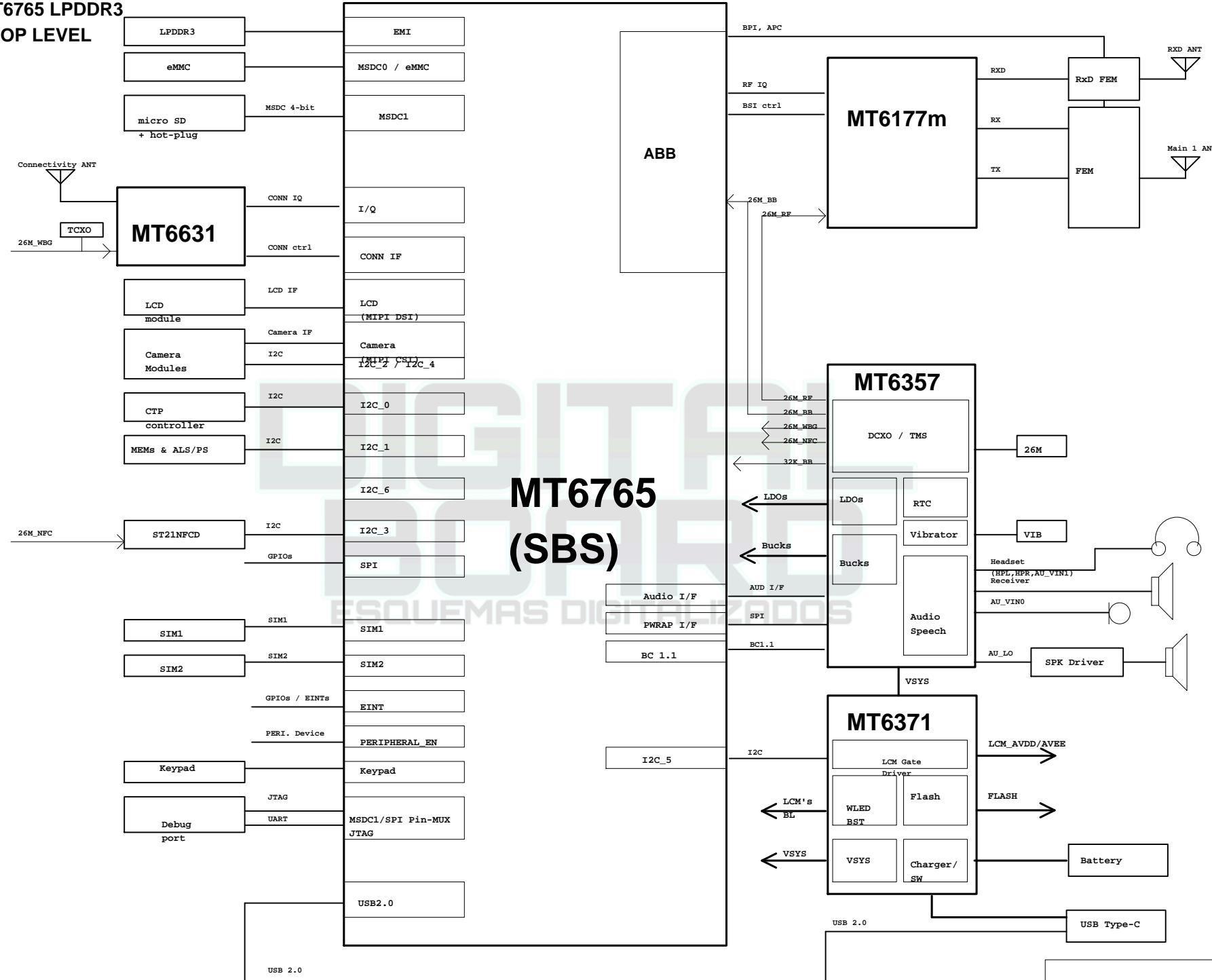


Project : MT6765 LPDDR3

REF_SCH TOP LEVEL

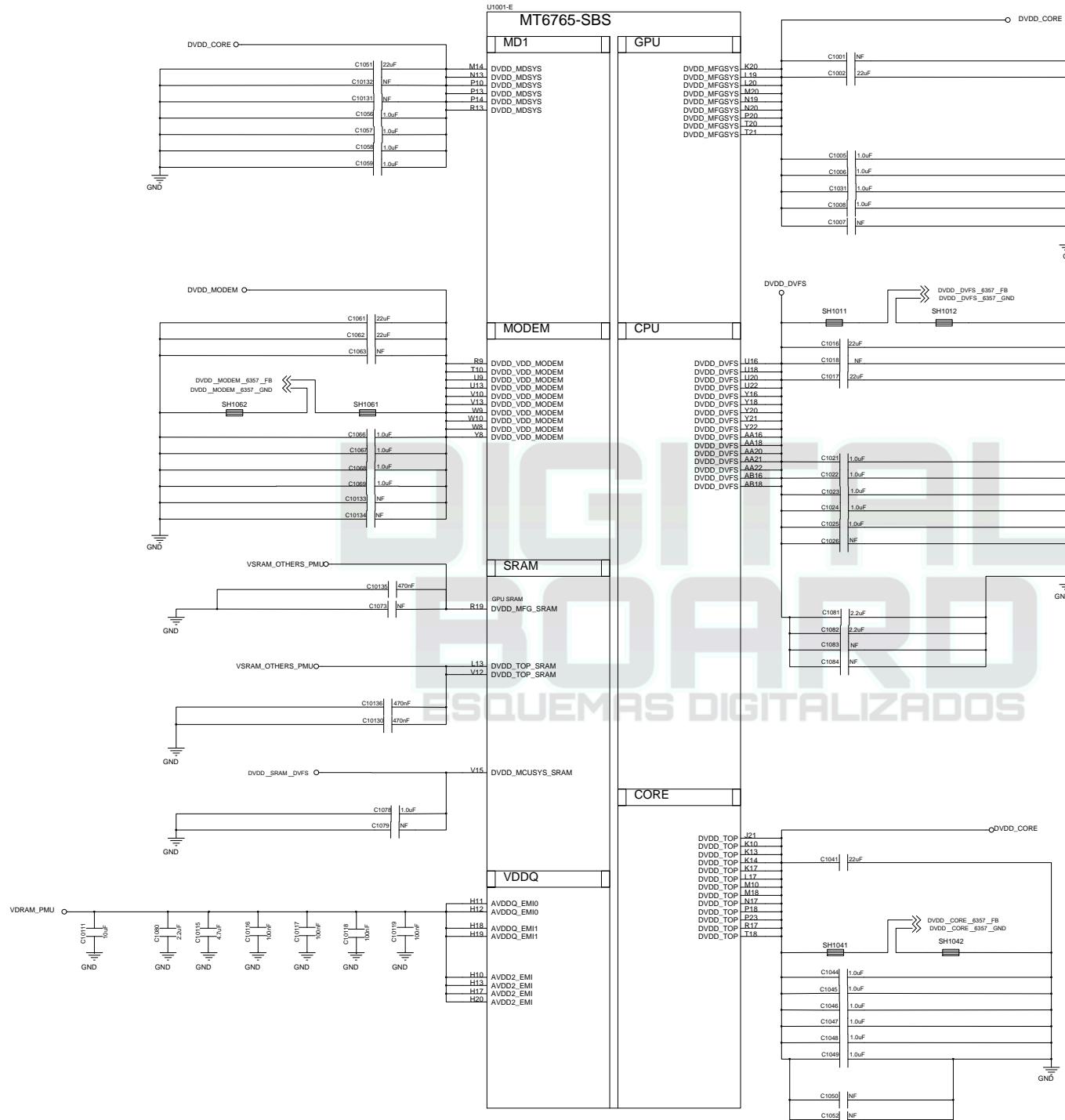


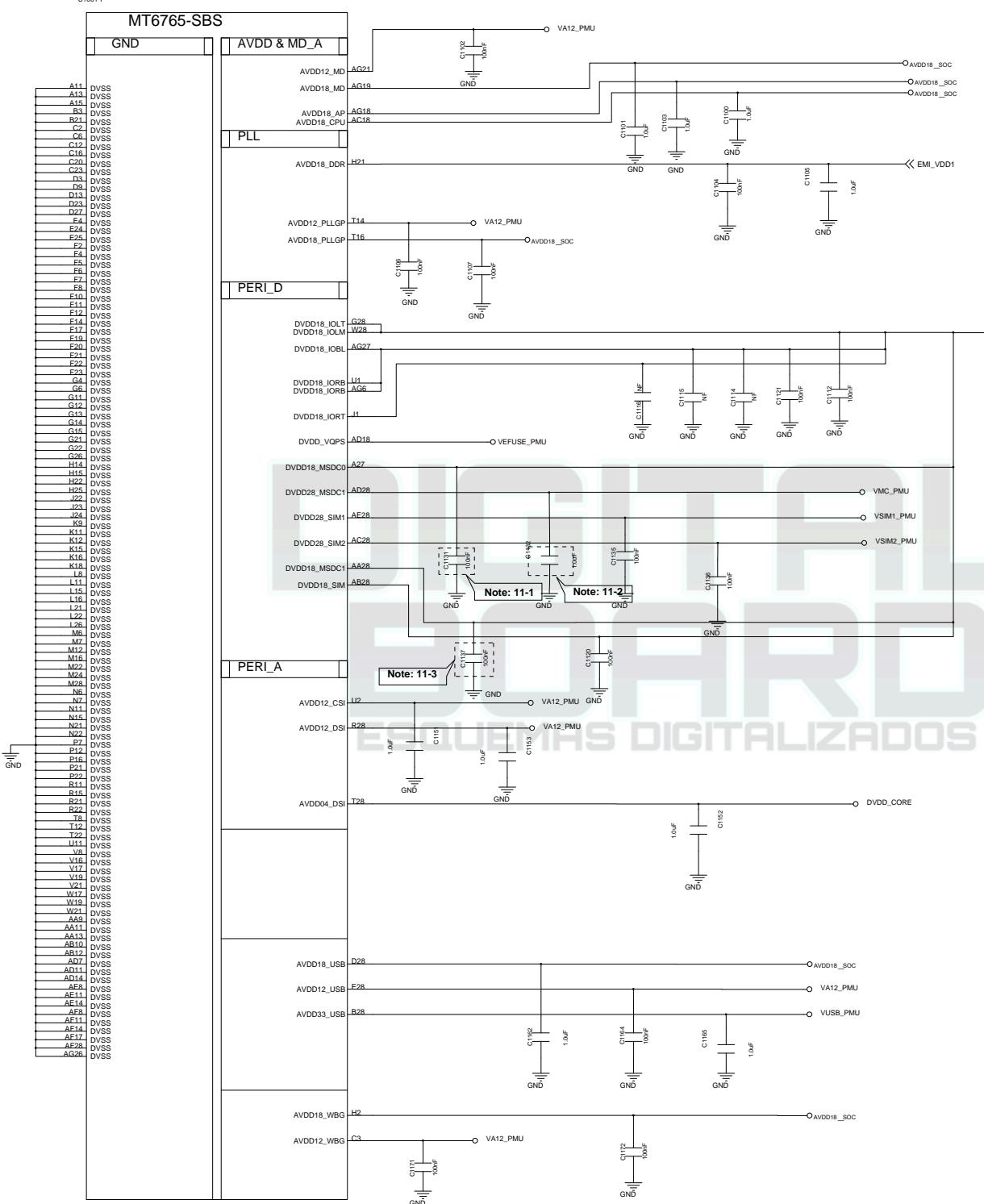
I2C	Sub SYS	Function	Part Number	I2C Spec.		i2C Slave Address / Write / Read (7-bit mode)
I2C-0	AP	Cap Touch controller	GT1151	400 Kbps		0x5D Write:0xBA / Read:0xBB
I2C-1 (I3C)	Sensor Hub	Magnetic Sensor	AK09918C	400 Kbps		0x0C Write:0x18 / Read:0x19
		Ambient Light Sensor	CM36558	400 Kbps	0x51	Write:0xA2 / 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	S5K2T7	400 Kbps	0x2D	Write:0x5A / Read:0x5B
			EEPROM	400 Kbps	0x52	Write:0xA4 / Read:0xA5
			AF driver=NA			
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)

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	
	Page 44	<ul style="list-style-type: none"> 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. Change L22D3 power off sequence, change C4422 from 0.1uF to 2.2uF, and change C4423 from 0.1uF to 1uF
	Page 51	<ul style="list-style-type: none"> 2. Change VDD1 power of eMCP from VIO18_PMU to EMI_VDD1, fulfilling power rail in star connection 1. Add 2nd source plan for U5004 2. Add Note 51-3 and Note 51-4





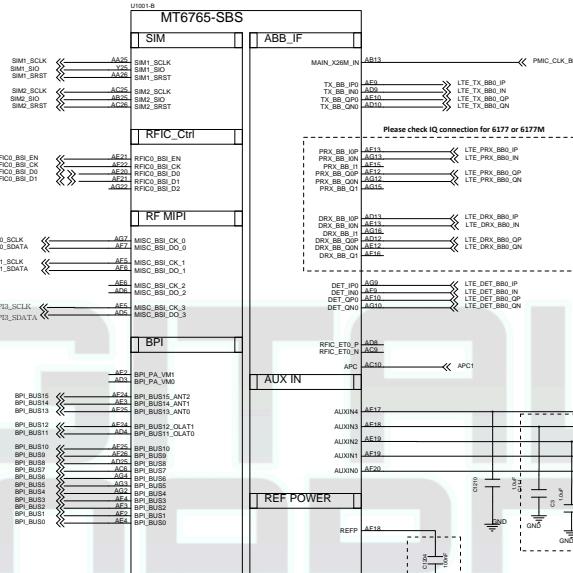
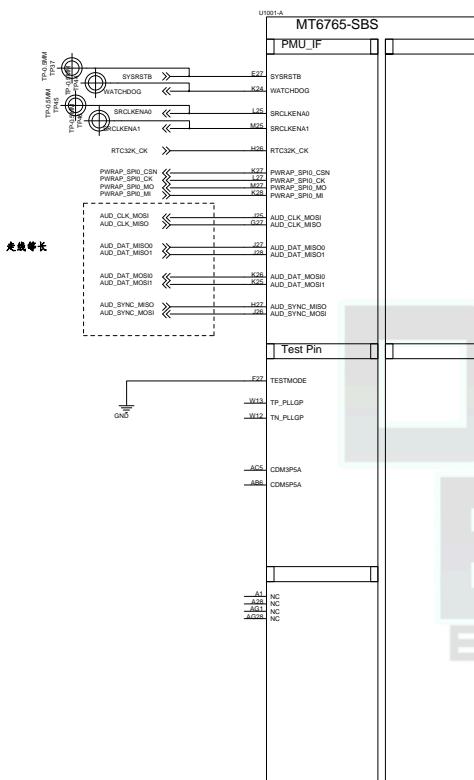


Schematic design notice of "11_BB_POWER_IO" page.

Note 11-1: C4101 closed DVDD18_MSDC0 150mil

Note 11-2: C4302 closed DVDD28_MSDC1 150mil

Note 11-3: C4301 closed DVDD18_MSDC1 150mil



The diagram shows a circuit connection. On the left, there is a vertical line labeled 'VDD'. A resistor component, labeled 'R2006', is connected between this line and the 'VDD' pin of a package labeled '增加主板各种版本ID'. The 'GND' pin of the same package is also connected to the common ground rail.

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_SPI0_CSN" and "AUD_DAT_MOSI0" are bootstrap pin to select which interface will be the JTAG pin on

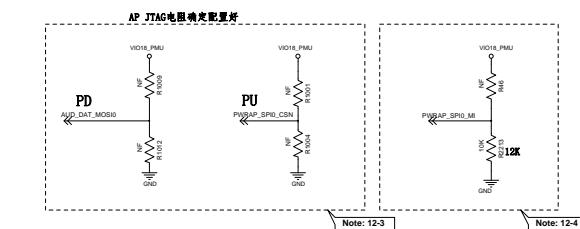
PWRAP_SPID_CSN	AUD_DAT_MOSI0	JTAG Function	
default=PU	default=PD	AP_JTAG	MD_JTAG
HI	LO	N/A	N/A
HI	By ext. PU	SP1+EINT8	SP1+SP13
LO	By ext. PD	SP1+EINT8	N/A
LO	By ext. PU	MDS1C	N/A

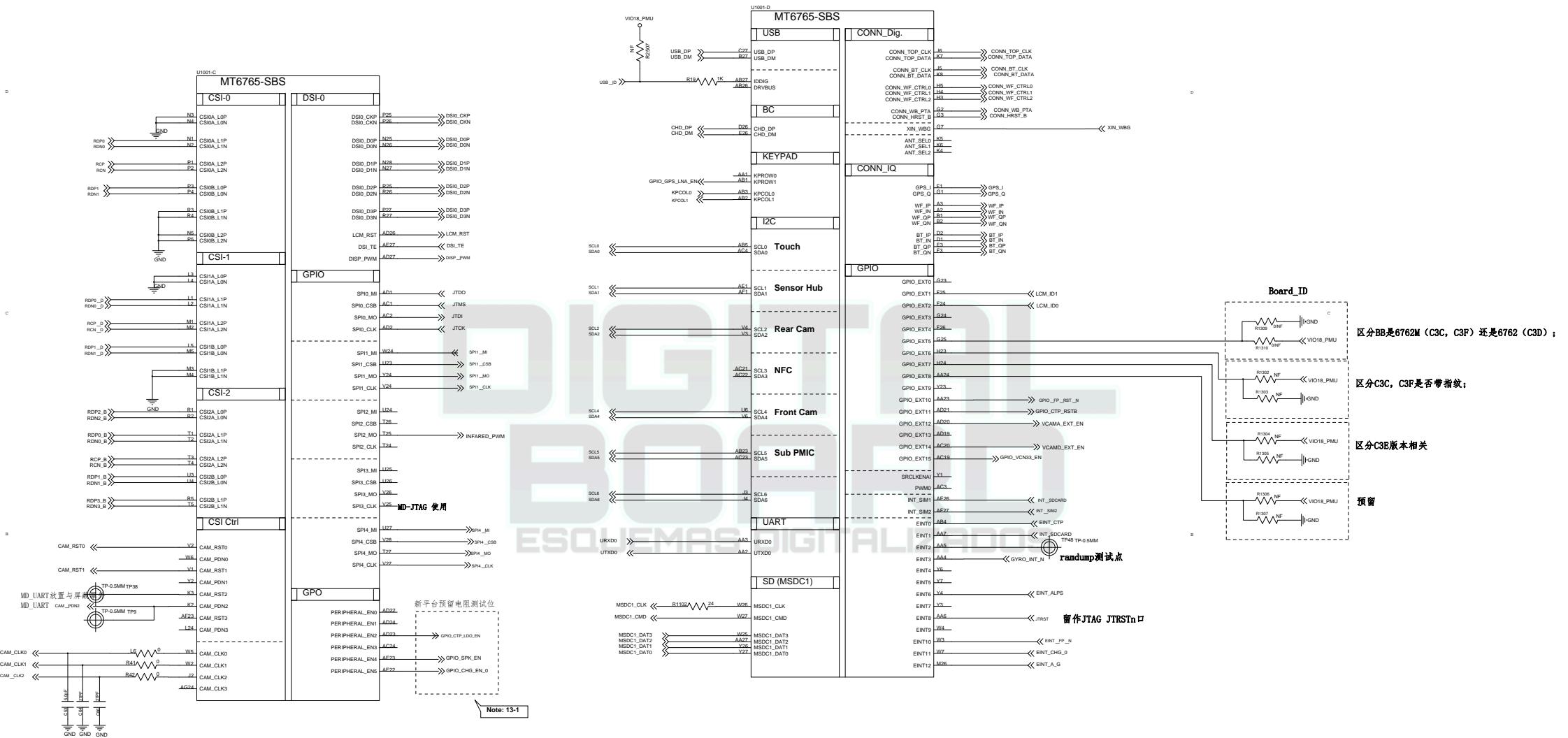
Note 12.4: PWRAP_SRIQ_MQ and PWRAP_SRIQ_ML are DDB-type feature in bootstrap.

Note 12-4: PWWR_SPI0_MO and PWWR_SPI0_MI are DDR type feature in bootstrap		
PWWR_SPI0_MI	Bootstrapping interface	
default=PU	DDR	MSDC0 pin mux
LO (by ext. PD)	LPDDR3	follow LP3 Ref SCH.
HI	LPDDR4X	follow LP4X Ref SCH

Math 1530 Test 1 Name _____

注释错误





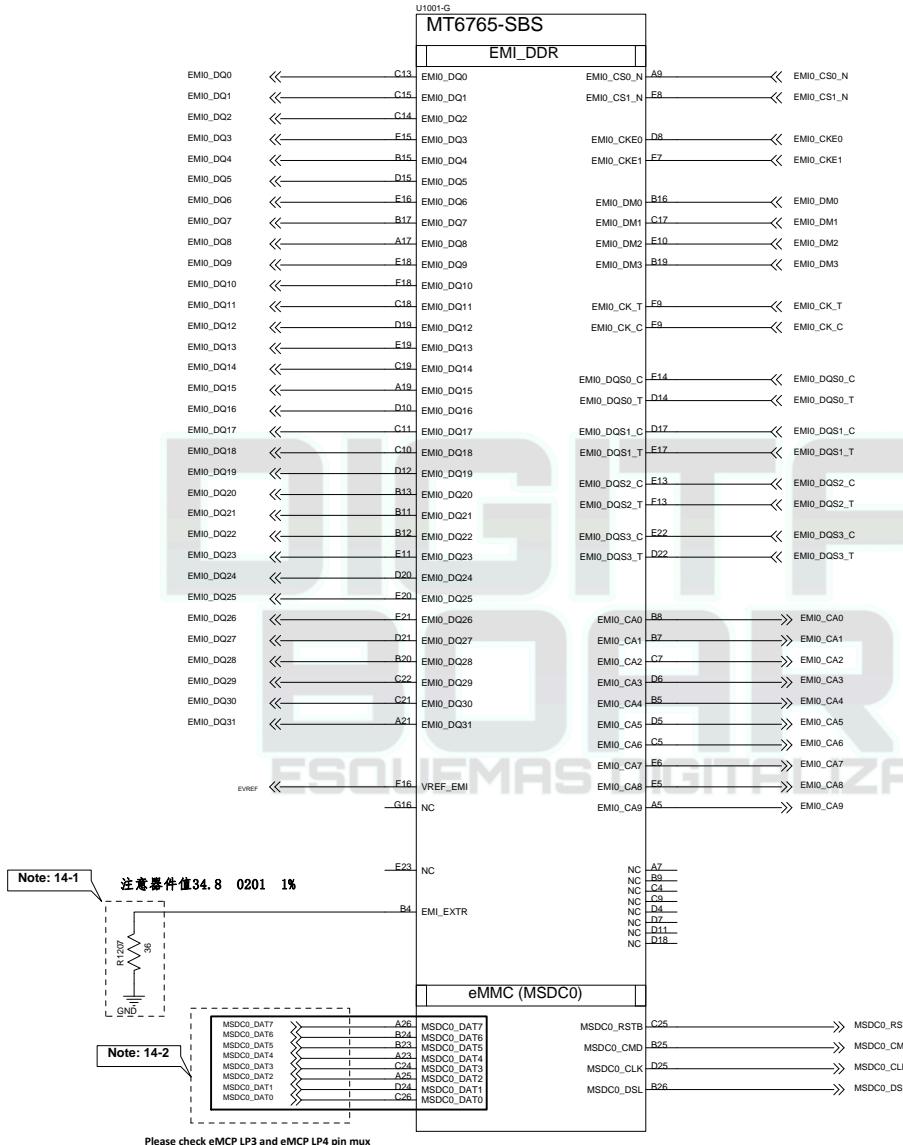
Note 13-1: The enable pin of acoustic or optoelectronic devices (e.g. SPK AMP/Backlight/Charger OCP/OVP) suggest to use Peripheral_EN[0:5] to GND

If use other GPIOs as enable pin, suggest to reserve 0201 NC to GND

Rev	13_BB_2
Size	A1
MTK Confidential	

Date: Thursday, November 02, 2017

Page: 1 of 34

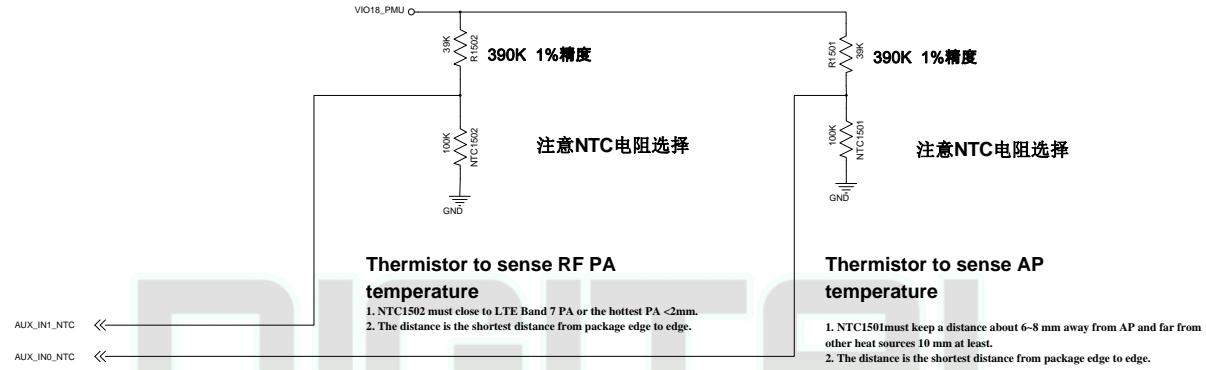


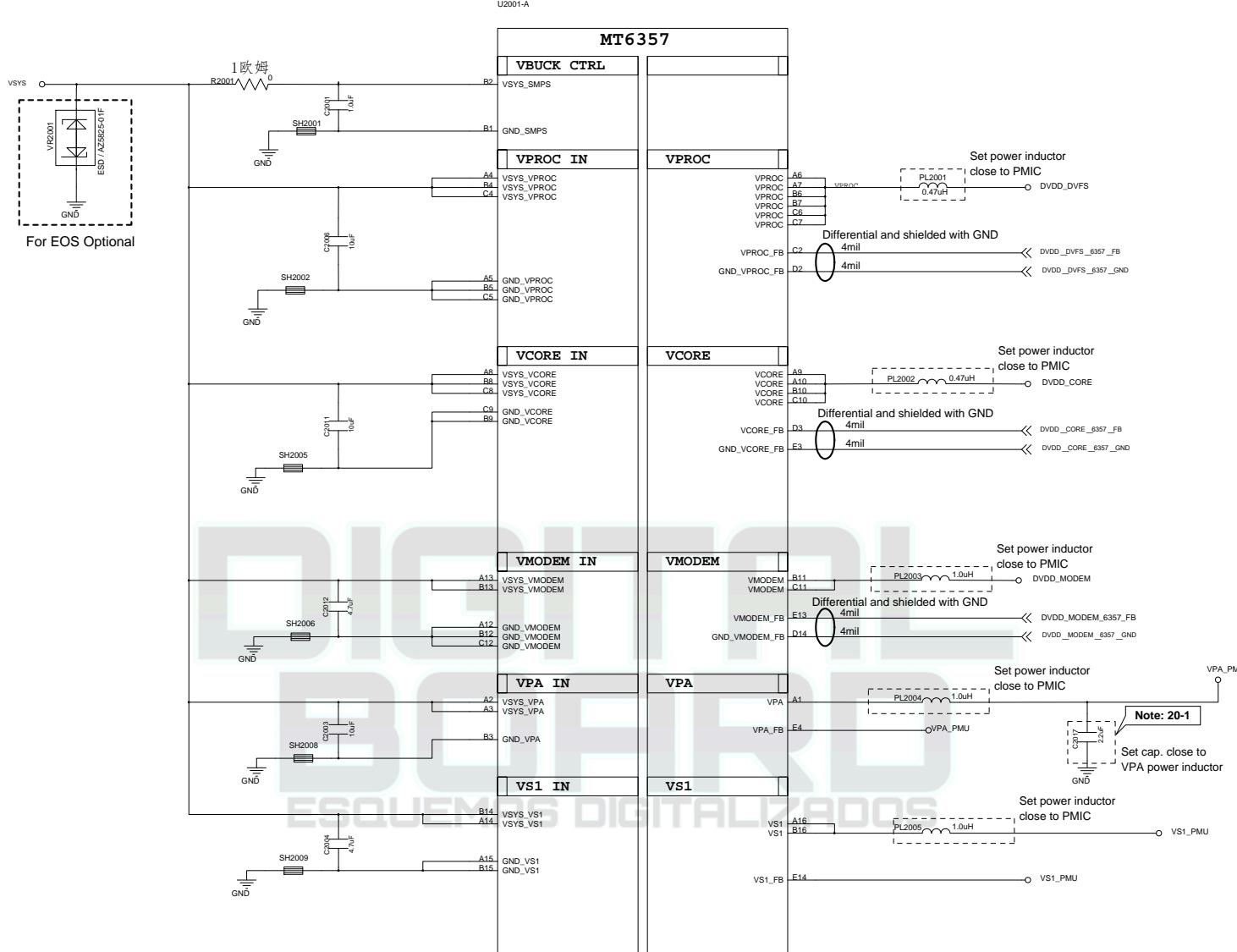
Schematic design notice of "14_BB_3" page.

Note 14-1: R4001 please select 34.8 ohm (1%) resistor

Note 14-2: Please check eMCP LP3 and eMCP LP4X pin mux

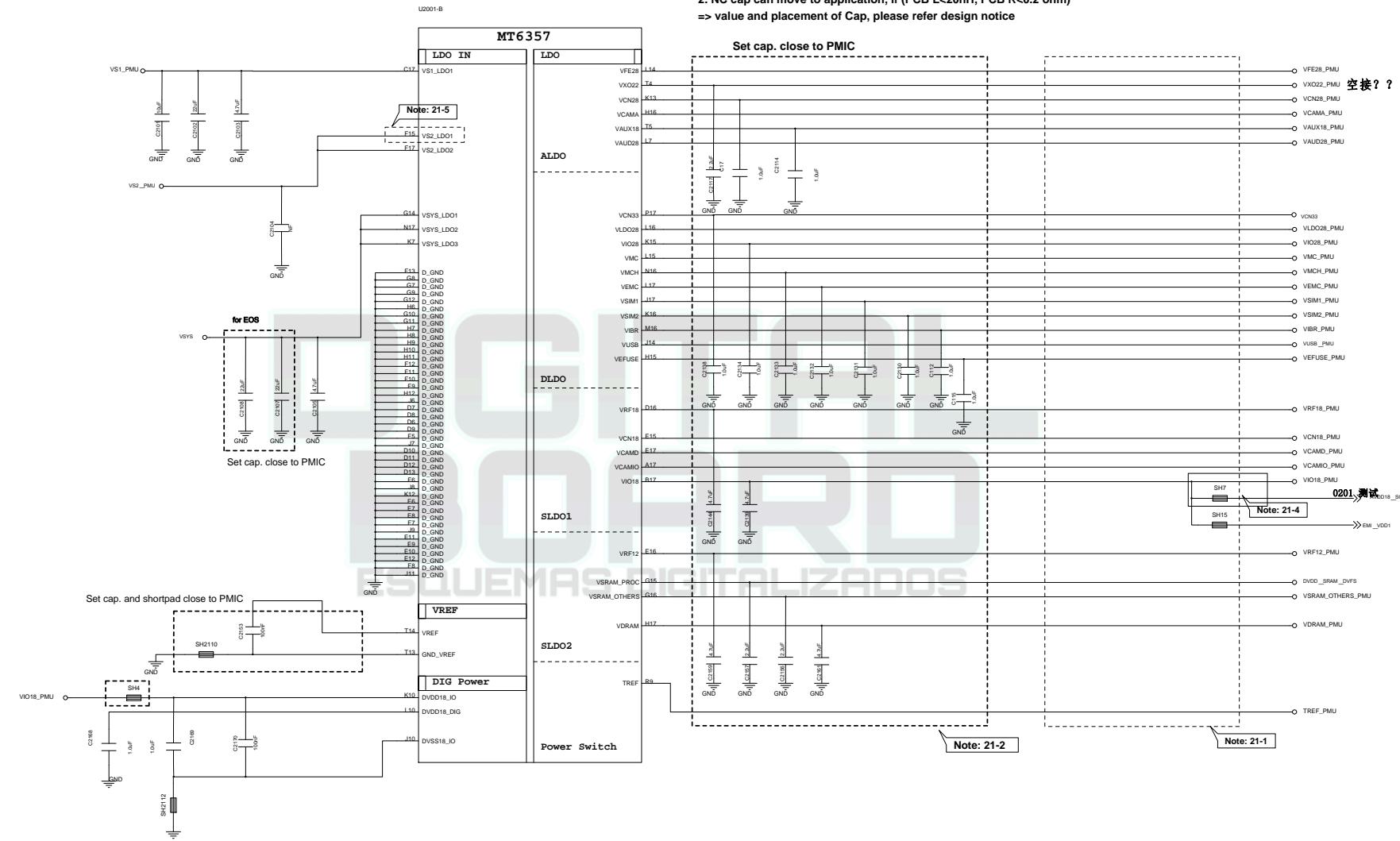
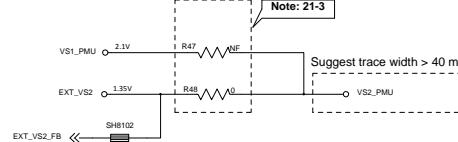
Title	
14_BB_3	
Size	A1
Date	Thursday, November 02, 2017
Sheet	8 of 34
MTK Confidential	





Schematic design notice of "20_POWER_MT6357_Buck"

Note 20-1: To reserve a cap., C2041, please choose 0603 size



Schematic design notice of "21_POWER_MT6357_LDO"

Note 21-1: If these power trace can meet LDO layout constraint, these CAP can be NC or removed.
Please refer to MT6357 design notice.

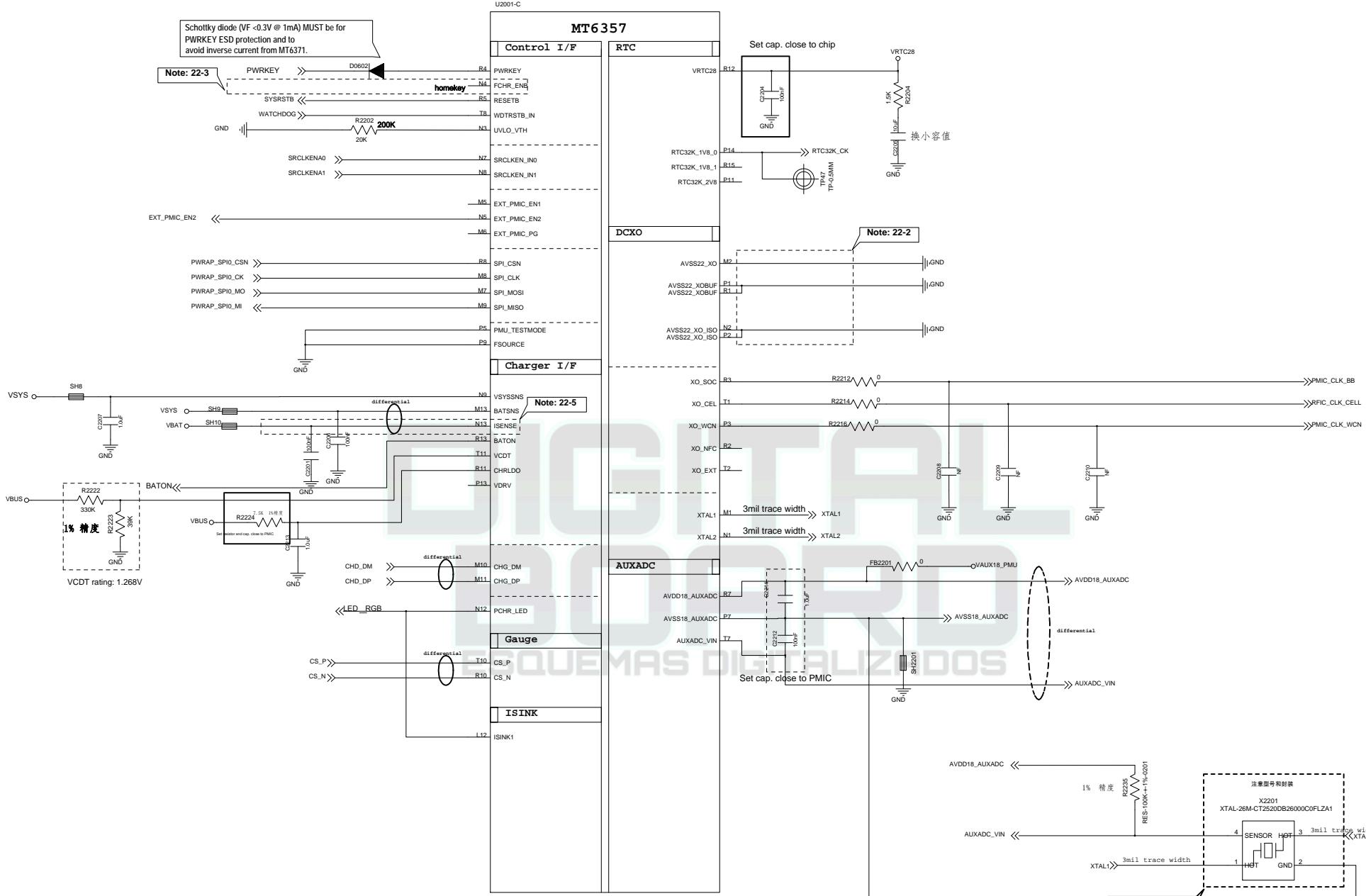
Note 21-2: Output cap range please follow MT6357CRV LDO design notice

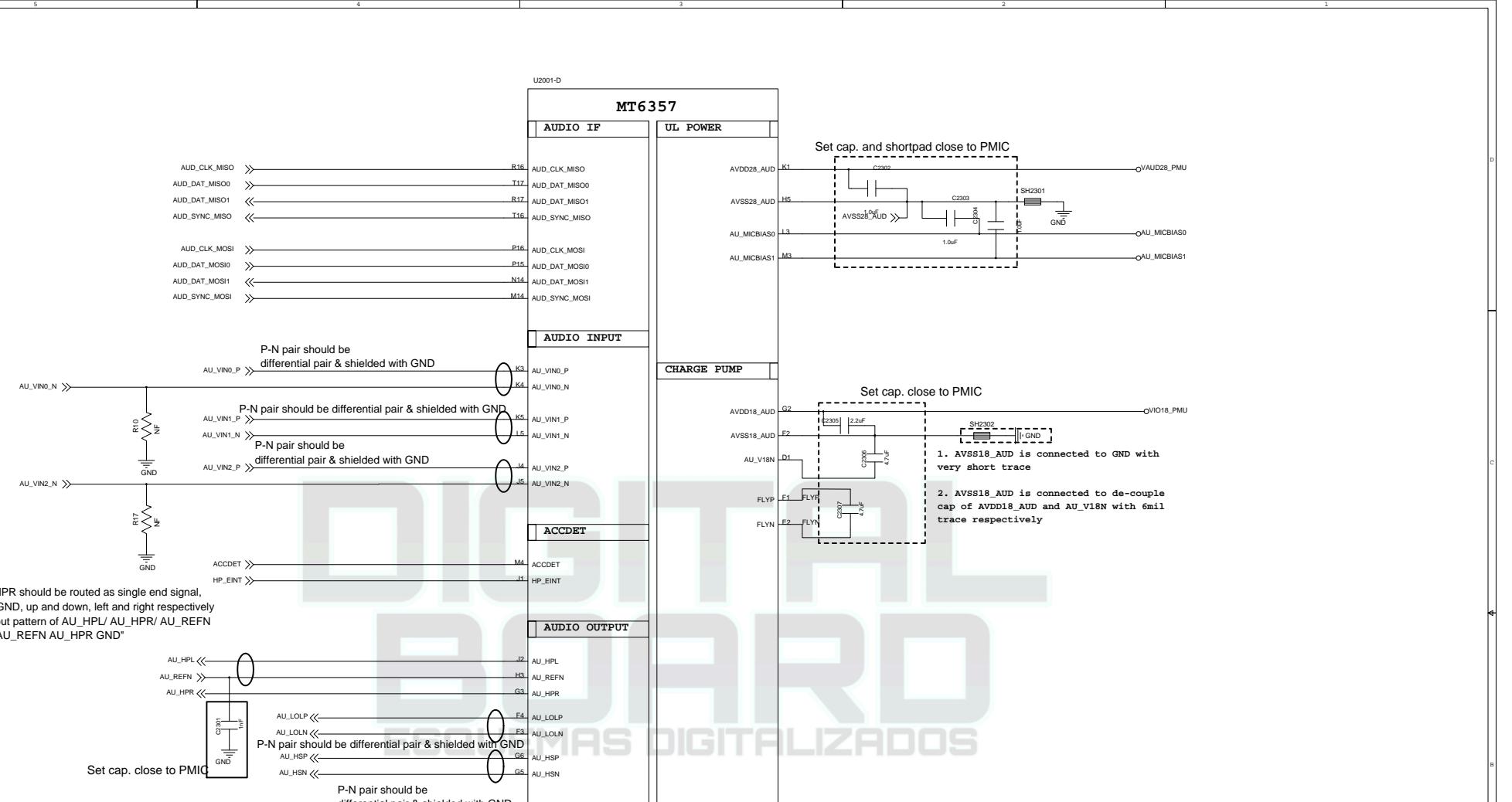
Note 21-3: Ext Buck BOM option

	Ext. buck option	
	w/ EXT VS2 Buck	w/o EXT VS2 Buck
C2104	10uF	22uF
R2851	0-ohm, 0603	NC
R2852	NC	0-ohm, 0603

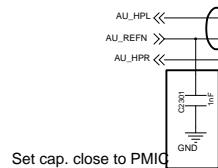
Note 21-4: Please set SH2101 close to C2141, making star connection between VIO18_PMU and AVDD18_SOC near to LDO cap. C2141
Please also refer to MT6357 design notice for further detail design information

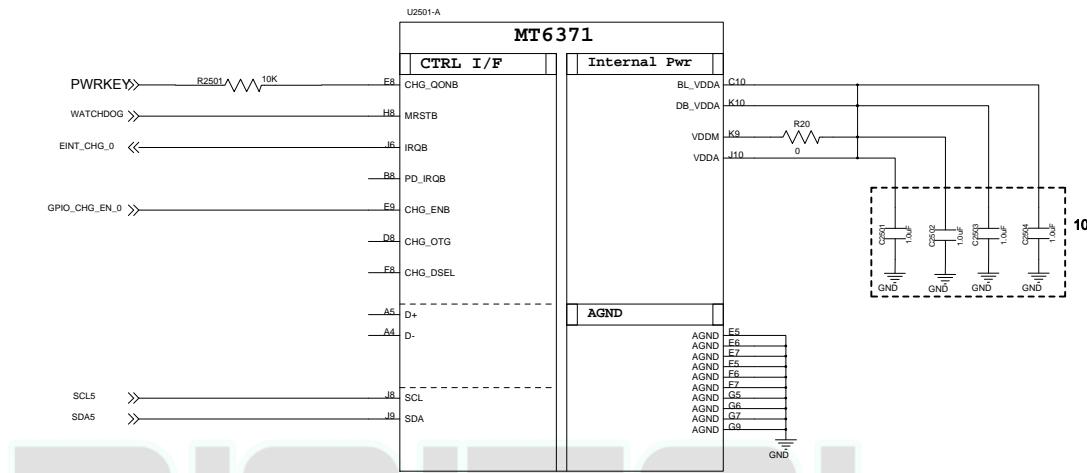
Note 21-5: Please connect VS2_LDO1(F15) to VS1_PMU if voltage applied to VCAMD(E17) ≥ 1.3 V





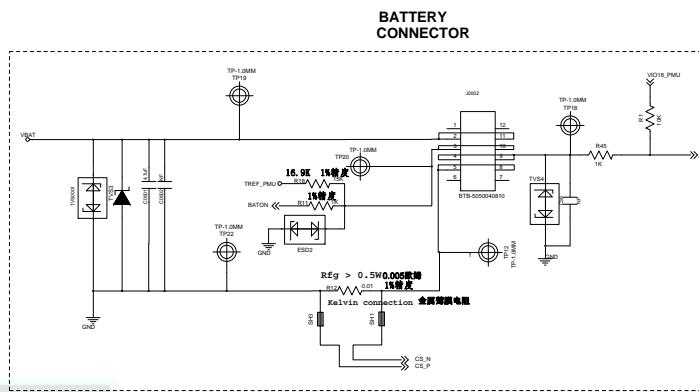
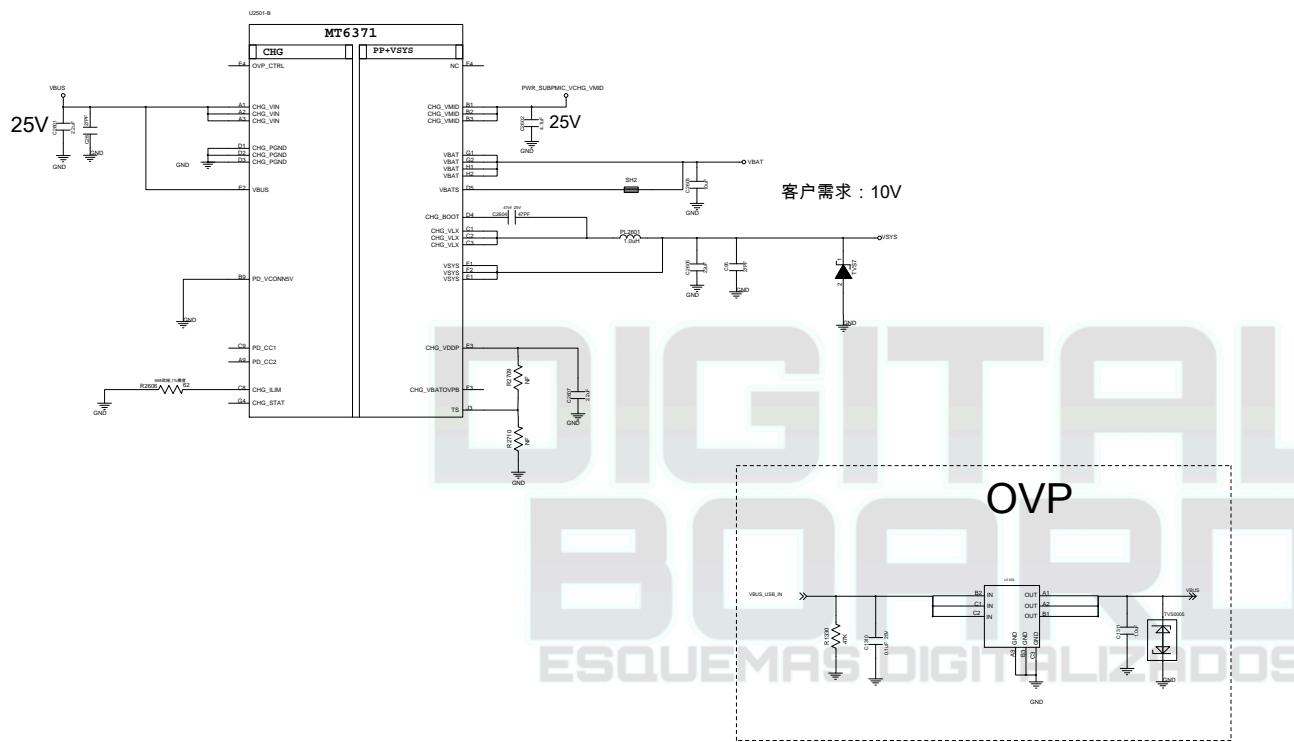
- AU_HPL and AU_HPR should be routed as single end signal, and be guarded by GND, up and down, left and right respectively
- The suggested layout pattern of AU_HPL/AU_HPR/AU_REFN is " GND AU_HPL AU_REFN AU_HPR GND"





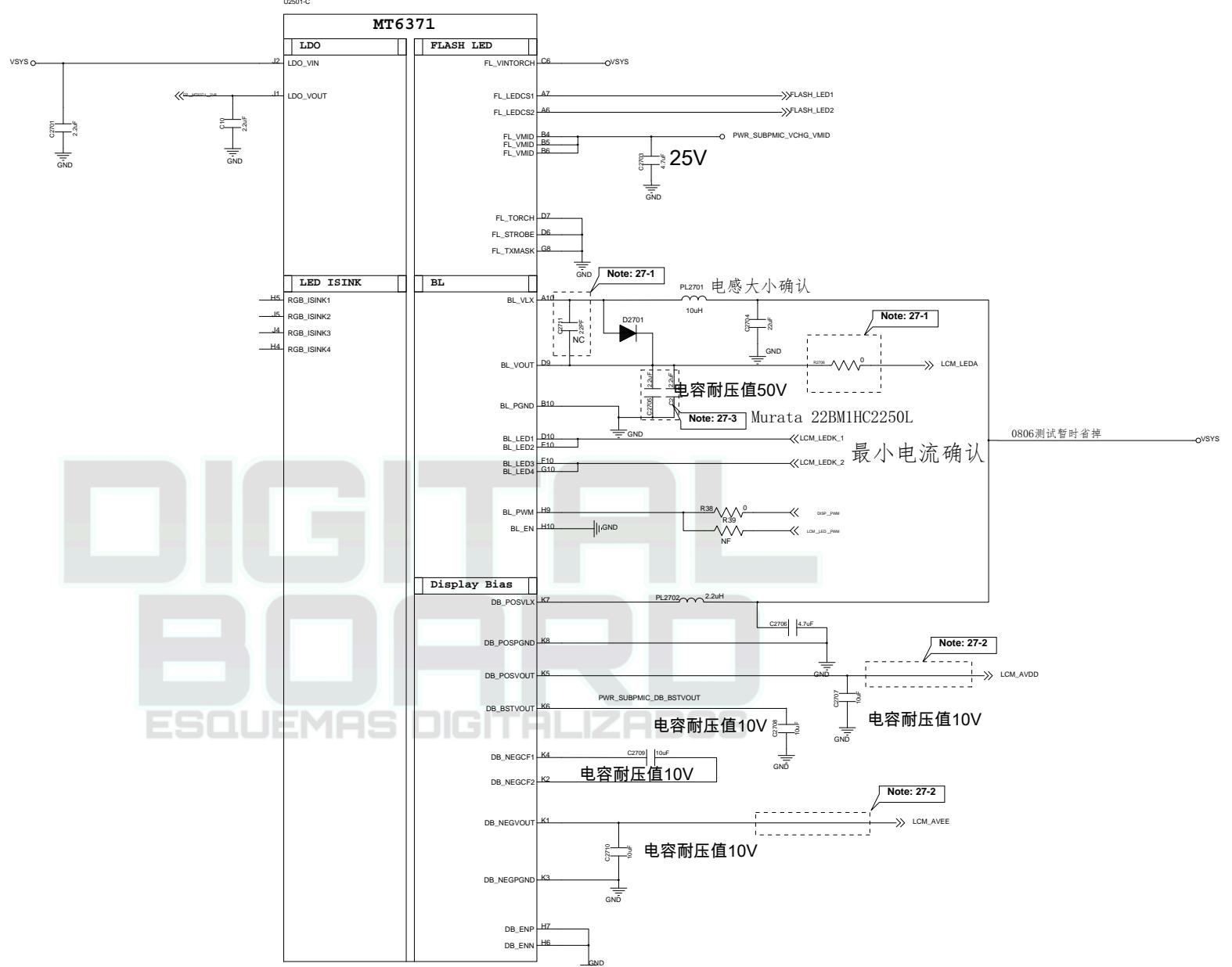
DIGITAL BOARD

ESQUEMAS DIGITALIZADOS



Schematic design notice of "26_POWER_MT6370-Charger + PP" page.

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.

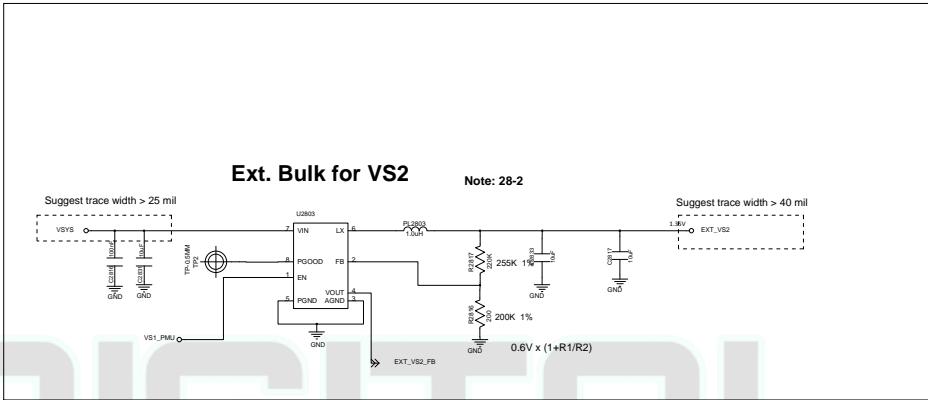
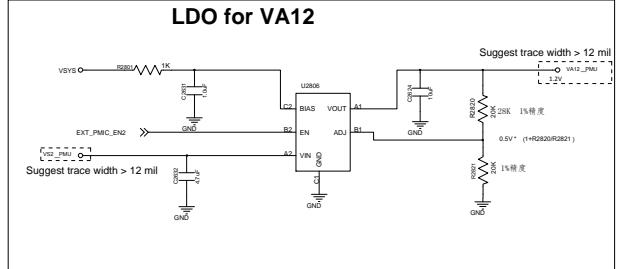


Schematic design notice of "27_POWER_SubPMIC-HV powers" page:

Note 27-1: To minimize RF de-sense, it is recommended to reserve 0-ohm and 0402 cap for BOM fine tuning.

Note 27-2: To minimize RF de-sense, it is recommended to reserve 0-ohm and 0201 cap. for BOM fine tuning.

Note 27-3: C2705 could be replaced with C / 1 / uF / 50V + C / 1 / uF / 50V

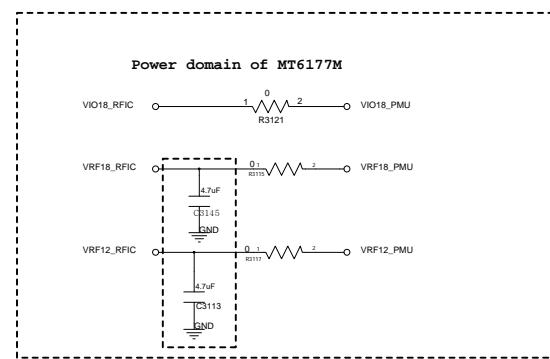
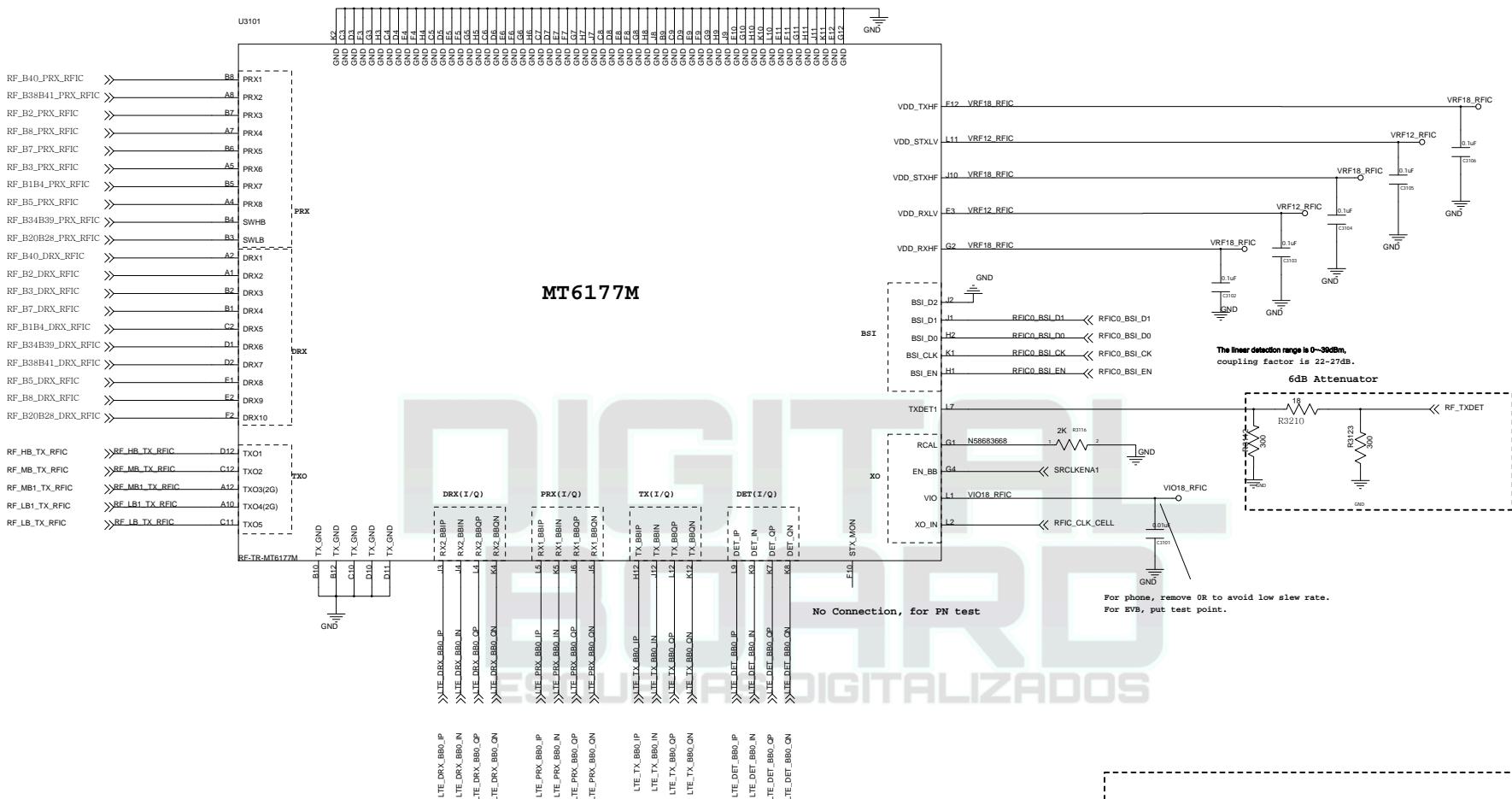


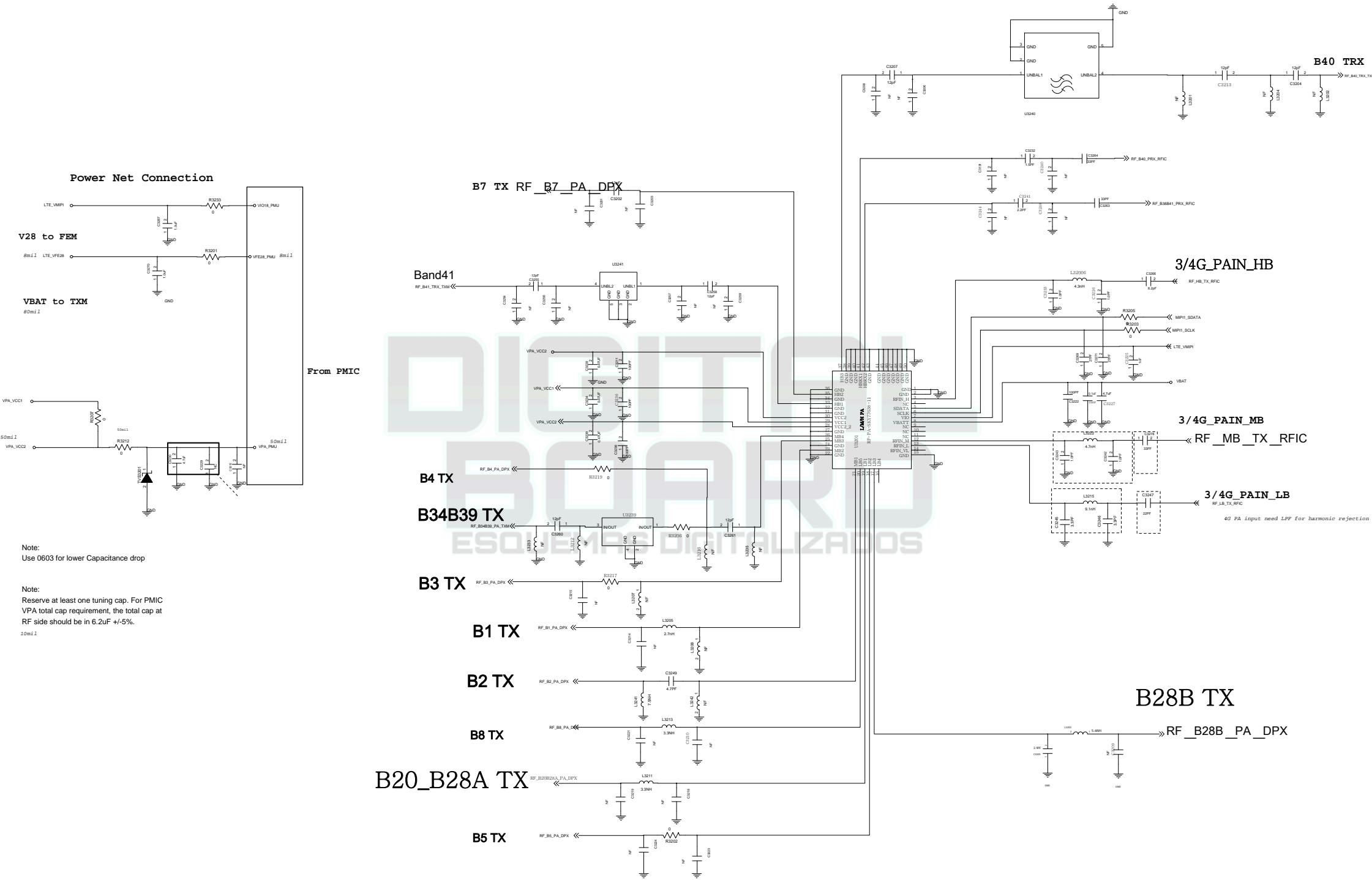
Schematic design notice of "28_POWER_ThirdParty-Power"

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

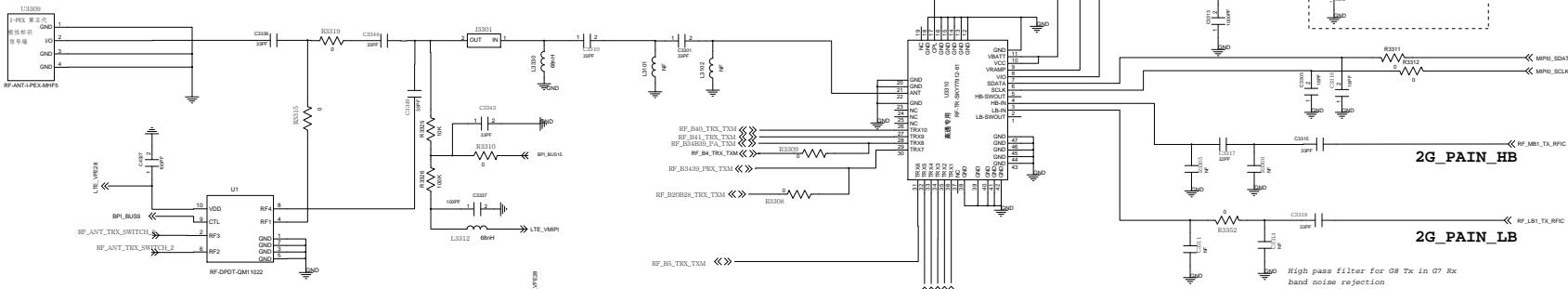
Note 28-2: VS2 Buck Layout placement please close to PMIC MT6357

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

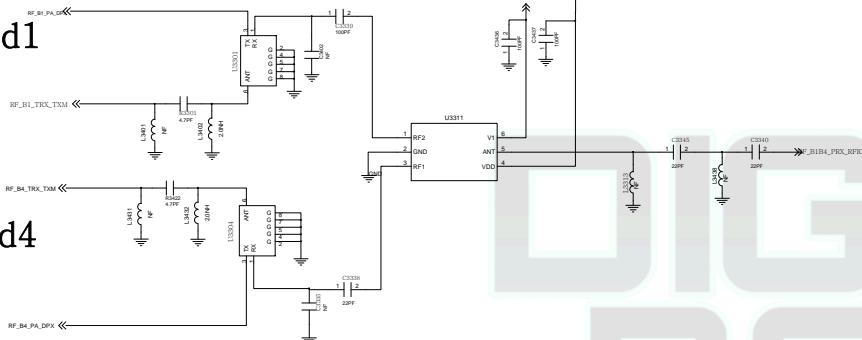




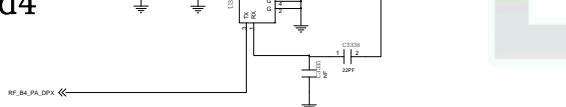
HMLB Primary-ANT



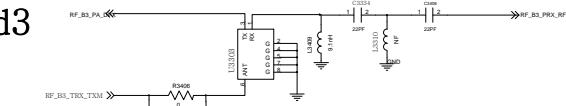
Band1



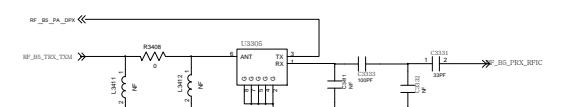
Band4



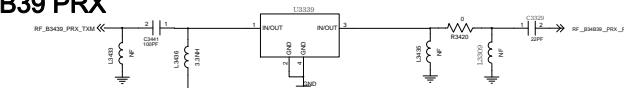
Band3



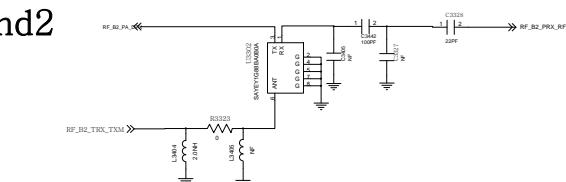
Band5



B34B39 PRX



Band2

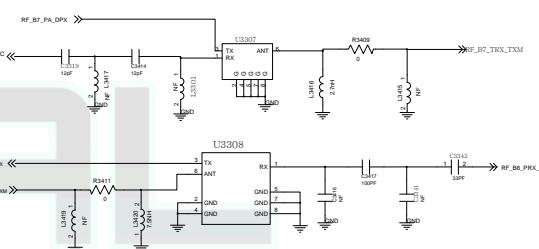


Band7

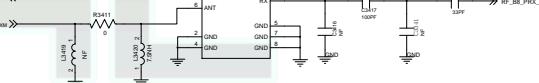
Band8

Band20&Band28

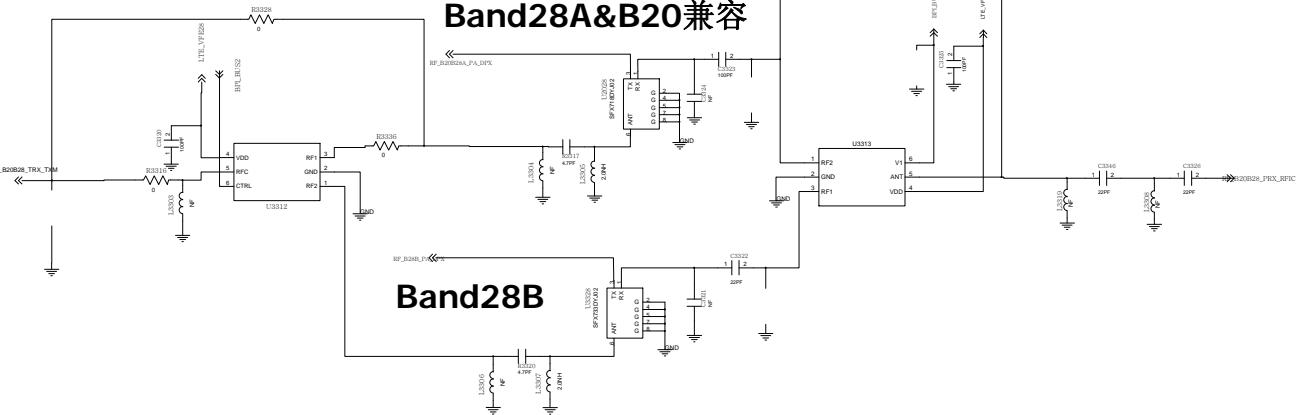
Band'

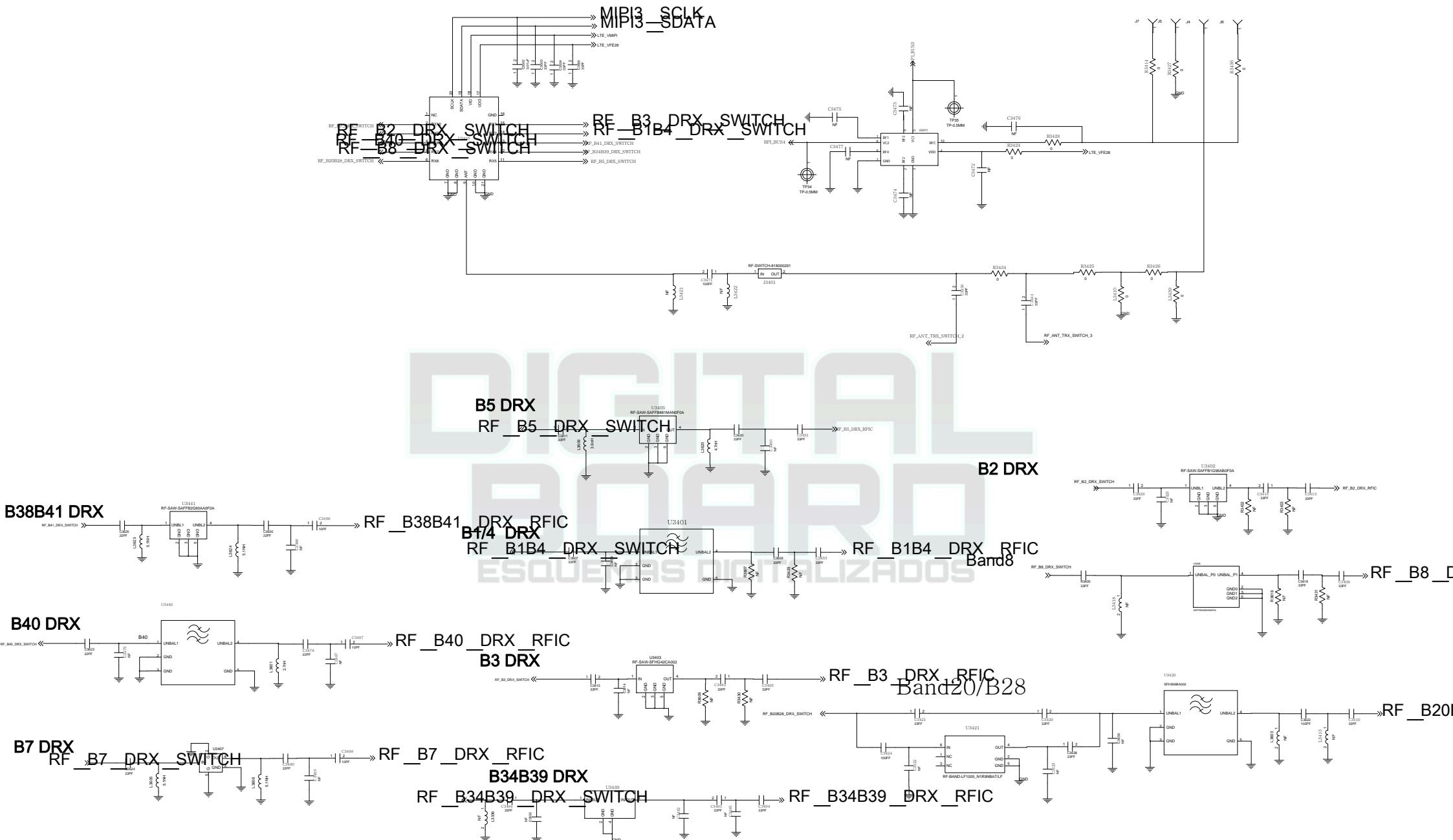


Band8

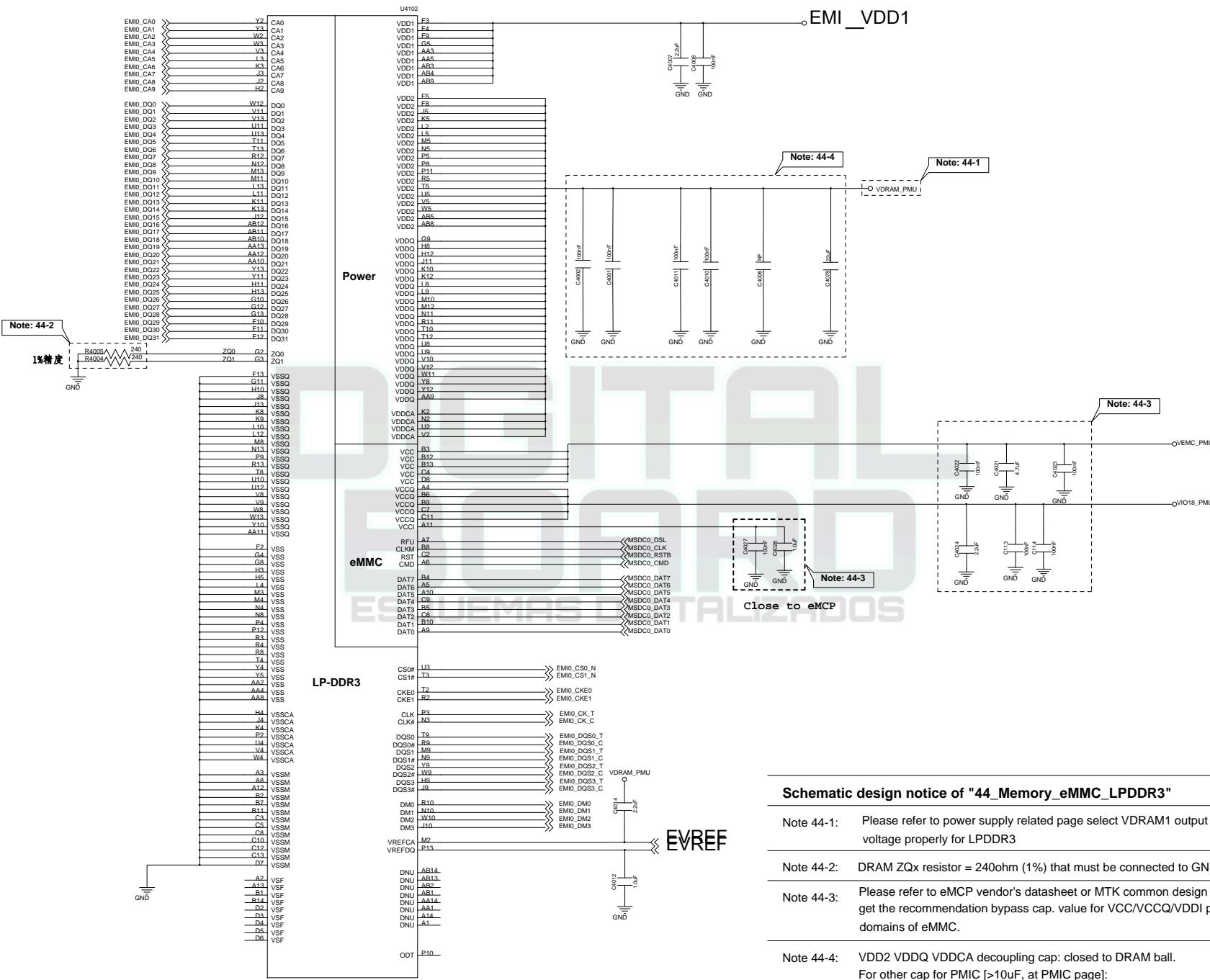


Band28A&B20兼容





eMMC+LPDDR3



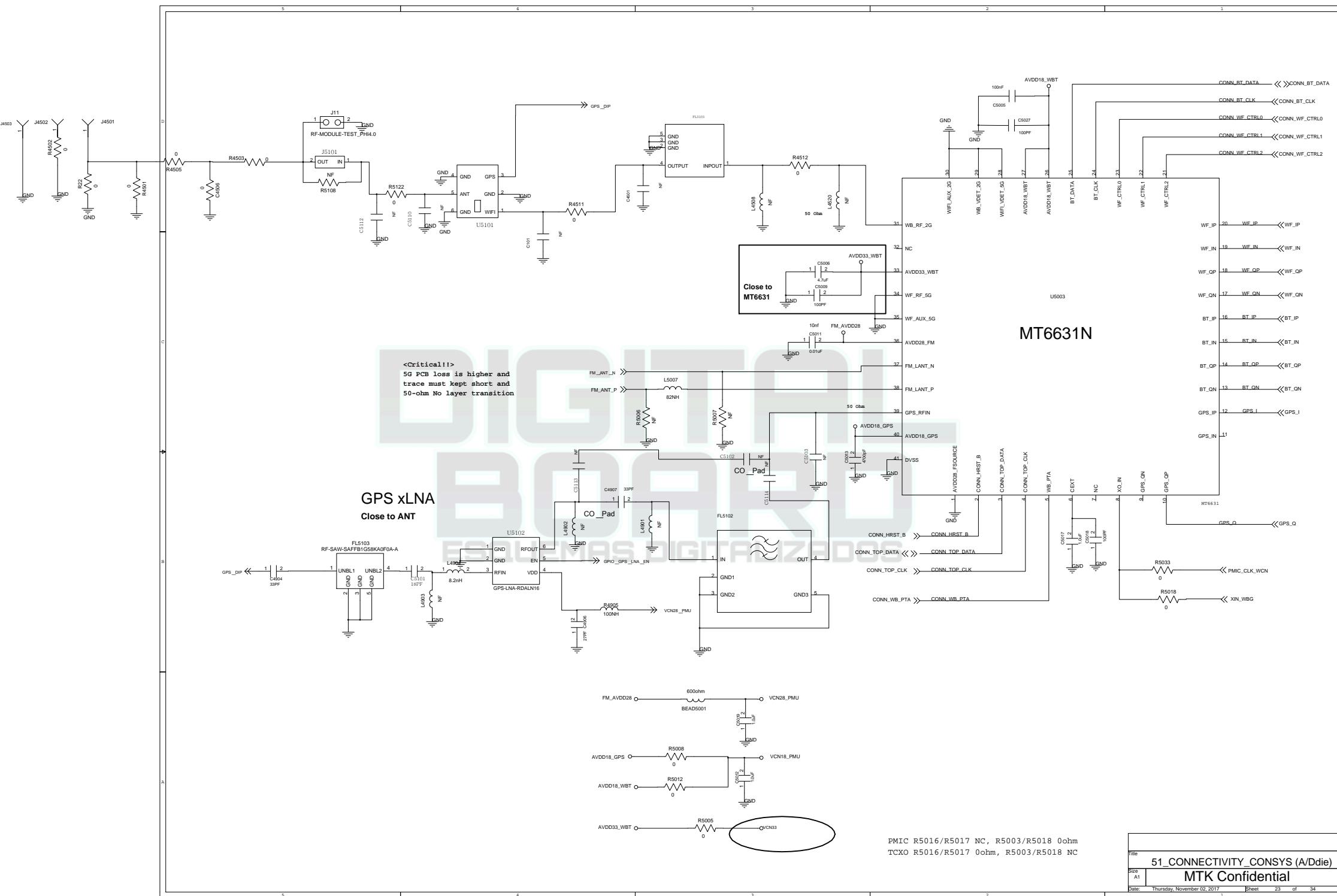
Schematic design notice of "44_Memory_eMMC_LPDDR3"

Note 44-1: Please refer to power supply related page select VDRAM1 output voltage properly for LPDDR3

Note 44-2: DRAM ZQx resistor = 240ohm (1%) that must be connected to GND

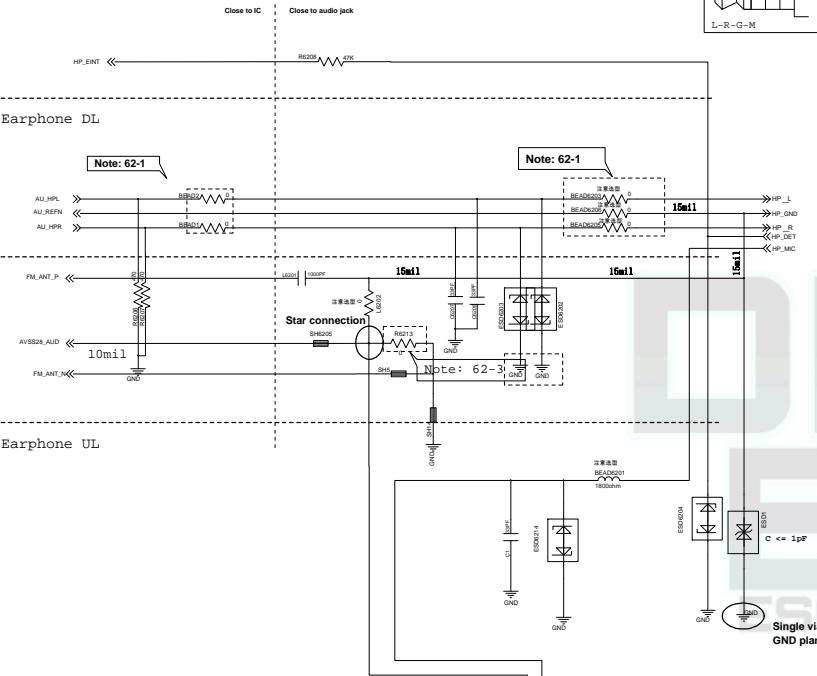
Note 44-3: Please refer to eMCP vendor's datasheet or MTK common design notice to get the recommendation bypass cap. value for VCC/VCCQ/VDDI power domains of eMMC.

Note 44-4: VDD2 VDDQ VDDCA 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.

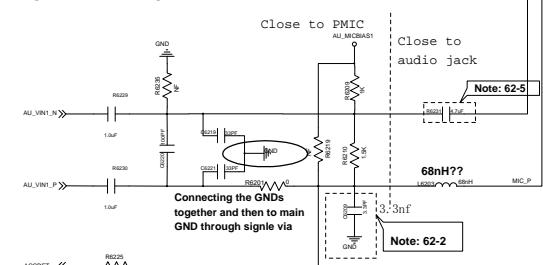


Earphone Audio

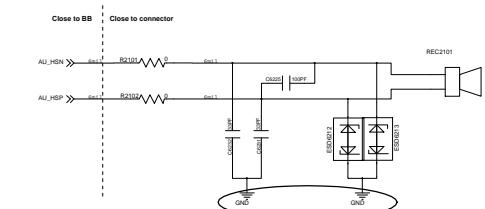
Earphone EINT



Earphone Microphone



Receiver



Connecting the GNDs together and then to main GND through single via

选择ACC MODE

Platform	MT6357	
Mode	ADC mode	DDC mode
KINT	HP_KINT	HP_KINT
Key-Detection	ACCOUNT	AU_VINL_P
R8219	1uF	0 ohm
R8230	1uF	0 ohm
R8209	NC	NC
R8210	1.5k	5k
R8219	NC	2.49k
R8211	4.7uF	0 ohm
R8225	0 ohm	NC
R8208	47k ohm	4.7k ohm

Schematic design notice of "62 PERI AUDIO IO" page

Note 62-1: Part # of BEAD6202, BEAD6203, BEAD6204 and BEAD6205 needs changed to "BLM18BD102SN1" for high THD performance (-90dB) but this BOM change will results in FM RSSI 10dB degraded .

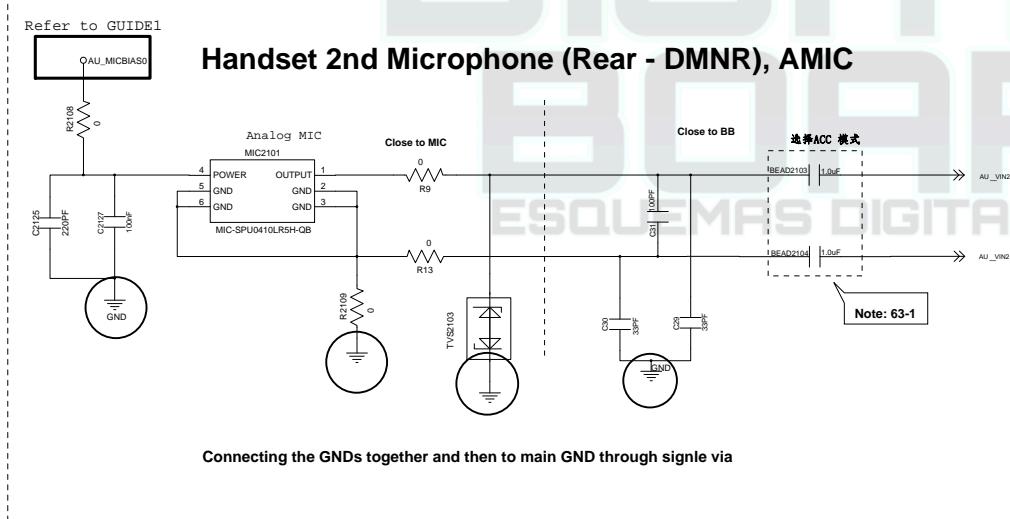
Note 62-2: Reserved Cap for CS/RS test, please double check multi-key function when used

Note 62-3:

	Earphone Jack @ Main board	Earphone Jack @ Sub board
R8213	0 ohm	100nF

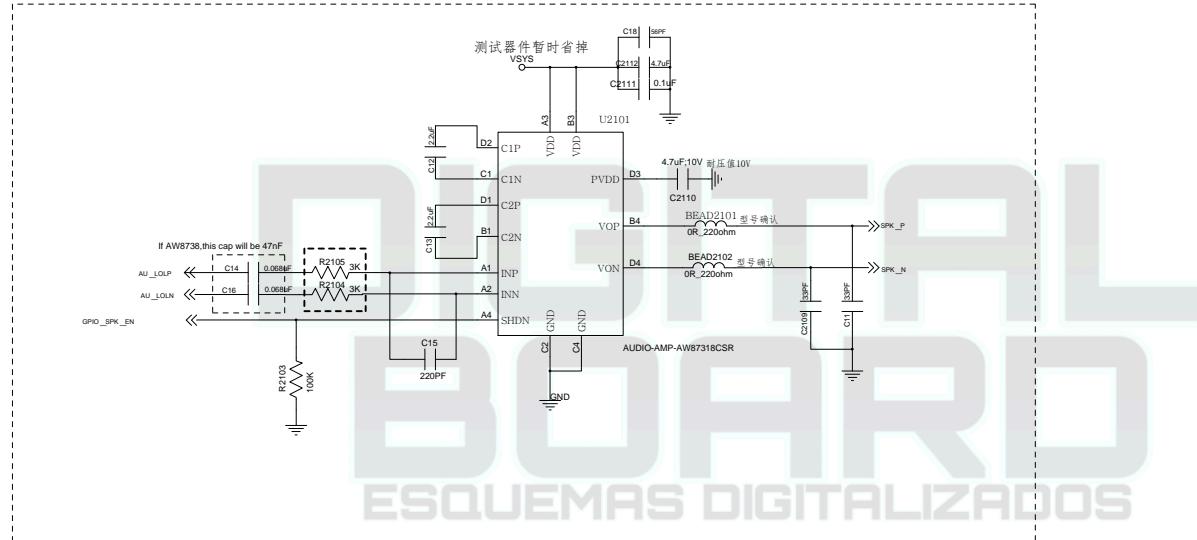
Note 62-4: Please Select ACC Mode for Operator Project to Pass Electrical MOS Test;
More Information refer to Audio/Speech Design Notice.

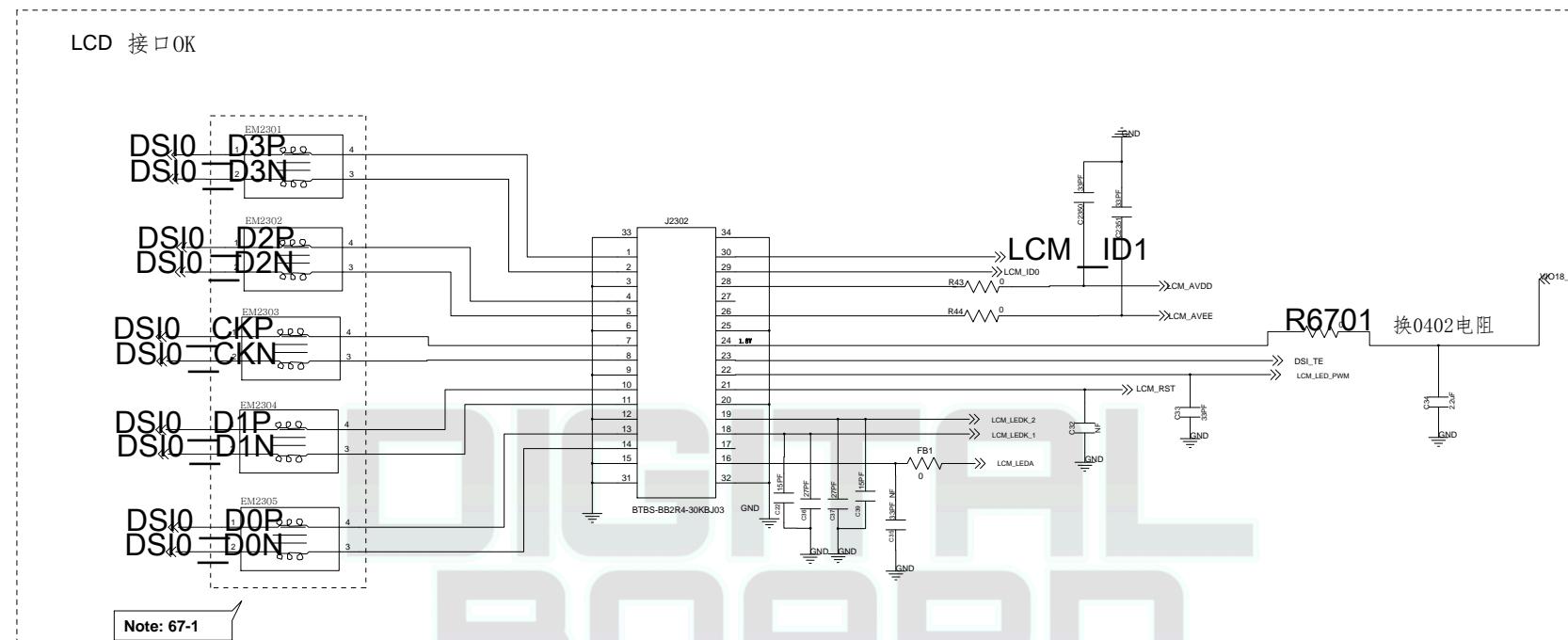
Note 62-5: Please select R6231 with 0402 size



Schematic design notice of "63_PERI_AUDIO_IO" page.

Note 63-1: 1 uF for ACC mode
0 ohm for DCC mode





Note: If best EMI practices are followed for MIPI CSI/DSI signals, there is no need for common mode choke filters. You may choose to have placeholders for common mode depending upon your design constraints.

Extreme care must be taken that no stubs are created by doing so.

LCM_ID		ID1 vendor
00	1	EBBG
0	0	无
1	0	无
0	0	无

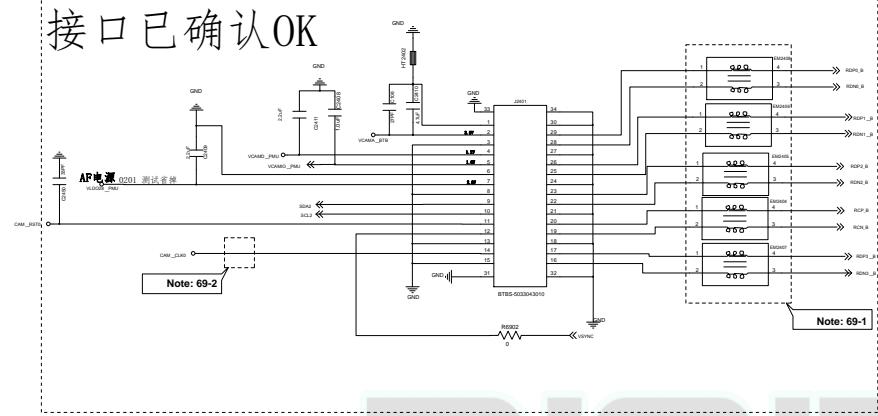
Schematic design notice of "67_PERI_LCD_CTP" page.

Note 67-1:
It is recommended to reserve common-mode choke to prevent RF de-sense,
the max. cap loading of common-mode choke must be less than 3pF.

供应商修改1 pin位置，需要按网络名核对

Main Camera

接口已确认OK



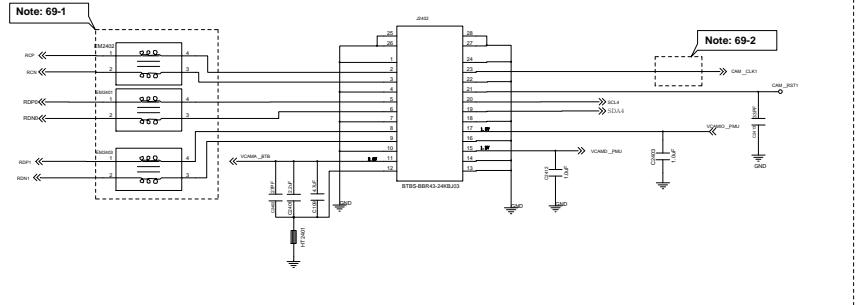
Schematic design notice of "69_PERI_CAMERA" page.

Note 69-1: It is recommended to reserve common-mode choke to prevent RF de-sense, the max. cap loading of common-mode choke must be less than 3pF.

Note 69-2: It is recommended to reserve 0-ohm for BOM fine tune to minimize RF de-sense.

接口已确认OK

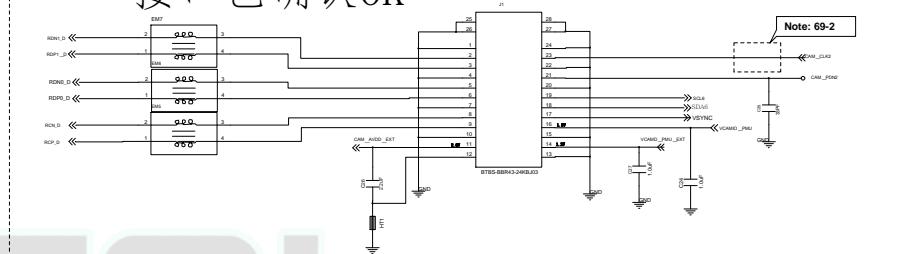
FRONT_camera



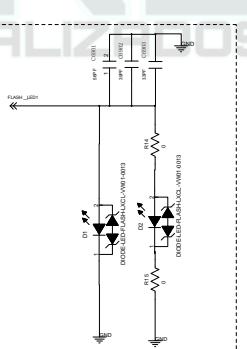
增加双摄

接口已确认OK

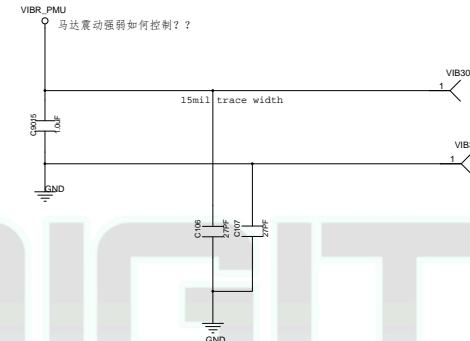
注意信号连接,I2C,CLK等的选用



AVDD, DVDD需要单独增加LDO

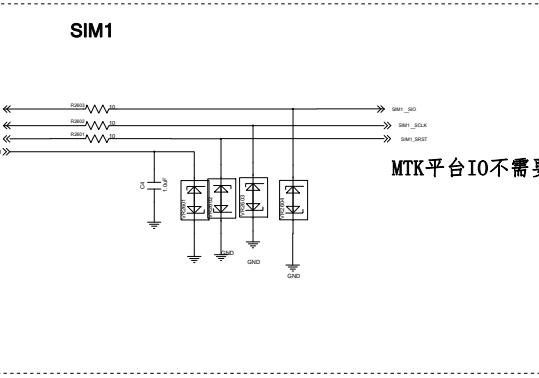


VIBRATOR

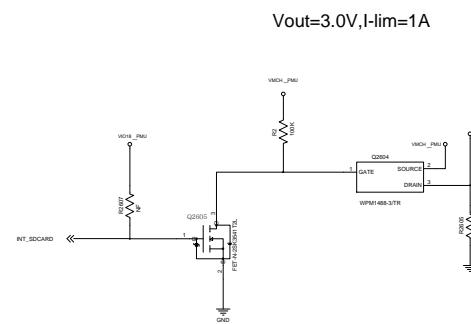


DIGITAL
BOARD
ESQUEMAS DIGITALIZADOS

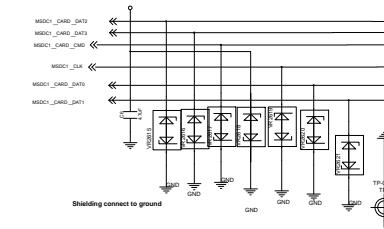
Title	73_PERI_VIBRATOR		
Size	A1	MTK Confidential	
Date	Thursday, November 02, 2017	Sheet	29 of 34



MTK平台IO不需要上拉

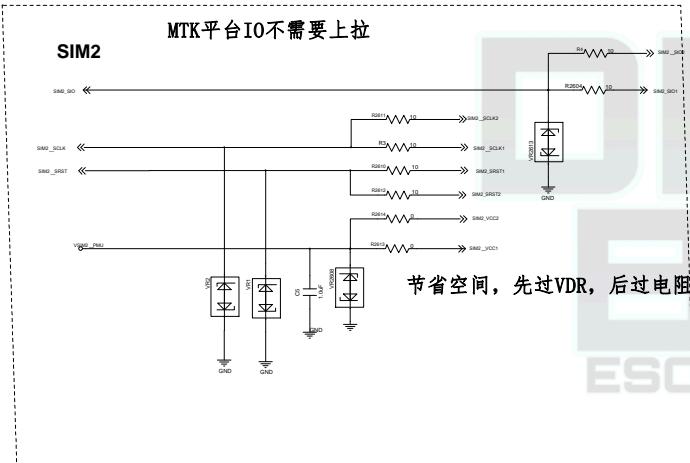


SD CARD



SIM2

MTK平台IO不需要上拉

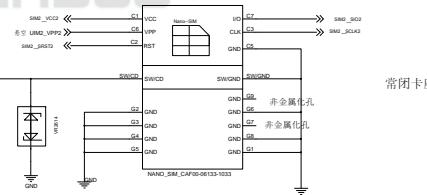


节省空间，先过VDR，后过电阻

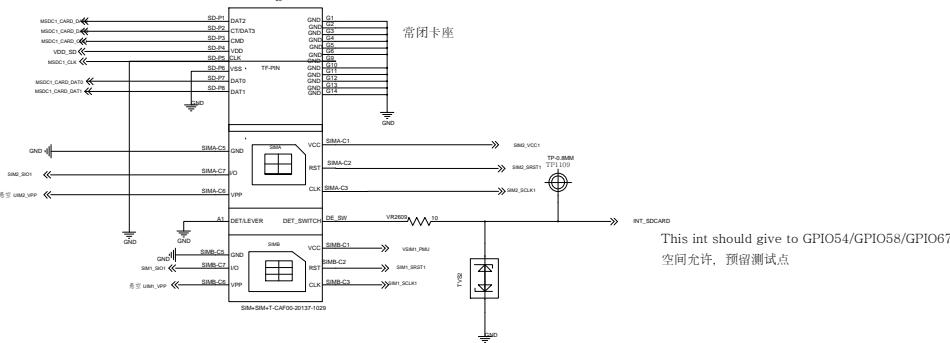
NOTE

**For internal version, ONLY use J2601:
R2603/R2610/R2613/R2604 can be 00, R2611/R2612/R2614/R2615 can be NF
R1301 can be 00 Q2601 NF-R1302 NF**

For India version:
R2611/R2612/R2614/R2615 can be 0Ω, R2603/R2610/R2613/R2604 can be N,
R2601 mount P1201_NF_P1202_100K.



堂闭卡



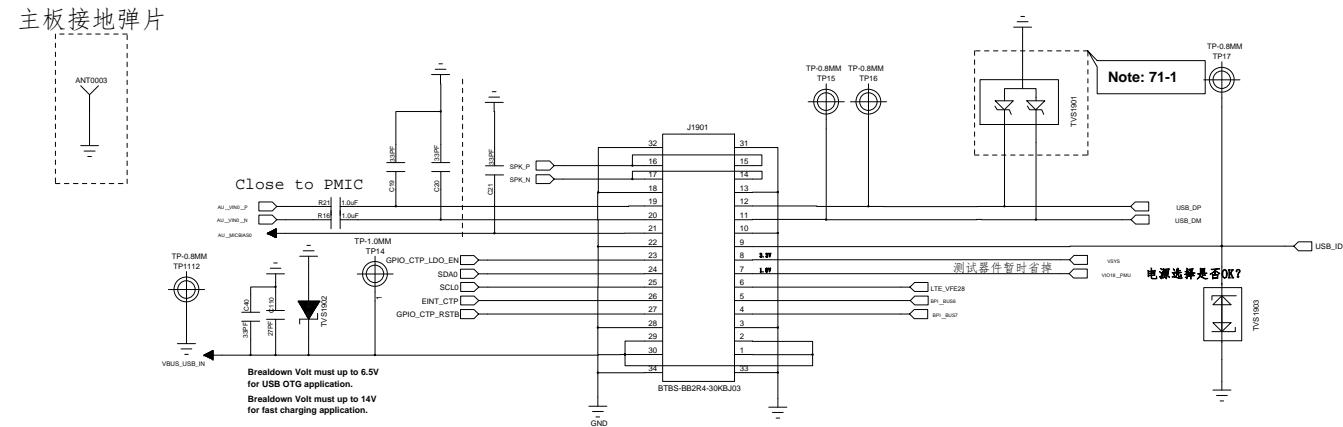
This int should give to GPIO54/GPIO58/GPIO67

空间允许，预留测试点

For internal version, R2603/R2610/R2613/R2604 can be 0Ω, R2611/R2612/R2614/R2615 can be NF
For external version, R2611/R2612/R2614/R2615 can be 0Ω, R2603/R2610/R2613/R2604 can be NF

SIM/TF card

M-MIC+USB+RGB+SPK



**DIGITAL
BOARD
ESQUEMAS DIGITALIZADOS**

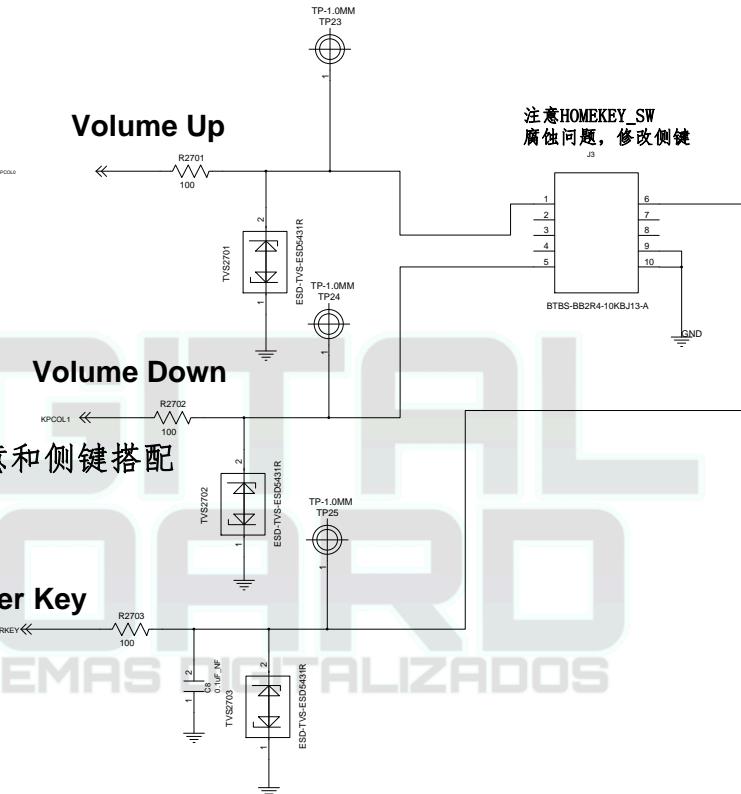
Schematic design notice of "71_PERI_USB 2.0" page.

Note 71-1:

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.

Power Key / Key Pad

DO NOT put pull-up resistor on PWRKEY



RAMDUMP debug key 省掉? ?

Schematic design notice of "65_PERI_Dual_SIM_ICUSB_KEYPAD" page.

Note 75-1: DO NOT put pull-up resistor on PWRKEY

Note 75-2:

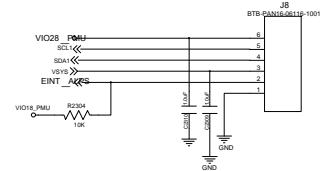
Volume Up : HOME Key / GND

Volume Down : KPROW0/KPCOL0

ALS +UV + Proximity Senso
CM36558 / ALPS + UV I2C address: 0x51 (Write:0xA2, Read:0xA3)
CM36558 INT default Output High, Active Low

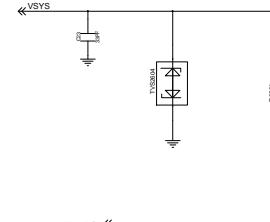
ALS+PS+IR

For LTR-578 R2330 0OHM
For STK3321 R2330 NC



测试器件暂时省掉

RGB

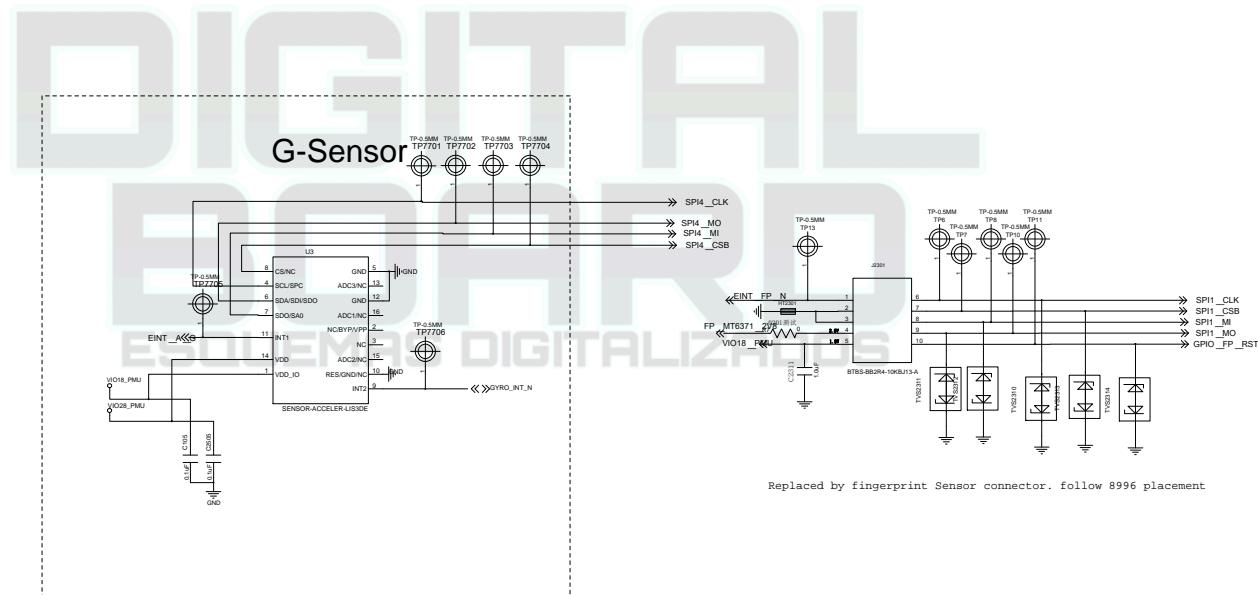


INFARED LED

选择PWM接

Accerometer + Gyro Senso

default SPI (if sensor hub support)
6DSX INT1/2 default Output Low, Active high



Schematic design notice of "77_PERI_SENSORS_MEMs_ALS/PS" page.

Note 77-1: [M sensor] Keep a minimum distance of 15mm from power ICs / PCB traces of more than 100mA / magnet component. Check HW design notice for more details.

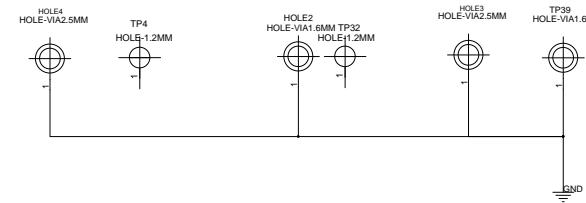
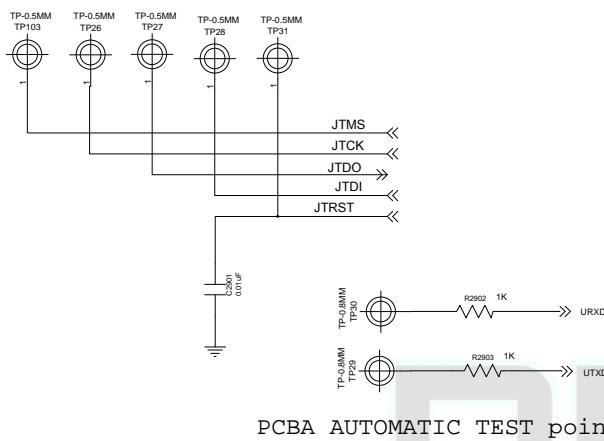
Note 77-2: [A+G] For optimized GPS performance, please check HW design notice for Sensor selection guide

Note 77-3: [A+G] MUST use SPI for optimized sensor hub performance **DO NOT USE I2C**

Note 77-4: [A+G] Suggest choose sensor support FIFO watermark interrupt otherwise we cannot support Hifi-sensor, daydream VR. And Sensor-location accuracy will become worse.

Note 77-5: [Baro] Reserve Baro sensor for LPPe feature (Must for North America Operator / NA SKU)

Note 77-6: DO NOT share Sensor hub i2C to other non-SCP device



Shielding Frame

	屏蔽盖	屏蔽框
BB	P1 ICO-BOX	P2 ICO-BOX
RF	P3 ICO-BOX	P4 ICO-BOX
SUB-PMU		P5 ICO-BOX
WCN		P6 ICO-BOX