


LCFC Confidential

Vienna-HSW M/B Schematics Document

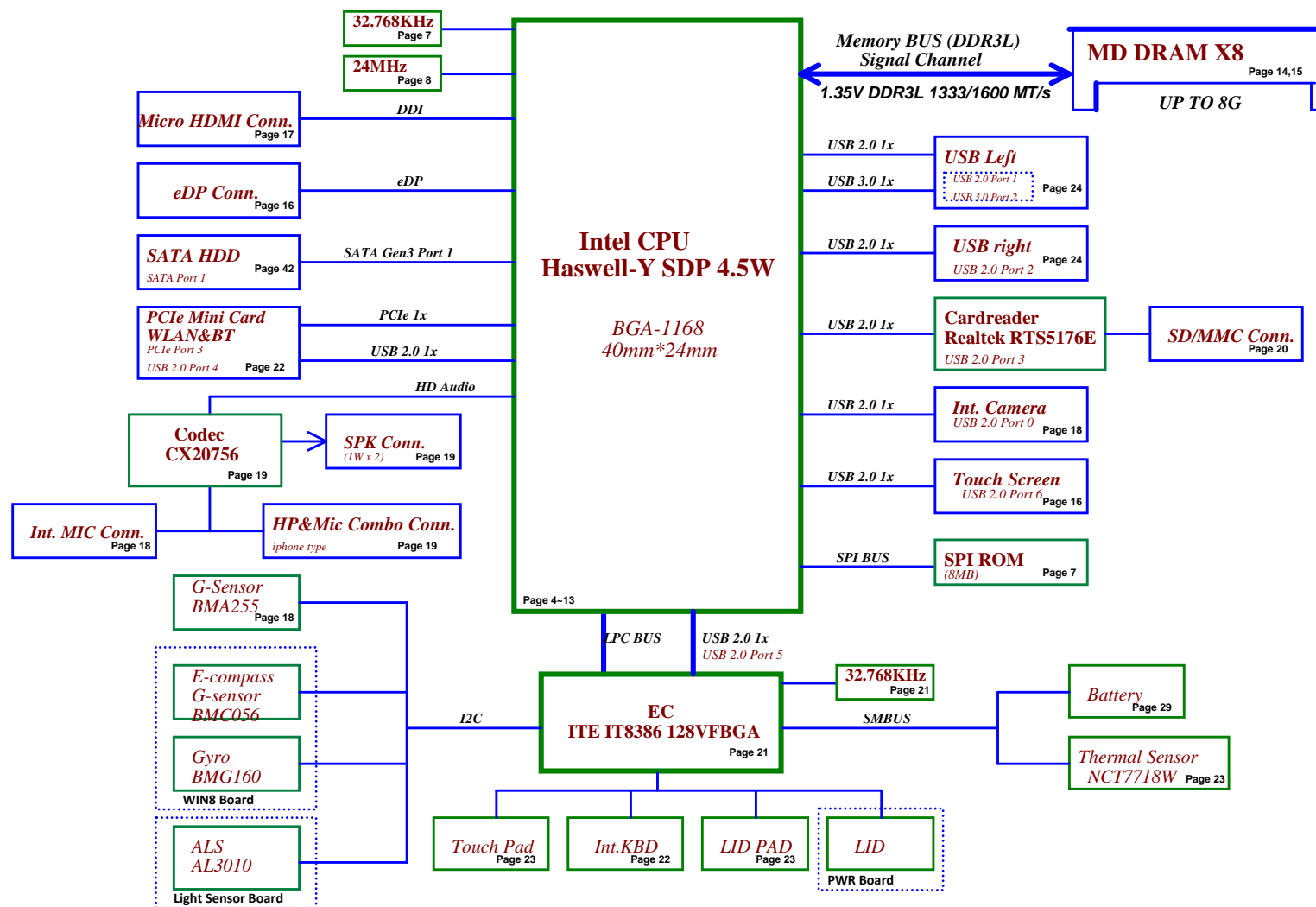
INTEL Haswell Mobile ULT Platform

2013-10-08

REV:1.0

Security Classification	LC Future Center Secret Data			Title					
Issued Date	2013/11/08	Deciphered Date	2013/11/08	Cover Page					
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VIENNA HSW Refresh Block diagram



Sub-board

WIN8,MIC and Sensor function SUB

Light Sensor SUB

PWR SUB

Power Plane State	B+ +3VL	+12VSB +3VALW +5VALW	+3VALW_PCH	+1.35V	+5VS +3VS +1.5VS +1.05VS +0.68VS +CPU_CORE +GFX_CORE
S0	O	O	O	O	O
S3	O	O	O	O	X
DS3	O	O	X	O	X
S5 S4/AC Only	O	O	O	X	X
S5 S4 Battery only	O	X	X	X	X
S5 S4 AC & Battery don't exist	X	X	X	X	X

SMBUS Control Table

SM Bus address

PCIE PORT LIST


USB Port Table

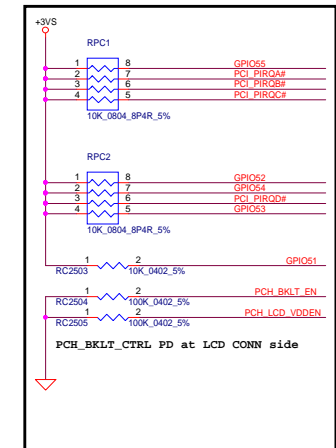
	USB20	USB30
0	CAMERA	1 x
1	Left USB	2 Left USB
2	Right USB	3 x
3	CARD READER	4 x
4	BT	
5	Sensor	
6	TOUCH PANEL	
7	x	

BOM Structure		BOM Structure	
DA8@	NPI M/B	MIRROR@	EC Mirror-code enable
DAZ@	MP M/B	UNMIRROR@	EC Mirror-code disableable
HDMI@	HDMI logo		
USB30@	USB3.0 logo		
RF@	RF request		
EMC@	EMC request		
X8@	Support 8pcs RAM stuff		

X76&VGA Configuration Table

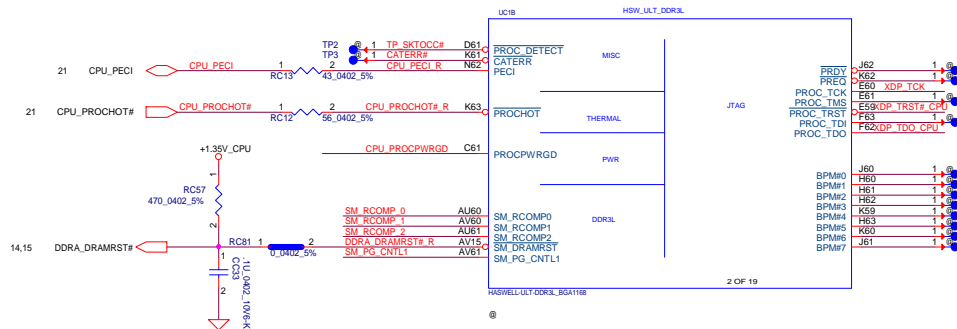
PCB And LOGO Config

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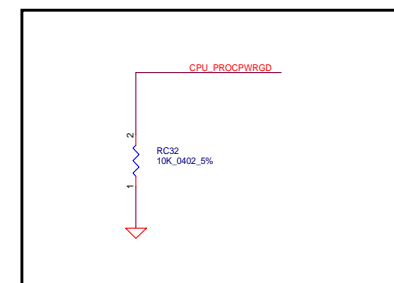
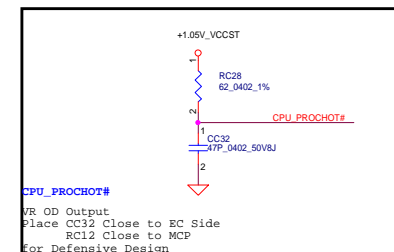
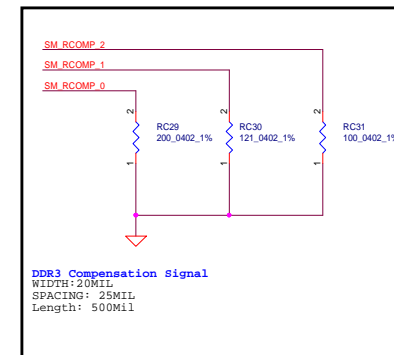
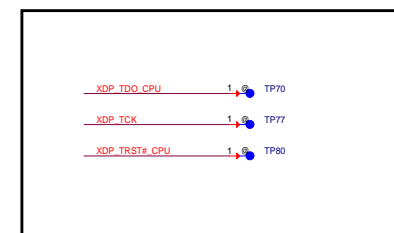
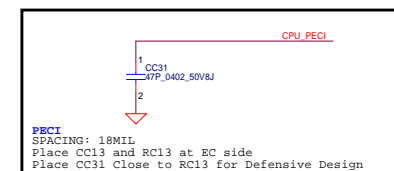
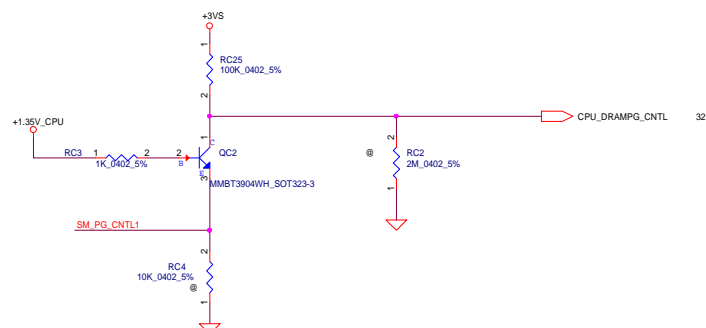


Pin Name	Recommendation
DDPC_AUXP	No Connect
DDPC_AUXN	No Connect
DDPC_HPDP	No Connect
DDI2_TXP[3:0]	No Connect
DDI2_TXN[3:0]	No Connect
DDPC_CTRLCLK	No Connect
DDPC_CTRLDATA	No Connect

5
Haswell MCP (MISC,THERMAL,JATG)



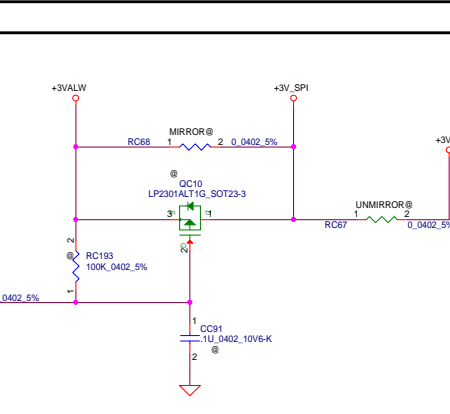
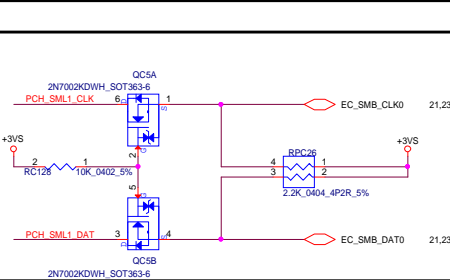
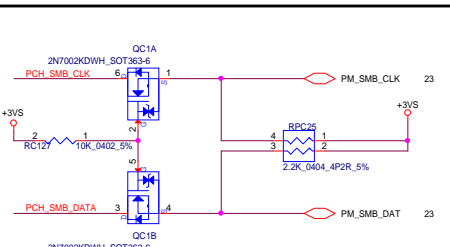
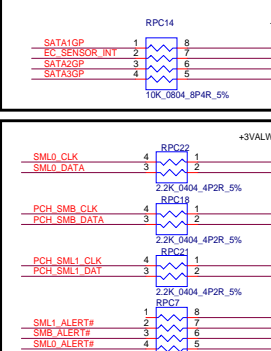
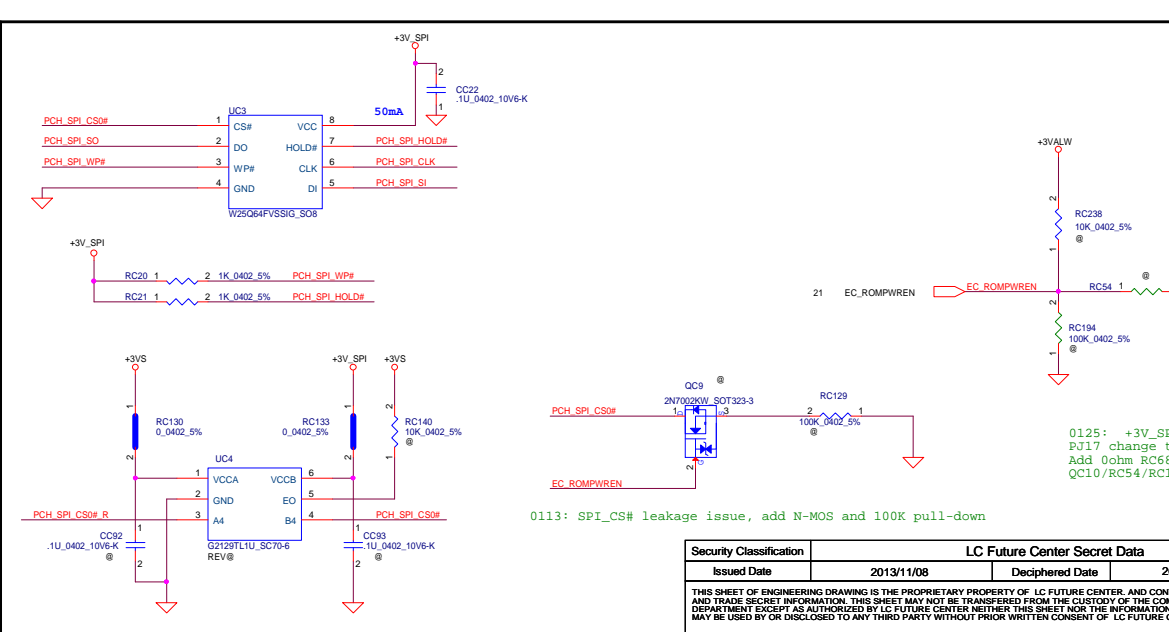
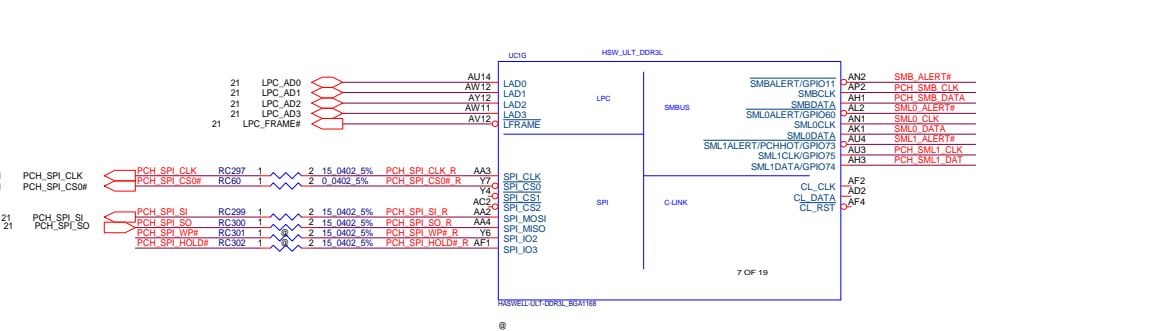
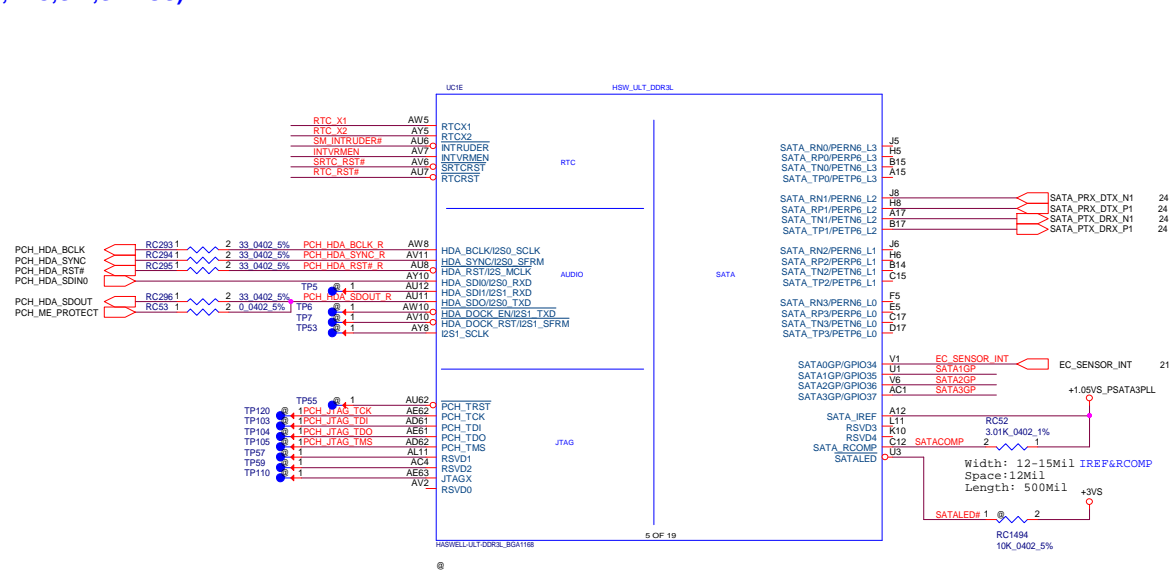
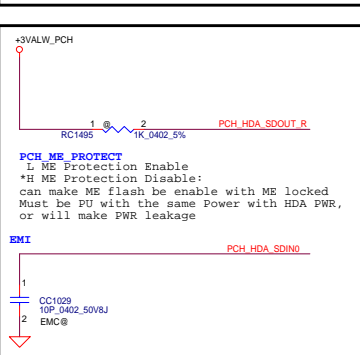
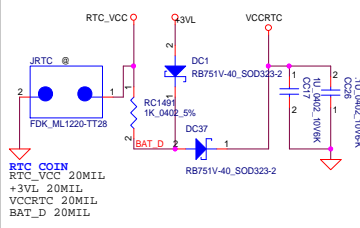
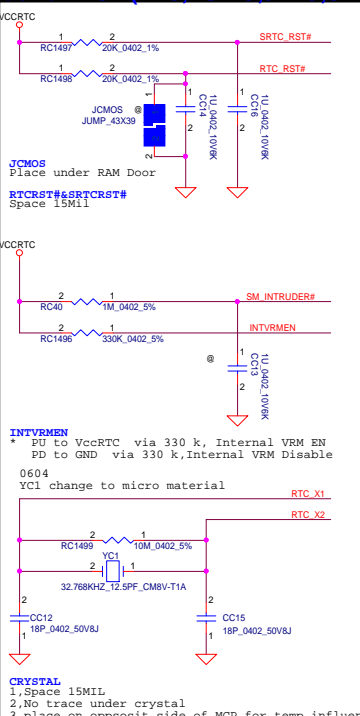
0312: CC33 change to stuff for DRAMRST# high pulse issue



Security Classification		LC Future Center Secret Data		Title MCP (MISC, THERMAL, JATG) <i>LCFC</i>	
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aswell MCP (RTC,AUDIO,JTAG,SATA,LPC,SPI,SMBUS

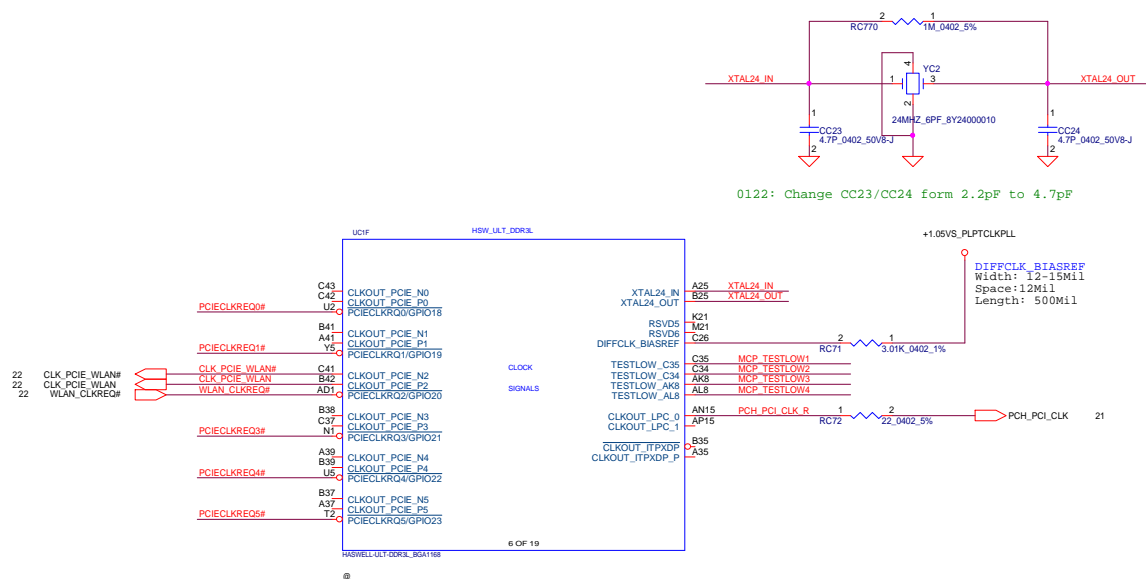


0125: +3V_SPI portion for no support DS3 change:
PJ17 change to RC67 and NC.
Add 0ohm RC68 connect to +3VALW
QC10/RC54/RC194/RC129/QC9 chang to NC.

0113: SPI CS# leakage issue, add N-MOS and 100K pull-down

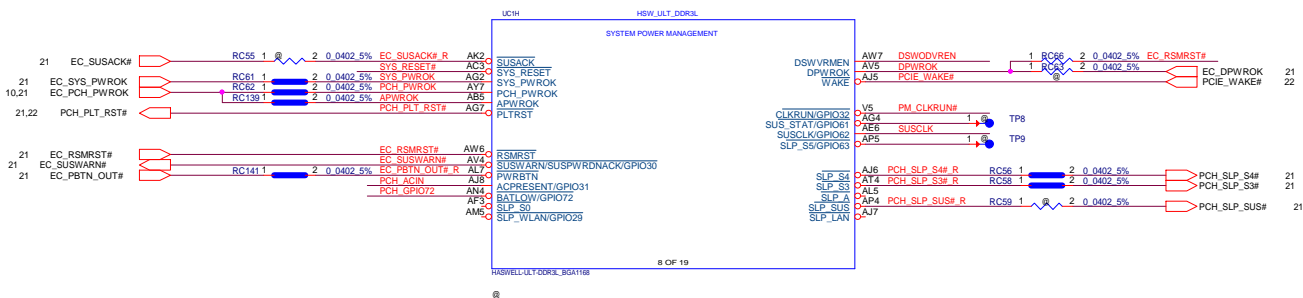
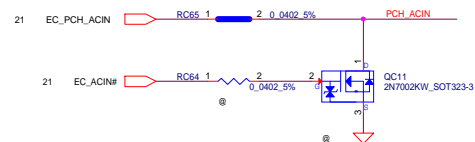
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Haswell MCP (Clock,PM)



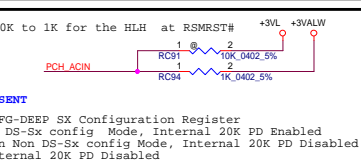
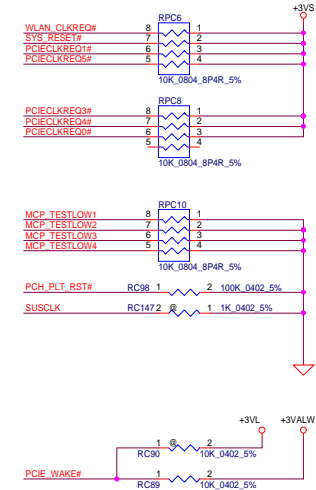
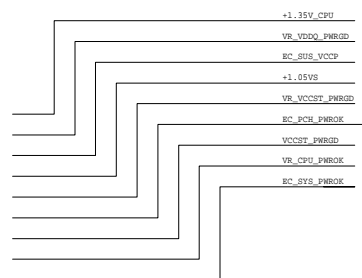
0122: Change CC23/CC24 form 2.2pF to 4.7pF

0211: RC65 change to stuff, RC64&QC11 change to NC for EC control by no-deep sleep



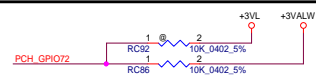
0125: RC63/RC55/RC59 change to NC, add RC66 connecto to RSMRST# for no support DS3

0312: RC65,RC61,RC62,RC139,RC141,RC56,RC58 change to R-Short



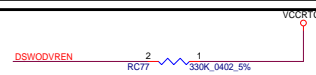
ACPRESENT

DSX_CFG-DEEP Sx Configuration Register
 *0 In DS-Sx config Mode, Internal 20K PD Enabled
 In Non DS-Sx config Mode, Internal 20K PD Disabled
 1 Internal 20K PD Disabled



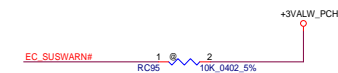
BATLOW:

```
*PU To VCCDSW3_3 IN DEEP SX PLATFORM
PU TO VCCSUS3_3 IN NON DEEP SX PLATFORM
```



DSWVRMEN(PU to RTCVCC):

```
*1 Enable   DSW 3.3V TO 1.05V Integrated
DSW On-die Voltage Regulator
0 Disable
```

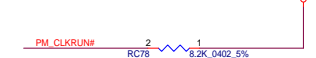


SUSWARN:


- ```

1, 10K PU to VCCSUS Follow CRB
*2, No Need PU for Check List used as SUSWARN#
3, Need PU for GPIO30 and not used

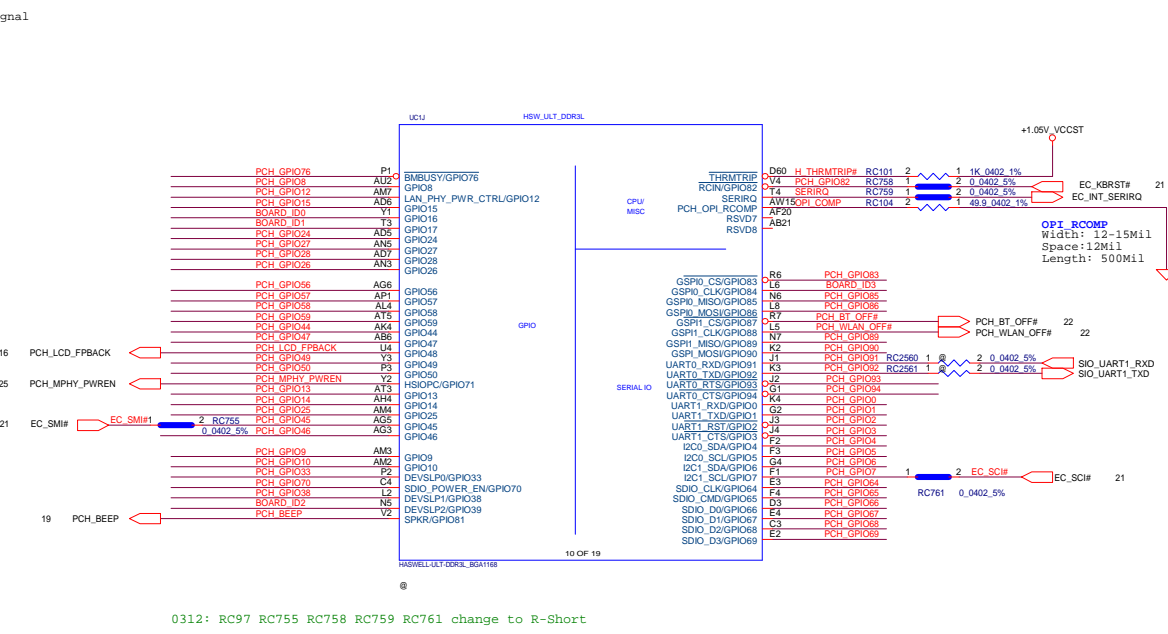
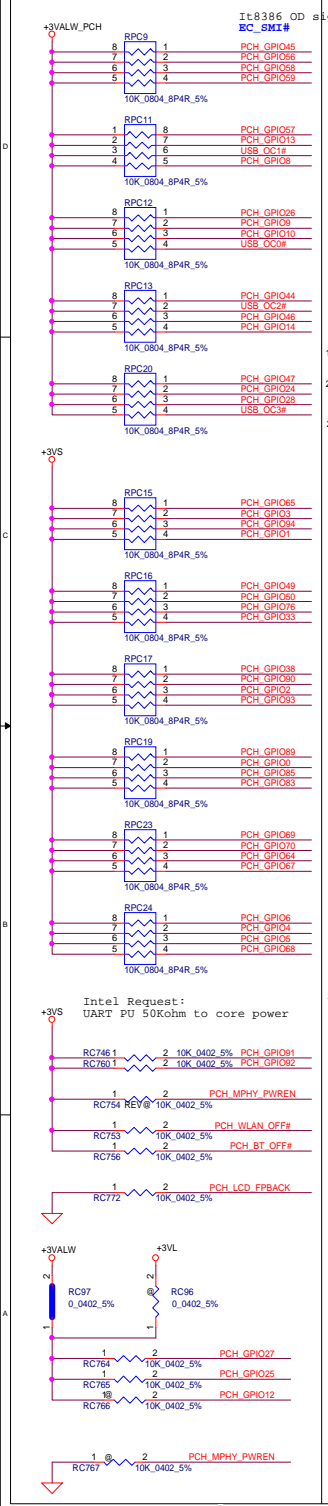
```



Intel demand

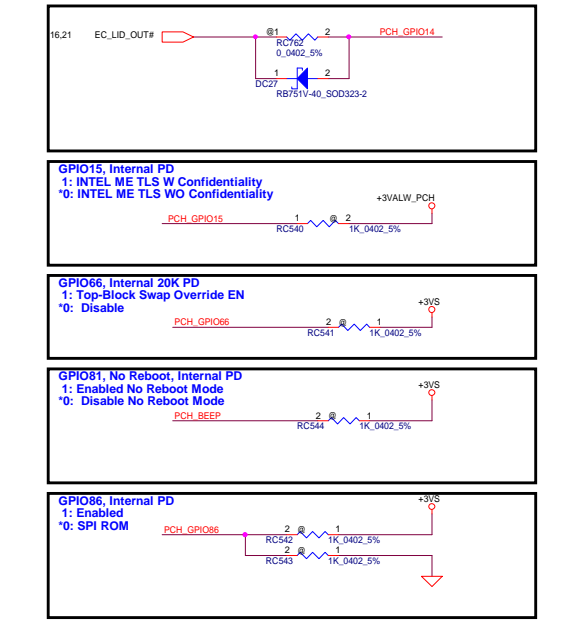
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| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  |  | LC Future Center Secret Data |  | Title           |  |  |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                              |  |                 |  | MCP (Clock,PM)                                                                        |  |
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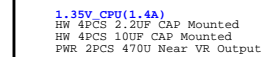
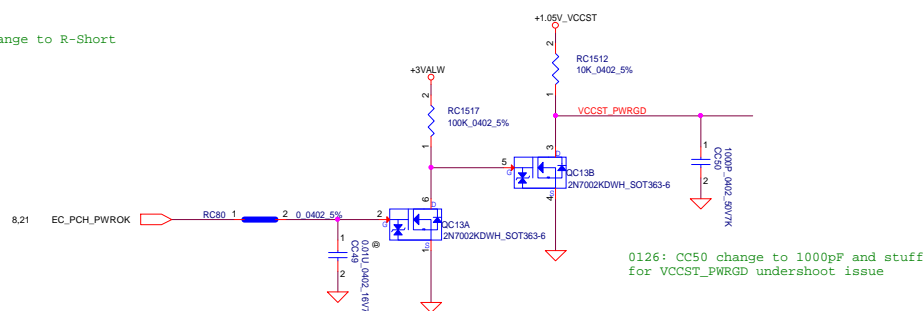
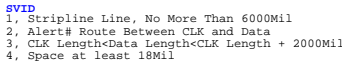



PCB ID table

| PCB ID3 | PCB ID2 | PCB ID0 | PCB ID0 | DRAM                |
|---------|---------|---------|---------|---------------------|
| 0       | 0       | 0       | 0       | 4GB (8x4Gb) HYNIX   |
| 0       | 0       | 0       | 1       | 4GB (8x4Gb) MICRON  |
| 0       | 0       | 1       | 0       | 4GB (8x4Gb) SAMSUNG |
| 0       | 0       | 1       | 1       | 4GB (8x4Gb) ELPIDA  |
| 0       | 1       | 0       | 0       | 8GB (8x8Gb) HYNIX   |
| 0       | 1       | 0       | 1       | 8GB (8x8Gb) MICRON  |
| 0       | 1       | 1       | 0       | 8GB (8x8Gb) SAMSUNG |
| 0       | 1       | 1       | 1       | 8GB (8x8Gb) ELPIDA  |
| 1       | 0       | 0       | 0       | 2GB (4x4Gb) HYNIX   |
| 1       | 0       | 0       | 1       | 2GB (4x4Gb) MICRON  |
| 1       | 0       | 1       | 0       | 2GB (4x4Gb) SAMSUNG |
| 1       | 0       | 1       | 1       | 2GB (4x4Gb) ELPIDA  |
| 1       | 1       | 0       | 0       | 4GB (4x8Gb) HYNIX   |
| 1       | 1       | 0       | 1       | 4GB (4x8Gb) MICRON  |
| 1       | 1       | 1       | 0       | 4GB (4x8Gb) SAMSUNG |
| 1       | 1       | 1       | 1       | 4GB (4x8Gb) ELPIDA  |

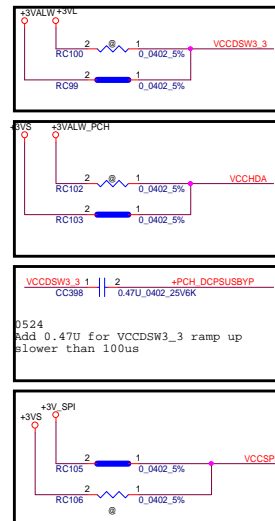
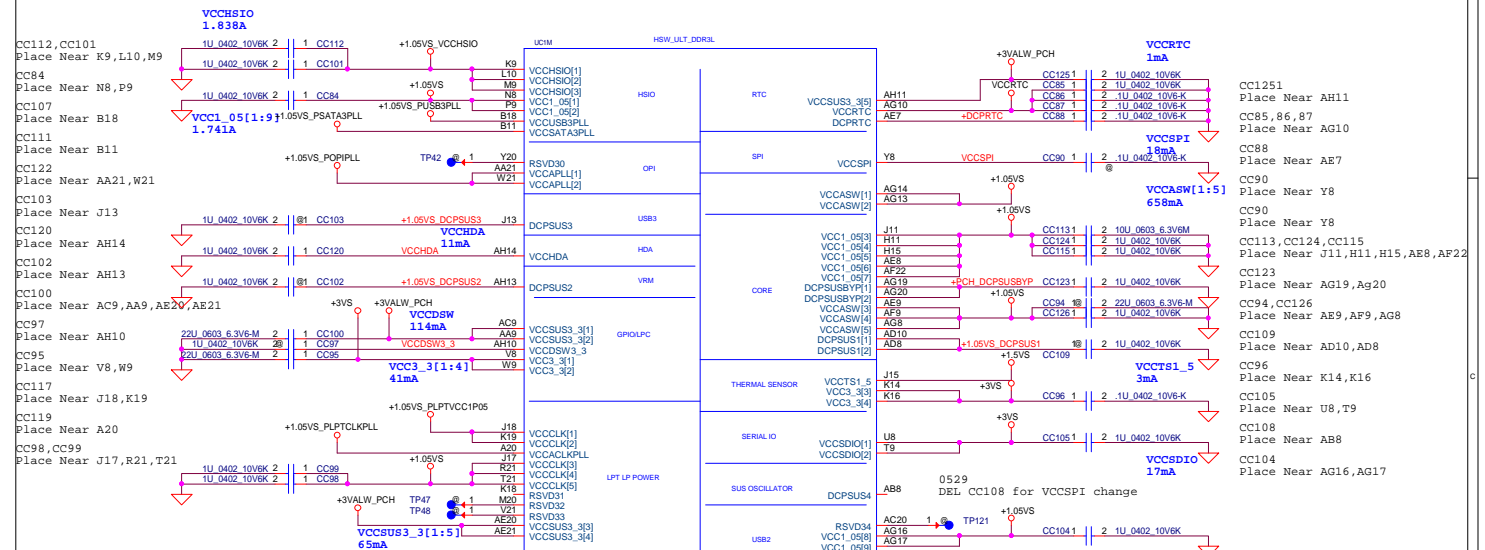
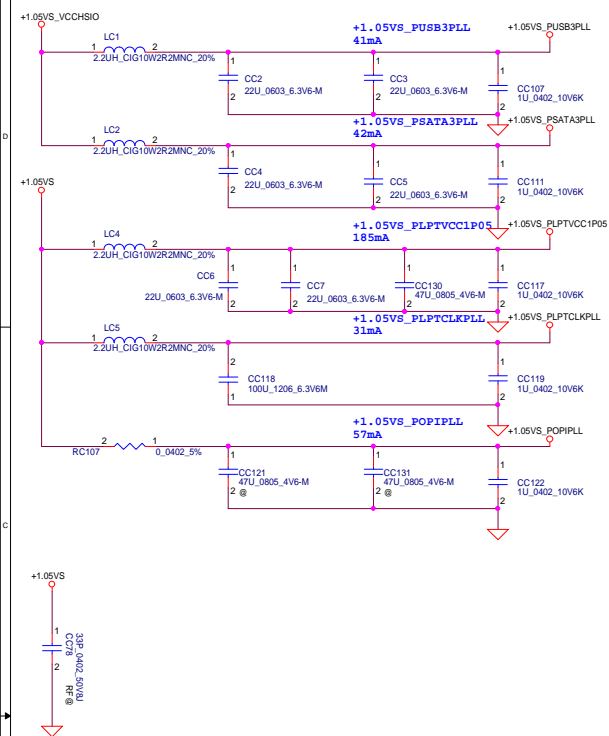


VCC\_SENSE  
Length Match: No More Than 25Mil  
Space: More Than 25Mil  
GND Reference





|                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |            |  |                              |  |            |  |             |  |                                                                                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|--|------------------------------|--|------------|--|-------------|--|---------------------------------------------------------------------------------------|--|
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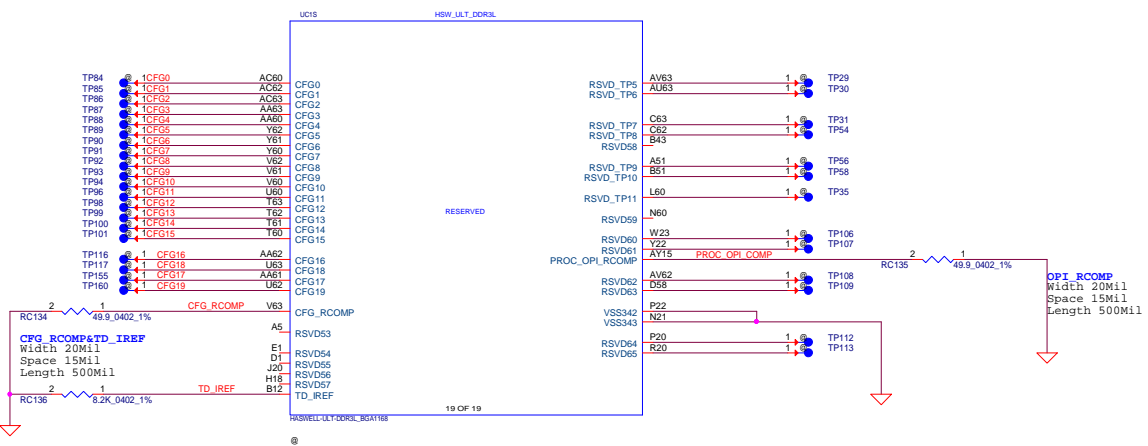
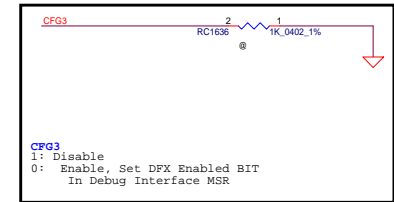
## Haswell MCP (Power2)

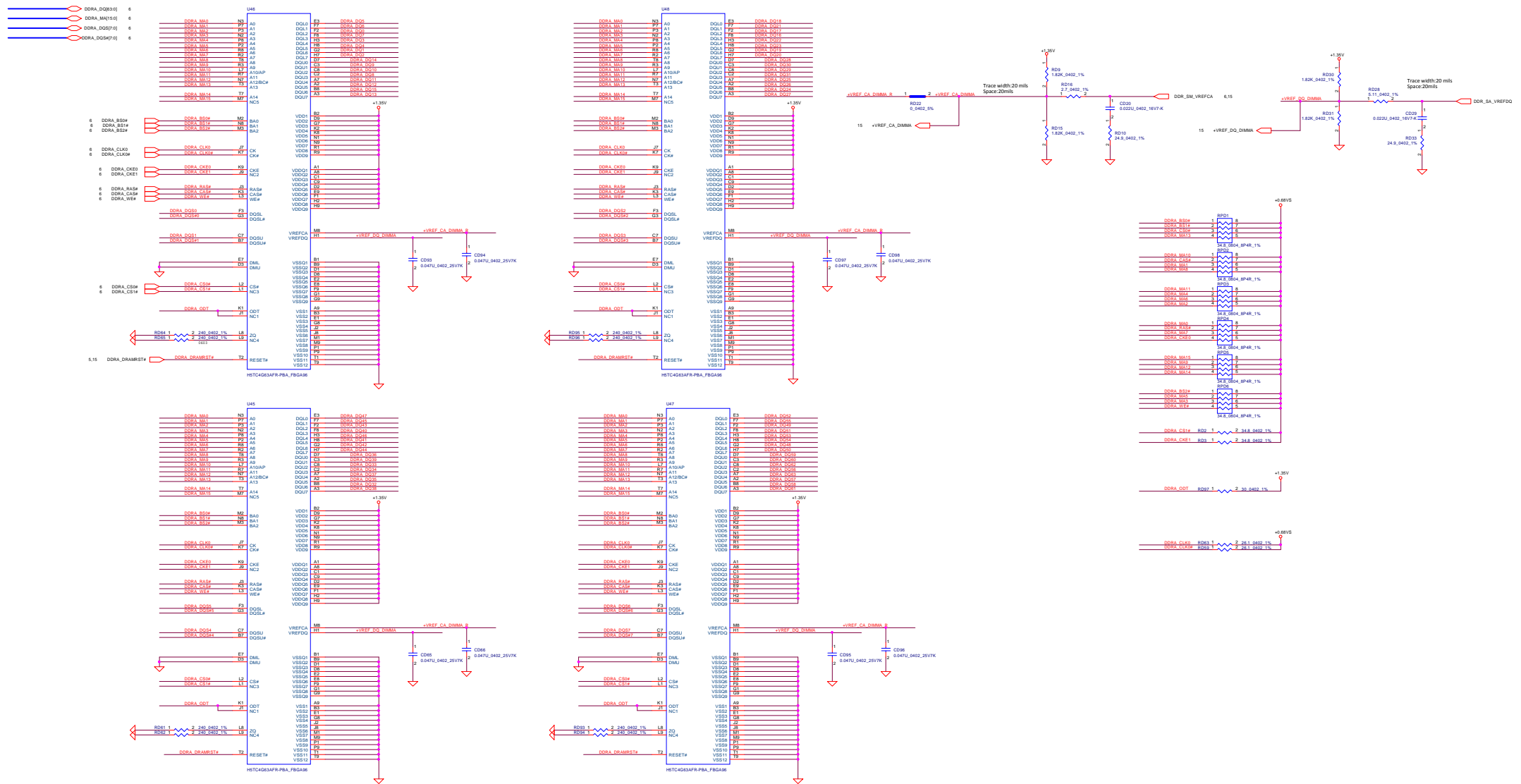


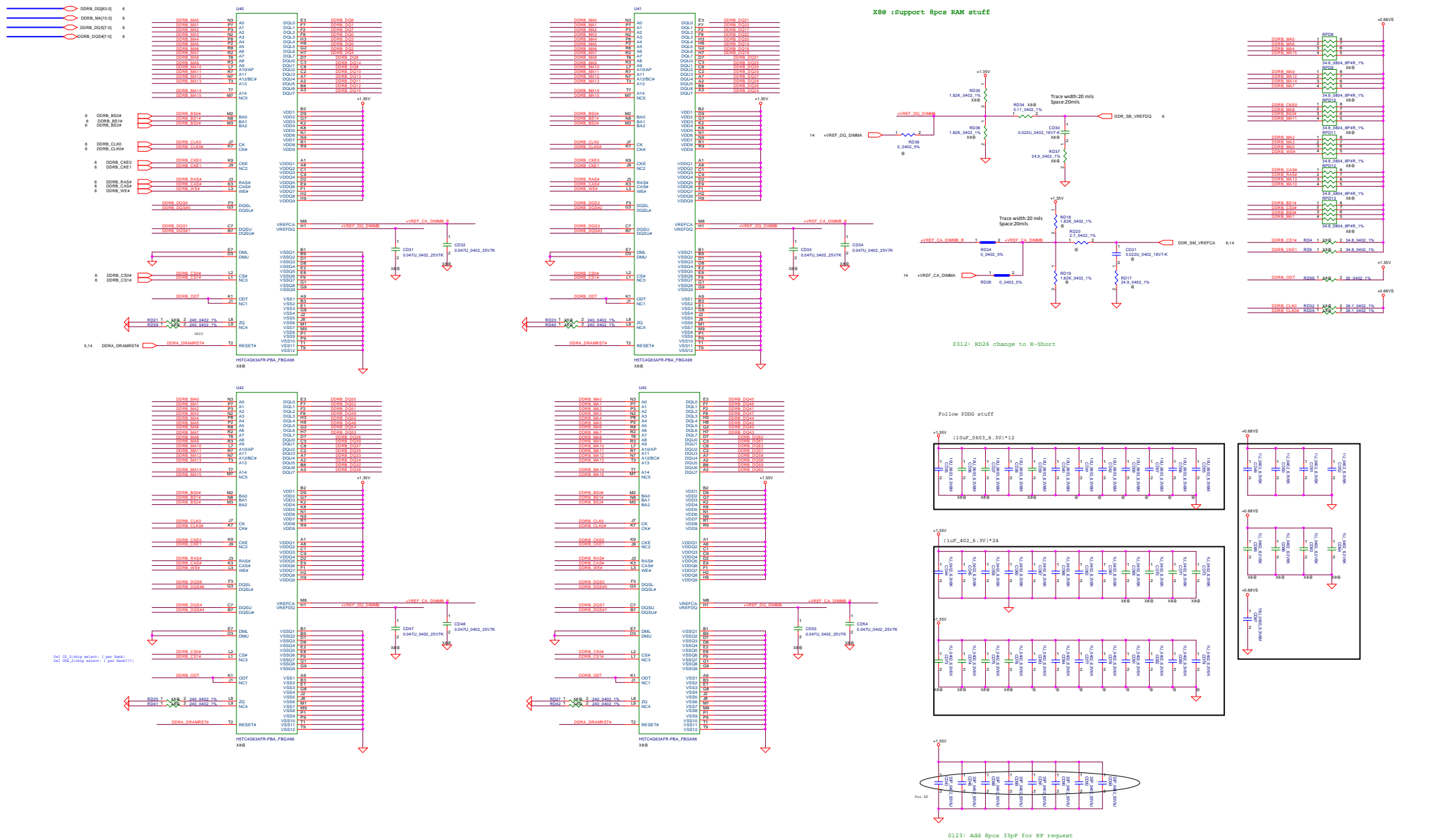
0312: RC99 RC103 RC105 change to R-Short

|                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                              |            |                         |                 |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------|------------|-------------------------|-----------------|---------------------------------------------------------------------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                             |            | LC Future Center Secret Data |            | Title                   |                 |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                 |            |                         |                 |                                                                                       |          |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                 |            |                         | Vienna-HSN      | 1.0                                                                                   |          |
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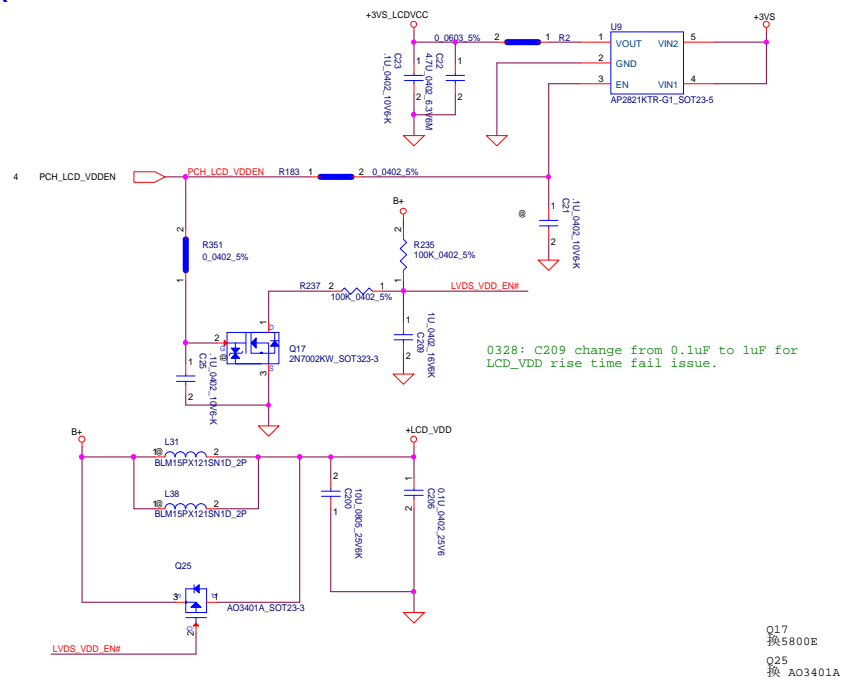


X80 :support 8pcs RAM stuff

0312: RD26 change to R-Short

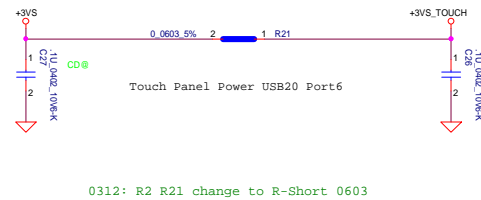
Follow PDDG stuff

0123: Add 8pcs 33pF for RF request



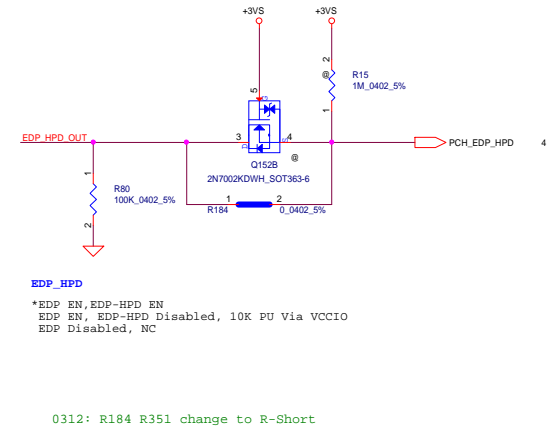
Q17  
换5800E  
Q25  
换 AO3401A

## TOUCH PANEL



0312: R2 R21 change to R-Short 0603

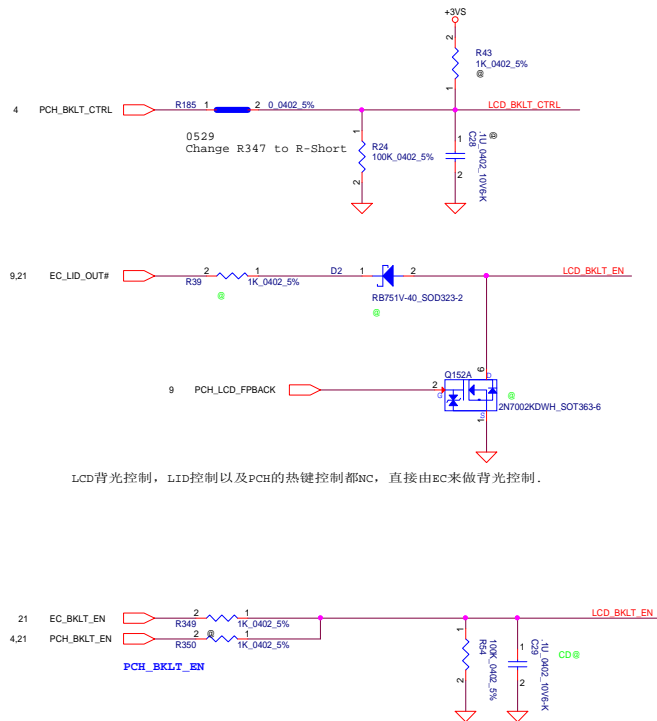
## Hot-Plug



\*EDP EN, EDP-HPD EN  
EDP-EN, EDP-HPD Disabled, 10K PU Via VCCIO  
EDP Disabled, NC

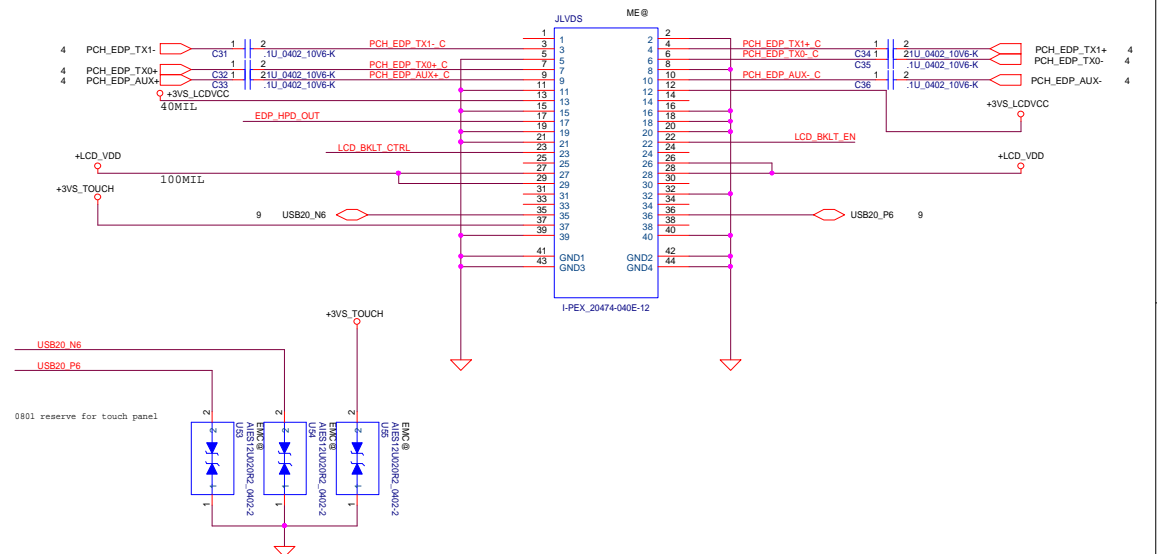
0312: R184 R351 change to R-Short

## BKLT CNTL



## CONN

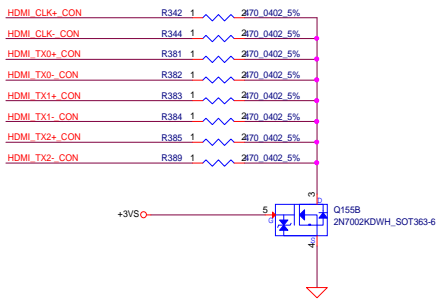
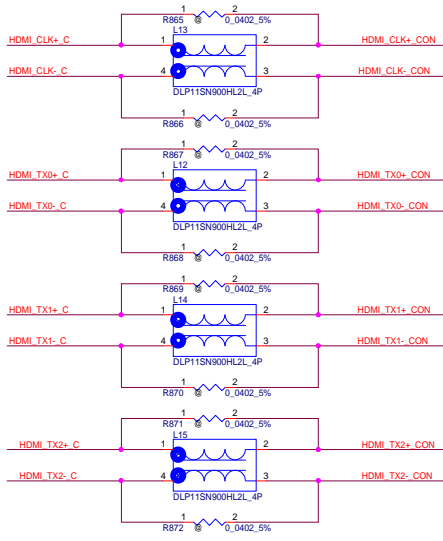
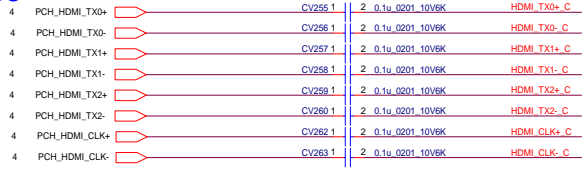
LCVCC  
Width 40Mil  
LCDVDD  
Width 100Mil



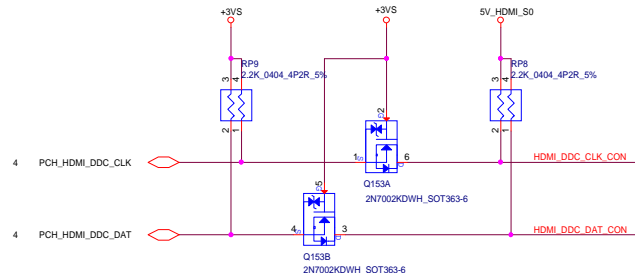
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            |       |                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|------------|-------|-----------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  | LC Future Center Secret Data |                 | Title      | LCD   |                 |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                              | 2013/11/08                   | Deciphered Date | 2013/11/08 | Size  | Document Number |
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| Tuesday, April 01, 2014                                                                                                                                                                                                                                                                                                                                                                                                                  |                              |                 |            | Sheet | 16 of 36        |



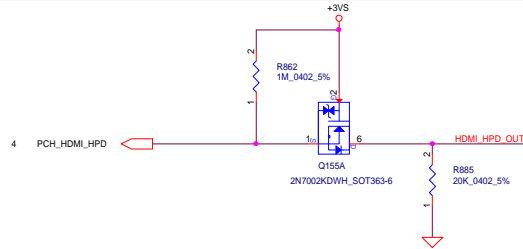
# TMDS



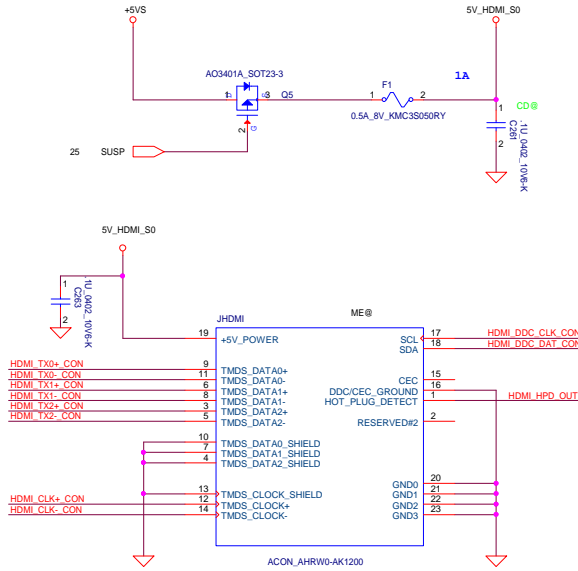
# DDC



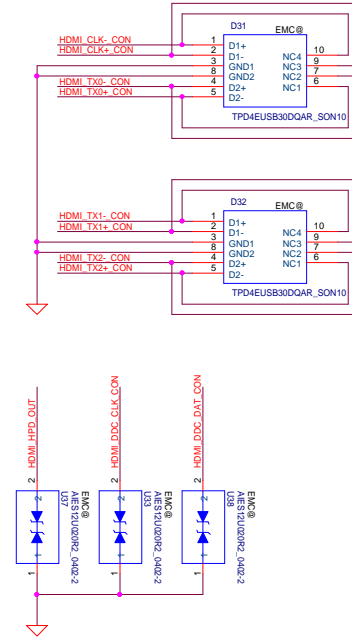
# H-PLUG



# CONN



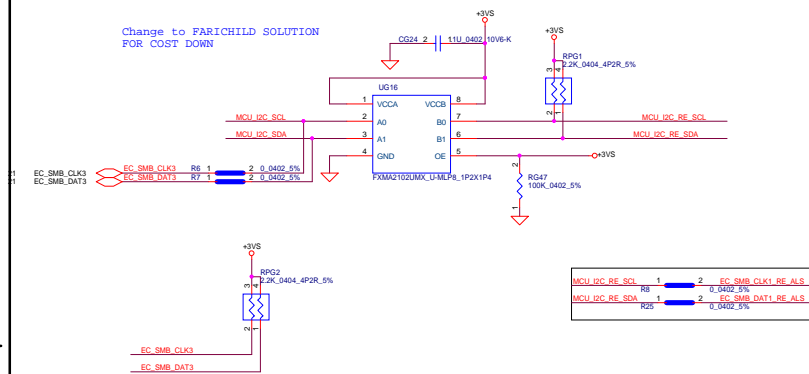
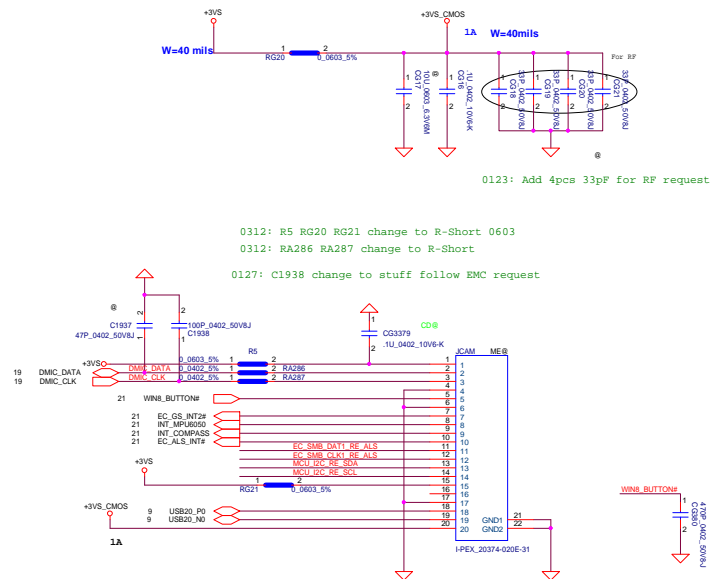
# ESD



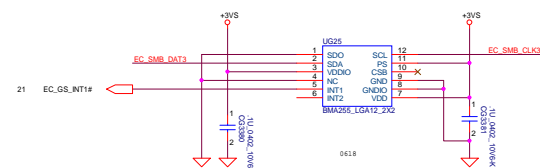
# Note


1. Mount 0ohm resistor, Reserve choke

## CMOS Camera WIN8 And MCU CONN

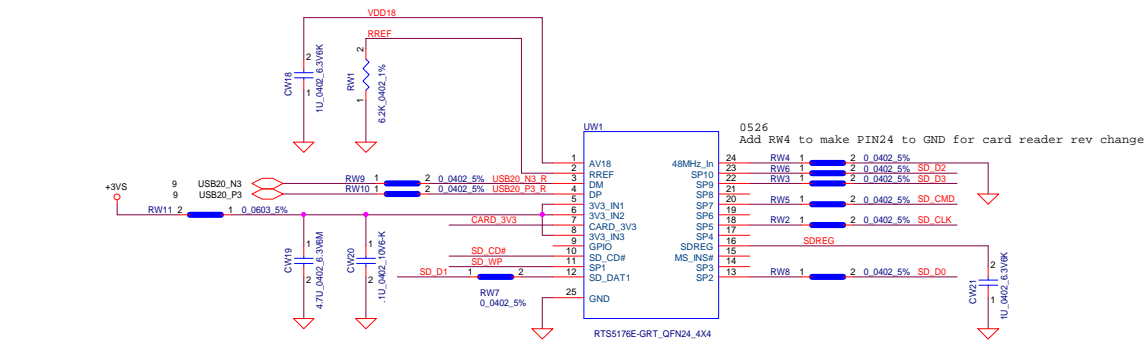


## G-SENSOR



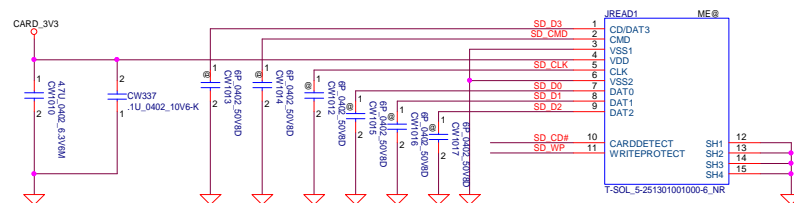
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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|-------------------------------|---------------------------------------------------------------------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | LC Future Center Secret Data |                 | Title                         |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2013/11/06                   | Deciphered Date | 2013/11/06                    |                                                                                       |
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| Date<br>Tuesday, April 01, 2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                              |                 | Document Number<br>Vienna-BSH | Rev<br>1.0                                                                            |
| Sheet<br>18 of 36                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                              |                 |                               |                                                                                       |

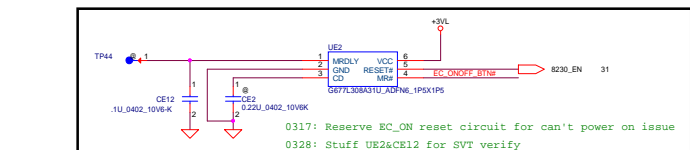
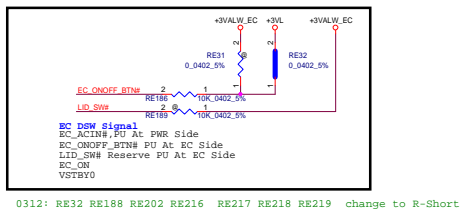
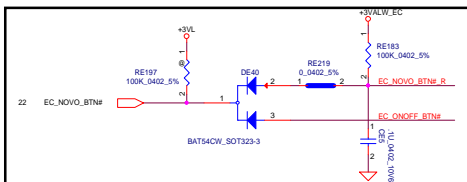
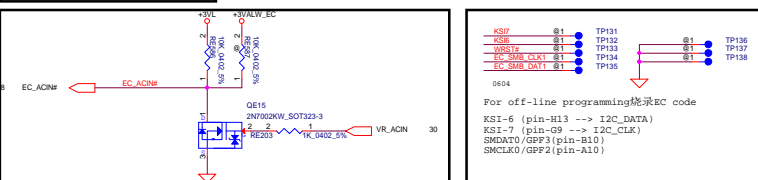
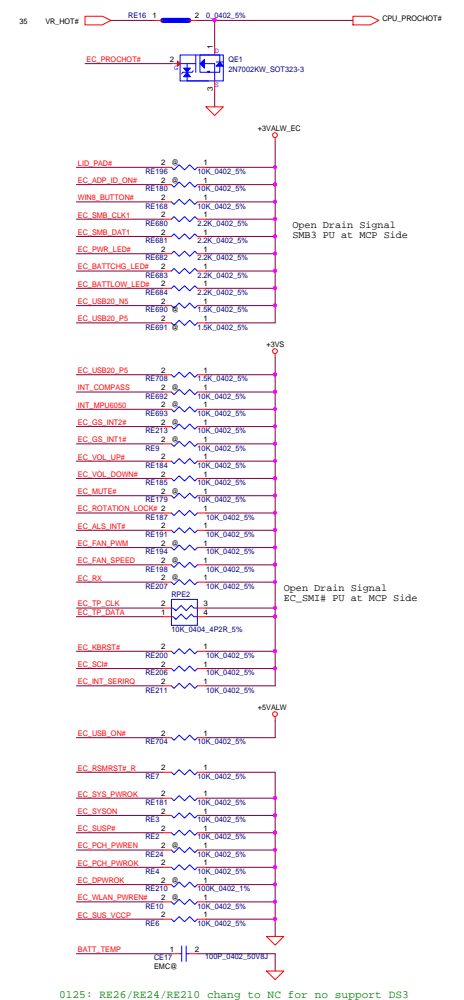
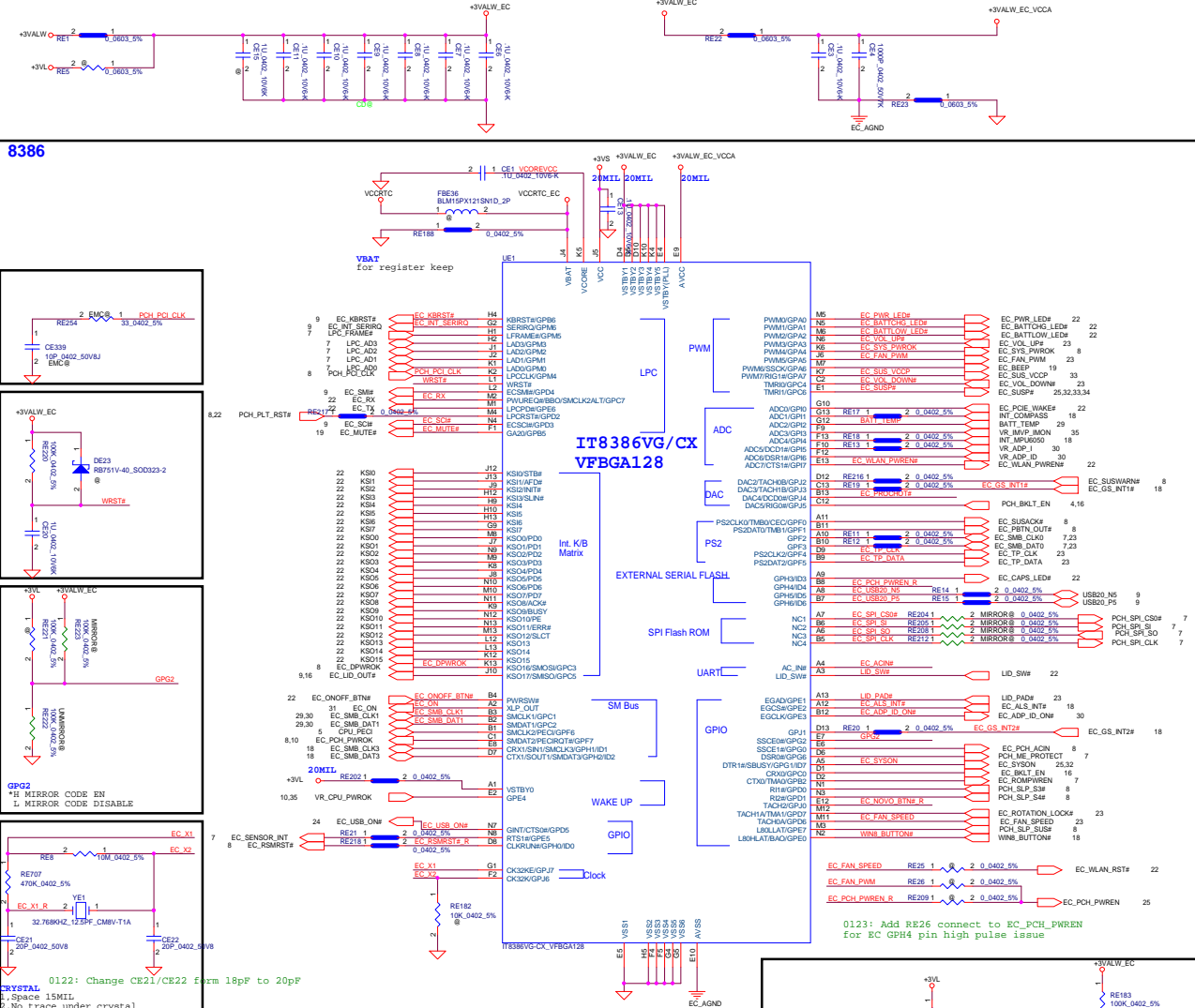




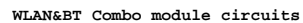
0312: RW11 change to R-Short 0603

0312: RW2 RW3 RW4 RW5 RW6 RW7 RW8 change to R-Short





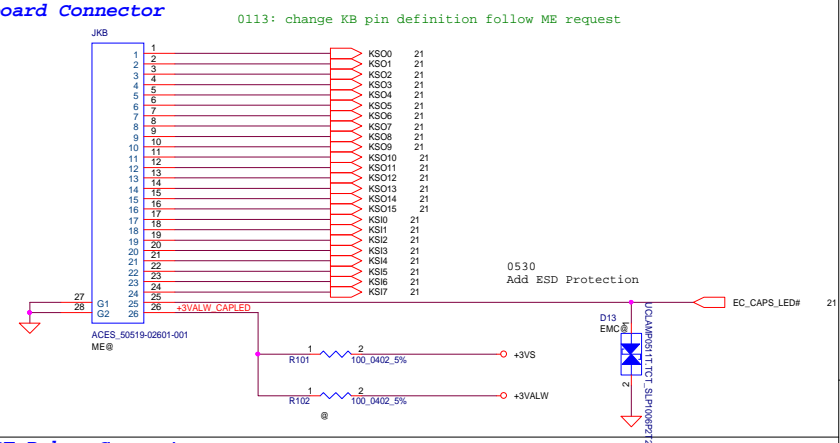
### *Mini Card(WLAN/WiMAX)*



|            | BT on module<br>Enable | BT on module<br>Disable |
|------------|------------------------|-------------------------|
| * BT_CRTL  | H                      | L                       |
| PCH_BT_ON# | L                      | H                       |

0312: R105 R110 R120 change to R-Short

0113: change KB pin definition follow ME request

[illegible]

### Thermal Sensor and Fan

**EC\_FAN\_SPEED**  
**EC\_FAN\_PWM**

**Nuvoton thermal sensor**  
**Address 1001\_100xb**

**10mA**

**U35**  
**REMOTEL+**  
**REMOTEL-**  
**THM\_SHDN#**  
**T\_CRIT#**  
**NCT7718W\_MSP08**

**EC\_SMB\_CLK0**  
**EC\_SMB\_DAT0**  
**THM\_ALERT#**  
**THM\_SHDN#**

**EC\_SMB\_CLK0**  
**EC\_SMB\_DAT0**  
**THM\_ALERT#**  
**THM\_SHDN#**

**Close to memory side**

**REMOTEL+/-**  
**Trace width/space:10/10 mil**  
**Trace length:<8"**

**Close U35**

**REMOTEL+**  
**REMOTEL-**

### Rotation Vol up/down button

**EC\_ROTATION\_LOCK#**  
**EC\_VOL\_UP#**  
**EC\_VOL\_DOWN#**

**EC\_ROTATION\_LOCK#**  
**EC\_VOL\_UP#**  
**EC\_VOL\_DOWN#**

**0113: change TP pin definition follow ME request**

**TP**  
**TP**  
**TP**

**EC\_TP\_CLK**  
**EC\_TP\_DATA**  
**PM\_SMB\_CLK**  
**PM\_SMB\_DAT**

**EC\_TP\_CLK**  
**EC\_TP\_DATA**  
**PM\_SMB\_CLK**  
**PM\_SMB\_DAT**

### LCD ROTATION LID

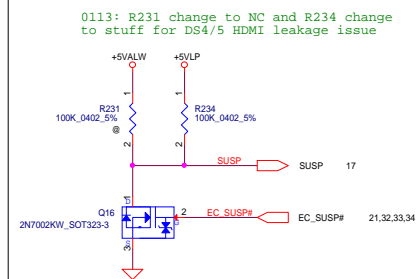
**U39**  
**R219**  
**R218**  
**C193**  
**C194**  
**LID\_PAD#**

**0312: R222 R219 change to R-Short**

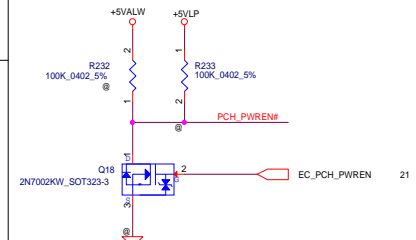
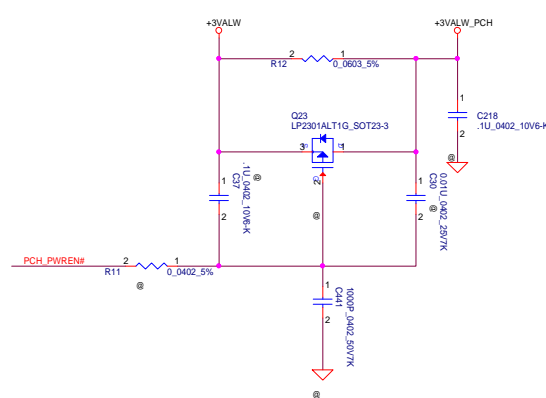
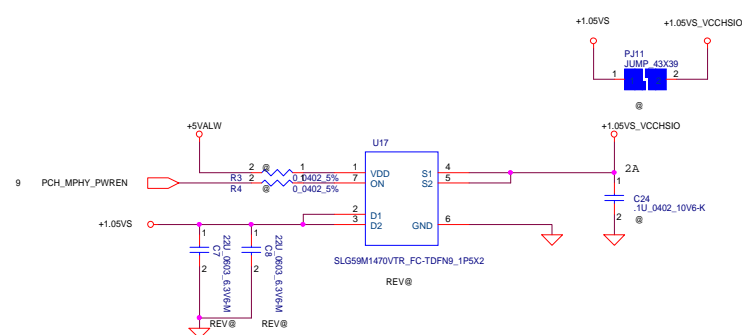
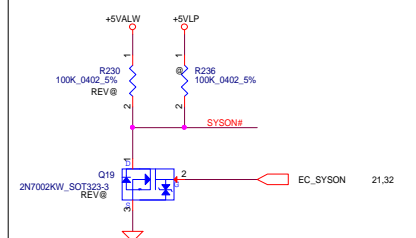
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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|------------|--------------------------------------------------------------------------------------------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  | LC Future Center Secret Data |                 | Title      |                                                                                                              |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                              | 2013/11/08                   | Deciphered Date | 2013/11/08 | CONN(THM&FAN&RTN&SPK) KFC                                                                                    |
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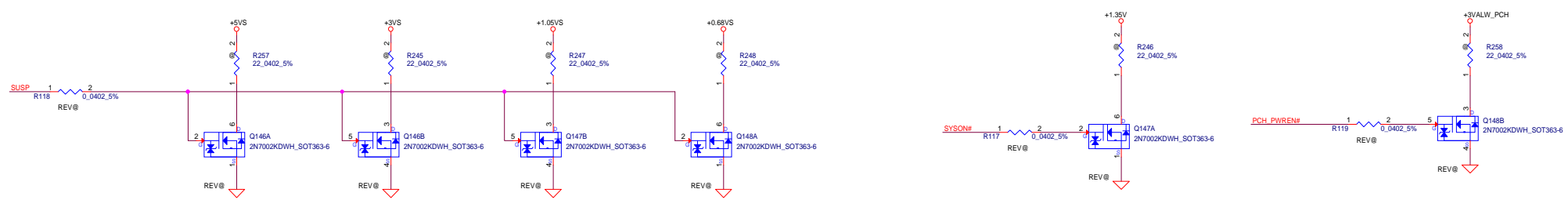



```
0113: TPS22966 slow rate control pin
CT1/CT2 reserve 1000P cap for output rise
time control
```



0113: R232 change to NC and R233 change to stuff for +3VALW\_PCH pulse issue

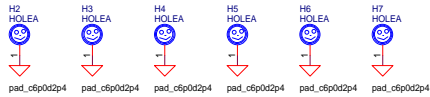
```
0126: +3VALW_PCH portion R12 change to
stuff,Q23/C441/C218/R11/Q18/R233& RE24/RE26
change to NC
```



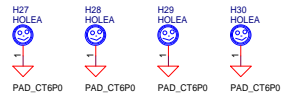
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|------------------------------------------------------------------------------------------------------------------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | LC Future Center Secret Data |  | Title                                                                                                            |  |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | Deciphered Date              |  | <p><b>POWER SWITCH</b></p>  |  |
| 2013/11/08                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | 2013/11/08                   |  | <p>Size Document Number</p> <p><b>vienna-HSW</b></p> <p>Page: Tuesday, April 01, 2014 12:56 PM of 56</p>         |  |
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pad\_c6p0d2p4



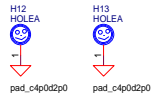
PAD\_CT6P0



PAD\_SHAPE2P0X4P29



pad\_c4p0d2p0



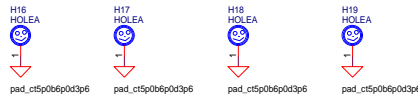
pad\_shape2p0x4p29



pad\_ct4p0



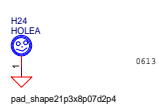
pad\_ct5p0b6p0d3p6



pad\_shape12p71x6p6d2p4



pad\_shape21p3x8p07d2p4



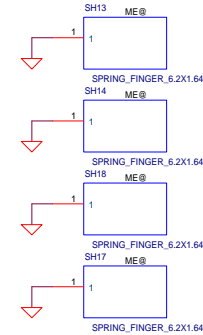
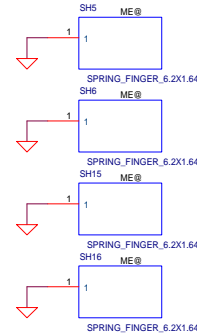
pad\_ct6p0b8p0x7p5d2p4



0531 update Screw

0608 ADD RF SHIELDING

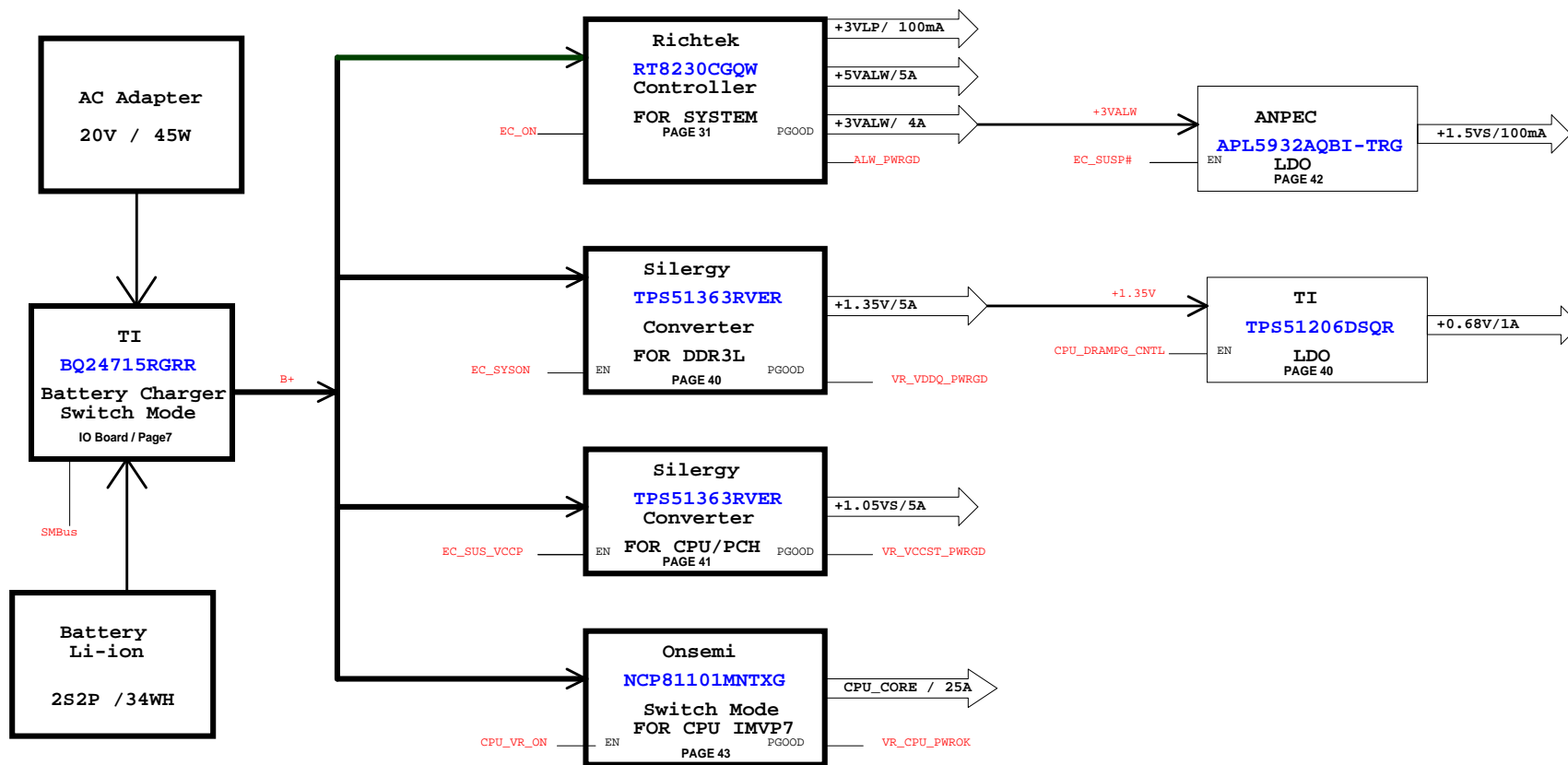
0805 change

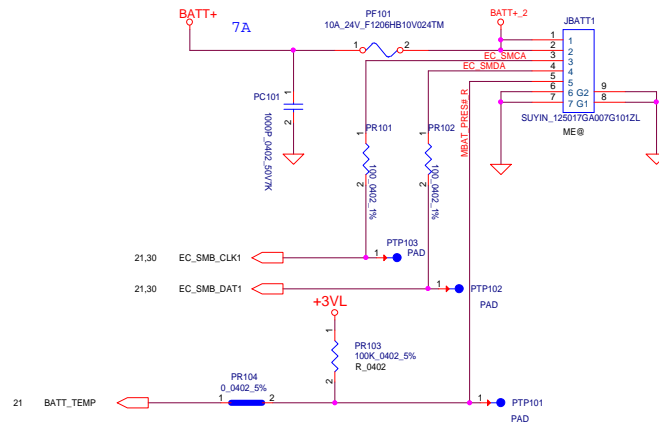


PCB ID table

| PCB_ID3 | PCB_ID2 | PCB_ID1 | PCB_ID0 | DRAM                |
|---------|---------|---------|---------|---------------------|
| 0       | 0       | 0       | 0       | 8GB (8x4GB) HYUNIX  |
| 0       | 0       | 0       | 1       | 8GB (8x4GB) MICRON  |
| 0       | 0       | 1       | 0       | 8GB (8x4GB) SAMSUNG |
| 0       | 0       | 1       | 1       | 8GB (8x4GB) ELPLIDA |
| 0       | 1       | 0       | 0       | 8GB (8x4GB) HYUNIX  |
| 0       | 1       | 0       | 1       | 8GB (8x4GB) MICRON  |
| 0       | 1       | 1       | 0       | 8GB (8x4GB) SAMSUNG |
| 0       | 1       | 1       | 1       | 8GB (8x4GB) ELPLIDA |
| 1       | 0       | 0       | 0       | 2GB (4x4GB) HYUNIX  |
| 1       | 0       | 0       | 1       | 2GB (4x4GB) MICRON  |
| 1       | 0       | 1       | 0       | 2GB (4x4GB) SAMSUNG |
| 1       | 0       | 1       | 1       | 2GB (4x4GB) ELPLIDA |
| 1       | 1       | 0       | 0       | 4GB (4x8GB) HYUNIX  |
| 1       | 1       | 0       | 1       | 4GB (4x8GB) MICRON  |
| 1       | 1       | 1       | 0       | 4GB (4x8GB) SAMSUNG |
| 1       | 1       | 1       | 1       | 4GB (4x8GB) ELPLIDA |





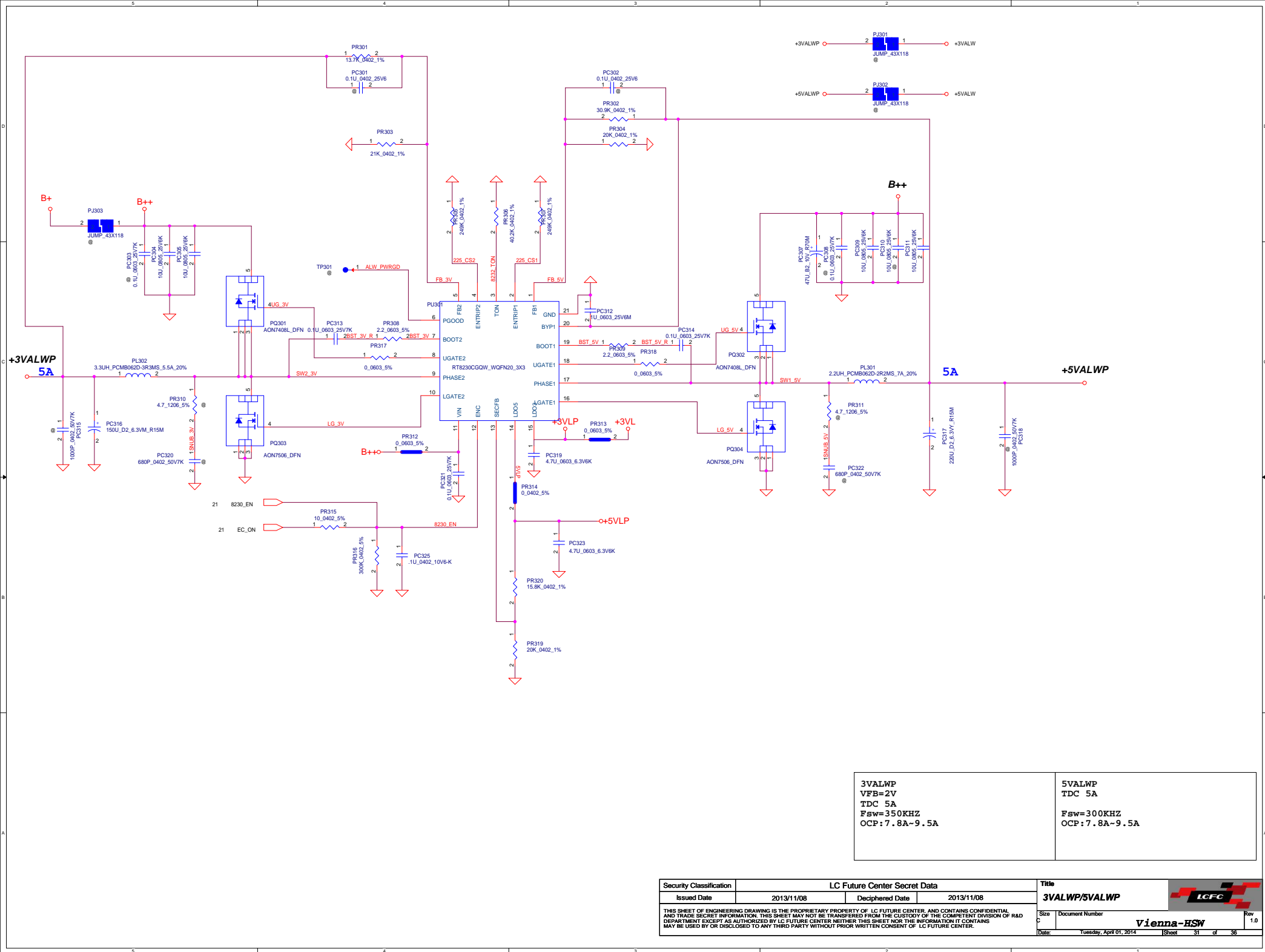


if AC input current>4.25A , pull low H\_PROCHOT#

if BAT input current>16.5A , pull low H\_PROCHOT#

|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            |                  |                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|------------|------------------|-------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  | LC Future Center Secret Data |                 |            | Title            |                         |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                              | 2013/11/08                   | Deciphered Date | 2013/11/08 | PWR_BATTERY_CONN |                         |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | C                | Vienna-HSW              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Date             | Tuesday, April 01, 2014 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Sheet            | 29 of 36                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Rev              | 1.0                     |



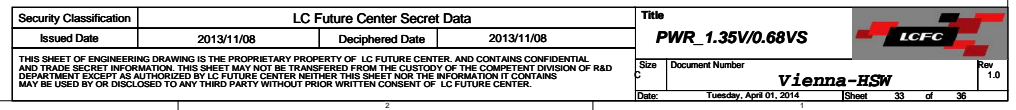


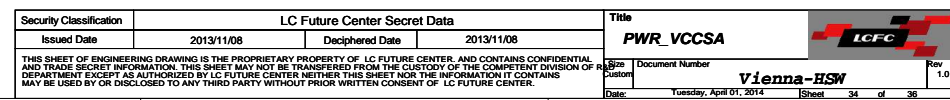
|                                                            |                                                      |
|------------------------------------------------------------|------------------------------------------------------|
| 3VALWP<br>VFB=2V<br>TDC 5A<br>Fsw=350KHZ<br>OCP: 7.8A~9.5A | 5VALWP<br>TDC 5A<br><br>Fsw=300KHZ<br>OCP: 7.8A~9.5A |
|------------------------------------------------------------|------------------------------------------------------|

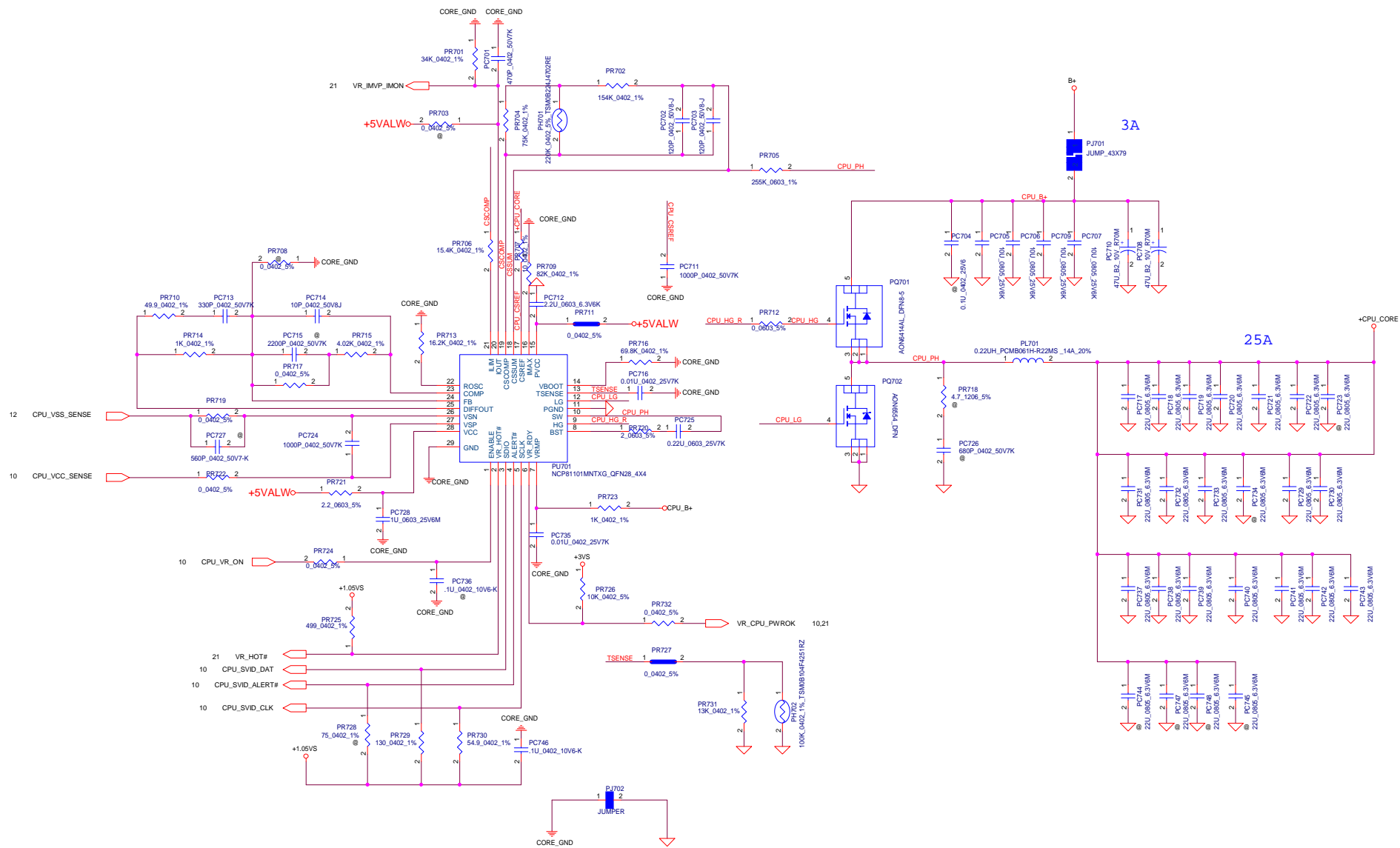
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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|------------|-------------------------------|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  | LC Future Center Secret Data |                 | Title      |                               |
| Issued Date                                                                                                                                                                                                                                                                                                                                                                                                                              | 2013/11/08                   | Deciphered Date | 2013/11/08 | 3VALWP/5VALWP                 |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Vienna-HSW                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Rev 1.0                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Date: Tuesday, April 01, 2014 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |                 |            | Sheet 31 of 36                |













|   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |
|---|--|--|--|--|---|--|--|--|--|---|--|--|--|--|---|--|--|--|--|---|--|--|--|--|
| 5 |  |  |  |  | 4 |  |  |  |  | 3 |  |  |  |  | 2 |  |  |  |  | 1 |  |  |  |  |
| D |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |
| C |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |
| B |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |
| A |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |
| 5 |  |  |  |  | 4 |  |  |  |  | 3 |  |  |  |  | 2 |  |  |  |  | 1 |  |  |  |  |
| S |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |   |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                              |  |                 |  |            |  |                                                                                       |  |       |  |                         |  |            |  |          |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|-----------------|--|------------|--|---------------------------------------------------------------------------------------|--|-------|--|-------------------------|--|------------|--|----------|--|
| Security Classification                                                                                                                                                                                                                                                                                                                                                                                                                  |  | LC Future Center Secret Data |  |                 |  | Title      |  |  |  |       |  |                         |  |            |  |          |  |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                              |  |                 |  |            |  |                                                                                       |  | Date: | Tuesday, April 01, 2014 |  | Sheet | 36 of 36 |  |