

Model Name : Azalea\_CAS  
Compal Project Name : GH5VZ  
File Name : LA-K831P

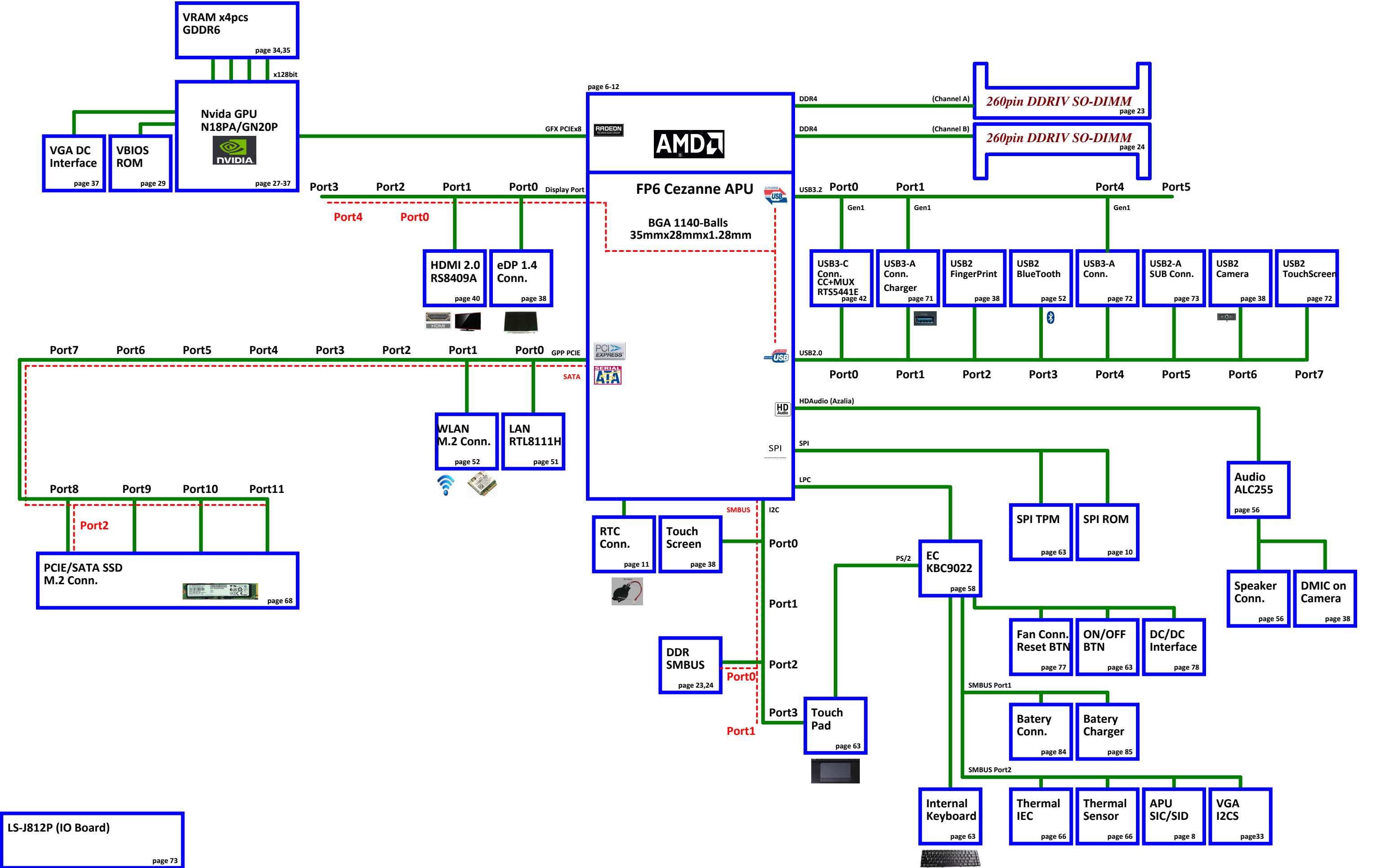
# Compal LA-K831P

## GH5VZ MB Schematics Document

### AMD Lucianne/Cezanne Platform

REV : 1 . A  
2020-02-24

|  |                    |                 |            |                          |                              |                |
|--|--------------------|-----------------|------------|--------------------------|------------------------------|----------------|
| Security Classification  | Compal Secret Data |                 |            | Compal Electronics, Inc. |                              |                |
| Issued Date  | 2020/02/24         | Deciphered Date | 2021/02/24 | Title<br>COVER PAGE      |                              |                |
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|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 1 of 122 |



LS-J812P (IO Board)  
page 73

Power Circuits DC/DC  
page 81-116

## Voltage Rails

[illegible]

## Device Power Rail

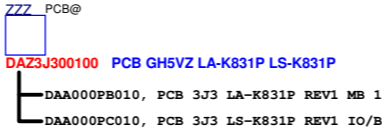
| Power Plane     | Description               | S0 | S3  | S5  |
|-----------------|---------------------------|----|-----|-----|
| +LCDVDD         | 3.3V Panel Logic Power    | ON | OFF | OFF |
| +3V_LAN         | 3.3V LAN Power (RTL8111)  | ON | ON  | ON  |
| +TP_VCC         | 3.3V Touch Pad Power      | ON | ON  | OFF |
| +TS_PWR         | 3.3V Touch Screen Power   | ON | OFF | OFF |
| +FP_VCC         | 3.3V Finger Print Power   | ON | ON  | OFF |
| +3VS_WLAN       | 3.3V WLAN Power           | ON | ON  | OFF |
| +5VS_PVDD       | 5V Audio Power            | ON | OFF | OFF |
| +EC_VCC         | 3.3V EC Power (KB9022QD)  | ON | ON  | ON  |
| +TPM_VCC        | 1.8V TPM Power (NPCT750)  | ON | ON  | OFF |
| +3VS_SSD1       | 3.3V SSD1 Power           | ON | OFF | OFF |
| +5VALW_MUX      | RTS5441 Power             | ON | ON  | OFF |
| +USB3_VCCC      | USB3.0 Type-C Conn. Power | ON | ON  | OFF |
| +USB3_VCCA      | USB3.0 Type-A Conn. Power | ON | ON  | OFF |
| +USB3_VCCB      | USB3.0 Type-A Conn. Power | ON | ON  | OFF |
| +1.2V_HDMI      | HDMI PS8409 Retimer Power | ON | OFF | OFF |
| +3VS_CAM        | Camera Power              | ON | OFF | OFF |
| +PEX_VDD        | VGA PCIE/PLL Power        | ON | OFF | OFF |
| +1.8VSDGPU_MAIN | VGA GPIO/Analog Power     | ON | OFF | OFF |
| +1.8VSDGPU_AON  | VGA GPIO/Analog Power     | ON | OFF | OFF |
| +FBVDDQ         | VGA VRAM Interface Power  | ON | OFF | OFF |
| +NVVDD1         | VGA CORE Power            | ON | OFF | OFF |
| +3V_OVRM        | VGA OVR-M Power           | ON | OFF | OFF |
|                 |                           |    |     |     |

## APU SMBus/I2C Address Table

| Master   | Device                 | Address[7:1]      | Address [7:0]     |                   |
|--|------------------------|-------------------|-------------------|-------------------|
|  |                        |                   | Write             | Read              |
| I2C Port 0<br>(+1.8VS)                                 | Touch Screen           | TBD               | TBD               | TBD               |
| I2C Port 1<br>(+1.8VS)                                 | G-Sensor<br>(Reserver) | 0001 1000b<br>18h | 0011 0000b<br>30h | 0011 0001b<br>31h |
| I2C Port 2<br>(+3VS)<br><br>SBMUS Port 0<br>(+3VS)     |                        |                   |                   |                   |
|  | JDIMM1                 | 0101 0000b<br>50h | 1010 0000b<br>A0h | 1010 0001b<br>A1h |
|  | JDIMM2                 | 0101 0001b<br>51h | 1010 0010b<br>A2h | 1010 0011b<br>A3h |
| I2C Port 3<br>(+3VALW)<br><br>SMBus Port 1<br>(+3VALW) | PTP<br>(Synaptics)     | 0010 1100b<br>2Ch | 0101 1000b<br>58h | 0101 1001b<br>59h |
|  | PTP<br>(ELAN)          | 0001 1111b<br>15h | 0011 1110b<br>3Eh | 0011 1111b<br>3Fh |
|  |                        |                   |                   |                   |

## BOARD ID Table

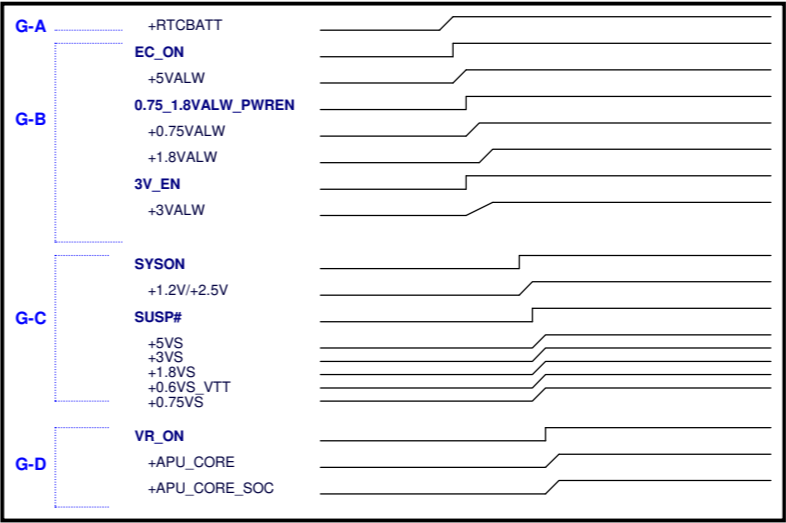
| Board ID | PCB Revision |
|----------|--------------|
| 0        | EVT          |
| 1        | DVT          |
| 2        | PVT          |
| 3        | MP           |
|          |              |
|          |              |
|          |              |
|          |              |



## BOM Structure Table

[illegible]

## AMD POWER SEQUENCE



## NVIDIA POWER SEQUENCE



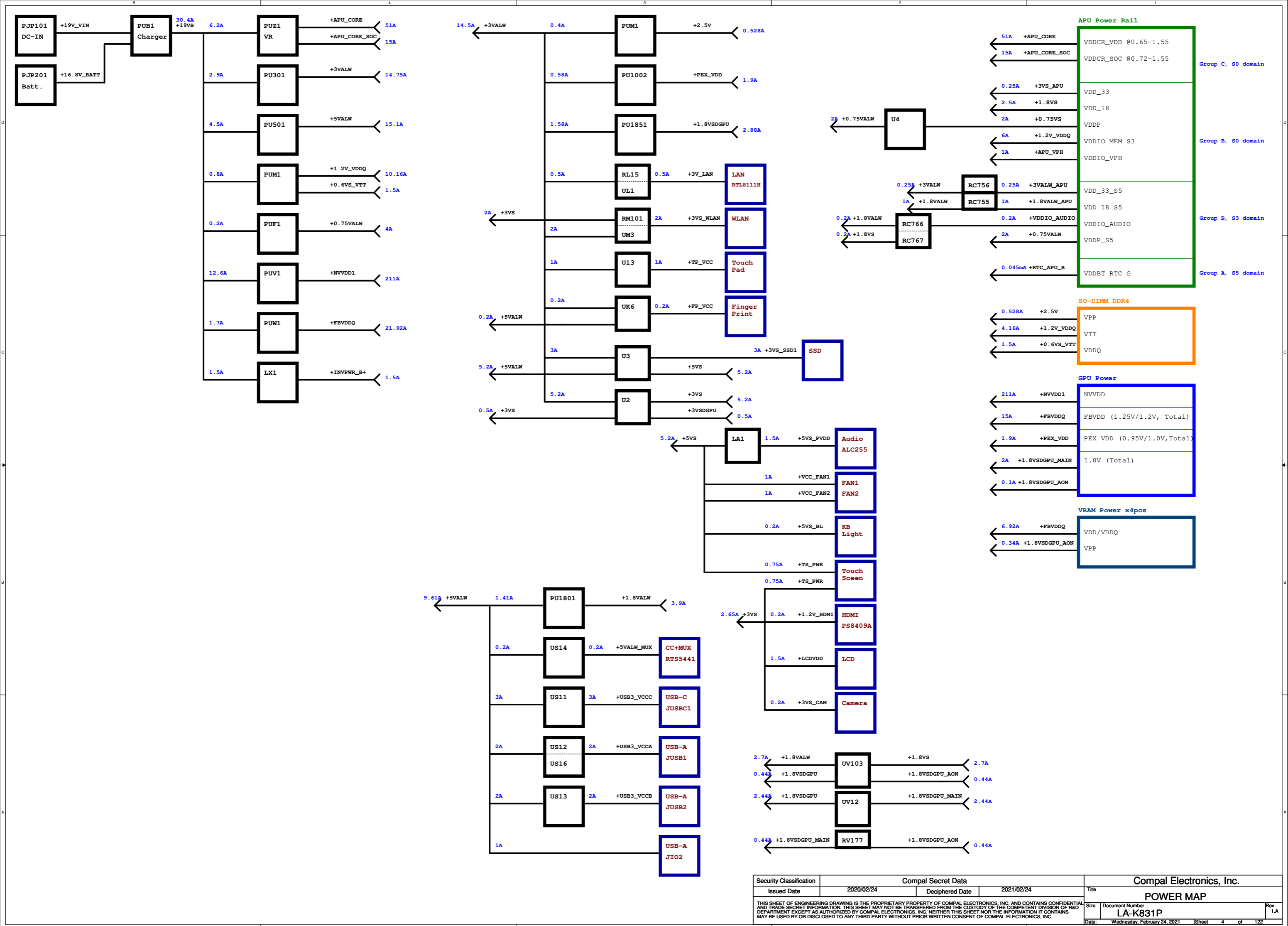
## NVIDIA GC6 POWER STATUS

|                   |                |                      |         |          |         |
|-------------------|----------------|----------------------|---------|----------|---------|
| Low Power Feature | +1.8VSDGPU_AON | +1.8VSDGPU_MAIN      | +NVVDD1 | +PEX_VDD | +FBVDDQ |
| Normal Operation  | ON             | ON                   | ON      | ON       | ON      |
| GC6 3.0           | ON             | GN20P:ON<br>N18P:OFF | OFF     | OFF      | ON      |
| OFF               | OFF            | OFF                  | OFF     | OFF      | OFF     |

## EC SMBus Address Table

|                           |                             |                   |                   |                   |
|---------------------------|-----------------------------|-------------------|-------------------|-------------------|
| SMBus Port 1<br>(+3VALW)  | Smart Battery               | 0000 1011b<br>0Bh | 0001 0110b<br>16h | 0001 0111b<br>17h |
|                           | Charger IC                  | 0000 1001b<br>09h | 0001 0010b<br>12h | 0001 0011b<br>13h |
| SMBus Port 2<br>(+EC_VCC) | APU Temp.                   | 0100 1100b<br>4Ch | 1001 1000b<br>98h | 1001 1001b<br>99h |
|                           | Therm Sensor<br>Temp. (IEC) | 0100 1000b<br>48h | 1001 0000b<br>90h | 1001 0001b<br>91h |
|                           | Therm Sensor<br>Temp.       | 0100 1101b<br>4Dh | 1001 1010b<br>9Ah | 1001 1011b<br>9Bh |
|                           | VGA<br>N18P/GN20P           | 1001 1110b<br>9Eh | 0011 1100b<br>3Ch | 0011 1101b<br>3Dh |

|   |                    |                 |            |                              |                 |          |
|---|--------------------|-----------------|------------|------------------------------|-----------------|----------|
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|   |                    |                 |            |                              | LA-K831P        | 1A       |
| Date:   |                    |                 |            | Wednesday, February 24, 2021 | Sheet           | 3 of 122 |



Power Sequence

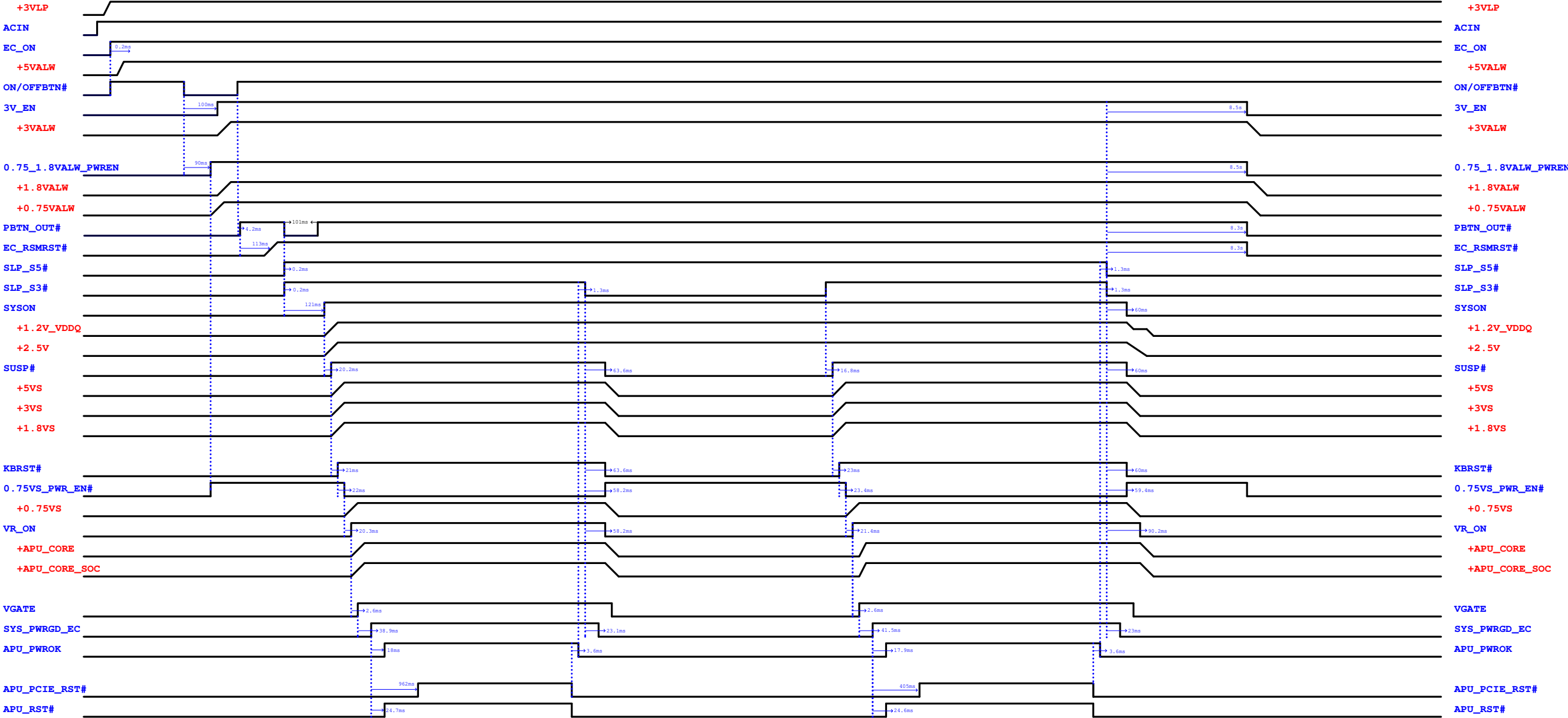
→ → →

AC-IN G3 --> S0

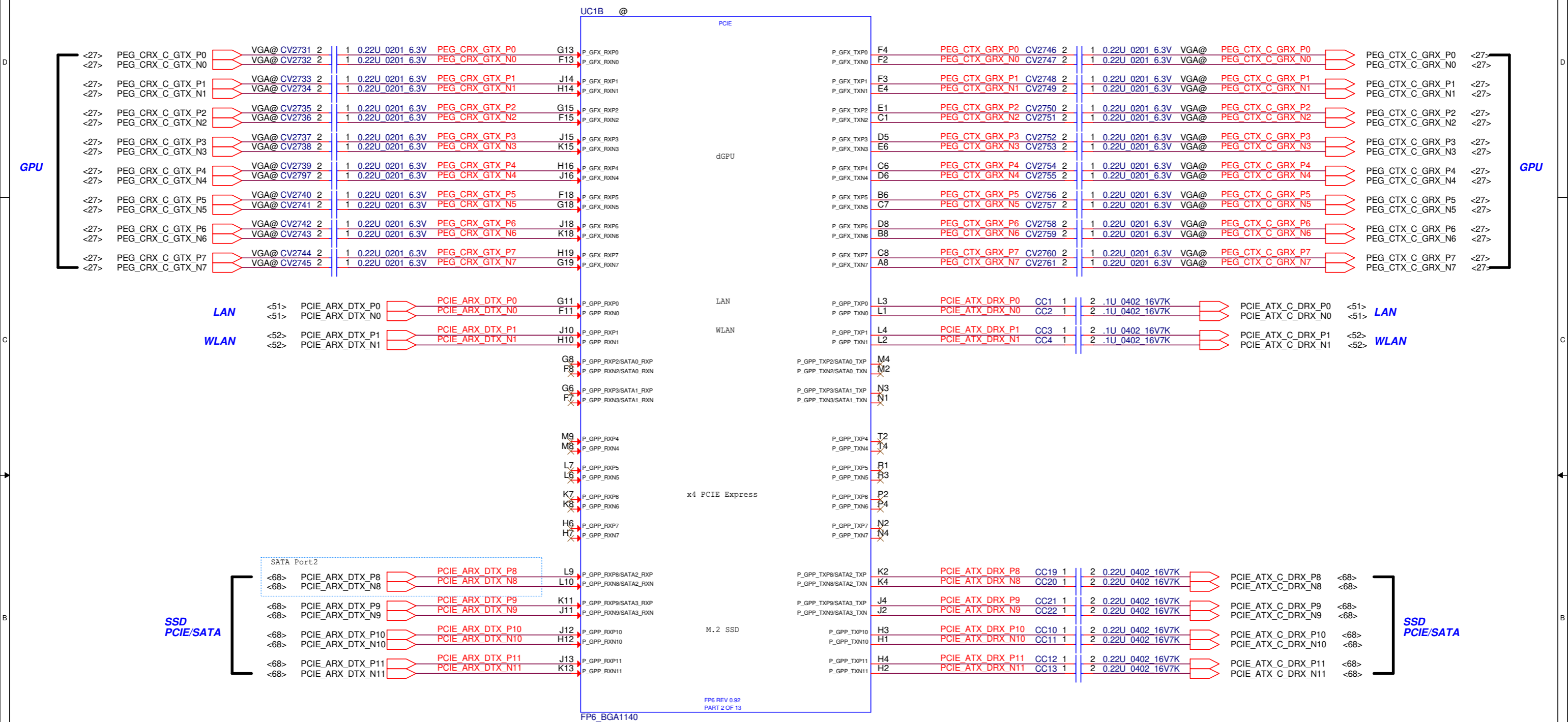
S0 --> S3

S3 --> S0










S0 --> S5



Main Func = CPU

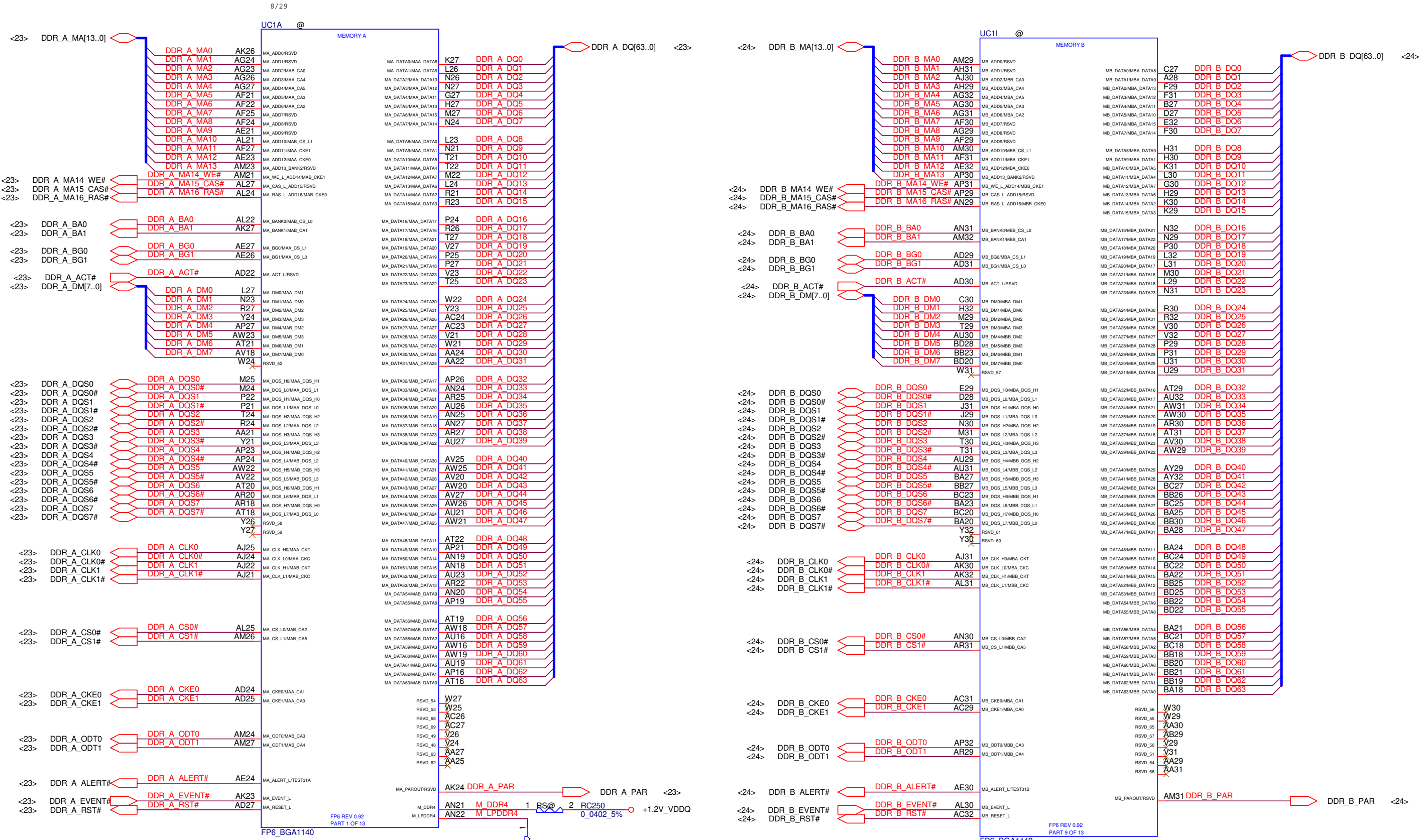


APU PN Table

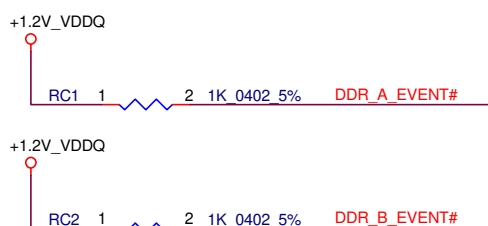
|  |  |  |
|--|--|--|
| UC1 LUR3PR@<br><br>SA0000DWZ30<br>S IC RYZEN3 100-000000376 2.6G BGA APU S | UC1 CZUR3PR@<br><br>SA0000DWT20<br>S IC RYZEN3 100-000000288 2.6G BGA APU S | UC1 CZHR5PR@<br><br>SA0000E3X00<br>S IC RYZEN5 100-000000296 3.3G BGA APU S |
| UC1 LUR5PR@<br><br>SA0000DWY30<br>S IC RYZEN5 100-000000375 2.1G BGA APU S | UC1 CZUR5PR@<br><br>SA0000E1010<br>S IC RYZEN5 100-000000287 2.3G BGA APU S | UC1 CZHR7PR@<br><br>SA0000E1P10<br>S IC RYZEN7 100-000000295 3.2G BGA APU S |
| UC1 LUR7PR@<br><br>SA0000DWW30<br>S IC RYZEN7 100-000000371 1.8G BGA APU S | UC1 CZUR7PR@<br><br>SA0000DWS20<br>S IC RYZEN7 100-000000285 2G BGA APU S   | UC1 CZHR9PR@<br><br>SA0000E1N10<br>S IC RYZEN9 100-000000300 3.3G BGA APU S |

|   |            |                    |            |                                      |            |           |
|---|------------|--------------------|------------|--------------------------------------|------------|-----------|
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| Issued Date   | 2020/02/24 | Deciphered Date    | 2021/02/24 | Title<br>FP6 (1/7) PEG/PCIE/SATA     |            |           |
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|   |            |                    |            | Date:<br>Thursday, February 25, 2021 | Sheet<br>6 | of<br>122 |

Main Func = CPU



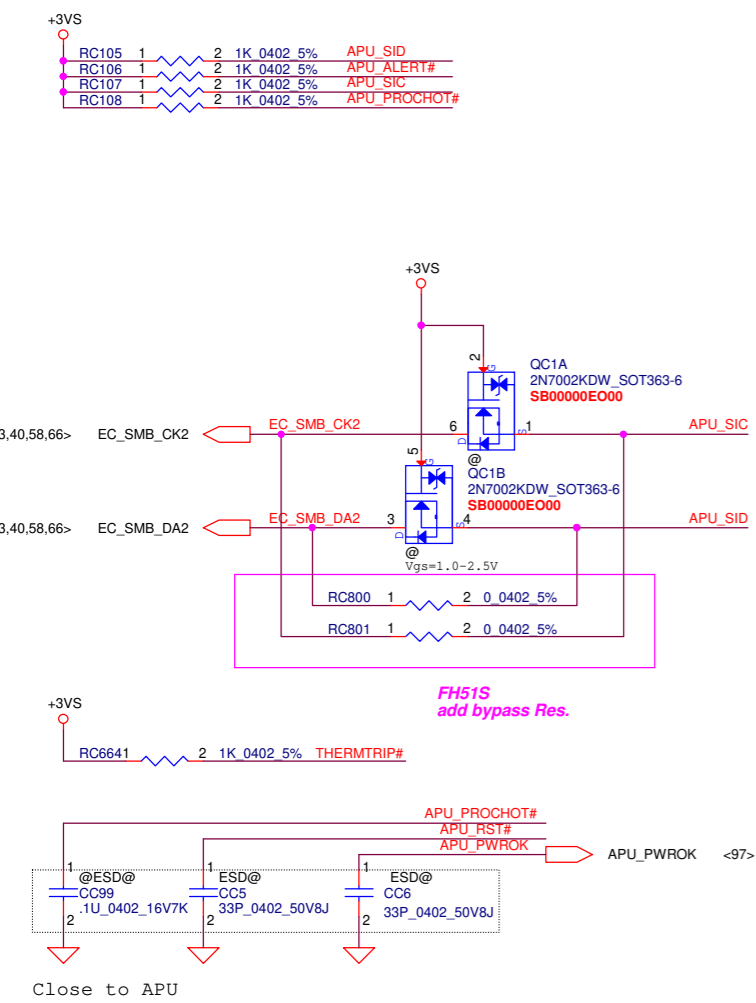
EVENT# pull high



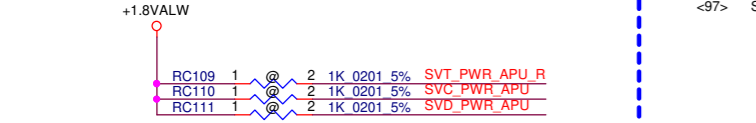
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| Issued Date   | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                    | FP6 (2/7) DDR4              |
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|   |                    |                 |            | Sheet                    | 7 of 122                    |

Main Func = CPU

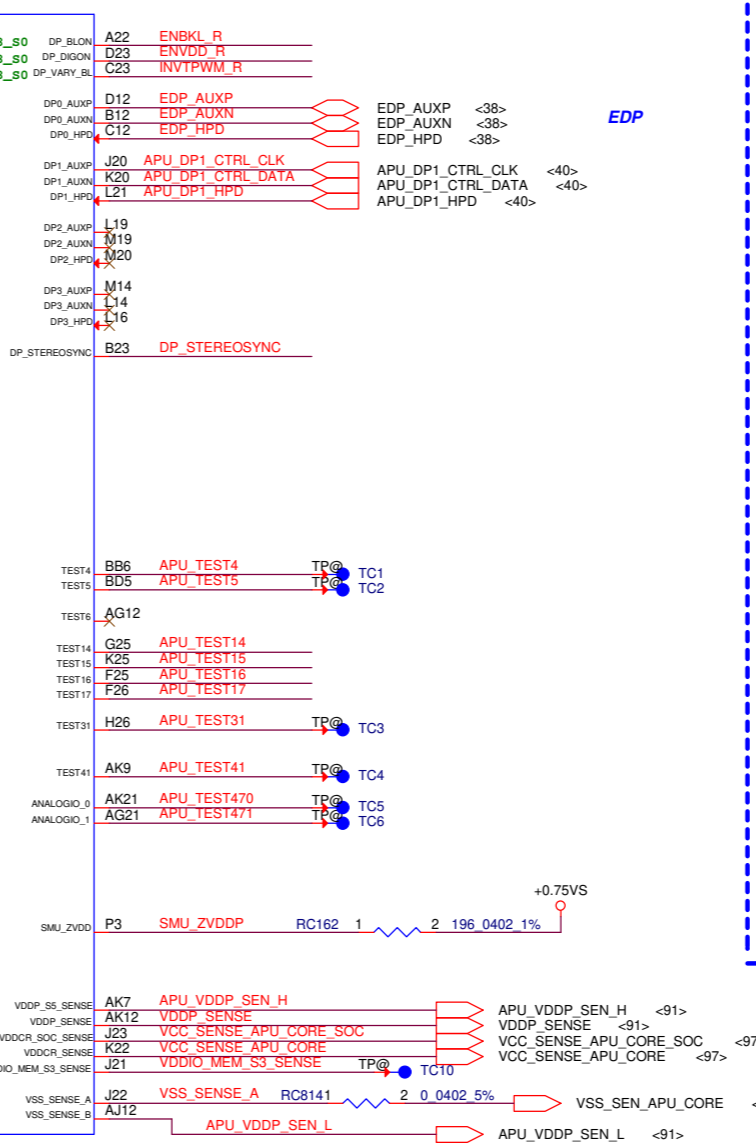
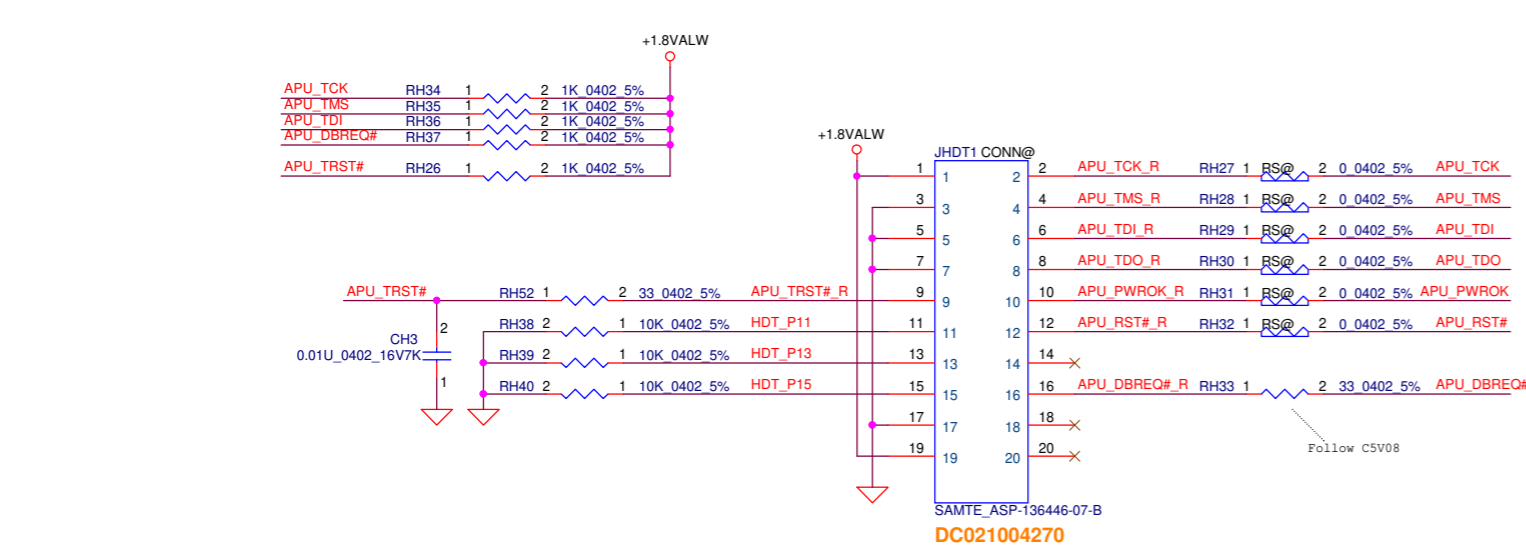
EC/THERM



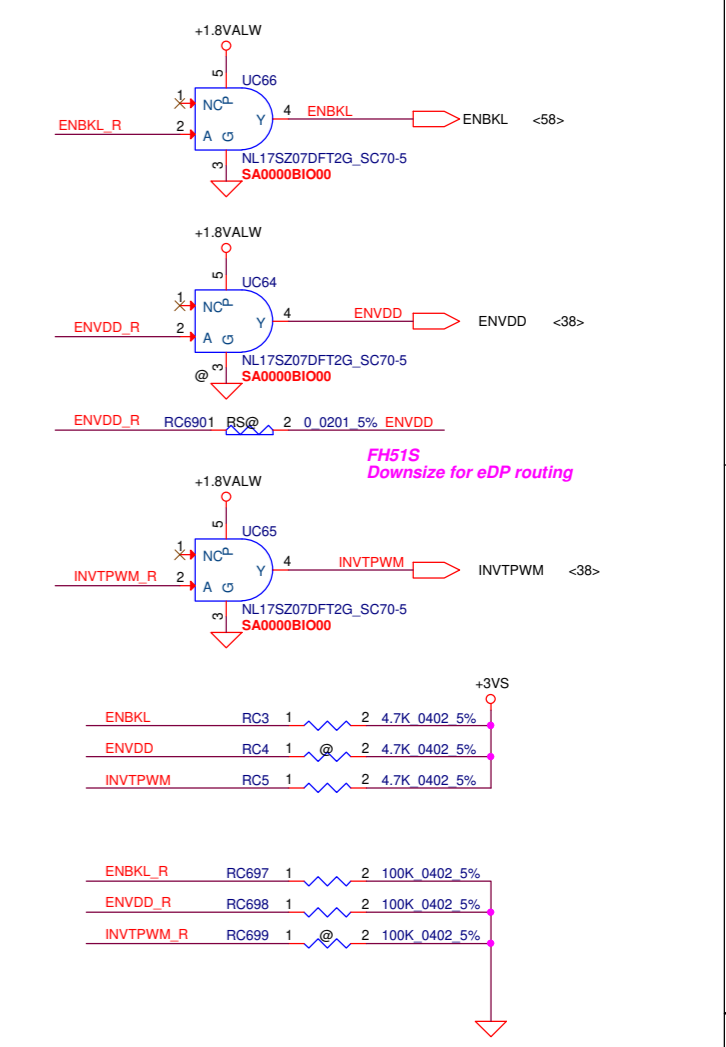
SVID



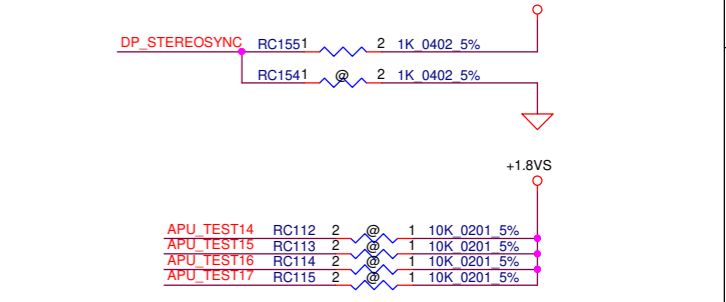
AMD DEBUG



DISP

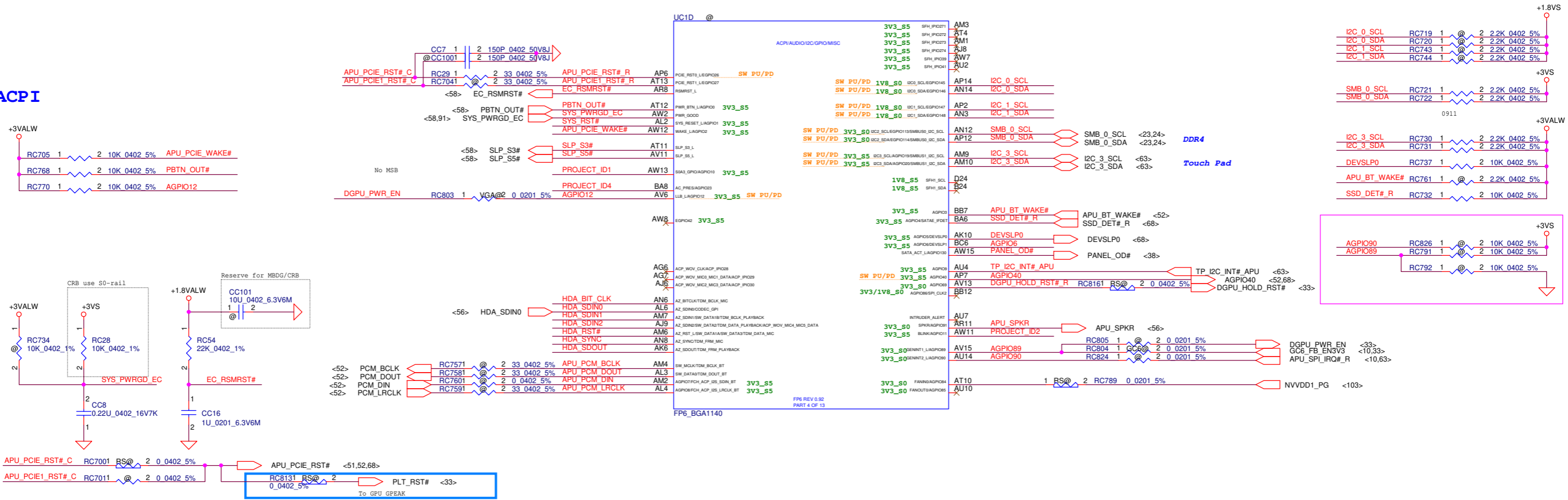


TESTPOINT

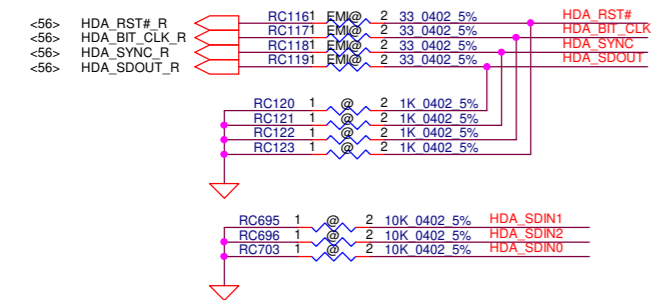


Main Func = CPU

ACPI

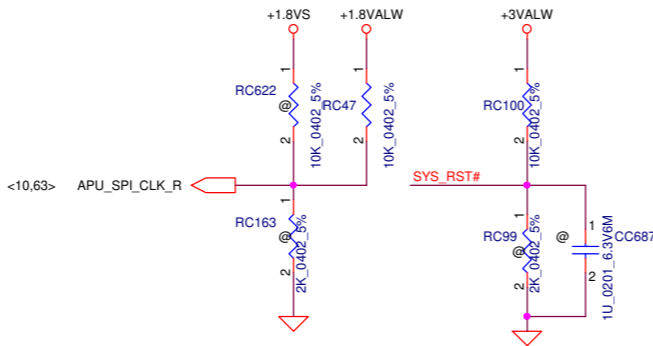


HDA

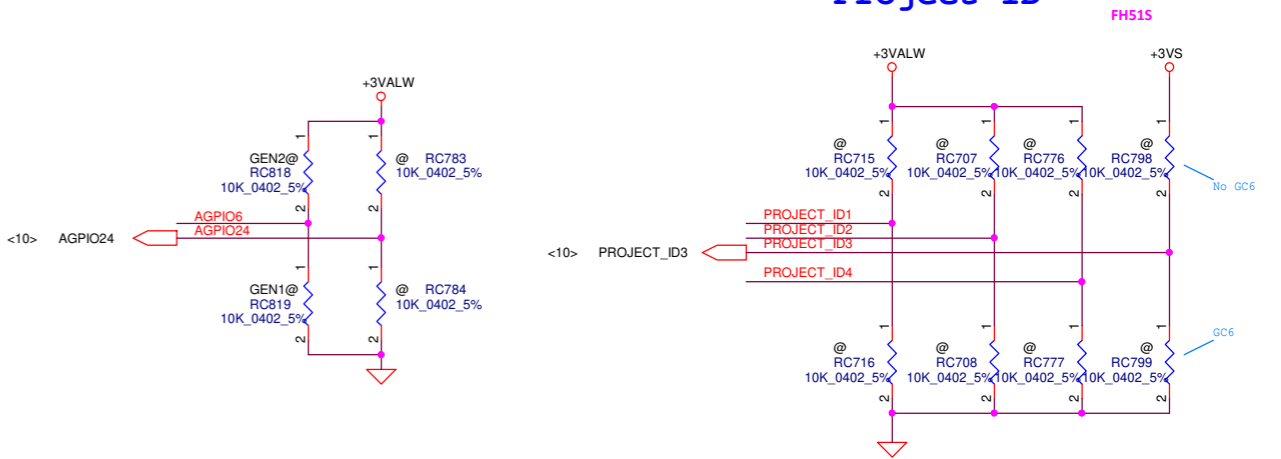


Strap Pin

|   | APU_SPI_CLK_R                            | SYS_RST#                    |
|---|--|-----------------------------|
| H | USE 48MHZ CRYSTAL CLOCK (Default)        | NORMAL RESET MODE (Default) |
| L | USE 100MHZ PCIE CLOCK AS REFERENCE CLOCK | SHORT RESET MODE            |



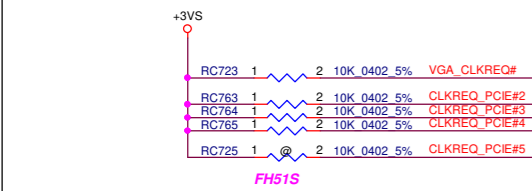
Project ID



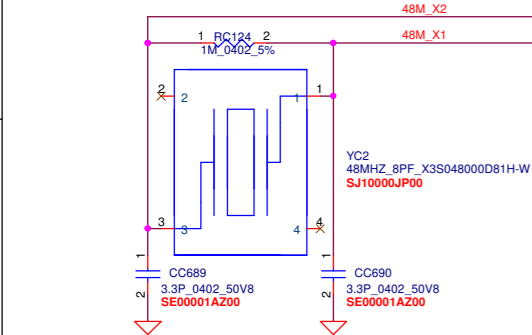
|           |           |
|-----------|-----------|
| RC716     | RC708     |
| RenoirH@  | RenoirH@  |
| RC716     | RC707     |
| Lucienne@ | Lucienne@ |
| RC715     | RC708     |
| CezanneU@ | CezanneU@ |
| RC715     | RC707     |
| CezanneH@ | CezanneH@ |

| Project_ID1 (AGPIO10) | Project_ID2 (AGPIO11) |           |
|-----------------------|-----------------------|-----------|
| L                     | L                     | Renoir-H  |
| L                     | H                     | Lucienne  |
| H                     | L                     | Cezanne-U |
| H                     | H                     | Cezanne-H |

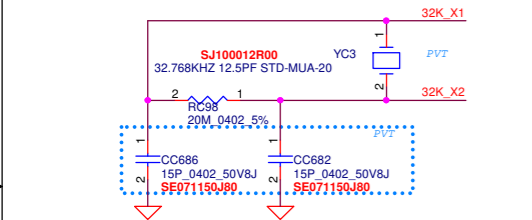
## Main Func = CPU



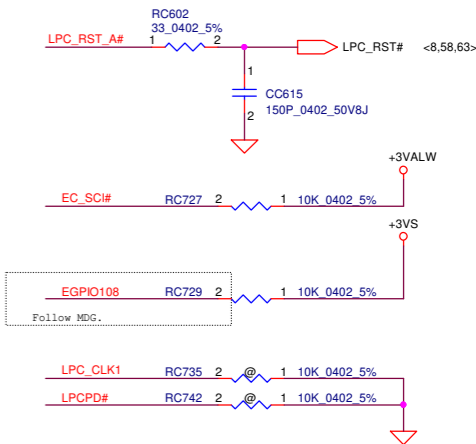
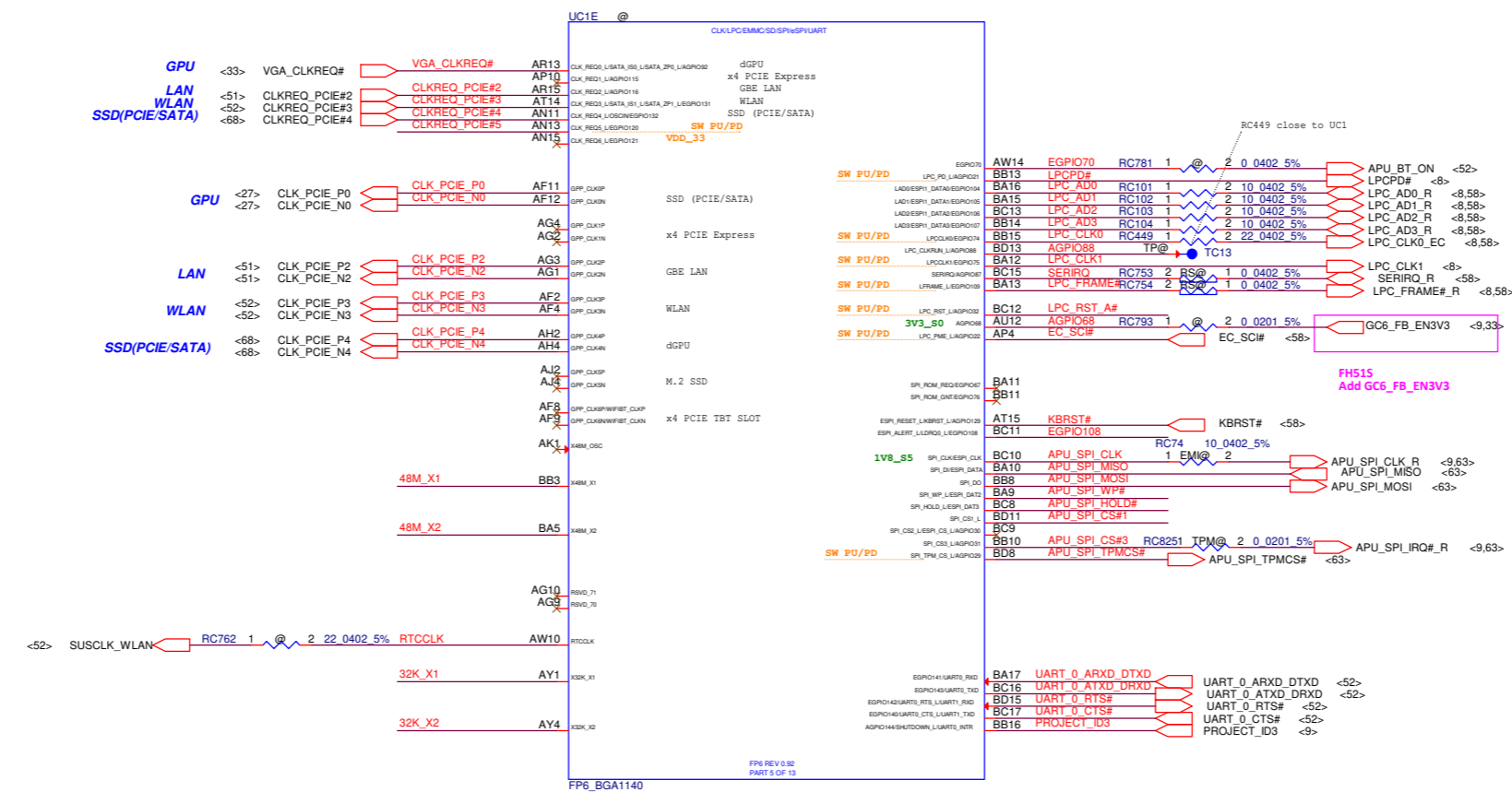
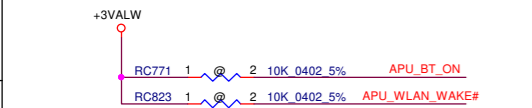
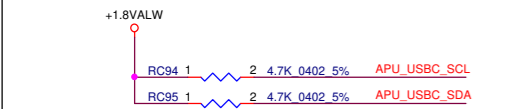
## 48MHz CRYSTAL



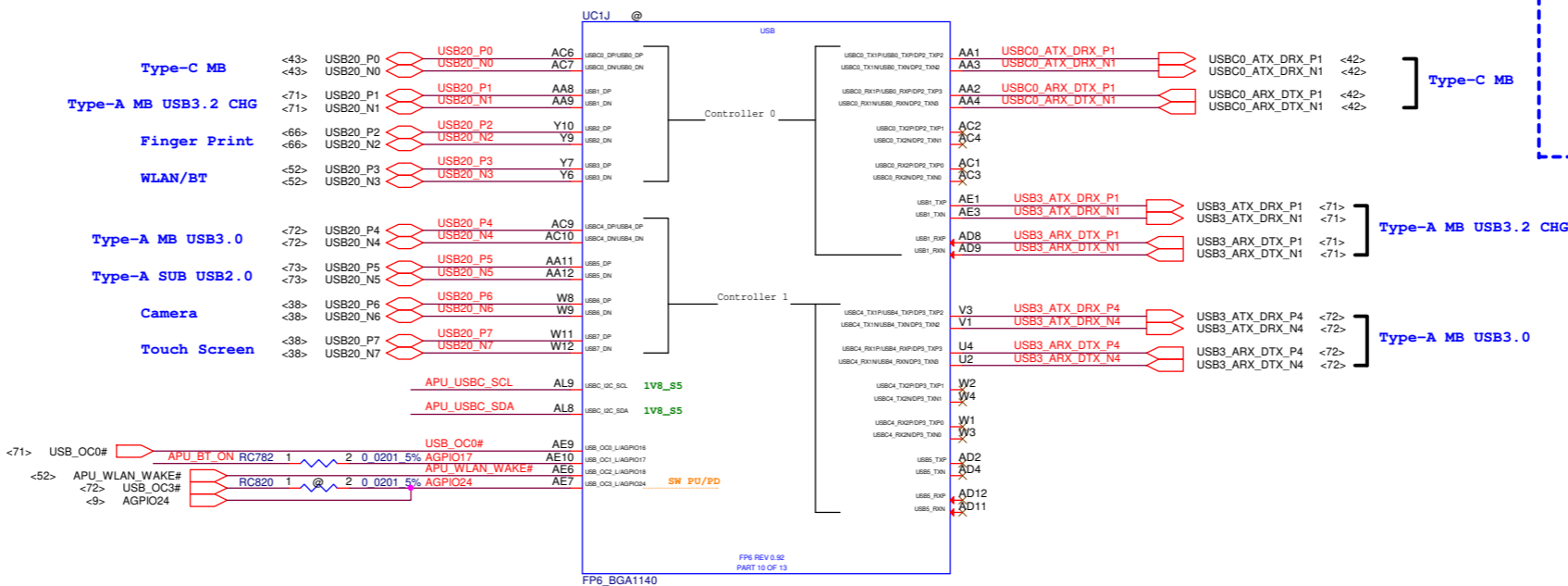
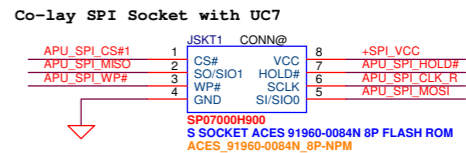
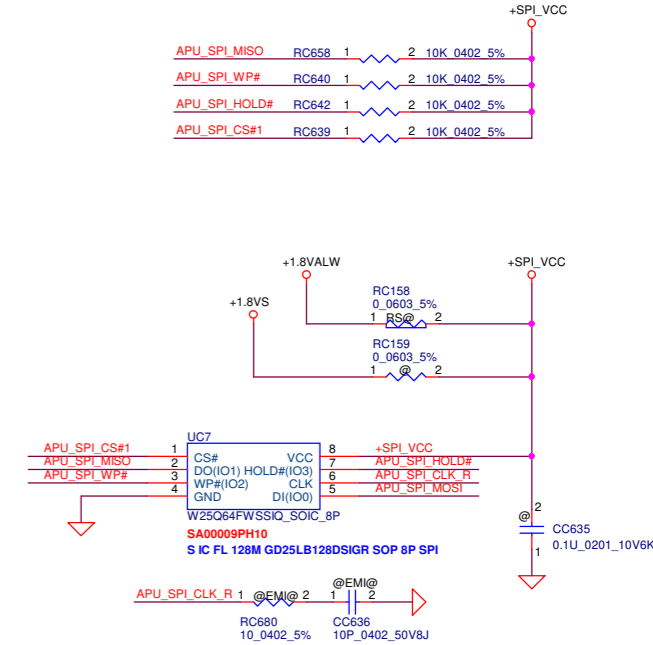
## 32.768KHz CRYSTAL



## USB Function



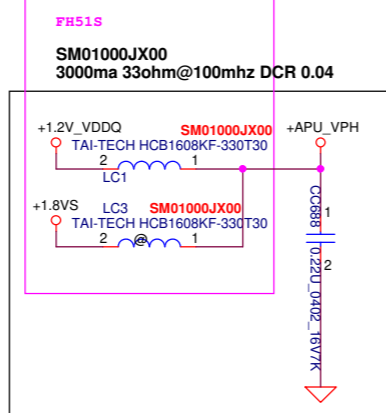
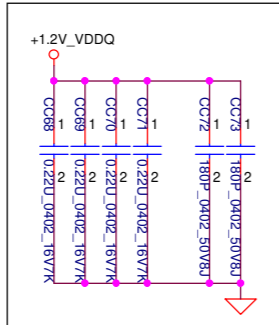
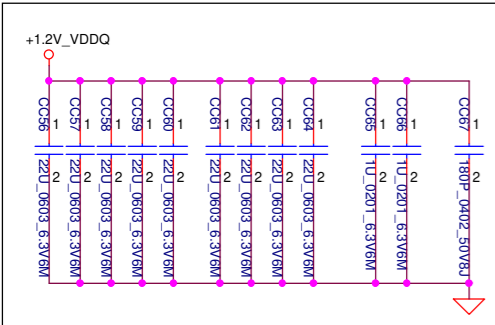
16MB SPI ROM



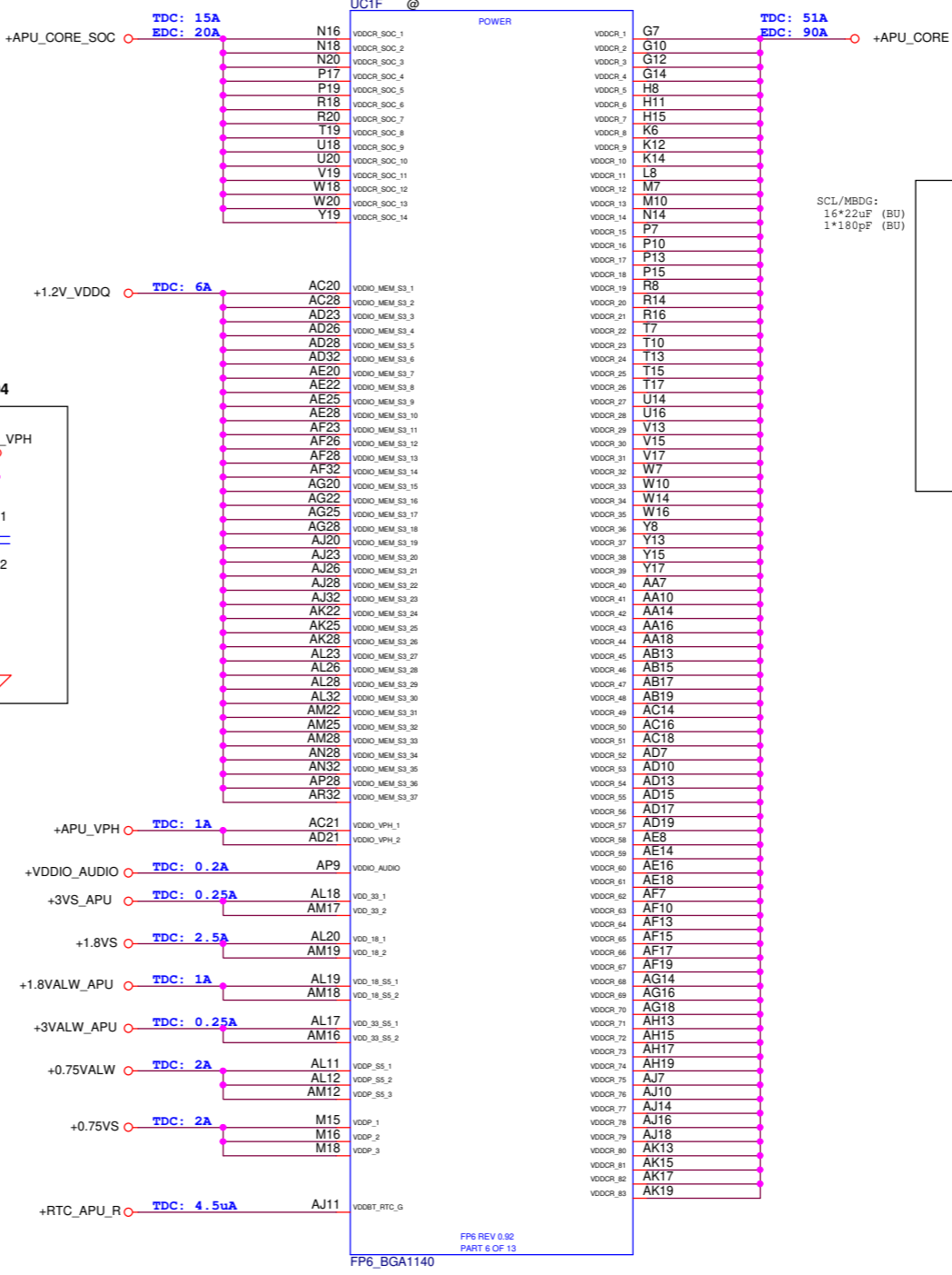
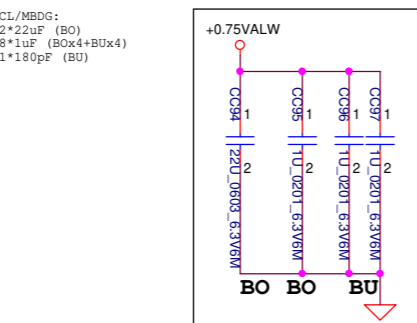
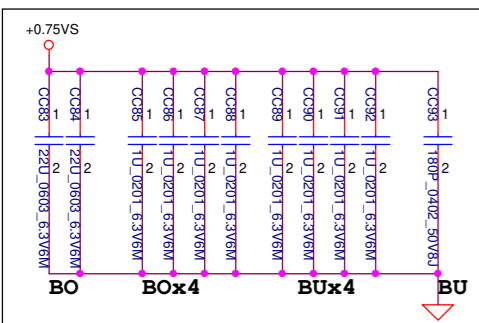
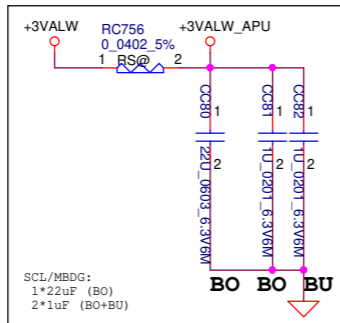
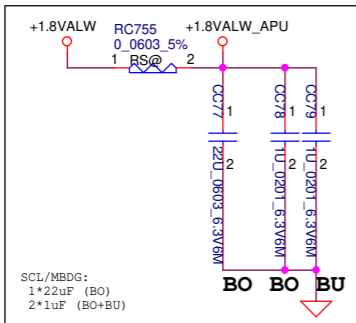
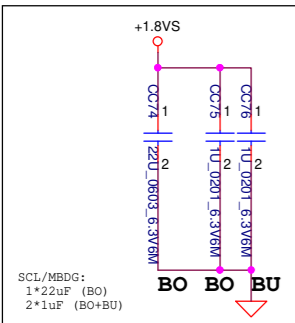
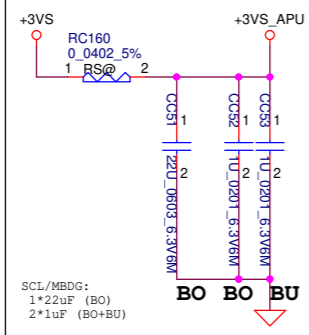
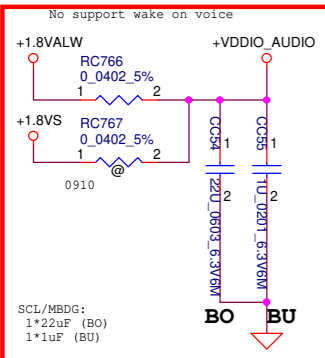
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| Security Classification   | Compal Secret Data |                 |            | Compal Electronics, Inc.    |                           |           |
| Issued Date   | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                       | FP6 (5/7) CLK/USB/SPI/LPC |           |
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|   |                    |                 |            |                             | LA-K831P                  | 1.A       |
| Date:   |                    |                 |            | Thursday, February 25, 2021 | Sheet                     | 10 of 122 |

Main Func = CPU

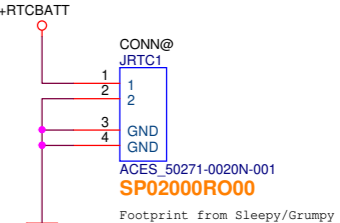
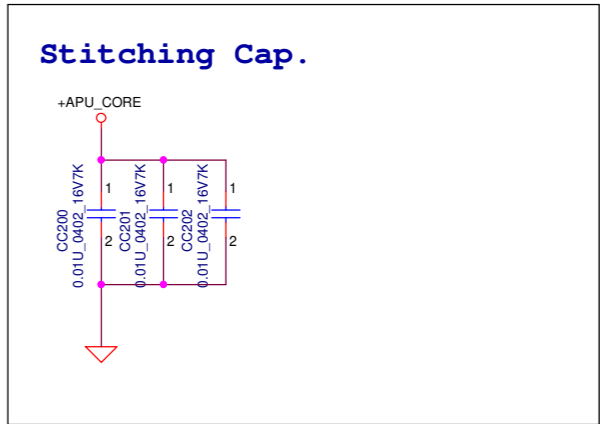
+APU\_CORE\_SOC Cap  
place at Power Side



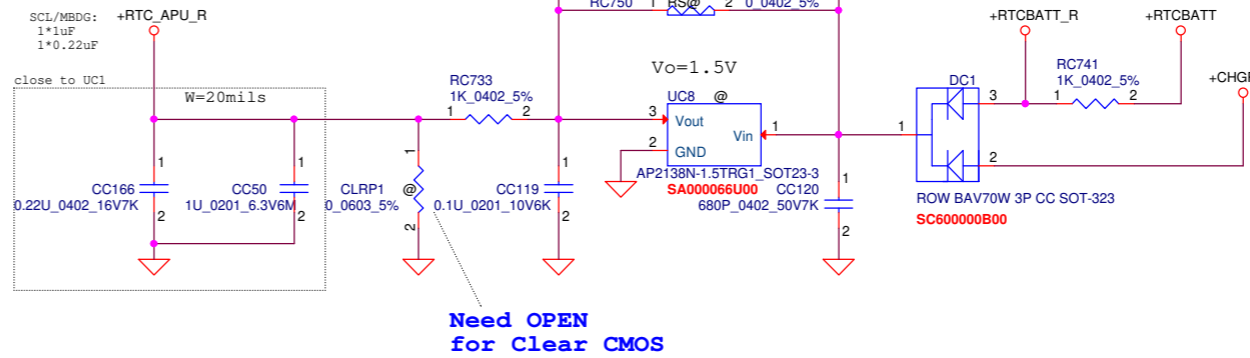
All BU(on bottom side under SOC)ACROSS VDDIO AND VSS SPLIT



+APU\_CORE Cap place at Power Side

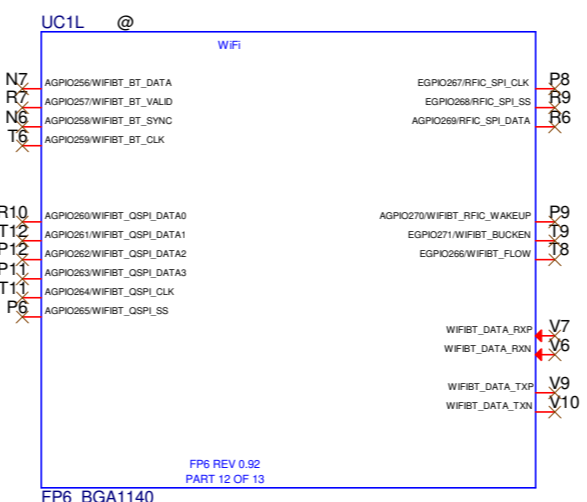
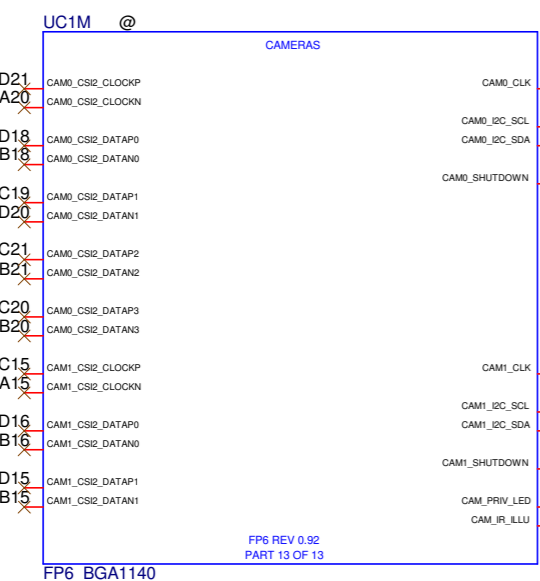
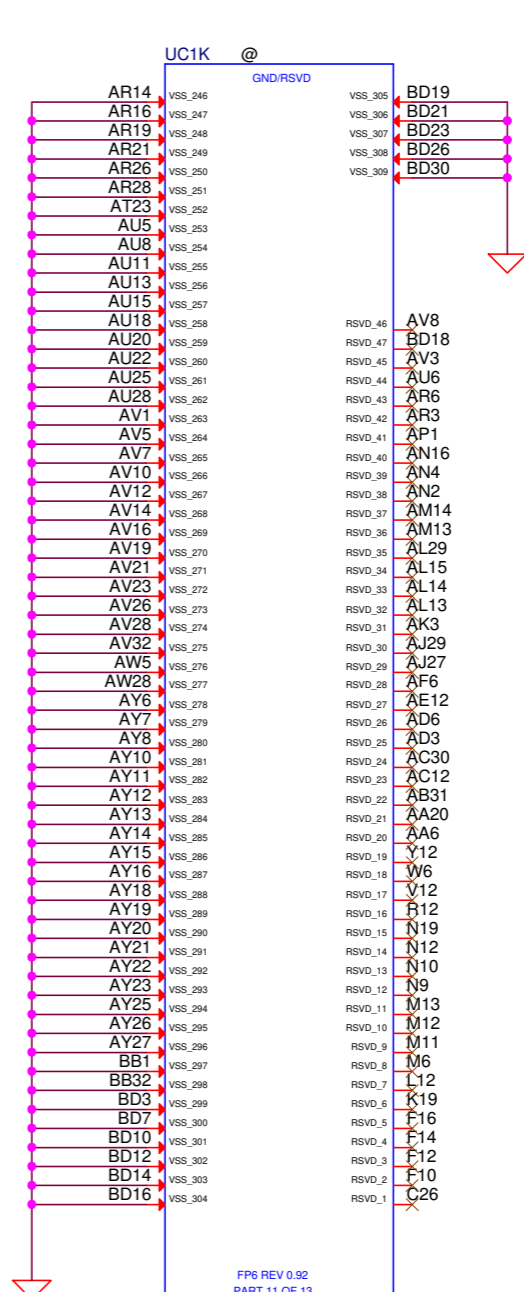
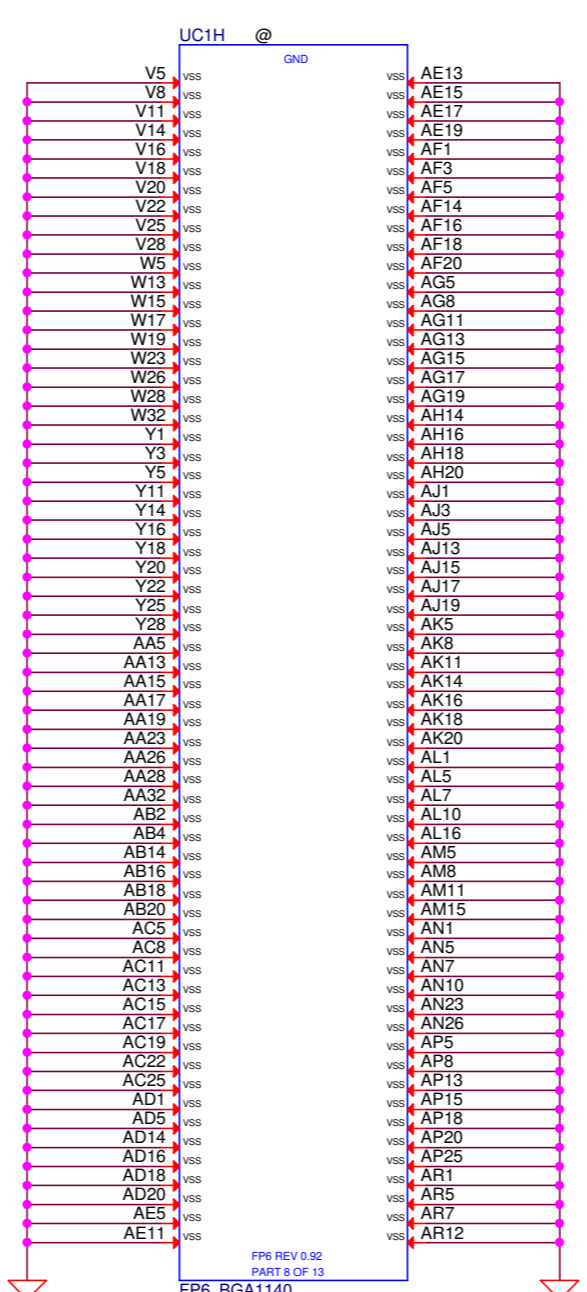
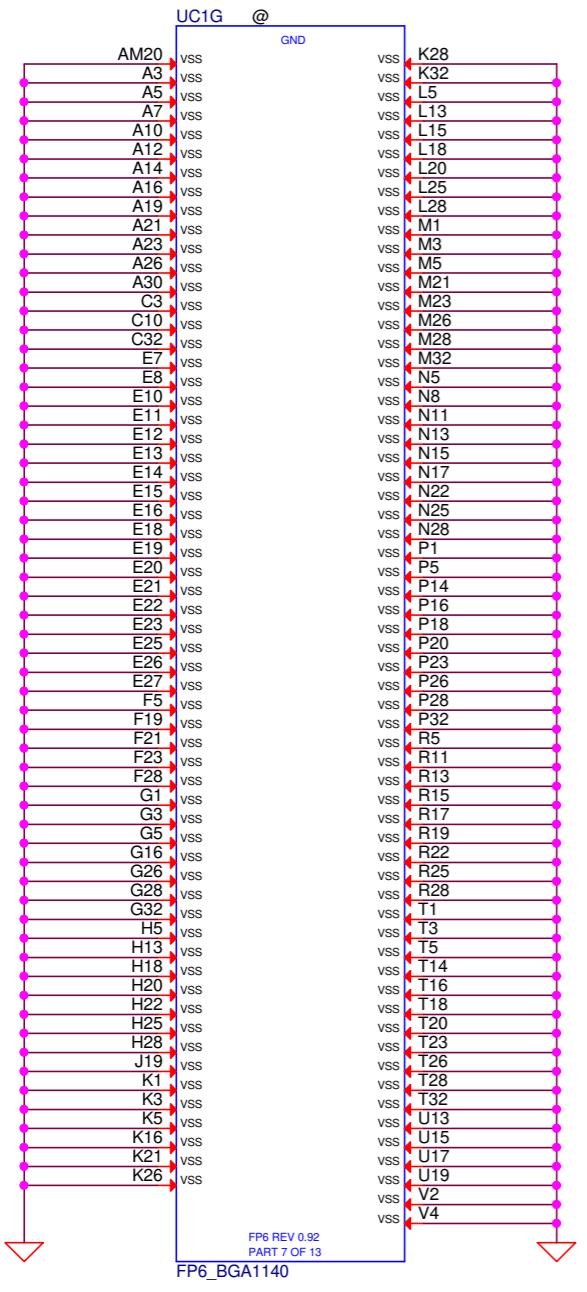


RTC OF APU



|   |  |                             |  |                 |  |
|---|--|-----------------------------|--|-----------------|--|
| Security Classification   |  | Compal Secret Data          |  | Title           |  |
| Issued Date   |  | Deciphered Date             |  | FP6 (6/7) PWR   |  |
| 2020/02/24  |  | 2021/02/24                  |  | Document Number |  |
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Main Func = CPU



|   |                    |                 |            |                                 |                             |                 |
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|   |                    |                 |            | Date:                           | Thursday, February 25, 2021 | Sheet 12 of 122 |

# Reserve

|  |                              |                 |            |                          |                 |        |
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|--|------------------------------|-----------------|------------|--------------------------|-----------------|--------|
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| Issued Date  | 2020/02/24                   | Deciphered Date | 2021/02/24 | Title                    | RSV             |        |
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Reserve

|  |                    |                 |            |                          |                              |                 |
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| Security Classification  | Compal Secret Data |                 |            | Compal Electronics, Inc. |                              |                 |
| Issued Date  | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                    | RSV                          |                 |
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|  |                    |                 |            |                          | LA-K831P                     | 1.A             |
|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 16 of 122 |

Reserve

|  |                              |                 |            |                          |                 |        |
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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
| Issued Date  | 2020/02/24                   | Deciphered Date | 2021/02/24 | Title                    | RSV             |        |
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Reserve

|  |                              |                 |            |                          |                 |        |
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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
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Reserve

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|--|--------------------|-----------------|------------|--------------------------|------------------------------|-----------------|
| Security Classification  | Compal Secret Data |                 |            | Compal Electronics, Inc. |                              |                 |
| Issued Date  | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                    | RSV                          |                 |
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|  |                    |                 |            |                          | LA-K831P                     | 1.A             |
|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 19 of 122 |

# Reserve

|  |                              |                 |            |                          |                 |        |
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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 20              | of 122 |

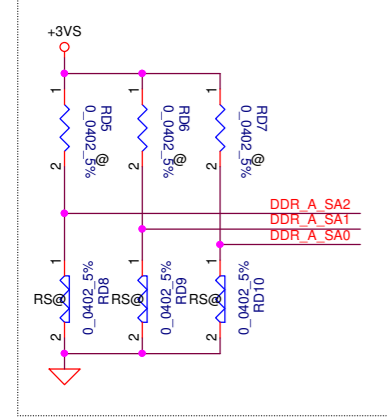
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|--|------------------------------|-----------------|------------|--------------------------|-----------------|--------|
| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 22              | of 122 |

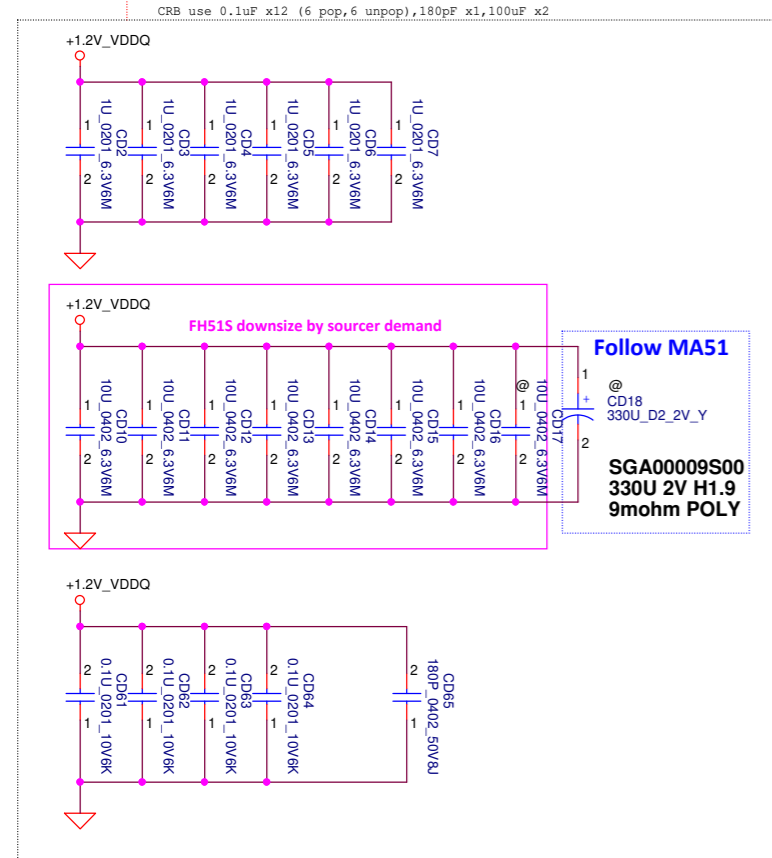
Address : A0



Layout Note:  
Place near JDIMM1

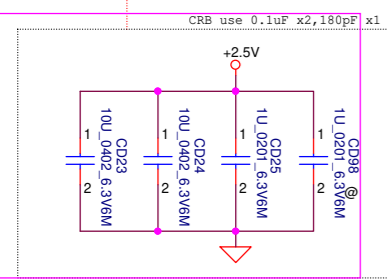
Note:  
Check voltage tolerance of  
VREF\_DQ at the DIMM socket

DDR4 support Even Parity check in DRAMs.

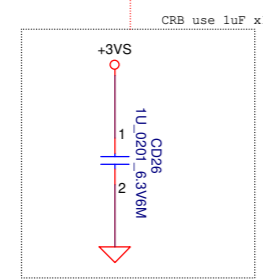


Layout Note:  
Place near JDIMM1.257,259

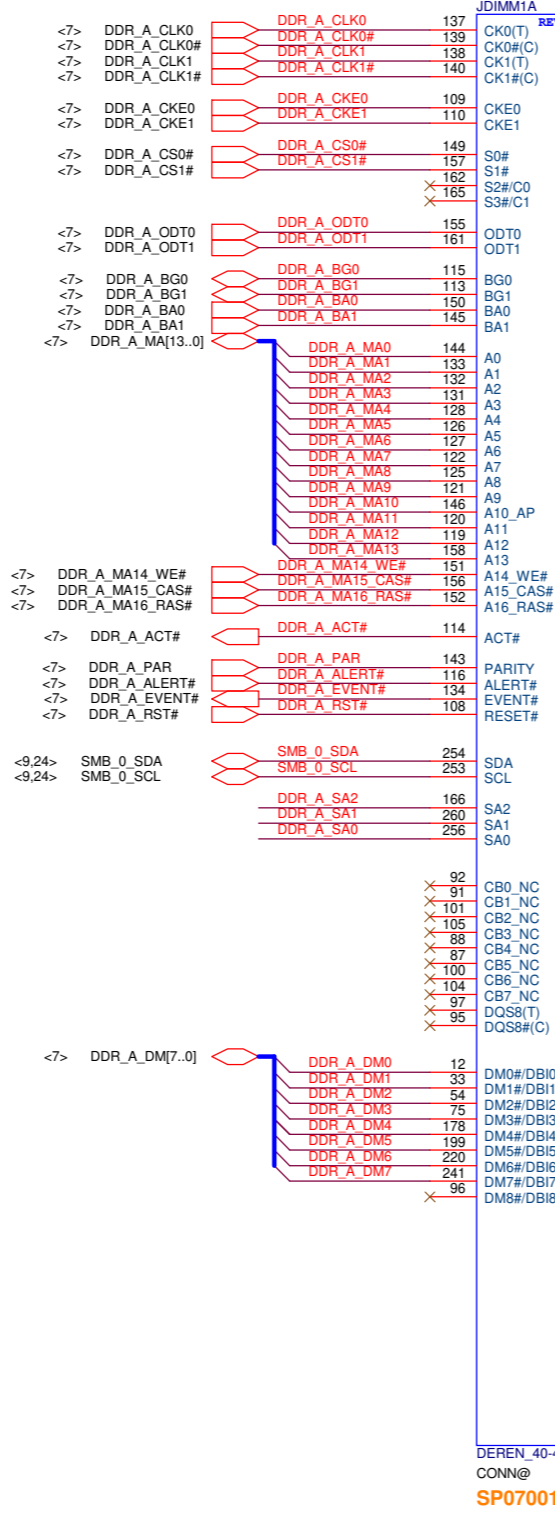
Layout Note:  
Place near JDIMM1.255



FH515 downsize by sourcer demand

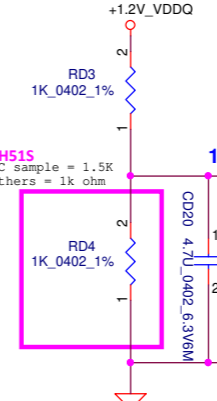


FH515 downsize by sourcer demand

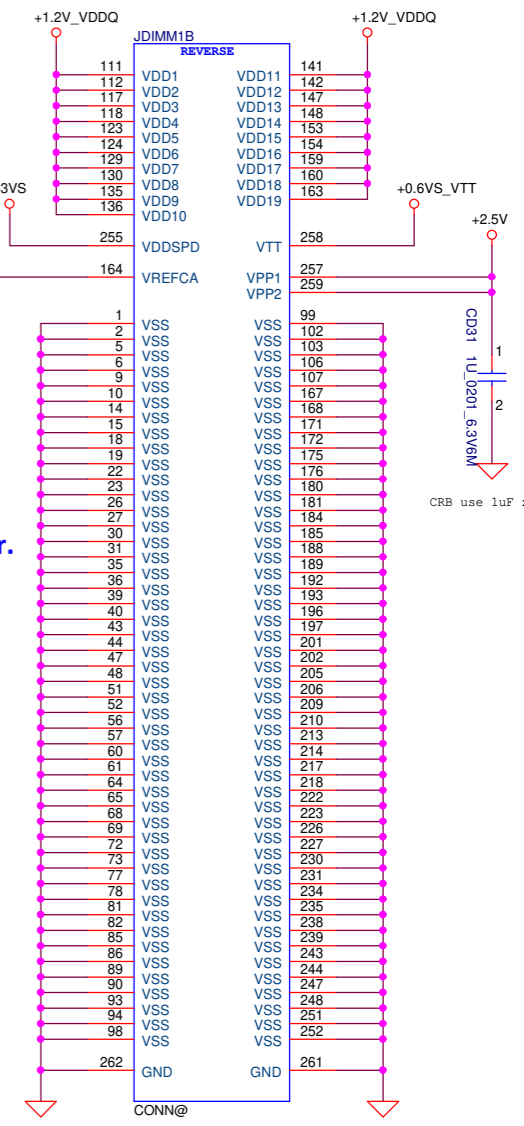


DEREN\_40-42271-26001RHF  
CONN@  
SP07001CW00

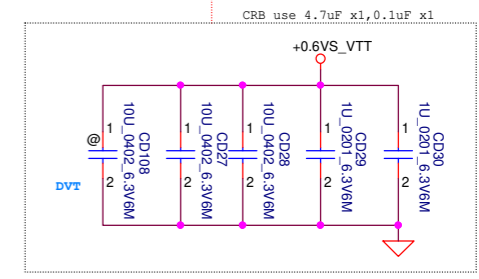
Follow CRB design



Place near to SO-DIMM connector.



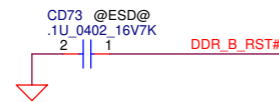
Layout Note:  
Place near JDIMM1.258



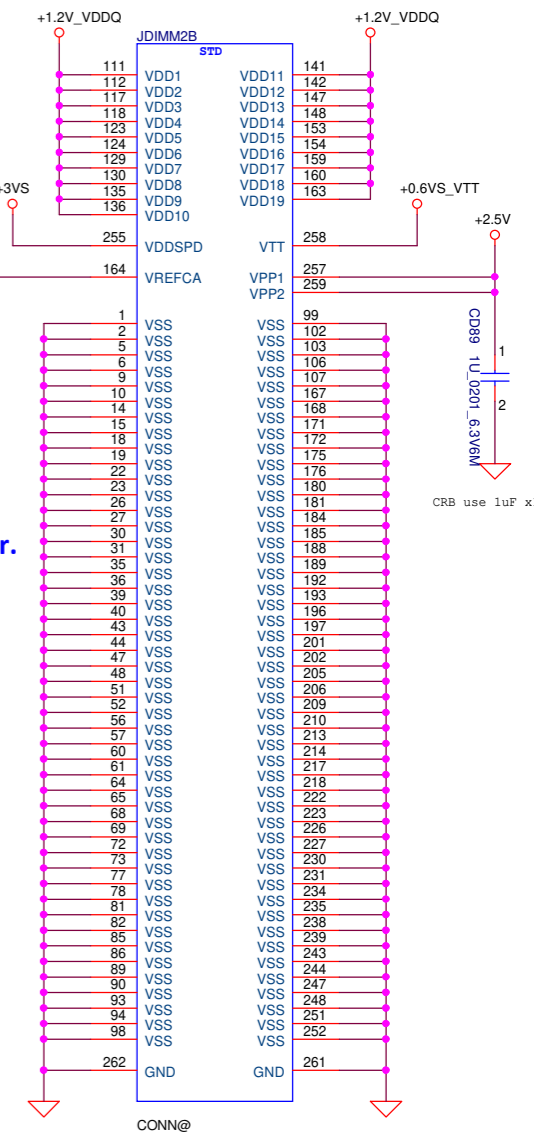
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| Security Classification   |            | Compal Secret Data |            | Title           |           |
| Issued Date   | 2020/02/24 | Deciphered Date    | 2021/02/24 | DDR4 DIMMA      |           |
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|   |            |                    |            | LA-K831P        | 1.A       |
| Date: Thursday, February 25, 2021   |            |                    |            | Sheet           | 23 of 122 |

2-3A to 1 DIMMs/channel

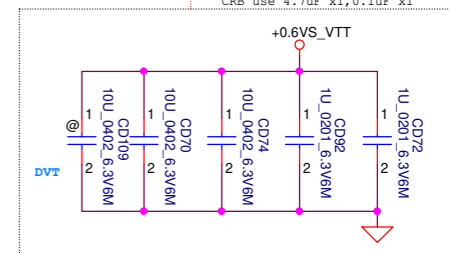
Note:  
Check voltage tolerance of  
VREF\_DQ at the DIMM socket



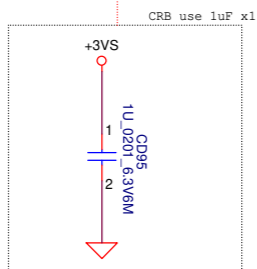
**Place near to SO-DIMM connector.**



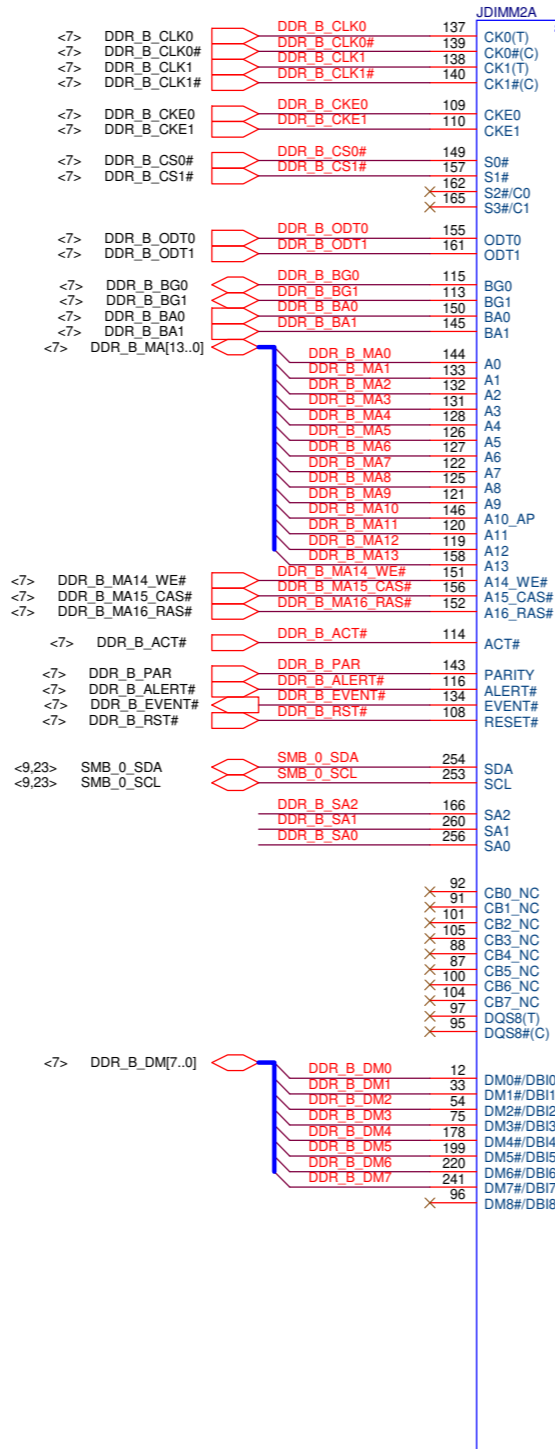
```
CRB use 4.7uF x1,0.1uF x1
```



**Layout Note:**  
Place near JDIMM2.255



## FH51S downsize by sourcer demand



FOX\_AS0A821-H4SB-7H  
CONN@  
SP07001HW00

Symbol follow EH5AW (Lada)

|   |  |                    |  |                 |  |                                 |  |                   |                             |  |  |  |       |    |            |     |
|---|--|--------------------|--|-----------------|--|---------------------------------|--|-------------------|-----------------------------|--|--|--|-------|----|------------|-----|
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| Issued Date   |  | 2020/02/24         |  | Deciphered Date |  | 2021/02/24                      |  | Title             |                             |  |  |  |       |    |            |     |
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|   |  |                    |  |                 |  |                                 |  | Size              | Document Number             |  |  |  |       |    | Rev        |     |
|   |  |                    |  |                 |  |                                 |  |                   | <b>LA-K831P</b>             |  |  |  |       |    | <b>1.A</b> |     |
|   |  |                    |  |                 |  |                                 |  | Date:             | Thursday, February 25, 2021 |  |  |  | Sheet | 24 | of         | 122 |

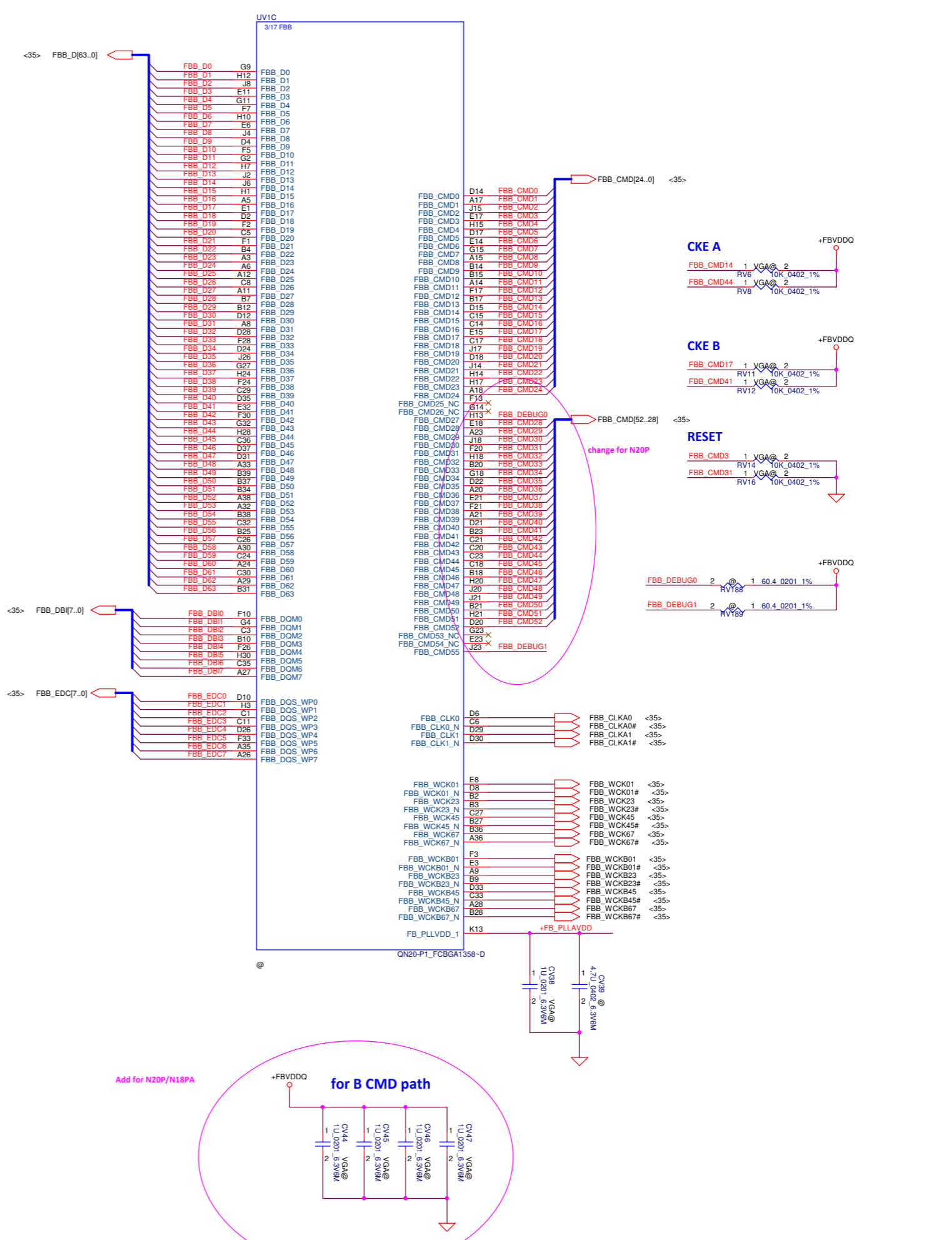
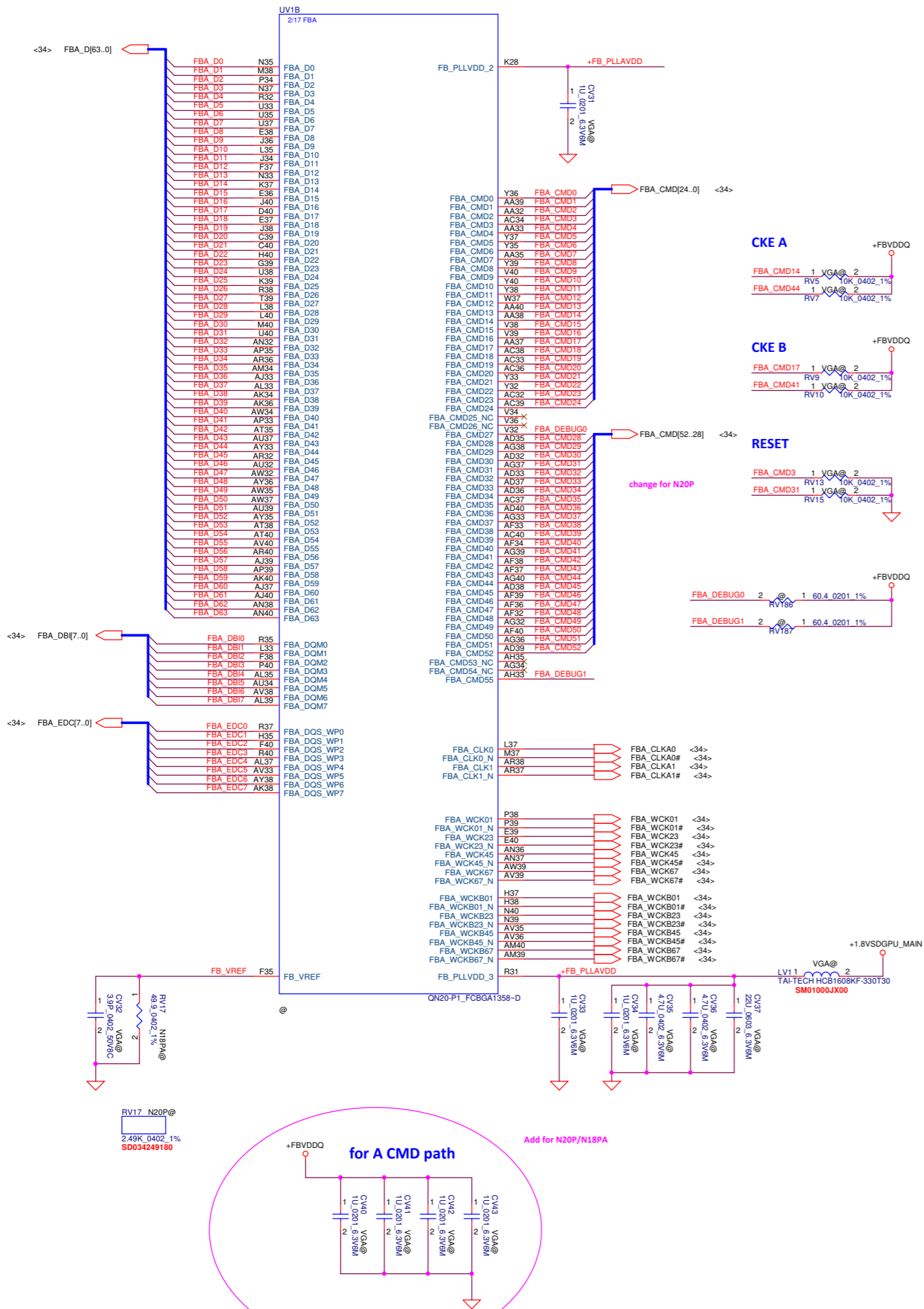
Reserve

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|--|------------------------------|-----------------|------------|--------------------------|-----------------|--------|
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
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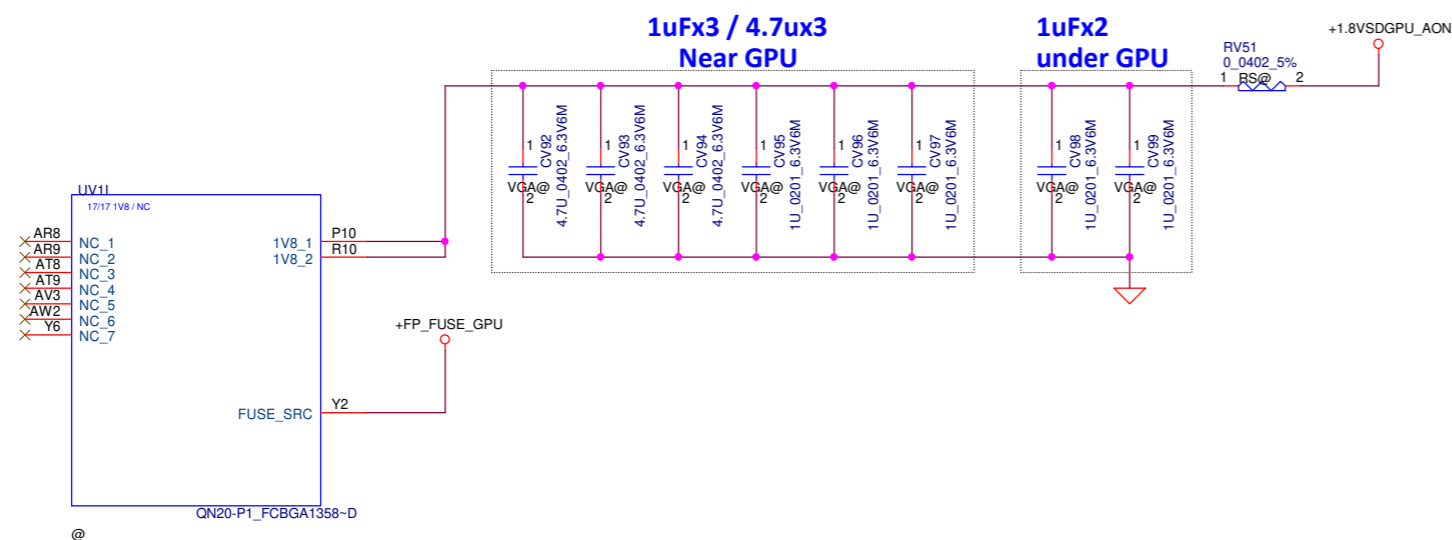
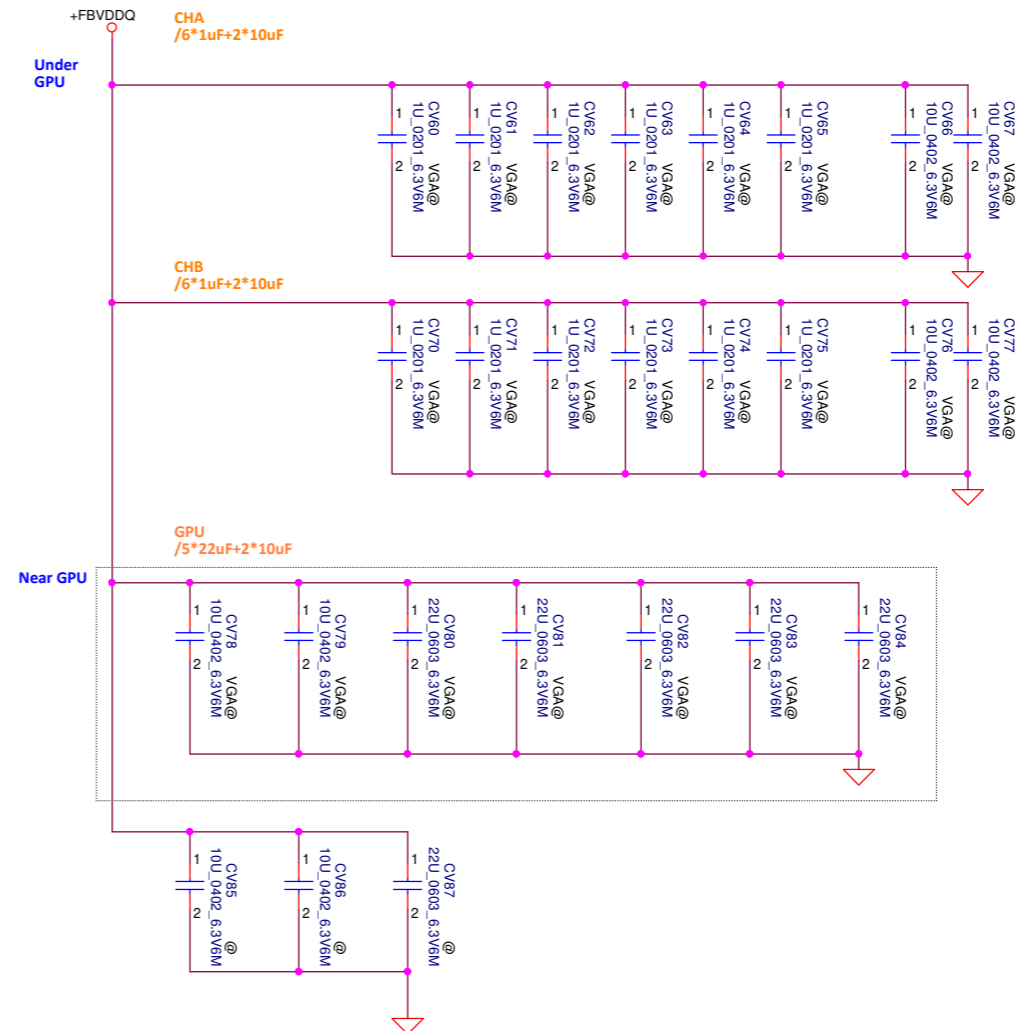
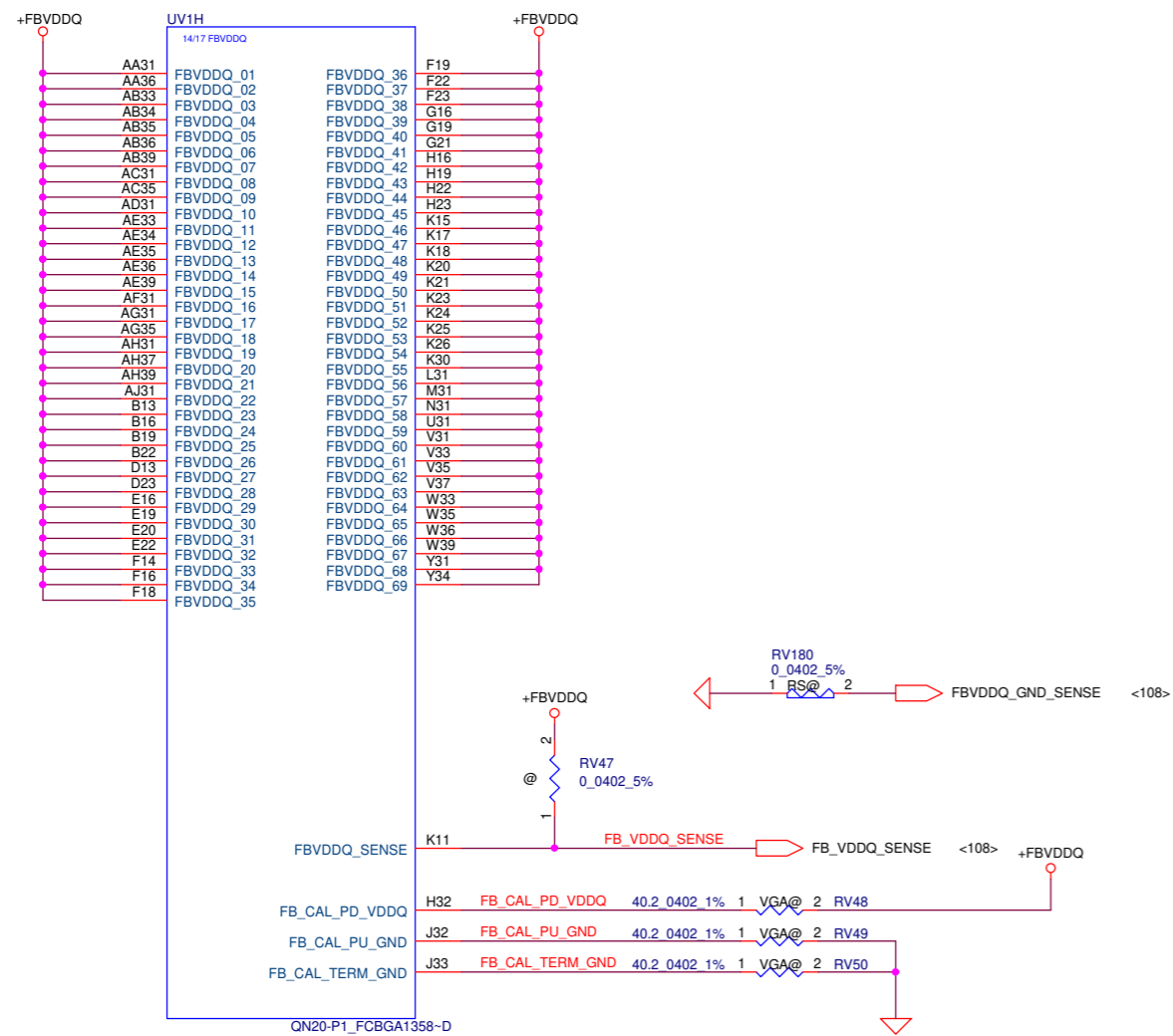
Reserve

|  |                    |                 |            |                          |                              |                 |
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| Security Classification  | Compal Secret Data |                 |            | Compal Electronics, Inc. |                              |                 |
| Issued Date  | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                    | RSV                          |                 |
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|  |                    |                 |            |                          | LA-K831P                     | 1.A             |
|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 26 of 122 |

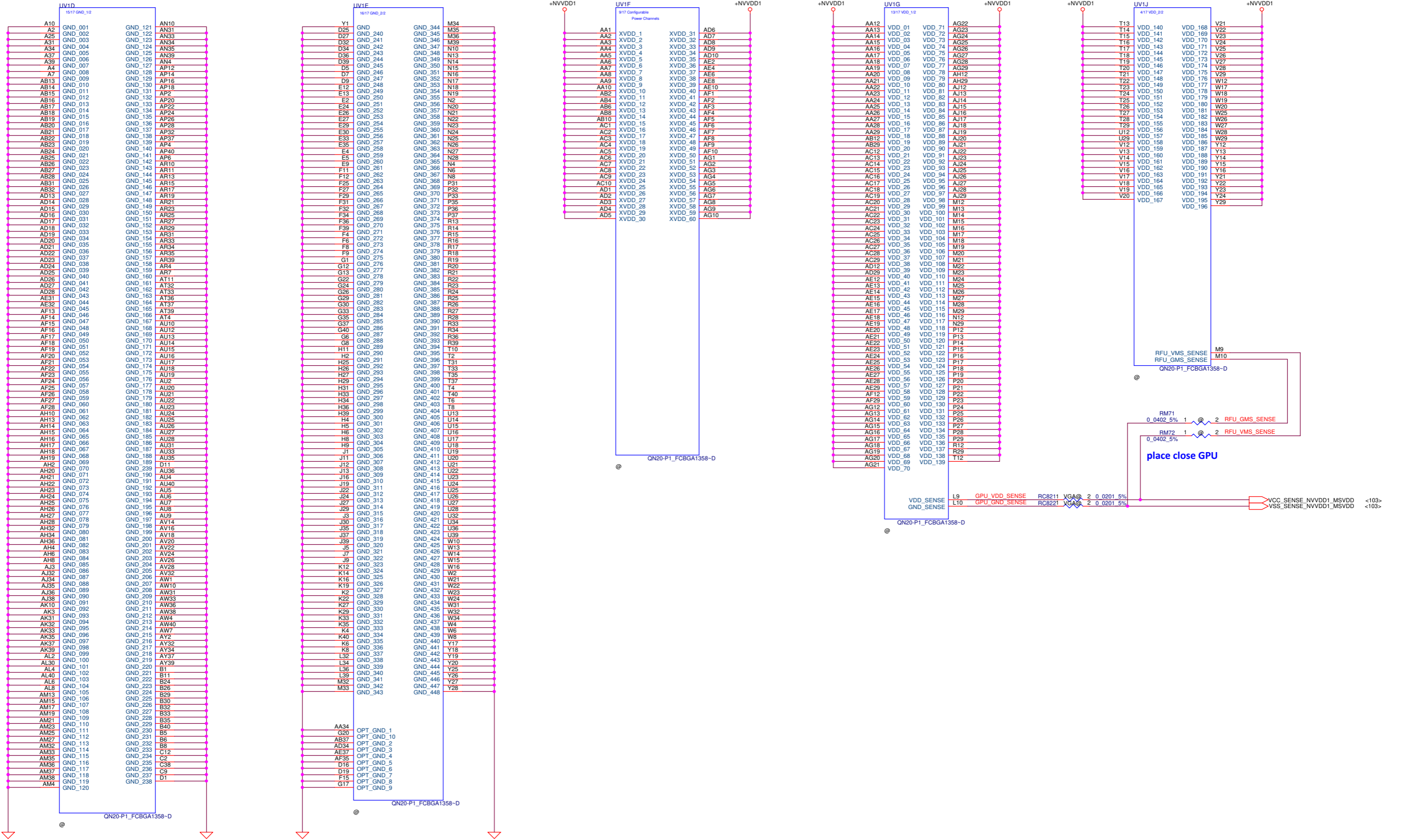


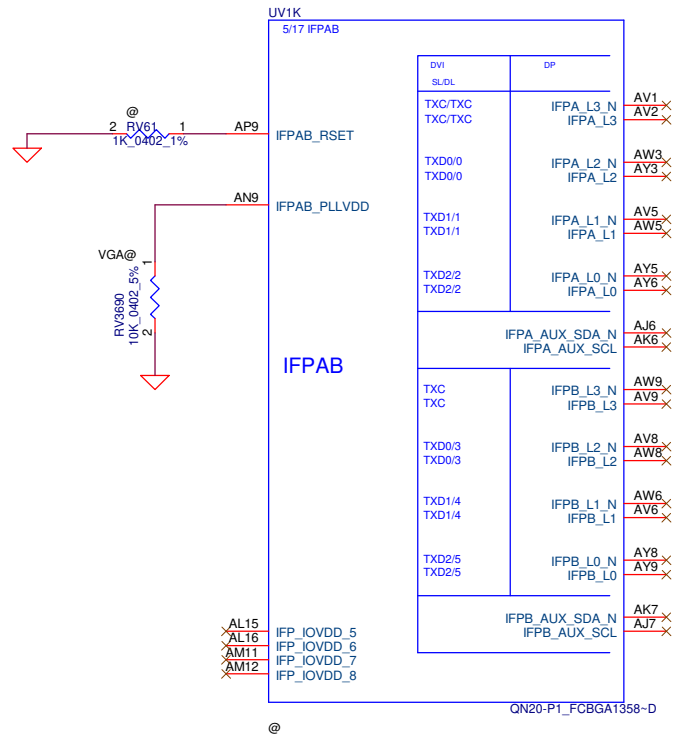




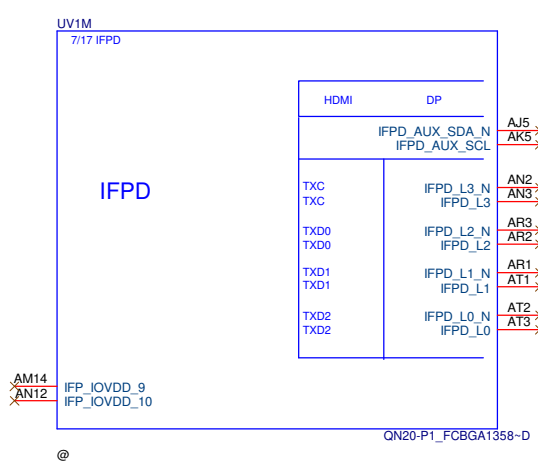
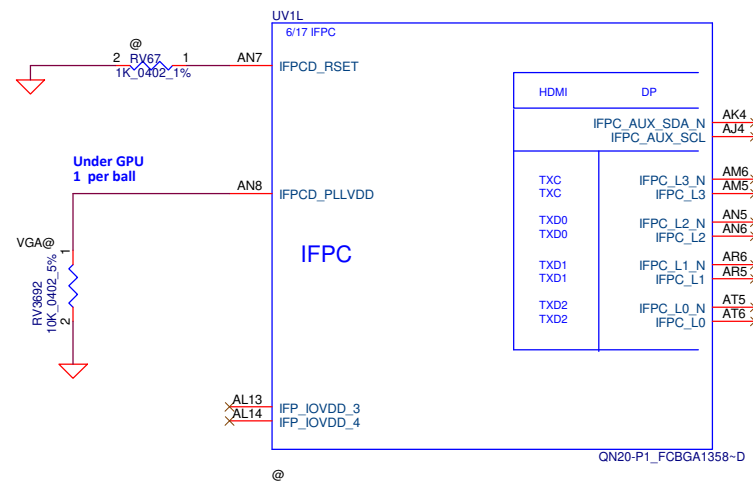
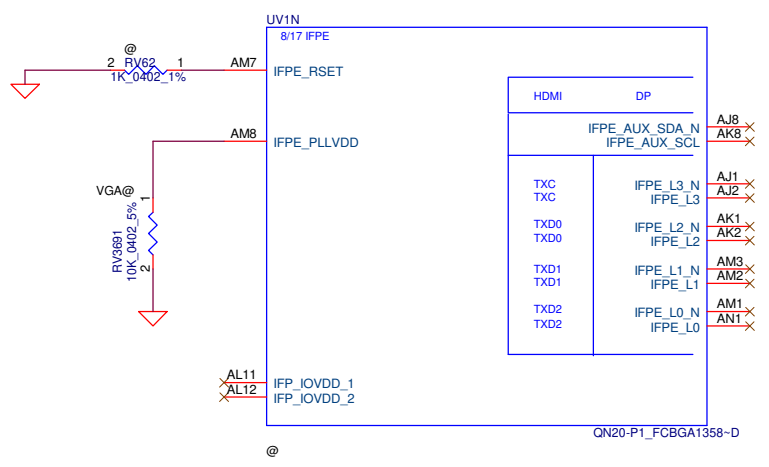


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| Security Classification   | Compal Secret Data |                 |            | Compal Electronics, Inc.    |                          |           |
| Issued Date   | 2020/02/24         | Deciphered Date | 2021/02/24 | Title                       | N18P(4/11)-G61/G62 POWER |           |
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|   |                    |                 |            | Custom                      | LA-K831P                 | 1.A       |
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Check layout for port connection.



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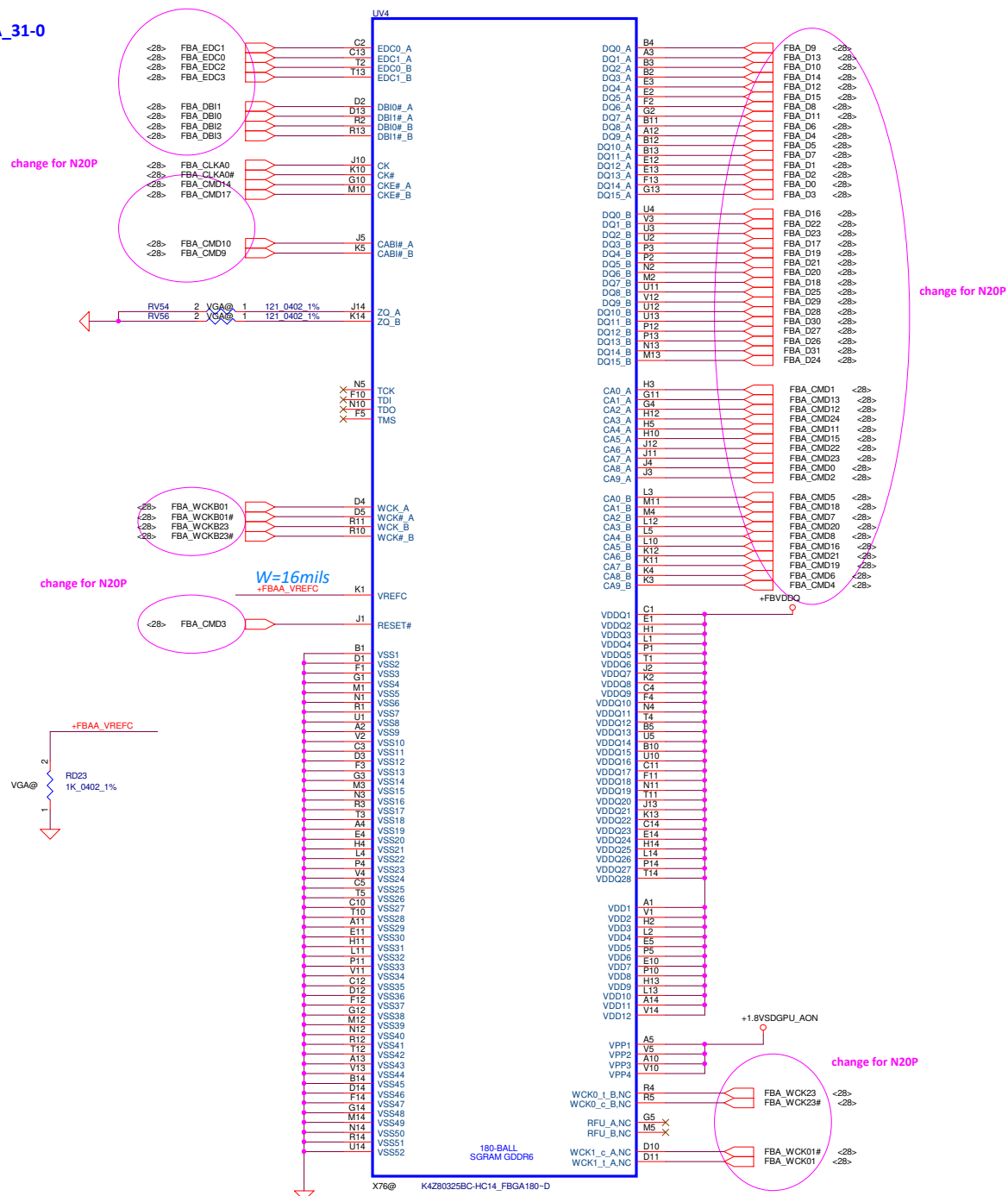
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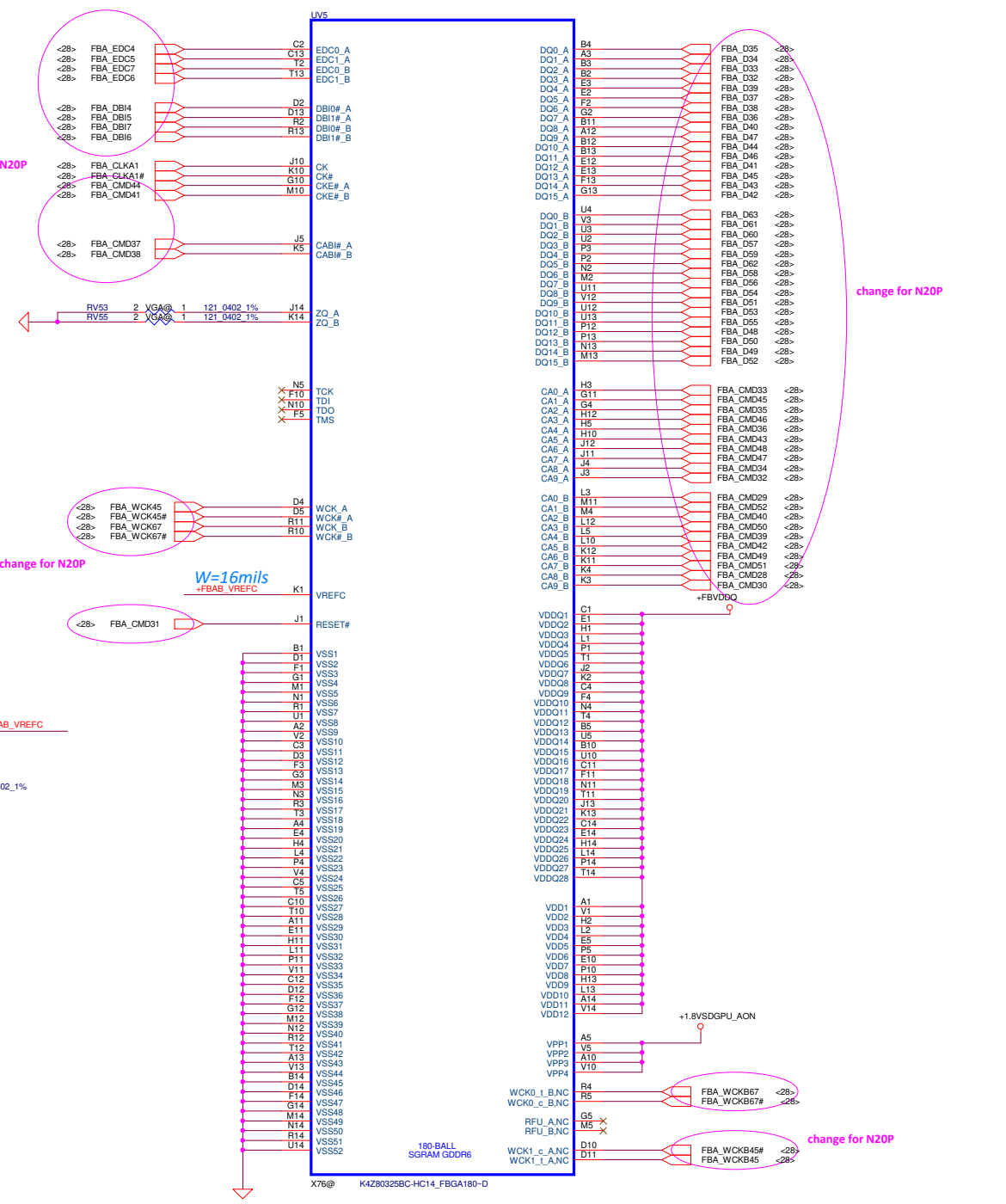
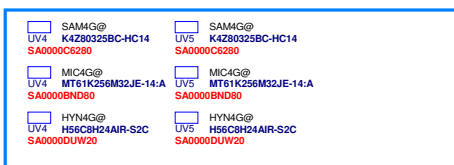
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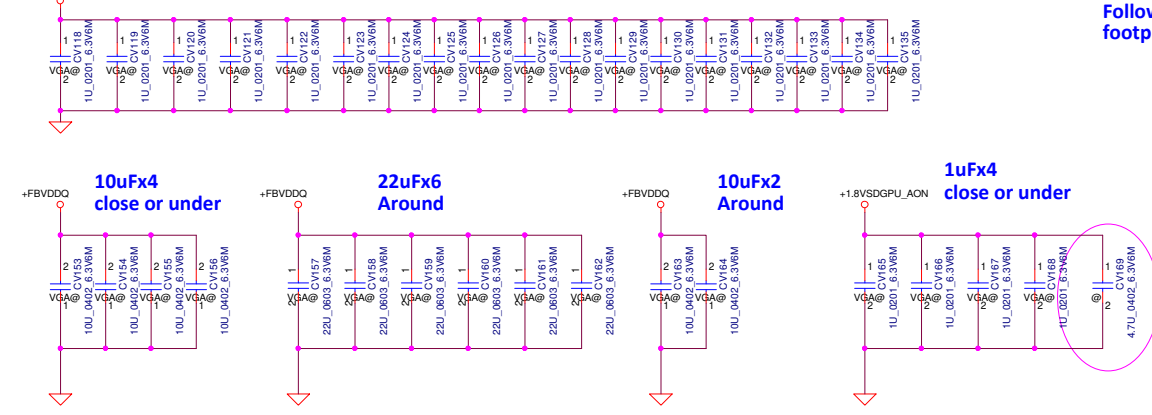
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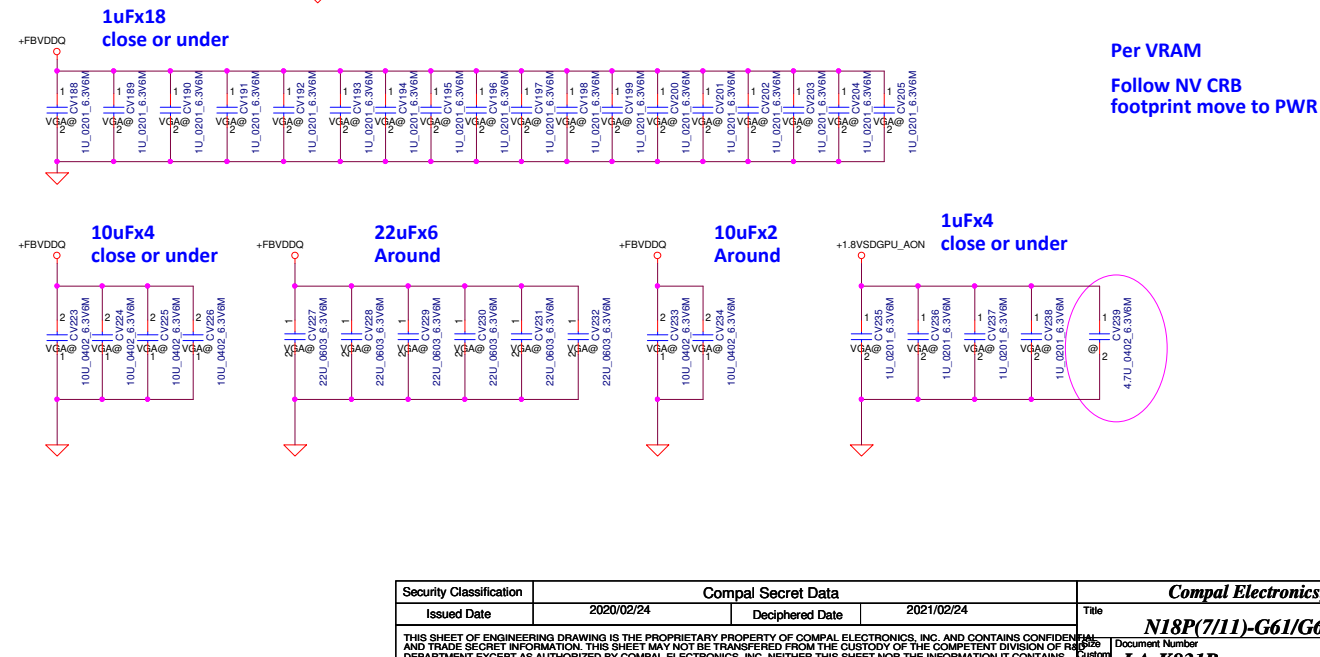
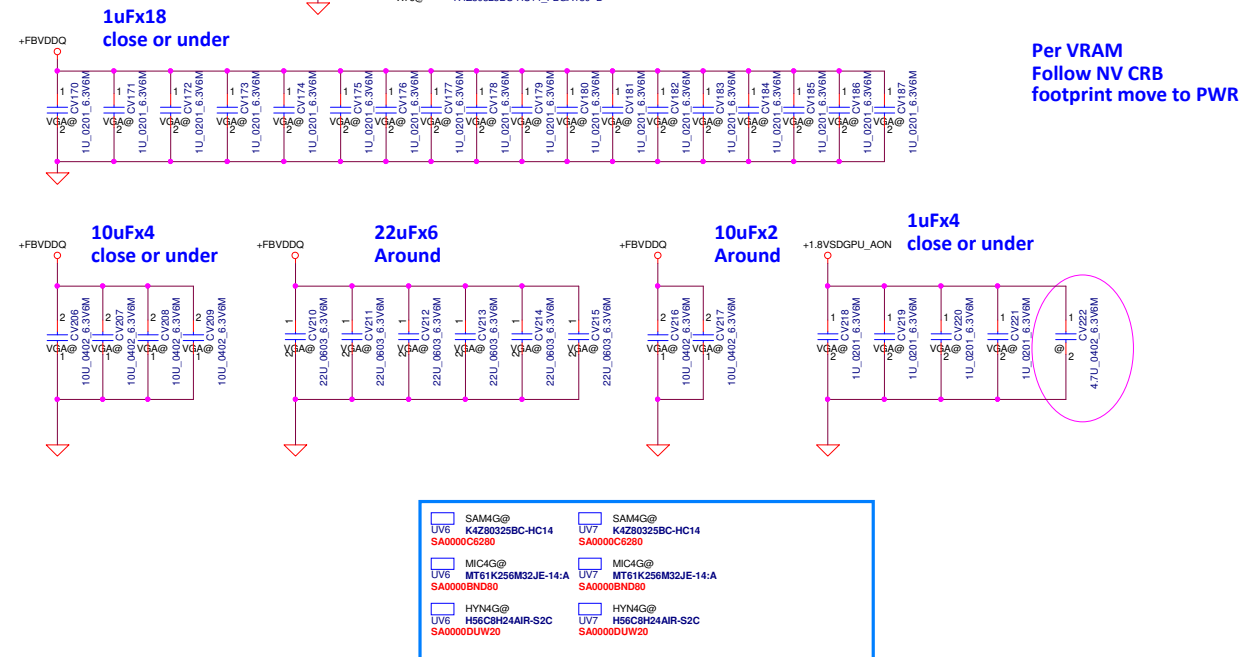
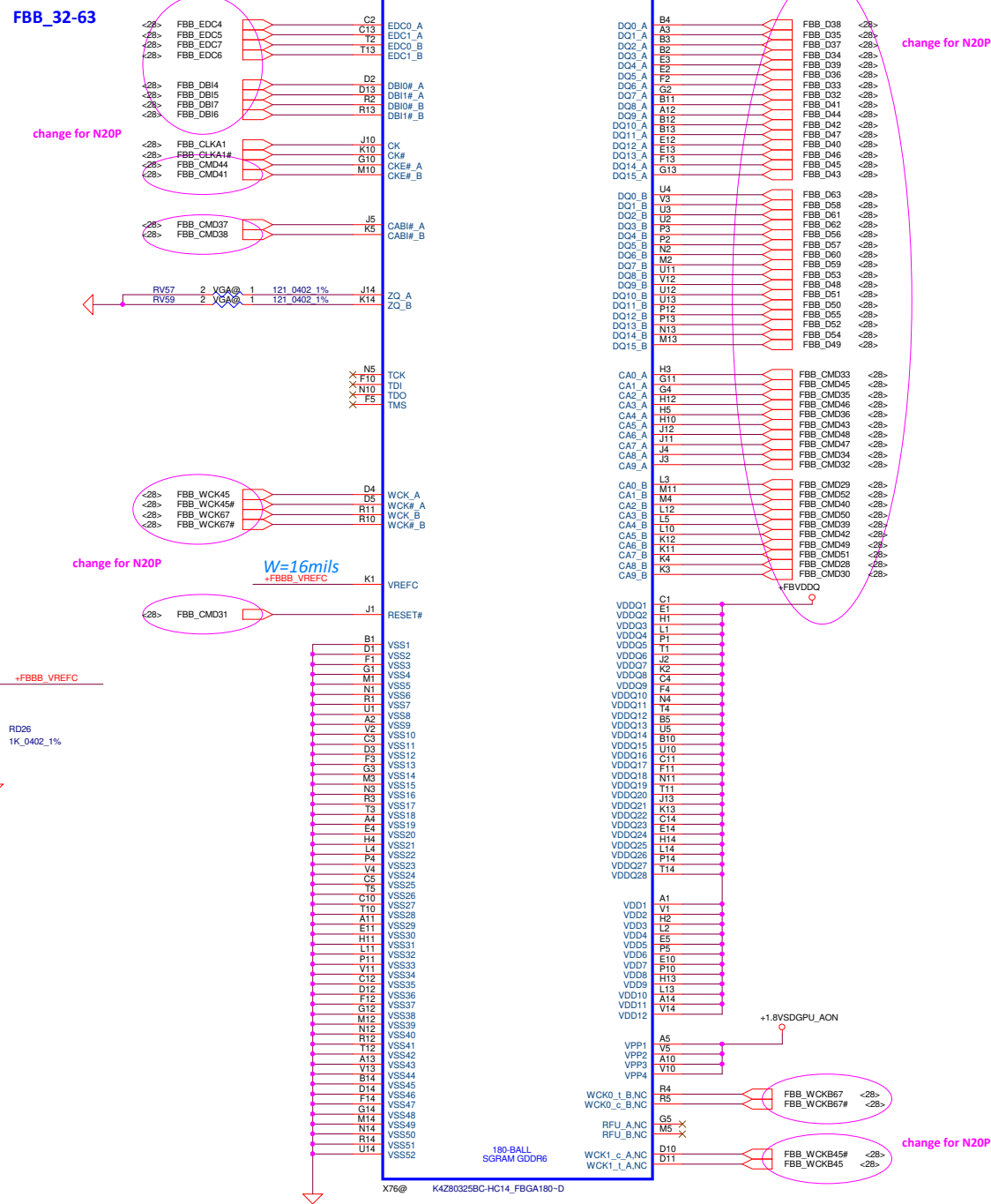
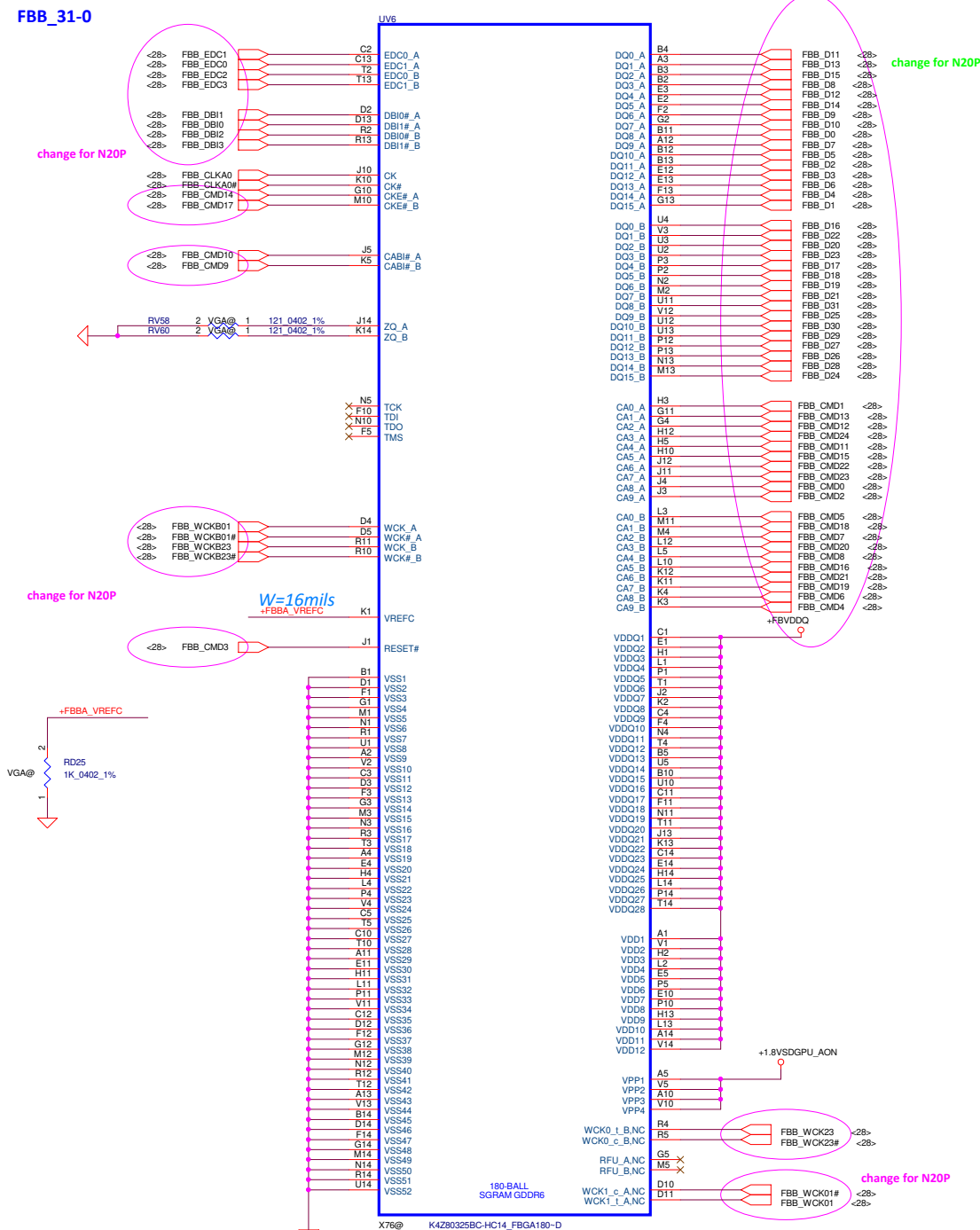
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footprint move to PWR



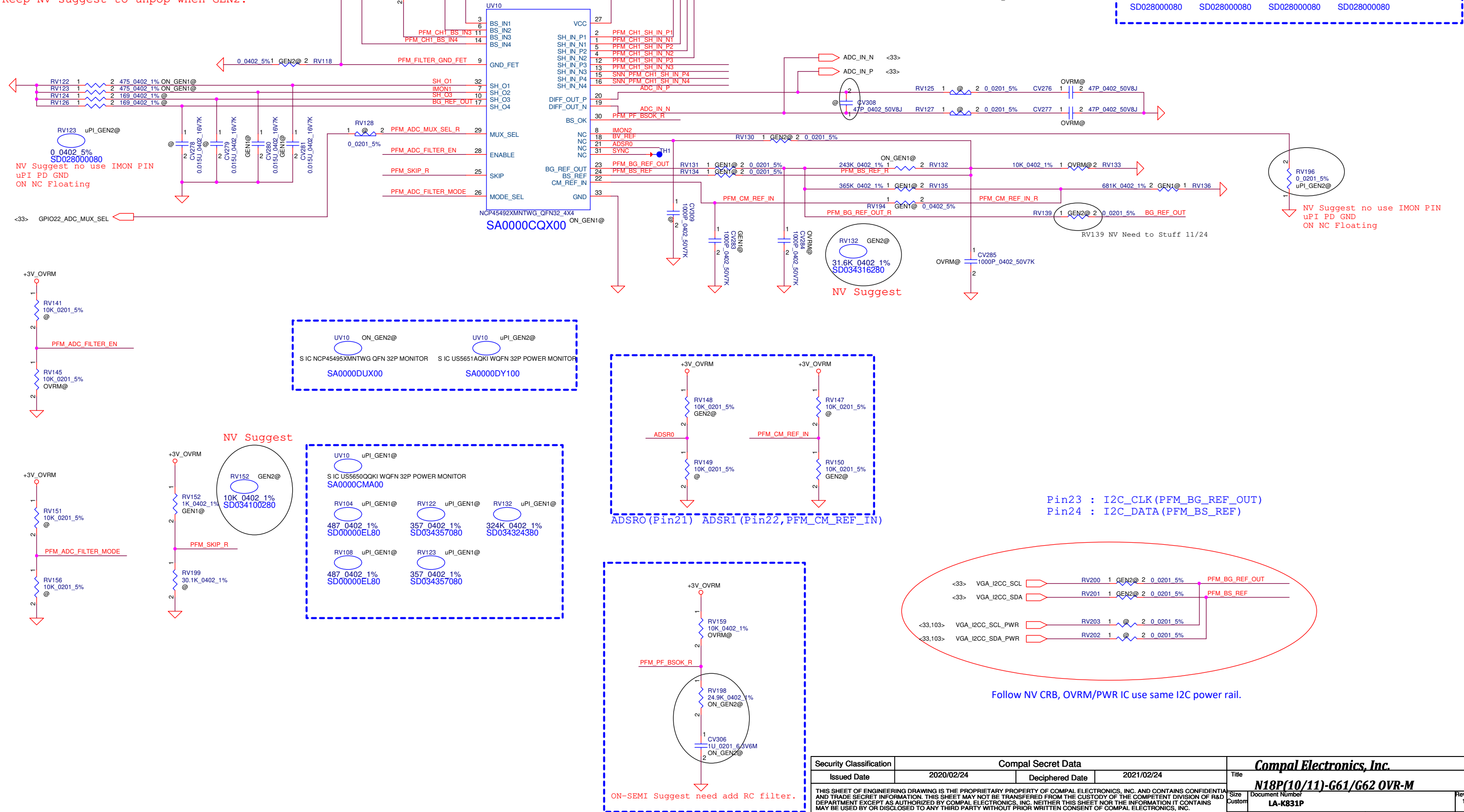
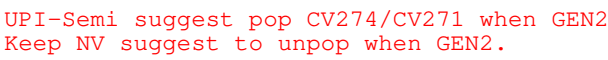
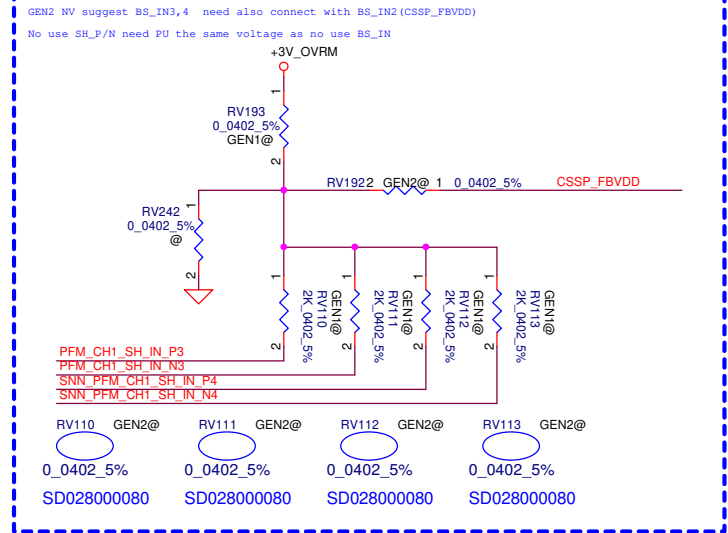
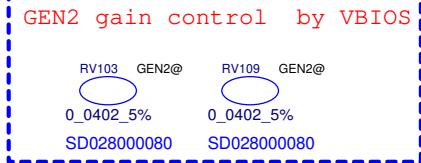
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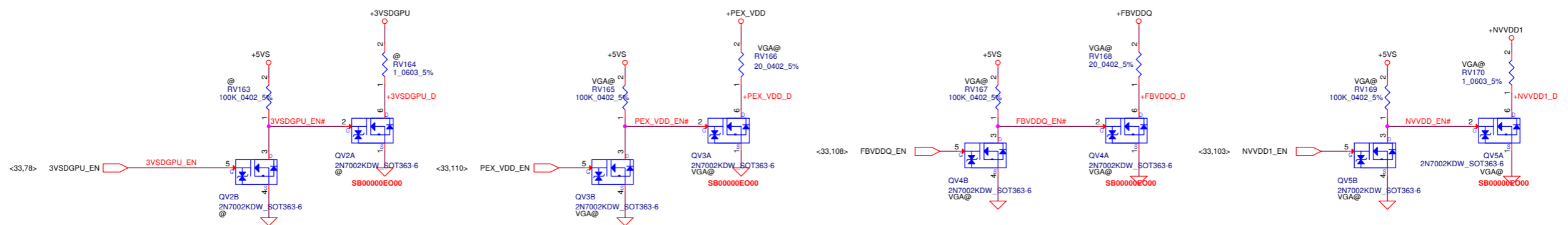
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|  |            |                    |            | LA-K831P                        |                              |
|  |            |                    |            | Date: Friday, February 26, 2021 | Sheet 34 of 122              |

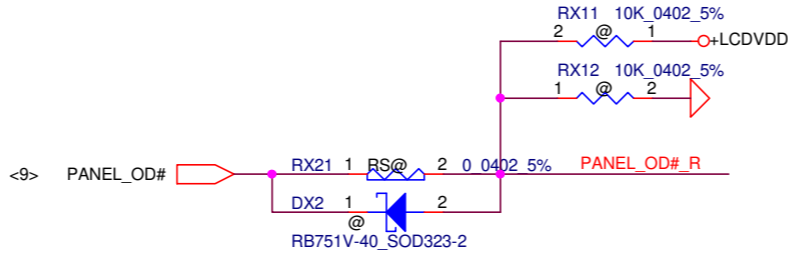
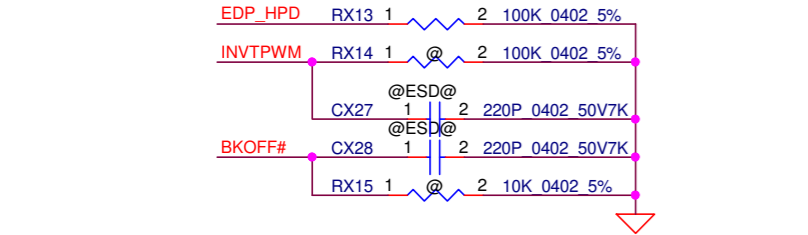
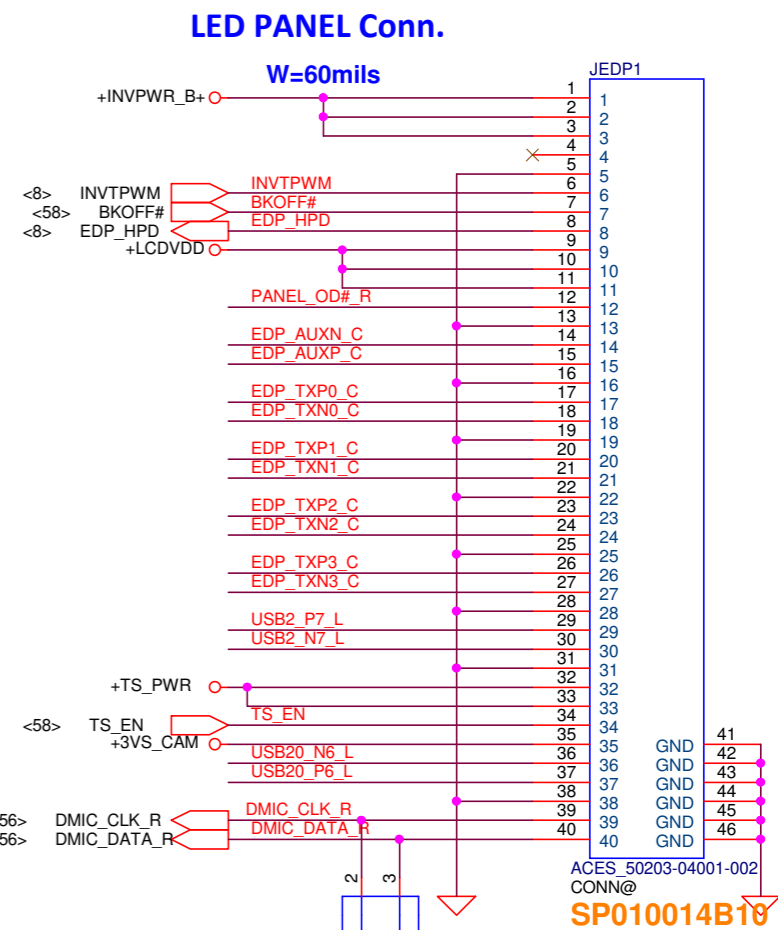
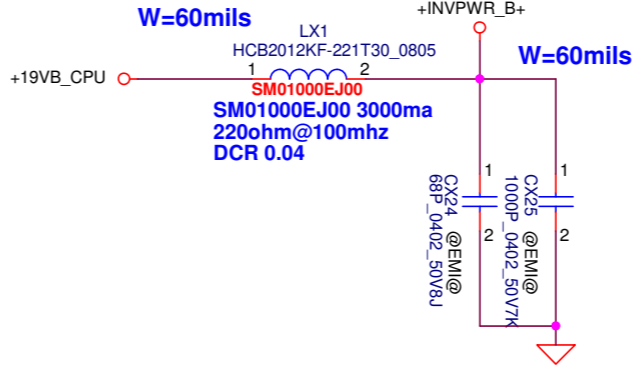
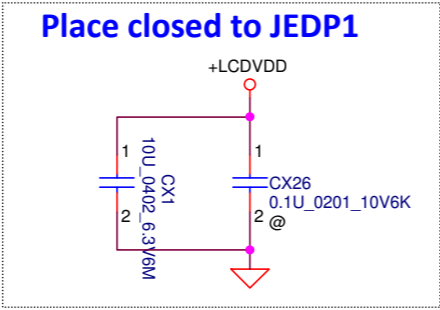
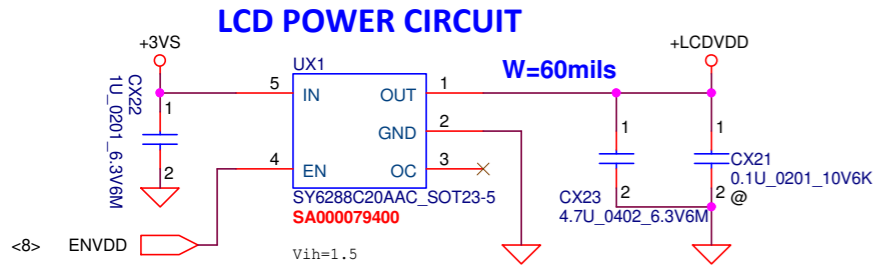


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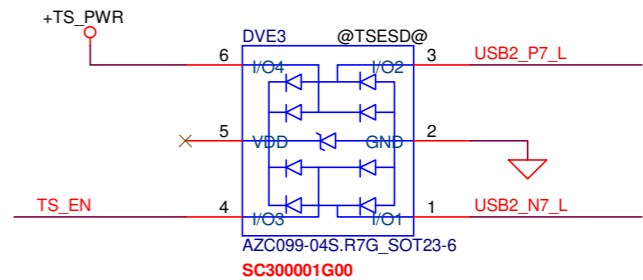
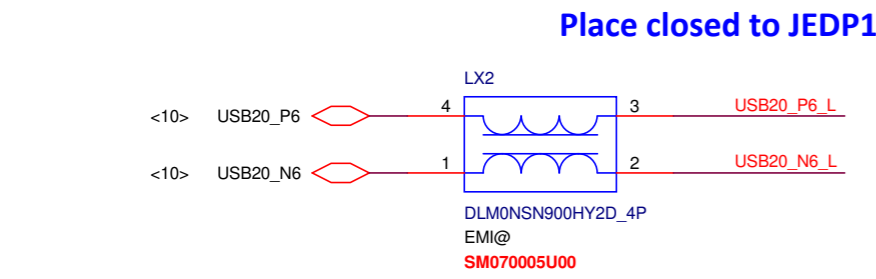
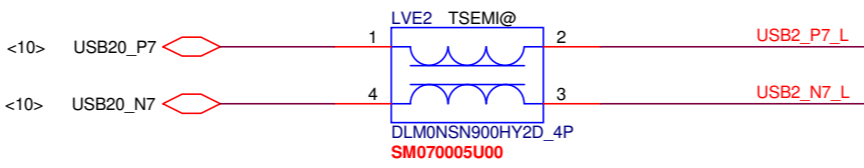
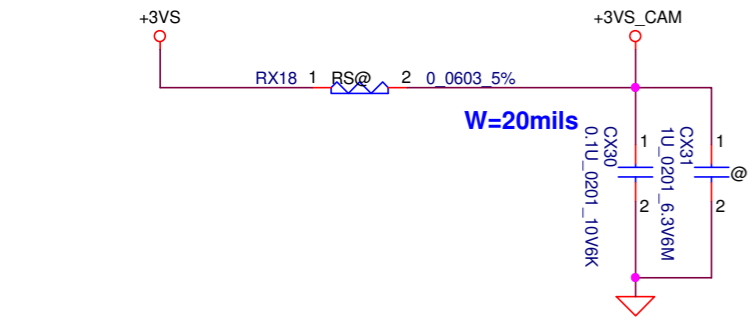
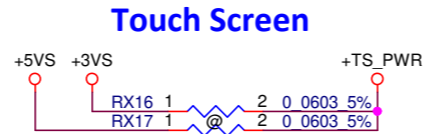
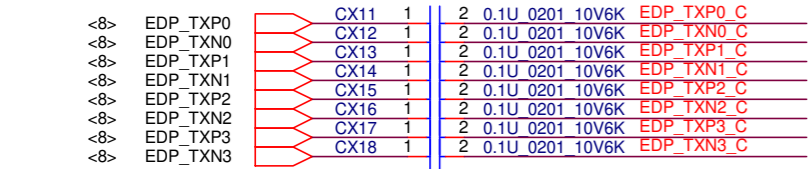


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| Issued Date   | 2020/02/24         | Deciphered Date | 2021/02/24 | Title   |                           |                 |
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|   |                    |                 |            | Custom  | LA-KB31P                  | 1.A             |
|   |                    |                 |            | Date:   | Friday, February 26, 2021 | Sheet 36 of 122 |





Touch Screen  
For Camera



|   |                    |                 |            |                          |                           |                 |
|---|--------------------|-----------------|------------|--------------------------|---------------------------|-----------------|
| Security Classification   | Compal Secret Data |                 |            | Compal Electronics, Inc. |                           |                 |
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|   |                    |                 |            | Date:                    | Friday, February 26, 2021 | Sheet 38 of 122 |

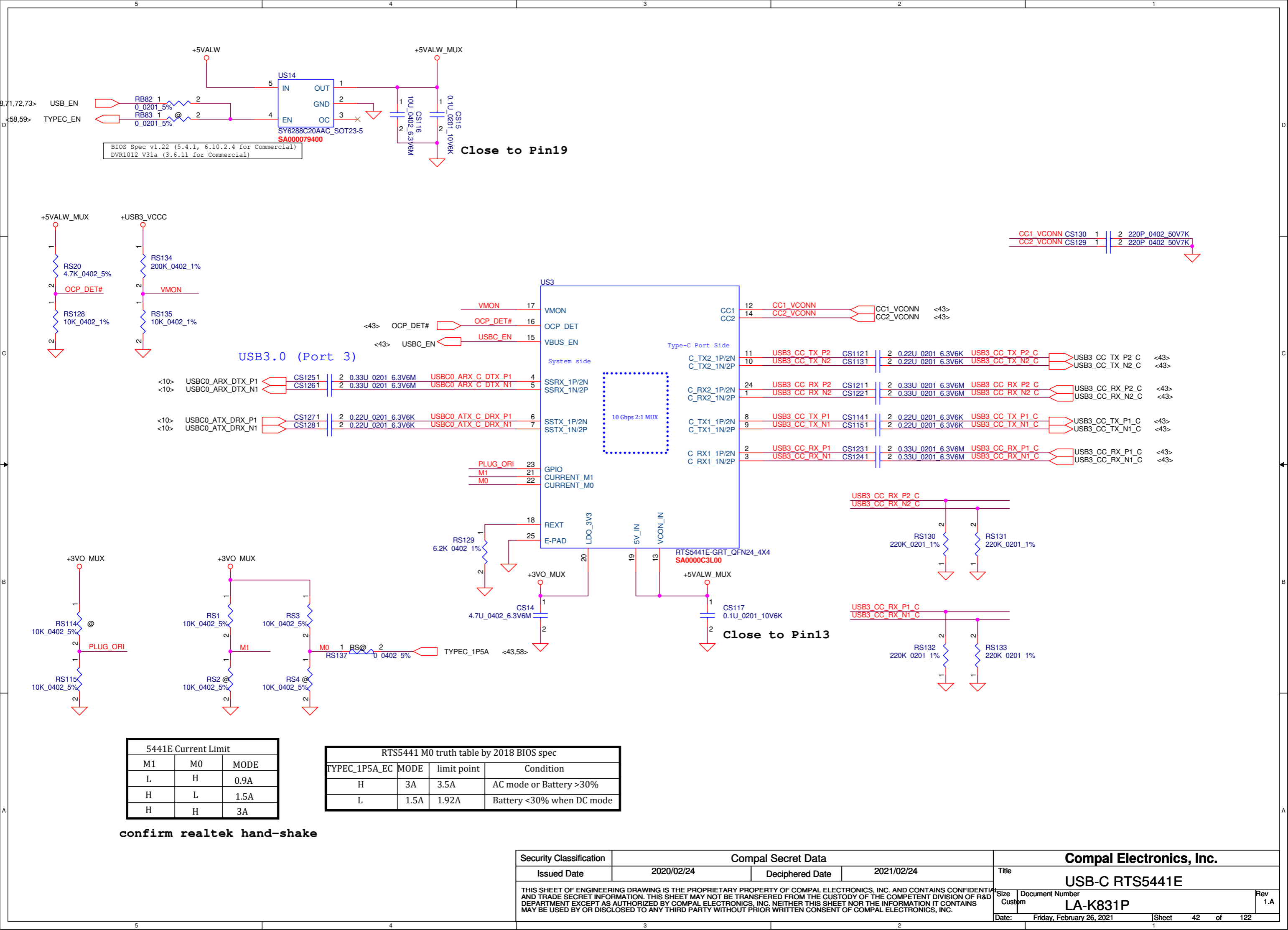
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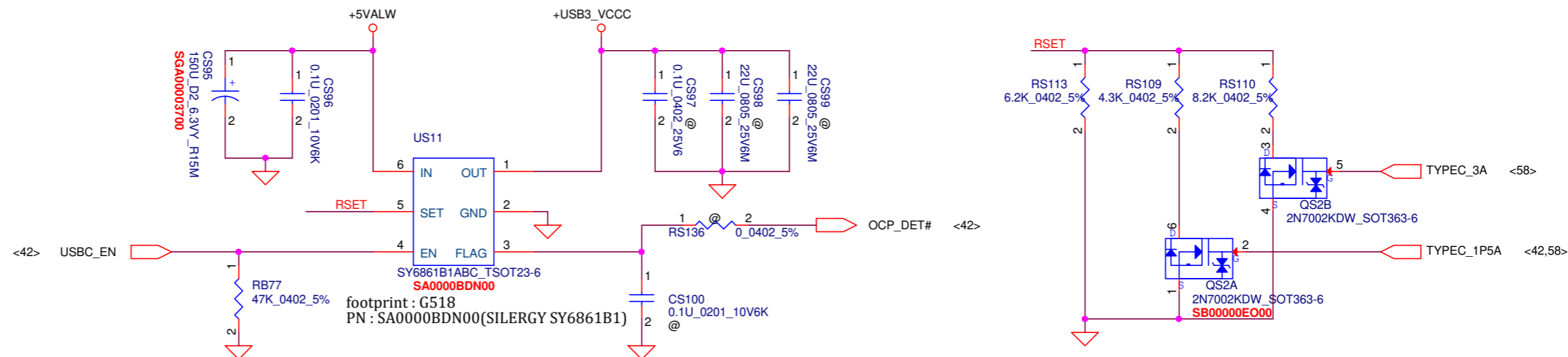
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 39              | of 122 |



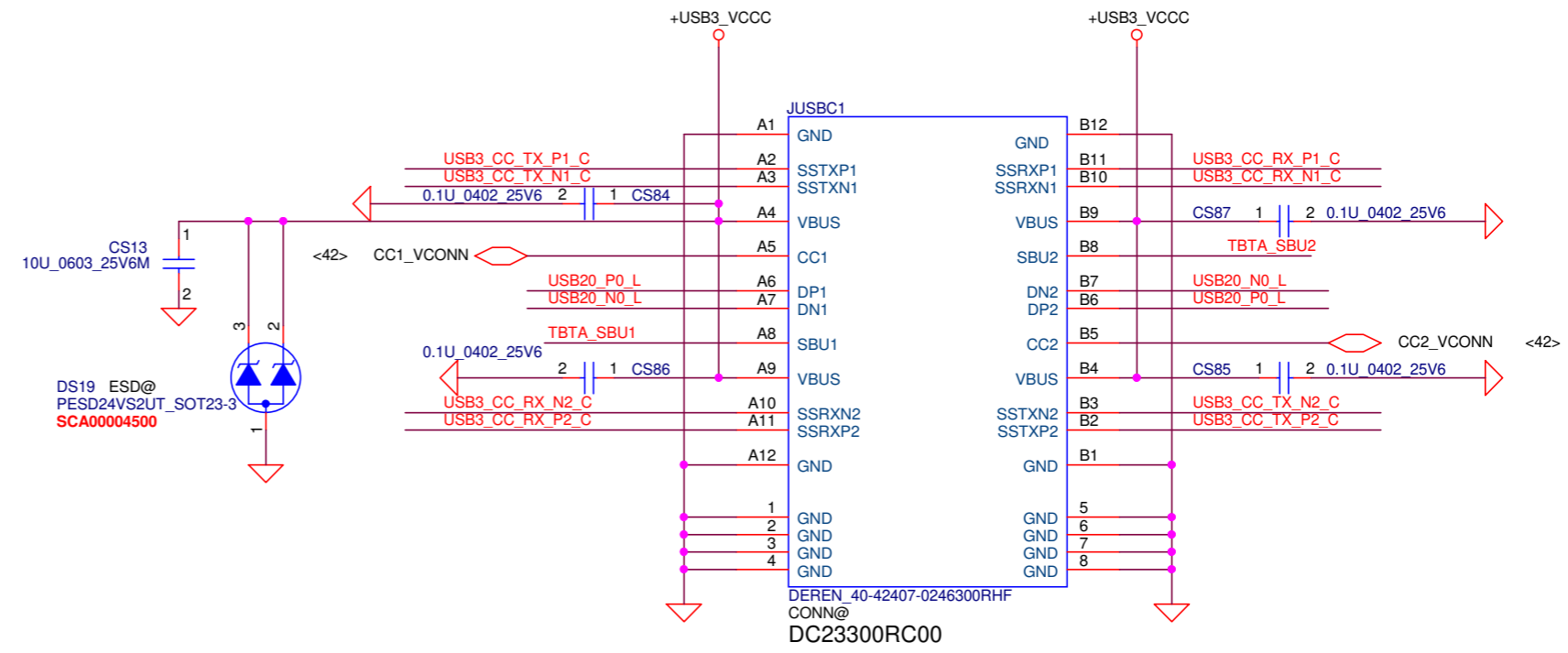
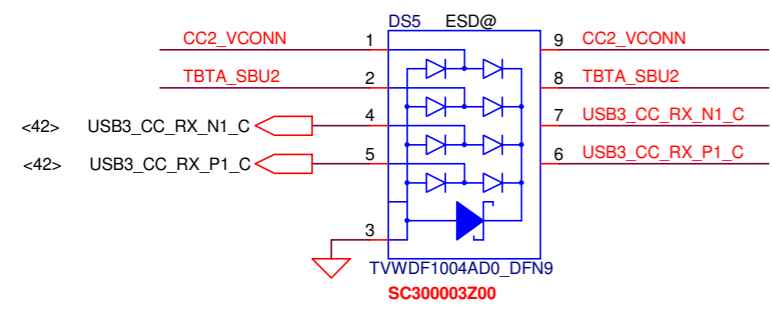
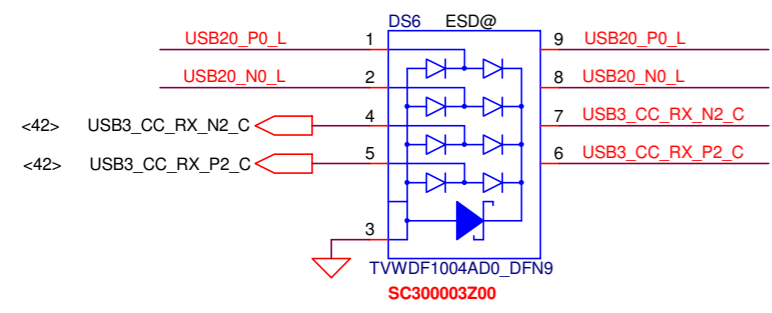
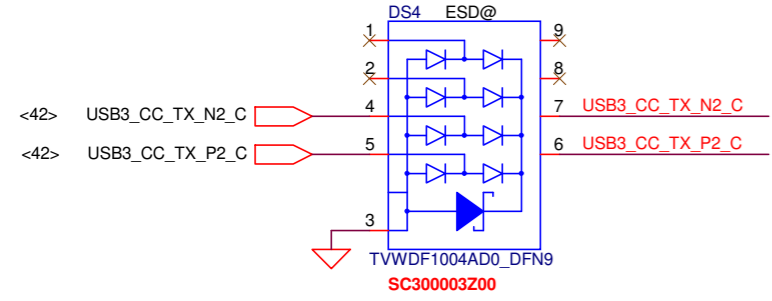
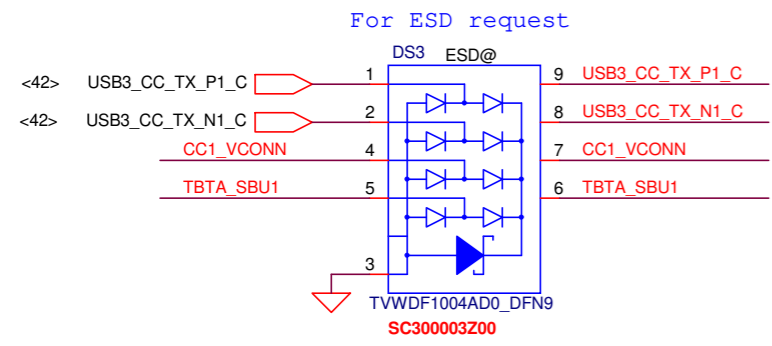
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| Issued Date  | 2020/02/24                   | Deciphered Date | 2021/02/24 | Title                    | RSV             |        |
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| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 41              | of 122 |

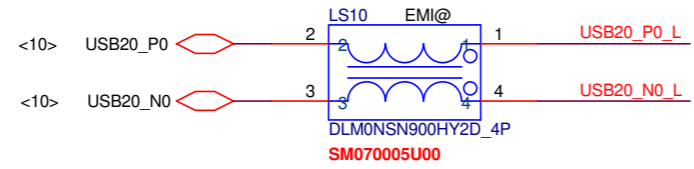




| SILERGY SY6861B1 MOS Current Limit |          |          |      |             |
|------------------------------------|----------|----------|------|-------------|
| TYPEC_1P5A                         | TYPEC_3A | RSET(kΩ) | MODE | limit point |
| L                                  | L        | 6.2      | 0.9A | 1.09A       |
| L                                  | H        | 3.53     | 1.5A | 1.92A       |
| H                                  | L        | 2.54     | 2A   | 2.67A       |
| *H                                 | H        | 1.94     | 3A   | 3.5A        |



CC1\_VCONN & CC2\_VCONN need 20miil trace width.



Reserve

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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 44              | of 122 |

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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
| Issued Date  | 2020/02/24                   | Deciphered Date | 2021/02/24 | Title                    | RSV             |        |
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 45              | of 122 |

Reserve

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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
| Issued Date  | 2020/02/24                   | Deciphered Date | 2021/02/24 | Title                    | RSV             |        |
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|  |                              |                 |            |                          | LA-K831P        | 1.A    |
| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 46              | of 122 |

Reserve

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| Security Classification  | Compal Secret Data |                 |            | Compal Electronics, Inc. |                              |                 |
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|  |                    |                 |            |                          | LA-K831P                     | 1.A             |
|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 47 of 122 |

# Reserve

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| Security Classification  | Compal Secret Data           |                 |            | Compal Electronics, Inc. |                 |        |
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| Date:  | Wednesday, February 24, 2021 |                 |            | Sheet                    | 48              | of 122 |

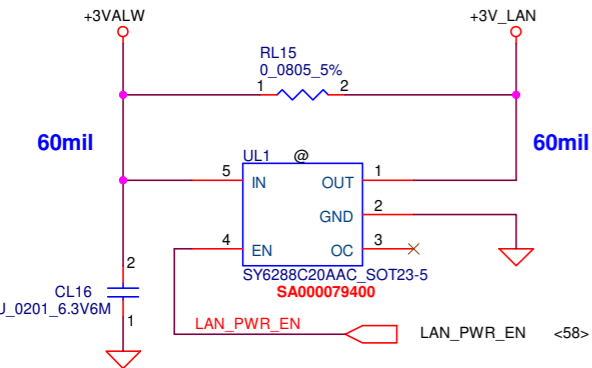
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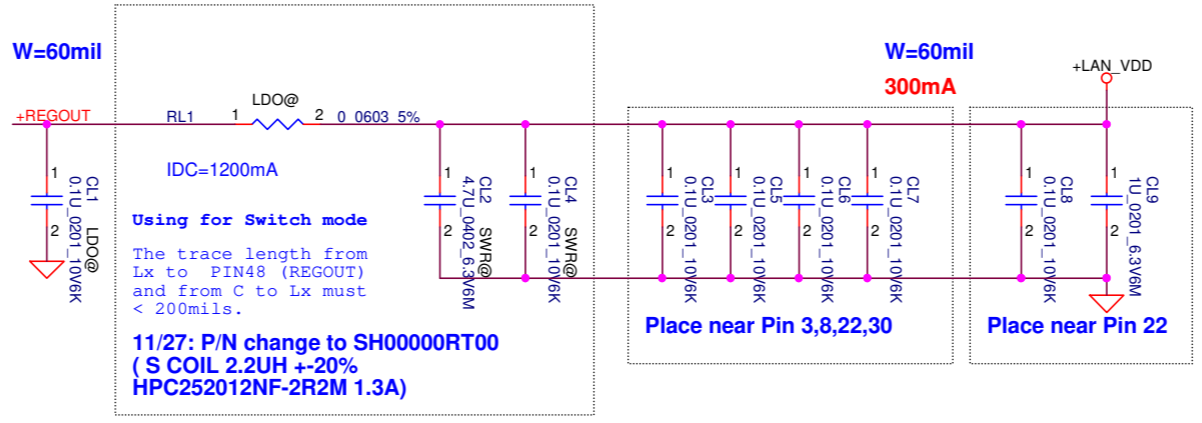
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+3V\_LAN Rising time (10%~90%) must >0.5ms and <100ms

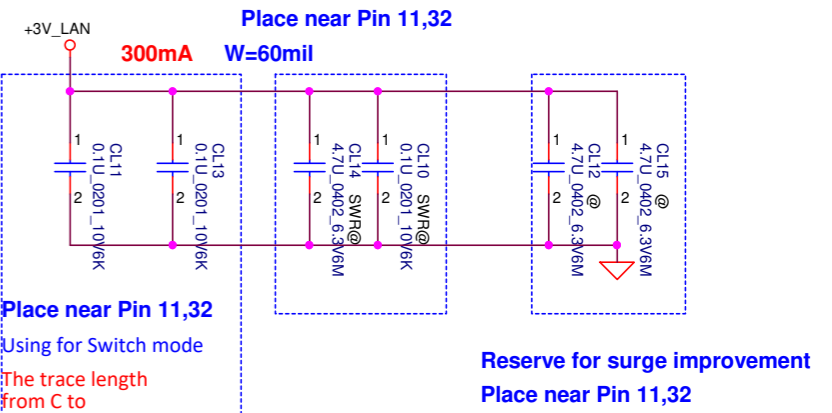


From EC  
High active.  
EN threshold voltage min:1.2V  
typ:1.6V max:2.0V  
Current limit threshold 1.5~2.8A  
+3V\_LAN Rising time must >0.5ms and <100ms

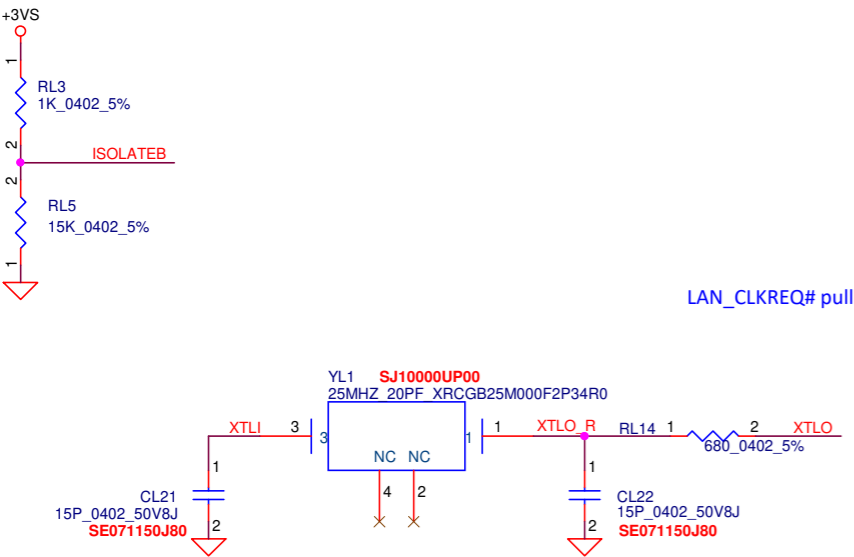
RTL8111H LDO mode  
RTL8118ASA SWR mode



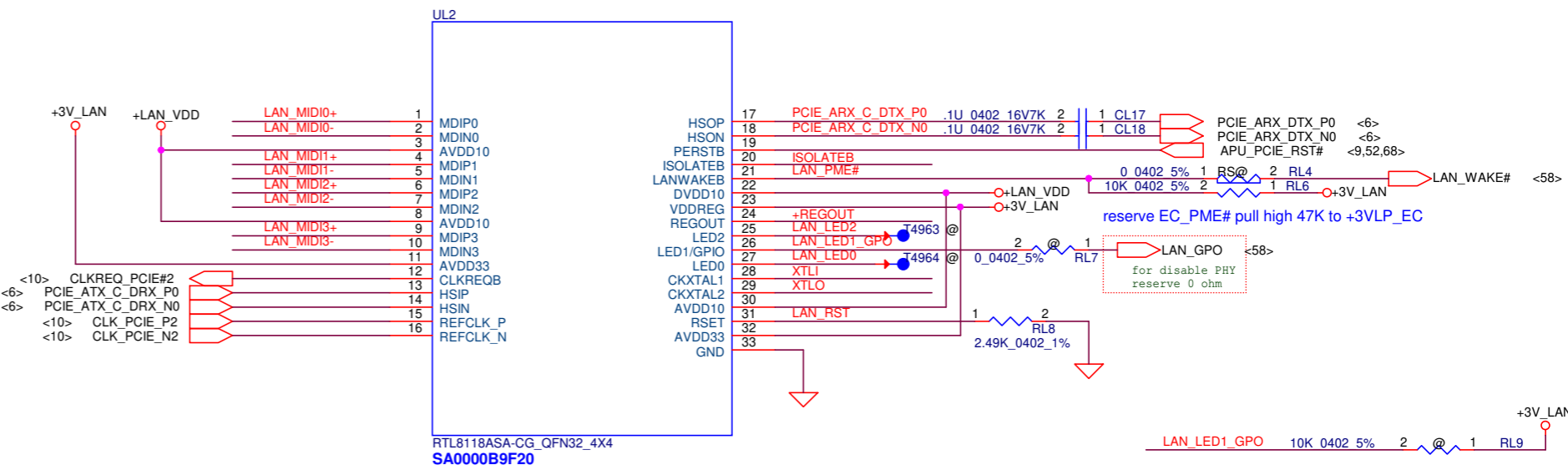
W=60mil  
IDC=1200mA  
Using for Switch mode  
The trace length from Lx to PIN48 (REGOUT) and from C to Lx must < 200mils.  
11/27: P/N change to SH00000RT00 (S COIL 2.2UH +-20% HPC252012NF-2R2M 1.3A)



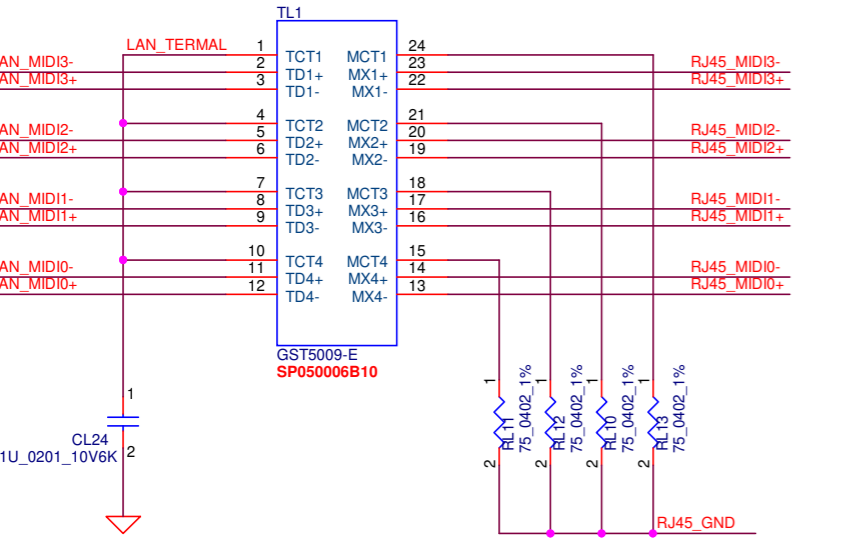
Place near Pin 11,32  
Using for Switch mode  
The trace length from C to PIN46,47(VDDREG) must < 200mils.  
Place near Pin 11,32  
Reserve for surge improvement  
Place near Pin 11,32



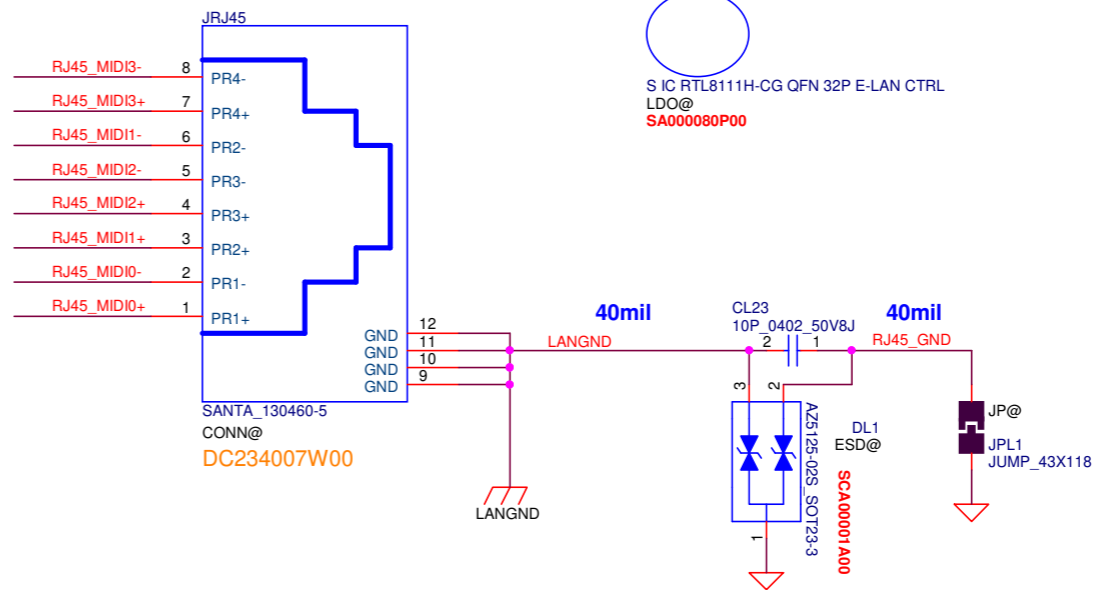
LAN\_CLKREQ# pull up at PCH side



SA0000B9F20, S IC RTL8118ASA-CG QFN 32P E-LAN CTRL

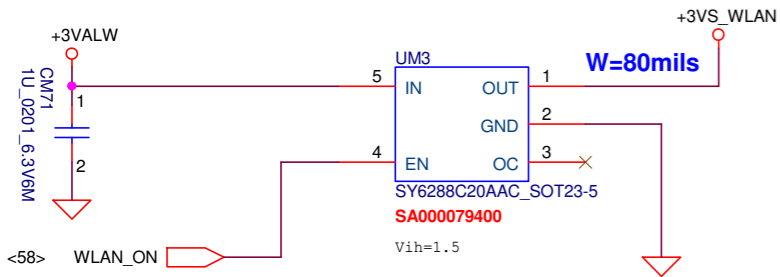
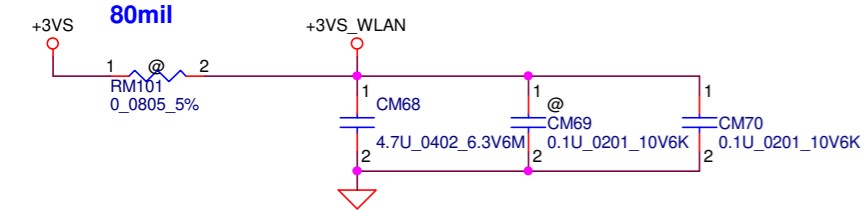


LAN Connector



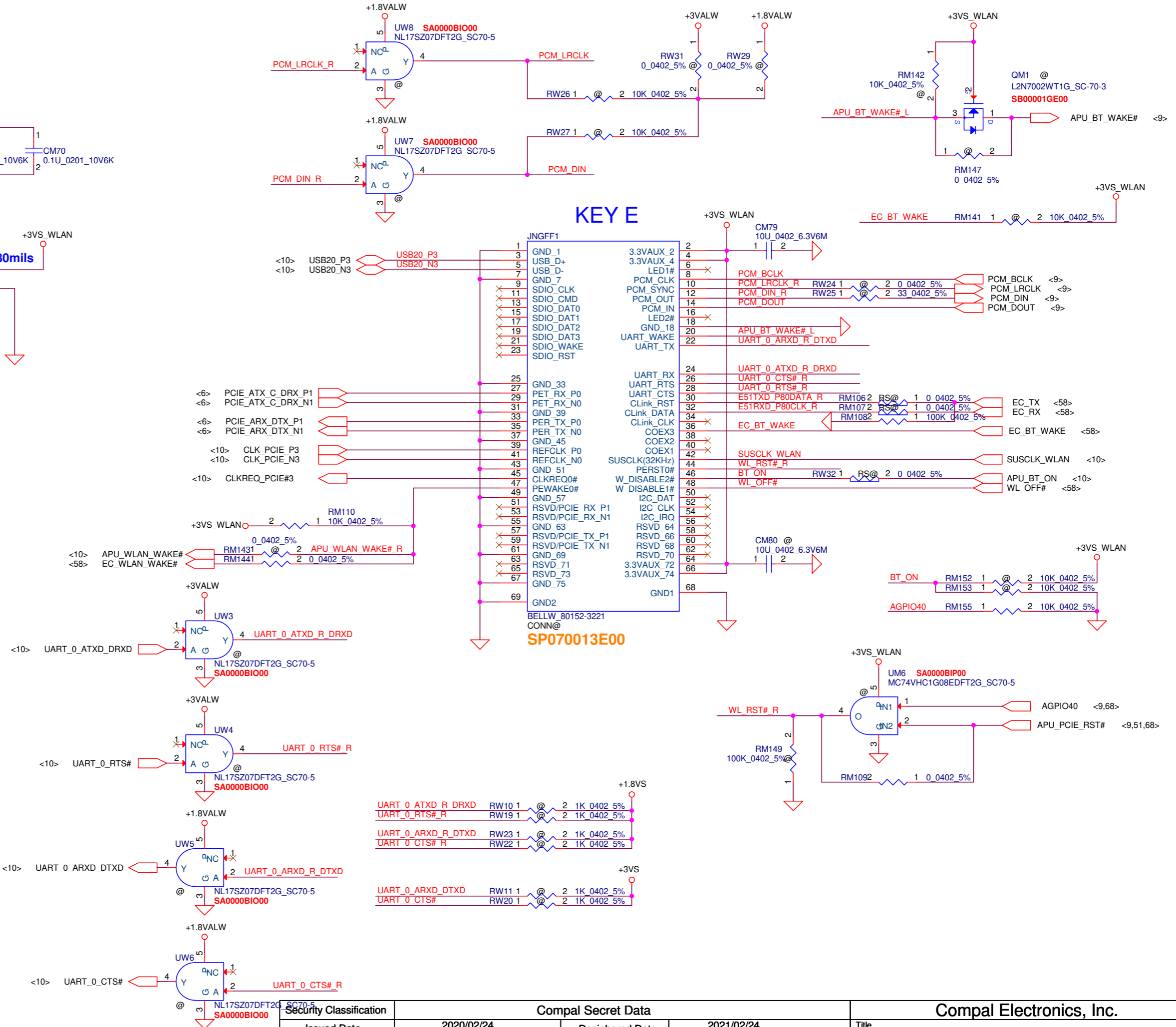
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|   |                    |                 |            | Date: Friday, February 26, 2021 | Sheet 51 of 122 |

# Wireless LAN



## NGFF WL+BT (KEY E)

|    |                                  |                         |    |
|----|----------------------------------|-------------------------|----|
| 74 | 3.3V                             | GND                     | 75 |
| 72 | 3.3V                             | RESERVED/REFCLKN1       | 73 |
| 70 | UIM_Power_SRC/GPIO1/PEWake1#     | RESERVED/REFCLKP1       | 71 |
| 68 | UIM_Power_SNK/CLKREQ1#           | GND                     | 69 |
| 66 | UIM_SWP/PERST1#                  | Reserved/PERn1          | 67 |
| 64 | RESERVED                         | Reserved/PERp1          | 65 |
| 62 | ALERT# (I/O)(3.3)                | GND                     | 63 |
| 60 | I2C CLK (O)(0/3.3)               | Reserved/PETn1          | 61 |
| 58 | I2C DATA (I/O)(0/3.3)            | Reserved/PETp1          | 59 |
| 56 | W_DISABLE#1 (O)(0/3.3V)          | GND                     | 57 |
| 54 | Reserved/W_DISABLE#2 (O)(0/3.3V) | PEWake0# (IO)(0/3.3V)   | 55 |
| 52 | PERST0# (O)(0/3.3V)              | CLKREQD# (IO)(0/3.3V)   | 53 |
| 50 | SUSCLK(32kHz) (O)(0/3.3V)        | GND                     | 51 |
| 48 | COEX1 (I/O)(0/1.8V)              | REFCLKN0                | 49 |
| 46 | COEX2(I/O)(0/1.8V)               | REFCLKP0                | 47 |
| 44 | COEX3(I/O)(0/1.8V)               | GND                     | 45 |
| 42 | VENDOR DEFINED                   | PERn0                   | 43 |
| 40 | VENDOR DEFINED                   | PERp0                   | 41 |
| 38 | VENDOR DEFINED                   | GND                     | 39 |
| 36 | UART RTS (O)(0/1.8V)             | PETn0                   | 37 |
| 34 | UART CTS (I/O)(1.8V)             | PETp0                   | 35 |
| 32 | UART Tx (O)(0/1.8V)              | GND                     | 33 |
|    | GPIOA Pin 0                      | GPIOA Pin 0             |    |
|    | GPIOA Pin 1                      | GPIOA Pin 1             |    |
|    | GPIOA Pin 2                      | GPIOA Pin 2             |    |
|    | GPIOA Pin 3                      | GPIOA Pin 3             |    |
|    | GPIOA Pin 4                      | GPIOA Pin 4             |    |
|    |                                  | SDIO Reset# (O)(0/1.8V) | 23 |
| 22 | UART Rx (I/O)(1.8V)              | SDIO Wake# (I/O)(1.8V)  | 21 |
| 20 | UART Wake# (I/O)(3.3V)           | SDIO DAT3(IO)(0/1.8V)   | 19 |
| 18 | GND                              | SDIO DAT2(IO)(0/1.8V)   | 17 |
| 16 | LED#2 (I/OD)                     | SDIO DAT1(IO)(0/1.8V)   | 15 |
| 14 | PCM_OUT/I2S SD_OUT (O)(0/1.8V)   | SDIO DAT0(IO)(0/1.8V)   | 13 |
| 12 | PCM_IN/I2S SD_IN (I/O)(1.8V)     | SDIO CMD(IO)(0/1.8V)    | 11 |
| 10 | PCM_SYNC/I2S WS (O)(0/1.8V)      | SDIO CLK(O)(0/1.8V)     | 9  |
| 8  | PCM_CLK/I2S SCK (O)(0/1.8V)      | GND                     | 7  |
| 6  | LED#1 (I/OD)                     | USB_D+                  | 5  |
| 4  | 3.3V                             | USB_D-                  | 3  |
| 2  | 3.3V                             | GND                     | 1  |



|   |                    |                 |            |                           |                           |                 |
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Reserve

|  |                    |                 |            |                          |                              |                 |
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|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 53 of 122 |

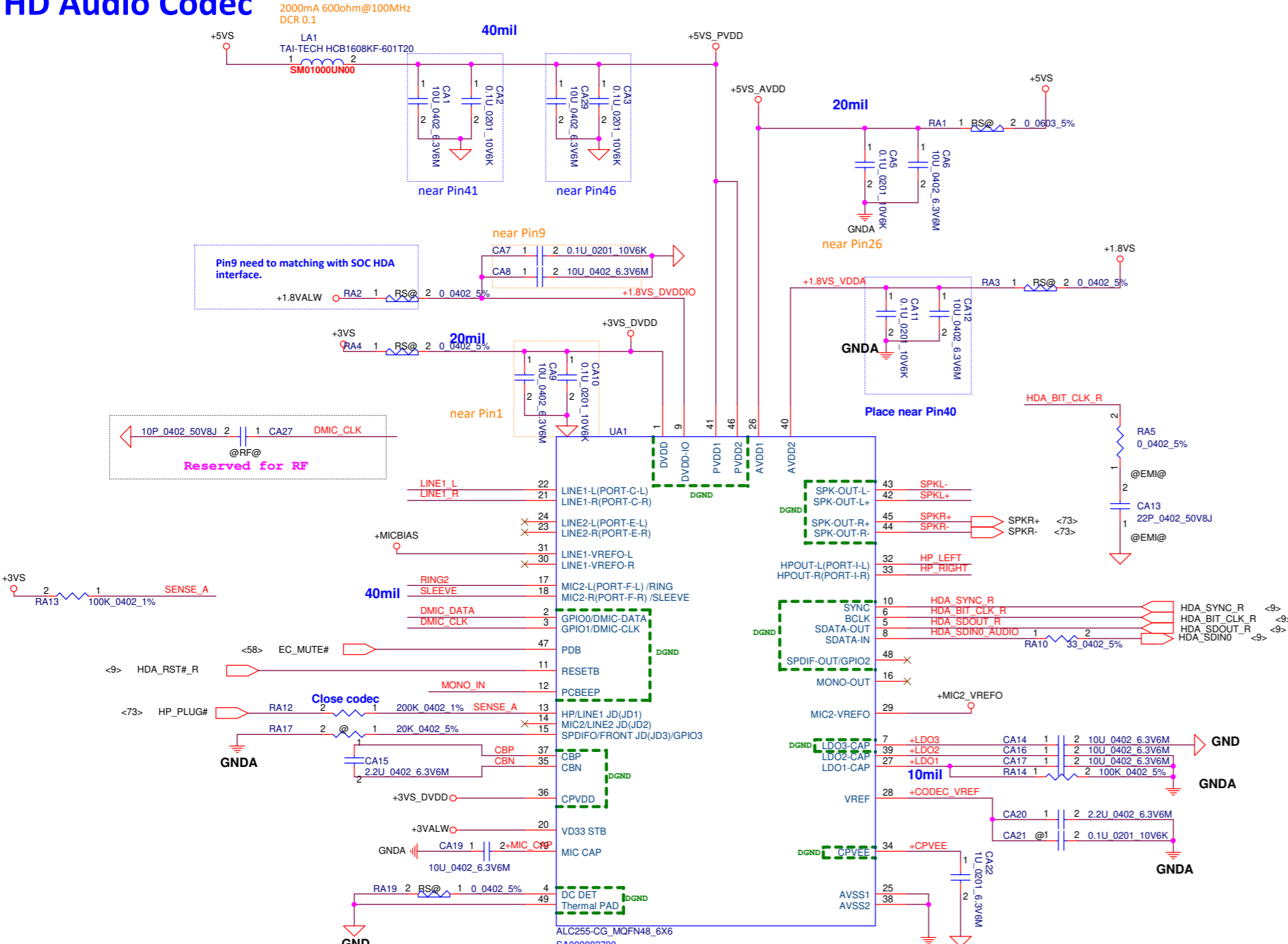
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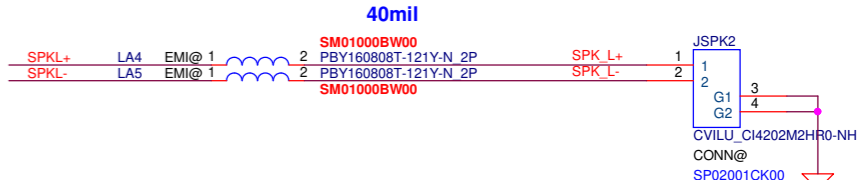


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## HD Audio Codec

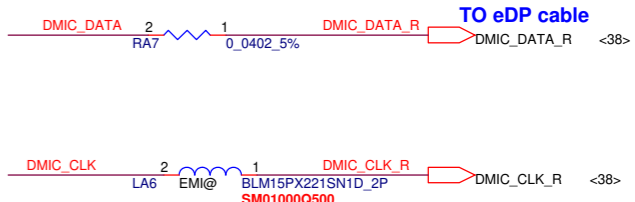


## Int. Speaker Conn.

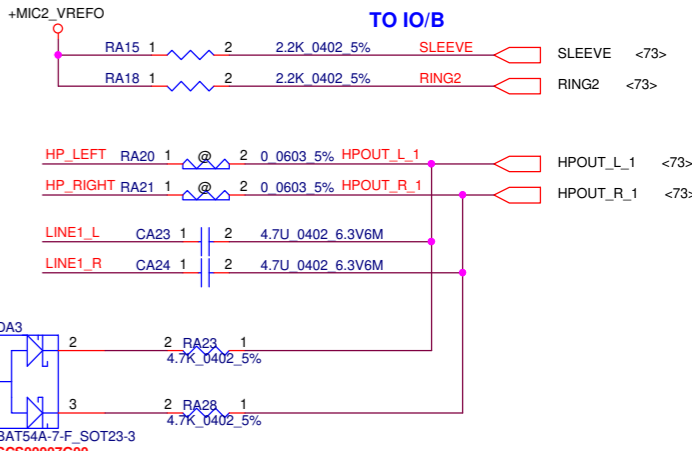


## Digital MIC

## MIC BOM upload by Audio Team



## Headphone Out

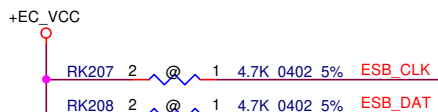
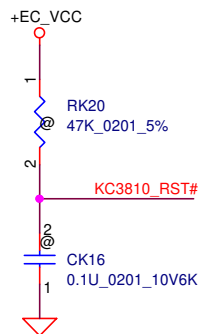


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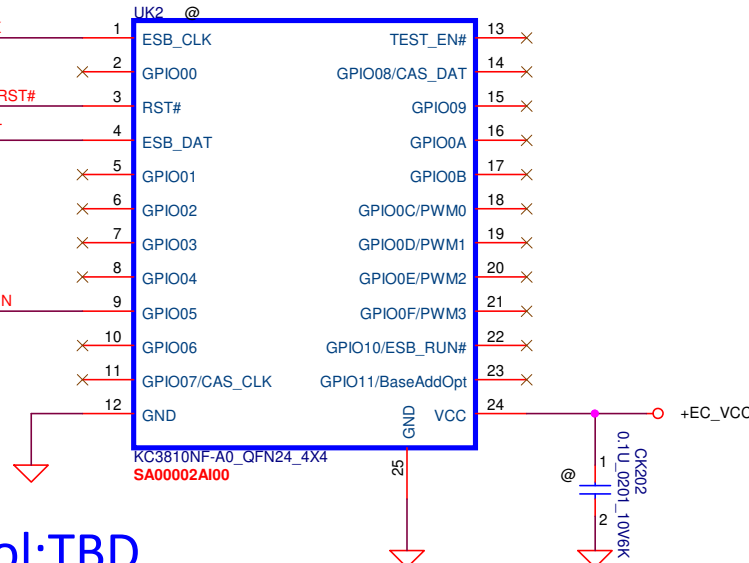
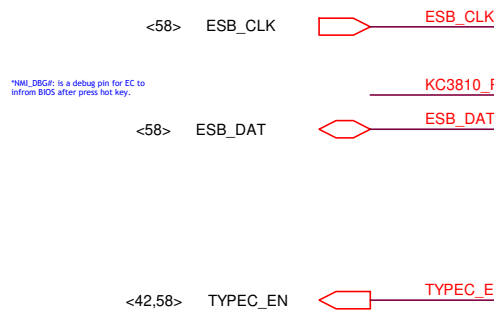
Reserve

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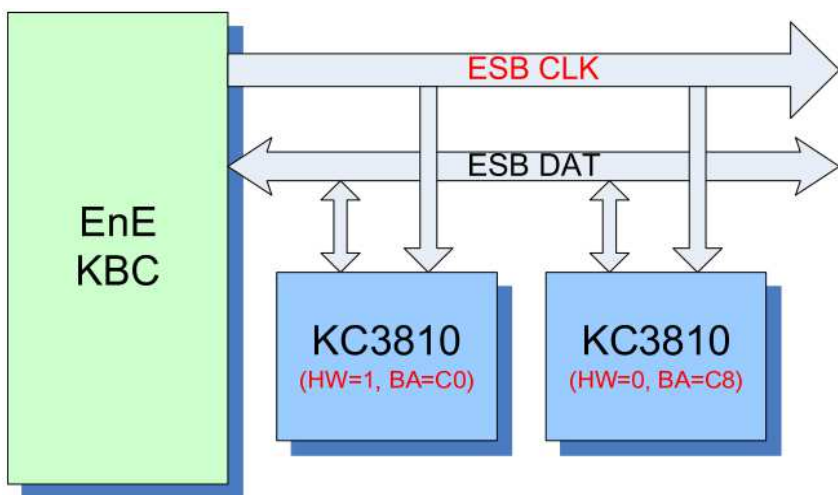


## OMEN New ESB CLK&DAT for Extend I/O



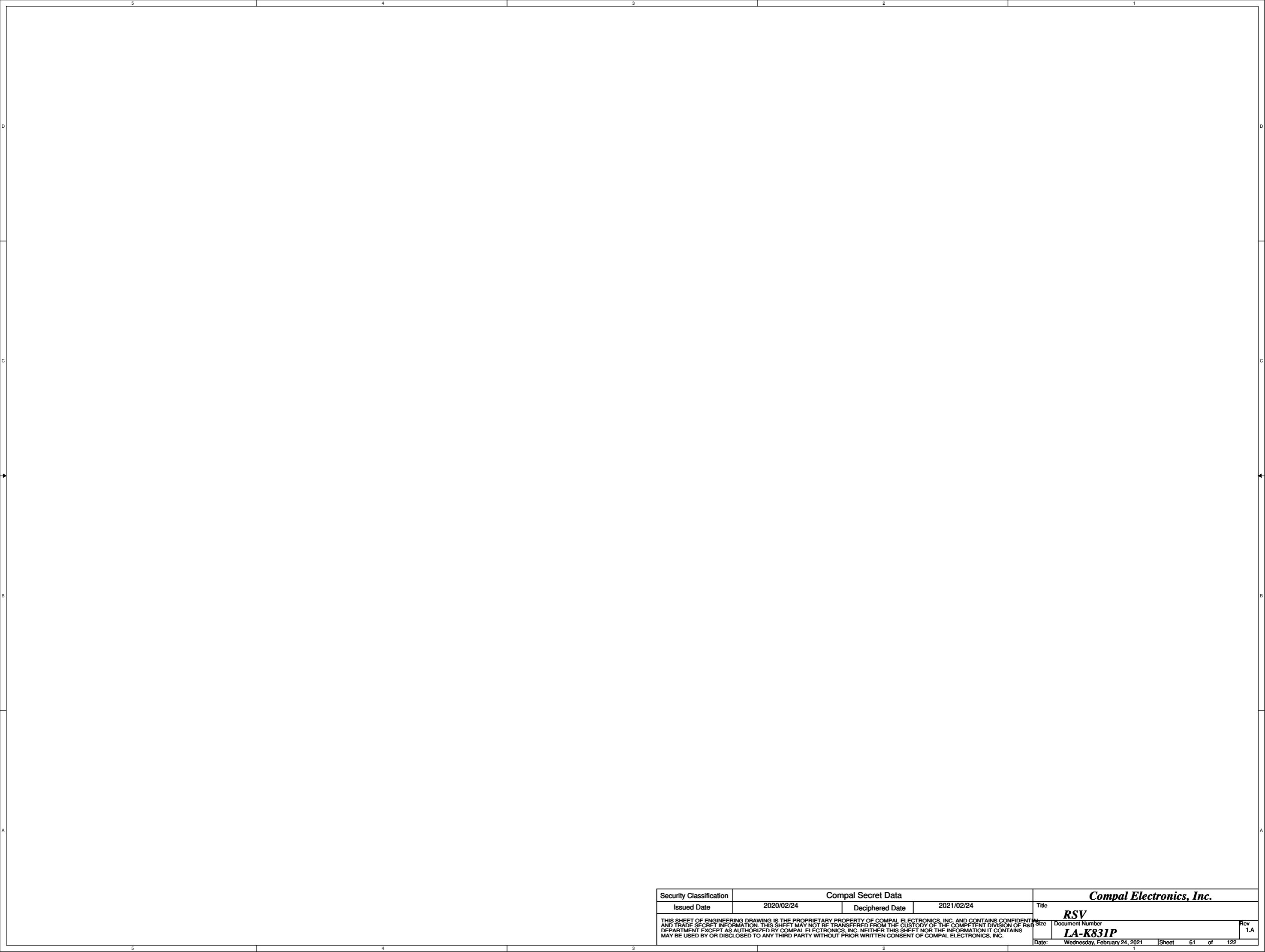
以下14根Pin 建議可以接到external I/O 3810,  
1. USB\_CTL1(GPIO4B Pin84),  
2. USB\_CTL2(GPIO3F Pin72),  
3. USB\_CTL3(GPIO1D Pin38),  
4. USB\_CHARGE\_EN(GPIO1A Pin36),  
5. GPU\_OVERTH(GPIO0D Pin19) => DPF50 NO USE  
6. LAN\_PWR\_EN(GPIO4D Pin86),  
7. WL\_PWREN\_EC(GPIO61 Pin98),  
8. DCHG\_I(GPIO40 Pin73) => DPF50 NO USE  
9. USB\_ON#(GPIO37 Pin 121),  
10. LED : 5 Pin.

## Some EC GPIO maybe change to extend IO control:TBD



# Reserve

|  |                              |                 |            |                          |                 |        |
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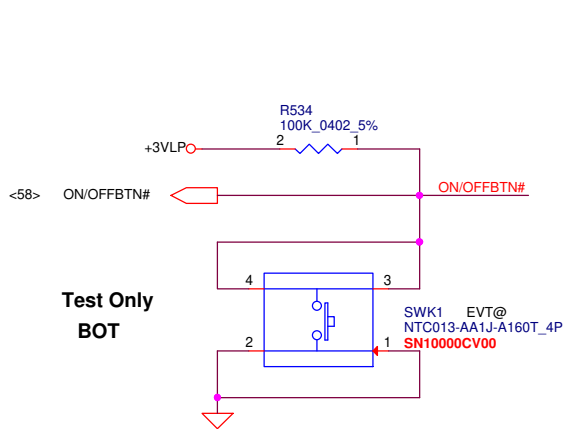


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|   |            |                    |            | Sheet                    | 61 of 122                    |

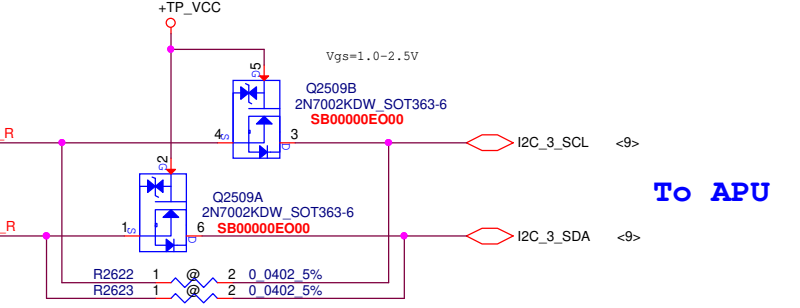
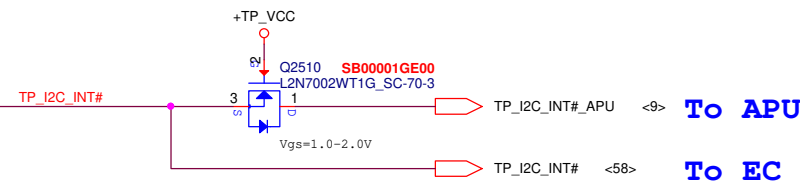
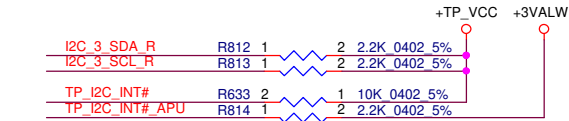
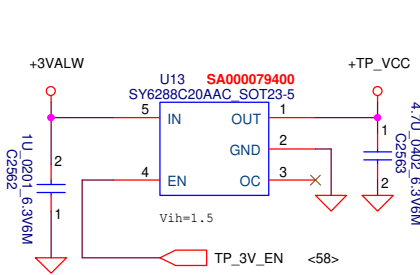
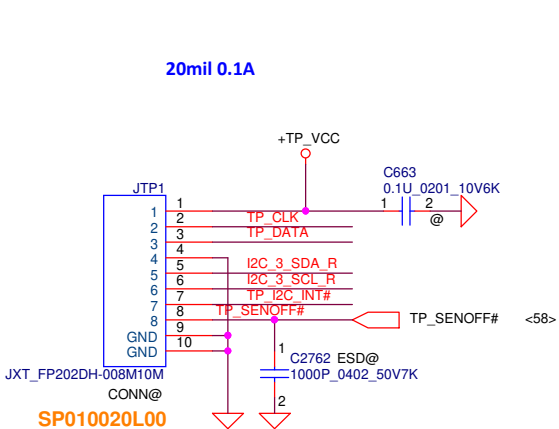
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|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 62 of 122 |

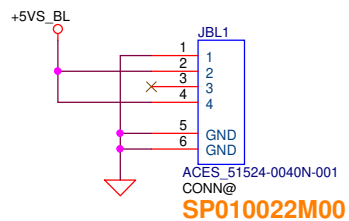
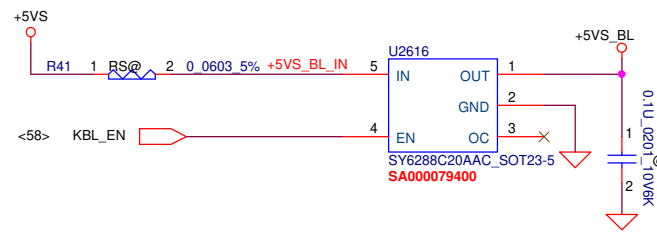
ON/OFF BTN



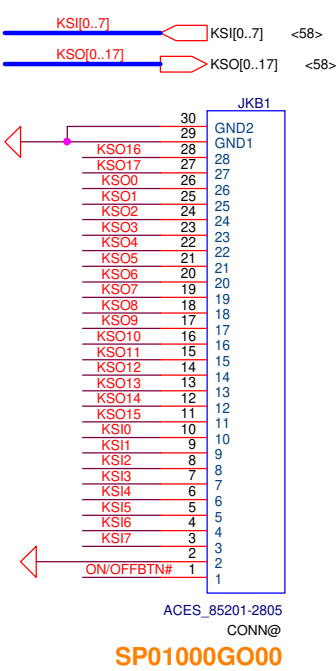
TP/B Conn.



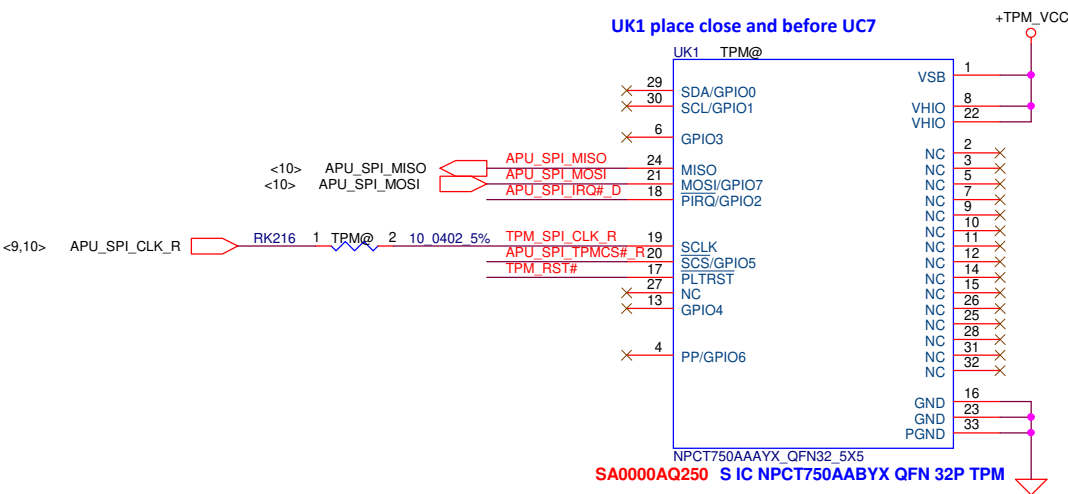
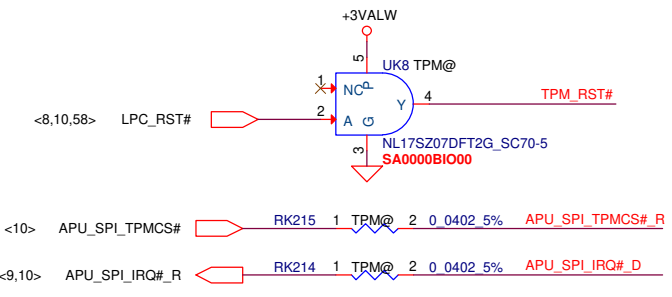
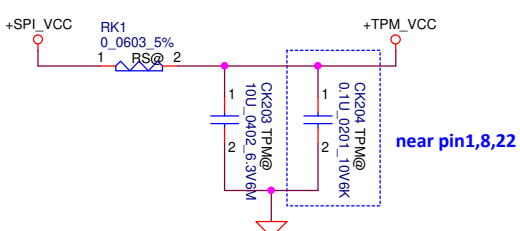
KB Backlight



KB Conn.



TPM



# Reserve Page

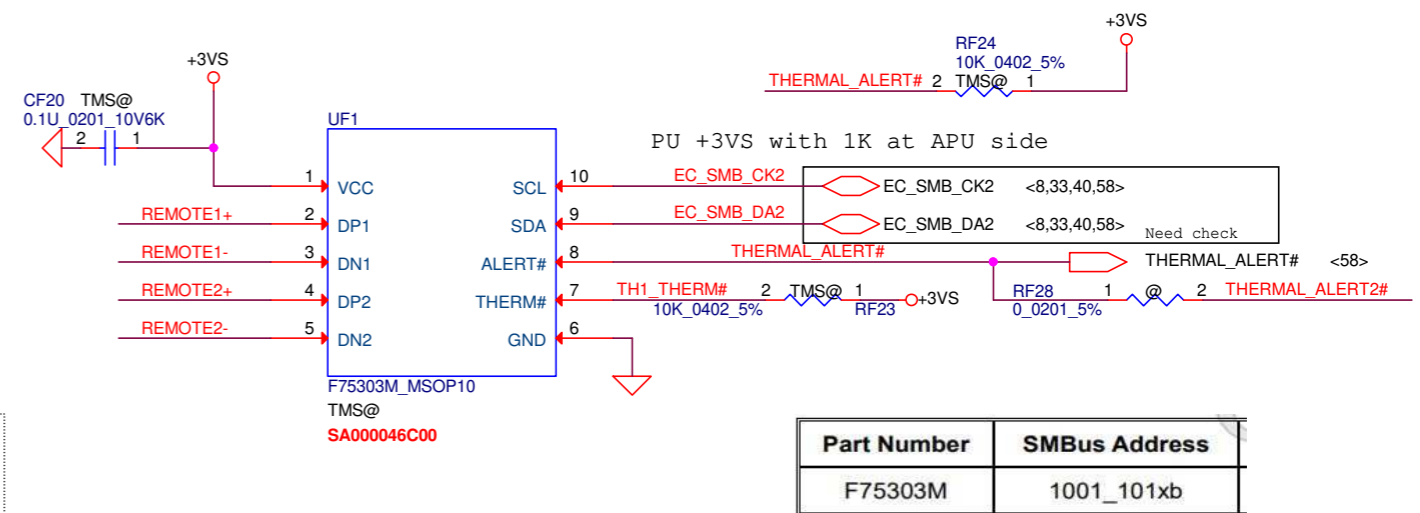
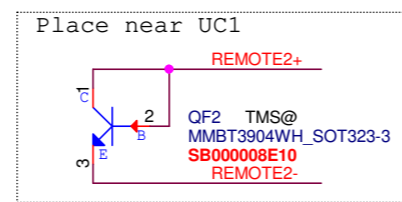
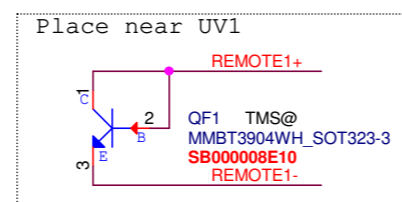
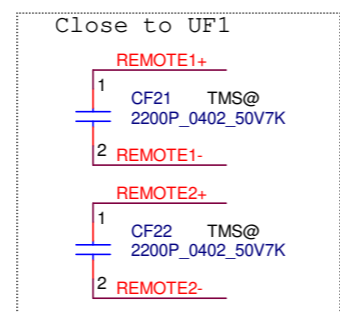
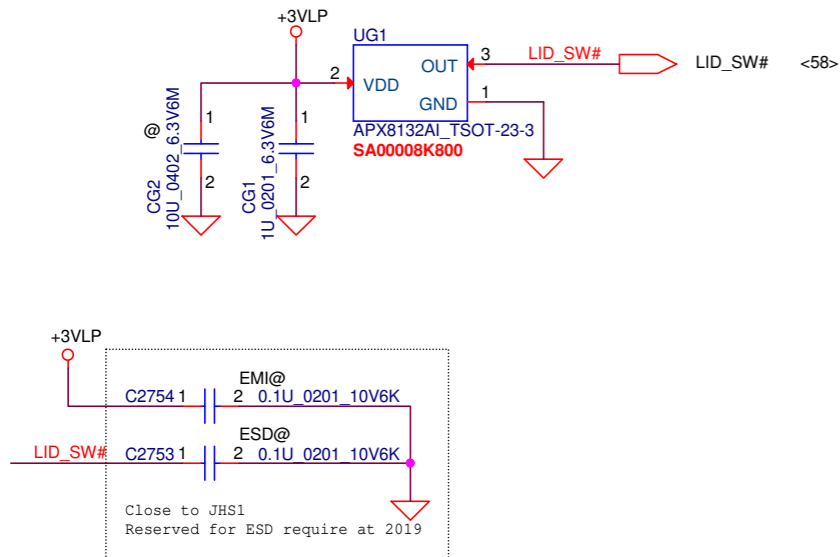
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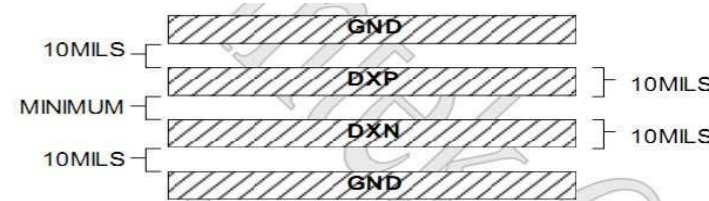
# Hall sensor

# THERMAL SENSOR



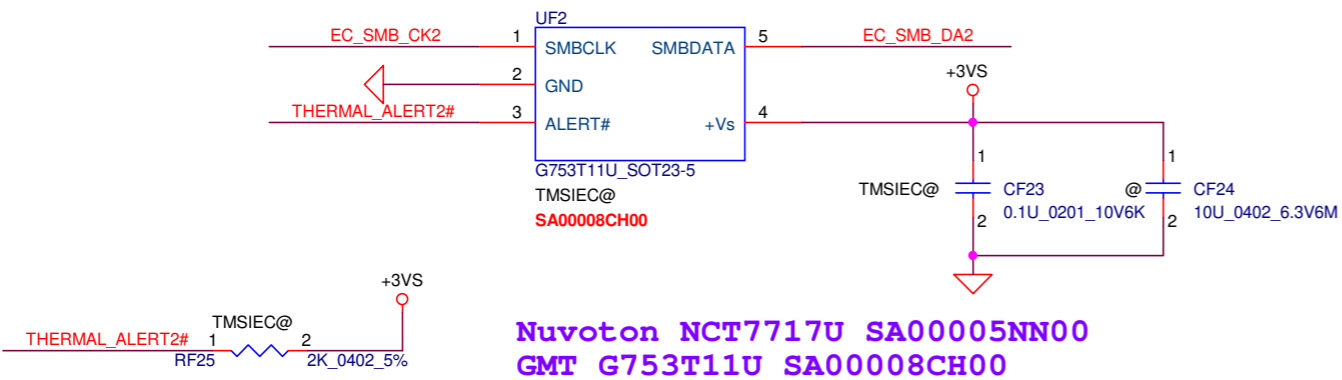
| Part Number | SMBus Address |
|-------------|---------------|
| F75303M     | 1001_101xb    |

REMOTE1,2 (+/-) :  
Trace length: <8"

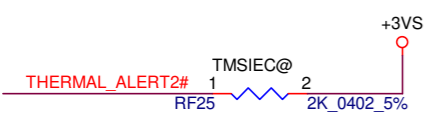


# THERMAL SENSOR IEC safety

# Finger Print



Power Souce Check  
EGIS ETU801 +FP\_VCC=5V  
ELAN FA6780-220 +FP\_VCC=3.3V



Nuvoton NCT7717U SA00005NN00  
GMT G753T11U SA00008CH00

**ALERT# point hardware power-on setting**  
The default value could be set after power up 100ms by different pull-up resistor of ALERT# pin:

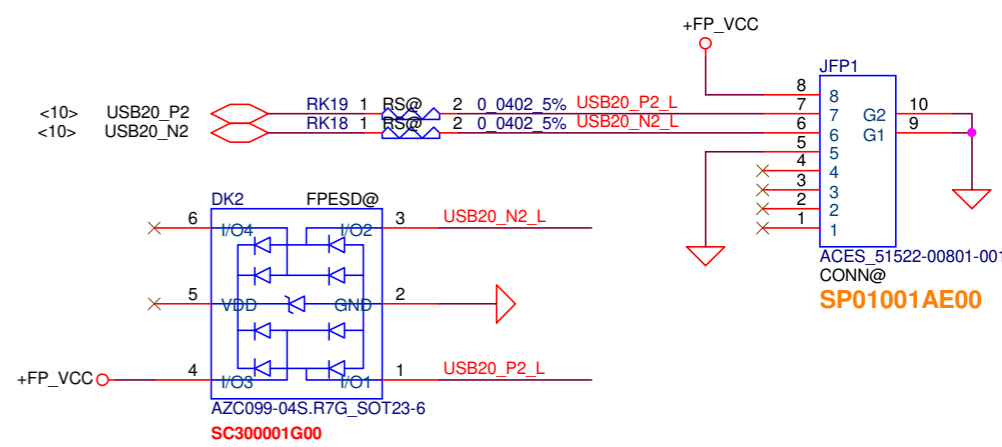
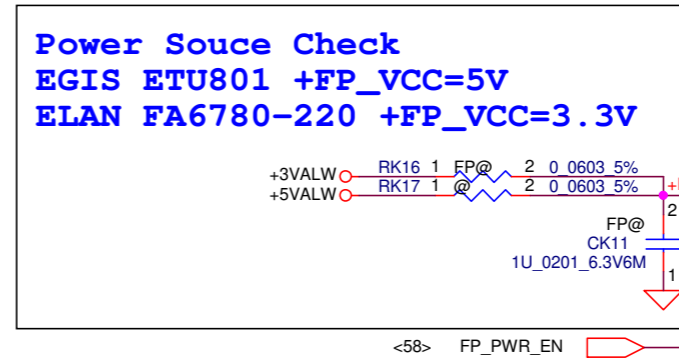
| PULL-UP RESISTOR | TEMPERATURE (°C) |
|------------------|------------------|
| 2kΩ              | 75               |
| 7.5kΩ            | 90               |
| 10.5kΩ           | 100              |
| 14kΩ             | 105              |
| 18.7kΩ           | 110              |

**6.3 Address Setting**  
NCT7717U I<sup>2</sup>C/ SMBus™ address is 1001000xb (x is R/W bit).

**Slave Address**  
The G753 appears to the SMBus as one device having a common address for both ADC channels. The G753 has the following SMBus slave address:

|      | A6 | A5 | A4 | A3 | A2 | A1 | A0 |
|------|----|----|----|----|----|----|----|
| G753 | 1  | 0  | 0  | 1  | 0  | 0  | 0  |

The G753 also responds to the SMBus Alert Response slave address (see the Alert Response Address section).



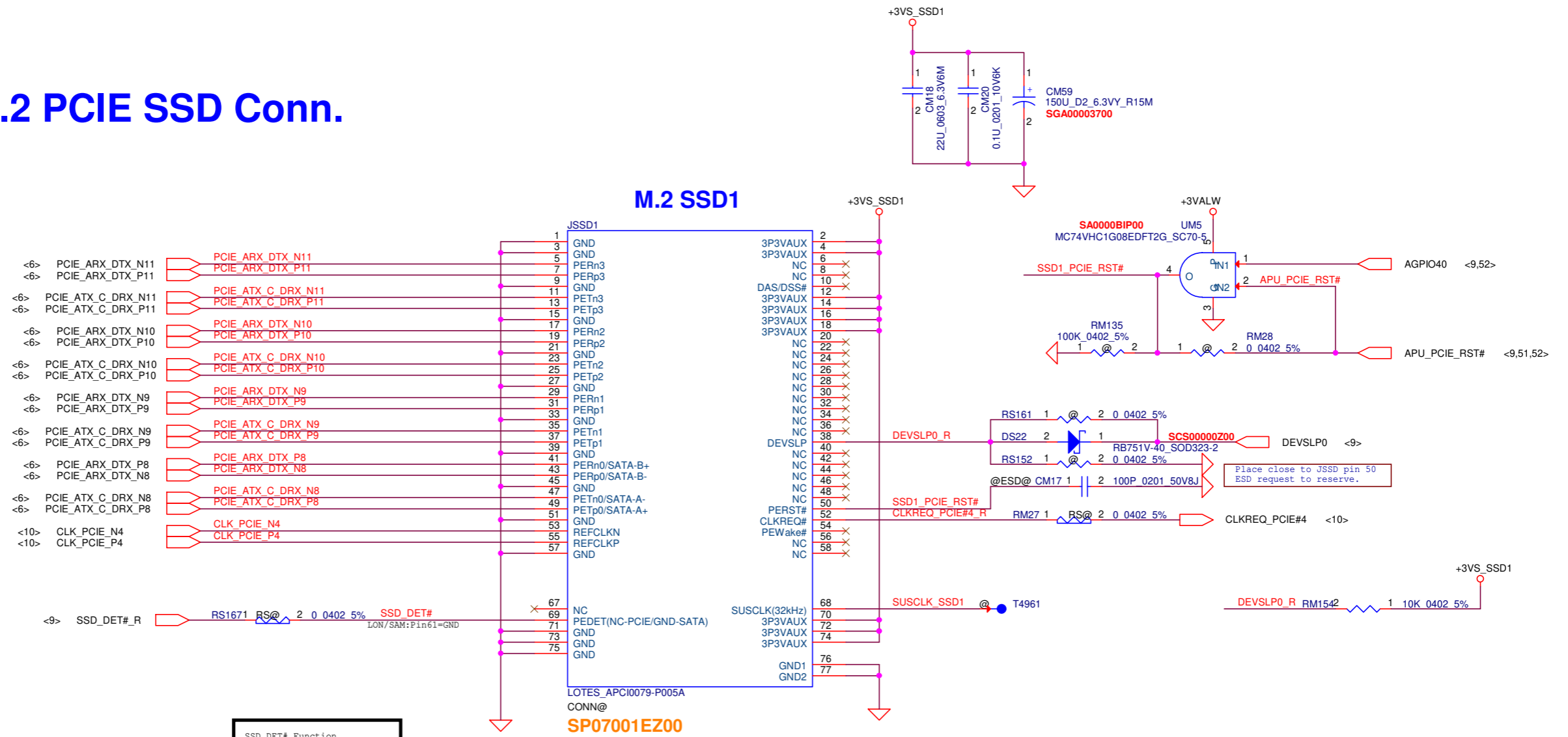
| PIN | ETU801       | FA577E-1200  |
|-----|--------------|--------------|
| 1   | +FP_VCC (5V) | +FP_VCC (3V) |
| 2   | USBP         | D+           |
| 3   | USBN         | D-           |
| 4   | GND          | GND          |
| 5   | NC           | NC           |
| 6   | NC           | NC           |
| 7   | NC           | NC           |
| 8   | NC           | NC           |

|   |                    |                 |            |                          |                           |                 |
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## M.2 PCIE SSD Conn.



| SSD_DET# Function |                 |
|-------------------|-----------------|
| 1                 | PCIE SSD Device |
| 0                 | SATA SSD Device |

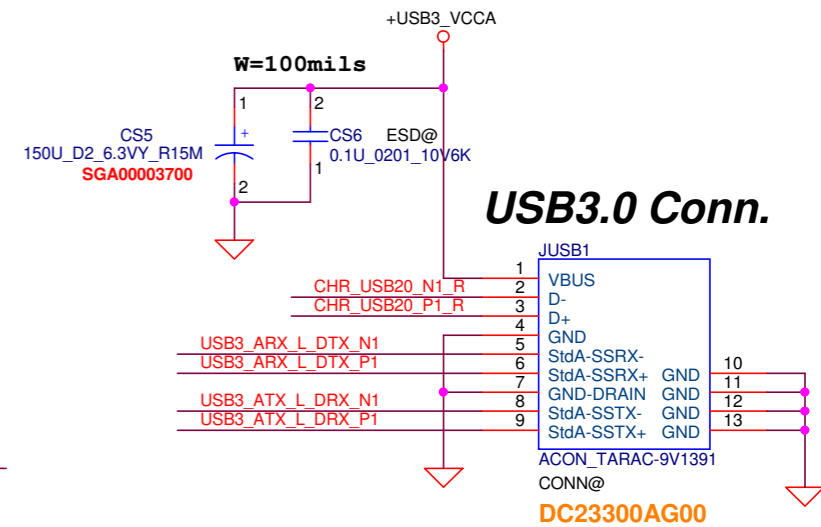
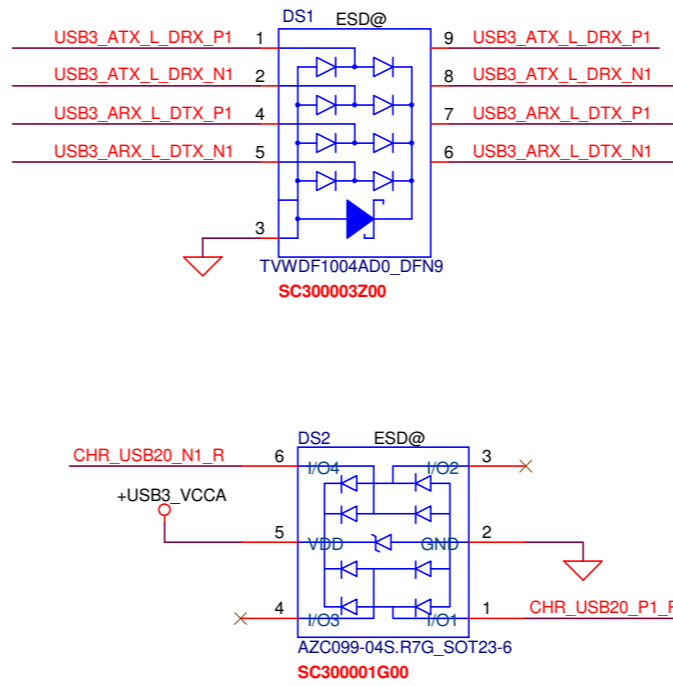
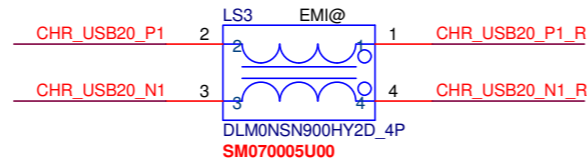
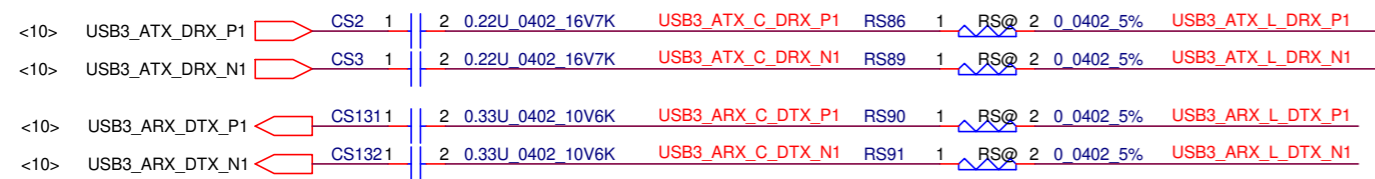
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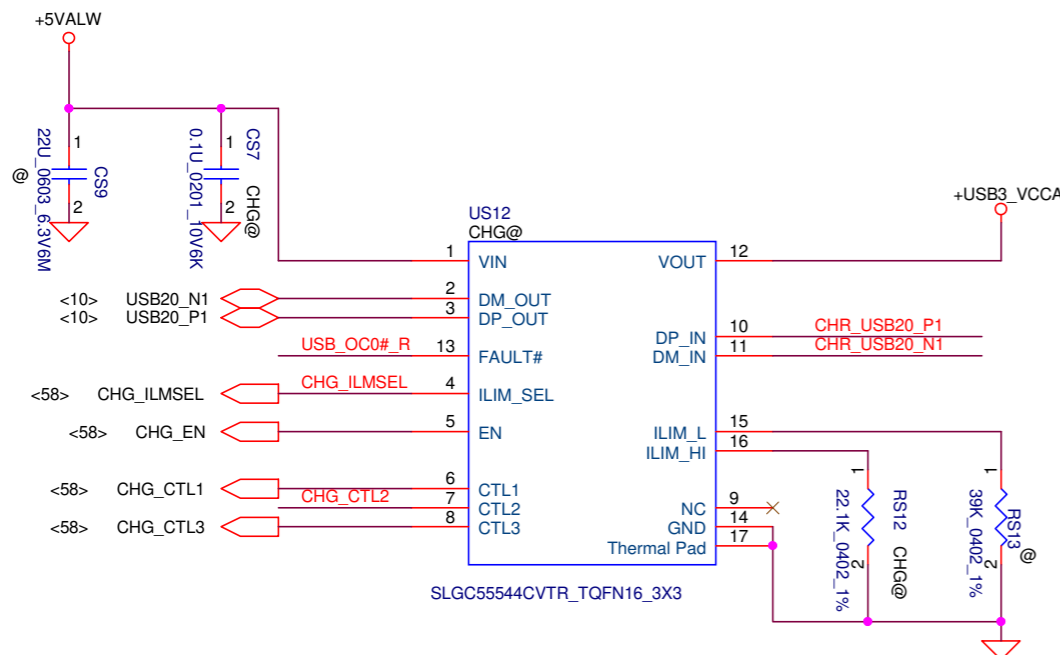
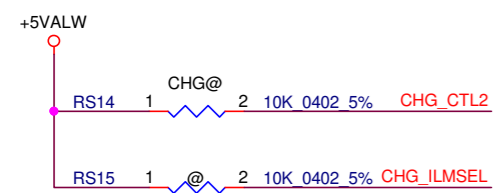
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# USB3.0

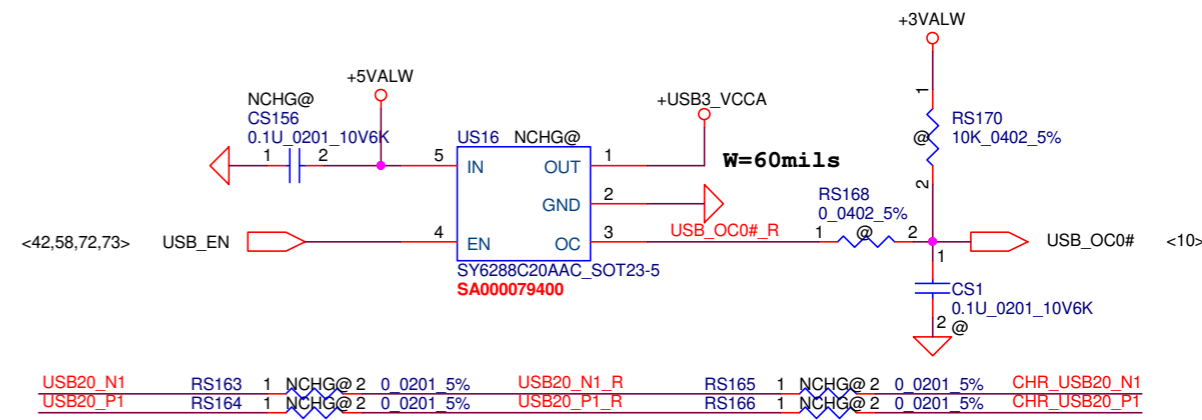


## USB Host Charger



ILM R vaule  
Ios (mA)=50250/R (Kohm)  
ILIM\_Hi=2273mA  
ILIM\_L=1288mA (reserve)

## Reserved for non-Charger

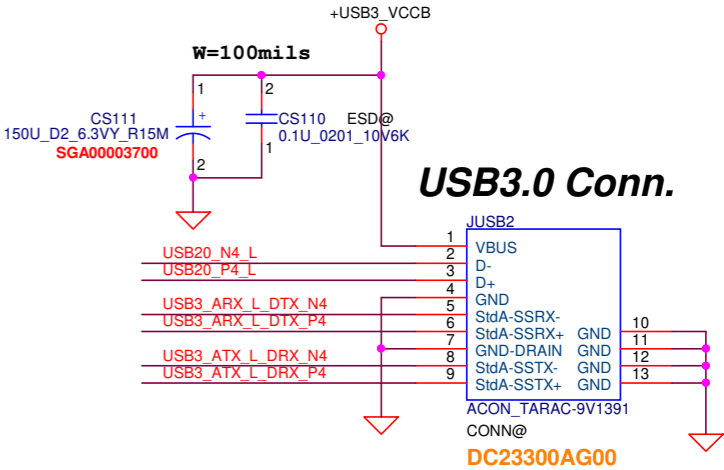
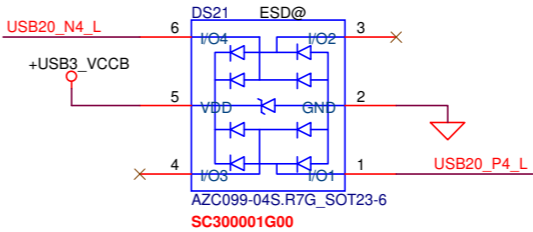
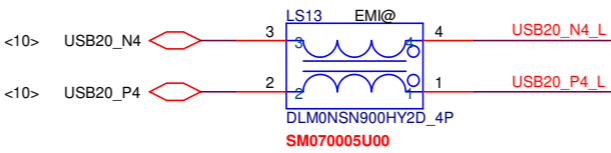
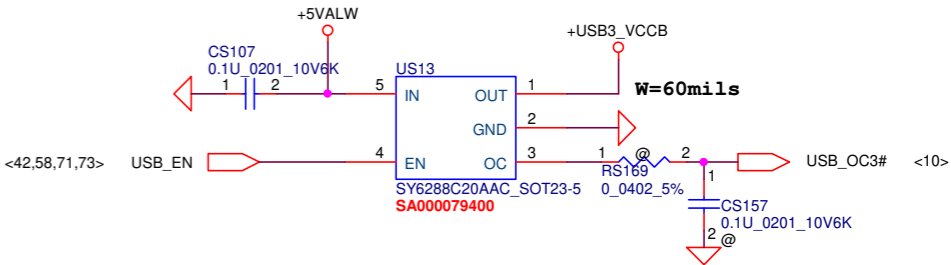
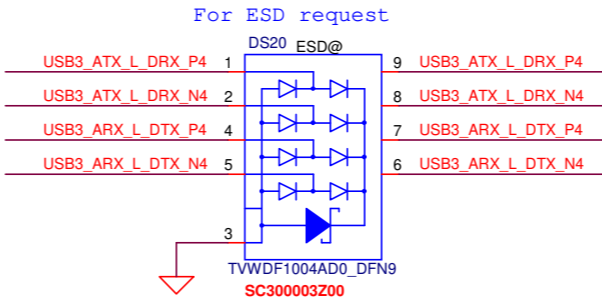


## USB Host Charger Truth Table

| CHG_EN | CTL1 | CTL2 | CTL3 | ILIM_SEL | MODE     | Current Limit Setting | Note                    |
|--------|------|------|------|----------|----------|-----------------------|-------------------------|
| 0      | 0    | 1    | 0    | 1        | SDP1-OFF | ILIM_H                | Port power off          |
| 1      | 0    | 1    | 0    | 1        | SDP1     | ILIM_H                | Data Lines Connected    |
| 1      | 0    | 1    | 1    | 1        | DCP Auto | ILIM_H                | Data Lines Disconnected |
| 1      | 1    | 1    | 1    | 1        | CDP      | ILIM_H                | Data Lines Connected    |

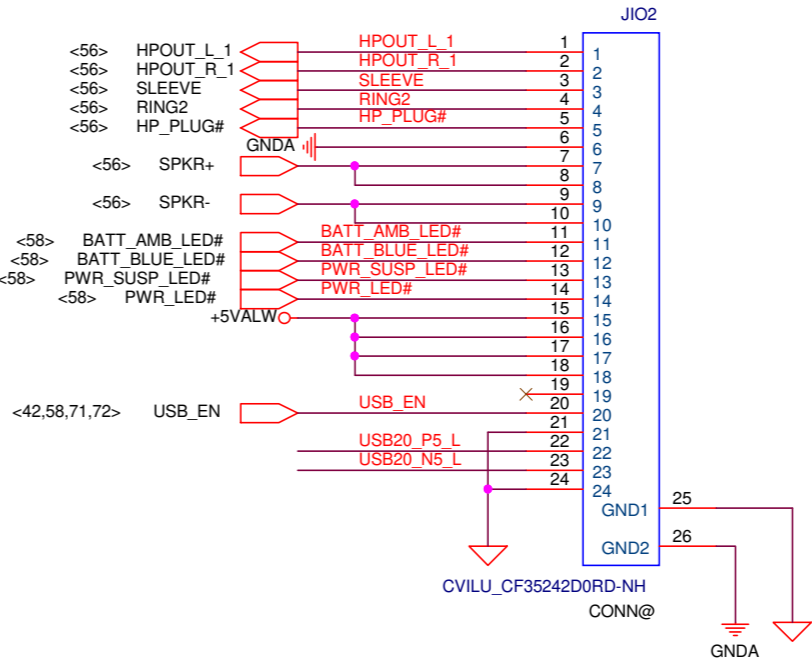
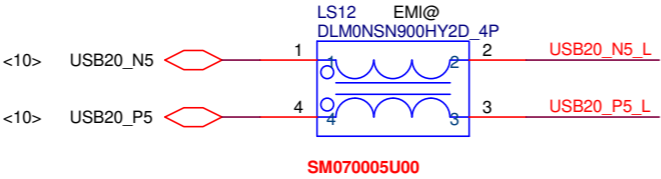
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USB3.0



|   |                    |                 |            |                          |                           |                 |
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IO/B CONN



|   |  |                                 |                 |                          |                 |
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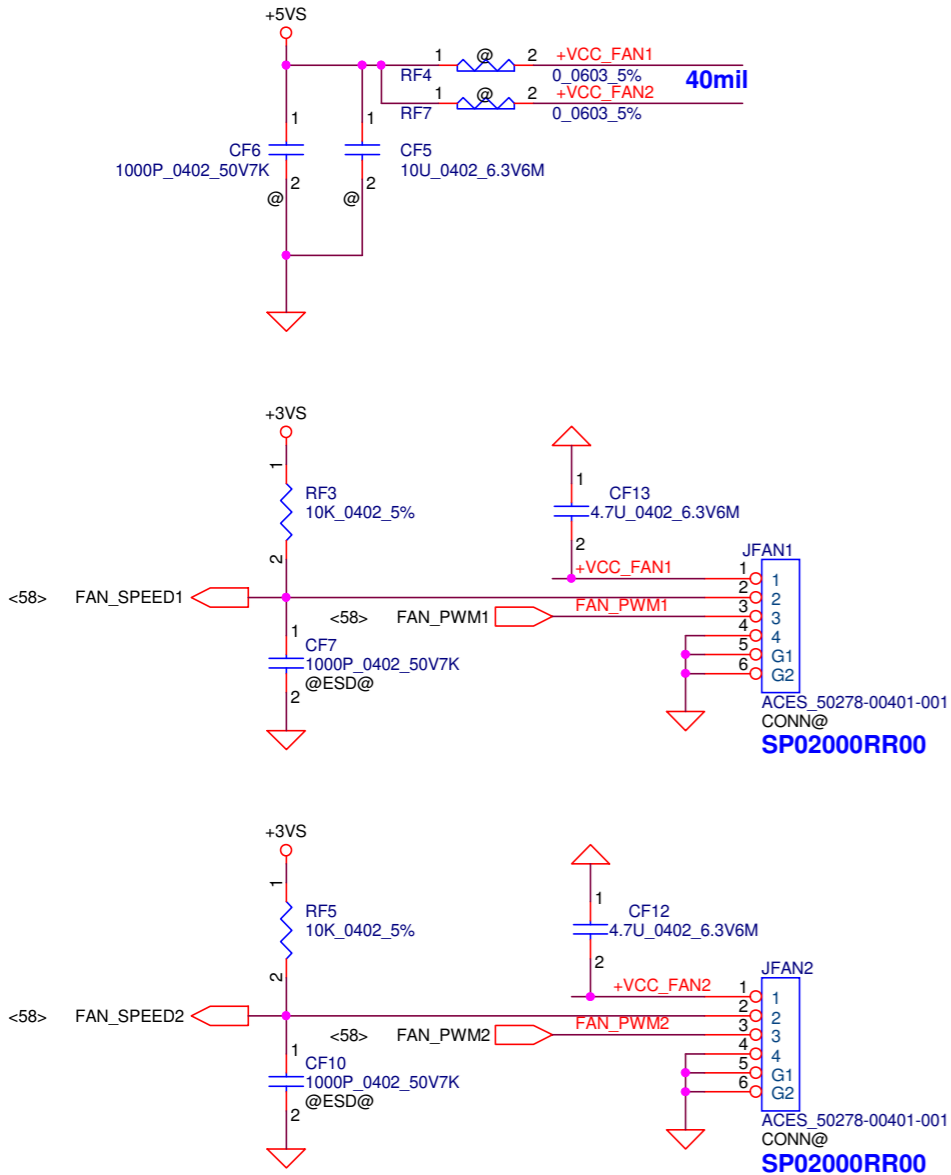


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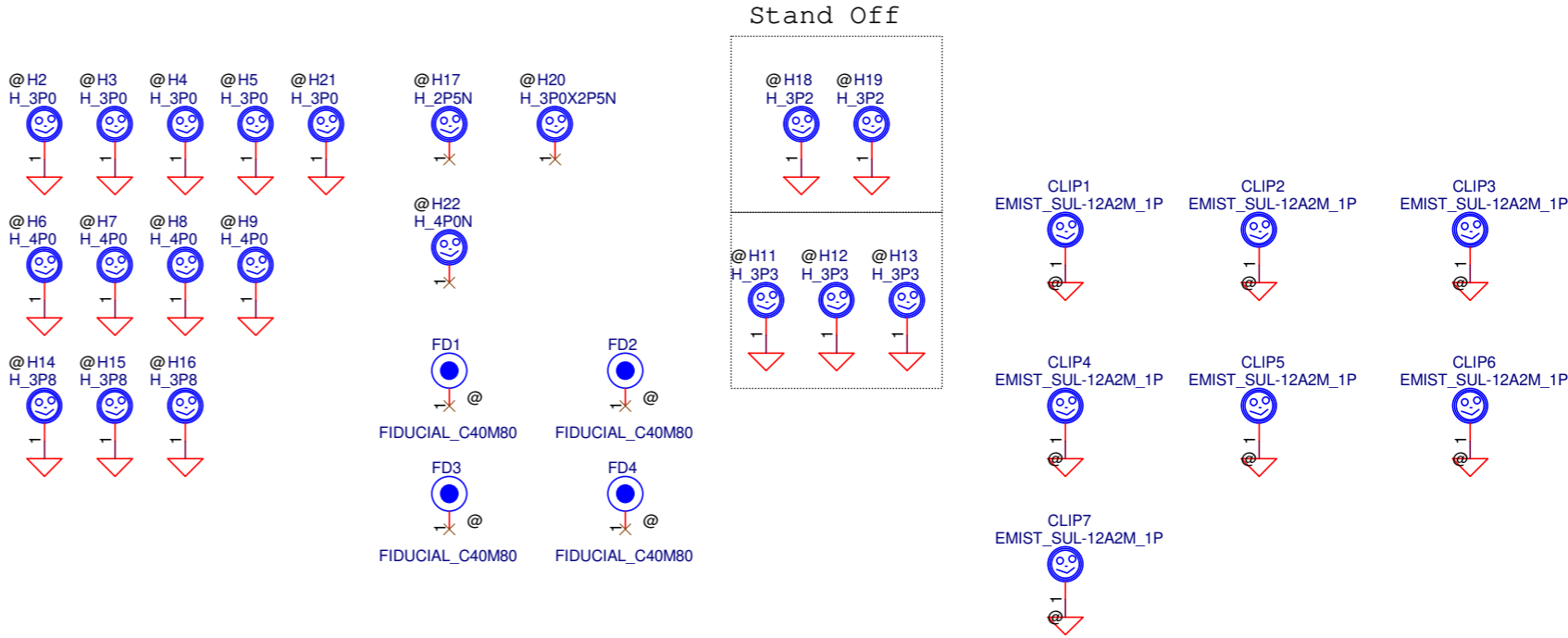
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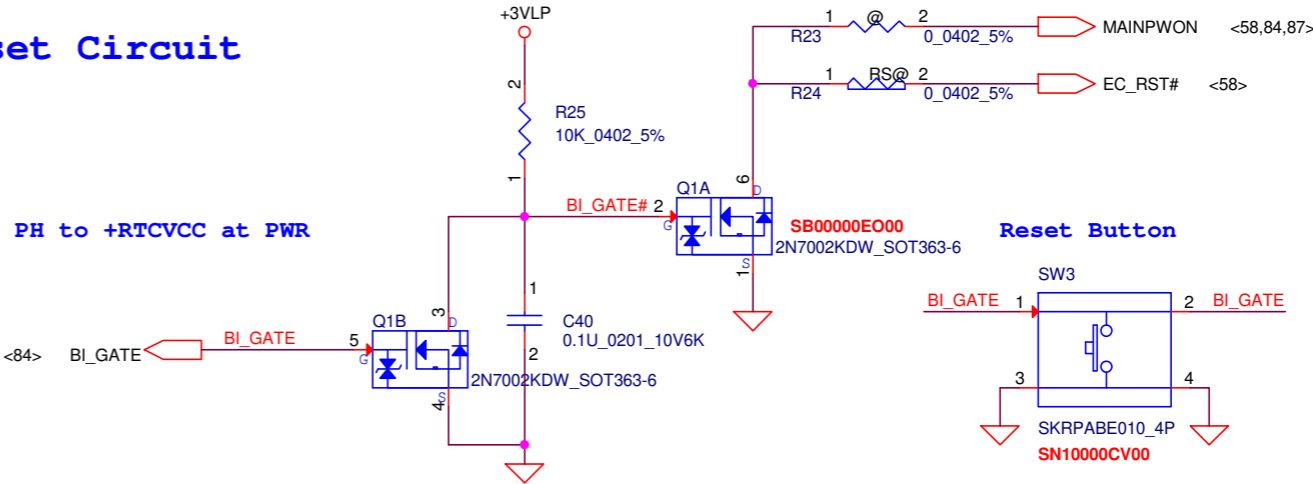
FAN Conn



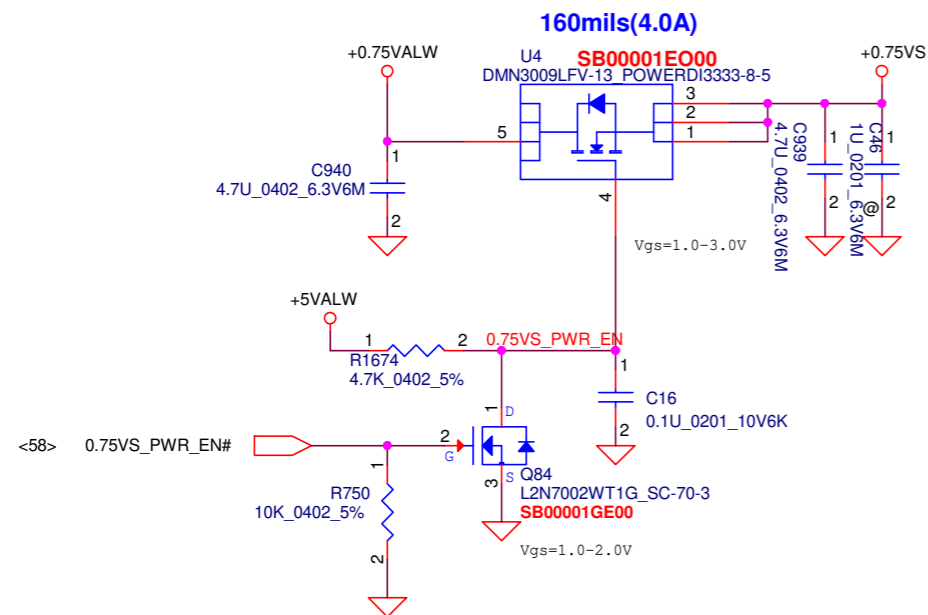
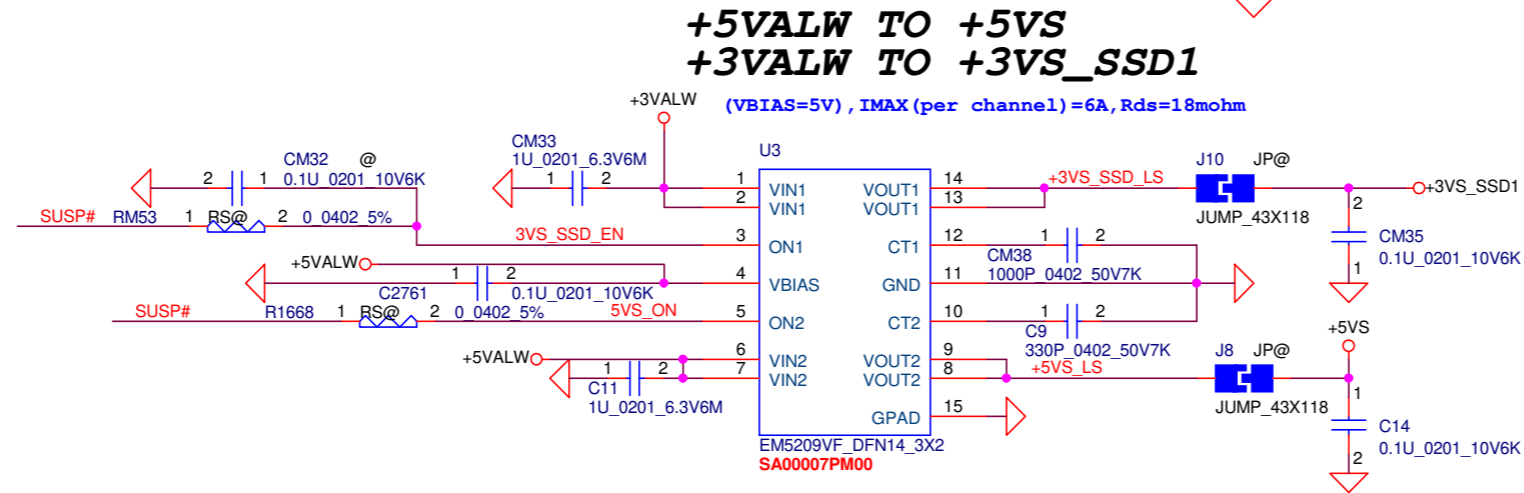
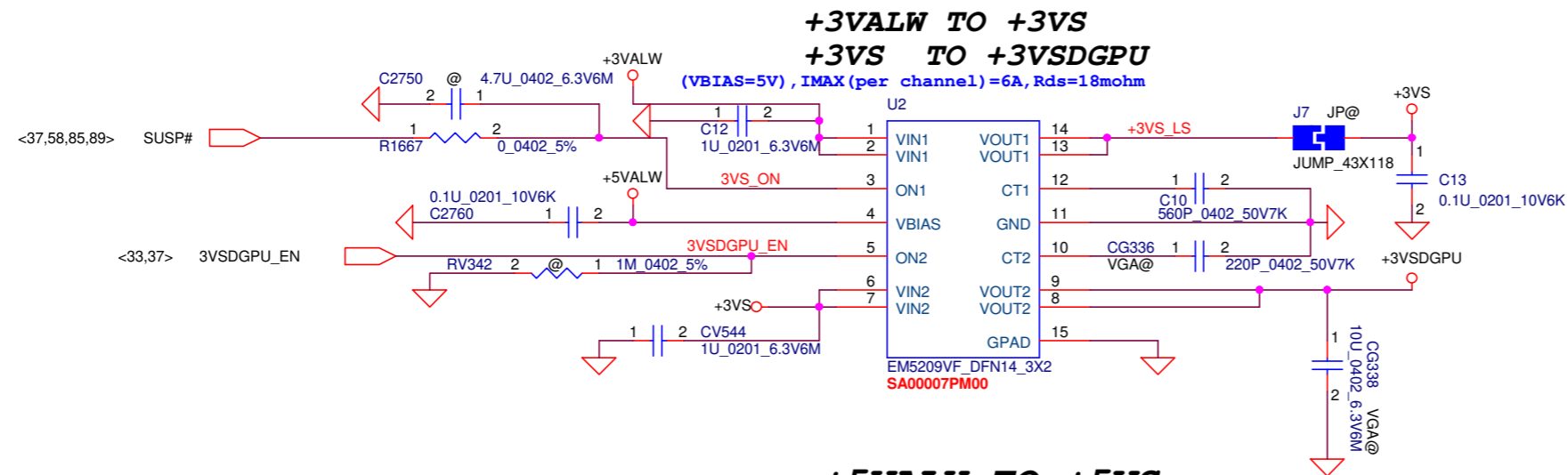
Screw Hole



Reset Circuit



|   |                    |                 |            |                          |                              |
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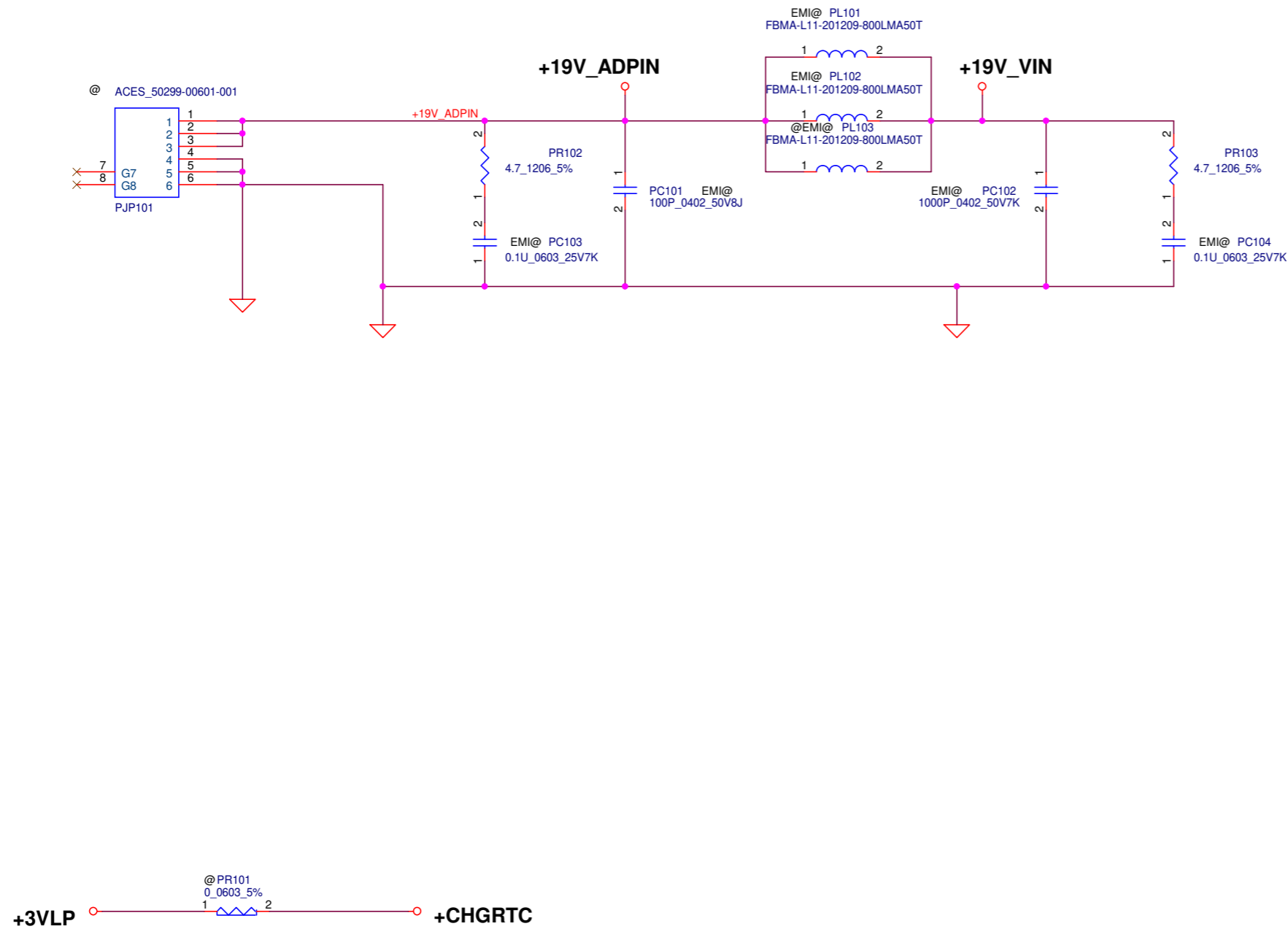
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Reserve

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|  |                    |                 |            | Date:                    | Wednesday, February 24, 2021 | Sheet 80 of 122 |

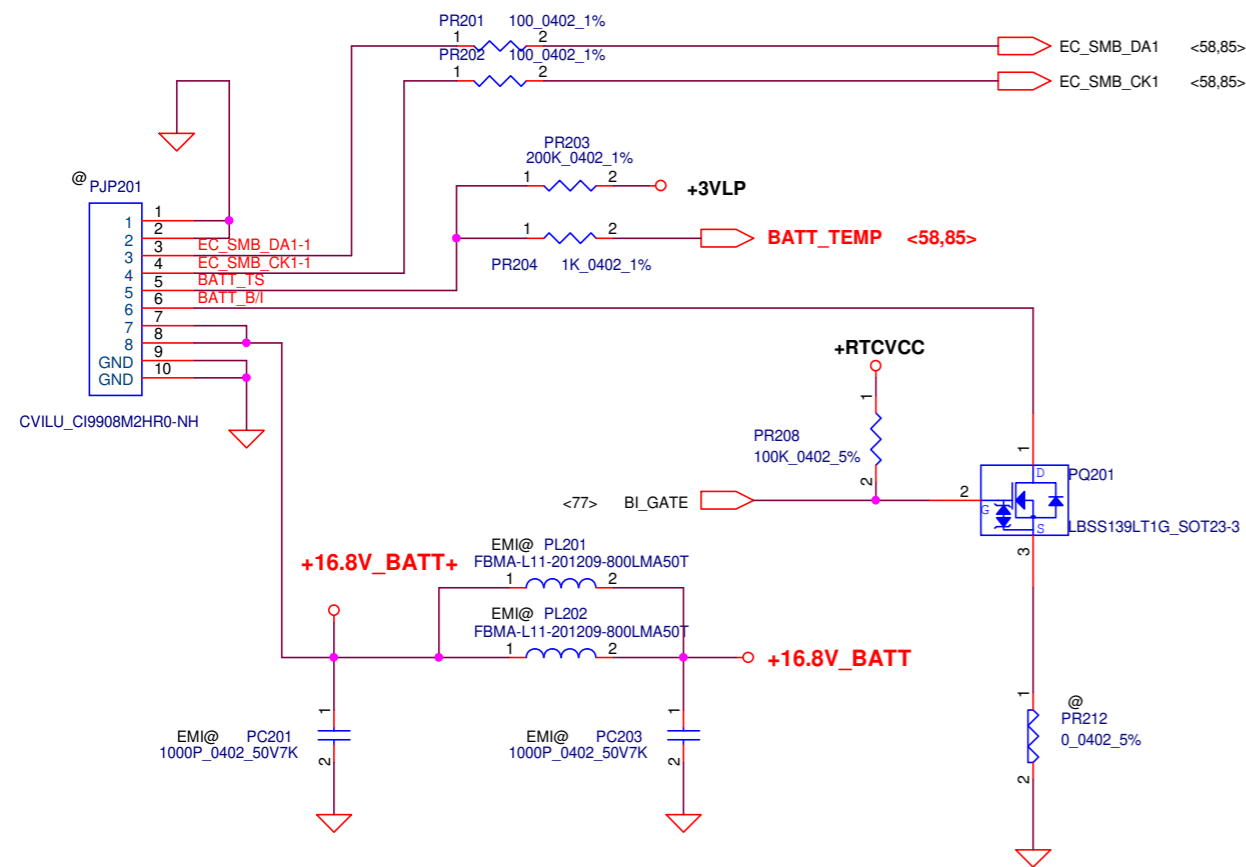
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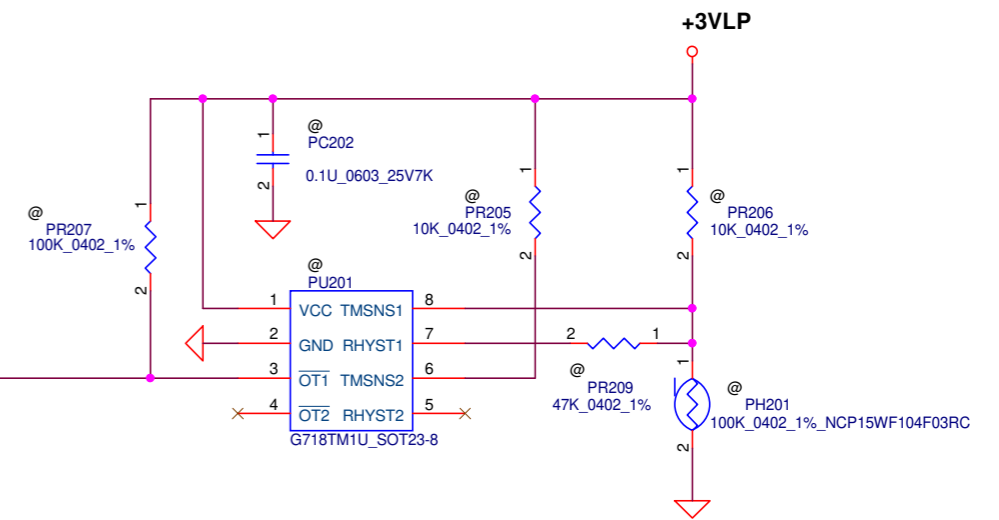


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<58,77,87> MAINPWON

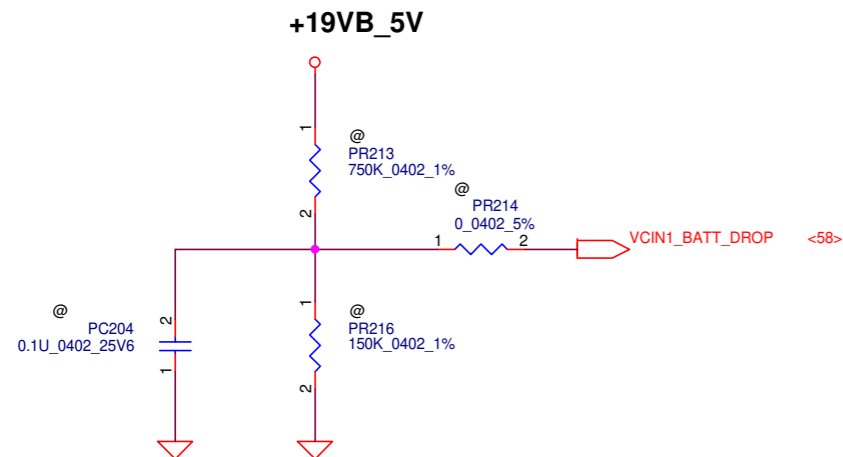


| For KB9022<br>OTP | Active  | Recovery |
|-------------------|---------|----------|
| VCIN0_PH (V)      | 92C, 1V | 56C, 2.V |
| PH202 (ohm)       | 7.3092K | 26.11K   |

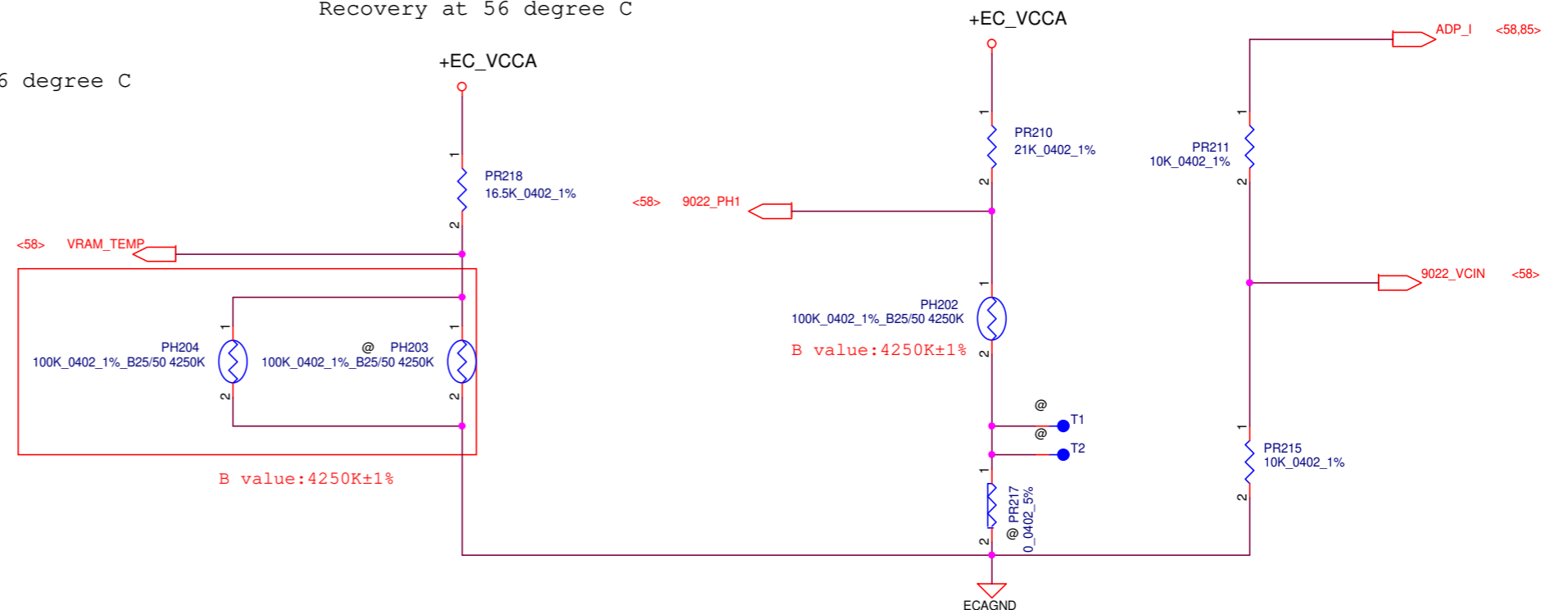
| For KB9012<br>sense 20mΩ | Active       | Recovery     |
|--------------------------|--------------|--------------|
| SR 45W                   | 58.5W, 0.61V | 58.5W, 0.61V |
| BR 65W                   | 84.5W, 0.61V | 84.5W, 0.61V |

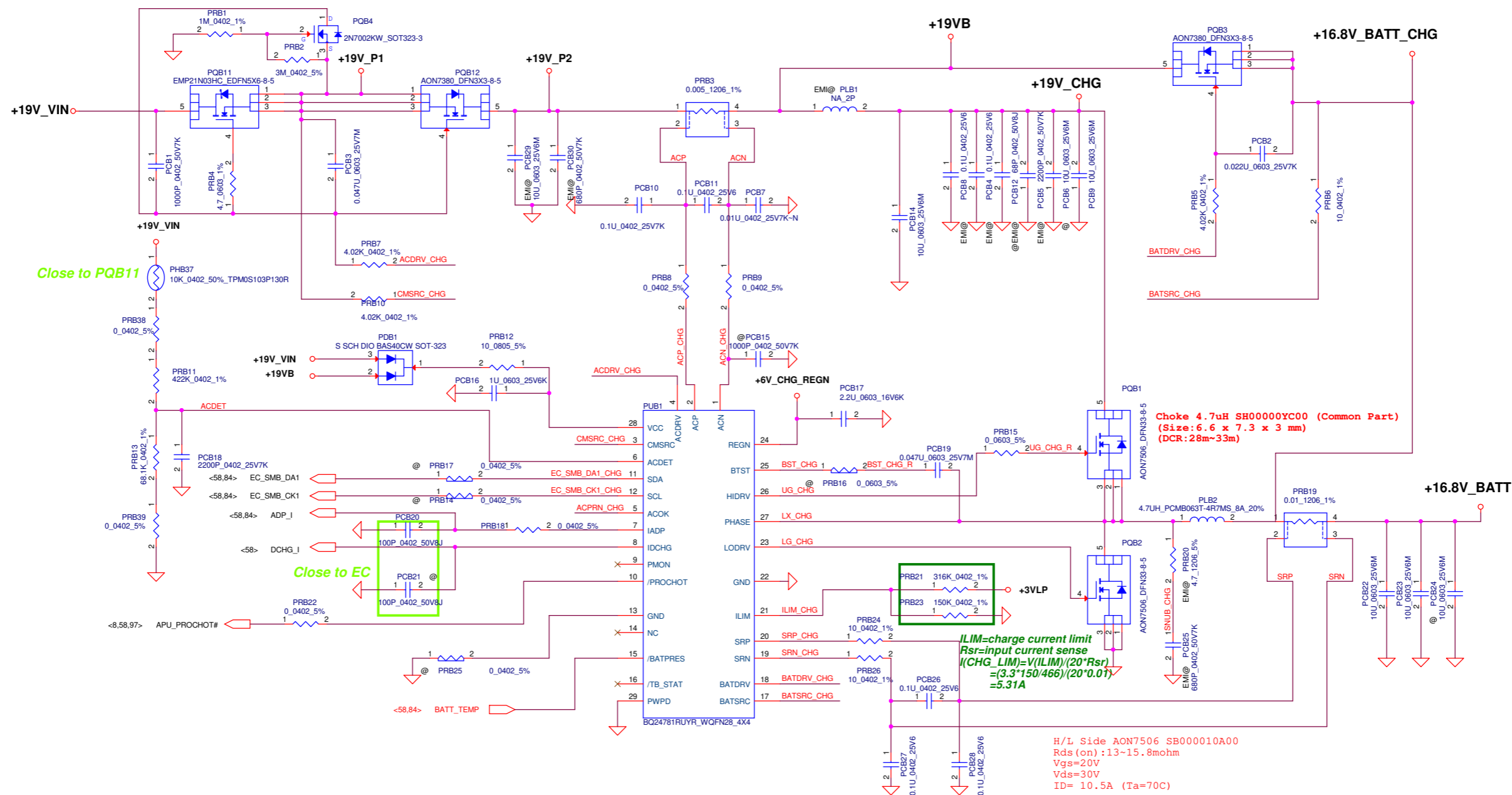
2013/10/02  
Add for ENE9022 Battery Voltage drop detection.  
Connect to ENE9022 pin64 AD1.

Reserve for 2-cell design

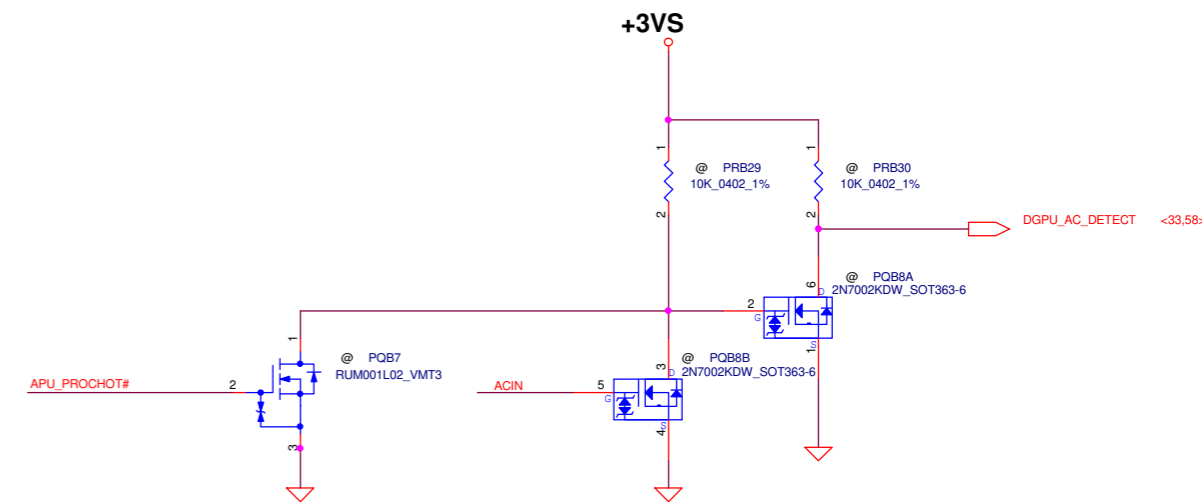
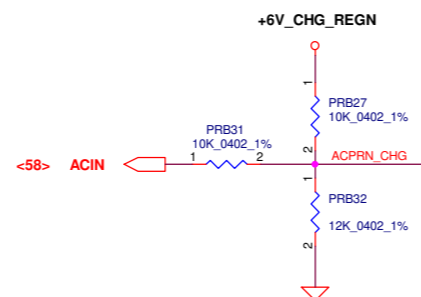
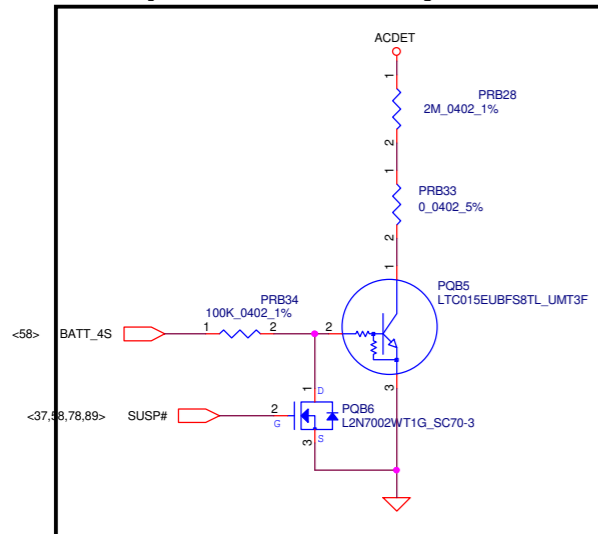


PH202 under CPU botten side :  
CPU thermal protection at 96 degree C ( shutdown )  
Recovery at 56 degree C



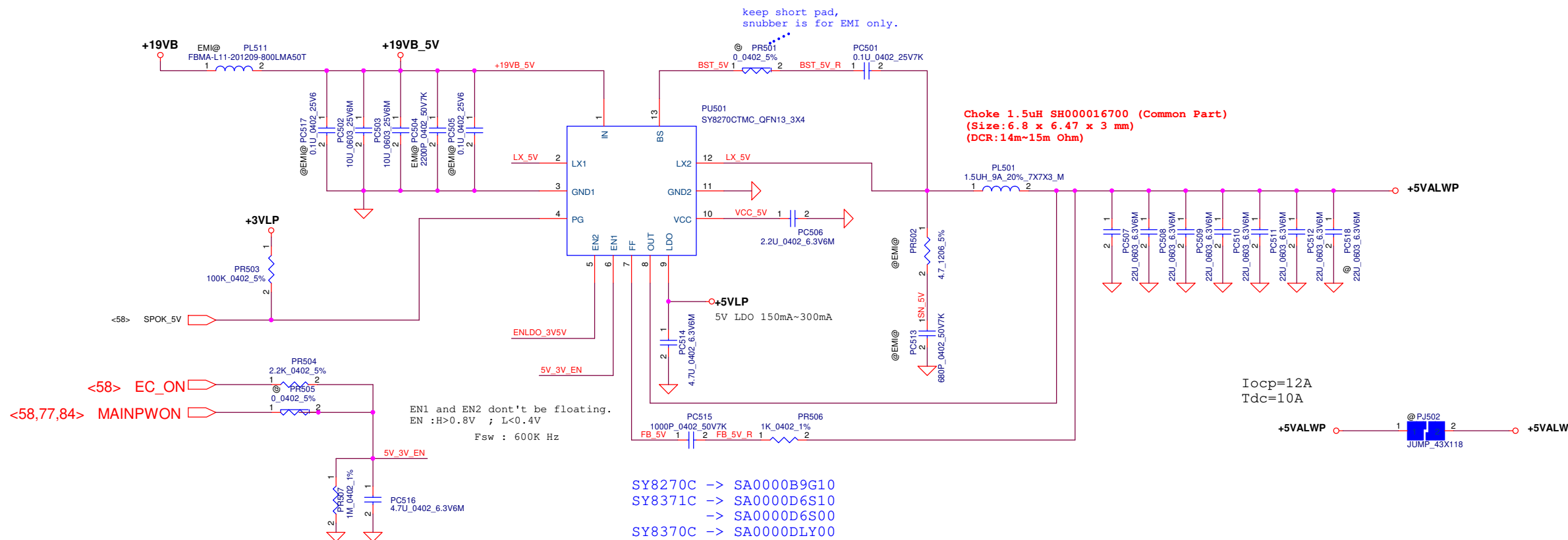
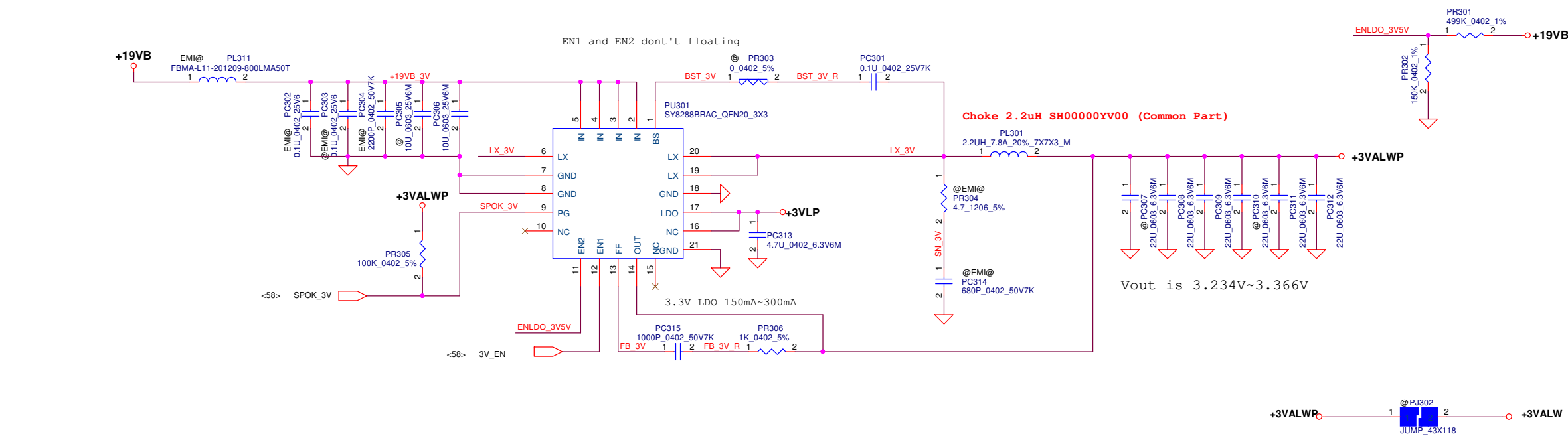


For 4S per cell 4.35V battery



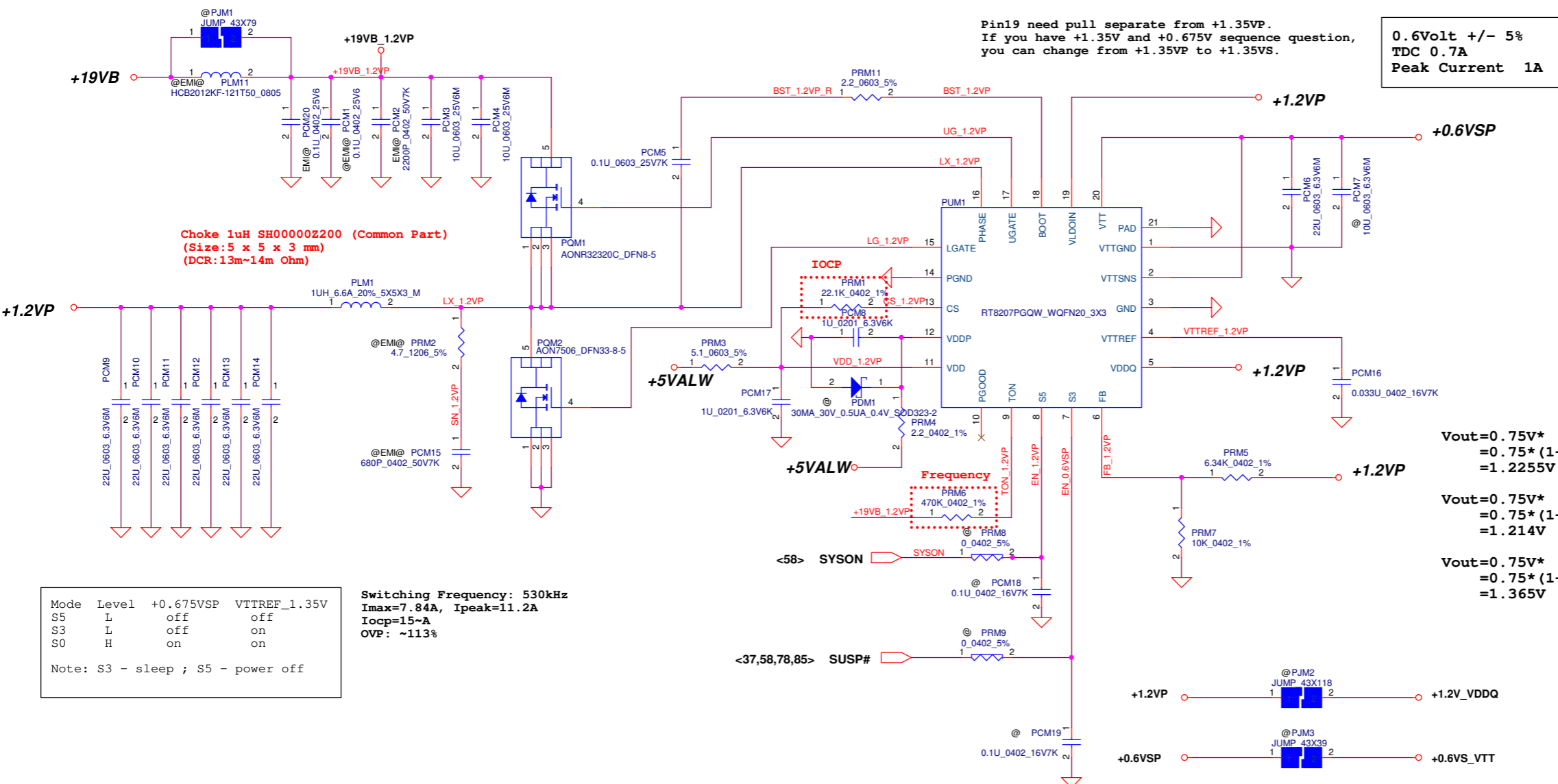
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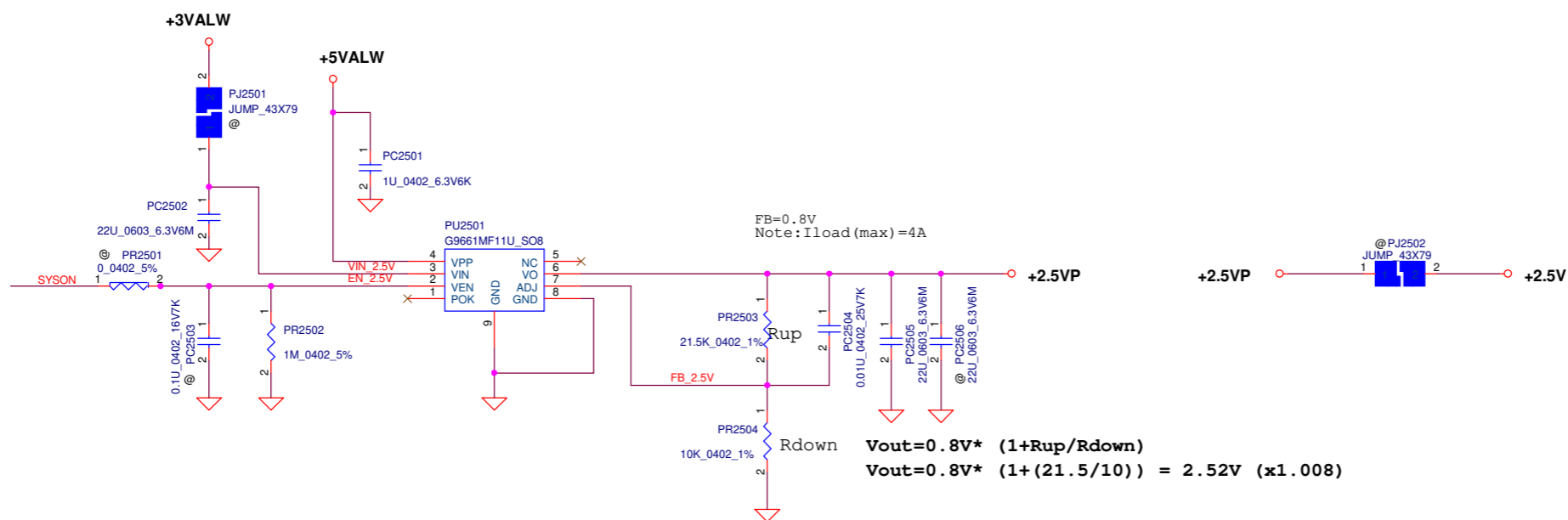


|      |       |           |              |
|------|-------|-----------|--------------|
| Mode | Level | +0.675VSP | VTTREF_1.35V |
| S5   | L     | off       | off          |
| S3   | L     | off       | on           |
| S0   | H     | on        | on           |

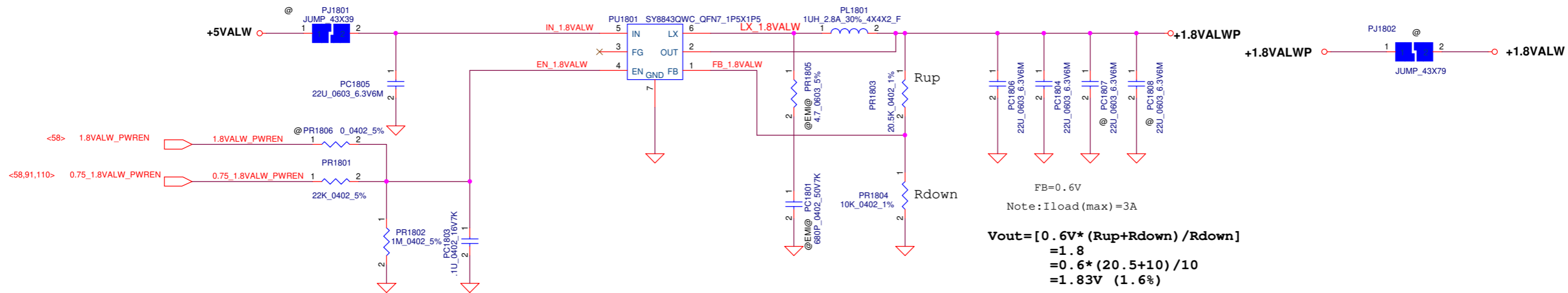
Note: S3 - sleep ; S5 - power off

Switching Frequency: 530kHz  
I<sub>max</sub>=7.84A, I<sub>peak</sub>=11.2A  
I<sub>ocp</sub>=15~A  
OVP: ~113%

$$\begin{aligned} V_{out} &= 0.75V * (1 + R_{up}/R_{down}) \\ &= 0.75 * (1 + (6.34/10)) \\ &= 1.2255V \quad 2.1\% \\ V_{out} &= 0.75V * (1 + R_{up}/R_{down}) \\ &= 0.75 * (1 + (6.19/10)) \\ &= 1.214V \quad 1.2\% \\ V_{out} &= 0.75V * (1 + R_{up}/R_{down}) \\ &= 0.75 * (1 + (8.2/10)) \\ &= 1.365V \quad 1.1\% \end{aligned}$$



$$\begin{aligned} V_{out} &= 0.8V * (1 + R_{up}/R_{down}) \\ V_{out} &= 0.8V * (1 + (21.5/10)) = 2.52V \quad (\times 1.008) \end{aligned}$$



|   |                    |                 |            |                          |                              |                 |
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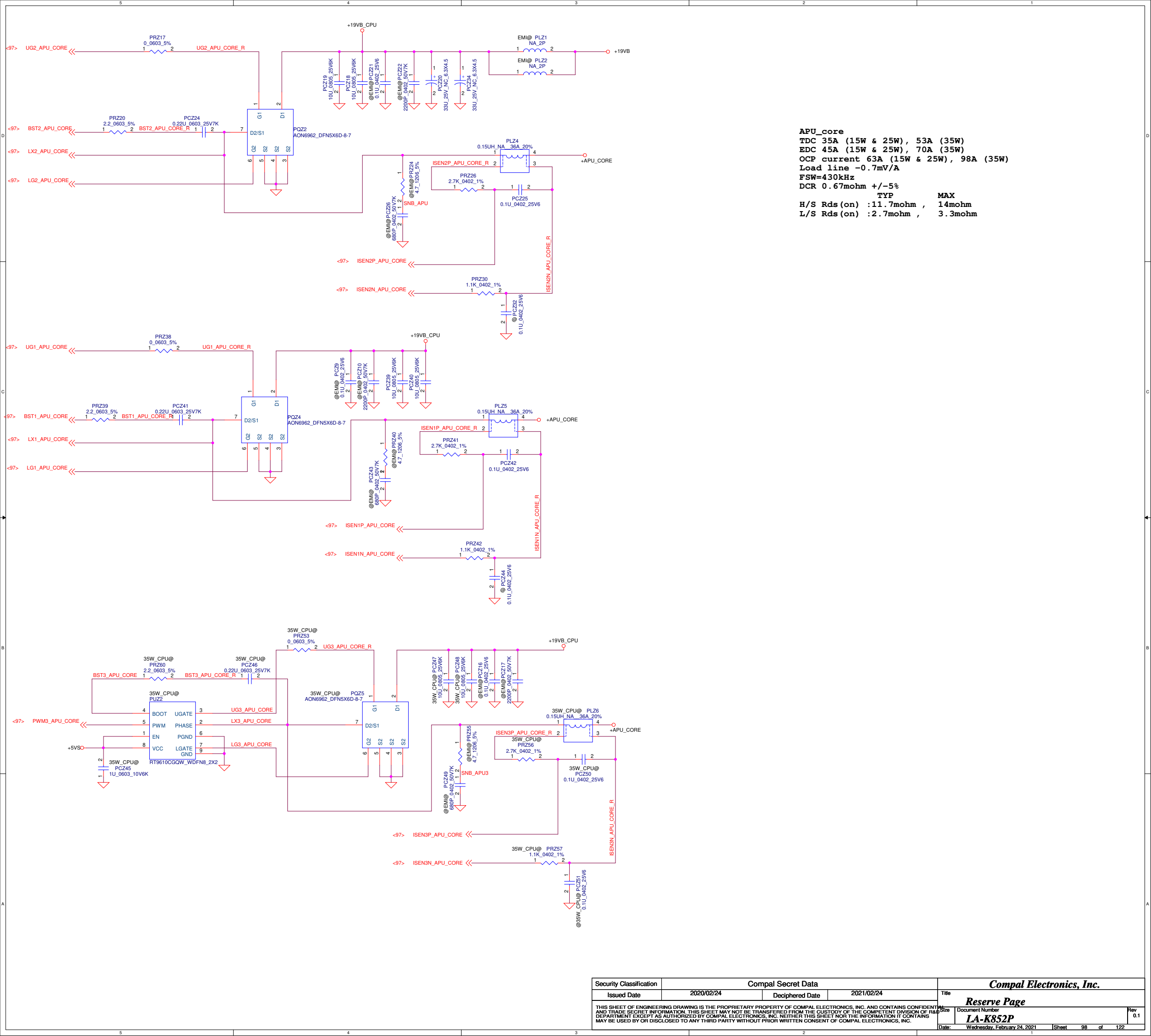
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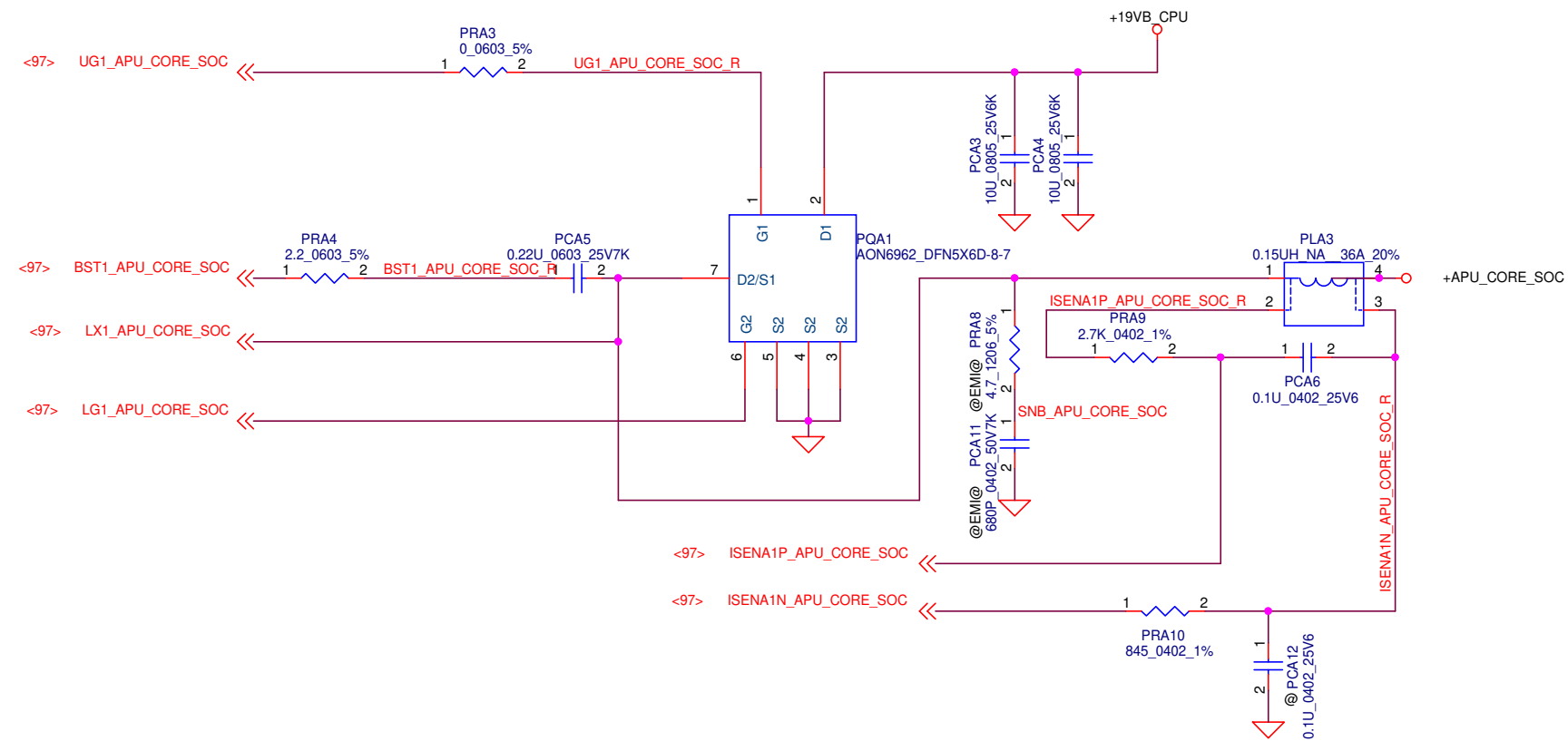
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**APU\_core**  
TDC 35A (15W & 25W), 53A (35W)  
EDC 45A (15W & 25W), 70A (35W)  
OCP current 63A (15W & 25W), 98A (35W)  
Load line -0.7mV/A  
FSW=430kHz  
DCR 0.67mohm +/-5%  
TYP MAX  
H/S Rds (on) :11.7mohm , 14mohm  
L/S Rds (on) :2.7mohm , 3.3mohm



**+APU\_CORE\_SOC**  
TDC 10A (15W & 25W &35W)  
EDC 13A (15W & 25W &35W)  
OCP current 24.2A (15W & 25W &35W)  
Load line -2.1mV/A  
FSW=400kHz  
DCR 0.67m ohm +/-5%  
TYP  
H/S Rds (on) :11.7mohm , 14mohm  
L/S Rds (on) :2.7mohm , 3.3mohm  
MAX

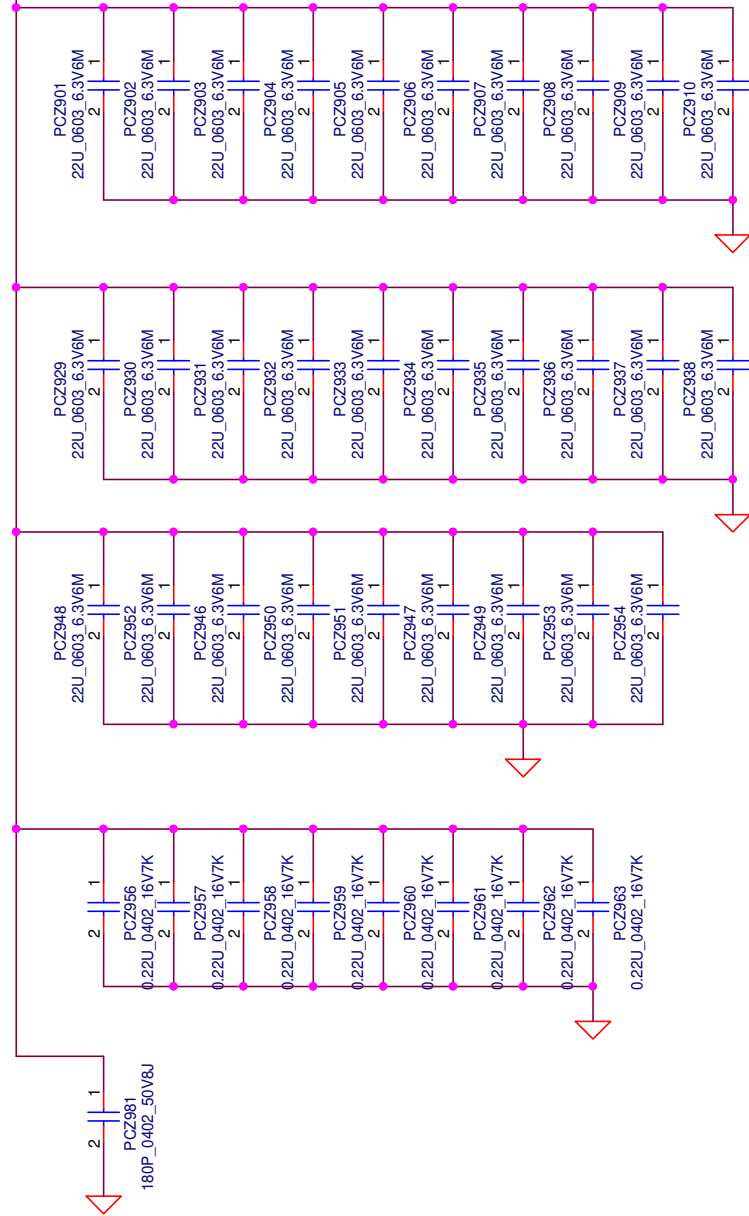
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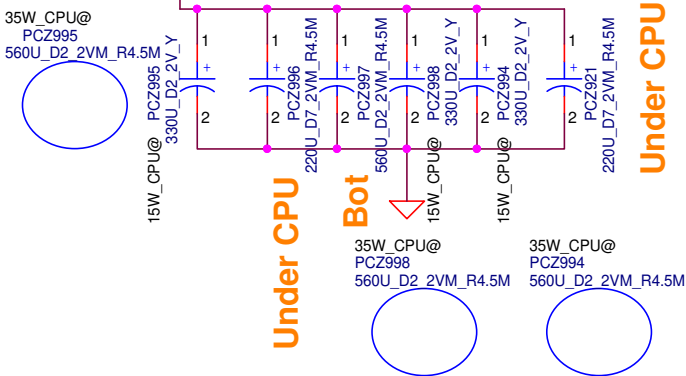
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|   |  |                    |  |                 |  | Date:                    | Wednesday, February 24, 2021 |       |     | Sheet | 100 |

+APU\_CORE

+APU\_CORE



+APU\_CORE



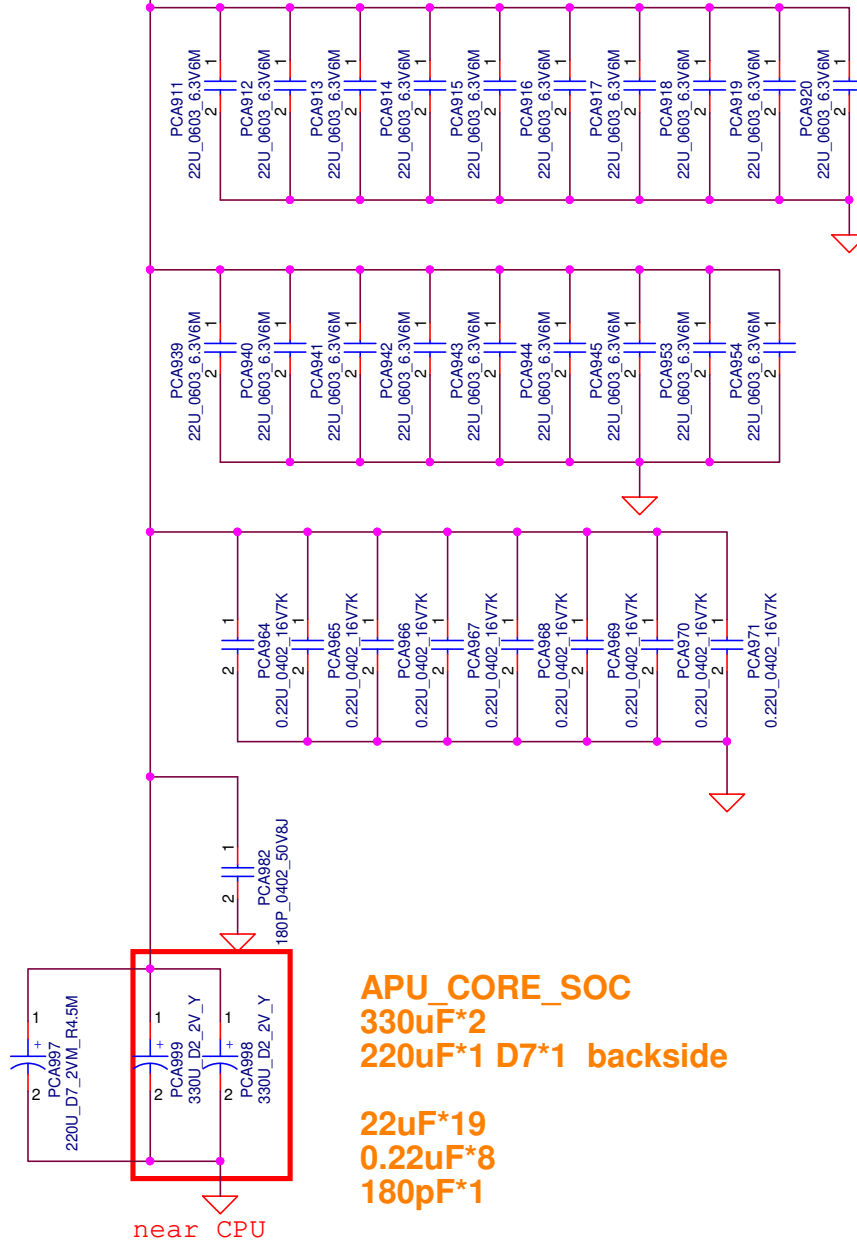
APU\_CORE  
330uF D2\*3  
560uF D2

220uF D7\*2 backside  
22uF\*29  
0.22uF\*8  
180pF\*1

330u is common part SGA00009S00

+APU\_CORE\_SOC

+APU\_CORE\_SOC



near CPU

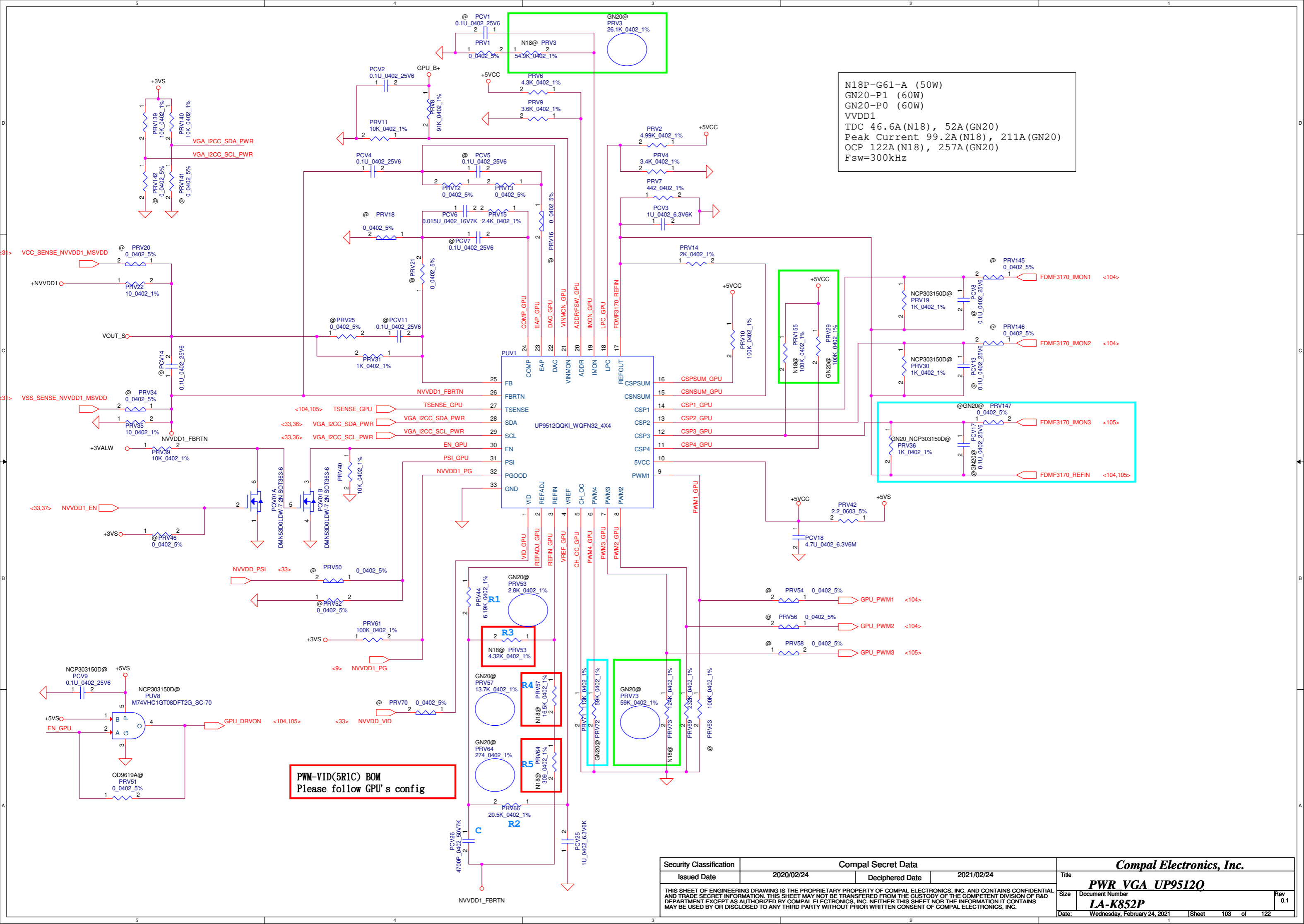
330u is common part SGA00009S00

APU\_CORE\_SOC  
330uF\*2  
220uF\*1 D7\*1 backside  
  
22uF\*19  
0.22uF\*8  
180pF\*1

|   |  |                              |                 |                          |            |
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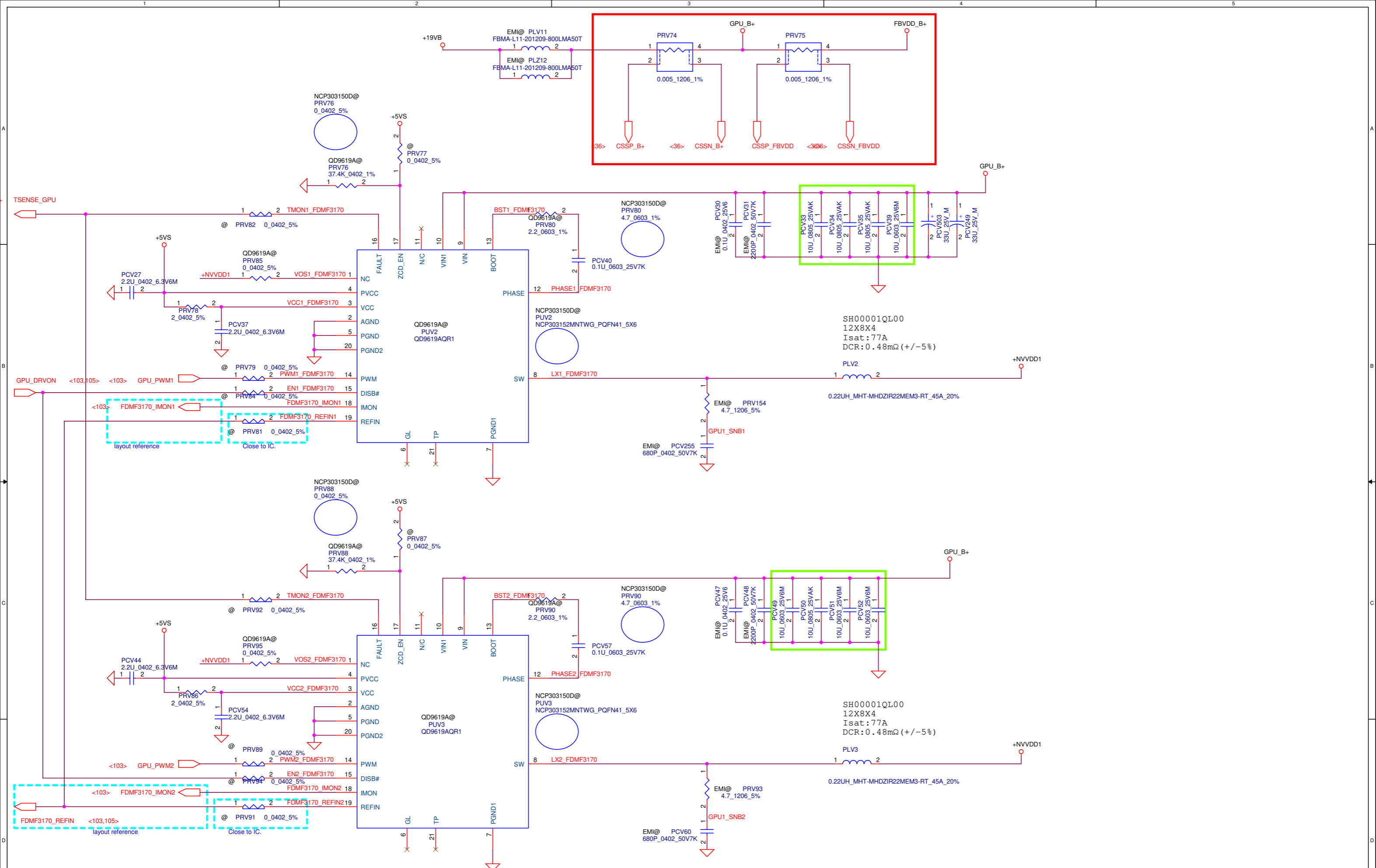
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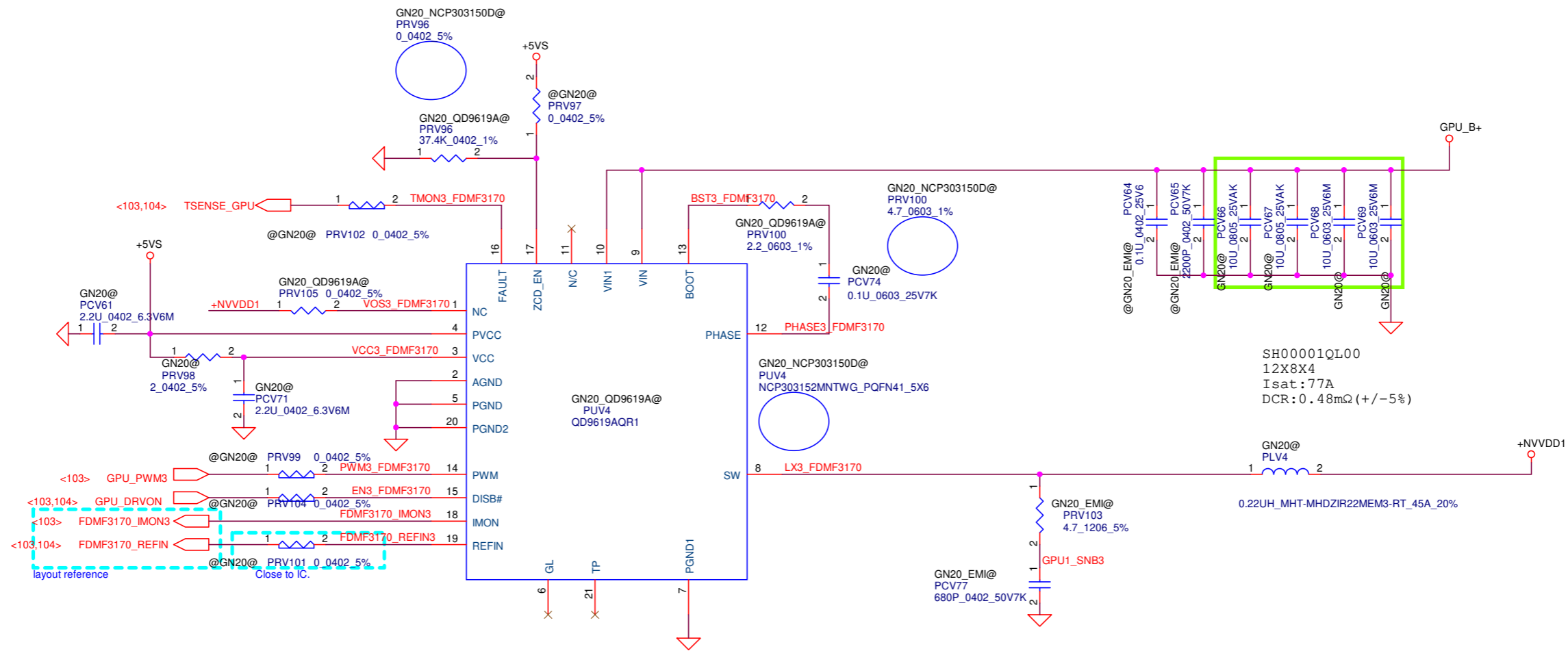


N18P-G61-A (50W)  
GN20-P1 (60W)  
GN20-P0 (60W)  
VVDD1  
TDC 46.6A (N18), 52A (GN20)  
Peak Current 99.2A (N18), 211A (GN20)  
OCP 122A (N18), 257A (GN20)  
Fsw=300kHz

PWM-VID(5R1C) BOM  
Please follow GPU's config

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| Deciphered Date   |  | 2021/02/24                   |  | PWR VGA UP9512Q          |  |            |
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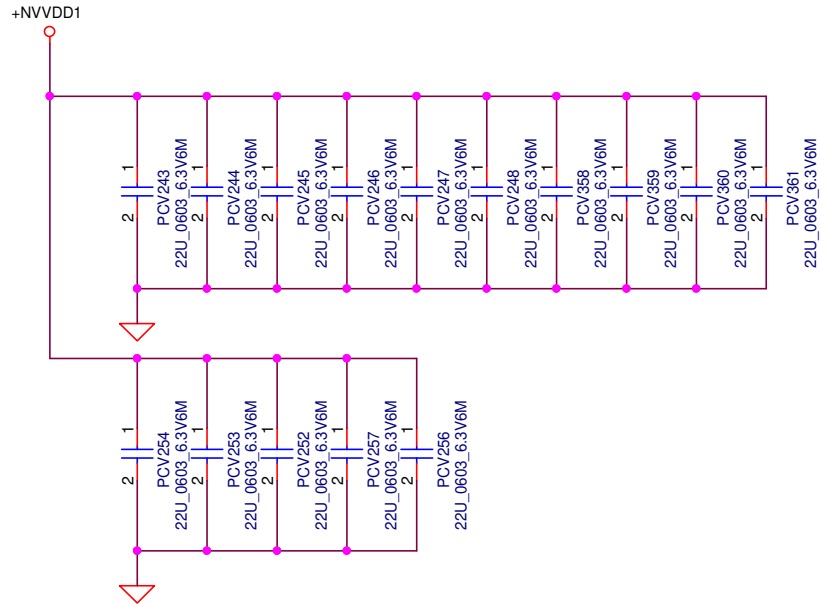
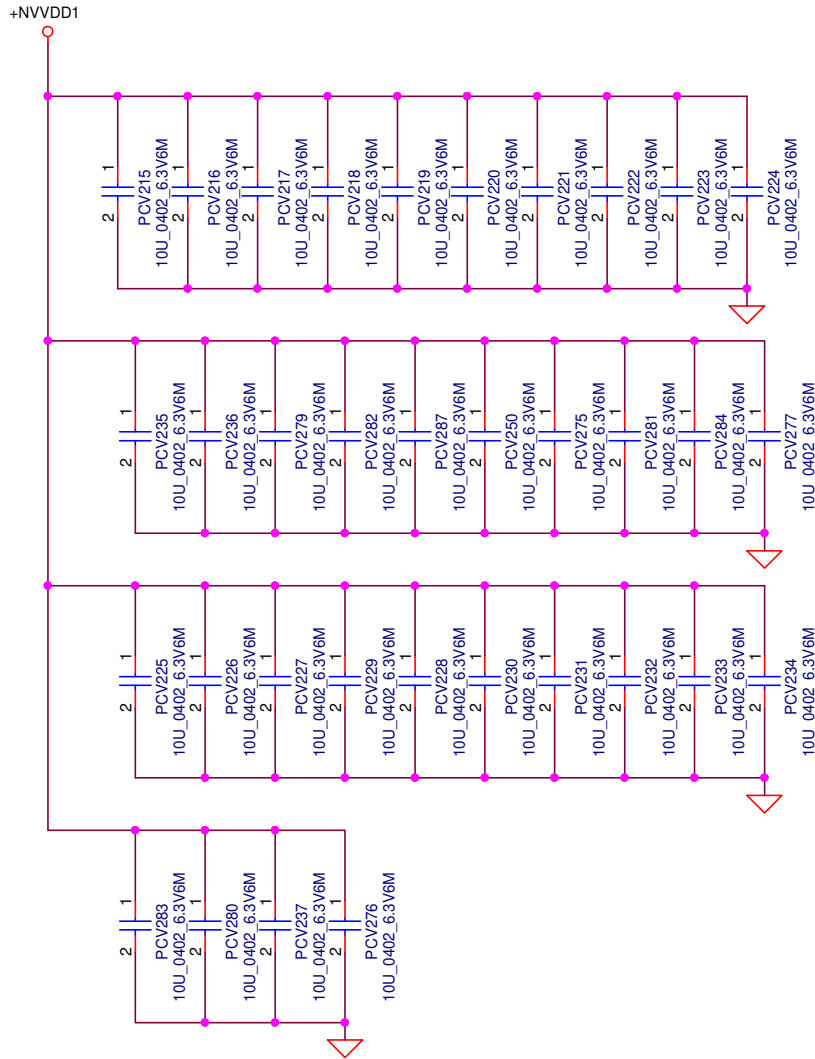
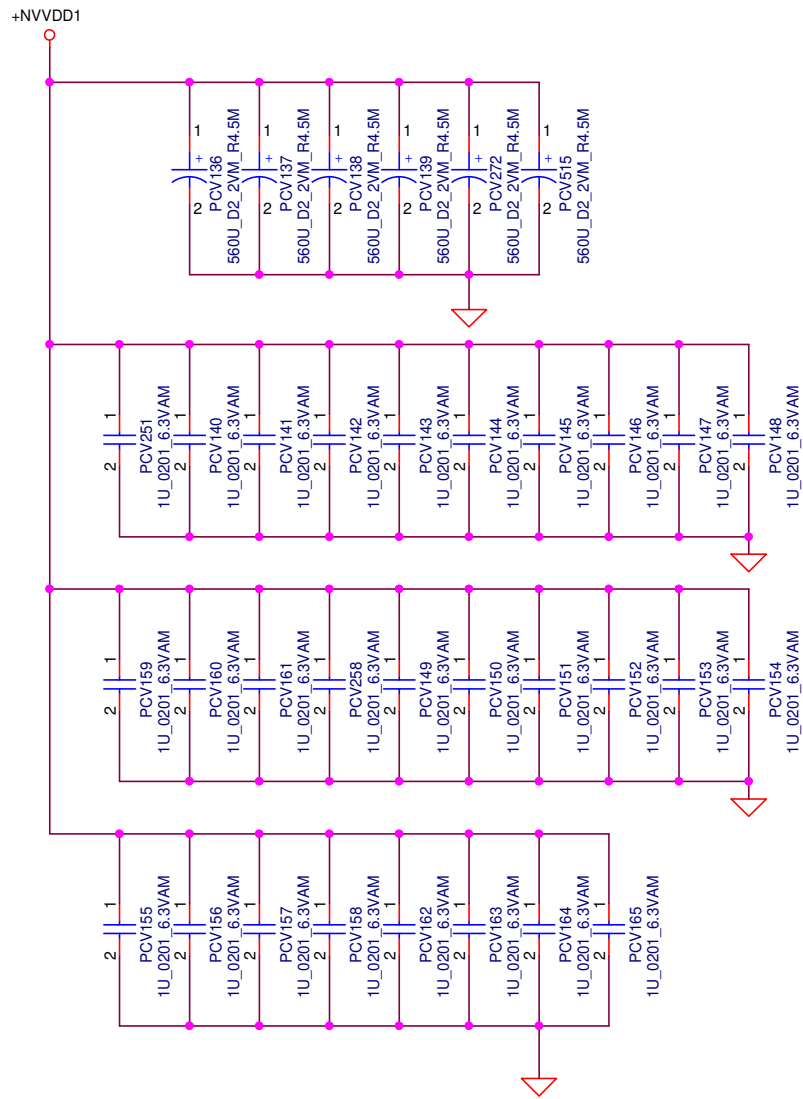




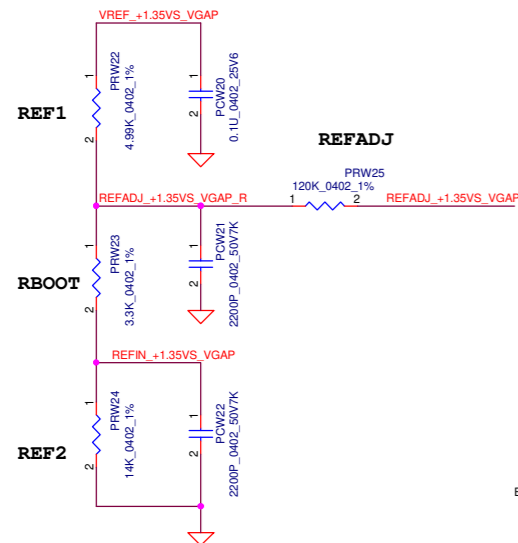
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| Issued Date   | 2020/02/24 | Deciphered Date    | 2021/02/24 | Title                    | PWR +NVVDD1                  |
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+NVVDD1  
560uF X 6  
22uF\_0603 X 15  
10uF\_0402X 34  
1uF\_0201 X 28 (13+15)

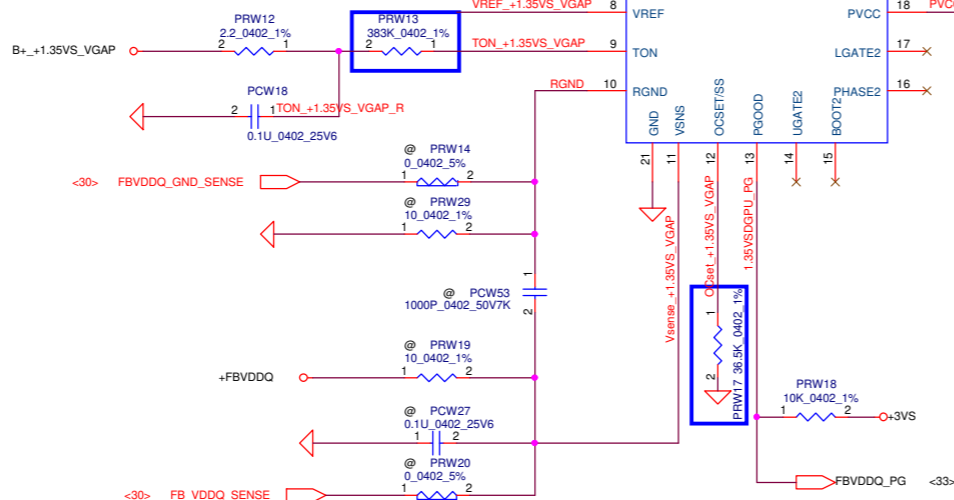


**Micron & Samesung VRAM**

When, VRAM\_VDD\_CTL=High  
Vboot=1.25V

When, VRAM\_VDD\_CTL=Low  
Vboot=1.2V

Switching frequency setting: (TON pin)  
 $F_{sw} = (V_{in} - 0.5) / (2 * V_{in} * R_{ton} * 3.2p)$   
=400Khz

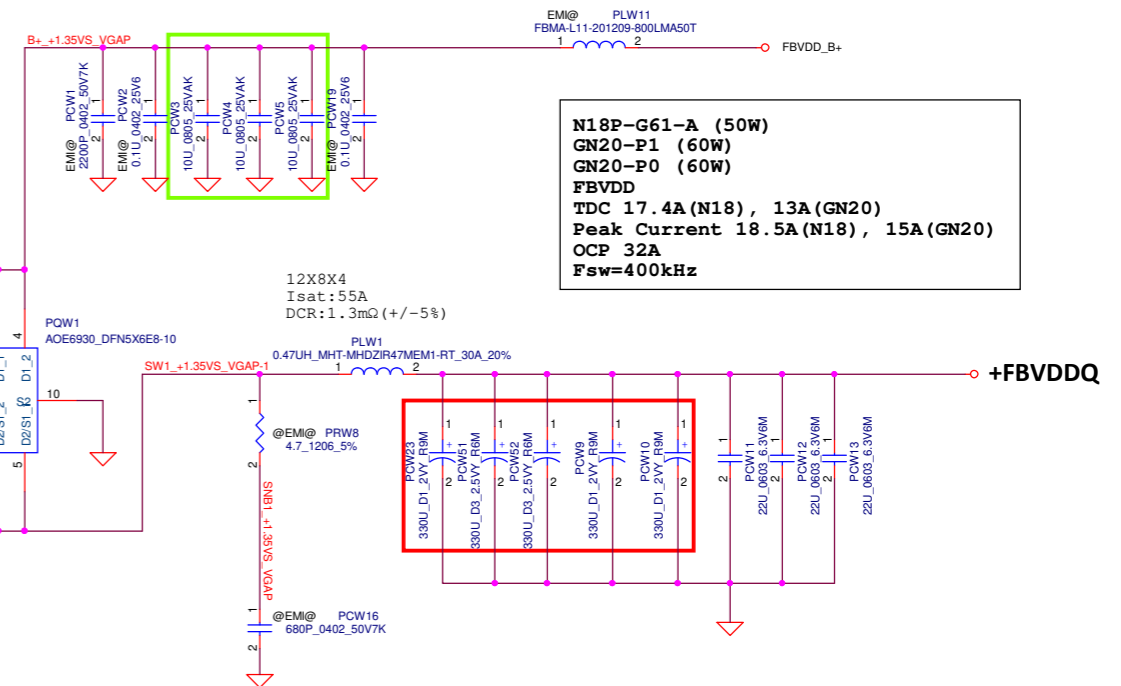
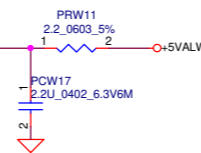


PRW17=36.5K ohm, Rocset for 32A

MOSFET: DFN 5X6E  
H/S Rds (on): 5.2mohm (Typ), 7mohm (Max)  
L/S Rds (on): 0.8mohm (Typ), 1.05mohm (Max)

UG1: +1.35VS\_VGAP  
SW1: +1.35VS\_VGAP

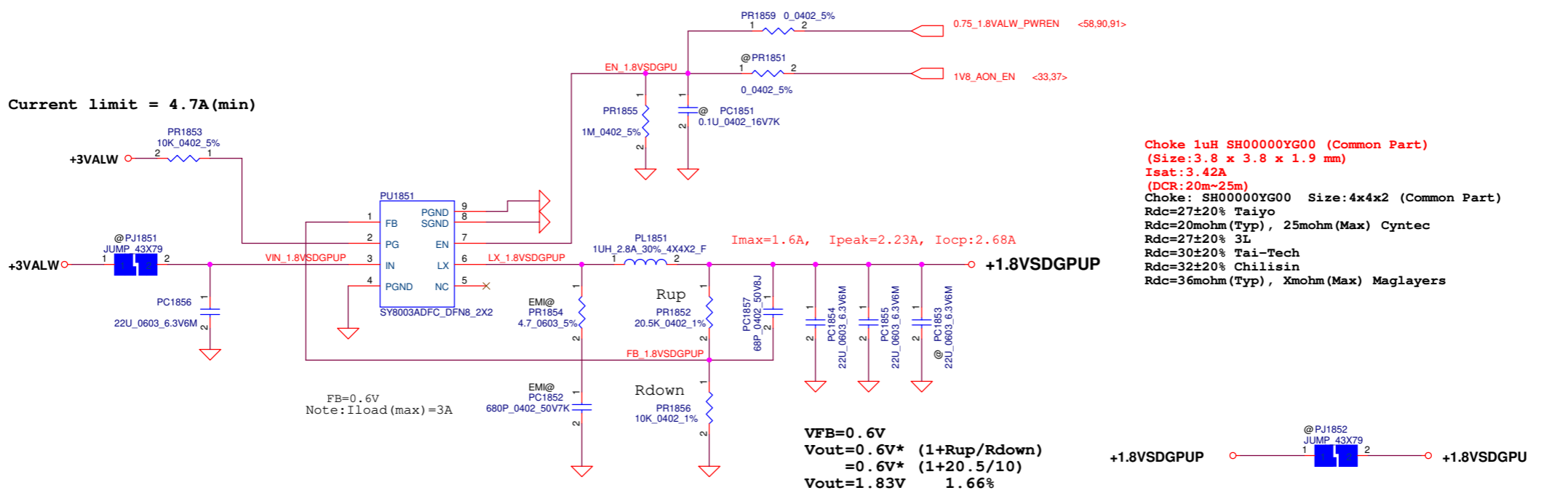
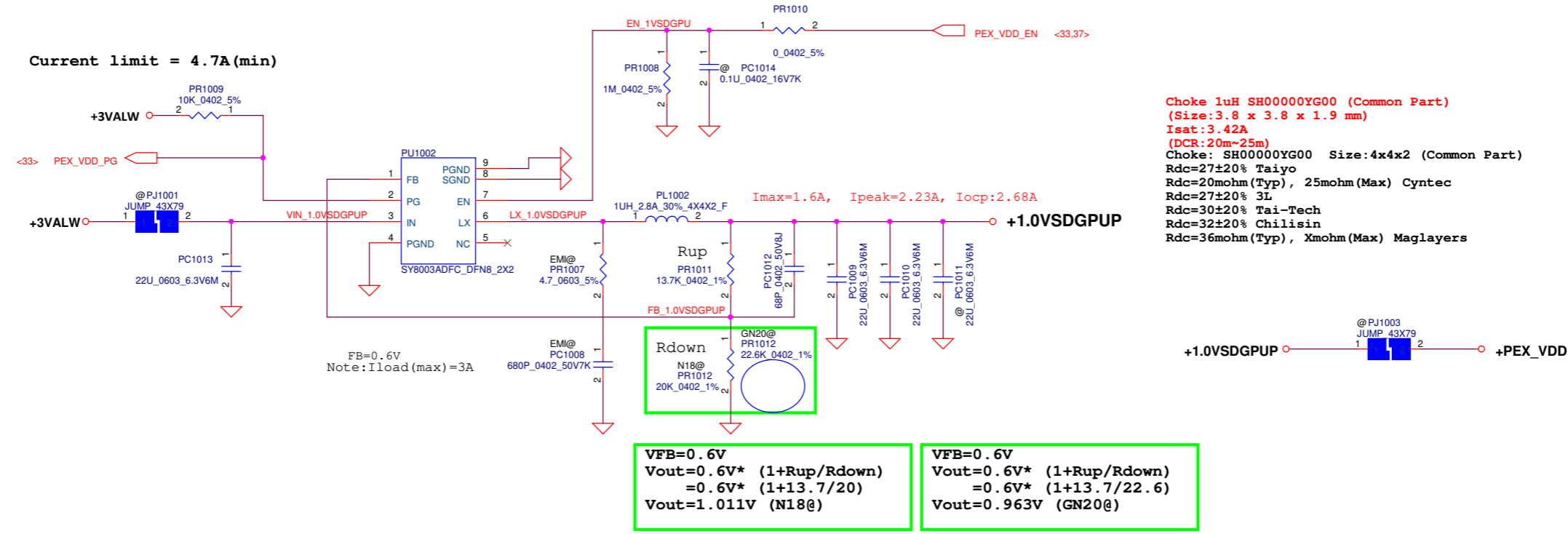
LG1: +1.35VS\_VGAP



**N18P-G61-A (50W)**  
**GN20-P1 (60W)**  
**GN20-P0 (60W)**  
**FBVDD**  
**TDC 17.4A (N18), 13A (GN20)**  
**Peak Current 18.5A (N18), 15A (GN20)**  
**OCP 32A**  
**Fsw=400kHz**

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| Item | Fixed Issue | Reason for change | PG# | Modify List | Date | Phase |
|------|-------------|-------------------|-----|-------------|------|-------|
| 01   |             |                   |     |             |      |       |
| 02   |             |                   |     |             |      |       |
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| 22   |             |                   |     |             |      |       |

| Item | Fixed Issue | Reason for change | PG# | Modify List | Date | Phase |
|------|-------------|-------------------|-----|-------------|------|-------|
| 01   |             |                   |     |             |      |       |
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| Item | Fixed Issue | Reason for change | PG# | Modify List | Date | Phase |
|------|-------------|-------------------|-----|-------------|------|-------|
| 01   |             |                   |     |             |      |       |
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| 20   |             |                   |     |             |      |       |
| 21   |             |                   |     |             |      |       |
| 22   |             |                   |     |             |      |       |

Version Change List (P. I. R. List)

| Item | Change Description  | Rev. |
|------|---|------|
| 1    | 2020/09/28<br>First Release   | 0.1  |
| 2    | 2020/10/20<br>(01) Combine PWR SCH<br>(02) HDMI DATA 0ohm change to R-short<br><br>2020/10/21<br>(01) HDMI DATA choke change to -NPM<br>(02) PCB PN update to DAZ<br>(03) CPU PN update.<br><br>2020/10/22<br>(01) QV2,RV164,RV163 change to @<br><br>2020/11/10<br>(01) YC3 change PN to SJ100012R00 for load BOM<br>(02) CL21,CL22,CV55,CV56 change to 15p (SE071150J80)<br>(03) UV1 add GN20 QS1 PN (SA0000E1W10)<br><br>2020/11/13<br>(01) RC781 unpop, RC782 pop<br><br>2020/11/17<br>(01) RM144 change to pop<br>(02) N18P change PN to SA0000DVM30 | 1.0  |
| 3    | 2020/11/23<br>(01) RH27,RH28,RH29,RH30,RH31,RH32,RC789,RC753,RC754,RC160,RC756,RC755,RV2,RV180,RV51,RW32 change to R-short<br><br>2020/12/01<br>(01) RV240,RV241 add 0ohm with OVRM@<br>(02) RV242 add 0ohm with @<br>(03) RV139 change to GEN2@<br>(04) Update N18P PN to R3 (SA0000DVM50)<br><br>2020/12/22<br>(01) Update BID Table for PCB Rev1A.<br><br>2021/02/03<br>(01) RC818 change to GEN2@, RC819 change to GEN1@  | 1.A  |