

1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

| REV | ECN        | DESCRIPTION OF REVISION | APPD DATE  |
|-----|------------|-------------------------|------------|
| 8   | 0006400877 | ENGINEERING RELEASED    | 2016-06-14 |

# D10 MLB - DVT

LAST\_MODIFICATION= Tue Jun 14 15:20:28 2016

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|-----------|-----|--------------|-------------------------|----------|------------|
| 051-00419 | 1   | SCH,MLB,D10  | SCH                     | CRITICAL | ?          |
| 820-00188 | 1   | PCBF,MLB,D10 | PCB                     | CRITICAL | ?          |

System Block Diagram:  
[rdar://problem/16684269](http://rdar://problem/16684269)

SCH 051-00419  
 BRD 820-00188  
 MCO 056-01342

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### NAND BOM Options

| PART#     | QTY | DESCRIPTION                                   | REFERENCE DESIGNATOR(S)           | CRITICAL | BOM OPTION |
|-----------|-----|---|-----------------------------------|----------|------------|
| 335800169 | 1   | NAND, 8, 32GB, 16nm, MLC                      | U1701                             | CRITICAL | NAND_32G   |
| 335800182 | 1   | NAND, 8, 128GB, 16nm, TLC                     | U1701                             | CRITICAL | NAND_128G  |
| 335800156 | 1   | NAND, 8, 256GB, 3Dv3, TLC                     | U1701                             | CRITICAL | NAND_256G  |
| 13880867  | 5   | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 | C1748, C1713, C1716, C1721, C1733 | CRITICAL | NAND_32G   |
| 138800003 | 5   | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 | C1748, C1713, C1716, C1721, C1733 | CRITICAL | NAND_128G  |
| 138800003 | 5   | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 | C1748, C1713, C1716, C1721, C1733 | CRITICAL | NAND_256G  |

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:            |
|-------------|---------------------------|------------|---------|----------------------|
| 335800201   | 335800169                 | ALTERNATE  | U1701   | T, 15nm, MLC, 32GB   |
| 335800209   | 335800169                 | ALTERNATE  | U1701   | S, 16nm, MLC, 32GB   |
| 335800195   | 335800182                 | ALTERNATE  | U1701   | SS, 11nm, TLC, 128GB |
| 335800180   | 335800182                 | ALTERNATE  | U1701   | T, 15nm, TLC, 128GB  |
| 335800179   | 335800182                 | ALTERNATE  | U1701   | SD, 15nm, TLC, 128GB |
| 335800148   | 335800183                 | ALTERNATE  | U1701   | SD, 3Dv2, TLC, 256GB |
| 335800190   | 335800183                 | ALTERNATE  | U1701   | SS, 3Dv3, TLC, 256GB |

#22686038: See Radar

### Magnesium Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                        |
|-------------|---------------------------|------------|---------|----------------------------------|
| 338800173   | 338800203                 | ALTERNATE  | U2402   | Seager Mchtr 1-28 Elove Resistor |

### Carbon Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES      | COMMENTS:                 |
|-------------|---------------------------|------------|--------------|---------------------------|
| 338800087   | 338800226                 | ALTERNATE  | U2401, U2404 | Updated version of Carbon |

### UT LDO Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                         |
|-------------|---------------------------|------------|---------|-----------------------------------|
| 353800889   | 353800015                 | ALTERNATE  | U2501   | RE, 100 RES, 1.200V, OP 0.450M-05 |

### Mamba LDO Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:          |
|-------------|---------------------------|------------|---------|--------------------|
| 353800932   | 353800576                 | ALTERNATE  | U3801   | RE, 100 RES, 1.70V |

### I2C5 Alternate

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:      |
|-------------|---------------------------|------------|---------|----------------|
| 335800234   | 335800233                 | ALTERNATE  | U1101   | I2C5 ALTERNATE |

### Active Diode Alternate

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:             |
|-------------|---------------------------|------------|---------|-----------------------|
| 376800106   | 376800047                 | ALTERNATE  | Q2101   | DIODES INC. ACT DIODE |

### DDR PLL Alternate

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                              |
|-------------|---------------------------|------------|---------|--|
| 155800095   | 155800068                 | ALTERNATE  | FL1501  | FORM 80, 0000M, 25V, 000M, 000M, 01005 |

### Power Inductor Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:  |
|-------------|---------------------------|------------|---------|--|
| 152800118   | 152800075                 | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |
| 152800077   | 152800397                 | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |
| 152800121   | 152800081                 | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |
| 152800123   | 15281936                  | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |
| 152800402   | 152800366                 | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |
| 152800297   | 15281843                  | ALTERNATE  | ALL     | CITEC 2012 10R   |
| 152800365   | 152800297                 | ALTERNATE  | ALL     | CITEC 2012 10R   |
| 152800398   | 152800204                 | ALTERNATE  | ALL     | 100, PMU, 1.000M, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                  |
| 152800120   | 152800077                 | ALTERNATE  | ALL     | For Chestnut Inductor; so it doesn't interfere with PMU inductor Buck 7 alts |
| 152800117   | 152800074                 | ALTERNATE  | ALL     | 100, PMU, 0805, 1.0, 10, 2.0, 1.5A, 1.5H, 080, 2014                          |

updated 11/12

updated 11/12  
reverted 11/13

For Chestnut inductor; so it doesn't interfere with PMU inductor Buck 7 alts  
Except BUCKS LX (BUCKS LX is Taiyo only)

### Global R/C Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                                     |
|-------------|---------------------------|------------|---------|---|
| 11880764    | 11880717                  | ALTERNATE  | ALL     | RES, 3.92K, 0.1%, 0201                        |
| 13880702    | 13880657                  | ALTERNATE  | ALL     | CAP, X5R, 4.70F, 4V, 0410                     |
| 138800006   | 13880835                  | ALTERNATE  | ALL     | CAP, X5R, 4.70F, 4V, 0410                     |
| 138800005   | 138800003                 | ALTERNATE  | ALL     | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 |
| 138800048   | 138800003                 | ALTERNATE  | ALL     | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 |
| 13880648    | 13880652                  | ALTERNATE  | ALL     | CAP, X5R, 4.70F, 4V, 0.450M, 0402, 050505     |
| 13280400    | 13280436                  | ALTERNATE  | ALL     | CAP, X5R, 1.000F, 25V, 1.0V, 01005, 0100      |
| 138800024   | 13880986                  | ALTERNATE  | ALL     | 0805, 1.000M, 1.00, 10V, 0.450M, 0805, 020108 |
| 13880706    | 13880739                  | ALTERNATE  | ALL     | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 |
| 13880945    | 13880739                  | ALTERNATE  | ALL     | CAP, X5R, 100F, 20V, 4.7V, 0.450M, 0805, 0402 |
| 13280436    | 13280400                  | ALTERNATE  | ALL     | CAP, X5R, 1.000F, 25V, 1.0V, 01005, 0100      |

### Global Ferrite Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                       |
|-------------|---------------------------|------------|---------|---------------------------------|
| 155800067   | 15580581                  | ALTERNATE  | ALL     | FERR, 2400HM, 0.330HM DCB, 0201 |
| 15580581    | 155800067                 | ALTERNATE  | ALL     | FERR, 2400HM, 0.330HM DCB, 0201 |
| 155800012   | 155800168                 | ALTERNATE  | ALL     | F10R, 65 OHMS, 0405             |
| 155800194   | 15580610                  | ALTERNATE  | ALL     | FERR BD, 1500HM, 70K            |
| 155800200   | 15580610                  | ALTERNATE  | ALL     | FERR BD, 1500HM, 70K            |
| 152800489   | 152800456                 | ALTERNATE  | ALL     | FERR BD, 0.470H, 70K            |

### Global Varistor Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:                    |
|-------------|---------------------------|------------|---------|------------------------------|
| 37780168    | 37780140                  | ALTERNATE  | ALL     | VARIATOR, 6.8V, 100PF, 01005 |

### ACC BUCK CIRCUIT Alternates

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES      | COMMENTS:                             |
|-------------|---------------------------|------------|--------------|---------------------------------------|
| 371800087   | 371800064                 | ALTERNATE  | D2700        | DIODES, 800VTR, 30V, 200M, 0201       |
| 152800558   | 152800557                 | ALTERNATE  | L2700        | IND, MFD, 0.470H, 2.5A, 800uOhm, 1608 |
| 376800166   | 376800164                 | ALTERNATE  | Q2700, Q2701 | PFET, 12V, 0094                       |
| 353801007   | 353801039                 | ALTERNATE  | U2710        | IC, LOGIC SWITCH, MLC094              |

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Apple Inc.

### D10 EEEE CALLOUTS

| PART#    | QTY | DESCRIPTION             | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION       |
|----------|-----|-------------------------|-------------------------|----------|------------------|
| 825-6838 | 1   | EEEE CODE FOR 639-01754 | EEEE_GXD5               | CRITICAL | EEEE_BEST        |
| 825-6838 | 1   | EEEE CODE FOR 639-01755 | EEEE_GXD6               | CRITICAL | EEEE_SUPREME     |
| 825-6838 | 1   | EEEE CODE FOR 639-01756 | EEEE_GXD7               | CRITICAL | EEEE_EXTREME     |
| 825-6838 | 1   | EEEE CODE FOR 639-02372 | EEEE_H6TF               | CRITICAL | EEEE_BEST_ROW    |
| 825-6838 | 1   | EEEE CODE FOR 639-02373 | EEEE_H6TG               | CRITICAL | EEEE_SUPREME_ROW |
| 825-6838 | 1   | EEEE CODE FOR 639-02374 | EEEE_H6TH               | CRITICAL | EEEE_EXTREME_ROW |

### CAYMAN DDR Alternates

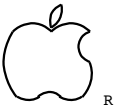
| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:     |
|-------------|---------------------------|------------|---------|---------------|
| 339800254   | 339800253                 | ALTERNATE  | ALL     | DDR-H, 2G, B1 |
| 339800255   | 339800253                 | ALTERNATE  | ALL     | DDR-S, 2G, B1 |

### Cap 2.2UF Alternates

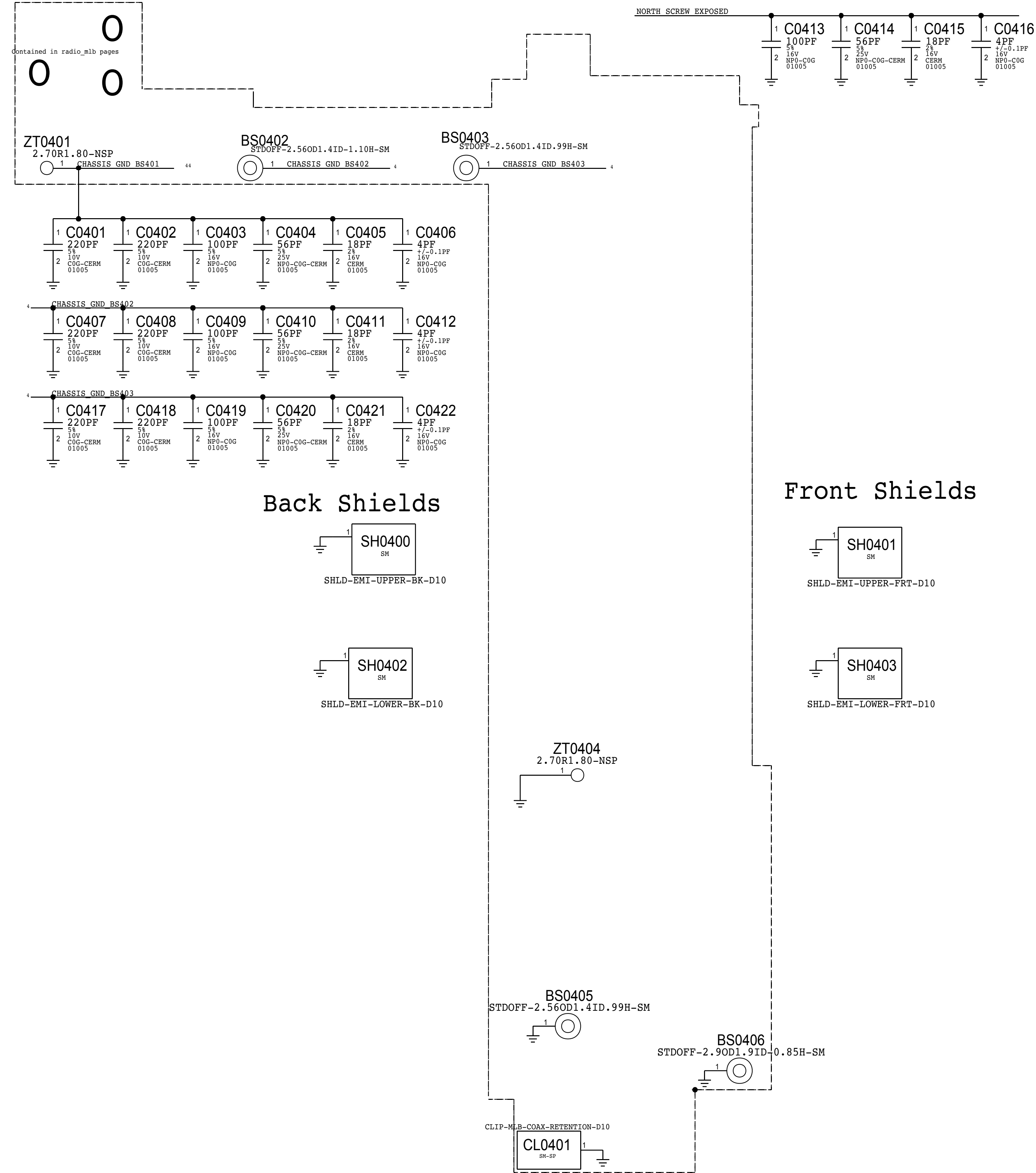
| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES       | COMMENTS:   |
|-------------|---------------------------|------------|---------------|---|
| 138800049   | 138800032                 | ALTERNATE  | (C2507,C2531) | Cap_C08_05A_2.2UF_010V_10%_X0000A #25634778: Exclude Xyocera as 2.2UF all at only C2507/C2531 REFDES (other refdes no impact) |
| 13880831    | 138800032                 | ALTERNATE  | ALL           | Cap_C08_05A_2.2UF_010V_10%_X0000A   |

### D10x Specific BOM Callouts

| PART#     | QTY | DESCRIPTION                              | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION           |
|-----------|-----|--|-------------------------|----------|----------------------|
| 152800117 | 1   | TAL10_100_P08_08L0_10H_3_6A_0_6600M_2016 | L1803                   | CRITICAL | B5LX_FAIYO #24681501 |
| 11780156  | 2   | RES_NP_1K_0805_5A_1/20K_01005            | R4808,R4809             | CRITICAL | UTAH_C #24429229     |

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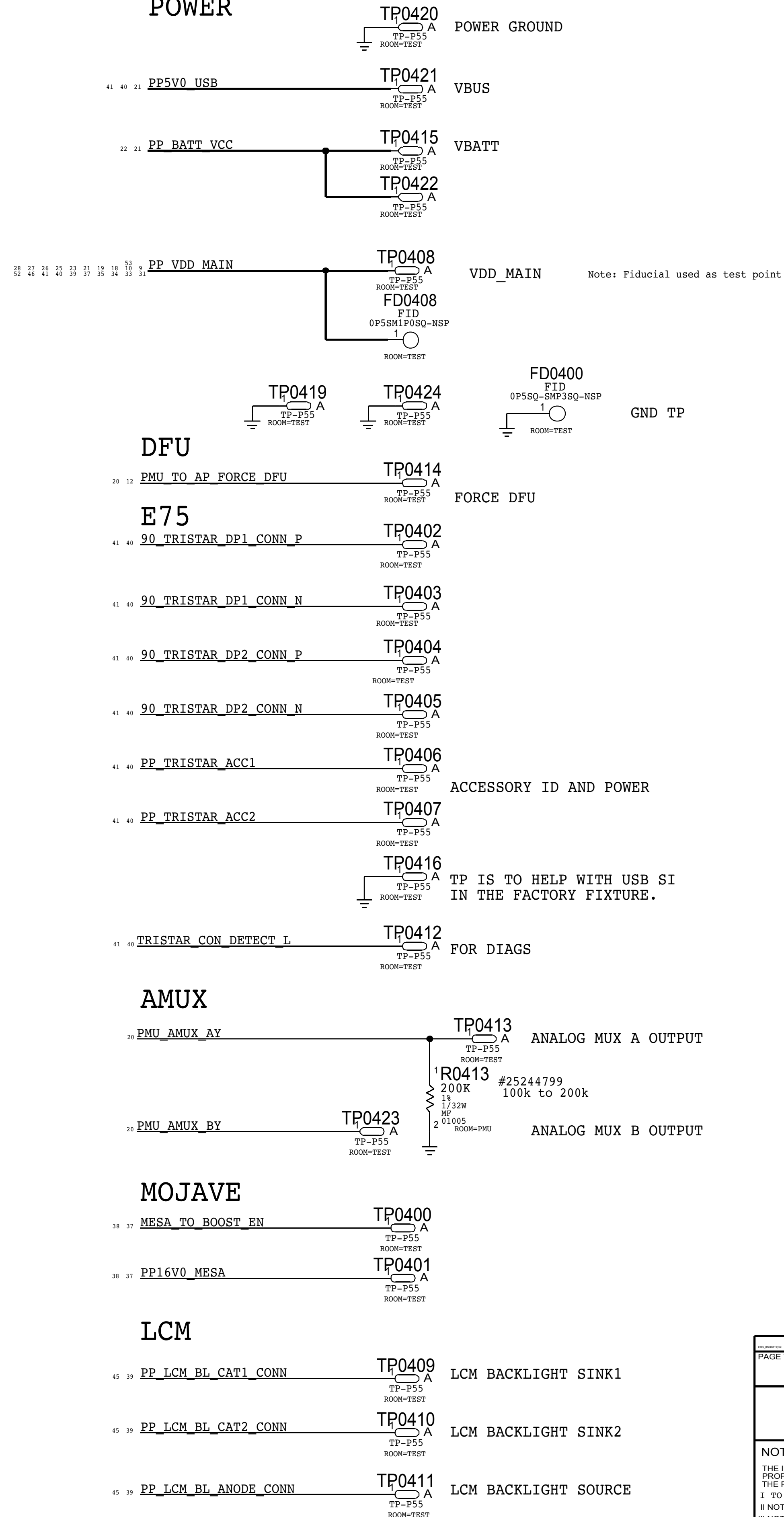
# Current as of D10 MCO 056-01342-78



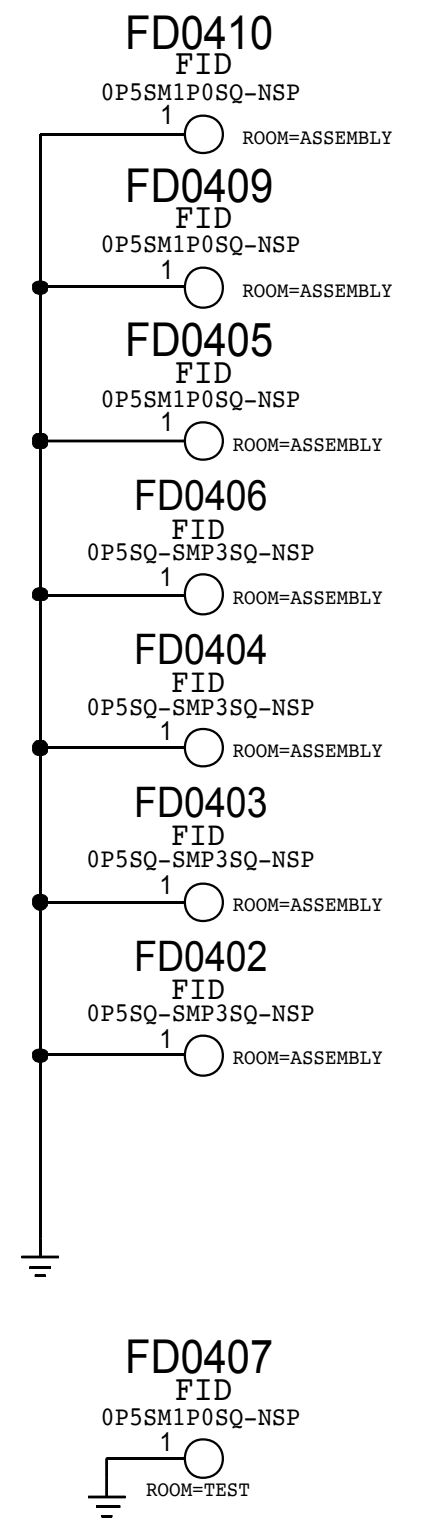
TOP SIDE

## TESTPOINTS

### POWER

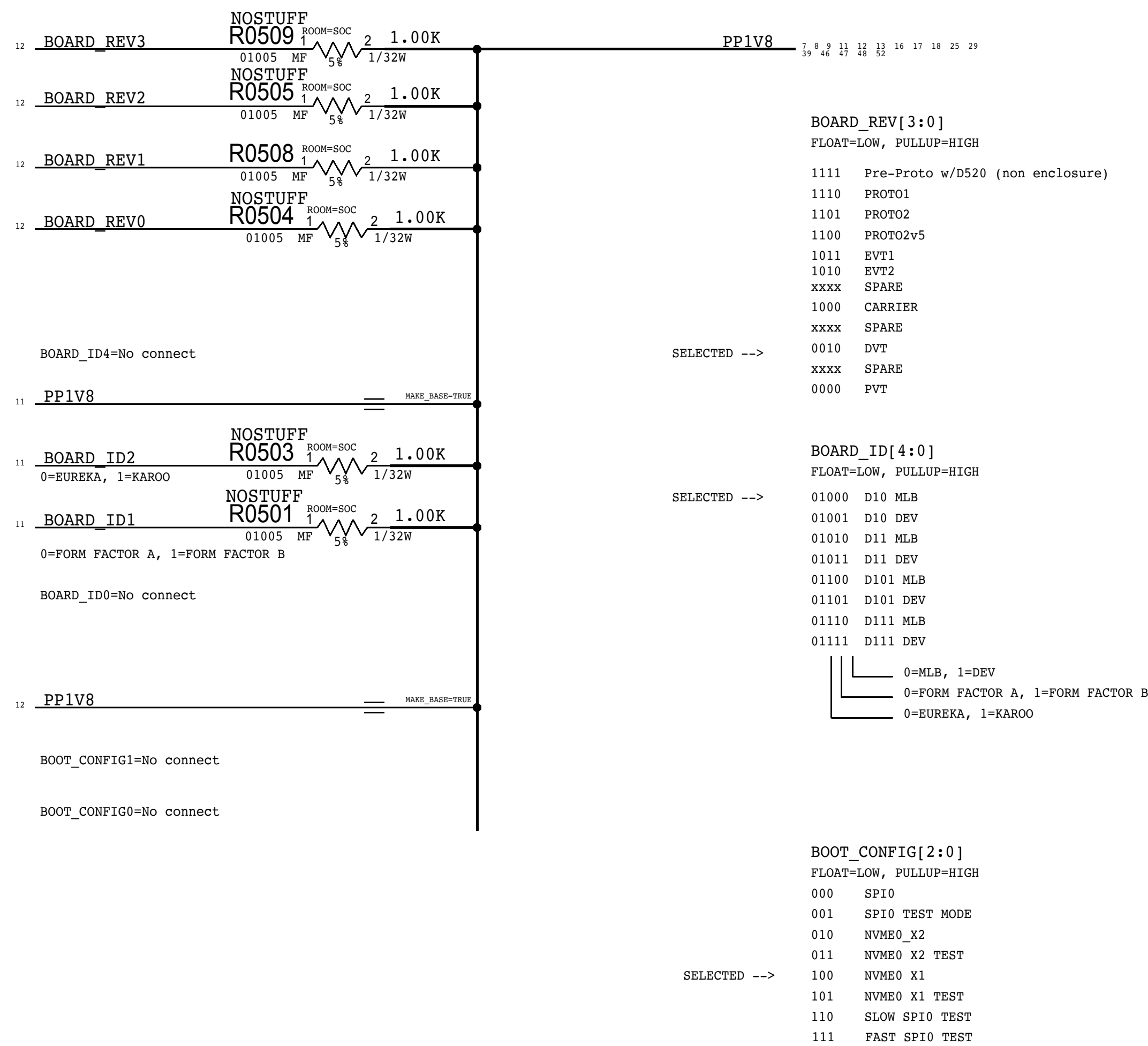


## FIDUCIALS



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# BOOTSTRAPPING:BOARD REV BOARD ID BOOT CONFIG



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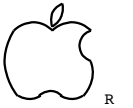
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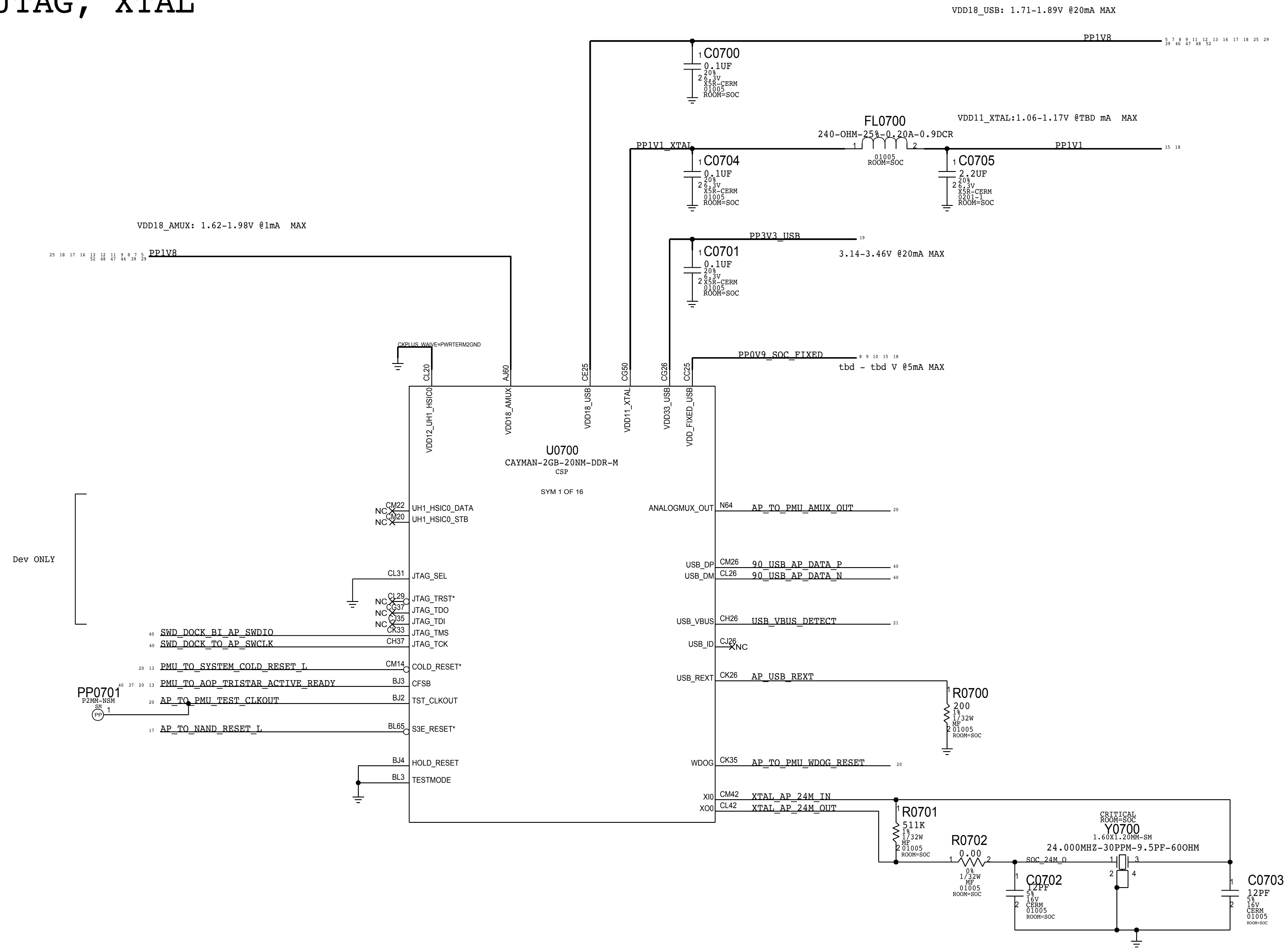
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# SOC - USB, JTAG, XTAL

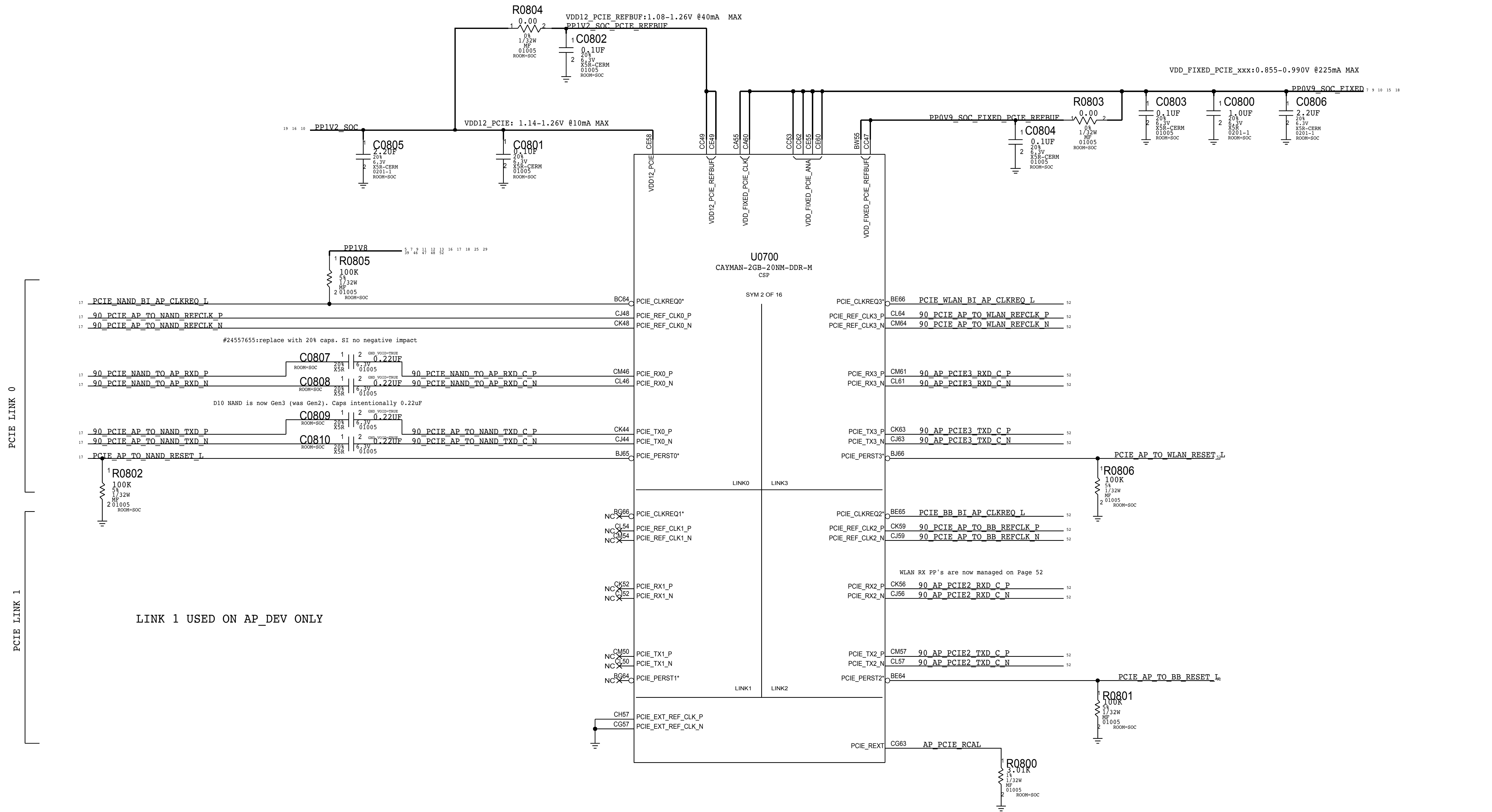


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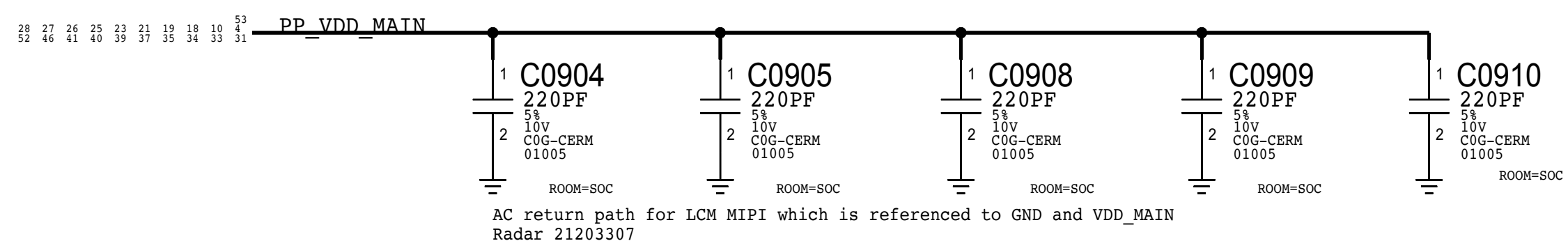
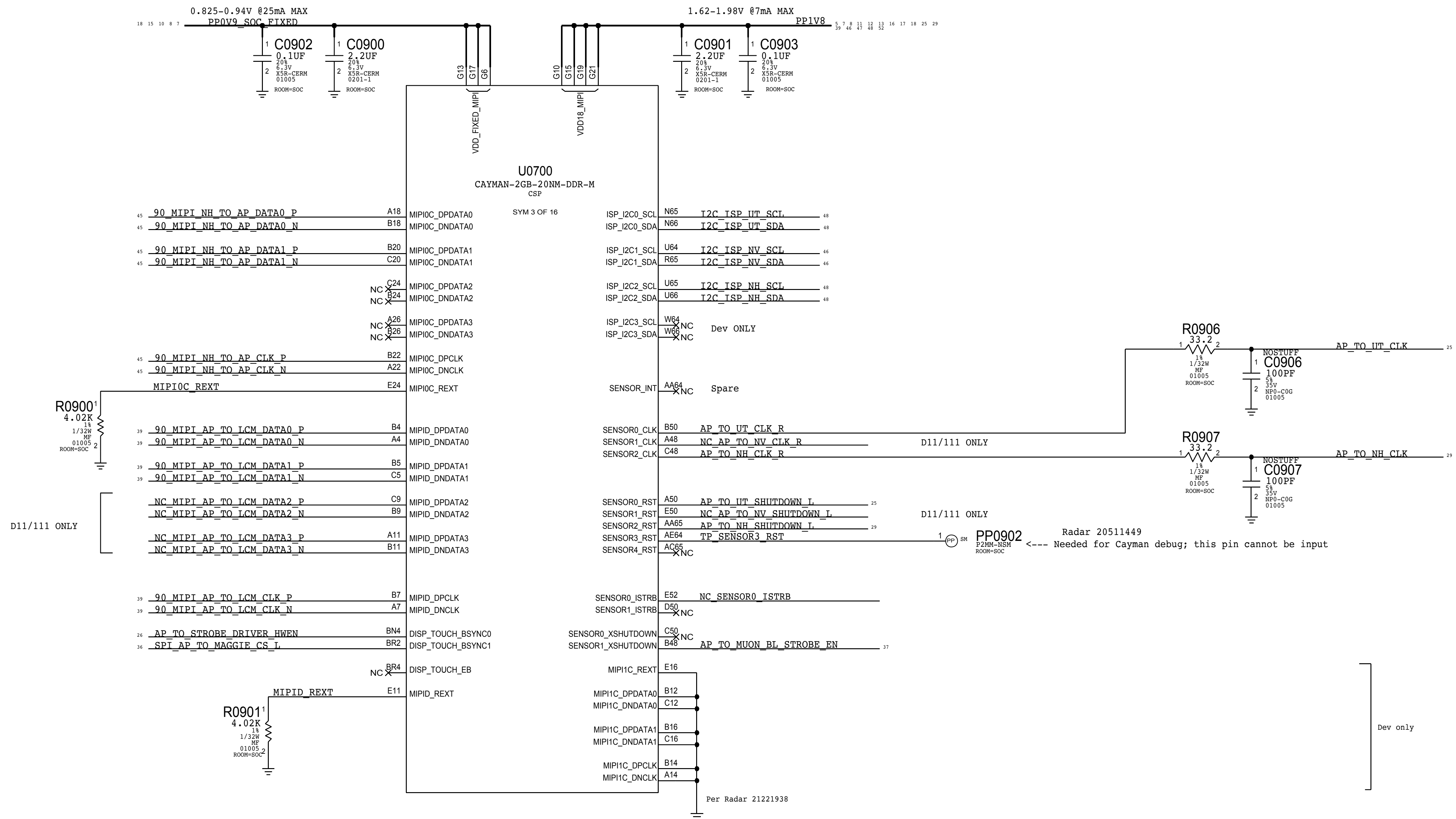
# SOC - PCIE INTERFACES



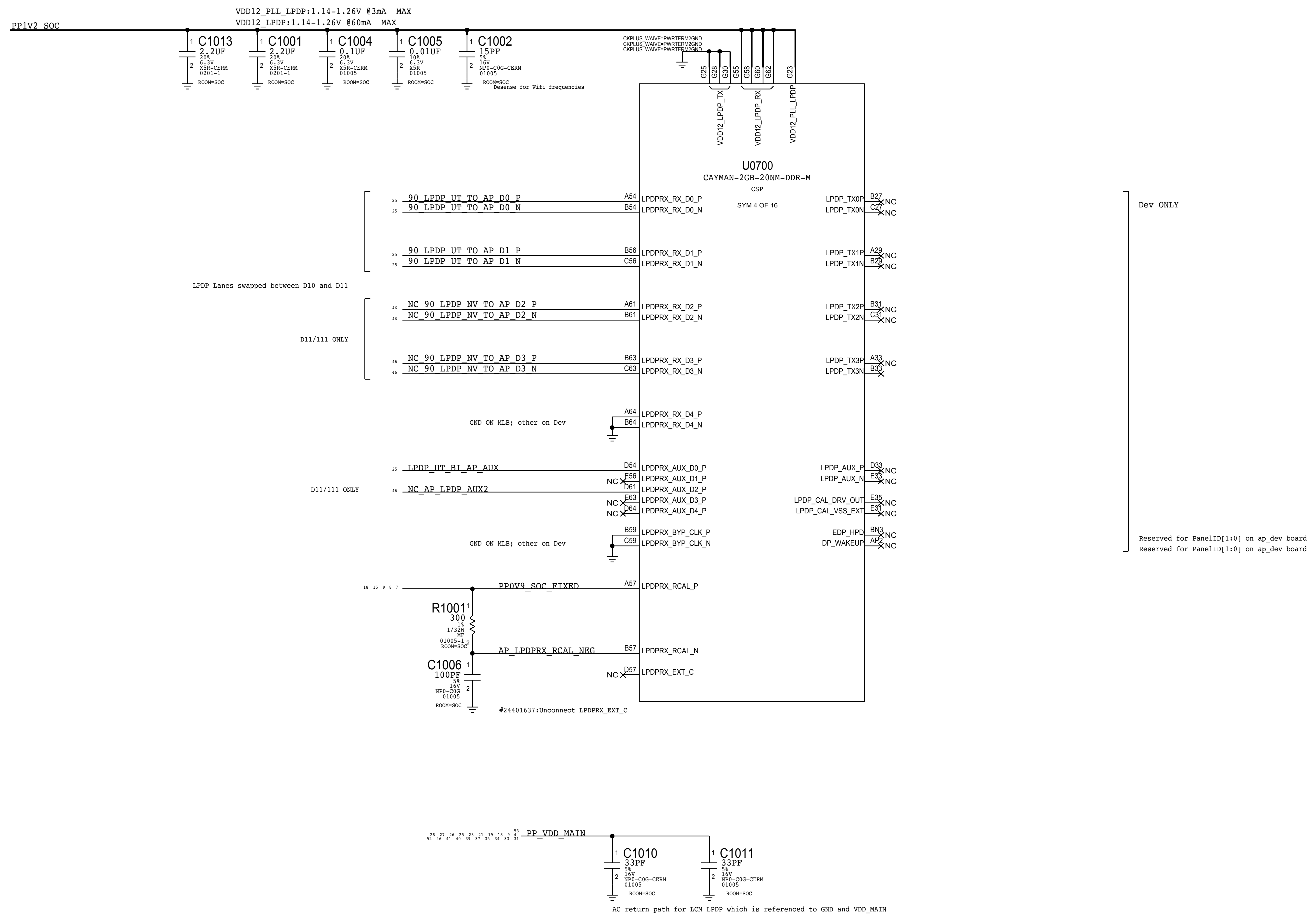
LINK 1 USED ON AP\_DEV ONLY

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# SOC - MIPI & ISP INTERFACES



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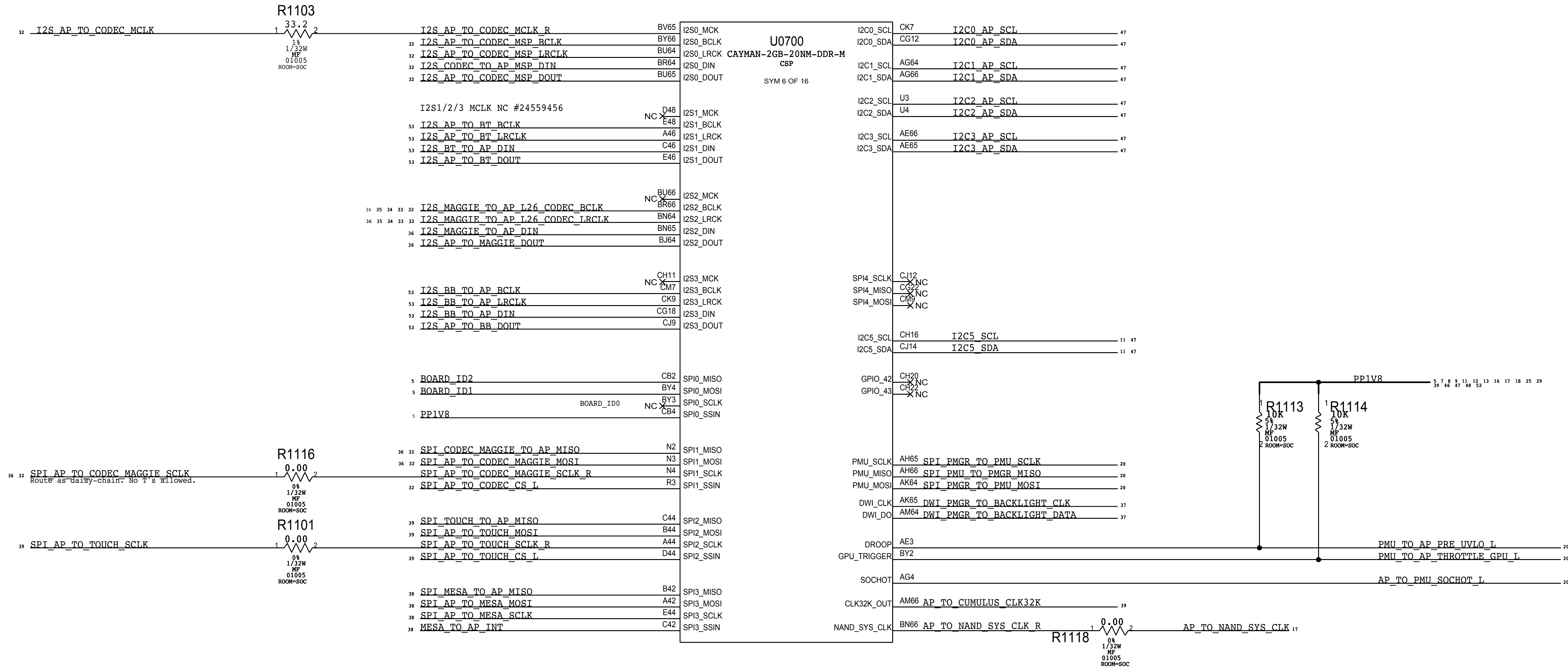


Dev ONLY

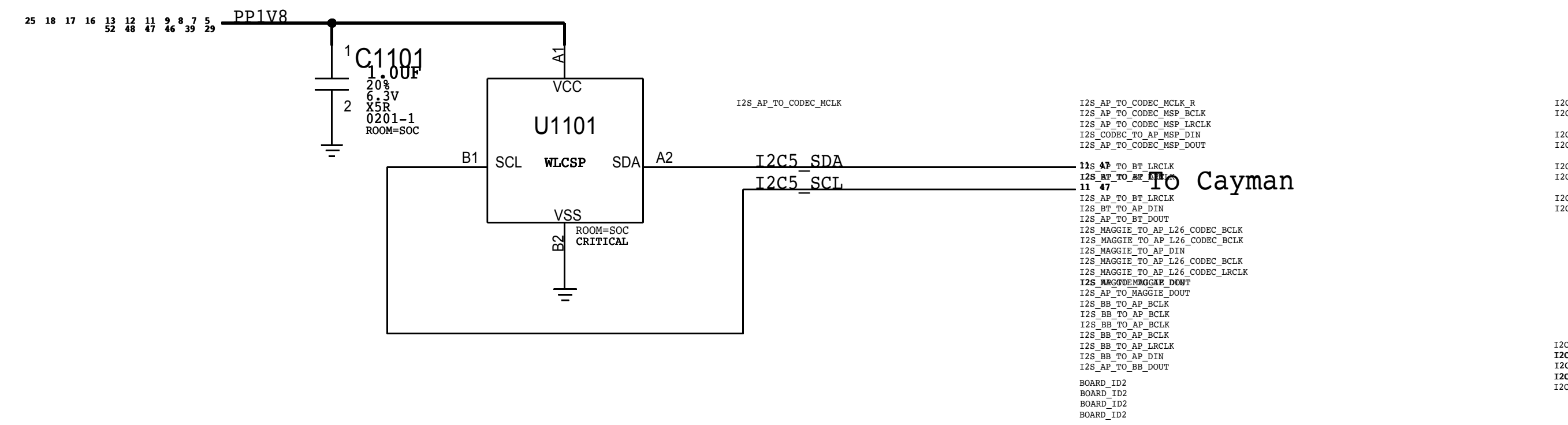
Reserved for PanelID[1:0] on ap\_dev board  
Reserved for PanelID[1:0] on ap\_dev board

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# SOC - SERIAL INTERFACES

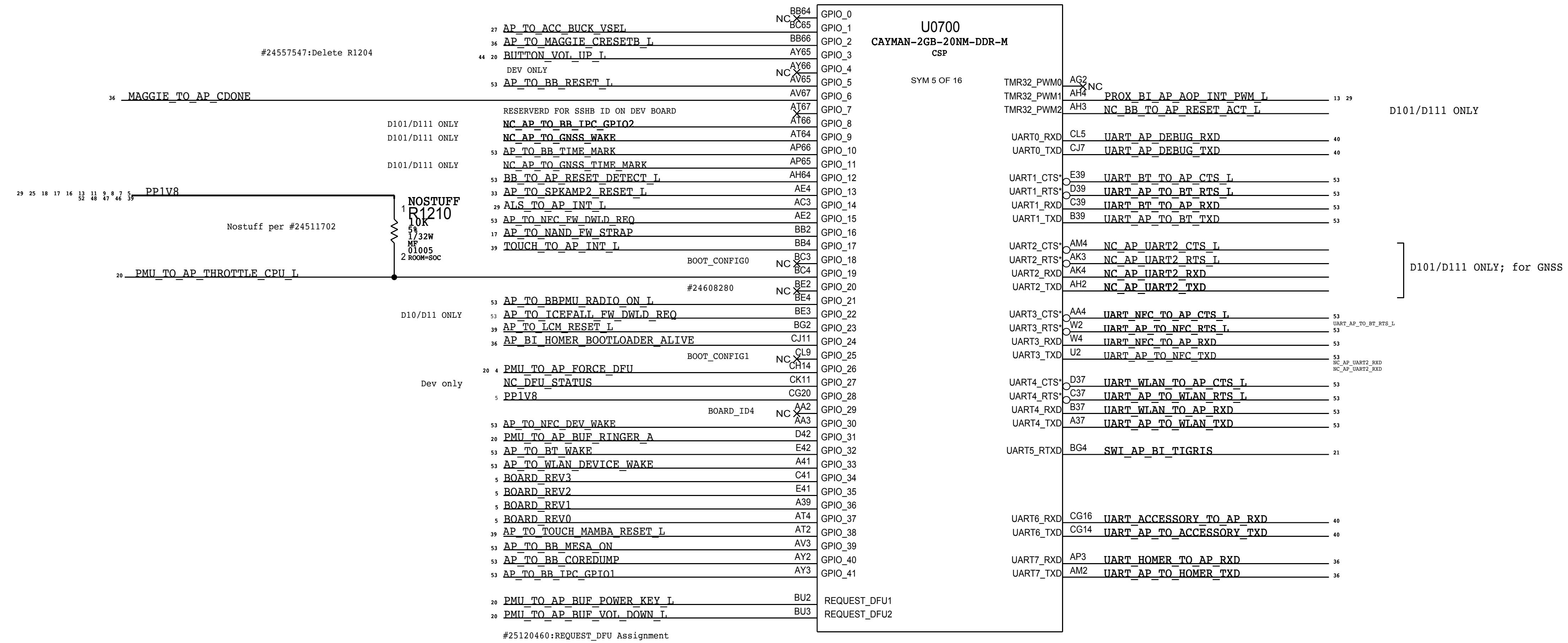


**I2C5**  
See Radar#25316444 for Details



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# SOC - GPIO INTERFACES



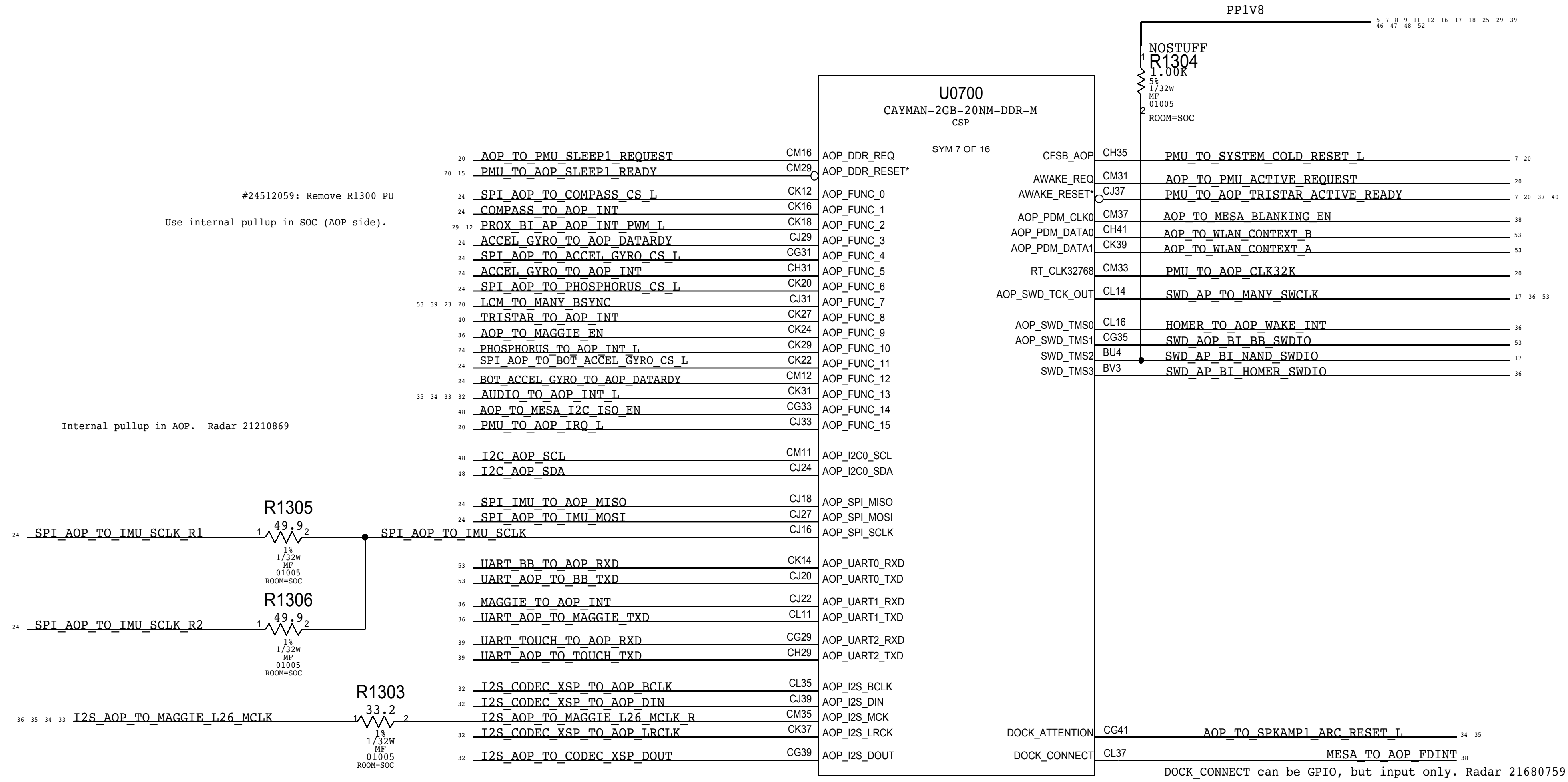
# SOC - AOP

#24512059: Remove R1300 PU  
Use internal pullup in SOC (AOP side).

Internal pullup in AOP. Radar 21210869

#25756894:North Carbon R1 (+Mg,P)

#25756894:South Carbon R2



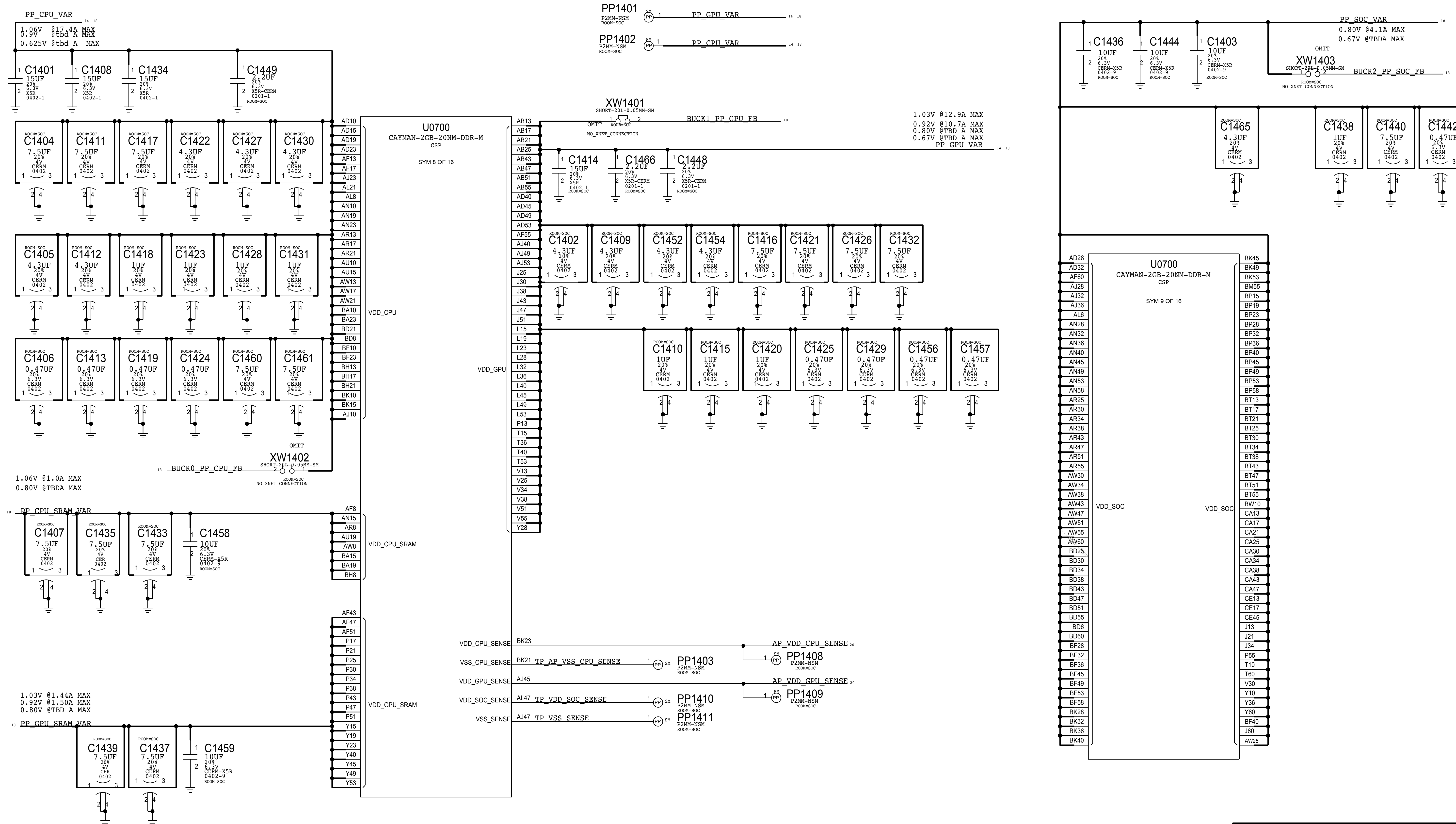
BB\_SWDIO has pullup in Radio\_MLB pages

DOCK\_CONNECT can be GPIO, but input only. Radar 21680759

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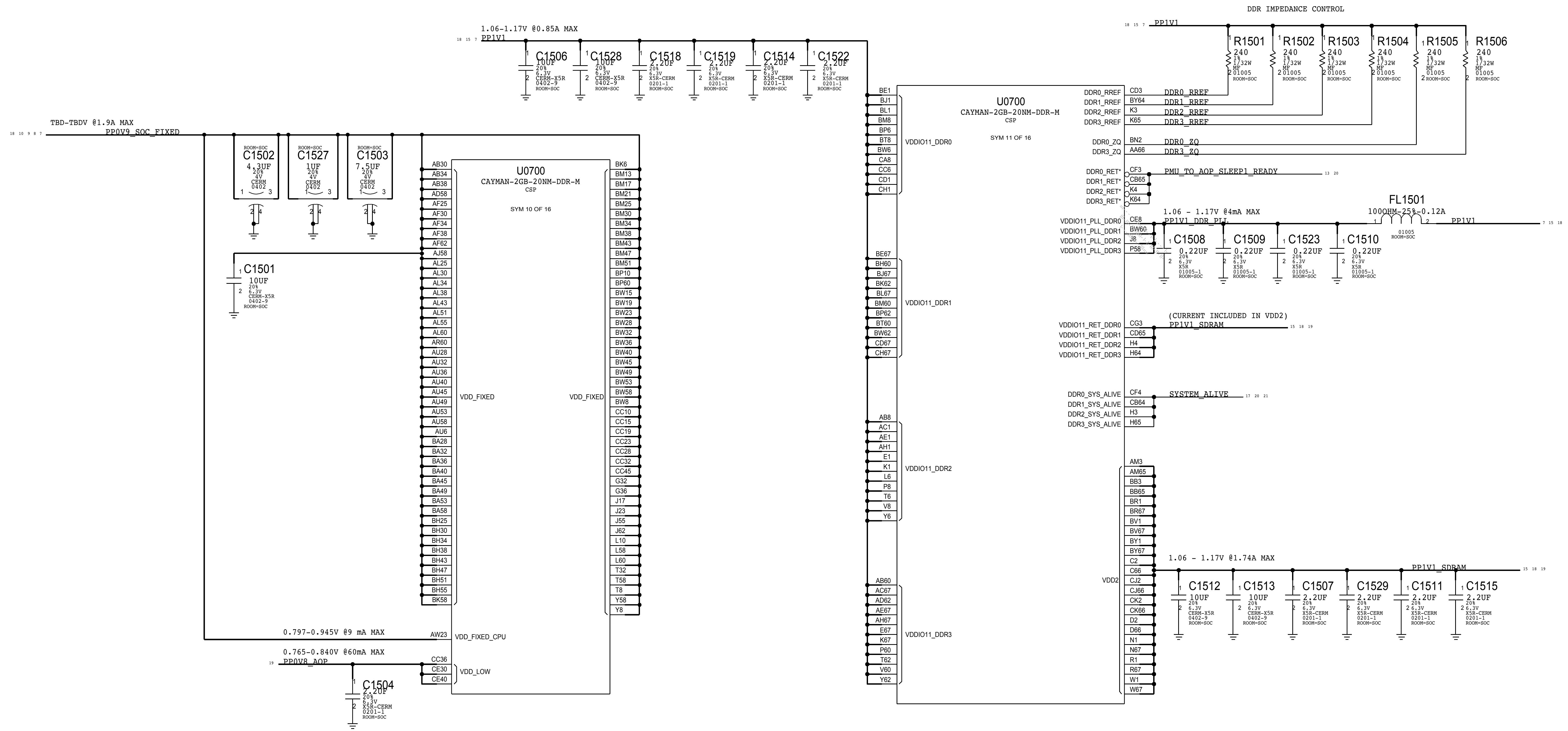
# SOC - CPU, GPU & SOC RAILS



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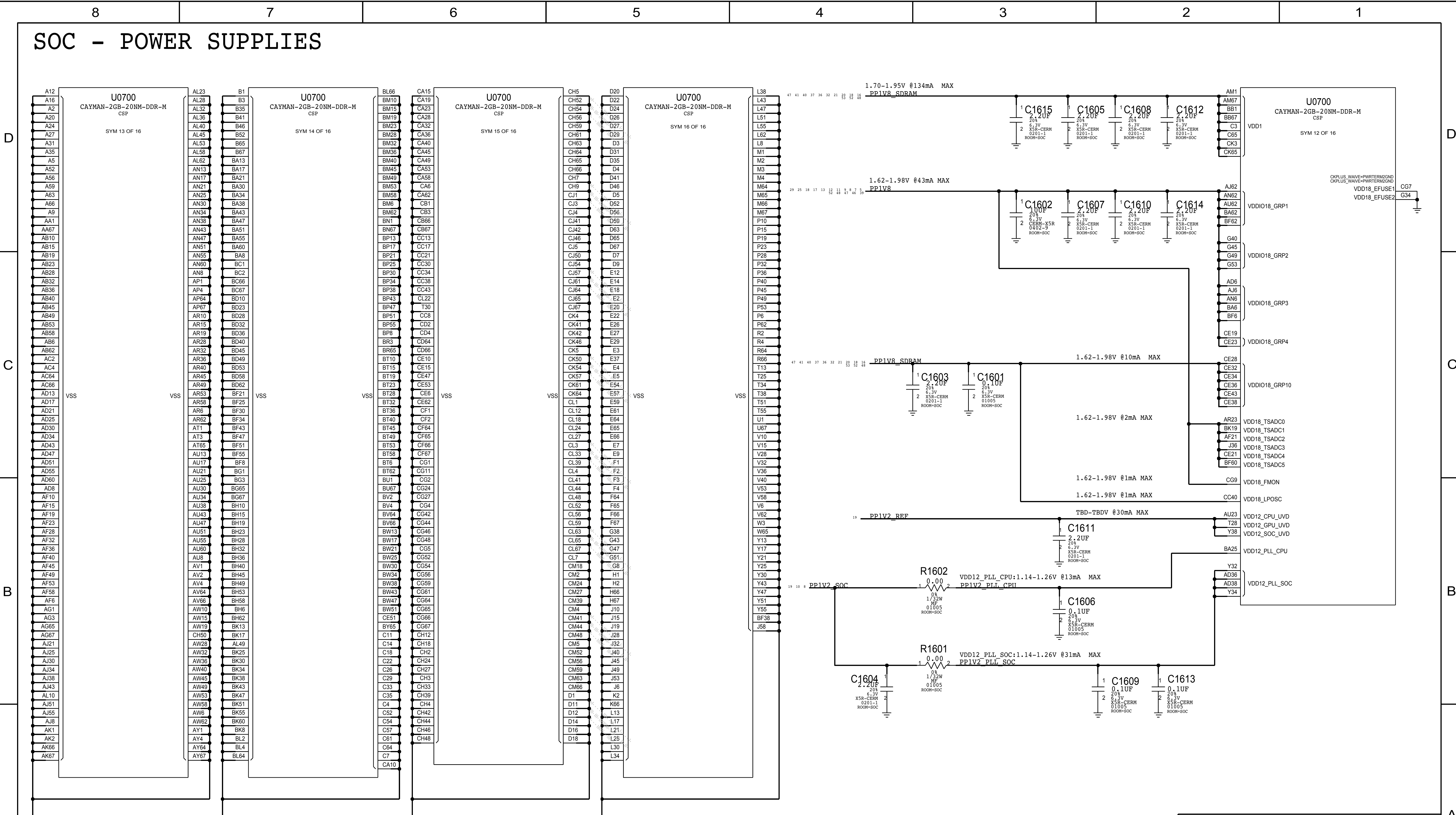


# SOC - POWER SUPPLIES



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# SOC - POWER SUPPLIES



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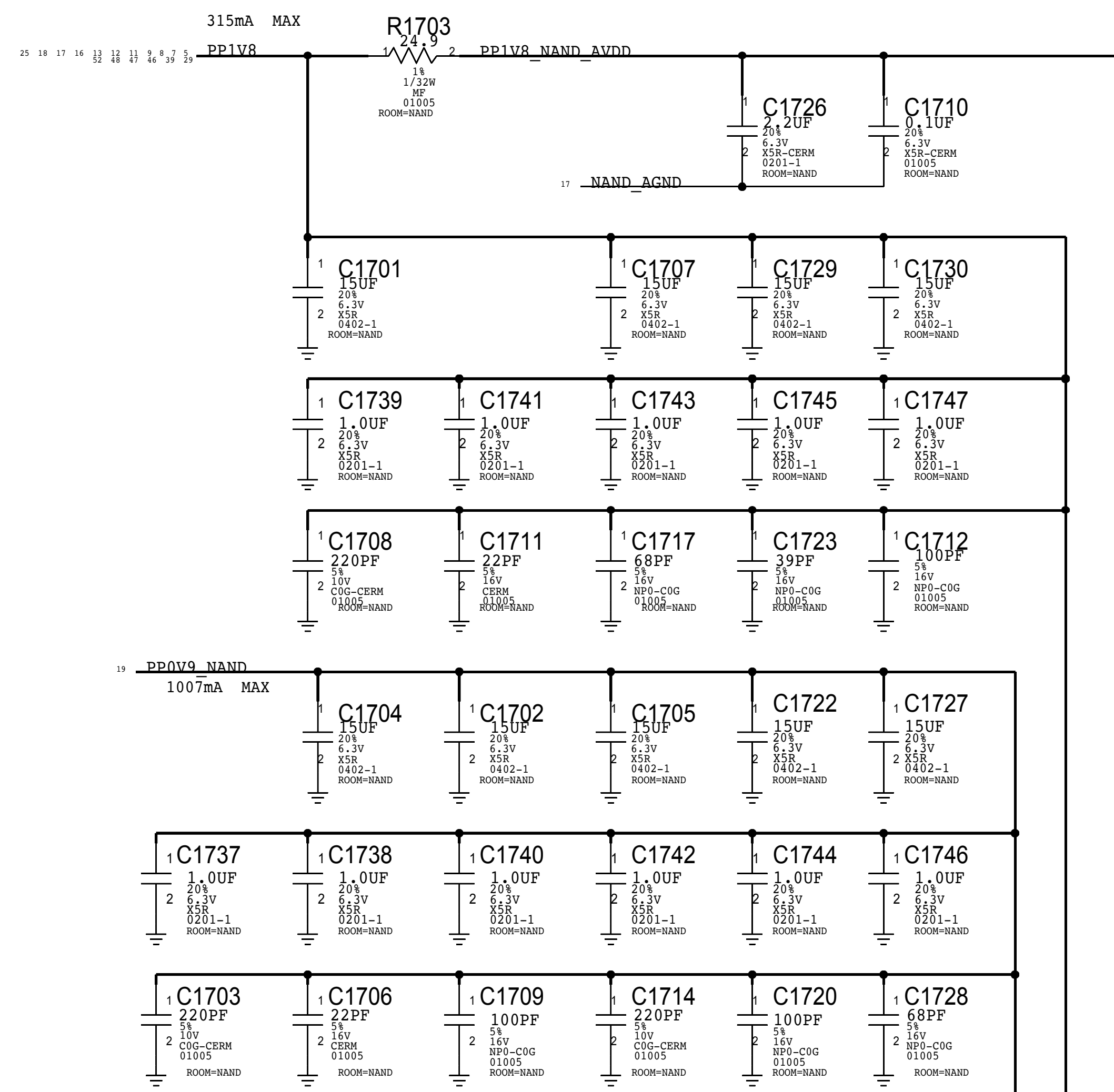
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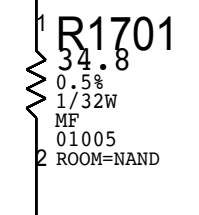
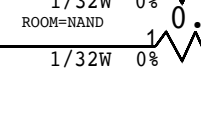
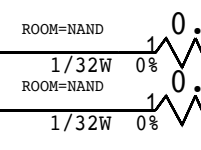
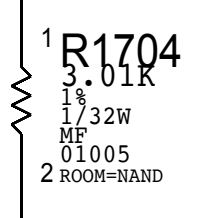
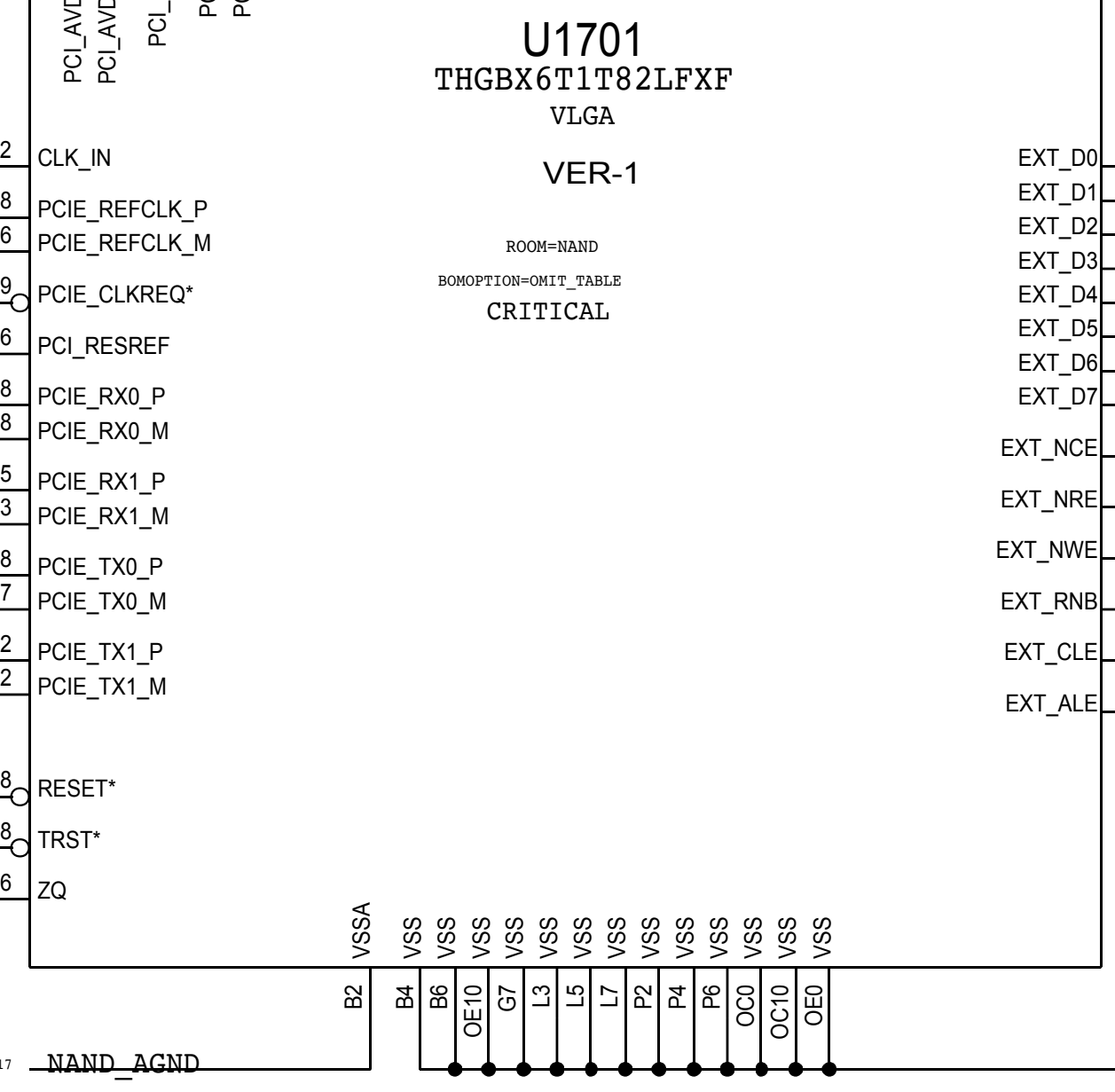
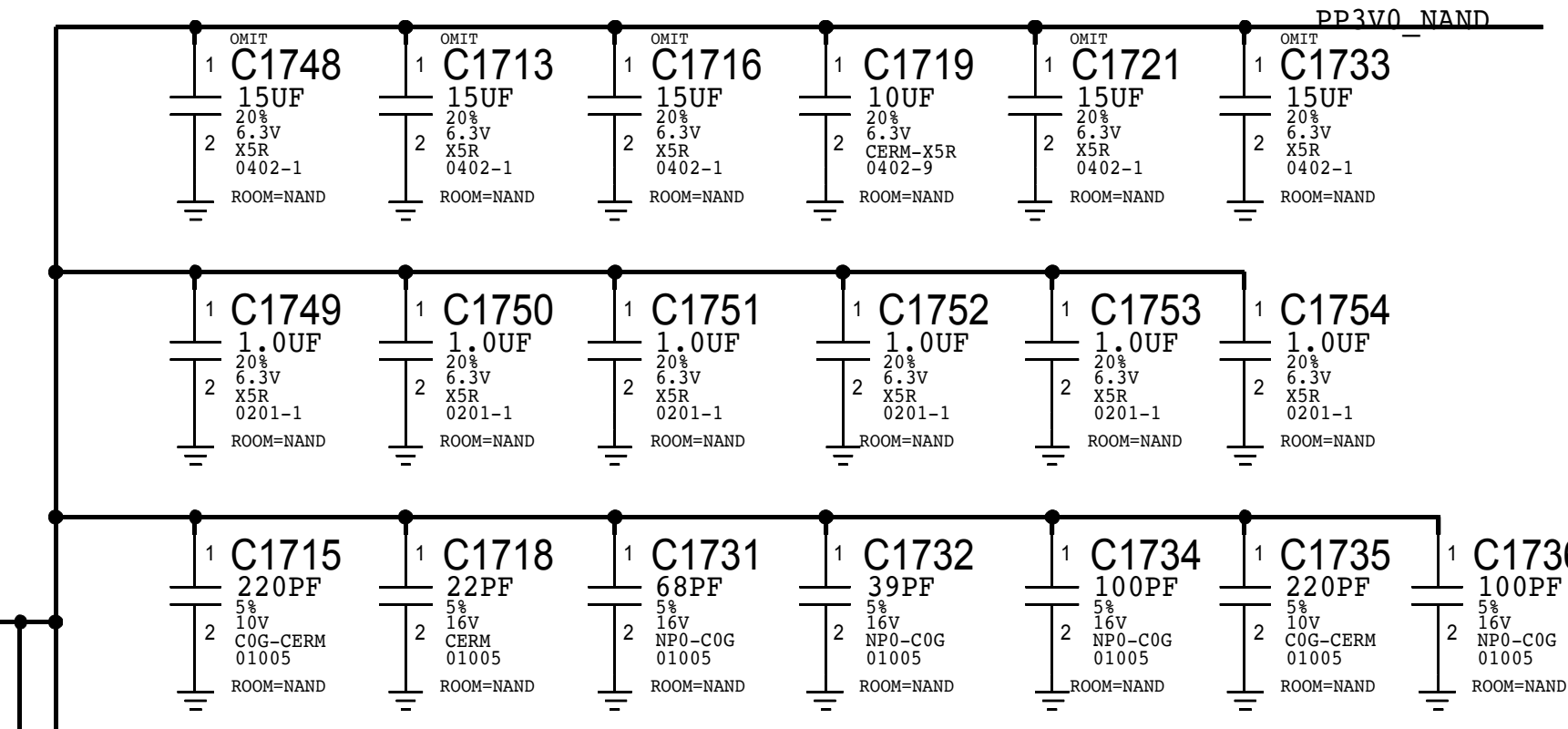


### PROBE POINTS

- 17 8 90\_PCIE\_AP\_TO\_NAND\_REFCLK\_P 1 PP1701
- 17 8 90\_PCIE\_AP\_TO\_NAND\_REFCLK\_N 1 PP1702

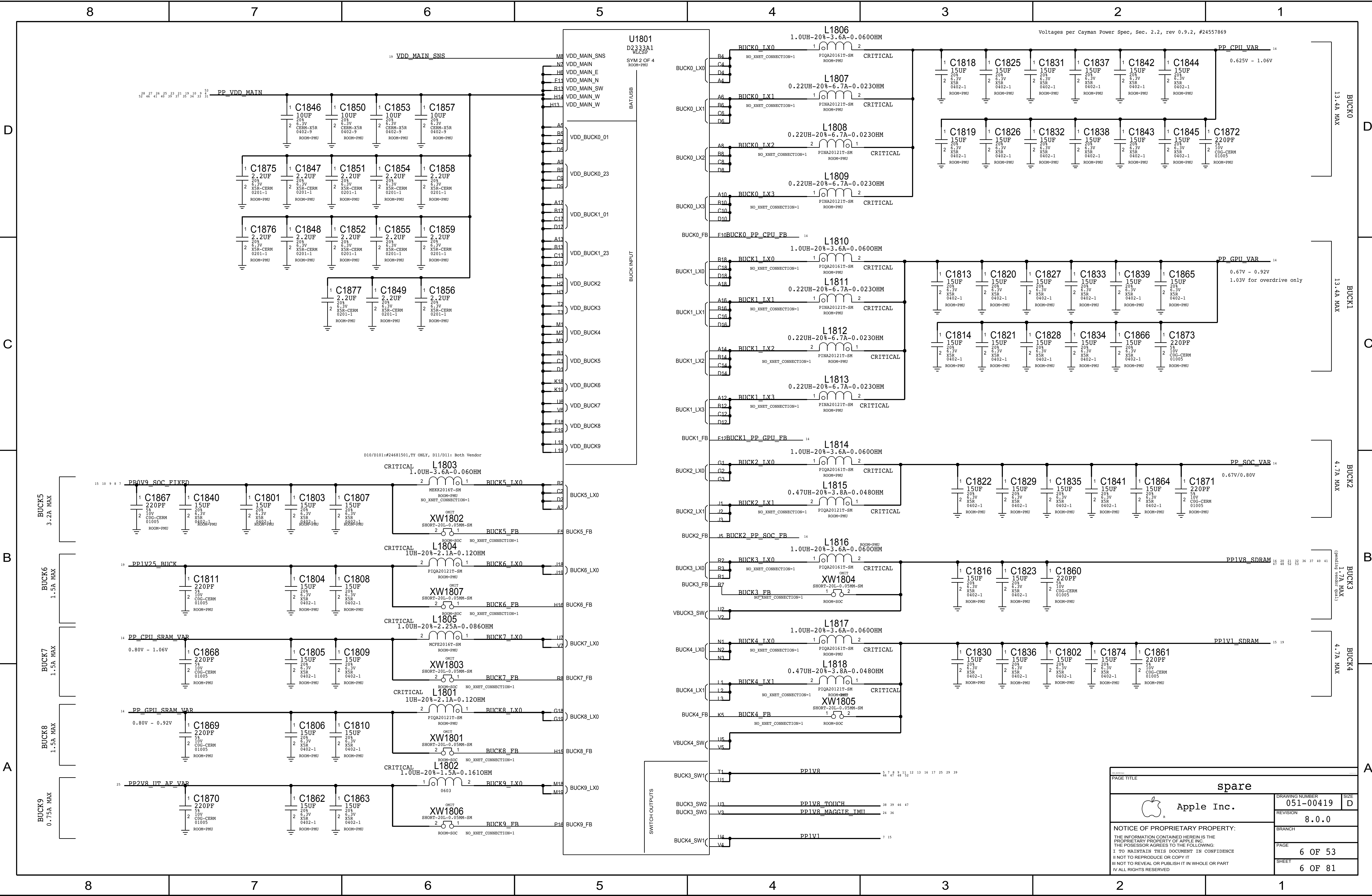
#24543147:10uF for 32GB  
#26326159:10uF for C1719

1230mA MAX (lus peak power)



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ADELYN LDO SPECS

| LDO#       | ADJ. RANGE, LOW | ADJ. RANGE, HI | ACCURACY | MAX. CURRENT                   |
|------------|-----------------|----------------|----------|--------------------------------|
| LD01 (Ca)  | 1.2-2.475V      | 2.4-3.675V     | +/-1.4%  | 50mA                           |
| LD02 (Ca)  | 1.2-2.475V      | 2.4-3.675V     | +/-2.5%  | 50mA                           |
| LD03 (Ca)  | 1.2-2.475V      | 2.4-3.675V     | +/-2.5%  | 50mA                           |
| LD04 (D)   | 0.7-1.2V        |                | +/-2.5%  | 60mA                           |
| LD05 (F)   | 2.5-3.6V(tbc)   |                | +/-75mV  | 1000mA                         |
| LD06 (Cb)  | 1.2-2.475V      | 2.4-3.675V     | +/-2.5%  | 250mA<br>(500/100mA in bypass) |
| LD07 (Cb)  | 1.2-2.475V      | 2.4-3.675V     | +/-30mV  | 250mA                          |
| LD08 (Cb)  | 1.2-2.475V      | 2.4-3.675V     | +/-30mV  | 250mA                          |
| LD09 (Cb)  | 1.2-2.475V      | 2.4-3.675V     | +/-25mV  | 250mA                          |
| LD010 (Ga) | 0.7-1.2V        |                | +/-4.5%  | 1150mA                         |

| LDO#       | ADJ. RANGE, LOW | ADJ. RANGE, HI | ACCURACY | MAX. CURRENT |
|------------|-----------------|----------------|----------|--------------|
| LD011 (Cb) | 1.2-2.475V      | 2.4-3.675V     | +/-30mV  | 250mA        |
| LD012 (E)  | 1.8V            |                | +/-5%    | 10mA         |
| LD013 (Cb) | 1.2-2.475V      | 2.4-3.675V     | +/-30mV  | 250mA        |
| LD014 (Gb) | 0.7-1.4V        |                | +/-3.0%  | 400mA        |
| LD015 (Ca) | 1.2-2.475V      | 2.4-3.675V     | +/-2.5%  | 50mA         |
| LD016 (Cb) | 1.2-2.475V      | 2.4-3.675V     | +/-30mV  | 250mA        |
| LD017 (Ca) | 1.2-2.475V      | 2.4-3.675V     | +/-2.5%  | 50mA         |
| LD018 (Gb) | 0.7-1.4V        |                | +/-3.0%  | 400mA        |
| LD019 (Gb) | 0.7-1.4V        |                | +/-3.0%  | 400mA        |
| LDO_RTC    | 2.5V            |                | +/-2.0%  | 10mA         |
| BUF_1V2    | 1.2V            |                | +/-5.0%  | 10mA         |

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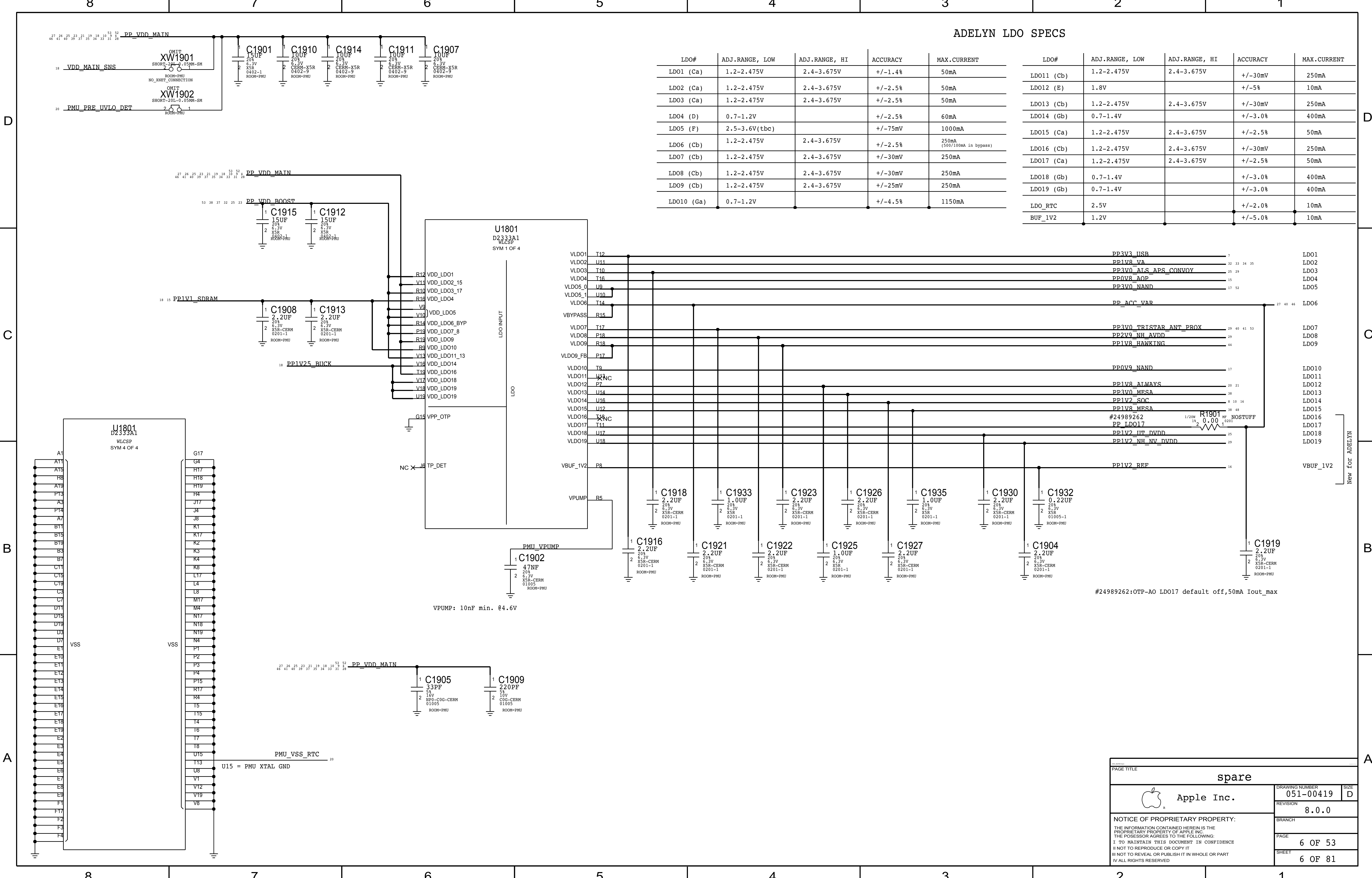
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#24989262:OTP-AO LD017 default off,50mA Iout\_max

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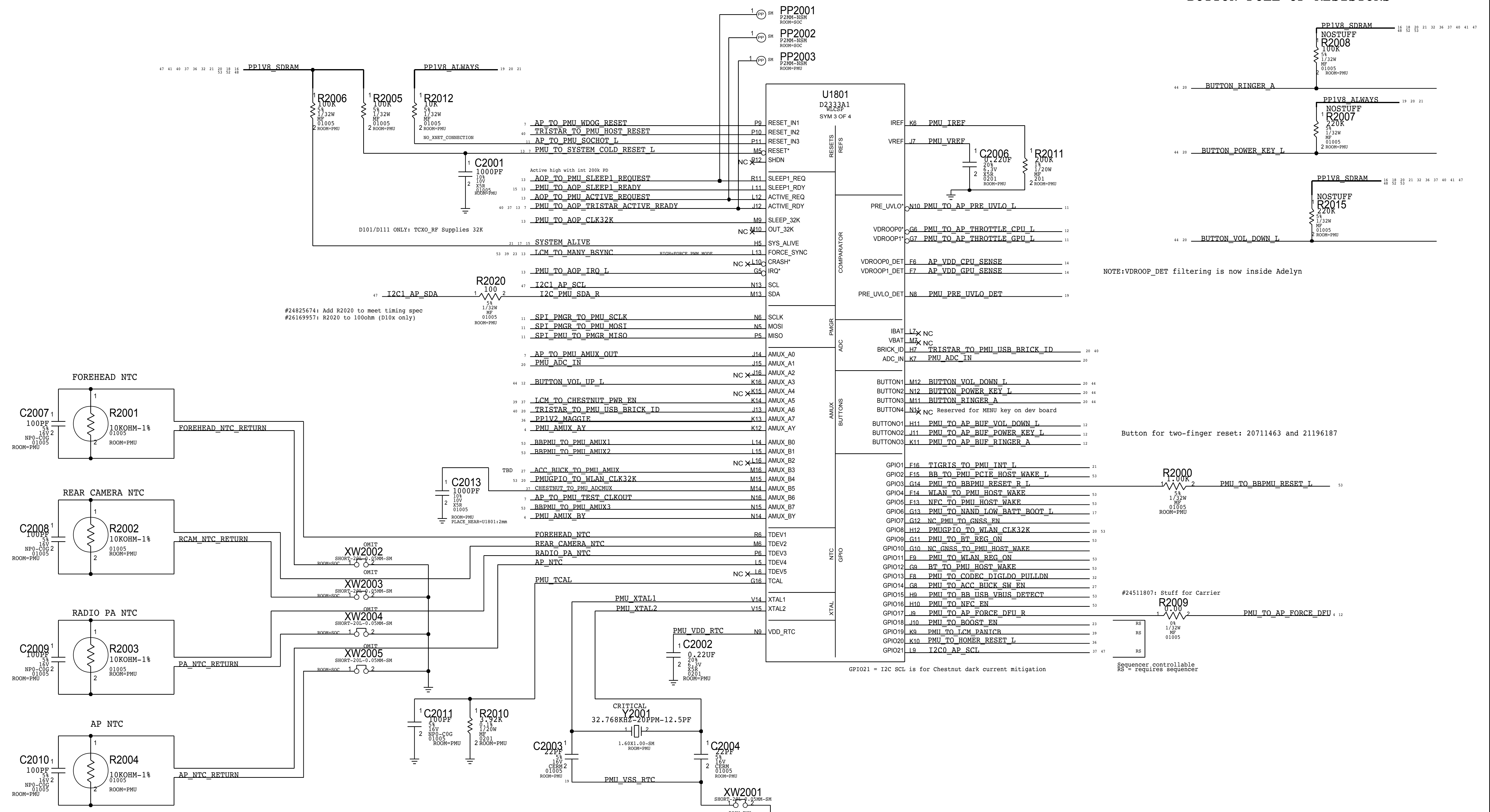
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BUTTON PULL-UP RESISTORS



#24825674: Add R2020 to meet timing spec  
#26169957: R2020 to 100ohm (D10x only)

NOTE:VDR00P\_DET filtering is now inside Adelyn

Button for two-finger reset: 20711463 and 21196187

#24511807: Stuff for Carrier

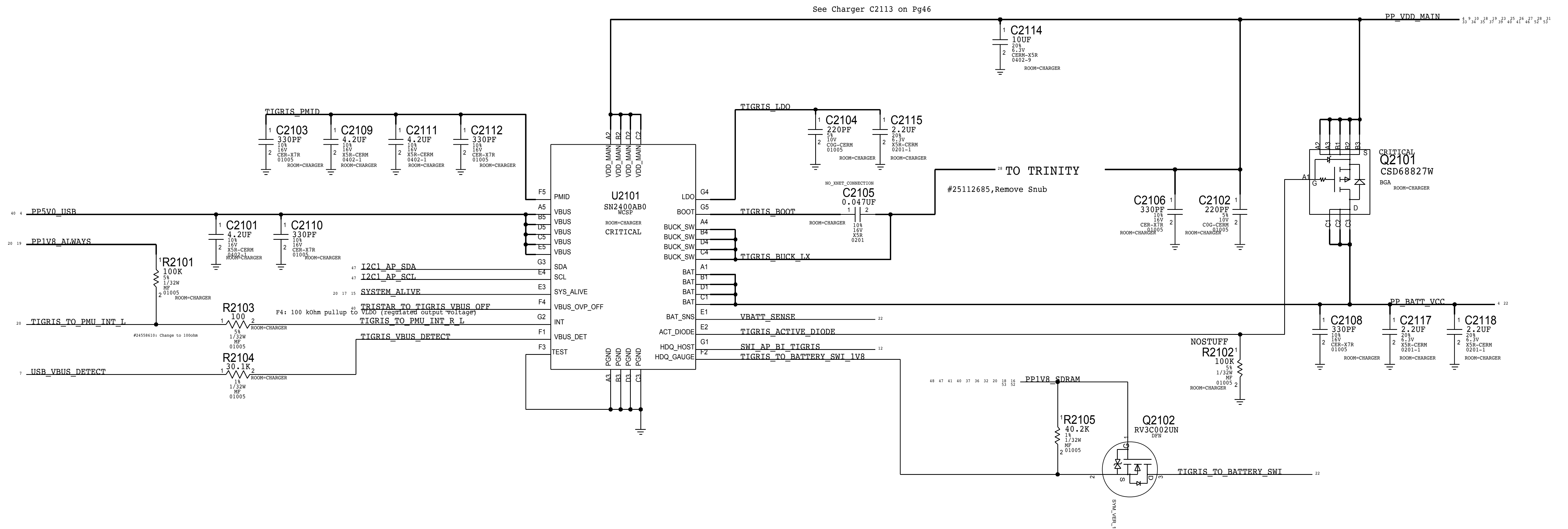
GPIO21 = I2C SCL is for Chestnut dark current mitigation

Sequencer controllable  
RS™ requires sequencer

NOTE:100PF CAPS ARE THE SAMPLING CAPS FOR PMU ADC

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# TIGRIS CHARGER



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| BRANCH  |           |      |
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| SHEET   | 6 OF 81   |      |



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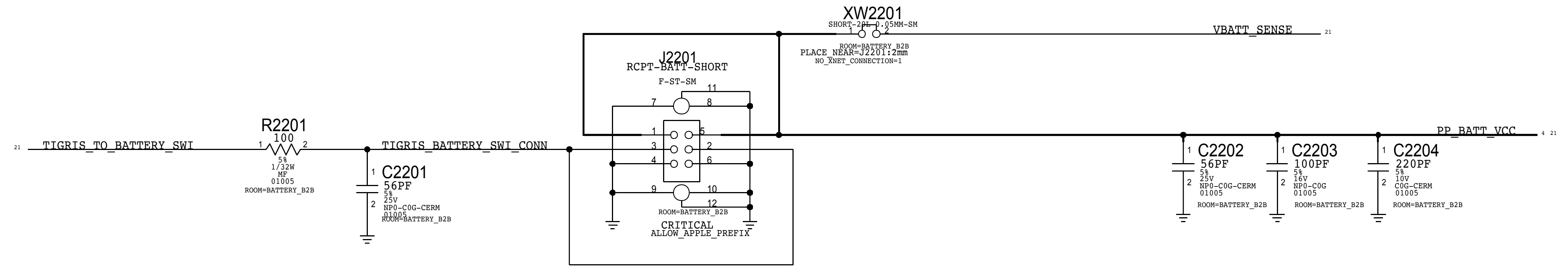
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# BATTERY CONNECTOR

THIS ONE ON MLB ----> 516S00172 (matches d10 m1b MCO rev 27)



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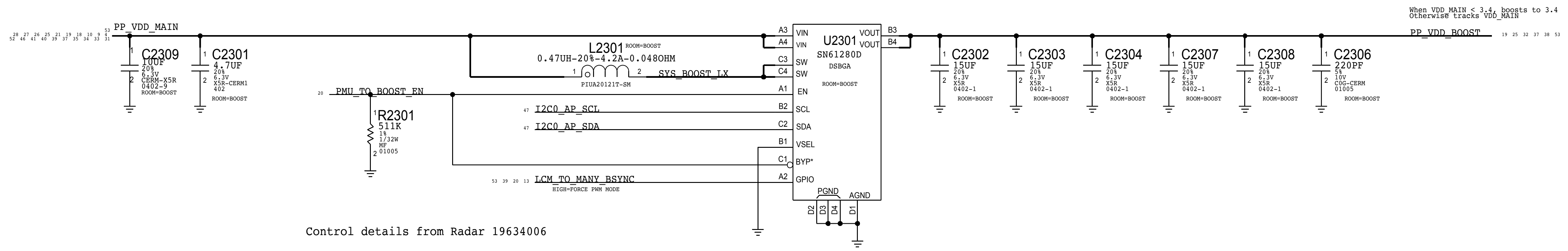
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# BOOST

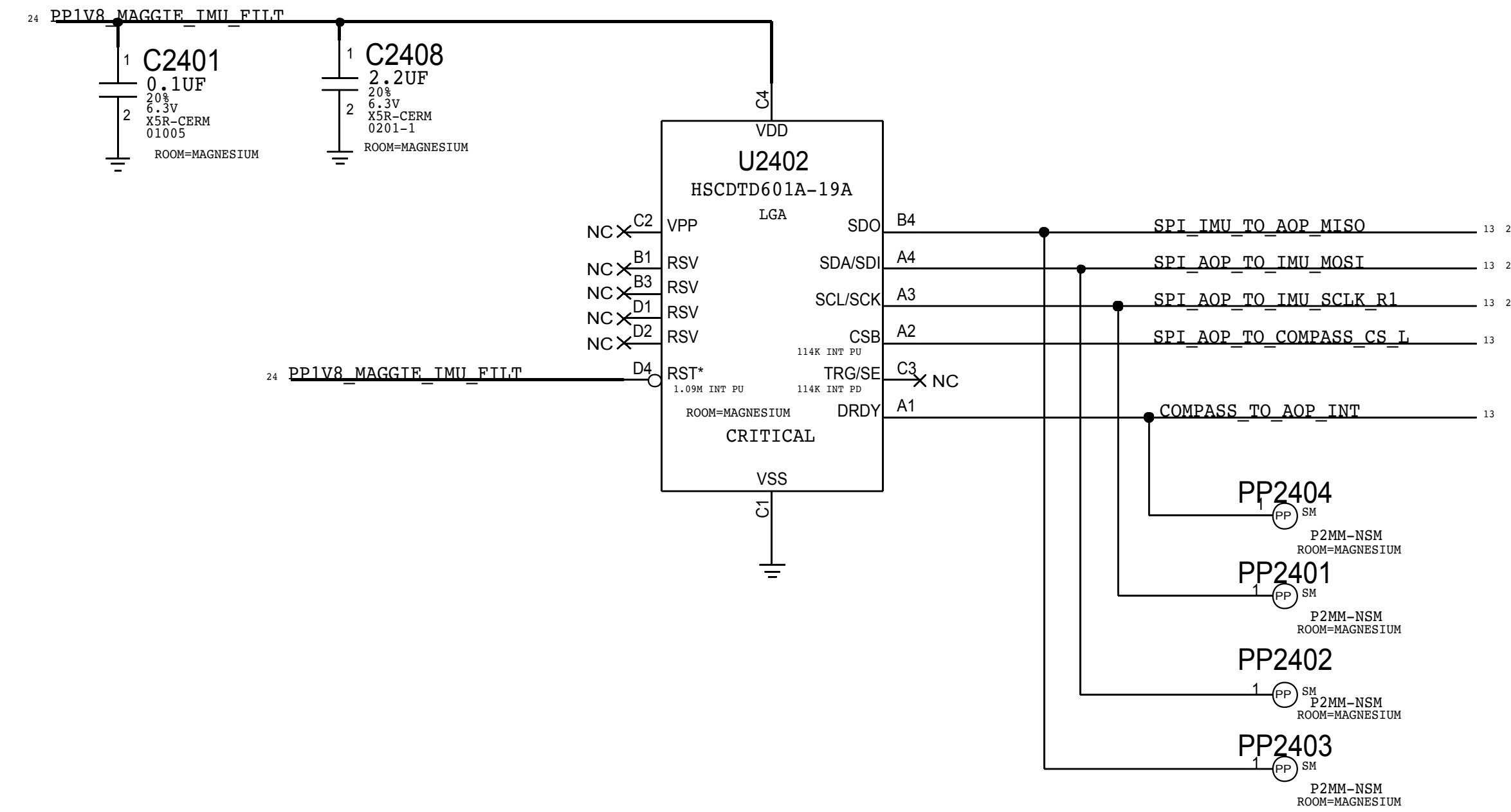
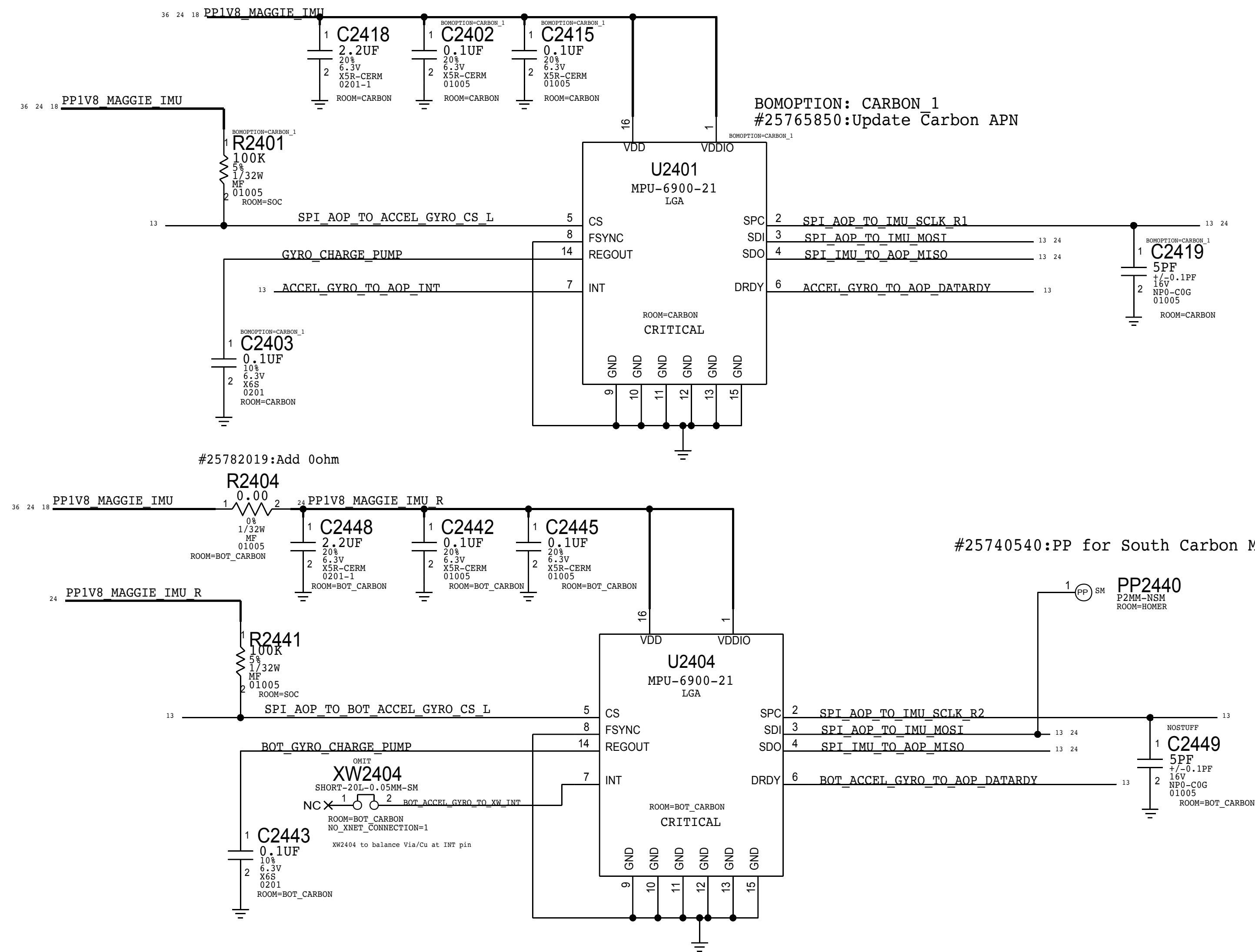


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# CARBON - ACCEL & GYRO

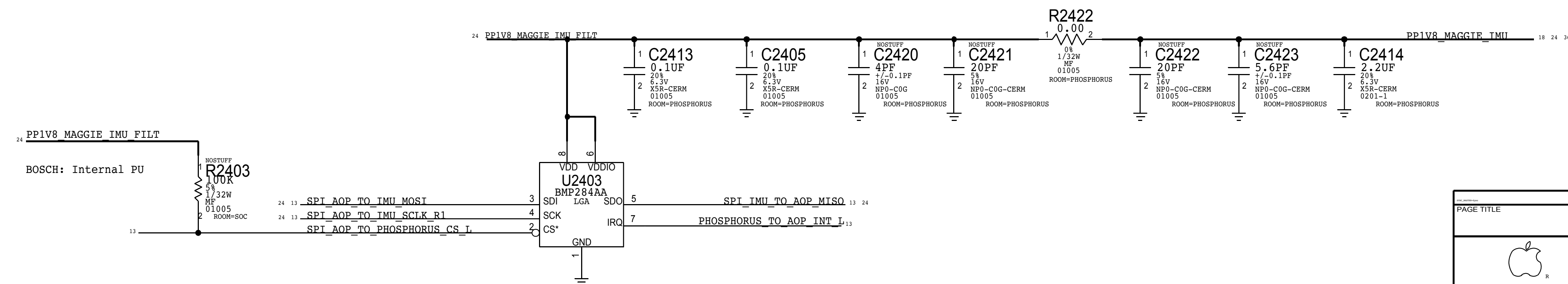
INVENSENSE, MPU-6800: C2403=0.1UF

# MAGNESIUM - COMPASS



# PHOSPHORUS

#24593845, #25691124  
BOSCH (APN:338S00188): nostuff C2420/C2421/C2422/C2423 and R2403 PU



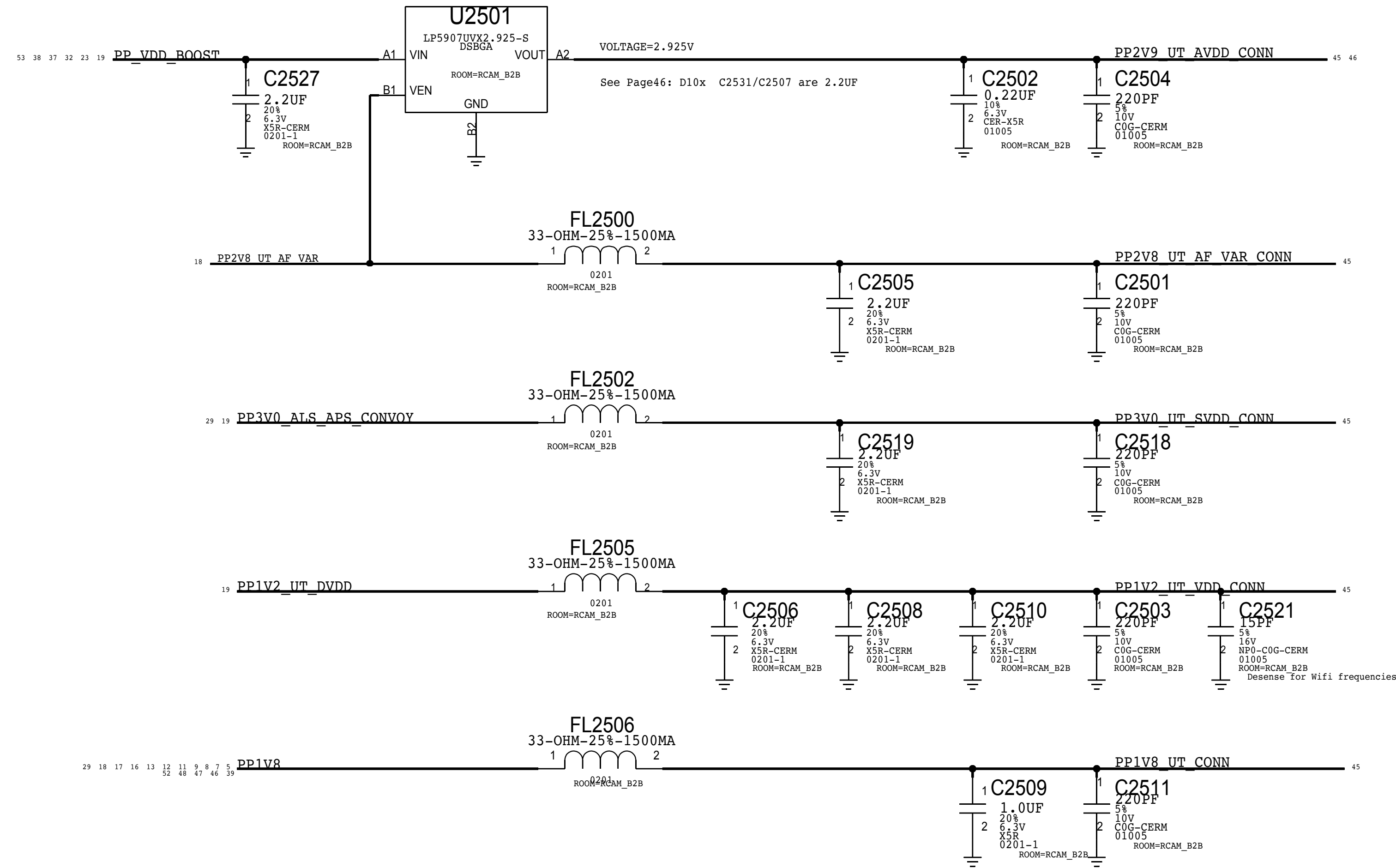
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THIS PAGE UNIQUE TO SMALL FORM FACTOR

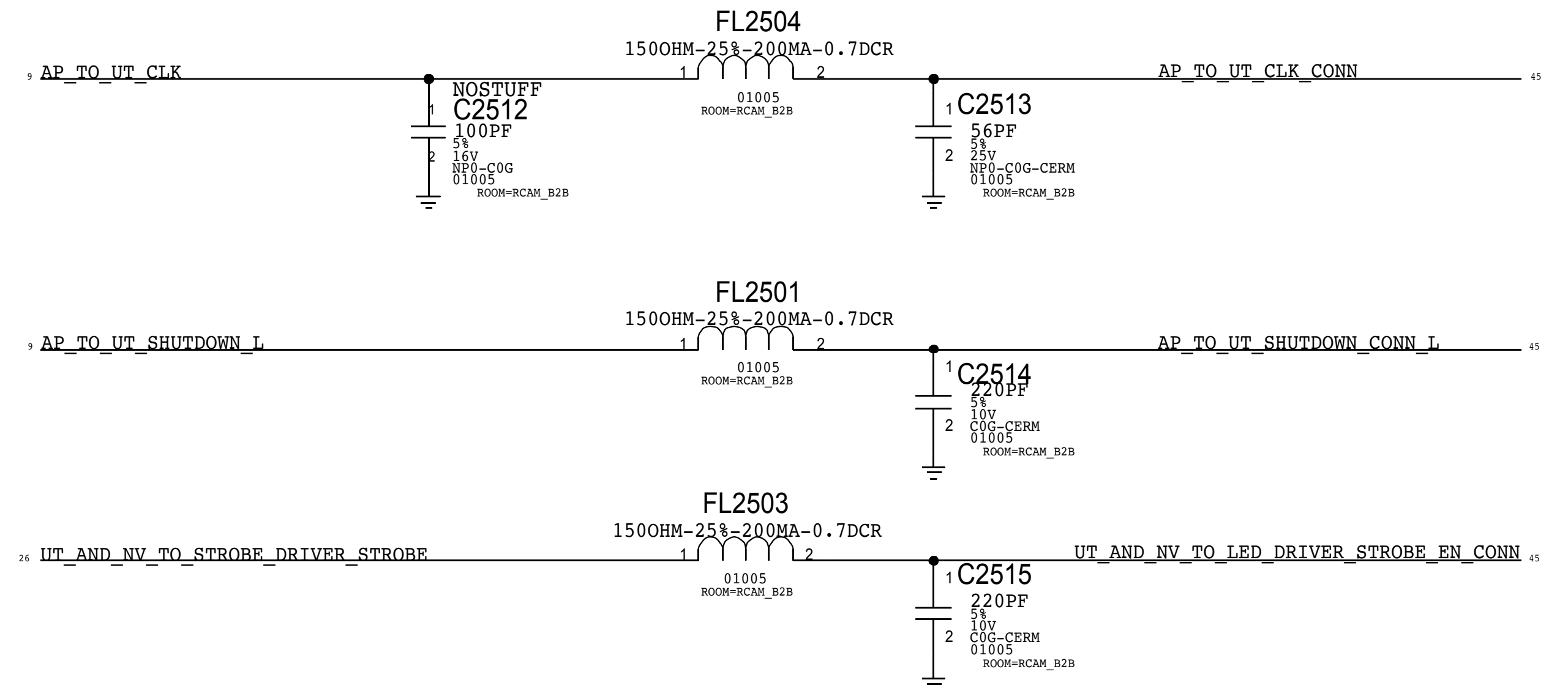
### UTAH POWER

NOTE: OUTPUT IMPEDANCE MUST BE >0.005-OHM  
IN ORDER TO MEET CAP ESR REQUIREMENT PER LDO SPEC.  
VENDOR ALSO RECOMMENDS CIN = COUT FOR STABILITY

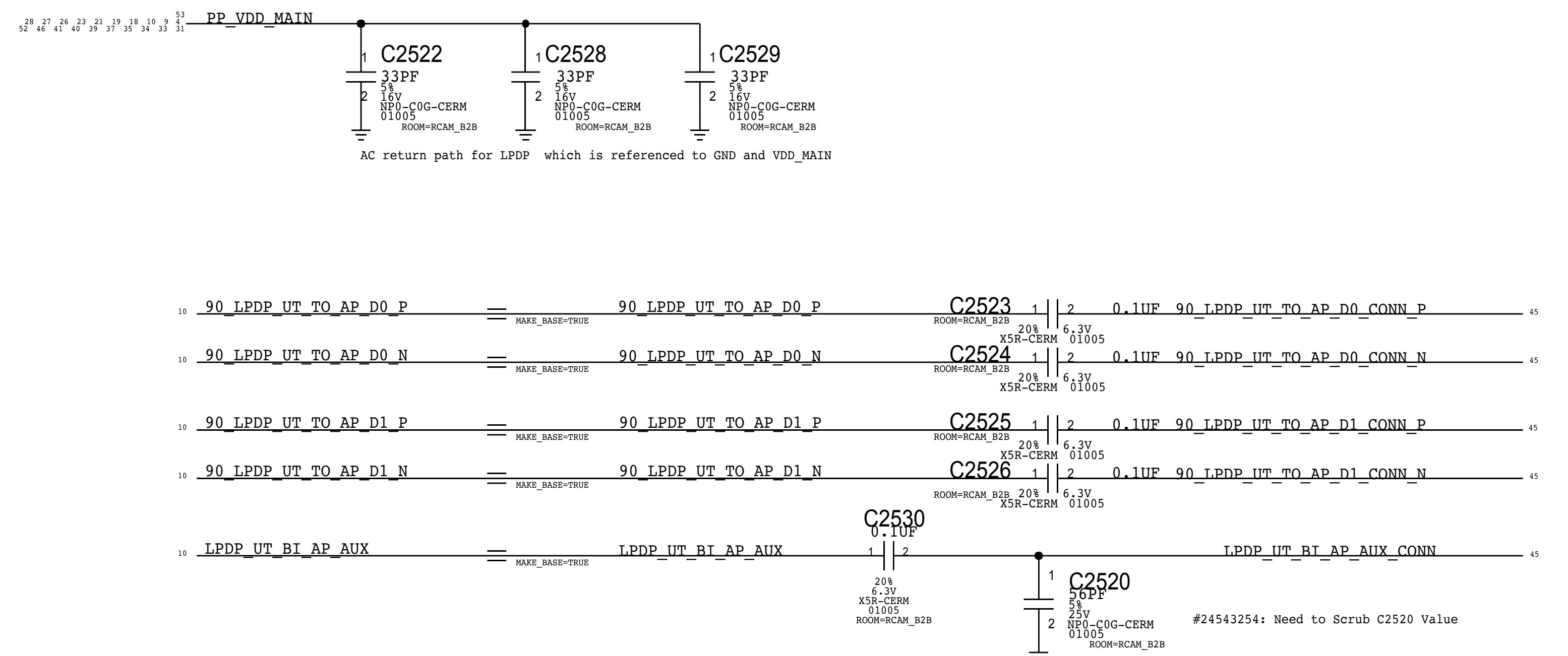
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ST:353S00889



### IO FILTERS



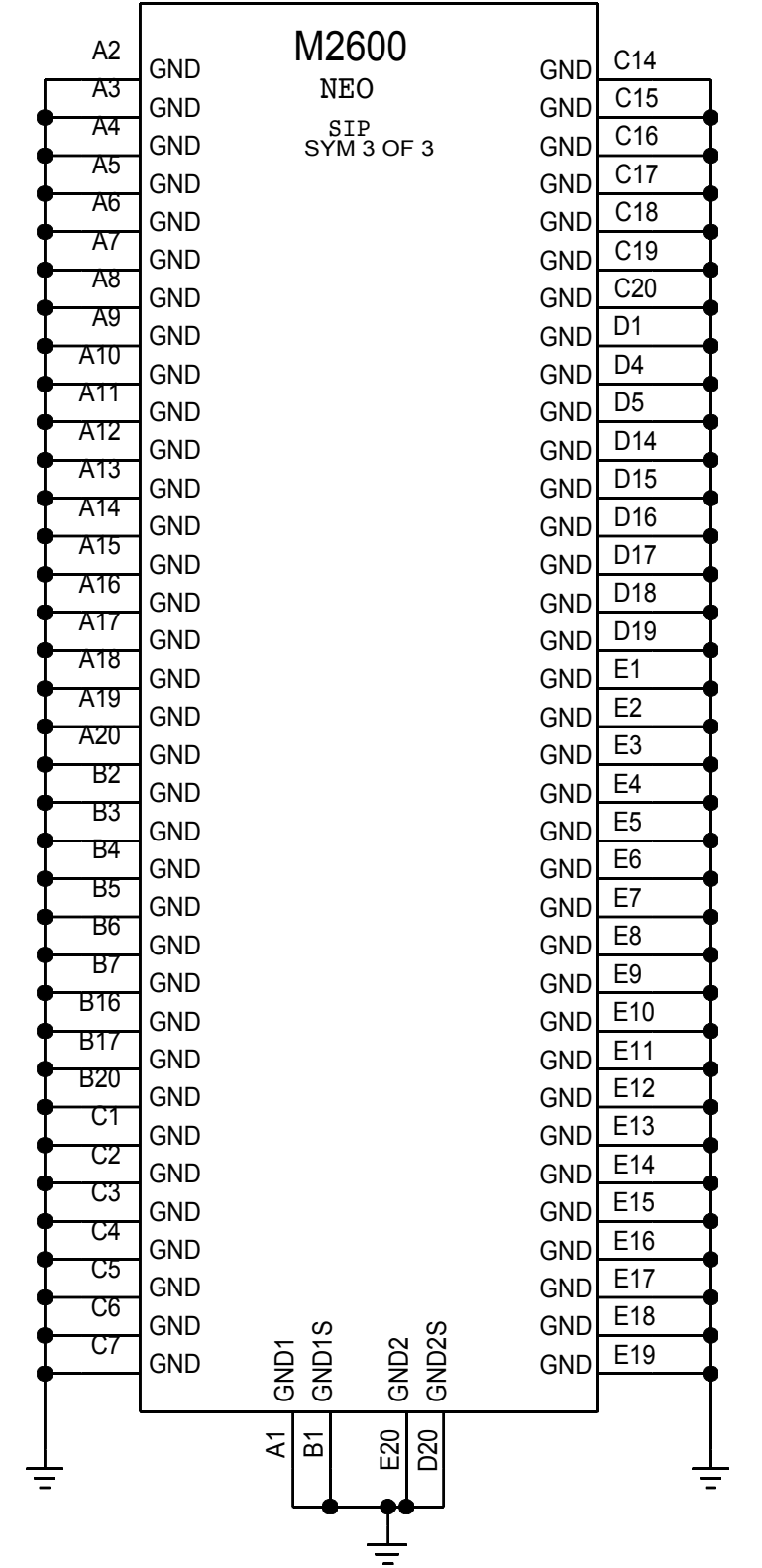
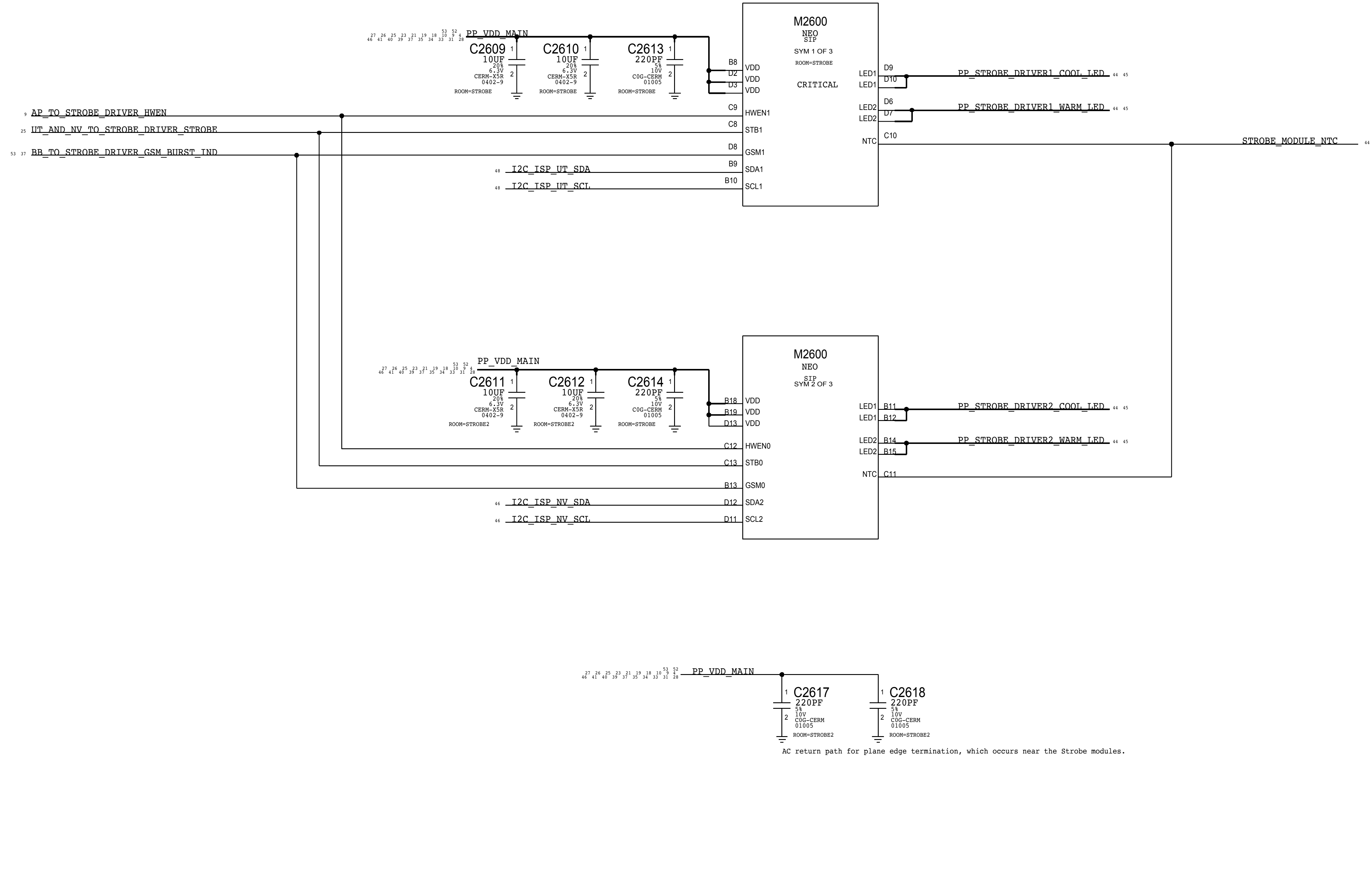
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|   |  | PAGE           | 6 OF 53   |
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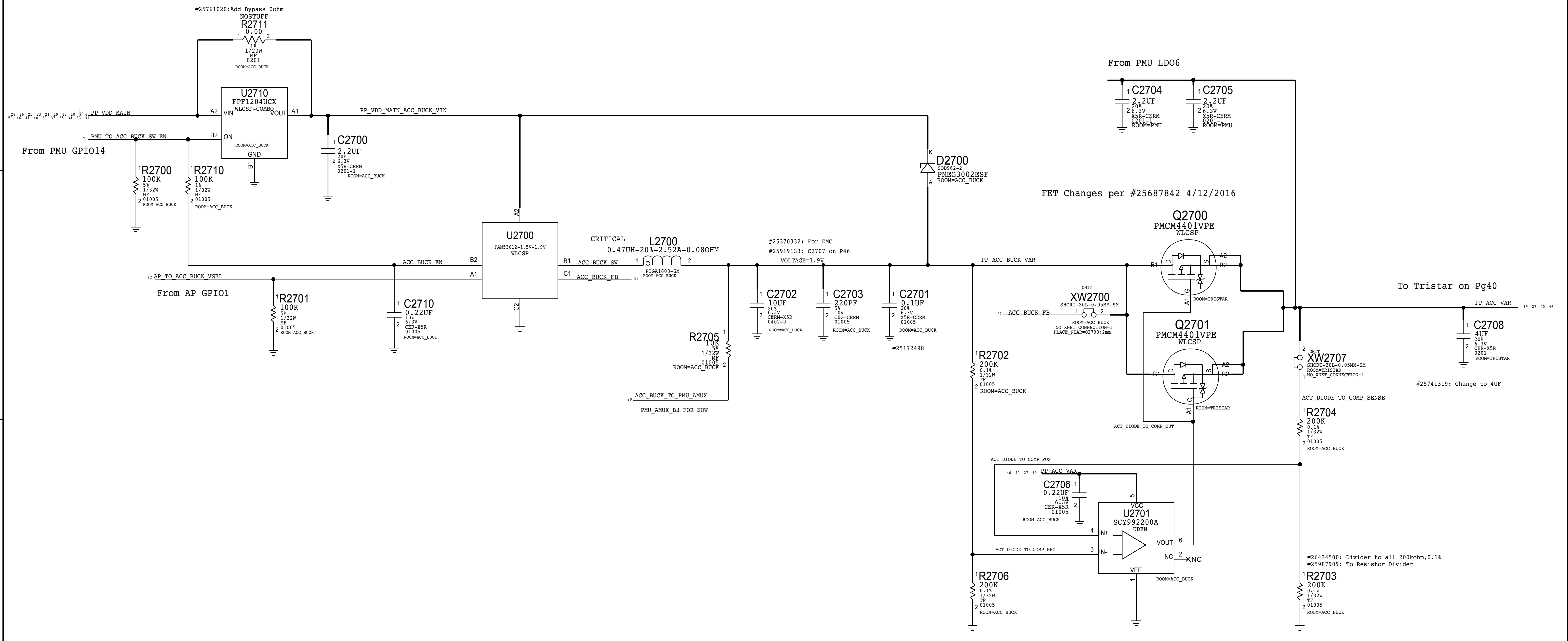
# STROBE DRIVERS INSIDE NEO SIP MODULE

D10/sip\_neo



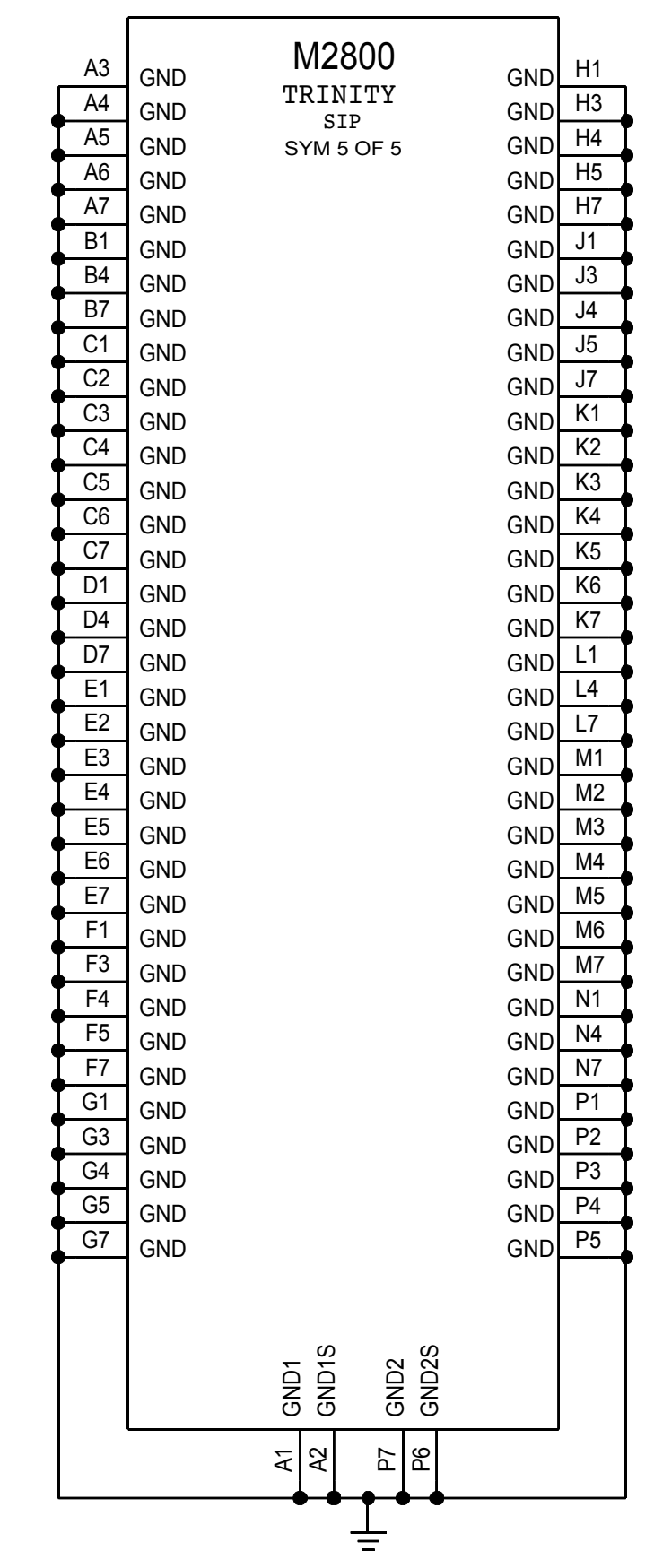
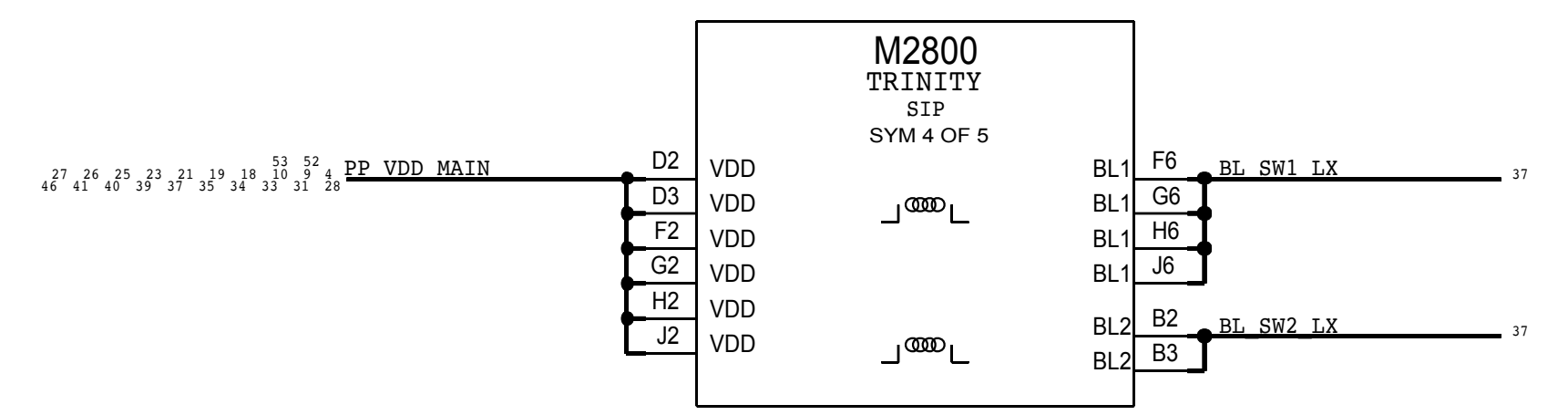
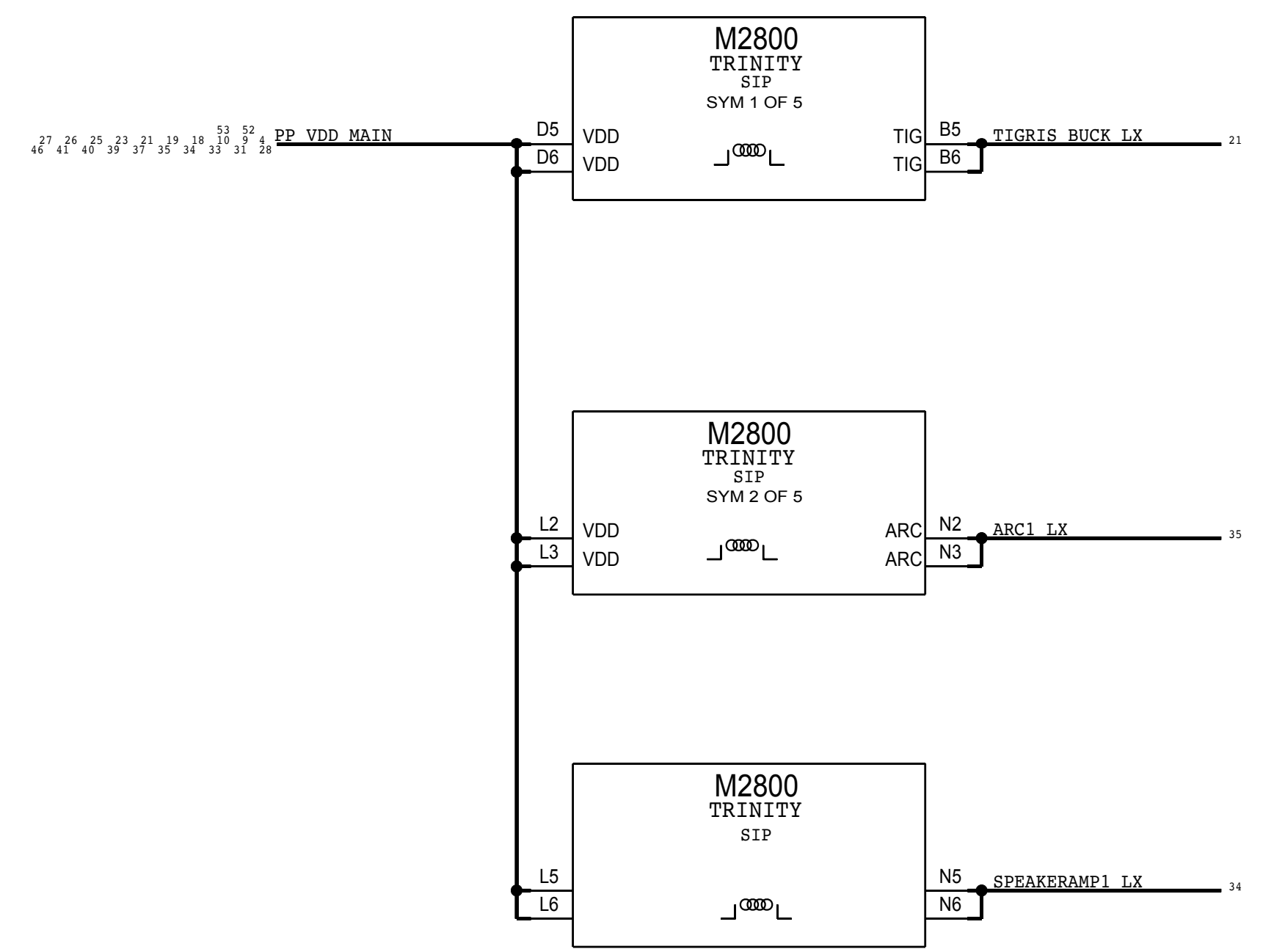
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# ACCESSORY BUCK



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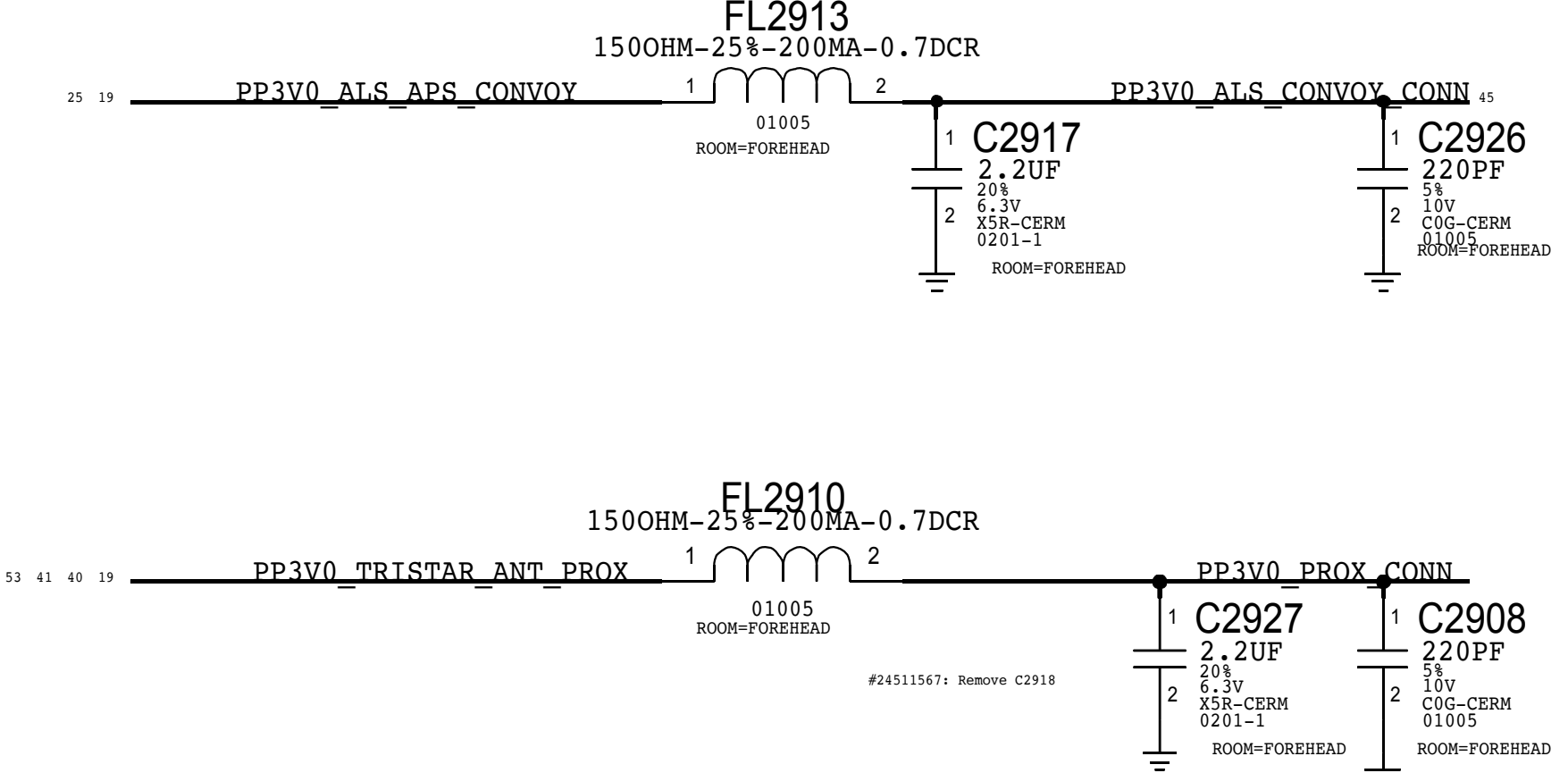
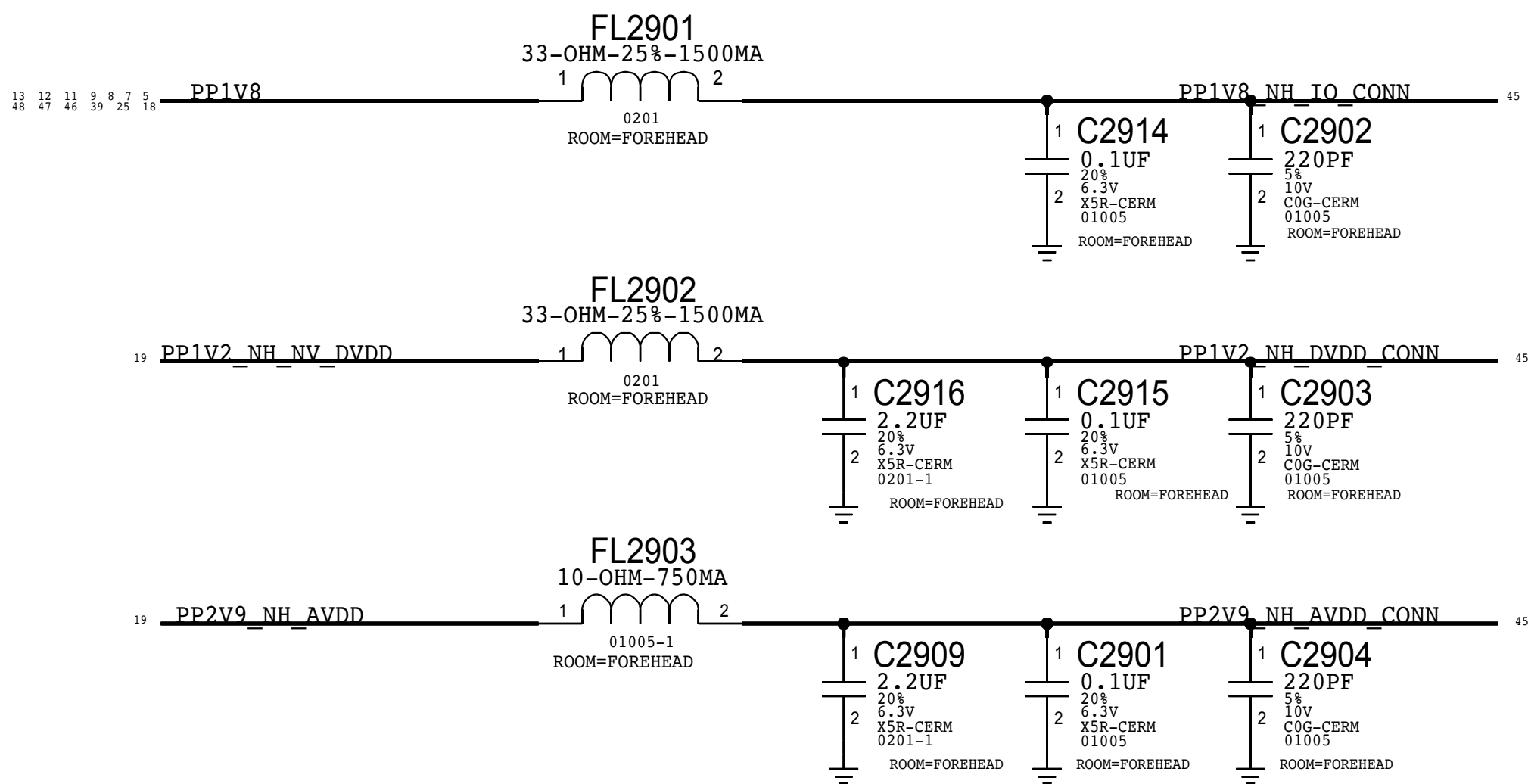


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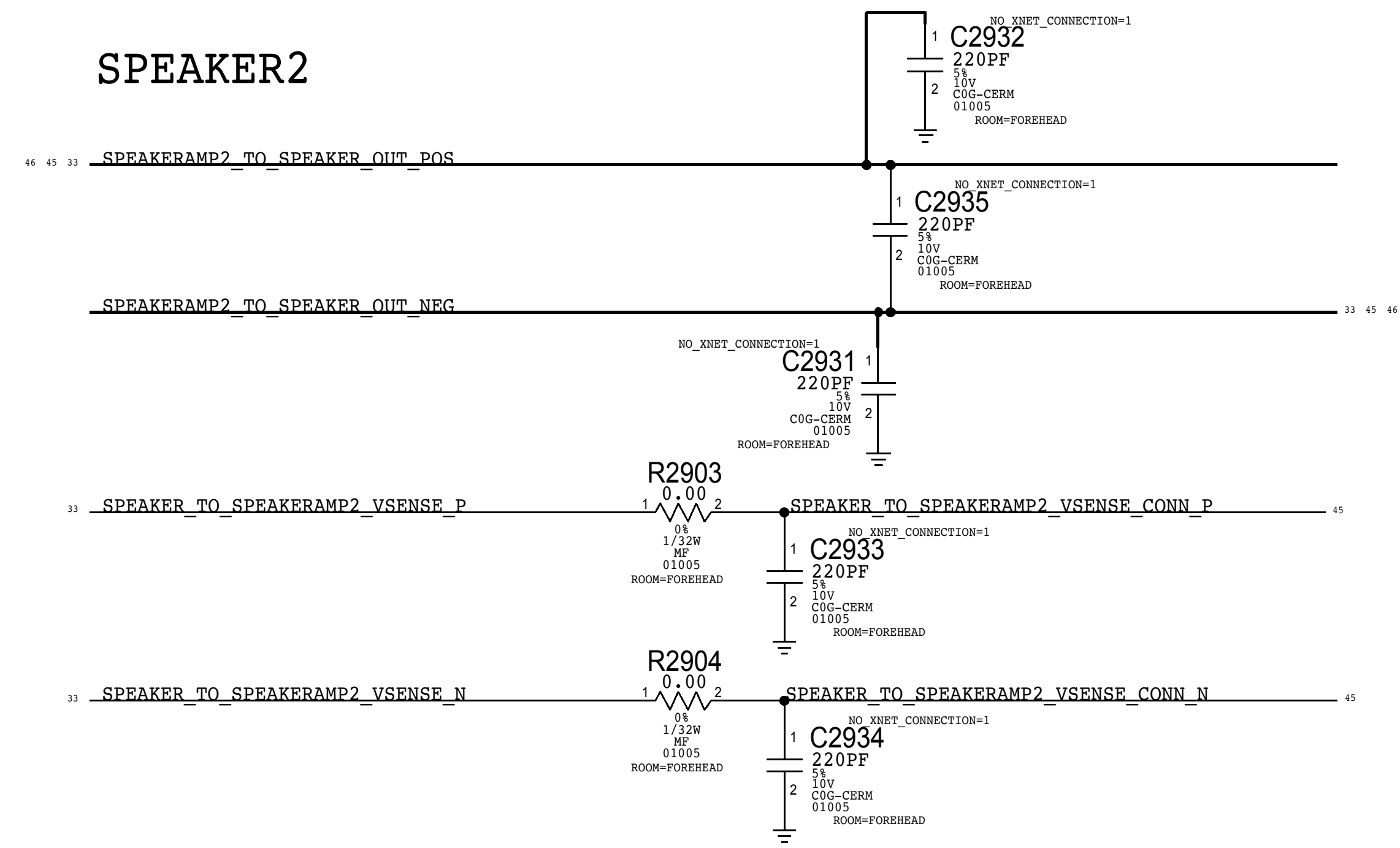
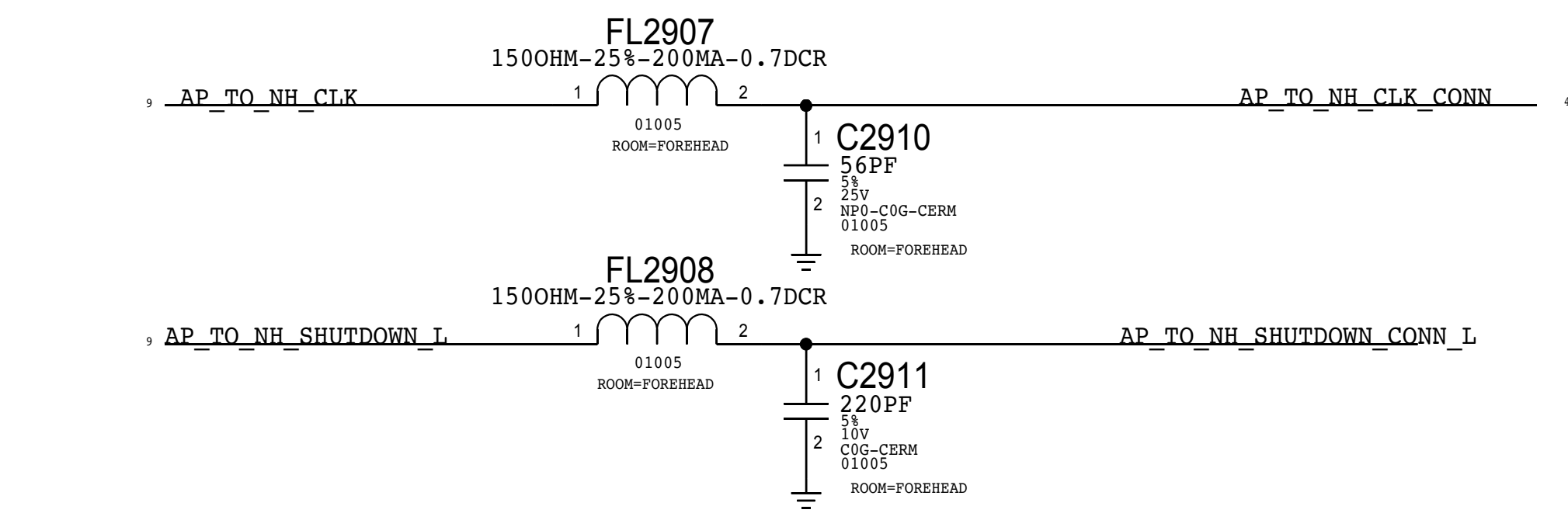
NEW HAMPSHIRE POWER

PROX, ALS, & CONVOY POWER



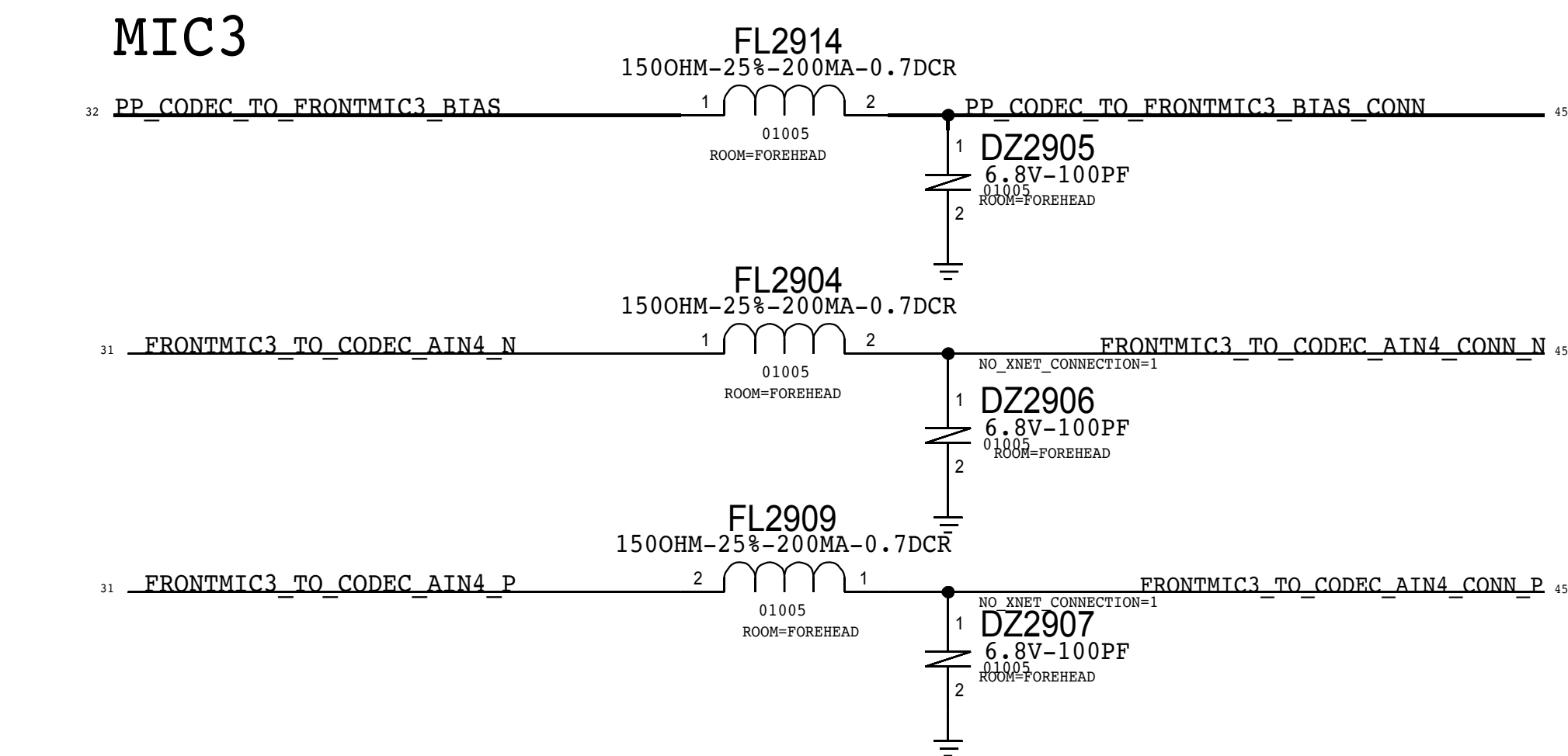
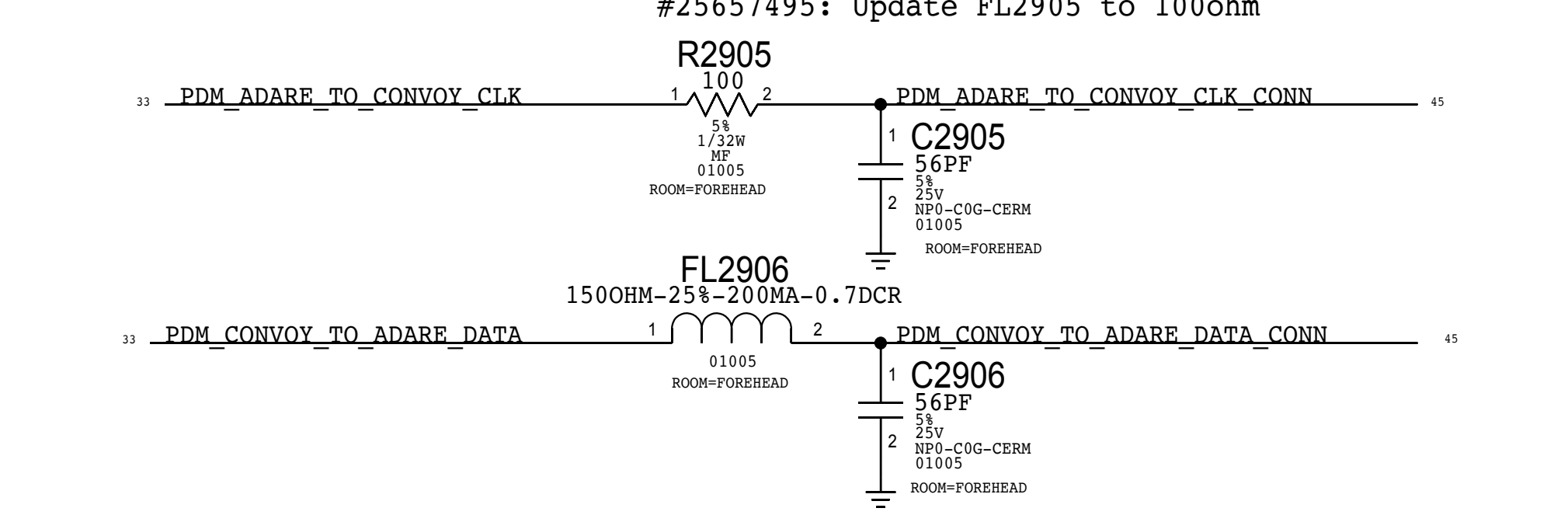
NEW HAMPSHIRE I/O

SPEAKER2

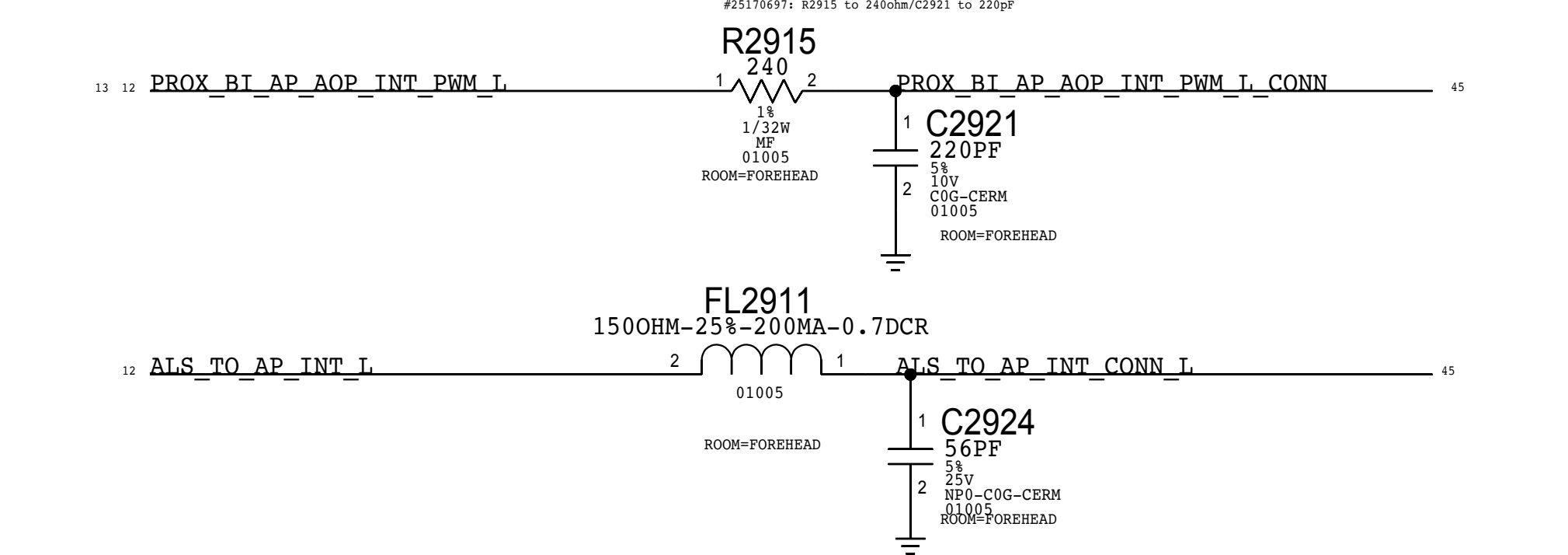


CONVOY I/O

MIC3



PROX/ALS I/O



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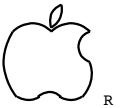
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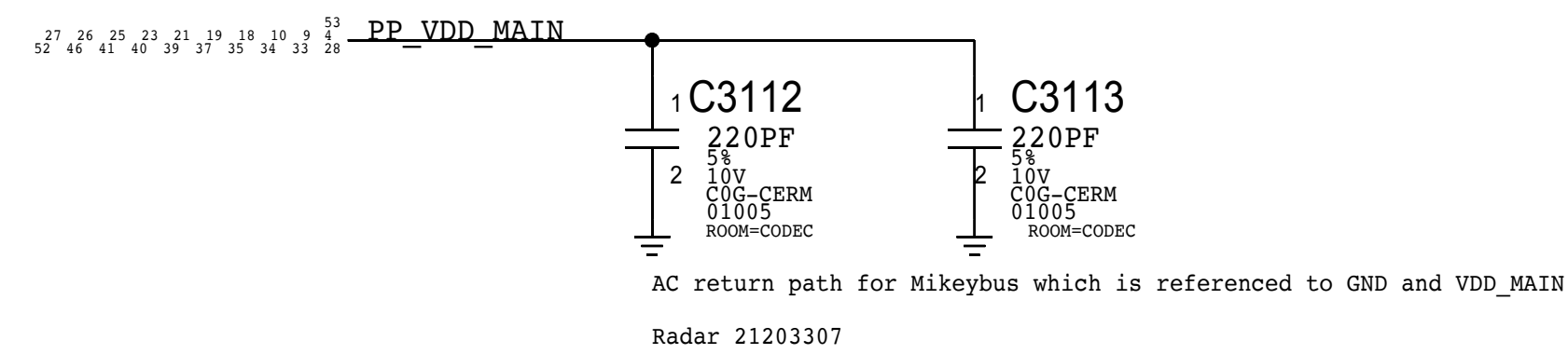
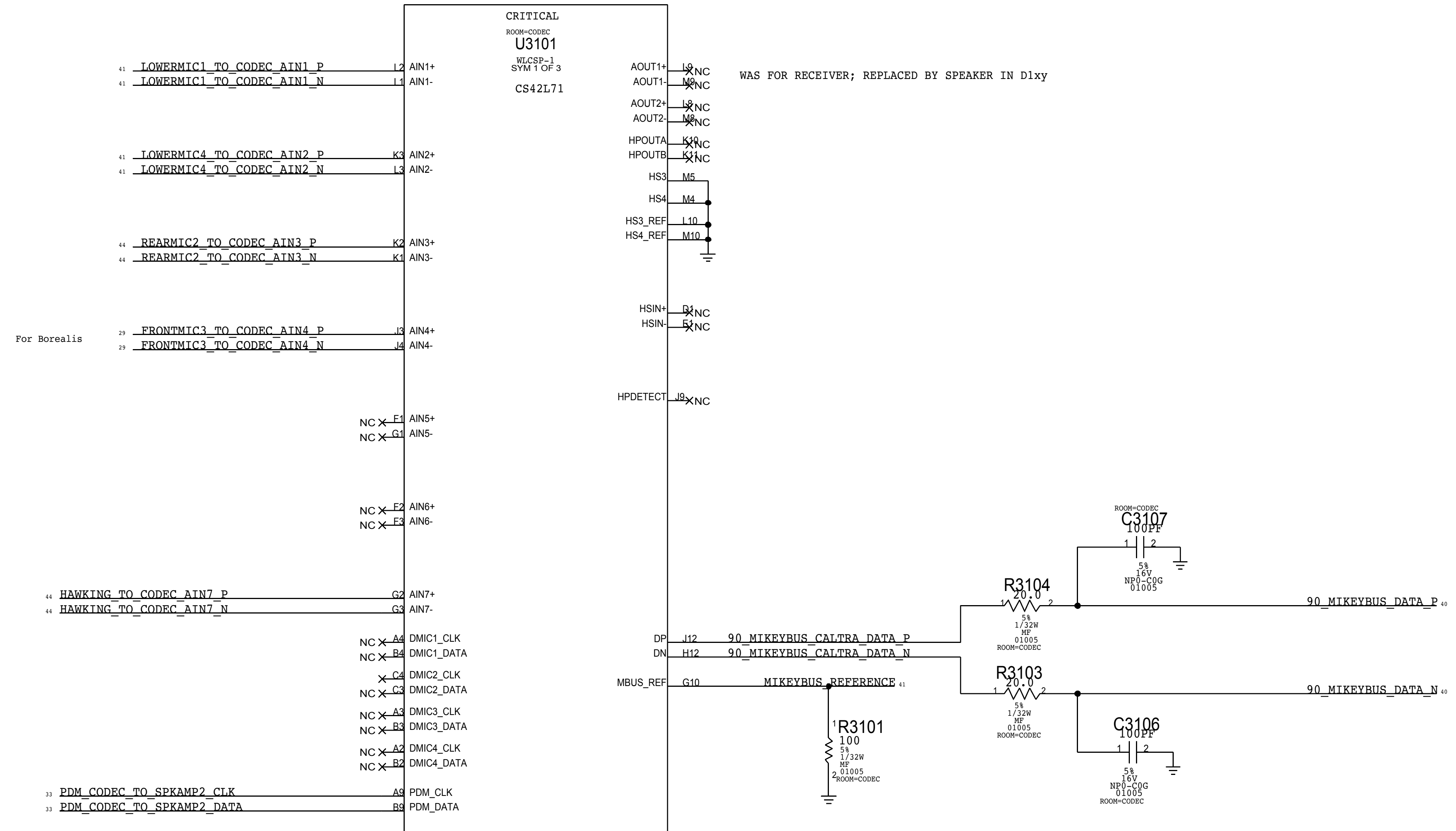
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# CALTRA AUDIO CODEC (ANALOG INPUTS & OUTPUTS)



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# CALTRA AUDIO CODEC (POWER & I/O)

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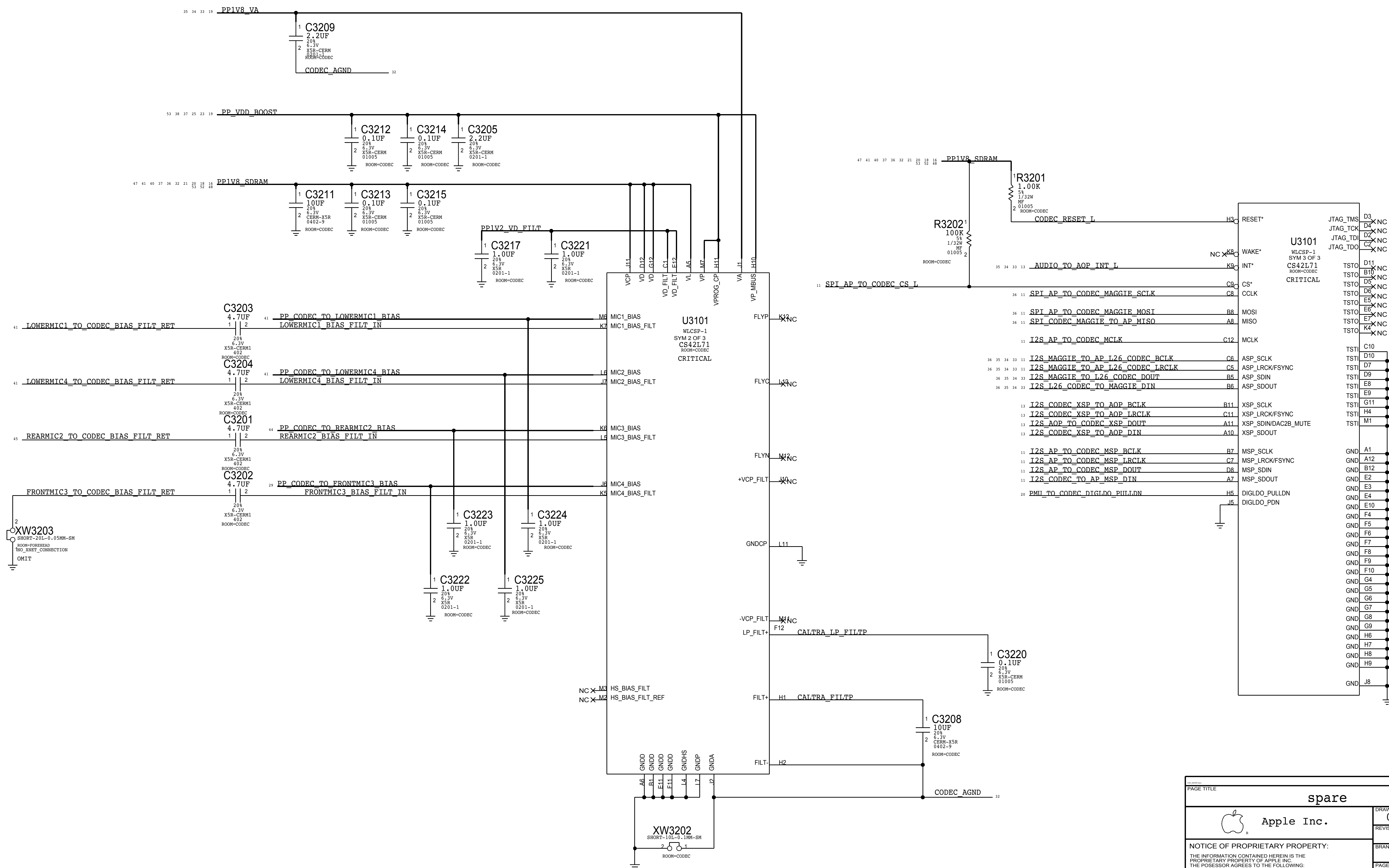
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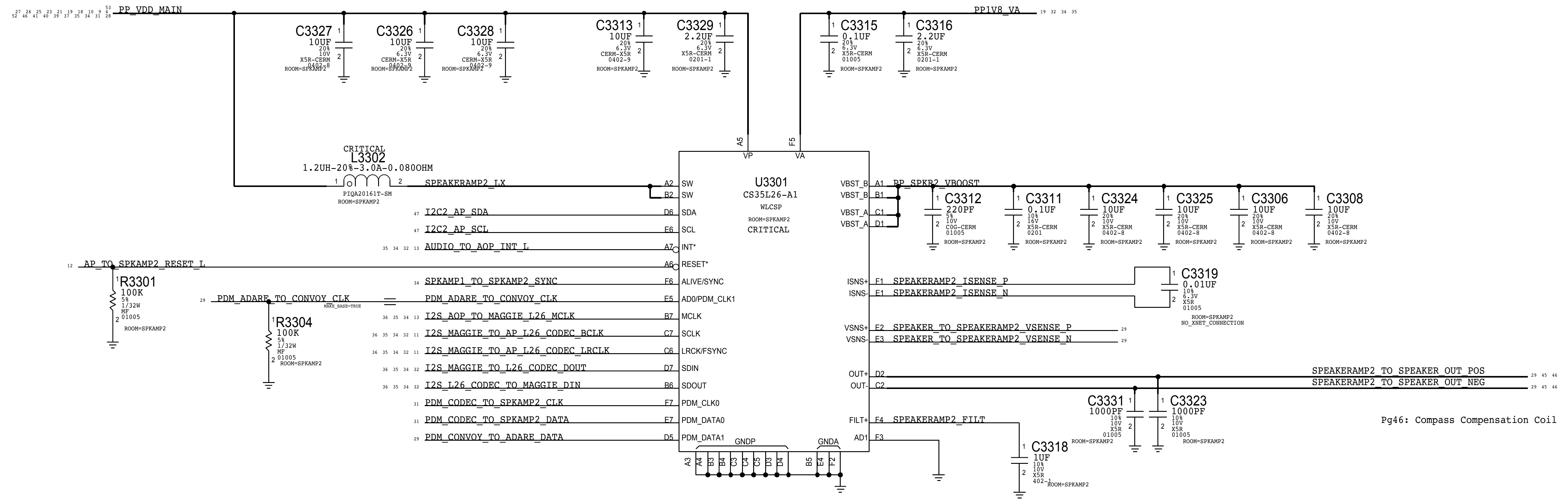
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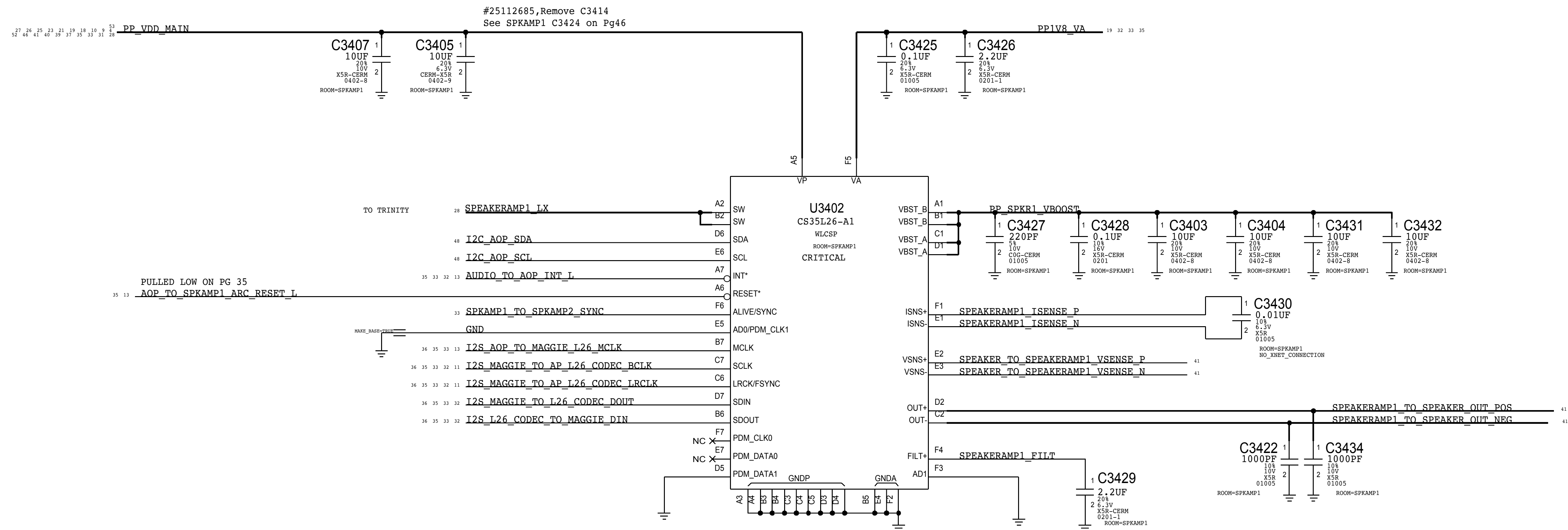
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# SPEAKER AMPLIFIER 2 (North)



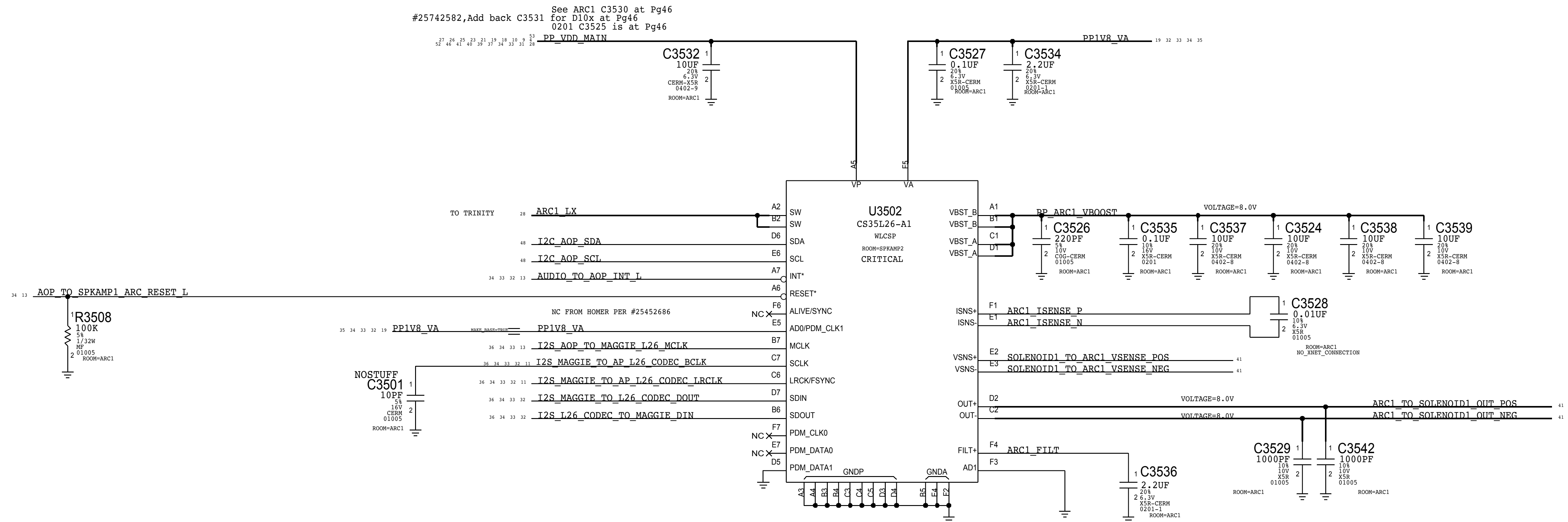
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# SPEAKER AMPLIFIER 1 (South)



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# ARC DRIVER



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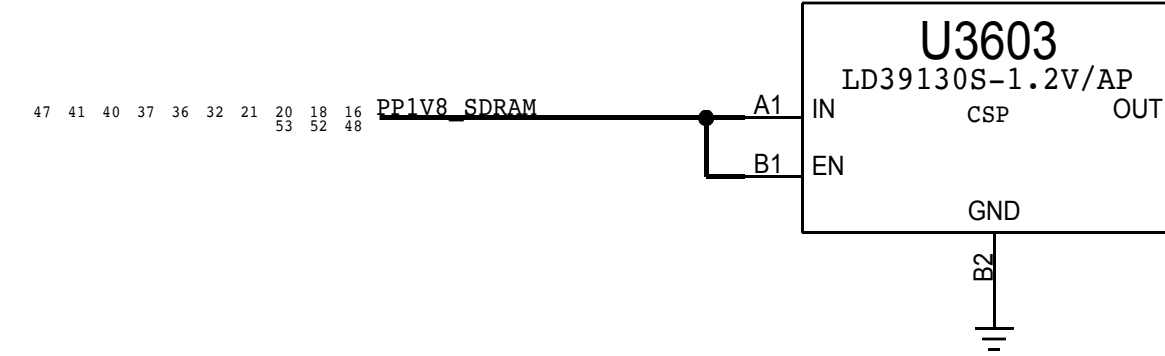
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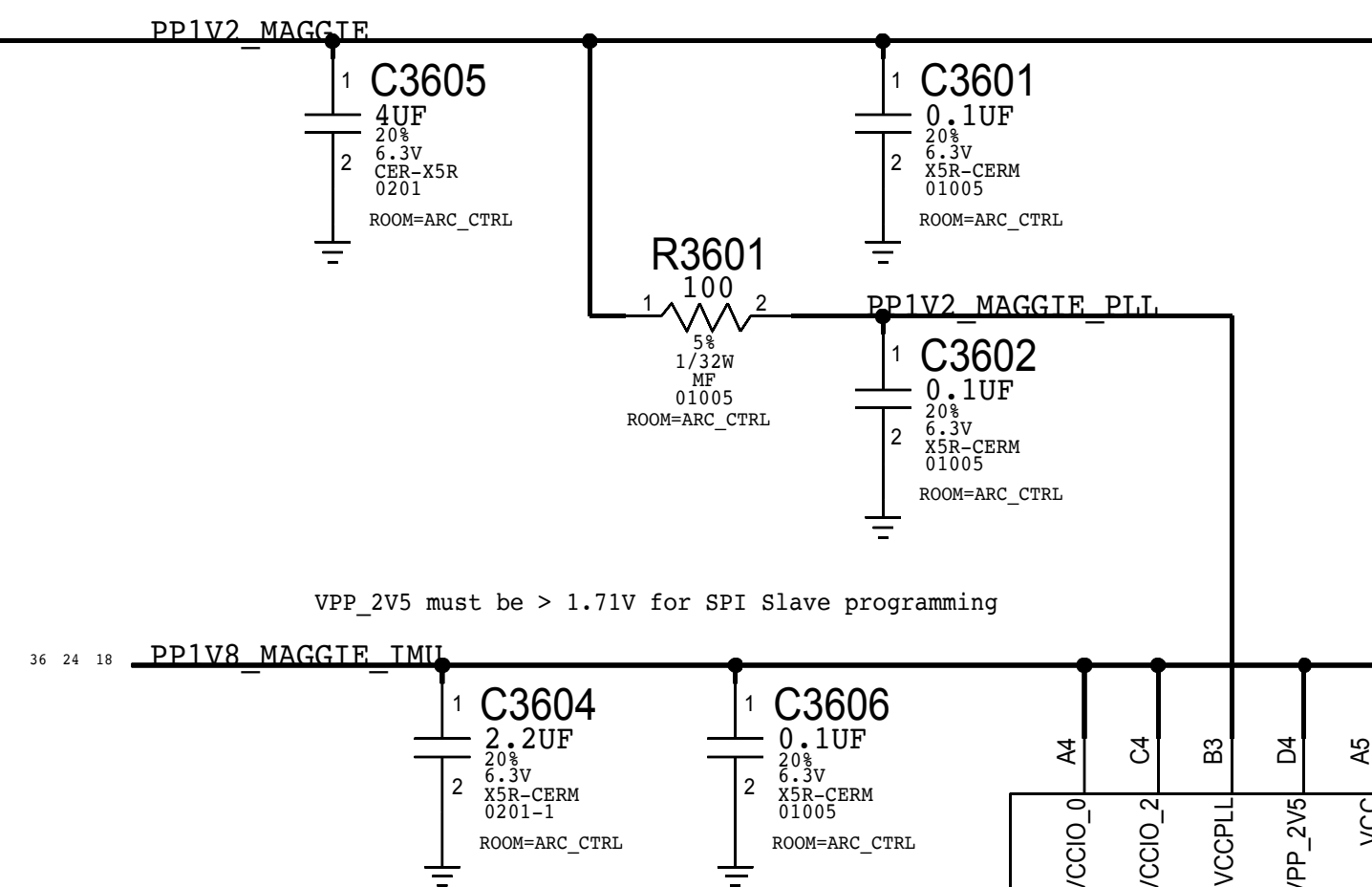
### MAGGIE LDO

APN: 353800842



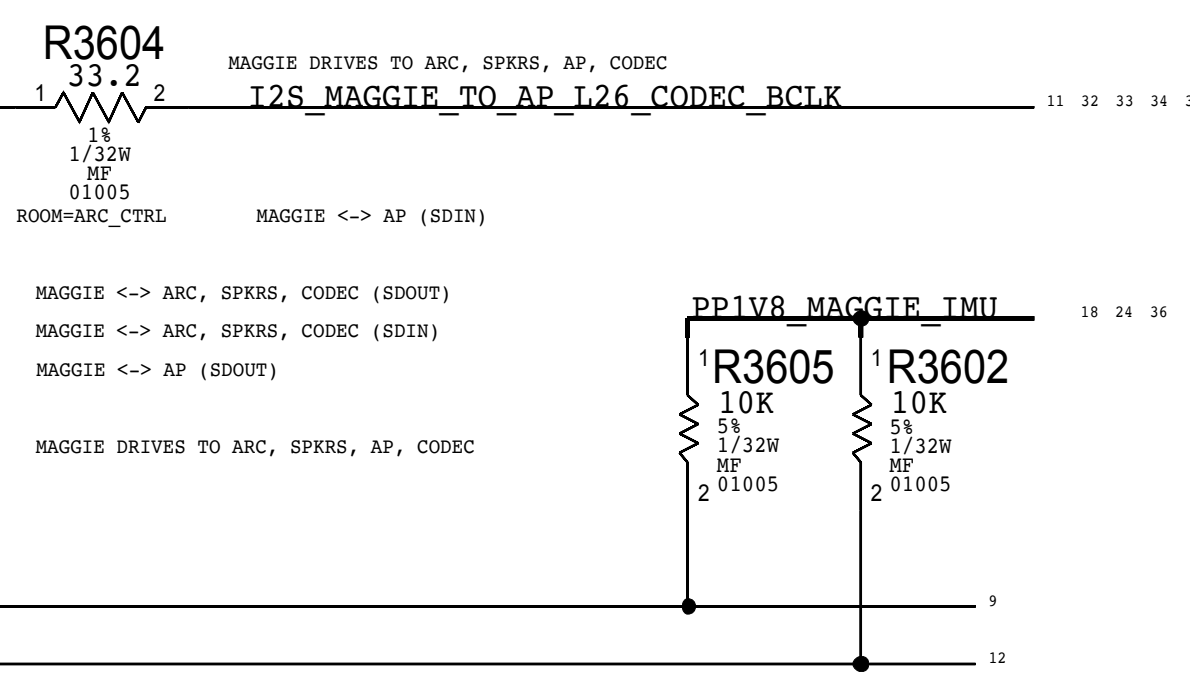
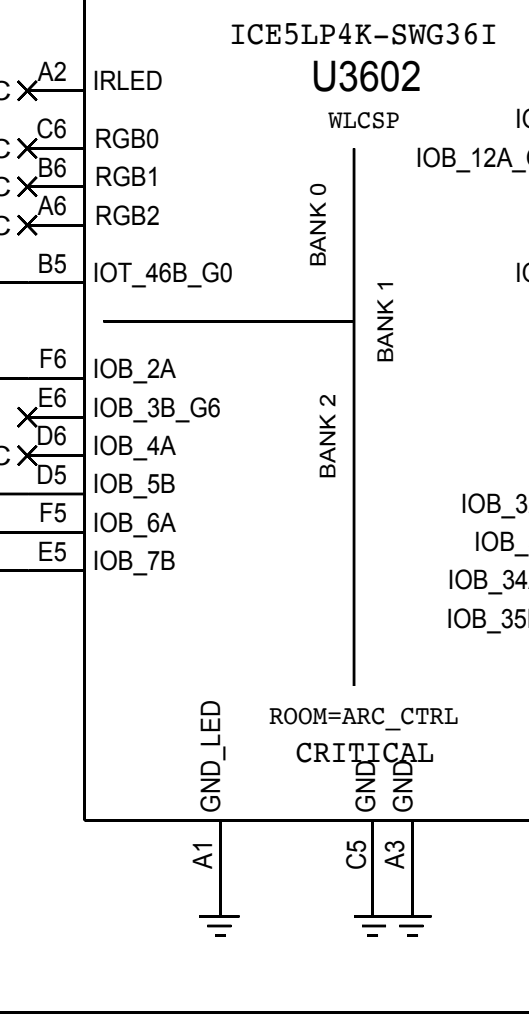
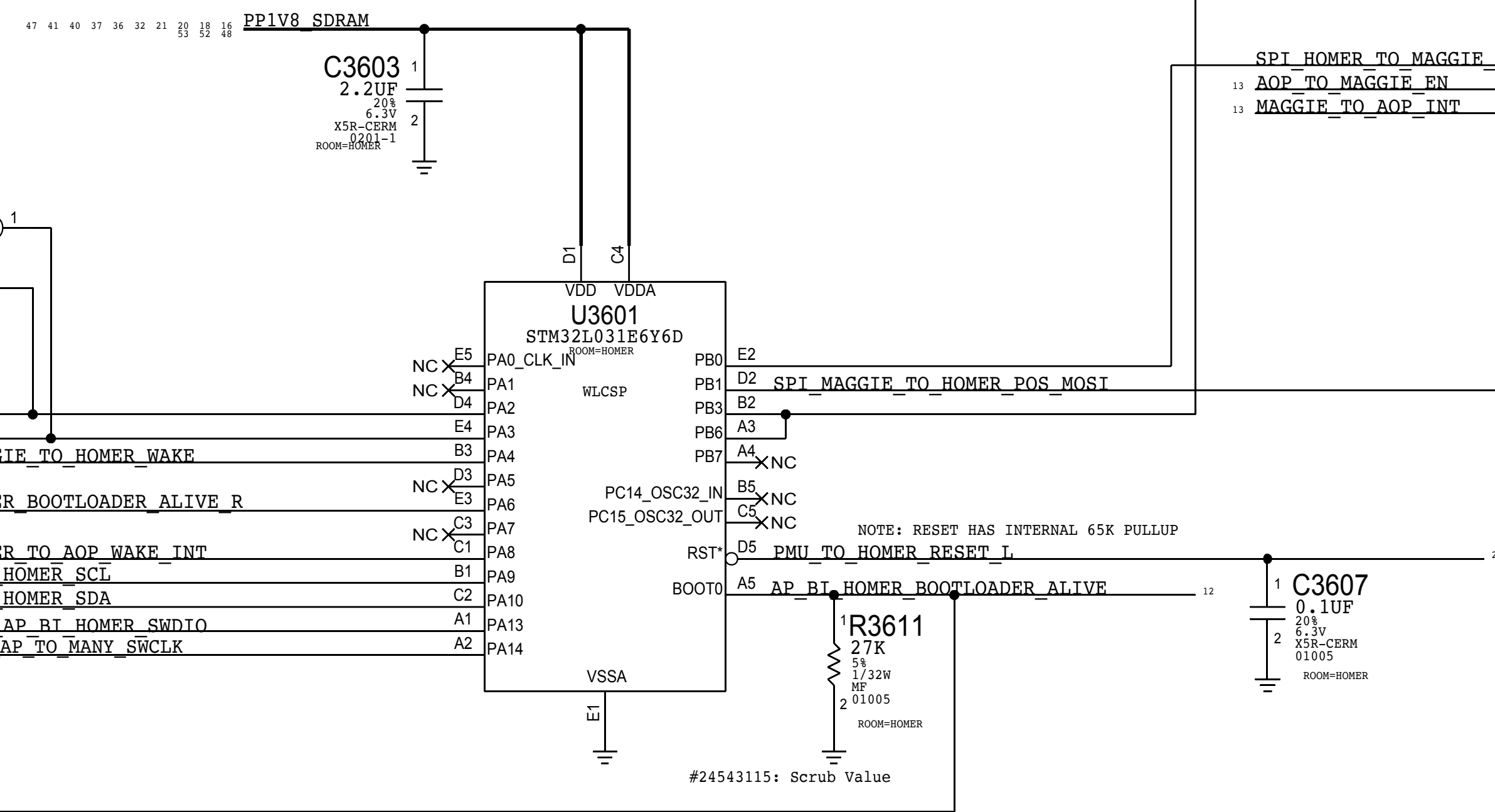
### MAGGIE

APN: 336S00020



### HOMER STM32L0 MICRO

STM32L03 APN: 337S00231

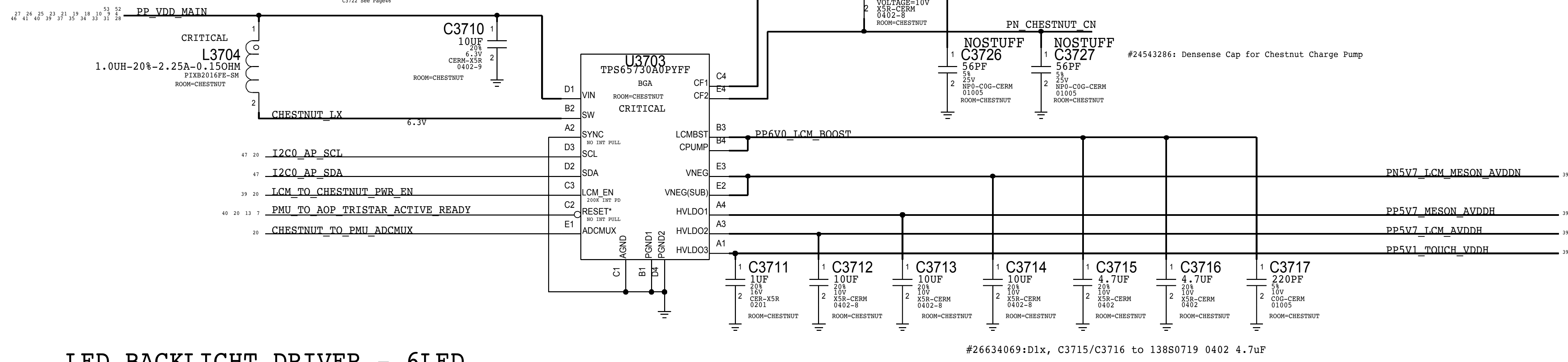


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# DISPLAY & TOUCH - POWER SUPPLIES

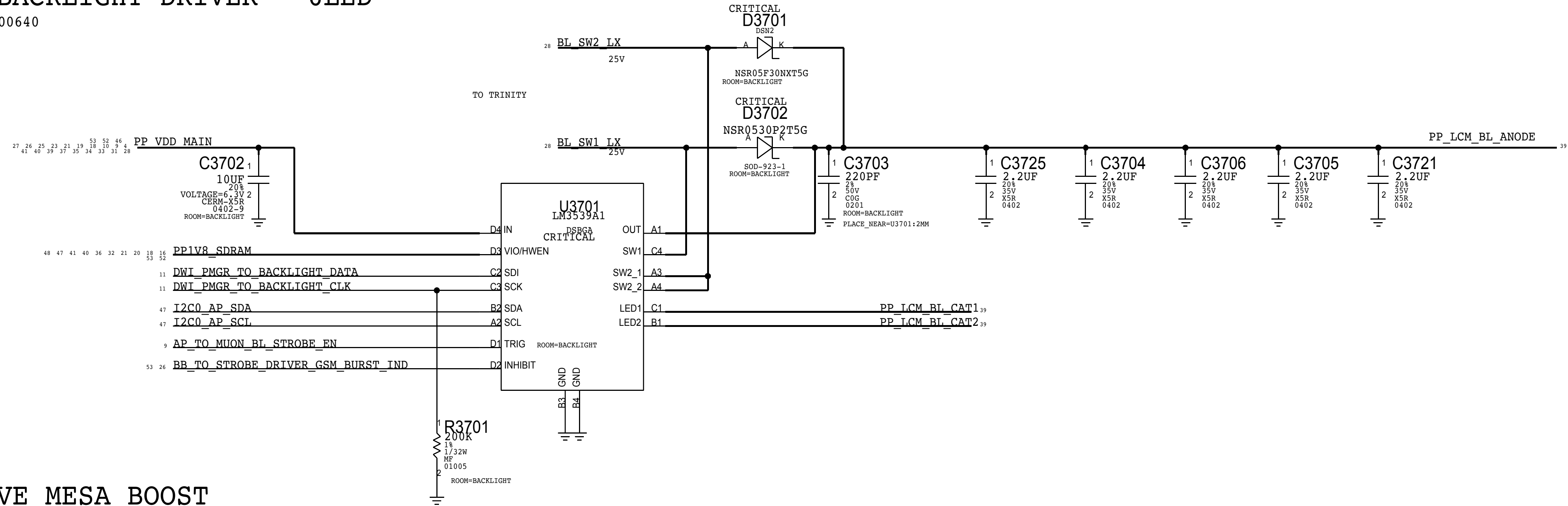
## CHESTNUT DISPLAY PMU

APN:338S1172



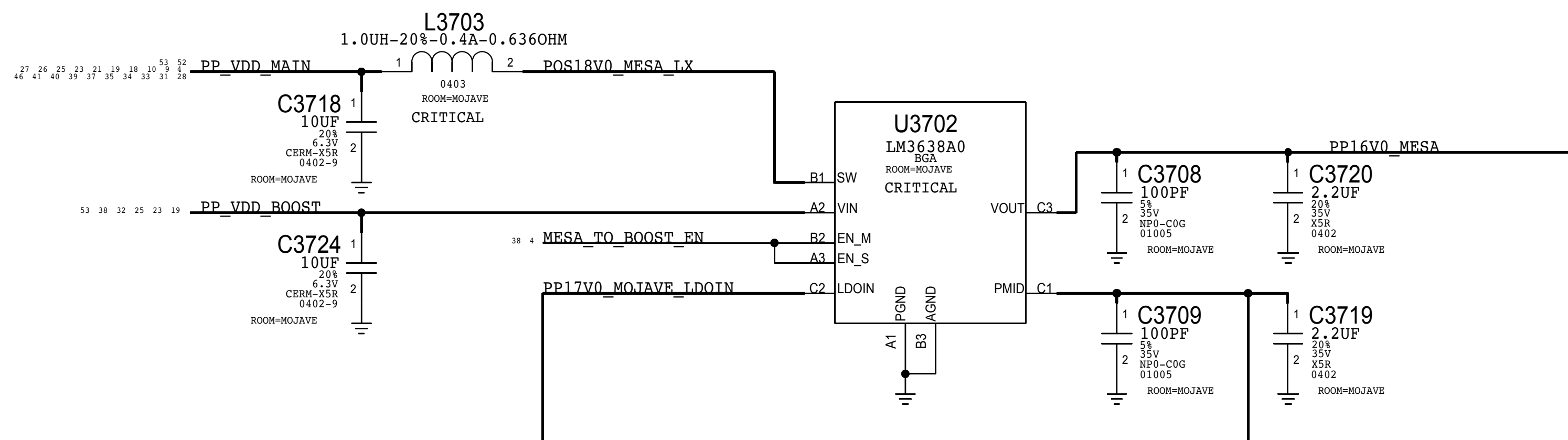
## LED BACKLIGHT DRIVER - 6LED

APN:353S00640



## MOJAVE MESA BOOST

APN:353S00671



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MESA POWER

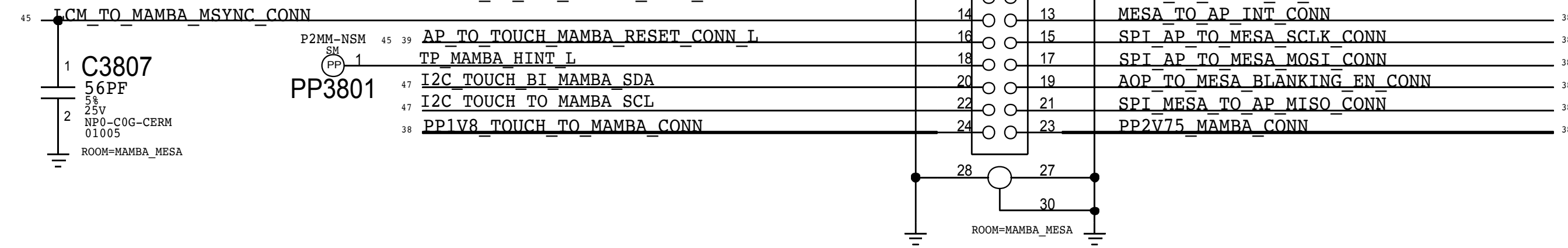
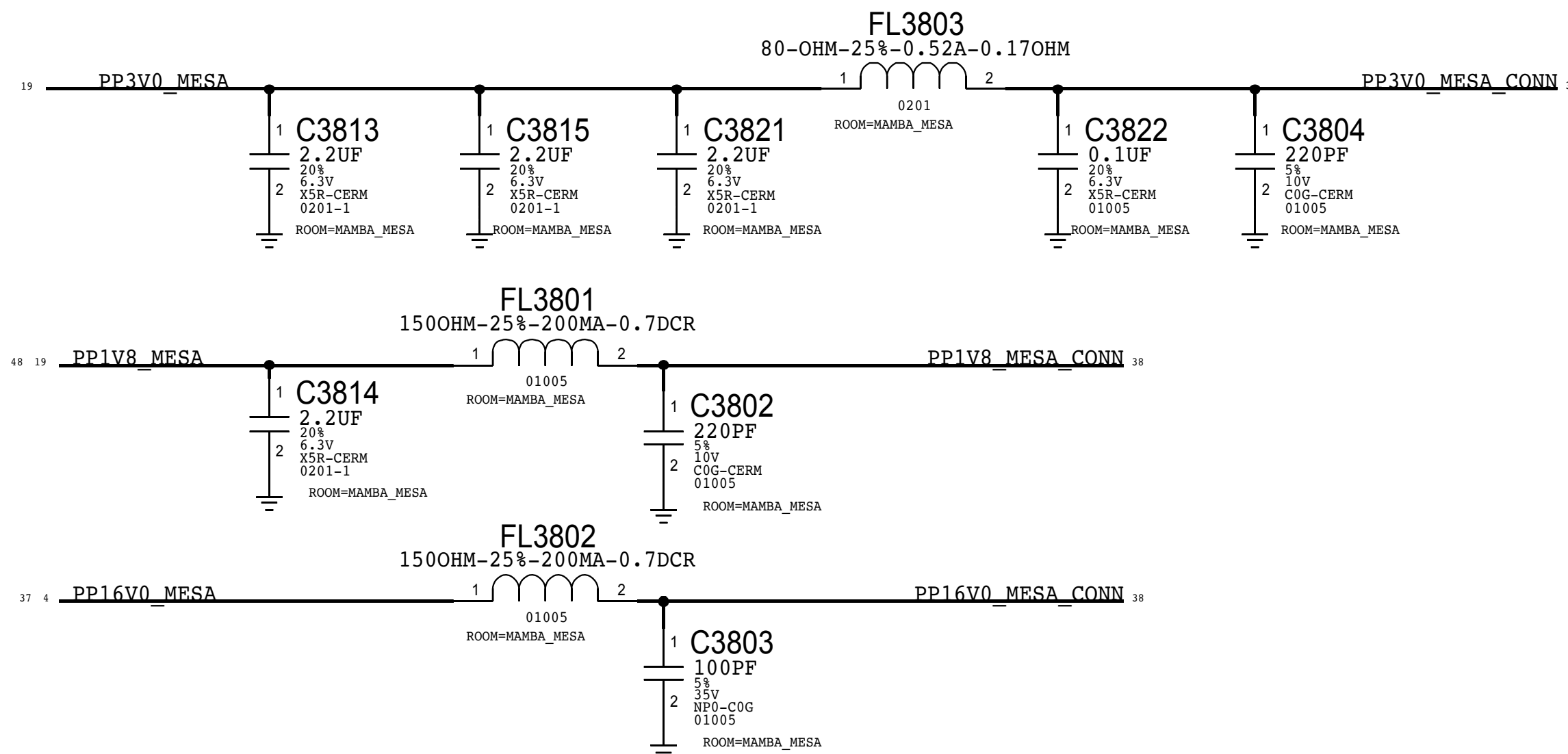
MAMBA AND MESA CONNECTOR

MLB: 516S00141 (RCPT)  
FLEX: 516S00142 (PLUG)

CRITICAL  
J3801

BB35C-RA24-3A  
F-ST-SM

Matches flex\_x452\_acf, schematic revision 1.5.0 pinout

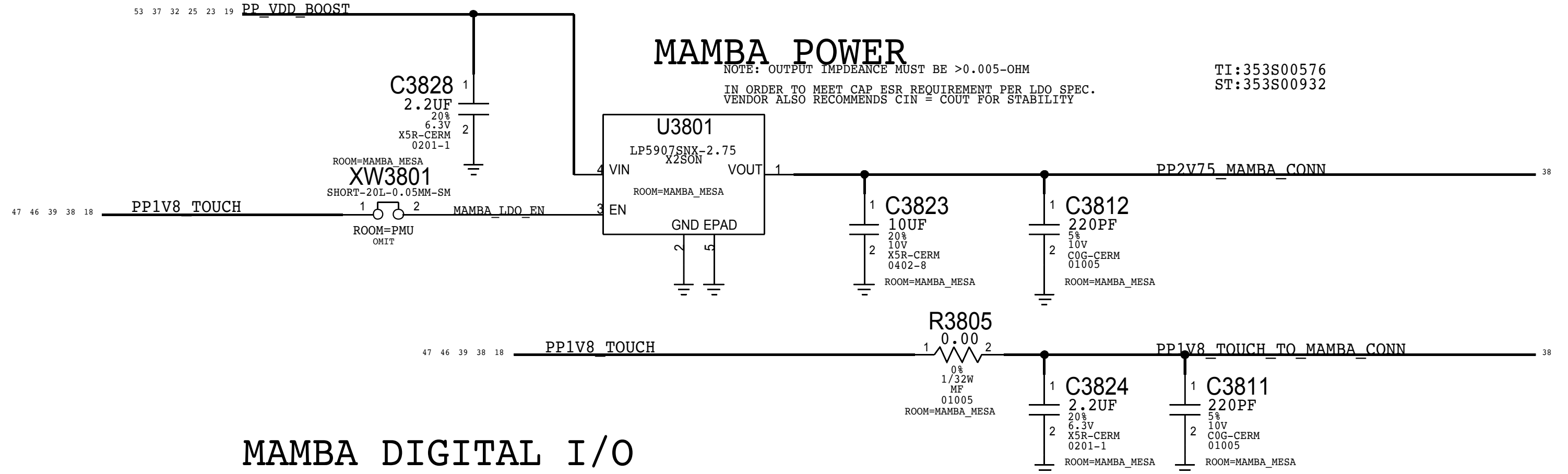


MESA DIGITAL I/O

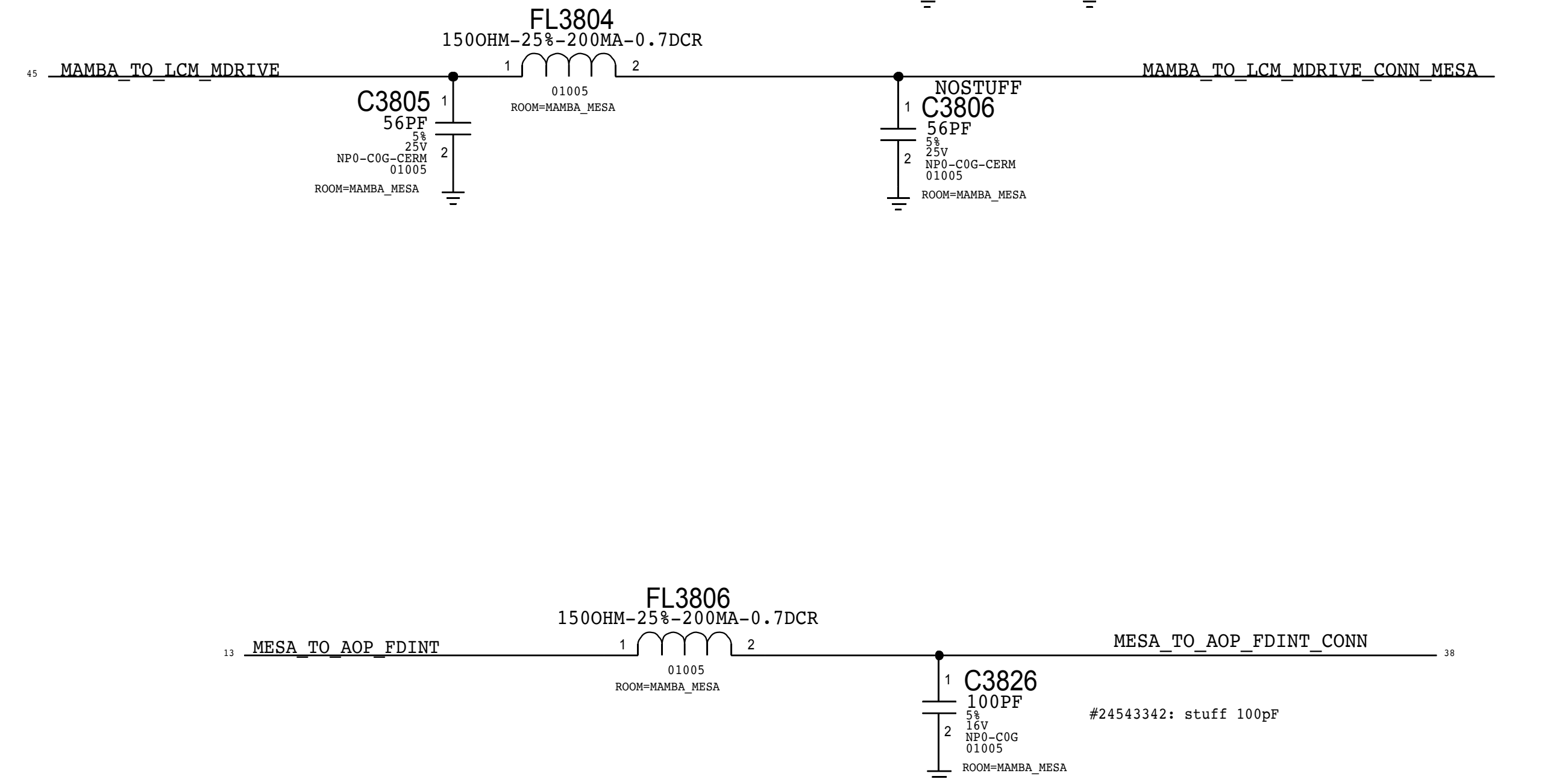
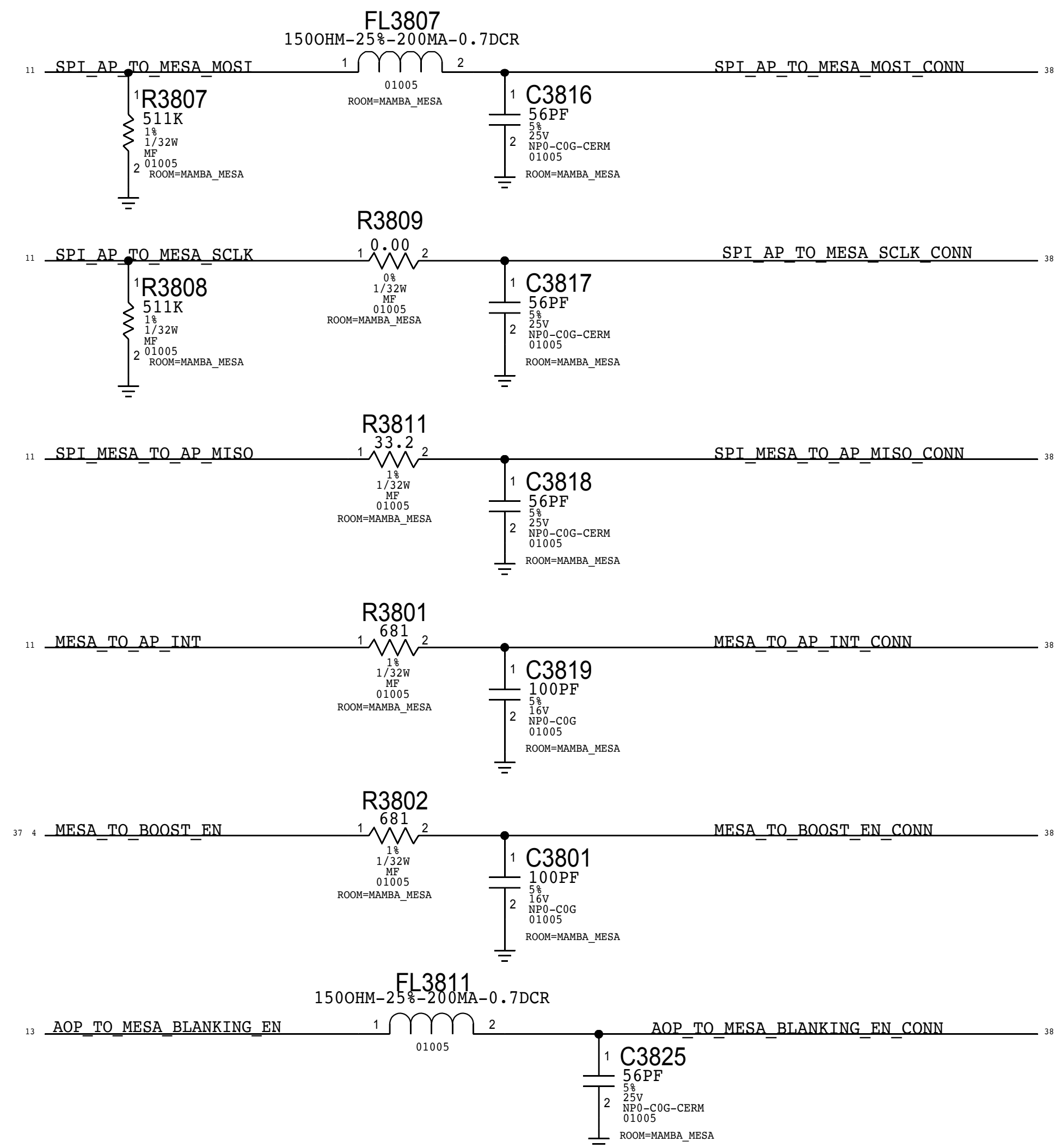
MAMBA POWER

NOTE: OUTPUT IMPEDANCE MUST BE >0.005-OHM  
IN ORDER TO MEET CAP RSR REQUIREMENT PER LDO SPEC.  
VENDOR ALSO RECOMMENDS CIN = COUT FOR STABILITY.

TI:353800576  
ST:353800932

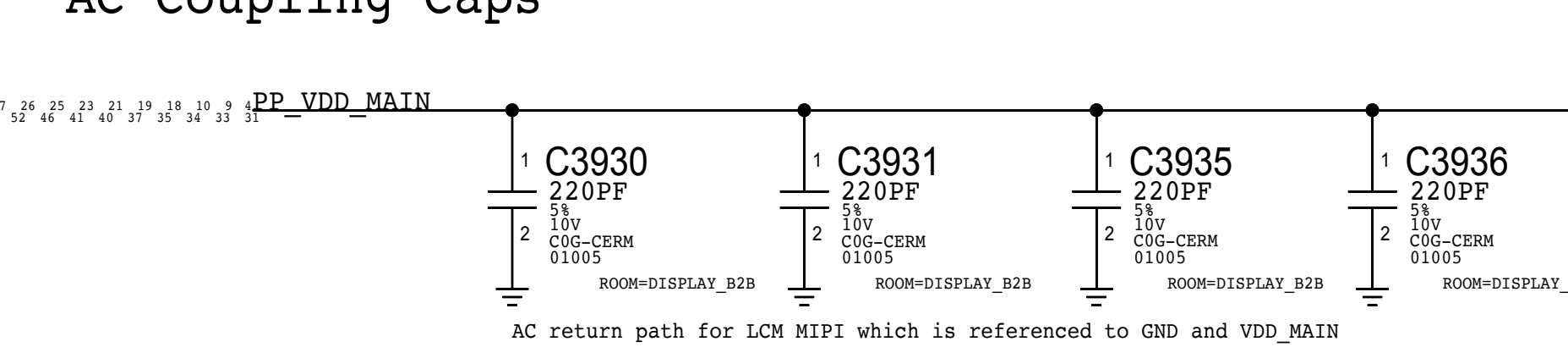
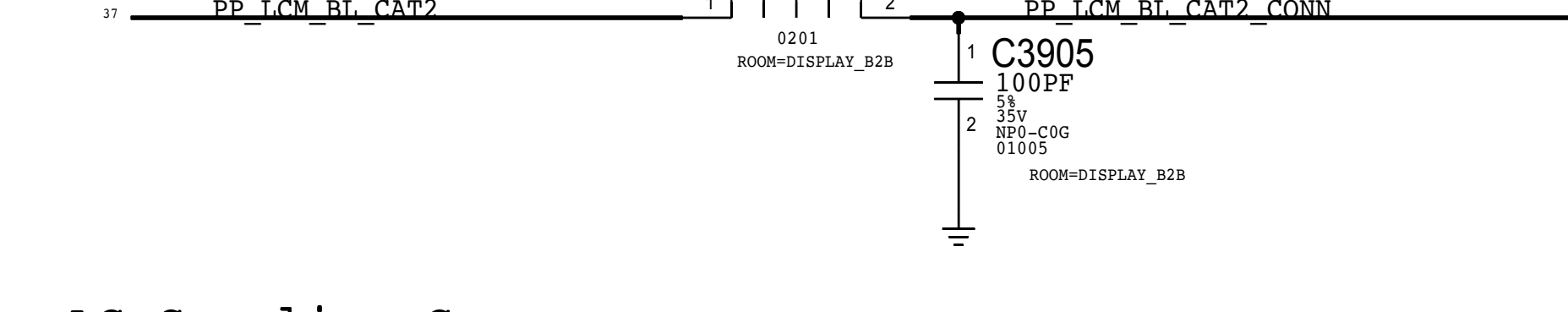
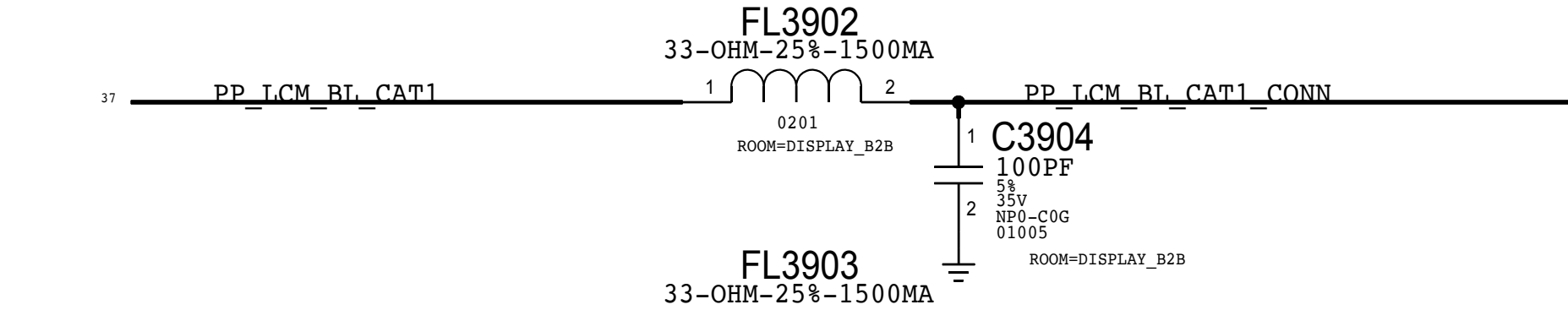
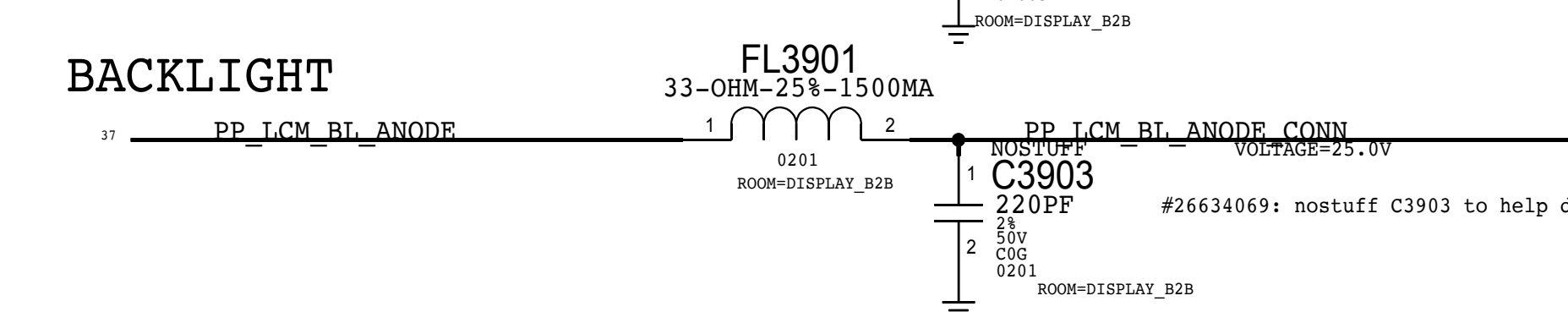
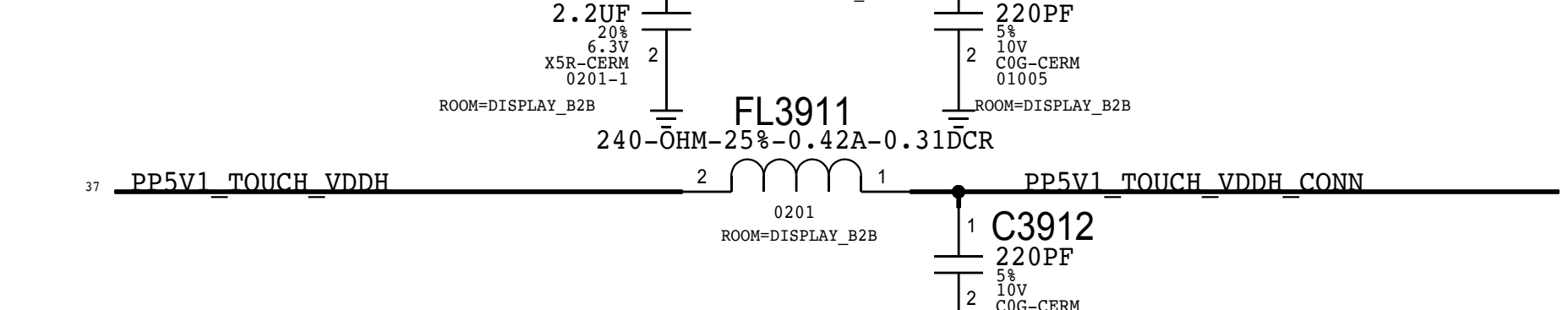
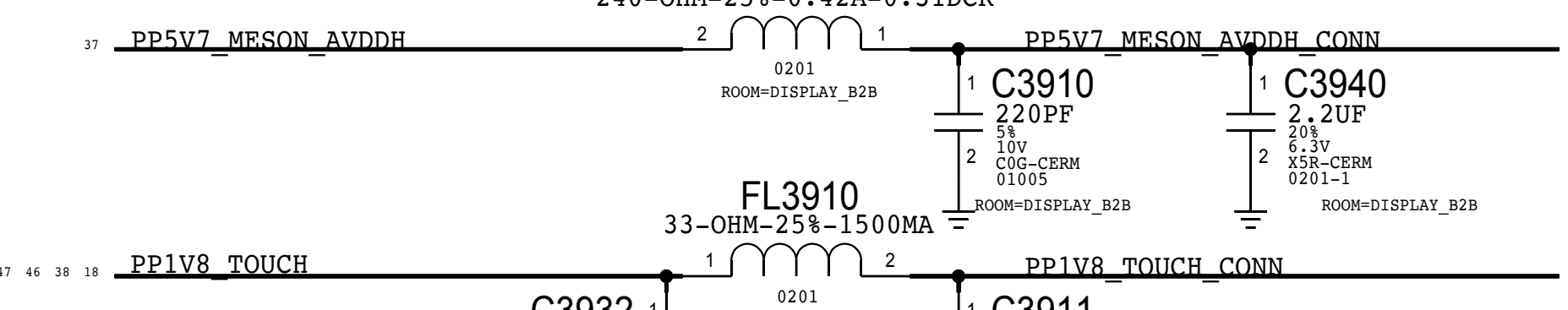
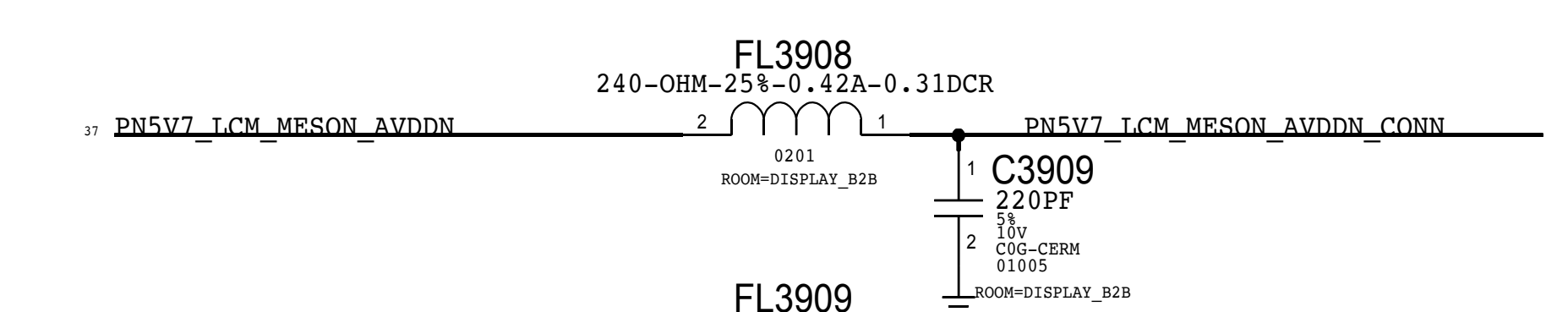
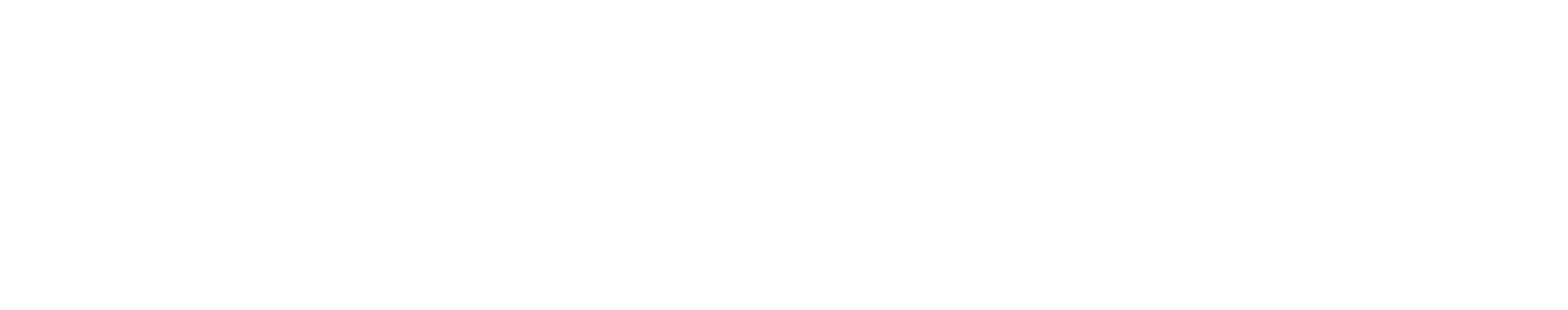
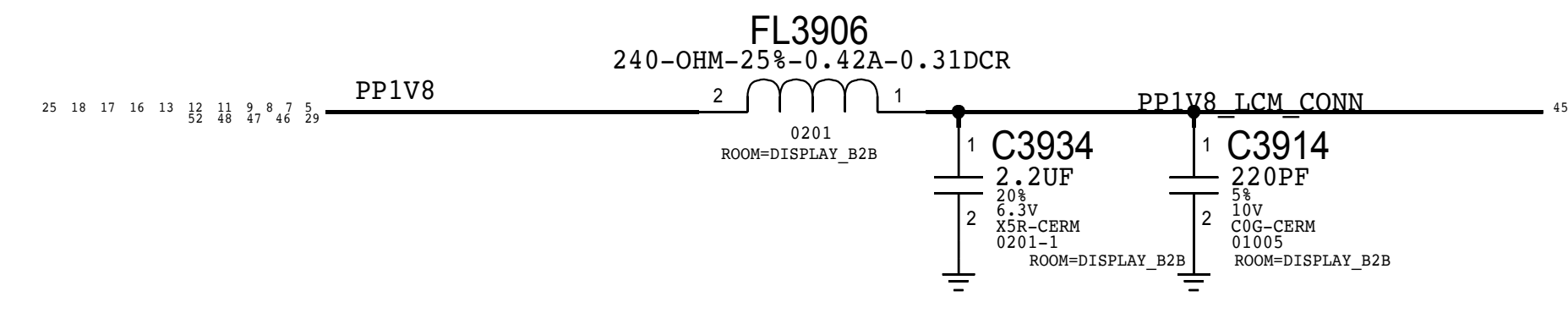
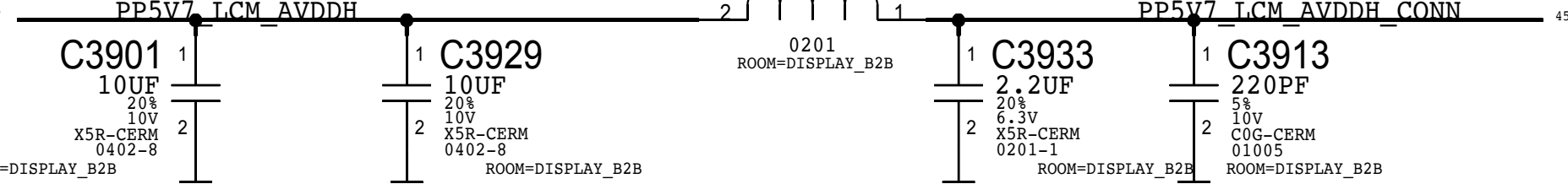


MAMBA DIGITAL I/O

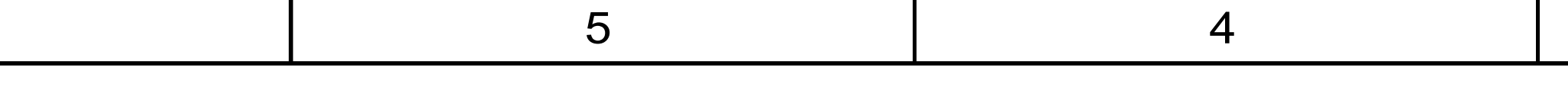
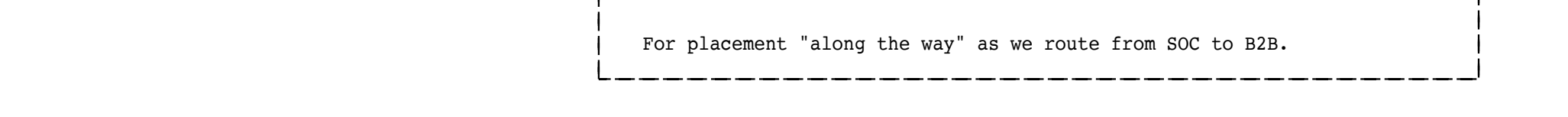
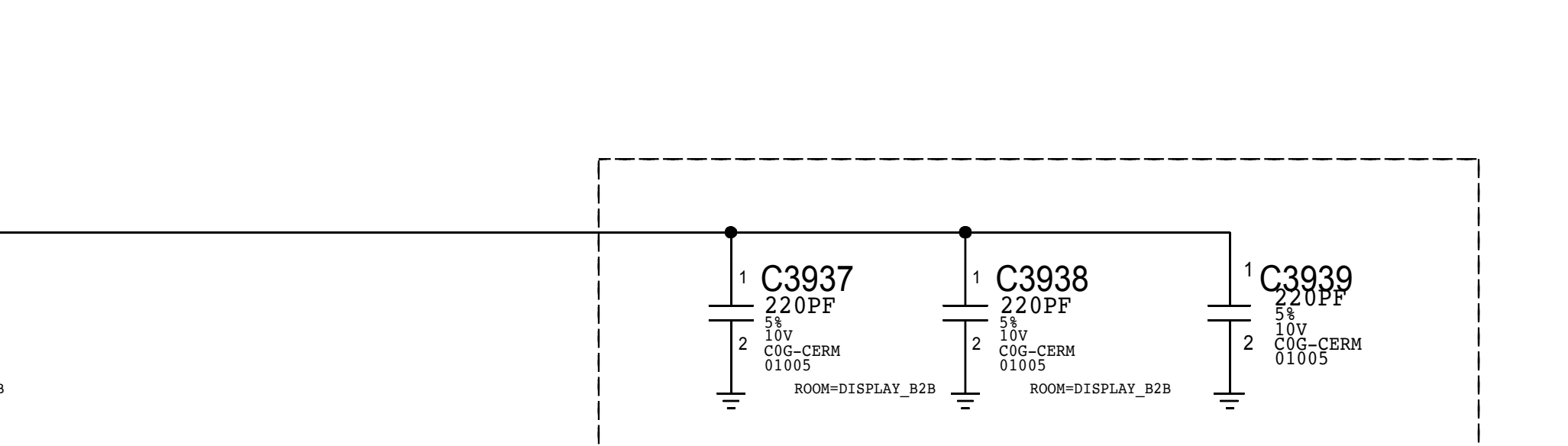
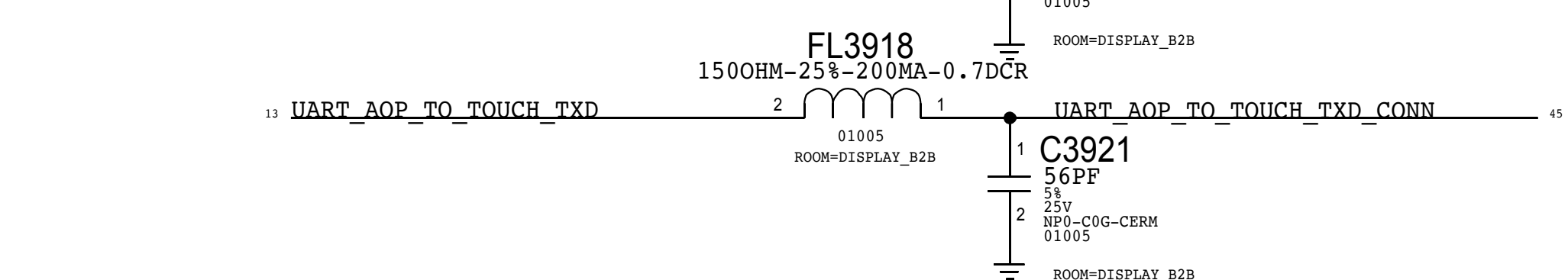
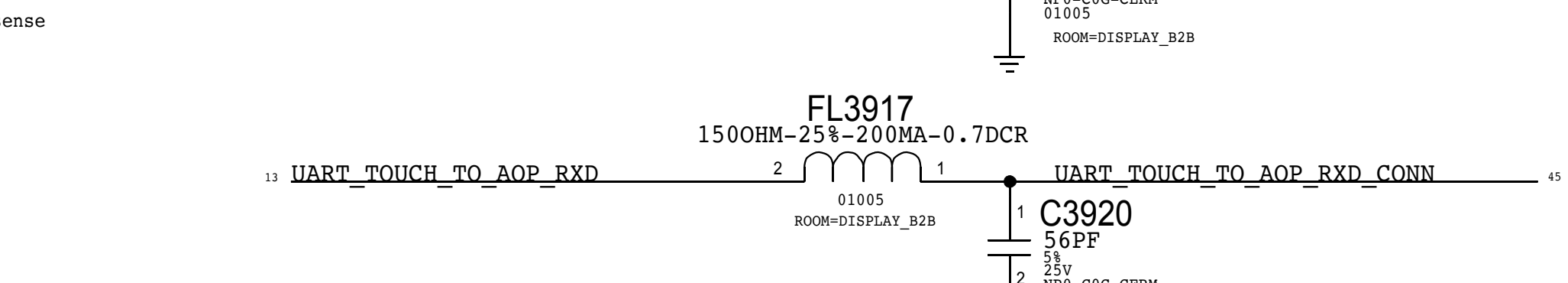
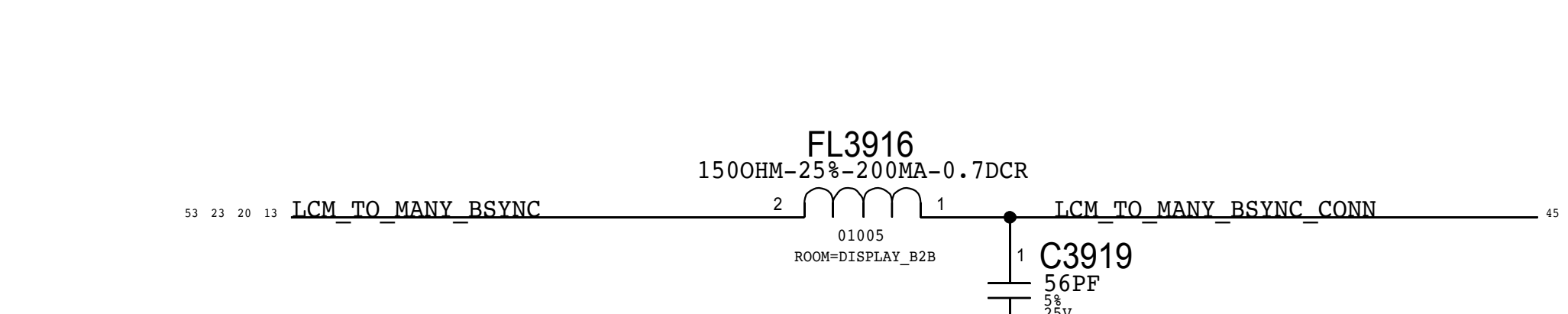
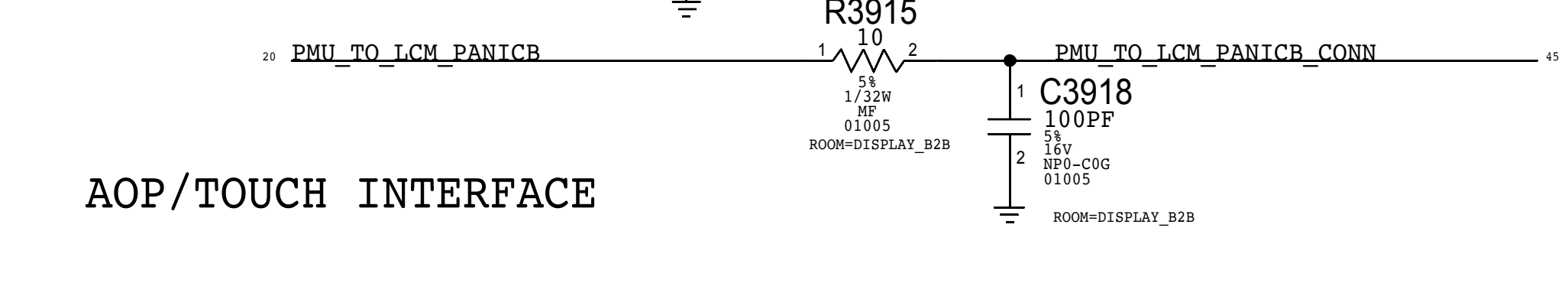
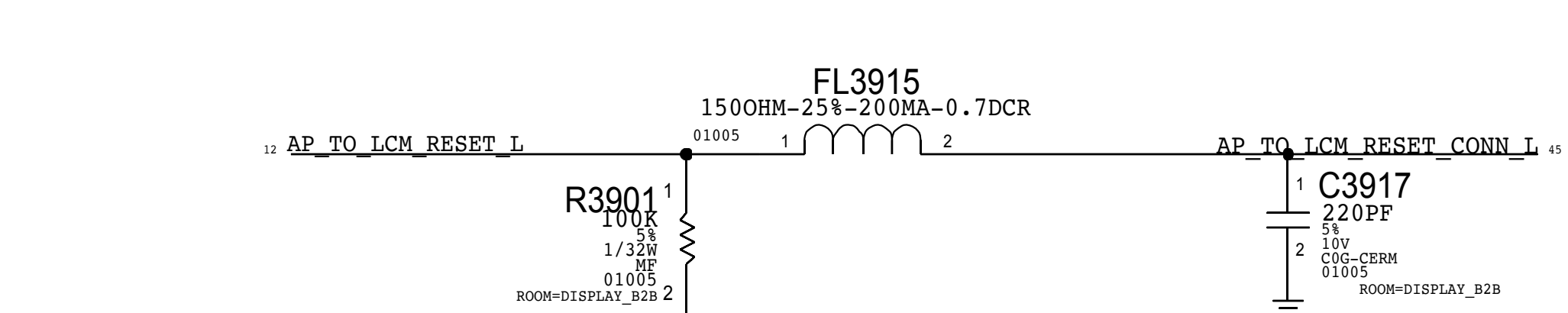
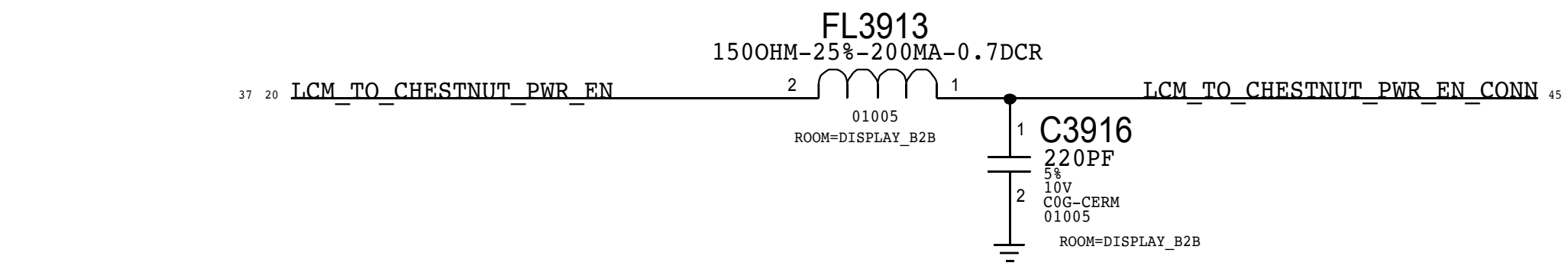
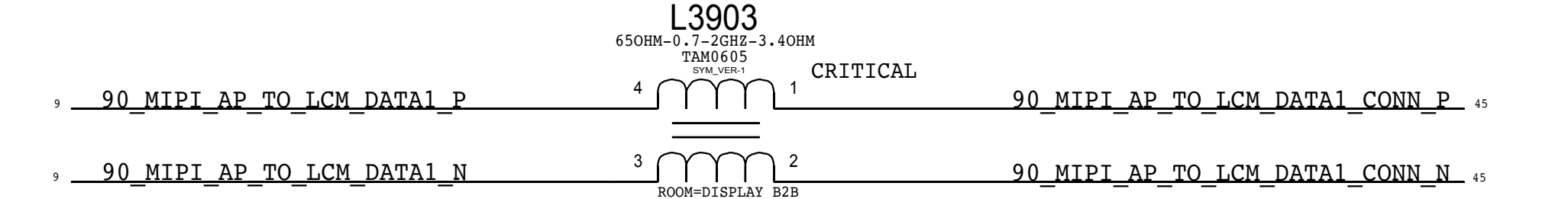
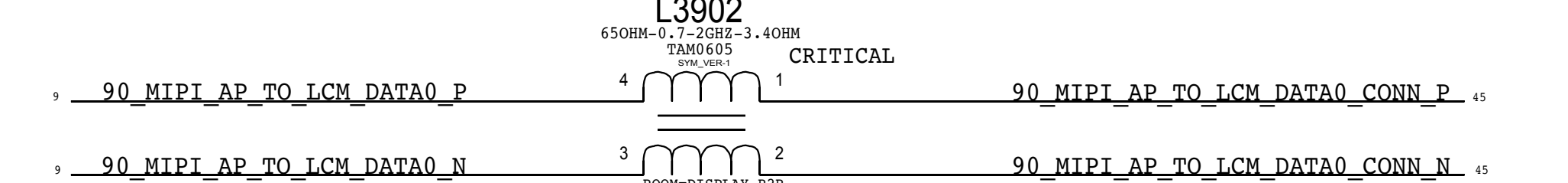
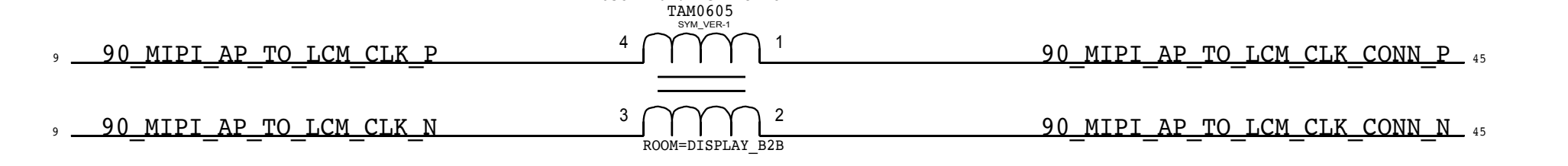


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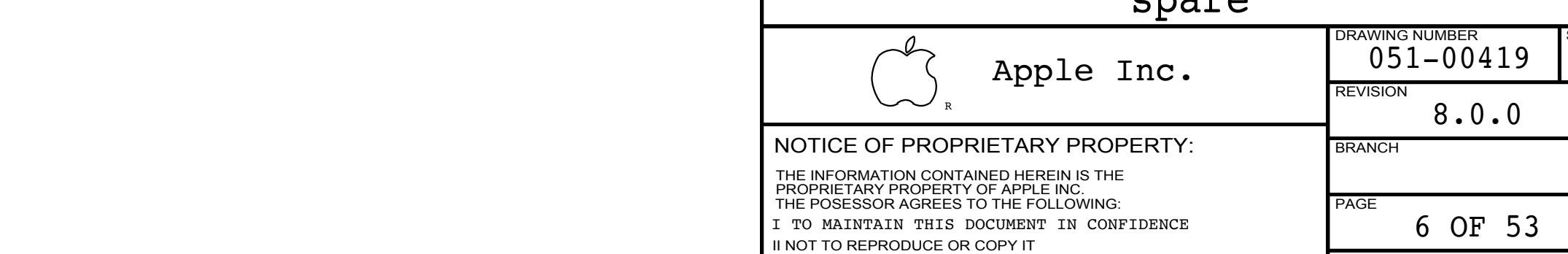
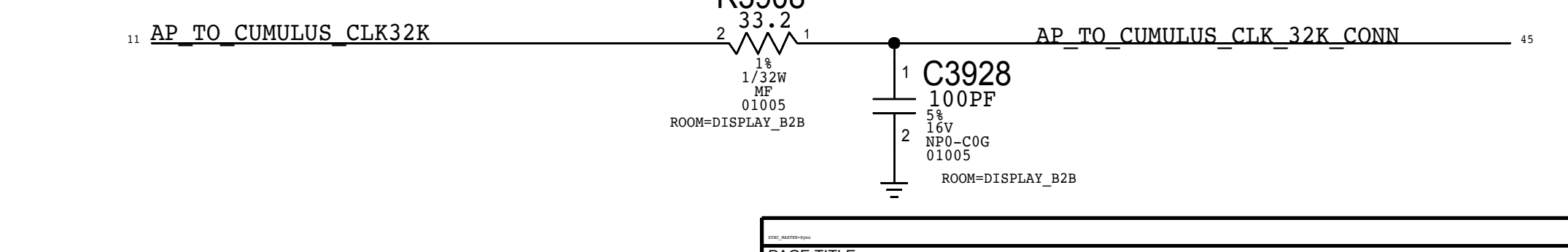
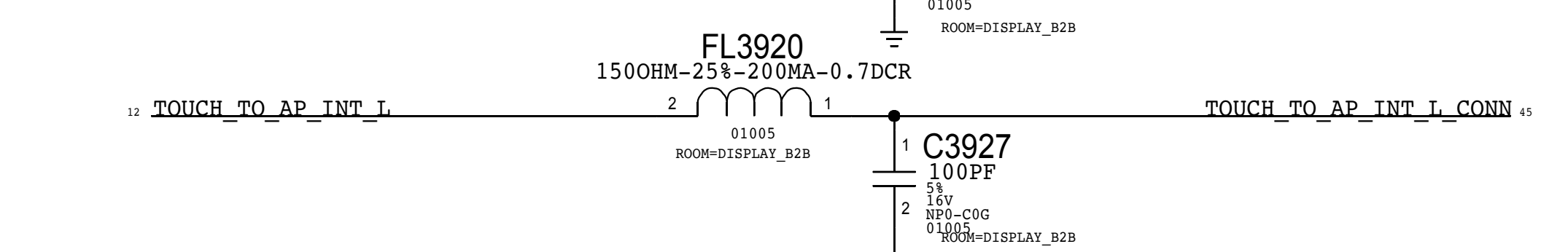
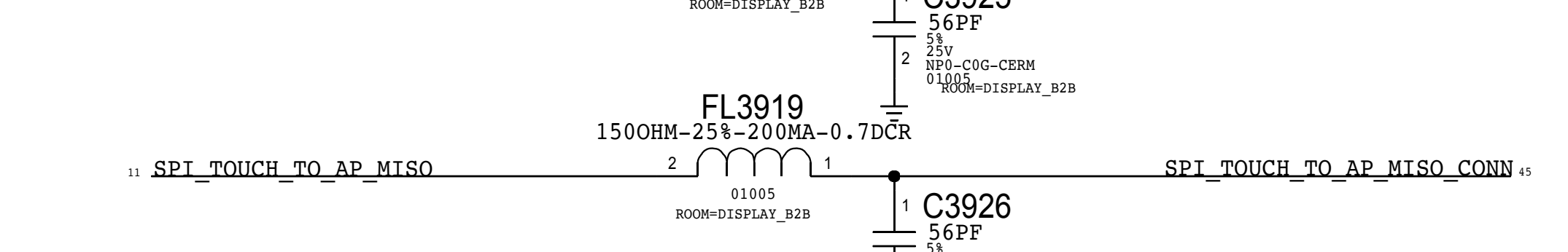
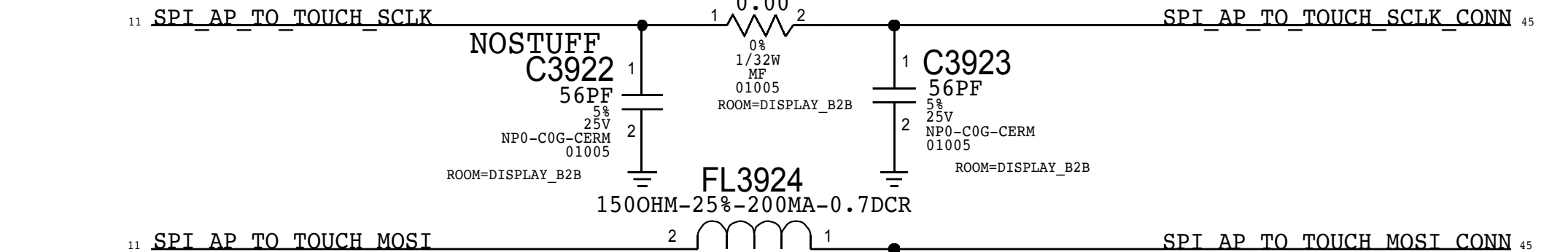
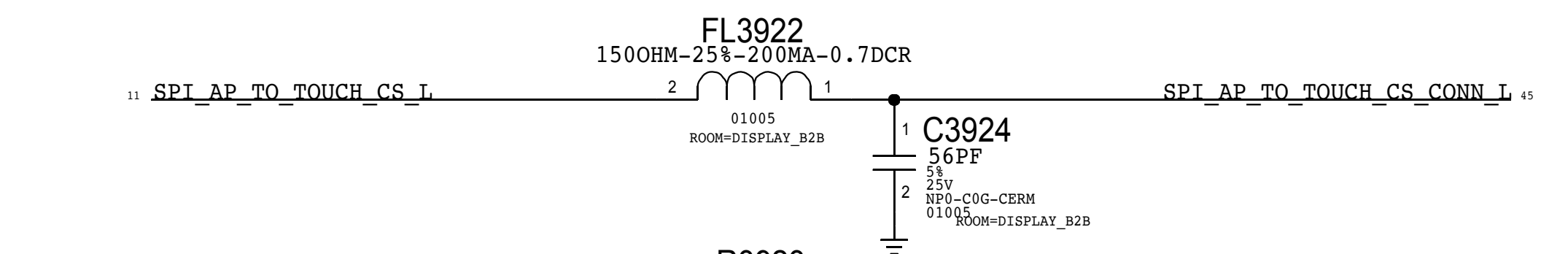
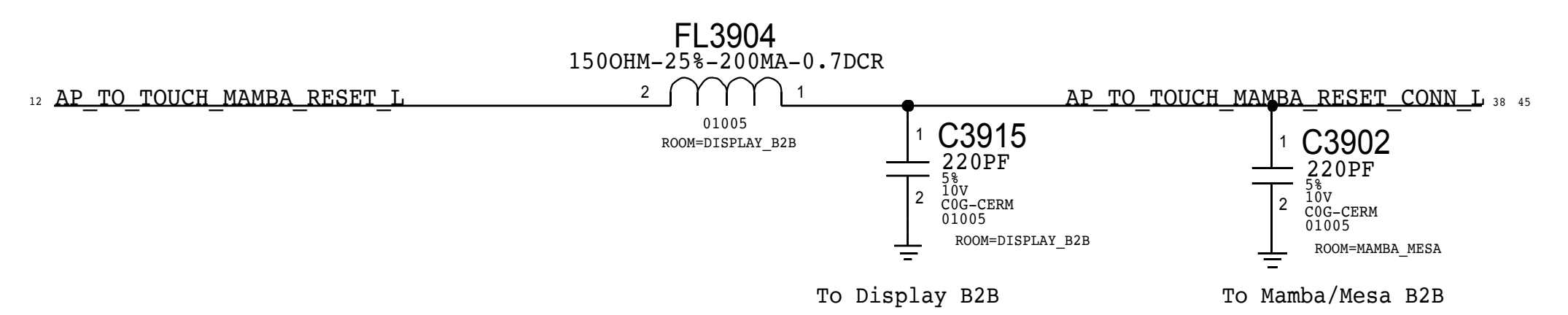
**DISPLAY POWER**



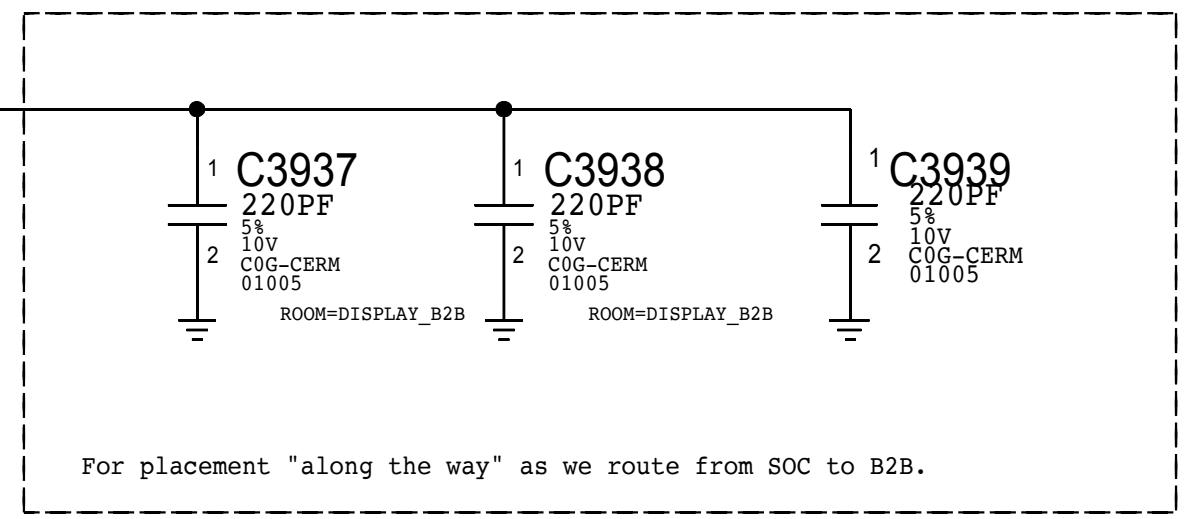
**DISPLAY MIPI**



**AP/TOUCH INTERFACE**



**AOP/TOUCH INTERFACE**

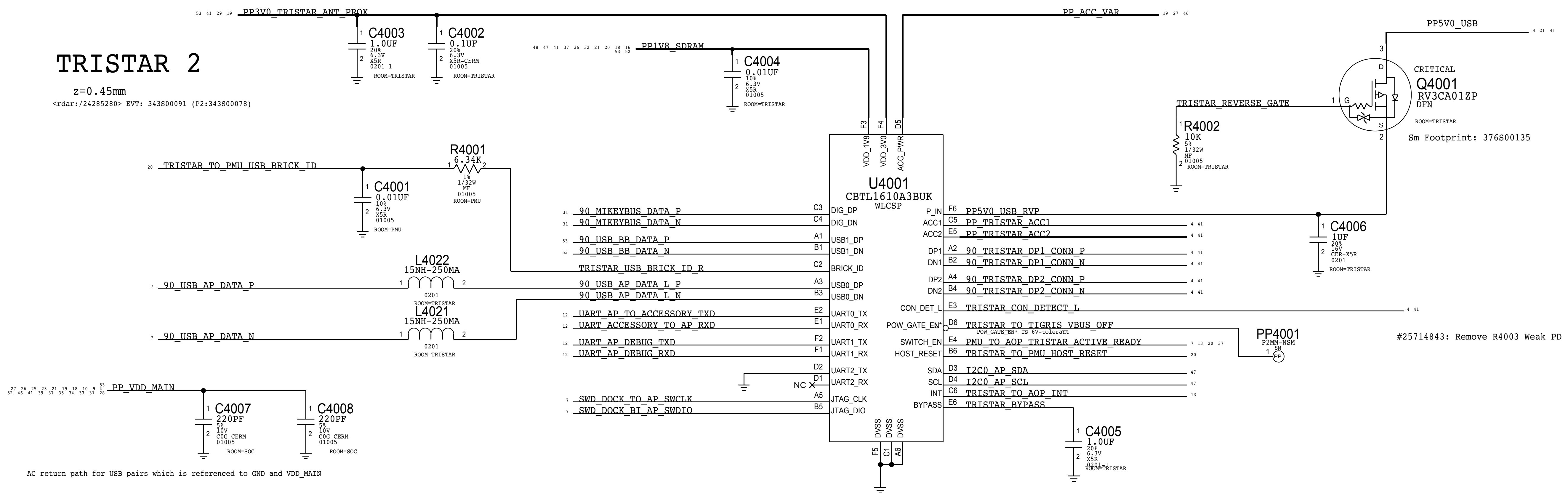


For placement "along the way" as we route from SOC to B2B.

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# TRISTAR 2

z=0.45mm  
 <rdar://24285280> EVT: 343S00091 (P2:343S00078)

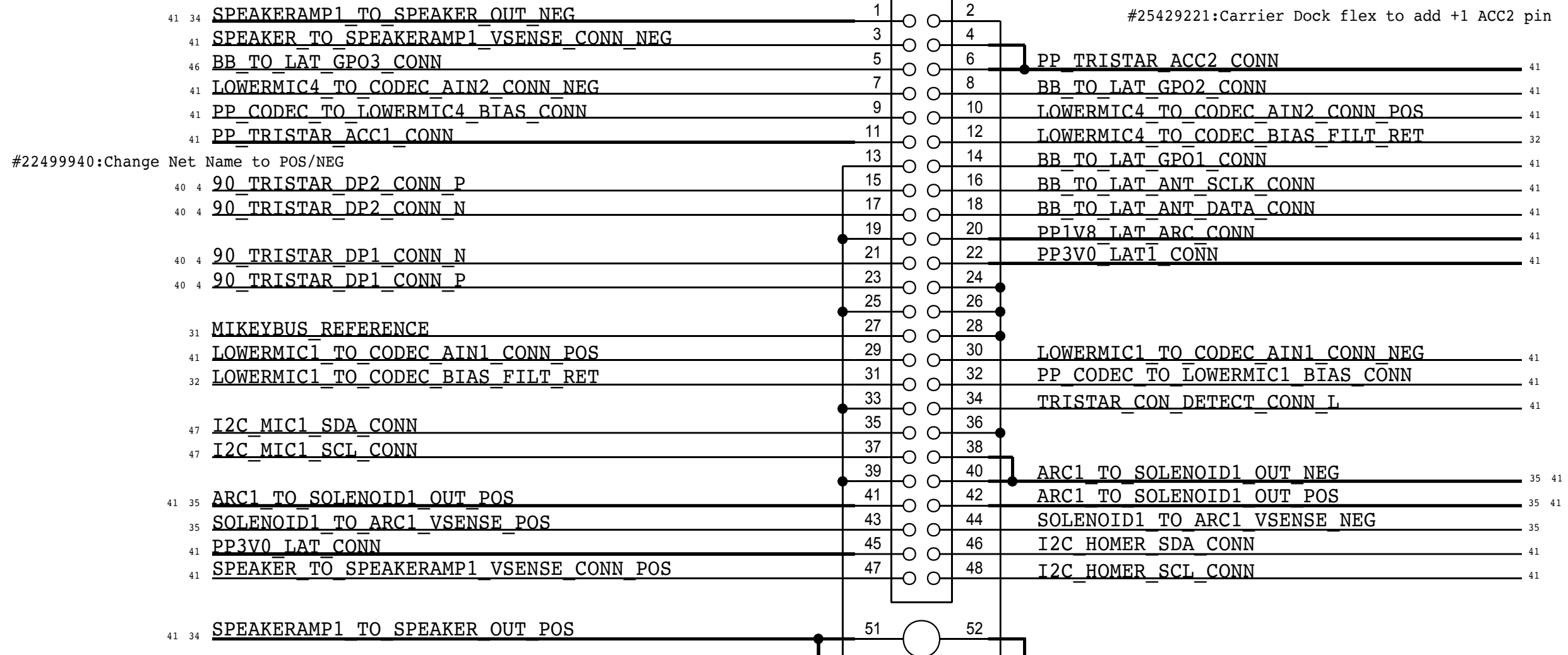
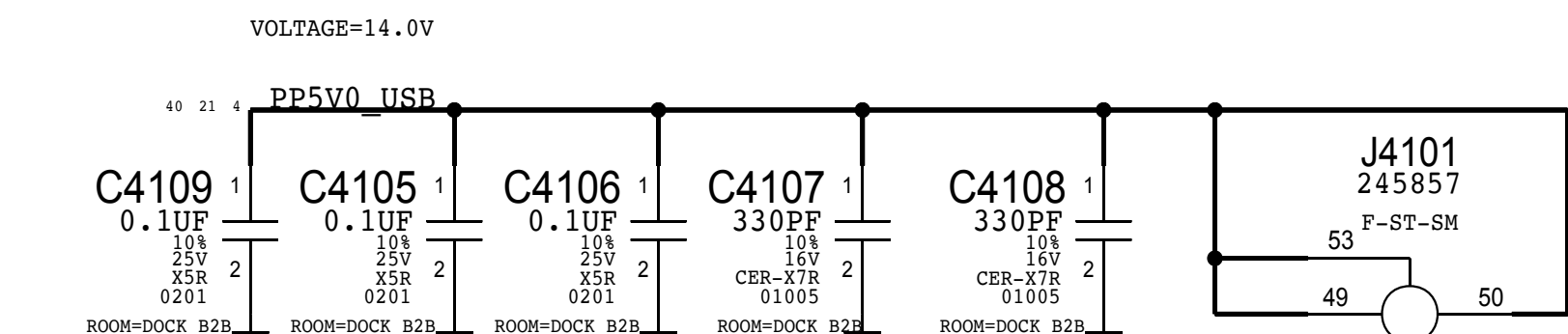
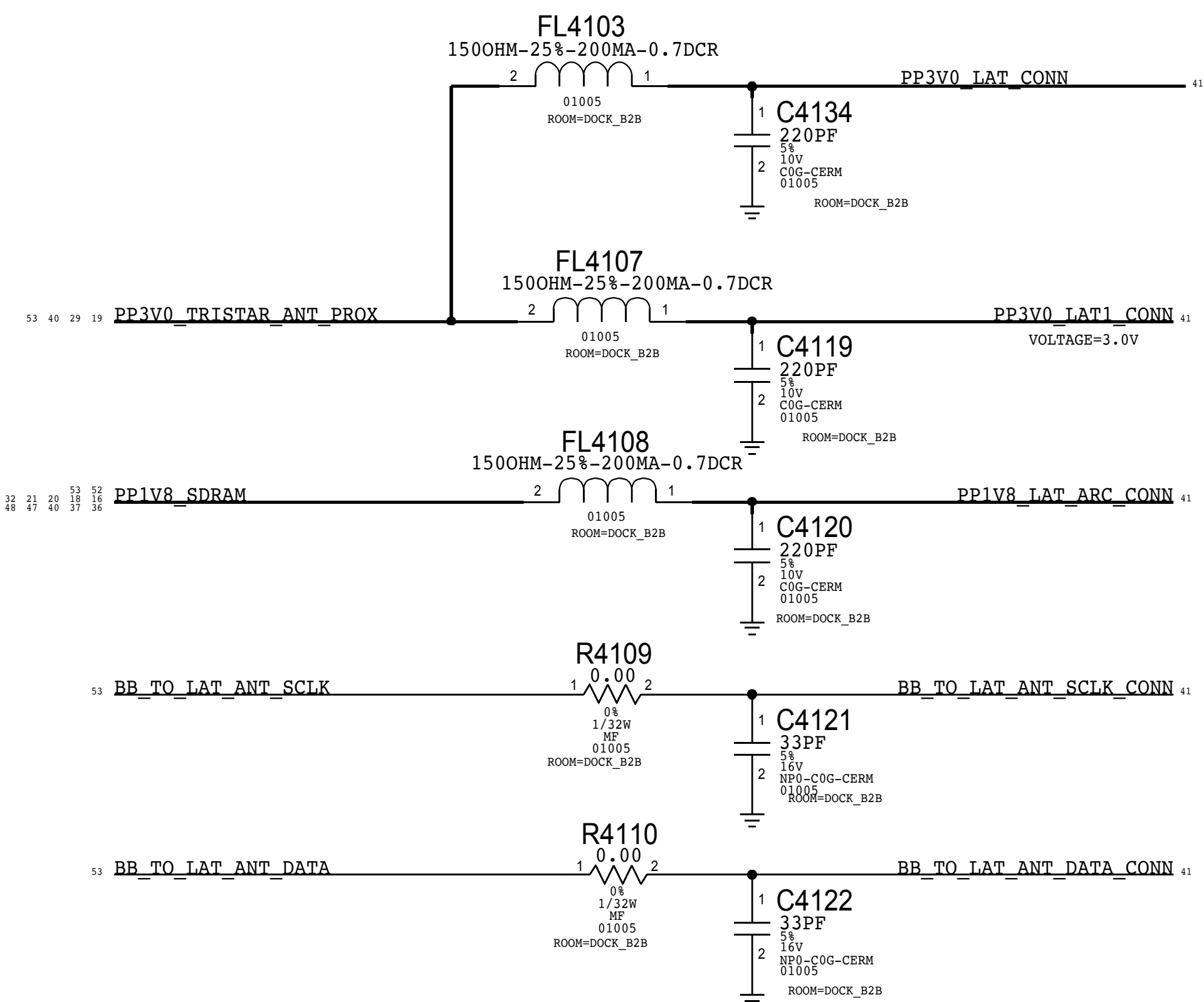


AC return path for USB pairs which is referenced to GND and VDD\_MAIN

|   |           |        |         |
|---|-----------|--------|---------|
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### ANTENNA

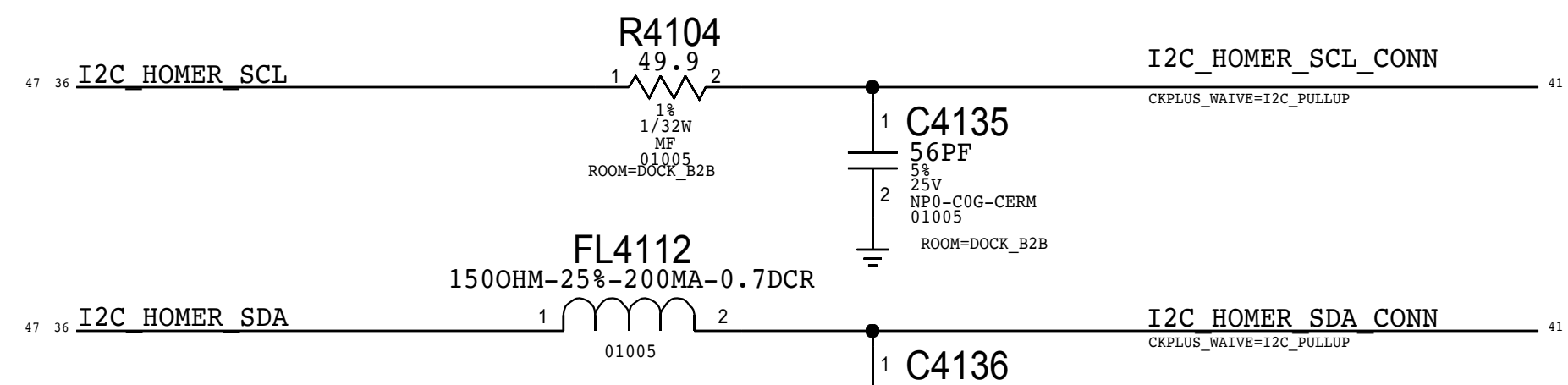
Please loop in Matt Mow (Antenna Team) when changing these components!



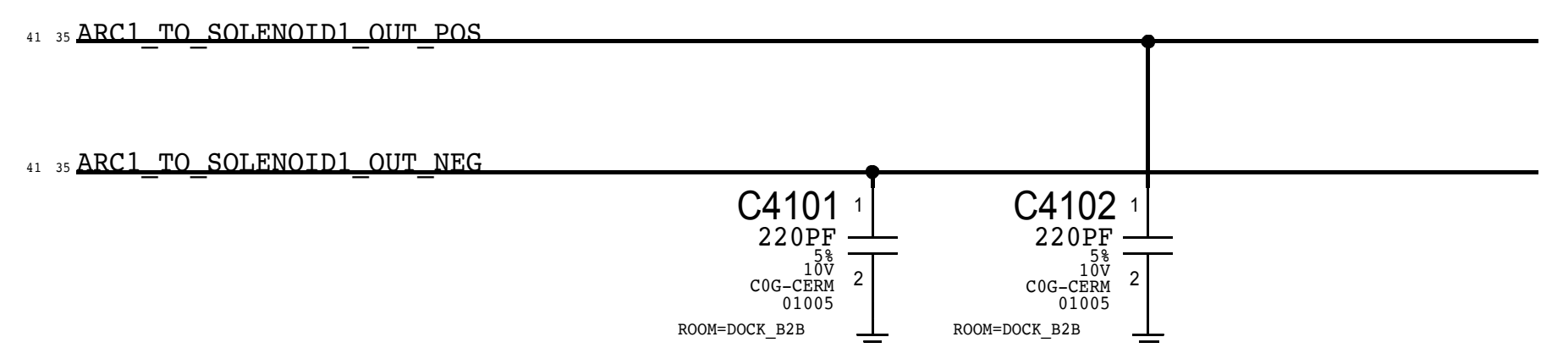
### DOCK FLEX CONNECTOR

### ARC CONTROL

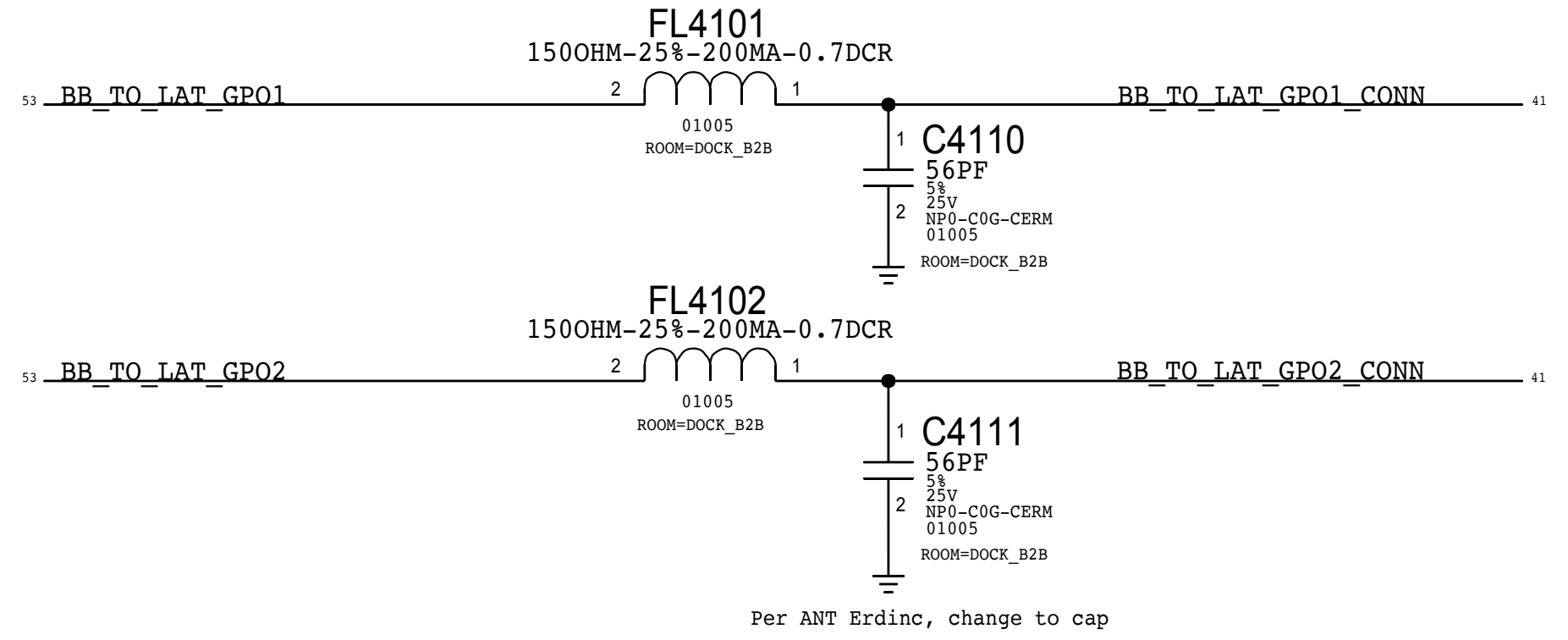
#26118161: Update FL4104 to 49.9ohm



### ARC1

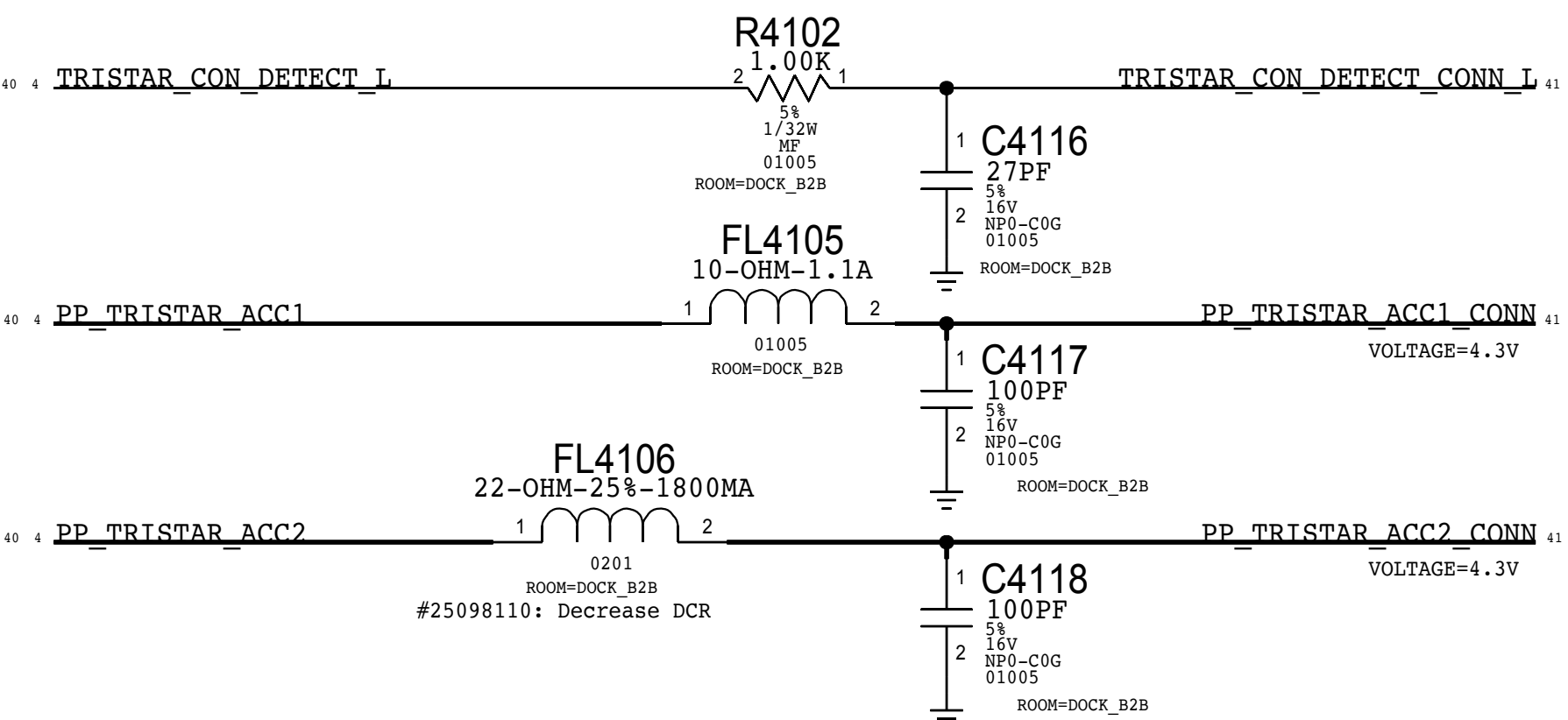


### Antenna GPIO

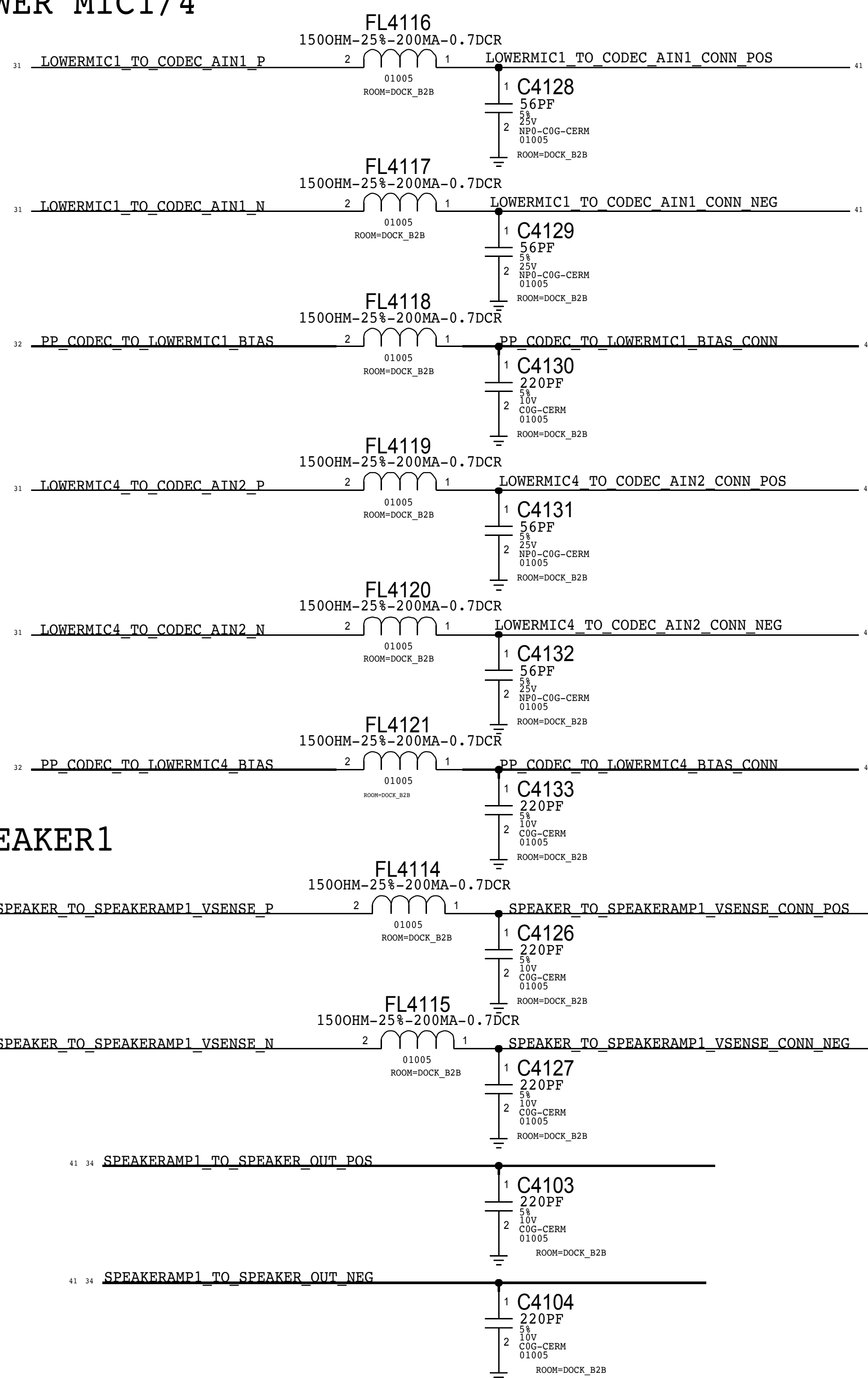


Per ANT Erdinc, change to cap

### TRISTAR



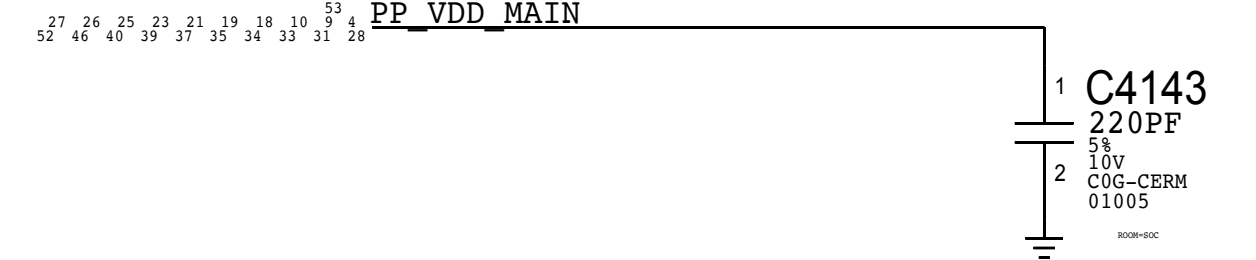
### LOWER MIC1/4



### SPEAKER1

### USB AC Coupling

AC return path for USB pairs which is referenced to GND and VDD\_MAIN



|                |  |           |        |
|----------------|--|-----------|--------|
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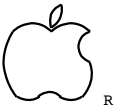
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8

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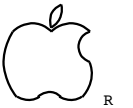
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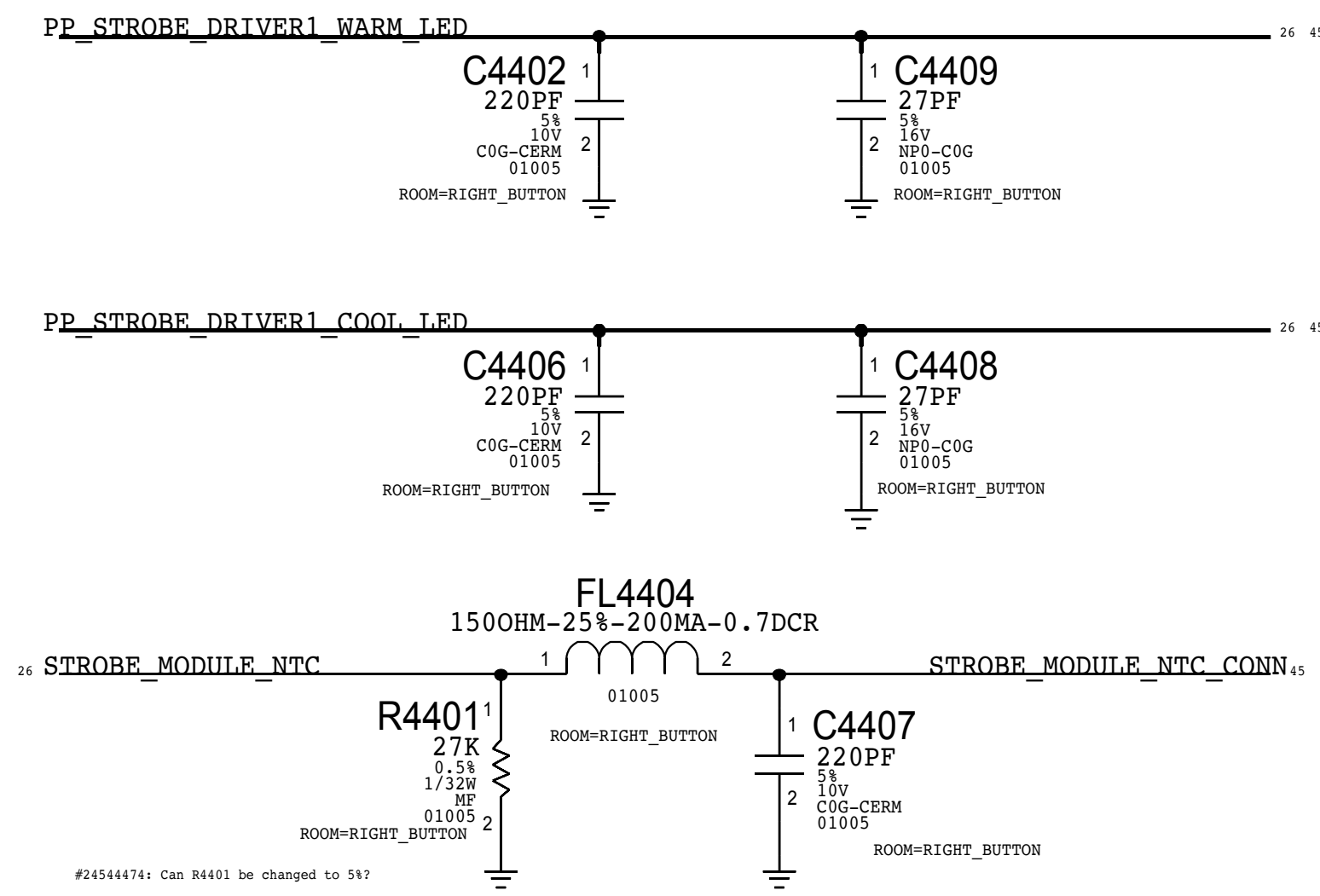
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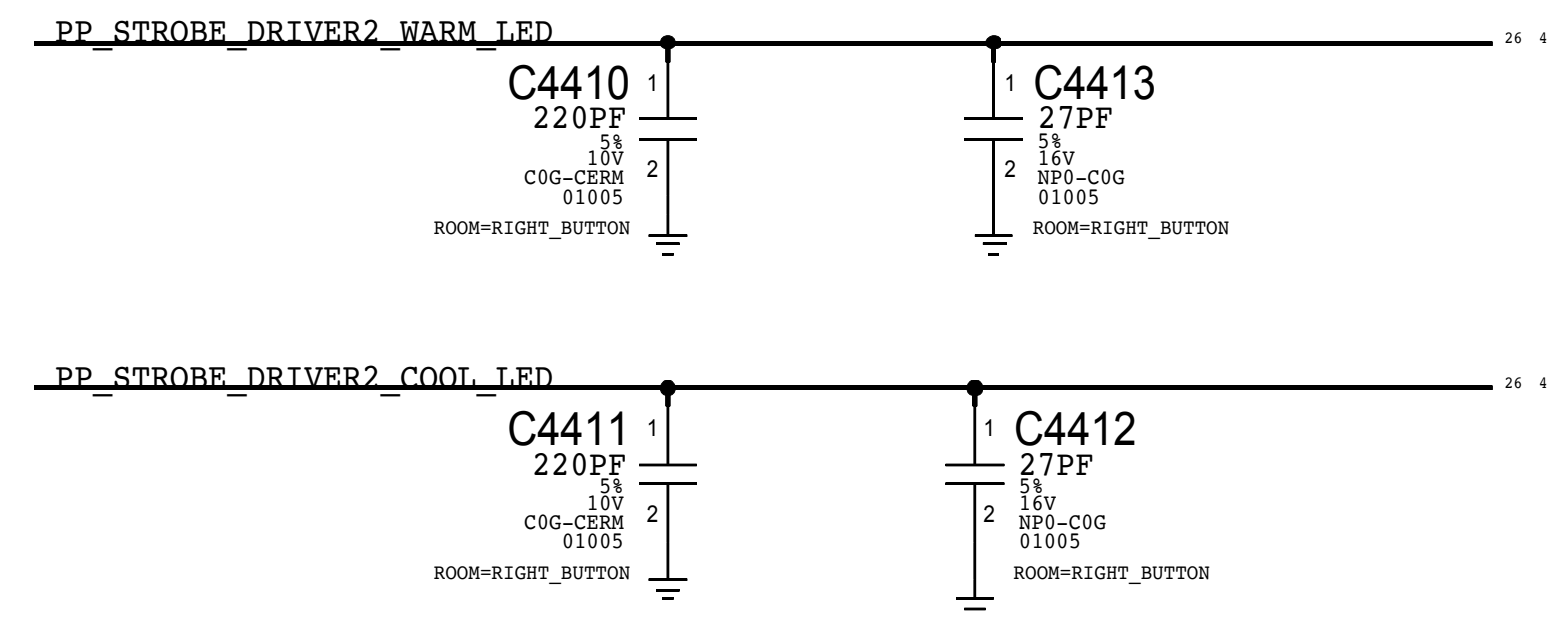
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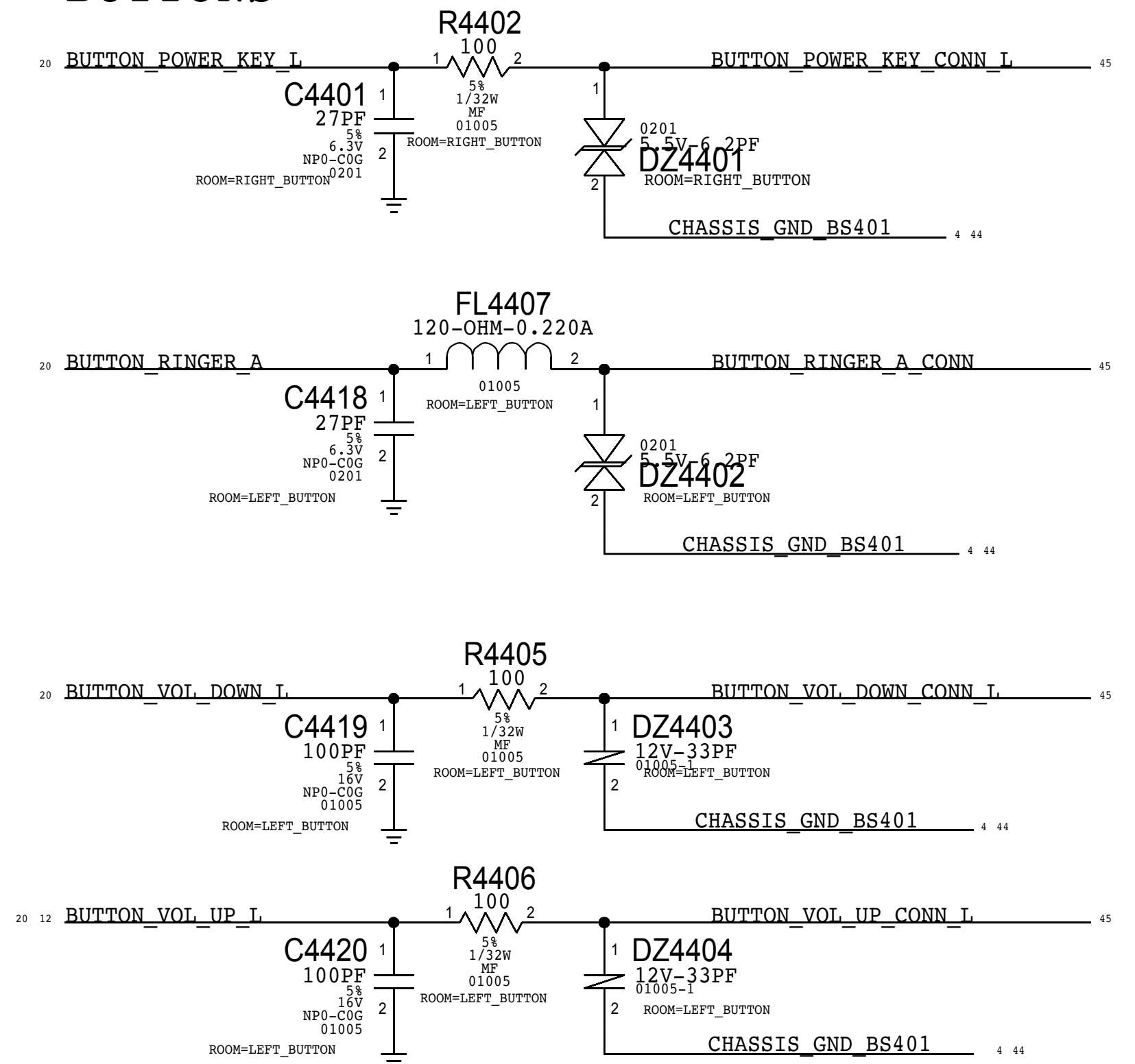
### STROBE1



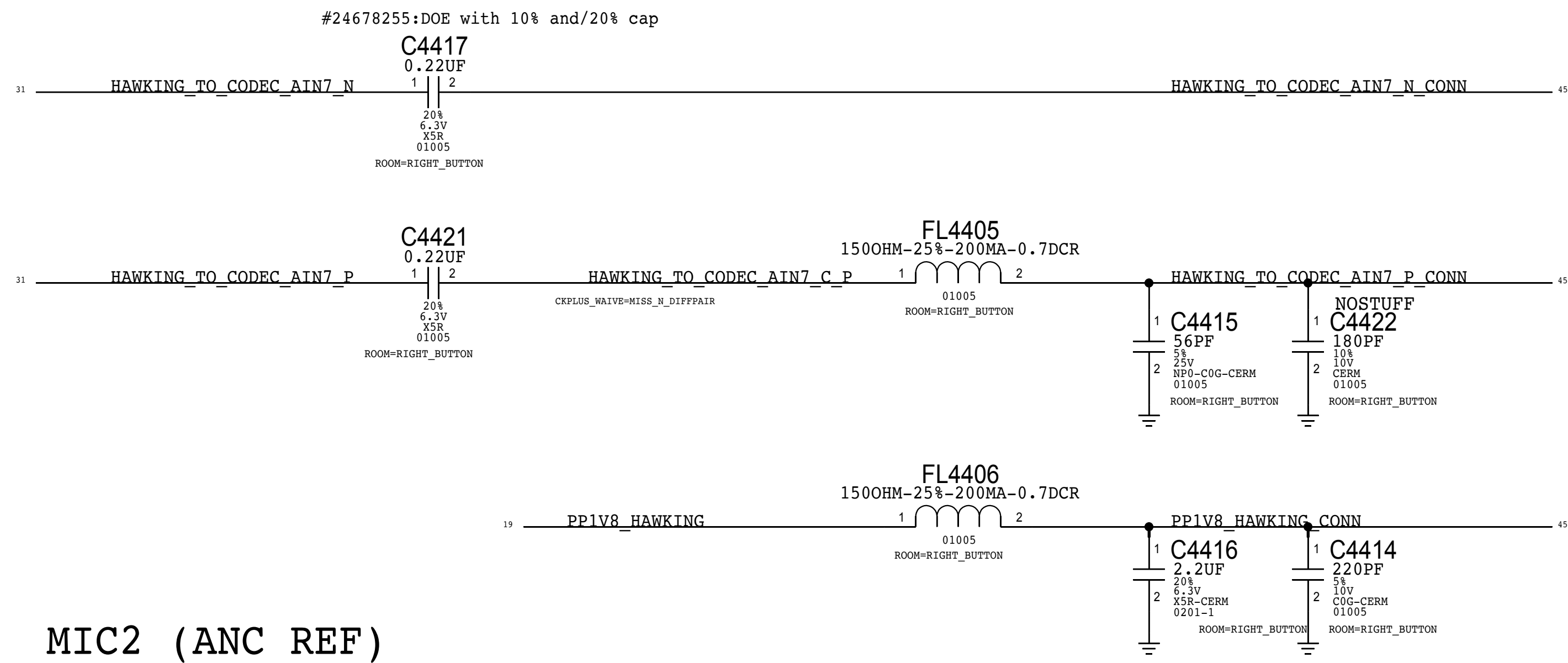
### STROBE2



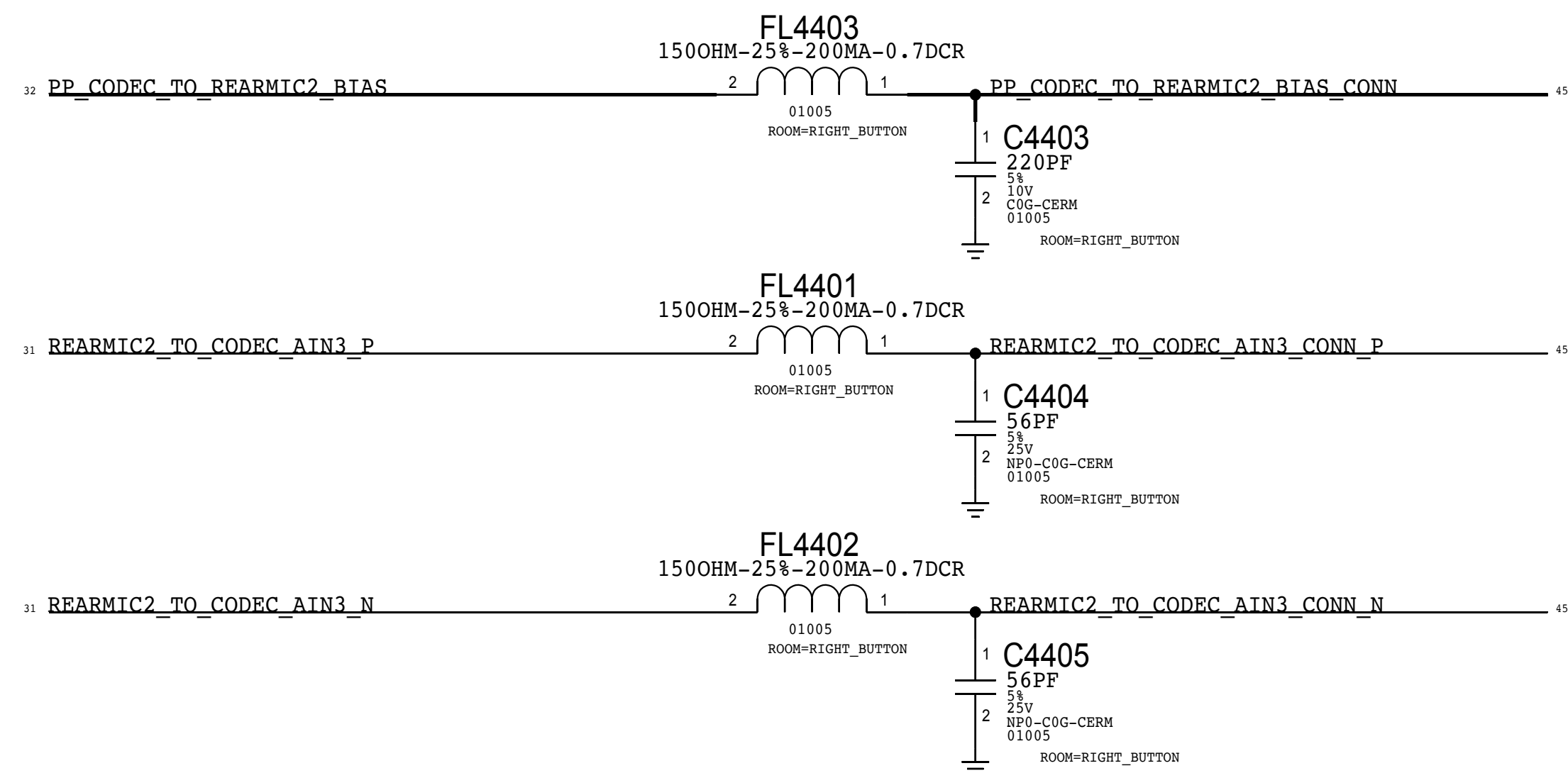
### BUTTONS



### HAWKING



### MIC2 (ANC REF)

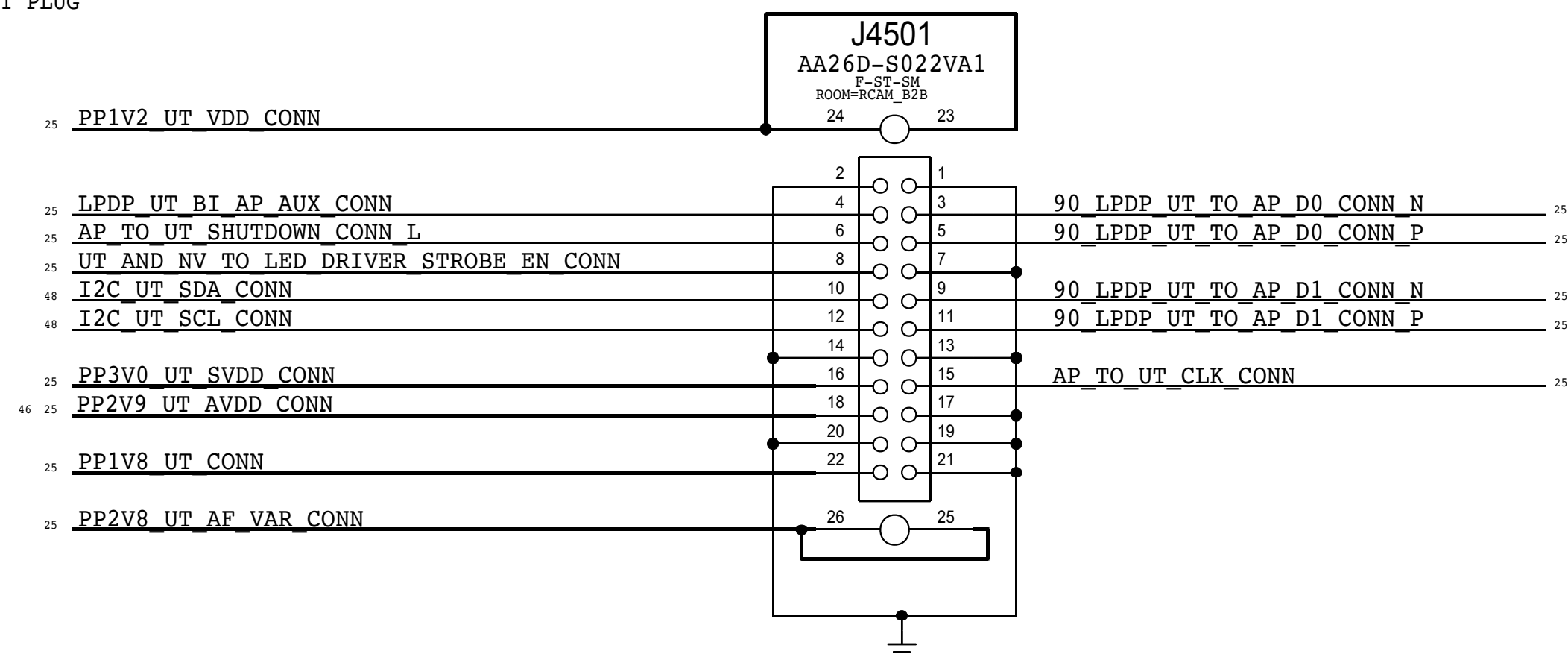


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### UTAH-C FLEX CONNECTOR

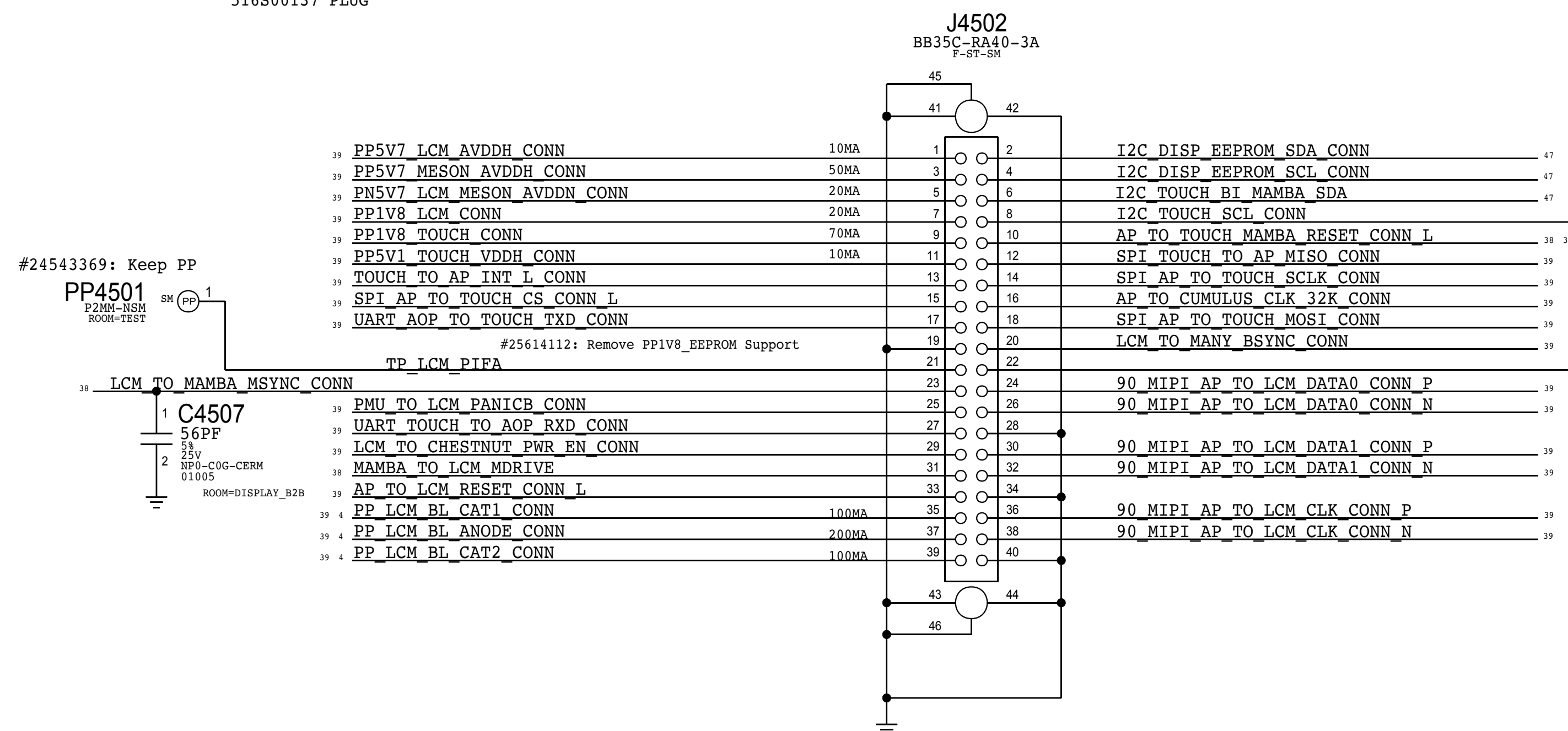
THIS PAGE UNIQUE TO SMALL FORM FACTOR

THIS ONE ----> 516S00152 RCPT (USED ON MLB)  
516S00151 PLUG



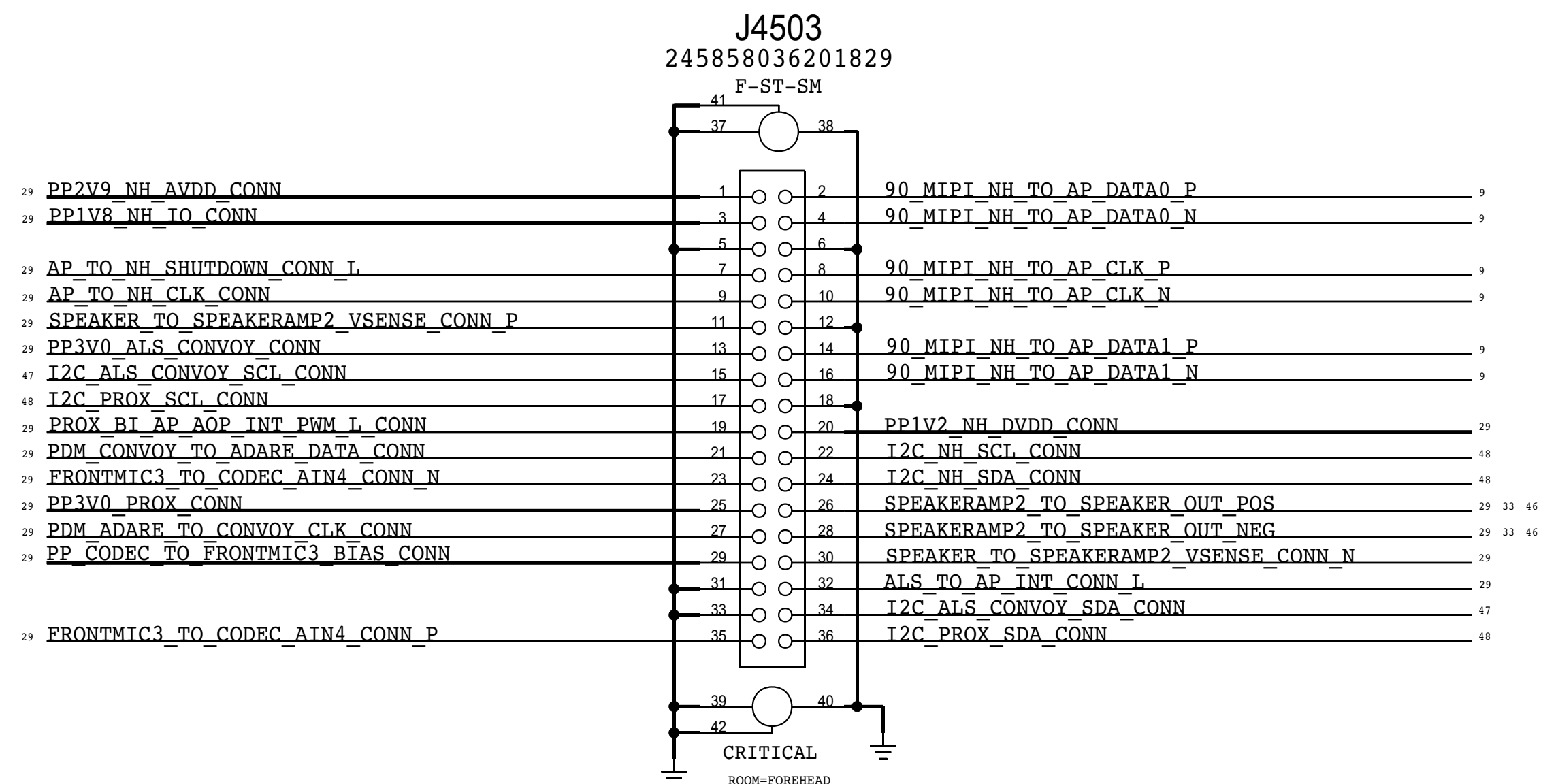
### DISPLAY / TOUCH FLEX CONNECTOR

THIS ONE ----> 516S00138 RCPT (USED ON MLB)  
516S00137 PLUG



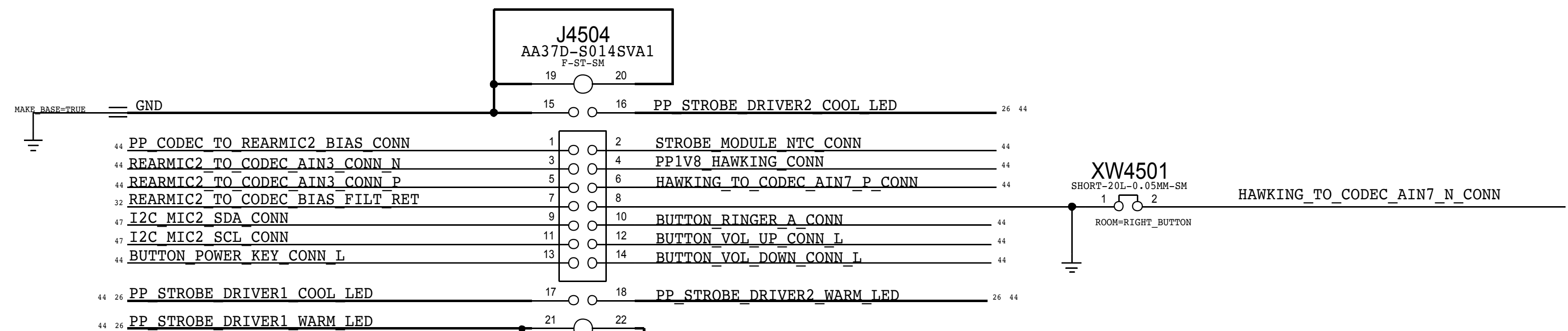
### FOREHEAD FLEX CONNECTOR

THIS ONE ----> 516S00146 RCPT (USED ON MLB)  
516S00145 PLUG



### COMBINED BUTTON FLEX CONNECTOR

MLB APN: 516S00150  
FLEX APN: 516S00149



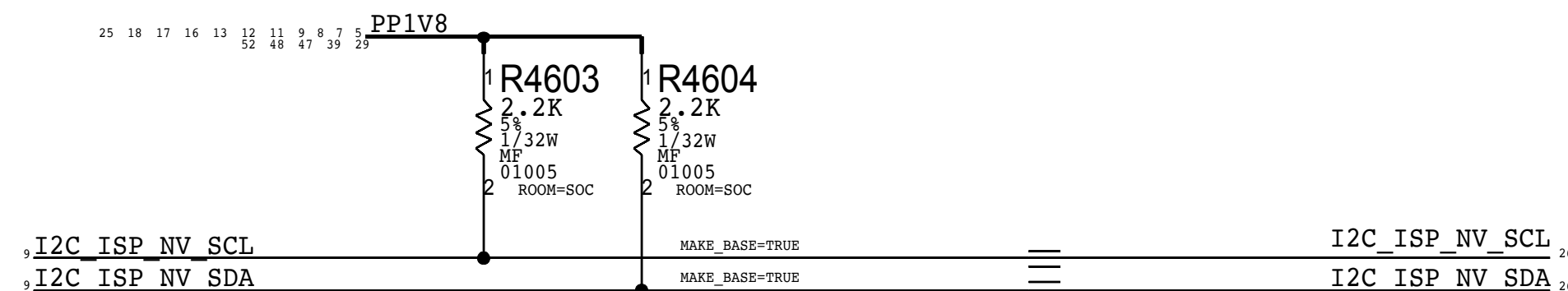
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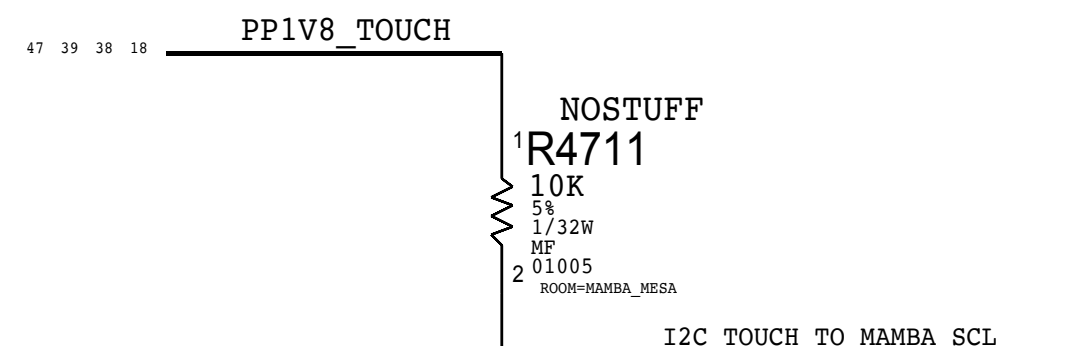
OTHER SMALL FORM FACTOR SPECIFIC PAGES:

4 - MECHANICAL

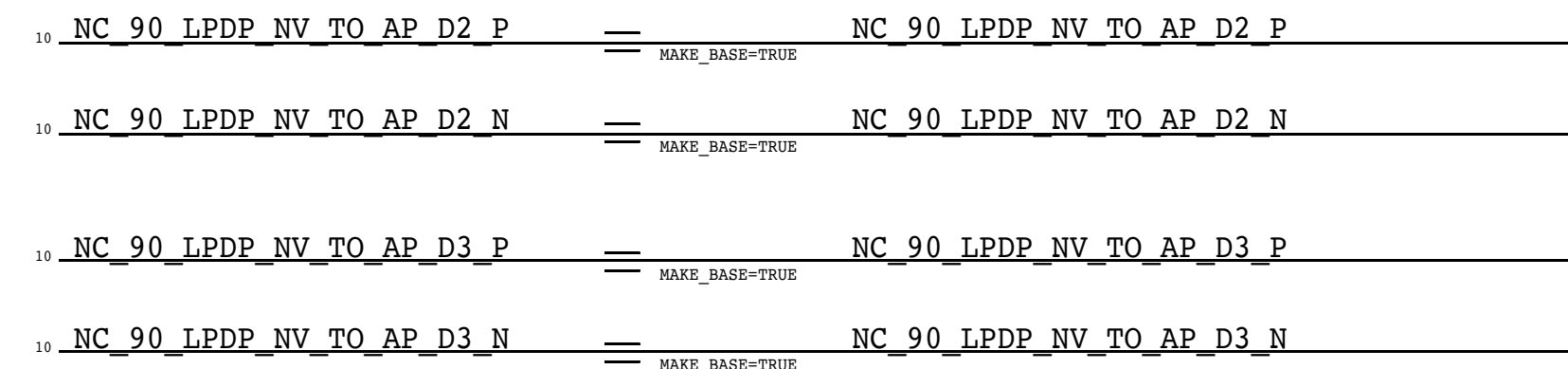
ISP I2C1



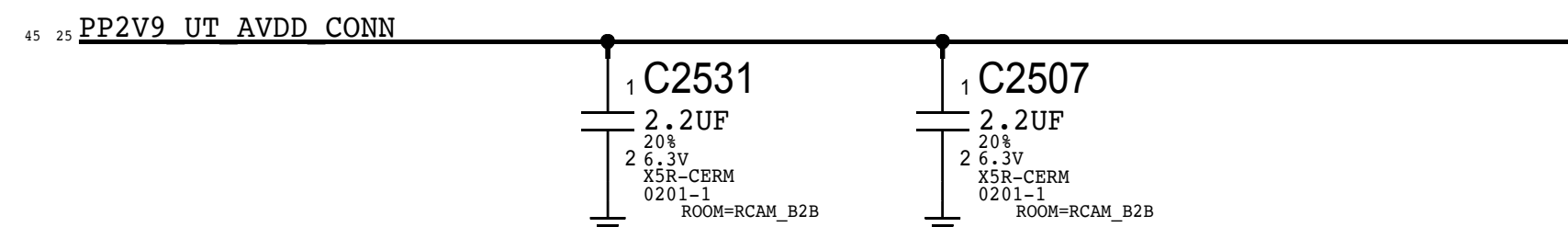
#26682438: Move to Page 46 TOUCH I2C



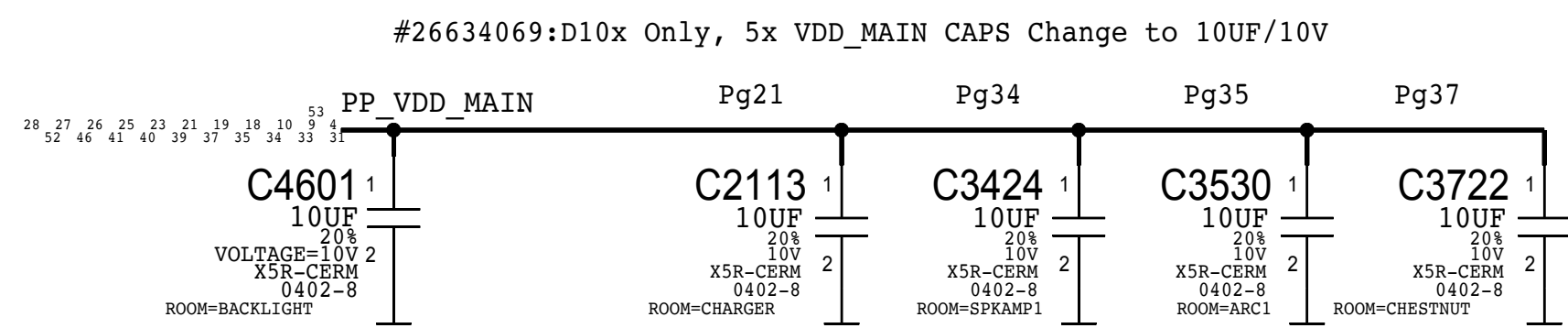
NC Nets in Small FF



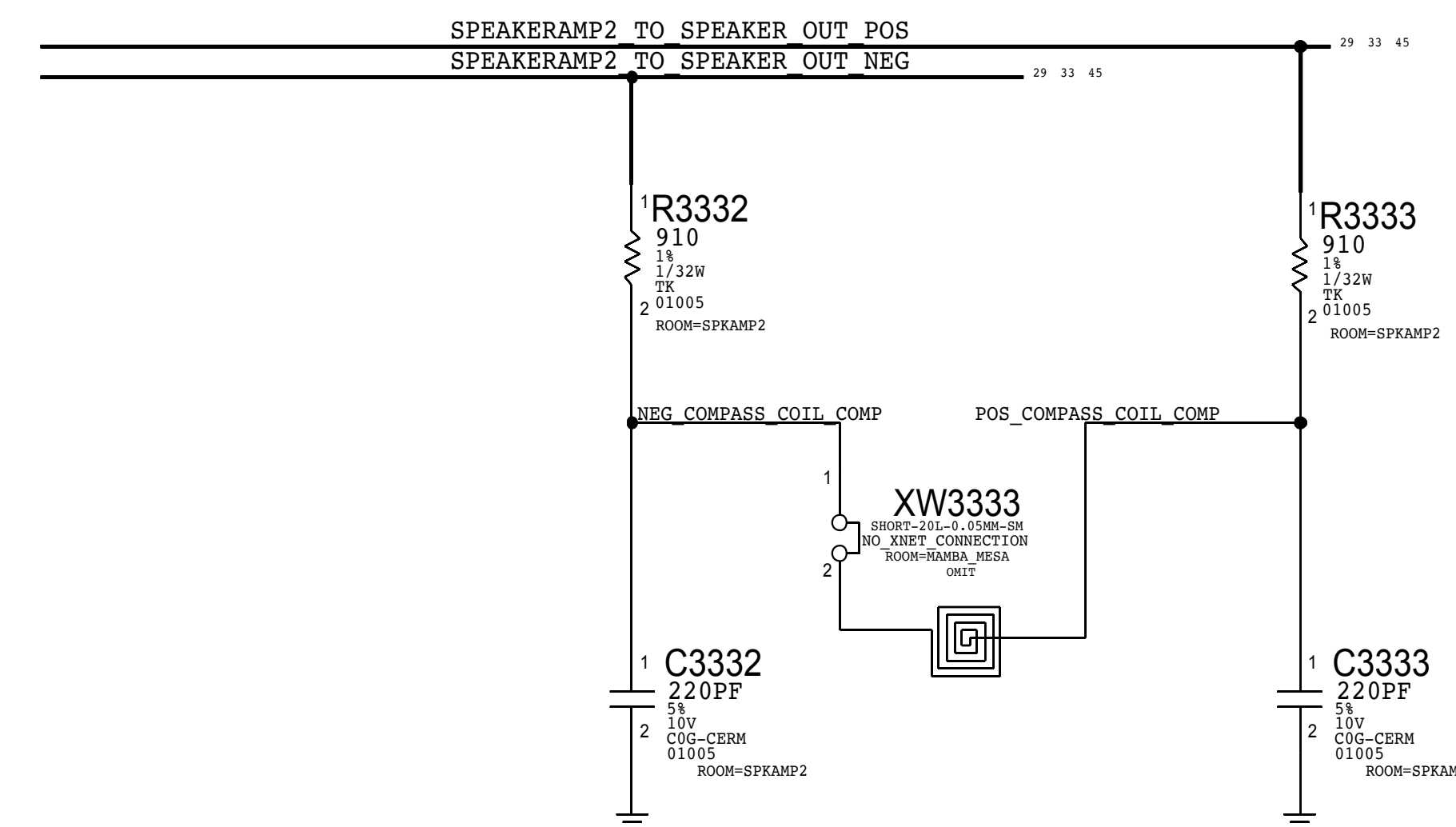
UT B2B



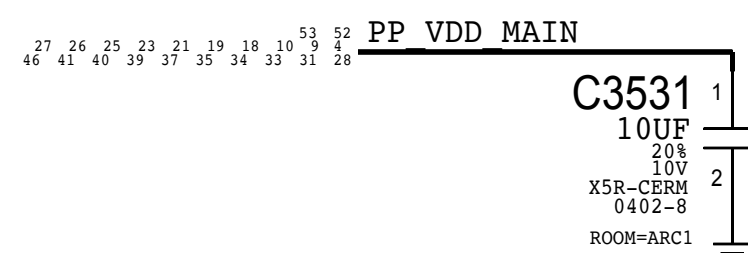
VDD\_MAIN Cap



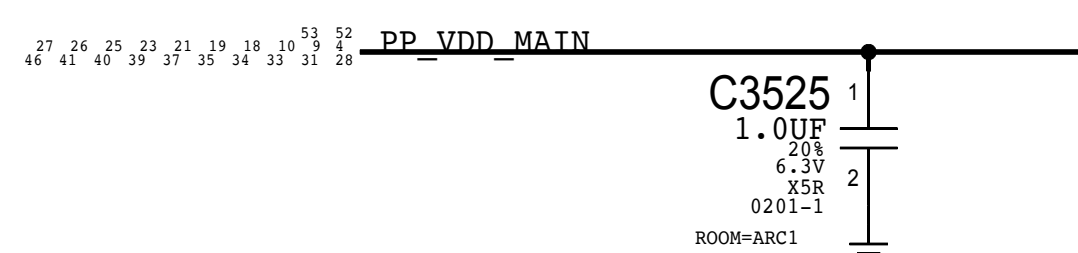
Top Speaker Compass Coil



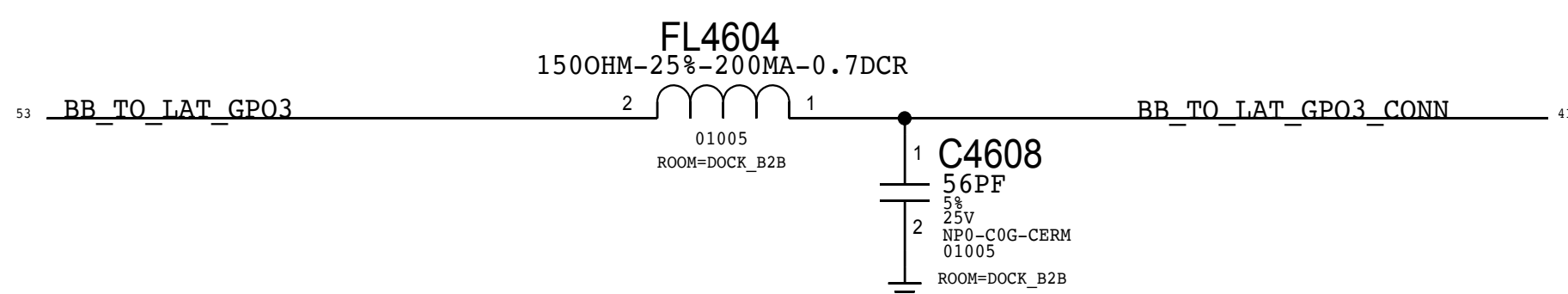
#25742582, Add back C3531 in layout at ARC



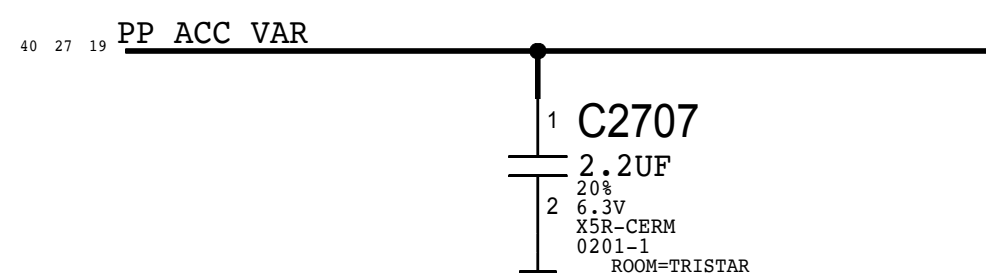
#26104509: C3525 Change to 1uF 0201 in DVT



Dock B2B (Pg 41)



ACC Buck Caps



|   |  |                |           |
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# AP

## I2C0

## I2C1

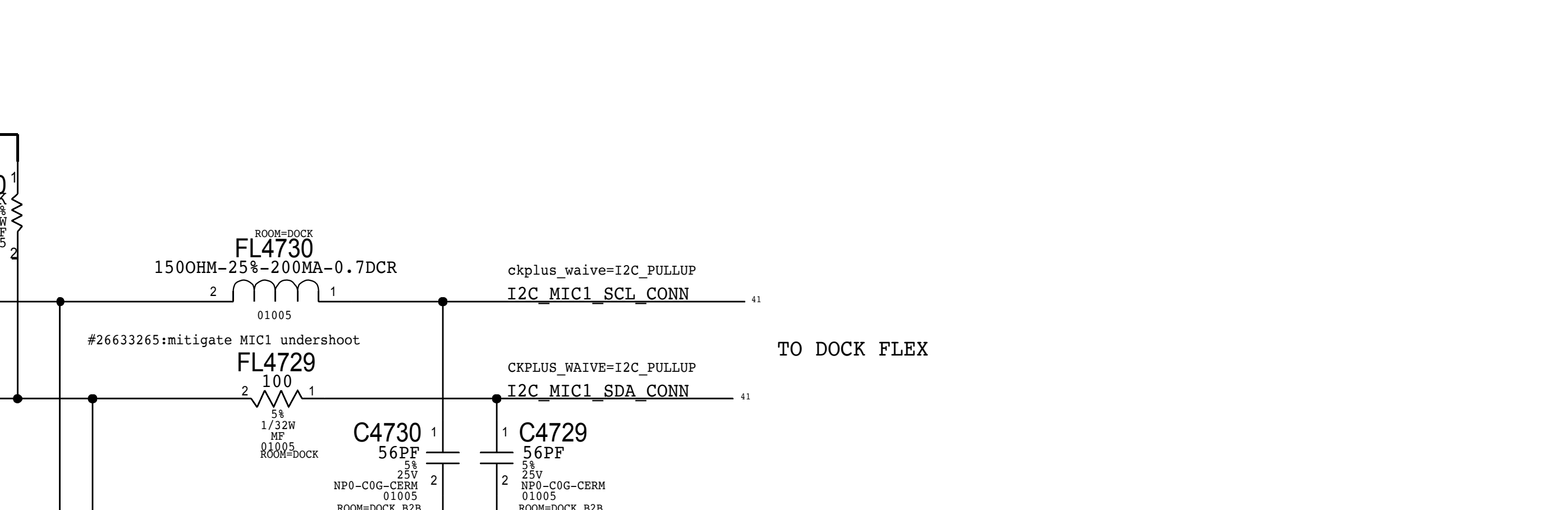
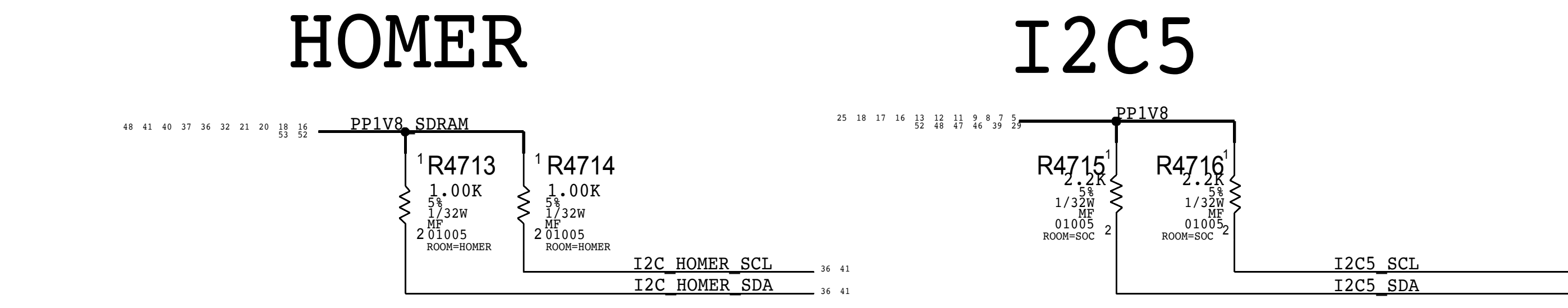
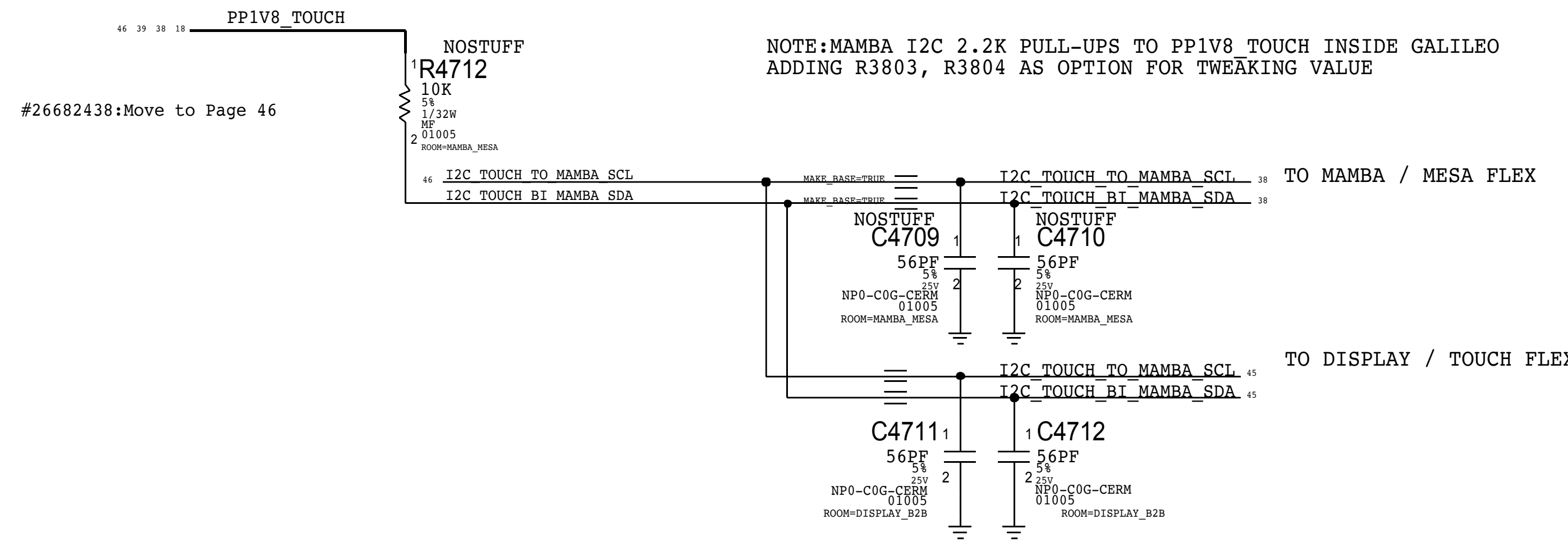
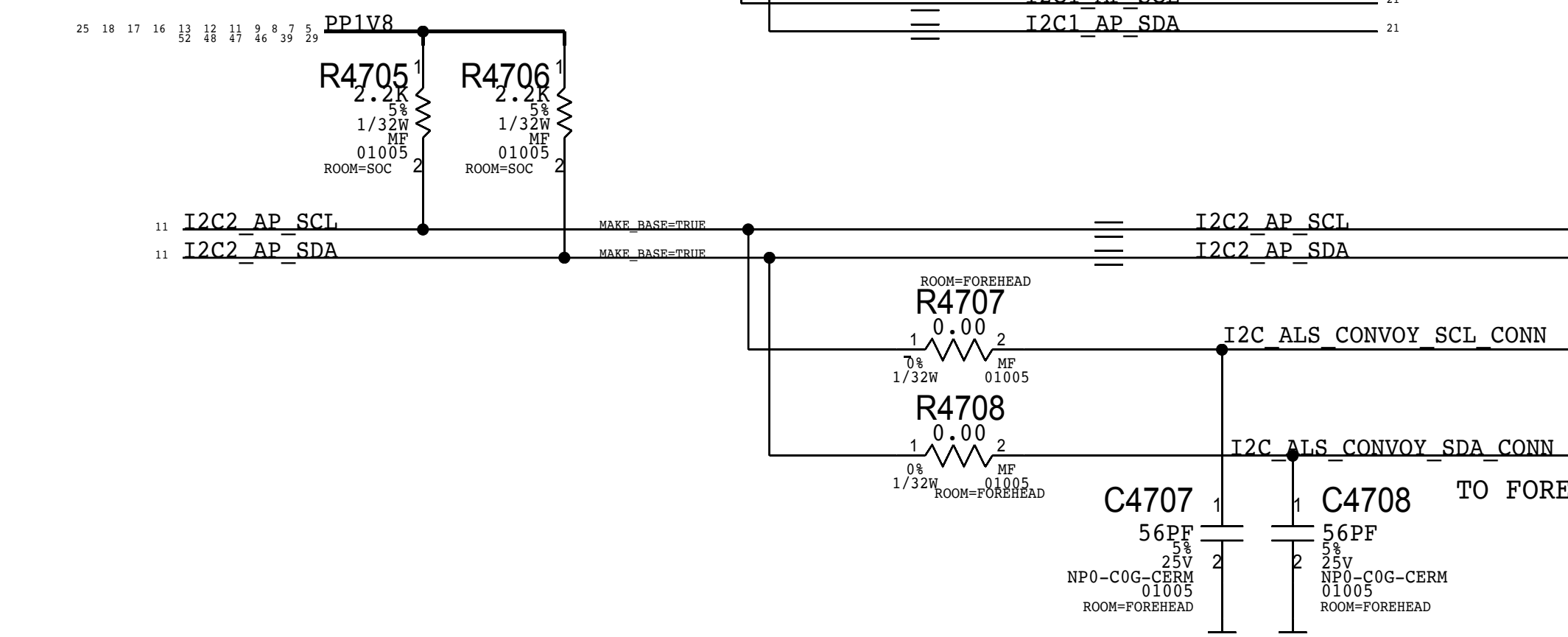
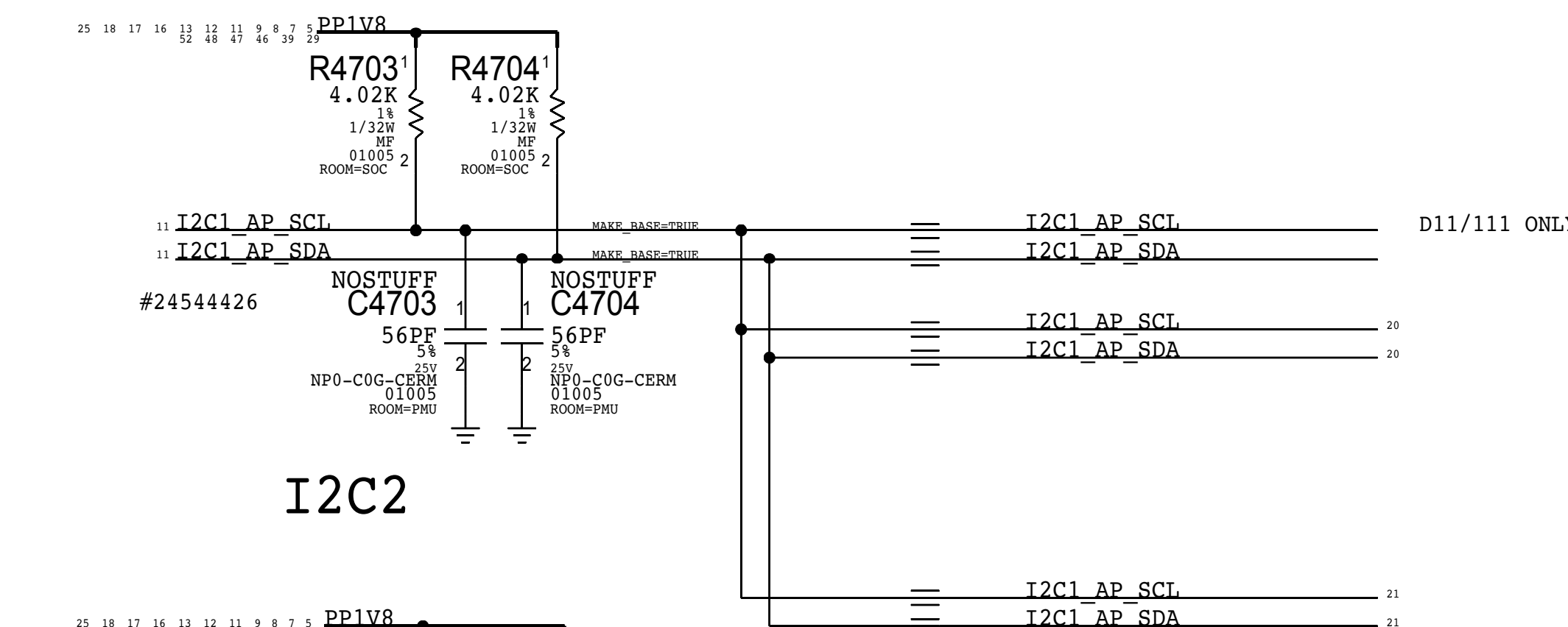
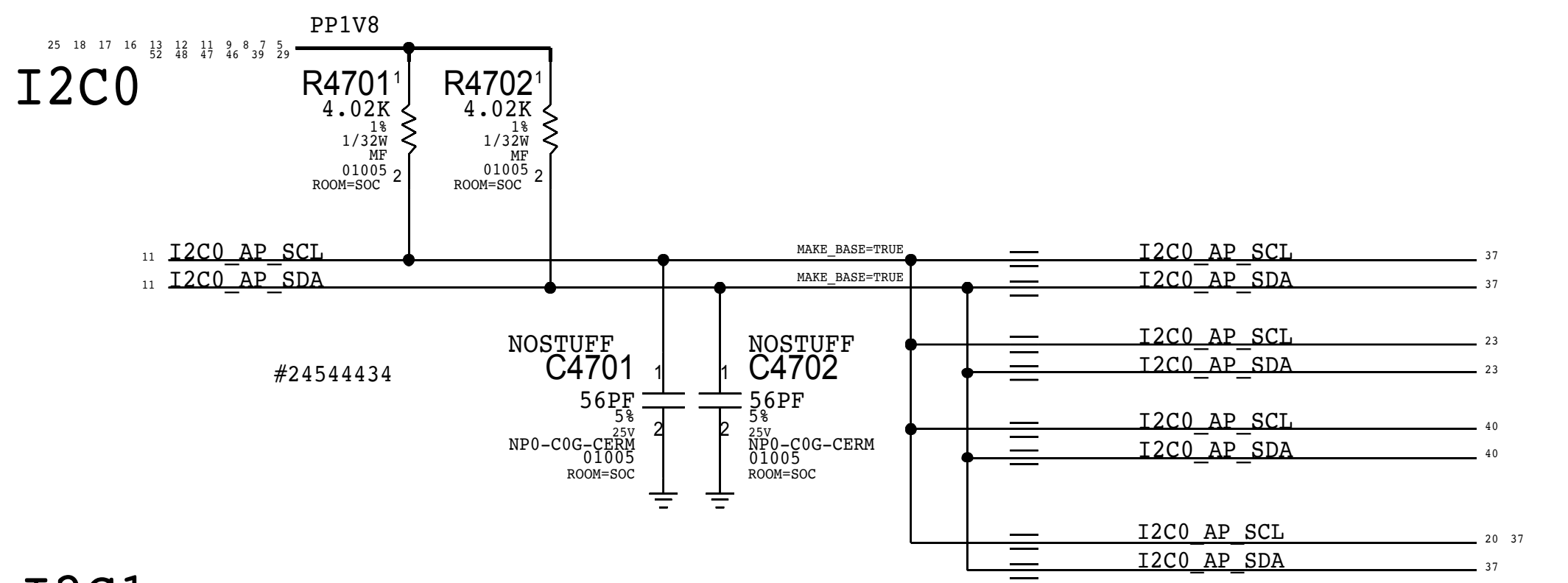
## I2C2

## I2C3

# TOUCH

# HOMER

# I2C5



NOTE:MAMBA I2C 2.2K PULL-UPS TO PPIV8 TOUCH INSIDE GALILEO  
 ADDING R3803, R3804 AS OPTION FOR TWEAKING VALUE

#26682438:Move to Page 46

#24544434

#24544426

D11/111 ONLY

ckplus\_waive=I2C\_PULLUP

ckplus\_waive=I2C\_PULLUP

ckplus\_waive=I2C\_PULLUP

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|   |  | REVISION       | 8.0.0     |
|   |  | BRANCH         |           |
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|   |  | SHEET          | 6 OF 81   |
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# AOP

## I2C

# ISP

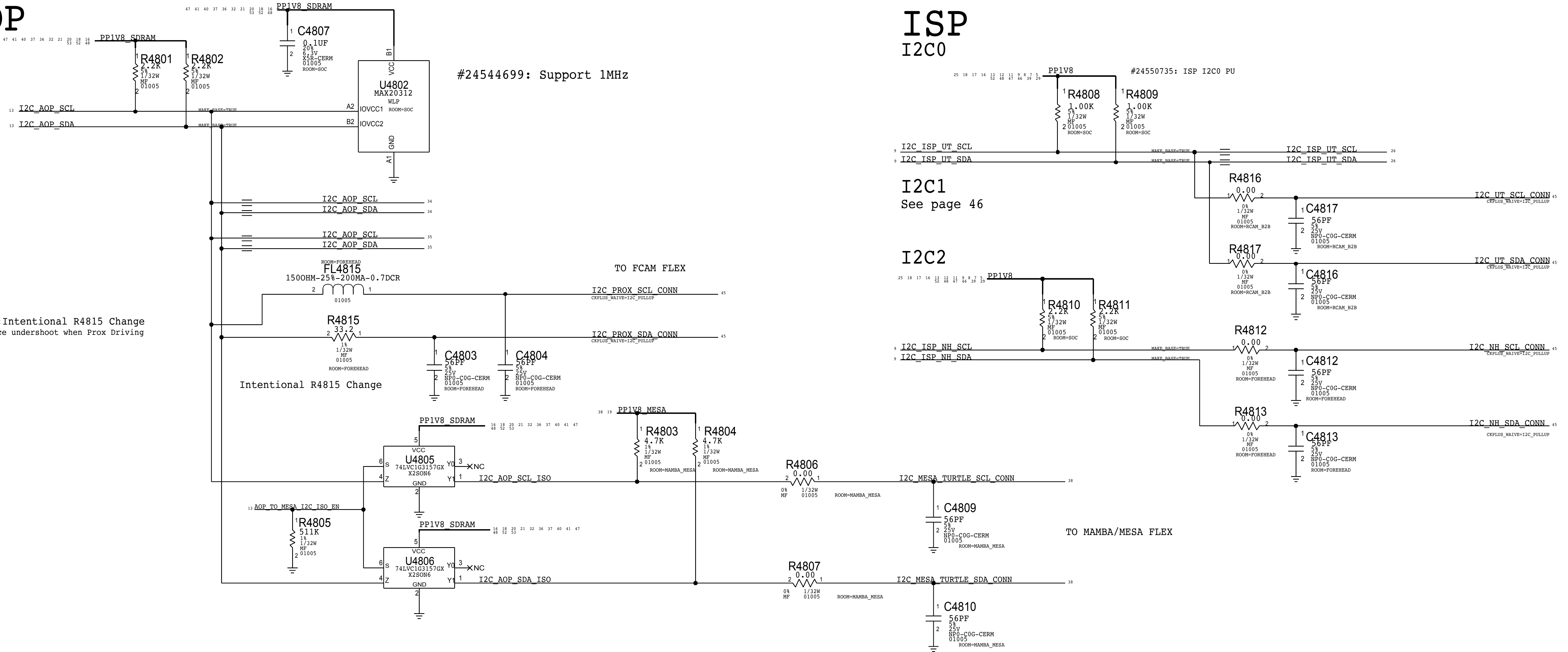
## I2C0

#24544699: Support 1MHz

#24550735: ISP I2C0 PU

#24958320: Intentional R4815 Change  
Reduce undershoot when Prox Driving

Intentional R4815 Change

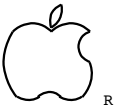


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|   |                | PAGE      | 6 OF 53 |
|   |                | SHEET     | 6 OF 81 |
|   |                |           |         |



### D1x I2C Table

| Bus                 | Device                         | Binary   | 7-bit Address | 8-bit Address | Max Speed |
|---------------------|--------------------------------|----------|---------------|---------------|-----------|
| ISP I2C0<br>1MHz    | SALT LAKE (PRIMARY)            | 0010000X | 0x10          | 0x20          | 1 MHz     |
|                     | SALT LAKE (SECONDARY)          | 0110000X | 0x30          | 0x60          | 1 MHz     |
|                     | GRUNBERG (STANDARD)            | 0011100X | 0x1C          | 0x38          | 1 MHz     |
|                     | GRUNBERG (SPECIAL ABSOLUTE RW) | 0011101X | 0x1D          | 0x3A          | 1 MHz     |
|                     | GRUNBERG (SPECIAL DELTA READ)  | 0011110X | 0x1E          | 0x3C          | 1 MHz     |
|                     | STROBE 1                       | 1100011X | 0x63          | 0xC6          | 1 MHz     |
| ISP I2C1<br>1MHz    | LAS VEGAS (PRIMARY)            | 0100000X | 0x20          | 0x40          | 1 MHz     |
|                     | LAS VEGAS (SECONDARY)          | 0110000X | 0x30          | 0x60          | 1 MHz     |
|                     | EDWIN                          | 1100011X | 0x63          | 0xC6          | 400 kHz   |
|                     | STROBE 2                       | 0000110X | 0x06          | 0x0C          | 1 MHz     |
| ISP I2C2<br>400kHz  | CONCORD                        | 0010000X | 0x10          | 0x20          | 1 MHz     |
| ADP I2C<br>1MHz     | ARC DRIVER 1                   | 100000YX | 0x41          | 0x82          | 1 MHz     |
|                     | PROX                           | 1011000X | 0x58          | 0xB0          | 1 MHz     |
|                     | SPKAMP1 (L26)                  | 100000YX | 0x40          | 0x80          | 1 MHz     |
|                     | TURTLE                         | 0101100X | 0x2c          | 0x58          | 400 kHz   |
|                     | MESA                           | 1100001X | 0x81          | 0xC2          | 400 kHz   |
| Touch I2C<br>400kHz | MAABA                          | 1100000X | 0x60          | 0xC0          | 1 MHz     |
|                     | MESON                          | 1000000X | 0x40          | 0x80          | 510 kHz   |
| EEPROM I2C          | EEPROM                         | 1010001X | 0x51          | 0xA2          | 400 kHz   |
| AP I2C0<br>400kHz   | BOOST                          | 1110101X | 0x75          | 0xEA          | 3.4 MHz   |
|                     | TRISTAR                        | 0011010X | 0x1A          | 0x34          | 400 kHz   |
|                     | BACKLIGHT 1                    | 1100010X | 0x62          | 0xC4          | 1 MHz     |
|                     | CHESTNUT                       | 0100111X | 0x27          | 0x4E          | 400 kHz   |
| AP I2C1<br>400kHz   | ADELYN                         | 1110100X | 0x74          | 0xEB          | 400 kHz   |
|                     | TIGRIS                         | 1110101X | 0x75          | 0xEA          | 400 kHz   |
|                     | BACKLIGHT 2                    | 1100010X | 0x62          | 0xC4          | 1 MHz     |
| AP I2C2<br>400kHz   | ALS                            | 0101001X | 0x29          | 0x52          | 400 kHz   |
|                     | CONVOY                         | 0100001X | 0x21          | 0x42          | 3.4 MHz   |
|                     | SPKAMP 2 (L26)                 | 0100010X | 0x22          | 0x44          | 400 kHz   |
| AP I2C3<br>1MHz     | DOCK FLEX (MIC1)               | 1010100X | 0x54          | 0xA8          | 1 MHz     |
|                     | COMBINED BUTTON FLEX (MIC2)    | 1010100X | 0x56          | 0xAC          | 1 MHz     |
|                     | DISP EEPROM                    | 1010001X | 0x51          | 0xA2          | 400kHz    |
| Homer I2C<br>1MHz   | SCHRODINGER (STANDARD)         | 0001110X | 0xE           | 0x1C          | 1 MHz     |
|                     | SCHRODINGER (CAL REG S)        | 0001111X | 0xF           | 0x1D          | 1 MHz     |
|                     | EEPROM (STANDARD)              | 1010000X | 0x50          | 0xA0          |           |
|                     | EEPROM (CONFIG)                | 1010000X | 0x90          | 0xA0          |           |

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| BRANCH  | PAGE           | SHEET     |           |
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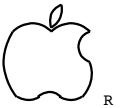
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|  |                | SHEET     | 6 OF 81 |

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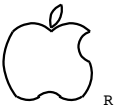
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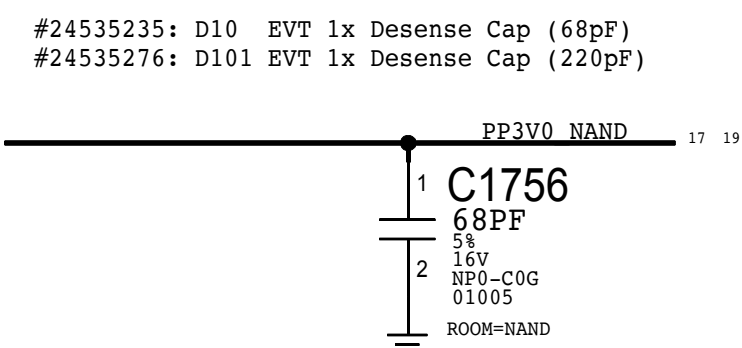
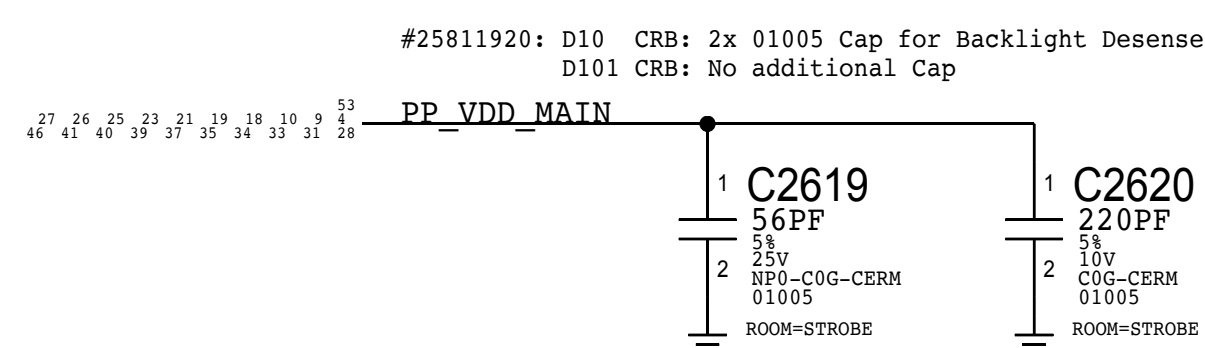
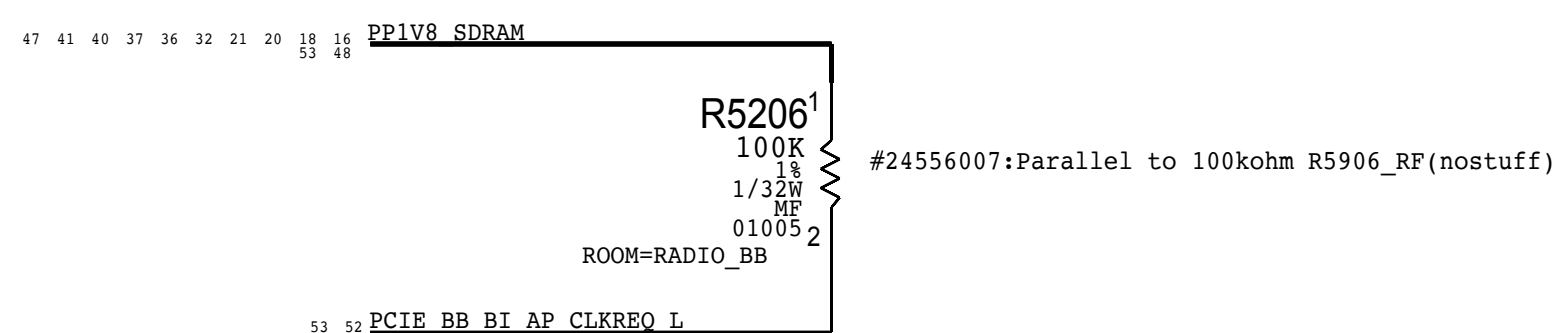
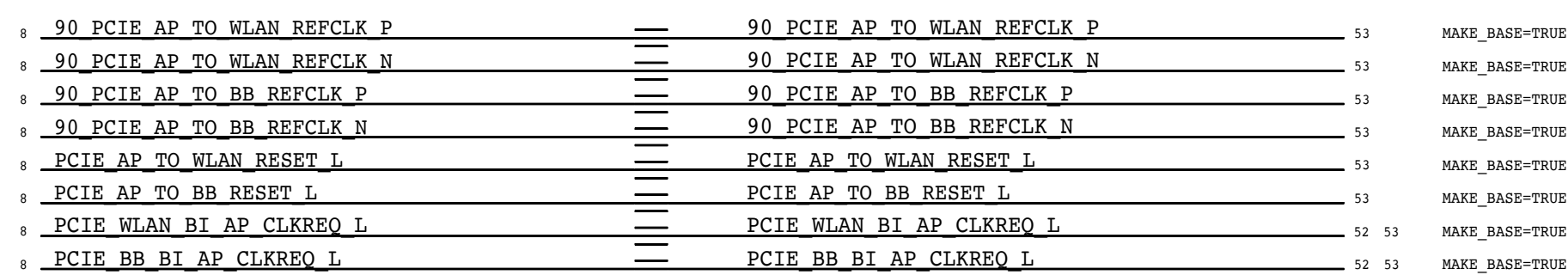
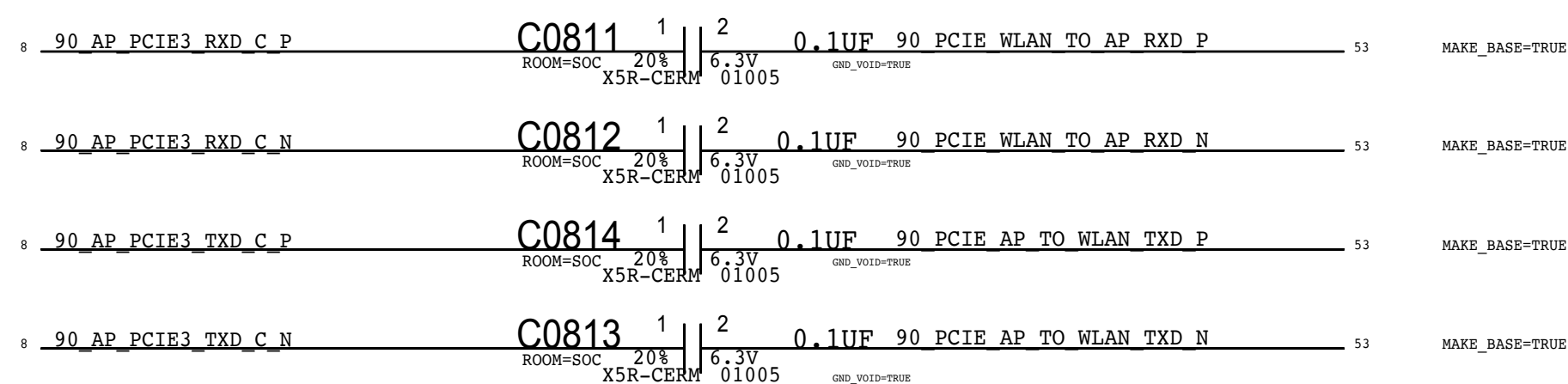
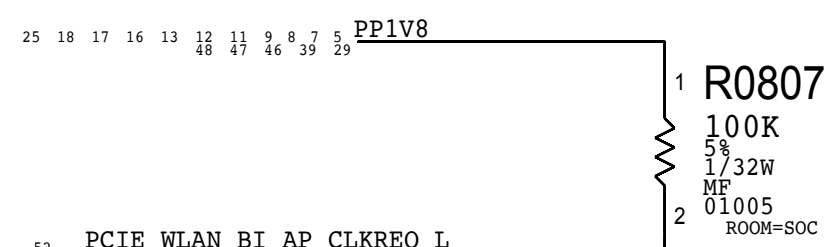
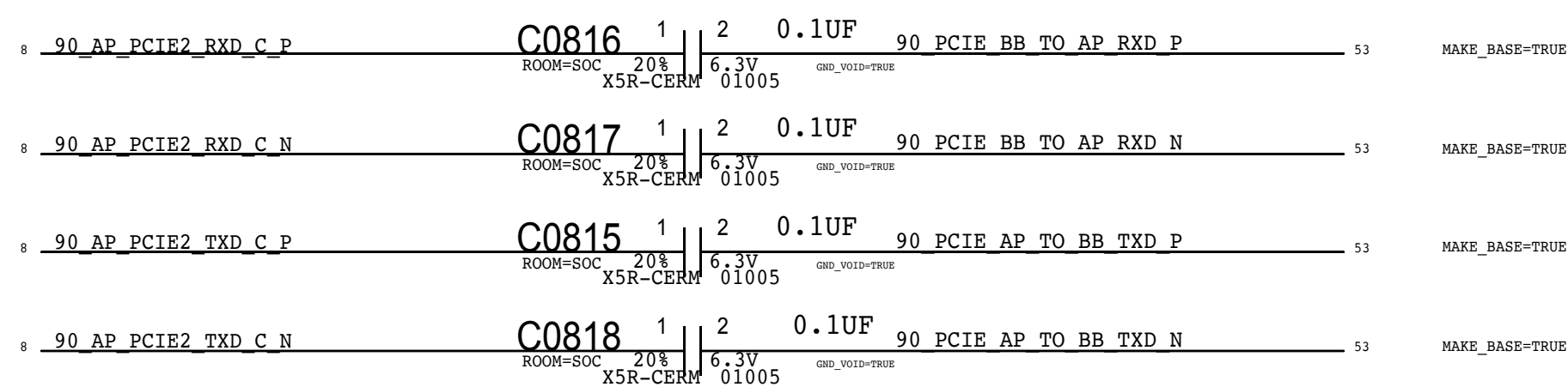
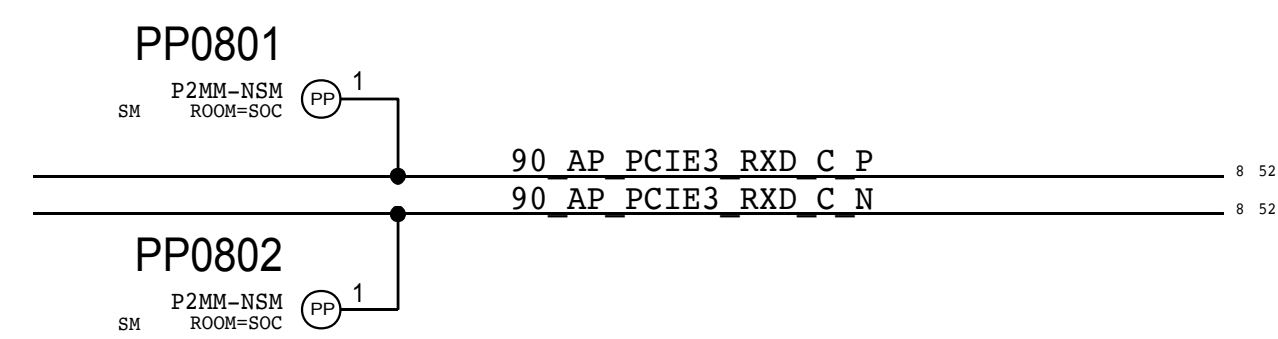
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This page contains items which differ accross all MLB designs  
PCIe lanes



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# Wifi/BT

# Cellular

Opposite polarity on Karoo -->

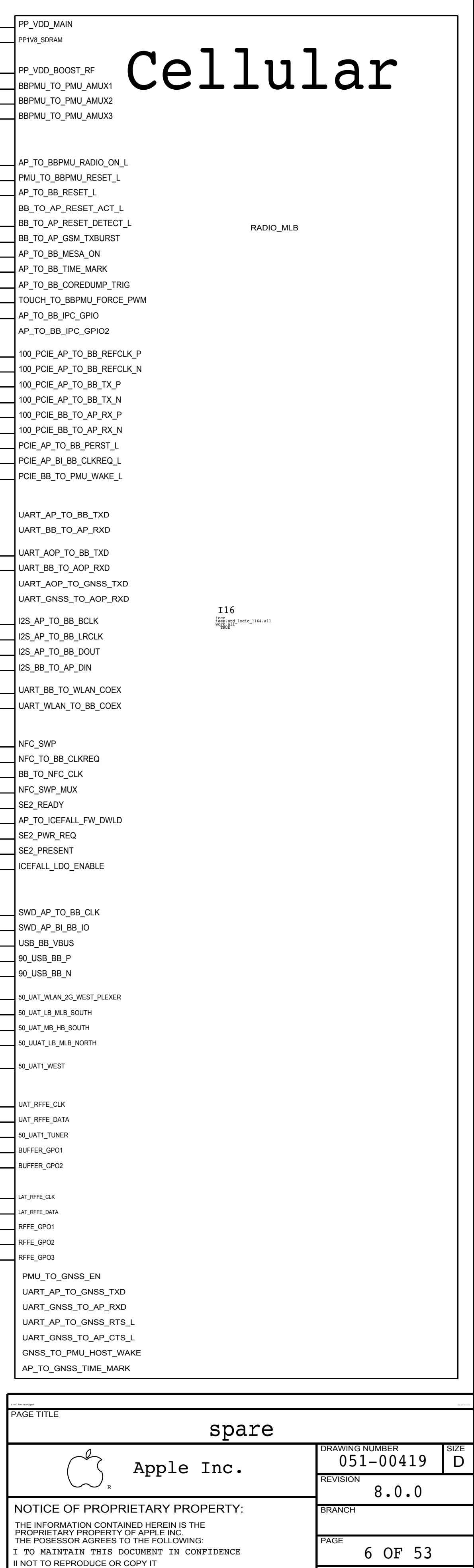
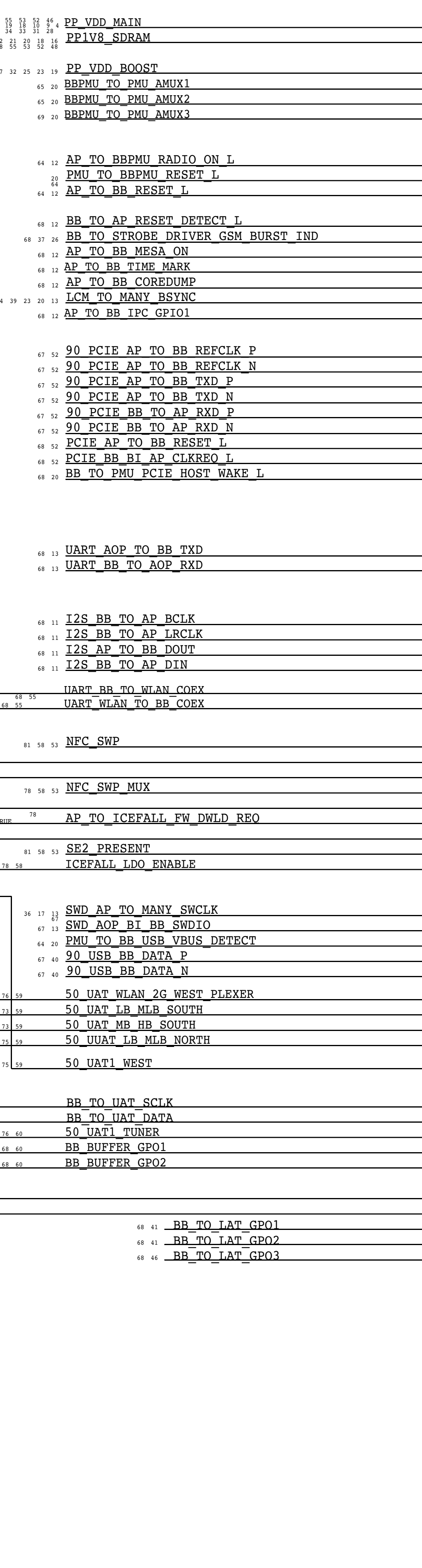
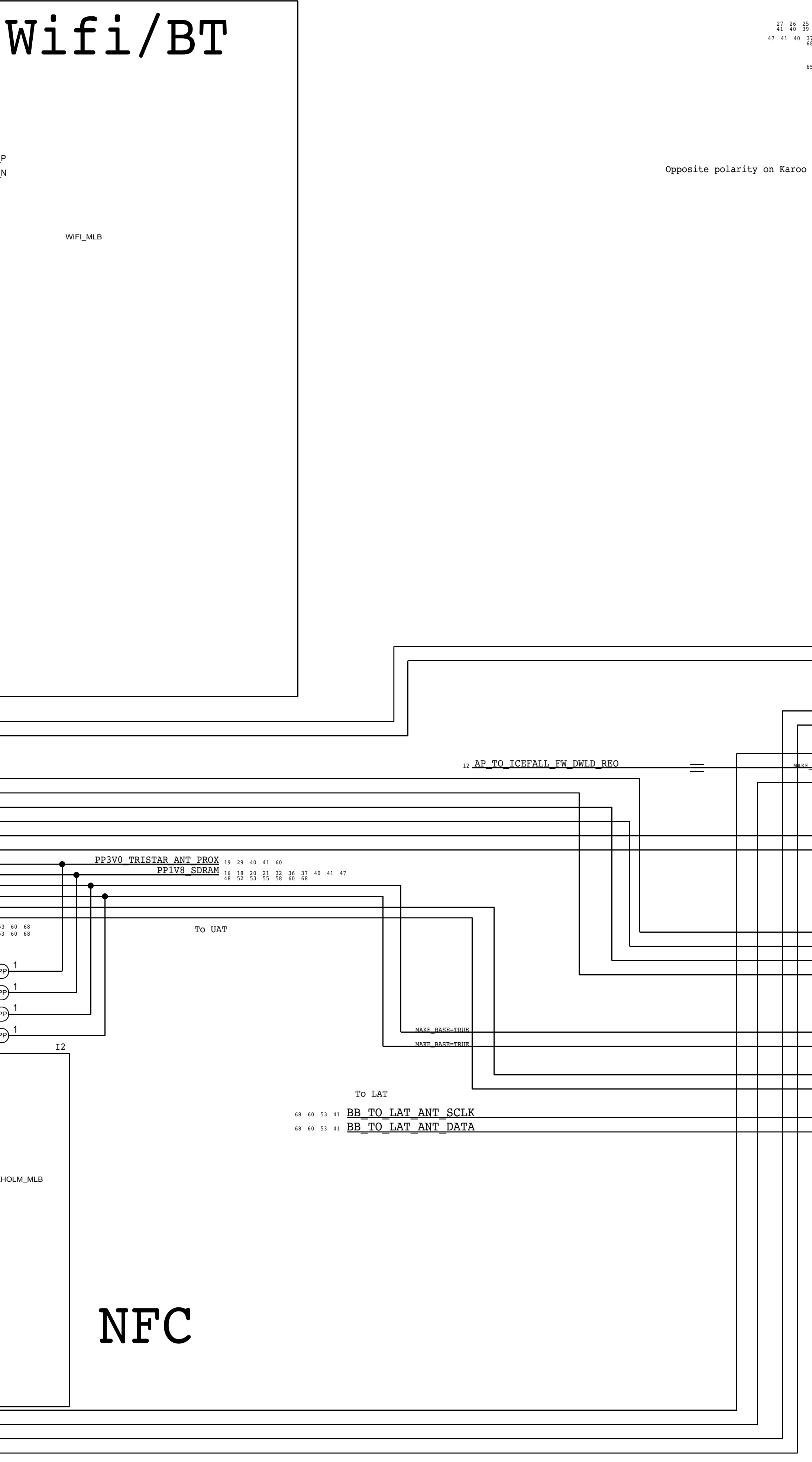
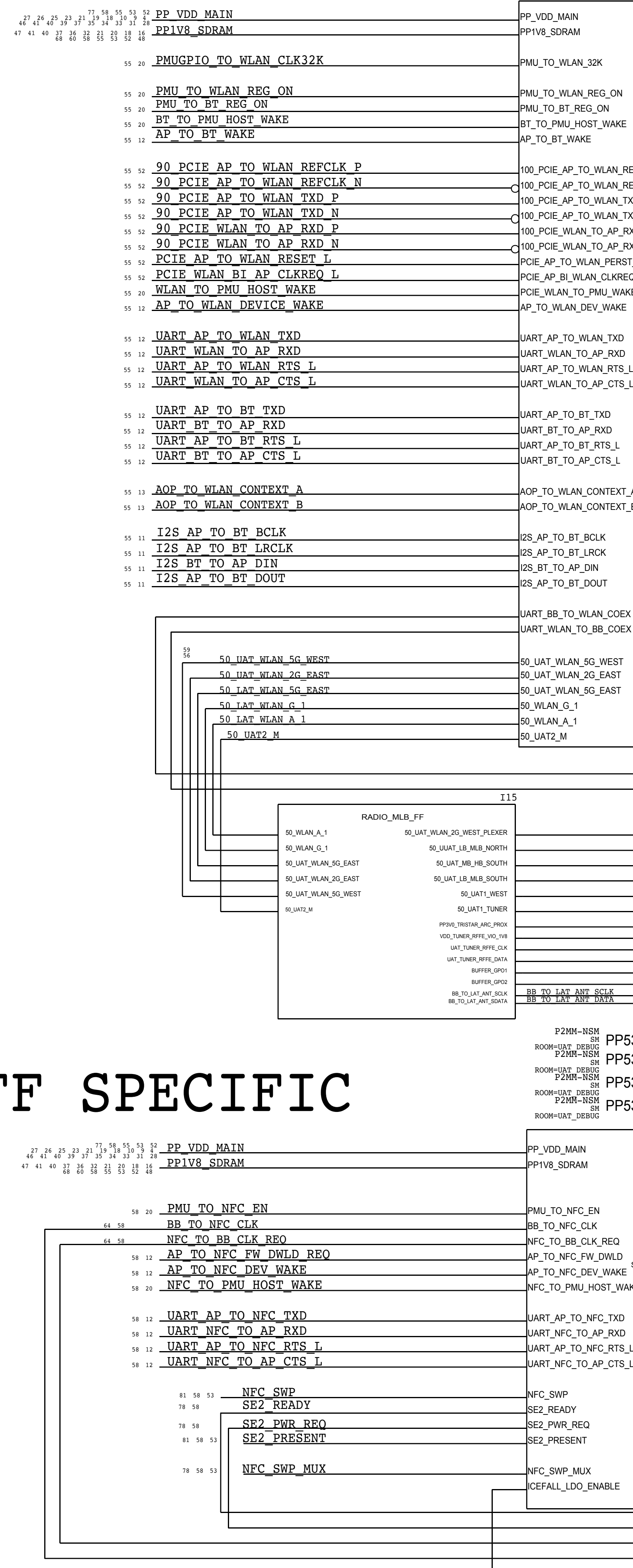
WIFI\_MLB

RADIO\_MLB

I16

# FF SPECIFIC

# NFC



PAGE TITLE: spare

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REVISION: 8.0.0

BRANCH:

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2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

Table with columns: REV, ECN, DESCRIPTION OF REVISION, CK APPD, DATE. Values: 8, 0006400877, ENGINEERING RELEASED, 2016-06-14

D1X WIFI MLB (PERENNIAL)
FEBRUARY 1, 2016

Table with columns: PDF PAGE, CSA PAGE, CONTENTS. Values: 2, 76, PERENNIAL; 3, 77, WIFI FRONT-END

BOM OPTIONS:

D10\_JP:

Table with columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION. Lists components like CAP, CER, IND, RES, MF for various functions.

NOSTUFF:C7729\_RF,C7711\_RF,C7709\_RF,C7710\_RF, C7707\_RF, C7708\_RF
C7700\_RF, C7703\_RF,C7704\_RF

D10\_ROW:

Table with columns: PART#, QTY, DESCRIPTION, REFERENCE DESIGNATOR(S), CRITICAL, BOM OPTION. Lists components like CAP, CER, IND, RES, MF for various functions.

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D101\_WIFI:

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C7700\_RF, C7703\_RF, C7704\_RF

D11\_JP:

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D11\_ROW:

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C7700\_RF,C7702\_RF, C7703\_RF,C7704\_RF

D111\_WIFI:

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NOSTUFF: C7706\_RF, C7711\_RF, C7709\_RF, C7710\_RF, C7707\_RF, C7708\_RF
C7700\_RF, C7702\_RF, C7703\_RF, C7704\_RF

POWER

PP\_VDD\_MAIN
PP1V8\_SDRAM

CLOCKS

PMU GPIO TO WLAN\_CLK32K

CONTROL

PMU\_TO\_WLAN\_REG\_ON
PMU\_TO\_BT\_REG\_ON
BT\_TO\_PMU\_HOST\_WAKE
AP\_TO\_BT\_WAKE

WLAN\_PCIE

90\_PCIE\_AP\_TO\_WLAN\_REPCLK\_P
90\_PCIE\_AP\_TO\_WLAN\_REPCLK\_N
90\_PCIE\_AP\_TO\_WLAN\_TXD\_P
90\_PCIE\_AP\_TO\_WLAN\_TXD\_N
90\_PCIE\_WLAN\_TO\_AP\_RXD\_P
90\_PCIE\_WLAN\_TO\_AP\_RXD\_N
PCIE\_AP\_TO\_WLAN\_RESET\_L
PCIE\_WLAN\_BT\_AP\_CLKREQ\_L
WLAN\_TO\_PMU\_HOST\_WAKE
AP\_TO\_WLAN\_DEVICE\_WAKE

WLAN\_UART

UART\_WLAN\_TO\_AP\_RXD
UART\_AP\_TO\_WLAN\_TXD
UART\_WLAN\_TO\_AP\_CTS\_L
UART\_AP\_TO\_WLAN\_RTS\_L

BLUETOOTH\_UART

UART\_AP\_TO\_BT\_TXD
UART\_BT\_TO\_AP\_RXD
UART\_AP\_TO\_BT\_RTS\_L
UART\_BT\_TO\_AP\_CTS\_L

AOP

AOP\_TO\_WLAN\_CONTEXT\_A
AOP\_TO\_WLAN\_CONTEXT\_B

AUDIO

I2S\_AP\_TO\_BT\_BCLK
I2S\_AP\_TO\_BT\_LRCLK
I2S\_BT\_TO\_AP\_DIN
I2S\_AP\_TO\_BT\_DOUT

COEX

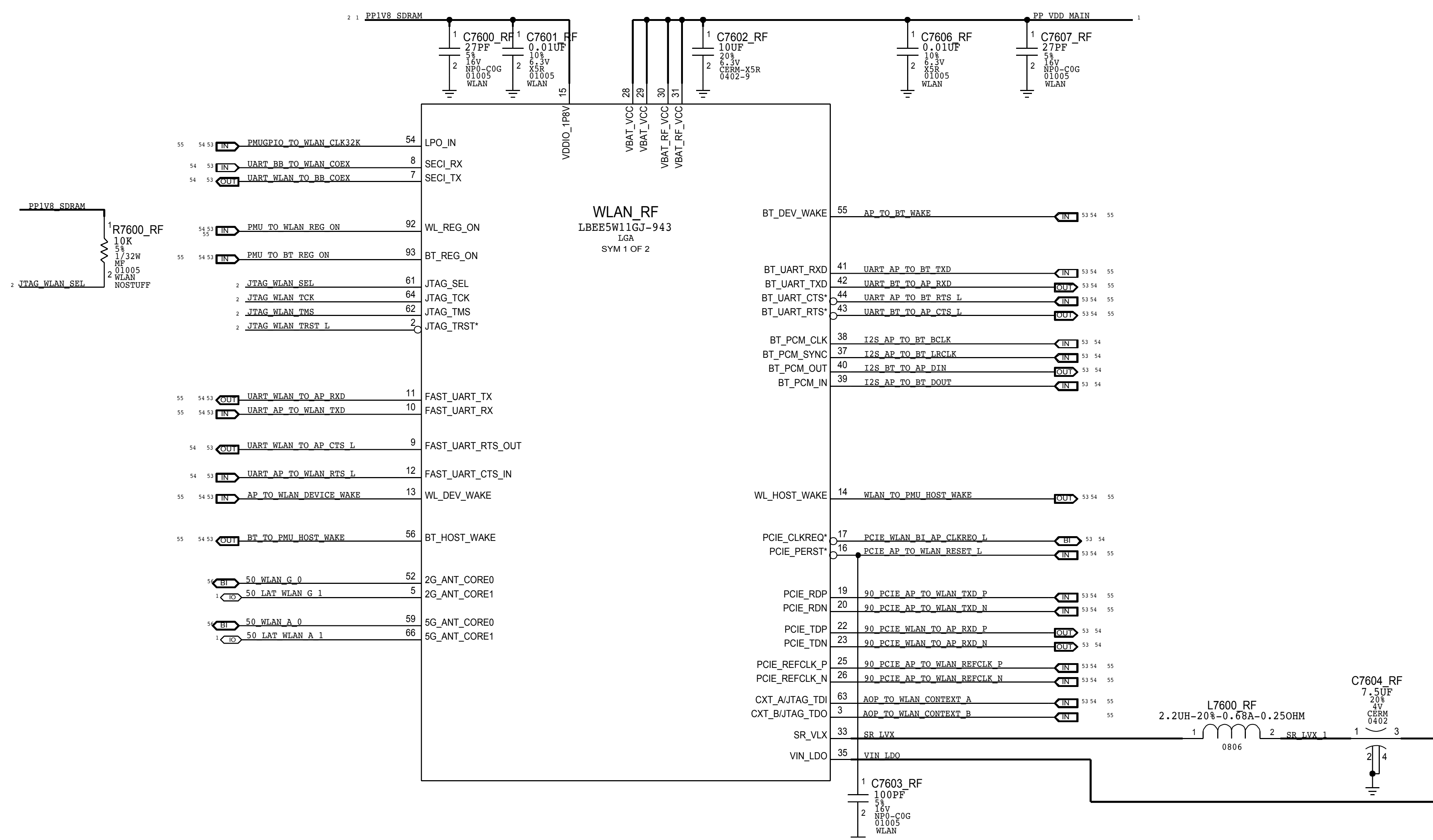
UART\_BB\_TO\_WLAN\_COEX
UART\_WLAN\_TO\_BB\_COEX

ANTENNA

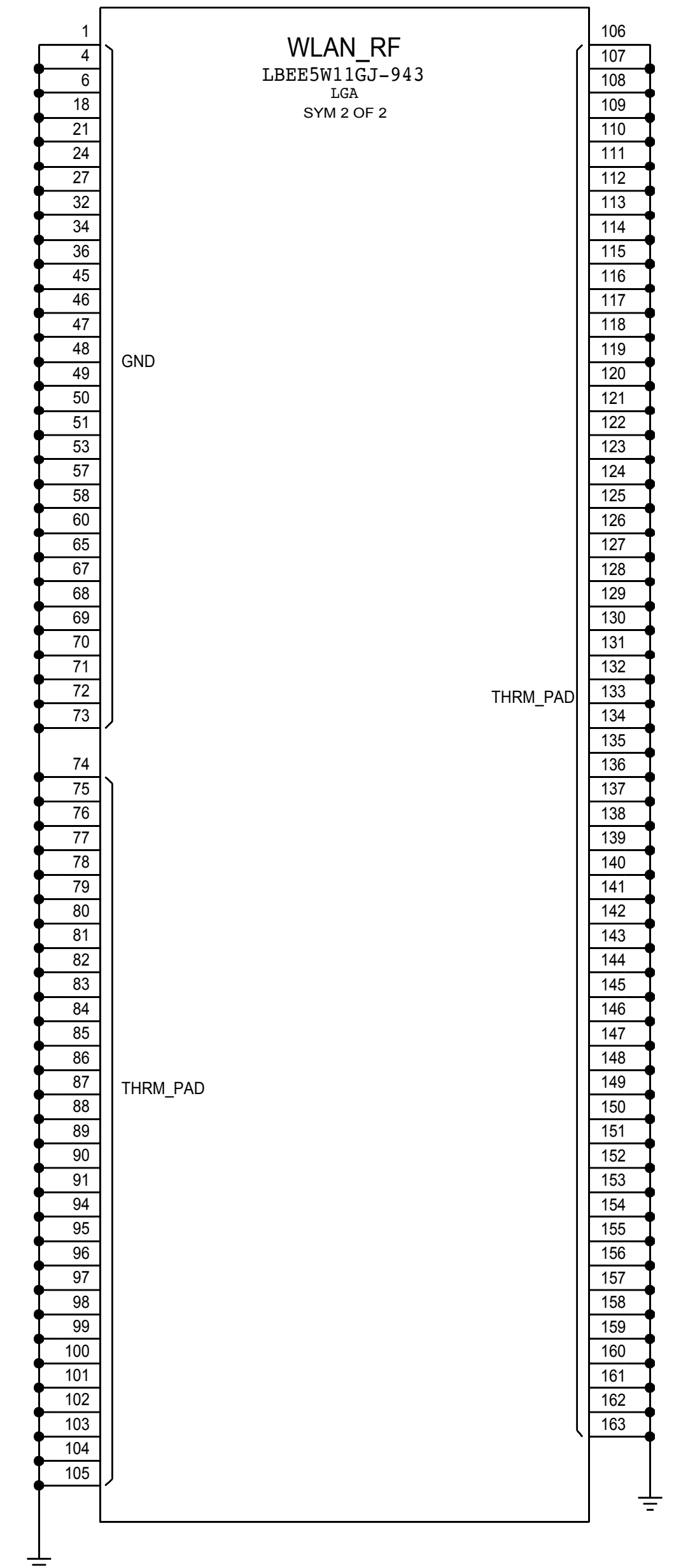
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50\_LAT\_WLAN\_A\_I
50\_UAT2\_M

Table with fields: DRAWING NUMBER (051-00419), REVISION (8.0.0), PAGE (6 OF 53), SHEET (6 OF 81), Apple Inc. logo and text.

# WIFI/BT



| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS:          |
|-------------|---------------------------|------------|---------|--------------------|
| 339800201   | 339800199                 | ALTERNATE  | WLAN_RF | ALT WIFI/BT MODULE |



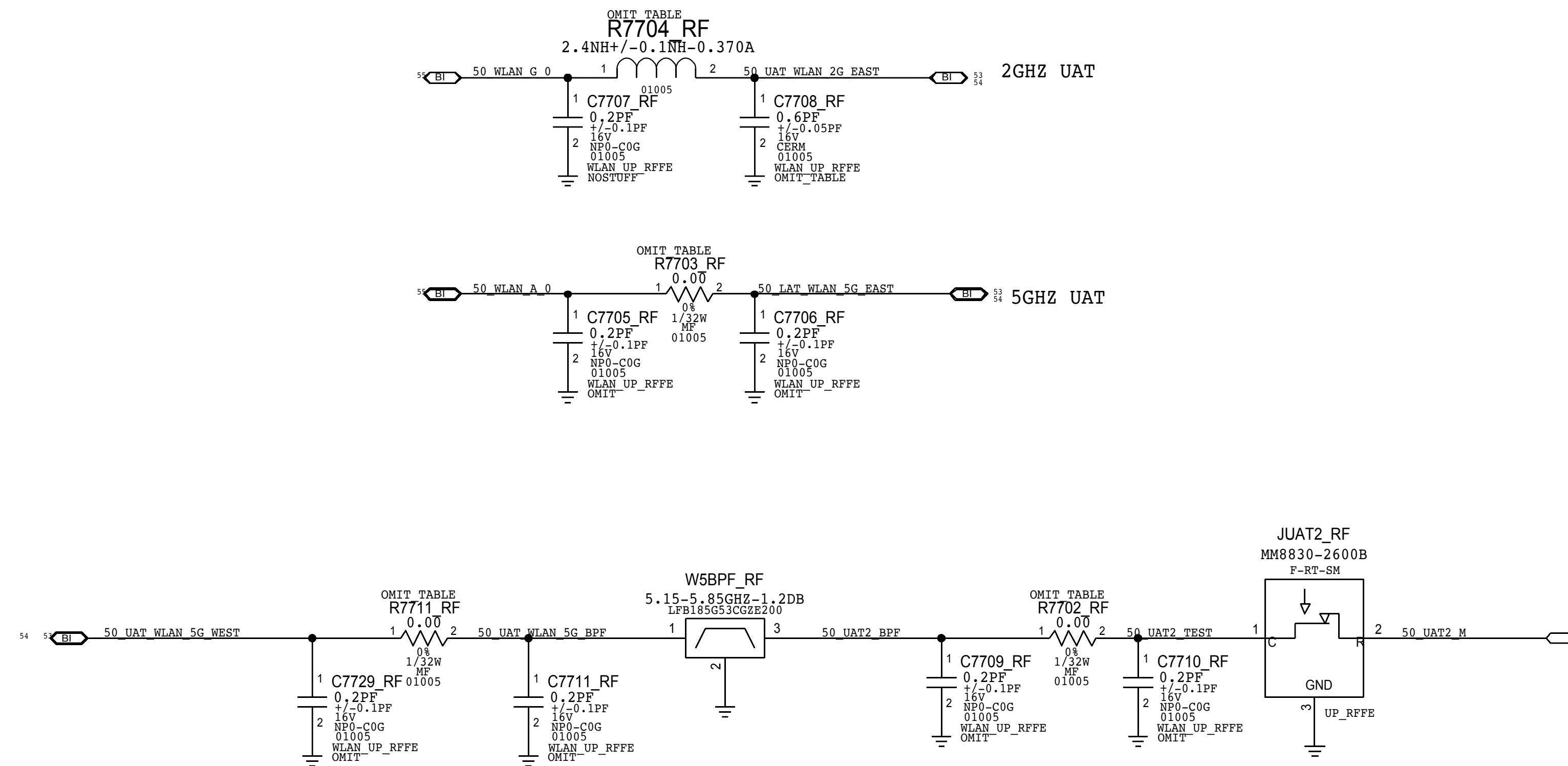
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| 1 | AOP TO WLAN CONTEXT A TDI   | PP7600_RF | OMIT |
| 1 | AOP TO WLAN CONTEXT B TDO   | PP7601_RF | OMIT |
| 1 | UART WLAN TO AP_RXD         | PP7603_RF | OMIT |
| 1 | UART AP TO WLAN_TXD         | PP7604_RF | OMIT |
| 2 | JTAG WLAN_TCK               | PP7605_RF | OMIT |
| 2 | JTAG WLAN_TMS               | PP7606_RF | OMIT |
| 2 | JTAG WLAN_TRST_L            | PP7607_RF | OMIT |
| 1 | AP TO WLAN_DEVICE_WAKE      | PP7608_RF | OMIT |
| 1 | BT TO PMU_HOST_WAKE         | PP7609_RF | OMIT |
| 1 | PMU_GPIO_TO WLAN_CLK32K     | PP7610_RF | OMIT |
| 1 | WLAN TO PMU_HOST_WAKE       | PP7611_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_REFCLK_P | PP7612_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_REFCLK_N | PP7613_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_TXD_P    | PP7614_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_TXD_N    | PP7615_RF | OMIT |
| 1 | PCIE_AP_TO WLAN_RESET_L     | PP7616_RF | OMIT |
| 1 | JTAG WLAN_SEL               | PP7617_RF | OMIT |
| 1 | PMU_TO WLAN_REG_ON          | PP7618_RF | OMIT |
| 1 | PMU_TO_BT_REG_ON            | PP7619_RF | OMIT |

|   |                             |           |      |
|---|-----------------------------|-----------|------|
| 1 | PMU_GPIO_TO WLAN_CLK32K     | PP7610_RF | OMIT |
| 1 | WLAN TO PMU_HOST_WAKE       | PP7611_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_REFCLK_P | PP7612_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_REFCLK_N | PP7613_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_TXD_P    | PP7614_RF | OMIT |
| 1 | 90_PCIE_AP_TO WLAN_TXD_N    | PP7615_RF | OMIT |
| 1 | PCIE_AP_TO WLAN_RESET_L     | PP7616_RF | OMIT |
| 1 | JTAG WLAN_SEL               | PP7617_RF | OMIT |
| 1 | PMU_TO WLAN_REG_ON          | PP7618_RF | OMIT |
| 1 | PMU_TO_BT_REG_ON            | PP7619_RF | OMIT |
| 1 | UART AP TO BT_TXD           | PP7620_RF | OMIT |
| 1 | UART BT TO AP_RXD           | PP7621_RF | OMIT |
| 1 | UART AP TO BT_RTS_L         | PP7622_RF | OMIT |
| 1 | UART BT TO AP_CTS_L         | PP7623_RF | OMIT |
| 1 | AP TO BT_WAKE               | PP7624_RF | OMIT |

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| BRANCH     |  | 6 OF 53        |   |      |
| PAGE       |  | 6 OF 81        |   |      |
| SHEET      |  | 6 OF 81        |   |      |

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# WIFI UPPER ANTENNA FEEDS



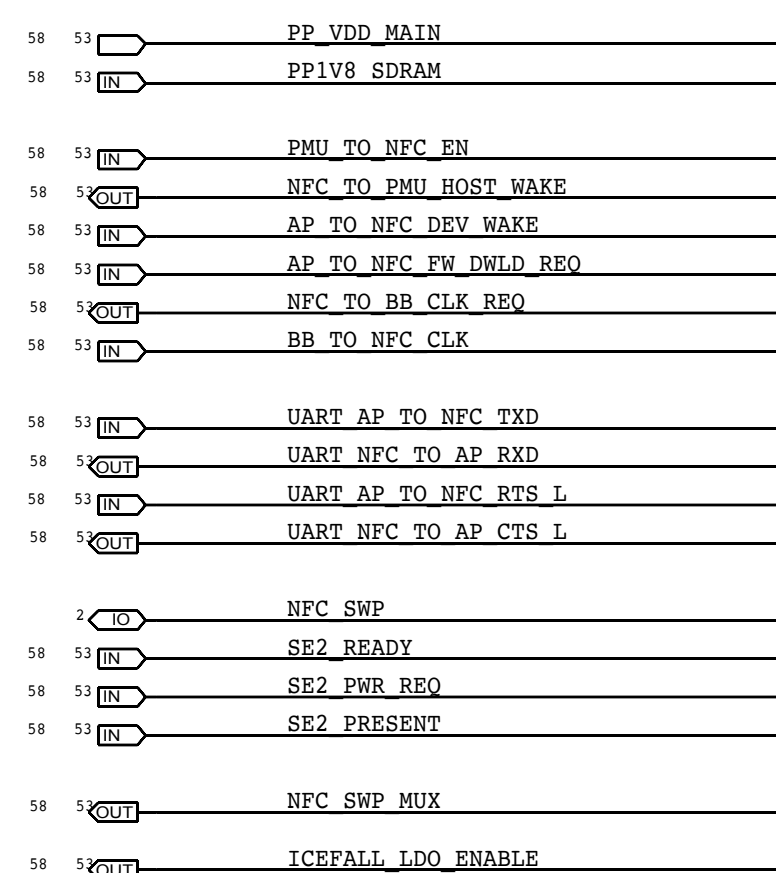
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|  | DRAWING NUMBER | 051-00419 |
|  | REVISION       | 8.0.0     |
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| PAGE   | 6 OF 53        |           |
| SHEET  | 6 OF 81        |           |

1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.  
 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.  
 3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

| REV | ECN        | DESCRIPTION OF REVISION | CK APPD |
|-----|------------|-------------------------|---------|
| 8   | 0006400877 | ENGINEERING RELEASED    |         |

# STOCKHOLM MLB

## JUNE 9, 2016



### ALTERNATES

| PART NUMBER | ALTERNATE FOR PART NUMBER | REFERENCE DESIGNATOR(S) | DESCRIPTION           | BOM OPTION |
|-------------|---------------------------|-------------------------|-----------------------|------------|
| 132S0436    | 132S0400                  | C7504_RF                | 0.22UF 20% 6.3V 01005 | ?          |

### BOM OPTIONS

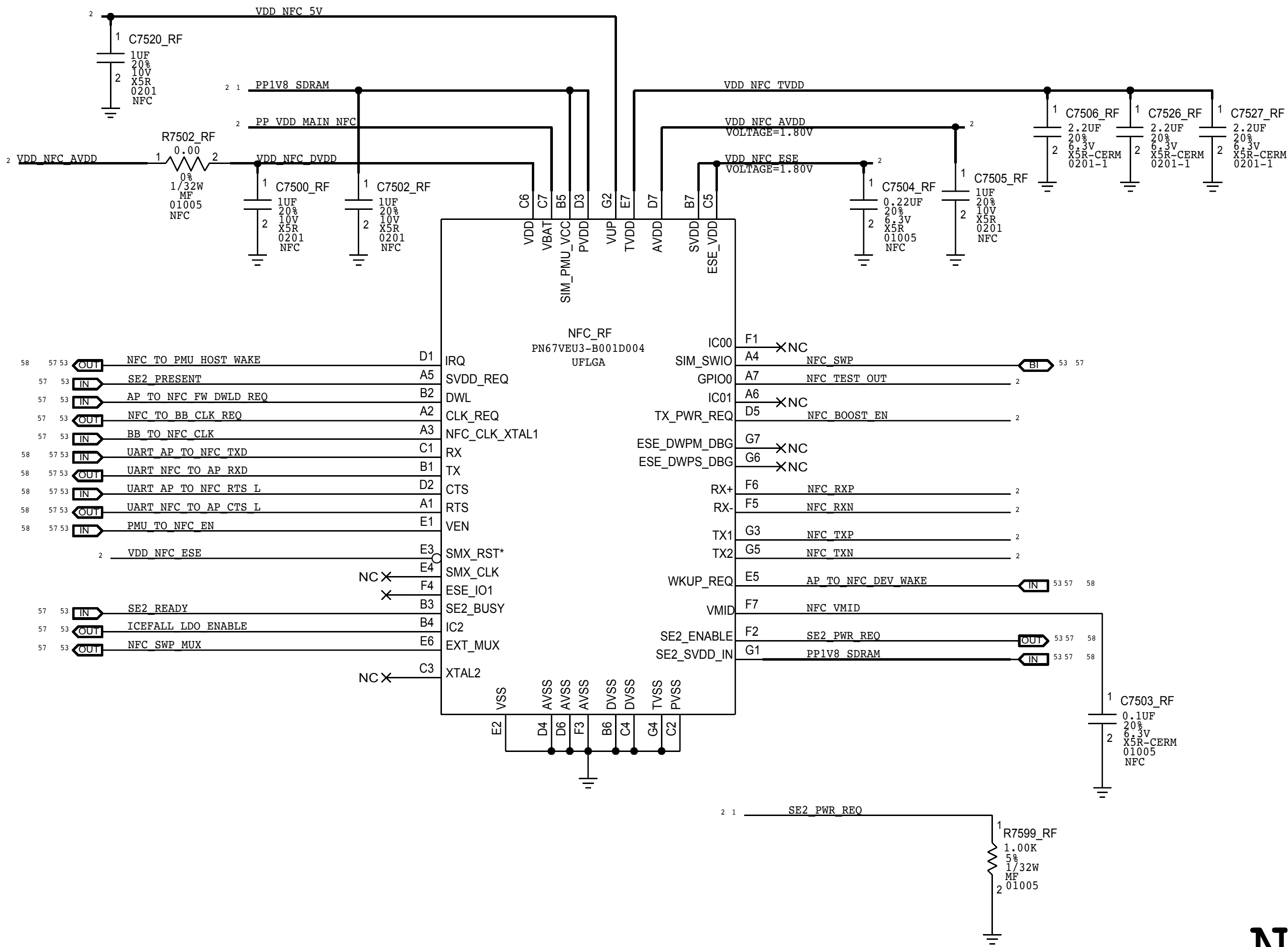
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|-----------|-----|--------------------|-------------------------|------------|
| 131S0883  | 1   | 220PF, 0201 2% 50V | C7514_RF                | D101       |
| 131S00055 | 1   | 22PF, 0201 2% 50V  | C7512_RF                | D101       |
| 131S00117 | 1   | 120PF, 0201 2% 50V | C7518_RF                | D101       |
| 131S00026 | 1   | 820PF, 0201 2% 50V | C7516_RF                | D101       |
| 131S0883  | 1   | 220PF, 0201 2% 50V | C7514_RF                | D10_JP     |
| 131S00055 | 1   | 22PF, 0201 2% 50V  | C7512_RF                | D10_JP     |
| 131S00019 | 1   | 150PF, 0201 2% 50V | C7518_RF                | D10_JP     |
| 131S0825  | 1   | 560PF, 0201 2% 50V | C7516_RF                | D10_JP     |
| 131S0883  | 1   | 220PF, 0201 2% 50V | C7514_RF                | D10_ROW    |
| 131S00055 | 1   | 22PF, 0201 2% 50V  | C7512_RF                | D10_ROW    |
| 131S00117 | 1   | 120PF, 0201 2% 50V | C7518_RF                | D10_ROW    |
| 131S00026 | 1   | 820PF, 0201 2% 50V | C7516_RF                | D10_ROW    |

| PART#     | QTY | DESCRIPTION        | REFERENCE DESIGNATOR(S) | BOM OPTION |
|-----------|-----|--------------------|-------------------------|------------|
| 131S00081 | 1   | 270PF, 0201 2% 25V | C7514_RF                | D111       |
| 131S00118 | 1   | 180PF, 0201 2% 50V | C7518_RF                | D111       |
| 131S00033 | 1   | 680PF, 0201 2% 50V | C7516_RF                | D111       |
| 131S00081 | 1   | 270PF, 0201 2% 25V | C7514_RF                | D11_JP     |
| 131S0731  | 1   | 100PF, 0201 2% 50V | C7518_RF                | D11_JP     |
| 131S00033 | 1   | 680PF, 0201 2% 50V | C7516_RF                | D11_JP     |
| 131S00081 | 1   | 270PF, 0201 2% 25V | C7514_RF                | D11_ROW    |
| 131S00118 | 1   | 180PF, 0201 2% 50V | C7518_RF                | D11_ROW    |
| 131S00033 | 1   | 680PF, 0201 2% 50V | C7516_RF                | D11_ROW    |

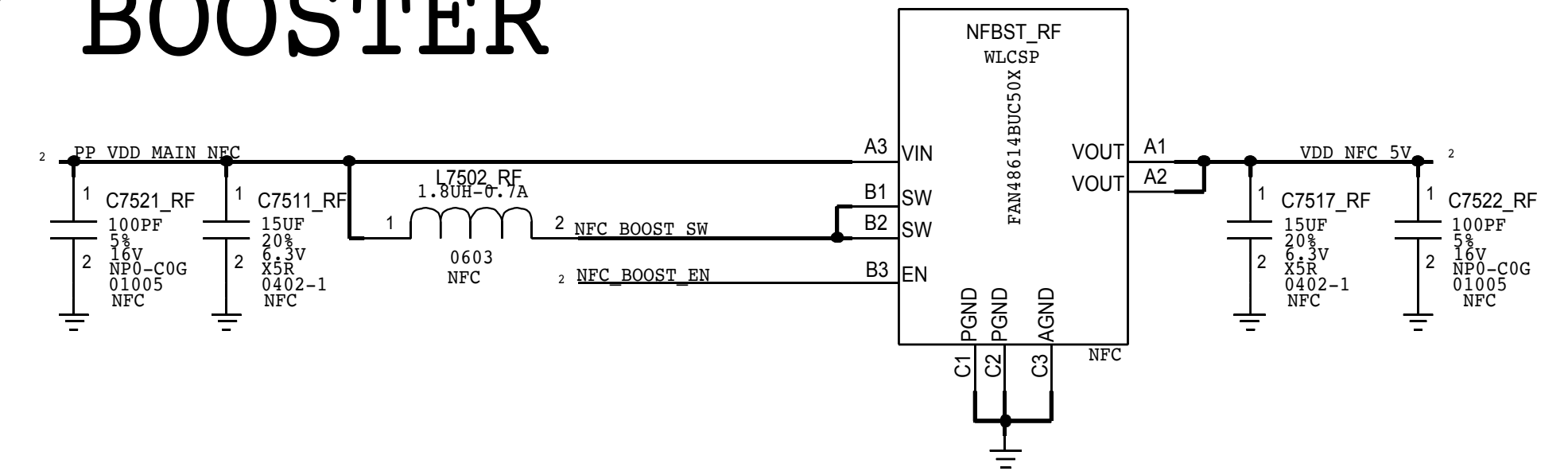
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|   |                | PAGE      | 6 OF 53 |
|   |                | SHEET     | 6 OF 81 |
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# STOCKHOLM

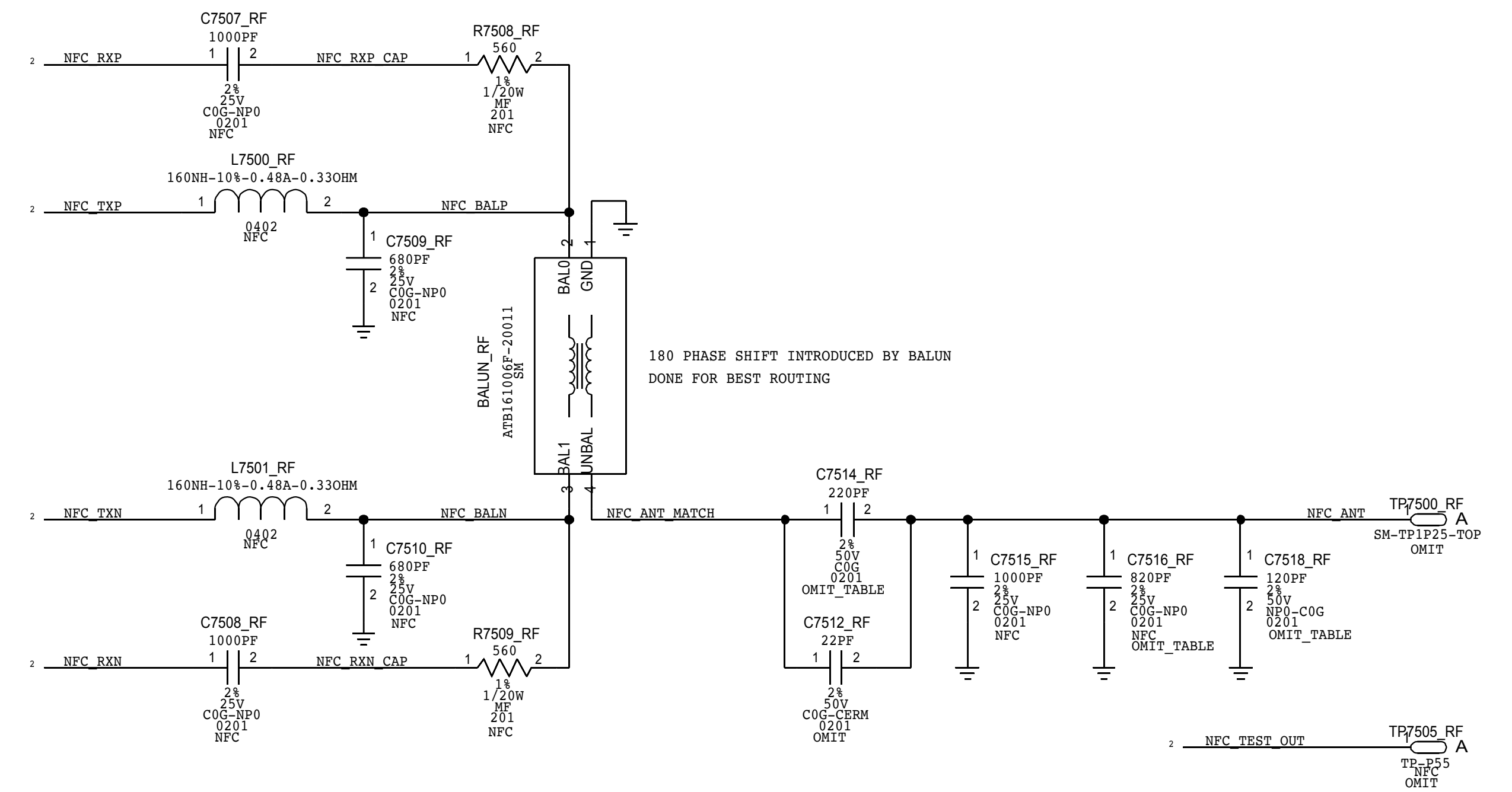
## NFC CONTROLLER



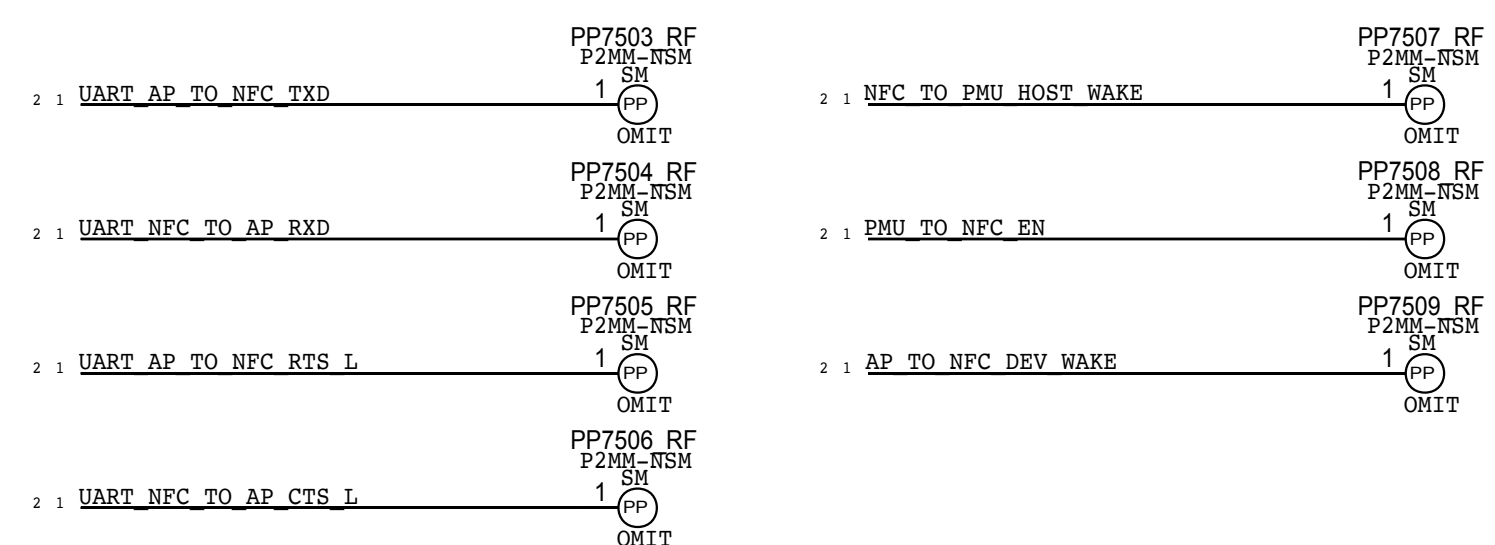
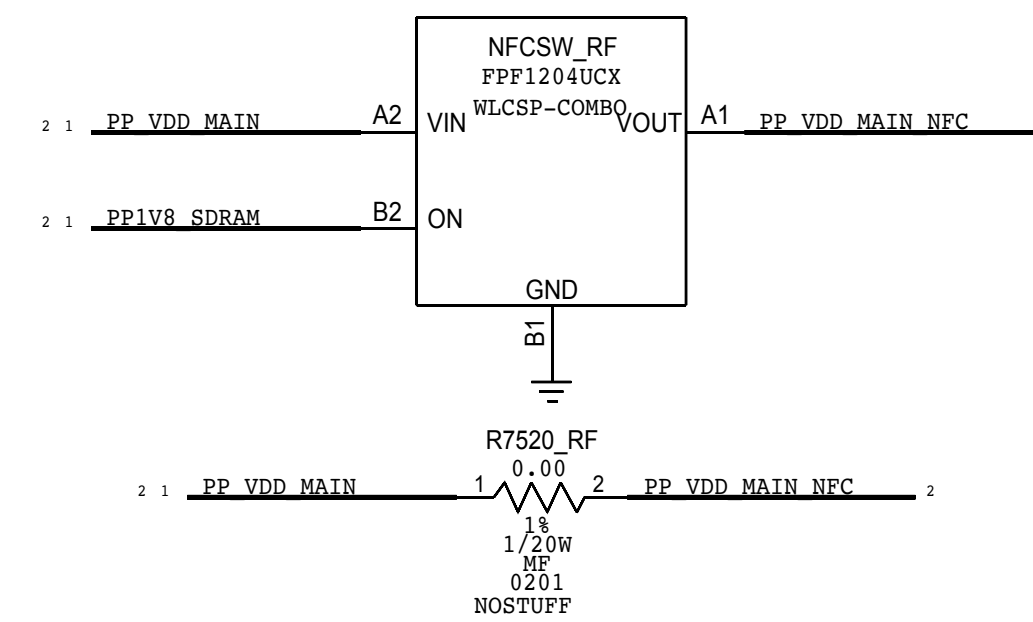
## 5V BOOSTER



## NFC FRONT END



## NFC LOAD SWITCH



|   |  |                |           |
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 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.  
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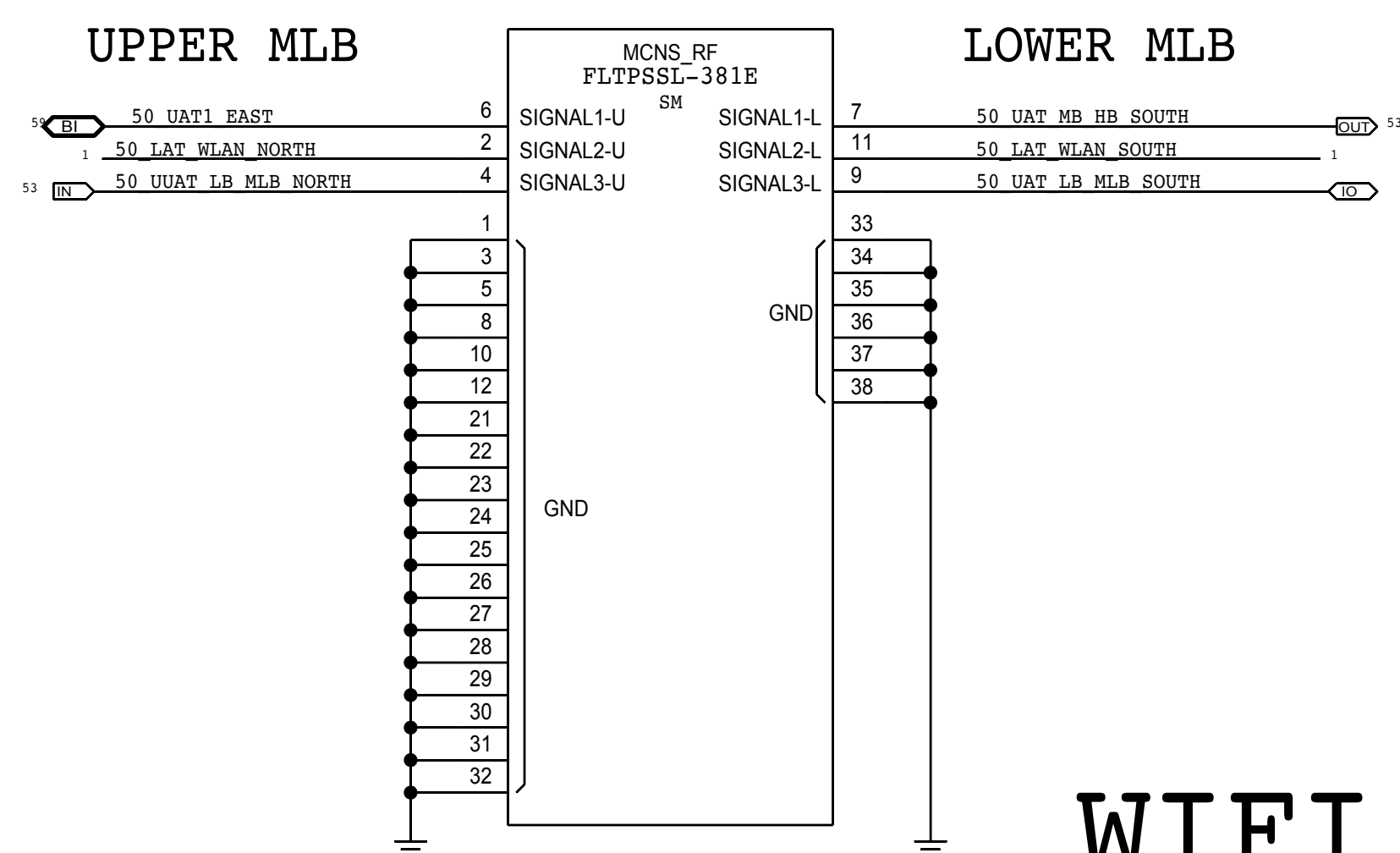
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|-----|------------|-------------------------|------------|
| 8   | 0006400877 | ENGINEERING RELEASED    | 2016-06-14 |

# D10 RADIO MLB\_FF

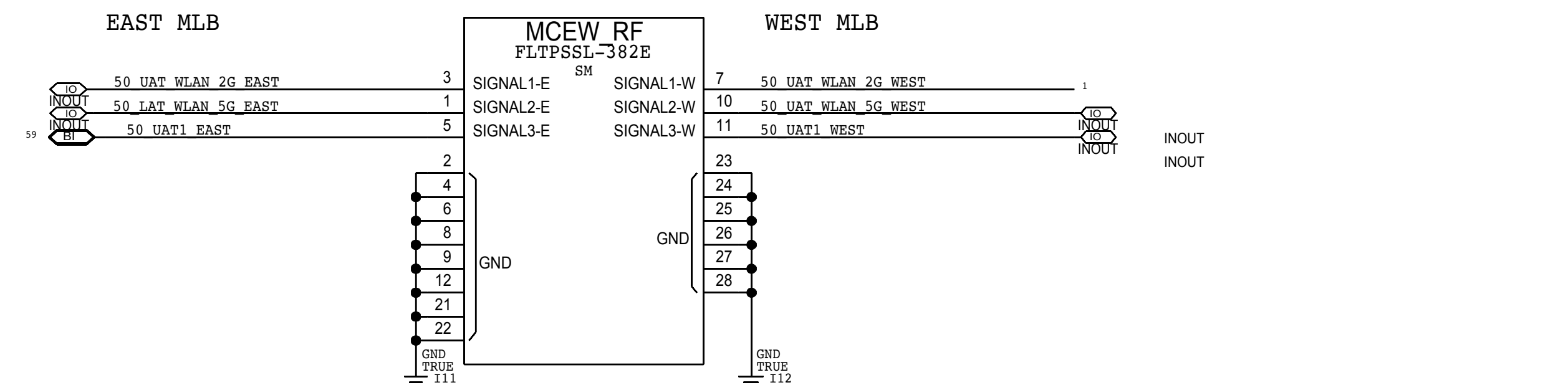
## FEB 19, 2016

D10 NORTH-SOUTH METROCIRC  
339S00086

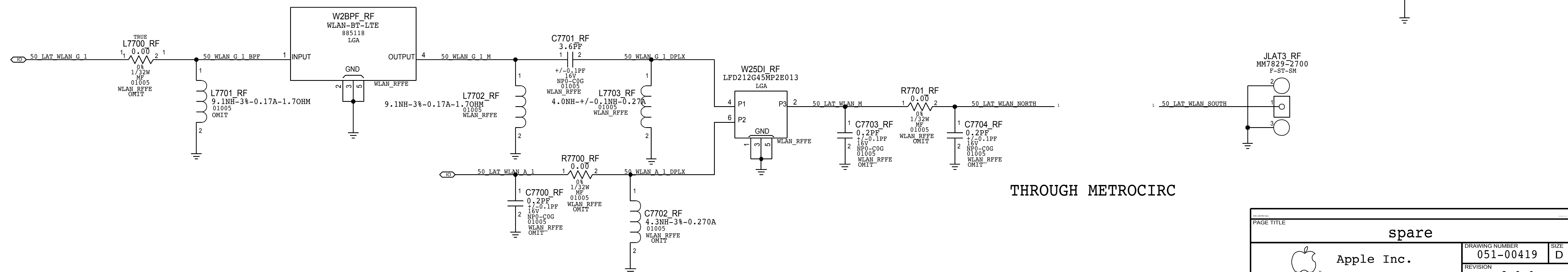
D10 EAST-WEST METROCIRC  
339S00110



### WIFI LOWER ANTENNA FEED



### COAX



### THROUGH METROCIRC

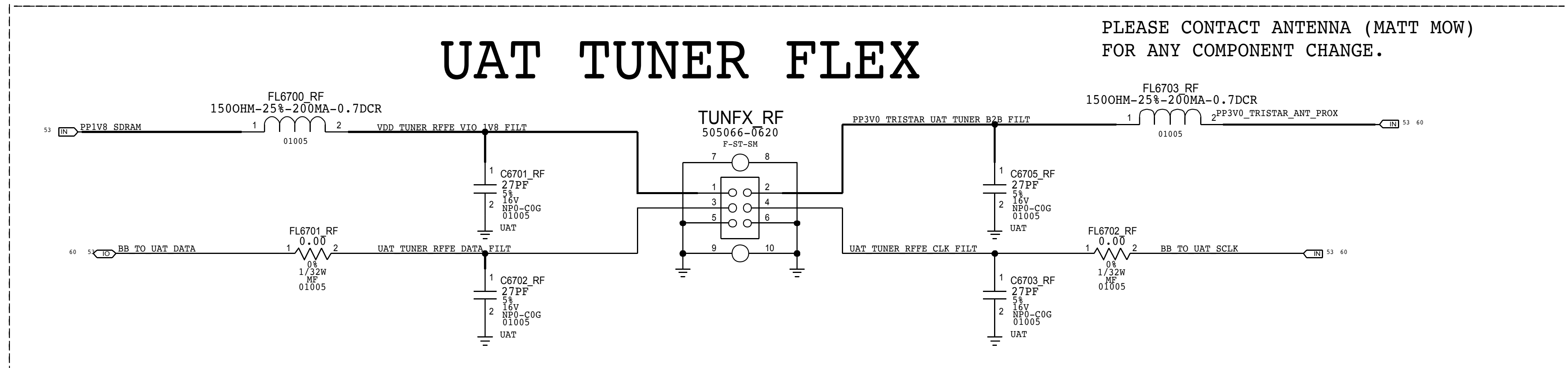
ADD REV ID FOR D10/D11 HERE

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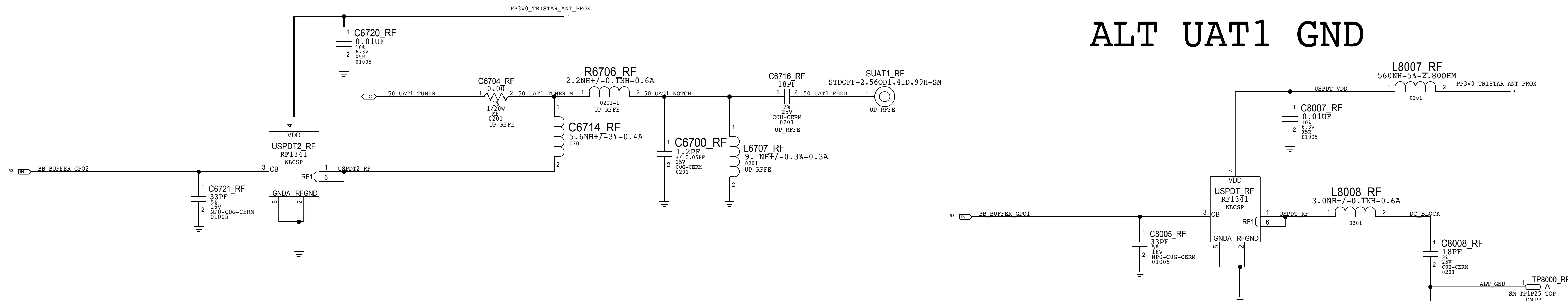
# UAT TUNER FLEX

PLEASE CONTACT ANTENNA (MATT MOW)  
FOR ANY COMPONENT CHANGE.



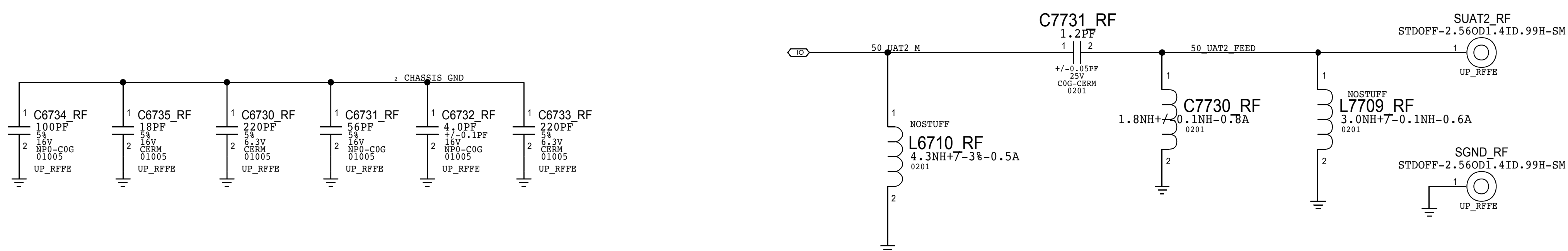
## LB/MLB/GNSS/MB/HB STANDOFF

## ALT UAT1 GND



## UAT GROUND RING

## 5G WIFI STANDOFF



|   |  |                |           |
|---|--|----------------|-----------|
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1

# BOM LIST

| PART#    | QTY | DESCRIPTION          | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|----------------------|-------------------------|----------|------------|
| 152S1860 | 1   | LONGER PATH INDUCTOR | L8009_RF                | CRITICAL | LMBRF      |
| 152S0570 | 1   | J.0 NH,03015         | L8009_RF                | CRITICAL | NOLMBRF    |

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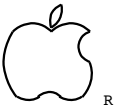
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|  |                | PAGE      | 6 OF 53 |
|  |                | SHEET     | 6 OF 81 |

81 ICEFALL, SIM, DEBUG CONN  
 1. ALL RESISTANCE VALUES ARE IN OHMS. 0.1 WATT +/- 5%.  
 2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.  
 3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

# MAV16 RADIO\_MLB

LAST\_MODIFICATION=Wed Jun 8 12:54:09 2016

## PAGE CSA CONTENTS

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| 63   | <CSA_PAGE2>  | BOM OMIT TABLE            | <SYNC_MASTER2>  | <SYNC_DATE2>  |
| 64   | <CSA_PAGE3>  | PMU: CONTROL AND CLOCKS   | <SYNC_MASTER3>  | <SYNC_DATE3>  |
| 65   | <CSA_PAGE4>  | PMU: SWITCHERS AND LDOS   | <SYNC_MASTER4>  | <SYNC_DATE4>  |
| 66   | <CSA_PAGE5>  | BASEBAND: POWER2          | <SYNC_MASTER5>  | <SYNC_DATE5>  |
| 67   | <CSA_PAGE6>  | BASEBAND: CONTROL         | <SYNC_MASTER6>  | <SYNC_DATE6>  |
| 68   | <CSA_PAGE7>  | BASEBAND GPIOs            | <SYNC_MASTER7>  | <SYNC_DATE7>  |
| 69   | <CSA_PAGE8>  | TRANSCEIVER0/1: POWER     | <SYNC_MASTER8>  | <SYNC_DATE8>  |
| 70   | <CSA_PAGE9>  | TRANSCEIVER0/1: TX PORTS  | <SYNC_MASTER9>  | <SYNC_DATE9>  |
| 71   | <CSA_PAGE10> | TRANSCEIVER0/1: PRX PORTS | <SYNC_MASTER10> | <SYNC_DATE10> |
| 72   | <CSA_PAGE11> | RECEIVE MATCHING          | <SYNC_MASTER11> | <SYNC_DATE11> |
| 73   | <CSA_PAGE12> | LOWER ANTENNA & COUPLERS  | <SYNC_MASTER12> | <SYNC_DATE12> |
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| 75   | <CSA_PAGE14> | DIVERSITY RECEIVE LNA'S   | <SYNC_MASTER14> | <SYNC_DATE14> |
| 76   | <CSA_PAGE15> | UPPER ANTENNA FEEDS       | <SYNC_MASTER15> | <SYNC_DATE15> |
| 77   | <CSA_PAGE16> | PMU: ET MODULATOR         | <SYNC_MASTER16> | <SYNC_DATE16> |
| 78   | <CSA_PAGE17> | TEST POINTS & BOOT CONFIG | <SYNC_MASTER17> | <SYNC_DATE17> |
| 79   | <CSA_PAGE18> | TDD TRANSMIT              | <SYNC_MASTER18> | <SYNC_DATE18> |
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SCH: 951-00964  
 BOM: 939-00826

## ALTERNATES

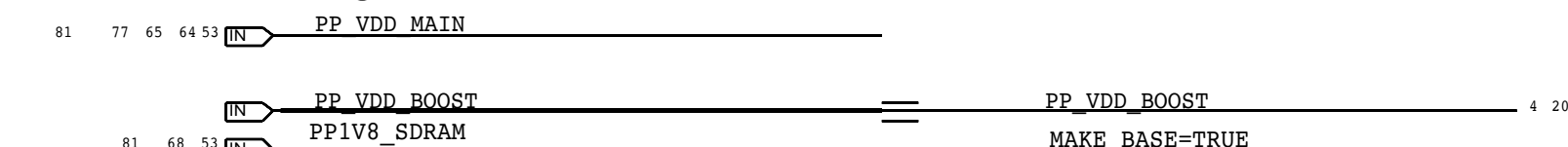
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|-------------|---------------------------|------------|----------|----------------|
| 19780565    | 19780593                  | ALTERNATE  | Y5501_RF | 19P2 MHZ XTAL  |
| 19780598    | 19780593                  | ALTERNATE  | Y5501_RF | 19P2 MHZ XTAL  |
| 138800101   | 138800095                 | ALTERNATE  | ALL      | TRANSITION CAP |
| 335800013   | 33580894                  | ALTERNATE  | EPROM_RF | IC EPROM       |
| 353800253   | 353800321                 | ALTERNATE  | SWPMX_RF | IC SWITCH SPDT |
| 155800235   | 155800234                 | ALTERNATE  | UPPDI_RF | NOLMBRF        |

ALL:C5616\_RF-C5618\_RF,C5632\_RF-C5634\_RF

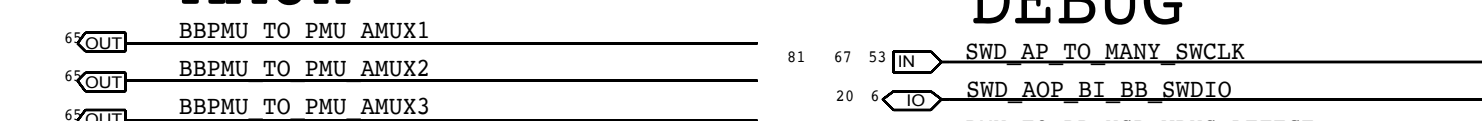
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| 8   | 0006400877 | ENGINEERING RELEASED    |         | 2016-06-14 |

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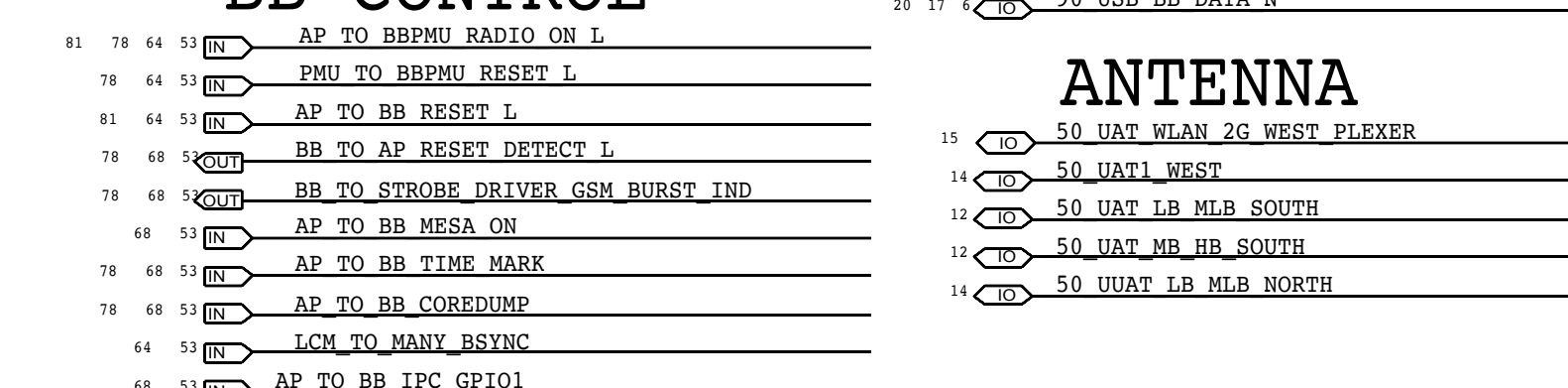
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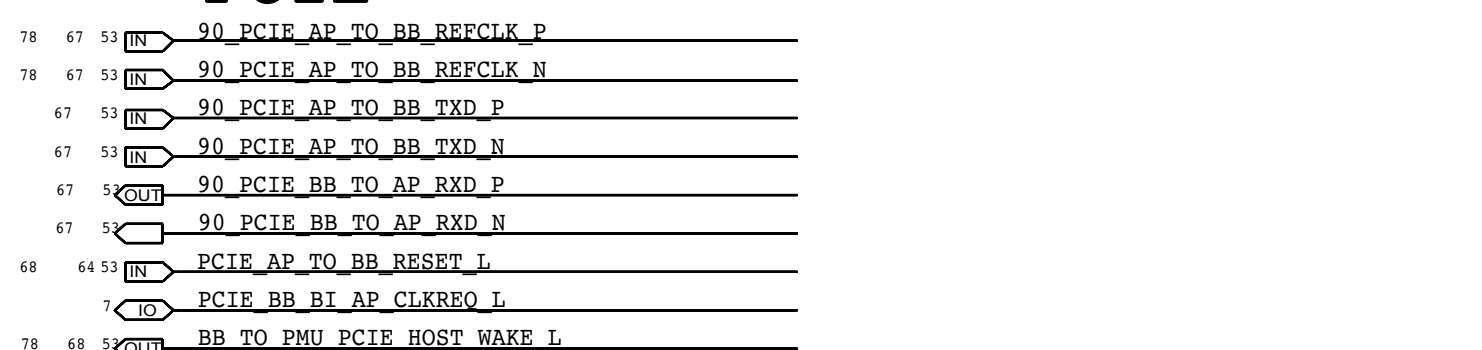
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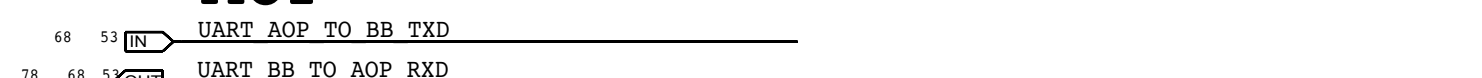
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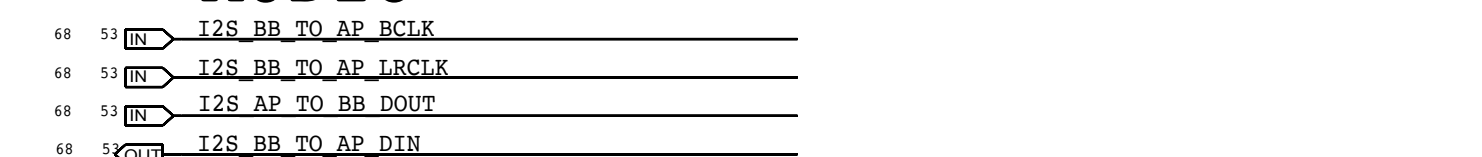
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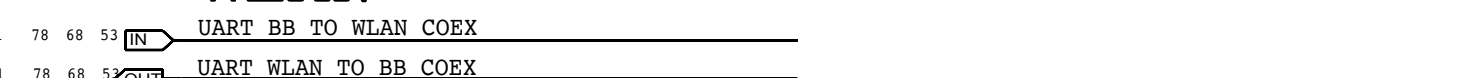
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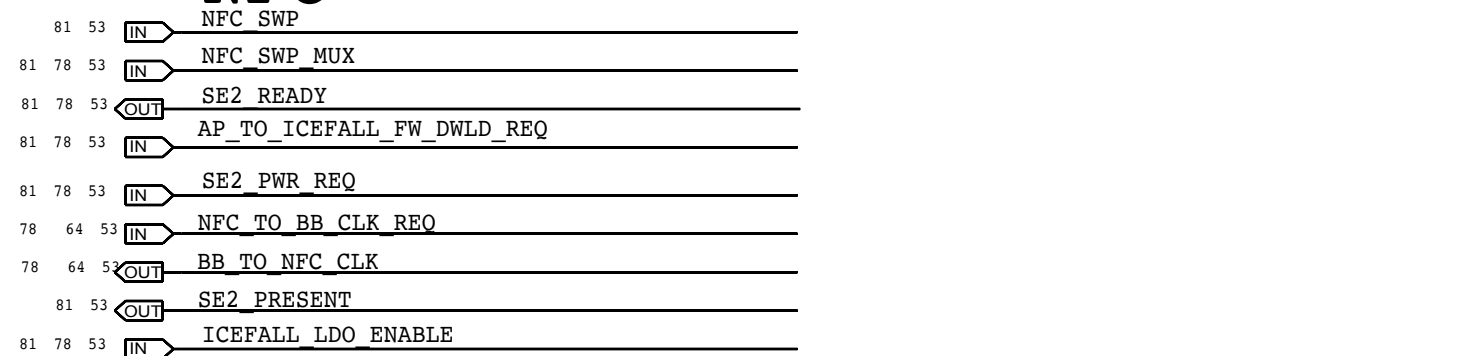
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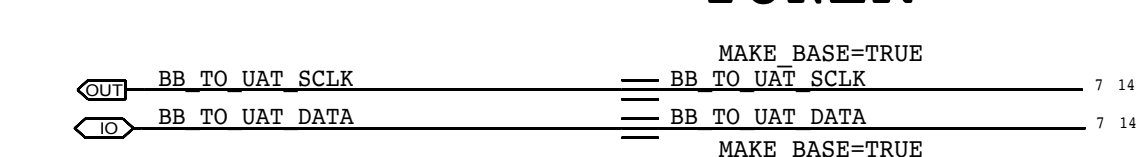
## WLAN



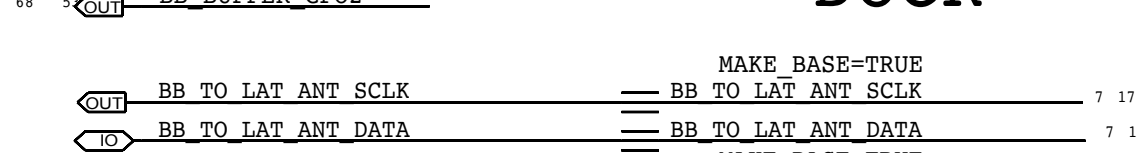
## NFC



## TUNER



## DOCK



page1

spare

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# BOM OPTIONS:

## LMBRF:

| PART#     | QTY | DESCRIPTION                               | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|-----------|-----|---|-------------------------|----------|------------|
| 353800723 | 1   | MLB PAD                                   | MLBPA_RF                | CRITICAL | LMBRF      |
| 11780002  | 1   | MLB PAD LAT OUTPUT MATCH                  | R7105_RF                | CRITICAL | LMBRF      |
| 15282042  | 1   | MLB PAD UAT OUTPUT MATCH                  | R7106_RF                | CRITICAL | LMBRF      |
| 353800627 | 1   | MLB LMA                                   | MLBLN_RF                | CRITICAL | LMBRF      |
| 11780002  | 1   | MLB LMA OUTPUT MATCH                      | R6710_RF                | CRITICAL | LMBRF      |
| 155800139 | 1   | PENTAPLEXER                               | PPLXR_RF                | CRITICAL | LMBRF      |
| 11880643  | 1   | RES,WF,4.99K OHM,01005                    | R7506_RF                | CRITICAL | LMBRF      |
| 155800193 | 1   | FLTR,DIPLEXER,LS-MB-HB,DPX,SHIELD,0805    | UATDI_RF                | CRITICAL | LMBRF      |
| 155800158 | 1   | FLTR,DIPLEXER,LS-MB-HB,MLISSOR,0805       | UPPDI_RF                | CRITICAL | LMBRF      |
| 337800284 | 1   | IC,SECURE ELEMENT,80K92011,ML80A35        | SE2_RF                  | CRITICAL | LMBRF      |
| 13880739  | 1   | CAP,1UF,0201                              | C7201_RF                | CRITICAL | LMBRF      |
| 13880739  | 1   | CAP,1UF,0201                              | C7528_RF                | CRITICAL | LMBRF      |
| 13280316  | 1   | CAP,0.1UF,01005                           | C7501_RF                | CRITICAL | LMBRF      |
| 13880739  | 1   | CAP,1UF,0201                              | C7523_RF                | CRITICAL | LMBRF      |
| 13880739  | 1   | CAP,1UF,0201                              | C7524_RF                | CRITICAL | LMBRF      |
| 138800032 | 1   | CAP,2.2UF,0201                            | C7529_RF                | CRITICAL | LMBRF      |
| 138800032 | 1   | CAP,2.2UF,0201                            | C7530_RF                | CRITICAL | LMBRF      |
| 13180217  | 1   | CAP,100PF,01005                           | C7531_RF                | CRITICAL | LMBRF      |
| 11880627  | 1   | RES,10KOHM,01005                          | R7512_RF                | CRITICAL | LMBRF      |
| 353800026 | 1   | LDO,PGA,2X2                               | SE2LDO_RF               | CRITICAL | LMBRF      |
| 13180630  | 1   | CAP,CER,NPO/COG,27PF,24,16V,01005         | C6345_RF                | CRITICAL | LMBRF      |
| 13180341  | 1   | CAP,CER,COG,3.0PF,+/-0.05,25V,0201,HI-Q   | C6348_RF                | CRITICAL | LMBRF      |
| 15282006  | 1   | IND,FILM,6.2NH,34,400MA,UH-Q,0201         | L6322_RF                | CRITICAL | LMBRF      |
| 13180630  | 1   | CAP,CER,NPO/COG,27PF,24,16V,01005         | C6315_RF                | CRITICAL | LMBRF      |
| 15282006  | 1   | IND,FILM,6.2NH,34,400MA,UH-Q,0201         | L6305_RF                | CRITICAL | LMBRF      |
| 13180341  | 1   | CAP,CER,COG,3.0PF,+/-0.05PF,25V,0201,HI-Q | C6306_RF                | CRITICAL | LMBRF      |
| 13180630  | 1   | CAP,CER,NPO/COG,27PF,24,16V,01005         | C6106_RF                | CRITICAL | LMBRF      |
| 15282051  | 1   | IND,1.3NH,1.1A,0201                       | R6404_RF                | CRITICAL | LMBRF      |
| 15282000  | 1   | IND,2.0NH,600MA,0201                      | R7104_RF                | CRITICAL | LMBRF      |
| 131800001 | 1   | CAP,CER,0.1PF,25V,0201                    | C7119_RF                | CRITICAL | LMBRF      |
| 11880724  | 1   | RES,WF,00HM,1/20W,0201                    | R6703_RF                | CRITICAL | LMBRF      |
| 11880724  | 1   | RES,WF,00HM,1/20W,0201                    | R6708_RF                | CRITICAL | LMBRF      |
| 13180363  | 1   | CAP,CER,COG,0.05PF,+/-0.05PF,25V,0201     | C7123_RF                | CRITICAL | LMBRF      |
| 15282002  | 1   | IND,2.7NH,+/-0.1NH,600MA,0201,UH-Q        | R6605_RF                | CRITICAL | LMBRF      |
| 13180337  | 1   | CAP,1.5PF,+/-0.05PF,25V,0201,8Q           | C6610_RF                | CRITICAL | LMBRF      |
| 11880724  | 1   | RES,WF,00HM,1/20W,0201                    | R6606_RF                | CRITICAL | LMBRF      |
| 13180275  | 1   | CAP,CER,COG,0.3PF,+/-0.1PF,25V,0201,8Q    | C6416_RF                | CRITICAL | LMBRF      |
| 11880608  | 1   | RES,WF,1K OHM,1/12W,01005                 | R5911_RF                | CRITICAL | LMBRF      |
| 15281356  | 1   | IND,1.0NH,34,250MA,HI-Q,0201              | C6613_RF                | CRITICAL | LMBRF      |

## NOLMBRF:

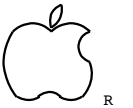
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| 15282020  | 1   | DCS/PCS RX FILTER MATCH                 | L6320_RF                | CRITICAL | NOLMBRF    |
| 155800149 | 1   | DCS/PCS RX FILTER                       | GSMRX_RF                | CRITICAL | NOLMBRF    |
| 15282005  | 1   | DCS/PCS RX MATCH (DCS)                  | L6318_RF                | CRITICAL | NOLMBRF    |
| 13180319  | 1   | DCS/PCS RX MATCH (DCS)                  | C6332_RF                | CRITICAL | NOLMBRF    |
| 13180630  | 1   | DCS/PCS RX MATCH (DCS)                  | C6340_RF                | CRITICAL | NOLMBRF    |
| 15282005  | 1   | DCS/PCS RX MATCH (DCS)                  | L6319_RF                | CRITICAL | NOLMBRF    |
| 13180385  | 1   | DCS/PCS RX MATCH (DCS)                  | C6333_RF                | CRITICAL | NOLMBRF    |
| 13180630  | 1   | DCS/PCS RX MATCH (DCS)                  | C6341_RF                | CRITICAL | NOLMBRF    |
| 155800163 | 1   | QUADPLEXER                              | PPLXR_RF                | CRITICAL | NOLMBRF    |
| 155800199 | 1   | FLTR,DPX,PASS THRU,LS-MB-HB,SHLD,0805   | UATDI_RF                | CRITICAL | NOLMBRF    |
| 155800234 | 1   | FLTR,DPX,PASS THRU,LS-MB-HB,UNSHLD,0805 | UPPDI_RF                | CRITICAL | NOLMBRF    |
| 11880724  | 1   | RES,WF,00HM,1/20W,0201                  | R6404_RF                | CRITICAL | NOLMBRF    |
| 15282044  | 1   | IND,2.2NH,+/-0.1NH,600MA,0201           | R7104_RF                | CRITICAL | NOLMBRF    |
| 152800157 | 1   | 1.2NH,+/-0.05NH,1.1A,UH-Q,0201          | R6703_RF                | CRITICAL | NOLMBRF    |
| 13180549  | 1   | 18PF,0201,25V                           | R6708_RF                | CRITICAL | NOLMBRF    |
| 13180445  | 1   | CAP,CER,12PF,54,25V,0201,HI-Q           | R6606_RF                | CRITICAL | NOLMBRF    |

## D10 SPECIFIC:

| PART#    | QTY | DESCRIPTION                            | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|--|-------------------------|----------|------------|
| 13180278 | 1   | CAP,CER,COG,1PF,+/-0.1PF,25V,0201,HI-Q | C7120_RF                | CRITICAL | D10        |

## D11 SPECIFIC:

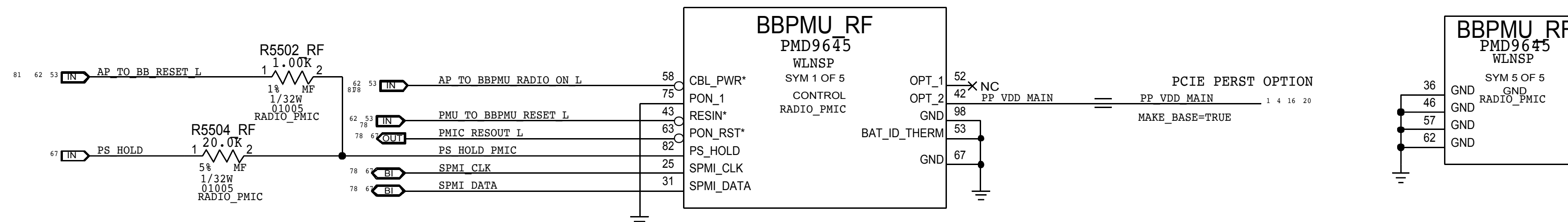
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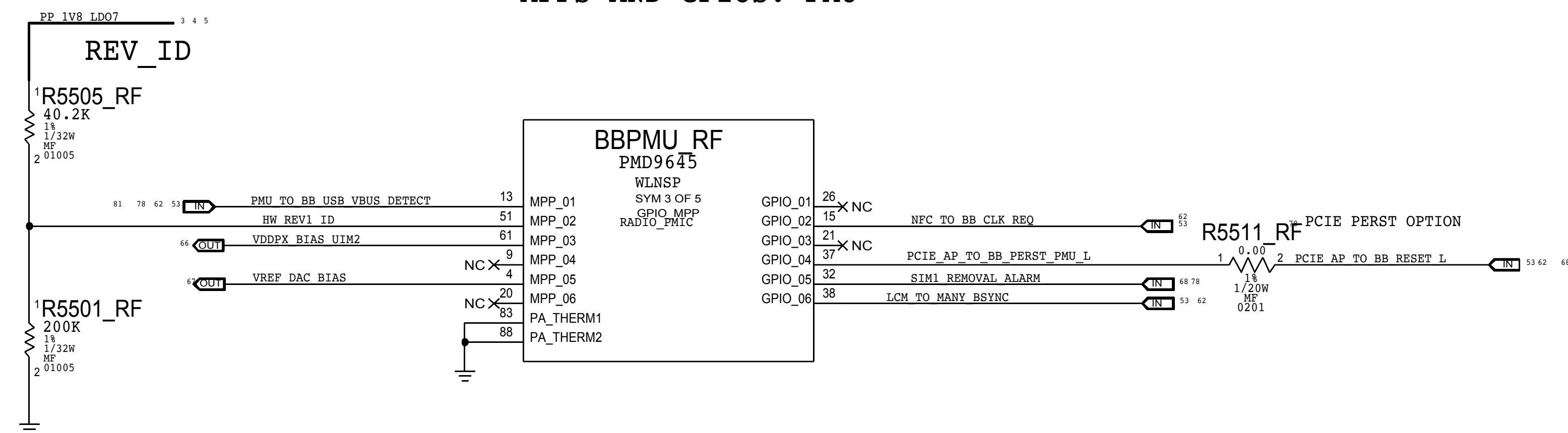
# PMU: CONTROL AND CLOCKS

## RESET AND CONTROL: PMU

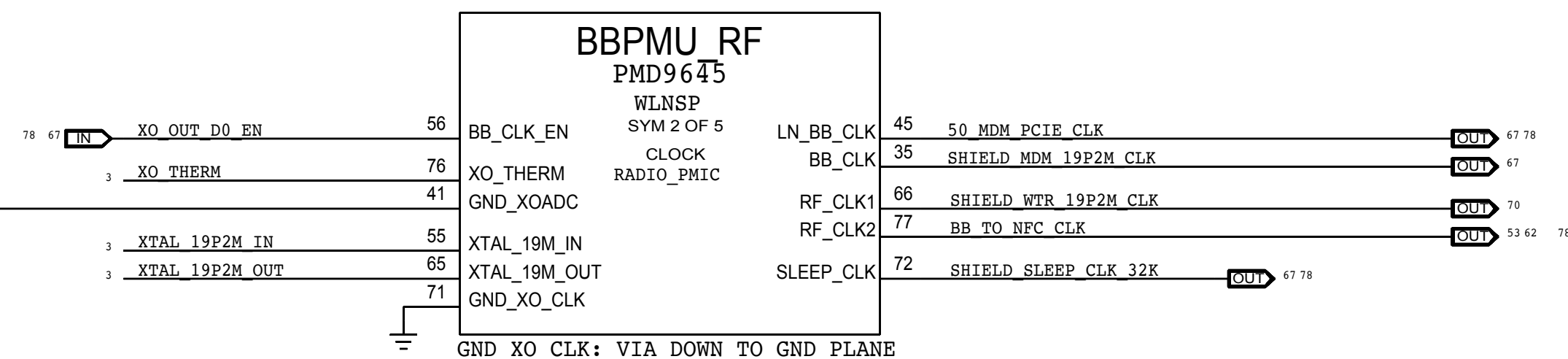
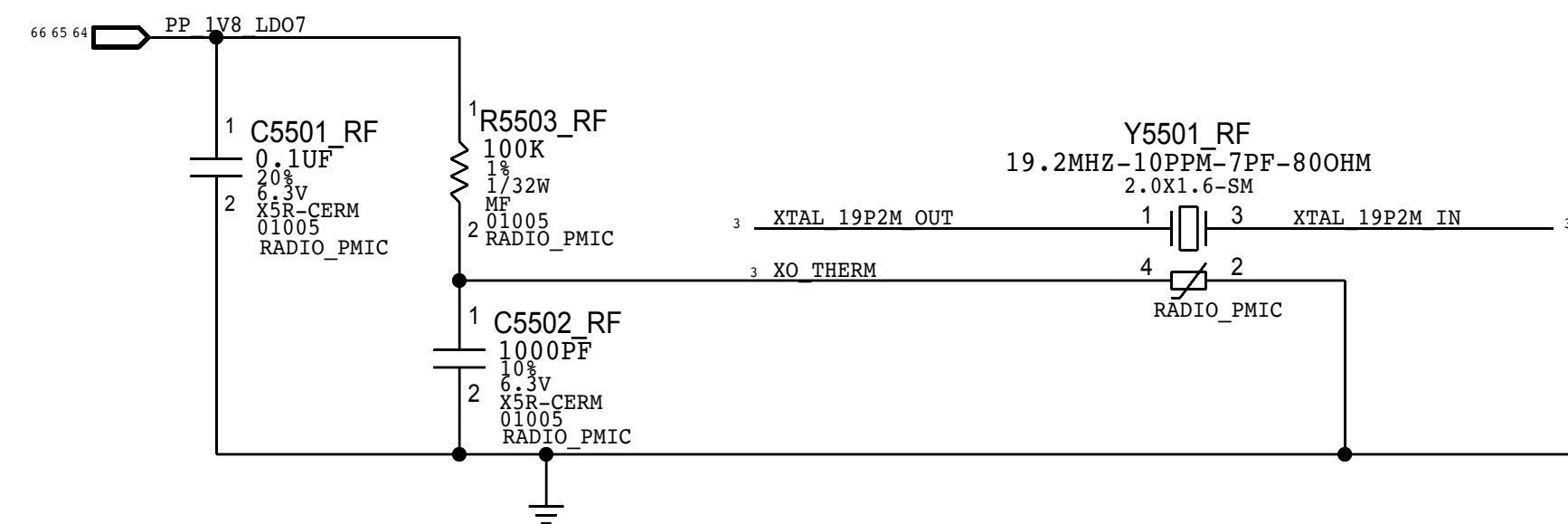
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| 0.10V     | 887K  | 51.1K | DEV1           |
| 0.20V     | 422K  | 51.1K | DEV2           |
| 0.30V     | 255K  | 51.1K | DEV 2.1        |
| 0.40V     | 180K  | 51.1K | DEV 3          |
| 0.50V     | 124K  | 51.1K | T181           |
| 0.60V     | 102K  | 51.1K | PP/P1          |
| 0.70V     | 82.5K | 51.1K | DEV4           |
| 0.80V     | 63.4K | 51.1K | P2             |
| 0.90V     | 51.1K | 51.1K | DEV5           |
| 1.00V     | 51.1K | 63.4K | EVT            |
| 1.10V     | 51.1K | 82.5K | EVT DOE        |
| 1.20V     | 50.0K | 100K  | EVT ALT/CARBON |
| 1.30V     | 39.0K | 100K  | DEV6           |
| 1.40V     | 14.7K | 51.1K | CARRIER        |
| 1.50V     | 40.2K | 200K  | DVT            |
| 1.60V     | 6.34K | 51.1K | PVT            |



## MPPS AND GPIOs: PMU



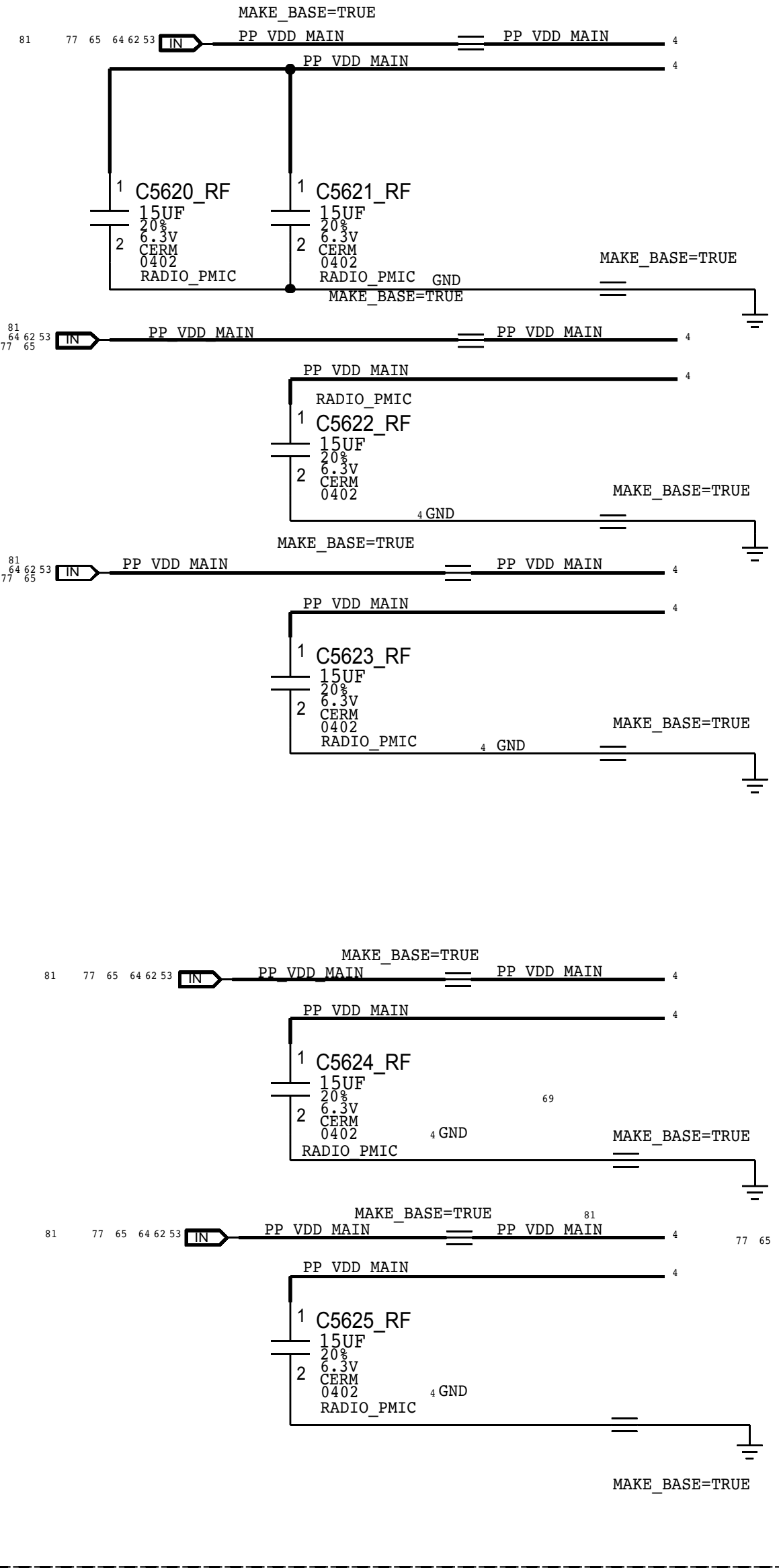
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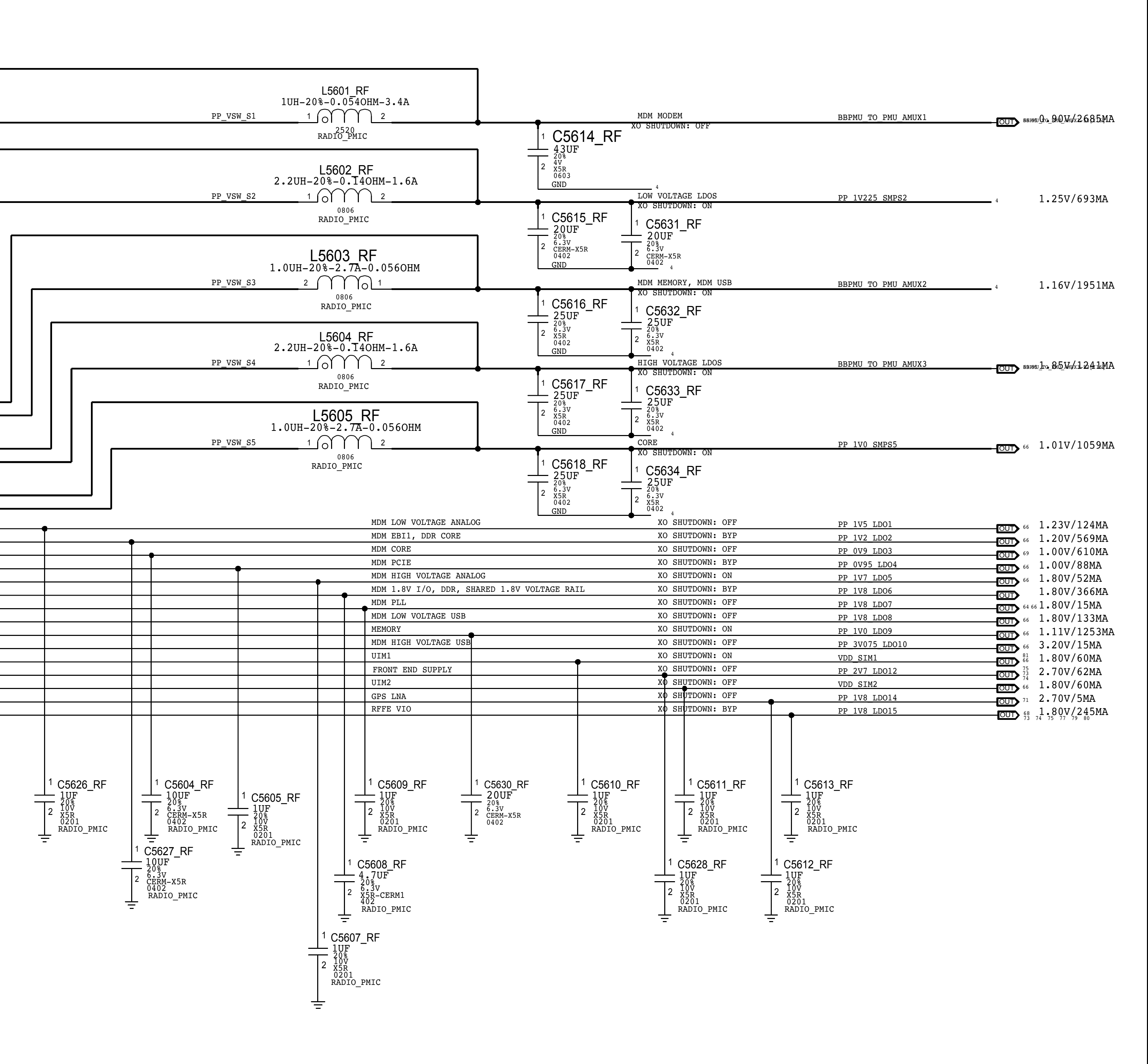
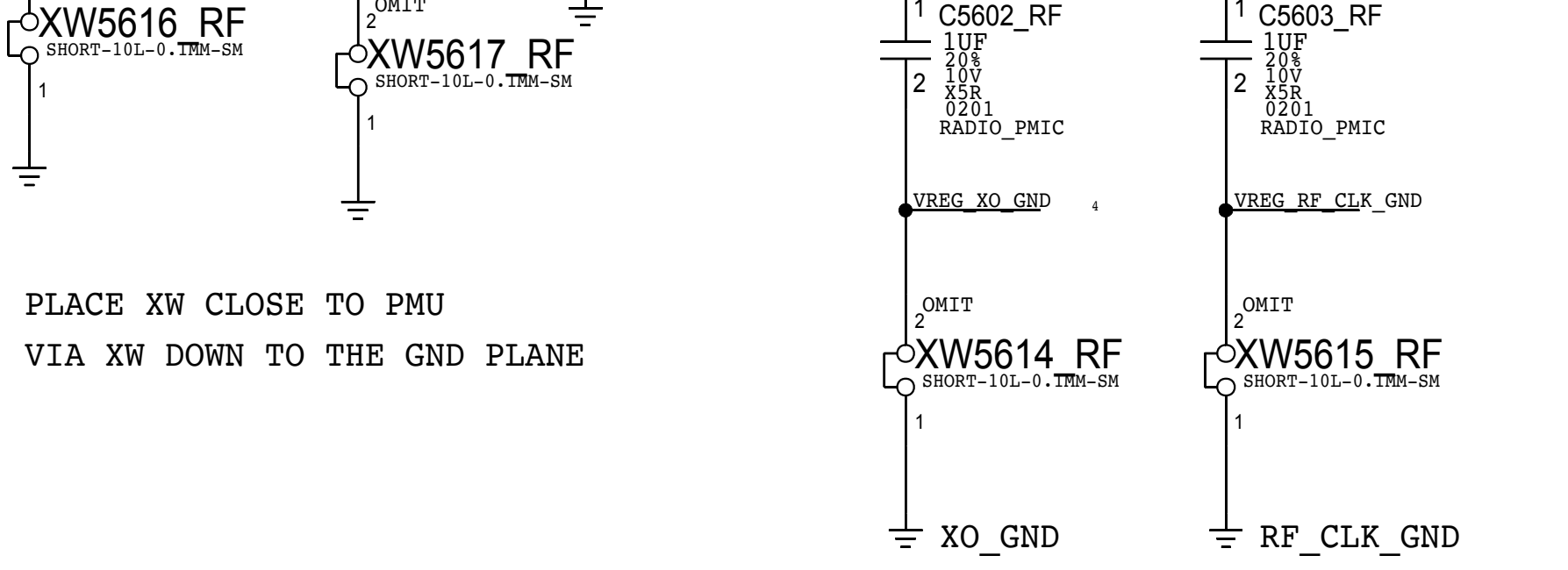
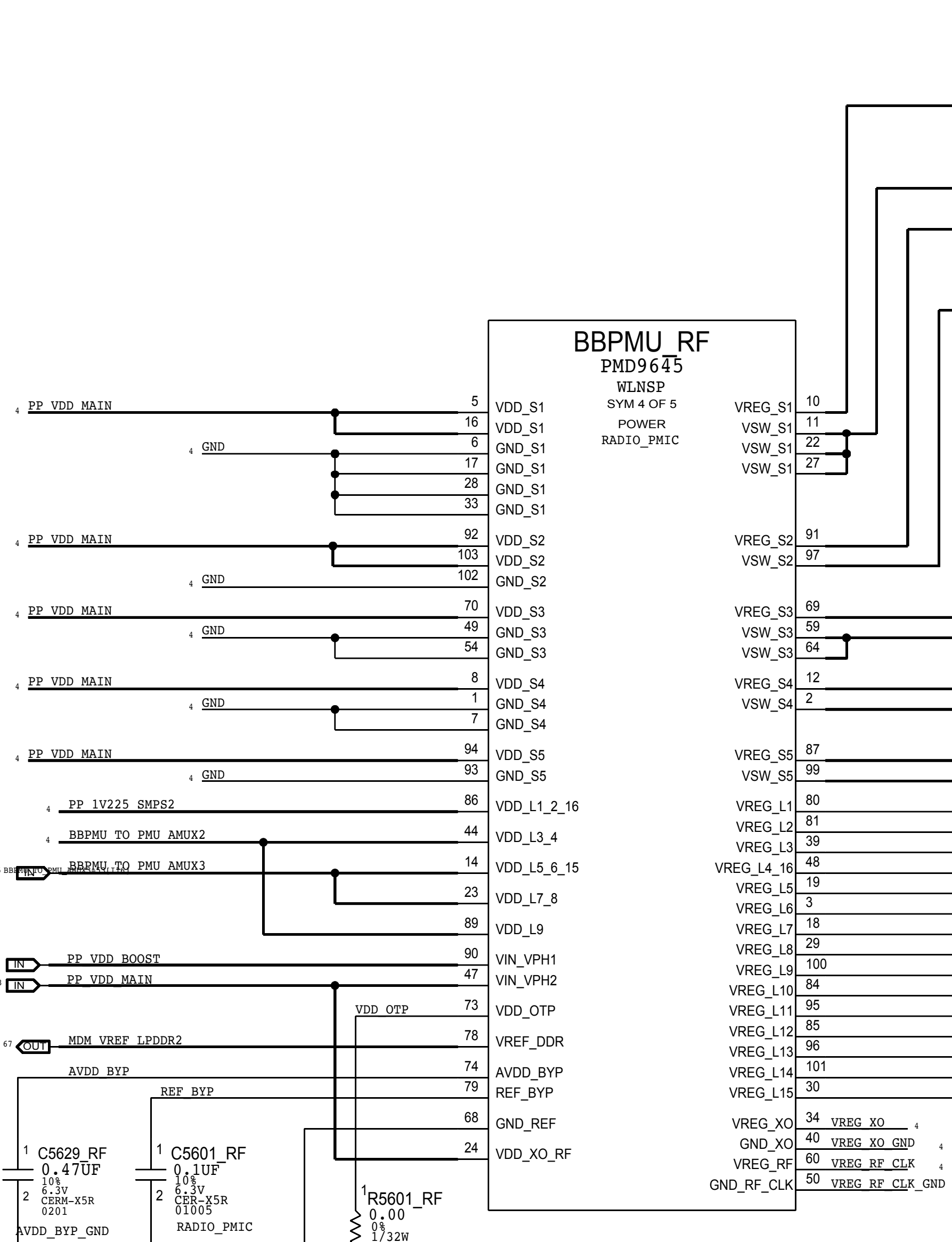
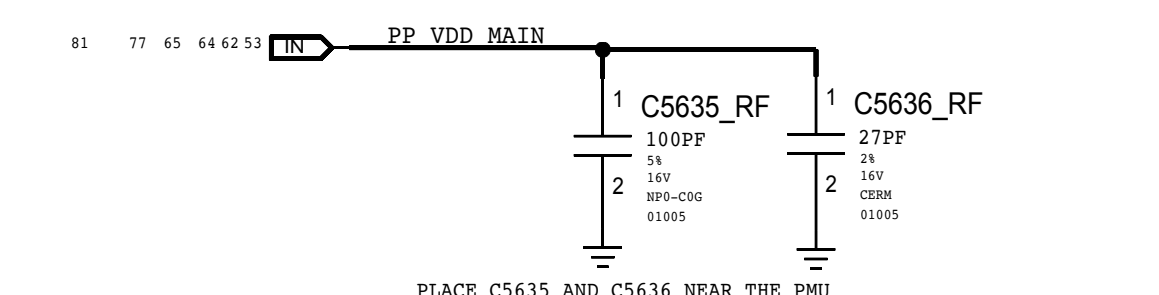
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# PMU: SWITCHERS AND LDOS

## SWITCHERS BULK CAPS



## DESENSE CAPS



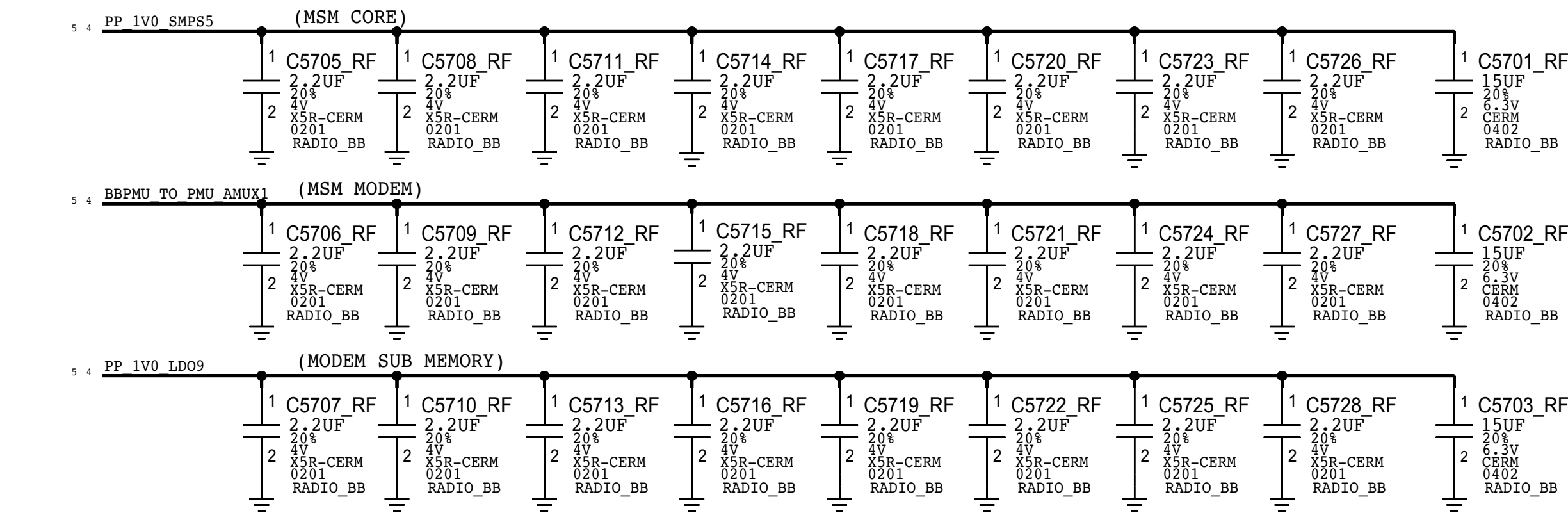
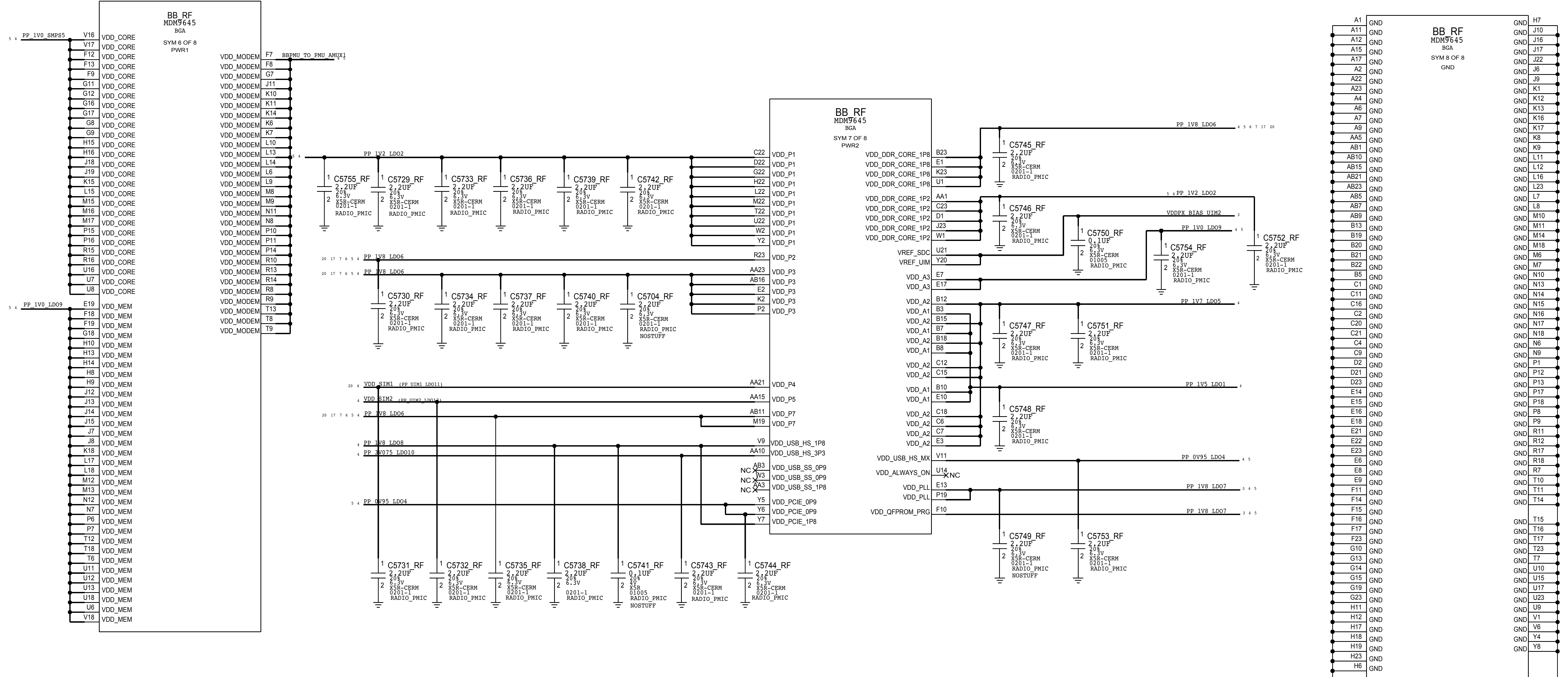
PLACE XW CLOSE TO PMU  
VIA XW DOWN TO THE GND PLANE

PLACE XW CLOSE TO PMU  
VIA XW DOWN TO THE GND PLANE

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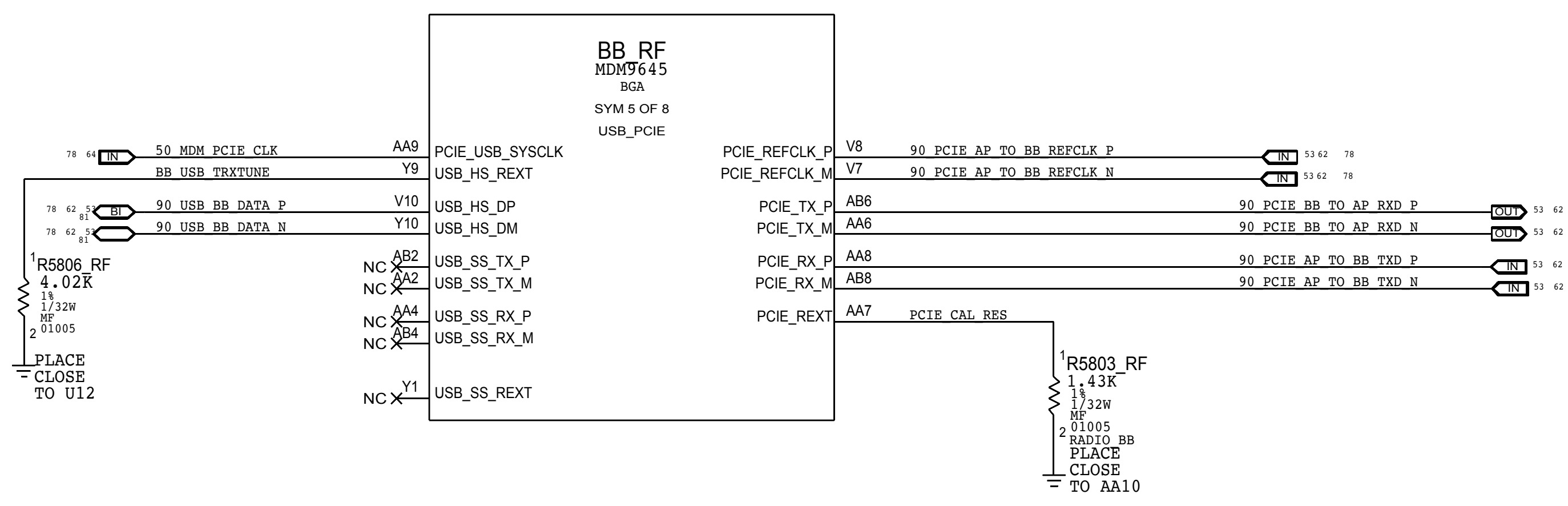
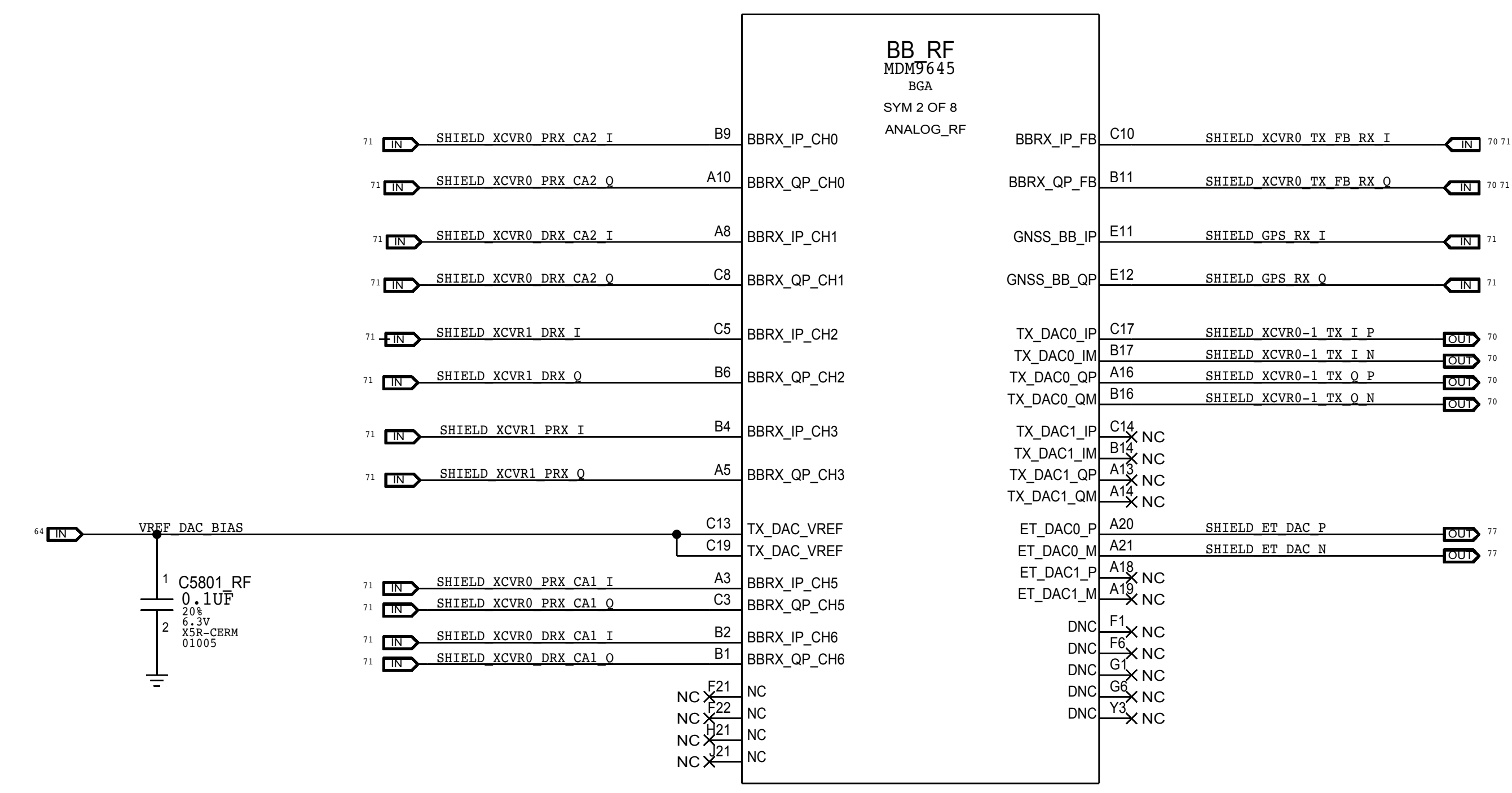
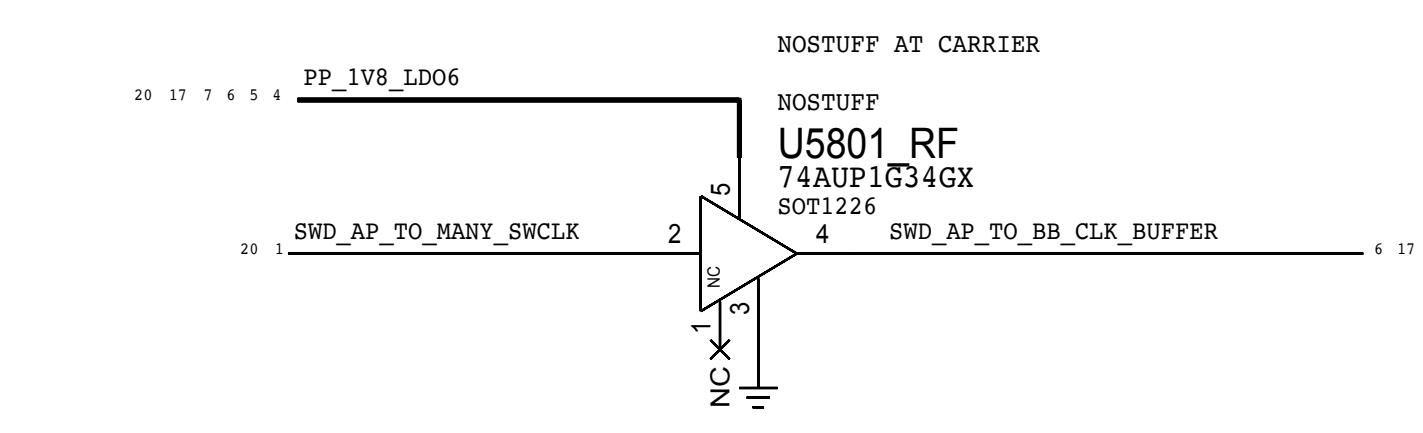
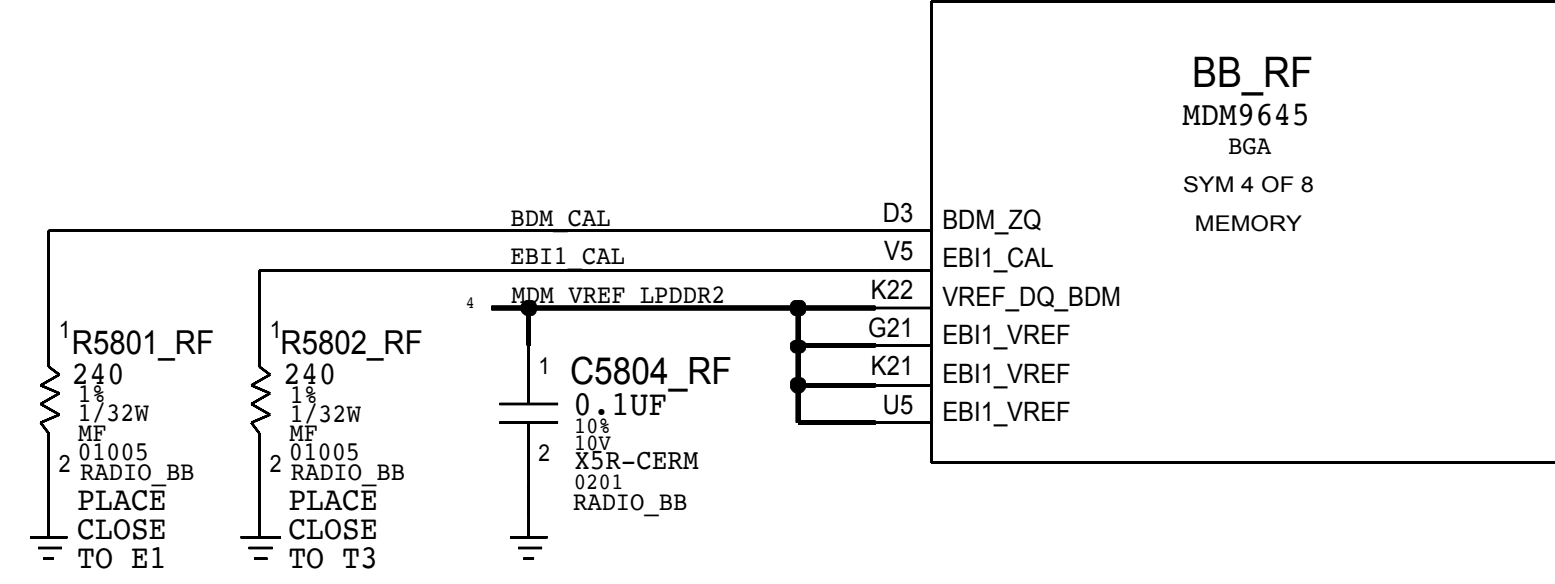
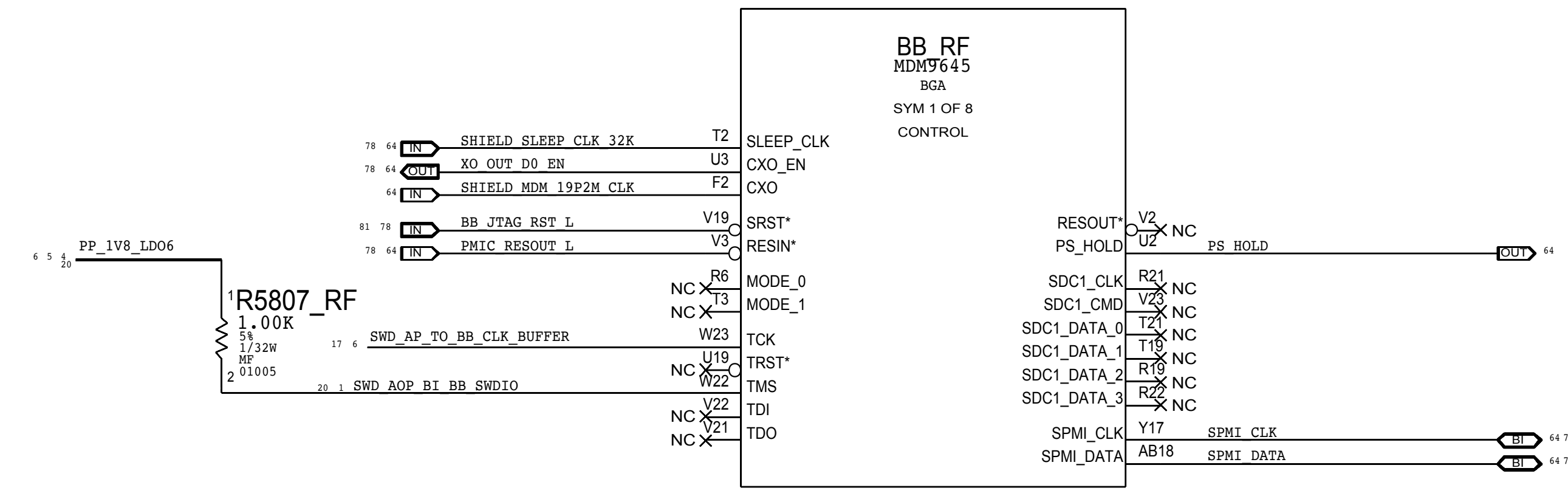


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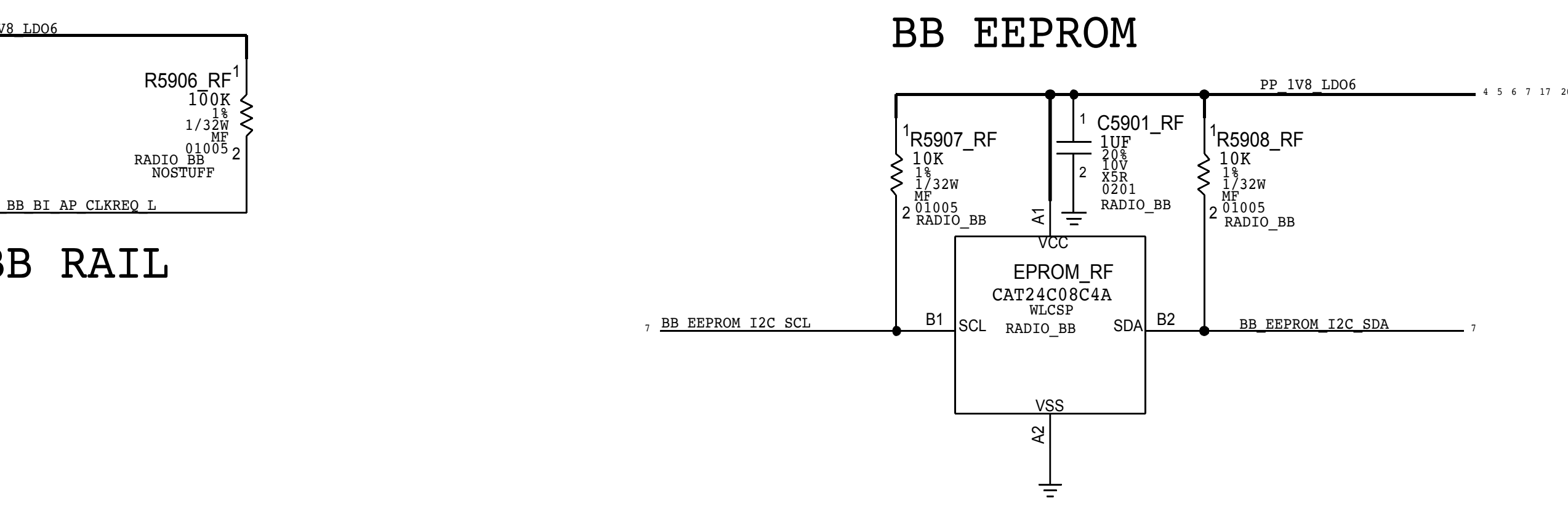
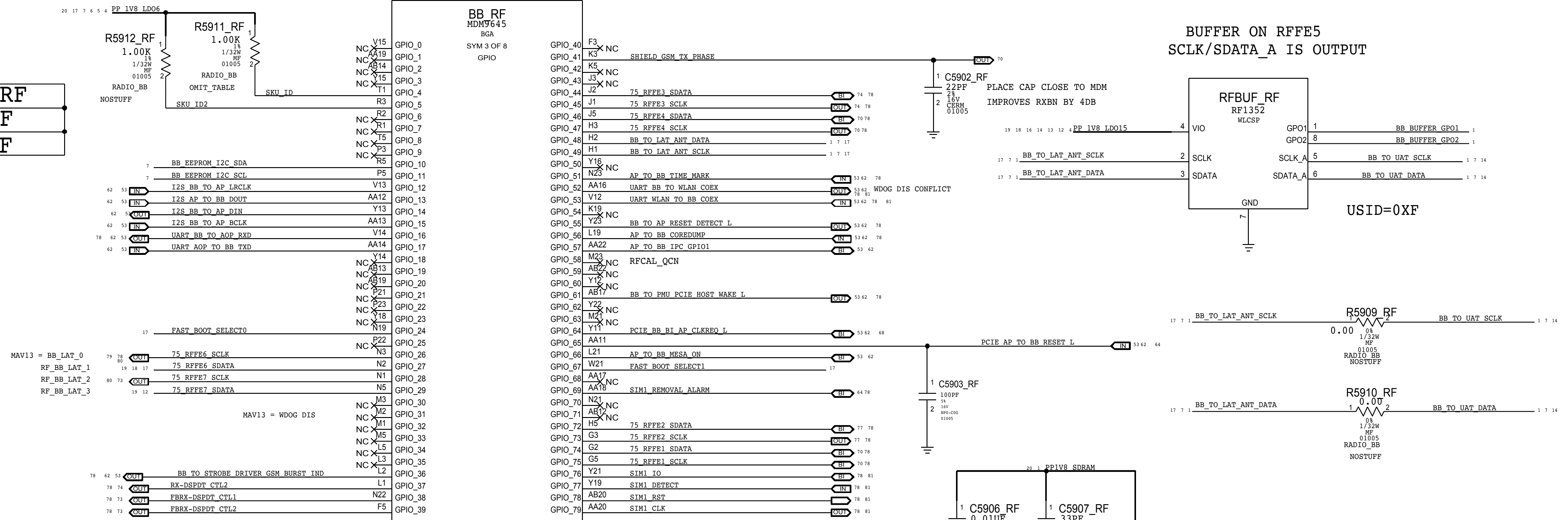
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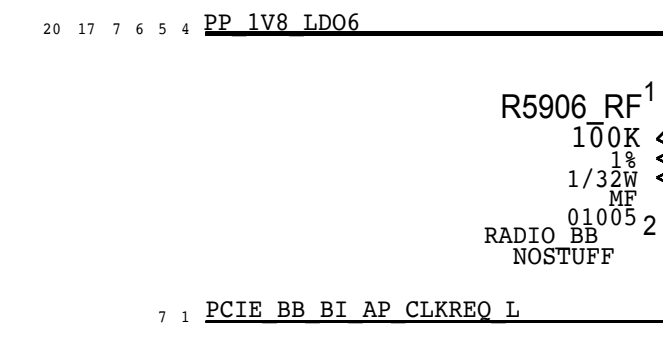
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# BASEBAND: GPIOS

|     |          |          |
|-----|----------|----------|
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| ROW | NOSTUFF  | NOSTUFF  |
| JP  | 1.0 KOHM | NOSTUFF  |

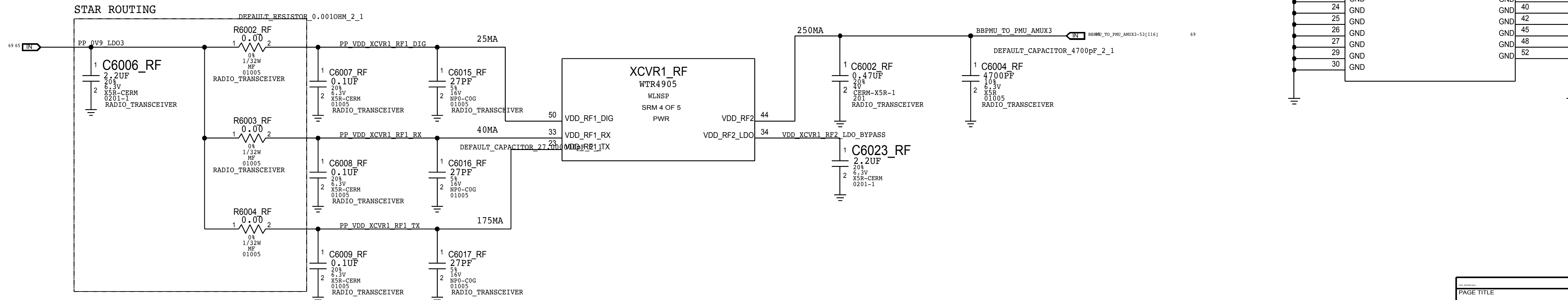
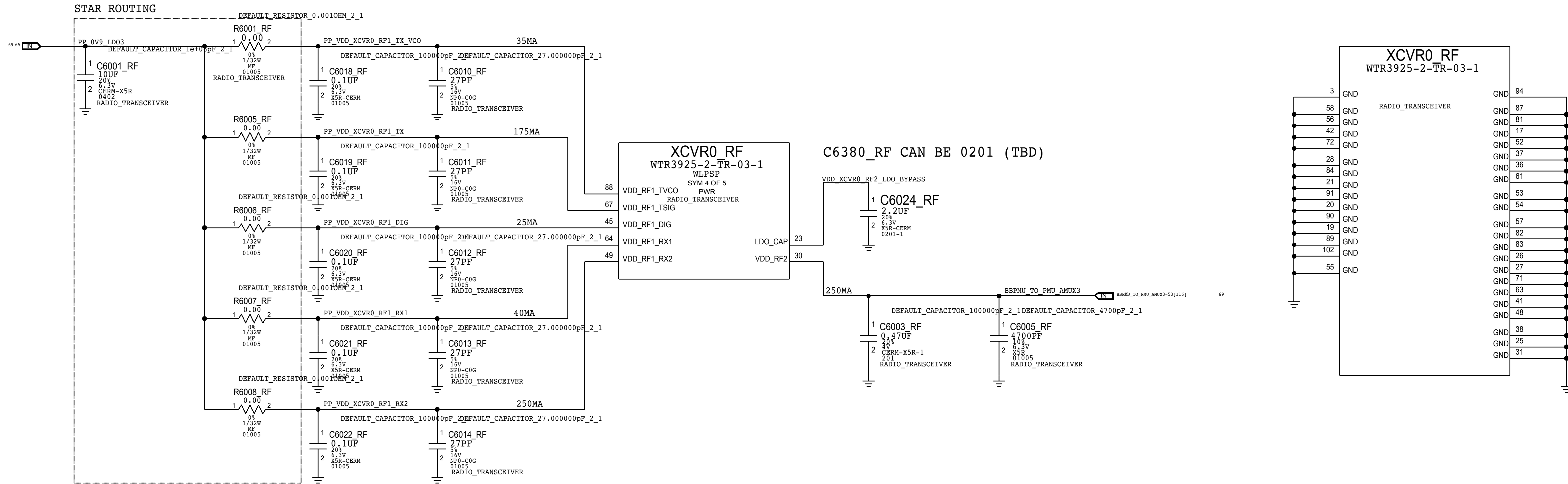


## PCIE PULL-UPS TO BB RAIL



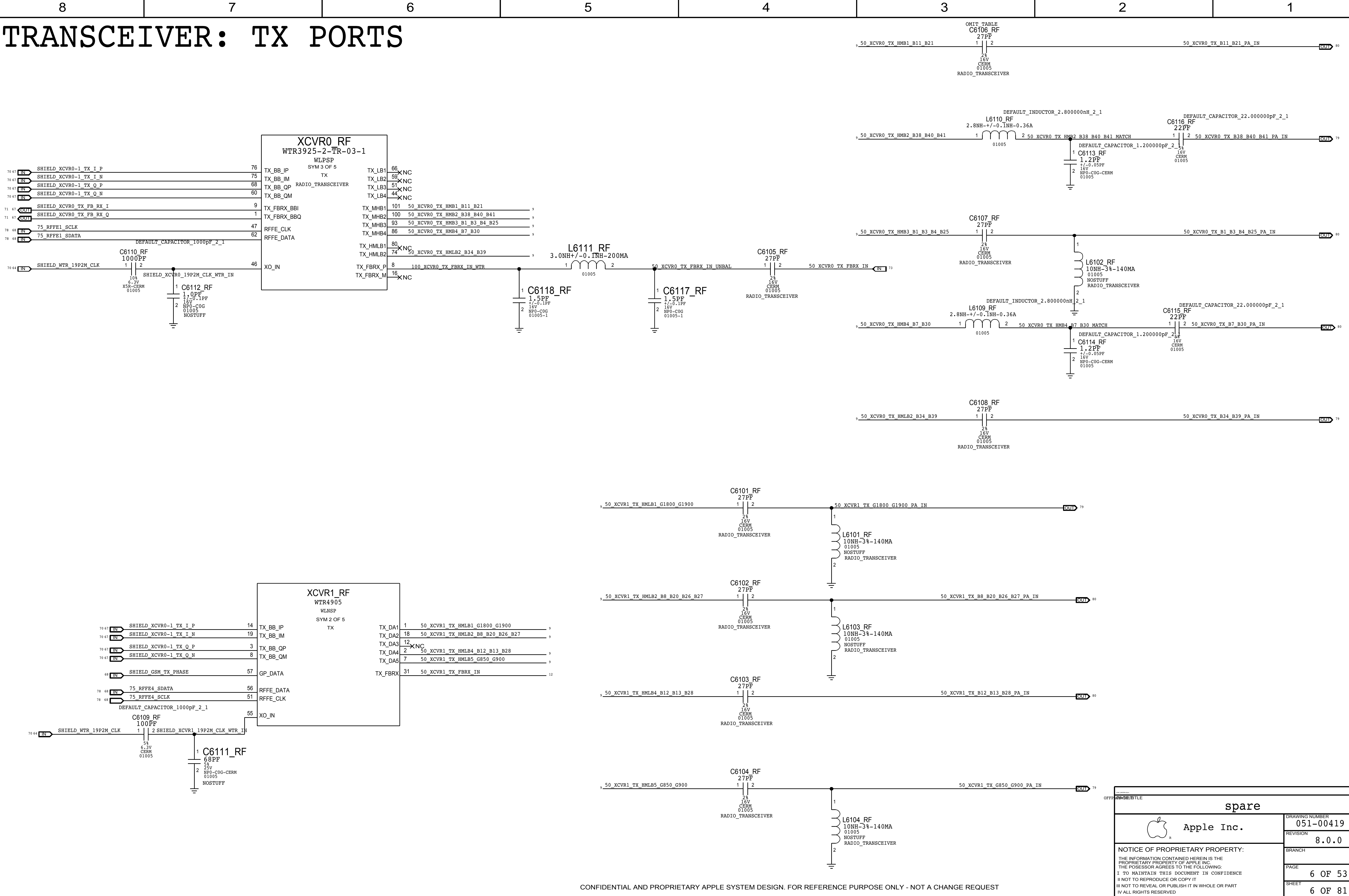
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# TRANSCEIVER: TX PORTS

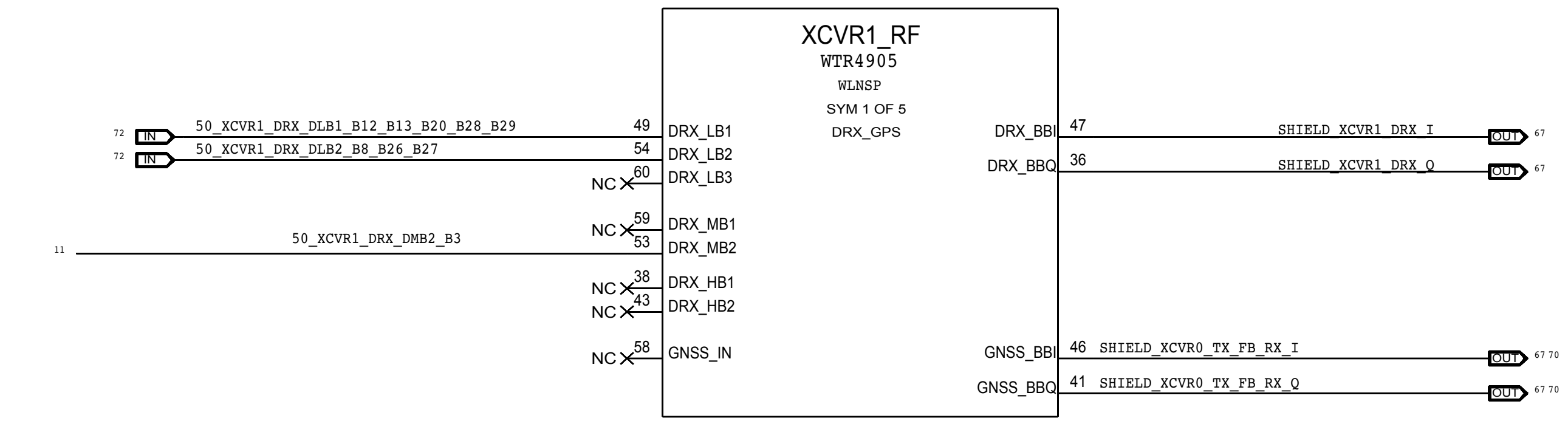
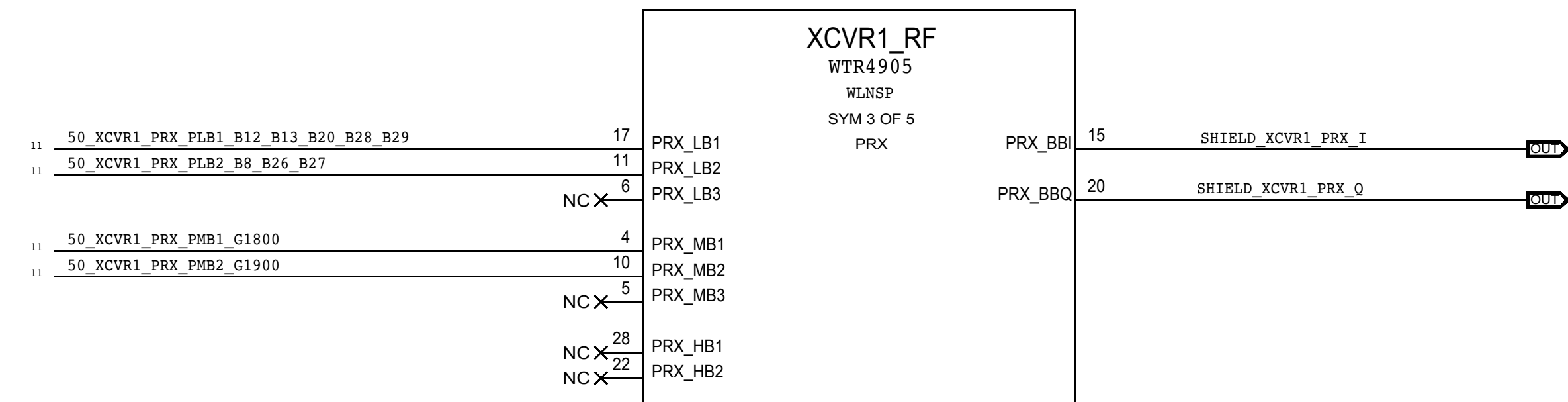
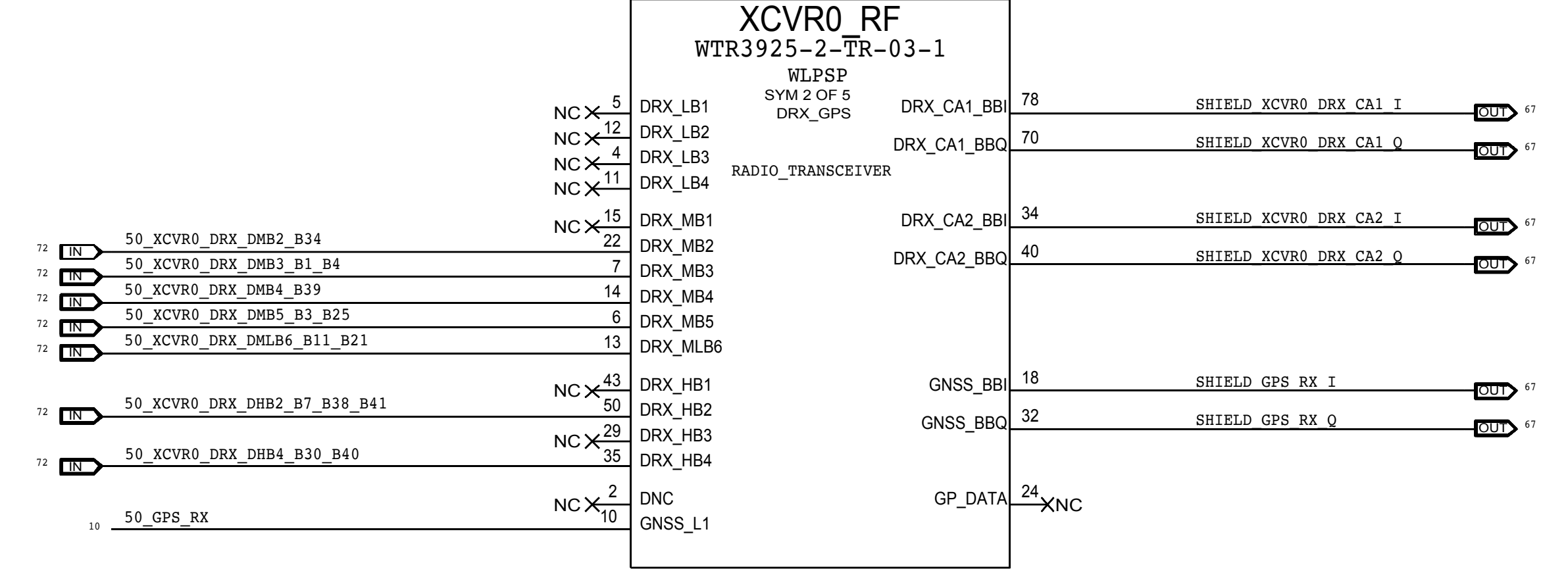
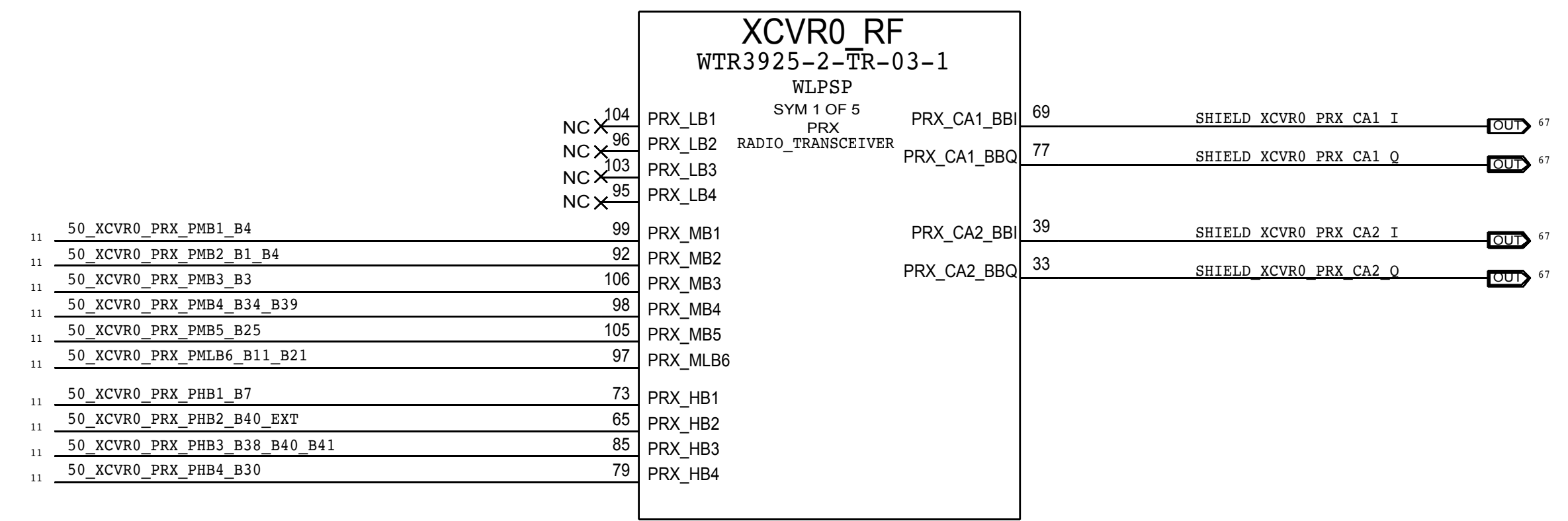


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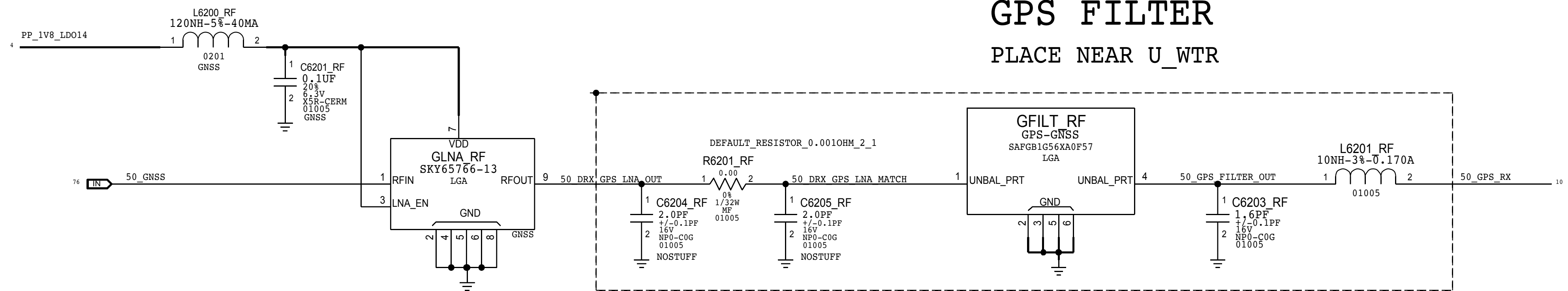
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# TRANSCEIVER: PRX, DRX, & GPS PORTS



## GPS FILTER PLACE NEAR U\_WTR



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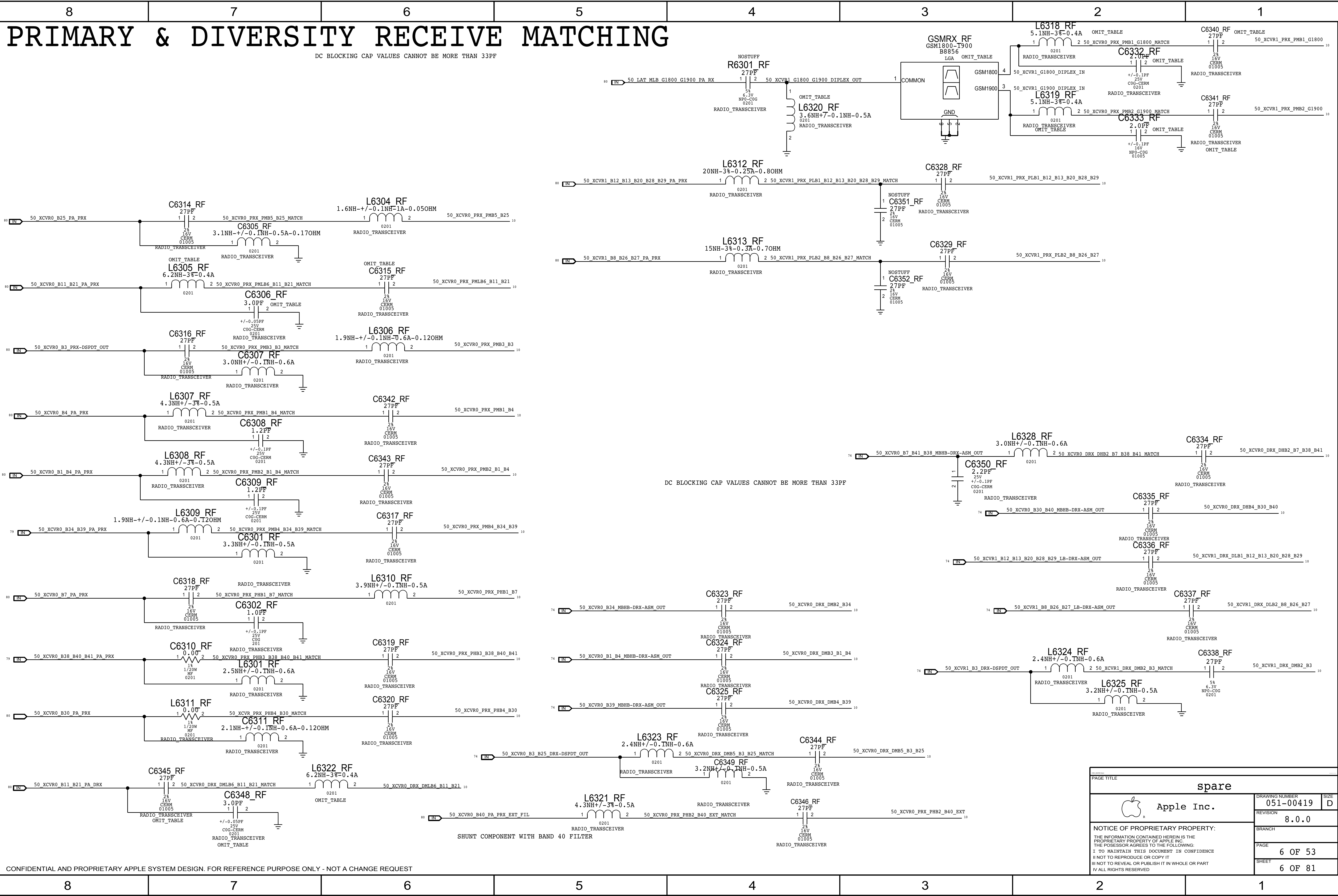
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D

C

B

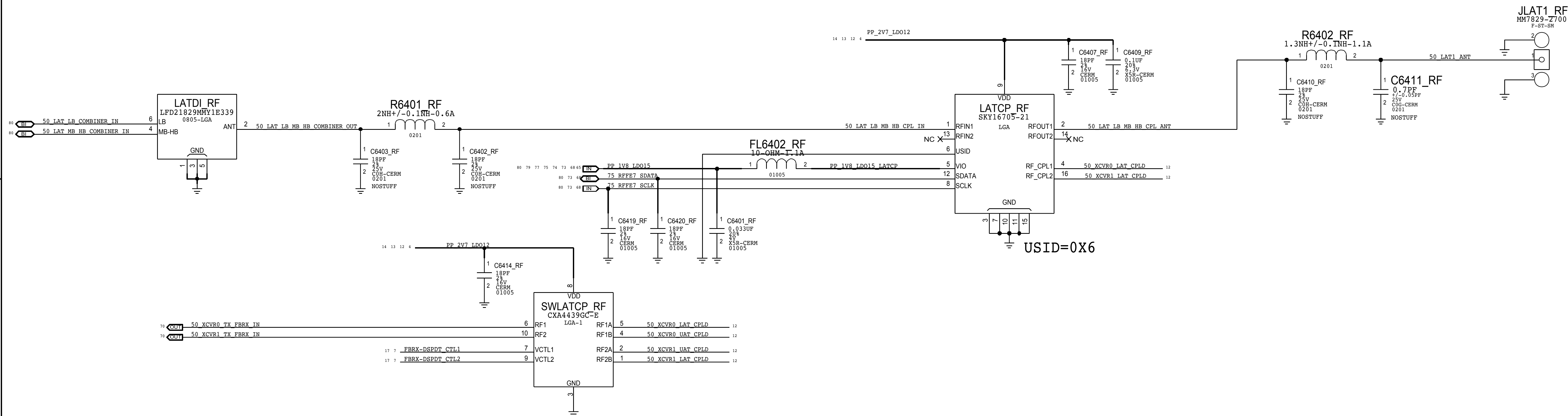
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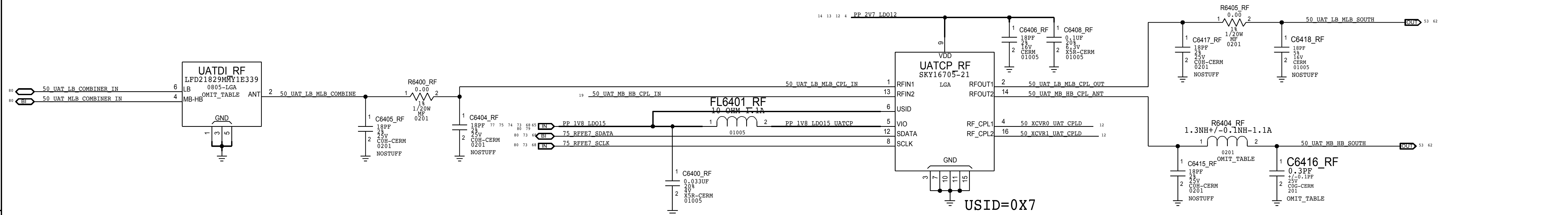
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# LOWER ANTENNA AND COUPLER



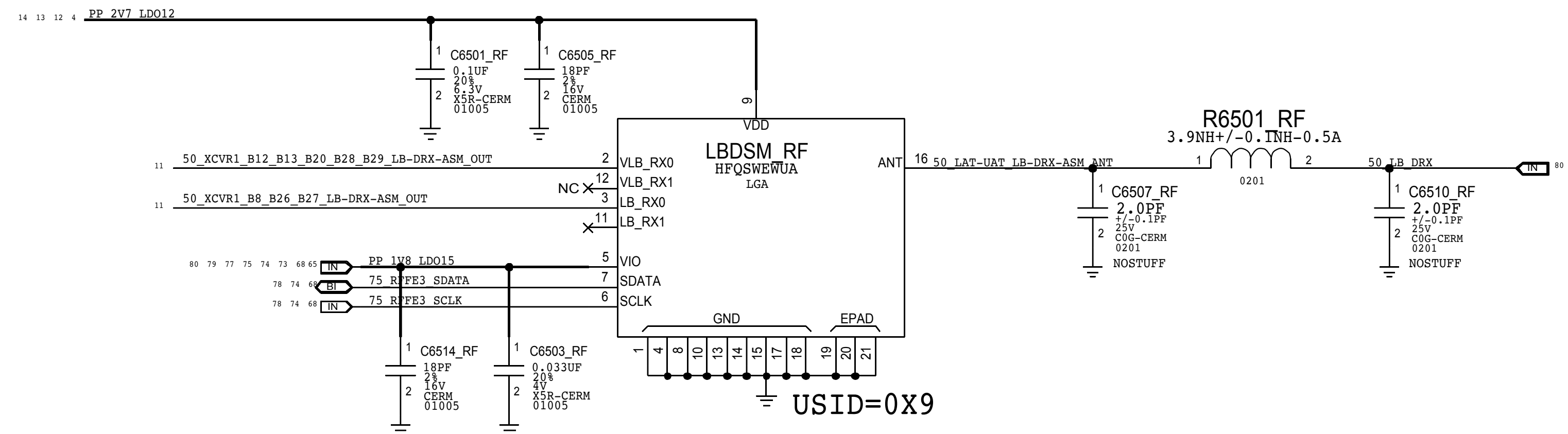
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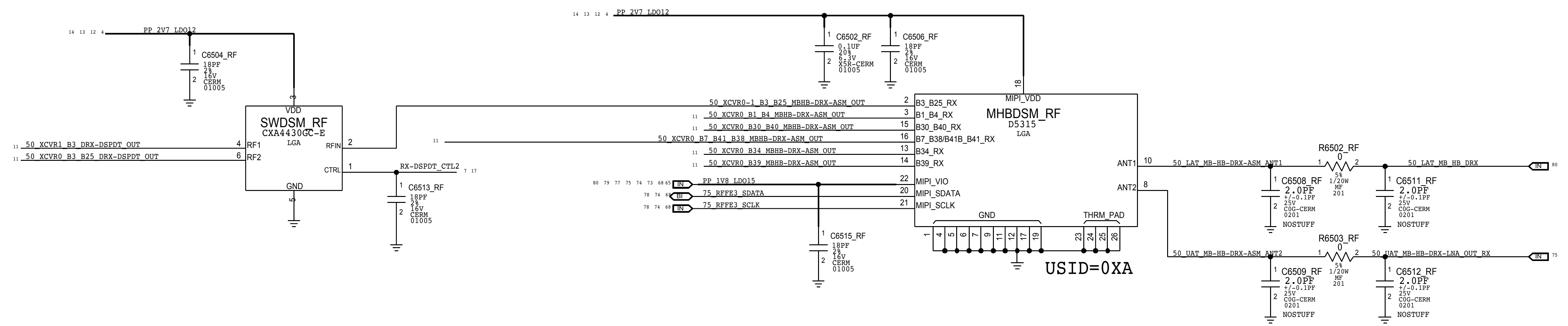
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# DIVERSITY RECEIVE

## LB DRX ASM



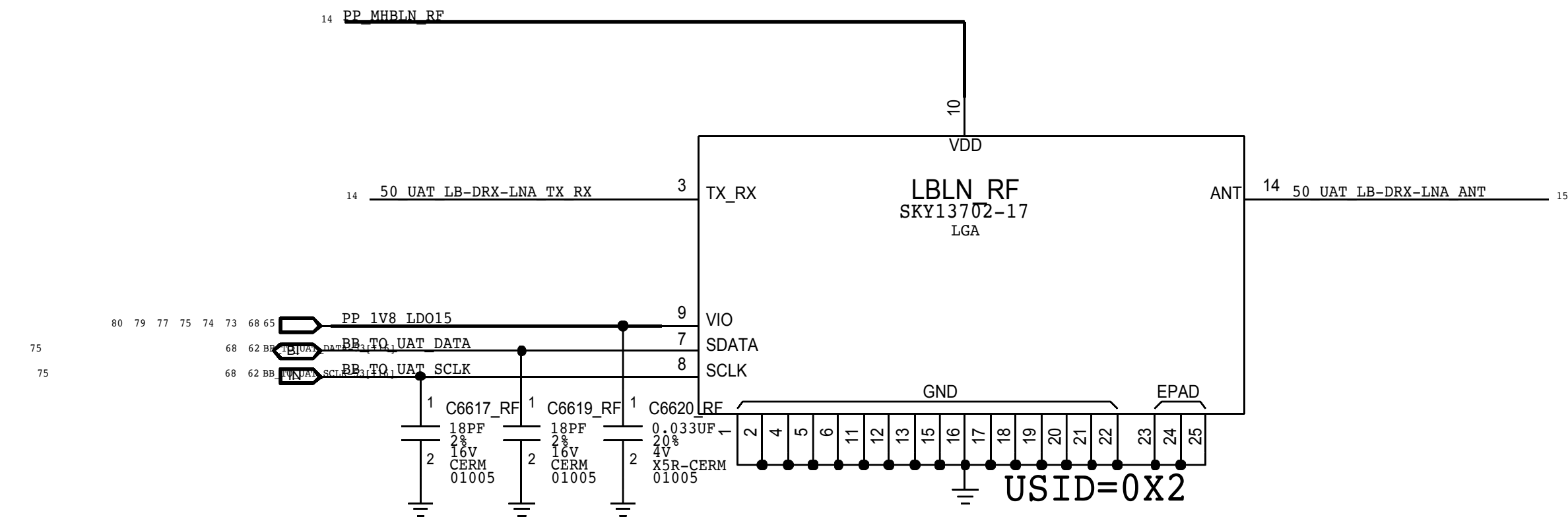
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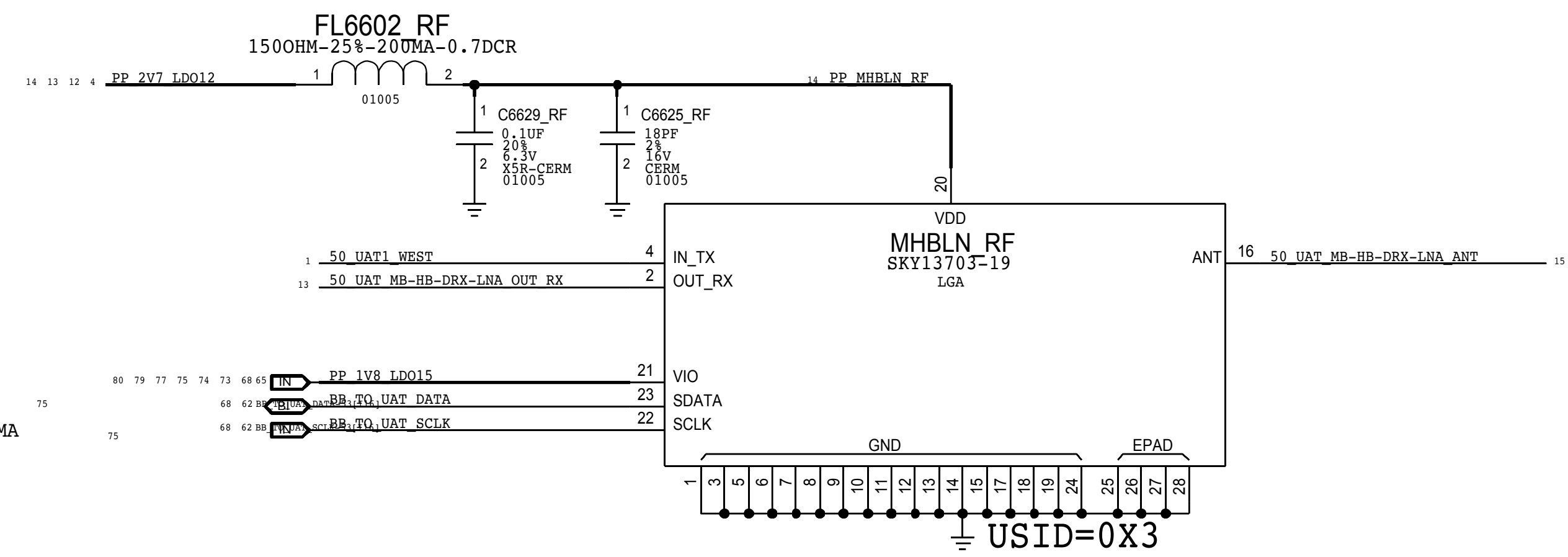
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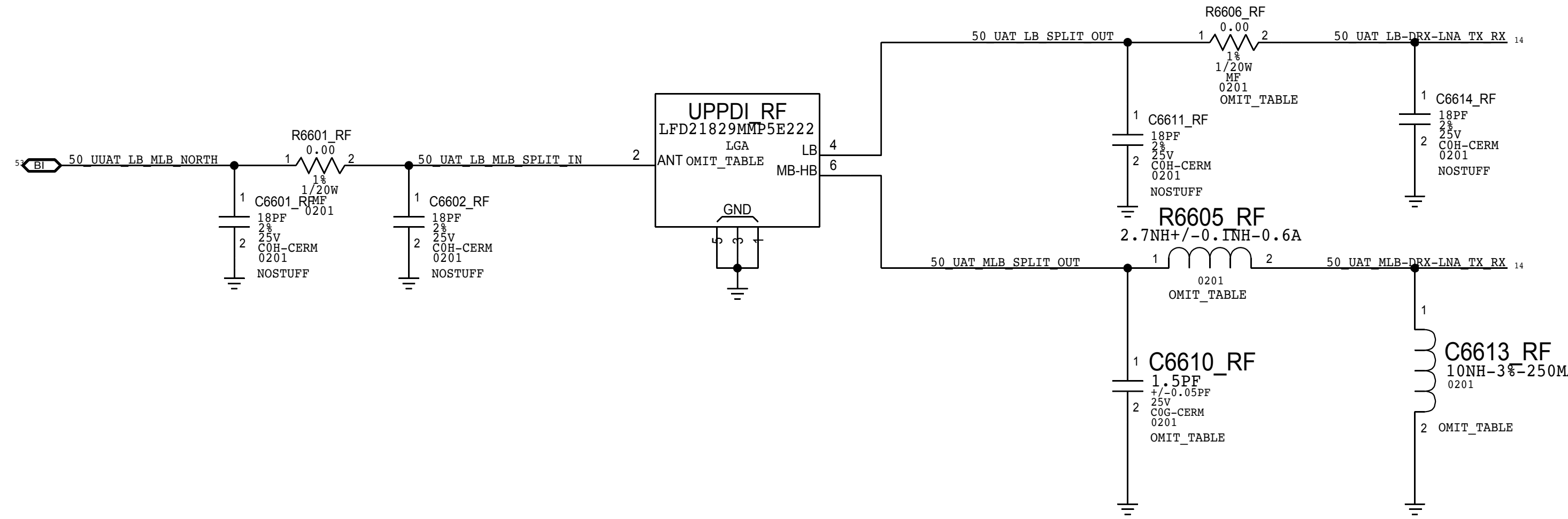
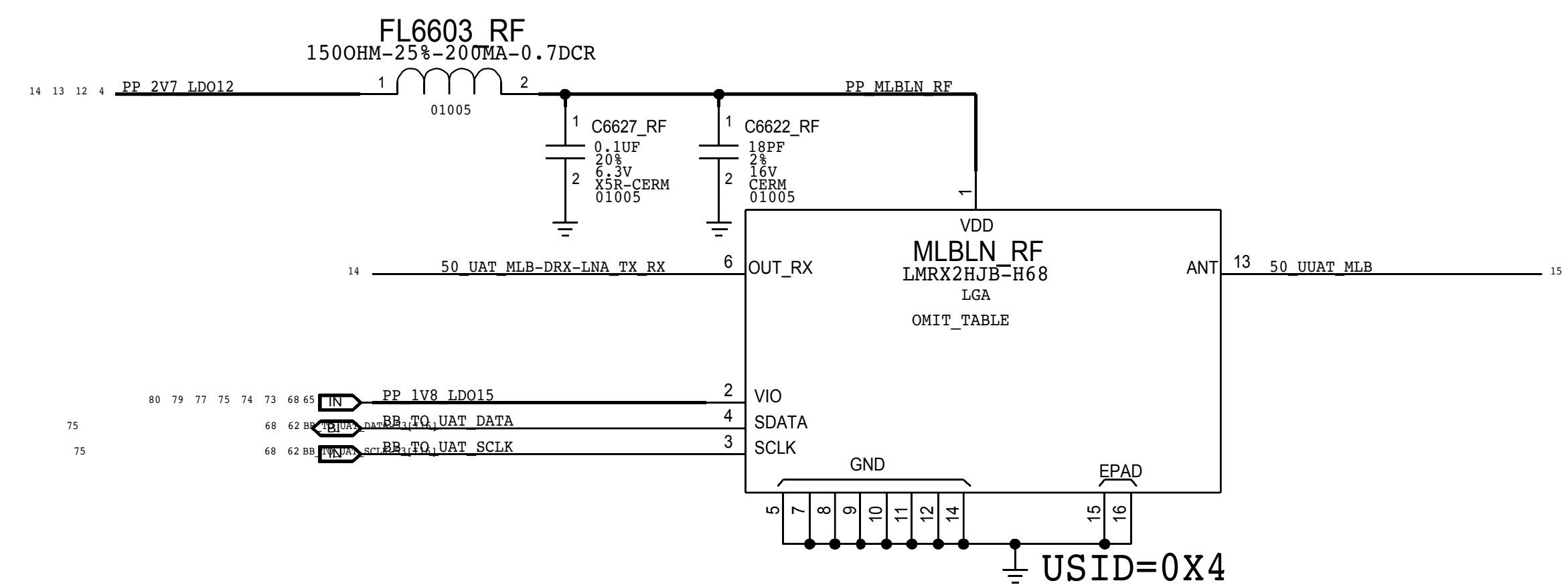
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## MB/HB DRX LNA



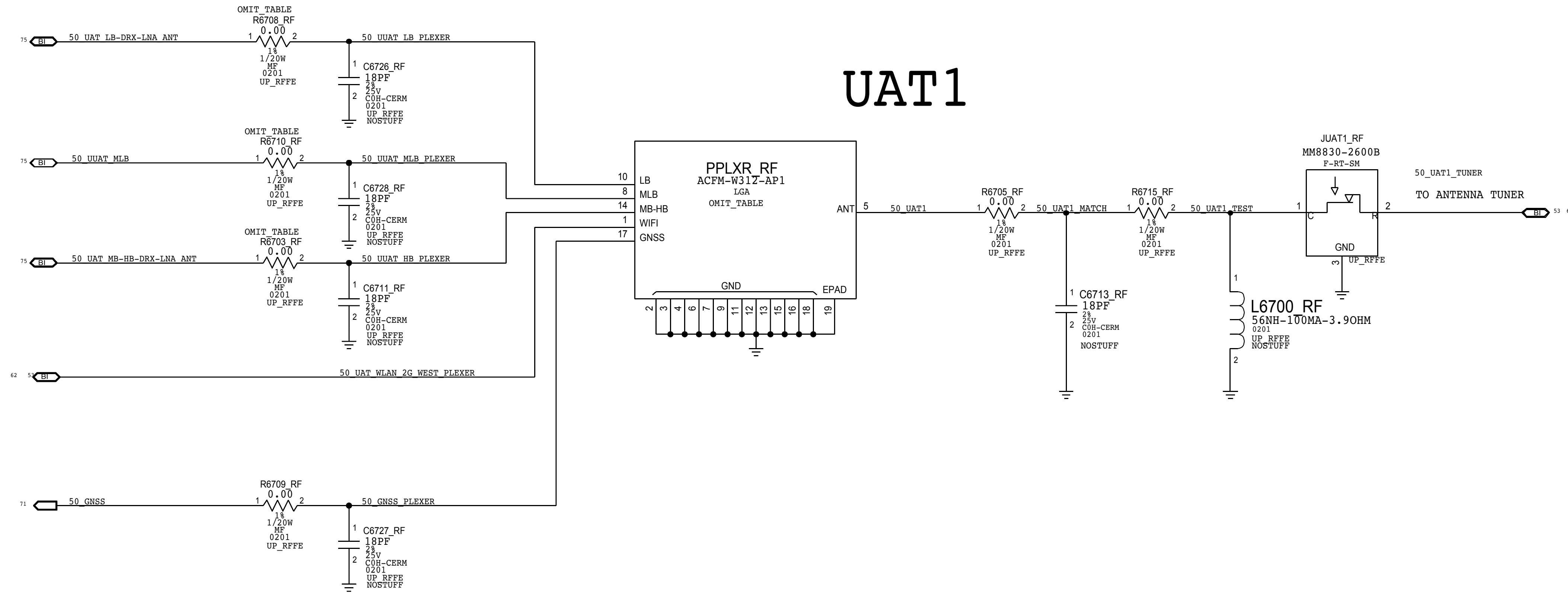
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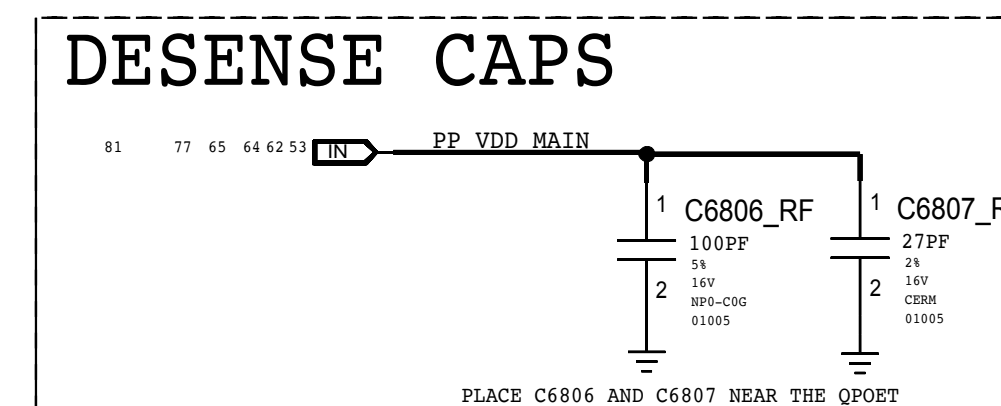
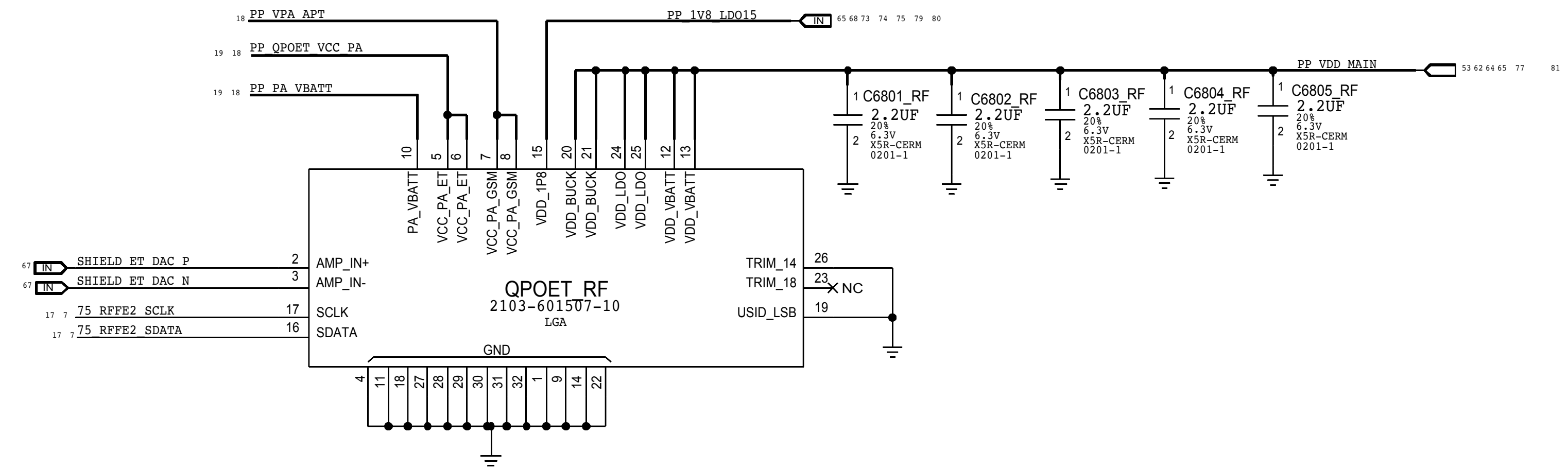
# UPPER ANTENNA FEEDS

## UAT1



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# PMU: ET MODULATOR

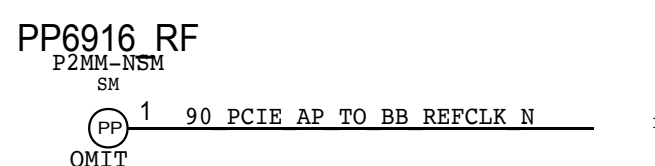
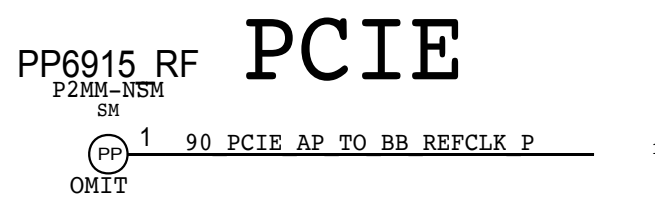
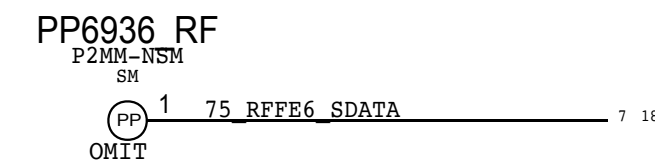
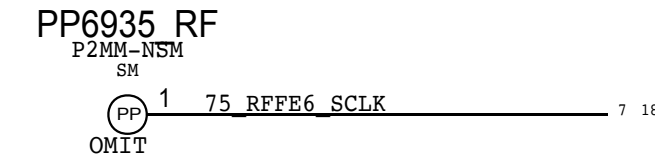
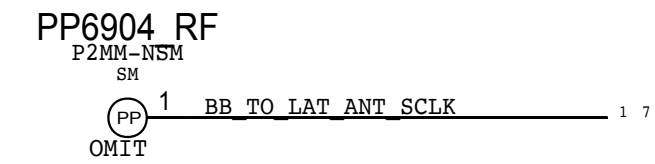
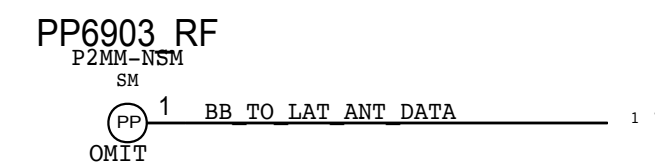
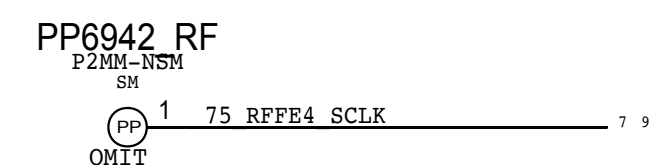
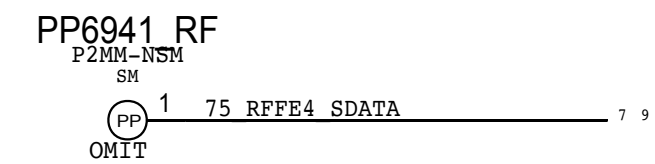
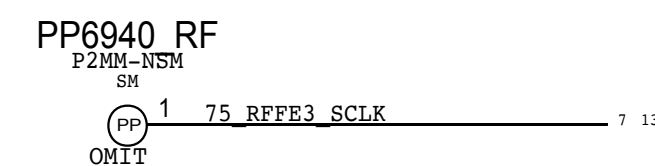
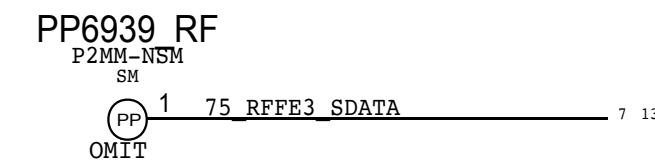
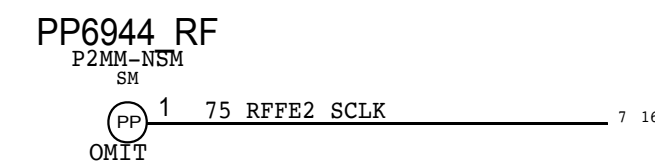
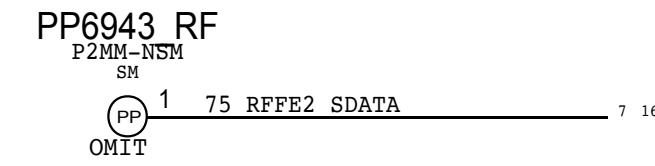
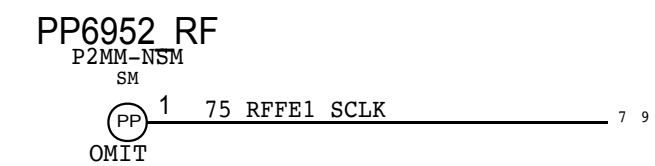
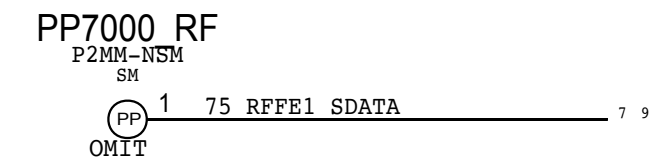


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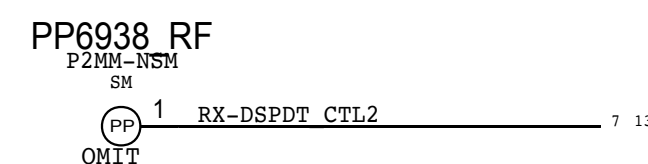
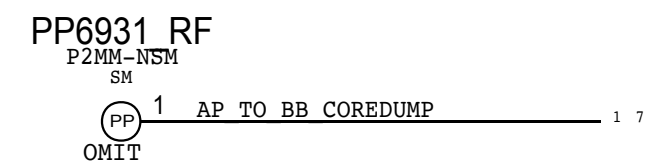
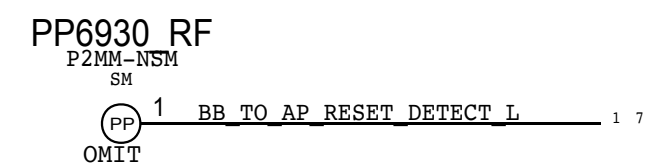
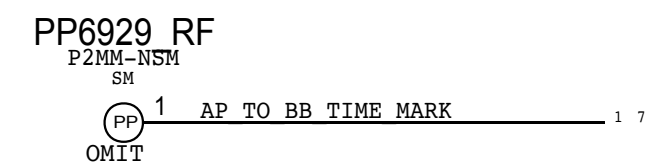
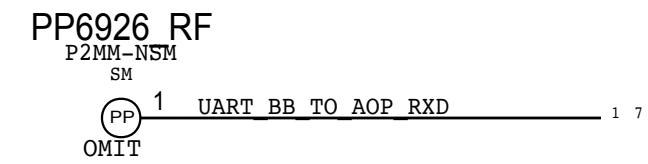
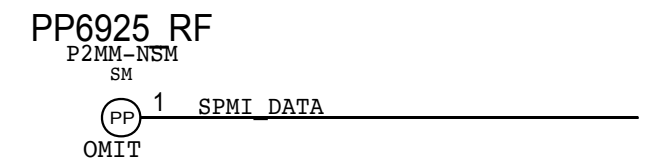
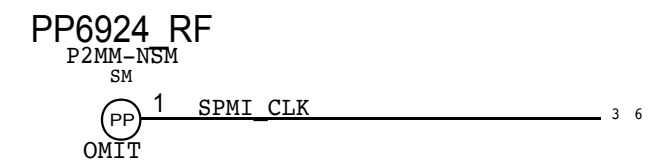
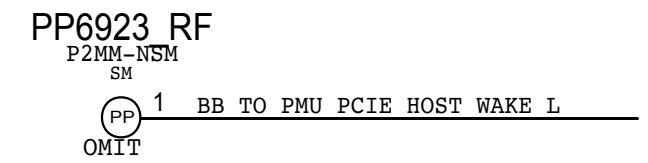
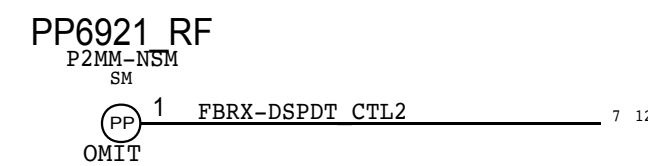
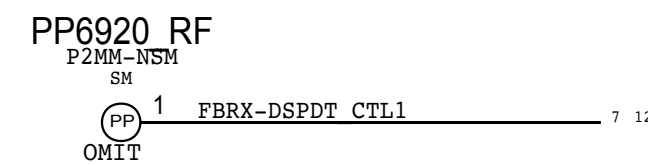
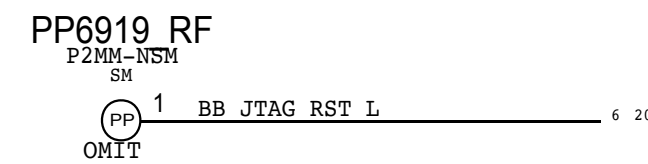
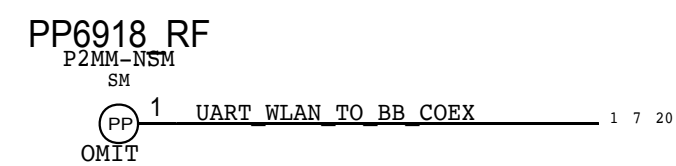
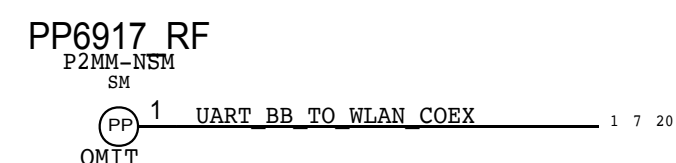
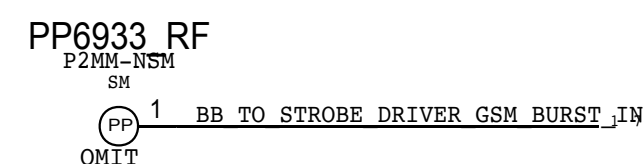
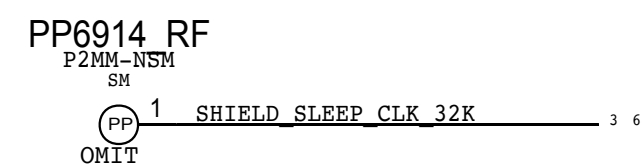
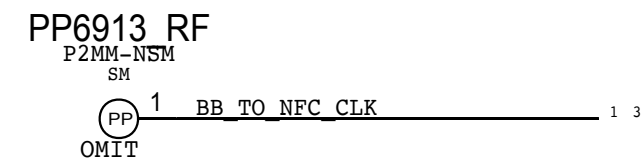
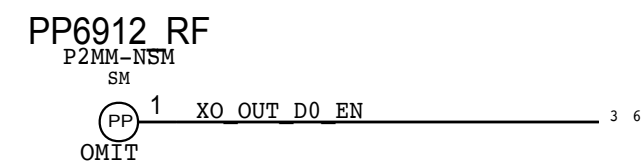
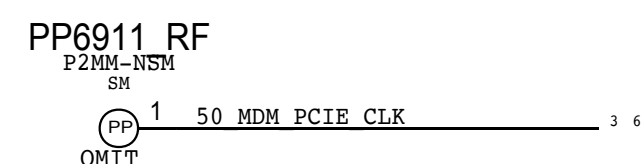
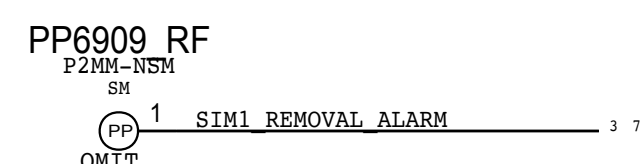
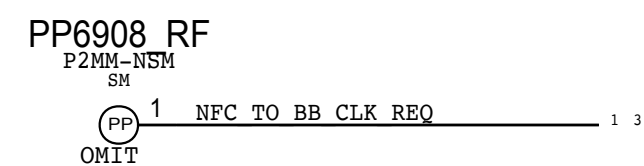
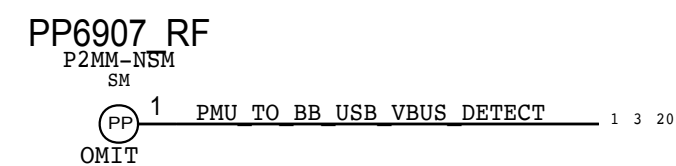
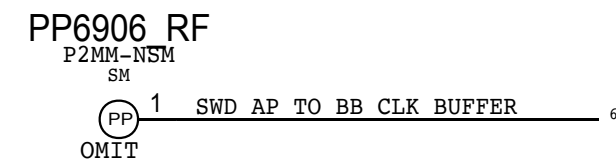
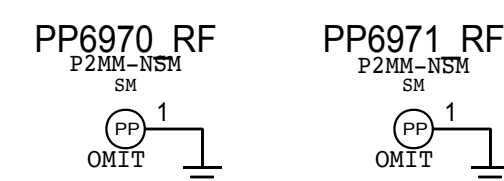


# MLB TEST POINTS

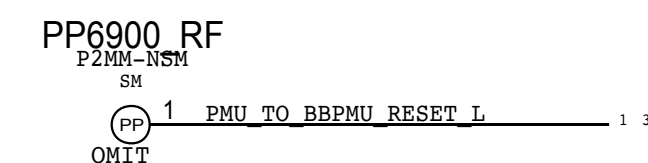
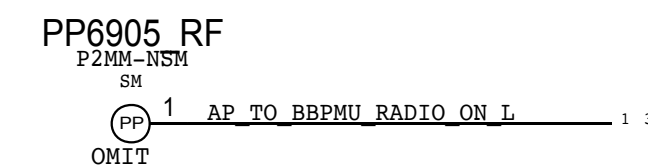
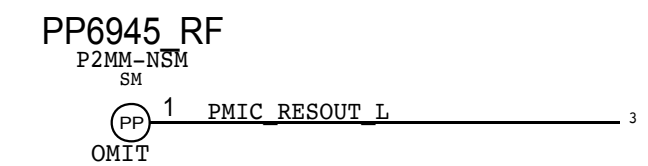
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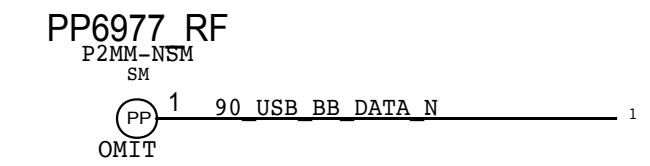
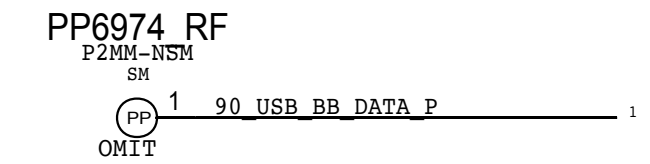
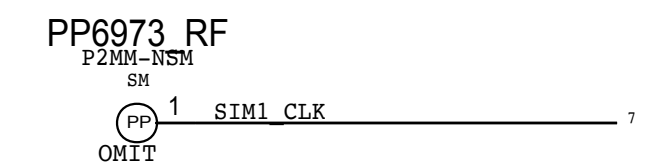
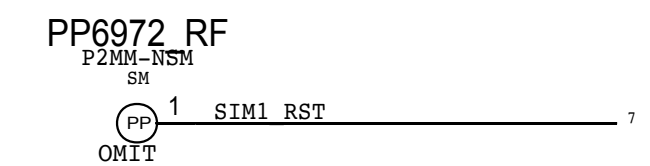
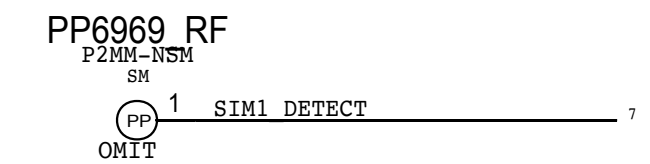
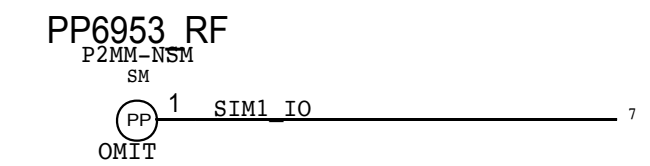
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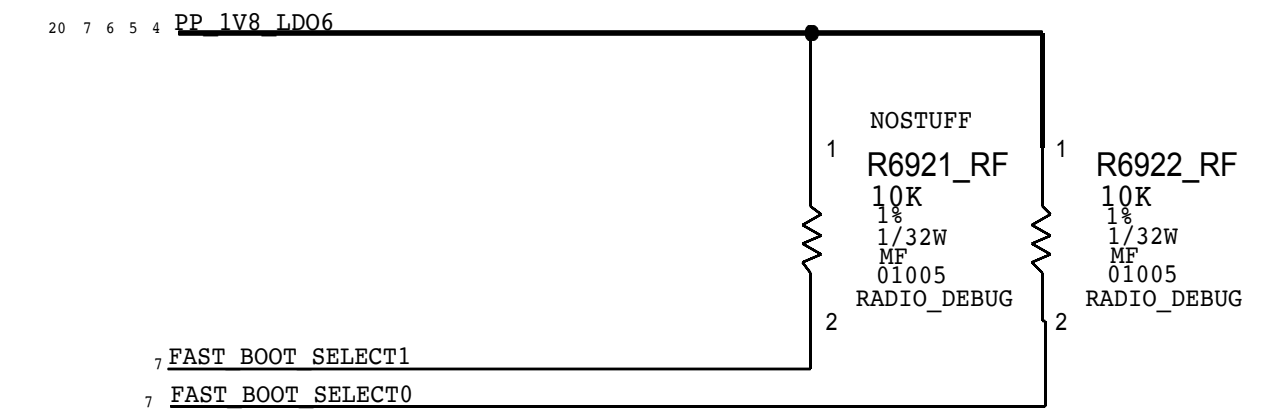
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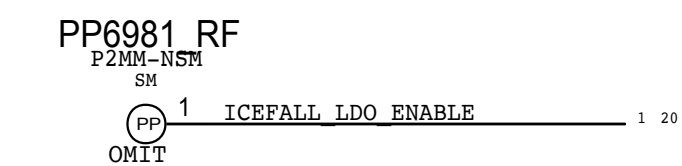
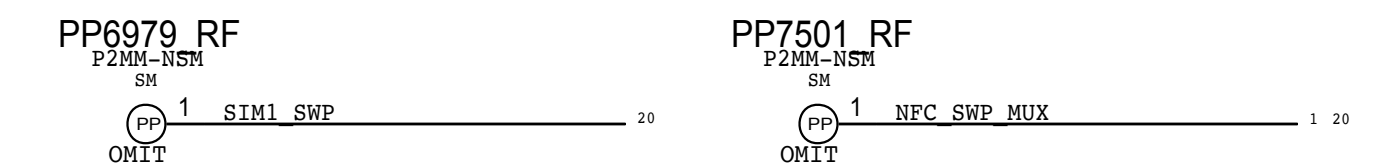
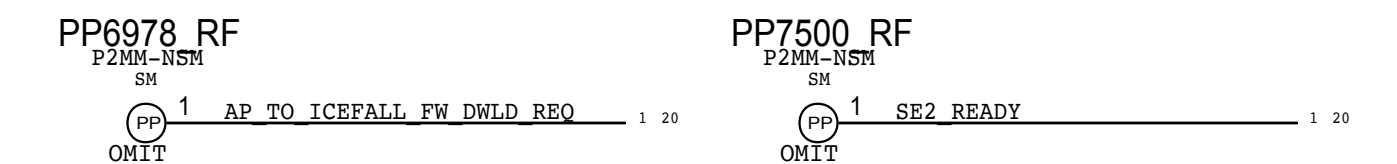
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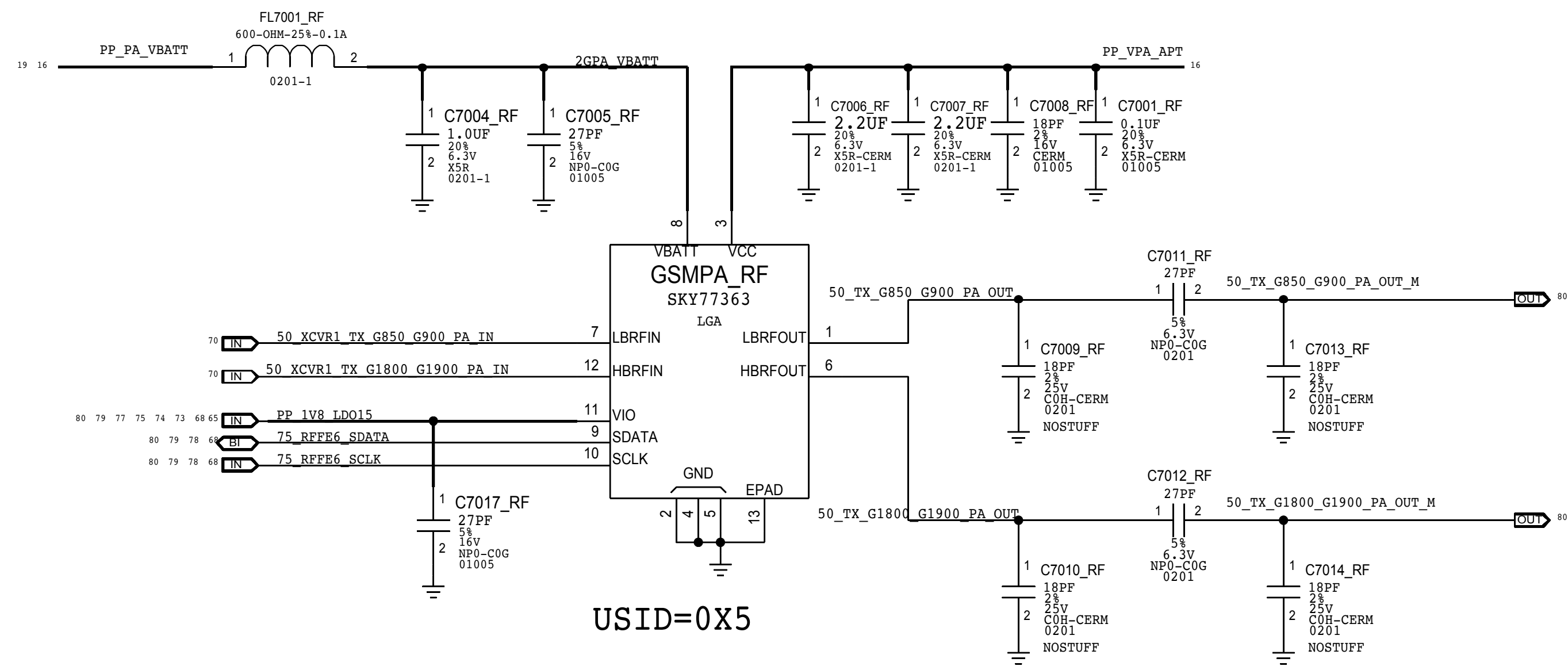
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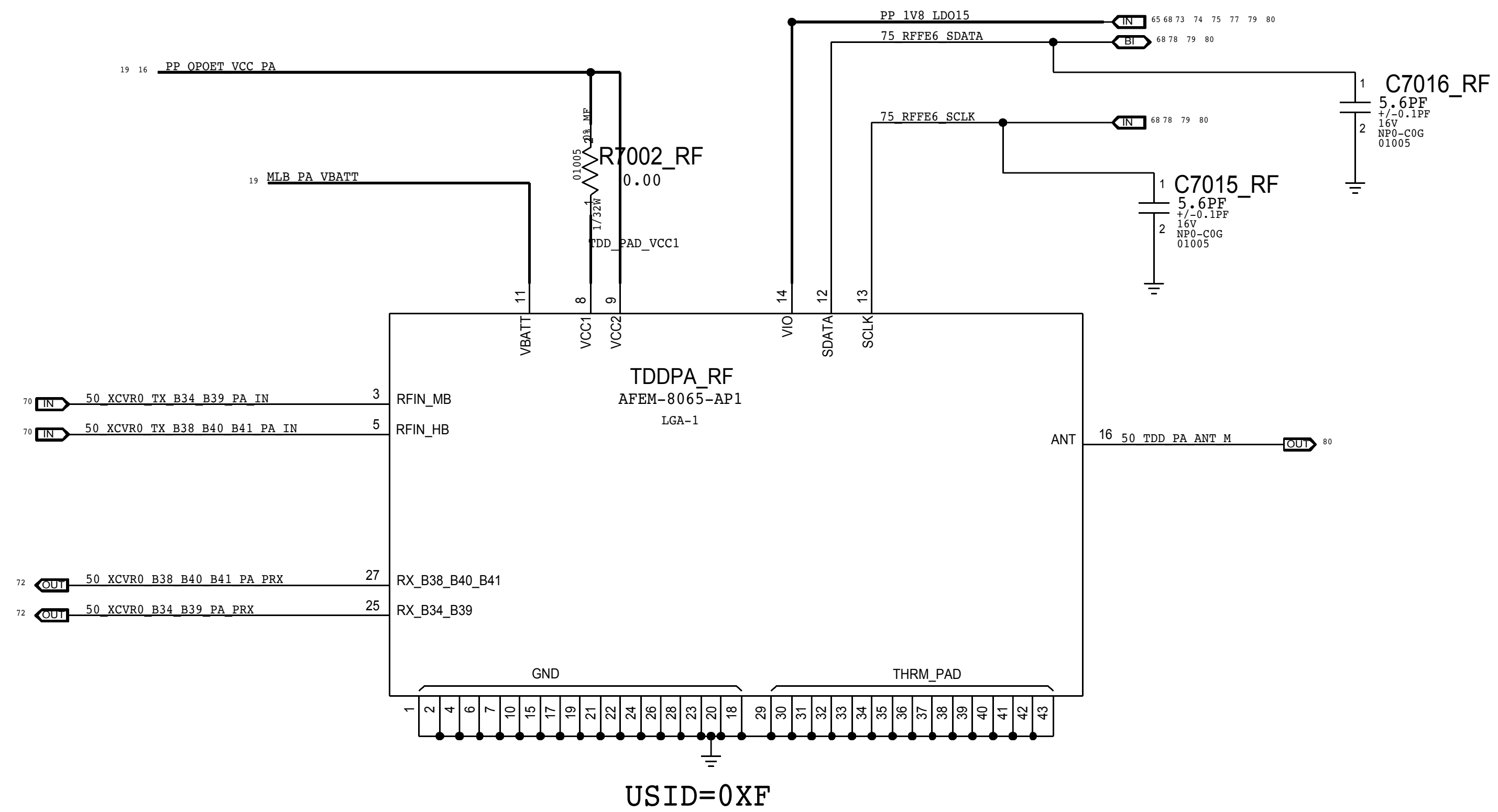
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# TDD TRANSMIT

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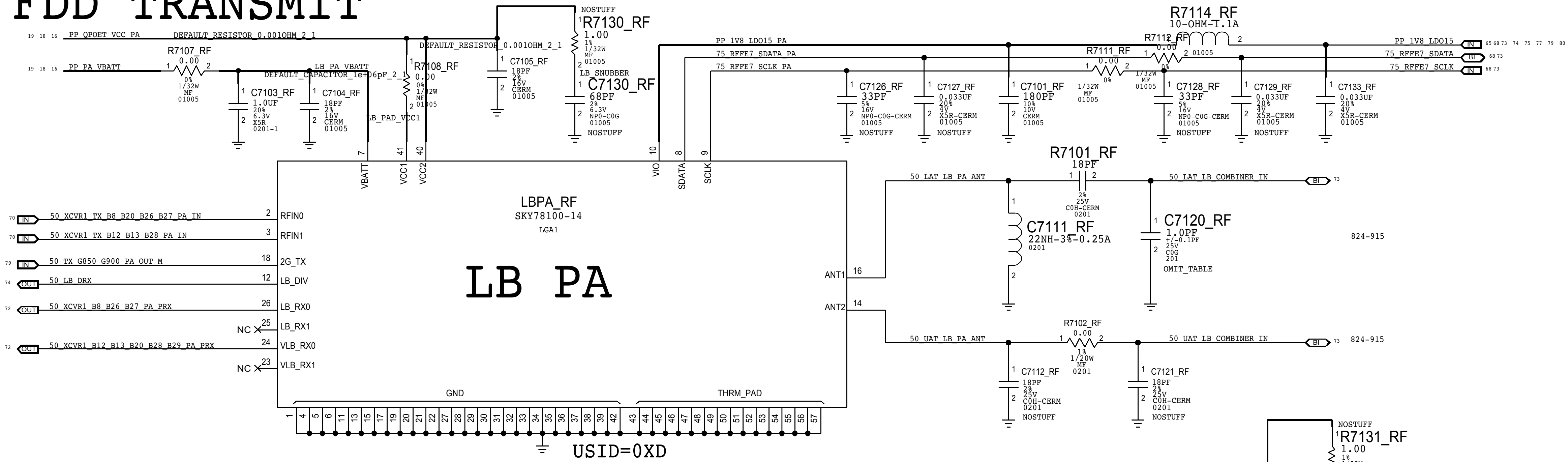


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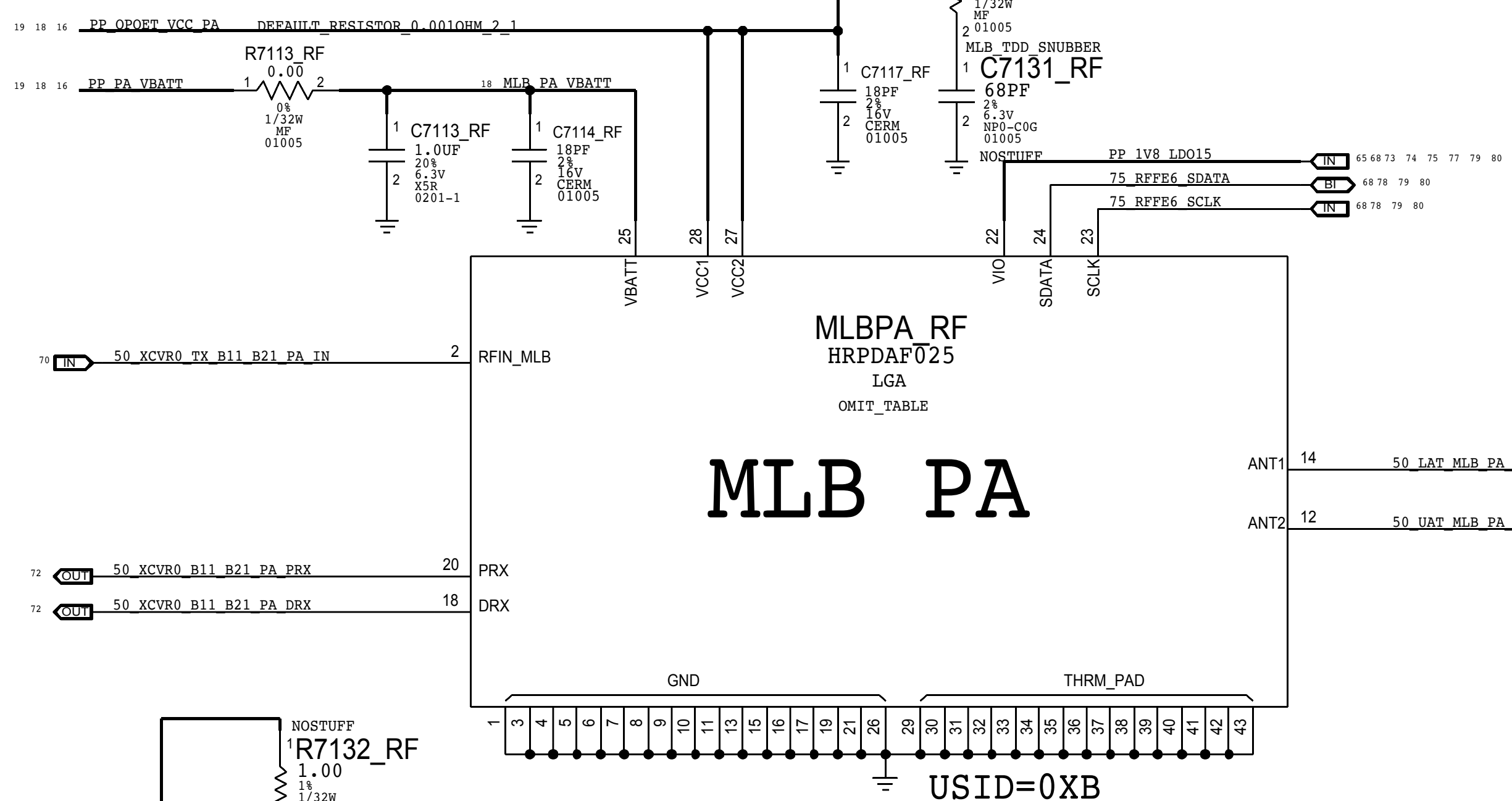
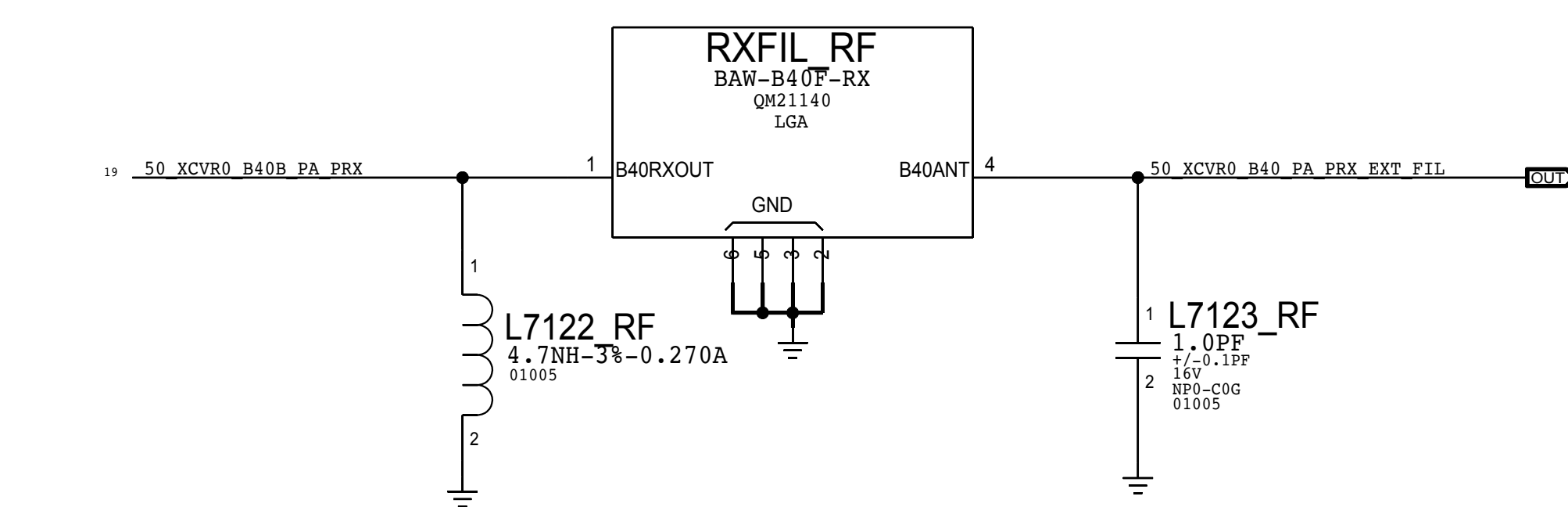
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# FDD TRANSMIT



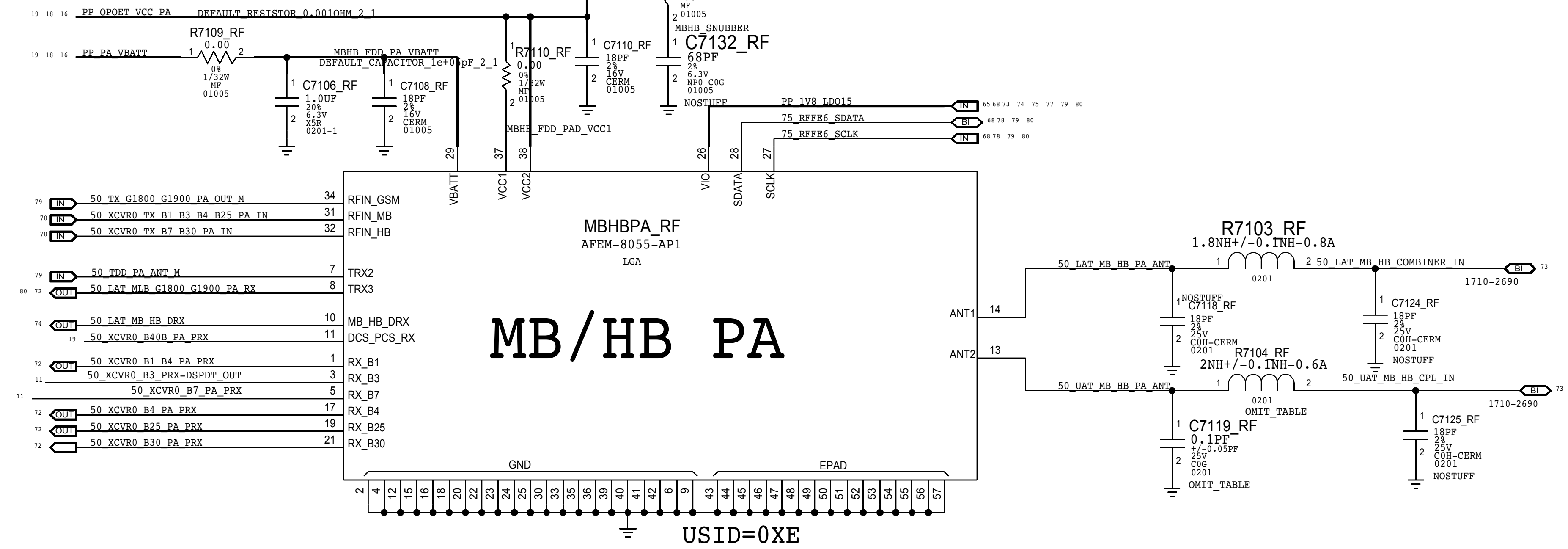
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- IN 50\_XCVR1\_TX\_B12\_B13\_B28\_PA\_IN 3 RFIN1
- OUT 50\_TX\_G850\_G900\_PA\_OUT\_M 18 2G\_TX
- OUT 50\_LB\_DRX 12 LB\_DIV
- OUT 50\_XCVR1\_B0\_B26\_B27\_PA\_PRX 26 LB\_RX0
- OUT 50\_XCVR1\_B12\_B13\_B20\_B28\_B29\_PA\_PRX 24 VLB\_RX0
- NC 25 LB\_RX1
- NC 23 VLB\_RX1



## MLB PA

- IN 50\_XCVR0\_TX\_B11\_B21\_PA\_IN 2 RFIN\_MLB
- OUT 50\_XCVR0\_B11\_B21\_PA\_PRX 20 PRX
- OUT 50\_XCVR0\_B11\_B21\_PA\_DRX 18 DRX



## MB/HB PA

- IN 50\_TX\_G1800\_G1900\_PA\_OUT\_M 34 RFIN\_GSM
- IN 50\_XCVR0\_TX\_B1\_B3\_B4\_B25\_PA\_IN 31 RFIN\_MB
- IN 50\_XCVR0\_TX\_B7\_B30\_PA\_IN 32 RFIN\_HB
- IN 50\_TDD\_PA\_ANT\_M 7 TRX2
- OUT 50\_LAT\_MLB\_G1800\_G1900\_PA\_RX 8 TRX3
- OUT 50\_LAT\_MB\_HB\_DRX 10 MB\_HB\_DRX
- OUT 50\_XCVR0\_B40B\_PA\_PRX 11 DCS\_PCS\_RX
- OUT 50\_XCVR0\_B1\_B4\_PA\_PRX 1 RX\_B1
- OUT 50\_XCVR0\_B3\_PRX-DSPDPT\_OUT 3 RX\_B3
- OUT 50\_XCVR0\_B7\_PA\_PRX 5 RX\_B7
- OUT 50\_XCVR0\_B4\_PA\_PRX 17 RX\_B4
- OUT 50\_XCVR0\_B25\_PA\_PRX 19 RX\_B25
- OUT 50\_XCVR0\_B30\_PA\_PRX 21 RX\_B30

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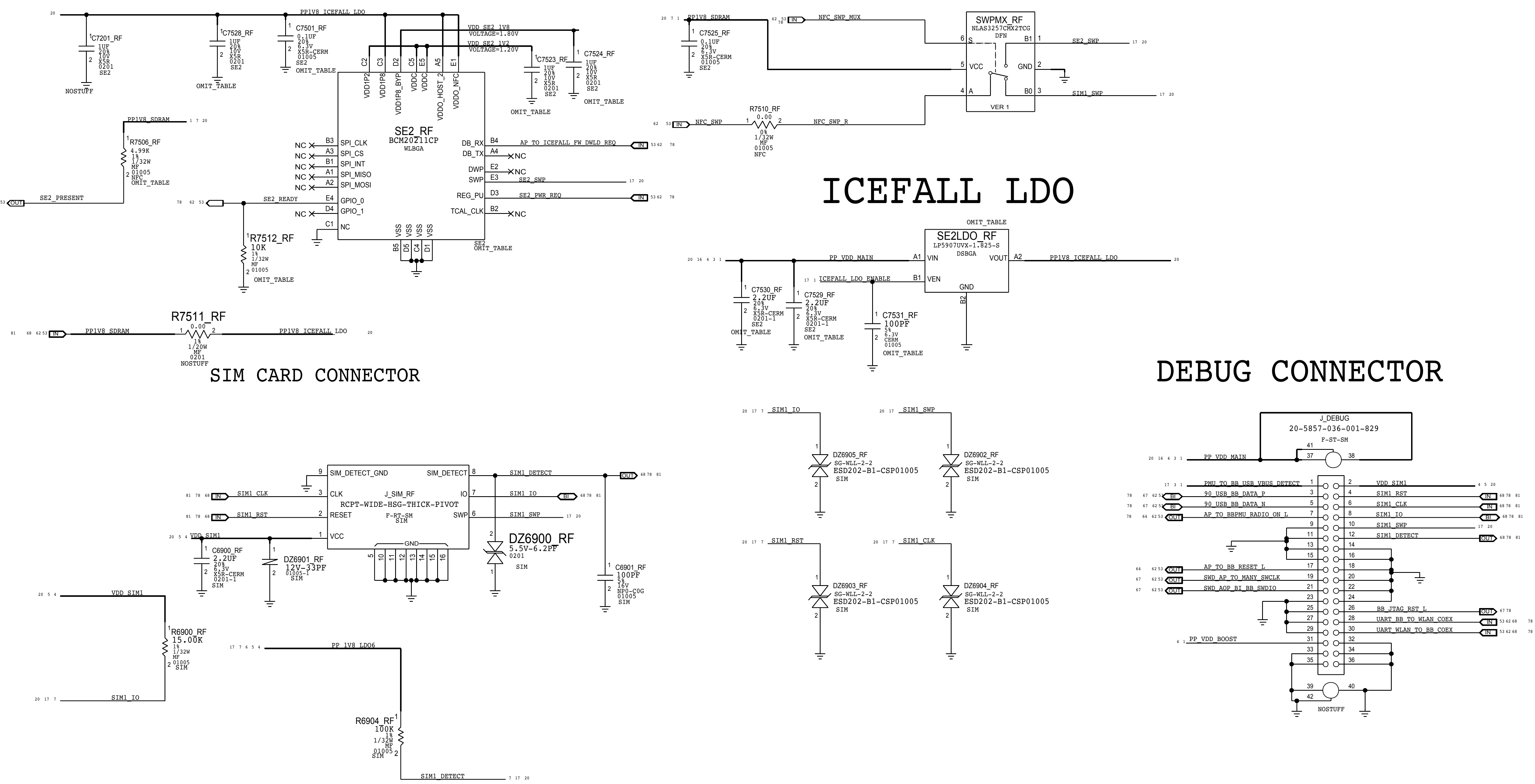
# ICEFALL

# SWP MUX

# ICEFALL LDO

# DEBUG CONNECTOR

# SIM CARD CONNECTOR



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