

Compal Confidential

Model Name : Charmander\_UMA

Compal Project Name : C5V01 / D7W01

File Name : LA-E891P

Compal Confidential

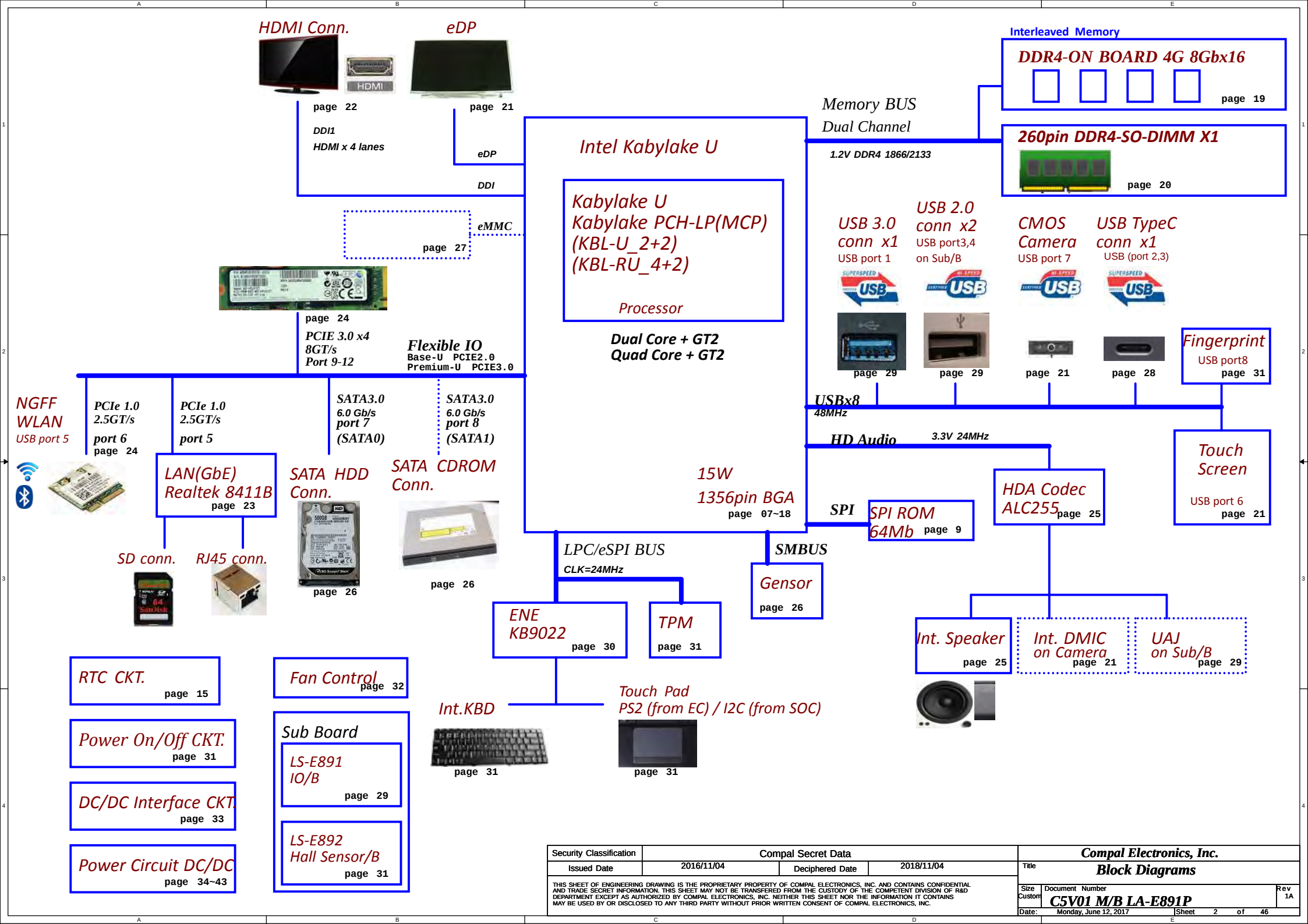
C5V01 MB Schematic Document

LA - E891P

Rev: 1A

2017.06.12

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  |                           |  |                       |  |  |               |        |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|---------------------------------|--|---------------------------|--|-----------------------|--|--|---------------|--------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | <b>Compal Electronics, Inc.</b> |  |                           |  |                       |  |  |               |        |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04         |  | Deciphered Date |  | 2018/11/04                      |  | Title                     |  |                       |  |  |               |        |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  | Size Custom               |  | Document Number       |  |  |               | Rev 1A |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  | <b>C5V01 M/B LA-E891P</b> |  |                       |  |  |               |        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  | Date:                     |  | Monday, June 12, 2017 |  |  | Sheet 1 of 46 |        |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  |                           |  |                       |  |  |               |        |  |



|          |             |                       |                       |                       |             |              |
|----------|-------------|-----------------------|-----------------------|-----------------------|-------------|--------------|
| Vcc      | 3.3V +/- 5% |                       |                       |                       |             |              |
| Ra       | 100K +/- 1% |                       |                       |                       |             |              |
| Board ID | Rb          | V <sub>BI</sub> D min | V <sub>BI</sub> D typ | V <sub>BI</sub> D max | EC AD3      | PCB Revision |
| 0        | 0           | 0 V                   | 0 V                   | 0.300 V               | 0x00 - 0x13 | 0.1(EVT)     |
| 1        | 12K +/- 1%  | 0.347 V               | 0.345 V               | 0.360 V               | 0x14 - 0x1E | 1.0(DVT)     |
| 2        | 15K +/- 1%  | 0.423 V               | 0.430 V               | 0.438 V               | 0x1F - 0x25 | 1A(PVT)      |
| 3        | 20K +/- 1%  | 0.541 V               | 0.550 V               | 0.559 V               | 0x26 - 0x30 | 1A(MP)       |
| 4        | 27K +/- 1%  | 0.691 V               | 0.702 V               | 0.713 V               | 0x31 - 0x3A | D7W01(PVT)   |
| 5        | 33K +/- 1%  | 0.807 V               | 0.819 V               | 0.831 V               | 0x3B - 0x45 | D7W01(MP)    |
| 6        | 43K +/- 1%  | 0.978 V               | 0.992 V               | 1.006 V               | 0x46 - 0x54 |              |
| 7        | 56K +/- 1%  | 1.169 V               | 1.185 V               | 1.200 V               | 0x55 - 0x64 |              |

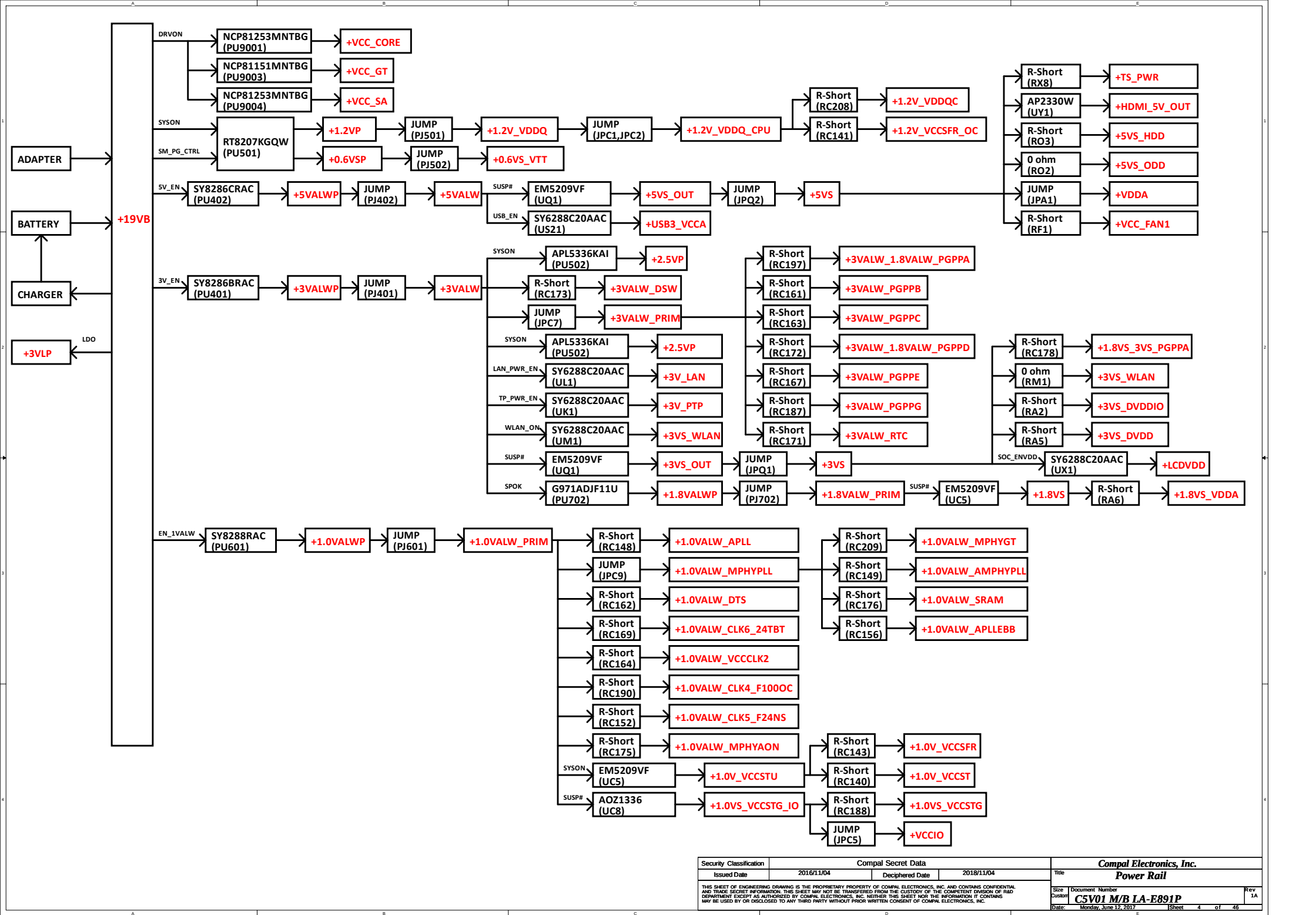
| BOM Option Table        |                | BOM Option Table     |                    |
|-------------------------|----------------|----------------------|--------------------|
| Item                    | BOM Structure  | Item                 | BOM Structure      |
| Unpop                   | @              | MB Stage             | EVT@/DVT@/PVT@/MP@ |
| Connector               | CONN@          | BOM Select           | X76@               |
| Acer BYOC               | BYOC@ / NBYOC@ | Memory Select        | X76M01@ ~ X76M03@  |
| CODEC(ALC255)           | 255@           | Memory Mode          | SDP@ / DDP@        |
| EC Mode Select          | LPC@ / ESPI@   | SATA Redriver Select | X76TI@ / X76PAR@   |
| For Intel CMC           | CMC@           | DAZ PN               | DAZ@               |
| LAN Mode Select         | SWR@ / LDO@    | PCB PN               | PCB@               |
| EMI requirement         | EMI@ / @EMI@   | HDMI LOGO            | 45@                |
| ESD requirement         | ESD@ / @ESD@   |                      |                    |
| RF requirement          | @RF@           |                      |                    |
| CPU Selection           | U42@/U22@      |                      |                    |
| TPM                     | TPM@           |                      |                    |
| Finger Print            | FP@            |                      |                    |
| UMA or DGPU             | UMA@/VGA@      |                      |                    |
| ODD Support             | ODD@           |                      |                    |
| G Sensor                | BA@            | CPU Code             | QKIW@              |
| For over 3 cell battery | 3S@            |                      |                    |

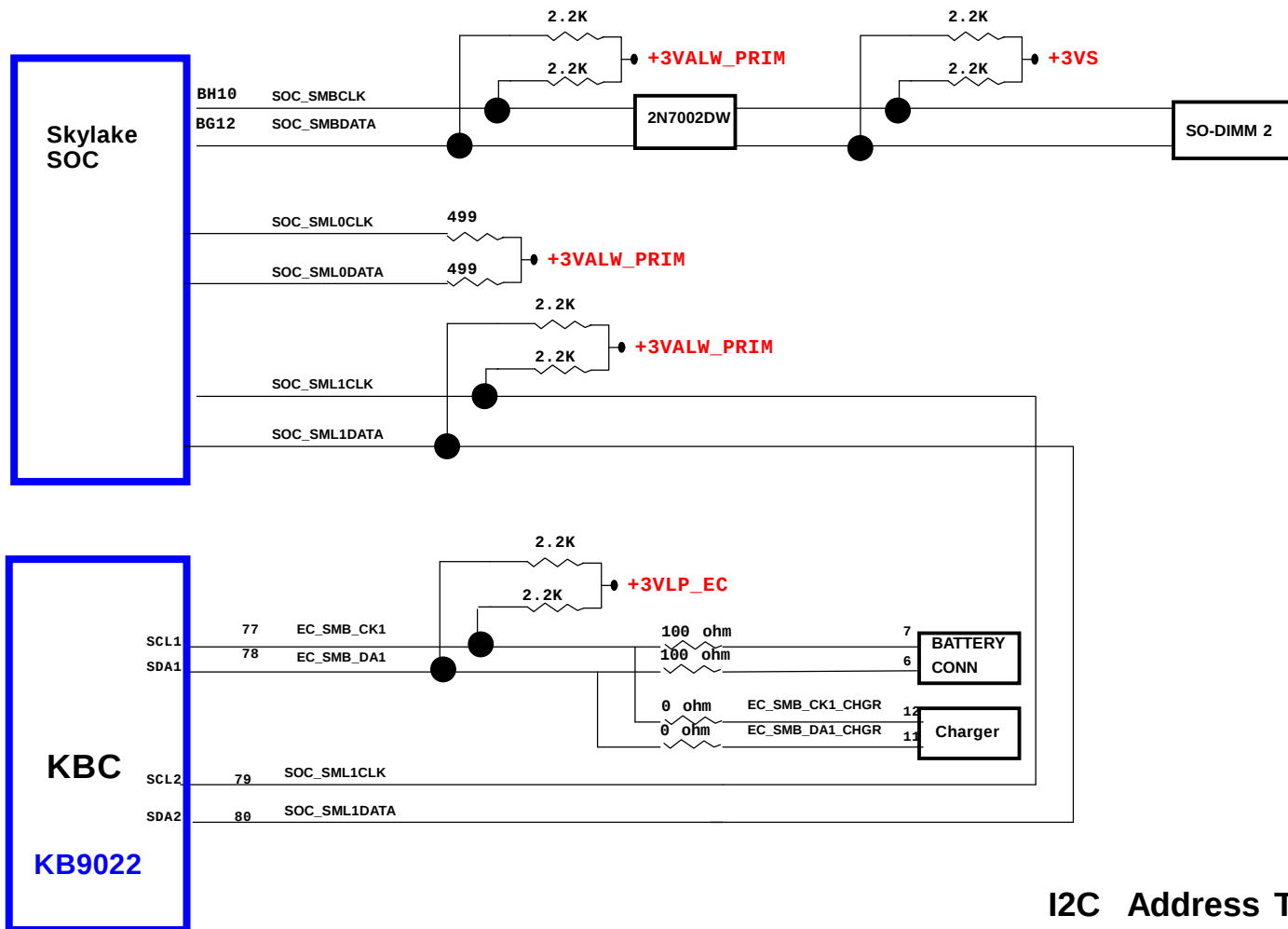
| A43 Level   | Description |    |       |       |                      | BOM Structure                                                                                       |
|-------------|-------------|----|-------|-------|----------------------|-----------------------------------------------------------------------------------------------------|
| 431A72B0L01 | SMT         | MB | AE891 | C5V01 | UMA I36006U HDMI     | SR2UW@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@             |
| 431A72B0L02 | SMT         | MB | AE891 | C5V01 | UMA I3 QLDP1.4 HDMI  | QLDP@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L03 | SMT         | MB | AE891 | C5V01 | UMA I5 QLDM1.4 HDMI  | QLDM@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L04 | SMT         | MB | AE891 | C5V01 | UMA I7 QLDN1.4 HDMI  | QLDN@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L05 | SMT         | MB | AE891 | C5V01 | UMA I3 QLYK2.2 HDMI  | QLYK@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L06 | SMT         | MB | AE891 | C5V01 | UMA I3-7100 1.4 HDMI | I37100@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@            |
| 431A72B0L07 | SMT         | MB | AE891 | C5V01 | UMA I5 QLYJ2.2 HDMI  | QLYJ@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L08 | SMT         | MB | AE891 | C5V01 | UMA I5-7200 1.4 HDMI | I57200@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@            |
| 431A72B0L09 | SMT         | MB | AE891 | C5V01 | UMA I7 QLYH2.2 HDMI  | QLYH@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L10 | SMT         | MB | AE891 | C5V01 | UMA I7 QLYH2.2 HDMI  | I77500@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@            |
| 431A72B0L11 | SMT         | MB | AE891 | C5V01 | UMA I3-7100 2.2 HDMI | I3710022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@          |
| 431A72B0L12 | SMT         | MB | AE891 | C5V01 | UMA I5-7200 2.2 HDMI | I5720022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@          |
| 431A72B0L13 | SMT         | MB | AE891 | C5V01 | UMA I7-7500 2.2 HDMI | I7750022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@          |
| 431A72B0L14 | SMT         | MB | AE891 | C5V01 | UMA I3-7100 U42 HDMI | I3710022@/CMC@/LPC@/UMA@/U42@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@          |
| 431A72B0L15 | SMT         | MB | AE891 | C5V01 | UMA I5 QN5D U42 HDMI | QN5D@/CMC@/LPC@/UMA@/U42@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L16 | SMT         | MB | AE891 | C5V01 | UMA I7 QN5C U42 HDMI | QN5C@/CMC@/LPC@/UMA@/U42@/3S@/LD0@/NBYOC@/255@/CHG@/MP@/X4E@/X76M@/DAZ@/X76PAR@/C5V01@              |
| 431A72B0L51 | SMT         | MB | AE891 | C5V01 | UMA I7 QN5C U42 HDMI | SR2UW@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@/D0 |
| 431A72B0L52 | SMT         | MB | AE891 | D7W01 | UMA I3-6006 HDMI     | I3710022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@ |
| 431A72B0L53 | SMT         | MB | AE891 | D7W01 | UMA I5-7200 HDMI     | I5720022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@ |
| 431A72B0L54 | SMT         | MB | AE891 | D7W01 | UMA I7-7500 HDMI     | I7750022@/CMC@/LPC@/UMA@/U22@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@ |
| 431A72B0L55 | SMT         | MB | AE891 | D7W01 | UMA QNEF HDMI        | U4215@/CMC@/LPC@/UMA@/U42@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@/D0 |
| 431A72B0L56 | SMT         | MB | AE891 | D7W01 | UMA QNBF HDMI        | U4217@/CMC@/LPC@/UMA@/U42@/3S@/LD0@/NBYOC@/255@/CHG@/EA17PVT@/X4E@/X76M@/EA17DAZ@/X76PAR@/D7W01@/D0 |

| SIGNAL<br>STATE      | SLP_S3# | SLP_S4# | SLP_S5# | +VALW | +V  | +VS | CLock |
|----------------------|---------|---------|---------|-------|-----|-----|-------|
| S0 (Full ON)         | HIGH    | HIGH    | HIGH    | ON    | ON  | ON  | ON    |
| S3 (Suspend to RAM)  | LOW     | HIGH    | HIGH    | ON    | ON  | OFF | OFF   |
| S4 (Suspend to Disk) | LOW     | LOW     | HIGH    | ON    | OFF | OFF | OFF   |
| S5 (Soft OFF)        | LOW     | LOW     | LOW     | ON    | OFF | OFF | OFF   |

| Power Plane   | Description                                    | S0  | S3  | S4/S5 |
|---------------|------------------------------------------------|-----|-----|-------|
| +19V_VIN      | Adapter power supply                           | N/A | N/A | N/A   |
| +17.4V_BATT   | Battery power supply                           | N/A | N/A | N/A   |
| +19VB         | AC or battery power rail for power circuit.    | N/A | N/A | N/A   |
| +VCC_CORE     | Processor IA Cores Power Rail                  | ON  | OFF | OFF   |
| +VCC_GT       | Processor Graphics Power Rails                 | ON  | OFF | OFF   |
| +VCC_SA       | System Agent power rail                        | ON  | OFF | OFF   |
| +0.6VS_VTT    | DDR +0.6VS power rail for DDR terminator .     | ON  | OFF | OFF   |
| +1.0VALW_PRIM | +1.0V Always power rail                        | ON  | ON  | ON*1  |
| +1.0V_VCCSTU  | Sustain voltage for processor in Standby modes | ON  | ON  | OFF   |
| +VCCIO        | CPU IO power rail                              | ON  | OFF | OFF   |
| +1.0VS_VCCSTG | +1.0VALW_PRIM Gated version of VCCST           | ON  | OFF | OFF   |
| +1.2V_VDDQ    | DDR4 +1.2V Power Rail                          | ON  | ON  | OFF   |
| +1.8VALW_PRIM | +1.8V Always power rail                        | ON  | ON  | ON*1  |
| +1.8VS        | System +1.8V power rail                        | ON  | OFF | OFF   |
| +3VLP         | +19VB to +3VLP power rail for suspend power    | ON  | ON  | ON    |
| +3VALW        | System +3VALW always on power rail             | ON  | ON  | ON*1  |
| +3VS          | System +3V power rail                          | ON  | OFF | OFF   |
| +5VALW        | +5V Always power rail                          | ON  | ON  | ON    |
| +5VS          | System +5V power rail                          | ON  | OFF | OFF   |
| +RTCVCC       | RTC Battery Power                              | ON  | ON  | ON    |
|               |                                                |     |     |       |
|               |                                                |     |     |       |
|               |                                                |     |     |       |
|               |                                                |     |     |       |

Note : ON\*1 means power plane is ON only when WOL enable and RTC wake at BIOS setting, otherwise it is OFF.



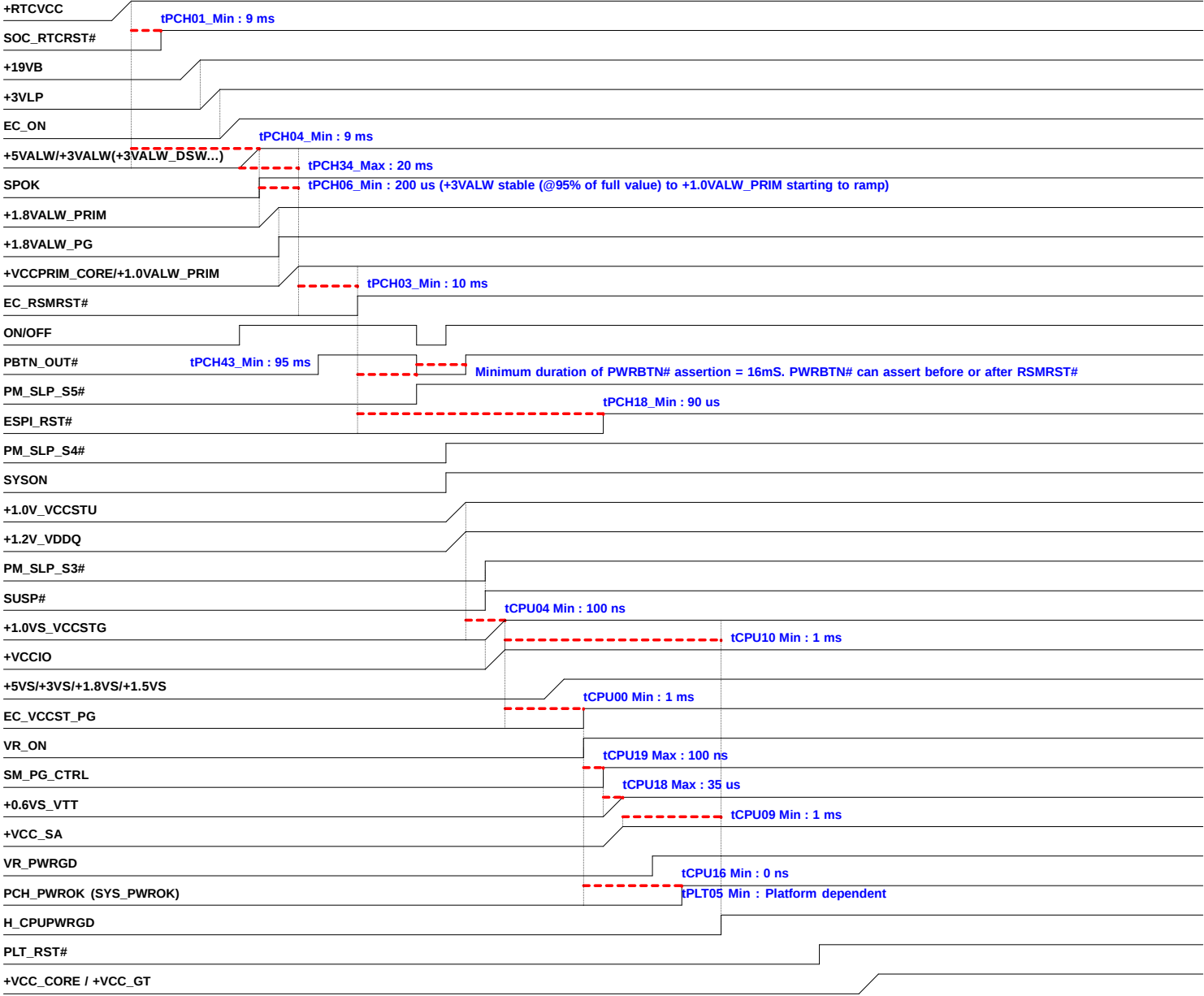


Need check

## I2C Address Table

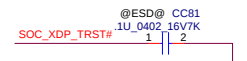
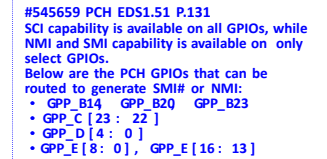
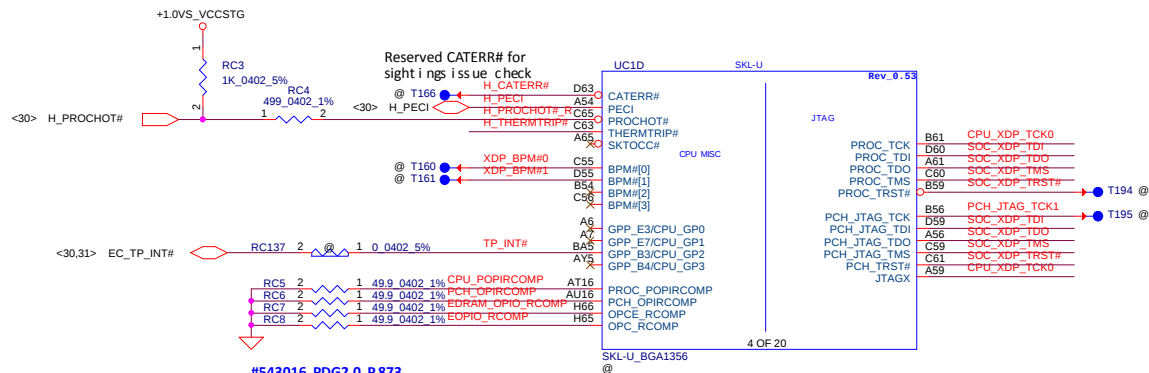
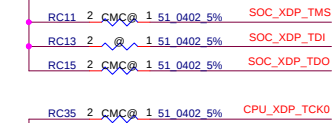
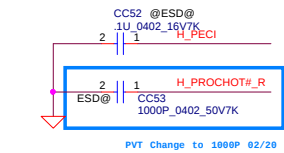
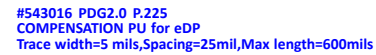
| BUS                     | Device                 | Address(7 bit) | Address(8bit) |      |
|-------------------------|------------------------|----------------|---------------|------|
|                         |                        |                | Write         | Read |
| I2C_0 (+3VS)            | Reserved (Touch Panel) |                |               |      |
| I2C_1 (+3VS)            | TM-P2969-001 (TP)      | 0x2C           |               |      |
|                         | SB8787-1200 (TP-ELAN)  | 0x15           |               |      |
| SOC_SMBCLK +3VS         | DIMM2                  | 0xA4           |               |      |
|                         |                        |                |               |      |
| SOC_SML1CLK +3VALW_PRIM | PCH-LP (SOC)           | 0x90           |               |      |
|                         |                        |                |               |      |
| EC_SMB_CK1 +3VLP        | BQ24780 (Charger IC)   | 0x12           |               |      |
|                         | BATTERY PACK           | 0x16           |               |      |

PWR Sequence\_SKL-U2+2\_DDR3L\_Value\_NON CS



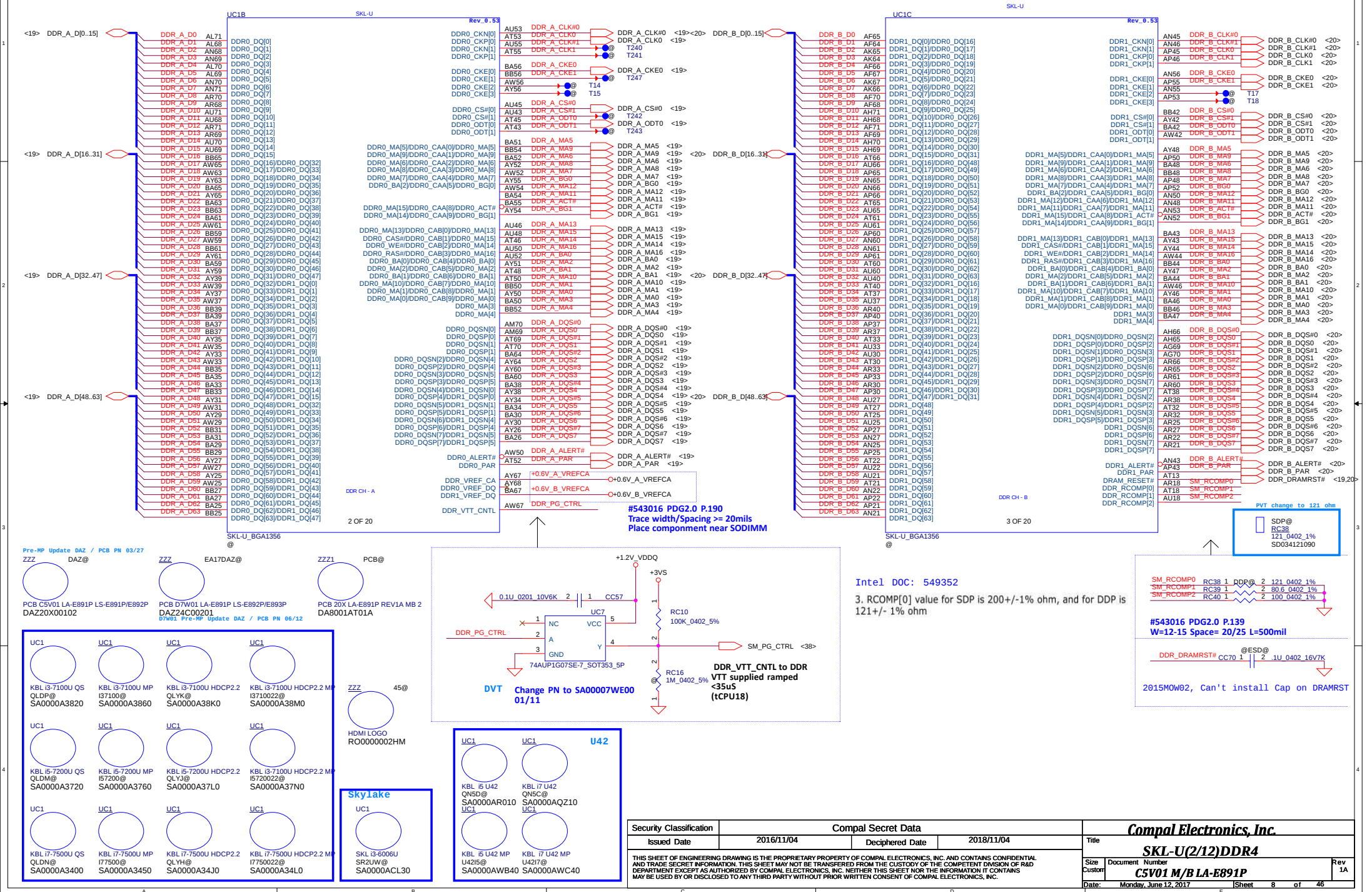
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                    |            |                             |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|------------|-----------------------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | Compal Secret Data |            | Compal Electronics, Inc.    |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04         | Deciphered Date    | 2018/11/04 | Title                       |  |
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| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Document           | Number             | Rev        | 1A                          |  |
| Custom                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C5V01 M/B LA-E891P |                    |            | Date: Monday, June 12, 2017 |  |
| Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | 6                  | of         | 46                          |  |

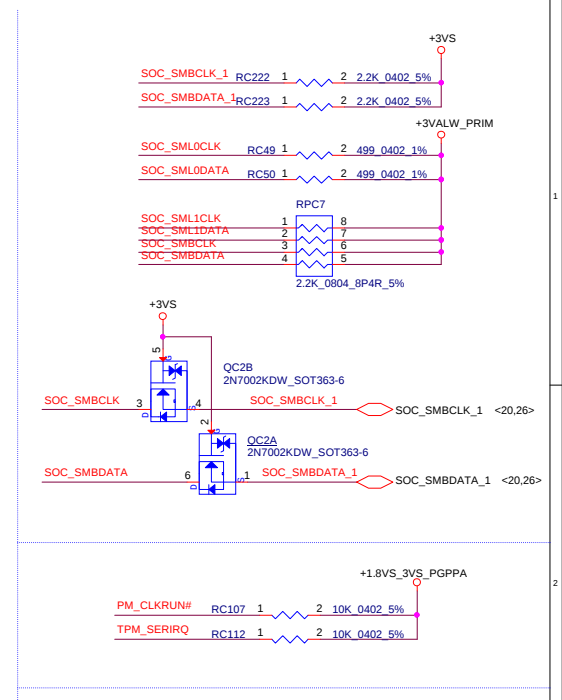
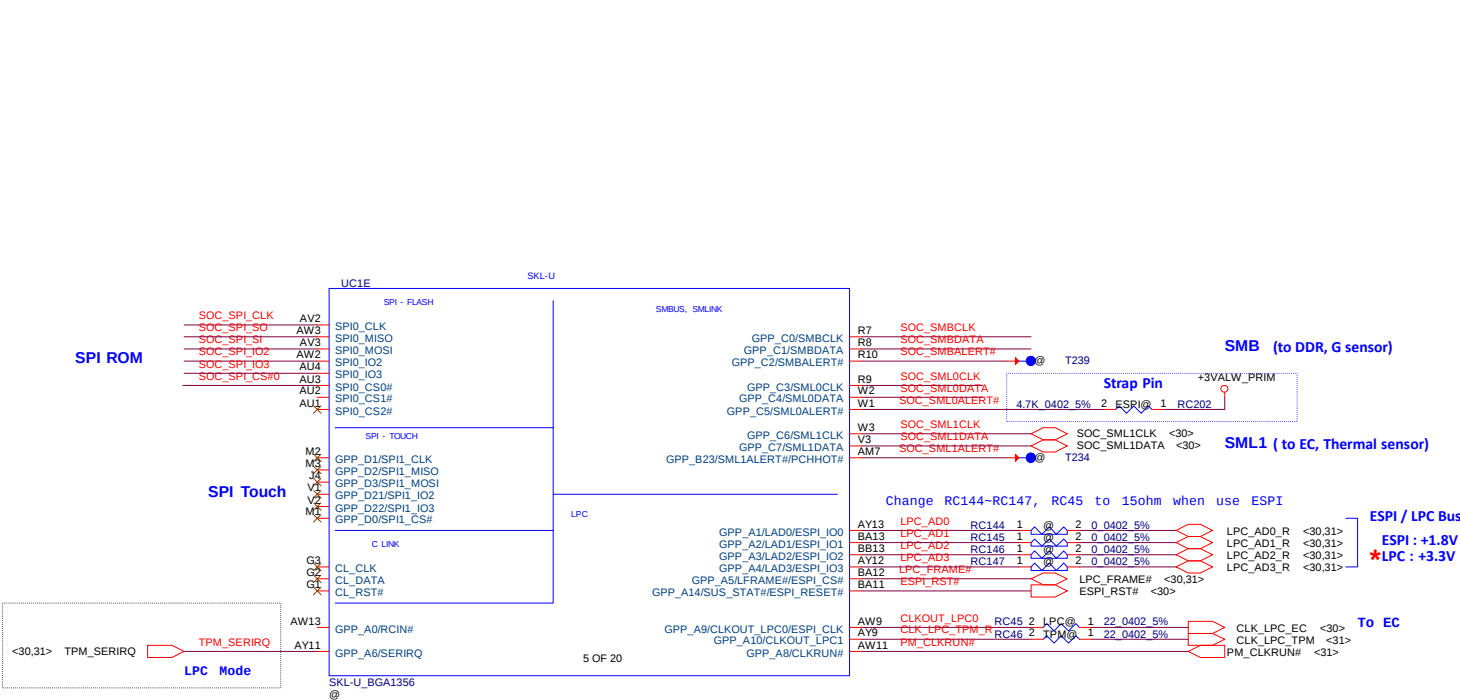
DDPB\_CTRLDATA  
DDPC\_CTRLDATA  
Display Port B/C Detected  
NC =Port is not detected.  
PU =Port is detected.



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                                       |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------------------------------------------------------------|---------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>SKL-U(1/12)DDI,MSIC,XDP,EDP</b> |         |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Title                                                                 |         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Custom<br><b>C5V01 M/B LA-E891P</b>                                   | 1A      |
| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                    |            | Sheet                                                                 | 7 of 46 |

## Interleaved Memory



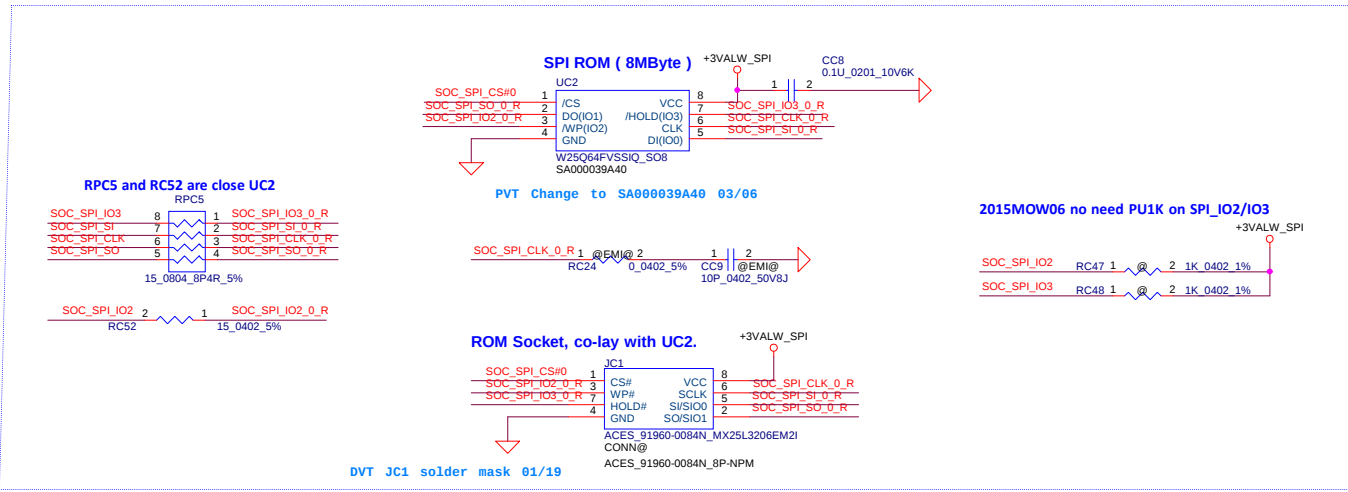


**SMLOALERT# / GPP\_C5 (Internal Pull Down):**  
(Sampled: Rising edge of RSMRST# )

**eSPI or LPC**  
\* 0 = LPC is selected for EC --> For KB9022/9032 Use  
1 = eSPI is selected for EC --> For KB9032 Only.

**SMBALERT# / GPP\_C2 (Internal Pull Down):**  
(Sampled: Rising edge of RSMRST# )

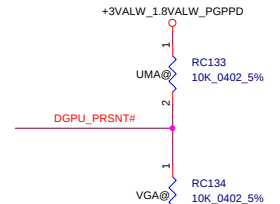
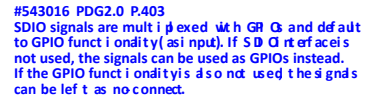
**TLS Confidentiality**  
\* 0 = Disable Intel ME Crypto Transport Layer Security (TLS) cipher suite (no confidentiality)  
1 = Enable Intel ME Crypto (TLS) (with confidentiality).  
Must be pulled up to support Intel AMT with TLS and Intel SBA (Small Business Advantage) with TLS.



<25> HDA\_SDINO  HDA\_SDINO  
 <25> HDA\_BIT\_CLK\_R  1 8 HDA\_BIT\_CLK  
 <25> HDA\_SYNC\_R  2 7 HDA\_SYNC  
 <25> HDA\_SDOUT\_R  3 6 HDA\_SDOUT  
 <25> HDA\_RST#\_R  4 5 HDA\_RST#

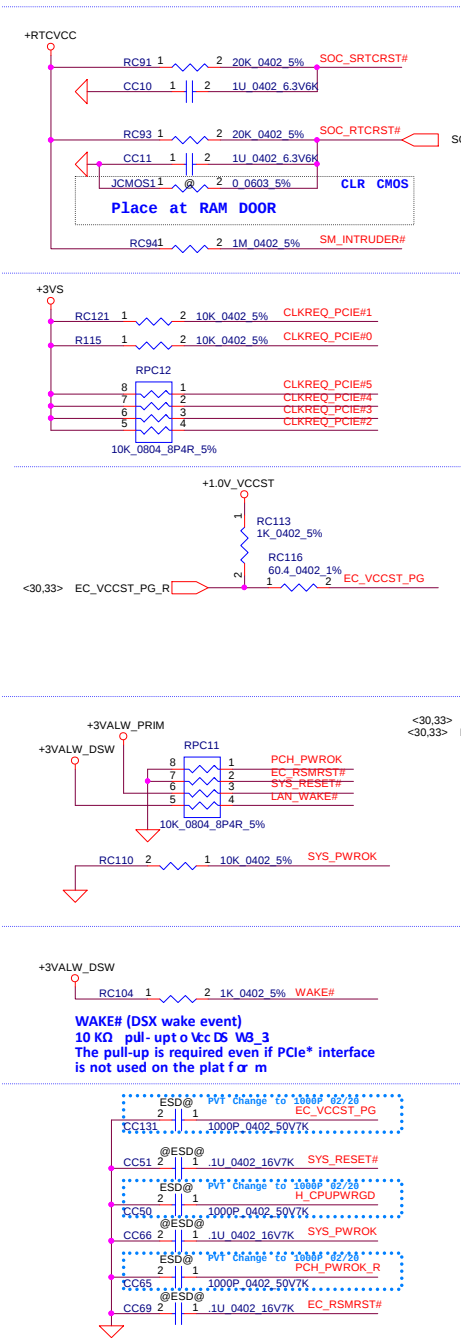
**SPKR / GPP\_B14 (Internal Pull Down):**  
(Sampled: Rising edge of PCH\_PWROK)

- Intel HD Audio link capabilities
  - > Two SDI signals to support two external codecs.
  - > Drivers variable frequency (5MHz to 24MHz) BCLK to support:
    - SDO double pumped up to 48 Mb/s
    - SDI's single pumped up to 24 Mb/s
  - > Provides cadence for 44.1 kHz based sample rate output.
  - > Support 1.5V, 1.8V, and 3.3V modes.



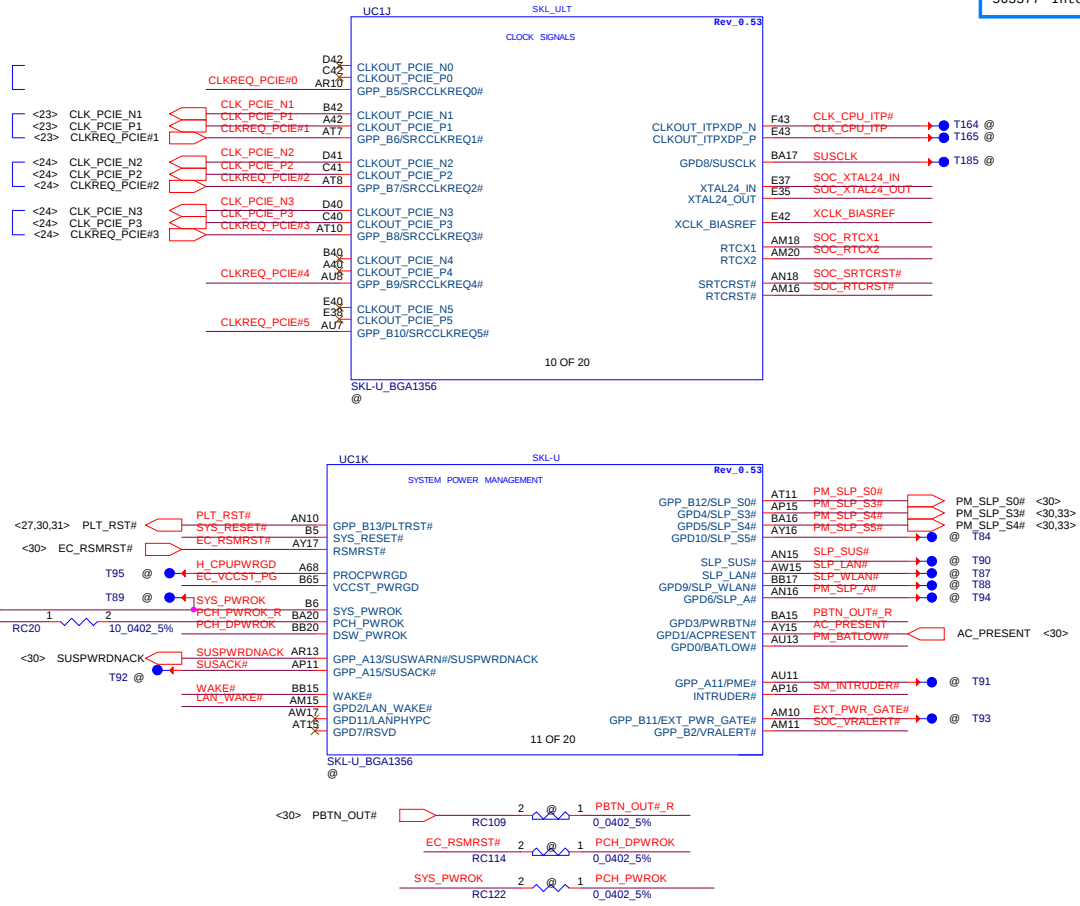
|                    |                               |
|--------------------|-------------------------------|
|                    | <b>GPI067</b><br>DGPU_PRSENT# |
| <b>DIS,Optimus</b> | <b>0</b>                      |
| <b>UMA</b>         | <b>1</b>                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                    |            |                                                                         |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-------------------------------------------------------------------------|----------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                              |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>SKL-U(4/12)HDA,EMMC,SDIO,CSI2</b> |          |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2016/11/04 | Deciphered Date    | 2018/11/04 | Title                                                                   |          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                    |            | Custom                                                                  | 1A       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |            |                    |            | Document Number<br><b>CSV01 M/B LA-E891P</b>                            |          |
| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                    |            | Sheet                                                                   | 10 of 46 |

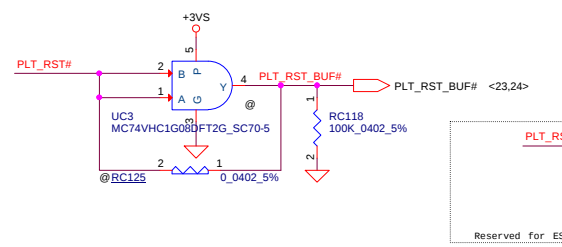


#543016 PDG2.0 P.599  
PROCUPWRGD is used only for power sequence debug and is not required to be connected to anything on the plat f or m

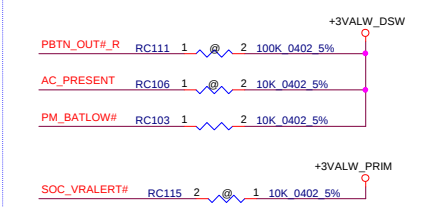
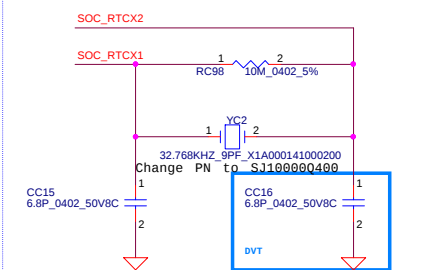
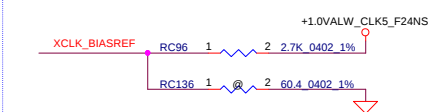
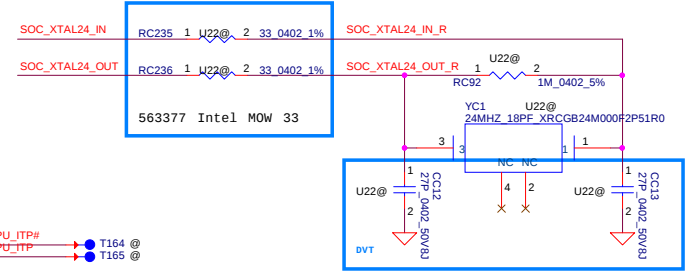
GLAN  
WLAN



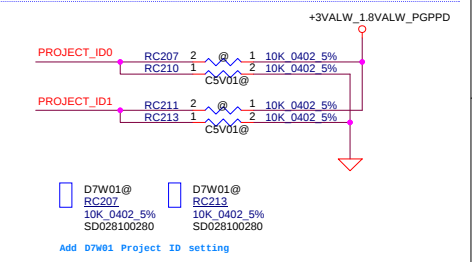
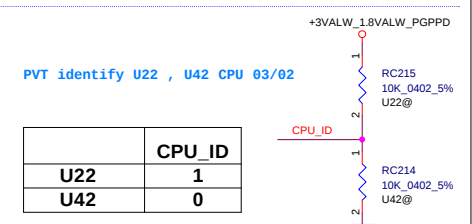
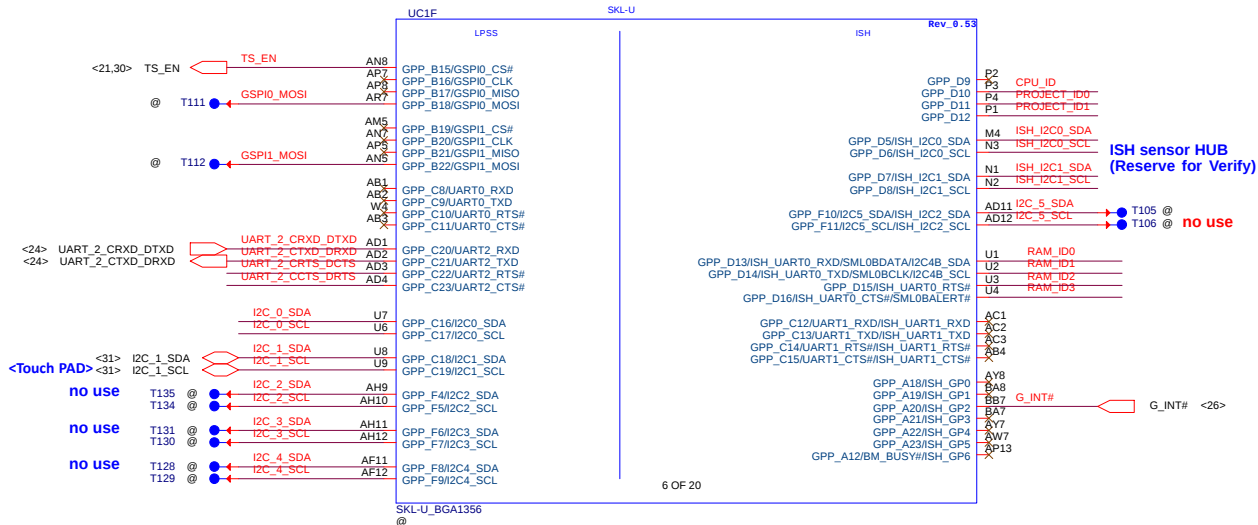
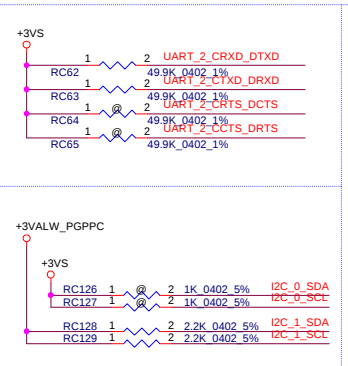
### PCH PLTRST Buffer



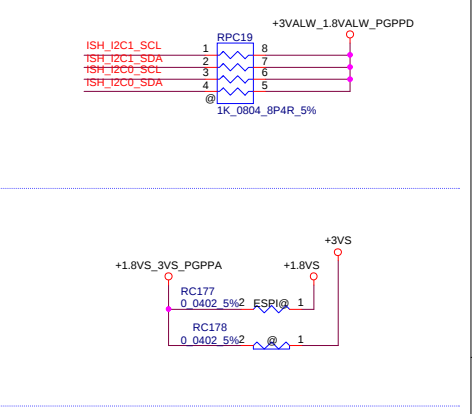
Pre-MP change to 33 ohm 03/28



| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  | Compal Secret Data |  |  |  | Title           |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--------------------|--|--|--|-----------------|--|--|--|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  | 2016/11/04         |  |  |  | Deciphered Date |  |  |  |
| 2018/11/04                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |  |  | 2018/11/04         |  |  |  | Document Number |  |  |  |
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| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  | Sheet 11 of 46     |  |  |  |                 |  |  |  |



| Project ID | Project_ID1<br>GPP_D12 | Project_ID0<br>GPP_D11 |
|------------|------------------------|------------------------|
| * C5V01    | 0                      | 0                      |
| D7W01      | 0                      | 1                      |
| Reserved   | 1                      | 0                      |
| Reserved   | 1                      | 1                      |



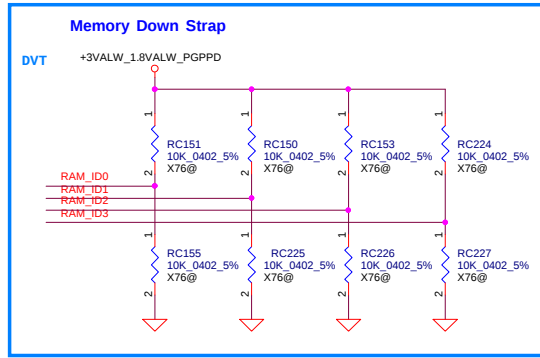
**Functional Strap Definitions**

**GSPI0\_MOSI /GPP\_B18 (Internal Pull Down):**  
(Rising edge of PCH\_PWROK)  
No Reboot

\*0 = Disable No Reboot mode. --> AAX05 Use  
1 = Enable No Reboot Mode. (PCH will disable the TCO Timer system reboot feature). This function is useful when running ITP/XDP.

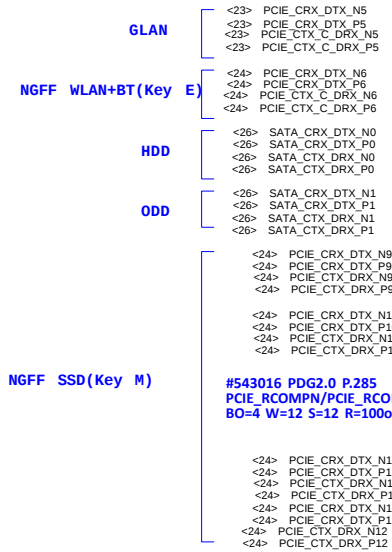
**GSPI1\_MOSI / GPP\_B22 (Internal Pull Down):**  
(Rising edge of PCH\_PWROK)

**Boot BIOS Strap Bit**  
\*0 = SPI Mode --> AAX05 Use  
1 = LPC Mode

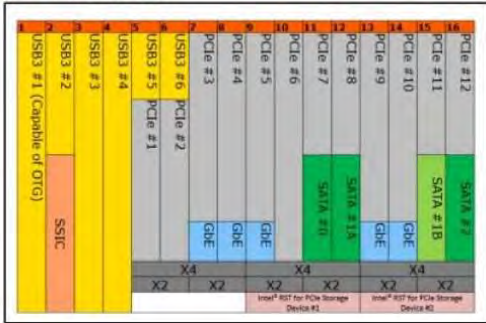


- ZZZ Hynix4GB X76M01@ X76731BOL01
- ZZZ Samsung4GB X76M02@ X76731BOL02
- ZZZ Micron4GB X76M03@ X76731BOL03

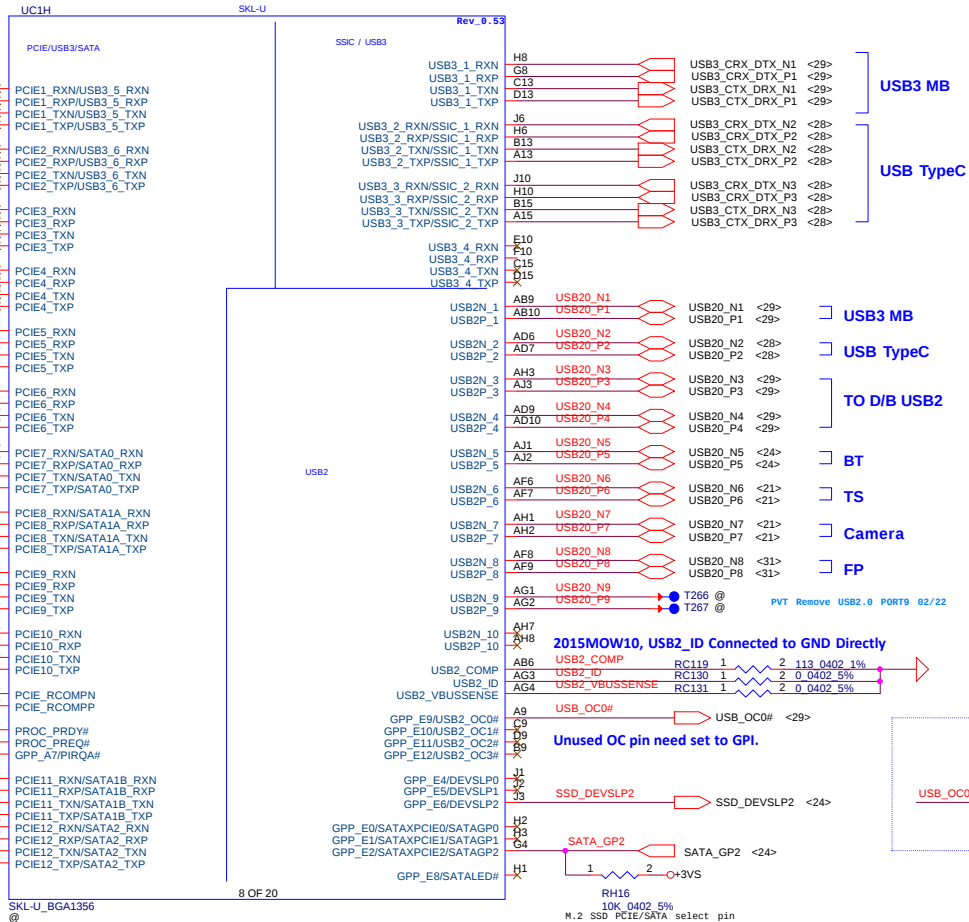
|                    | RAM_ID3 | RAM_ID2 | *RAM_ID1 | *RAM_ID0 | PartNumber - Description                                     |
|--------------------|---------|---------|----------|----------|--------------------------------------------------------------|
| Hynix 4Gb          | 0       | 0       | 0        | 0        | SA0000A1H20 (\$ IC D4 512M16 H5AN08G6NAFR-UHC FBGA ABOI)     |
| Micron 4Gb         | 0       | 0       | 0        | 1        | SA00009V220 (\$ IC D4 512M16 MT40A512M16Y-083E-B ABOI)       |
| Samsung 4Gb        | 0       | 0       | 1        | 0        | SA00009U420 (\$ IC D4 512M16 K4A8G165WB-BCRC FBGA 96P ABO I) |
| No on board memory | 1       | 1       | 1        | 1        |                                                              |



HSIO Multiplexing on PCH-U



| PCH-LP Details  |         | PCie* Controller #1 |     |     |     | PCie* Controller #2 |     |     |     | PCie* Controller #3 |      |      |      |
|-----------------|---------|---------------------|-----|-----|-----|---------------------|-----|-----|-----|---------------------|------|------|------|
| Flex I/O Lane # |         | 5                   | 6   | 7   | 8   | 9                   | 10  | 11  | 12  | 13                  | 14   | 15   | 16   |
| PCie* Lane #    |         | 1                   | 2   | 3   | 4   | 5                   | 6   | 7   | 8   | 9                   | 10   | 11   | 12   |
| Base-U          | 1x4     | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 1x2+1x2 | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 2x1+1x2 | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 4x1     | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
| Premium-U       | 1x4     | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 2x2     | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 1x2+1x2 | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |
|                 | 2x1+1x2 | RP1                 | RP2 | RP3 | RP4 | RP5                 | RP6 | RP7 | RP8 | RP9                 | RP10 | RP11 | RP12 |



| GPIO     | DEVICE CONTROL |
|----------|----------------|
| USB_OC0# | USB2 Port 1    |
| USB_OC1# | NA             |
| USB_OC2# | NA             |
| USB_OC3# | NA             |
| DEVSLP0  | NA             |
| DEVSLP1  | NA             |
| DEVSLP2  | NA             |
| SATA_GP0 | NA             |
| SATA_GP1 | NA             |
| SATA_GP2 | NA             |

#### DEVSLP[2:0] Implementation

DEVSLP is a host-controlled hardware signal which enables a SATA host and device to enter an ultra-low interface power state, including the possibility to completely power down host and device PHYs.

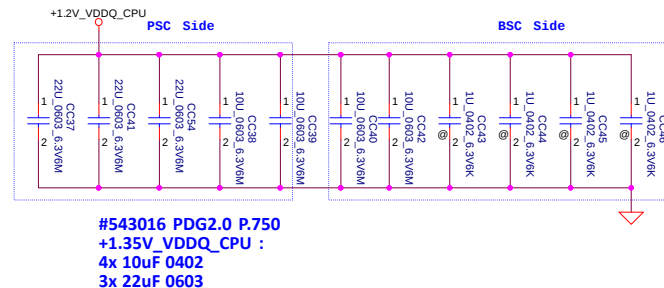
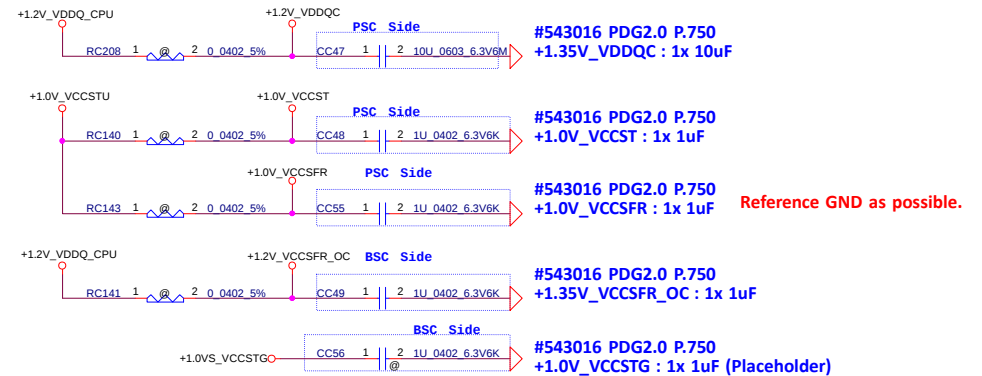
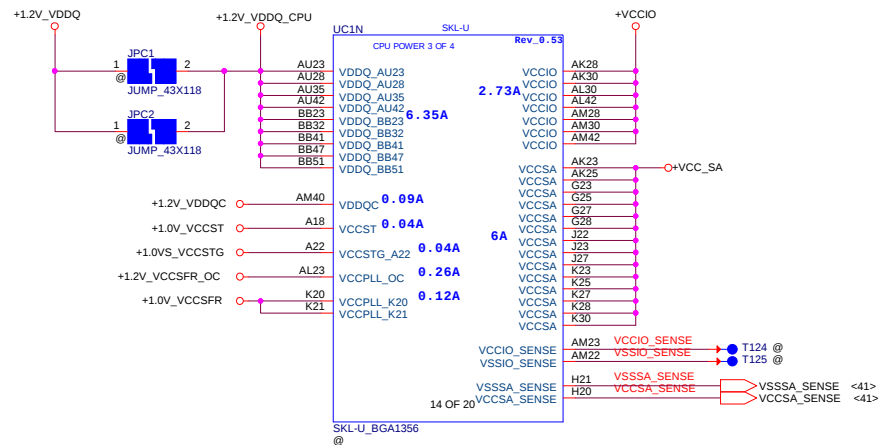
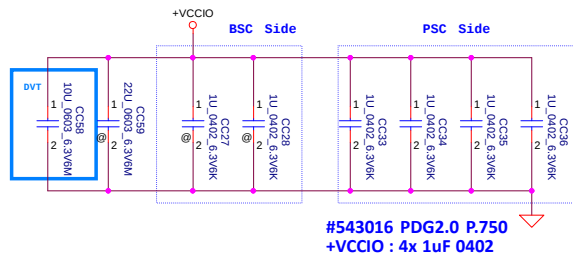
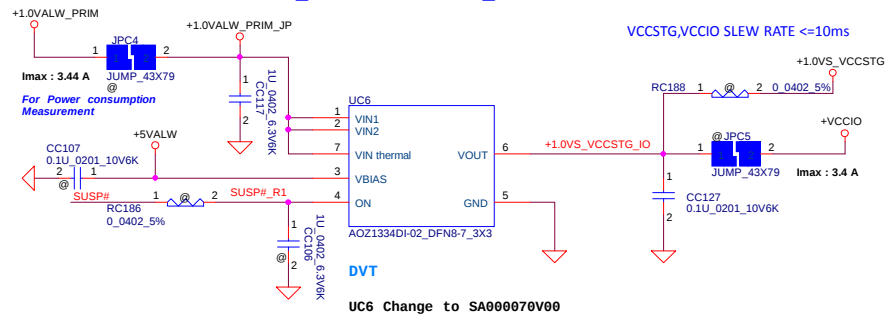
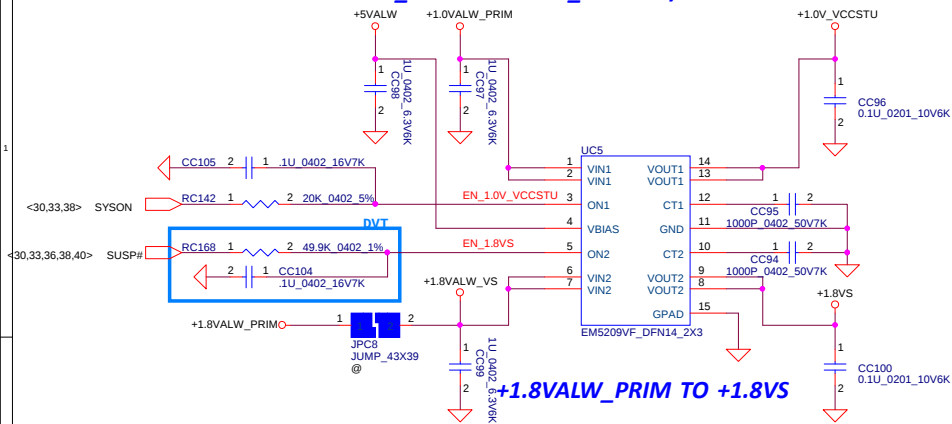
The processor provides three SATA DEVSLP signals, DEVSLP[2:0] for SKL-U.

- When high DEVSLP requests the SATA device to enter into the DEVSLP power state
- When low DEVSLP requests the SATA device to exit from the DEVSLP power state and transition to active state.

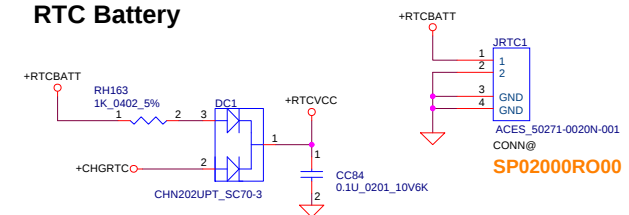
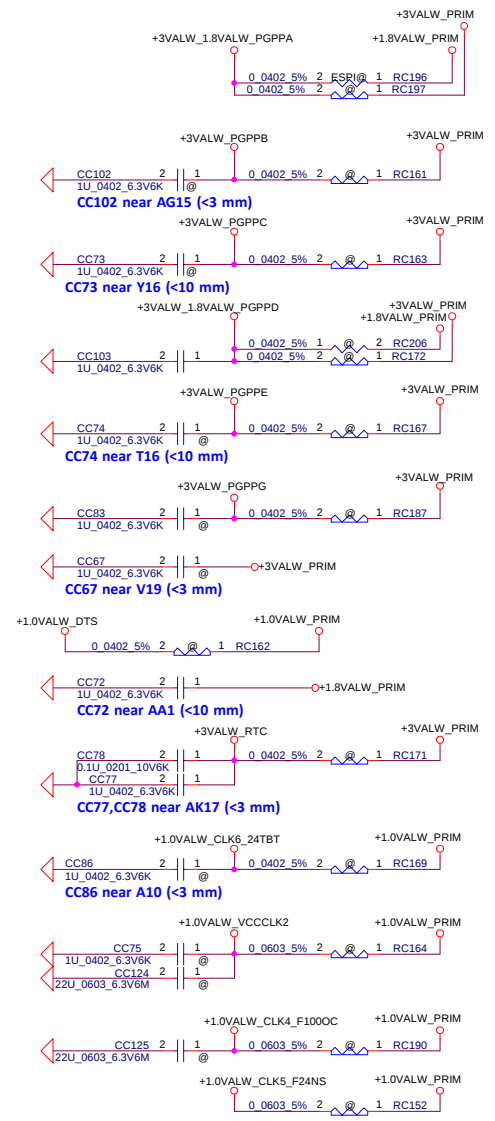
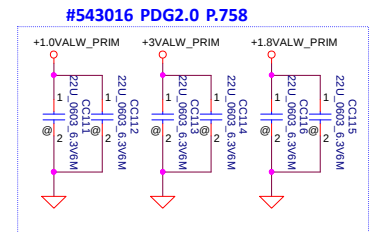
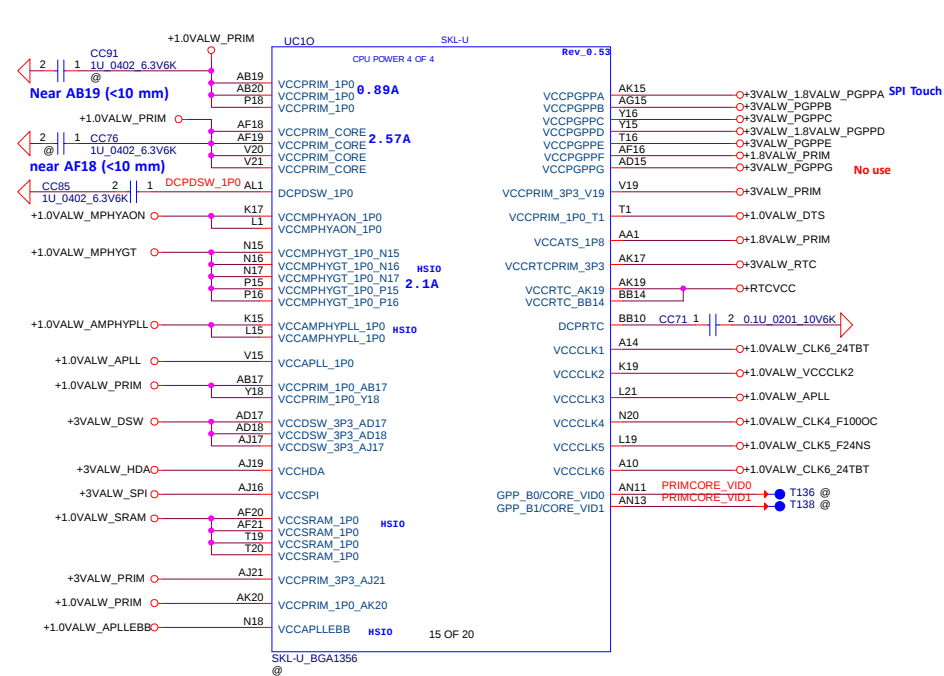
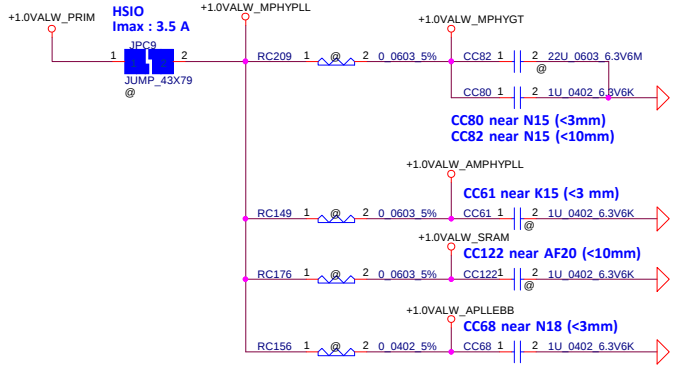
#### SATA General Purpose (SATAGP[2:0]) Signals

- The processor provides three SATA general purpose input signals SATAGP[2:0] for SKL-U. These signals can be configured as interlock switch inputs corresponding to a given SATA port.
- When used as an interlock switch status indicator on this signal should be driven to 0 to indicate that the switch is closed and to a 1 to indicate that the switch is open.
- If mechanical presence switches will not be used on the platform SATAGP[2:0] signals can be configured as GPP\_E[2:0] GPIOs signals.

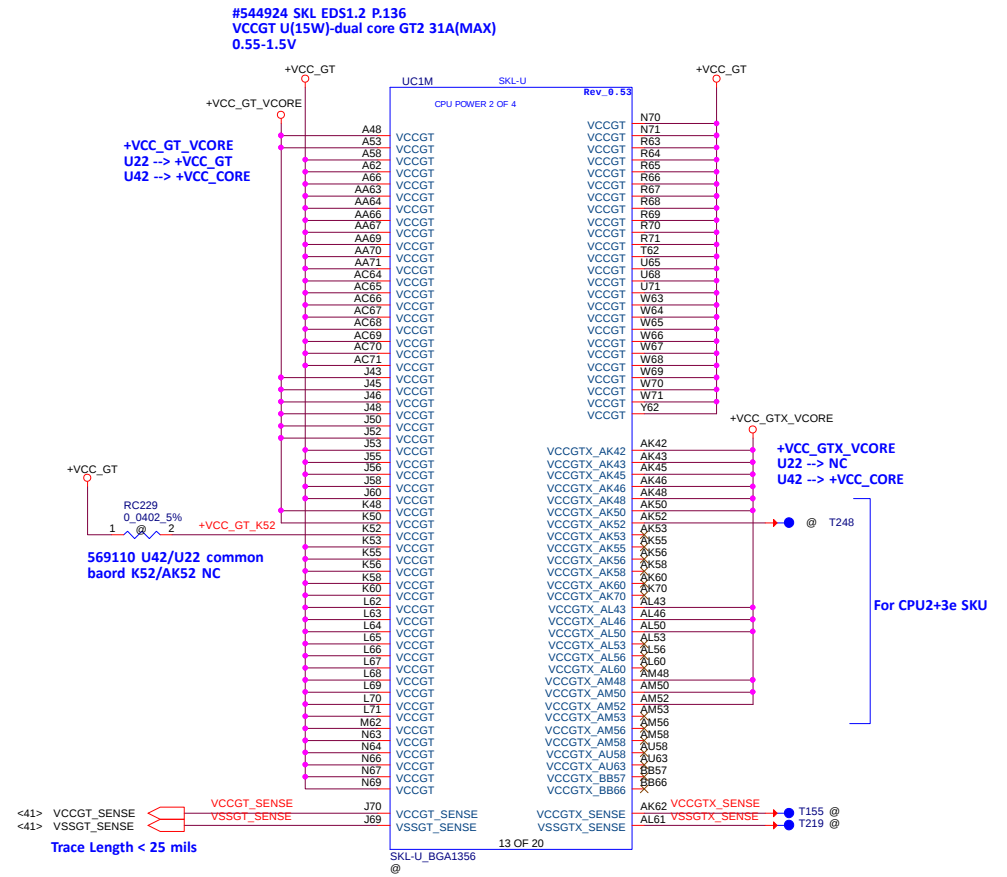
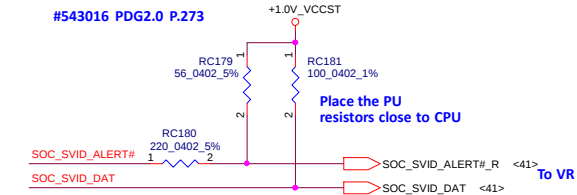
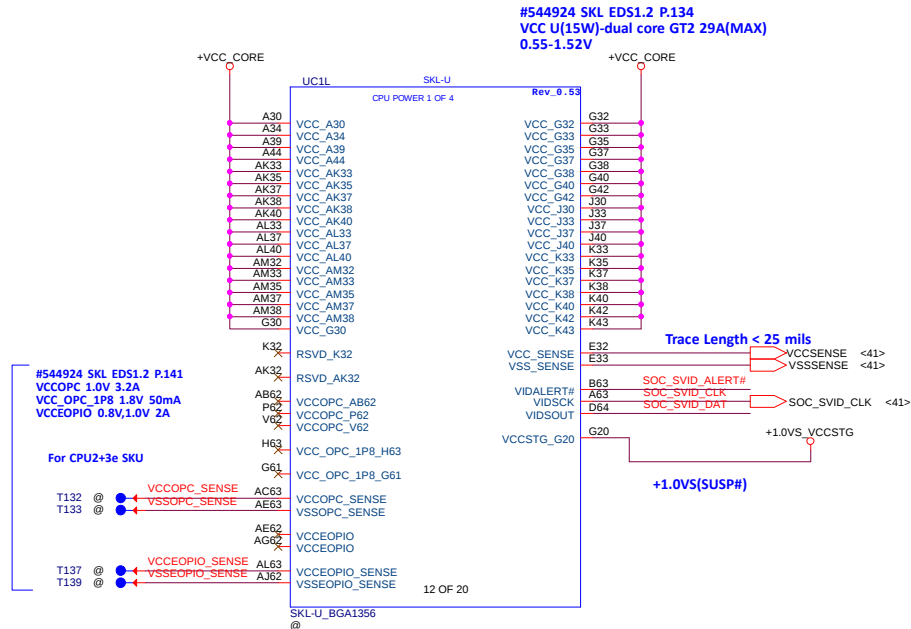
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title           |                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------|--------------------------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Document Number | SKL-U(7/12)PCIE,USB,SATA |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date            | Monday, June 12, 2017    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet           | 13 of 46                 |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                             |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-------------------------------------------------------------|----------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>SKL-U(8/12)Power</b>  |                |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Title                                                       |                |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date: Monday, June 12, 2017                                 | Sheet 14 of 46 |

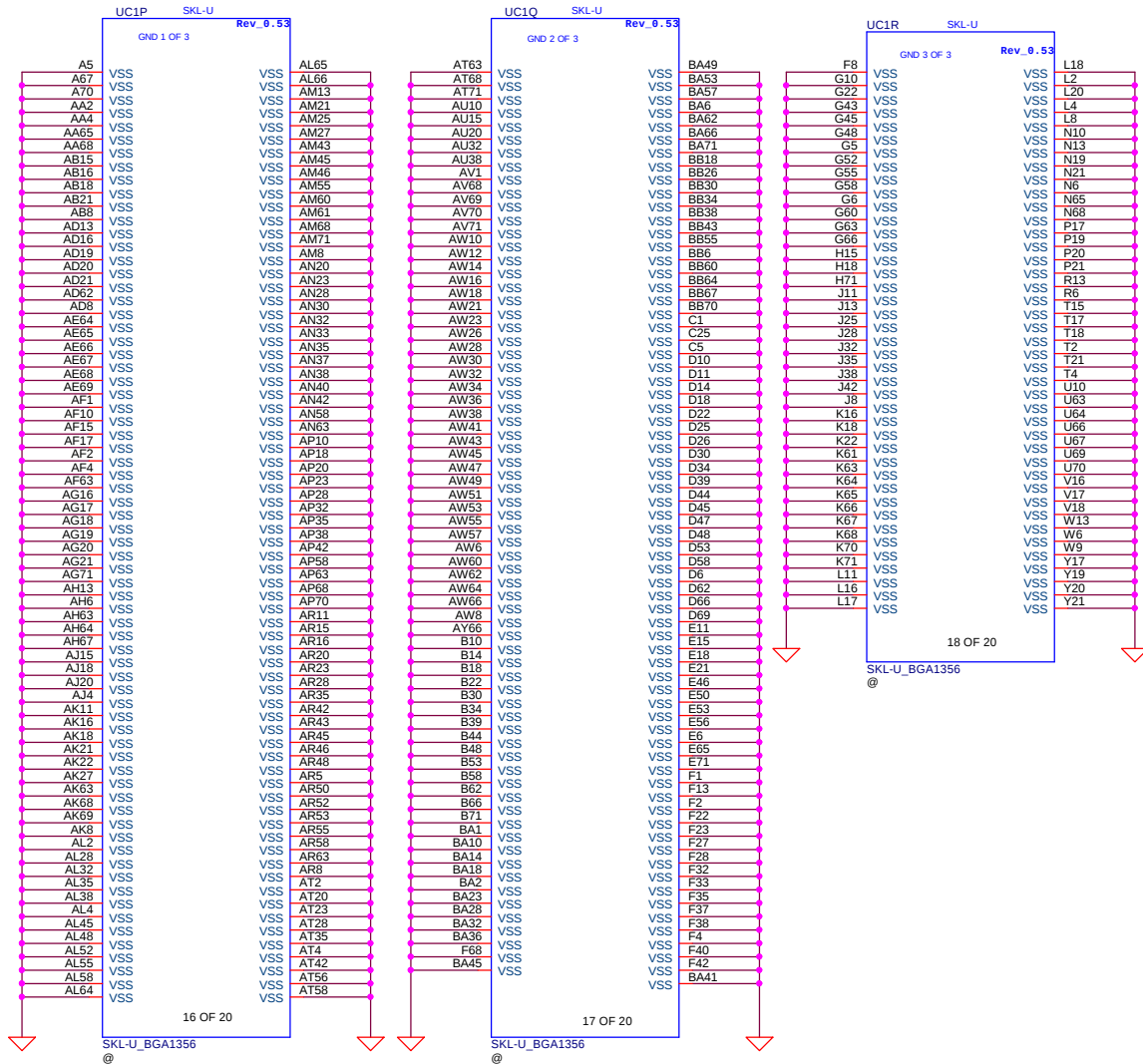


| Power Rail    | Voltage     |
|---------------|-------------|
| +CHGRTC       | 3.383V(MAX) |
| BAT54C(VF)    | 240 mV      |
| +RTCVCC       | 3.143V      |
| Result : Pass |             |

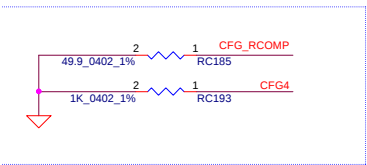


# Processor Power Rails

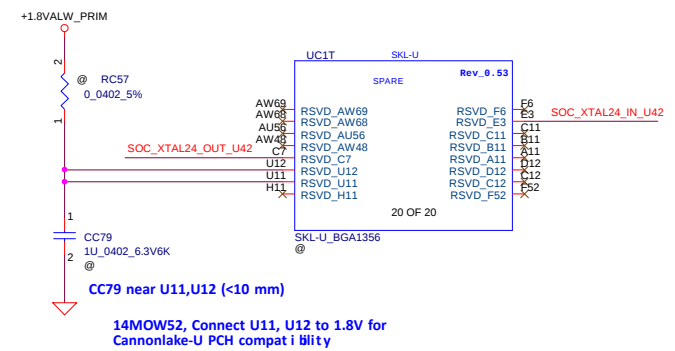
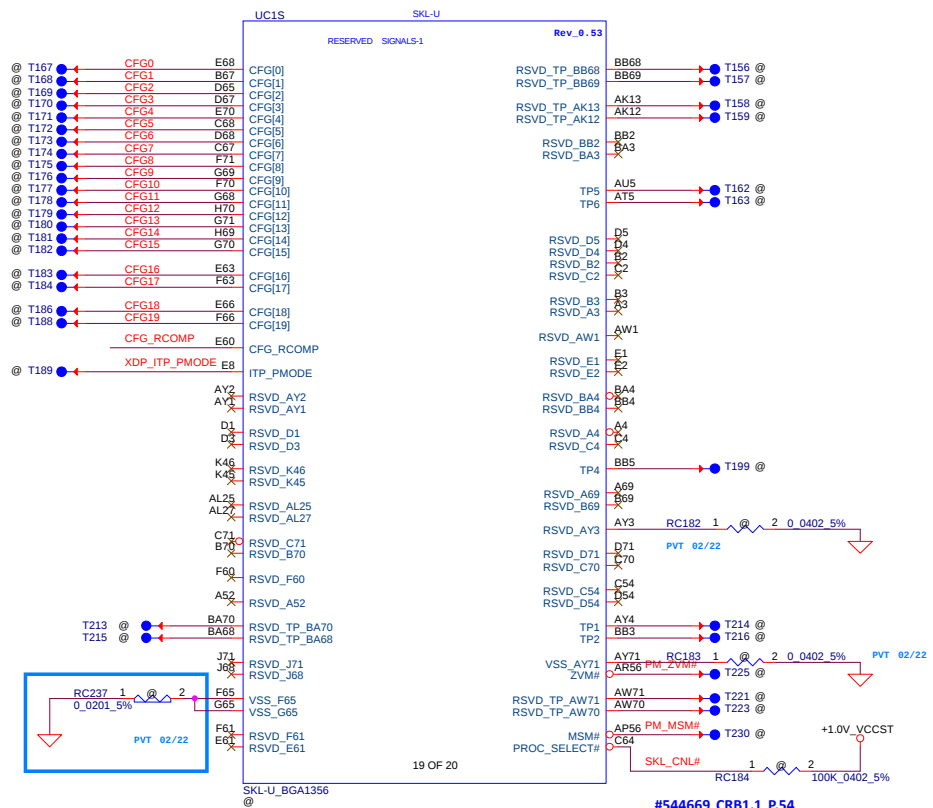
| Power Rail             | Description                                                                         | Control                             |
|------------------------|-------------------------------------------------------------------------------------|-------------------------------------|
| V <sub>CC</sub>        | Processor IA Cores Power Rail                                                       | SVID                                |
| V <sub>CCGT</sub>      | Processor Graphics Power Rails                                                      | SVID                                |
| V <sub>CCGTX</sub>     | Processor Graphics Extended Power Rail<br>Available only for GT3/GT4 processor SKUs | SVID                                |
| V <sub>CCSA</sub>      | System Agent Power Rail                                                             | SVID/Fixed<br>(SKU dependent)       |
| V <sub>CCIO</sub>      | ID Power Rail                                                                       | Fixed                               |
| V <sub>CCST</sub>      | Sustain Power Rail                                                                  | Fixed                               |
| V <sub>CCPLL</sub>     | Processor PLLs power rail                                                           | Fixed                               |
| V <sub>DDQ</sub>       | Integrated Memory Controller Power Rail                                             | Fixed (Memory technology dependent) |
| V <sub>CCOPC</sub>     | Processor OPC power rail (available only in SKU's with OPC)                         | Fixed                               |
| V <sub>CCOPC_1P8</sub> | Processor OPC power rail (available only in SKU's with OPC)                         | Fixed                               |
| V <sub>CCOEPIO</sub>   | Processor EOPIO power rail (available only in SKU's with OPC)                       | Fixed                               |



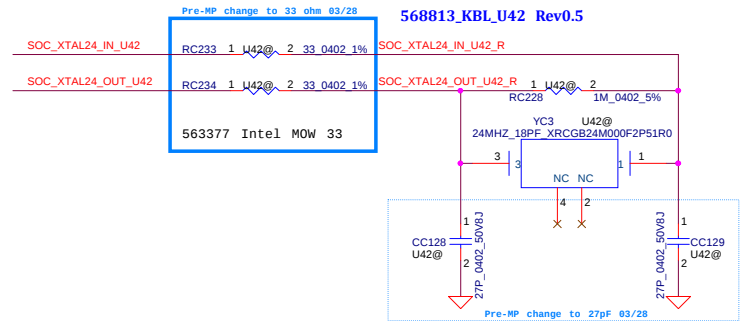
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                       |  |                 |  |                          |  |                 |  |                    |  |     |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------|--|-----------------|--|--------------------------|--|-----------------|--|--------------------|--|-----|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data    |  |                 |  | Compal Electronics, Inc. |  |                 |  |                    |  |     |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04            |  | Deciphered Date |  | 2018/11/04               |  | Title           |  |                    |  |     |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                       |  |                 |  |                          |  | Size            |  | Document Number    |  | Rev |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                       |  |                 |  |                          |  | Custom          |  | C5V01 M/B LA-E891P |  | 1A  |  |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Monday, June 12, 2017 |  |                 |  | Sheet                    |  | 17 of 46        |  |                    |  |     |  |



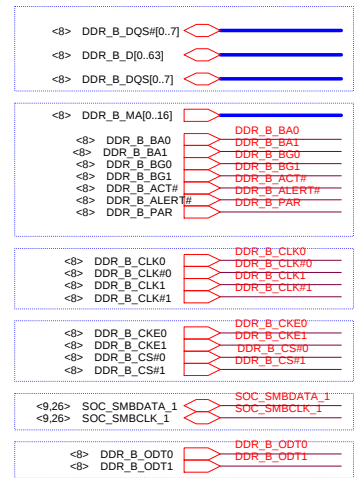
| Display Port Presence Strap |                                                                                                                                                                    |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CFG4                        | 1 : Disabled; No Physical Display Port attached to Embedded Display Port<br>0 : Enabled; An external Display Port device is connected to the Embedded Display Port |



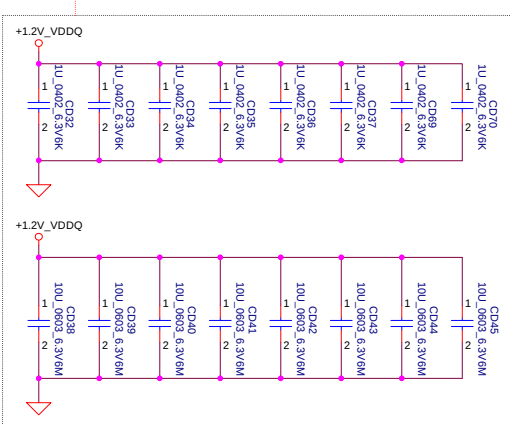
For 2+3e Solution  
PM\_ZVM#  
Zero Voltage Mode: Control Signal to OPC VR, when low OPC VR output is 0V.  
PM\_MSM#  
Minimum Speed Mode: Control signal to VccOPIO VR (connected only in 2 VR solution for OPC).



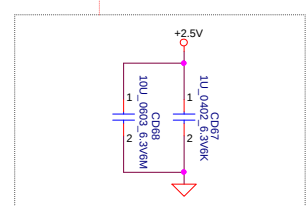




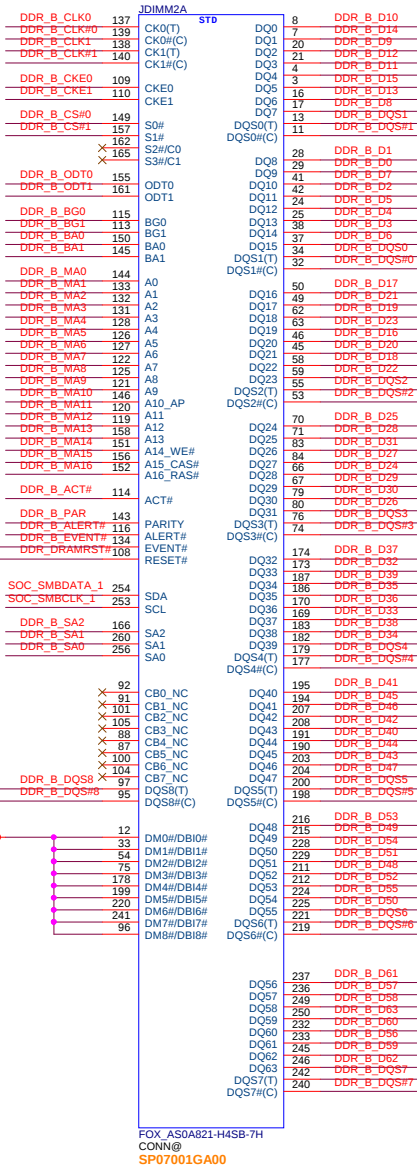
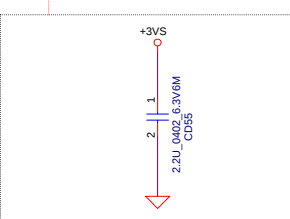
Layout Note:  
Place near JDIMM2



Layout Note:  
Place near JDIMM1.257,259

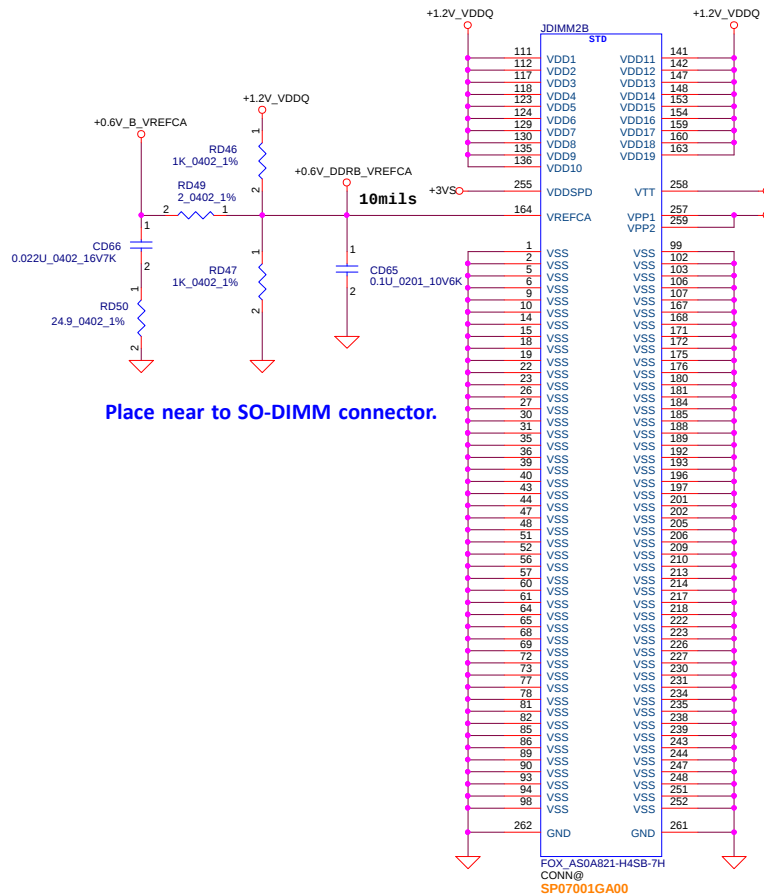


Layout Note:  
Place near JDIMM2.255

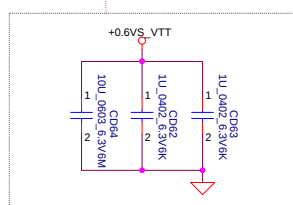


FOX\_AS0A821-H4SB-7H  
CONN@  
SP07001GA00

Standard Type  
2-3A to 1 DIMMs/channel

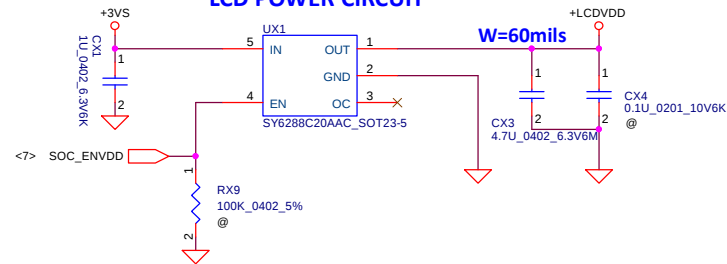


Layout Note:  
Place near JDIMM1.258

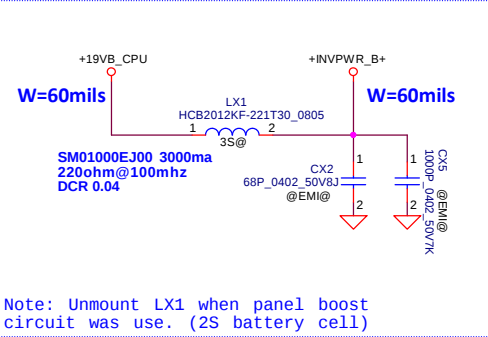


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |                       |  |                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|--------------------------|--|-----------------------|--|----------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | Compal Electronics, Inc. |  |                       |  |                |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04         |  | Deciphered Date |  | 2018/11/04               |  | Title                 |  |                |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Size                     |  | Document Number       |  | Rev            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Custom                   |  | C5V01 M/B LA-E891P    |  | 1A             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Date:                    |  | Monday, June 12, 2017 |  | Sheet 20 of 46 |  |

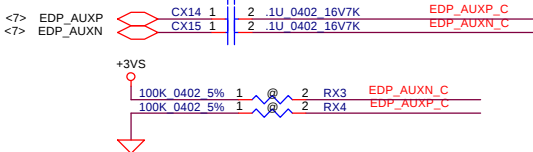
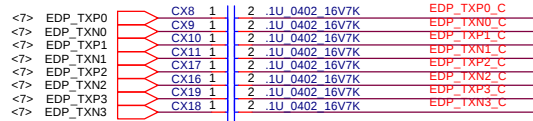
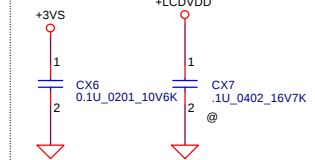
## LCD POWER CIRCUIT



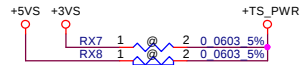
LX1.1 change to +19VB\_CPU for layout routing request



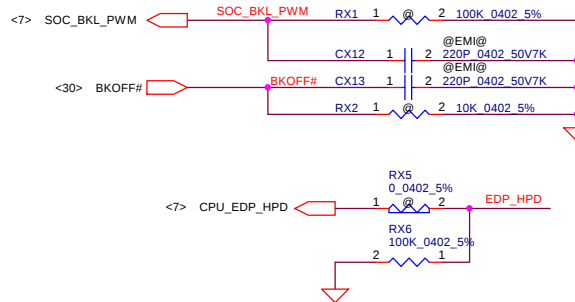
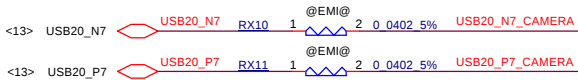
## Place closed to JEDP1



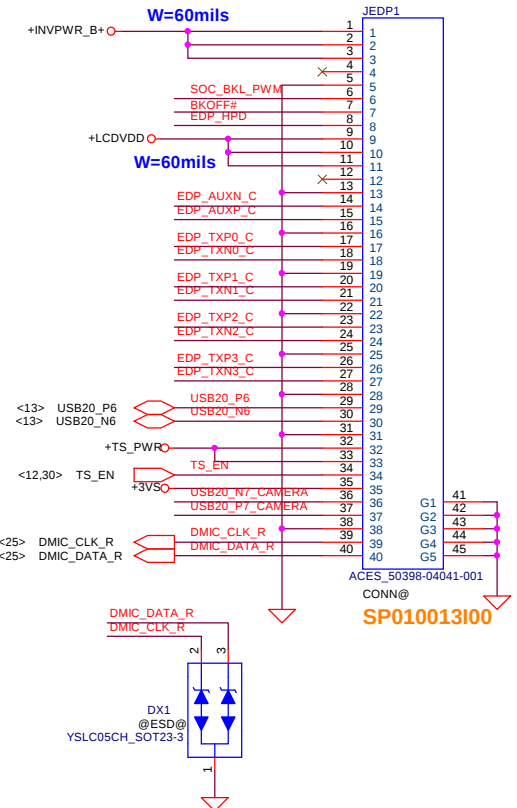
## Touch Screen



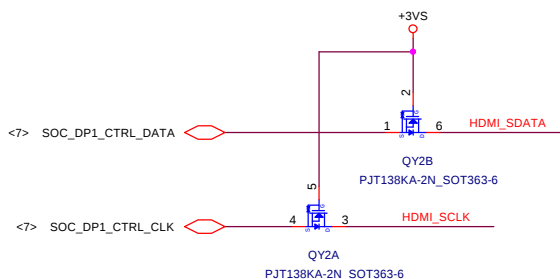
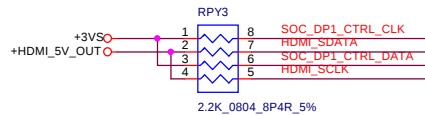
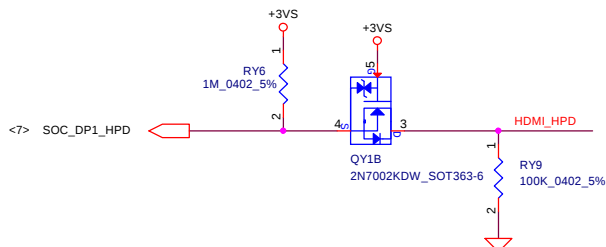
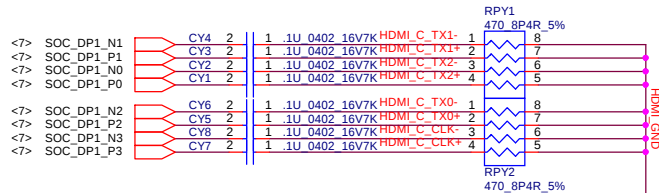
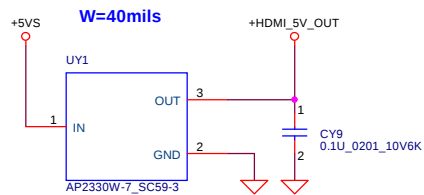
## Camera



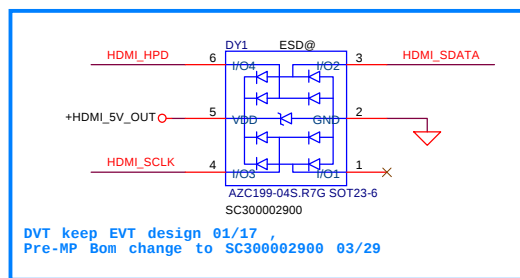
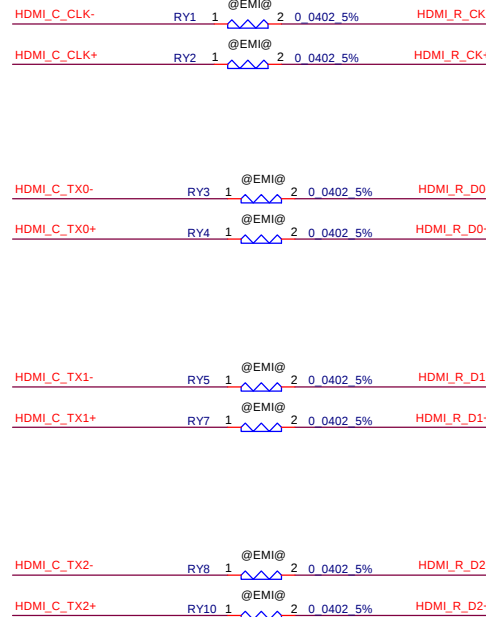
## LED PANEL Conn.



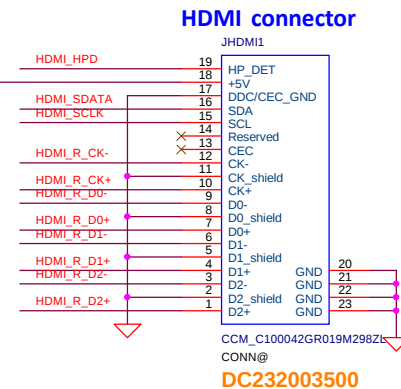
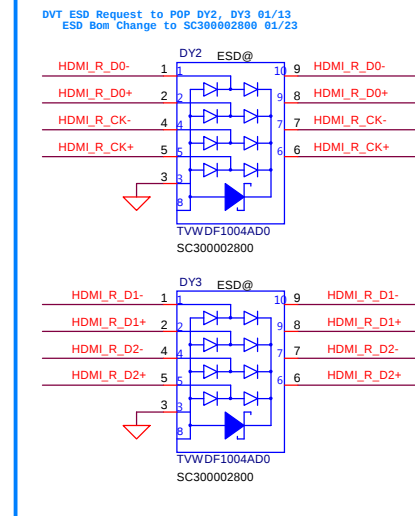
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |                    |                    |                          |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|--------------------|--------------------------|--------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       | Compal Secret Data |                    | Compal Electronics, Inc. |        |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04            | Deciphered Date    | 2018/11/04         | Title                    |        |
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| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Custom                | Document Number    | C5V01 M/B 1A-E891P |                          | Rev 1A |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Monday, June 12, 2017 | Sheet              | 21                 | of                       | 46     |



Intel spec Ron/Cout : 3ohm/10pF.  
SB000016K00, S TR PJT138KA 2N SOT363-6

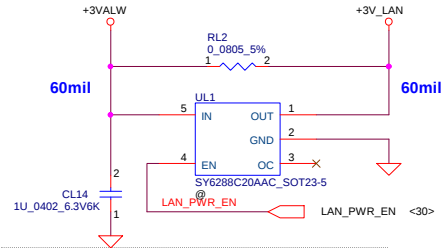


DVT keep EVT design 01/17 ,  
Pre-MP Bom change to SC300002900 03/29

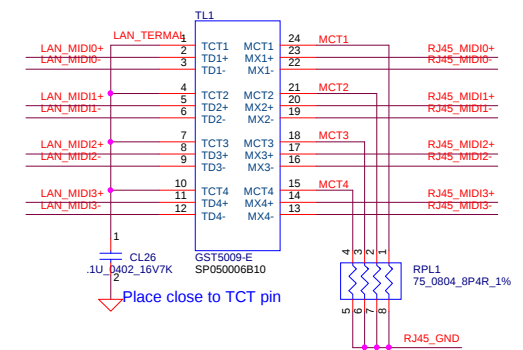
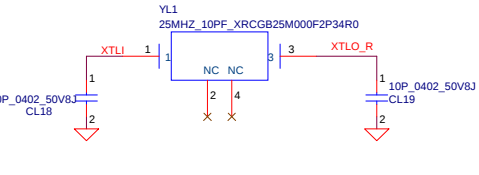


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                    |            |                          |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|------------|--------------------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    | Compal Secret Data |            | Compal Electronics, Inc. |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04         | Deciphered Date    | 2018/11/04 | Title                    |  |
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| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Document Number    | Rev                |            | 1A                       |  |
| Custom                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C5V01 M/B LA-E891P | Date               |            | Monday, June 12, 2017    |  |
| Sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    | 22                 |            | of 46                    |  |

# LAN-RTL8411B

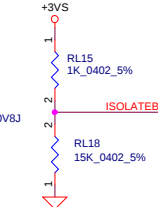
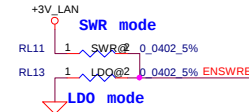


From EC  
High active.  
EN threshold voltage min:1.2V  
typ:1.6V max:2.0V  
Current limit threshold 1.5-2.8A  
+3V\_LAN Rising time must >0.5ms and <100ms

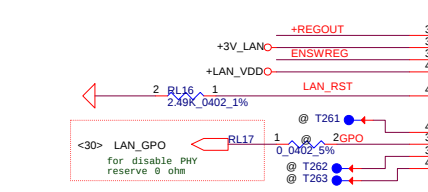
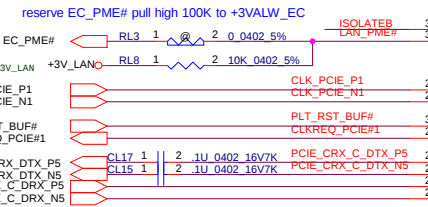


Place close to TCT pin

PU at PCH side

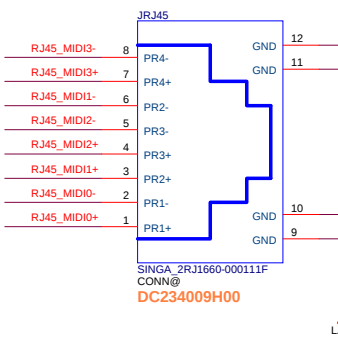


ISOLATEB

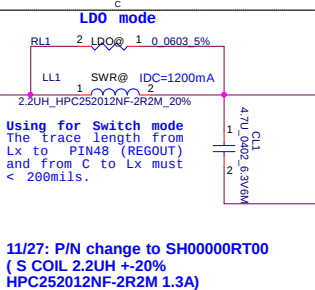


LAN\_GPO for disable PHY reserve 0 ohm

## LAN Connector

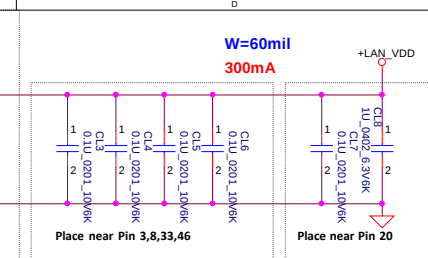


DC234009H00



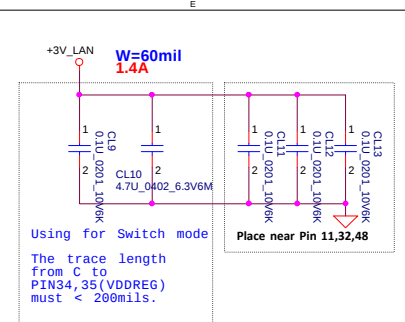
Using for Switch mode  
The trace length from Lx to PIN48 (REGOUT) and from C to Lx must < 200mils.

11/27: P/N change to SH00000RT00 (S COIL 2.2UH +20% HPC252012NF-2R2M 1.3A)



Place near Pin 3,8,33,46

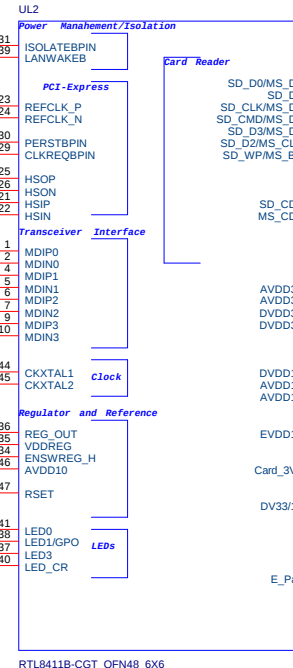
Place near Pin 20



Using for Switch mode

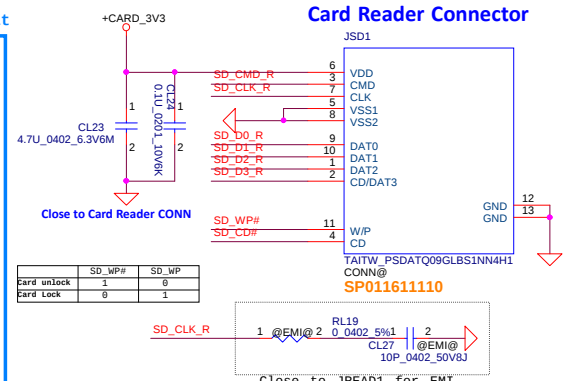
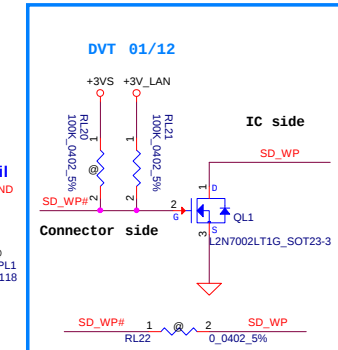
The trace length from C to PIN34,35 (VDDREG) must < 200mils.

close to pin17



RTL8411B-CGT\_QFN48\_6X6

## SD Write protect inverter circuit



| Card unlock | SD_WP# | SD_WP |
|-------------|--------|-------|
| 1           | 1      | 0     |
| Card Lock   | 0      | 1     |

Close to Card Reader CONN

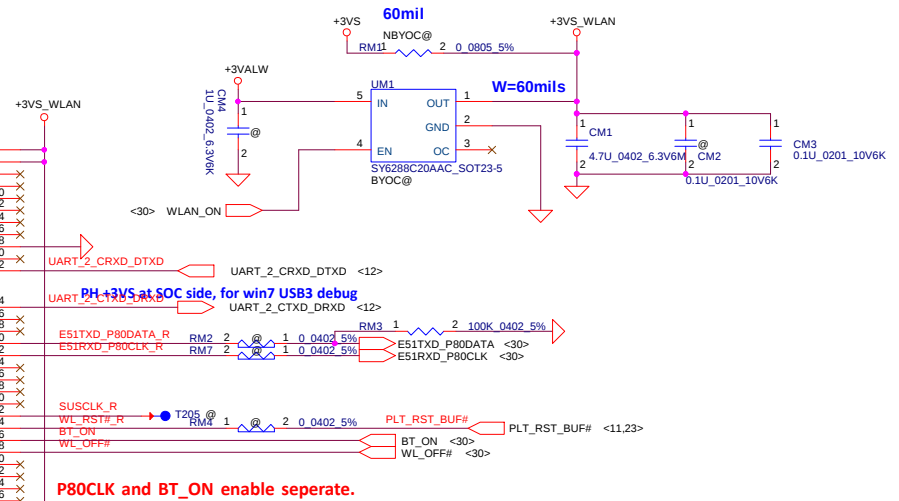
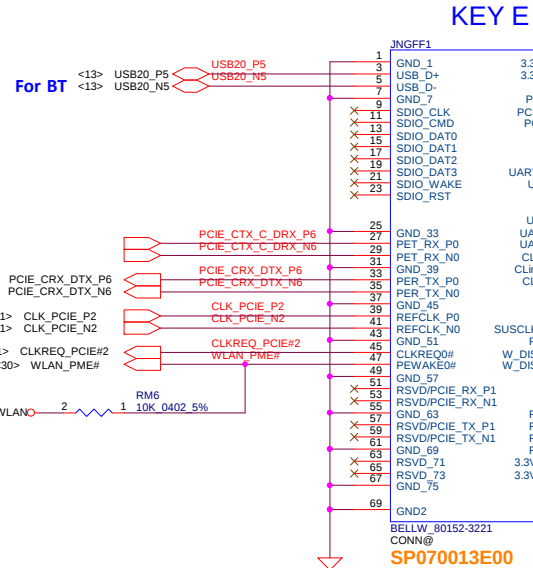
Close to JREAD1 for EMI

| Security Classification |  |  | Compal Secret Data |  |  | Title                 |  |  |
|-------------------------|--|--|--------------------|--|--|-----------------------|--|--|
| Issued Date             |  |  | 2016/11/04         |  |  | LAN RTL8411B          |  |  |
| Deciphered Date         |  |  | 2018/11/04         |  |  | C5V01 M/B LA-E891P    |  |  |
| Rev                     |  |  | 1A                 |  |  | Monday, June 12, 2017 |  |  |

# Wireless LAN

## NGFF WL+BT (KEY E)

|    |     |     |    |
|----|-----|-----|----|
| 74 | U1A | U1A | 75 |
| 72 | U1A | U1A | 73 |
| 68 | U1A | U1A | 69 |
| 66 | U1A | U1A | 67 |
| 64 | U1A | U1A | 63 |
| 62 | U1A | U1A | 61 |
| 60 | U1A | U1A | 59 |
| 58 | U1A | U1A | 57 |
| 56 | U1A | U1A | 55 |
| 54 | U1A | U1A | 53 |
| 52 | U1A | U1A | 51 |
| 50 | U1A | U1A | 49 |
| 48 | U1A | U1A | 47 |
| 46 | U1A | U1A | 45 |
| 44 | U1A | U1A | 43 |
| 42 | U1A | U1A | 41 |
| 40 | U1A | U1A | 39 |
| 38 | U1A | U1A | 37 |
| 36 | U1A | U1A | 35 |
| 34 | U1A | U1A | 33 |
| 32 | U1A | U1A | 31 |
| 30 | U1A | U1A | 29 |
| 28 | U1A | U1A | 27 |
| 26 | U1A | U1A | 25 |
| 24 | U1A | U1A | 23 |
| 22 | U1A | U1A | 21 |
| 20 | U1A | U1A | 19 |
| 18 | U1A | U1A | 17 |
| 16 | U1A | U1A | 15 |
| 14 | U1A | U1A | 13 |
| 12 | U1A | U1A | 11 |
| 10 | U1A | U1A | 9  |
| 8  | U1A | U1A | 7  |
| 6  | U1A | U1A | 5  |
| 4  | U1A | U1A | 3  |
| 2  | U1A | U1A | 1  |



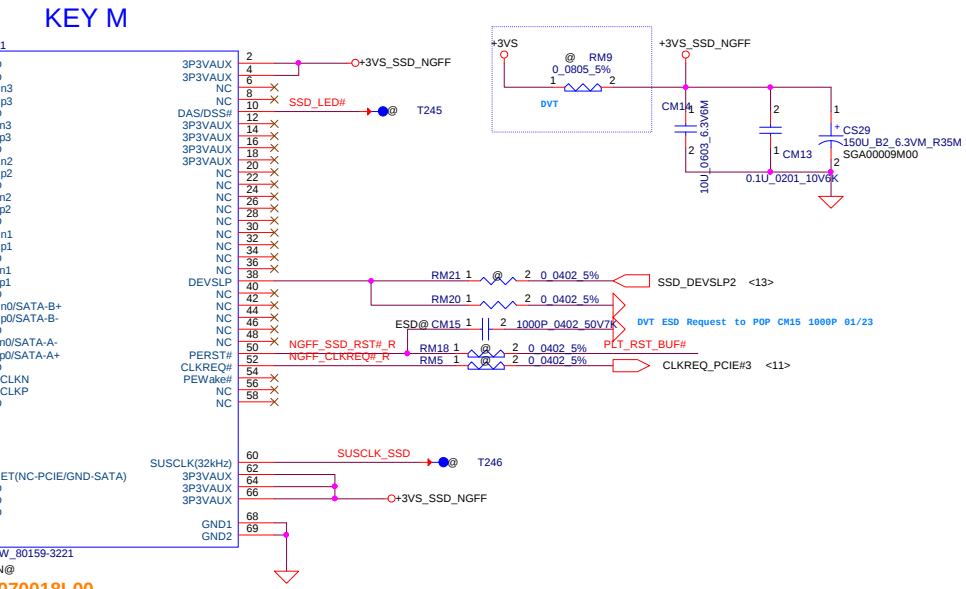
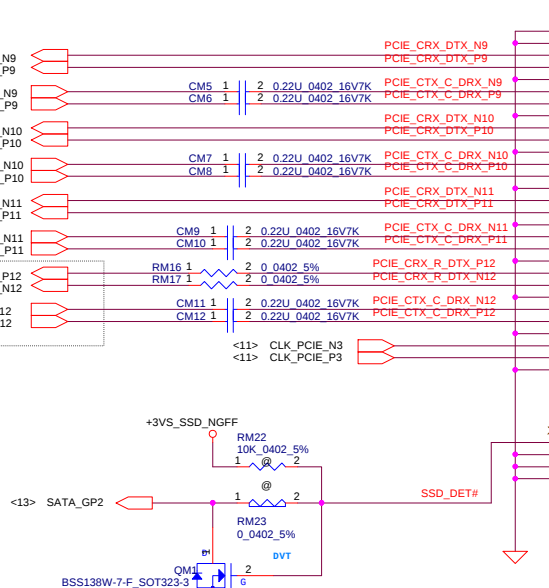
## mSATA/SSD

|               |    |
|---------------|----|
| PETp0/SATA-A+ | 49 |
| PETn0/SATA-A- | 47 |
| GND           | 45 |
| PERp0/SATA-B- | 43 |
| PERn0/SATA-B+ | 41 |

Table 35-7: SATA / PCI Express\* Gen 2 and Gen 3 Capacitor Values

| Condition    | PCI Express* Gen 2 Only | PCI Express* Gen 3 Only | SATA Only | PCI Express* Gen 2 / SATA | PCI Express* Gen 3 / SATA |
|--------------|-------------------------|-------------------------|-----------|---------------------------|---------------------------|
| Processor Tx | 100 nF                  | 220 nF                  | 10 nF     | 100 nF                    | 220 nF                    |
| Processor Rx | None                    | None                    | 10 nF     | None                      | None                      |

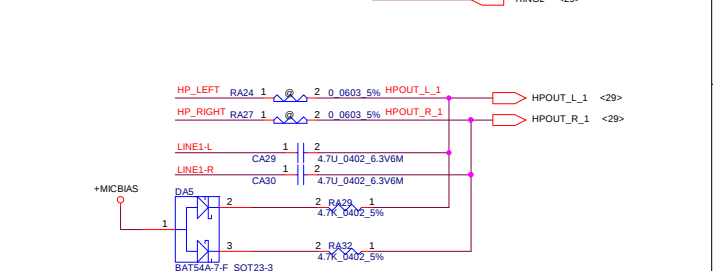
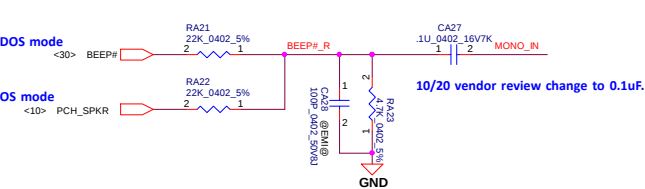
Port P and N follow SATA



SSD\_DET# (SATA\_GP0)  
SATA Device 0  
PCIe Device 1

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |                 |                             |                 |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|-----------------|-----------------------------|-----------------|----------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |                 | Compal Electronics, Inc.    |                 |          |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04         | Deciphered Date |                             | 2018/11/04      |          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |                 | M.2 Key E (WLAN)/Key M(SSD) |                 |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |                 | Size                        | Document Number | Rev      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |                 | C5V01                       | M/B LA-E891P    | 1A       |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                    |                 | Monday, June 12, 2017       | Sheet           | 24 of 46 |

## SM01000EJ00 3000mA\_220ohm@100mhz DCR 0.04



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                          |                                    |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|------------------------------------|-------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                                    |       |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Title                    | HD Audio Codec ALC255/ALC233 Colay |       |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Custom                   | C5V01 M/B LA-E891P                 | 1A    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Monday, June 12, 2017              | Sheet |

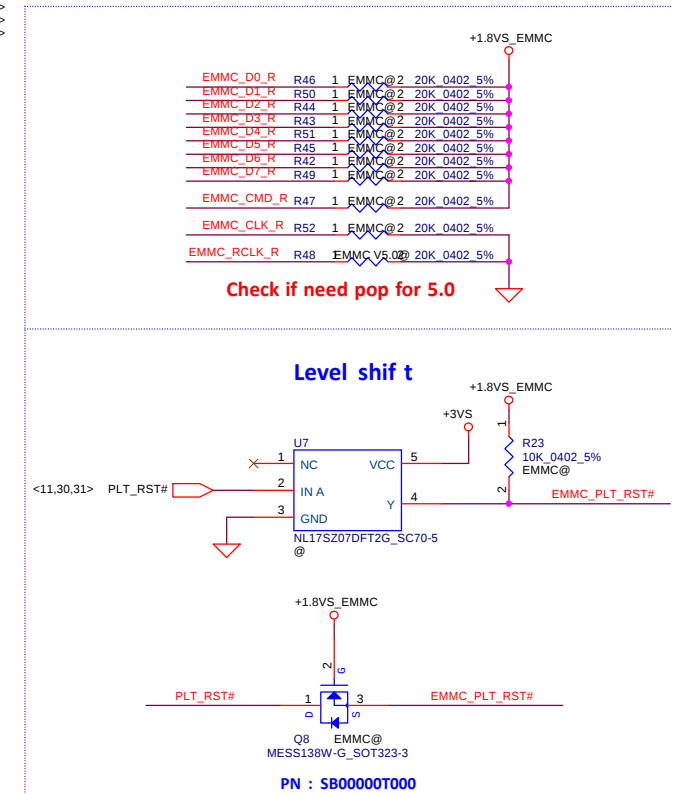
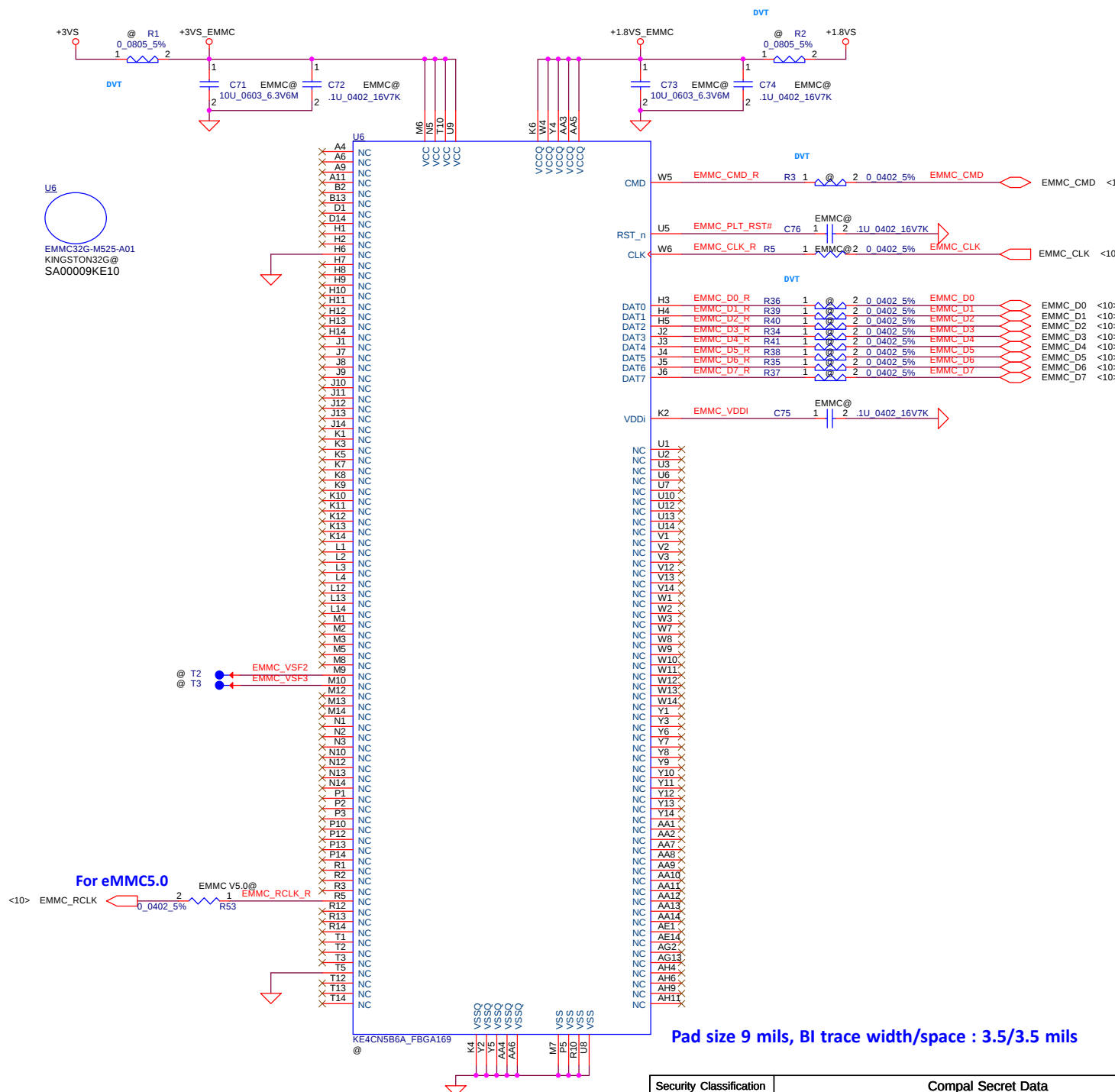
## 1



## 1

[illegible]4

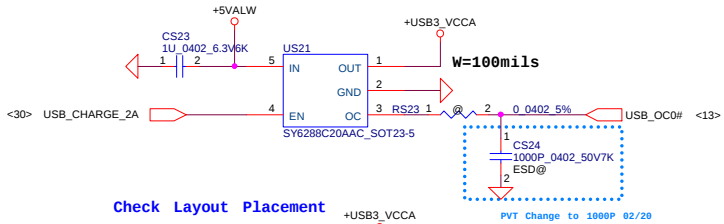
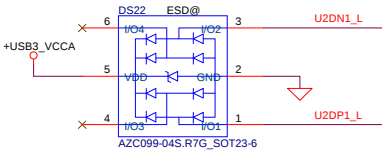
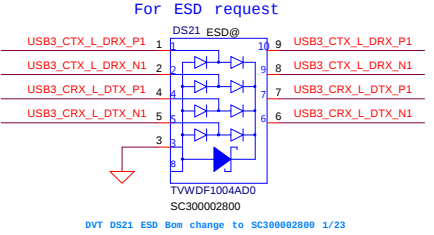
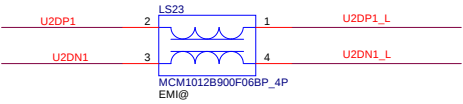
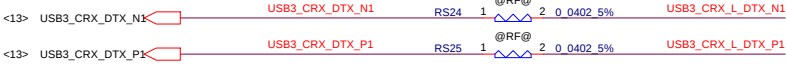
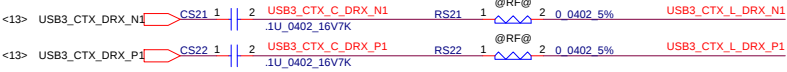
L



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                                 |  |                           |  |                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|---------------------------------|--|---------------------------|--|----------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | <b>Compal Electronics, Inc.</b> |  |                           |  |                |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04         |  | Deciphered Date |  | 2018/11/04                      |  | Title                     |  |                |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Size                            |  | Document Number           |  | Rev            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Custom                          |  | <b>C5V01 M/B LA-E891P</b> |  | 1A             |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  | Date:                           |  | Monday, June 12, 2017     |  | Sheet 27 of 46 |  |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |                    |  | 2               |  | 1                               |  |                           |  |                |  |

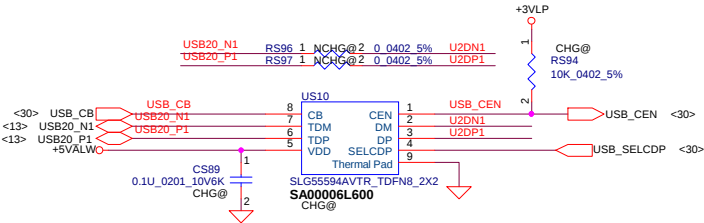


USB3.0 (Port 1)

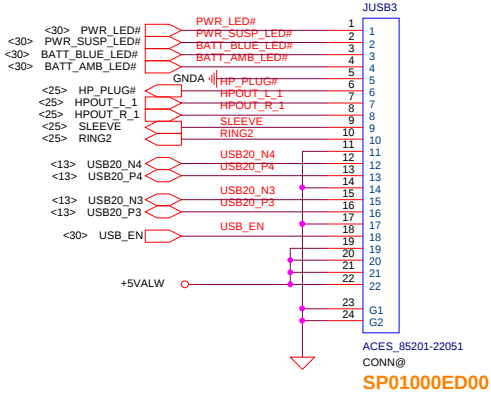


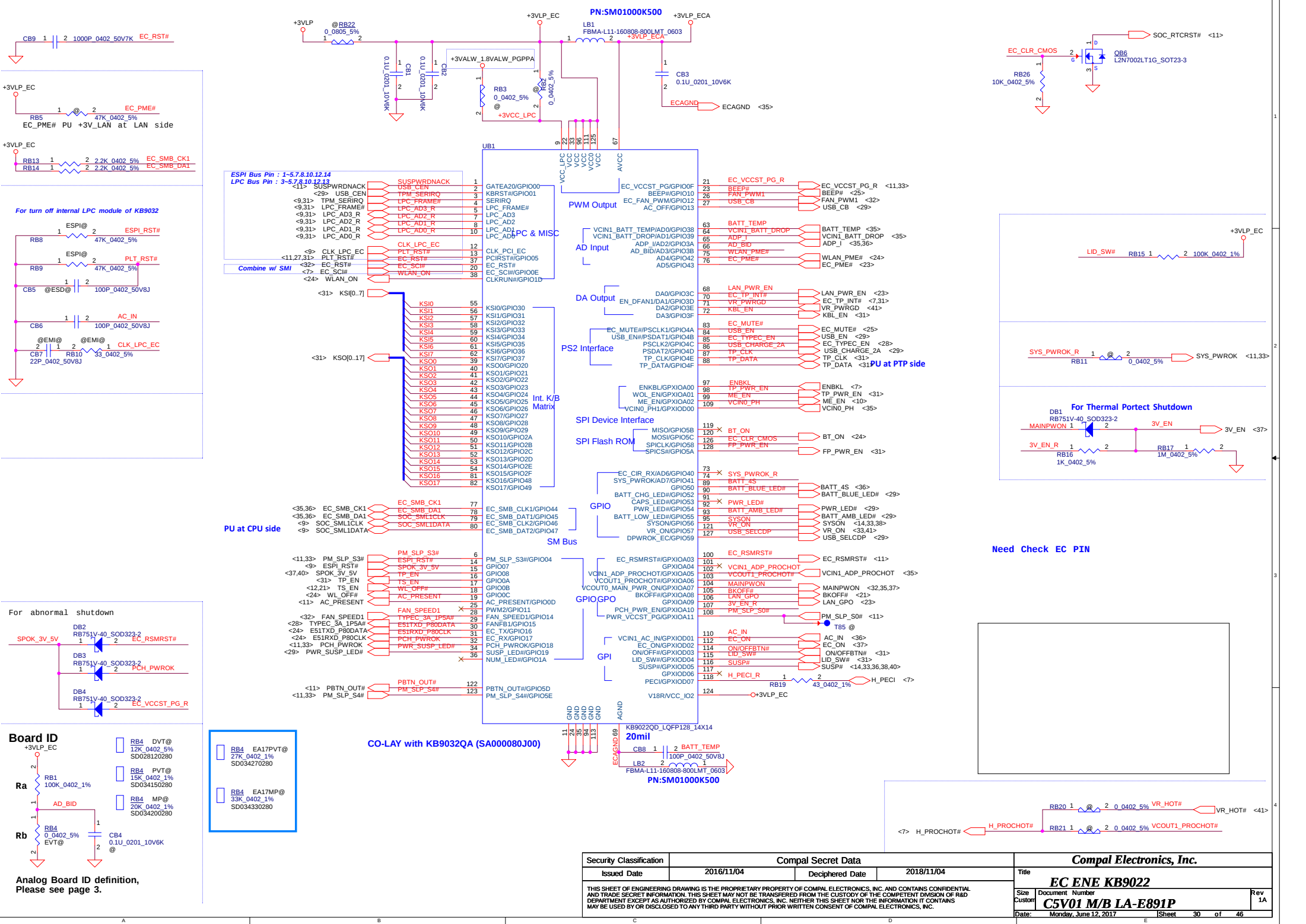
USB Host Charger

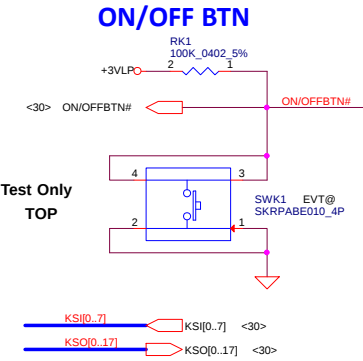
| CB | SELCDP |                                                                    |
|----|--------|--------------------------------------------------------------------|
| 0  | X      | DCP(Dedicated Charging Port) autotetect with mouse/keyboard wakeup |
| 1  | 0      | S0 charging with SDP(Standard Downstream Port) only                |
| 1  | 1      | S0 charging with CDP(Charging Downstream Port) or SDP only         |



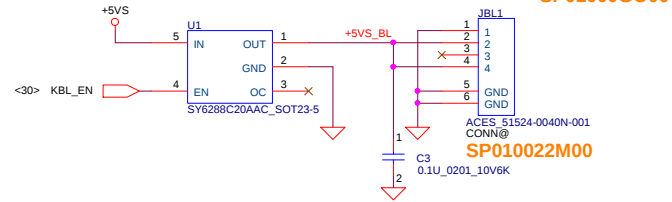
USB/B (USBx2, AUDIO, LEDx2)



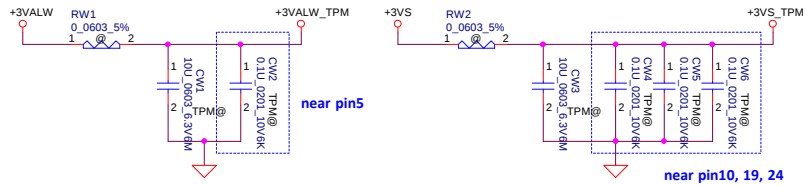




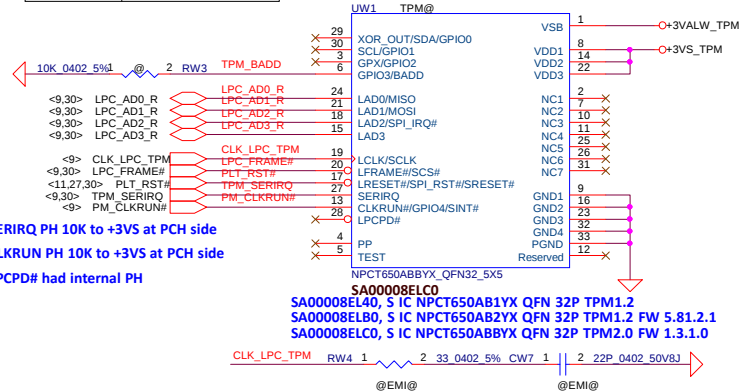
## KB BackLight



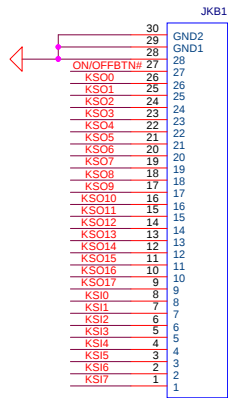
## TPM



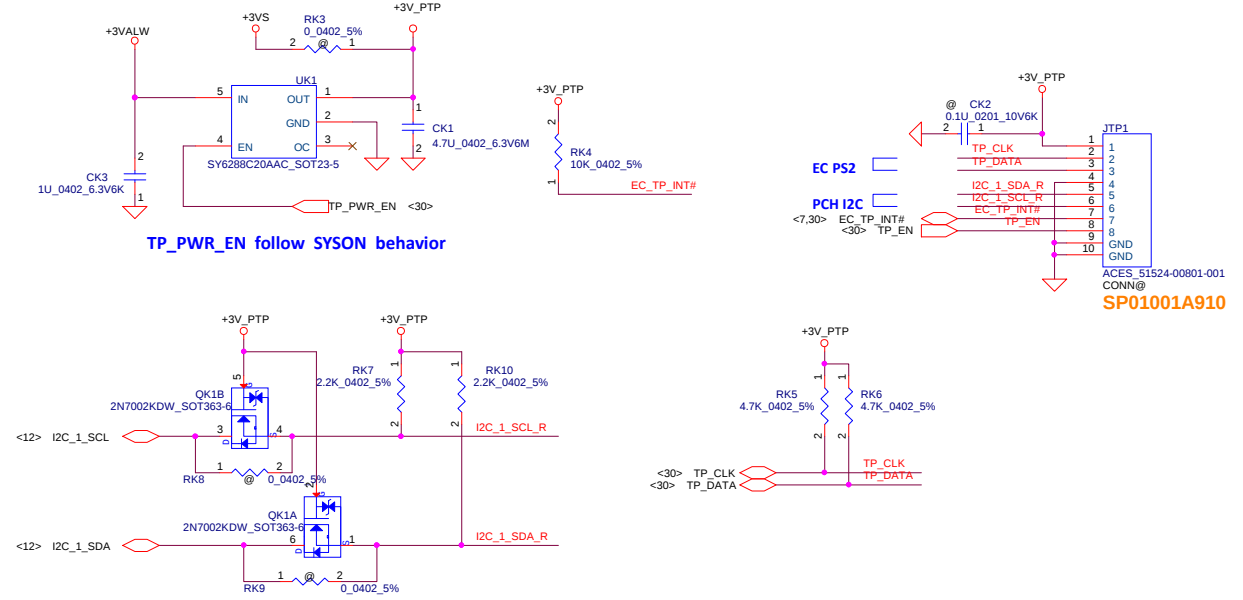
| BADD | SELECTION             |
|------|-----------------------|
| * 1  | AEh(write), AFh(read) |



## KB Conn.

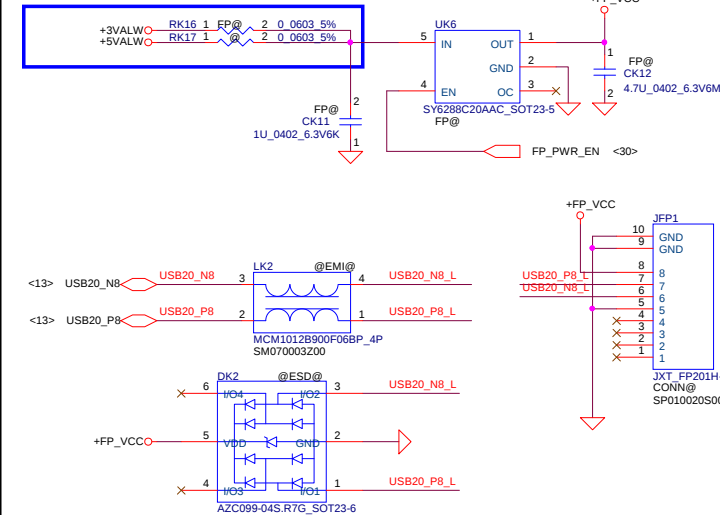


## TP/B Conn.

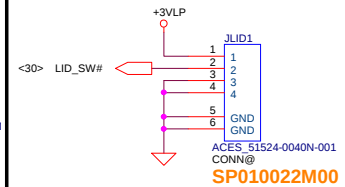


## Finger Print

Power Souce Check  
EGIS ETU801 +FP\_VCC=5V  
ELAN SA464K-2200 +FP\_VCC=3.3V



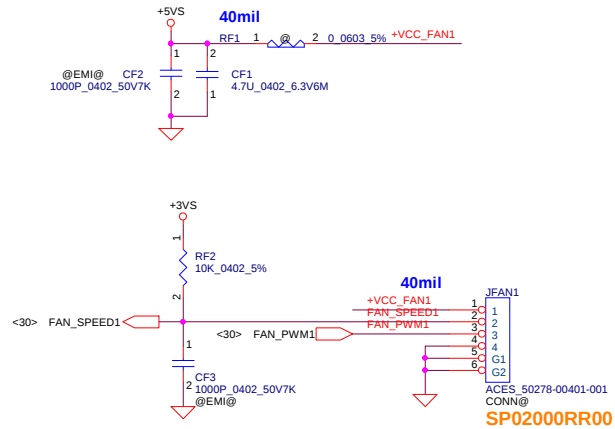
## Lid Switch (Hall Effect Switch)



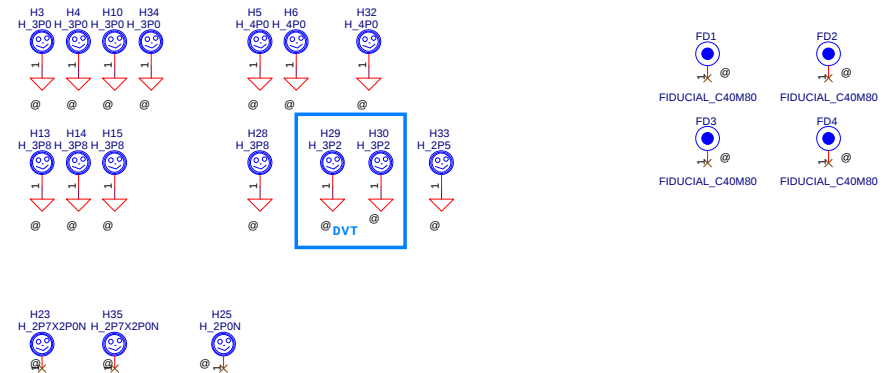
| PIN | ETU801      | SA464K-2200 |
|-----|-------------|-------------|
| 1   | +FP_VCC(5V) | +FP_VCC(3V) |
| 2   | USBP        | D+          |
| 3   | USBN        | D-          |
| 4   | GND         | GND         |
| 5   | NC          | NC          |
| 6   | NC          | NC          |
| 7   |             | NC          |
| 8   |             | NC          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  |                          |  |                       |  |                |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------|--|-----------------|--|--------------------------|--|--------------------------|--|-----------------------|--|----------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | Compal Secret Data |  |                 |  | Compal Electronics, Inc. |  |                          |  |                       |  |                |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  | 2016/11/04         |  | Deciphered Date |  | 2018/11/04               |  | Title                    |  |                       |  |                |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  | Size                     |  | Document Number       |  | Rev            |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  | C5V01 M/B LA-E891P       |  | 1A                    |  |                |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                    |  |                 |  |                          |  | Date:                    |  | Monday, June 12, 2017 |  | Sheet 31 of 46 |  |

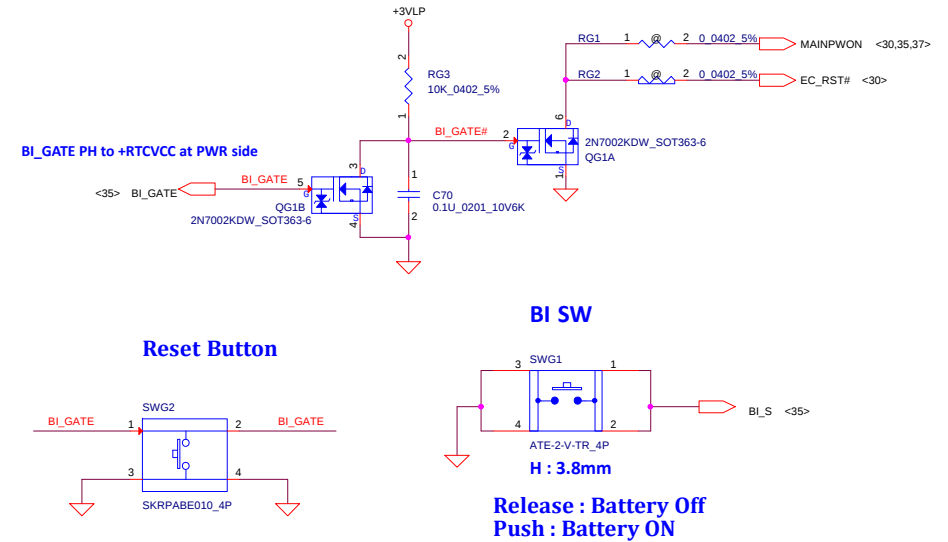
## FAN1 Conn



## Screw Hole

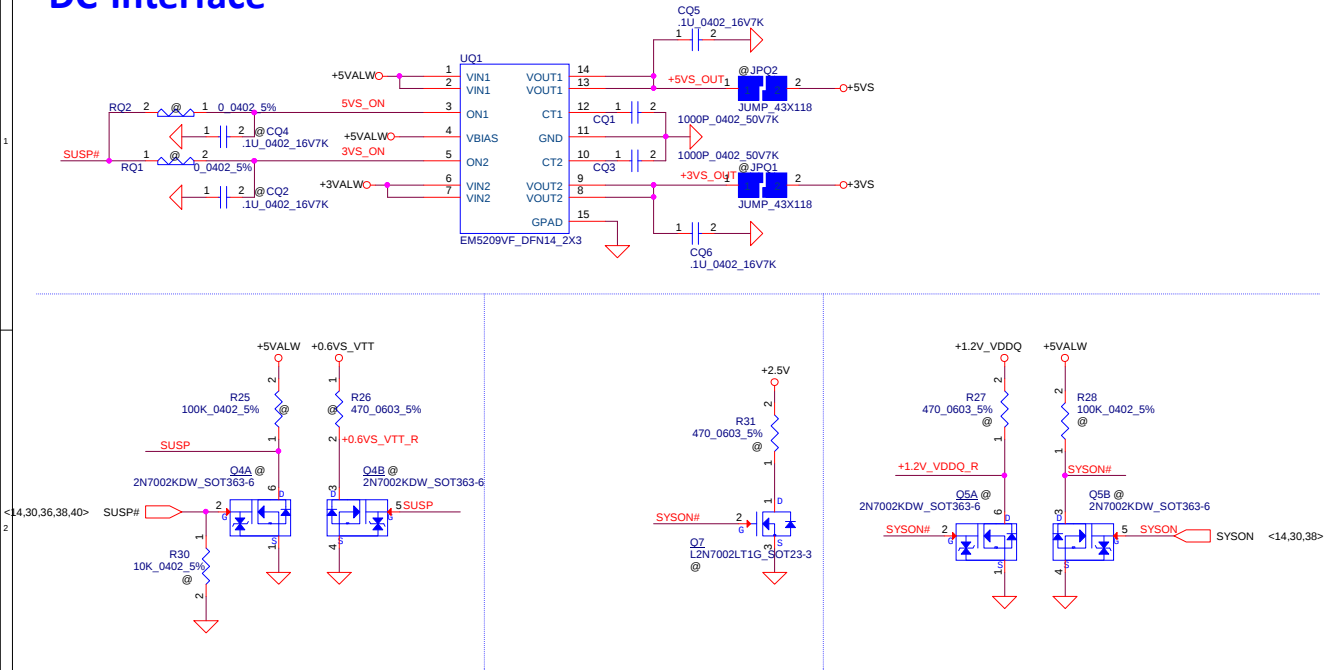


## Reset Circuit

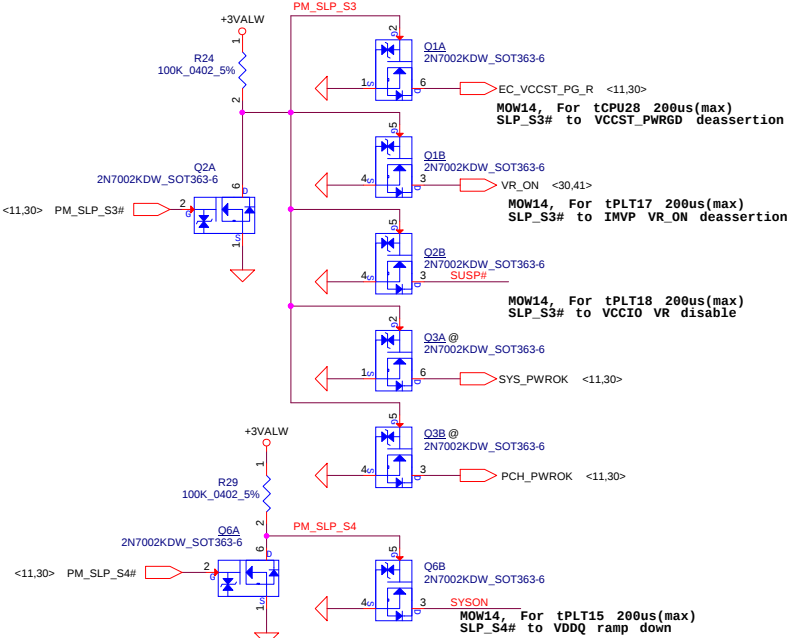


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                          |                          |        |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|--------------------------|--------|----------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                          |        |          |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Title                    | FAN & Screw Hole & Reset |        |          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Custor                   | C5V01 M/B LA-E891P       |        |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date:                    | Monday, June 12, 2017    | Sheet  | 32 of 46 |

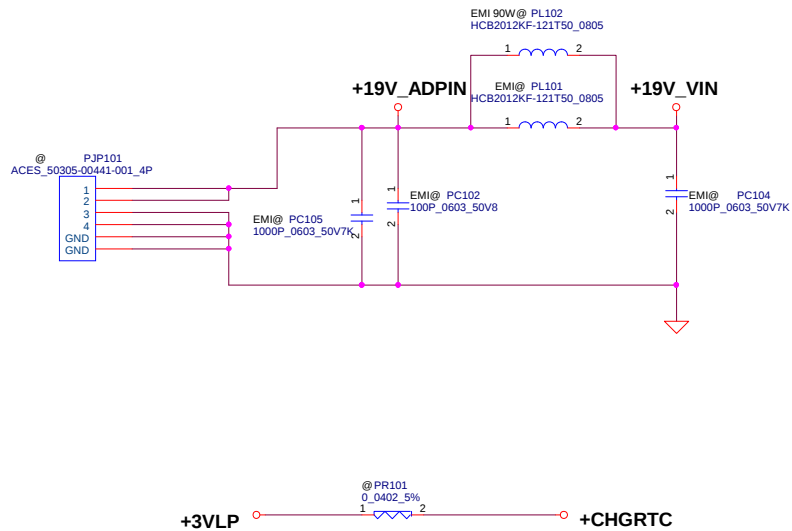
DC Interface



For Power ON/Off Sequence



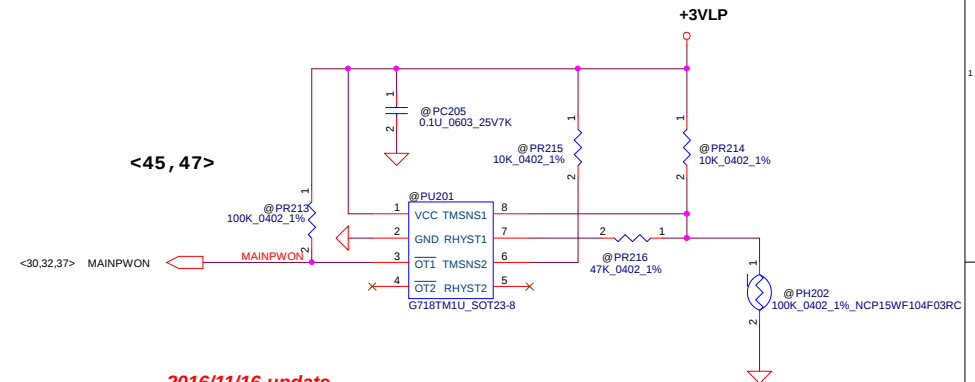
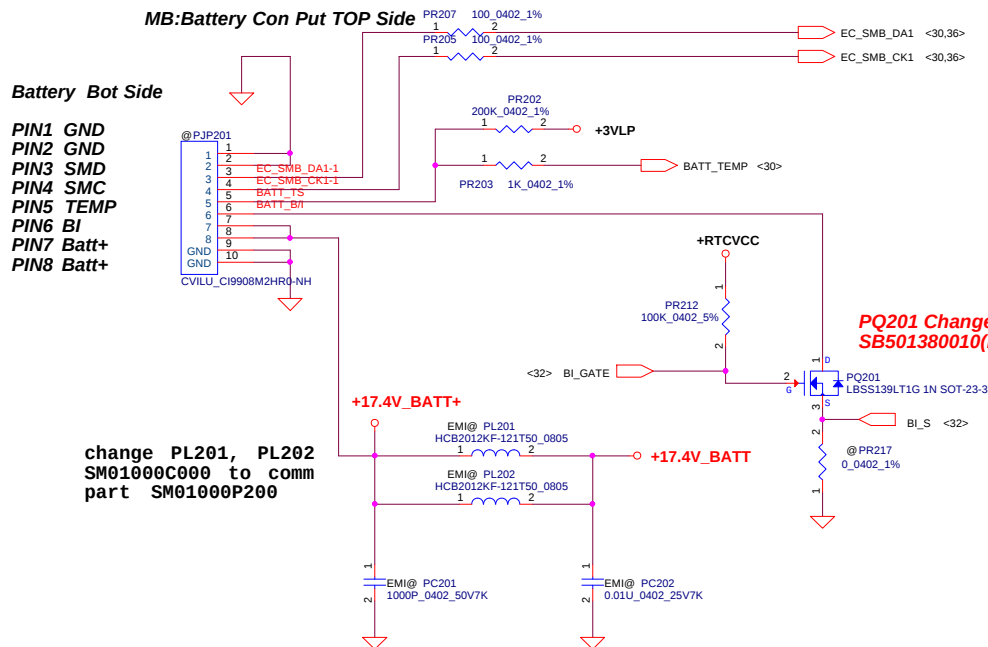
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                       |            |                          |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------|------------|--------------------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data    |            | Compal Electronics, Inc. |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date       | 2018/11/04 | Title                    |  |
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| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | Document Number       |            | Rev                      |  |
| Cust                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            | C5V01 M/B 1A-E891P    |            | 1A                       |  |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | Monday, June 12, 2017 |            | Sheet 33 of 46           |  |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                          |                    |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------|--------------------|-------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Compal Electronics, Inc. |                    |       |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/02 | Deciphered Date    | 2016/11/10 | Title                    |                    |       |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Size                     | Document Number    | Rev   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Custom                   | B5W1S M/B LA-D671P | 1A    |
| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                    |            | Sheet                    | 34                 | of 46 |

2013/07/23  
change PC5 and PC6 function field from 37.1 to 47.1

schematic from A4WAS

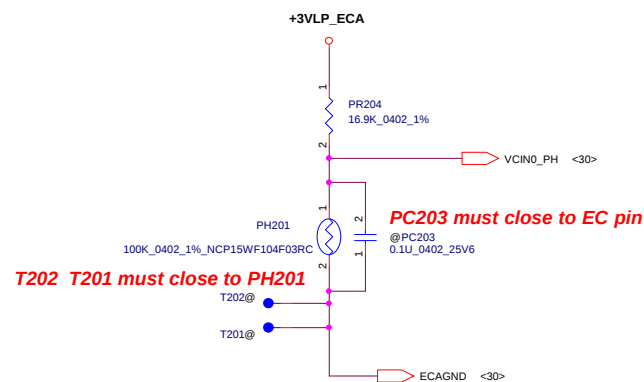
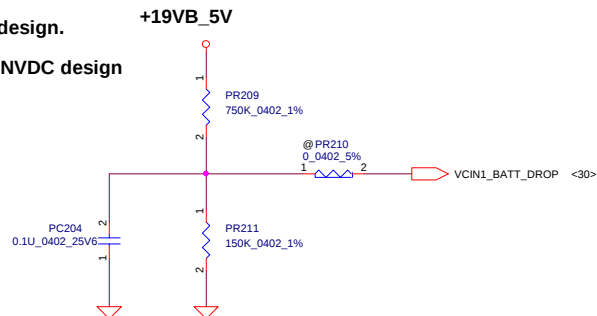


2016/11/16 update

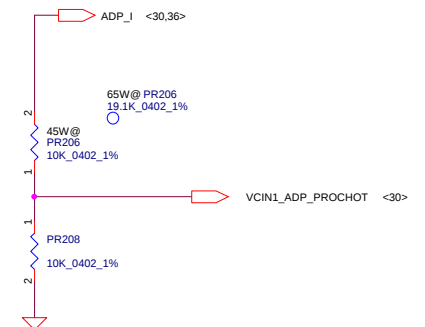
| For KB9022 sense 20mΩ | Active       | Recovery        |
|-----------------------|--------------|-----------------|
| 45W PR206 10K ohm     | 58.5W, 0.61V | Active=recovery |
| 65W PR206 19.1K ohm   | 84.5W, 0.61V | Active=recovery |
| 90W PR206 30.1K ohm   | 117W, 0.61V  | Active=recovery |
| PH1                   | 2V           | 1V              |

2013/06/07  
Add for ENE9022 Battery Voltage drop detection.  
Connect to ENE9022 pin64 AD1.

VAL50/ZAL20 Battery is 3-cell NVDC design.  
B+=9V  
Change PR12=50K if Battery is 2-cell NVDC design  
B+=6V



PH1 under CPU bottom side :  
CPU thermal protection at 89 +/-3 degree C  
Recovery at 56 +/-3 degree C



| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data    |                 |            | Compal Electronics, Inc. |    |
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| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/02            | Deciphered Date | 2016/11/10 | Title                    |    |
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| Size                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Document              | Number          | Rev        | 1A                       |    |
| Custom                                                                                                                                                                                                                                                                                                                                                                                                                                                        | B5W1S M/B LA-D671P    |                 |            |                          |    |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Monday, June 12, 2017 | Sheet           | 35         | of                       | 46 |

```
schematic from module
```



For 4S per cell 4.35V battery


$$\begin{aligned} \text{VILIM} &= 20 \cdot \text{ILIM} \cdot \text{Rsr} \\ \text{ILIM} &= 3.3 \cdot 100 / (100 + 316) / 20 / 0.01 \\ &= 3.966 \text{ A} \end{aligned}$$

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**Compal Electronics, Inc.**

**CHARGER**

### Common Circuit

|       |                       |       |          |
|-------|-----------------------|-------|----------|
| Date: | Monday, June 12, 2017 | Sheet | 36 of 46 |
|-------|-----------------------|-------|----------|

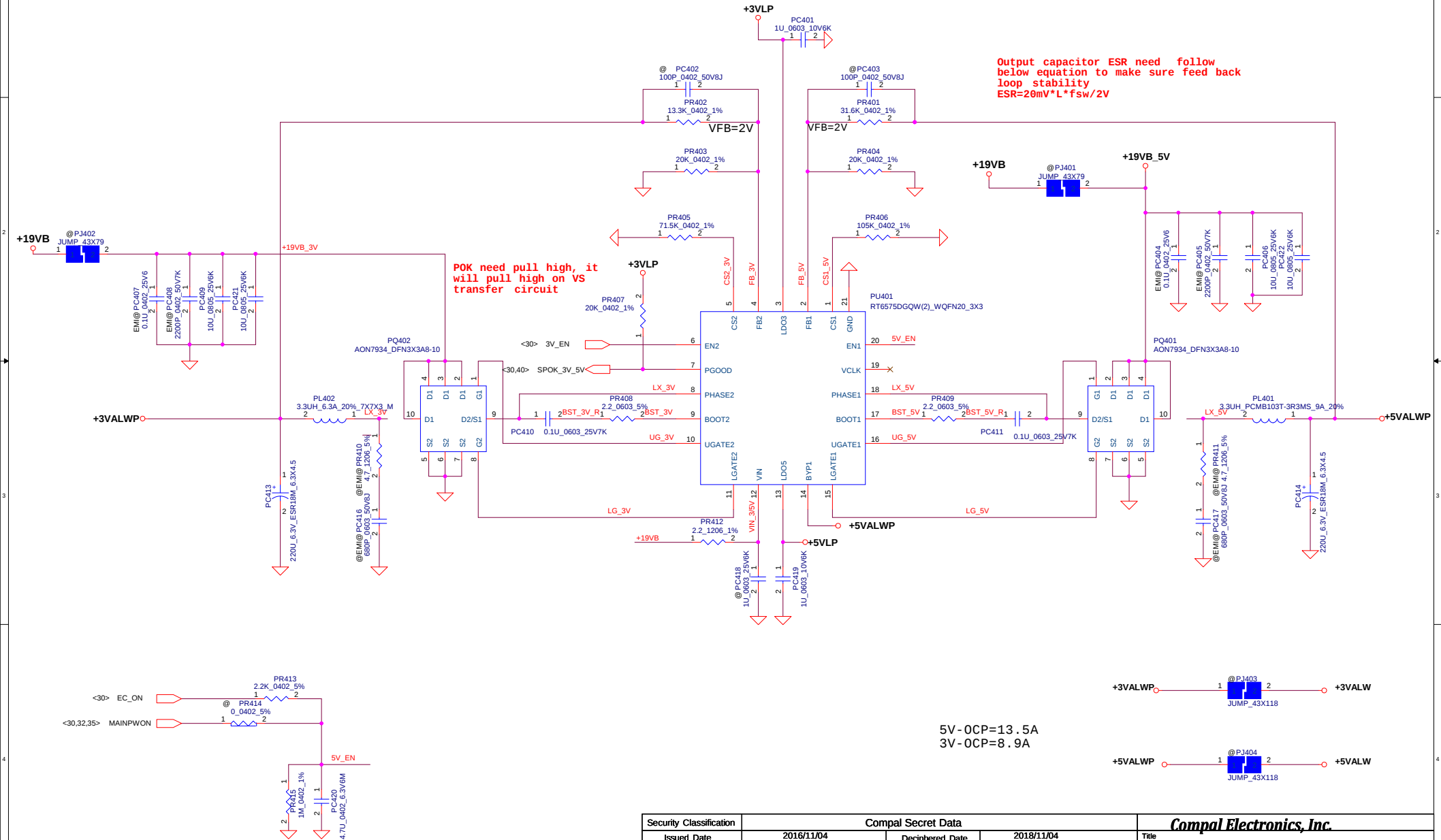
## Module model information

RT6575D\_DMOS\_single\_V1.mdd  
RT6575D\_DMOS\_dual\_V1.mdd

H/S Rds(on):typ:12.4mOhm, max:15.8mOhm  
Idsm(TA=25)=13A, Idsm(TA=70)=7.8A  
Ploss=0.42W

L/S Rds(on):typ:9.1mOhm, max:11.6mOhm  
Idsm(TA=25)=15A, Idsm(TA=70)=9A  
Ploss=0.14W

CHOKE:4.7uH, DCR 35mOhm  
Ploss=1.77W

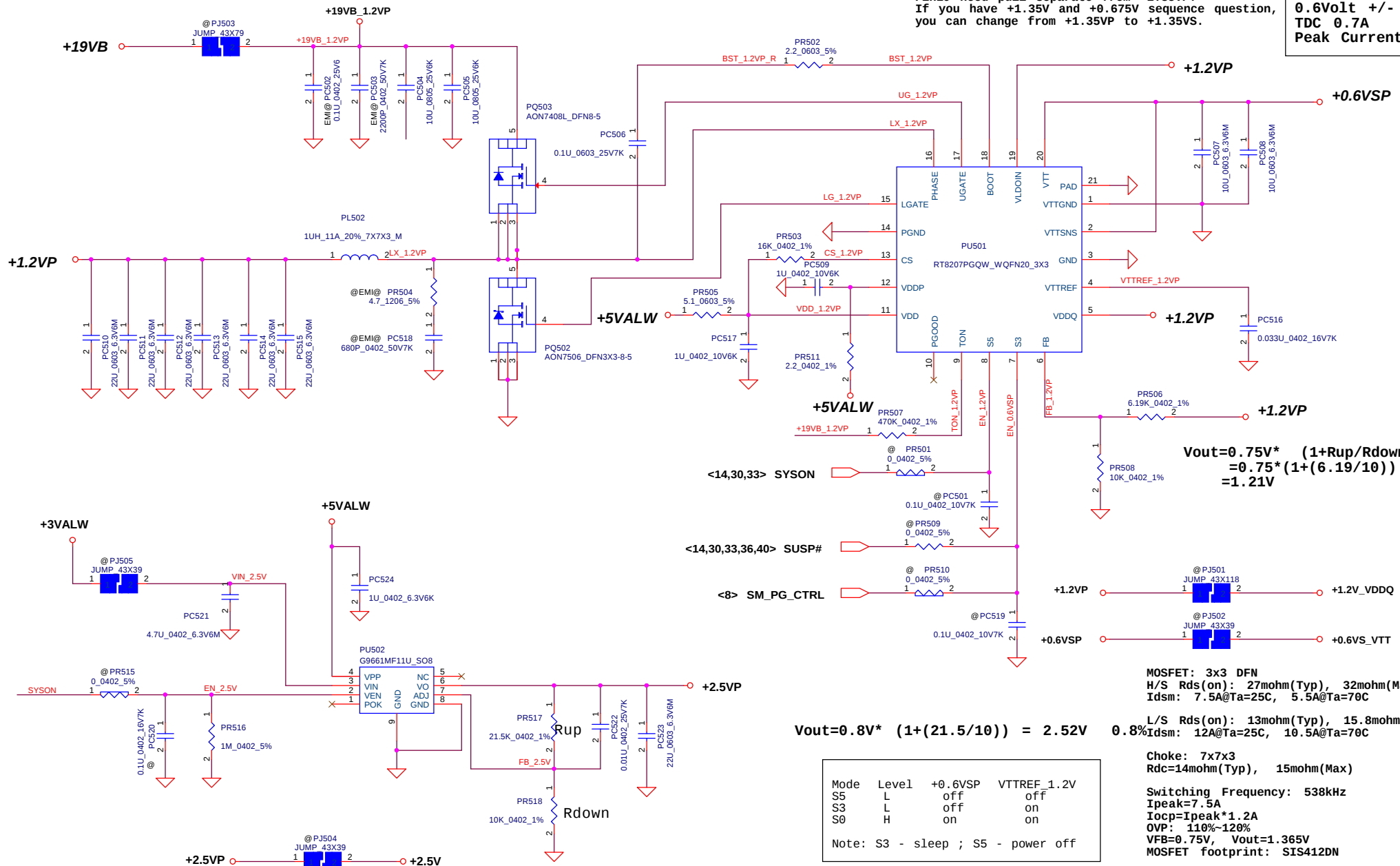


| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title                                         |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|-----------------------------------------------|-----------|
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2016/11/04 | Deciphered Date    | 2018/11/04 | Compal Electronics, Inc.                      |           |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Size<br>Document Number<br>C5V01 M/B LA-E891P | Rev<br>1A |
| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                    |            | Sheet 37 of 46                                |           |

schematic from A4WAS  
IC change RT8207K

Pin19 need pull separate from +1.35VP.  
If you have +1.35V and +0.675V sequence question,  
you can change from +1.35VP to +1.35VS.

|                 |
|-----------------|
| 0.6Volt +/- 5%  |
| TDC 0.7A        |
| Peak Current 1A |



MOSFET: 3x3 DFN  
H/S Rds(on): 27mohm(Typ), 32mohm(Max)  
Idsm: 7.5A@Ta=25C, 5.5A@Ta=70C

L/S Rds(on): 13mohm(Typ), 15.8mohm(Max)  
0.8%Idsm: 12A@Ta=25C, 10.5A@Ta=70C

**Choke: 7x7x3**  
**Rdc=14mohm(Typ), 15mohm(Max)**

Switching Frequency: 538kHz  
I<sub>peak</sub>=7.5A

$$I_{ocp} = I_{peak} * 1.2A$$

OVP: 110%~120%

VFB=0.75V, Vout=1.365V

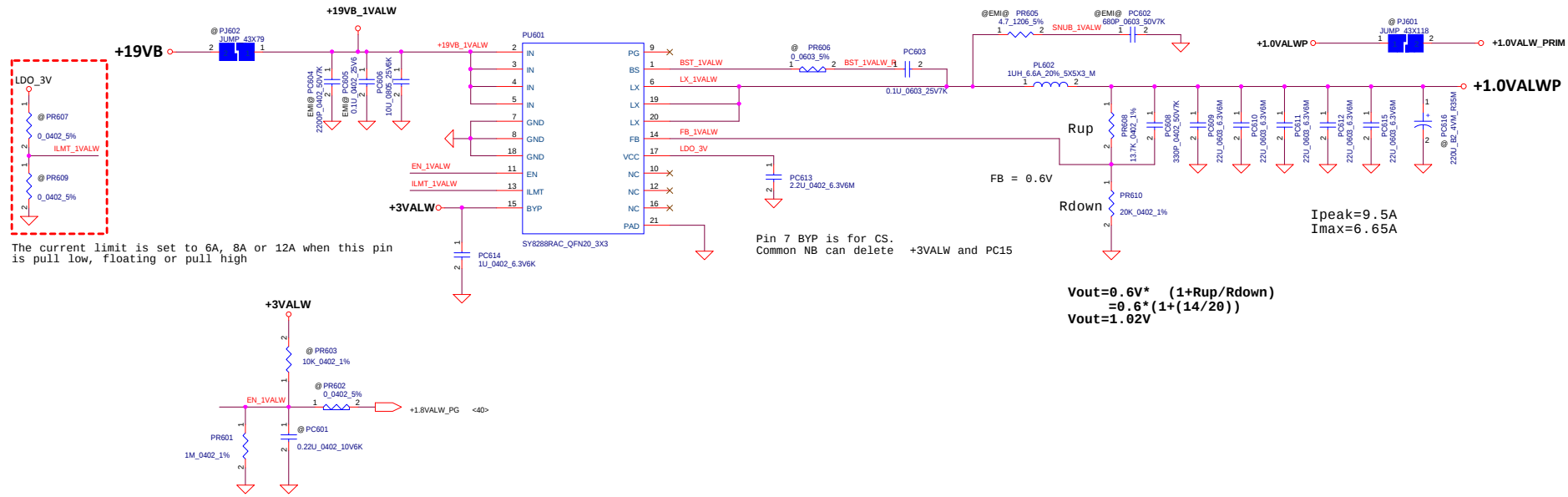
MOSFET footprint: SIS412DN

| Mode | Level | +0.6VSP | VTTREF_1.2V |
|------|-------|---------|-------------|
| S5   | L     | off     | off         |
| S3   | L     | off     | on          |
| S0   | H     | on      | on          |

Note: S3 - sleep ; S5 - power off

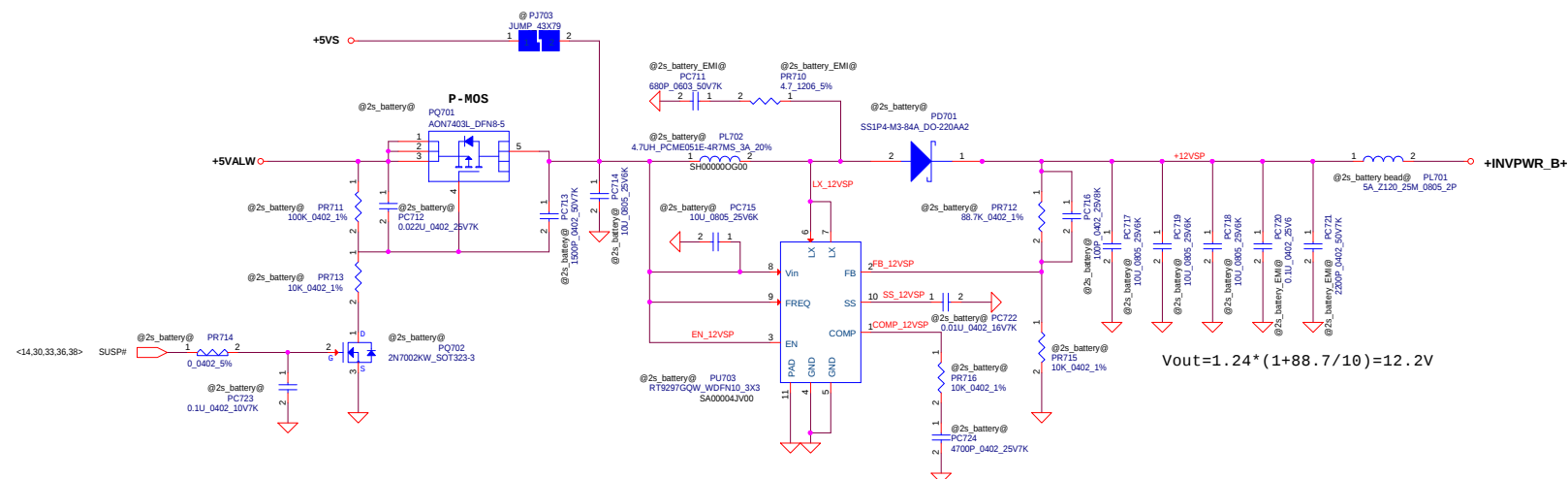
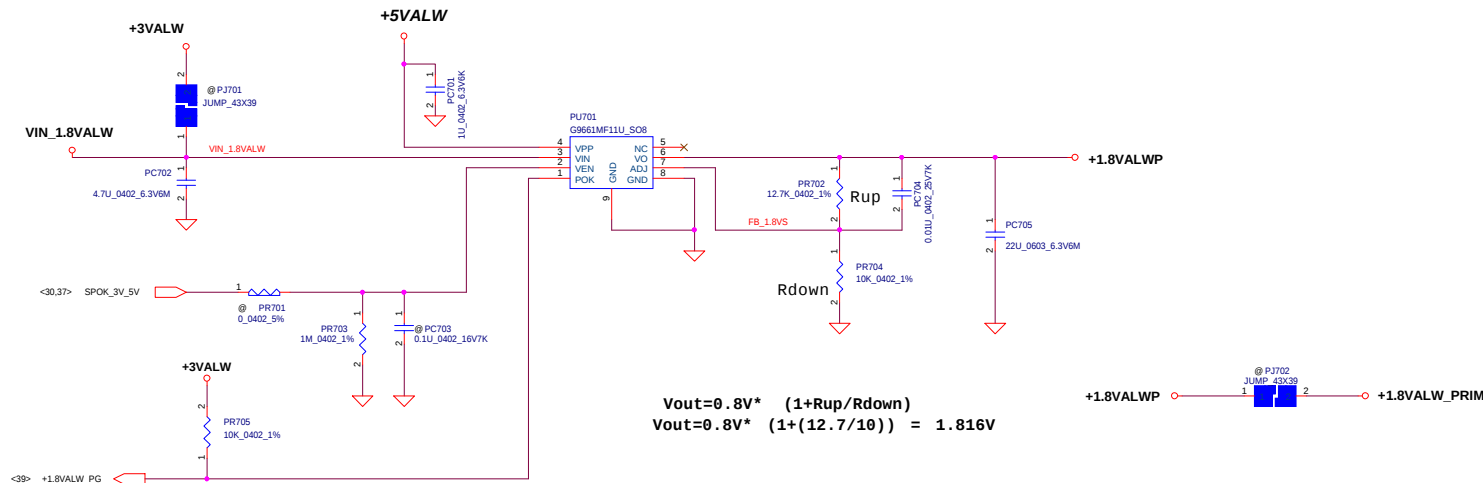
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                       |            |                                 |                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------|------------|---------------------------------|----------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data    |            | <b>Compal Electronics, Inc.</b> |                |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                       |            | Size<br>Custom                  |                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                       |            | <b>CSV01 LA-E891P</b>           |                |
| Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            | Monday, June 12, 2017 |            | Sheet 38 of 46                  |                |

EN pin don't floating  
If have pull down resistor at HW side, pls delete PR702

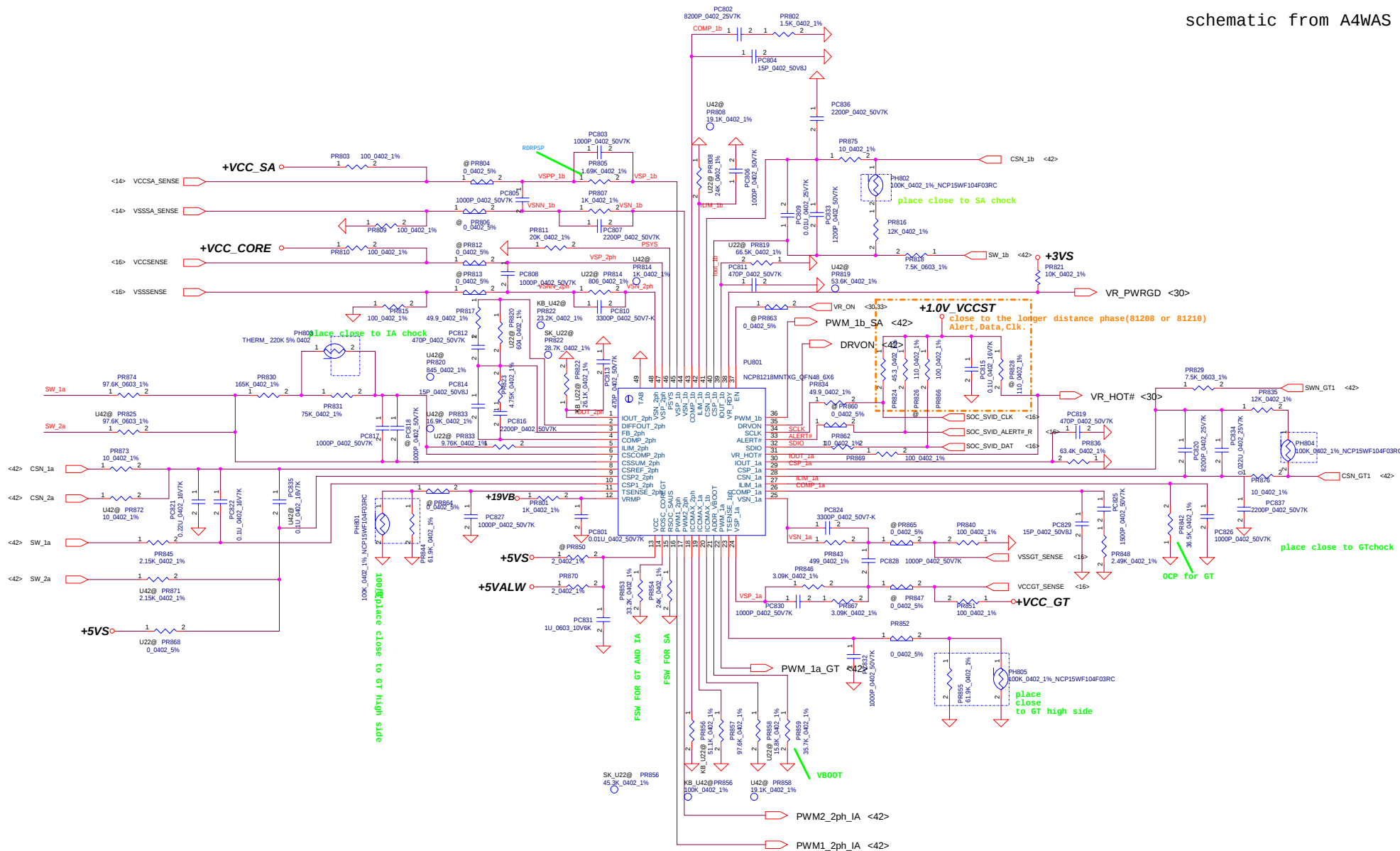


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            |                          |                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|--------------------------|-----------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       | Compal Secret Data |                 |            | Compal Electronics, Inc. |                       |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/02         | Deciphered Date | 2016/11/10 | Title                    | VCCP                  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Date:                    | Monday, June 12, 2017 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Sheet                    | 39 of 46              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                    |                 |            | Rev                      | 1A                    |

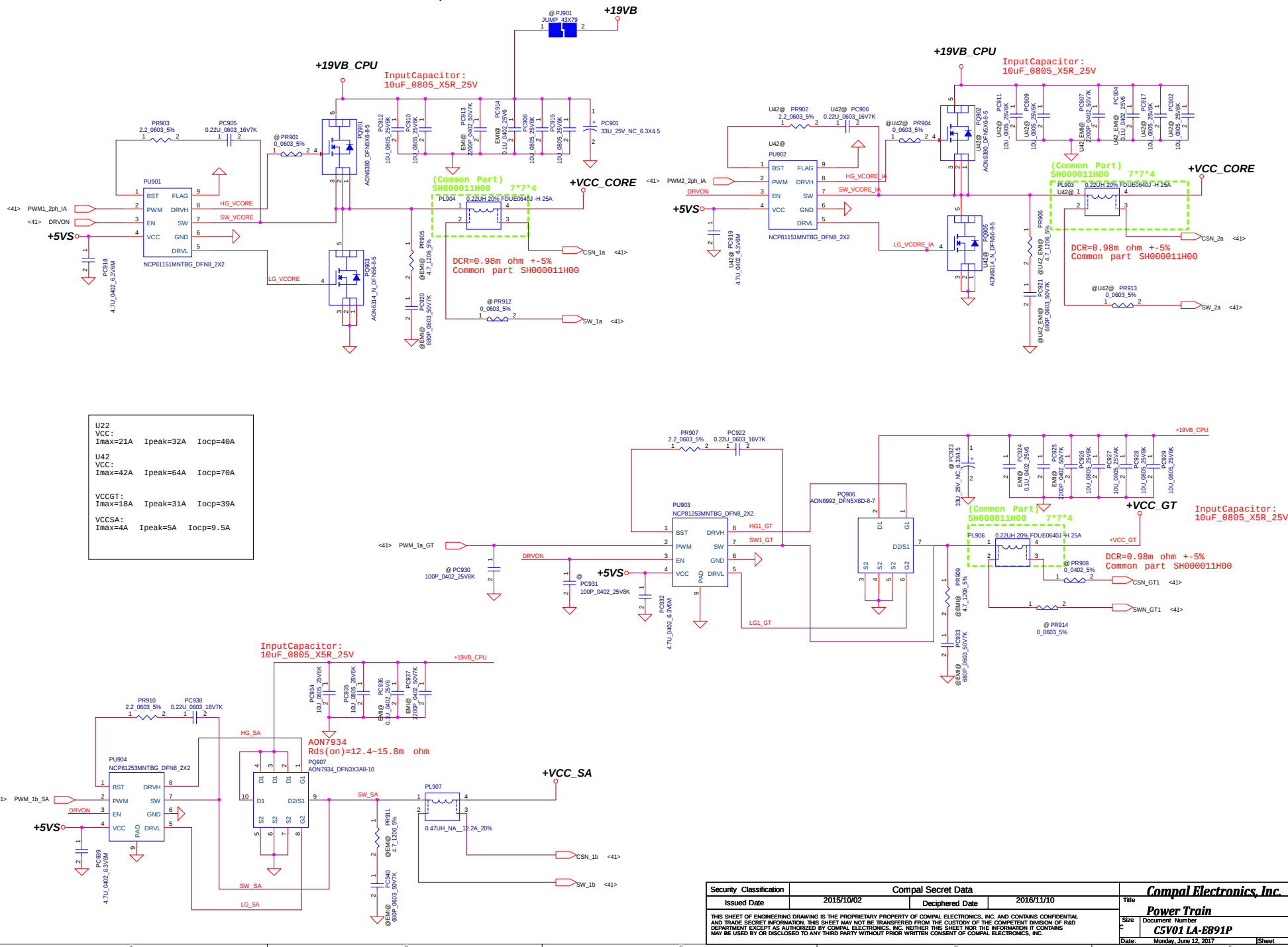
schematic from A4WAS  
IC change to G971

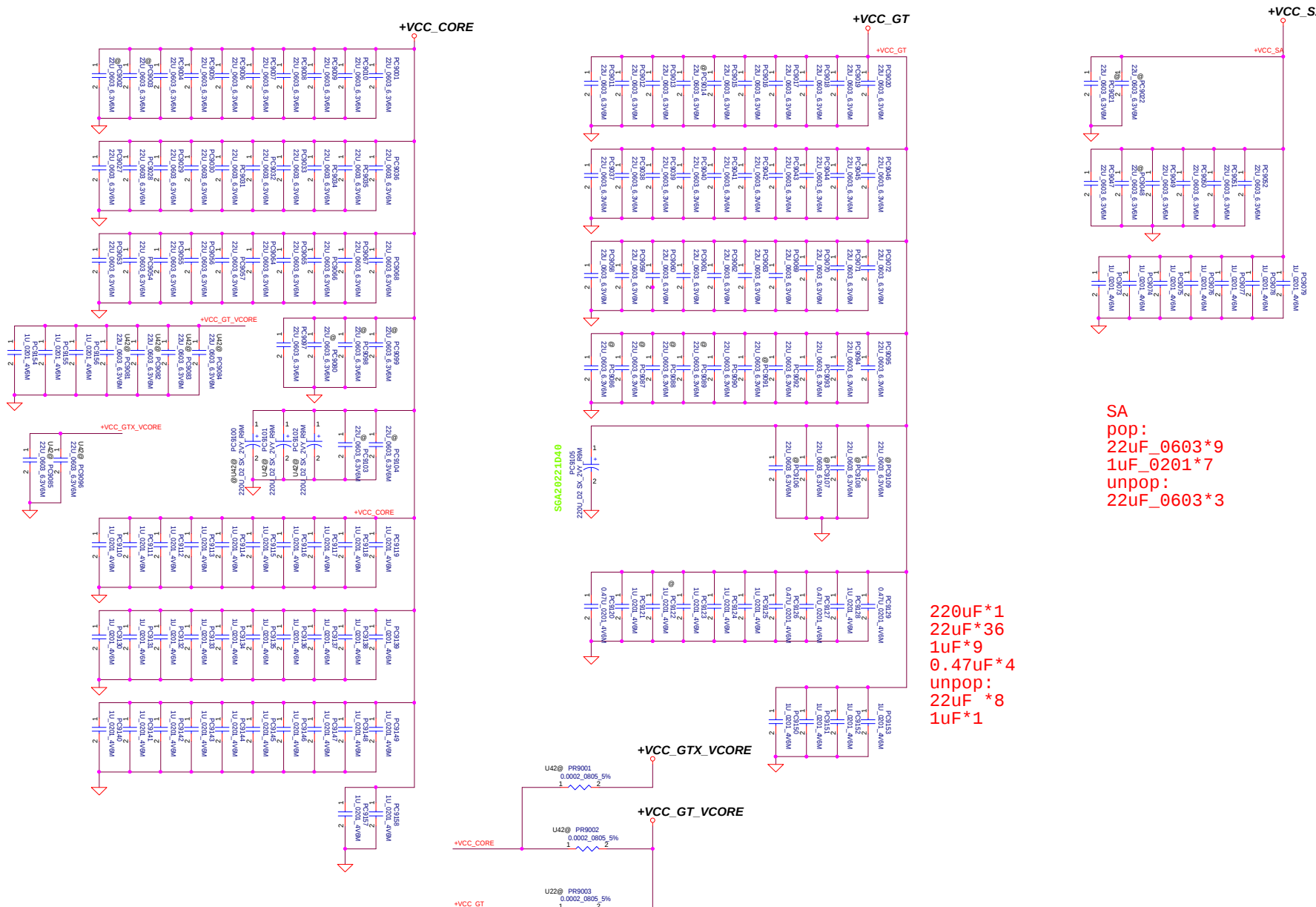


|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                                  |                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|--------------------------------------------------|----------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | <b>Compal Electronics, Inc.</b><br><b>SY8032</b> |                      |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Date                                             | Monday, June 12 2017 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            | Sheet                                            | 40 of 46             |



change PL9002, PL9003  
SM01000C000 to comm  
part SM01000P200





SA  
pop:  
22uF\_0603\*9  
1uF\_0201\*7  
unpop:  
22uF\_0603\*3

220uF\*1  
22uF\*36  
1uF\*9  
0.47uF\*4  
unpop:  
22uF \*8  
1uF\*1

2016/10/26  
VCORE Output Capacitor:  
U42  
22uF\_0603\*39  
1uF\_0201\*35  
220uF \*3  
UNPOP  
22\_0603\*9  
220uF \*3

2016/10/26  
VCORE Output Capacitor:  
U22  
22uF\_0603\*33  
1uF\_0201\*35  
UNPOP  
22\_0603\*9  
220uF \*3

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                 |            |                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|------------|-----------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                         | Compal Secret Data |                 | Title      |                             |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2015/10/02         | Deciphered Date | 2016/11/10 | Size                        |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                 |            | Rev 1A                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                 |            | Date: Monday, June 12, 2017 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |                 |            | Sheet 43 of 46              |

## Version change list (P.I.R. List)

Page 1 of 1  
for PWR

| Item | Fixed Issue                          | Reason for change         | Rev. | PG# | Modify List                                                                                                                                                                                                                                                                                                                                 | Date | Phase |
|------|--------------------------------------|---------------------------|------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|
| 01   | prevent part damage                  |                           |      |     | PC410 and PC411 change to 0603 size                                                                                                                                                                                                                                                                                                         | 1/3  | DVT   |
| 02   | reduce part count                    |                           |      |     | PR515, PR804, PR806, PR812, PR813, PR865, PR847, PR860, PR876, PR863, PR875, PR901, PR912, PR904, PR913, PR914 change to R-short                                                                                                                                                                                                            | 1/3  | DVT   |
| 03   | voltage level too high               | 3.37V change to 3.33V     |      |     | PR402 change to 13.3K from 13.7K                                                                                                                                                                                                                                                                                                            | 1/3  | DVT   |
| 04   | voltage level too high               | 1.02V change to 1.011V    |      |     | PR608 change to 13.7K from 14K                                                                                                                                                                                                                                                                                                              | 1/3  | DVT   |
| 05   | SMT                                  | close SMT stencil problem |      |     | PJ9001, PJ9002, PJ9003 change to 0.2m ohm                                                                                                                                                                                                                                                                                                   | 1/3  | DVT   |
| 06   | CPU transient                        | meet CPU spec             |      |     | PR805 change to 1.69K from 1.78K<br>PR814 change to 806ohm from 1K<br>PR874 change to 97.6K from 93.1K<br>PC821 change to 0.22u from 0.1uF<br>PC820 change to 8200P from 0.01uF<br>PR836 change to 63.4K from 69.8K<br>PR846 and PR867 change to 3.09K from 3.32K<br>PC9002, PC9003, PC9099, PC9098, PC9014, PC9091, PC9048 change to dummy | 1/14 | DVT   |
| 07   | DC S5 power consumption              | meet DC S5 2.5mA spec     |      |     | PR209 change to 750K from 10K<br>PR211 change to 150K from 2K                                                                                                                                                                                                                                                                               | 1/14 | DVT   |
| 08   | prevent shortage                     |                           |      |     | PL907 change to common part SH00001ED00<br>PQ502 change to AON7506                                                                                                                                                                                                                                                                          | 1/14 | DVT   |
| 09   | meet panel spec voltage              | remove boost circuit      |      |     | PQ701, PQ702, PR711, PR712, PR713, PR715, PR716, PC712, PC713, PC714, PC715, PC722, PC724, PL702, PD701, PU703, PC717, PC718, PC719, PC721, PL701 change to un-pop                                                                                                                                                                          | 1/14 | DVT   |
| 10   | reduce part count                    |                           |      |     | PR852 and PR864 change to R-short                                                                                                                                                                                                                                                                                                           | 1/14 | DVT   |
| 11   | spok voltage level                   |                           |      |     | PR407 change to 20K ohm from 100K                                                                                                                                                                                                                                                                                                           | 1/24 | DVT   |
| 12   | Change to 5V OCP setting             |                           |      |     | PR406 change to 105K ohm from 107K                                                                                                                                                                                                                                                                                                          | 3/1  | PVT   |
| 13   | for CPU transient                    |                           |      |     | PU901 and PU902 change to NCP81151MNTB6_DFN8_2X2<br>PU903 change to NCP81253MNTB6_DFN8_2X2<br>PR908 change to R-short from 10 ohm<br>PR876, PR875 change to 10ohm from R-short<br>PC837, PC836 change to pop to 2200P                                                                                                                       | 3/1  | PVT   |
| 14   | from soucer suggest for USB 5V Level |                           |      |     | PC901 change part number SF000007700 from SF000007200<br>PR401 change to 31.6K from 30.9K                                                                                                                                                                                                                                                   | 3/4  |       |
| 15   | for U42 modify                       |                           |      |     | PR808 change to 19.1K<br>PR814 change to 1K<br>PR820 change to 845 ohm<br>PR857 fix to 97.6k<br>PR858 Change to 19.1K<br>PR836 fix to 63.4K<br>PR819 Change to 53.6K<br>PR320 Change to 499ohm<br>PC323 Change to 2.2uF<br>PC9100 change to unpop                                                                                           |      |       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                    |            |                                        |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------|------------|----------------------------------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                       |            | Compal Secret Data |            | Title                                  |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2015/10/02 | Deciphered Date    | 2016/11/10 | PIR                                    |  |
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| Date: Monday, June 12, 2017                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                    |            | Rev 1A                                 |  |
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[illegible]

HW Schematic chang list (P.I.R)

| Item | Page | Date | Rev. | Reason for change                          | Modify Item                                                    |
|------|------|------|------|--------------------------------------------|----------------------------------------------------------------|
| 42   | 11   | 3/28 | 1A   | Crystal damping resistor adjust            | RC235 , RC236 change to 33ohm 1%                               |
| 43   | 18   | 3/28 | 1A   | Crystal damping resistor adjust (U42)      | RC233 , RC234 change to 33ohm 1% , CC128 ,CC129 Change to 27pF |
| 44   | 8    | 3/28 | 1A   | RCOMP [0] 121 ohm for Mixed MD and SO-DIMM | RC38 Change to 121 ohm                                         |
| 45   | 8    | 3/28 | 1A   | Update DAZ PN & Add U42 PN                 | DAZ change to DAZ20X00102 ,Add U42 QN5D@ / Q15C@               |
| 46   | 8    | 3/28 | 1A   | Change ESD Main source                     | DYI Change to SC300002900                                      |
| 47   | 8    | 4/17 | 1A   | Add D7W01 Project ID setting               | RC207 / RC213 BOM structure D7W01@                             |
| 48   | 30   | 4/17 | 1A   | Add D7W01 Board ID setting                 | RB4 27K ohm for EA17PVT@ , RB4 33K ohm for EA17MP@             |
|      |      |      |      |                                            |                                                                |
|      |      |      |      |                                            |                                                                |
|      |      |      |      |                                            |                                                                |
|      |      |      |      |                                            |                                                                |