

I2C	Sub SYS	Function	Part Number	I2C Spec.	Budget Timing	I2C Slave Address / Write / Read (7-bit mode)		
I2C-0	AP	Cap Touch controller	GT1151	400 Kbps	Yes.	0x5D	Write:0xBA / Read:0xBB	
		LCM Gate Drive	RT4801HWSC	400 Kbps	Yes.			
I2C-1 (I3C)	AP Sensor Hub	Magnetic Sensor	AK09918C	400 Kbps	Yes.	0x0C	Write:0x18 / Read:0x19	
		Ambient Light Sensor	CM36558	400 Kbps	Yes.	0x51	Write:0xA2 / Read:0xA3	
		Proximity Sensor						
		Pressure Sensor	BMP280	400 Kbps	Yes.	0x77	Write:0xEE / Read:0xEF	
I2C-2 (I3C)	AP	Rear Camera	IMX519	400 Kbps		0x1A	Write:0x34 / Read:0x35	
			EEPROM	400 Kbps		0x50	Write:0xA0 / Read:0xA1	
			AF driver	400 Kbps		0x0C	Write:0x18 / Read:0x19	
			SK2P7	400 Kbps		0x2D	Write:0x5A / Read:0x5B	
		Dual cam (B+b) - Main1	EEPROM	400 Kbps		0x50	Write:0xA0 / Read:0xA1	
			AF driver	400 Kbps		0x0C	Write:0x18 / Read:0x19	
I2C-3	AP	NFC	ST21NFCD	400 Kbps	Yes.	0x08	Write:0x10 / Read:0x11	
		Dual cam (B+b) - Main2	OV8856	400 Kbps		0x10	Write:0x20 / Read:0x21	
			EEPROM=NA					
			AF driver=NA					
I2C-4 (I3C)	AP	Front Camera	SK2T7	400 Kbps		0x2D	Write:0x5A / Read:0x5B	
			EEPROM	400 Kbps		0x52	Write:0xA4 / Read:0xA5	
			AF driver=NA					
I2C-5	AP	Reserved						
I2C-6	AP SSPM	Reserved						
I2C-7	AP	Audio Smart PA	MT6660	400 Kbps	Yes.	0x34	Write:0x68 / Read:0x69	
		SW Charger	SW Charger	400 Kbps	Yes.			
		CC Detect	RT1715WSC	400 Kbps	Yes.			
		Flash LED 5V Boost	RT4505	400 Kbps	Yes.			

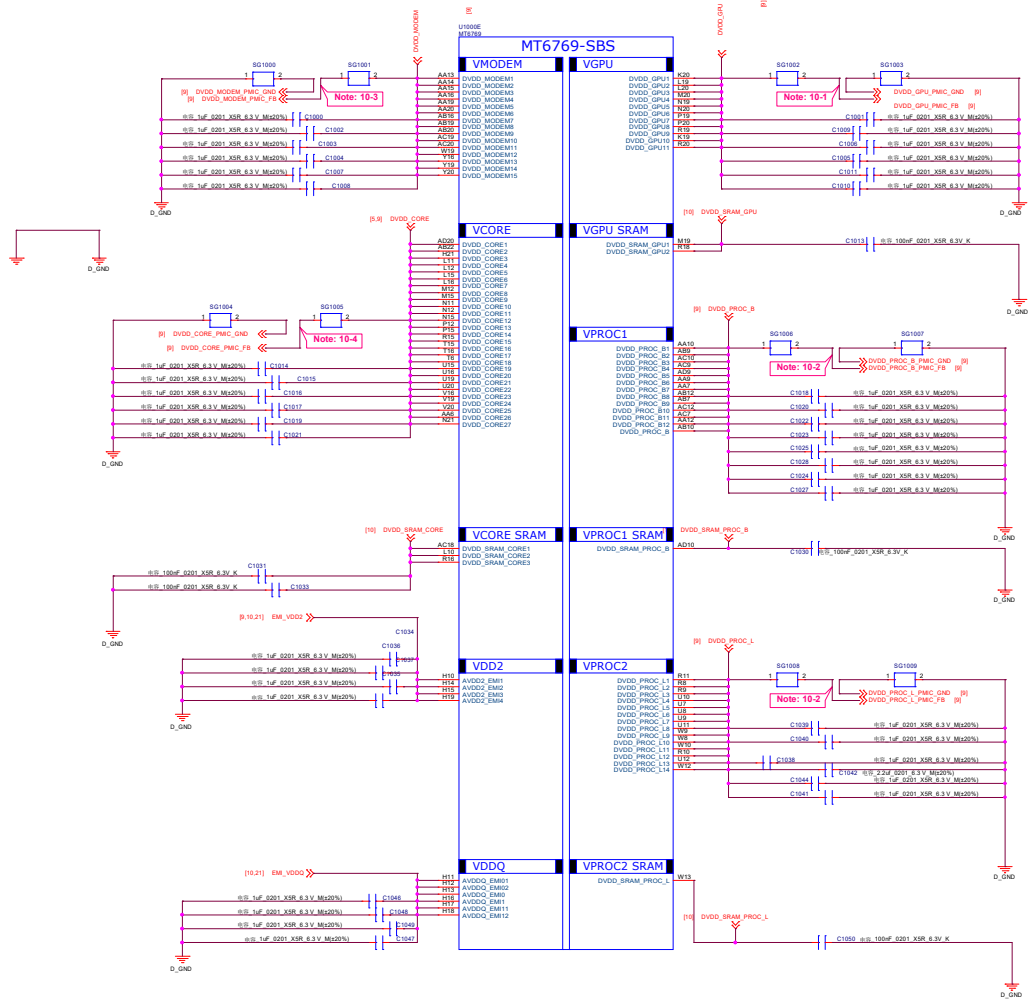
Note : I2C Spec. : Standard mode (100 kbps) and Fast mode (400 kbps), Fast mode Plus (1 Mbps) and High-speed mode (3.4 Mbps)

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Date	Category	Item
2018.12.14 (V0.1)	Page 04	V0.1 Release
2019.01.11 (V0.2)	Page 12	Add CAM_PDN3(GPIO110) HW pin for Note 12-4: HW pin for DDR type feature in bootstrap Delete R1007 and R1012 ext. pull for LP4X eMCP
	Page 13	Add CAM_PDN3(GPIO110)'s Note : No ext. pull for DDR type feature in bootstrap
	Page 69	Add CAM_PDN3(GPIO110)'s Note : No ext. pull for DDR type feature in bootstrap
	Page 21	Add C2106 for VBIF28 cap
	Page 22	Delete R2202

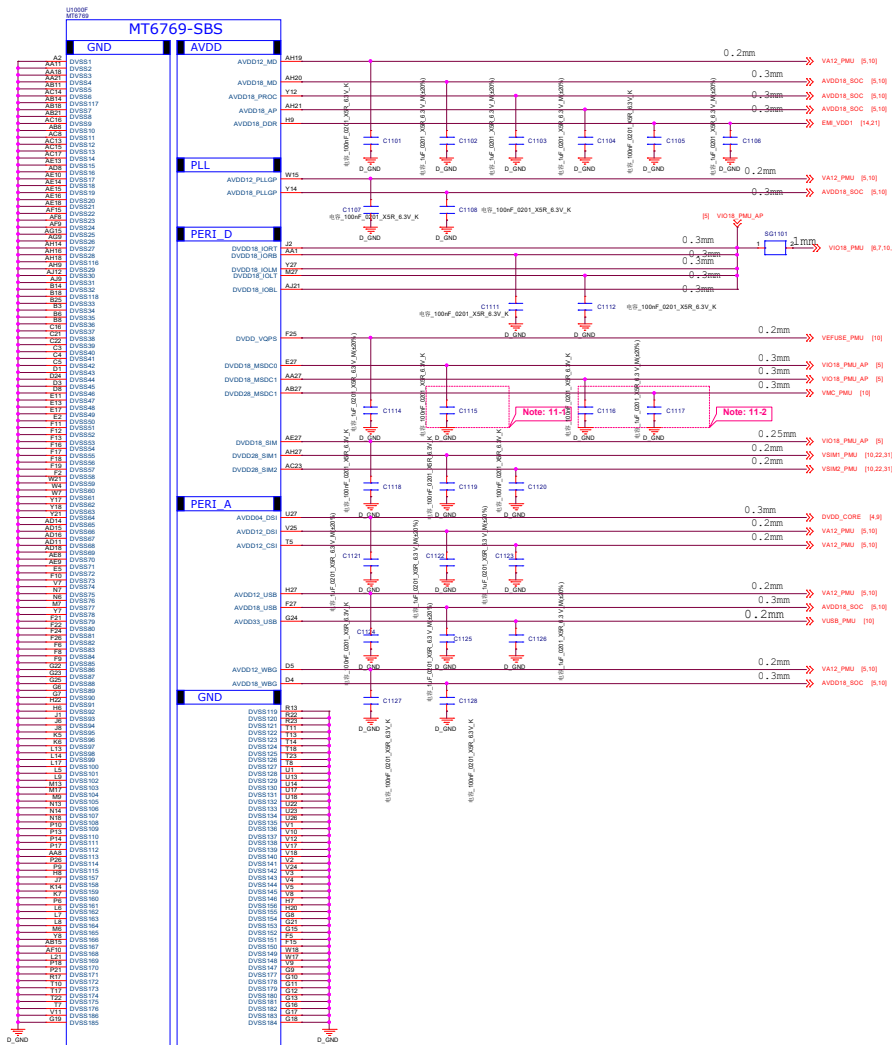
华勤通讯 Huaqin Telecom Technology Com.,Ltd		
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Schematic design notice of "10_BB_POWER_PDN" page:



- Note 10-1: Differential pair of DVDD_GPU remote sense must be close to BB's ball.
Remote sense trace with GND shielding to PMIC (Differential)
- Note 10-2: Differential pair of DVDD_PROC remote sense must be close to BB's ball.
Remote sense trace with GND shielding to PMIC (Differential)
- Note 10-3: Differential pair of DVDD_MODEM remote sense must be close to BB's ball.
Remote sense trace with GND shielding to PMIC (Differential)
- Note 10-4: Differential pair of DVDD_CORE remote sense must be close to BB's ball.
Remote sense trace with GND shielding to PMIC (Differential)

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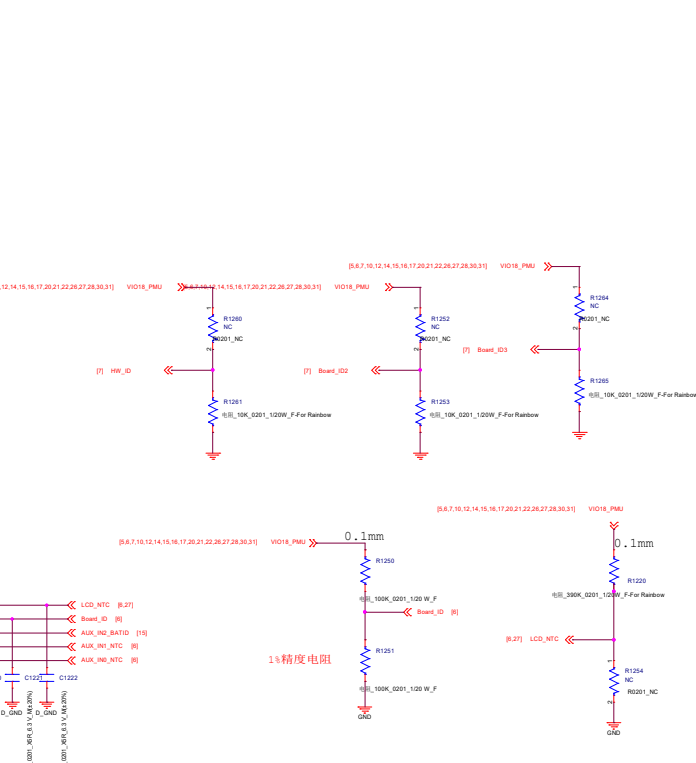
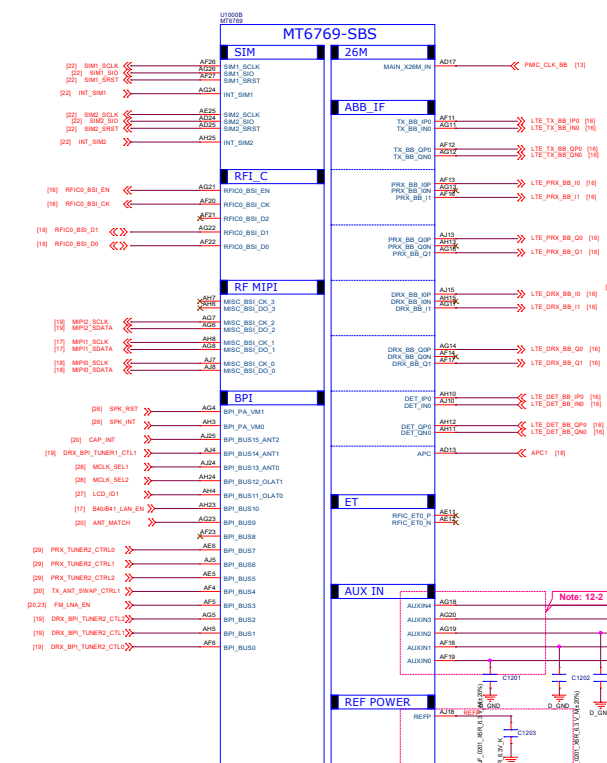
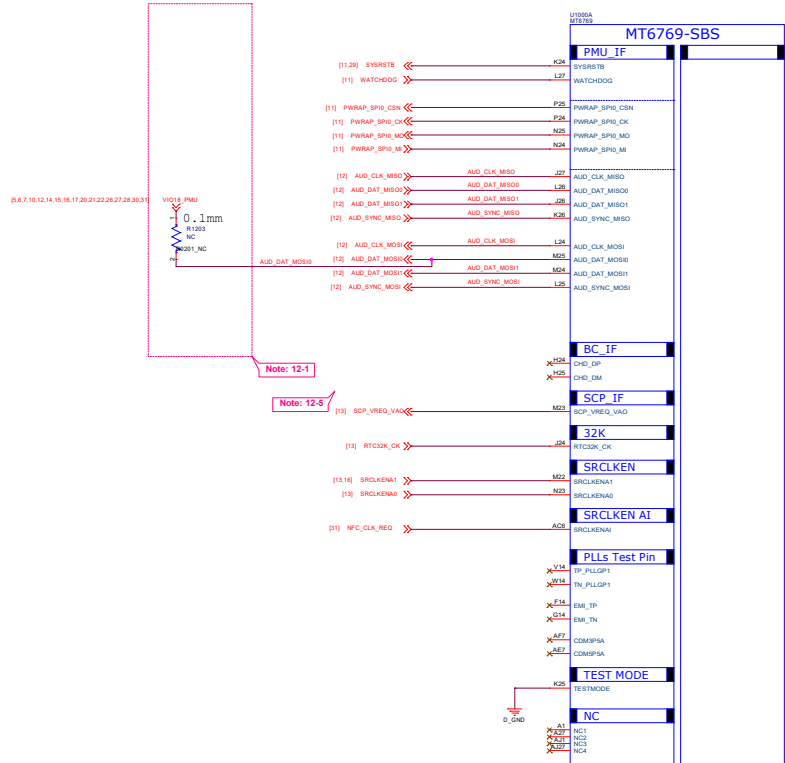
Schematic design notice of "11_BB_POWER_IO" page:

Note 11-1: C1115 closed DVDD18_MSDC0 150mil

Note 11-2: C1116 closed DVDD18_MSDC1 150mil
C1117 closed DVDD28_MSDC1 150mil

AVDD12 : 单个点走8mil, 两路分支各16mil, 总路径20mil
VIO18_FPMU_AP: 总路径40mil
AVDD18_SOC: 总路径20mil

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Schematic design notice of "12_BB_1" page:

Note 12-1: PWRAP_SPI0_CSN* and *AUD_DAT_MOSIO* are bootstrap pins to select which interface will be the JTAG pin out

PWRAP_SPI0_CSN	AUD_DAT_MOSIO	JTAG Function	
default=PU	default=PD	AP_JTAG	MD_JTAG
HI	LO	N/A	N/A
HI	HI	SPI0 + EINT8	SPI2 + SPI3
LO	LO	SPI0 + EINT8	N/A
LO	HI	N/A	N/A

Note 12-2: To shunt a 1uF capacitor in the AUXIN ADC input to prevent noise coupling. It should be placed as close to BB as possible. Connect the unused AUX ADC input to GND.

Note 12-3: The de-coupling cap. for REFFP (AJ18 ball) have to be placed as close to BB as possible.

Note 12-4: HW pin for DDR type feature in bootstrap (refer to BB HW design Notice)

AUD_SYNC_MISO	AUD_CLK_MISO	CAM_PDN3	PMIC 6358 voltage	DDR Type
default=PD	default=PD	default=PD	VDRAM1 / VDRAM2	DDR
No ext. pull	No ext. pull	No ext. pull	1.125V / 0.6v	LP4X eMCP
12K pull to VIO18	No ext. pull	No ext. pull	OFF / 1.8v	Reserved
12K pull to VIO18	No ext. pull	No ext. pull	1.225v / OFF	LP3 eMCP
12K pull to VIO18	12K pull to VIO18	No ext. pull	1.125v / 1.8v	Reserved

Note 12-5: Charger must have D+/-D- pin for charger type USB detection. Charger must have at least 500mA USB current for All charger type.

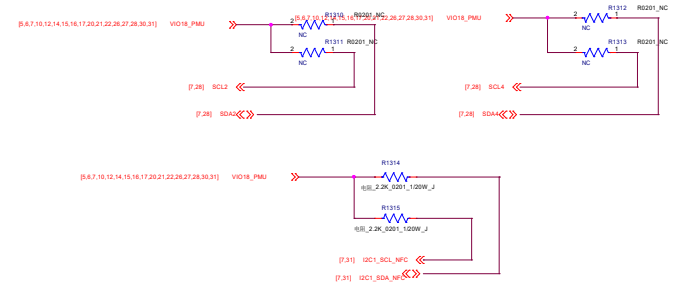
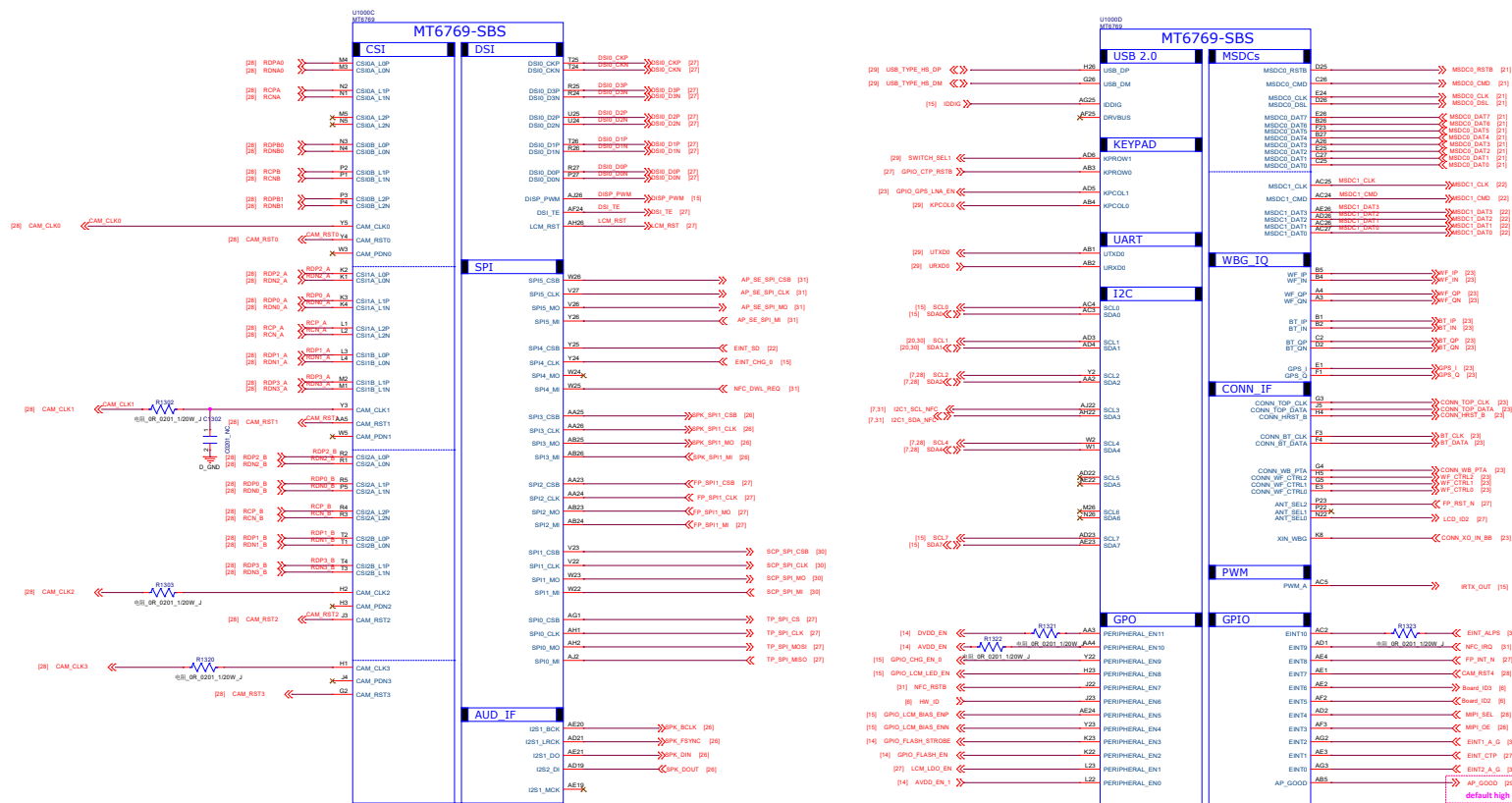
Thermistor to sense RF PA temperature

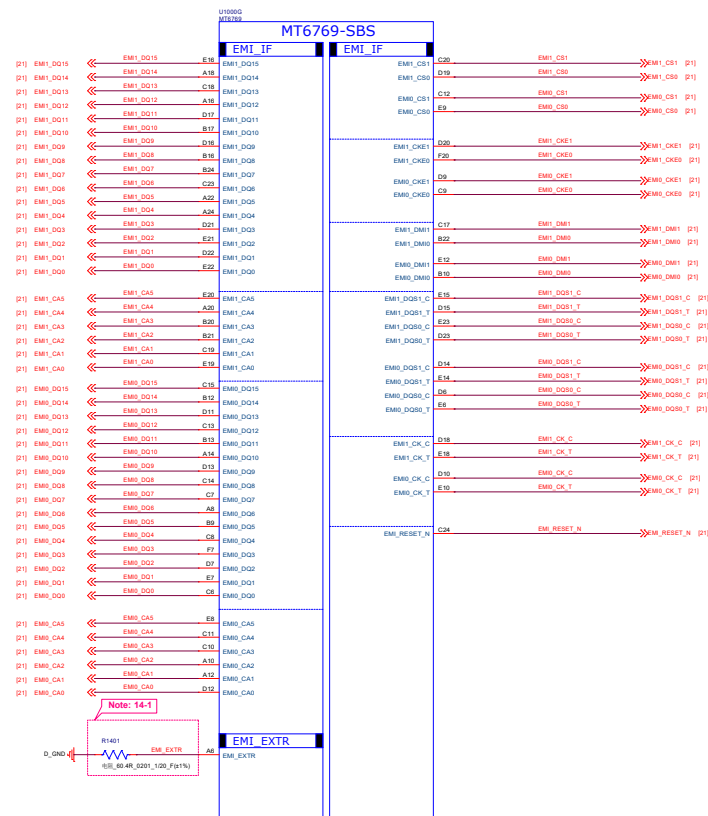
- R1208 must close to L1F Band 7 PA or the better P3 < 2mm.
- The distance is the shortest distance from package edge to edge.

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Schematic design notice of "14_BB_3" page.

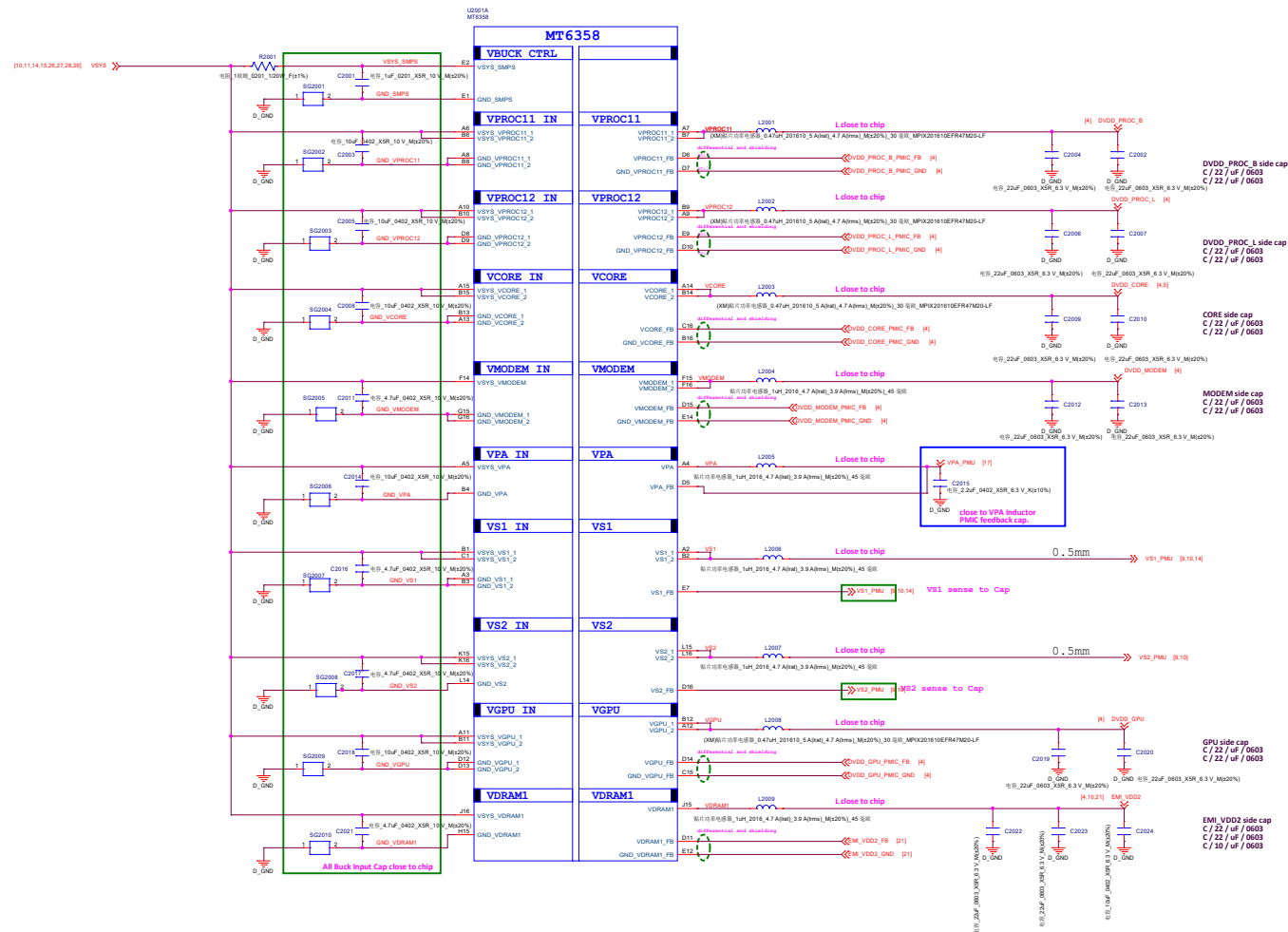
Note 14-1: R1401 please select 60.4 ohm (1%) resistor

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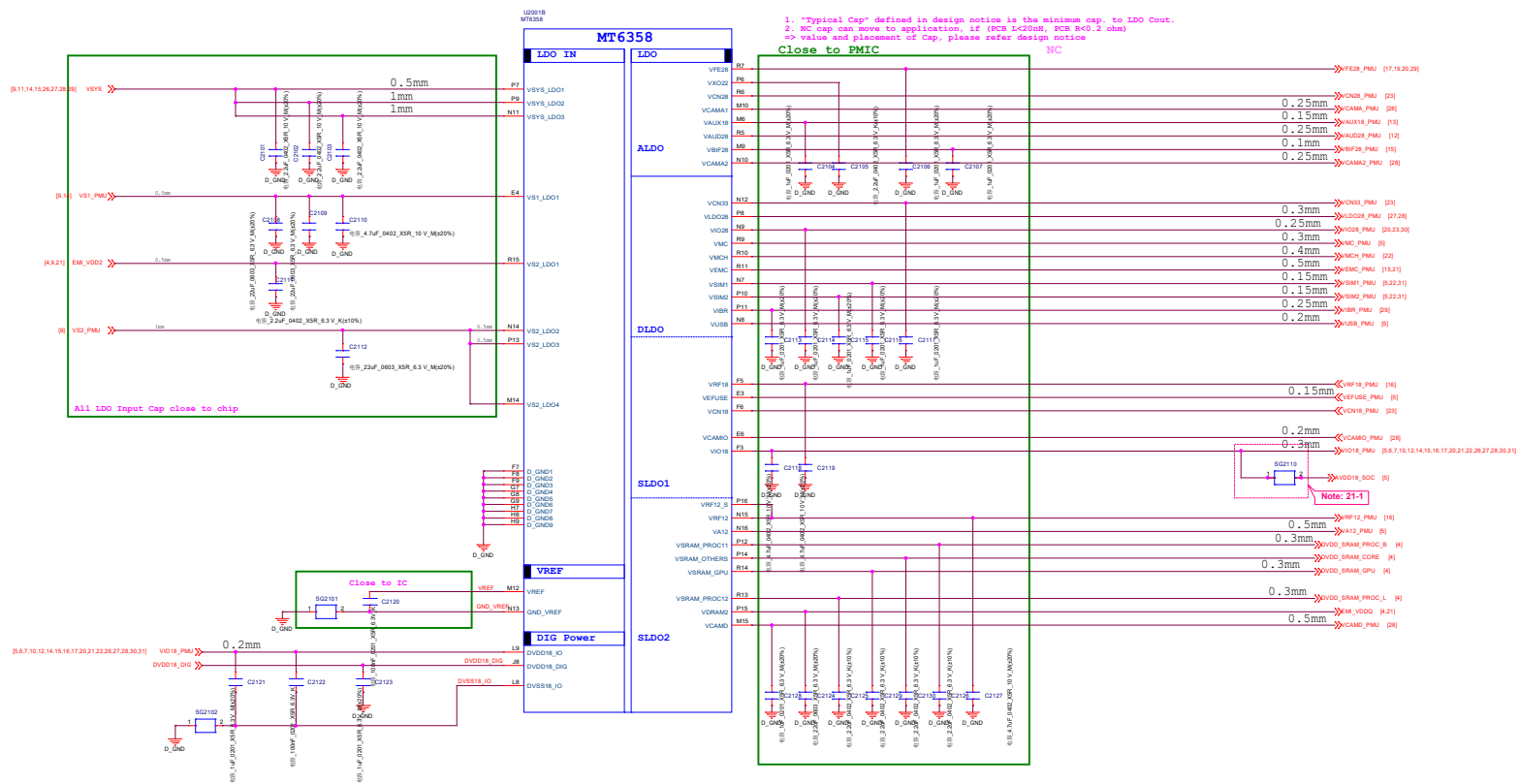
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1. "Typical Cap" defined in design notice is the minimum cap. to LDO Cout.
2. NC cap can move to application, if (CINB 1<200nF, RINB 8<0.2 ohm)
=> value and placement of Cap, please refer design notice

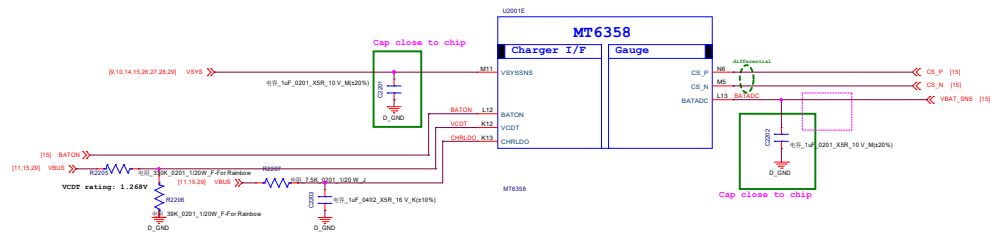
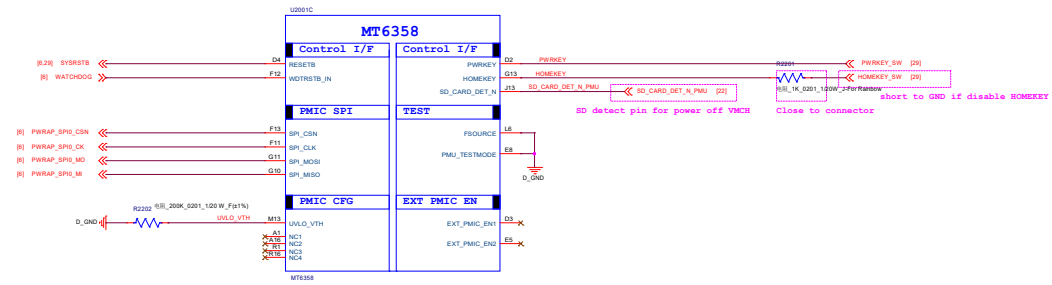
Schematic design notice of "21_POWER_MT6358-LDO" page.

Note 21-1: Please set SG2110 close to C2118, making star connection between VIO18_PMU and AVDD18_SOC near to LDO cap. C2118
Please also refer to MT6358 design notice for further detail design information

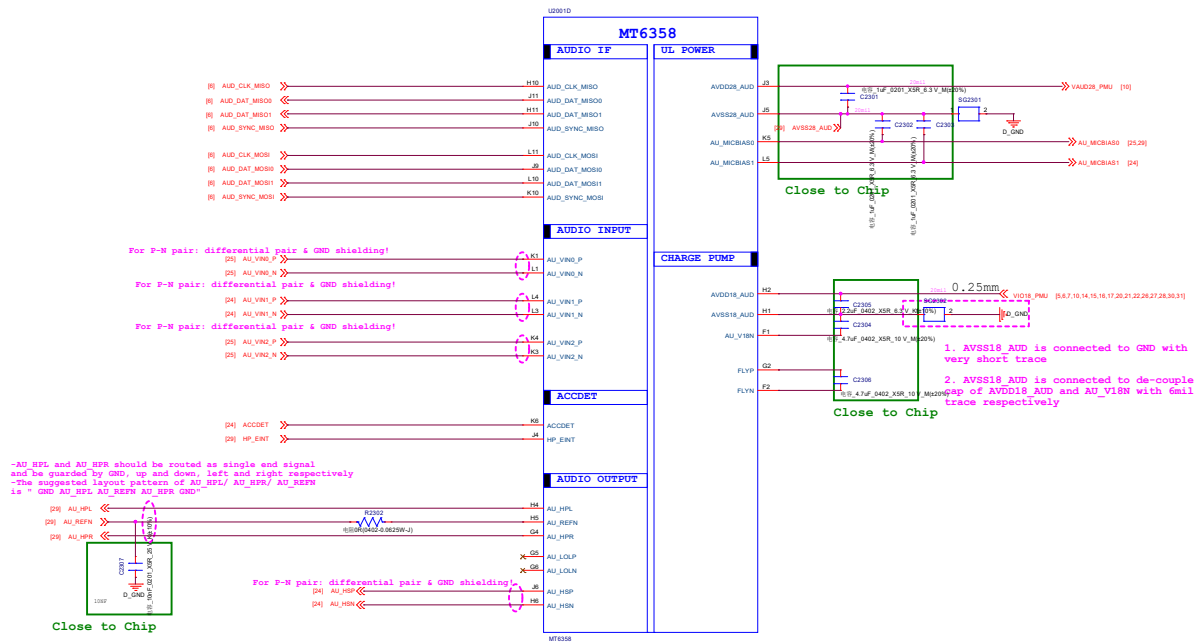
Note 21-2: If these power trace can meet LDO layout constraint, these CAP can be NC or removed.
Please refer to MT6358 design notice.

Note 21-2

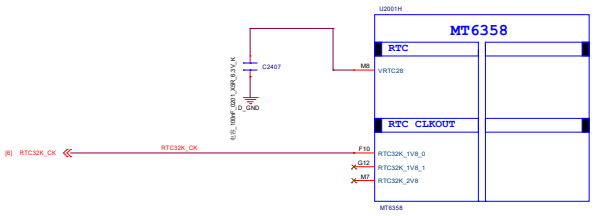
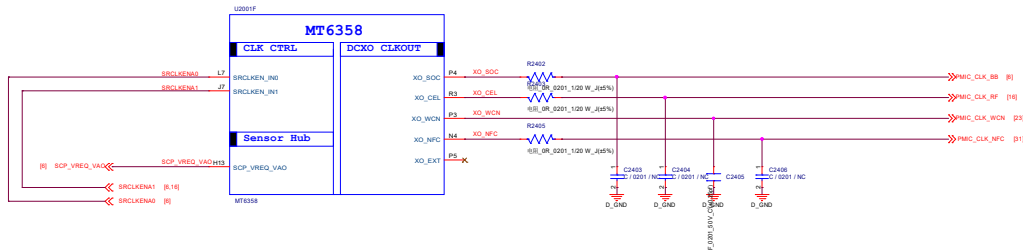
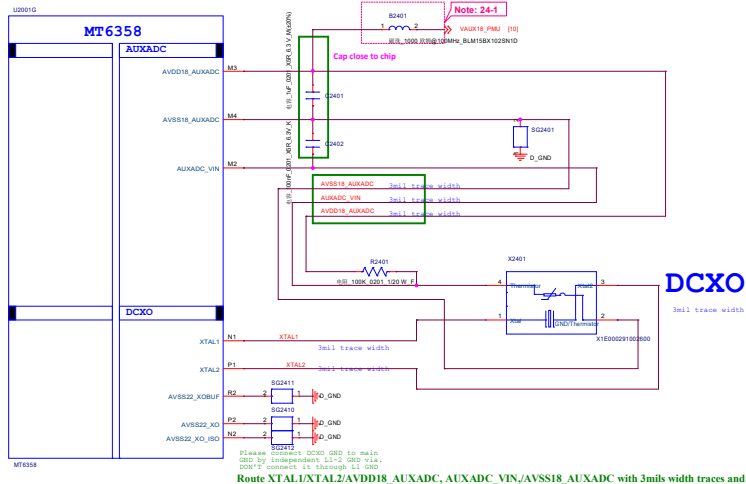
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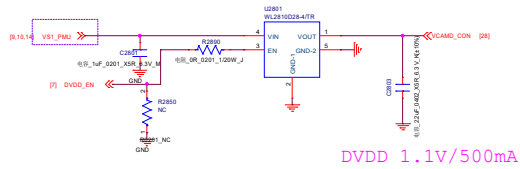
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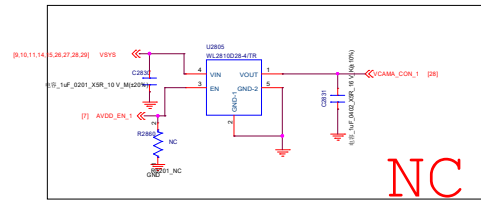
Schematic design notice of "24_POWER_MT6358_Clock"
 Note 24-1: Please follow MT6768_MT6358 Co-Clock Design Notice for Layout guide of VAUX18, then B2401 can use 0 ohm to replace BEAD.

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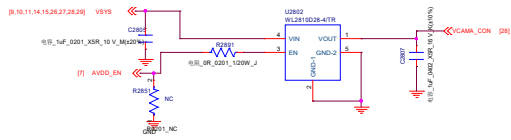
**LDO for Rear Camera (VCAMD_EXT1)
1.06V**



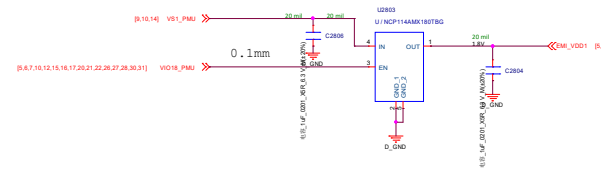
**LDO for Dual Camera (VCAMA_EXT)
2.8V**



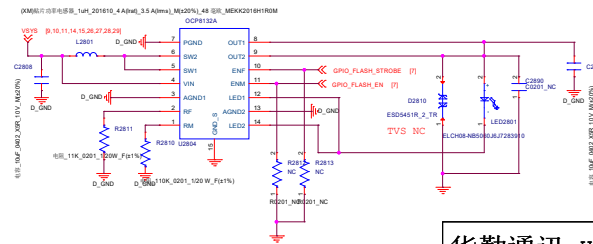
**LDO for Dual Camera (VCAMA_EXT)
2.8V**



Ext. EMI_VDD1 for LPDDR4X VDD1



Flash LED 5V Boost

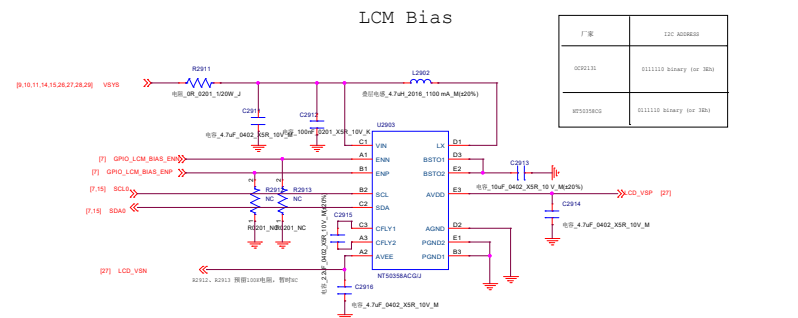
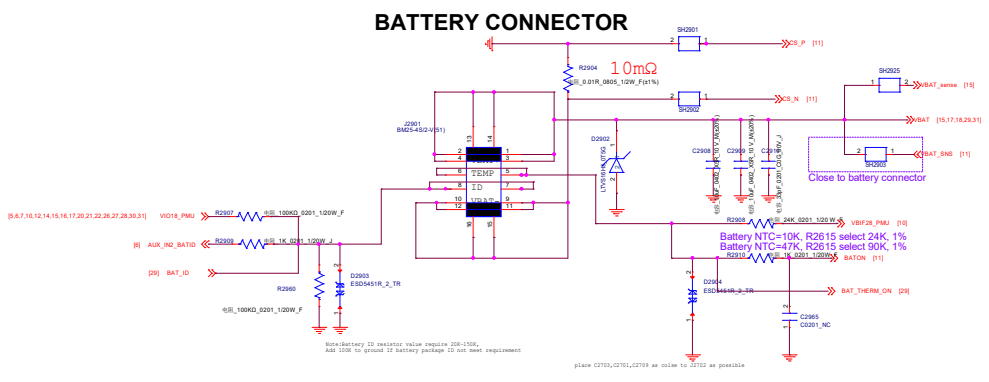
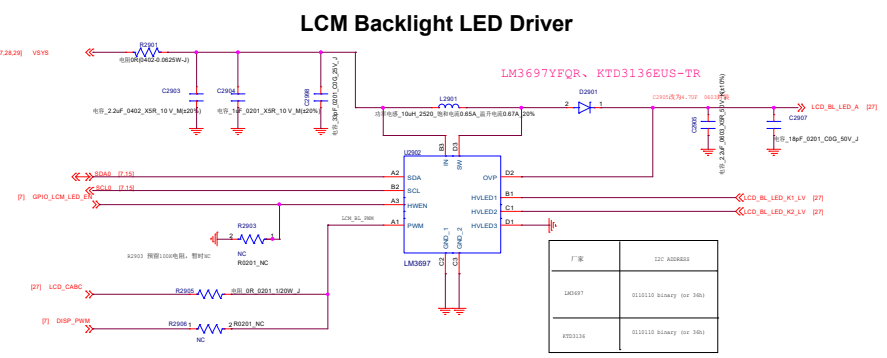
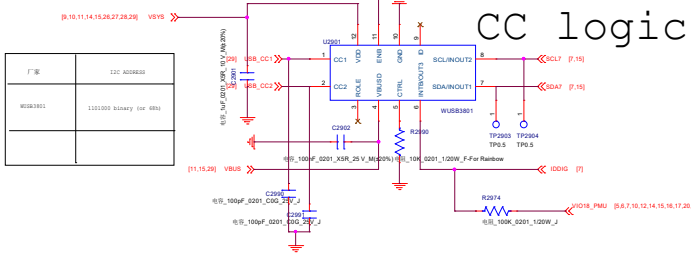


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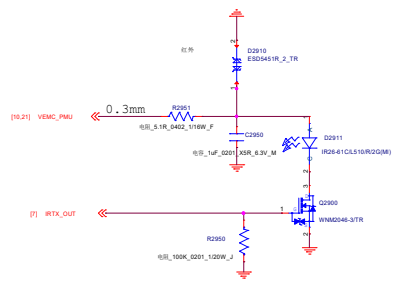
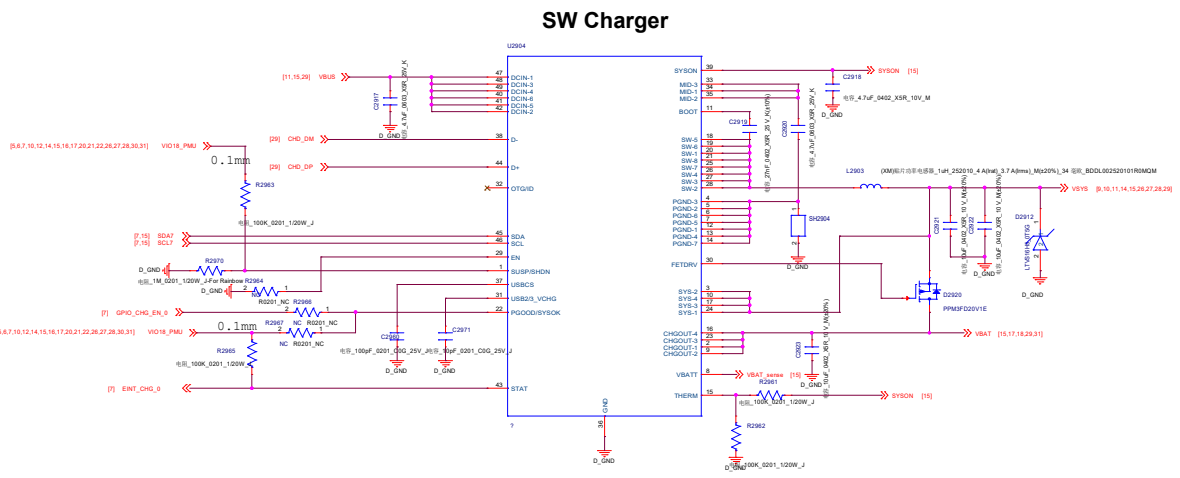
Title 01_Block_Diagram

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Schematic design notice of "29_EXT_WLED+DB+FL+CHG+PD" page.
 Note 29-1: For better ESD or surge performance we need choose suitable device for system protection. Please refer to [Surge device selection guide V2.0] provide by MTK.

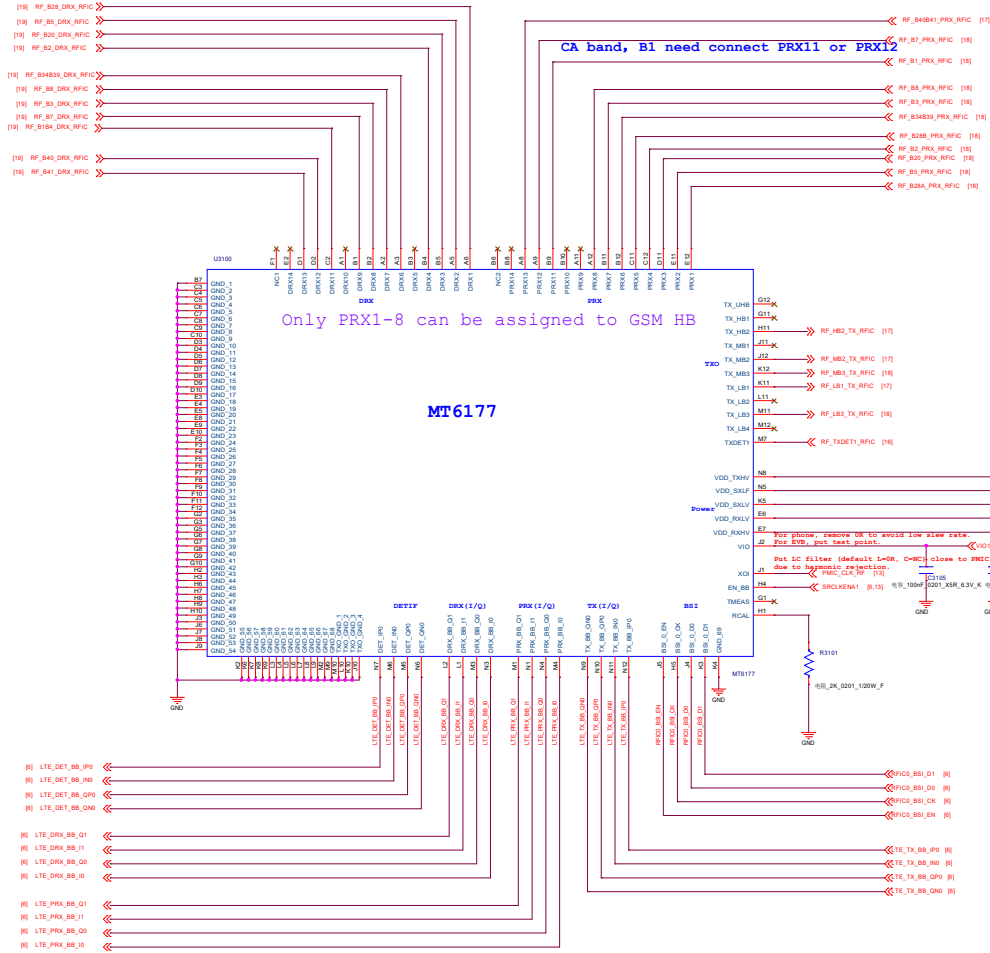
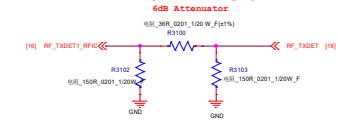


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Title 01_Block_Diagram		
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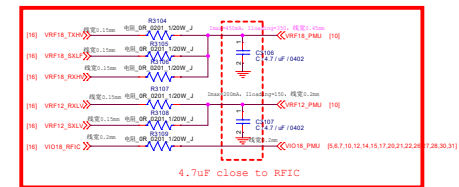
Attenuator for Detector

Transceiver

The linear detection range is 0-30dBm, coupling factor is 22-27dB.



Power For MT6177



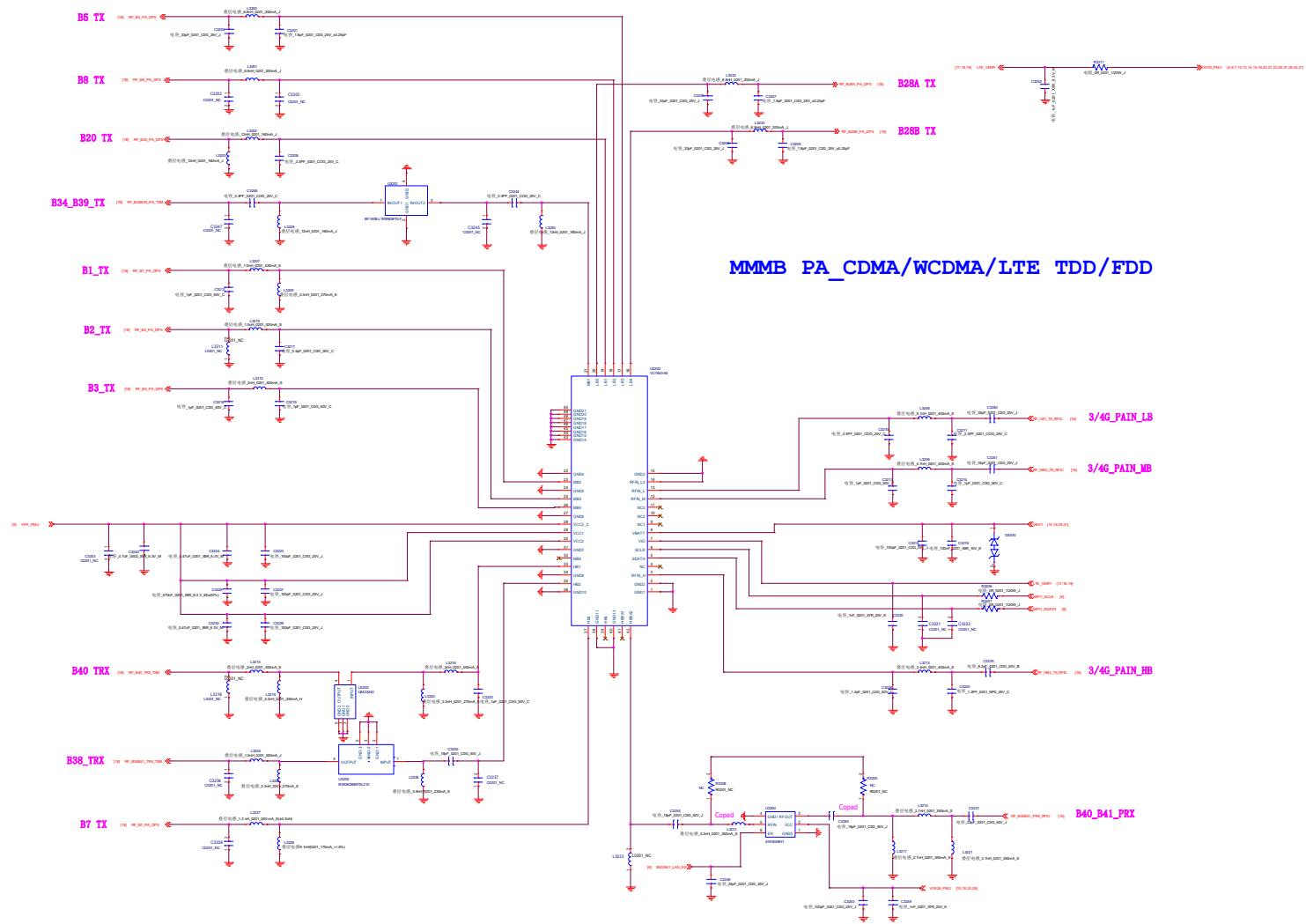
GND

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Title 31_RF_MT6177_Pin_Out

Size D	Project F9_MB_V1	Rev V1
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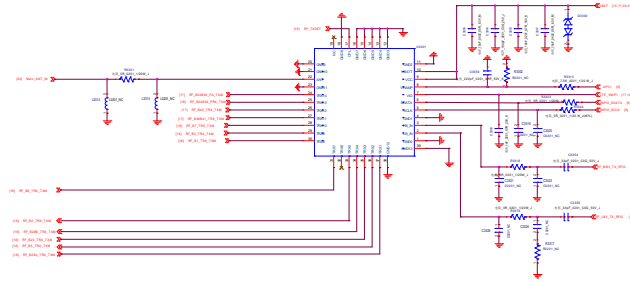
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MMB PA_CDMA/WCDMA/LTE TDD/FDD

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Title 32_RF_MT6177_RF_TX		
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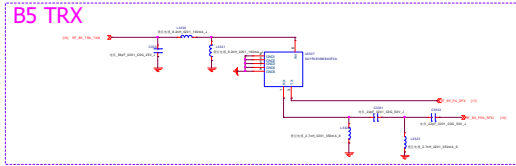
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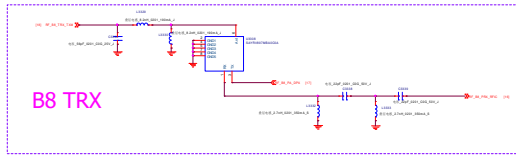
TXM_GSM

TRX_LB

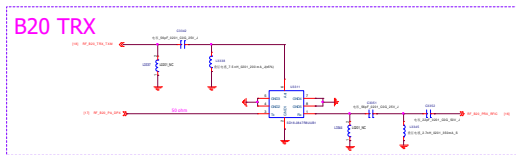
B5 TRX



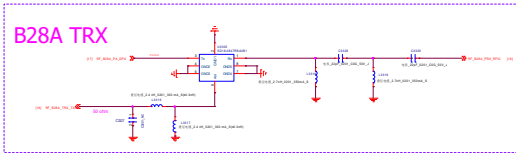
B8 TRX



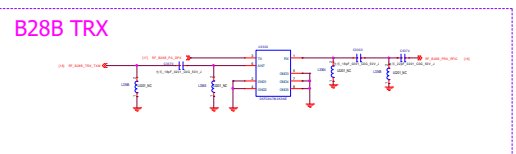
B20 TRX



B28A TRX

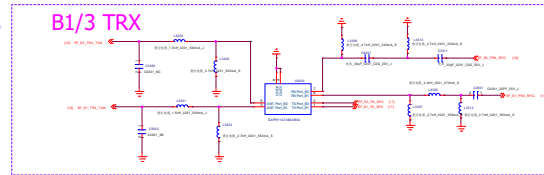


B28B TRX

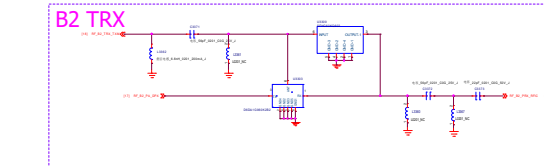


TRX_MB

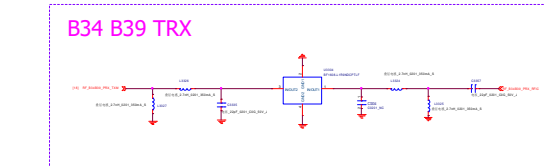
B1/3 TRX



B2 TRX

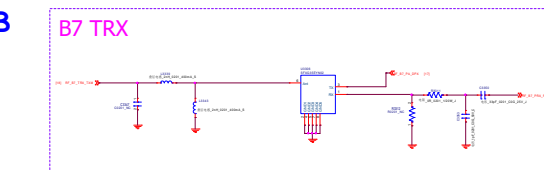


B34 B39 TRX



TRX_HB

B7 TRX



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Title 33_RF_MT6177_RF_PRX

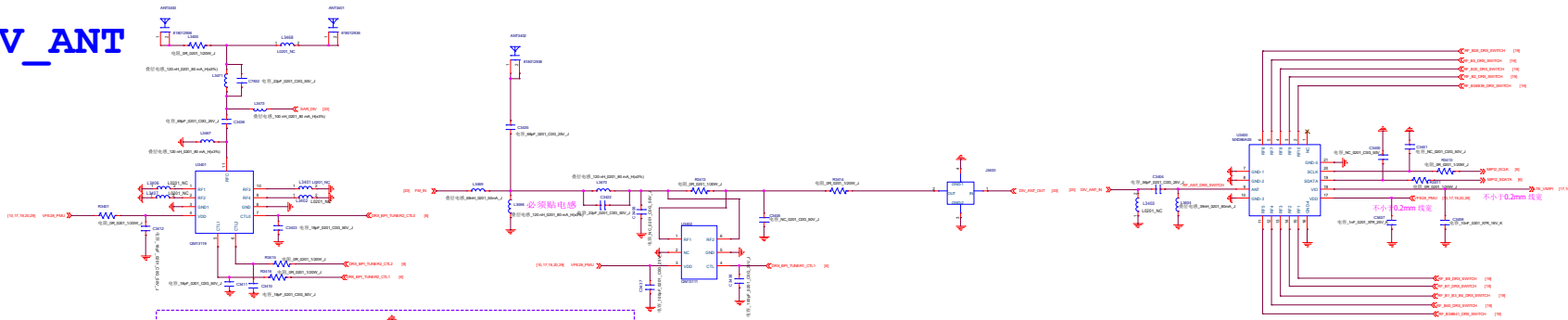
Size Project F9_MB_V1
Custom

Rev
v1

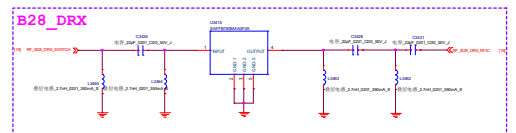
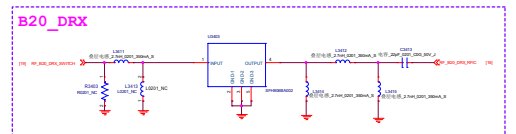
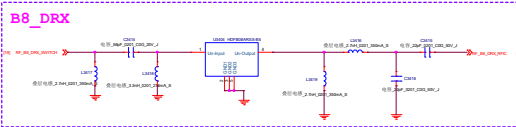
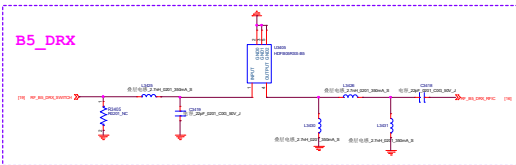
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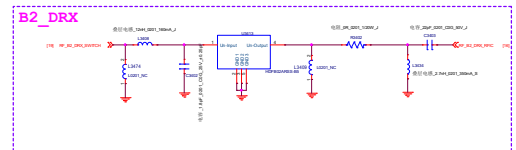
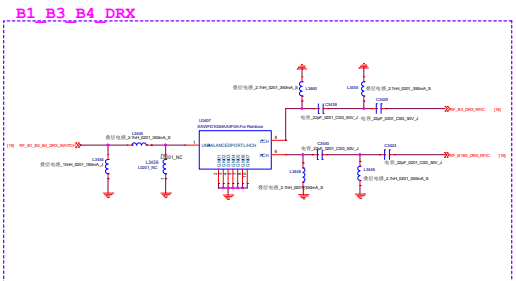
DIV_ANT



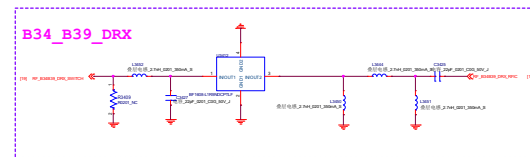
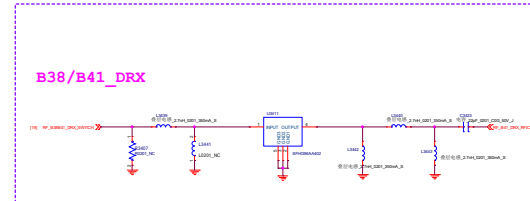
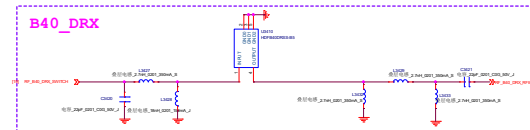
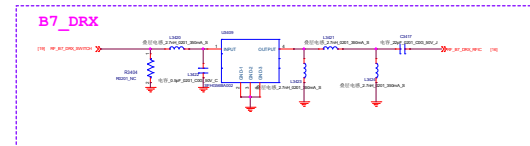
DIV_LB



DIV_MB



DIV_HB



5

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3

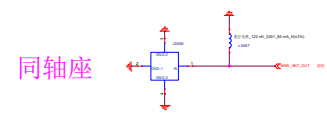
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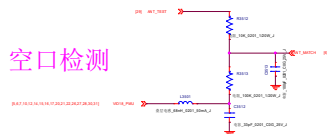
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D

同轴座

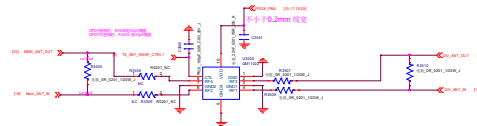


空口检测

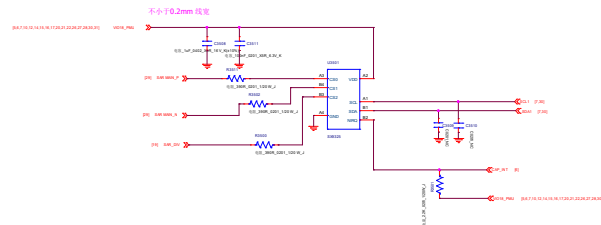


TAS

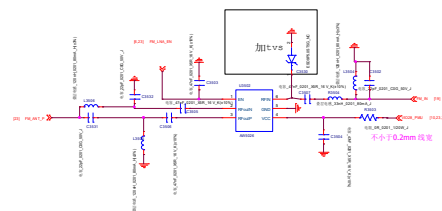
MAIN DPDT SWITCH



SAR Sensor



FM



5

4

3

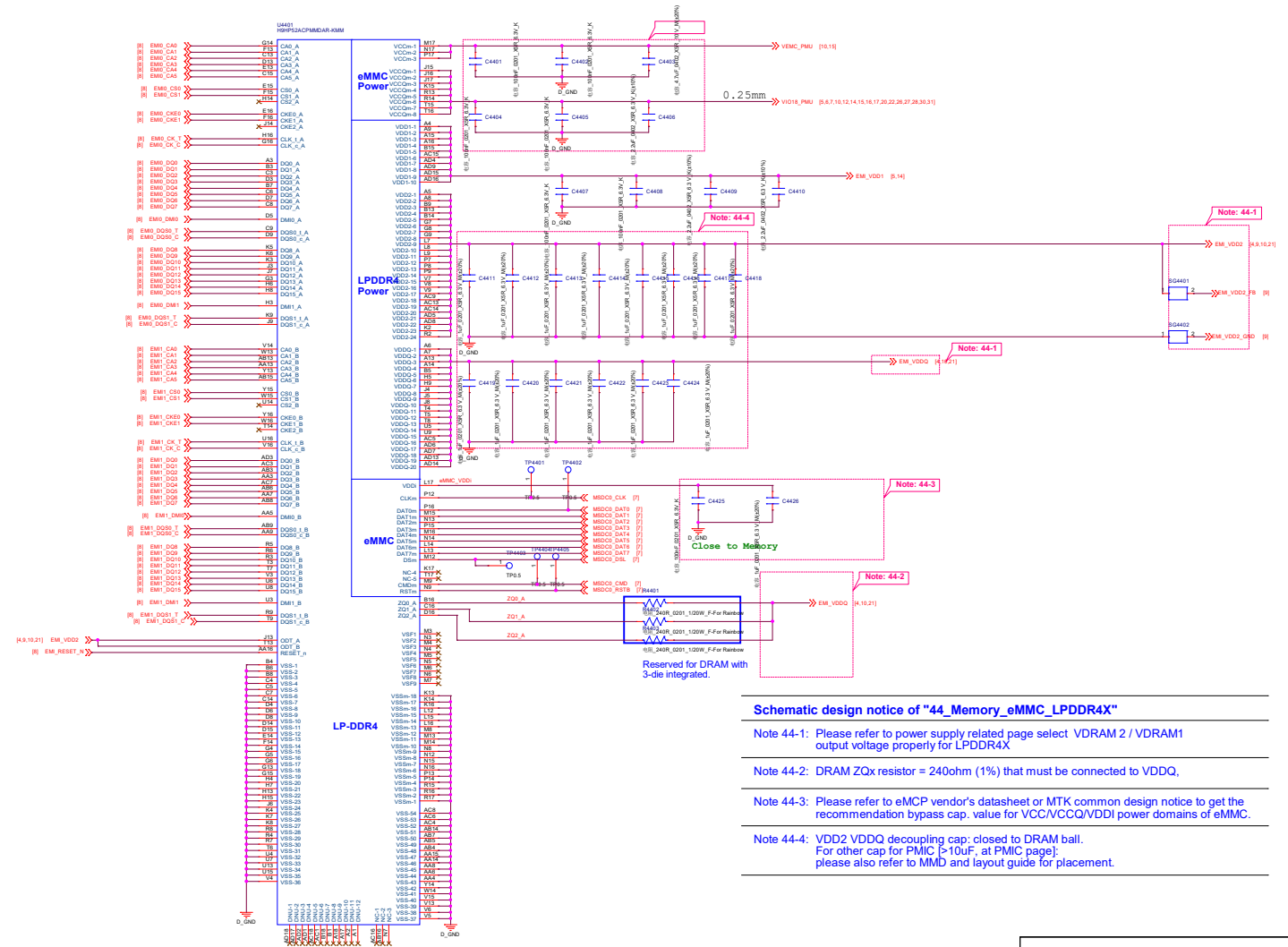
2

1

A

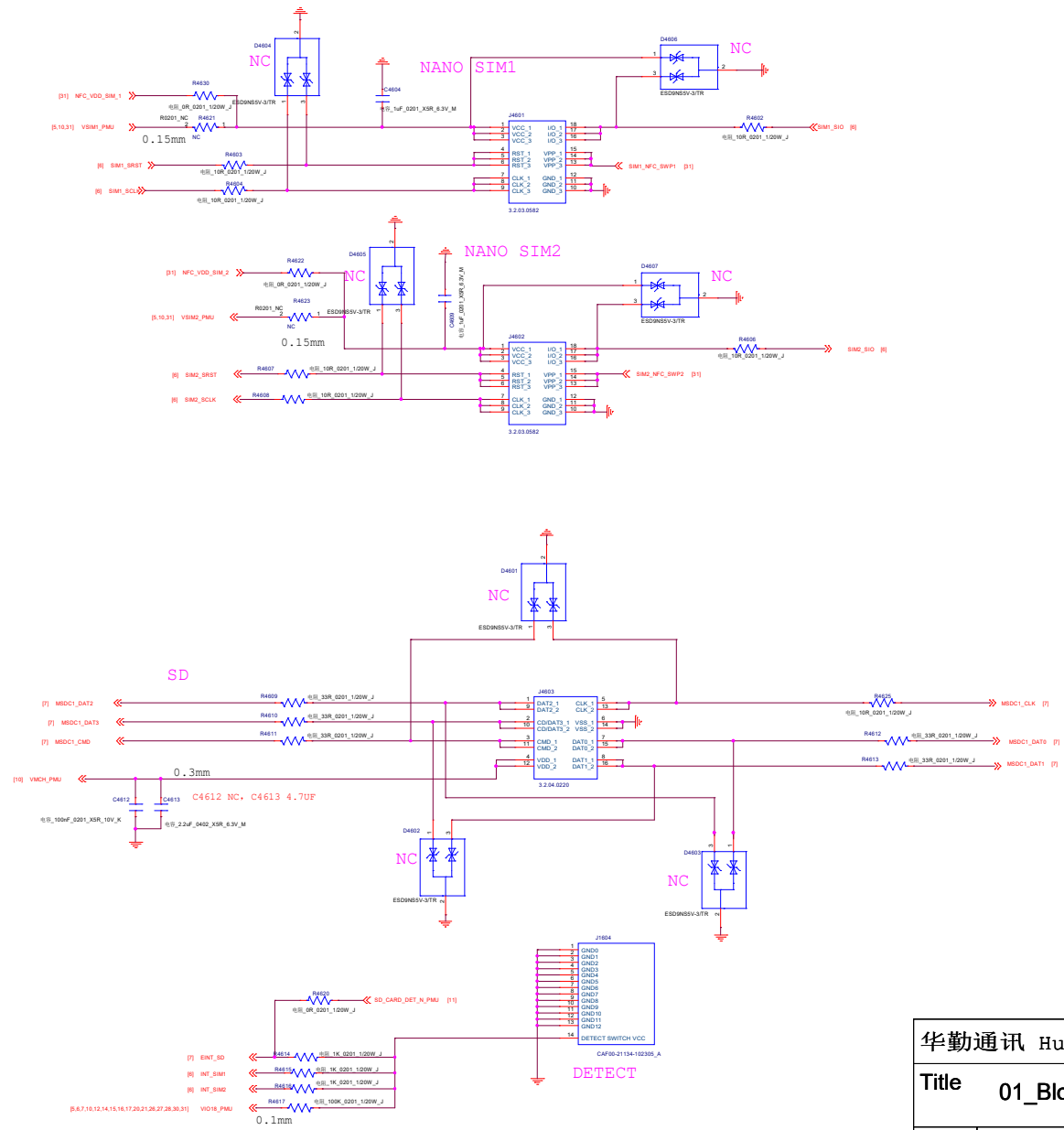
A

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- Schematic design notice of "44_Memory_eMMC_LPDDR4X"**
- Note 44-1: Please refer to power supply related page select VDRAM 2 / VDRAM1 output voltage properly for LPDDR4X
 - Note 44-2: DRAM ZQx resistor = 240ohm (1%) that must be connected to VDDQ,
 - Note 44-3: Please refer to eMCP vendor's datasheet or MTK common design notice to get the recommendation bypass cap. value for VCC/VCCQ/VDDI power domains of eMMC.
 - Note 44-4: VDD2 VDDQ decoupling cap: closed to DRAM ball.
For other cap for PMIC (>10uF, at PMIC page) please also refer to MMD and layout guide for placement.

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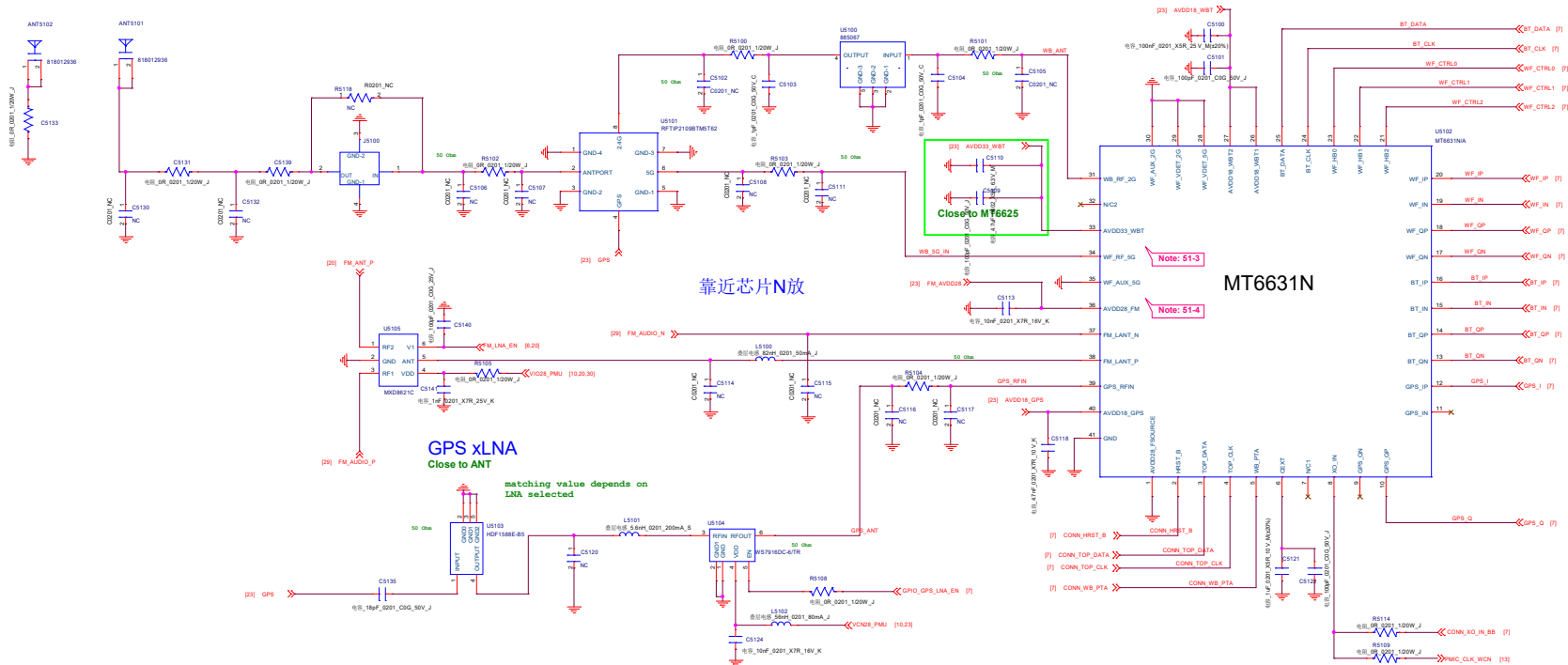


Note 46-1:

Schematic design notice of "46_MEMORY_SD Card" page.

For better ESD performance, please select suitable components for system protection.

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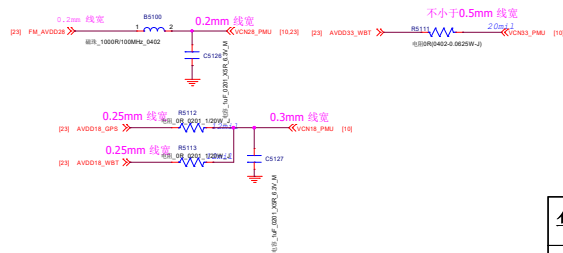
Schematic design notice of "51_CONNECTIVITY_CONSYS_MT6631"

Note 51-1: For R5015 size, please select 0402 size or larger one

Note 51-2: Please refer to MT6765 Baseband design notice for VCN33 LDO selection guide

Note 51-3: If WiFi 5G not support, connect pin 34(WF_RF_5G) to GND

Note 51-4: Pin 36 (AVDD28_FM) must be connected to VCN28 even if FM not support

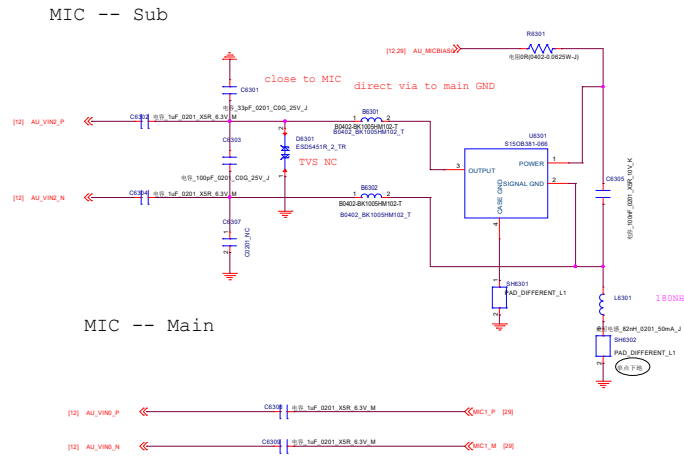


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Title 51_CONNECTIVITY_CONSYS_MT6631

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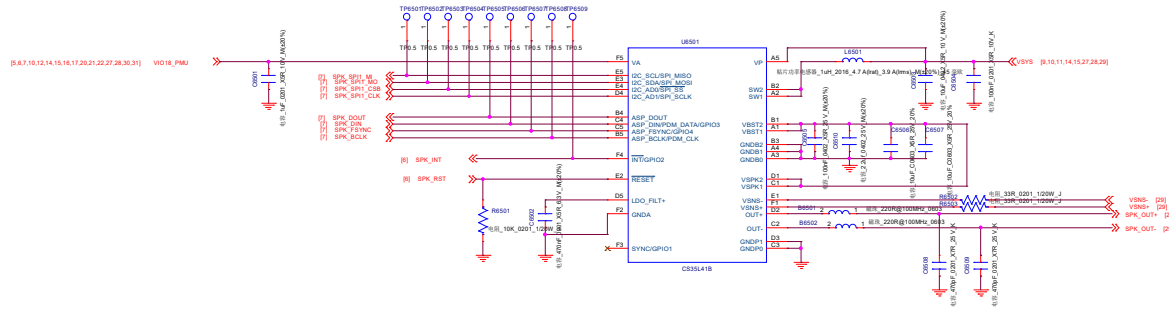
Schematic design notice of "63_PERI_AUDIO_IO" page.

Note 63-1: 1 uF for ACC mode

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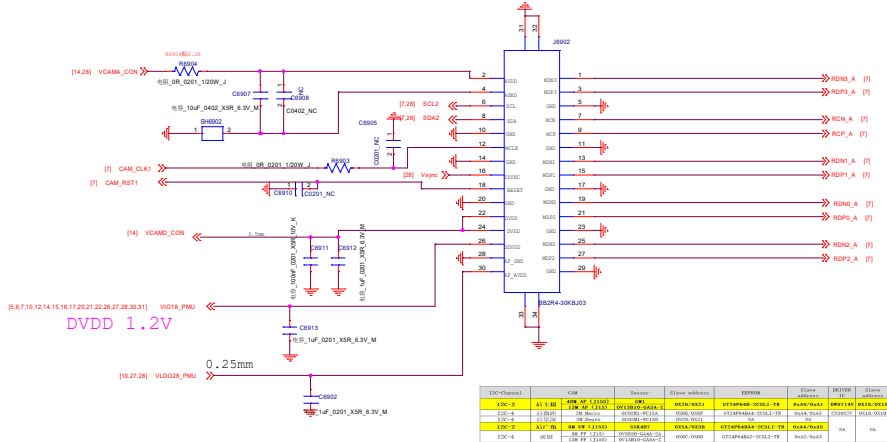
Speaker Amplifier

MT6660 Speaker AMP I2C Address: 0x34 (Write:0x68, Read:0x69) when ADS1 = GND; ADS2 = GND.



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Main MONO Camera 48M



SW-Character	CHK	ERR	ERR	ERR	ERR	ERR	ERR	ERR
020-C	OK	OK	OK	OK	OK	OK	OK	OK
020-C	OK	OK	OK	OK	OK	OK	OK	OK
020-C	OK	OK	OK	OK	OK	OK	OK	OK
020-C	OK	OK	OK	OK	OK	OK	OK	OK

Front Camera - 13M

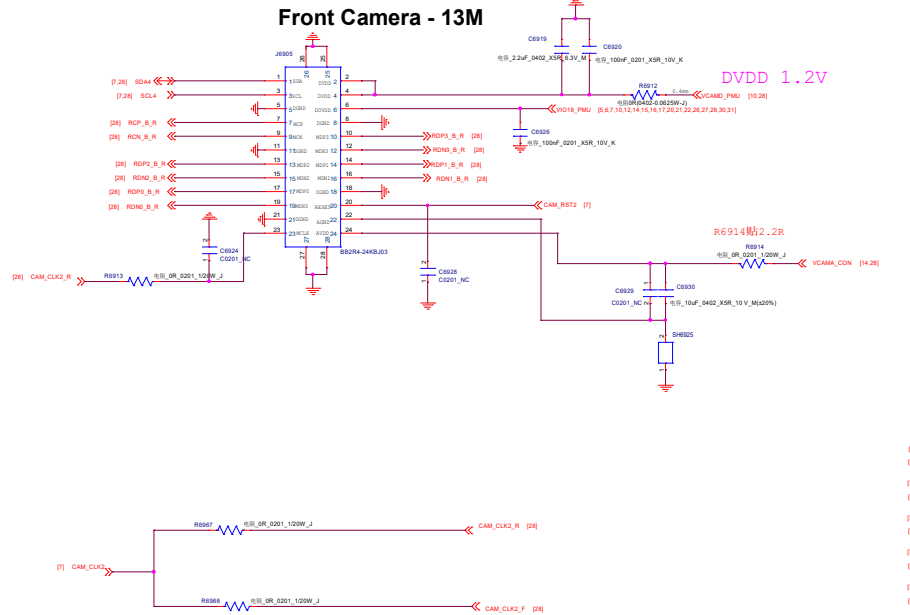
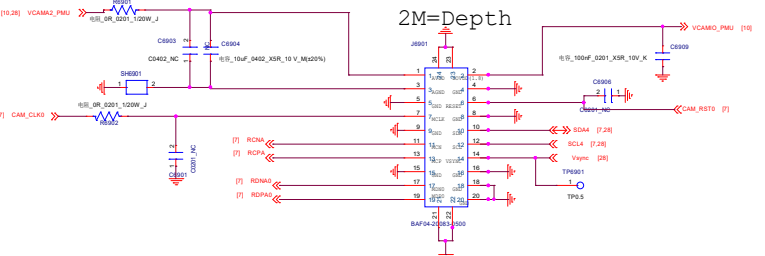


Table 1. Function Table

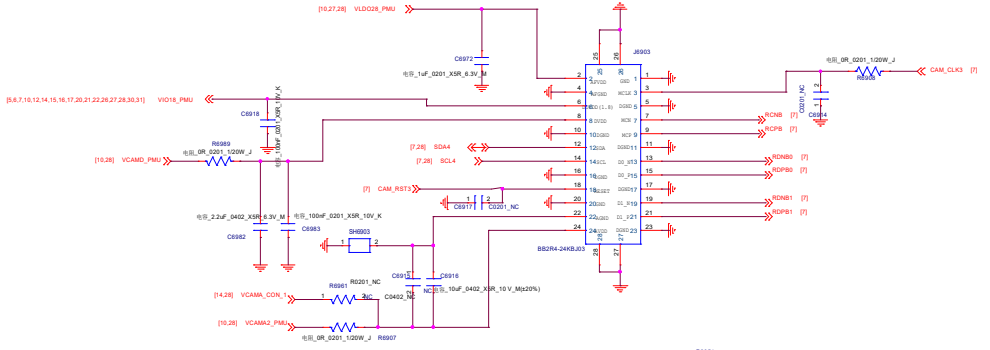
OE	SEL	Function
H <td>X <td>LD (no High Impedance)</td> </td>	X <td>LD (no High Impedance)</td>	LD (no High Impedance)
L <td>L <td>CLK(PN) - CLK(PN)</td> </td>	L <td>CLK(PN) - CLK(PN)</td>	CLK(PN) - CLK(PN)
L <td>H <td>CLK(PN) - CLK(PN)</td> </td>	H <td>CLK(PN) - CLK(PN)</td>	CLK(PN) - CLK(PN)
L <td>H <td>CLK(PN) - CLK(PN)</td> </td>	H <td>CLK(PN) - CLK(PN)</td>	CLK(PN) - CLK(PN)

贴R6967、R6968, 其他器件NC

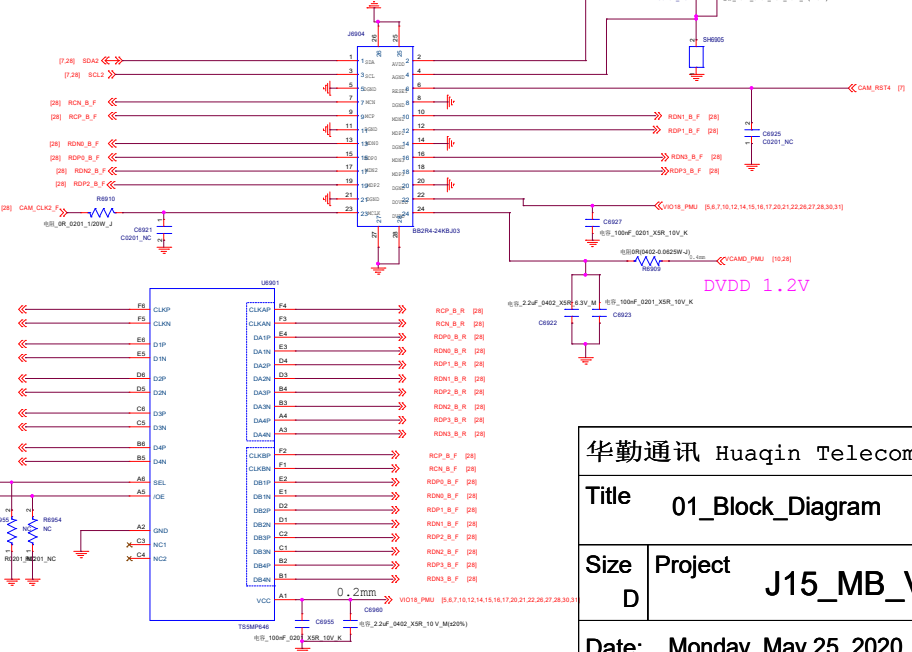
CLK_R6967	CLK_R6968	MCLK_IN	CLK_OUT1	CLK_OUT2	CLK_OUT3
L	L	CLK	CLK	CLK	CLK
L	L	CLK	CLK	CLK	CLK
L	L	CLK	CLK	CLK	CLK



2M =Macro



Rear Camera 8M



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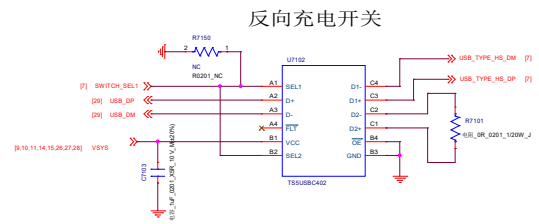
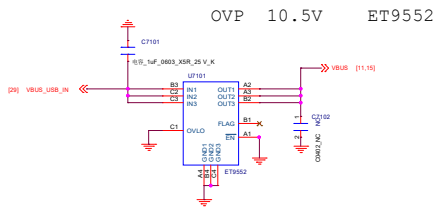
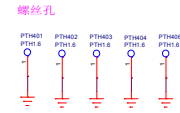
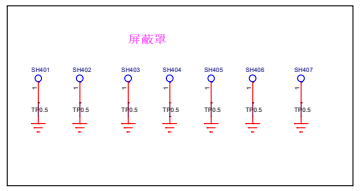
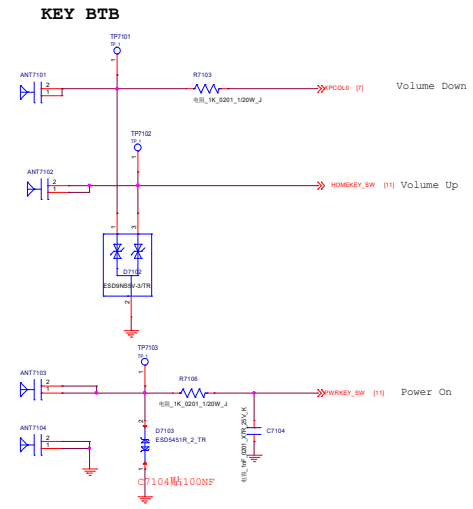
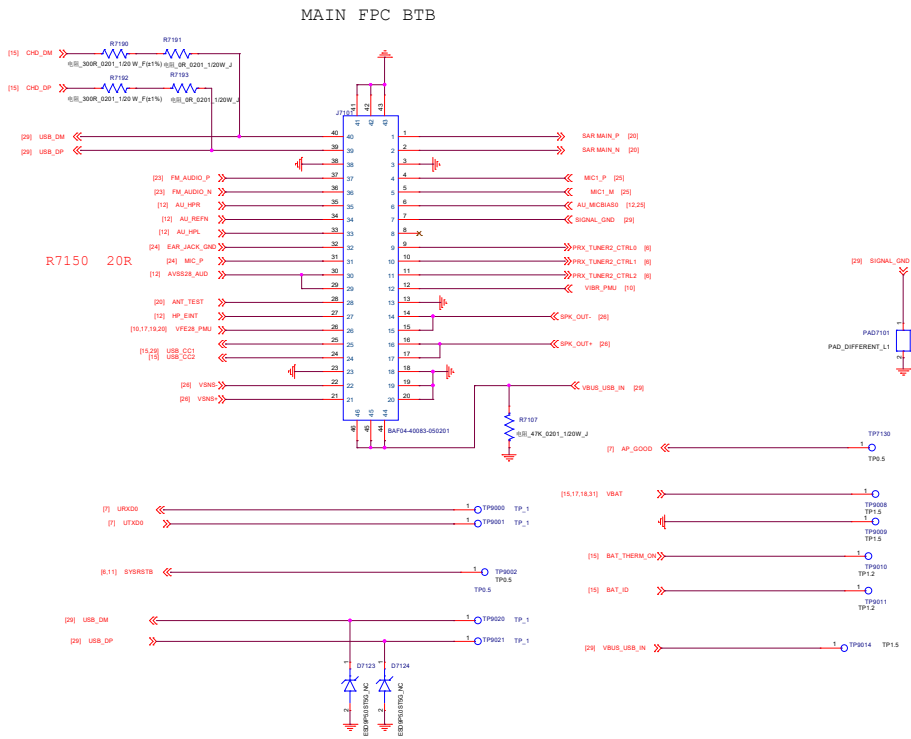


Table 1. Function Table

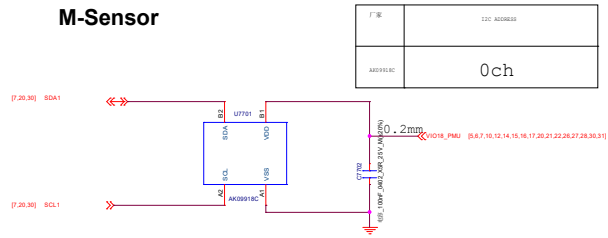
OE	SEL1	SEL2	D- Connection	D+ Connection
H	X	X	High-Z	High-Z
L	L	L	D- to D1-	D+ to D1+
L	L	H	D- to D1-	D+ to D2+
L	H	L	D- to D2-	D+ to D1+
L	H	H	D- to D2-	D+ to D2+



USB

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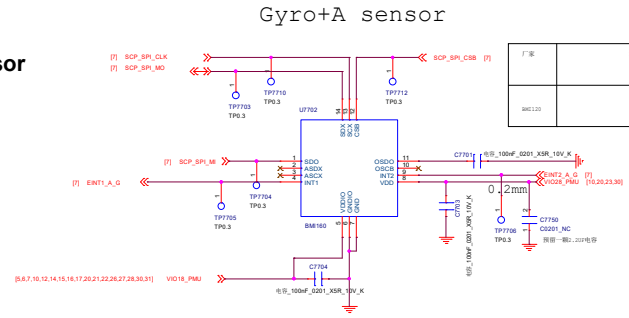
M-Sensor



厂家	ICC ADDRESS
AK8975IC	0ch

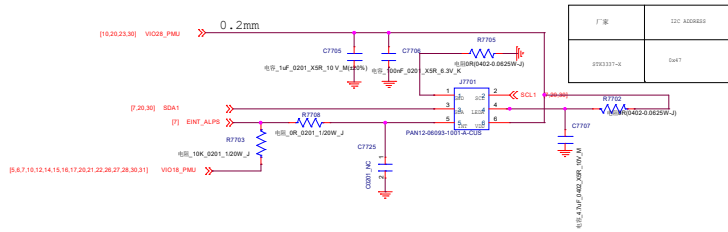
Accerometer + Gyro Sensor

default SPI (if sensor hub support)



厂家	ICC ADDRESS
BM850	0x68

ALS PS STK3337-X



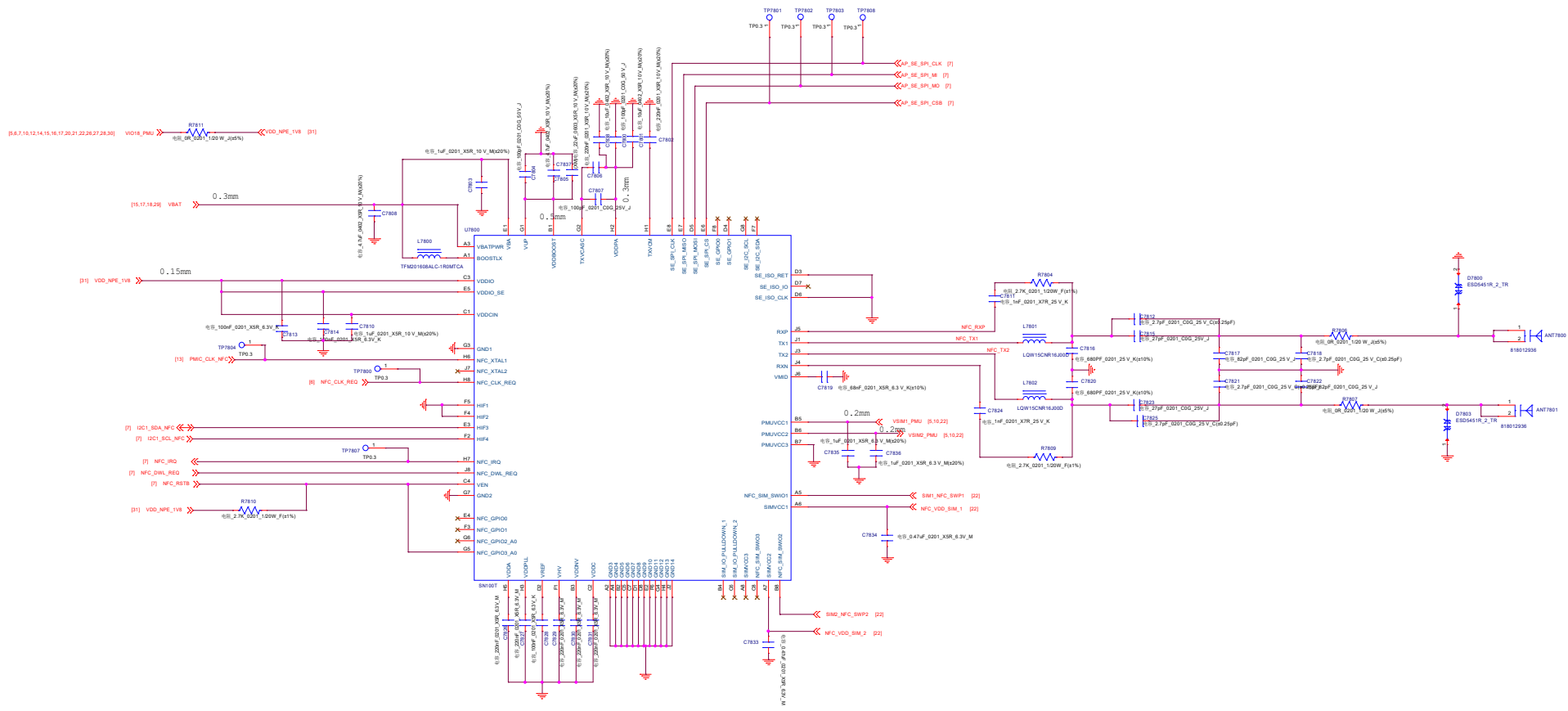
厂家	ICC ADDRESS
STK3337-X	0x47

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