

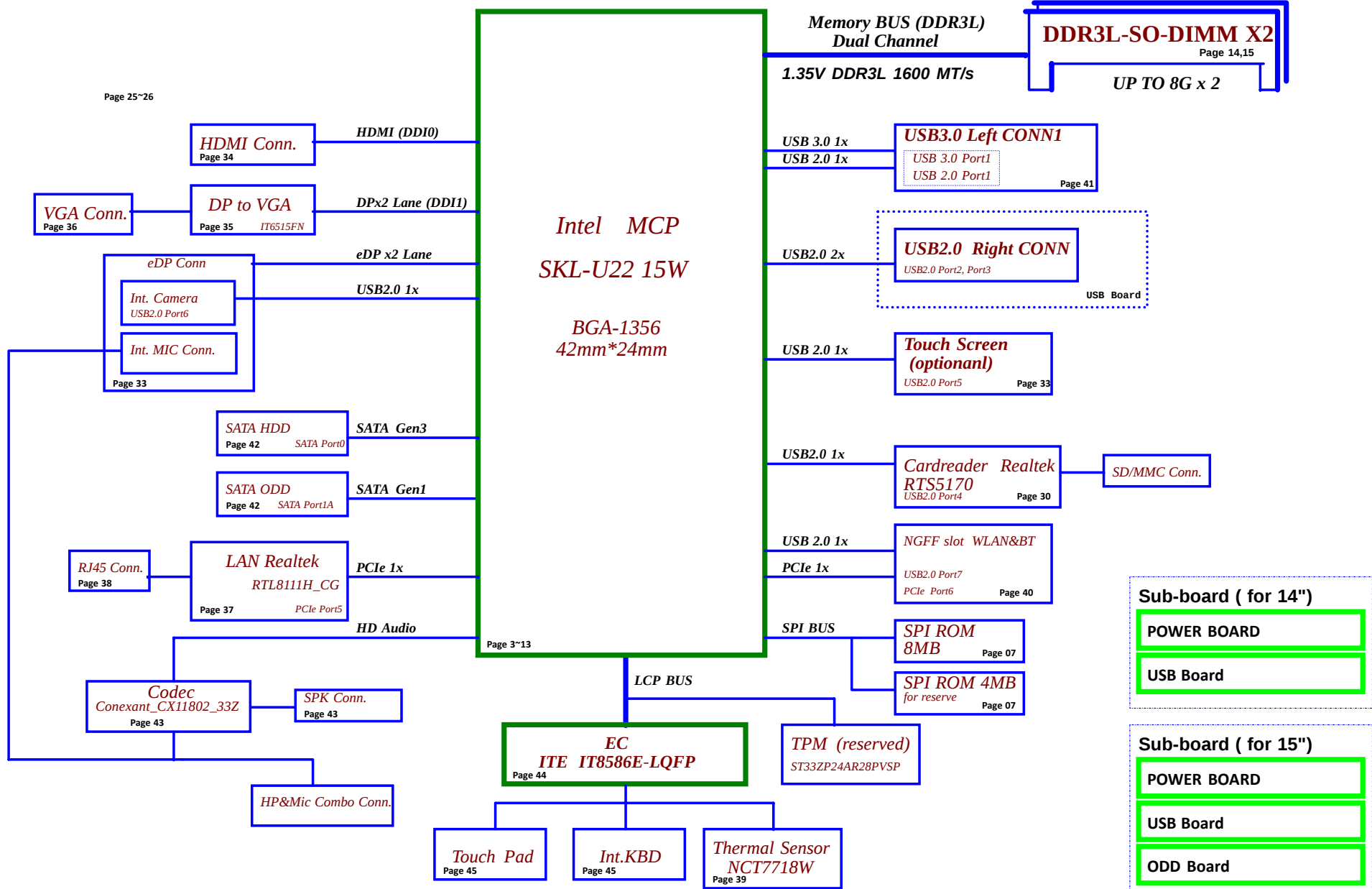
BMWQ1/Q2 UMA M/B Schematics Document

Intel Skylake U22 with DDRIIL

2015-07-12

REV:1.0

Security Classification		LC Future Center Secret Data		Title			
Issued Date	2014/12/11	Deciphered Date	2015/12/11	Cover Page			
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Voltage Rails (O --> Means ON , X --> Means OFF)

Power Plane \ State				
	B+	+3VALW +5VALW +3VALW_PCH +1.8VALW +1.0VALW	+1.35V +VCCST	+5VS +3VS +VCCIO +VCCSTG +VCCSA +VCC_GT +CPU_CORE +0.675VS
S0	0	0	0	0
S3	0	0	0	X
S3 Battery only	0	0	0	X
S5 S4/AC Only	0	0	X	X
S5 S4 Battery only	0	X	X	X
S5 S4 AC & Battery don't exist	X	X	X	X

SMBUS Control Table

	SOURCE	BATT	IT8586E	SODIMM	WLAN WiMAX	Thermal Sensor	PCH	TP Module	charger	DGPU
EC_SMB_CK1 EC_SMB_DA1	IT8586E +3VALW	V	+3VALW	X	X	X	X	X	V	X
EC_SMB_CK2 EC_SMB_DA2	IT8586E +3VS	X	+3VS	X	X	V +3VS	V +3VALW_PCH	X	X	V +3V6S
PCH_SMB_CLK PCH_SMB_DATA	PCH +3VALW_PCH	X	X	V +3VS	V +3VS	X	V +3VALW_PCH	X	X	X

EC SM Bus1 address

EC SM Bus2 address

PCH SM Bus address

Device	Address
Smart Battery	0X16
Charger	0001 0010 b

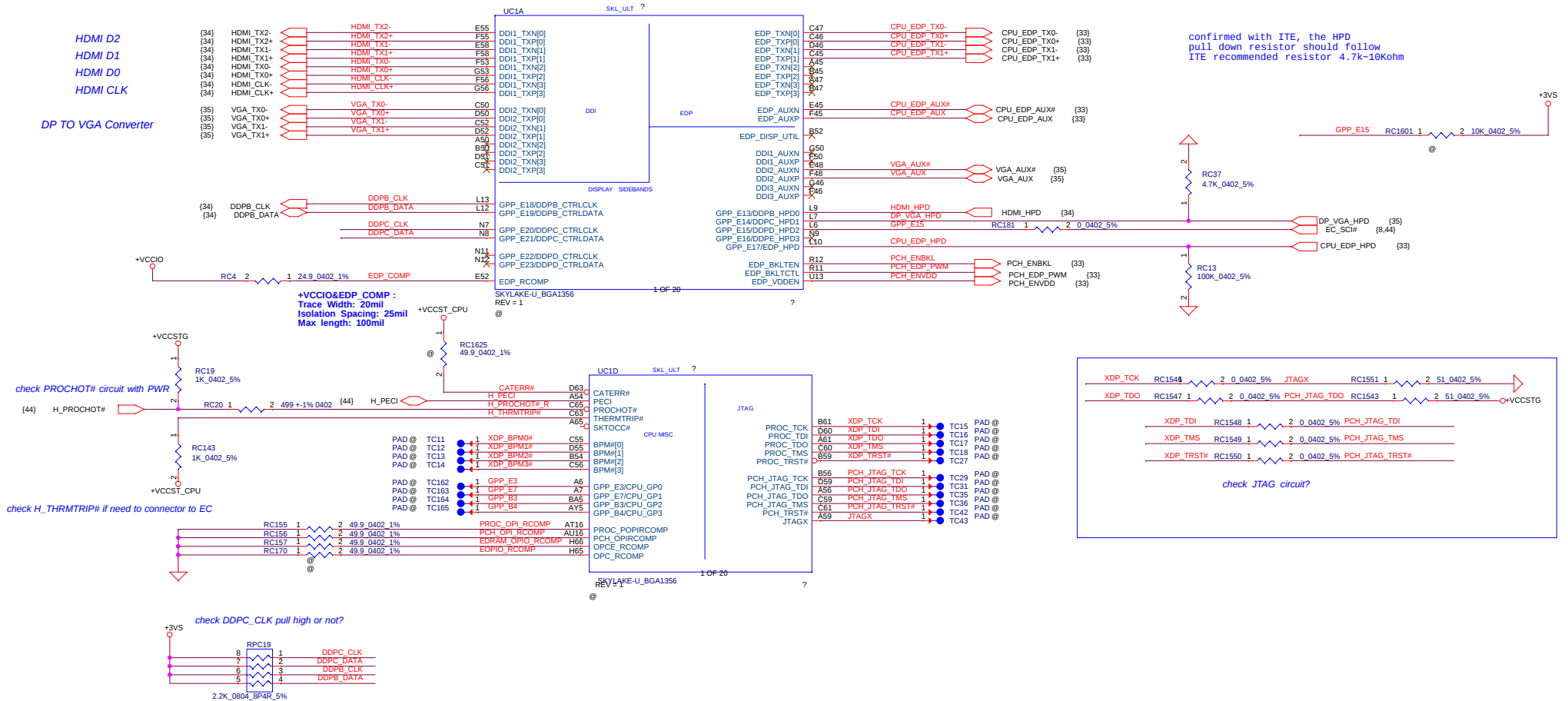
Device	Address
Thermal Sensor NCT7718W	1001_100xb
PCH	need to update
DGPU	need to update

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

STATE \ SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
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	LOW	ON	OFF	OFF	OFF
S5 (Soft OFF)	LOW	LOW	LOW	ON	OFF	OFF	OFF

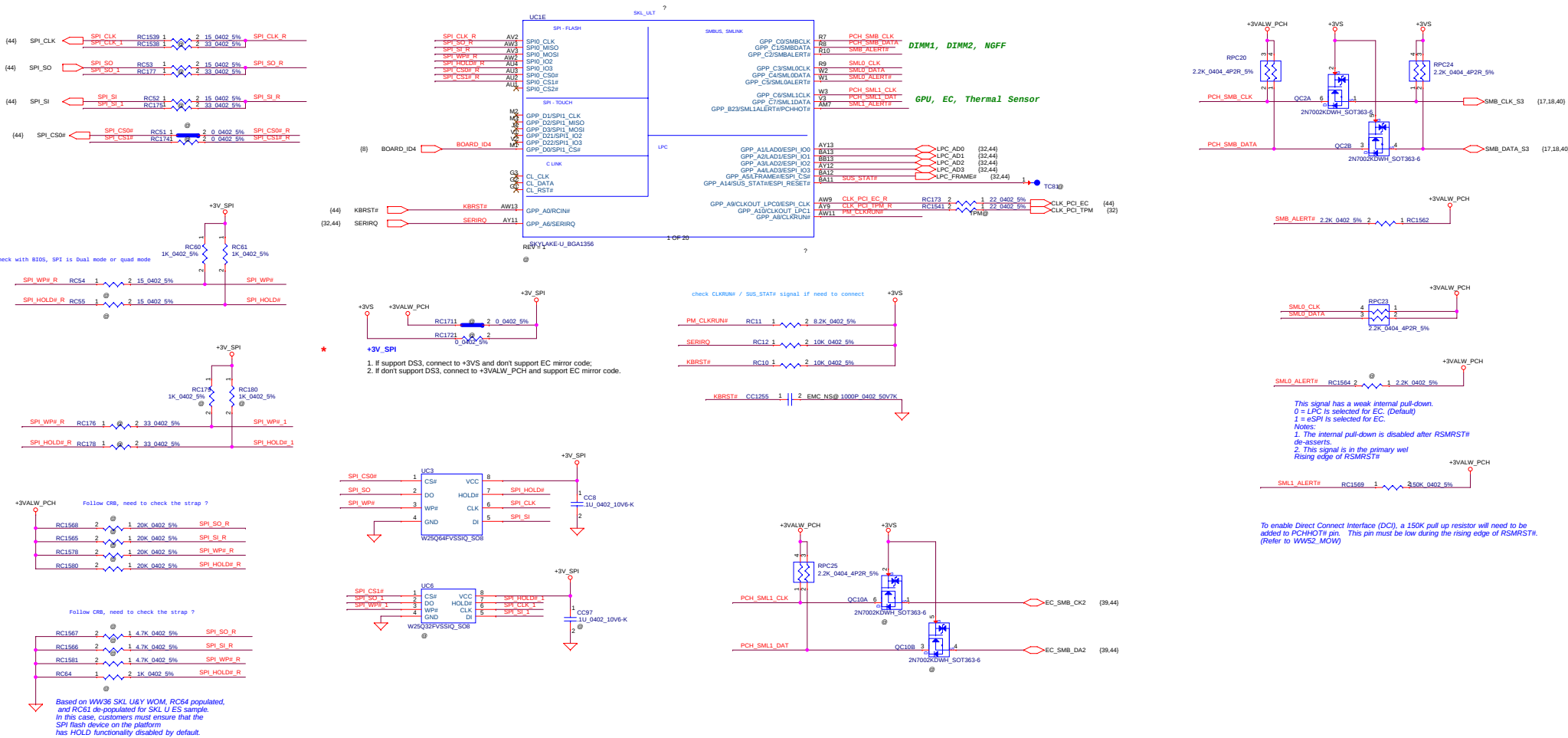
HSIO PORT	Function	BOM Structure	BTO Item
USB3.0	1 USB3.0 CONN left	@	Not stuff
	2 NC	14@	For 14" part
	3 NC	15@	For 15" part
	4 NC	14or15@	For 14" or 15" part
	5 NC	14or17@	For 14" or 17" part
	6 NC	AOAC@	AOAC support part
USB2.0	1 USB3.0 CONN Left	BCD@	For C cost down (BDW)
	2 USB2.0 CONN1 Right	Cannonlake@	For Cannonlake part
	3 USB2.0 CONN2 Right	CD@	For C cost down
	4 Camera	DUALMIC@	For Dual MIC part
	5 Cardreader	EMC@	For EMC part
	6 Touch Panel	EMC_15@	For EMC 15" part
PCIE	7 BT	EMC_NS@	For EMC nu-stuff part
	8 NC	EMC_PX@	For EMC PX part
	9 NC	EMC_PXNS@	For EMC PX nu-stuff part
	10 NC	ES@	For ES CPU
	1 NC	EXO@	For EXO GPU
	2 NC	GCLK@	For GreenCLK part
SATA	3 NC	ME@	For ME part
	4 NC	NTS@	For nu-touch part
	5 LAN	PCH_SDIO@	For PCH SDIO part
	6 WLAN	PCH_SDIO1@	For PCH SDIO path1
	7 used as SATA	PCH_SDIO2@	For PCH SDIO path2
	8 used as SATA	PX@	For PX part
SATA	X4 PCIE (9-12)	RANKA@	For VRAM rank A part
	DGPU	RANKB@	For VRAM rank B part
	0 HDD	Realtek_SD@	For Realtek SD part
	1A ODD	SINGLEMIC@	For single MIC part
	1B used as PCIE	SINGLERANK@	For single VRAM rank part
	2 used as PCIE	DUALRANK@	For dual VRAM rank part
		TS@	For touch screen part
		TPM@	For TPM part
		UMA@	For UMA part

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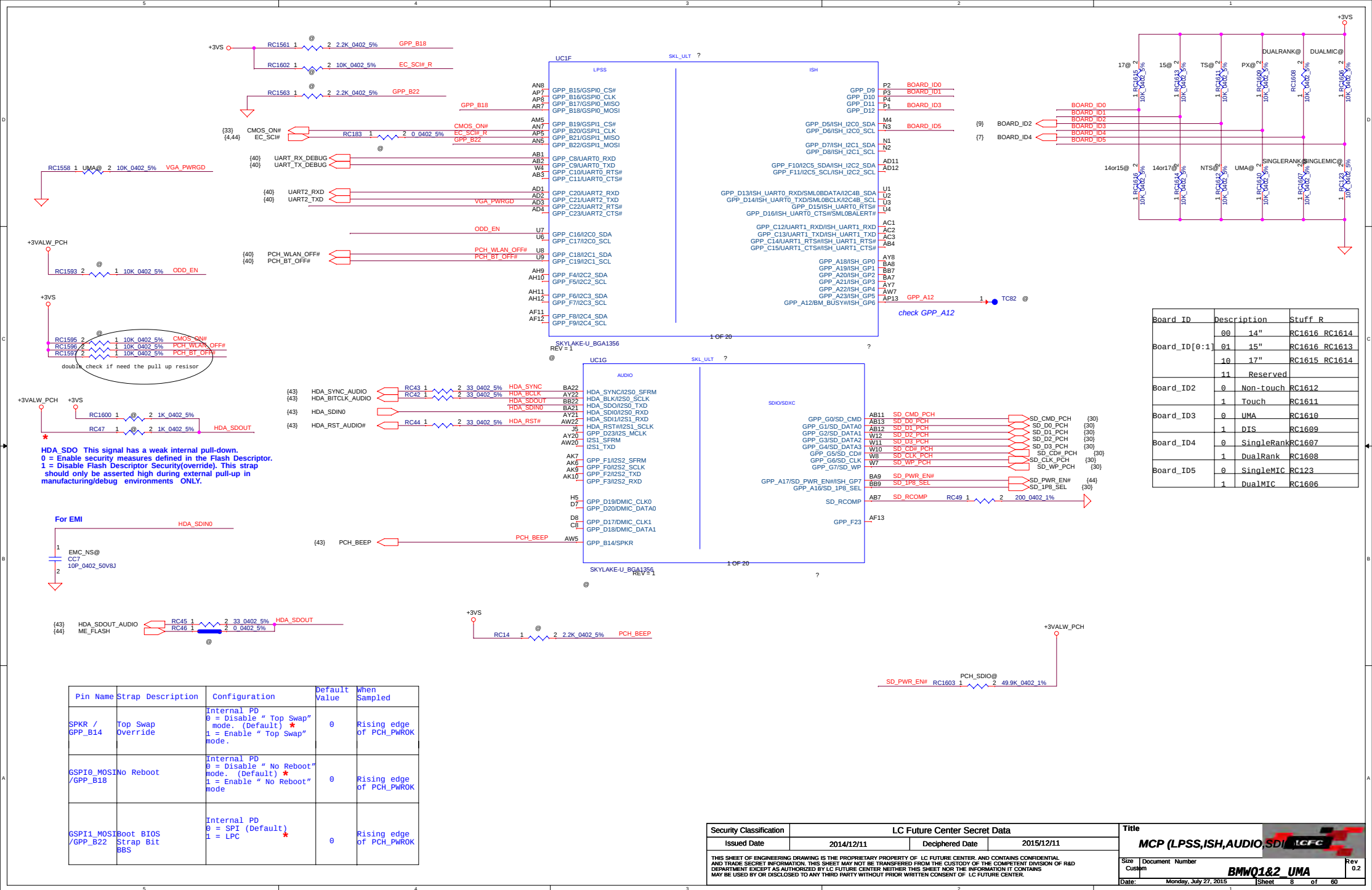


Port	Strap	Enable	Disable
Port 1	DDPB_CTRLDATA	Pull up to 3.3 V with 2.2Kohm	NC
Port 2	DDPB_CTRLDATA	Pull up to 3.3 V with 2.2Kohm	NC

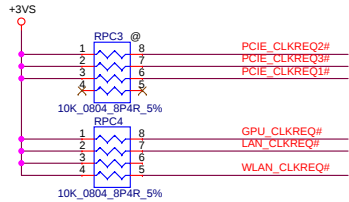
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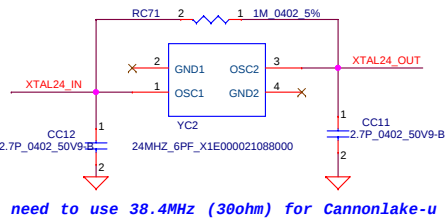
check the Pull up resistor



PCIE CLK5 LAN

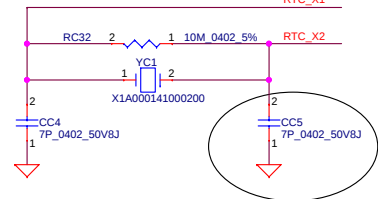
PCIE CLK6 WLAN

check if need to change to 1M_0402_1% follow PD6, CRB is 1M_0402_5%

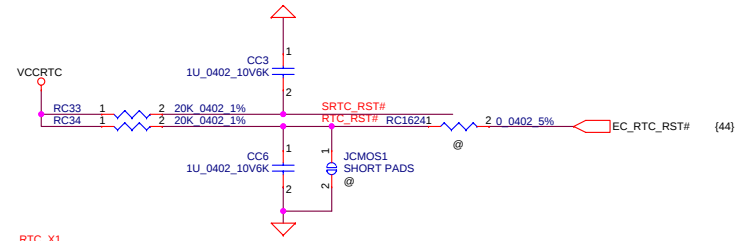
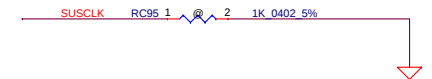
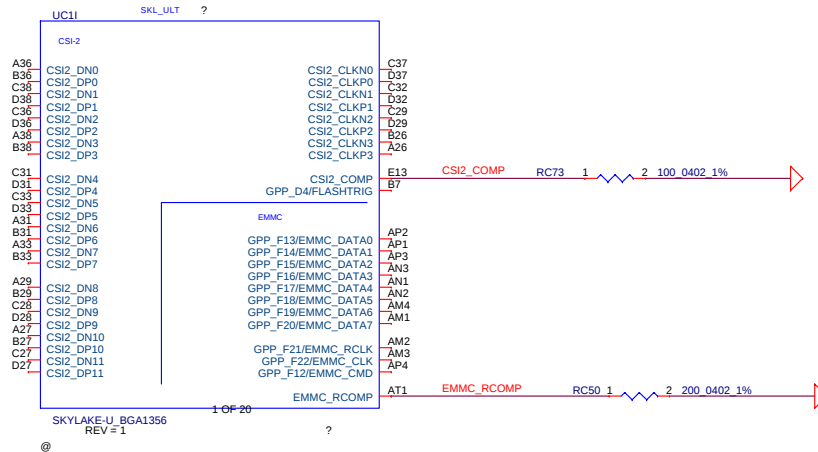


[31] 24M_CLK RC122 1 2 0.0402 5% XTAL24_IN

change to SJ1000LM00

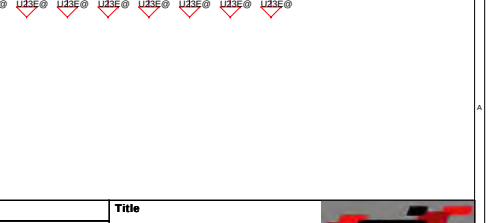
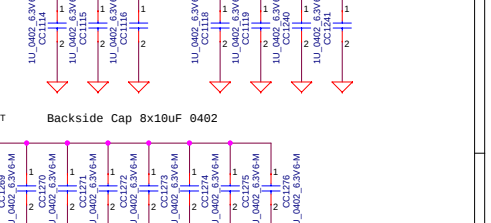
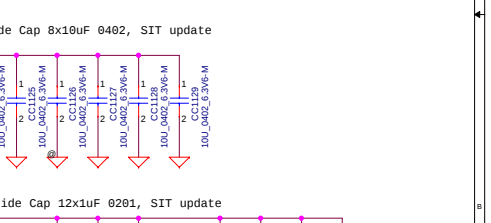
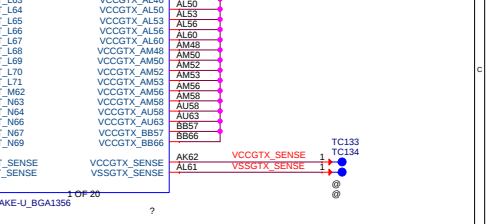
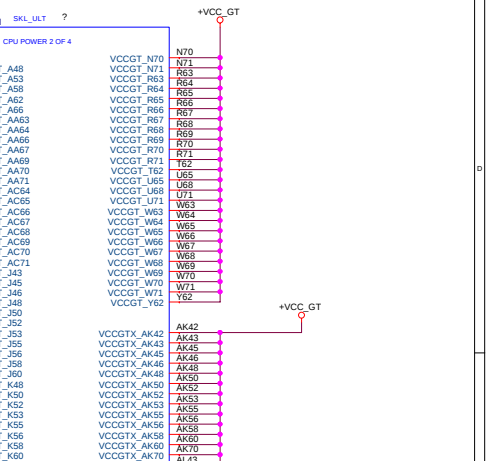
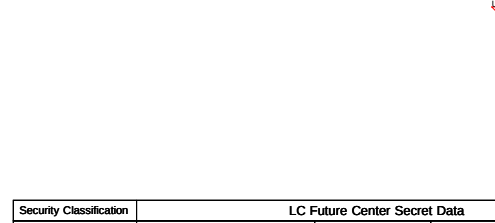
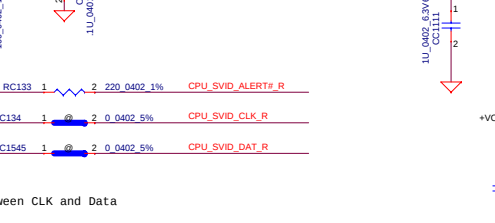
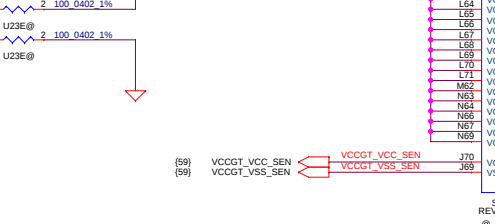
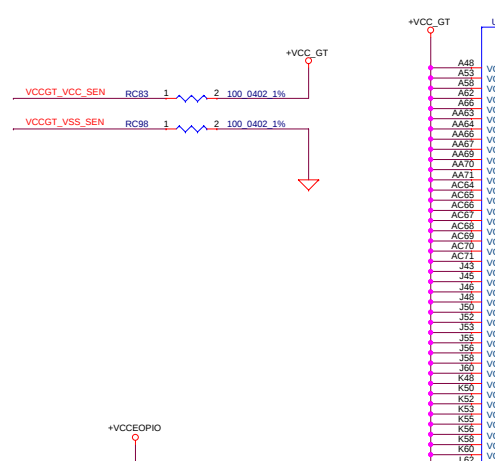
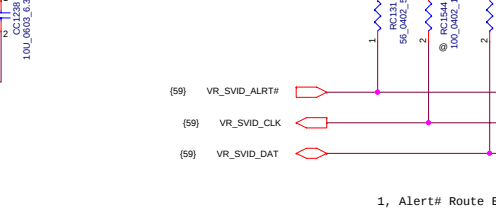
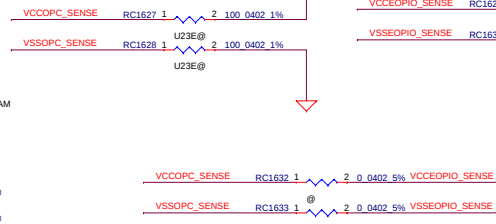
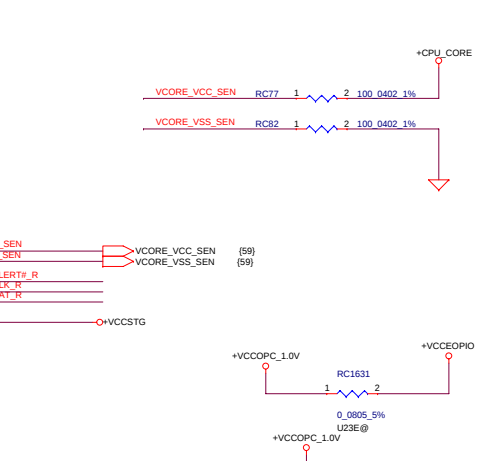
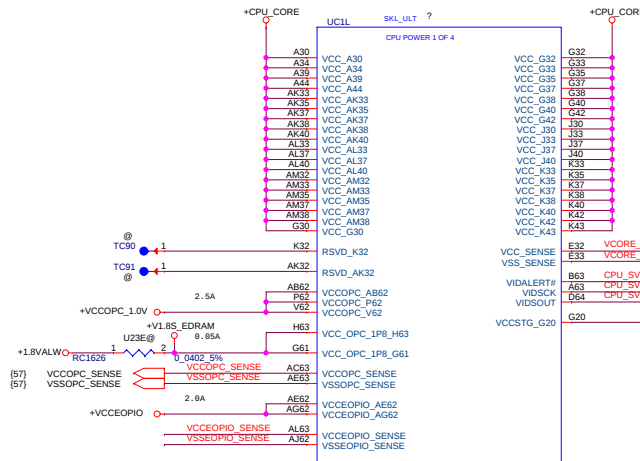


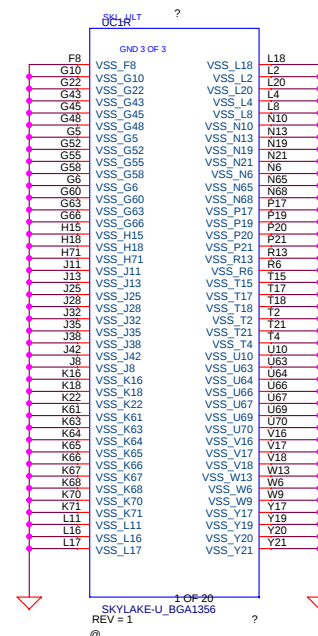
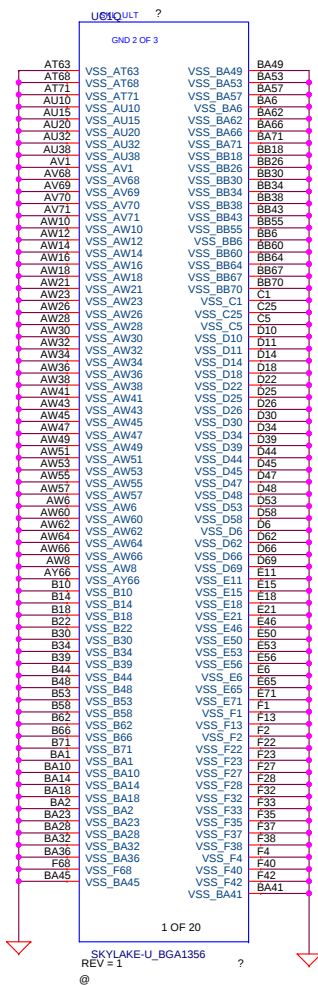
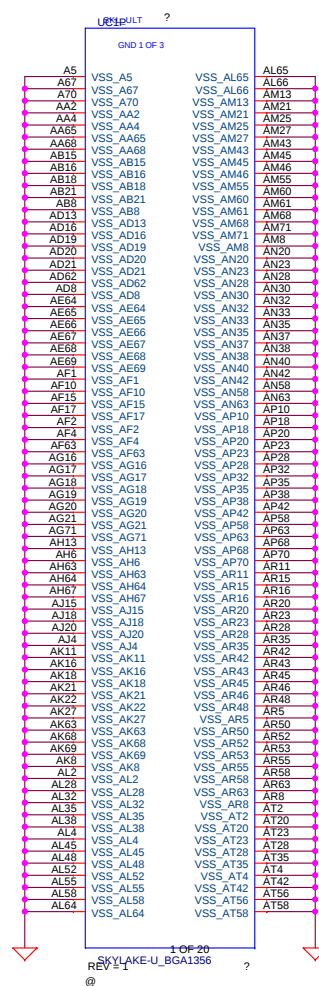
[31] RTC_CLK RC121 1 2 0.0402 5% RTC_X1



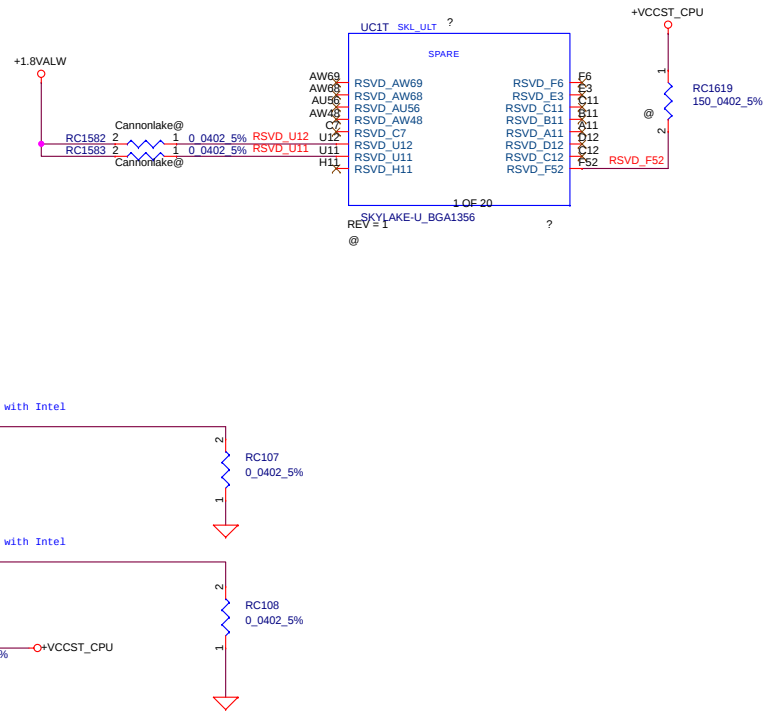
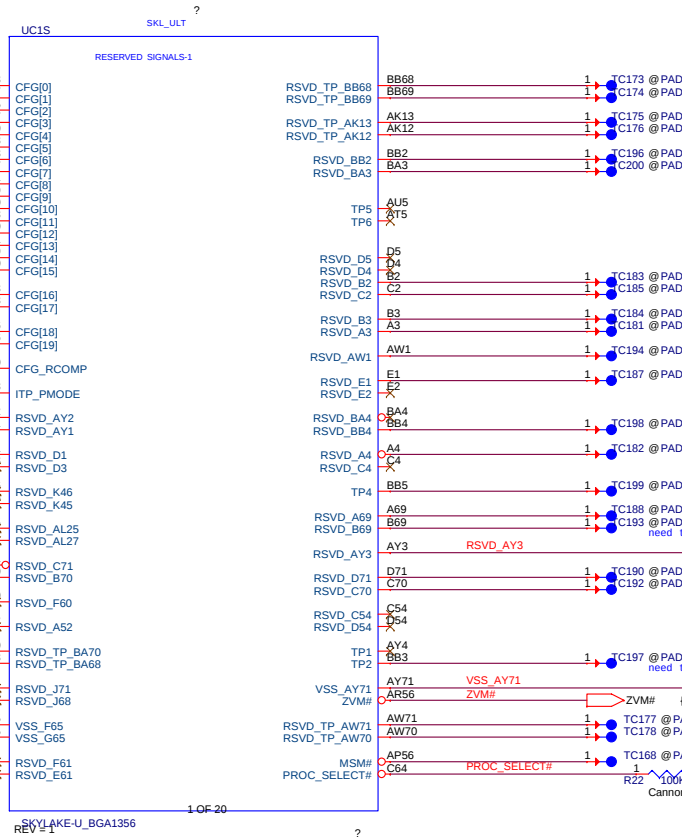
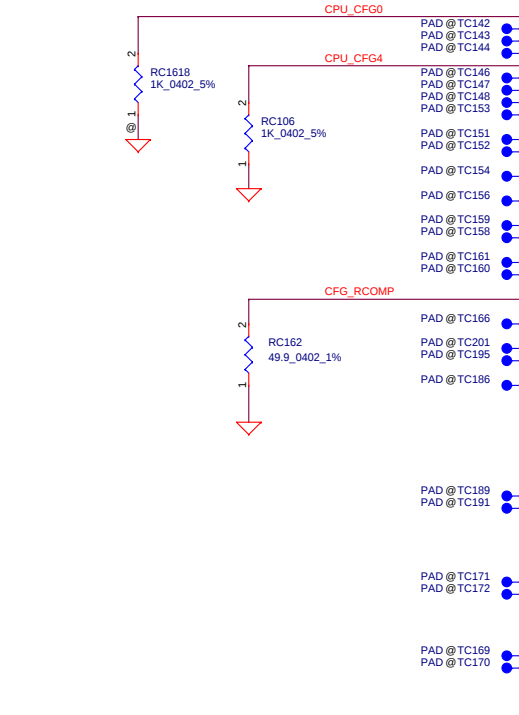
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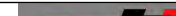


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Pin Name	Strap Description	Configuration	Default Value
CFG[4]	Display Port Presence strap	- 1 = eDP Disabled - 0 = eDP Enabled *	1

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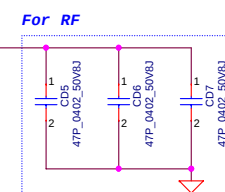
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DDR3 SO-DIMM A

Swap Table

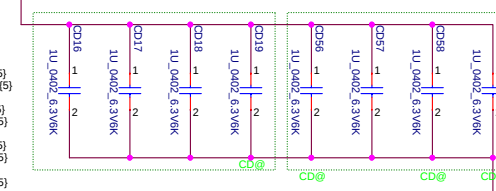
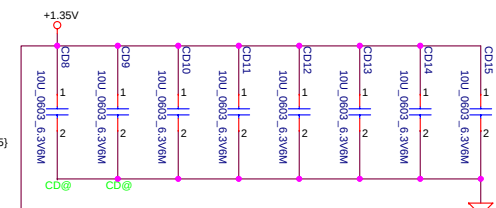
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7	DQ1	DDR3_DQ5	7	DQ33	DDR3_DQ36
15	DQ2	DDR3_DQ6	15	DQ34	DDR3_DQ39
17	DQ3	DDR3_DQ7	17	DQ35	DDR3_DQ38
4	DQ4	DDR3_DQ0	4	DQ36	DDR3_DQ37
6	DQ5	DDR3_DQ4	6	DQ37	DDR3_DQ32
16	DQ6	DDR3_DQ2	16	DQ38	DDR3_DQ34
18	DQ7	DDR3_DQ3	18	DQ39	DDR3_DQ35
10	DQS#0	DDR3_DQS#0	10	DQS#4	DDR3_DQS#4
12	DQS0	DDR3_DQS0	12	DQS5	DDR3_DQS5
21	DQ8	DDR3_DQ12	21	DQ40	DDR3_DQ44
23	DQ9	DDR3_DQ9	23	DQ41	DDR3_DQ41
33	DQ10	DDR3_DQ14	33	DQ42	DDR3_DQ46
35	DQ11	DDR3_DQ15	35	DQ43	DDR3_DQ47
22	DQ12	DDR3_DQ13	22	DQ44	DDR3_DQ45
24	DQ13	DDR3_DQ8	24	DQ45	DDR3_DQ40
34	DQ14	DDR3_DQ11	34	DQ46	DDR3_DQ43
36	DQ15	DDR3_DQ15	36	DQ47	DDR3_DQ42
27	DQS#1	DDR3_DQS#1	27	DQS#5	DDR3_DQS#5
29	DQS1	DDR3_DQS1	29	DQS6	DDR3_DQS6
39	DQ16	DDR3_DQ20	39	DQ48	DDR3_DQ48
41	DQ17	DDR3_DQ21	41	DQ49	DDR3_DQ53
51	DQ18	DDR3_DQ18	51	DQ50	DDR3_DQ55
53	DQ19	DDR3_DQ23	53	DQ51	DDR3_DQ54
49	DQ20	DDR3_DQ17	49	DQ52	DDR3_DQ52
42	DQ21	DDR3_DQ16	42	DQ53	DDR3_DQ49
50	DQ22	DDR3_DQ22	50	DQ54	DDR3_DQ51
52	DQ23	DDR3_DQ19	52	DQ55	DDR3_DQ50
45	DQS#2	DDR3_DQS#2	45	DQS#6	DDR3_DQS#6
47	DQS2	DDR3_DQS2	47	DQS6	DDR3_DQS6
57	DQ24	DDR3_DQ29	57	DQ56	DDR3_DQ61
59	DQ25	DDR3_DQ25	59	DQ57	DDR3_DQ60
67	DQ26	DDR3_DQ26	67	DQ58	DDR3_DQ59
69	DQ27	DDR3_DQ30	69	DQ59	DDR3_DQ63
56	DQ28	DDR3_DQ24	56	DQ60	DDR3_DQ66
58	DQ29	DDR3_DQ28	58	DQ61	DDR3_DQ67
68	DQ30	DDR3_DQ31	68	DQ62	DDR3_DQ62
70	DQ31	DDR3_DQ27	70	DQ63	DDR3_DQ58
62	DQS#3	DDR3_DQS#3	62	DQS#7	DDR3_DQS#7
64	DQS3	DDR3_DQS3	64	DQS7	DDR3_DQS7

DDR3_DQ1[0..63] (5)
DDR3_DQS[0..7] (5)
DDR3_DQS[0..7] (5)
DDR3_MA[0..15] (5)



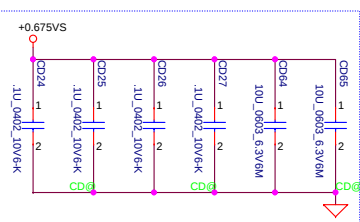
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Place near DIMM

(10uF_0603_6.3V)*8
(1U_0402_6.3V)*8



Layout Note:
Place near DIMM

(10U_0603_6.3V)*2
(.1U_0402_10V)*4

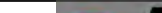


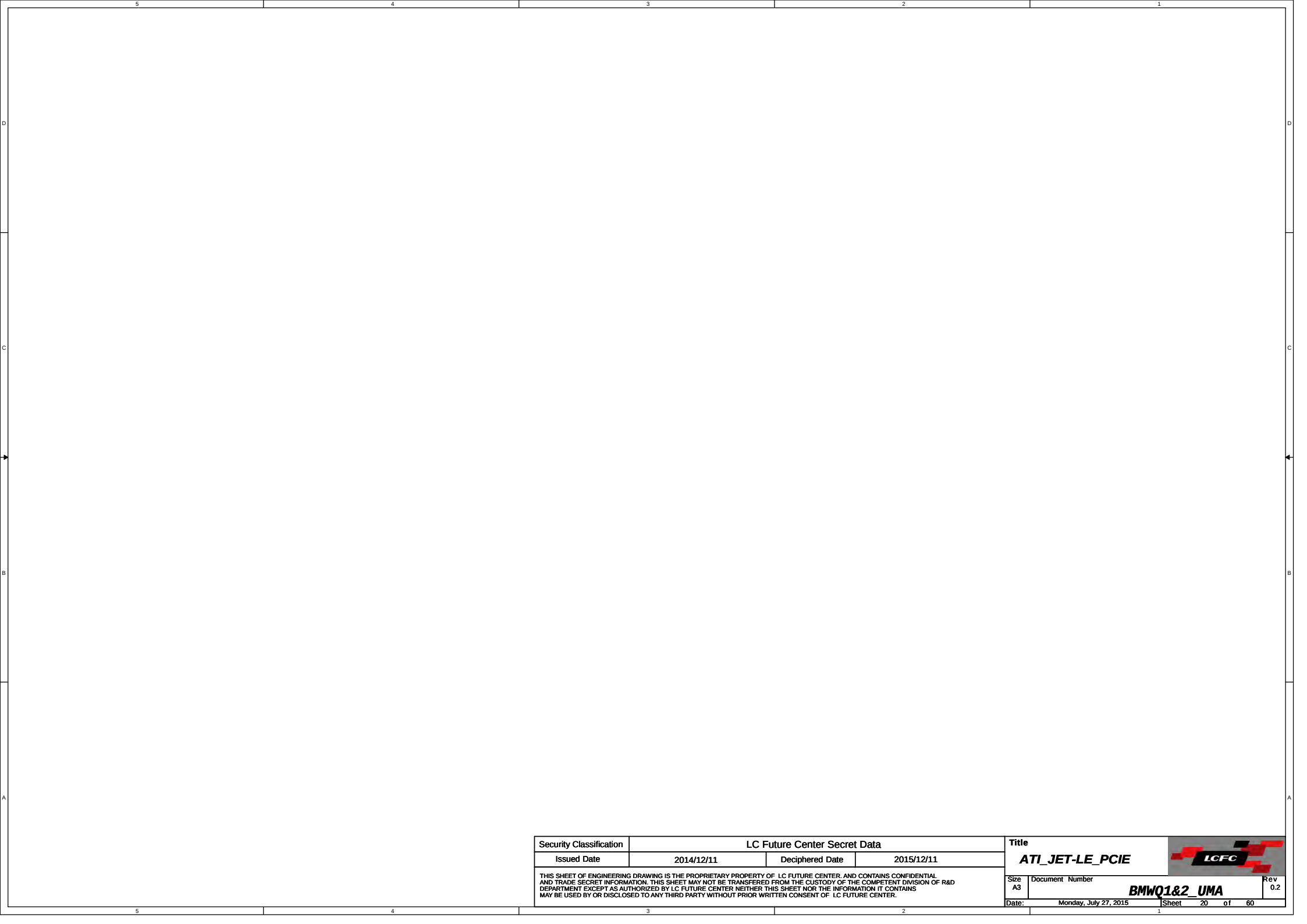
Trace width:20 mils
Space:20mils

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

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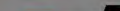


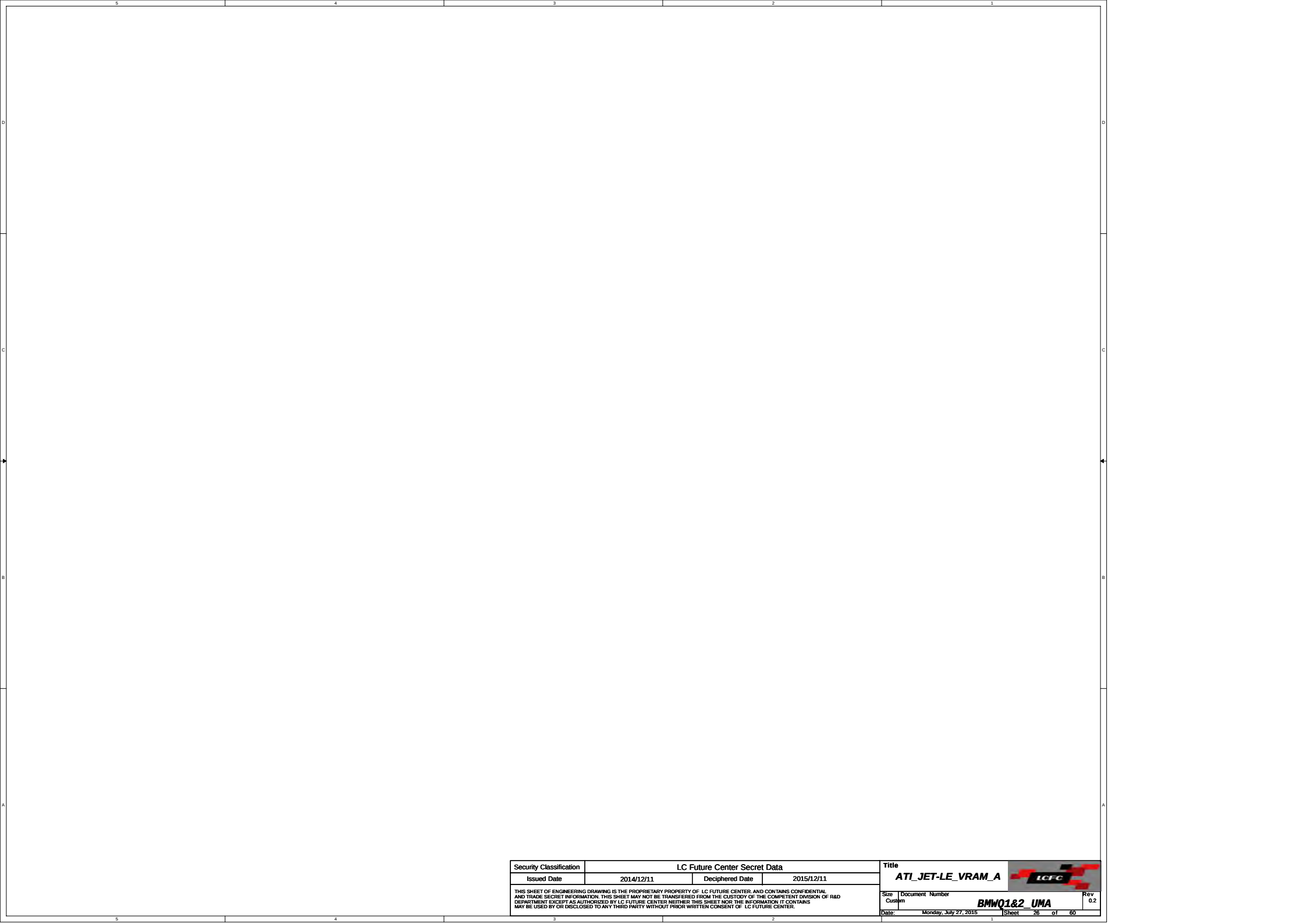
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		Issued Date	2014/12/11	Deciphered Date 2015/12/11
		Title		
		ATI_JET-LE_DP Power		
				
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		Size	Document Number	Rev
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		Date:	Monday, July 27, 2015	Sheet 23 of 60
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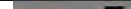
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Issued Date	2014/12/11	Deciphered Date	2015/12/11	ATI_JET-LE_MEM IF			
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Size	Document	Number			Rev
Custom		BMWQ1&2 UMA			0.2
Date:		Monday, July 27, 2015		Sheet	26 of 60

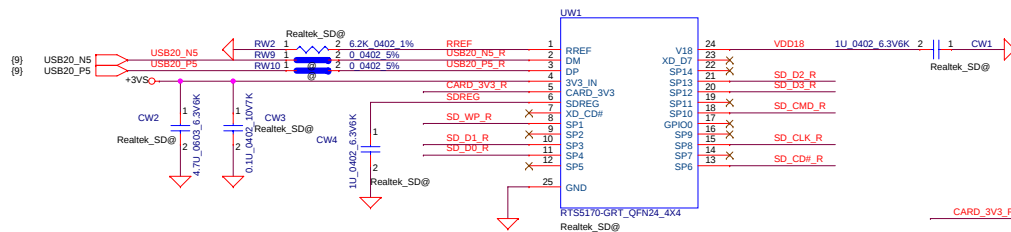
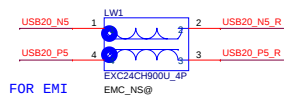


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					Document Number BMWQ1&2 UMA
					Date: Monday, July 27, 2015 Sheet 27 of 60

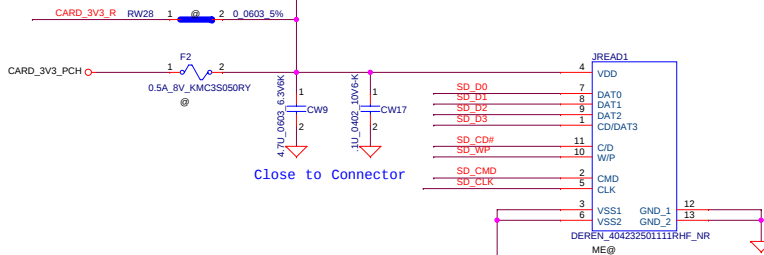
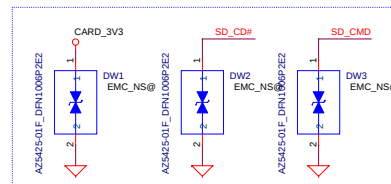
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									Date: Monday, July 27, 2015	Sheet 29 of 60	

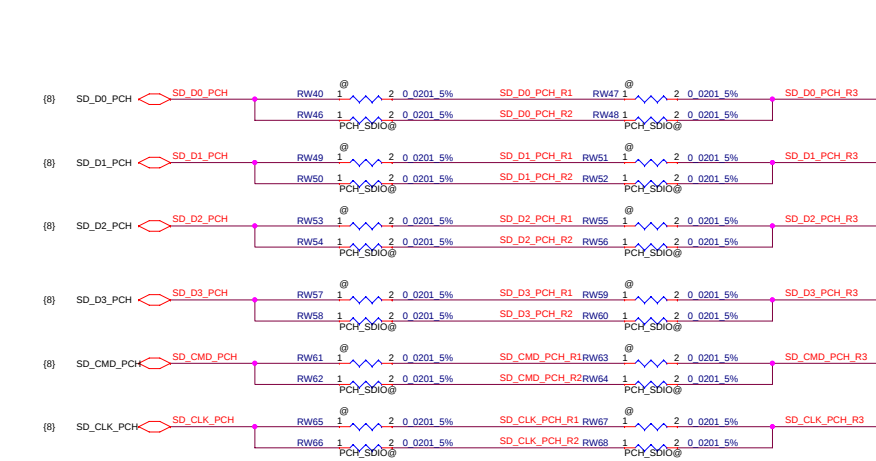
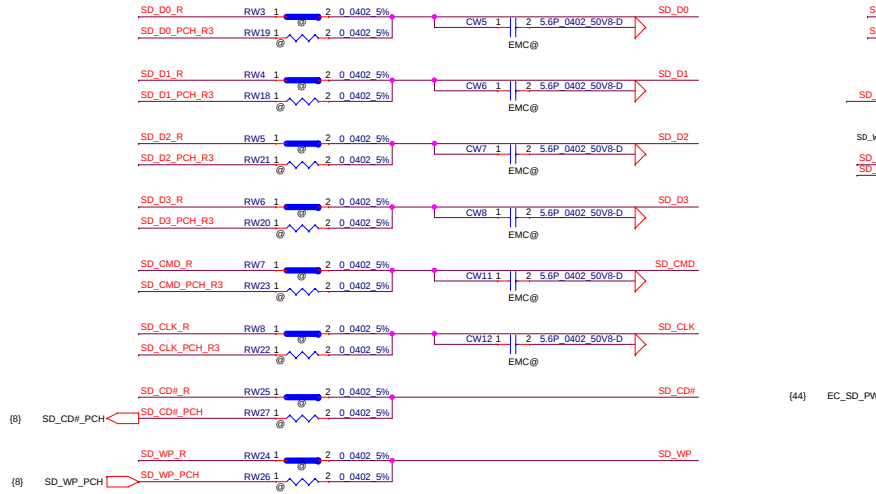


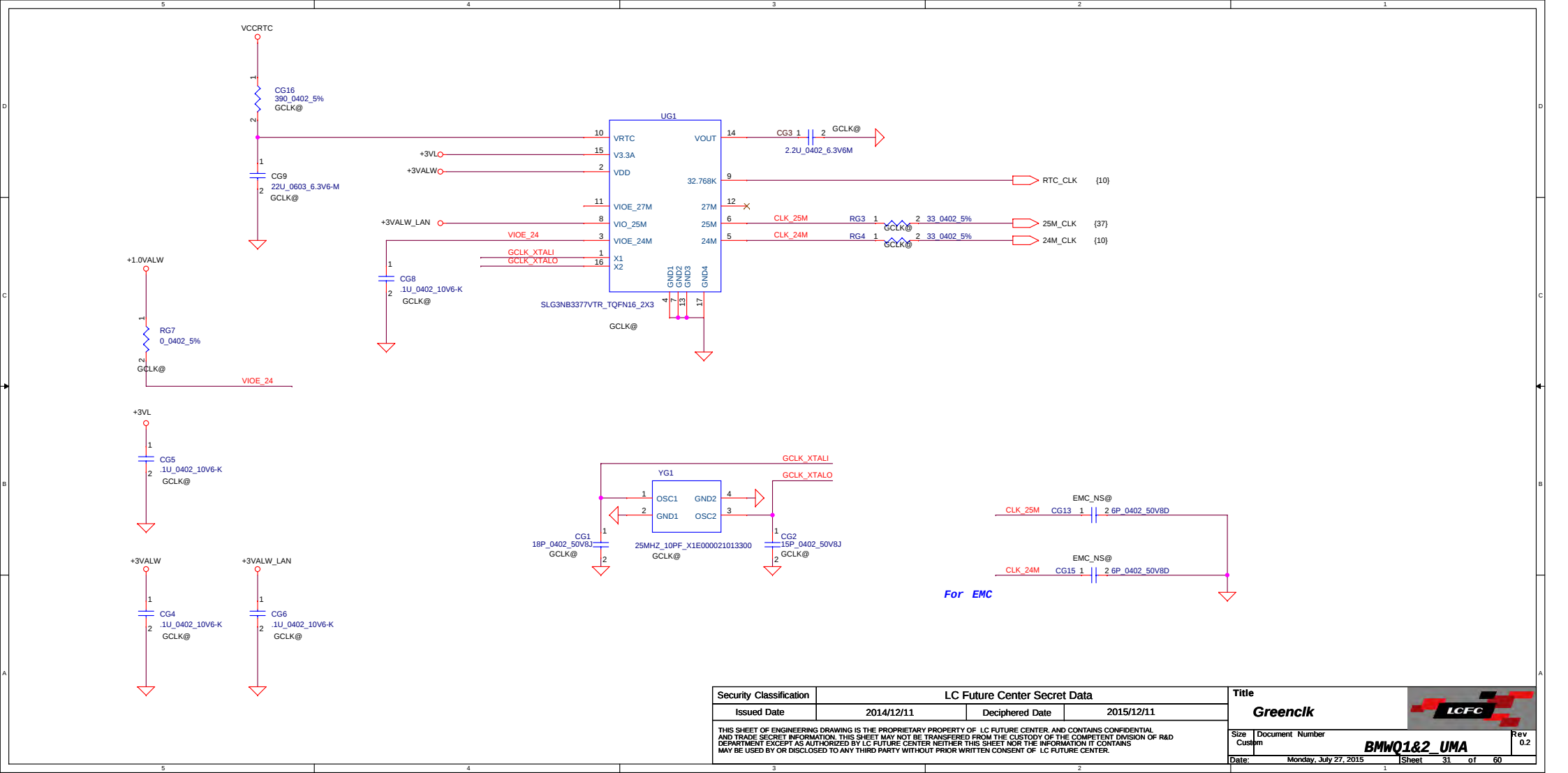


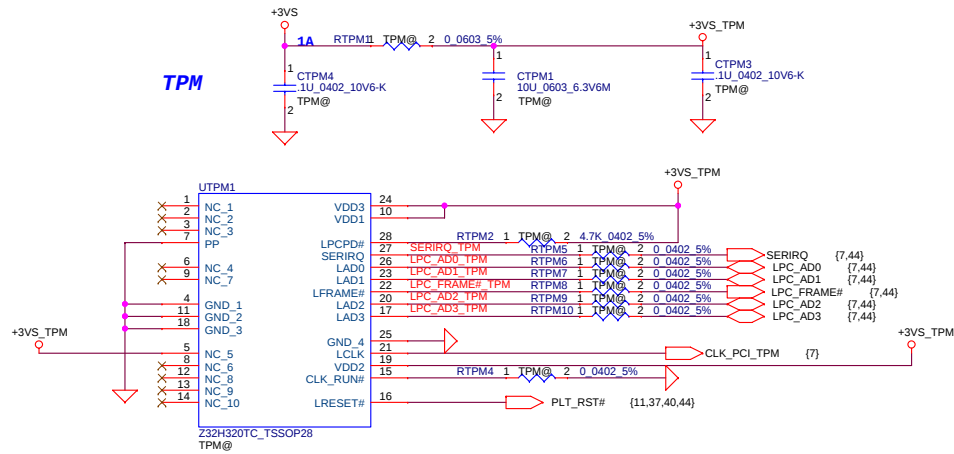
FOR ESD Close to Connector



SD / MMC

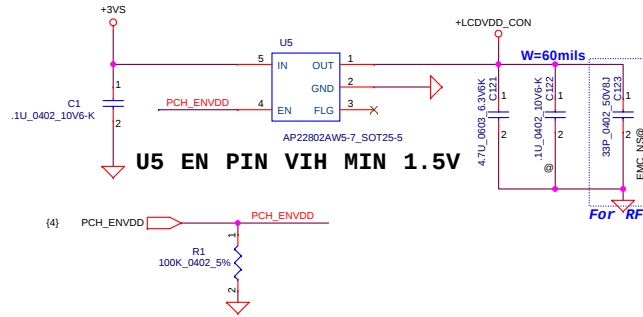




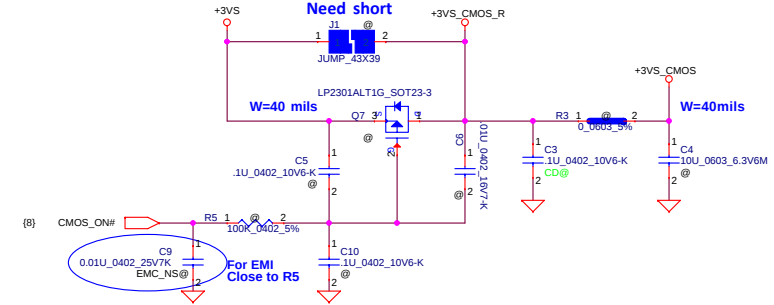


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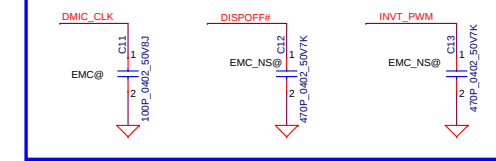
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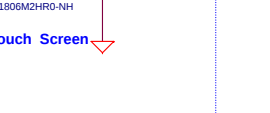
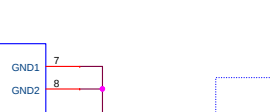
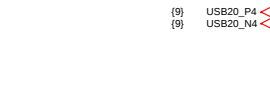
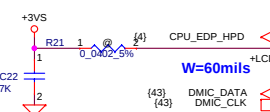
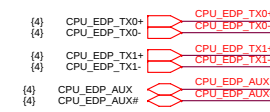
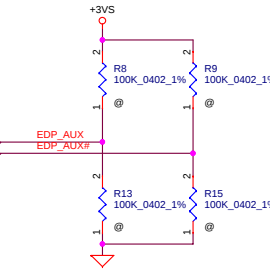
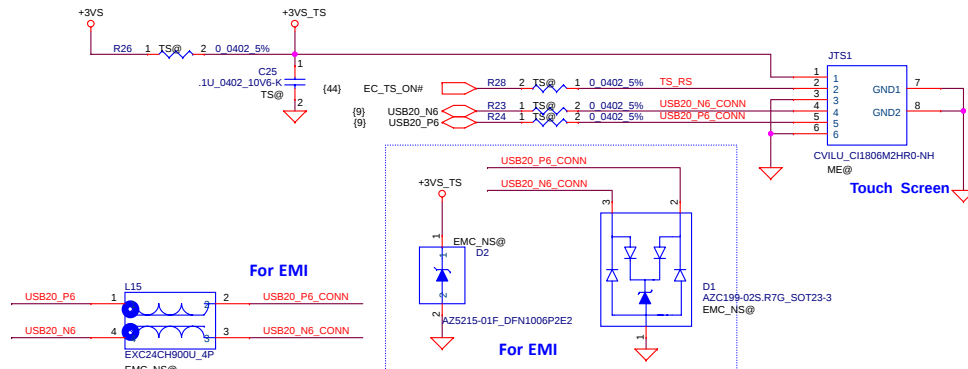
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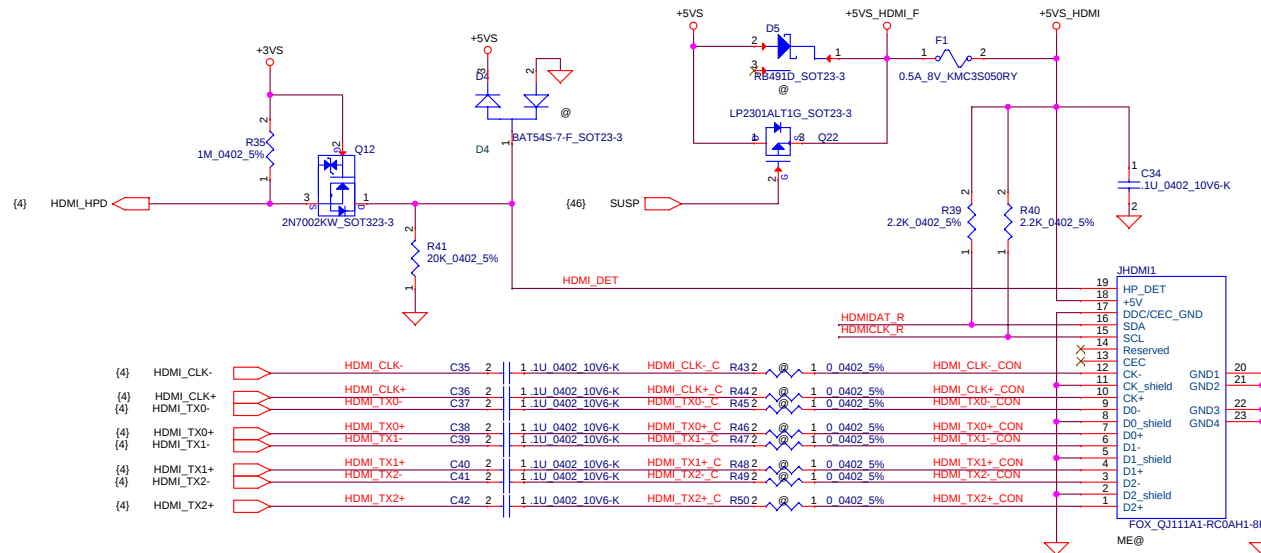
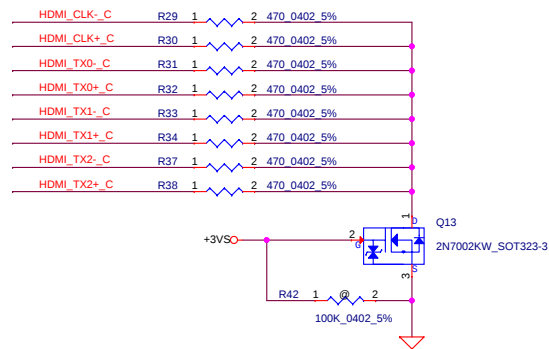
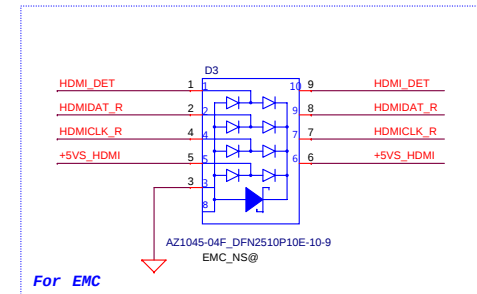
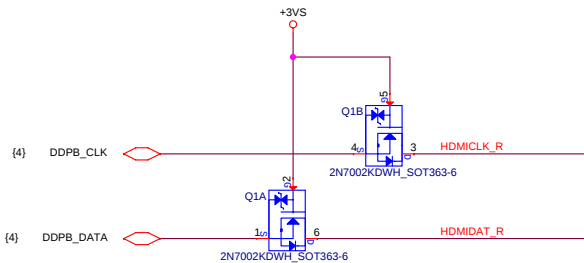
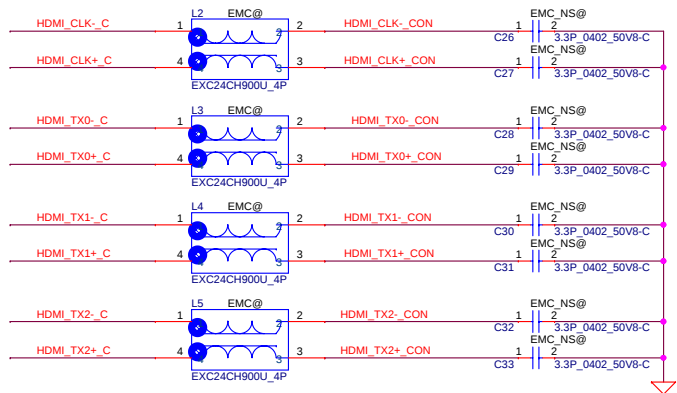


EMI request

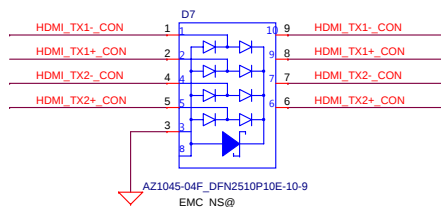
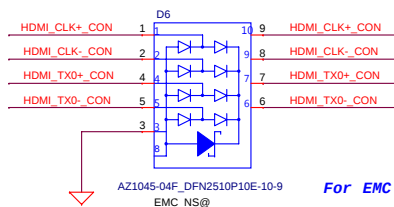


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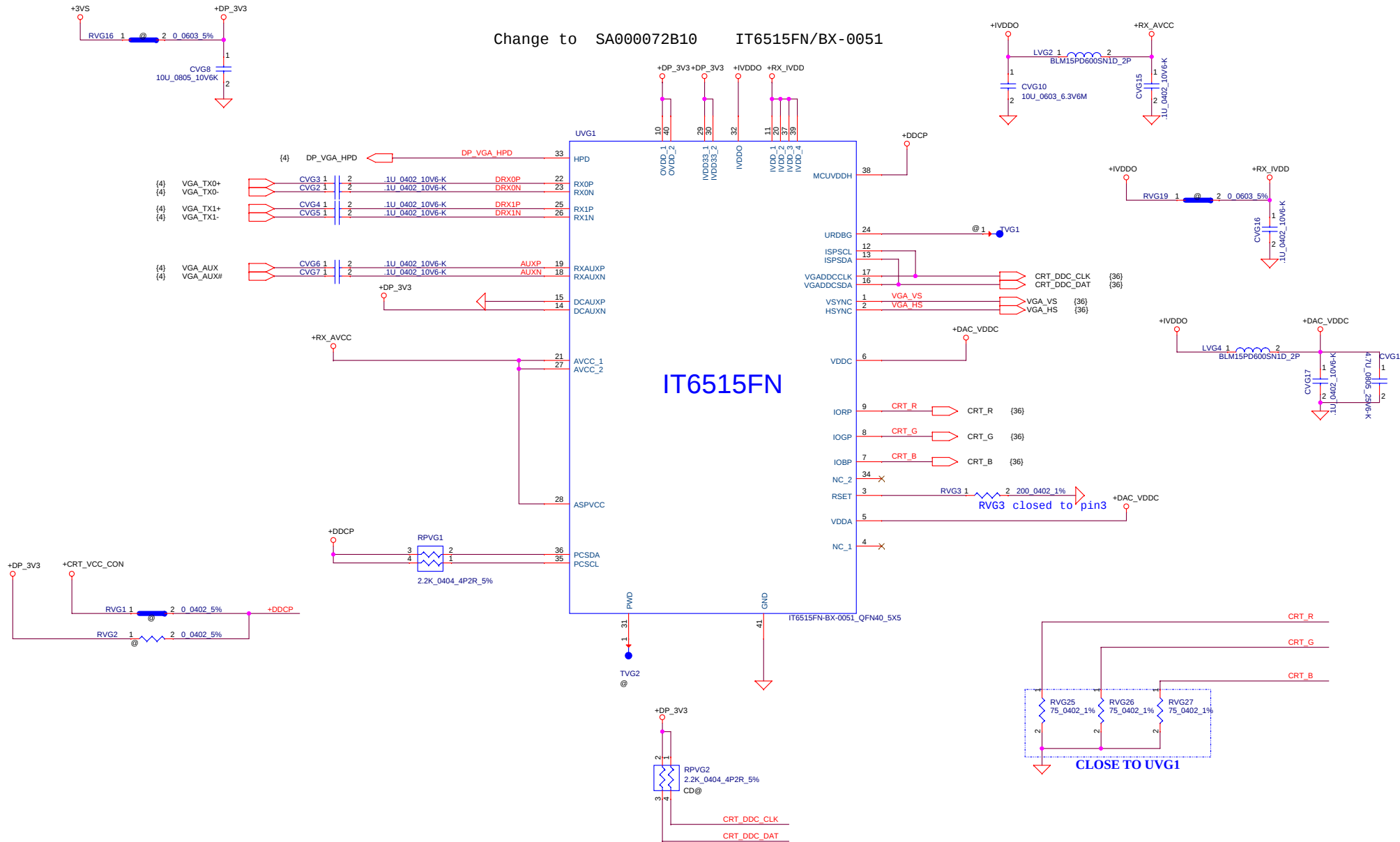


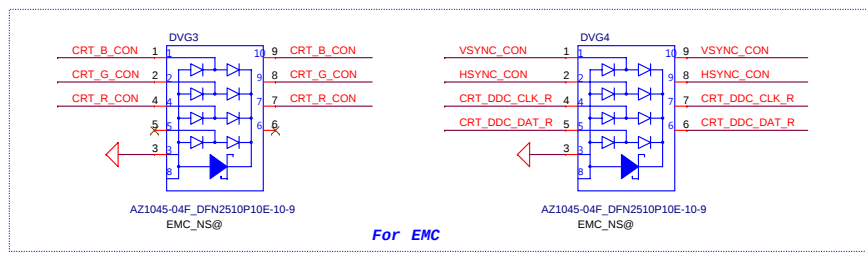
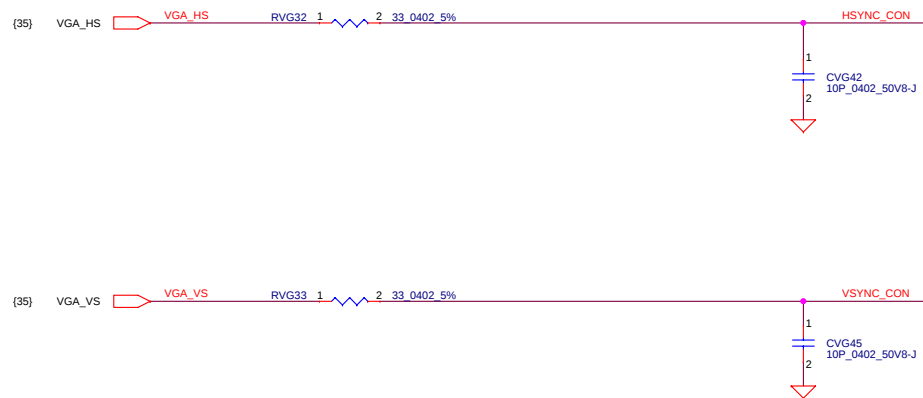
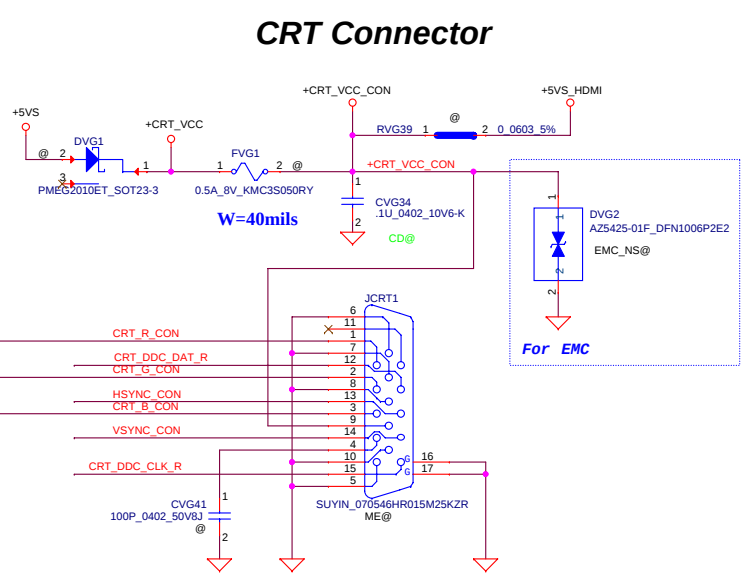
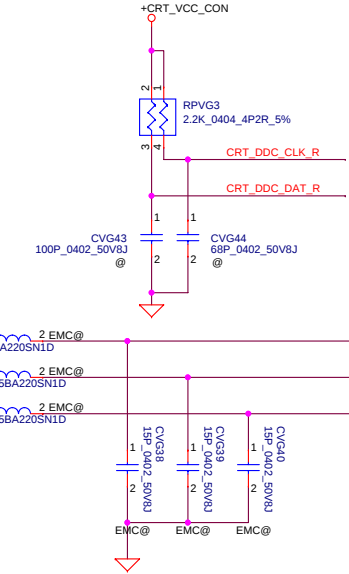
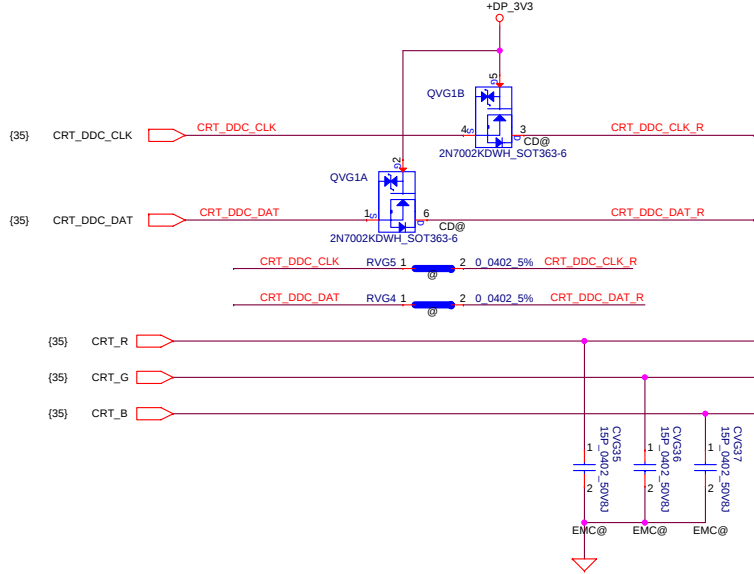


Close to JHDMI1

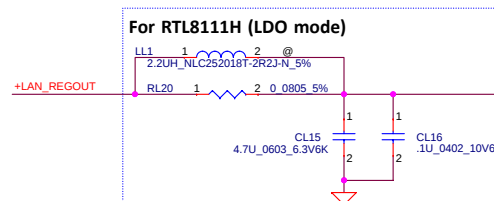
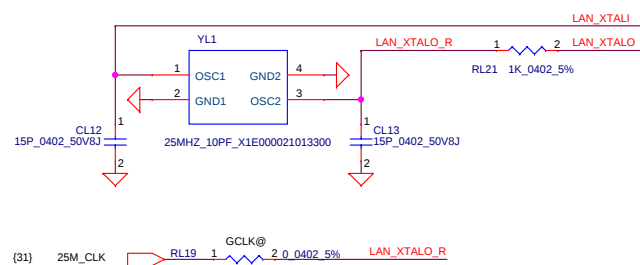
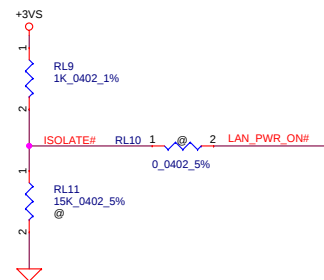
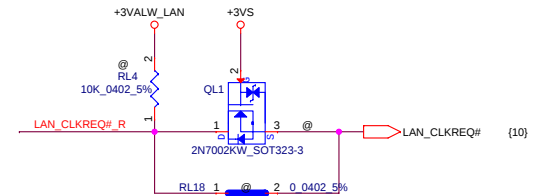
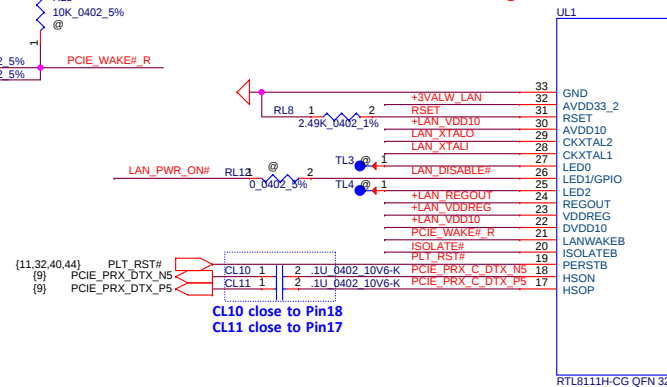
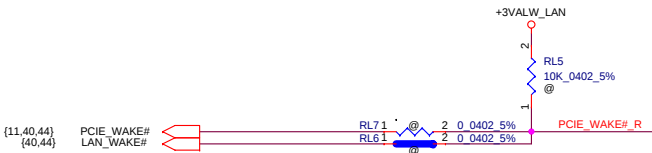
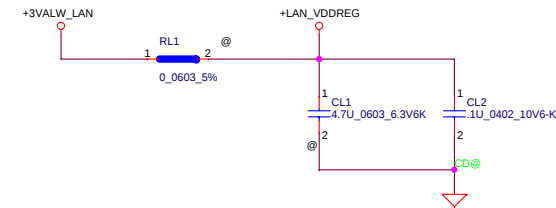
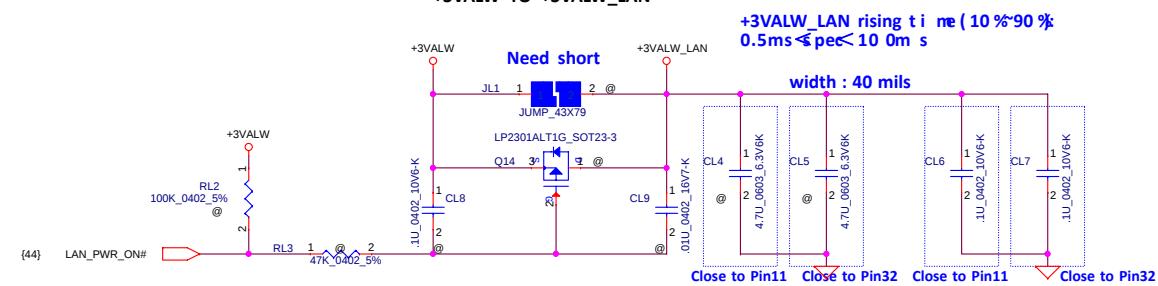


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Date:		Monday, July 27, 2015		Sheet 34 of 60		0.2

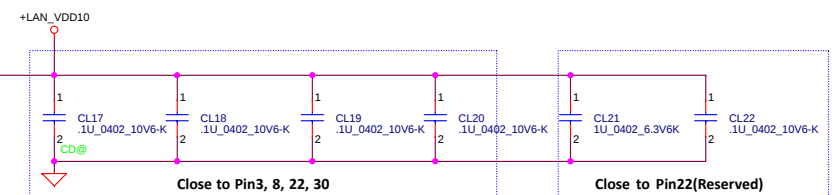




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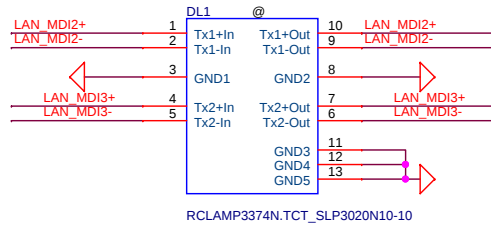


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+LAN_REGOUT: Width =60mil

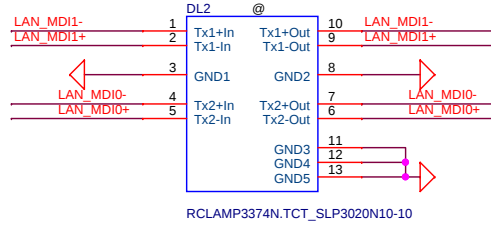


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Date: Monday, July 27, 2015 Sheet 37 of 60							

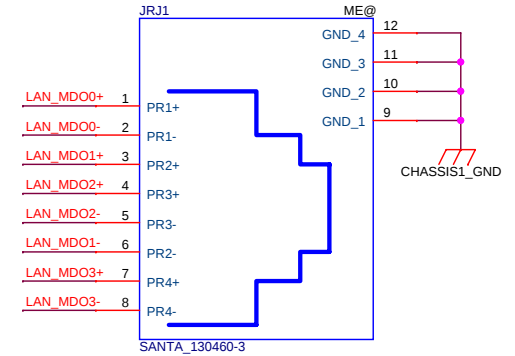
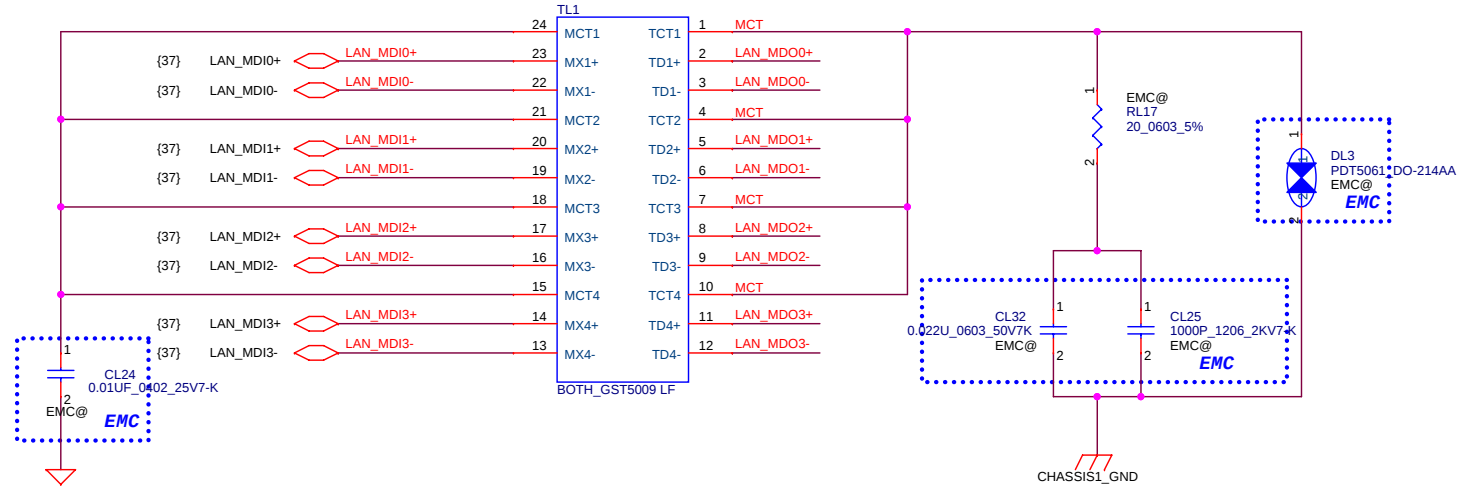
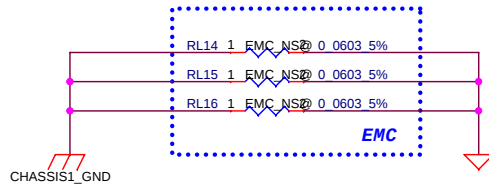
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Place Close to TL1

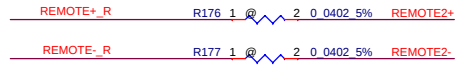
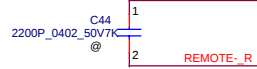


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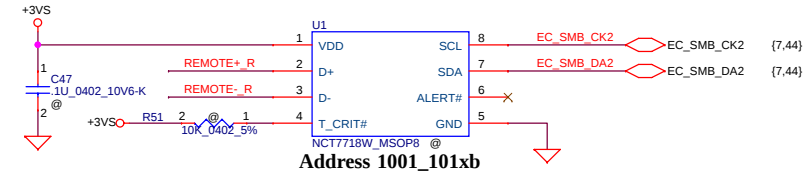
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Close to U1



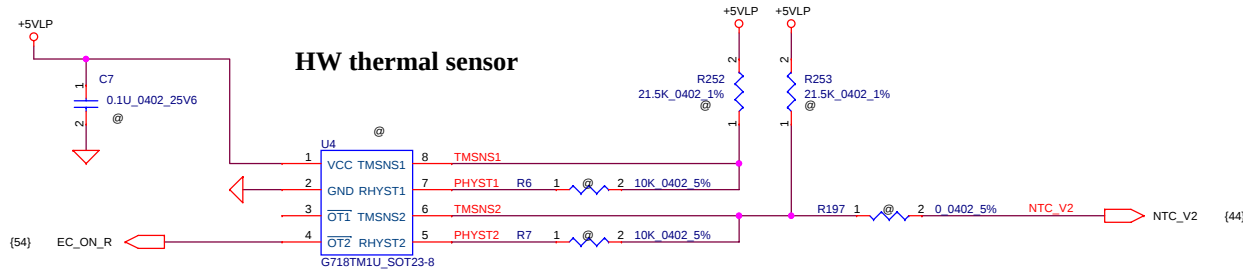
REMOTE+/-_R, REMOTE1+/-, REMOTE2+/-:
Trace width/space:10/10 mil
Trace length:<8"

SMSC thermal sensor placed near DIMM



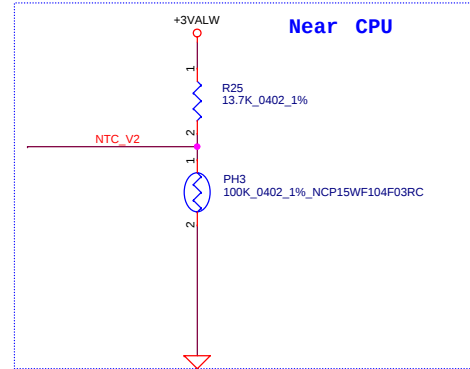
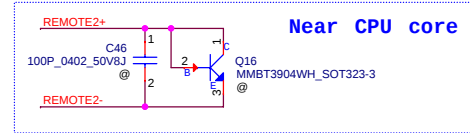
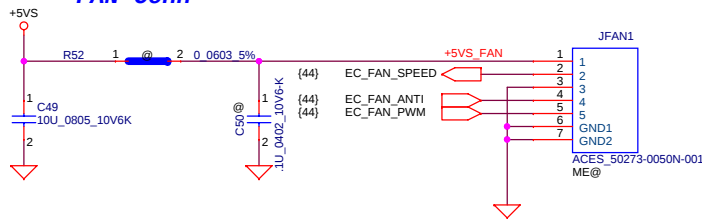
Address 1001_101xb

HW thermal sensor



over temperature threshold:
RSET=3*RTMH
92+/-30C
Hysteresis temperature threshold.
RHYST=(RSET*RTML)/(3*RTML-RSET)
56+/-30C

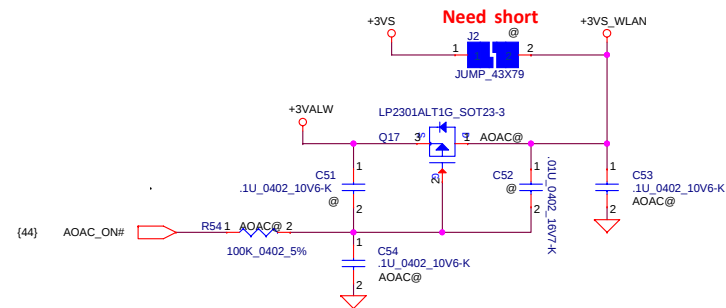
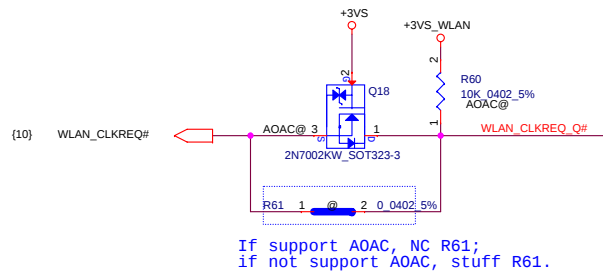
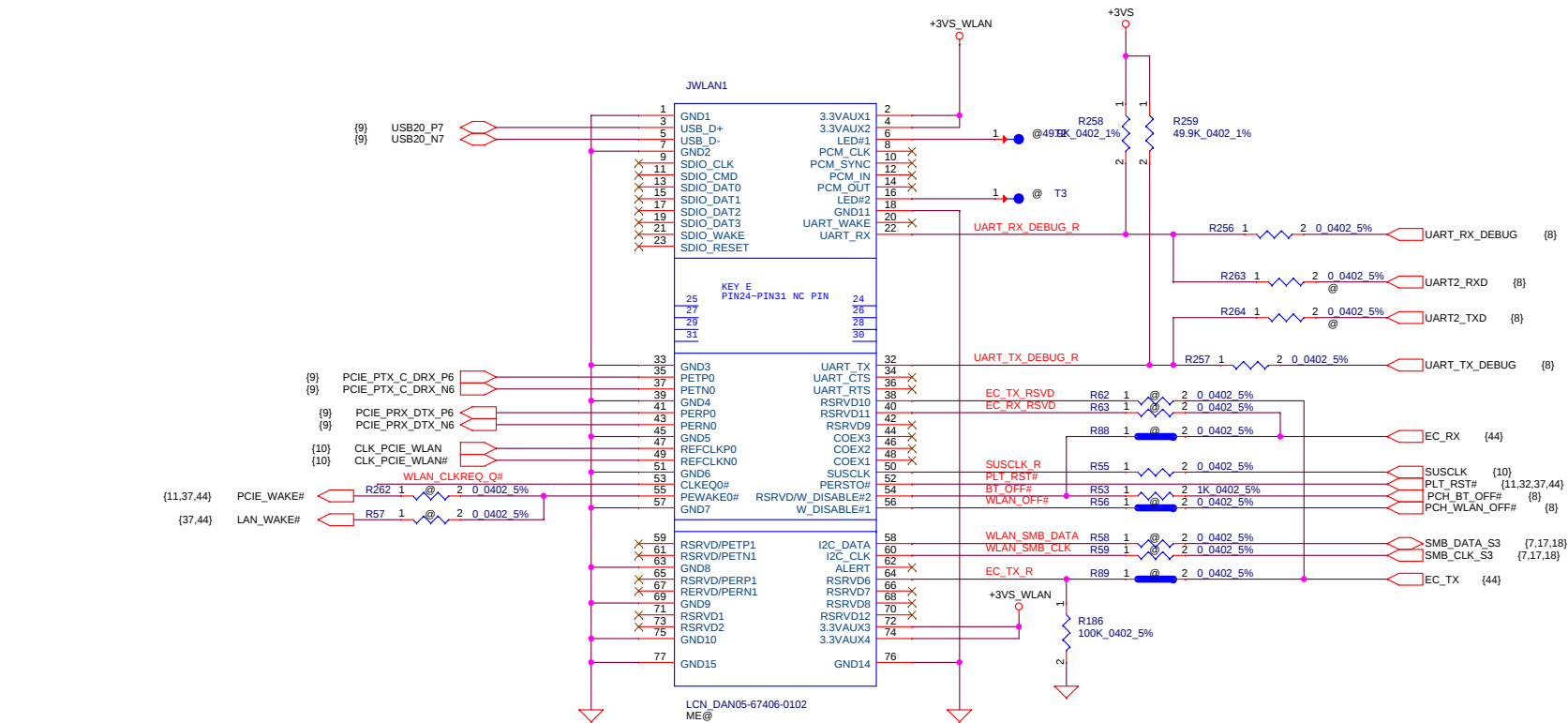
FAN Conn



for layout optimized, change the EC_AGND to GND

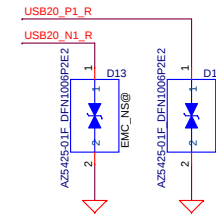
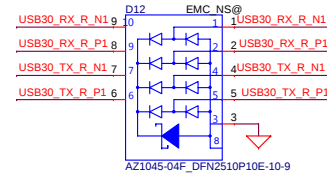
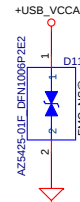
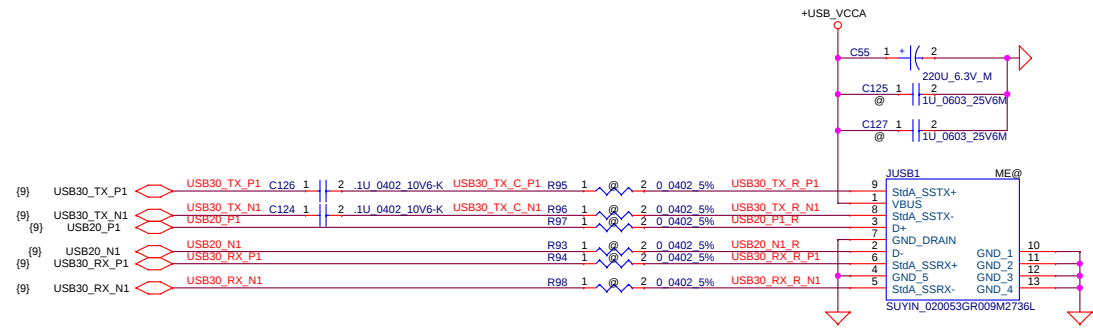
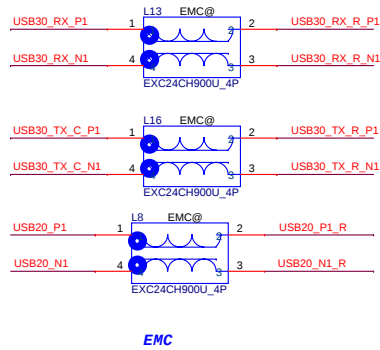
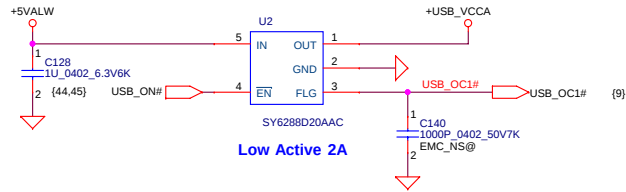
Security Classification	LC Future Center Secret Data			Title
Issued Date	2014/12/11	Deciphered Date	2015/12/11	Thermal sensor/FAN CONN/TPM
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				Document Number BMWQ1&2 UMA
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				Date: Monday, July 27, 2015
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Mini-Express Card(WLAN/WiMAX)



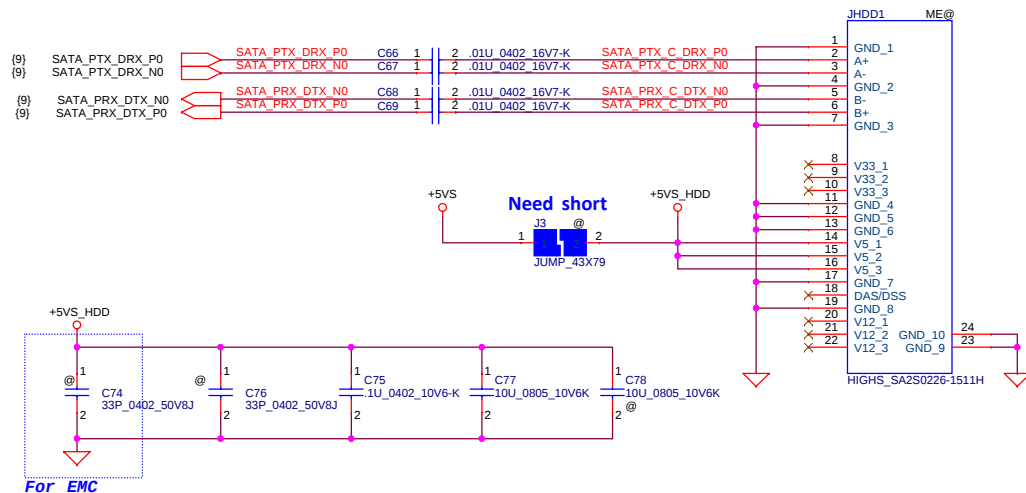
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Issued Date		2014/12/11		Deciphered Date		2015/12/11			NGFF WLAN								
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LEFT SIDE USB3.0 PORT x1

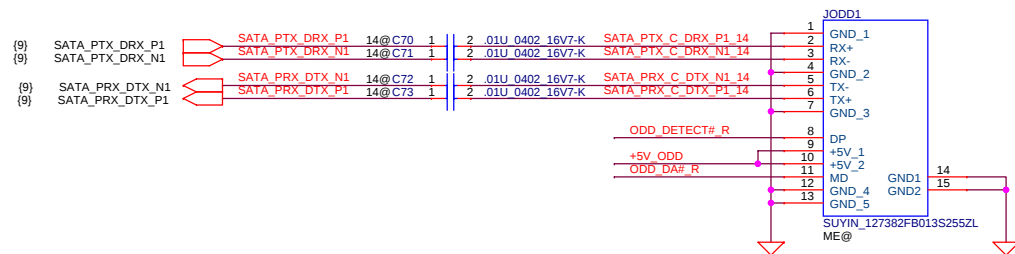


Security Classification	LC Future Center Secret Data		Title	
Issued Date	2014/12/11	Deciphered Date	2015/12/11	P32-USB3.0 PORT (LEFT)
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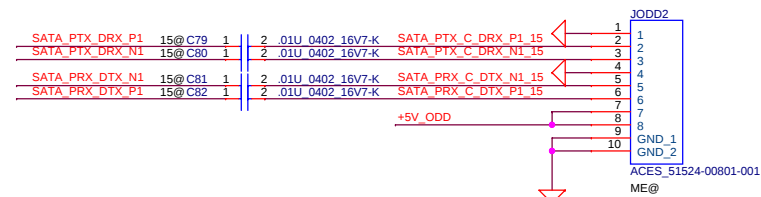
SATA HDD Conn.



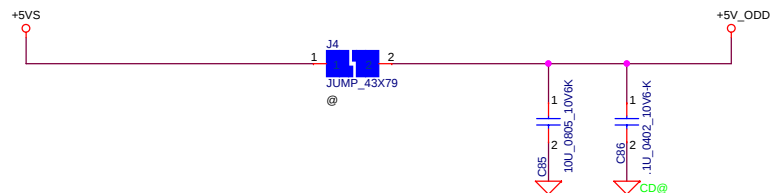
FOR 14" SATA ODD Conn.



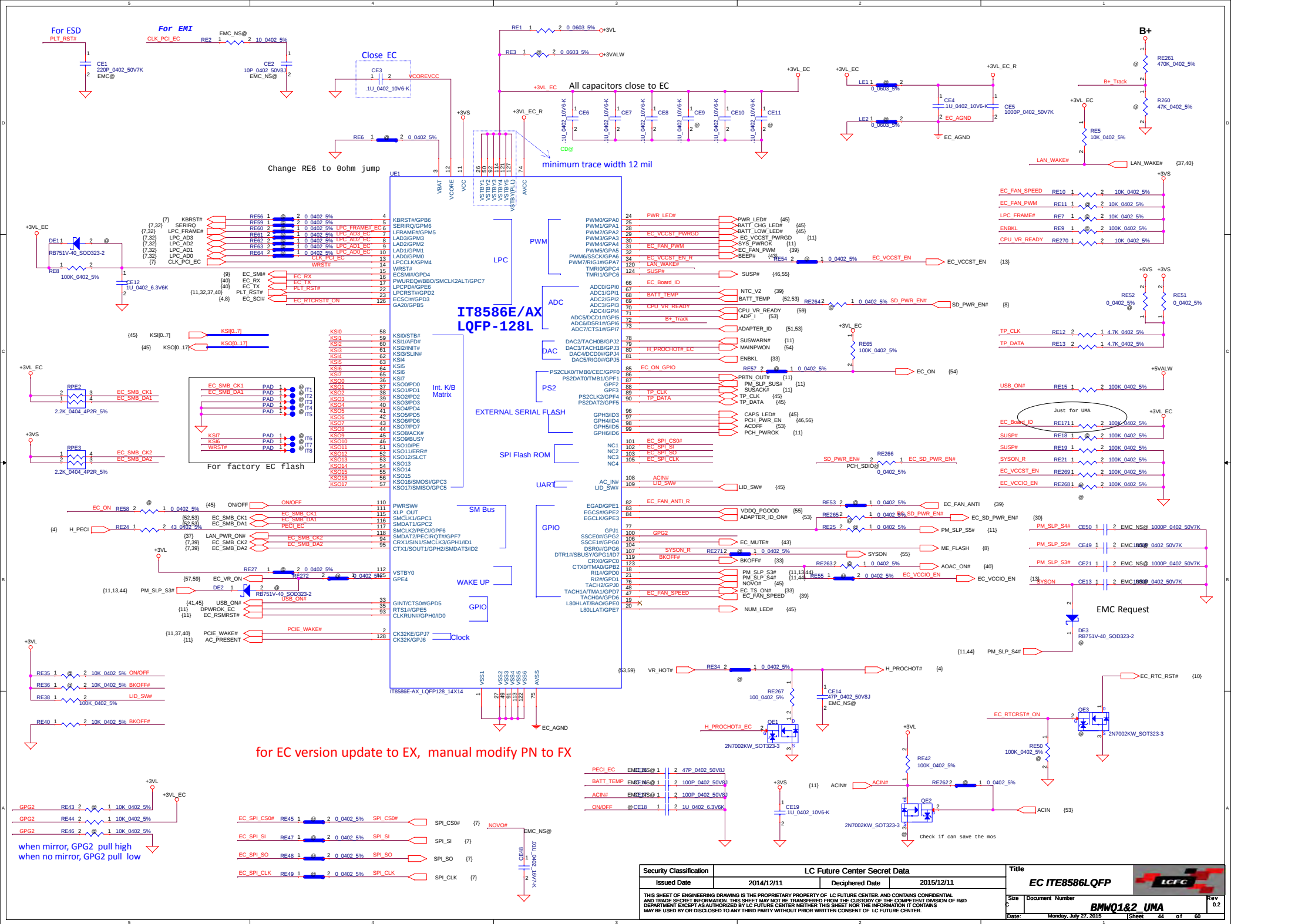
FOR 15" SATA ODD FFC Conn

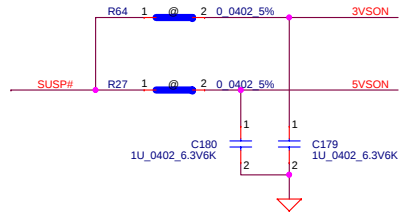


Need Short



Security Classification		LC Future Center Secret Data				Title				Rev 0.2		
Issued Date	2014/12/11	Deciphered Date	2015/12/11		HDD/ODD CONN							
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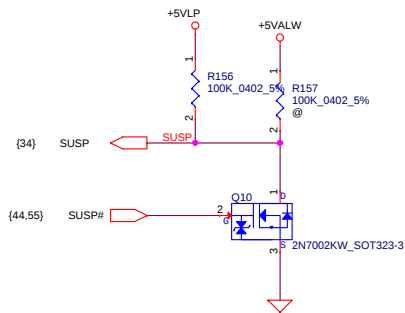
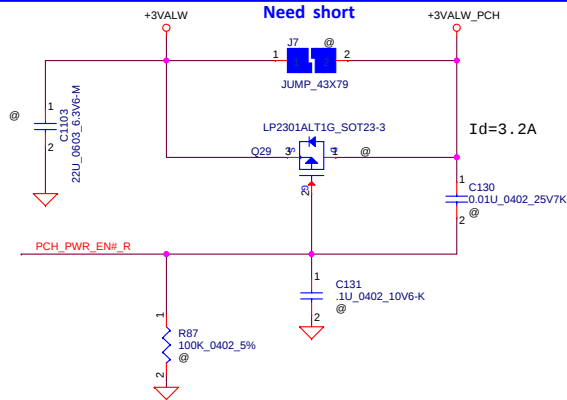
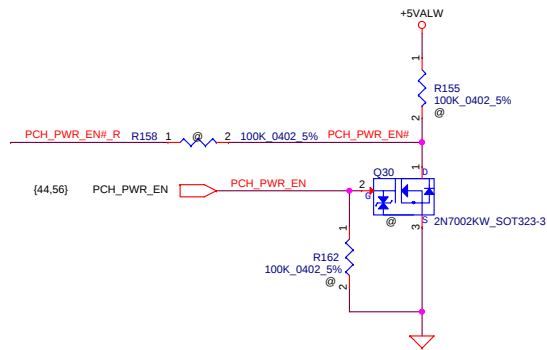
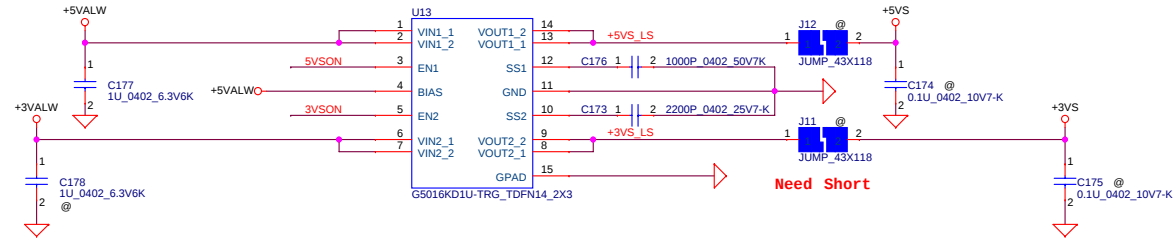




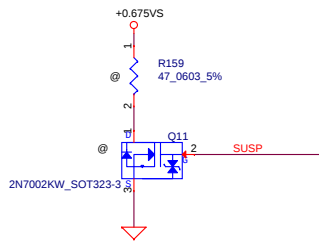
Load Switch
+5VALW To +5VS
+3VALW To +3VS

+3VS, C173 --> 2.74ms
+5VS, C176 --> 2.03ms

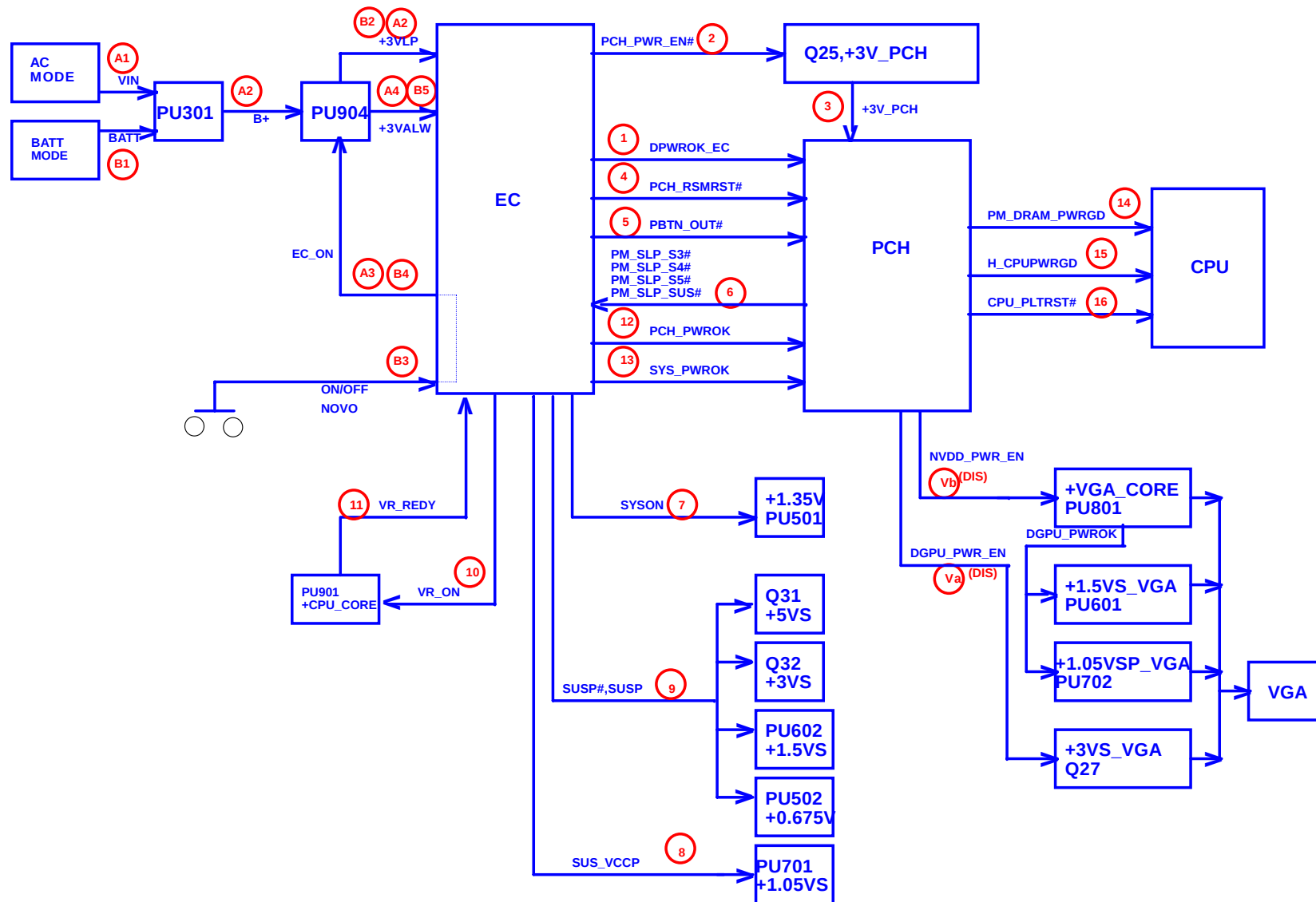
VIN 5V and 3.3V (VBias=5V), I_{MAX(per channel)}=6A, R_{ds}=16mohm



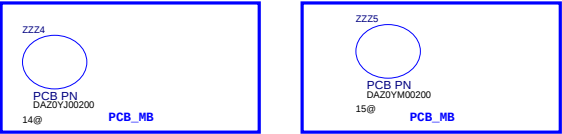
For DisCharge



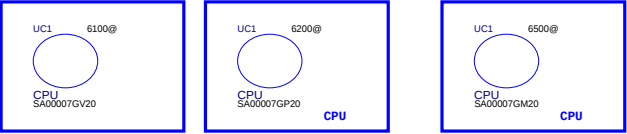
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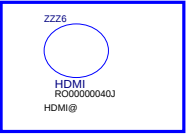
PCB



CPU

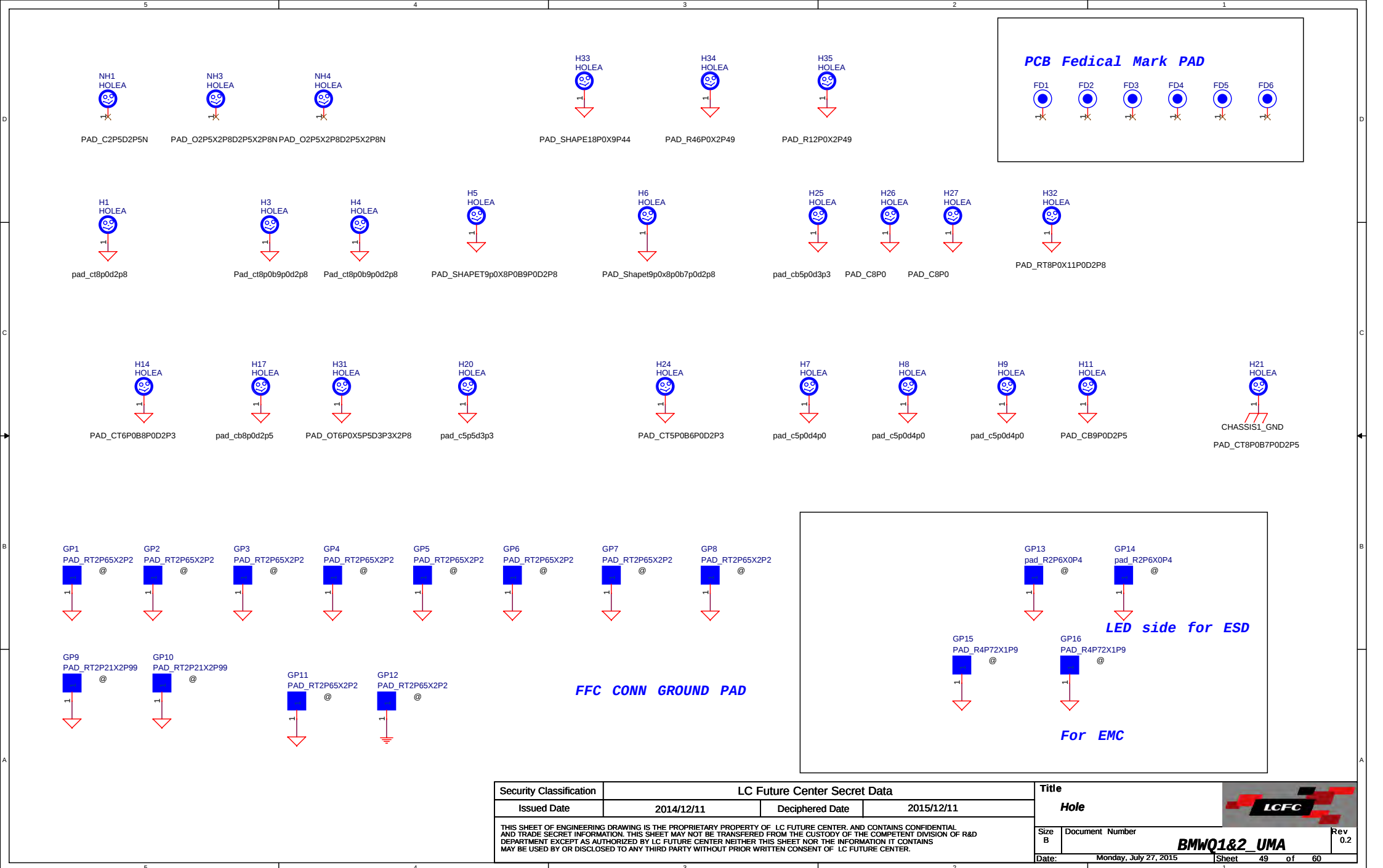


HDMI

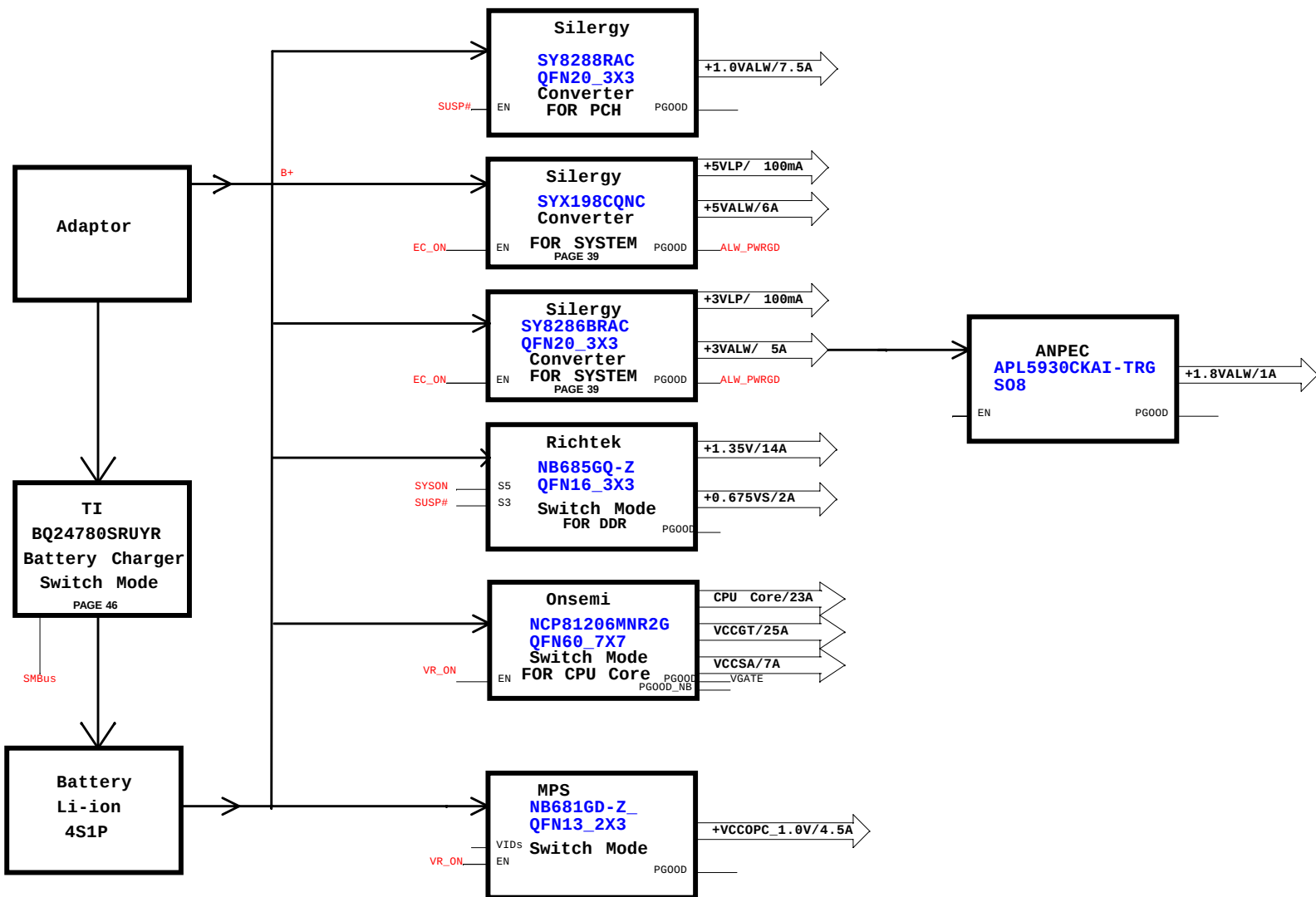


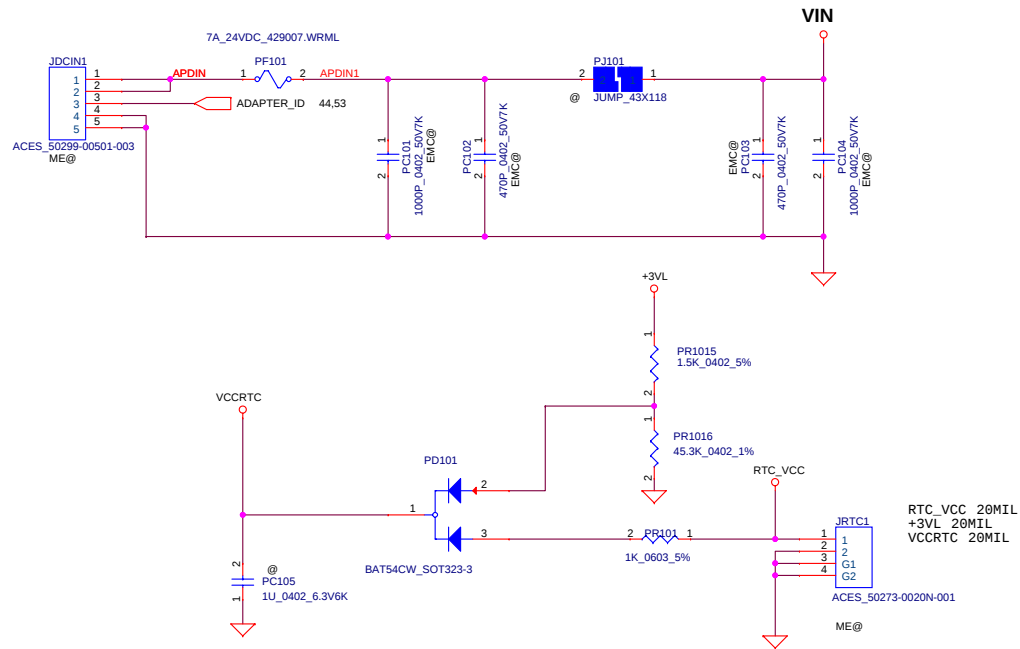
Board ID

BOARD_ID0	BOARD_ID1	BOARD_ID2	BOARD_ID3	Description	Stuff Resistor
0	0	0	1	14" + Jet-LE + Single-Rank sku	RC107,RC108,RC109,RC121
0	0	1	1	14" + Jet-LE + Dual-Rank sku	RC107,RC108,RC102,RC121
0	1	0	1	15" + Jet-LE + Single-Rank sku	RC107,RC101,RC109,RC121
0	1	1	1	15" + Jet-LE + Dual-Rank sku	RC107,RC101,RC102,RC121
1	0	0	1	14" + Topaz-XT + Single-Rank sku	RC108,RC108,RC109,RC121
1	0	1	1	14" + Topaz-XT + Dual-Rank sku	RC108,RC108,RC102,RC121
1	1	0	1	15" + Topaz-XT + Single-Rank sku	RC108,RC101,RC109,RC121
1	1	1	1	15" + Topaz-XT + Dual-Rank sku	RC108,RC101,RC102,RC121

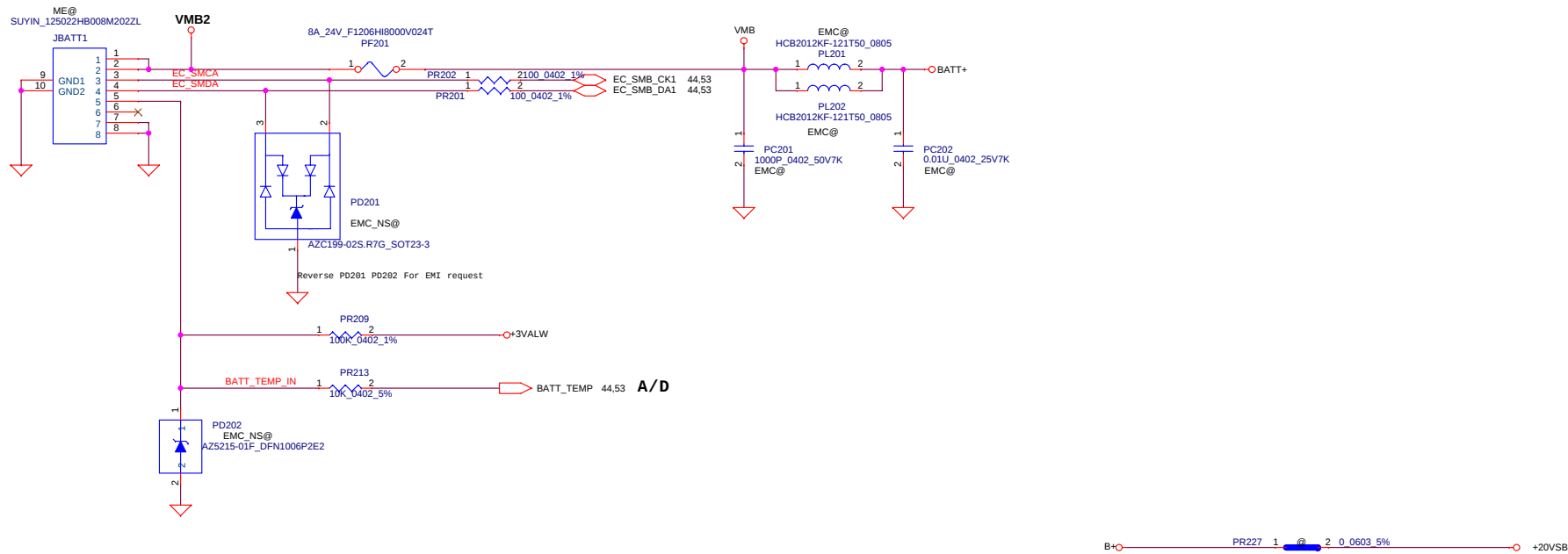


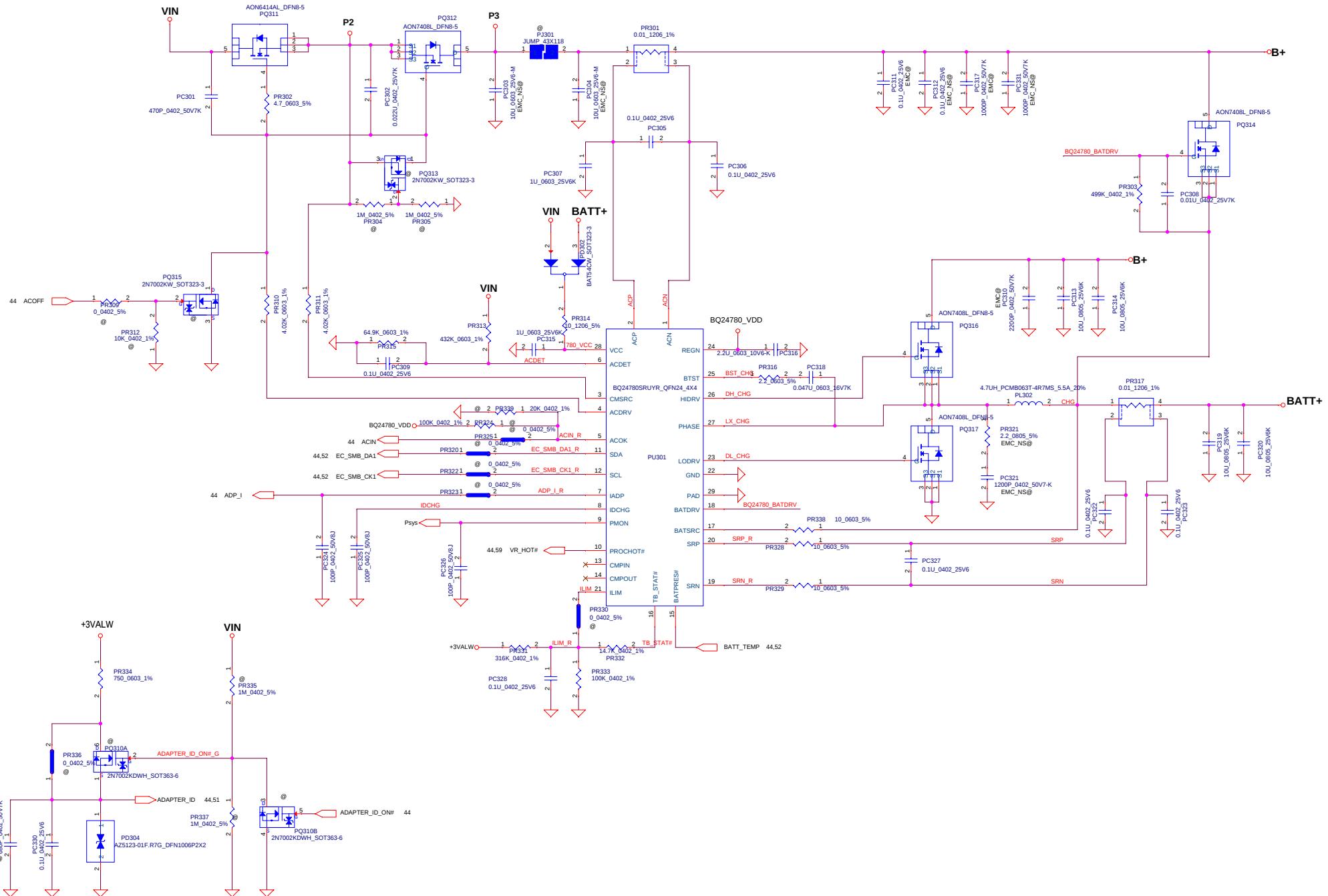
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Issued Date	2014/12/11	Deciphered Date	2015/12/11	Hole		
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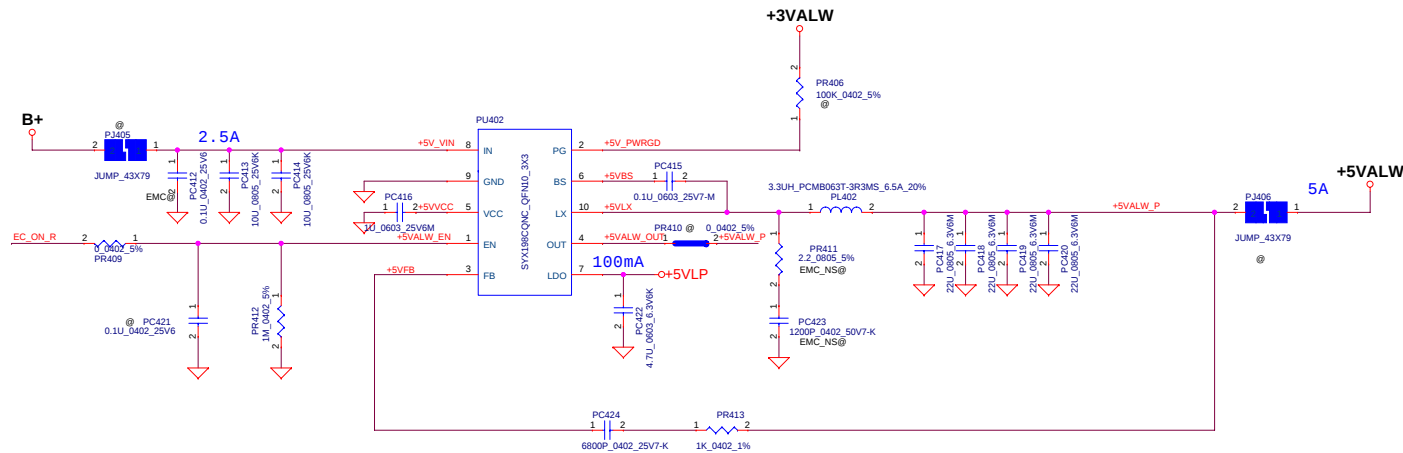
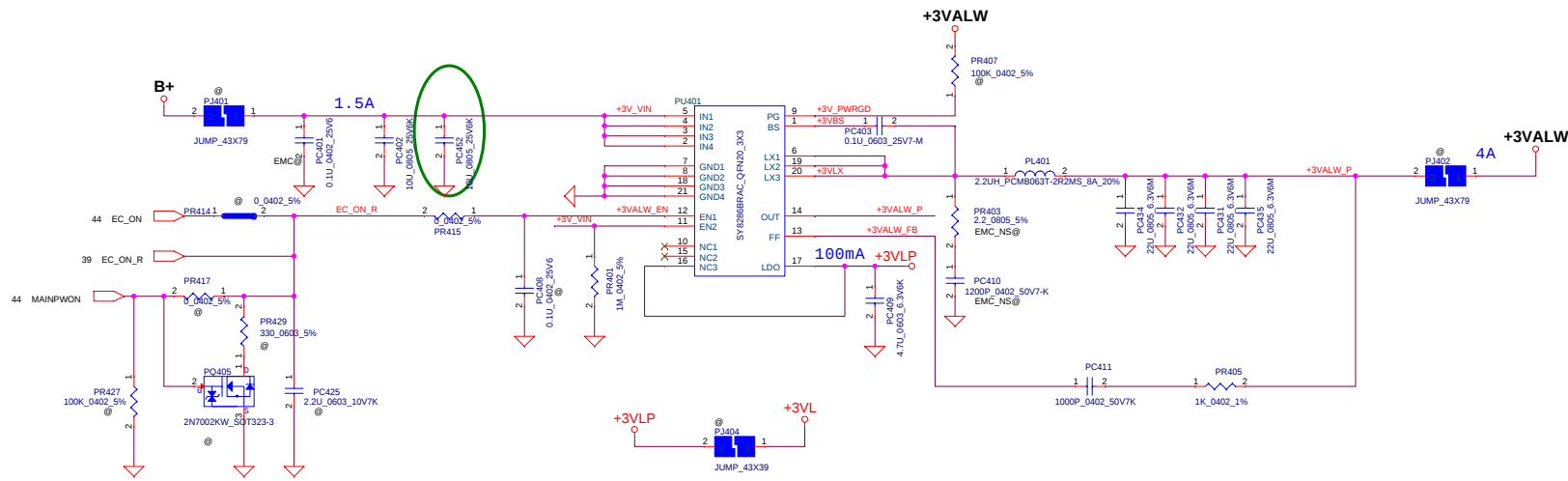




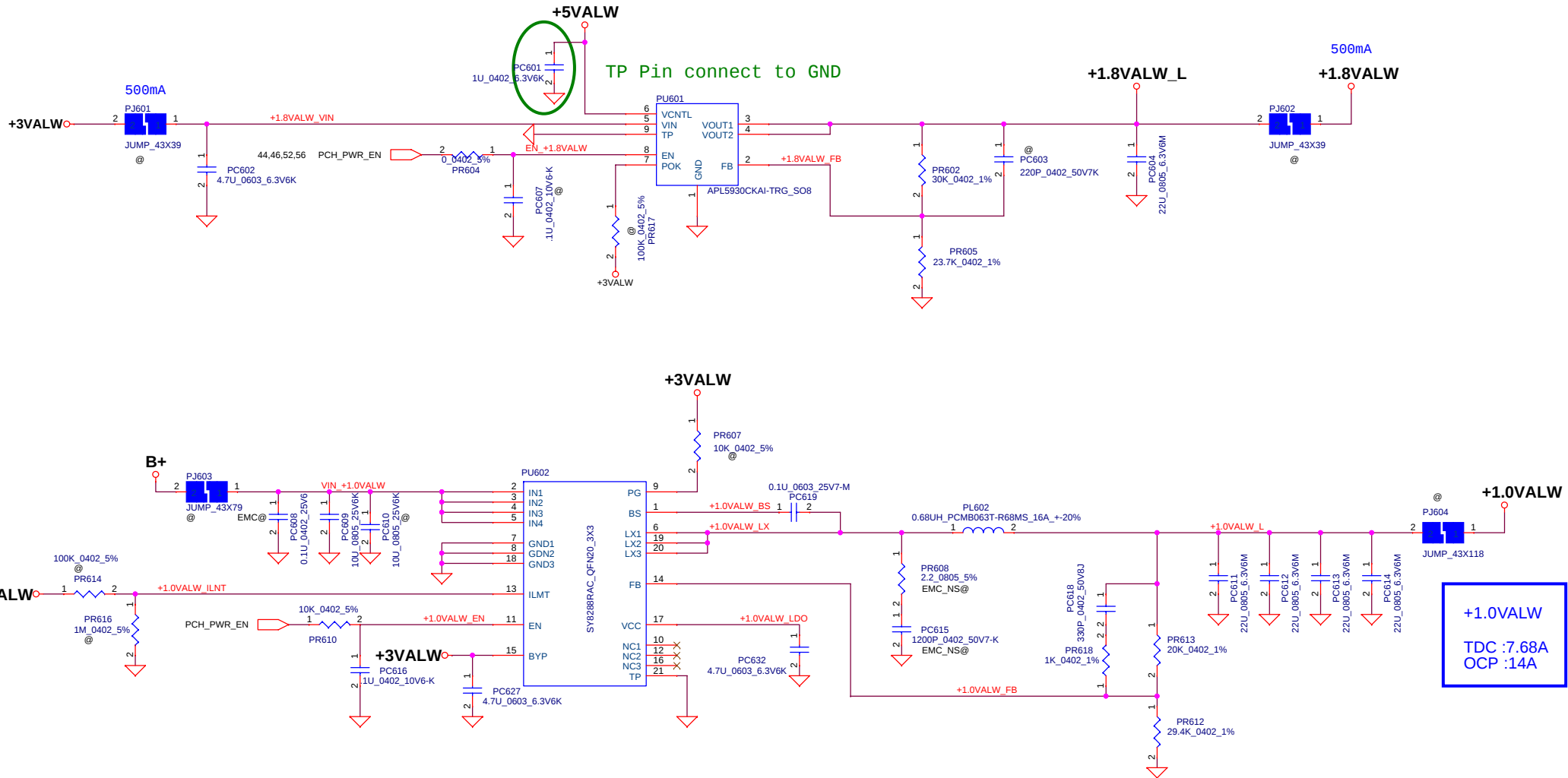
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Issued Date		2013/08/08		Deciphered Date		2013/08/05							
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6800pf soft start 2ms
47nf soft start 7ms



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Issued Date	2013/08/08	Deciphered Date	2013/08/05
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+1.8VAWL/+1.0VALW				
Size Custom	Document Number	BMWQ1&Q2		
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