

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.

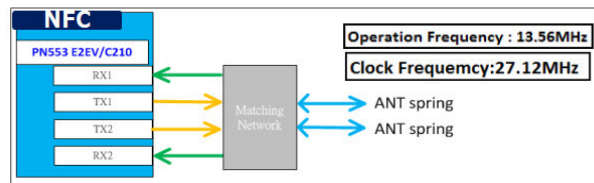
Project Name : PY7-67442A  
PCB Number : GA-527  
PCB Revision : 0D



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



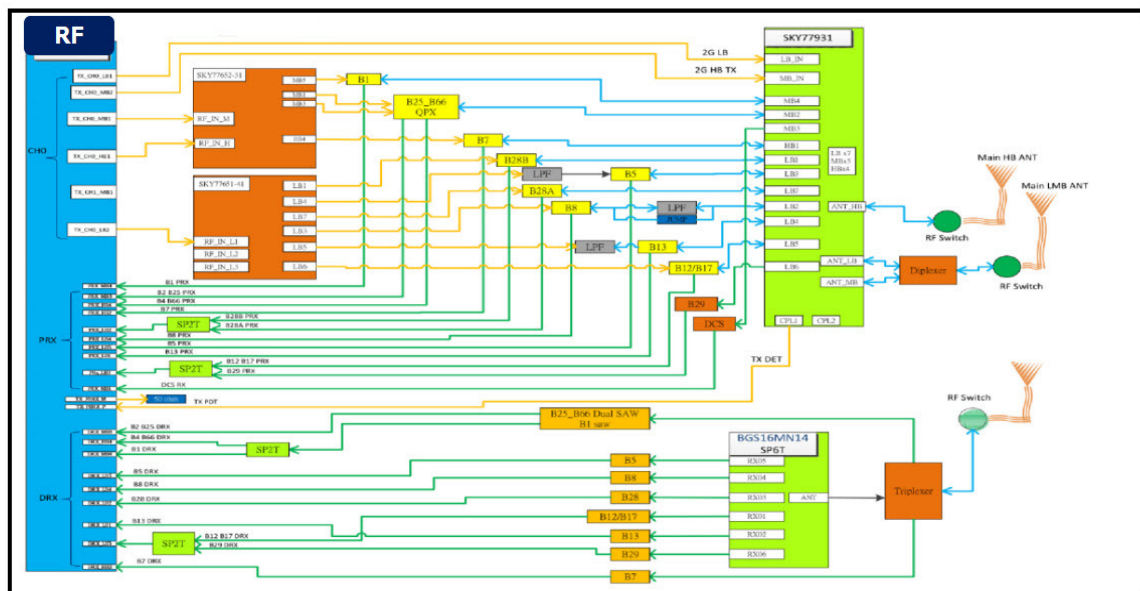
| Page | Description :                          |                                                                                  |              |          |
|------|----------------------------------------|----------------------------------------------------------------------------------|--------------|----------|
| 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                                                               |              |          |

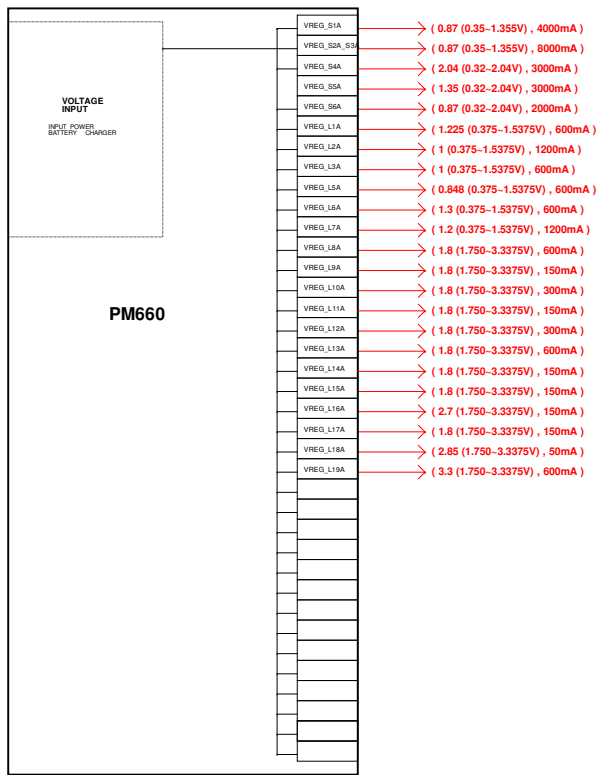


| WCDMA Band 2, 4, 5 |             |             |
|--------------------|-------------|-------------|
| WCDMA              | UL          | DL          |
| 2                  | 1850 - 1910 | 1930 - 1990 |
| 4                  | 1710-1755   | 2110-2155   |
| 5                  | 824 - 849   | 869 - 894   |

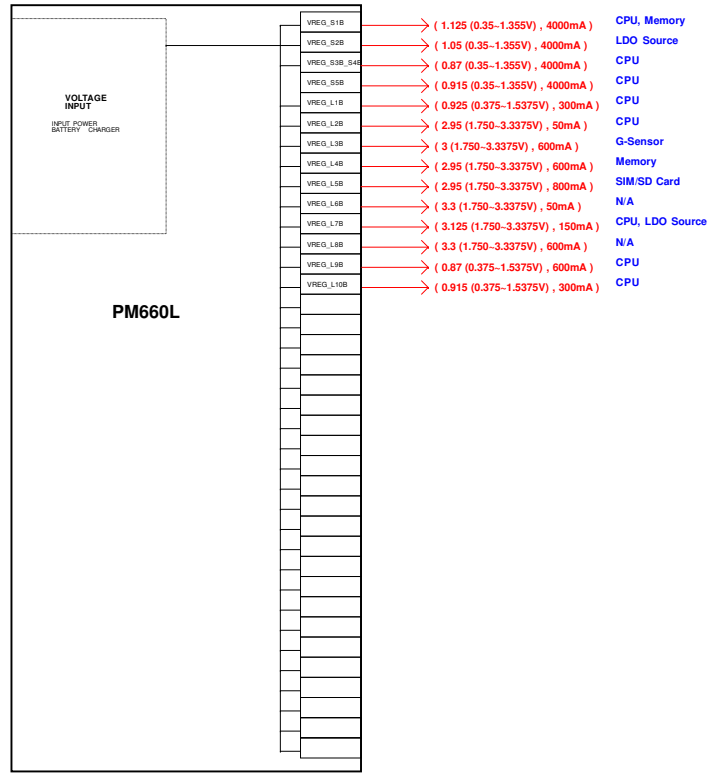
| LTE Band2, 4, 5, 7, 12, 13, 17, 25, 29, 66 |             |             |
|--------------------------------------------|-------------|-------------|
| LTE                                        | UL          | DL          |
| 2                                          | 1850 - 1910 | 1930 - 1990 |
| 4                                          | 1710-1755   | 2110-2155   |
| 5                                          | 824 - 849   | 869 - 894   |
| 7                                          | 2500 - 2570 | 2620 - 2690 |
| 12                                         | 699 - 716   | 729 - 746   |
| 13                                         | 777 - 787   | 746 - 756   |
| 17                                         | 704 - 716   | 734 - 746   |
| 25                                         | 1850-1915   | 1930-1995   |
| 29                                         | n/a         | 717 - 728   |
| 66                                         | 1710-1780   | 2110-2200   |

**Clock Frequency:38.4MHz**





- 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

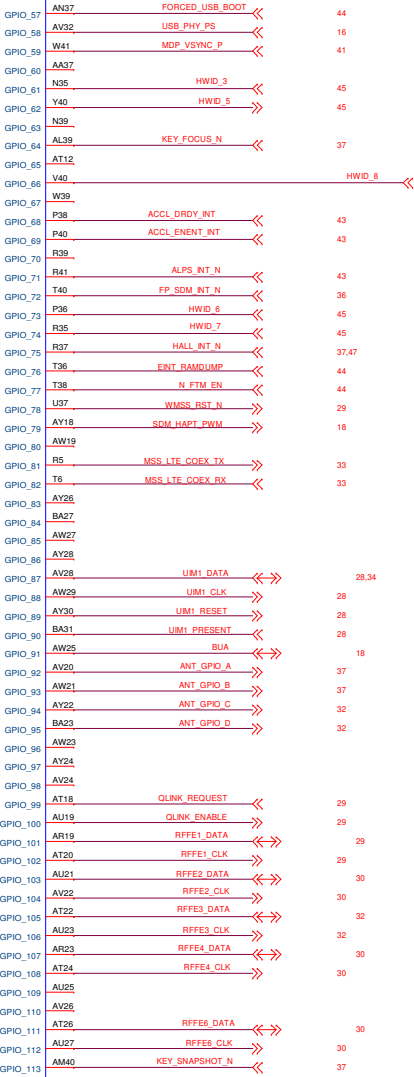
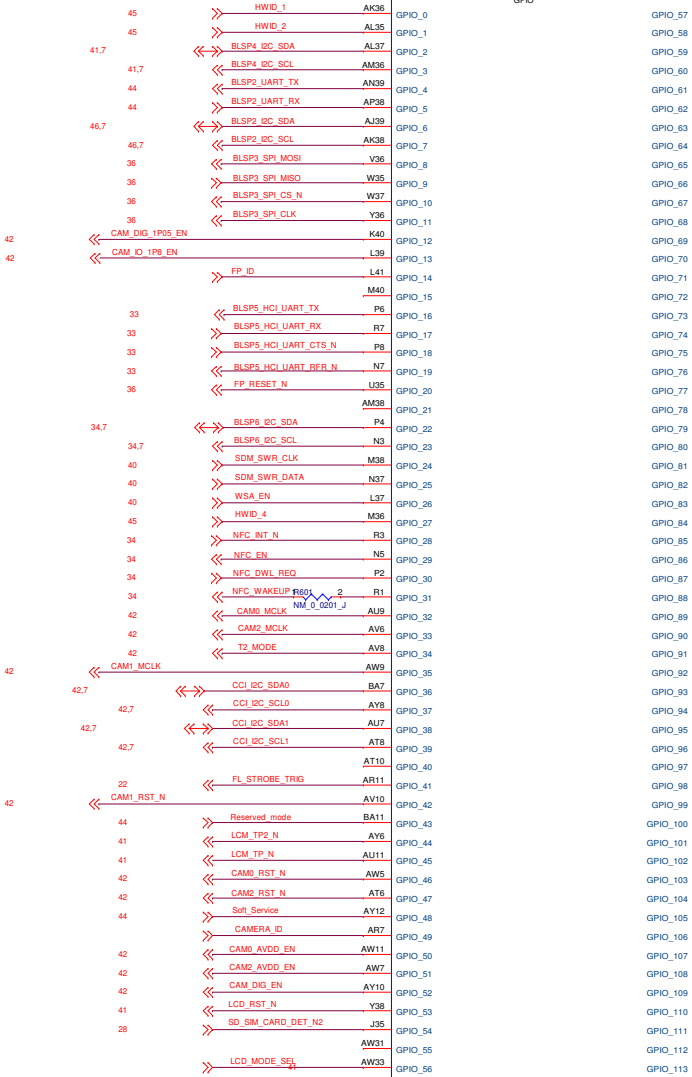


- CPU, Memory
- LDO Source
- CPU
- CPU
- CPU
- G-Sensor
- Memory
- SIM/SD Card
- N/A
- CPU, LDO Source
- N/A
- CPU
- CPU



U501B  
SDM330

-BLOCKID-  
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_111          | FASTBOOT_SEL[3]     |
| GPIO_30           | PK_HASH_INDEX_SRC   |
| GPIO_32           | ALL_USE_SERIAL_NUM  |
| GPIO_33           | MSA_PK_HASH_IN_FUSE |
| GPIO_34           | 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                  |
|-------------------|-------------------------------|
| 0b0000            | eMMC @SDC1 -> SD @SDC2 -> USB |
| 0b0001            | SD @SDC2 -> eMMC @SDC1        |
| 0b0010            | SD @SDC2                      |
| 0b0011            | USB                           |
| 0b0100            | UFS HS-G1                     |
| 0b0101            | SD @SDC2 -> UFS               |

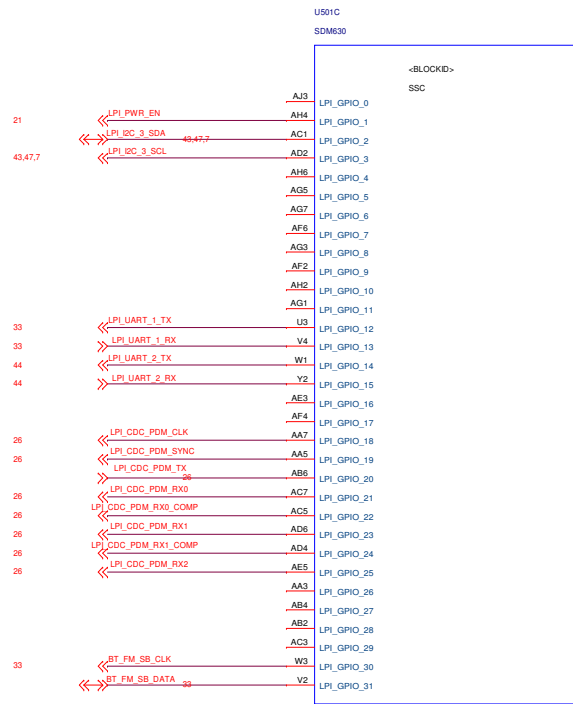
Sony Mobile Communications, Inc.

File SCHEMATIC, M/B GA-527(GPIO-1: GPIOs)

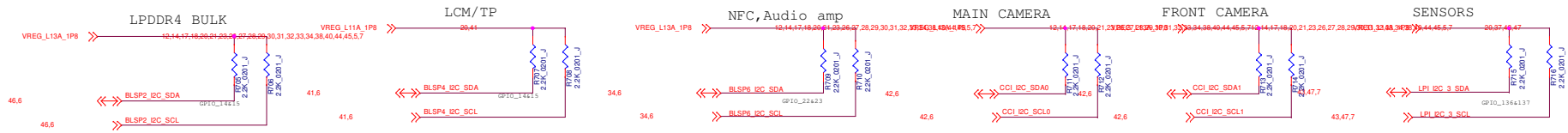
Size A2 Document Number 601FP2 Rev BF

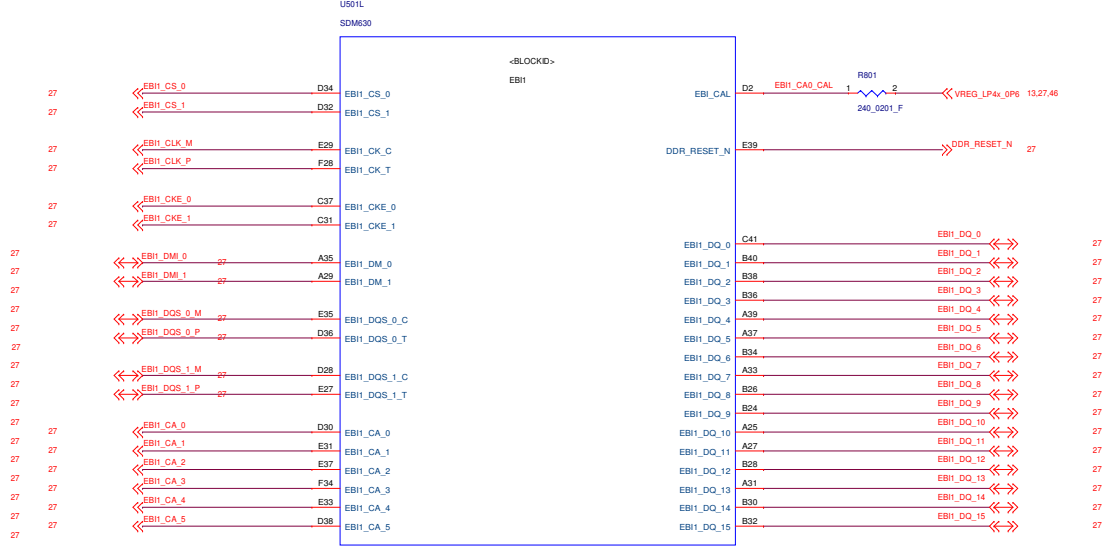
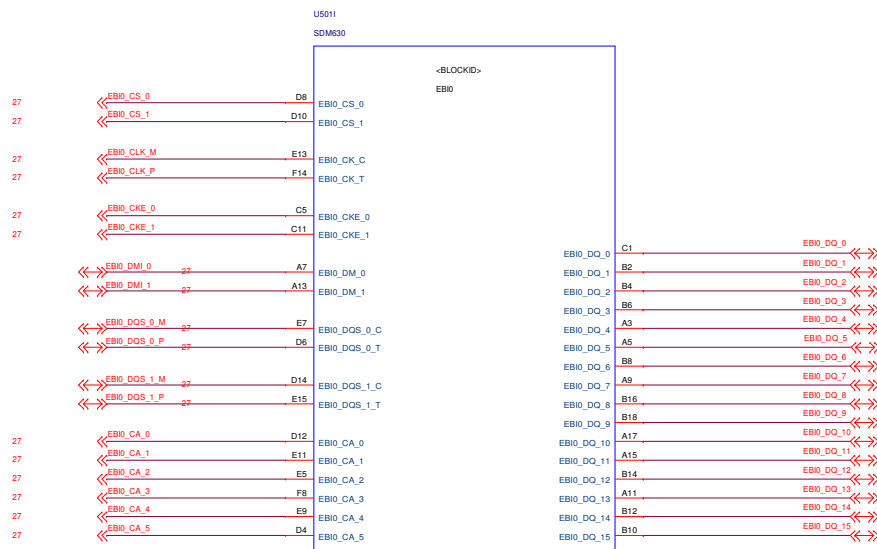
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## I2C BUS PULL-UPS

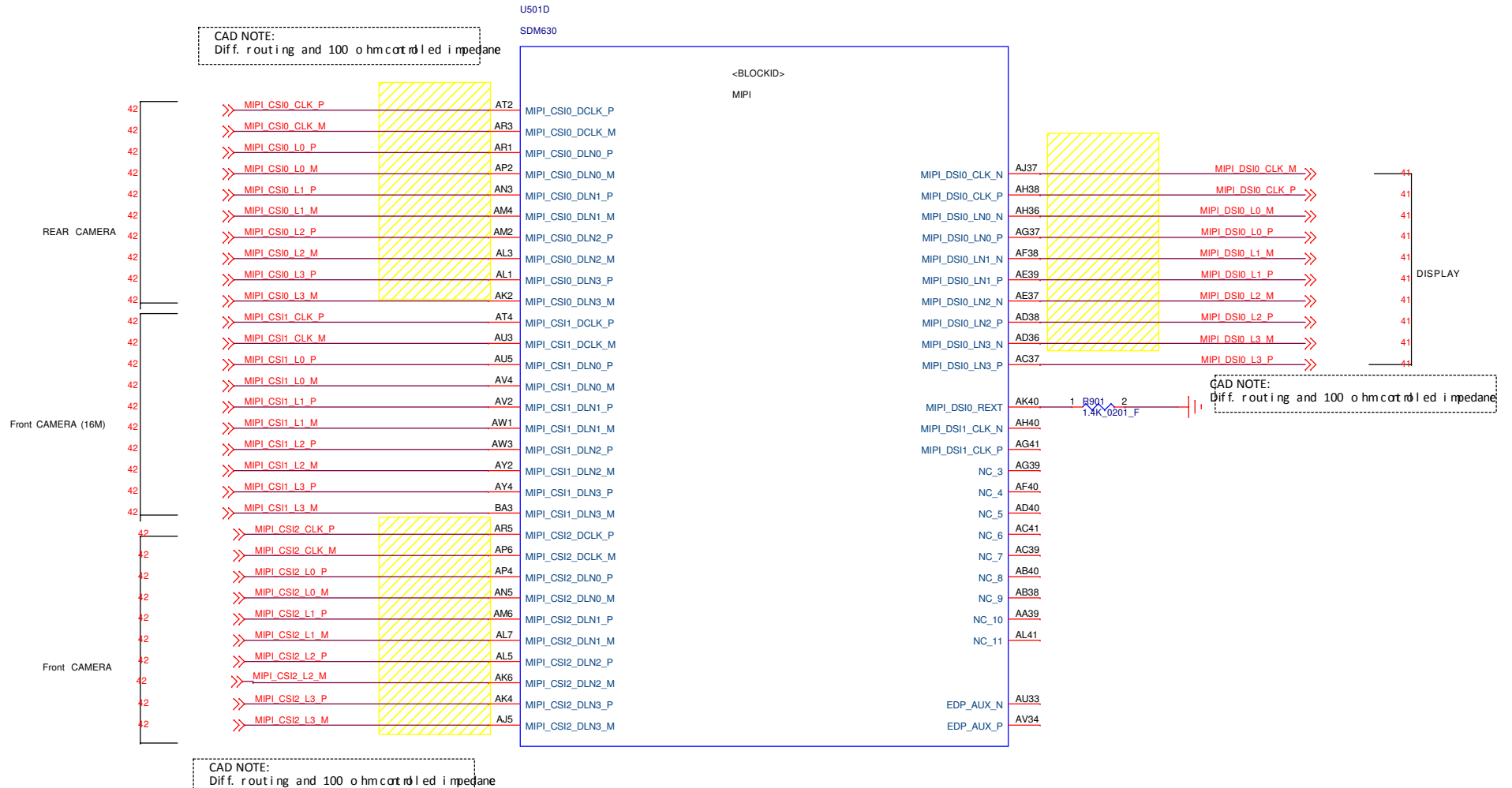


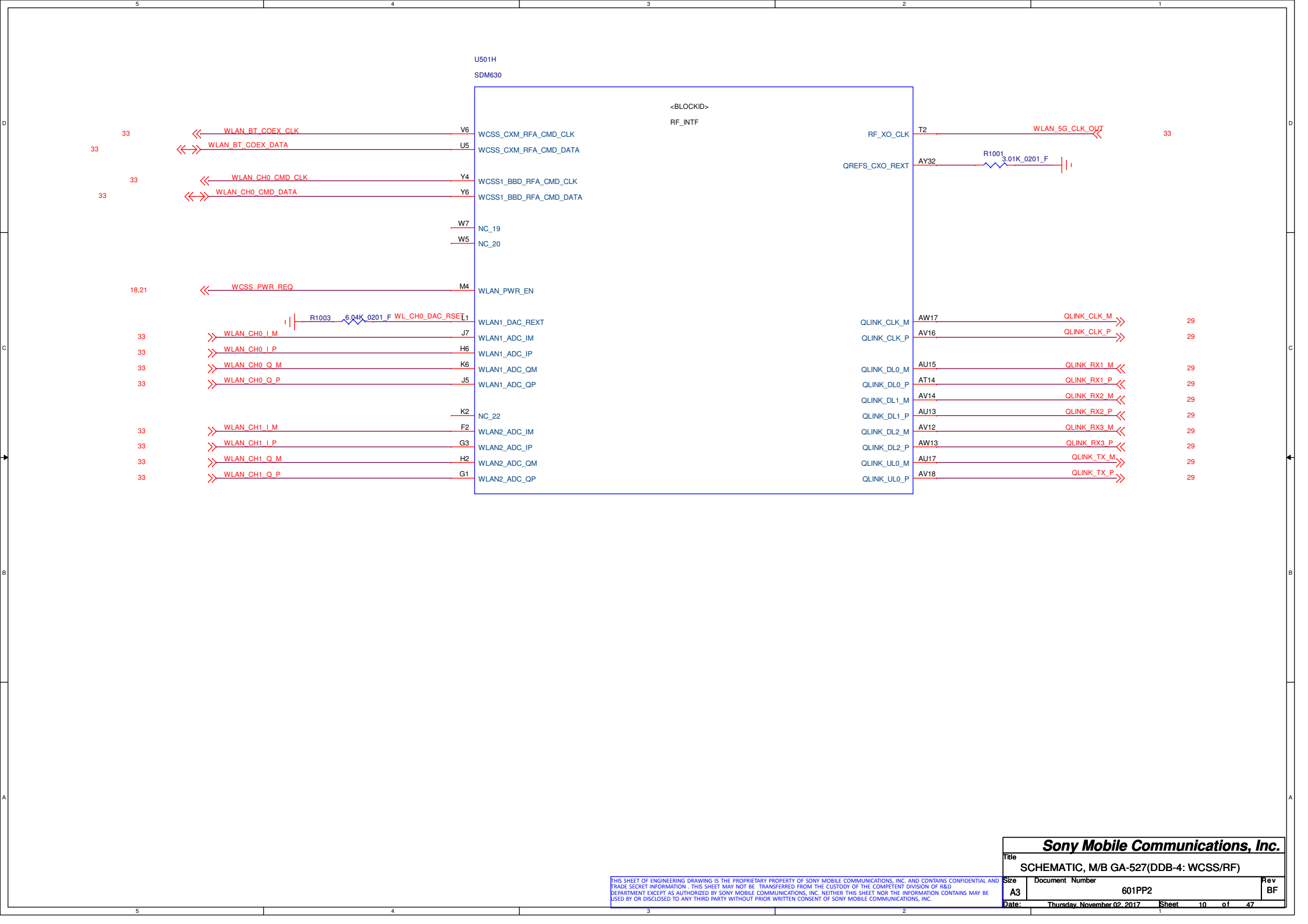


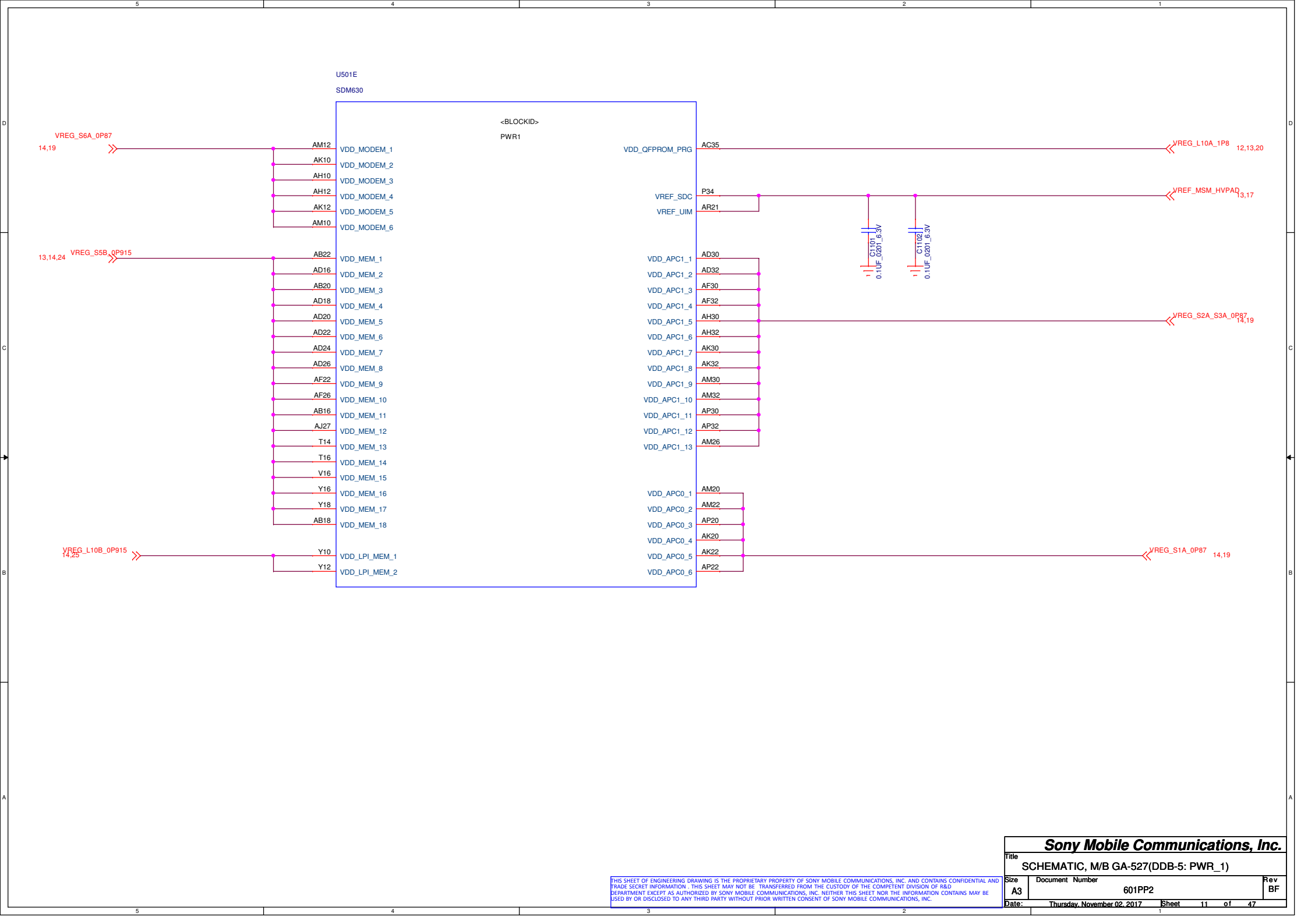
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# MSM: MIPI

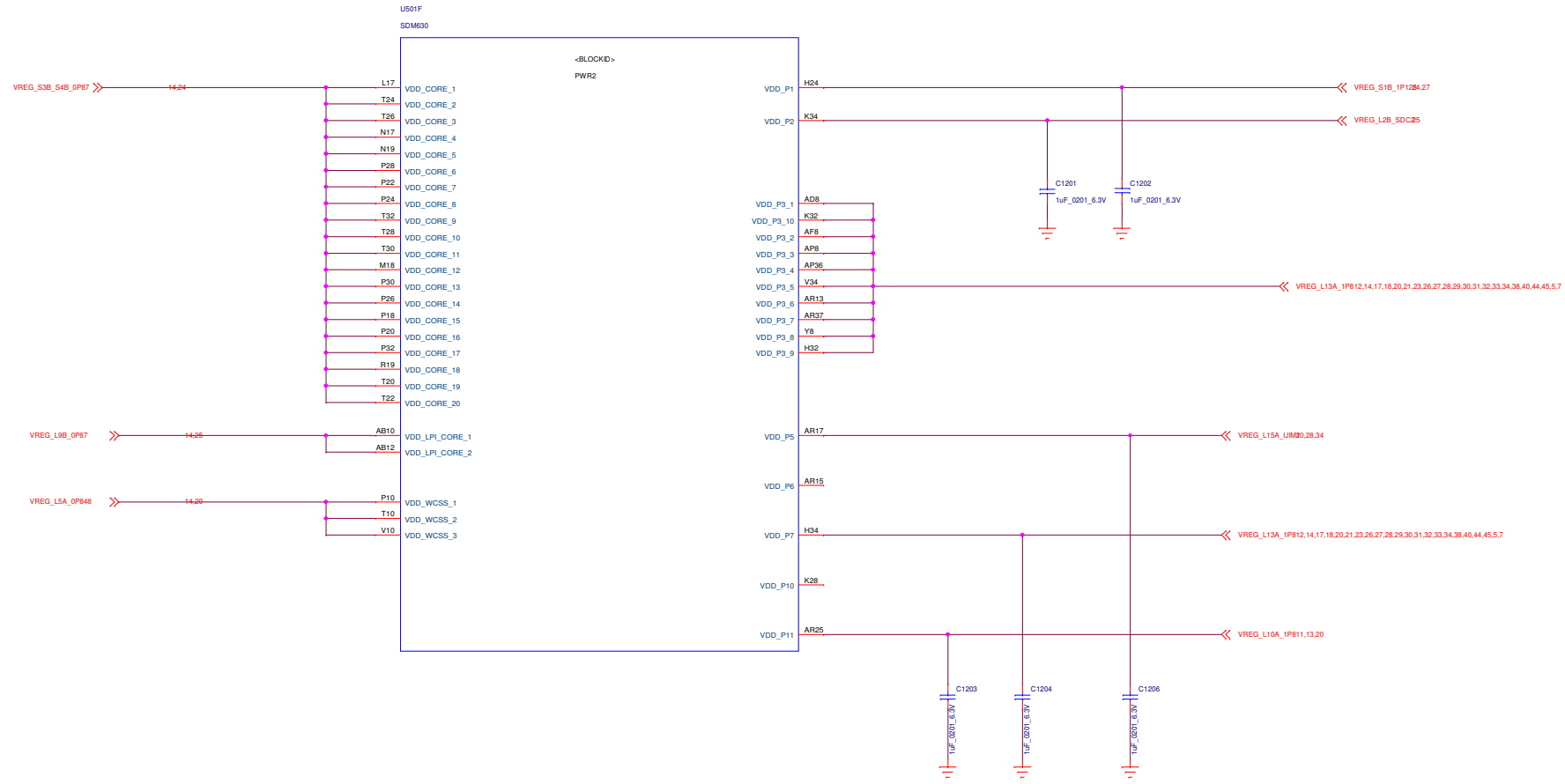






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| A3                                  |                             | 601PP2 | BF    |
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|                                     | Sheet                       | 11     | of 47 |

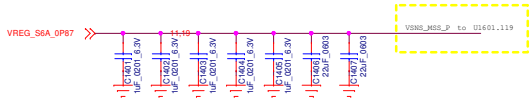


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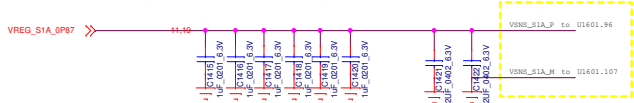
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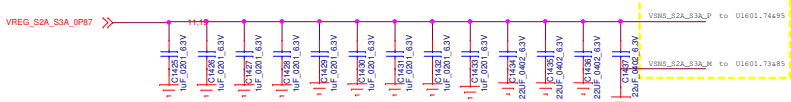
MODEM



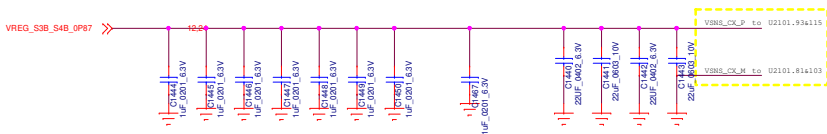
SILVER APC  
(PWR CLUSTER)



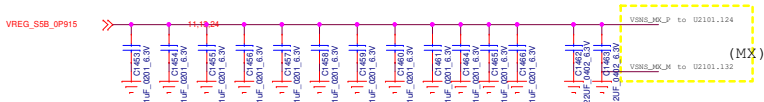
GOLD APC  
(PERF CLUSTER)



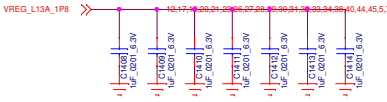
CX



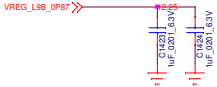
MX



SDM PX\_3



LPI (SSC) CX

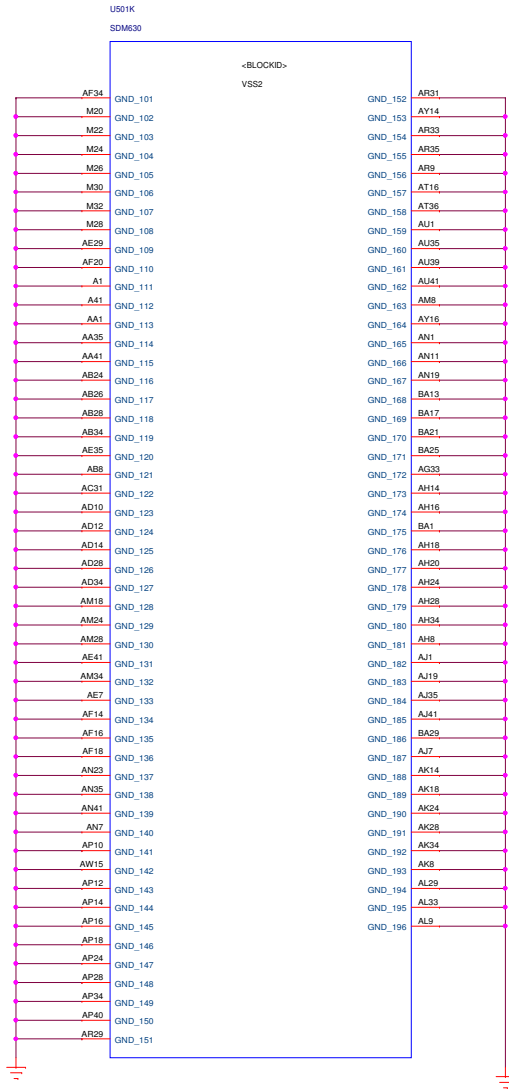
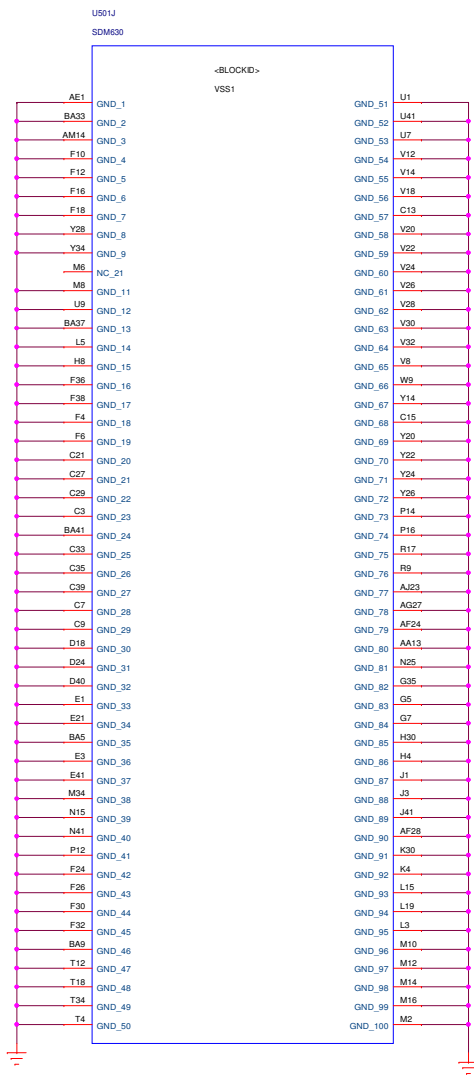


LPI (SSC) MX



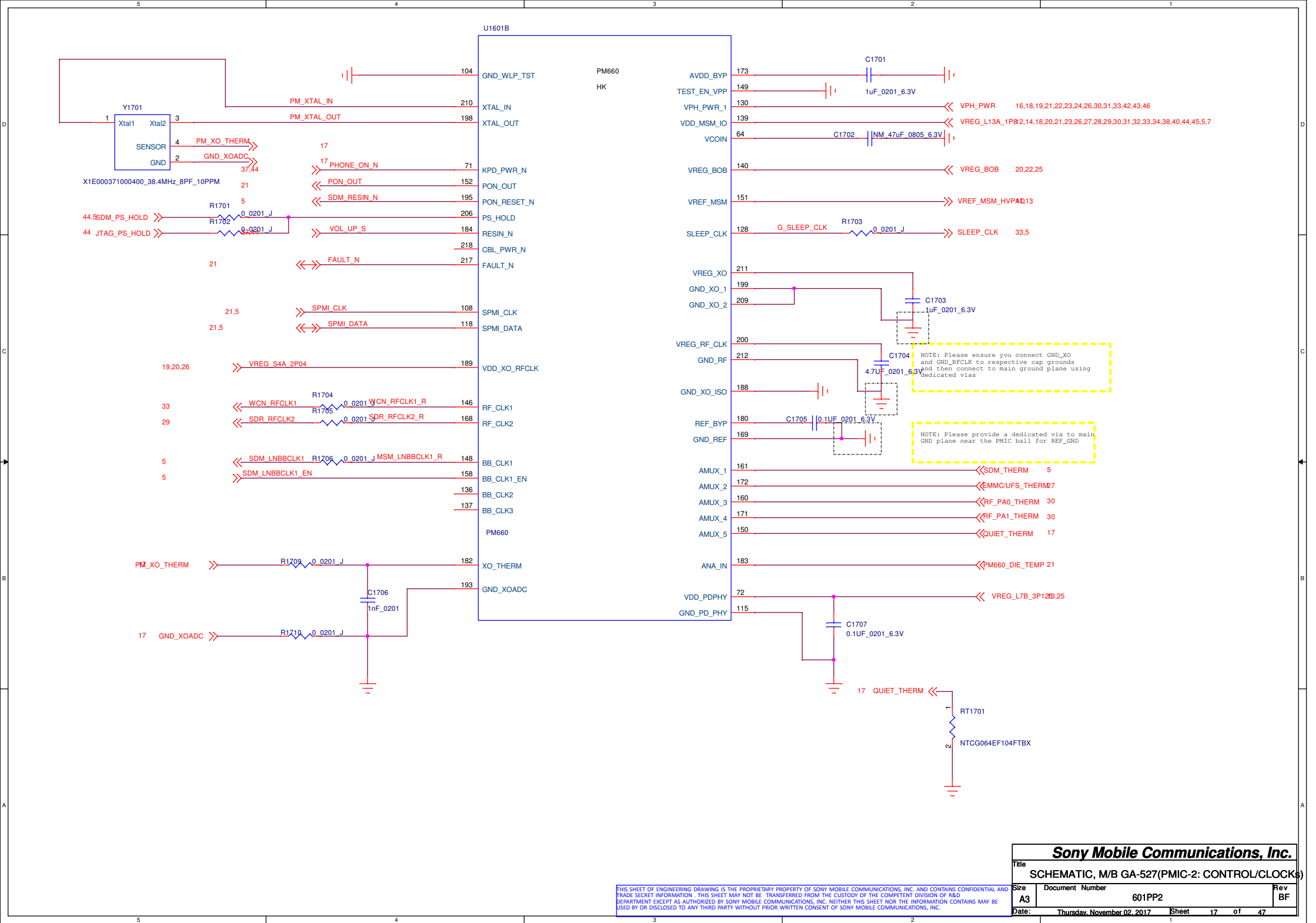
WCSS CX&MX

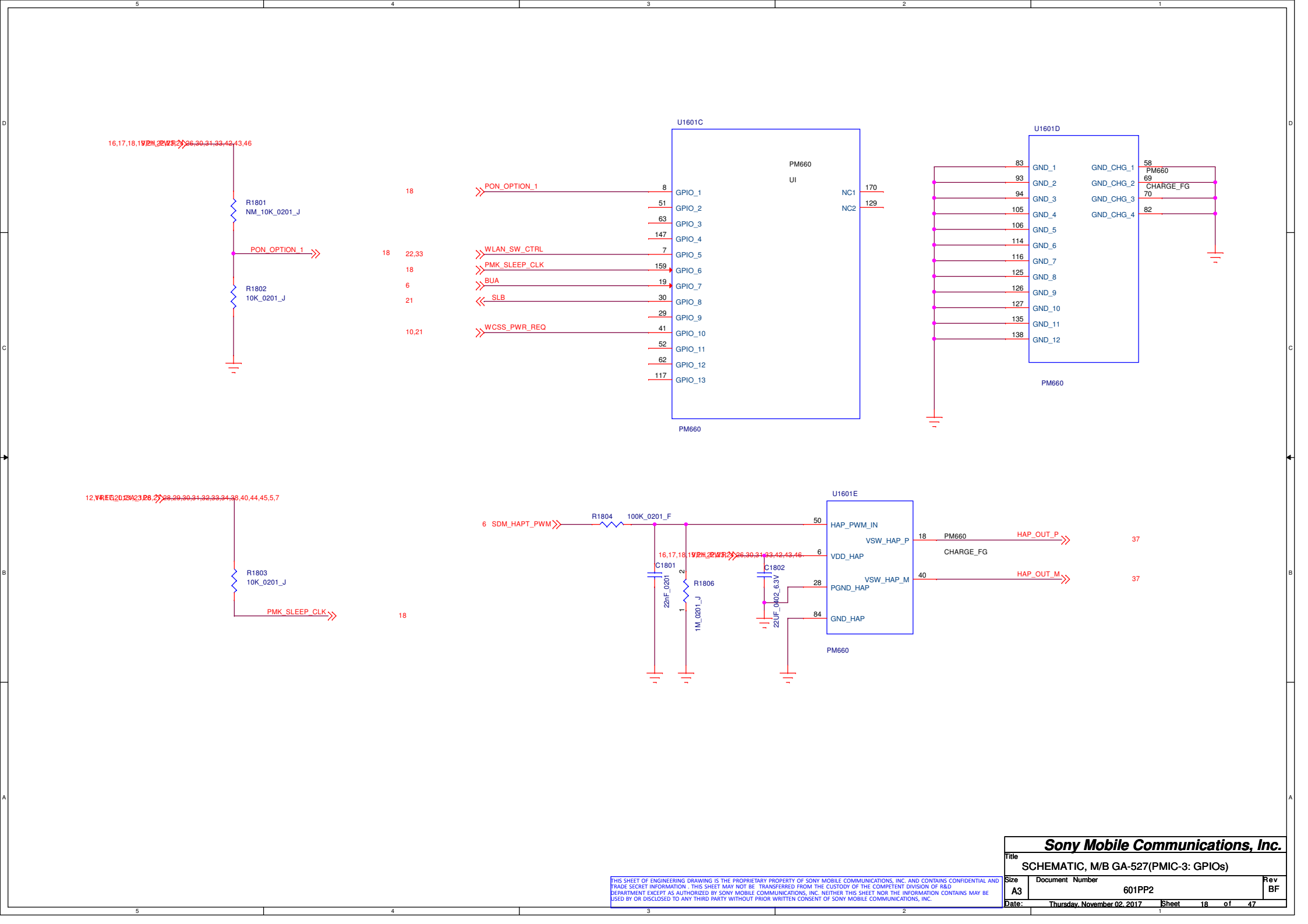






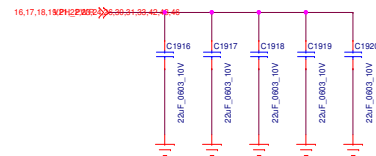
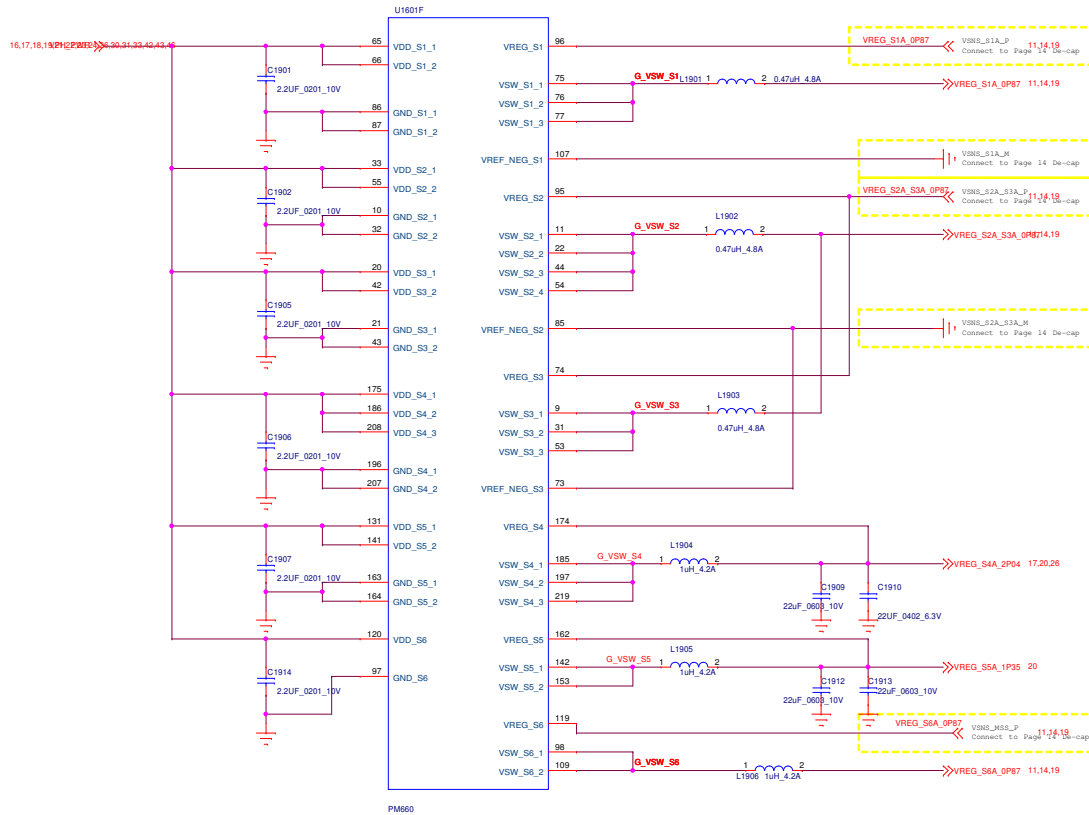






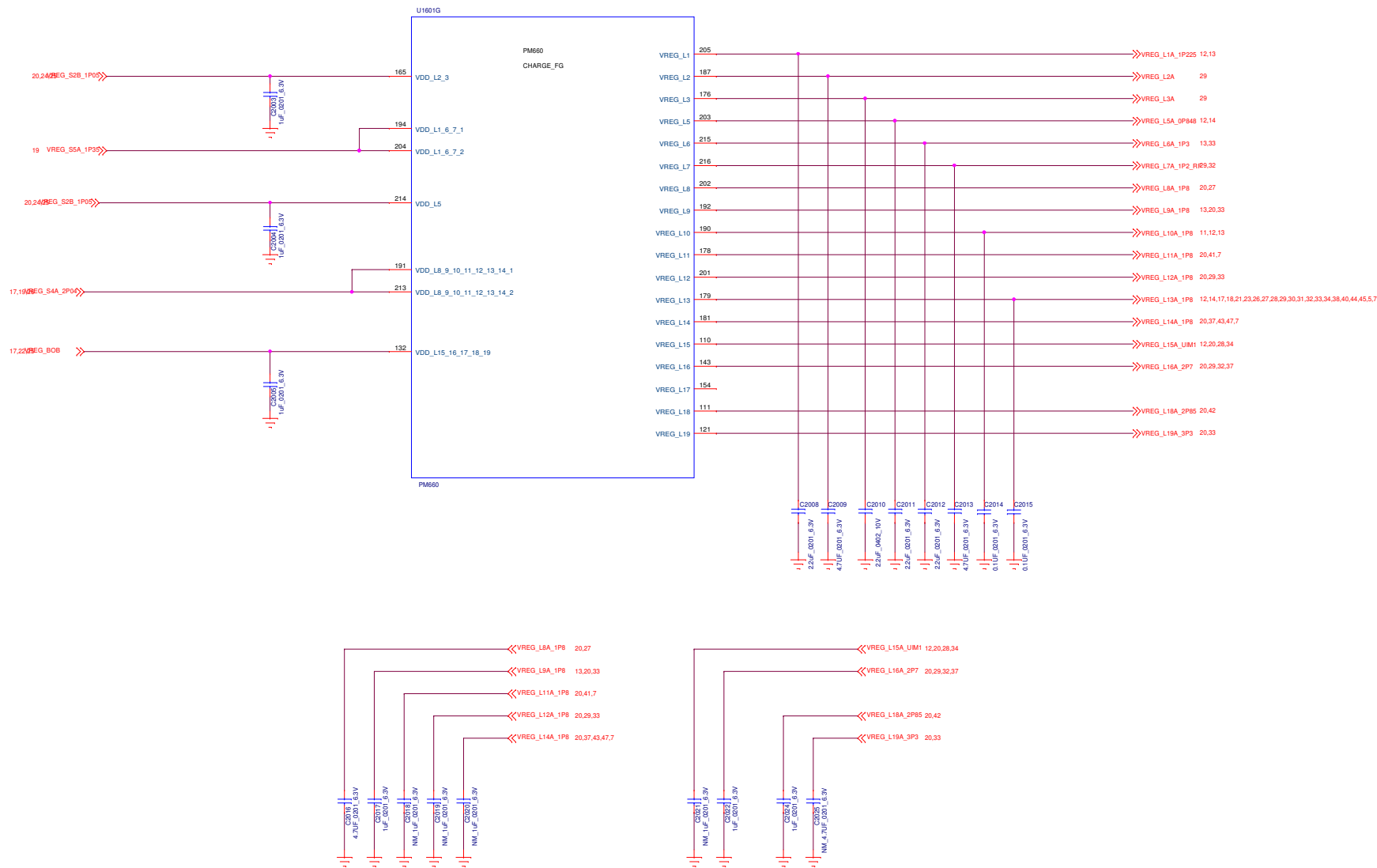
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| A3                                   | 601PP2                      | BF    |          |
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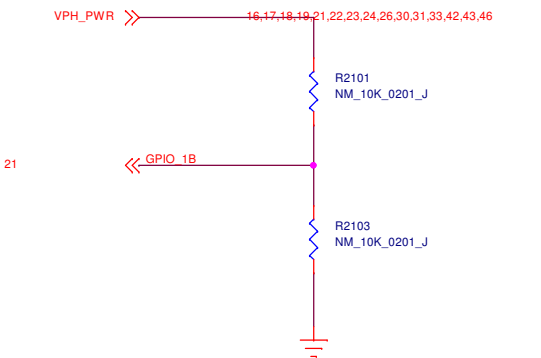
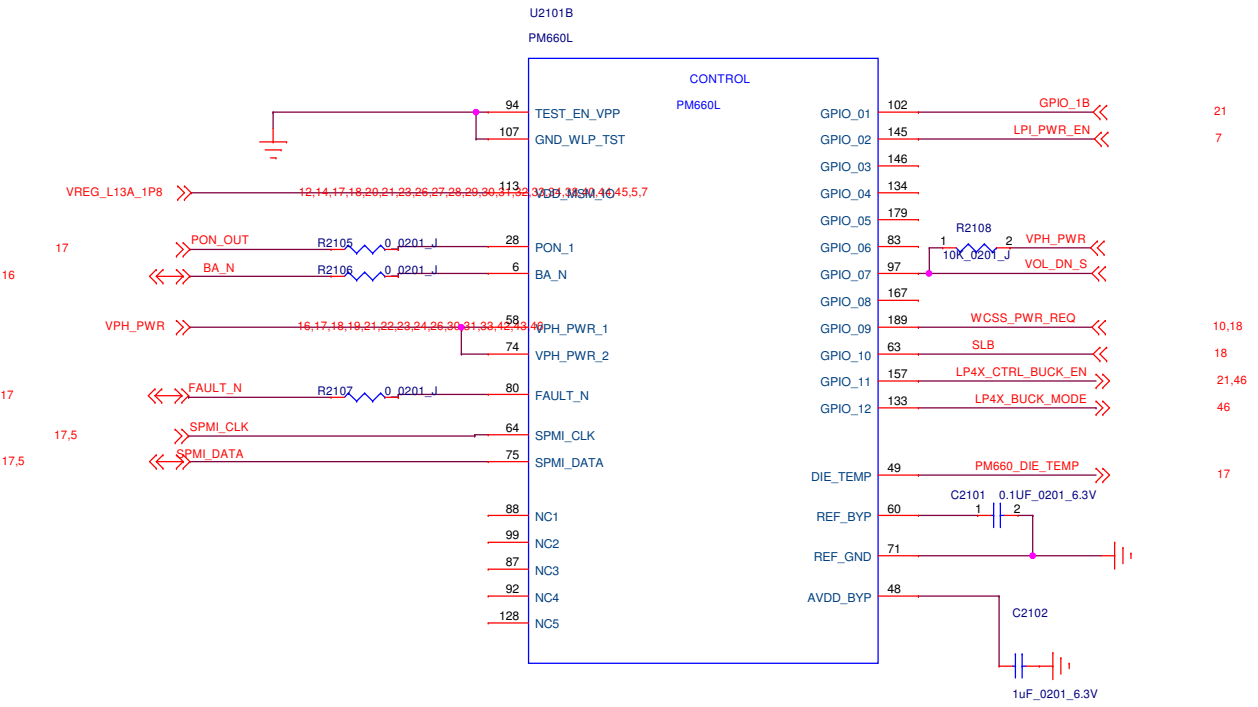
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| A2                                 | 601PP2                      |       |          |
| Date:                              | Thursday, November 02, 2017 | Sheet | 18 of 67 |



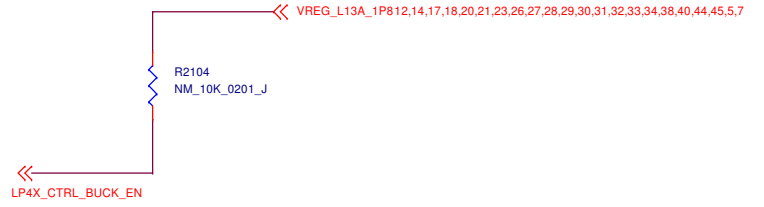
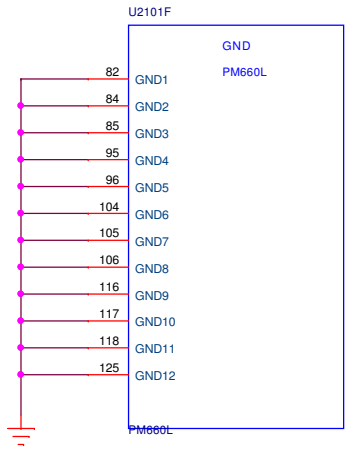
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| A2                                | 601PP2                      |       |          |
| Date:                             | Thursday, November 02, 2017 | Sheet | 20 of 47 |

PM660L OPTION PINS SELECTION



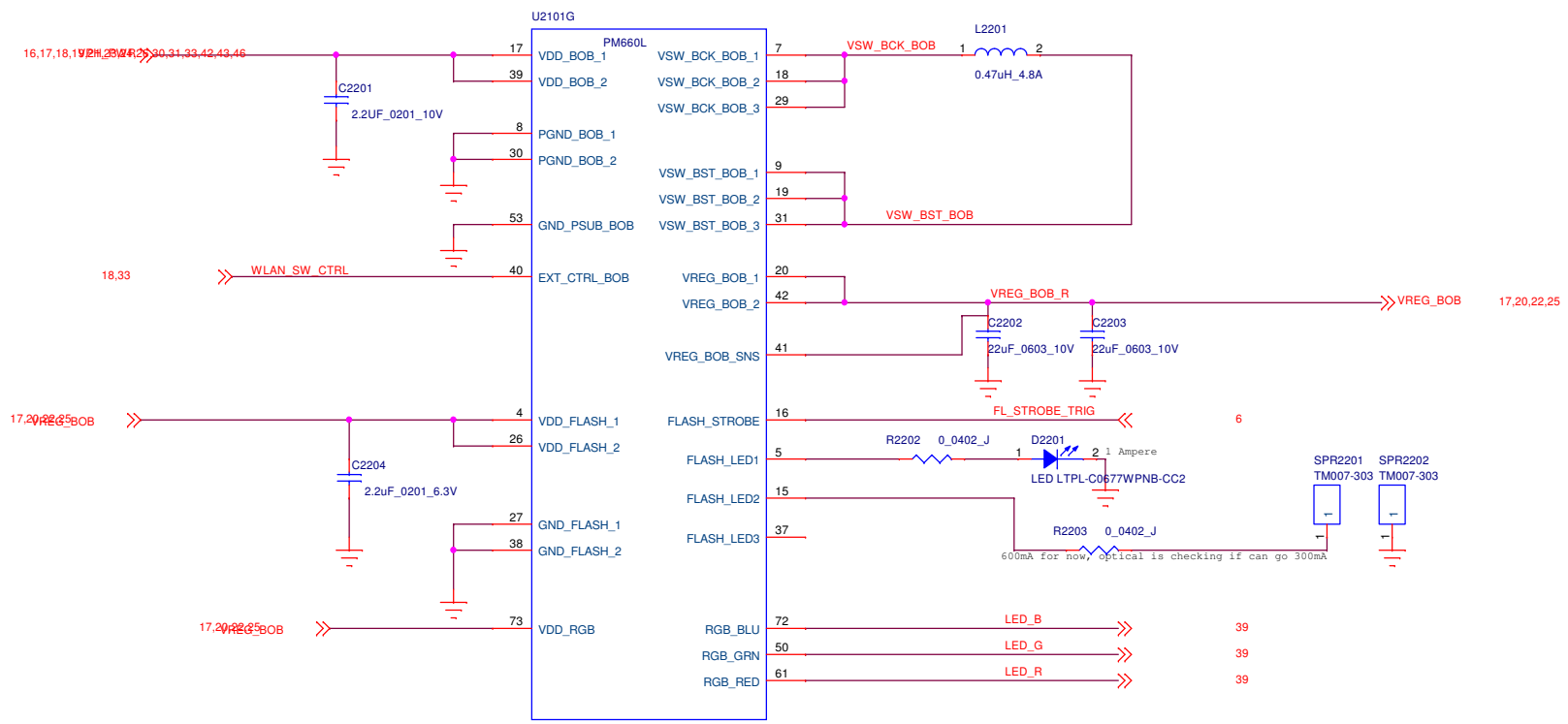
GPIO\_1B OPTION FOR FUTURE USE



INSTALL R2104 (Pull-up) FOR LPDDR4

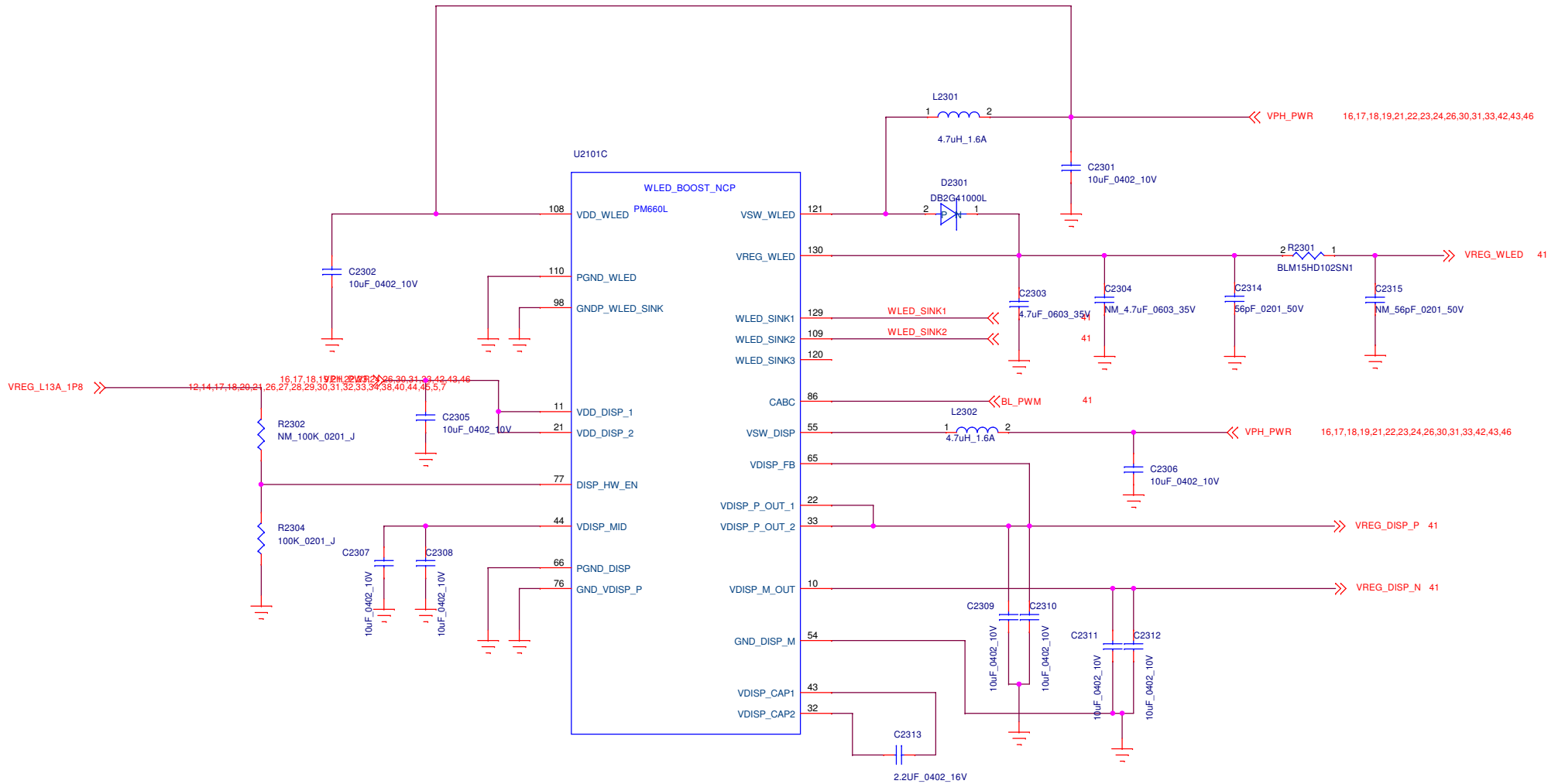
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| A3                                   | 601PP2                      | BF    |          |
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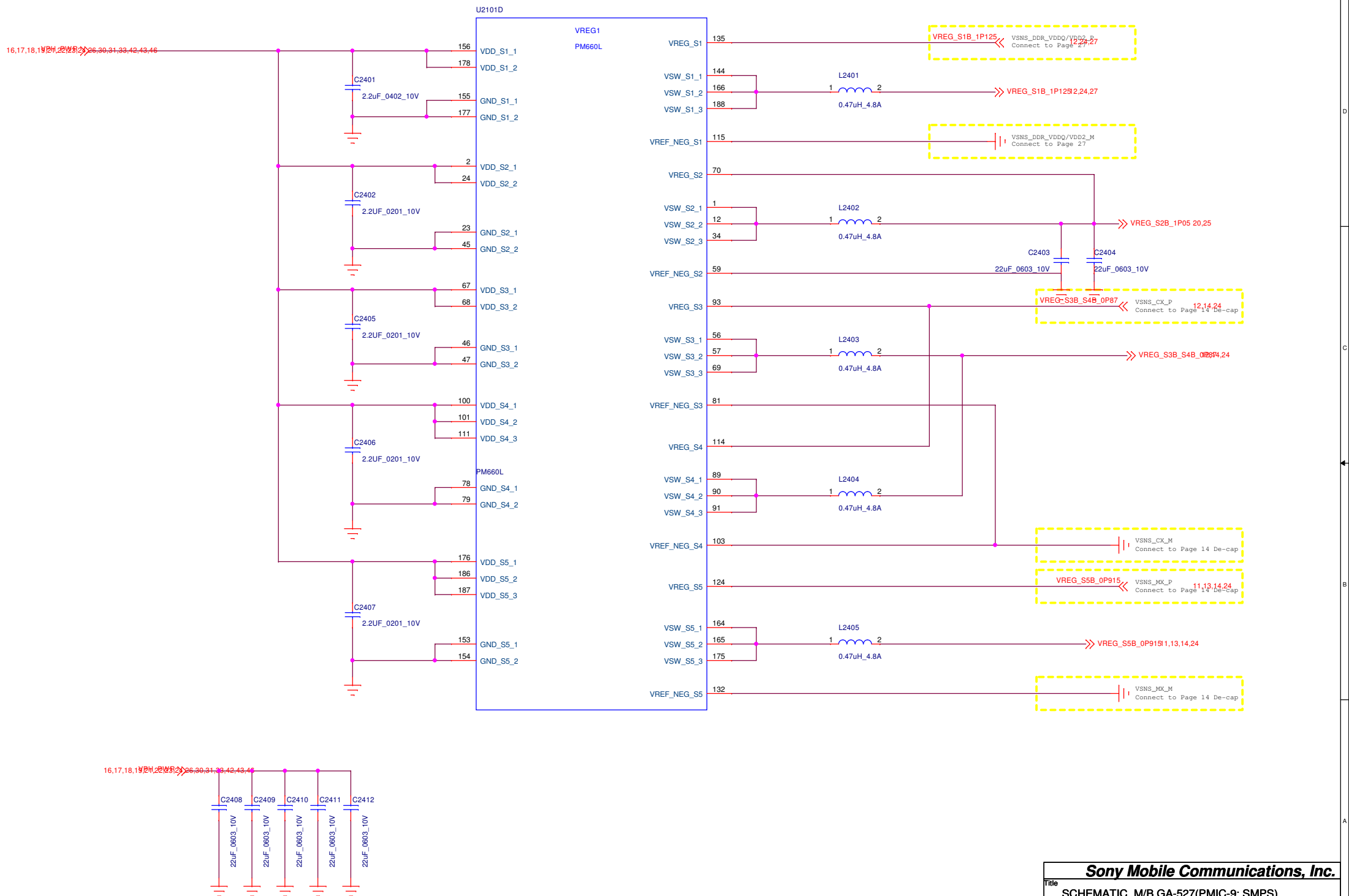
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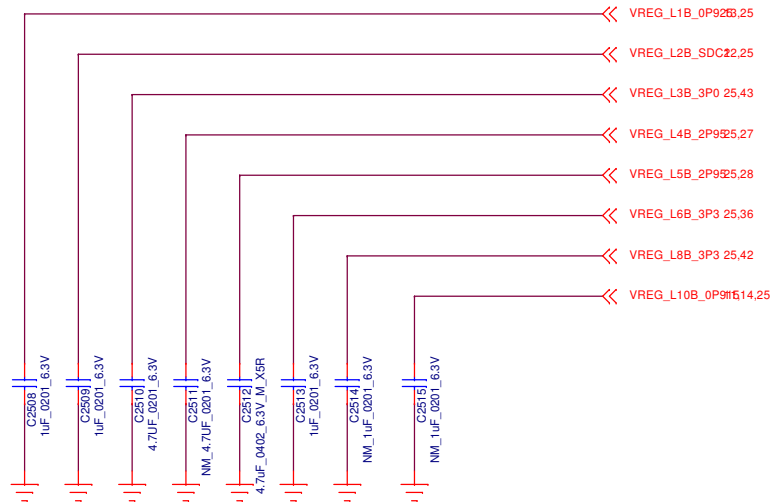
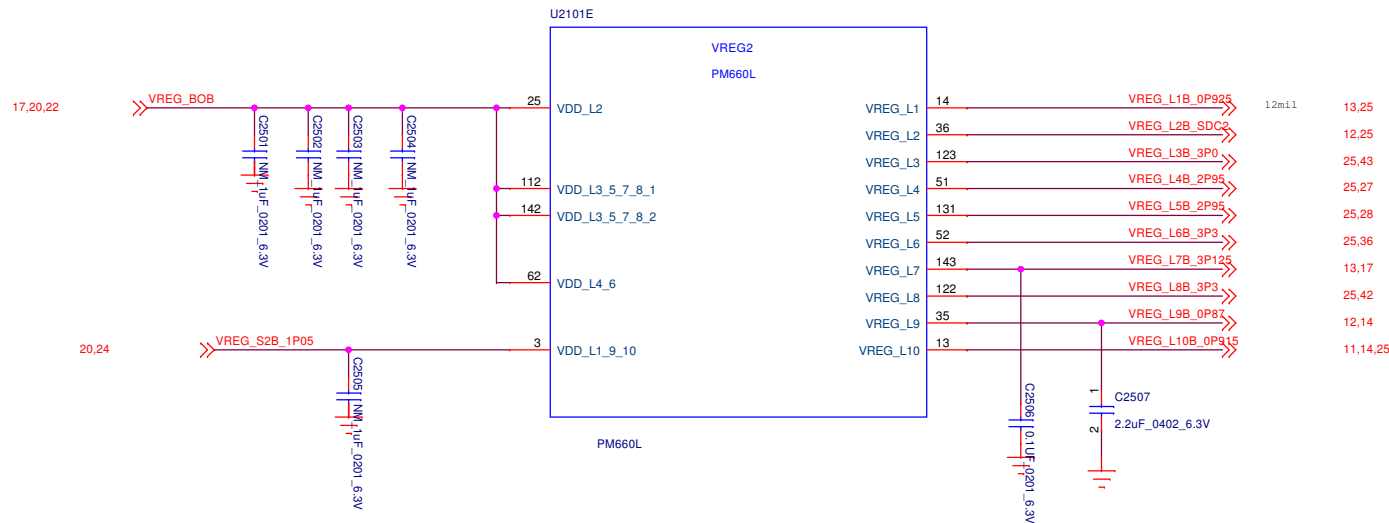
| Sony Mobile Communications, Inc.            |                             |       |    |       |
|---------------------------------------------|-----------------------------|-------|----|-------|
| Title                                       |                             |       |    |       |
| SCHEMATIC, M/B GA-527(PMIC-8: WLED_LAB/IBB) |                             |       |    |       |
| Size                                        | Document Number             | Rev   |    | BF    |
| A3                                          | 601PP2                      |       |    |       |
| Date:                                       | Thursday, November 02, 2017 | Sheet | 23 | of 47 |



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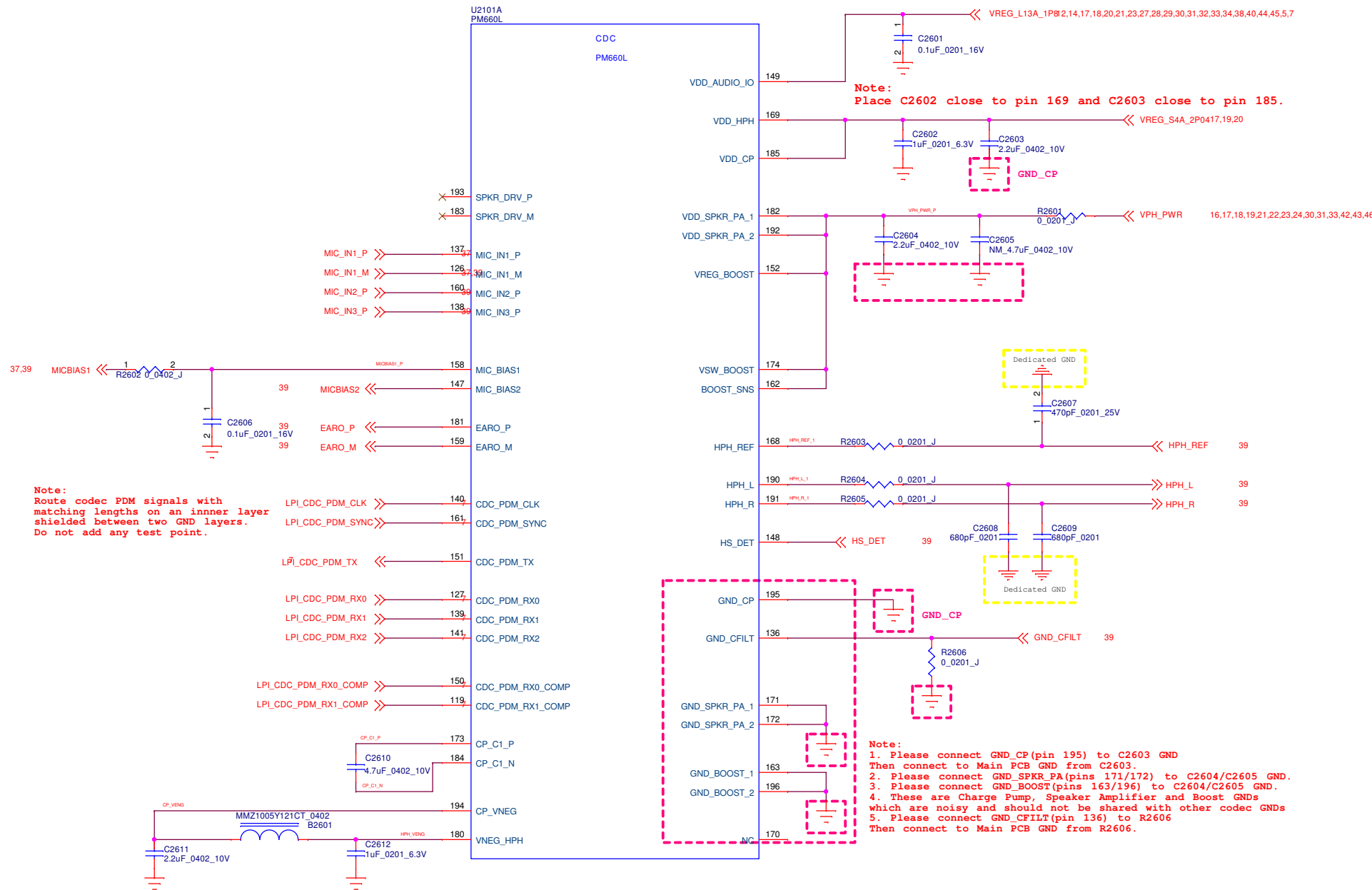
| Sony Mobile Communications, Inc.    |                             |       |          |
|-------------------------------------|-----------------------------|-------|----------|
| Title                               |                             |       |          |
| SCHEMATIC, M/B GA-527(PMIC-9: SMPS) |                             |       |          |
| Size                                | Document Number             | Rev   |          |
| A3                                  | 601PP2                      | BF    |          |
| Date:                               | Thursday, November 02, 2017 | Sheet | 24 of 47 |





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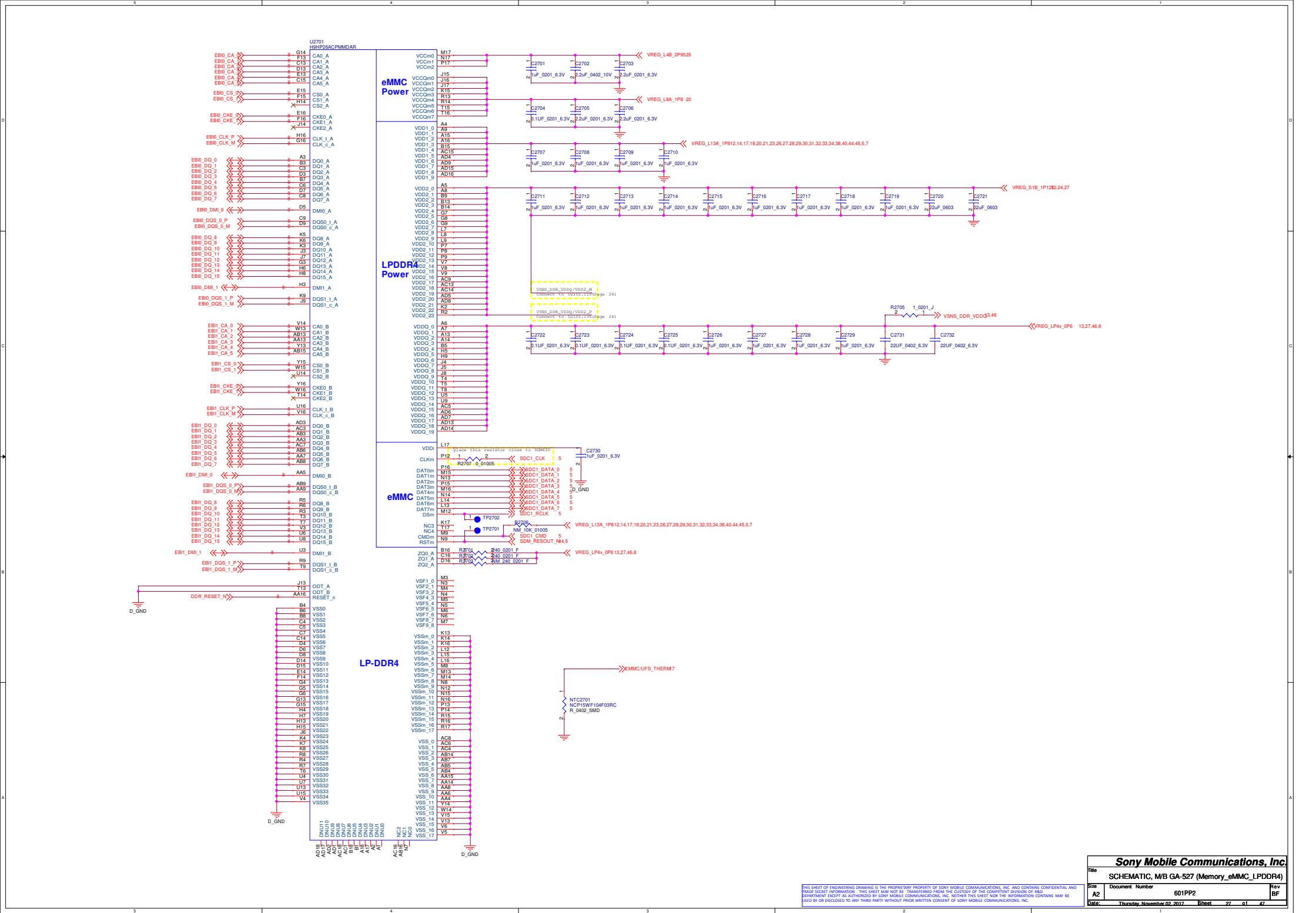
| Sony Mobile Communications, Inc.     |                             |       |          |
|--------------------------------------|-----------------------------|-------|----------|
| Title                                |                             |       |          |
| SCHEMATIC, M/B GA-527(PMIC-10: LDOs) |                             |       |          |
| Size                                 | Document Number             | Rev   |          |
| A3                                   | 601PP2                      | BF    |          |
| Date:                                | Thursday, November 02, 2017 | Sheet | 25 of 47 |

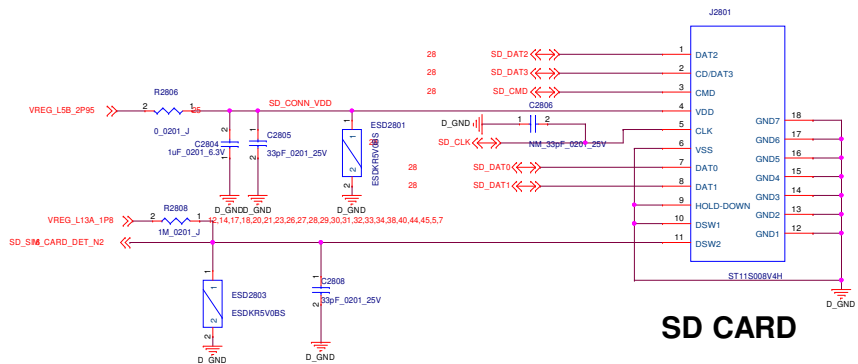
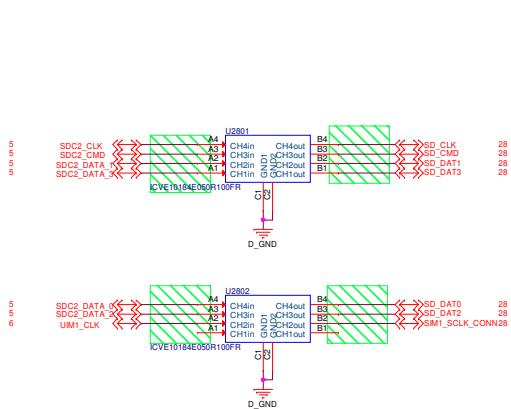
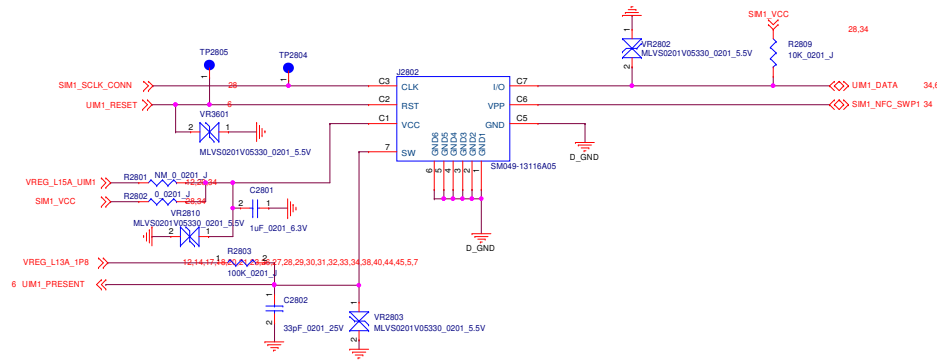


Note:  
Route codec PDM signals with  
matching lengths on an inner layer  
shielded between two GND layers.  
Do not add any test point.

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

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\_CFILT(pin 136) to R2606  
Then connect to Main PCB GND from R2606.



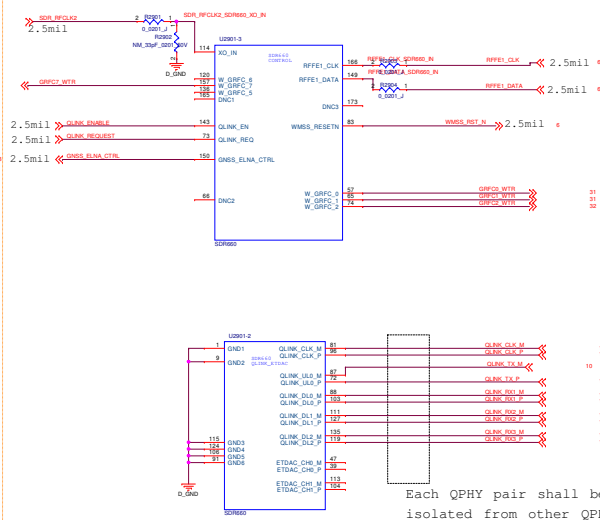


SD CARD

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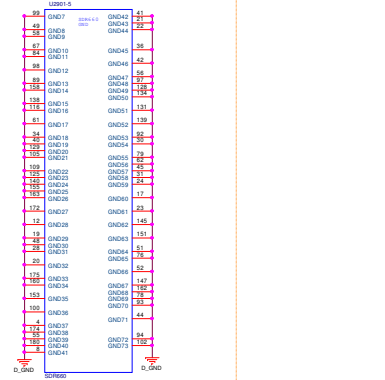
| Sony Mobile Communications, Inc. |                                     |        |          |
|----------------------------------|-------------------------------------|--------|----------|
| File                             | SCHEMATIC, M/B GA-527 (SIM/SD Card) |        |          |
| Size                             | Document                            | Number | Rev      |
| A2                               |                                     | 601PP2 | BF       |
| Date:                            | Thursday, November 02, 2017         | Sheet  | 29 of 47 |

## SDR660\_XO/DATA/QLINK

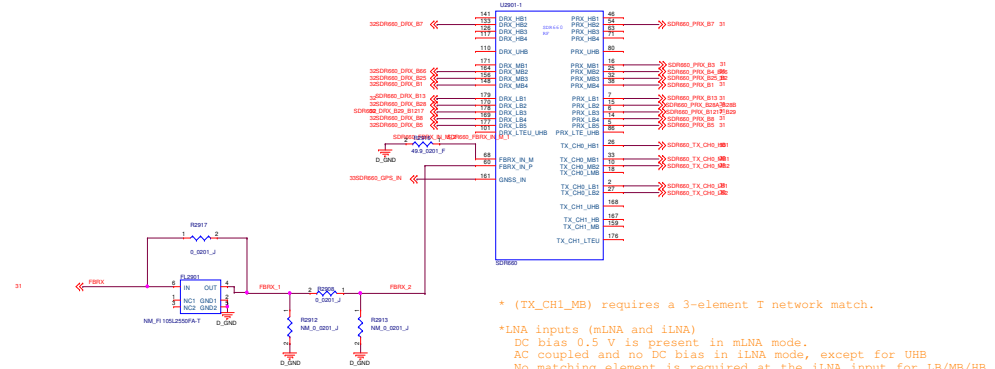


Each QPHY pair shall be routed in a channel together isolated from other QPHY pairs with surrounding gnd

## SDR660\_GNC



## SDR660\_RF



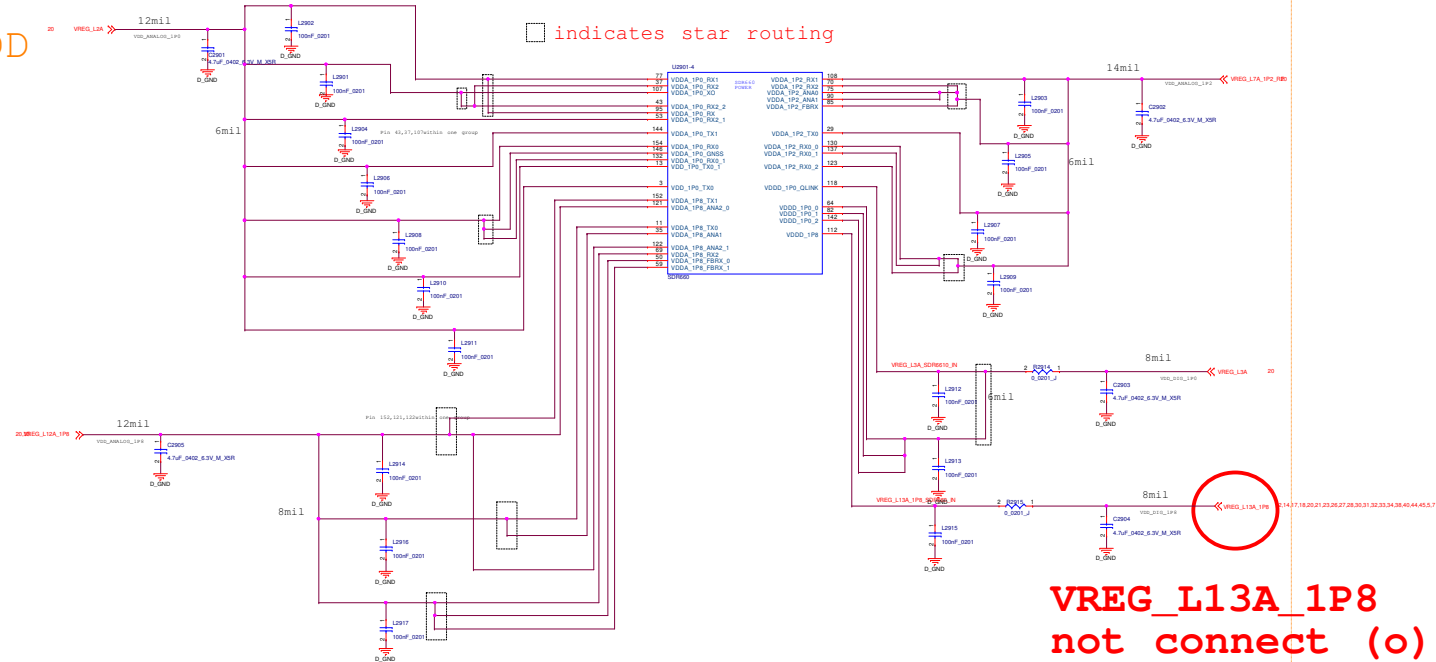
\* (TX\_CH1\_MB) requires a 3-element T network match.

```
*LNA inputs (mLNA and iLNA)
DC bias 0.5 V is present in mLNA mode.
AC coupled and no DC bias in iLNA mode, except for UHB
No matching element is required at the iLNA input for LB/MB/HB.
Matching is required at the iLNA input for UHB and LTE-U.
```

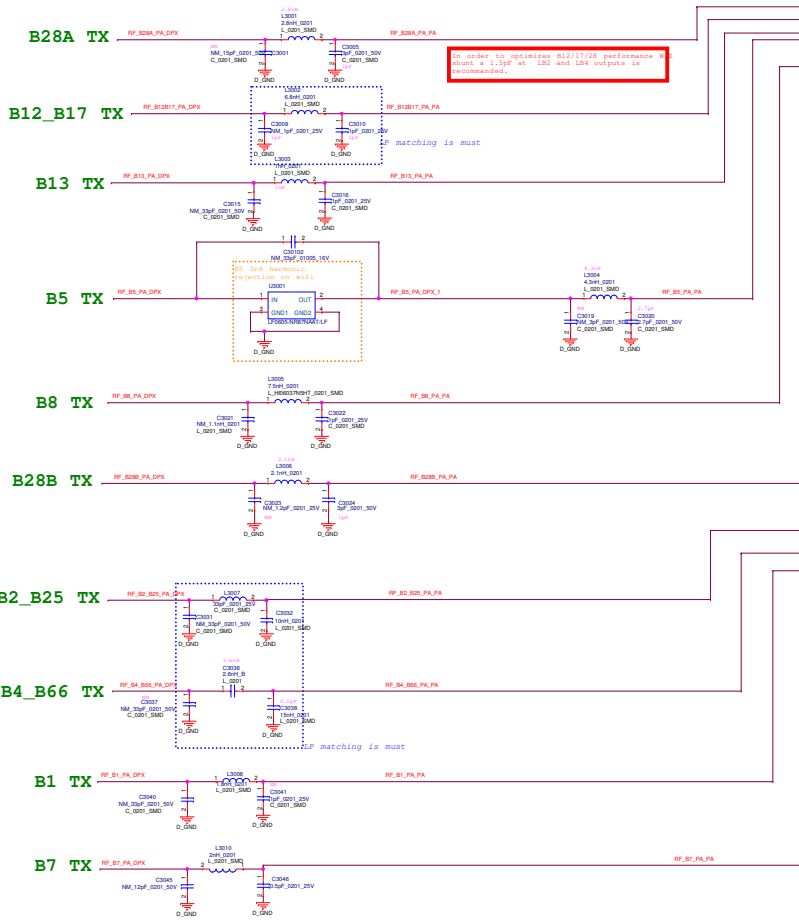
\*LNA groups listed below share common circuitry

- LB1 and LB2
- LB3, LB4, and LB5
- MB1 and MB2
- MB3 and MB4
- HB1 and HB2
- HB3 and HB4

## SDR660\_VDD



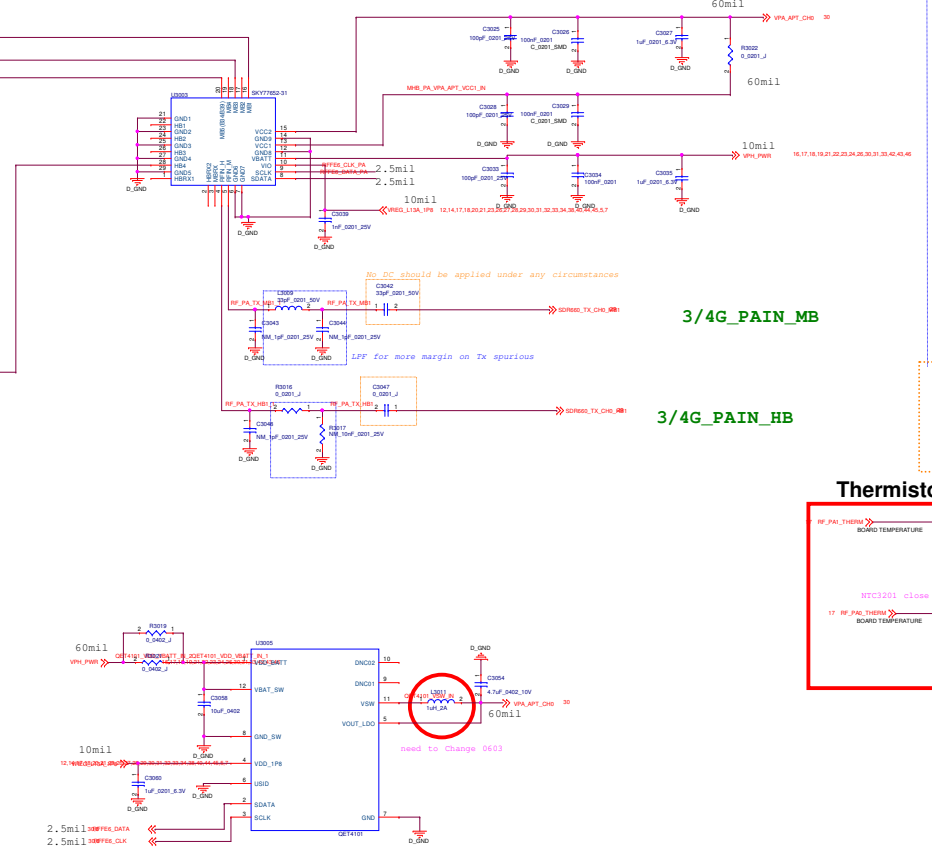
```
VREG_L13A_1P8 (BB pin name)
not connect (o)
```



In order to optimize B12/B17 performance in front of 1.5uF at 1.8G and 1.8G output is recommended.

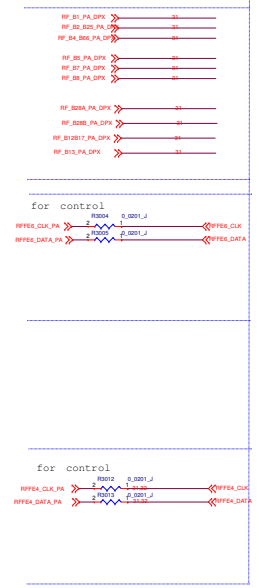
matching is must

change to SKY77652-31



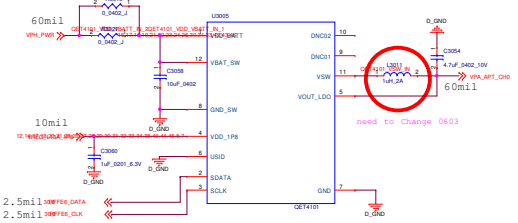
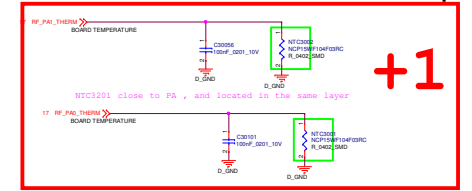
change to SKY77651-41

Off-Page Connector  
(To SDR660)

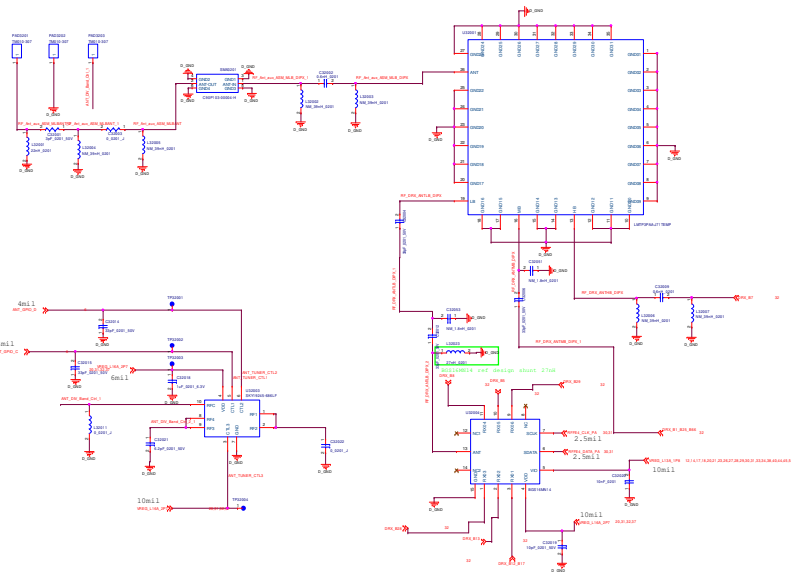


Note!  
PMIC total Cap requirement => 3.3 uF +-10%  
Please note  
VCC1 Cap+VCC2 cap+C906+C2260 total value

Thermistor / To sense board level temperature







Place close to SDR660

DC block is necessary  
(SDR660 output with DC voltage)

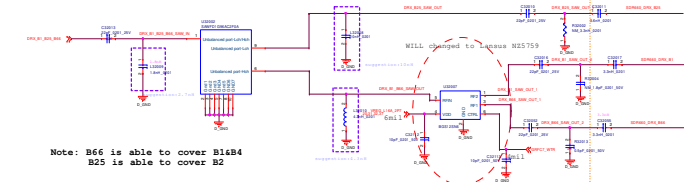
### B5\_DRX



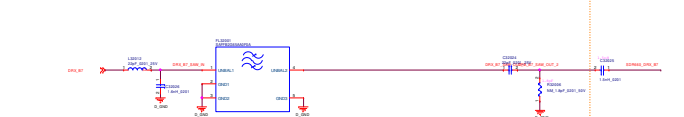
### B28\_DRX



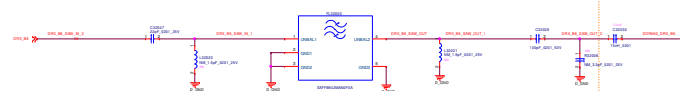
### B25\_B66\_DRX & non CA B1\_B4\_DRX



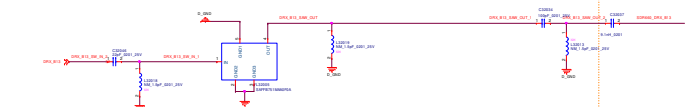
### B7\_DRX



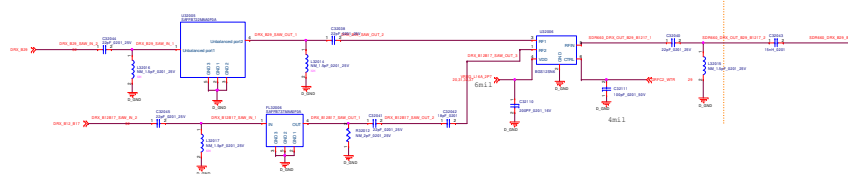
### B8\_DRX



### B13\_DRX



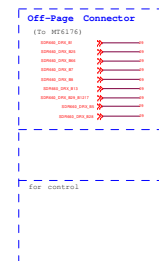
### B29\_ & B12B17\_DRX



Note: B12 and B17 are using the same SAW filter

Place close to SDR660

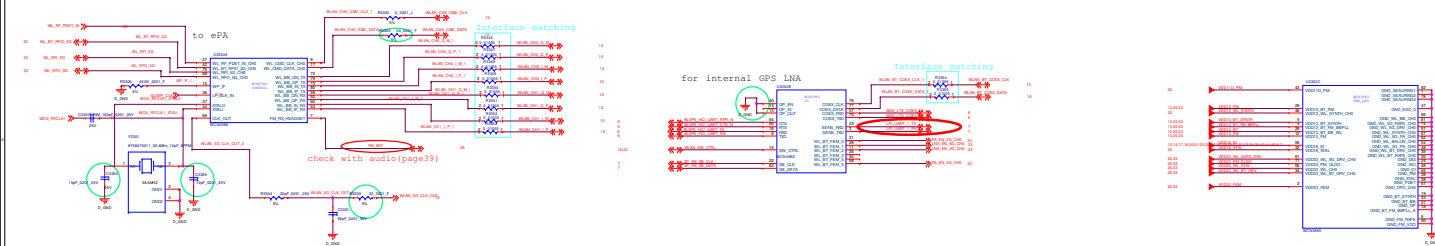
DC block is necessary  
(SDR660 output with DC voltage)



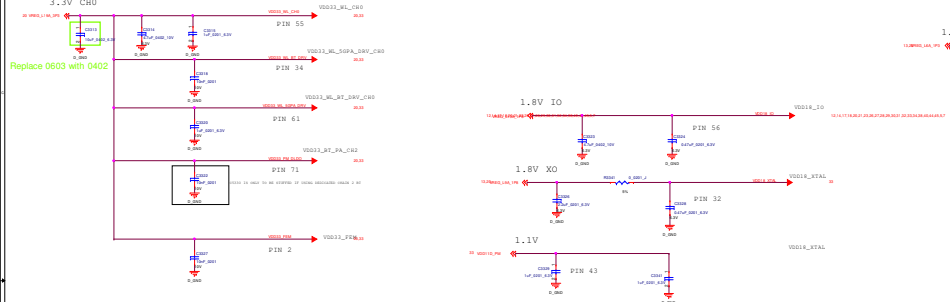
for control



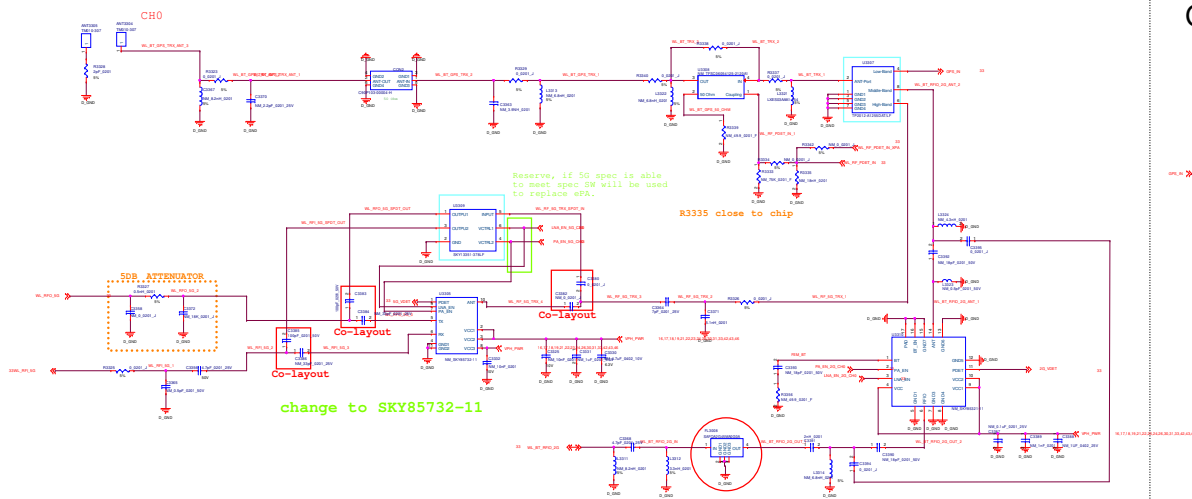
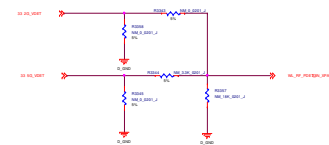
Place these two 240hm less than 1.5 inches from chip.



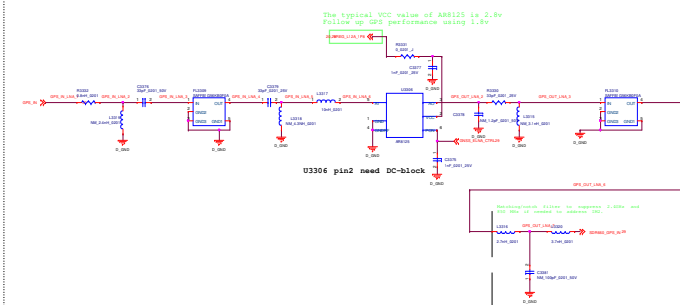
Layout: Star-Type Routing



Layout: Star-Type Routing



GPS RX



ENB (NFC\_VEN)  
1.Input pin  
2.Internal pull low  
3.Low active  
4.If default NFC  
would like to disable,  
please configure to high

XRCGB27M120F3M10R0\_27.12MHz\_10PF\_30PPM

BLSP6\_I2C\_SDA  
BLSP6\_I2C\_SCL  
NFC\_INT\_N  
NFC\_EN  
NFC\_DWL\_REQ  
NFC\_WAKEUP

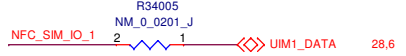
IRQ (NFC\_IRQ)  
1. IRQ is output pin and high active  
2. IRQ is also a NFC strap pin  
3. Host EINT connected with IRQ must be  
default low

EINT (NFC\_EINT)  
1. Input pin  
2. Internal pull low  
3. High active

PN553E2EV/C210

U3401

NFC  
ADDRESS: (write 0X50,read 0X51)

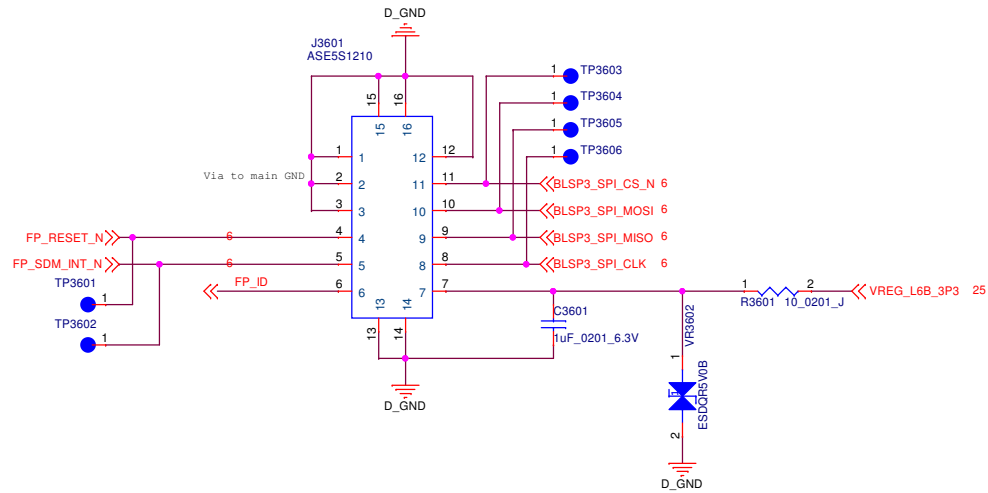


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|----------------------------------------------------|-----------------------------|-------|----------|
| Title                                              |                             |       |          |
| SCHEMATIC, M/B GA-524(BT/ WiFi / FM-2_NXP553(NFC)) |                             |       |          |
| Size                                               | Document Number             |       | Rev      |
| A3                                                 | 601PP1                      |       | BF       |
| Date:                                              | Thursday, November 02, 2017 | Sheet | 34 of 47 |

The schematic shows the internal circuitry of the USB\_VBUS\_IN component. It features a central U3501 chip (KTS1687EAY-TR) with pins B3, C2, C3, C1, A4, B4, C4, B1, VDET, A1, and CTRL connected to various components. The input signal USB\_VBUS\_IN (labeled 37,44) passes through a 1M\_0201\_F resistor (R3502) and a 100 mil trace to pin B3. Pin C2 is connected to OVLO. Pin C3 is connected to a 100N\_0402\_50V capacitor (C3503). Pin C1 is connected to a 1U\_0402\_25V capacitor (C3501). Pin A4 is connected to GND1. Pin B4 is connected to GND2. Pin C4 is connected to GND4. Pin B1 is connected to VDET. Pin A1 is connected to CTRL. Pin CTRL is connected to a 1U\_0402\_25V capacitor (C3502) and a 100N\_0402\_50V capacitor (C3503). The output signal USB\_VBUS\_OUT (labeled 16) is taken from the output of the U3501 chip.

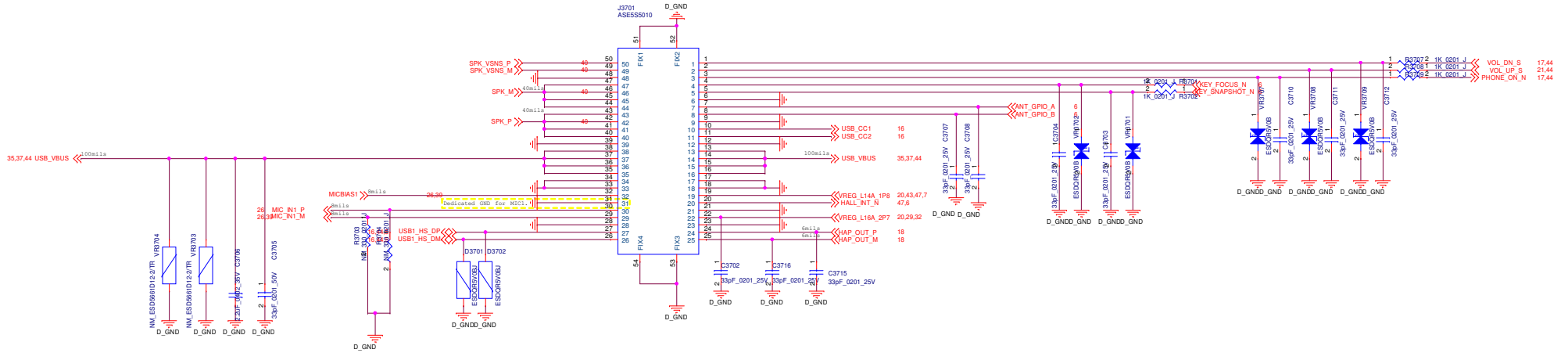
|                                                |                             |                        |        |
|------------------------------------------------|-----------------------------|------------------------|--------|
| <b><i>Sony Mobile Communications, Inc.</i></b> |                             |                        |        |
| Title SCHEMATIC, M/B GA-527(OVP)               |                             |                        |        |
| NO                                             | Size A3                     | Document Number 601PP2 | Rev BF |
| Date:                                          | Thursday, November 02, 2017 | Sheet 35               | of 47  |



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|-------------------------------------------------|-----------------------------|--|----------------|
| Title                                           |                             |  |                |
| SCHEMATIC, M/B GA-527(Connector-1: Fingerprint) |                             |  |                |
| Size                                            | Document Number             |  | Rev            |
| A3                                              | 601PP2                      |  | BF             |
| Date:                                           | Thursday, November 02, 2017 |  | Sheet 36 of 47 |

## Main to Sub CONN



**BATTERY CONNECTOR**

BM22L-4P-V(77)

J3801

1 2 3 4 5 6

ESDQF5V0BU

D3801

ESDQF5V0BU

D3802

C3801

56pF\_0201\_25V

R3803

NM\_680K\_0201\_F

C3802

33pF\_0201\_25V

D3803

D\_GND

BAT\_TEMP\_CONN 16,44

BAT\_ID\_CONN 44

VBAT1\_CONN\_VSNS\_P  
Connect to U1601.102 (Page 16)

VBAT1\_CONN\_VSNS\_M  
Connect to U1601.81 (Page 16)

VBAT1\_CONN\_ISNS\_P  
Connect to U1601.122 (Page 16)

VBAT1\_CONN\_ISNS\_M  
Connect to U1601.133 (Page 16)

VBAT

BATT\_THERM 16,44

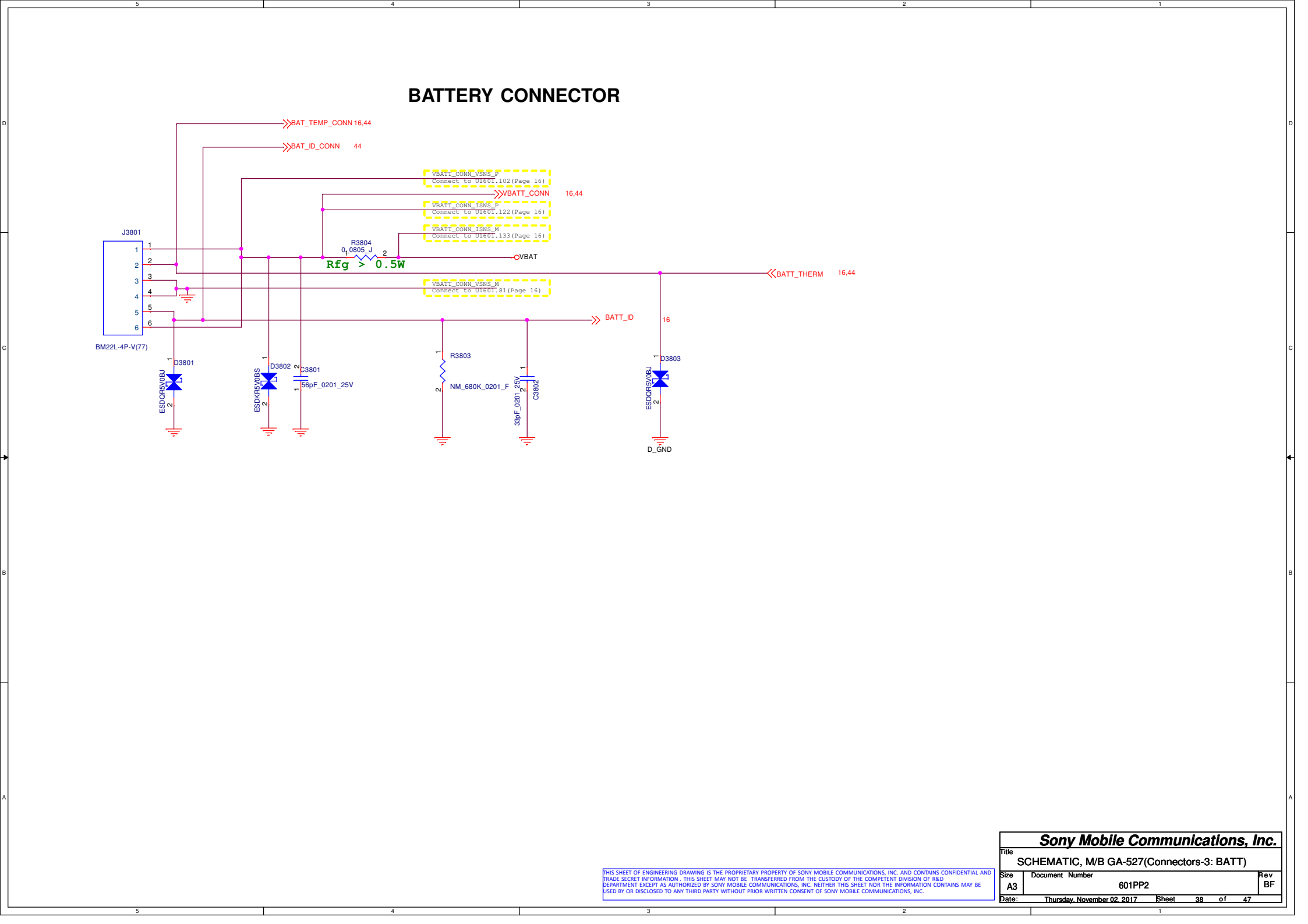
BATT\_ID 16

Rfg > 0.5W

R3804  
040805\_J

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

[illegible]

**BATTERY CONNECTOR**

The schematic diagram illustrates the internal wiring of a battery connector. A 6-pin connector (J3801, BM22L-4P-V(77)) is shown on the left. The pins are connected as follows:

- Pin 1: Connected to VBAT.
- Pin 2: Connected to BATT\_ID.
- Pin 3: Connected to BATT\_THERM.
- Pin 4: Connected to BATT\_TEMP\_CONN.
- Pin 5: Connected to BATT\_ID.
- Pin 6: Connected to BATT\_ID.

Key components and connections include:

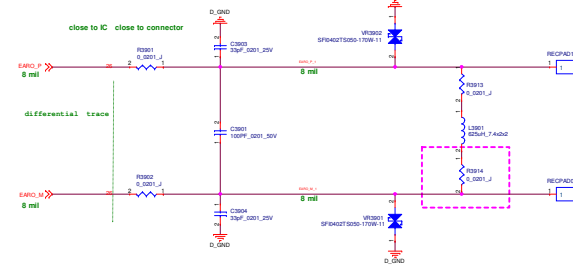
- Diodes:** D3801, D3802, and D3803 are ESD protection diodes connected to ground.
- Capacitors:** C3801 (56pF) and C3802 (33pF) are connected to ground.
- Resistors:** R3803 (NM\_680K\_0201\_F) and R3804 (0\_0805\_J) are connected to ground.
- VBAT:** The main battery connection, labeled VBAT.
- BATT\_ID:** Battery identification signal.
- BATT\_THERM:** Battery temperature sensor.
- BATT\_TEMP\_CONN:** Battery temperature connection.
- BATT\_ID\_CONN:** Battery identification connection.
- BATT\_CONN:** Battery connection.
- VBATT\_CONN\_VSNS\_P:** VBATT connection to U1601.102 (Page 16).
- VBATT\_CONN\_VSNS\_M:** VBATT connection to U1601.81 (Page 16).
- VBATT\_CONN\_VSNS\_P:** VBATT connection to U1601.122 (Page 16).
- VBATT\_CONN\_VSNS\_M:** VBATT connection to U1601.133 (Page 16).

Additional labels and notes:

- Rfg > 0.5W:** A note indicating the power rating of the resistor R3804.
- D\_GND:** Ground connection for the diodes.
- ESDQF5V0BU:** ESD protection diode part number.
- ESDKR5V0BS:** ESD protection diode part number.
- ESDKR5V0BS:** ESD protection diode part number.
- ESDKR5V0BS:** ESD protection diode part number.

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



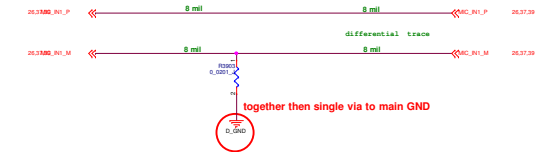
Receiver

(in the sub-board)

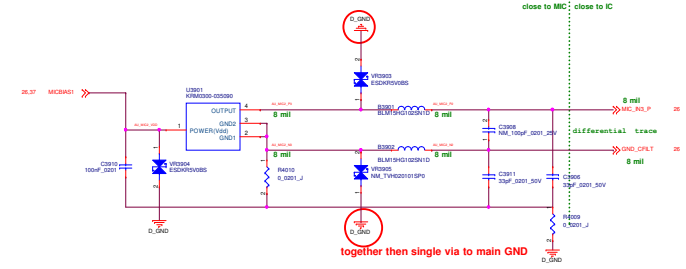
1st MIC

2nd MIC

Speaker components (in the bottom)

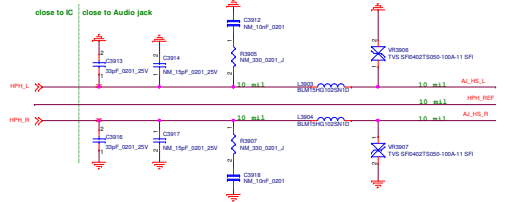


together then single via to main GND



together then single via to main GND

Earphone Audio



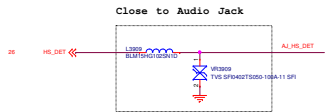
Notes: Place all components shown on this block close to headset jack connector.  
Notes: Bead L3001 and L3004 are needed to reduce noise generated by audio/FM concurrency.  
These components can be removed if FM radio is not supported.

HS\_OUT L/R

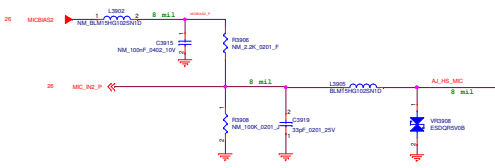
HS\_MIC

HS\_DET

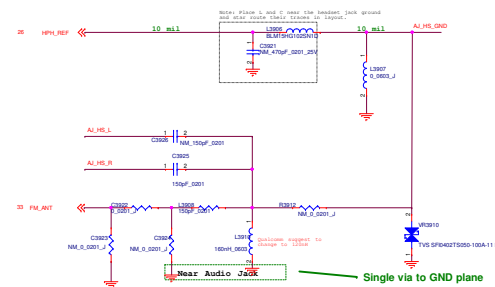
HS\_GND/FM



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



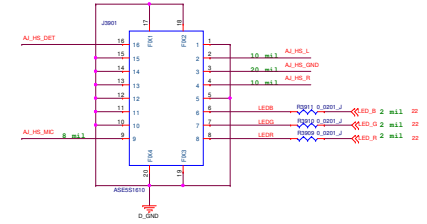
Notes: Place all components shown on this block close to headset jack connector.  
Notes: Bead L3001 is needed to reduce noise generated by audio/FM concurrency.  
These components can be removed if FM radio is not supported.

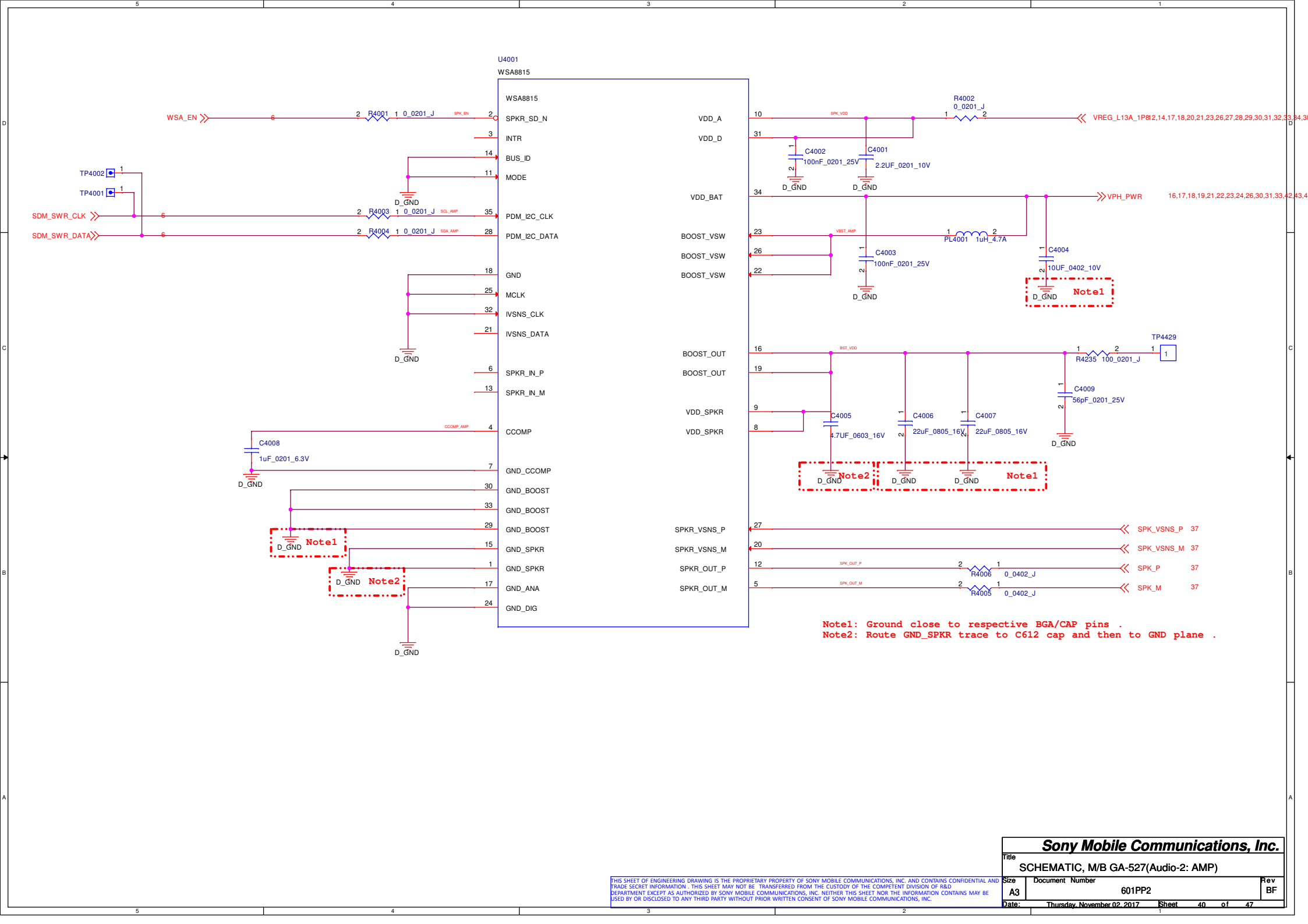


Notes: Place all components shown on this block close to headset jack connector.  
Notes: Bead L3001 is needed to reduce noise generated by audio/FM concurrency.  
These components can be removed if FM radio is not supported.

AJ CONN

Audio Jack use FPC type\_2016/11/28





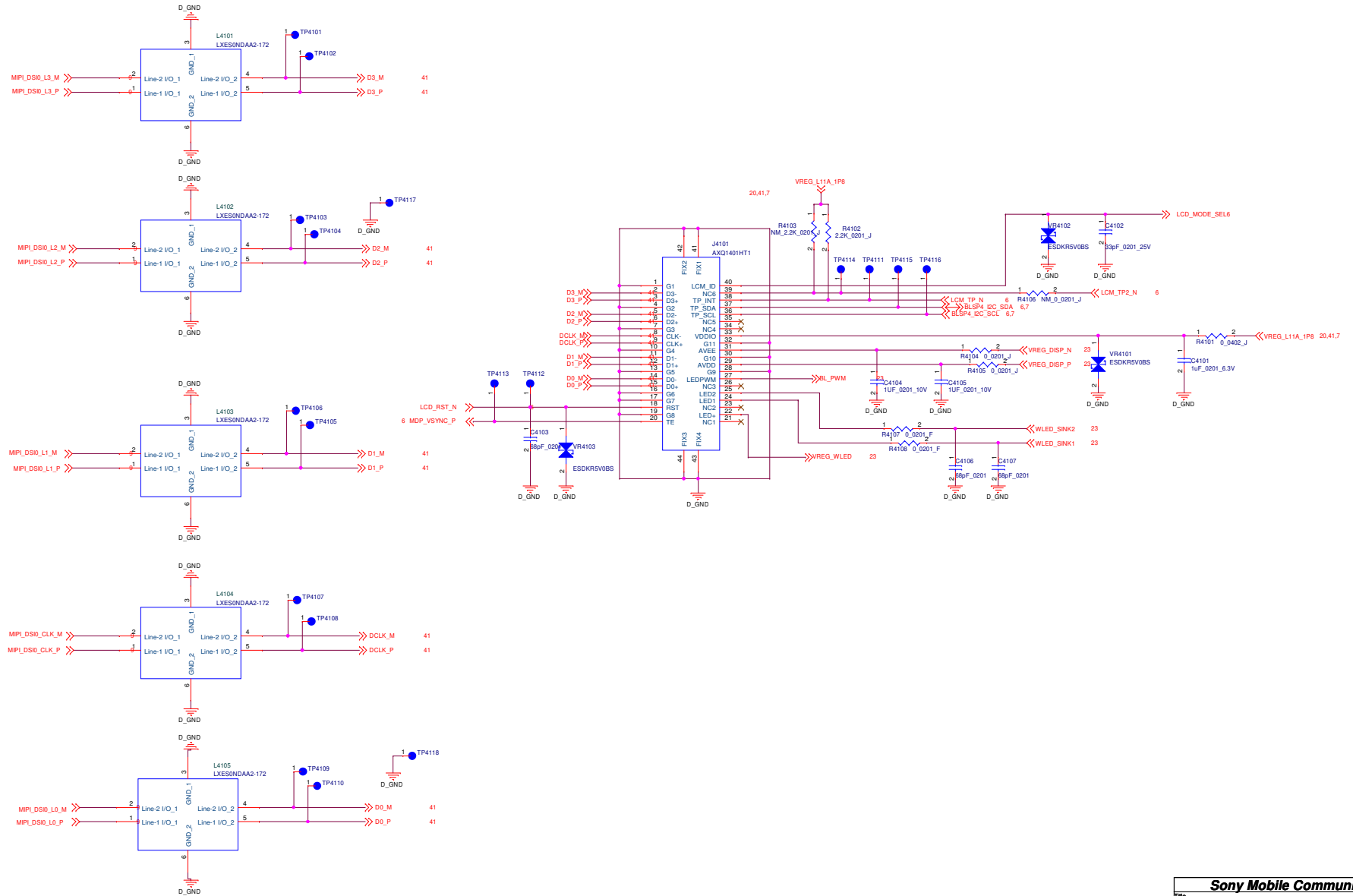
Note1: Ground close to respective BGA/CAP pins .  
Note2: Route GND\_SPKR trace to C612 cap and then to GND plane .

| Sony Mobile Communications, Inc.    |                             |       |          |
|-------------------------------------|-----------------------------|-------|----------|
| Title                               |                             |       |          |
| SCHEMATIC, M/B GA-527(Audio-2: AMP) |                             |       |          |
| Size                                | Document Number             |       | Rev      |
| A3                                  | 601PP2                      |       | BF       |
| Date:                               | Thursday, November 02, 2017 | Sheet | 40 of 47 |

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# Main LCM

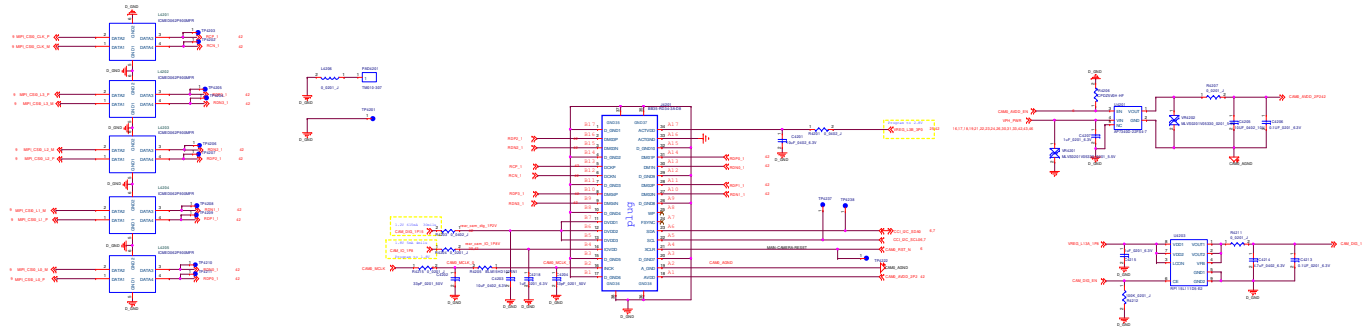


Waiting for pin define. 12/2

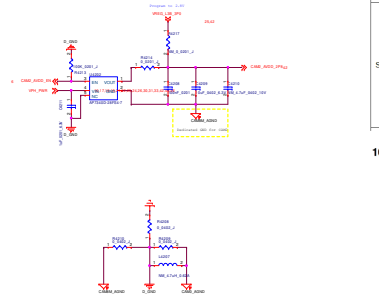
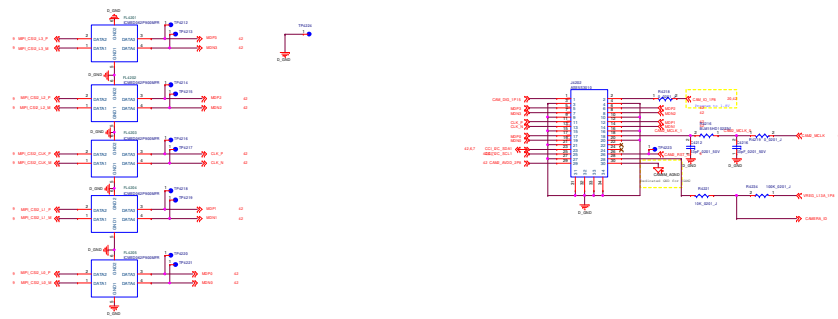
| Sony Mobile Communications, Inc. |                                 |        |          |
|----------------------------------|---------------------------------|--------|----------|
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| A2                               |                                 |        | BF       |
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**Rear Camera 23M (IMX300)**



**Front Camera (8M) IMX219**



|                | Item | Pins       | Symbol           | Min  | Typ  | Max  | Unit | Comment |
|----------------|------|------------|------------------|------|------|------|------|---------|
| Supply voltage |      | VDDHFL1,2  | V <sub>max</sub> | 2.6  | 2.8  | 3.0  | V    |         |
|                |      | VDDHCM1,2  |                  |      |      |      |      |         |
|                |      | VDDHPL     |                  |      |      |      |      |         |
|                |      | VDDHSN1,2  |                  |      |      |      |      |         |
|                |      | VDDCMCO    | V <sub>DD</sub>  | 1.62 | 1.8  | 1.98 | V    |         |
|                |      | VDDLSC1-8  | V <sub>DDL</sub> | 1.08 | 1.20 | 1.30 | V    |         |
|                |      | VDDLCLN1,2 |                  |      |      |      |      |         |
|                |      | VDDLIO1,2  |                  |      |      |      |      |         |

### 10-5 Electrical Characteristics

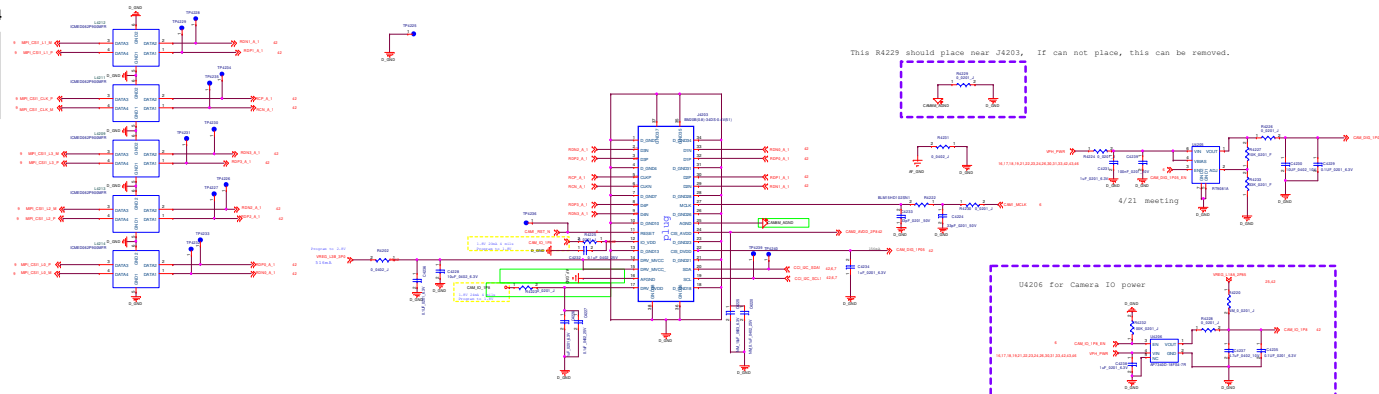
Table 45 Electrical Characteristics

( $V_{ANA} = 3.0\text{ V}$ ,  $V_{DOL} = 1.3\text{ V}$ ,  $V_{DIG} = 1.98\text{ V}$ ,  $T_j = 60^\circ\text{C}$ )

| Item                                     | Symbol     | Min. | Typ. | Max. | Unit | Comment                                                                                                                                  |
|------------------------------------------|------------|------|------|------|------|------------------------------------------------------------------------------------------------------------------------------------------|
| Current consumption<br>(Full.30 frame/s) | IVAVA_strm | 33   | 38   | mA   |      | V <sub>Tmax</sub> is max speed read out from pixel array CS12 4 lanes, V <sub>ANA</sub> current                                          |
|                                          | IVDDL_strm | 100  | 160  | mA   |      | V <sub>Tmax</sub> is max speed read out from pixel array CS12 4 lanes, V <sub>ODD</sub> current Defection Correction, L.S.C function off |
| HW-Standby current                       | ISTB_ana   |      |      | 50   | μA   | XCLR = Lo, V <sub>ANA</sub> current                                                                                                      |
|                                          | ISTB_dig   |      |      | 10   | μA   | XCLR = Lo, V <sub>ODD</sub> current                                                                                                      |
|                                          | ISTB_1dd1  |      |      | 50   | μA   | XCLR = Lo, V <sub>ODD</sub> current                                                                                                      |

**Front Camera (16M) IMX234**

|           | Symbol        | Standby(µA) | Operating(µA) |
|-----------|---------------|-------------|---------------|
| Driver IC | DRV_DIVD0_V18 | 88          | 24            |
|           | DRV_MVDC_V20  | 10          | 916           |
| Sensor    | CS_DIVD0_V18  | 88000       | 116.1         |
|           | IOVDD_V18     | 28.3        | 0             |
|           | CIS_VADD0_V18 | 43.5        | 83            |
| 26        | U0DND         | 7           | U0DND         |
| 27        | MCLK          | 8           | DAP           |
| 26        | D0DND         | 9           | D4N           |
| 25        | AGND          | 10          | D0DND         |
| 24        | CIS_AVDD0     | 11          | RESET         |
| 23        | D0DND         | 12          | D0DND         |
| 22        | CIS_DIVD0     | 13          | D0DND         |
| 21        | D0DND         | 14          | DRV_MVDC      |
| 20        | SDA           | 15          | DRV_MVCC      |
| 19        | SCL           | 16          | AF0DND        |
| 18        | D0DND         | 17          | DRV_DIVD0     |



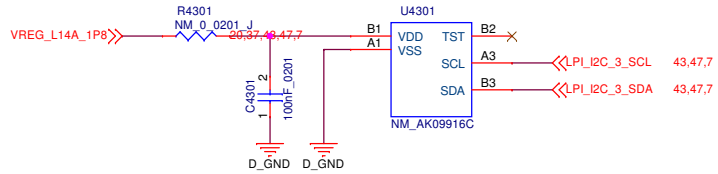
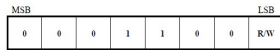
## E-COMPASS

## I2C Address:

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

#### 10.1.1.4. Slave Address

The slave address of AK09916 is 0Ch.

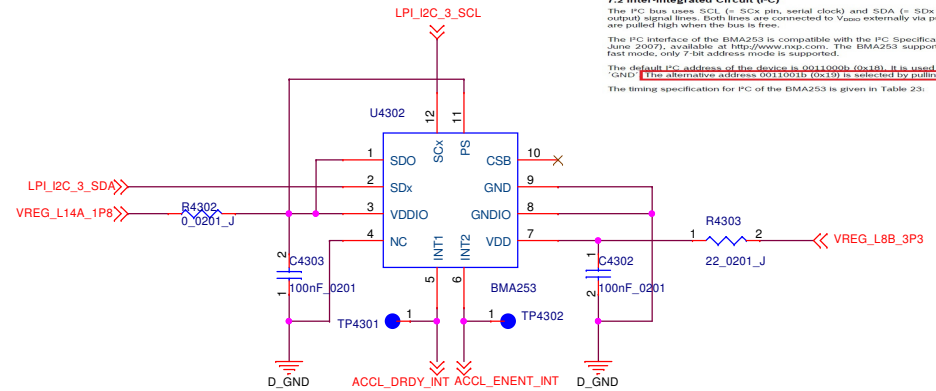


For stock, only KS BOM have mount 2nd location E-compass for verification.  
U4301, NM on CQ BOM

## G-Sensor

## I2C Address:

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



|                                                                                                                                                                                                                                                                                                                                             |                             |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|----------|
|  <b>BOSCH</b>                                                                                                                                                                                                                                            | <b>EM2A23</b><br>Data sheet | Page 101 |
| <b>7.2 Inter-Integrated Circuit (PC)</b>                                                                                                                                                                                                                                                                                                    |                             |          |
| The PC bus uses SCL ( = SCL pin, serial clock) and SDA ( = SDA pin, serial data input and output) signal lines. Both lines are connected to $V_{DD}$ externally via pull-up resistors so that they can be used as open-drain outputs.                                                                                                       |                             |          |
| The PC interface of the EM2A23 is compatible with the PC Specification UM10204 Rev. 03 (19 Feb. 2004). The EM2A23 is compatible with the PC Specification UM10204 Rev. 03 (19 Feb. 2004) and the PC Specification UM10204 Rev. 04 (19 Feb. 2004). The EM2A23 supports PC standard mode and fast mode, only 7-bit address mode is supported. |                             |          |
| The default PC address of the device is 0x000b (000b_0011). It is useful if the SDA pin is pulled to GND. The PC address 0x000b (000b_0011) is reserved by the EM2A23 pins.                                                                                                                                                                 |                             |          |
| The timing specification for PC of the EM2A23 is given in Table 23:                                                                                                                                                                                                                                                                         |                             |          |

## P+L Sensor

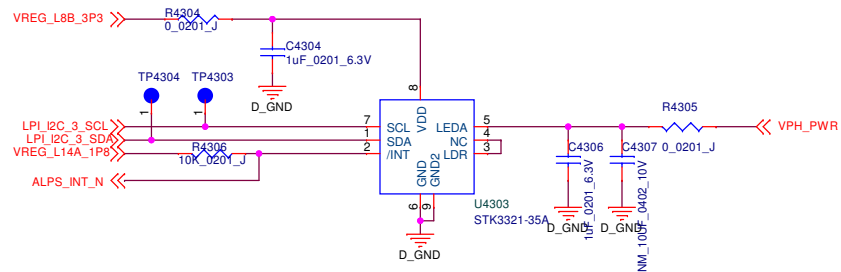
**I2C Address:**

| Slave Address        | R/W Command Bit | Remark |
|----------------------|-----------------|--------|
| 0x48<br>follow by RW | R: 1 ; W: 0     |        |

Slave Address

STK3321-35A provides fixed I<sup>2</sup>C 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 R/W bit) | 1               | Read Data form STK3321-35A   |

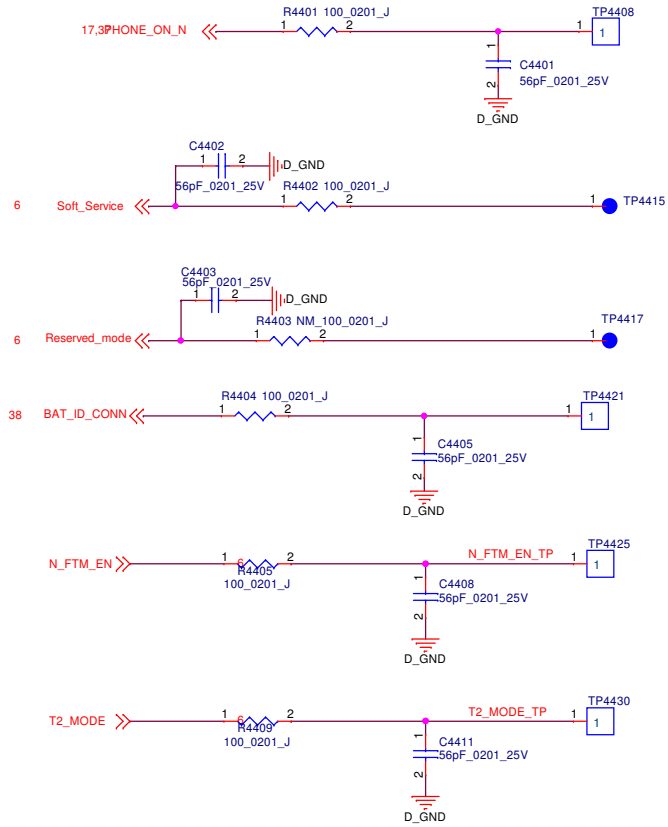


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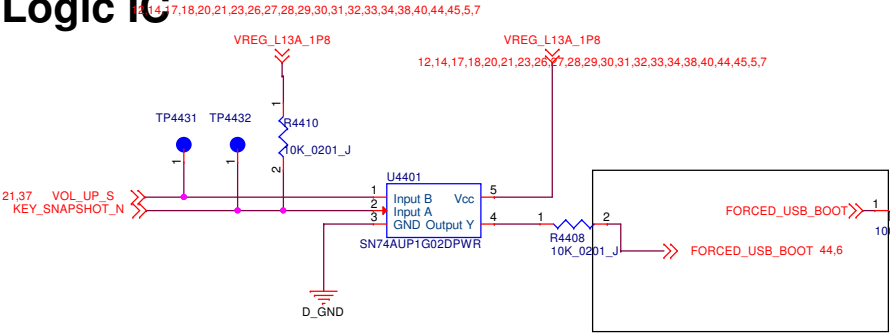
**Sony Mobile Communications, Inc.**

|                                 |                             |       |          |
|---------------------------------|-----------------------------|-------|----------|
| Title                           |                             |       |          |
| SCHEMATIC, M/B GA-527 (Sensors) |                             |       |          |
| Size                            | Document Number             | Rev   |          |
| A3                              | 601PP2                      | BF    |          |
| Date:                           | Thursday, November 02, 2017 | Sheet | 43 of 47 |

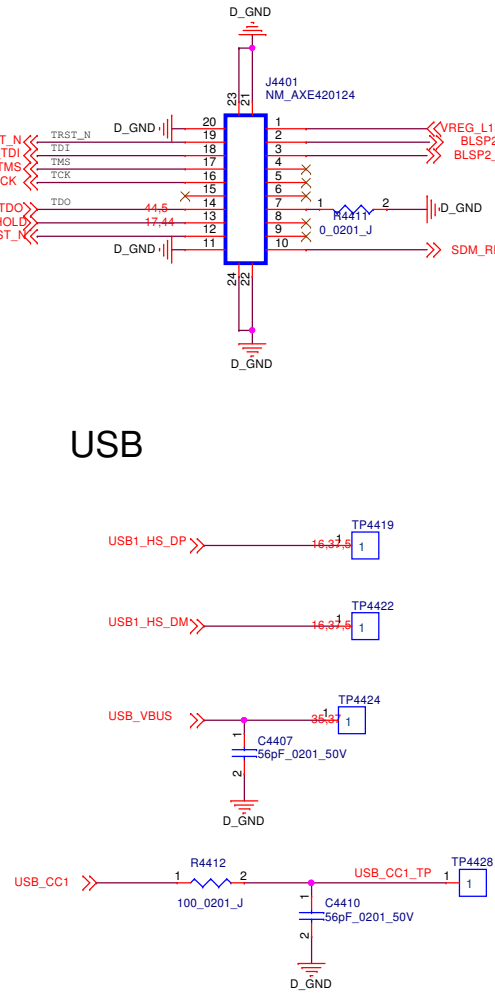
Power Key / Key Pad



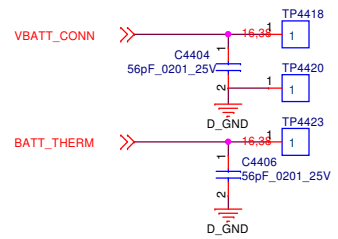
Logic IC



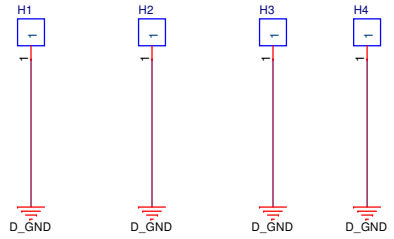
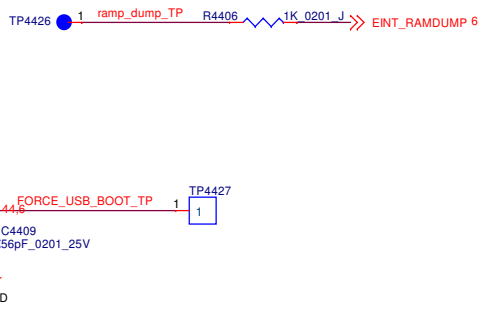
USB



Battery



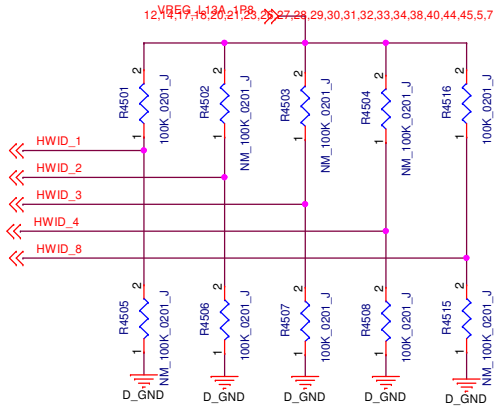
RAM DUMP key



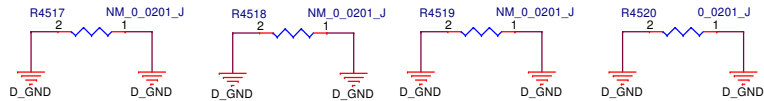
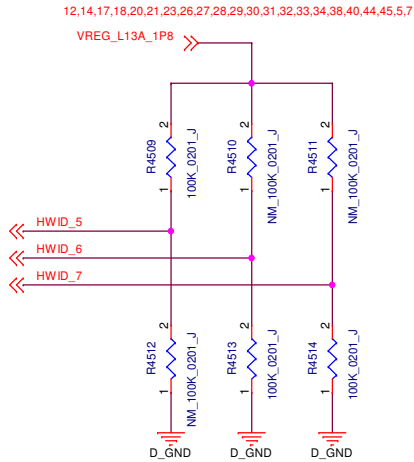
| Sony Mobile Communications, Inc. |                             |        |          |
|----------------------------------|-----------------------------|--------|----------|
| Title                            |                             |        |          |
| SCHEMATIC, M/B GA-527 (Keypad)   |                             |        |          |
| Size                             | Document                    | Number | Rev      |
| A3                               |                             | 601PP2 | BF       |
| Date:                            | Thursday, November 02, 2017 | Sheet  | 44 of 47 |

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6  
6  
6  
6  
6

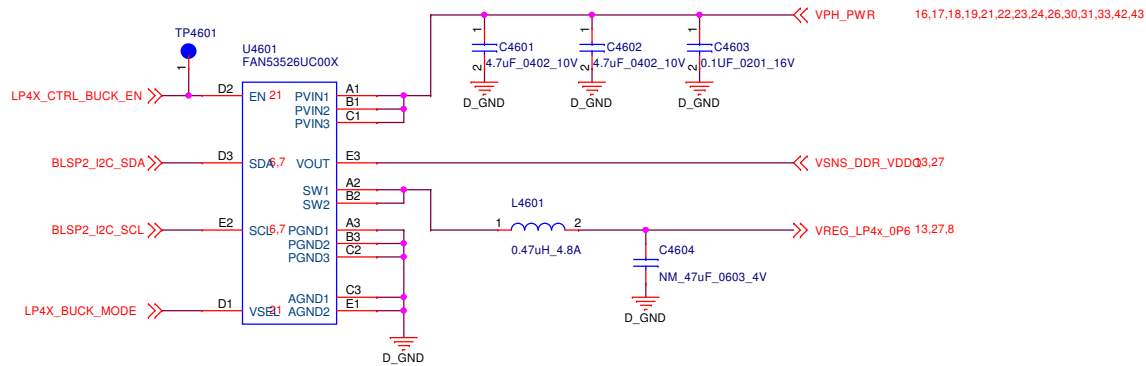


6  
6  
6



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| Sony Mobile Communications, Inc. |                             |                                     |          |
|----------------------------------|-----------------------------|-------------------------------------|----------|
| Title                            |                             | SCHEMATIC, M/B GA-527 (Others_HWID) |          |
| Size                             | Document Number             | Rev                                 |          |
| A3                               | 601PP2                      | BF                                  |          |
| Date:                            | Thursday, November 02, 2017 | Sheet                               | 45 of 47 |



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| Sony Mobile Communications, Inc.     |                             |       |          |
|--------------------------------------|-----------------------------|-------|----------|
| Title                                |                             |       |          |
| SCHEMATIC, M/B GA-527(External Buck) |                             |       |          |
| Size                                 | Document Number             | Rev   |          |
| A3                                   | 601PP2                      | BF    |          |
| Date:                                | Thursday, November 02, 2017 | Sheet | 46 of 47 |

I2C Address:

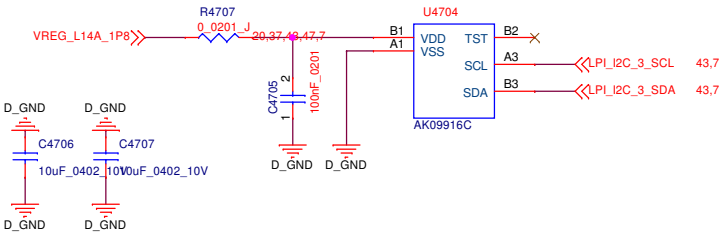
| Slave Address             | R/W Command Bit | Remark |
|---------------------------|-----------------|--------|
| 0x0C-7bit<br>follow by RW | R: 1 ; W: 0     |        |

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

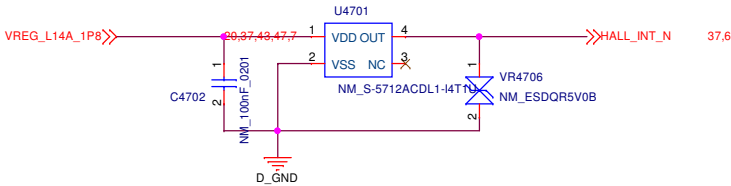
| MSB |   |   |   |   |   |   |     | LSB |
|-----|---|---|---|---|---|---|-----|-----|
| 0   | 0 | 0 | 1 | 1 | 0 | 0 | R/W |     |

Figure 10-4 Slave Address

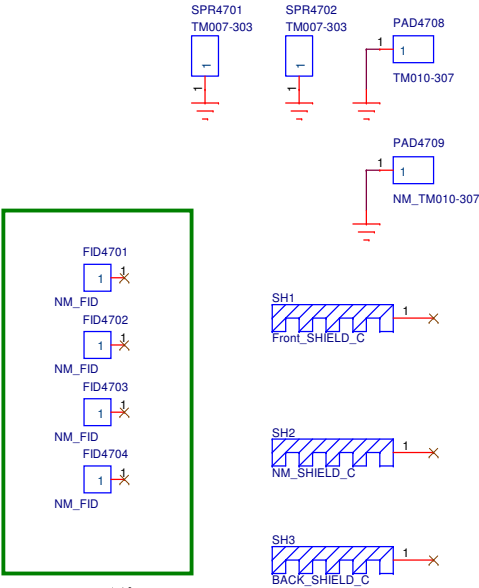
Backup Compass



Backup Hall Sensor



2 grounding springs on Top side



光學點