

# LCFC Confidential



## ACLU1/2 UMA M/B Schematics Document


Intel Haswell/Broadwell U-Processor

2013-12-05

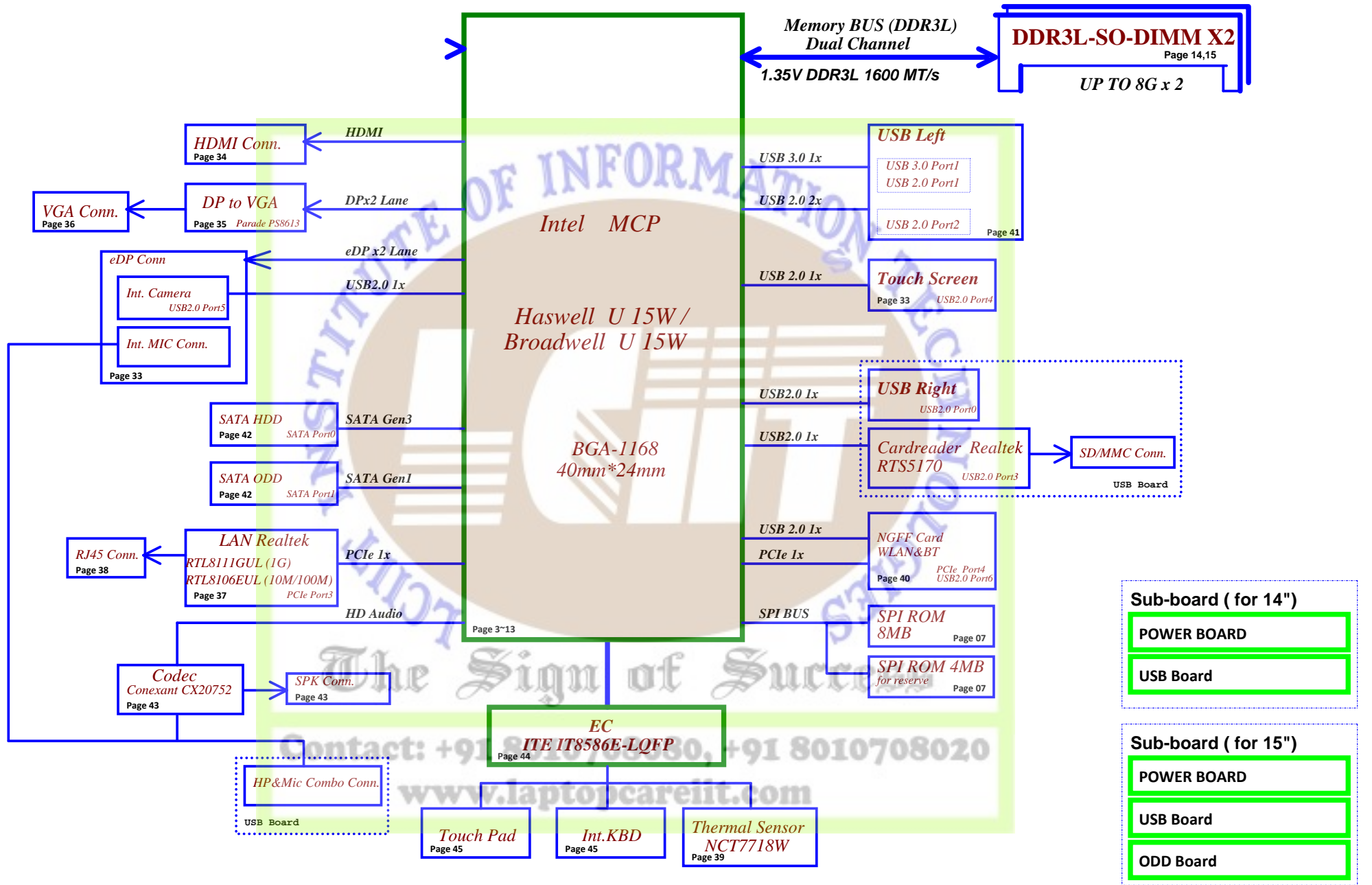
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The Sign of Success

Contact: +91 8010708080, +91 8010708020  
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**Voltage Rails** ( 0 --> Means ON , X --> Means OFF )

<div>Power Plane</div> <div>State</div>	B+	+3VALW +5VALW	+3VALW_PCH	+1.35V	+5VS +3VS +1.5VS +1.35VS +1.05VS  +0.675VS CPU_CORE
S0	O	O	O	O	O
S3	O	O	O	O	X
S3 Battery only	O	O	O	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

STATE \ SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1(Power On Suspend)	LOW	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)	LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)	LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)	LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

## USB Port Table

USB 2.0 EHCI1		USB 3.0 XHCI	
0	USB Port (Right Side)		
1	USB Port1 (Left Side)	1	USB Port1 (Left Side)
2	USB Port2 (Left Side)	2	
3	Cardreader	3	
4	TOUCH PANEL	4	
5	Camera		
6	NGFF(WLAN)		
7			

### BOM Structure Table

[illegible]

### ***SMBUS Control Table***

	SOURCE	BATT	IT8586E	SODIMM	WLAN WiMAX	Thermal Sensor	PCH	TP Module	charger
EC_SMB_CK1 EC_SMB_DA1	IT8586E +3VALW	V	V +3VALW	X	X	X	X	X	V
EC_SMB_CK2 EC_SMB_DA2	IT8586E +3VS	X	V +3VS	X	X	V +3VS	V +3VALW_PCH	X	X
PCH_SMB_CLK PCH_SMB_DATA	PCH +3VALW_PCH	X	X	V +3VS	V +3VS	X	V +3VALW_PCH	X	X

## PCIE PORT LIST

Port	Device
1	
2	
3	LAN
4	WLAN
5	
6	


**EC SM Bus1 address**

### EC SM Bus2 address

**PCH SM Bus address**

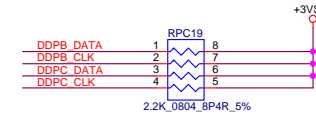
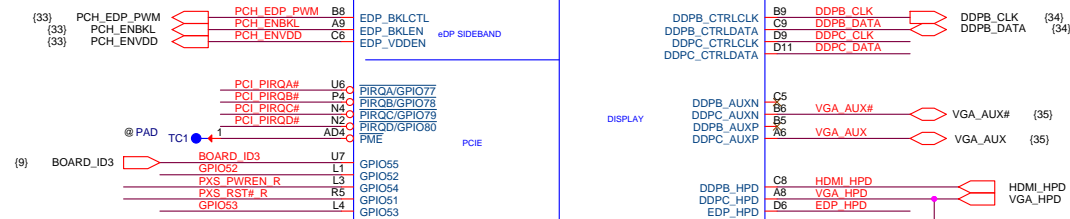
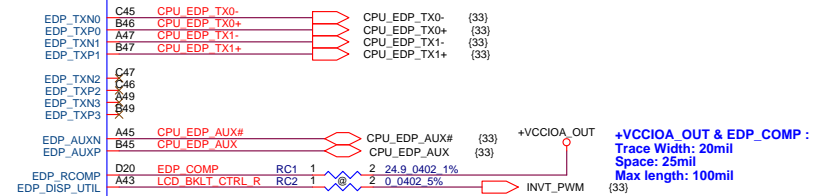
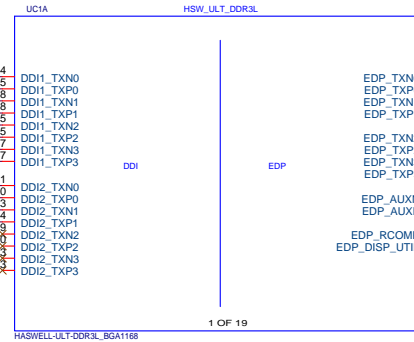
Device	Device	Address
Smart Battery 0X16	Thermal Sensor NCT7718W	1001_100xb
Charger 0001 0010 b	PCH	need to update

Device	Address
DDR DIMMA	1010 000Xb
DDR DIMMB	1010 010Xb
Wlan	Rsvd

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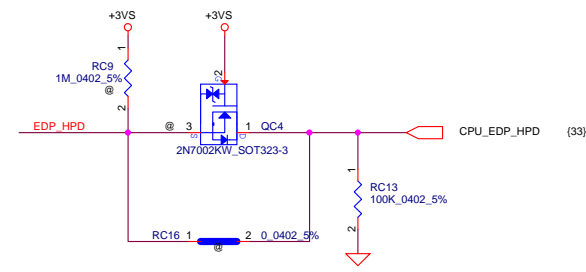
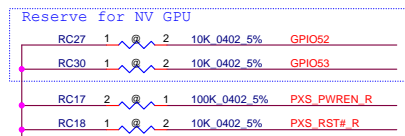
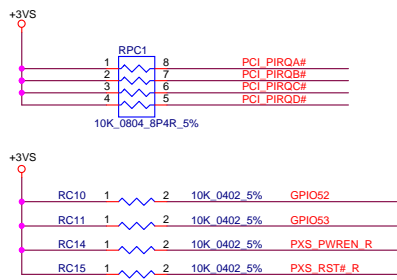
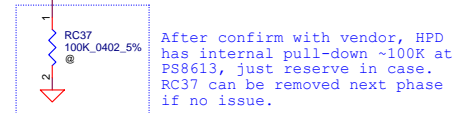


HDMI D2  
HDMI D1  
HDMI D0  
HDMI CLK  
DP TO VGA Converter



DDPx\_CTRLDATA  
The signal has a weak internal pull-down.  
★ Port is detected.  
L Port is not detected.

ACLU2: delete PXS\_PWREN\_R PXS\_RST#\_R PORT  
and RC7 RC8 RC170 QC13



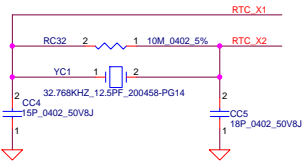




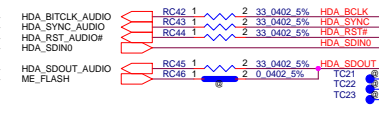
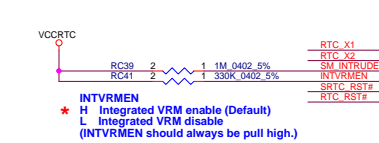
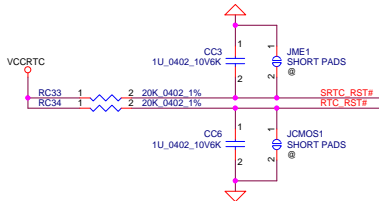




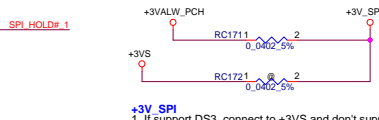
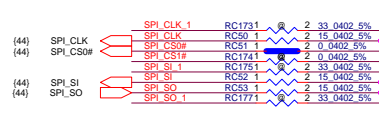
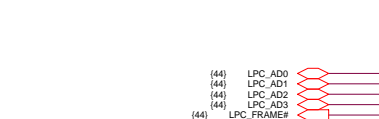




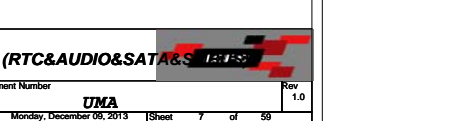
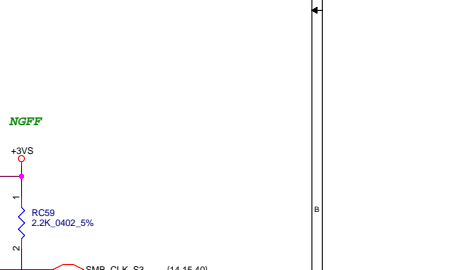
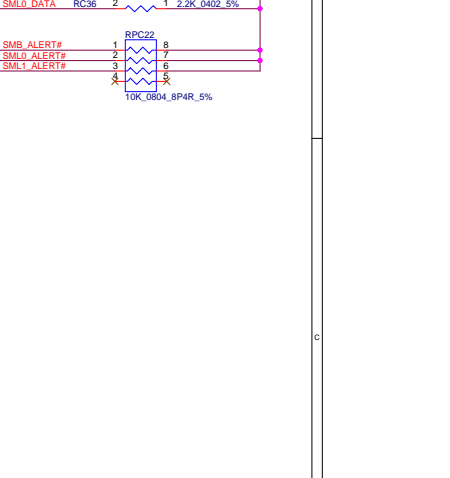
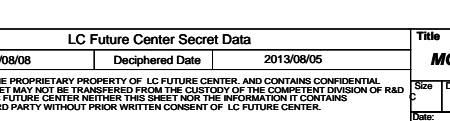
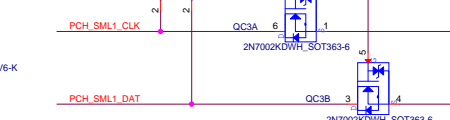
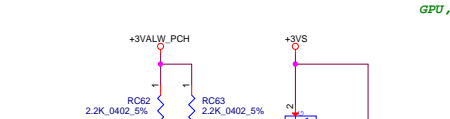
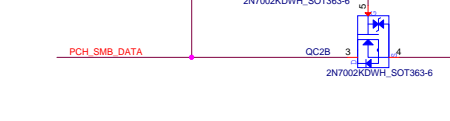
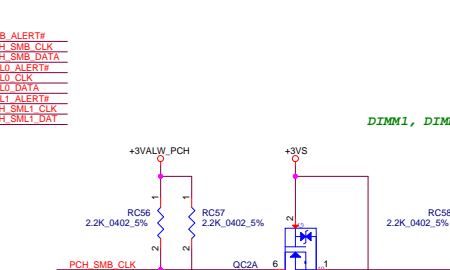
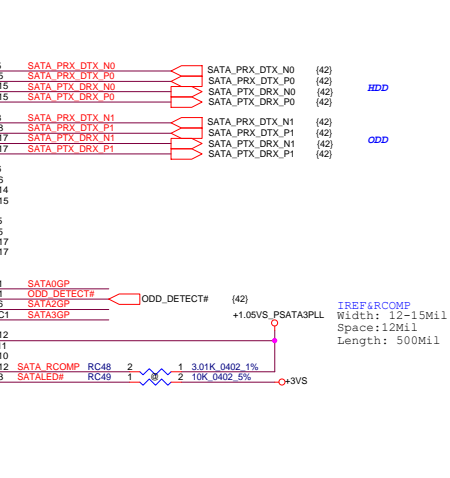
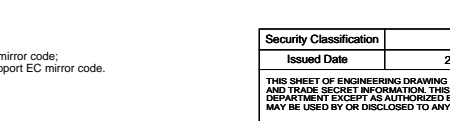
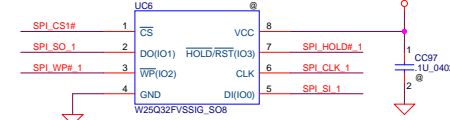
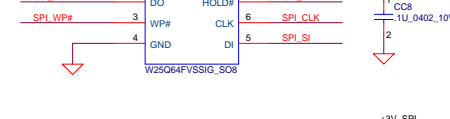
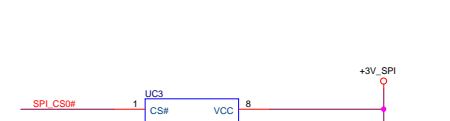
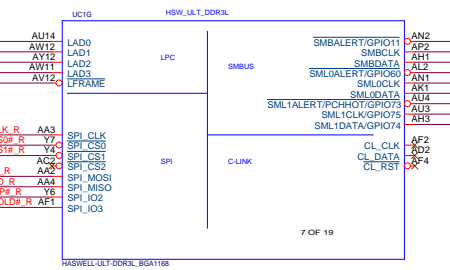
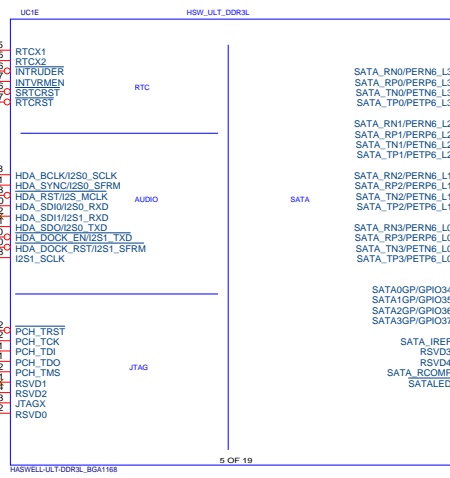
**CRYSTAL**  
 1. Space 15mil  
 2. No trace under crystal  
 3. Place on opposite side of MCP for temp influence



**HDA\_SDO** This signal has a weak internal pull-down.  
 0 = Enable security measures defined in the Flash Descriptor.  
 1 = Disable Flash Descriptor Security(override). This strap should only be asserted high during external pull-up in manufacturing/debug environments ONLY.



**+3V\_SPI**  
 1. If support DS3, connect to +3VS and don't support EC mirror code;  
 2. If don't support DS3, connect to +3VALW\_PCH and support EC mirror code.



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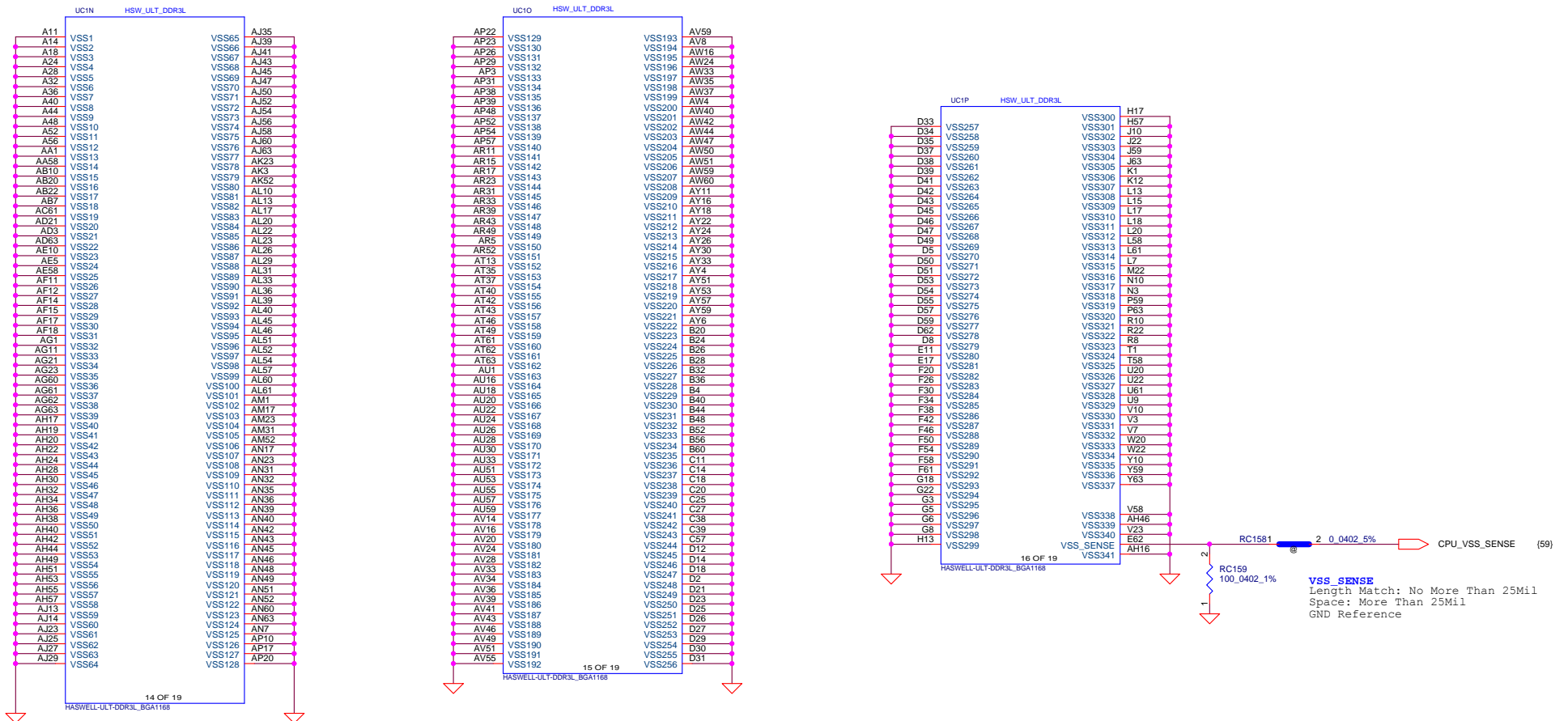




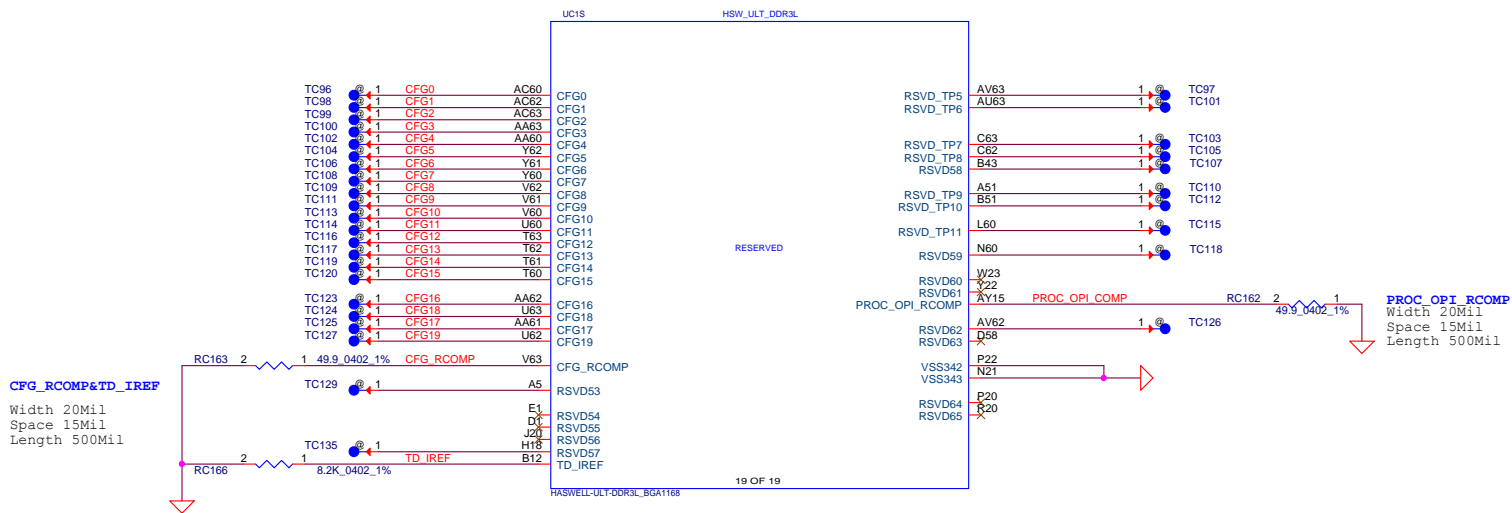
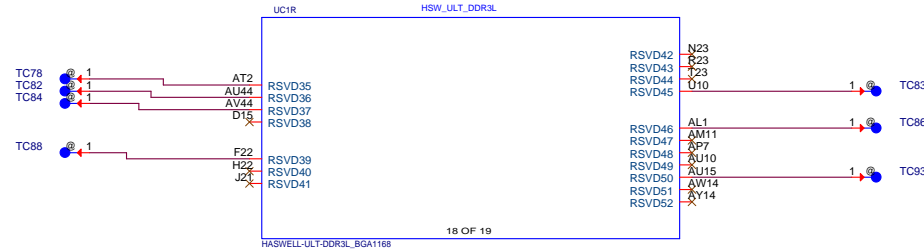
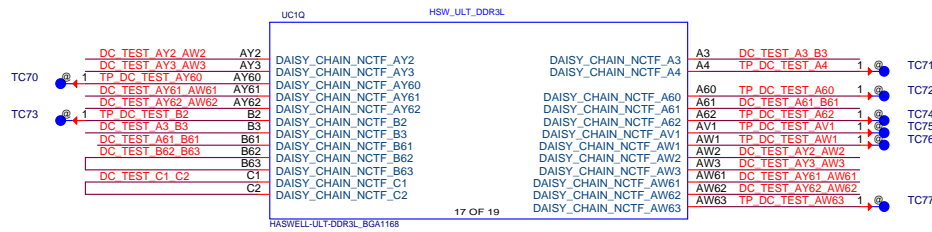












CFG3

\*1: Disable  
0: Enable, Set DFX Enabled BIT  
In Debug Interface MSR

CFG4

\*L: eDP enable  
H: eDP disable

CFG0

CFG1

CFG8

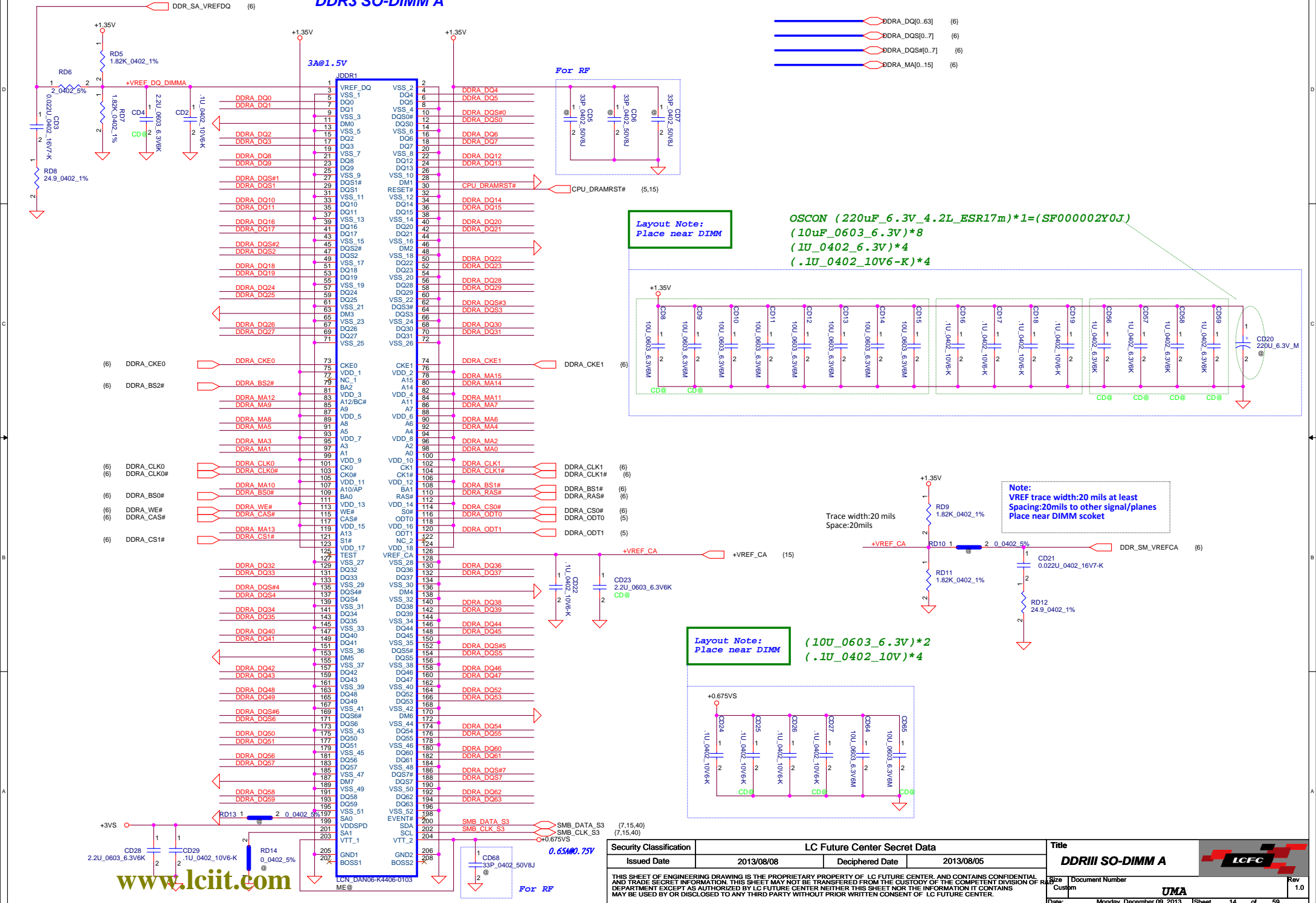
CFG9

CFG10

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# DDR3 SO-DIMM A



Layout Note:  
Place near DIMM

OSCON (220uF\_6.3V\_4.2L\_ESR17m)\*1=(SF000002Y0J)  
(10uF\_0603\_6.3V)\*8  
(1U\_0402\_6.3V)\*4  
(.1U\_0402\_10V6-K)\*4

Note:  
VREF trace width:20 mils at least  
Spacing:20mils to other signal/planes  
Place near DIMM socket

Layout Note:  
Place near DIMM

(10U\_0603\_6.3V)\*2  
(.1U\_0402\_10V)\*4

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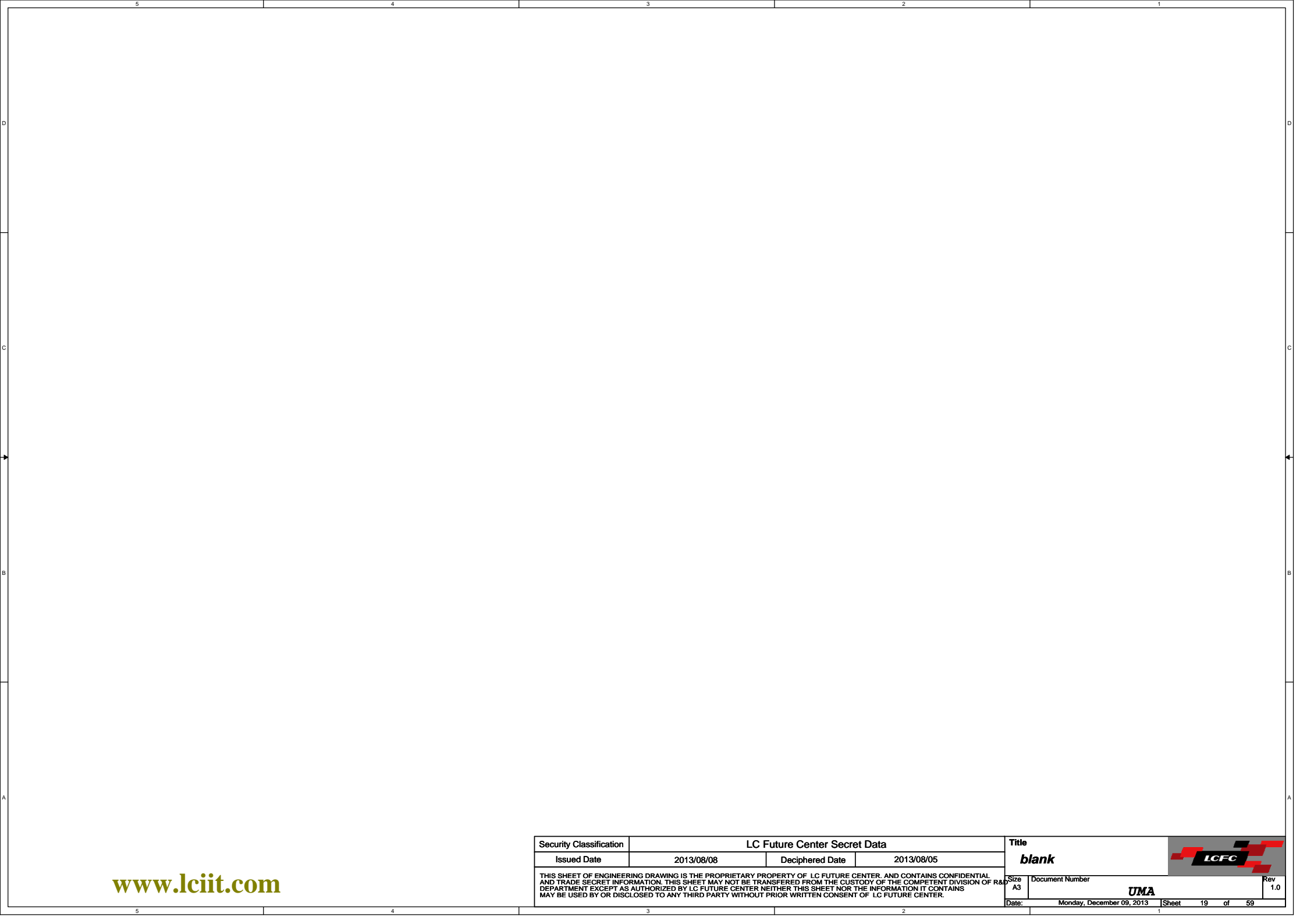


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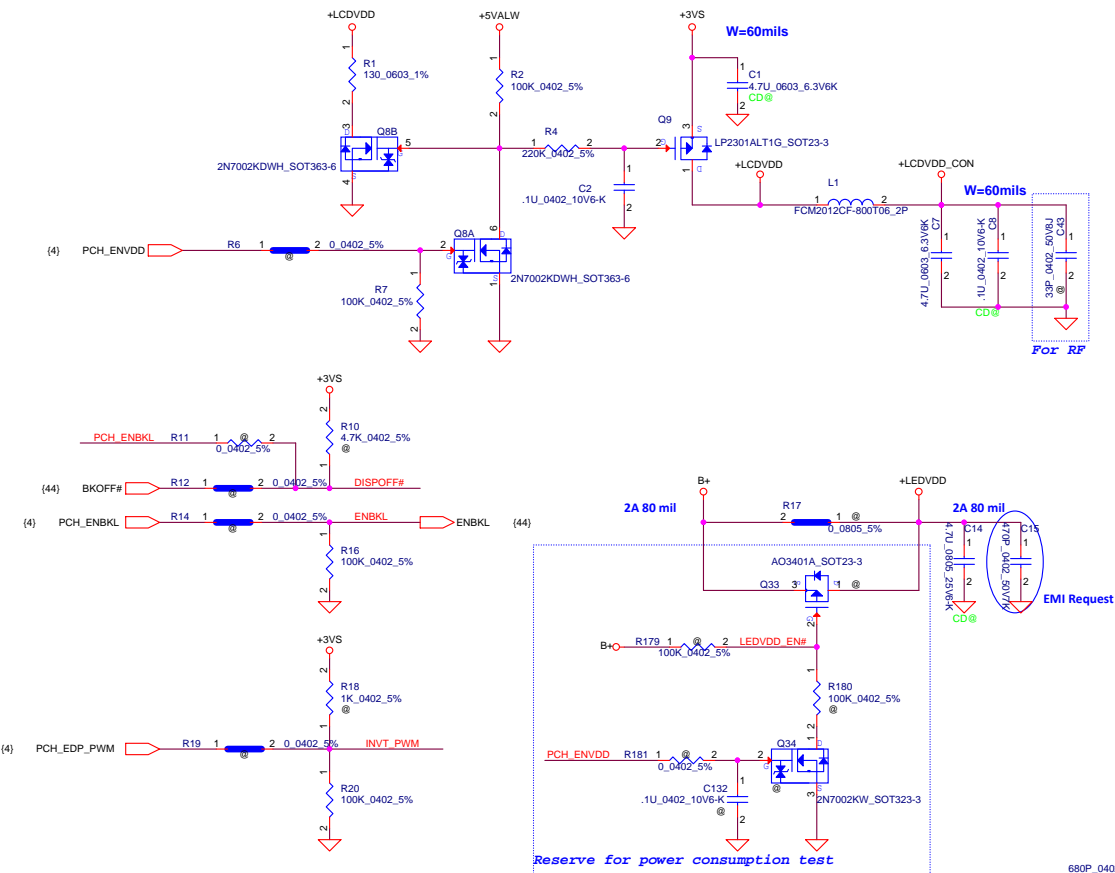




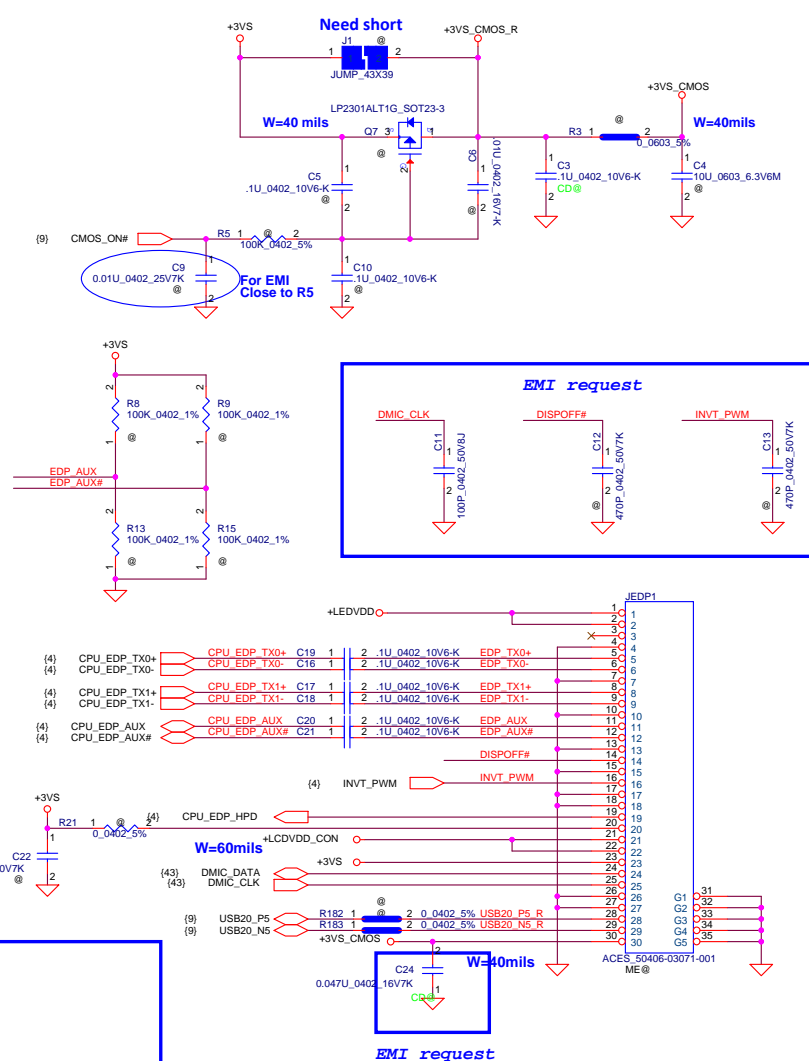




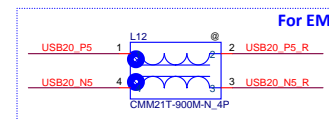
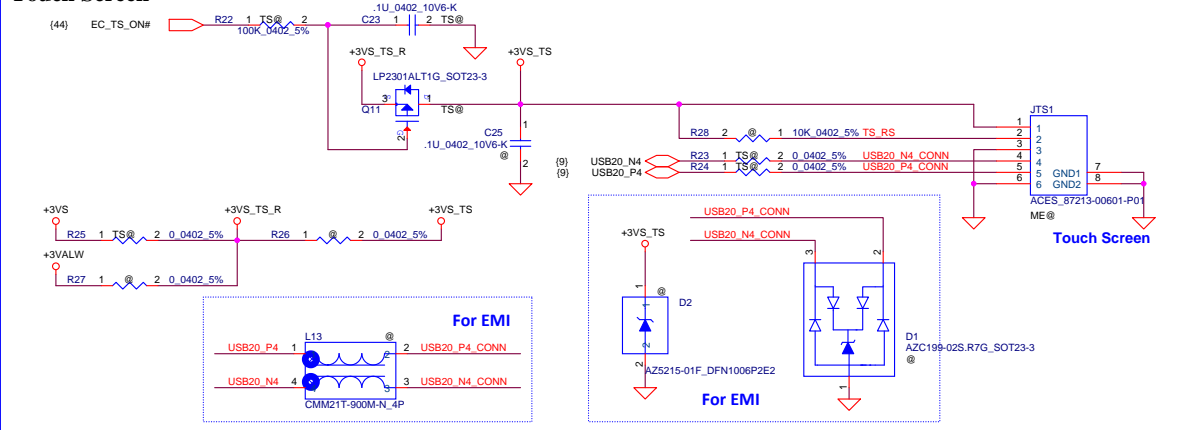
## LCD POWER CIRCUIT



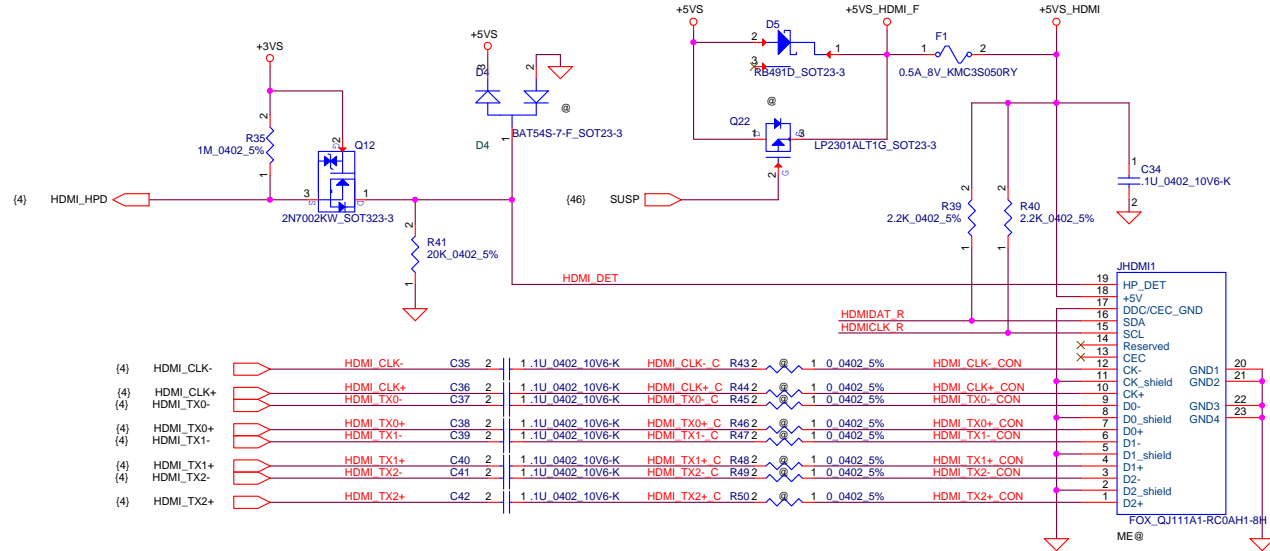
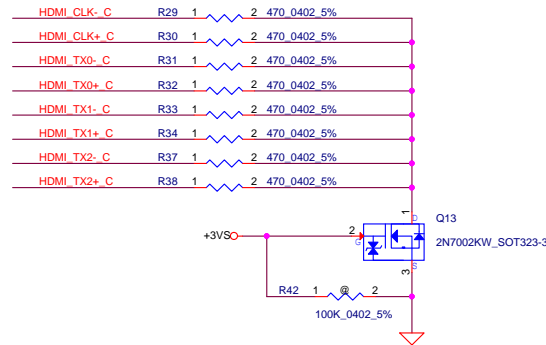
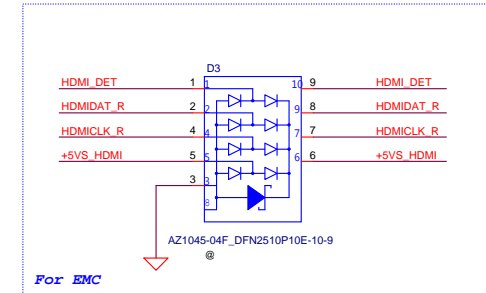
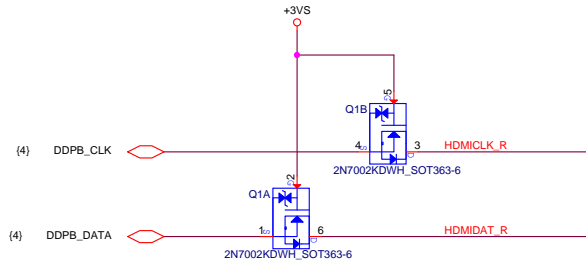
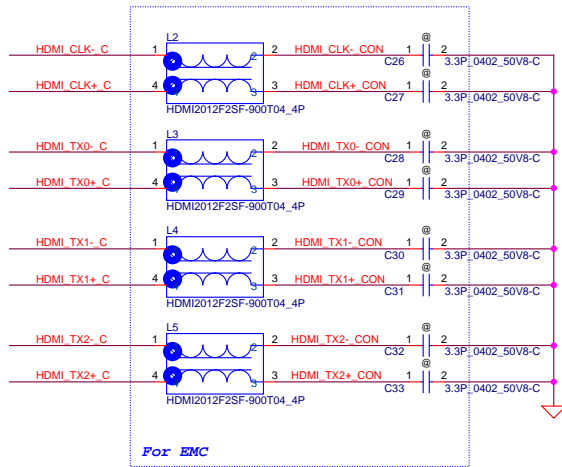
## CMOS Camera



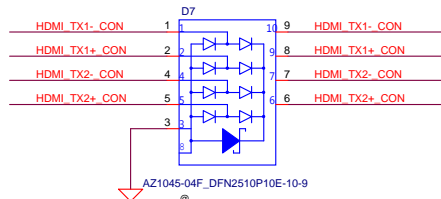
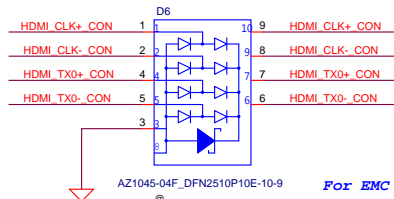
## Touch Screen








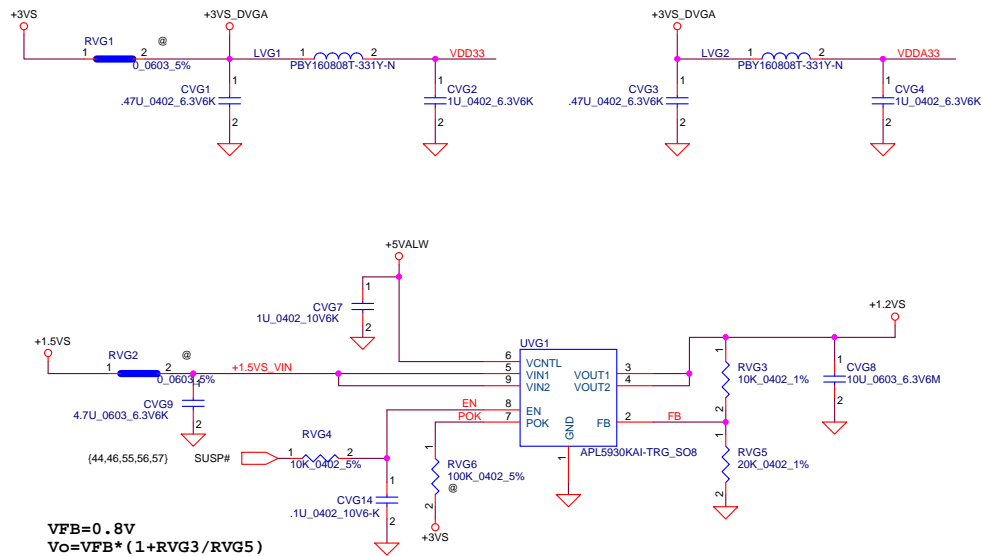
Close to JHDMI1



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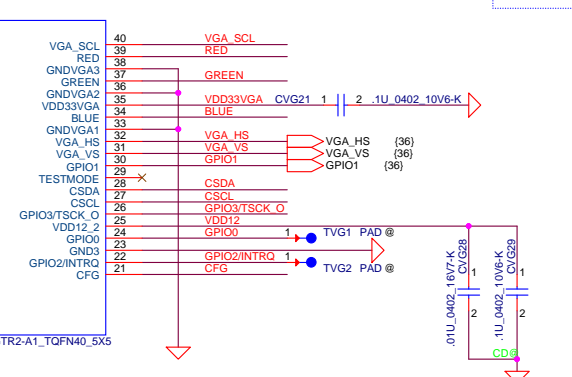
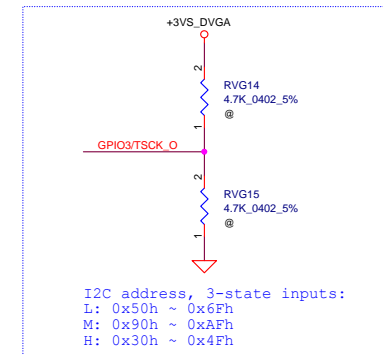
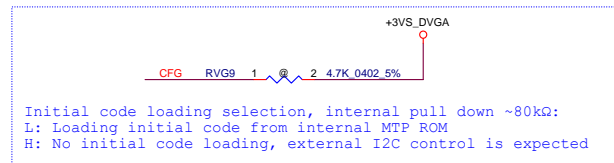
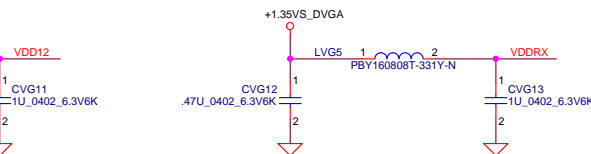
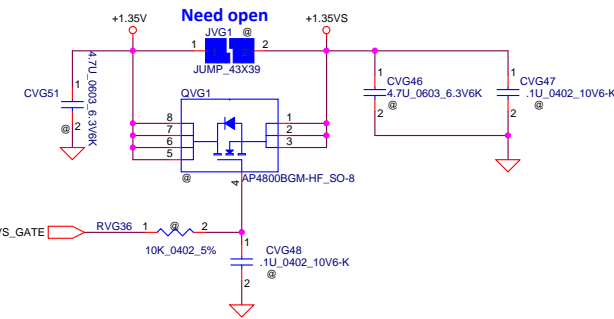
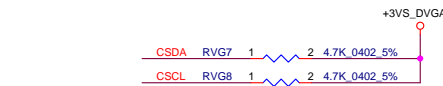
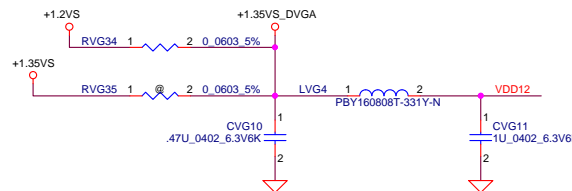
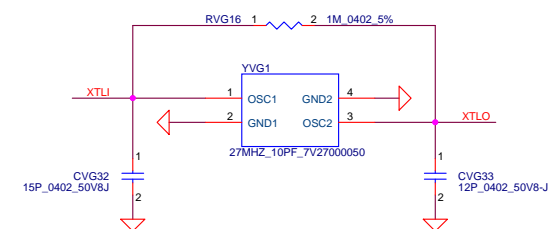
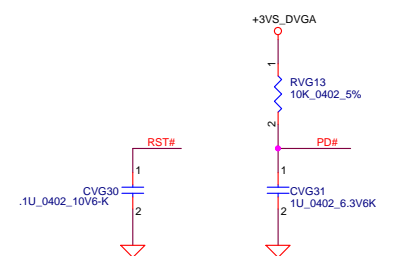
Security Classification		LC Future Center Secret Data		Title			
Issued Date	2013/08/08	Deciphered Date	2013/08/05	HDMI_CONN			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF LC FUTURE CENTER, AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY LC FUTURE CENTER. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF LC FUTURE CENTER.				Size	Document Number	Rev	
				Custom	UMA	1.0	
				Date:	Monday, December 09, 2013	Sheet	34





(4)	VGA_TX0-	CVG15f	2	1U_0402_10V6-K	DRX0N
(4)	VGA_TX0+	CVG16f	2	1U_0402_10V6-K	DRX0P
(4)	VGA_TX1-	CVG17f	2	1U_0402_10V6-K	DRX1P
(4)	VGA_TX1+	CVG18f	2	1U_0402_10V6-K	DRX1P
(4)	VGA_AUX#	CVG19f	2	1U_0402_10V6-K	AUXN
(4)	VGA_AUX	CVG20f	2	1U_0402_10V6-K	AUXP

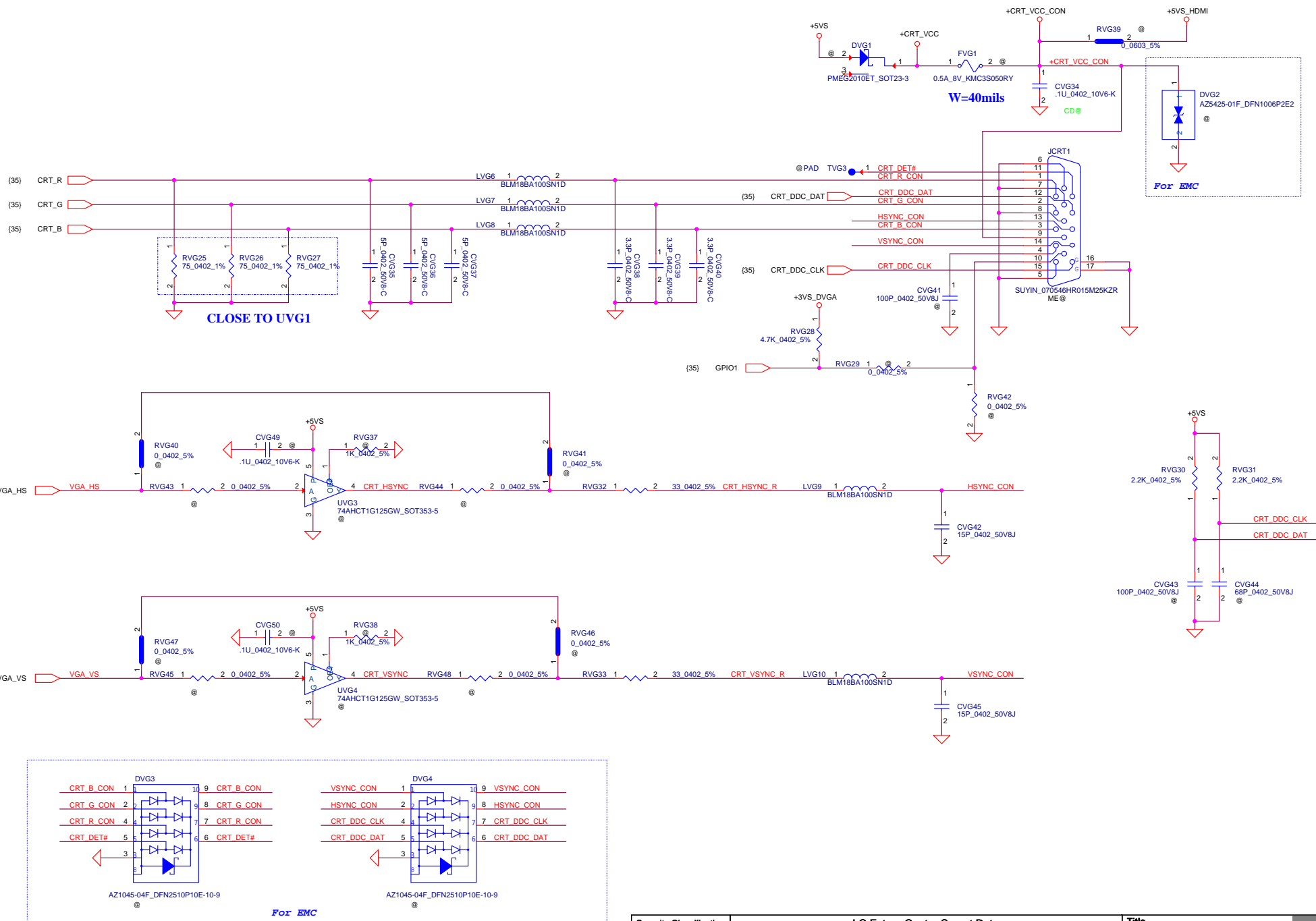
(4)	VGA_HPDP	RVG11f	2	1K_0402_5%	DP_HPDP
-----	----------	--------	---	------------	---------



RED	RVG17	1	2	10_0402_5%	CRT_R (36)
GREEN	RVG18	1	2	10_0402_5%	CRT_G (36)
BLUE	RVG20	1	2	10_0402_5%	CRT_B (36)
VGA_SCL	RVG23f	2	0	0402_5%	CRT_DDC_CLK (36)
VGA_SDA	RVG24f	2	0	0402_5%	CRT_DDC_DAT (36)



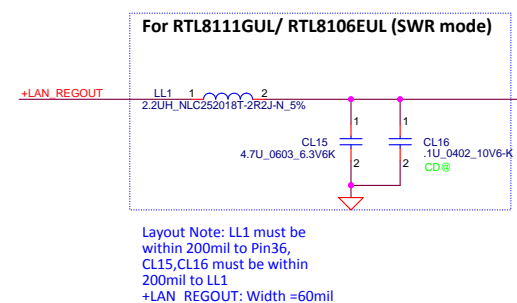
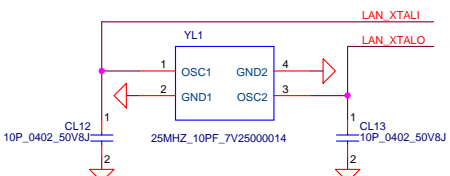
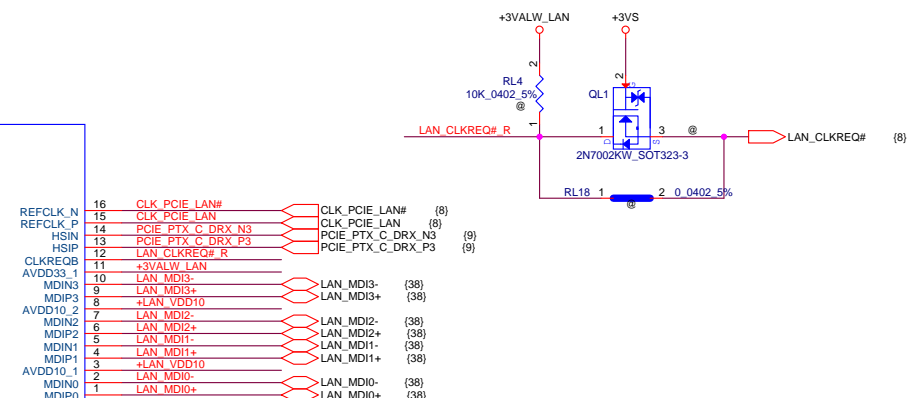
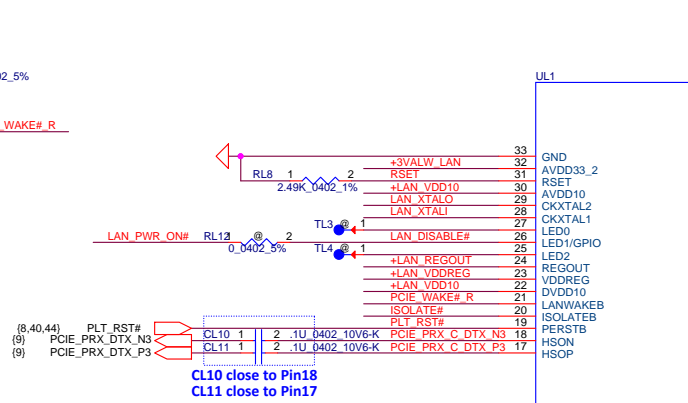
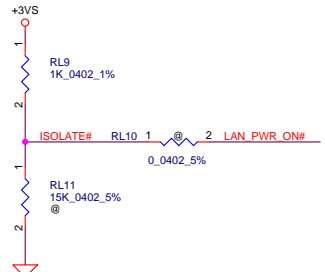
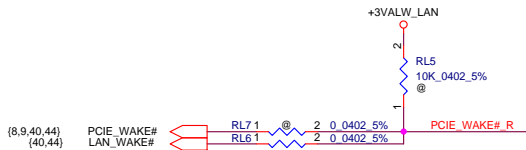
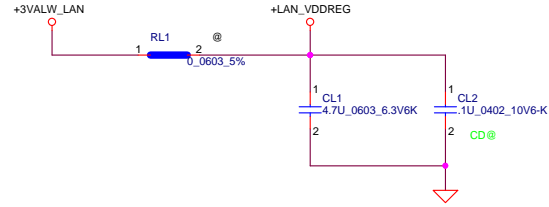
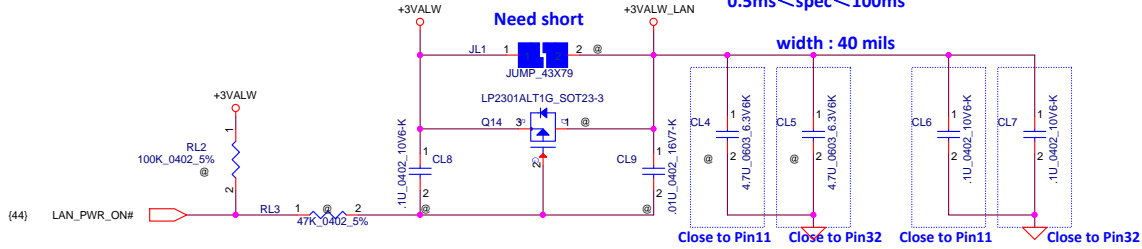
# CRT Connector





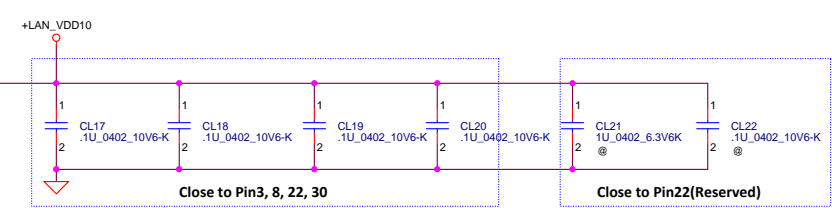
# +3VALW TO +3VALW\_LAN

+3VALW\_LAN rising time (10%~90%):  
0.5ms<spec<100ms



For RTL8111GUL/ RTL8106EUL (SWR mode)

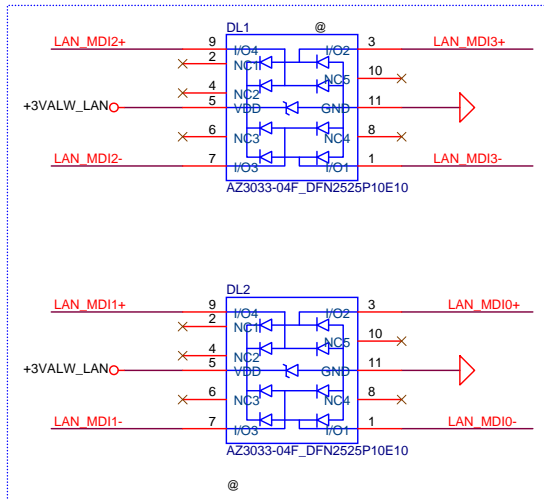
Layout Note: LL1 must be within 200mil to Pin36,  
CL15,CL16 must be within 200mil to LL1  
+LAN\_REGOUT: Width =60mil



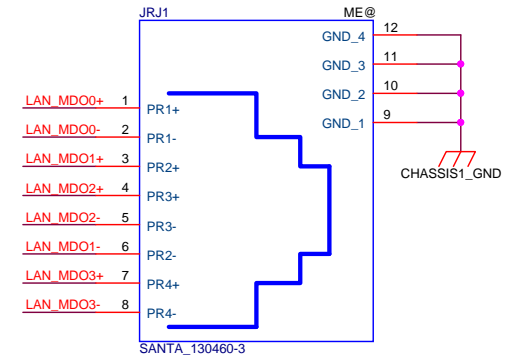
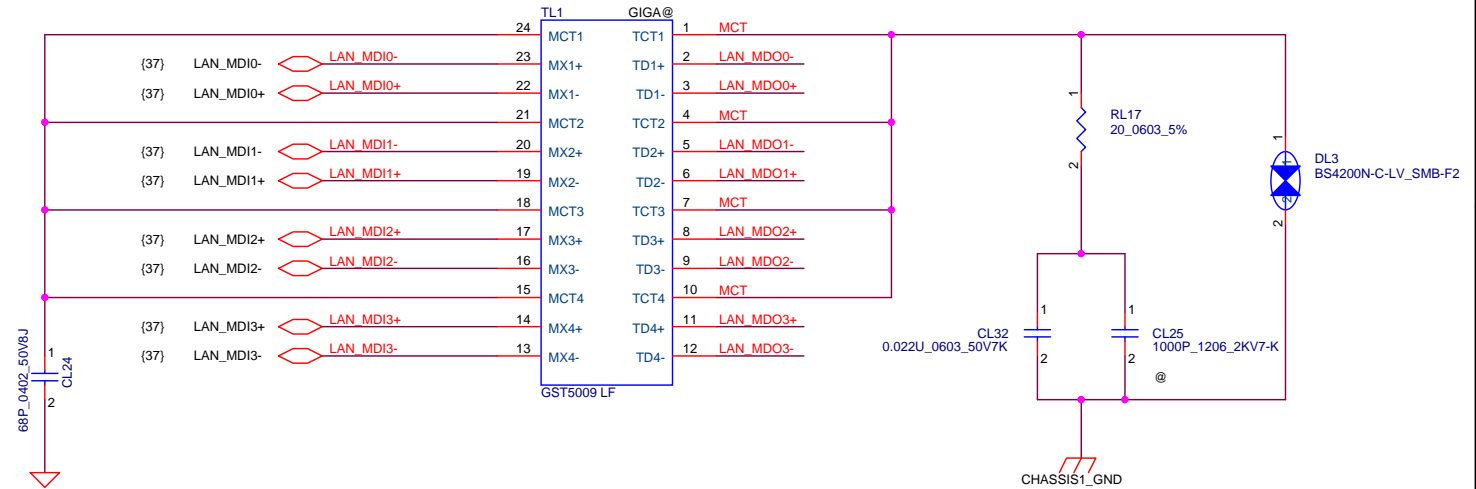
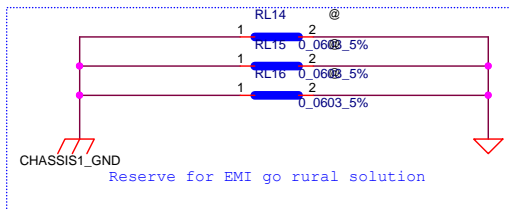
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2013/08/08	Deciphered Date	2013/08/05	LAN_RTL8111GUL/RTL8106E	
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				Rev 1.	
Size	Custom	Document Number	UMA		Rev 1.
Date:	Monday, December 09, 2013		Sheet	37	of 59



DL1/DL2  
1'S PN:SC300003M00



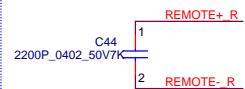
Place Close to TL1



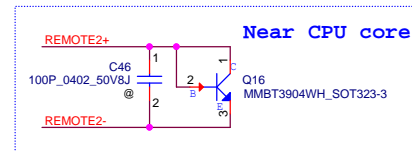
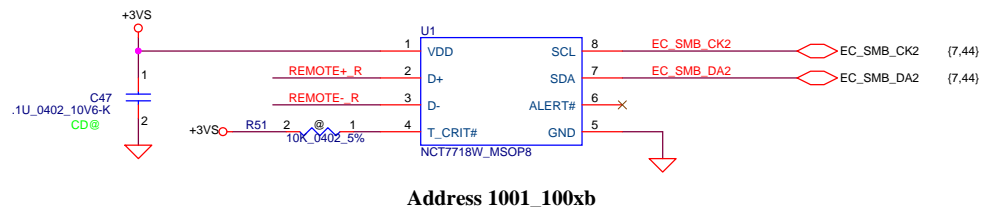
Security Classification		LC Future Center Secret Data		Title	
Issued Date	2013/08/08	Deciphered Date	2013/08/05	LAN_Transformer	
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				5	UMA
				Date:	Monday, December 09, 2013
				Sheet	38 of 59
				Rev	1.0



Close to U1



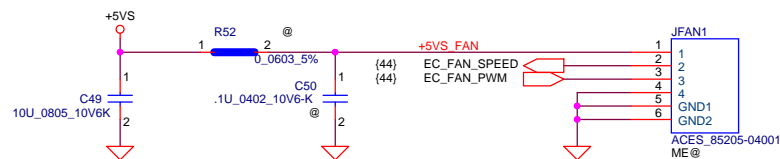
## SMSC thermal sensor placed near DIMM



REMOTE2+ R176 1 @ 2 0.0402\_5% REMOTE+\_R  
REMOTE2- R177 1 @ 2 0.0402\_5% REMOTE-\_R

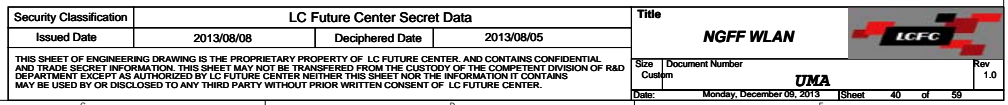
REMOTE+/-\_R, REMOTE1+/-, REMOTE2+/-:  
Trace width/space:10/10 mil  
Trace length:<8"

## FAN Conn



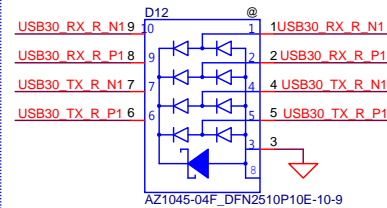
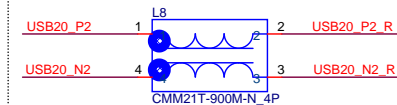
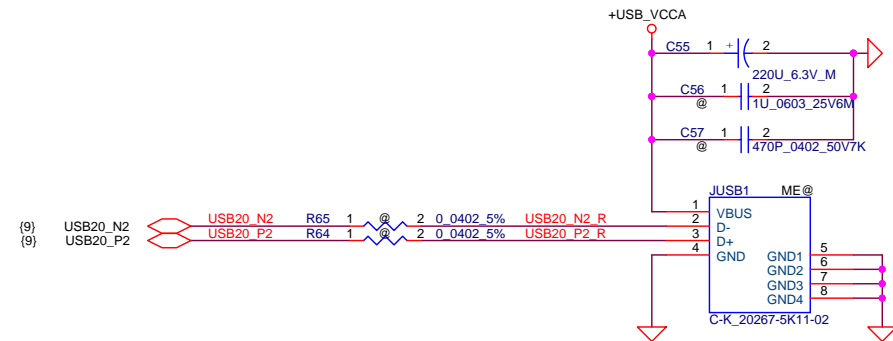
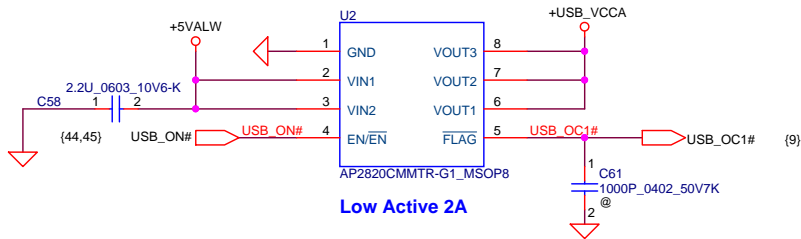


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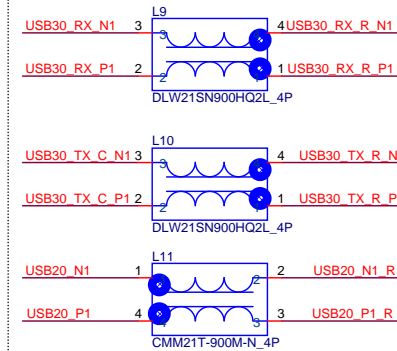
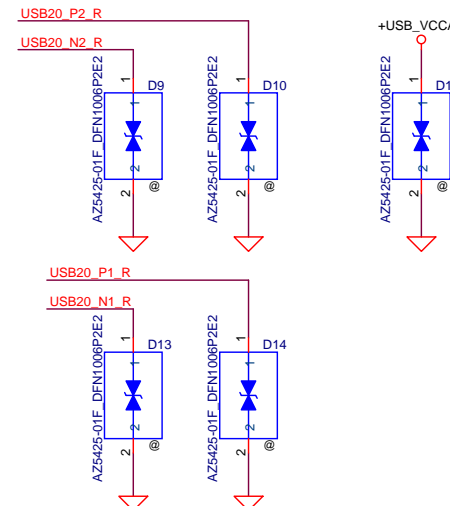




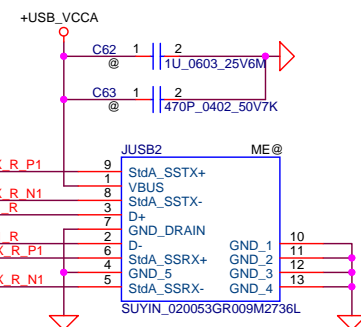
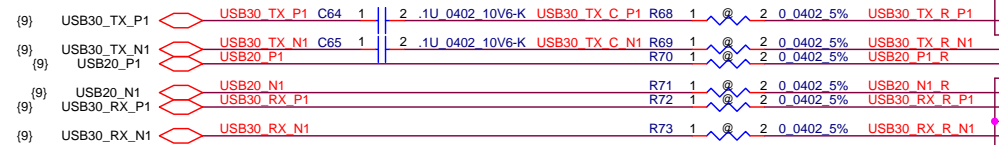
## LEFT SIDE USB3.0 PORT X2




For EMC

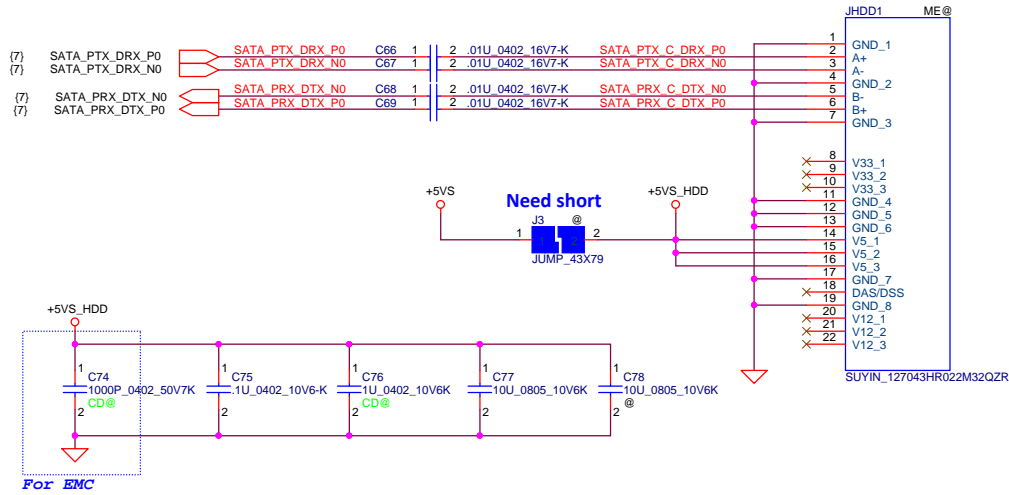


For EMC

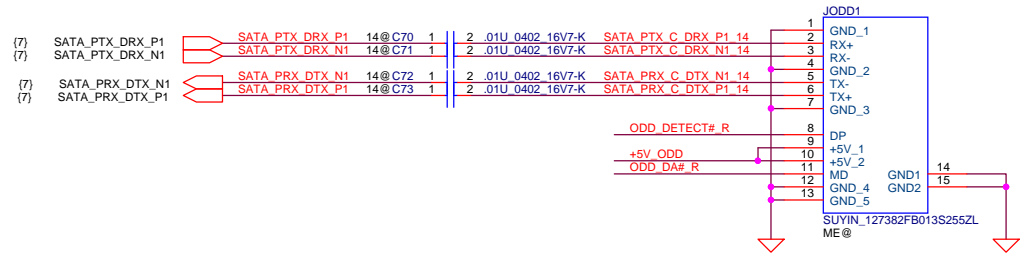


Security Classification		LC Future Center Secret Data				Title			
Issued Date	2013/08/08	Deciphered Date	2013/08/05		USB2.0/USB3.0 PORT (LEFT)				
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Size	Document Number		UMA				Rev		1.0
Custom							Date:		Monday, December 09, 2013
						Sheet		41	of 59

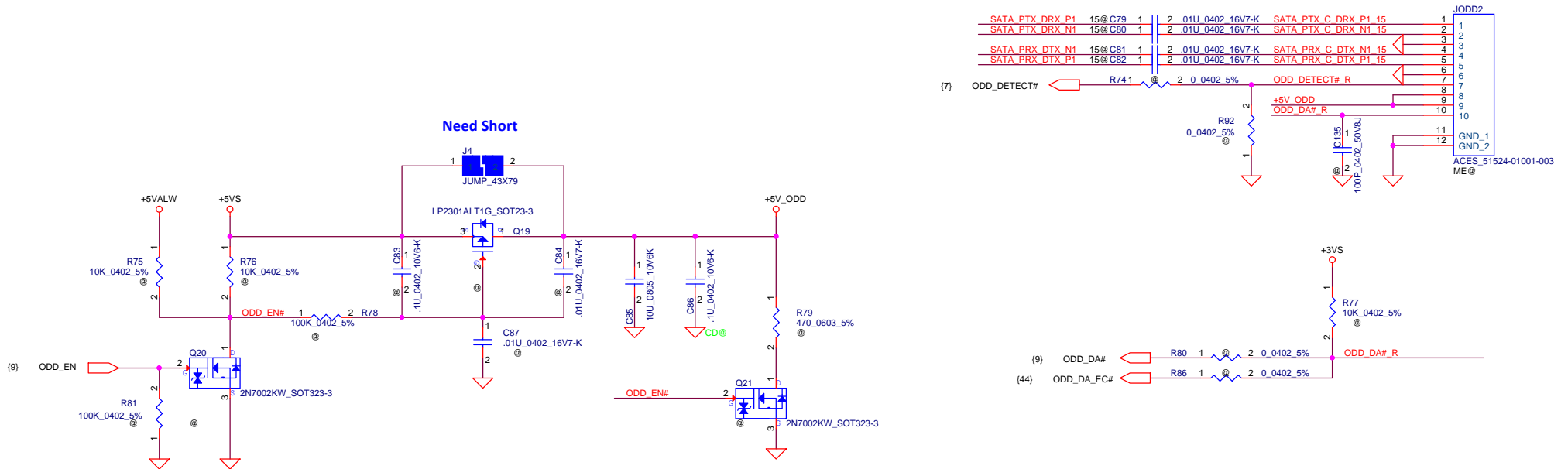


**SATA HDD Conn.**


**FOR 14"**  
**SATA ODD Conn.**



**FOR 15"**  
**SATA ODD FFC Conn**



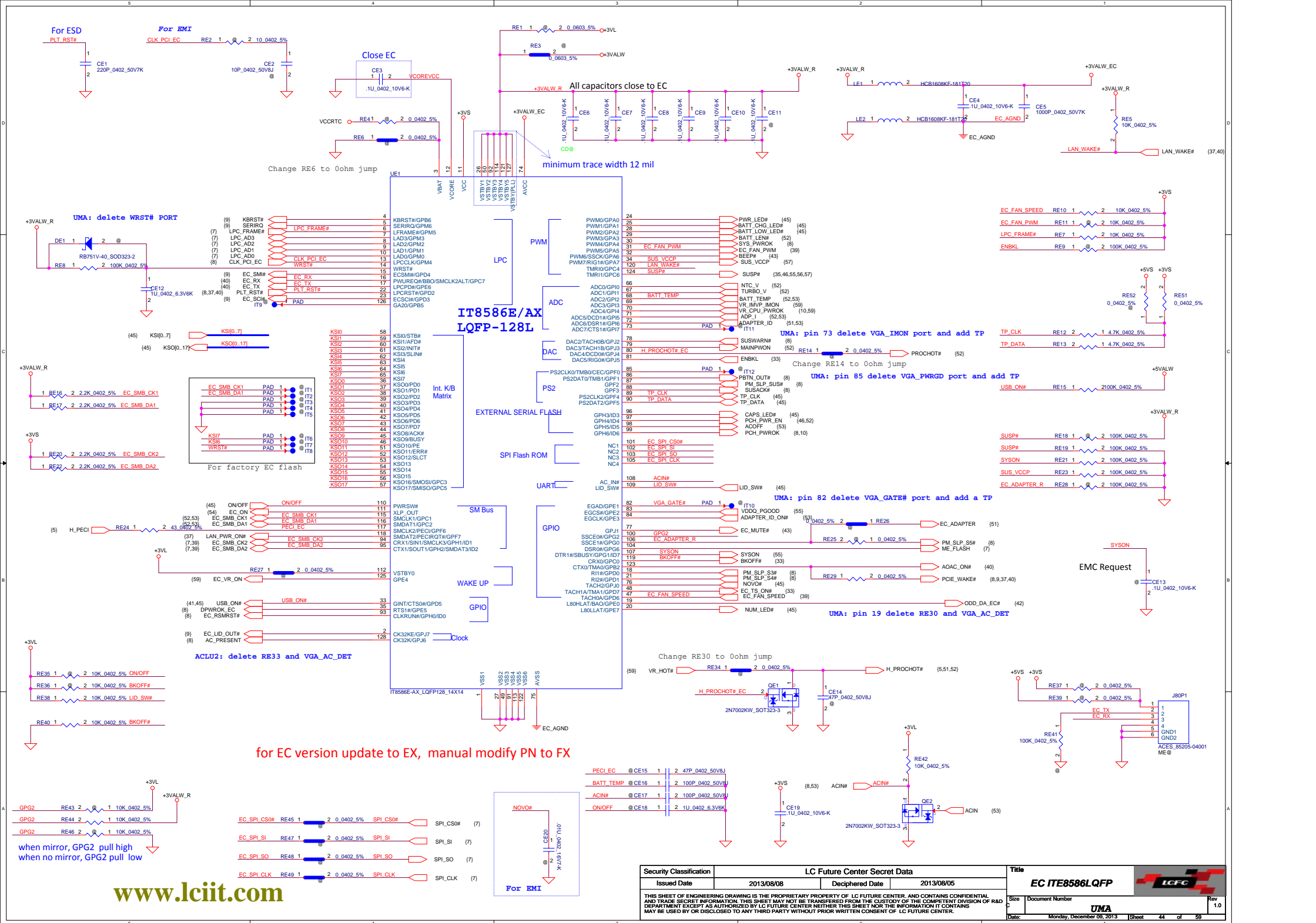
Security Classification	LC Future Center Secret Data		
Issued Date	2013/08/08	Deciphered Date	2013/08/05
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Title		<b>HDD/ODD CONN</b>			
Size	Document Number	<b>UMA</b>			Rev
Custom					1.0
Date:	Monday, December 09, 2013	Sheet	42	of	59



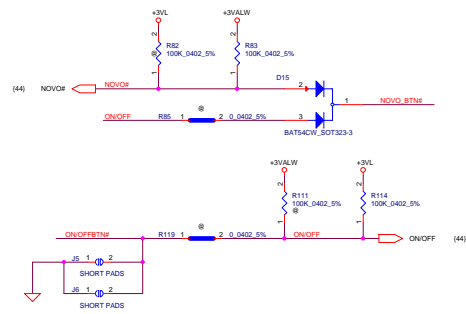






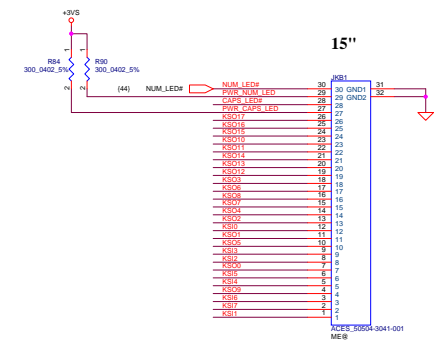
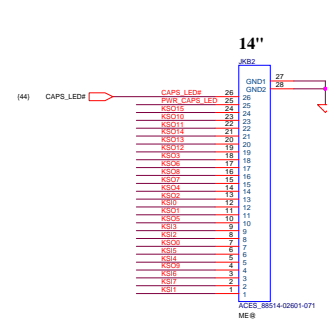
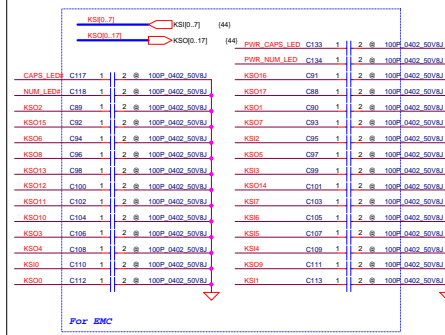


**ON/OFF switch**

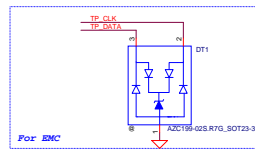
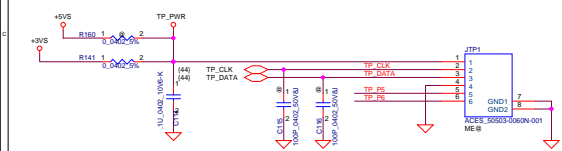


### TP/B Connector

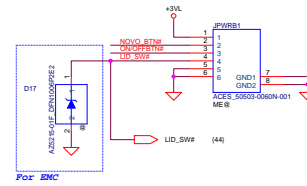
### K/B Connector



	14"	15"
RE_1	R311_14	R300_15
RE_2	R317_14	R312_15
RE_3	R316_14	R313_15
RE_4	R309_14	R305_15
RE_5	R314_14	R301_15
RE_6	R315_14	R310_15
RE_7	R300_14	R302_15
RE_8	R312_14	R304_15
RE_9	R313_14	R307_15
RE_10	R310_14	R303_15
RE_11	R301_14	R306_15
RE_12	R314_14	R308_15
RE_13	R302_14	R309_15
RE_14	R304_14	R301_15
RE_15	R307_14	R304_15
RE_16	R308_14	R301_14
RE_17	R306_14	R301_15
RE_18	R303_14	R301_15
RE_19	R302_14	R301_15
RE_20	R301_14	R301_15
RE_21	R301_14	RE_LEO_PRR_15
RE_22	R301_14	CAFS LEOP_15
RE_23	R301_14	VOC_15
RE_24	R301_14	NORM LEOP_15

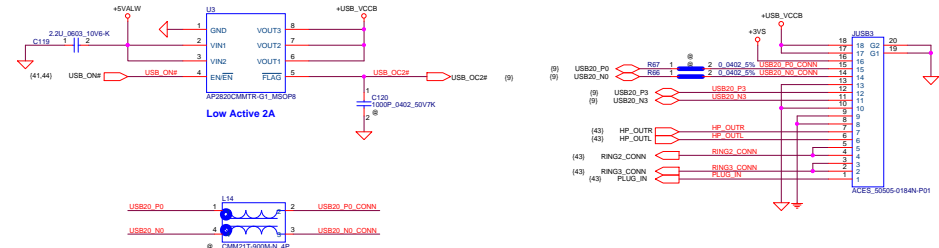


### PWR/B Connector

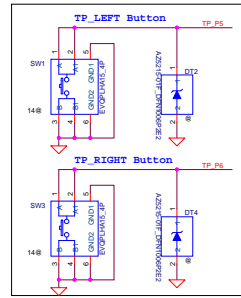


### USB I/O Connector

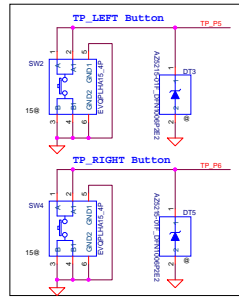
**Right Side USB2.0 Port X 1 (USB/B)**



For 14"		For 15"	
1	VDD	1	VDD
2	CLK	2	CLK
3	DAT	3	DAT
4	GND	4	GND
5	TP-L	5	TP-L
6	TP-R	6	TP-R

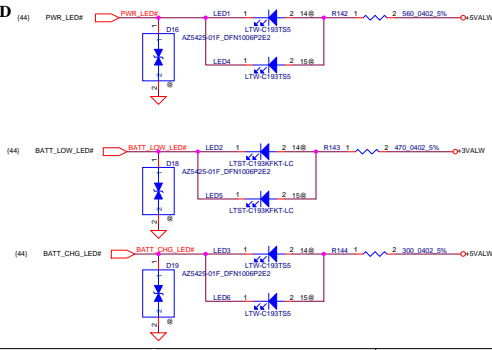



For 14"



*For 15"*

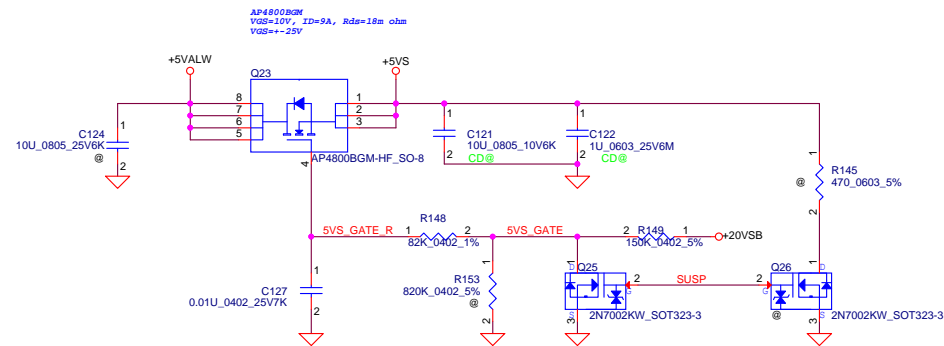
**LED**



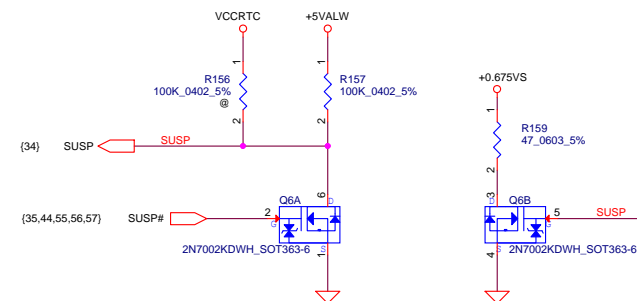
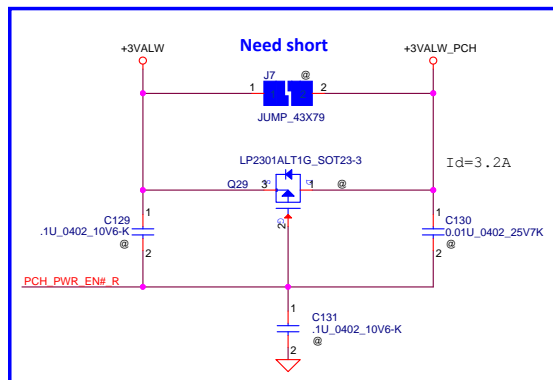
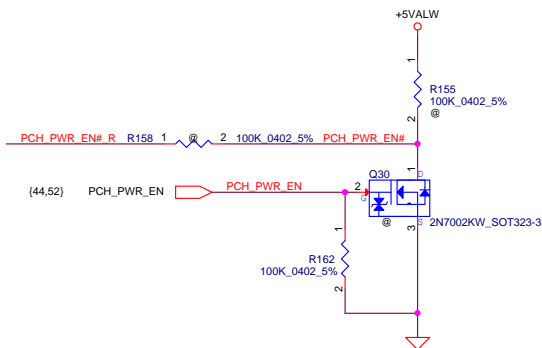
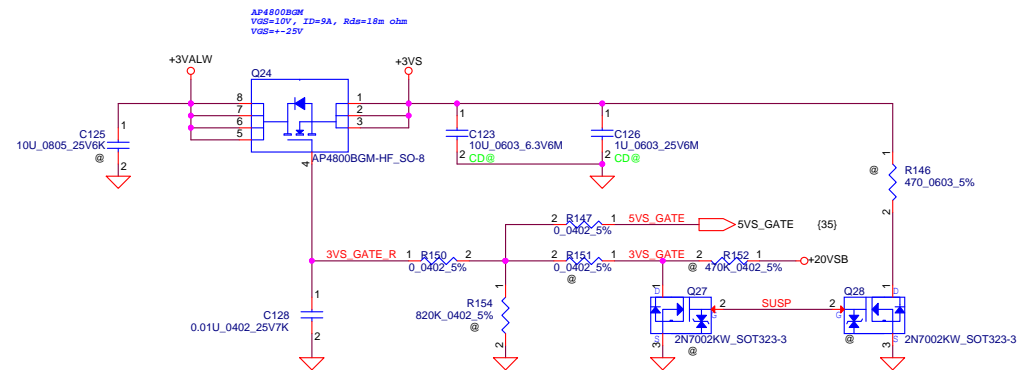
Security Classification	LC Future Center Secret Data			Title		
Issued Date	2013/08/08	Deciphered Date	2013/08/05	KBD/PWR/IO/LED/TP Conn.		
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				45	UTMA	1.0
Date: Monday, December 04, 2013				Sheet	45 of 59	



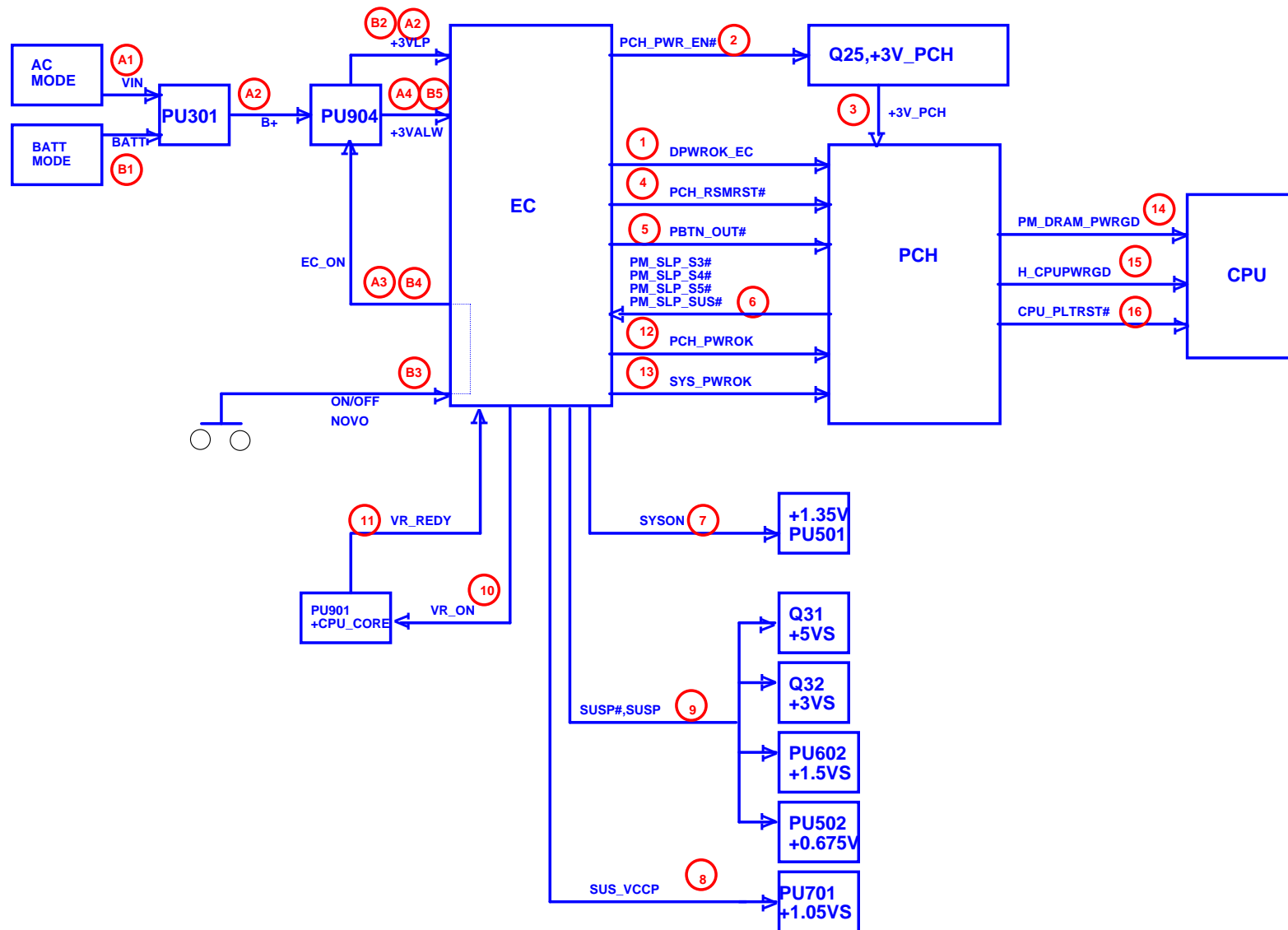
# +5VALW to +5VS



# +3VALW to +3VS







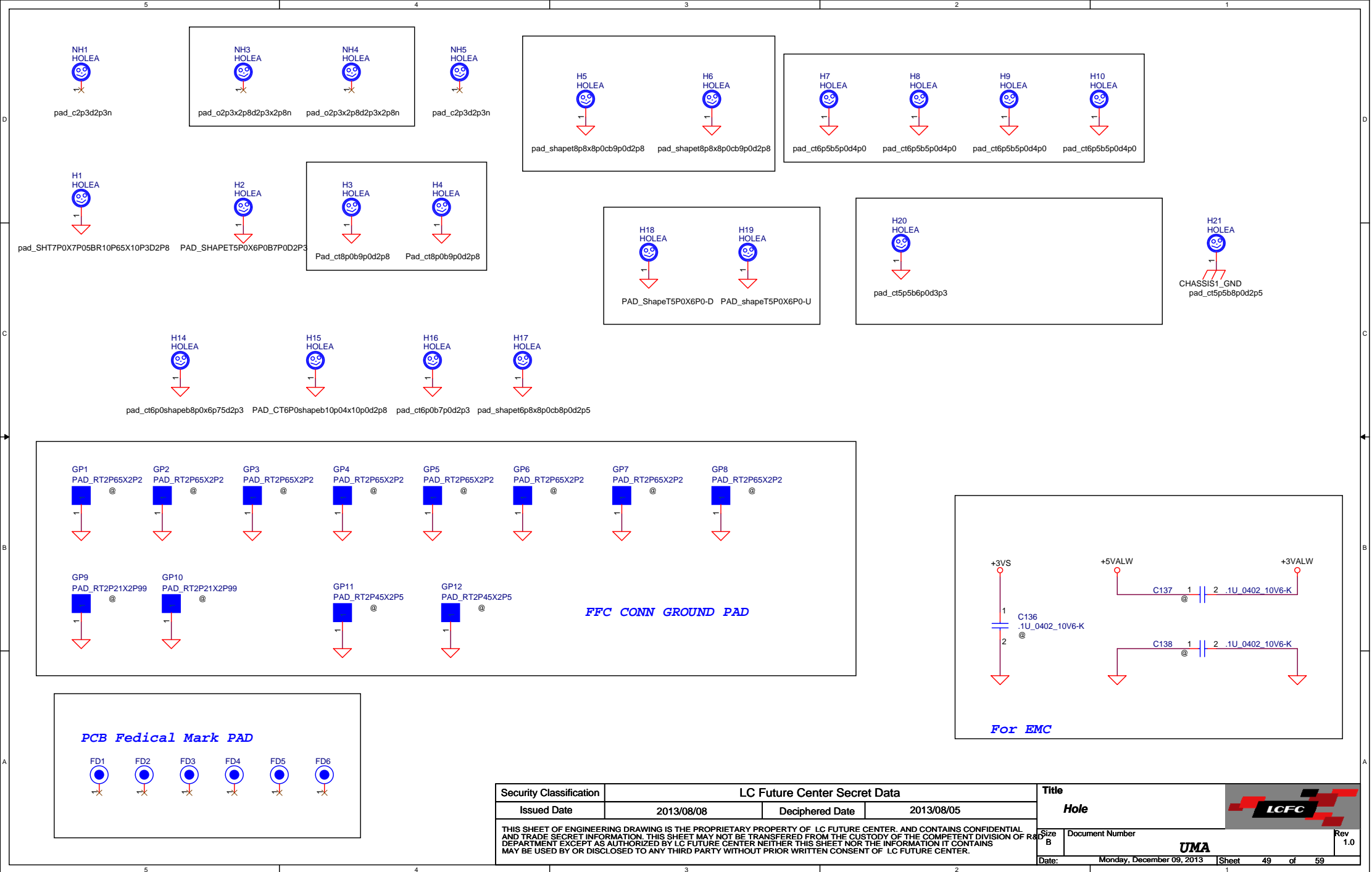


Board ID

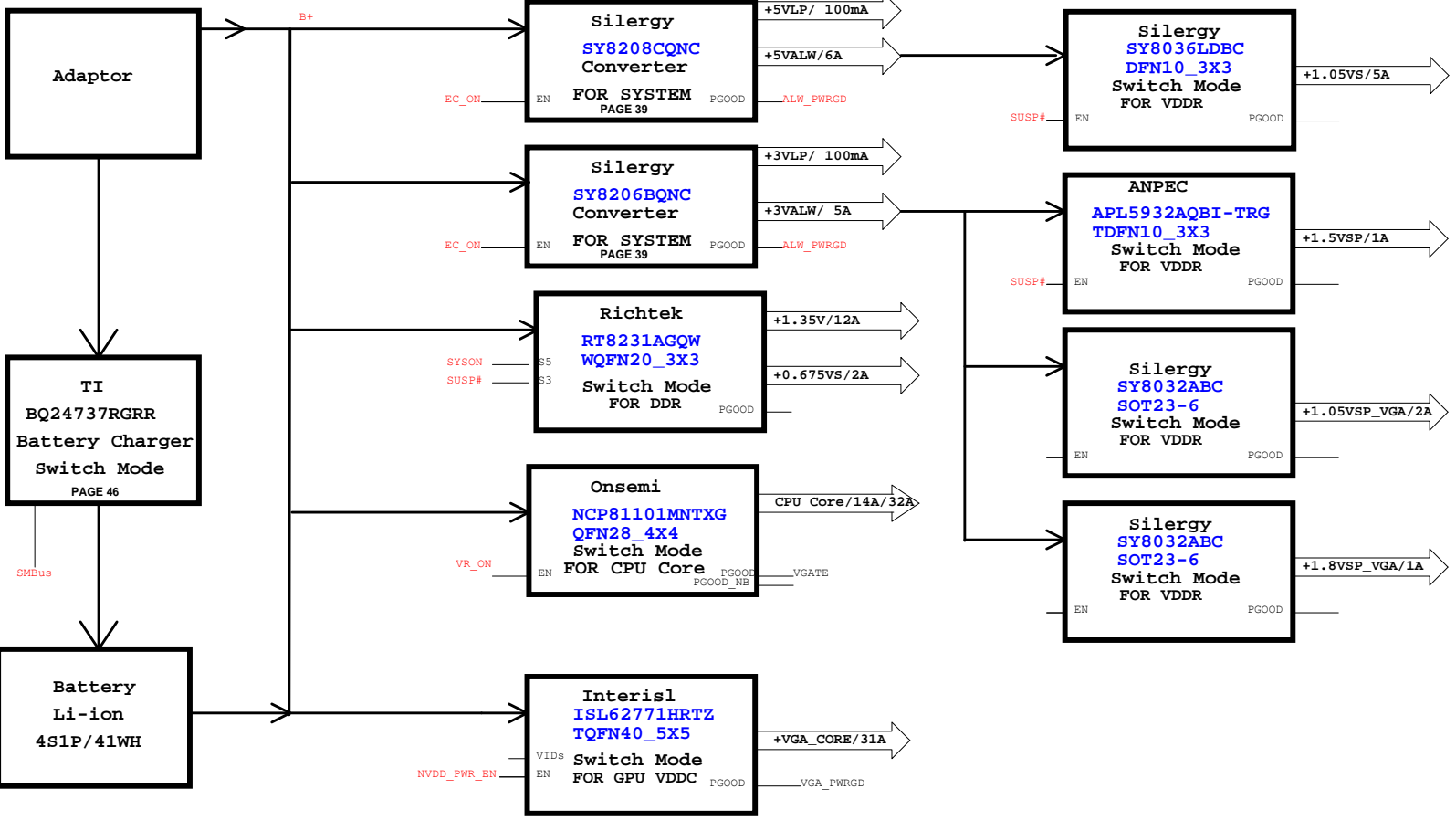
BOARD_ID0	BOARD_ID1	BOARD_ID2	BOARD_ID3	Description	Stuff Resistor
0	0	0	0	BDW + Jet-LE sku	RC107,RC108,RC109,RC128
0	0	1	0	BDW + Topaz-XT sku	RC107,RC108,RC102,RC128
0	1	0	0	BDW + N15V-GM sku	RC107,RC101,RC109,RC128
0	1	1	0	BDW + N15S-GT sku	RC107,RC101,RC102,RC128
1	0	0	0	HSW + Jet-LE sku	RC100,RC108,RC109,RC128
1	0	1	0	HSW + Topaz-XT sku	RC100,RC108,RC102,RC128
1	1	0	0	HSW + N15V-GM sku	RC100,RC101,RC109,RC128
1	1	1	0	HSW + N15S-GT sku	RC100,RC101,RC102,RC128
0	0	0	1	BDW + UMA sku	RC107,RC108,RC109,RC128
1	0	0	1	HSW + UMA sku	RC100,RC108,RC109,RC128

Security Classification		LC Future Center Secret Data		Title	
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				Date:	Monday, December 09, 2013
				Sheet	48 of 59

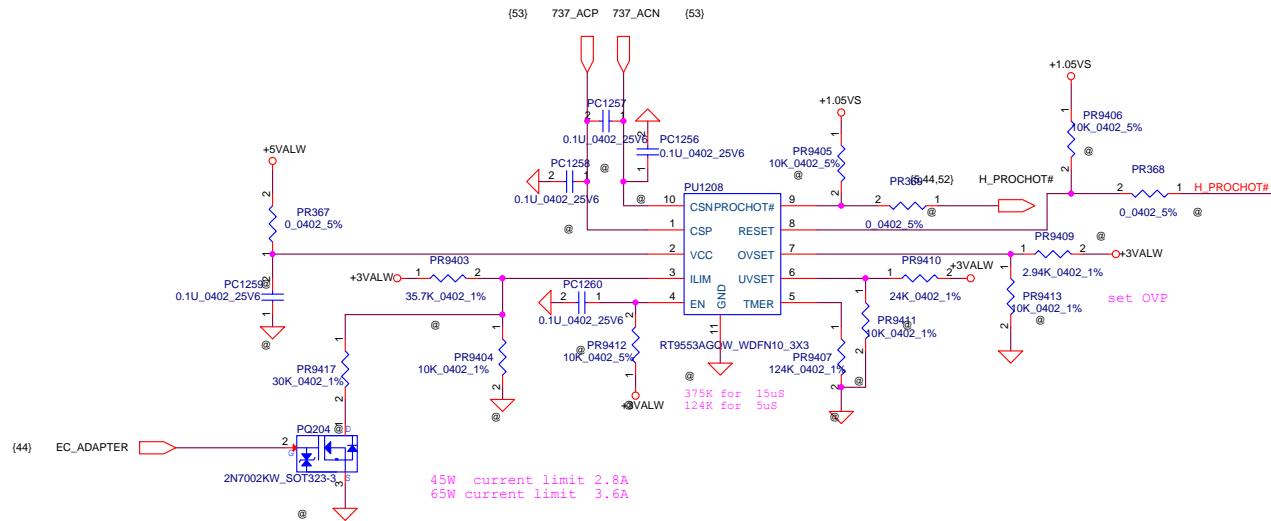
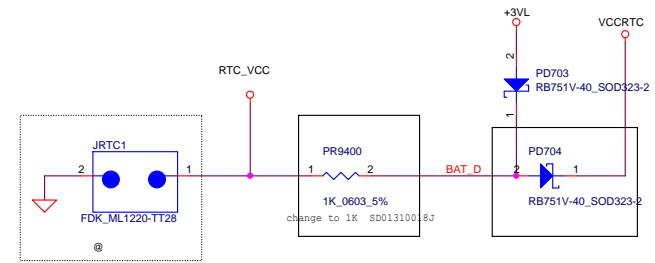
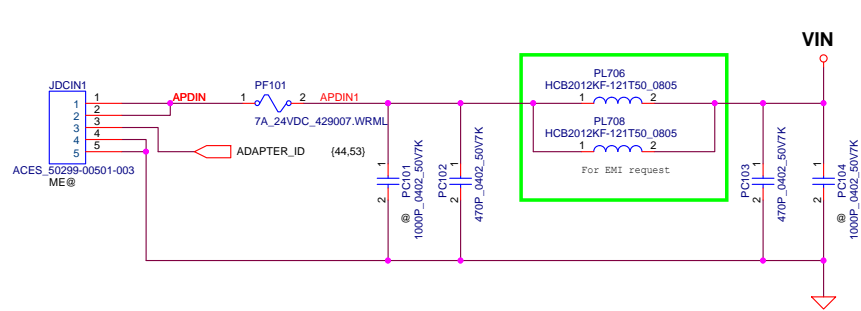
















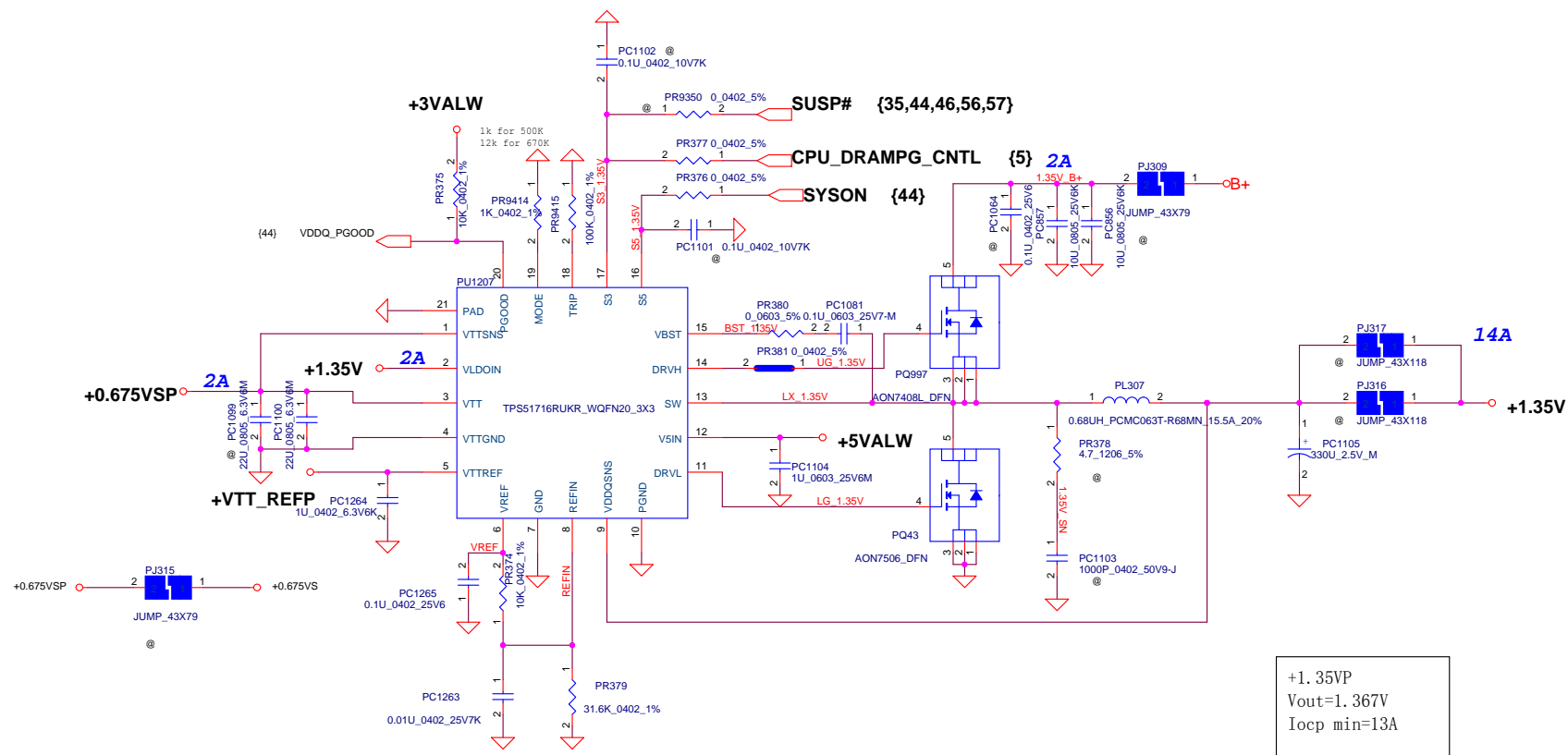
















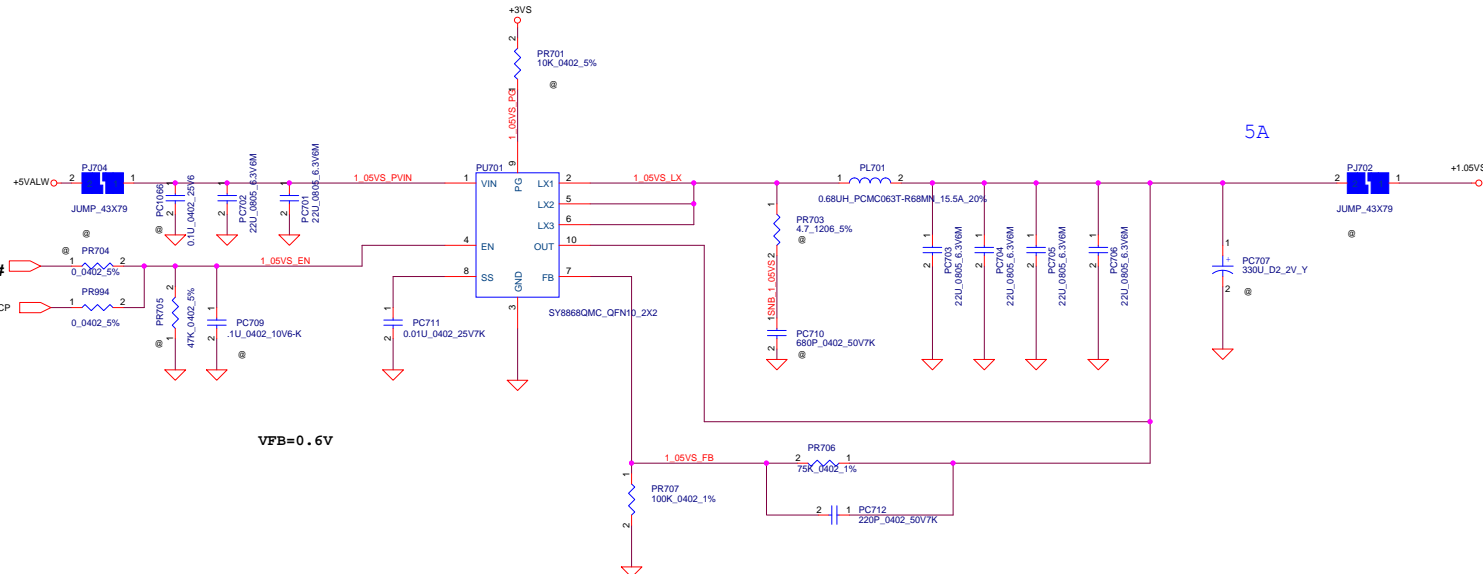


35,44,46,55,56}

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