

# LCFC Confidential

## ACLU9 M/B Schematics Document

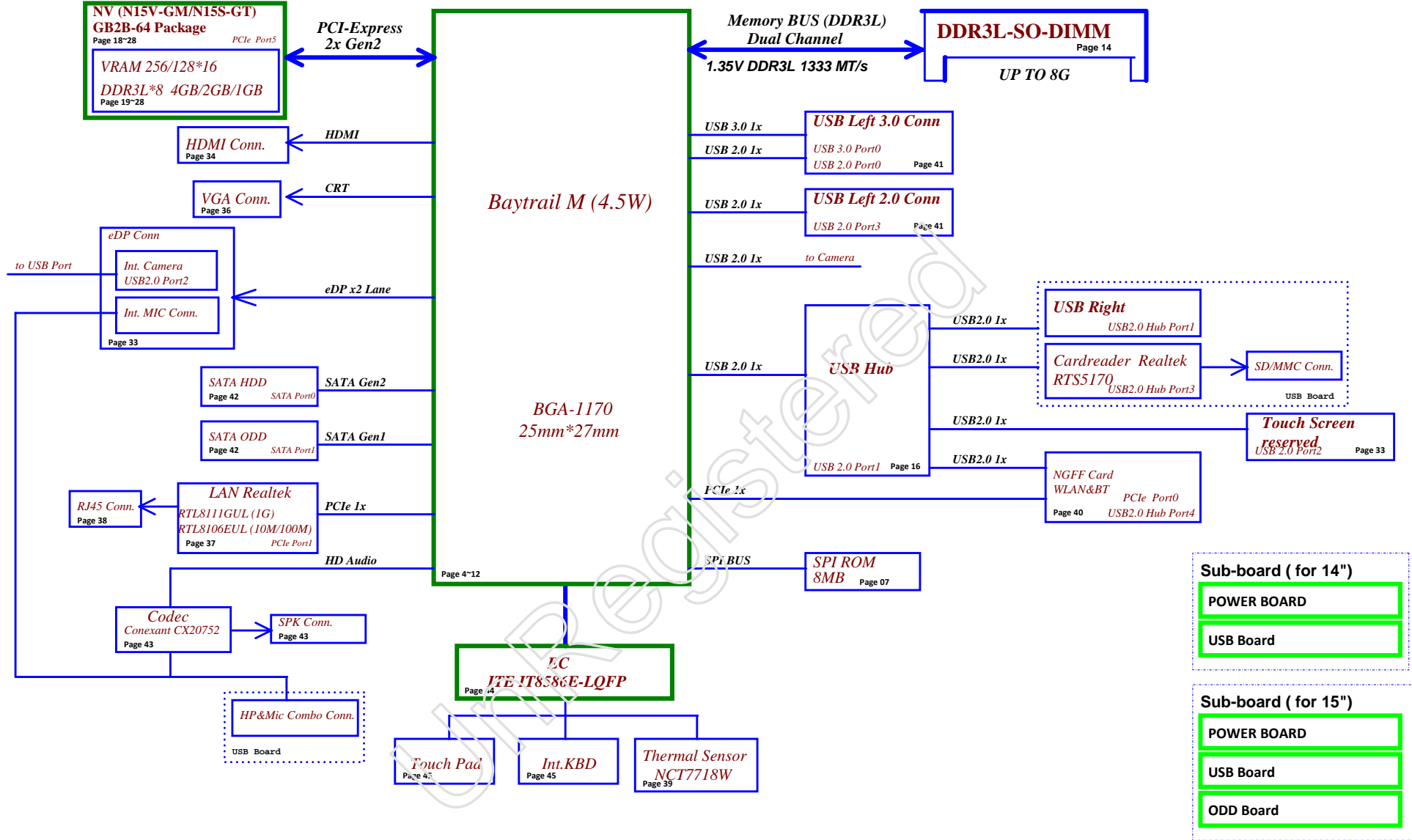
Intel BayTrail M-Processor with DDRIII + NV (N15V-GM/N15S-GT) GPU

2013-12-22

REV: 0.2

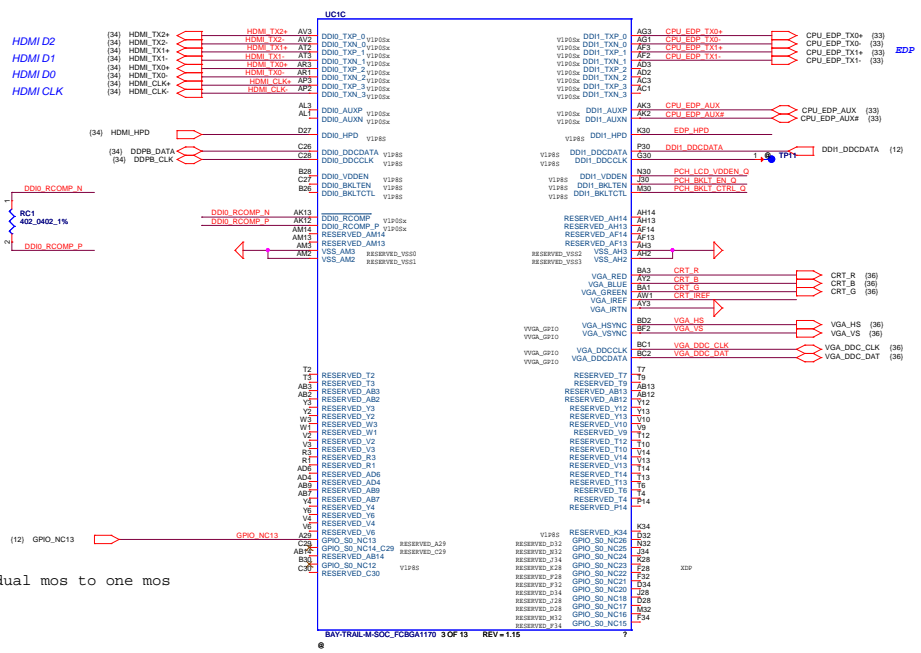
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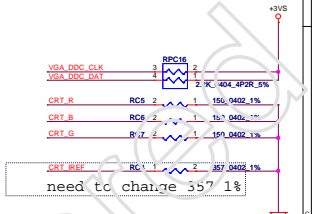
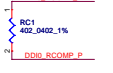


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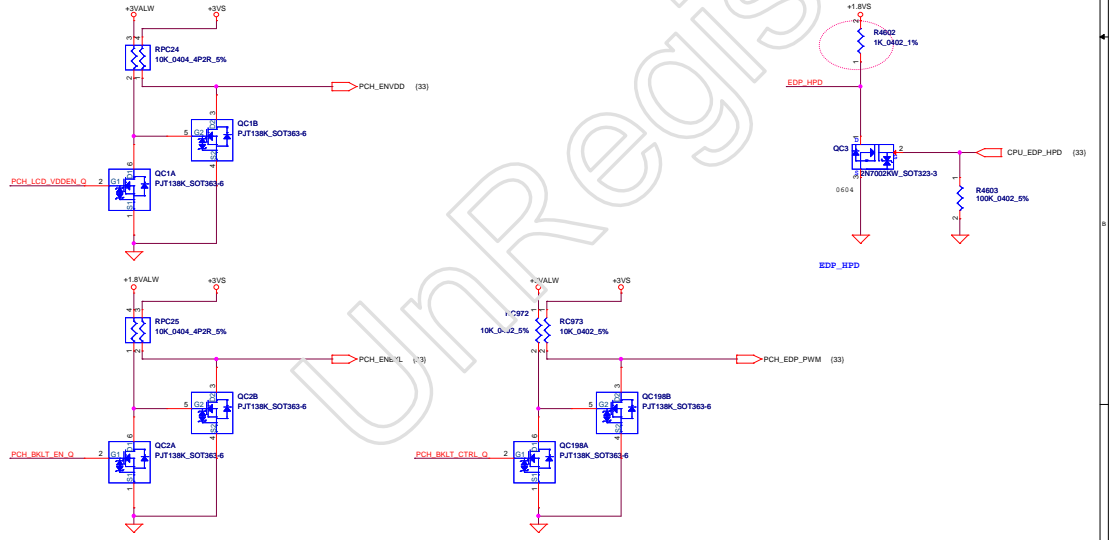


Port	DDI PROCESSOR Pin Names	HDMI* Mapping
Port 0	DDI1_TXP_0	HDMI_TX2+
	DDI1_TXN_0	HDMI_TX2-
	DDI1_TXP_1	HDMI_TX1+
	DDI1_TXN_1	HDMI_TX1-
	DDI1_TXP_2	HDMI_TX0+
	DDI1_TXN_2	HDMI_TX0-
	DDI1_TXP_3	HDMI_CLK+
	DDI1_TXN_3	HDMI_CLK-
	DDI1_HPD	HDMI_HPD
	DDI1_DDCDATA	DDP8_DAT
DDI1_DDOCLK	DDP8_CLK	
Port 1	DDI1_TXP_0	EDP_TX0+
	DDI1_TXN_0	EDP_TX0-
	DDI1_TXP_1	EDP_TX1+
	DDI1_TXN_1	EDP_TX1-
	DDI1_AUXP	EDP_AUX#
	DDI1_AUXN	EDP_AUX#
	DDI1_HPD	EDP_HPD
	DDI1_TXP_2	EDP_TX2+
	DDI1_TXN_2	EDP_TX2-
	DDI1_TXP_3	EDP_TX3+

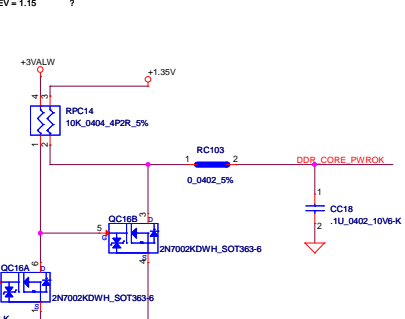
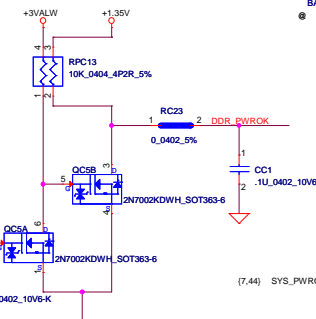
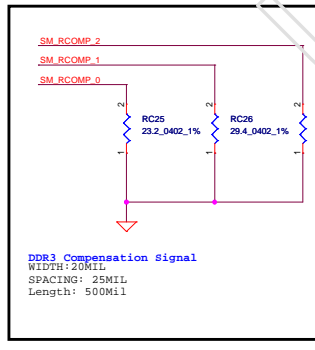
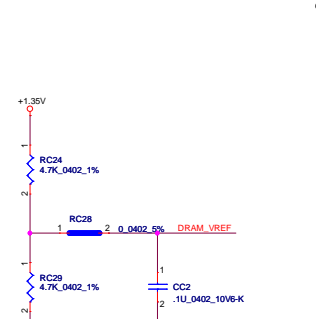
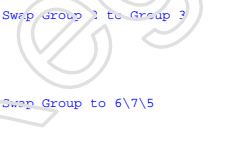
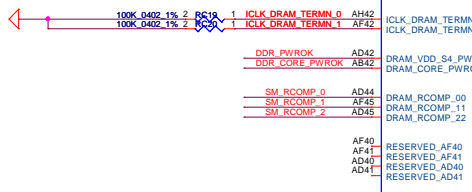
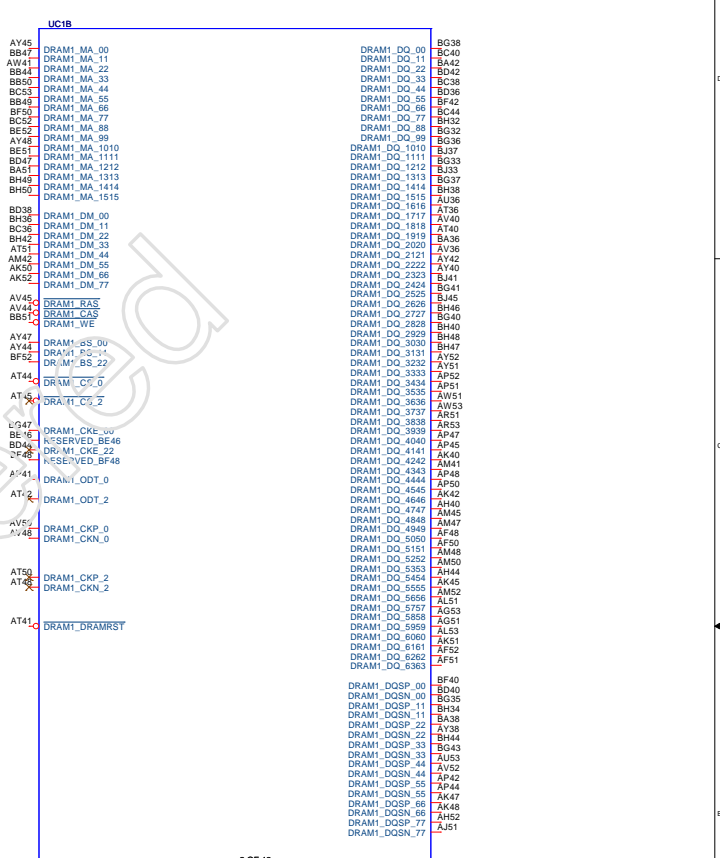
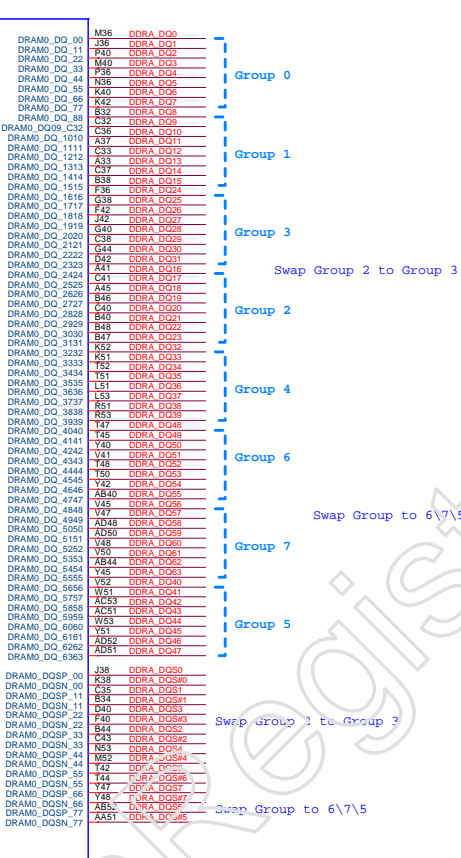
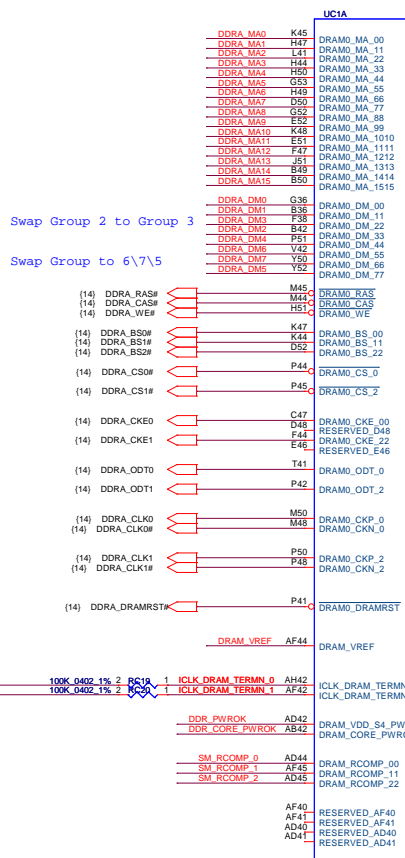
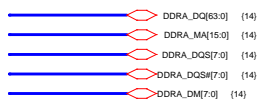


change dual mos to one mos

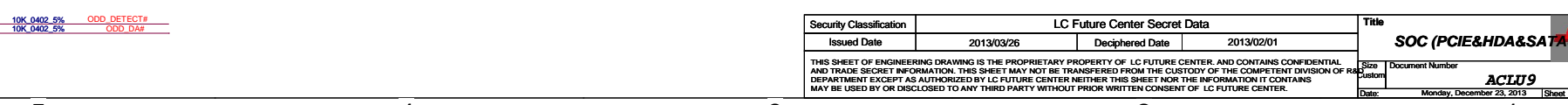
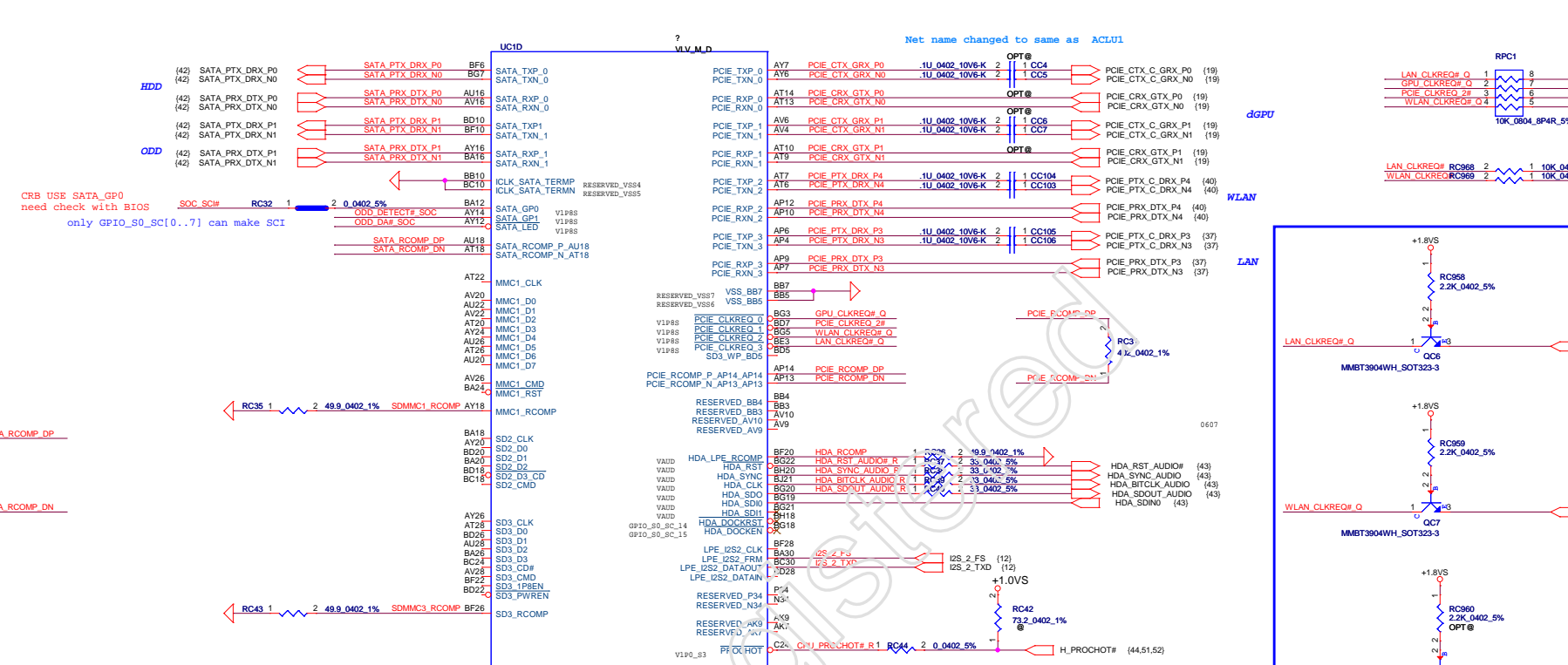
R4602 change from 10K to 1K, as Vienna



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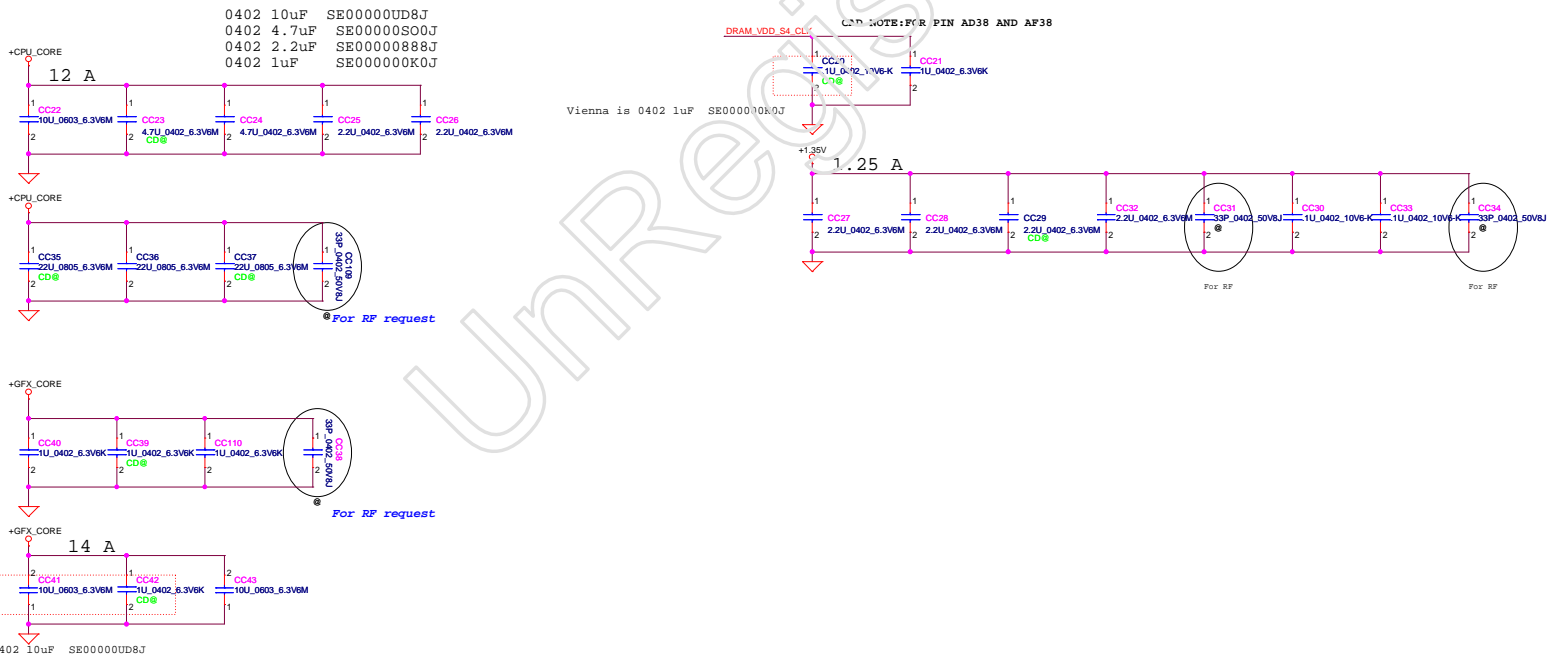
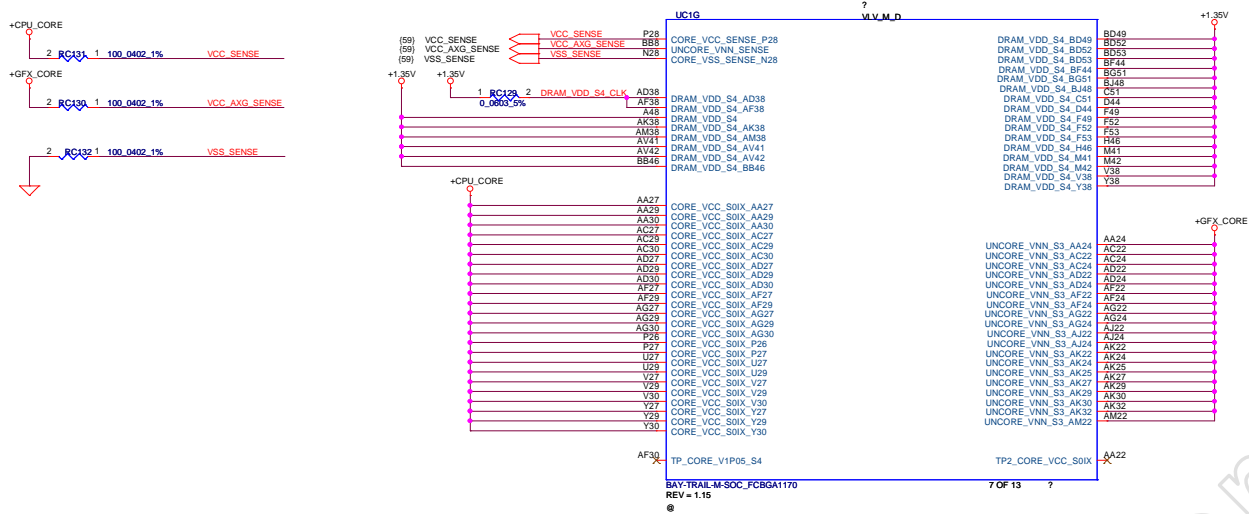


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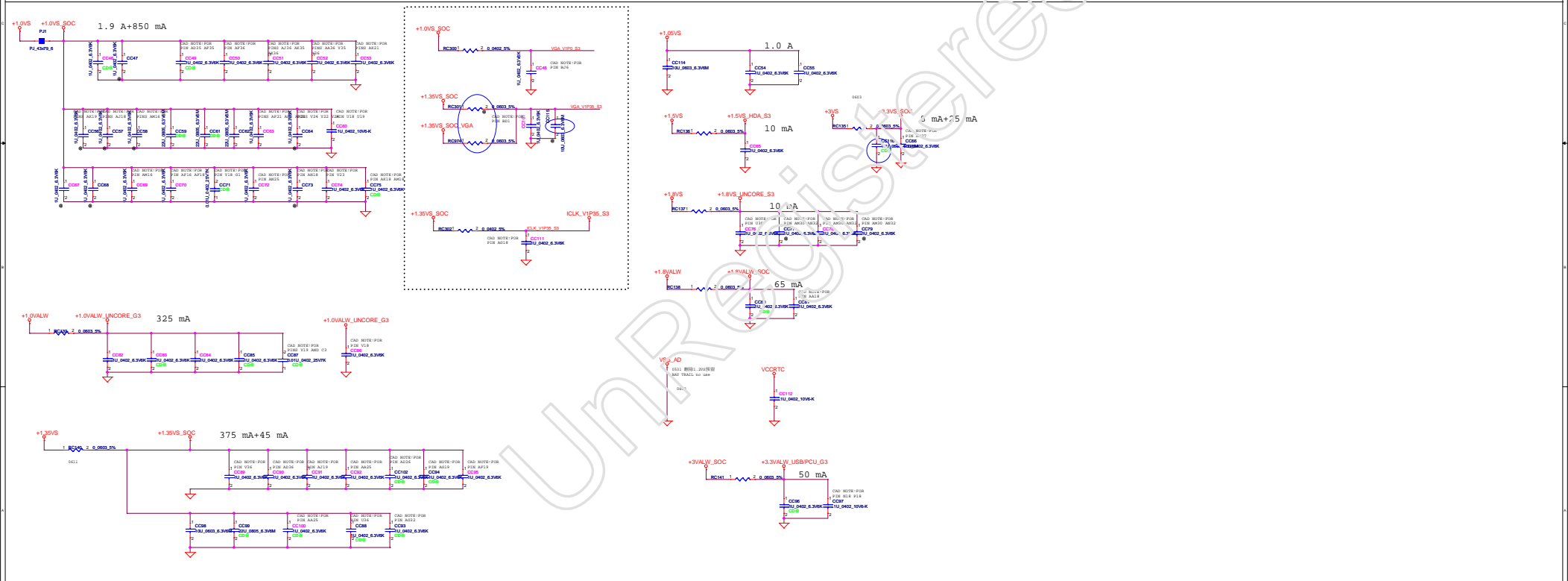
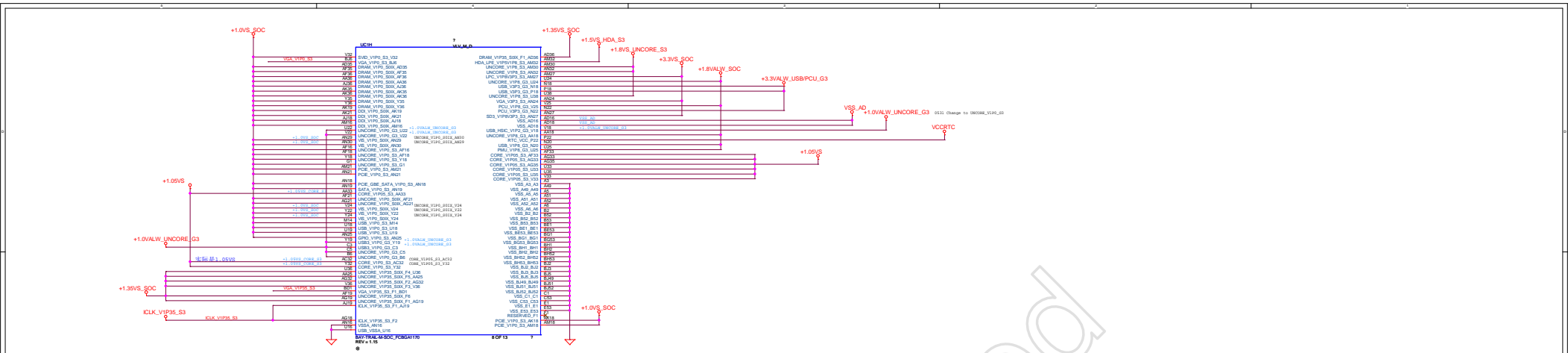




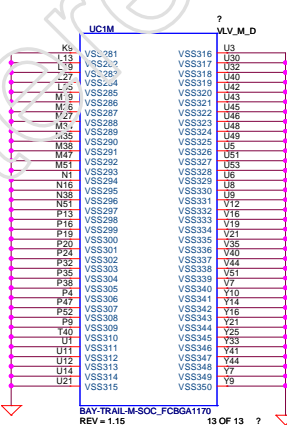
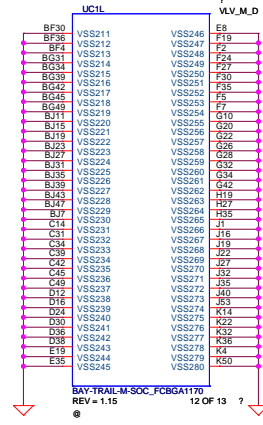
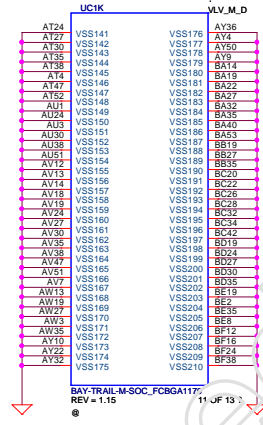
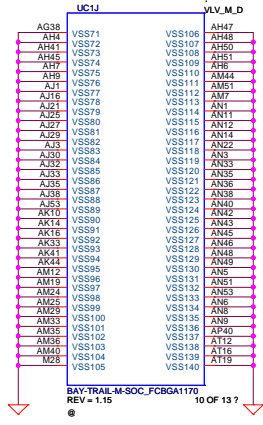
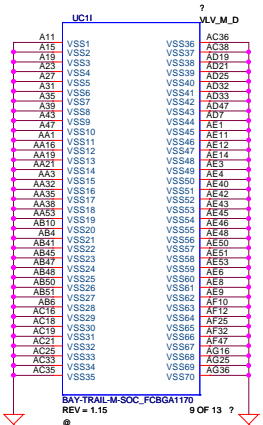




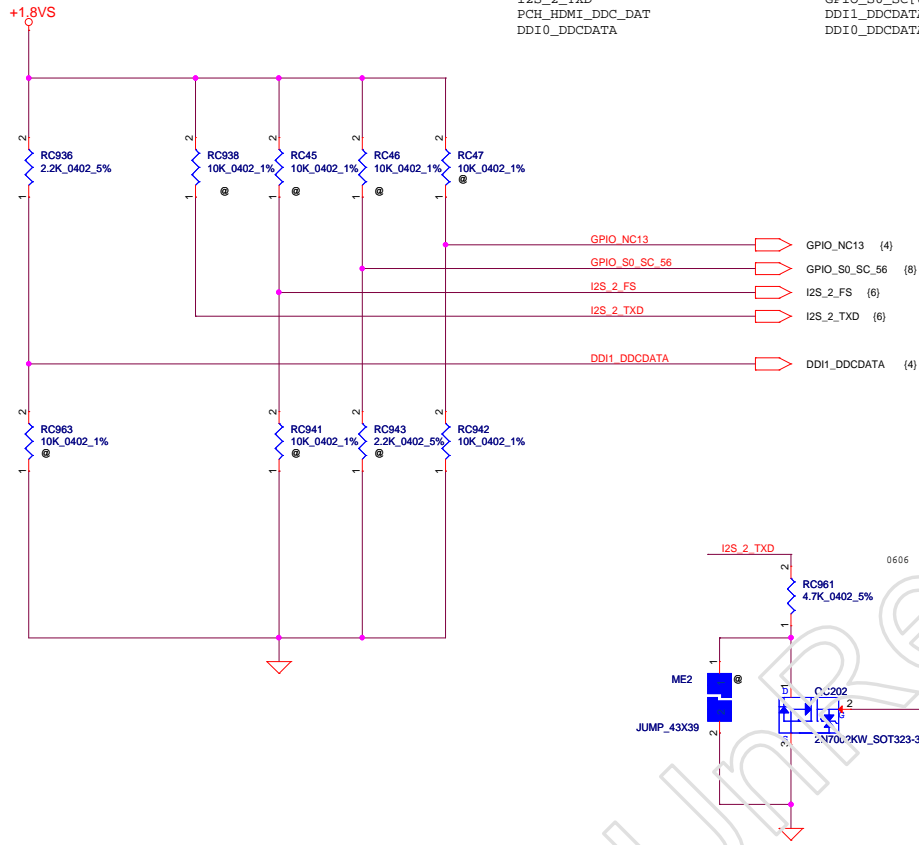
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**Hardware STRAPS  
(Follow up CRB & VIENNA)**



GPIO\_NC13  
GPIO\_S0\_SC\_56  
I2S\_2\_FS  
I2S\_2\_TXD  
PCH\_HDMI\_DDC\_DAT  
DDI0\_DDCDATA

MDSI\_DDCDATA (Checklist request 10K pull down)  
GPIO\_S0\_SC\_56 (Internal Pull-up)  
GPIO\_S0\_SC[063] (Internal Pull-up)  
GPIO\_S0\_SC[065] (Internal Pull-up)  
DDI1\_DDCDATA  
DDI0\_DDCDATA

**GPIO\_S0\_SC\_56:**  
A16 Top Swap  
0=Top address bit is unchanged  
1=Top address bit is inverted

**GPIO\_S0\_SC[063]**  
Multiplexed with Hardware Straps Pin LPE\_I2S2\_FRM  
BIOS boot selection  
0=LPC  
1=SPI

**GPIO\_S0\_SC[065]**  
Multiplexed with LPE\_I2S2\_DATAOUT  
Security Flash Descriptors  
0=Override  
1=Normal Operation


**DDI0\_DDCDATA:**  
DDI0 strap  
0=DDI0 not detected  
1=DDI0 detected

**DDI1\_DDCDATA:**  
DDI1 strap  
0=DDI1 not detected  
1=DDI1 detected

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DDR Mapping table


DDR3 SO-DIMM A

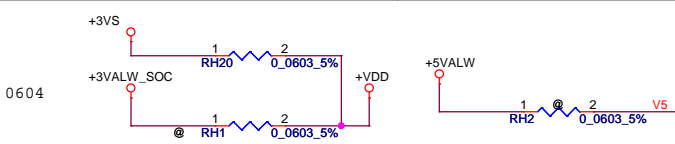
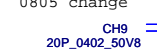
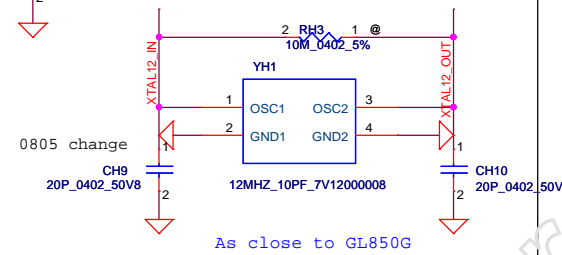
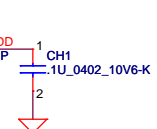
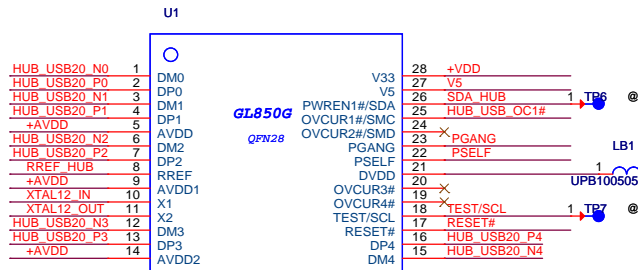
DDR3 pinout mapping table:

DDR3 Pin	Signal	DDR3 Pin	Signal
1	VREF_DQ	73	DDR3_CKE0
2	VSS_1	74	DDR3_CKE1
3	DQ0	75	DDR3_DQ33
4	DQ4	76	DDR3_DQ37
5	DQ8	77	DDR3_DQ41
6	DQ12	78	DDR3_DQ45
7	DQ16	79	DDR3_DQ49
8	DQ20	80	DDR3_DQ53
9	DQ24	81	DDR3_DQ57
10	DQ28	82	DDR3_DQ61
11	DQ32	83	DDR3_DQ65
12	DQ36	84	DDR3_DQ69
13	DQ40	85	DDR3_DQ73
14	DQ44	86	DDR3_DQ77
15	DQ48	87	DDR3_DQ81
16	DQ52	88	DDR3_DQ85
17	DQ56	89	DDR3_DQ89
18	DQ60	90	DDR3_DQ93
19	DQ64	91	DDR3_DQ97
20	DQ68	92	DDR3_DQ101
21	DQ72	93	DDR3_DQ105
22	DQ76	94	DDR3_DQ109
23	DQ80	95	DDR3_DQ113
24	DQ84	96	DDR3_DQ117
25	DQ88	97	DDR3_DQ121
26	DQ92	98	DDR3_DQ125
27	DQ96	99	DDR3_DQ129
28	DQ100	100	DDR3_DQ133
29	DQ104	101	DDR3_DQ137
30	DQ108	102	DDR3_DQ141
31	DQ112	103	DDR3_DQ145
32	DQ116	104	DDR3_DQ149
33	DQ120	105	DDR3_DQ153
34	DQ124	106	DDR3_DQ157
35	DQ128	107	DDR3_DQ161
36	DQ132	108	DDR3_DQ165
37	DQ136	109	DDR3_DQ169
38	DQ140	110	DDR3_DQ173
39	DQ144	111	DDR3_DQ177
40	DQ148	112	DDR3_DQ181
41	DQ152	113	DDR3_DQ185
42	DQ156	114	DDR3_DQ189
43	DQ160	115	DDR3_DQ193
44	DQ164	116	DDR3_DQ197
45	DQ168	117	DDR3_DQ201
46	DQ172	118	DDR3_DQ205
47	DQ176	119	DDR3_DQ209
48	DQ180	120	DDR3_DQ213
49	DQ184	121	DDR3_DQ217
50	DQ188	122	DDR3_DQ221
51	DQ192	123	DDR3_DQ225
52	DQ196	124	DDR3_DQ229
53	DQ200	125	DDR3_DQ233
54	DQ204	126	DDR3_DQ237
55	DQ208	127	DDR3_DQ241
56	DQ212	128	DDR3_DQ245
57	DQ216	129	DDR3_DQ249
58	DQ220	130	DDR3_DQ253
59	DQ224	131	DDR3_DQ257
60	DQ228	132	DDR3_DQ261
61	DQ232	133	DDR3_DQ265
62	DQ236	134	DDR3_DQ269
63	DQ240	135	DDR3_DQ273
64	DQ244	136	DDR3_DQ277
65	DQ248	137	DDR3_DQ281
66	DQ252	138	DDR3_DQ285
67	DQ256	139	DDR3_DQ289
68	DQ260	140	DDR3_DQ293
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72	DQ276	144	DDR3_DQ309
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75	DQ288	147	DDR3_DQ321
76	DQ292	148	DDR3_DQ325
77	DQ296	149	DDR3_DQ329
78	DQ300	150	DDR3_DQ333
79	DQ304	151	DDR3_DQ337
80	DQ308	152	DDR3_DQ341
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90	DQ348	162	DDR3_DQ381
91	DQ352	163	DDR3_DQ385
92	DQ356	164	DDR3_DQ389
93	DQ360	165	DDR3_DQ393
94	DQ364	166	DDR3_DQ397
95	DQ368	167	DDR3_DQ401
96	DQ372	168	DDR3_DQ405
97	DQ376	169	DDR3_DQ409
98	DQ380	170	DDR3_DQ413
99	DQ384	171	DDR3_DQ417
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112	DQ436	184	DDR3_DQ469
113	DQ440	185	DDR3_DQ473
114	DQ444	186	DDR3_DQ477
115	DQ448	187	DDR3_DQ481
116	DQ452	188	DDR3_DQ485
117	DQ456	189	DDR3_DQ489
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120	DQ468	192	DDR3_DQ501
121	DQ472	193	DDR3_DQ505
122	DQ476	194	DDR3_DQ509
123	DQ480	195	DDR3_DQ513
124	DQ484	196	DDR3_DQ517
125	DQ488	197	DDR3_DQ521
126	DQ492	198	DDR3_DQ525
127	DQ496	199	DDR3_DQ529
128	DQ500	200	DDR3_DQ533
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184	DQ724	256	DDR3_DQ757
185	DQ728	257	DDR3_DQ761
186	DQ732	258	DDR3_DQ765
187	DQ736	259	DDR3_DQ769
188	DQ740	260	DDR3_DQ773
189	DQ744	261	DDR3_DQ777
190	DQ748	262	DDR3_DQ781
191	DQ752	263	DDR3_DQ785
192	DQ756	264	DDR3_DQ789
193	DQ760	265	DDR3_DQ793
194	DQ764	266	DDR3_DQ797
195	DQ768	267	DDR3_DQ801
196	DQ772	268	DDR3_DQ805
197	DQ776	269	DDR3_DQ809
198	DQ780	270	DDR3_DQ813
199	DQ784	271	DDR3_DQ817
200	DQ788	272	DDR3_DQ821
201	DQ792	273	DDR3_DQ825
202	DQ796	274	DDR3_DQ829
203	DQ800	275	DDR3_DQ833
204	DQ804	276	DDR3_DQ837
205	DQ808	277	DDR3_DQ841
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263	DQ1040	335	DDR3_DQ1073
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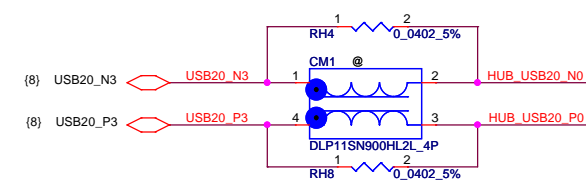
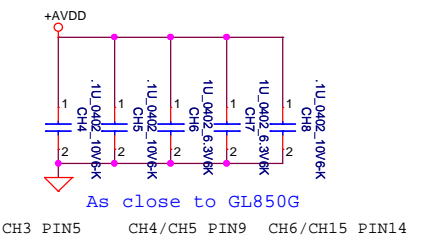
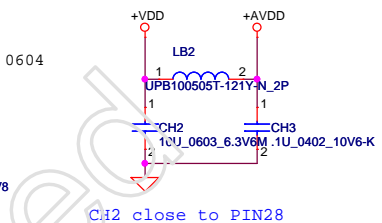
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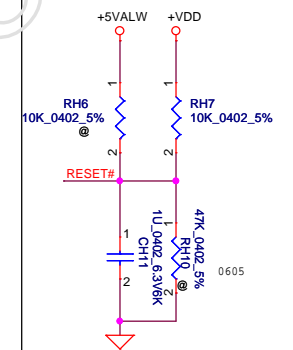
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Size	Document Number	Rev	
Custom	ACLU9	0.2	
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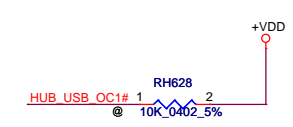
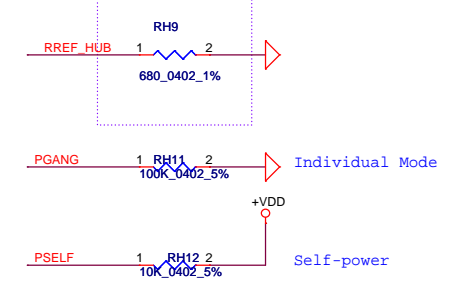
\*\* External regulator mode: RH1上件, RH2不上件  
Internal regulator mode: RH1不上件, RH2上件



- HUB\_USB20\_N1 (33) Camera
- HUB\_USB20\_P1 (33) Camera
- HUB\_USB20\_N2 (45) Card reader
- HUB\_USB20\_P2 (45) Card reader
- HUB\_USB20\_N3 (40) BT
- HUB\_USB20\_P3 (40) BT
- HUB\_USB20\_N4 (33) Touch panel
- HUB\_USB20\_P4 (33) Touch panel



Vienna change to 619 ohm for Eye Diagram test



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Issued Date	2013/03/26	Deciphered Date	2013/02/01	Size	Document Number
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Issued Date	2013/08/08	Deciphered Date	2013/08/05	<b>Blank</b>			
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					<small>Date:</small> Monday, December 23, 2013	<small>Sheet</small> 17 <small>of</small> 59	

UnRegistered

### N15x GPIO

GPIO	I/O	ACTIVE	Function Description
GPIO0	OUT	-	FB Enable for GC6 2.0
GPIO1	OUT	N/A	
GPIO2	OUT	N/A	
GPIO3	OUT	N/A	
GPIO4	OUT	N/A	
GPIO5	OUT	N/A	GPU power sequencing--3V3_MAIN_EN
GPIO6	IN	-	GPU wake signal for GC6 2.0
GPIO7	OUT	N/A	
GPIO8	I/O	-	System side PCIe reset Monitor
GPIO9	I/O	N/A	2.2K Pull-up
GPIO10	OUT	N/A	
GPIO11	OUT	-	GPU Core VDD PWM control signal
GPIO12	IN		AC Power Detect Input (10K pull High)
GPIO13	OUT	-	Phase Shedding
GPIO14	IN	N/A	
GPIO15	IN	N/A	
GPIO16		N/A	
GPIO17	IN	N/A	
GPIO18	IN	N/A	
GPIO19	IN	N/A	
GPIO20		N/A	
GPIO21	OUT		GPU PCIe self-reset control
OVERT	OUT		Active Low Thermal Catastrophic Over Temperature

### Performance Mode P0 TDP at Tj = 102 C\* (DDR3)

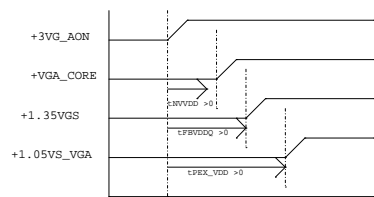
Products	GPU	Mem	NVCLK	NVVDD			FBVDD		FBVDD0		PCI Express		I/O and PLLVDD		Other	
	(4)	(1.5)	(MHz)	(V)	(A)	(W)	(A)	(W)	(A)	(W)	(mA)	(W)	(mA)	(W)	(mA)	(W)
N14X 128bit 2GB DDR3	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

### N15x Multi-level Straps

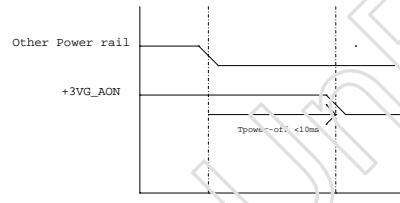
Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VGS	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
ROM_SI	+3VGS	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	+3VGS	DEVID_SEL	PCIE_CFG	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	+3VGS	Reserved(keep pull-up and pull-down footprint and stuff 50Kohm pull-up)			
STRAP1	+3VGS	Reserved(keep pull-up and pull-down footprint and not stuff by default)			
STRAP2	+3VGS				
STRAP3	+3VGS				
STRAP4	+3VGS				

SMBUS_ALT_ADDR	
u	0x9E (Default)
l	0x9C (Multi-GPU usage)

### N15V-GM Power Sequence

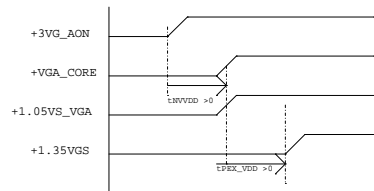


1. all power rail ramp up time should be larger than 40us



1. all GPU power rail should be turned off within 10ms  
2. Optimus system VDD3 avoids drop earlier than NVDD and FBVDD

### N15S-GT Power Sequence



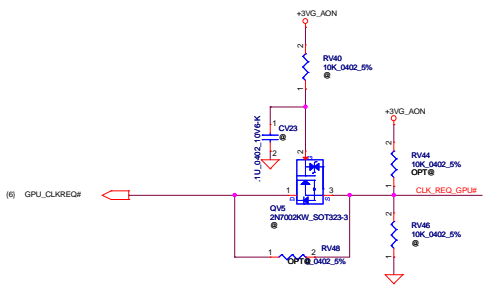
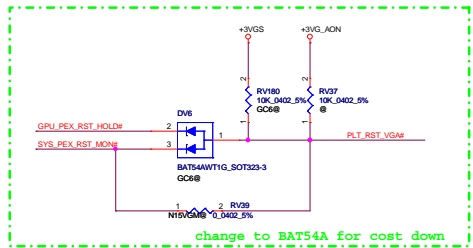
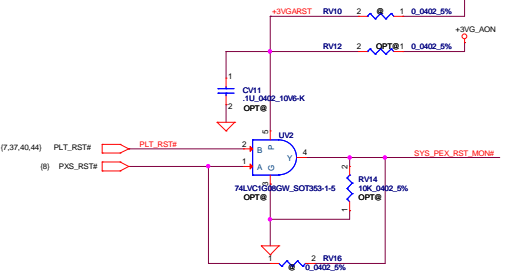
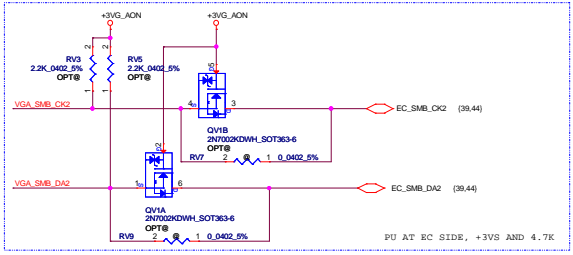
1. all power rail ramp up time should be larger than 40us

### N15x Binary Straps

Physical Strapping pin	Power Rail	Strap Mapping
ROM_SCLK	+3VGS	SMB_ALT_ADDR
ROM_SI	+3VGS	SUB_VENDOR
ROM_SO	+3VGS	VGA_DEVICE
STRAP0	+3VGS	RAM_CFG[0]
STRAP1	+3VGS	RAM_CFG[1]
STRAP2	+3VGS	RAM_CFG[2]
STRAP3	+3VGS	RAM_CFG[3]
STRAP4	+3VGS	PCIE_MAX_SPEED

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- (8) GPIO2  $\rightarrow$  RV1 1 GC68 2 0.0402 5% FB\_G05\_EN\_R
- (8) GPIO3  $\rightarrow$  RV2 1 GC68 2 0.0402 5% GPU\_EVENT#
- (6) PCIE\_CRX\_GTX\_N0..1  $\rightarrow$
- (6) PCIE\_CRX\_GTX\_P0..1  $\rightarrow$
- (6) PCIE\_CTX\_G\_GRX\_N0..1  $\rightarrow$
- (6) PCIE\_CTX\_C\_GRX\_P0..1  $\rightarrow$



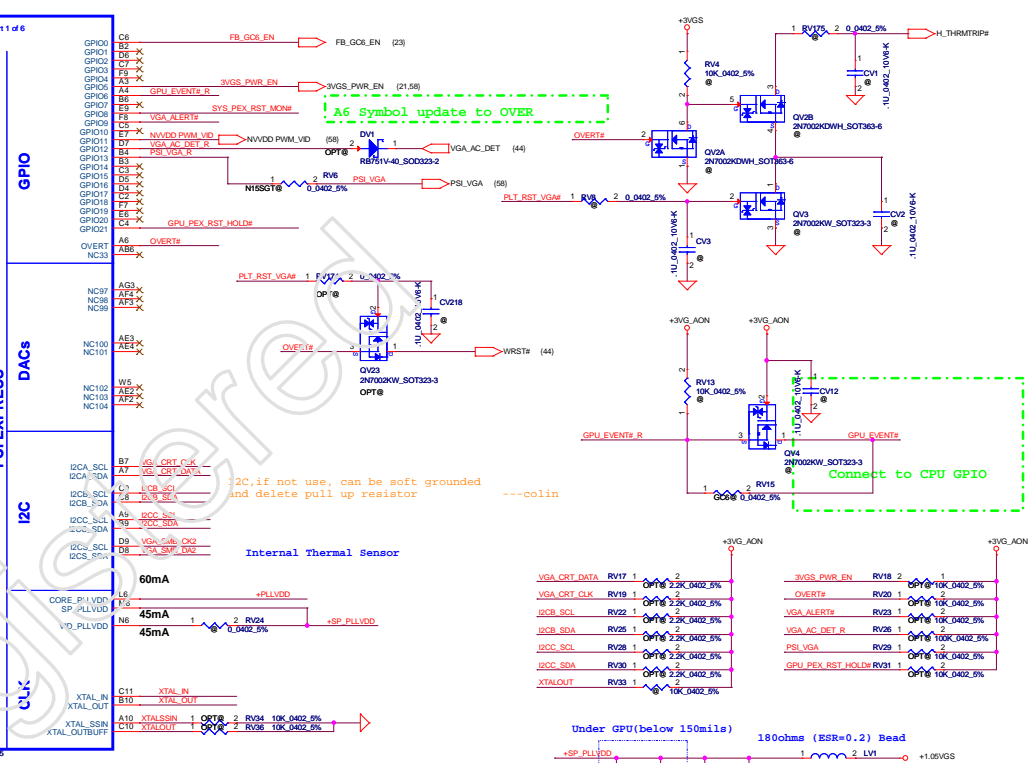
- PCIE\_CRX\_GTX\_P0 CV10 OPT#1 2 1U 0.0402 10%K
- PCIE\_CRX\_GTX\_N0 CV13 OPT#1 2 1U 0.0402 10%K
- PCIE\_CRX\_GTX\_P1 CV8 OPT#1 2 1U 0.0402 10%K
- PCIE\_CRX\_GTX\_N1 CV9 OPT#1 2 1U 0.0402 10%K

Differential signal

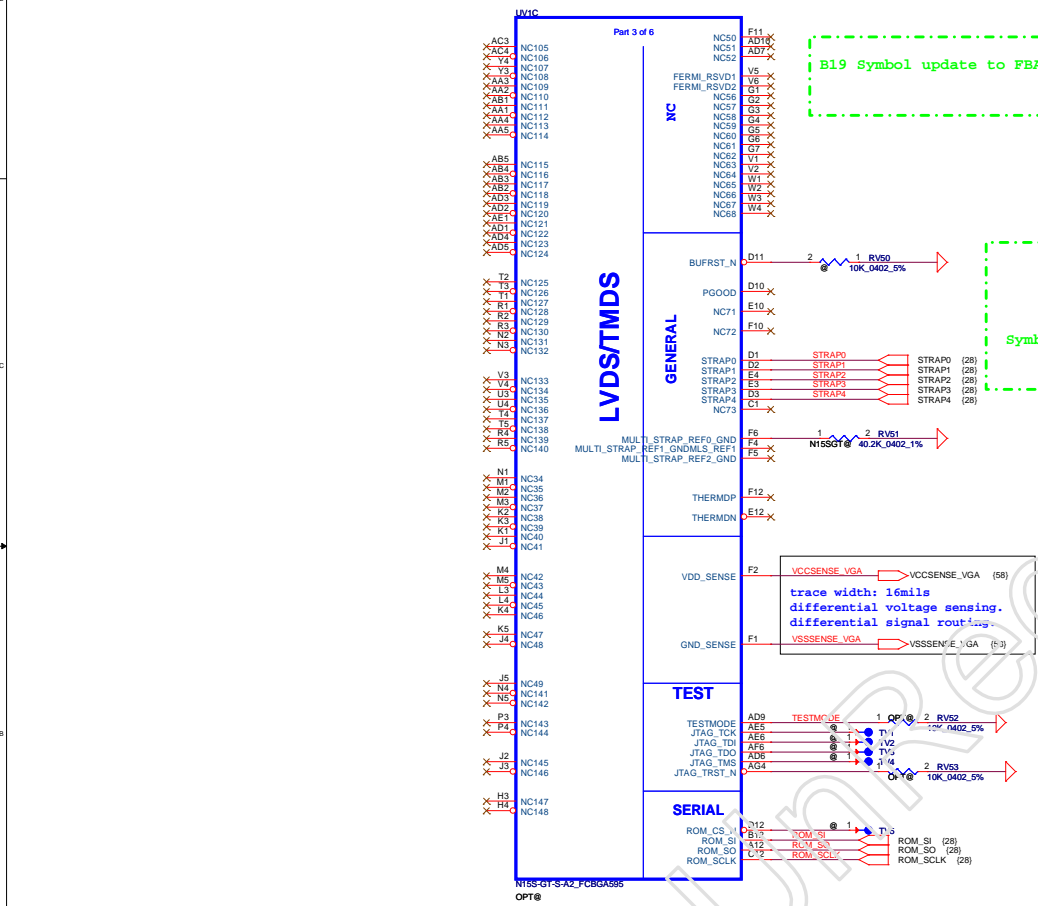
- (7) CLK\_POE\_GPU  $\rightarrow$  CLK\_POE\_GPU#
- (7) CLK\_POE\_GPU#  $\rightarrow$  CLK\_POE\_GPU#
- CLK\_REG\_GPL#  $\rightarrow$  CLK\_REG\_GPL#
- CLK\_REG\_GPL#  $\rightarrow$  CLK\_REG\_GPL#
- PEX\_STCLK\_OUT#  $\rightarrow$  PEX\_STCLK\_OUT#
- PEX\_STCLK\_OUT#  $\rightarrow$  PEX\_STCLK\_OUT#
- PLT\_RST\_VGA#  $\rightarrow$  PLT\_RST\_VGA#
- PEX\_TERM#  $\rightarrow$  PEX\_TERM#
- PEX\_TERM#  $\rightarrow$  PEX\_TERM#
- PEX\_TERM#  $\rightarrow$  PEX\_TERM#
- PEX\_TERM#  $\rightarrow$  PEX\_TERM#

Connect to CPU GPIO

- AG6 PEX\_RX0
- AG7 PEX\_RX0\_N
- AG8 PEX\_RX1
- AG9 PEX\_RX1\_N
- AF0 PEX\_RX2
- AF1 PEX\_RX2\_N
- AG0 PEX\_RX3
- AG1 PEX\_RX3\_N
- AF2 PEX\_RX4
- AF3 PEX\_RX4\_N
- AG2 PEX\_RX5
- AG3 PEX\_RX5\_N
- AG4 PEX\_RX6
- AG5 PEX\_RX6\_N
- AG6 PEX\_RX7
- AG7 PEX\_RX7\_N
- AG8 PEX\_RX8
- AG9 PEX\_RX8\_N
- AF0 PEX\_RX9
- AF1 PEX\_RX9\_N
- AG0 PEX\_RX10
- AG1 PEX\_RX10\_N
- AG2 PEX\_RX11
- AG3 PEX\_RX11\_N
- AG4 PEX\_RX12
- AG5 PEX\_RX12\_N
- AG6 PEX\_RX13
- AG7 PEX\_RX13\_N
- AG8 PEX\_RX14
- AG9 PEX\_RX14\_N
- AF0 PEX\_RX15
- AF1 PEX\_RX15\_N
- AG2 PEX\_RX16
- AG3 PEX\_RX16\_N
- AG4 PEX\_RX17
- AG5 PEX\_RX17\_N
- AG6 PEX\_RX18
- AG7 PEX\_RX18\_N
- AG8 PEX\_RX19
- AG9 PEX\_RX19\_N
- AF0 PEX\_RX20
- AF1 PEX\_RX20\_N
- AG2 PEX\_RX21
- AG3 PEX\_RX21\_N
- AG4 PEX\_RX22
- AG5 PEX\_RX22\_N
- AG6 PEX\_RX23
- AG7 PEX\_RX23\_N
- AG8 PEX\_RX24
- AG9 PEX\_RX24\_N
- AF0 PEX\_RX25
- AF1 PEX\_RX25\_N
- AG2 PEX\_RX26
- AG3 PEX\_RX26\_N
- AG4 PEX\_RX27
- AG5 PEX\_RX27\_N
- AG6 PEX\_RX28
- AG7 PEX\_RX28\_N
- AG8 PEX\_RX29
- AG9 PEX\_RX29\_N
- AF0 PEX\_RX30
- AF1 PEX\_RX30\_N
- AG2 PEX\_RX31
- AG3 PEX\_RX31\_N
- AG4 PEX\_RX32
- AG5 PEX\_RX32\_N



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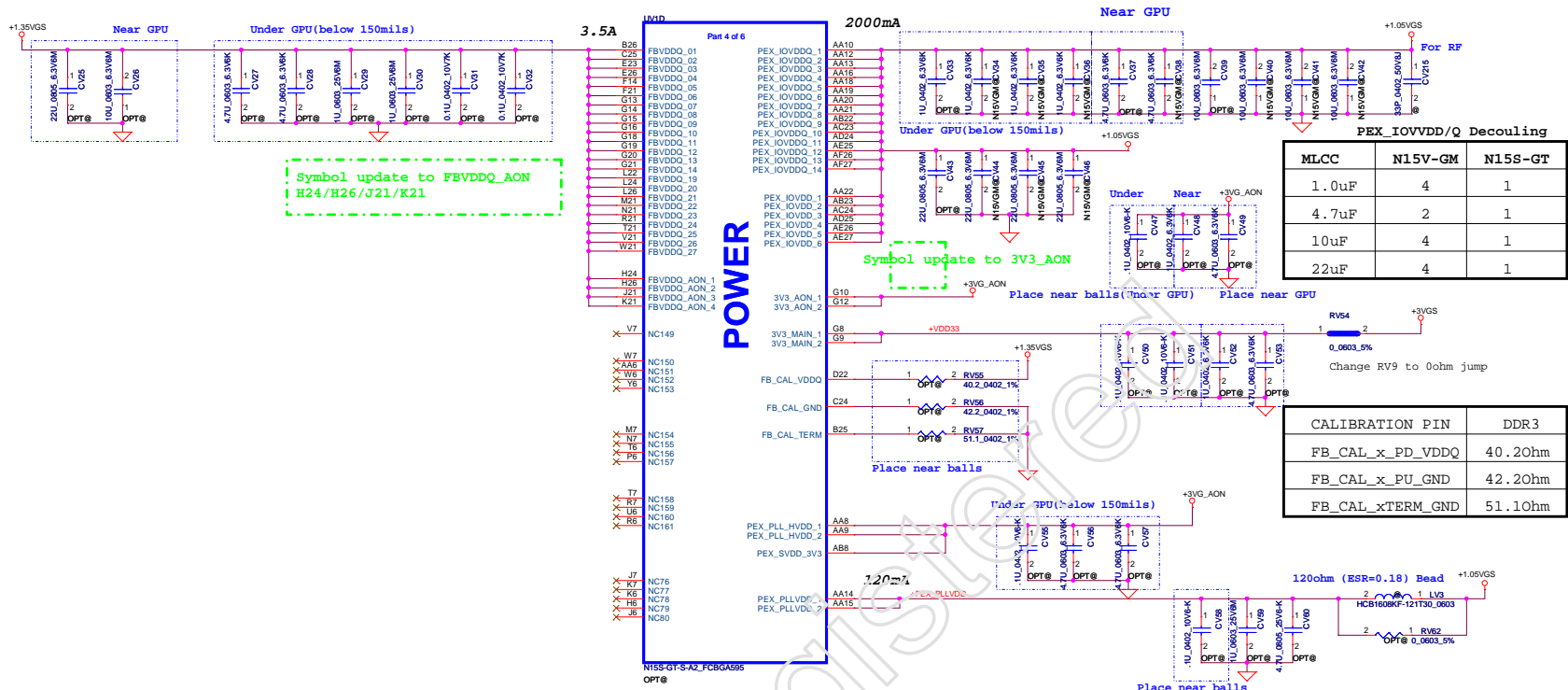


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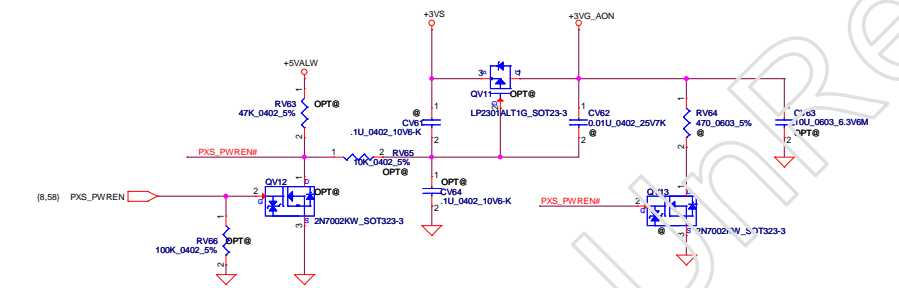
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N15X_LVDS/HDMI/THERM		
Sign C	Document Number	Rev 0.2
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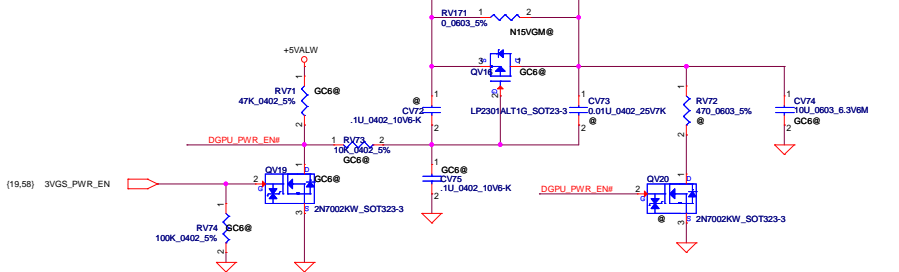
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H24/H26/J21/K21

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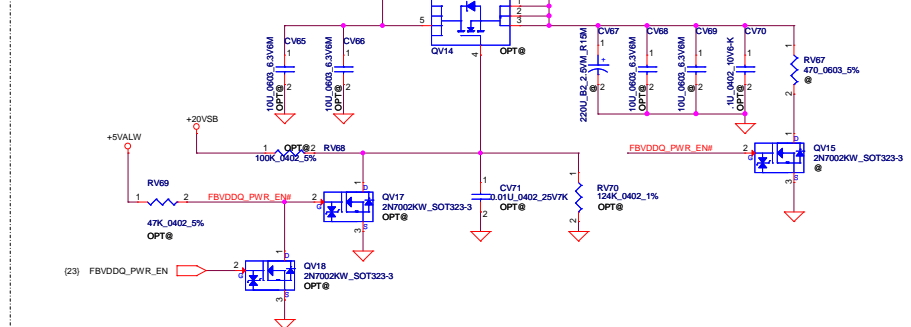
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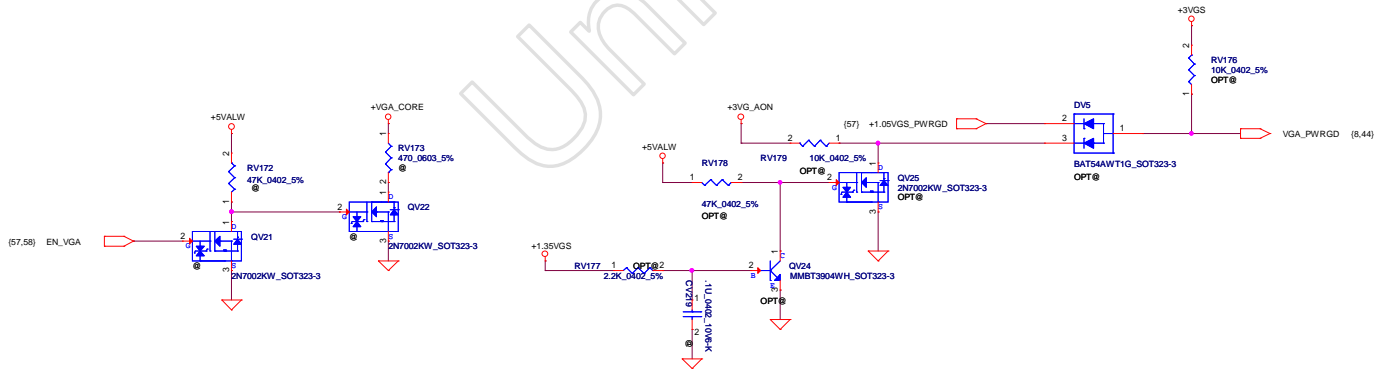
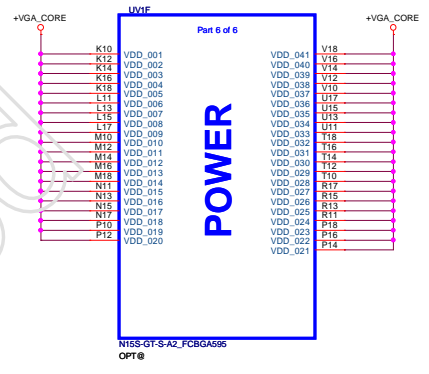
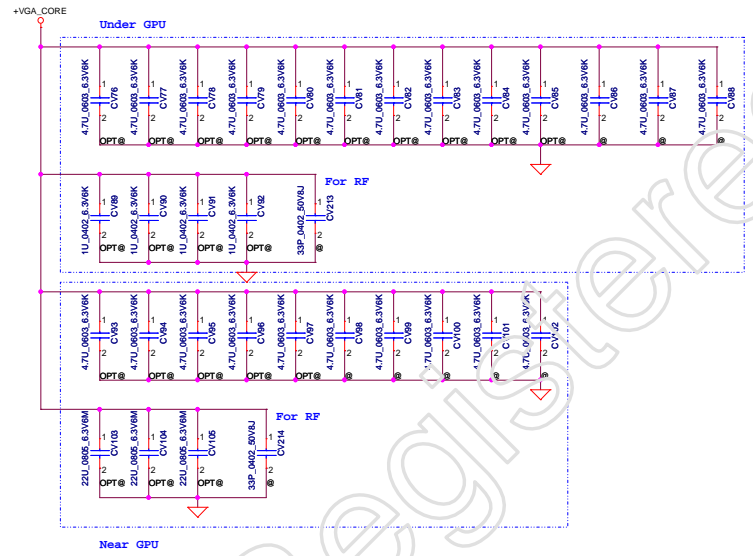
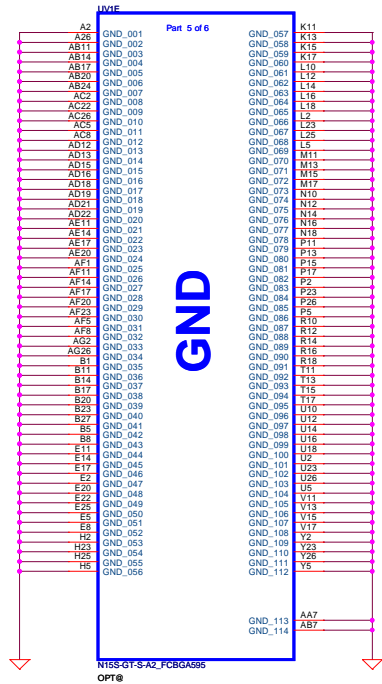


+3.3VS TO +3VGS

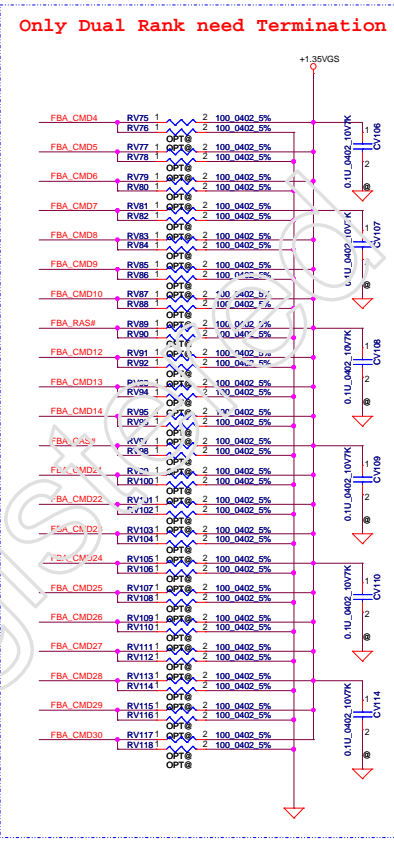
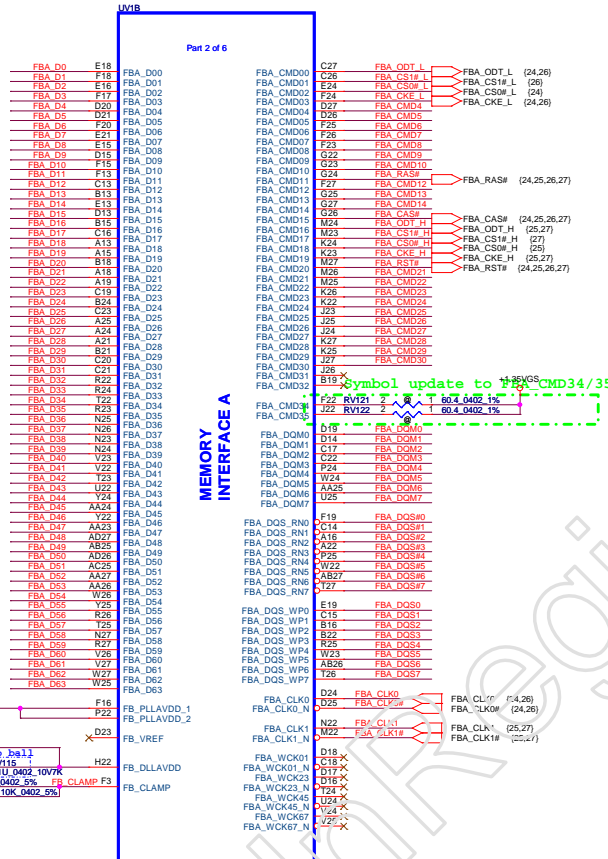
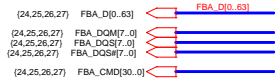


+1.35V TO +1.35VGS



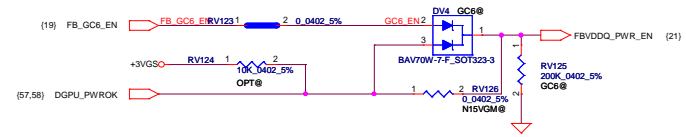
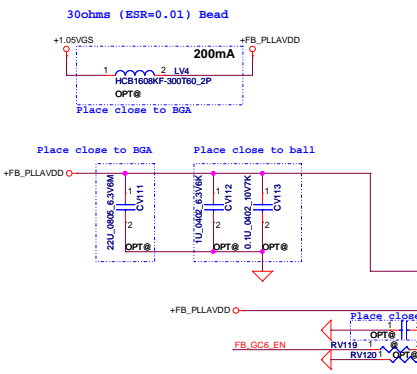


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Rev	C	Document Number	AC109	Rev	0.2
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**CMD mapping mod Mode E**

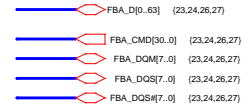
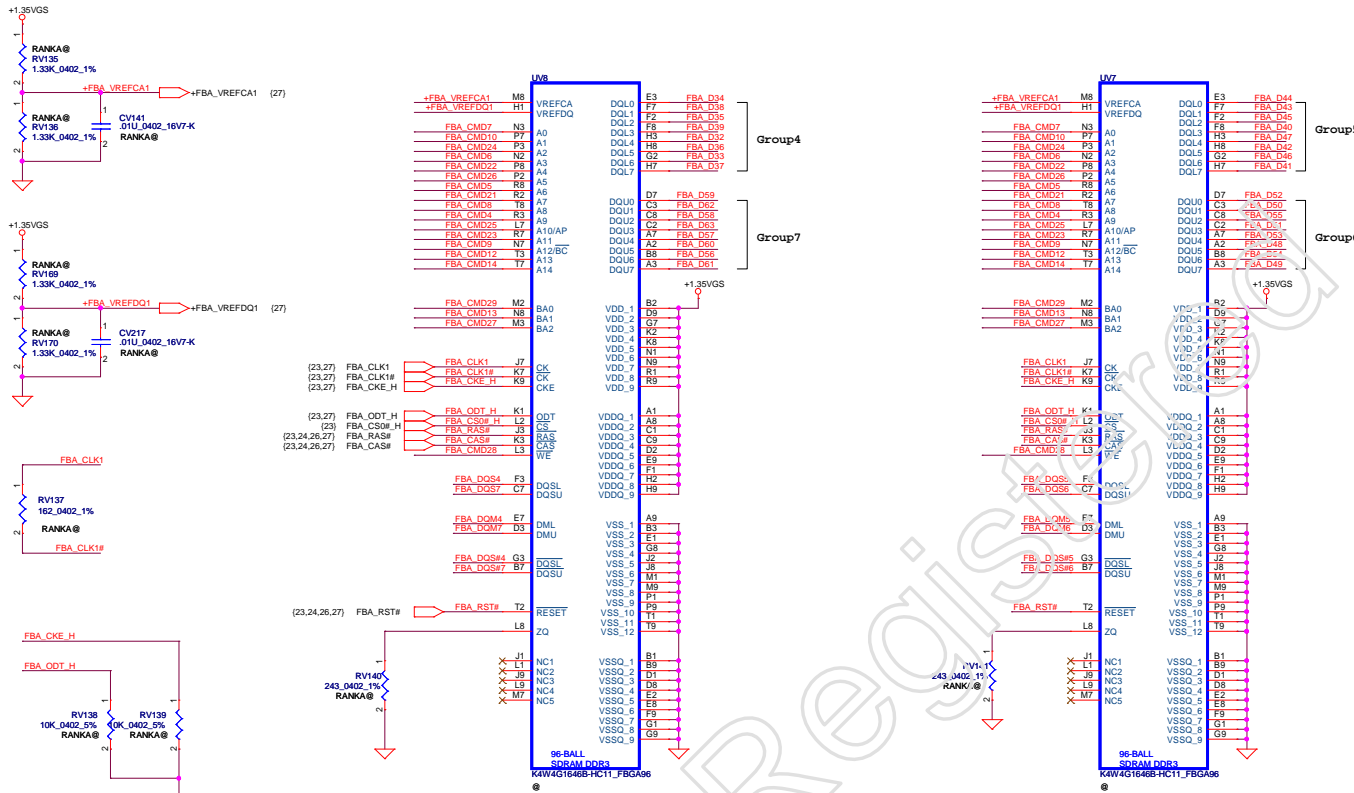
Address	Rank0		Rank1	
	0..31	32..63	0..31	32..63
FBx_CMD0	ODT_L		ODT_L	
FBx_CMD1			CS1#_L	
FBx_CMD2	CS0#_L			
FBx_CMD3	CKE_L		CKE_L	
FBx_CMD4	A9	A9	A11	A11
FBx_CMD5	A6	A6	A7	A7
FBx_CMD6	A3	A3	BA1	BA1
FBx_CMD7	A0	A0	A12	A12
FBx_CMD8	A8	A8	A8	A8
FBx_CMD9	A12	A12	A0	A0
FBx_CMD10	A1	A1	A2	A2
FBx_CMD11	RAS#	RAS#	RAS#	RAS#
FBx_CMD12	A13	A13	A14	A14
FBx_CMD13	BA1	BA1	A3	A3
FBx_CMD14	A14	A14	A13	A13
FBx_CMD15	CAS#	CAS#	CAS#	CAS#
FBx_CMD16			ODT_H	ODT_H
FBx_CMD17			CS1#_H	CS1#_H
FBx_CMD18			CS0#_H	CS0#_H
FBx_CMD19			CKE_H	CKE_H
FBx_CMD20	RST	RST	RST	RST
FBx_CMD21	A7	A7	A6	A6
FBx_CMD22	A4	A4	A5	A5
FBx_CMD23	A11	A11	A9	A9
FBx_CMD24	A2	A2	A1	A1
FBx_CMD25	A10	A10	WE#	WE#
FBx_CMD26	A5	A5	A4	A4
FBx_CMD27	BA2	BA2		
FBx_CMD28	WE#	WE#	A10	A10
FBx_CMD29	BA0	BA0	BA0	BA0
FBx_CMD30			BA2	BA2





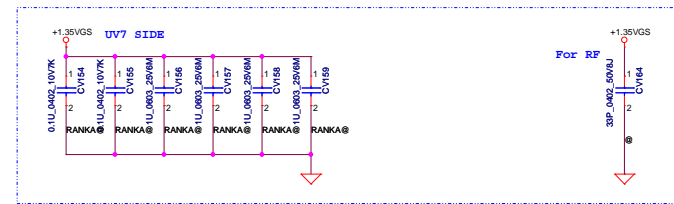
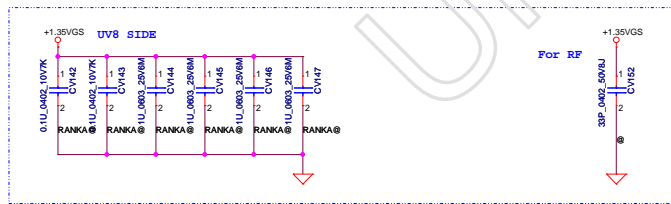


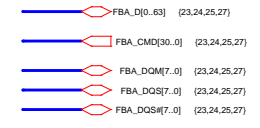
at least 16 mils width(optimal)  
20 mils spacing to other signals /planes



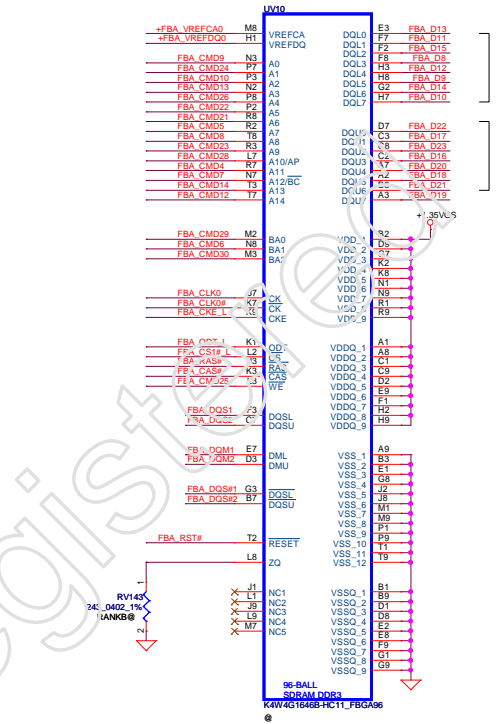
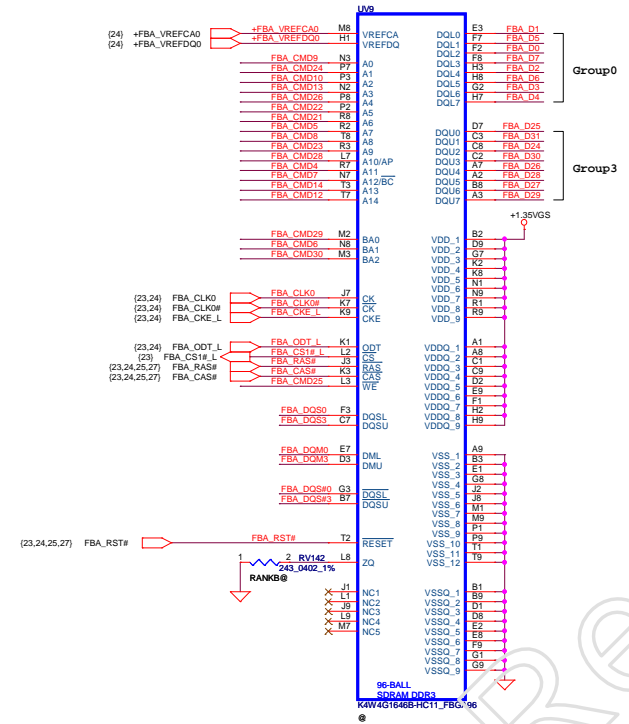
CMD mapping mod Mode E

Address	Rank0		Rank1	
	0..31	32..63	0..31	32..63
Fbx_CMD0	ODT_L1		ODT_L	
Fbx_CMD1			CS1#_L	
Fbx_CMD2	CS0#_L			
Fbx_CMD3	CKE_L		CKE_L	
Fbx_CMD4	A9	A9	A11	A11
Fbx_CMD5	A6	A6	A7	A7
Fbx_CMD6	A3	A3	BA1	BA1
Fbx_CMD7	A0	A0	A12	A12
Fbx_CMD8	A8	A8	A8	A8
Fbx_CMD9	A12	A12	A0	A0
Fbx_CMD10	A1	A1	A2	A2
Fbx_CMD11	RAS#	RAS#	RAS#	RAS#
Fbx_CMD12	A13	A13	A14	A14
Fbx_CMD13	BA1	BA1	A3	A3
Fbx_CMD14	A14	A14	A13	A13
Fbx_CMD15	CAS#	CAS#	CAS#	CAS#
Fbx_CMD16		ODT_H		ODT_H
Fbx_CMD17			CS1#_H	
Fbx_CMD18		CS0#_H		
Fbx_CMD19		CKE_H		CKE_H
Fbx_CMD20	RST	RST	RST	RST
Fbx_CMD21	A7	A7	A6	A6
Fbx_CMD22	A4	A4	A5	A5
Fbx_CMD23	A11	A11	A9	A9
Fbx_CMD24	A2	A2	A1	A1
Fbx_CMD25	A10	A10	WE#	WE#
Fbx_CMD26	A5	A5	A4	A4
Fbx_CMD27	BA2	BA2		
Fbx_CMD28	WE#	WE#	A10	A10
Fbx_CMD29	BA0	BA0	BA0	BA0
Fbx_CMD30			BA2	BA2



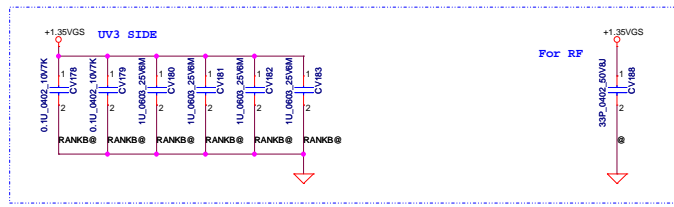
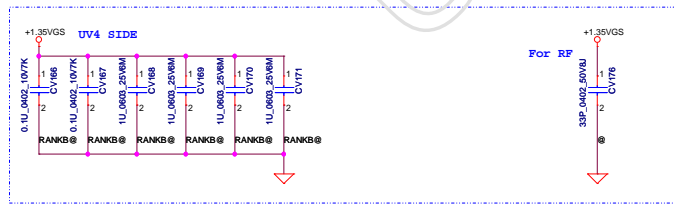


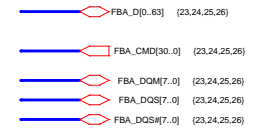
at least 16 mils width (optimal)  
20 mils spacing to other signals / planes



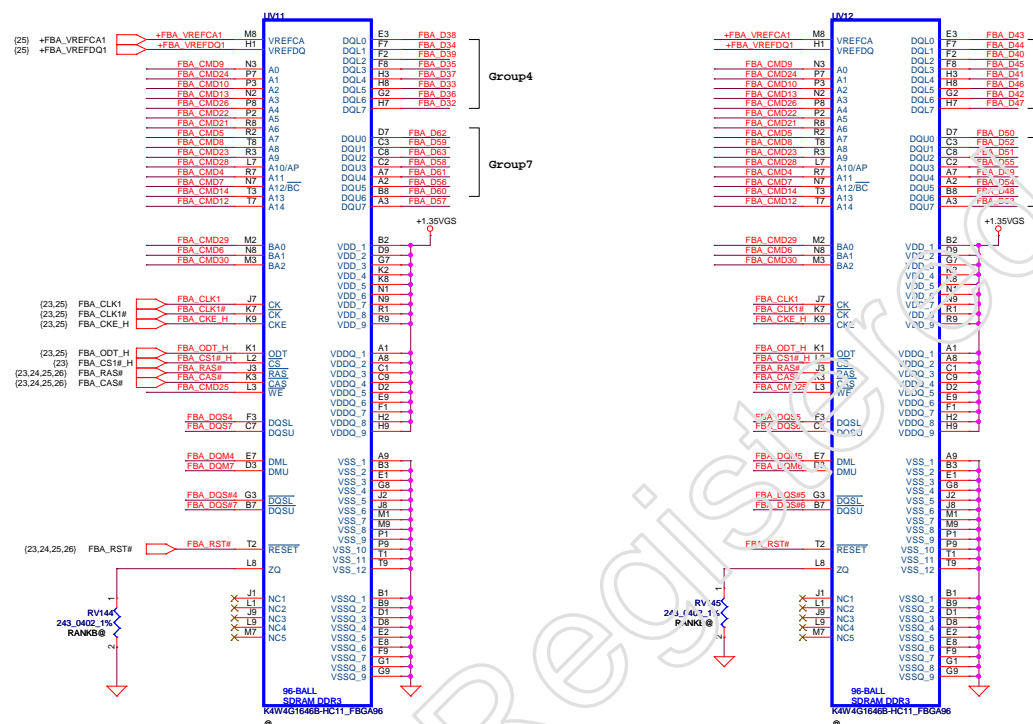
**CMD mapping mod Mode E**

Address	Rank0		Rank1	
	0..31	32..63	0..31	32..63
FBX_CMD0	ODT_L		ODT_L	
FBX_CMD1			CS1#_L	
FBX_CMD2	CS0#_L			
FBX_CMD3			CKE_L	
FBX_CMD4	A9	A9	A11	A11
FBX_CMD5	A6	A6	A7	A7
FBX_CMD6	A3	A3	BA1	BA1
FBX_CMD7	A0	A0	A12	A12
FBX_CMD8	A8	A8	A8	A8
FBX_CMD9	A12	A12	A0	A0
FBX_CMD10	A1	A1	A2	A2
FBX_CMD11	RAS#	RAS#	RAS#	RAS#
FBX_CMD12	A13	A13	A14	A14
FBX_CMD13	BA1	BA1	A3	A3
FBX_CMD14	A14	A14	A13	A13
FBX_CMD15	CAS#	CAS#	CAS#	CAS#
FBX_CMD16		ODT_H		ODT_H
FBX_CMD17			CS1#_H	
FBX_CMD18			CS0#_H	
FBX_CMD19		CHE_H		CHE_H
FBX_CMD20	RST	RST	RST	RST
FBX_CMD21	A7	A7	A6	A6
FBX_CMD22	A4	A4	A5	A5
FBX_CMD23	A11	A11	A9	A9
FBX_CMD24	A2	A2	A1	A1
FBX_CMD25	A10	A10	WE#	WE#
FBX_CMD26	A5	A5	A4	A4
FBX_CMD27	BA2	BA2		
FBX_CMD28	WE#	WE#	A10	A10
FBX_CMD29	BA0	BA0	BA0	BA0
FBX_CMD30			BA2	BA2



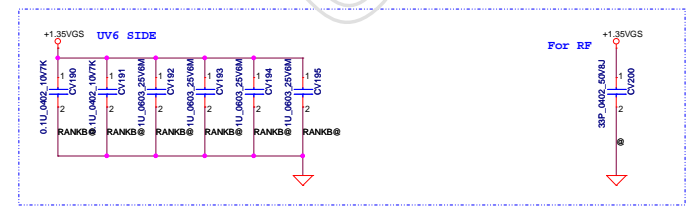


at least 16 mils width(optimal)  
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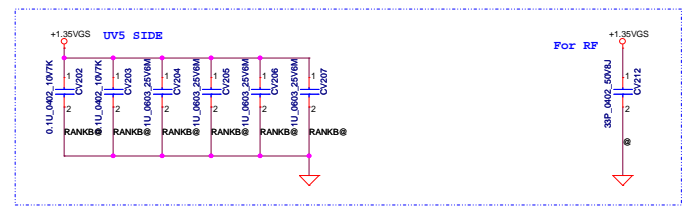


CMD mapping mod Mode E

Address	Rank0		Rank1	
	0..31	32..63	0..31	32..63
FBx_CMD0	ODT_L		ODT_L	
FBx_CMD1			CS1#_L	
FBx_CMD2	CS0#_L			
FBx_CMD3			CKE_L	
FBx_CMD4	A9	A9	A11	A11
FBx_CMD5	A6	A6	A7	A7
FBx_CMD6	A3	A3	BA1	BA1
FBx_CMD7	A0	A0	A12	A12
FBx_CMD8	A8	A8	A8	A8
FBx_CMD9	A12	A12	A0	A0
FBx_CMD10	A1	A1	A2	A2
FBx_CMD11	RAS#	RAS#	RAS#	RAS#
FBx_CMD12	A13	A13	A14	A14
FBx_CMD13	BA1	BA1	A3	A3
FBx_CMD14	A14	A14	A13	A13
FBx_CMD15	CAS#	CAS#	CAS#	CAS#
FBx_CMD16			ODT_H	
FBx_CMD17			CS1#_H	
FBx_CMD18			CS0#_H	
FBx_CMD19			CKE_H	
FBx_CMD20	RST	RST	RST	RST
FBx_CMD21	A7	A7	A6	A6
FBx_CMD22	A4	A4	A5	A5
FBx_CMD23	A11	A11	A9	A9
FBx_CMD24	A2	A2	A1	A1
FBx_CMD25	A10	A10	WE#	WE#
FBx_CMD26	A5	A5	A4	A4
FBx_CMD27	BA2	BA2		
FBx_CMD28	WE#	WE#	A10	A10
FBx_CMD29	BA0	BA0	BA0	BA0
FBx_CMD30			BA2	BA2



For RF



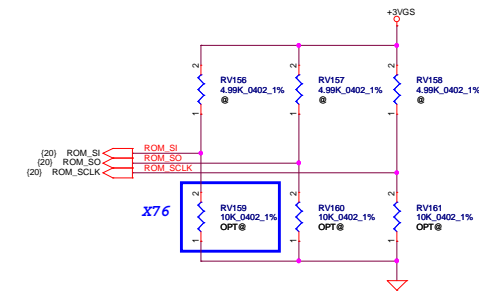
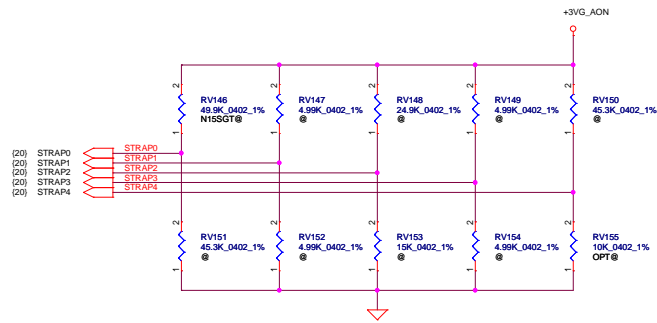
For RF

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This  
**DDR3 VRAM Rank1\_H**

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**ACL09**

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Physical Strapping pin	Power Rail	Logical Strapping Bit3	Logical Strapping Bit2	Logical Strapping Bit1	Logical Strapping Bit0
ROM_SCLK	+3VGS	SOR3_EXPOSED	SOR2_EXPOSED	SOR1_EXPOSED	SOR0_EXPOSED
ROM_SI	+3VGS	RAM_CFG[3]	RAM_CFG[2]	RAM_CFG[1]	RAM_CFG[0]
ROM_SO	+3VGS	DEVID_SEL	PCIE_CFG	SMB_ALT_ADDR	VGA_DEVICE
STRAP0	+3VGS	Reserved(keep pull-up and pull-down footprint and stuff 50Kohm pull-up)			
STRAP1	+3VGS	Reserved(keep pull-up and pull-down footprint and not stuff by default)			
STRAP2	+3VGS				
STRAP3	+3VGS				
STRAP4	+3VGS				

Resistor Values	Pull-up to +3VGS	Pull-down to Gnd
4.99K	1000	0000
SD0344528J		
10K	1001	0001
15K	1010	0010
20K	1011	0011
24.9K	1100	0100
SD0344528J		
30.1K	1101	0101
SD0344528J		
34.8K	1110	0110
45.3K	1111	0111
SD03445328J		

DEVID_SEL	
0	(Default)
1	

PCIE_CFG	
0	(Default)
1	

SMBUS_ALT_ADDR	
0	0x9E (Default)
1	0x9C (Multi-GPU usage)

VGA_DEVICE	
0	3D Device (Class Code 302h)
1	VGA Device (Default)

Physical Strapping pin	Power Rail	Strap Mapping
ROM_SCLK	+3VGS	SMB_ALT_ADDR
ROM_SI	+3VGS	CUB_VFNOR
ROM_SO	+3VGS	VGA_DEVICE
STRAP0	+3VGS	RAM_CFG[0]
STRAP1	+3VGS	RAM_CFG[1]
STRAP2	+3VGS	RAM_CFG[2]
STRAP3	+3VGS	RAM_CFG[3]
STRAP4	+3VGS	PCIE_MAX_SPEED

X76

GPU	FB Memory (DDR3)	ROM_SI	ROM_SO	ROM_SCLK	STRAP0	STRAP1	STRAP2	STRAP3	STRAP4		
N15S-GT	Hynix 900MHz	H5TC4G63AFR-11C	0x3	PD 20K	PD 4.99K	PD 4.99K	PU 49.9K	Un-stuff	Un-stuff	Un-stuff	Un-stuff
	Micron 900MHz	MT41J256M16HA-093G:E	0x4	PD 24.9K							
	Samsung 900MHz	K4W4G1646D-BC1A	0x5	PD 30.1K							

GPU	FB Memory (DDR3)	STRAP3	STRAP2	STRAP1	STRAP0	STRAP4	ROM_SI	ROM_SO	ROM_SCLK
N15V-GM	Hynix 900MHz	H5TC4G63AFR-11C	PD 10K	PU 10K	PD 10K	PD 10K	PD 10K	PD 10K	PD 10K
	Micron 900MHz	MT41J256M16HA-093G:E	PU 10K	PU 10K	PD 10K	PU 10K			
	Hynix 900MHz	H5TC2G63FFR-11C	PU 10K	PU 10K	PD 10K	PD 10K			
	Micron 900MHz	MT41J128M16JT-093G	PD 10K	PD 10K	PD 10K	PU 10K			
	Samsung 900MHz	K4W2G1646Q-BC1A	PU 10K	PU 10K	PU 10K	PD 10K			


VRAM	X76	VRAM P/N
Samsung	X7604112001	SA00005SH40
Micron	X7604012002	SA00005M120
Hynix	X7604012001	SA00005VS00

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Custom	ACLU9	0.2
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				<small>Date:</small> Monday, December 23, 2013	<small>Rev</small> 0.2
				<small>Sheet</small> 30 of 59	




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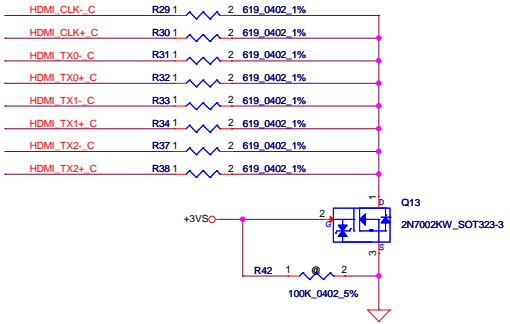
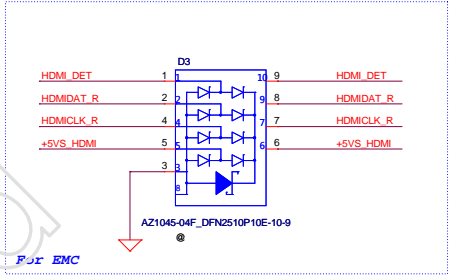
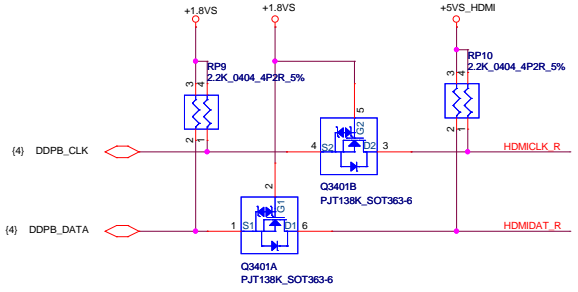
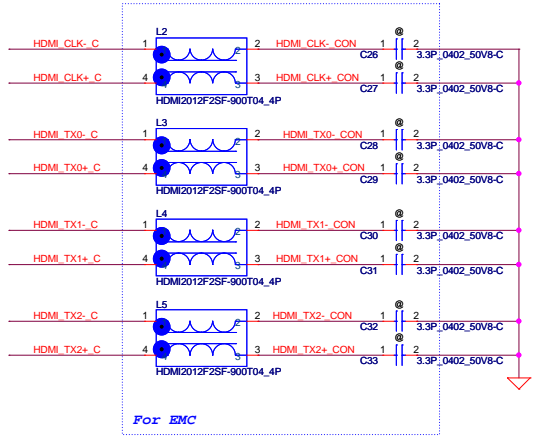
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UnRegistered

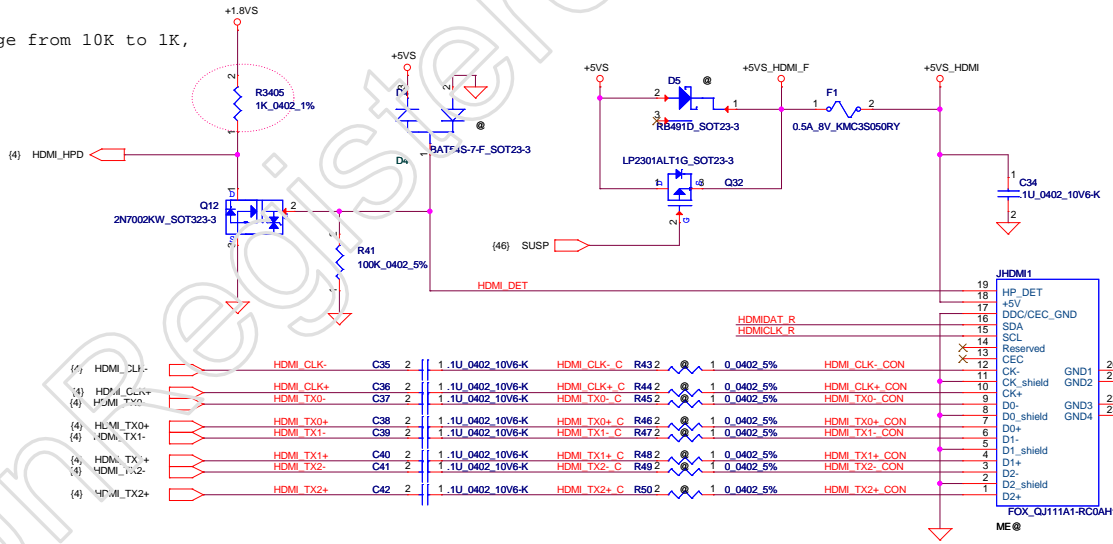
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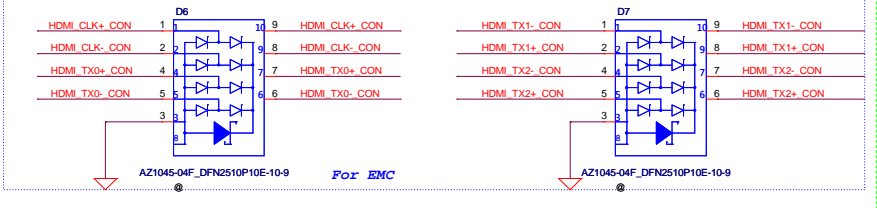




R4602 change from 10K to 1K, as Vienna



Close to JHDMI1




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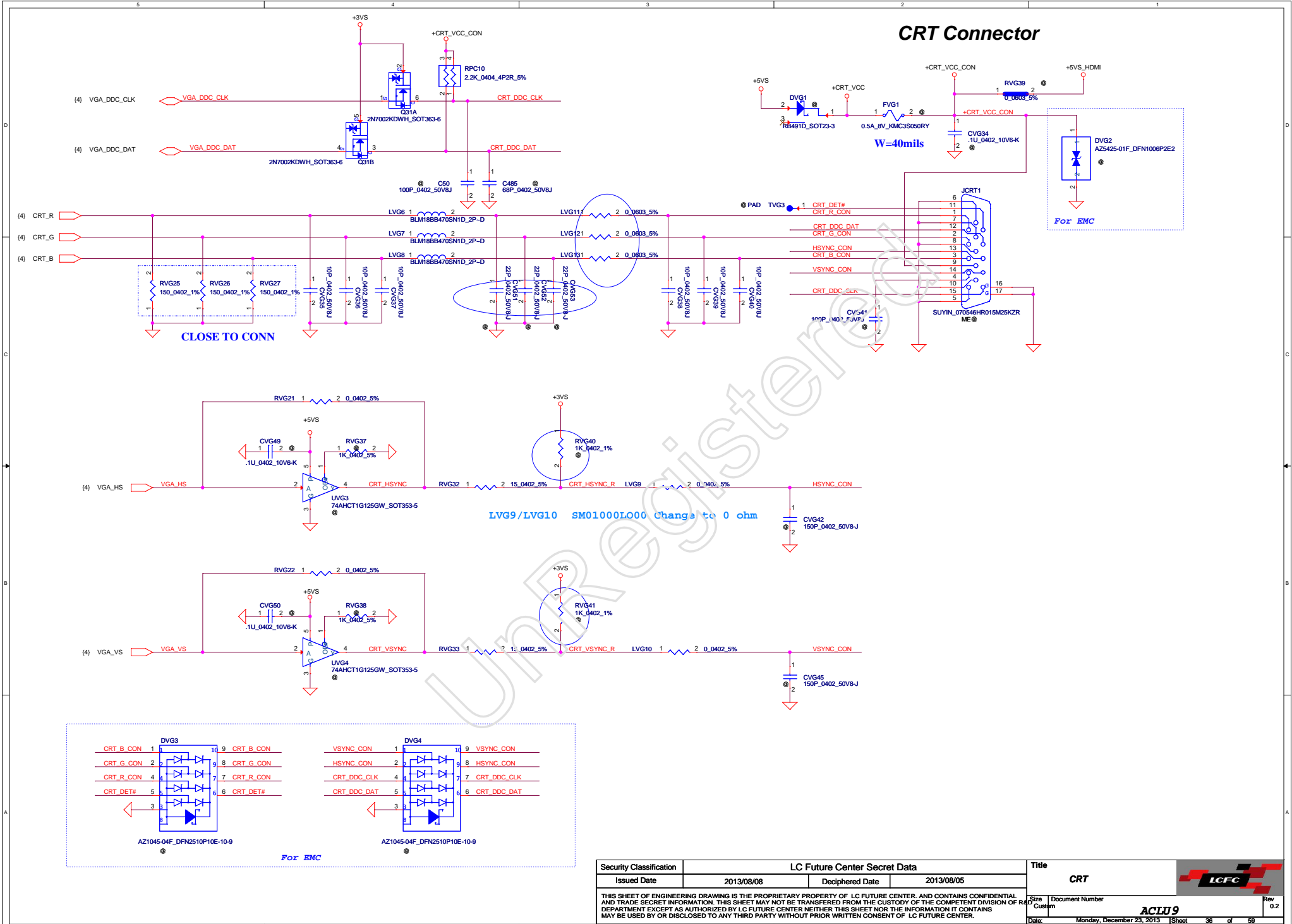
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Size	Document Number	<b>ACLU9</b>	
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# CRT Connector



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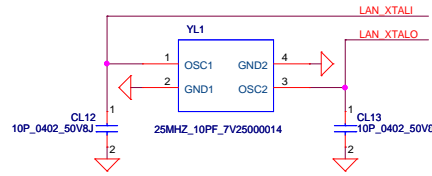
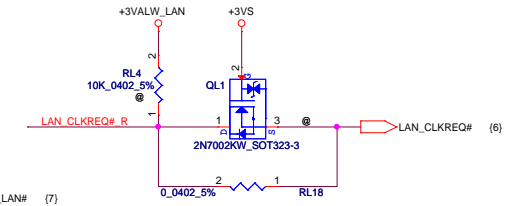
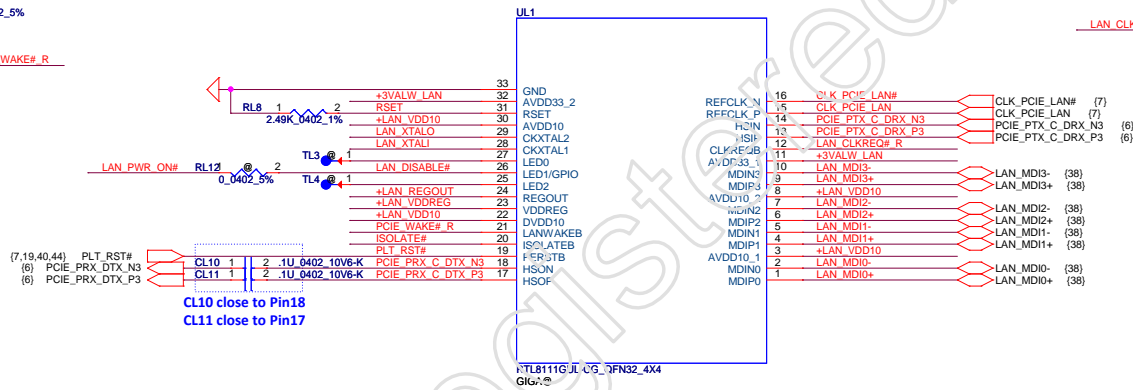
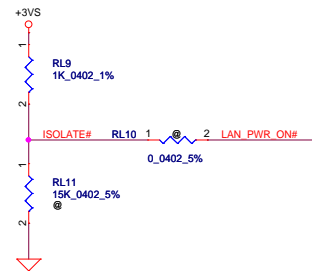
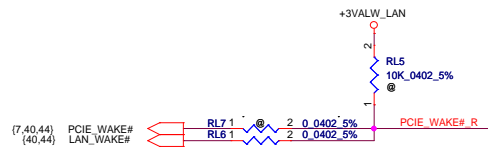
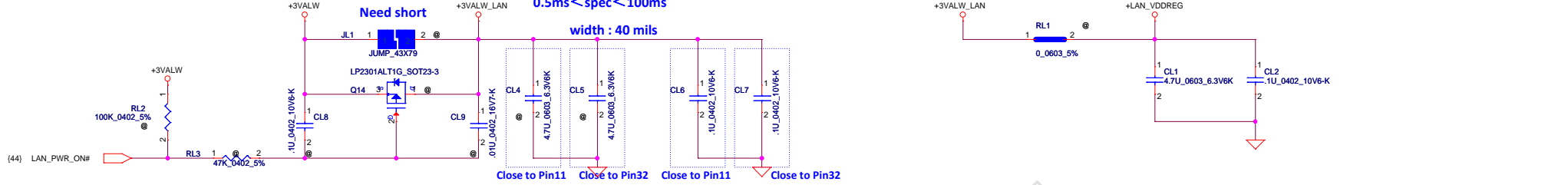
Issued Date: 2013/08/08 | Deciphered Date: 2013/08/05

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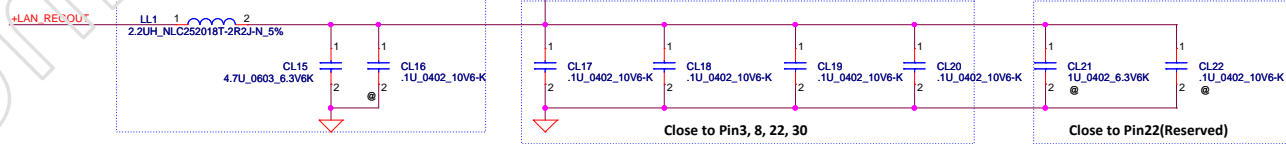
Title		CRT	
Size	Document Number	Rev	
Custom	ACLJ9	0.2	
Date:	Monday, December 23, 2013	Sheet	36 of 59

**+3VALW TO +3VALW\_LAN**

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



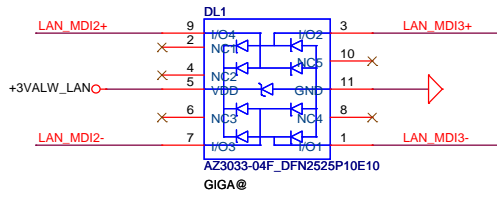
**For rtl8111GUL/ RTL8106EUL (SWR mode)**



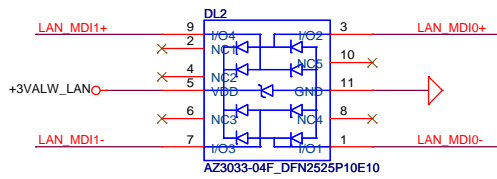
Layout Note: LL1 must be within 200mil to Pin24, CL15, CL16 must be within 200mil to LL1  
+LAN\_REGOUT: Width =60mil

Security Classification		LC Future Center Secret Data		Title	
Issued Date	2013/08/08	Deciphered Date	2013/08/05	LAN_RTL8111GUL/RTL8106EUL ICF	
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Size Custom	Document Number	ACT19		Rev	0.2
Date:	Monday, December 23, 2013	Sheet	37	of	59

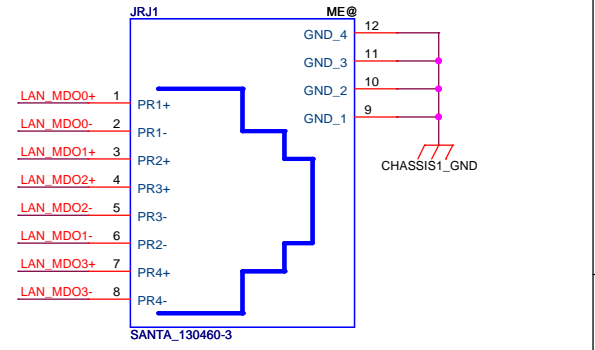
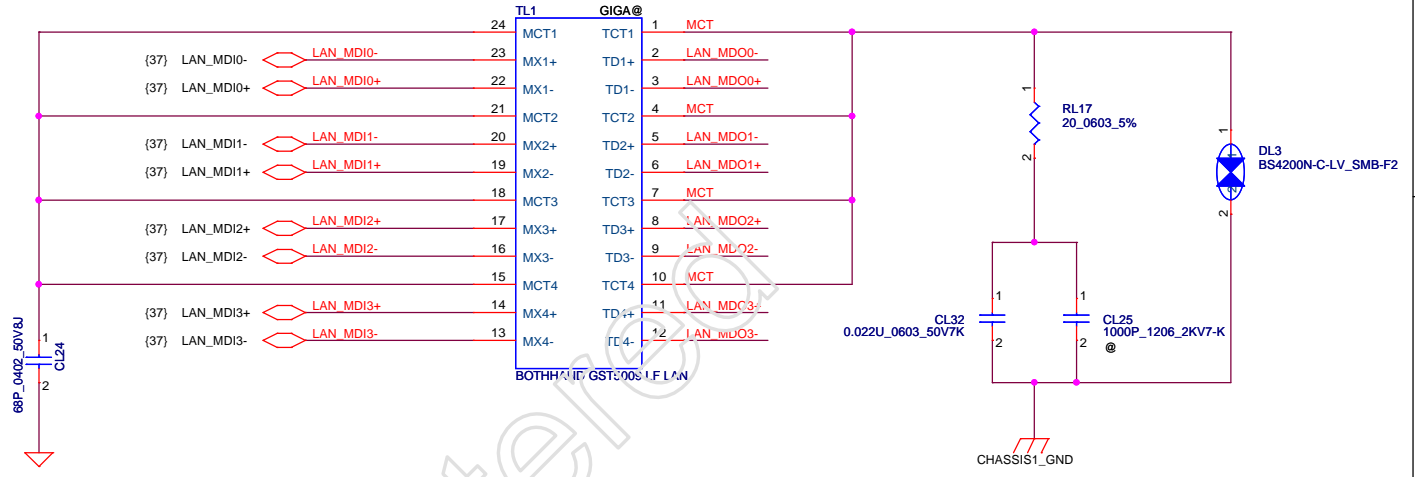
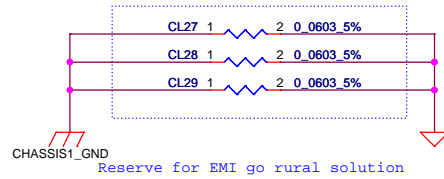
**DL1/DL2**  
1'S PN:SC300003M00



Place Close to TL1

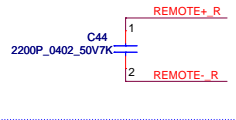


Place Close to TL2

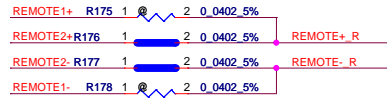
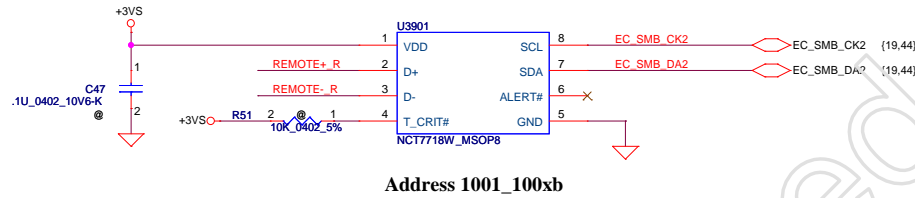


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Issued Date	2013/08/08	Deciphered Date	2013/08/05		LAN_Transformer	
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					<b>ACLJ9</b>	0.2
				Date:	Monday, December 23, 2013	Sheet 38 of 59

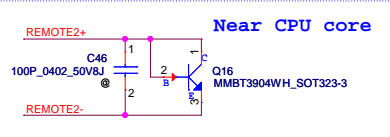
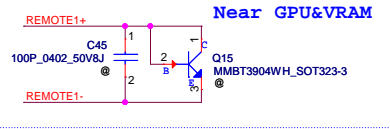
**Close to U3901**



**SMSC thermal sensor placed near DIMM**

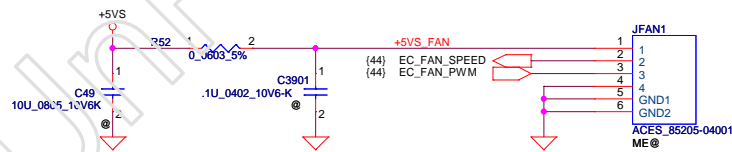


REMOTE+/\_R, REMOTE1+/\_R, REMOTE2+/\_R  
Trace width/space:10/10 mil  
Trace length:<8"



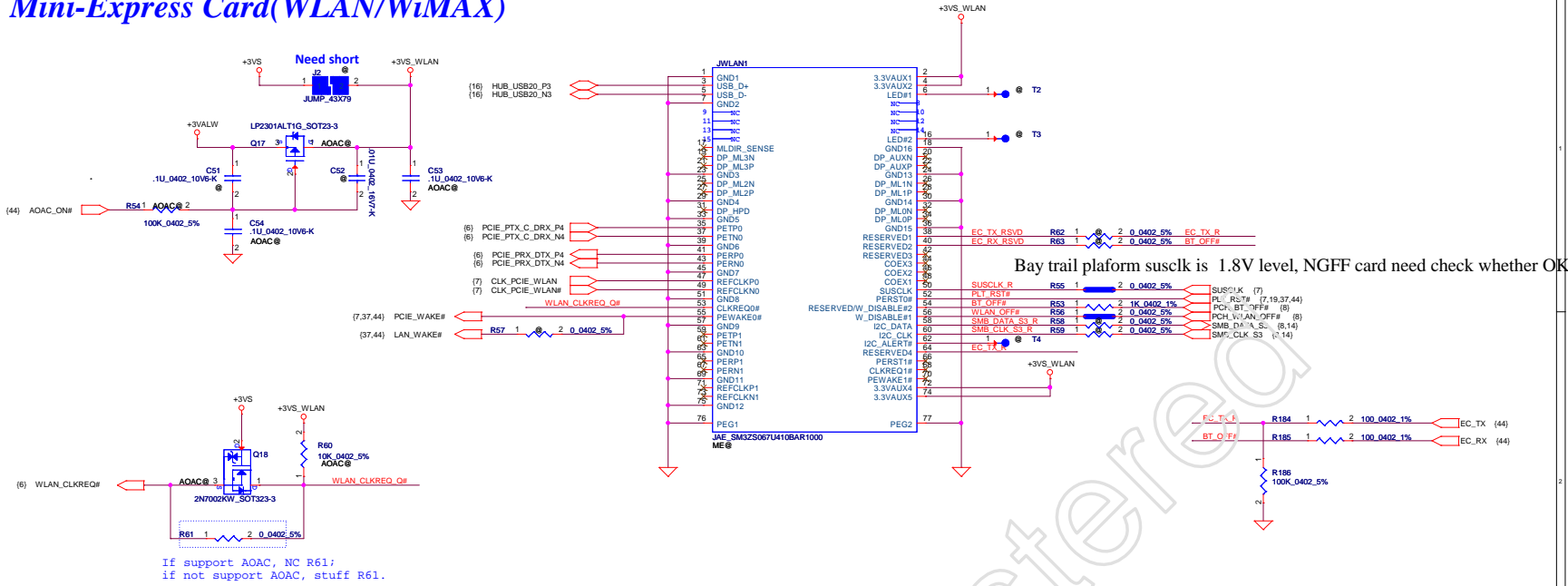
Baytrail SOC use thermal sensor to read the thermal,  
Baytrail don't has PECI signal

**FAN Conn**



Security Classification	LC Future Center Secret Data		Title			
Issued Date	2013/08/08	Deciphered Date	2013/08/05		Thermal sensor/FAN CONN	
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				Date:	Monday, December 23, 2013	Sheet 39 of 59

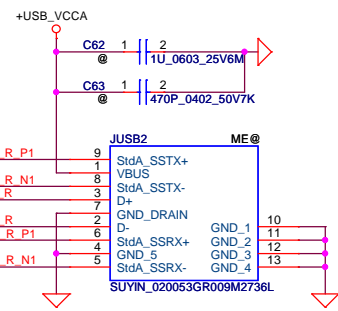
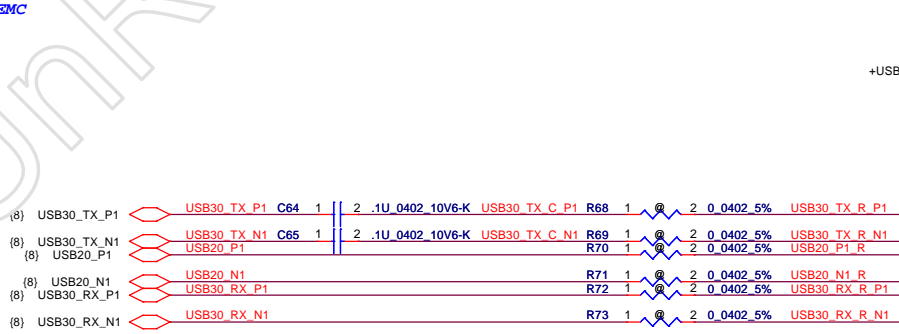
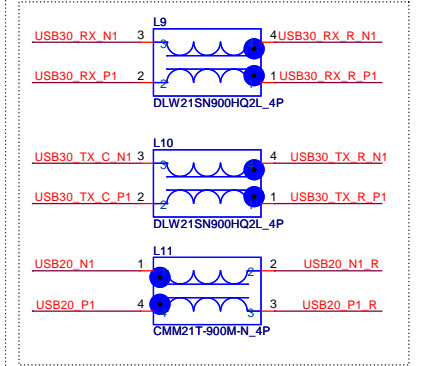
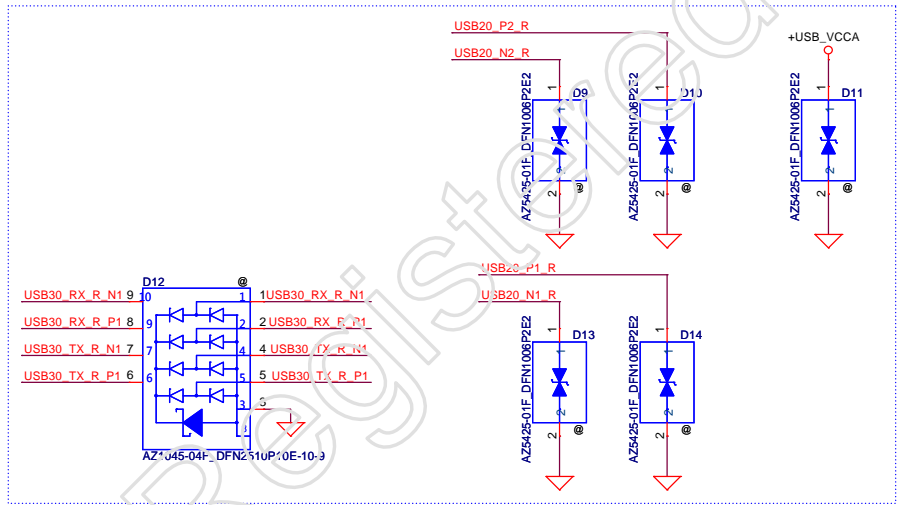
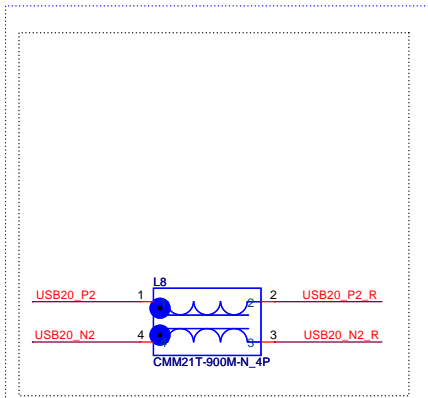
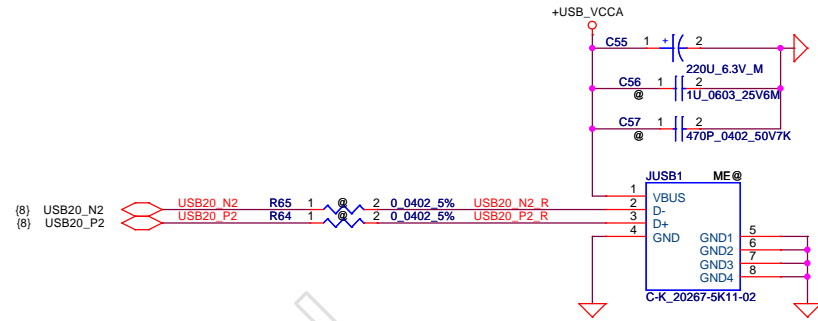
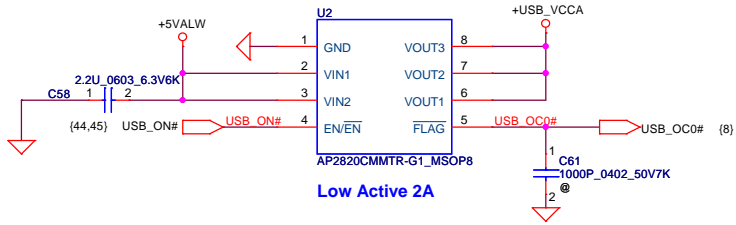
# Mini-Express Card(WLAN/WiMAX)



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Issued Date		Deciphered Date		NGFF WLAN	
2013/08/08		2013/08/05		LCFC	
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				Custom	0.2
				Date:	Monday, December 23, 2013
				Sheet	40 of 59



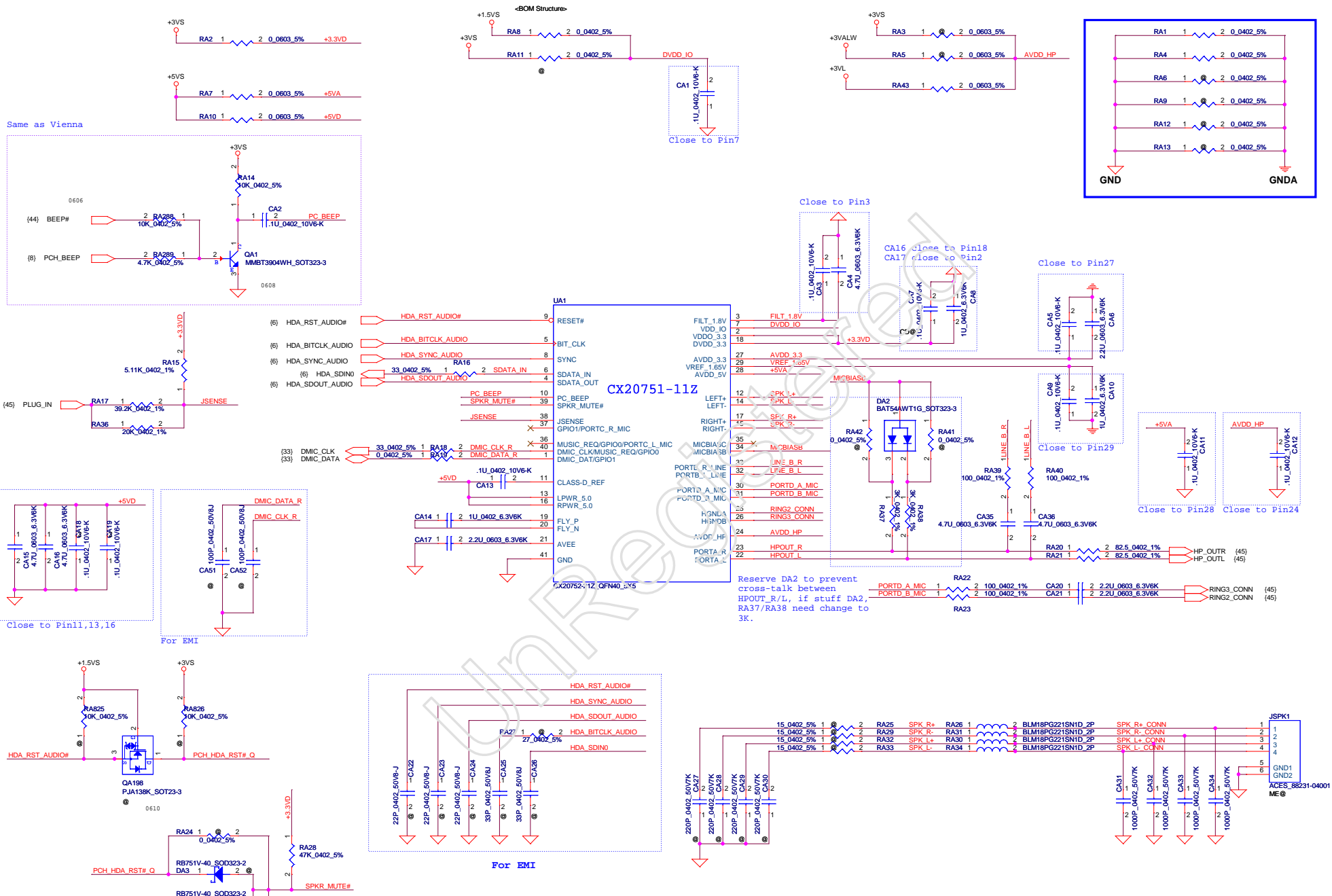
# LEFT SIDE USB3.0 PORT X2



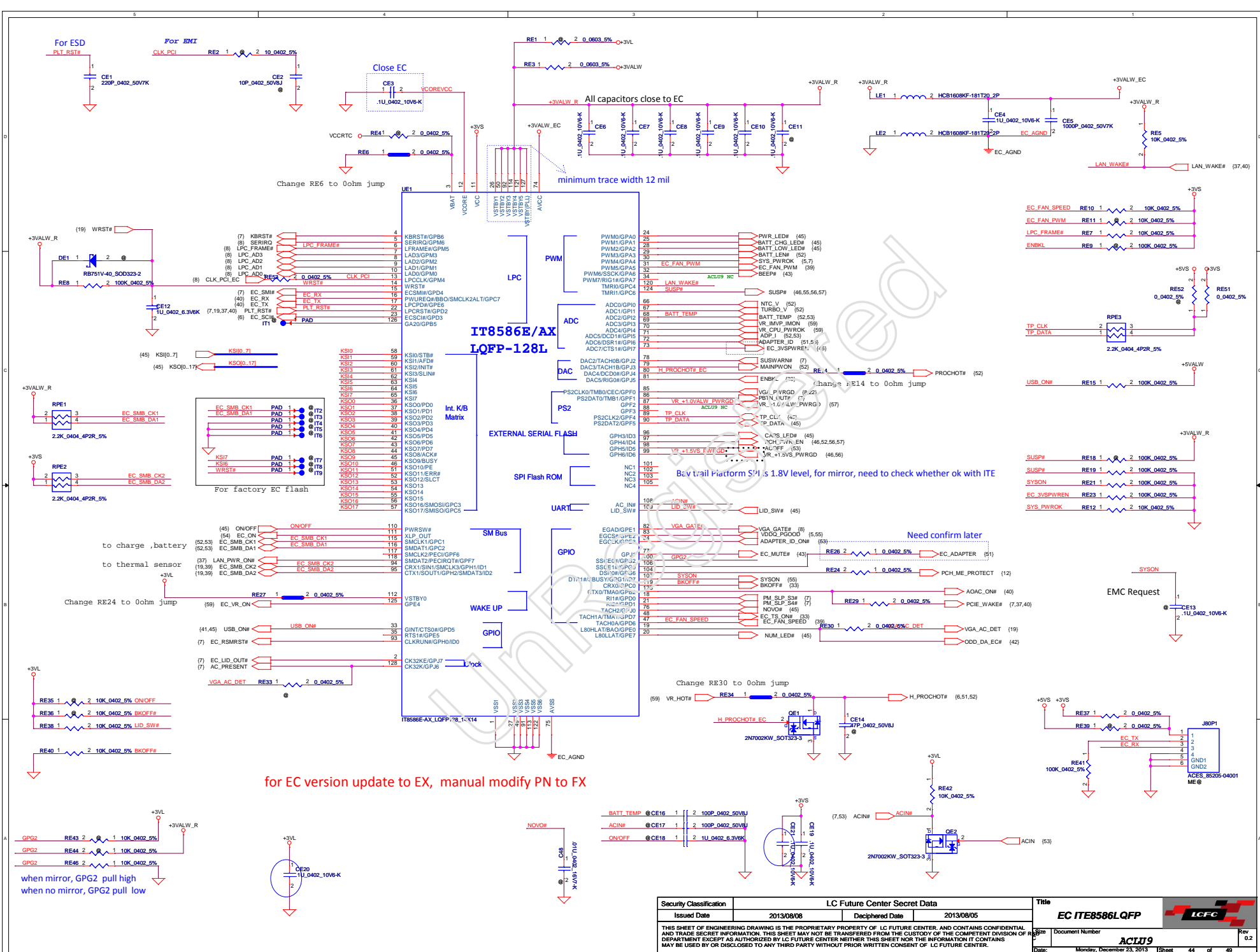
For EMC

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Issued Date	2013/08/08	Deciphered Date	2013/08/05
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Size	Document Number	Rev	0.2
Custom	ACLU9		
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Size	Document Number	Date		Rev	
Custom	ACLU9	Monday, December 23, 2013		43 of 59	



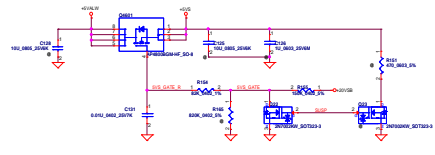
for EC version update to EX, manual modify PN to FX

Security Classification	LC Future Center Secret Data	
Issued Date	2013/08/08	Deciphered Date
		2013/08/05
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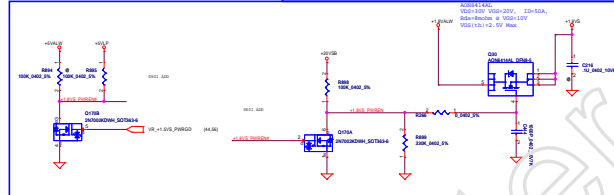
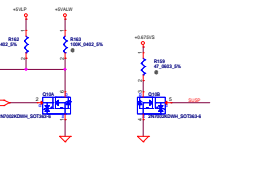
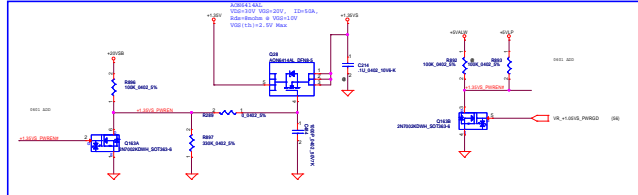
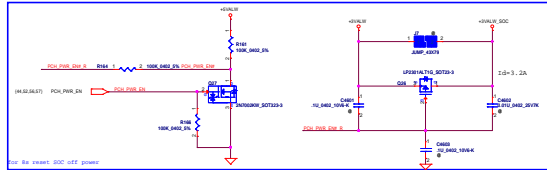
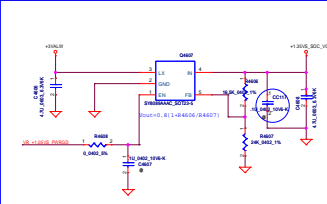
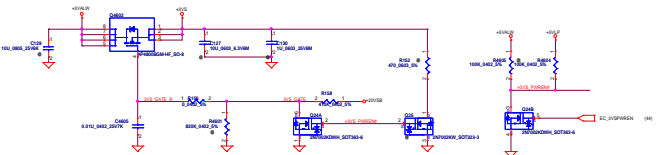
This	EC ITE8586LQFP	
Document Number	ACTI09	
Date	Monday, December 23, 2013	Sheet 44 of 49



+5VALW to +5VS AP4800BGW  
 VGS=10V, ID=9A, Rds=18m ohm  
 VGS=-25V

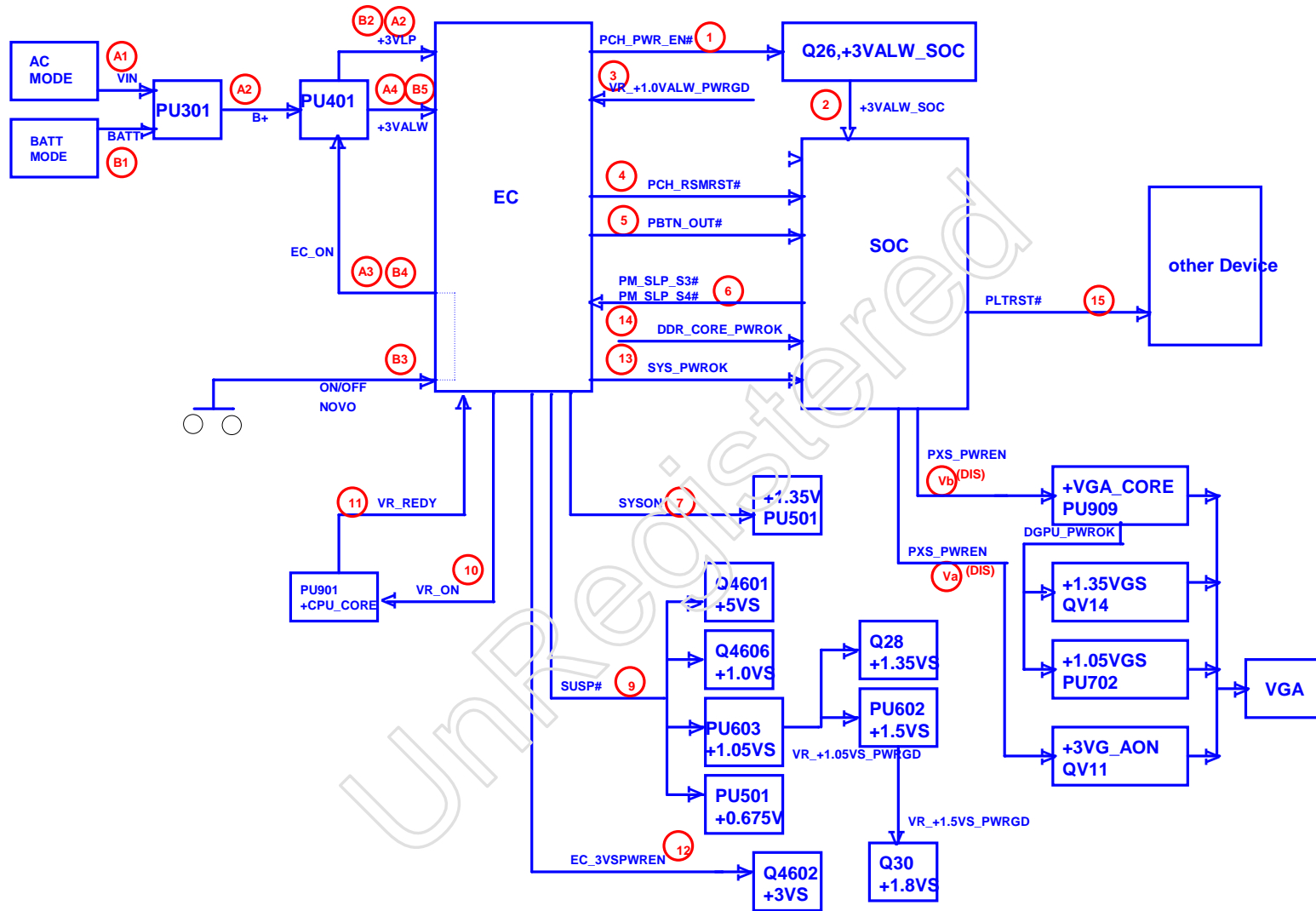


+3VALW to +3VS AP4800BGW  
 VGS=10V, ID=9A, Rds=18m ohm  
 VGS=-25V



UnRegistered


Security Classification	LC Future Center Secret Data	Rev	DC V TO VS INTERFACE
Issued Date	2/11/2003	Discarded Date	2/11/2002
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Doc. Control	ACT119	Page	11



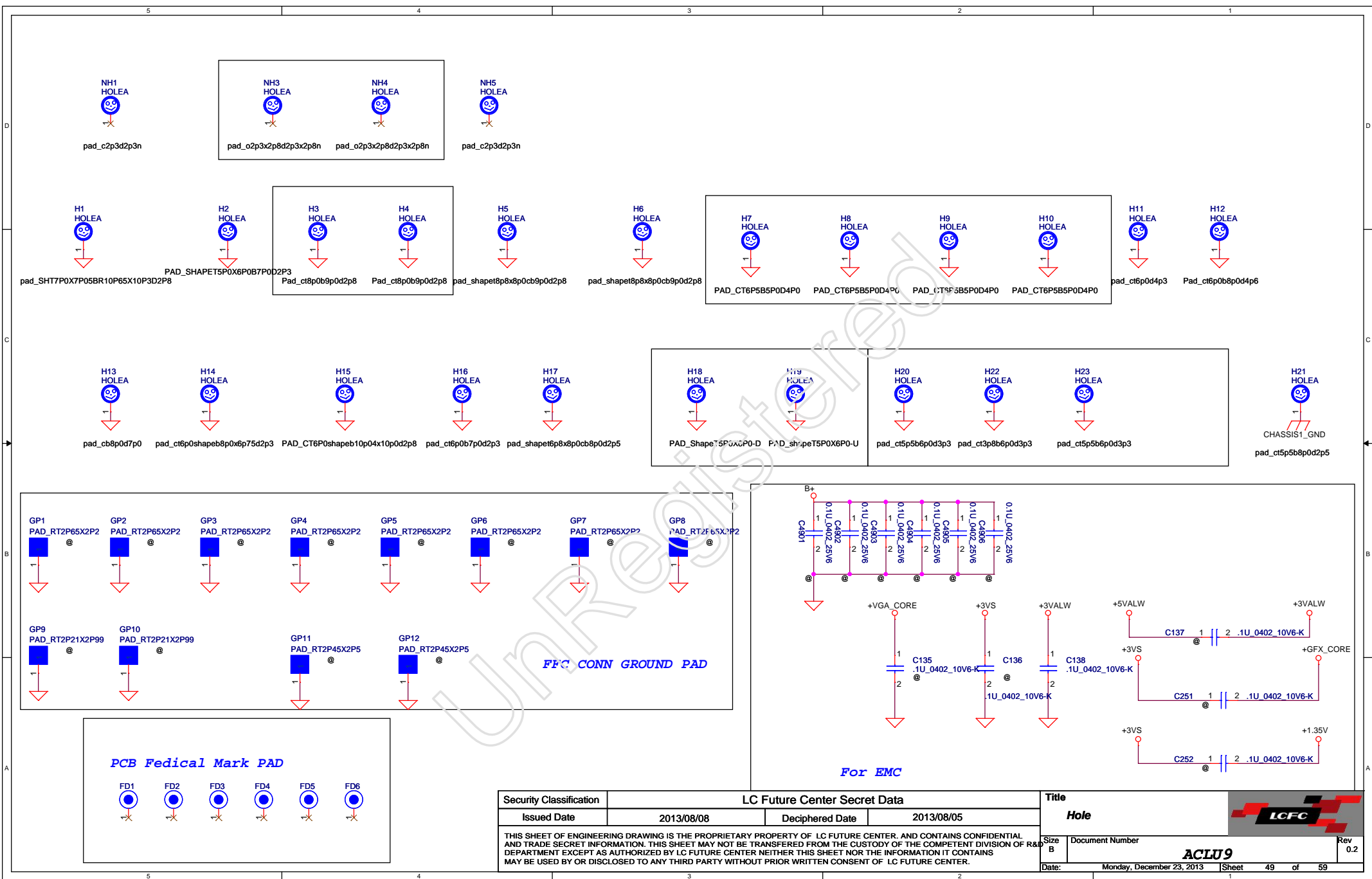
Security Classification	LC Future Center Secret Data	
Issued Date	2013/08/08	Deciphered Date
		2013/08/05
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Title	Power sequence Block	
Size	Document Number	Rev
Custom	ACLJ9	0.2
Date:	Monday, December 23, 2013	Sheet 47 of 59

UnRegistered

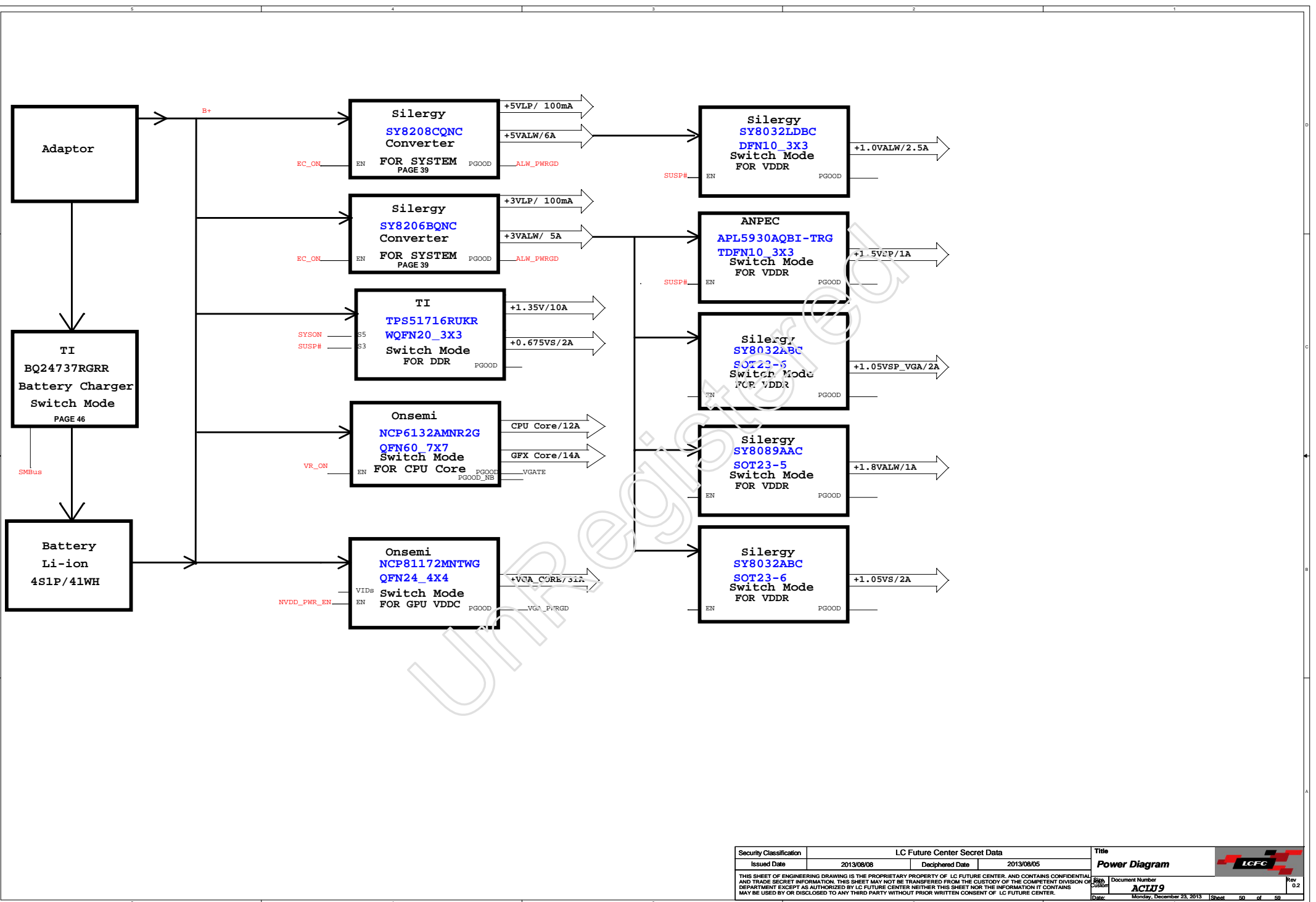
Security Classification	LC Future Center Secret Data			Title	
Issued Date	2013/08/08	Deciphered Date	2013/08/05	Virtual symbol	
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Size	Document Number	Rev			
B	ACLU9	0.2			
Date:	Monday, December 23, 2013	Sheet	48	of	59



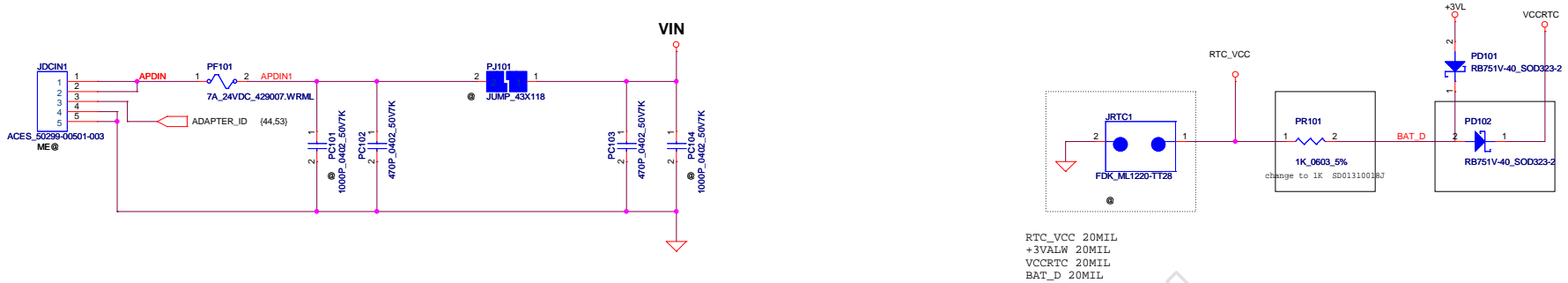


Security Classification	LC Future Center Secret Data		
Issued Date	2013/08/08	Deciphered Date	2013/08/05
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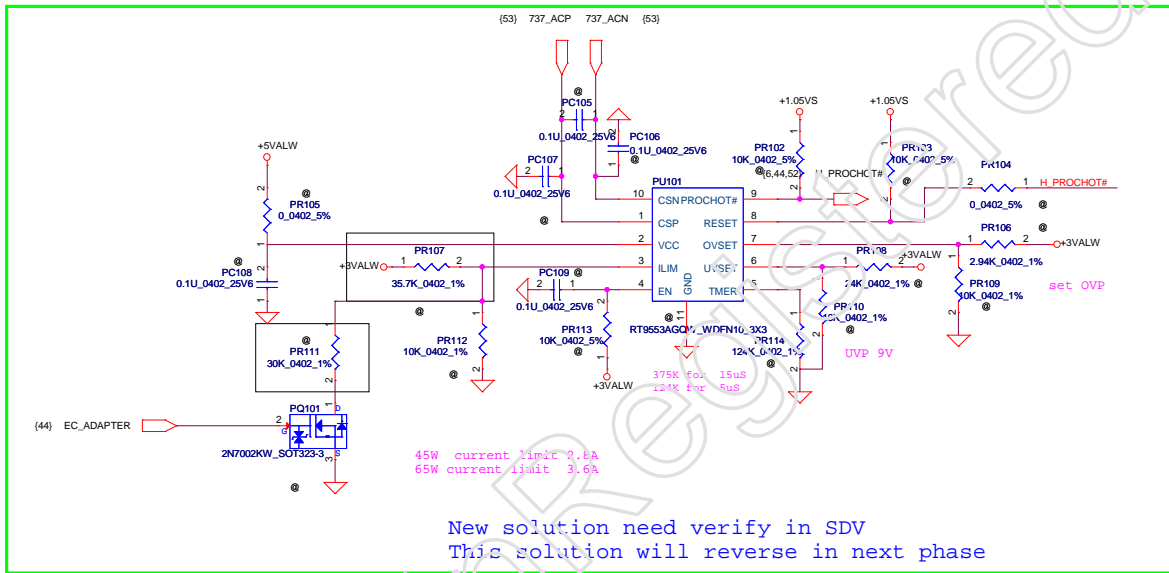
Title		
Hole		
Size	Document Number	<b>ACLU9</b>
Date	Monday, December 23, 2013	
Sheet	49	of 59
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Security Classification	LC Future Center Secret Data		Title	
Issued Date	2013/08/06	Deciphered Date	2013/08/05	
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Rev	0.2	Rev	0.2	



RTC\_VCC 20MIL  
 +3VALW 20MIL  
 VCCRTC 20MIL  
 BAT\_D 20MIL



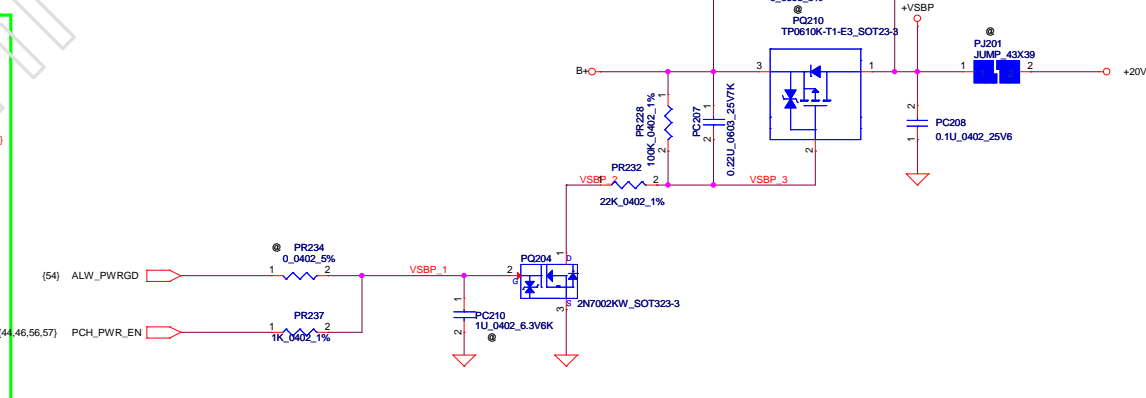
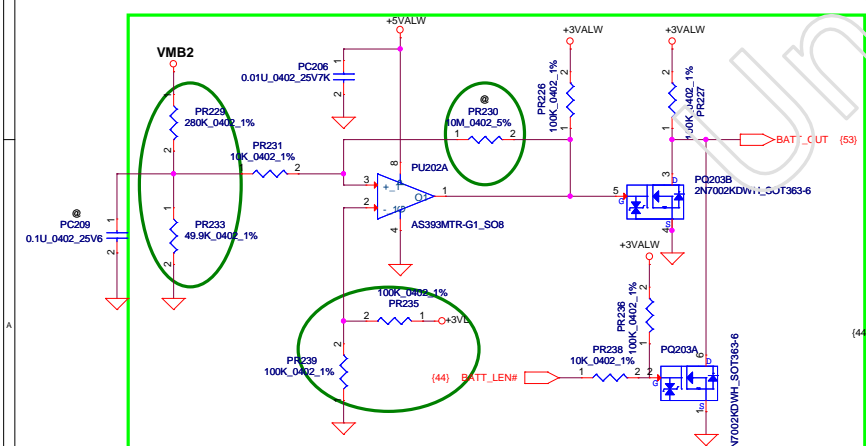
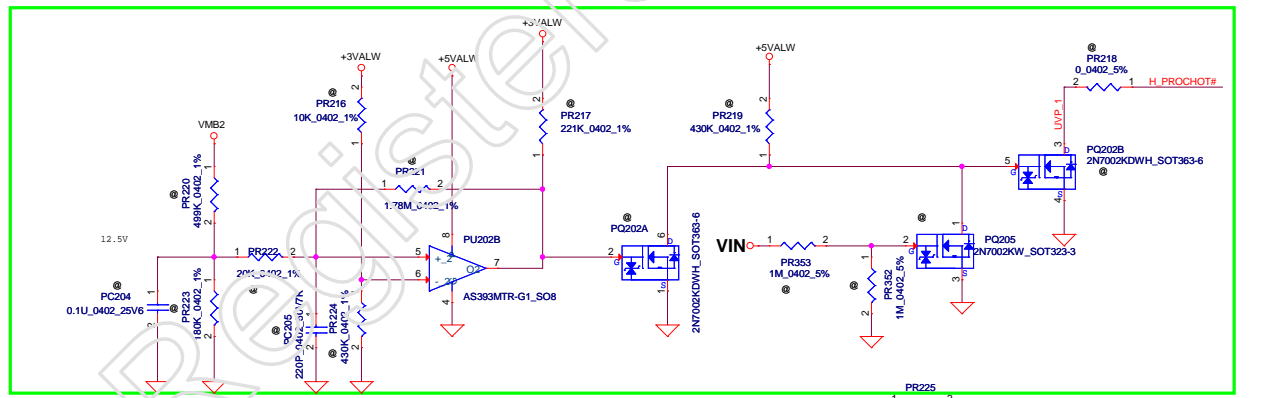
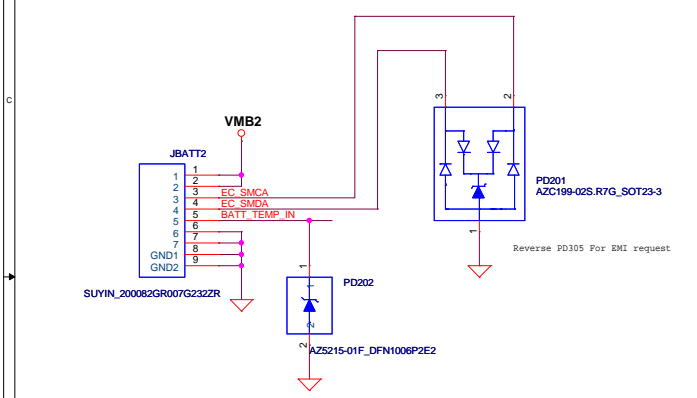
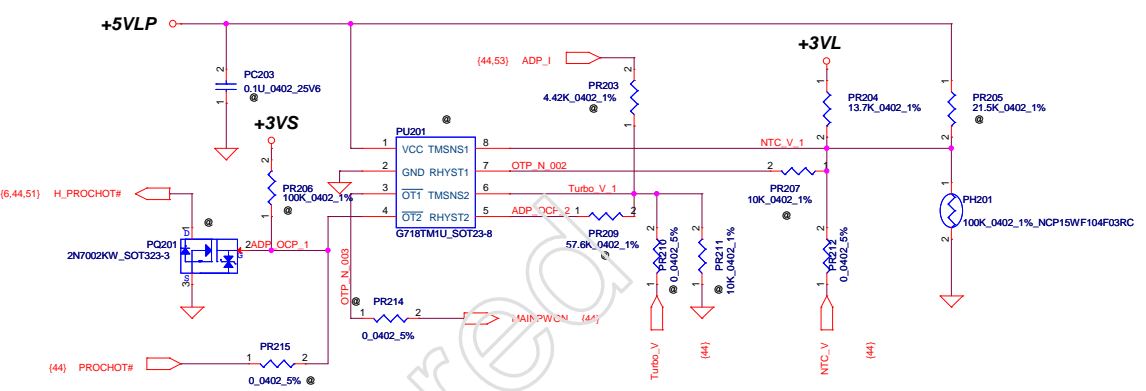
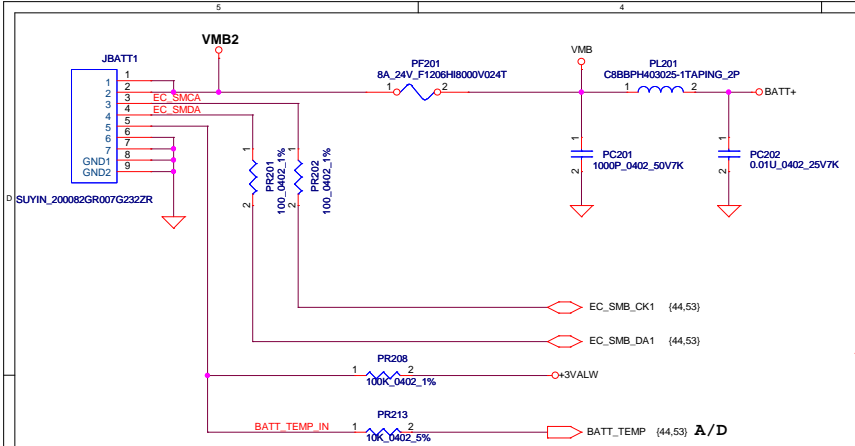
New solution need verify in SDV  
 This solution will reverse in next phase

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Issued Date	2013/08/08	Deciphered Date 2013/08/05
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Title	DCIN / RTC	
Size	Document Number	Rev
Custom	ACLJ 9	0.2
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PH201 under CPU bottom side :  
 CPU thermal protection at 92+3 degree C  
 Recovery at 56 +3 degree C

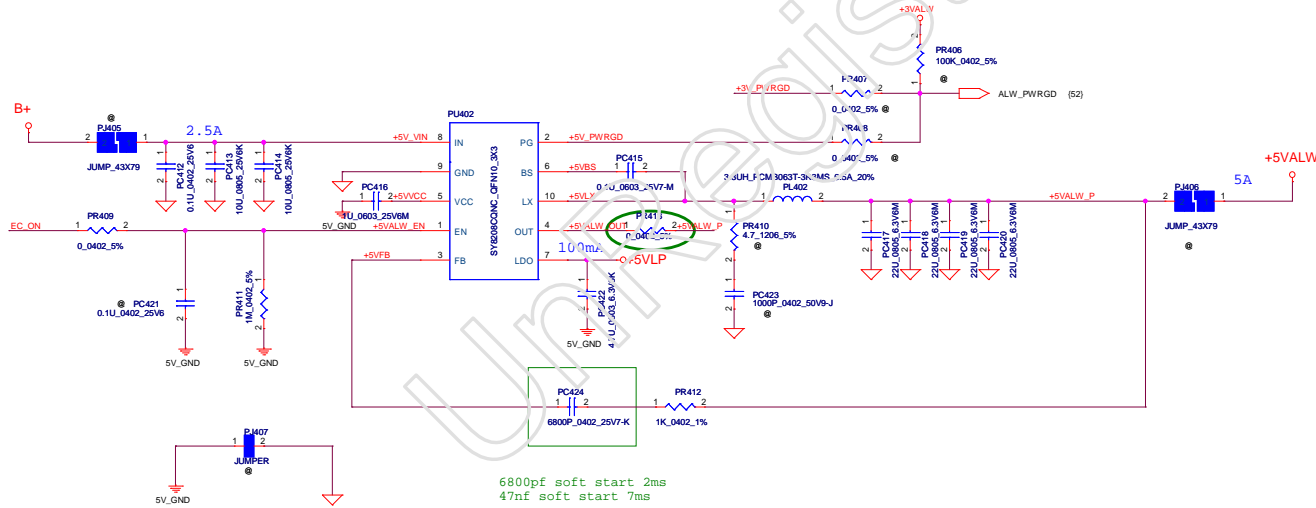
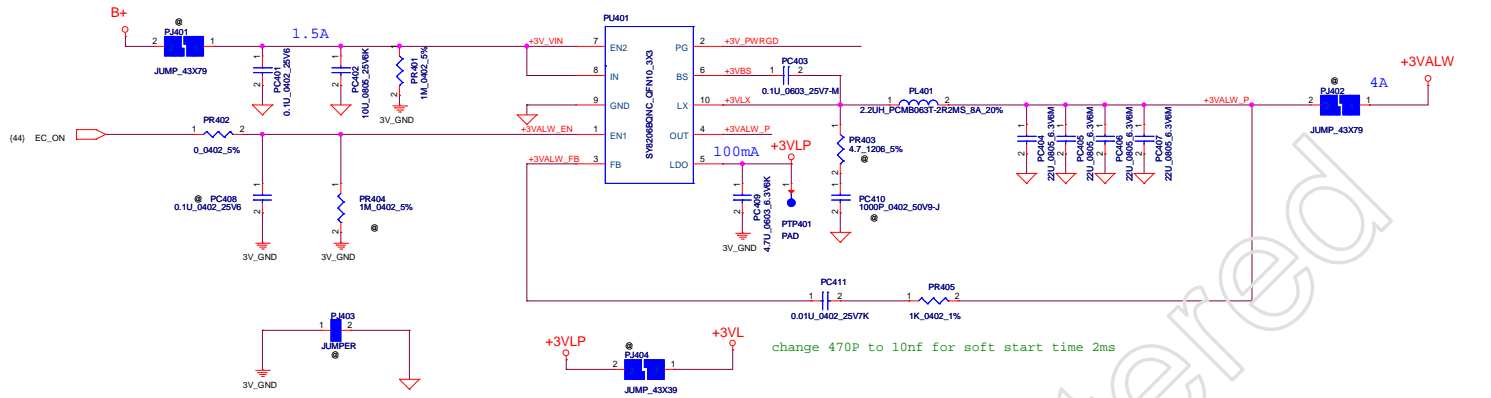
For KB930 --> Keep PU1 circuit  
 (Vth = 0.825V)  
 For KB9012 (Red square) --> Remove PU201 circuit, but keep PR206  
 PH201, PR205, PR211, PQ201, PR208, PR212




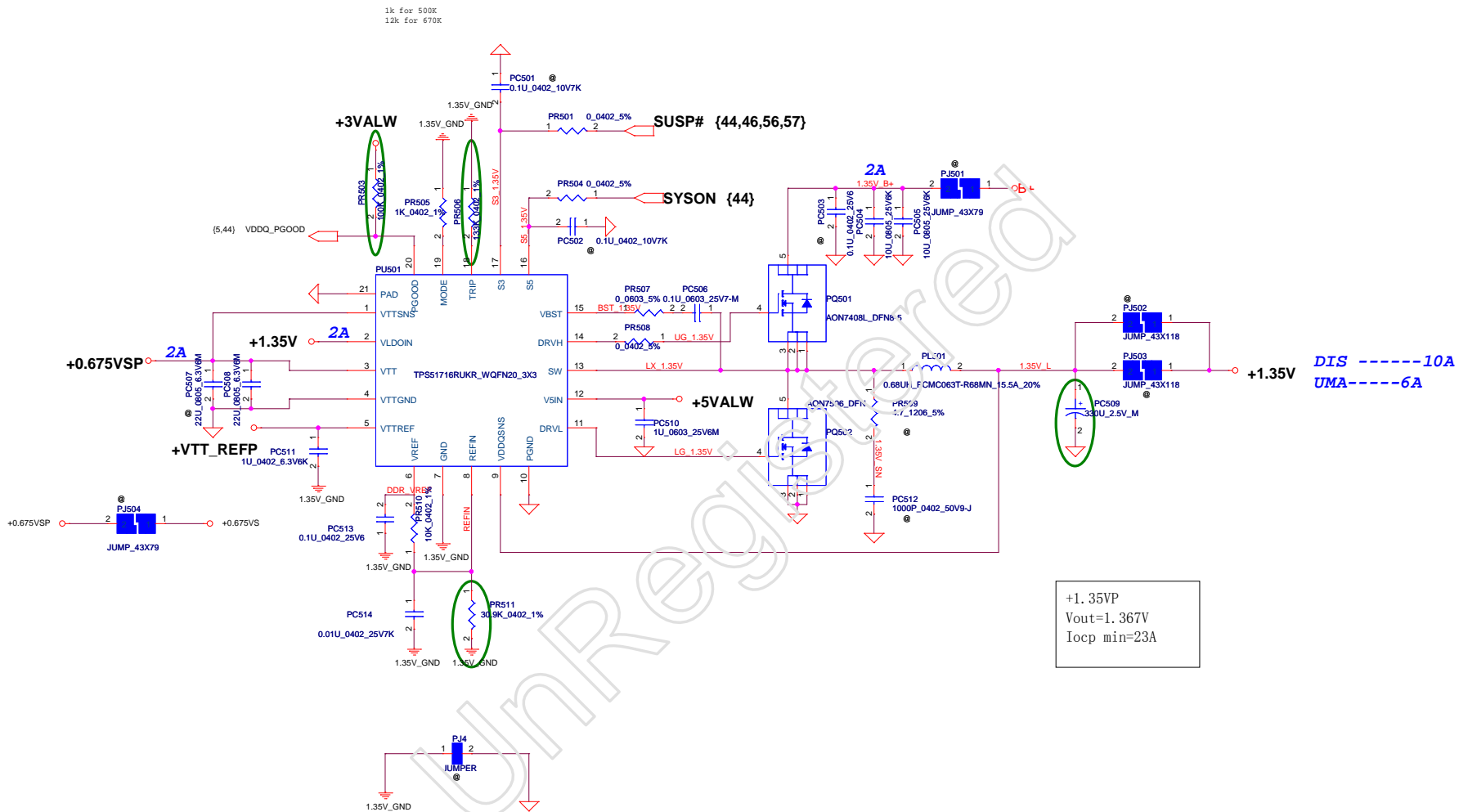
Use BATT\_TEMP to implement BATT\_OUT function,  
 New solution need verify in SDV, maybe can reverse in next phase

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Issued Date	2013/08/08	Deciphered Date	2013/08/05	
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Size	Document Number	Rev	ACLU9	
Custom		0.2		
Date:	Monday, December 23, 2013	Sheet	52	of 59

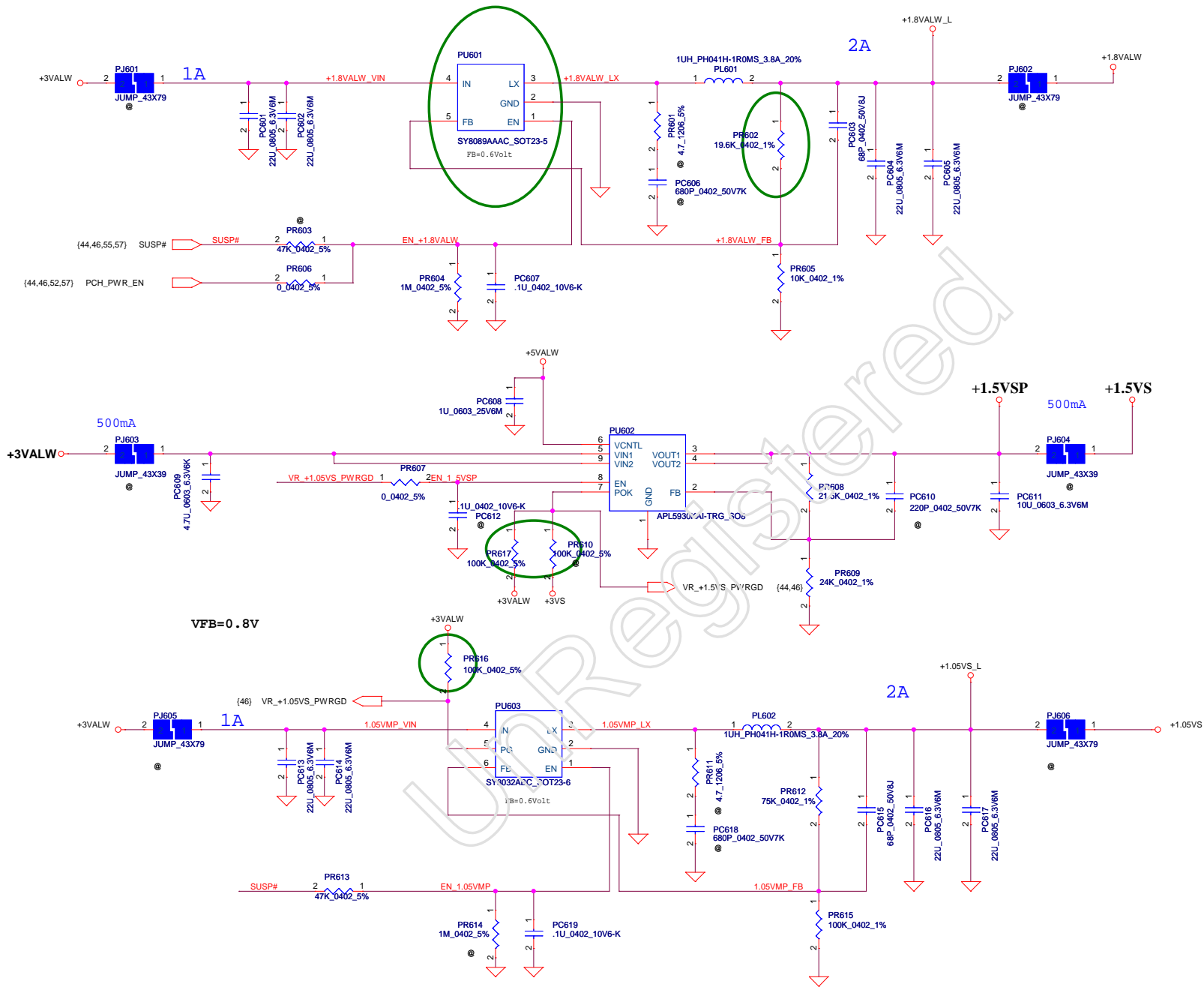





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Issued Date	2013/08/08	Deciphered Date	2013/08/05	
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Date:	Monday, December 23, 2013	Sheet	54 of 59	Rev 0.2



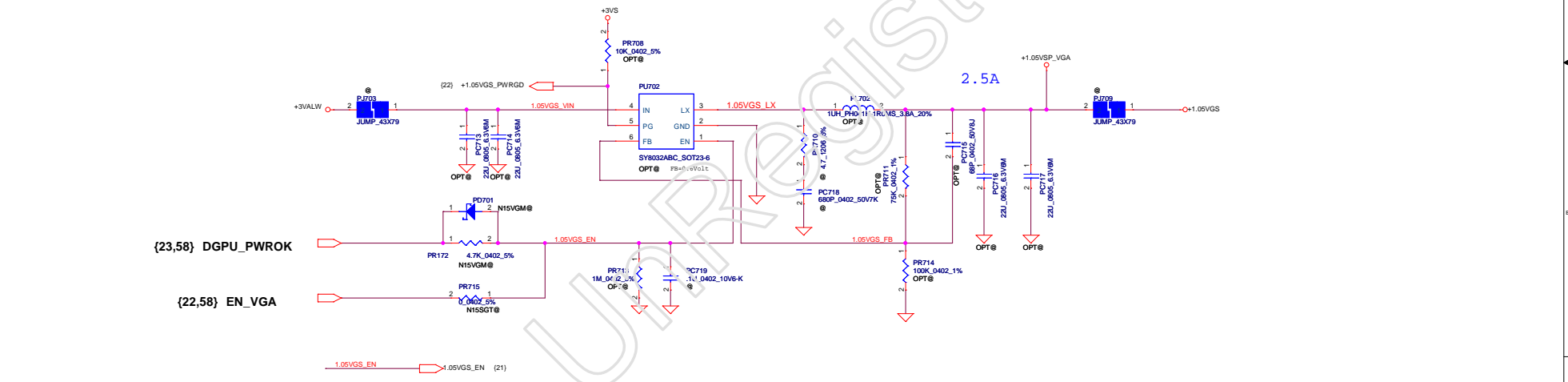
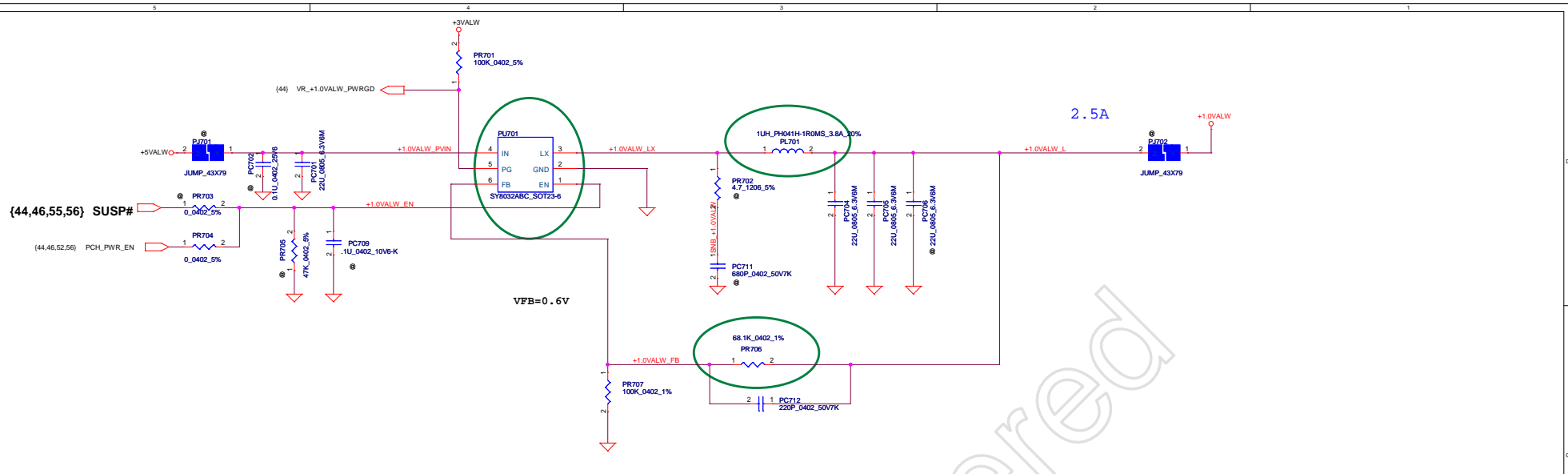
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Issued Date	2013/08/08	Deciphered Date	2013/08/05		1.35VS/+0.675VS
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			Date:	Monday, December 23, 2013	Sheet 55 of 59



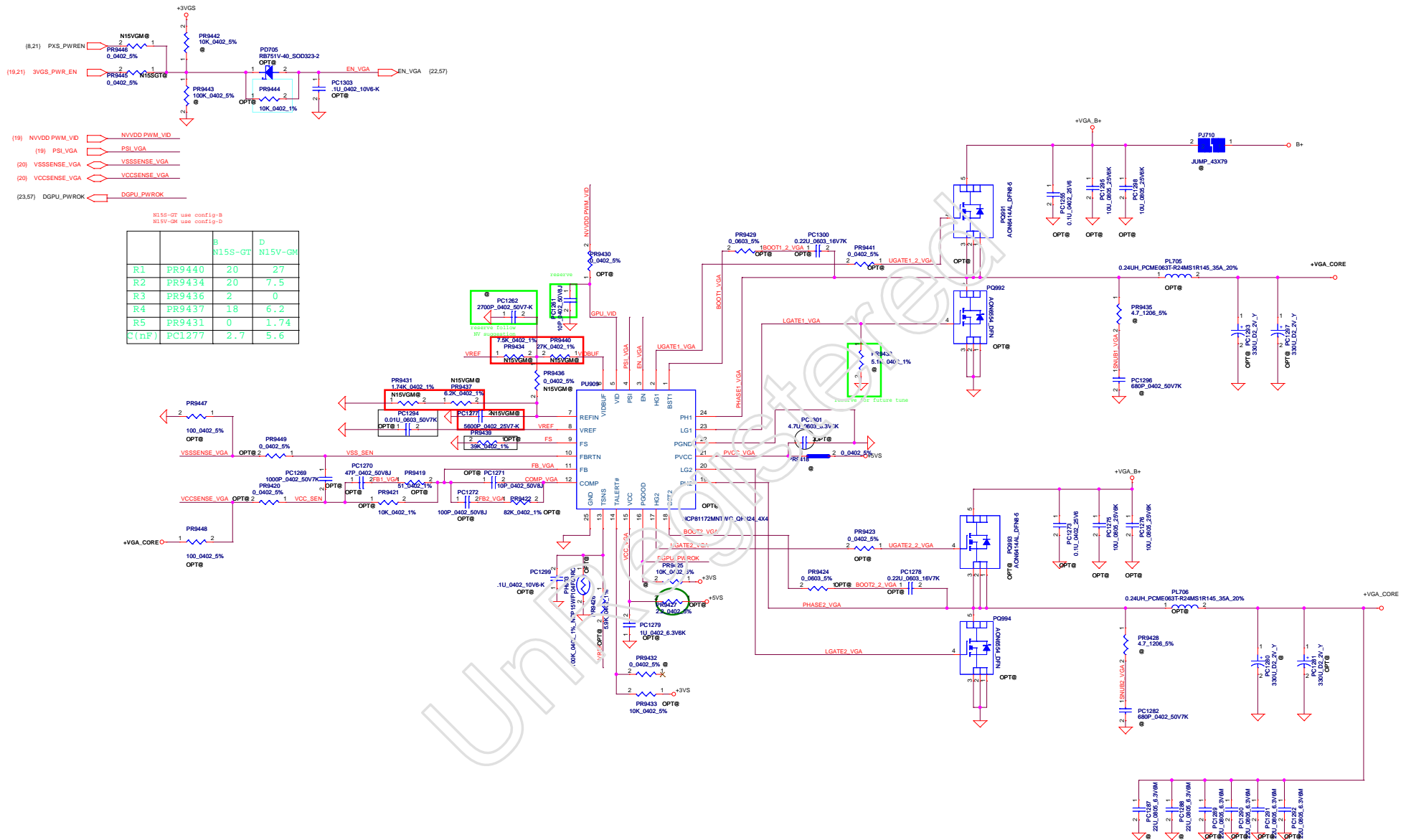
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Issued Date	2013/08/08	Deciphered Date
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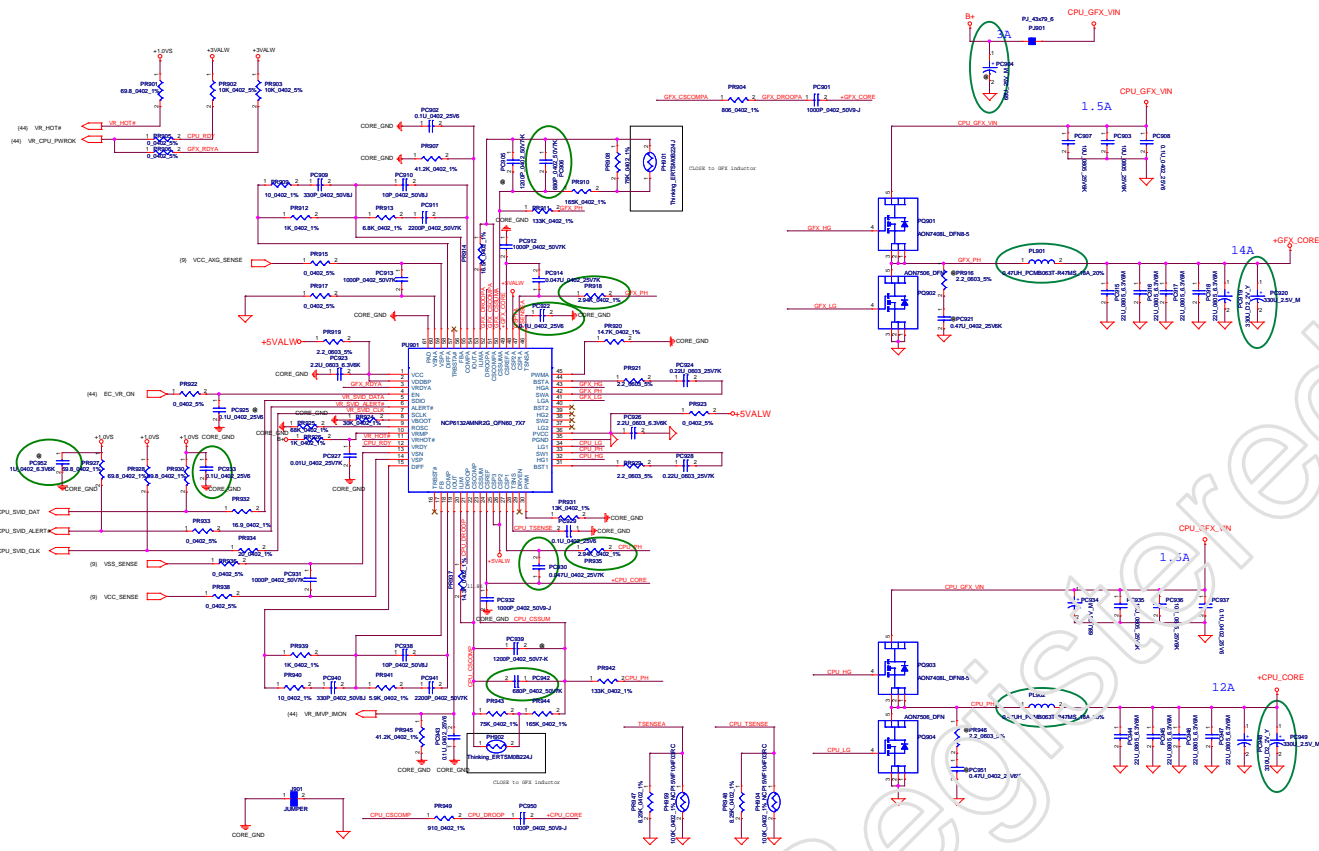
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N15S-GT Use config-B  
N15V-GM Use config-D

	B	D	
	N15S-GT	N15V-GM	
R1	PR9440	20	27
R2	PR9434	20	7.5
R3	PR9436	2	0
R4	PR9437	18	6.2
R5	PR9431	0	1.74
C(nF)	PC1277	2.7	5.6

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