

REMARKS :

1. The "NM" is for no mount. (Ex. NM_1K 0402 5%)
2. Document number: 60xxxx
It is first six characters of SMT P/N, and change second character to " 0" .
Ex. If SMT P/N is 6610090001W or 6310090001W, the document number is 601009.
3. Title :SCHEMATIC, x/B Gx-xxx (Function title)
It is the description & specification of SMT P/N, and function of each page.
Ex. 6310090001W is " SMT M/B T31I GA-010" , and function is " Power Supply" .
The title is " SCHEMATIC, M/B GA-010 (Power Supply)".
4. Rev. :
The schematic revision from TRY1, after EN modify CML to control TRY2, TRY3..... by EDC
From DVT phase, the schematic revision change to 0A, after ECO/EN modify CML to control 0B, 0C... by EDC.
If PCB version changes to 1.0, the schematic revision will change to 1A.
5. Size Units by Millimeters, Size by A3 for standard.
6. Copyright reserved Each page must have CCI' s copyright reserved .
7. One schematic file for one PCB number
8. Function "Mechanical Parts Template" must include shield-case,
and each shield-case must write P/N in this symbol "Part Number" filed.

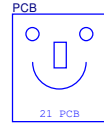
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Title			
SCHEMATIC, M/B GA-527(REMARKS)			
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Project Name : PY7-67442A

PCB Number : GA-527

PCB Revision : 0D



PY7-67442A GA-527 REV:0D MB



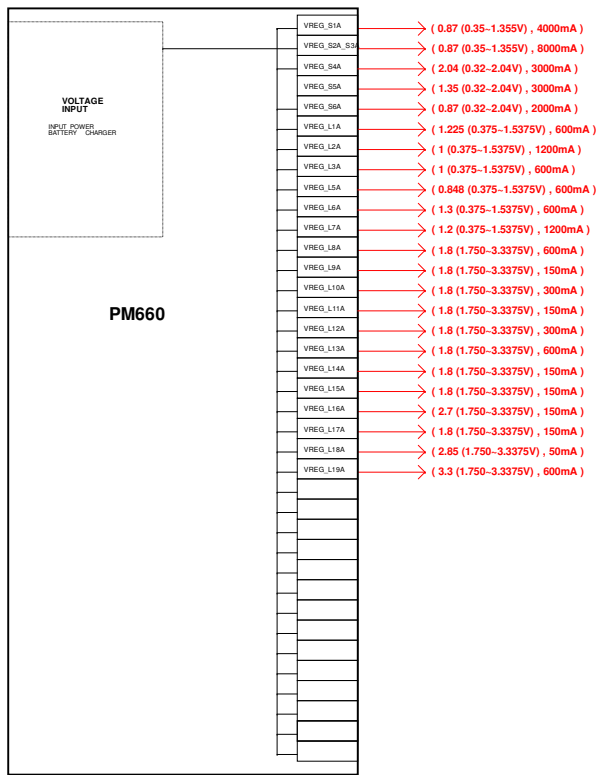
Page	Description :			
Item	Function Category	Function Description / Contents	Option	Page
1	Cover Page	EDC's cover page for EN/ECO revision control (EXCEL File)	Necessary	1
2	Page Summary	Project Name , PCB Number , PCB Revision , Pages Description	Necessary	2
3	Block Diagram	System Block Diagram	MB necessary	3
4	Power Tree	Power tree definition	MB necessary	4
5	DBB -1,-2,-3,-4,-5,-6,-7,-8,-9	Digital baseband or application processor	Yes	5,8~15
6	GPIO	GPIO	Yes	6,7
7	PMIC-1,-2,-3,-4,-5,-6,-7,-8,-9,-10,-11	PMIC Power	Yes	16~26
8	Power Supply	Discrete Power: LDO, Switching Regulator ...		
9	USB / Charger	USB, USB PHY, USB Charger, Gas Guage , OVP, EMU... & c	Yes	35
10	Memory	MCP Memory, Embedded Memory	Yes	27
11	Audio -1,-2	Microphone(s), Receiver, Speaker(s), Headset, Audio Amplifier ... & c	Yes	39,40
12	Camera/Flash Light	Camera , Camera ISP , Camera Flash Light	Yes	42
13	LCM	LCM, LCM Bridge IC , LCM Backlight Driver , Touch Screen ... & c	Yes	41
14	RF Transceiver	RF Transceiver	Yes	29
15	RF PA	RF PA	Yes	30
16	RF Front End -1,-2	RF Front End	Yes	31,32
17	BT / WiFi / FM -1,-2	BT / WiFi / FM	Yes	33,34
18	GPS	GPS , Galileo	Yes	34
19	Mobile TV	Mobile TV , DVB-H/T , MedioFLO , TV-Out , Analog TV, HDMI , ... & c		
20	Sensors	G-Sensor, Ambient Light Sensor, Proximity Sensor, e-compass, Hall sensor ... & c	Yes	44
21	Keypad / Backlight	Keypad and keypad backlight driver & LED or EL	Yes	45
22	SIM / uSD Card	SIM Connector, uSD Card	Yes	28
23	Connectors / Vibrator-1,-2,-3	Battery connector, Board to Board Connector, Keypad connector	Yes	36,37,38
24	Debug Conn / TPs	Debug connecgtor, Test points (for factory test requirements)	Yes	47
25	Clock / Others	Clock , VCTCXO, Haptic Driver, others	Yes	46
26	Mechanical Parts Template	Screw hole, PADs , Shielding Case , Antenna ...	Yes	47
27	Modem part DBB	Modem Part's DBB		
28	Modem Part ABB	Modem Part's ABB		
29	Modem Part Memory	Modem Part's Memory		
30	Modem Part Power	Modem Part's Power		

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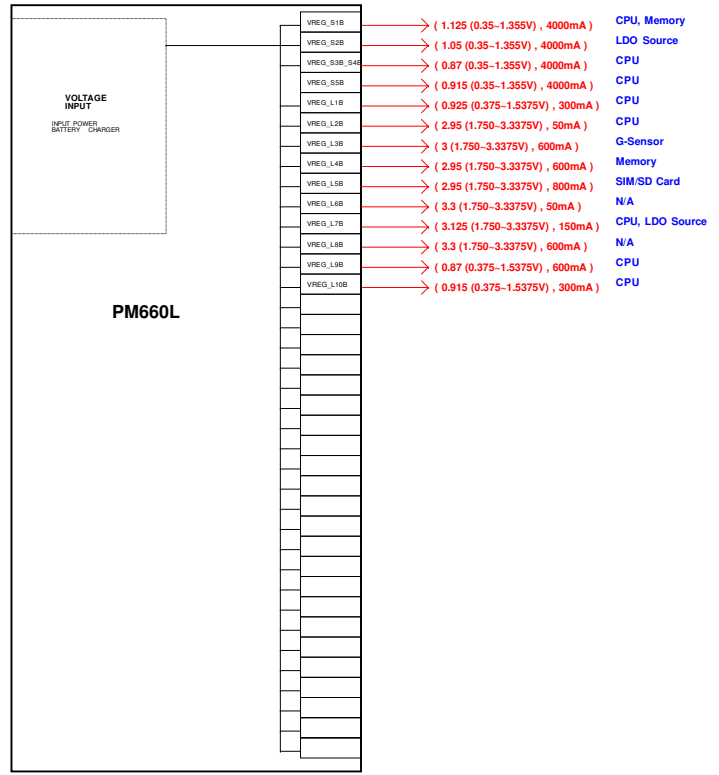
Title: SCHEMATIC, M/B GA-527(Page Summary)

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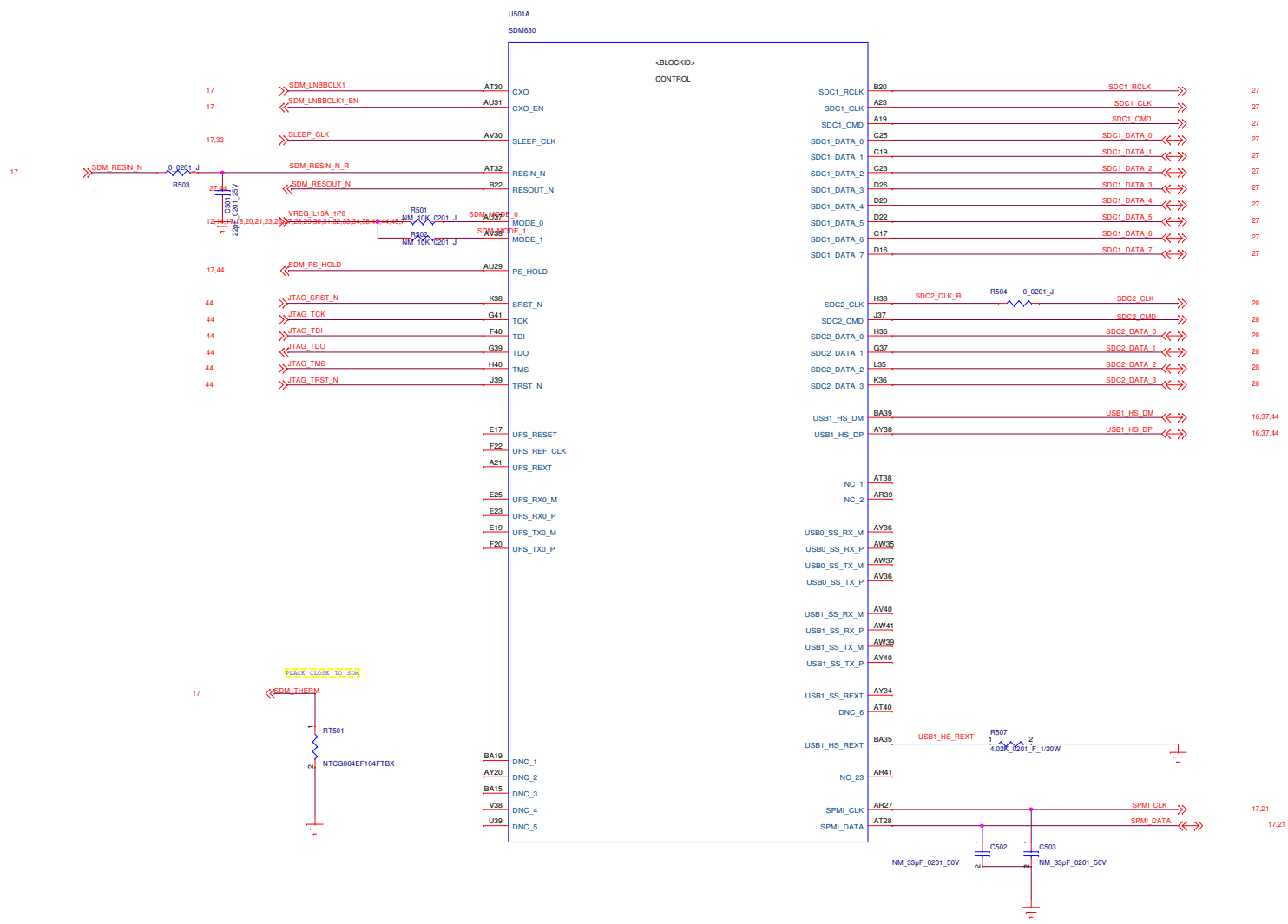
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- CPU
- CPU
- Audio Codec, LDO Source
- LDO Source
- CPU
- CPU
- RF Transceiver
- RF Transceiver
- CPU
- CPU, BT_WIFI
- RF Transceiver, RF Front End
- Memory
- CPU, BT_WIFI
- CPU
- CPU, LCM, Camera, Logic IC
- RF Transceiver, BT_WIFI
- CPU, Memory, SIM/SD Card, Audio, Fingerprint, BAT ID,HWID, RF Transceiver, BT_WIFI, RF Front End, RF PA
- CPU, Main to Sub CONN, Sensors
- CPU, SIM/SD Card, BT_WIFI
- RF Transceiver, RF Front End
- CPU, SIM/SD Card, BT_WIFI
- Main to Sub CONN, Camera
- BT_WIFI



- CPU, Memory
- LDO Source
- CPU
- CPU
- CPU
- CPU
- G-Sensor
- Memory
- SIM/SD Card
- N/A
- CPU, LDO Source
- N/A
- CPU
- CPU



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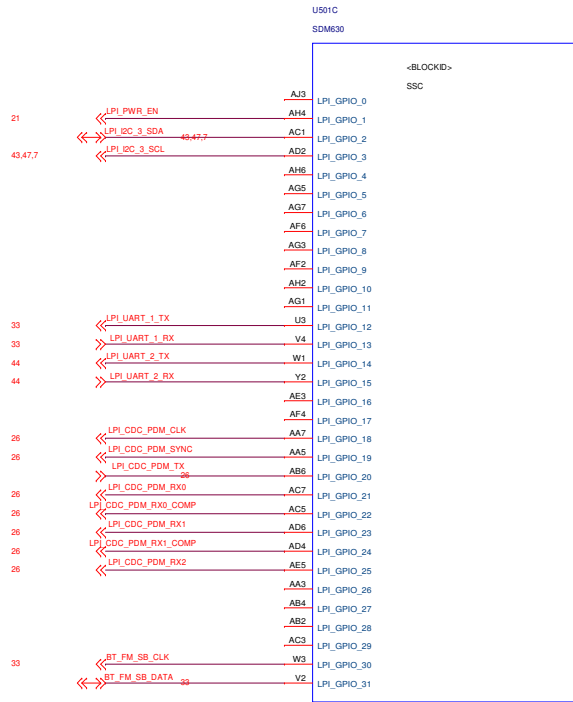
-BLOCKD-

GPIO

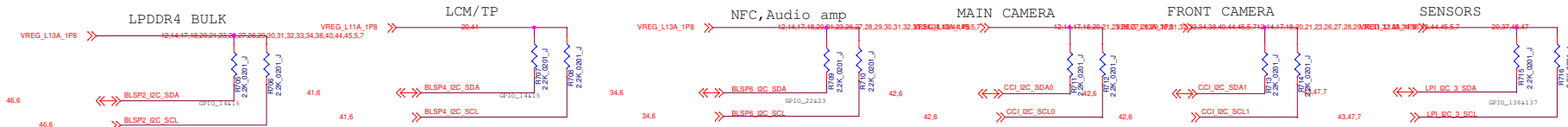


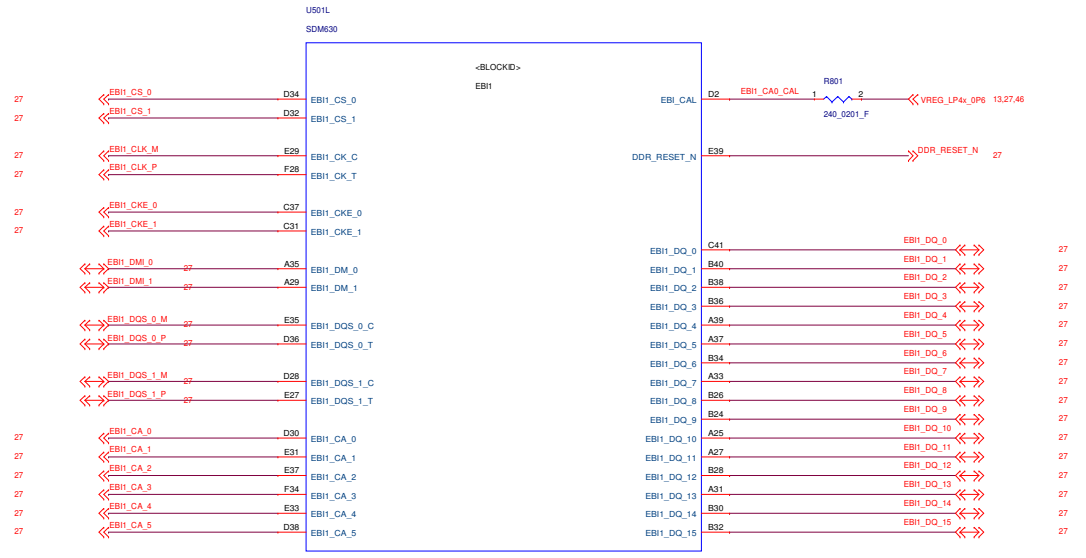
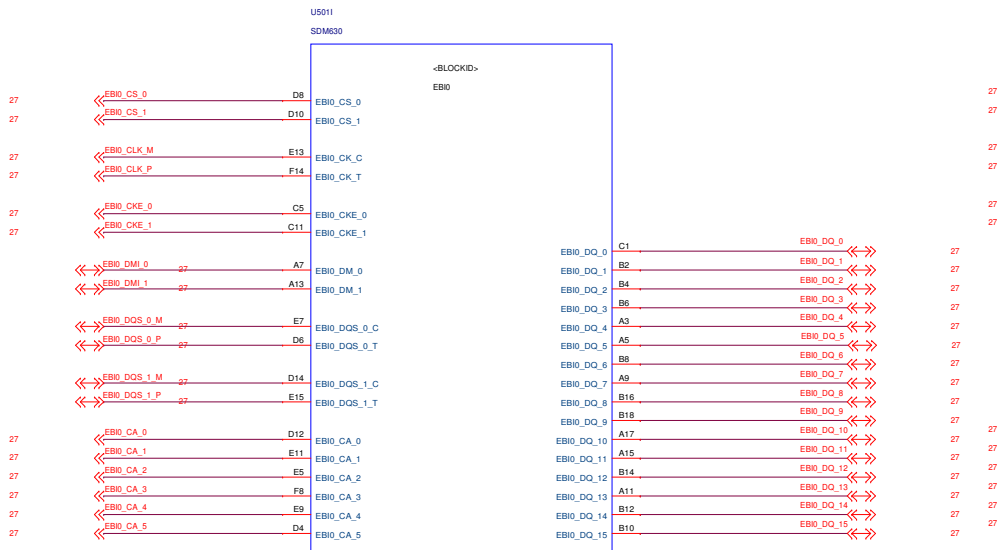
BOOT CONFIG GPIOs	FUNCTIONALITY
GPIO_57	FORCED_USB_BOOT
GPIO_96	WDOG_DISABLE
GPIO_97	FASTBOOT_SEL[0]
GPIO_98	FASTBOOT_SEL[1]
GPIO_99	FASTBOOT_SEL[2]
GPIO_100	FASTBOOT_SEL[3]
GPIO_30	PK_HASH_INDEX_SRC
GPIO_32	ALL_USE_SERIAL_NUM
GPIO_33	MSA_PK_HASH_IN_FUSE
GPIO_54	MSA_AUTH_EN
GPIO_113	AP_PK_HASH_IN_FUSE
GPIO_53	AP_AUTH_EN
GPIO_93	FORCE_MSA_AUTH_EN

FASTBOOT_SEL[3:0]	BOOT OPTIONS
00000	eMMC @SDC1 --> SD @SDC2 --> USB
00001	SD @SDC2 --> eMMC @SDC1
00010	SD @SDC2
00011	USB
00100	UFS HS-G1
00101	SD @SDC2 --> UFS



I2C BUS PULL-UPS

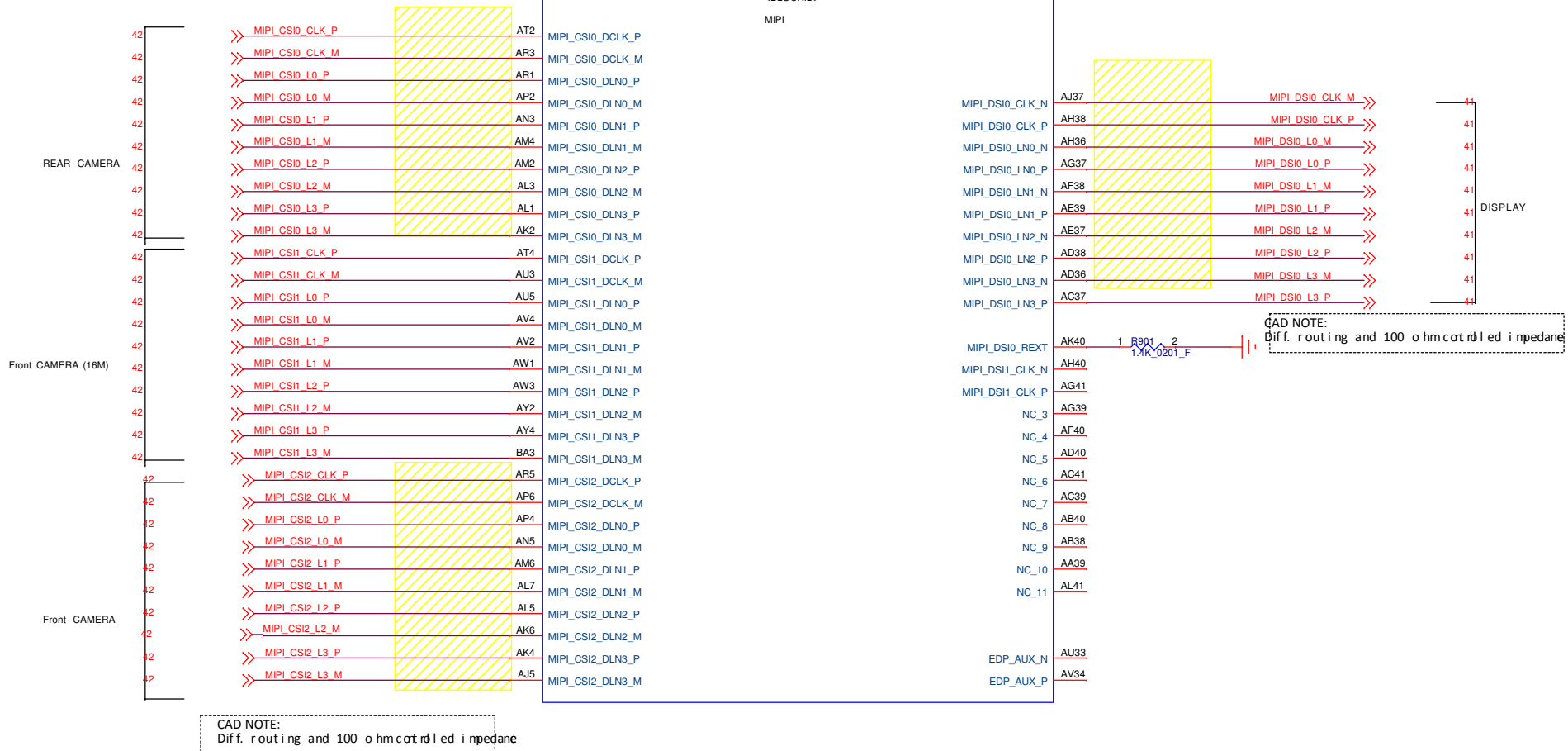




MSM: MIPI

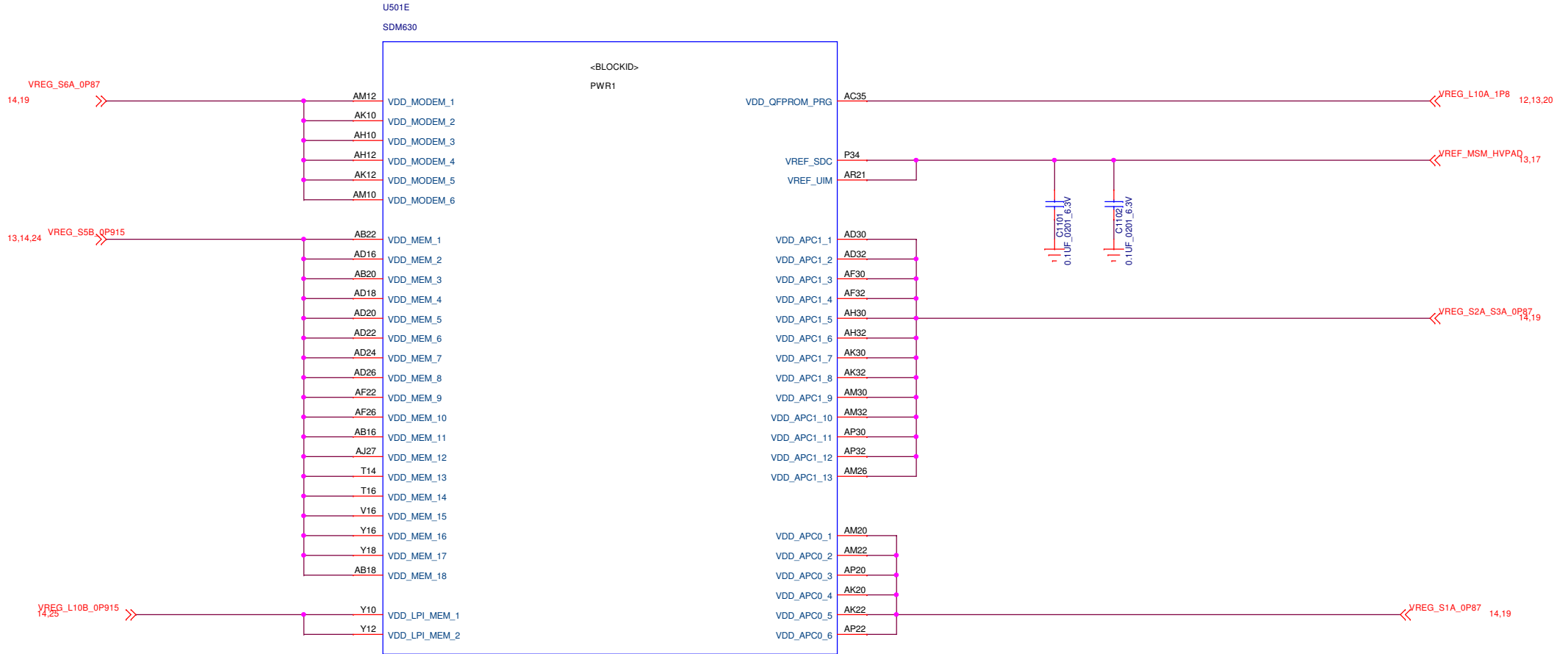
U501D
SDM630

CAD NOTE:
Diff. routing and 100 ohm controlled impedance



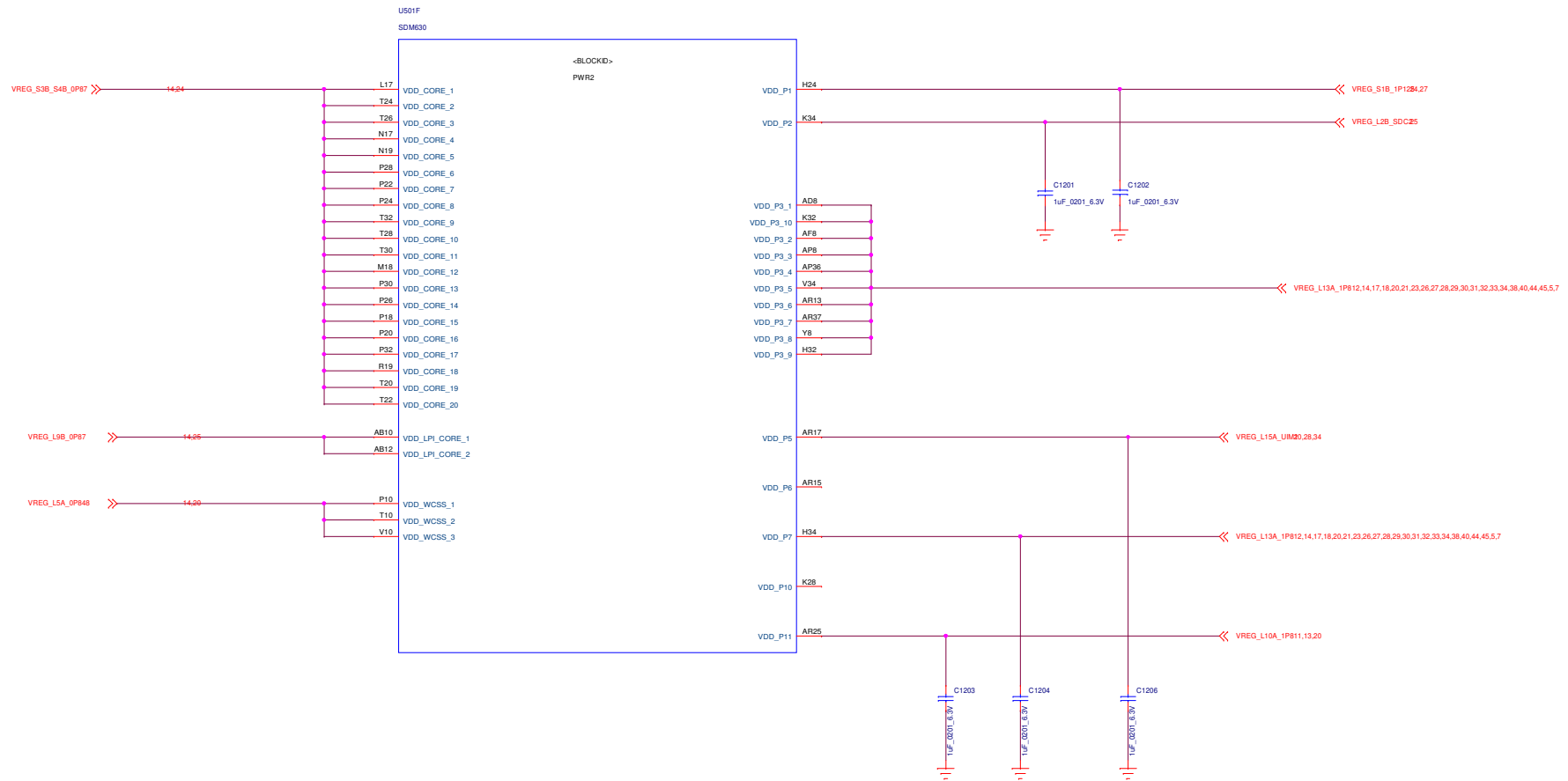
CAD NOTE:
Diff. routing and 100 ohm controlled impedance

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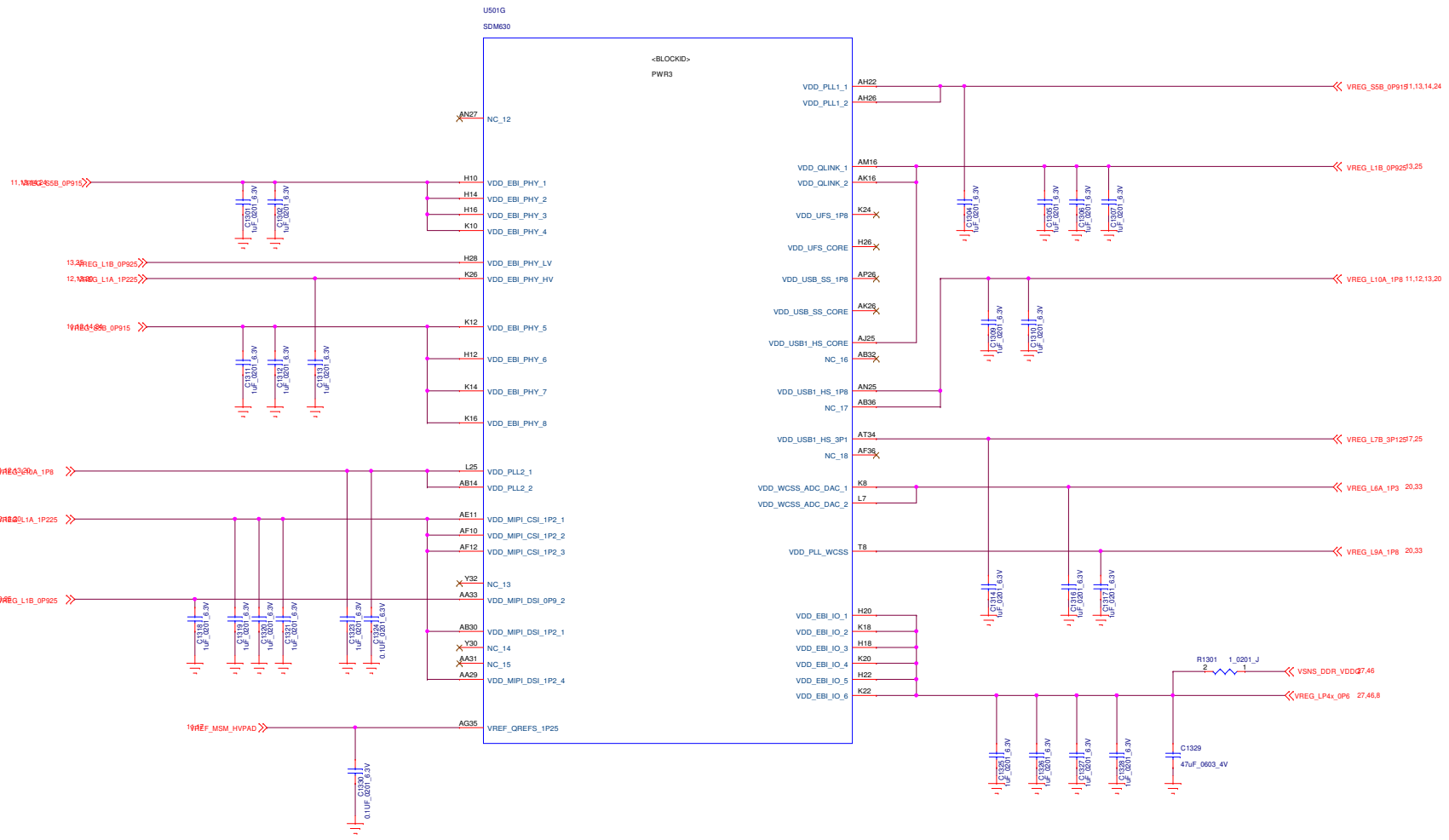
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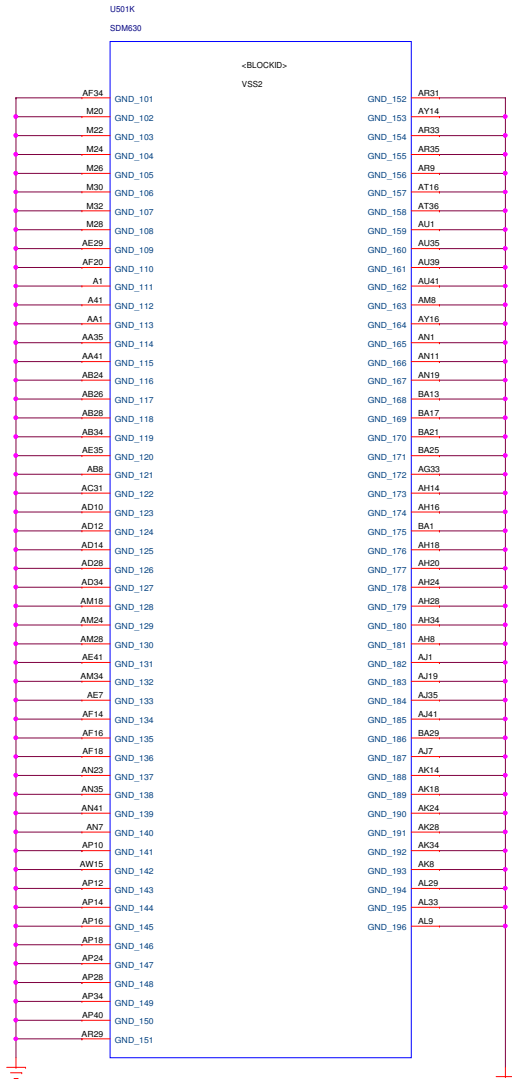
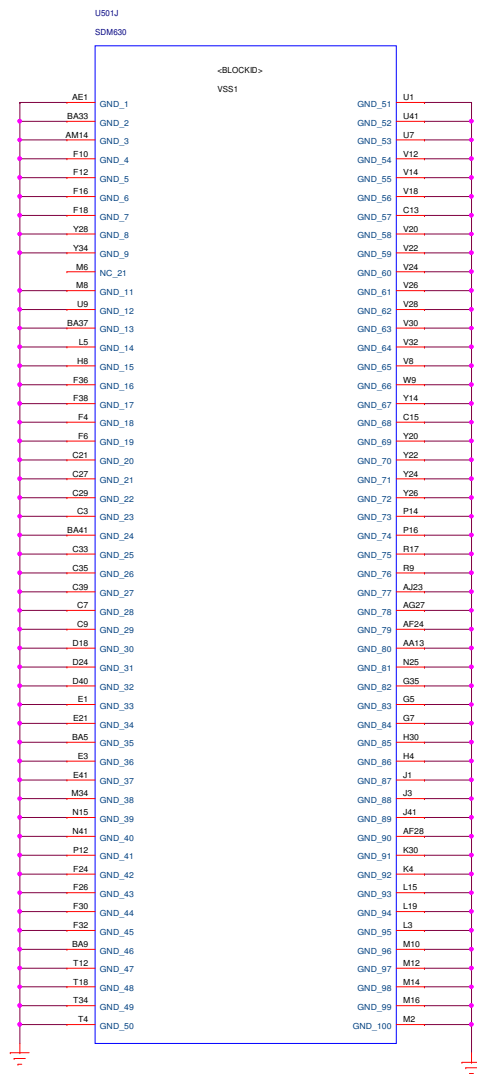
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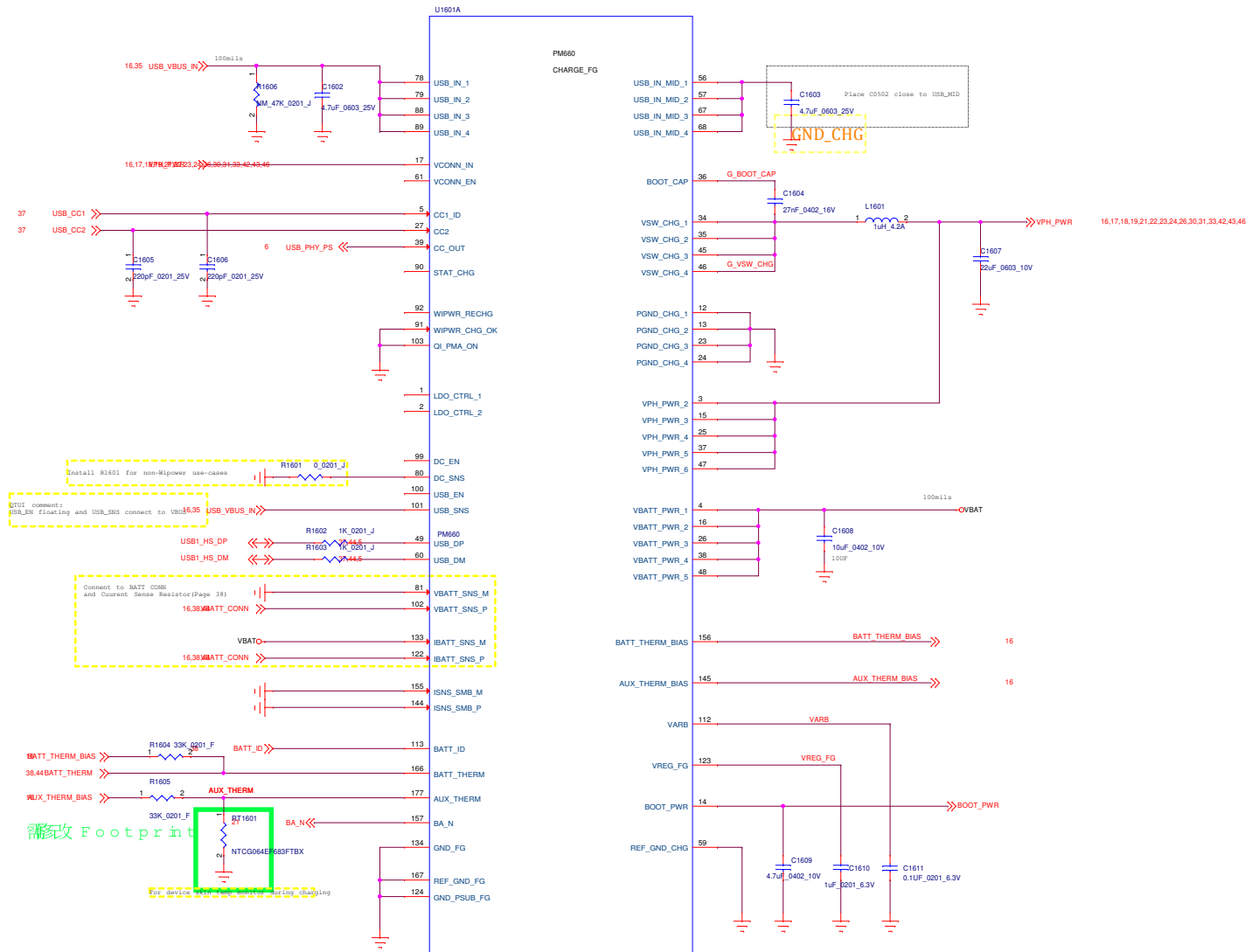
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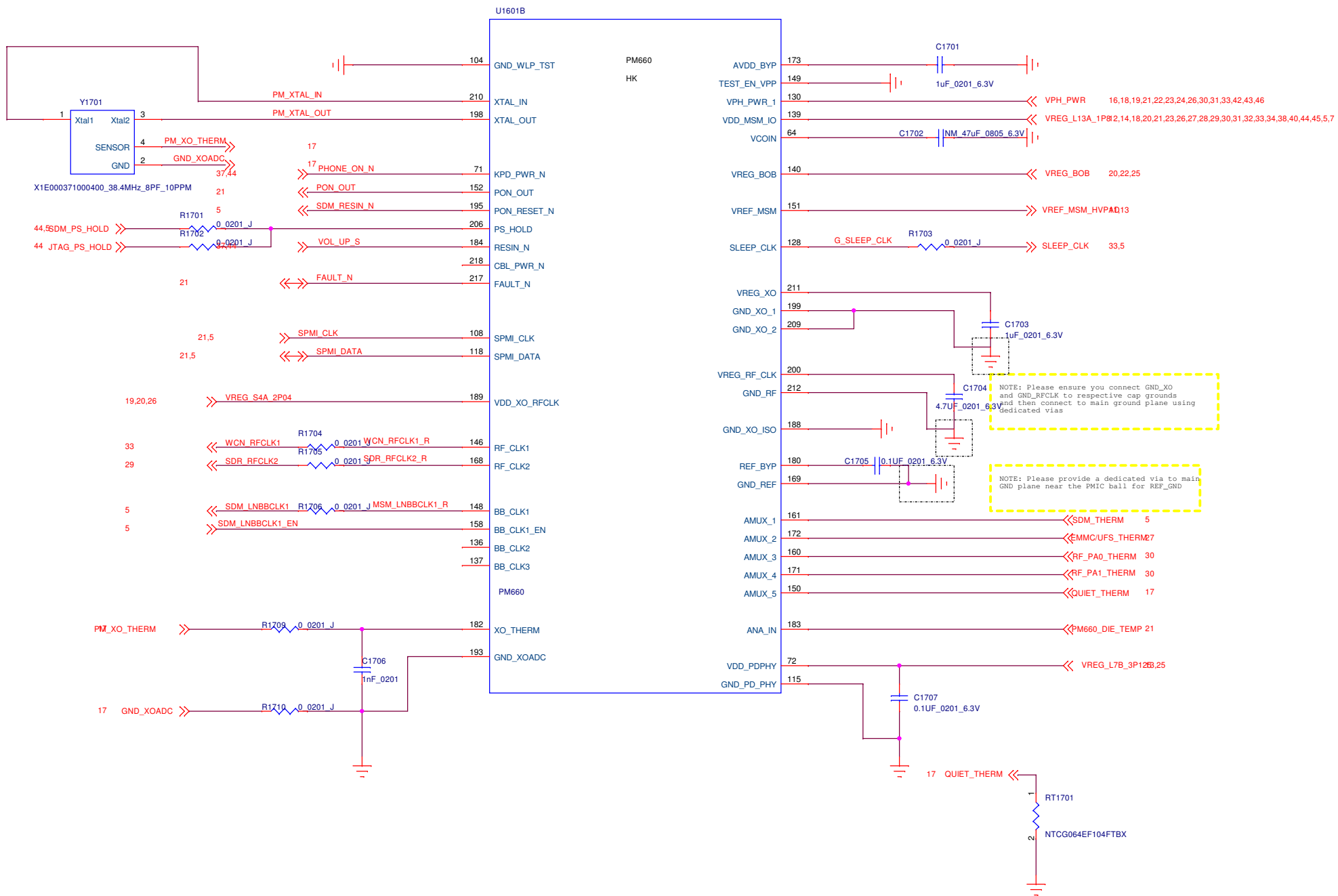


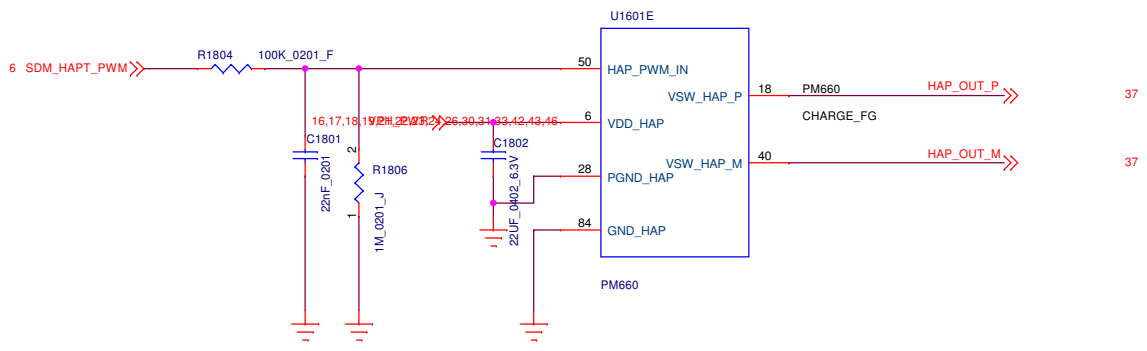
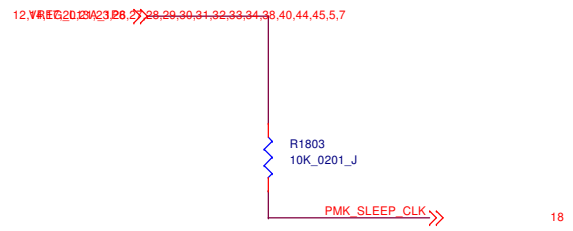
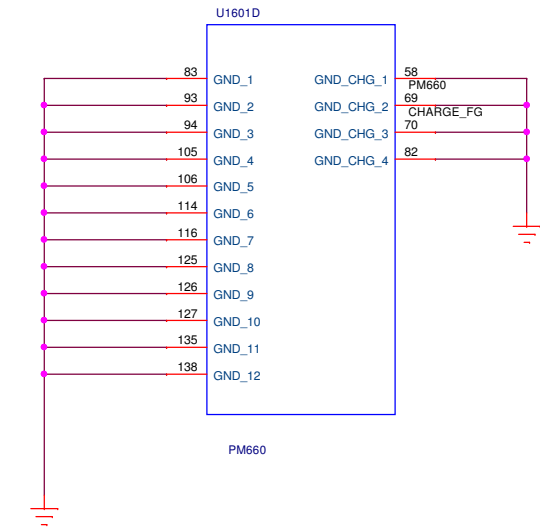
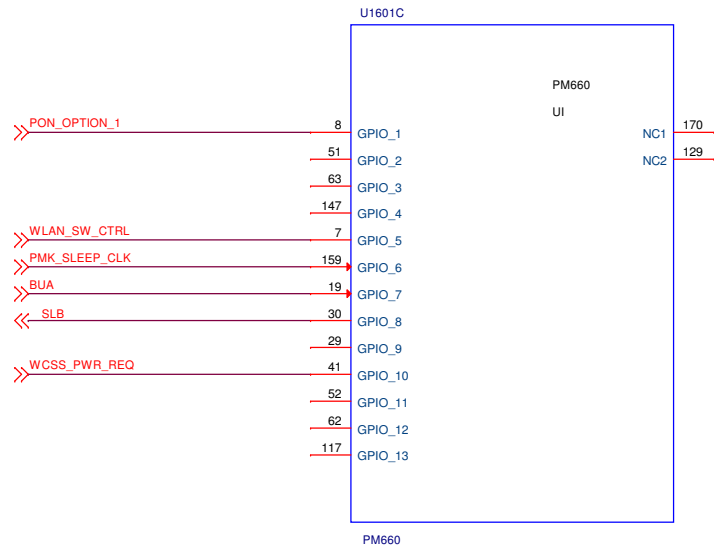
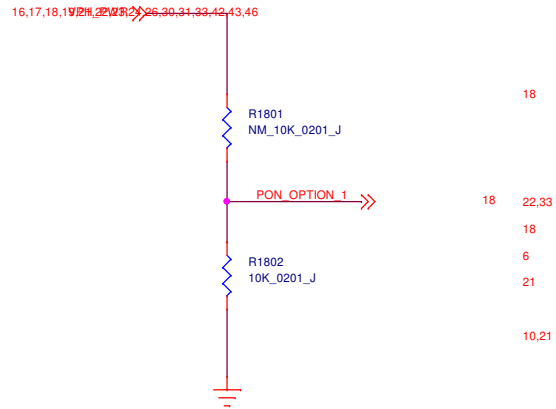
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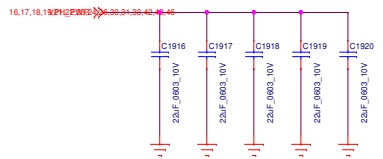
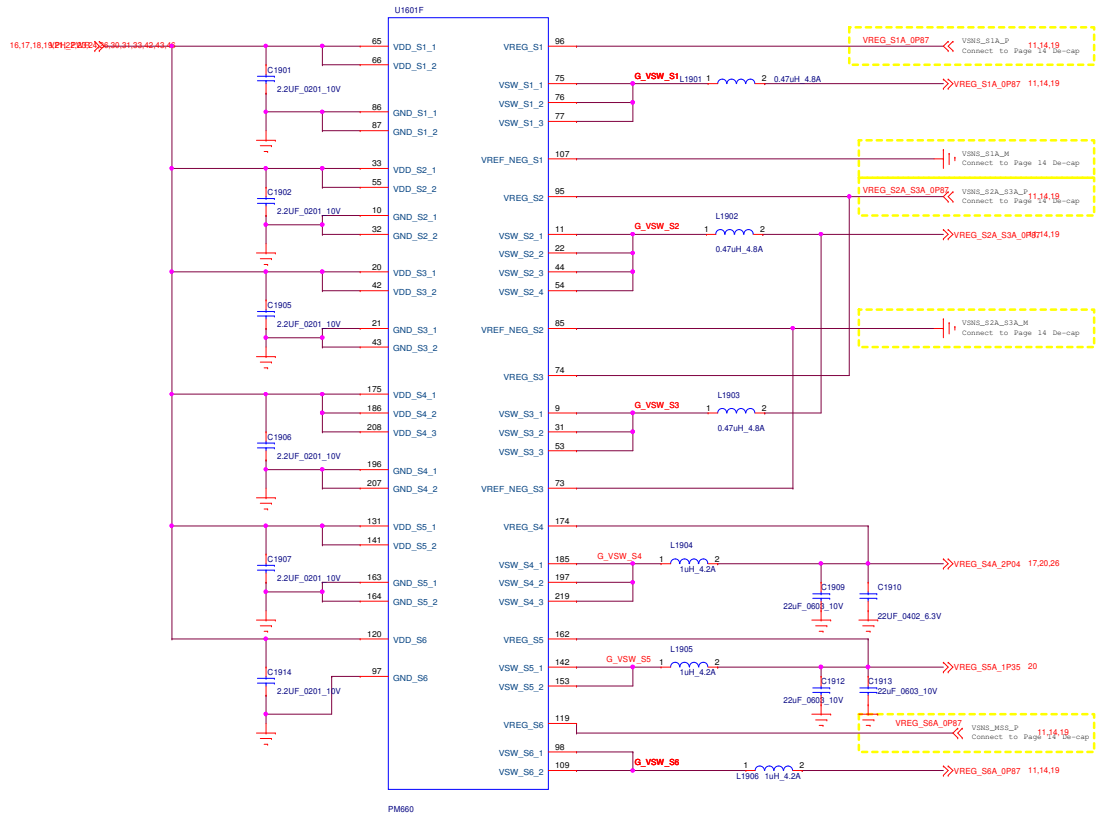






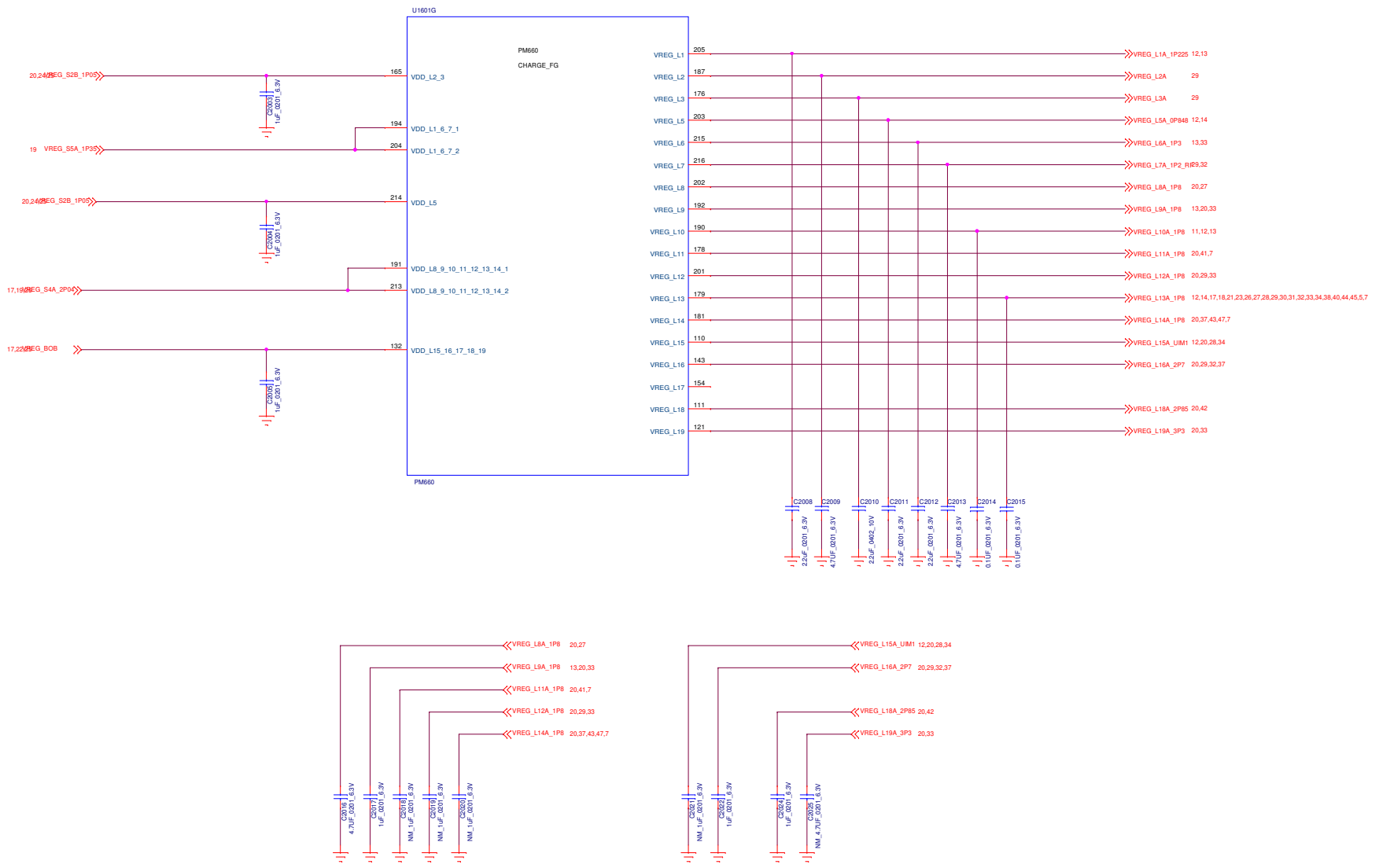
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Title SCHEMATIC, M/B GA-527(PMIC-3: GPIOs)			
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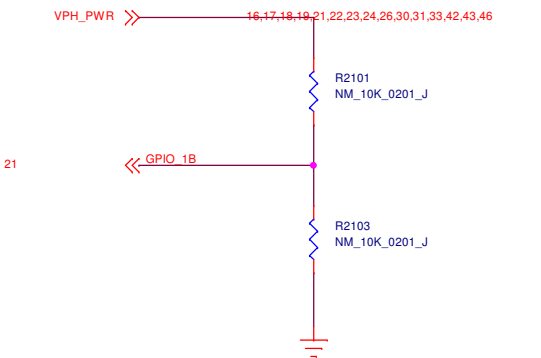
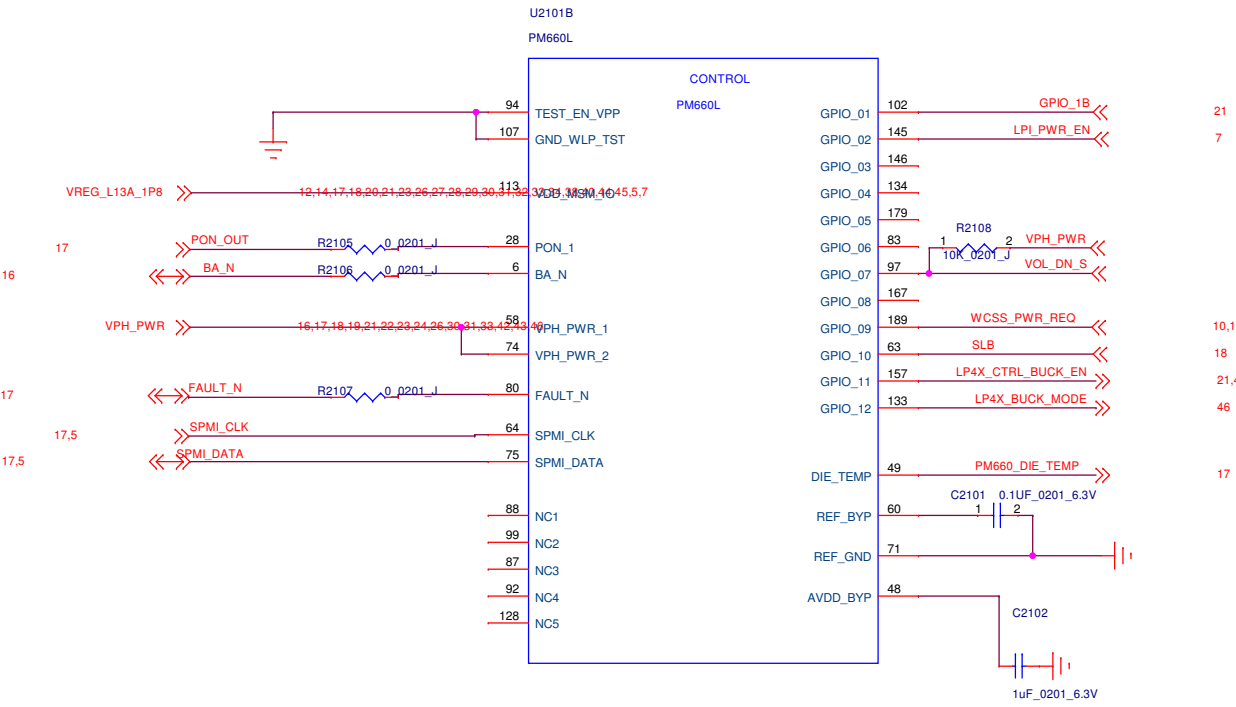


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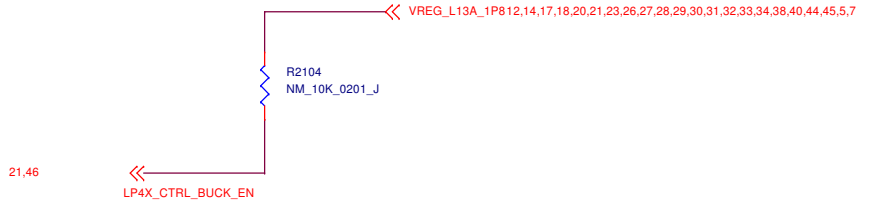
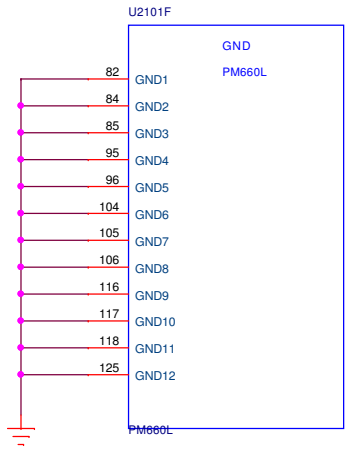
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PM660L OPTION PINS SELECTION



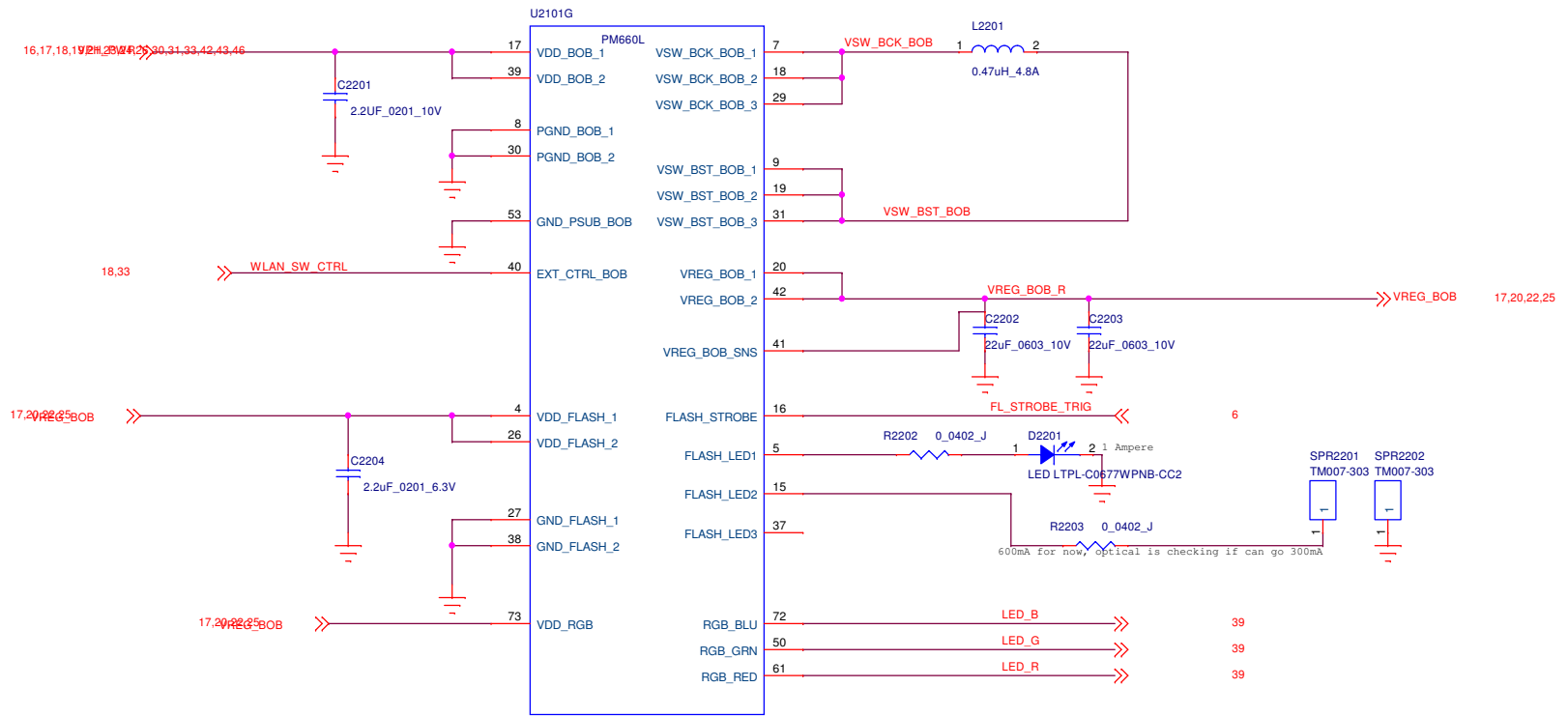
GPIO_1B OPTION FOR FUTURE USE



INSTALL R2104 (Pull-up) FOR LPDDR4

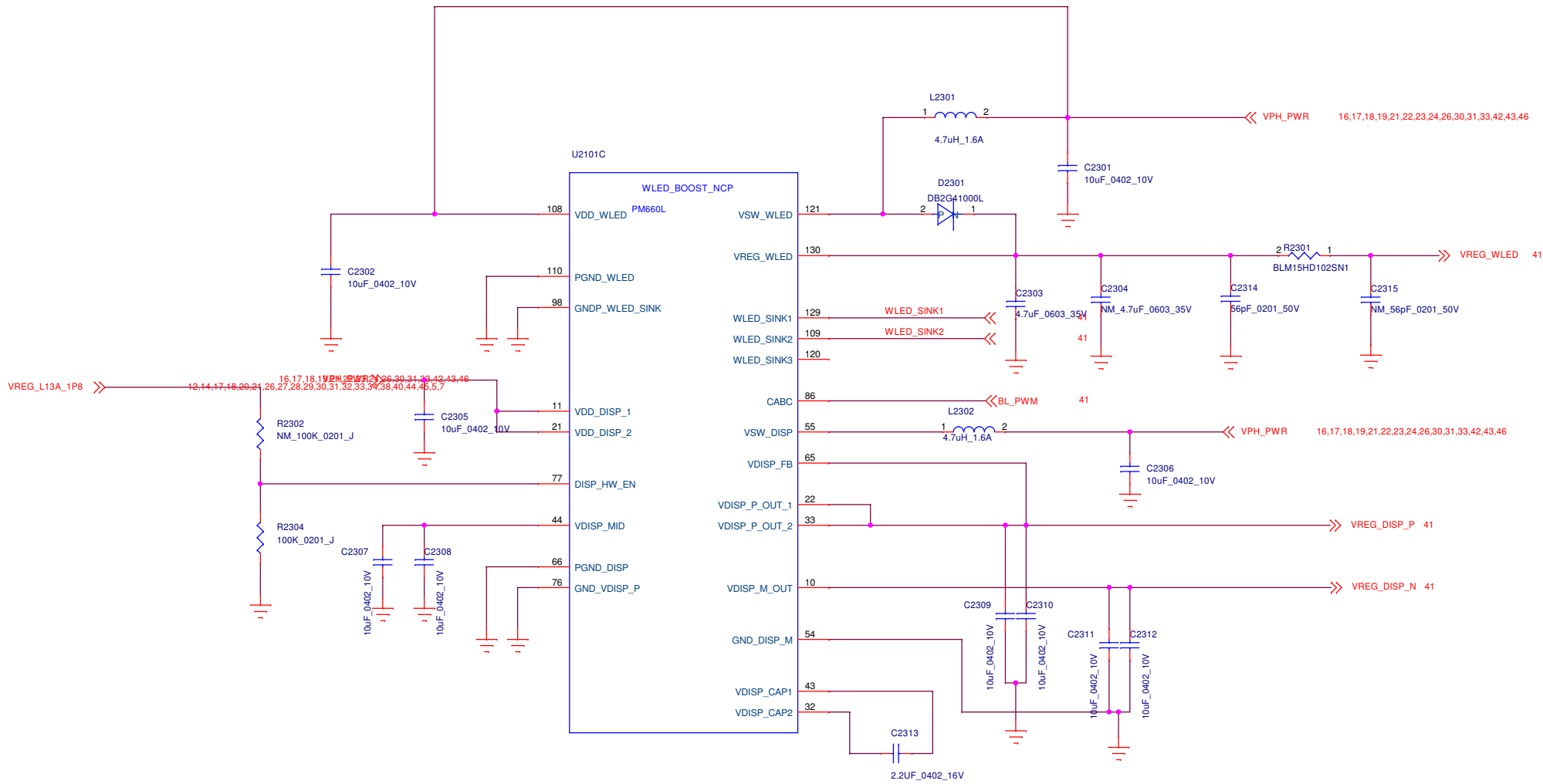
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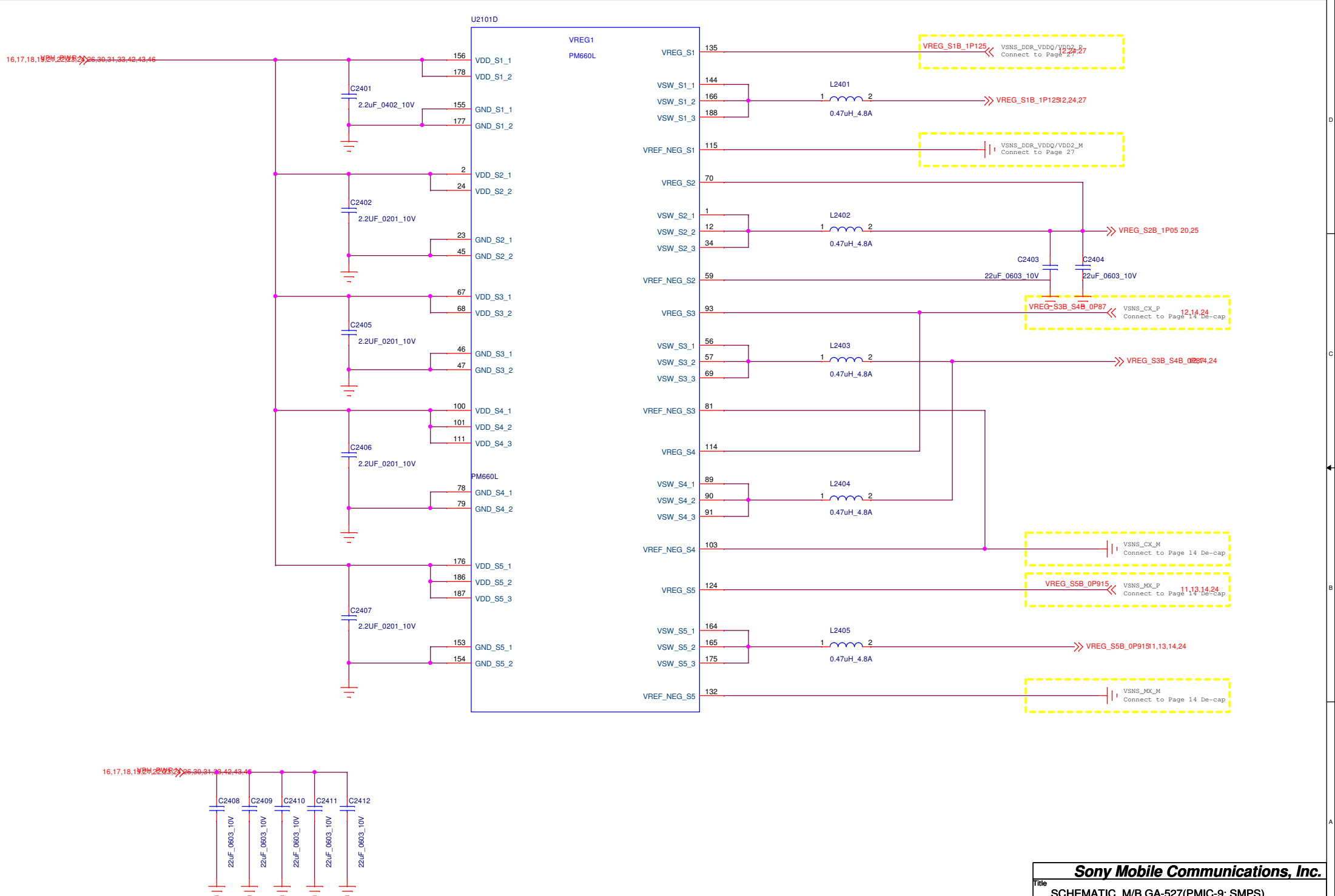
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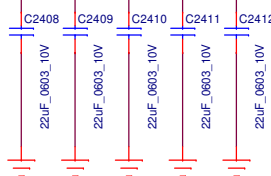


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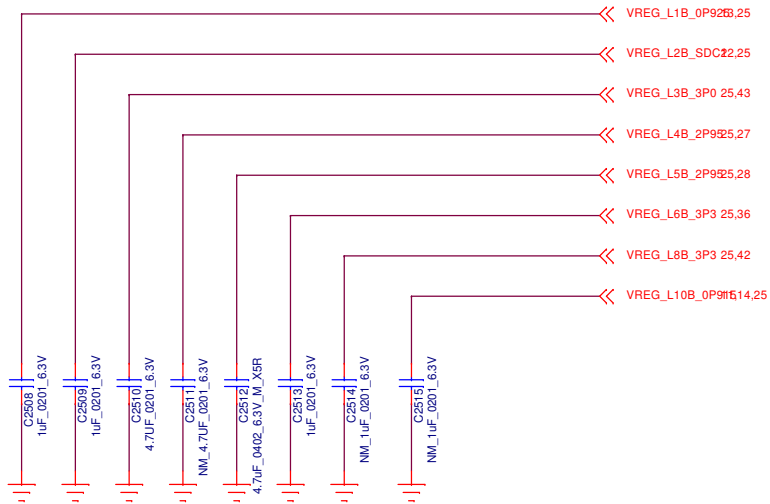
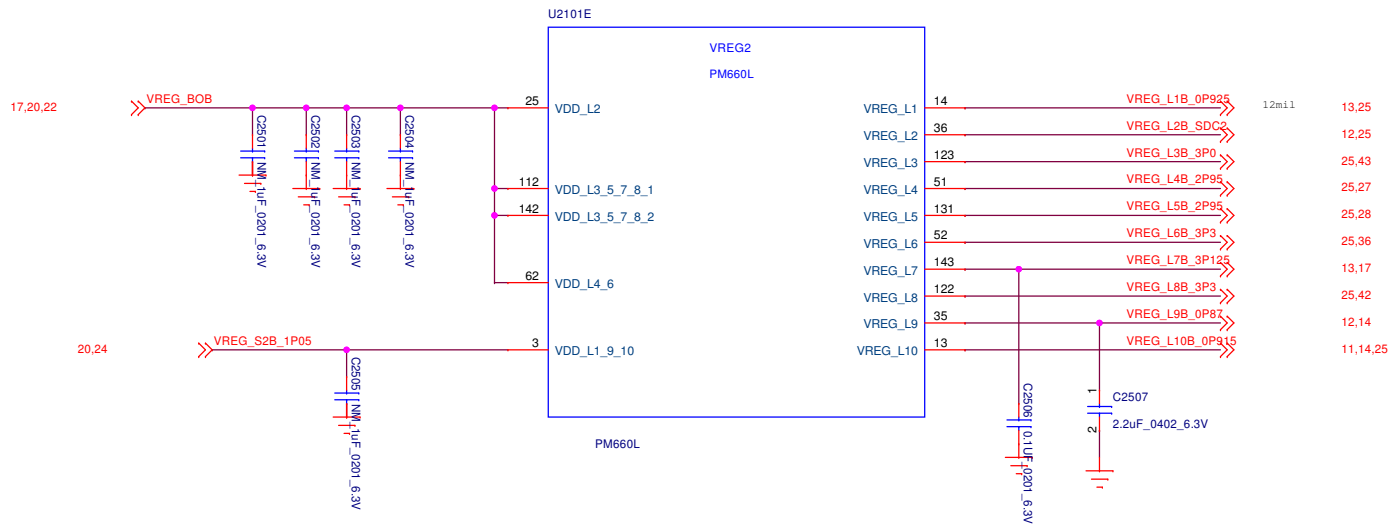


16,17,18,19,20,21,22,23,24,25,26,30,31,33,42,43,46



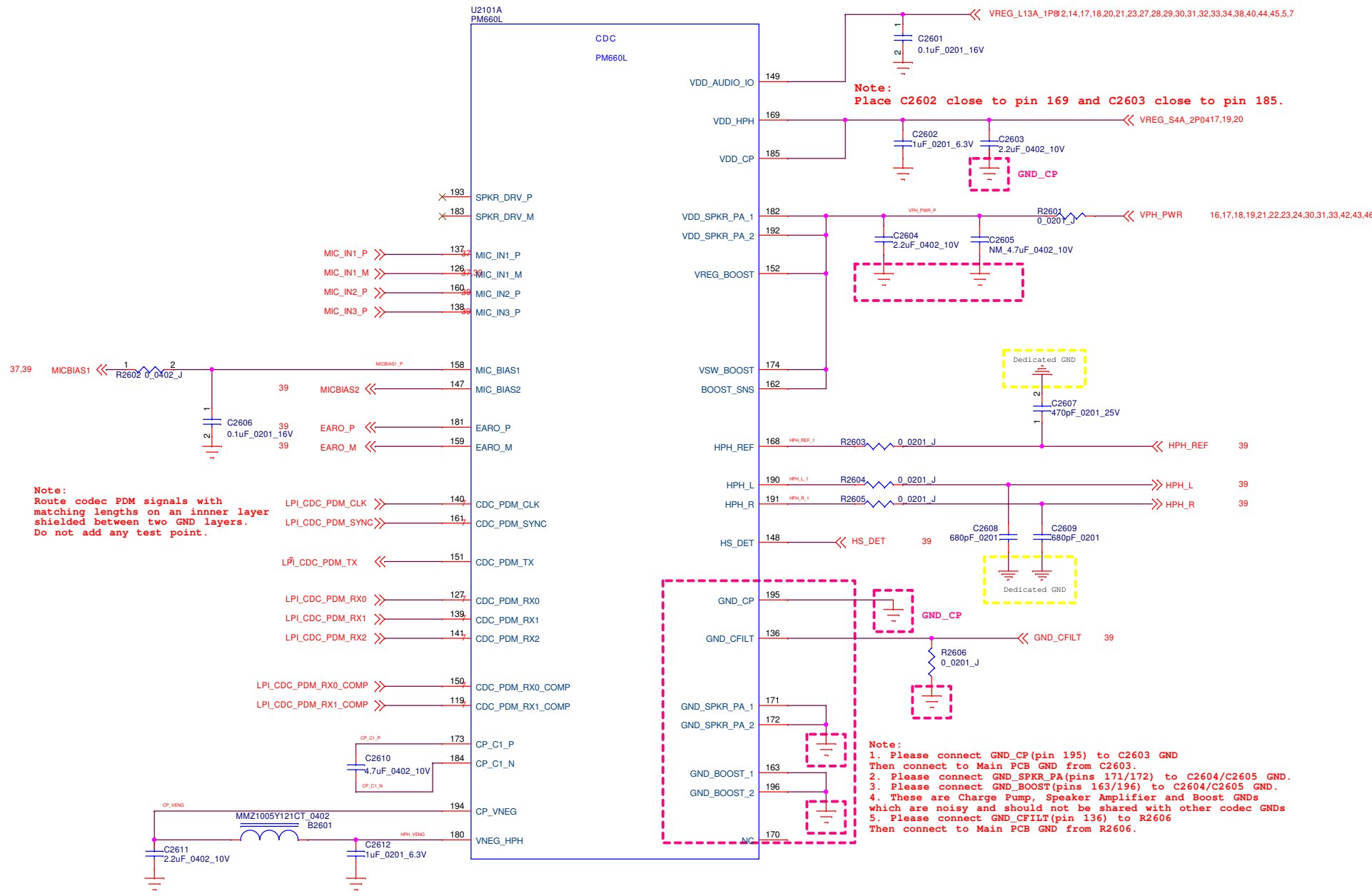
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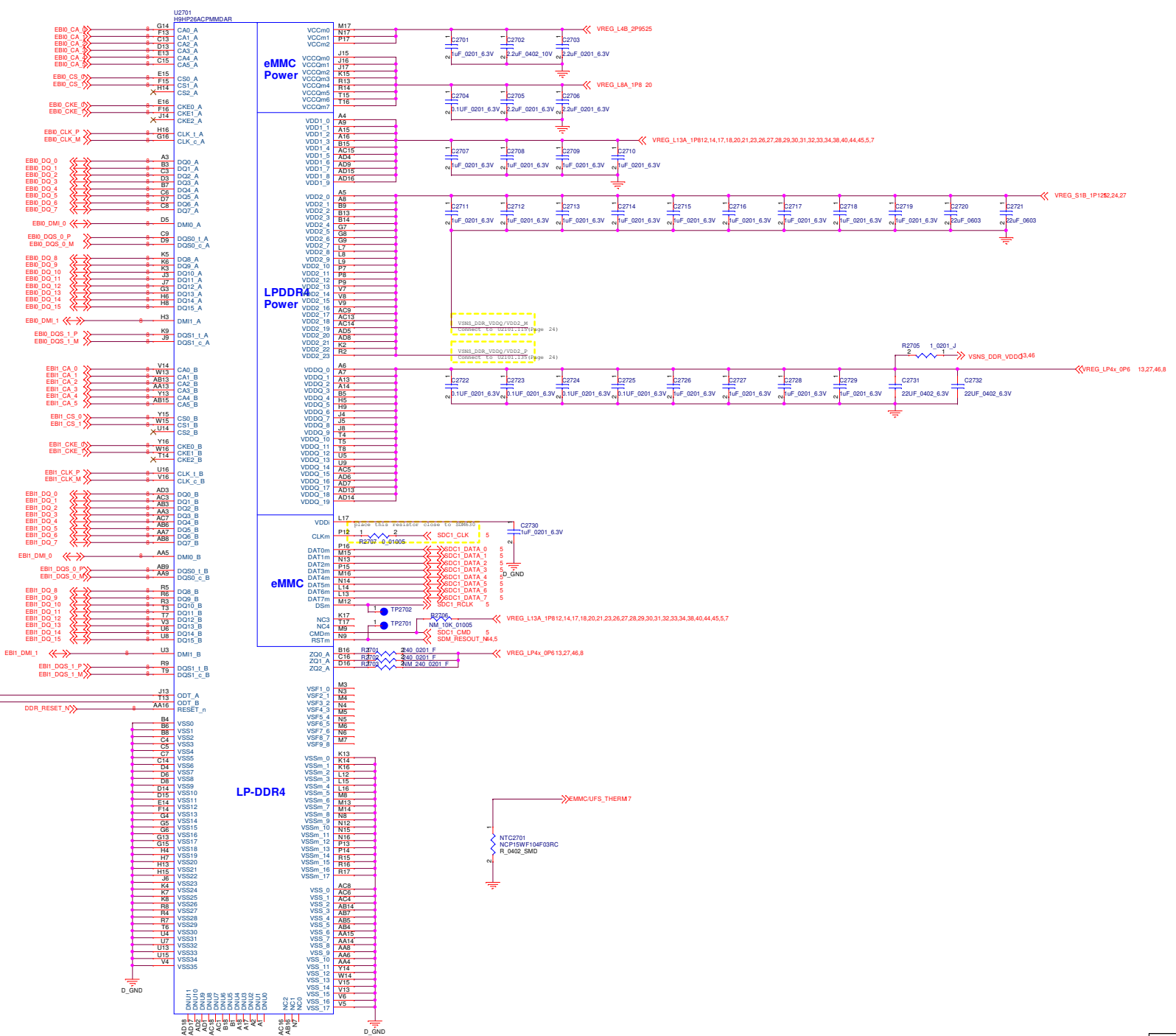
Note:
Place C2602 close to pin 169 and C2603 close to pin 185.

Note:
Route codec PDM signals with matching lengths on an inner layer shielded between two GND layers. Do not add any test point.

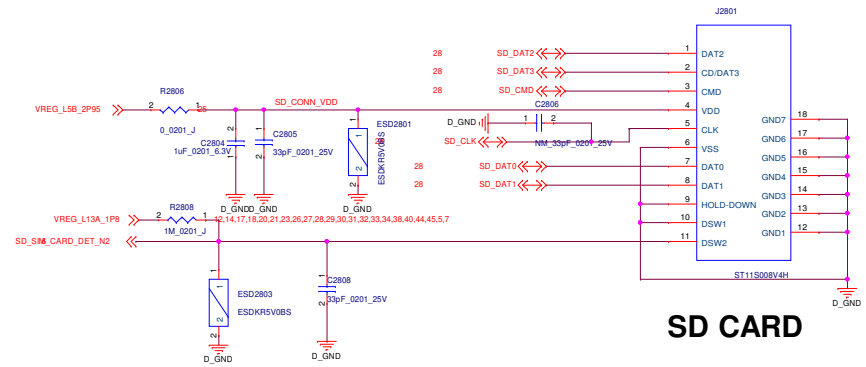
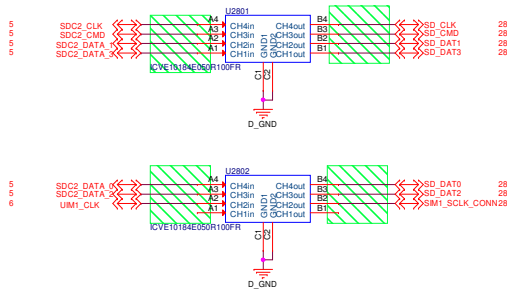
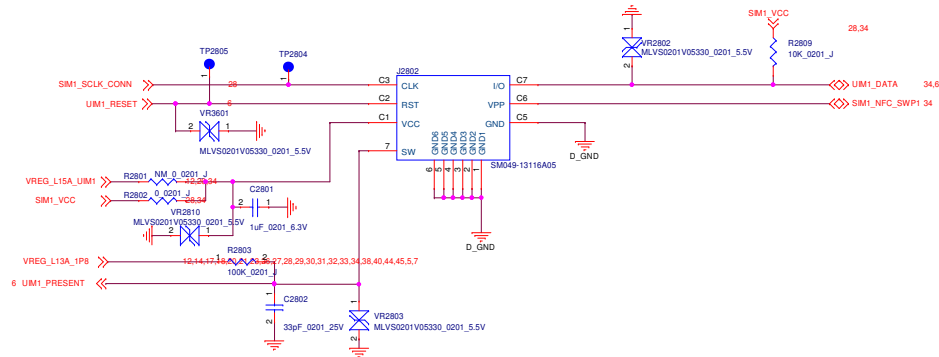
Note:
1. Please connect GND_CP (pin 195) to C2603 GND. Then connect to Main PCB GND from C2603.
2. Please connect GND_SPKR_PA (pins 171/172) to C2604/C2605 GND.
3. Please connect GND_BOOST (pins 163/196) to C2604/C2605 GND.
4. These are Charge Pump, Speaker Amplifier and Boost GNDs which are noisy and should not be shared with other codec GNDs.
5. Please connect GND_CFLT (pin 136) to R2606. Then connect to Main PCB GND from R2606.

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Title SCHEMATIC, M/B GA-527(PMIC-11: AUDIO CODEC)			
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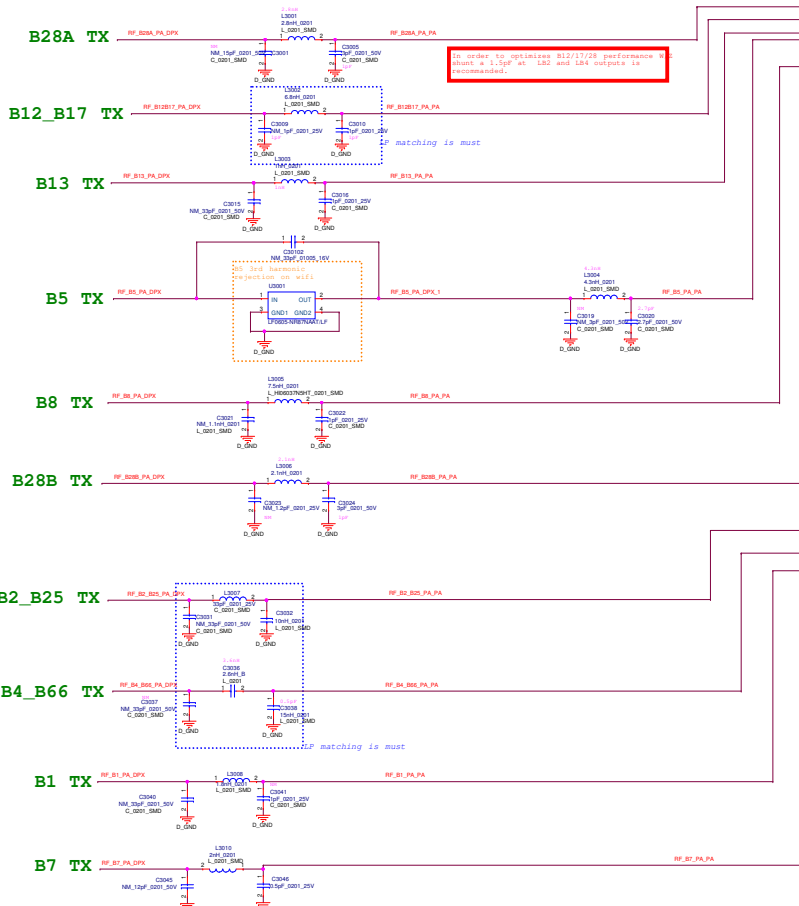
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SD CARD

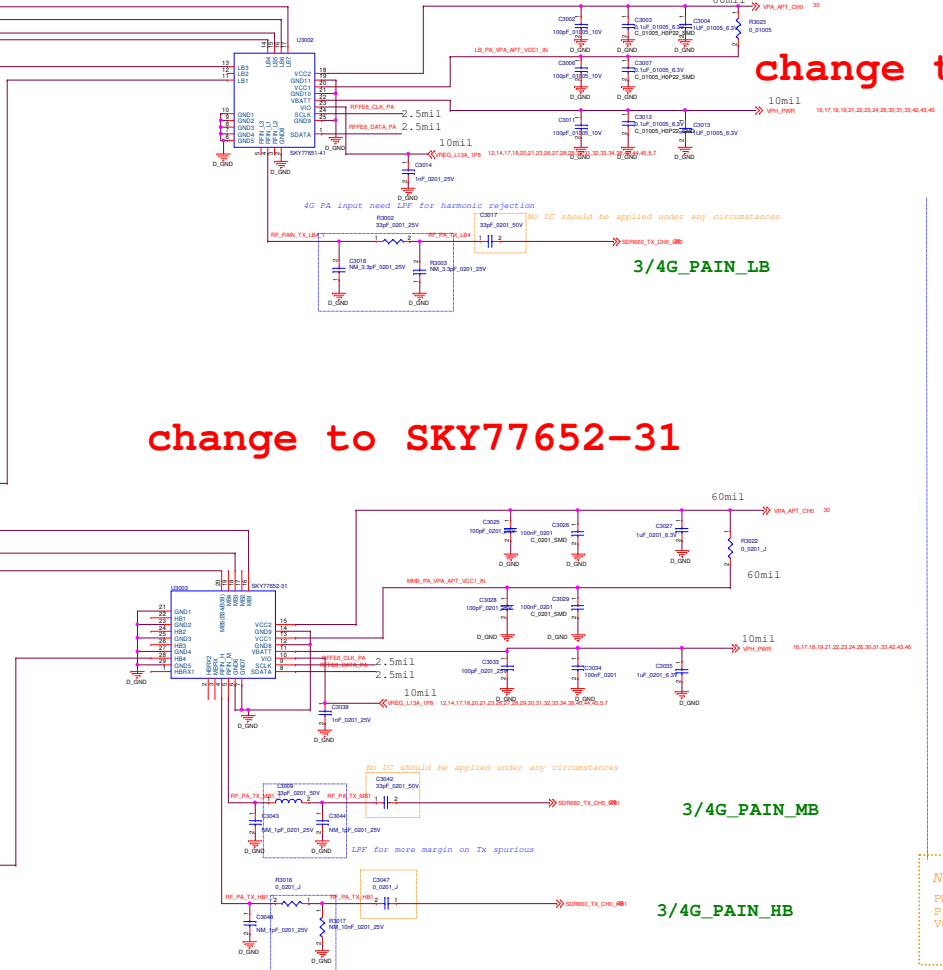


In order to optimize B12/B17 performance, match as tight as B2 and take outputs as recommended.

matching is must

matching is must

change to SKY77652-31



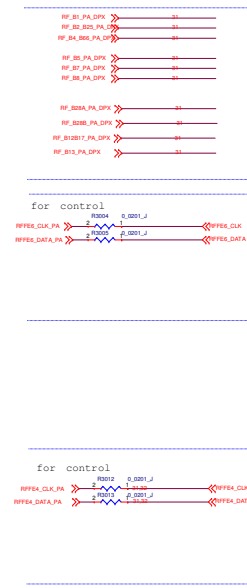
change to SKY77651-41

3/4G_PAIN_LB

3/4G_PAIN_MB

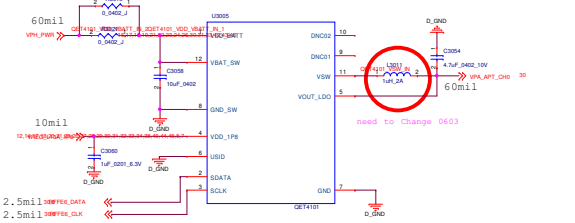
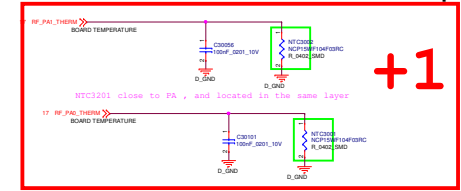
3/4G_PAIN_HB

Off-Page Connector (To SDR660)

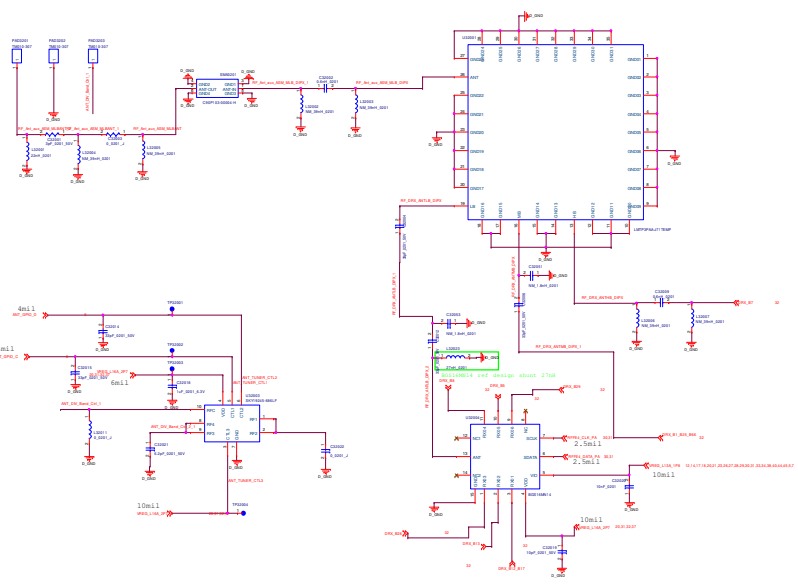


Note1
PMIC total Cap requirement => 3.3 uF +/-10%
Please note
VCC1 Cap+VCC_2 cap+C906+C2260 total value

Thermistor / To sense board level temperature



need to change 603



Place close to SDR660

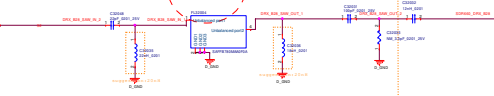
DC block is necessary
(SDR660 output with DC voltage)

B5_DRX

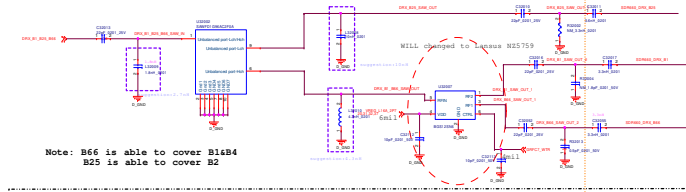


B28_DRX

has been changed to Murata DAFFS7800A02FA



B25_B66_DRX & non CA B1_B4 DRX



Note: B66 is able to cover B1&B4
B25 is able to cover B2

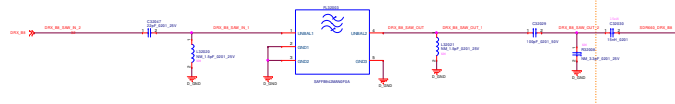
Place close to SDR660

DC block is necessary
(SDR660 output with DC voltage)

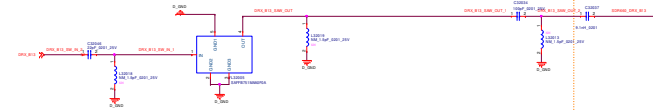
B7_DRX



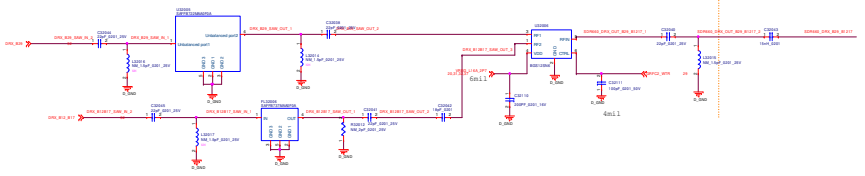
B8_DRX



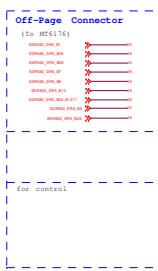
B13_DRX



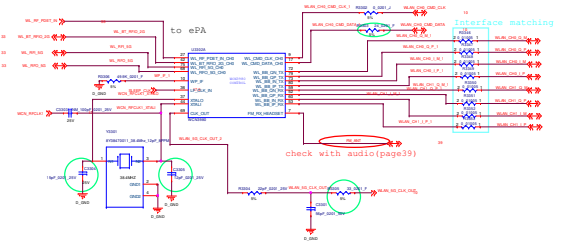
B29_ & B12B17_DRX



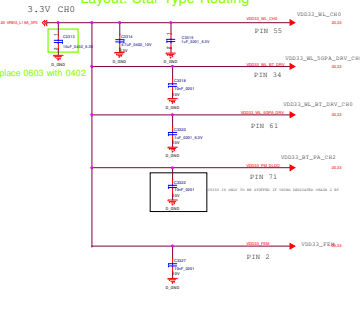
Note: B12 and B17 are using the same SAW filter



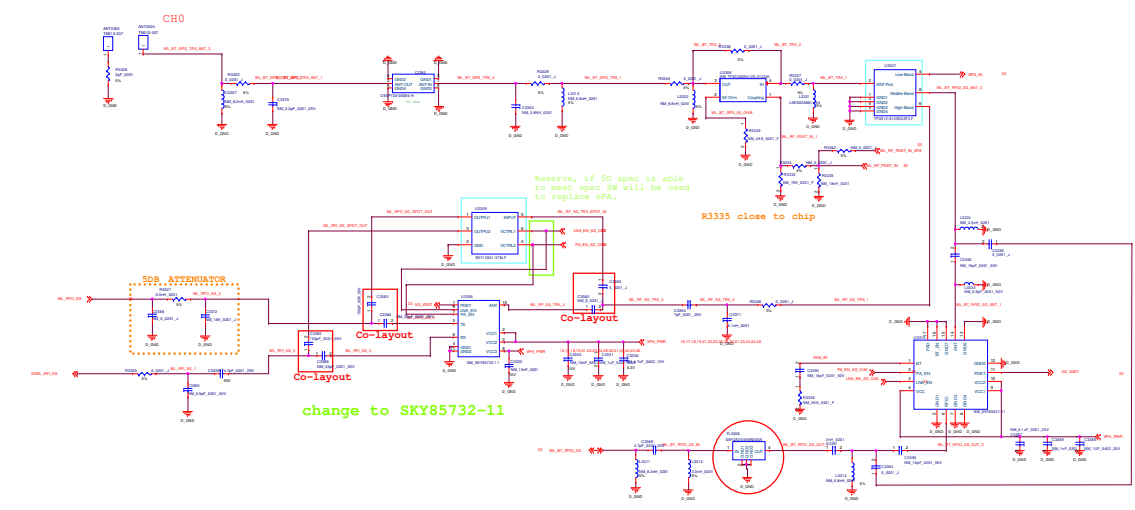
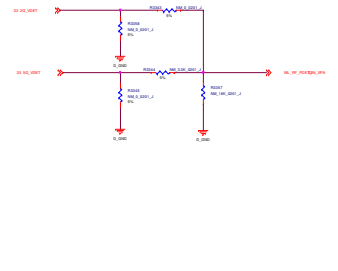
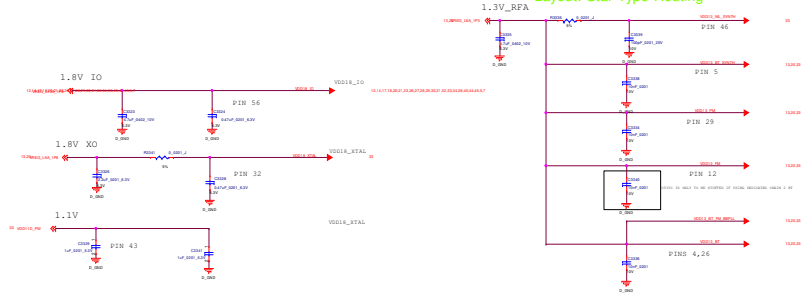
Place these two 240ohm less than 1.5 inches from chip.



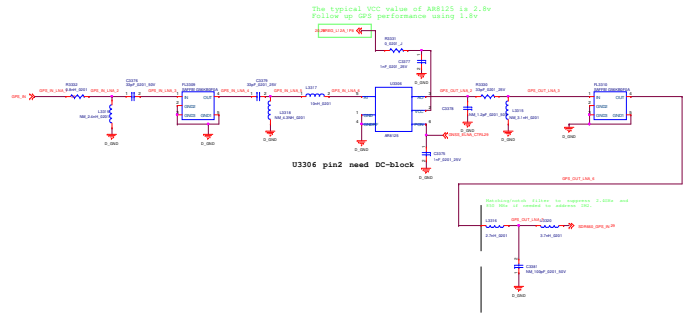
Layout: Star-Type Routing



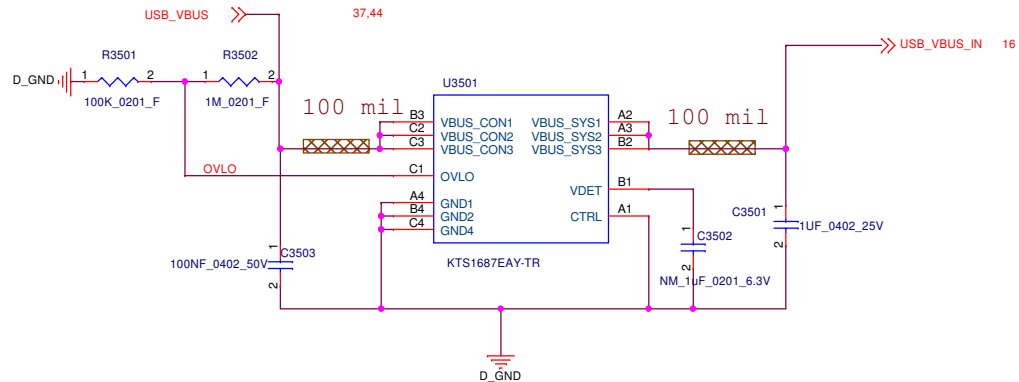
Layout: Star-Type Routing



GPS RX

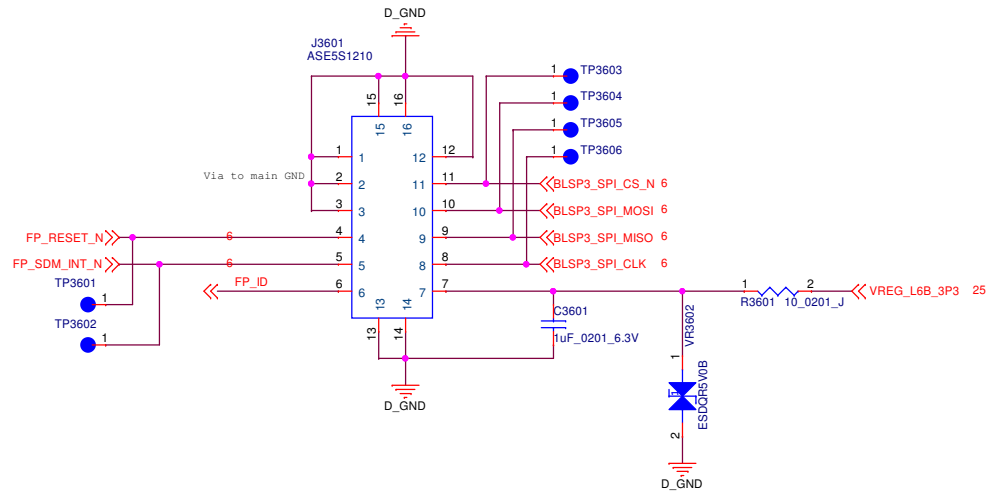


Change resistance follow charger voltage



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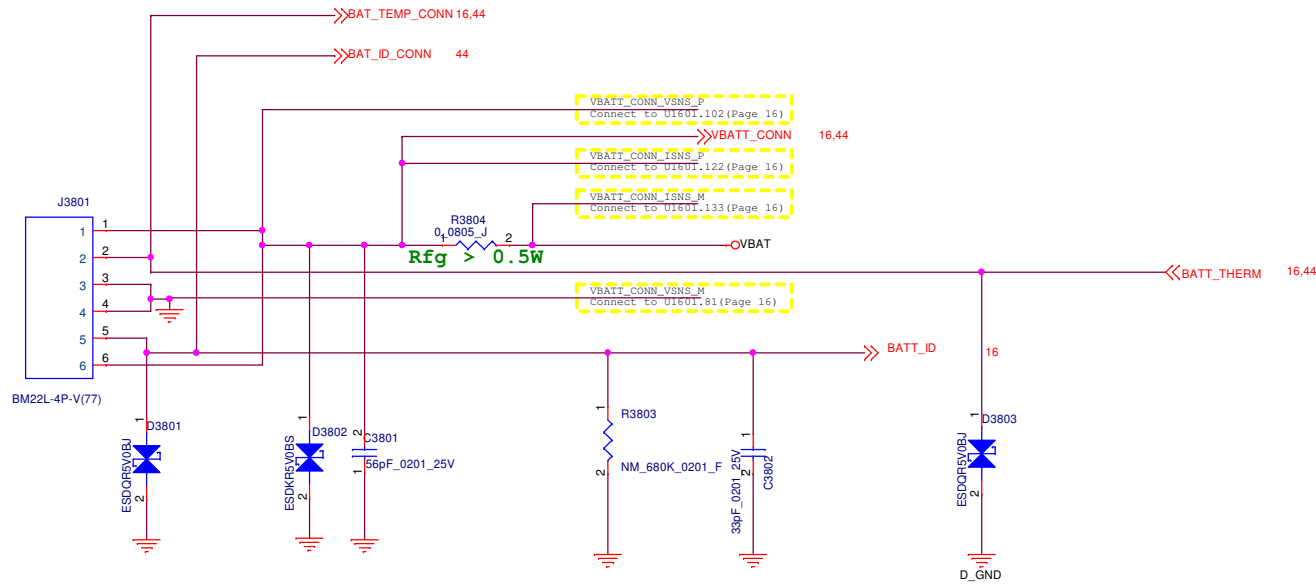
Sony Mobile Communications, Inc.		
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SCHEMATIC, M/B GA-527(OVP)		
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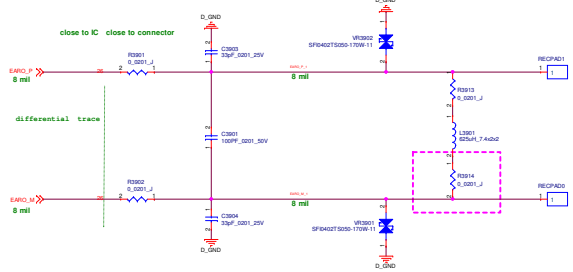
Sony Mobile Communications, Inc.			
Title			
SCHEMATIC, M/B GA-527(Connector-1: Fingerprint)			
Size	Document Number		Rev
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BATTERY CONNECTOR



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Sony Mobile Communications, Inc.			
Title SCHEMATIC, M/B GA-527(Connectors-3: BATT)			
Size A3	Document Number 601PP2	Rev BF	
Date: Thursday, November 02, 2017 Sheet 38 of 47			

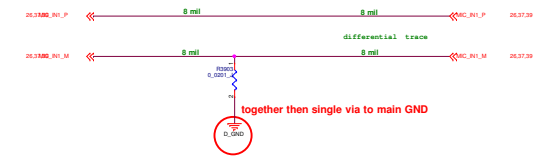


Receiver

(in the sub-board)

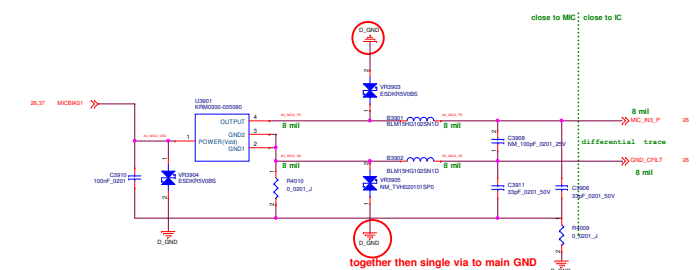
1st MIC

2nd MIC



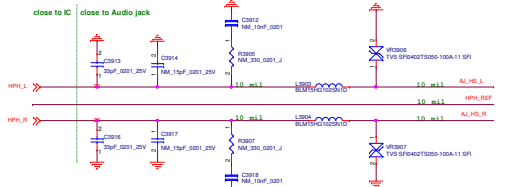
together then single via to main GND

Speaker components (in the bottom)



together then single via to main GND

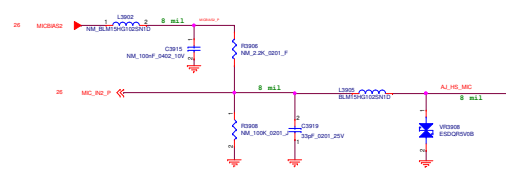
Earphone Audio



Notes: Place all components shown on this block close to headset jack connector.
 Notes: Bead L3001 and L3004 are needed to reduce noise generated by audio/FM concurrency.
 These components can be removed if FM radio is not supported.

HS_OUT L/R

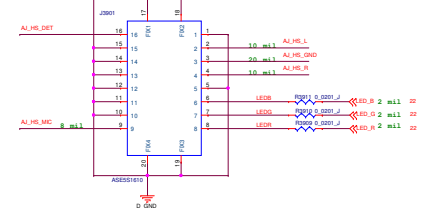
HS_MIC



Notes: Place all components shown on this block close to headset jack connector.
 Notes: Bead L3006 is needed to reduce noise generated by audio/FM concurrency.
 These component can be removed if FM radio is not supported.

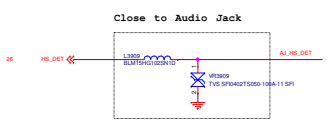
AJ CONN

Audio Jack use FPC type_2016/11/28



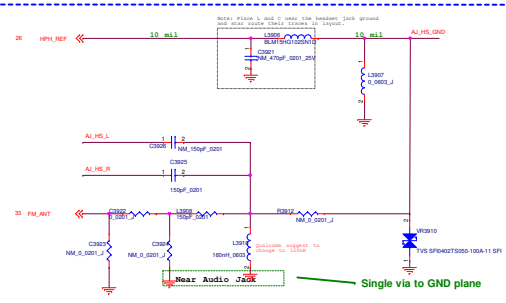
HS_DET

HS_GND/FM



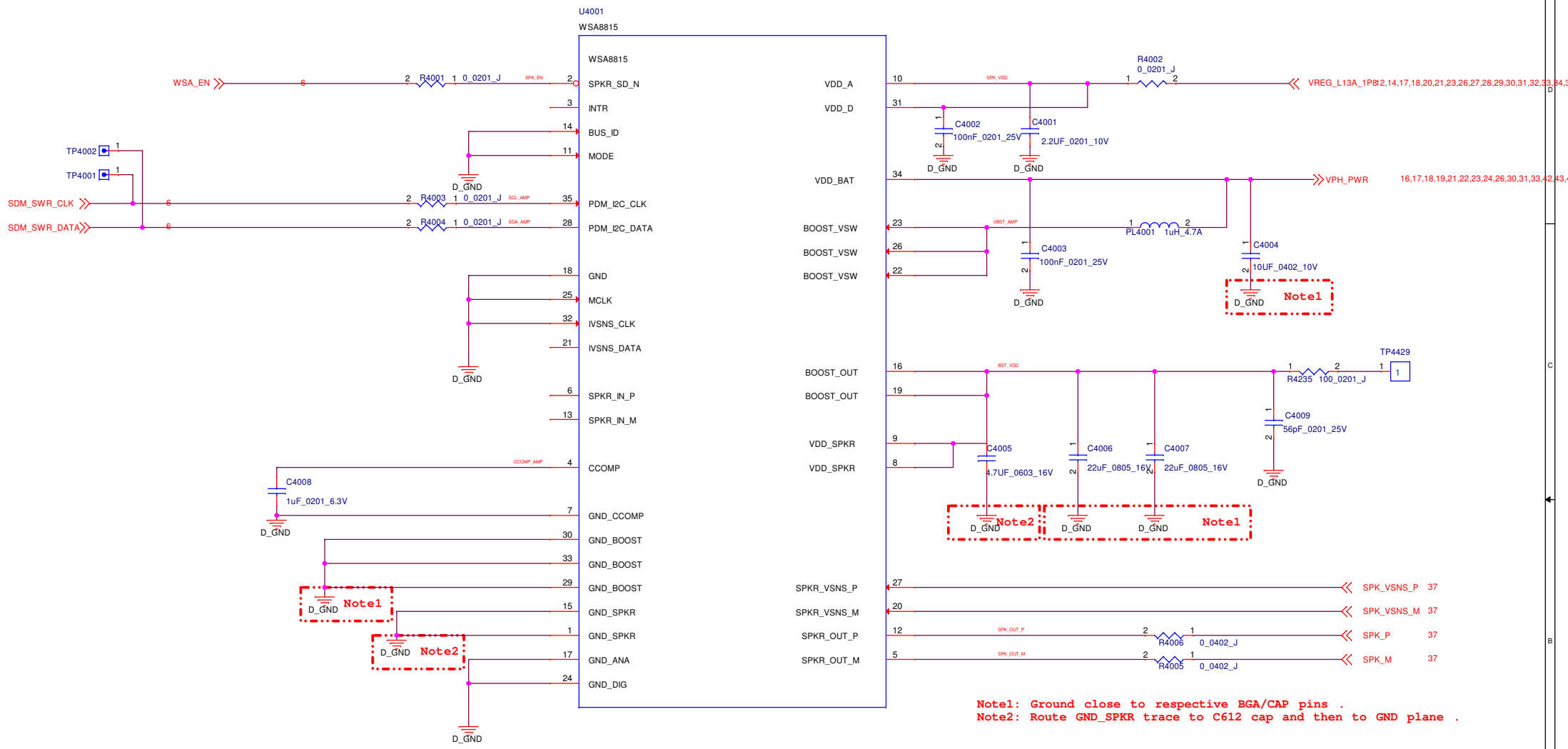
Close to Audio Jack

Notes: Place all components shown on this block close to headset jack connector.
 Notes: Bead L3006 is needed to reduce noise generated by audio/FM concurrency.
 These components can be removed if FM radio is not supported.



Notes: Place all components shown on this block close to headset jack connector.
 Notes: Bead L3006 is needed to reduce noise generated by audio/FM concurrency.
 These component can be removed if FM radio is not supported.

Single via to GND plane

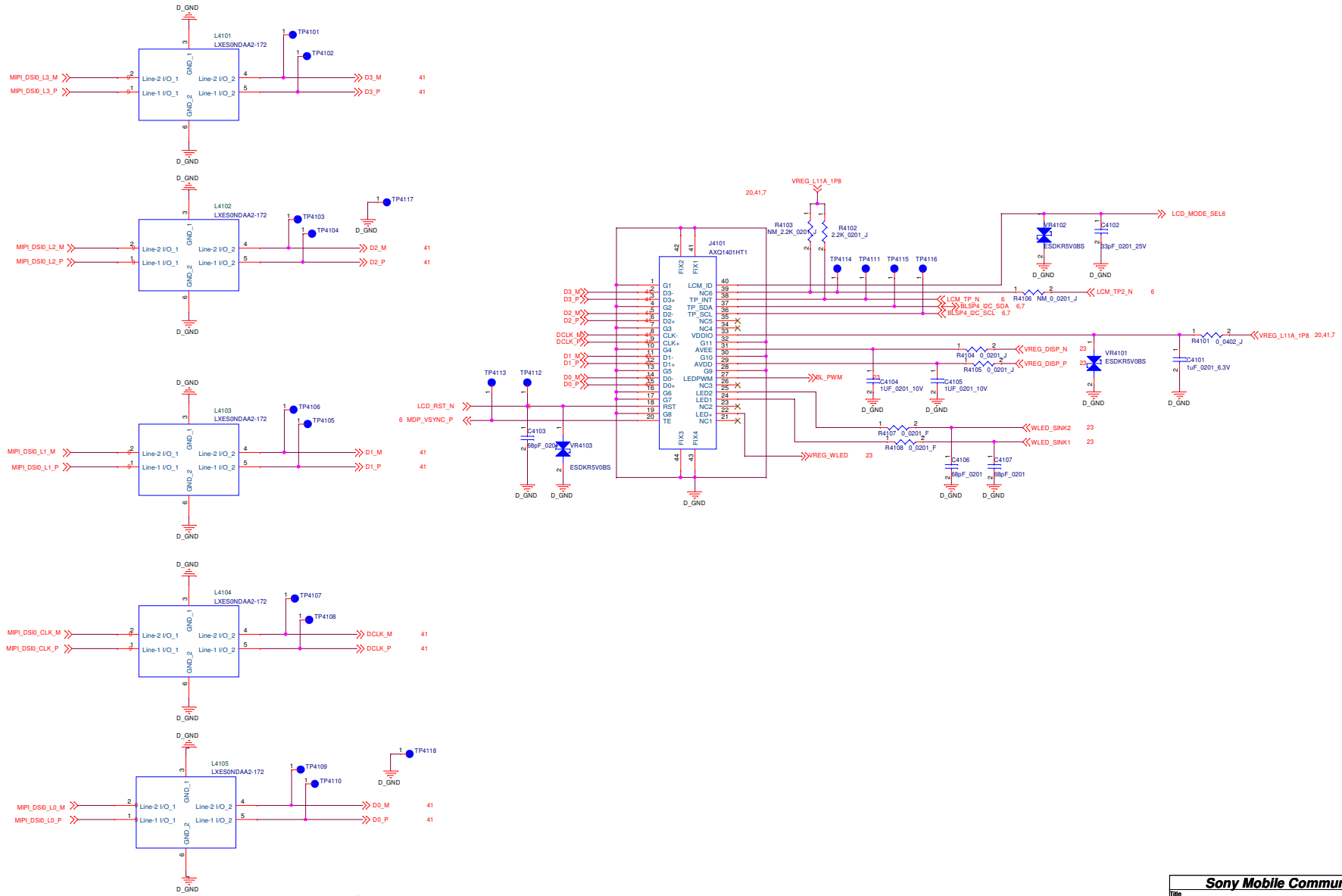


Note1: Ground close to respective BGA/CAP pins .
 Note2: Route GND_SPKR trace to C612 cap and then to GND plane .

Sony Mobile Communications, Inc.			
Title			
SCHEMATIC, M/B GA-527(Audio-2: AMP)			
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Main LCM

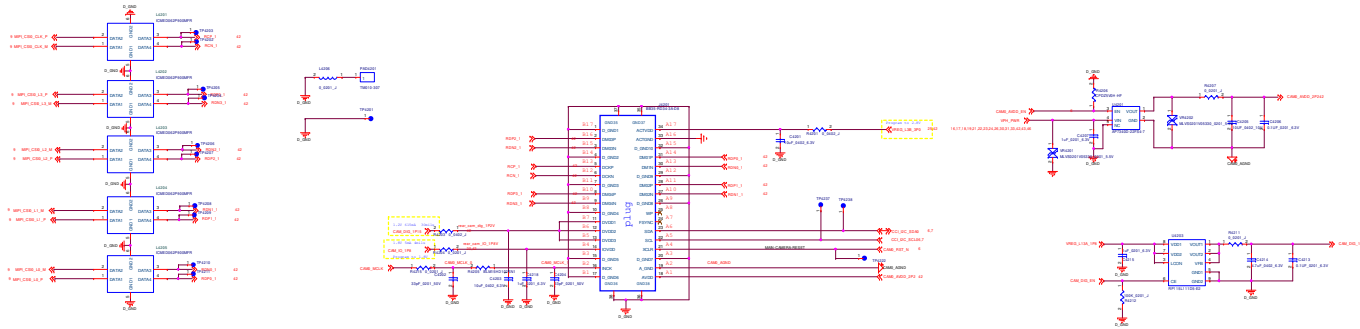


Waiting for pin define. 12/2

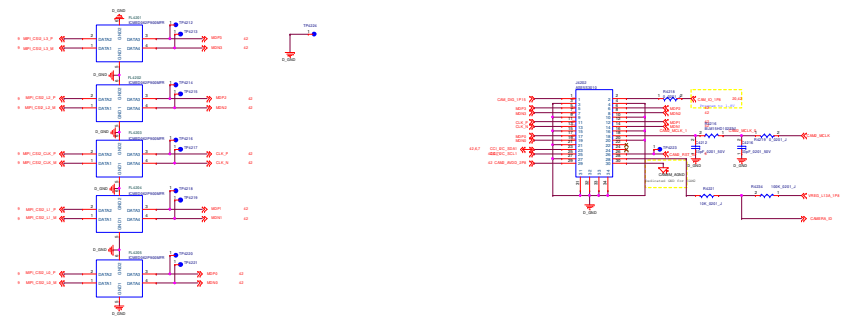
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Size: A2	Document Number: 601PP2	Rev: BF	
Date: Thursday, November 02, 2017 Sheet: 41 of 47			

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Rear Camera 23M (IMX300)



Front Camera (8M) IMX219



Item	Pins	Symbol	Min.	Typ.	Max.	Unit	Comment
Supply voltage	VDDPH1,2	V _{max}	2.6	2.8	3.0	V	
	VDDPHAN						
	VDDPHPL						
	VDDHSH1,2	V _{DD}	1.62	1.8	1.98	V	
	VDDMCO						
	VDDLSC1-8						
	VDDCN1,2						
VDDU0,1,2		1.08	1.20	1.30	V		

10-5 Electrical Characteristics

Table 45 Electrical Characteristics

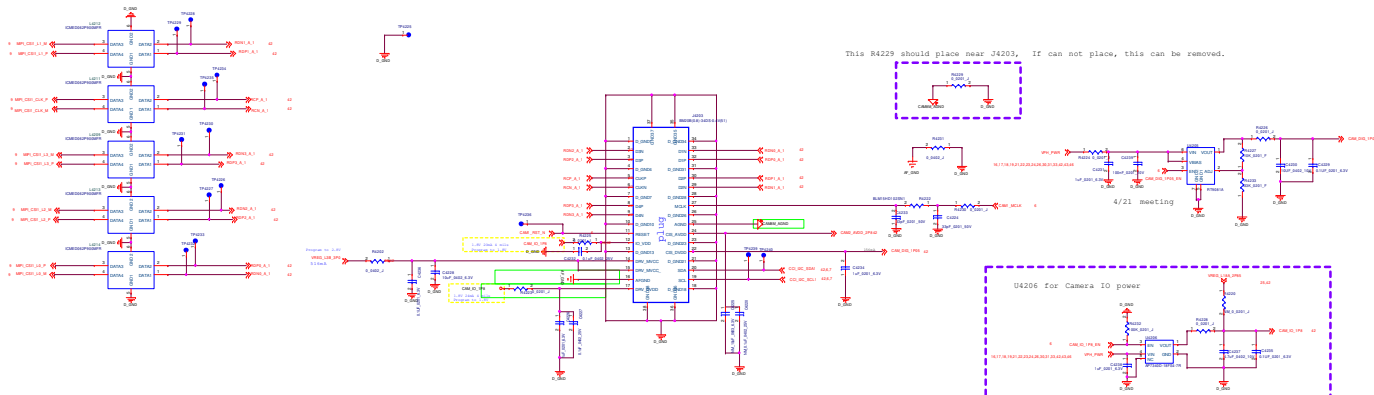
(V_{MAX} = 3.0 V, V_{DDI} = 1.3 V, V_{DD} = 1.98 V, T_J = 60 °C)

Item	Symbol	Min.	Typ.	Max.	Unit	Comment
Current consumption (Full,30 frames/s)	IVAVA_strm		33	38	mA	V _{Tmax} is max speed read out from pixel array CS12 4 lanes, V _{MAX} current
	IVDDL_strm		100	160	mA	V _{Tmax} is max speed read out from pixel array CS12 4 lanes, V _{DDI} current Defect Correction, L.S.C. function off
HW-Standby current	ISTB_ana			50	µA	XCLR = Lo, V _{MAX} current
	ISTB_dig			10	µA	XCLR = Lo, V _{DDI} current
	ISTB_ddd			50	µA	XCLR = Lo, V _{DDI} current

Front Camera (16M) IMX234

	Symbol	Standby(µA)	Operating(mA)
Driver IC	DRV_VDD1_V18	88	24
	DRV_MVCC_V18	10	816
	CIS_VDD1_V18	8800	156.1
Sensor	IOVDD_V18	28.9	20
	CIS_VDD0_V18	42.3	53

Pin	Symbol	Function
26	DIGND	D4N1
27	MCLK	D4P
28	DIGND	D4N1
29	AGND	D4N1
30	CS1_ARD0	RESET
31	DIGND	D4N1
32	CS1_DVDD	D4N1
33	CS1_DVDD	D4N1
34	DIGND	DRV_MVCC
35	SDA	DRV_MVCC
36	SCL	AFSGND
37	DIGND	DRV_DVDD



E-COMPASS

I2C Address:

Slave Address	R/W Command Bit	Remark
0x0C-7bit follow by RW	R: 1 ; W: 0	

10.1.1.4. Slave Address
The slave address of AK09916 is 0Ch.

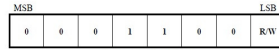
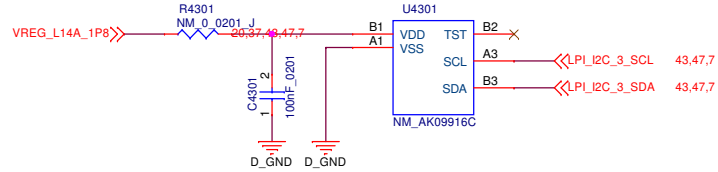


Figure 10.4. Slave Address



For stock, only KS BOM have mount 2nd location E-compass for verification.
U4301, NM on CQ BOM

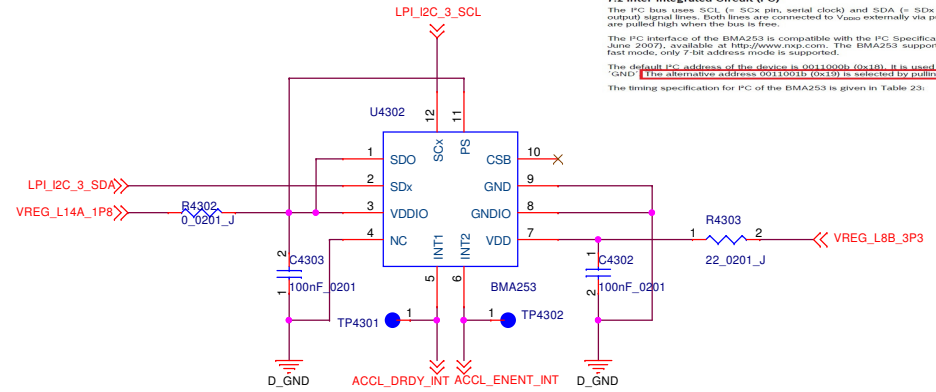
G-Sensor

I2C Address:

Slave Address	R/W Command Bit	Remark
0x19-7bit follow by RW	R: 1 ; W: 0	

	BMA253 Data sheet	Page 304
--	-----------------------------	----------

7.2 Inter-integrated Circuit (I²C)
The I²C bus uses SCL (= SCL pin, serial clock) and SDA (= SDx pin, serial data input and output) signal lines. Both lines are connected to V_{DD} externally via pull-up resistors so that they are pulled high when the bus is free.
The I²C interface of the BMA253 is compatible with the I²C Specification UM10204 Rev. 03 (19 June 2007), available at <http://www.nxp.com>. The BMA253 supports I²C standard mode and fast mode, only 7-bit address mode is supported.
The default I²C address of the device is 0x19 (0x19). This is used if the SDO pin is pulled to GND. If the alternative address 0x1A (0x1A) is selected by pulling the SDO pin to V_{DD}.
The timing specification for I²C of the BMA253 is given in Table 23.



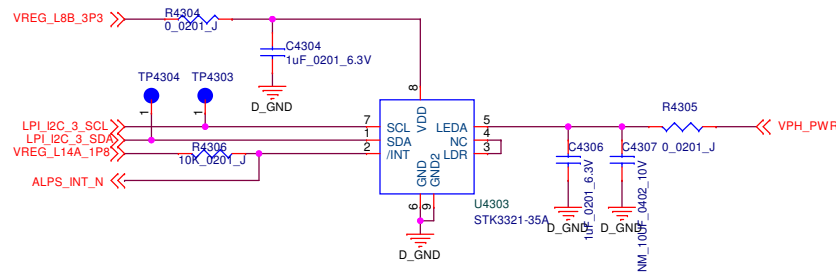
P+L Sensor

I2C Address:

Slave Address	R/W Command Bit	Remark
0x48 follow by RW	R: 1 ; W: 0	

Slave Address
STK3321-35A provides fixed I²C slave address of 0x48 using 7 bit addressing protocol.

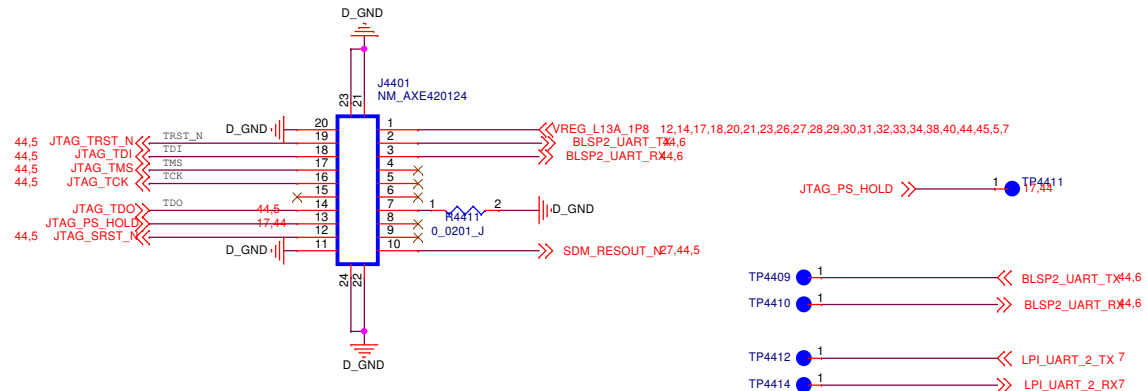
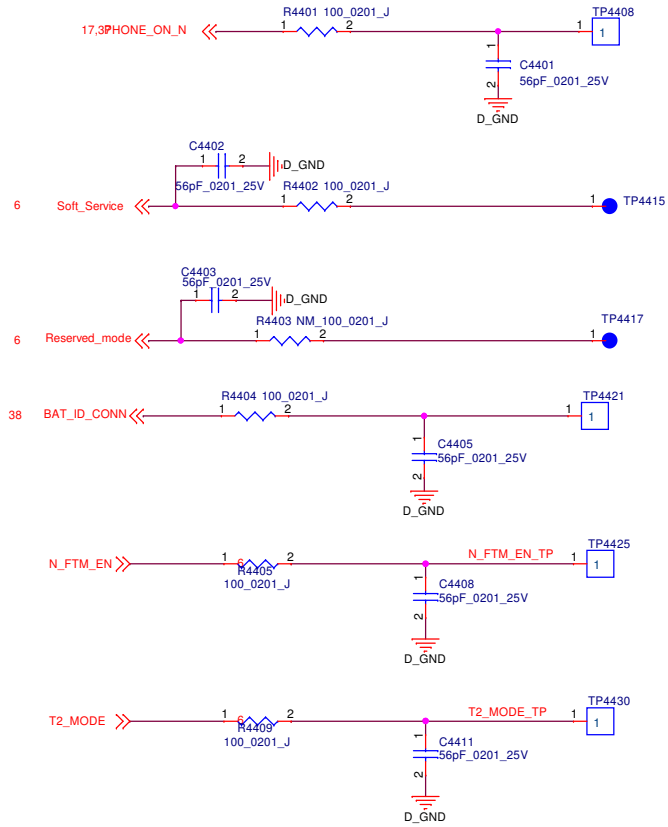
Slave Address	R/W Command Bit	OPERATION
0x48	0	Write Command to STK3321-35A
(followed by the RW bit)	1	Read Data from STK3321-35A



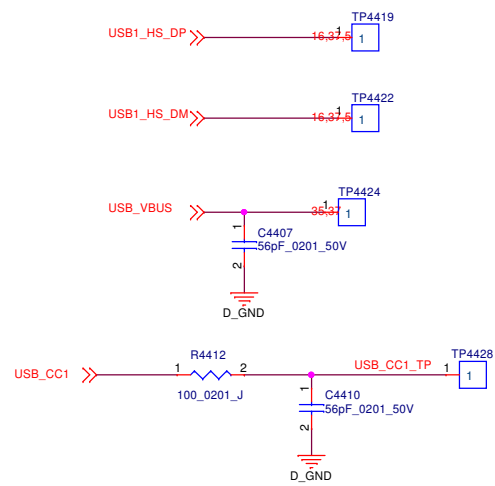
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Size A3	Document Number 601PP2	Rev BF	
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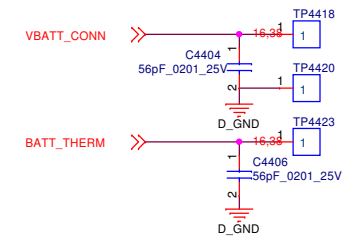
Power Key / Key Pad



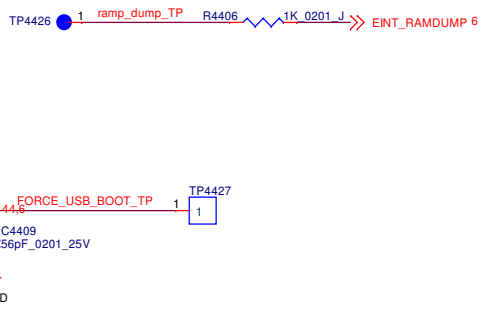
USB



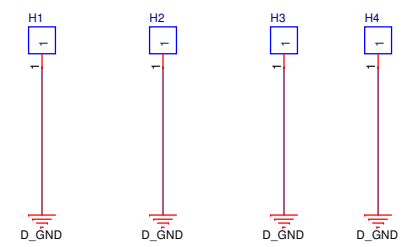
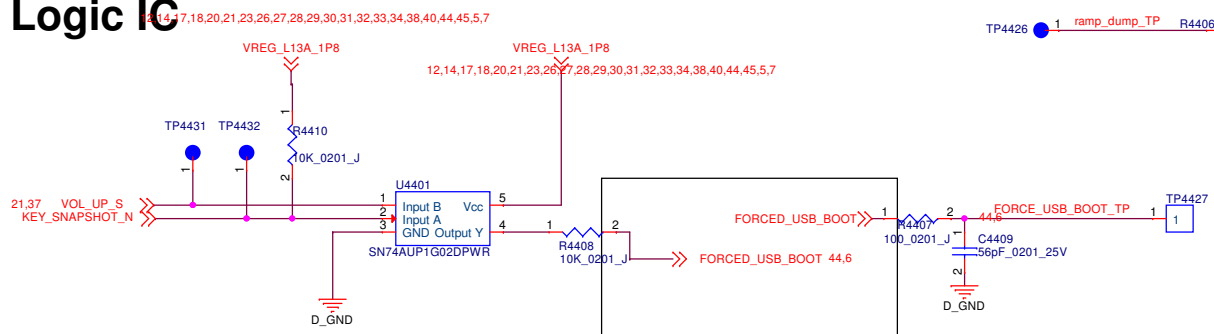
Battery



RAM DUMP key



Logic IC

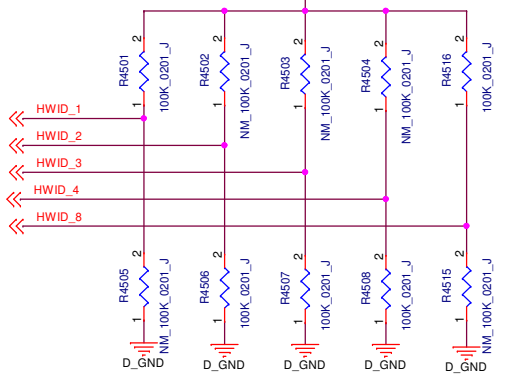


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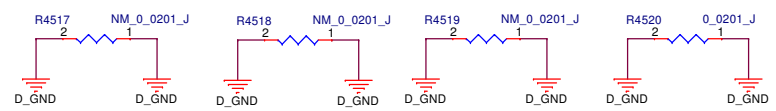
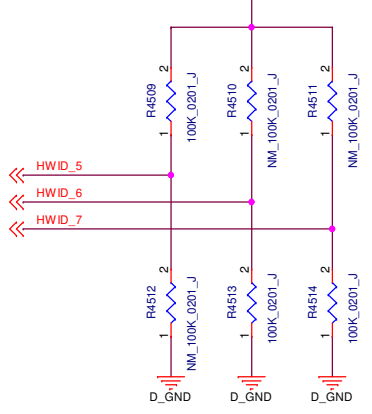
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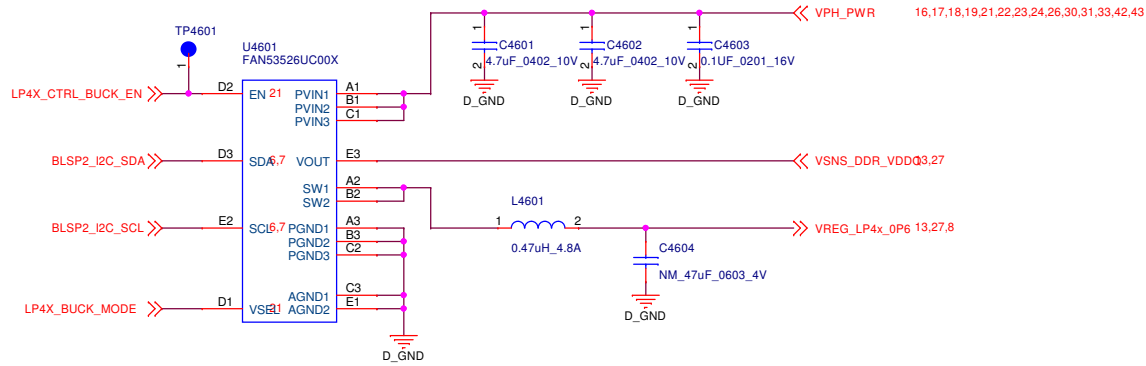
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Sony Mobile Communications, Inc.			
Title			
SCHEMATIC, M/B GA-527(External Buck)			
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I2C Address:

Slave Address	R/W Command Bit	Remark
0x0C-7bit follow by RW	R: 1 ; W: 0	

10.1.1.4. Slave Address
The slave address of AK09916 is 0Ch.

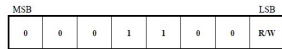
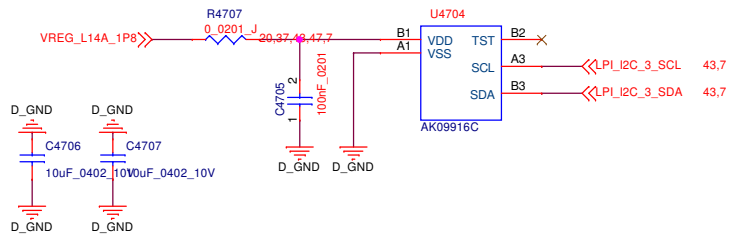
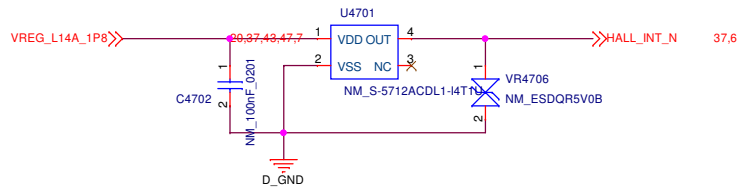


Figure 10-4. Slave Address

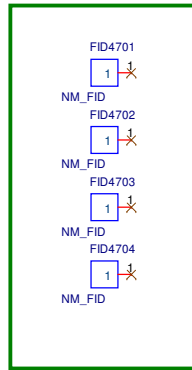
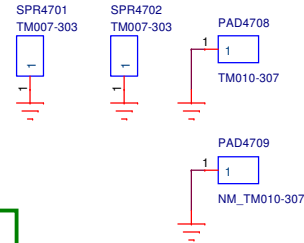
Backup Compass



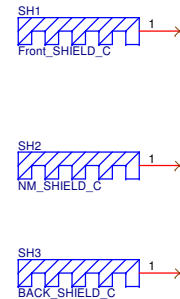
Backup Hall Sensor



2 grounding springs on Top side



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