

|  |       |          |                                    |   |  |   |  |   |  |   |  |   |  |   |    |
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| C  | 10    | 14       | SOC: Serial                        |   |  |   |  |   |  |   |  |   |  |   |    |
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|  | 14    | 18       | SOC: Power (CPU/GPU & SOC)         |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 15    | 19       | SOC: Power (SRAM)                  |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 16    | 20       | SOC: Power (Fixed)                 |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 17    | 21       | SOC: Power (DDR & AOP/AVE/ISP/USB) |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 18    | 22       | SOC: Power (1V2)                   |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 19    | 23       | SOC: Power (GND)                   |   |  |   |  |   |  |   |  |   |  |   |    |
| B  | 20    | 24       | SOC: Aliases: I2C AP/ISP           |   |  |   |  |   |  |   |  |   |  |   |    |
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|  | 28    | 34       | SYS PWR: PMU: Bucks (2/5)          |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 29    | 35       | SYS PWR: PMU: LDOs (3/5)           |   |  |   |  |   |  |   |  |   |  |   |    |
| A  | 30    | 36       | SYS PWR: PMU: GPIO (4/5)           |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 31    | 37       | SYS PWR: PMU: Misc (5/5)           |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 32    | 38       | SYS PWR: PMU: Aliases: GPIO        |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 33    | 39       | SYS PWR: PMU: Aliases: Misc        |   |  |   |  |   |  |   |  |   |  |   |    |
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|  | 38    | 45       | SYS PWR: Arue                      |   |  |   |  |   |  |   |  |   |  |   |    |
|  | 39    | 49       | SYS PWR: NTCs (Top)                |   |  |   |  |   |  |   |  |   |  |   |    |
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|       |          |   |  |  |
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|       |          |   |  |  |
|       |          |   |  |  |

Multi-Vendor Criticals

| Capacitors                                      |  |
|---|--|
| In descending order of value, then package size |  |
| PART NUMBER                                     | COMMENT                                |
| 13850979  | CAP,CER,XSR,10UF,20%,10V,0402,H=0.65MM |
| 13850692  | CAP,CER,XSR,1UF,20%,6.3V,0201          |
| 138500014                                       | CAP,CER,XSR,1UF,20%,16V,0201,H=0.39MM  |
| 13250245  | CAP,CER,XSR,0.01UF,10%,6.3V,01005      |
| 132500283                                       | CAP,CER,XSR,6800PF,10%,16V,01005       |
| 13250396  | CAP,CER,XSR,1000PF,10%,10V,01005       |
| 132500258                                       | CAP,CER,X7R,330PF,10%,16V,01005        |
| 131500543                                       | CAP,CER,COG,220PF,5%,25V,01005         |
| 131500057                                       | CAP,CER,NPO/COG,100PF,5%,35V,01005     |
| 131500150                                       | CAP,CER,NPO/COG,100PF,5%,25V,01005     |
| 131500170                                       | CAP,CER,COG,220PF,5%,25V,01005         |
| 131500293                                       | CAP,CER,NPO/COG,12PF,5%,16V,01005      |
| 131500353                                       | CAP,CER,NPO/COG,10PF,5%,16V,01005      |
| 13850758  | CAP,CER,XSR,22UF,20%,10V,0603          |
| 131500740                                       | CAP,CER,NPO/COG,47PF,5%,16V,01005      |
| 131500732                                       | CAP,CER,NPO/COG,18PF,5%,16V,01005      |
| 132500051                                       | CAP,X7R,330PF,10%,25V,0201             |
| 131500731                                       | CAP,CER,NPO/COG,56PF,5%,25V,01005      |
| 132500270                                       | CAP,CER,0.22UF,20%,10V,XSR,0201        |
| 131500742                                       | CAP,CER,NPO/COG,33PF,5%,16V,01005      |

Capacitor Alternates

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                        |
|--------------------|------------------|-----------------------|--------------------------------|
| 13851103           | 13850719         | ALL                   | CAP,CER,XSR,4.7UF,20%,10V,0402 |

| PART NUMBER | COMMENT        |
|-------------|----------------|
| 13850719    | 0402 4.7uF,10V |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                |
|--------------------|------------------|-----------------------|--|
| 138500215          | 13851068         | ALL                   | CAP,XSR,4.7UF,20%,16V,0402,H=0.55MM,TY |

| PART NUMBER | COMMENT                                 |
|-------------|---|
| 13851068    | CAP,CER,XSR,4.7UF,20%,16V,0402,H=0.55MM |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                       |
|--------------------|------------------|-----------------------|---|
| 138500518          | 13850968         | ALL                   | CAP,CER,XSR,4.2UF,10%,16V,K,0402H0.55,KYOCERA |
| 138500513          | 13850968         | ALL                   | CAP,CER,XSR,4.2UF,10%,16V,5,0402,H0.55,SEMCO  |

| PART NUMBER | COMMENT                                 |
|-------------|---|
| 13850968    | CAP,CER,XSR,4.2UF,10%,16V,0402,H=0.55MM |

| ALTERNATE PART NO. | PRIMARY PART NO. | COMMENT                         |
|--------------------|------------------|---------------------------------|
| 138500117          | 138500071        | CAP,XSR,4UF,0201,0.55MM,KYOCERA |
| 138500116          | 138500071        | CAP,XSR,4UF,0201,0.55MM,TAIYO   |
| 138500515          | 138500071        | CAP,XSR,4UF,0201,0.55MM,SEMCO   |

| PART NUMBER | COMMENT                         |
|-------------|---------------------------------|
| 138500071   | 0201,XSR,4UF,0201,0.55MM,MURATA |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT             |
|--------------------|------------------|-----------------------|---------------------|
| 138500138          | 138500139        | ALL                   | 0201,3uF@1V,KYOCERA |
| 138500164          | 138500139        | ALL                   | 0201,3uF@1V,TAIYO   |
| 138500280          | 138500139        | ALL                   | 0201,3uF@1V,SAMSUNG |

| PART NUMBER | COMMENT     |
|-------------|-------------|
| 138500139   | 0201,3uF@1V |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                  |
|--------------------|------------------|-----------------------|--|
| 138500455          | 138500441        | ALL                   | CAP,XSR,4.9UF,20%,4V,3UF@1V,0201H.55,HZT |
| 138500443          | 138500441        | ALL                   | CAP,XSR,4.7UF,20%,4V,3UF@1V,0201H.55,HZT |
| 138500486          | 138500441        | ALL                   | CAP,XSR,4.4UF,20%,4V,3UF@1V,0201H.55     |

| PART NUMBER | COMMENT                                  |
|-------------|--|
| 138500441   | CAP,XSR,4.3UF,20%,4V,3UF@1V,0201H.55,HZT |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|-----------------------|---|
| 138500439          | 138500444        | ALL                   | CAP,XSR,4.3UF,20%,6.3V,1.48@3V,0201H.55 |
| 138500440          | 138500444        | ALL                   | CAP,XSR,2.5UF,20%,6.3V,1.48@3V,0201H.55 |

| PART NUMBER | COMMENT                                 |
|-------------|---|
| 138500444   | CAP,XSR,3.9UF,20%,6.3V,1.48@3V,0201H.55 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 138500284          | 138500136        | ALL                   | CAP,XSR,2.2UF,20%,10V,0.39MM,0201,KYO |

| PART NUMBER | COMMENT                               |
|-------------|---------------------------------------|
| 138500136   | CAP,XSR,2.2UF,20%,10V,MUR,H=0.39,0201 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS     | COMMENT                         |
|--------------------|------------------|---------------------------|---------------------------------|
| 138500049          | 138500450        | (C2170-C2173,C3590,C5392) | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |
| 13850831           | 138500450        | (C2170-C2173,C3590,C5392) | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |
| 138500516          | 138500450        | (C2170-C2173,C3590,C5392) | CAP,XSR,2.2UF,20%,6.3V,5,HZ0201 |

| PART NUMBER | COMMENT                         |
|-------------|---------------------------------|
| 138500450   | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                   |
|--------------------|------------------|-----------------------|---|
| 13850739           | 13850706         | ALL                   | CAP,CER,XSR,1UF,20%,10V,0201,SAMSUNG      |
| 13850945           | 13850706         | ALL                   | CAP,CER,XSR,1UF,20%,10V,0201,KYOCERA      |
| 138500517          | 138500014        | ALL                   | CAP,XSR,1UF,20%,16V,0201,H=0.39MM,KYOCERA |
| 138500085          | 138500014        | ALL                   | CAP,XSR,1UF,20%,16V,0201,H=0.39MM,MURATA  |

| PART NUMBER | COMMENT                  |
|-------------|--------------------------|
| 13850706    | CAP,XSR,1UF,20%,10V,0201 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                |
|--------------------|------------------|-----------------------|--|
| 13250639           | 132500088        | ALL                   | CAP,CER,XSR,0.47UF,20%,25V,0201,Murata |

| PART NUMBER | COMMENT                           |
|-------------|-----------------------------------|
| 132500088   | CAP,XSR,0.47UF,20%,25V,0201,Taiyo |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 131500329          | 131500025        | ALL                   | CAP,COG,1000PF,2%,25V,TAIYO,0201 |

| PART NUMBER | COMMENT                    |
|-------------|----------------------------|
| 131500025   | CAP,COG,1000PF,2%,25V,0201 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|-----------------------|---|
| 138500128          | 138500412        | ALL                   | CAP,CER,XSR,0.47UF,20%,6.3V,KYO,01005   |
| 138500519          | 138500412        |                       | CAP,XSR,0.47UF,20%,6.3V,0.09@3V,5,01005 |

| PART NUMBER | COMMENT                           |
|-------------|-----------------------------------|
| 138500412   | CAP,XSR,0.47UF,20%,6.3V,MUR,01005 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS     | COMMENT                   |
|--------------------|------------------|---------------------------|---------------------------|
| 132500380          | 132500014        |                           | 01005,0.22uF,6.3V,Taiyo   |
| 132500304          | 132500014        | (C2806-C2805,C2810,C2811) | 01005,0.22uF,6.3V,Kyocera |

| PART NUMBER | COMMENT            |
|-------------|--------------------|
| 132500014   | 01005,0.22uF, 6.3V |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|-----------------------|---|
| 132500199          | 132500200        | ALL                   | CAP,CER,XSR,0.1UF,20%,10V,01005,Murata  |
| 132500204          | 132500200        | ALL                   | CAP,CER,XSR,0.1UF,20%,10V,01005,Kyocera |

| PART NUMBER | COMMENT               |
|-------------|-----------------------|
| 132500200   | 01005,0.1uF,10V,Taiyo |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS     | COMMENT                          |
|--------------------|------------------|---------------------------|----------------------------------|
| 132500185          | 13250316         | (C2806-C2809,C5228-C5231) | CAP,CER,XSR,0.1UF,20%,6.3V,01005 |
| 132500350          | 13250316         |                           | CAP,CER,XSR,0.1UF,20%,6.3V,01005 |

| PART NUMBER | COMMENT           |
|-------------|-------------------|
| 13250316    | 01005,0.1uF, 6.3V |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 132500154          | 13250683         | ALL                   | CAP,CER,XSR,0.1UF,10%,6.3V,01005 |

| PART NUMBER | COMMENT                          |
|-------------|----------------------------------|
| 13250683    | CAP,CER,XSR,0.1UF,10%,6.3V,01005 |

| ALTERNATE PART NO. | PRIMARY PART NO. | COMMENT                           |
|--------------------|------------------|-----------------------------------|
| 132500381          | 132500377        | CAP,CER,XSR,8200PF,10%,6.3V,01005 |

| PART NUMBER | COMMENT                           |
|-------------|-----------------------------------|
| 132500377   | CAP,CER,XSR,8200PF,10%,6.3V,01005 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                              |
|--------------------|------------------|-----------------------|--------------------------------------|
| 132500308          | 13250420         | ALL                   | CAP,XSR,2200PF,10%,16V,01005,Kyocera |
| 132500264          | 13250420         |                       | CAP,CER,XSR,2200PF,10%,16V,01005     |

| PART NUMBER | COMMENT                            |
|-------------|------------------------------------|
| 13250420    | CAP,XSR,2200PF,10%,16V,01005,Taiyo |

MLCCs

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 138500453          | 138500296        | ALL                   | CAP,XSR,22UF,20%,16V,KYO,H=0.8MM,0704 |

Primary: Murata  
Kyocera

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                    |
|--------------------|------------------|-----------------------|----------------------------|
| 138500484          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,T,0402 |
| 138500314          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,M,0402 |
| 138500315          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,M,0402 |

Primary: Murata  
Taiyo  
Kyocera  
Samsung

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS                                     | COMMENT                     |
|--------------------|------------------|---|-----------------------------|
| 138500048          | 138500003        | (C4090-C4092,C4390,C6272,C6591,C7097,C7511,S,C9302-C9305) | 0402,15uF,6.3V, Kyocera     |
| 138500406          | 138500003        |   | 0402,13uF,6.3V, Murata Gen2 |
| 138500388          | 138500003        |   | 0402,9uF,6.3V, Samco Gen2   |

Primary: Murata  
Kyocera  
Gen2: Murata  
Gen2: Samsung


| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                    |
|--------------------|------------------|-----------------------|----------------------------|
| 138500148          | 138500149        | ALL                   | 0402-3T,10.5uF@1V, Kyocera |
| 138500150          | 138500149        | ALL                   | 0402-3T,10.5uF@1V, SEMCO   |
| 138500151          | 138500149        |                       | 0402-3T,10.5uF@1V, TY      |

Primary: Murata  
Kyocera  
Samsung  
Taiyo

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 138500405          | 138500406        | ALL                   | CAP,XSR,13UF,20%,6.3V,4.9UF@3V,K,0402 |
| 138500388          | 138500406        | ALL                   | CAP,XSR,9UF,20%,6.3V,4.9@3V,SAM,0402  |

Primary: Murata  
Kyocera  
Samsung

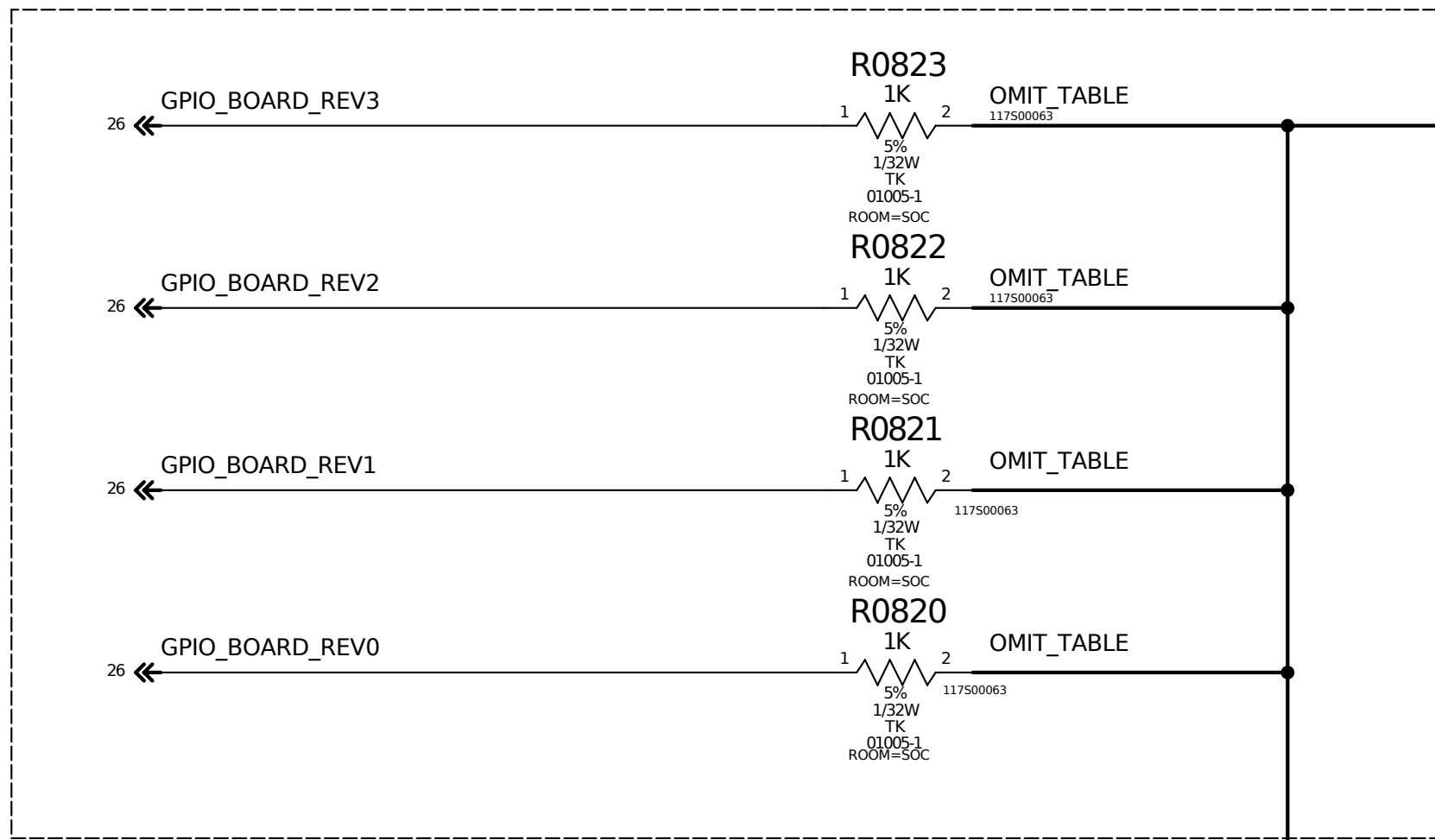
| PART NUMBER | COMMENT                               |
|-------------|---------------------------------------|
| 138500313   | CAP,CER,XSR,16UF,20%,4V,0402          |
| 138500406   | CAP,XSR,13UF,20%,6.3V,4.9UF@3V,M,0402 |
| 138500149   | 0402-3T,10.5uF@1V                     |
| 138500003   | 0402,15uF,6.3V                        |
| 138500296   | CAP,CER,XSR,22UF,20%,16V,0402,H=0.8MM |

| PAGE TITLE  |                |      |
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| SYSTEM: BOM Tables (1/2) (2)  |                |      |
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| 8   | 7                | 6                                       | 5  | 4                                      | 3   | 2              | 1    |
| Additional Capacitor Alternates   |                  |   |  |  |   |                |      |
| 0.1uF, 0201   |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 132500229   | 132500010        | ALL                                     | CAP,CER,X5R,0.1UF,10%,35V,0201                 | 132500010                              | CAP,CER,X5R,0.1UF,10%,35V,0201            |                |      |
| 33nF, 0402  |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 132500319   | 132500314        | ALL                                     | CAP,CER,33NF,10%,50V,X7R,H=0.55,M,0402         | 132500314                              | CAP,CER,33NF,10%,50V,X7R,H=0.55,M,0402    |                |      |
| Level Shifter Alternates  |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 311500231   | 311500232        | ALL                                     | IC,74AVC2T45,XCVR,2 BIT,2 SPLY,X2SON8          | 311500232                              | IC,74AVC2T45,XCVR,2 BIT,2 SPLY,X2SON8     |                |      |
| 311500230   | 311500212        | ALL                                     | IC,74AVC1T45,XCVR,1 BIT,2 SPLY,X2SON6          | 311500212                              | IC,74AVC1T45,XCVR,1 BIT,2 SPLY,X2SON6     |                |      |
| 311500261   | 311500233        | ALL                                     | IC,LSF0101,XCVR,2 BIT,2 SPLY,X2SON6            | 311500233                              | IC,LSF0101,XCVR,2 BIT,2 SPLY,X2SON6       |                |      |
| 311500348   | 311500235        | ALL                                     | IC,SGM4542V,XCVR,2 BIT,2 SPLY,BIDI,DFN8        | 311500235                              | IC,NVT0202,XCVR,2 BIT,2 SPLY,BIDI,DFN8    |                |      |
| ZRX Cap ALTs  |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 138500187   | 138500240        | ALL                                     | CAP,X5R,4.7UF,20%,25V,0402                     | 138500240                              | CAP,X5R,4.7UF,20%,25V,0402                |                |      |
| 138500185   | 138500246        | ALL                                     | CAP,X5R,2.2UF,20%,25V,0402                     | 138500246                              | CAP,X5R,2.2UF,20%,25V,0402                |                |      |
| Power Inductor Alternates   |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 152501513   | 152500897        | ALL                                     | IND,CPLD,0.1UH,20%,5.5A,20MQ,2016              | 152500897                              | Taiyo,IND                                 |                |      |
| 152501771   | 152500818        | ALL                                     | Taiyo,IND,MLD,0.22UH,20%,5.3A,40MQ,H=0.65,1608 | 152500818                              | Cyntec,IND                                |                |      |
| 152501563   | 152500985        | ALL                                     | Taiyo,IND,MLD,0.47UH,4.0A,45MQ,2012            | 152500985                              | Cyntec,IND                                |                |      |
| 152501770   | 152500982        | ALL                                     | Taiyo,IND,MLD,0.47UH,20%,2.9A,70MQ,H=0.65,1608 | 152500982                              | Cyntec,IND                                |                |      |
| 152500825   | 152500823        | ALL                                     | Taiyo,IND,MLD,1UH,20%,3A,60MQ,H=0.65,2016      | 152500823                              | Cyntec,IND                                |                |      |
| 152500994   | 152500987        | ALL                                     | Taiyo,IND,MLD,1.0UH,1.5A,67MQ,H=0.65,2012      | 152500987                              | Cyntec,IND                                |                |      |
| 152500869   | 152500871        | ALL                                     | CYNTEC,IND,MLD,0.47UH,5.6A,30MQ,H=0.8,2016     |  |   |                |      |
| 152501578   | 152501255        | ALL                                     | TAIYO,IND,PWR,0.47UH,3.8A,39MQ,H=0.65,2016     |  |   |                |      |
| Misc. Alternates  |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | REFERENCE DESIGNATORS                   | COMMENT  | PART NUMBER                            | COMMENT                                   |                |      |
| 155500194   | 155500400        | ALL                                     | FERR BD,150OHM,25%,200MA,0.7OHM DCR,01005      | 155500400                              | FERR BD,150OHM,25%,200MA,0.7OHM DCR,01005 |                |      |
| 155500414   | 15550876         | ALL                                     | FERR BD,100OHM,50%,1.1A,0.05OHM DCR,01005      | 15550876                               | FERR BD,100OHM,50%,1.1A,0.05OHM DCR,01005 |                |      |
| 155500131   | 15550755         | ALL                                     | FERR BD,240OHM,25%,200MA,1.0OHM DCR,01005      | 15550755                               | FERR BD,240 OHM,25%,200MA,1.0 DCR,01005   |                |      |
| 155500583   | 155500140        | ALL                                     | FERR BD,330OHM,25%,400MA,0.20DCR,01005         | 155500140                              | FERR BD,33OHM,25%,400MA,0.20DCR,01005     |                |      |
| 377500070   | 377500001        | ALL                                     | TVS,BIDIR,5.8V,6PF,01005                       | 377500001                              | TVS,BIDIR,5.8V,6PF,01005                  |                |      |
| 377500140   | 377500001        | ALL                                     | TVS,BIDIR,5V,6PF,01005                         |  |   |                |      |
| 107500469   | 107500349        | ALL                                     | THERMISTOR,NTC,10K OHM,1%,B=3380K,01005        | 107500349                              | THERMISTOR,NTC,10K OHM,1%,B=3435,01005    |                |      |
| Display Choke Alternates  |                  |   |  |  |   |                |      |
| ALTERNATE PART NO.  | PRIMARY PART NO. | COMMENT                                 | PART NUMBER                                    | COMMENT                                |   |                |      |
| 15550577  | 15550960         | FERR BD,70 OHM,25%,300MA,0.45 DCR,01005 | 15550960                                       | FERR BD,70 OHM,25%,300MA,0.4 DCR,01005 |   |                |      |
| SYSTEM: BOM Tables (2/2) (3)  |                  |   |  |  |   |                |      |
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# BOOTSTRAPPING

## BOARD REV + BOARD ID + BOOT CONFIG



### Board Rev [3:0]

\* Float = 0 | PU = 1

Note: Boot uses the inverse of BOARD\_REV[3:0], so that it counts up (Proto0 = 0x0, PVT = 0xF)

|         |                | R0823 | R0822 | R0821 | R0820 |
|---------|----------------|-------|-------|-------|-------|
| ?       | BOARD_REV[3:0] | [3]   | [2]   | [1]   | [0]   |
| P0      | 4b1111         | 1     | 1     | 1     | 1     |
| P1      | 4b1110         | 1     | 1     | 1     | 0     |
| (Spare) | 4b1101         | 1     | 1     | 0     | 1     |
| P2      | 4b1011         | 1     | 0     | 1     | 1     |
| (Spare) | 4b1010         | 1     | 0     | 1     | 0     |
| EVT     | 4b0111         | 0     | 1     | 1     | 1     |
| (Spare) | 4b0110         | 0     | 1     | 1     | 0     |
| CRB     | 4b0100         | 0     | 1     | 0     | 0     |
| (Spare) | 4b0011         | 0     | 0     | 1     | 1     |
| DVT     | 4b0010         | 0     | 0     | 1     | 0     |
| (Spare) | 4b0001         | 0     | 0     | 0     | 1     |
| PVT     | 4b0000         | 0     | 0     | 0     | 0     |

### Board ID [4:0]

\* Float = 0 | PU = 1

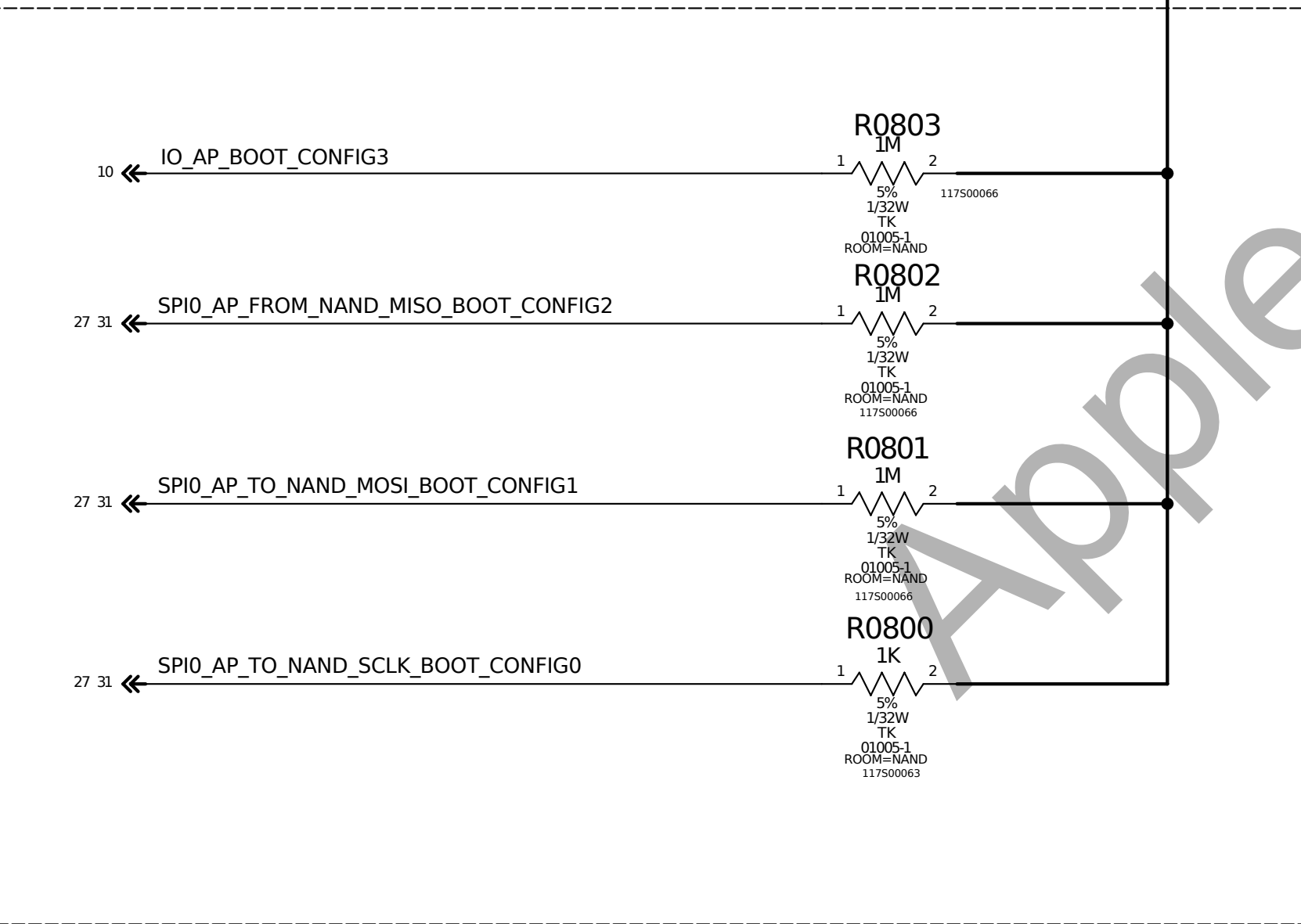
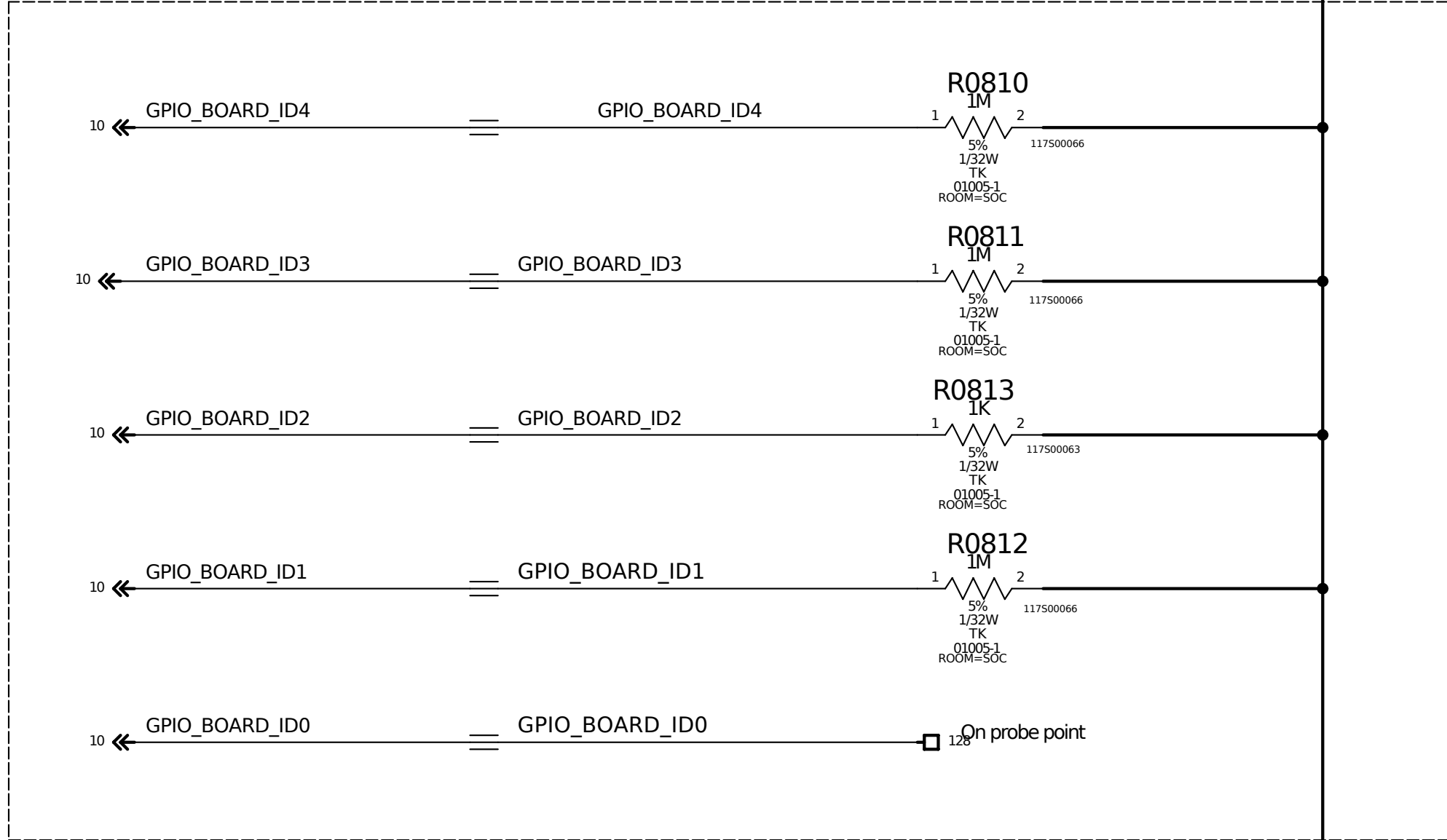
|         |          | R0810 | R0811 | R0813 | R0812 | [0] 0=MLB, 1=DEV |
|---------|----------|-------|-------|-------|-------|------------------|
| MLB V59 | 5'b00100 | 0     | 0     | 1     | 0     | 0                |
| DEV V59 | 5'b00101 | 0     | 0     | 1     | 0     | 1                |

### Boot Config [2:0]

\* Float = 0 | PU = 1

|                   |       |        |      | R0803 | R0802 | R0801 | R0800 |
|-------------------|-------|--------|------|-------|-------|-------|-------|
|                   | USAGE | SPEED  | TEST | [3]   | [2]   | [1]   | [0]   |
| SPI0 NAND         | --    | 12MHz  | --   | 0     | 0     | 0     | 0     |
| SPI0 NAND         | POR   | 40MHz  | --   | 0     | 0     | 0     | 1     |
| SPI1 QUAD-SPI NOR | --    | 24MHz  | --   | 0     | 0     | 1     | 0     |
| SPI0 UNUSED       | --    | UNUSED | --   | 0     | 0     | 1     | 1     |
| SPI1 NOR          | --    | 6MHz   | --   | 0     | 1     | 0     | 0     |
| SPI1 NOR          | --    | 12MHz  | --   | 0     | 1     | 0     | 1     |
| SPI1 QUAD-SPI NOR | --    | 40MHz  | --   | 0     | 1     | 1     | 0     |
| SPI1 NOR          | --    | 40MHz  | --   | 0     | 1     | 1     | 1     |
| SPI0 NAND         | --    | 12MHz  | Test | 1     | 0     | 0     | 0     |
| SPI0 NAND         | --    | 40MHz  | Test | 1     | 0     | 0     | 1     |
| SPI1 QUAD-SPI NOR | --    | 24MHz  | Test | 1     | 0     | 1     | 0     |
| SPI0 UNUSED       | --    | UNUSED | Test | 1     | 0     | 1     | 1     |
| SPI1 NOR          | --    | 6MHz   | Test | 1     | 1     | 0     | 0     |
| SPI1 NOR          | --    | 12MHz  | Test | 1     | 1     | 0     | 1     |
| SPI1 QUAD-SPI NOR | --    | 40MHz  | Test | 1     | 1     | 1     | 0     |
| SPI1 NOR          | --    | 40MHz  | Test | 1     | 1     | 1     | 1     |

<-- POR



| PART NUMBER | BOMOPTION        | REFERENCE DESIGNATORS | QTY | DESCRIPTION                  |
|-------------|------------------|-----------------------|-----|------------------------------|
| 117500063   | BOARD_REV:PROTO0 | R0820-R0823           | 4   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500063   | BOARD_REV:PROTO1 | R0821-R0823           | 3   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:PROTO1 | R0820                 | 1   | RES,TK,1M OHM,5%,1/32W,01005 |
| 117500063   | BOARD_REV:PROTO2 | R0820,R0821,R0823     | 3   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:PROTO2 | R0822                 | 1   | RES,TK,1M OHM,5%,1/32W,01005 |
| 117500063   | BOARD_REV:EVT    | R0820-R0822           | 3   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:EVT    | R0823                 | 1   | RES,TK,1M OHM,5%,1/32W,01005 |
| 117500063   | BOARD_REV:CRB    | R0822                 | 1   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:CRB    | R0820,R0821,R0823     | 3   | RES,TK,1M OHM,5%,1/32W,01005 |
| 117500063   | BOARD_REV:DVT    | R0821                 | 1   | RES,TK,1K OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:DVT    | R0820,R0822,R0823     | 3   | RES,TK,1M OHM,5%,1/32W,01005 |
| 117500066   | BOARD_REV:PVT    | R0820-R0823           | 4   | RES,TK,1M OHM,5%,1/32W,01005 |

| PAGE TITLE  |                |      |
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D

C

B

A

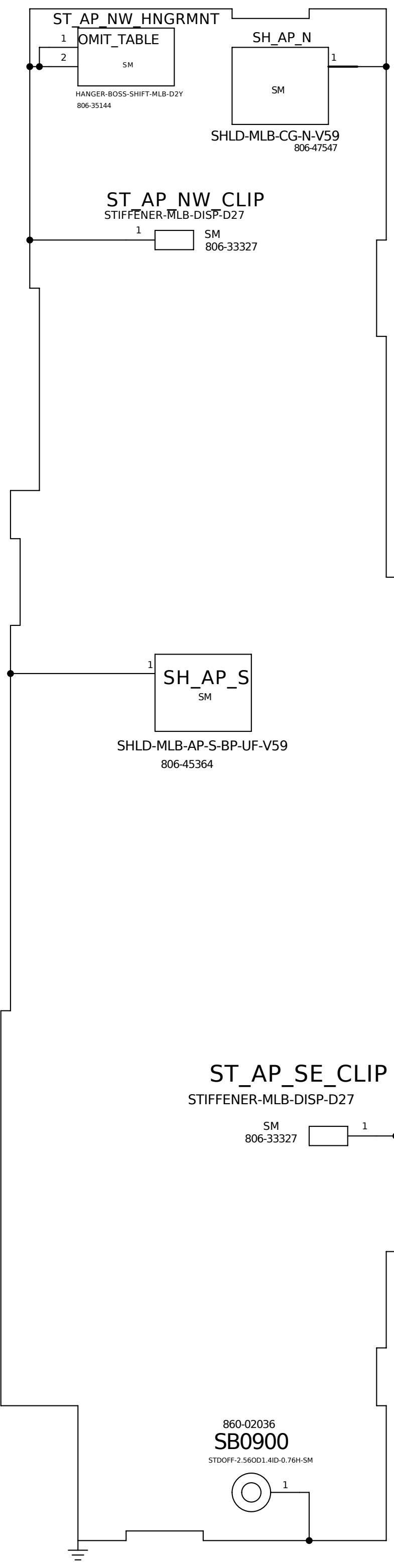
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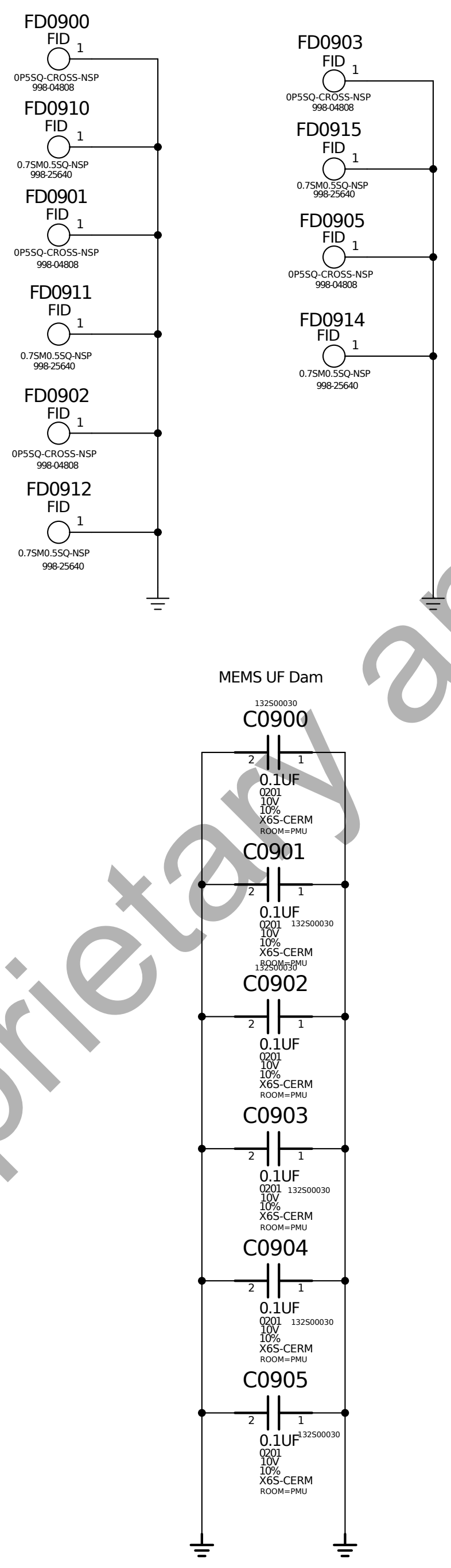
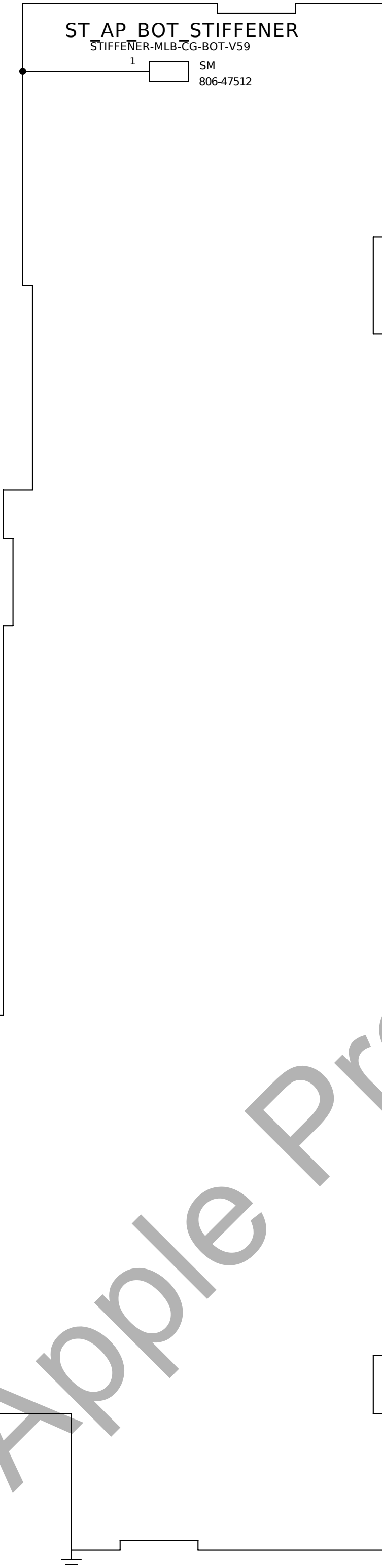
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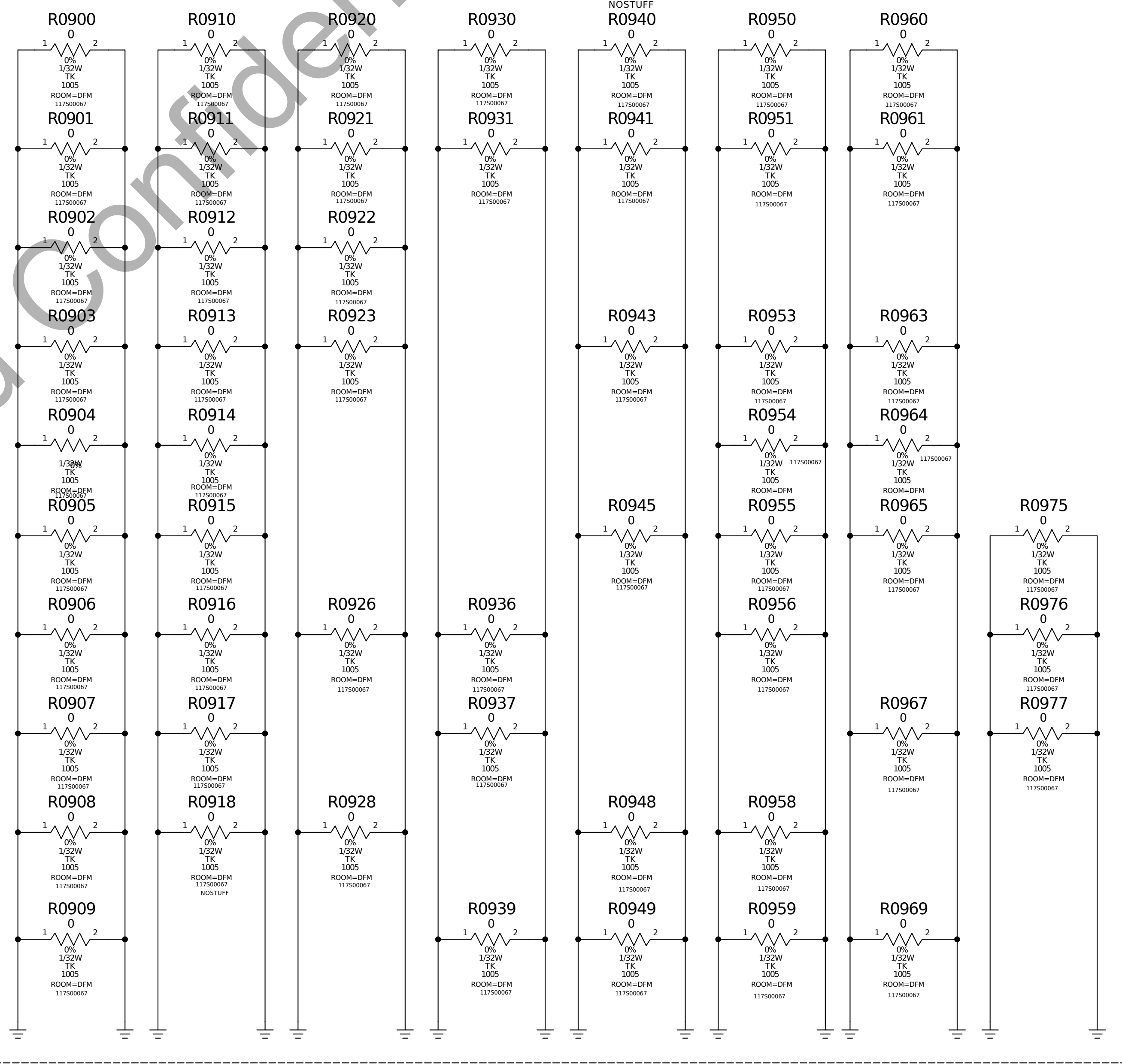
TOP SIDE



BOTTOM SIDE

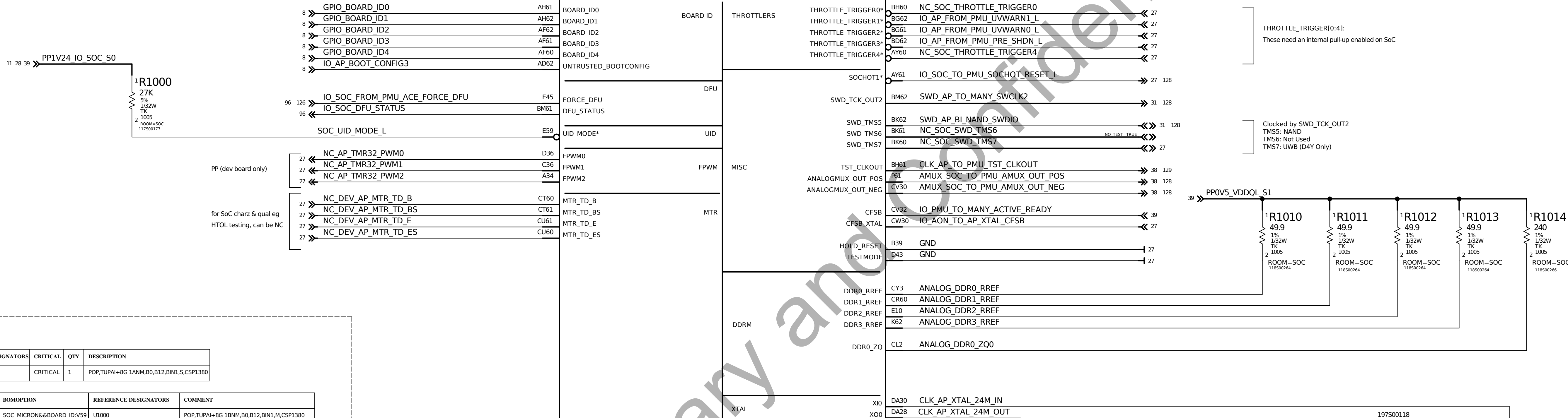


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SOC: Misc

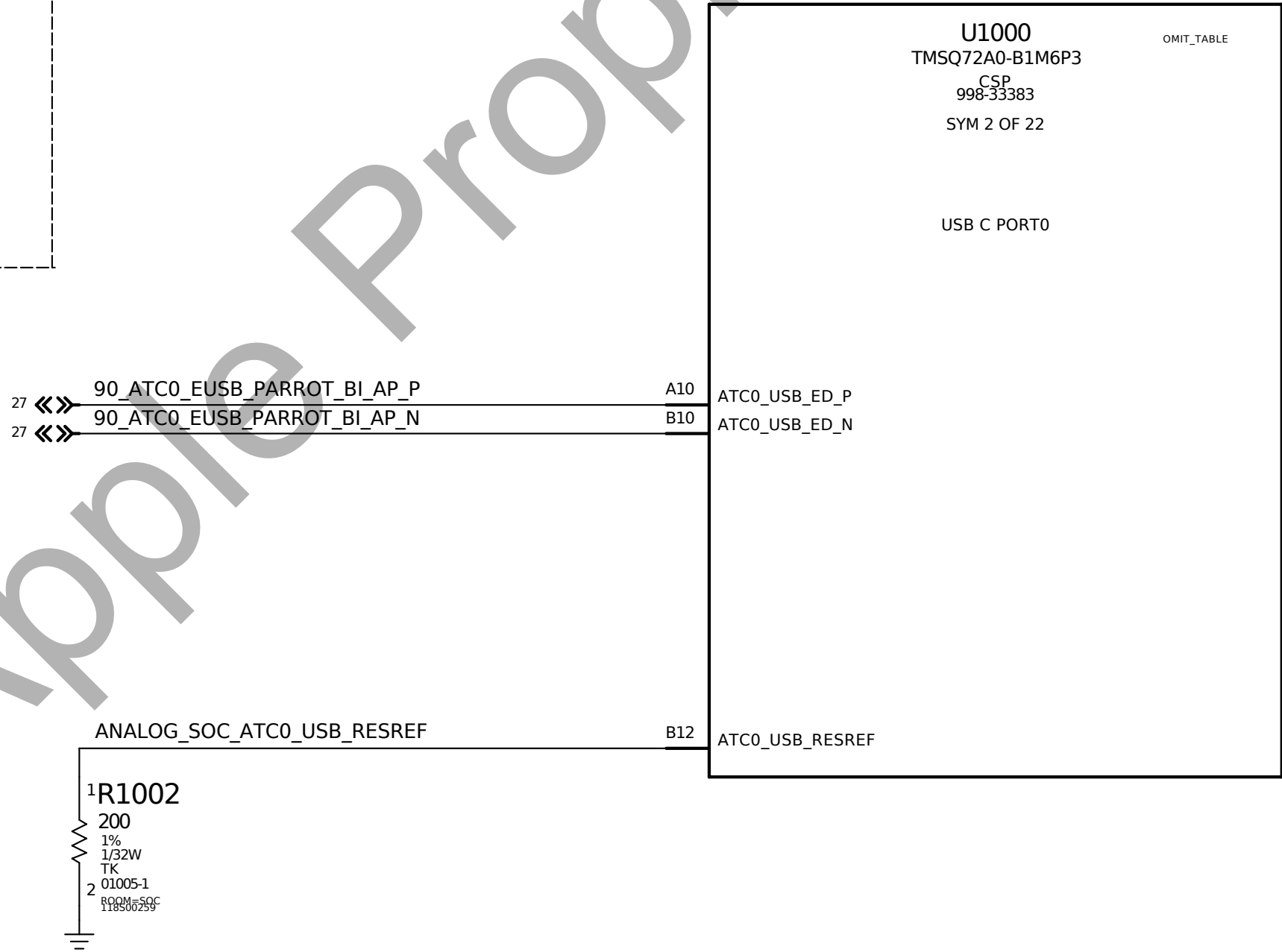


SOC APNs

| PART NUMBER | BOMOPTION    | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                             |
|-------------|--------------|-----------------------|----------|-----|---|
| 339501609   | BOARD_ID-V59 | U1000                 | CRITICAL | 1   | POP,TUPAI+8G 1ANM,B0,B12,BIN1,S,CSPI380 |

| ALTERNATE PART NO. | PRIMARY PART NO. | BOMOPTION                | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|--------------------------|-----------------------|---|
| 339501602          | 339501609        | SOC_MICRON6&BOARD_ID-V59 | U1000                 | POP,TUPAI+8G 1BNM,B0,B12,BIN1,M,CSPI380 |
| 339501603          | 339501609        | BOARD_ID-V59             | U1000                 | POP,TUPAI+8G 1ANM,B0,B12,BIN1,H,CSPI380 |
| 339501604          | 339501609        | BOARD_ID-V59             | U1000                 | POP,TUPAI+8G 1ANM,B0,B12,BIN1,H,CSPI380 |
| 339501605          | 339501609        | BOARD_ID-V59             | U1000                 | POP,TUPAI+8G 1ANM,B0,B12,BIN5,S,CSPI380 |
| 339501606          | 339501609        | SOC_MICRON6&BOARD_ID-V59 | U1000                 | POP,TUPAI+8G 1BNM,B0,B12,BIN5,M,CSPI380 |
| 339501607          | 339501609        | BOARD_ID-V59             | U1000                 | POP,TUPAI+8G 1ANM,B0,B12,BIN5,H,CSPI380 |
| 339501608          | 339501609        | BOARD_ID-V59             | U1000                 | POP,TUPAI+8G 1ANM,B0,B12,BIN5,H,CSPI380 |

SOC: ATC USB



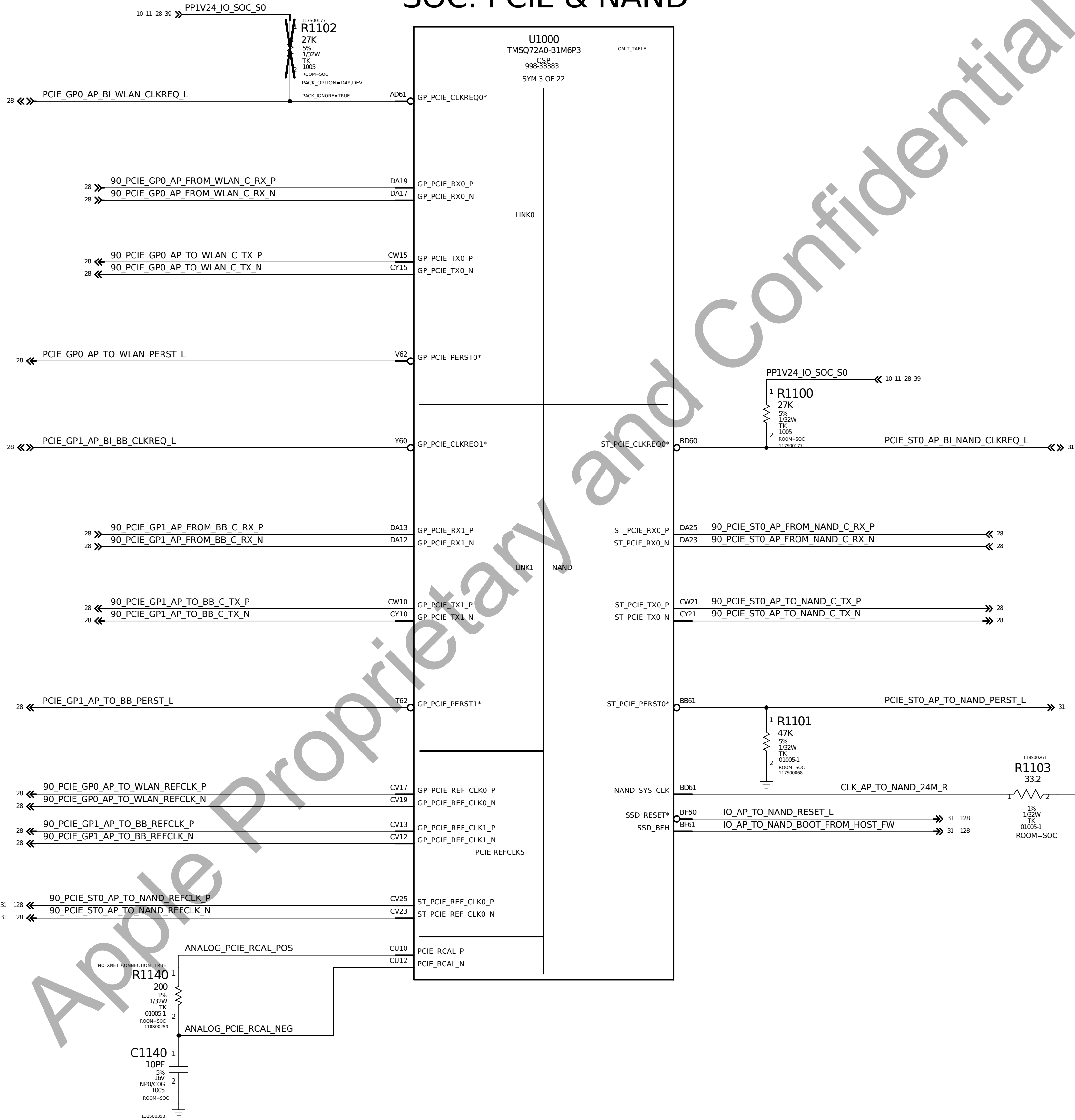
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V59 WiFi PCIE is GEN2

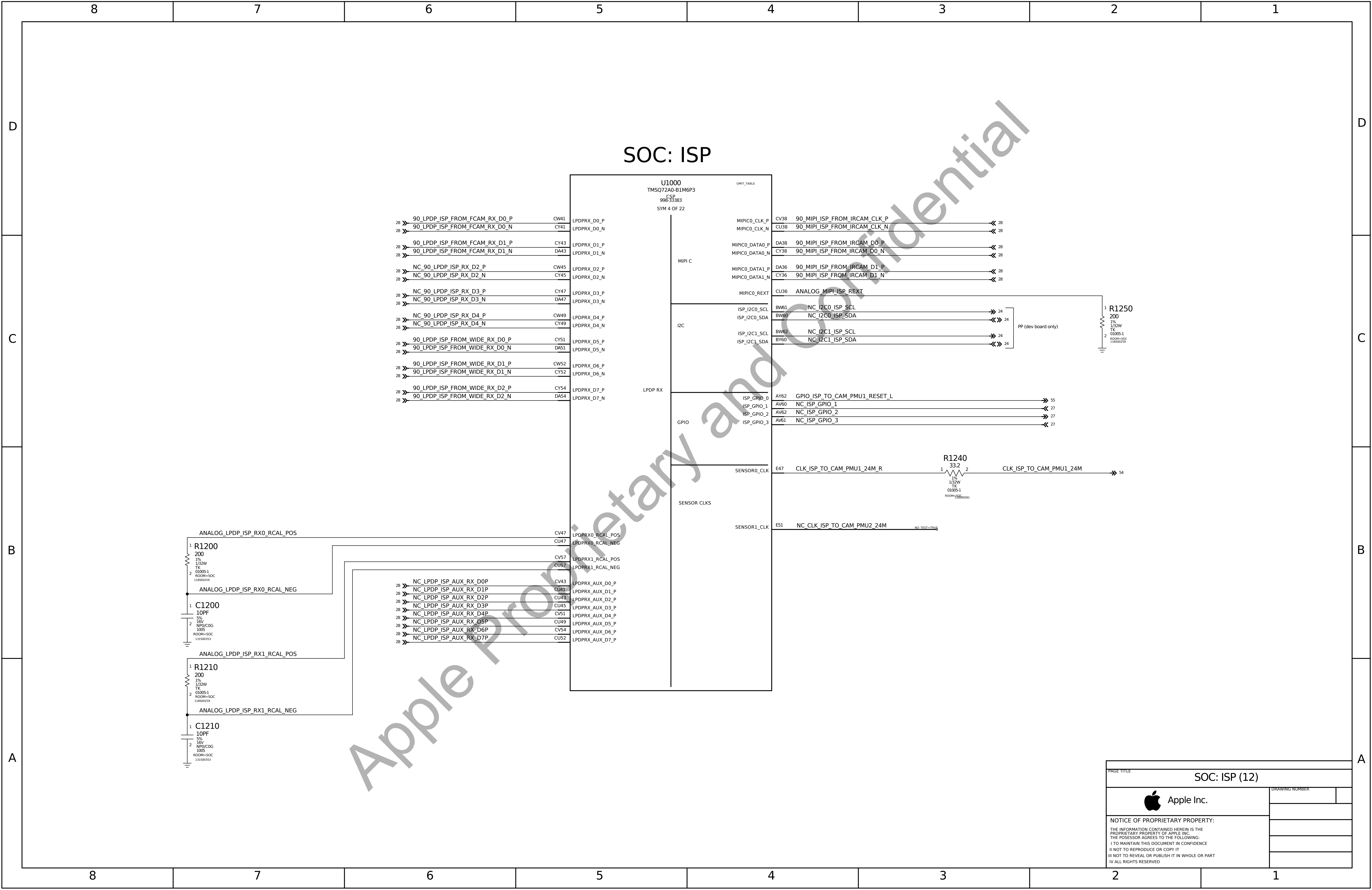
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PCIE GEN4 - ST LINK 0

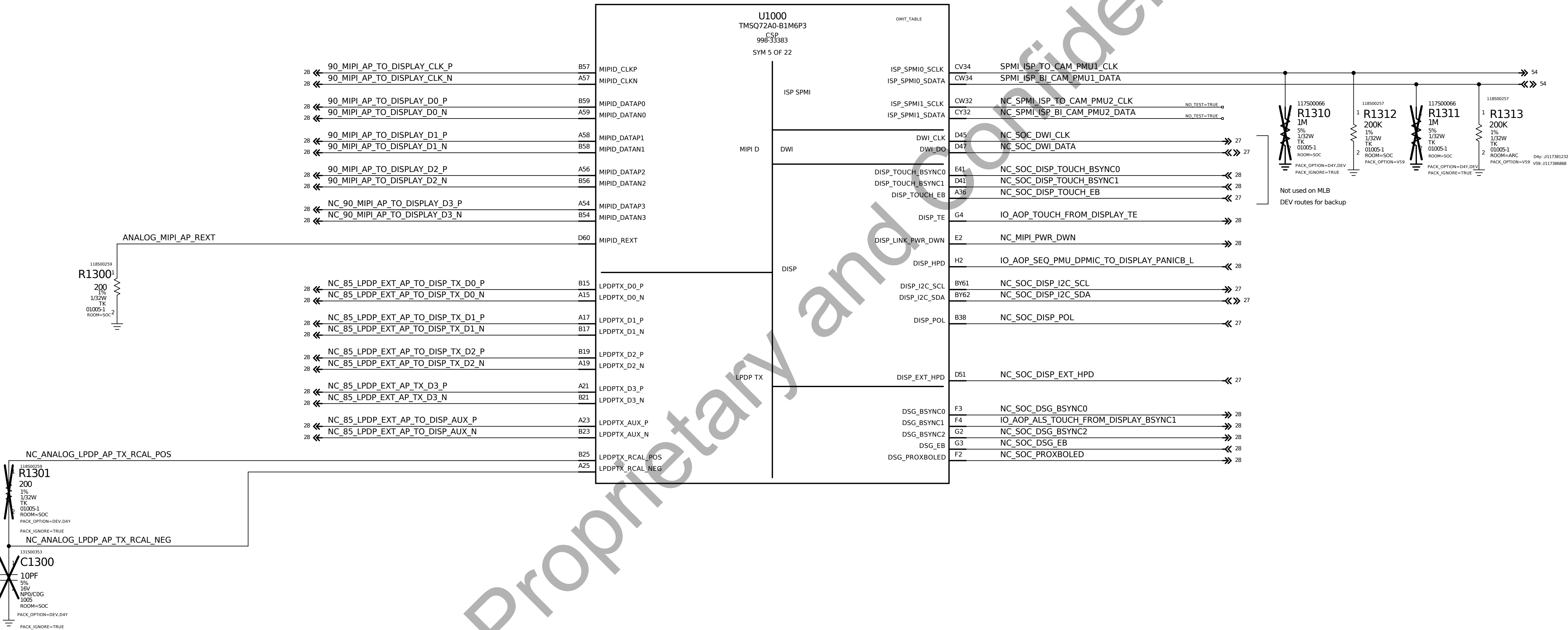




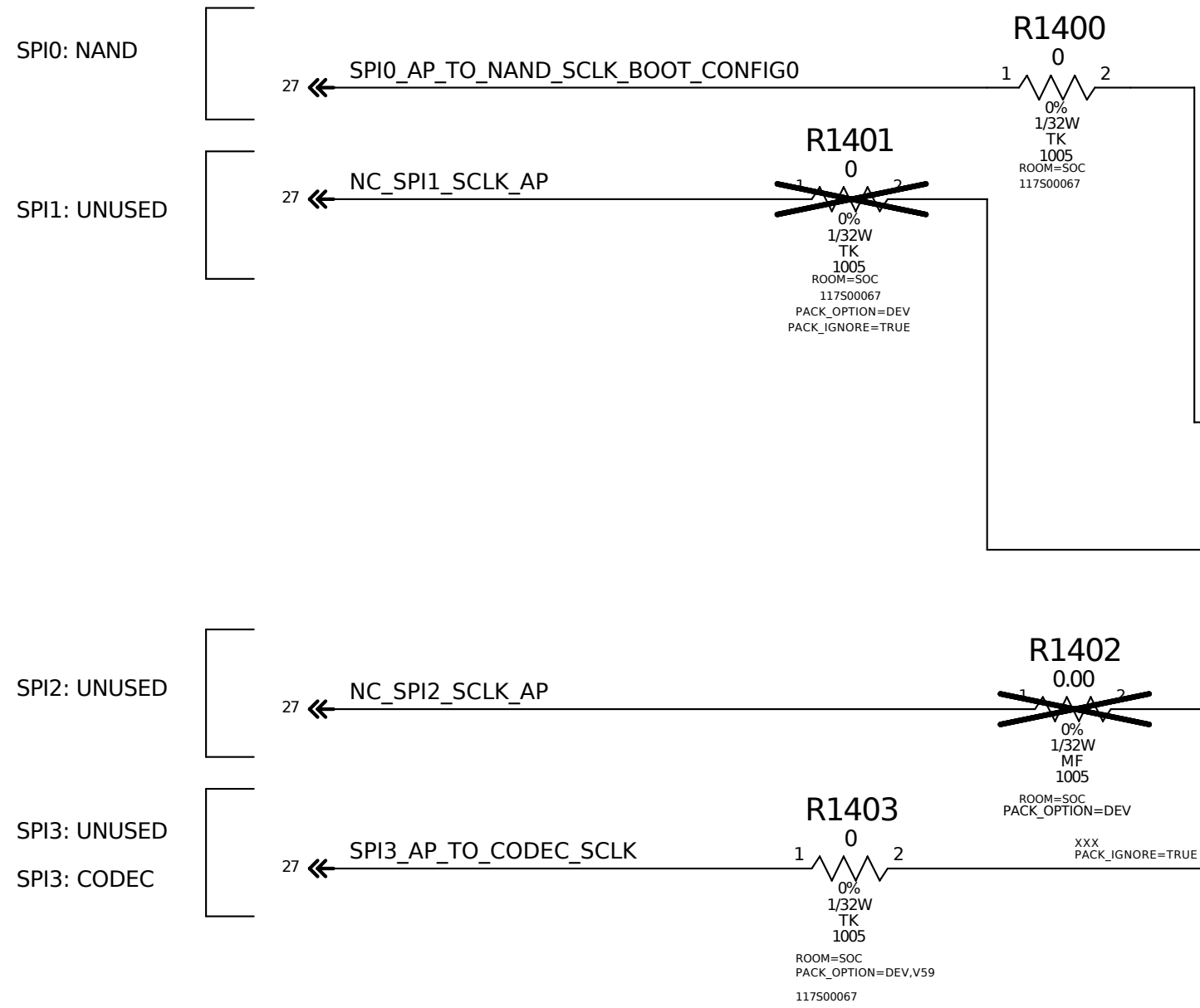
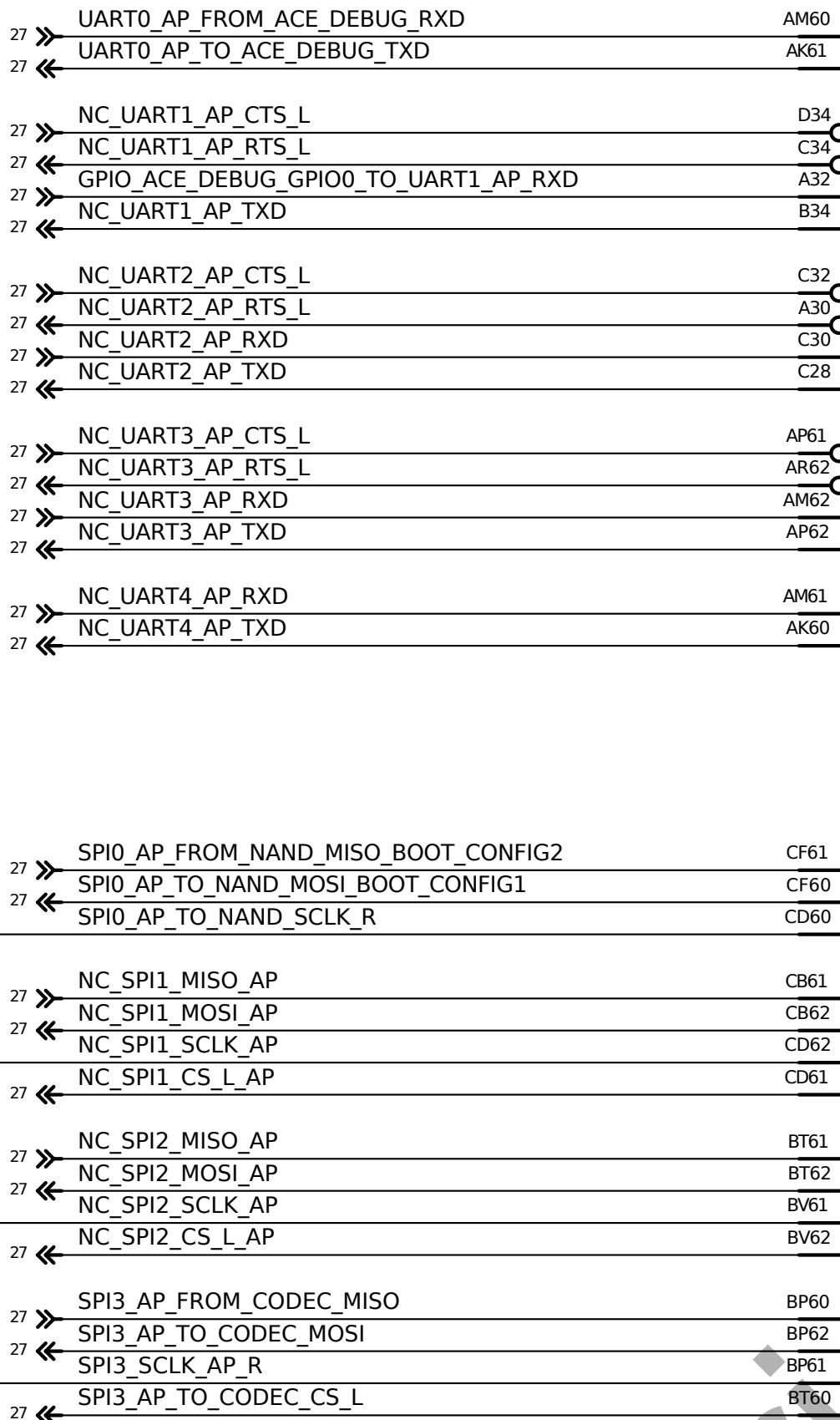
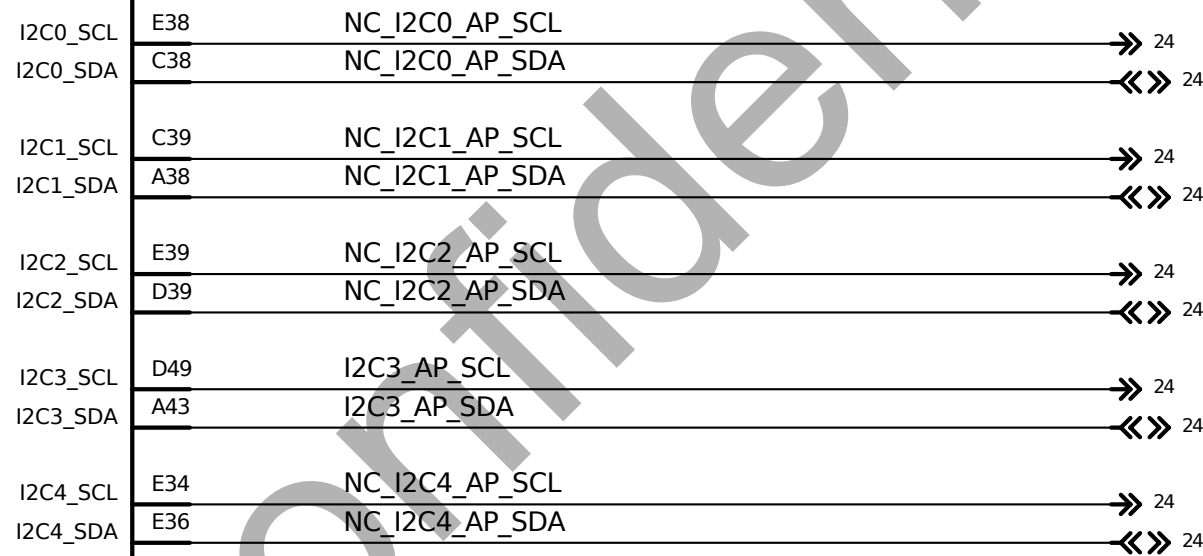
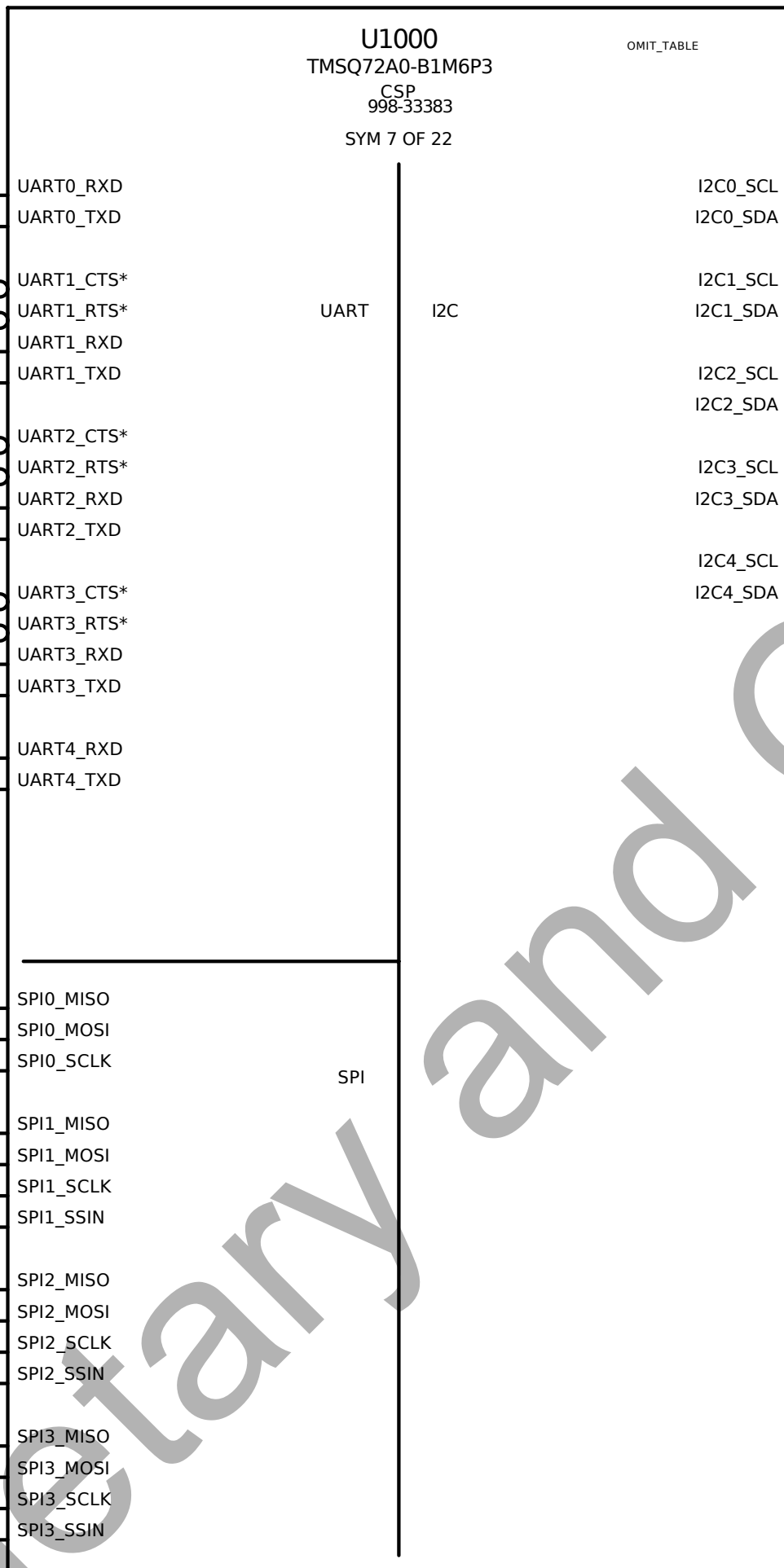




SOC: DISPLAY/ISP



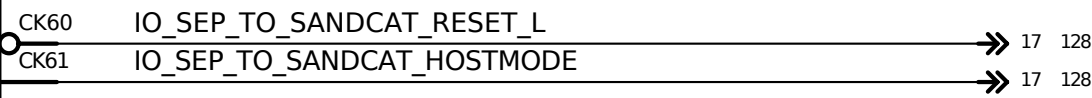
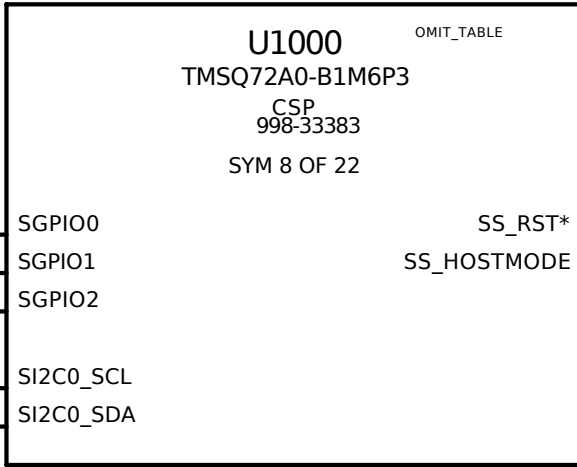
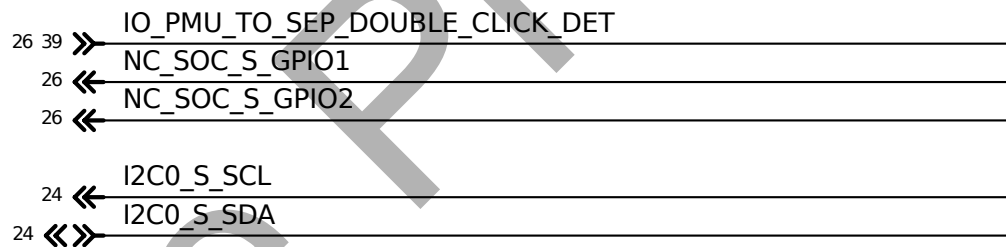
SOC: AP Serial



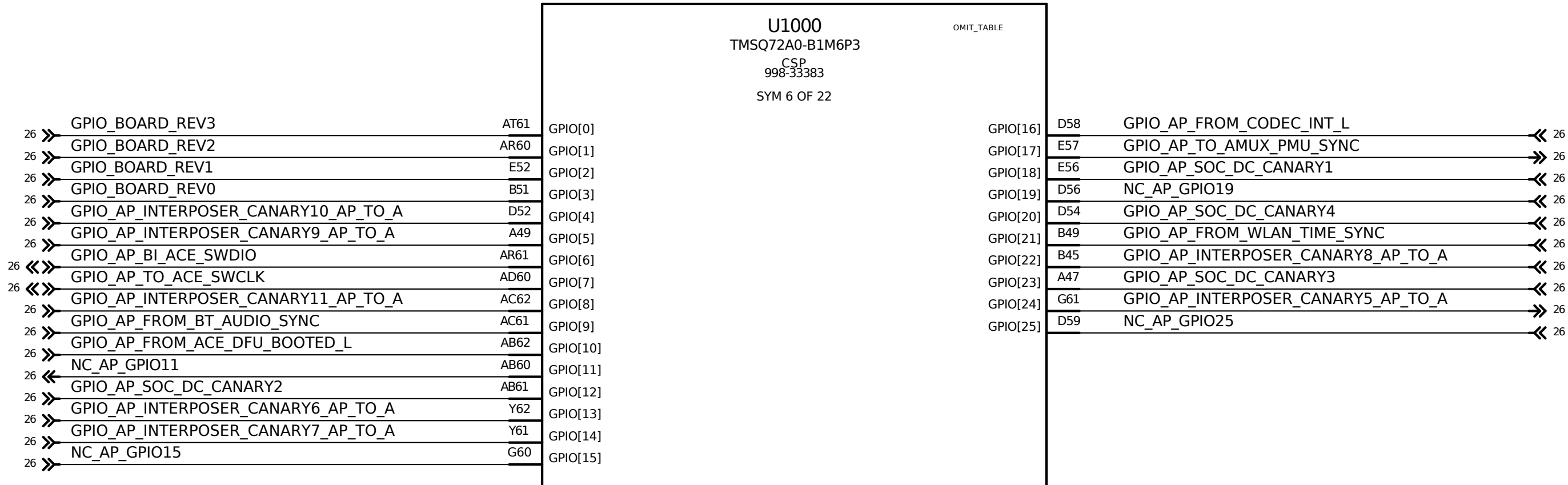
AP SPI Map

| BUS     | DEVICE | MAX SPEED | LOCATION |
|---------|--------|-----------|----------|
| SPI0 AP | S5E    | 40MHz     | MLB      |
| SPI1 AP | BONGO  | 24MHz     | MLB      |
| SPI2 AP | UNUSED | N/A       | N/A      |
| SPI3 AP | CODEC  | 24MHz     | MLB      |

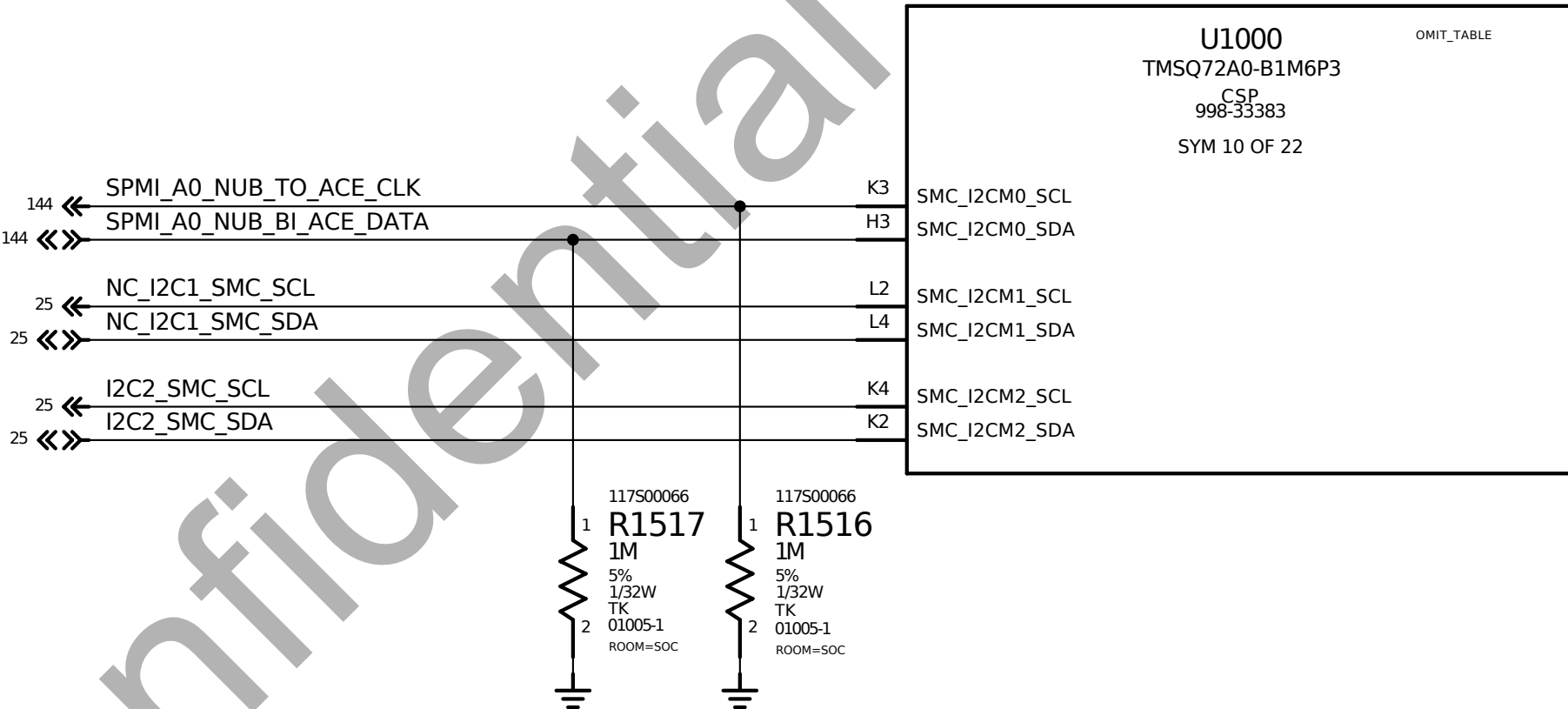
V59 Only



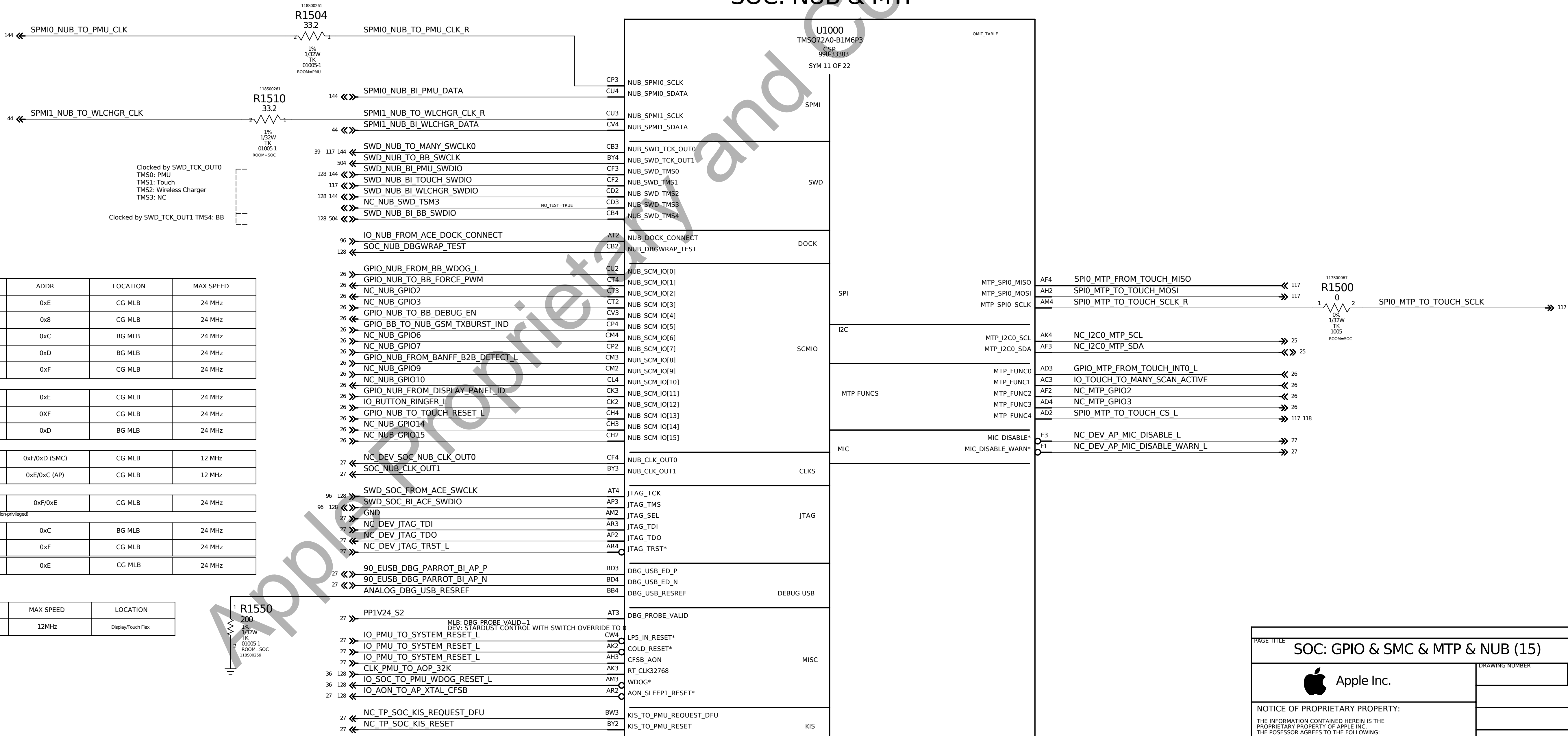
# SOC: AP GPIO



# SOC: SMC



# SOC: NUB & MTP



PAGE TITLE SOC: GPIO & SMC & MTP & NUB (15)



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SOC: AOP

U1000  
TMSQ72A0-B1M6P3  
CSP  
998-33383  
SYM 9 OF 22

AOP\_SCM\_IO[0]  
AOP\_SCM\_IO[1]  
AOP\_SCM\_IO[2]  
AOP\_SCM\_IO[3]  
AOP\_SCM\_IO[4]  
AOP\_SCM\_IO[5]  
AOP\_SCM\_IO[6]  
AOP\_SCM\_IO[7]  
AOP\_SCM\_IO[8]  
AOP\_SCM\_IO[9]  
AOP\_SCM\_IO[10]  
AOP\_SCM\_IO[11]  
AOP\_SCM\_IO[12]  
AOP\_SCM\_IO[13]  
AOP\_SCM\_IO[14]  
AOP\_SCM\_IO[15]

AOP\_I2CM0\_SCL  
AOP\_I2CM0\_SDA

AOP\_I2CM1\_SCL  
AOP\_I2CM1\_SDA

AOP\_I2CM2\_SCL  
AOP\_I2CM2\_SDA

AOP\_I2CM3\_SCL  
AOP\_I2CM3\_SDA

AOP\_SPI0\_SCLK  
AOP\_SPI0\_MISO  
AOP\_SPI0\_MOSI

AOP\_SPI1\_SCLK  
AOP\_SPI1\_MISO  
AOP\_SPI1\_MOSI

AOP\_SPMIO\_SCLK  
AOP\_SPMIO\_SDATA

AOP\_SPMI1\_SCLK  
AOP\_SPMI1\_SDATA

AOP\_UART2\_TXD  
AOP\_UART2\_RXD

C7 GPIO\_SCM\_AOP\_FROM\_IMU\_DATARDY  
A6 GPIO\_SCM\_AOP\_TO\_IMU\_SPI\_CS\_L  
B6 GPIO\_SCM\_AOP\_FROM\_COMPASS\_INT  
E6 GPIO\_SCM\_AOP\_BI\_PROX\_INT\_L  
C6 GPIO\_SCM\_AOP\_FROM\_ALS\_INT\_L  
A5 GPIO\_AOP\_TO\_CODEC\_RESET\_L  
D6 NC\_AOP\_FUNC6  
B5 NC\_AOP\_FUNC7  
C5 NC\_AOP\_FUNC8  
D5 GPIO\_SCM\_AOP\_TO\_GNSS\_SPI\_CS\_L  
E5 NC\_AOP\_FUNC10  
A4 NC\_AOP\_FUNC11  
B3 GPIO\_AOP\_FROM\_GNSS\_HOST\_REQ  
C4 NC\_AOP\_FUNC13  
C3 GPIO\_AOP\_TO\_BBMUX\_SEL  
D4 GPIO\_AOP\_FROM\_BARO\_INT\_L

M3 I2C0\_AOP\_SCL  
L3 I2C0\_AOP\_SDA

M2 I2C1\_AOP\_SCL  
P2 I2C1\_AOP\_SDA

P3 I2C2\_AOP\_SCL  
P4 I2C2\_AOP\_SDA


T3 I2C3\_AOP\_SCL  
T2 I2C3\_AOP\_SDA

T4 SPI0\_AOP\_TO\_IMU\_SCLK\_R  
V3 SPI0\_AOP\_FROM\_IMU\_MISO  
V2 SPI0\_AOP\_TO\_IMU\_MOSI

Y4 SPI1\_AOP\_TO\_GNSS\_SCLK\_R  
AB2 SPI1\_AOP\_FROM\_GNSS\_MISO  
Y3 SPI1\_AOP\_TO\_GNSS\_MOSI

AB4 SPMIO\_HEB\_AOP\_TO\_BB\_WLAN\_NFC\_CLK\_R  
Y2 SPMIO\_HEB\_AOP\_BI\_BB\_WLAN\_NFC\_DATA

AB3 SPMI1\_COEX\_AOP\_TO\_BB\_WLAN\_CLK\_R  
AC2 SPMI1\_COEX\_AOP\_BI\_BB\_WLAN\_DATA

|   |  |                |      |
|---|--|----------------|------|
| PAGE TITLE  |  | SOC: AOP (16)  |      |
|    |  | DRAWING NUMBER | SIZE |
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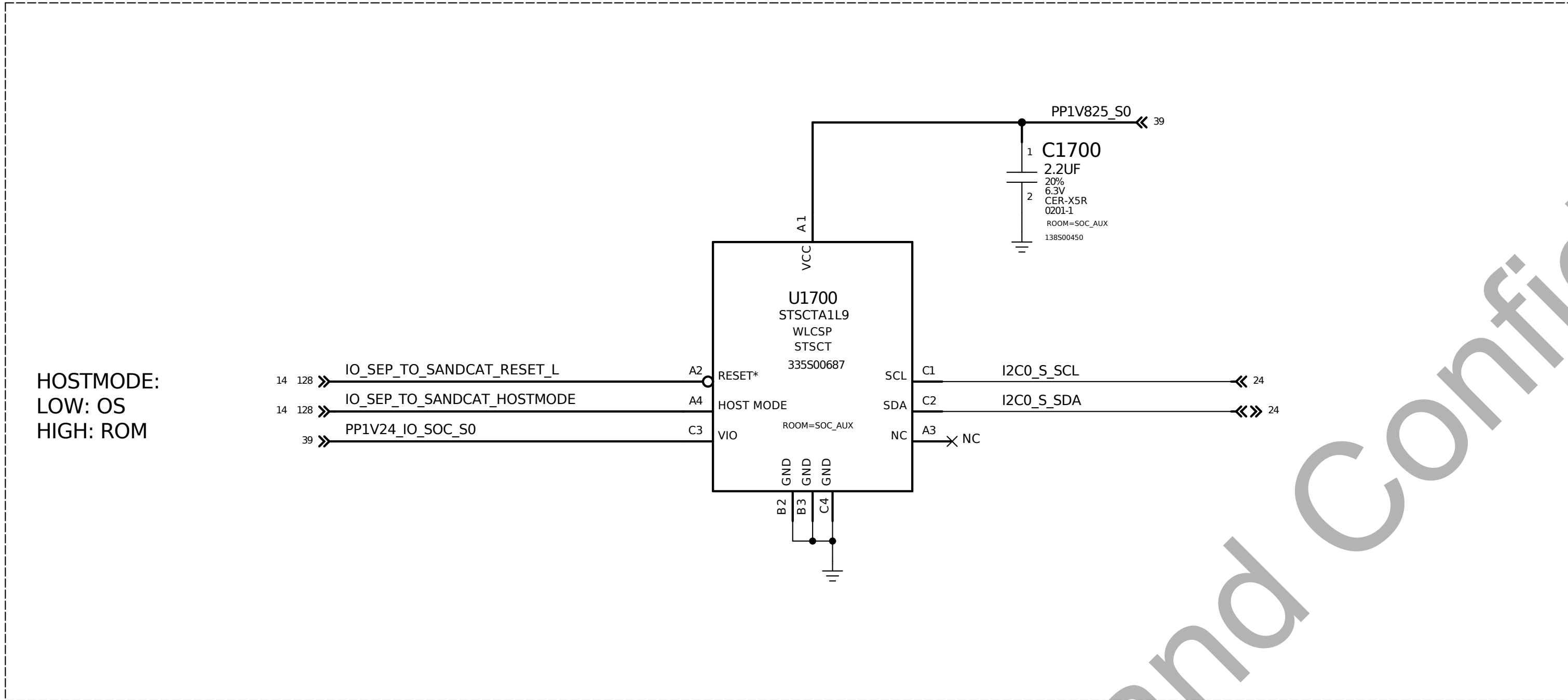
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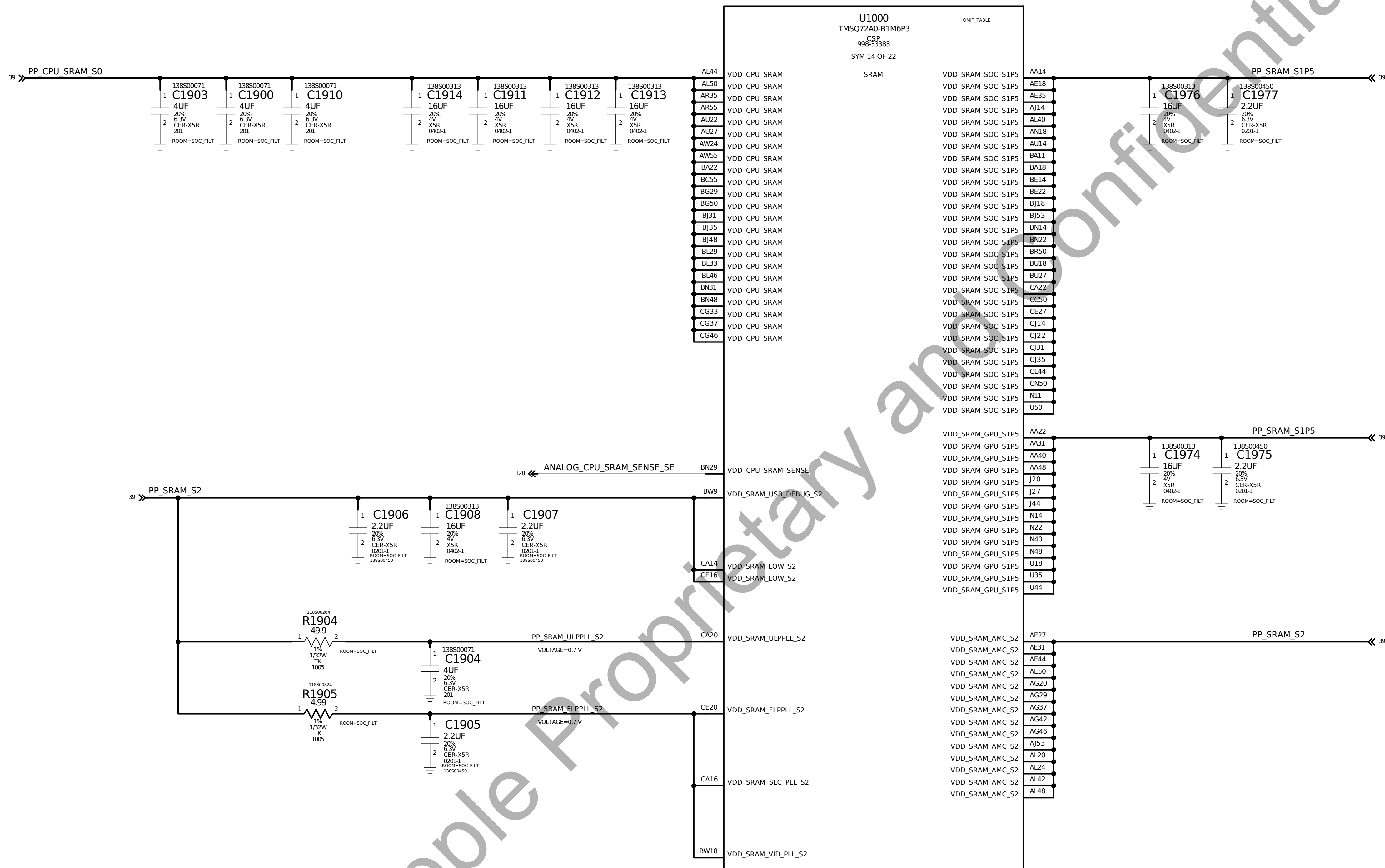


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|---|--|------------------------|--|
| PAGE TITLE  |  | SOC: Extra Memory (17) |  |
|   |  | DRAWING NUMBER         |  |
|   |  | D                      |  |
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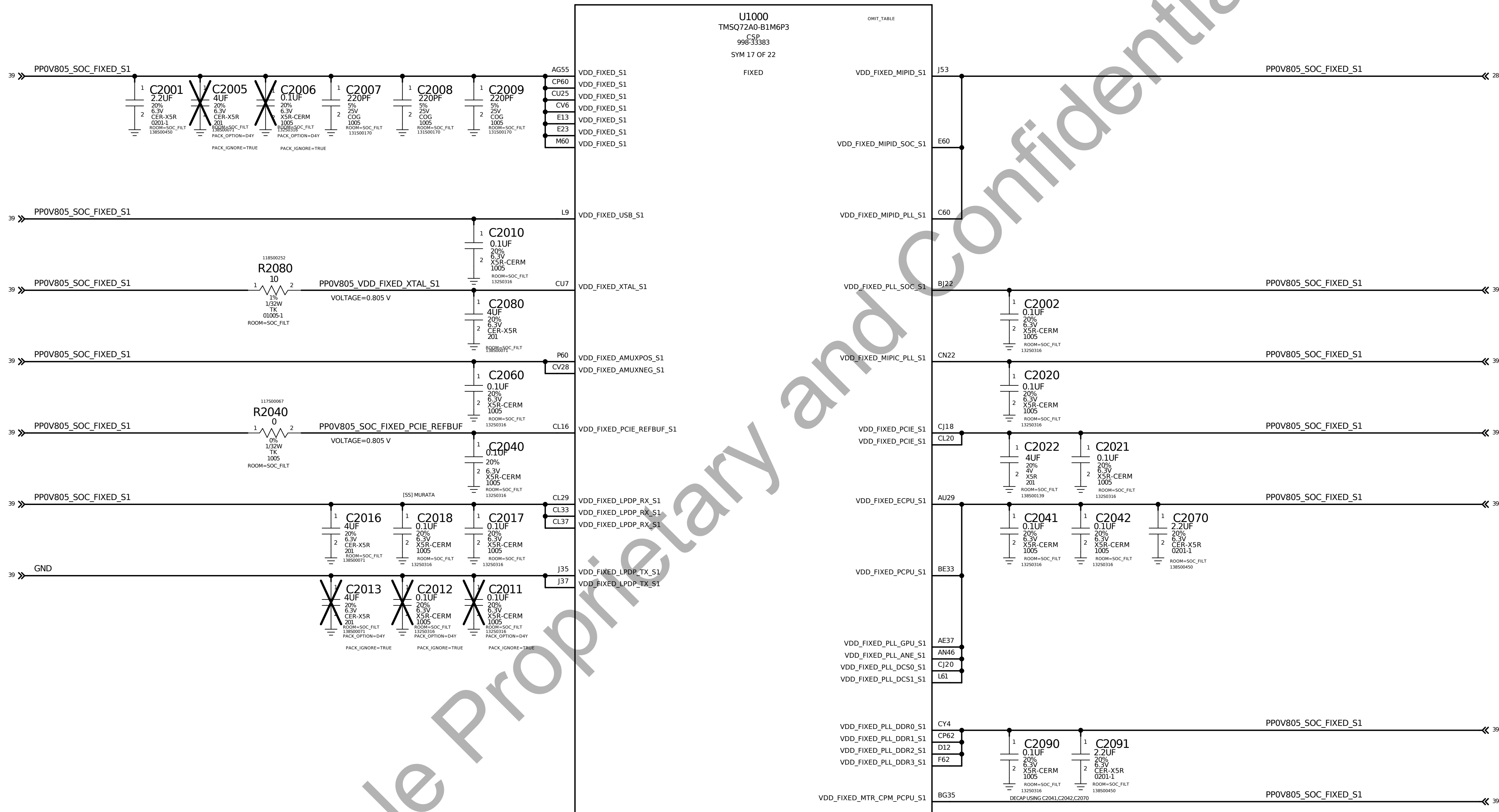


SOC: SRAM





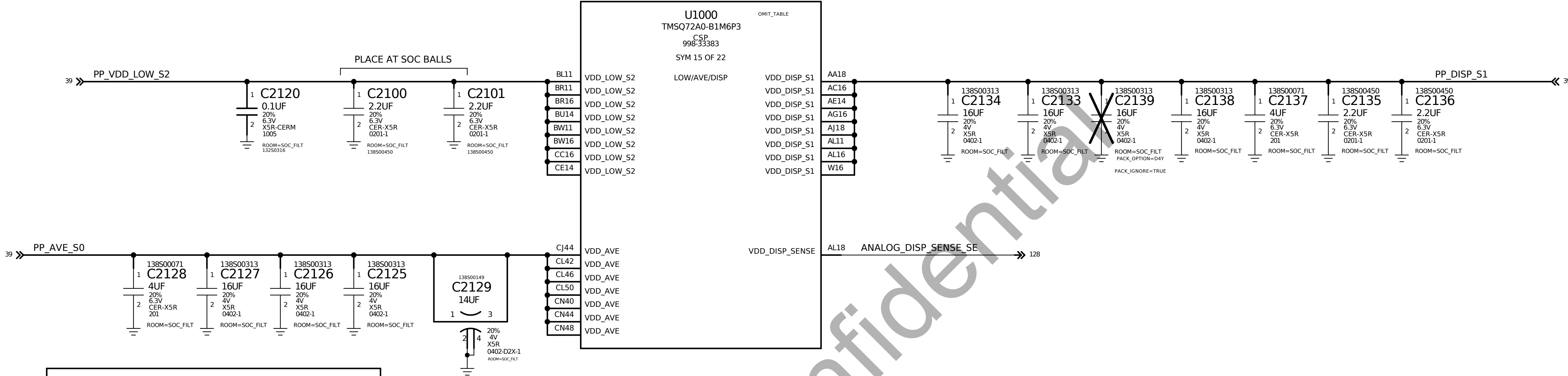
SOC: FIXED



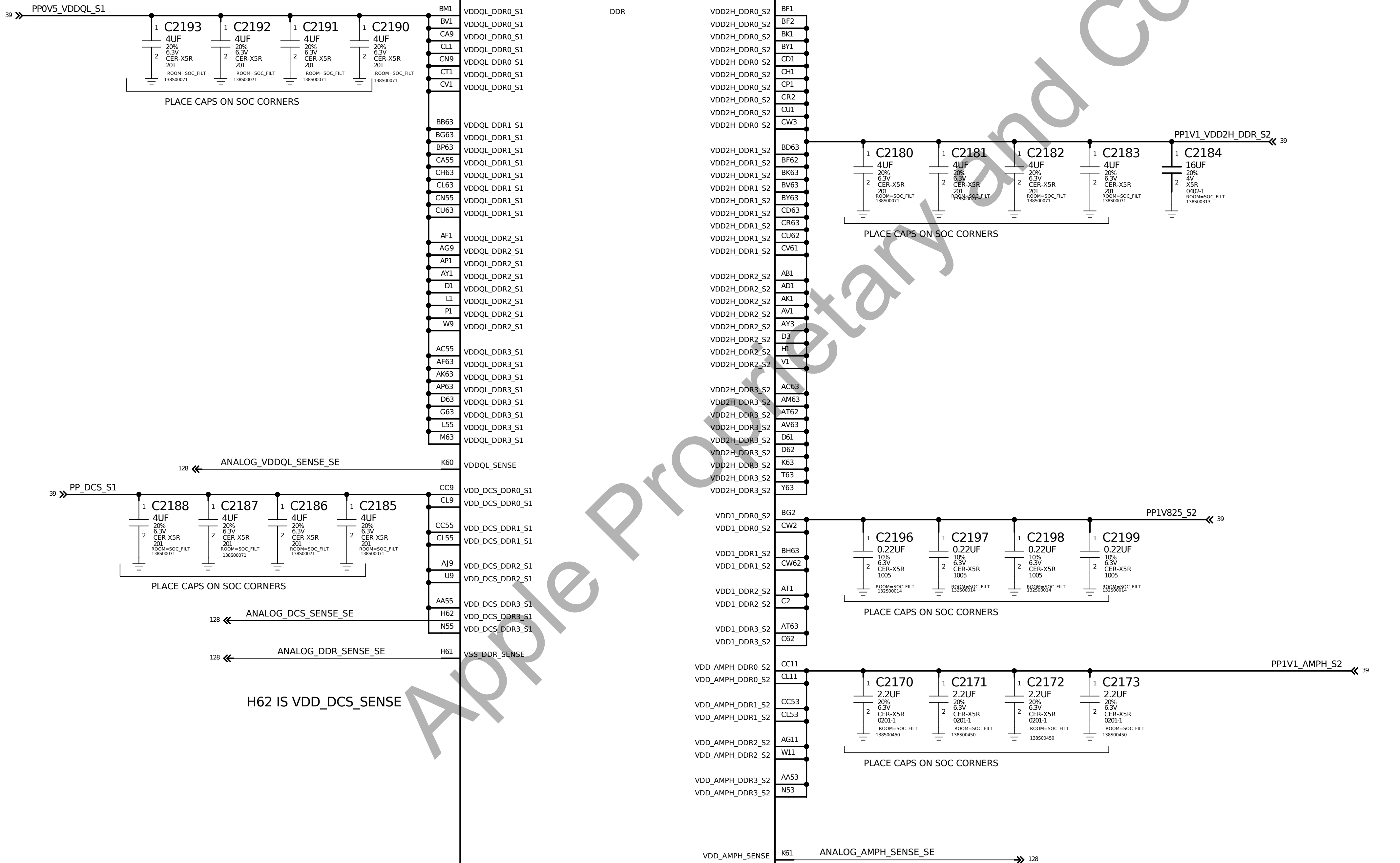
SUBSYSTEM SPECIFIC BOM TABLES

| 4uF 0201 Capacitors (single-source Murata) |                  |   |                                 |
|--|------------------|---|---------------------------------|
| ALTERNATE PART NO.                         | PRIMARY PART NO. | REFERENCE DESIGNATORS                             | COMMENT                         |
| 138500116                                  | 138500071        | (C2128,C2137,C2180-C2183,C2185-C2188,C2190-C2193) | CAP,XSR,4UF,0201,0.55MM,TAIYO   |
| 138500117                                  | 138500071        | (C2128,C2137,C2180-C2183,C2185-C2188,C2190-C2193) | CAP,XSR,4UF,0201,0.55MM,KYOCERA |
| 138500115                                  | 138500071        | (C2128,C2137,C2180-C2183,C2185-C2188,C2190-C2193) | CAP,XSR,4UF,0201,0.55MM,SEMC0   |

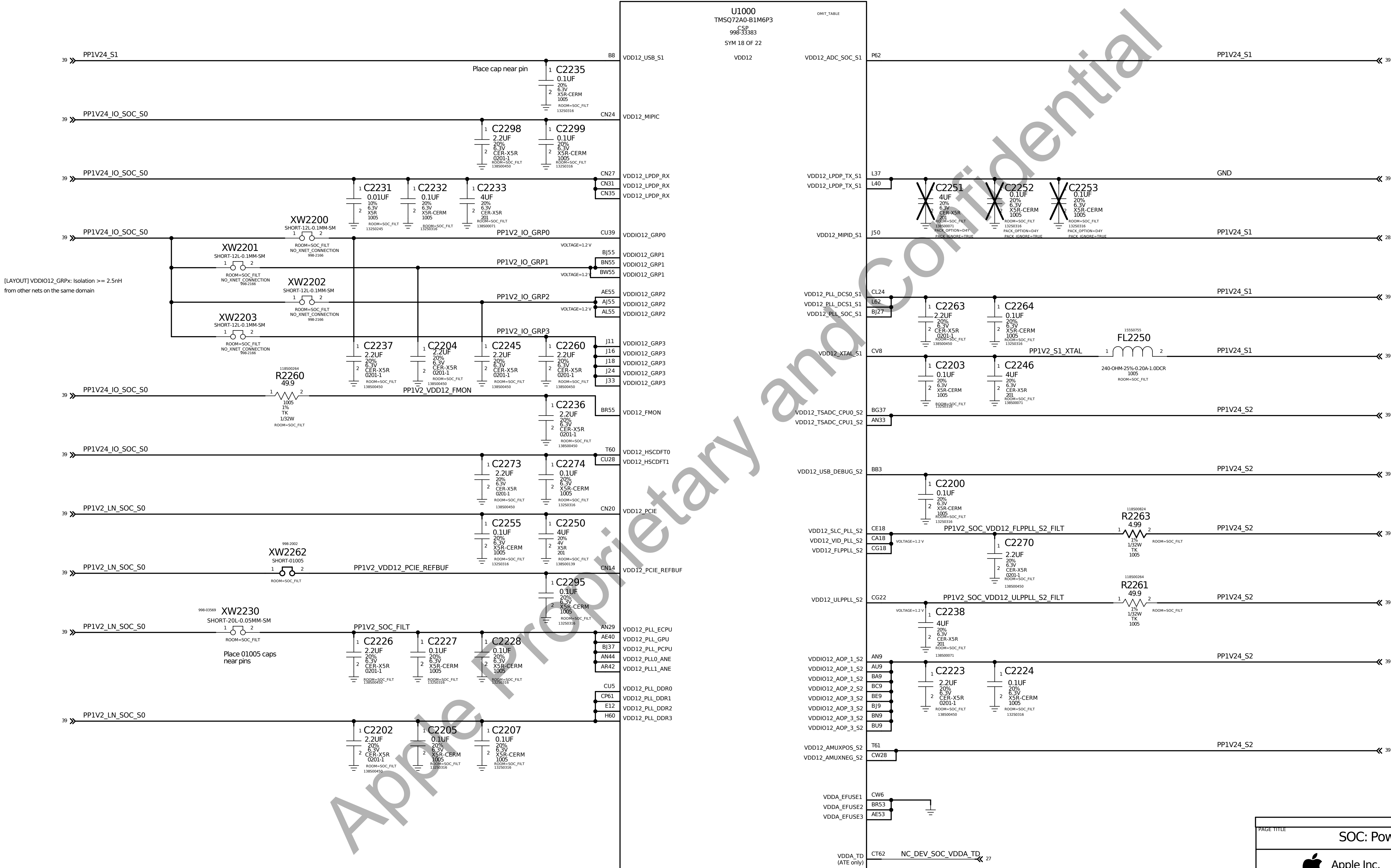
SOC: AOP/AVE/ISP/USB



SOC: DDR



SOC: VDD12

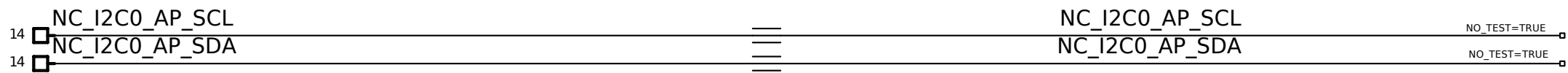


## D

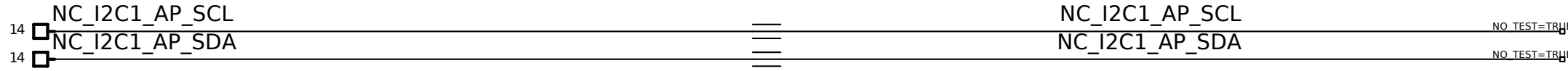


AP/ISP I2C

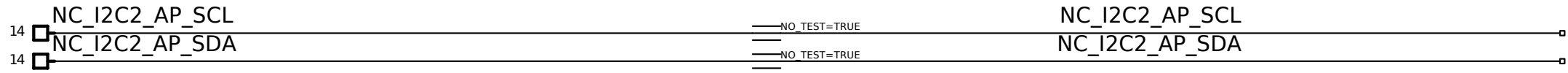
AP I2C0 (Unused)



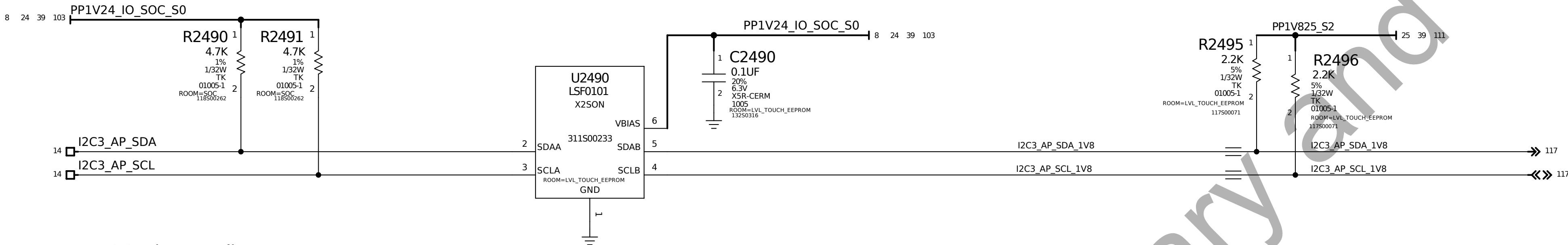
AP I2C1 (Unused)



AP I2C2 (Unused)

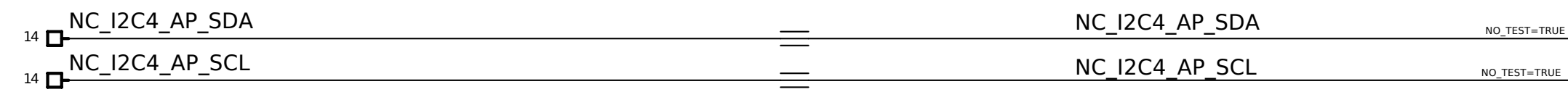


AP I2C3

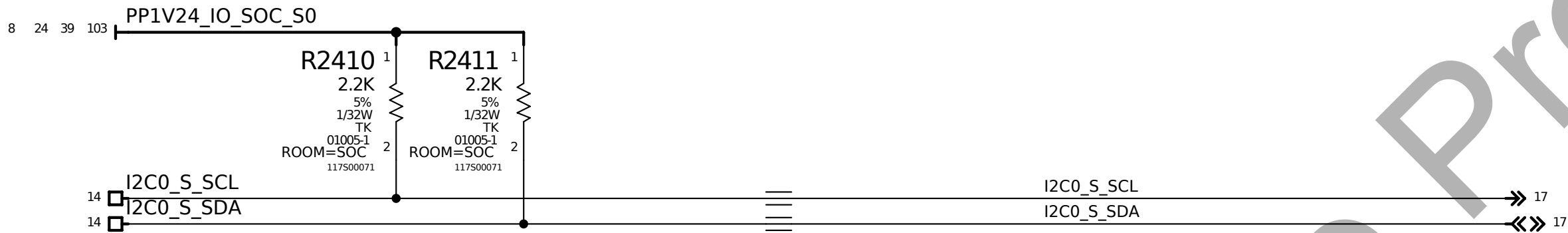


| DOMAIN       | AP      | NUMBER     | I2C3       | DIAGS NUMBER | 3            | SPEED | 400kHz |
|--------------|---------|------------|------------|--------------|--------------|-------|--------|
| DEVICE       | VOLTAGE | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION     |       |        |
| Touch EEPROM | 1.8V    | 0x51       | 0xA2, 0xA3 | 400kHz       | Display Flex |       |        |

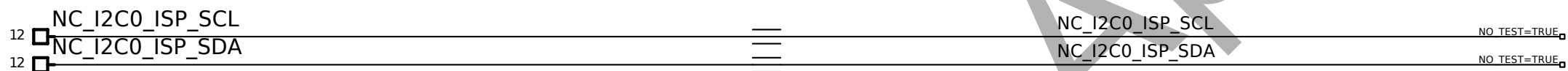
AP I2C4 (Unused)



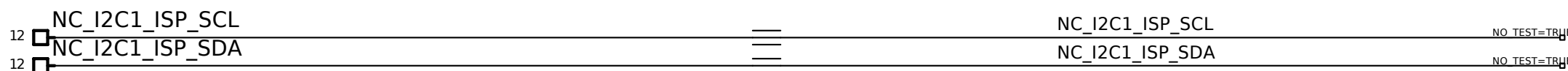
SI2C0



ISP I2C0 (Unused)



ISP I2C1 (Unused)



PAGE TITLE

SOC: Aliases: I2C AP/ISP (24)

Apple Inc.

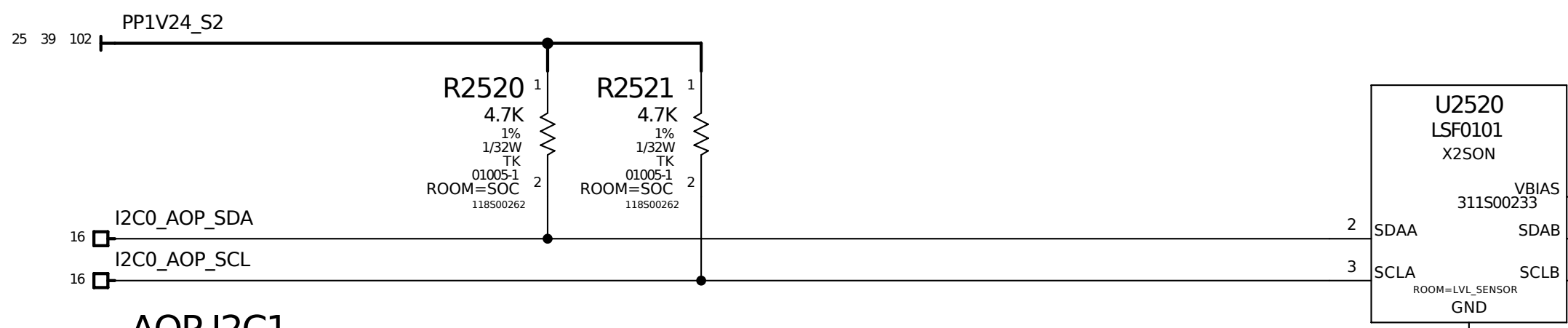
DRAWING NUMBER

D

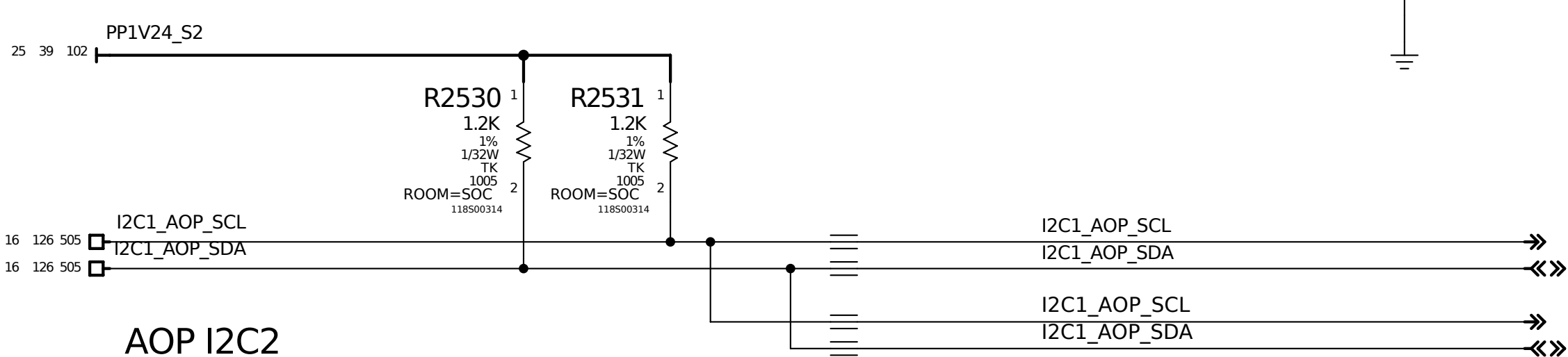
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# AOP/SMC/MTP I2C

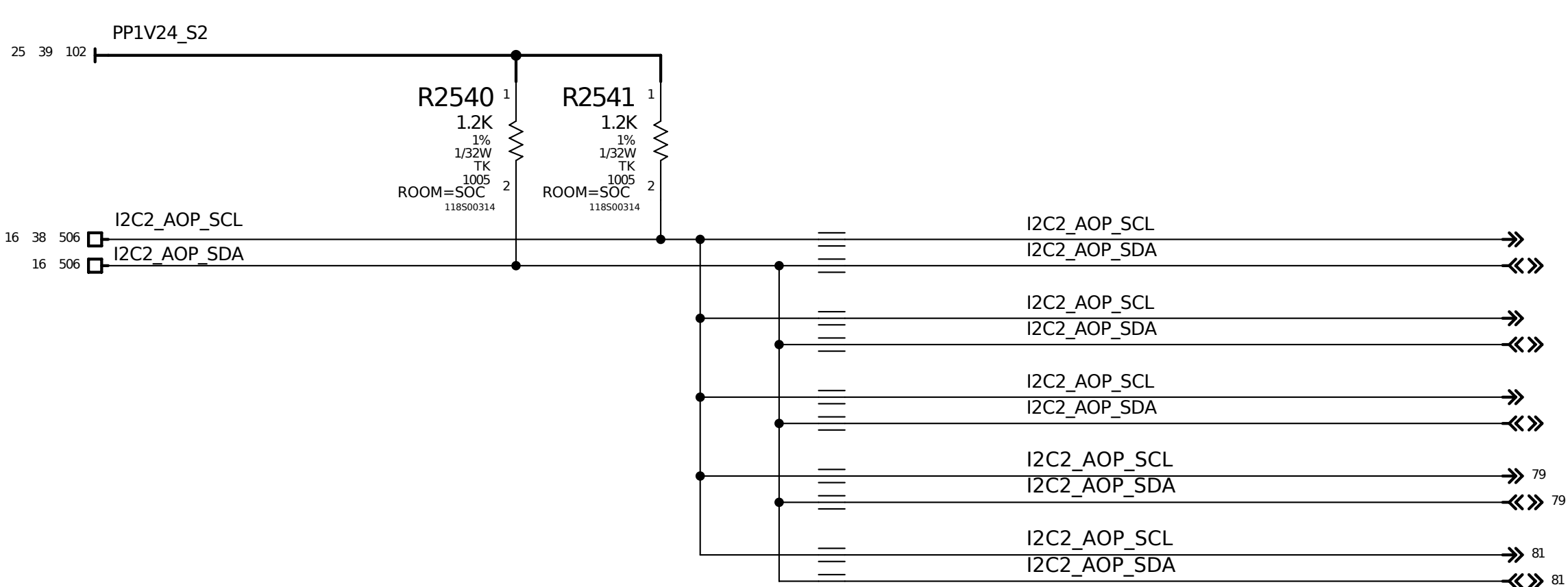
## AOP I2C0



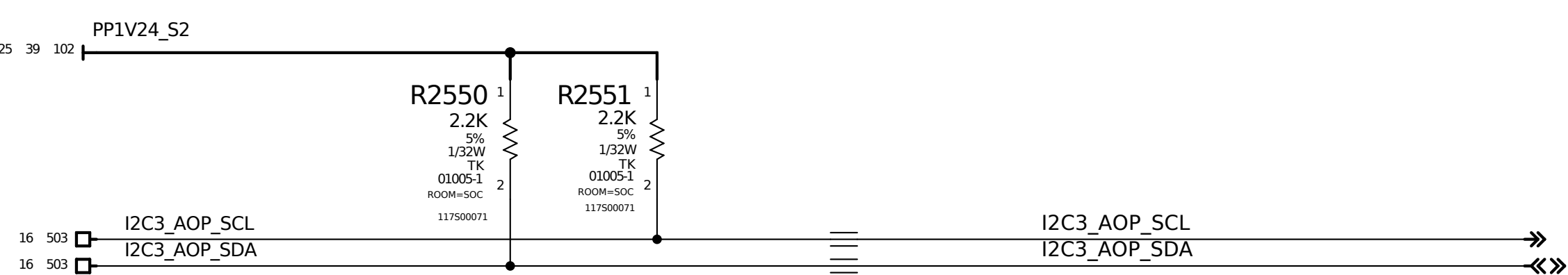
## AOP I2C1



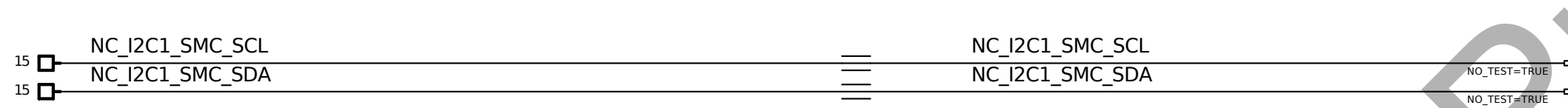
## AOP I2C2



## AOP I2C3



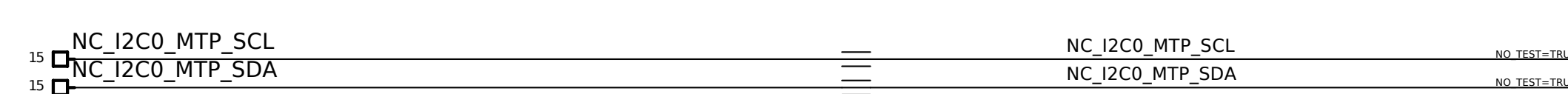
## SMC I2C1 (Unused)



## SMC I2C2



## MTP I2C0 (Unused)



| DOMAIN     | AOP     | NUMBER     | I2C1       | DIAGS NUMBER | 6        | SPEED | 400kHz |
|------------|---------|------------|------------|--------------|----------|-------|--------|
| DEVICE     | VOLTAGE | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION |       |        |
| BARO       | 1.2V    | 0x76       | 0xEC, 0xED | 1MHz         | Dock     |       |        |
| Arc EEPROM | 1.2V    | 0x50       | 0xA0, 0xA1 | 400kHz       | Arc Flex |       |        |

| DOMAIN      | AOP     | NUMBER     | I2C2       | DIAGS NUMBER | 7        | SPEED | 1MHz |
|-------------|---------|------------|------------|--------------|----------|-------|------|
| DEVICE      | VOLTAGE | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION |       |      |
| Sakonnet    | 1.2V    | 0x08       | 0x10, 0x11 | 1MHz         | MLB      |       |      |
| Codec       | 1.2V    | 0x4A       | 0x94, 0x95 | 1MHz         | MLB      |       |      |
| Arc Amp     | 1.2V    | 0x42       | 0x84, 0x85 | 1MHz         | MLB      |       |      |
| TOP Spk Amp | 1.2V    | 0x41       | 0x82, 0x83 | 1MHz         | MLB      |       |      |
| BOT Spk Amp | 1.2V    | 0x40       | 0x80, 0x81 | 1MHz         | MLB      |       |      |

| DOMAIN       | AOP     | NUMBER     | I2C3       | DIAGS NUMBER | I2       | SPEED | 400kHz |
|--------------|---------|------------|------------|--------------|----------|-------|--------|
| DEVICE       | VOLTAGE | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION |       |        |
| Grimaldi     | 1.2V    | 0x3A       | 0x74, 0x75 | 1MHz         | BG Flex  |       |        |
| BG ID EEPROM | 1.2V    | 0x50       | 0xA0, 0xA1 | 400kHz       | BG Flex  |       |        |

| DOMAIN   | SMC     | NUMBER     | I2C2       | DIAGS NUMBER | 10           | SPEED | 400kHz |
|----------|---------|------------|------------|--------------|--------------|-------|--------|
| DEVICE   | VOLTAGE | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION     |       |        |
| Rubicon  | 1.2V    | 0x71       | 0xE2, 0xE3 | 1MHz         | MLB          |       |        |
| Veridian | 1.8V    | 0x0B       | 0x16, 0x17 | 400kHz       | Battery Flex |       |        |

|   |  |                                    |   |
|---|--|------------------------------------|---|
| PAGE TITLE  |  | SOC: Aliases: I2C AOP/SMC/MTP (25) |   |
|   |  | DRAWING NUMBER                     | D |
|   |  |                                    |   |
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AOP GPIOs



NUB GPIOs

MTP GPIOs

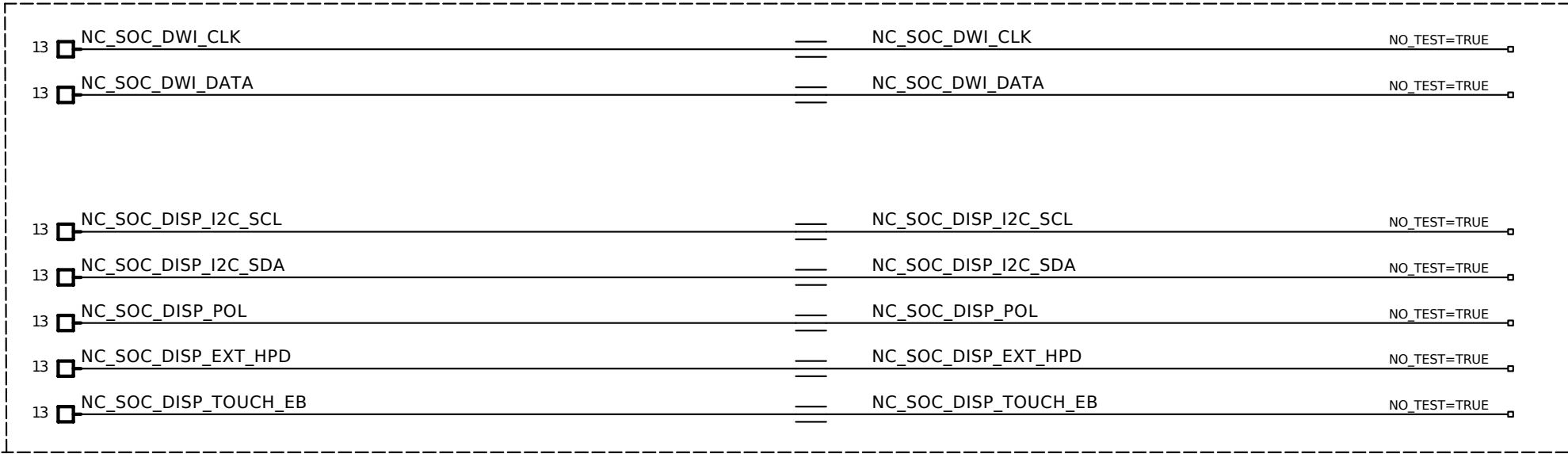
AP GPIOs



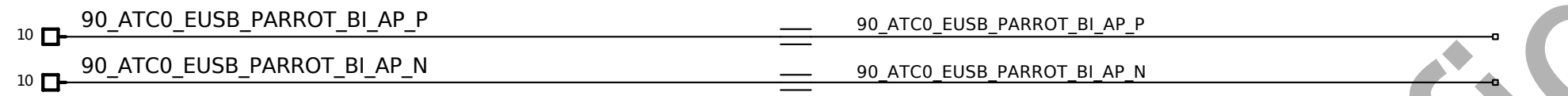


# Misc. SoC Aliases

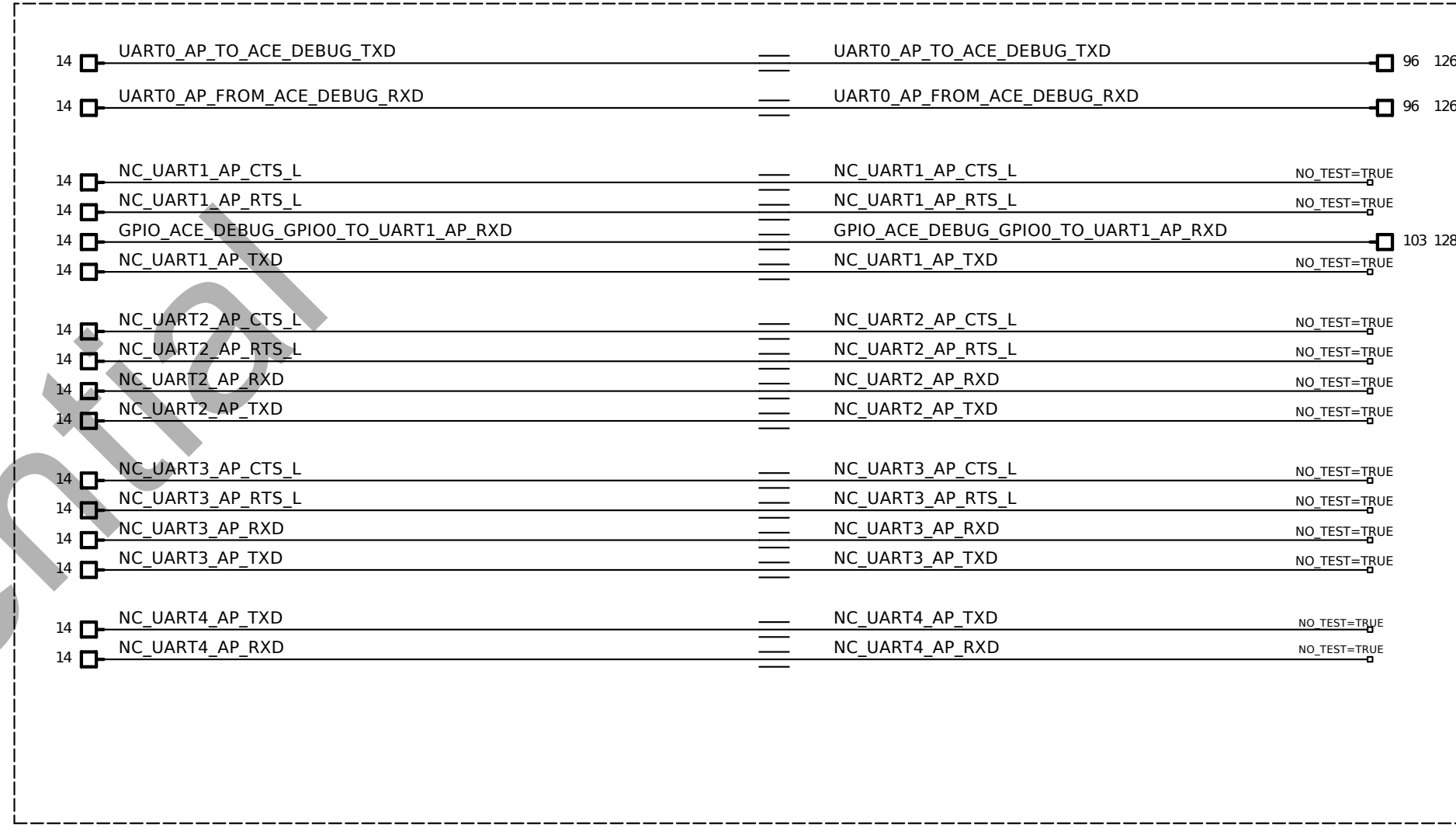
## DISPLAY



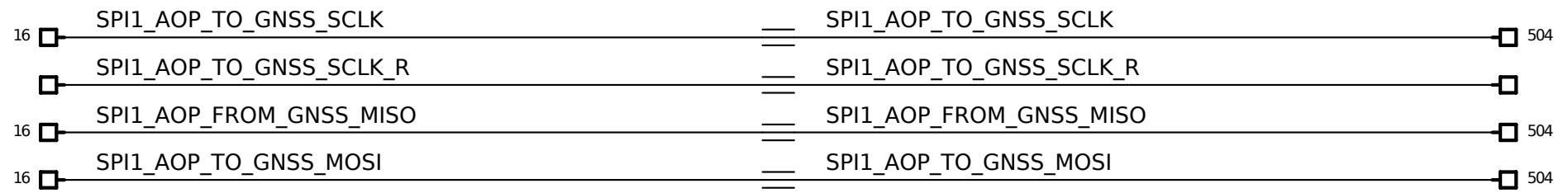
## ATCPHY



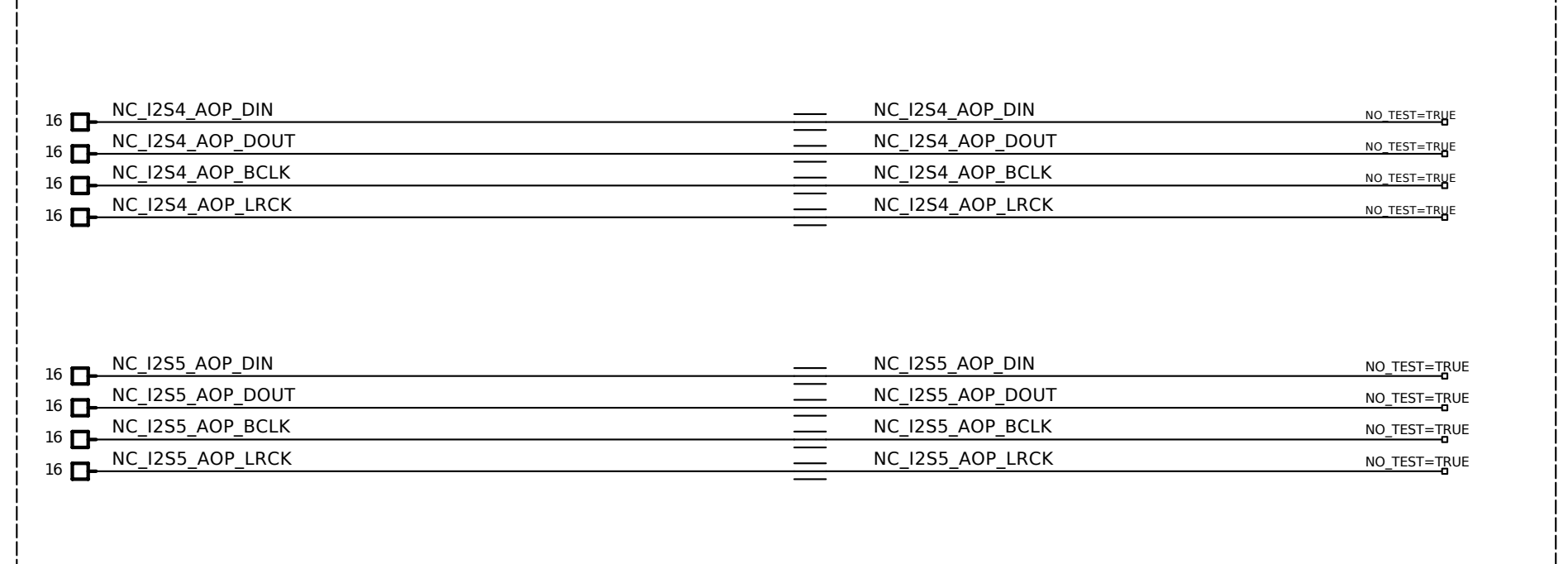
## Serial UART



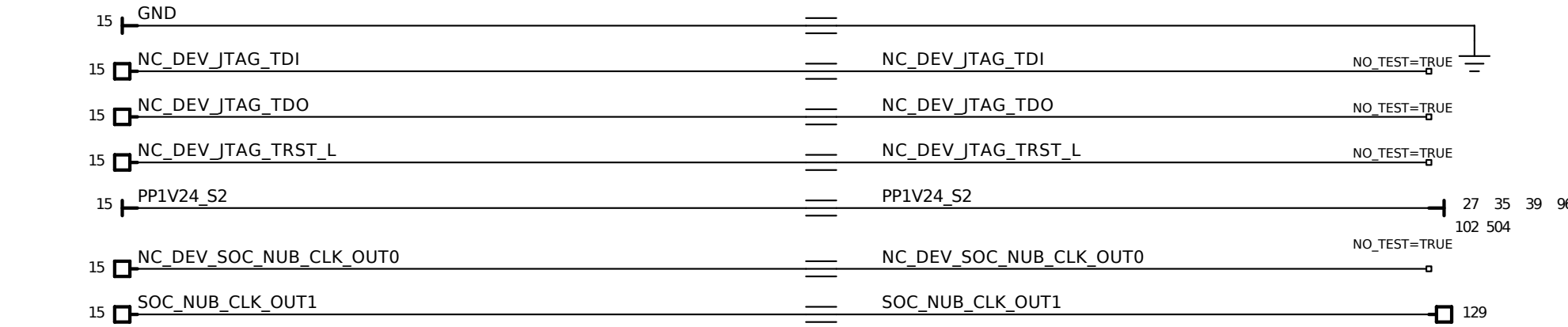
## AOP SPI1



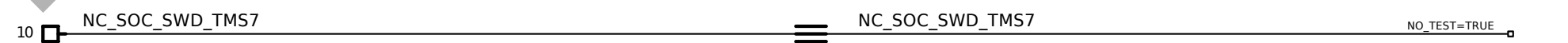
## Serial I2S



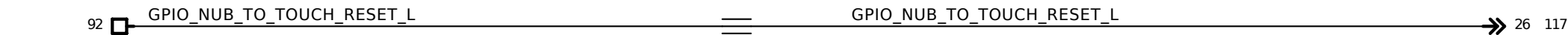
## AOP



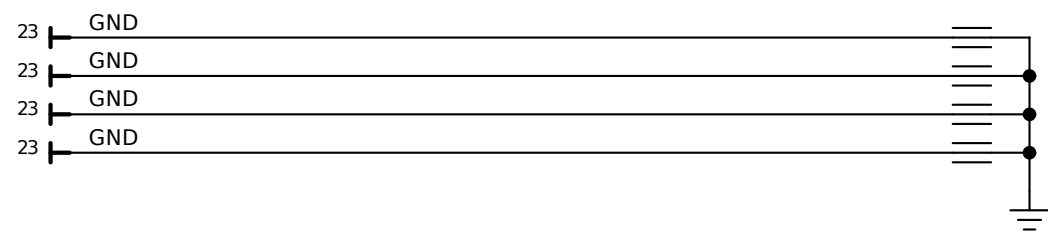
## NUB



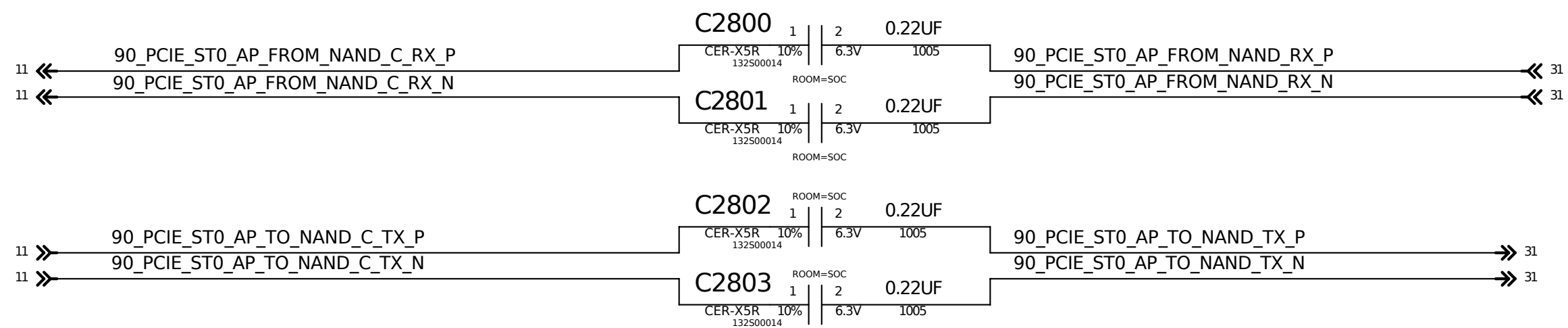
## MTP



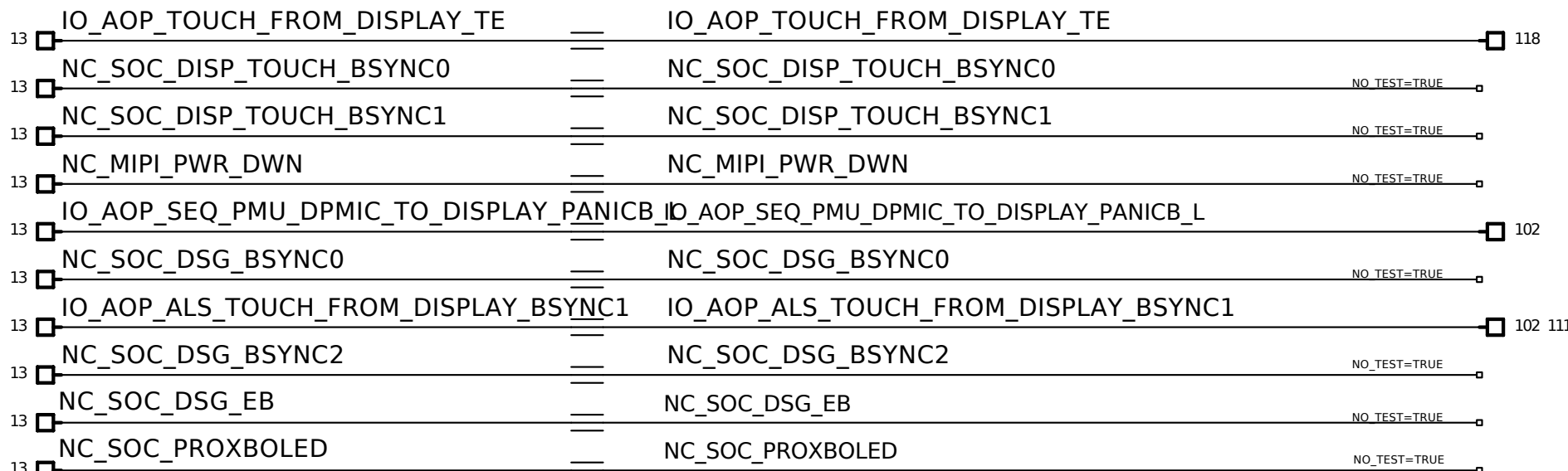
## VSS CORNER BALLS



## PCle ST0

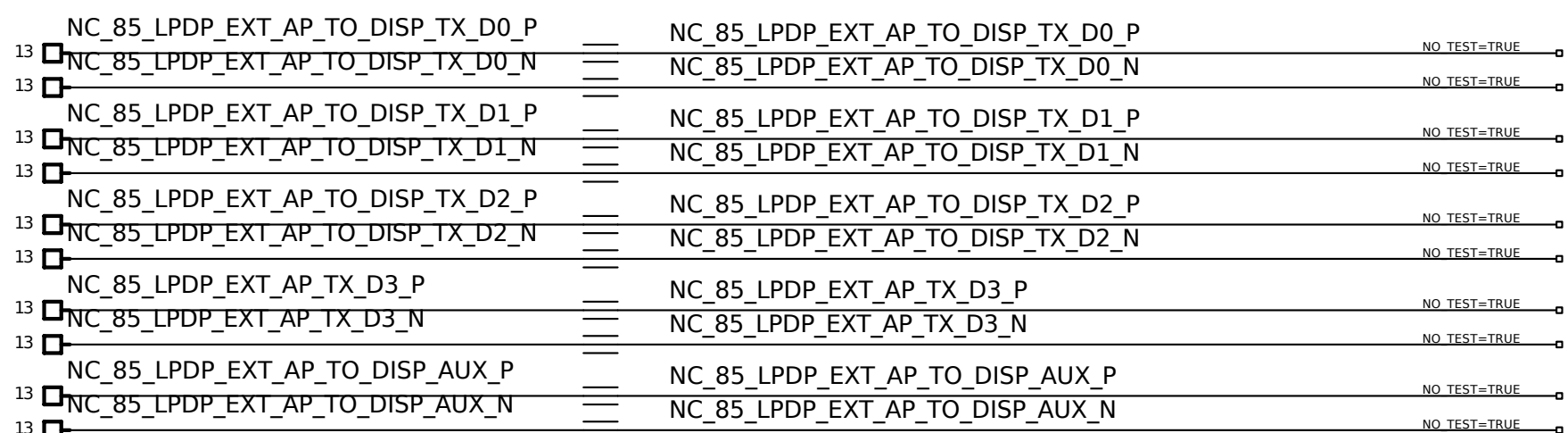


## DISP

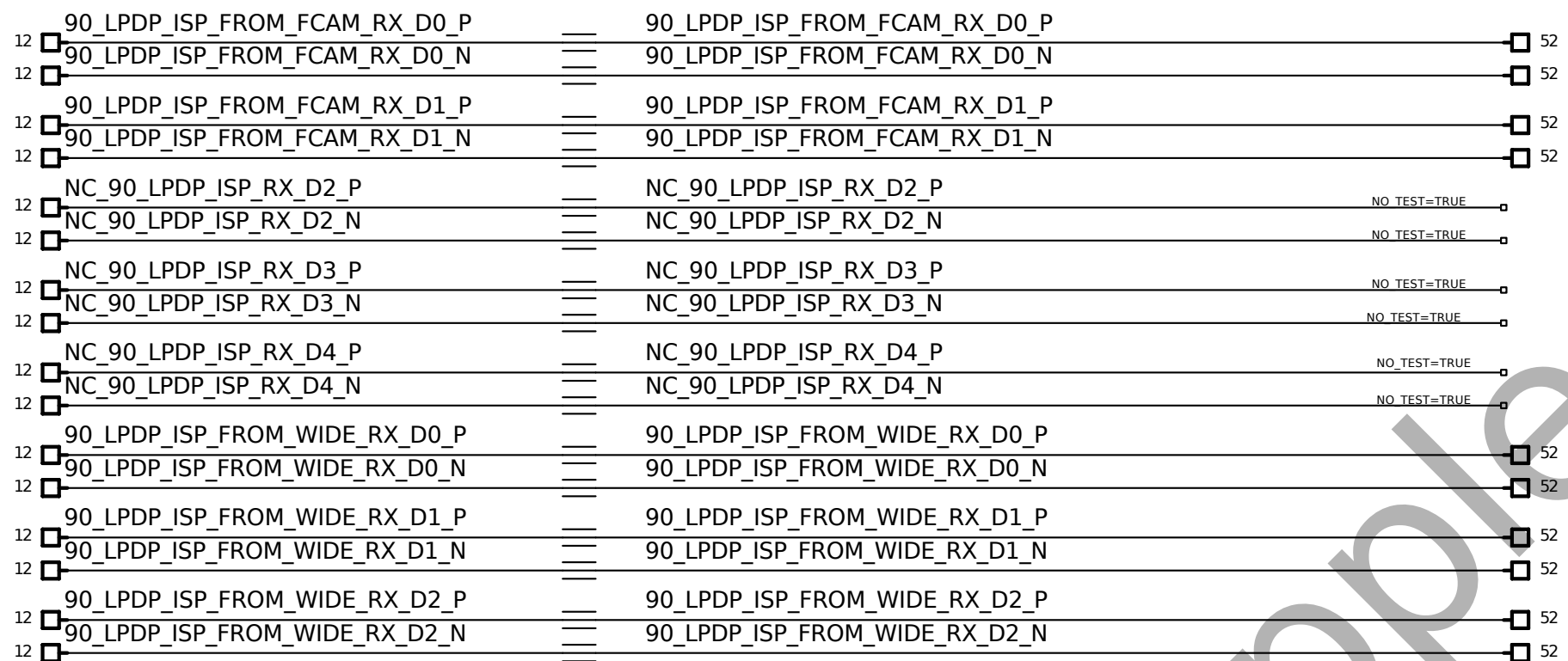


## LPDP

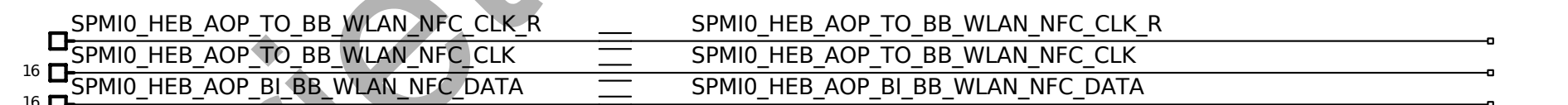
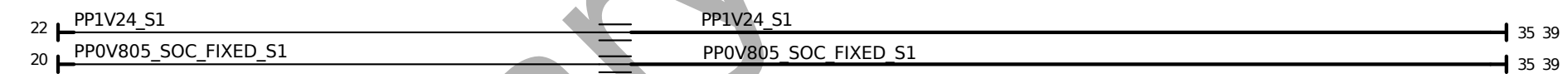
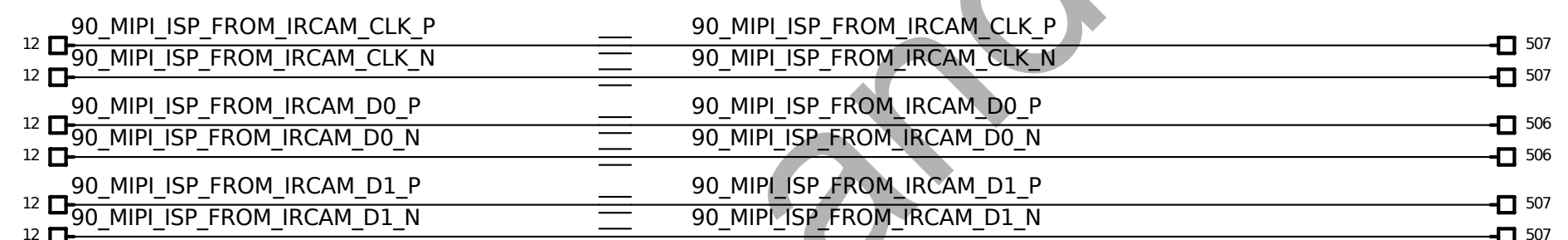
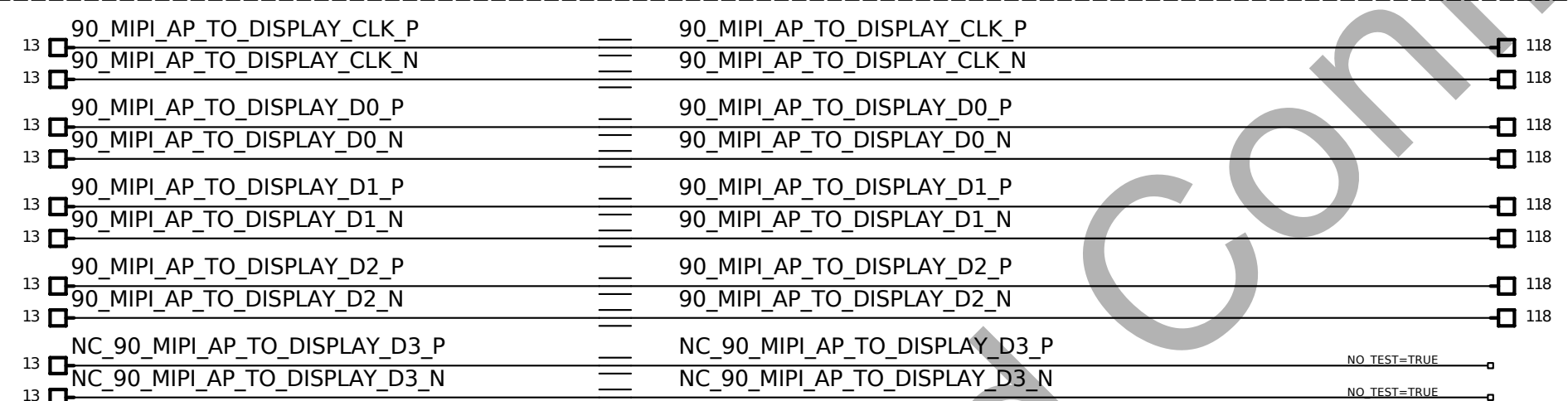
## DISP: LPDP Lanes



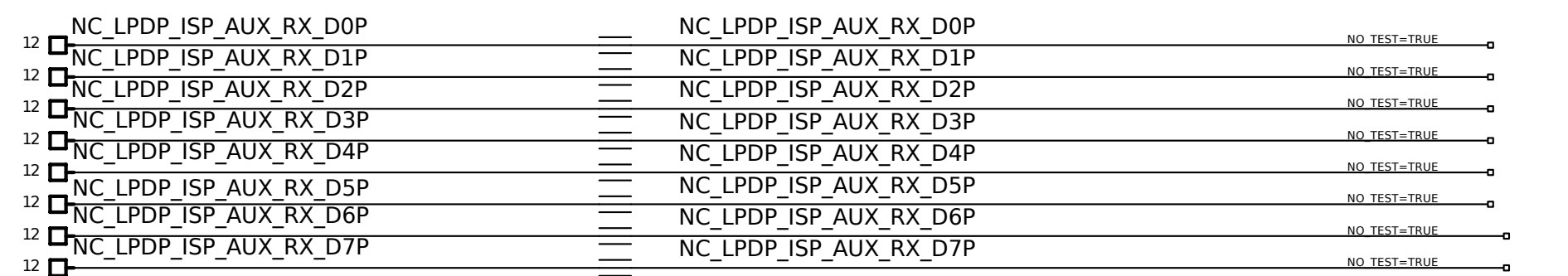
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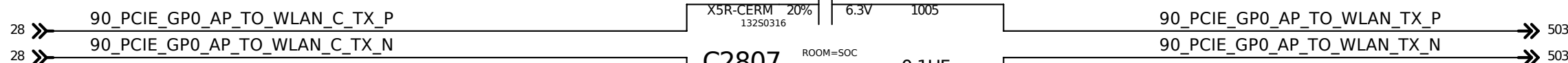
## MISC



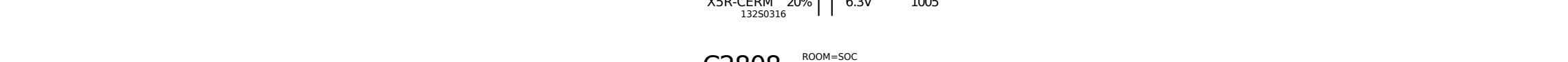
## ISP: LPDP Aux



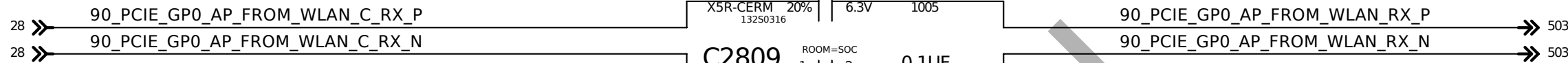
## C2806



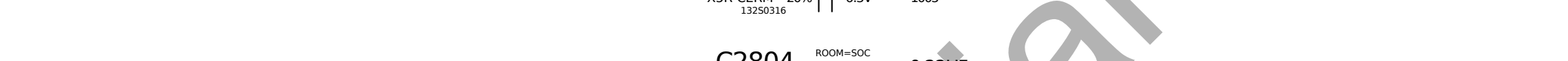
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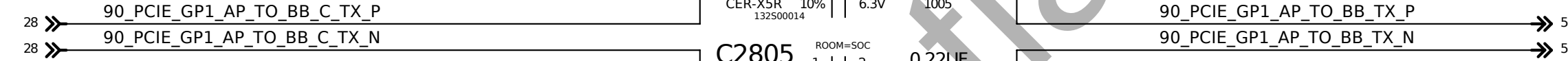
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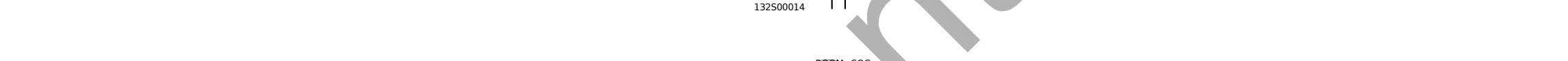
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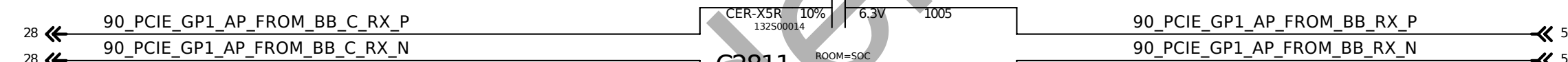
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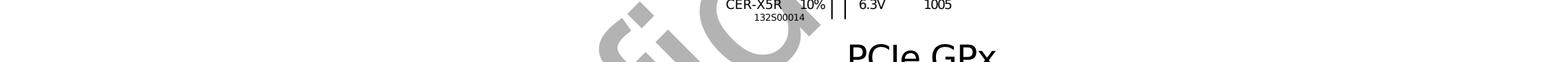
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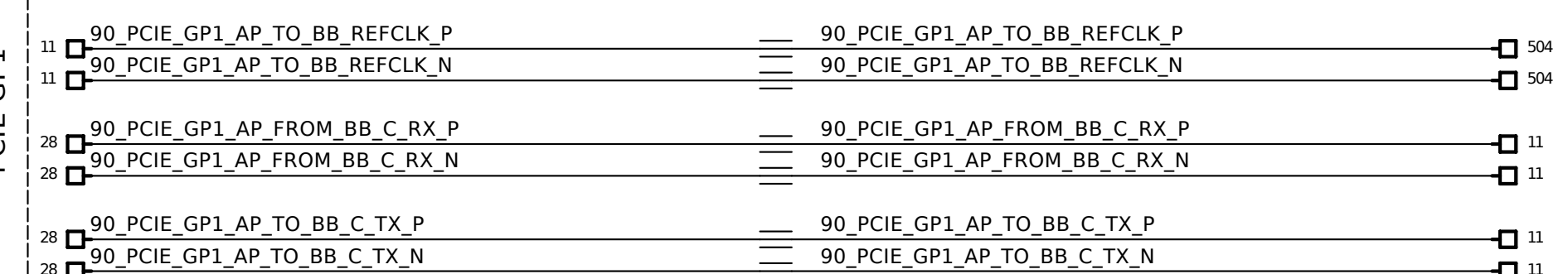
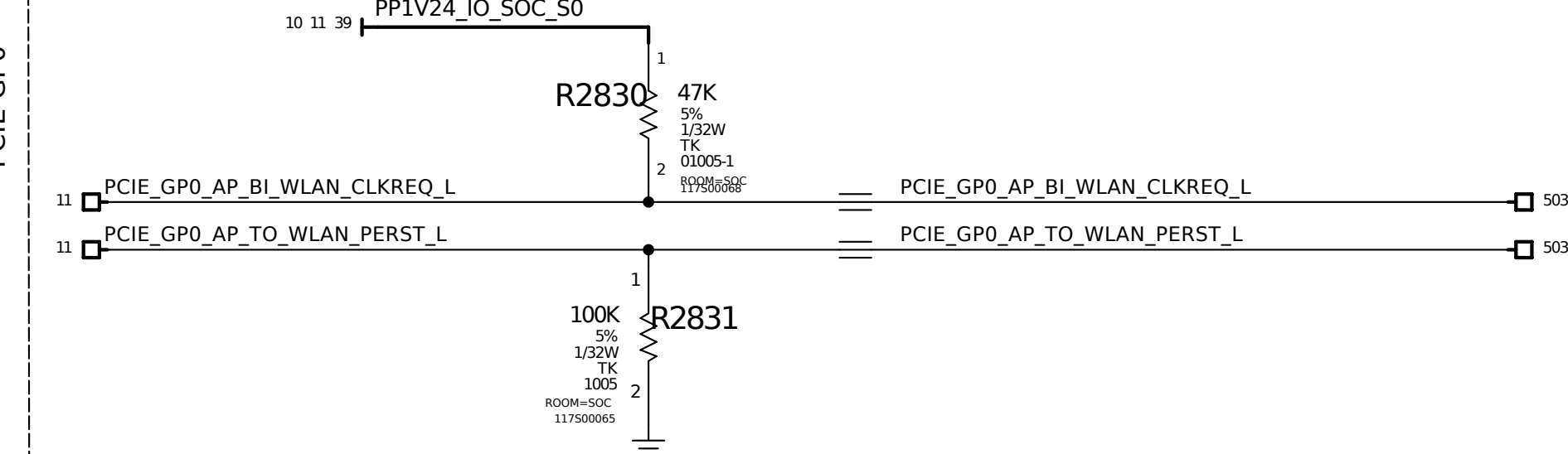
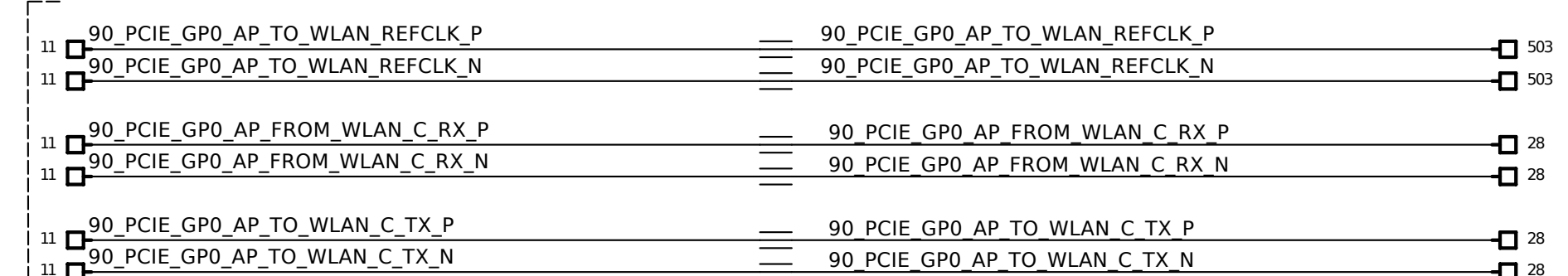
## C2810



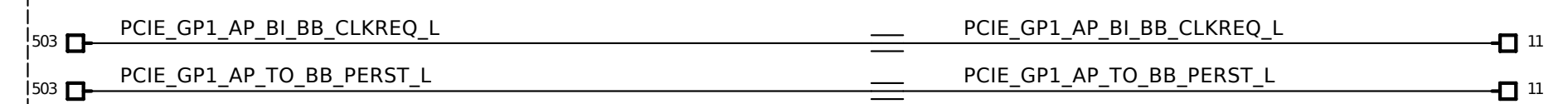
## C2811



## PCle GPx



BB CLKREQ PULL-UP and PULL\_DOWN LIVES IN RADIO HIERARCHY



PAGE TITLE

SOC: Aliases: FF-Specific (28)



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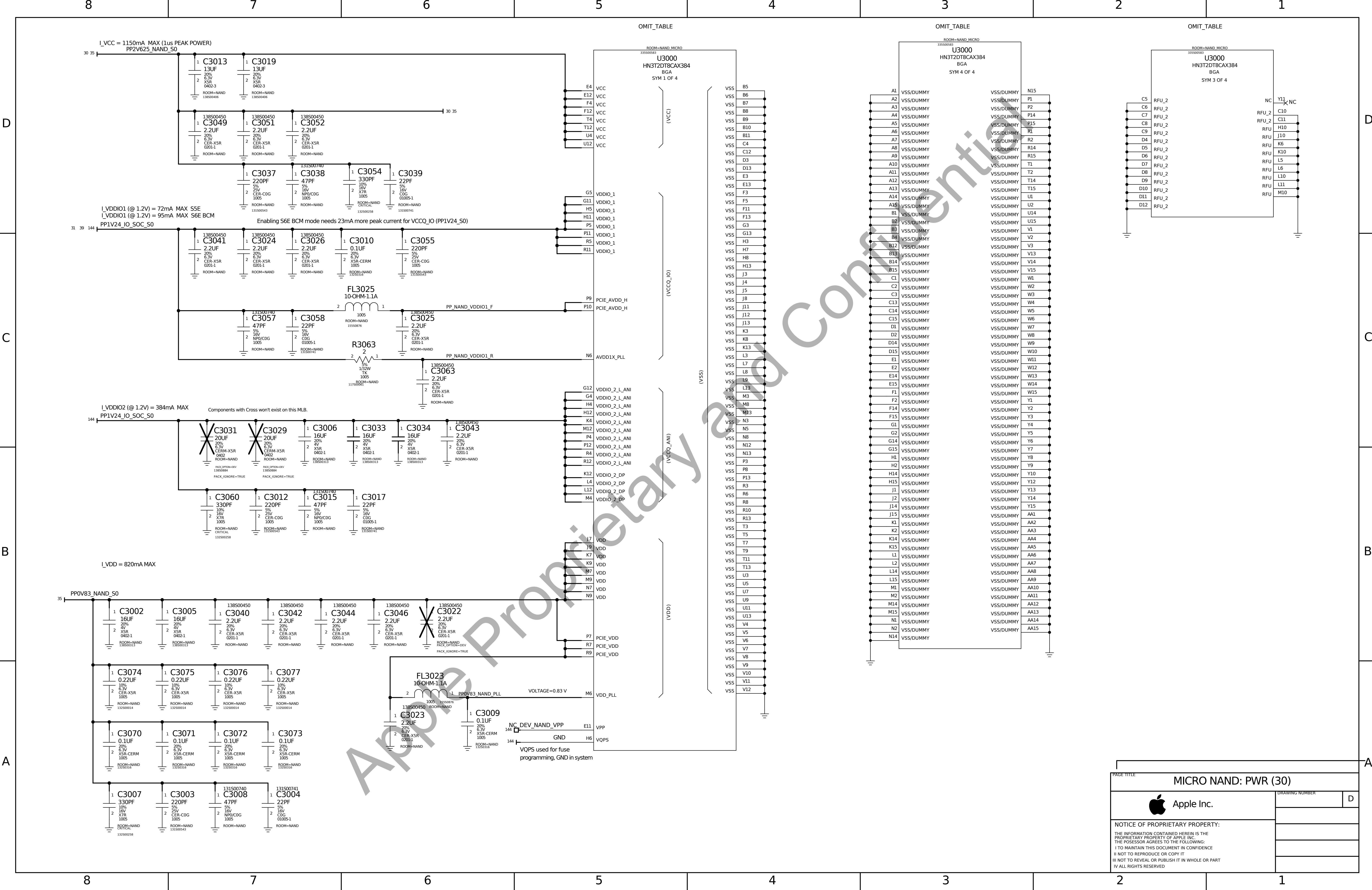
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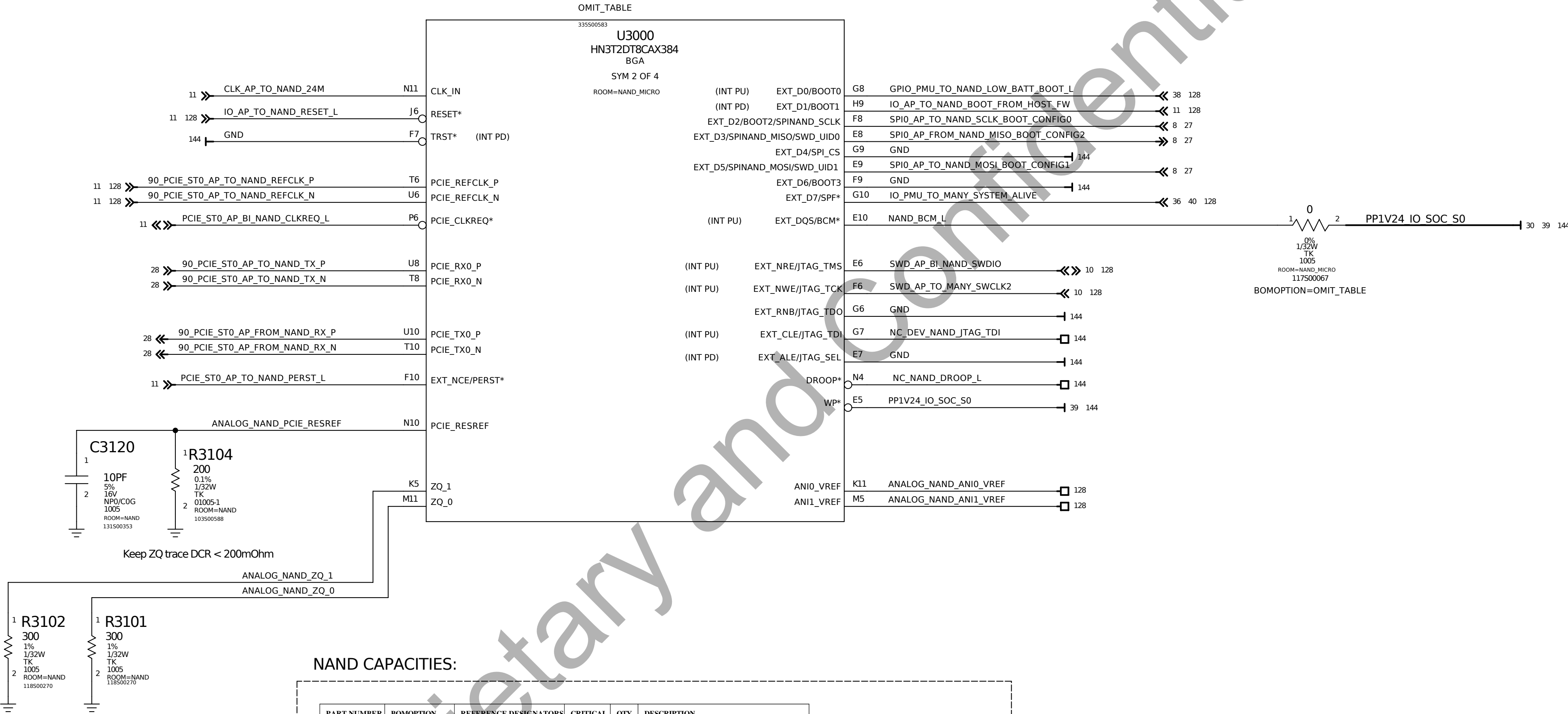
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S5E/S6E NAND

NOTES:  
INT PU = internal pull up to VDDIO\_1  
INT PD = internal pull down to VSS  
Internal pulls are 40kOhm (min), 80kOhm (typ), 165kOhm (max)

Max allowed onboard trace resistance  
for ANALOG\_NAND\_PCIE\_RESREF shall be 1150mohm



NAND CAPACITIES:

| PART NUMBER | BOMOPTION    | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                              |
|-------------|--------------|-----------------------|----------|-----|--|
| 335S00579   | NAND:SUPREME | U3000                 | C        | 1   | NAND,3DV7T,128GB,S5E,17.0,512G,H,U,GA315 |
| 335S00581   | NAND:EXTREME | U3000                 | C        | 1   | NAND,3DV7T,256GB,S5E,17.0,512G,H,U,GA315 |
| 335S00583   | NAND:MAX     | U3000                 | C        | 1   | NAND,3DV7T,512GB,S5E,17.0,512G,H,U,GA315 |

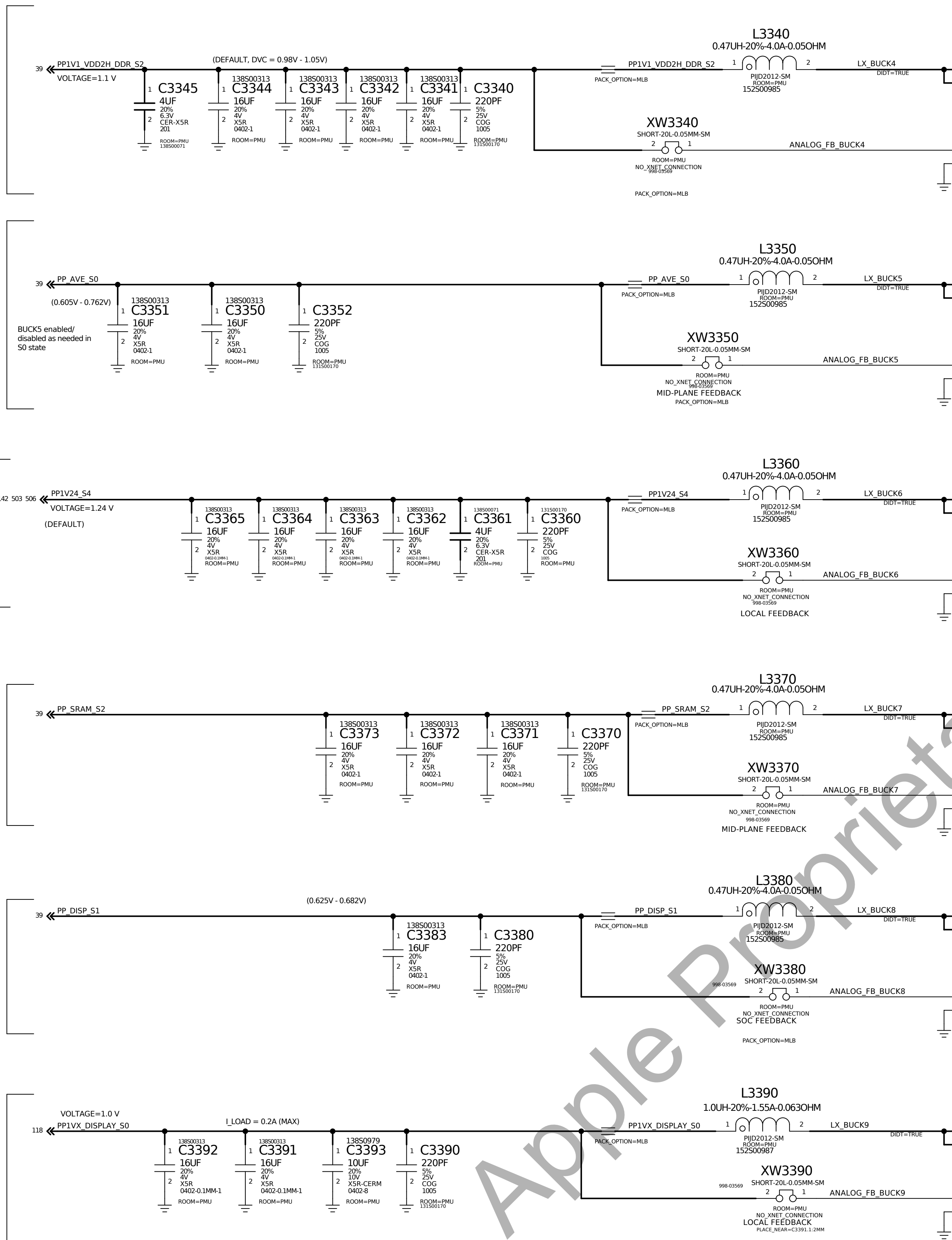
| ALTERNATE PART NO. | PRIMARY PART NO. | BOMOPTION    | REFERENCE DESIGNATORS | COMMENT                    |
|--------------------|------------------|--------------|-----------------------|----------------------------|
| 335S00551          | 335S00579        | NAND:SUPREME | U3000                 | KIOXIA,BIC55,128GB,SUPREME |
| 335S00635          | 335S00581        | NAND:EXTREME | U3000                 | SMSG,BIC58,256GB,EXTREME   |
| 335S00665          | 335S00581        | NAND:EXTREME | U3000                 | KIOXIA,BIC58,256GB,EXTREME |
| 335S00553          | 335S00583        | NAND:MAX     | U3000                 | KIOXIA,BIC55,512GB,MAX     |

S6E NAND:

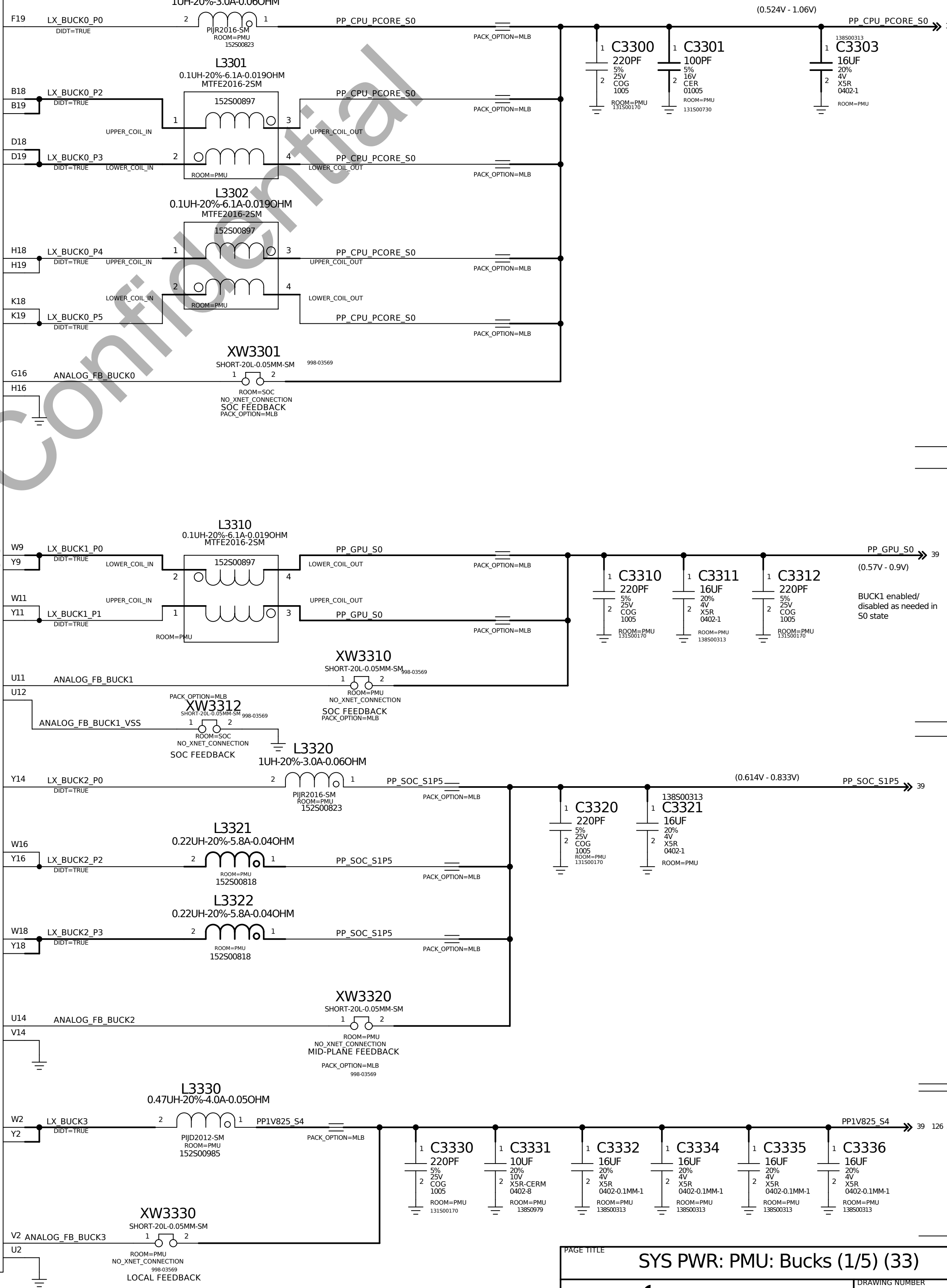
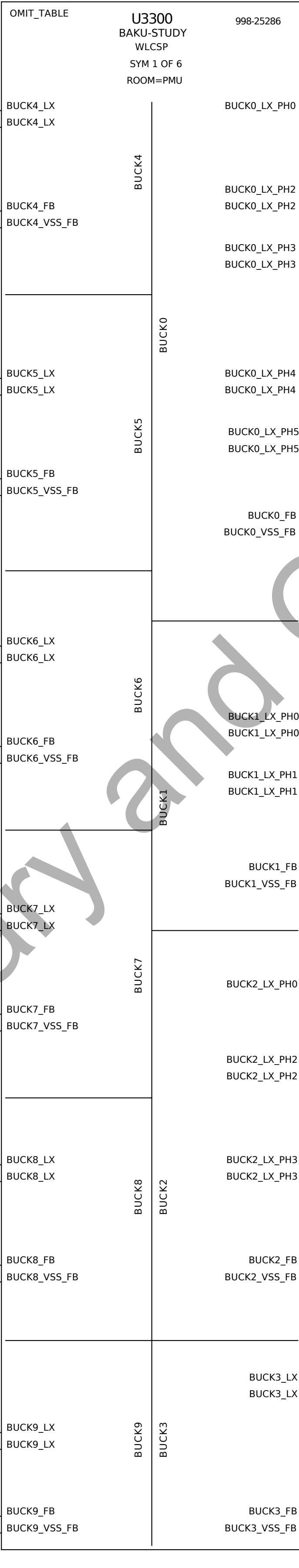
| PART NUMBER | BOMOPTION       | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                          |
|-------------|-----------------|-----------------------|----------|-----|--------------------------------------|
| 335S00673   | NAND:S6EEXTREME | U3000                 | C        | 1   | NAND,BC8T,512GB,S6E,XXX,1T,K,U,GA315 |
| 117500067   | NAND:S6EEXTREME | R3100                 | C        | 1   | RES,TK,0 OHM,1/32W,01005             |

# OUTPUTS

# OUTPUTS



BUCK9 NOTES:  
 1. PP1VX\_DISPLAY\_S2' is default OFF  
 2. For PP1VX\_DISPLAY\_S2, the nominal voltage is between 1.0V to 1.15V depending on program and display



PAGE TITLE  
 SYS PWR: PMU: Bucks (1/5) (33)



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D

C

B

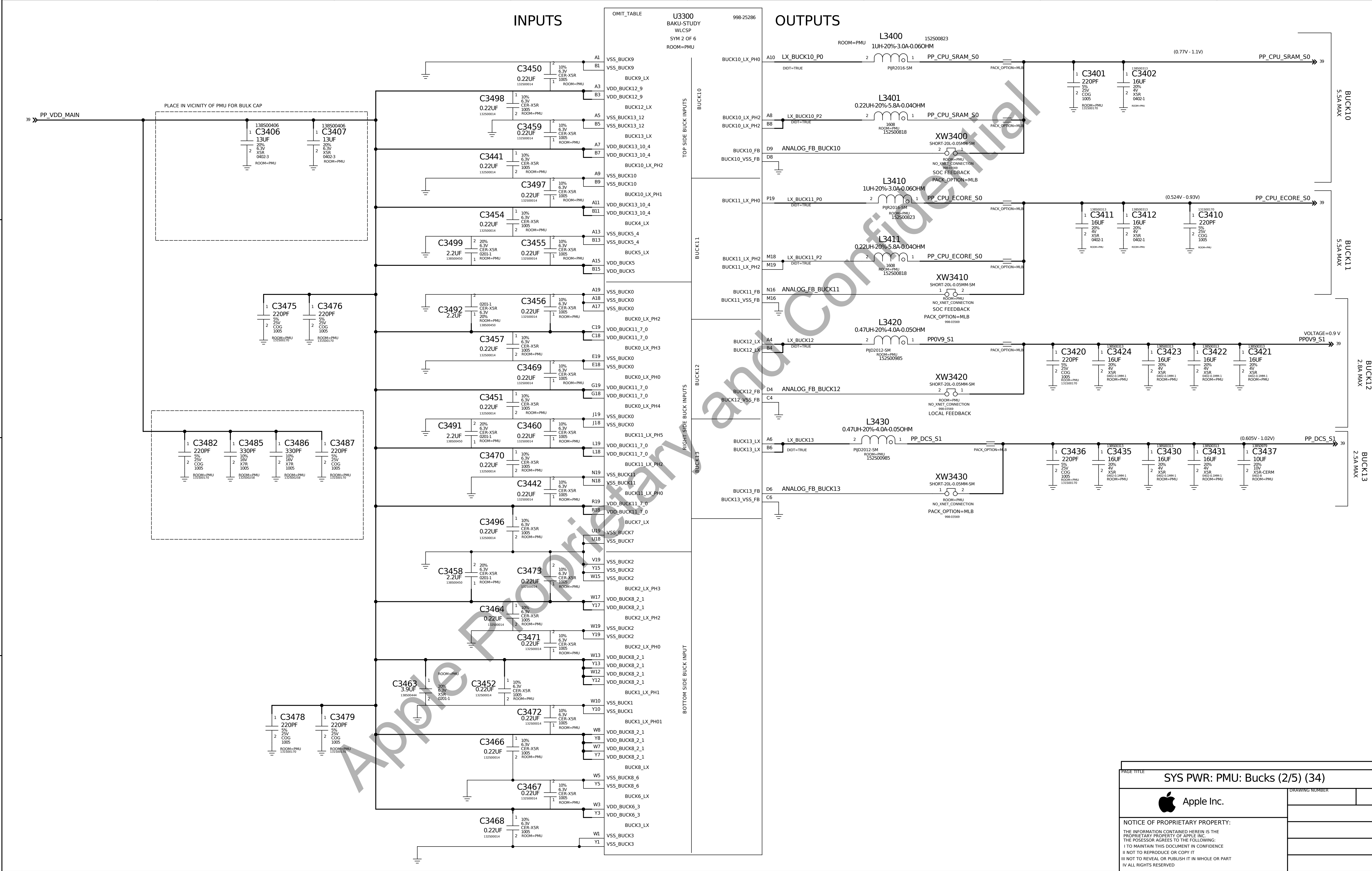
A


D

C

B

A

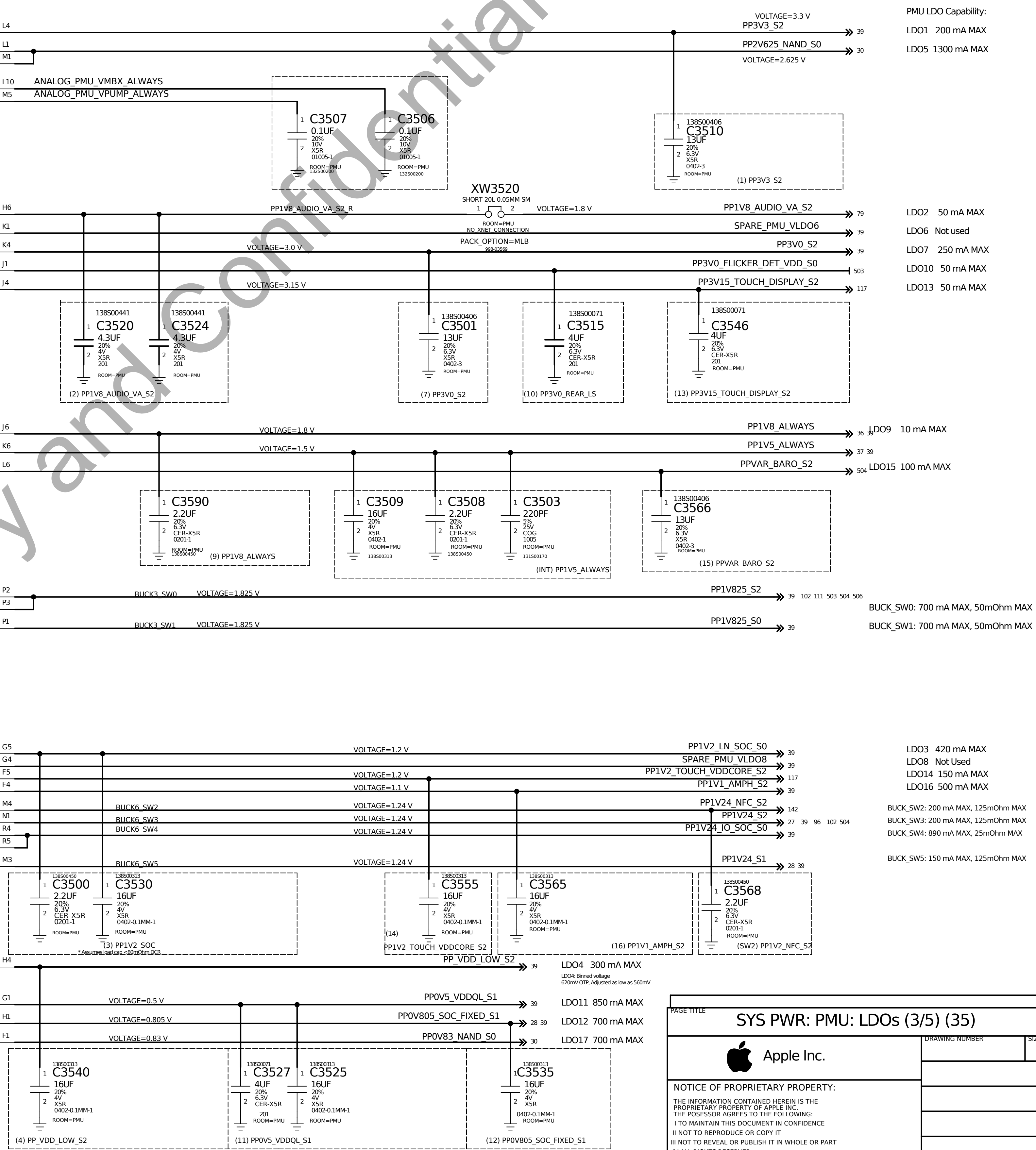


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## PMU - LDOs

## LDO & Switch

PP\_VDD\_BOOST



| PART NUMBER | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                   |
|-------------|-----------------------|----------|-----|-------------------------------|
| 998-32560   | U3300                 | C        | 1   | IC,PMU,BAKU,A1,OTP-QPC,CSP380 |

| PART NUMBER | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                   |
|-------------|-----------------------|----------|-----|-------------------------------|
| 998-32560   | U3300                 | C        | 1   | IC,PMU,BAKU,A1,OTP-QPC,CSP380 |

The schematic diagram illustrates the power and ground connections for the PP1V2 SOC. It is organized into several functional groups:

- GROUP 4:** Includes VIN\_SW0, VIN\_SW1, VOUT\_SW0, and VOUT\_SW1. It shows connections to BUCK3\_SW0 and BUCK3\_SW1, both with a voltage of 1.825 V.
- GROUP 5:** Includes VDD\_LDO3, VDD\_LDO8, VDD\_LDO14, VDD\_LDO16, VIN\_SW2, VIN\_SW3, VIN\_SW4, VIN\_SW5, and VSS. It shows connections to VLD03, VLD08, VLD014, VLD016, VOUT\_SW2, VOUT\_SW3, VOUT\_SW4, and VOUT\_SW5. It also shows connections to BUCK6\_SW2, BUCK6\_SW3, BUCK6\_SW4, and BUCK6\_SW5, all with a voltage of 1.24 V.
- GROUP 6:** Includes VDD\_LDO4, VDD\_LDO11, VDD\_LDO12, and VDD\_LDO17. It shows connections to VLD04, VLD011, VLD012, and VLD017. It also shows connections to PP0V5\_VDDQL\_S1, PP0V805\_SOC\_FIXED\_S1, and PP0V83\_NAND\_S0.

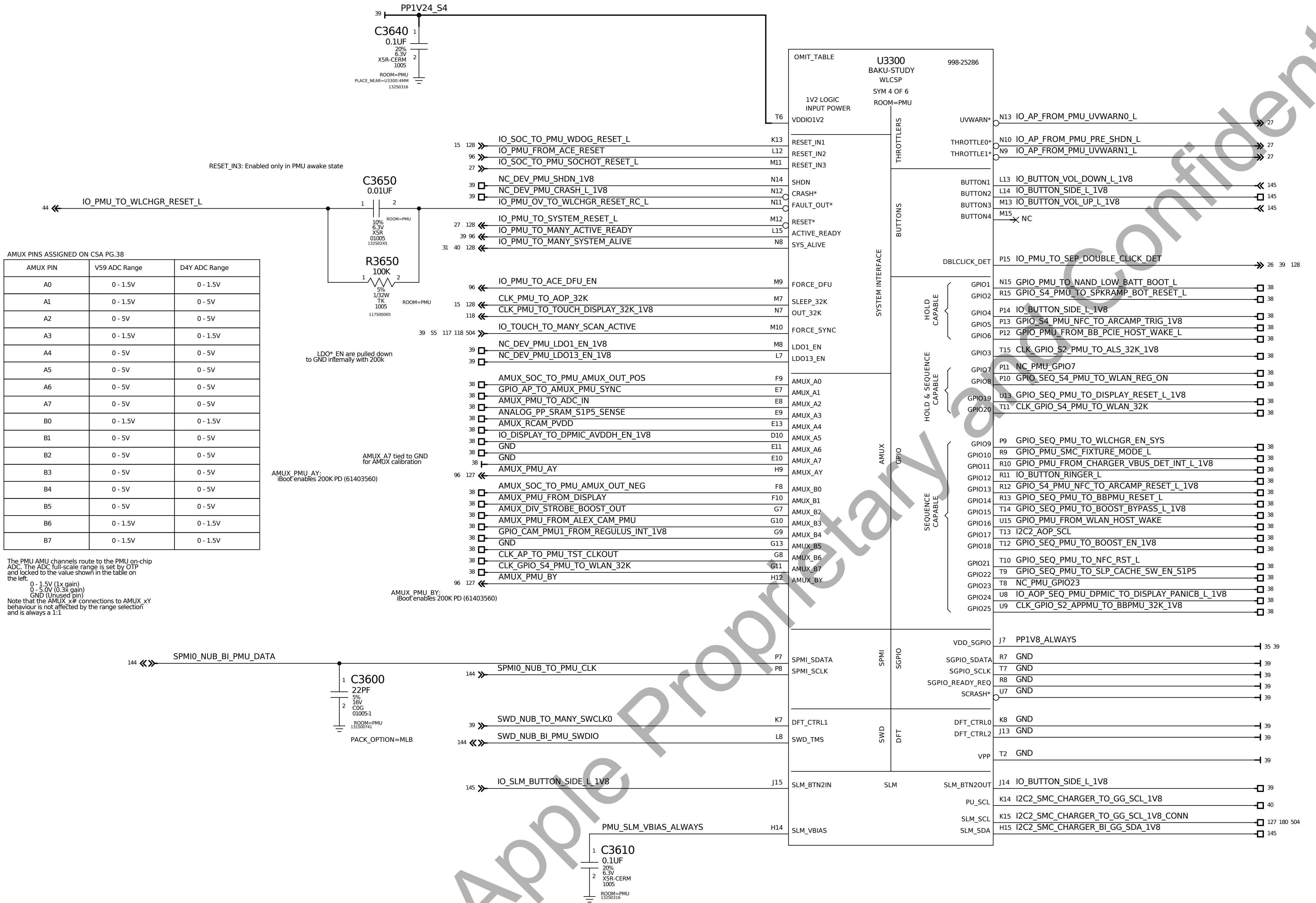
Internal components and connections include:

- Capacitors: C3500 (2.2UF), C3530 (16UF), C3555 (16UF), and C3556 (16UF).
- Resistors: R2, R3, R1, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R74

\* Assumes load cap <80mOhm DCR

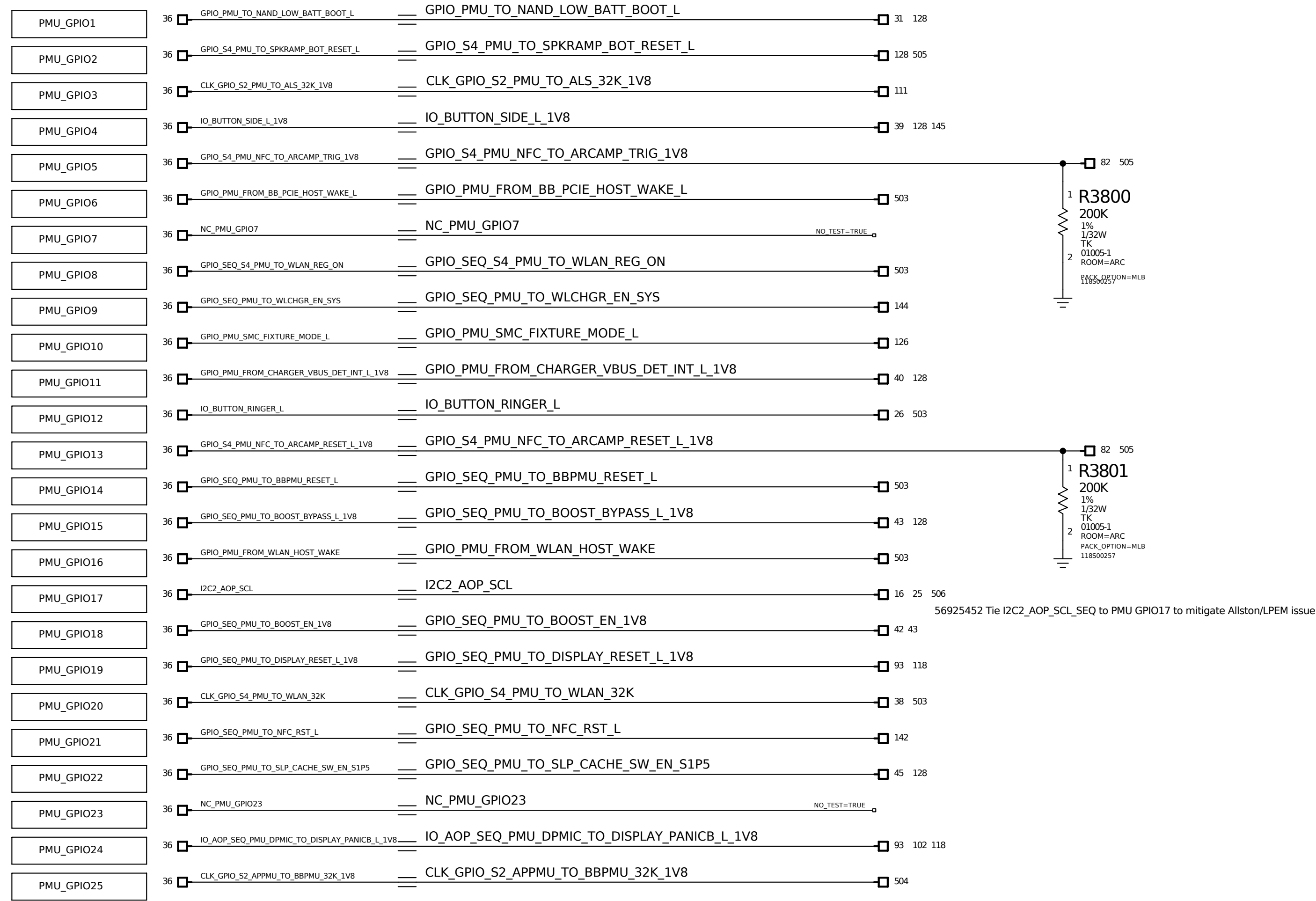


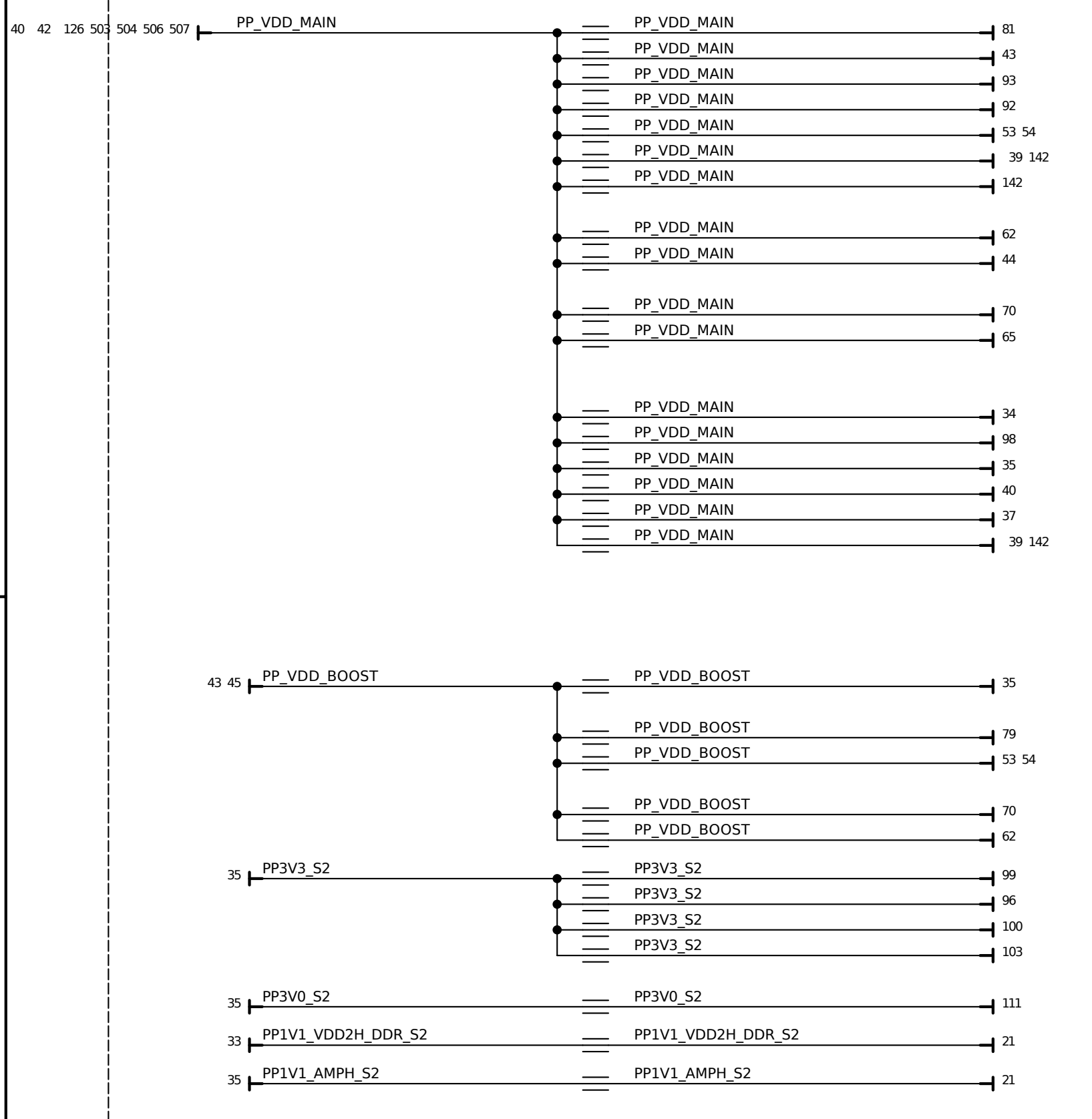
PMU - GPIOs + DIOs



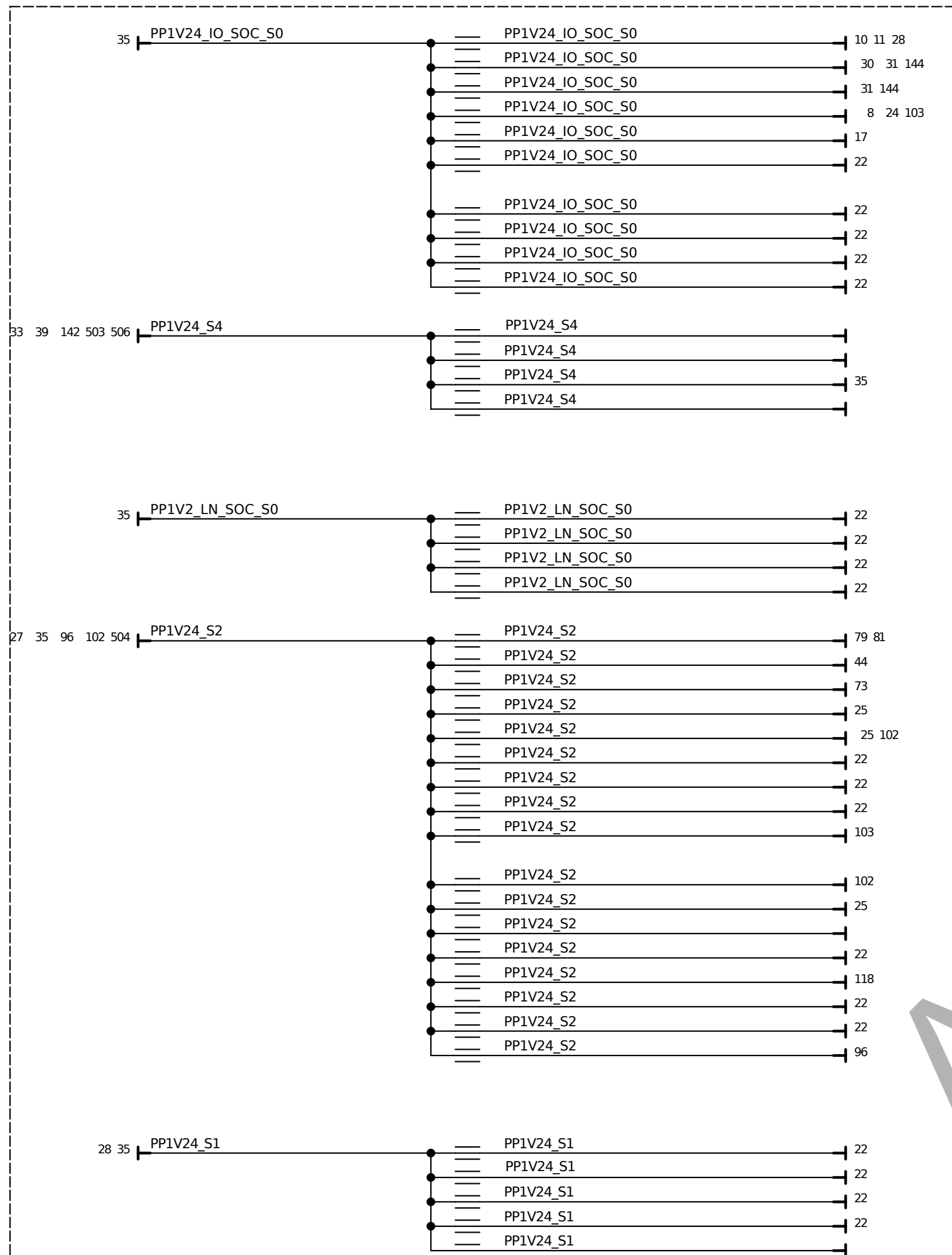


PMU GPIOs

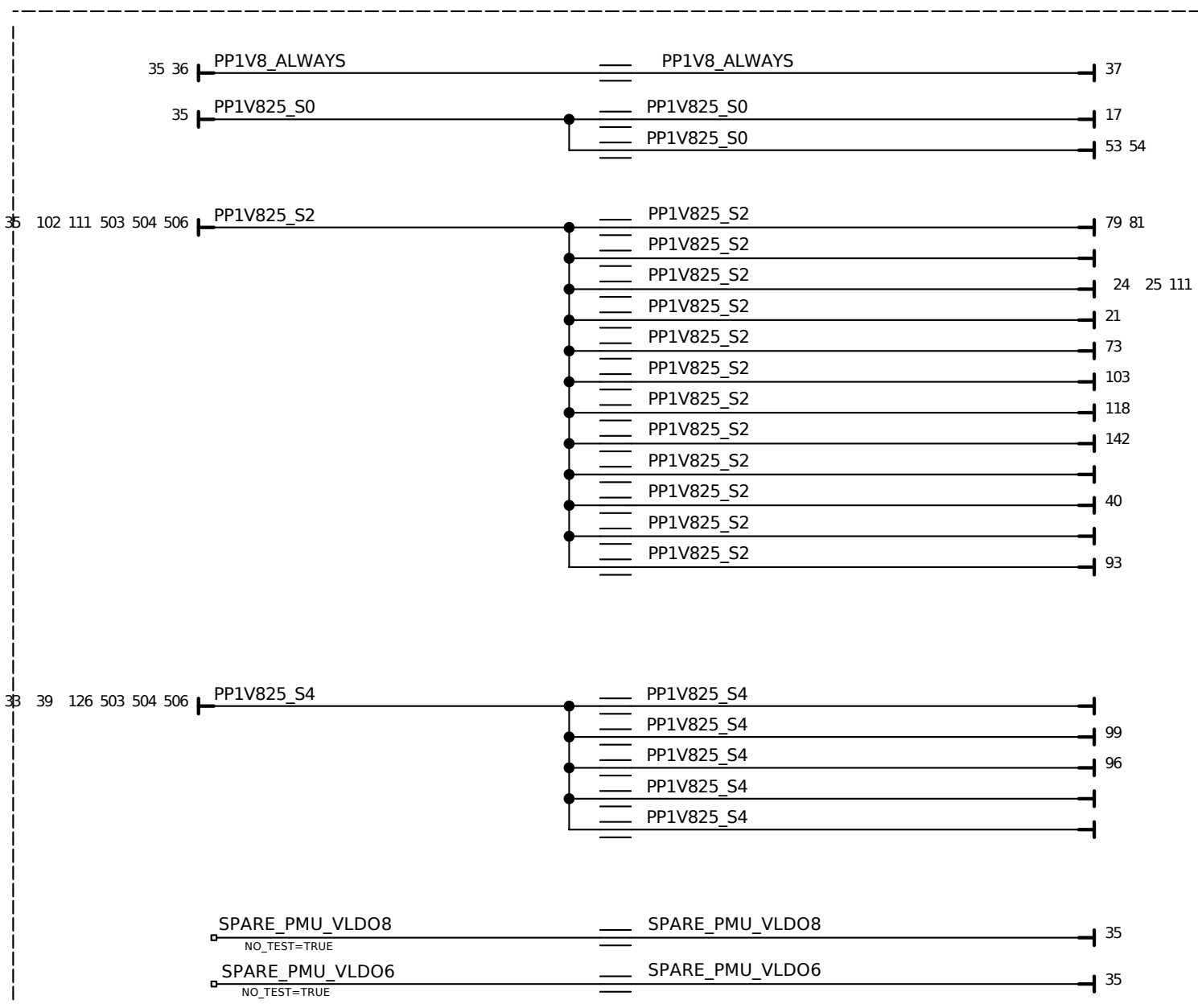




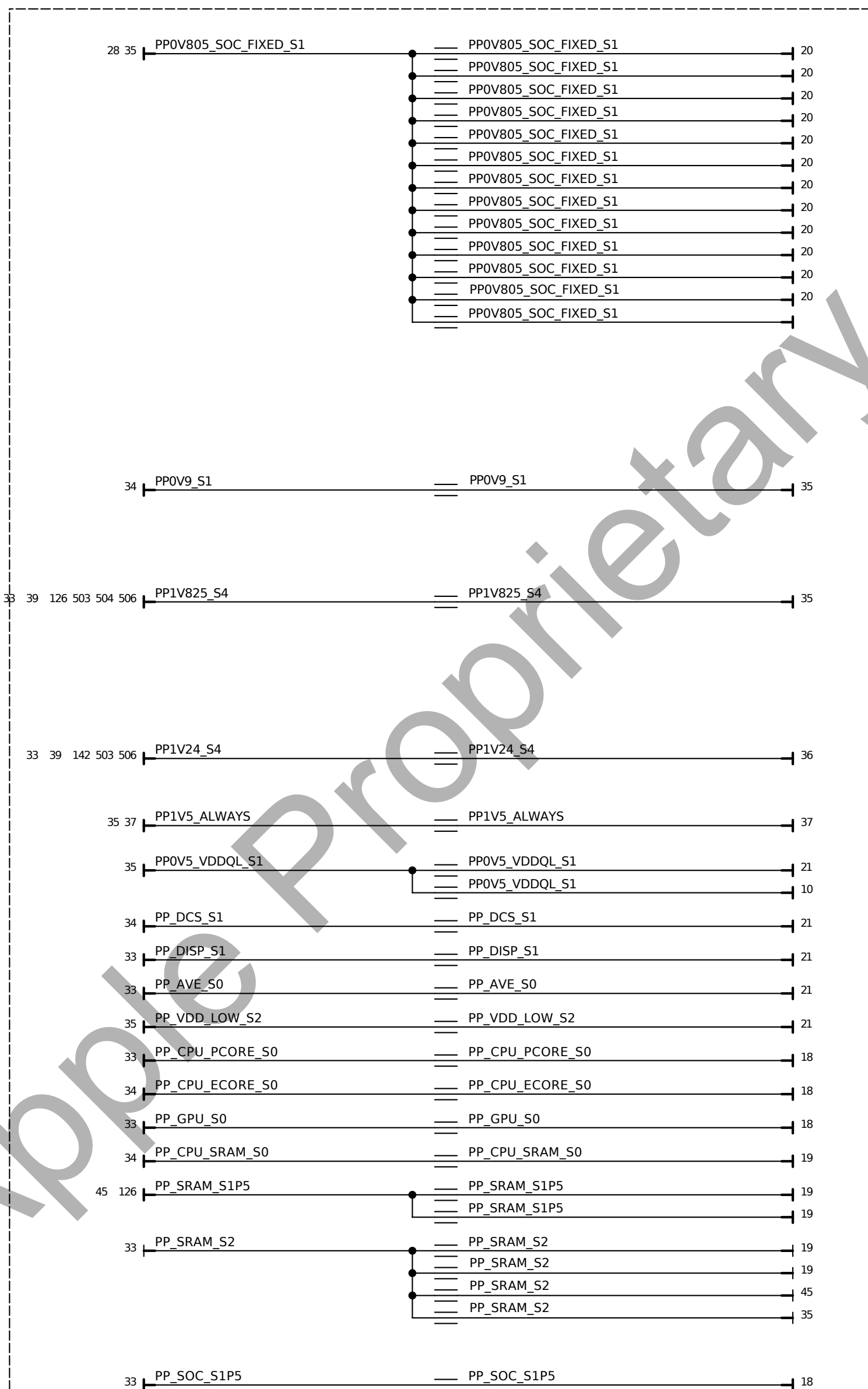
## PP1V2 Domains



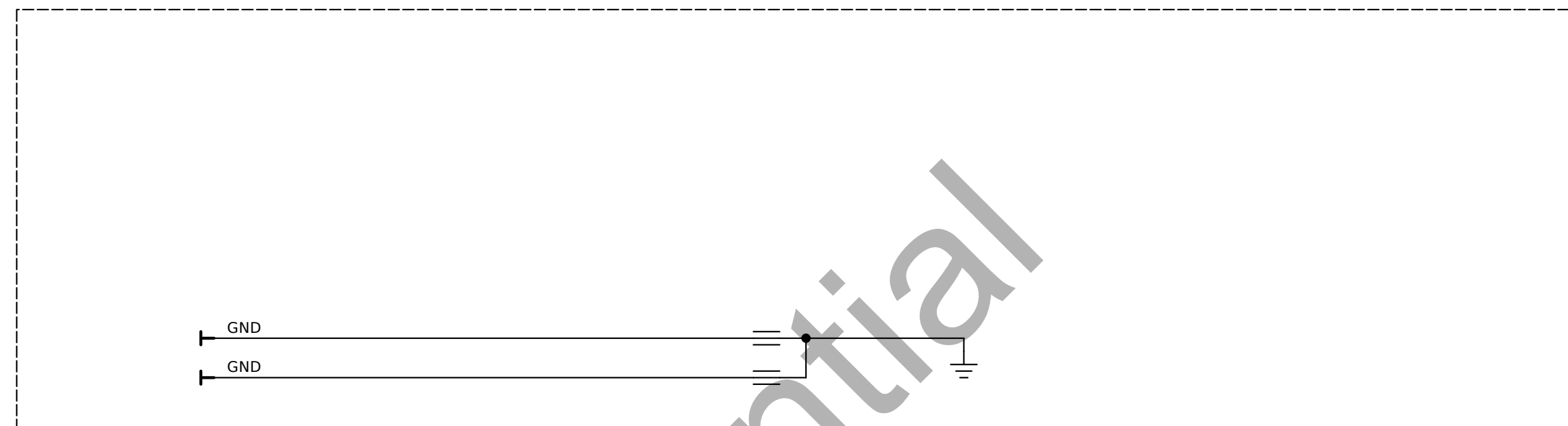
## PP1V8 Domains



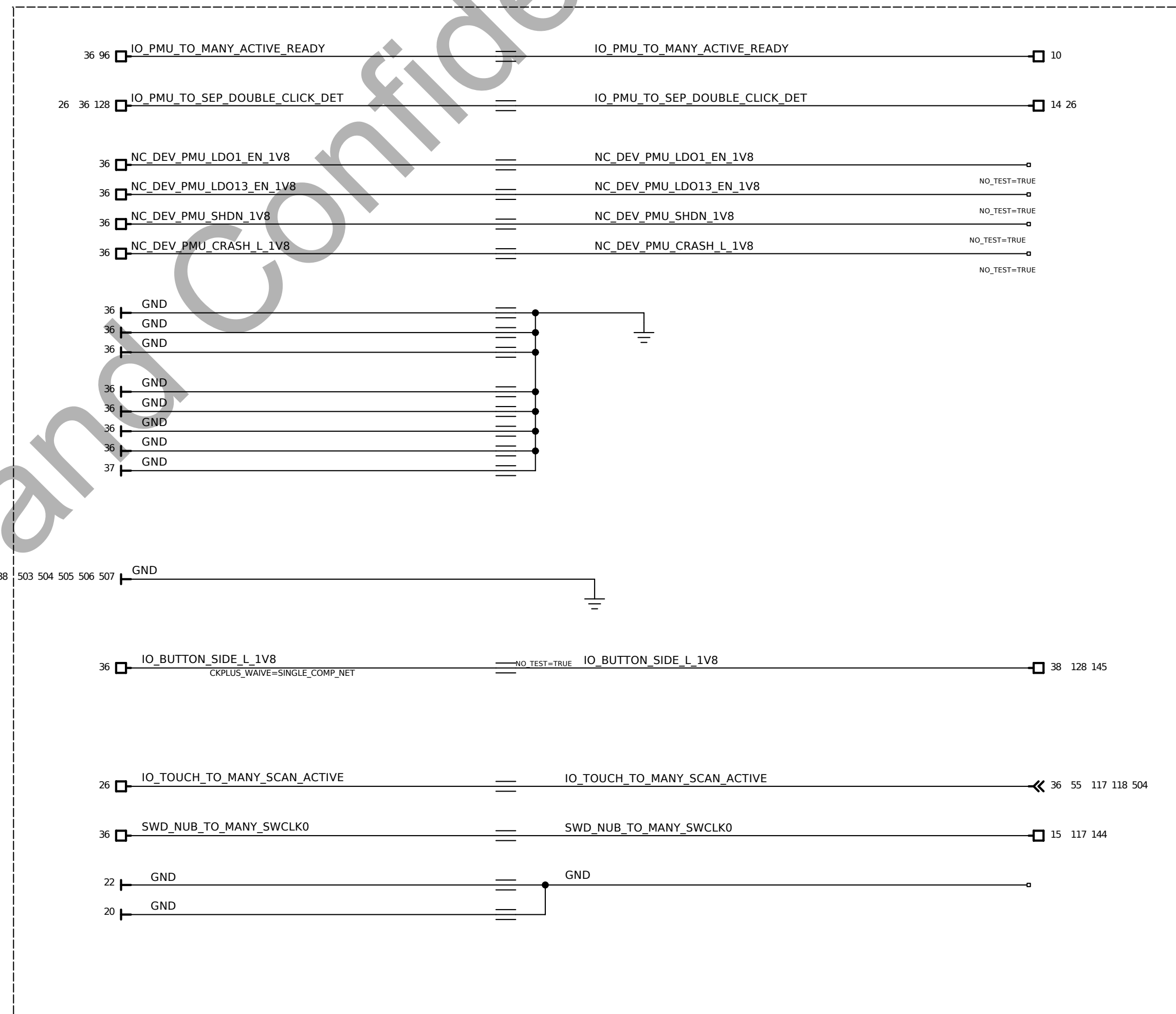
## SOC + PMU Power Assignments



## DEV Board Compatability



## PMU Dedicated IO Assignments



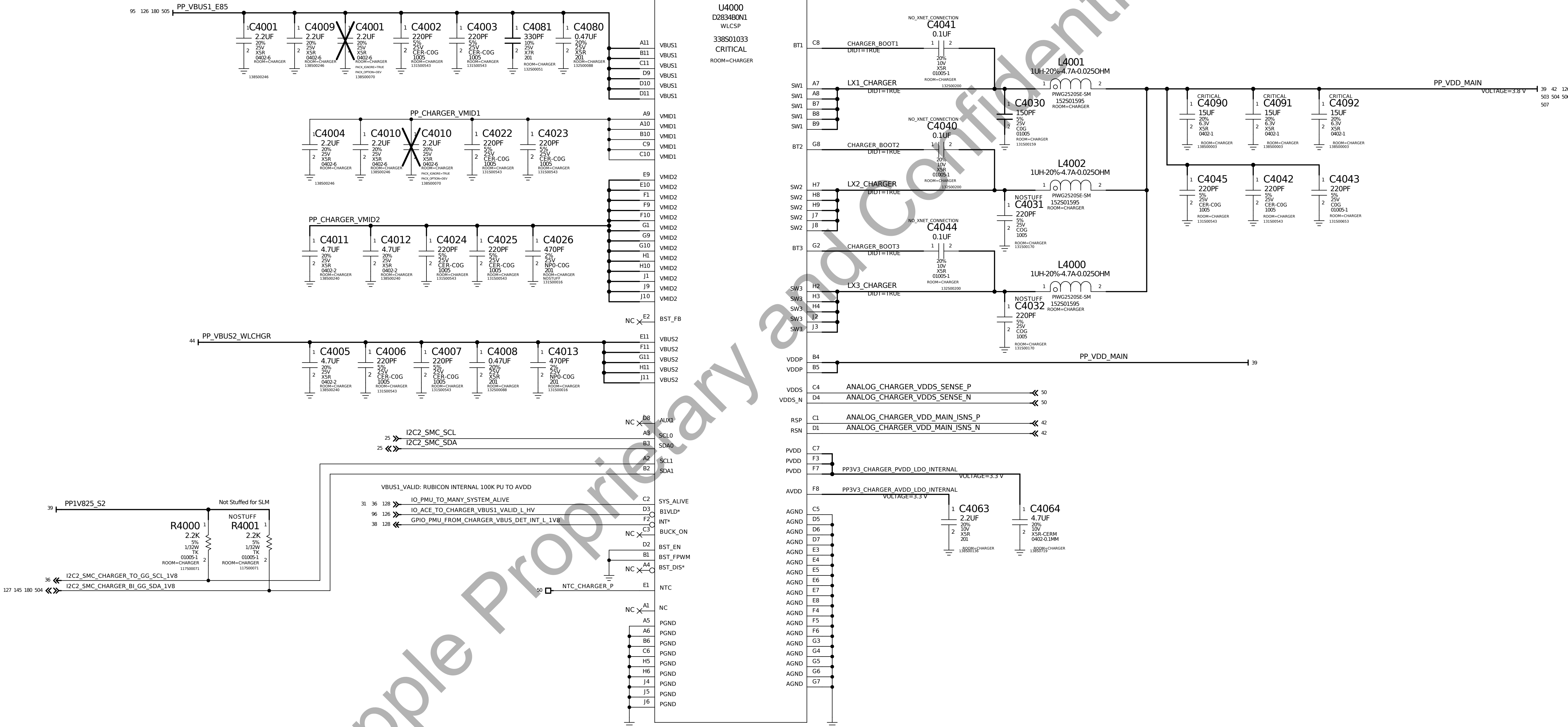
SUBSYSTEM SPECIFIC BOM TABLES

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                             |
|--------------------|------------------|-----------------------|-------------------------------------|
| 152S01596          | 152S01595        | L4000-L4002           | TAIYO,1UH,20%,4.7A,33MO,H=0.95,2520 |

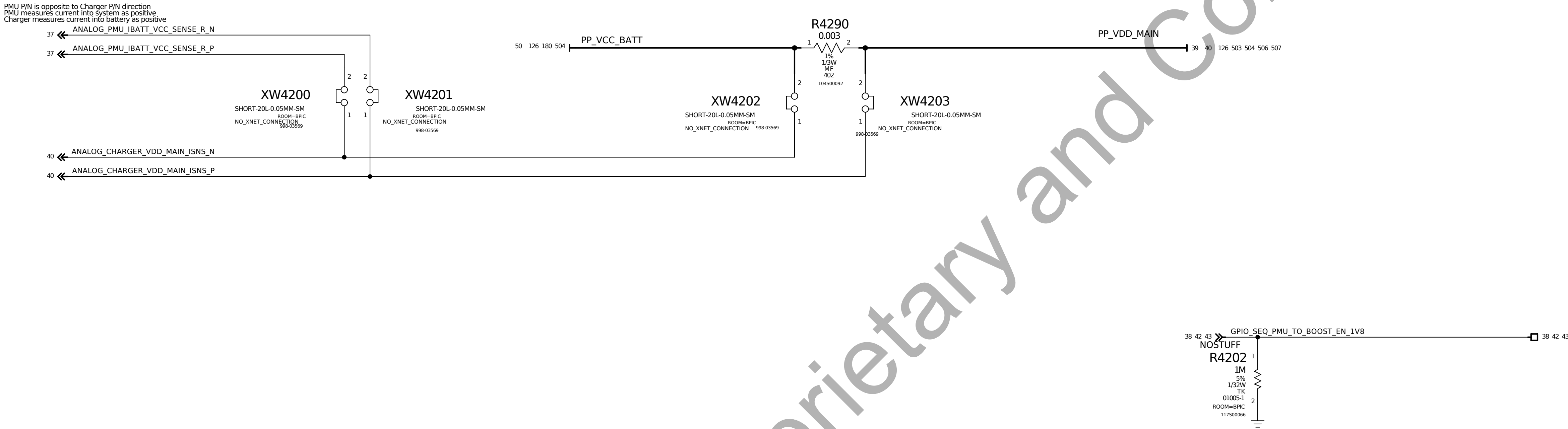
CHARGER

INPUTS

OUTPUTS



VDD\_MAIN Sense Resistor

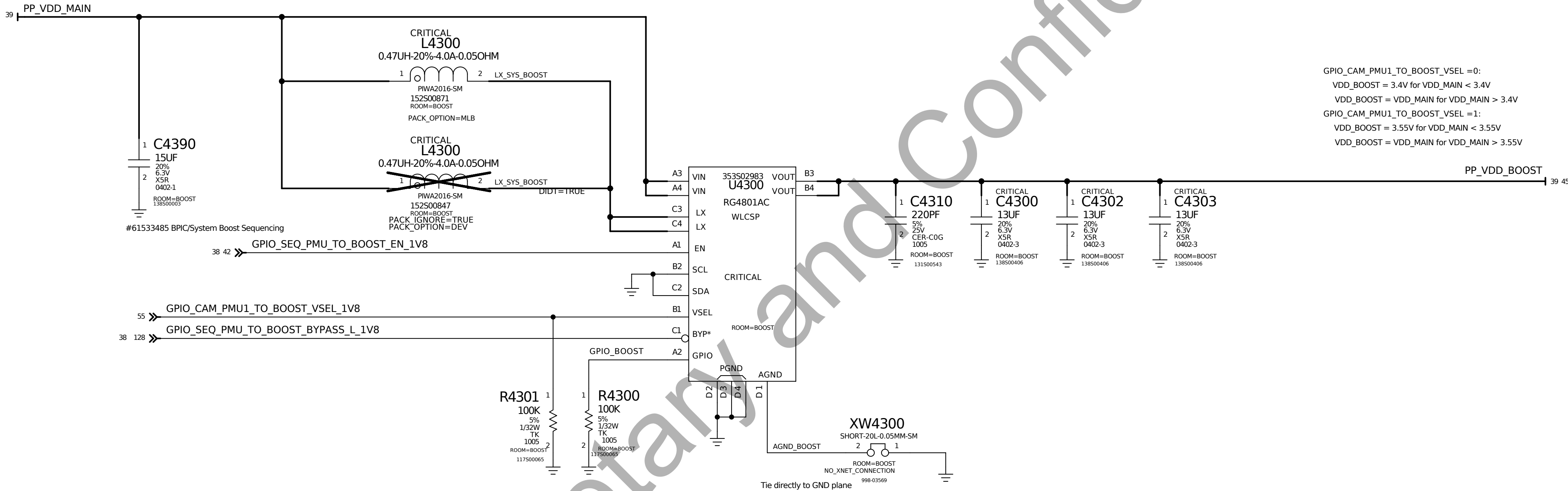



SUBSYSTEM SPECIFIC BOM TABLES

Boost

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                  |
|--------------------|------------------|-----------------------|--|
| 353503002          | 353502983        | U4300                 | IC:SN61280H,BOOST,3.4/3.55V,4.5A,CSP16,T |

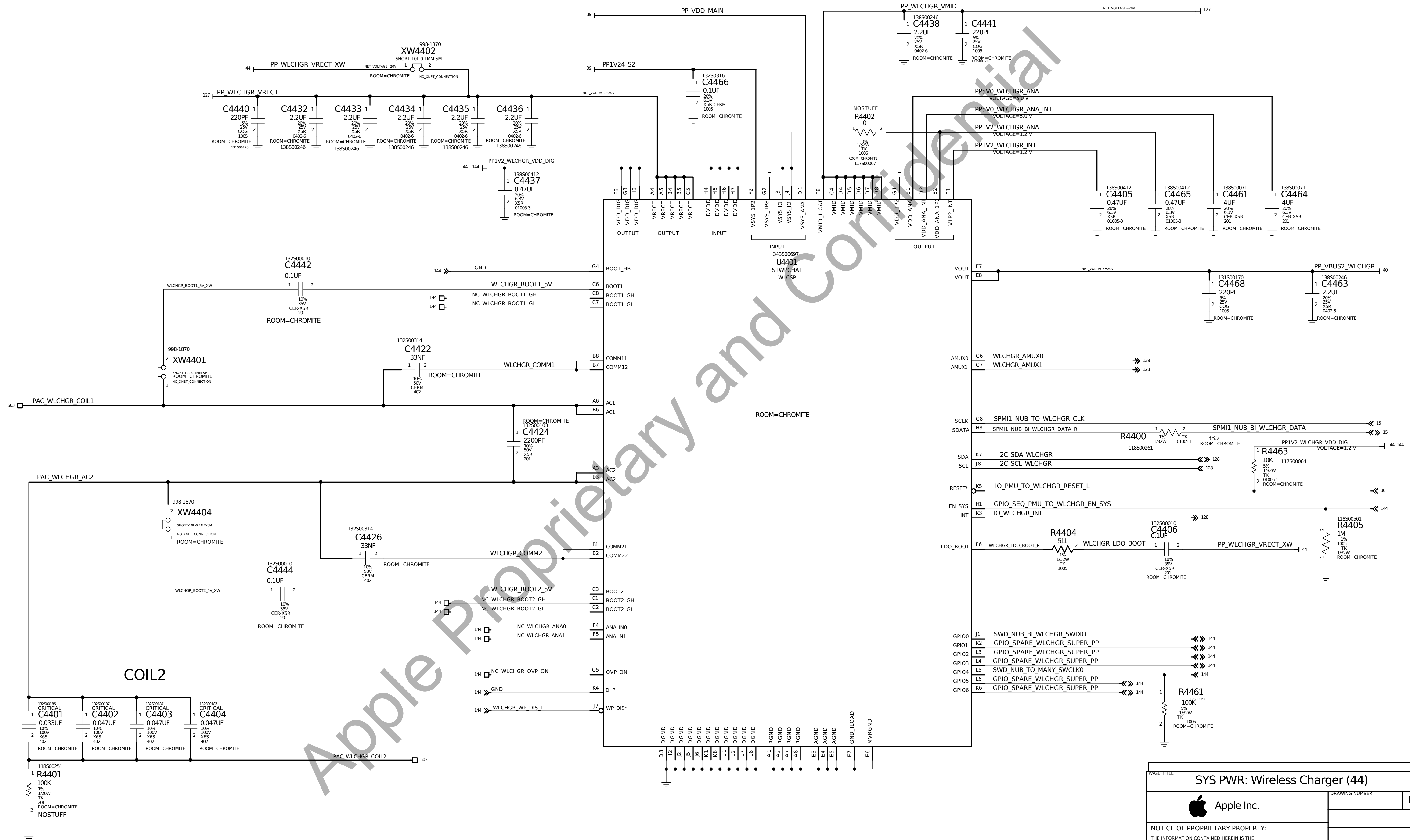
BOOST



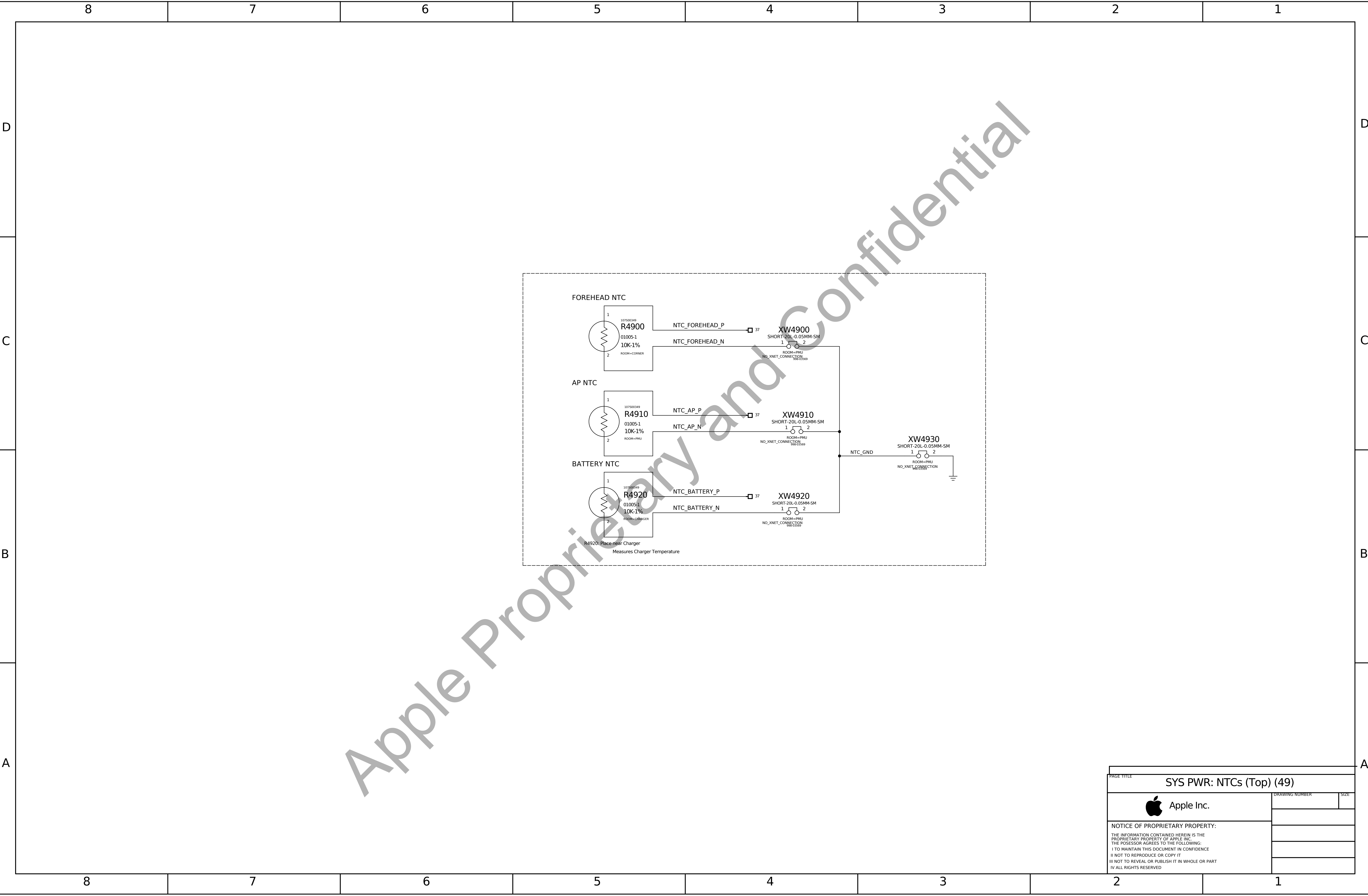
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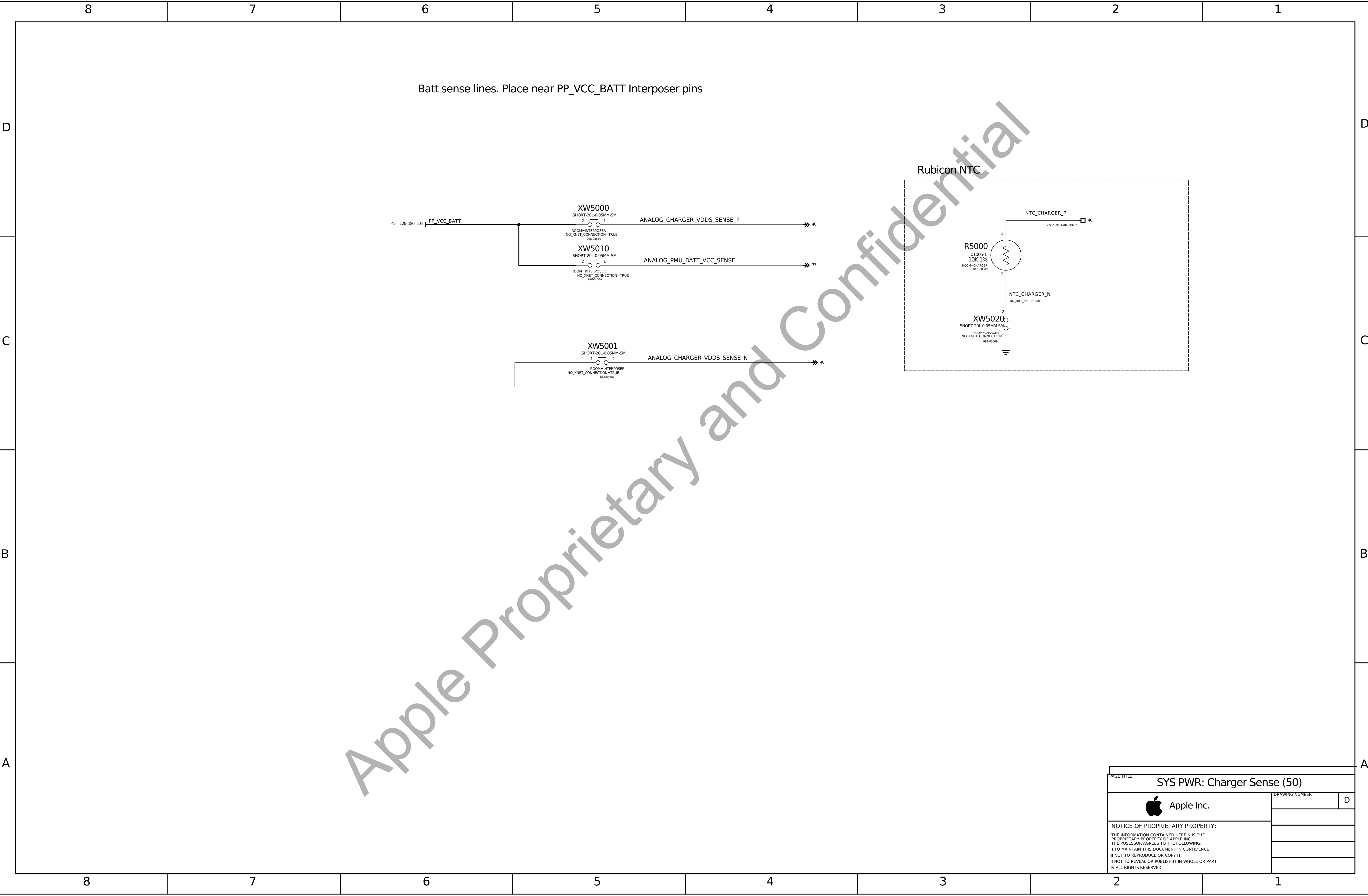


## Wireless Charger

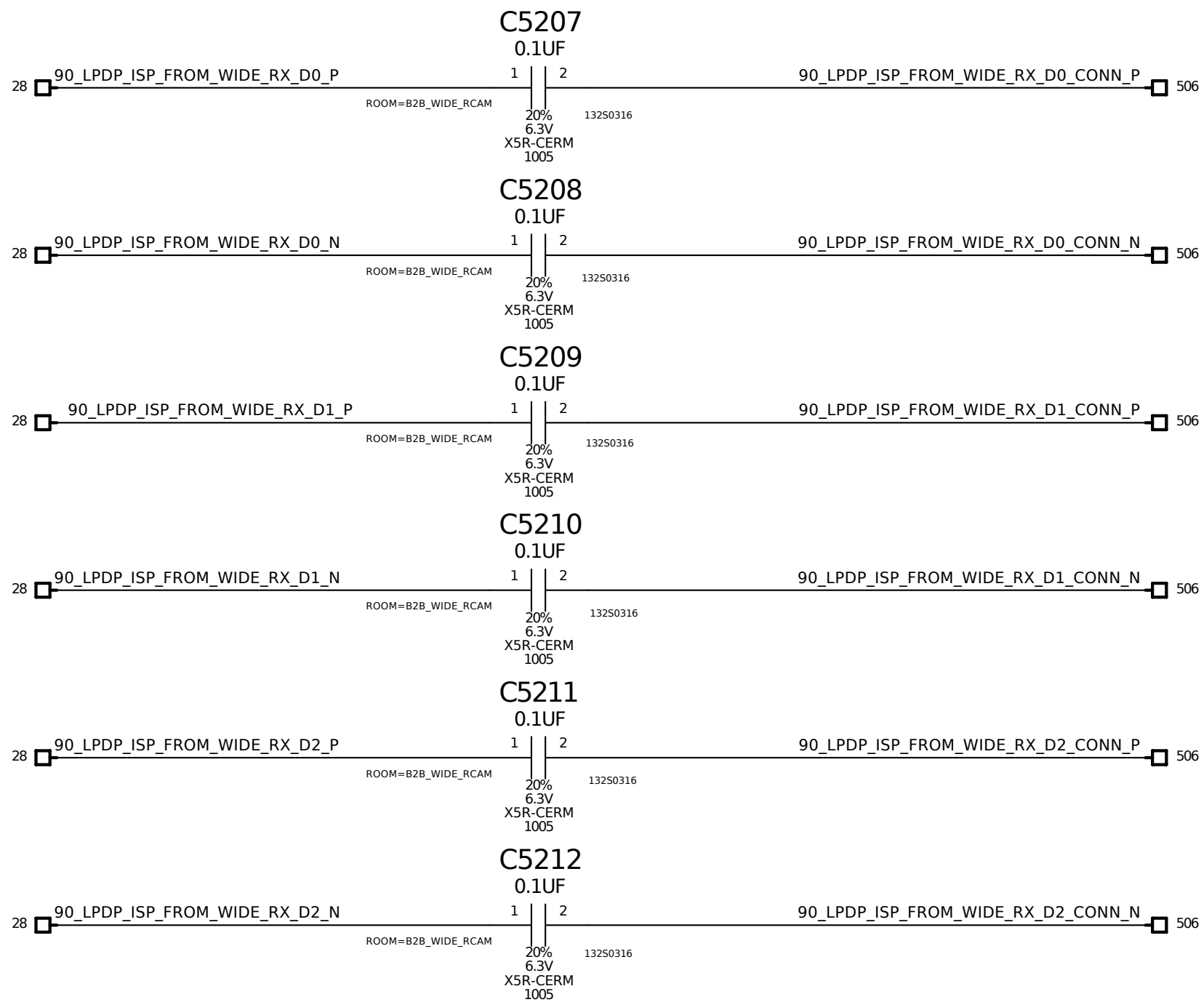




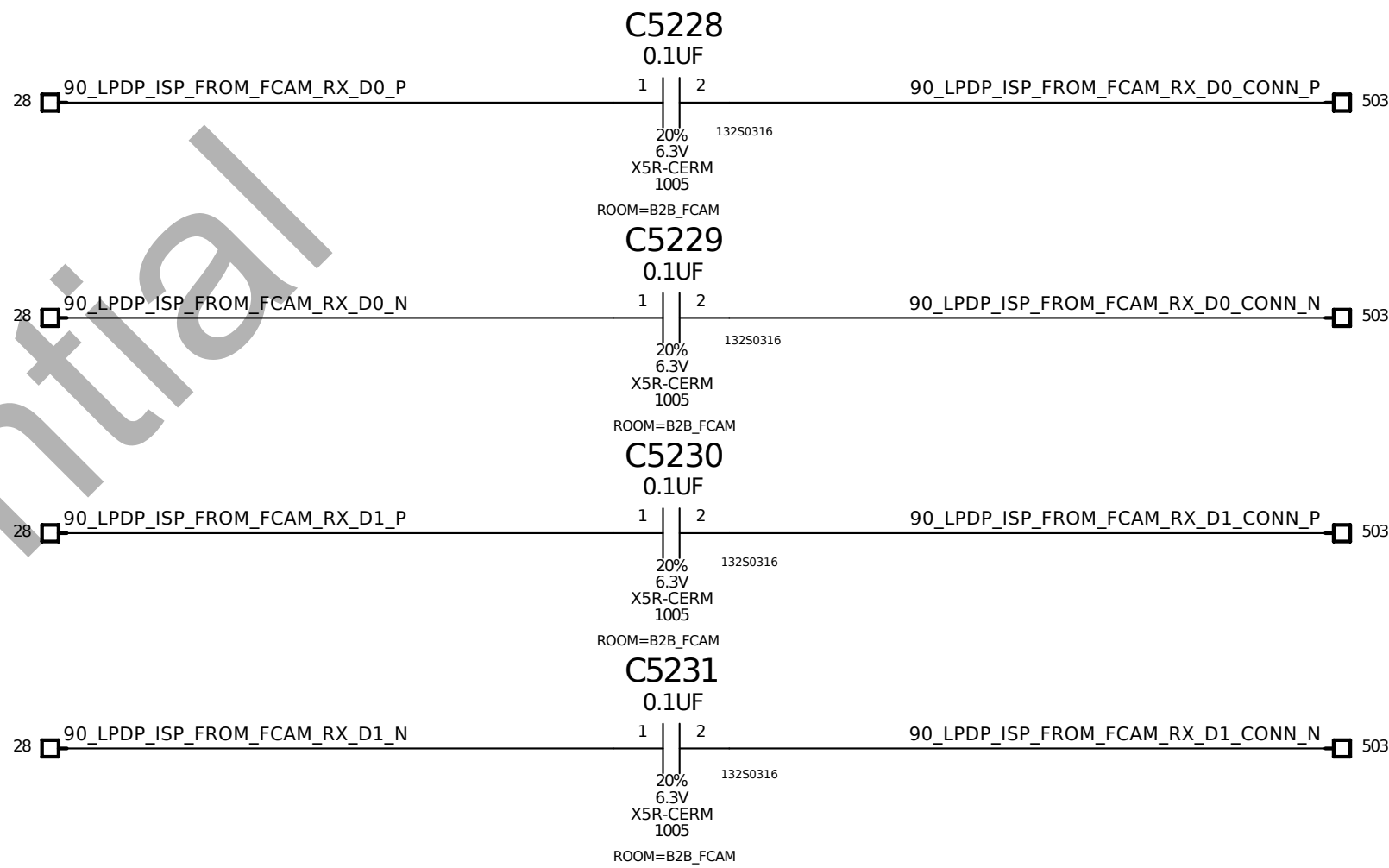




WIDE LPDP FILTERS



FCAM LPDP FILTERS

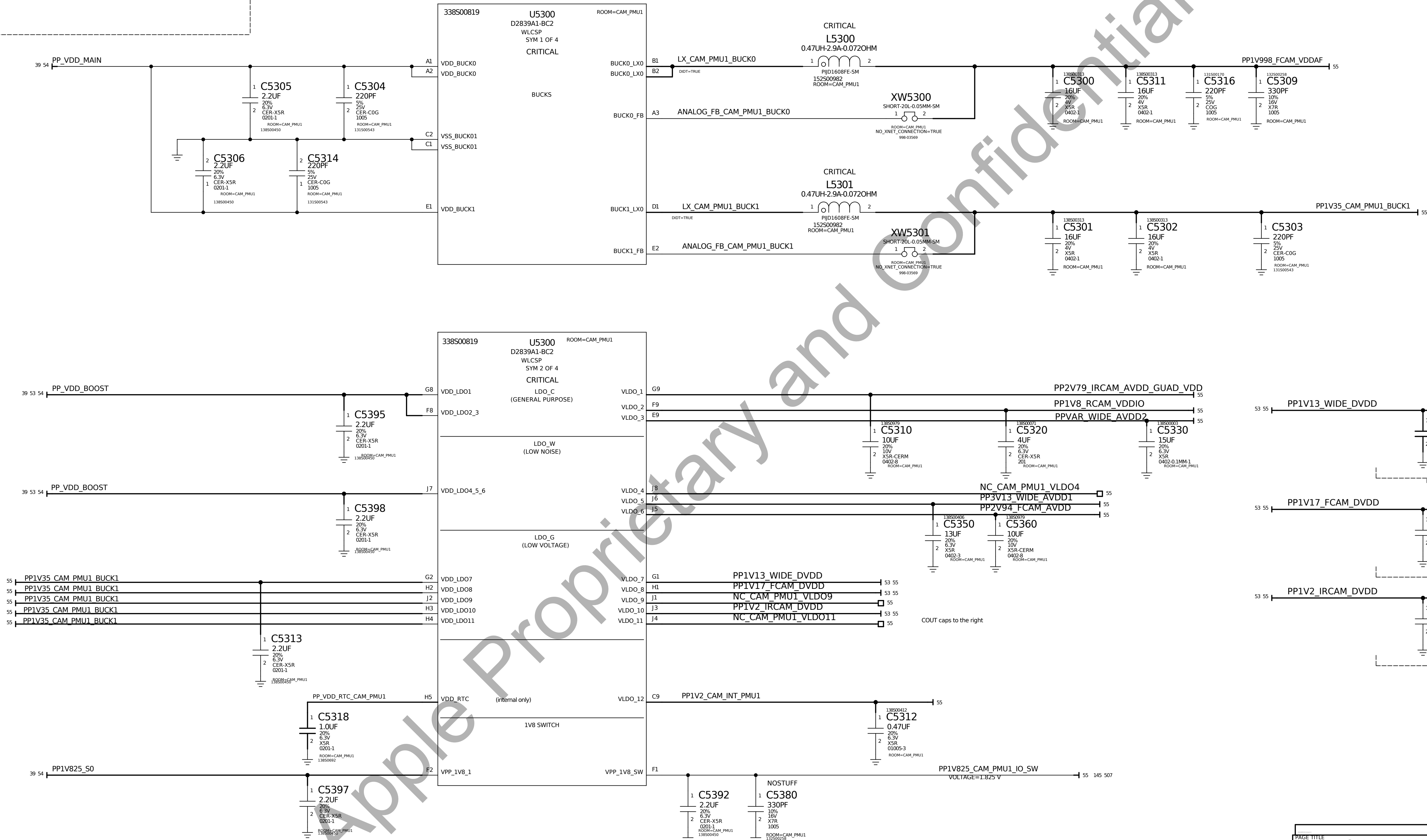


## SUBSYSTEM SPECIFIC BOM TABLES

## CAMERA PMU1

4uF 0201 Capacitors (single-source Murata)

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                       |
|--------------------|------------------|-----------------------|-------------------------------|
| 138500116          | 138500071        | (C5315,C5386)         | 0201,4uF,X5R,6.3V,Taiyo       |
| 138500117          | 138500071        | (C5315,C5386)         | 0201,4uF,X5R,6.3V,Kyocera     |
| 138500515          | 138500071        | (C5315,C5386)         | CAP,X5R,4UF,0201,0.55MM,SEMCO |



|            |                                 |
|------------|---------------------------------|
| PAGE TITLE | CAMERA: PMU 1: Power (1/2) (53) |
|------------|---------------------------------|



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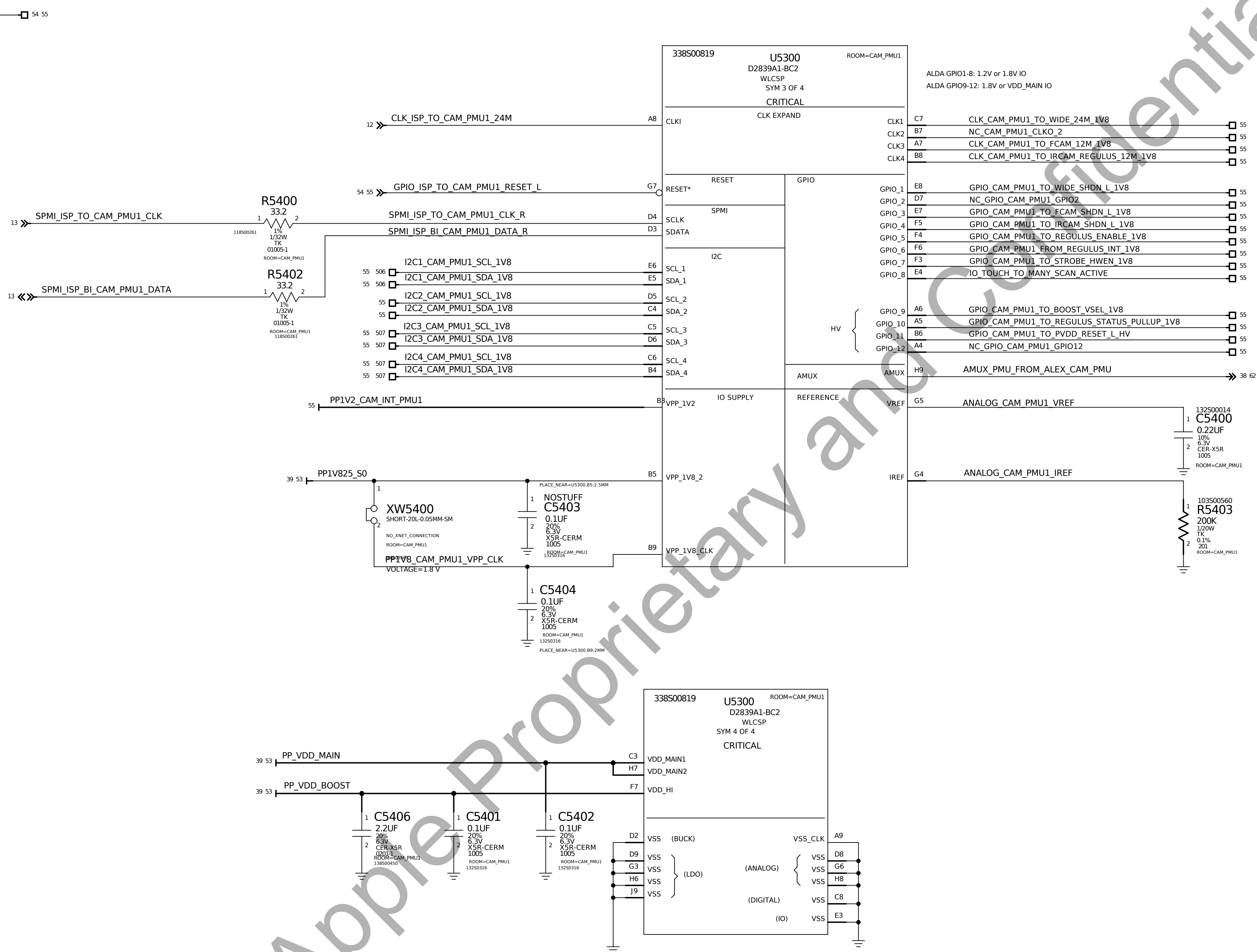
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|                |  |
|----------------|--|
| DRAWING NUMBER |  |
|----------------|--|

A



CAMERA PMU1



## D



Lorentz can use addresses 0x74,0x75,0x76,0x77 for different modes

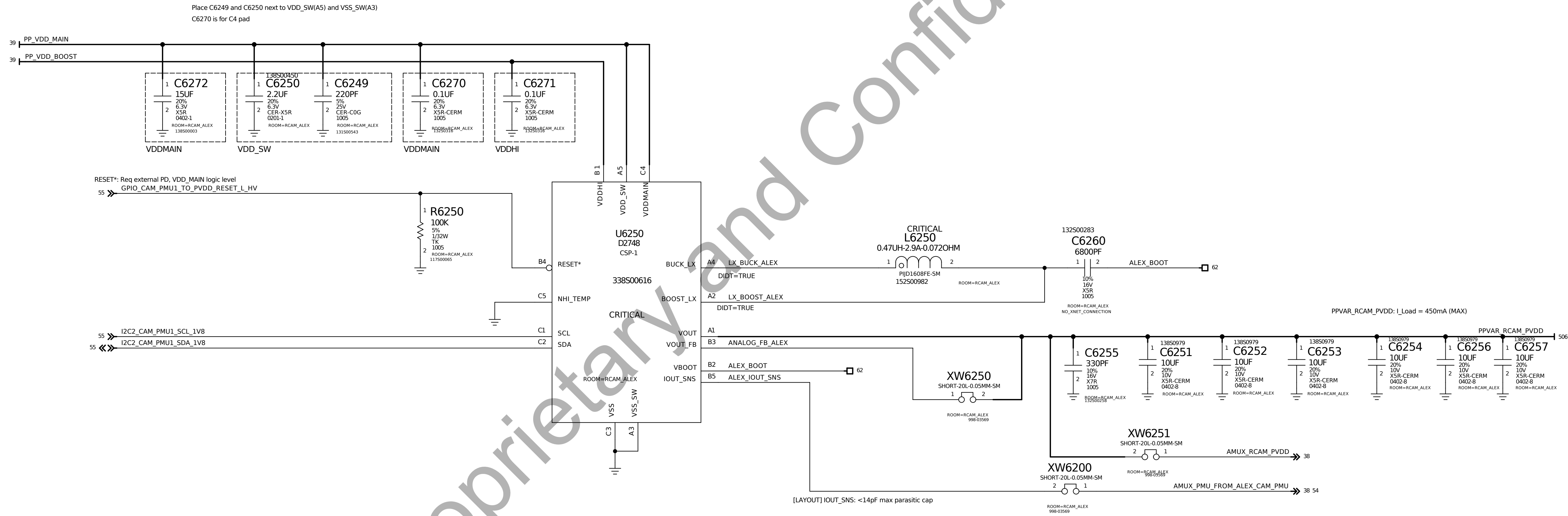
| DOMAIN  | CAM PMU1 | NUMBER     | I2C3       | DIAGS NUMBER | 6            | SPEED | 1MHz |
|---------|----------|------------|------------|--------------|--------------|-------|------|
| DEVICE  | VOLTAGE  | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION     |       |      |
| FCAM    | 1.8V     | 0x10       | 0x20,0x21  | 1MHz         | FCAM SC FLEX |       |      |
| Faraday | 1.8V     | 0x59       | 0xB2,0xB3  | 1MHz         | FCAM SC FLEX |       |      |


| DOMAIN    | CAM PMU1 | NUMBER     | I2C4       | DIAGS NUMBER | 7           | SPEED | 1MHz |
|-----------|----------|------------|------------|--------------|-------------|-------|------|
| DEVICE    | VOLTAGE  | 7-BIT ADDR | 8-BIT ADDR | MAX SPEED    | LOCATION    |       |      |
| IRCAM     | 1.8V     | 0x18       | 0x30,0x31  | 1MHz         | Bariff Flex |       |      |
| Guadalupe | 1.8V     | 0x64       | 0xC8,0xC9  | 1MHz         | Bariff Flex |       |      |
| Regulus   | 1.8V     | 0x71       | 0xE2,0xE3  | 1MHz         | CG MLB      |       |      |

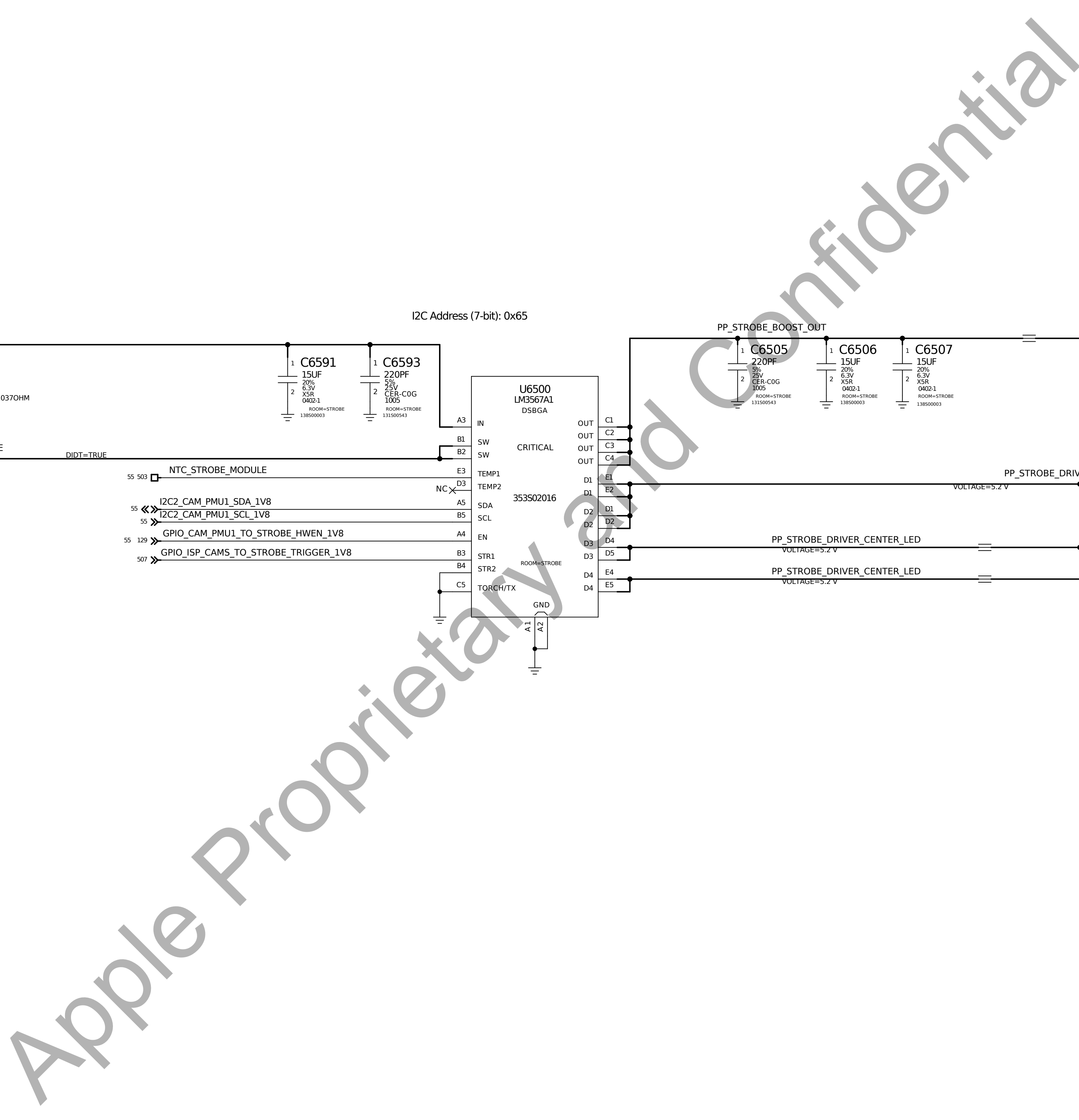
Guadalupe 7 bit addr alternatives are 0x45,0x69,0x35

C

Actuator Supply



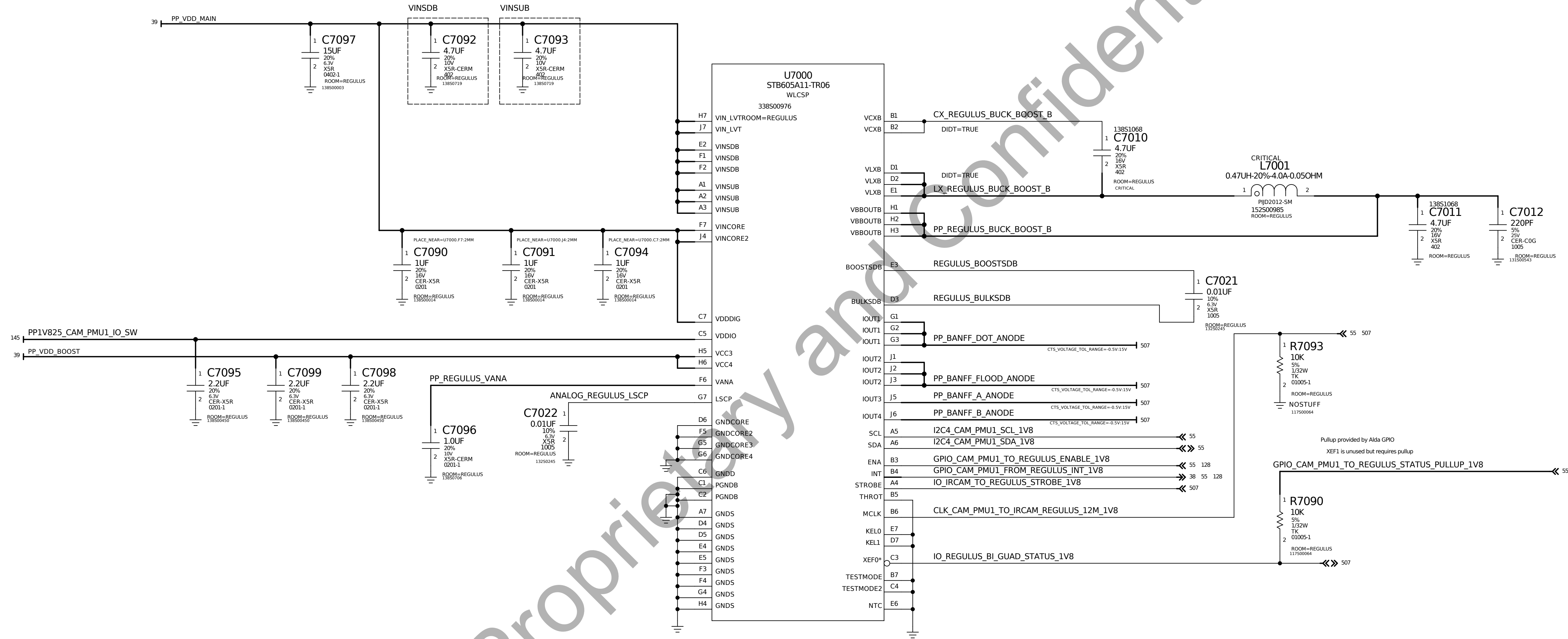
| PAGE TITLE   |                |
|--|----------------|
| CAMERA: Actuator Supply (Alex) (62)  |                |
|  Apple Inc.   | DRAWING NUMBER |
|  |                |
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SUBSYSTEM SPECIFIC BOM TABLES

INDUCTOR: Alt covered with PMU inductor BOM table

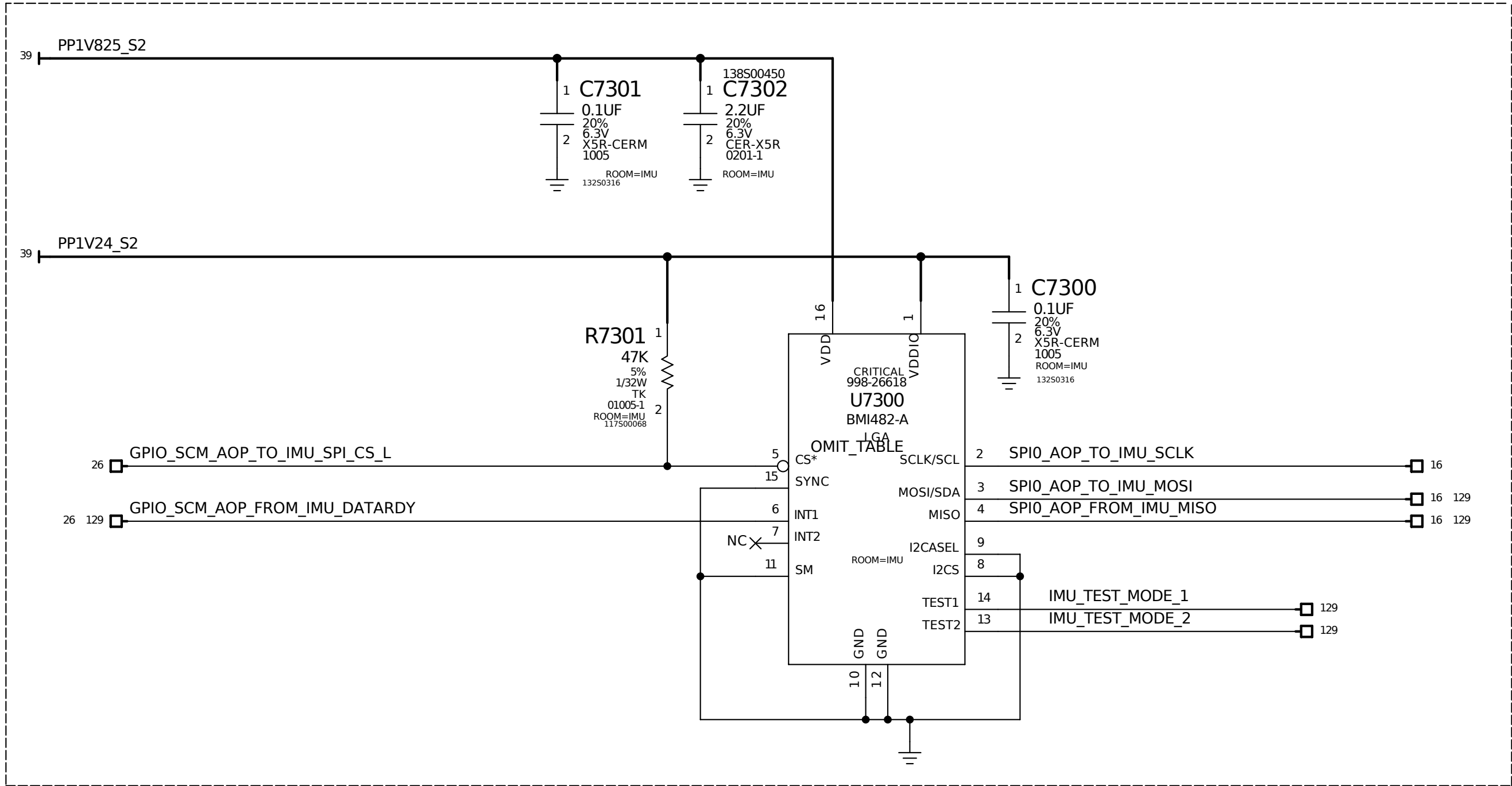
VCSEL DRIVER



| PAGE TITLE  |   | VCSEL Driver (70) |  |
|---|---|-------------------|--|
| <div> Apple Inc.</div> | DRAWING NUMBER  |                   |  |
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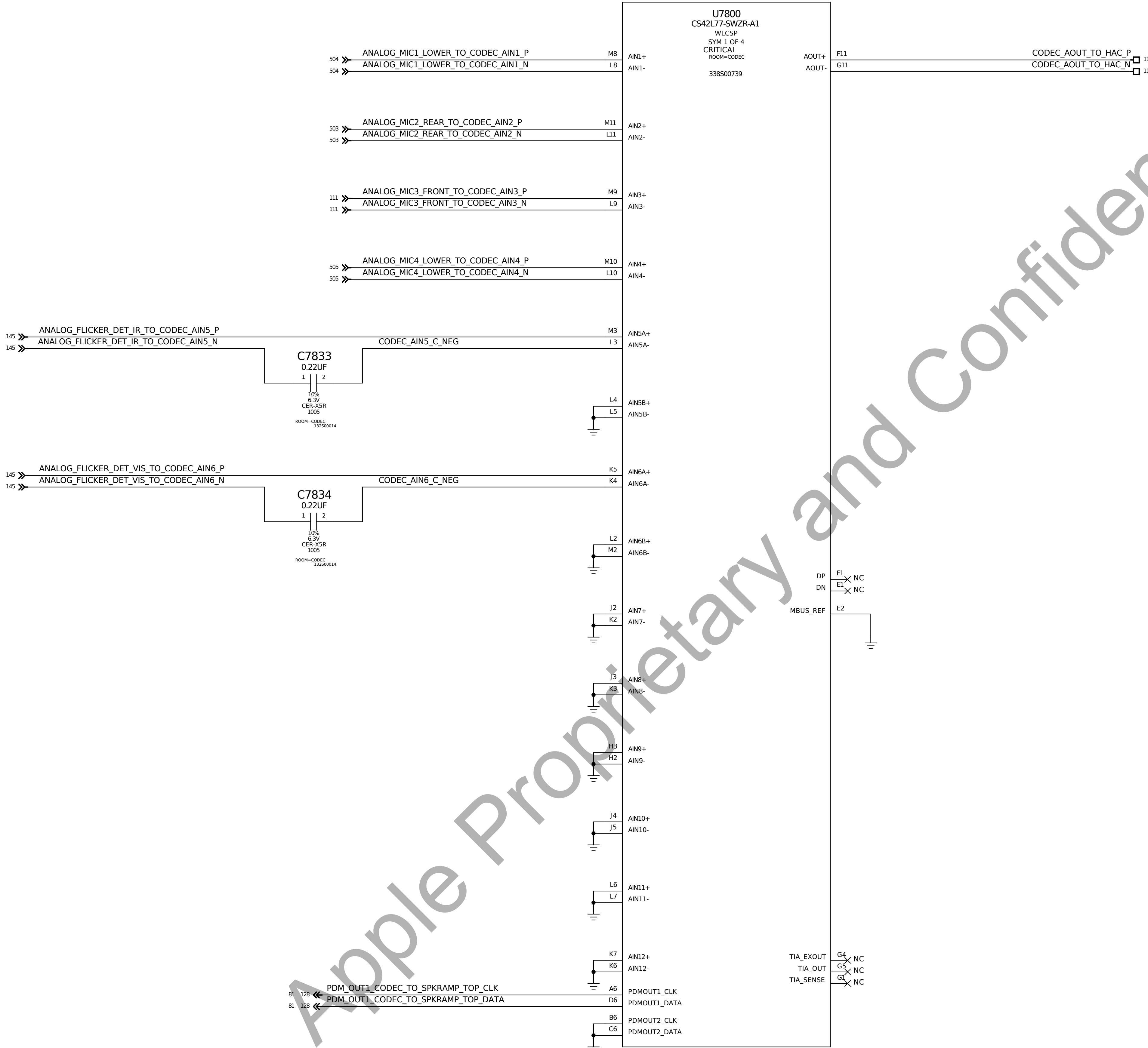
IMU - ACCEL & GYRO


IMU





## AUDIO CODEC (ANALOG INPUTS & OUTPUTS)



|  |  |                                 |  |
|--|--|---------------------------------|--|
| PAGE TITLE   |  | AUDIO: Codec: Analog (7/8) (78) |  |
|  Apple Inc.   |  | DRAWING NUMBER                  |  |
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AUDIO CODEC (POWER & I/O)

D

C

B

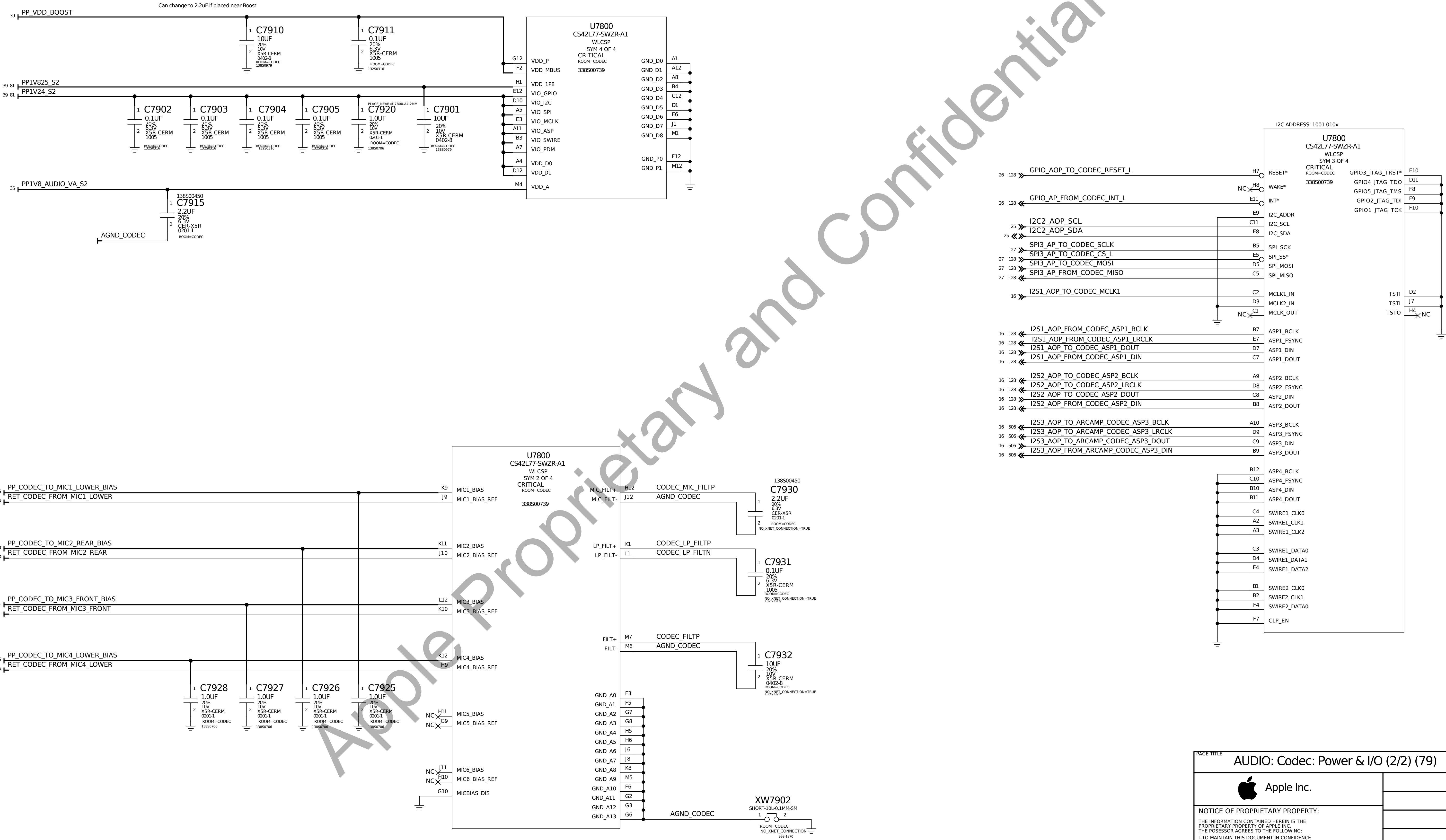
A

D

C

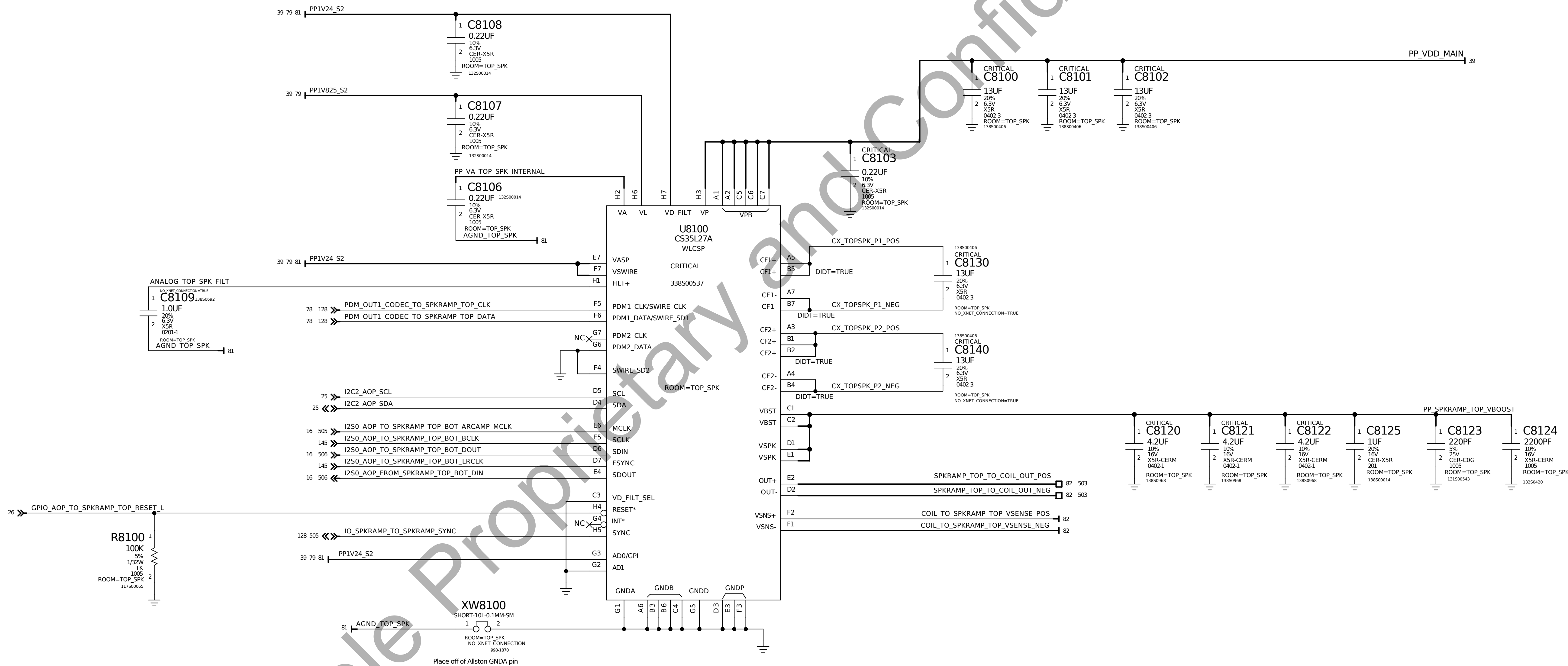
B

A



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# TOP SPEAKER AMP

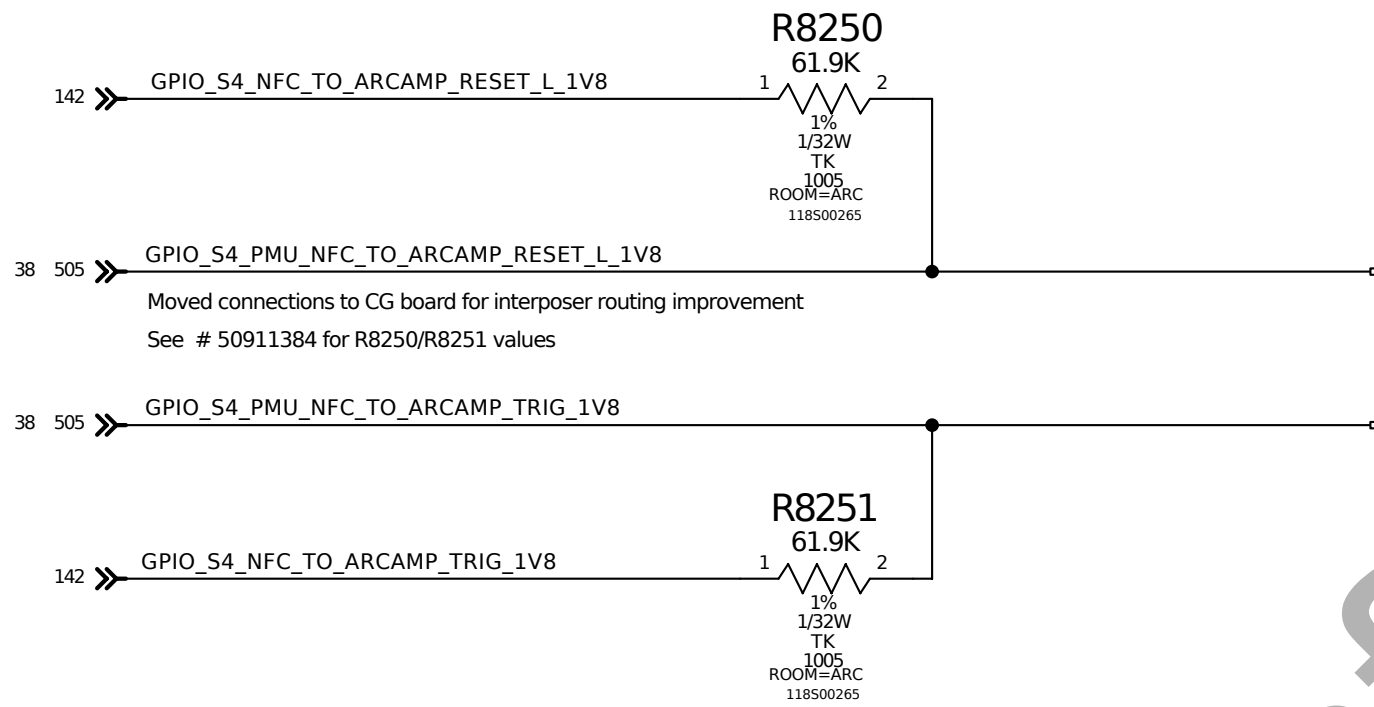
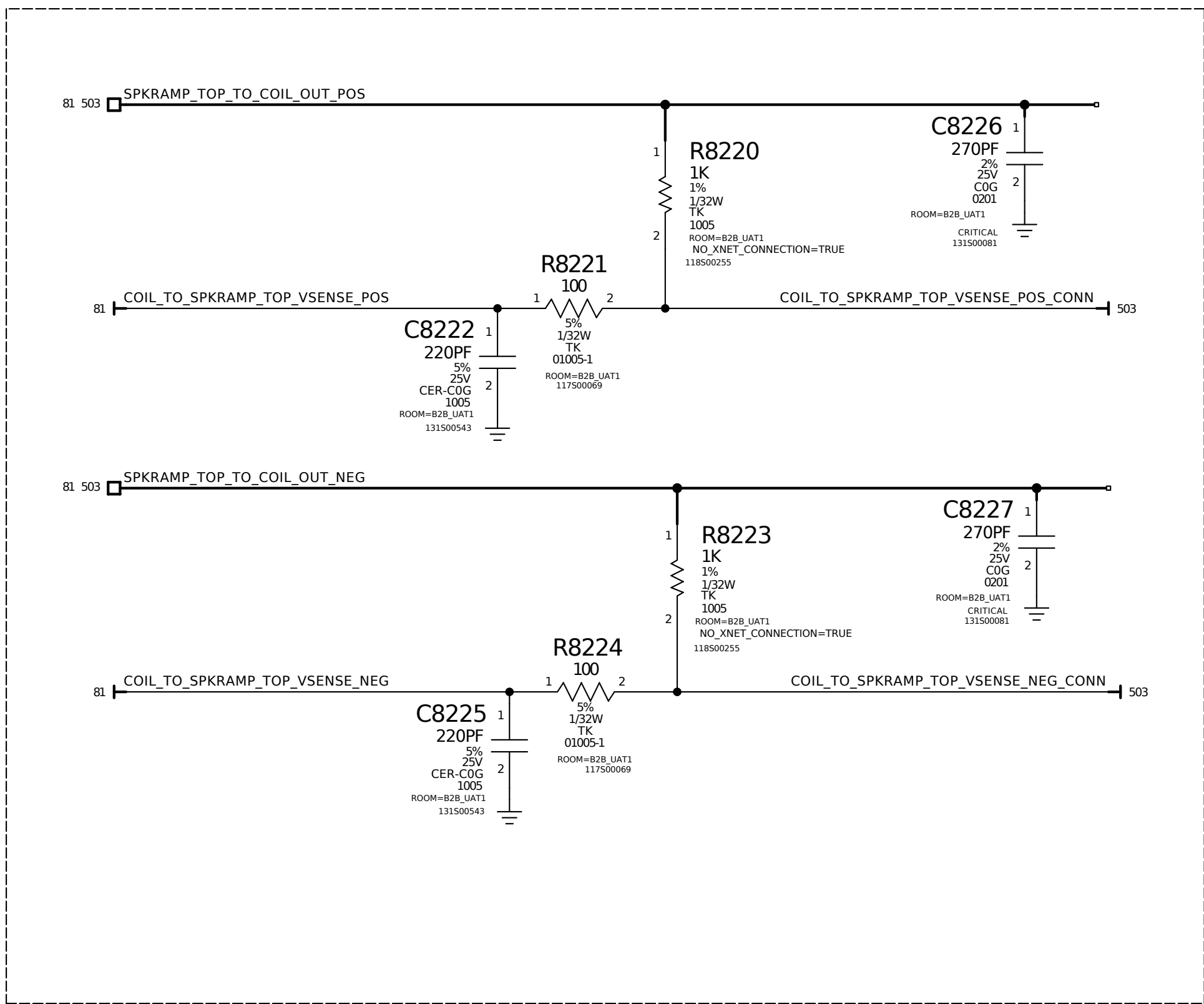


AUDIO: Top Speaker Amp (81)



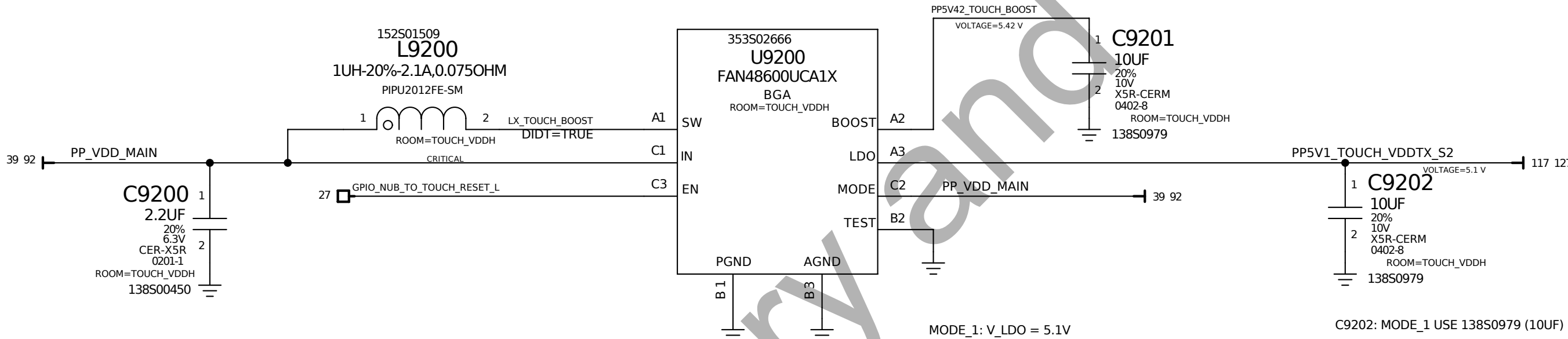
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TOP Speaker Filters



| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                           |
|--------------------|------------------|-----------------------|-----------------------------------|
| 152S00824          | 152S01509        | L9200                 | TAIYO,1UH,20%,2A,69MO,H=0.65,2012 |

Touch Power

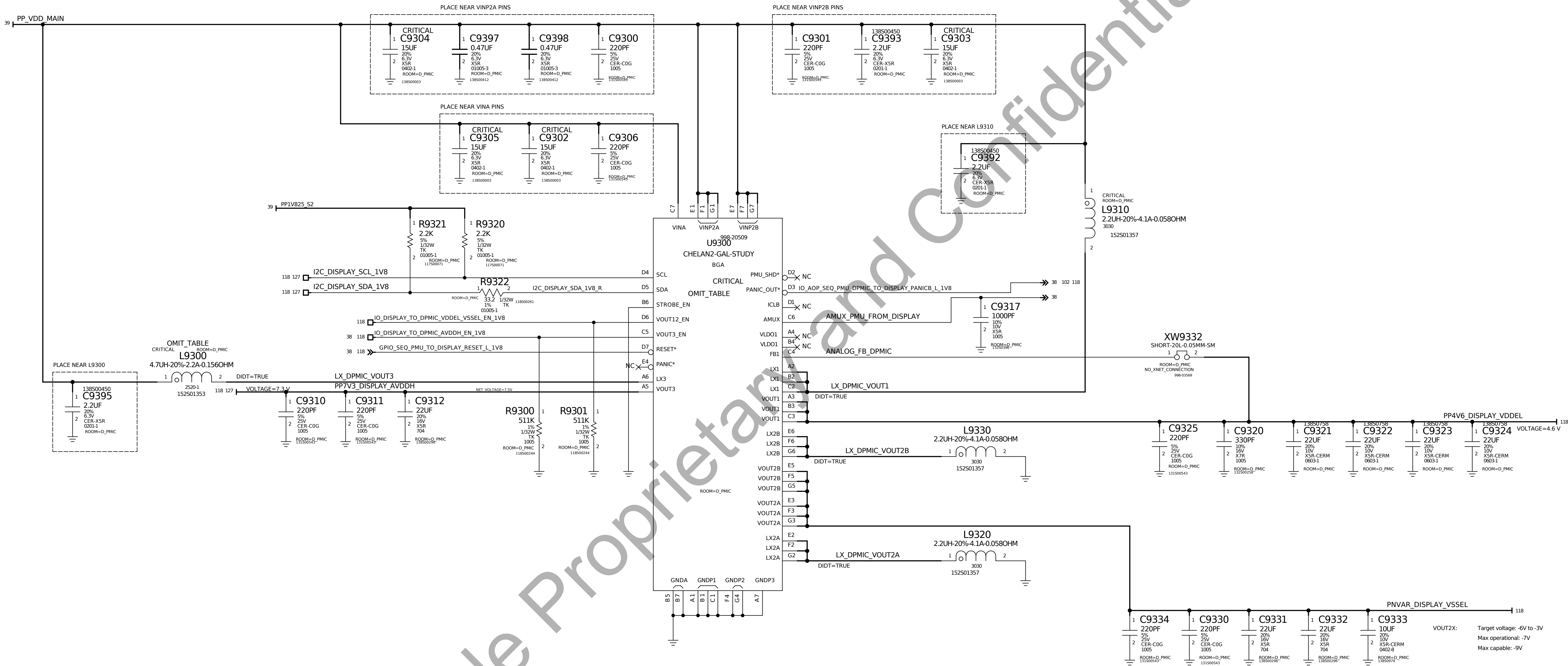


DISPLAY PMIC

INDUCTOR ALTERNATES

| PART NUMBER | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                              |
|-------------|-----------------------|----------|-----|--|
| 338500578   | U9300                 | C        | 1   | IC,PMU,CHELAN2,S2DOS24,WFP47             |
| 152501355   | L9300                 | C        | 1   | IND,MLD,6.8UH,20%,1.7A,220MO,H=0.95,2520 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 152501358          | 152501357        | L9310,L9320,L9330     | TAYO,2.2UH,20%,4A,65MO,H=0.95,3030    |
| 152501356          | 152501355        | L9300                 | TAYO,6.8UH,20%,1.7A,280MO,H=0.95,2520 |

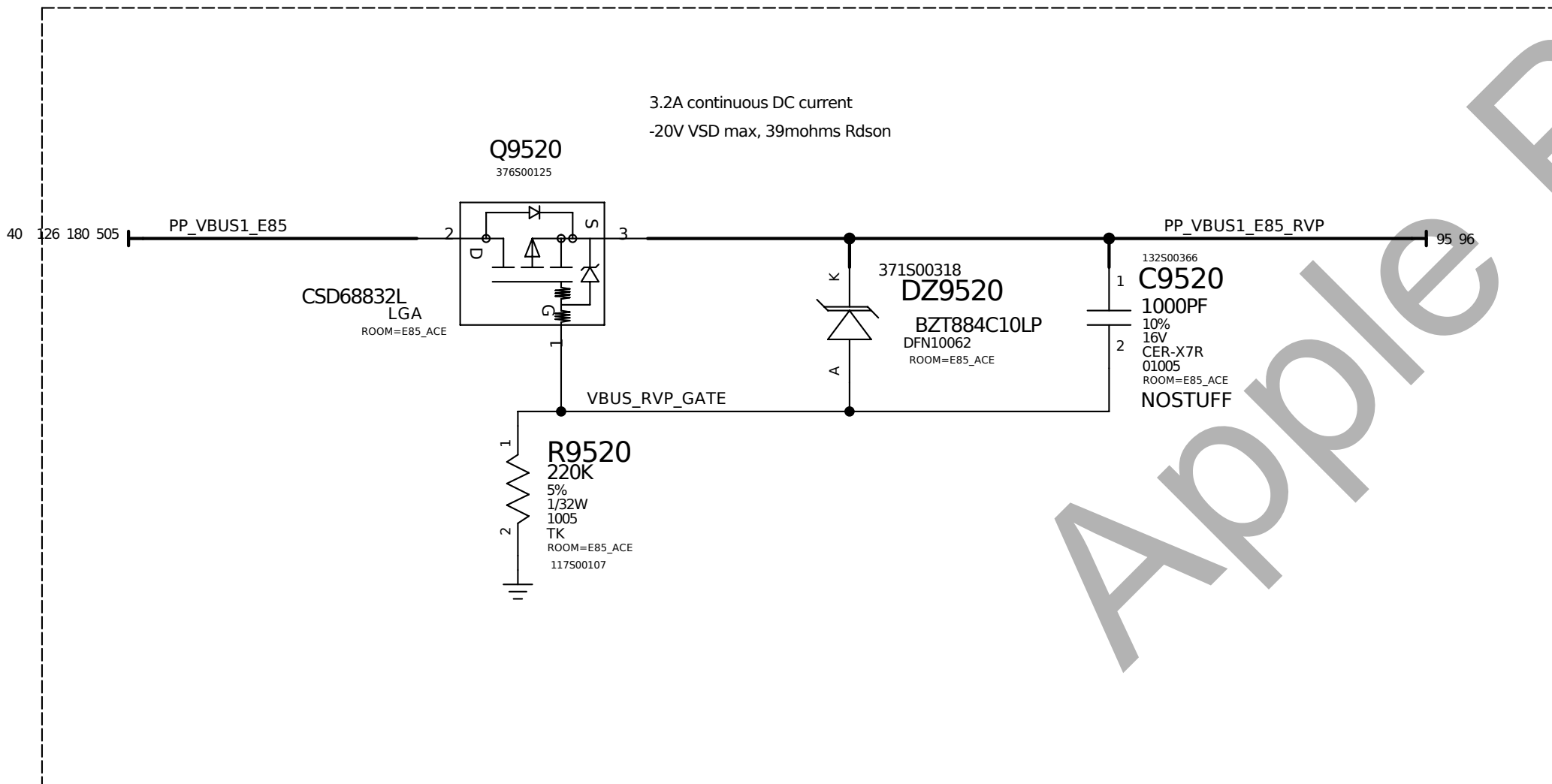
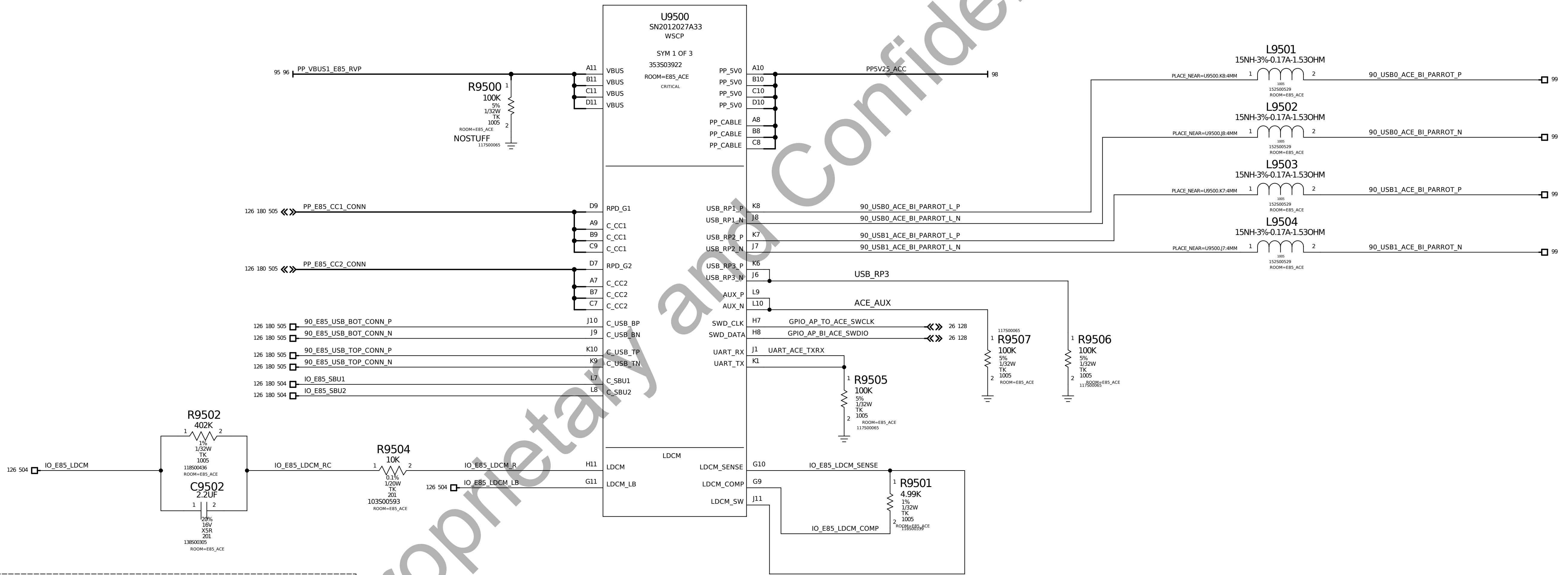




SUBSYSTEM SPECIFIC BOM TABLES

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                            |
|--------------------|------------------|-----------------------|------------------------------------|
| 376500314          | 376500125        | Q9520                 | XSTR.PFET.20V,4.2A,0.045 OHM,LGA3  |
| 37150685           | 371500318        | DZ9520                | DIODE,ZENER,10V,5%,250MW,DFN1006-2 |

PORT CONTROLLER



## D



B

A

D

C

B

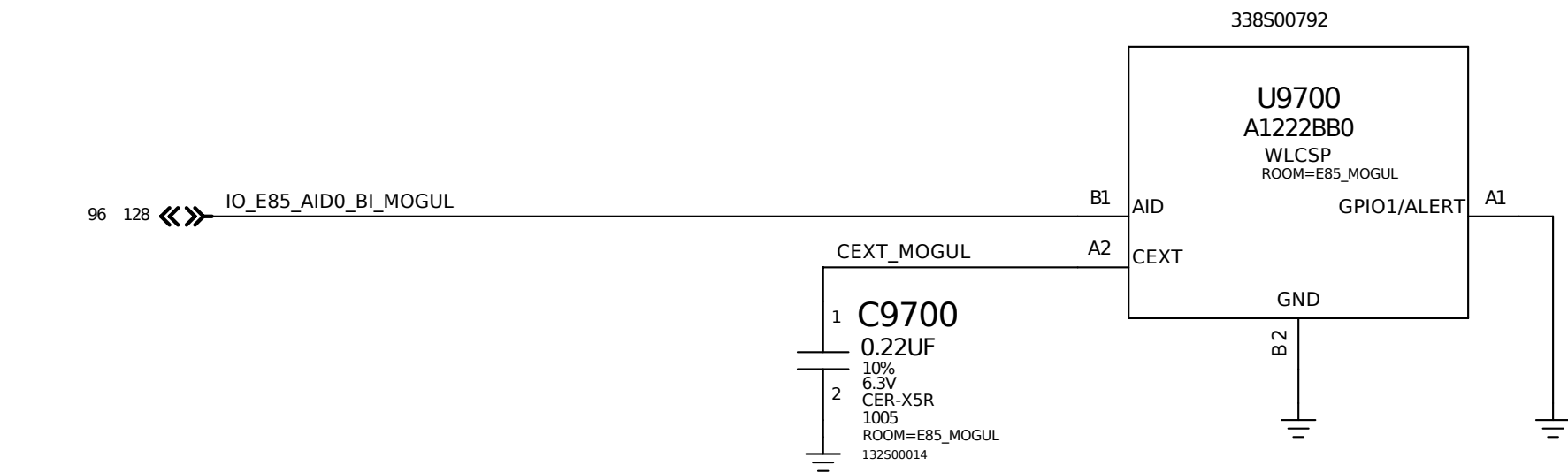
A

D

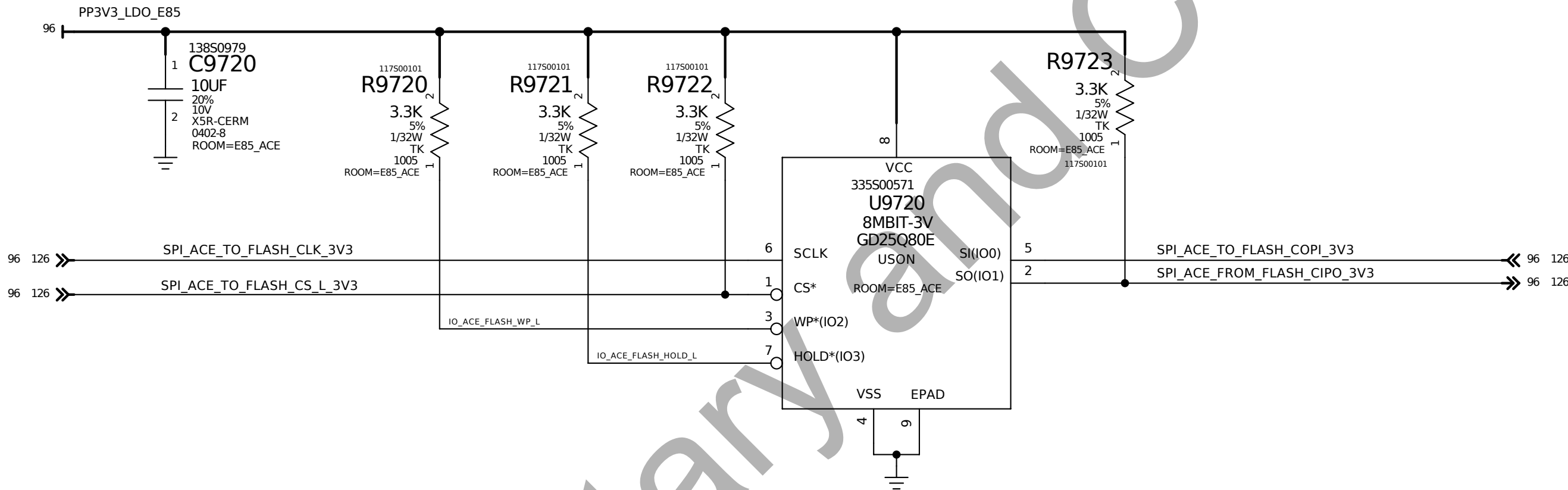
C

B

A

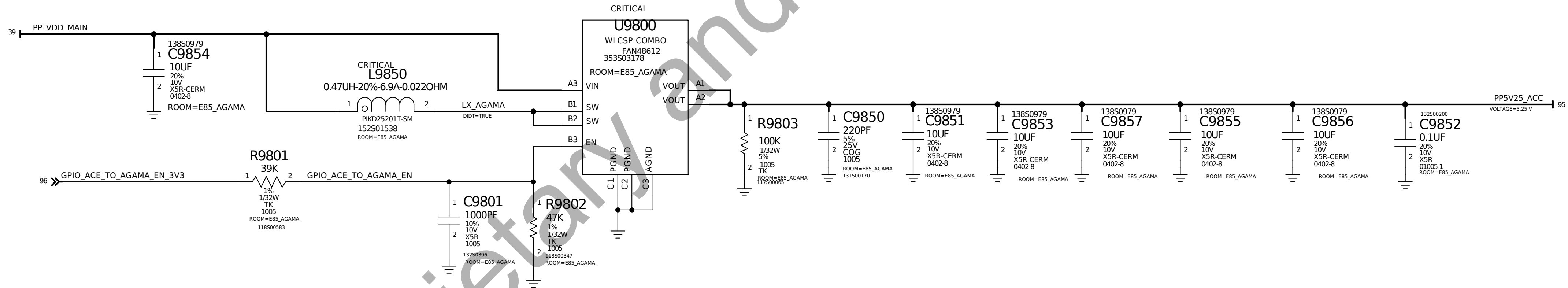


FLASH

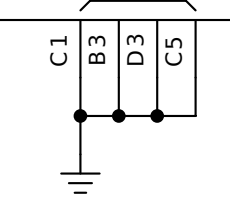


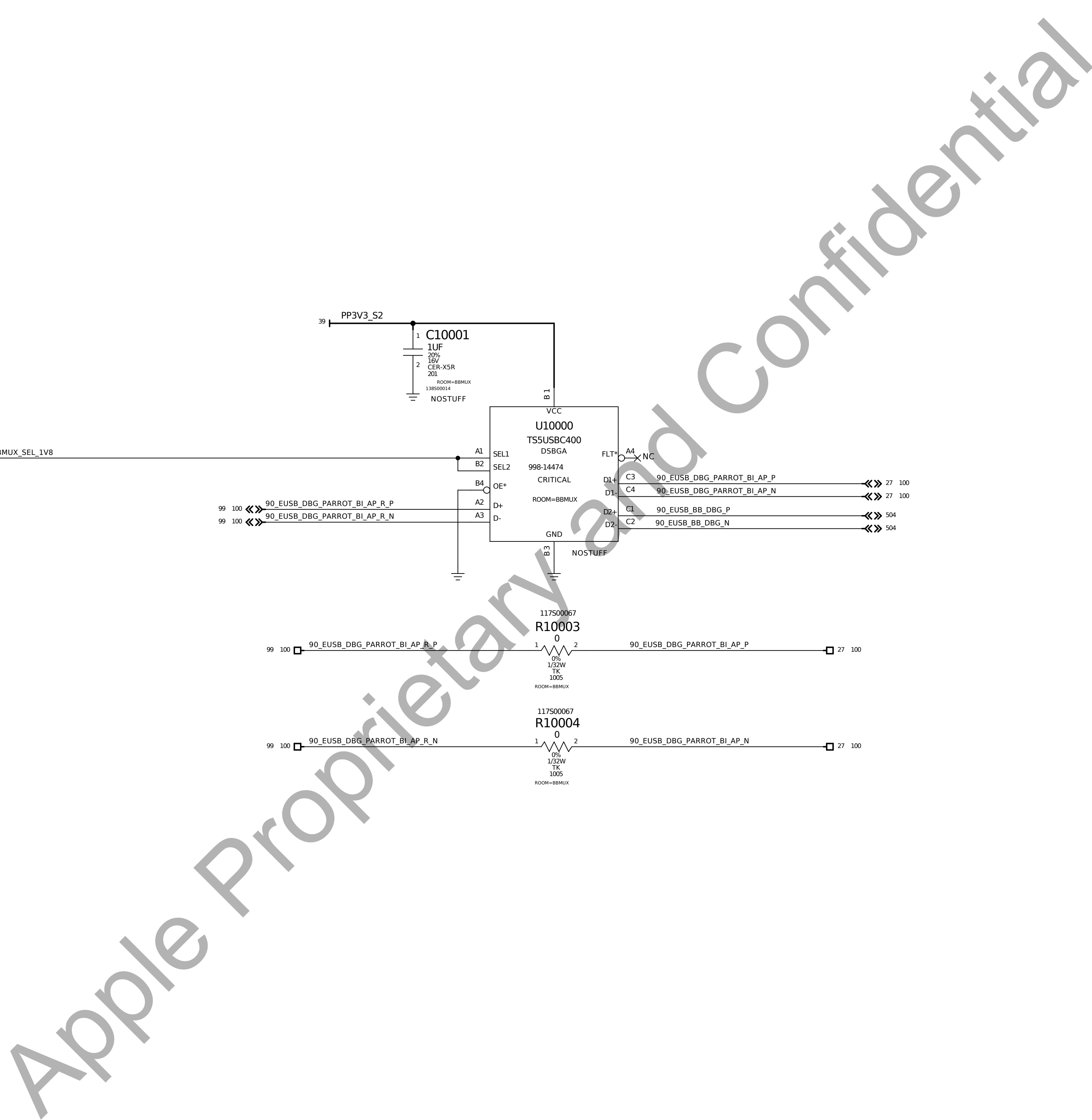
| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 335500044          | 335500571        | U9720                 | IC,SPI SERIAL FLASH,8MBITS,3.0V,USON8 |

ACCESSORY POWER



Ground on MLB

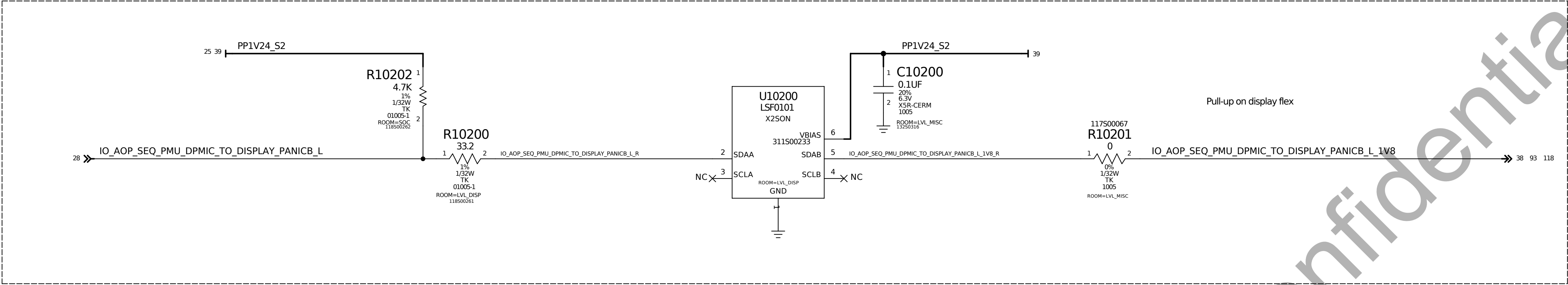


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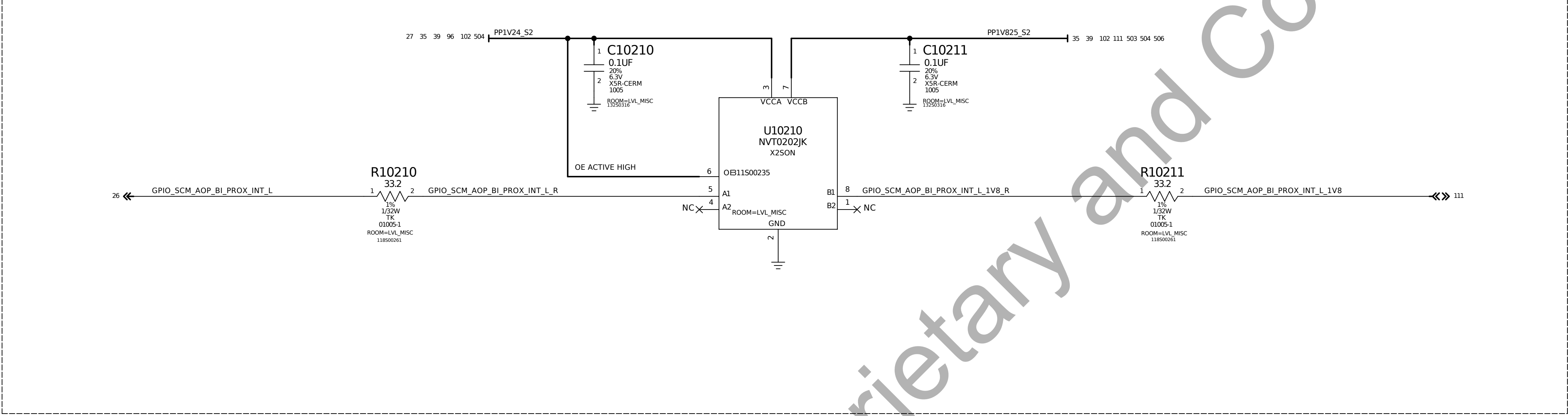


LEVEL TRANSLATORS

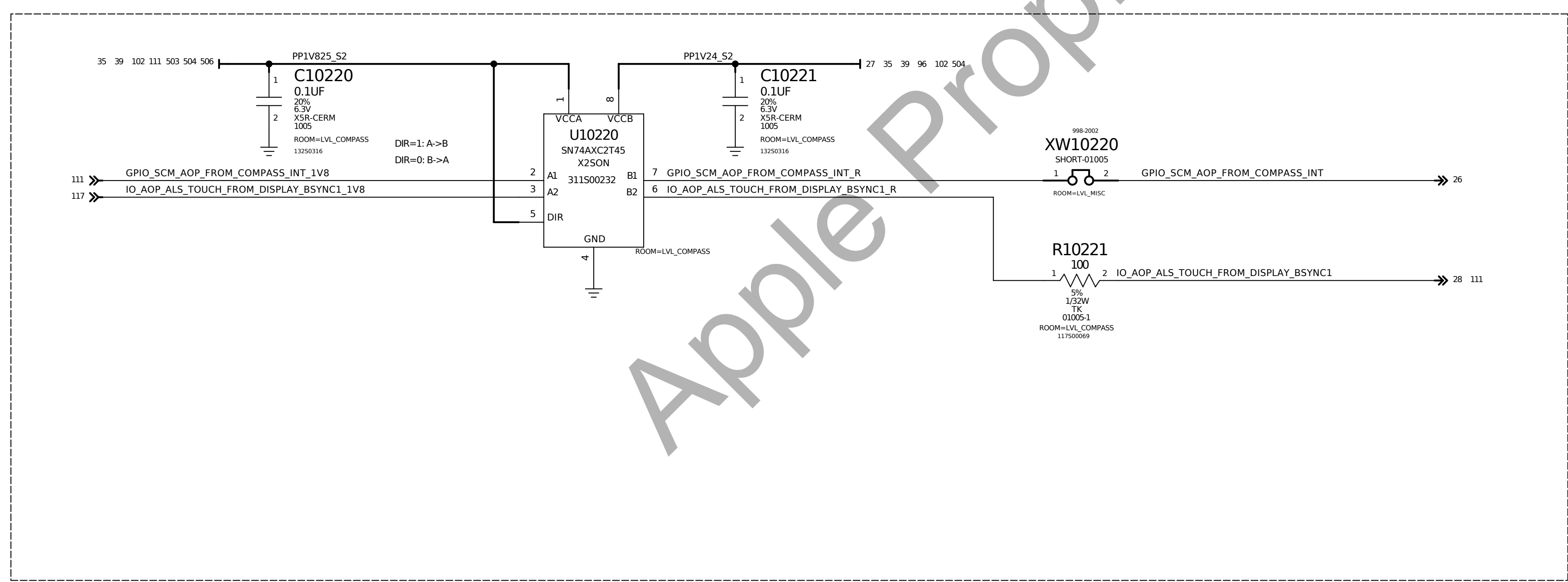
PANICB



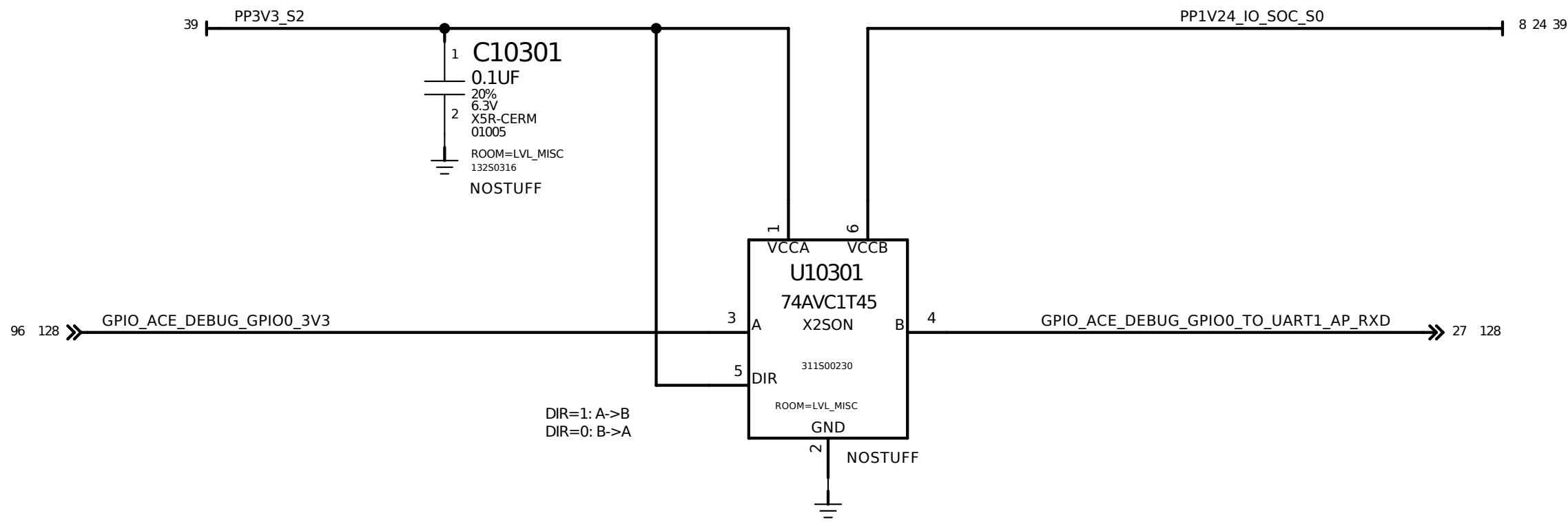
PROX INTERRUPT + CAMS\_TO\_STROBE\_ACE\_FLASH\_TRIG



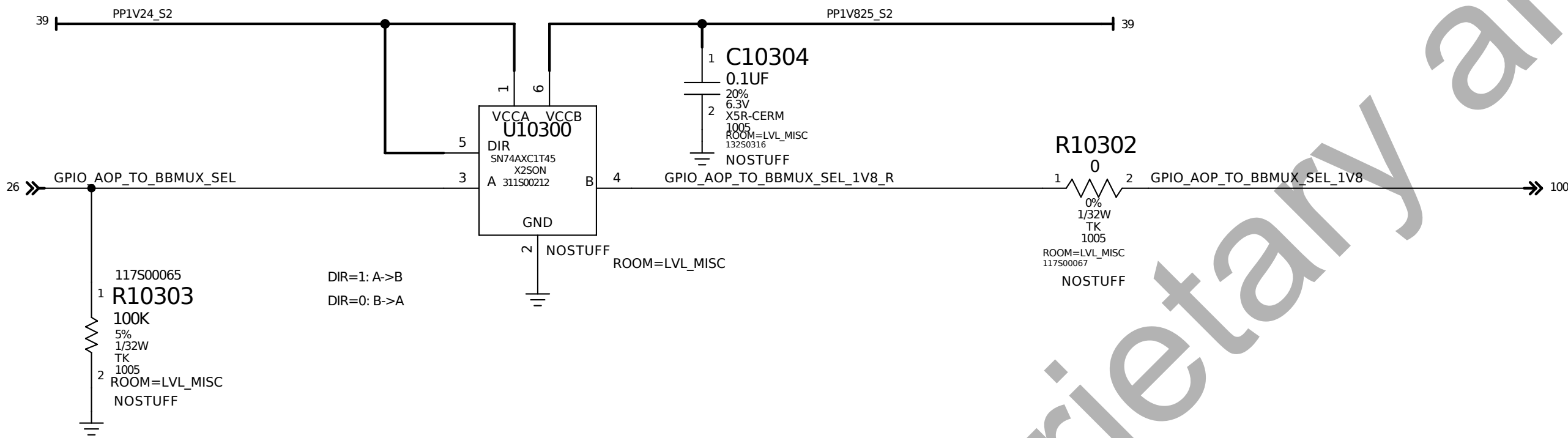
DISPLAY BSYNC + COMPASS INTERRUPT



ACE DEBUG GPIO0

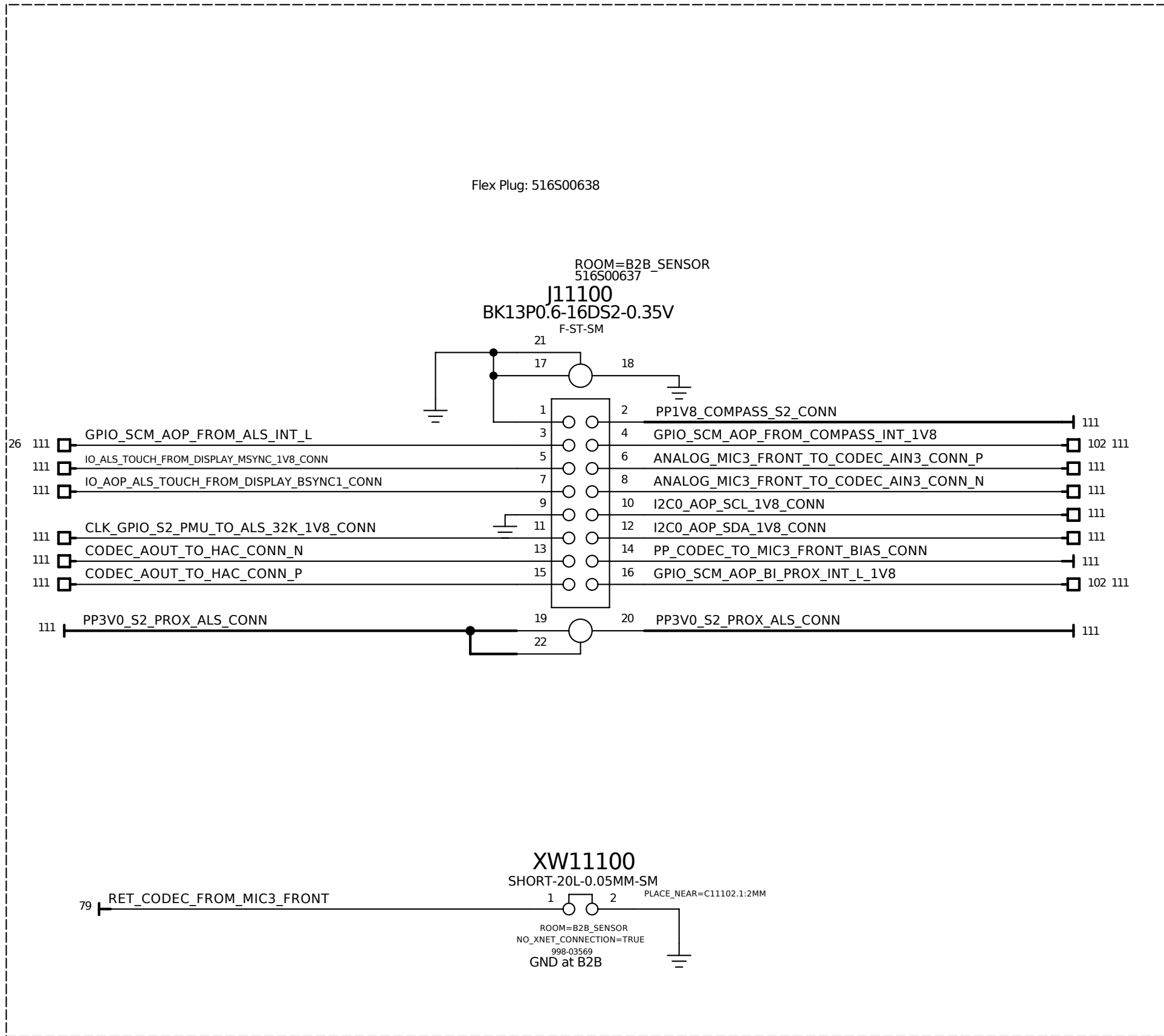


BBMUX\_SEL

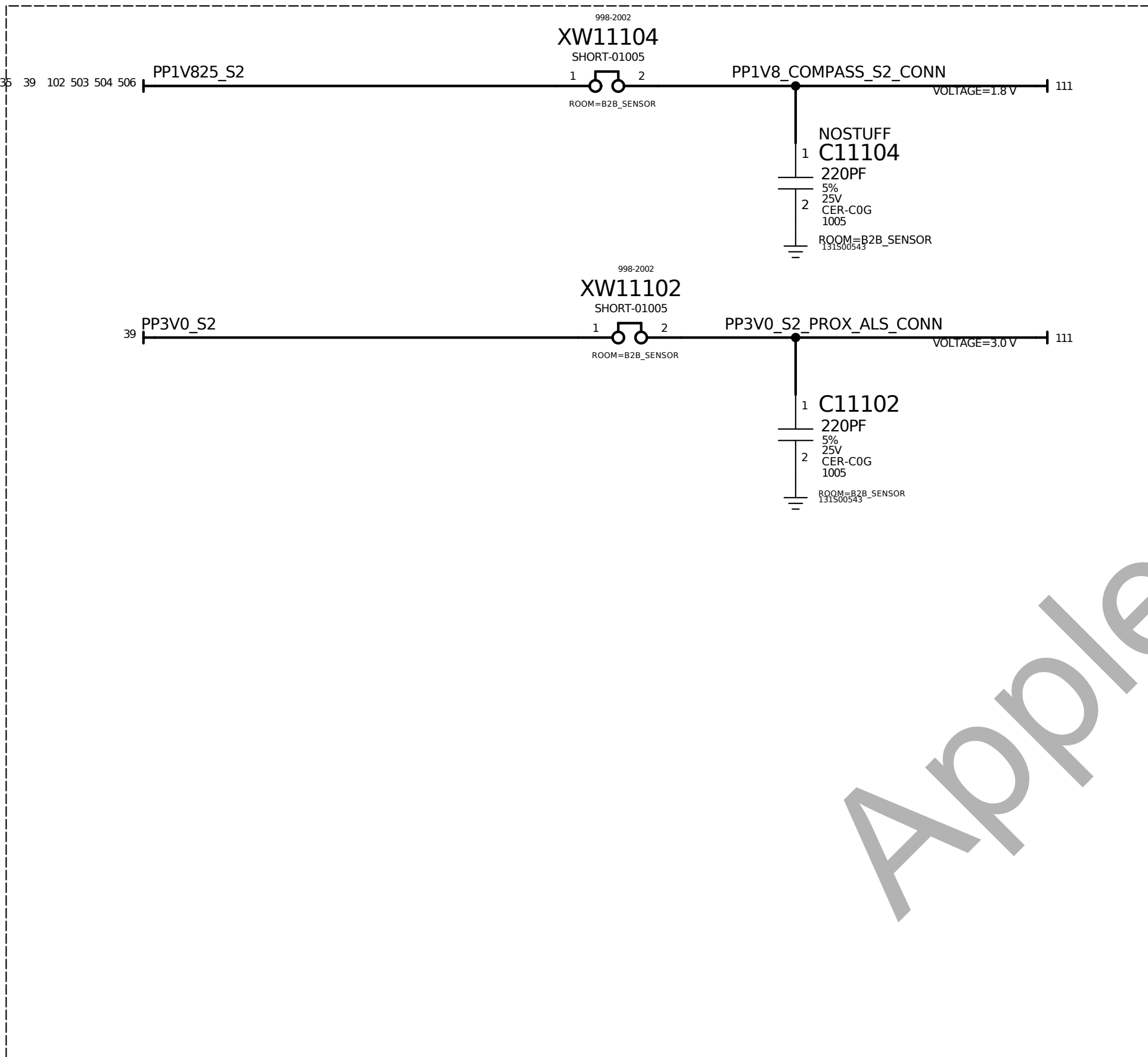


SENSOR B2B

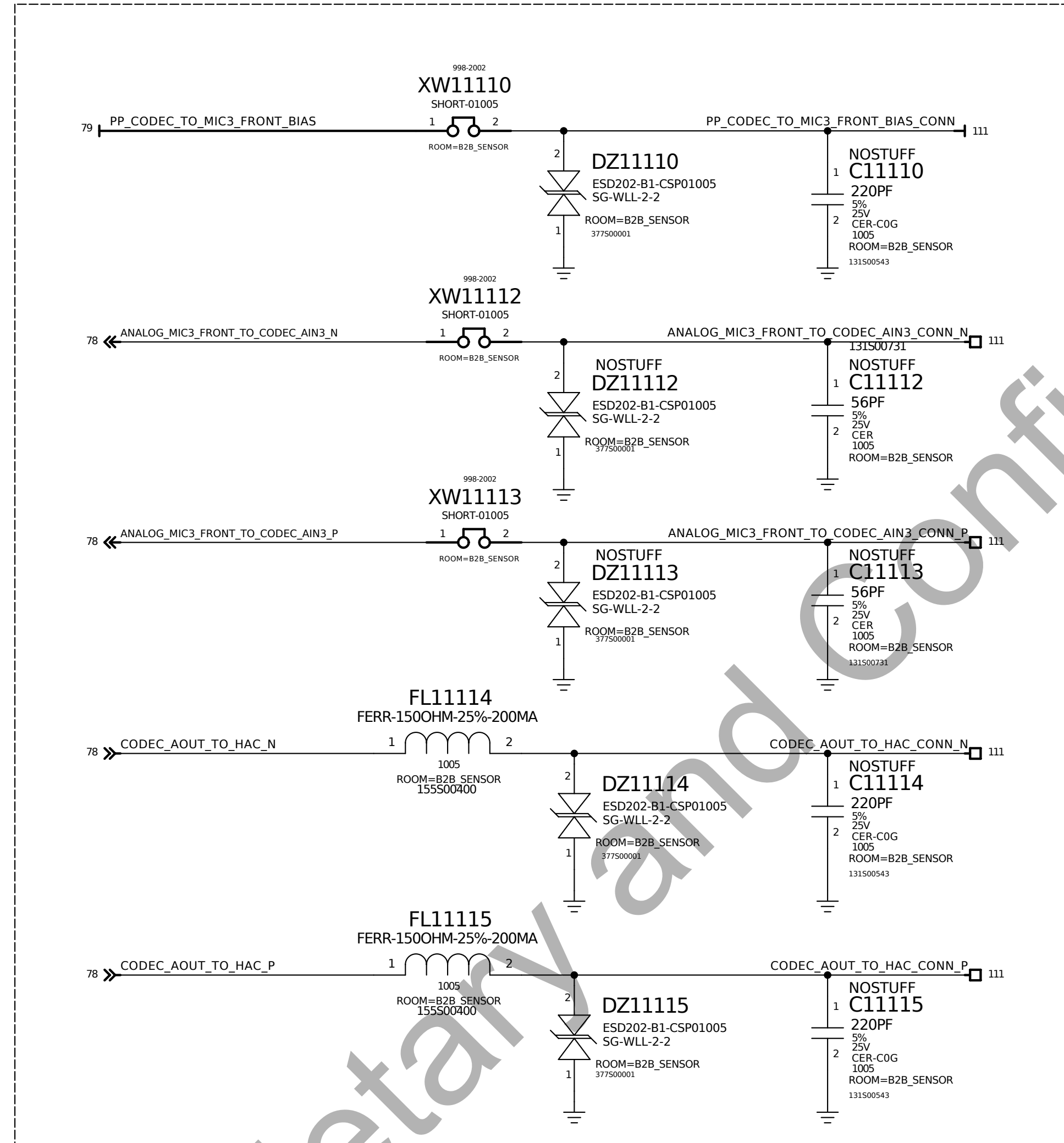
CONNECTOR



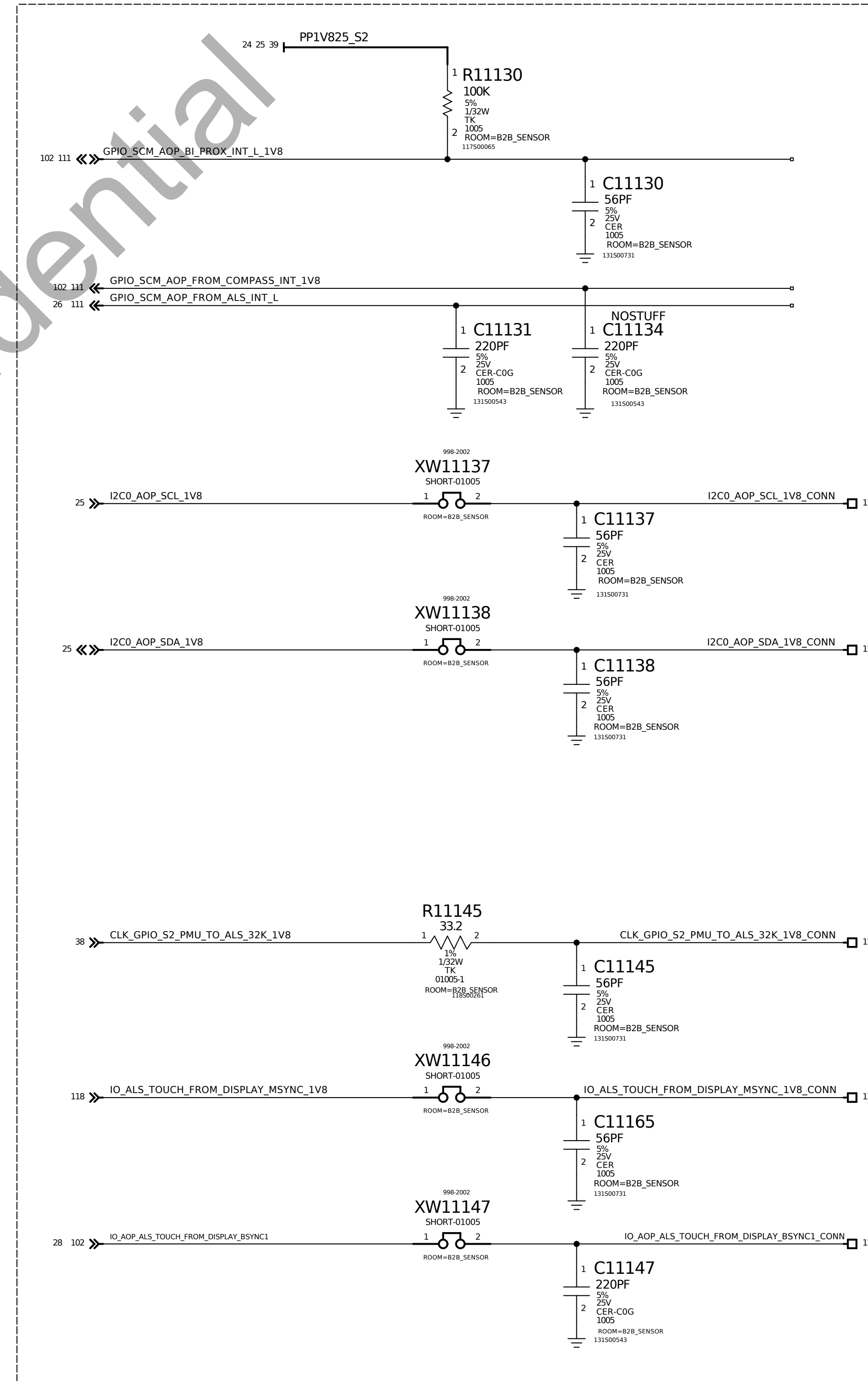
POWER FILTERS



MIC3



IO FILTERS



B2B: Sensor (111)



Apple Inc.

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TOUCH B2B

CONNECTOR

DISPLAY/TOUCH COMBO B2B  
MAINTAINED ON NEXT PAGE

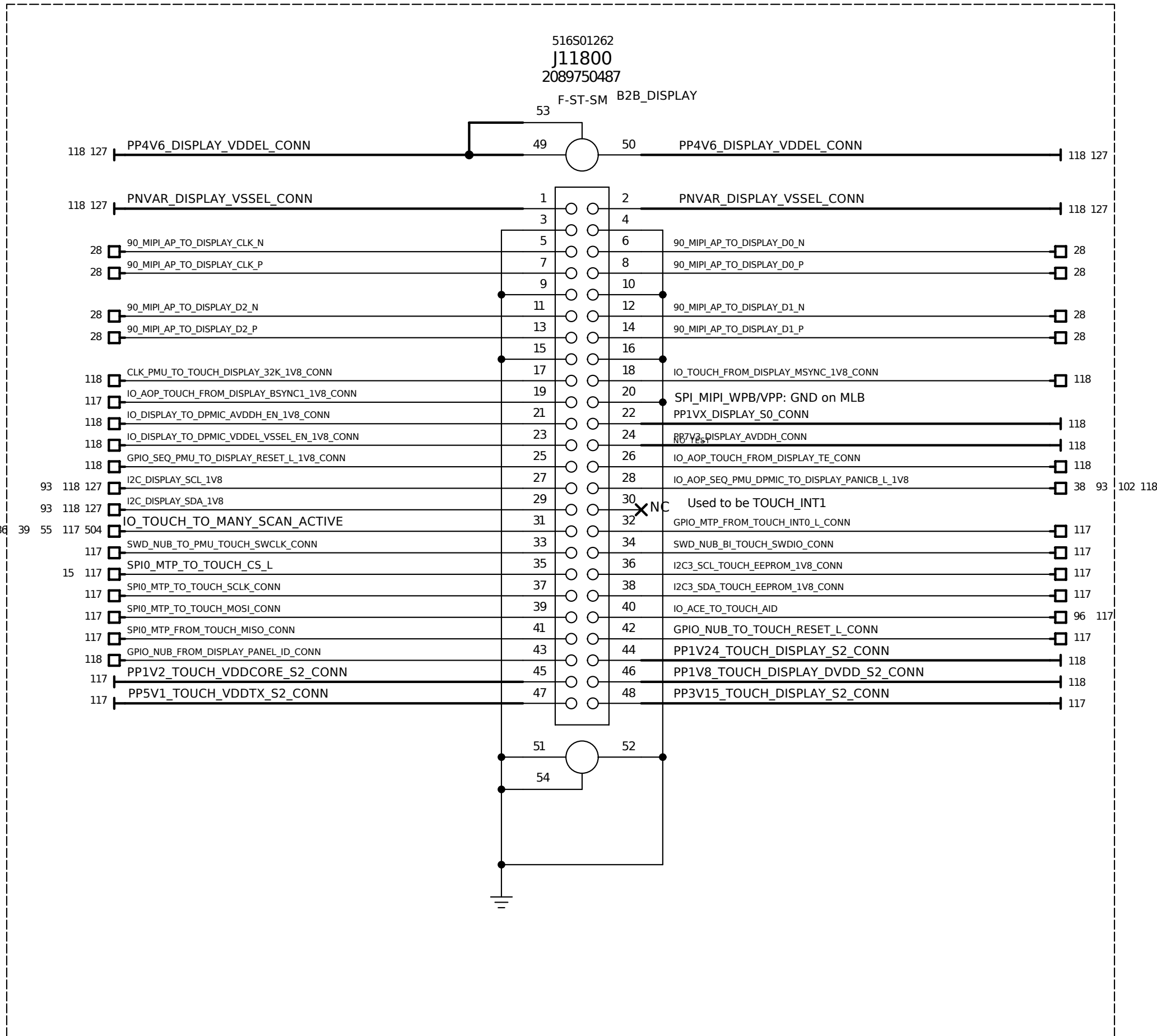
IO FILTERS

IO FILTERS (cont)

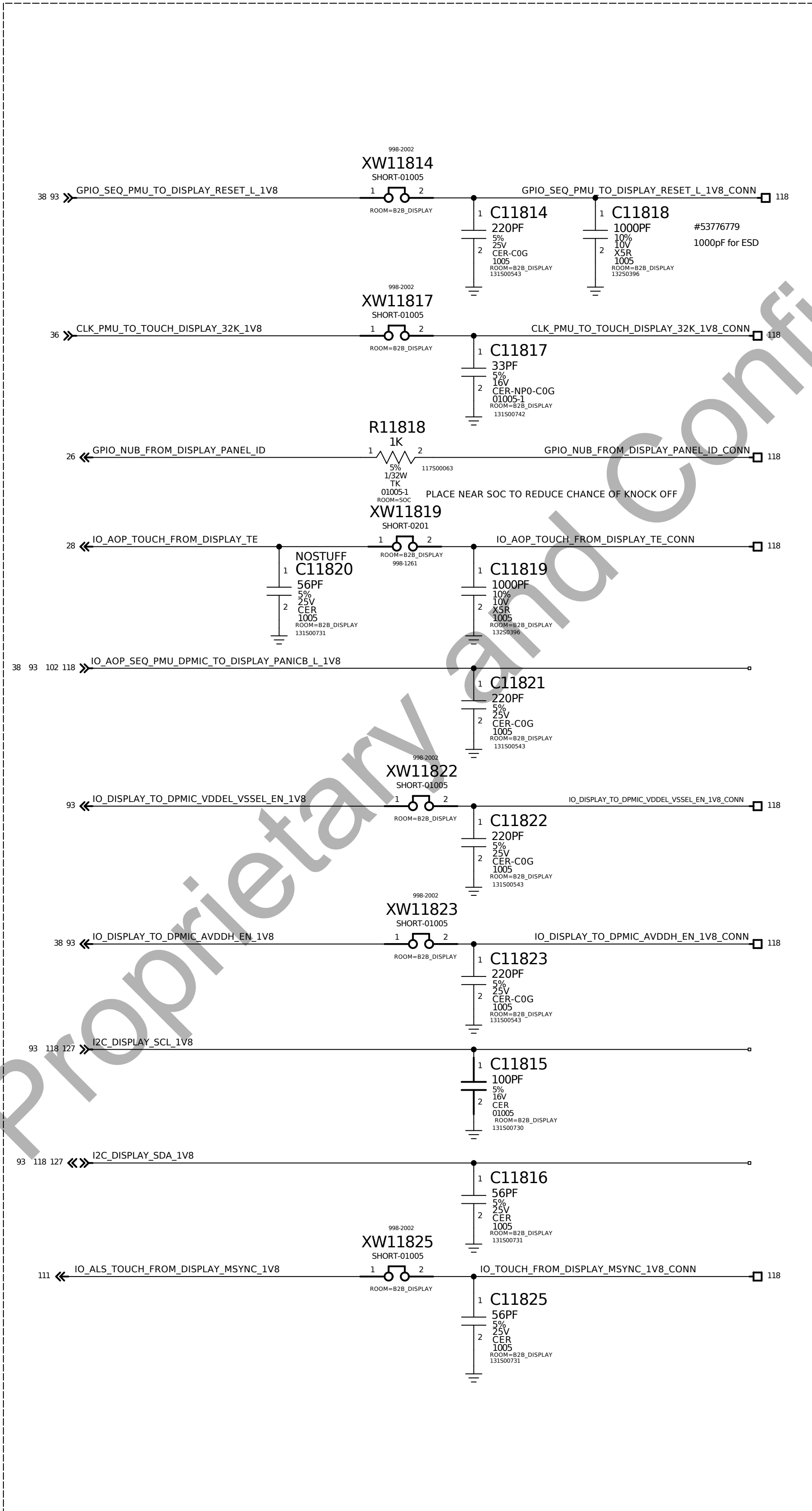
POWER FILTERS

DISPLAY B2B

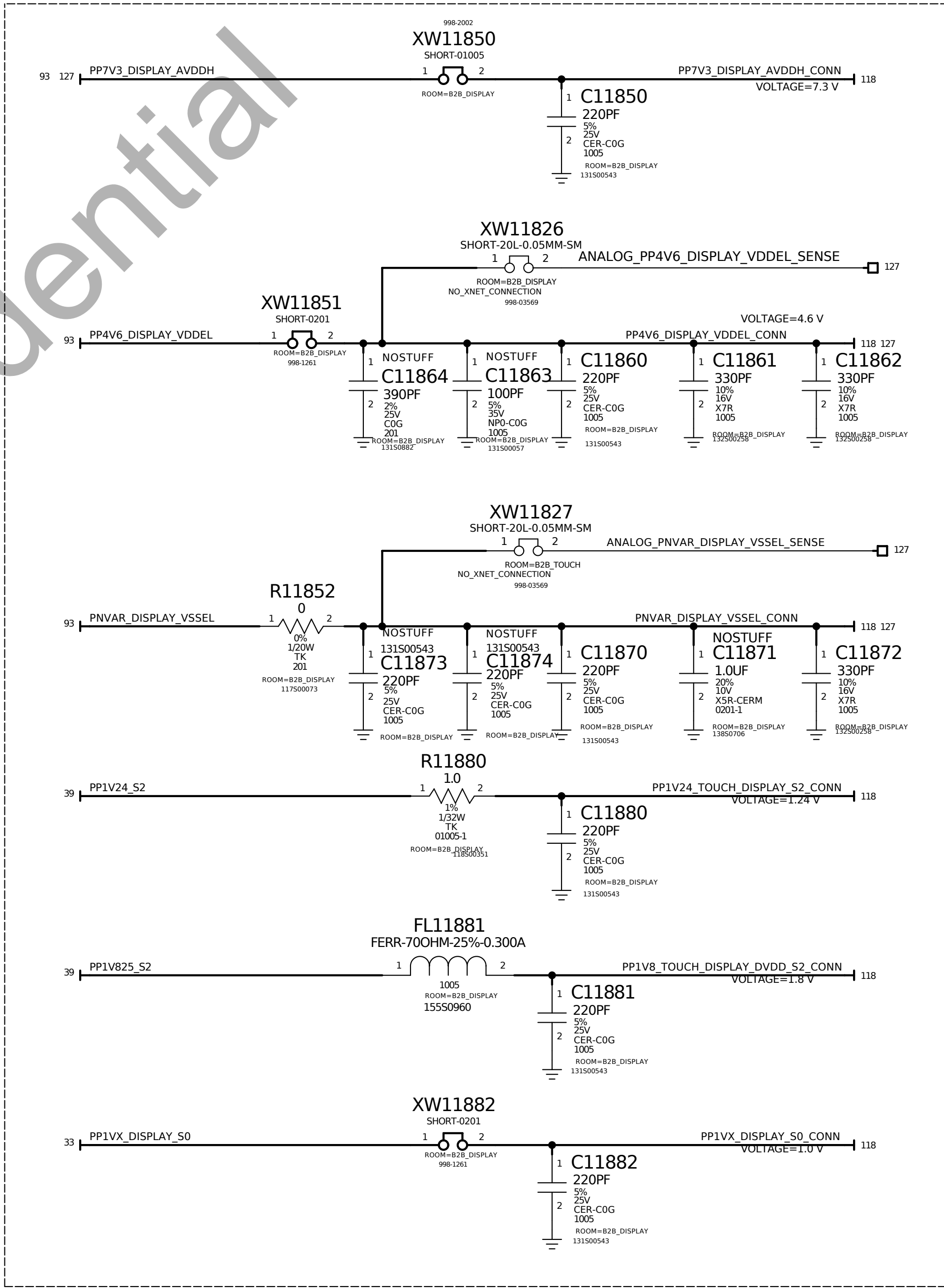
CONNECTOR



IO FILTERS

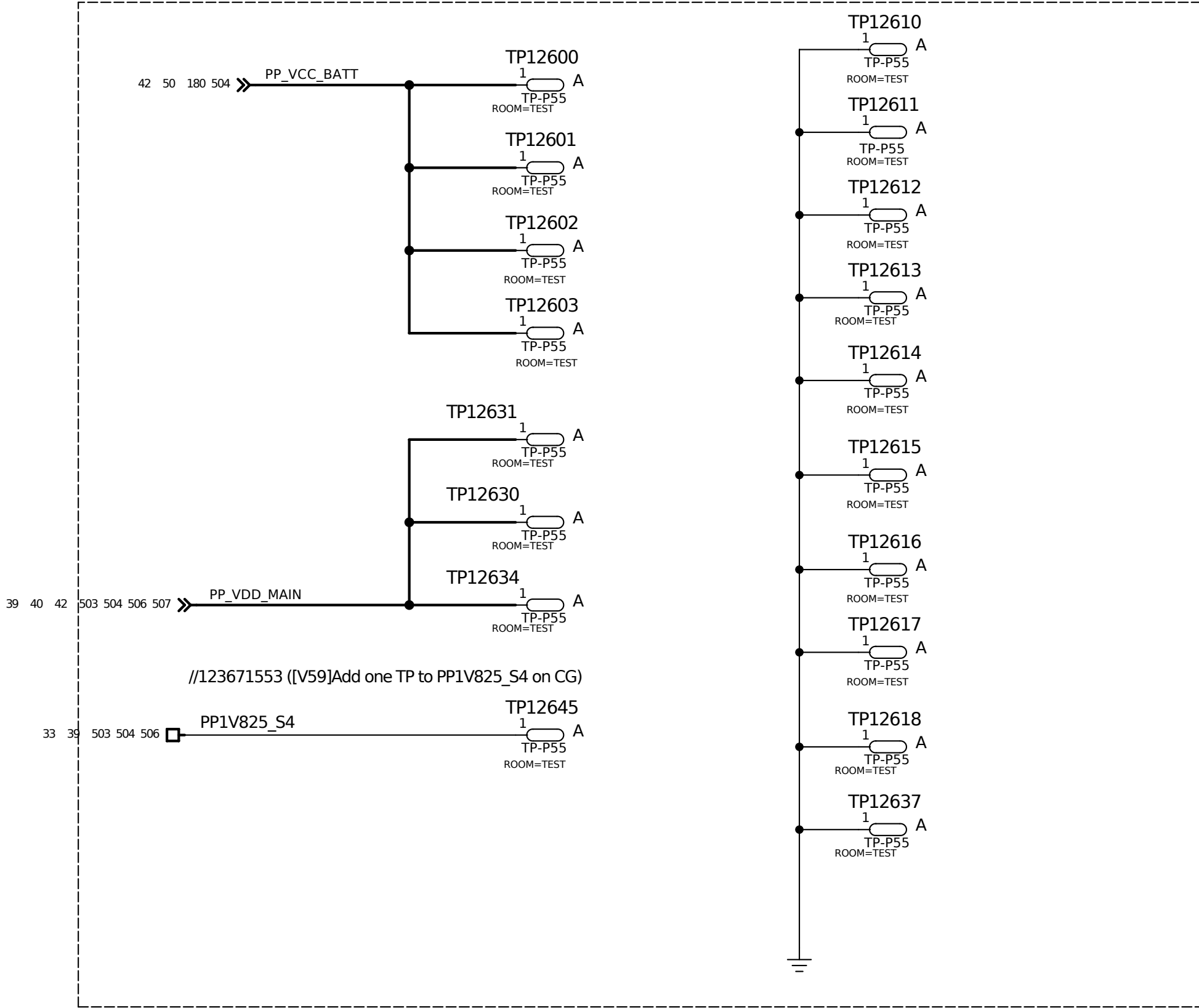


POWER FILTERS

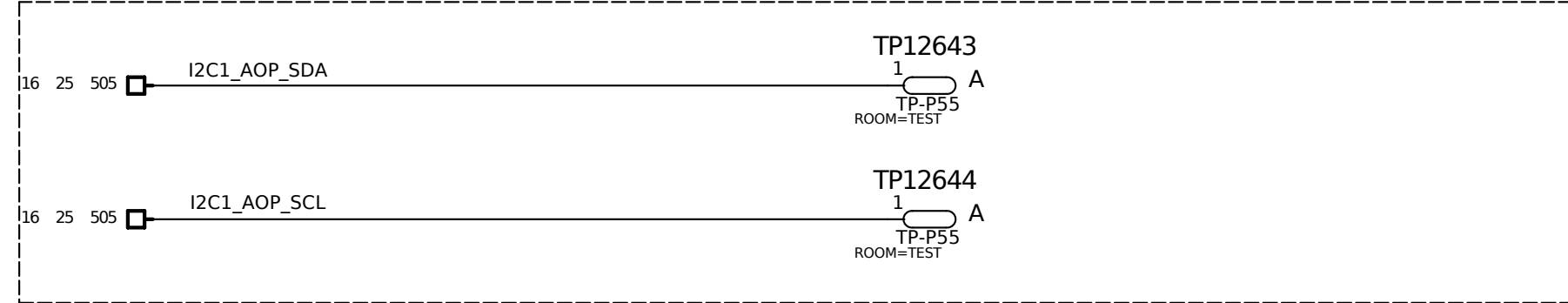


# Test Points

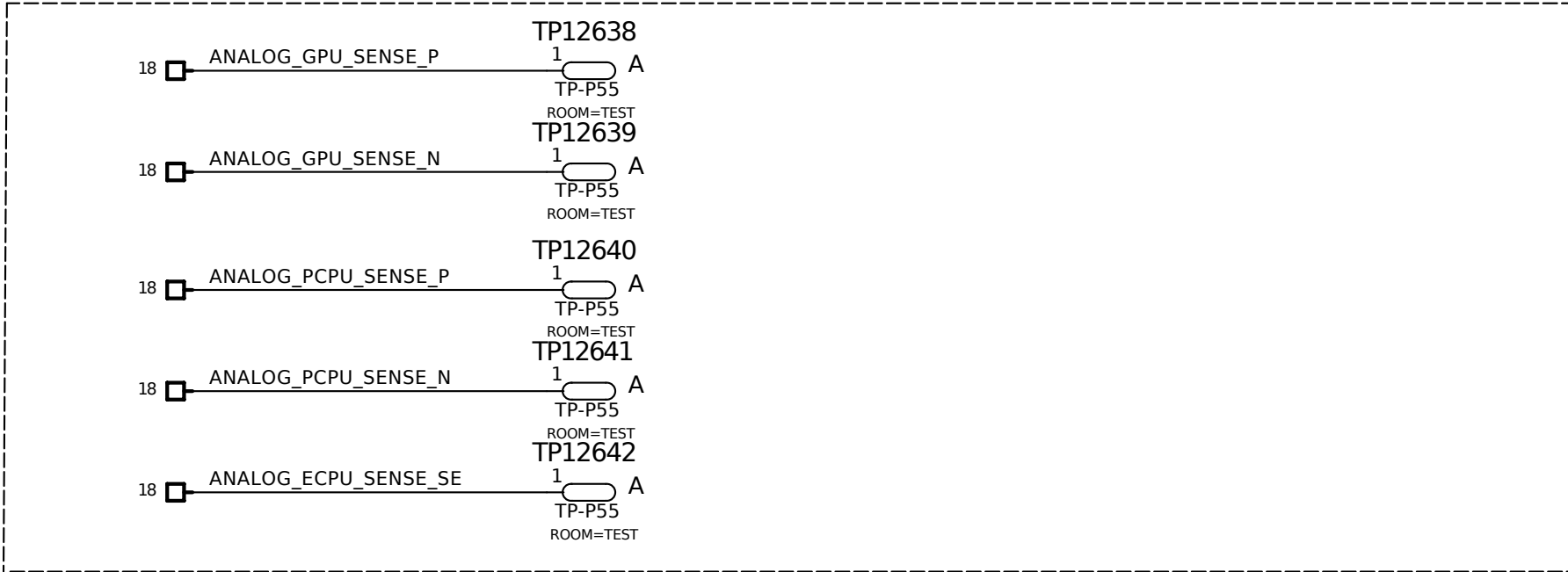
## Power + GND



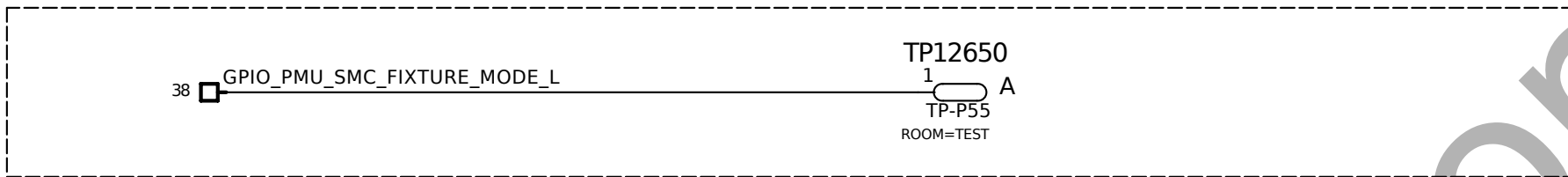
## DOCK



## LVCC



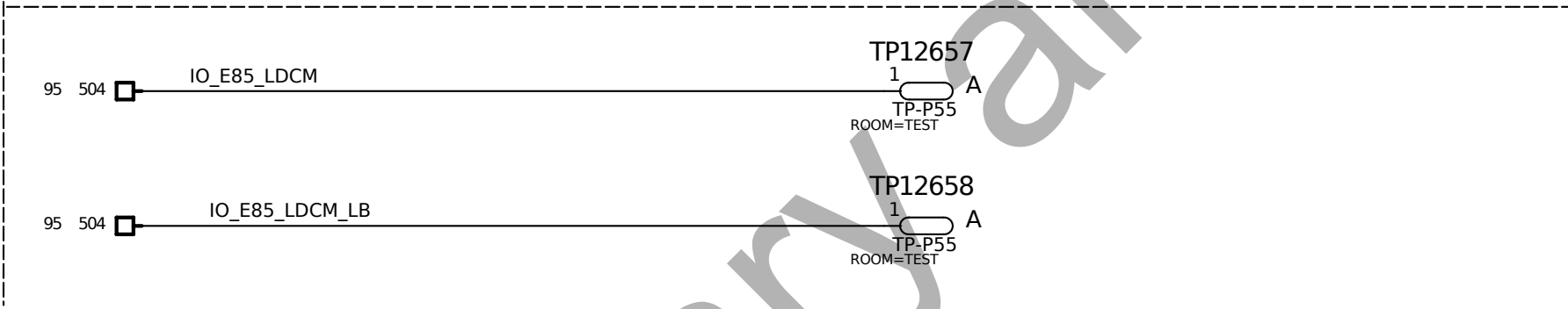
## DBB



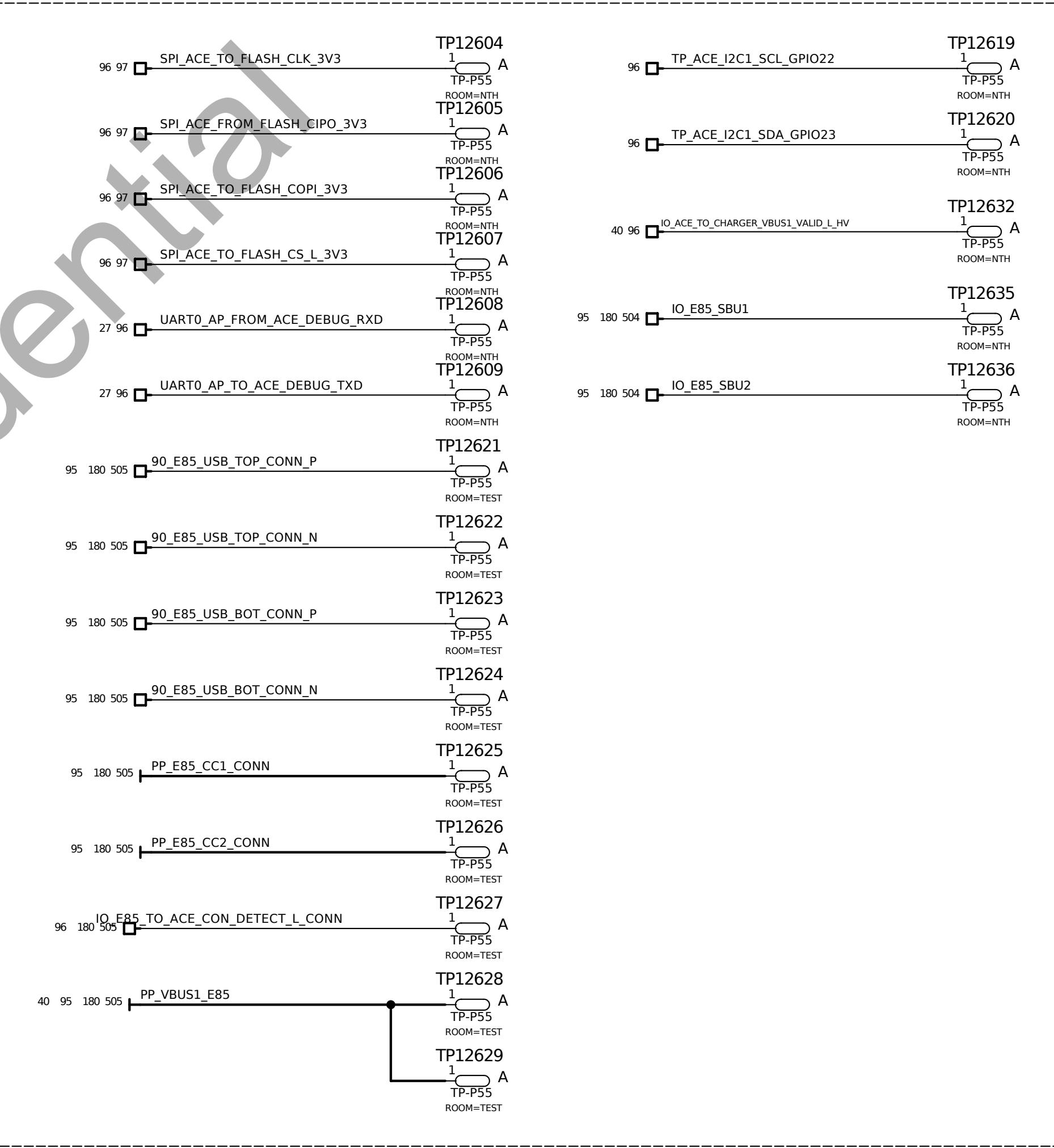
## DFU



## LDCM

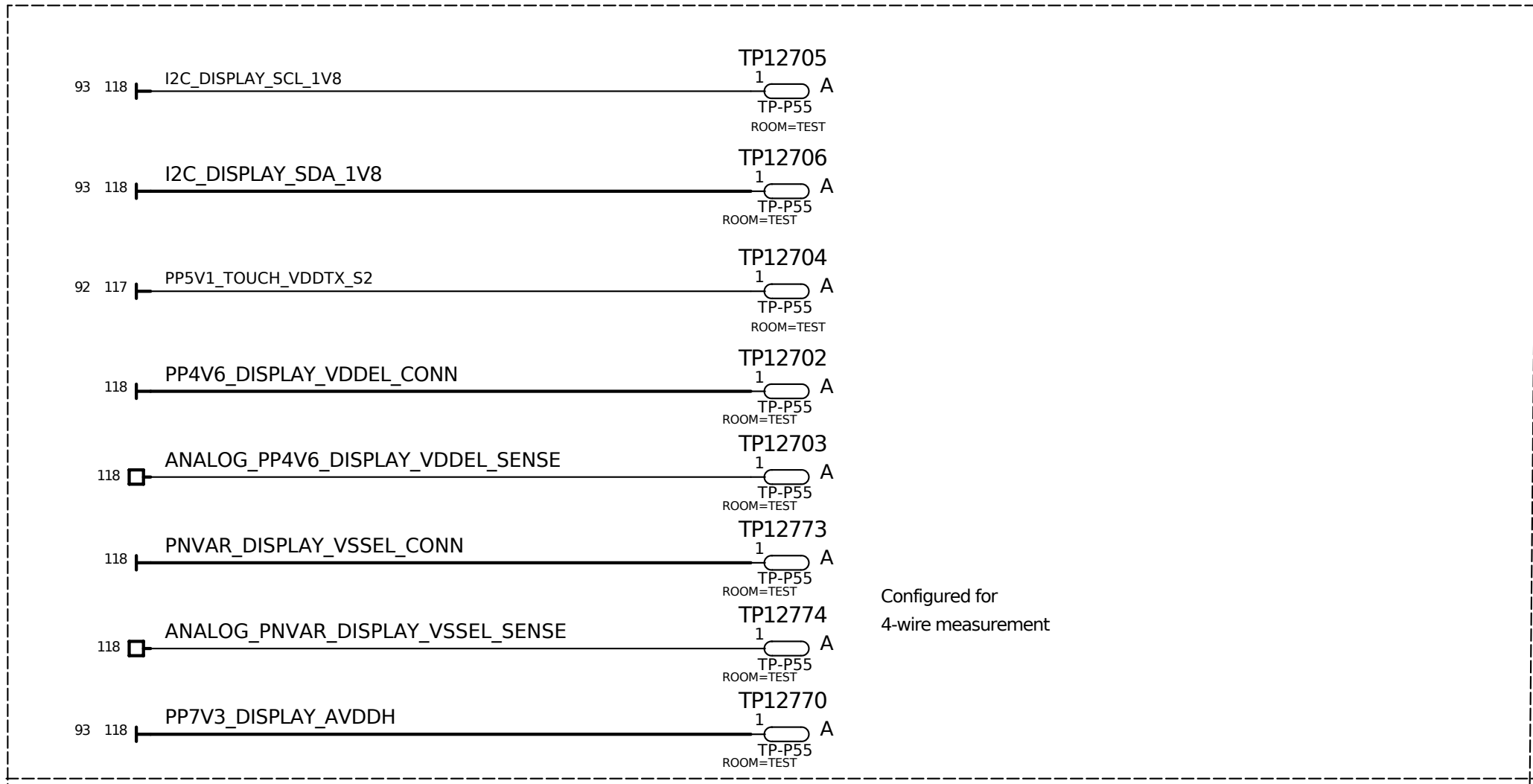


## E85

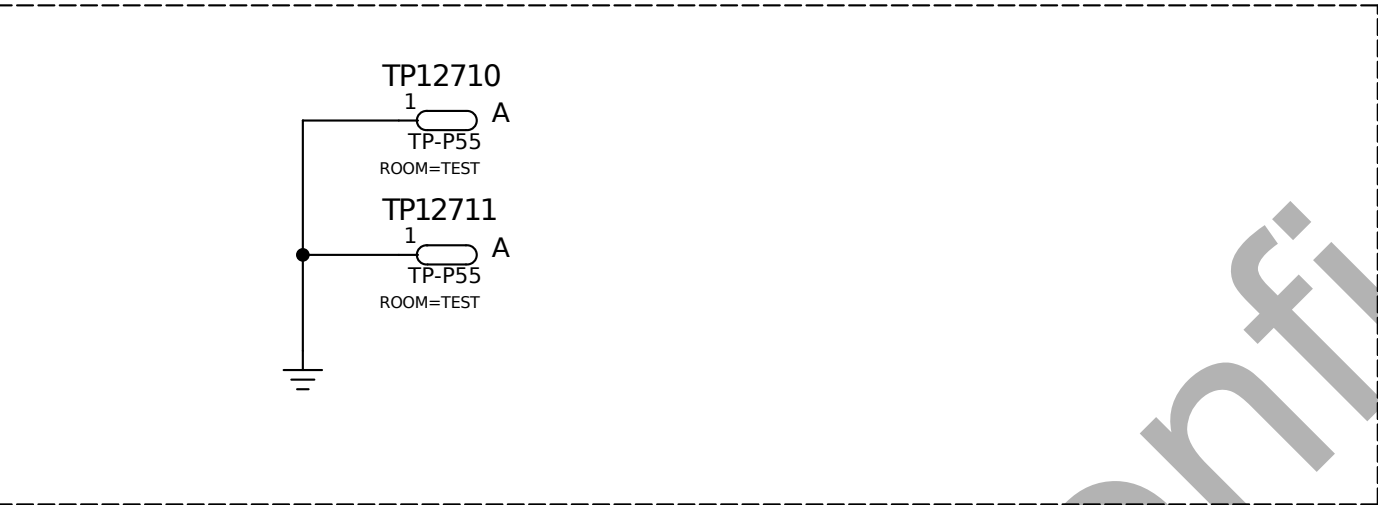


Test Points (FF Specific)

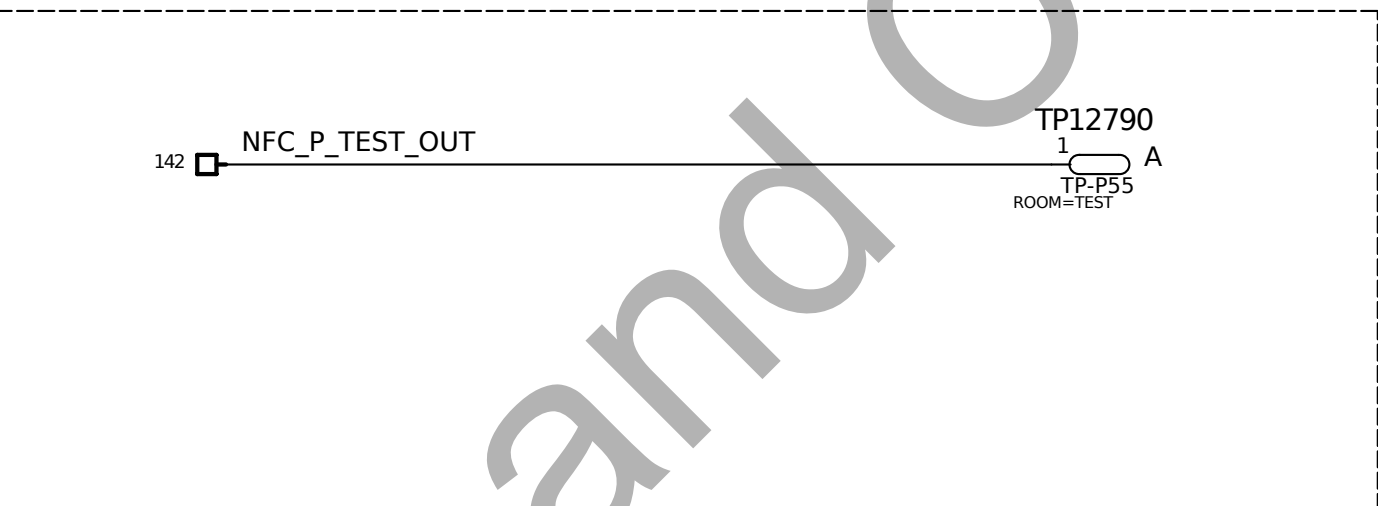
Display + Touch



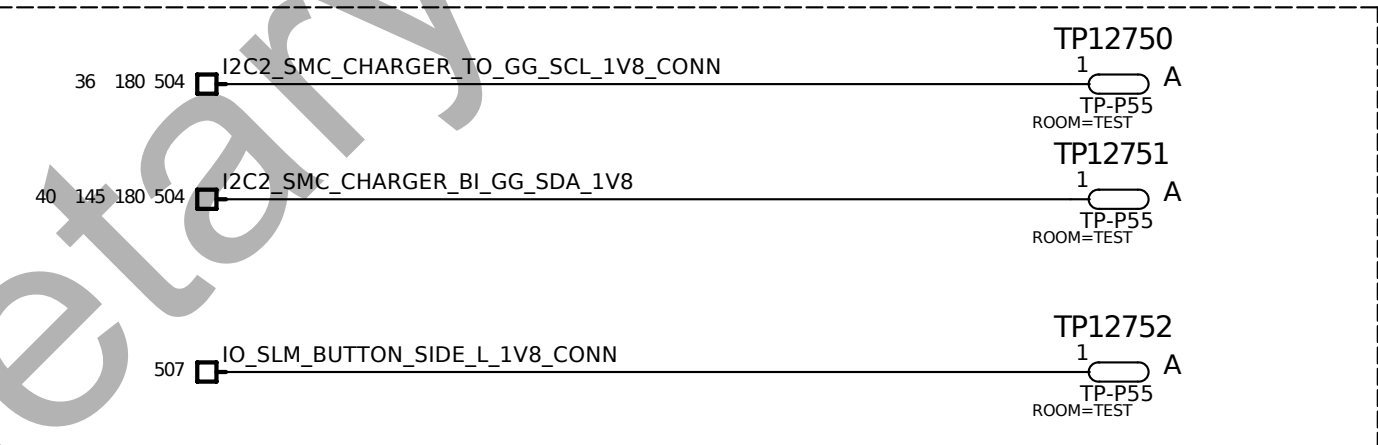
GND



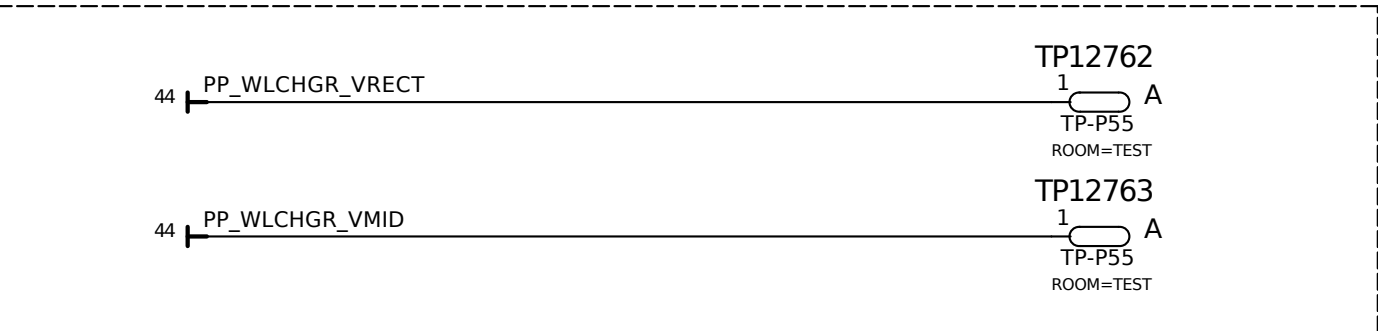
NFC



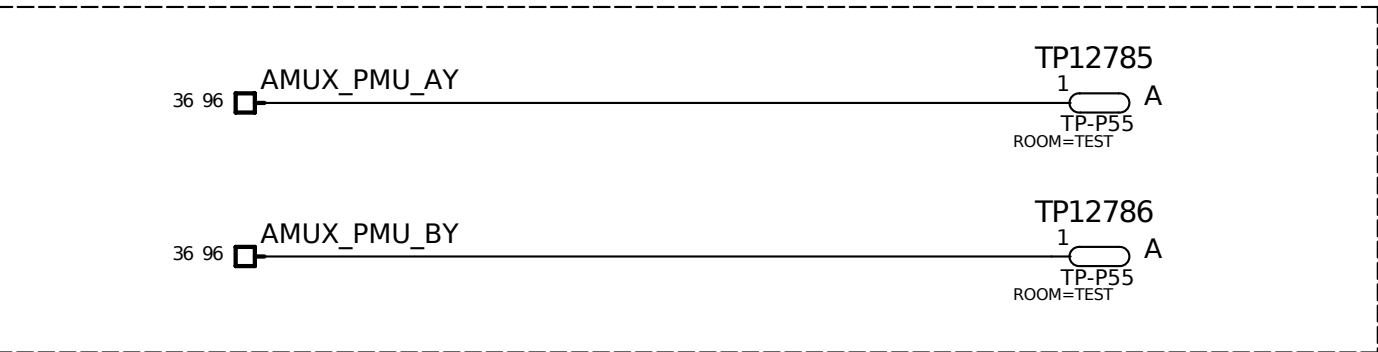
GAS GAUGE + SLM



WLCHGR



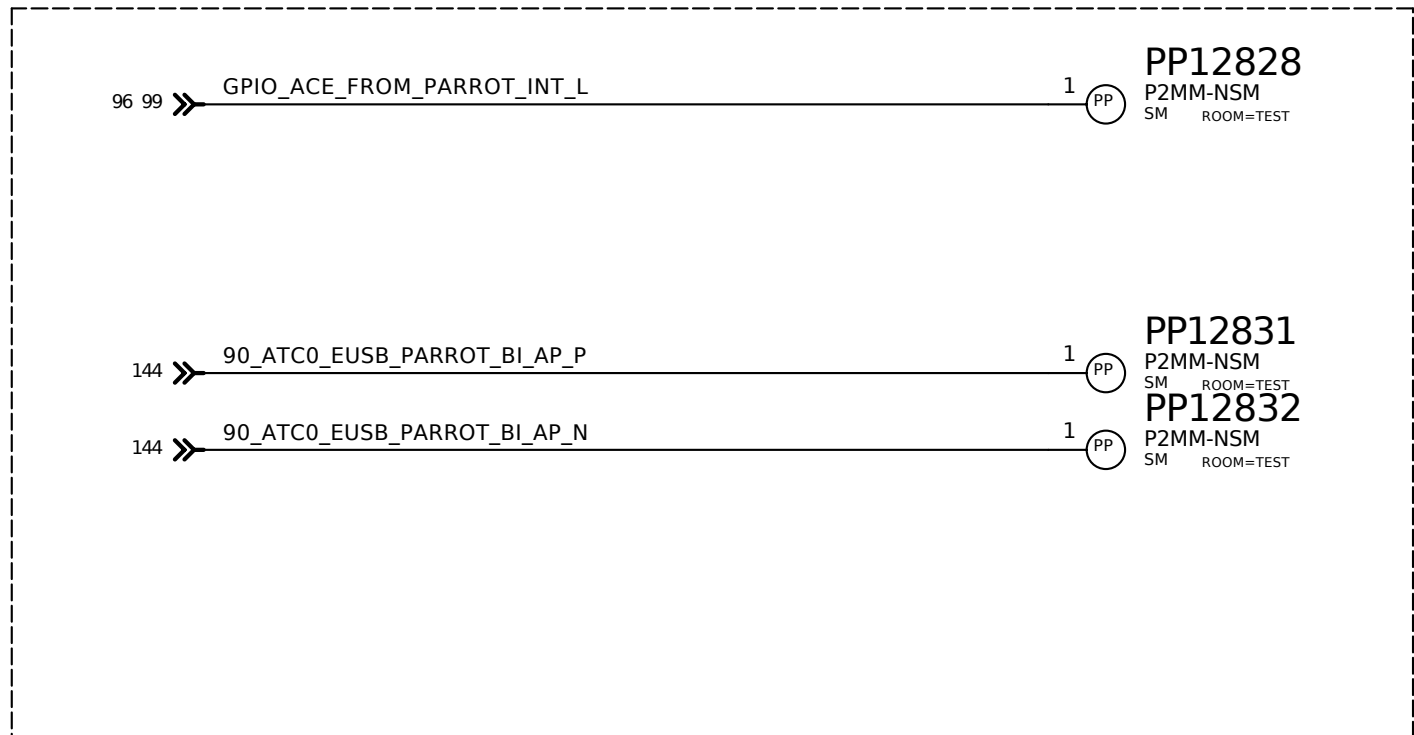
AMUX



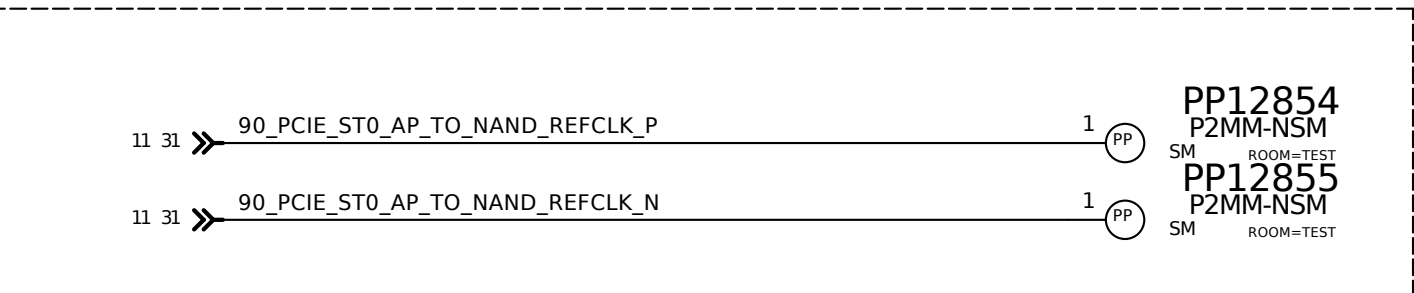


# Probe Points

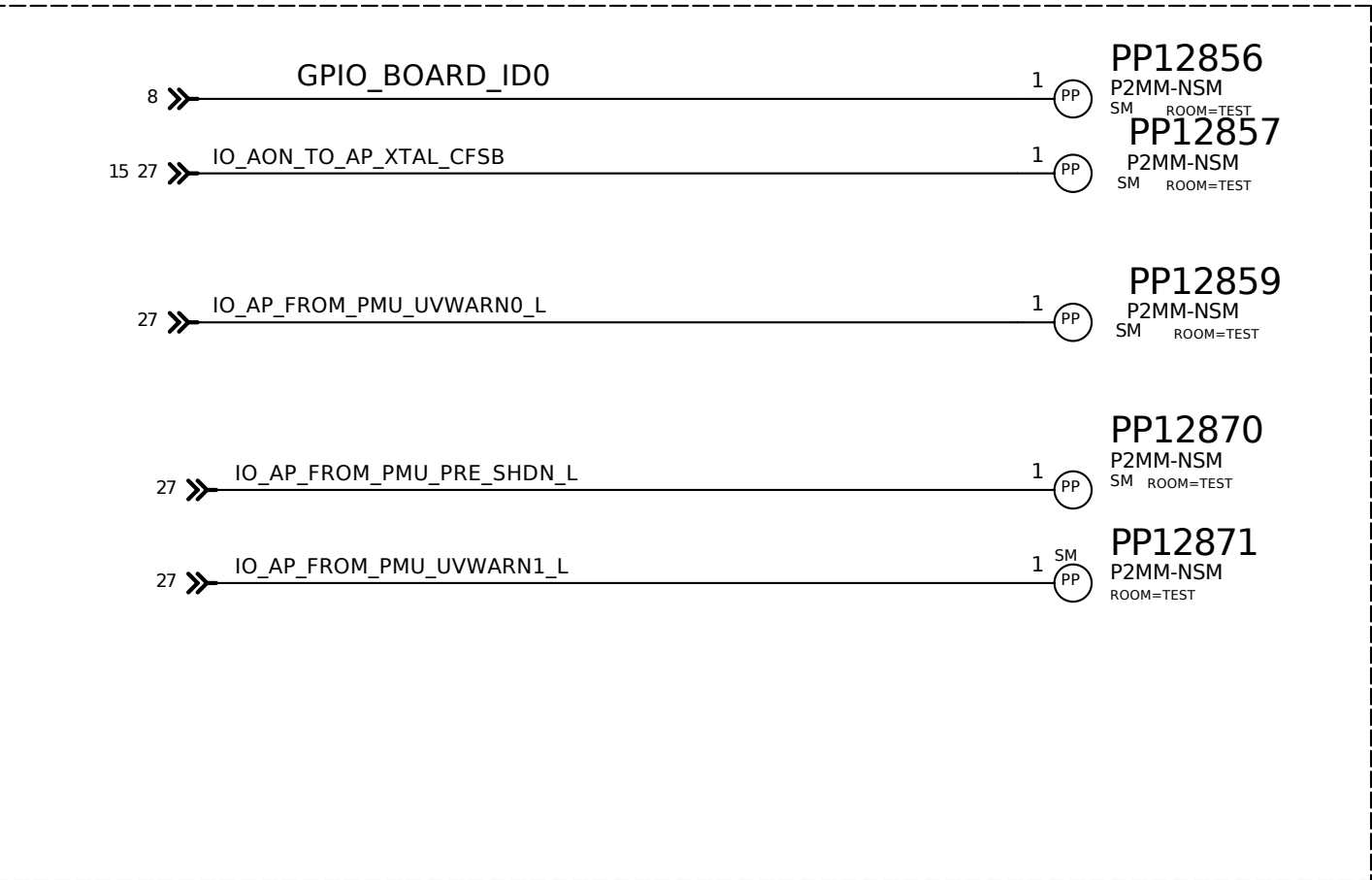
## Parrot



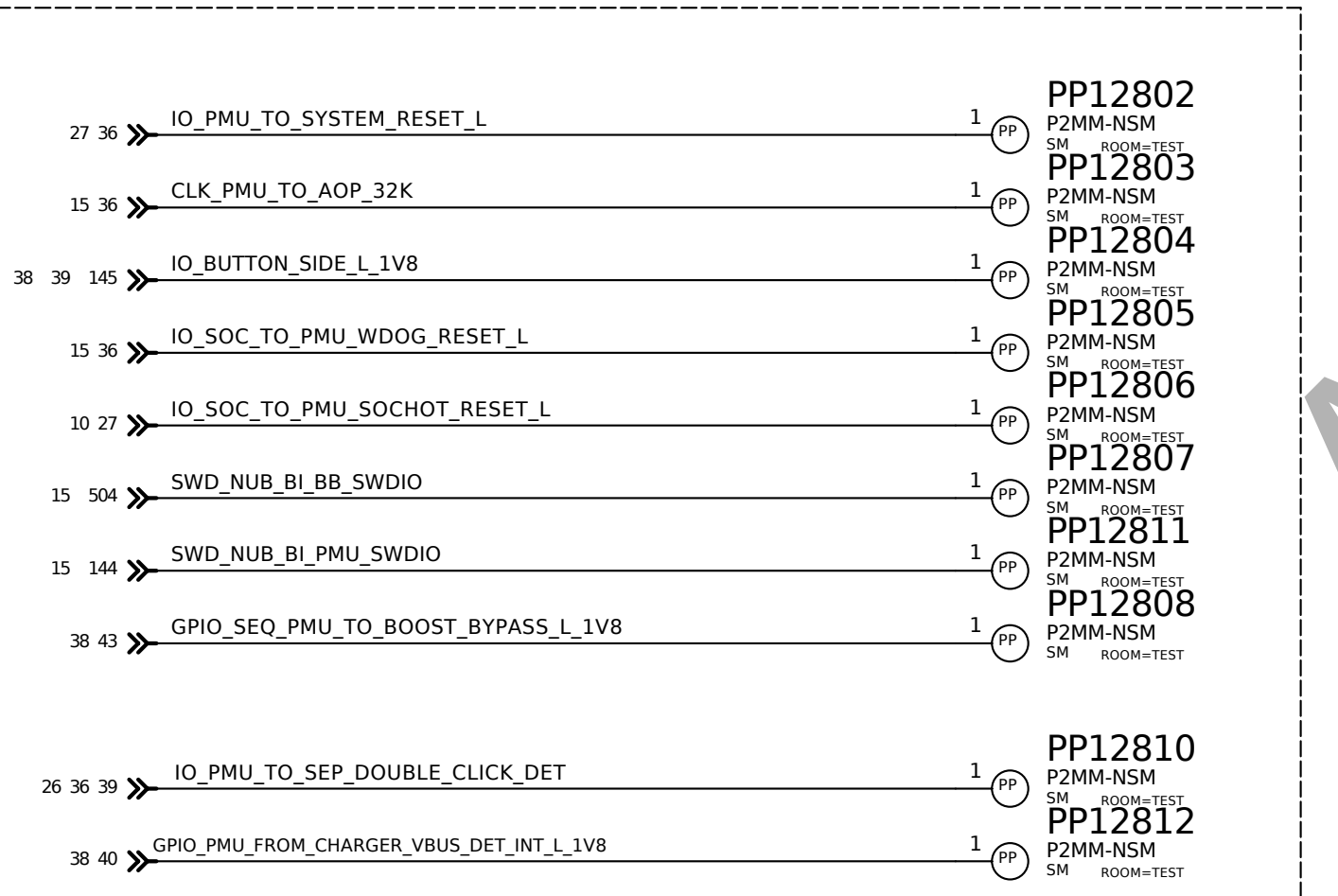
## PCIe



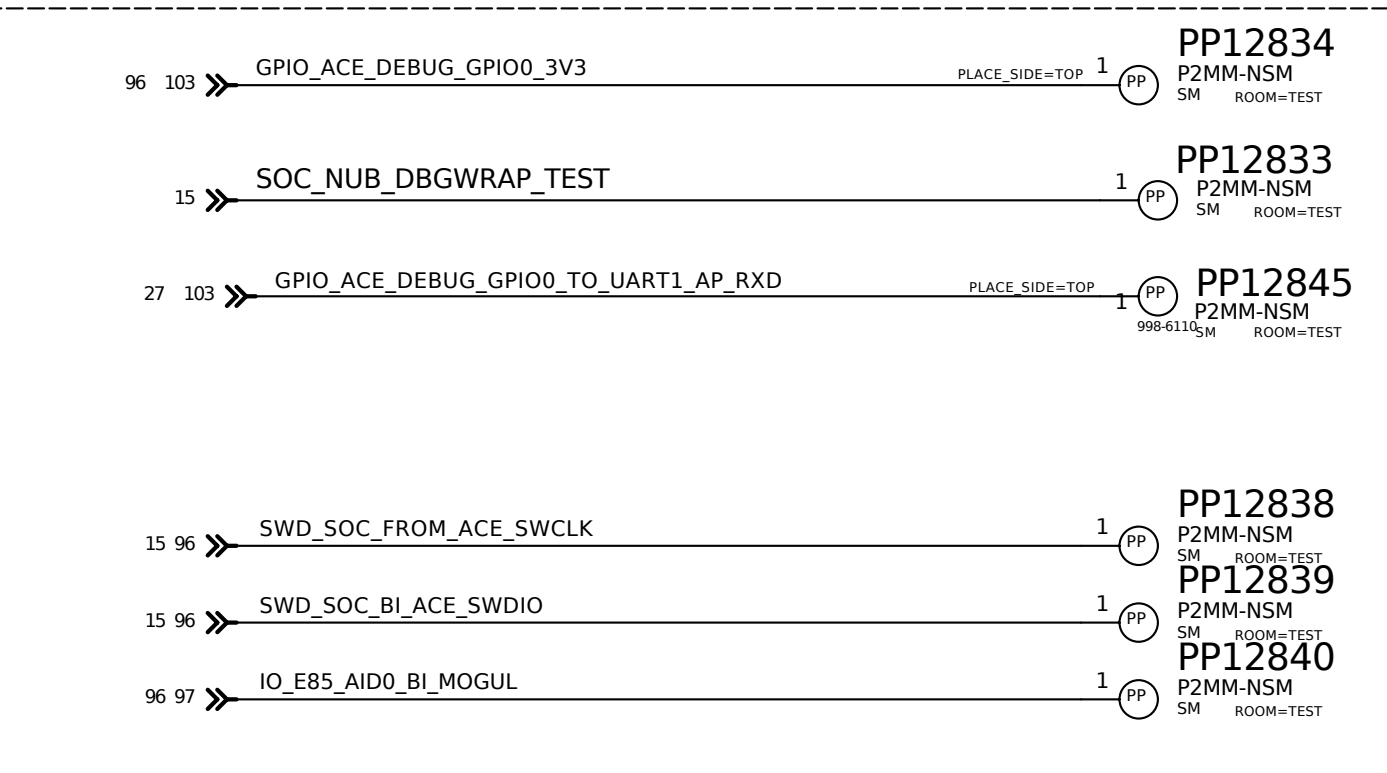
## SOC Debug



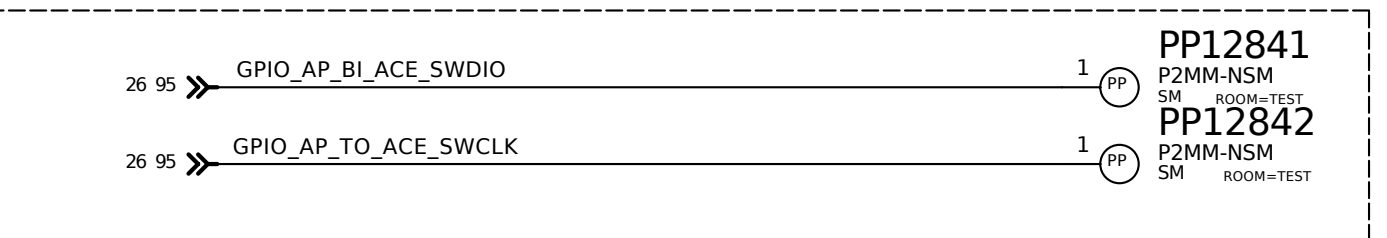
## PMU



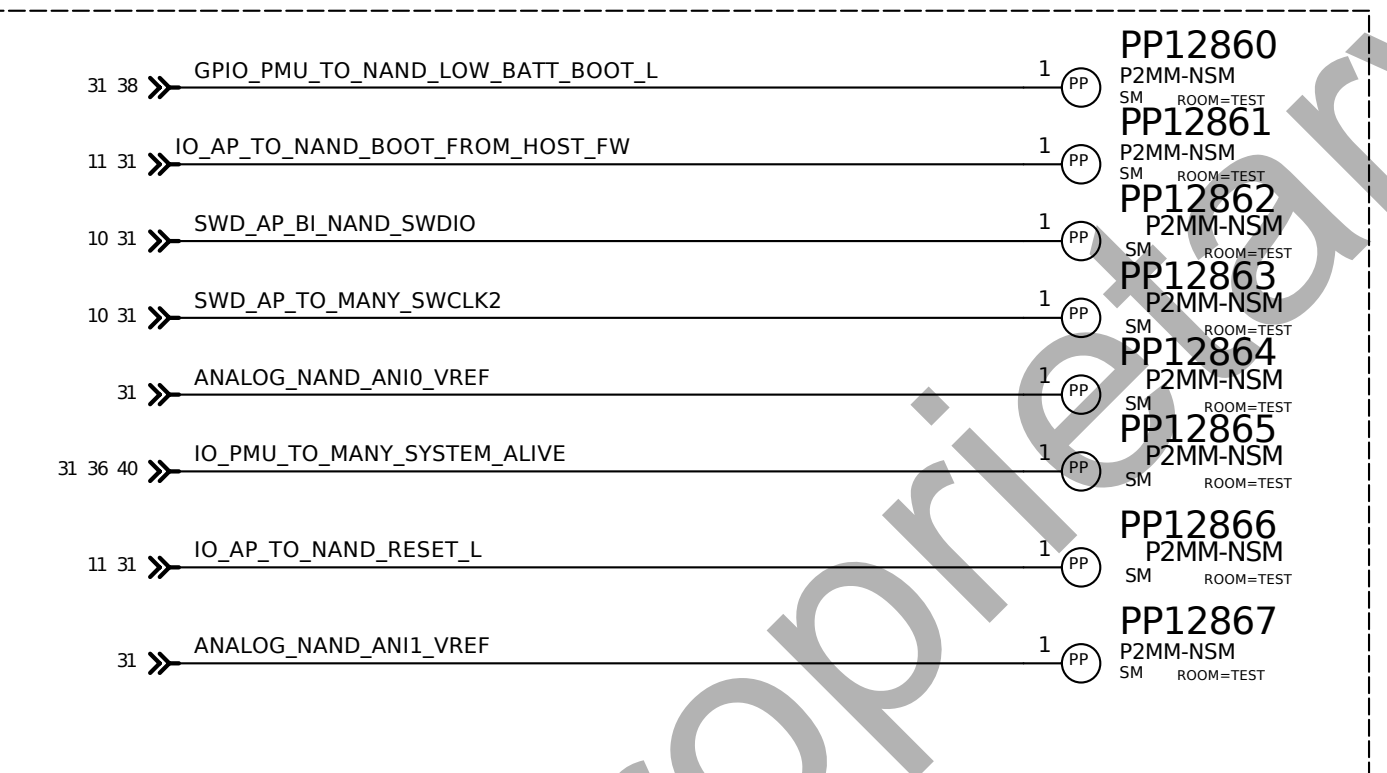
## E85



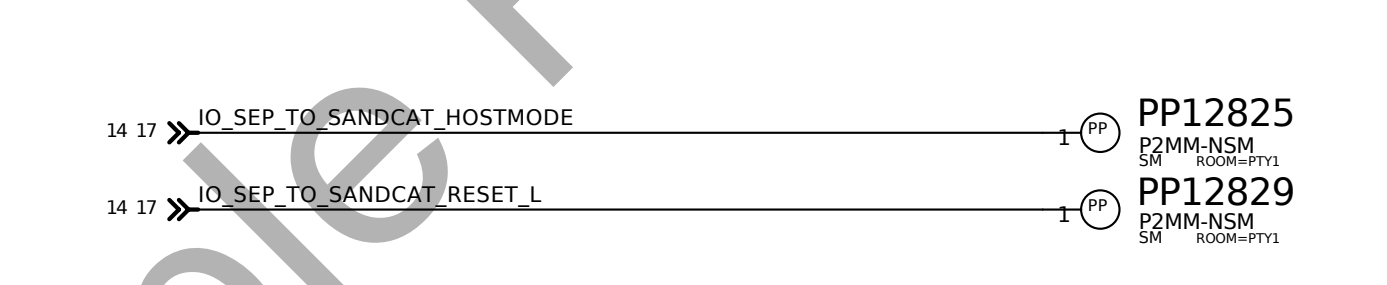
## ACE SWDIO



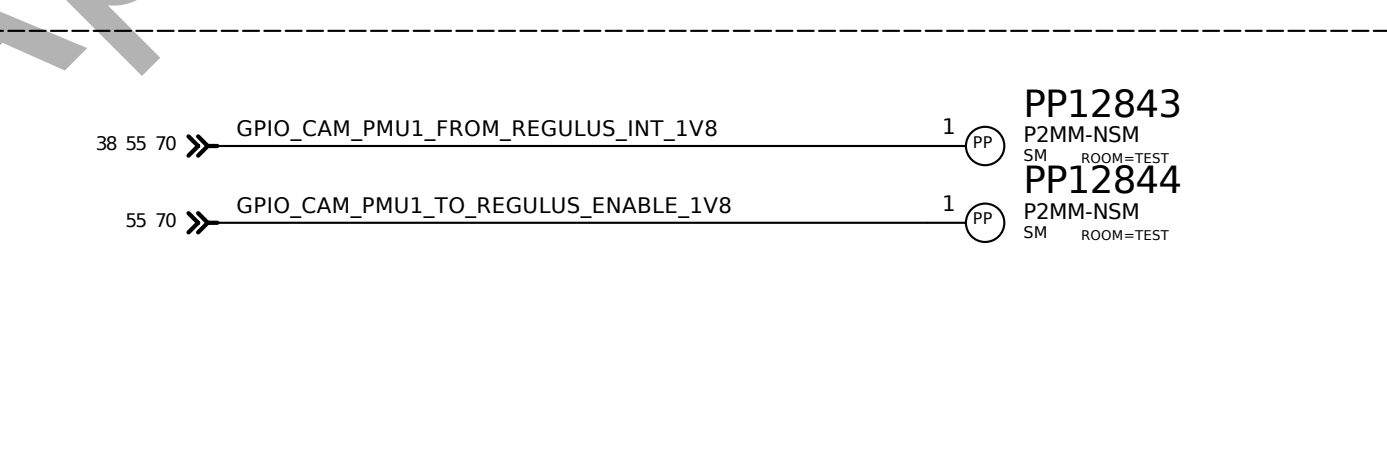
## NAND



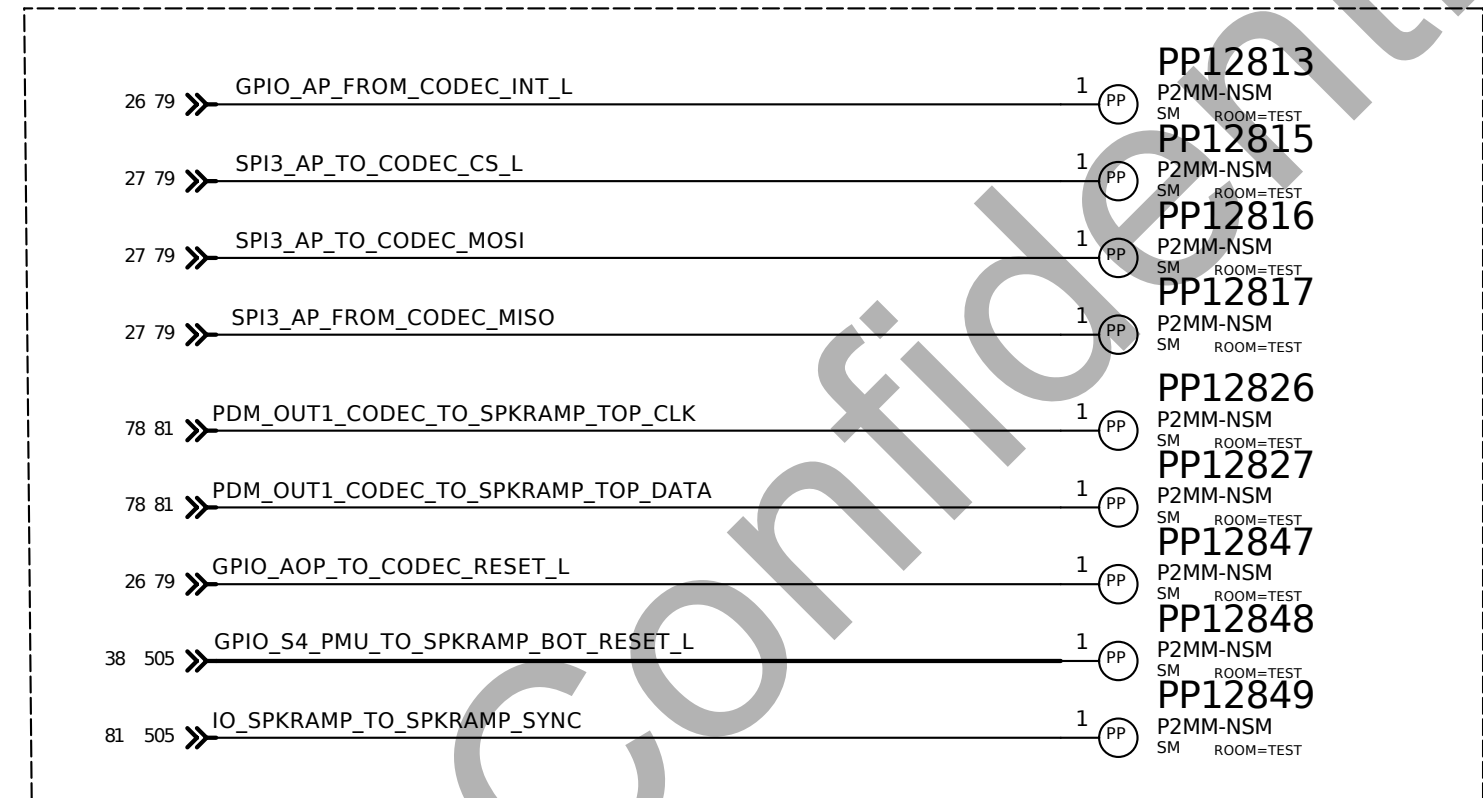
## SANDCAT



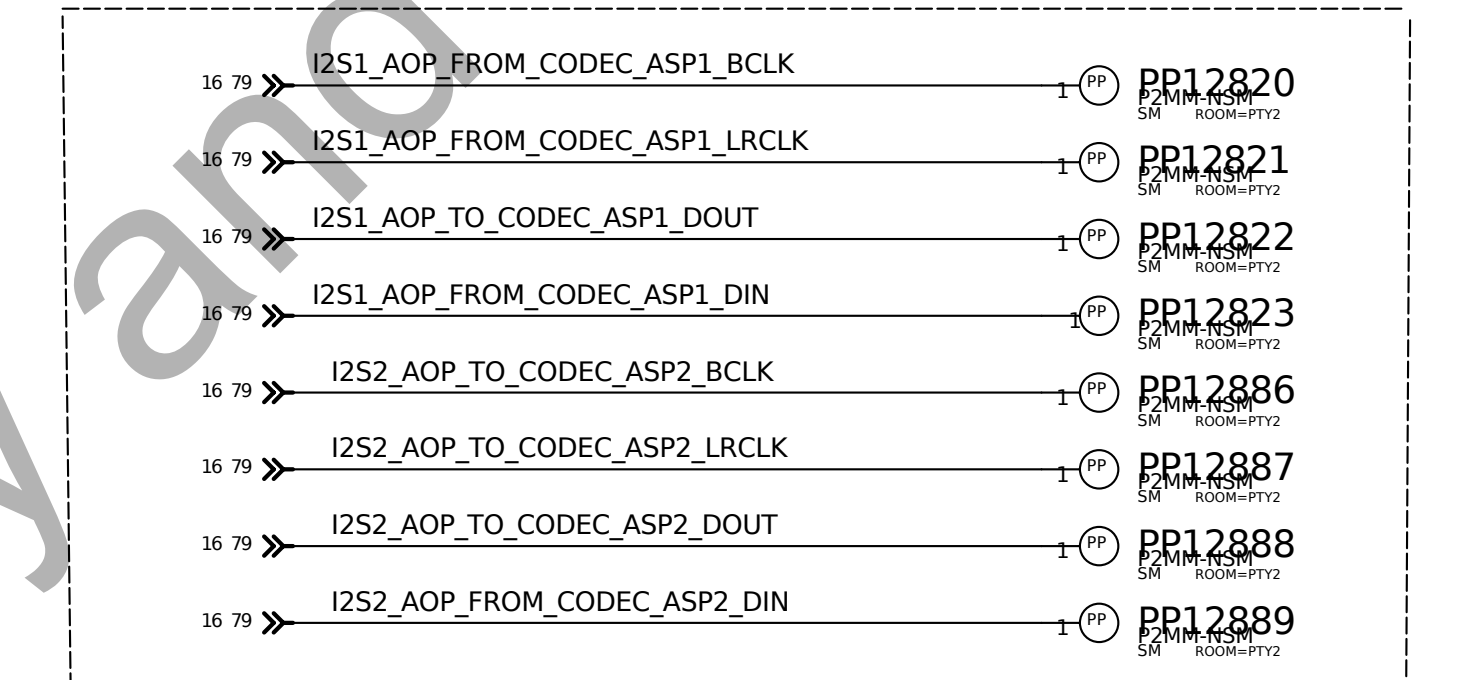
## Alda



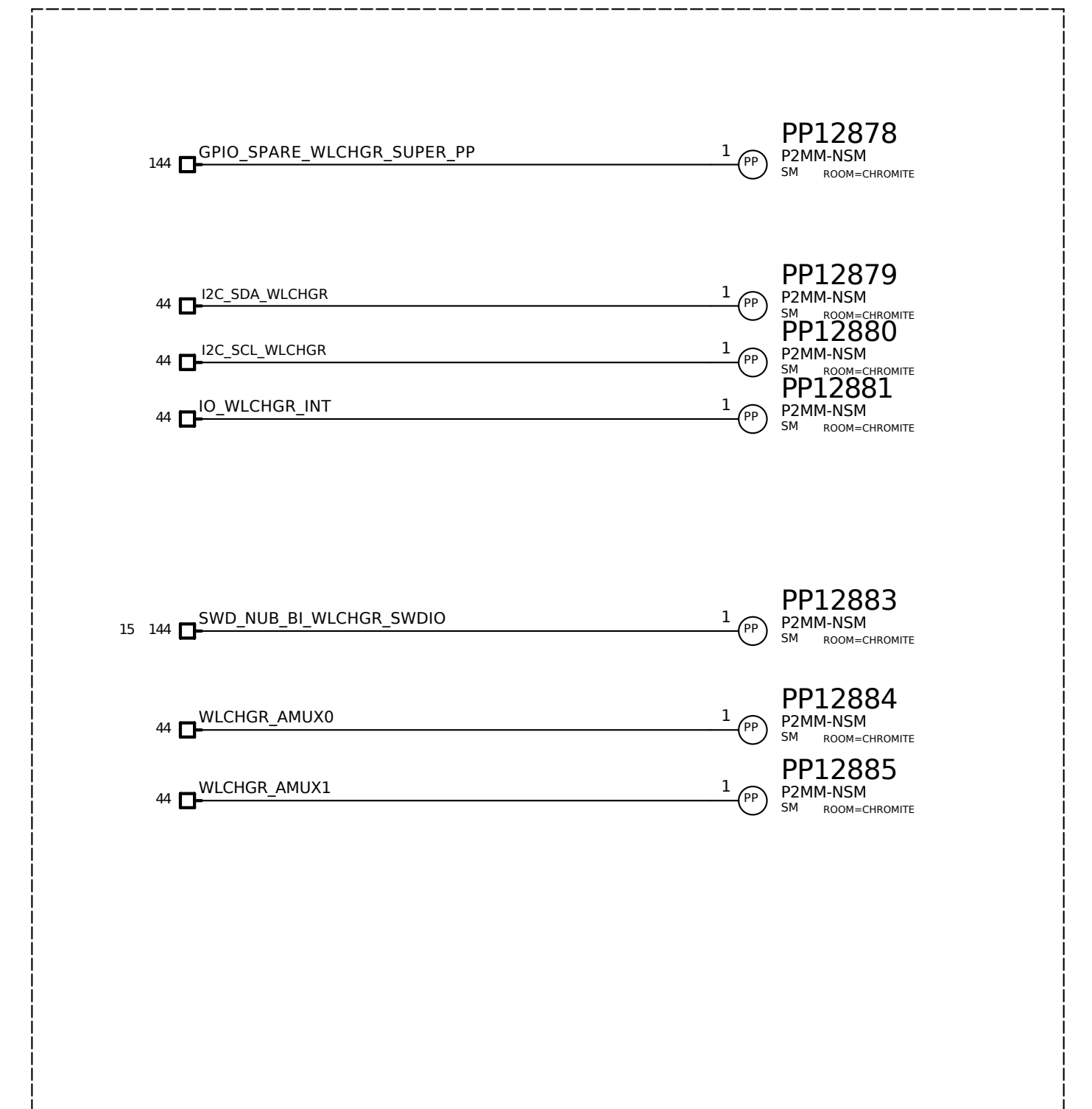
## Codec



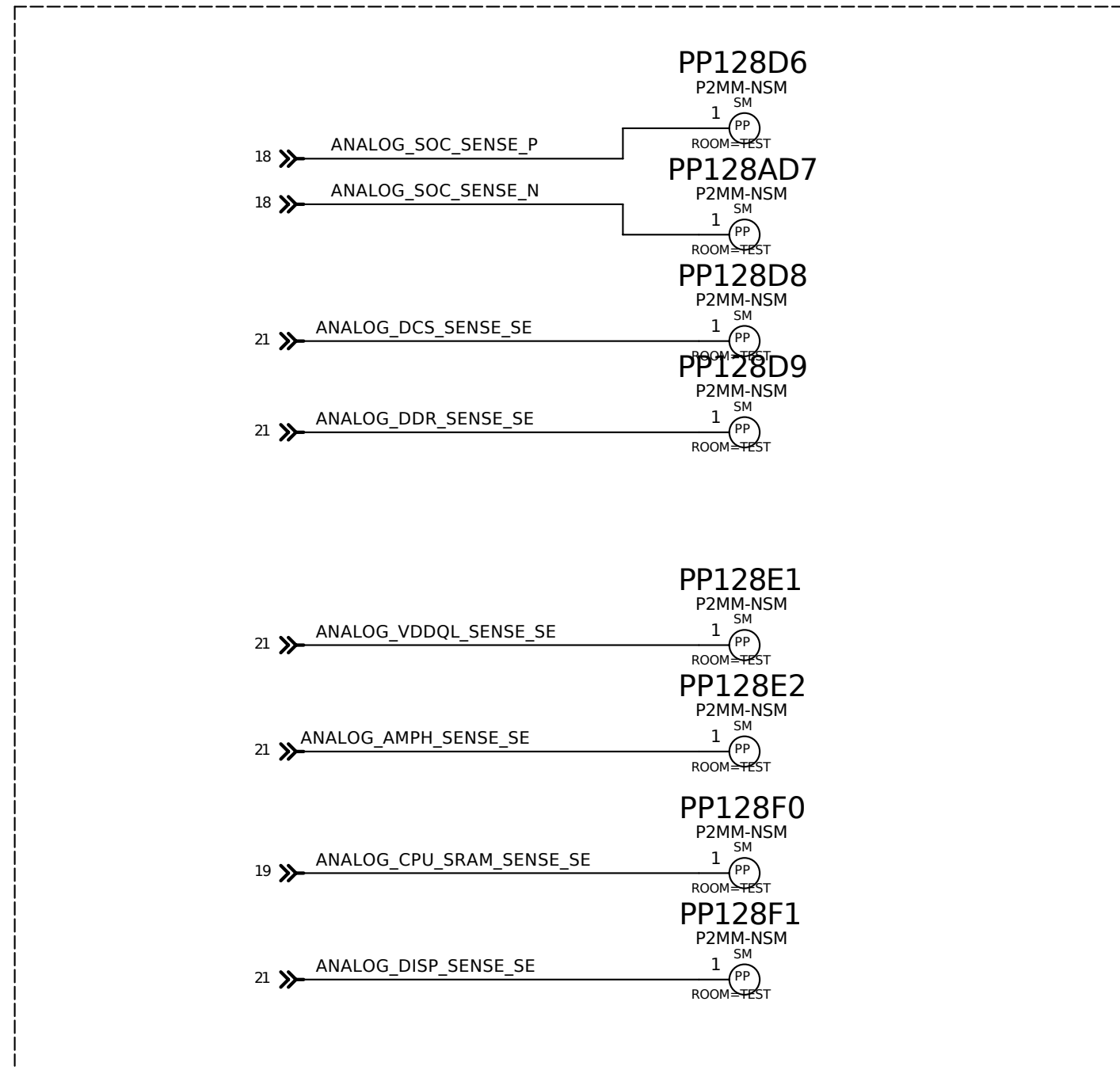
## I2S



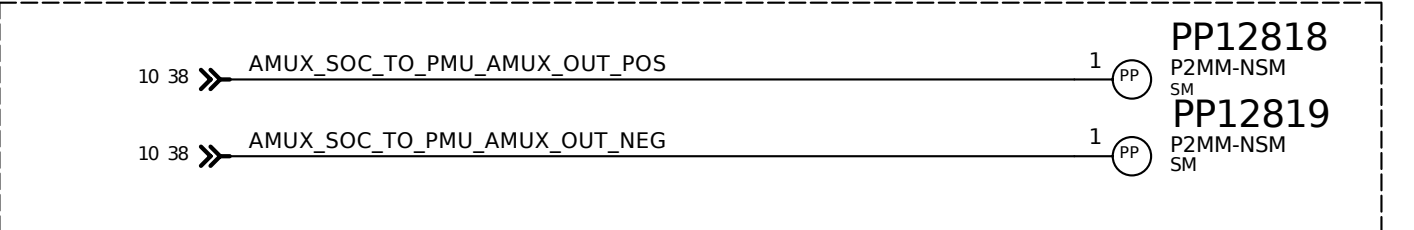
## CHROMITE



## Bump Sense



## AMUX Probe Points



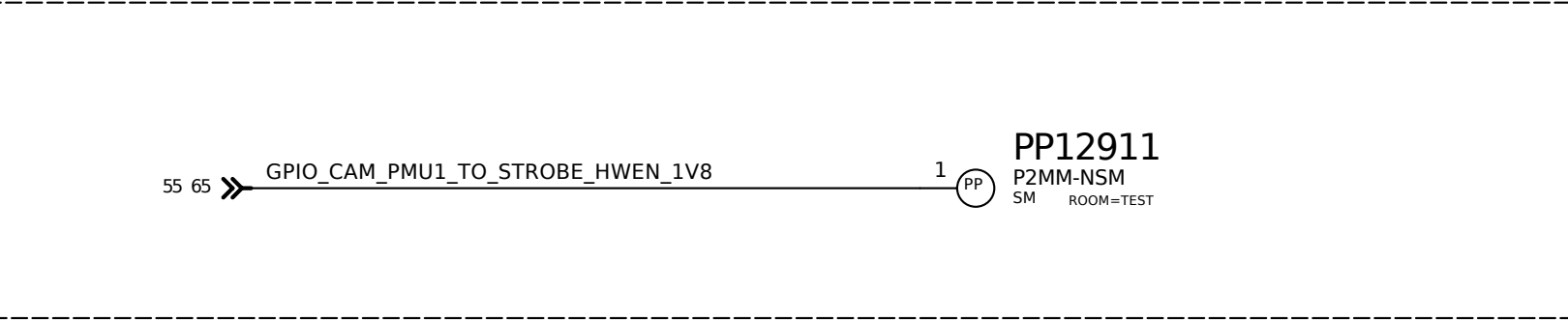
## ARUE



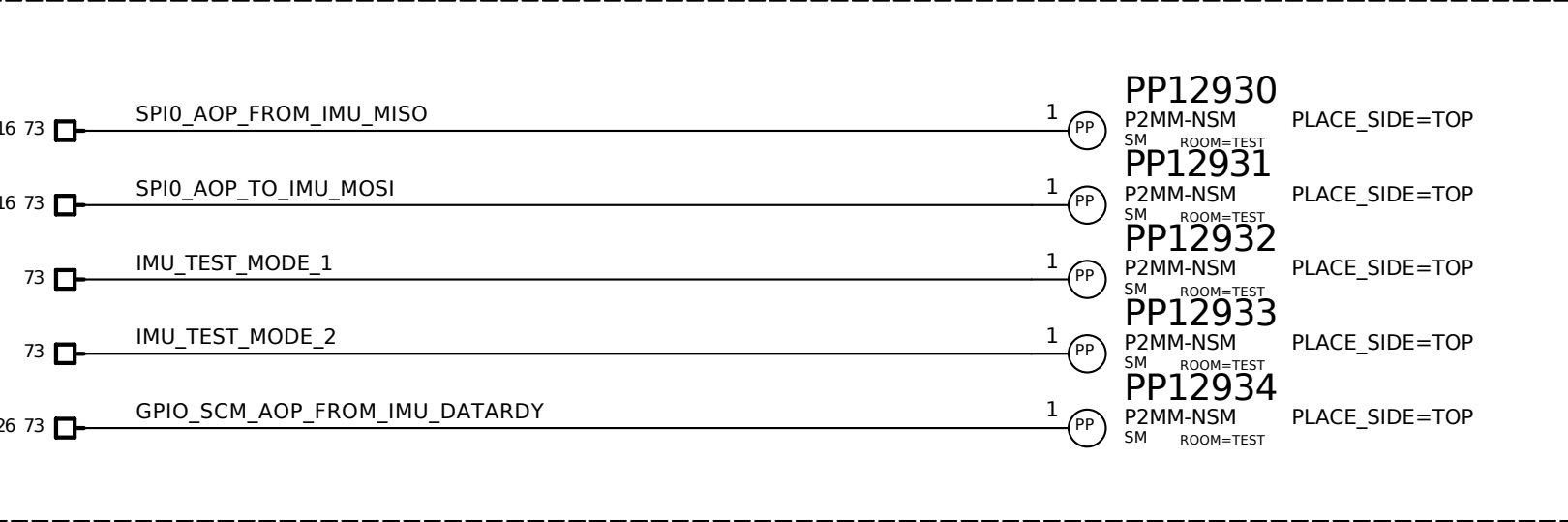
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| PAGE TITLE  |  |
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Probe Points

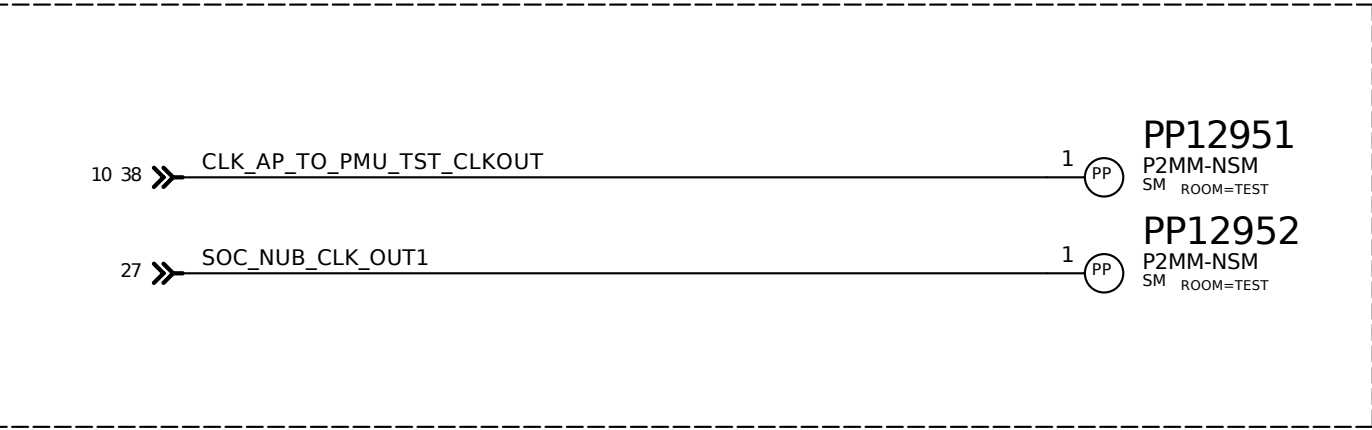
CAM + STROBE



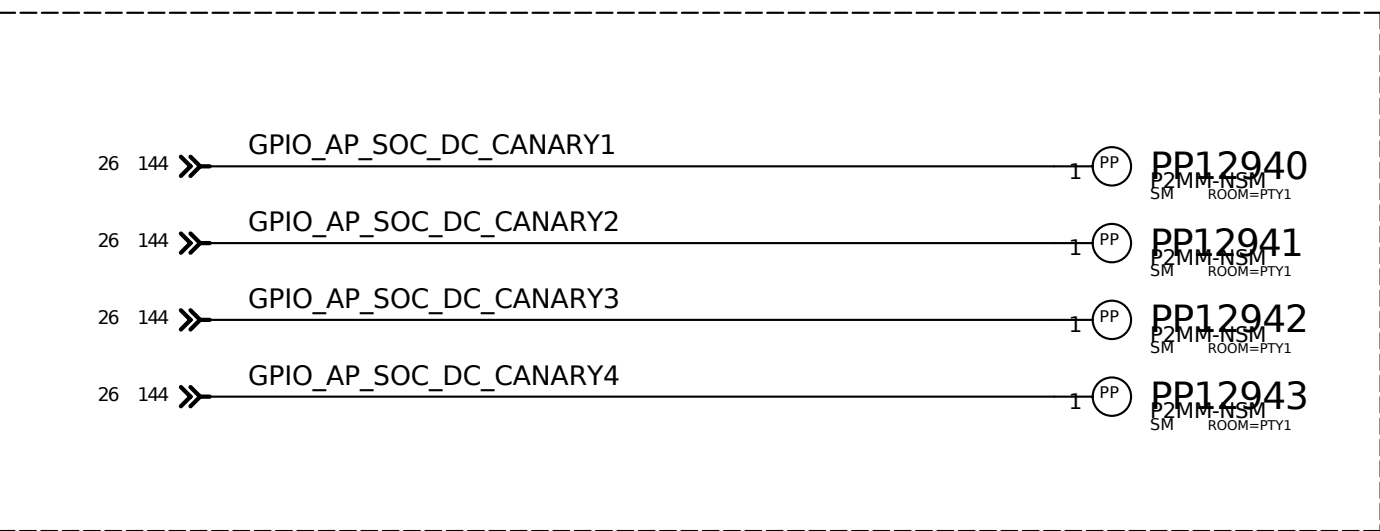
IMU



SOC

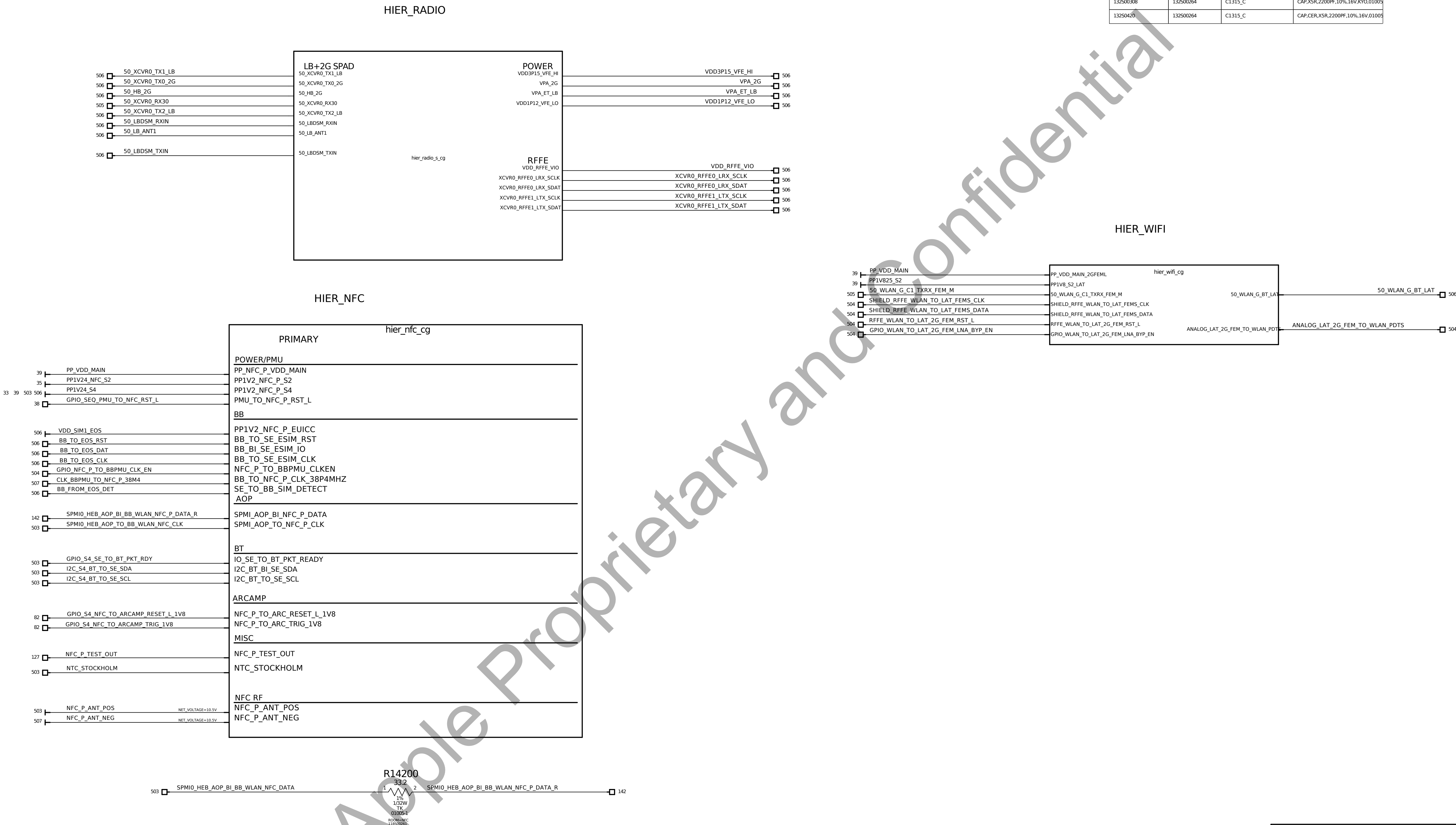



SOC CANARY



HIERARCHY BLOCKS

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 132500308          | 132500264        | C1315_C               | CAP,XSR,2200PF,10%,16V,KYO,01005 |
| 13250420           | 132500264        | C1315_C               | CAP,CER,XSR,2200PF,10%,16V,01005 |



| PAGE TITLE  |  |  |
|---|--|--|
| HIERARCHIES: TOP (142)  |  |  |
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# GENERAL ALIASES

## ACE3LITE

99 NC\_GPIO1\_PARROT NC\_GPIO1\_PARROT NO\_TEST=TRUE

## eUSB (PARROT)

LOW: 1.2V IO / HIGH: 1.8V IO  
99 GND

99 90\_ATC0\_EUSB\_PARROT\_BI\_AP\_P 90\_ATC0\_EUSB\_PARROT\_BI\_AP\_P 128  
99 90\_ATC0\_EUSB\_PARROT\_BI\_AP\_N 90\_ATC0\_EUSB\_PARROT\_BI\_AP\_N 128

36 SPMI0\_NUB\_BI\_PMU\_DATA SPMI0\_NUB\_BI\_PMU\_DATA 15  
36 SPMI0\_NUB\_TO\_PMU\_CLK SPMI0\_NUB\_TO\_PMU\_CLK 15  
36 SWD\_NUB\_BI\_PMU\_SWDIO SWD\_NUB\_BI\_PMU\_SWDIO 15 128

## ACE3L

96 GND GND  
96 NC\_IO\_ACE\_IRQ1\_L NC\_IO\_ACE\_IRQ1\_L  
96 NC\_IO\_ACE\_IRQ2\_L NC\_IO\_ACE\_IRQ2\_L  
96 SPMI\_A0\_NUB\_BI\_ACE\_DATA SPMI\_A0\_NUB\_BI\_ACE\_DATA 15  
96 SPMI\_A0\_NUB\_TO\_ACE\_CLK SPMI\_A0\_NUB\_TO\_ACE\_CLK 15

## CHROMITE ALIASES

44 GPIO\_SEQ\_PMU\_TO\_WLCHGR\_EN\_SYS GPIO\_SEQ\_PMU\_TO\_WLCHGR\_EN\_SYS 38  
44 SWD\_NUB\_BI\_WLCHGR\_SWDIO SWD\_NUB\_BI\_WLCHGR\_SWDIO 15 128  
44 SWD\_NUB\_TO\_MANY\_SWCLK0 SWD\_NUB\_TO\_MANY\_SWCLK0 15 39 117  
44 GPIO\_SPARE\_WLCHGR\_SUPER\_PP GPIO\_SPARE\_WLCHGR\_SUPER\_PP 128  
44 GPIO\_SPARE\_WLCHGR\_SUPER\_PP  
44 GPIO\_SPARE\_WLCHGR\_SUPER\_PP  
44 GPIO\_SPARE\_WLCHGR\_SUPER\_PP  
44 GPIO\_SPARE\_WLCHGR\_SUPER\_PP  
44 NC\_WLCHGR\_BOOT1\_GH NC\_WLCHGR\_BOOT1\_GH NO\_TEST=TRUE  
44 NC\_WLCHGR\_BOOT1\_GL NC\_WLCHGR\_BOOT1\_GL NO\_TEST=TRUE  
44 NC\_WLCHGR\_BOOT2\_GH NC\_WLCHGR\_BOOT2\_GH NO\_TEST=TRUE  
44 NC\_WLCHGR\_BOOT2\_GL NC\_WLCHGR\_BOOT2\_GL NO\_TEST=TRUE  
44 NC\_WLCHGR\_ANA0 NC\_WLCHGR\_ANA0 NO\_TEST=TRUE  
44 NC\_WLCHGR\_ANA1 NC\_WLCHGR\_ANA1 NO\_TEST=TRUE  
44 NC\_WLCHGR\_OVP\_ON NC\_WLCHGR\_OVP\_ON NO\_TEST=TRUE  
44 GND  
44 GND  
44 PP1V2\_WLCHGR\_VDD\_DIG R14400 1 2 WLCHGR\_WP\_DIS\_L 44  
10K  
1/2W  
5%  
01005-1  
117500064  
R000=CHROMITE

## NAND ALIASES

### DEV BOARD COMPATIBILITY

31 GND  
31 GND  
31 GND  
30 GND  
31 GND  
31 GND  
31 NC\_DEV\_NAND\_JTAG\_TDI NC\_DEV\_NAND\_JTAG\_TDI  
30 NC\_DEV\_NAND\_VPP NC\_DEV\_NAND\_VPP NO\_TEST=TRUE  
31 NC\_NAND\_DROOP\_L NC\_NAND\_DROOP\_L NO\_TEST=TRUE

### VDDIO2

30 31 39 PP1V24\_IO\_SOC\_S0 PP1V24\_IO\_SOC\_S0 30  
PP1V24\_IO\_SOC\_S0 31 39

23 GPIO\_AP\_SOC\_DC\_CANARY1 GPIO\_AP\_SOC\_DC\_CANARY1 26 129  
23 GPIO\_AP\_SOC\_DC\_CANARY2 GPIO\_AP\_SOC\_DC\_CANARY2 26 129  
23 GPIO\_AP\_SOC\_DC\_CANARY3 GPIO\_AP\_SOC\_DC\_CANARY3 26 129  
23 GPIO\_AP\_SOC\_DC\_CANARY4 GPIO\_AP\_SOC\_DC\_CANARY4 26 129

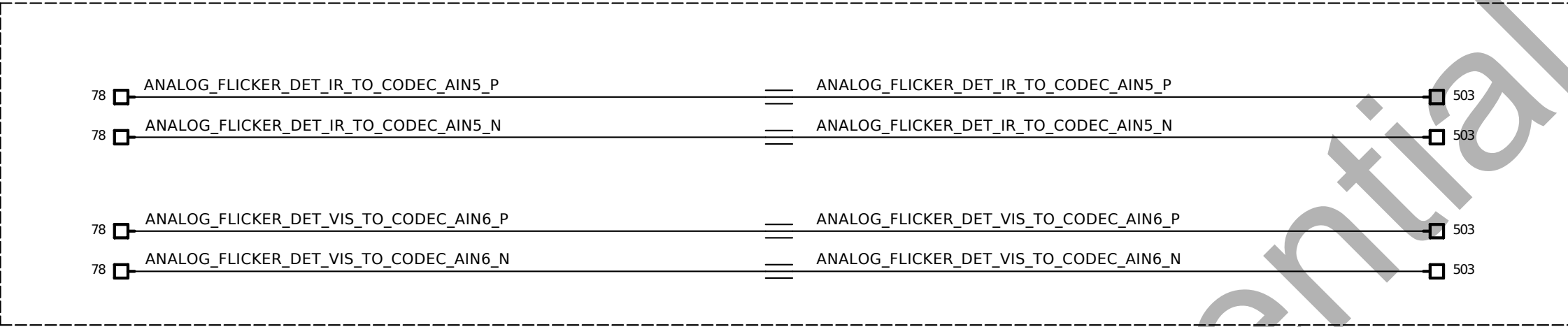
PAGE TITLE  
SYSTEM: General Aliases (144)



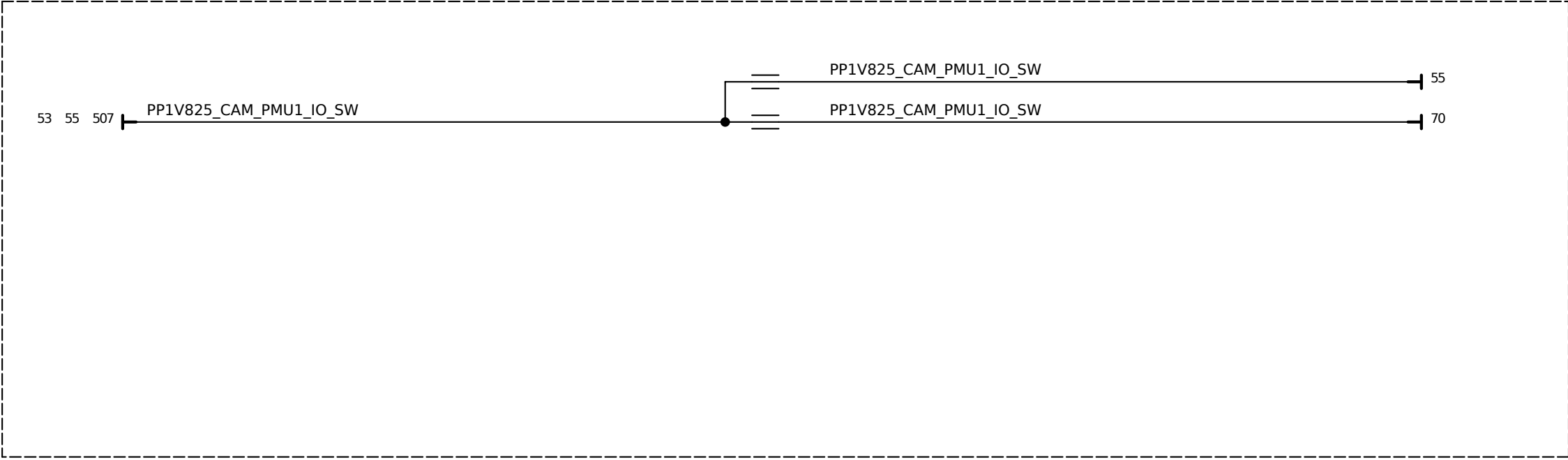
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FF SPECIFIC ALIASES

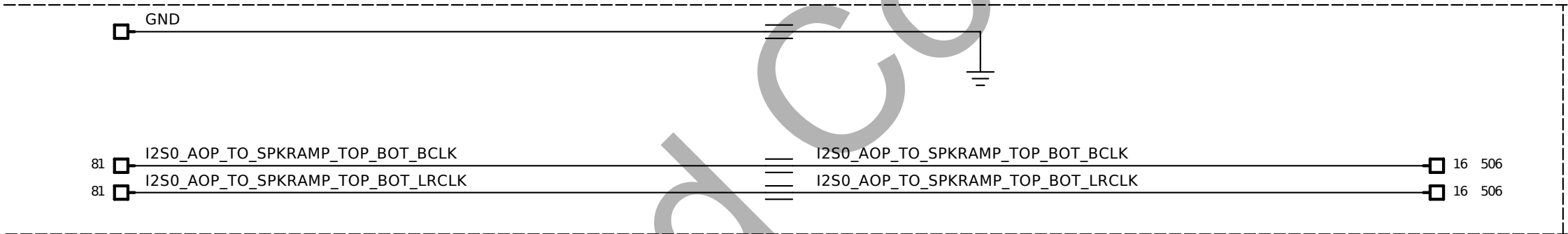
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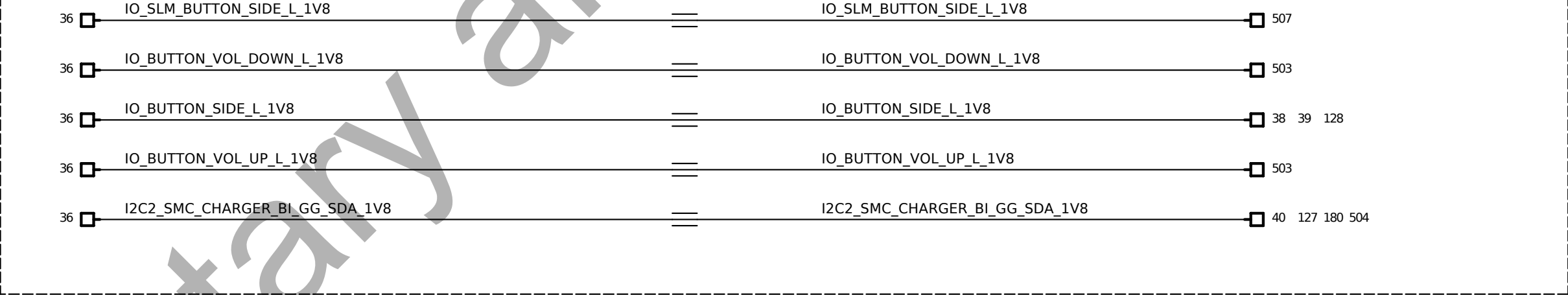
CAMERAS (DEV COMPATIBILITY)



MISC



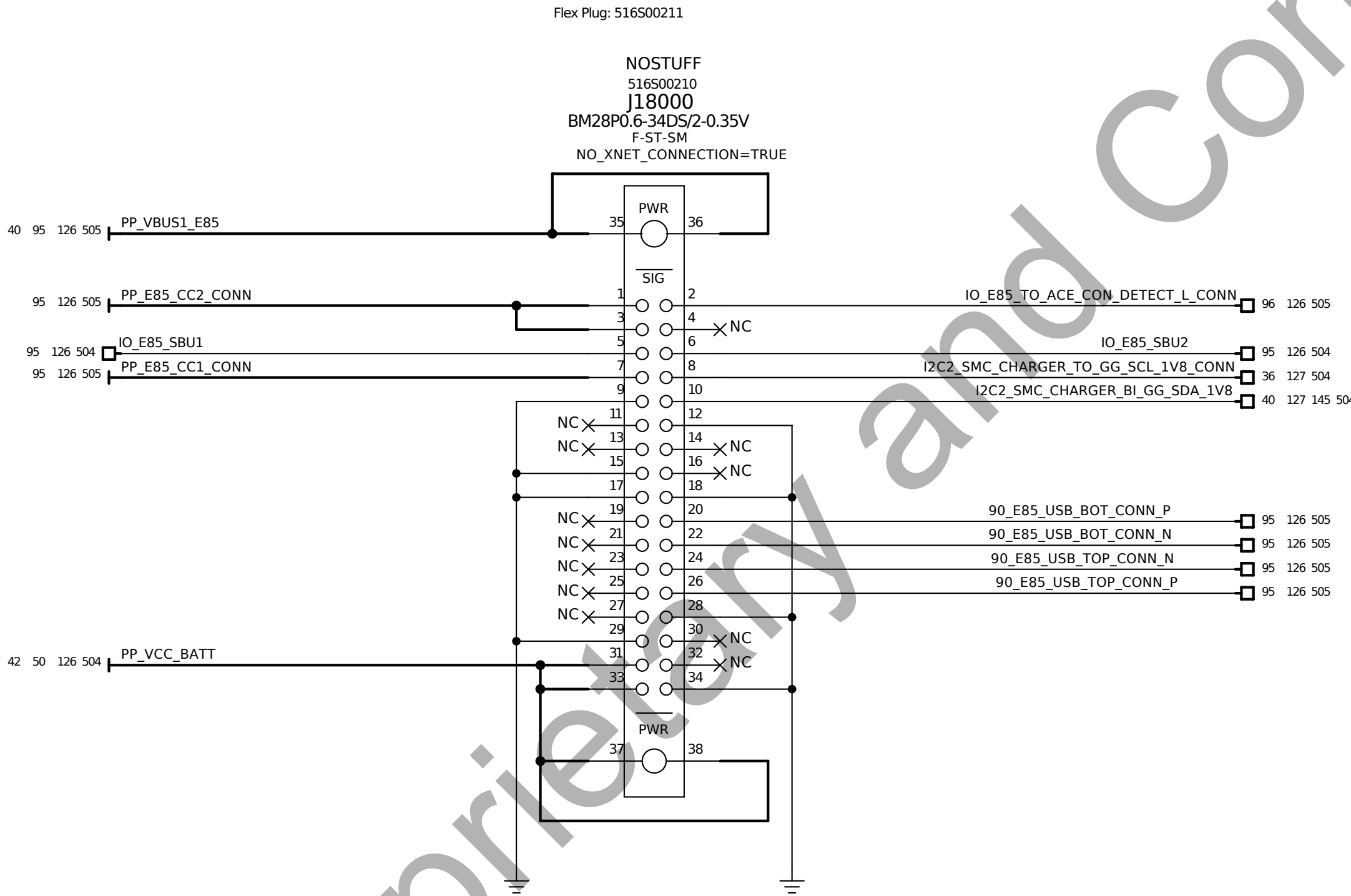
PMU SLM



DEBUG CONNECTORS

Dock Jumper B2B

Battery B2B



|   |        |   |    |      |       |     |  |        |     |     |        |                               |     |       |       |     |                                    |        |     |
|---|--------|---|----|------|-------|-----|--|--------|-----|-----|--------|-------------------------------|-----|-------|-------|-----|------------------------------------|--------|-----|
| 8   | 7      | 6   | 5  | 4    | 3     | 2   | 1                                      |        |     |     |        |                               |     |       |       |     |                                    |        |     |
| <div>998-33243</div> <div>J_INT_CG</div> <div>INTERPOSER-BOT-CG-V59</div> <div>SMT-PAD</div> <div>SYM 1 OF 5</div> <div>0MM</div> |        | <div>998-33263</div> <div>J_INT_CG</div> <div>INTERPOSER-BOT-CG-V59</div> <div>SMT-PAD</div> <div>SYM 2 OF 5</div> <div>0MM</div> |    |      |       |     |  |        |     |     |        |                               |     |       |       |     |                                    |        |     |
| 503   | <<<>>> | GND   | 1  | IO1  | IO91  | 91  | NTC_RADIO_PA_P                         | <<<>>> | 503 | 504 | <<<>>> | GND                           | 181 | IO181 | IO271 | 271 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 2  | IO2  | IO92  | 92  | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 182 | IO182 | IO272 | 272 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 3  | IO3  | IO93  | 93  | ANALOG_FLICKER_DET_VIS_TO_CODEC_AIN6_N | <<<>>> | 503 | 504 | <<<>>> | GND                           | 183 | IO183 | IO273 | 273 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 4  | IO4  | IO94  | 94  | ANALOG_FLICKER_DET_VIS_TO_CODEC_AIN6_P | <<<>>> | 503 | 504 | <<<>>> | GND                           | 184 | IO184 | IO274 | 274 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | PP1V17_FCAM_DVDD  | 5  | IO5  | IO95  | 95  | GND                                    | <<<>>> | 503 | 504 | <<<>>> | SWD_NUB_BI_BB_SWDIO           | 185 | IO185 | IO275 | 275 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | CLK_CAM_PMU1_TO_FCAM_12M_1V8  | 6  | IO6  | IO96  | 96  | ANALOG_FLICKER_DET_IR_TO_CODEC_AIN5_N  | <<<>>> | 503 | 504 | <<<>>> | GND                           | 186 | IO186 | IO276 | 276 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 7  | IO7  | IO97  | 97  | ANALOG_FLICKER_DET_IR_TO_CODEC_AIN5_P  | <<<>>> | 503 | 504 | <<<>>> | SWD_NUB_TO_BB_SWCLK           | 187 | IO187 | IO277 | 277 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 8  | IO8  | IO98  | 98  | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 188 | IO188 | IO278 | 278 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 9  | IO9  | IO99  | 99  | ANALOG_MIC2_REAR_TO_CODEC_AIN2_P       | <<<>>> | 503 | 504 | <<<>>> | GND                           | 189 | IO189 | IO279 | 279 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 10 | IO10 | IO100 | 100 | ANALOG_MIC2_REAR_TO_CODEC_AIN2_N       | <<<>>> | 503 | 504 | <<<>>> | GND                           | 190 | IO190 | IO280 | 280 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | 90_LPDP_ISP_FROM_FCAM_RX_D0_CONN_P  | 11 | IO11 | IO101 | 101 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_TO_BB_REFCLK_N | 191 | IO191 | IO281 | 281 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | 90_LPDP_ISP_FROM_FCAM_RX_D0_CONN_N  | 12 | IO12 | IO102 | 102 | PP_CODEC_TO_MIC2_REAR_BIAS             | <<<>>> | 503 | 504 | <<<>>> | GND                           | 192 | IO192 | IO282 | 282 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 13 | IO13 | IO103 | 103 | RET_CODEC_FROM_MIC2_REAR               | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_TO_BB_REFCLK_P | 193 | IO193 | IO283 | 283 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | 90_LPDP_ISP_FROM_FCAM_RX_D1_CONN_N  | 14 | IO14 | IO104 | 104 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 194 | IO194 | IO284 | 284 | PP_VCC_BATT                        | <<<>>> | 504 |
| 503   | <<<>>> | 90_LPDP_ISP_FROM_FCAM_RX_D1_CONN_P  | 15 | IO15 | IO105 | 105 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_TO_BB_TX_P     | 195 | IO195 | IO285 | 285 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 16 | IO16 | IO106 | 106 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 196 | IO196 | IO286 | 286 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 17 | IO17 | IO107 | 107 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_TO_BB_TX_N     | 197 | IO197 | IO287 | 287 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 18 | IO18 | IO108 | 108 | PP_STROBE_DRIVER_CENTER_LED            | <<<>>> | 503 | 504 | <<<>>> | GND                           | 198 | IO198 | IO288 | 288 | ANALOG_LAT_2G_FEM_TO_WLAN_PDTS     | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 19 | IO19 | IO109 | 109 | PP_STROBE_DRIVER_CENTER_LED            | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_FROM_BB_RX_N   | 199 | IO199 | IO289 | 289 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | COIL_TO_SPKRAMP_TOP_VSENSE_POS_CONN   | 20 | IO20 | IO110 | 110 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 200 | IO200 | IO290 | 290 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | COIL_TO_SPKRAMP_TOP_VSENSE_NEG_CONN   | 21 | IO21 | IO111 | 111 | I2C3_AOP_SDA                           | <<<>>> | 503 | 504 | <<<>>> | 90_PCIE_GP1_AP_FROM_BB_RX_P   | 201 | IO201 | IO291 | 291 | RFFE_WLAN_TO_LAT_2G_FEM_RST_L      | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 22 | IO22 | IO112 | 112 | I2C3_AOP_SCL                           | <<<>>> | 503 | 504 | <<<>>> | GND                           | 202 | IO202 | IO292 | 292 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | SPKRAMP_TOP_TO_COIL_OUT_NEG   | 23 | IO23 | IO113 | 113 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 203 | IO203 | IO293 | 293 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | SPKRAMP_TOP_TO_COIL_OUT_POS   | 24 | IO24 | IO114 | 114 | PP1V825_S2                             | <<<>>> | 503 | 504 | <<<>>> | GND                           | 204 | IO204 | IO294 | 294 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 25 | IO25 | IO115 | 115 | PP3V0_FLICKER_DET_VDD_S0               | <<<>>> | 503 | 504 | <<<>>> | 90_EUSB_BB_DBG_N              | 205 | IO205 | IO295 | 295 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 26 | IO26 | IO116 | 116 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 206 | IO206 | IO296 | 296 | GPIO_AP_INTERPOSER_CANARY9_B_TO_C  | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 27 | IO27 | IO117 | 117 | PCIE_GP0_AP_BI_WLAN_CLKREQ_L           | <<<>>> | 503 | 504 | <<<>>> | 90_EUSB_BB_DBG_P              | 207 | IO207 | IO297 | 297 | GPIO_AP_INTERPOSER_CANARY9_AP_TO_A | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 28 | IO28 | IO118 | 118 | NTC_STROBE_MODULE                      | <<<>>> | 503 | 504 | <<<>>> | GND                           | 208 | IO208 | IO298 | 298 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | NFC_P_ANT_POS   | 29 | IO29 | IO119 | 119 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 209 | IO209 | IO299 | 299 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | NFC_P_ANT_POS   | 30 | IO30 | IO120 | 120 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 210 | IO210 | IO300 | 300 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 31 | IO31 | IO121 | 121 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 211 | IO211 | IO301 | 301 | GPIO_AP_INTERPOSER_CANARY9_B_TO_C  | <<<>>> | 504 |
| 503   | <<<>>> | NFC_P_ANT_POS   | 32 | IO32 | IO122 | 122 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 212 | IO212 | IO302 | 302 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 33 | IO33 | IO123 | 123 | PAC_WLCHGR_COIL1                       | <<<>>> | 503 | 504 | <<<>>> | PP_VDD_MAIN                   | 213 | IO213 | IO303 | 303 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 34 | IO34 | IO124 | 124 | PAC_WLCHGR_COIL1                       | <<<>>> | 503 | 504 | <<<>>> | GND                           | 214 | IO214 | IO304 | 304 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 35 | IO35 | IO125 | 125 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | PP_VDD_MAIN                   | 215 | IO215 | IO305 | 305 | GPIO_AP_INTERPOSER_CANARY9_D_TO_E  | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 36 | IO36 | IO126 | 126 | PAC_WLCHGR_COIL2                       | <<<>>> | 503 | 504 | <<<>>> | GND                           | 216 | IO216 | IO306 | 306 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 37 | IO37 | IO127 | 127 | PAC_WLCHGR_COIL2                       | <<<>>> | 503 | 504 | <<<>>> | PP_VDD_MAIN                   | 217 | IO217 | IO307 | 307 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 38 | IO38 | IO128 | 128 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 218 | IO218 | IO308 | 308 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 39 | IO39 | IO129 | 129 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | PP_VDD_MAIN                   | 219 | IO219 | IO309 | 309 | GPIO_AP_INTERPOSER_CANARY9_D_TO_E  | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 40 | IO40 | IO130 | 130 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 220 | IO220 | IO310 | 310 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 41 | IO41 | IO131 | 131 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | PP_VDD_MAIN                   | 221 | IO221 | IO311 | 311 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 42 | IO42 | IO132 | 132 | 90_PCIE_GP0_AP_TO_WLAN_TX_P            | <<<>>> | 503 | 504 | <<<>>> | GND                           | 222 | IO222 | IO312 | 312 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 43 | IO43 | IO133 | 133 | 90_PCIE_GP0_AP_TO_WLAN_TX_N            | <<<>>> | 503 | 504 | <<<>>> | GND                           | 223 | IO223 | IO313 | 313 | IO_E85_LDCM                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 44 | IO44 | IO134 | 134 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | GND                           | 224 | IO224 | IO314 | 314 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 45 | IO45 | IO135 | 135 | 90_PCIE_GP0_AP_FROM_WLAN_RX_N          | <<<>>> | 503 | 504 | <<<>>> | GND                           | 225 | IO225 | IO315 | 315 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 46 | IO46 | IO136 | 136 | 90_PCIE_GP0_AP_FROM_WLAN_RX_P          | <<<>>> | 503 | 504 | <<<>>> | GND                           | 226 | IO226 | IO316 | 316 | IO_E85_LDCM_LB                     | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 47 | IO47 | IO137 | 137 | GND                                    | <<<>>> | 503 | 504 | <<<>>> | PP1V825_S4                    | 227 | IO227 | IO317 | 317 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 48 | IO48 | IO138 | 138 | 90_PCIE_GP0_AP_TO_WLAN_REFCLK_P        | <<<>>> | 503 | 504 | <<<>>> | GND                           | 228 | IO228 | IO318 | 318 | GND                                | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 49 | IO49 | IO139 | 139 | 90_PCIE_GP0_AP_TO_WLAN_REFCLK_N        | <<<>>> | 503 | 504 | <<<>>> | IO_TOUCH_TO_MANY_SCAN_ACTIVE  | 229 | IO229 | IO319 | 319 | IO_E85_SBU2                        | <<<>>> | 504 |
| 503   | <<<>>> | GND   | 50 |      |       |     |  |        |     |     |        |                               |     |       |       |     |                                    |        |     |



|                             |  |                             |  |     |  |     |  |     |  |                       |  |             |  |             |  |
|-----------------------------|--|-----------------------------|--|-----|--|-----|--|-----|--|-----------------------|--|-------------|--|-------------|--|
| 8                           |  | 7                           |  | 6   |  | 5   |  | 4   |  | 3                     |  | 2           |  | 1           |  |
| 998-33263                   |  | 998-33263                   |  |     |  |     |  |     |  | 998-33263             |  |             |  |             |  |
| J_INT.CG                    |  | J_INT.CG                    |  |     |  |     |  |     |  | J_INT.CG              |  |             |  |             |  |
| INTERPOSER-BOT-CG-V59       |  | INTERPOSER-BOT-CG-V59       |  |     |  |     |  |     |  | INTERPOSER-BOT-CG-V59 |  |             |  |             |  |
| SMT-PAD                     |  | SMT-PAD                     |  |     |  |     |  |     |  | SMT-PAD               |  |             |  |             |  |
| SYM 3 OF 5                  |  | SYM 4 OF 5                  |  |     |  |     |  |     |  | SYM 4 OF 5            |  |             |  |             |  |
| PP_CODEC_TO_MIC1_LOWER_BIAS |  | PP_CODEC_TO_MIC1_LOWER_BIAS |  | GND |  | GND |  | GND |  | GND                   |  | PP_VDD_MAIN |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| 90_E85_USB_BOT_CONN_P       |  | 90_E85_USB_BOT_CONN_P       |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| 90_E85_USB_BOT_CONN_N       |  | 90_E85_USB_BOT_CONN_N       |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| 90_E85_USB_TOP_CONN_N       |  | 90_E85_USB_TOP_CONN_N       |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| 90_E85_USB_TOP_CONN_P       |  | 90_E85_USB_TOP_CONN_P       |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
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| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
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| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
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| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  | GND                   |  | GND         |  | PP_VDD_MAIN |  |
| GND                         |  | GND                         |  | GND |  | GND |  | GND |  |                       |  |             |  |             |  |

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SYM 5 OF 5

|     |      |                                       |     |       |       |     |                                   |      |     |
|-----|------|---------------------------------------|-----|-------|-------|-----|-----------------------------------|------|-----|
| 507 | <<>> | GND                                   | 721 | IO721 | IO811 | 811 | GND                               | <<>> | 507 |
| 507 | <<>> | PP3V13_WIDE_AVDD1                     | 722 | IO722 | IO812 | 812 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 723 | IO723 | IO813 | 813 | GND                               | <<>> | 507 |
| 507 | <<>> | 90_MIPI_ISP_FROM_IRCAM_CLK_P          | 724 | IO724 | IO814 | 814 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 725 | IO725 | IO815 | 815 | GND                               | <<>> | 507 |
| 507 | <<>> | GPIO_ISP_CAMS_TO_STROBE_TRIGGER_1V8   | 726 | IO726 | IO816 | 816 | GPIO_AP_INTERPOSER_CANARY5_B_TO_C | <<>> | 507 |
| 507 | <<>> | GND                                   | 727 | IO727 | IO817 | 817 | GND                               | <<>> | 507 |
| 507 | <<>> | 90_MIPI_ISP_FROM_IRCAM_CLK_N          | 728 | IO728 | IO818 | 818 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 729 | IO729 | IO819 | 819 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 730 | IO730 | IO820 | 820 | GPIO_AP_INTERPOSER_CANARY5_B_TO_C | <<>> | 507 |
| 507 | <<>> | GND                                   | 731 | IO731 | IO821 | 821 | GND                               | <<>> | 507 |
| 507 | <<>> | 90_MIPI_ISP_FROM_IRCAM_D1_P           | 732 | IO732 | IO822 | 822 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 733 | IO733 | IO823 | 823 | GND                               | <<>> | 507 |
| 507 | <<>> | PP1V2_IRCAM_DVDD                      | 734 | IO734 | IO824 | 824 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 735 | IO735 | IO825 | 825 | GND                               | <<>> | 507 |
| 507 | <<>> | 90_MIPI_ISP_FROM_IRCAM_D1_N           | 736 | IO736 | IO826 | 826 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 737 | IO737 | IO827 | 827 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 738 | IO738 | IO828 | 828 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 739 | IO739 | IO829 | 829 | GPIO_AP_INTERPOSER_CANARY5_D_TO_E | <<>> | 507 |
| 507 | <<>> | GND                                   | 740 | IO740 | IO830 | 830 | GND                               | <<>> | 507 |
| 507 | <<>> | GND                                   | 741 | IO741 | IO831 | 831 | GND                               | <<>> | 507 |
| 507 | <<>> | CLK_CAM_PMU1_TO_IRCAM_REGULUS_12M_1V8 | 742 | IO742 | IO832 | 832 | GPIO_AP_INTERPOSER_CANARY5_D_TO_E | <<>> | 507 |
| 507 | <<>> | GND                                   | 743 | IO743 |       |     |                                   |      | 507 |
| 507 | <<>> | PP2V79_IRCAM_AVDD_GUAD_VDD            | 744 | IO744 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 745 | IO745 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 746 | IO746 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 747 | IO747 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 748 | IO748 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 749 | IO749 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_VDD_MAIN                           | 750 | IO750 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 751 | IO751 |       |     |                                   |      | 507 |
| 507 | <<>> | IO_REGULUS_BI_GUAD_STATUS_1V8         | 752 | IO752 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 753 | IO753 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 754 | IO754 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 755 | IO755 |       |     |                                   |      | 507 |
| 507 | <<>> | IO_IRCAM_TO_REGULUS_STROBE_1V8        | 756 | IO756 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 757 | IO757 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_BANFF_A_ANODE                      | 758 | IO758 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 759 | IO759 |       |     |                                   |      | 507 |
| 507 | <<>> | PP1V825_CAM_PMU1_IO_SW                | 760 | IO760 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 761 | IO761 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_BANFF_FLOOD_ANODE                  | 762 | IO762 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 763 | IO763 |       |     |                                   |      | 507 |
| 507 | <<>> | I2C4_CAM_PMU1_SDA_1V8                 | 764 | IO764 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 765 | IO765 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_BANFF_B_ANODE                      | 766 | IO766 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 767 | IO767 |       |     |                                   |      | 507 |
| 507 | <<>> | I2C4_CAM_PMU1_SCL_1V8                 | 768 | IO768 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 769 | IO769 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_BANFF_DOT_ANODE                    | 770 | IO770 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 771 | IO771 |       |     |                                   |      | 507 |
| 507 | <<>> | GPIO_NUB_FROM_BANFF_B2B_DETECT_L      | 772 | IO772 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 773 | IO773 |       |     |                                   |      | 507 |
| 507 | <<>> | GPIO_CAM_PMU1_TO_IRCAM_SHDN_L_1V8     | 774 | IO774 |       |     |                                   |      | 507 |
| 507 | <<>> | CLK_BBPMU_TO_NFC_P_38M4               | 775 | IO775 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 776 | IO776 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 777 | IO777 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 778 | IO778 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 779 | IO779 |       |     |                                   |      | 507 |
| 507 | <<>> | IO_SLM_BUTTON_SIDE_L_1V8_CONN         | 780 | IO780 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 781 | IO781 |       |     |                                   |      | 507 |
| 507 | <<>> | PP_VDD_MAIN                           | 782 | IO782 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 783 | IO783 |       |     |                                   |      | 507 |
| 507 | <<>> | IO_SLM_BUTTON_SIDE_L_1V8              | 784 | IO784 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 785 | IO785 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 786 | IO786 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 787 | IO787 |       |     |                                   |      | 507 |
| 507 | <<>> | NFC_P_ANT_NEG                         | 788 | IO788 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 789 | IO789 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 790 | IO790 |       |     |                                   |      | 507 |
| 507 | <<>> | NFC_P_ANT_NEG                         | 791 | IO791 |       |     |                                   |      | 507 |
| 507 | <<>> | NFC_P_ANT_NEG                         | 792 | IO792 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 793 | IO793 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 794 | IO794 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 795 | IO795 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 796 | IO796 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 797 | IO797 |       |     |                                   |      | 507 |
| 507 | <<>> | PP2V94_FCAM_AVDD                      | 798 | IO798 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 799 | IO799 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 800 | IO800 |       |     |                                   |      | 507 |
| 507 | <<>> | GPIO_CAM_PMU1_TO_FCAM_SHDN_L_1V8      | 801 | IO801 |       |     |                                   |      | 507 |
| 507 | <<>> | PP1V825_CAM_PMU1_IO_SW                | 802 | IO802 |       |     |                                   |      | 507 |
| 507 | <<>> | I2C3_CAM_PMU1_SDA_1V8                 | 803 | IO803 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 804 | IO804 |       |     |                                   |      | 507 |
| 507 | <<>> | I2C3_CAM_PMU1_SCL_1V8                 | 805 | IO805 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 806 | IO806 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 807 | IO807 |       |     |                                   |      | 507 |
| 507 | <<>> | GPIO_AP_INTERPOSER_CANARY5_AP_TO_A    | 808 | IO808 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 809 | IO809 |       |     |                                   |      | 507 |
| 507 | <<>> | GND                                   | 810 | IO810 |       |     |                                   |      | 507 |

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|-----|------|---------------------------------------|--|---------------------------------------|------|-----|-----|-----|-----|-----|-----|-------------|
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | PP3V13_WIDE_AVDD1                     |  | PP3V13_WIDE_AVDD1                     | <<>> | 55  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | 90_MIPI_ISP_FROM_IRCAM_CLK_P          |  | 90_MIPI_ISP_FROM_IRCAM_CLK_P          | <<>> | 28  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GPIO_ISP_CAM5_TO_STROBE_TRIGGER_1V8   |  | GPIO_ISP_CAM5_TO_STROBE_TRIGGER_1V8   | <<>> | 65  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | 90_MIPI_ISP_FROM_IRCAM_CLK_N          |  | 90_MIPI_ISP_FROM_IRCAM_CLK_N          | <<>> | 28  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | 90_MIPI_ISP_FROM_IRCAM_D1_P           |  | 90_MIPI_ISP_FROM_IRCAM_D1_P           | <<>> | 28  |     |     |     |     |     |             |
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| 502 | <<>> | PP1V2_IRCAM_DVDD                      |  | PP1V2_IRCAM_DVDD                      | <<>> | 55  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | 90_MIPI_ISP_FROM_IRCAM_D1_N           |  | 90_MIPI_ISP_FROM_IRCAM_D1_N           | <<>> | 28  |     |     |     |     |     |             |
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| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
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| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | CLK_CAM_PMU1_TO_IRCAM_REGULUS_12M_1V8 |  | CLK_CAM_PMU1_TO_IRCAM_REGULUS_12M_1V8 | <<>> | 55  | 70  |     |     |     |     |             |
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| 502 | <<>> | PP2V79_IRCAM_AVDD_GUAD_VDD            |  | PP2V79_IRCAM_AVDD_GUAD_VDD            | <<>> | 55  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
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| 502 | <<>> | PP_VDD_MAIN                           |  | PP_VDD_MAIN                           | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 39  | 40  | 42  | 126 | 503 | 504 | 506 507     |
| 502 | <<>> | IO_REGULUS_BI_GUAD_STATUS_1V8         |  | IO_REGULUS_BI_GUAD_STATUS_1V8         | <<>> | 70  |     |     |     |     |     |             |
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| 502 | <<>> | IO_IRCAM_TO_REGULUS_STROBE_1V8        |  | IO_IRCAM_TO_REGULUS_STROBE_1V8        | <<>> | 70  |     |     |     |     |     |             |
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| 502 | <<>> | PP_BANFF_A_ANODE                      |  | PP_BANFF_A_ANODE                      | <<>> | 70  |     |     |     |     |     |             |
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| 502 | <<>> | PP1V825_CAM_PMU1_IO_SW                |  | PP1V825_CAM_PMU1_IO_SW                | <<>> | 53  | 55  | 145 | 507 |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | PP_BANFF_FLOOD_ANODE                  |  | PP_BANFF_FLOOD_ANODE                  | <<>> | 70  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | I2C4_CAM_PMU1_SDA_1V8                 |  | I2C4_CAM_PMU1_SDA_1V8                 | <<>> | 54  | 55  |     |     |     |     |             |
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| 502 | <<>> | PP_BANFF_B_ANODE                      |  | PP_BANFF_B_ANODE                      | <<>> | 70  |     |     |     |     |     |             |
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| 502 | <<>> | I2C4_CAM_PMU1_SCL_1V8                 |  | I2C4_CAM_PMU1_SCL_1V8                 | <<>> | 54  | 55  |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | PP_BANFF_DOT_ANODE                    |  | PP_BANFF_DOT_ANODE                    | <<>> | 70  | 507 |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GPIO_NUB_FROM_BANFF_B2B_DETECT_L      |  | GPIO_NUB_FROM_BANFF_B2B_DETECT_L      | <<>> | 26  | 27  |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GPIO_CAM_PMU1_TO_IRCAM_SHDN_L_1V8     |  | GPIO_CAM_PMU1_TO_IRCAM_SHDN_L_1V8     | <<>> | 55  |     |     |     |     |     |             |
| 502 | <<>> | CLK_BBPMU_TO_NFC_P_38M4               |  | CLK_BBPMU_TO_NFC_P_38M4               | <<>> | 142 |     |     |     |     |     |             |
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| 502 | <<>> | IO_SLM_BUTTON_SIDE_L_1V8_CONN         |  | IO_SLM_BUTTON_SIDE_L_1V8_CONN         | <<>> | 127 |     |     |     |     |     |             |
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| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | IO_SLM_BUTTON_SIDE_L_1V8              |  | IO_SLM_BUTTON_SIDE_L_1V8              | <<>> | 145 |     |     |     |     |     |             |
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| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GPIO_CAM_PMU1_TO_FCAM_SHDN_L_1V8      |  | GPIO_CAM_PMU1_TO_FCAM_SHDN_L_1V8      | <<>> | 55  |     |     |     |     |     |             |
| 502 | <<>> | PP1V825_CAM_PMU1_IO_SW                |  | PP1V825_CAM_PMU1_IO_SW                | <<>> | 53  | 55  | 145 | 507 |     |     |             |
| 502 | <<>> | I2C3_CAM_PMU1_SDA_1V8                 |  | I2C3_CAM_PMU1_SDA_1V8                 | <<>> | 54  | 55  |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | I2C3_CAM_PMU1_SCL_1V8                 |  | I2C3_CAM_PMU1_SCL_1V8                 | <<>> | 54  | 55  |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GPIO_AP_INTERPOSER_CANARY5_AP_TO_A    |  | GPIO_AP_INTERPOSER_CANARY5_AP_TO_A    | <<>> | 26  |     |     |     |     |     |             |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |
| 502 | <<>> | GND                                   |  | GND                                   | <<>> | 38  | 39  | 503 | 504 | 505 | 506 | 507         |

|     |      |                                   |  |                                   |      |     |    |     |     |     |     |     |
|-----|------|-----------------------------------|--|-----------------------------------|------|-----|----|-----|-----|-----|-----|-----|
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GPIO_AP_INTERPOSER_CANARY5_B_TO_C |  | GPIO_AP_INTERPOSER_CANARY5_B_TO_C | <<>> | 507 |    |     |     |     |     |     |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GPIO_AP_INTERPOSER_CANARY5_B_TO_C |  | GPIO_AP_INTERPOSER_CANARY5_B_TO_C | <<>> | 507 |    |     |     |     |     |     |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GPIO_AP_INTERPOSER_CANARY5_D_TO_E |  | GPIO_AP_INTERPOSER_CANARY5_D_TO_E | <<>> | 507 |    |     |     |     |     |     |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GND                               |  | GND                               | <<>> | 38  | 39 | 503 | 504 | 505 | 506 | 507 |
| 502 | <<>> | GPIO_AP_INTERPOSER_CANARY5_D_TO_E |  | GPIO_AP_INTERPOSER_CANARY5_D_TO_E | <<>> | 507 |    |     |     |     |     |     |





D

C

B

A

D

C

B

A

Primary Chip

| PART NUMBER | BOMOPTION                      | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                             |
|-------------|--------------------------------|-----------------------|----------|-----|---|
| 338501082   | RFSKU-US                       | NFC_P                 | CRITICAL | 1   | IC,EOS,SN300V3,B21.PROD.BS1.WN0.WLCSP79 |
| 338501081   | RFSKU-RS  RFSKU-ROW  RFSKU-CHN | NFC_P                 | CRITICAL | 1   | IC,EOS,SN300V3,B21.PROD.NBS.W20.WLCSP79 |

RTM7C.5 PRIMARY MATCHING

PRIMARY CS:

| PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                         |
|-------------|-----------|-----------------------|----------|-----|-------------------------------------|
| 131500569   | RTM7C.5   | C7514_S,C7542_S       | CRITICAL | 2   | CAP,COG,680PF,2%,50V,0201           |
| 131500017   | RTM7C.5   | C7543_S,C7555_S       | CRITICAL | 2   | CAP,CER,NP0/COG,47PF,+/-2%,50V,0201 |
| 131500017   | RTM7C.5   | C7515_S,C7541_S       | CRITICAL | 2   | CAP,CER,NP0/COG,47PF,+/-2%,50V,0201 |

PRIMARY CP:

| PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                          |
|-------------|-----------|-----------------------|----------|-----|--------------------------------------|
| 131500547   | RTM7C.5   | C7546_S               | CRITICAL | 1   | CAP,COG,1000PF,2%,50V,0201           |
| 131500017   | RTM7C.5   | C7547_S               | CRITICAL | 1   | CAP,CER,NP0/COG,47PF,+/-2%,50V,0201  |
| 131500017   | RTM7C.5   | C7548_S               | CRITICAL | 1   | CAP,CER,NP0/COG,47PF,+/-2%,50V,0201  |
| 131500017   | RTM7C.5   | C7558_S               | CRITICAL | 1   | CAP,CER,NP0/COG,47PF,+/-2%,50V,0201  |
| 13150883    | NOSTUFF   | C7559_S               | CRITICAL | 1   | CAP,CER,NP0/COG,220PF,2%,50V,0201    |
| 131500117   | NOSTUFF   | C7560_S               | CRITICAL | 1   | CAP,CER,NP0/COG,120PF,+/-2%,50V,0201 |

PRIMARY EMC:

| PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                          |
|-------------|-----------|-----------------------|----------|-----|--------------------------------------|
| 131500547   | RTM7C.5   | C7513_S,C7554_S       | CRITICAL | 2   | CAP,COG,1000PF,2%,50V,0201           |
| 131500550   | RTM7C.5   | C7550_S,C7551_S       | CRITICAL | 2   | CAP,COG,470PF,2%,50V,0201            |
| 152501530   | RTM7C.5   | L7500_S,L7501_S       | CRITICAL | 2   | IND,MULT,75NH,4%,1.05A,156 MOHM,0402 |
| 131500478   | RTM7C.5   | C7561_S,C7562_S       | CRITICAL | 2   | CAP,COG,82PF,2%,25V,01005            |
| 131500019   | RTM7C.5   | C7552_S,C7553_S       | CRITICAL | 2   | CAP,CER,NP0/COG,150PF,+/-2%,50V,0201 |

ALTERNATE PARTS

| ALTERNATE PART NO. | PRIMARY PART NO. | BOMOPTION | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|-----------|-----------------------|---|
| 152501697          | 152500622        | ALL       | L7502_S               | FERR,BD,10 OHM,50%,1A,0.05 OHM DCR,0201 |
| 155501010          | 155500161        | ALL       | FL7500_S              | IND,MLD,1UH,2.1A,TAIYO                  |
| 338501083          | 338501082        | RFSKU-US  | NFC_P                 | IC,EOS,SN300V3,B21.PROD.BS2.BU0.WLCSP79 |

ESIM/PSIM:

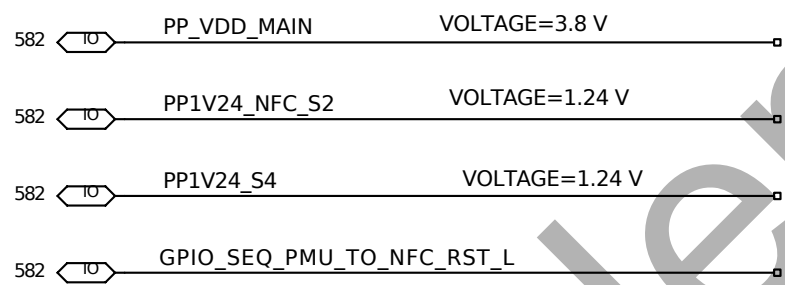
| PART NUMBER | BOMOPTION                     | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                       |
|-------------|-------------------------------|-----------------------|----------|-----|-----------------------------------|
| 117500067   | RFSKU-CHN                     | C7504_S               | CRITICAL | 1   | RES,TK,0 OHM,1/32W,01005          |
| 132500014   | RFSKU-US  RFSKU-RS  RFSKU-ROW | C7504_S               | CRITICAL | 1   | CAP,CER,X5R,0.22UF,10%,6.3V,01005 |

GPIO

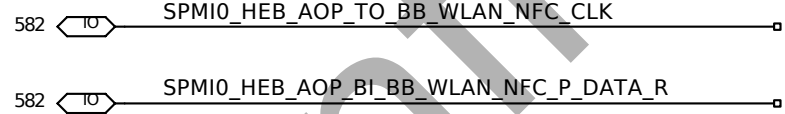
| PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                     |
|-------------|-----------|-----------------------|----------|-----|---------------------------------|
| 118500310   | RTM7C.5   | R7521_S               | CRITICAL | 1   | RES,TK,60.4K OHM,1%,1/32W,01005 |

NFC PRIMARY IO PORTS

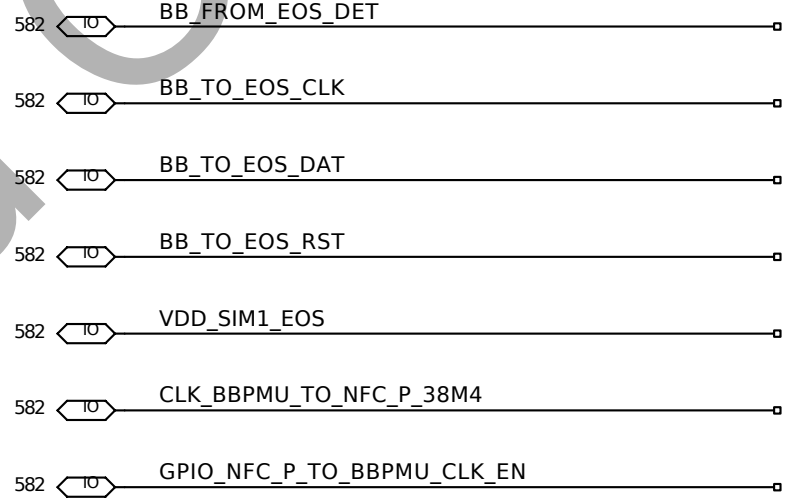
PMU CONNECTIONS



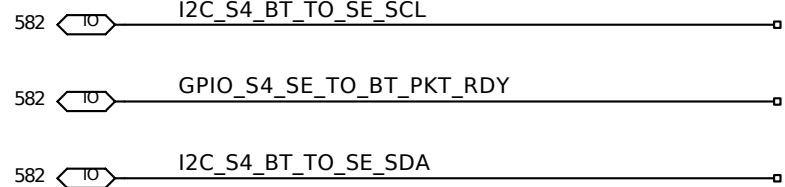
AOP CONNECTIONS



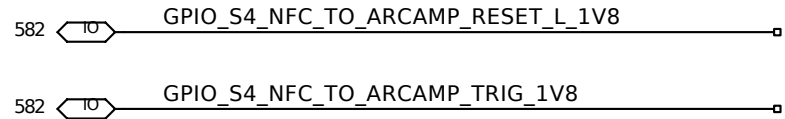
BASEBAND CONNECTIONS



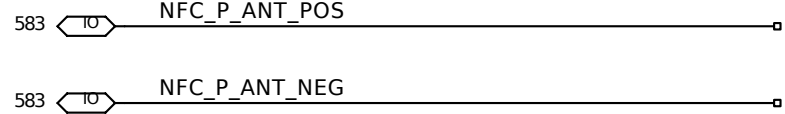
WLAN/BT CONNECTIONS



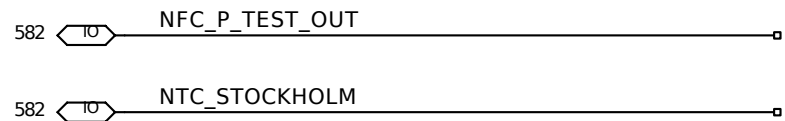
ARCAMP CONNECTIONS



NFC RF



MISC



8

7

6

5

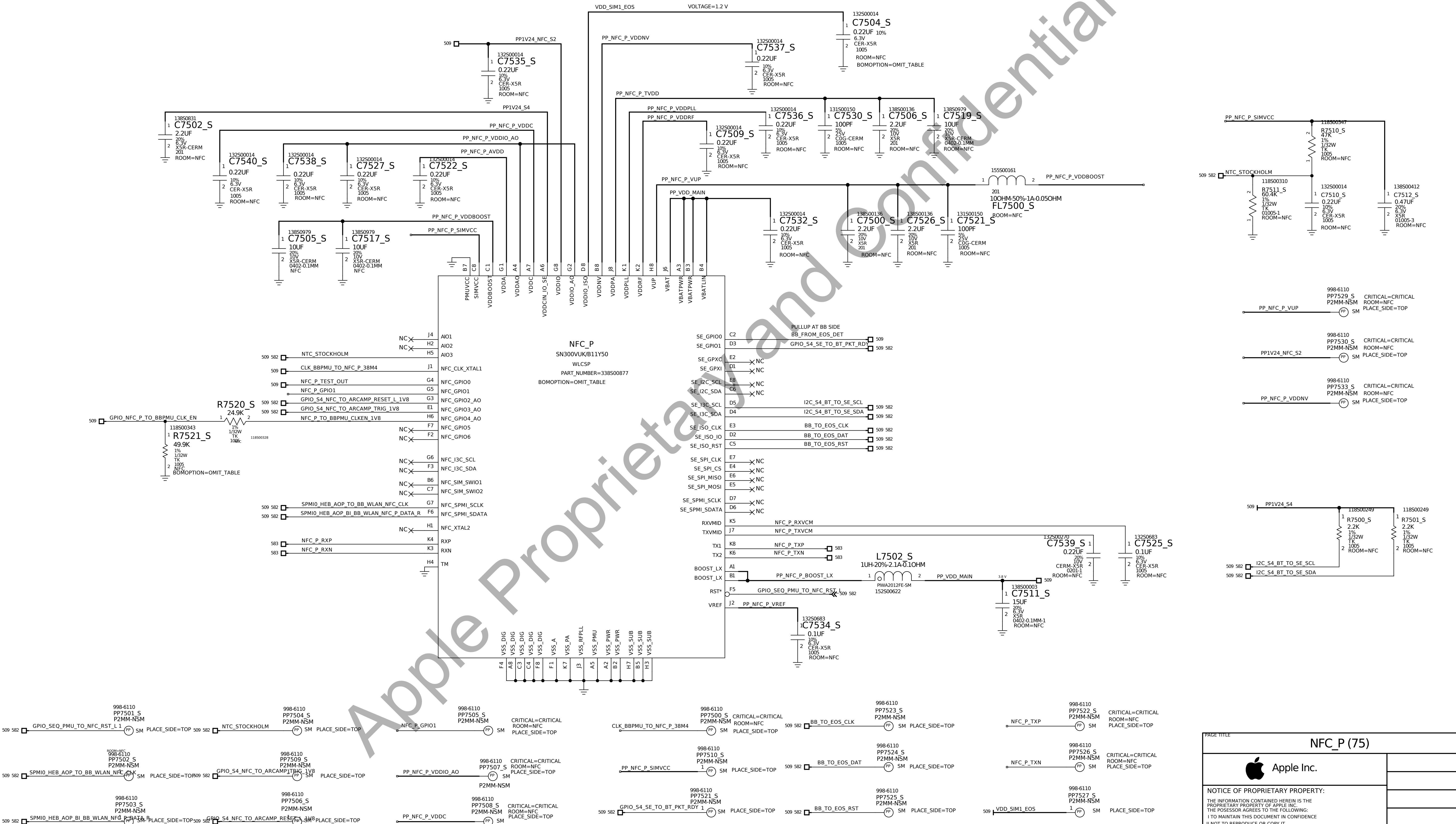
4

3

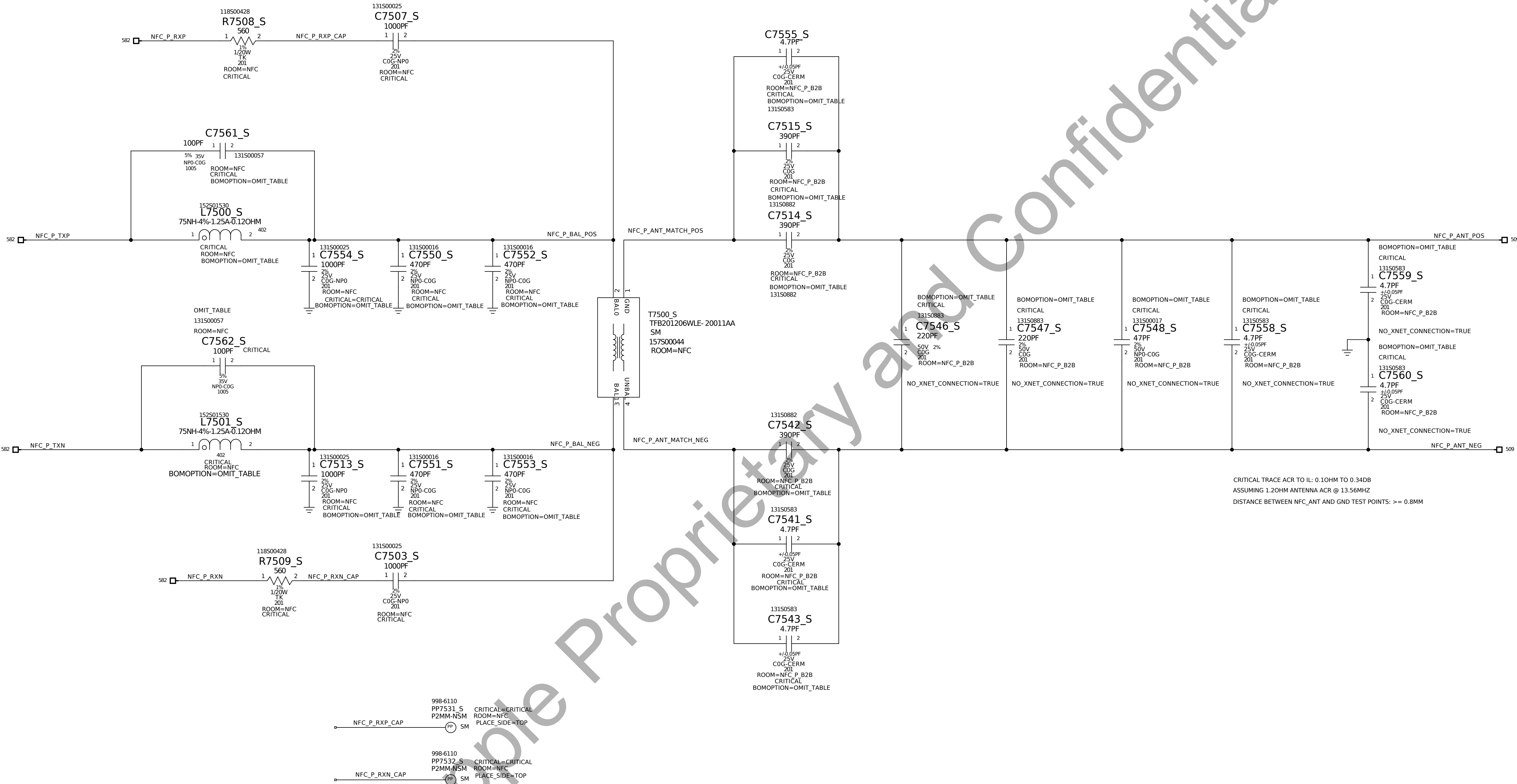
2

1

PRIMARY NFC CONTROLLER












PRIMARY NFC FRONT END






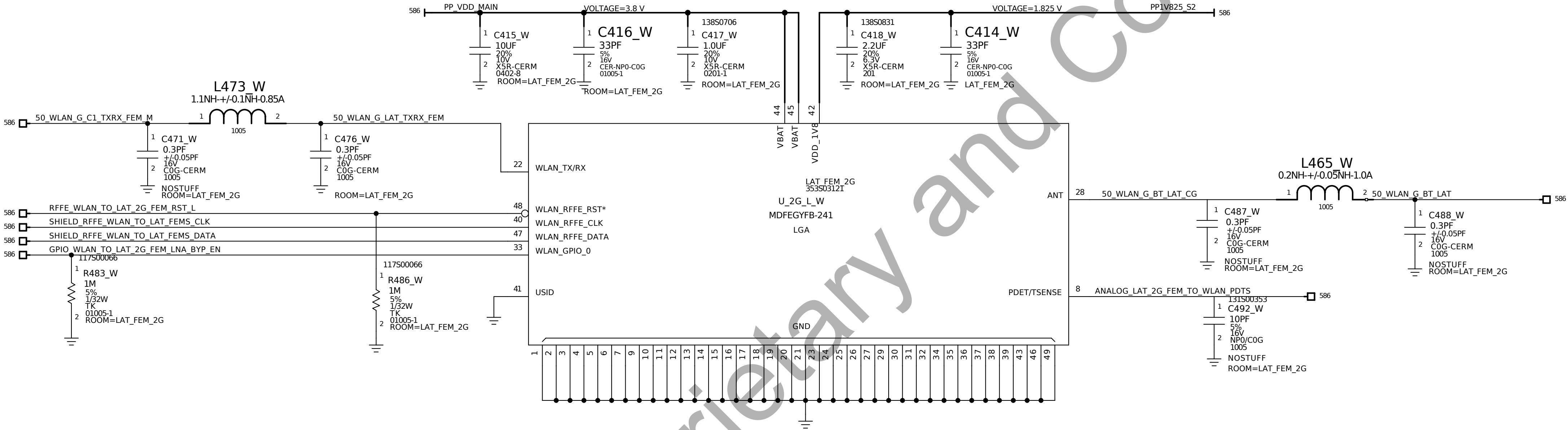
# HIER\_WIFI\_CG

- 587  PP\_VDD\_MAIN
- 587  PP1V825\_S2
- 587  50\_WLAN\_G\_C1\_TXRX\_FEM\_M
- 587  RFFE\_WLAN\_TO\_LAT\_2G\_FEM\_RST\_L
- 587  SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_CLK
- 587  SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_DATA
- 587  GPIO\_WLAN\_TO\_LAT\_2G\_FEM\_LNA\_BYP\_EN
- 587  ANALOG\_LAT\_2G\_FEM\_TO\_WLAN\_PDTS
- 587  50\_WLAN\_G\_BT\_LAT

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|   |  |             |  |
|   |  |             |  |
|   |  |             |  |
|   |  |             |  |

LAT 2.4 GHZ RFEM



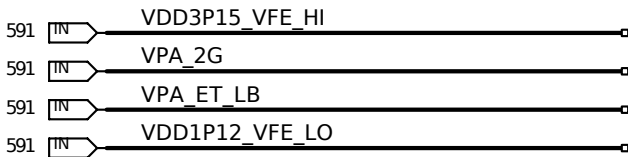




PORTS

CONNECTION FROM/TO MLB\_BG

POWER



RFFE



LB+2G SPAD



FR1 LAT MIMO DSM

MOVED BACK TO HIER\_RADIO\_S\_BG

# CONSTRAINTS

## Grouping Constraints

### POWER CONSTRAINTS

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*<br>DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|--|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET |  |                            |
| PWR_SHAPE         | P    | PWR_SHAPE      | VPA_E1*, VPA_ZG*   | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD3P15_VFE_HI   | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDDIPI2_VFE_LO   | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD*_LNA   | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD_RFFE_VIO*  | ?                          |

### RF CONSTRAINTS

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*<br>DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|--|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET |  |                            |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_HB*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LB_*  | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_LBDSM_TXIN  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LMIMO*  | ?                          |

### SENSITIVE TRACE SHEILD

| CLASS DEFINITIONS |      |                   | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*<br>DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|-------------------|--|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET    |  |                            |
| RFFE_SHIELD       | S    | A_DIELECTRIC_1.5X | XCVR0_RFFE*  | ?                          |

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*<br>DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|--|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET |  |                            |
| 50_LMB_HB_RX      | P    | A_50_THIN_SE   | 50_XCVR0_RX30  | ?                          |
| 50_2G_LB_SPAD_TX  | P    | A_50_THIN_SE   | 50_XCVR0_TX1_LB,50_XCVR0_TX2_LB,50_XCVR0_TX0_2G  | ?                          |

### SPACING (SCSET)

| CLASS DEFINITIONS |      |                            | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR*<br>DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------------------|--|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET             |  |                            |
| 50_WIDE_SE        | S    | A_DIELECTRIC_2X_50_WIDE_SE | =  | ?                          |
| 50_THIN_SE        | S    | A_DIELECTRIC_2X_50_THIN_SE | =  | ?                          |
| 50_LMB_HB_RX      | S    | A_DIELECTRIC_2X_50_THIN_SE | =  | ?                          |
| 50_2G_LB_SPAD_TX  | S    | A_DIELECTRIC_2X_50_THIN_SE | =  | ?                          |

| CLASS TO CLASS SPACING |            |                              |
|------------------------|------------|------------------------------|
| CLASS NAME             | CLASS NAME | CONSTRAINT SET               |
| 50_WIDE_SE             | GND        | A_DIELECTRIC_1.6X_50_WIDE_SE |
| 50_THIN_SE             | GND        | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_LMB_HB_RX           | GND        | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_2G_LB_SPAD_TX       | GND        | A_DIELECTRIC_2X_50_THIN_SE   |

## D



**A**

**4. A**



Multi-Vendor Criticals

Capacitors

In descending order of value, then package size

| PART NUMBER | COMMENT                                 |
|-------------|---|
| 13850979    | CAP,CER,XSR,10UF,20%,10V,0402,H=0.65MM  |
| 13850692    | CAP,CER,XSR,1UF,20%,6.3V,0201           |
| 138500014   | CAP,CER,XSR,1UF,20%,16V,0201,H=0.39MM   |
| 13250534    | CAP,CER,XSR,0.1UF,10%,25V,0201          |
| 132500258   | CAP,CER,X7R,330PF,10%,16V,01005         |
| 13150883    | CAP,CER,NP0/COG,220PF,2%,50V,0201       |
| 131500543   | CAP,CER,COG,220PF,5%,25V,01005          |
| 131500057   | CAP,CER,NP0/COG,100PF,5%,35V,01005      |
| 13850968    | CAP,CER,XSR,4.2UF,10%,16V,0402,H=0.55MM |
| 131500294   | CAP,COG,330PF,5%,25V,0201               |
| 132500030   | CAP,CER,0.1UF,10%,10V,X6S,0201          |
| 131500732   | CAP,CER,NP0/COG,18PF,5%,16V,01005       |
| 132500051   | CAP,X7R,330PF,10%,25V,0201              |
| 131500730   | CAP,CER,NP0/COG,100PF,5%,16V,01005      |

| PART NUMBER | COMMENT                                  |
|-------------|--|
| 131500731   | CAP,CER,NP0/COG,56PF,5%,25V,01005        |
| 131500740   | CAP,CER,NP0/COG,47PF,5%,16V,01005        |
| 131500742   | CAP,CER,NP0/COG,33PF,5%,16V,01005        |
| 131500291   | CAP,CER,NP0/COG,27PF,5%,16V,01005        |
| 131500741   | CAP,CER,COG,22PF,5%,16V,01005            |
| 131500333   | CAP,CER,COG,10PF,2%,25V,01005            |
| 131500383   | CAP,CER,NP0/COG,4.7PF,+/-0.1PF,16V,01005 |

Ferrites

| PART NUMBER | COMMENT                                 |
|-------------|---|
| 15550576    | FERR BD,10 OHM,50%,750MA,0.07 DCR,01005 |

Capacitor Alternates

4uF, 0201

| ALTERNATE PART NO. | PRIMARY PART NO. | COMMENT                         |
|--------------------|------------------|---------------------------------|
| 138500116          | 138500071        | CAP,XSR,4UF,0201,0.55MM,TAIYO   |
| 138500117          | 138500071        | CAP,XSR,4UF,0201,0.55MM,KYOCERA |
| 138500515          | 138500071        | CAP,XSR,4UF,0201,0.55MM,SEMCO   |

| PART NUMBER | COMMENT                         |
|-------------|---------------------------------|
| 138500071   | 0201,XSR,4UF,0201,0.55MM,MURATA |

4.2uF, 0201

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                       |
|--------------------|------------------|-----------------------|---|
| 138500518          | 13850968         | ALL                   | CAP,CER,XSR,4.2UF,10%,16V,K,0402H0.55,KYOCERA |
| 138500513          | 13850968         | ALL                   | CAP,CER,XSR,4.2UF,10%,16V,S,0402,H0.55,SEMCO  |

:/134475084 ([V59][CRB][BOM] Add more ALTs for 138500014 and 13850968 in BOM table)

2.2uF, 0201, 6.3V

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                         |
|--------------------|------------------|-----------------------|---------------------------------|
| 13850831           | 138500450        | ALL                   | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |
| 138500516          | 138500450        | ALL                   | CAP,XSR,2.2UF,20%,6.3V,S,HZ0201 |
| 138500049          | 138500450        | ALL                   | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |

| PART NUMBER | COMMENT                         |
|-------------|---------------------------------|
| 138500450   | CAP,CER,XSR,2.2UF,20%,6.3V,0201 |

1uF, 0201

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                   |
|--------------------|------------------|-----------------------|---|
| 13850739           | 13850706         | ALL                   | CAP,CER,XSR,1UF,20%,10V,0201,SAMSUNG      |
| 13850945           | 13850706         | ALL                   | CAP,CER,XSR,1UF,20%,10V,0201,KYOCERA      |
| 138500517          | 138500014        | ALL                   | CAP,XSR,1UF,20%,16V,0201,H=0.39MM,KYOCERA |
| 138500085          | 138500014        | ALL                   | CAP,XSR,1UF,20%,16V,0201,H=0.39MM,MURATA  |

| PART NUMBER | COMMENT                  |
|-------------|--------------------------|
| 13850706    | CAP,XSR,1UF,20%,10V,0201 |

0.47uF, 01005

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                 |
|--------------------|------------------|-----------------------|---|
| 138500128          | 138500412        | ALL                   | CAP,CER,XSR,0.47UF,20%,6.3V,KYO,01005   |
| 138500519          | 138500412        |                       | CAP,XSR,0.47UF,20%,6.3V,0.09@3V,S,01005 |

| PART NUMBER | COMMENT                           |
|-------------|-----------------------------------|
| 138500412   | CAP,XSR,0.47UF,20%,6.3V,MUR,01005 |

:/134474177 ([V59][CRB][BOM]Taiyo (138500269) 0.47uF cap DO)) :/134406786 ([V59][CRB][BOM] Add 138500519 SEMCO BOM option)

| ALTERNATE PART NO. | PRIMARY PART NO. | COMMENT                   |
|--------------------|------------------|---------------------------|
| 138500519          | 138500014        | 01005,0.22uF,6.3V,Taiyo   |
| 132500304          | 132500014        | 01005,0.22uF,6.3V,Kyocera |

| PART NUMBER | COMMENT            |
|-------------|--------------------|
| 132500014   | 01005,0.22uF, 6.3V |

0.1uF, 01005, 6.3V

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 132500185          | 13250316         | ALL                   | CAP,CER,XSR,0.1UF,20%,6.3V,01005 |
| 132500350          | 13250316         | ALL                   | CAP,CER,XSR,0.1UF,20%,6.3V,01005 |

| PART NUMBER | COMMENT           |
|-------------|-------------------|
| 13250316    | 01005,0.1uF, 6.3V |

2200pF, 01005

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                              |
|--------------------|------------------|-----------------------|--------------------------------------|
| 132500308          | 13250420         | ALL                   | CAP,XSR,2200PF,10%,16V,01005,Kyocera |
| 132500264          | 13250420         |                       | CAP,CER,XSR,2200PF,10%,16V,01005     |

| PART NUMBER | COMMENT                            |
|-------------|------------------------------------|
| 13250420    | CAP,XSR,2200PF,10%,16V,01005,Taiyo |

2020 MLCCs

16uF, 0402, 4V

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                    |
|--------------------|------------------|-----------------------|----------------------------|
| 138500484          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,T,0402 |
| 138500314          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,M,0402 |
| 138500315          | 138500313        | ALL                   | CAP,XSR,16UF,20%,4V,M,0402 |

Primary: Murata  
Taiyo  
Kyocera  
Samsung

15uF, 0402

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS                 | COMMENT                     |
|--------------------|------------------|---------------------------------------|-----------------------------|
| 138500048          | 138500003        | (C8000-C8002,C8004,C8300-C8302,C8304) | 0402,15uF,6.3V, Kyocera     |
| 138500406          | 138500003        |                                       | 0402,13uF,6.3V, Murata Gen2 |
| 138500388          | 138500003        |                                       | 0402,9uF,6.3V, Samco Gen2   |

Primary: Murata  
Kyocera  
Murata Gen 2  
Samsung Gen 2

:/134023334 ([V59] [CRB] DQ 8x 138500048 locations on BG, add Gen2 cap options as ALT)

13uF, 0402, 6.3V

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                               |
|--------------------|------------------|-----------------------|---------------------------------------|
| 138500405          | 138500406        | ALL                   | CAP,XSR,13UF,20%,6.3V,4.9UF@3V,K,0402 |
| 138500388          | 138500406        | ALL                   | CAP,XSR,9UF,20%,6.3V,4.9@3V,SAM,0402  |

Primary: Murata  
Kyocera  
Samsung

7.5uF, 0402, 4V

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 138500024          | 13850986         | ALL                   | CAP,CER,3-TERM,7.5UF,20%,4V,0402 |

Primary: Murata  
Taiyo

| PART NUMBER | COMMENT                               |
|-------------|---------------------------------------|
| 138500313   | CAP,CER,XSR,16UF,20%,4V,0402          |
| 138500003   | 0402,15uF,6.3V                        |
| 138500406   | CAP,XSR,13UF,20%,6.3V,4.9UF@3V,M,0402 |
| 13850986    | CAP,CER,3-TERM,7.5UF,20%,4V,0402      |

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| D |   |   |   |   |   |   |   |
| C |   |   |   |   |   |   |   |
| B |   |   |   |   |   |   |   |
| A |   |   |   |   |   |   |   |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

Misc. Alternates

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT   | PART NUMBER | COMMENT                                       |
|--------------------|------------------|-----------------------|---|-------------|---|
| 155500437          | 155500402        | ALL                   | FERR BD,330HM,25%,1.5A,55MOHM DCR,0201          | 155500402   | FERR BD,330HM,25%,1.5A,55MOHM DCR,0201        |
| 155500414          | 15550876         | ALL                   | FERR BD,100HM,50%,1.1A,0.05OHM DCR,01005        | 15550876    | FERR BD,100HM,50%,1.1A,0.05OHM DCR,01005      |
| 155500583          | 155500140        | ALL                   | FERR BD,330HM,25%,400MA,0.20DCR,01005           | 155500140   | FERR BD,330HM,25%,400MA,0.20DCR,01005         |
| 377500070          | 377500001        | ALL                   | TVS,BIDIR,5.8V,6PF,01005                        | 377500001   | TVS,BIDIR,5.8V,6PF,01005                      |
| 377500140          | 377500001        | ALL                   | TVS,BIDIR,5V,6PF,01005                          | 155500462   | FLTR,-300B@0.6-1.55GHZ,1-LINE,ESD,LGA3,ONSEMI |
| 155500700          | 155500462        | ALL                   | FLTR,-300B@0.6-1.55GHZ,1-LINE,ESD,LGA3,ONSEMI   | 107500349   | THERMISTOR,NTC,10K0,1%,B=3380,01005,MUR       |
| 155500706          | 155500462        | ALL                   | FLTR,-300B@0.6-1.55GHZ,1-LINE,ESD,LGA3,INFINEON |             |   |
| 107500469          | 107500349        | ALL                   | THERMISTOR,NTC,10K OHM,1%,B=3380K,01005         |             |   |

Power Inductor Alternates

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                              | PART NUMBER | COMMENT    |
|--------------------|------------------|-----------------------|--------------------------------------|-------------|------------|
| 152501513          | 152500897        | ALL                   | IND,CPLD,0.1UH,20%,5.5A,20MO,2016    | 152500897   | Taiyo,IND  |
| 152501771          | 152500818        | ALL                   | Taiyo,IND,MLD,0.22UH,5.3A,40MO,1608  | 152500818   | Cyntec,IND |
| 152500979          | 152500874        | ALL                   | Taiyo,IND,MLD,0.47UH,1.7A,175MO,0402 | 152500874   | Cyntec,IND |

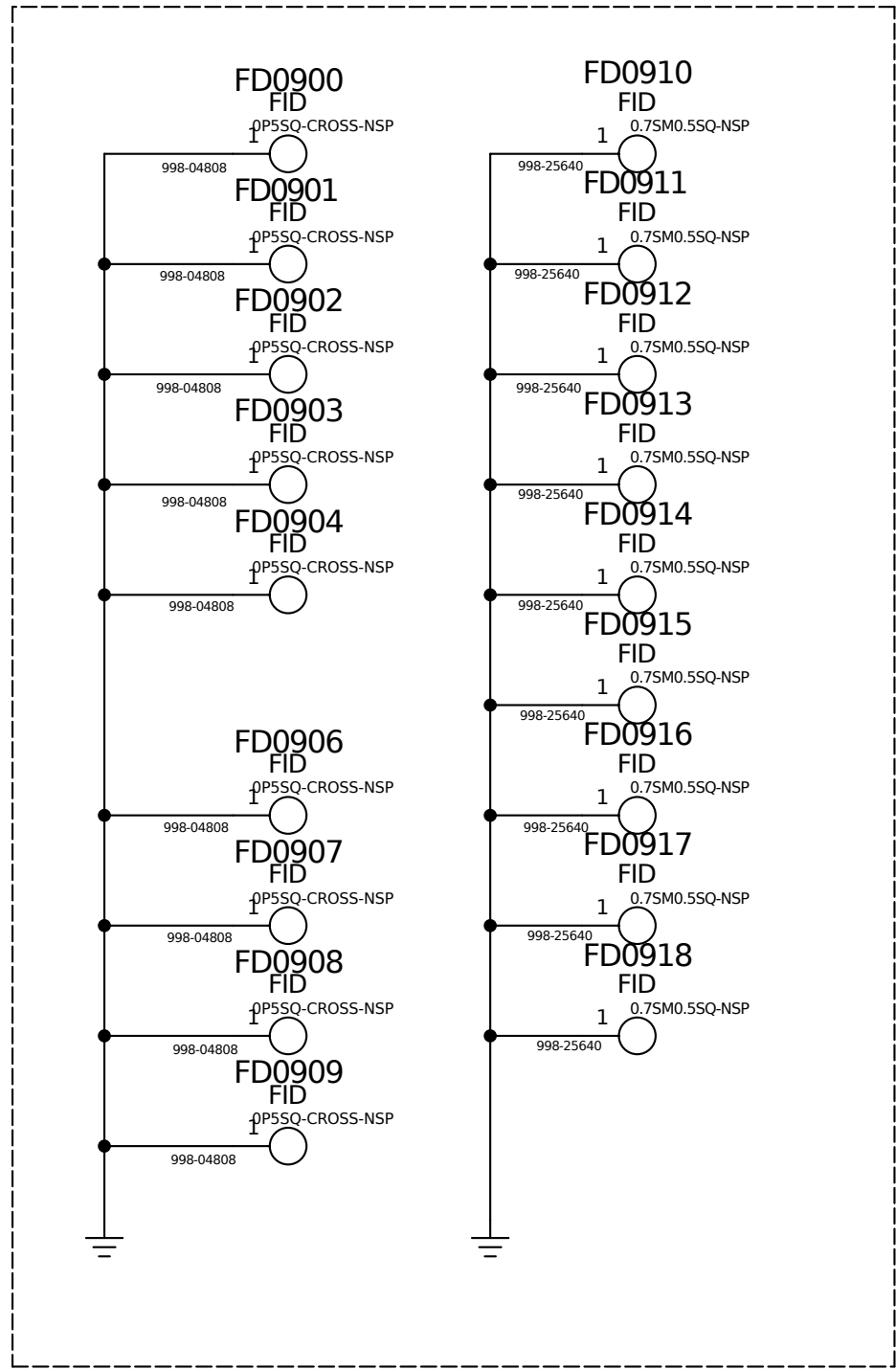
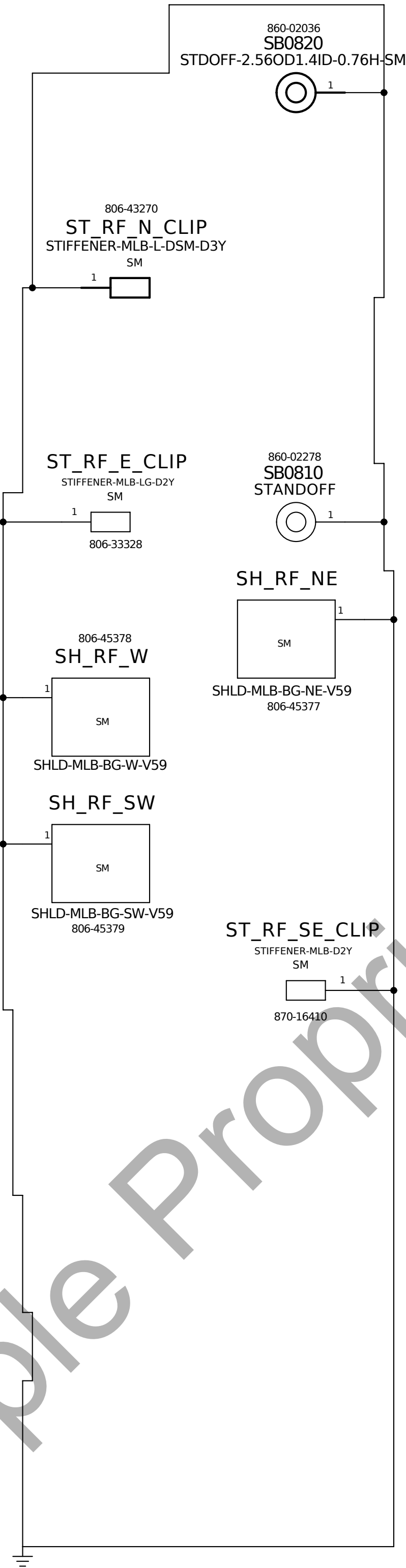
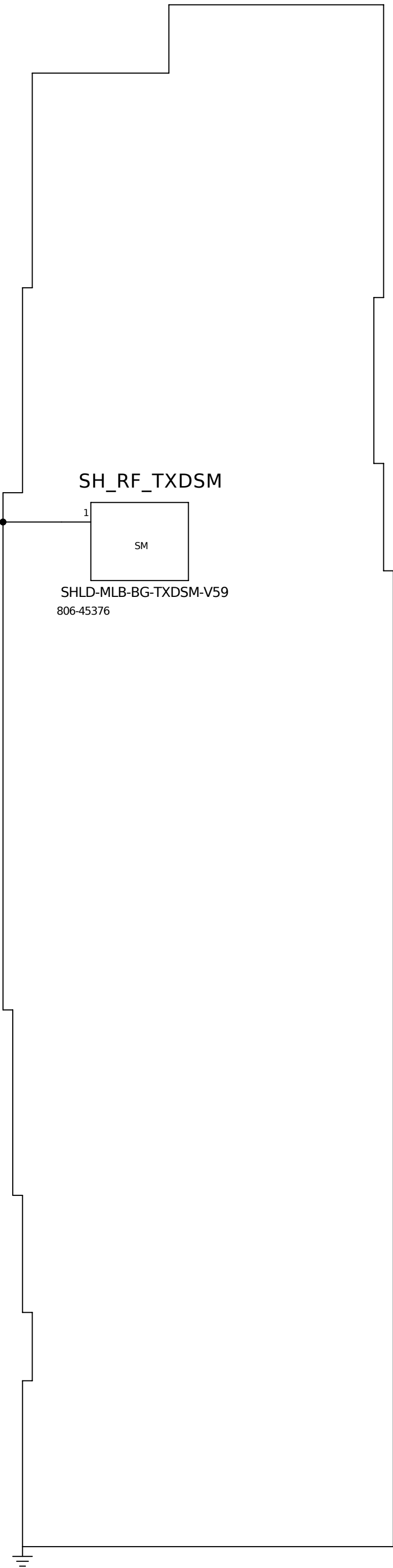


Conventions:

- 1. All net names and notes should use font size 0.112 (8 if you use the group tool)
- 2. Nets which are not connected on FFs but probed out on dev board should start with "NC\_DEV\_"
- 3. Nets that contain "\_1V8" are 1.8V logic, all other nets are implied 1.2V logic
- 4. Components with PACK\_IGNORE=TRUE will not be included in the netlist

TOP SIDE

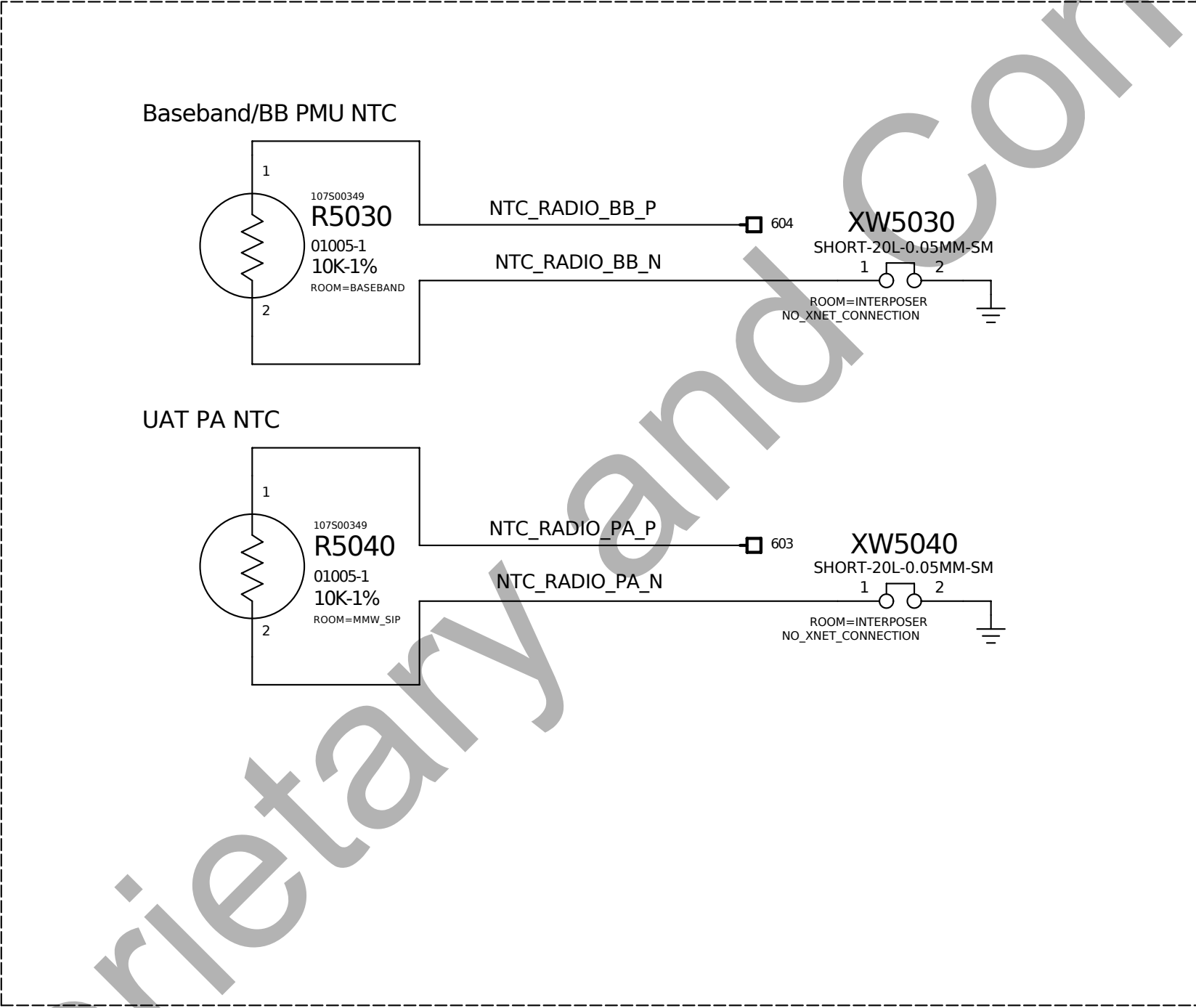
BOTTOM SIDE



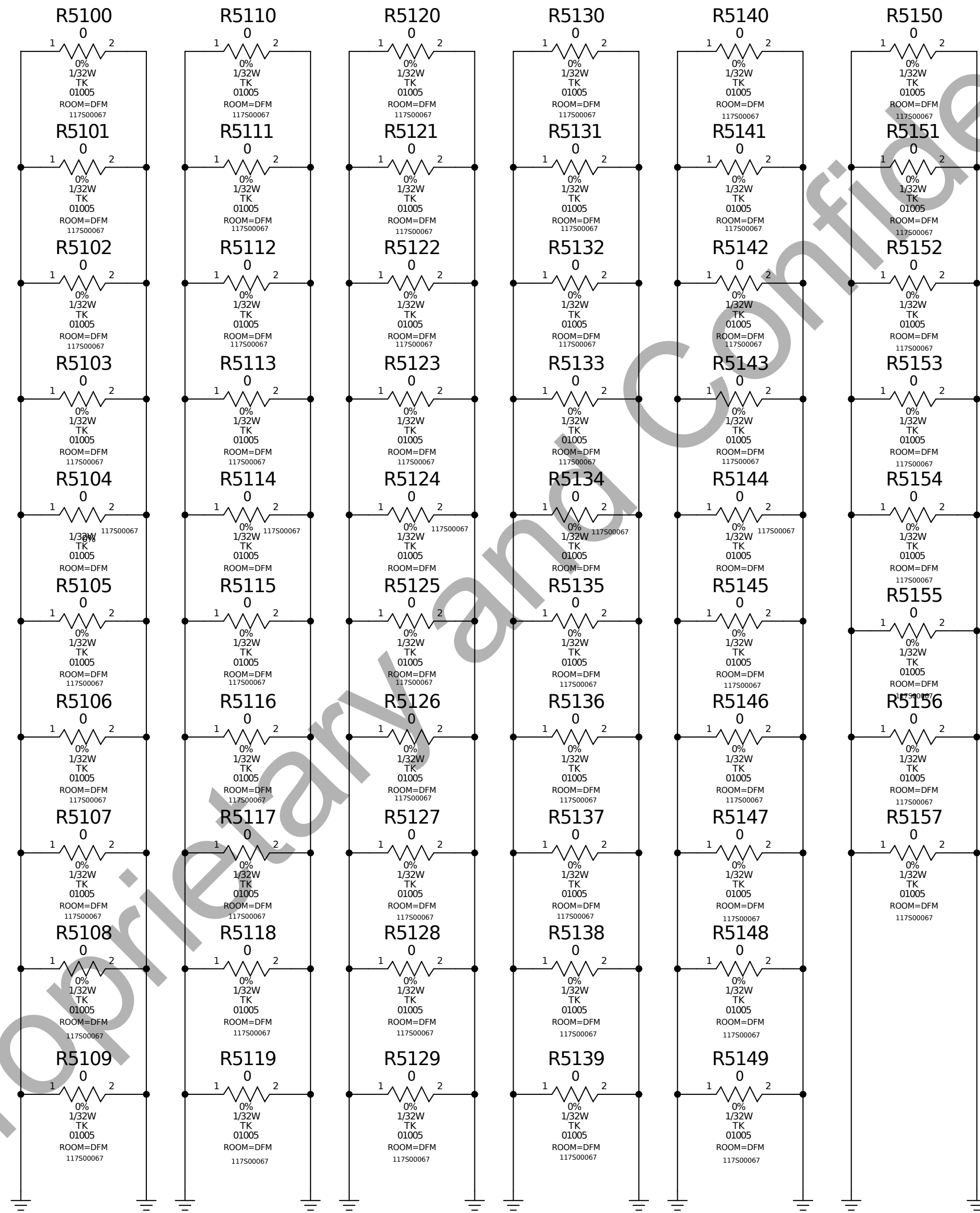
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| D |   |   |   |   |   |   | D |
| C |   |   |   |   |   |   | C |
| B |   |   |   |   |   |   | B |
| A |   |   |   |   |   |   | A |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

Bot MLB NTCs

Place NTC XWs near interposer pins for \_P nets  
Route P/N differentially



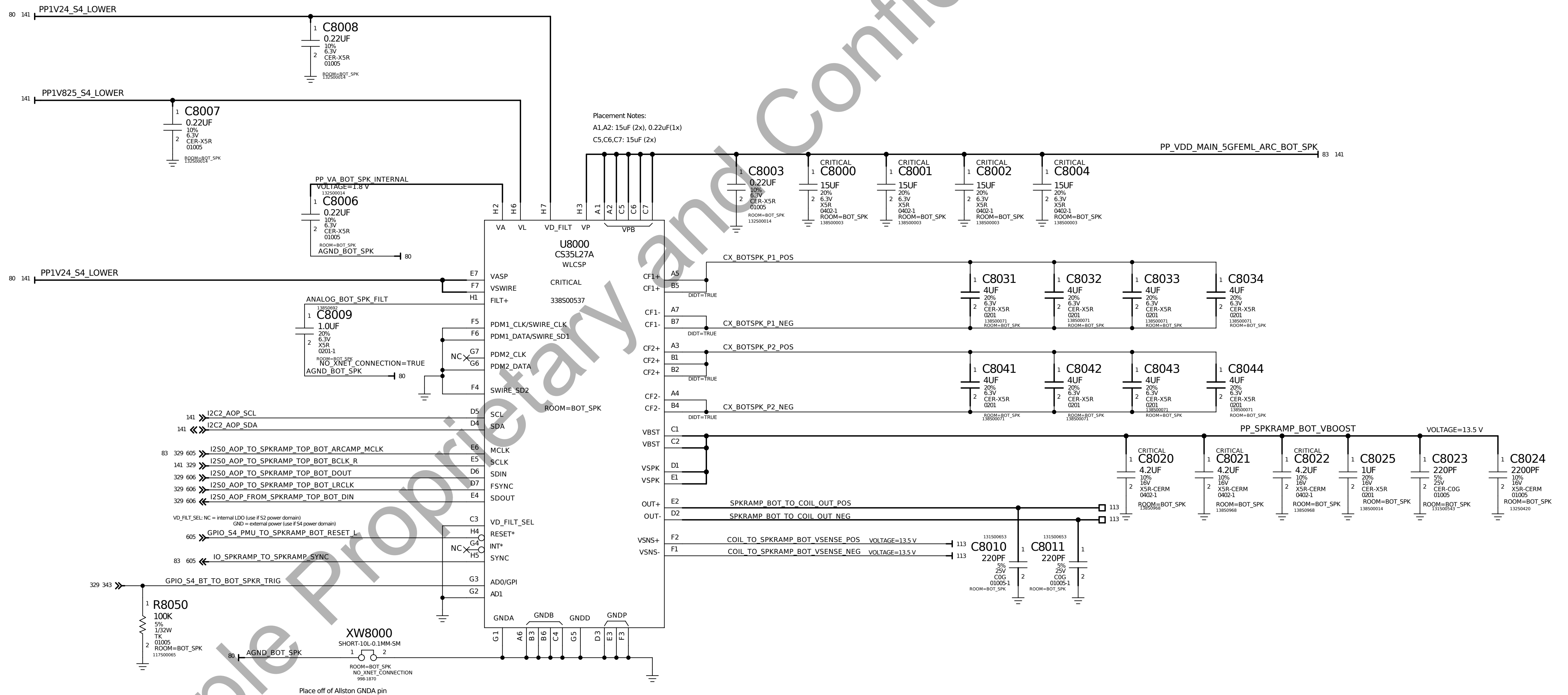
UF RESISTORS




[illegible]

1. Use S4 domain if possible, then GND VD\_FILT\_SEL
2. Can use S2 domain if routing constrained, then NC VD\_FILT\_SEL

Placement Notes:  
A1,A2: 15uF (2x), 0.22uF(1x)  
C5,C6,C7: 15uF (2x)

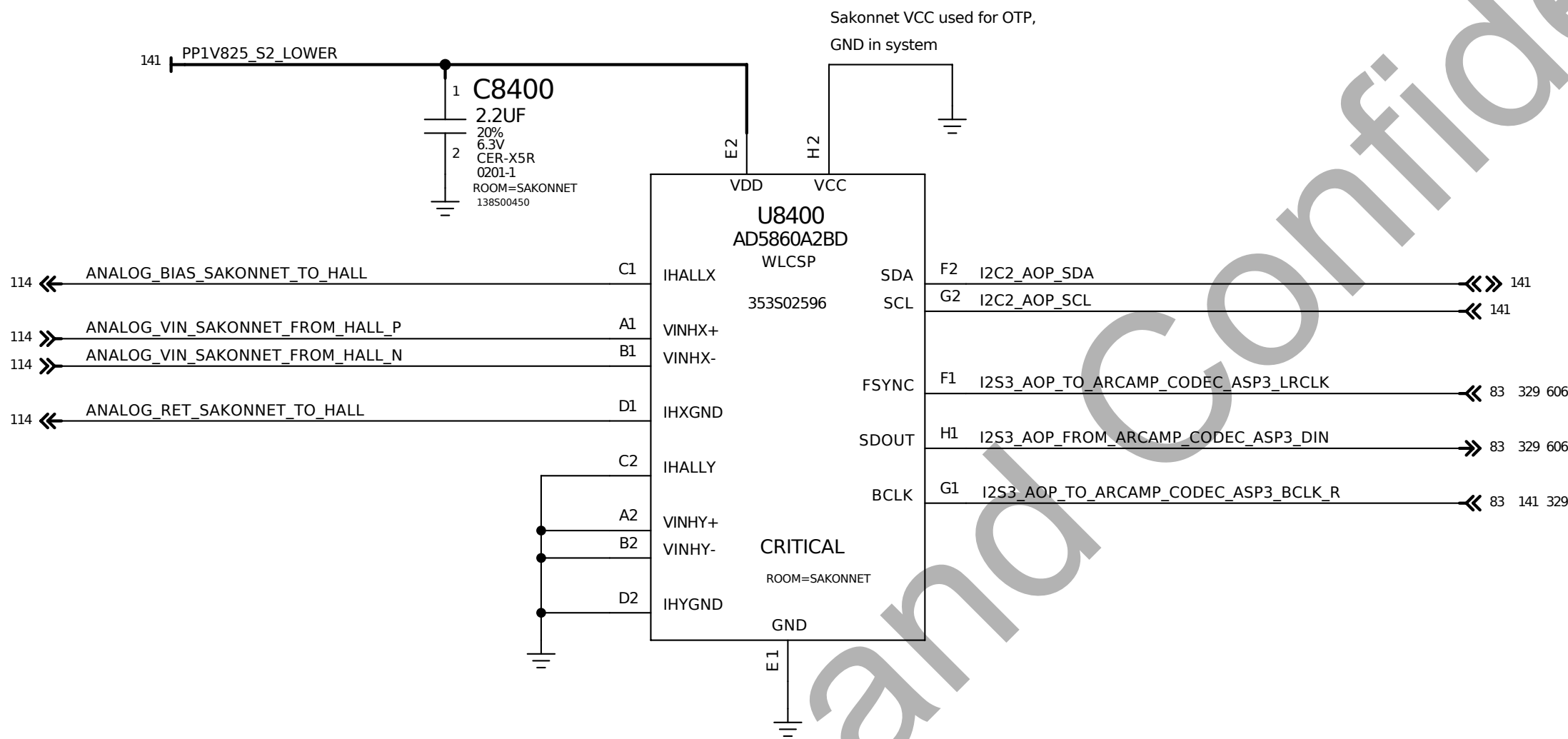


|  |  |
|--|--|
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PLACEMENT NOTES:  
A1,A2: 15uF (2x), 0.22uF(1x)  
C5,C6,C7: 15uF (3x)



HALL SENSOR



D

C

B

A

D

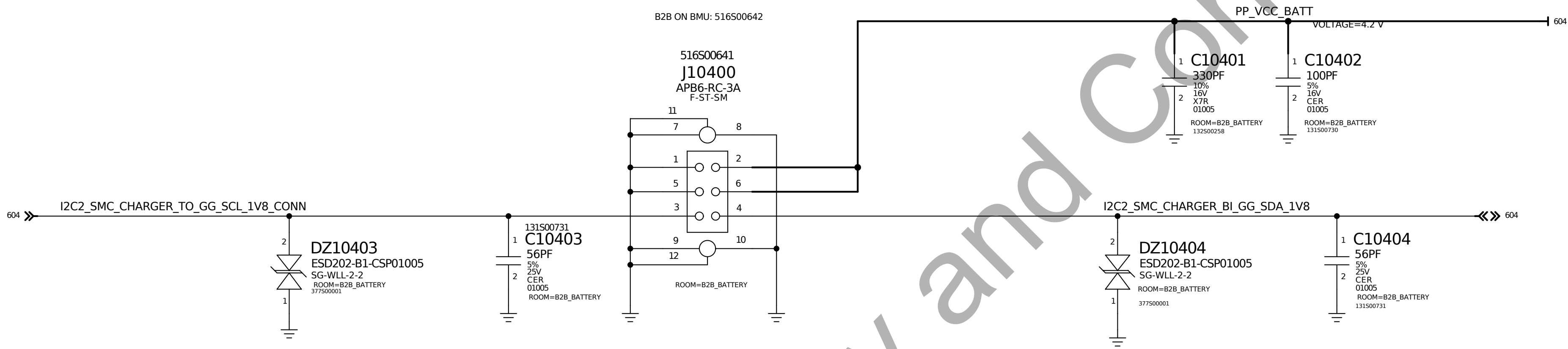
C

B

A

BATTERY B2B

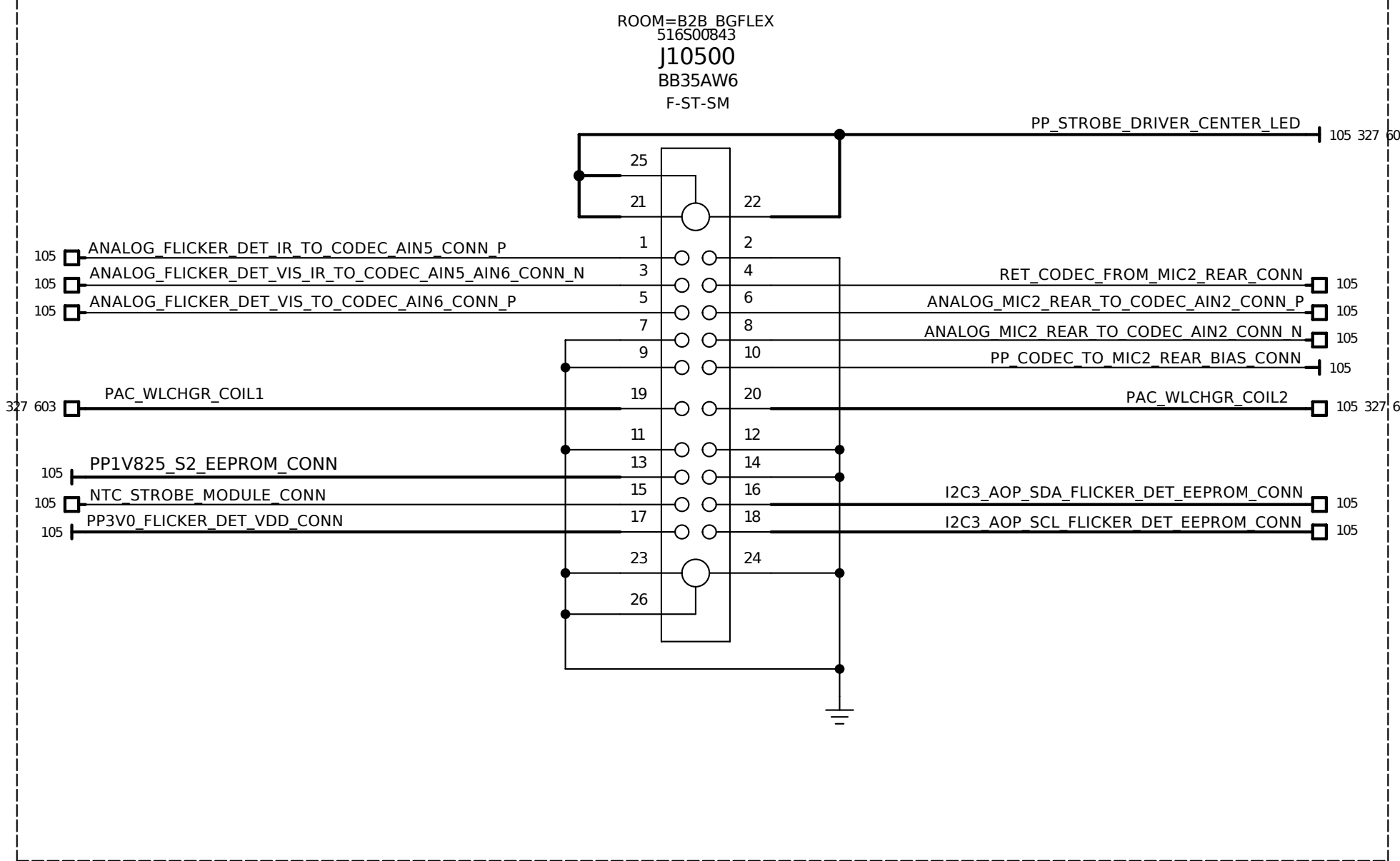
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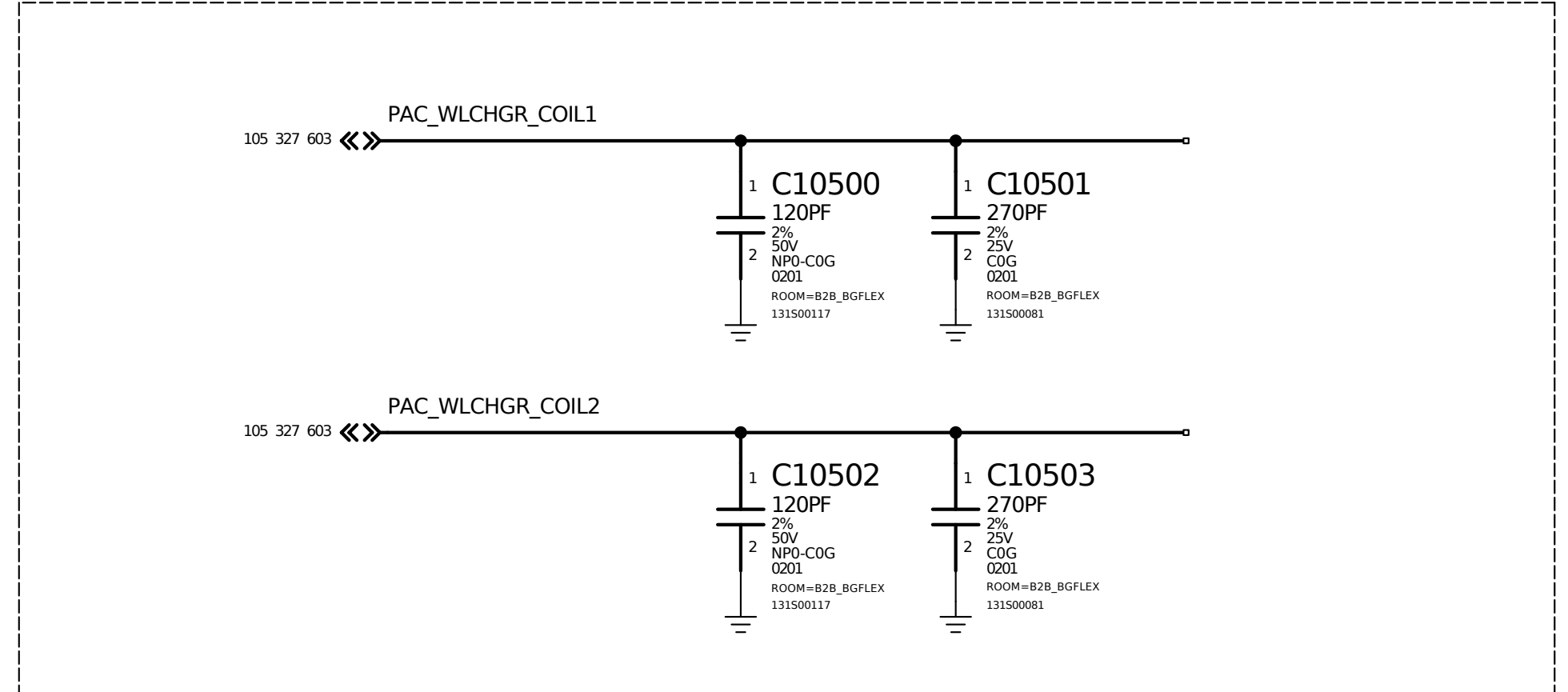


BG Flex B2B

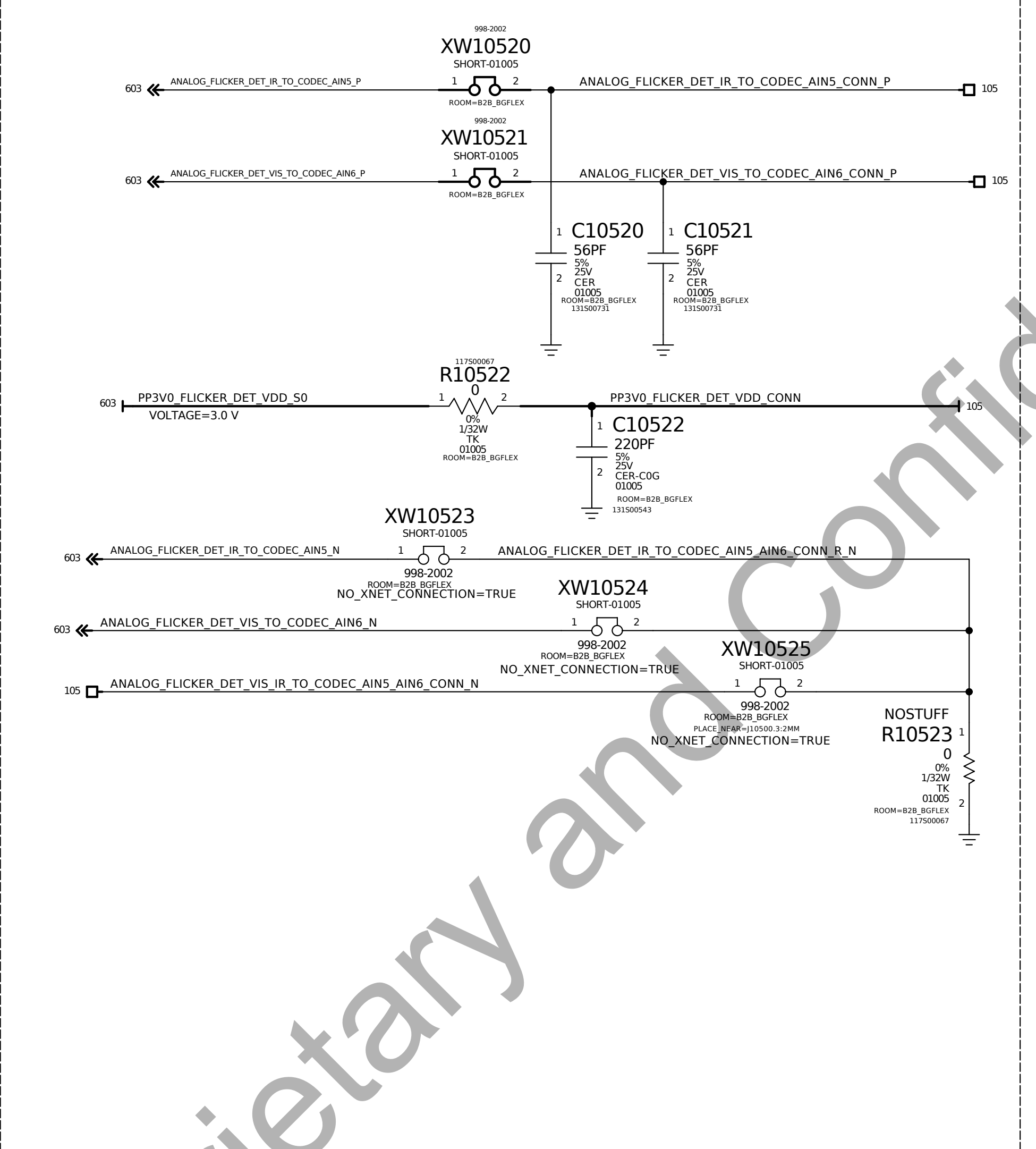
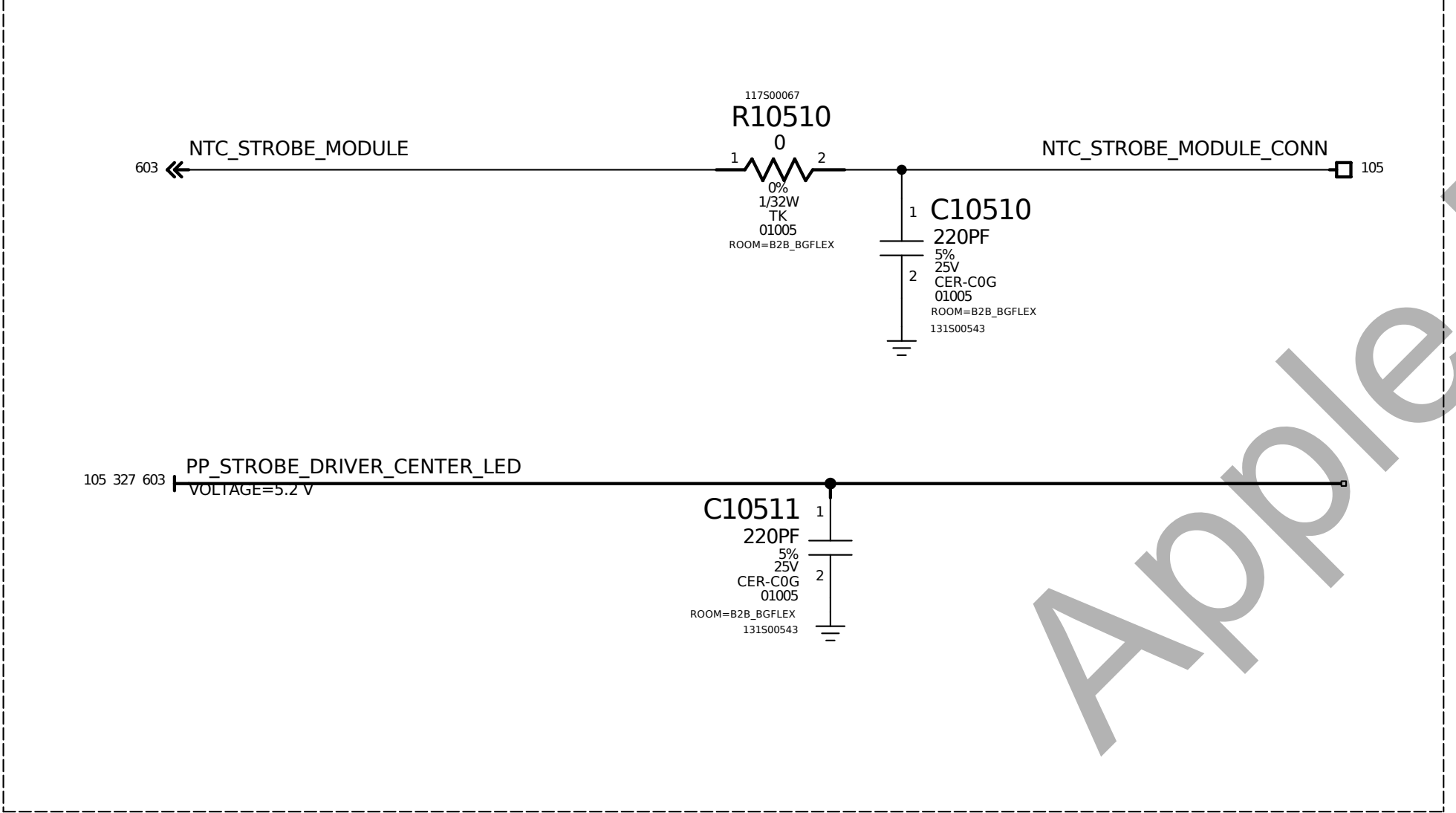
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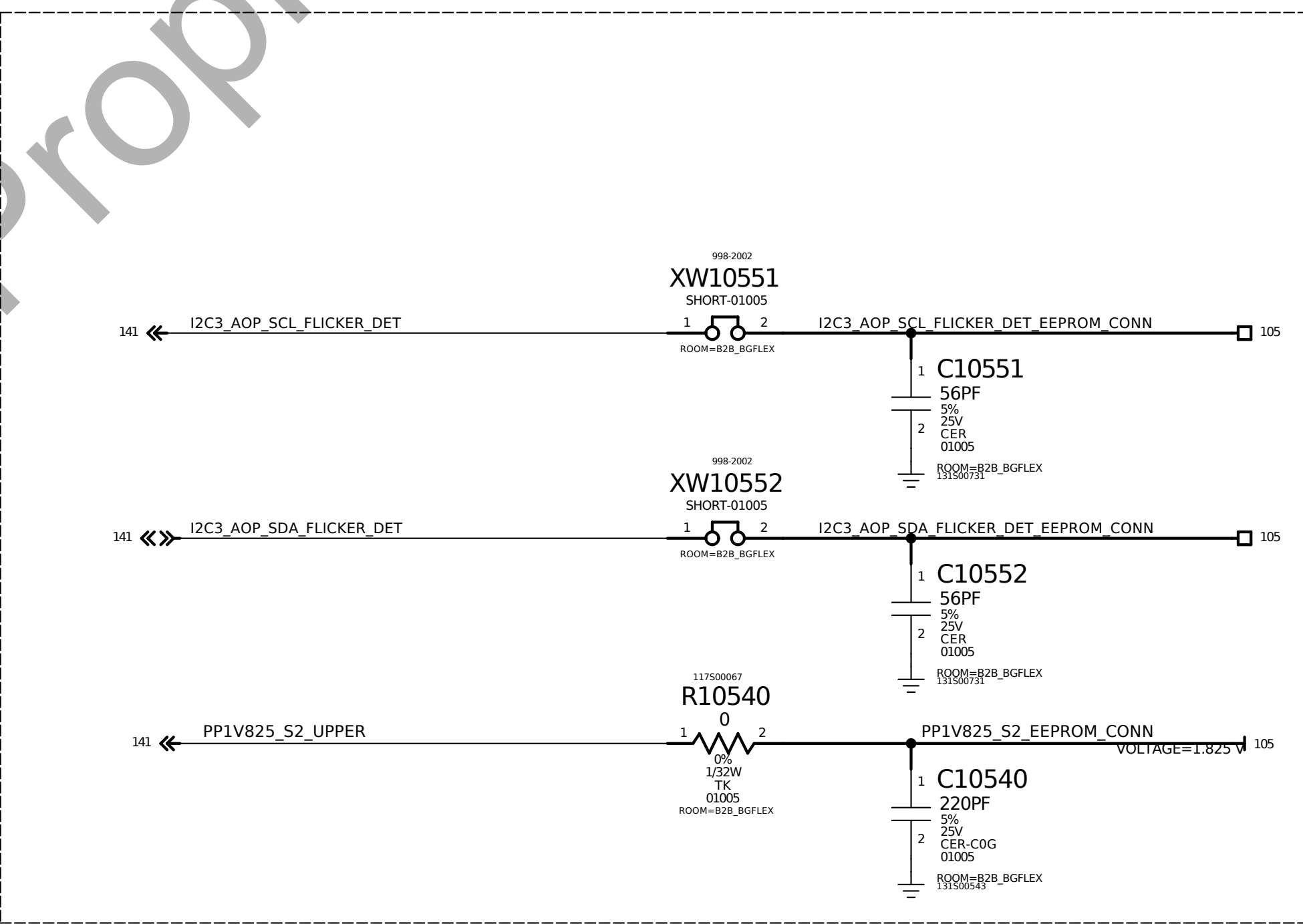
CHROMITE FILTERS



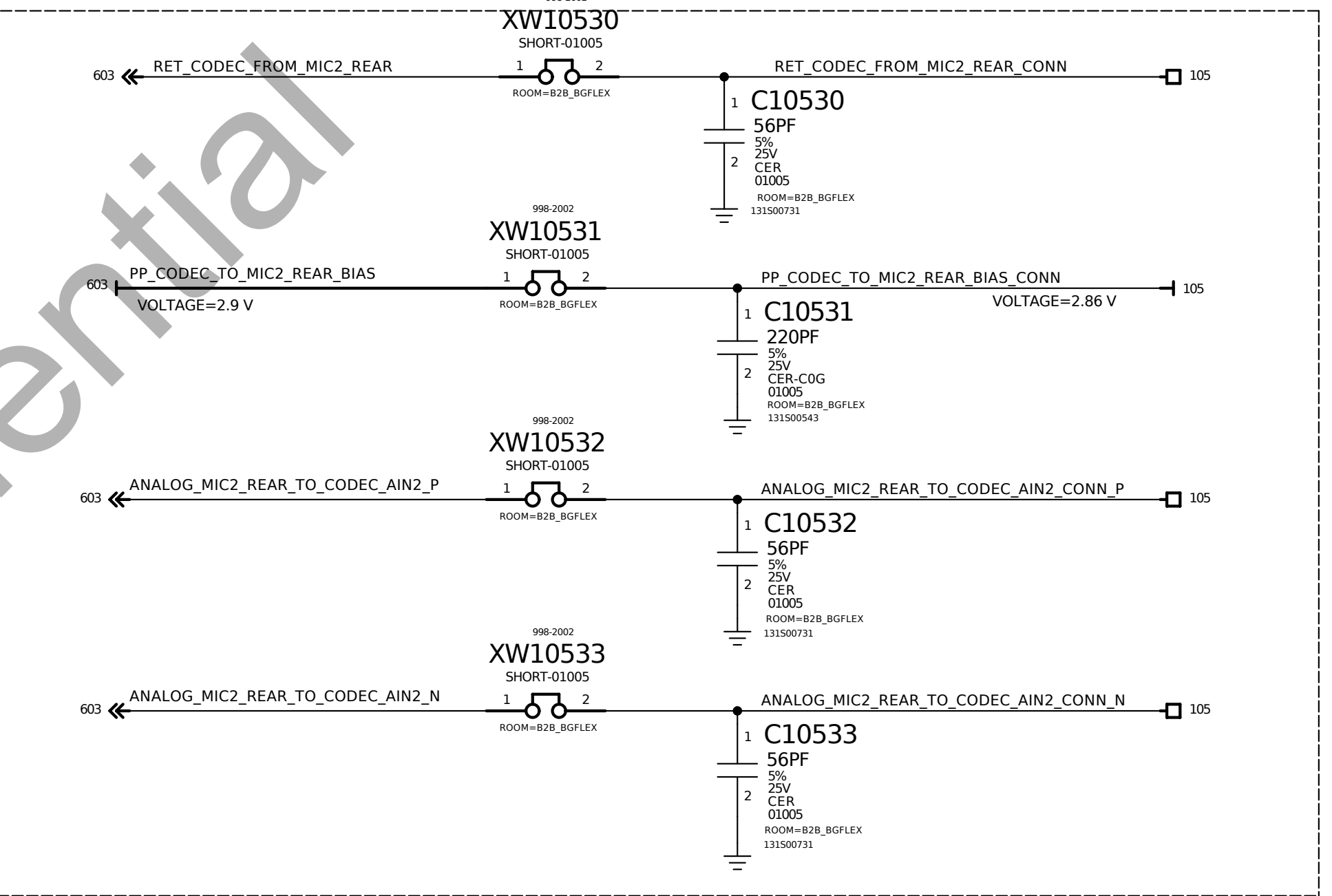
Strobe



IO FILTERS

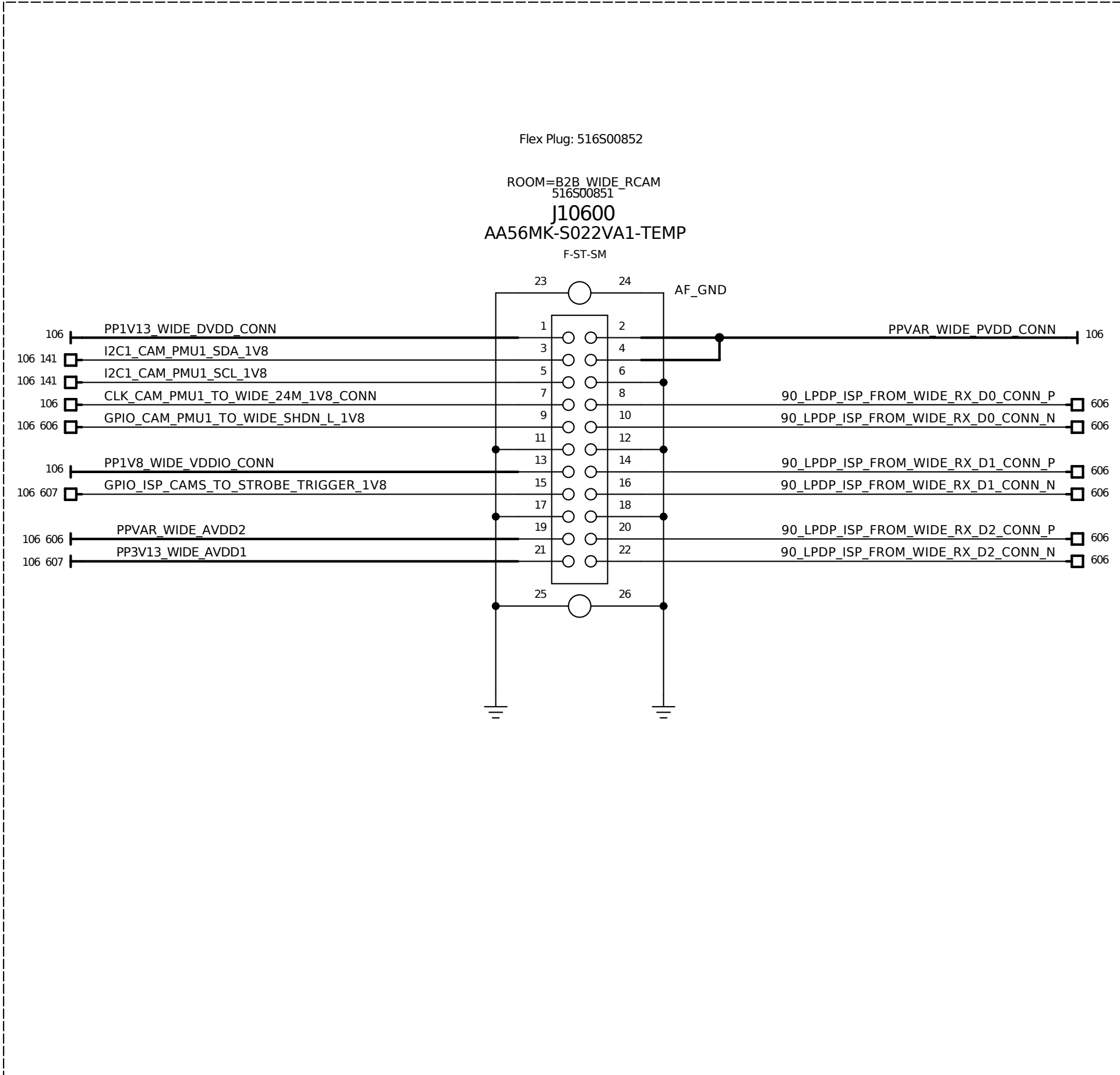


MIC2

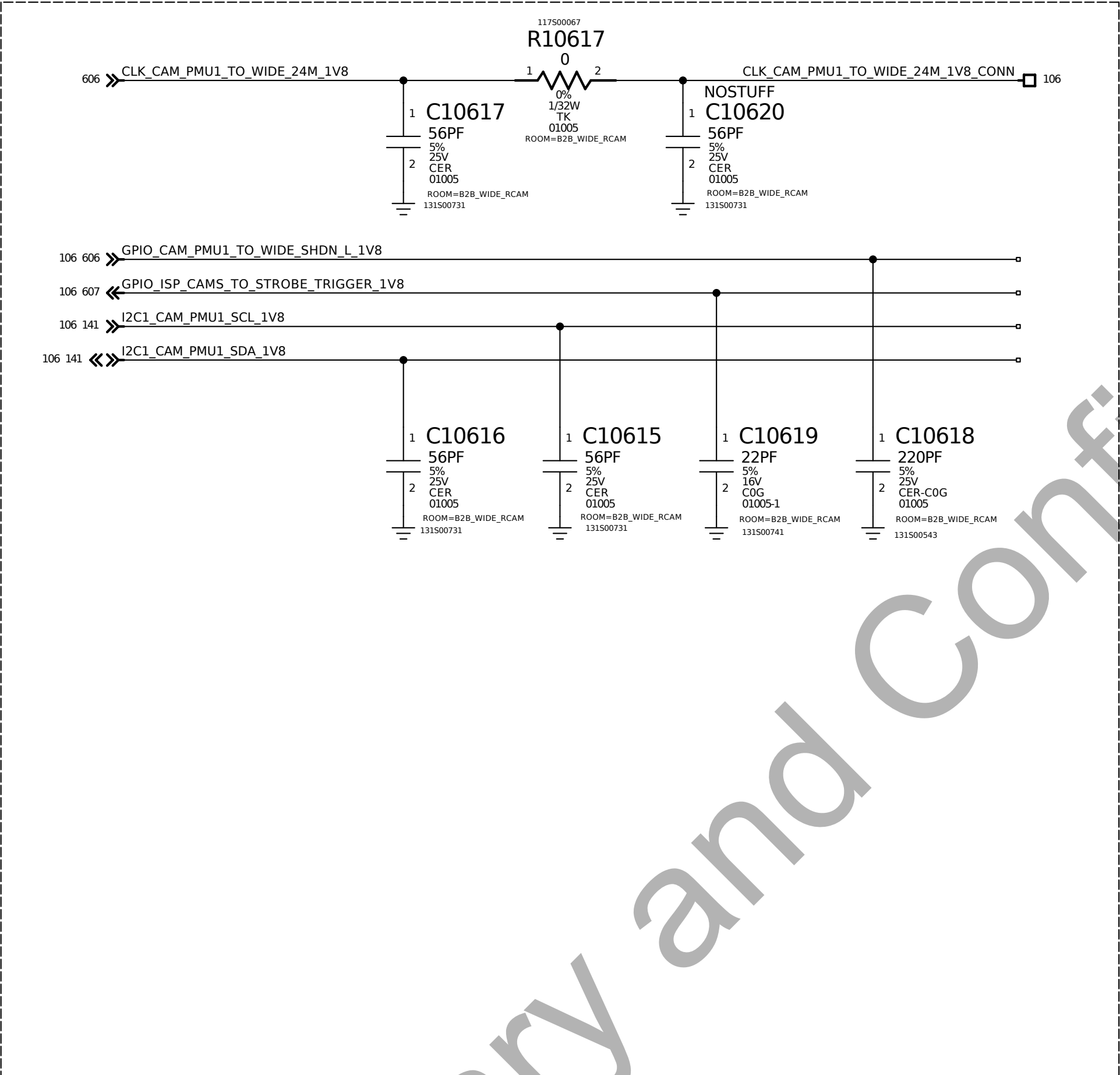


WIDE CAMERA B2B

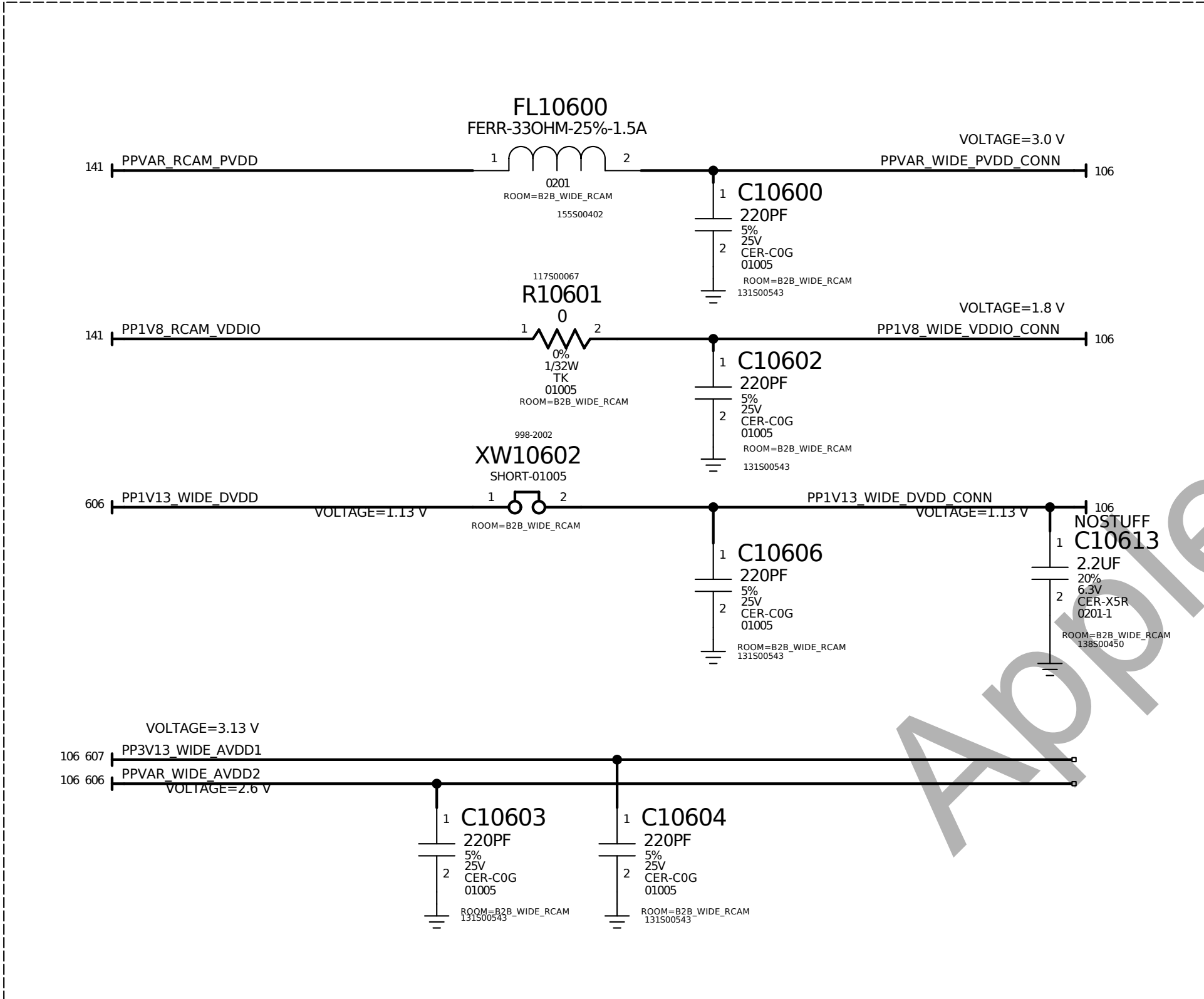
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IO FILTERS

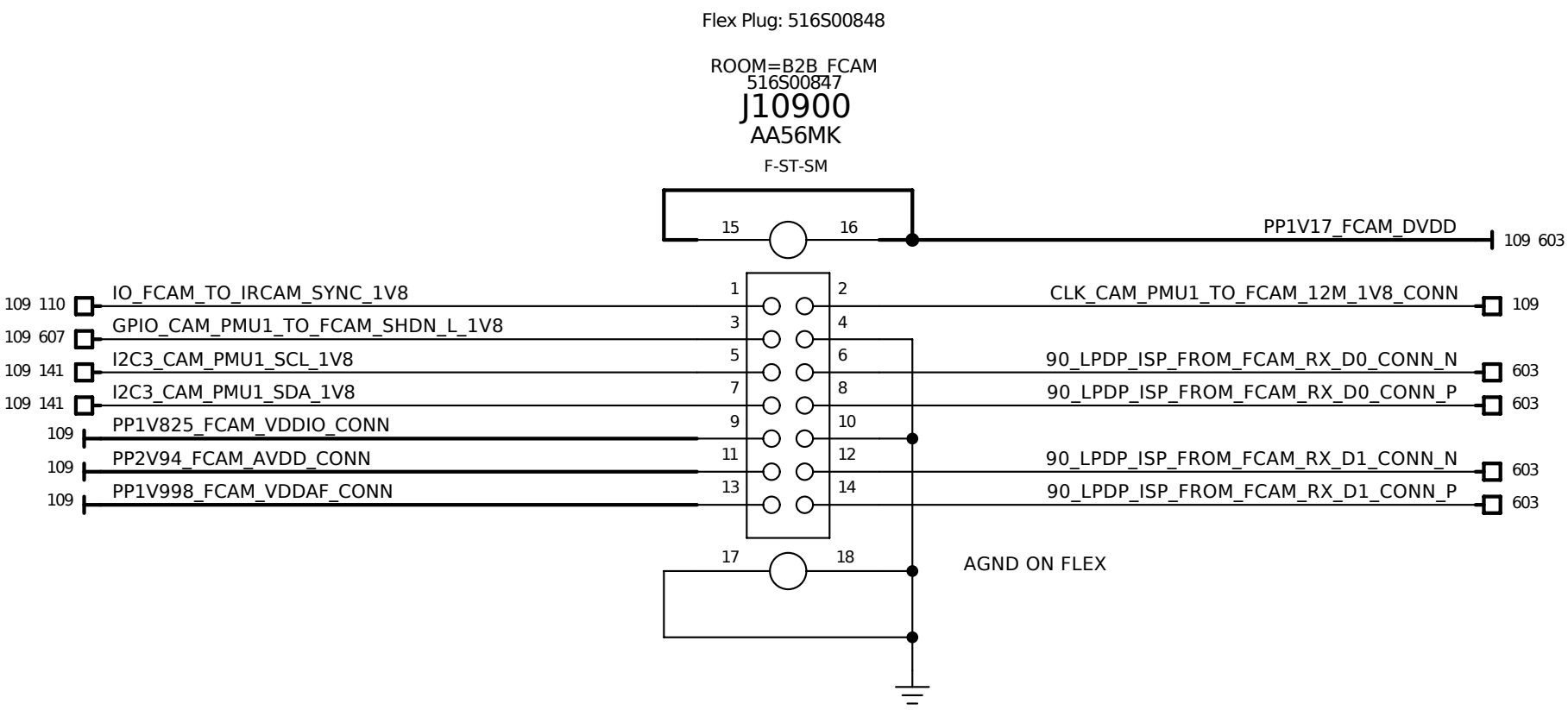


POWER FILTERS

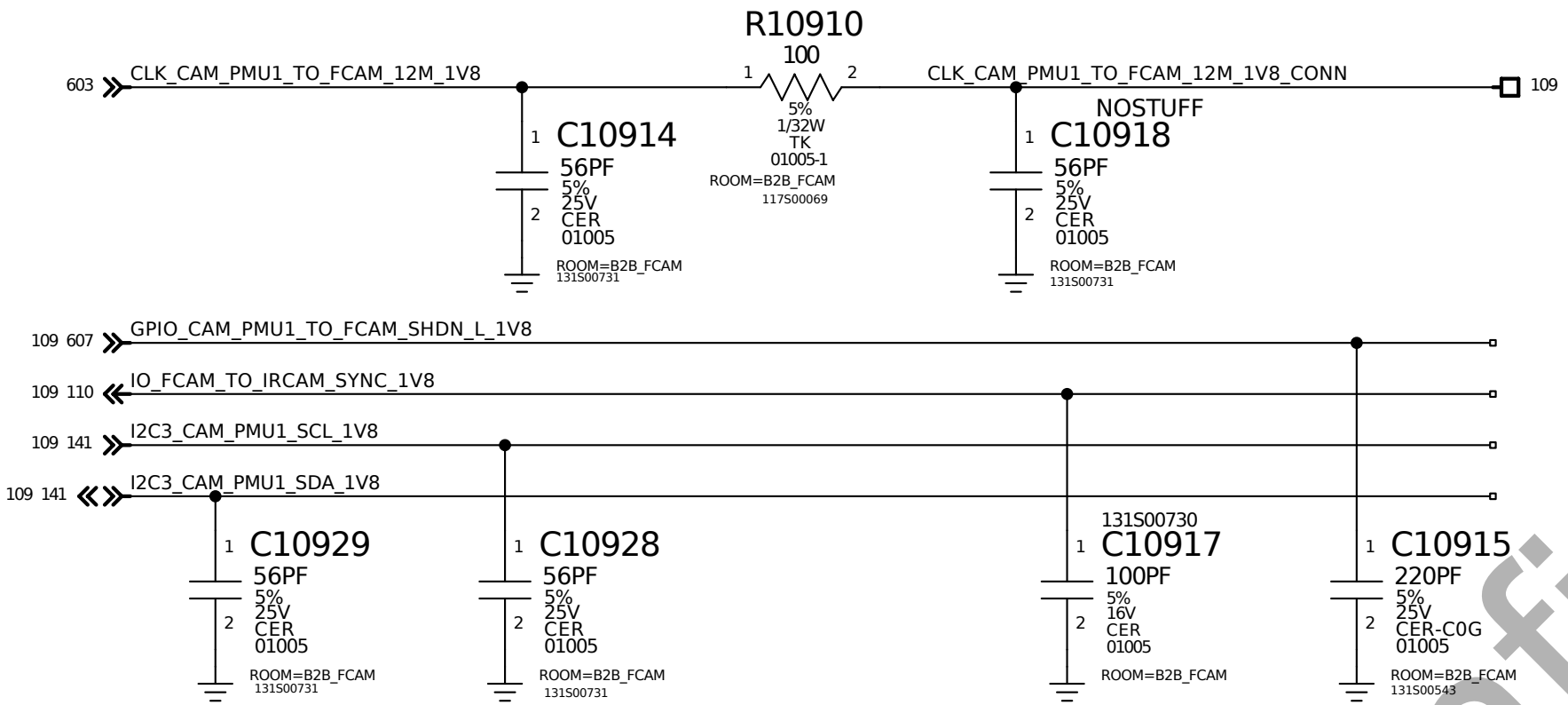


FCAM B2B

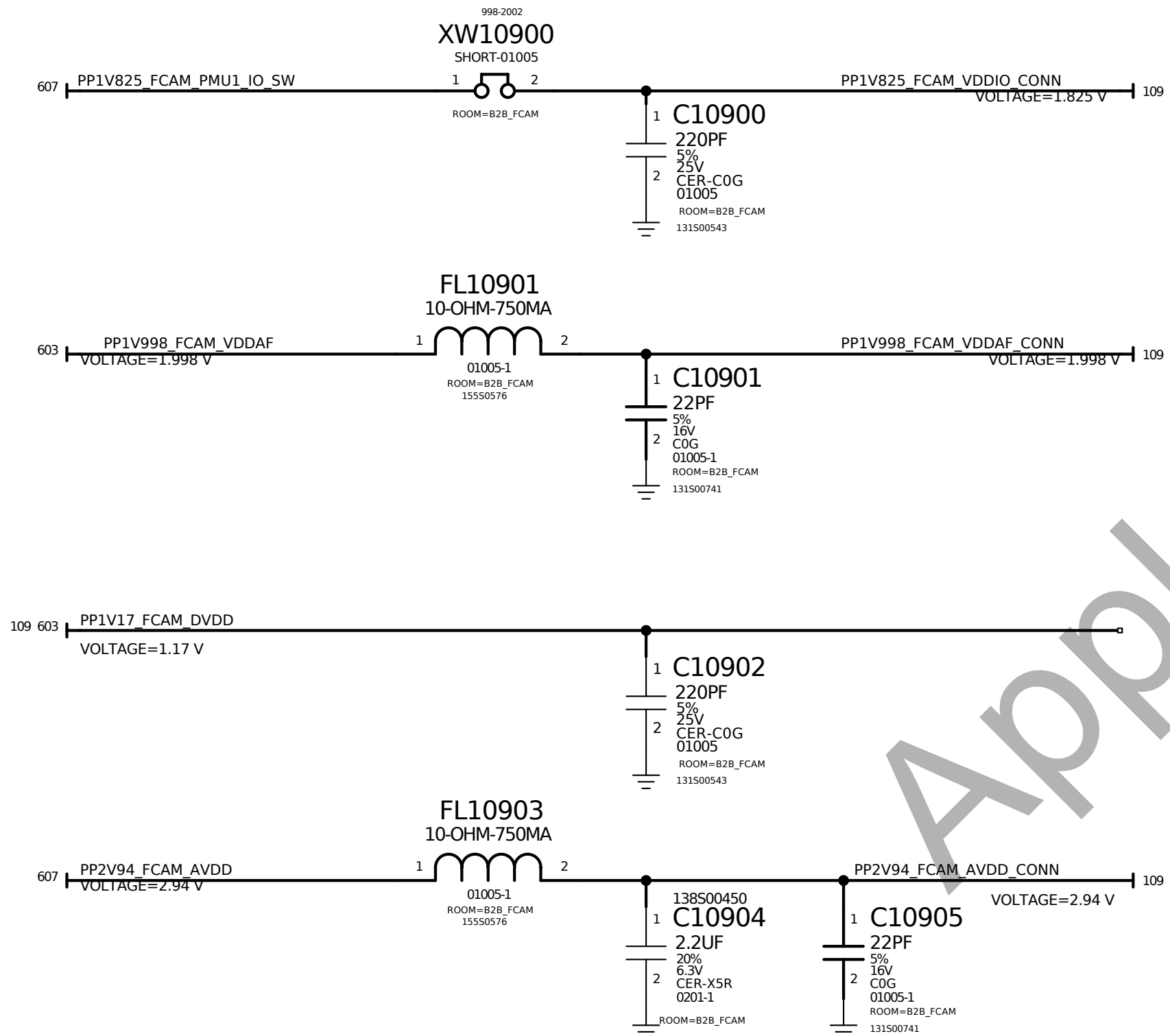
CONNECTORS




IO FILTERS



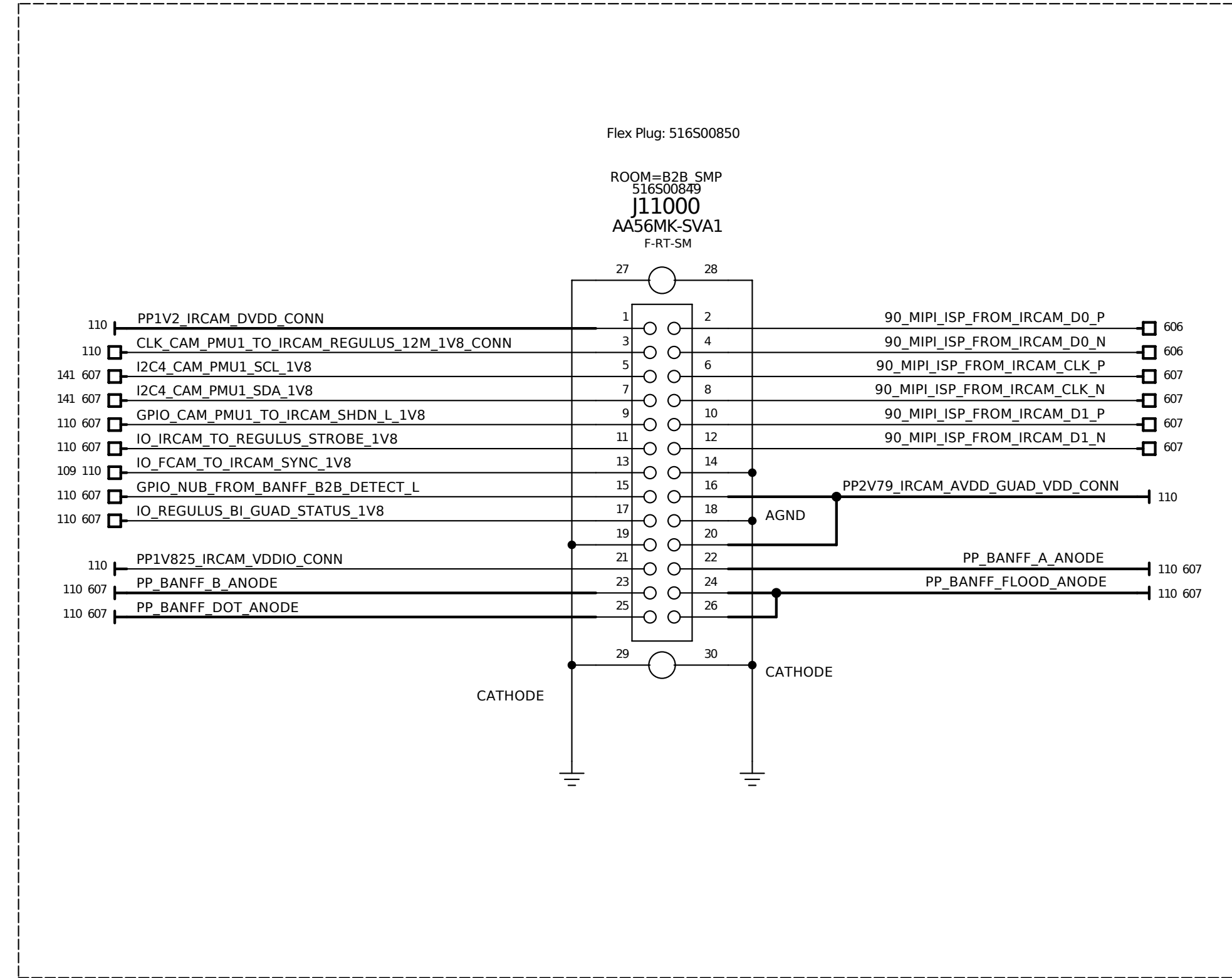
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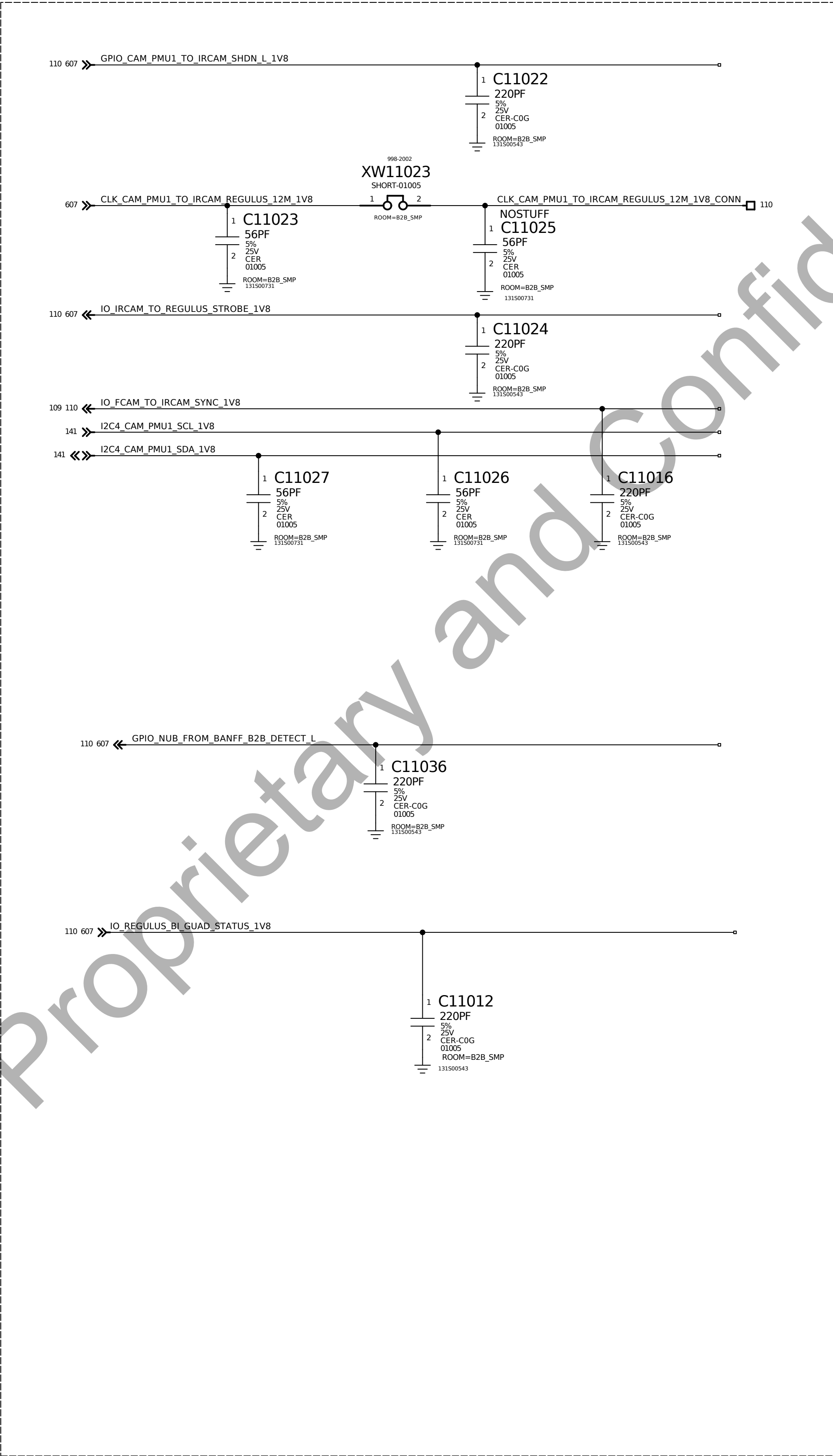
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SMP B2B

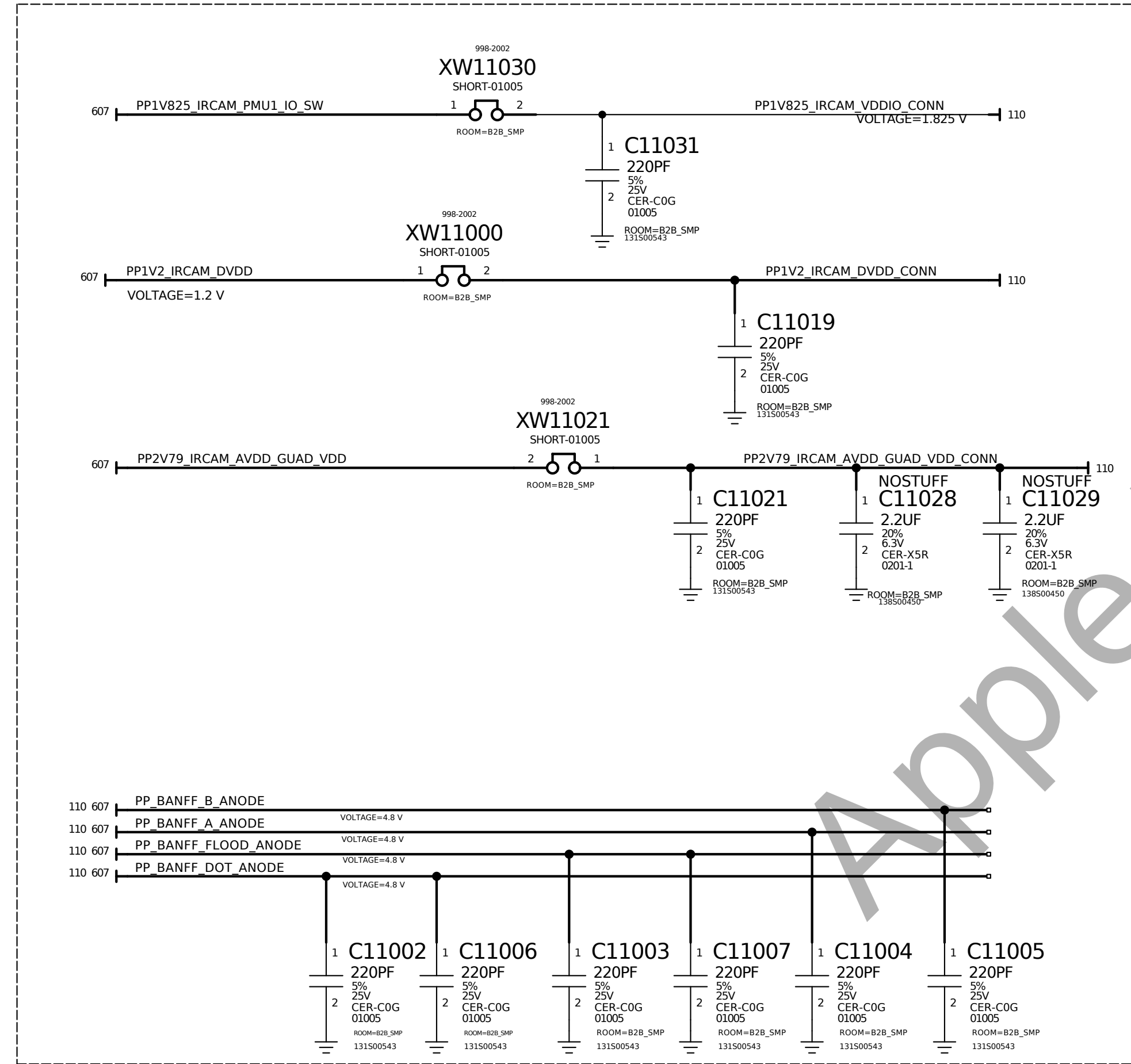
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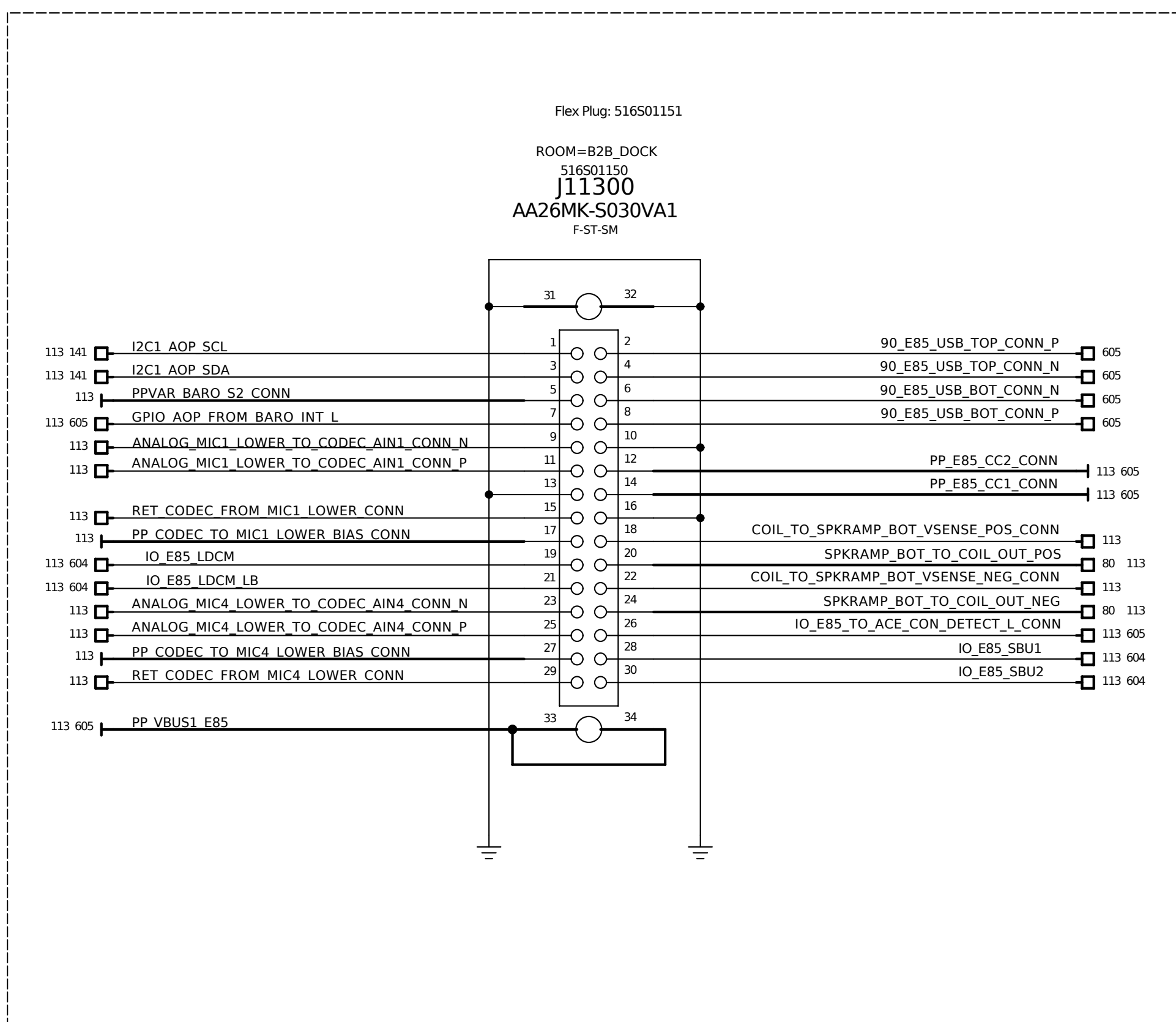
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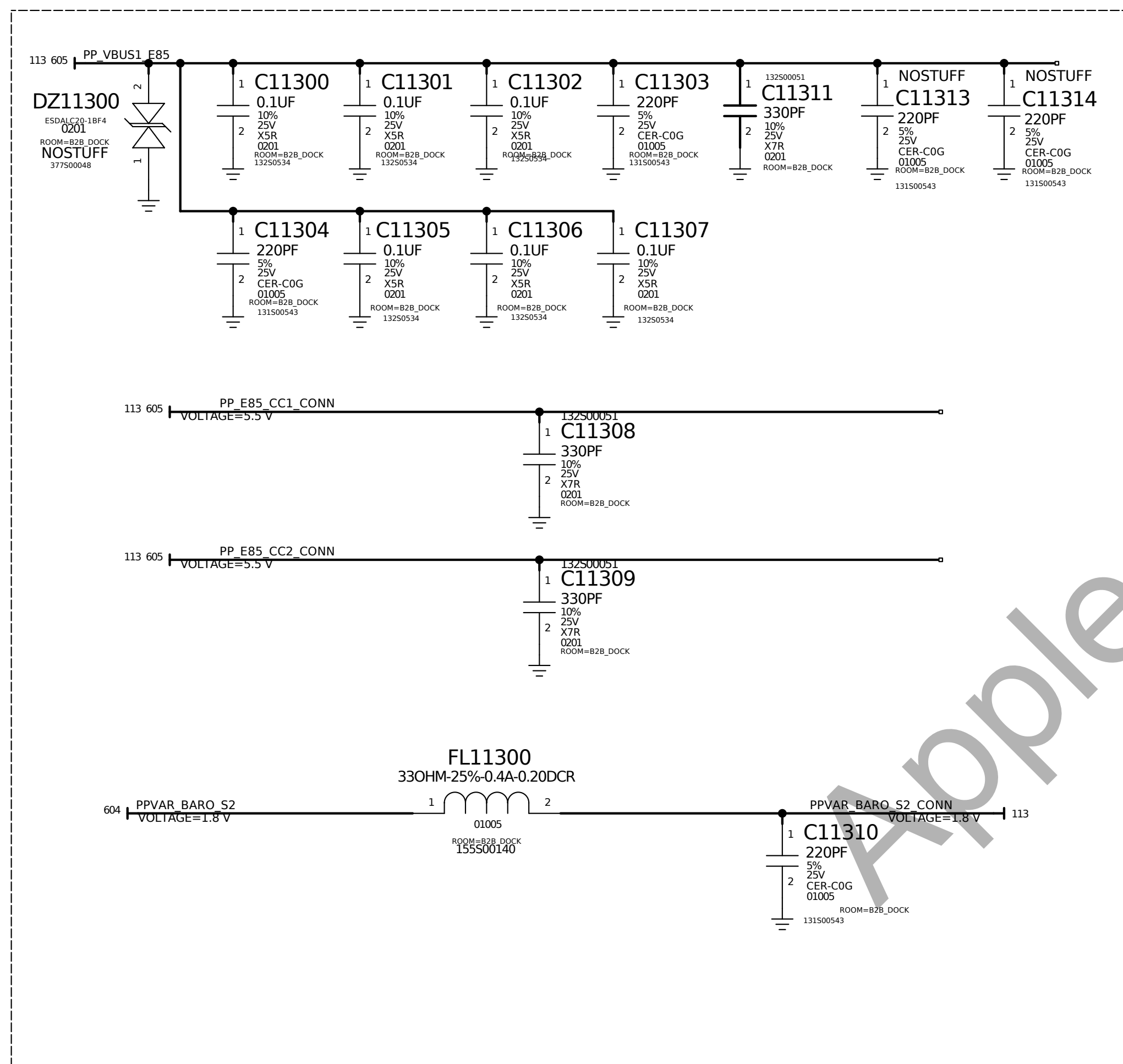
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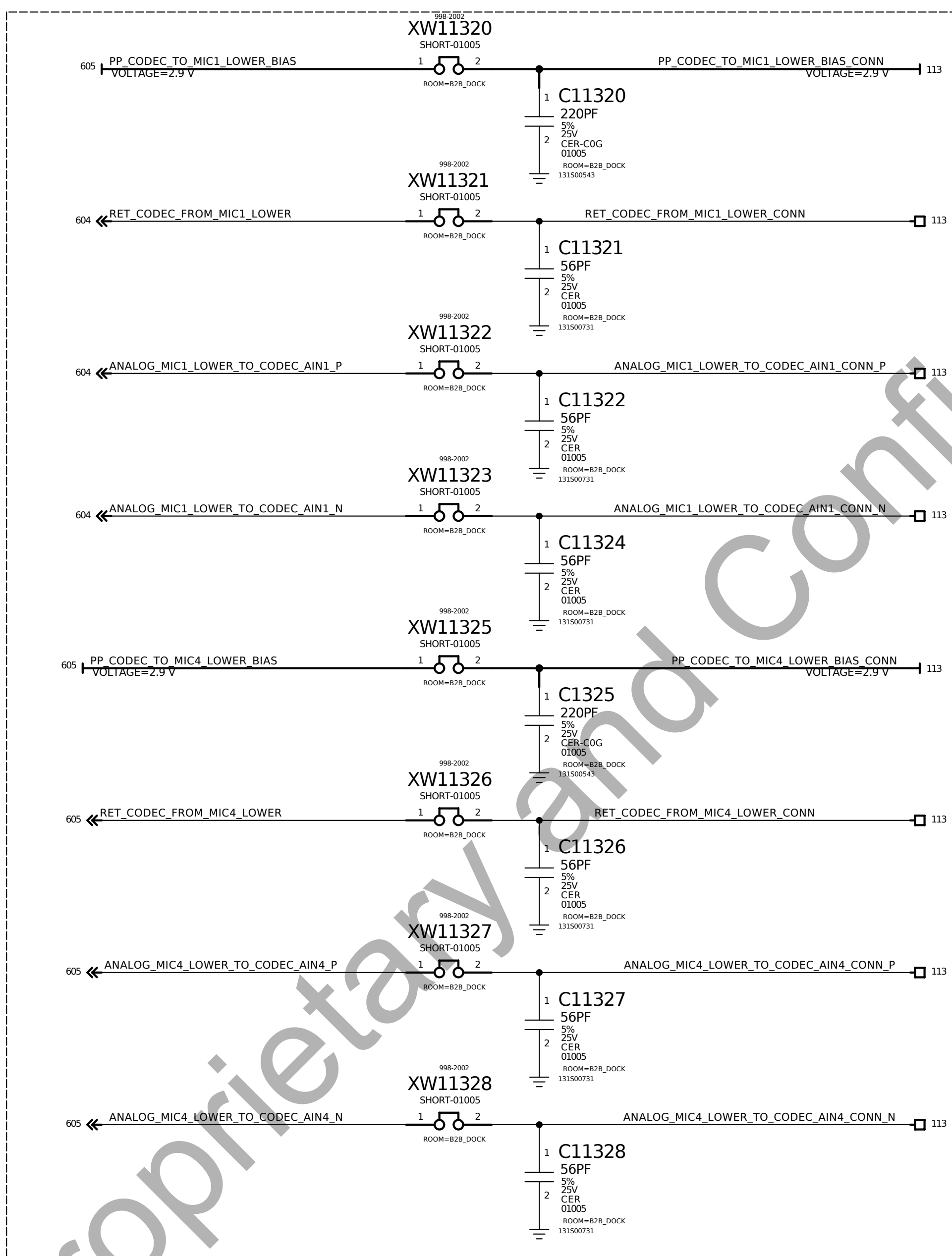
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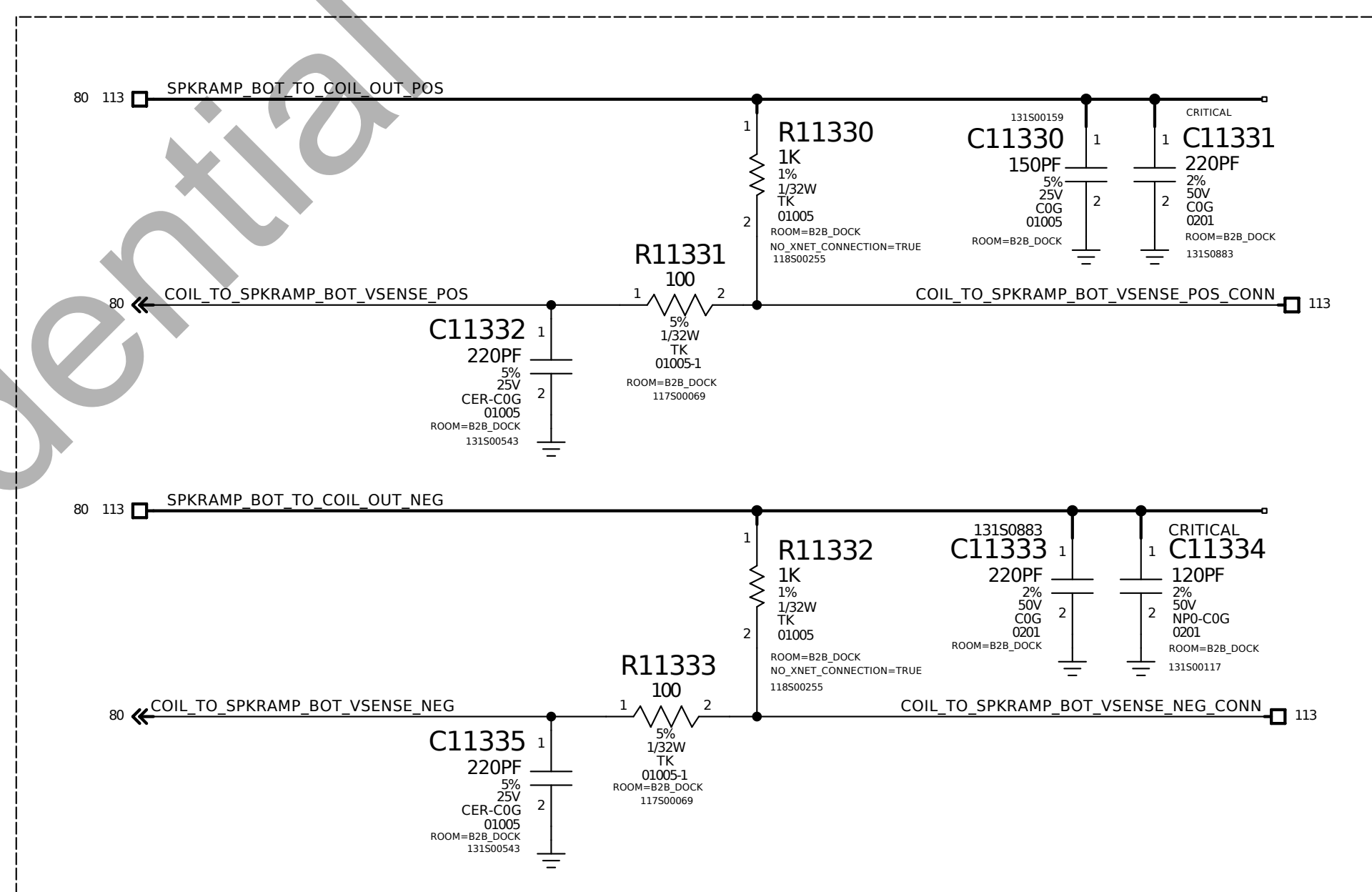
## POWER FILTERS



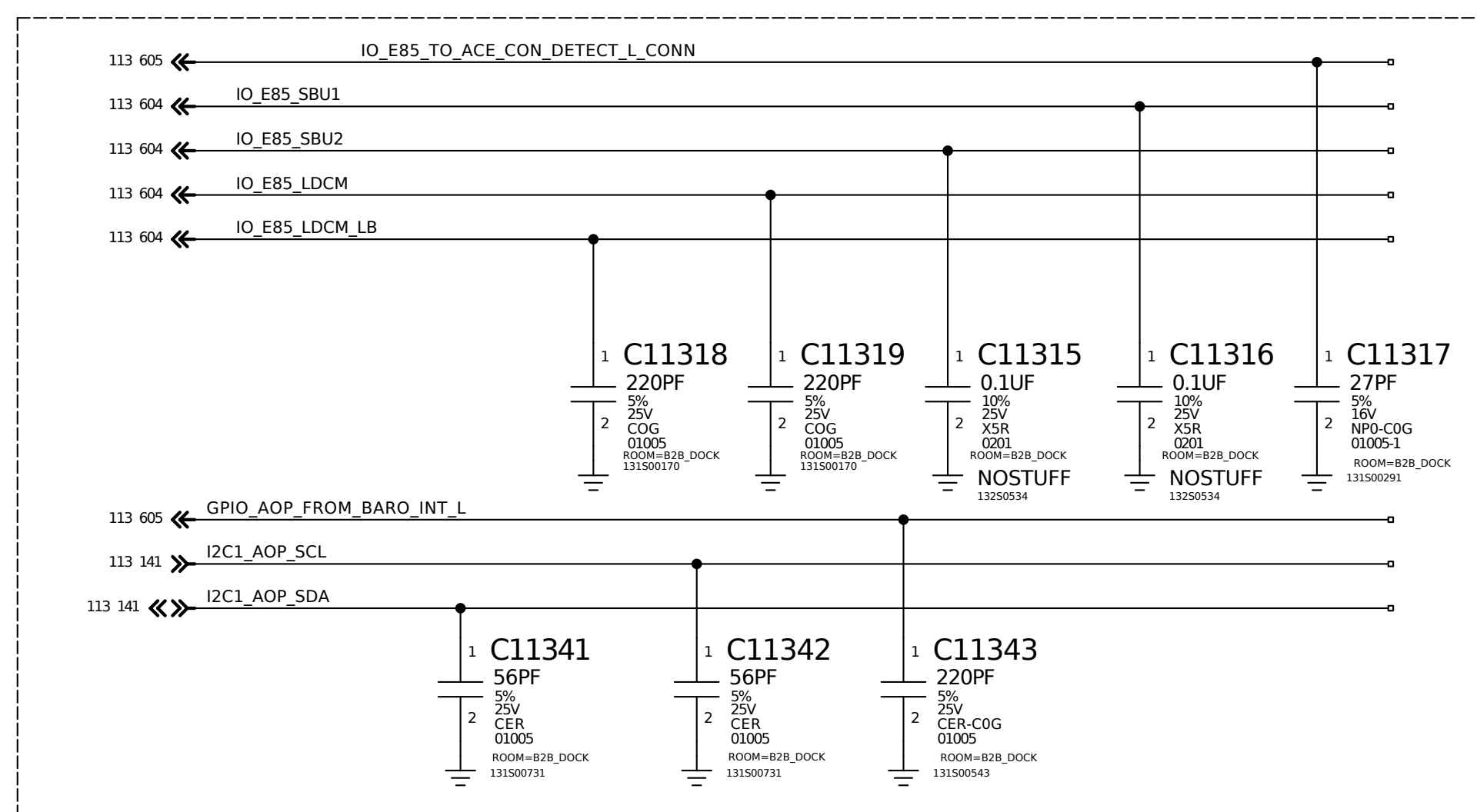
## MIC1 + MIC4



## BOT SPEAKER

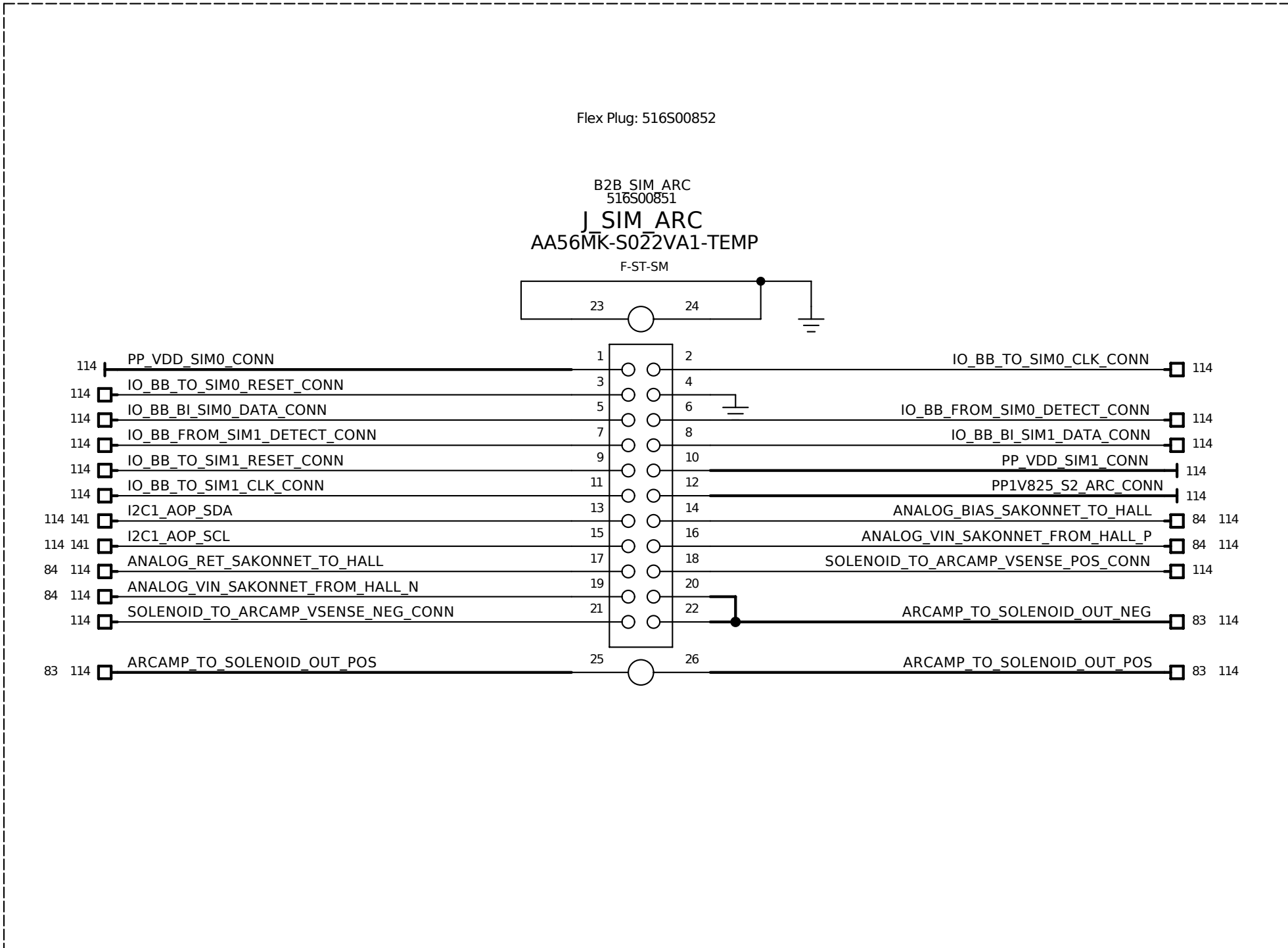


## IO FILTERS

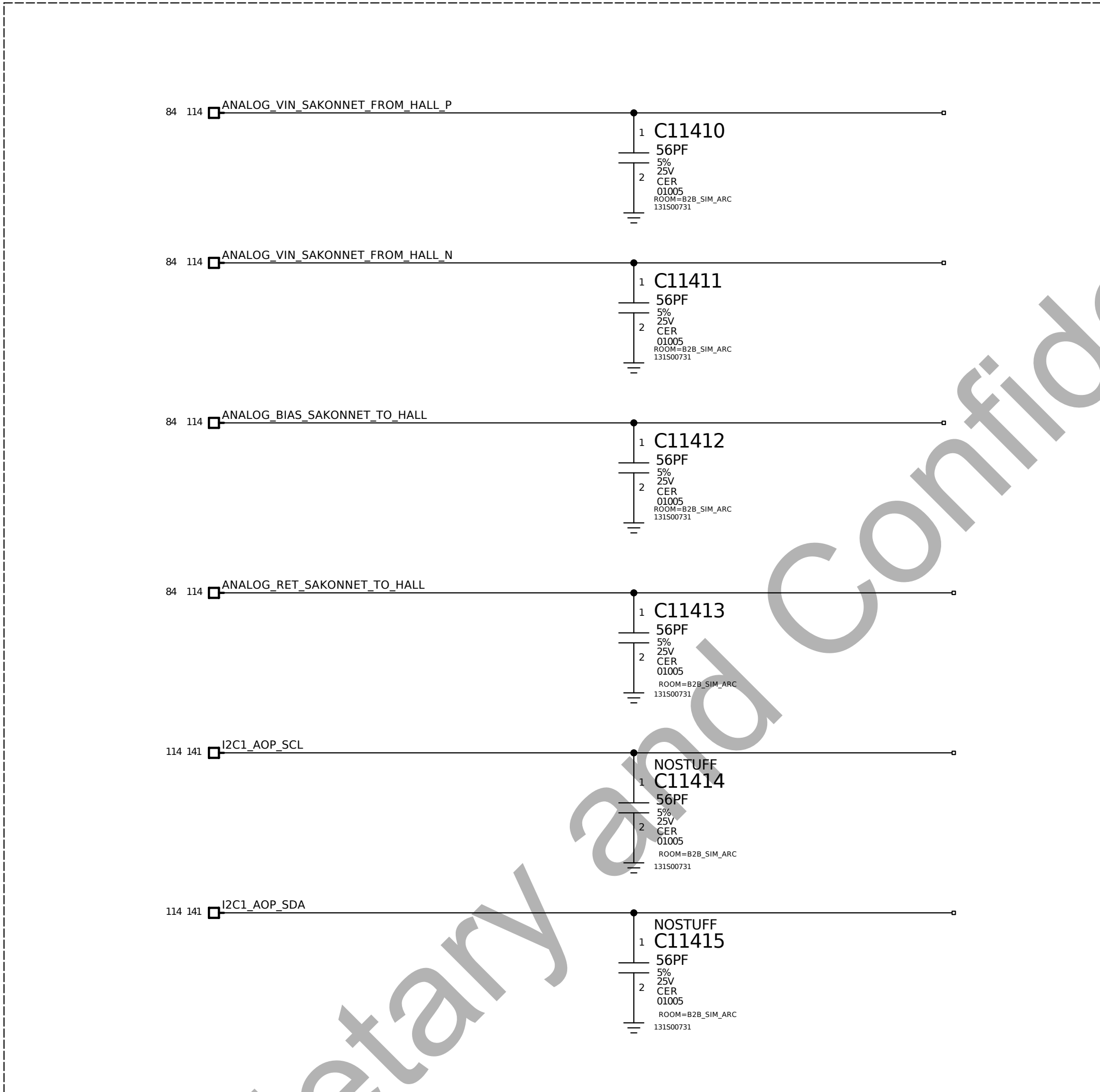


SIM ARC B2B

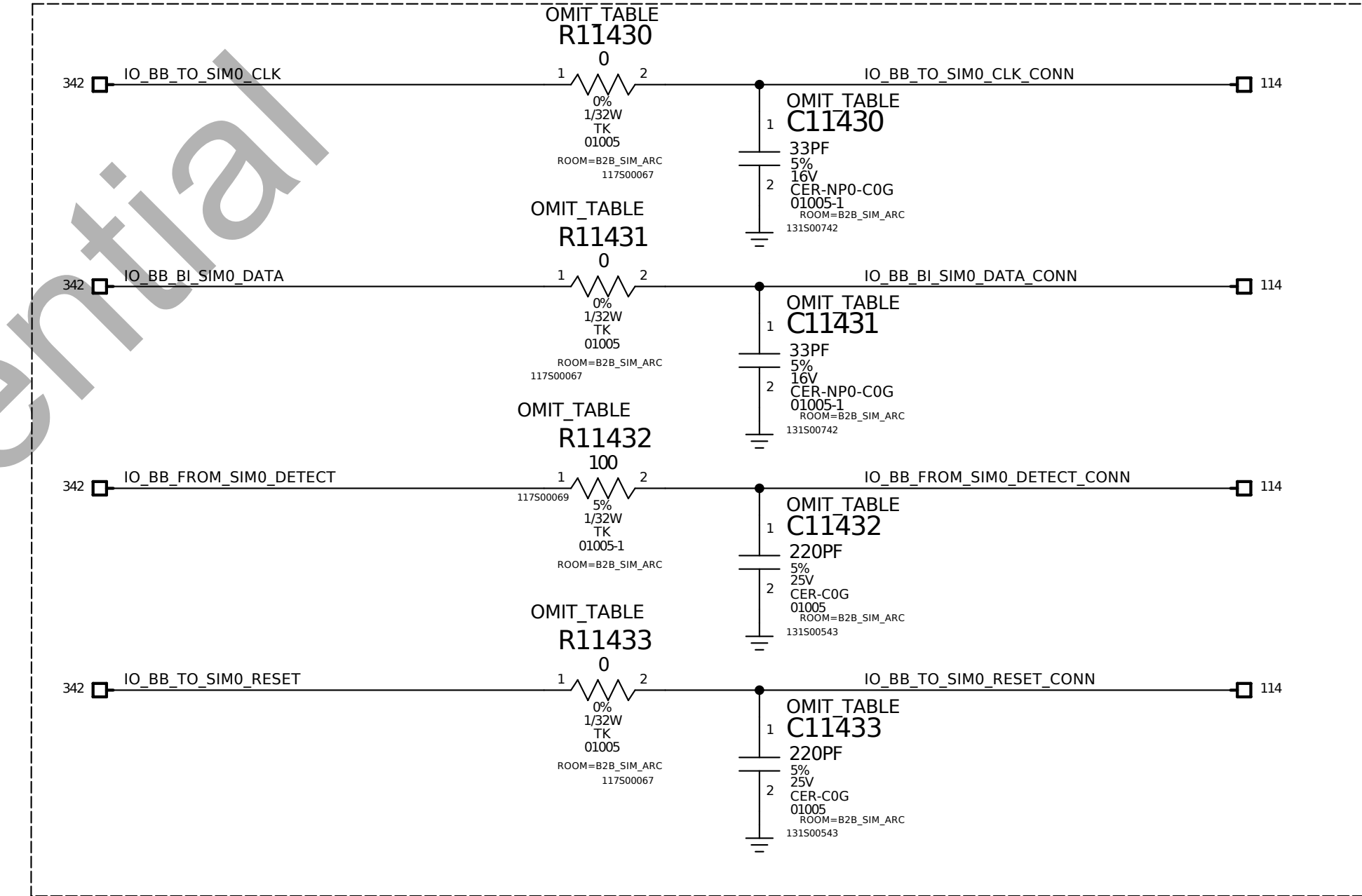
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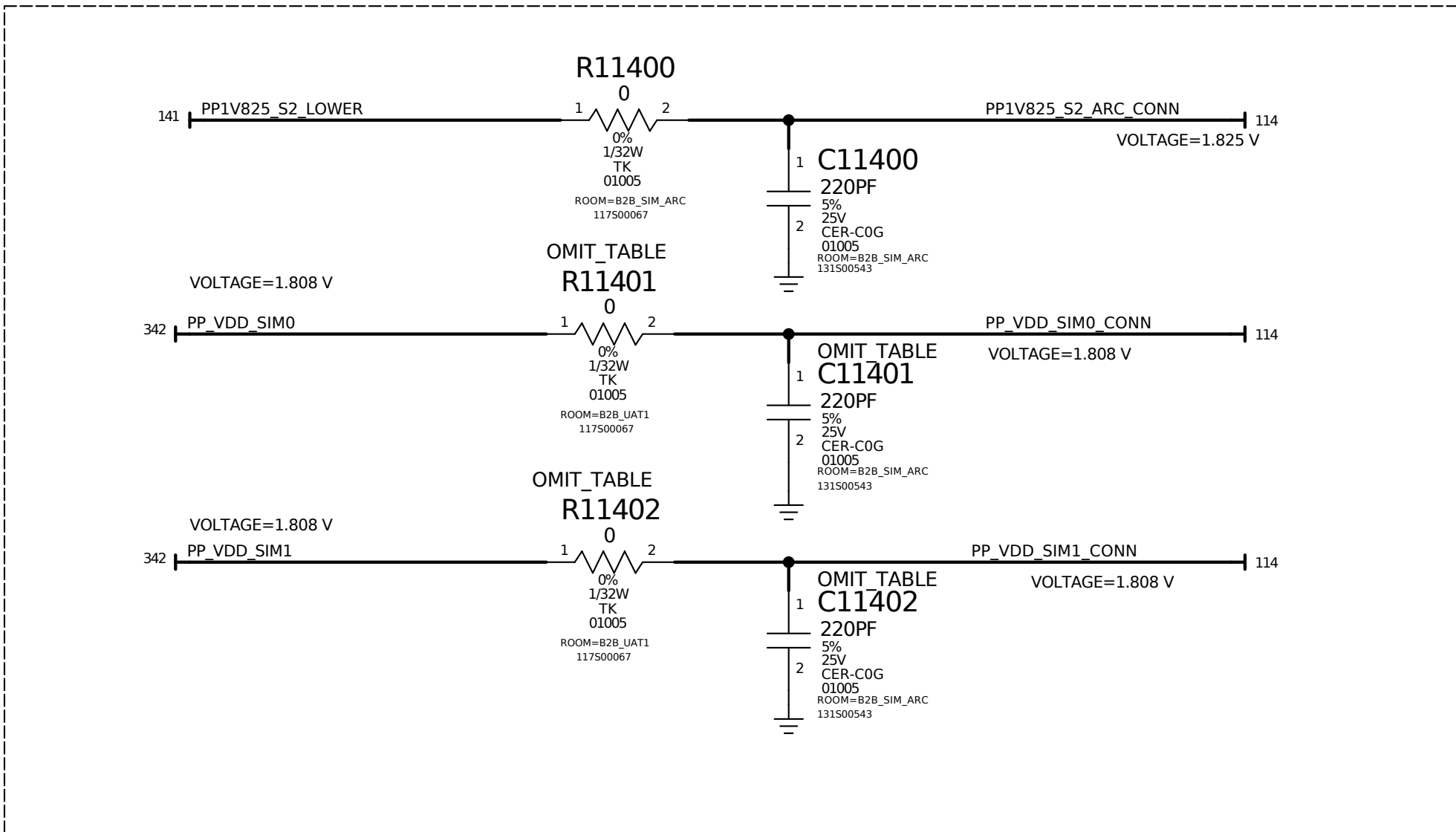
ARC IO FILTERS



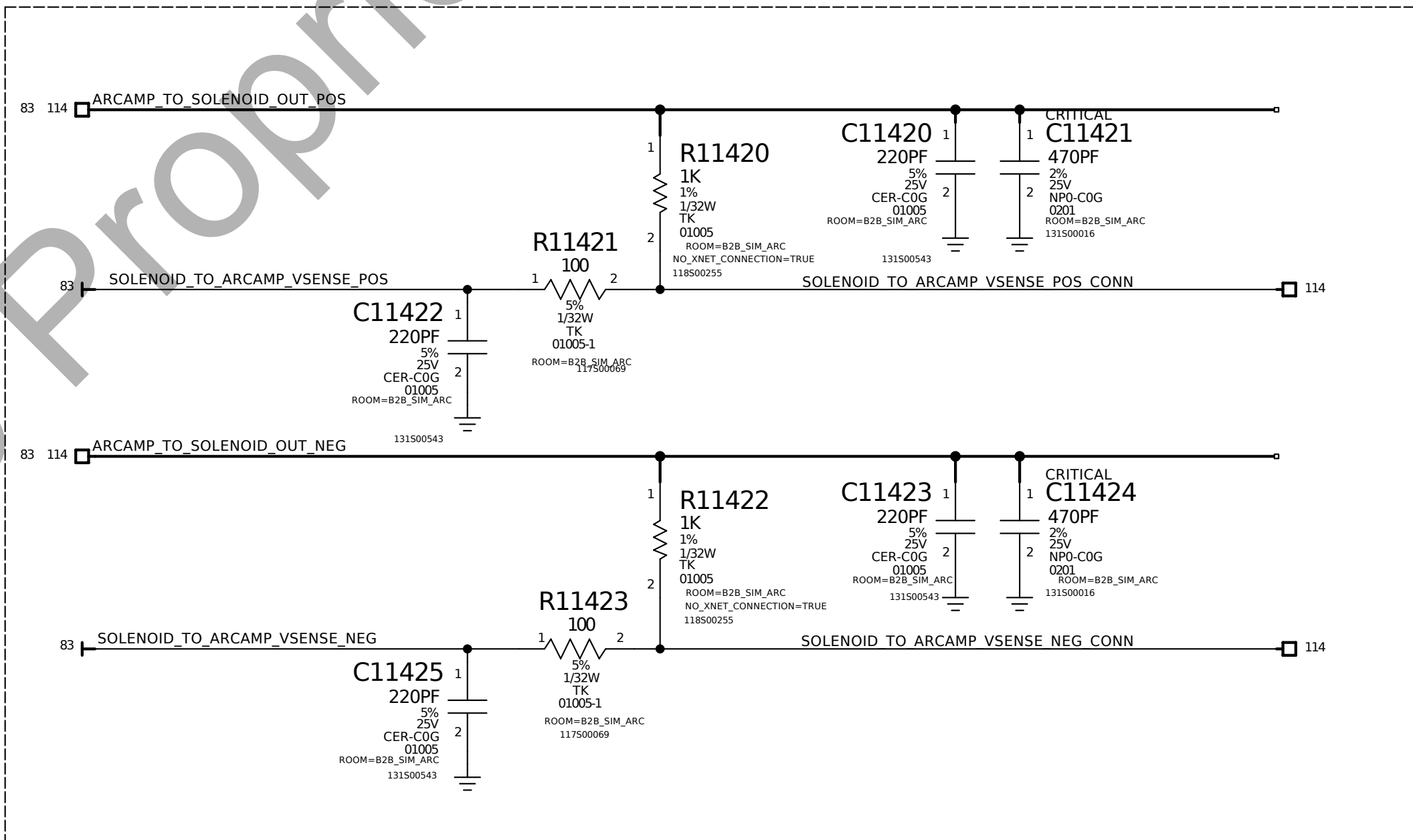
SIM0 IO FILTERS



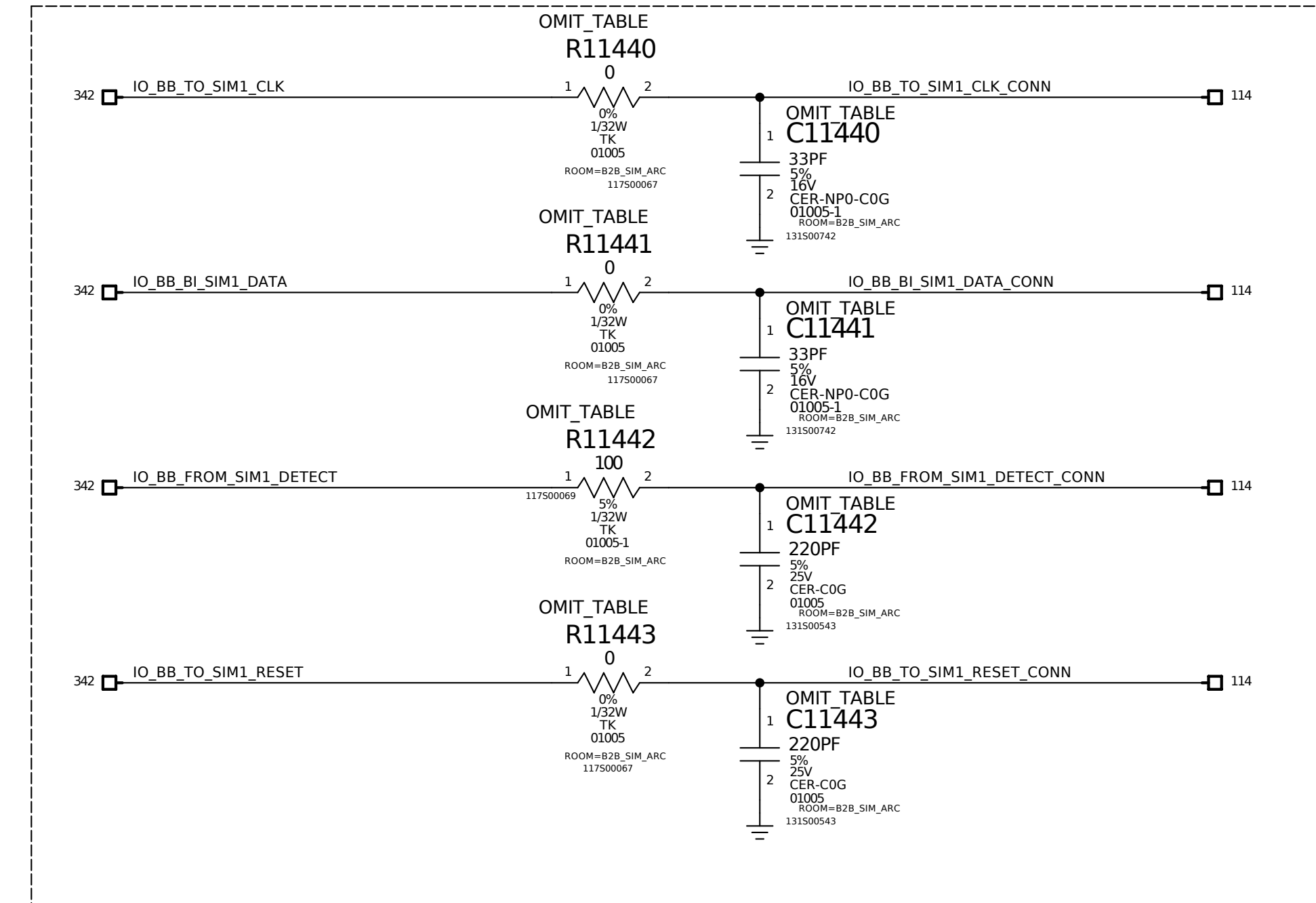
POWER FILTERS



ARC SPEAKER




SIM1 IO FILTERS



SIM Bus/Power Stuffing Options:

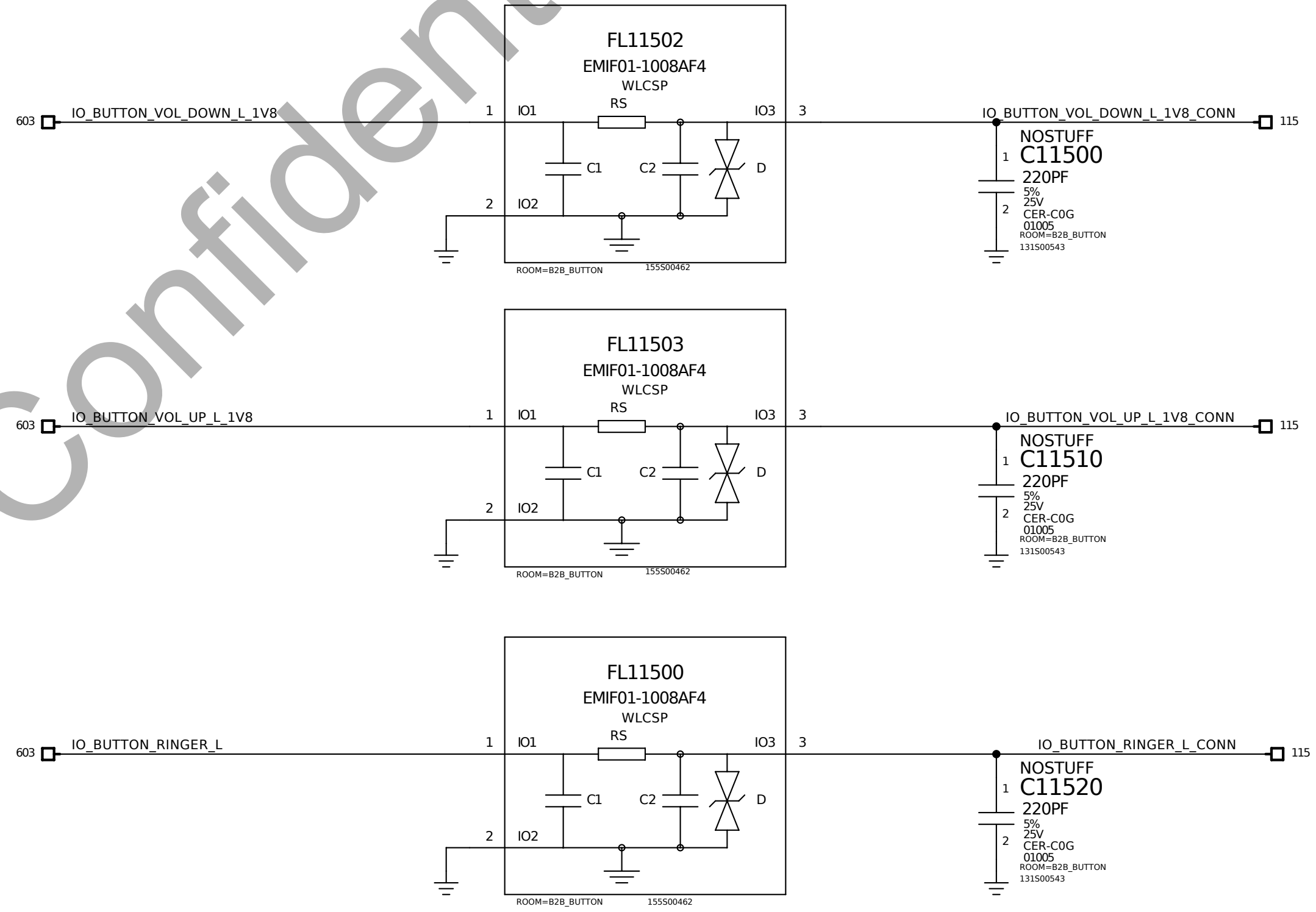
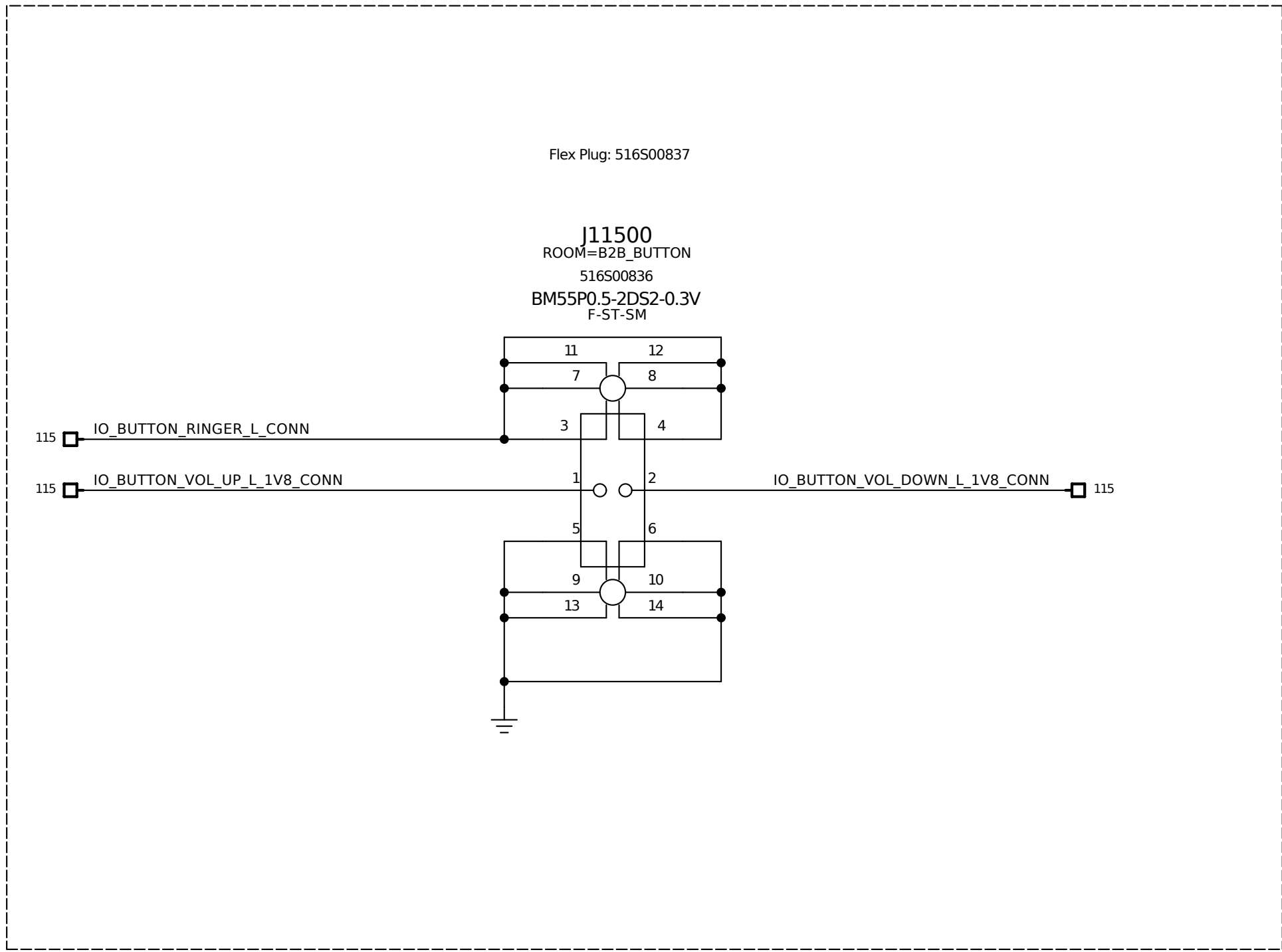
For mmW, Ground flex connections and nostuff series R

| PART NUMBER | BOPTION            | REFERENCE DESIGNATORS                                   | QTY | DESCRIPTION                       |
|-------------|--------------------|---|-----|-----------------------------------|
| 117500067   | RFSKU-US           | C11401,C11402,C11430,C11433,C11440,C11443               | 10  | RES,TK,0 OHM,1/32W,01005          |
| 117500067   | RFSKU-RS RFSKU:ROW | C11402,C11440,C11443,R11401,R11430,R11431,R11433        | 9   | RES,TK,0 OHM,1/32W,01005          |
| 131500543   | RFSKU-RS RFSKU:ROW | C11401,C11432,C11433                                    | 3   | CAP,CER,COG,220PF,5%,25V,01005    |
| 117500069   | RFSKU-RS RFSKU:ROW | R11432  | 1   | RES,TK,100 OHM,5%,1/32W,01005     |
| 131500742   | RFSKU-RS RFSKU:ROW | C11430,C11431   | 2   | CAP,CER,NPO/COG,33PF,5%,16V,01005 |
| 117500067   | RFSKU:CHN          | R11401,R11402,R11430,R11431,R11433,R11440,R11441,R11443 | 8   | RES,TK,0 OHM,1/32W,01005          |
| 131500543   | RFSKU:CHN          | C11401,C11402,C11432,C11433,C11442,C11443               | 6   | CAP,CER,COG,220PF,5%,25V,01005    |
| 131500742   | RFSKU:CHN          | C11430,C11431,C11440,C11441                             | 4   | CAP,CER,NPO/COG,33PF,5%,16V,01005 |
| 117500069   | RFSKU:CHN          | R11432,R11442   | 2   | RES,TK,100 OHM,5%,1/32W,01005     |

|   |  |
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Button B2B

CONNECTOR



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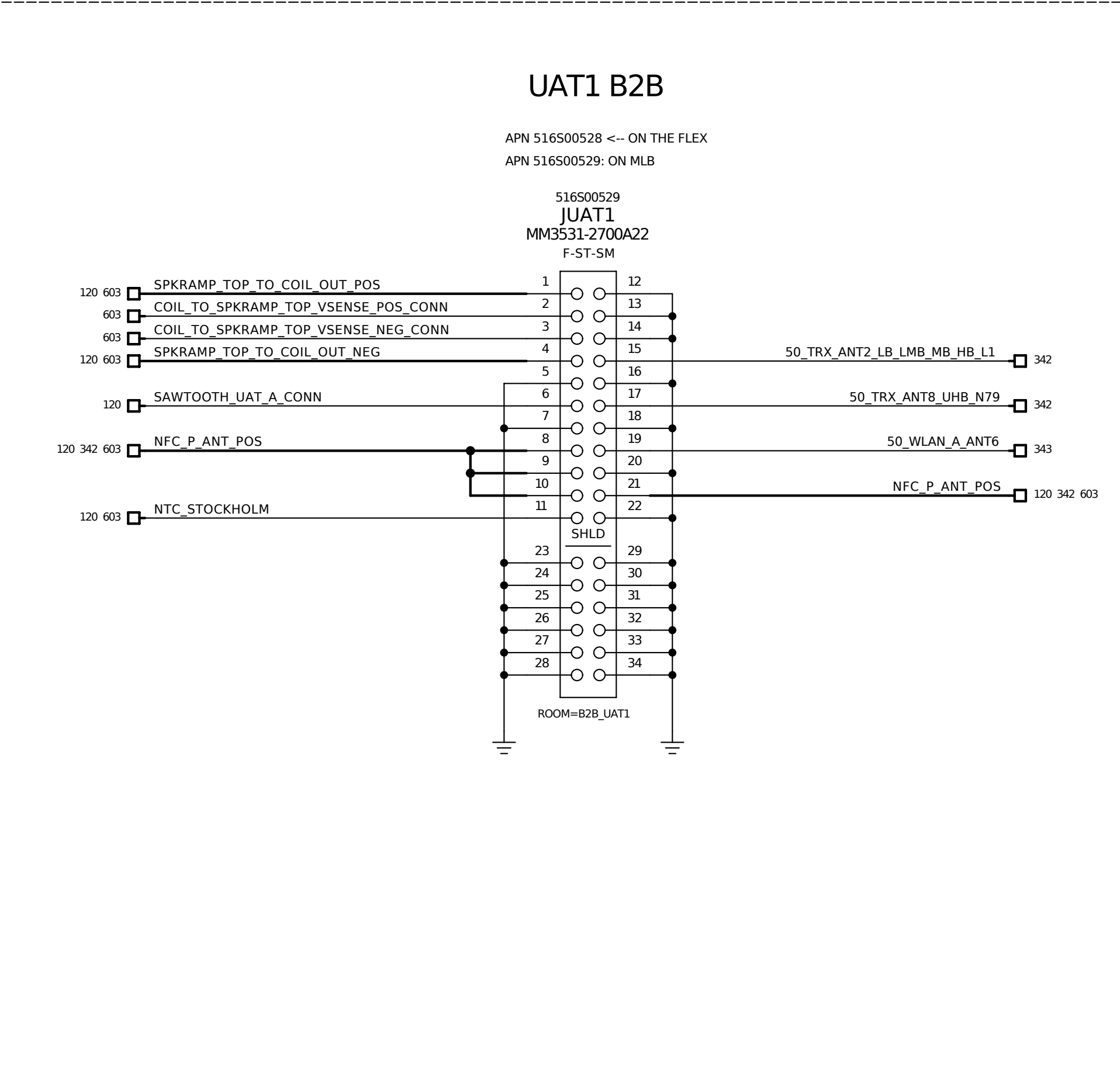


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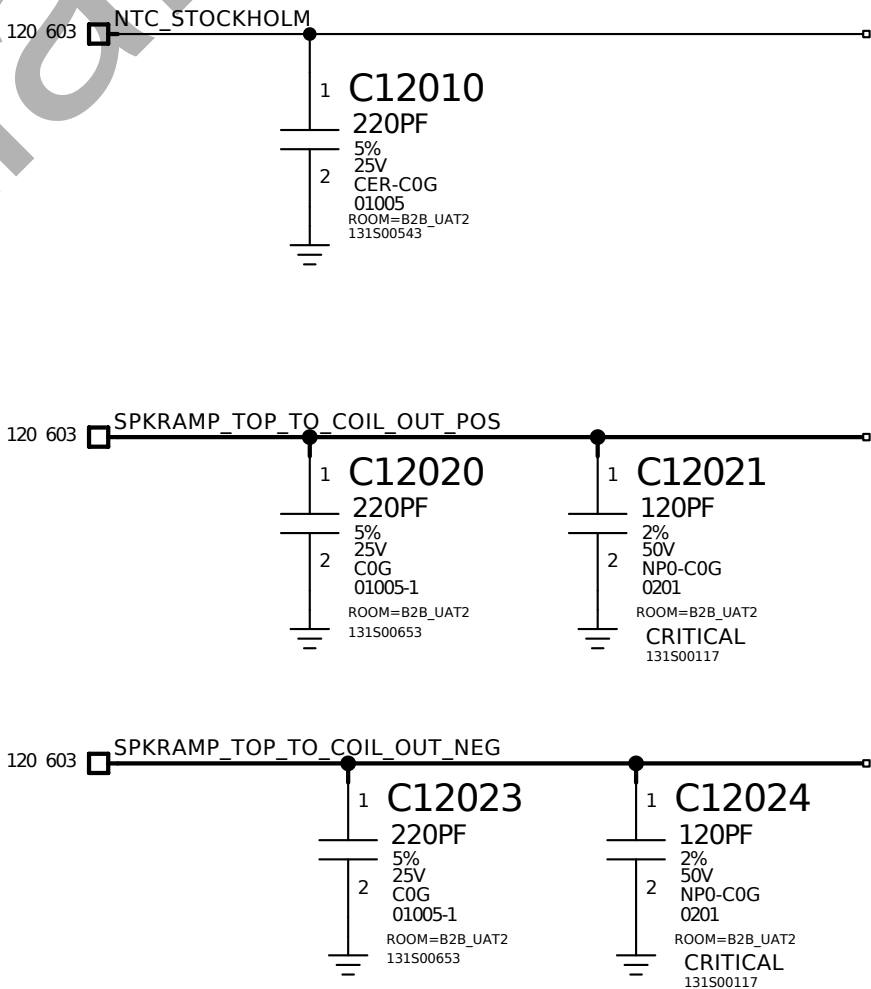
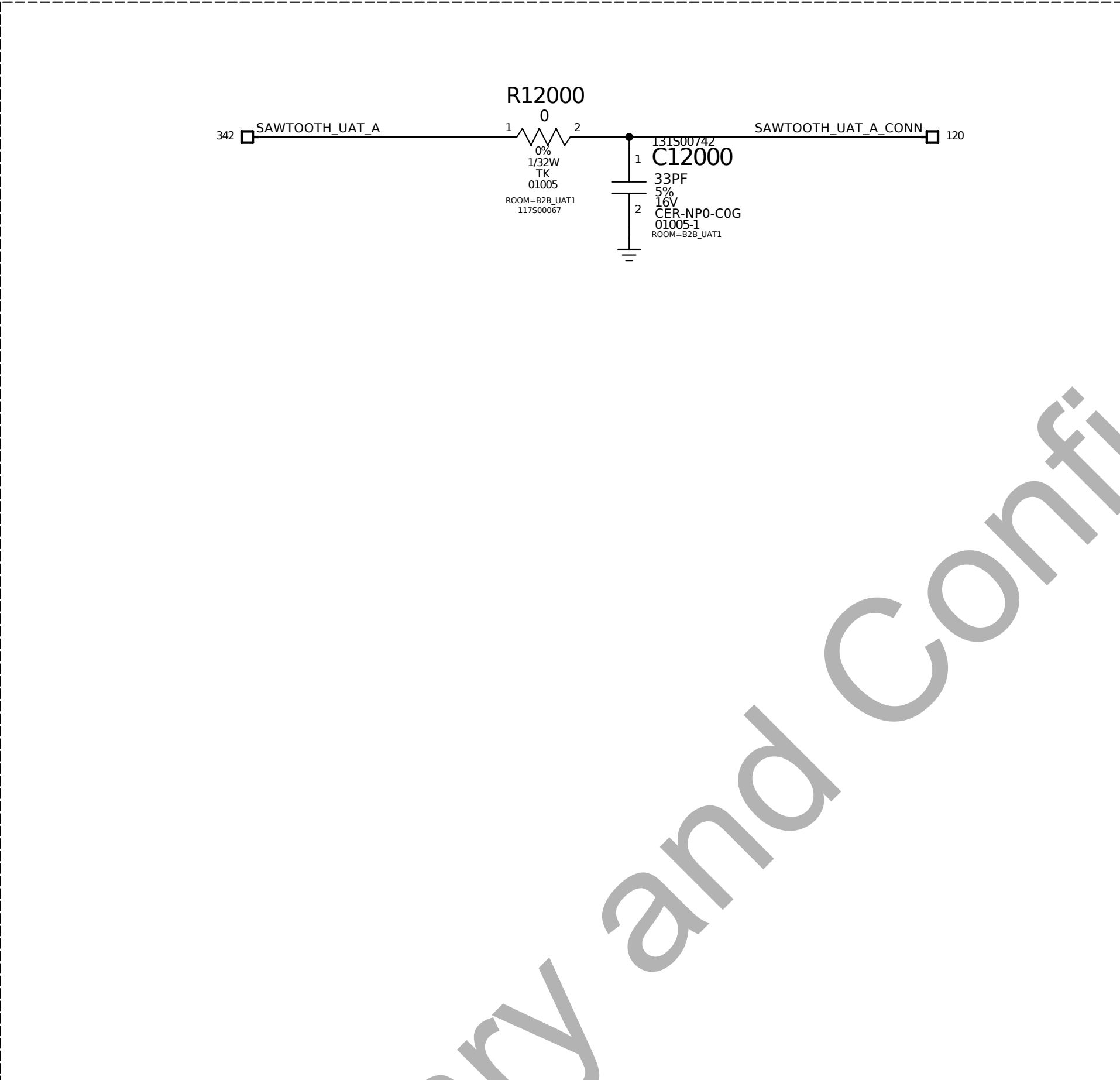


UAT1 B2B

CONNECTOR



SUBUS FILTERS

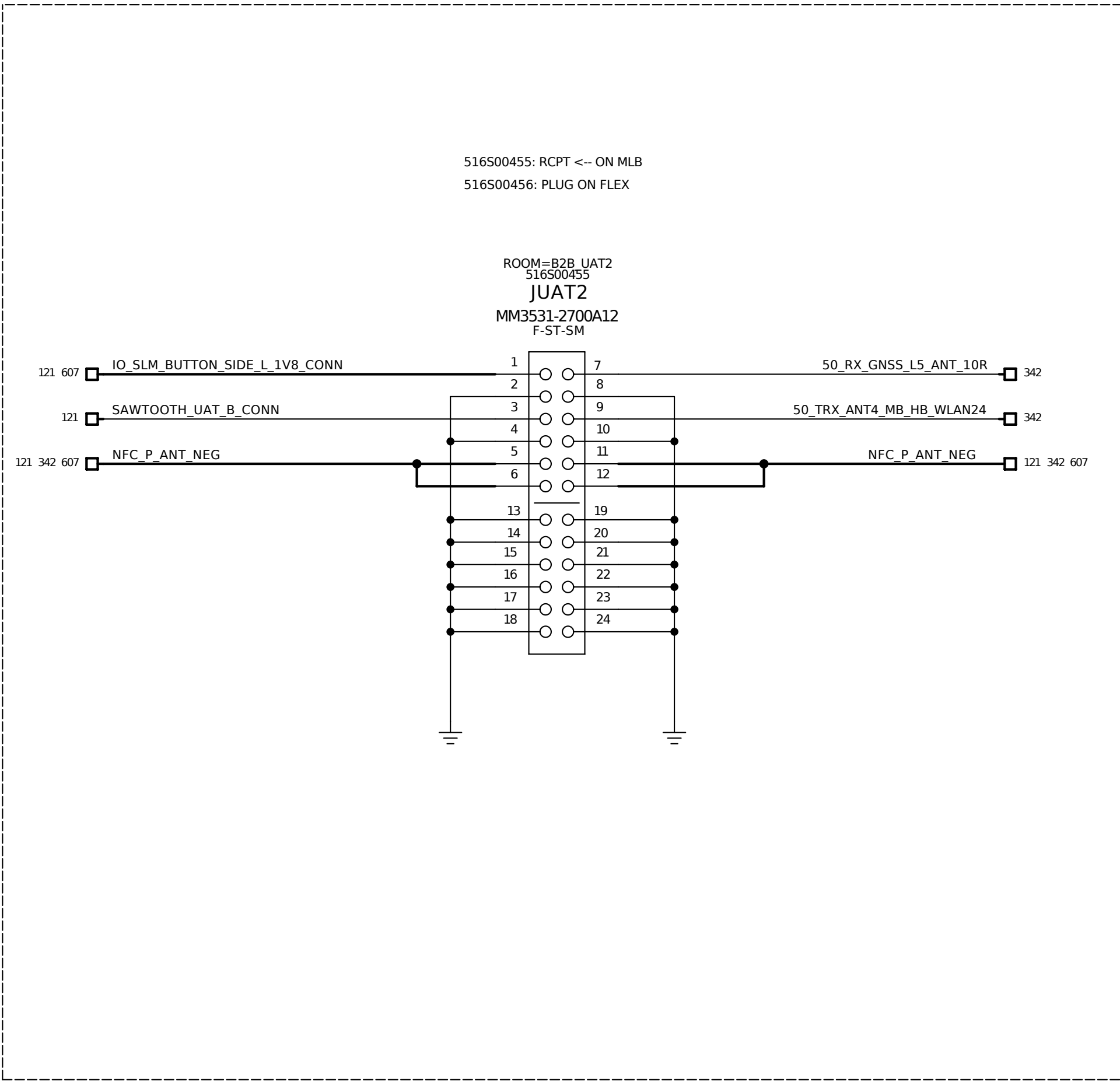


UAT ANTENNAS

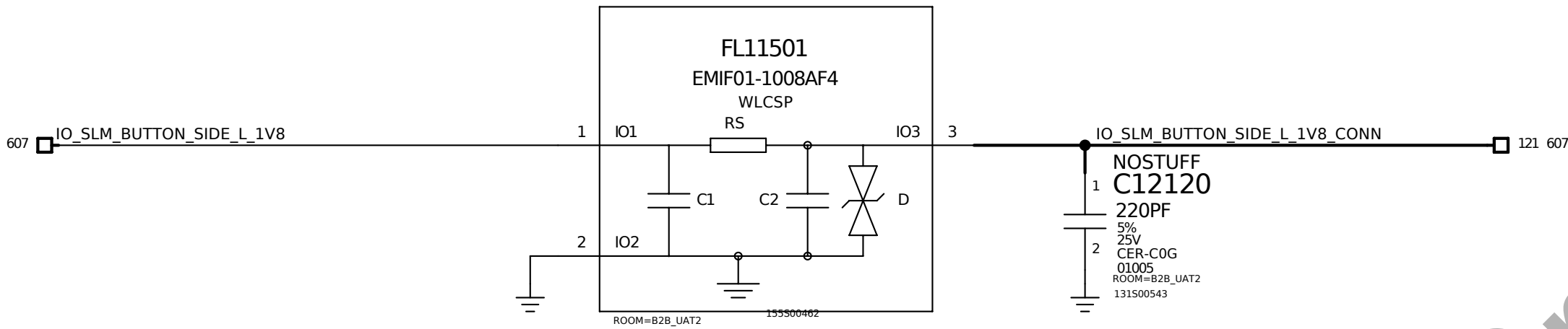
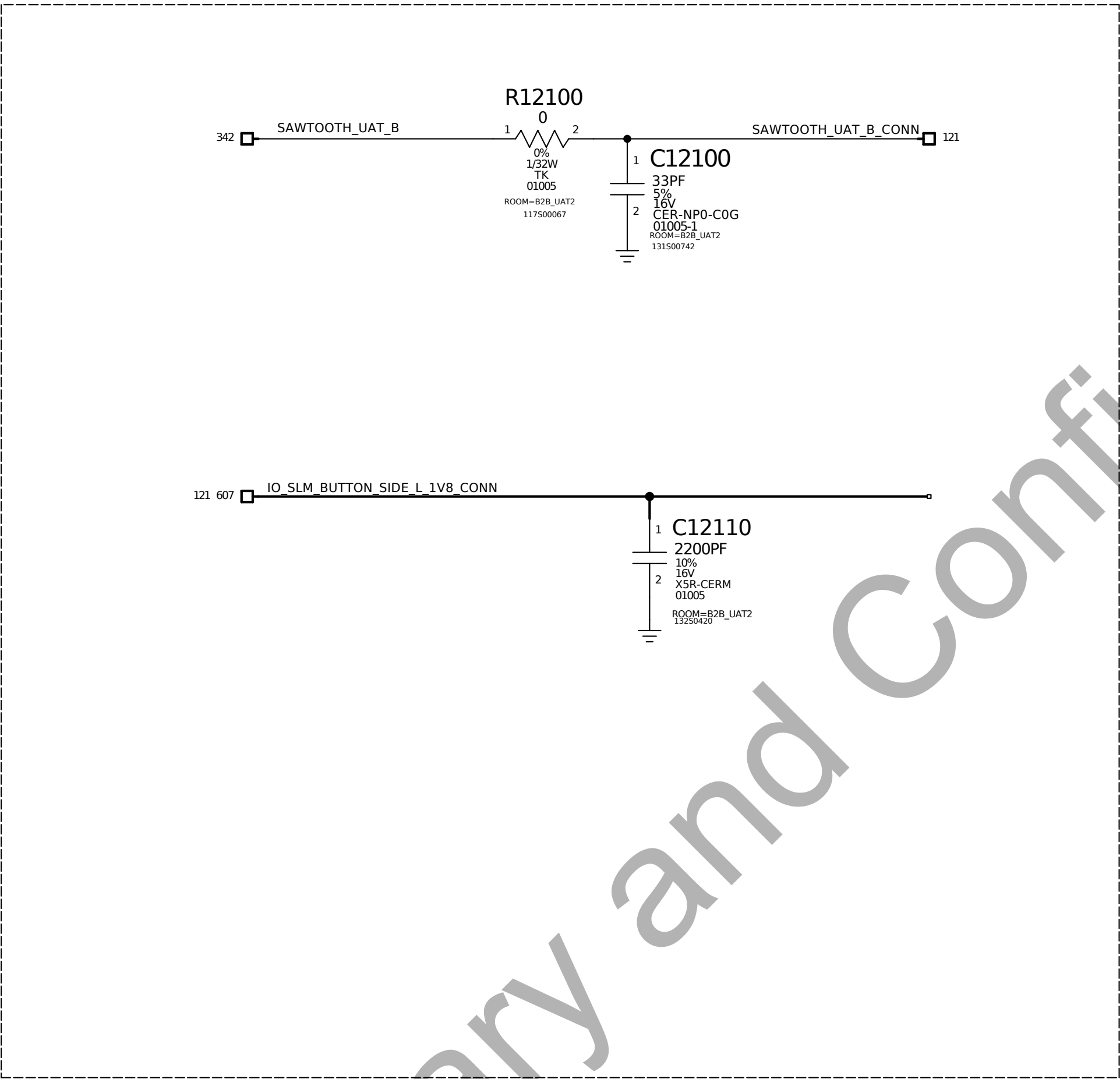
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| ANT2      | ANT4   | ANT6 | ANT8 |
| LB        | MB/HB  | 5GHZ | UHB  |
| LMB/MB/HB | 2.4GHZ |      | SAM  |
| L1 GNSS   | UHB    |      |      |

UAT2 B2B

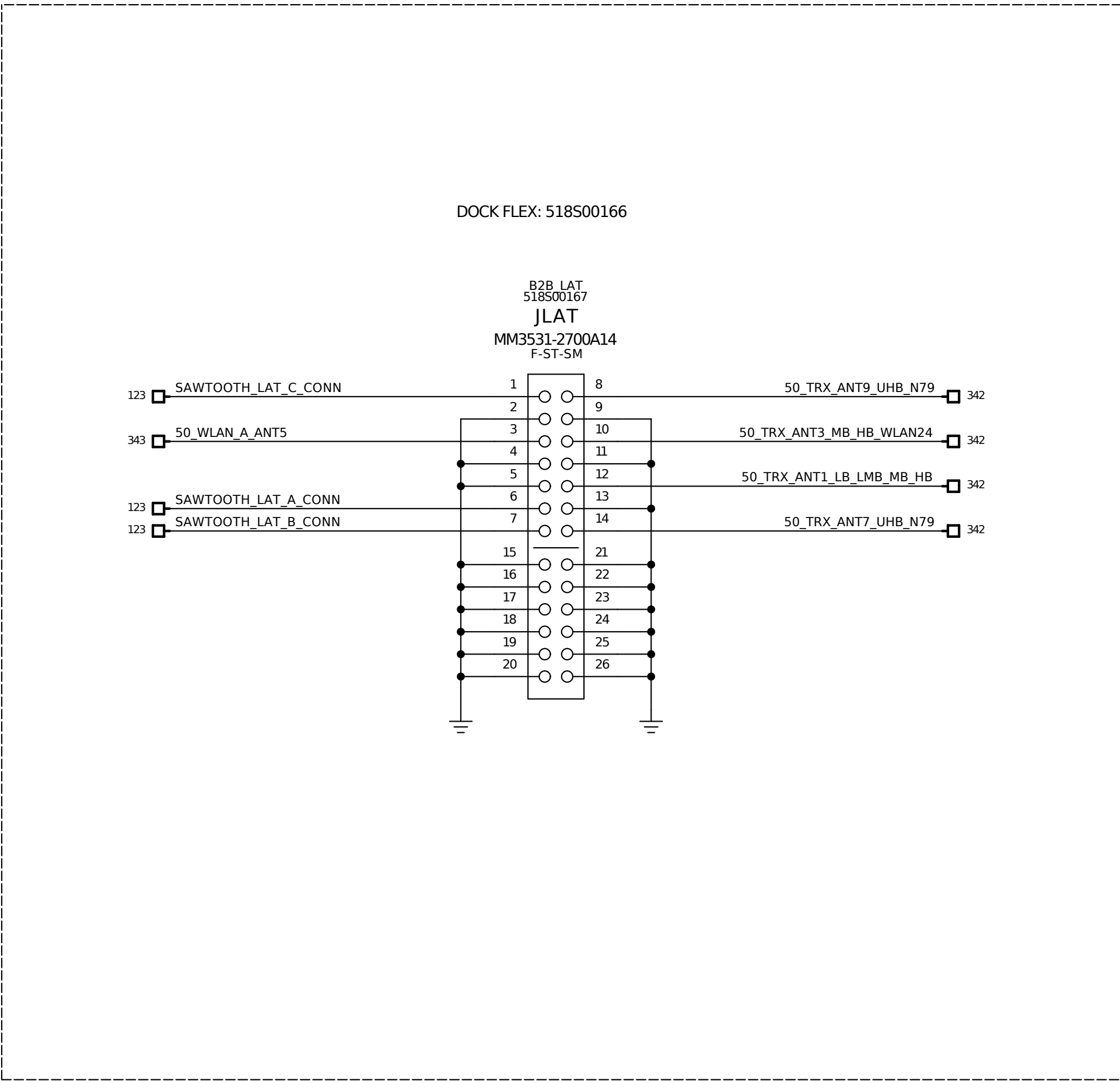
CONNECTOR



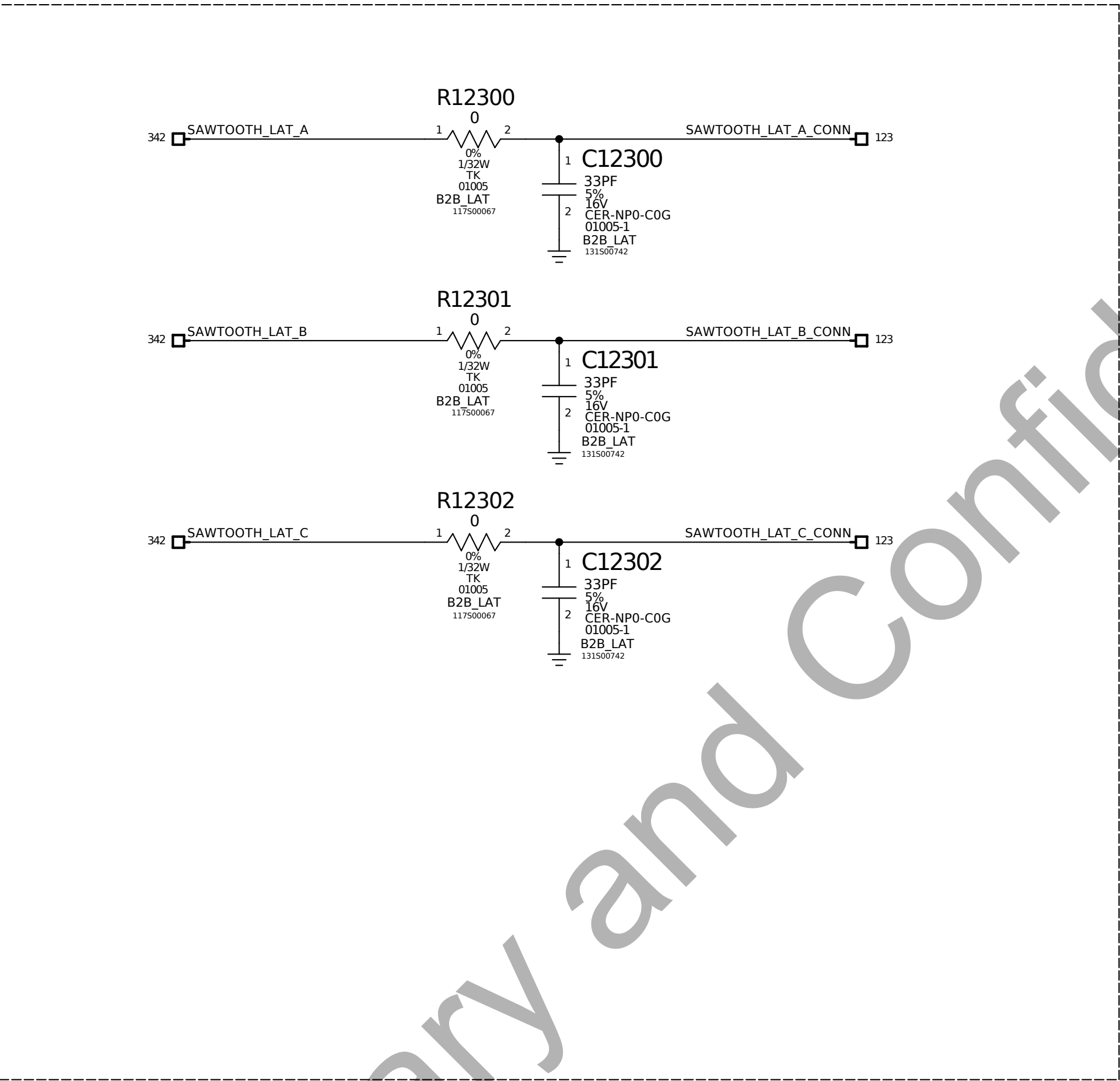
SUBUS FILTERS



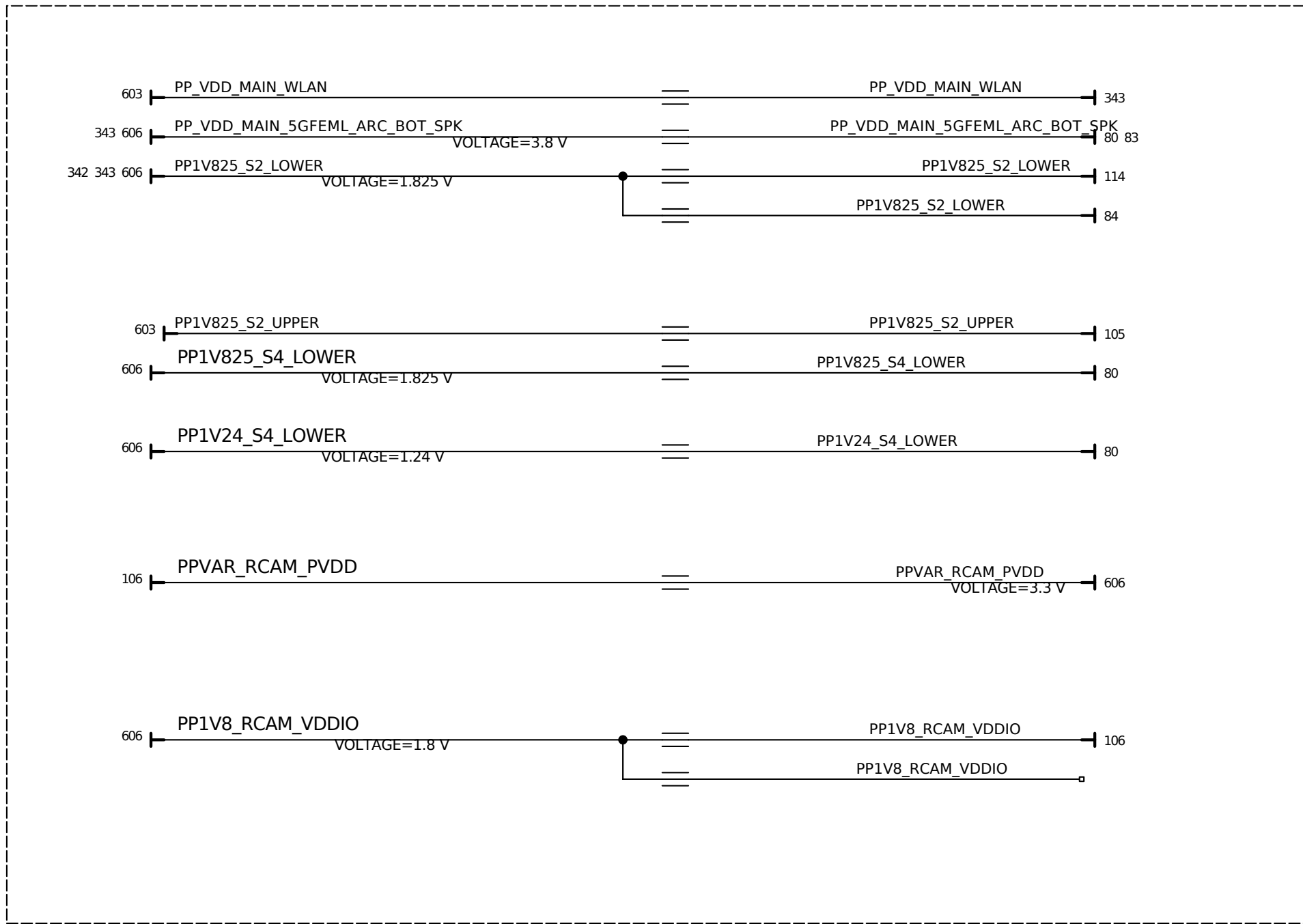
CONNECTOR



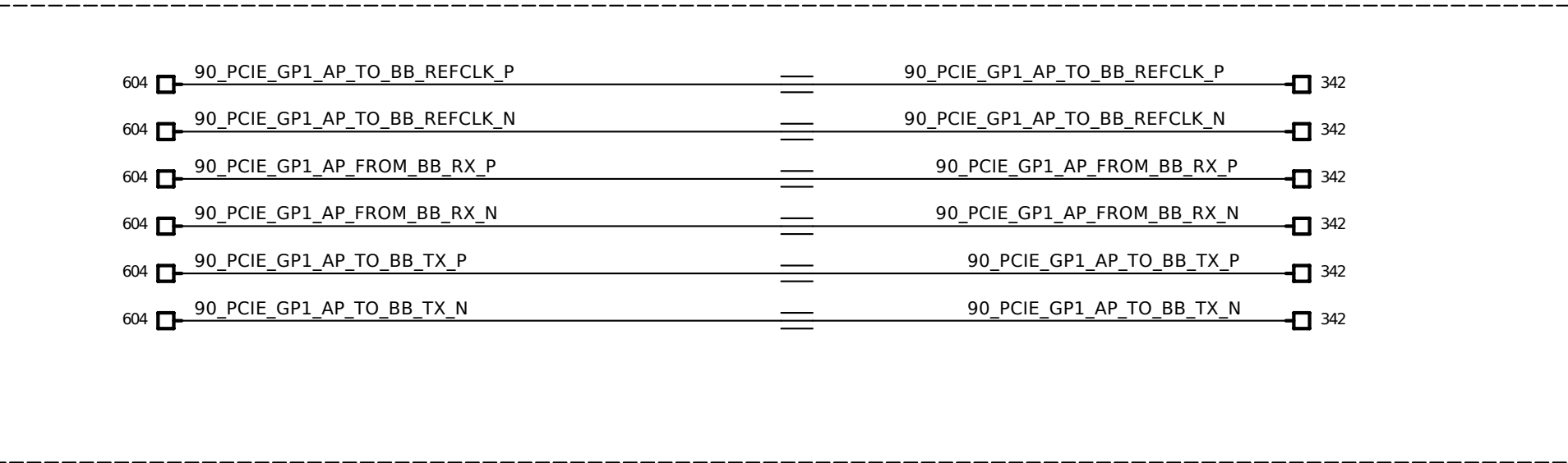
SUBUS FILTERS



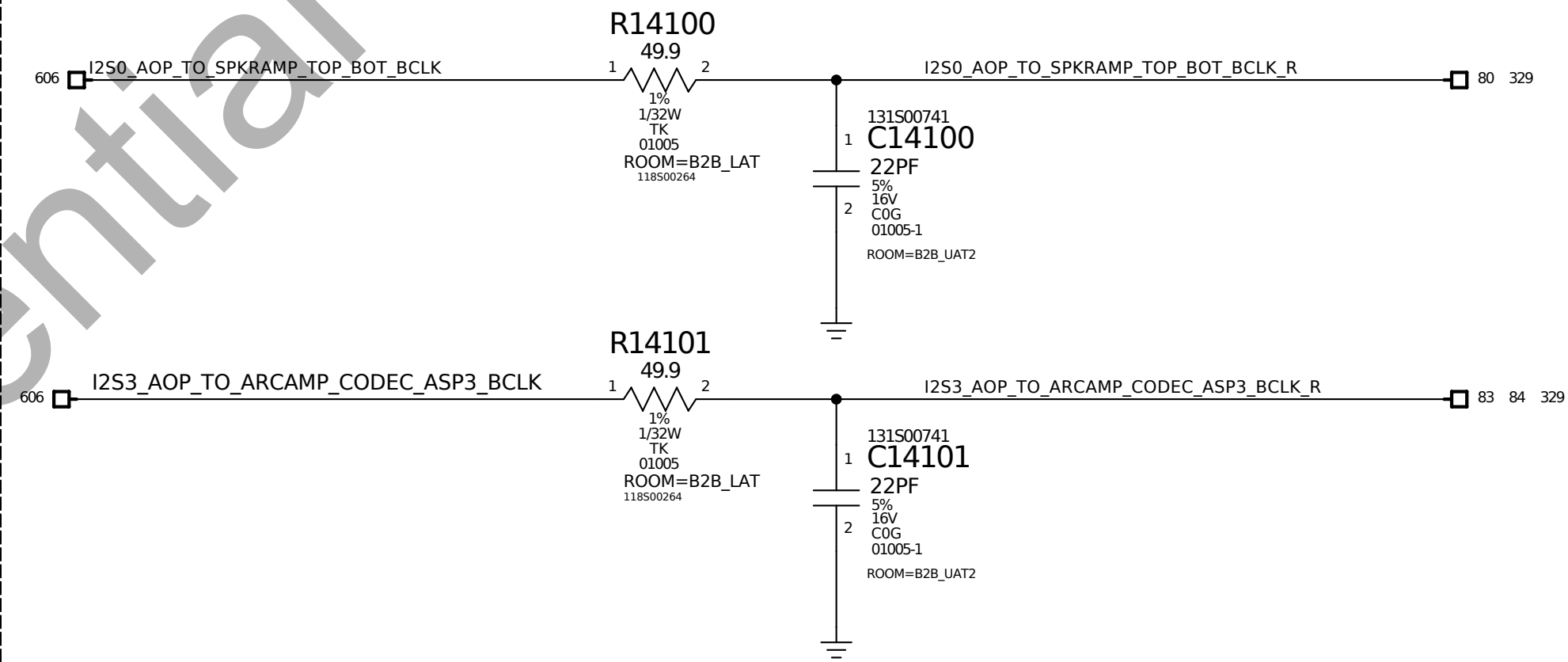
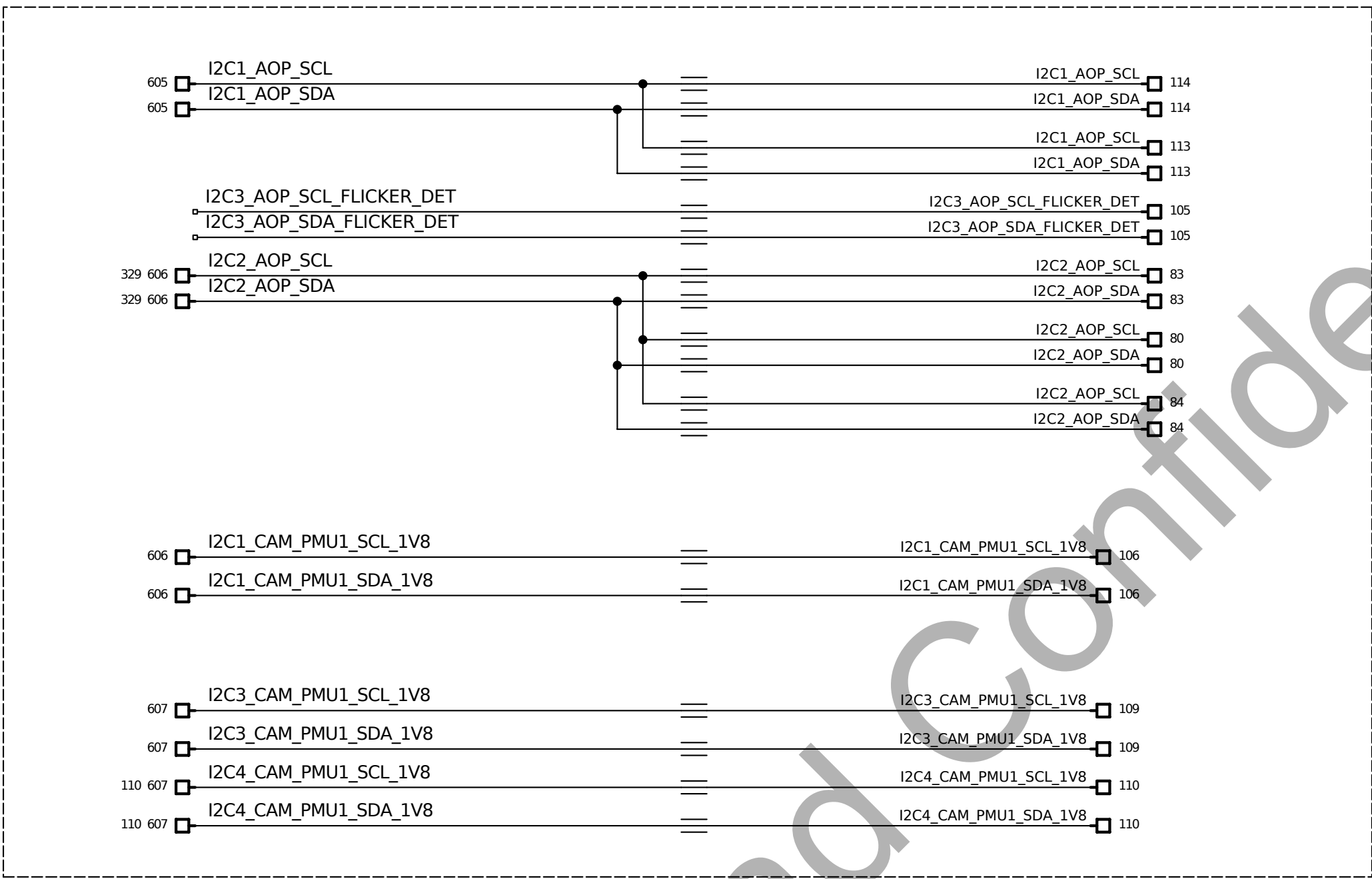
POWER



PCIE

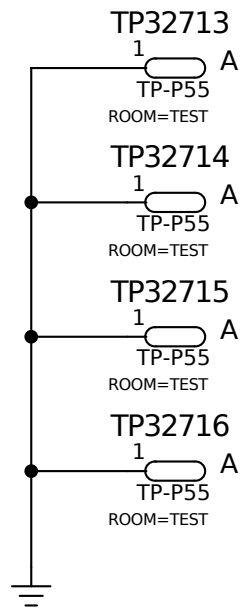


I2C

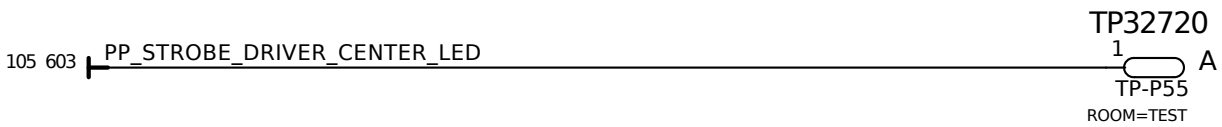


BG Test Points

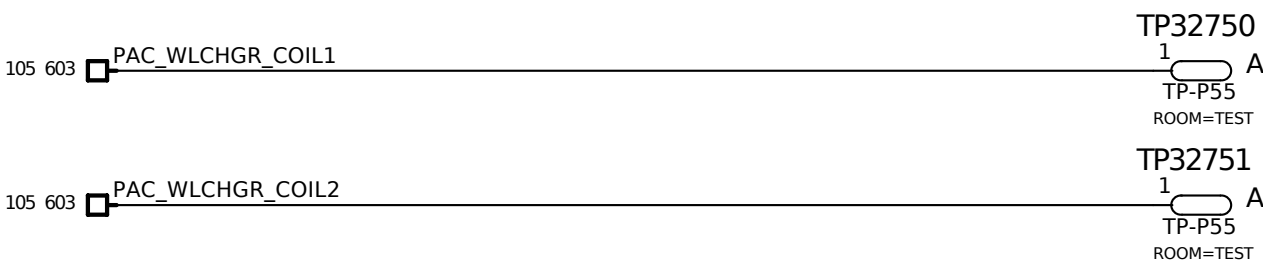
Power + GND



STROBE



Dotara Power



## D

## C

## B

**A**



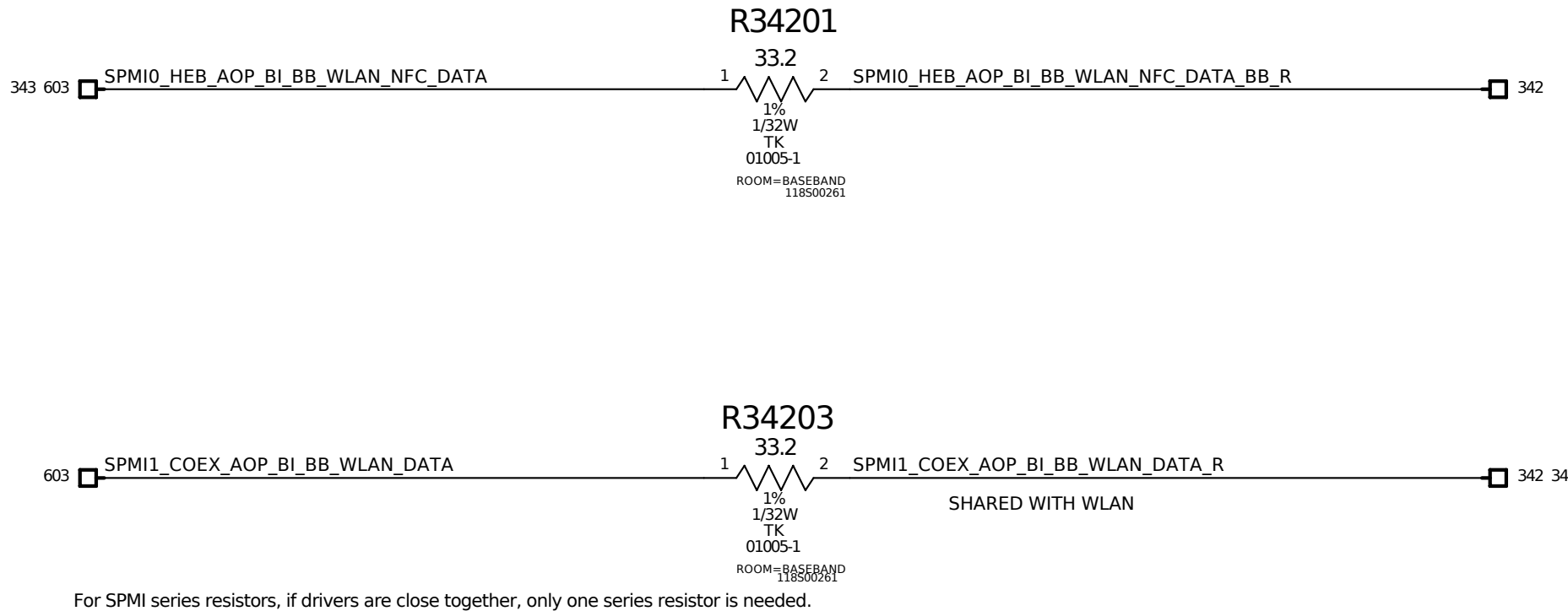
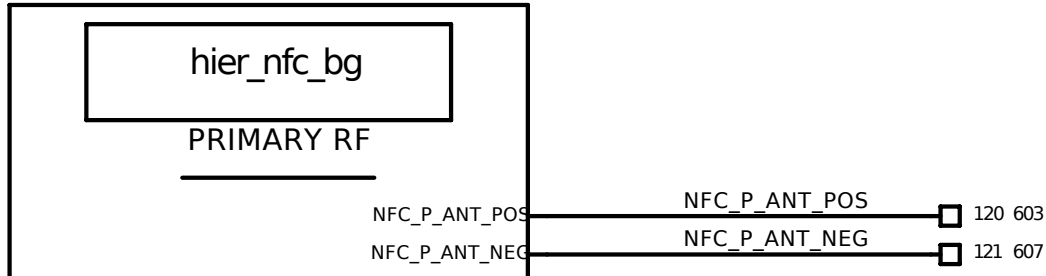
# HIERARCHIES

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                          |
|--------------------|------------------|-----------------------|----------------------------------|
| 13250420           | 132500264        | C2134_C               | CAP,CER,X5R,2200PF,10%,16V,01005 |
| 132500308          | 132500264        | C2134_C               | CAP,X5R,2200PF,10%,16V,KYO,01005 |

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                      |
|--------------------|------------------|-----------------------|------------------------------|
| 13850775           | 13850860         | C1215_C               | CAP,CER,X6S,1UF,10%,25V,0402 |

HIER\_RADIO\_BG

HIER\_NFC\_BG



| SYNCING:  |                                     |
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hier\_wifi\_bg

R1

POWER

SE

GPIO

PCIE

SPMI

UAT 2G PORTS

UAT 5G PORTS

LAT 5G PORTS

LAT 2G PORTS

PP\_VDD\_MAIN\_WLAN

PP\_VDD\_MAIN\_2GFEMU

PP\_VDD\_MAIN\_5GFEML\_ARC\_BOT\_SPK

PP\_VDD\_MAIN\_5GFEMU

PP1V825\_S4\_UPPER

PP1V24\_S4\_UPPER

PP1V825\_S2\_LOWER

PP1V825\_S4\_UPPER

CLK\_GPIO\_S4\_PMU\_TO\_WLAN\_32K

GPIO\_SEQ\_S4\_PMU\_TO\_WLAN\_REG\_ON

GPIO\_PMU\_FROM\_WLAN\_HOST\_WAKE

90\_PCIE\_GP0\_AP\_FROM\_WLAN\_RX\_P

90\_PCIE\_GP0\_AP\_FROM\_WLAN\_RX\_N

90\_PCIE\_GP0\_AP\_TO\_WLAN\_TX\_P

90\_PCIE\_GP0\_AP\_TO\_WLAN\_TX\_N

90\_PCIE\_GP0\_AP\_TO\_WLAN\_REFCLK\_P

90\_PCIE\_GP0\_AP\_TO\_WLAN\_REFCLK\_N

PCIE\_GP0\_AP\_TO\_WLAN\_PERST\_L

PCIE\_GP0\_AP\_BI\_WLAN\_CLKREQ\_L

SPMIO\_HEB\_AOP\_BI\_BB\_WLAN\_NFC\_DATA\_R

SPMIO\_HEB\_AOP\_TO\_BB\_WLAN\_NFC\_CLK

SPMI1\_COEX\_AOP\_BI\_BB\_WLAN\_DATA\_R

SPMI1\_COEX\_AOP\_TO\_BB\_WLAN\_CLK

50\_WLAN\_G\_C1\_TXRX\_FEM\_M

GPIO\_WLAN\_TO\_LAT\_2G\_FEM\_LNA\_BYP\_EN

RFFE\_WLAN\_TO\_LAT\_2G\_FEM\_RST\_L

SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_CLK

SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_DATA

PP\_VDD\_MAIN\_WLAN

PP\_VDD\_MAIN\_2GFEMU

PP\_VDD\_MAIN\_5GFEML

PP\_VDD\_MAIN\_5GFEMU

PMU

PP1V8\_S4\_UAT

PP1V2\_S4

PP1V8\_S2\_LAT

PP1V8\_S4\_WLAN

CLK\_GPIO\_PMU\_TO\_WLAN\_R1\_32K

GPIO\_PMU\_TO\_WLAN\_REG\_ON

GPIO\_PMU\_FROM\_WLAN\_HOST\_WAKE

PCIE

90\_PCIE\_WLAN\_TO\_AP\_TX\_P

90\_PCIE\_WLAN\_TO\_AP\_TX\_N

90\_PCIE\_AP\_TO\_WLAN\_TX\_P

90\_PCIE\_AP\_TO\_WLAN\_TX\_N

90\_PCIE\_AP\_TO\_WLAN\_REFCLK\_P

90\_PCIE\_AP\_TO\_WLAN\_REFCLK\_N

PCIE\_AP\_TO\_WLAN\_PERST\_1V2\_L

PCIE\_AP\_BI\_WLAN\_CLKREQ\_L

SPMI

SPMI\_EVENTS\_AOP\_TO\_WLAN\_NFC\_DATA

SPMI\_EVENTS\_AOP\_TO\_WLAN\_NFC\_CLK

WLAN\_SPMI\_IDC\_DATA

WLAN\_SPMI\_IDC\_CLK

UAT 2G PORTS

50\_WLAN\_G\_BT\_ANT4\_NPLXR

50\_WLAN\_G\_BT\_ANT4\_NPLXR

50\_WLAN\_A\_ANT6

50\_WLAN\_A\_ANT5

50\_WLAN\_G\_C1\_TXRX\_FEM\_M

GPIO\_WLAN\_TO\_LAT\_2G\_FEM\_LNA\_BYP\_EN

RFFE\_WLAN\_TO\_LAT\_2G\_FEM\_RST\_L

SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_CLK

SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_DATA

ANALOG\_LAT\_2G\_FEM\_TO\_WLAN\_PD1

50\_WLAN\_G\_BT\_LAT

50\_WLAN\_G\_BT\_ANT3\_NPLXR

603

603

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329 603

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80 329

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R34300

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1 2

SPMIO\_HEB\_AOP\_BI\_BB\_WLAN\_NFC\_DATA\_R

343

1/32W


TK

01005-1

ROOM=WLAN

131000261

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT                                |
|--------------------|------------------|-----------------------|--|
| 138500109          | 13850914         | C408_W                | CAP,X5R,2.2UF,20%,6.3V,0201,0.35MM,KYQ |

|  |  |  |  |
|--|--|--|--|
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|   |     |      |                                     |    |      |     |     |  |      |     |
|---|-----|------|-------------------------------------|----|------|-----|-----|--|------|-----|
| 8   | 7   | 6    | 5                                   | 4  | 3    | 2   | 1   |  |      |     |
| <div><div><div>998 33266</div><div>J_INT_BG</div><div>INTERPOSER-TOP-BG-V59</div><div>SMT-PAD</div><div>SYM 1 OF 6</div></div><div><div>998 33266</div><div>J_INT_BG</div><div>INTERPOSER-TOP-BG-V59</div><div>SMT-PAD</div><div>SYM 2 OF 6</div></div></div> |     |      |                                     |    |      |     |     |  |      |     |
| D   | 603 | <<>> | GND                                 | 1  | I01  | 603 | 91  | NTC_RADIO_PA_P                         | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 2  | I02  | 603 | 92  | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 3  | I03  | 603 | 93  | ANALOG_FLICKER_DET_VIS_TO_CODEC_AIN6_N | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 4  | I04  | 603 | 94  | ANALOG_FLICKER_DET_VIS_TO_CODEC_AIN6_P | <<>> | 603 |
|   | 603 | <<>> | PP1V17_FCAM_DVDD                    | 5  | I05  | 603 | 95  | GND                                    | <<>> | 603 |
|   | 603 | <<>> | CLK_CAM_PMU1_TO_FCAM_12M_1V8        | 6  | I06  | 603 | 96  | ANALOG_FLICKER_DET_IR_TO_CODEC_AIN5_N  | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 7  | I07  | 603 | 97  | ANALOG_FLICKER_DET_IR_TO_CODEC_AIN5_P  | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 8  | I08  | 603 | 98  | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 9  | I09  | 603 | 99  | ANALOG_MIC2_REAR_TO_CODEC_AIN2_P       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 10 | I010 | 603 | 100 | ANALOG_MIC2_REAR_TO_CODEC_AIN2_N       | <<>> | 603 |
| C   | 603 | <<>> | 90_LPDP_ISP_FROM_FCAM_RX_D0_CONN_P  | 11 | I011 | 603 | 101 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | 90_LPDP_ISP_FROM_FCAM_RX_D0_CONN_N  | 12 | I012 | 603 | 102 | PP_CODEC_TO_MIC2_REAR_BIAS             | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 13 | I013 | 603 | 103 | RET_CODEC_FROM_MIC2_REAR               | <<>> | 603 |
|   | 603 | <<>> | 90_LPDP_ISP_FROM_FCAM_RX_D1_CONN_N  | 14 | I014 | 603 | 104 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | 90_LPDP_ISP_FROM_FCAM_RX_D1_CONN_P  | 15 | I015 | 603 | 105 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 16 | I016 | 603 | 106 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 17 | I017 | 603 | 107 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 18 | I018 | 603 | 108 | PP_STROBE_DRIVER_CENTER_LED            | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 19 | I019 | 603 | 109 | PP_STROBE_DRIVER_CENTER_LED            | <<>> | 603 |
|   | 603 | <<>> | COIL_TO_SPKRAMP_TOP_VSENSE_POS_CONN | 20 | I020 | 603 | 110 | GND                                    | <<>> | 603 |
| B   | 603 | <<>> | COIL_TO_SPKRAMP_TOP_VSENSE_NEG_CONN | 21 | I021 | 603 | 111 | I2C3_AOP_SDA_FLICKER_DET               | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 22 | I022 | 603 | 112 | I2C3_AOP_SCL_FLICKER_DET               | <<>> | 603 |
|   | 603 | <<>> | SPKRAMP_TOP_TO_COIL_OUT_NEG         | 23 | I023 | 603 | 113 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | SPKRAMP_TOP_TO_COIL_OUT_POS         | 24 | I024 | 603 | 114 | PP1V825_S2_UPPER                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 25 | I025 | 603 | 115 | PP3V0_FLICKER_DET_VDD_S0               | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 26 | I026 | 603 | 116 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 27 | I027 | 603 | 117 | PCIE_GP0_AP_BI_WLAN_CLKREQ_L           | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 28 | I028 | 603 | 118 | NTC_STROBE_MODULE                      | <<>> | 603 |
|   | 603 | <<>> | NFC_P_ANT_POS                       | 29 | I029 | 603 | 119 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | NFC_P_ANT_POS                       | 30 | I030 | 603 | 120 | GND                                    | <<>> | 603 |
| A   | 603 | <<>> | GND                                 | 31 | I031 | 603 | 121 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | NFC_P_ANT_POS                       | 32 | I032 | 603 | 122 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 33 | I033 | 603 | 123 | PAC_WLCHGR_COIL1                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 34 | I034 | 603 | 124 | PAC_WLCHGR_COIL1                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 35 | I035 | 603 | 125 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 36 | I036 | 603 | 126 | PAC_WLCHGR_COIL2                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 37 | I037 | 603 | 127 | PAC_WLCHGR_COIL2                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 38 | I038 | 603 | 128 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 39 | I039 | 603 | 129 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 40 | I040 | 603 | 130 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 41 | I041 | 603 | 131 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 42 | I042 | 603 | 132 | 90_PCIE_GP0_AP_TO_WLAN_TX_P            | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 43 | I043 | 603 | 133 | 90_PCIE_GP0_AP_TO_WLAN_TX_N            | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 44 | I044 | 603 | 134 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 45 | I045 | 603 | 135 | 90_PCIE_GP0_AP_FROM_WLAN_RX_N          | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 46 | I046 | 603 | 136 | 90_PCIE_GP0_AP_FROM_WLAN_RX_P          | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 47 | I047 | 603 | 137 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 48 | I048 | 603 | 138 | 90_PCIE_GP0_AP_TO_WLAN_REFCLK_P        | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 49 | I049 | 603 | 139 | 90_PCIE_GP0_AP_TO_WLAN_REFCLK_N        | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 50 | I050 | 603 | 140 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 51 | I051 | 603 | 141 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 52 | I052 | 603 | 142 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 53 | I053 | 603 | 143 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 54 | I054 | 603 | 144 | SPMIO_HEB_AOP_BI_BB_WLAN_NFC_DATA      | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 55 | I055 | 603 | 145 | SPMIO_HEB_AOP_TO_BB_WLAN_NFC_CLK       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 56 | I056 | 603 | 146 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 57 | I057 | 603 | 147 | PCIE_GP0_AP_TO_WLAN_PERST_L            | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 58 | I058 | 603 | 148 | GPIO_AP_FROM_WLAN_TIME_SYNC            | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 59 | I059 | 603 | 149 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | NTC_STOCKHOLM                       | 60 | I060 | 603 | 150 | CLK_GPIO_S4_PMU_TO_WLAN_32K            | <<>> | 603 |
|   | 603 | <<>> | PP1V998_FCAM_VDDAF                  | 61 | I061 | 603 | 151 | GPIO_PMU_FROM_WLAN_HOST_WAKE           | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 62 | I062 | 603 | 152 | SPM11_COEX_AOP_TO_BB_WLAN_CLK          | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 63 | I063 | 603 | 153 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 64 | I064 | 603 | 154 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 65 | I065 | 603 | 155 | GPIO_S4_SE_TO_BT_PKT_RDY               | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 66 | I066 | 603 | 156 | SPM11_COEX_AOP_BI_BB_WLAN_DATA         | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 67 | I067 | 603 | 157 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GPIO_AP_INTERPOSER_CANARY6_A_TO_B   | 68 | I068 | 603 | 158 | I2C_S4_BT_TO_SE_SCL                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 69 | I069 | 603 | 159 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 70 | I070 | 603 | 160 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 71 | I071 | 603 | 161 | I2C_S4_BT_TO_SE_SDA                    | <<>> | 603 |
|   | 603 | <<>> | PP1V24_S4_RADIO                     | 72 | I072 | 603 | 162 | GPIO_SEQ_S4_PMU_TO_WLAN_REG_ON         | <<>> | 603 |
|   | 603 | <<>> | PP1V825_S4_UPPER                    | 73 | I073 | 603 | 163 | PP_VDD_MAIN_WLAN                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 74 | I074 | 603 | 164 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 75 | I075 | 603 | 165 | GPIO_AP_FROM_BT_AUDIO_SYNC             | <<>> | 603 |
|   | 603 | <<>> | PP_VDD_MAIN_5GFEMU                  | 76 | I076 | 603 | 166 | PP_VDD_MAIN_WLAN                       | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 77 | I077 | 603 | 167 | GPIO_AP_INTERPOSER_CANARY7_A_TO_B      | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 78 | I078 | 603 | 168 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 79 | I079 | 603 | 169 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 80 | I080 | 603 | 170 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 81 | I081 | 603 | 171 | GPIO_NUB_TO_BB_DEBUG_EN                | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 82 | I082 | 603 | 172 | GPIO_NUB_FROM_BB_WDOG_L                | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 83 | I083 | 603 | 173 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | IO_BUTTON_RINGER_L                  | 84 | I084 | 603 | 174 | GPIO_SEQ_PMU_TO_BBPMU_RESET_L          | <<>> | 603 |
|   | 603 | <<>> | IO_BUTTON_VOL_UP_L_1V8              | 85 | I085 | 603 | 175 | GPIO_PMU_FROM_BB_PCIE_HOST_WAKE_L      | <<>> | 603 |
|   | 603 | <<>> | GPIO_AP_INTERPOSER_CANARY6_A_TO_B   | 86 | I086 | 603 | 176 | GPIO_AP_INTERPOSER_CANARY7_A_TO_B      | <<>> | 603 |
|   | 603 | <<>> | IO_BUTTON_VOL_DOWN_L_1V8            | 87 | I087 | 603 | 177 | PCIE_GP1_AP_TO_BB_PERST_L              | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 88 | I088 | 603 | 178 | GND                                    | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 89 | I089 | 603 | 179 | PCIE_GP1_AP_BI_BB_CLKREQ_L             | <<>> | 603 |
|   | 603 | <<>> | GND                                 | 90 | I090 | 603 | 180 | GND                                    | <<>> | 603 |
| ONLY  |     |      |                                     |    |      |     |     |  |      |     |
| 8   | 7   | 6    | 5                                   | 4  | 3    | 2   | 1   |  |      |     |

998 33266

J\_INT\_BG

INTERPOSER-TOP-BG-V59

SMT-PAD

SYM 2 OF 6

998 33266

J\_INT\_BG

INTERPOSER-TOP-BG-V59

SMT-PAD

SYM 2 OF 6

|     |      |                     |     |       |     |     |             |      |     |
|-----|------|---------------------|-----|-------|-----|-----|-------------|------|-----|
| 604 | <<>> | GND                 | 181 | I0181 | 604 | 271 | GND         | <<>> | 604 |
| 604 | <<>> | GND                 | 182 | I0182 | 604 | 272 | PP_VCC_BATT | <<>> | 604 |
| 604 | <<>> | GND                 | 183 | I0183 | 604 | 273 | PP_VCC_BATT | <<>> | 604 |
| 604 | <<>> | GND                 | 184 | I0184 | 604 | 274 | GND         | <<>> | 604 |
| 604 | <<>> | SWD_NUB_BI_BB_SWDIO | 185 | I0185 | 604 | 275 | PP_VCC_BATT | <<>> | 604 |
| 604 | <<>> | GND                 | 186 | I0186 | 604 | 276 | PP_VCC_BATT | <<>> | 604 |
| 604 | <<>> | SWD_NUB_TO_BB_SWCLK | 187 | I0187 | 604 | 277 | GND         | <<>> | 604 |
| 604 | <<>> | GND                 | 188 | I0188 | 604 | 278 | PP_VCC_BATT | &lt  |     |

| 8   |                                 | 7  |       | 6     |     | 5                       |     | 4  |     | 3     |       | 2   |                                    | 1   |  |
|-----|---------------------------------|--|-------|-------|-----|-------------------------|-----|--|-----|-------|-------|-----|------------------------------------|-----|--|
|     |                                 | J_INT_BG<br>INTERPOSER-TOP-BG-V59<br>SMT-PAD<br>SYM 3 OF 6 |       |       |     |                         |     | J_INT_BG<br>INTERPOSER-TOP-BG-V59<br>SMT-PAD<br>SYM 4 OF 6 |     |       |       |     |                                    |     |  |
| 605 | PP_CODEC_TO_MIC1_LOWER_BIAS     | 361  | IO361 | IO451 | 451 | GND                     | 605 | 605  | 541 | IO541 | IO631 | 631 | PP_VDD_MAIN_ETIC                   | 605 |  |
| 605 | GND                             | 362  | IO362 | IO452 | 452 | GND                     | 605 | 605  | 542 | IO542 | IO632 | 632 | PP_VDD_MAIN_ETIC                   | 605 |  |
| 605 | GND                             | 363  | IO363 | IO453 | 453 | GND                     | 605 | 605  | 543 | IO543 | IO633 | 633 | PP_VDD_MAIN_ETIC                   | 605 |  |
| 605 | GND                             | 364  | IO364 | IO454 | 454 | GND                     | 605 | 605  | 544 | IO544 | IO634 | 634 | GND                                | 605 |  |
| 605 | 90_E85_USB_BOT_CONN_P           | 365  | IO365 | IO455 | 455 | GND                     | 605 | 605  | 545 | IO545 | IO635 | 635 | GND                                | 605 |  |
| 605 | GND                             | 366  | IO366 | IO456 | 456 | GND                     | 605 | 605  | 546 | IO546 | IO636 | 636 | XCVR0_RFFE1_LTX_SDAT               | 605 |  |
| 605 | 90_E85_USB_BOT_CONN_N           | 367  | IO367 | IO457 | 457 | GND                     | 605 | 605  | 547 | IO547 | IO637 | 637 | XCVR0_RFFE1_LTX_SCLK               | 605 |  |
| 605 | GND                             | 368  | IO368 | IO458 | 458 | GND                     | 605 | 605  | 548 | IO548 | IO638 | 638 | GND                                | 605 |  |
| 605 | 90_E85_USB_TOP_CONN_N           | 369  | IO369 | IO459 | 459 | GND                     | 605 | 605  | 549 | IO549 | IO639 | 639 | GND                                | 605 |  |
| 605 | GND                             | 370  | IO370 | IO460 | 460 | GND                     | 605 | 605  | 550 | IO550 | IO640 | 640 | VPA_ET_LB                          | 605 |  |
| 605 | 90_E85_USB_TOP_CONN_P           | 371  | IO371 | IO461 | 461 | GND                     | 605 | 605  | 551 | IO551 | IO641 | 641 | VPA_ET_LB                          | 605 |  |
| 605 | GND                             | 372  | IO372 | IO462 | 462 | GND                     | 605 | 605  | 552 | IO552 | IO642 | 642 | GND                                | 605 |  |
| 605 | GND                             | 373  | IO373 | IO463 | 463 | GND                     | 605 | 605  | 553 | IO553 | IO643 | 643 | GND                                | 605 |  |
| 605 | GND                             | 374  | IO374 | IO464 | 464 | GND                     | 605 | 605  | 554 | IO554 | IO644 | 644 | VPA_2G                             | 605 |  |
| 605 | GND                             | 375  | IO375 | IO465 | 465 | 50_WLAN_G_C1_TXRX_FEM_M | 605 | 605  | 555 | IO555 | IO645 | 645 | VPA_2G                             | 605 |  |
| 605 | GND                             | 376  | IO376 | IO466 | 466 | GND                     | 605 | 605  | 556 | IO556 | IO646 | 646 | GND                                | 605 |  |
| 605 | GND                             | 377  | IO377 | IO467 | 467 | GND                     | 605 | 605  | 557 | IO557 | IO647 | 647 | GND                                | 605 |  |
| 605 | PP_E85_CC1_CONN                 | 378  | IO378 | IO468 | 468 | GND                     | 605 | 605  | 558 | IO558 | IO648 | 648 | GND                                | 605 |  |
| 605 | GND                             | 379  | IO379 | IO469 | 469 | 50_XCVR0_RX30           | 605 | 605  | 559 | IO559 | IO649 | 649 | GND                                | 605 |  |
| 605 | PP_E85_CC2_CONN                 | 380  | IO380 | IO470 | 470 | GND                     | 605 | 605  | 560 | IO560 | IO650 | 650 | VDD3P15_VFE_HI                     | 605 |  |
| 605 | GND                             | 381  | IO381 | IO471 | 471 | GND                     | 605 | 605  | 561 | IO561 | IO651 | 651 | GND                                | 605 |  |
| 605 | GND                             | 382  | IO382 | IO472 | 472 | GND                     | 605 | 605  | 562 | IO562 | IO652 | 652 | GND                                | 605 |  |
| 605 | GND                             | 383  | IO383 | IO473 | 473 | GND                     | 605 | 605  | 563 | IO563 | IO653 | 653 | GND                                | 605 |  |
| 605 | IO_E85_TO_ACE_CON_DETECT_L_CONN | 384  | IO384 | IO474 | 474 | GND                     | 605 | 605  | 564 | IO564 | IO654 | 654 | GND                                | 605 |  |
| 605 | GND                             | 385  | IO385 | IO475 | 475 | GND                     | 605 | 605  | 565 | IO565 | IO655 | 655 | GND                                | 605 |  |
| 605 | GPIO_AOP_FROM_BARO_INT_L        | 386  | IO386 | IO476 | 476 | GND                     | 605 | 605  | 566 | IO566 | IO656 | 656 | GPIO_AP_INTERPOSER_CANARY11_C_TO_D | 605 |  |
| 605 | GND                             | 387  | IO387 | IO477 | 477 | GND                     | 605 | 605  | 567 | IO567 | IO657 | 657 | GND                                | 605 |  |
| 605 | I2C1_AOP_SCL                    | 388  | IO388 | IO478 | 478 | GND                     | 605 | 605  | 568 | IO568 | IO658 | 658 | GPIO_AP_INTERPOSER_CANARY11_C_TO_D | 605 |  |
| 605 | GND                             | 389  | IO389 | IO479 | 479 | GND                     | 605 | 605  | 569 | IO569 | IO659 | 659 | GND                                | 605 |  |
| 605 | I2C1_AOP_SDA                    | 390  | IO390 | IO480 | 480 | GND                     | 605 | 605  | 570 | IO570 | IO660 | 660 | GPIO_AP_INTERPOSER_CANARY11_A_TO_B | 605 |  |
| 605 | GND                             | 391  | IO391 | IO481 | 481 | GND                     | 605 | 605  | 571 | IO571 | IO661 | 661 | GND                                | 605 |  |
| 605 | GND                             | 392  | IO392 | IO482 | 482 | GND                     | 605 | 605  | 572 | IO572 | IO662 | 662 | GPIO_AP_INTERPOSER_CANARY11_A_TO_B | 605 |  |
| 605 | GND                             | 393  | IO393 | IO483 | 483 | GND                     | 605 | 605  | 573 | IO573 | IO663 | 663 | GND                                | 605 |  |
| 605 | GND                             | 394  | IO394 | IO484 | 484 | GND                     | 605 | 605  | 574 | IO574 | IO664 | 664 | GND                                | 605 |  |
| 605 | GND                             | 395  | IO395 | IO485 | 485 | GND                     | 605 | 605  | 575 | IO575 | IO665 | 665 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 396  | IO396 | IO486 | 486 | GND                     | 605 | 605  | 576 | IO576 | IO666 | 666 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 397  | IO397 | IO487 | 487 | GND                     | 605 | 605  | 577 | IO577 | IO667 | 667 | GND                                | 605 |  |
| 605 | GND                             | 398  | IO398 | IO488 | 488 | GND                     | 605 | 605  | 578 | IO578 | IO668 | 668 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 399  | IO399 | IO489 | 489 | GND                     | 605 | 605  | 579 | IO579 | IO669 | 669 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 400  | IO400 | IO490 | 490 | GND                     | 605 | 605  | 580 | IO580 | IO670 | 670 | GND                                | 605 |  |
| 605 | GND                             | 401  | IO401 | IO491 | 491 | GND                     | 605 | 605  | 581 | IO581 | IO671 | 671 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 402  | IO402 | IO492 | 492 | GND                     | 605 | 605  | 582 | IO582 | IO672 | 672 | GND                                | 605 |  |
| 605 | PP_VBUS1_E85                    | 403  | IO403 | IO493 | 493 | GND                     | 605 | 605  | 583 | IO583 | IO673 | 673 | GND                                | 605 |  |
| 605 | GND                             | 404  | IO404 | IO494 | 494 | GND                     | 605 | 605  | 584 | IO584 | IO674 | 674 | GND                                | 605 |  |
| 605 | GND                             | 405  | IO405 | IO495 | 495 | GND                     | 605 | 605  | 585 | IO585 | IO675 | 675 | GND                                | 605 |  |
| 605 | GND                             | 406  | IO406 | IO496 | 496 | GND                     | 605 | 605  | 586 | IO586 | IO676 | 676 | GND                                | 605 |  |
| 605 | GND                             | 407  | IO407 | IO497 | 497 | GND                     | 605 | 605  | 587 | IO587 | IO677 | 677 | GND                                | 605 |  |
| 605 | GND                             | 408  | IO408 | IO498 | 498 | GND                     | 605 | 605  | 588 | IO588 | IO678 | 678 | PP1V24_S4_UPPER                    | 605 |  |
| 605 | GND                             | 409  | IO409 | IO499 | 499 | GND                     | 605 | 605  | 589 | IO589 | IO679 | 679 | GND                                | 605 |  |
| 605 | GND                             | 410  | IO410 | IO500 | 500 | GND                     | 605 | 605  | 590 | IO590 | IO680 | 680 | 90_LPDP_ISP_FROM_WIDE_RX_D0_CONN_P | 605 |  |
| 605 | GND                             | 411  | IO411 | IO501 | 501 | GND                     | 605 | 605  | 591 | IO591 | IO681 | 681 | GND                                | 605 |  |
| 605 | GND                             | 412  | IO412 | IO502 | 502 | GND                     | 605 | 605  | 592 | IO592 | IO682 | 682 | GPIO_BB_TO_NUB_GSM_TXBURST_IND     | 605 |  |
| 605 | GND                             | 413  | IO413 | IO503 | 503 | GND                     | 605 | 605  | 593 | IO593 | IO683 | 683 | GND                                | 605 |  |
| 605 | GND                             | 414  | IO414 | IO504 | 504 | GND                     | 605 | 605  | 594 | IO594 | IO684 | 684 | 90_LPDP_ISP_FROM_WIDE_RX_D0_CONN_N | 605 |  |
| 605 | GND                             | 415  | IO415 | IO505 | 505 | GND                     | 605 | 605  | 595 | IO595 | IO685 | 685 | GND                                | 605 |  |
| 605 | GND                             | 416  | IO416 | IO506 | 506 | GND                     | 605 | 605  | 596 | IO596 | IO686 | 686 | GPIO_CAM_PMU1_TO_WIDE_SHDN_L_1V8   | 605 |  |
| 605 | GND                             | 417  | IO417 | IO507 | 507 | GND                     | 605 | 605  | 597 | IO597 | IO687 | 687 | GND                                | 605 |  |
| 605 |                                 |  |       |       |     |                         |     |  |     |       |       |     |                                    |     |  |

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| 998-33266             |     |                                       |     |
|-----------------------|-----|---------------------------------------|-----|
| J_INT_BG              |     |                                       |     |
| INTERPOSER-TOP-BG-V59 |     |                                       |     |
| SMT-PAD               |     |                                       |     |
| SYM 5 OF 6            |     |                                       |     |
| 607                   | <<> | GND                                   | 721 |
| 607                   | <<> | PP3V13_WIDE_AVDD1                     | 722 |
| 607                   | <<> | GND                                   | 723 |
| 607                   | <<> | 90_MIPI_ISP_FROM_IRCAM_CLK_P          | 724 |
| 607                   | <<> | GND                                   | 725 |
| 607                   | <<> | GPIO_ISP_CAMS_TO_STROBE_TRIGGER_1V8   | 726 |
| 607                   | <<> | GND                                   | 727 |
| 607                   | <<> | 90_MIPI_ISP_FROM_IRCAM_CLK_N          | 728 |
| 607                   | <<> | GND                                   | 729 |
| 607                   | <<> | GND                                   | 730 |
| 607                   | <<> | GND                                   | 731 |
| 607                   | <<> | 90_MIPI_ISP_FROM_IRCAM_D1_P           | 732 |
| 607                   | <<> | GND                                   | 733 |
| 607                   | <<> | PP1V2_IRCAM_DVDD                      | 734 |
| 607                   | <<> | GND                                   | 735 |
| 607                   | <<> | 90_MIPI_ISP_FROM_IRCAM_D1_N           | 736 |
| 607                   | <<> | GND                                   | 737 |
| 607                   | <<> | GND                                   | 738 |
| 607                   | <<> | GND                                   | 739 |
| 607                   | <<> | GND                                   | 740 |
| 607                   | <<> | GND                                   | 741 |
| 607                   | <<> | CLK_CAM_PMU1_TO_IRCAM_REGULUS_12M_1V8 | 742 |
| 607                   | <<> | GND                                   | 743 |
| 607                   | <<> | PP2V79_IRCAM_AVDD_GUAD_VDD            | 744 |
| 607                   | <<> | GND                                   | 745 |
| 607                   | <<> | GND                                   | 746 |
| 607                   | <<> | GND                                   | 747 |
| 607                   | <<> | GND                                   | 748 |
| 607                   | <<> | GND                                   | 749 |
| 607                   | <<> | PP_VDD_MAIN_DPA                       | 750 |
| 607                   | <<> | GND                                   | 751 |
| 607                   | <<> | IO_REGULUS_BI_GUAD_STATUS_1V8         | 752 |
| 607                   | <<> | GND                                   | 753 |
| 607                   | <<> | GND                                   | 754 |
| 607                   | <<> | GND                                   | 755 |
| 607                   | <<> | IO_IRCAM_TO_REGULUS_STROBE_1V8        | 756 |
| 607                   | <<> | GND                                   | 757 |
| 607                   | <<> | PP_BANFF_A_ANODE                      | 758 |
| 607                   | <<> | GND                                   | 759 |
| 607                   | <<> | PP1V825_IRCAM_PMU1_IO_SW              | 760 |
| 607                   | <<> | GND                                   | 761 |
| 607                   | <<> | PP_BANFF_FLOOD_ANODE                  | 762 |
| 607                   | <<> | GND                                   | 763 |
| 607                   | <<> | I2C4_CAM_PMU1_SDA_1V8                 | 764 |
| 607                   | <<> | GND                                   | 765 |
| 607                   | <<> | PP_BANFF_B_ANODE                      | 766 |
| 607                   | <<> | GND                                   | 767 |
| 607                   | <<> | I2C4_CAM_PMU1_SCL_1V8                 | 768 |
| 607                   | <<> | GND                                   | 769 |
| 607                   | <<> | PP_BANFF_DOT_ANODE                    | 770 |
| 607                   | <<> | GND                                   | 771 |
| 607                   | <<> | GPIO_NUB_FROM_BANFF_B2B_DETECT_L      | 772 |
| 607                   | <<> | GND                                   | 773 |
| 607                   | <<> | GPIO_CAM_PMU1_TO_IRCAM_SHDN_L_1V8     | 774 |
| 607                   | <<> | CLK_BBPMU_TO_NFC_P_38M4               | 775 |
| 607                   | <<> | GND                                   | 776 |
| 607                   | <<> | GND                                   | 777 |
| 607                   | <<> | GND                                   | 778 |
| 607                   | <<> | GND                                   | 779 |
| 607                   | <<> | IO_SLM_BUTTON_SIDE_L_1V8_CONN         | 780 |
| 607                   | <<> | GND                                   | 781 |
| 607                   | <<> | PP_VDD_MAIN_2GFEMU                    | 782 |
| 607                   | <<> | GND                                   | 783 |
| 607                   | <<> | IO_SLM_BUTTON_SIDE_L_1V8              | 784 |
| 607                   | <<> | GND                                   | 785 |
| 607                   | <<> | GND                                   | 786 |
| 607                   | <<> | GND                                   | 787 |
| 607                   | <<> | NFC_P_ANT_NEG                         | 788 |
| 607                   | <<> | GND                                   | 789 |
| 607                   | <<> | GND                                   | 790 |
| 607                   | <<> | NFC_P_ANT_NEG                         | 791 |
| 607                   | <<> | NFC_P_ANT_NEG                         | 792 |
| 607                   | <<> | GND                                   | 793 |
| 607                   | <<> | GND                                   | 794 |
| 607                   | <<> | GND                                   | 795 |
| 607                   | <<> | GND                                   | 796 |
| 607                   | <<> | GND                                   | 797 |
| 607                   | <<> | PP2V94_FCAM_AVDD                      | 798 |
| 607                   | <<> | GND                                   | 799 |
| 607                   | <<> | GND                                   | 800 |
| 607                   | <<> | GPIO_CAM_PMU1_TO_FCAM_SHDN_L_1V8      | 801 |
| 607                   | <<> | PP1V825_FCAM_PMU1_IO_SW               | 802 |
| 607                   | <<> | I2C3_CAM_PMU1_SDA_1V8                 | 803 |
| 607                   | <<> | GND                                   | 804 |
| 607                   | <<> | I2C3_CAM_PMU1_SCL_1V8                 | 805 |
| 607                   | <<> | GND                                   | 806 |
| 607                   | <<> | GND                                   | 807 |
| 607                   | <<> | GPIO_AP_INTERPOSER_CANARY5_A_TO_B     | 808 |
| 607                   | <<> | GND                                   | 809 |
| 607                   | <<> | GND                                   | 810 |

0901

|       |     |                                   |
|-------|-----|-----------------------------------|
| IO811 | 811 | GND                               |
| IO812 | 812 | GND                               |
| IO813 | 813 | GND                               |
| IO814 | 814 | GND                               |
| IO815 | 815 | GND                               |
| IO816 | 816 | GPIO_AP_INTERPOSER_CANARY5_A_TO_B |
| IO817 | 817 | GND                               |
| IO818 | 818 | GND                               |
| IO819 | 819 | GND                               |
| IO820 | 820 | GPIO_AP_INTERPOSER_CANARY5_C_TO_D |
| IO821 | 821 | GND                               |
| IO822 | 822 | GND                               |
| IO823 | 823 | GND                               |
| IO824 | 824 | GND                               |
| IO825 | 825 | GND                               |
| IO826 | 826 | GND                               |
| IO827 | 827 | GND                               |
| IO828 | 828 | GND                               |
| IO829 | 829 | GPIO_AP_INTERPOSER_CANARY5_C_TO_D |
| IO830 | 830 | GND                               |
| IO831 | 831 | GND                               |
| IO832 | 832 | GND                               |
| IO833 | 833 | GND                               |
| IO834 | 834 | GND                               |
| IO835 | 835 | GND                               |
| IO836 | 836 | GND                               |
| IO837 | 837 | GND                               |
| IO838 | 838 | GND                               |
| IO839 | 839 | GND                               |
| IO840 | 840 | GND                               |
| IO841 | 841 | GND                               |
| IO842 | 842 | GND                               |
| IO843 | 843 | GND                               |
| IO844 | 844 | GND                               |
| IO845 | 845 | GND                               |
| IO846 | 846 | GND                               |
| IO847 | 847 | GND                               |
| IO848 | 848 | GND                               |
| IO849 | 849 | GND                               |
| IO850 | 850 | GND                               |
| IO851 | 851 | GND                               |
| IO852 | 852 | GND                               |
| IO853 | 853 | GND                               |
| IO854 | 854 | GND                               |
| IO855 | 855 | GND                               |
| IO856 | 856 | GND                               |
| IO857 | 857 | GND                               |
| IO858 | 858 | GND                               |
| IO859 | 859 | GND                               |
| IO860 | 860 | GND                               |
| IO861 | 861 | GND                               |
| IO862 | 862 | GND                               |
| IO863 | 863 | GND                               |
| IO864 | 864 | GND                               |
| IO865 | 865 | GND                               |
| IO866 | 866 | GND                               |
| IO867 | 867 | GND                               |
| IO868 | 868 | GND                               |
| IO869 | 869 | GND                               |
| IO870 | 870 | GND                               |
| IO871 | 871 | GND                               |
| IO872 | 872 | GND                               |
| IO873 | 873 | GND                               |
| IO874 | 874 | GND                               |
| IO875 | 875 | GND                               |
| IO876 | 876 | GND                               |
| IO877 | 877 | GND                               |
| IO878 | 878 | GND                               |
| IO879 | 879 | GND                               |
| IO880 | 880 | GND                               |
| IO881 | 881 | GND                               |
| IO882 | 882 | GND                               |
| IO883 | 883 | GND                               |
| IO884 | 884 | GND                               |
| IO885 | 885 | GND                               |
| IO886 | 886 | GND                               |
| IO887 | 887 | GND                               |
| IO888 | 888 | GND                               |
| IO889 | 889 | GND                               |
| IO890 | 890 | GND                               |
| IO891 | 891 | GND                               |
| IO892 | 892 | GND                               |
| IO893 | 893 | GND                               |
| IO894 | 894 | GND                               |
| IO895 | 895 | GND                               |
| IO896 | 896 | GND                               |
| IO897 | 897 | GND                               |
| IO898 | 898 | GND                               |
| IO899 | 899 | GND                               |
| IO900 | 900 | GND                               |

998-33266  
J\_INT\_BG  
INTERPOSER-TOP-BG-V59  
SMT-PAD  
SYM 6 OF 6

|     |     |     |     |
|-----|-----|-----|-----|
| 607 | <<> | GND | 901 |
| 607 | <<> | GND | 902 |
| 607 | <<> | GND | 903 |
| 607 | <<> | GND | 904 |
| 607 | <<> | GND | 905 |
| 607 | <<> | GND | 906 |
| 607 | <<> | GND | 907 |
| 607 | <<> | GND | 908 |
| 607 | <<> | GND | 909 |
| 607 | <<> | GND | 910 |
| 607 | <<> | GND | 911 |
| 607 | <<> | GND | 912 |
| 607 | <<> | GND | 913 |
| 607 | <<> | GND | 914 |
| 607 | <<> | GND | 915 |
| 607 | <<> | GND | 916 |
| 607 | <<> | GND | 917 |
| 607 | <<> | GND | 918 |
| 607 | <<> | GND | 919 |
| 607 | <<> | GND | 920 |
| 607 | <<> | GND | 921 |
| 607 | <<> | GND | 922 |
| 607 | <<> | GND | 923 |
| 607 | <<> | GND | 924 |
| 607 | <<> | GND | 925 |
| 607 | <<> | GND | 926 |
| 607 | <<> | GND | 927 |
| 607 | <<> | GND | 928 |

0901

PAGE TITLE

Interposer: BG (3/3) (602)



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


| REV | ECN        | DESCRIPTION OF REVISION | CK<br>APPD | DATE       |
|-----|------------|-------------------------|------------|------------|
| 6   | 0058492950 | ENGINEERING RELEASED    |            | 2024-09-17 |


# HIER\_NFC\_BG

## IO PORTS

PRIMARY NFC RF

682  NFC\_P\_ANT\_POS

682  NFC\_P\_ANT\_NEG

| DRAWING TITLE  |  |  |  |
|--|--|--|--|
| SCH,MLB,BG   |  |  |  |
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|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

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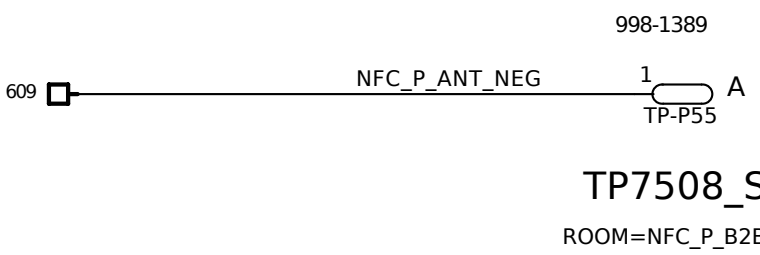
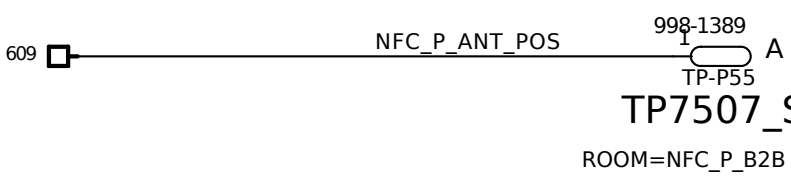
B

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PRIMARY NFC FRONT END



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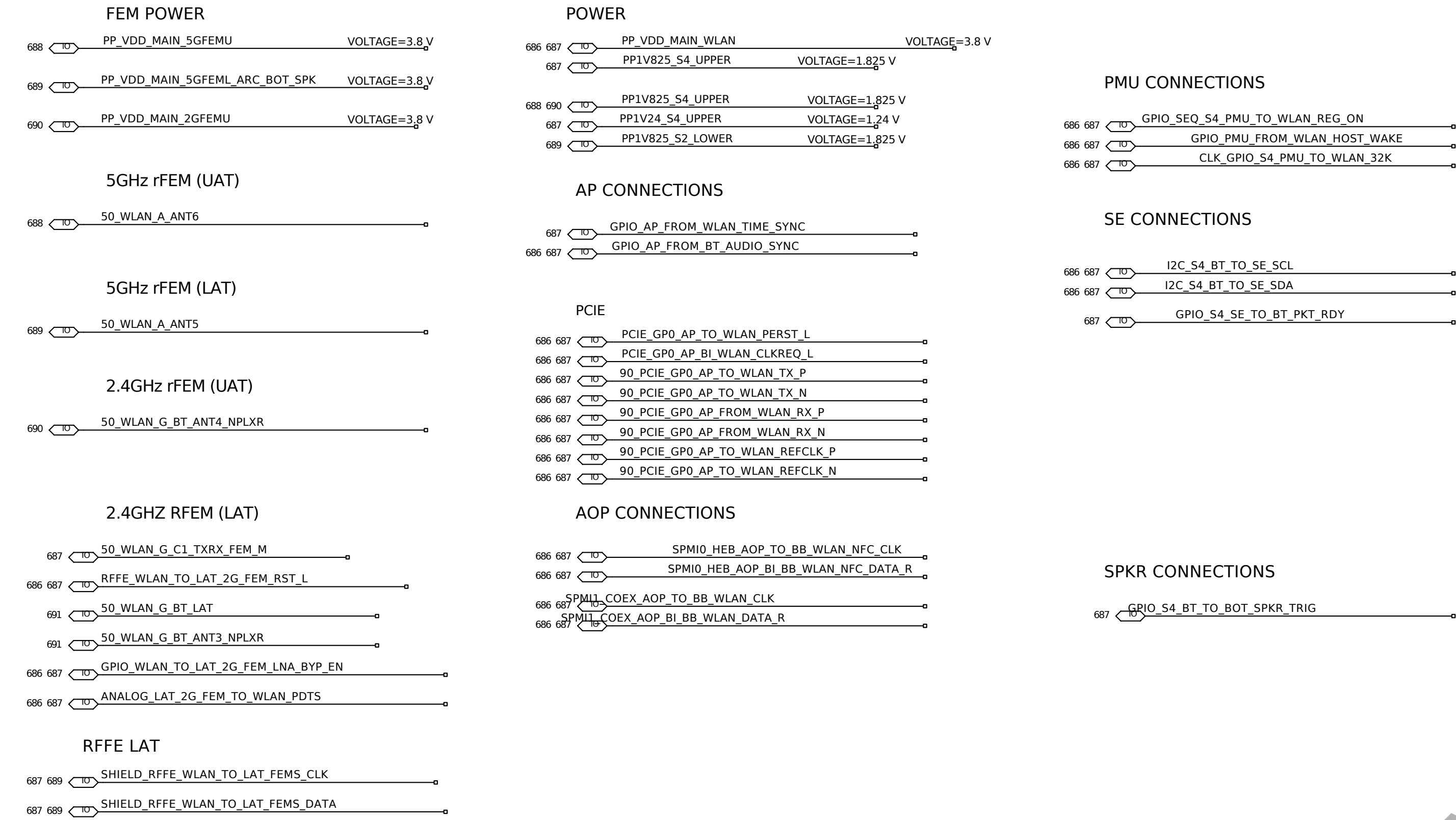
D

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B

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WLAN SYMBOL IO PORTS



POWER

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687

10

PP\_VDD\_MAIN\_WLAN

VOLTAGE=3.8 V

687

10

PP1V825\_S4\_UPPER

VOLTAGE=1.825 V

688

690

10

PP1V825\_S4\_UPPER

VOLTAGE=1.825 V

687

10

PP1V24\_S4\_UPPER

VOLTAGE=1.24 V

689

10

PP1V825\_S2\_LOWER

VOLTAGE=1.825 V

AP CONNECTIONS

687

10

GPIO\_AP\_FROM\_WLAN\_TIME\_SYNC

686

687

10

GPIO\_AP\_FROM\_BT\_AUDIO\_SYNC

PCIE

686

687

10

PCIE\_GPO\_AP\_TO\_WLAN\_PERST\_L

686

687

10

PCIE\_GPO\_AP\_BI\_WLAN\_CLKREQ\_L

686

687

10

90\_PCIE\_GPO\_AP\_TO\_WLAN\_TX\_P

686

687

10

90\_PCIE\_GPO\_AP\_TO\_WLAN\_TX\_N

686

687

10

90\_PCIE\_GPO\_AP\_FROM\_WLAN\_RX\_P

686

687

10

90\_PCIE\_GPO\_AP\_FROM\_WLAN\_RX\_N

686

687

10

90\_PCIE\_GPO\_AP\_TO\_WLAN\_REFCLK\_P

686

687

10

90\_PCIE\_GPO\_AP\_TO\_WLAN\_REFCLK\_N

AOP CONNECTIONS

686

687

10

SPMIO\_HEB\_AOP\_TO\_BB\_WLAN\_NFC\_CLK

686

687

10

SPMIO\_HEB\_AOP\_BI\_BB\_WLAN\_NFC\_DATA\_R

686

687

10

SPMIO\_COEX\_AOP\_TO\_BB\_WLAN\_CLK

686

687

10

SPMIO\_COEX\_AOP\_BI\_BB\_WLAN\_DATA\_R

PMU CONNECTIONS

686

687

10

GPIO\_SEQ\_S4\_PMU\_TO\_WLAN\_REG\_ON

686

687

10

GPIO\_PMU\_FROM\_WLAN\_HOST\_WAKE

686

687

10

CLK\_GPIO\_S4\_PMU\_TO\_WLAN\_32K

SE CONNECTIONS

686

687

10

I2C\_S4\_BT\_TO\_SE\_SCL

686

687

10

I2C\_S4\_BT\_TO\_SE\_SDA

687

10

GPIO\_S4\_SE\_TO\_BT\_PKT\_RDY

SPKR CONNECTIONS

687

10

GPIO\_S4\_BT\_TO\_BOT\_SPKR\_TRIG

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# BOM TABLE

WLAN ALT

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT      |
|--------------------|------------------|-----------------------|--------------|
| 339501445          | 339501444        | U_WLAN_W              | STATS ALT PN |

BUCK ALT

| ALTERNATE PART NO. | PRIMARY PART NO. | REFERENCE DESIGNATORS | COMMENT        |
|--------------------|------------------|-----------------------|----------------|
| 138500024          | 13850986         | C254_W                | TAIYO ALT PART |
| 138500024          | 13850986         | C256_W                | TAIYO ALT PART |
| 152501962          | 152500750        | L253_W,L255_W         | TAIYO ALT PART |

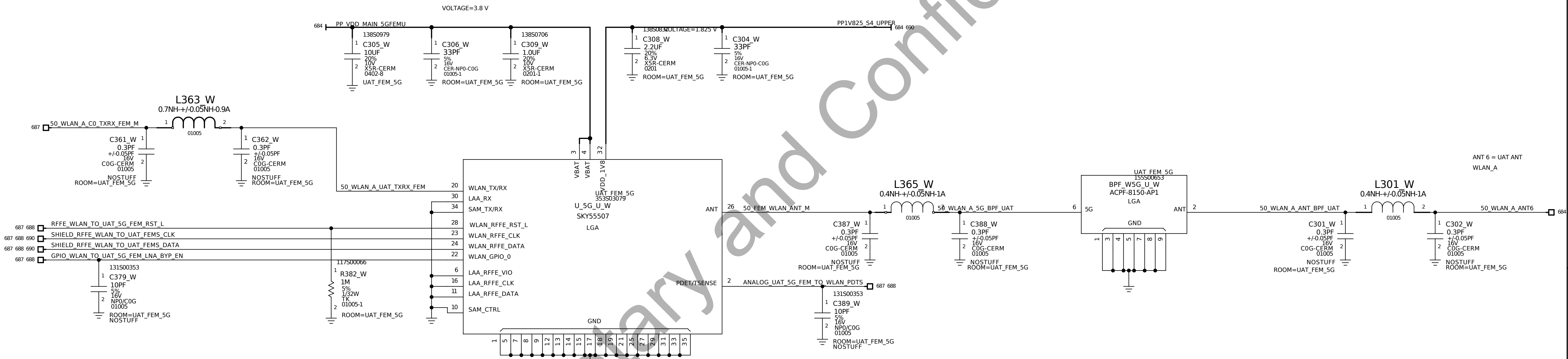
PROBE POINTS



## D



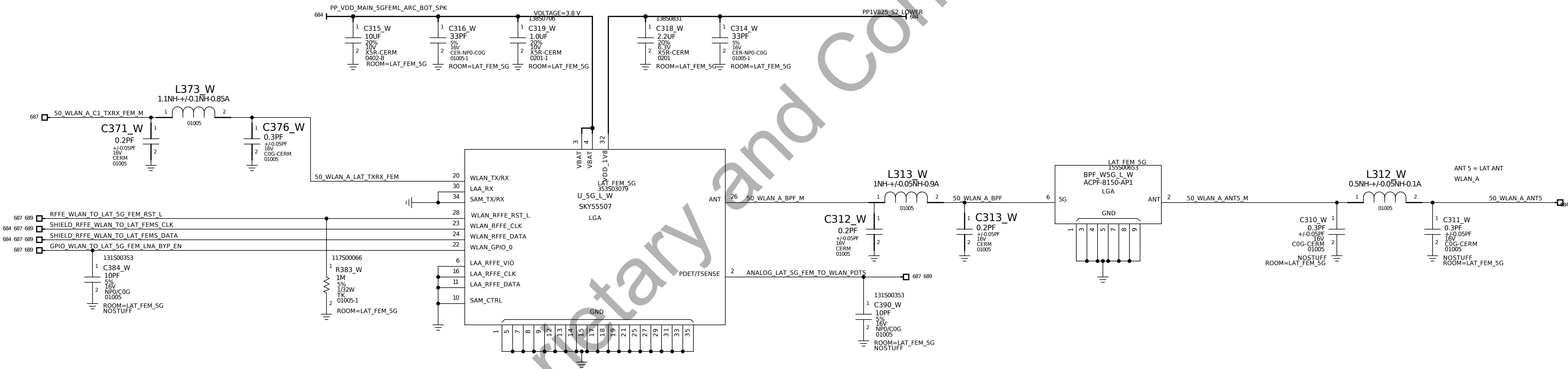
UAT 5GHZ RFEM



|                 |                      |   |                                    |             |
|-----------------|----------------------|---|------------------------------------|-------------|
| ROOM=UAT_FEM_5G | SM PP368 W P2MM-NSM  | 1 | SHIELD_RFFE_WLAN_TO_UAT_FEMS_CLK   | 687 688 690 |
| ROOM=UAT_FEM_5G | SM PP363 W P2MM-NSM  | 1 | SHIELD_RFFE_WLAN_TO_UAT_FEMS_DATA  | 687 688 690 |
| ROOM=UAT_FEM_5G | SM PP0600 W P2MM-NSM | 1 | RFFE_WLAN_TO_UAT_5G_FEM_RST_L      | 687 688     |
| ROOM=UAT_FEM_5G | SM PP0601 W P2MM-NSM | 1 | GPIO_WLAN_TO_UAT_5G_FEM_LNA_BYP_EN | 687 688     |
| ROOM=UAT_FEM_5G | SM PP0602 W P2MM-NSM | 1 | ANALOG_UAT_5G_FEM_TO_WLAN_PDTS     | 687 688     |

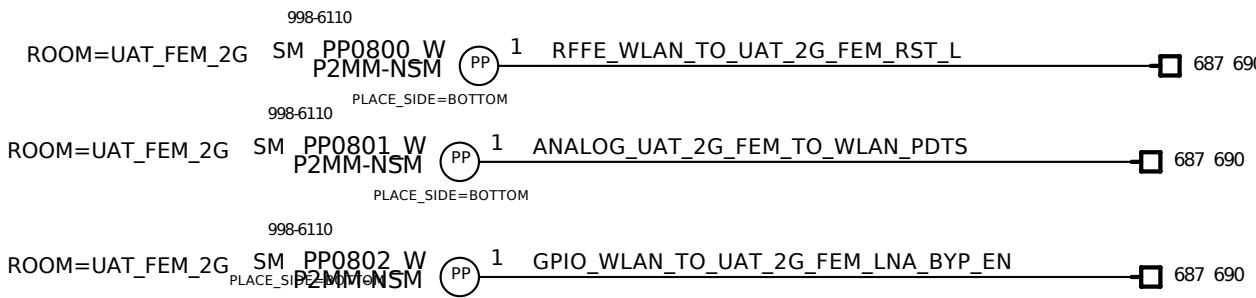
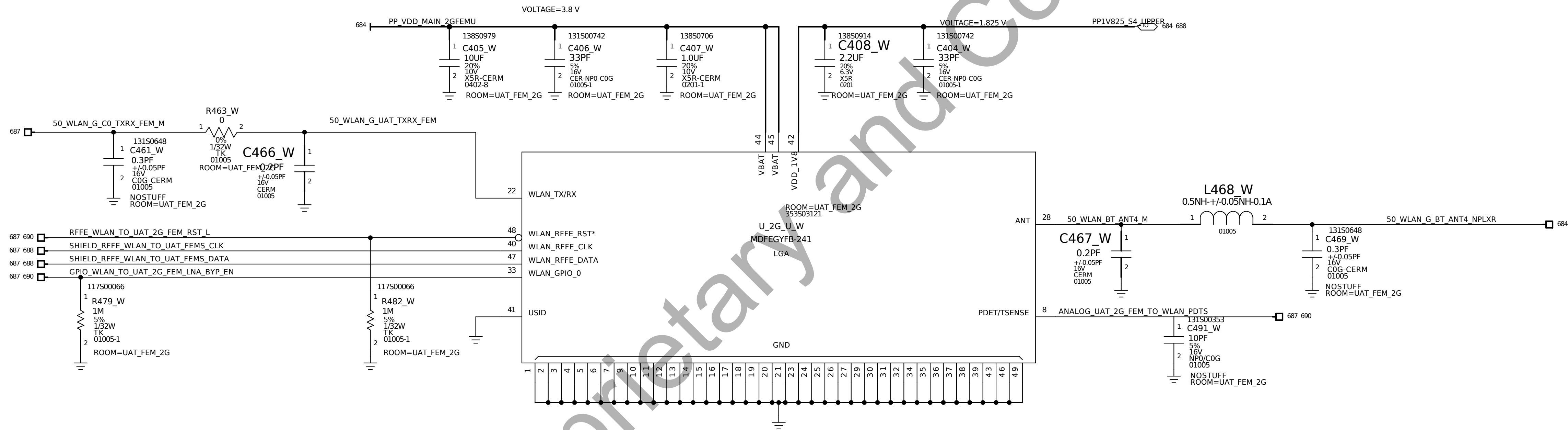
|   |  |                   |  |
|---|--|-------------------|--|
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|   |  |                   |  |
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LAT 5GHZ RFEM

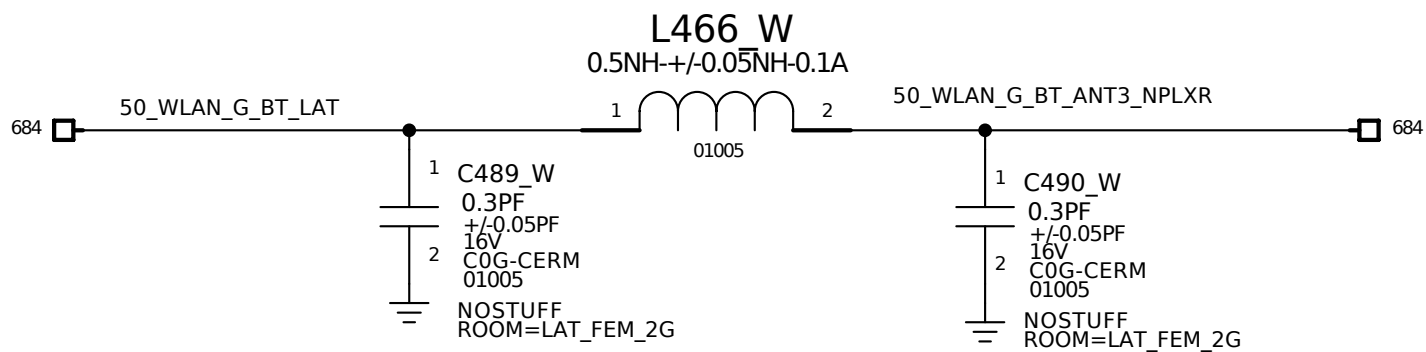


- SM\_PP357\_W P2MM-NSM 1 SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_CLK 684 687 689  
ROOM=LAT\_FEM\_5G BOTTOM
- SM\_PP358\_W P2MM-NSM 1 SHIELD\_RFFE\_WLAN\_TO\_LAT\_FEMS\_DATA 684 687 689  
ROOM=LAT\_FEM\_5G BOTTOM
- SM\_PP0700\_W P2MM-NSM 1 RFFE\_WLAN\_TO\_LAT\_5G\_FEM\_RST\_L 687 689  
ROOM=LAT\_FEM\_5G BOTTOM
- SM\_PP0701\_W P2MM-NSM 1 GPIO\_WLAN\_TO\_LAT\_5G\_FEM\_LNA\_BYP\_EN 687 689  
ROOM=LAT\_FEM\_5G BOTTOM
- SM\_PP0702\_W P2MM-NSM 1 ANALOG\_LAT\_5G\_FEM\_TO\_WLAN\_PDTS 687 689  
ROOM=LAT\_FEM\_5G BOTTOM

UAT 2.4 GHZ RFEM



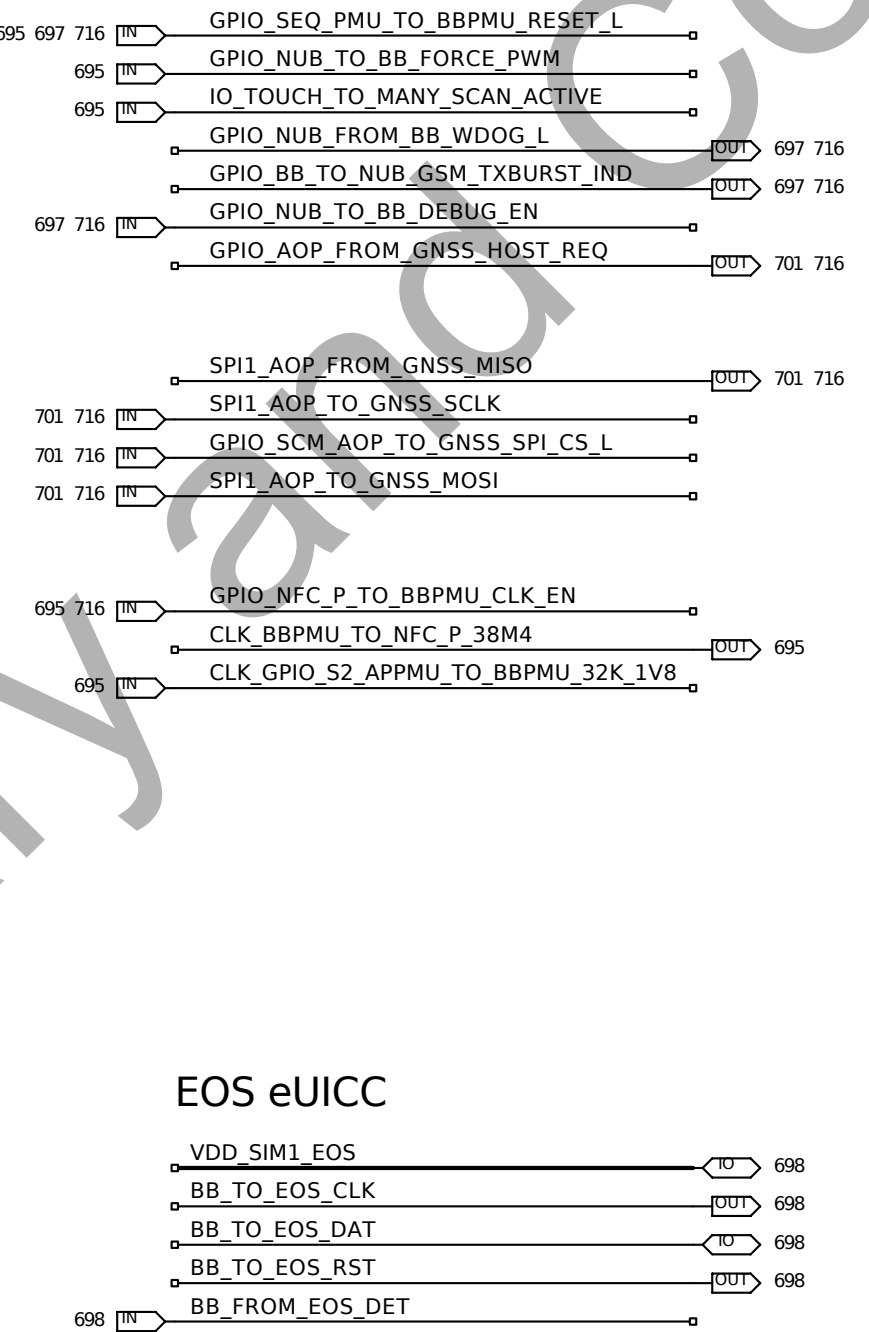
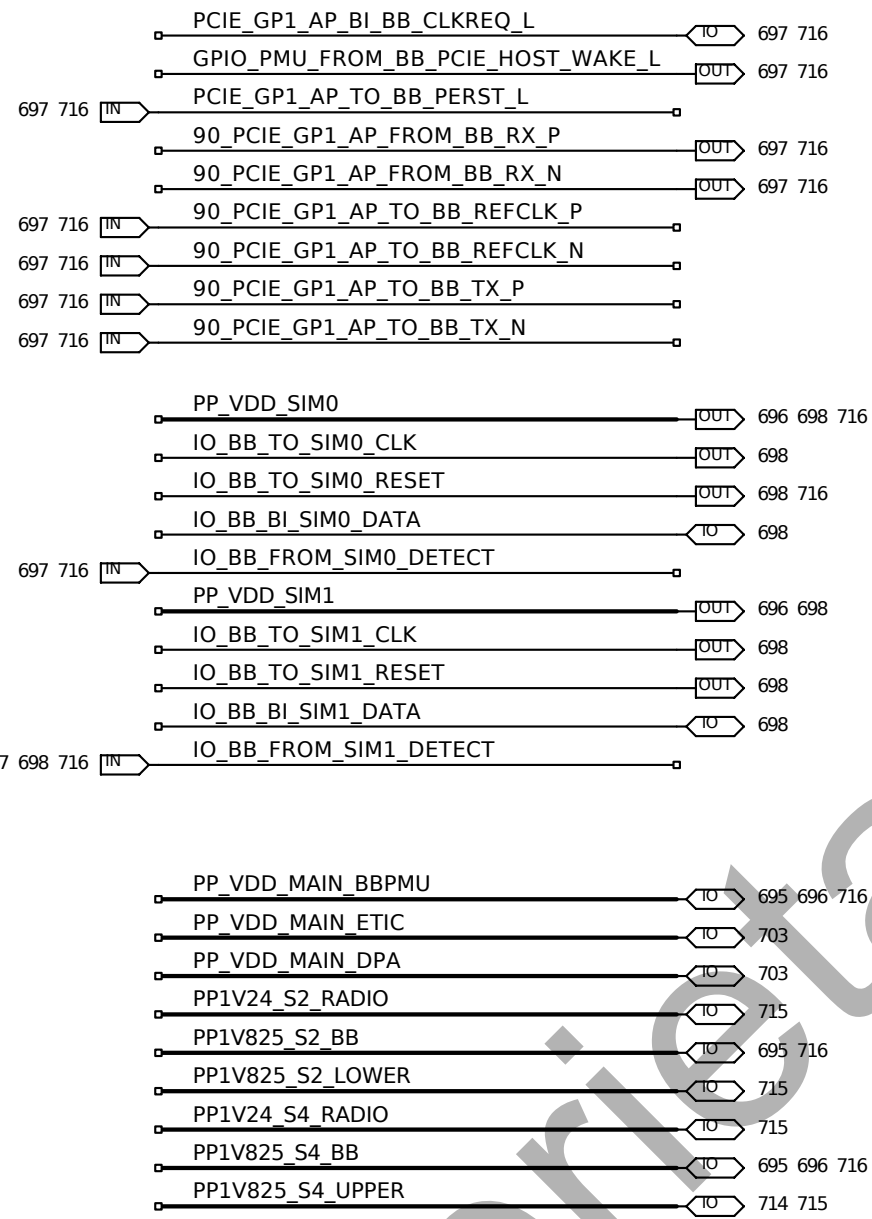
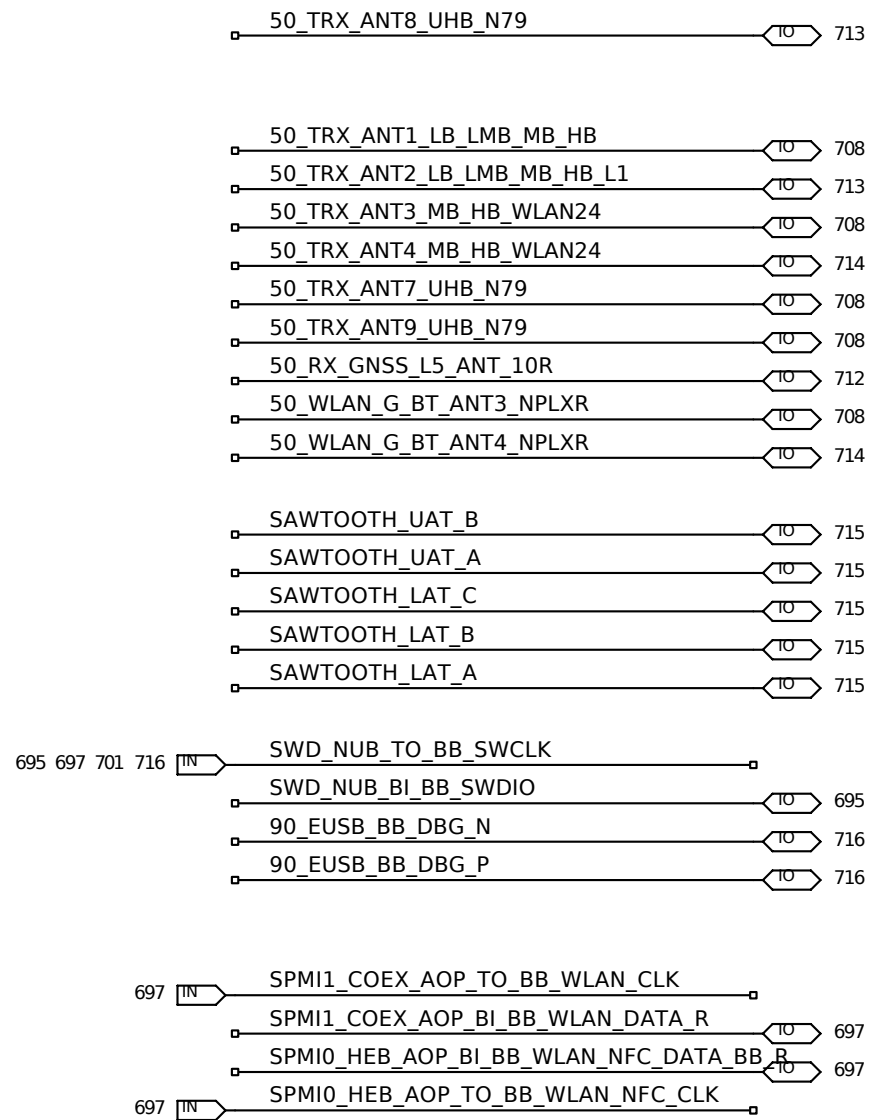
LAT 2.4 GHZ RFEM







# PORTS

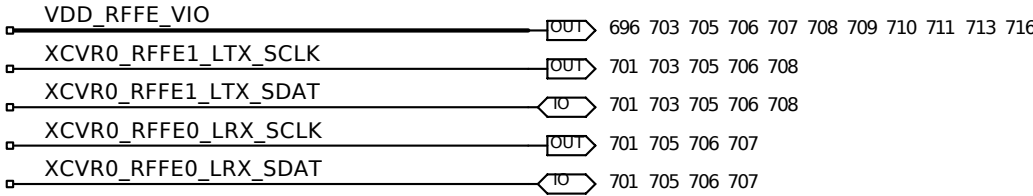


## CONNECTIONS TO MLB\_CG

### POWER



### RFFE



### LB+2G SPAD



# BLOCK DIAGRAM

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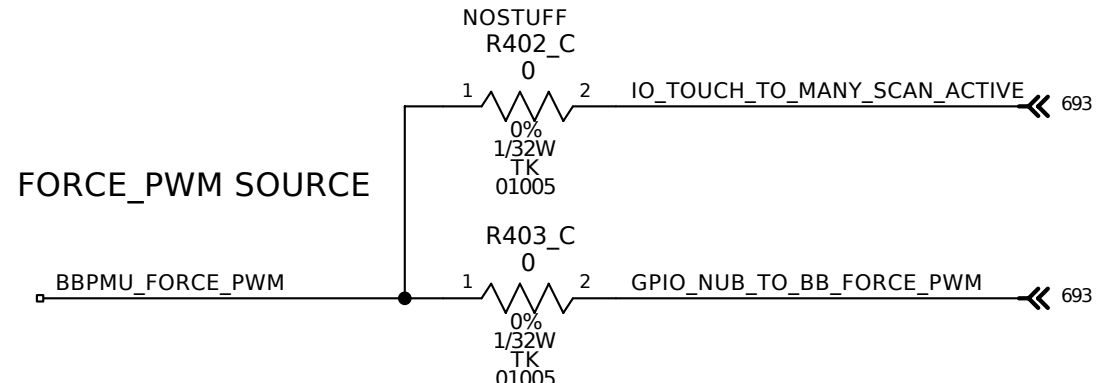
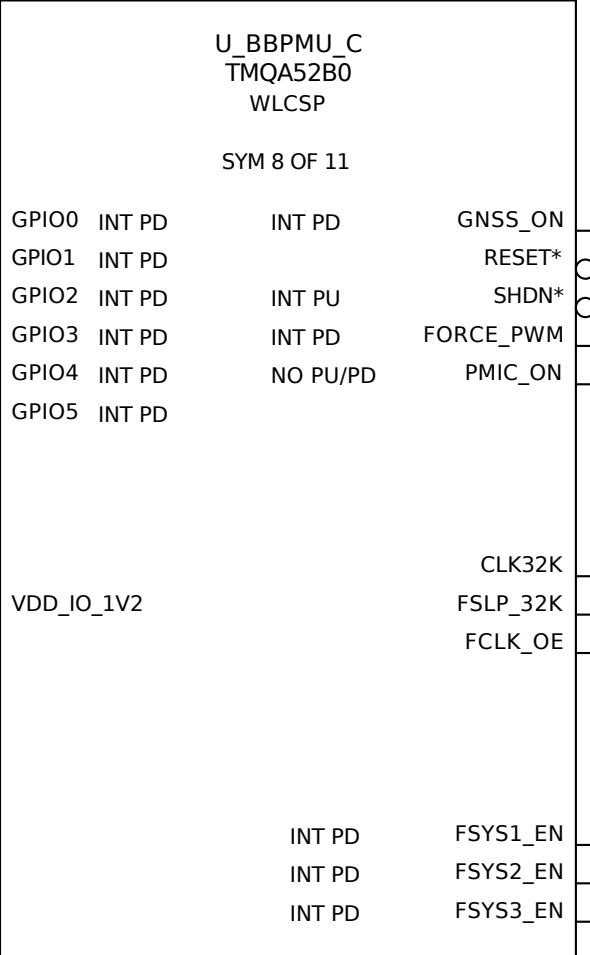
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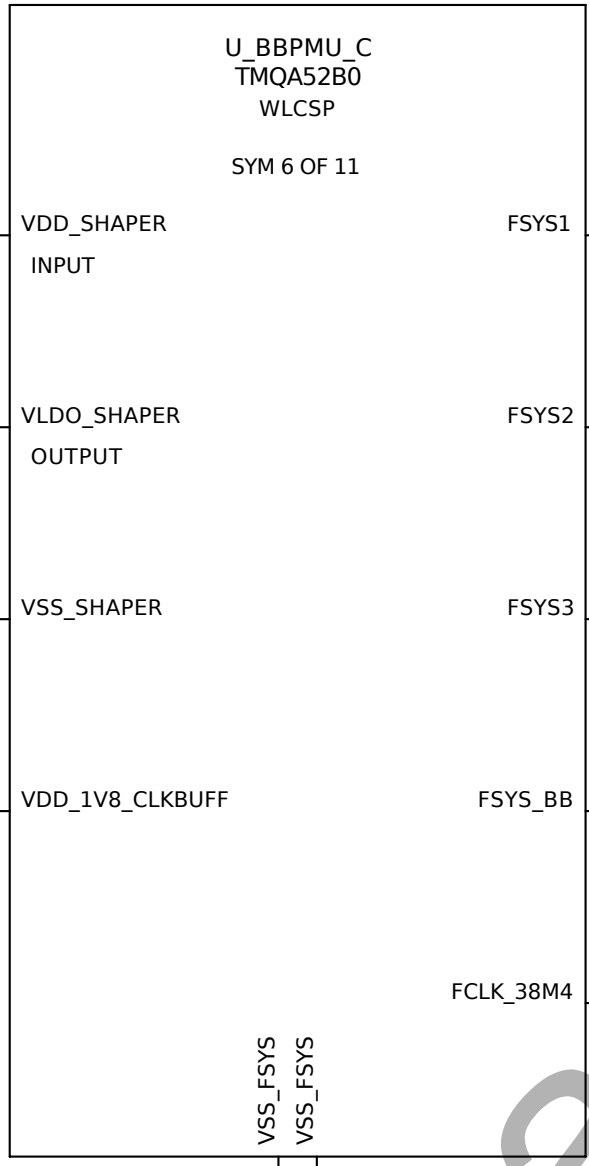
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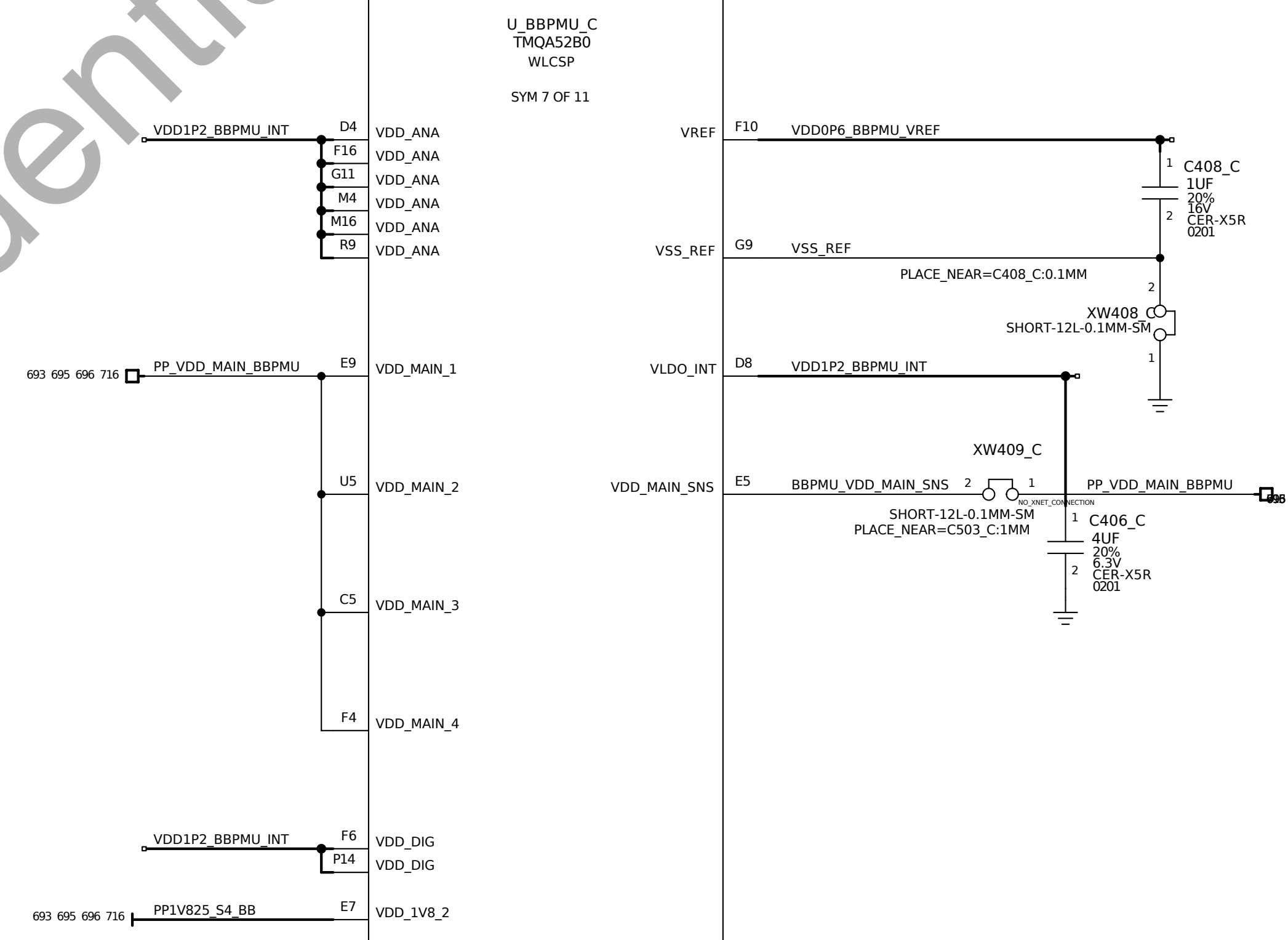
## SIM CONFIG

| PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                    |
|-------------|-----------|-----------------------|----------|-----|--------------------------------|
| 118500255   | RFSKU:CHN | R_SIMCFGPU_C          | CRITICAL | 1   | RES,TK,1K OHM,1%,1/32W,01005   |
| 118500244   | RFSKU:US  | R_SIMCFGPD_C          | CRITICAL | 1   | RES,TK,511K OHM,1%,1/32W,01005 |
| 118500255   | RFSKU:RS  | R_SIMCFGPD_C          | CRITICAL | 1   | RES,TK,1K OHM,1%,1/32W,01005   |
| 118500255   | RFSKU:ROW | R_SIMCFGPD_C          | CRITICAL | 1   | RES,TK,1K OHM,1%,1/32W,01005   |

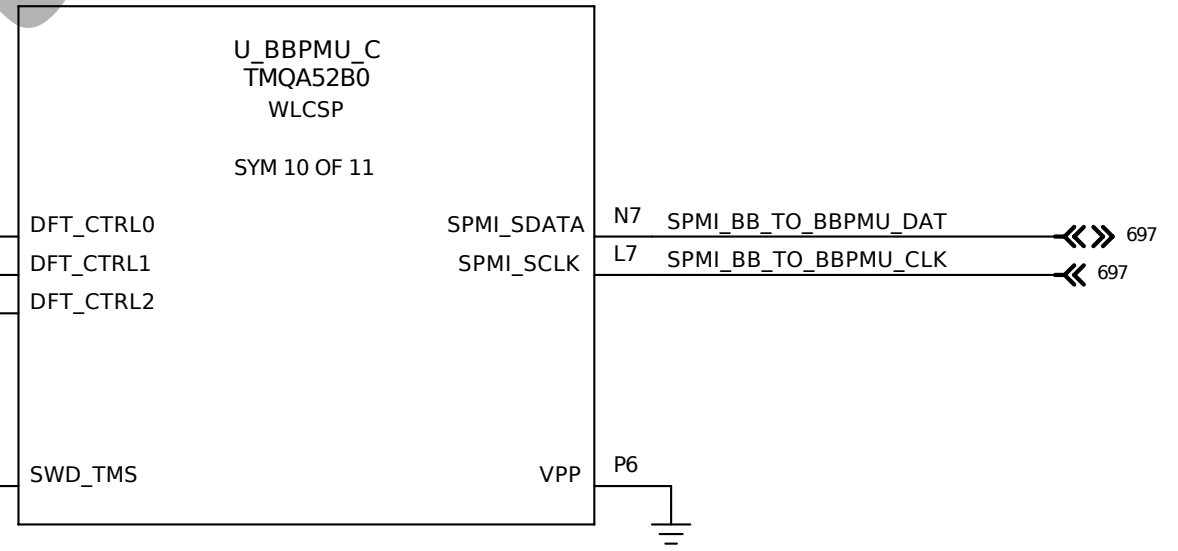
## CLOCKING



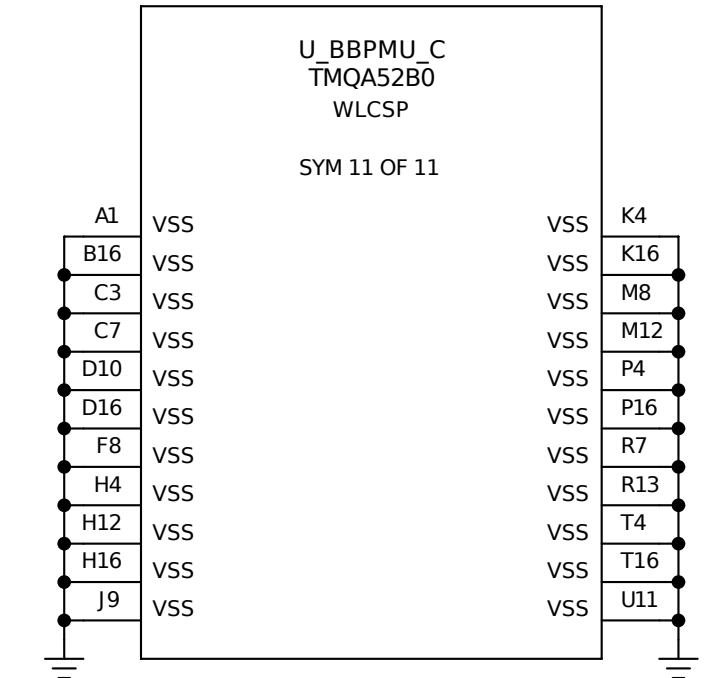
## SUPPLIES



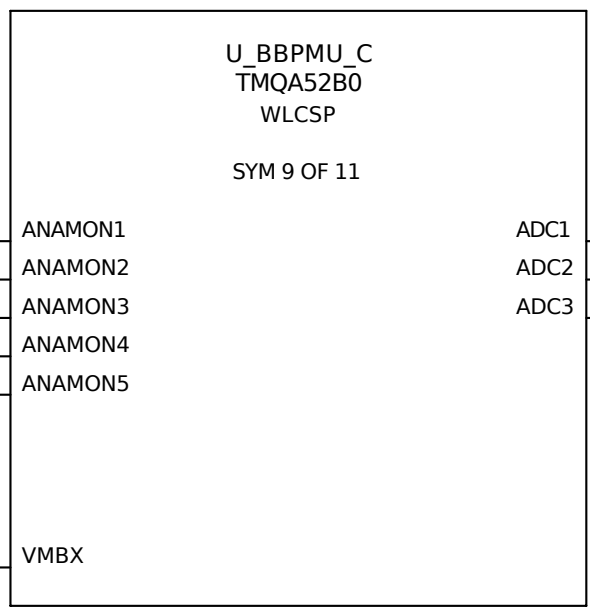
## TEST



## GND



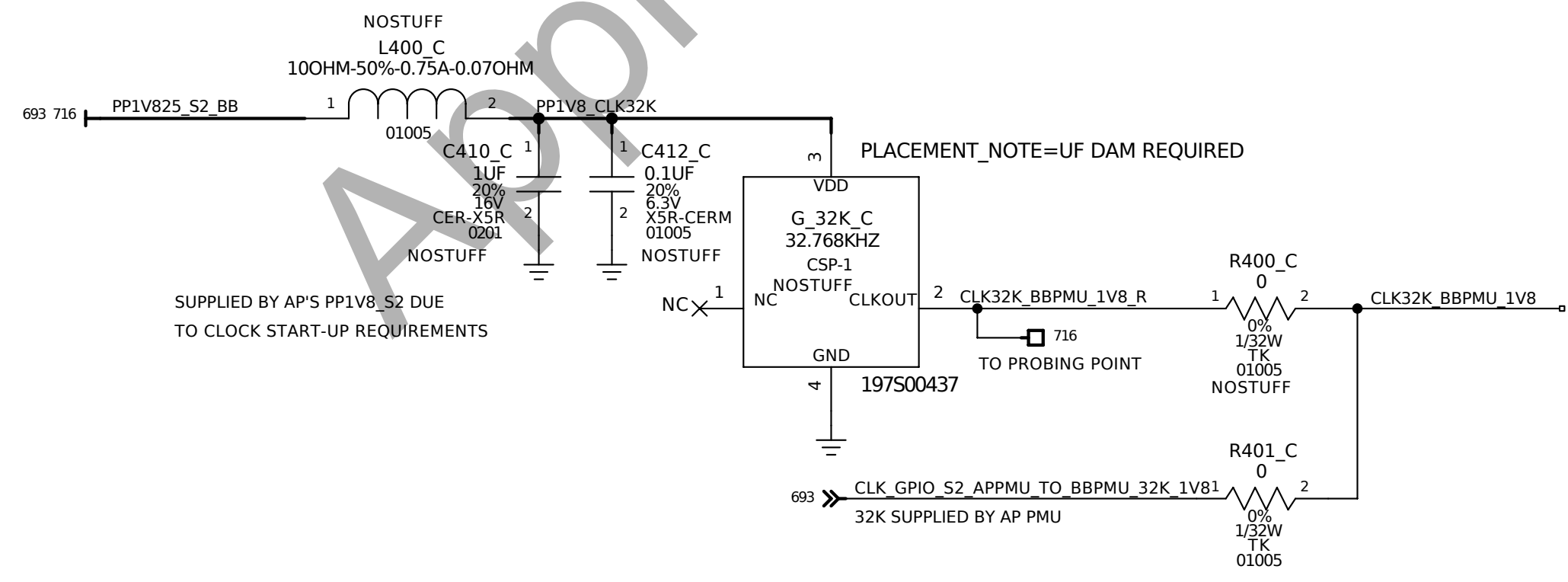
## ADC



| PRODUCT_ID     | REVISION_ID    |
|----------------|----------------|
| 1.4K = V59     | 1.4K = PROTO0  |
| 4.53K = PROTO1 | 4.53K = PROTO1 |
| 8.06K = PROTO2 | 8.06K = PROTO2 |
| 12.1K = EVT    | 12.1K = EVT    |
| 16.9K = CDB    | 16.9K = CDB    |
| 22.1K = DVT    | 22.1K = DVT    |
| 28.0K          | 28.0K          |
| 34.8K          | 34.8K          |
| 42.2K          | 42.2K          |
| 51.1K          | 51.1K          |
| 60.4K          | 60.4K          |
| 71.5K          | 71.5K          |
| 84.5K          | 84.5K          |
| 97.6K          | 97.6K          |
| 113K           | 113K           |
| 130K           | 130K           |
| 150K           | 150K           |
| 174K           | 174K           |
| 200K           | 200K           |
| 226K           | 226K           |
| 255K           | 255K           |

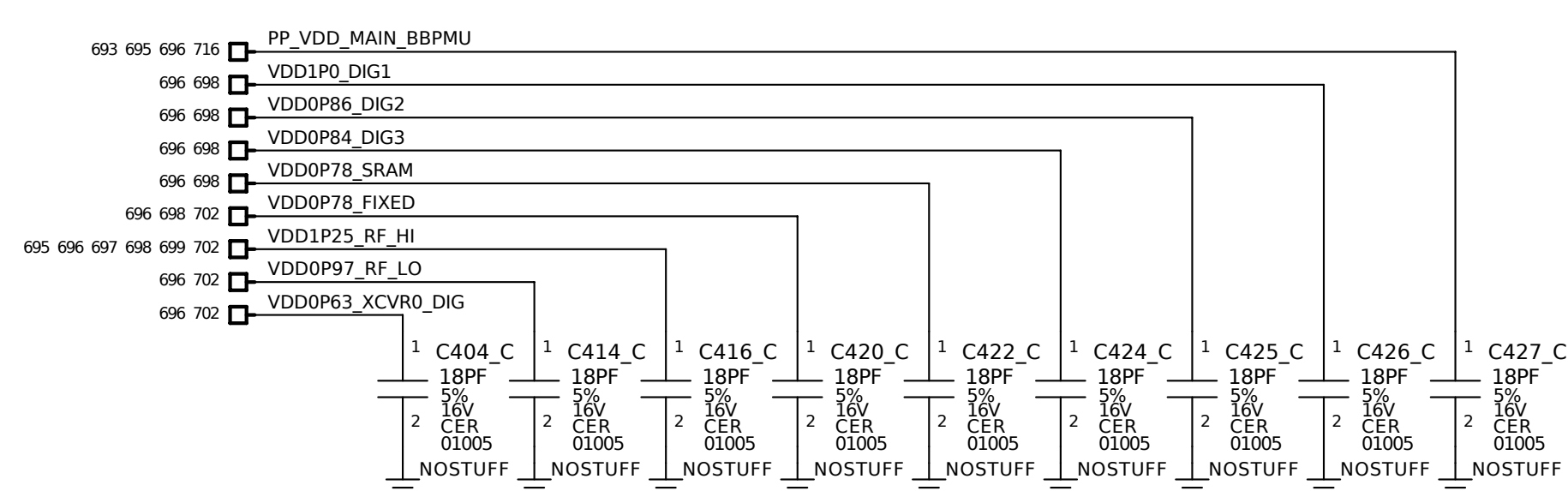
FAMILY ID DETERMINED BY BOARD\_ID @ LEDA  
BOARD\_ID=0X3=2025 IPHONE

## CLK 32K



32K MEMS VIBRATION MITIGATION REMOVED

## DESENSE SHUNTS



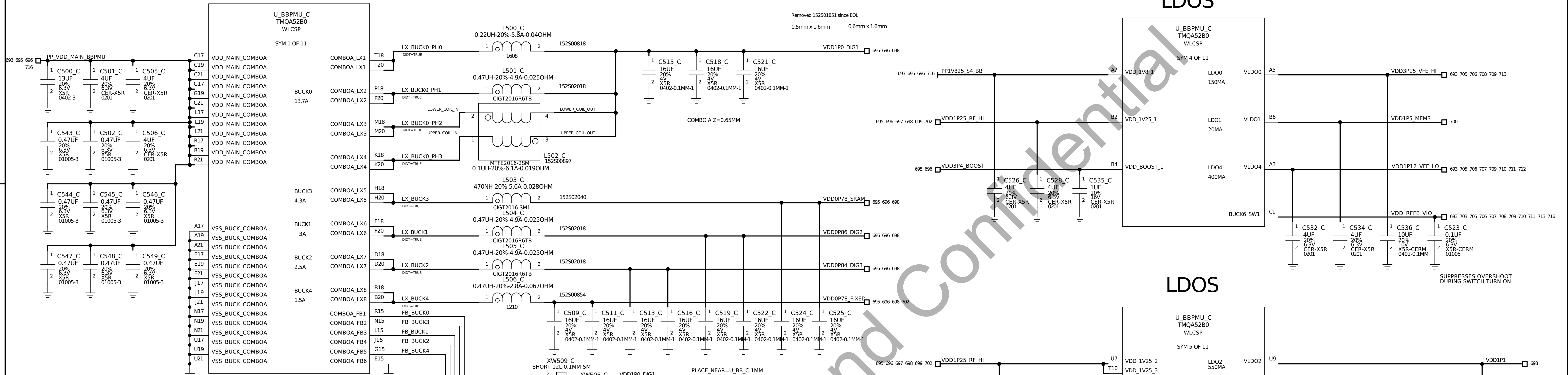
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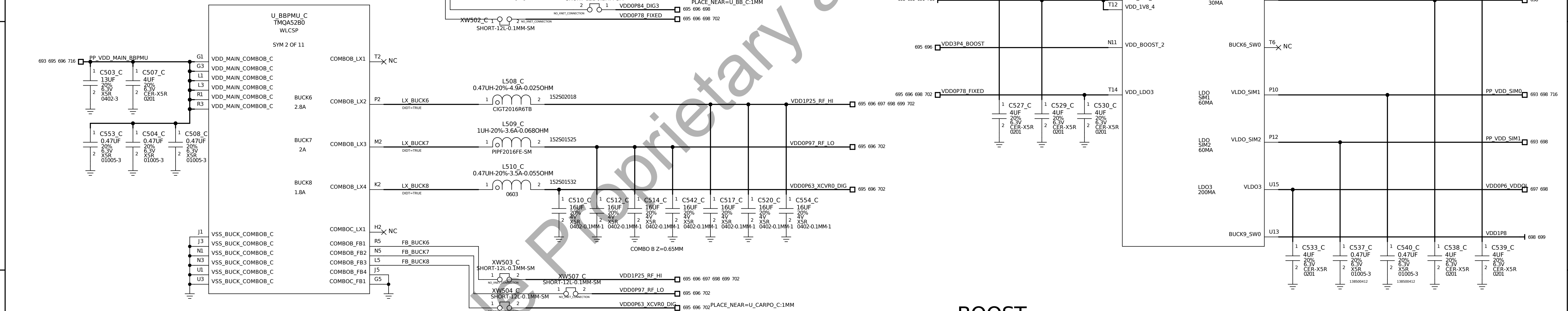
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## INDUCTOR FOOTPRINT ALT

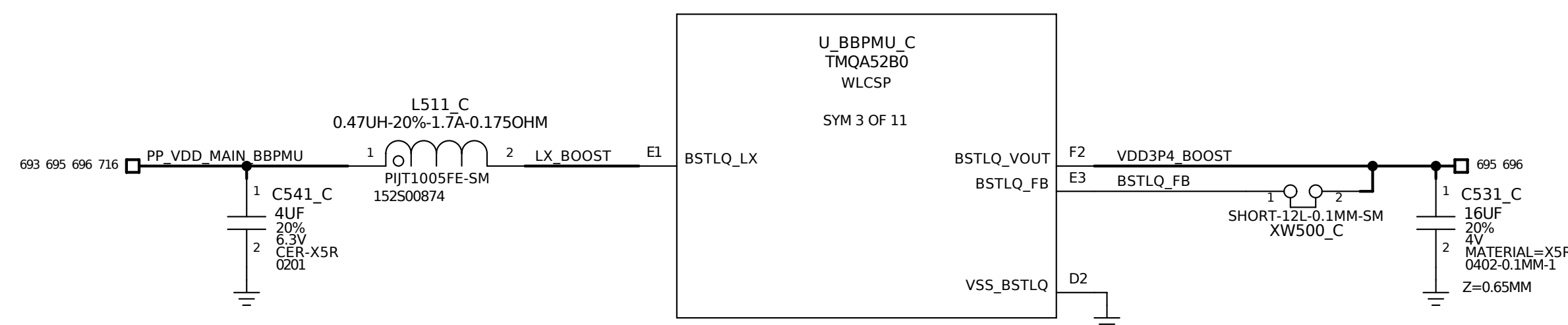
## COMBO A



## COMBO B



# BOOST



D

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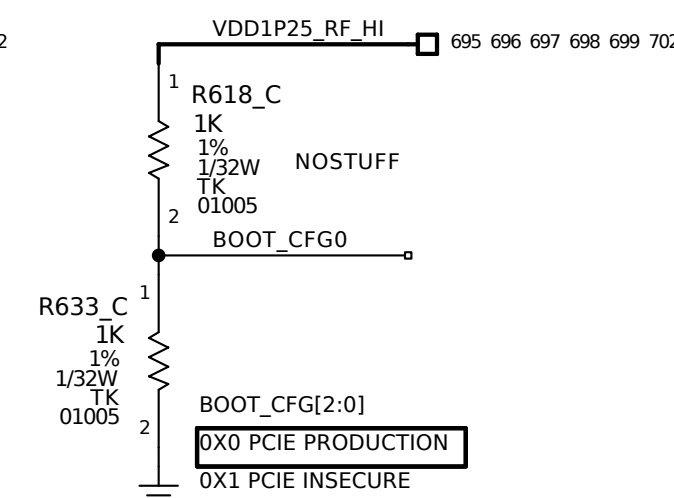
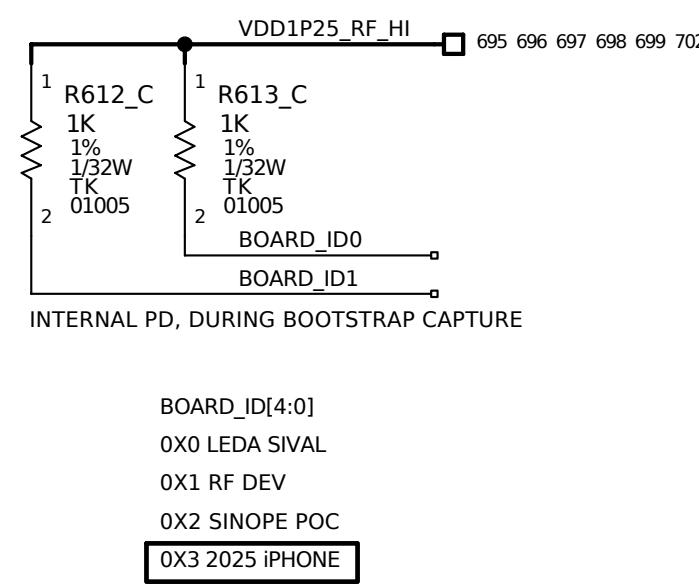
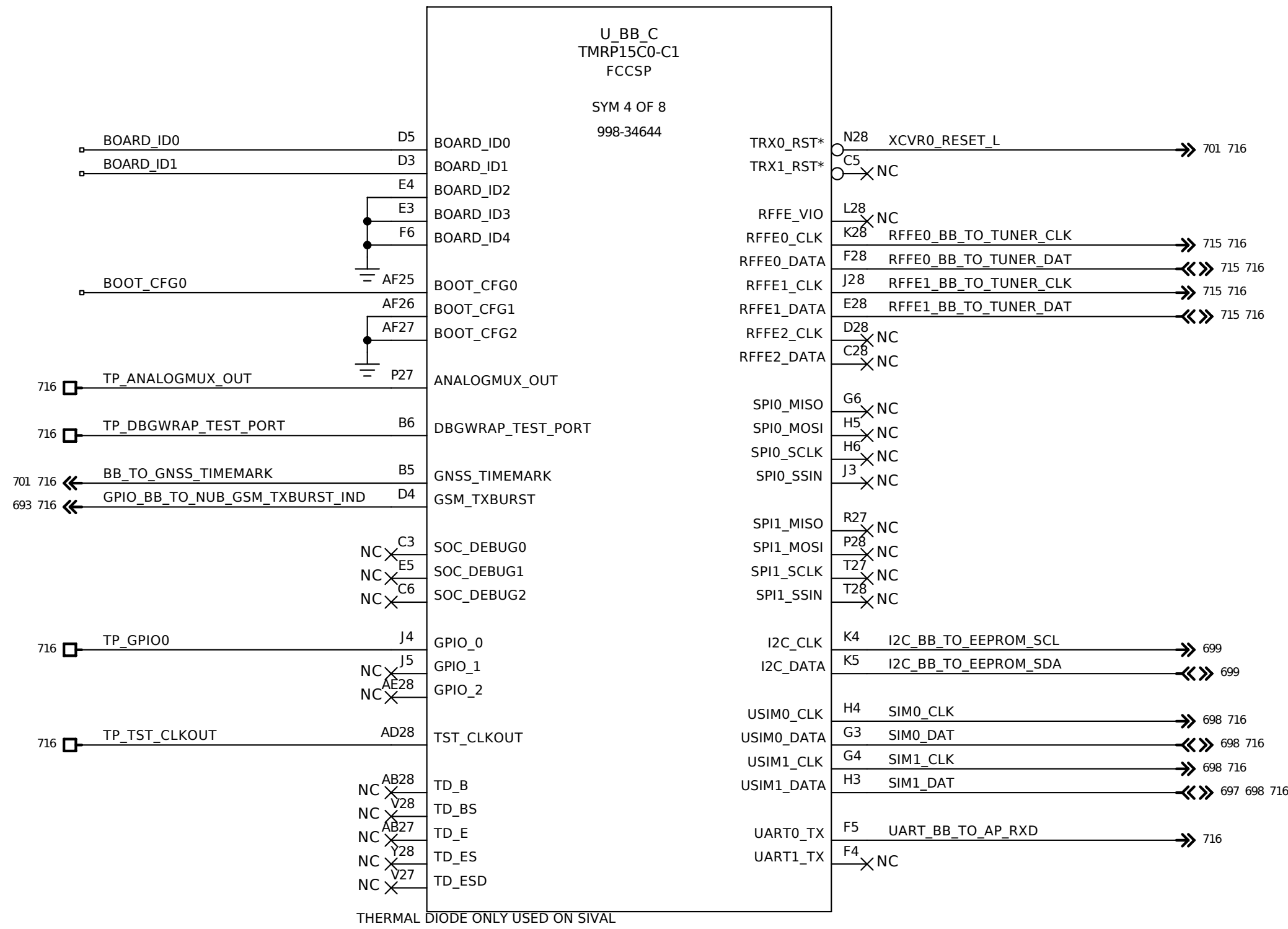
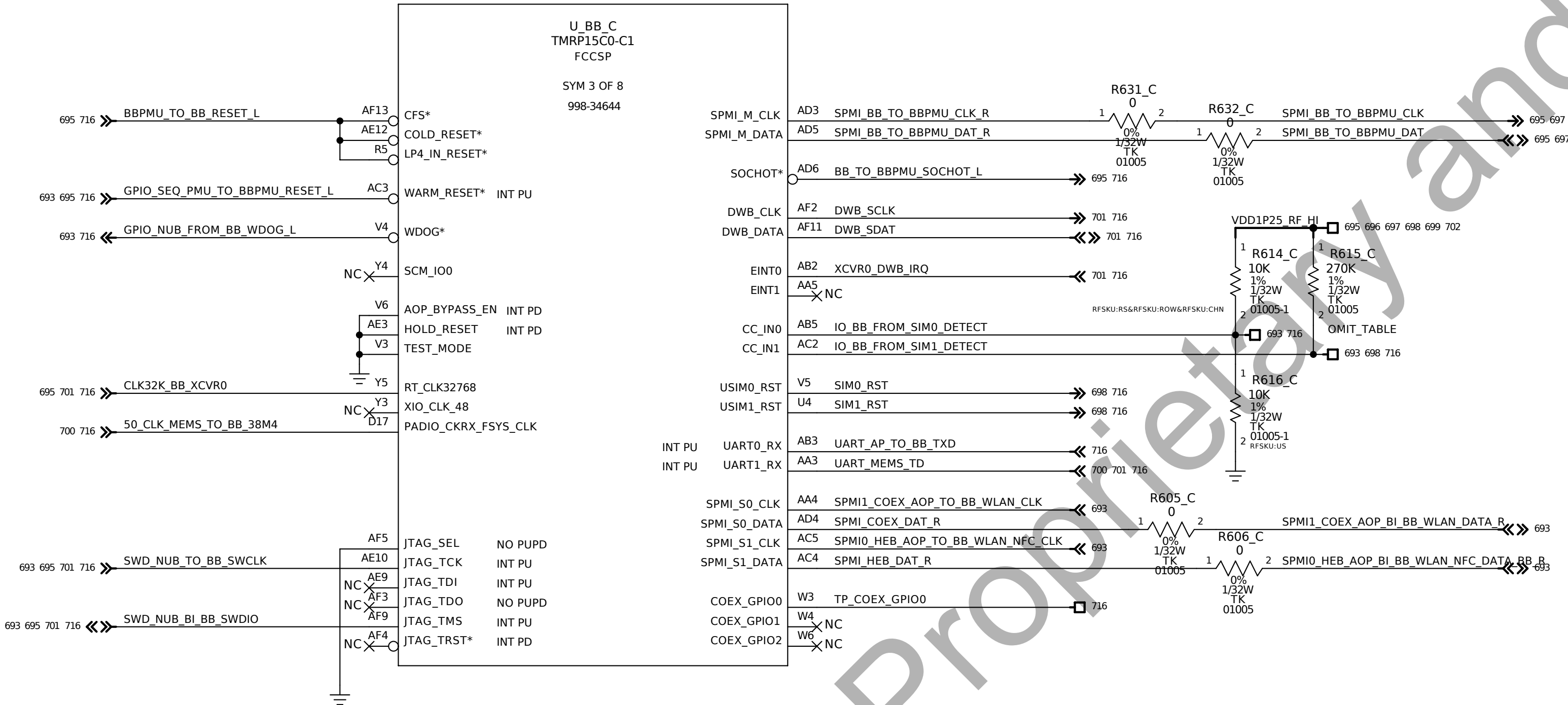
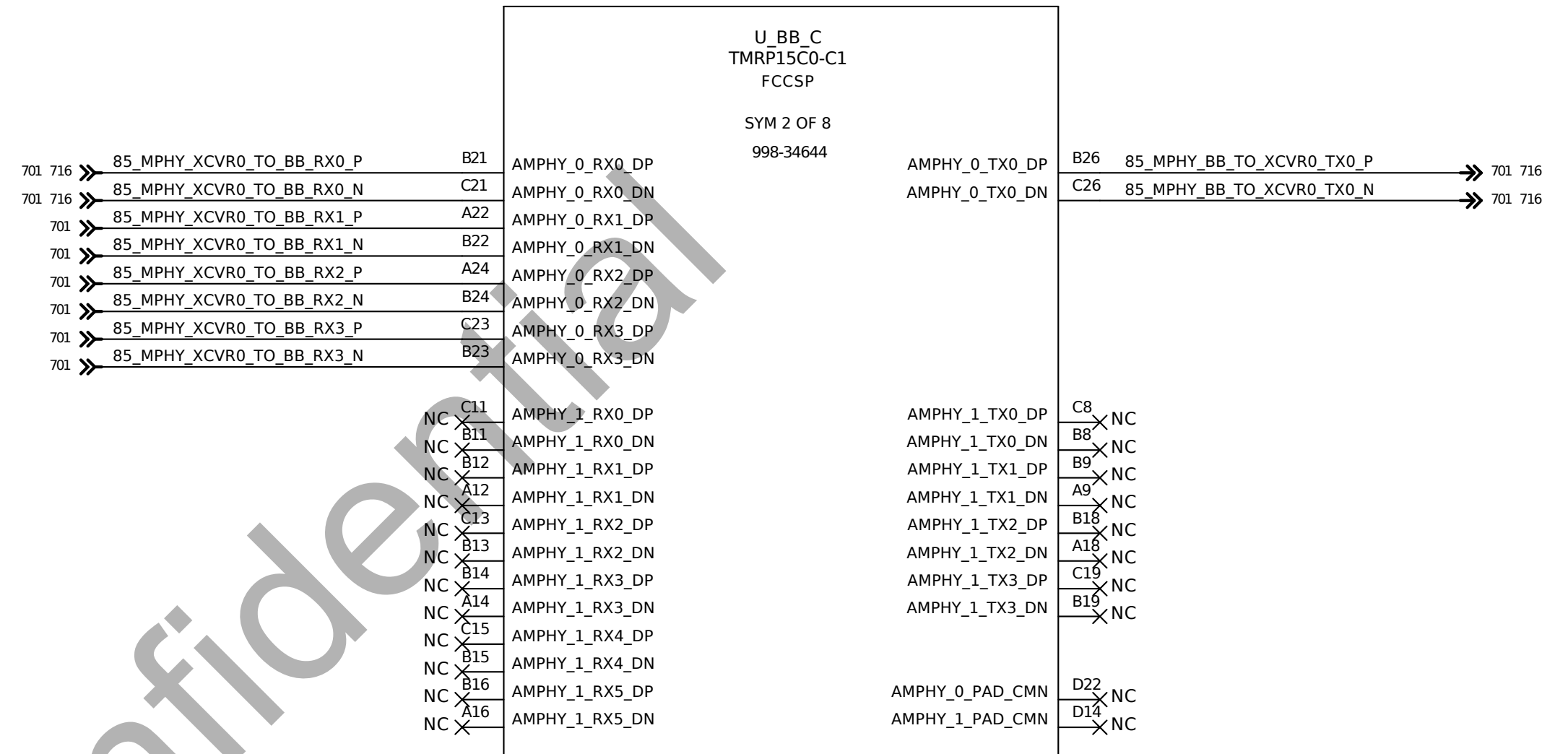
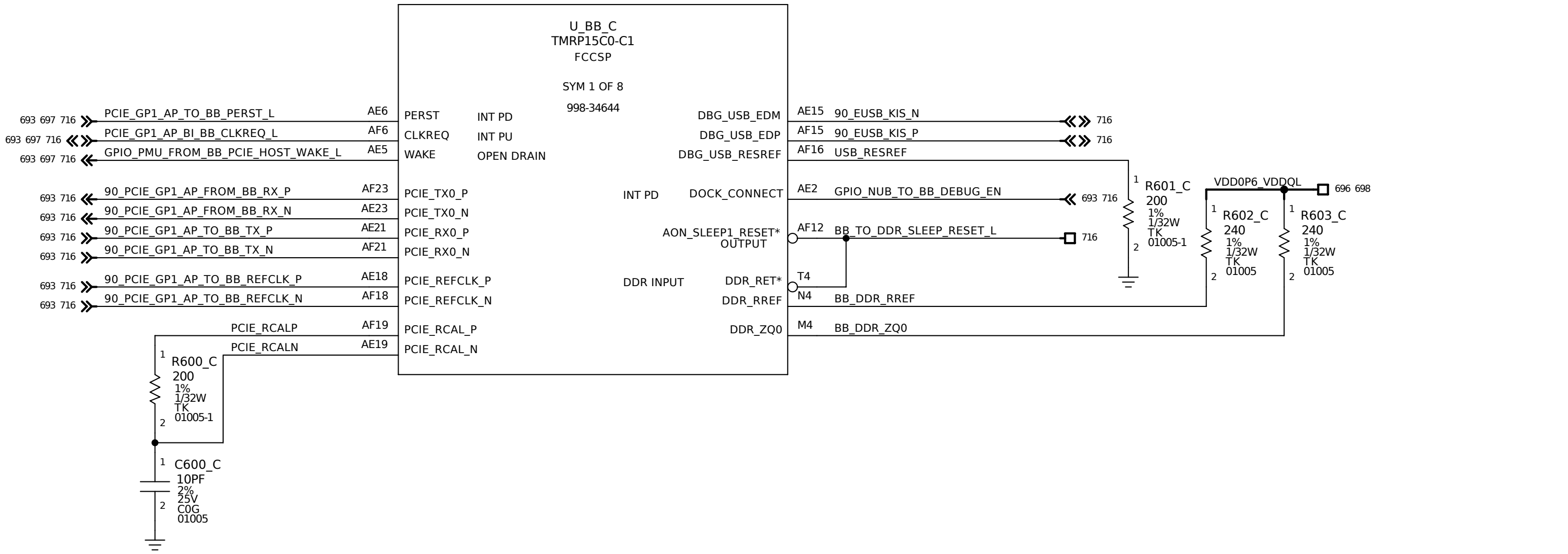
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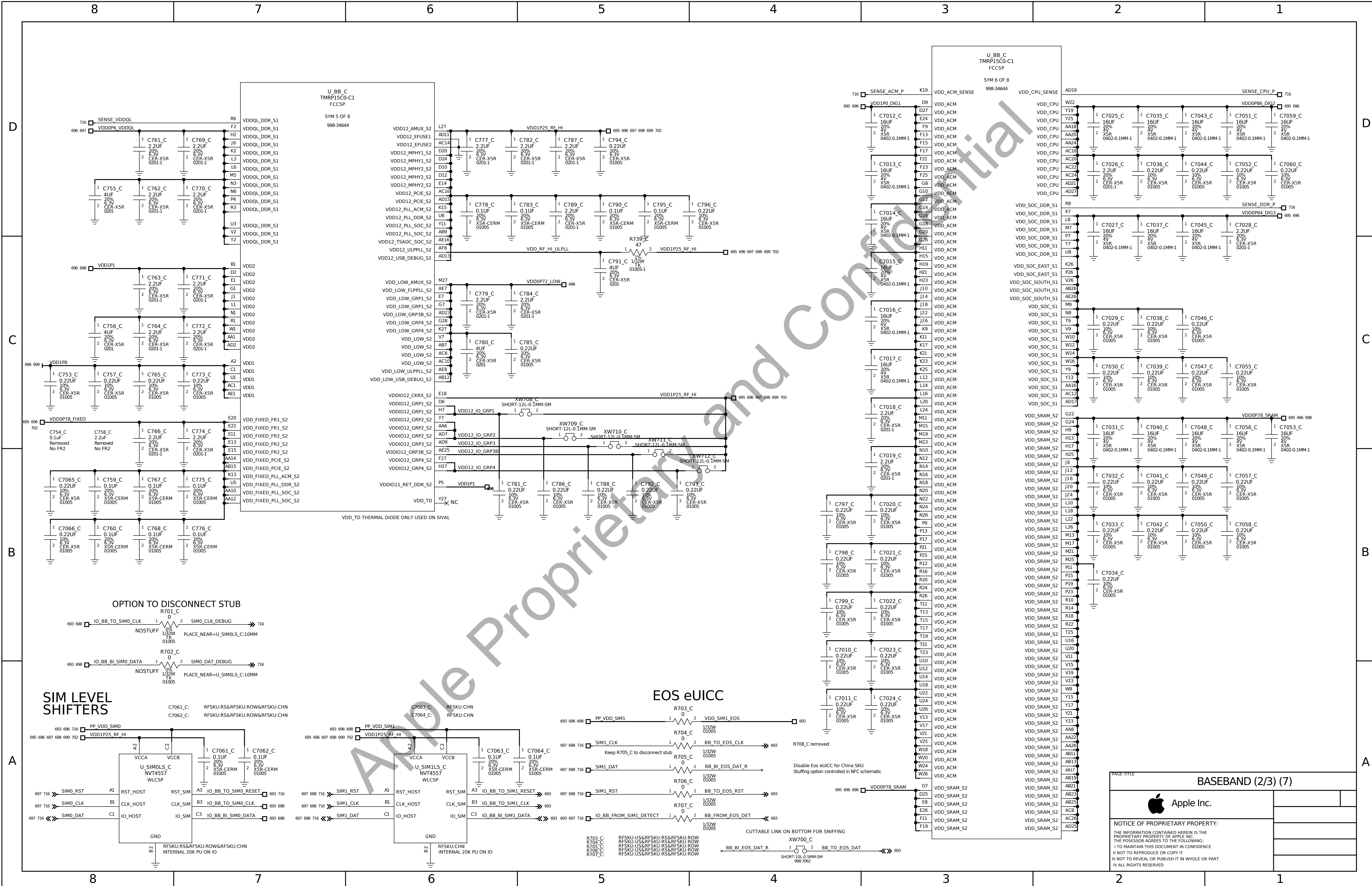
B

A



| PAGE TITLE  |  |
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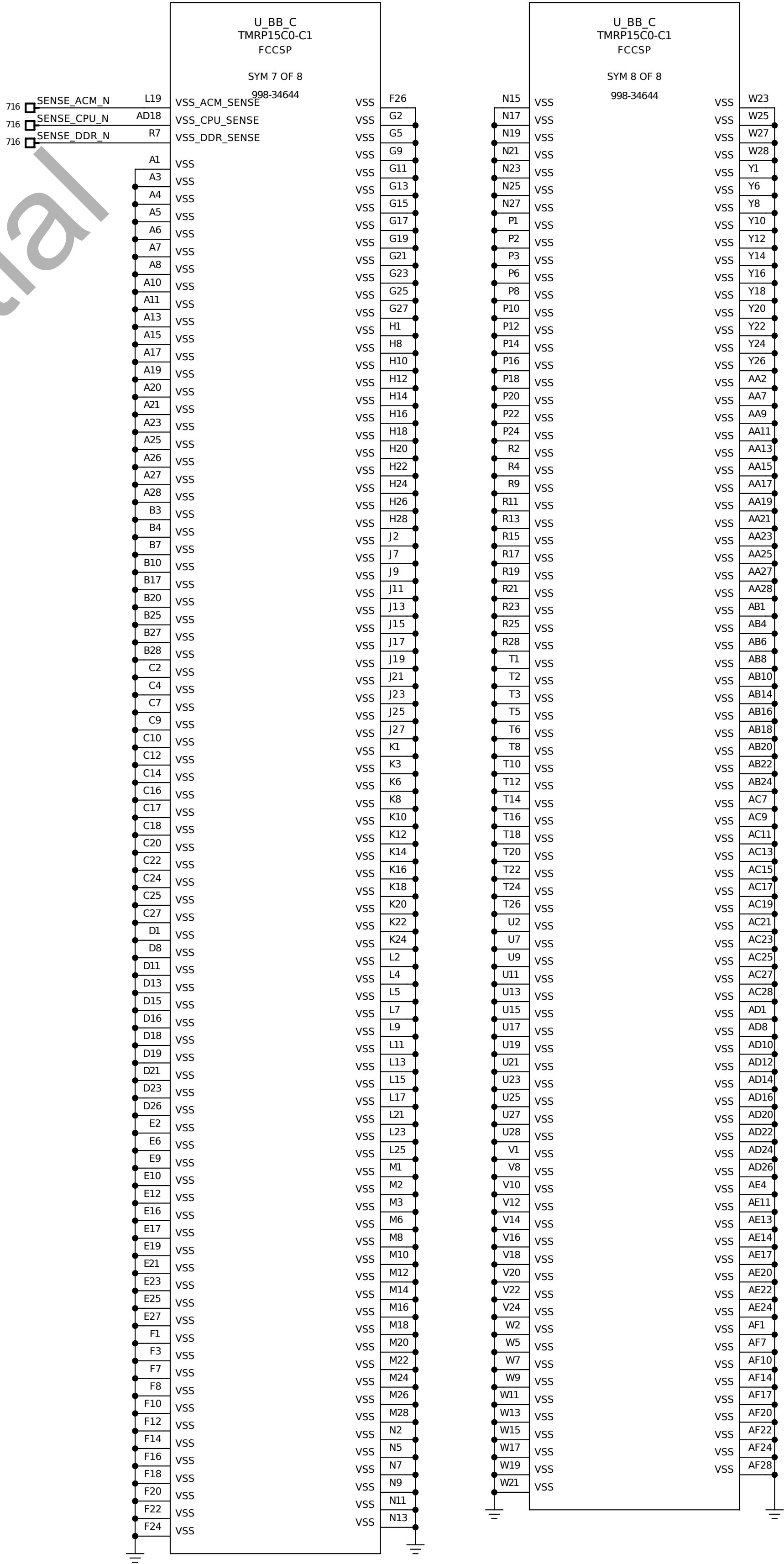
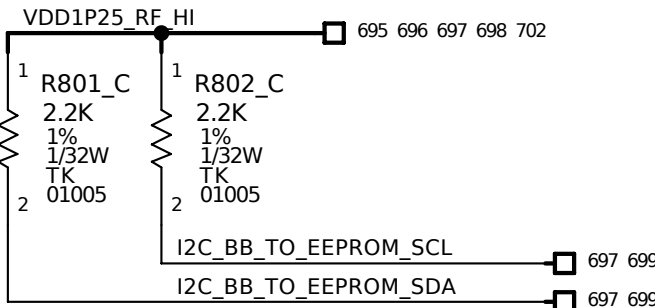
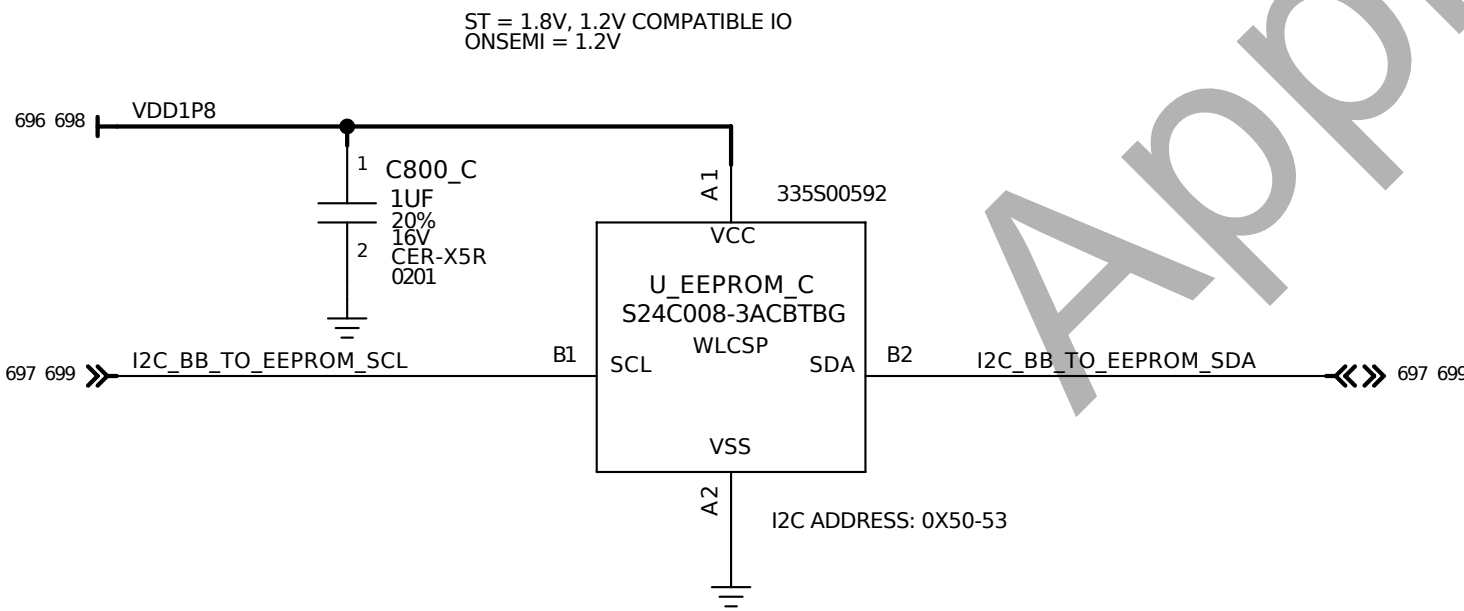
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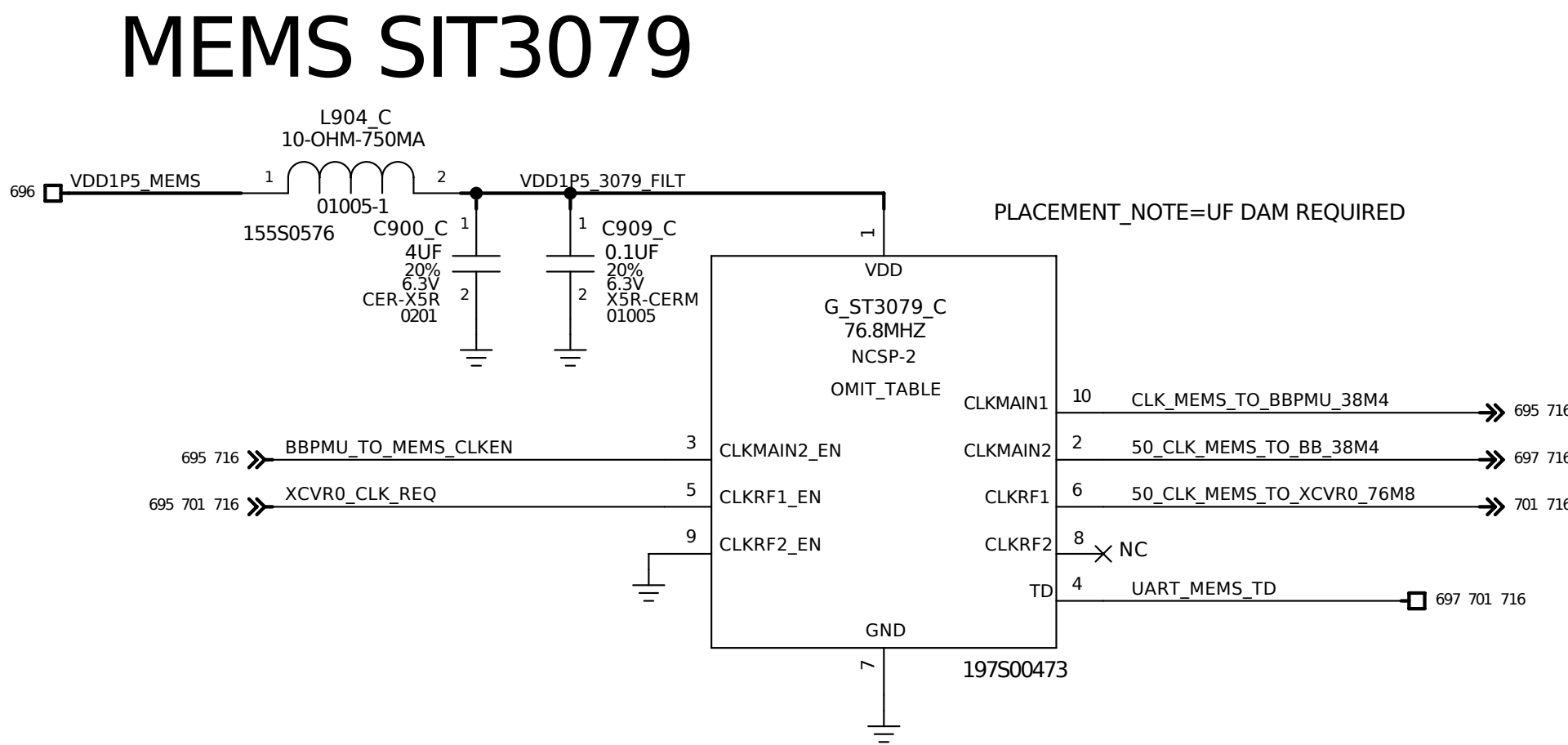
A

# BB EEPROM



CLOCKING

| PART NUMBER | BOMOPTION        | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                      |
|-------------|------------------|-----------------------|----------|-----|----------------------------------|
| 197500457   | SIT3079PKG:SMALL | G_ST3079_C            | CRITICAL | 1   | OSC, MEMS, 76.8MHZ, 4-OUT, CSP10 |
| 197500473   | SIT3079PKG:LARGE | G_ST3079_C            | CRITICAL | 1   | OSC, MEMS, 76.8MHZ, 4-OUT, CSP10 |



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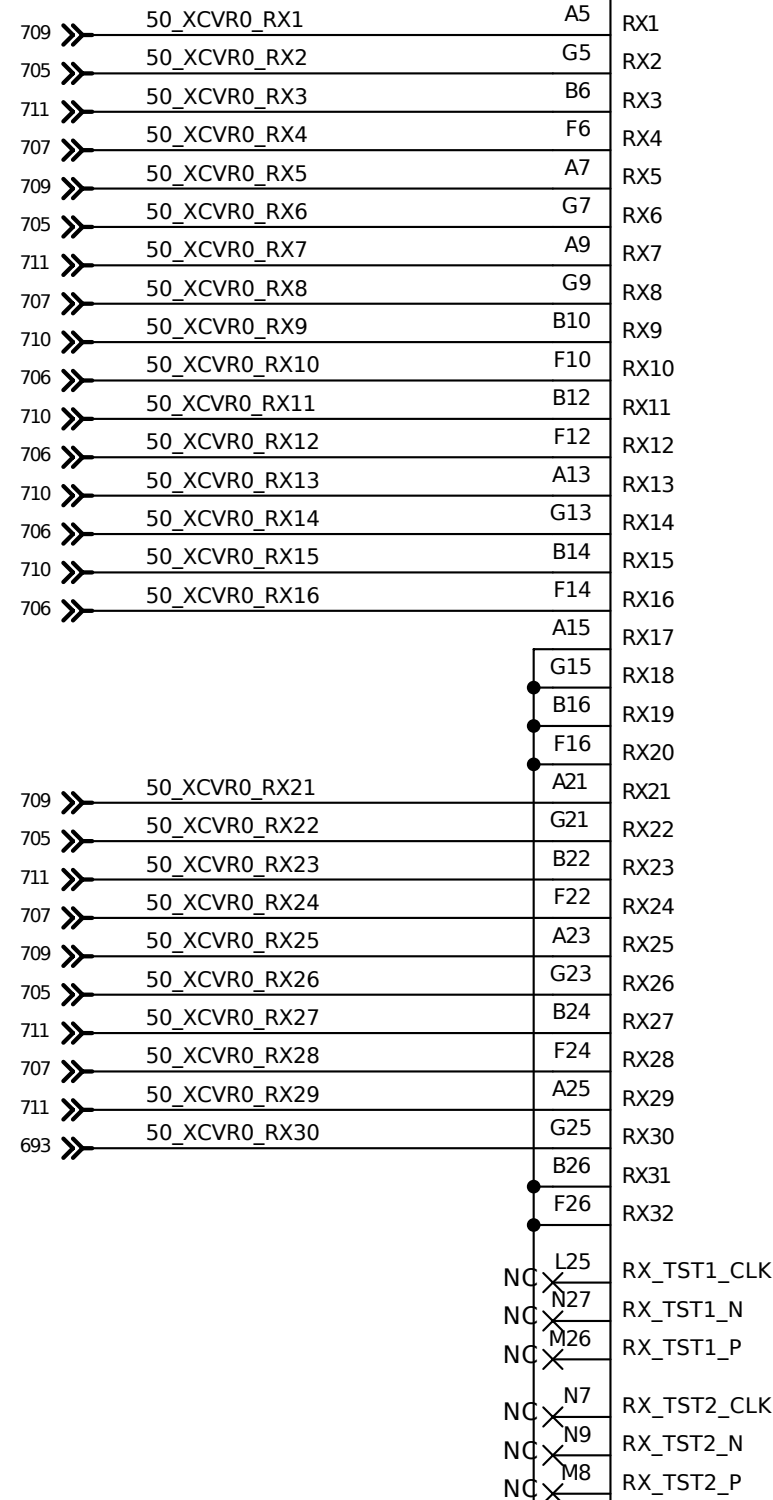
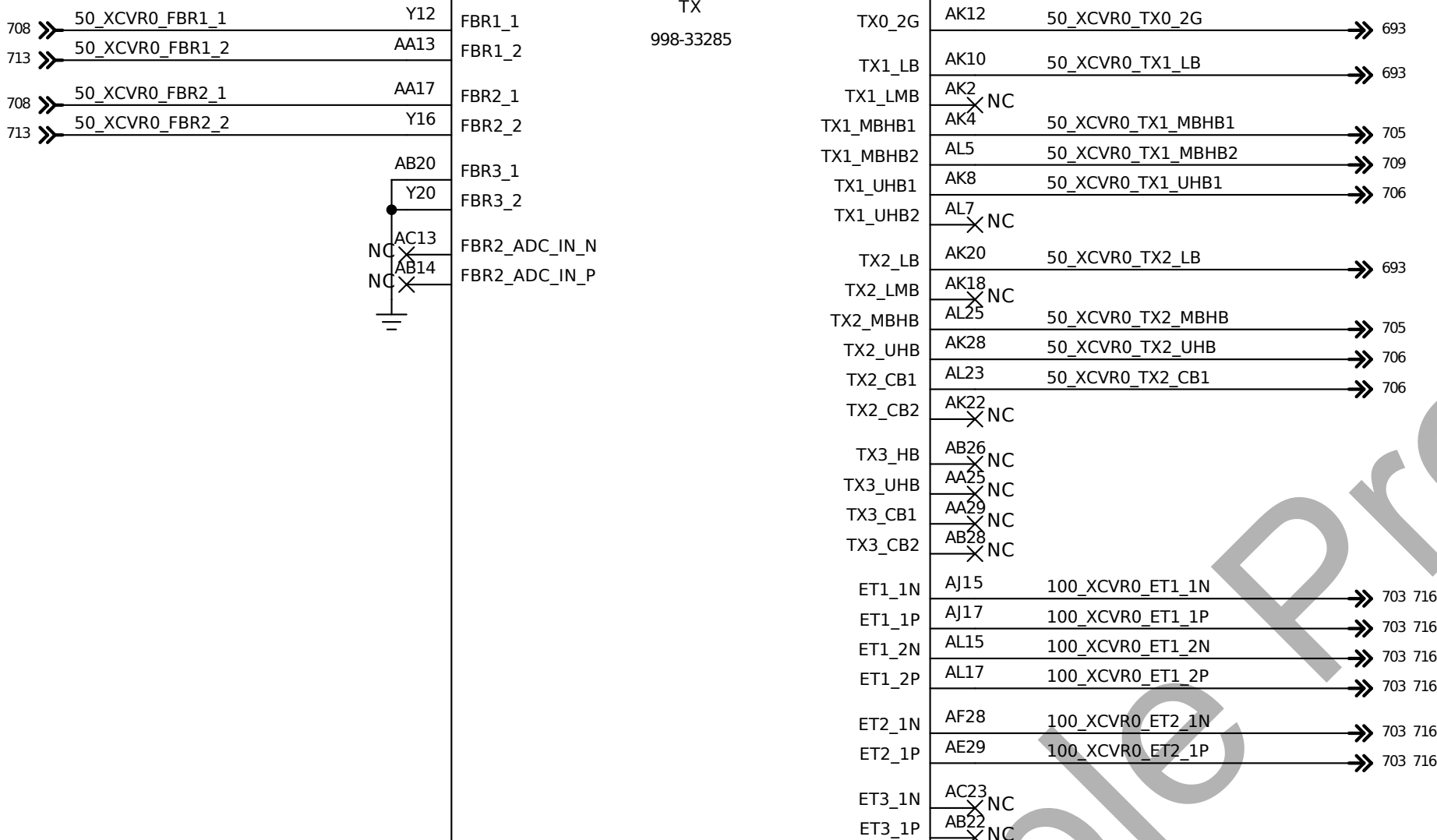
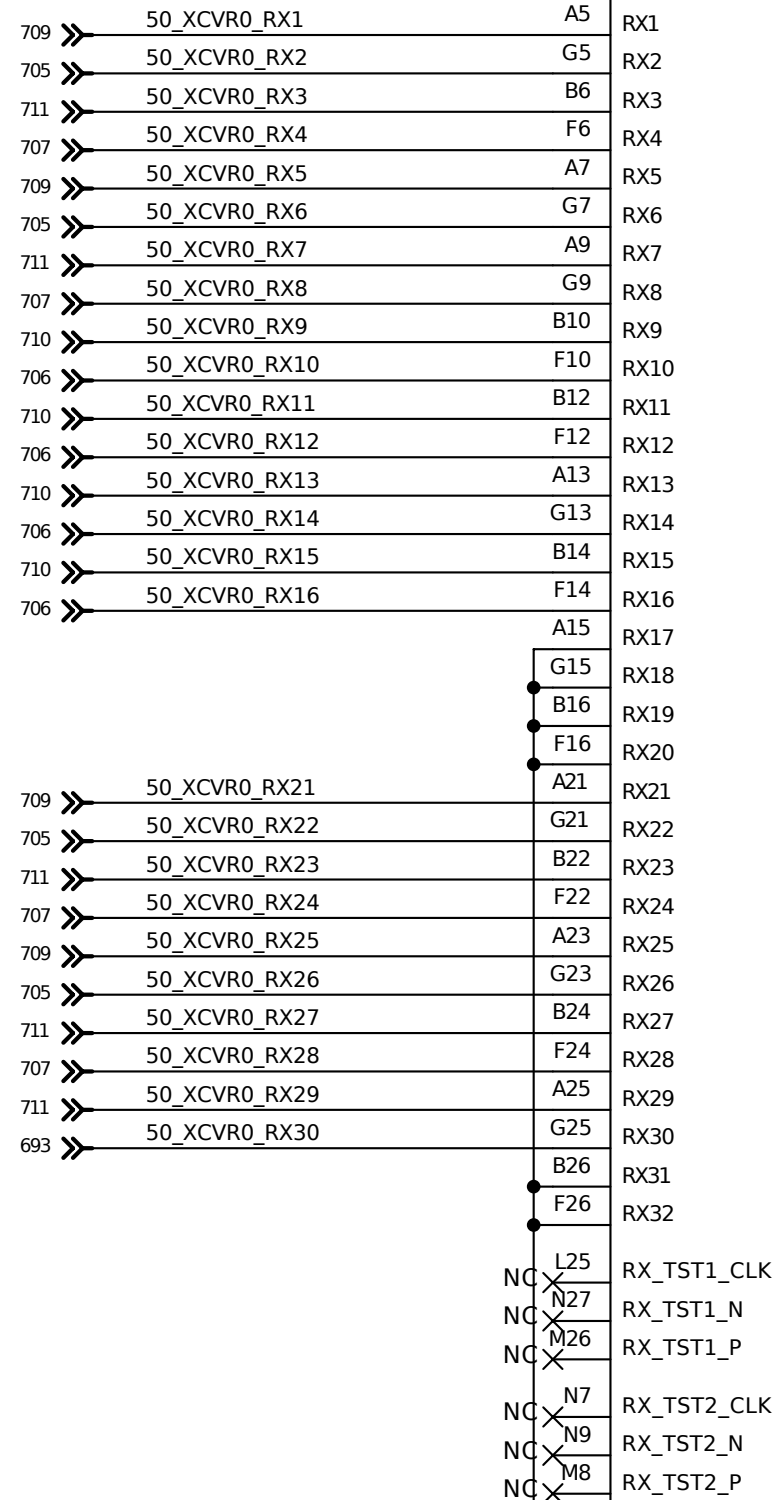
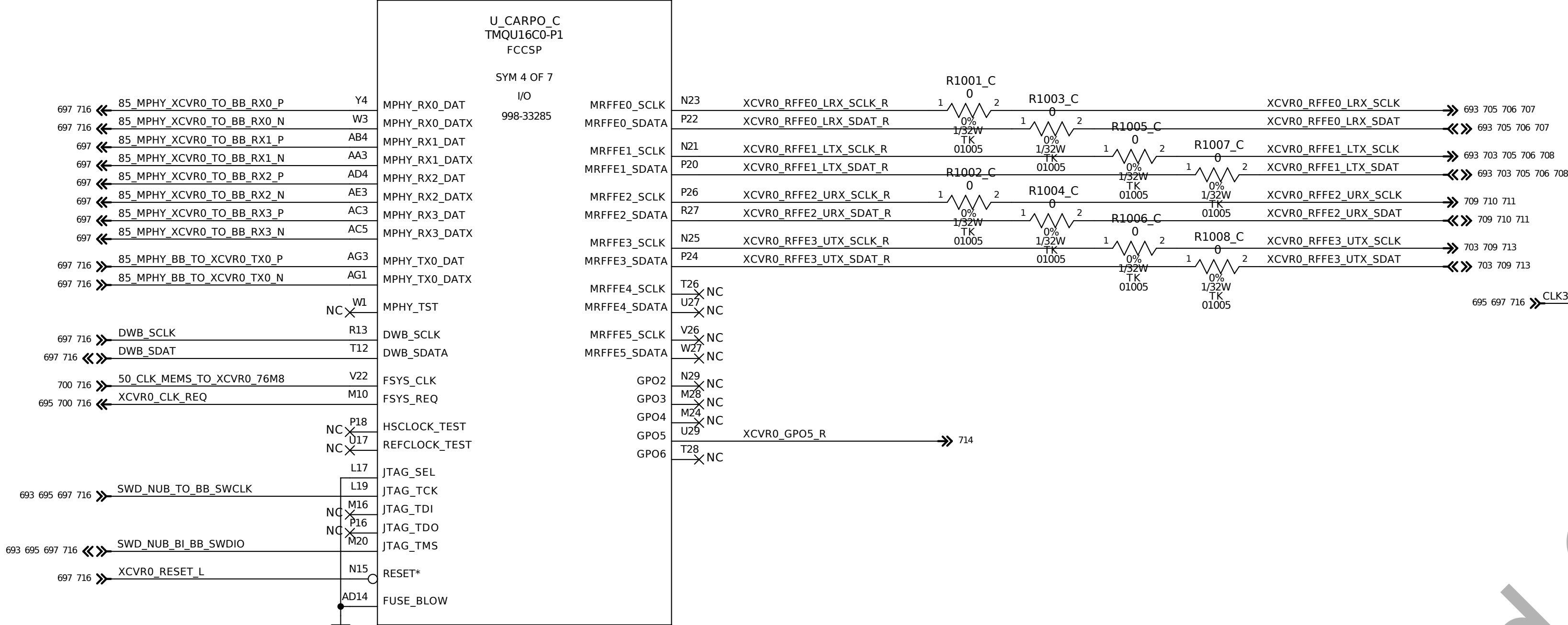
A

CONTROL

GNSS

RX

TX



PAGE TITLE

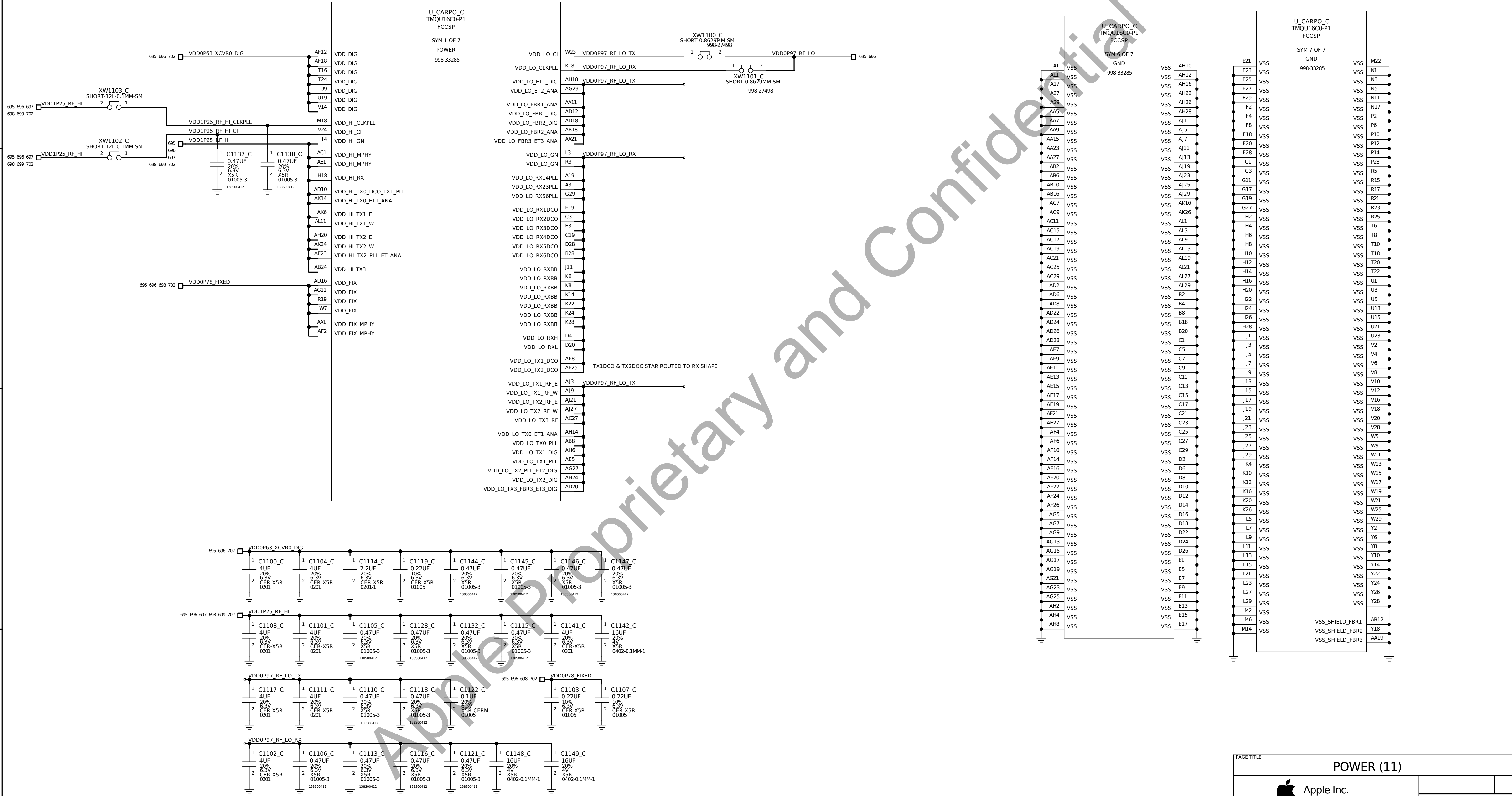


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POWER



LAT

UAT DPA

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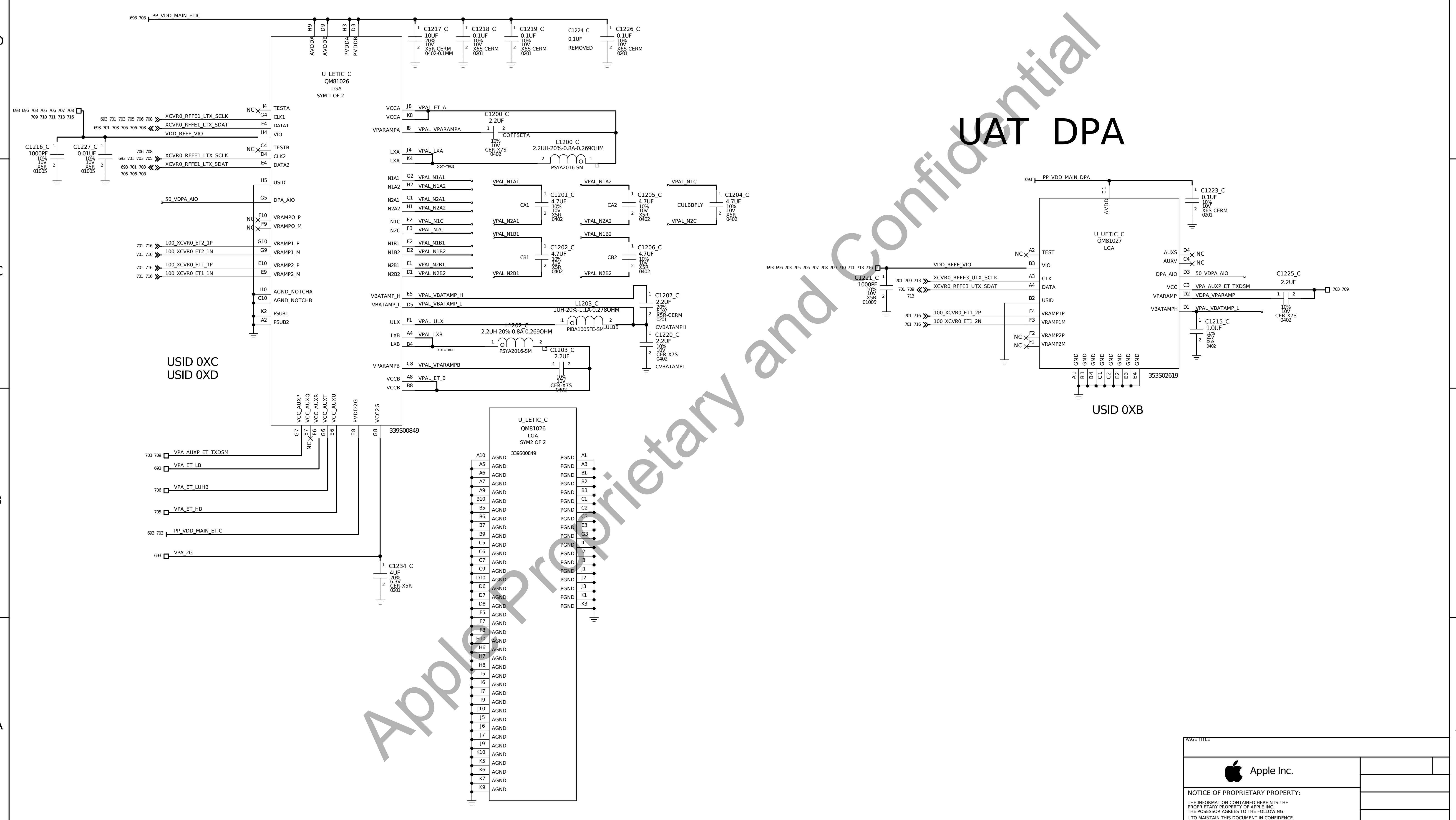
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LB+2G SPAD

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HIER\_RADIO\_S\_CG

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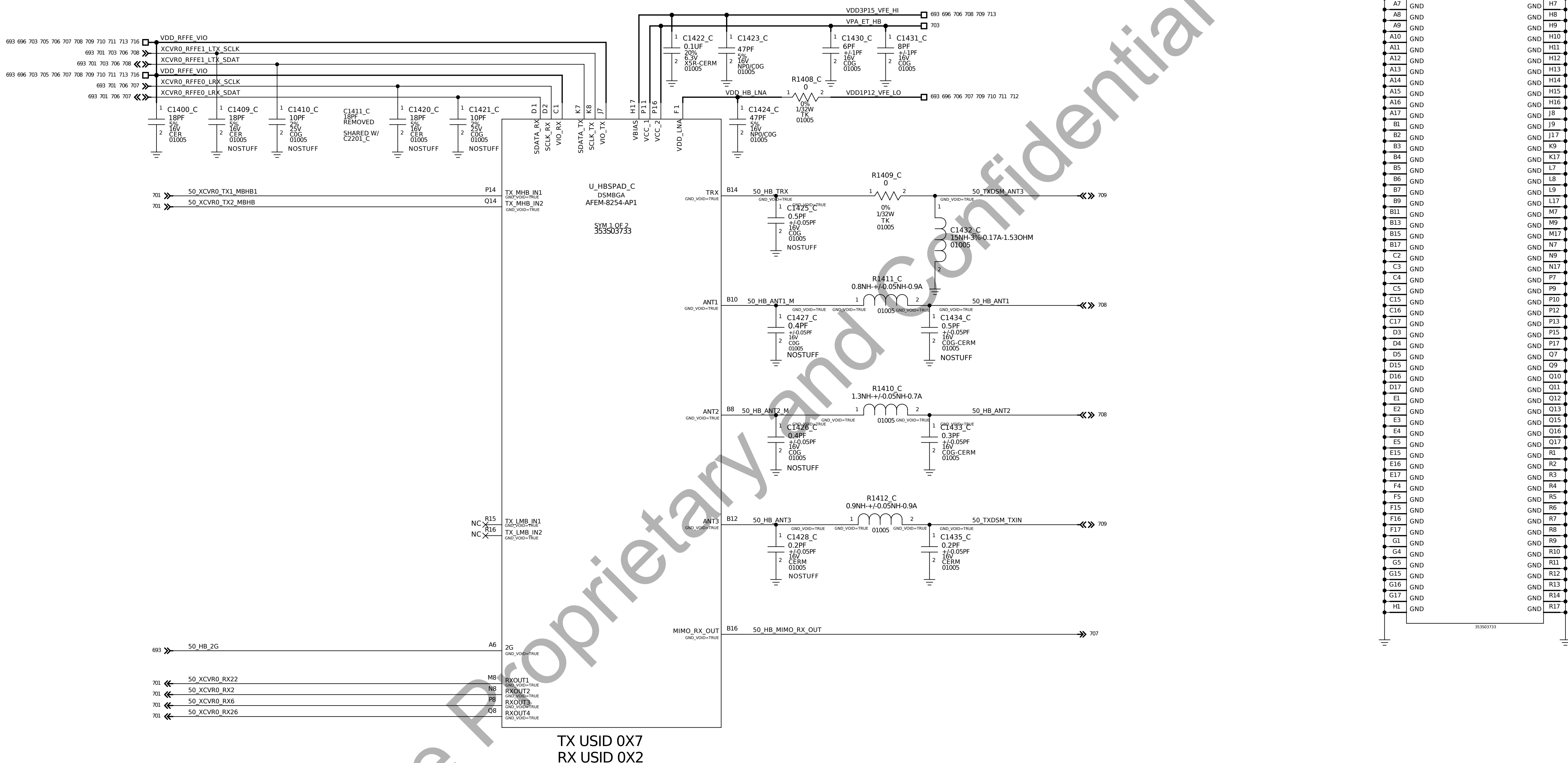
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3

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HB SPAD



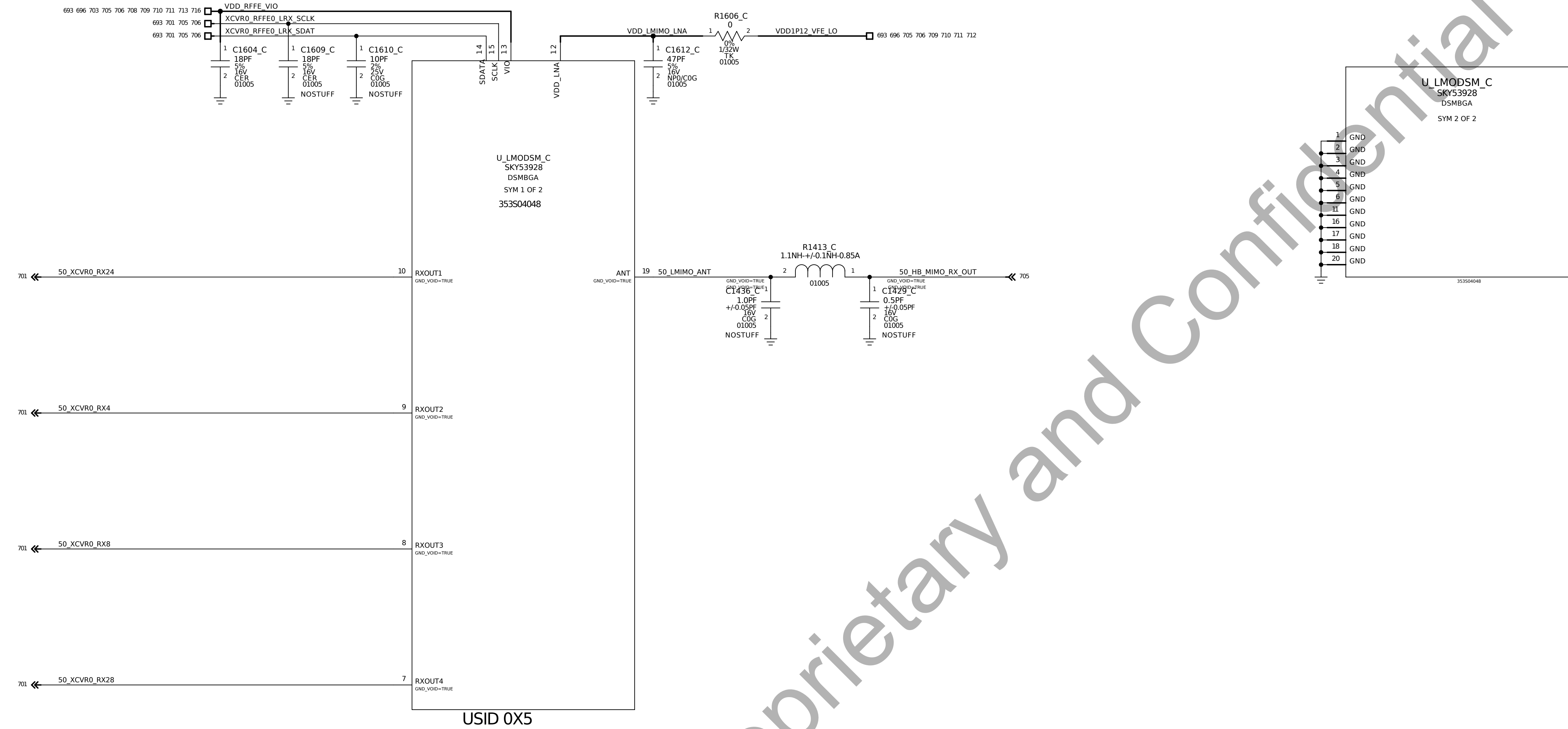


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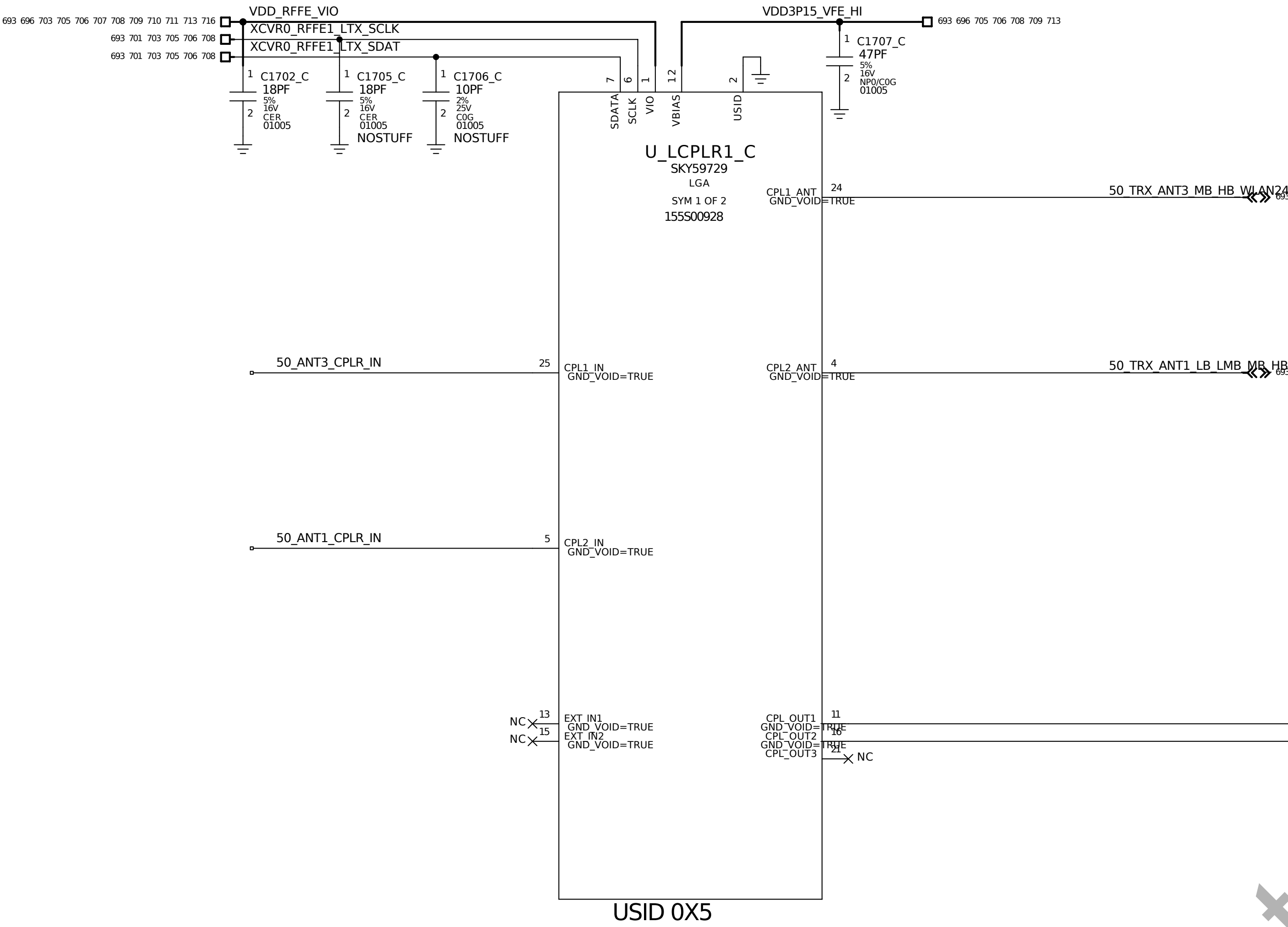


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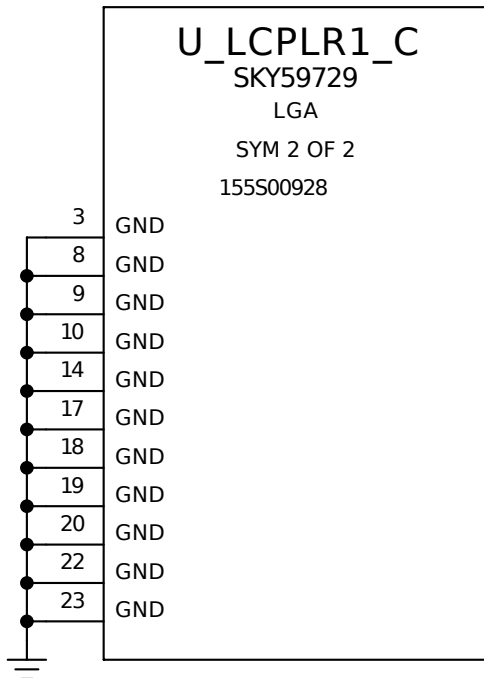
FR1 LAT MIMO DSM



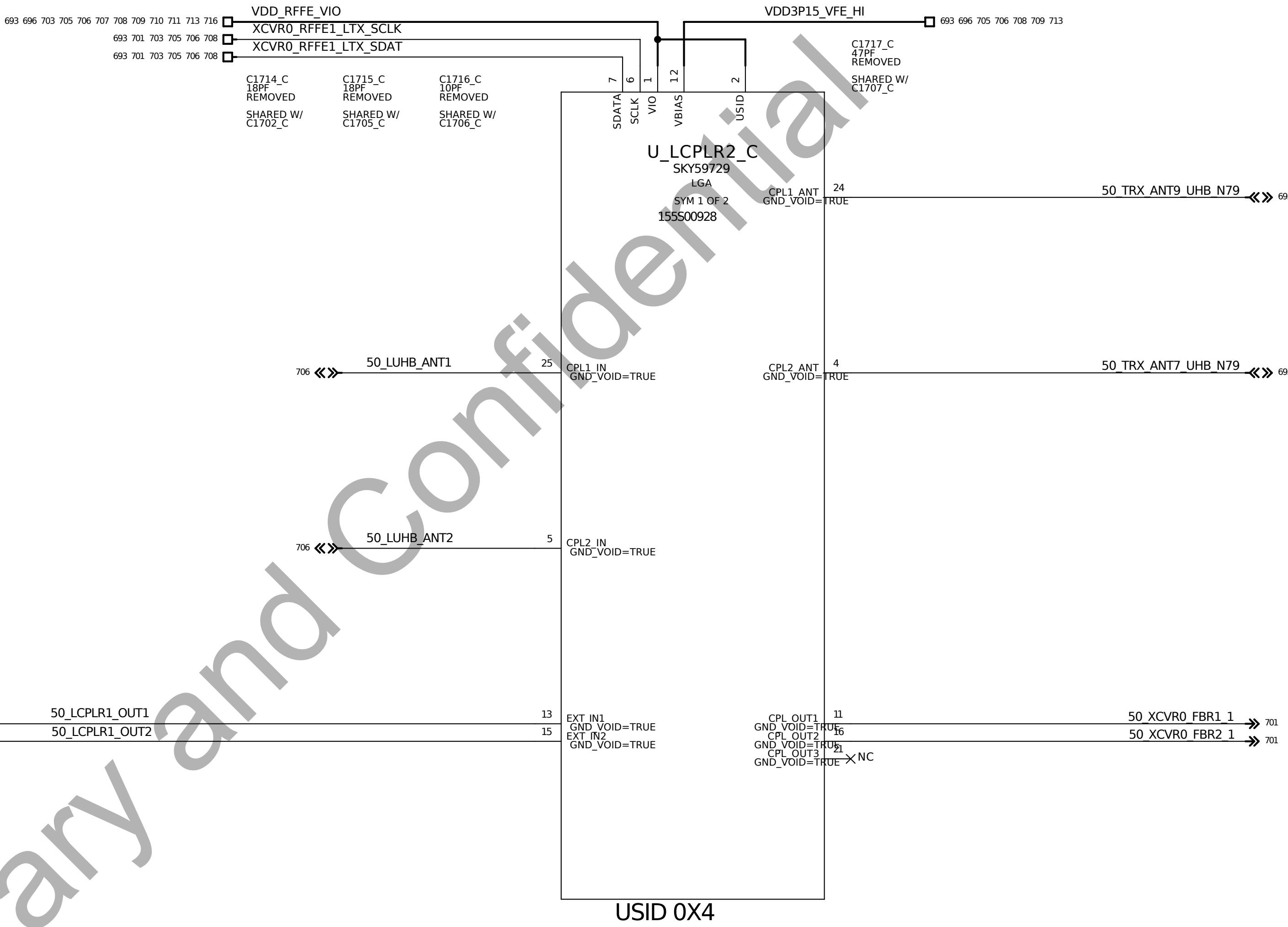
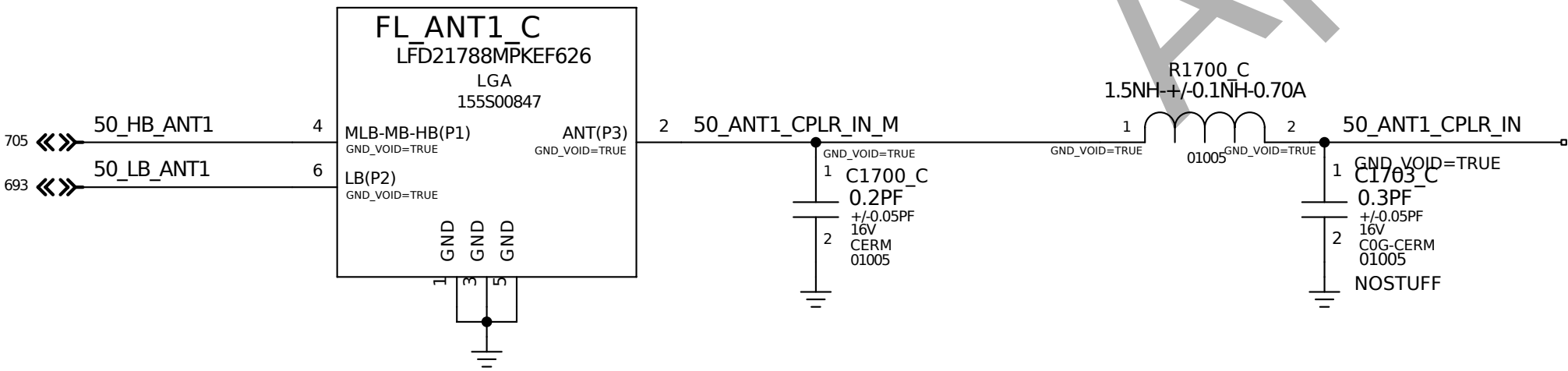
FR1 LAT COUPLERS



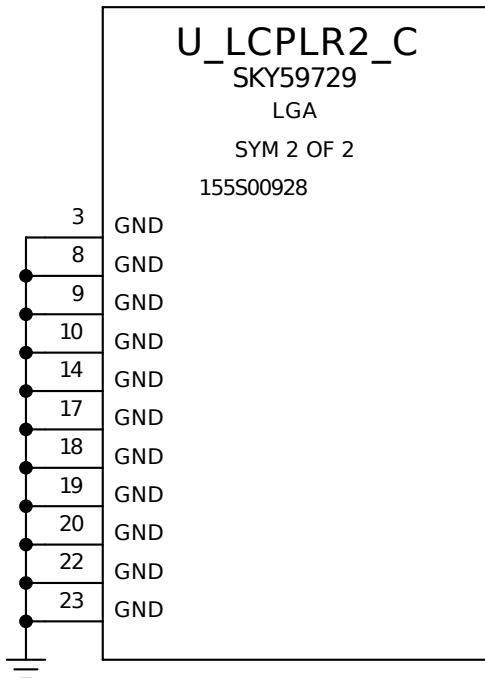
DUAL COUPLER



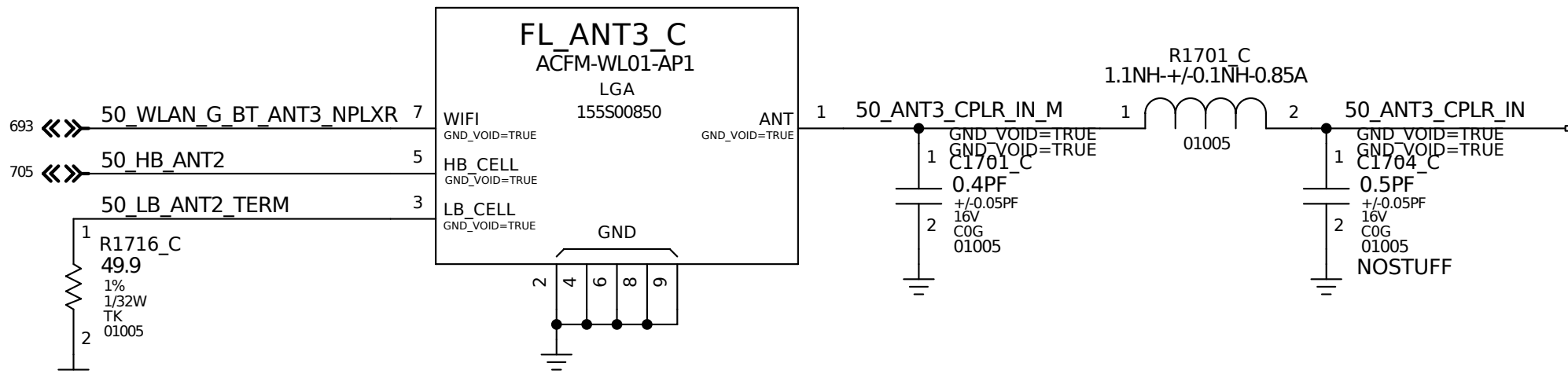
ANT1 DIPLEXER



DUAL COUPLER



ANT3 DIPLEXER

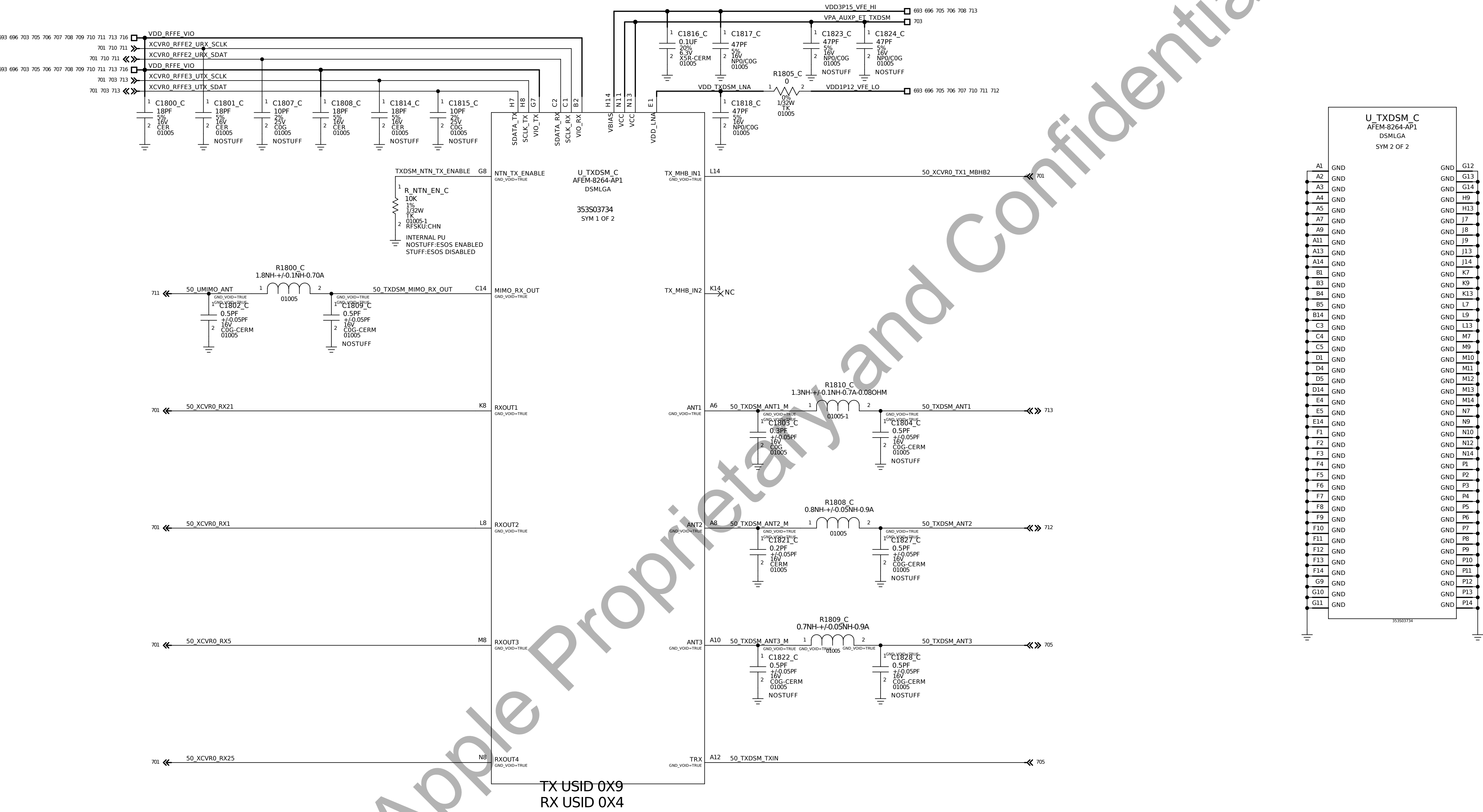


FR1 LAT COUPLERS (17)



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FR1 UAT TX DSM



The schematic diagram illustrates the internal structure and external connections of the U\_UUHBDSM\_C component, which is a 5-pin device. The component is labeled "U\_UUHBDSM\_C SKY53921 DSBGA" and "SYM 1 OF 2 353503749".

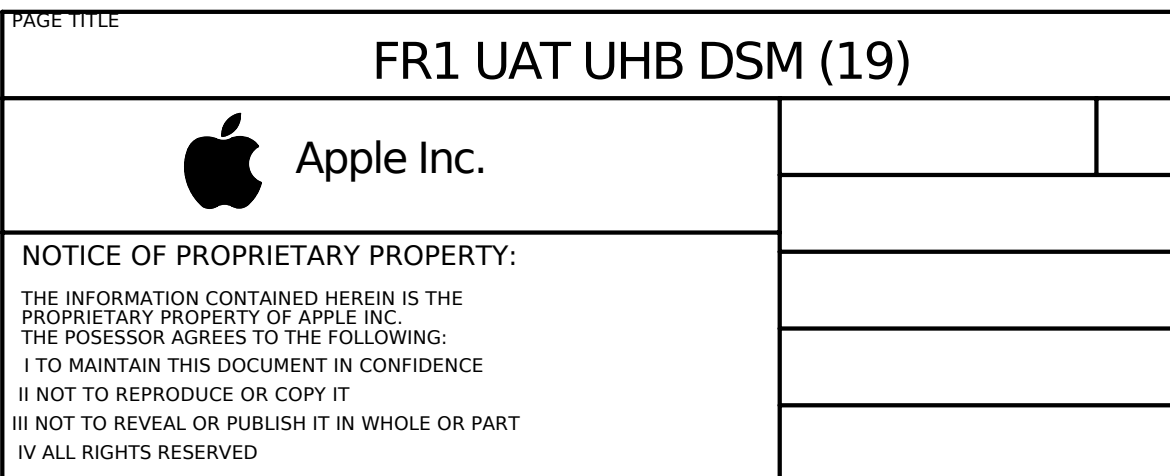
**Internal Structure:**

- The component is a 5-pin device with pins E6, E7, E5, E3, and E4.
- Internal components include:
  - Capacitors: C1922\_C (47PF, 16V, C0G, 01005), C1923\_C (2.2NH +/- 0.1NH-0.50A, 01005), C1924\_C (0.2PF, +/- 0.05PF, 16V, CERM, 01005), and C1927\_C (0.5PF, +/- 0.05PF, 16V, C0G, 01005).
  - Resistors: R1907\_C (0.5W, 1/32W, 1K, 01005), R1908\_C (5.6PF, +/- 0.05PF, 16V, C0G, 01005), and R1909\_C (1NH +/- 0.05NH-0.9A, 01005).
  - Inductors: L1901\_C (2.2NH +/- 0.1NH-0.50A, 01005) and L1902\_C (1NH +/- 0.05NH-0.9A, 01005).

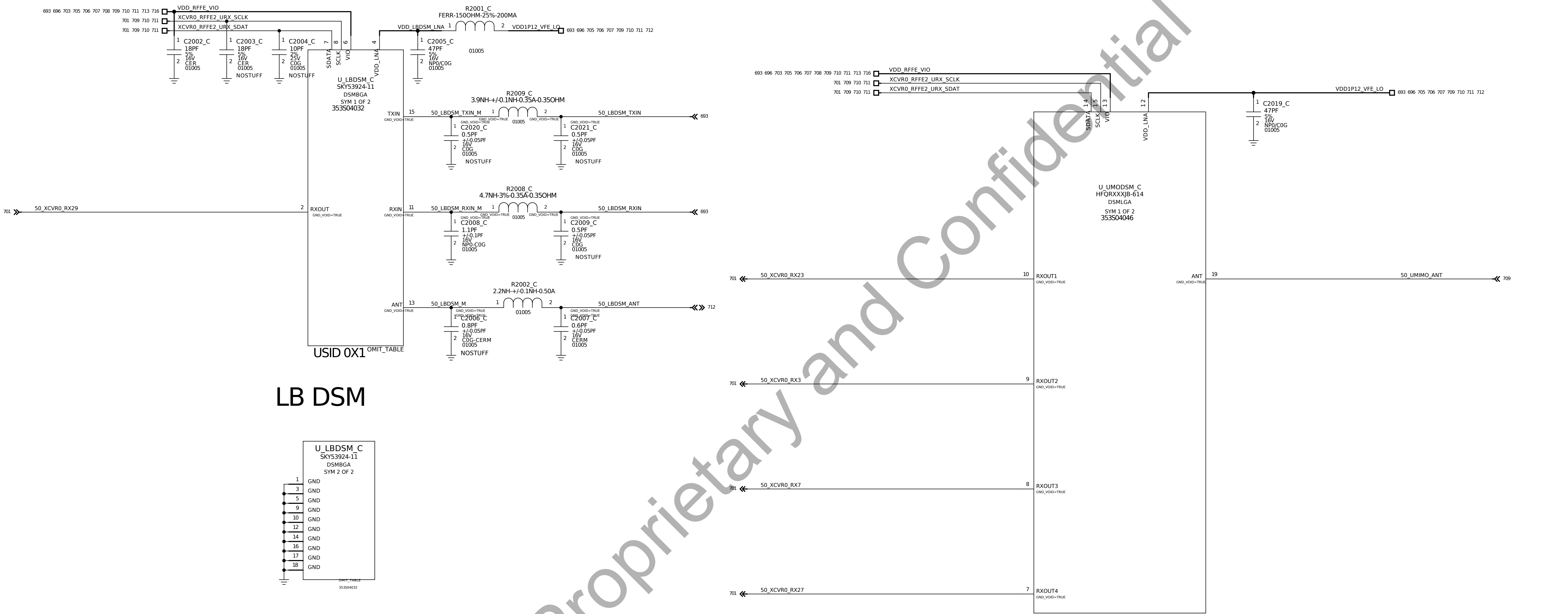
**External Connections:**

- Pin E6:** Connected to SDA\_TX, SCL\_TX, and VDD\_LNA.
- Pin E7:** Connected to SDA\_RX, SCL\_RX, and VDD\_LNA.
- Pin E5:** Connected to VDD\_LNA.
- Pin E3:** Connected to VDD\_LNA.
- Pin E4:** Connected to VDD\_LNA.
- ANT1:** Connected to 50 OHM ANT1, with a 5.6PF capacitor (R1908\_C) and a 0.5PF capacitor (C1927\_C) in parallel.
- ANT2:** Connected to 50 OHM ANT2, with a 1NH inductor (R1909\_C) and a 0.5PF capacitor (C1927\_C) in parallel.
- ANT3:** Connected to 50 OHM ANT3, with a 0.5PF capacitor (C1905\_C) in parallel.
- TXIN:** Connected to TXIN, with a 0.5PF capacitor (C1905\_C) in parallel.

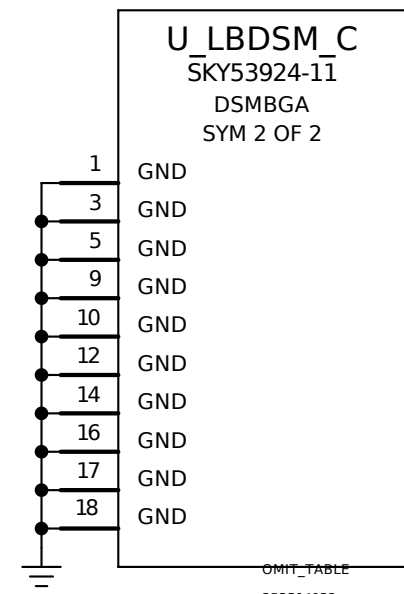
The diagram also shows a large "Apple Confidential" watermark across the bottom half of the image.



FR1 UAT RX (1/2)



LB DSM

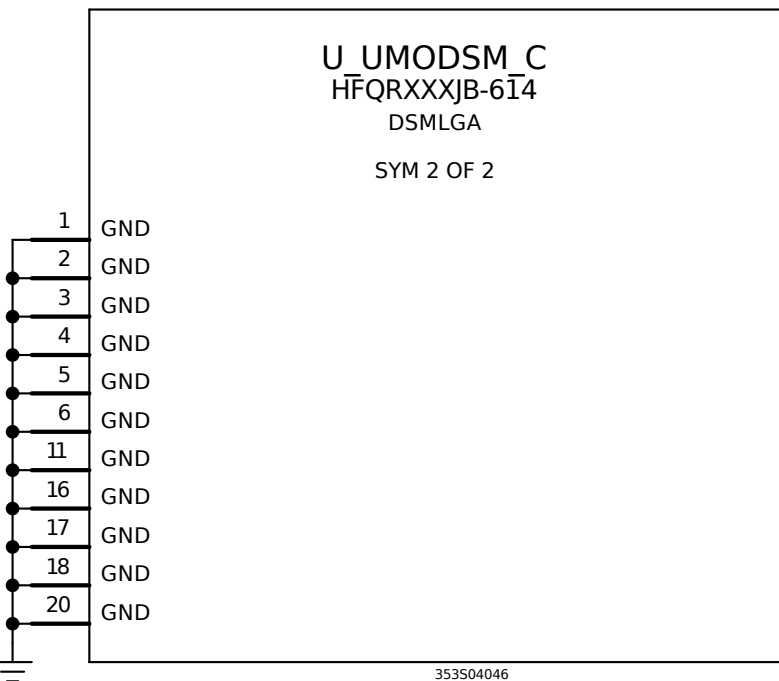


LB DSM RF SKU

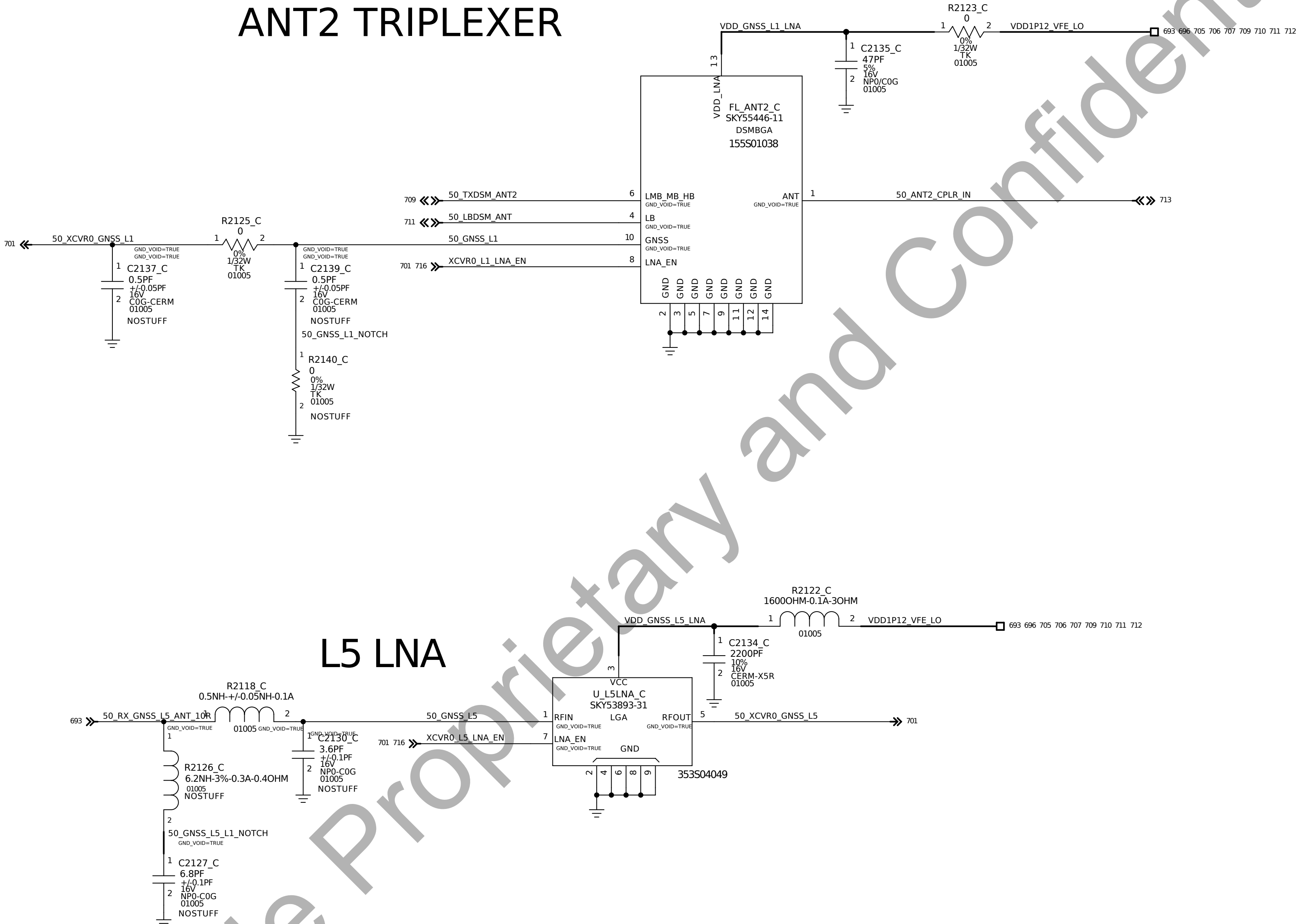
|        | PART NUMBER | BOMOPTION | REFERENCE DESIGNATORS | CRITICAL | QTY | DESCRIPTION                    |
|--------|-------------|-----------|-----------------------|----------|-----|--------------------------------|
| WW SKU | 353S04032   | RFSKU:US  | U_LBDSM_C             | CRITICAL | 1   | IC,DSM,LB,SKY53924,DSMBGA18    |
| WW SKU | 353S04032   | RFSKU:RS  | U_LBDSM_C             | CRITICAL | 1   | IC,DSM,LB,SKY53924,DSMBGA18    |
| RS SKU | 353S04052   | RFSKU:ROW | U_LBDSM_C             | CRITICAL | 1   | IC,RS,DSM,LB,SKY53925,DSMBGA18 |
| RS SKU | 353S04052   | RFSKU:CHN | U_LBDSM_C             | CRITICAL | 1   | IC,RS,DSM,LB,SKY53925,DSMBGA18 |

USID 0X5

MIMO DSM

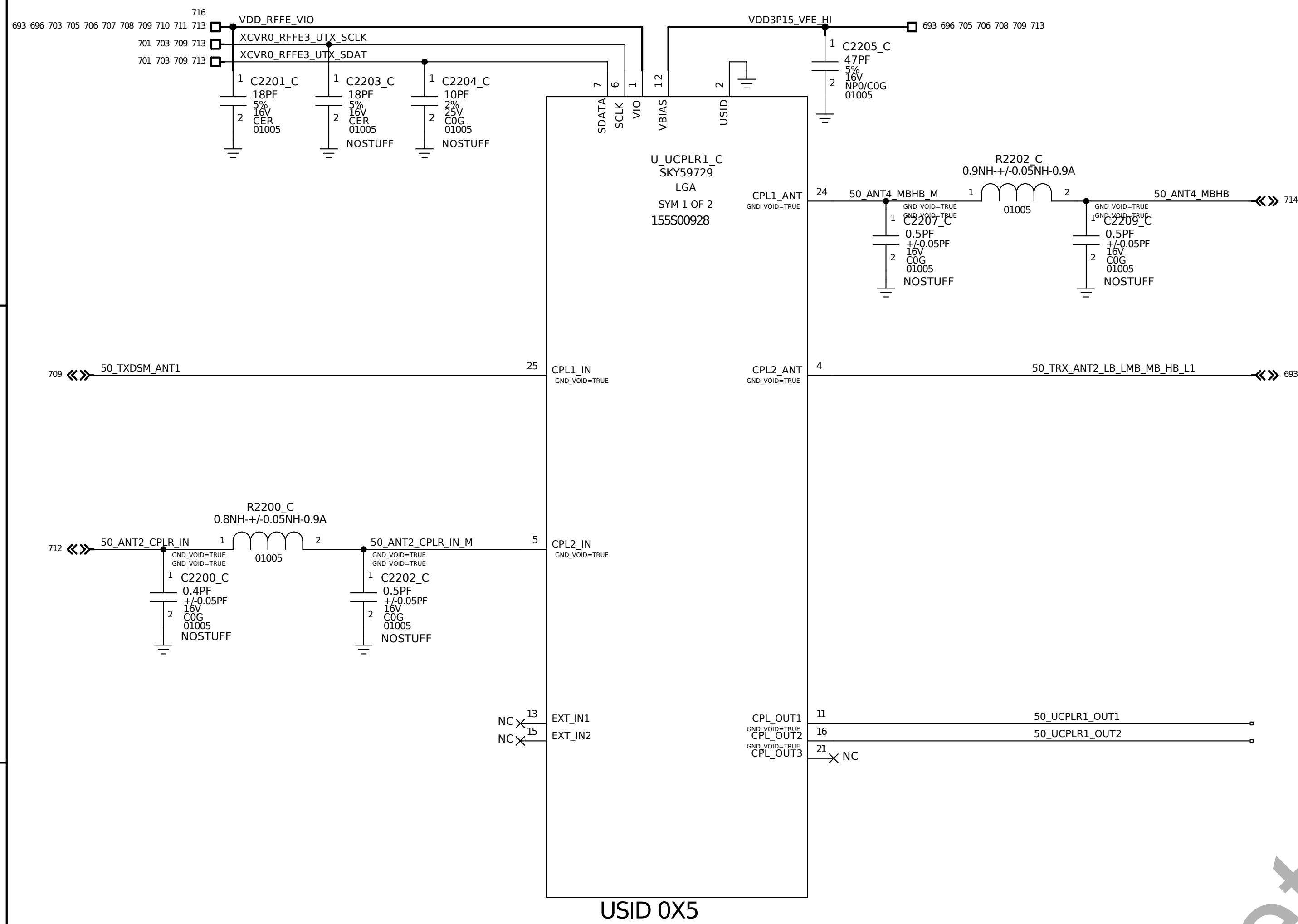


FR1 UAT RX (2/2)

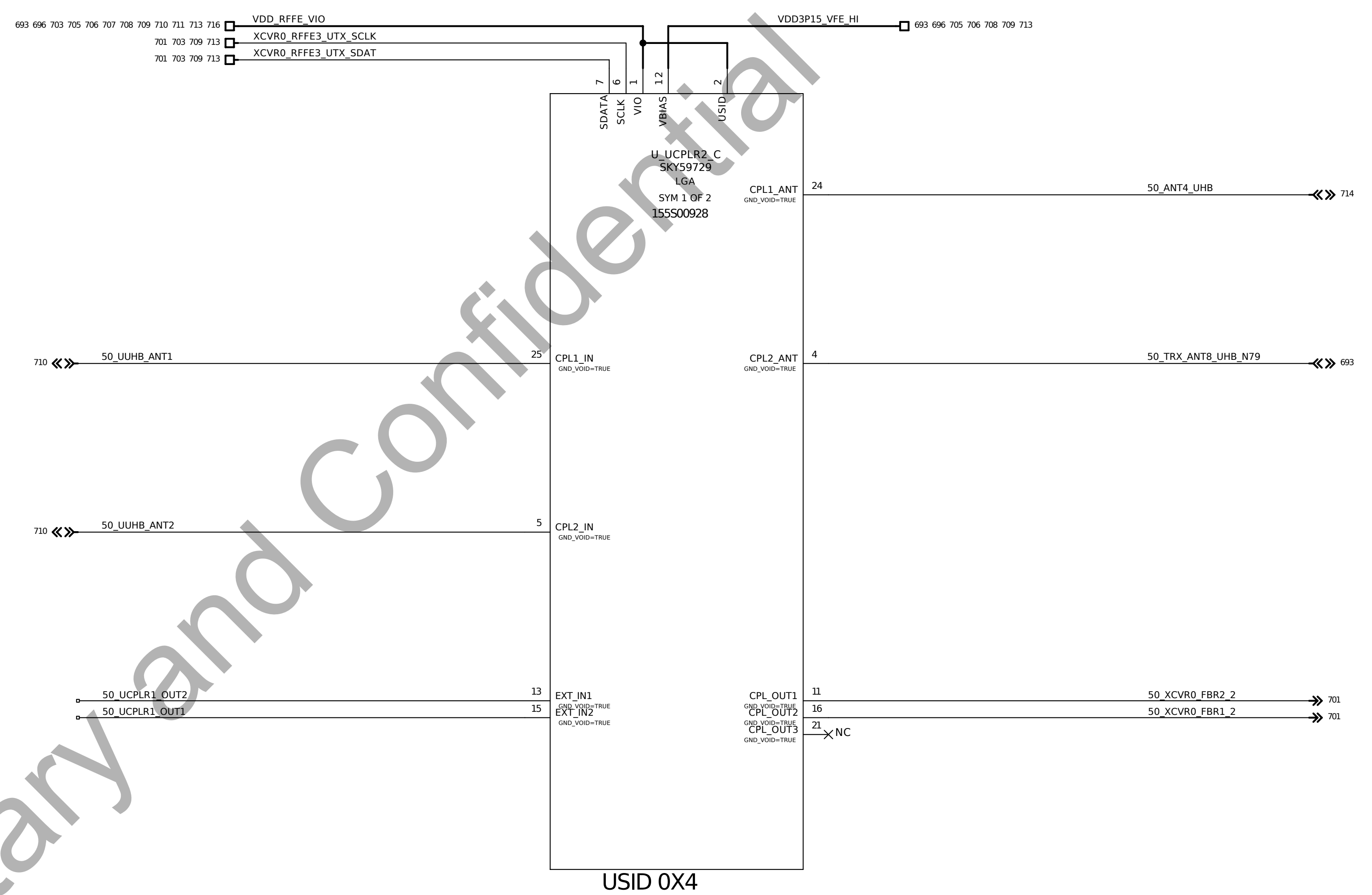
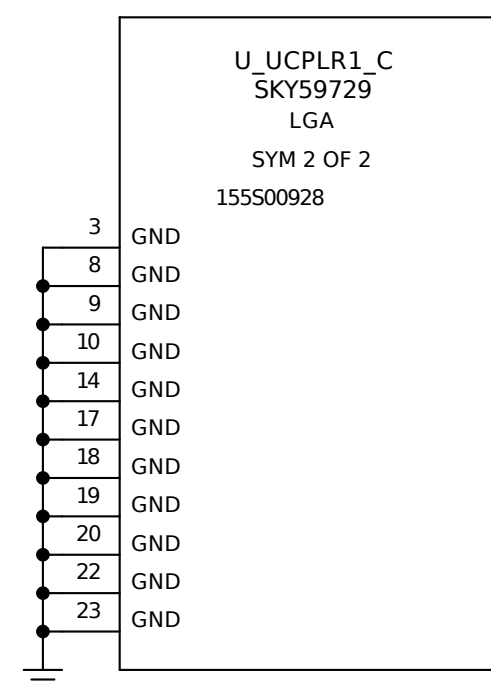




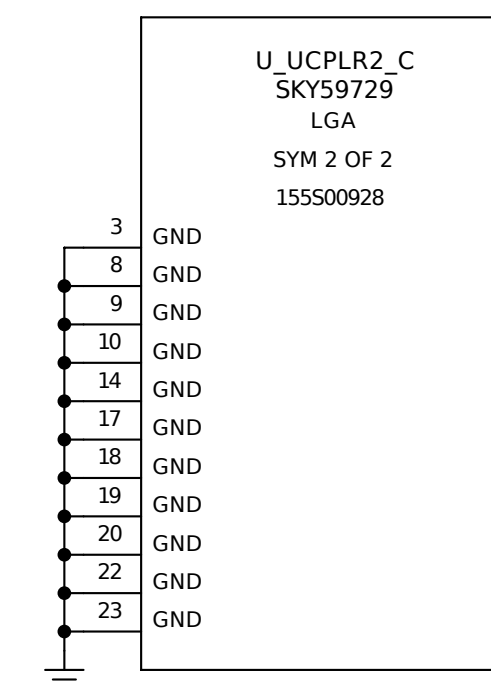
# FR1 UAT COUPLERS



## DUAL COUPLER



## DUAL COUPLER



# FR1 UAT ANTENNAS & GPS

| CLASS DEFINITIONS       |                             | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* |  | CLASS OVERVIEW |
|-------------------------|-----------------------------|---|--|----------------|
| CLASS NAME              | CONSTRAINT SET              | DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |  | Y/N            |
| 50_ANT4_MBHB            | P A_50_WIDE_L3-THIN_SE      | 50_ANT4_MBHB, 50_ANT4_M                                   |  | ?              |
| 50_ANT4_UAT2            | P A_50_WIDE_L3-HWIDE_SE     | 50_TRX_ANT4_MB_HB_WLAN24                                  |  | ?              |
| 50_ANT2_CPLR            | P A_50_THIN_SE              | 50_ANT2_CPLR_IN, 50_ANT2_CPLR_IN_M                        |  | ?              |
| 50_ANT10_GNSS_L5        | P A_50_WIDE_L3-HWIDE_SE     | 50_RX_GNSS_L5_ANT_10L, 50_GNSS_L5                         |  | ?              |
| 50_WIDE_SURFACE_THIN_SE | P A_50_WIDE_SURFACE_THIN_SE | 50_TXDSM_TXIN, 50_LUHB_ANT3, 50_TXDSM_ANT3                |  | ?              |

<HIER SCHEMATIC> | <TOP SCHEMATIC>

50\_ANT4 = 50\_TRX\_ANT4\_MB\_HB\_WLAN24

50\_ANT10 = 50\_RX\_GNSS\_L5\_ANT\_10L

## SPACING (SCSET)

| CLASS DEFINITIONS       |   | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* |  | CLASS OVERVIEW |
|-------------------------|---|---|--|----------------|
| CLASS NAME              | CONSTRAINT SET                            | DP NAMES EX: DP:DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |  | Y/N            |
| 50_ANT4_MBHB            | S A_DIELECTRIC_2X_50_WIDE_SE              | =   |  | ?              |
| 50_ANT4_UAT2            | S A_DIELECTRIC_2X_50_WIDE_SE              | =   |  | ?              |
| 50_ANT2_CPLR            | S A_DIELECTRIC_2X_50_WIDE_SE              | =   |  | ?              |
| 50_ANT10_GNSS_L5        | S A_DIELECTRIC_2X_50_WIDE_SE              | =   |  | ?              |
| 50_WIDE_SURFACE_THIN_SE | S A_DIELECTRIC_2X_50_WIDE_SURFACE_THIN_SE | =   |  | ?              |

## SPACING MATRIX

| CLASS TO CLASS SPACING |                    |                               |
|------------------------|--------------------|-------------------------------|
| CLASS NAME             | CLASS NAME         | CONSTRAINT SET                |
| 50_ANT4_MBHB           | 50_WIDE_SE         | A_DIELECTRIC_3.2XV_50_WIDE_SE |
| 50_ANT4_MBHB           | 50_THIN_SE         | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_UHB_RX          | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | GND                | A_DIELECTRIC_1.6X_50_WIDE_SE  |

| CLASS TO CLASS SPACING |                    |                               |
|------------------------|--------------------|-------------------------------|
| CLASS NAME             | CLASS NAME         | CONSTRAINT SET                |
| 50_ANT4_UAT2           | 50_WIDE_SE         | A_DIELECTRIC_3.2XV_50_WIDE_SE |
| 50_ANT4_UAT2           | 50_THIN_SE         | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_UHB_RX          | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | GND                | A_DIELECTRIC_1.6X_50_WIDE_SE  |

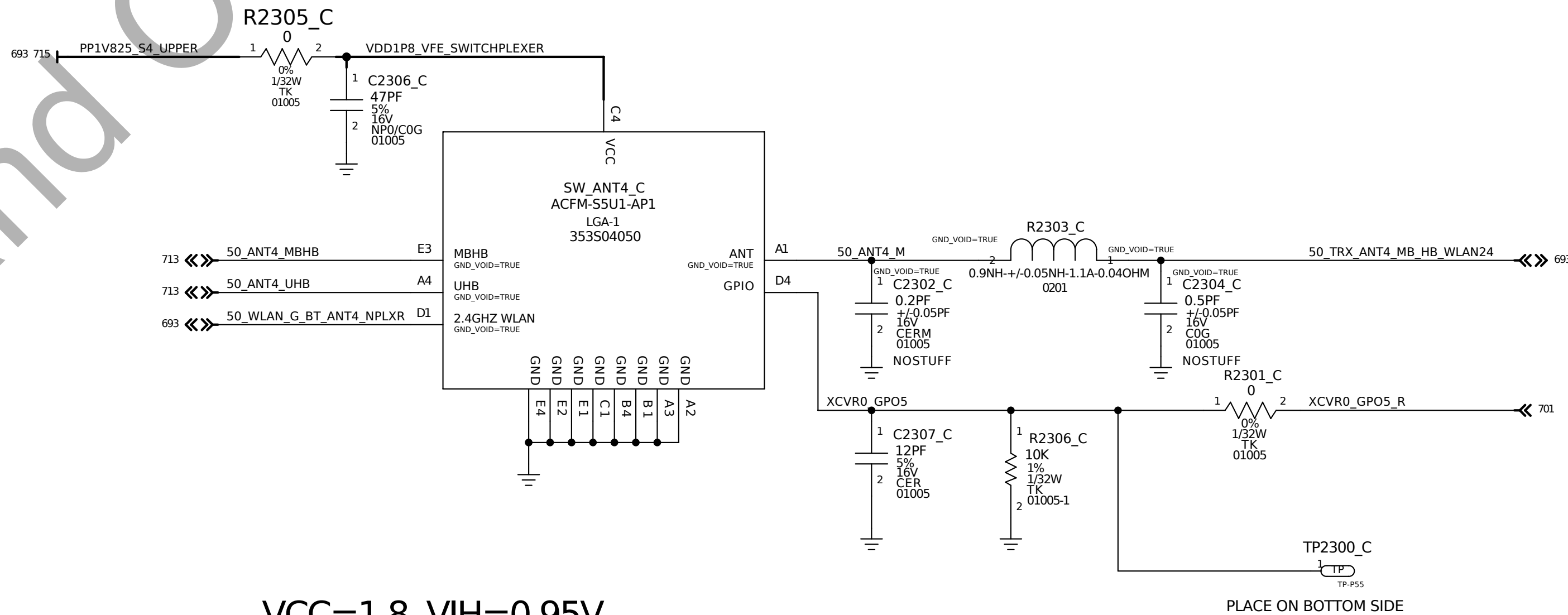
| CLASS TO CLASS SPACING |                    |                               |
|------------------------|--------------------|-------------------------------|
| CLASS NAME             | CLASS NAME         | CONSTRAINT SET                |
| 50_ANT2_CPLR           | 50_WIDE_SE         | A_DIELECTRIC_3.2XV_50_WIDE_SE |
| 50_ANT2_CPLR           | 50_THIN_SE         | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_UHB_RX          | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | GND                | A_DIELECTRIC_1.6X_50_WIDE_SE  |

| CLASS TO CLASS SPACING |                    |                               |
|------------------------|--------------------|-------------------------------|
| CLASS NAME             | CLASS NAME         | CONSTRAINT SET                |
| 50_ANT10_GNSS_L5       | 50_WIDE_SE         | A_DIELECTRIC_3.2XV_50_WIDE_SE |
| 50_ANT10_GNSS_L5       | 50_THIN_SE         | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_UHB_RX          | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | GND                | A_DIELECTRIC_1.6X_50_WIDE_SE  |

| CLASS TO CLASS SPACING |                  |                               |
|------------------------|------------------|-------------------------------|
| CLASS NAME             | CLASS NAME       | CONSTRAINT SET                |
| 50_ANT4_MBHB           | 50_ANT4_MBHB     | A_DIELECTRIC_3.2XV_50_WIDE_SE |
| 50_ANT4_MBHB           | 50_ANT4_UAT2     | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_ANT2_CPLR     | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_MBHB           | 50_ANT10_GNSS_L5 | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_ANT4_UAT2     | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_ANT2_CPLR     | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT4_UAT2           | 50_ANT10_GNSS_L5 | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_ANT2_CPLR     | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT2_CPLR           | 50_ANT10_GNSS_L5 | A_DIELECTRIC_4XD_50_WIDE_SE   |
| 50_ANT10_GNSS_L5       | 50_ANT10_GNSS_L5 | A_DIELECTRIC_4XD_50_WIDE_SE   |

| CLASS TO CLASS SPACING  |            |   |
|-------------------------|------------|---|
| CLASS NAME              | CLASS NAME | CONSTRAINT SET                            |
| 50_WIDE_SURFACE_THIN_SE | GND        | A_DIELECTRIC_1.6X_50_WIDE_SURFACE_THIN_SE |

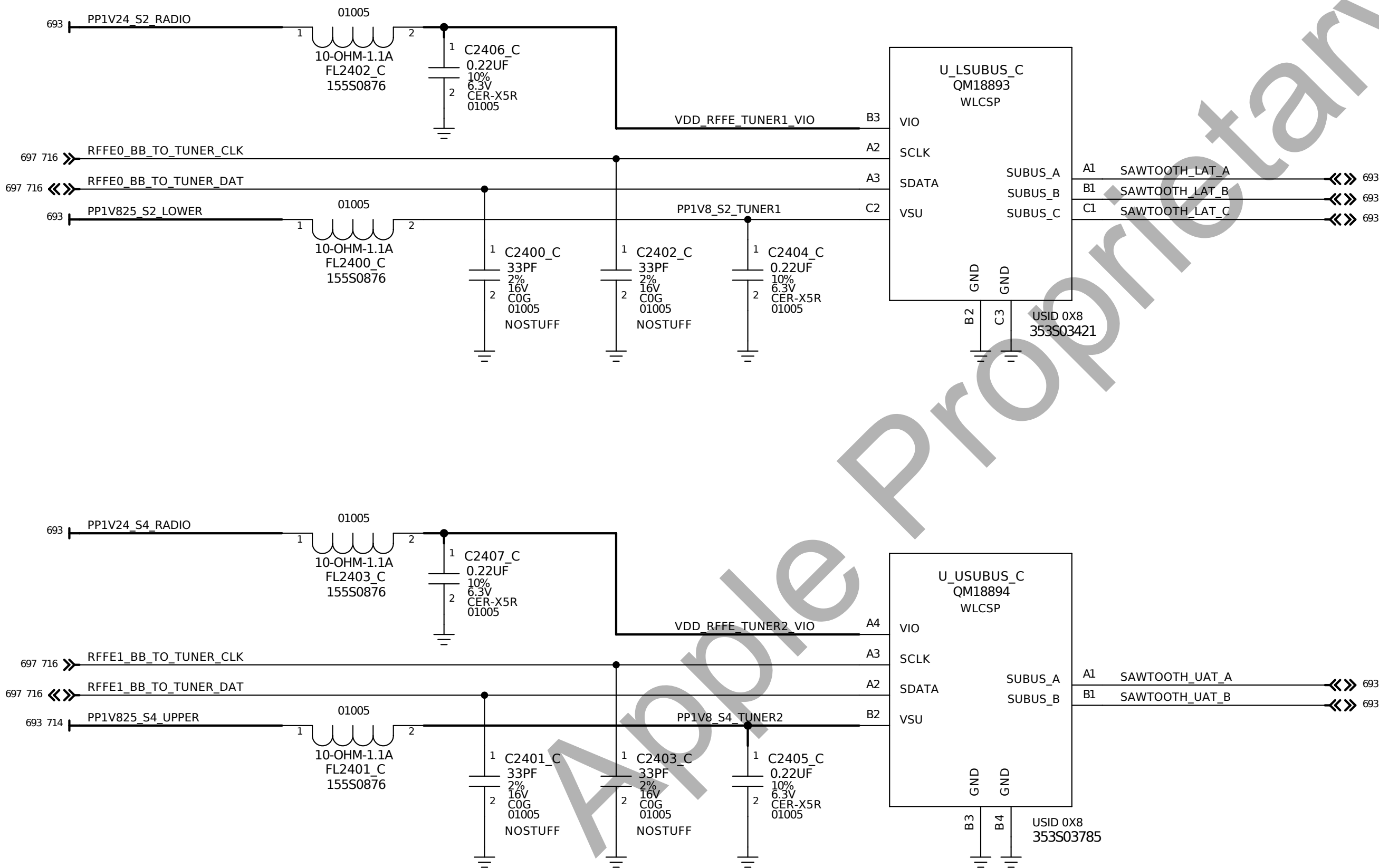
## ANT4 SWITCHPLEXER



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# FR1 ANTENNA TUNERS

## SUBUS BRIDGE



UAT TUNERS KEPT POWERED UP IN LPDM (S4)

PAGE TITLE  
FR1 ANTENNA TUNERS (24)



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D

C

B

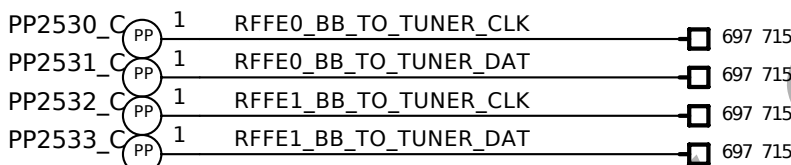
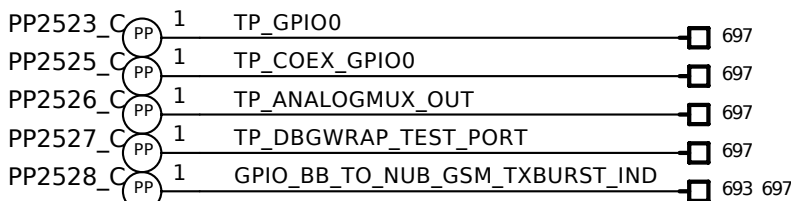
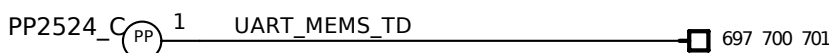
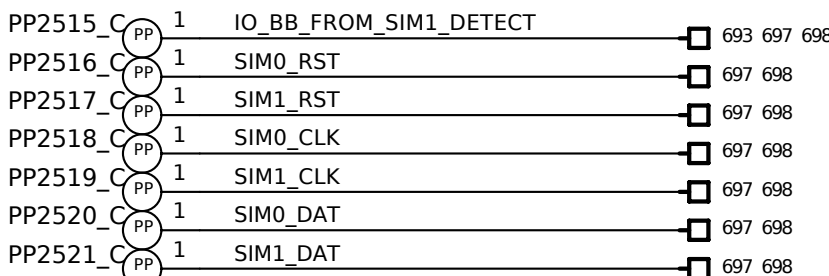
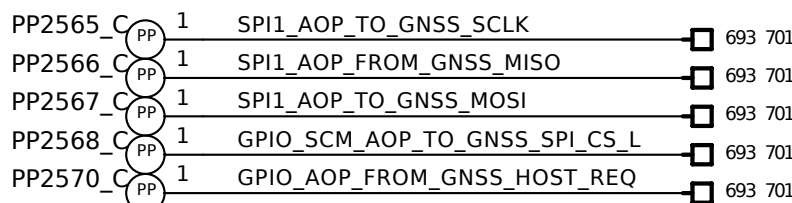
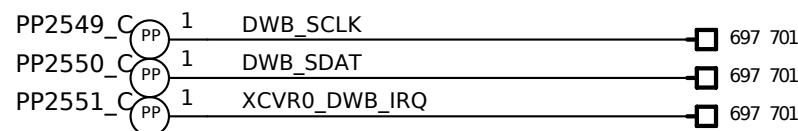
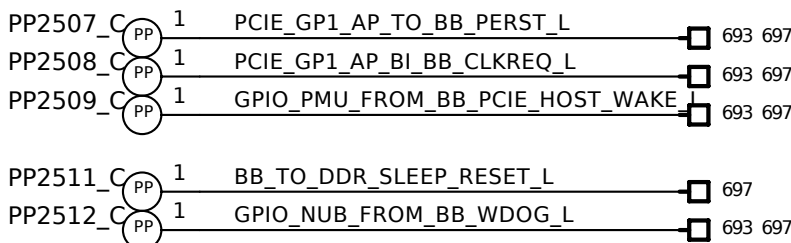
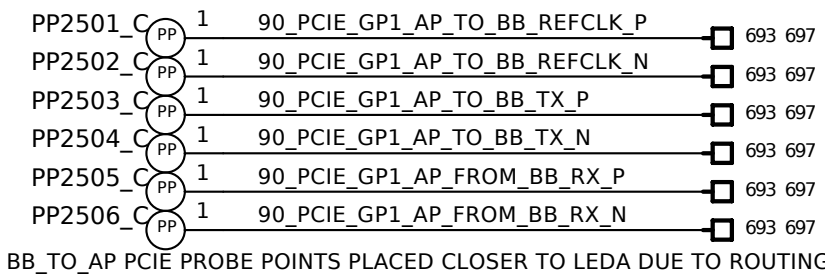
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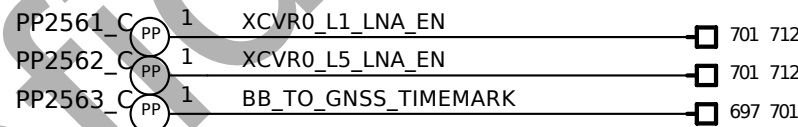
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A



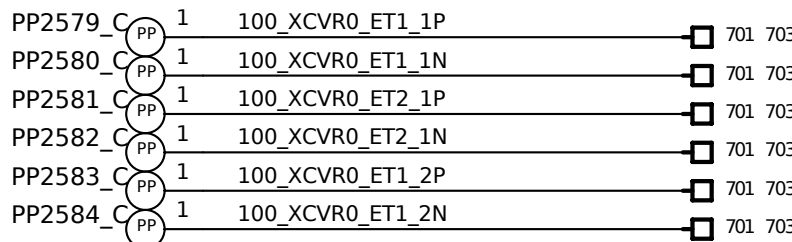
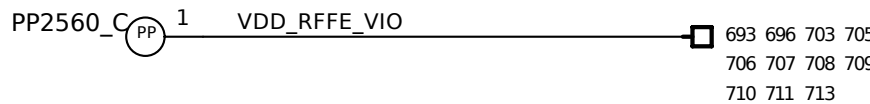
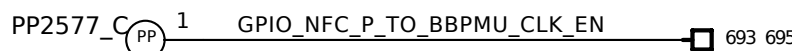
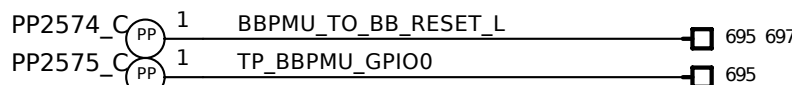
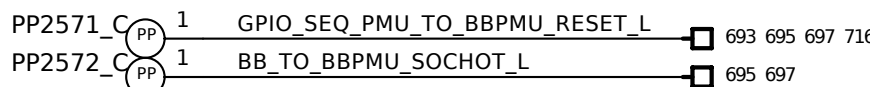
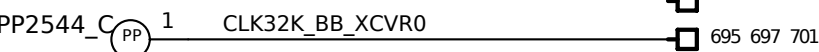
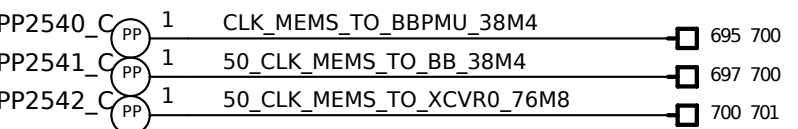
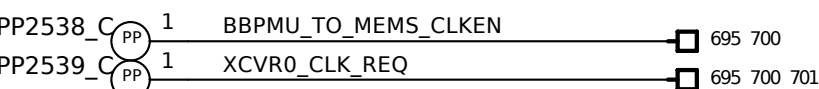
## GNSS



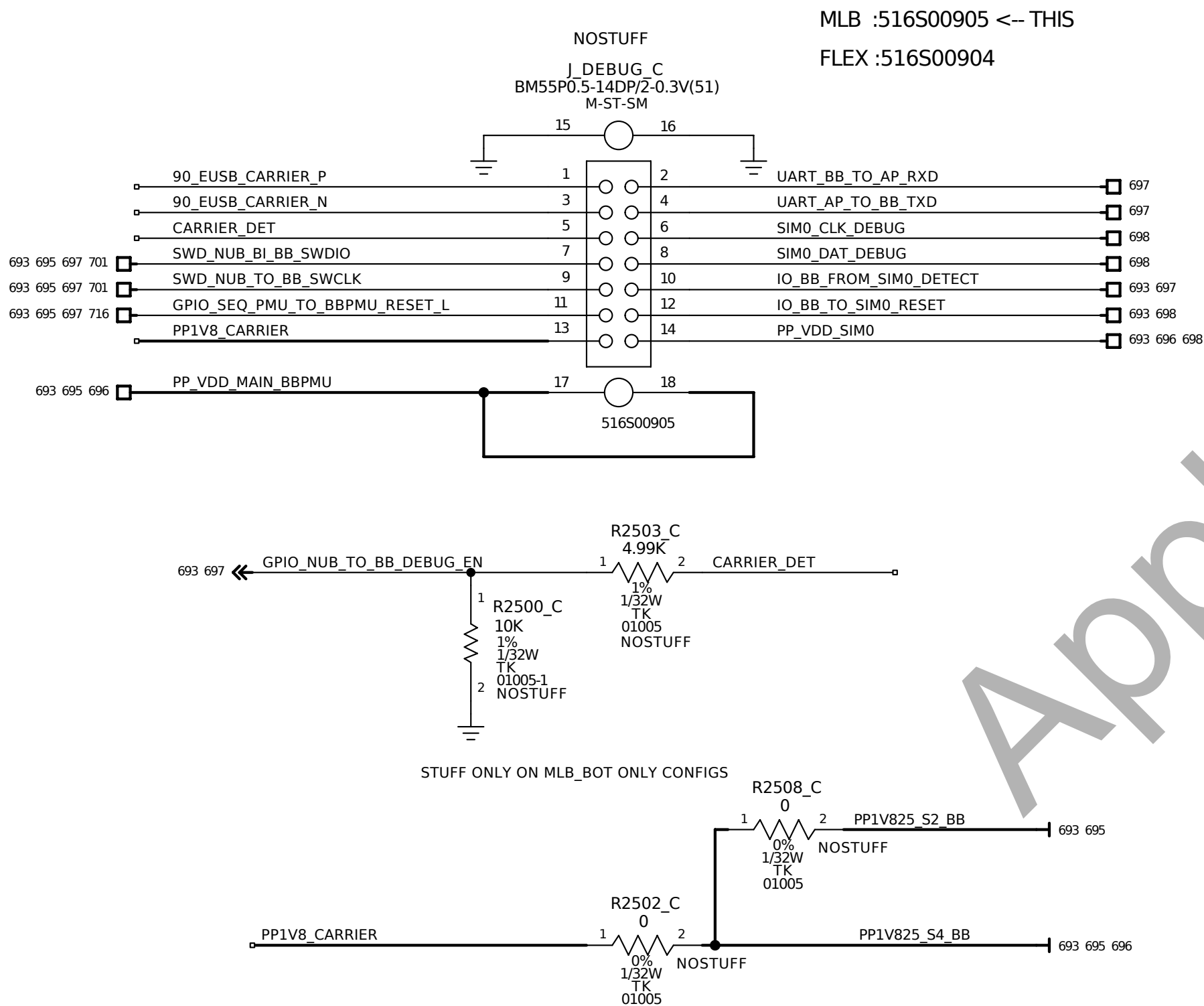
## RESET



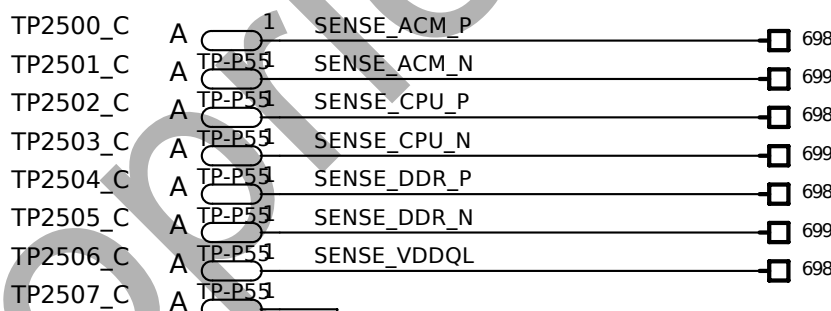
## CLOCKS



## DEBUG CONNECTOR



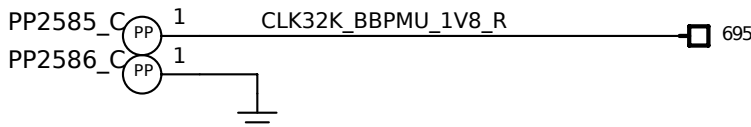
## SENSE



32K MEMS CFRE EXCURSION VALIDATION

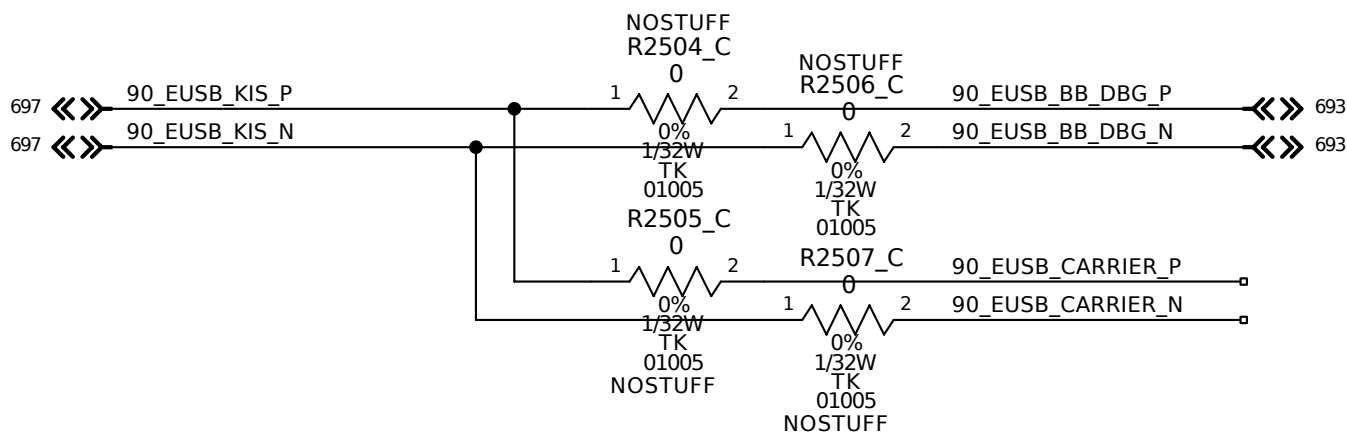
REMOVED


32K MEMS MEASUREMENT POINT



ALT2 REMOVED

## KIS



| PAGE TITLE  |  |
|---|--|
| TEST POINTS (25)  |  |
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# CONSTRAINTS

## 90-ohm Diff Pair Constraints

### Electrical

| CLASS DEFINITIONS |      |                      | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET       | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| E_MPHY_XCVR0      | E    | DIFF_PAIR_MPHY_XCVR0 | DP:DP_85_MPHY*XCVR0*                                      | ?                          |
| E_PCIE_BB         | E    | DIFF_PAIR            | DP:DP_90_PCIE*BB*   | ?                          |
| E_EUSB_BB         | E    | DIFF_PAIR            | DP:DP_90_EUSB*  | ?                          |

### Physical

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| 85_MPHY_XCVR0     | P    | A_85_OHM_DIFF  | DP:DP_85_MPHY*XCVR0*                                      | ?                          |
| 90_PCIE_BB        | P    | A_90_OHM_DIFF  | DP:DP_90_PCIE*BB*   | ?                          |
| 90_EUSB_BB        | P    | A_90_OHM_DIFF  | DP:DP_90_EUSB*  | ?                          |

### Spacing

| CLASS DEFINITIONS |      |                 | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|-----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET  | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| 85_MPHY_XCVR0     | S    | A_DIELECTRIC_3X | =   | ?                          |
| 90_PCIE_BB        | S    | A_DIELECTRIC_3X | =   | ?                          |
| 90_EUSB_BB        | S    | A_DIELECTRIC_3X | =   | ?                          |

### POWER CONSTRAINTS

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P97_RF_LO*  | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P63_XCVR0_DIG*  | ?                          |
| PWR_SHAPE         | P    | PWR_300UM      | VDD1P12_VFE_LO  | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD3P15_VFE_HI  | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P78_FIXED   | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD1P25_RF_HI   | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD1P5_MEMS   | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD_RFFE_VIO*   | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VPA_C*, VPAU*   | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VPA_ET*, VPA_ZG*, VPA_AUX*                                | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD*_LNA  | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDDIP0_DIG1   | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P78_SRAM  | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P86_DIG2, VDD0P84_DIG3                                | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD0P78_BB_FIXED  | ?                          |
| PWR_500UM         | P    | PWR_500UM      | VDD1P25_BB_RF_HI  | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD12_ID*   | ?                          |
| PWR_SHAPE         | P    | PWR_SHAPE      | VDD1P1  | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD0P6_VDDQL  | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD0P72_LOW   | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD*_SIM0, VDD*_SIM1, VDDIP8_SIM0, VDD1P8_SIM1            | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD3P4_BOOST1   | ?                          |
| PWR_150UM         | P    | PWR_150UM      | PP1VX_EEPROM  | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD_RF_HI_ULPCLL, VDD0P6_BBPMU_VREF                       | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDD_RF_HI_ULPCLL, VDD_SHAPER                              | ?                          |
| PWR_500UM         | P    | PWR_500UM      | VDDIP2_BBPMU_IN1  | ?                          |
| PWR_150UM         | P    | PWR_150UM      | VDDIP5_3079_FLT   | ?                          |
| PWR_500UM         | P    | PWR_500UM      | VDD1P8  | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDD1P8_CLKBUFF  | ?                          |
| PWR_300UM         | P    | PWR_300UM      | VDDIP25_RF_HI*  | ?                          |
| PWR_300UM         | P    | PWR_300UM      | PP1V8_CARRIER, PP1V8_CLK32K                               | ?                          |

### SENSITIVE TRACE SHIELD

| CLASS DEFINITIONS |      |                   | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|-------------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET    | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| RF_SHIELD         | S    | A_DIELECTRIC_3X   | SENSE*, CLK_BBPMU*  | ?                          |
| RFFE_SHIELD       | S    | A_DIELECTRIC_1.5X | DWB_*, XCVR0_RFFE*, RFFE*BB*,SHIELD_RFFE*                 | ?                          |
| ET_DIFF           | S    | A_DIELECTRIC_3X   | 100_XCVR0_ET*   | ?                          |
| 50_CLK_SE         | S    | A_DIELECTRIC_3X   | 50_REFLO*   | ?                          |
| RF_SHIELD         | S    | A_DIELECTRIC_3X   | SNS*, FB*   | ?                          |
| RF_SHIELD         | S    | A_DIELECTRIC_3X   | BB_DDR_RREF, BB_DDR_ZQ*                                   | ?                          |
| RF_SHIELD         | S    | A_DIELECTRIC_3X   | 100_PCIE*, 100_MPHY*, 90_EUSB*, 90_USB*                   | ?                          |
| CLK_SPMI          | S    | A_DIELECTRIC_1.5X | SPMI*CLK*   | ?                          |
| GRP_SPMI_DATA     | S    | DEFAULT           | SPMI*DAT*   | ?                          |
| CLK_SHIELD        | S    | A_DIELECTRIC_3X   | =   | ?                          |

### PHYSICAL (PCSET)

| CLASS DEFINITIONS |      |                 | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|-----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET  | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| DP_GENERIC        | P    | GENERIC_DIFF_05 | DP:DP_SENSE*  | ?                          |

### RF CONSTRAINTS (OPTIMIZED BY LAYOUT)

TABLE CONTINUED ON FR1 UAT ANTENNAS & GPS PAGE (PAGE 24)

## Grouping Constraints

### Physical

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| GRP_GPIO          | P    | DEFAULT        | GPIO*, IO_*   | Y                          |
| GRP_I2C           | P    | DEFAULT        | I2C*  | Y                          |
| GRP_SPI           | P    | DEFAULT        | SPI*MOSI*, SPI*MISO*, SPI*CS*                             | Y                          |
| GRP_UART          | P    | DEFAULT        | UART*   | Y                          |
| GRP_SWD           | P    | DEFAULT        | SWD*  | Y                          |
| GRP_PCIE_SIDE     | P    | DEFAULT        | PCIE*CLKREQ*, PCIE*PERST*                                 | Y                          |
| GRP_MISC          | P    | DEFAULT        | RFFE*RST*, SDR*EN   | Y                          |
| GRP_RFFE          | P    | DEFAULT        | XCVR0_RFFE*   | Y                          |

### Spacing

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| GRP_GPIO          | S    | DEFAULT        | =   | Y                          |
| GRP_I2C           | S    | DEFAULT        | =   | Y                          |
| GRP_I2S           | S    | DEFAULT        | =   | Y                          |
| GRP_SPI           | S    | DEFAULT        | =   | Y                          |
| GRP_UART          | S    | DEFAULT        | =   | Y                          |
| GRP_SWD           | S    | DEFAULT        | =   | Y                          |
| GRP_PCIE_SIDE     | S    | DEFAULT        | =   | Y                          |
| GRP_MISC          | S    | DEFAULT        | =   | Y                          |

### RF CONSTRAINTS

| CLASS DEFINITIONS |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|-------------------|------|----------------|---|----------------------------|
| CLASS NAME        | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| CLK_SHIELD        | P    | DEFAULT        | CLK32K*, CLK_MEMS_TO*, CLK_BBPMU_TO_*                     | ?                          |
| 50_CLK_SE         | P    | A_50_THIN_SE   | 50_REFLO*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_GNSS_L1*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_HB*  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LB_*, 50_LBDSM_RX*, 50_LBDSM_ANT*, 50_LBDSM_M          | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LCPLR*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LNRU*  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LUHB_TX*, 50_LUHB_N*, 50_LUHB_ANT1*, 50_LUHB_ANT2*     | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LUHB_ANT3_M  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LWIF*  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_TXDSM_MIMO*, 50_TXDSM_RX*, 50_TXDSM_MHB*               | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_UCPLR*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_LNRU*  | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_ANT4_MBHB_M  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_UMIMO*, 50_LMIMO*                                      | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_UUHB*, 50_UHBDSM*                                      | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_UWIF*  | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_ANT4_UHB   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_VCXO*  | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_XCVR0_FBR*   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_XCVR0_GNSS*  | ?                          |
| ET_DIFF           | P    | A_100_OHM_DIFF | DP:DP_100_XCVR*, ET*                                      | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_LBDSM_TXIN, 50_LUHB_ANT3_U, 50_TXDSM_ANT2*             | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_ANT1*, 50_ANT3*, 50_ANT5*                              | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_ANT6*, 50_ANT7*, 50_ANT8*, 50_ANT9*                    | ?                          |
| 50_WIDE_SE        | P    | A_50_WIDE_SE   | 50_ANT2   | ?                          |
| 50_THIN_SE        | P    | A_50_THIN_SE   | 50_TXDSM_ANT1*, 50_TXDSM_ANT3_M                           | ?                          |
| 50_CLK_THIN       | P    | A_50_THIN_SE   | 50_CLK_XCVR1  | ?                          |
| 50_FBR_THIN       | P    | A_50_THIN_SE   | 50_*FBR*  | ?                          |

| CLASS DEFINITIONS  |      |                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|--------------------|------|----------------|---|----------------------------|
| CLASS NAME         | TYPE | CONSTRAINT SET | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| 50_LMB_HB_RX       | P    | A_50_THIN_SE   | 50_XCVR0_RX1.50_XCVR0_RX2.50_XCVR0_RX3.50_XCVR0_RX4       | ?                          |
| 50_LMB_HB_RX       | P    | A_50_THIN_SE   | 50_XCVR0_RX5.50_XCVR0_RX6.50_XCVR0_RX7.50_XCVR0_RX8       | ?                          |
| 50_UHB_RX          | P    | A_50_THIN_SE   | 50_XCVR0_RX9*.50_XCVR0_RX10.50_XCVR0_RX11*.50_XCVR0_RX12  | ?                          |
| 50_UHB_RX          | P    | A_50_THIN_SE   | 50_XCVR0_RX13*.50_XCVR0_RX14.50_XCVR0_RX15*.50_XCVR0_RX16 | ?                          |
| 50_UHB_RX          | P    | A_50_THIN_SE   | 50_XCVR0_RX17.50_XCVR0_RX18                               | ?                          |
| 50_LMB_HB_RX       | P    | A_50_THIN_SE   | 50_XCVR0_RX21.50_XCVR0_RX22.50_XCVR0_RX23.50_XCVR0_RX24   | ?                          |
| 50_LMB_HB_RX       | P    | A_50_THIN_SE   | 50_XCVR0_RX25.50_XCVR0_RX26.50_XCVR0_RX27.50_XCVR0_RX28   | ?                          |
| 50_LMB_HB_RX       | P    | A_50_THIN_SE   | 50_XCVR0_RX29.50_XCVR0_RX30                               | ?                          |
| 50_2G_LB_SPAD_TX   | P    | A_50_THIN_SE   | 50_XCVR0_TX1_LB.50_XCVR0_TX2_LB.50_XCVR0_TX0_2G           | ?                          |
| 50_HB_SPAD_TX      | P    | A_50_THIN_SE   | 50_XCVR0_TX1_MBHB1.50_XCVR0_TX2_MBHB                      | ?                          |
| 50_HB_SPAD_TX      | P    | A_50_THIN_SE   | 50_XCVR0_TX1_LMB*.50_XCVR0_TX2_LMB*                       | ?                          |
| 50_UHB_SPAD_LAT_TX | P    | A_50_THIN_SE   | 50_XCVR0_TX1_UHB1.50_XCVR0_TX2_UHB.50_XCVR0_TX2_CB1       | ?                          |
| 50_TXDSM_TX        | P    | A_50_THIN_SE   | 50_XCVR0_TX1_MBHB2.50_XCVR0_TX3_HB                        | ?                          |
| 50_UHB_SPAD_UAT_TX | P    | A_50_THIN_SE   | 50_XCVR0_TX1_UHB2.50_XCVR0_TX3_UHB.50_XCVR0_TX3_CB1       | ?                          |

### SPACING (SCSET)

| CLASS DEFINITIONS  |      |                                | COMMA SEPARATED WITH WILDCARD SUPPORT: NET NAMES EX: DDR* | CLASS<br>DEFINITION<br>Y/N |
|--------------------|------|--------------------------------|---|----------------------------|
| CLASS NAME         | TYPE | CONSTRAINT SET                 | DP NAMES EX: DP-DP_AA*,DP_BB* (LINE STARTS WITH FLAG DP:) |                            |
| DP_GENERIC         | S    | A_DIELECTRIC_3X                | =   | ?                          |
| RF_SHIELD          | S    | A_DIELECTRIC_3X                | =   | ?                          |
| 50_WIDE_SE         | S    | A_DIELECTRIC_2X_50_WIDE_SE     | =   | ?                          |
| 50_THIN_SE         | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| ET_DIFF            | S    | A_DIELECTRIC_3X                | =   | ?                          |
| 50_LMB_HB_RX       | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_UHB_RX          | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_2G_LB_SPAD_TX   | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_HB_SPAD_TX      | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_UHB_SPAD_LAT_TX | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_TXDSM_TX        | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_UHB_SPAD_UAT_TX | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_CLK_THIN        | S    | A_DIELECTRIC_3X                | =   | ?                          |
| 50_FBR_THIN        | S    | A_DIELECTRIC_2X_50_THIN_SE     | =   | ?                          |
| 50_MMW_BG1_SE      | S    | NA_DIELECTRIC_2X_50_MMW_BG1_SE | =   | ?                          |
| 50_MMW_BG2_SE      | S    | NA_DIELECTRIC_2X_50_MMW_BG2_SE | =   | ?                          |
| 50_MMW_IF          | S    | NA_DIELECTRIC_2X_50_MMW_IF_SE  | =   | ?                          |
| 50_MMW_BG1_MB_SE   | S    | NA_DIELECTRIC_2X_50_MMW_BG1_SE | =   | ?                          |

### SPACING MATRIX

| CLASS TO CLASS SPACING |                    |                                |
|------------------------|--------------------|--------------------------------|
| CLASS NAME             | CLASS NAME         | CONSTRAINT SET                 |
| ET_DIFF                | GND                | DEFAULT                        |
| RF_SHIELD              | GND                | DEFAULT                        |
| RFFE_SHIELD            | GND                | DEFAULT                        |
| DP_GENERIC             | GND                | DEFAULT                        |
| 50_WIDE_SE             | 50_WIDE_SE         | A_DIELECTRIC_3_2XV_50_WIDE_SE  |
| 50_WIDE_SE             | 50_THIN_SE         | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_UHB_RX          | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_WIDE_SE             | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_WIDE_SE    |
| 50_THIN_SE             | 50_THIN_SE         | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_LMB_HB_RX       | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_UHB_RX          | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_THIN_SE             | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_LMB_HB_RX           | 50_UHB_RX          | A_DIELECTRIC_2x                |
| 50_LMB_HB_RX           | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_LMB_HB_RX           | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_LMB_HB_RX           | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_LMB_HB_RX           | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_LMB_HB_RX           | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_UHB_RX              | 50_2G_LB_SPAD_TX   | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_UHB_RX              | 50_HB_SPAD_TX      | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_UHB_RX              | 50_UHB_SPAD_LAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_UHB_RX              | 50_TXDSM_TX        | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_UHB_RX              | 50_UHB_SPAD_UAT_TX | A_DIELECTRIC_4XD_50_THIN_SE    |
| 50_CLK_THIN            | 50_CLK_THIN        | A_DIELECTRIC_3X_50_CLK_THIN_SE |
| 50_FBR_THIN            | 50_FBR_THIN        | A_DIELECTRIC_4XV_50_THIN_SE    |


### POWER LX - CLASS-CLASS SPACING

| CLASS TO CLASS SPACING |               |                 |
|------------------------|---------------|-----------------|
| CLASS NAME             | CLASS NAME    | CONSTRAINT SET  |
| PWR_SHAPE_LX           | CLK           | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | CLK_SPI       | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | PWR_SHAPE_LX  | DEFAULT         |
| PWR_SHAPE_LX           | GND           | DEFAULT         |
| PWR_SHAPE_LX           | RF_SHIELD     | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | RFFE_SHIELD   | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | ET_DIFF       | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | 50_CLK_SE     | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | CLK_SPMI      | A_DIELECTRIC_3X |
| PWR_SHAPE_LX           | GRP_SPMI_DATA | A_DIELECTRIC_3X |

### Class-Class Spacing

| CLASS TO CLASS SPACING |            |                 |
|------------------------|------------|-----------------|
| CLASS NAME             | CLASS NAME | CONSTRAINT SET  |
| 90_PCIE_BB             | GND        | A_DIELECTRIC_3X |
| 90_EUSB_BB             | GND        | A_DIELECTRIC_2X |
| 85_MPHY_XCVR0          | GND        | DEFAULT         |

| CLASS TO CLASS SPACING |               |                              |
|------------------------|---------------|------------------------------|
| CLASS NAME             | CLASS NAME    | CONSTRAINT SET               |
| 50_WIDE_SE             | GND           | A_DIELECTRIC_1_6X_50_WIDE_SE |
| 50_THIN_SE             | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_LMB_HB_RX           | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_UHB_RX              | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_2G_LB_SPAD_TX       | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_HB_SPAD_TX          | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_TXDSM_TX            | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_UHB_SPAD_UAT_TX     | GND           | A_DIELECTRIC_2X_50_THIN_SE   |
| 50_CLK_SE              | GND           | DEFAULT                      |
| RF_SHIELD              | RF_SHIELD     | A_DIELECTRIC_3X              |
| CLK_SPMI               | GRP_SPMI_DATA | A_DIELECTRIC_1.5X            |
| CLK_SHIELD             | GND           | DEFAULT                      |

| PAGE TITLE  |  |  | CONSTRAINTS (26) |  |  |
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