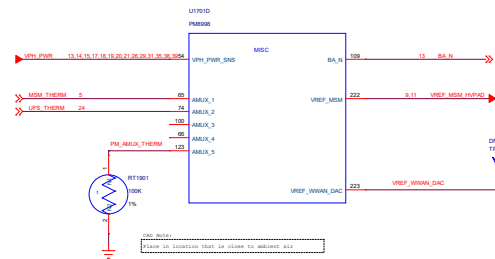


PM8998 Bucks (1 of 2)

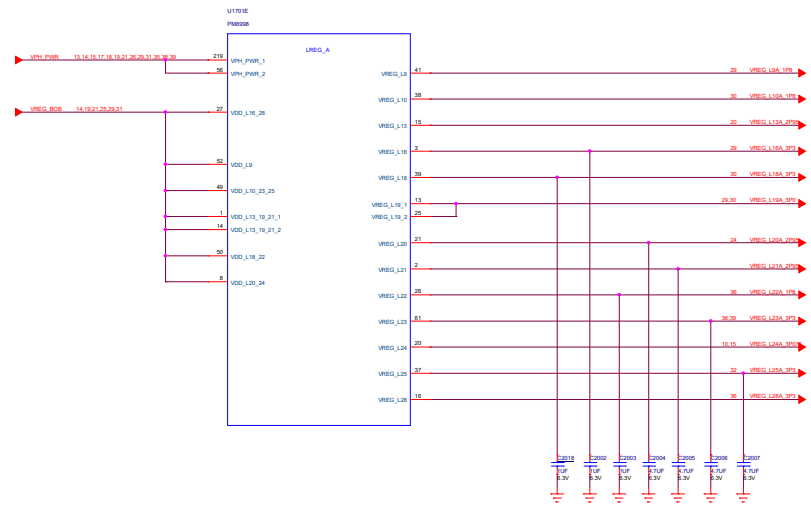
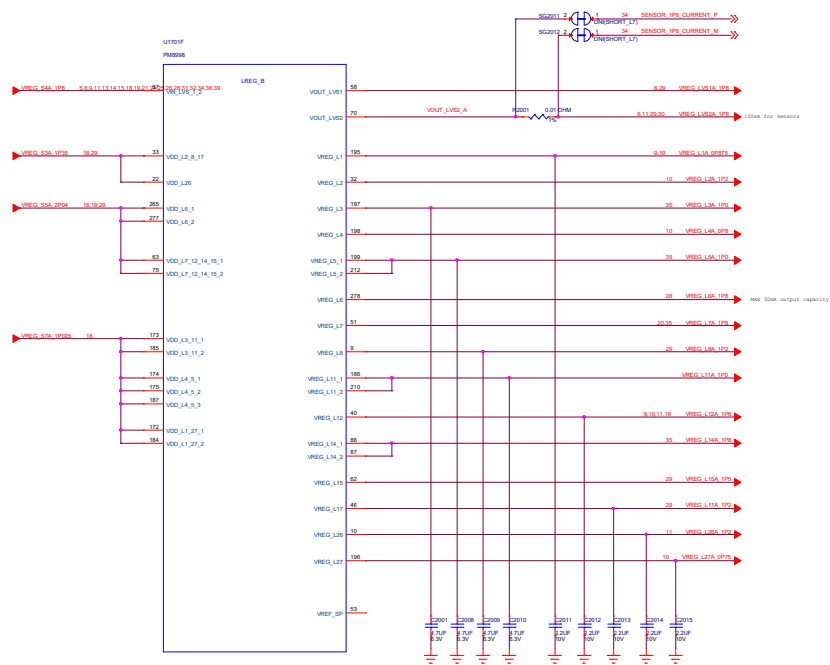


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Rev	1	Doc	PM8998





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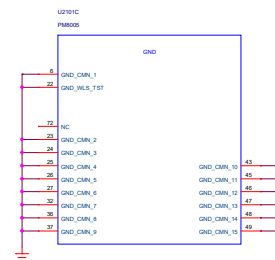
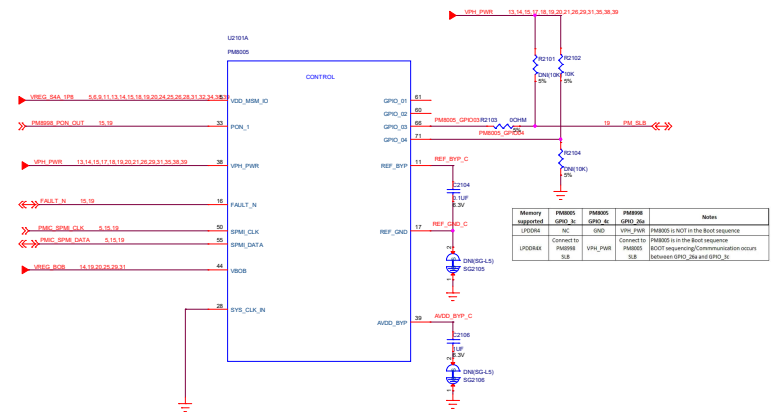
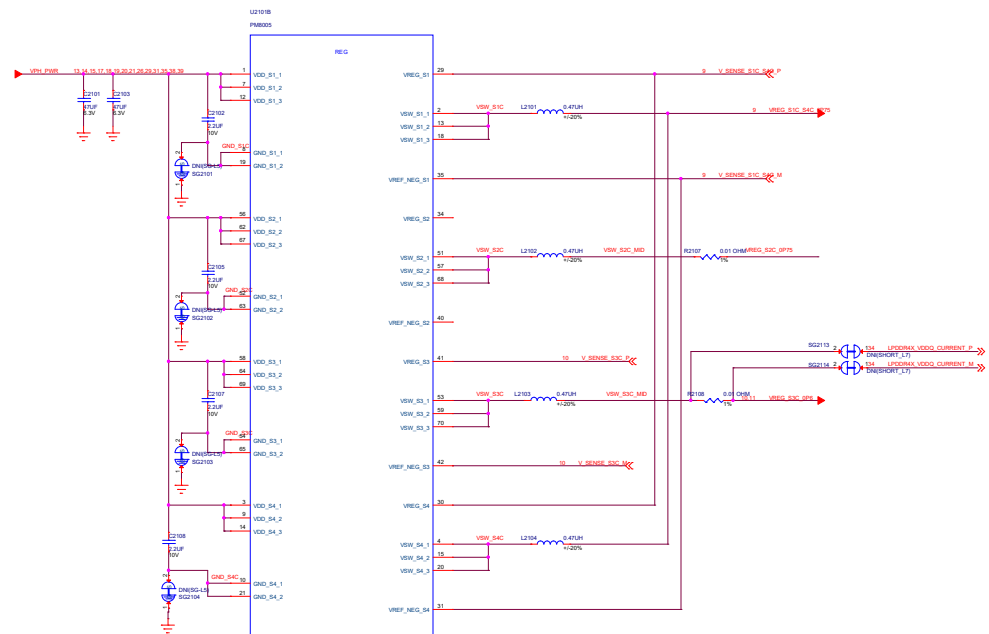
Notes:  
1. Power-on reset (POR) delay is 100ms. The delay is 100ms for VREG\_L1, VREG\_L2, VREG\_L3, VREG\_L4, VREG\_L5, VREG\_L6, VREG\_L7, VREG\_L8, VREG\_L9, VREG\_L10, VREG\_L11, VREG\_L12, VREG\_L13, VREG\_L14, VREG\_L15, VREG\_L16, VREG\_L17, VREG\_L18, VREG\_L19, VREG\_L20, VREG\_L21, VREG\_L22, VREG\_L23, VREG\_L24, VREG\_L25, VREG\_L26, VREG\_L27, VREG\_L28, VREG\_L29, VREG\_L30, VREG\_L31, VREG\_L32, VREG\_L33, VREG\_L34, VREG\_L35, VREG\_L36, VREG\_L37, VREG\_L38, VREG\_L39, VREG\_L40, VREG\_L41, VREG\_L42, VREG\_L43, VREG\_L44, VREG\_L45, VREG\_L46, VREG\_L47, VREG\_L48, VREG\_L49, VREG\_L50, VREG\_L51, VREG\_L52, VREG\_L53, VREG\_L54, VREG\_L55, VREG\_L56, VREG\_L57, VREG\_L58, VREG\_L59, VREG\_L60, VREG\_L61, VREG\_L62, VREG\_L63, VREG\_L64, VREG\_L65, VREG\_L66, VREG\_L67, VREG\_L68, VREG\_L69, VREG\_L70, VREG\_L71, VREG\_L72, VREG\_L73, VREG\_L74, VREG\_L75, VREG\_L76, VREG\_L77, VREG\_L78, VREG\_L79, VREG\_L80, VREG\_L81, VREG\_L82, VREG\_L83, VREG\_L84, VREG\_L85, VREG\_L86, VREG\_L87, VREG\_L88, VREG\_L89, VREG\_L90, VREG\_L91, VREG\_L92, VREG\_L93, VREG\_L94, VREG\_L95, VREG\_L96, VREG\_L97, VREG\_L98, VREG\_L99, VREG\_L100.



PMIC	Signal (poweron sequential order)
PM8998	PON_TRIGGER
PM8998	REF_BYP
PM8998	PON_OUT
PM8998	VREG_05
PM8998	VREG_00
PM8998	VREG_00B
PM8998	VREG_00A/VREG_01/VREG_08
PM8998	VREG_03
PM8998	VREG_07
PM8998	VREG_11
PM8998	VREG_04
PM8998	VREF_INA
PM8998	VREG_17
PM8998	VREG_05
PM8998	VREG_17
PM8998	VREG_17
PM8998	VREG_125
PM8998	STEP_CLK
PM8998	REF_CLK2
PM8998	SPD14
PM8998	VREG_12
PM8998	IN_BB_CLK1
PM8998	VREG_02
PM8998	SPD10A
PM8998	VREG_03C
PM8998	VREG_12
PM8998	VREG_11
PM8998	VREG_124
PM8998	VREG_120
PM8998	VREG_126
PM8998	VREG_113
PM8998	VREG_123
PM8998	VREG_010
PM8998	PON_RESET_N

PM8998 LDO





PM8005



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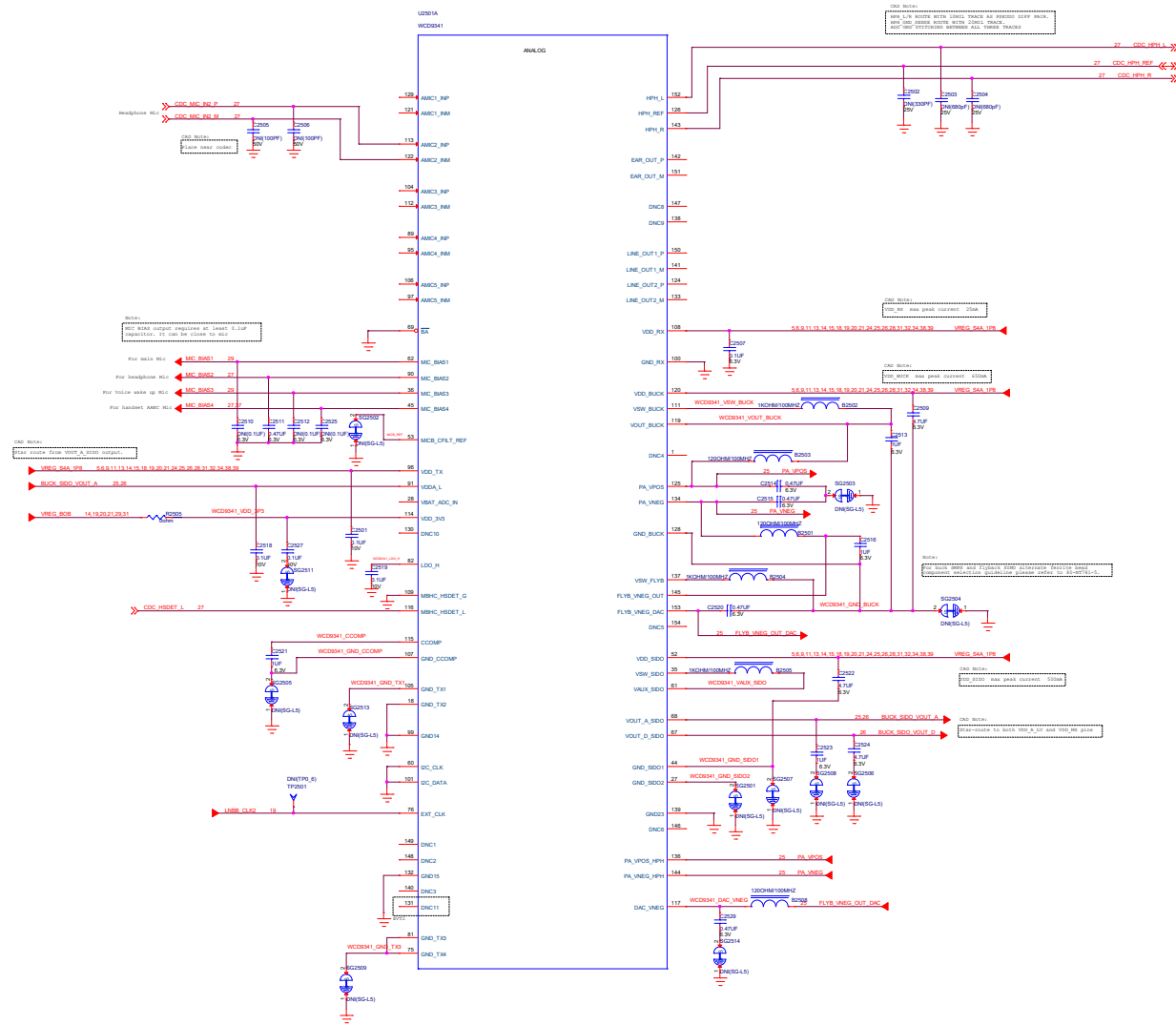


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WCD9341 ANALOG

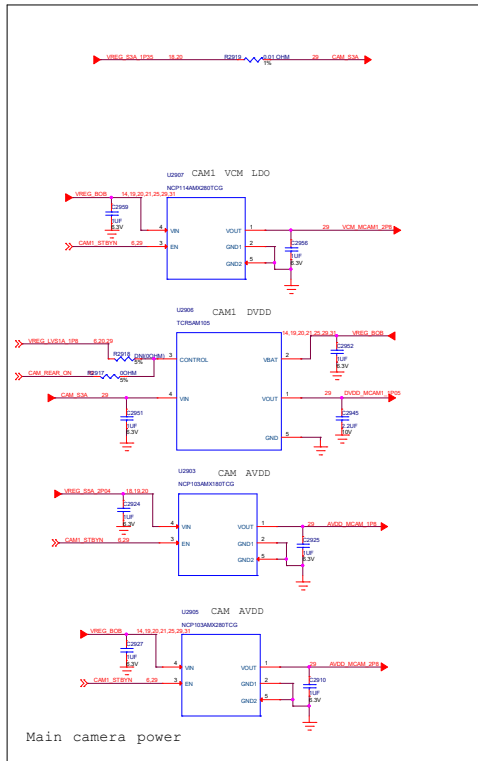


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Pin definition is not finalized

6DOF\_L CAMERA

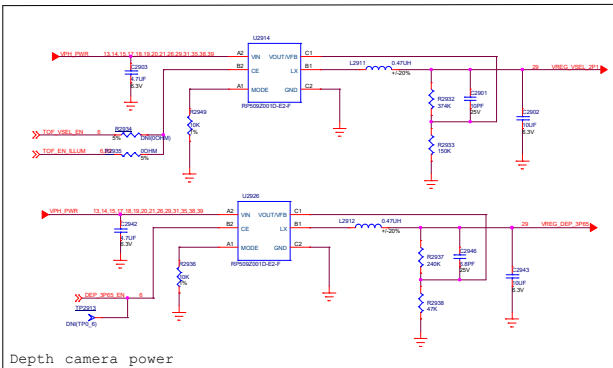
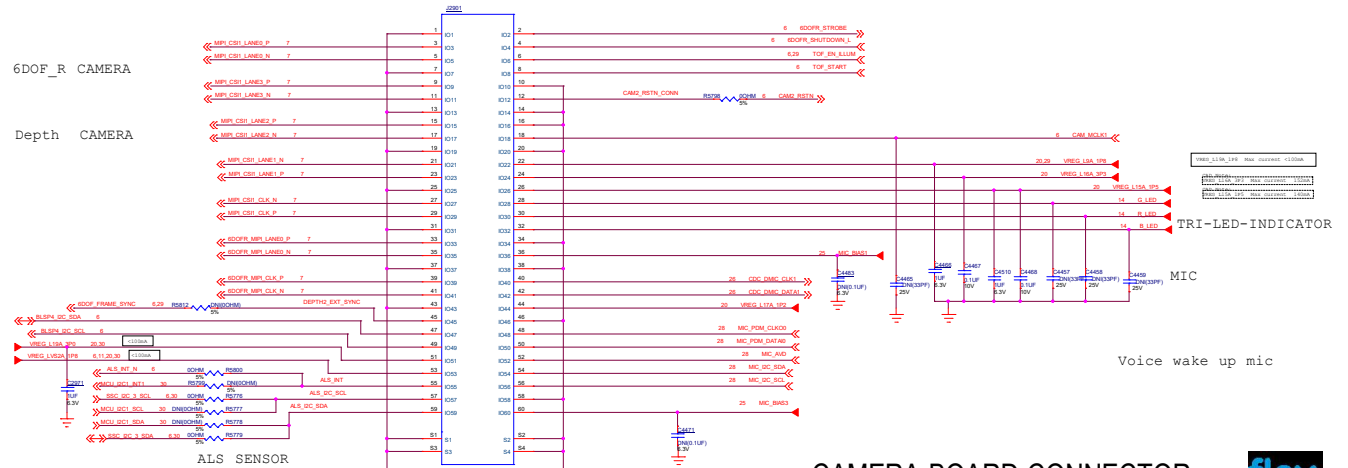
REAR CAMERA

6DOF\_R CAMERA

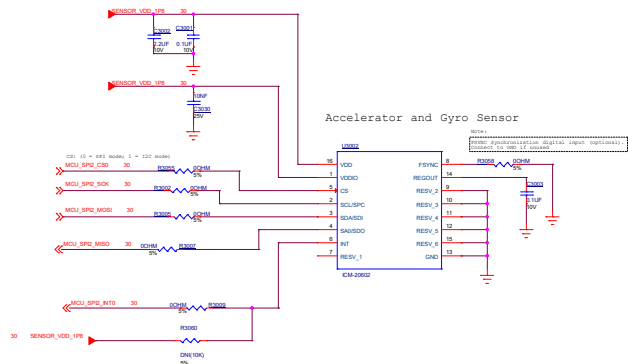
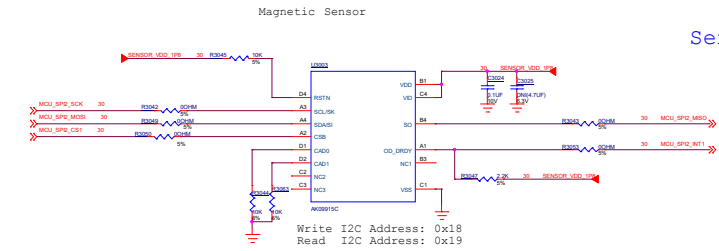
Depth CAMERA

6 DOF CAMERA

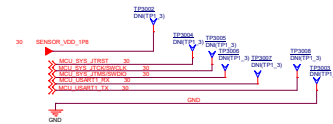
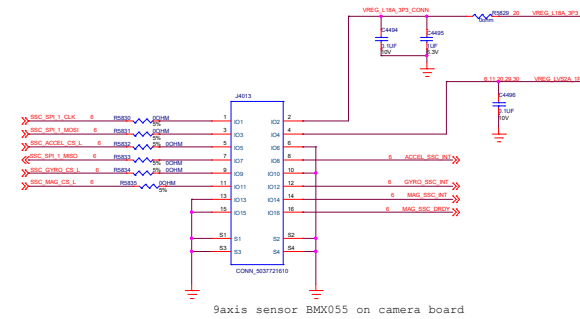
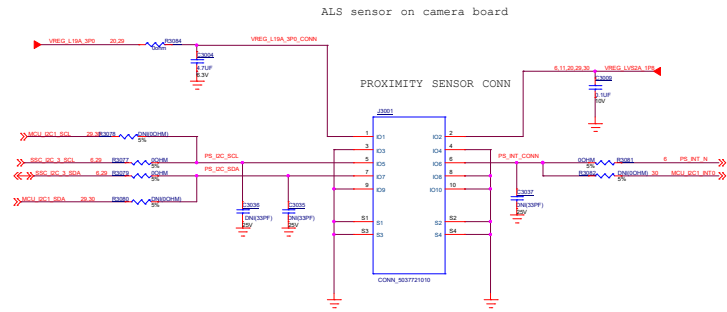
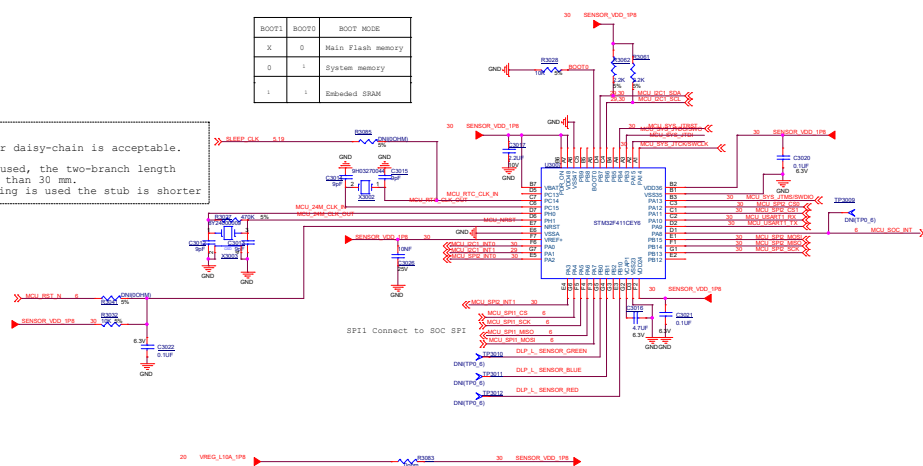
Pin definition is not finalized



## Sensors

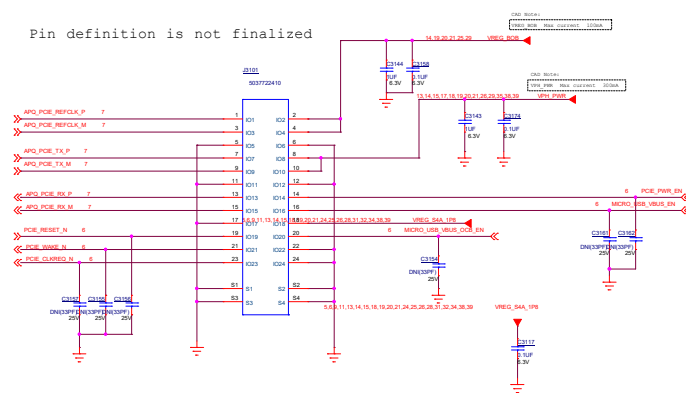


BOOT1	BOOT0	BOOT MODE
X	0	Main Flash memory
0	1	System memory
1	1	Embedded SRAM



SENSORS&amp;MCU





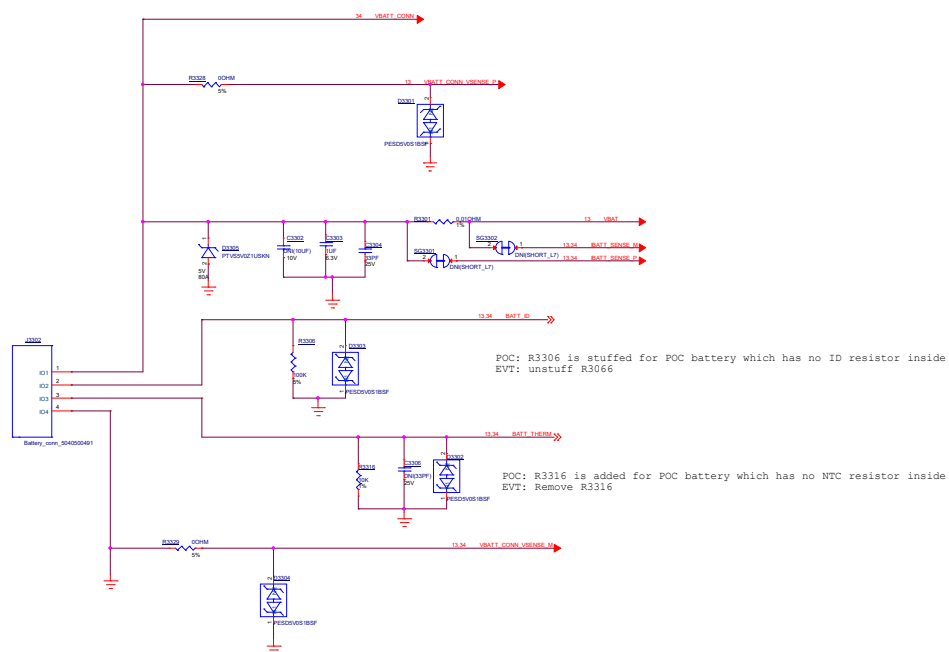
PCIE to USB Bridge Conn





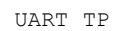


The battery connector pin definition is not finalized



Sub Battery CONN

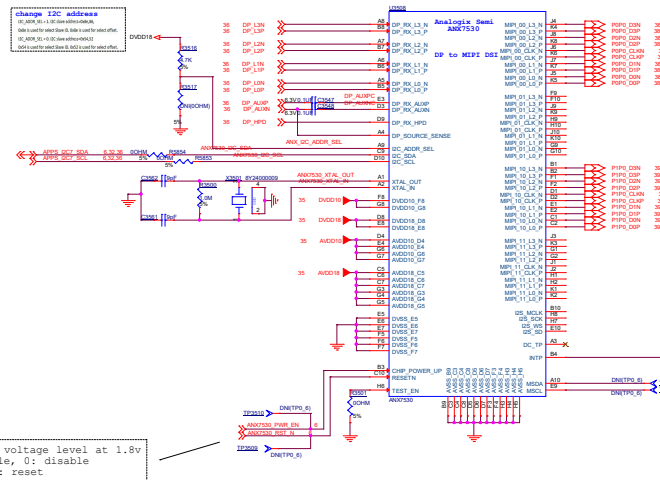




Test point/GND/Shields



## ANX7530



Note

```
From MSM8998, input voltage level at 1.8v
Pwr_Enable: 1: enable, 0: disable
Rst_N: 1: Normal, 0: reset
```

CAD Note

Decoupling capacitors close to ANX7530 PIN

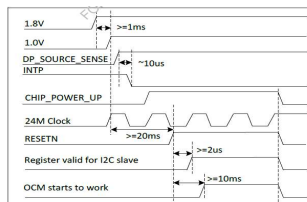
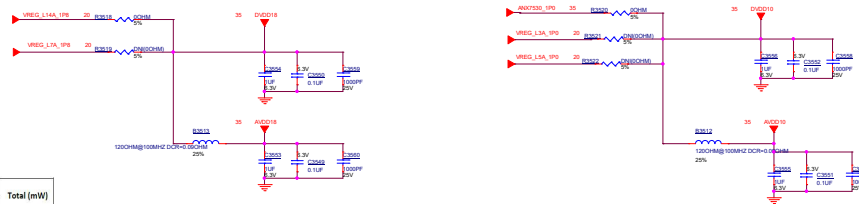


Table 6-6 Power Consumption in Active Mode

Input Video Clock	Current (mA)				Total (mW)
	AVDD10	AVDD18	DVDD18	DVDD10	
390MHz	178.00	77.00	1.00	88.00	406.40
524MHz	175.00	78.00	1.00	94.00	411.20
619MHz	175.00	78.00	1.00	101.00	418.20

CAD Note

DVDD10 & AVDD10 276mA

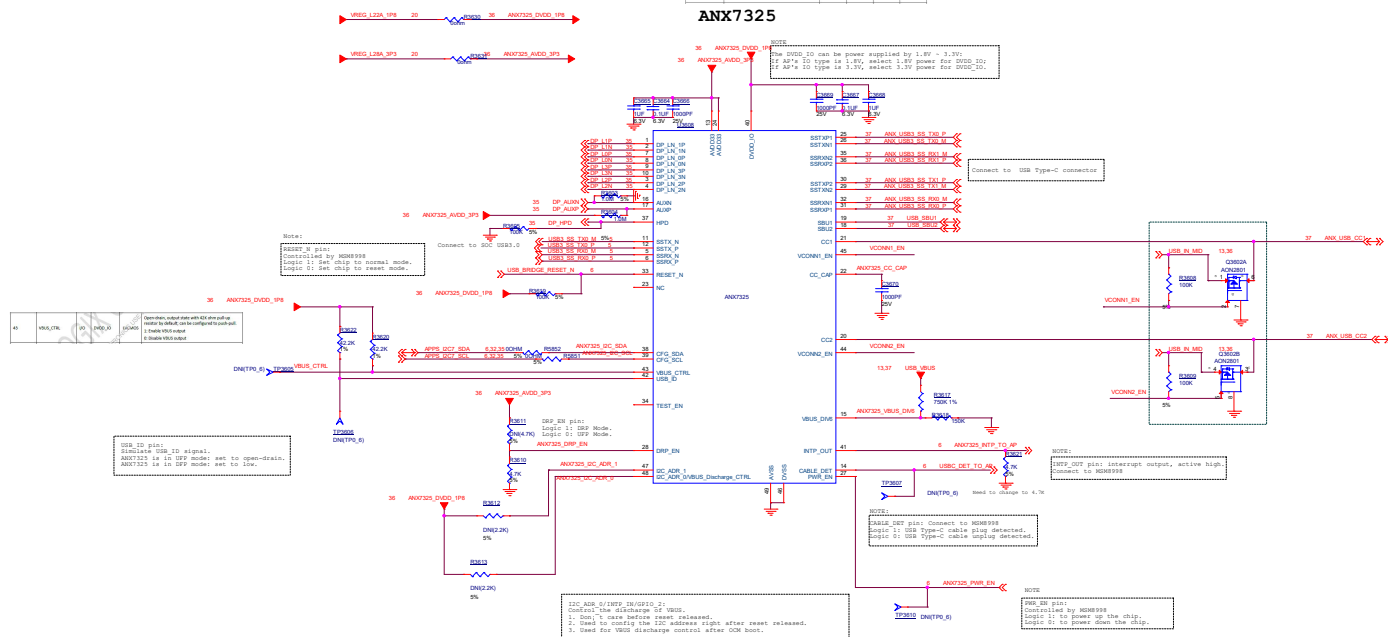


DP to MIPI Bridge ANX7530



Symbol	Parameter	Min	Typ	Max	Units
V <sub>VDD_IO</sub>	Digital supply voltage	1.7	3.3	3.63	V
V <sub>VDD33</sub>	Analog supply voltage	3.14	3.5	5.45	V

ANX7325



IPC Address Selection:

I2C_ADR_1	I2C_ADR_0	I2C_Adr
Logic 0	Logic 0	0x50
Logic 0	Logic 1	0x72
Logic 1	Logic 0	0x7c
Logic 1	Logic 1	0x80

```

I2C_ADR_1 and I2C_ADR_0 pins:
1. The I2C address is determined approximately 300ns after RESET_N turns from 0 to 1,
   these two pins' input should be kept at a stable value during this period.
2. There are internal pull-down resistors on I2C_ADR_0 and I2C_ADR_1 pins.
3. If external pull-up resistor is not populated, the I2C_ADR_0 or I2C_ADR_1 is logic 0.
4. If external pull-up is populated, the I2C_ADR_0 or I2C_ADR_1 is logic 1.

```

[illegible]

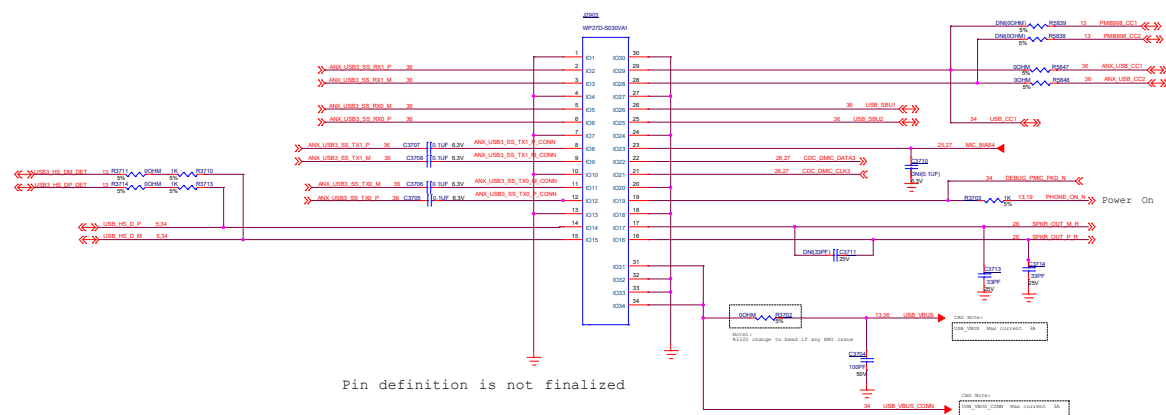
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USB TYPEC BRIDGE ANX7325



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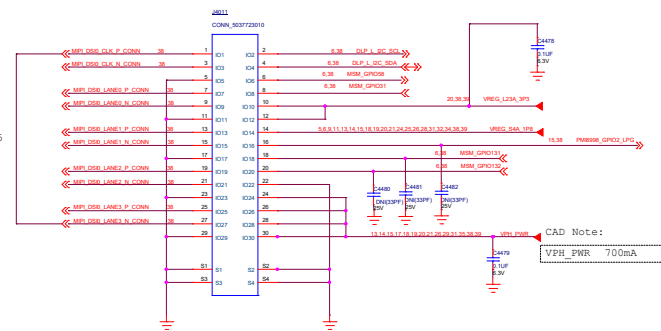
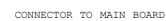
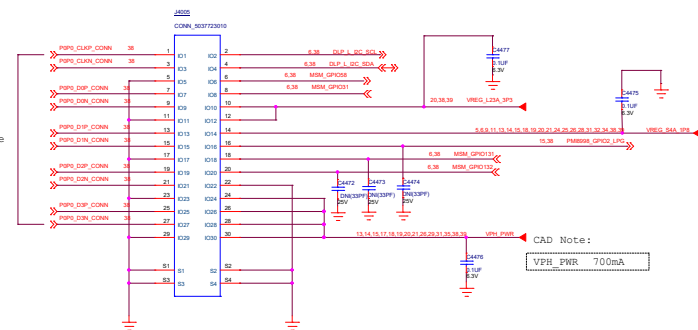
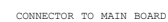
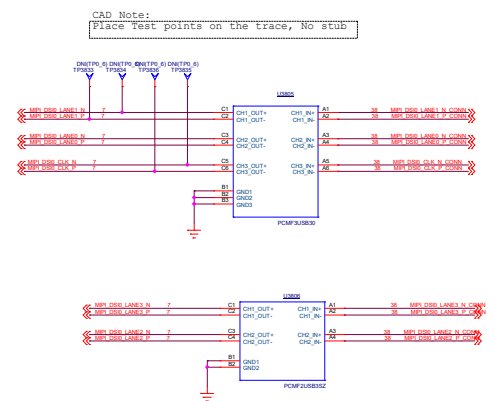
Note:  
To reduce the capacitive loading of DP/DM lines if required  
change R3711 and R3714 to ferrite beads



Pin definition is not finalized

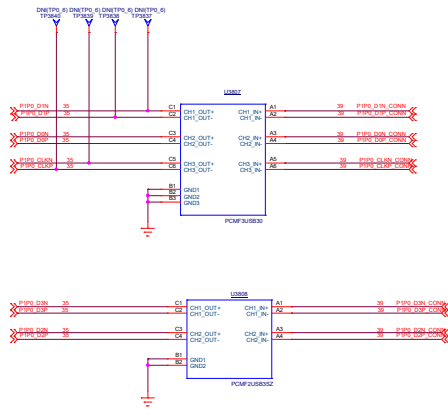
USB typeC board connector



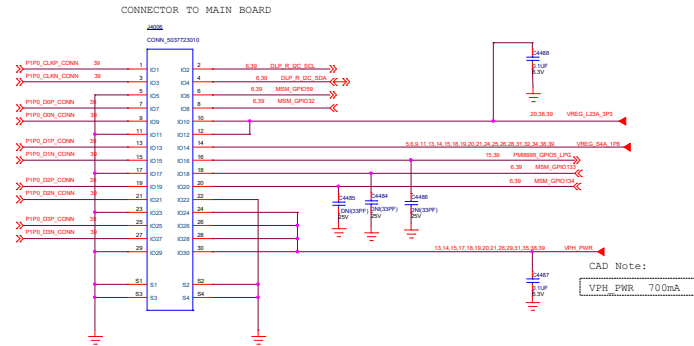


flex

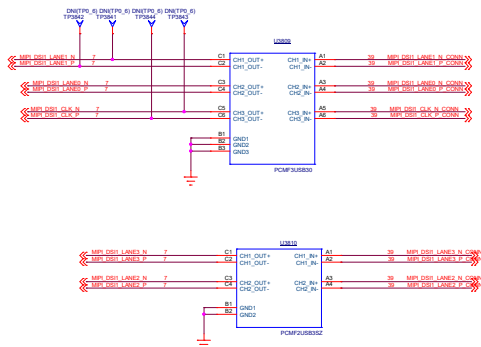
CAD Note:  
Place Test points on the trace, No stub



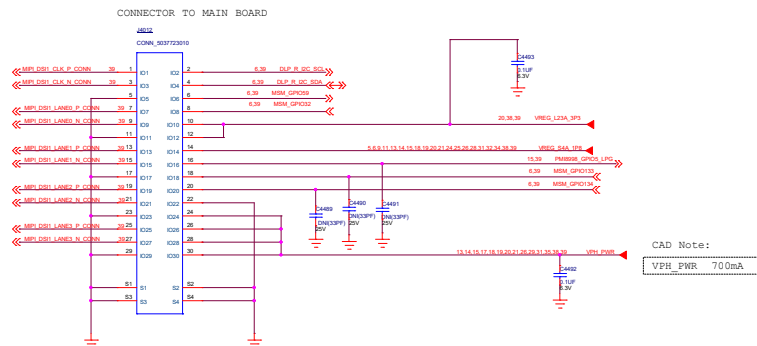
Pin definition is not finalized



CAD Note:  
Place test points on the trace, No stub



Pin definition is not finalized



RIGHT DLP board connector **flex**

# Change list

## EVT1 change list

[6/30] Page28: Change C2836 from 0201 0.1uf to 0201 1uf  
[6/30] Page29: Add 0201 1uf capacitor C4510  
[7/3] Page29: Change C4466 from 0.1uf to 1uf  
[7/5] Page6: add a test point TP3858  
[7/5] Page30: add a 10K pull-up resistor R3060 for ICM20602 int, DNI  
[7/6] Page11: add capacitor C1160/C1161/C1162/C1163/C1164 for better PDN performance  
[7/10] Page33: stuff R3306/add R3316 for POC battery  
[7/10] Page29: add a 1.0uf capacitor C2970  
[7/10] Page15: add a TP TP1501 for FAULT\_N  
[7/10] Page05: add a TP TP0510 for LN\_BB\_CLK1\_EN  
[7/11] Page26: Remove TP2701/TP2702  
[7/11] Page29: unstuff C4483/C4471  
[7/11] Page27: unstuff C2701  
[7/11] Page37: unstuff C3710  
[7/12] Page29: Change R2932 from 300k to 374k  
[7/14] Page29: Remove SG2901 SG2902 for better routing  
[7/24] Page30: Change R3085 to DNI  
[7/24] Page38/Page39: Change the pin definition of EMI filters  
[7/24] Page29: Change R2934 to unstuffed, Change R2935 to stuffed  
[7/24] Page29: Add testpoint TP2912/TP2913  
[7/24] Page32: Change Resistor R5843/R5844 from unstuffed to stuffed  
[7/28] Page13: Change Resistor R5858 from unstuffed to stuffed

## Revision History



Rev			
*Title*			
Rev	Document Number	Rev	Rev
1	0000	1	0000