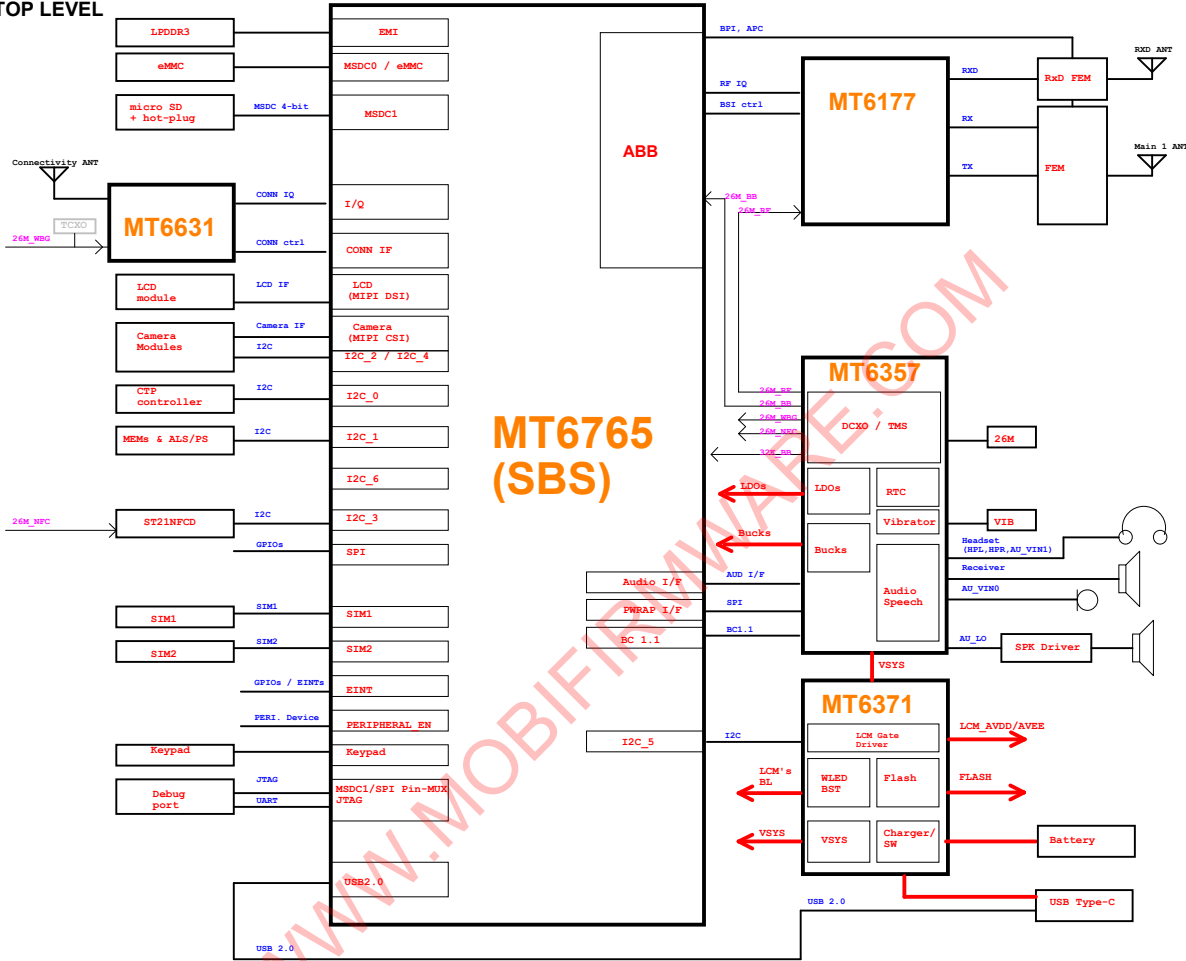


Project : MT6765 LPDDR3
REF_SCH TOP LEVEL



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Title	01_Block_Diagram
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Size	Project	Rev
D	F9_MB_V1	v1

Date: Friday, October 19, 2018	Sheet 1 of 99
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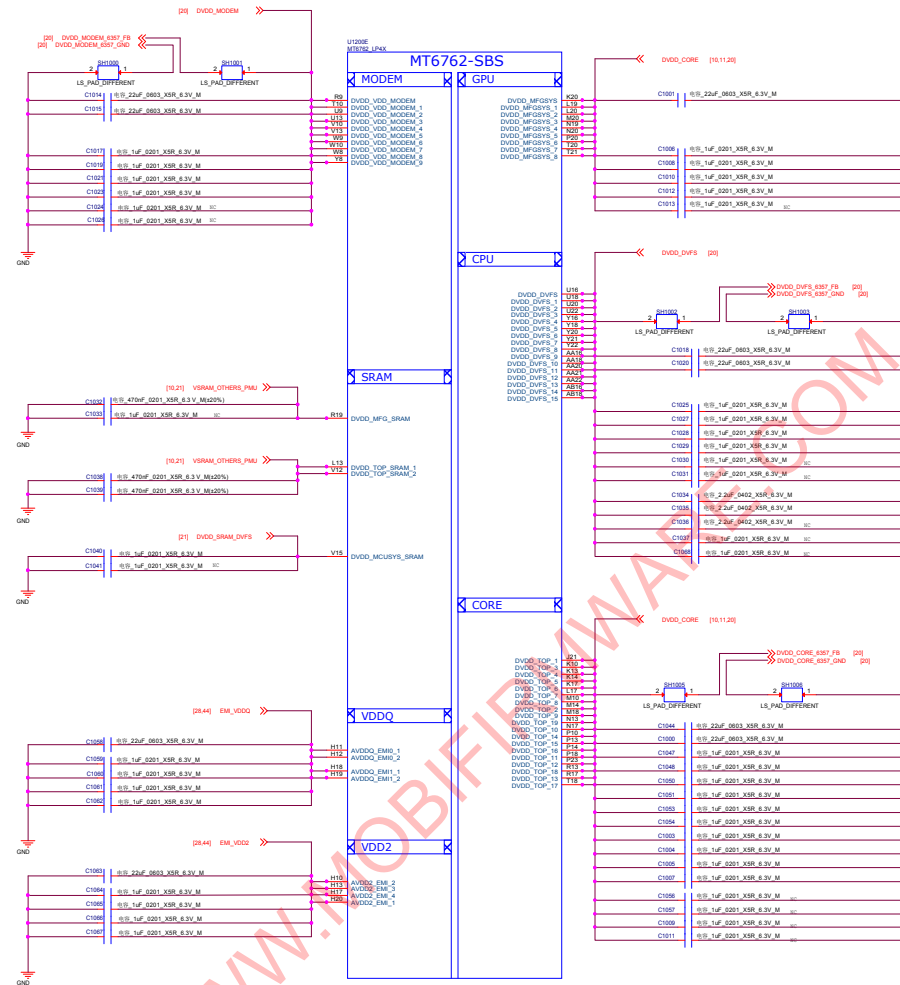
I2C	Sub SYS	Function	Part Number	I2C Spec.	I2C Slave Address / Write / Read (7-bit mode)	
I2C-0	AP	Cap Touch controller	GT1151	400 Kbps	0x5D	Write:0xBA / Read:0xBB
I2C-1 (I3C)	AP Sensor Hub	Magnetic Sensor	AK09918C	400 Kbps	0x0C	Write:0x18 / Read:0x19
		Ambient Light Sensor	CM36558	400 Kbps	0x51	Write:0xA2 / Read:0xA3
		Proximity Sensor				
		Pressure Sensor	BMP280	400 Kbps	0x77	Write:0xEE / Read:0xEF
I2C-2 (I3C)	AP	Rear Camera	IMX230	400 Kbps	0x1A	Write:0x34 / Read:0x35
			EEPROM	400 Kbps	0x50	Write:0xA0 / Read:0xA1
			AF driver	400 Kbps	0x0C	Write:0x18 / Read:0x19
I2C-3	AP	Audio Smart PA	RT5510	400 Kbps	0x34	Write:0x68 / Read:0x69
		NFC	ST21NFCD	400 Kbps	0x08	Write:0x10 / Read:0x11
I2C-4 (I3C)	AP	Front Camera	S5K217	400 Kbps	0x2D	Write:0x5A / Read:0x5B
			EEPROM	400 Kbps	0x52	Write:0xA4 / Read:0xA5
I2C-5	AP	Sub-PMIC	MT6371 PMU	3.4 Mbps	0x34	Write:0x68 / Read:0x69
			MT6371 PD	3.4 Mbps	0x4E	Write:0x9C / Read:0x9D
I2C-6	AP					
Note : I2C Spec. : Standard mode (100 kbps) and Fast mode (400 kbps), Fast mode Plus (1 Mbps) and High-speed mode (3.4 Mbps)						

华勤通讯 Huaqin Telecom Technology Com.,Ltd		
Title 02_I2C_ID_Overview		
Size C	Project F9_MB_V1	Rev V1
Date: Friday, October 19, 2018	Sheet 2 of 99	

Date	Category	Item
2017.11.24 (V0.1)	Page 05	V0.1 Release
2017.12.7 (V0.2)	Page 11	Change power of AVDD18_DDR(H21) from VIO18_PMU to EMI_VDD1, connecting EMI_VDD1 to SH2102 in star connection
	Page 12	Add Note 12-5
	Page 21	Add SH2102 for star connection among EMI_VDD1, AVDD18_SOC, and VIO18_PMU
	Page 22	1. Change C2304 from C / 1 / uF / 10V to C / 1 / uF / 6.3V 2. Change R2301 from R / 1.5 / K to R / 7.5 / K 3. Update Note 22-5
	Page 44	1. To enhance LPDDR3 power off sequence,change C4422 from 0.1uF to 2.2uF, and change C4423 from 0.1uF to 1uF 2. Change VDD1 power of eMCP from VIO18_PMU to EMI_VDD1, fulfilling power rail in star connection
	Page 51	1. Add 2nd source plan for U5004 2. Add Note 51-3 and Note 51-4

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Title 05_Change_Notice		
Size C	Project F9_MB_V1	Rev V1
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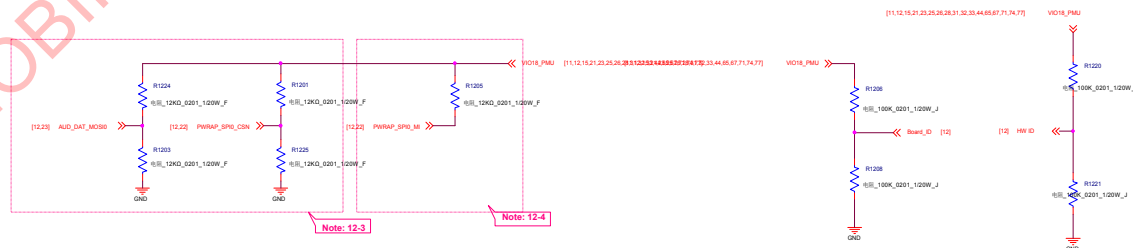
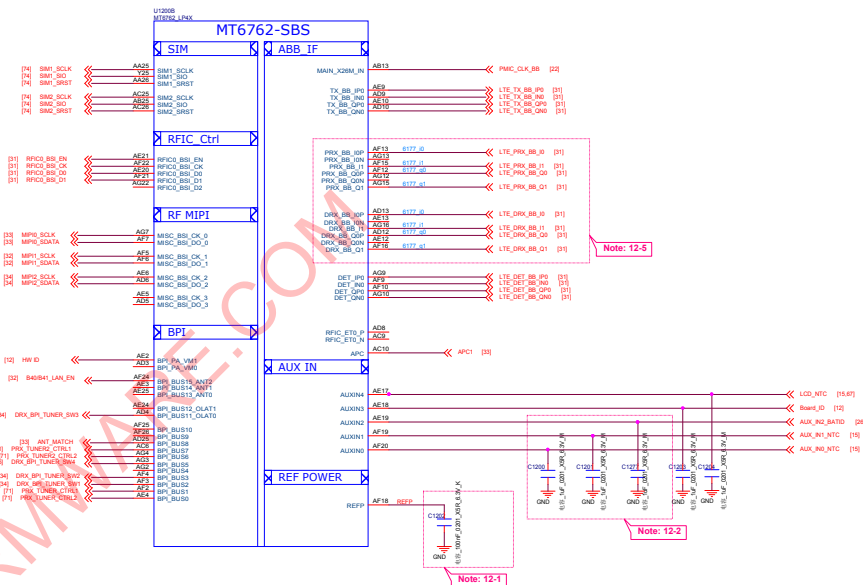
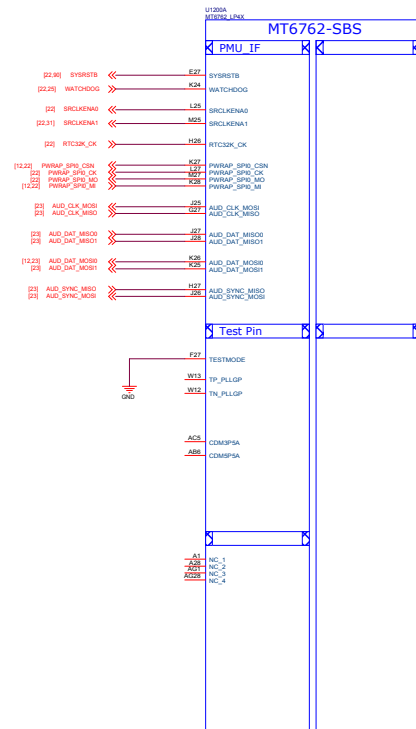


华勤通讯 Huaqin Telecom Technology Com.,Ltd

Title 10_BB_POWER_PDN

Size D	Project F9_MB_V1	Rev V1
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Schematic design notice of "12_BB_1" page.

Note 12-1: The de-coupling cap. for REFP (AF18 ball) have to be placed as close to BB as possible.

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: "PWRAP_SPIO_CSN" and "AUD_DAT_MOSI0" are bootstrap pin to select which interface will be the JTAG pin out.

PWRAP_SPIO_CSN	AUD_DAT_MOSI0	AP_JTAG	JTAG Function
default=PU	default=PD	N/A	N/A
HI	LO	N/A	N/A
HI	HI	SPI0+EINT8	SPI1+SPI3
LO (by ext. PDI)	LO	SPI0+EINT8	N/A
LO (by ext. PDI)	HI	MSDC1	N/A

Note 12-4: PWRAP_SPIO_MI and PWRAP_SPIO_MI are DDR type feature in bootstrap

PWRAP_SPIO_MI	Booting interface	MSDC0 pin mux
default=PU	DDR	follow LP3 Ref SCH.
LO (by ext. PDI)	LPDDR3	follow LP3 Ref SCH.
HI	LPDDR4X	follow LP4X Ref SCH.

Note 12-5: Please set unused IQ pins in NC

华勤通讯 Huaqin Telecom Technology Com.,Ltd

Title 12_BB_1

Size D Project F9_MB_V1 Rev V1

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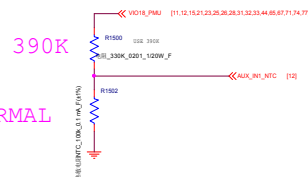


Note 13-1: The enable pin of acoustic or optoelectronic devices (e.g. SPK AMP/Backlight/Charger OCP/OVP) suggest to use Peripheral_EN[0:5]
If use other GPIOs as enable pin, suggest to reserve 0201 NC to GND

LCD_THERMAL



PA_THERMAL

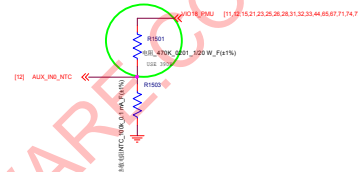


change to NCP03WF104F05RL Murata

Thermistor to sense RF PA temperature

1. NTC1502 must close to LTE Band 7 PA or the hottest PA <2mm.
2. The distance is the shortest distance from package edge to edge.

Thermistor / To sense board level temperature

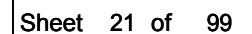


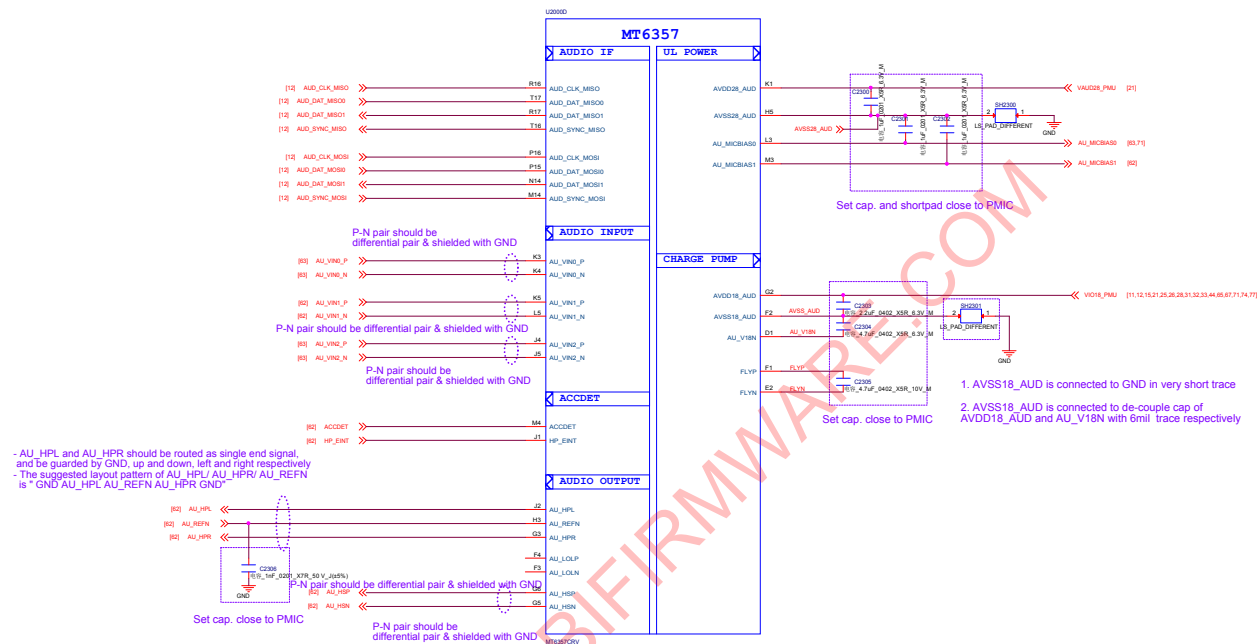
Thermistor to sense AP temperature

1. NTC1501 must keep a distance about 6-8 mm away from AP and far from other heat sources 10 mm at least.
2. The distance is the shortest distance from package edge to edge.

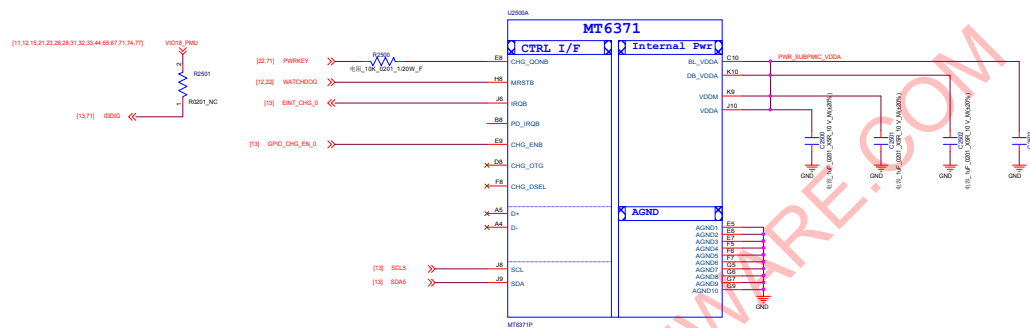
华勤通讯 Huaqin Telecom Technology Com.,Ltd		
Title 15_BB_AUXADC_Thermal		
Size D	Project F9_MB_V1	Rev v1
Date: Friday, October 19, 2018	Sheet 15 of 99	

Input Power	Power Name	Output Voltage (V)	Output Current	Default Voltage
LDO from VBAT	VFE28	2.8	40mA	2.8V
	VXO22	2.24	25mA	2.24V
	VCN28	2.8	40mA	2.8V
	VCAMA	1.8/2.5/2.8	200mA	2.8V
	VAUX18	1.8	20mA	1.8V
	VAUD28	2.8	50mA	2.8V
	VBIF28	2.8	1mA	2.8V
	VCN33	3.3/3.4/3.5/3.6	800mA	3.3V
	VLD028	2.8/3.0	360mA	2.8V
	VIO28	2.8	200mA	2.8V
	VMC	1.86/2.9/3.0/3.3	200mA	3.0V
	VMCH	2.9/3.0/3.3	800mA	3.0V
	VEMC	2.9/3.0/3.3	800mA	3.3V
	VSIM1	1.7/1.8/1.86/2.76/3.0/3.1	200mA	1.86V
	VSIM2	1.7/1.8/1.86/2.76/3.0/3.1	200mA	1.86V
	VIBR	1.2/1.3/1.5/3.8/2.0/2.8/3.9/3.3	200mA	2.8V
	USB	3.07	50mA	3.07V
	VRF18	1.81	450mA	1.81V
	WMIPI	1.71/1.8/1.84	300mA	3.0V
	VCN18	1.8	200mA	1.8V
LDO from VS1	VCAMD	1/1.05/1.1/1.2/1.3/1.5/1.9	600mA	1.2V
	VCAMIO	1.8	300mA	1.8V
	VIO18	1.8	1200mA	1.8V
	VRF12	1.2	200mA	1.2V
	VA12	1.2	300mA	1.2V
LDO from VS2	VSRAM_PROC	0.6-1.31	400mA	1.1V
	VSRAM_OTHERS	0.6-1.31	200mA	0.9V
	VSRAM_GPU	0.6-1.31	400mA	1.0V
	VDRAM	1.12/1.24	1000mA	1.24V

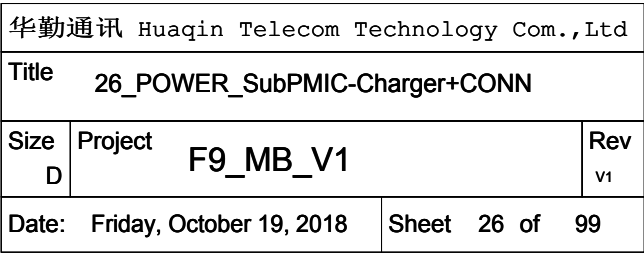
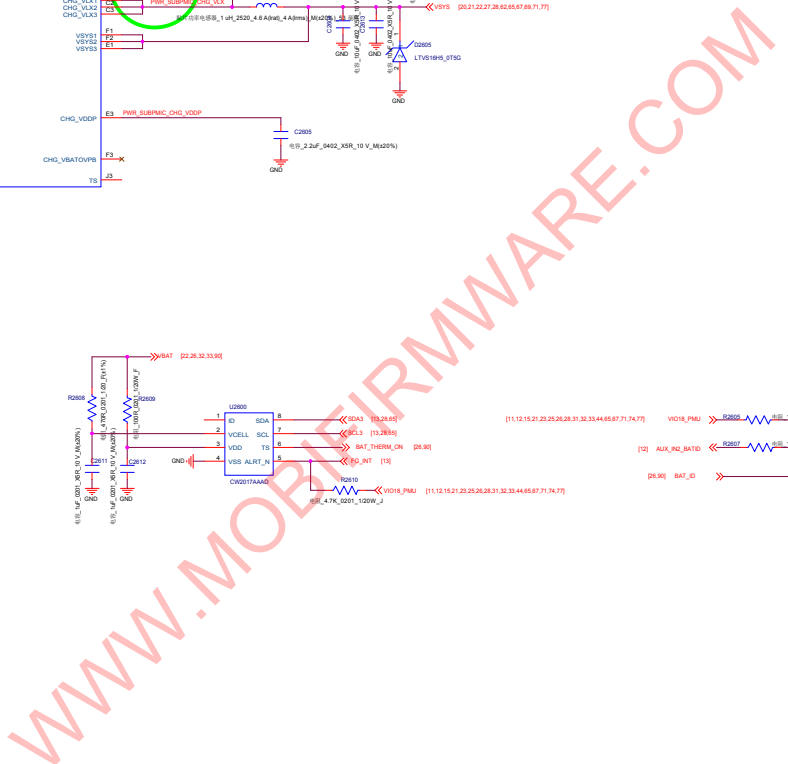




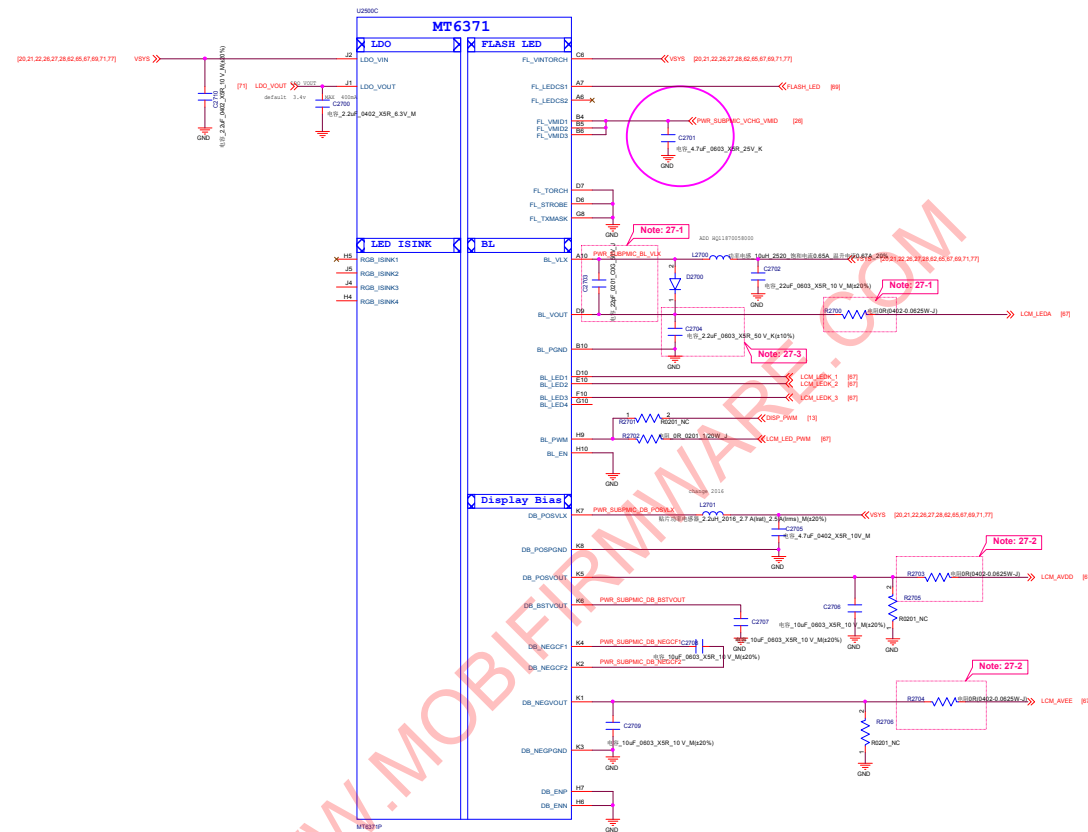
华勤通讯 Huaqin Telecom Technology Com.,Ltd		
Title 23_POWER_MT6357_Audio		
Size D	Project F9_MB_V1	Rev V1
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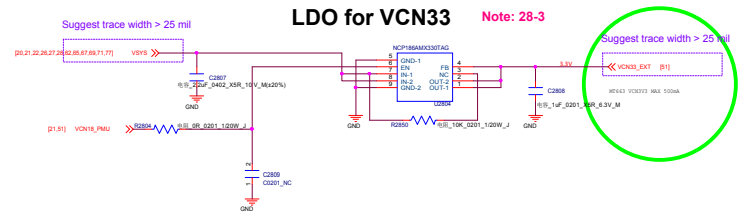
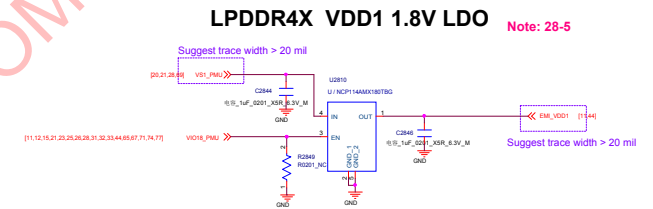
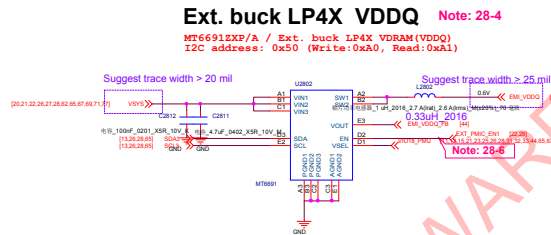
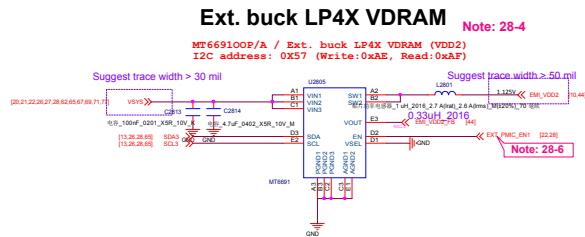
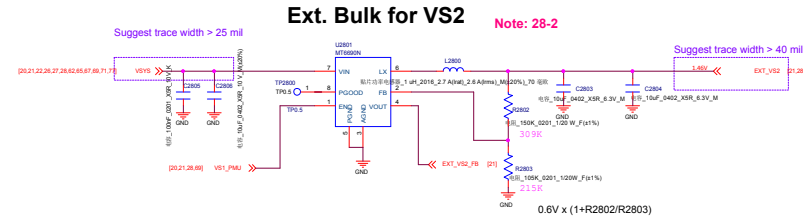
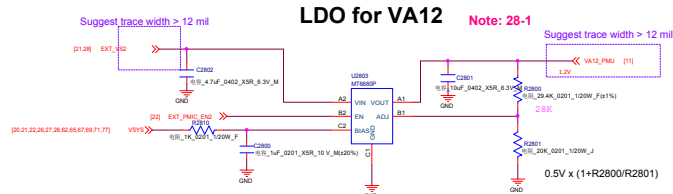
华勤通讯 Huaqin Telecom Technology Com.,Ltd		
Title 25_POWER_SubPMIC-General		
Size D	Project F9_MB_V1	Rev V1
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Note 26-1: For better ESD or surge performance we need choose suitable device for system protection. Please refer to [Surge device selection guide V2.0] provide by MTK.



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Title 27_POWER_SubPMIC-HV powers		
Size D	Project F9_MB_V1	Rev V1
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Schematic design notice of "28_POWER_ThirdParty-Power"

Note 28-1: VA12 Layout placement please close to AP

Note 28-2: VS2 Buck Layout placement please close to PMIC MT6357

Note 28-3: VCN33 LDO Layout placement please close to MT6631

Note 28-4: MT6691ZXP/A and MT6691OOP/A Buck Layout Placement please close to LPDDR4X

Note 28-5: U2810 LDO Layout Placement Please close to LPDDR4X VDD1 power ball

Note 28-6: For EMI_VDD2_FB and EMI_VDDQ_FB, please follow MMD rule

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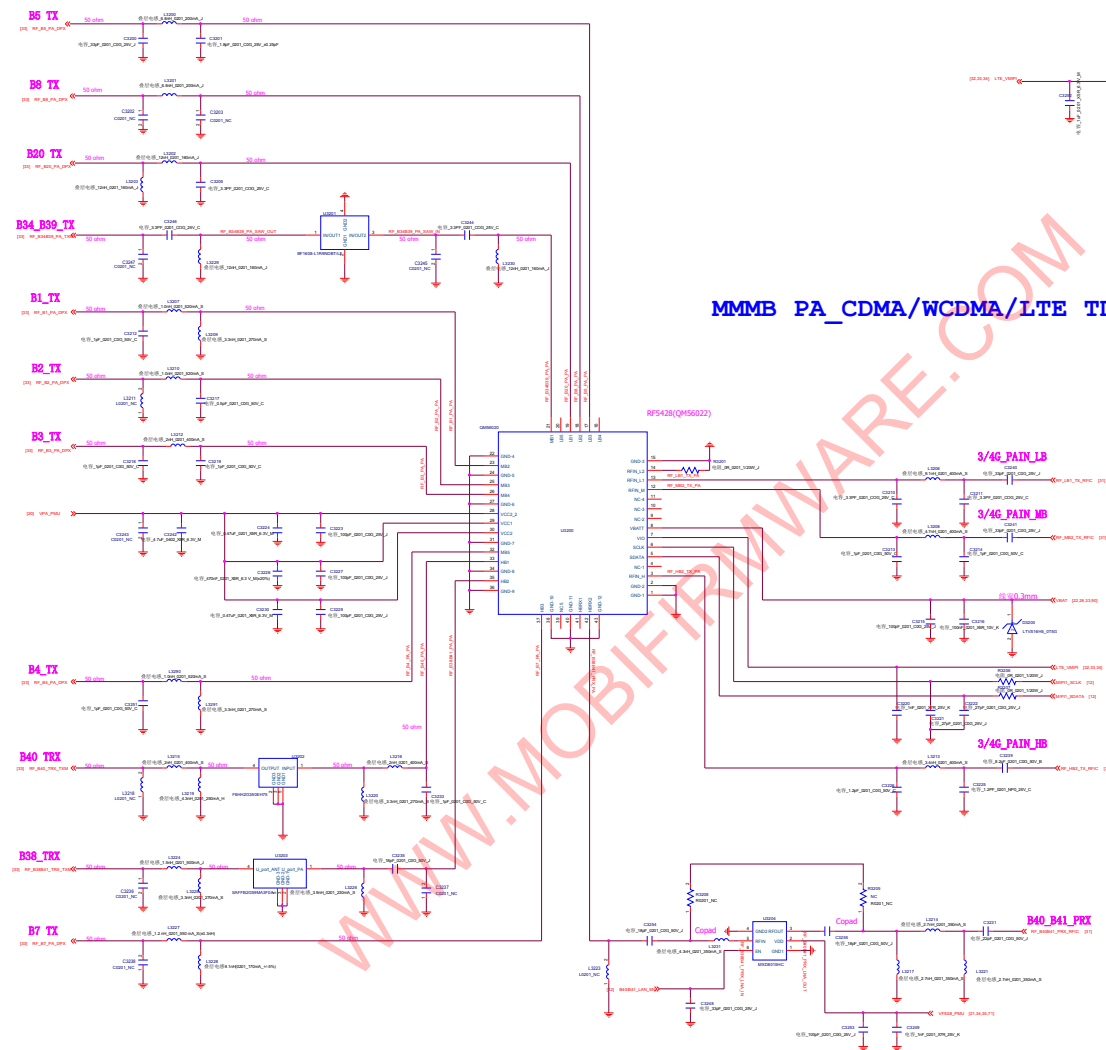
Title 28_POWER_ThirdParty_Powers

Size D Project F9_MB_V1

Rev v1

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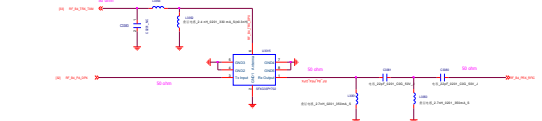
Title 32_RF_MT6177_RF_TX

Size E Project F9_MB_V1

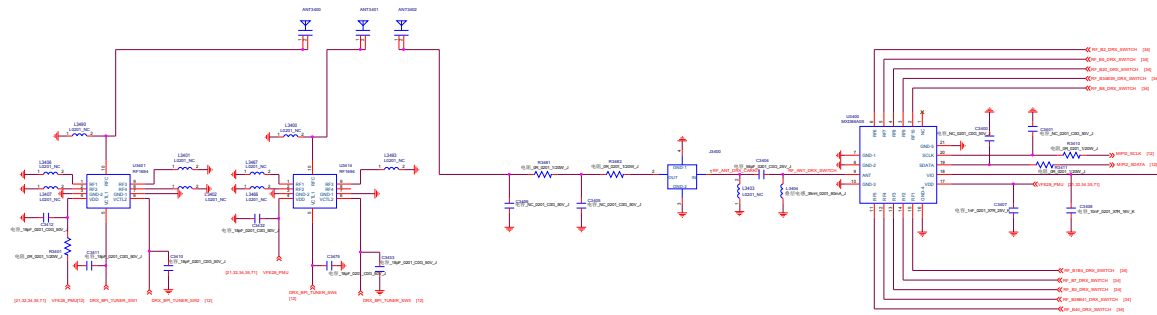
Rev v1

Date: Friday, October 19, 2018

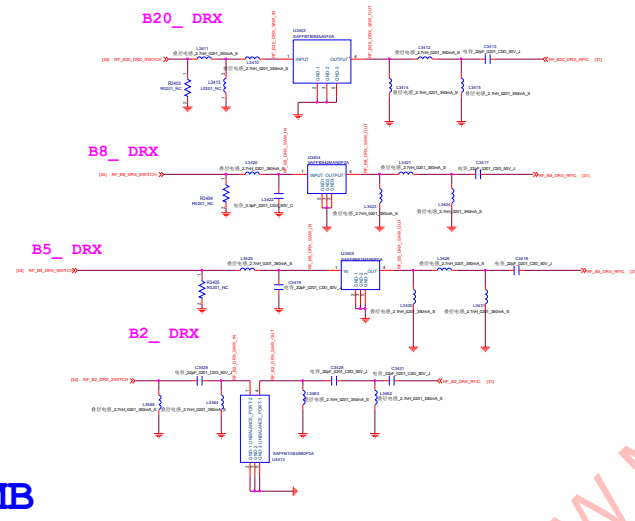
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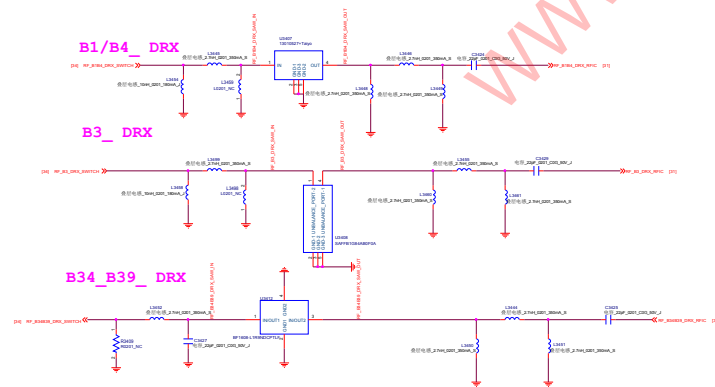
DIV_ANT



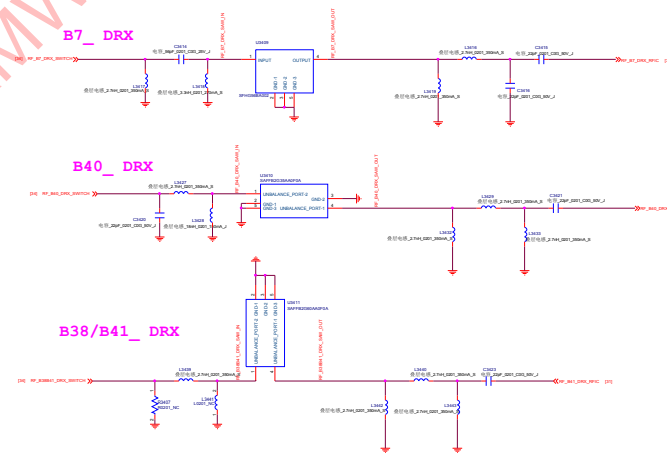
DIV_LB



DIV_MB



DIV_HB



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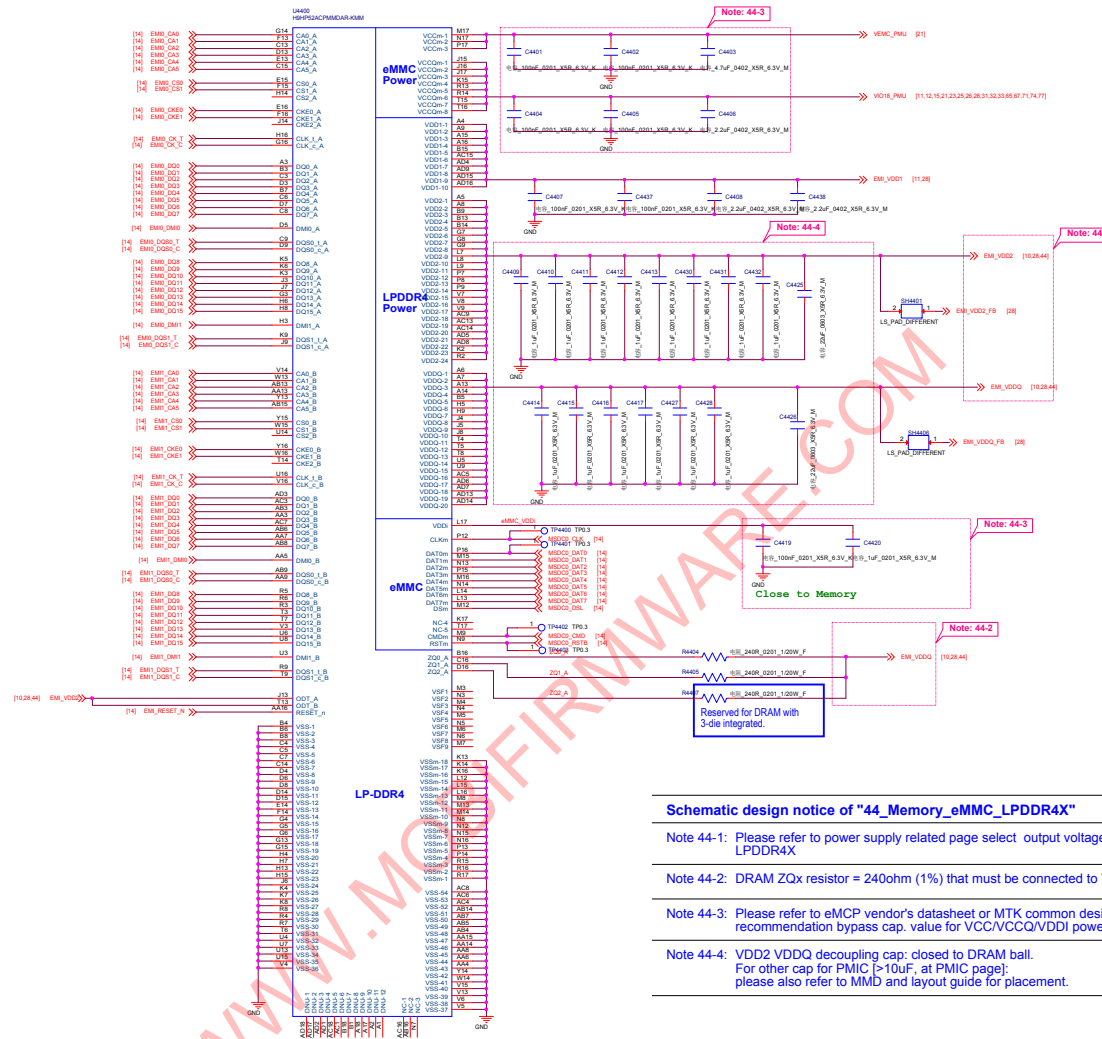
Title 34_RF_MT6177_RF_DRX

Size E Project F9_MB_V1

Rev v1

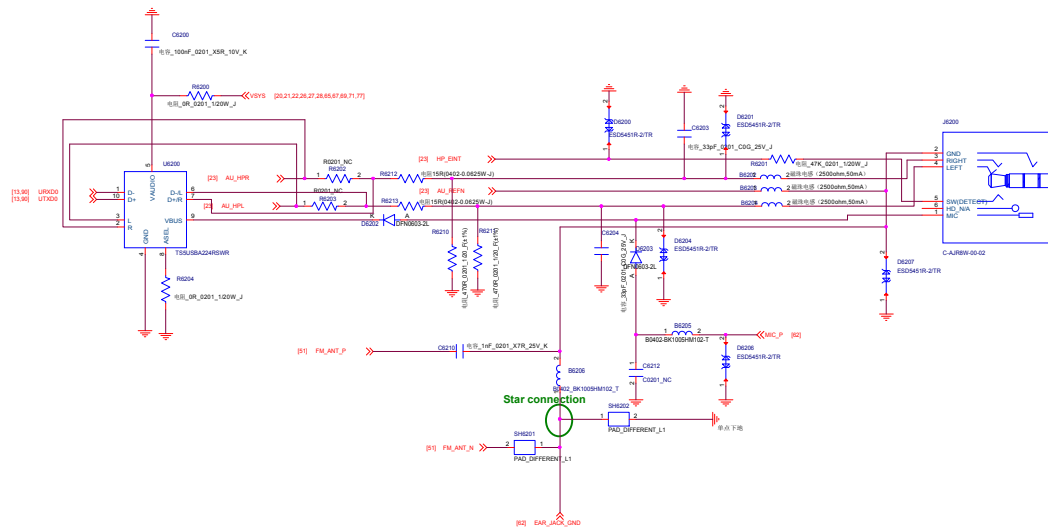
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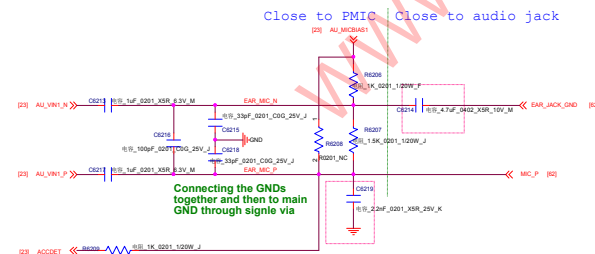


华勤通讯 Huaqin Telecom Technology Com.,Ltd		
Title 44_Memory_eMMC_LPDDR4		
Size D	Project F9_MB_V1	Rev V1
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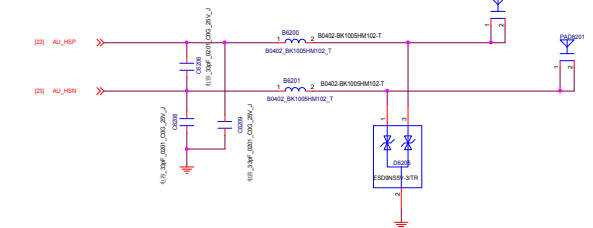
AUDIO JACK



Earphone Microphone



EAR

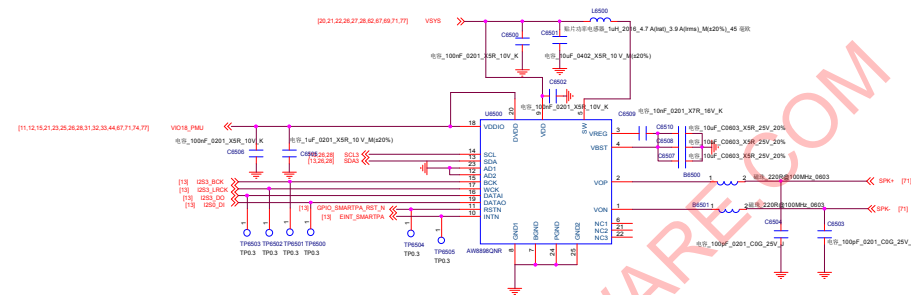


华勤通讯 Huaqin Telecom Technology Com.,Ltd			
Title 62_PERI_AUDIO_IO			
Size D	Project F9_MB_V1		Rev V1
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[23] AU_VIND_P << C6307 | 电容 1uF 0201_XSR 0.3V_M << MIC1_P [71]

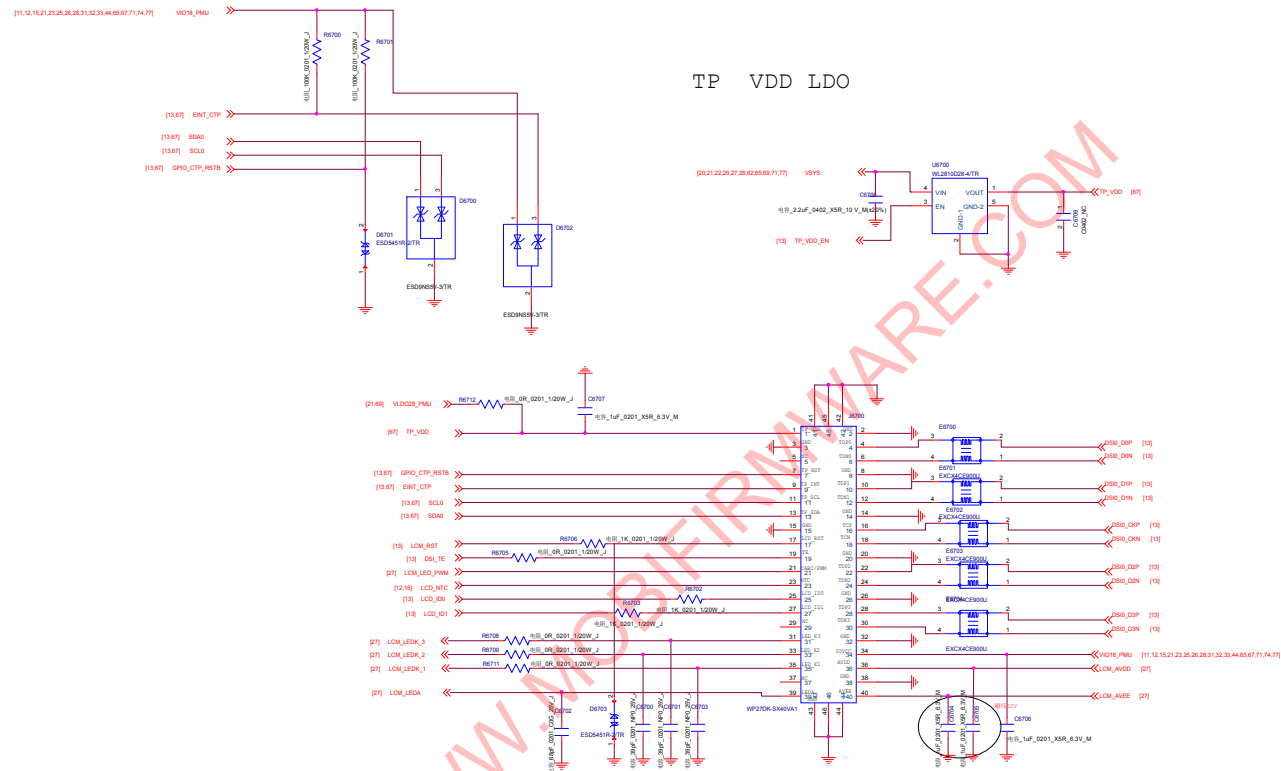
华勤通讯 Huaqin Telecom Technology Com.,Ltd			
Title 63_PERI_AUDIO_IO2(2 AMIC)			
Size D	Project F9_MB_V1		Rev V1
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AUDIO PA



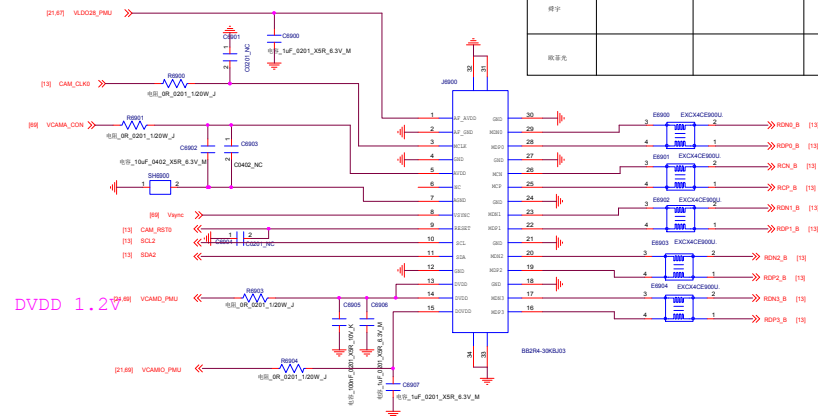
华勤通讯 Huaqin Telecom Technology Com.,Ltd			
Title 65_PERI_SPEAKER_AMP			
Size D	Project F9_MB_V1		Rev V1
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Main LCM+CTP



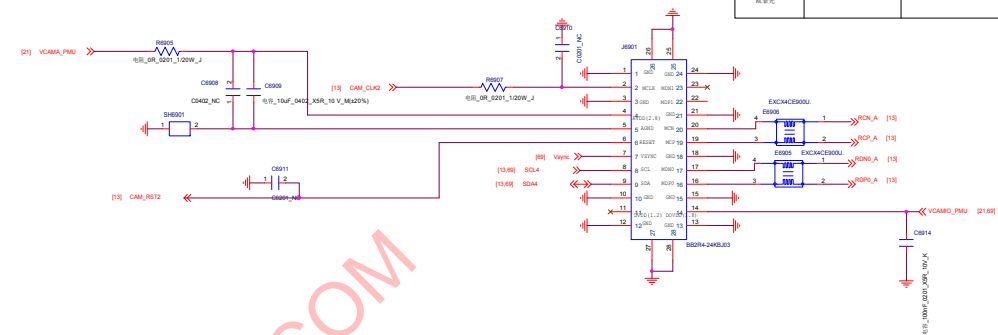
华勤通讯 Huaqin Telecom Technology Com.,Ltd			
Title 67_PERI_LCD_CTP_FP			
Size D	Project F9_MB_V1		Rev V1
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Main MONO Camera 12M



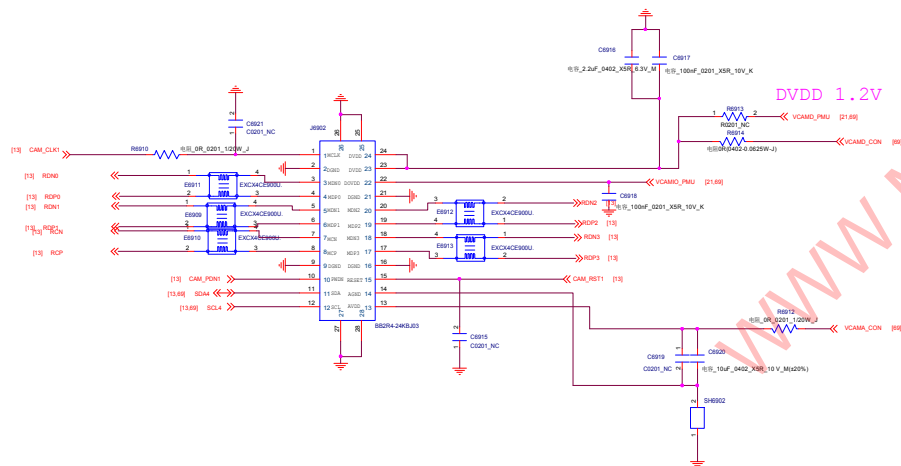
厂家	120 MEGA	120 MEGA	10
型号			
供应商			

AUX Camera 2M



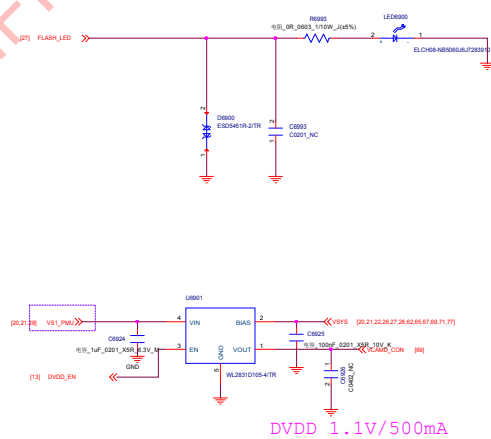
厂家	120 MEGA	120 MEGA	10
型号			
供应商			

Front Camera - 5M

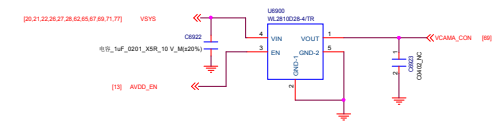


厂家	120 MEGA	120 MEGA	10
型号			
供应商			

Rear Camera Flash



AVDD LDO



华勤通讯 Huaqin Telecom Technology Com.,Ltd

Title 69_PERI_CAMERA

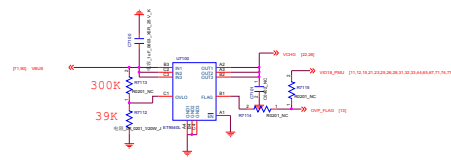
Size D Project F9_MB_V1

Rev v1

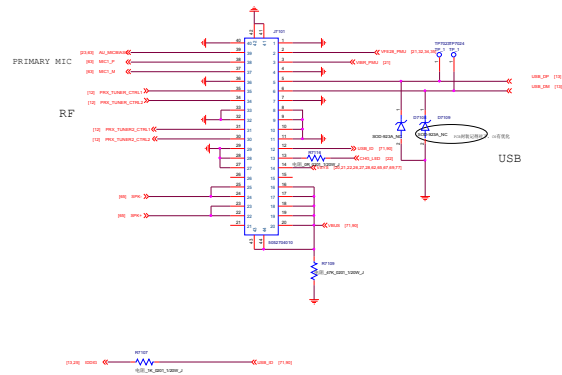
Date: Friday, October 19, 2018

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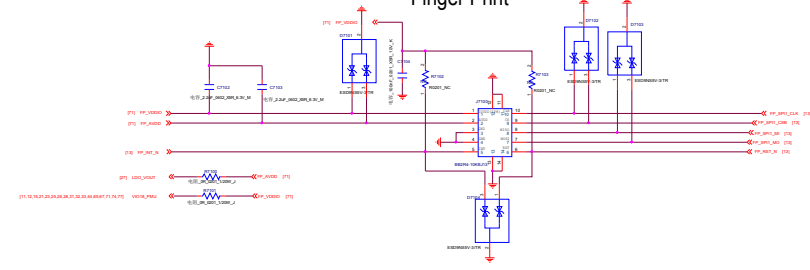
OVP 10.5V



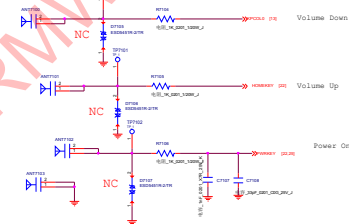
BTB Connector



Finger Print

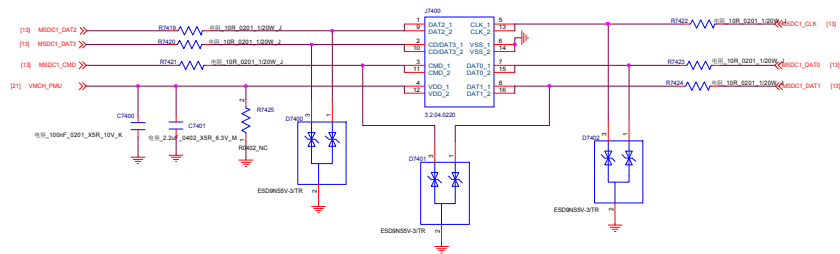


KEY BTB

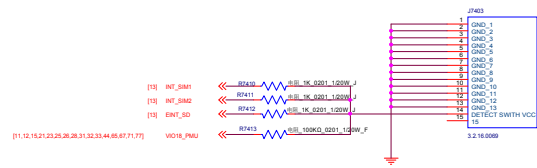


Signal	Description
KPCOLO	Volume Down
HOMEKEY	Volume Up
POWERKEY	POWER_ON

SDC2

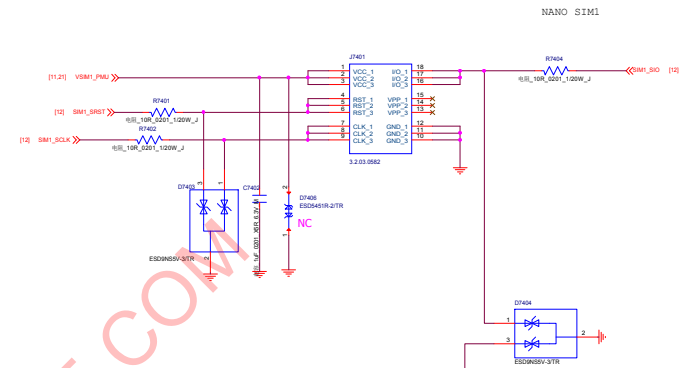


SD_SIM_DET

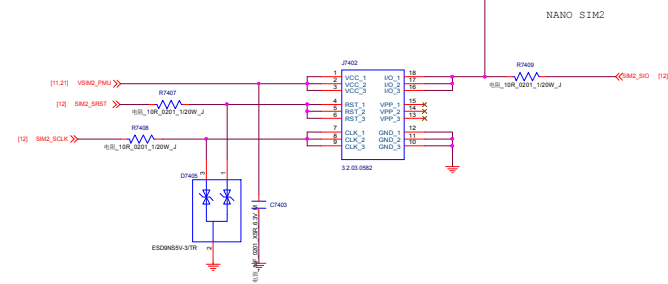


EINT DEAFULT LOW
 plug in int H
 plug OUT int L

SIM1



SIM2



Schematic design notice of "46_MEMORY_SD Card" page.

Note 46-1: For better ESD performance, please select suitable components for system protection.

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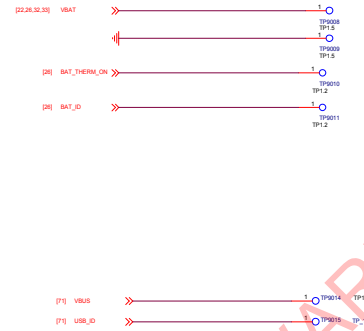
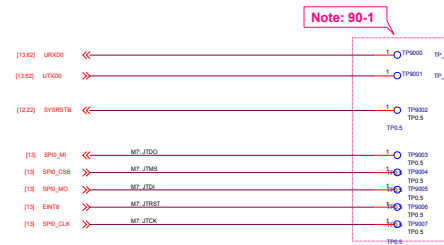
Title 74_PERI_SIM&SD Card

Size D Project F9_MB_V1

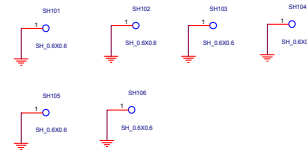
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屏蔽罩



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Title 90_DEBUG_IO		
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