

MODEL NAME : *QBR10*

PCB NO : *LA-8321P*

BOM P/N : *4619H531L01*

# Compal Confidential

## Avenger MLK

rPGA Ivy Bridge + FCBGA PCH Panther Point-M + MXM III x2

Rev: 0.3 (X02)

2011.12.08

@ : Nopop component

CONN@ : ME connector

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Title		
Cover Sheet		
Size	Document Number	Rev
	LA-8321P	0.1
Date	Tuesday, January 17, 2012	
	Sheet	1 of 85



Board ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra	100K +/- 5%			
Board ID	Rb	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.168 V	0.250 V	0.362 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

BOARD ID Table

Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	0.4
4	1.0
5	
6	
7	

USB3.0	USB PORT#	DESTINATION
	0	JUSB1
	1	JUSB2
	2	JUSB3
	3	JUSB4

USB	USB PORT#	DESTINATION
	0	JUSB1
	1	JUSB2
	2	JUSB3
	3	JUSB4
	4	Mini Card (WLAN)
	5	Mini Card (DMC)
	6	AlienFX/ELC
	7	None
	8	Bluetooth
	9	USB / eSATA combo
	10	None
	11	EXPRESS CARD
	12	CAMERA
	13	VPK

POWER STATES

State	Signal	SLP S3#	SLP S4#	SLP S5#	S4 STATE#	SLP M#	ALWAYS PLANE	SUS PLANE	RUN PLANE	CLOCKS
S0 (Full ON) / M0		HIGH	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S3 (Suspend to RAM) / M-OFF		LOW	HIGH		HIGH	LOW	ON	ON	OFF	OFF
S4 (Suspend to DISK) / M-OFF		LOW	LOW	HIGH	LOW	LOW	ON	OFF	OFF	OFF
S5 (SOFT OFF) / M-OFF		LOW	LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

PM TABLE

State	power plane	+5VALW +3VALW +3VLP +3V_PCH	+1.5V	+5VS +3VS +1.8VS +1.5VS +0.75VS +3VMXM +5VMXM +VCCP +VCCSA +VCC_CORE +1.5V_CPU_VDDQ
S0		ON	ON	ON
S3		ON	ON	OFF
S5 S4/AC		ON	OFF	OFF
S5 S4/AC don't exist		OFF	OFF	OFF

CLK	DIFFERENTIAL	DESTINATION	FLEX CLOCKS	DESTINATION
	CLKOUT_PCIE0	None	CLKOUTFLEX0	None
	CLKOUT_PCIE1	10/100/1G LAN	CLKOUTFLEX1	None
	CLKOUT_PCIE2	MINI CARD-2 DMC	CLKOUTFLEX2	None
	CLKOUT_PCIE3	MINI CARD-1 WLAN	CLKOUTFLEX3	None
	CLKOUT_PCIE4	CARD READER		
	CLKOUT_PCIE5	EXPRESS CARD		
	CLKOUT_PCIE6	None		
	CLKOUT_PCIE7	None		
	CLKOUT_PEG_A	MXM I		
	CLKOUT_PEG_B	MXM II		

Symbol Note :



SATA	DESTINATION
SATA0	HDD1
SATA1	HDD2
SATA2	ODD
SATA3	HDD3
SATA4	E-SATA
SATA5	mSATA

PCI EXPRESS	DESTINATION
Lane 1	10/100/1G LAN
Lane 2	MINI CARD-2 DMC
Lane 3	MINI CARD-1 WLAN
Lane 4	CARD READER
Lane 5	EXPRESS CARD
Lane 6	None
Lane 7	None
Lane 8	None

CLKOUT	DESTINATION
PCI0	PCH_LOOPBACK
PCI1	EC
PCI2	DEBUG
PCI3	None
PCI4	None

Power plane	Voltage
+3VALW +3VLP +3V_PCH +3VS +3VMXM	3.3V

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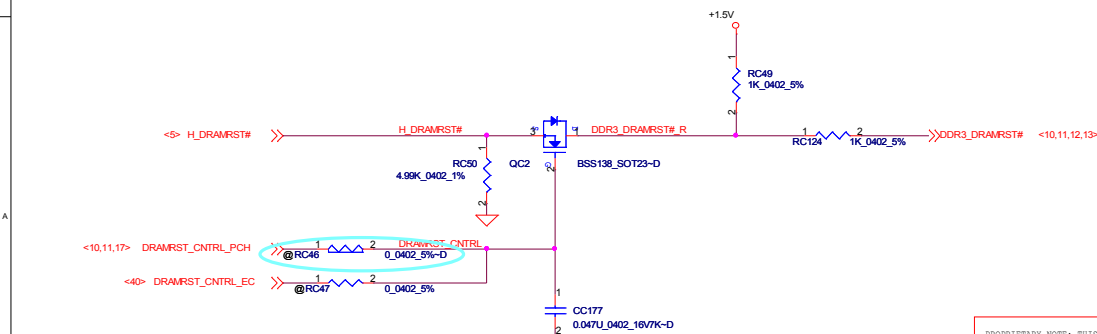
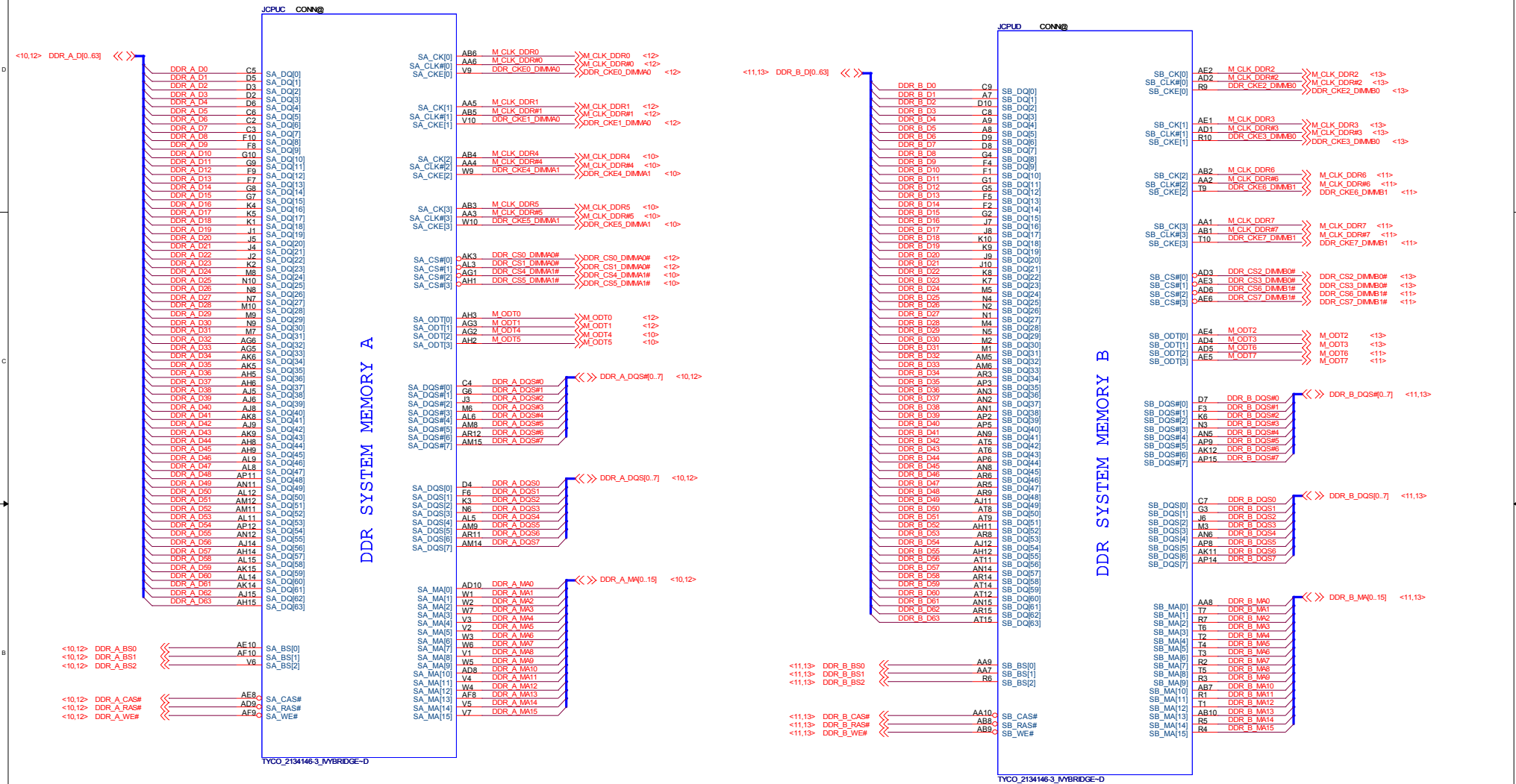
Index and Config.



File	Document Number	Rev
Size	LA-8321P	0.1
Date	Tuesday, January 17, 2012	Sheet 3 of 65





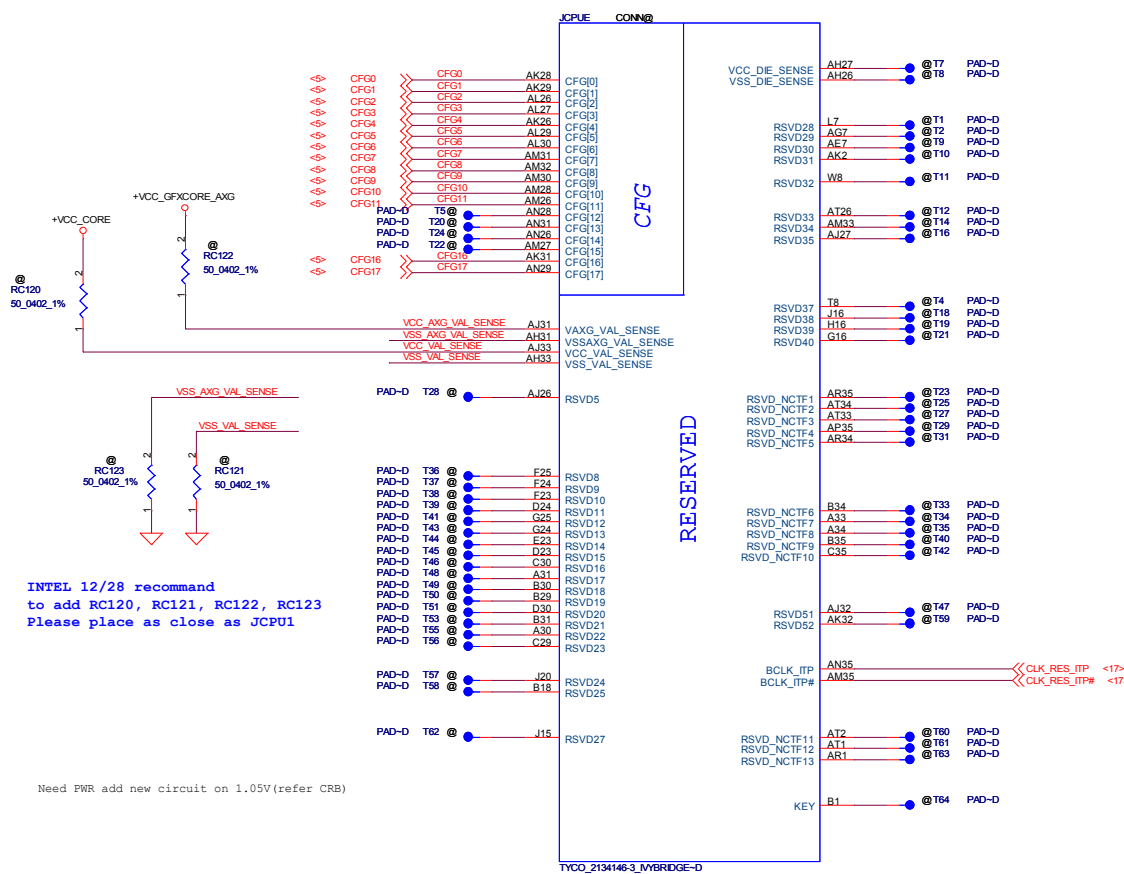


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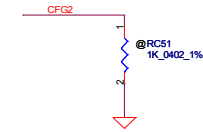
File	PROCESSOR(3/6) DDRIII	Rev	0.1
Size	Document Number	LA-8321P	
Date	Tuesday, January 17, 2012	Sheet	6 of 65



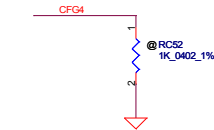
INTEL 12/28 recommend  
to add RC120, RC121, RC122, RC123  
Please place as close as JCPU1

Need PWR add new circuit on 1.05V(refer CRB)

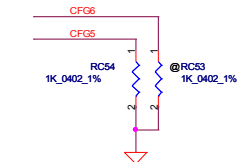
## CFG Straps for Processor



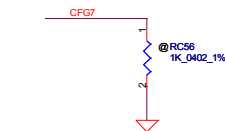
PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1: (Default) Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed



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



PCIe Port Bifurcation Straps	
CFG[6:5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled



PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

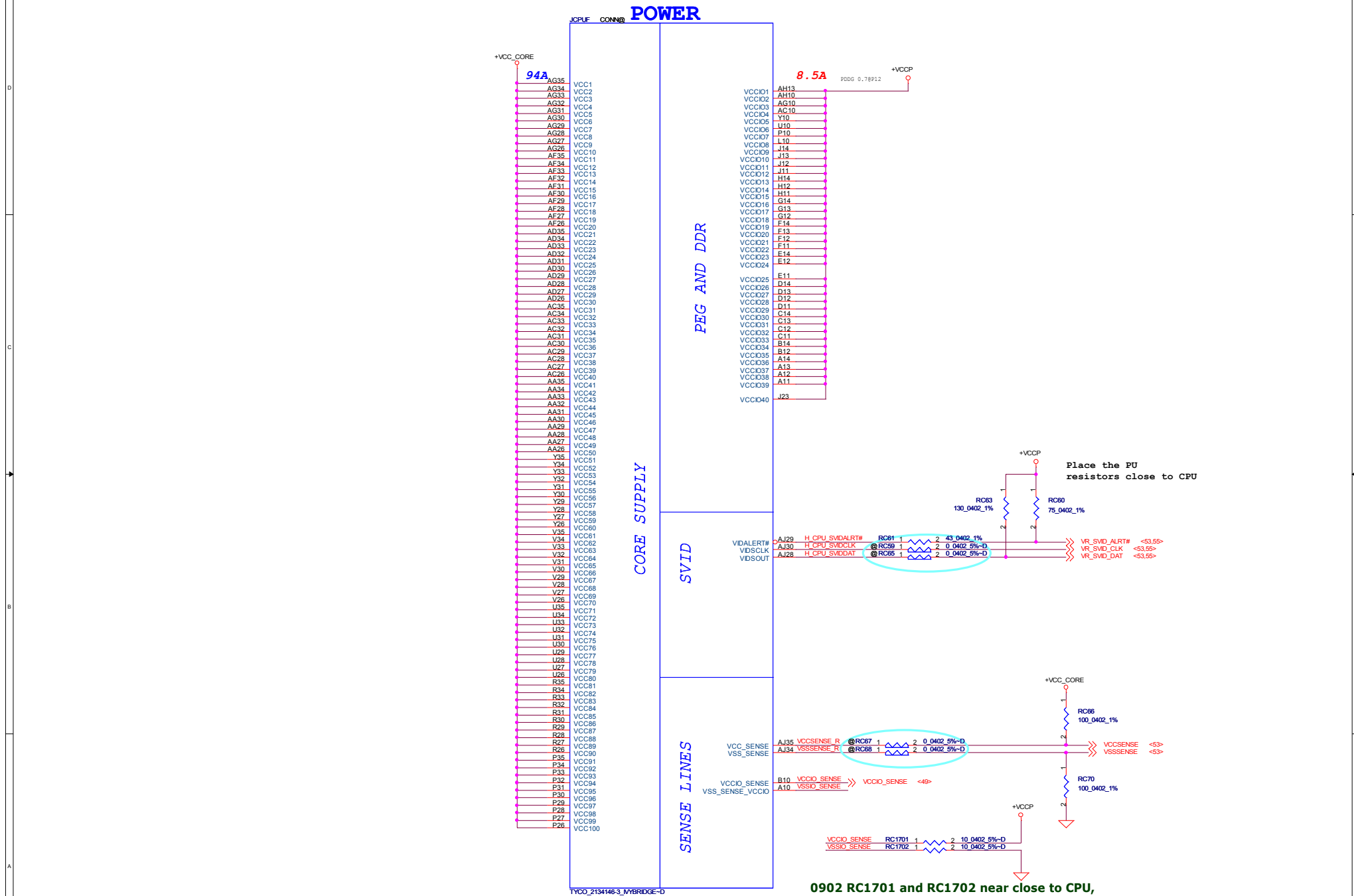
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File		PROCESSOR(4/6) RSVD,CFG	
Size	Document Number	LA-8321P	
Date	Tuesday, January 17, 2012	Sheet	7 of 65
Rev	0.1		

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File			
PROCESSOR(5/6) PWR,BYPASS			
Size	Document Number		Rev
	LA-8321P		0.1
Date	Tuesday, January 17, 2012	Sheet	8 of 65



The figure contains two circuit diagrams. The top diagram, labeled 320-SX-VT-VT, shows a series of capacitors C06, C05, C04, and C03 connected in series between a 1.5V source and ground. The bottom diagram, labeled 320-SY-VT-VT, shows a similar series connection of capacitors C07, C06, C05, C04, C03, and C02. Both diagrams include a 330kΩ resistor connected to the 1.5V source.

The circuit diagram shows a voltage source of +0.75V connected to three parallel branches. Each branch contains a capacitor labeled C220, C218, and C217 respectively. All capacitors have the same specifications: 1U 0A02 6.3VK-D.



CH A1 (H9.2) (Rev)

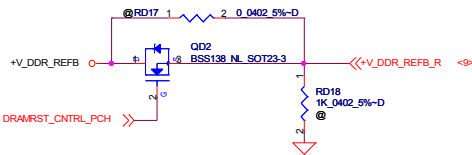
CH B1 (H5.2) (Rev)

CH B0 (H5.2) (Std)

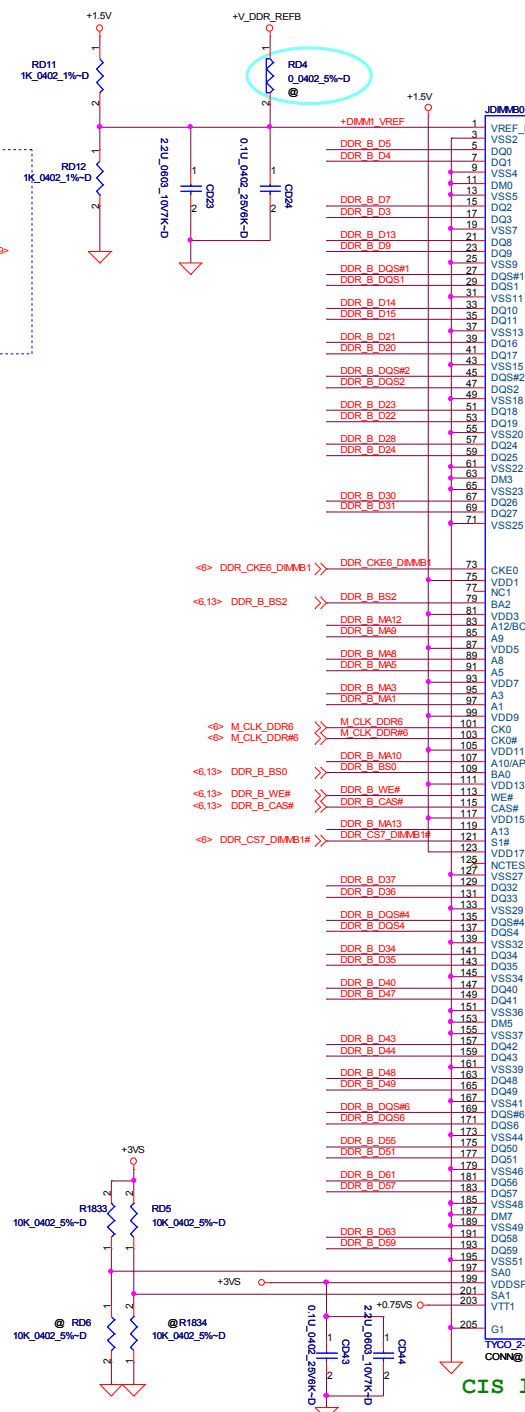
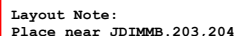
CH A0 (H9.2) (Std)

DIMM A1

Title			
DDRIII DIMMA0			
Size	Document Number		Rev
	LA-8321P		0.1
Date:	Tuesday, January 17, 2012	Sheet	10 of 65

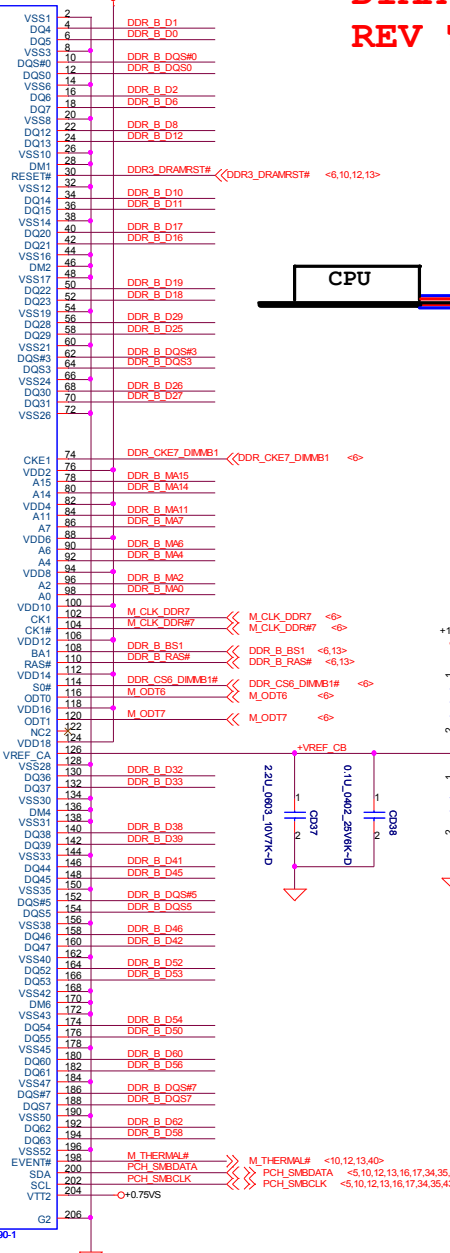
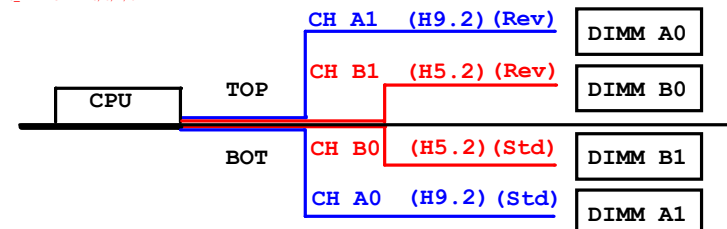


Layout Note:  
Place near JDIMMB



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CH A1	(H9.2) (Rev)
CH B1	(H5.2) (Rev)
CH B0	(H5.2) (Std)
CH A0	(H9.2) (Std)



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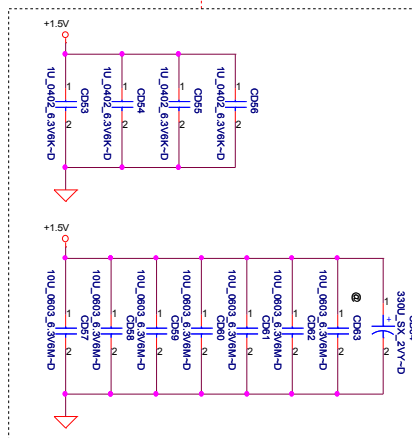
### DDRIII DIMMB0

Document Number  
**LA-8321P**

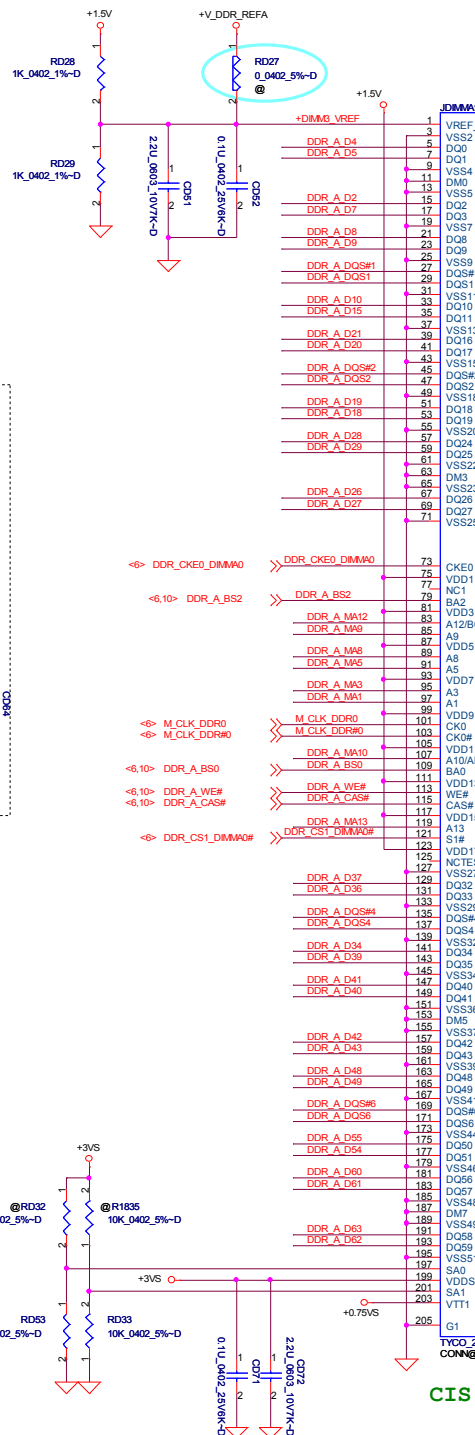
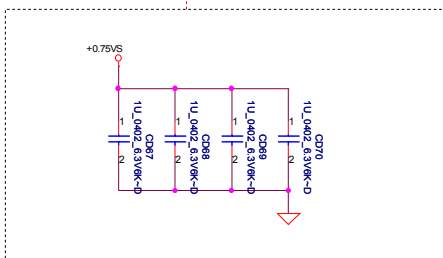
Date: Tuesday, January 17, 2012 Sheet 11 of 68

<6,10> DDR\_A\_DQS# [0..7] <<>  
<6,10> DDR\_A\_DQS [0..7] <<>  
<6,10> DDR\_A\_D [0..63] <<>  
<6,10> DDR\_A\_M [0..15] <<>

Layout Note:  
Place near JDIMMC

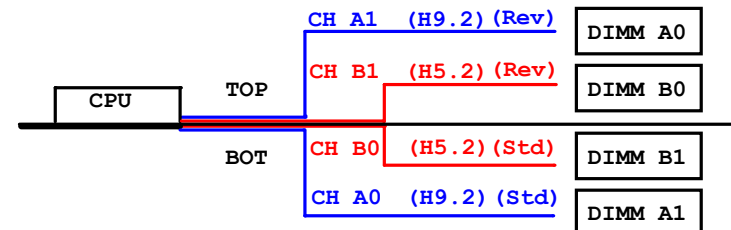


Layout Note:  
Place near JDIMMC.203,204



CIS Link OK

## DIMM A1 STD TYPE (H9.2)



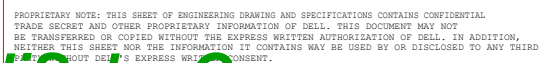
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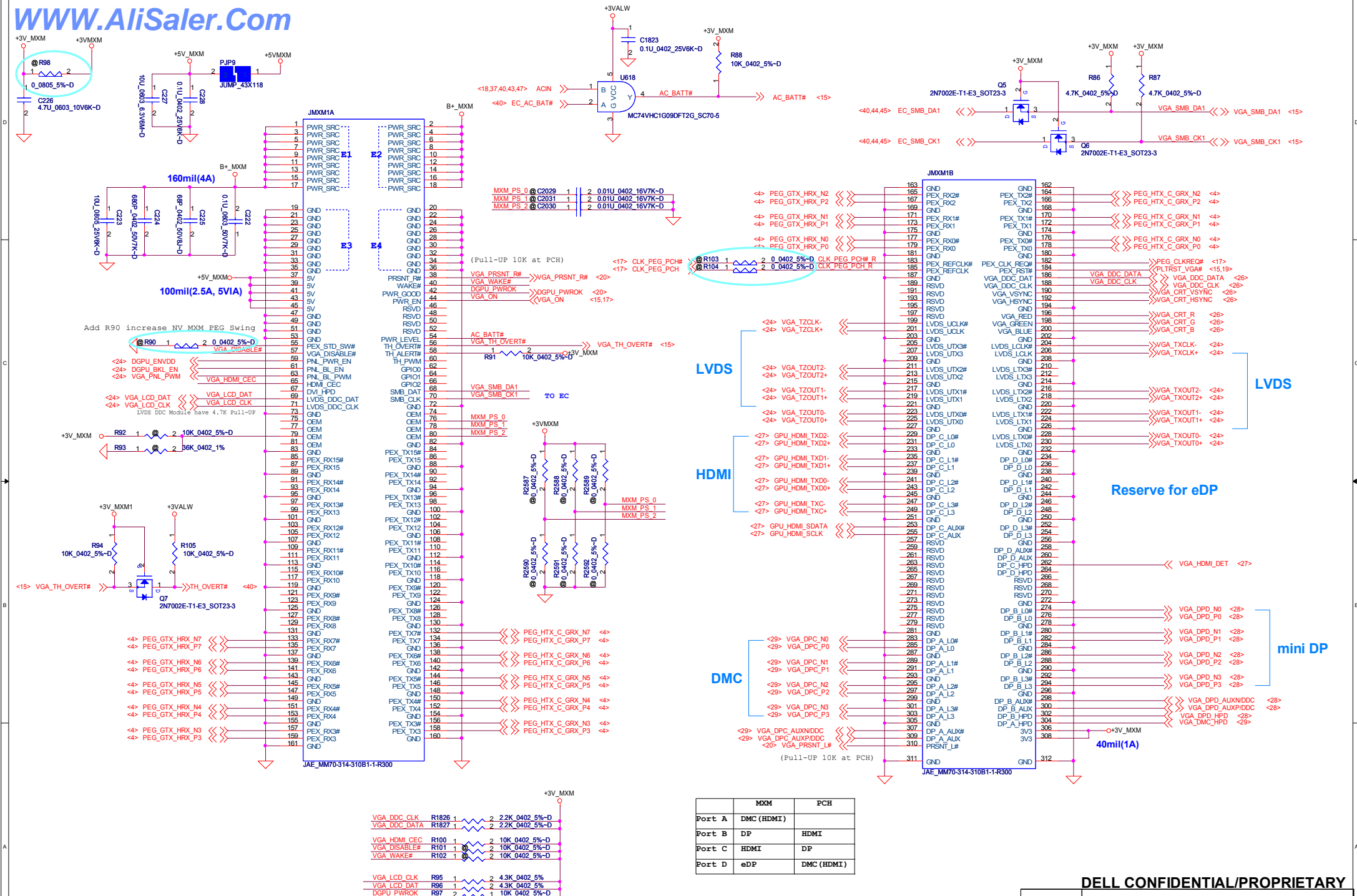
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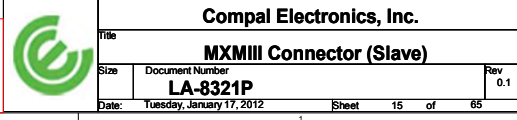
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Size	Document Number	Rev	
	LA-8321P	0.1	
Date	Tuesday, January 17, 2012	Sheet	12 of 65

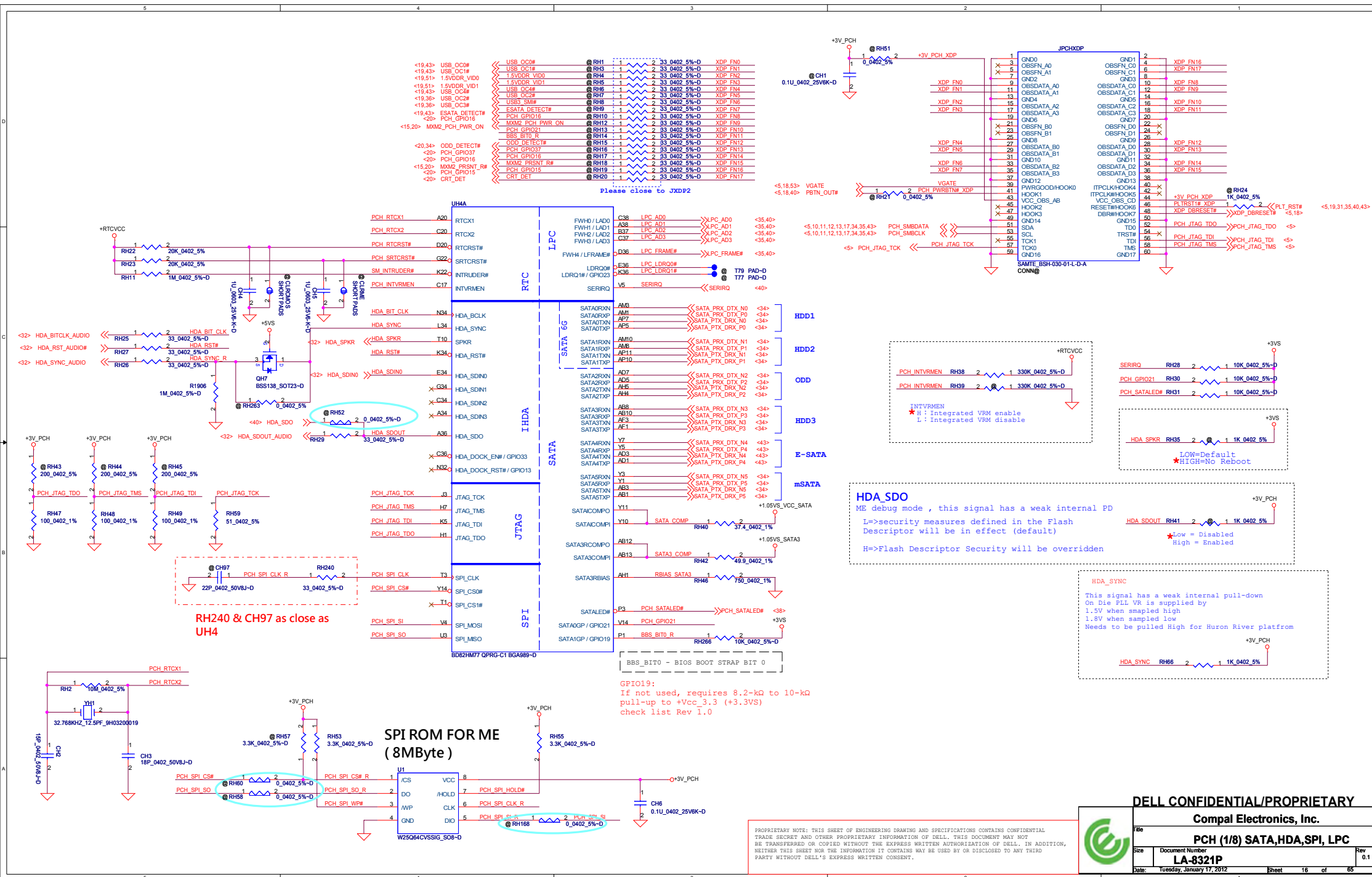
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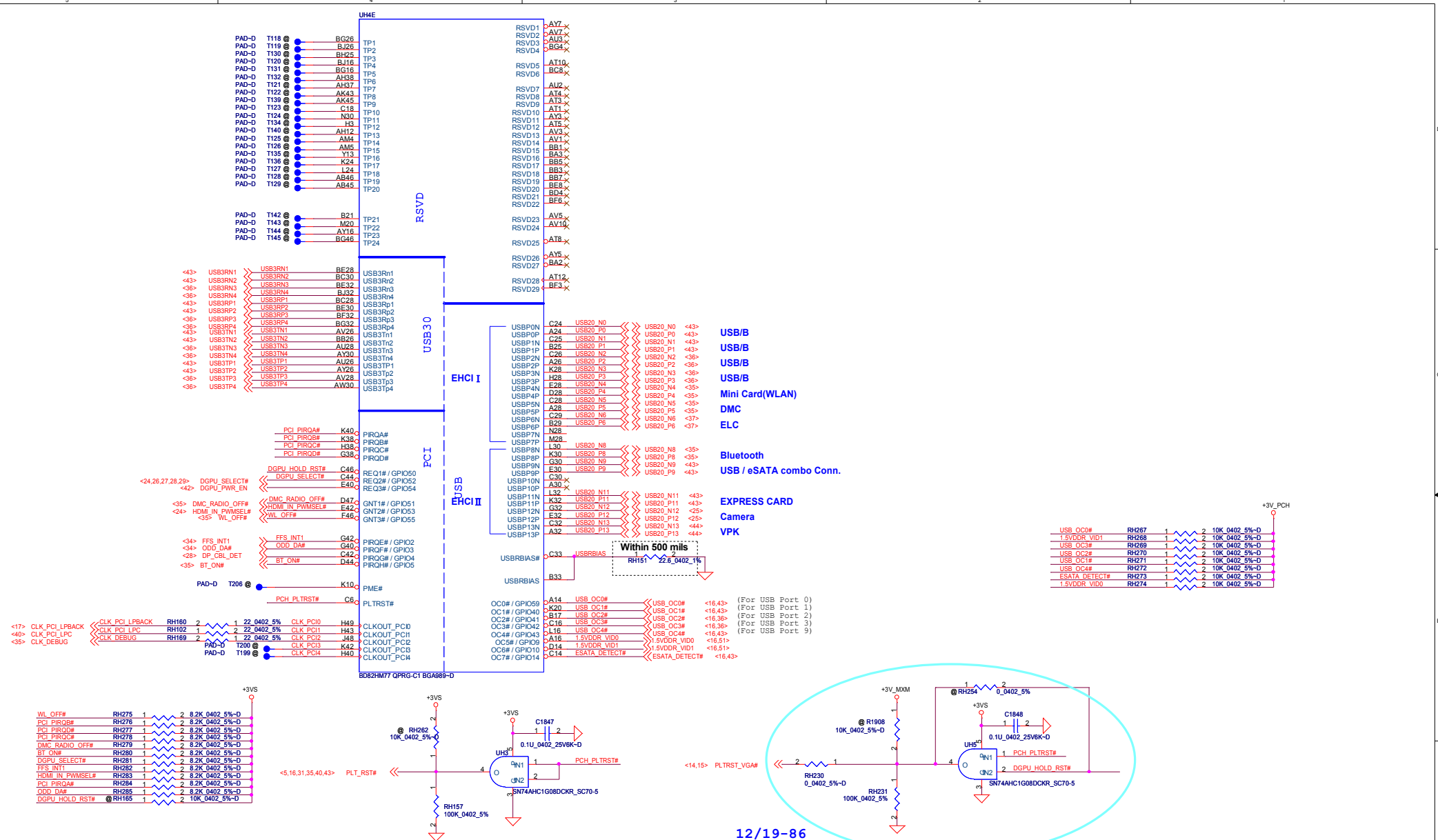
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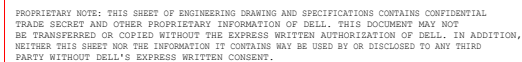
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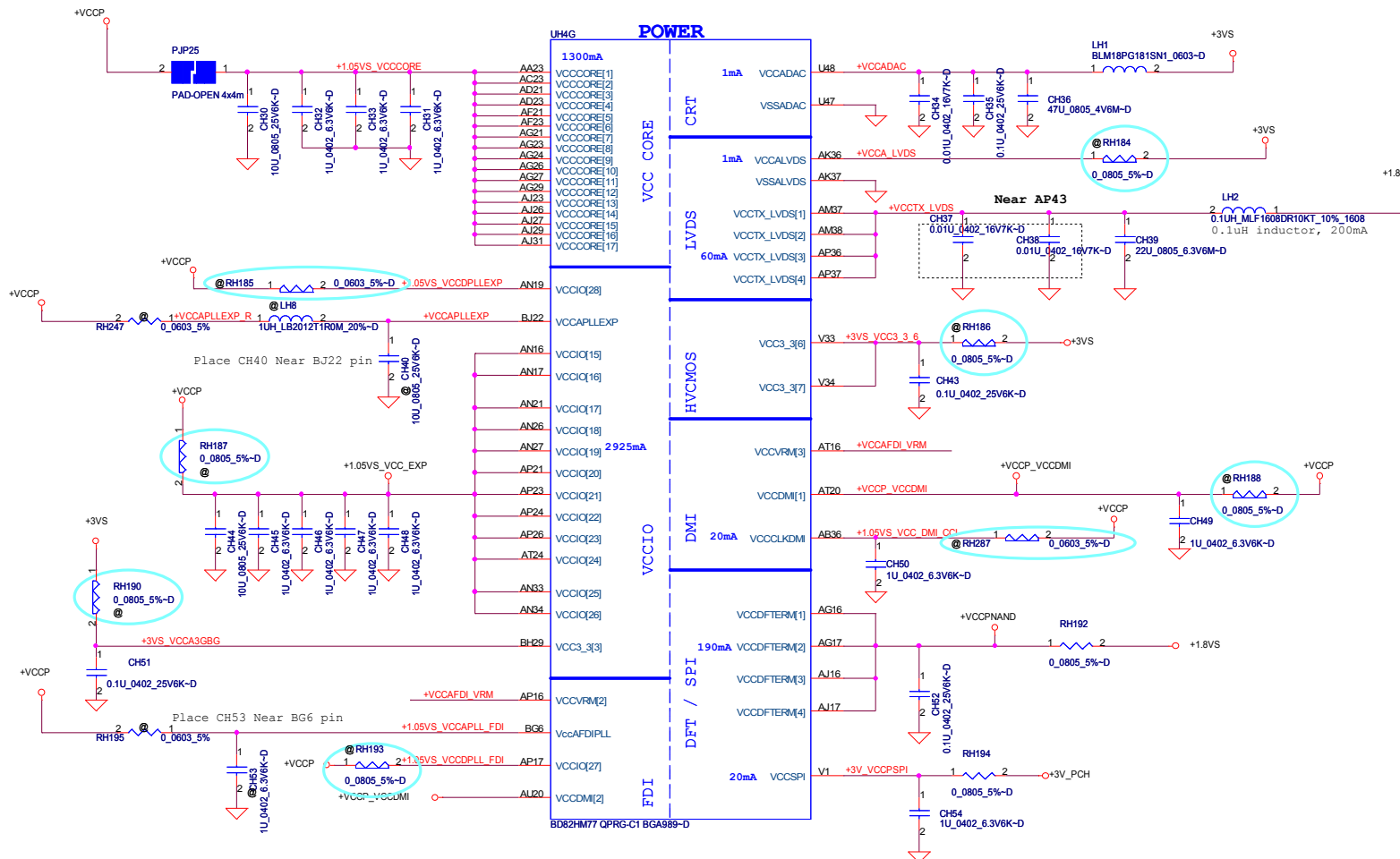
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PCH (4/8) PCI, USB, NVRAM

File  
Size  
Document Number  
LA-8321P  
Date: Tuesday, January 17, 2012 Sheet 19 of 85

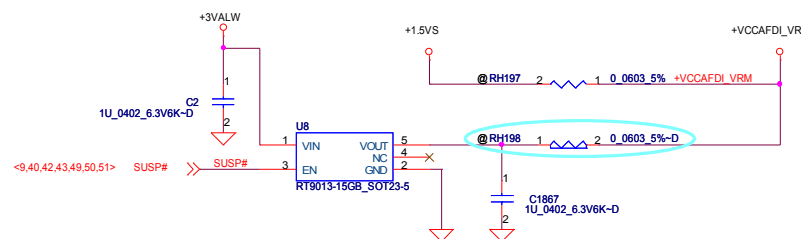
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PCH Power Rail Table		
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_Sus	5	0.001
Vcc3_3	3.3	0.266
VccADAC	3.3	0.001
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.05	0.042
VccIO	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.02
VccDSW	3.3	0.003
VccpNAND	1.8	0.19
VccRTC	3.3	6 uA
VccSus3_3	3.3	0.119
VccSusHDA	3.3 / 1.5	0.01
VccVRM	1.8 / 1.5	0.16
VccCLKDMI	1.05	0.02
VccSSC	1.05	0.095
VccDIFFCLKN	1.05	0.055
VccALVDS	3.3	0.001
VccTX_LVDS	1.8	0.06

VCCVRM = 160mA detal waiting for newest spec

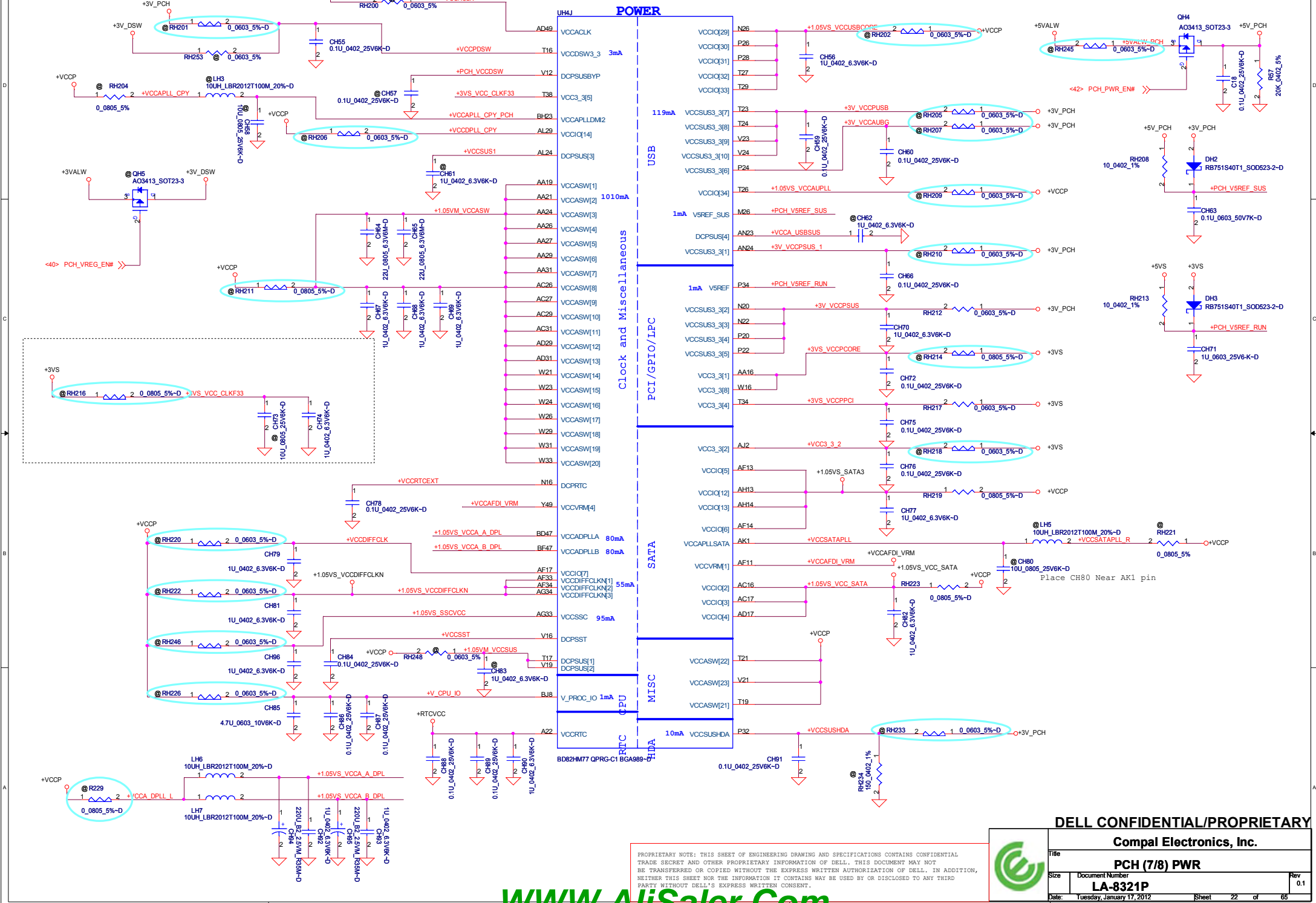


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Title	PCH (6/8) PWR	
Size	Document Number	Rev
	LA-8321P	0.1
Date:	Tuesday, January 17, 2012	Sheet 21 of 65

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Pin	Signal	Pin	Signal	Pin	Signal
1	VSS[0]	101	AK38	201	VSS[259]
2	VSS[1]	102	AK4	202	VSS[260]
3	VSS[2]	103	AK42	203	VSS[261]
4	VSS[3]	104	AK46	204	VSS[262]
5	VSS[4]	105	AK8	205	VSS[263]
6	VSS[5]	106	AL16	206	VSS[264]
7	VSS[6]	107	AL17	207	VSS[265]
8	VSS[7]	108	AL19	208	VSS[266]
9	VSS[8]	109	AL2	209	VSS[267]
10	VSS[9]	110	AL21	210	VSS[268]
11	VSS[10]	111	AL23	211	VSS[269]
12	VSS[11]	112	AL25	212	VSS[270]
13	VSS[12]	113	AL27	213	VSS[271]
14	VSS[13]	114	AL31	214	VSS[272]
15	VSS[14]	115	AL33	215	VSS[273]
16	VSS[15]	116	AL34	216	VSS[274]
17	VSS[16]	117	AL48	217	VSS[275]
18	VSS[17]	118	AM11	218	VSS[276]
19	VSS[18]	119	VSS[98]	219	VSS[277]
20	VSS[19]	120	VSS[99]	220	VSS[278]
21	VSS[20]	121	VSS[100]	221	VSS[279]
22	VSS[21]	122	VSS[101]	222	VSS[280]
23	VSS[22]	123	VSS[102]	223	VSS[281]
24	VSS[23]	124	VSS[103]	224	VSS[282]
25	VSS[24]	125	VSS[104]	225	VSS[283]
26	VSS[25]	126	VSS[105]	226	VSS[284]
27	VSS[26]	127	VSS[106]	227	VSS[285]
28	VSS[27]	128	VSS[107]	228	VSS[286]
29	VSS[28]	129	VSS[108]	229	VSS[287]
30	VSS[29]	130	VSS[109]	230	VSS[288]
31	VSS[30]	131	VSS[110]	231	VSS[289]
32	VSS[31]	132	VSS[111]	232	VSS[290]
33	VSS[32]	133	VSS[112]	233	VSS[291]
34	VSS[33]	134	VSS[113]	234	VSS[292]
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36	VSS[35]	136	VSS[115]	236	VSS[294]
37	VSS[36]	137	VSS[116]	237	VSS[295]
38	VSS[37]	138	VSS[117]	238	VSS[296]
39	VSS[38]	139	VSS[118]	239	VSS[297]
40	VSS[39]	140	VSS[119]	240	VSS[298]
41	VSS[40]	141	VSS[120]	241	VSS[299]
42	VSS[41]	142	VSS[121]	242	VSS[300]
43	VSS[42]	143	VSS[122]	243	VSS[301]
44	VSS[43]	144	VSS[123]	244	VSS[302]
45	VSS[44]	145	VSS[124]	245	VSS[303]
46	VSS[45]	146	VSS[125]	246	VSS[304]
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52	VSS[51]	152	VSS[131]	252	VSS[310]
53	VSS[52]	153	VSS[132]	253	VSS[311]
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57	VSS[56]	157	VSS[136]	257	VSS[315]
58	VSS[57]	158	VSS[137]	258	VSS[316]
59	VSS[58]	159	VSS[138]	259	VSS[317]
60	VSS[59]	160	VSS[139]	260	VSS[318]
61	VSS[60]	161	VSS[140]	261	VSS[319]
62	VSS[61]	162	VSS[141]	262	VSS[320]
63	VSS[62]	163	VSS[142]	263	VSS[321]
64	VSS[63]	164	VSS[143]	264	VSS[322]
65	VSS[64]	165	VSS[144]	265	VSS[323]
66	VSS[65]	166	VSS[145]	266	VSS[324]
67	VSS[66]	167	VSS[146]	267	VSS[325]
68	VSS[67]	168	VSS[147]	268	VSS[326]
69	VSS[68]	169	VSS[148]	269	VSS[327]
70	VSS[69]	170	VSS[149]	270	VSS[328]
71	VSS[70]	171	VSS[150]	271	VSS[329]
72	VSS[71]	172	VSS[151]	272	VSS[330]
73	VSS[72]	173	VSS[152]	273	VSS[331]
74	VSS[73]	174	VSS[153]	274	VSS[332]
75	VSS[74]	175	VSS[154]	275	VSS[333]
76	VSS[75]	176	VSS[155]	276	VSS[334]
77	VSS[76]	177	VSS[156]	277	VSS[335]
78	VSS[77]	178	VSS[157]	278	VSS[336]
79	VSS[78]	179	VSS[158]	279	VSS[337]
80	VSS[79]	180	VSS[159]	280	VSS[338]

BD82HM77 QPRG-C1 BGA989-D

Pin	Signal	Pin	Signal	Pin	Signal
1	VSS[159]	101	VSS[259]	201	VSS[359]
2	VSS[160]	102	VSS[260]	202	VSS[360]
3	VSS[161]	103	VSS[261]	203	VSS[361]
4	VSS[162]	104	VSS[262]	204	VSS[362]
5	VSS[163]	105	VSS[263]	205	VSS[363]
6	VSS[164]	106	VSS[264]	206	VSS[364]
7	VSS[165]	107	VSS[265]	207	VSS[365]
8	VSS[166]	108	VSS[266]	208	VSS[366]
9	VSS[167]	109	VSS[267]	209	VSS[367]
10	VSS[168]	110	VSS[268]	210	VSS[368]
11	VSS[169]	111	VSS[269]	211	VSS[369]
12	VSS[170]	112	VSS[270]	212	VSS[370]
13	VSS[171]	113	VSS[271]	213	VSS[371]
14	VSS[172]	114	VSS[272]	214	VSS[372]
15	VSS[173]	115	VSS[273]	215	VSS[373]
16	VSS[174]	116	VSS[274]	216	VSS[374]
17	VSS[175]	117	VSS[275]	217	VSS[375]
18	VSS[176]	118	VSS[276]	218	VSS[376]
19	VSS[177]	119	VSS[277]	219	VSS[377]
20	VSS[178]	120	VSS[278]	220	VSS[378]
21	VSS[179]	121	VSS[279]	221	VSS[379]
22	VSS[180]	122	VSS[280]	222	VSS[380]
23	VSS[181]	123	VSS[281]	223	VSS[381]
24	VSS[182]	124	VSS[282]	224	VSS[382]
25	VSS[183]	125	VSS[283]	225	VSS[383]
26	VSS[184]	126	VSS[284]	226	VSS[384]
27	VSS[185]	127	VSS[285]	227	VSS[385]
28	VSS[186]	128	VSS[286]	228	VSS[386]
29	VSS[187]	129	VSS[287]	229	VSS[387]
30	VSS[188]	130	VSS[288]	230	VSS[388]
31	VSS[189]	131	VSS[289]	231	VSS[389]
32	VSS[190]	132	VSS[290]	232	VSS[390]
33	VSS[191]	133	VSS[291]	233	VSS[391]
34	VSS[192]	134	VSS[292]	234	VSS[392]
35	VSS[193]	135	VSS[293]	235	VSS[393]
36	VSS[194]	136	VSS[294]	236	VSS[394]
37	VSS[195]	137	VSS[295]	237	VSS[395]
38	VSS[196]	138	VSS[296]	238	VSS[396]
39	VSS[197]	139	VSS[297]	239	VSS[397]
40	VSS[198]	140	VSS[298]	240	VSS[398]
41	VSS[199]	141	VSS[299]	241	VSS[399]
42	VSS[200]	142	VSS[300]	242	VSS[400]
43	VSS[201]	143	VSS[301]	243	VSS[401]
44	VSS[202]	144	VSS[302]	244	VSS[402]
45	VSS[203]	145	VSS[303]	245	VSS[403]
46	VSS[204]	146	VSS[304]	246	VSS[404]
47	VSS[205]	147	VSS[305]	247	VSS[405]
48	VSS[206]	148	VSS[306]	248	VSS[406]
49	VSS[207]	149	VSS[307]	249	VSS[407]
50	VSS[208]	150	VSS[308]	250	VSS[408]
51	VSS[209]	151	VSS[309]	251	VSS[409]
52	VSS[210]	152	VSS[310]	252	VSS[410]
53	VSS[211]	153	VSS[311]	253	VSS[411]
54	VSS[212]	154	VSS[312]	254	VSS[412]
55	VSS[213]	155	VSS[313]	255	VSS[413]
56	VSS[214]	156	VSS[314]	256	VSS[414]
57	VSS[215]	157	VSS[315]	257	VSS[415]
58	VSS[216]	158	VSS[316]	258	VSS[416]
59	VSS[217]	159	VSS[317]	259	VSS[417]
60	VSS[218]	160	VSS[318]	260	VSS[418]
61	VSS[219]	161	VSS[319]	261	VSS[419]
62	VSS[220]	162	VSS[320]	262	VSS[420]
63	VSS[221]	163	VSS[321]	263	VSS[421]
64	VSS[222]	164	VSS[322]	264	VSS[422]
65	VSS[223]	165	VSS[323]	265	VSS[423]
66	VSS[224]	166	VSS[324]	266	VSS[424]
67	VSS[225]	167	VSS[325]	267	VSS[425]
68	VSS[226]	168	VSS[326]	268	VSS[426]
69	VSS[227]	169	VSS[327]	269	VSS[427]
70	VSS[228]	170	VSS[328]	270	VSS[428]
71	VSS[229]	171	VSS[329]	271	VSS[429]
72	VSS[230]	172	VSS[330]	272	VSS[430]
73	VSS[231]	173	VSS[331]	273	VSS[431]
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75	VSS[233]	175	VSS[333]	275	VSS[433]
76	VSS[234]	176	VSS[334]	276	VSS[434]
77	VSS[235]	177	VSS[335]	277	VSS[435]
78	VSS[236]	178	VSS[336]	278	VSS[436]
79	VSS[237]	179	VSS[337]	279	VSS[437]
80	VSS[238]	180	VSS[338]	280	VSS[438]
81	VSS[239]	181	VSS[339]	281	VSS[439]
82	VSS[240]	182	VSS[340]	282	VSS[440]
83	VSS[241]	183	VSS[341]	283	VSS[441]
84	VSS[242]	184	VSS[342]	284	VSS[442]
85	VSS[243]	185	VSS[343]	285	VSS[443]
86	VSS[244]	186	VSS[344]	286	VSS[444]
87	VSS[245]	187	VSS[345]	287	VSS[445]
88	VSS[246]	188	VSS[346]	288	VSS[446]
89	VSS[247]	189	VSS[347]	289	VSS[447]
90	VSS[248]	190	VSS[348]	290	VSS[448]
91	VSS[249]	191	VSS[349]	291	VSS[449]
92	VSS[250]	192	VSS[350]	292	VSS[450]
93	VSS[251]	193	VSS[351]	293	VSS[451]
94	VSS[252]	194	VSS[352]	294	VSS[452]
95	VSS[253]	195	VSS[453]	295	VSS[453]
96	VSS[254]	196	VSS[454]	296	VSS[454]
97	VSS[255]	197	VSS[455]	297	VSS[455]
98	VSS[256]	198	VSS[456]	298	VSS[456]
99	VSS[257]	199	VSS[457]	299	VSS[457]
100	VSS[258]	200	VSS[458]	300	VSS[458]

BD82HM77 QPRG-C1 BGA989-D

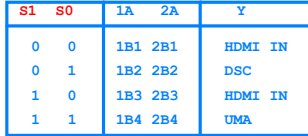
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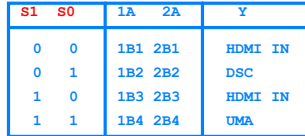
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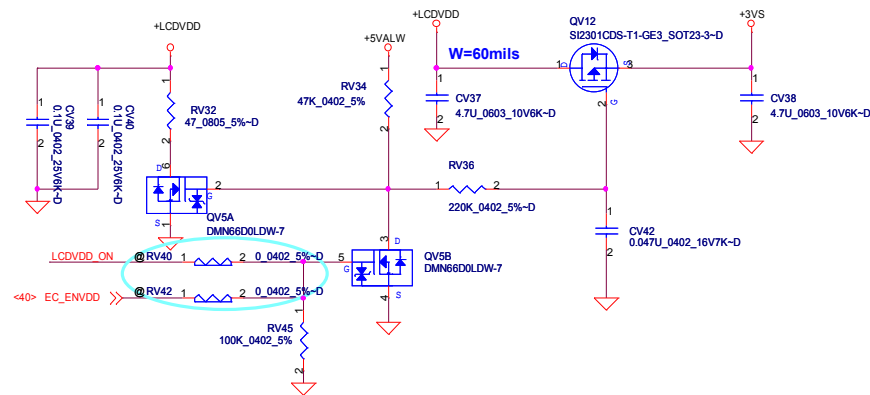
Title	Document Number	Rev
PCH (8/8) PWR	LA-8321P	0.1
Date: Tuesday, January 17, 2012	Sheet 23 of 65	



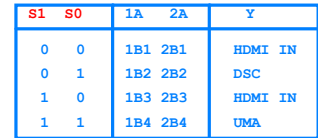
## LCD DDC Selector



**LCD POWER**



### LCD VDD Selector



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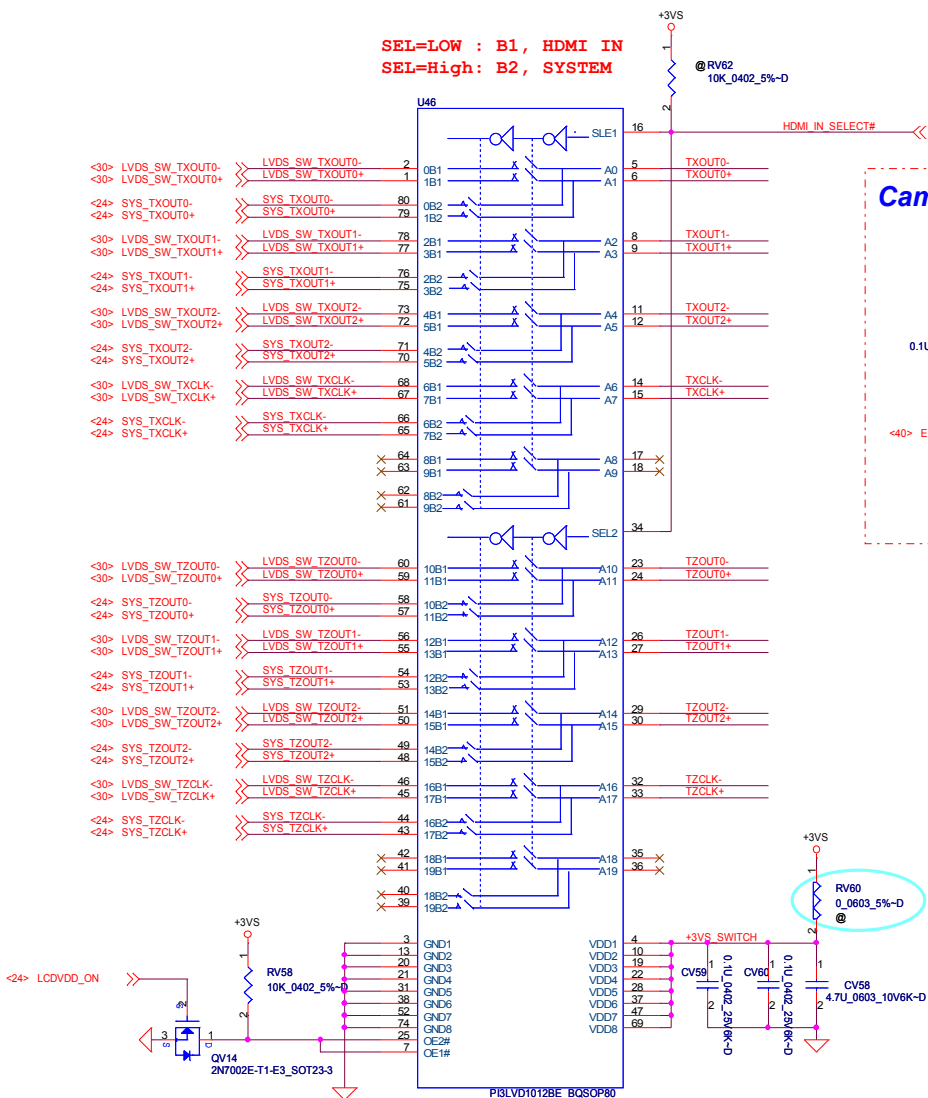
**Compal Electronics, Inc.**

Title **LVDS SW - GPU & PCH**

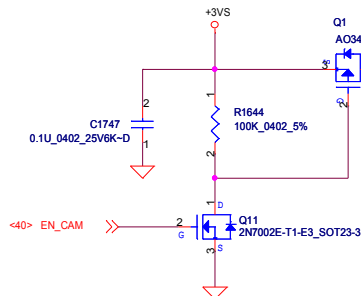
Size	Document Number <b>LA-8321P</b>	Rev 0.1
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Date: Tuesday, January 17, 2012 Sheet 24 of 65

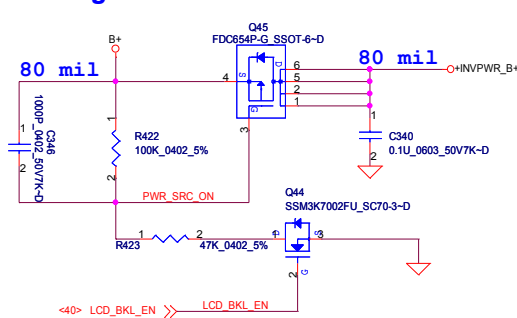
SEL=LOW : B1, HDMI IN  
SEL=High: B2, SYSTEM



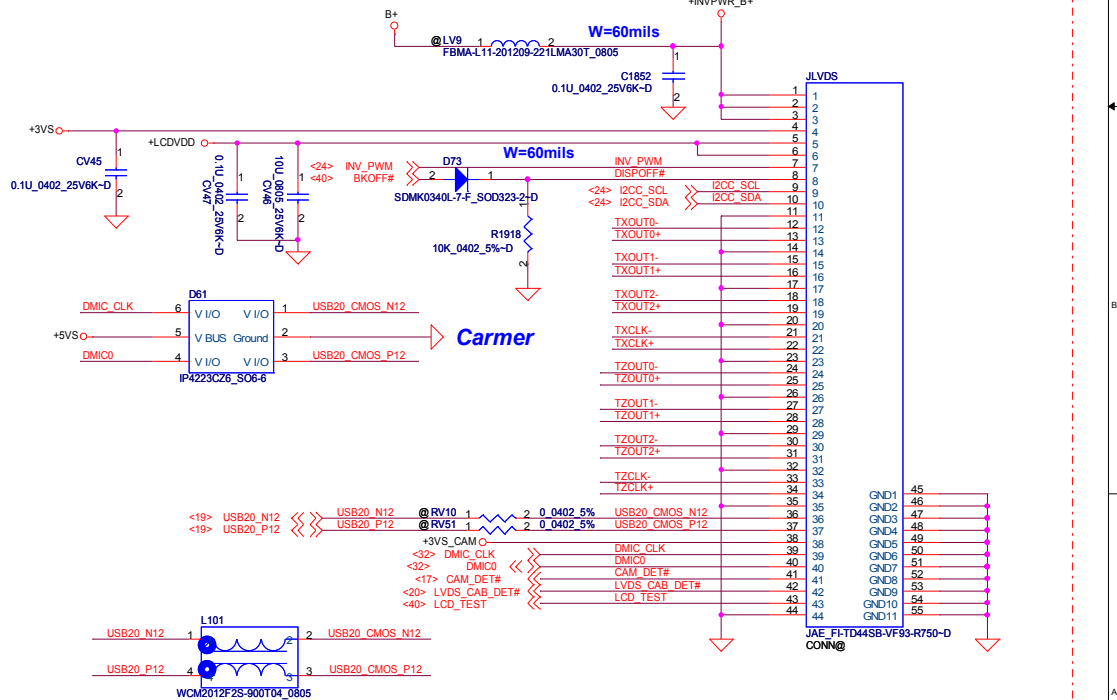
### Camera Power Control



### LCD Backlight Control



### LVDS Connector



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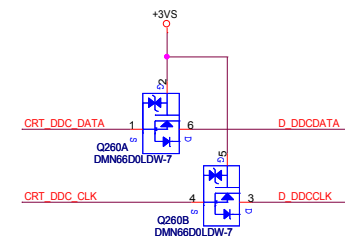
Compal Electronics, Inc.

LVDS SW - SYSTEM & HDMI IN

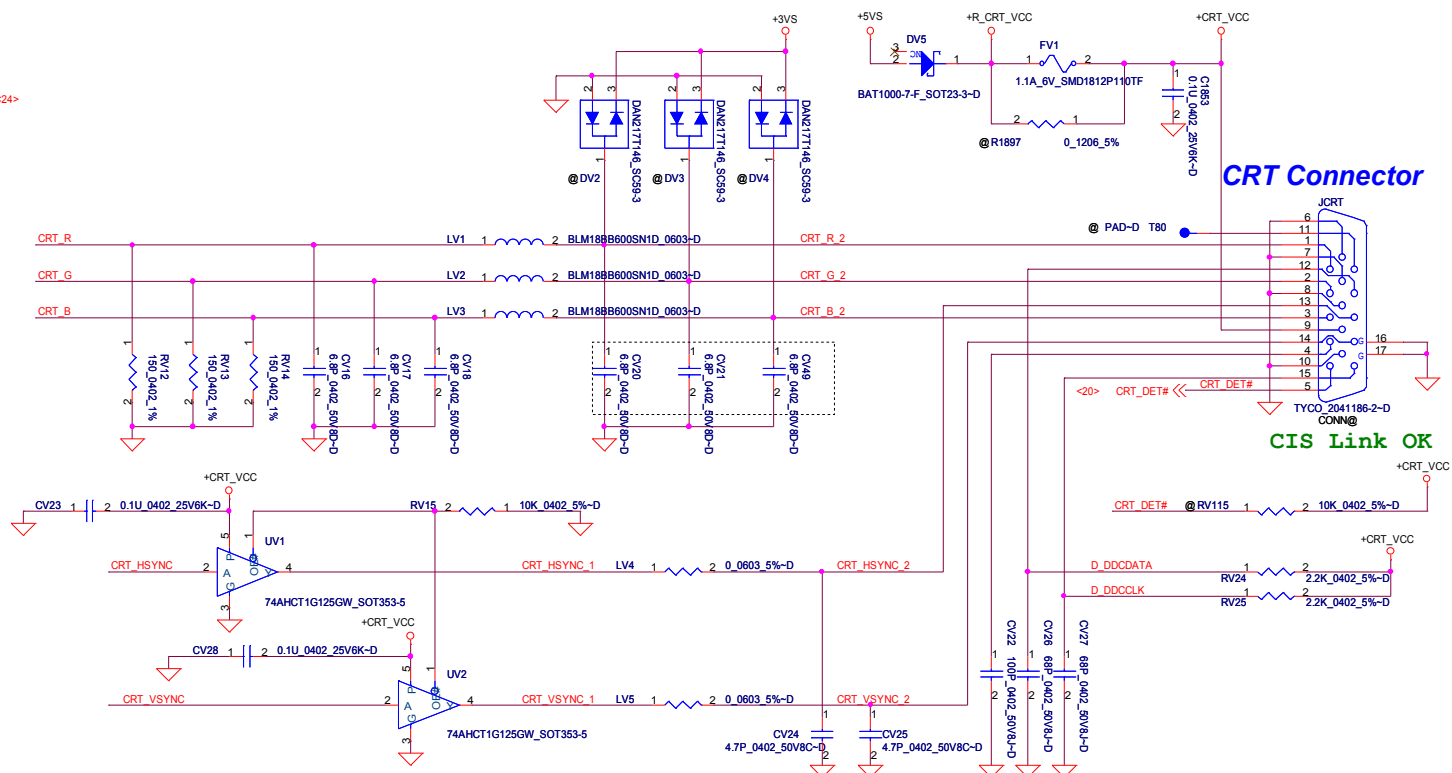
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Date: Tuesday, January 17, 2012 Sheet 25 of 65

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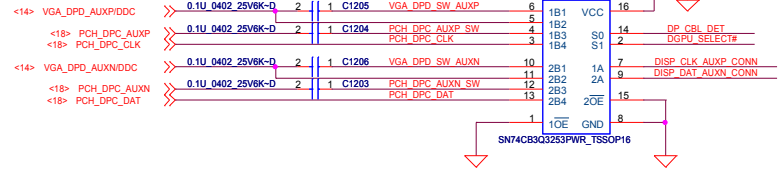
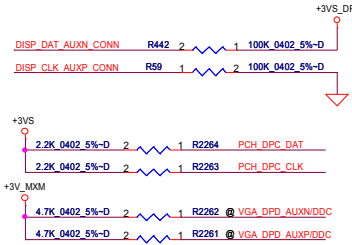
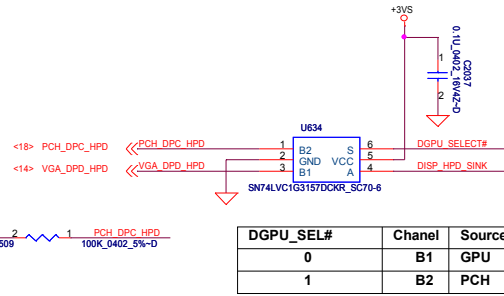
IN1	IN2	D1	D2	Y
0	0			
0	1	1S1	2S1	DSC
1	0	1S2	2S2	UMA
1	1			



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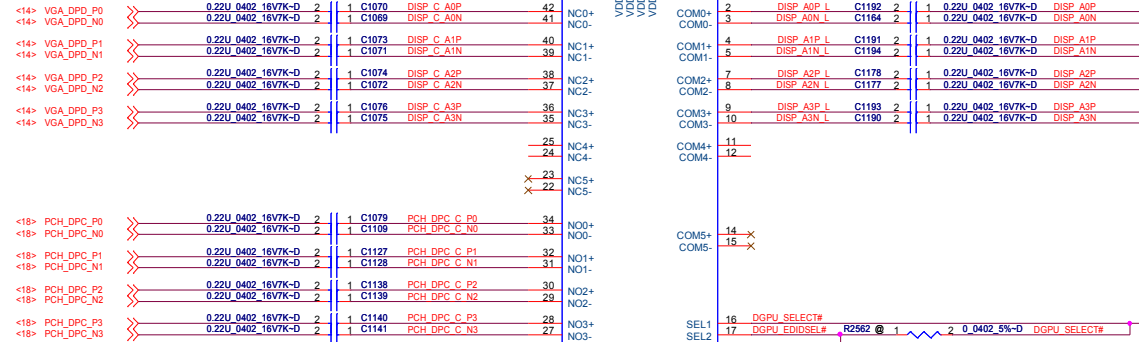




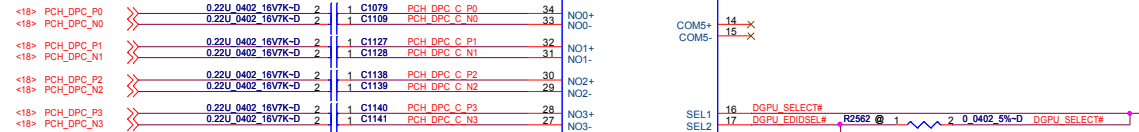
S1	S0	1A	2A	Y
0	0	1B1	2B1	MXM_AUX
0	1	1B2	2B2	MXM_DDC
1	0	1B3	2B3	PCH_AUX
1	1	1B4	2B4	PCH_DDC

## PCH/GPU AUX&LANE SW

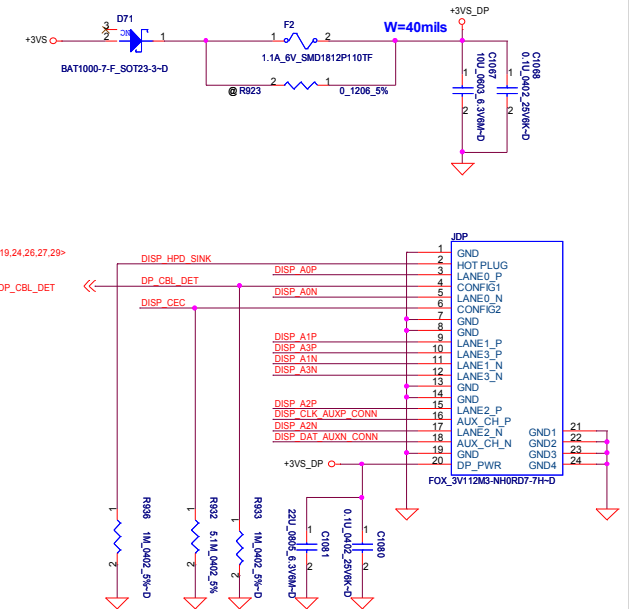
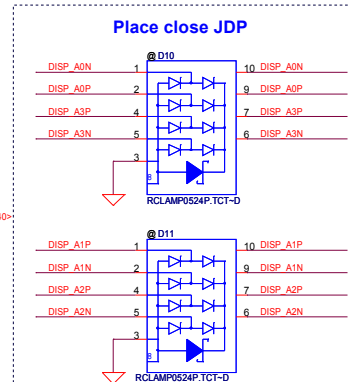
For ATi/Nvidia GPU



For Intel PCH



## Place close JDP



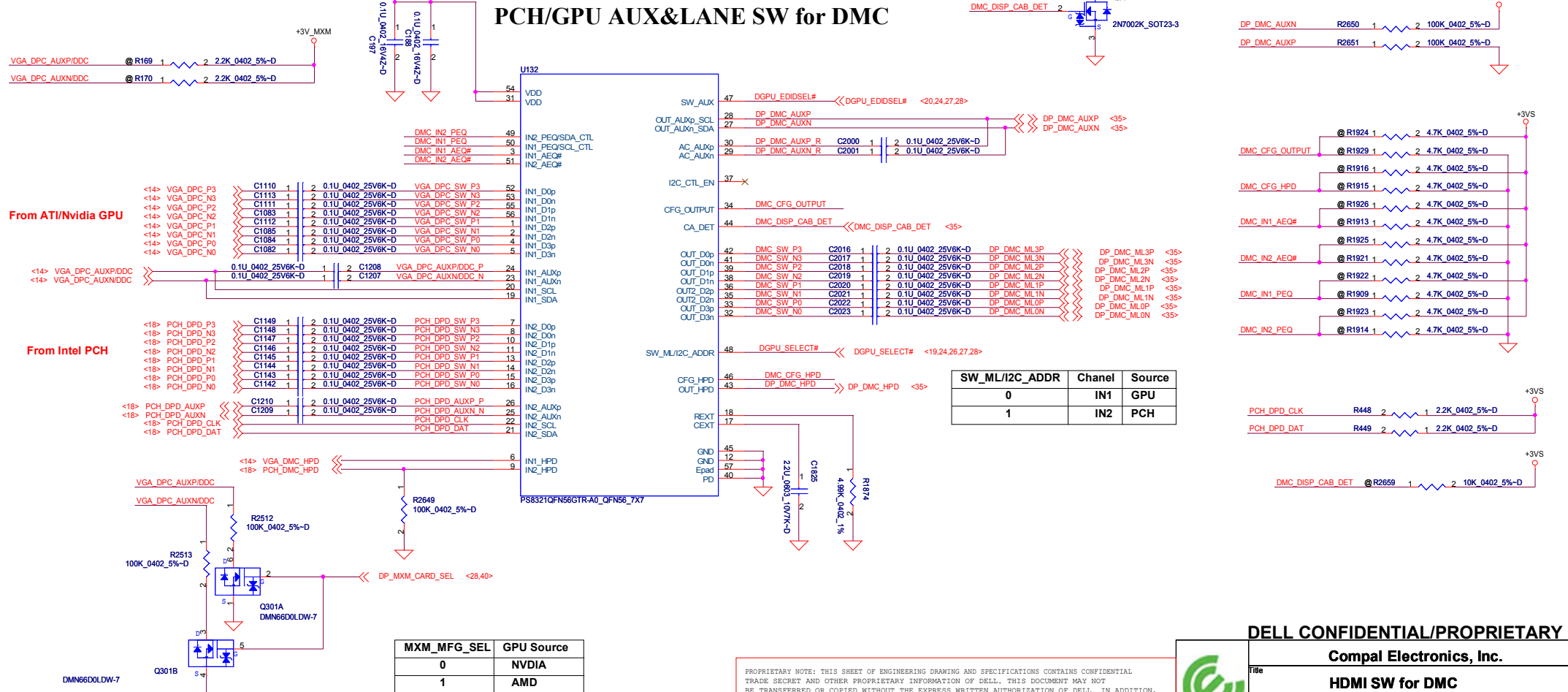
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DP SW for DP CONN

LA-8321P  
Date: Tuesday, January 17, 2012  
Sheet 28 of 65

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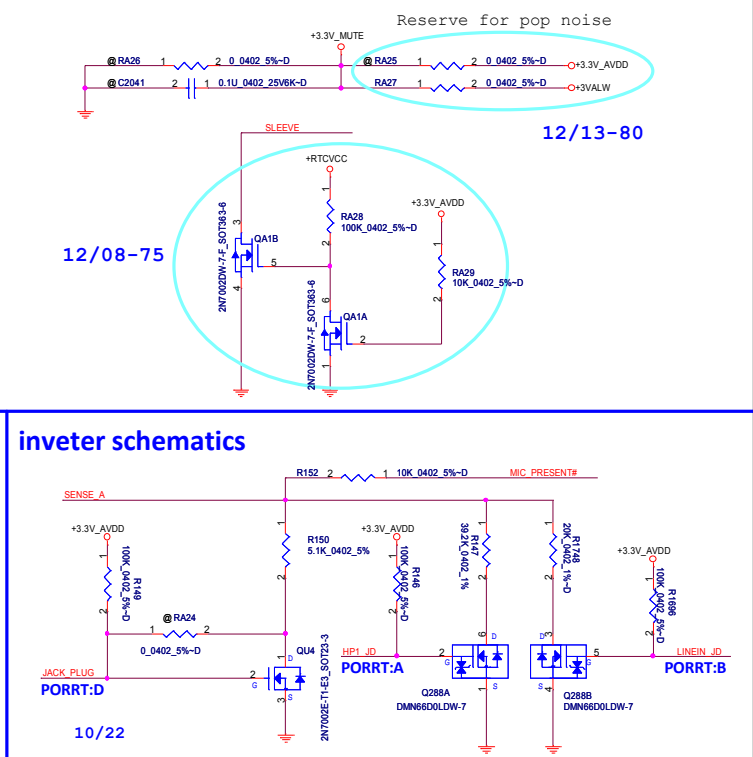
**HDMI SW for DMC**

Size: Document Number  
**LA-8321P**  
Date: Tuesday, January 17, 2012 Sheet 29 of 65

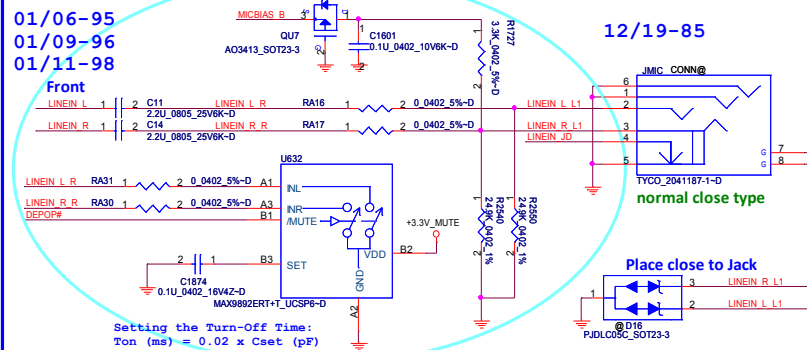


Size	Document Number <b>LA-8321P</b>	Rev 0.1
Date:	Tuesday, January 17, 2012	Sheet 30 of 65

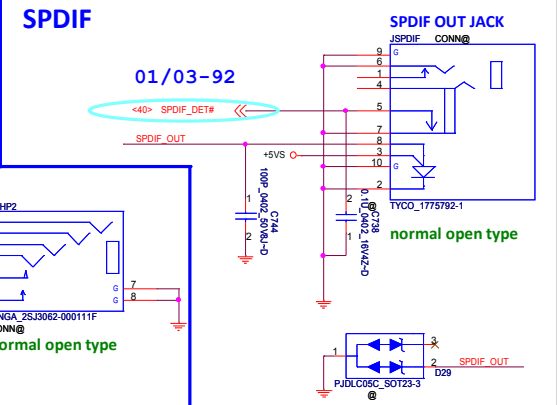




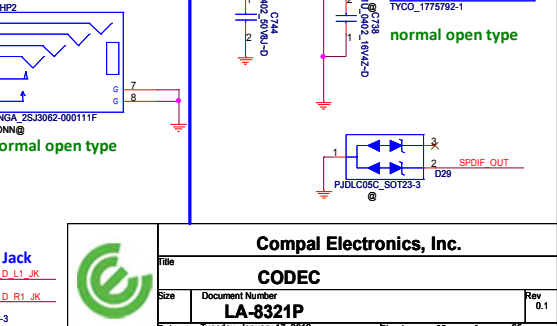
**S3: PORTB**    ~~Rear L/R + Line in + Mic~~

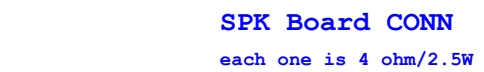


SPDIF

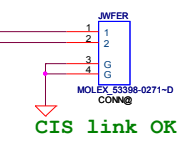


01/17-100

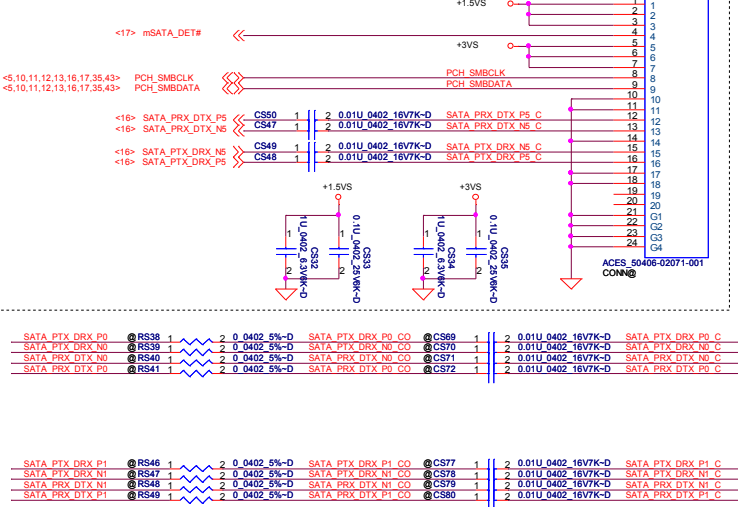




Size	Document Number	Rev
	<b>LA-8321P</b>	0.1
Date:	Tuesday, January 17, 2012	Sheet 33 of 65



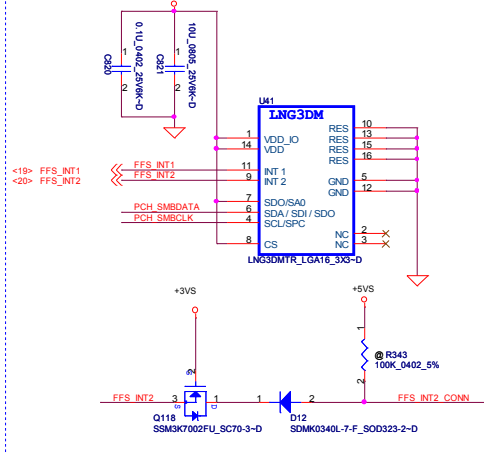
## mSATA CONN



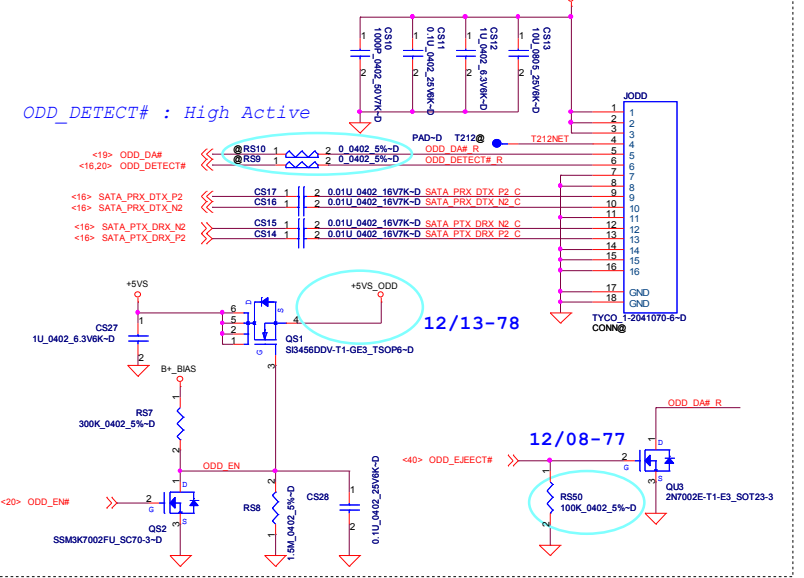
## HDD Redriver

EN	CAD	STATUS
0	0	LowPower
1	1	LowPower
1	0	Active
1	1	LowPower

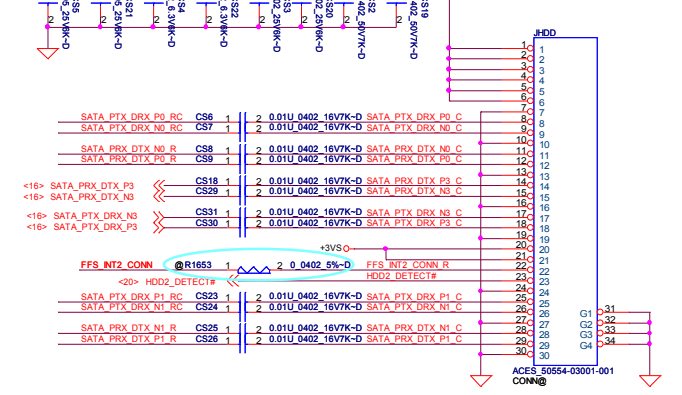
## Free Fall Sensor



## SATA ODD Conn.



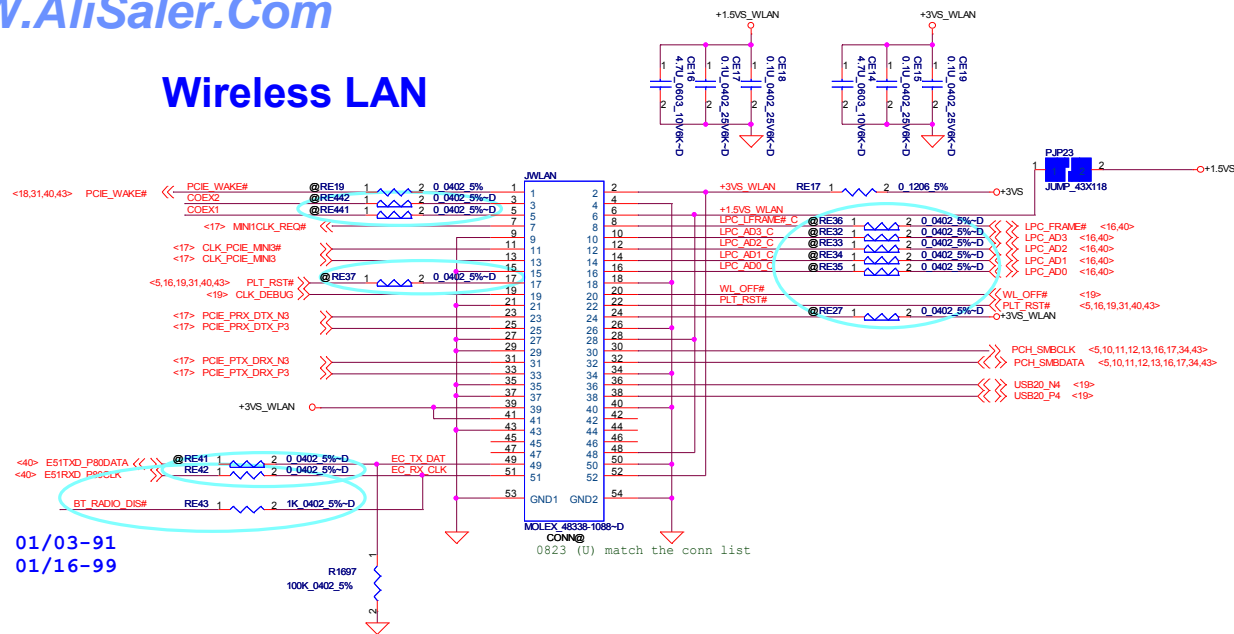
## SATA HDD Conn.



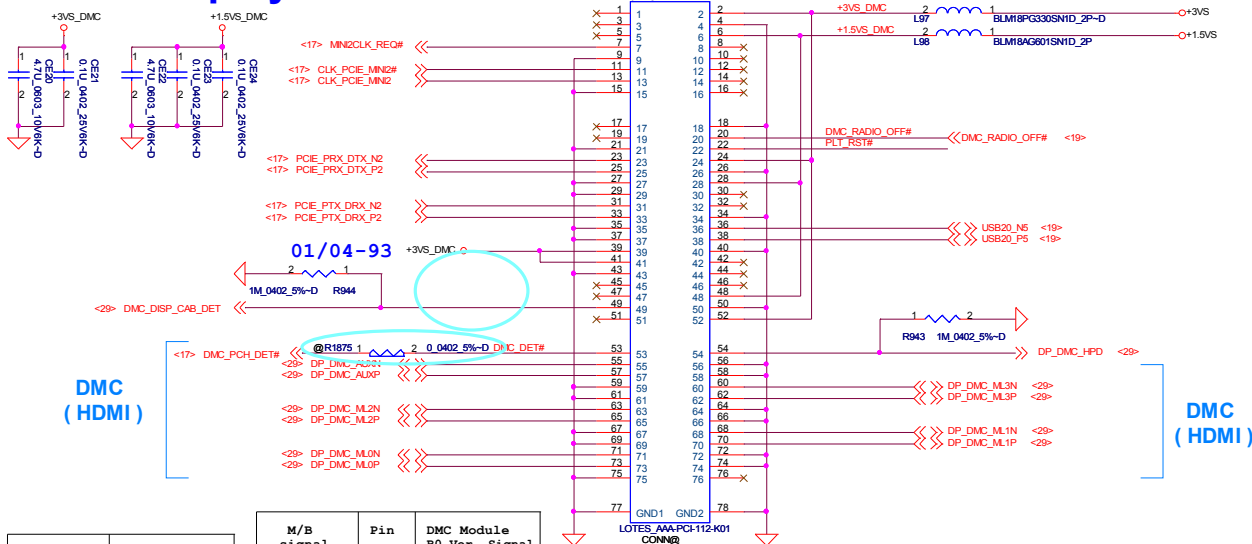
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SATA HDD & ODD & FFS	
LA-8321P	Rev 0.1
Date: Tuesday, January 17, 2012	Sheet 34 of 65

## Wireless LAN

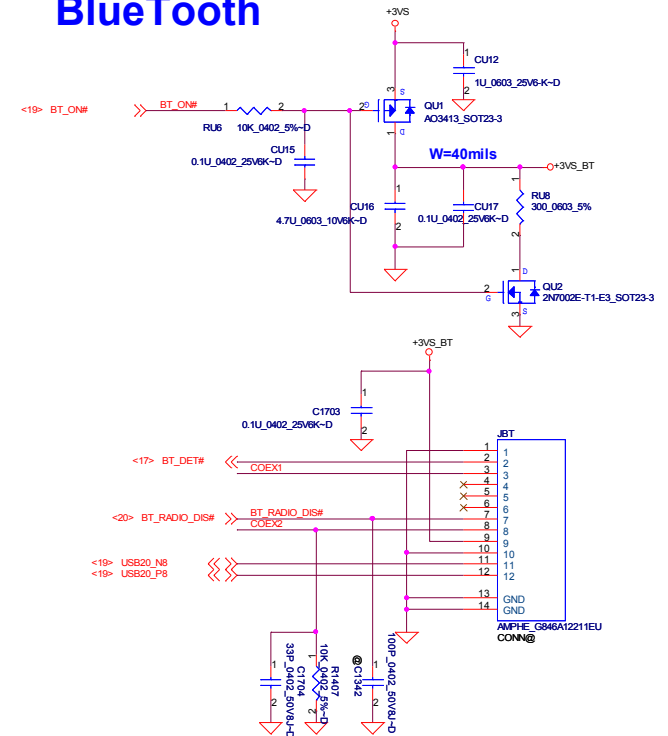


## Display Mini Card



FCH DP Port		HDMI usage	M/B signal	Pin	DMC Module B0 Ver. Signal
DDP 0P	TMDS DATA 2		DP_DMC_ML3N	60	DMC_CKN
DDP 0N	TMDS DATA 2#		DP_DMC_ML3P	62	DMC_CKP
DDP 1P	TMDS DATA 1		DP_DMC_ML2N	63	DMC_D0N
DDP 1N	TMDS DATA 1#		DP_DMC_ML2P	65	DMC_D0P
DDP 2P	TMDS DATA 0		DP_DMC_ML1N	68	DMC_D1N
DDP 2N	TMDS DATA 0#		DP_DMC_ML1P	70	DMC_D1P
DDP 3P	TMDS CLK		DP_DMC_ML0N	71	DMC_D2N
DDP 3N	TMDS CLK#		DP_DMC_ML0P	73	DMC_D2P
DDP AUXP	HDMI_CTRL_CLK		DP_DMC_AUXN	55	DMC_DDC_DAT
DDP AUXN	HDMI_CTRL_DAT		DP_DMC_AUXP	57	DMC_DDC_CLK

## BlueTooth



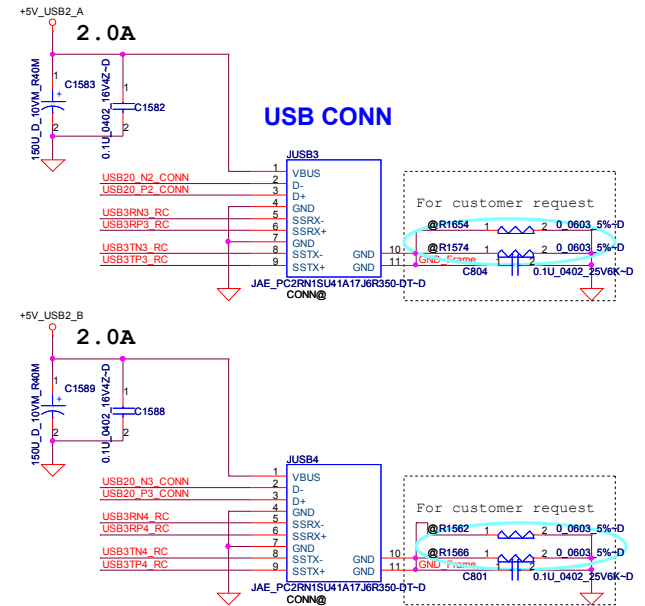
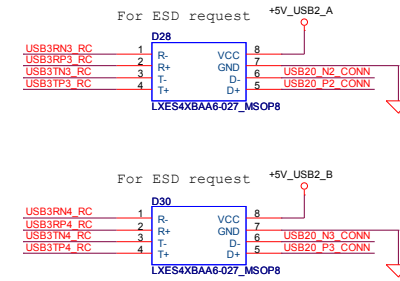
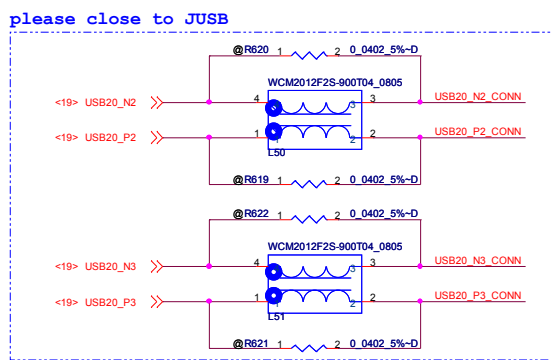
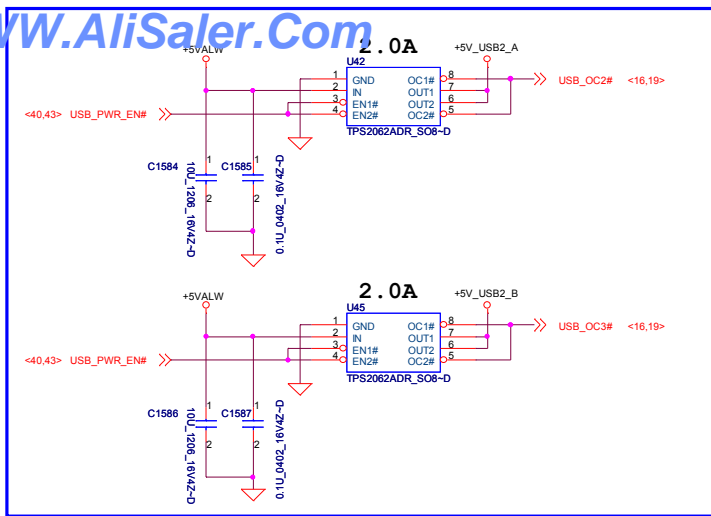
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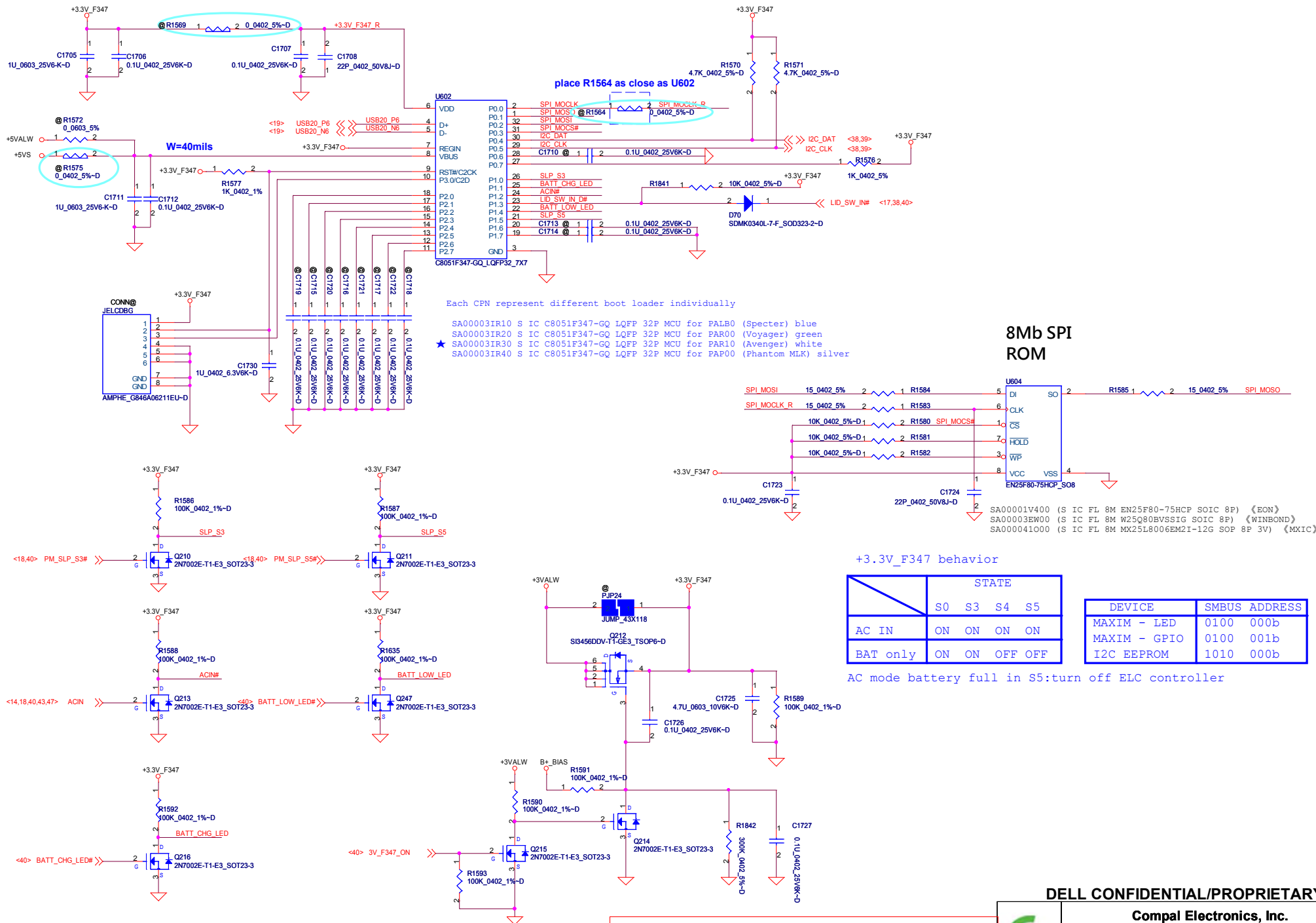
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### Mini Card - WLAN/ BT/DMC

Size	Document Number <b>LA-8321P</b>	Rev 0.1
Date	Tuesday, January 17, 2012	Sheet 35 of 65

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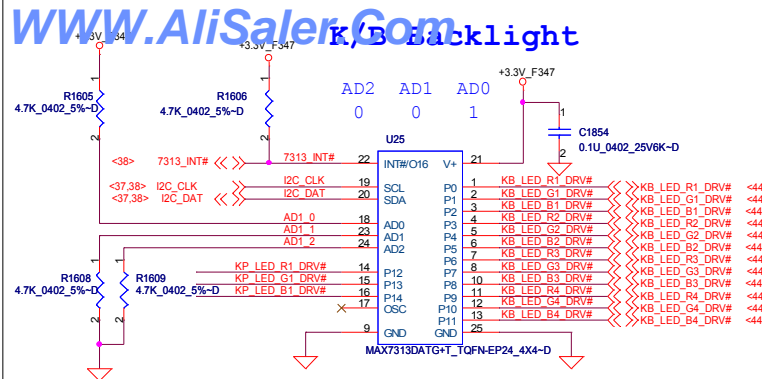
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ELC (1)

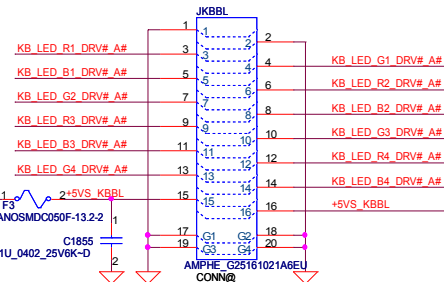
LA-8321P

1 Tuesday, January 17, 2012 Sheet 37 of 85

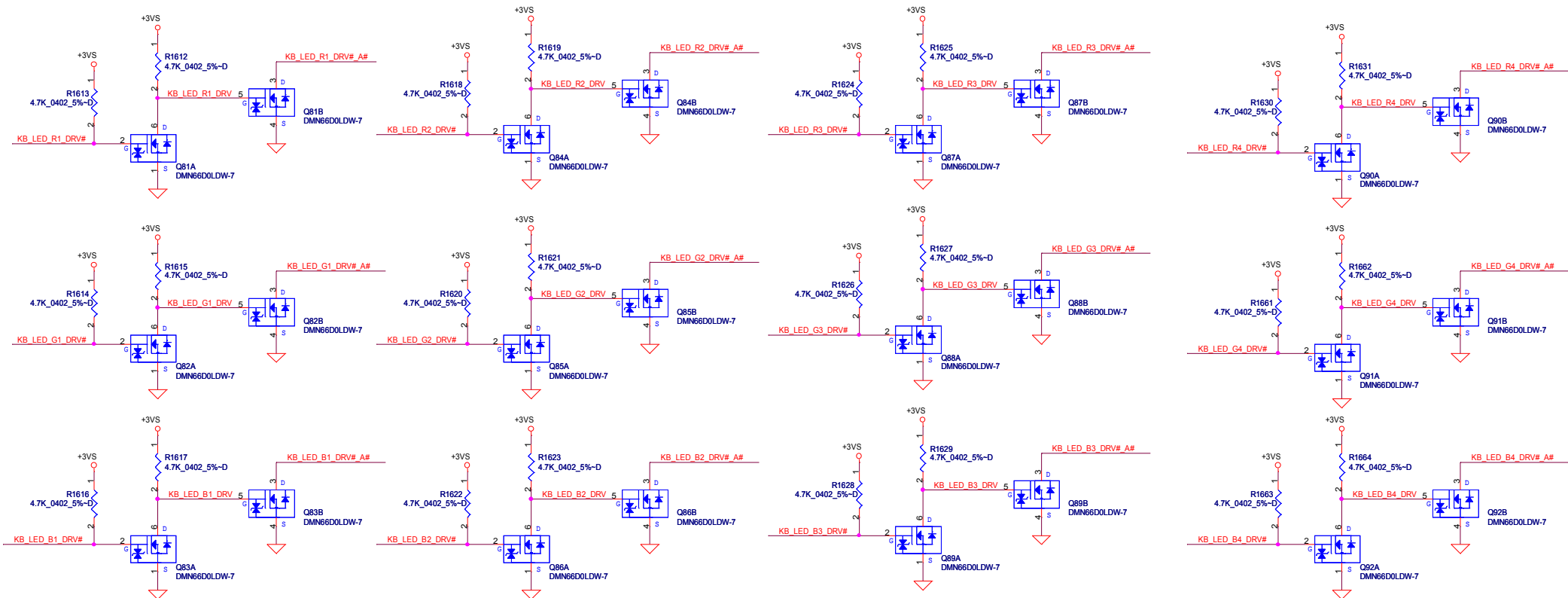
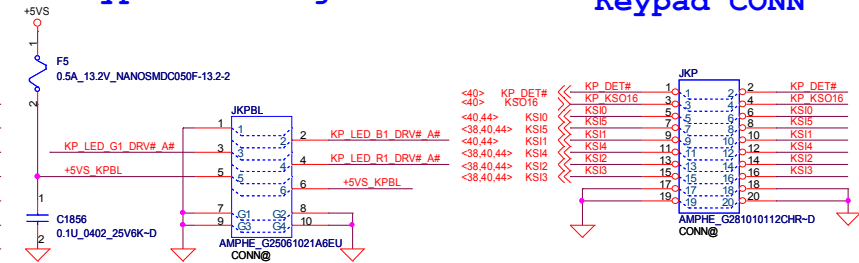




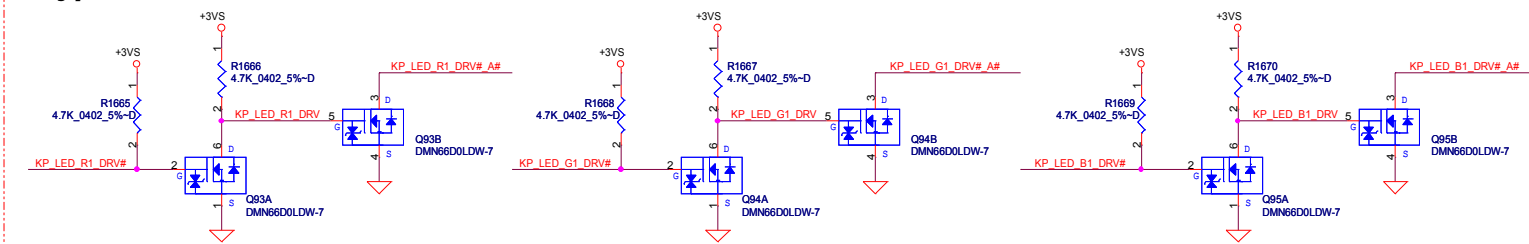
## K/B Backlight CONN

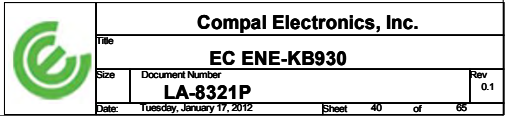


## Keypad CONN



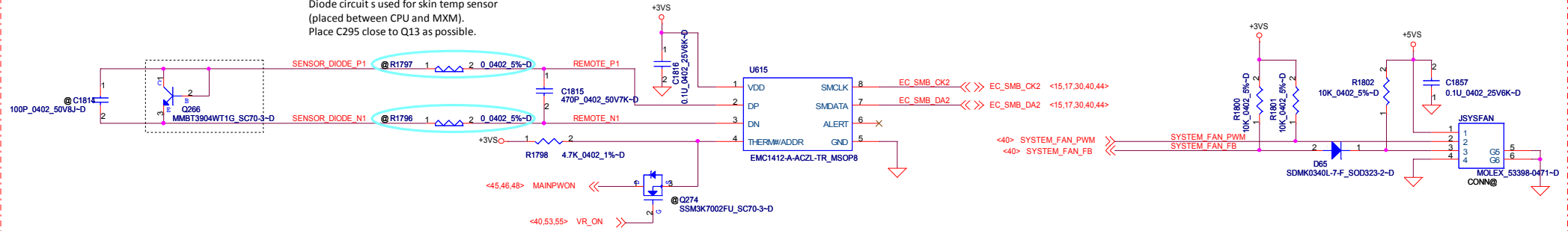
## Keypad LED control



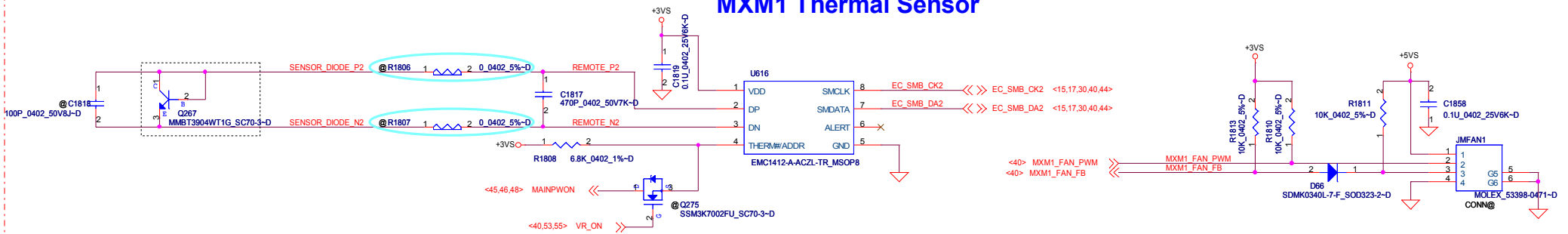


## System Thermal Sensor

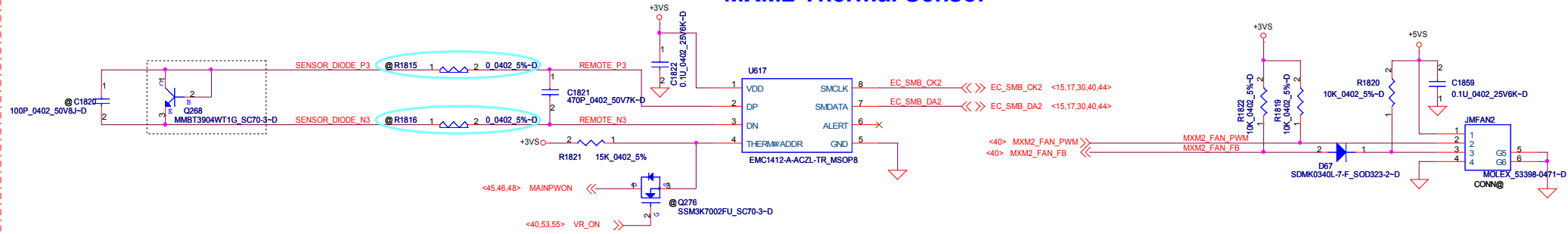
Diode circuit s used for skin temp sensor  
(placed between CPU and MXM).  
Place C295 close to Q13 as possible.



## MXM1 Thermal Sensor



## MXM2 Thermal Sensor



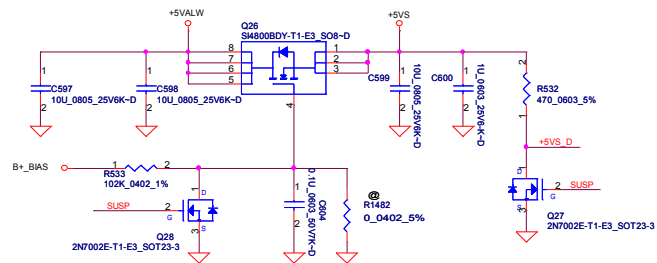
Pull up resistor on thermtrip pin	SMBUS address
4.7k	1111_100xb
6.8k	1011_100xb
10k	1001_100xb
15k	1101_100xb
22k	0011_100xb
33k	0111_100xb

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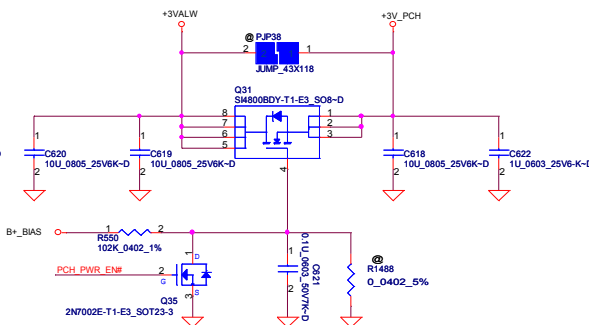
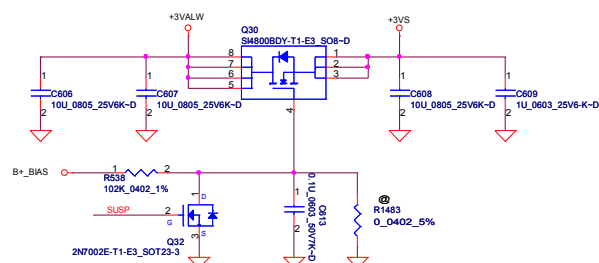


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Title			
Thermal Sensor & FAN			
Size	Document Number	Rev	
	LA-8321P	0.1	
Date:	Tuesday, January 17, 2012	Sheet	41 of 65

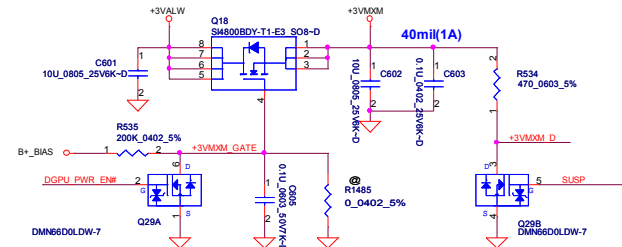


+3VALW to +3V\_PCH

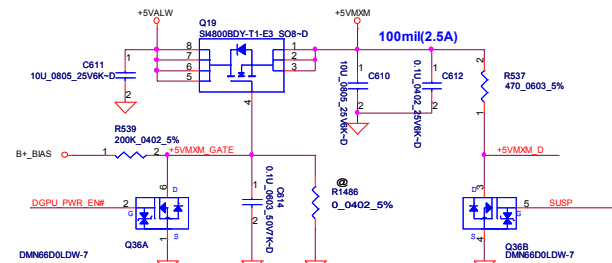
+3VALW to +3VS



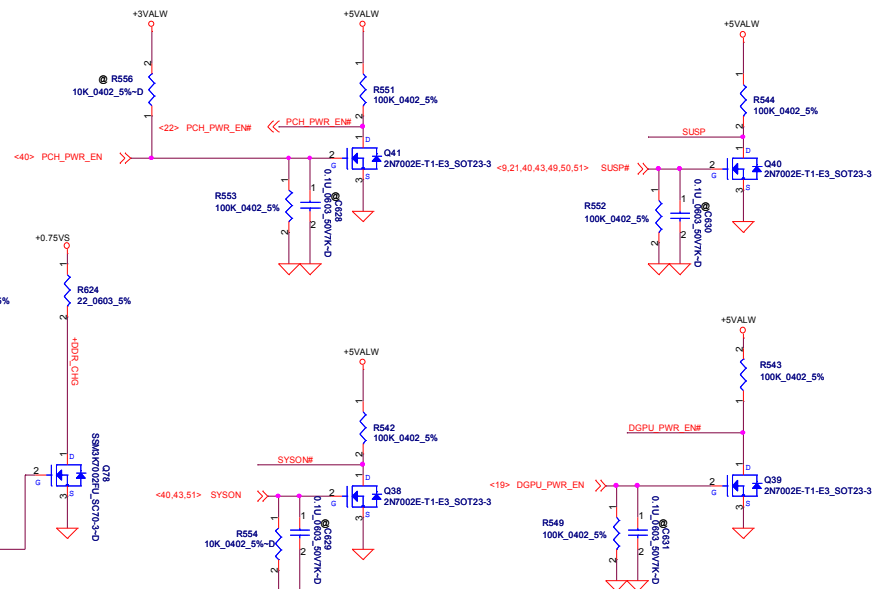
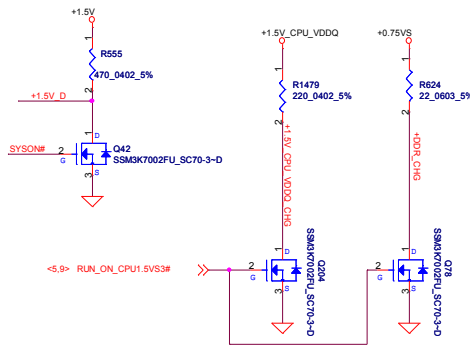
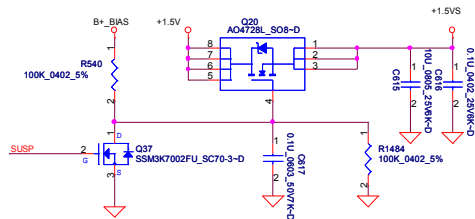
+3VALW to +3VMXM Transfer



+5VALW to +5VMXM Transfer



+1.5V To +1.5VS



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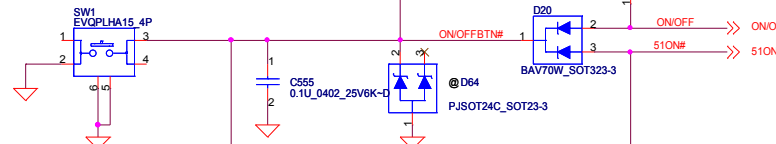
Compal Electronics, Inc.

DC/DC Interface

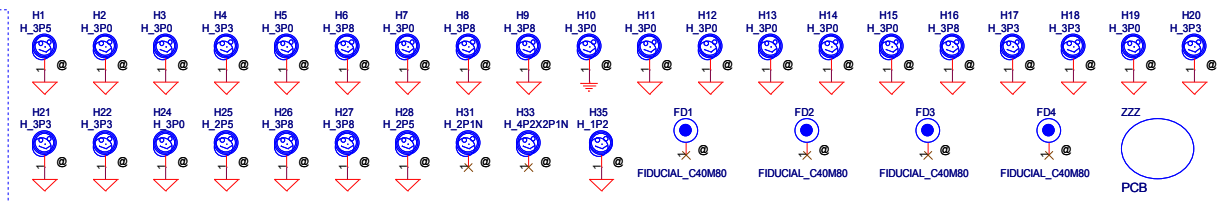
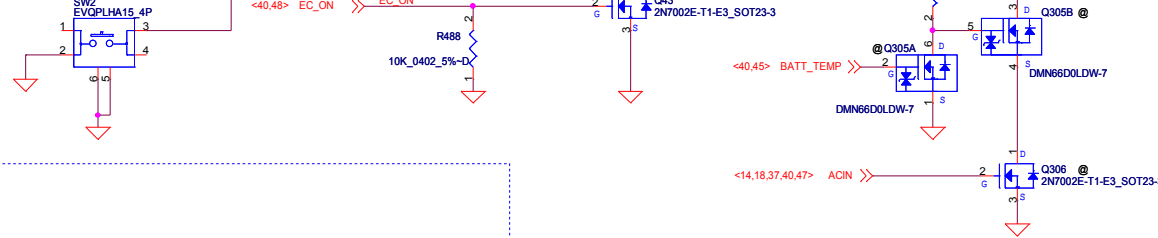
LA-8321P

Sheet 42 of 85

### ON/OFF switch (TOP)

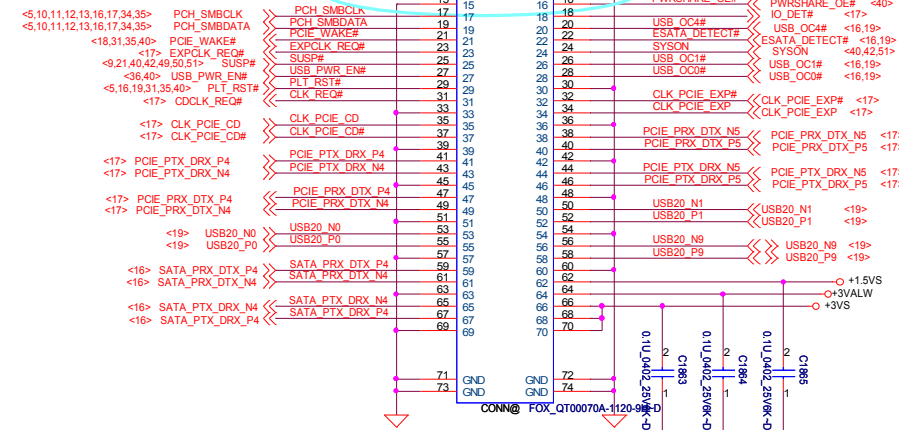


### ON/OFF switch (BOT)

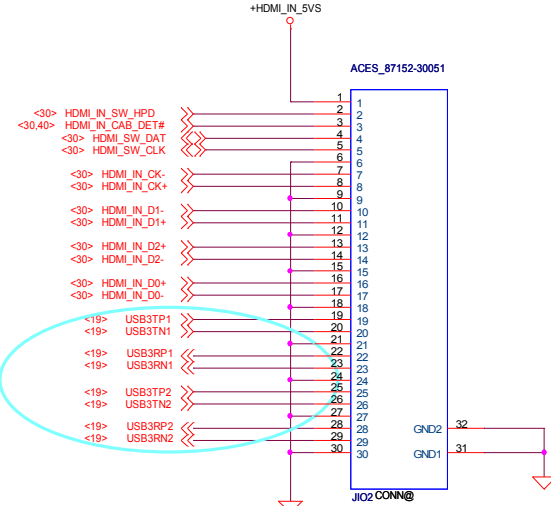


### IO Board CONN 1

12/14-81



### IO Board CONN 2



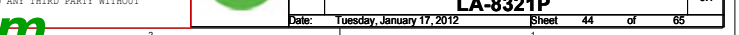
12/20-87  
12/22-89

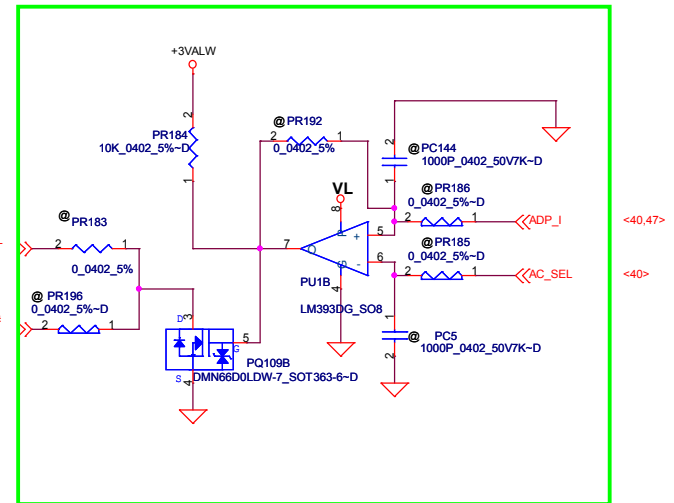
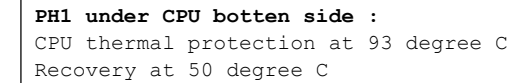
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Title		
IO/B CONN / KB		
Size	Document Number	Rev
	LA-8321P	0.1
Date:	Tuesday, January 17, 2012	Sheet 43 of 65

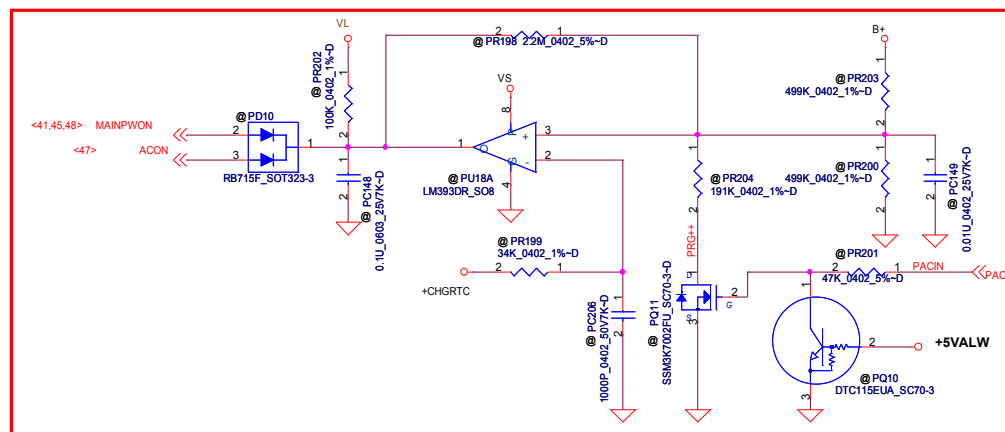
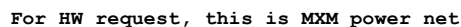
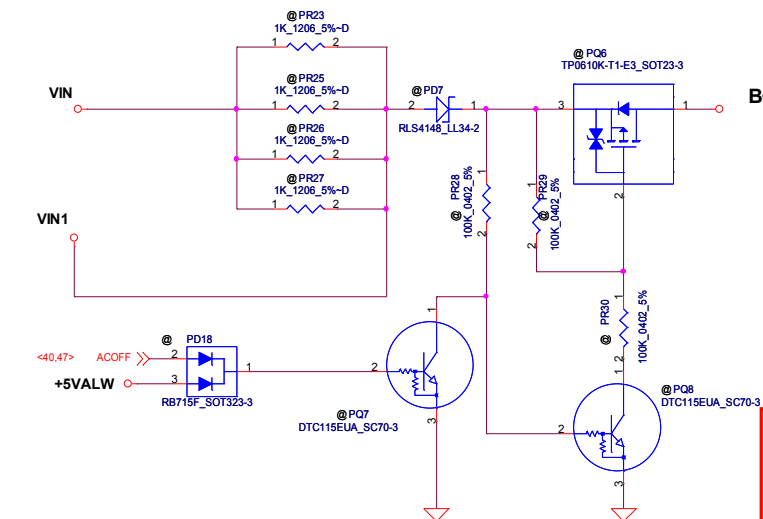
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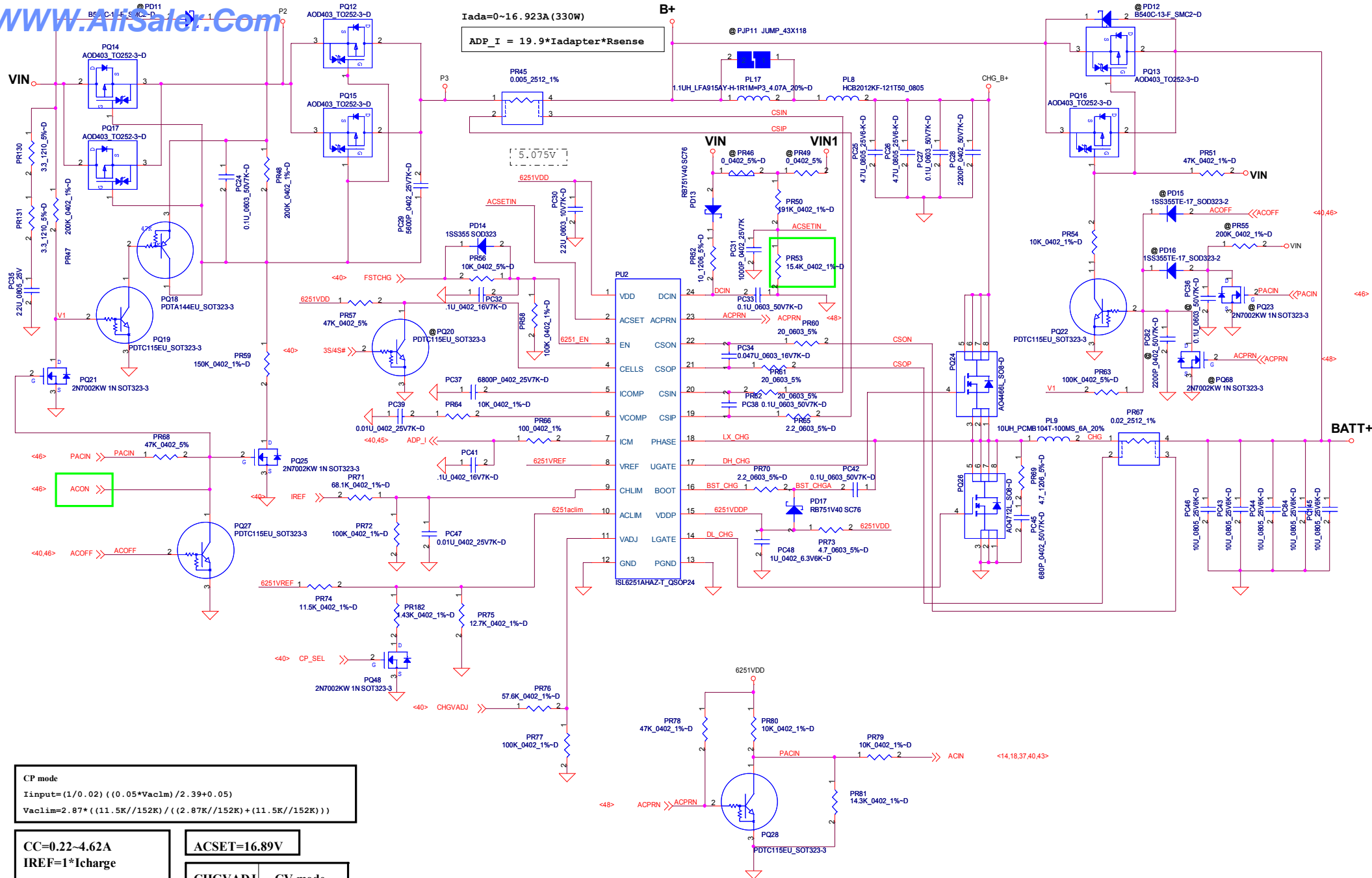


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				Custom		0.1
				Date:	Tuesday, January 17, 2012	Sheet 46 of 65



**CP mode**

$$I_{input} = (1/0.02) \left( (0.05 \cdot V_{ac1m}) / 2.39 + 0.05 \right)$$

$$Va_{clim} = 2.87 * ((11.5K // 152K) / ((2.87K // 152K) + (11.5K // 152K)))$$

$$CC=0.22 \sim 4.62 \text{ A}$$

**IREF=1\*Icharge**

**IREF=0.22V~3.294V**

3S/4S# signal	
High	3S
Low	4S

ACSET=16.89V

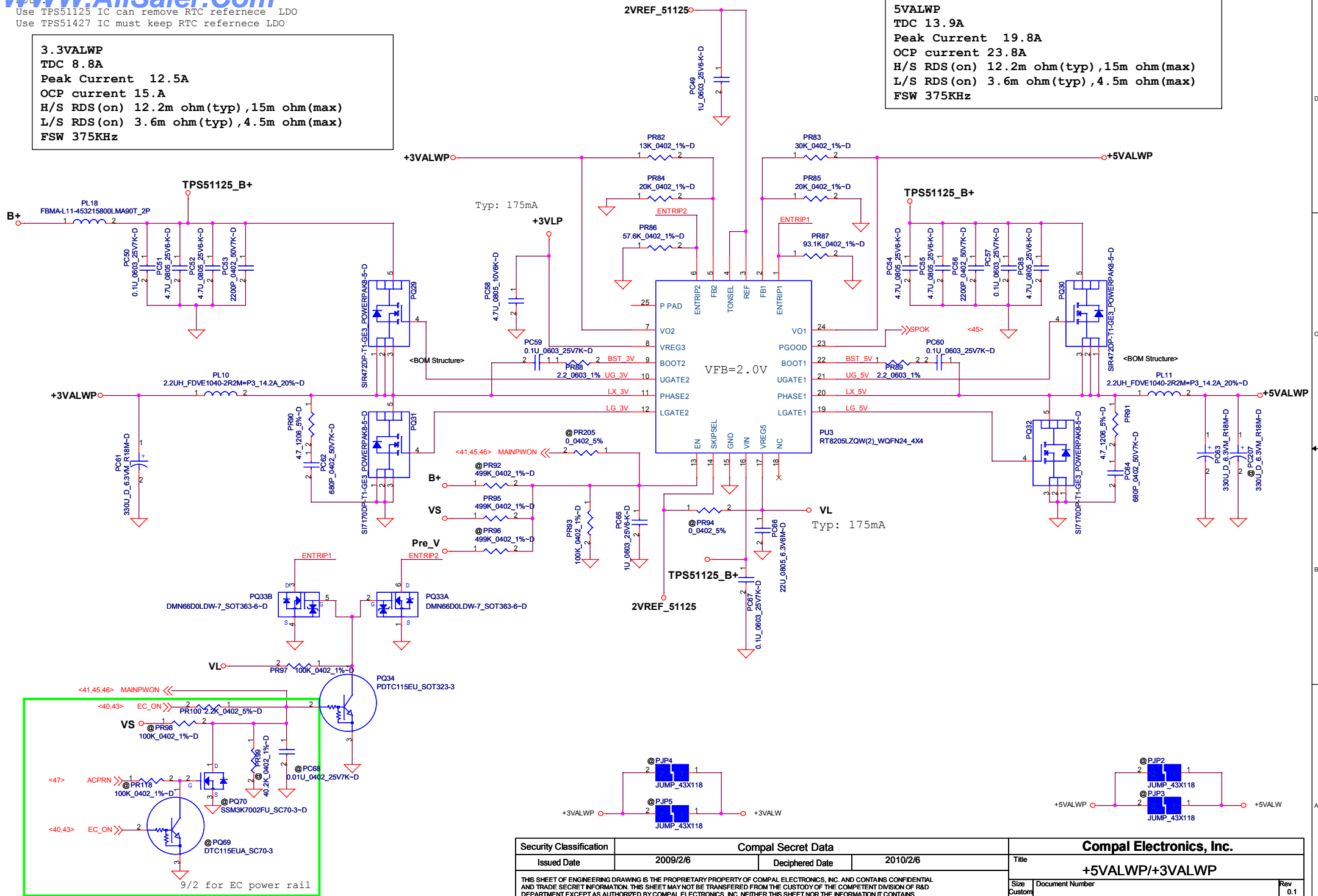
<b>CHGVADJ</b>	<b>CV mode</b>
<b>0V</b>	<b>4V per cell</b>
<b>1.882V</b>	<b>4.2V per cell</b>
<b>3.294V</b>	<b>4.35V per cell</b>

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				Date: Tuesday, January 17, 2012	Rev 0.1
				Sheet 47 of 65	

Use TPS51125 IC can remove RTC reference LDO  
Use TPS51427 IC must keep RTC reference LDO

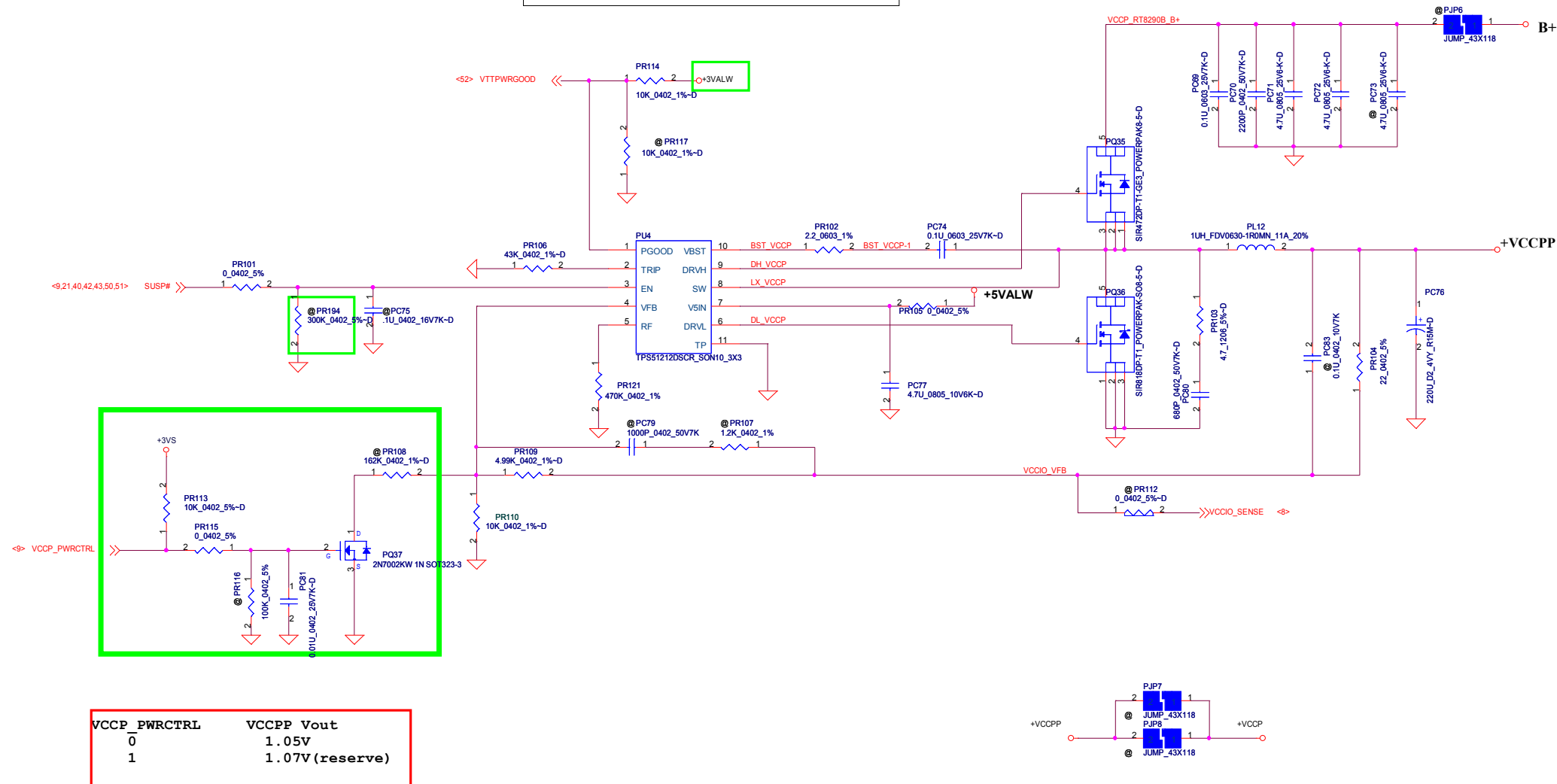
**3.3VALWP**  
TDC 8.8A  
Peak Current 12.5A  
OCP current 15.A  
H/S RDS(on) 12.2m ohm(typ), 15m ohm(max)  
L/S RDS(on) 3.6m ohm(typ), 4.5m ohm(max)  
FSW 375KHz

**5VALWP**  
TDC 13.9A  
Peak Current 19.8A  
OCP current 23.8A  
H/S RDS(on) 12.2m ohm(typ), 15m ohm(max)  
L/S RDS(on) 3.6m ohm(typ), 4.5m ohm(max)  
FSW 375KHz

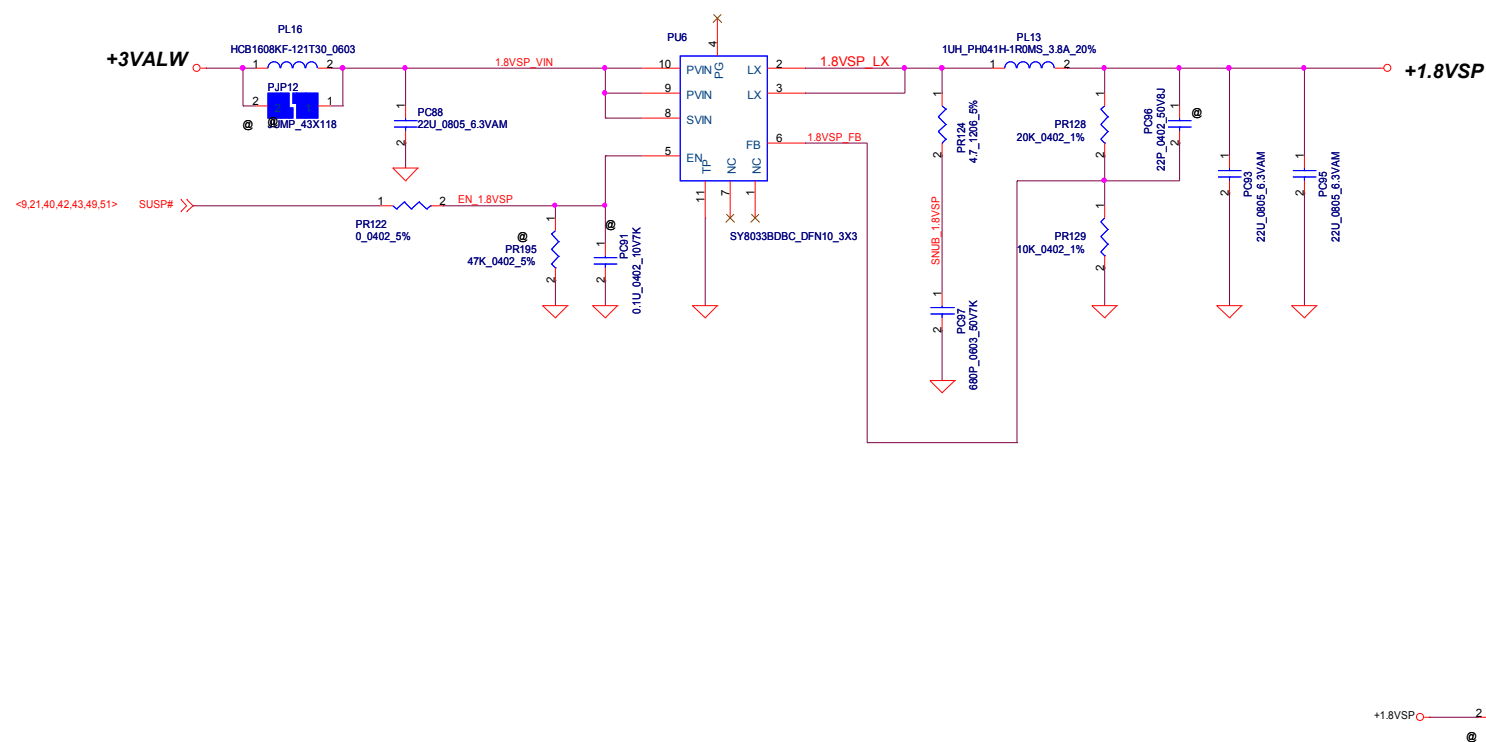


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Size	Document Number	Rev		0.1	
Date:	Tuesday, January 17, 2012	Sheet	48	of 65	

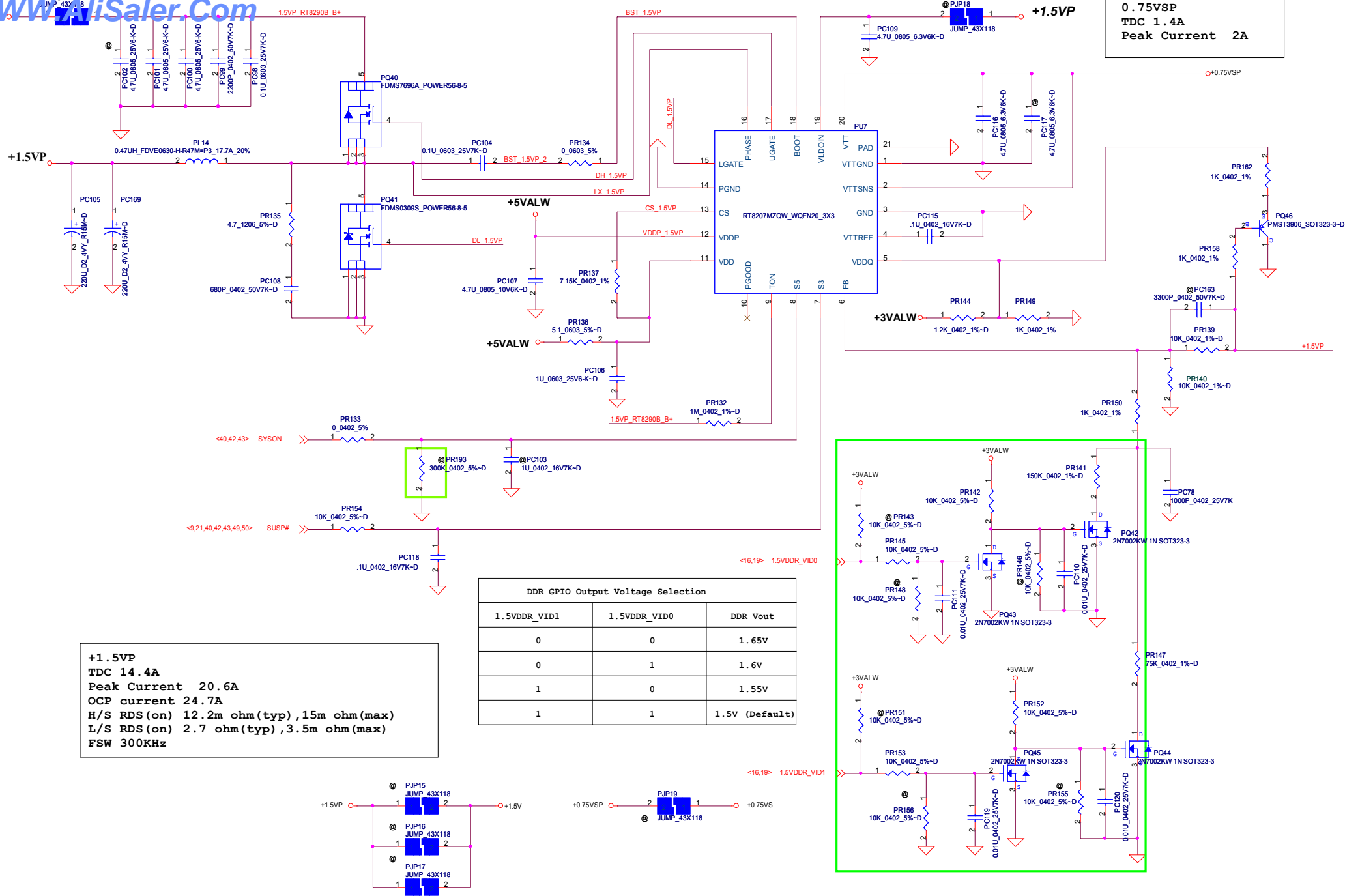
+VCCPP  
TDC 10.7A  
Peak Current 15.3A  
OCP current 18.3A  
H/S RDS(on) 12.2m ohm(typ), 15m ohm(max)  
L/S RDS(on) 2.7m ohm(typ), 3.3m ohm(max)  
FSW 300KHz



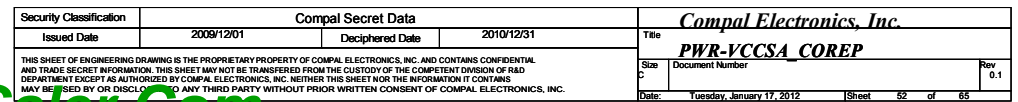
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				Custom	Rev 0.1
				Date:	Tuesday, January 17, 2012
				Sheet	49 of 65

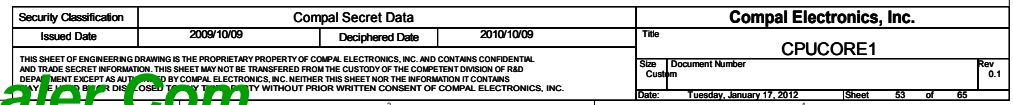


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				Custom		0.
				Date:	Tuesday, January 17, 2012	Sheet 50 of 65

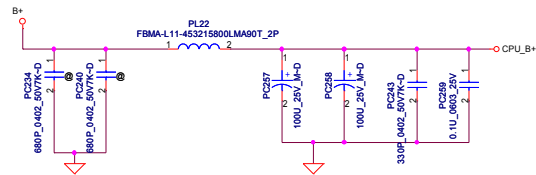
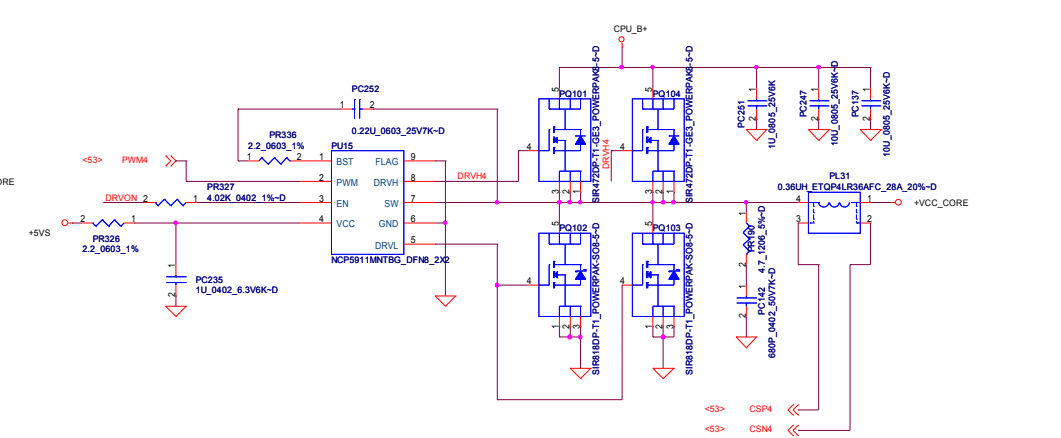
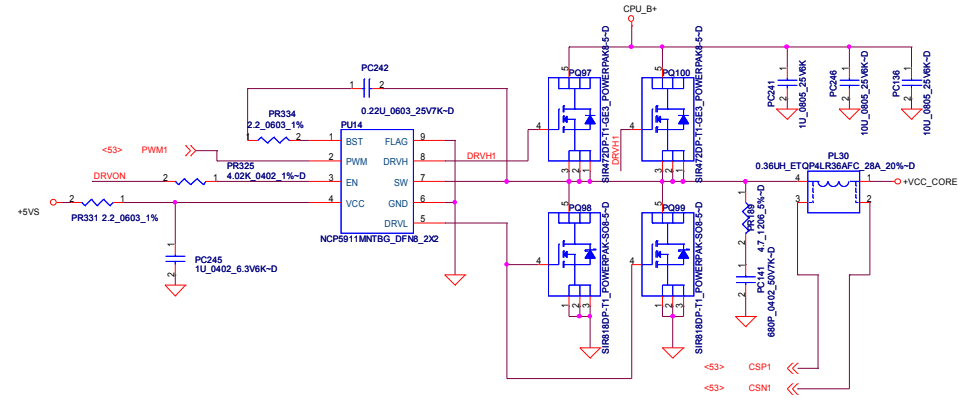
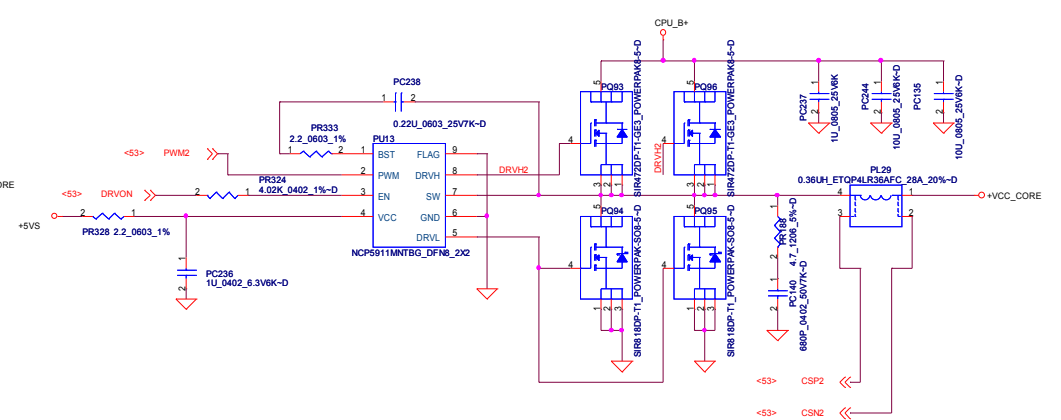
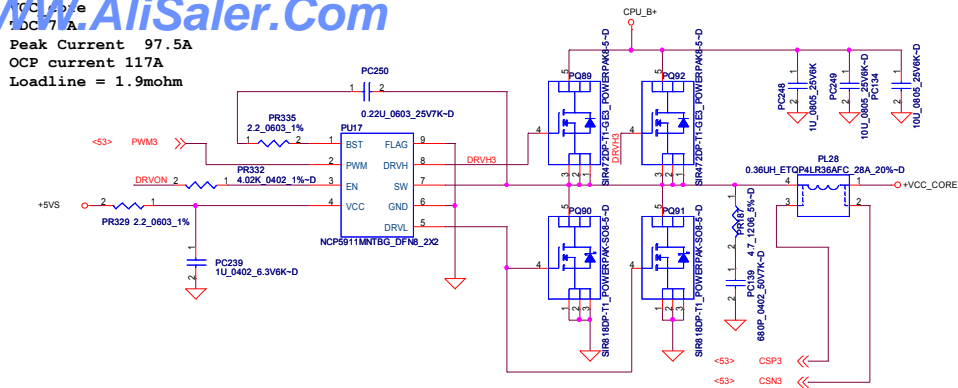


DDR GPIO Output Voltage Selection		
1.5VDDR_VID1	1.5VDDR_VID0	DDR Vout
0	0	1.65V
0	1	1.6V
1	0	1.55V
1	1	1.5V (Default)

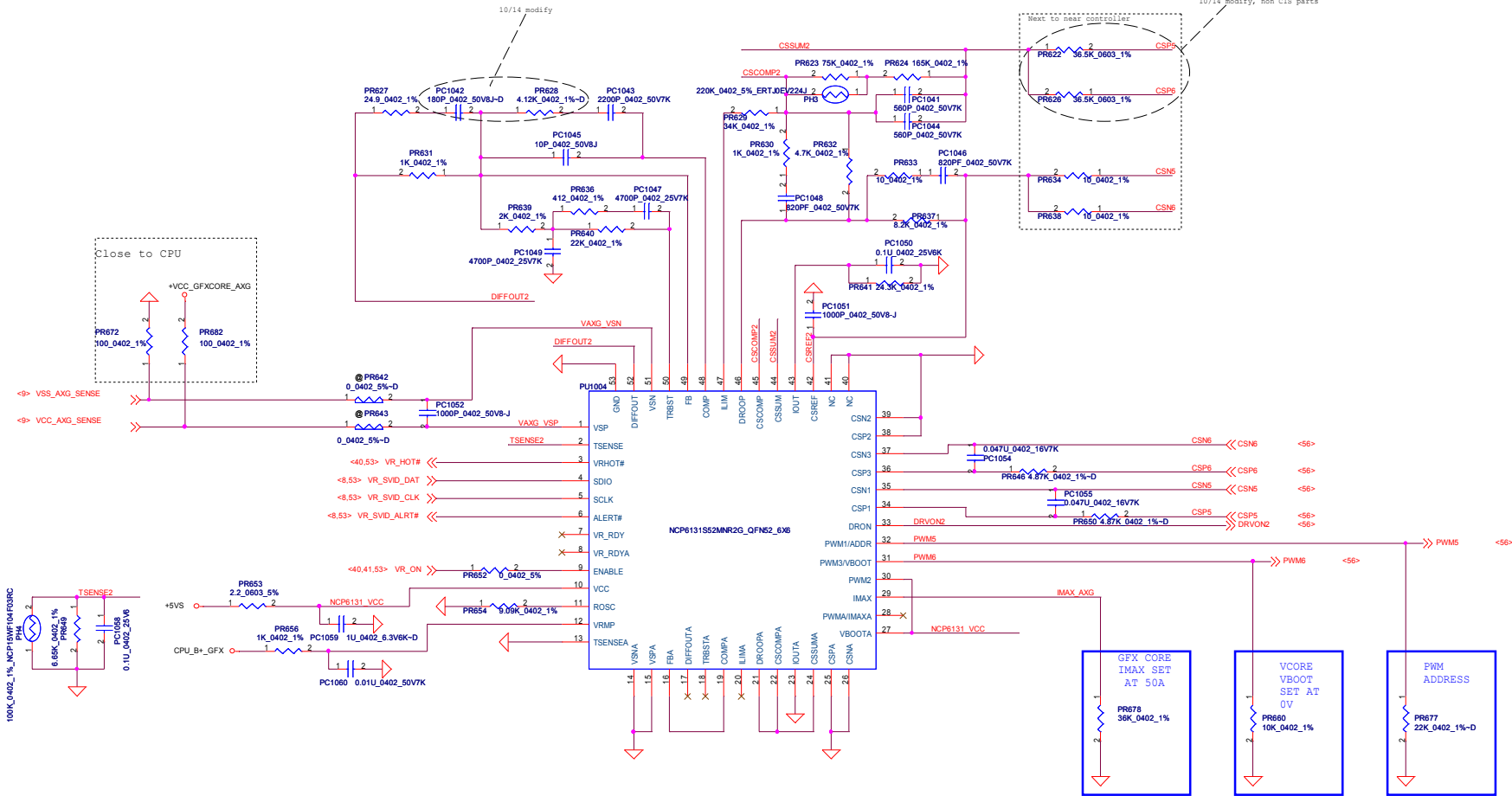




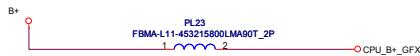
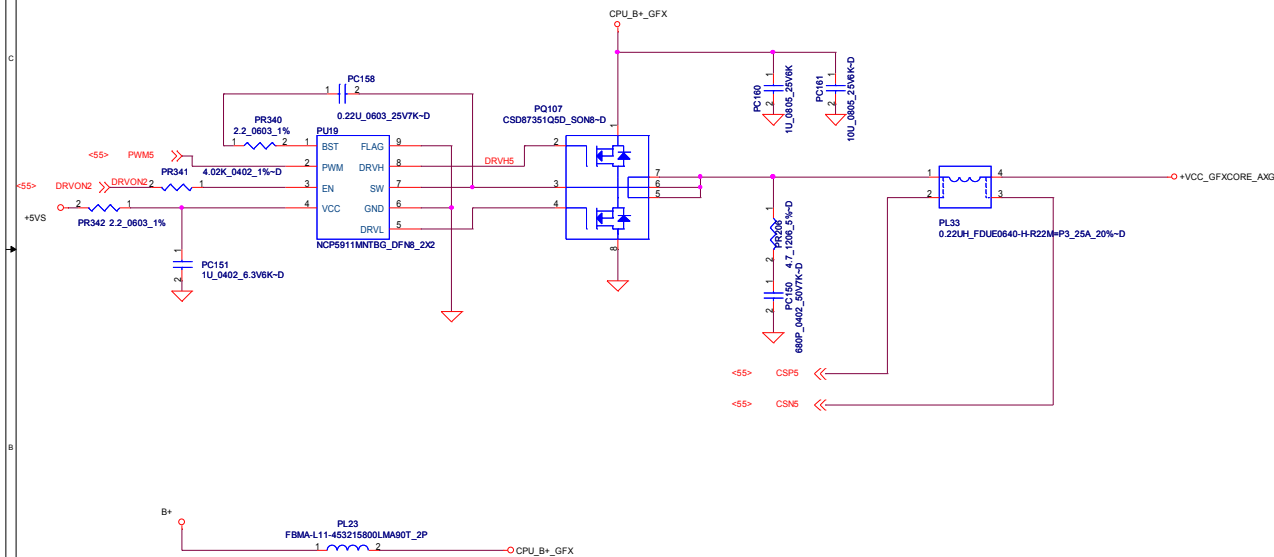
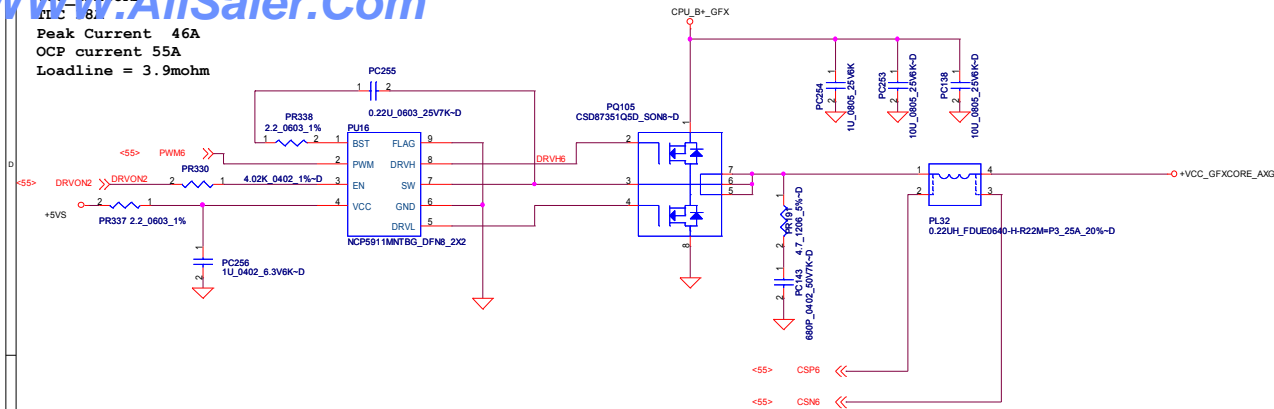
Peak Current 97.5A  
 OCP current 117A  
 Loadline = 1.9mohm



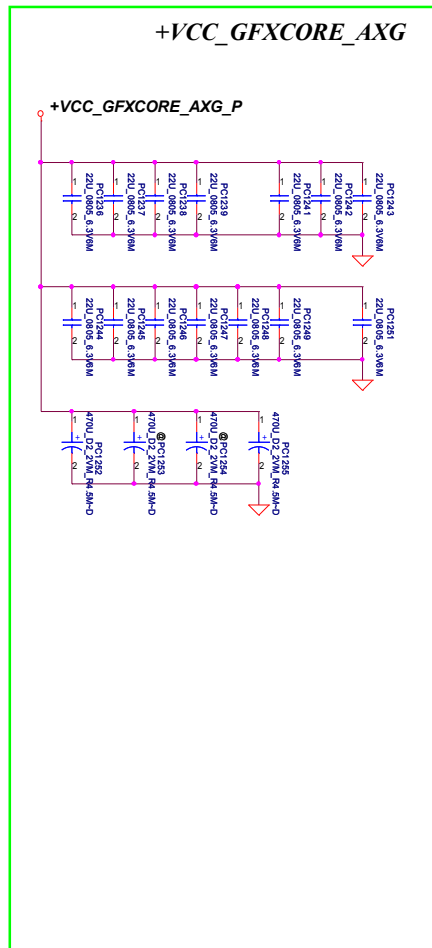
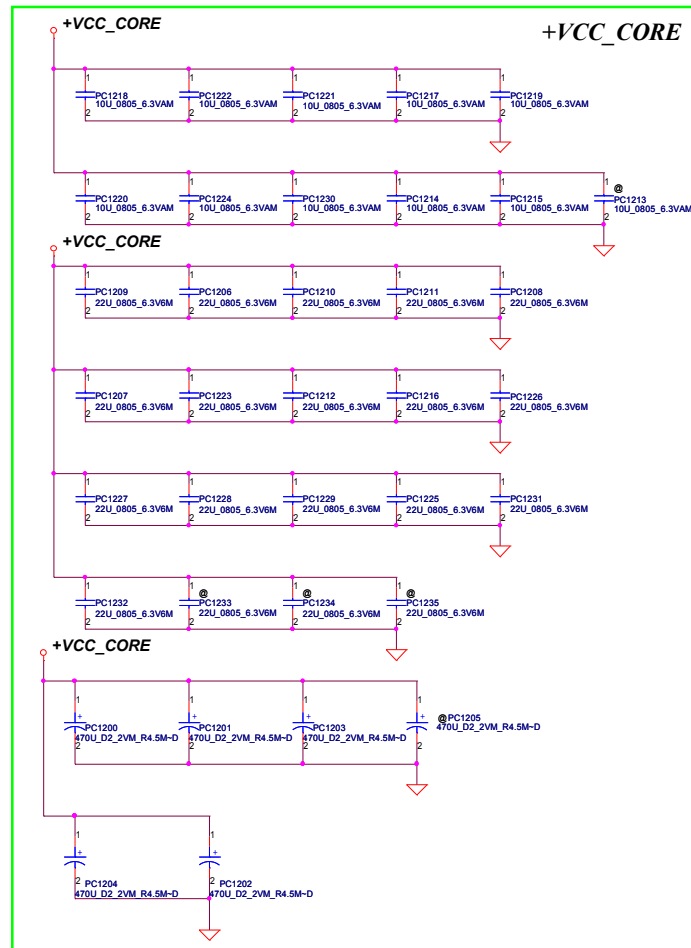
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				Custom	Rev
				Date: Tuesday, January 17, 2012	Sheet 54 of 65



V<sub>C</sub> = 37V CORE  
 I<sub>L</sub> C = 8A  
 Peak Current 46A  
 OCP current 55A  
 Loadline = 3.9mohm

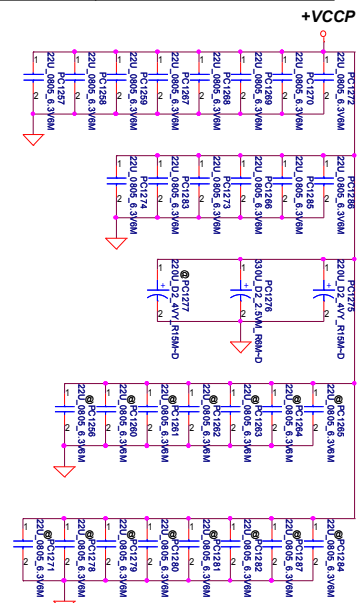


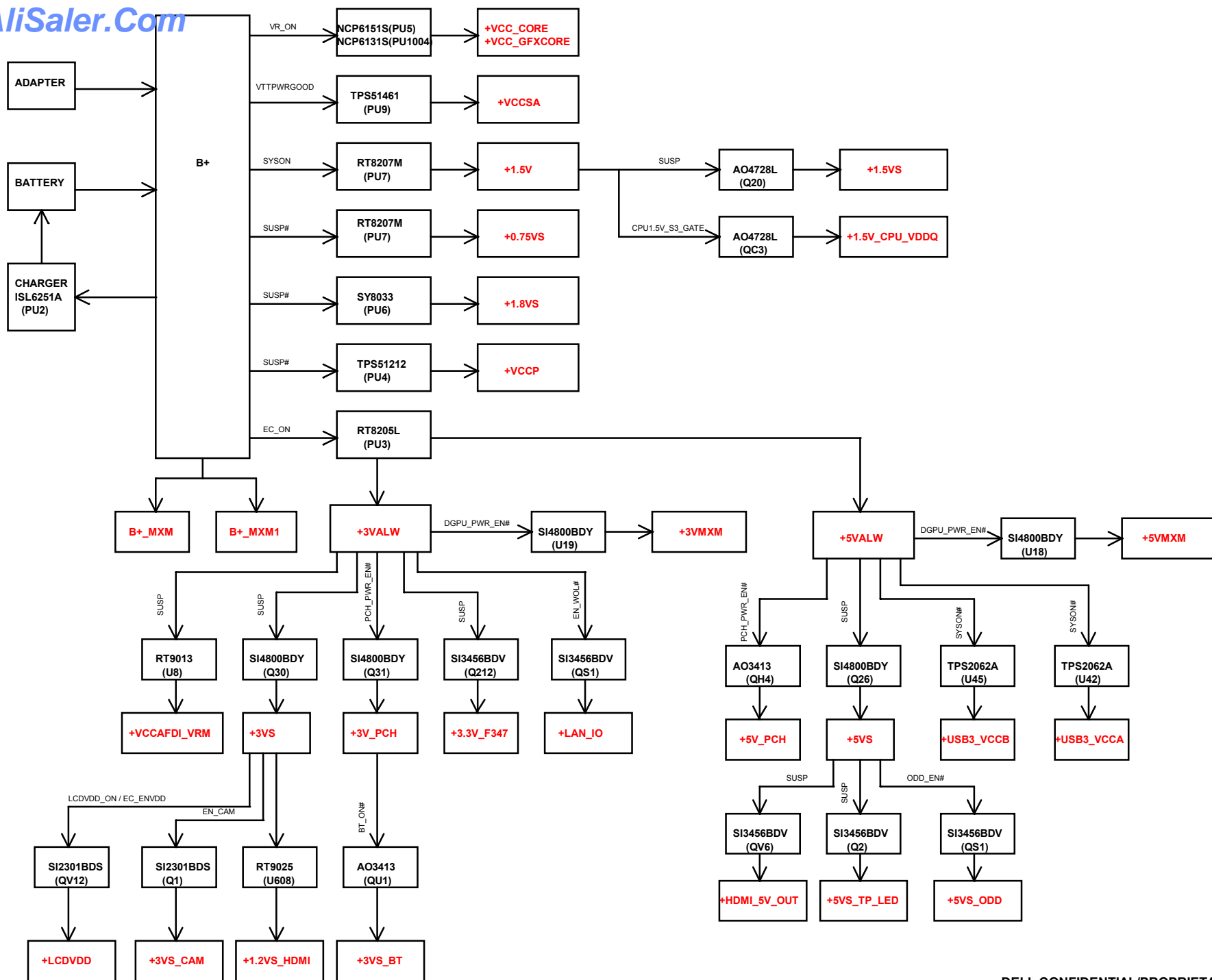
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Size	Document Number	HMA51_HR		Rev
C				0.1
Date: Tuesday, January 17, 2012		Sheet	56	of 65



Below is 458544\_CRV\_PDDG\_0.5 Table 5-8.

Socket Bottom	5 x 22 $\mu$ F (0805) 5 x (0805) no-stuff sites
Socket Top	7 x 22 $\mu$ F (0805) 2 x (0805) no-stuff sites





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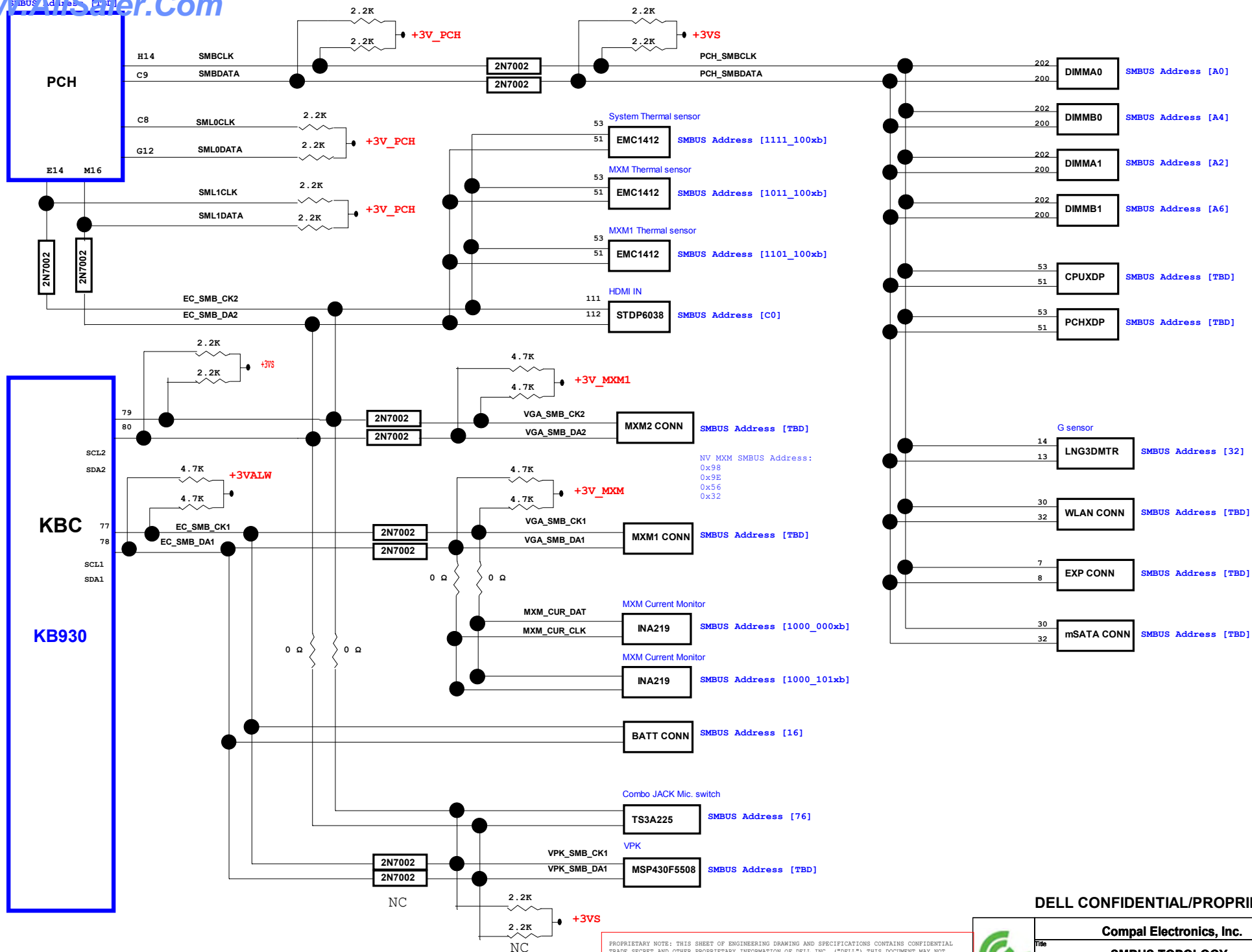
Power Rail

File: LA-6561P  
Site: Tuesday, January 17, 2012  
Document Number: 58 of 65  
Rev: 1.0

Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	52	PWR-VCCSA_COREP	10/05	Alan	SMT NC part (PR262)	BOM structure change to "Do Not Display"	X01
2	45	BATTERY CONN/OTP	10/13	Alan	EC detect the battery is insertion when only adapter in	BATT_PRS pull high from +3VALW to +3VALW_EC	
3	53	CPUCORE1	10/14	Alan	For Intel VCORE test	Change PC18=1500P	X01
4	55	GFXCORE1	10/14	Alan	For Intel Vgfx test	Change PC1042=180P, PR628=4.12K, PC1041=560P, PR622=PR626=36.5K	X01
5	47	CHARGER	10/17	Alan	For charger voltage and current setting	Change PR71=68.1K, PR75=12.7K, PR182=1.43K, PR45=0.005	X01
6	48, 51	3VALWP/5VALWP, +1.5VP/0.75VSP	10/17	Alan	Find tune OC setting	Change PR86 =57.6K, PR87 =93.1K, PR137 =7.15K	X01
7	45, 46	DCIN/DECTOR	10/25	Alan	"US California Energy Efficiency" (Reserve 130mW for no battery mode)	Refer to page 45 PR170, PR171 and page 46 modify	X01
8	46, 47	CHARGER	11/11	Alan	NC revise parts	NC: PD6, PQ23,PQ68, PD11, PD12, PQ20,	X01
9	**	ALL	11/11	Alan	Change source for affected by "Thailand flood"	Refer to PT-Build_SMT MEMO	X01
10	**	ALL	12/13	Alan	Change 0 ohm to short pad	PR5, PR196, PR186, PR185, PR300, PR46, PR112, PR262, PR298, PR299, PR642, PR643	X01
11	50	1.8VSP	12/14	Alan	PL13 footprint is too small to find the 2nd source	Change PL13 footprint for 2nd source	X01
12	48, 54, 56	DCIN/DECTOR	12/23	Alan	PL18, PL22, PL23 footprint DFB modify to larger size	PL18, PL22, PL23 update CIS PART	X02
13	47	DCIN/DECTOR	12/24	Alan	Revise PR164 for EE Jeffy request		X02
14	45	OTP Value modify	01/11	Alan	CPU OTP caculate and test value 93C not mach with schematic 90C	Double check with thermal team and agree change to 93C	X02

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Size	Document Number	Rev
	LA-8321P	0.1
Date	Tuesday, January 17, 2012	
Sheet	59	of 65



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SMBUS TOPOLOGY

LA-8321P

Date: Tuesday, January 17, 2012 Sheet 60 of 65

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# Version Change List (P. I. R. List)

Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	34	SATA HDD	2011/10/4	Compal	HDD EA fial	Add HDD re-driver *3, Add RS11~RS37, US1~US3, CS51~CS68	X01
2	35	WLAN	2011/10/4	Compal	LPC pin assignment error for 80 port	Re-assignment pin	X01
3	40	EC	2011/10/10	Compal	There are double power source for EC	Depop R464	X01
4	40, 18	PCH, EC	2011/10/10	Compal	correct net name for not support deep S4/S5	Change net name from SUSWARN# to SUSPWRDNACK, Change net name from SUSWARN#_R to SUSPWRDNACK_R	X01
5	28	DP SW	2011/10/10	Compal	DP no function, because double CAP for MUX	Delete C1069, C1070, C1071, C1072, C1073, C1074, C1075, C1076, C1079, C1109, C1127, C1128, C1138, C1139, C1140, C1141, C1203, C1204, C1205, C1206	X01
6	40	EC	2011/10/10	Compal	Change board ID to V0.2	Change R466 from 0 ohm to 8.2K ohm	X01
7	17	PCH	2011/10/11	Compal	Sourcer require change crystal size to 3225	Change YH2 PN to SJ10000EF00	X01
8	31	GLAN	2011/10/11	Compal	Sourcer require change crystal size to 3225	Change YL1 PN to SJ10000EF00	X01
9	44	VPK	2011/10/11	Compal	Sourcer require change crystal size to 3225	Change YH3 PN to SJ10000DI00	X01
10	16	PCH	2011/10/11	Compal	Sourcer require change crystal size to 3215	Change YH1 PN to SJ10000DM00	X01
11	40	EC	2011/10/11	Compal	Sourcer require change crystal size to 3215	Change X1 PN to SJ10000DM00	X01
12	30	HDMI IN	2011/10/11	Compal	Sourcer require change crystal size to 3225	Change Y5 PN to SJ10000970L	X01
13	30	HDMI IN	2011/10/11	Compal	Follow Vandor feedback modify CAP value of crystal	Change C1751, C1750 from 27P to 12P	X01
14	27	HDMI SW	2011/10/11	Compal	HDMI eye diagram fail	Add R2600, pop R1855, R1857	X01
15	34	SATA HDD	2011/10/12	Compal	Add SATA re-driver co-lay circuit	Add RS38~RS49, CS69~CS80	X01
16	5	PCH	2011/10/13	Compal	PM_DRAM_PWRGD have glitch and leakage	Change RC18 from 200 ohm to 10k ohm	X01
17	44	VPK	2011/10/14	Compal	Depop VPK function	Depop CD75, C2011~C2015, RH137, CH100, CH101, YH3, R2, R227, R1607, R1578 C294, C1754, C1755, F6, R198, C1753, R197, R1823~R1825, R1837~R1840, R1843	X01
18	44	VPK	2011/10/14	Compal	Sourcer require change arrey resister to single	Delete RP1~RP6, add R2601~R2624	X01
19	40	EC	2011/10/14	Compal	Sourcer require change arrey resister to single	Delete RP7~RP12, add R2625~R2648	X01
20	19	PCH	2011/10/14	Compal	Sourcer require change arrey resister to single	Delete RPH1~RPH5, add RH267~RH285	X01
21	34	SATA HDD	2011/10/18	Compal	Delete HDD3 SATA re-driver circuit	Delete RS42~RS45, CS73~CR76, RS20~RS28, CS57~CS62, US2	X01
22	27	HDMI SW	2011/10/19	Compal	Intel feedback change HDMI DDC pull high resister value	Change R437, R438, R461, R462 from 4.7k ohm to 2.2k ohm	X01
23	27	HDMI SW	2011/10/19	Compal	Intel feedback change HDMI HPD implementation	Depop Q264, R1741, R1742, C1058, R1743, add R2652	X01

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Changed-List History 1



Title	Document Number	Rev
LA-8321P	61	0.1
Date: Tuesday, January 17, 2012	Sheet	of 65

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# Version Change List (P. I. R. List)

Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
24	29	DMC SW	2011/10/19	Compal	Intel feedback change DMC HPD implementation	Delete R1236, R1237, Add R2649	X01
25	29	DMC SW	2011/10/19	Compal	Intel feedback add DMC AUX PU/PD resister	Add R2650, R2651	X01
26	9	CPU	2011/10/19	Compal	Modify CPU DDR Vref circuit	Delete QC5, RC76, RC77, change RC118 connect from +1.5V to +1.5V_CPU_VDDQ	X01
27	22	PCH	2011/10/19	Compal	Intel feedback follow PDDG	Delete LH4, depop CH73	X01
28	22	PCH	2011/10/19	Compal	Intel feedback follow PDDG	Delete RH224, RH225, RH227	X01
29	21	PCH	2011/10/19	Compal	Intel feedback follow PDDG	Change LH9 to RH287 (0 ohm)	X01
30	20	PCH	2011/10/19	Compal	Intel feedback follow PDG	Pop RH181, Add RH286	X01
31	33	Audio Amplifier	2011/10/20	Compal	Audio Amplifier burned issue	Add D74, D75, C2035, C2036	X01
32	33	Audio Amplifier	2011/10/21	Compal	Audio Amplifier burned issue	Change C932, C1102 connect from B+ to +AMP_VDD	X01
33	32	Audio Jcak	2011/10/21	Compal	Change JHP2 connector	Change JHP2 footprint to SINGA_2SJ3062-000111F_6P-T	X01
35	5	XDP	2011/10/21	Compal	Depop CPU XDP	Depop RC84~RC95, RC5~RC9, RC112, RC113, CC65, CC66	X01
36	16	XDP	2011/10/21	Compal	Depop PCH XDP	Depop RH1, RH3~RH10, RH12~RH21, RH24, RH51, CH1	X01
37	20, 26	PCH, CRT	2011/10/21	Compal	CRT leakage	Depop RH178, add RV115	X01
38	32	Audio Jcak	2011/10/22	Compal	Change JHP2 connector from NC to NO	Change JHP2 symbol, add RA24, depop R149, QU4	X01
39	29	DMC SW	2011/10/22	Compal	DMC AUX channel pu/pd location error	Change R2650, R2651 connect from U132 to CONN	X01
40	32	AUDIO	2011/10/22	Compal	Reserve for pop noise	Add RA25~RA27, change U631 and U629 pin B2 connect to +3.3V_MUTE	X01
41	34	ODD	2011/10/24	Compal	Zero power ODD function	Pop RS10	X01
42	28	DP SW	2011/10/24	Compal	Vendor feedback DP MUX need CAP for input and output	Add C1069, C1070, C1071, C1072, C1073, C1074, C1075, C1076, C1079, C1109, C1127, C1128, C1138, C1139, C1140, C1141, C1203, C1204, C1205, C1206 Change C1190~C1194, C1164, C1177, C1178, C1200, C1201 to 220nF	X01
43	25	CCD	2011/10/24	Compal	Reserve for EMI	Add L101, depop RV10, RV51, change D61 connect to onnector side	X01
44	28	DP SW	2011/10/24	Compal	DP dongle can't display on UMA mode	Change U633, delete C1200, C1201, add U634, C2037, C2038 Change C1203~C1206 from 0.22uF to 0.1uF Change AUX, DDC, HDP connect	X01
45	43	PWR BTN	2011/10/24	Compal	Avoid SW reverse at SMT	NC SW1 pin 1 & pin 4 and SW2 pin 1 & pin 4	X01
46	30	HDMI IN	2011/10/24	Compal	(STDP6038) doesn't need to read / write the panel EDID	de-pop R1880, R1881	X01

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<b>Compal Electronics, Inc.</b>			
<b>Changed-List History 1</b>			
Title	Document Number		
Size	LA-8321P		Rev 0.1
Date	Tuesday, January 17, 2012		
Sheet	62	of	65

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# Version Change List ( P. I. R. List )

Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
47	30	HDMI IN	2011/10/24	Compal	keep I2S_DAT/SPDIF_IN has fine performance	change R1882 to C2039 0.1UF	X01
48	30	HDMI IN	2011/10/24	Compal	reserver these soltion to avoid I2S_DAT/SPDIF_IN signal has attenuation problem duo to long trance	add U635, C2040	X01
49	32	Audio	2011/10/24	Compal	change combo jack dection method	de-pop R2585, pop R1244	X01
50	32	AUDIO	2011/10/24	Compal	Reserve for pop noise	Add C2041	X01
51	32	AUDIO	2011/10/24	Compal	JACK_PLUG funcion reverse duo to JACK change to normal open type	add R2653 and QU8	X01
52	32	AUDIO	2011/10/24	Compal	vendor suggestion	change R1752 to C2042 0.1UF	X01
53	32	AUDIO	2011/10/25	Compal	change combo jack dection circuit	pop R149, QU4, depop RA24, change QU8 connect	X01
54	32	AUDIO	2011/10/25	Compal	HP fast plug in/out issue	change RC107, RC114 to 1k ohm and pop	X01
55	32	AUDIO	2011/10/25	Compal	pop noise issue	change RA20, RA21 to 0 ohm	X01
56	32	AUDIO	2011/10/26	Compal	pop noise issue	change RA22, RA23 to 0 ohm	X01
57	43	USB3.0	2011/10/26	Compal	base on EA result, depop MB usb3.0 re-driver	change C205~C208 to 0 ohm (R2654~R2657) and pop, pop C209~C212, R358~365 depop C100, C111~C113, C140, C156, C186, C187, C194~C196, C200, C2025~C2028, R374, R375, R378, R379, R416~R418, R421, U630, U632	X01
58	43	PWR BTN	2011/10/26	Compal	"US California Energy Efficiency" (Reserve 130mW for no battery mode)	Add Q305, Q306, R2658	X01
59	5	XDP	2011/10/26	Compal	Depop CPU XDP	Depop RC23~RC24, RC30~RC31, RC33~RC34, RC36~RC39	X01
60	32	AUDIO	2011/10/26	Compal	HP fast plug in/out issue	change RC109, RC115 to 1k ohm and pop	X01
61	29	DMC	2011/10/26	Compal	Reserve for DMC card	Add R2659	X01
62	29	DMC	2011/10/26	Compal	add ESD protect for DMC card	change Q302 to SB00000EN00	X01
63	26	CRT	2011/10/27	Compal	rise and fall time fail	change LV1~LV3 from 75 ohm to 47 ohm	X01
64	32	Audio	2011/10/27	Compal	audio THD+N fail	change C11, C14 to 2.2uF 0805 16V	X01
65	40	EC	2011/11/09	Compal	For Erp lot 6, reduce power consumption on S5 mode	change R483, R493 from 10K to 100K ohm	X01
66	26	CRT	2011/11/09	Compal	For EMI test fail	change LV1~LV3 from 47 ohm to 60 ohm	X01
67	42	DC-DC	2011/11/09	Compal	For PCH_PWR_EN leakage	depop R556, pop R553	X01
68	28	DP	2011/11/25	Compal	DP can't hot plug issue	depop R2261 and R2262	X01

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Compal Electronics, Inc.			
Title			
Changed-List History 1			
Size	Document Number	Rev	
	LA-8321P	0.1	
Date:	Tuesday, January 17, 2012	Sheet	63 of 65

# Version Change List (P. I. R. List)

Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
69	34	HDD	2011/11/25	Compal	SATA EA test fail	pop RS13, RS14, RS31, RS32	X01
70	24	LCD	2011/11/30	Compal	LCD EA test fail	Change RV32 from 100 ohm to 47 ohm	X01
71	26	CRT	2011/11/30	Compal	CRT EA test fail	Change LV4, LV5 from bead to 0 ohm, CV24, V25 from 10P to 4.7P	X01
72	33	Audio	2011/11/30	Compal	Audio amplifier fine tune	Change R929, R939 from 16.5k ohm to 20.5k ohm, R1195 from 10k ohm to 14k ohm	X01
73	16	Crystal	2011/11/30	Compal	Crystal fine tune	Change CH2 from 18P to 15P	X01
74	17, 40	PCH, EC	2011/12/08	Compal	Chang KB_DET# from PCH to EC (pin 34)	Chang KB_DET# from PCH to EC (pin 34), DEL R1733, add R2660	X02
75	32	Audio	2011/12/08	Compal	S3/S4/S5/G3 have noise when insert external speaker	Add QA1, RA28, RA29	X02
76	40	EC	2011/12/08	Compal	"US California Energy Efficiency"	Add R2661, Q307	X02
77	34	ODD	2011/12/08	Compal	ADD pull down resister for ODD_EJEECT#	Add RS50	X02
78	34	ODD	2011/12/13	Compal	Reduce 0 ohm	delete RS6	X02
79	All	All	2011/12/13	Compal	Reduce 0 ohm	change 0 ohm to short pad	X02
80	32	Audio	2011/12/13	Compal	change HP mute IC's power rail to +3VALW	change HP mute IC's power rail to +3VALW, pop RA27, depop RA25	X02
81	43	IO CONN	2011/12/14	Compal	add +5V_ALW pin for USB	change JIO1 pin 13 to +5VALW, pin 14 to ground	X02
82	40 44	SMBus	2011/12/15	Compal	Battery can't charge when with N13-GS MXM card	add R2662, R2663, depop R2583, R2584, Q304, Change R470, R473 to 4.7k	X02
83	16-23	PCH	2011/12/16	Compal	change PCH to QS sample	change UH4 part number to SA00005AG1L	X02
84	40	EC	2011/12/16	Compal	Change board ID to V0.3	Change R466 from 8.2K ohm to 18K ohm	X02
85	32	Audio	2011/12/19	Compal	Modify line-in circuit	Change R2550 connect to LINEIN_L_L1	X02
86	19	PCH	2011/12/19	Compal	nVIDIA N-13 GE can't detect	Change UH5 to SN74AHC1G08DCKR, RH230 to 0 ohm, depop R1908, pop RH231	X02
87	43	USB 3.0	2011/12/20	Compal	delete USB 3.0 redriver and co-lay circuit	delete U630, U632, C100, C111~C113, R1844, R1845, R424, R411~R418, R374, R375, R378, R379, R4, R5, R12, R17, R25, R30, R32, R35, R44~R53, R63, R66, R67, R81, R83, R108, R190, R195, R290, R313, R314, R323, R326, R337, R421, R358~R365, R2654~R2657, C140, C156, C186, C187, C2025~C2028, C194~C196, C200, C209~C212	X02
88	32	Audio	2011/12/22	Compal	iPHONE's mic can't recording	depop R8, R9	X02
89	43	USB 3.0	2011/12/22	Compal	delete USB 3.0 redriver and co-lay circuit	delete C209~C212	X02
90	30	HDMI IN	2012/01/02	Compal	HDMI IN debug function	pop R1650, R1651	X02
91	35	BT	2012/01/03	Compal	can't disable bt of combo card	change RE42 to 0 ohm, add RE43, connect BT_RADIO_DIS# to JWLAN pin 51	X02

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<b>Compal Electronics, Inc.</b>			
<b>Changed-List History 1</b>			
Size	Document Number	Rev	
	<b>LA-8321P</b>	0.1	
Date:	Tuesday, January 17, 2012	Sheet	64 of 65

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# Version Change List ( P. I. R. List )

Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
92	32 40 17	AUDIO	2012/01/03	Compal	ADD SPDIF detect pin	add net SPDIF_DET# connect JSPDIF pin 5 to EC pin 76, change R1829 connect to SPDIF_DET#, change IO_DET# to PCH gpio64, add R1737	X02
93	35	DMC	2012/01/04	Compal	double pull up	del R945	X02
94	40	board ID	2012/01/04	Compal	Change board ID to V0.4	Change R466 from 18K ohm to 33K ohm	X02
95	32	audio	2012/01/06	Compal	pop noise issue	add U632, RA30, RA31, C1874	X02
96	32	audio	2012/01/09	Compal	THD+N measure	add C1601, change RA30, RA31 to RA16 RA17 pin 2	X02
97	32	audio	2012/01/09	Compal	MIC fine turn	Change RA13 R1243 from short pad to 0 ohm	X02
98	32	audio	2012/01/11	Compal	THD+N fail	change C11, C14 to 25V X5R	X02
99	35	BT	2012/01/16	Compal	enable debug function on minicard	pop RE42, change RE43 to 1k ohm	X02
100	32	AUDIO	2012/01/17	Compal	Thailand flood impact	change C123, C129, C132, C133 to SGA00004D00	X02

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Title		
Changed-List History 1		
Size	Document Number	Rev
	LA-8321P	0.1
Date:	Tuesday, January 17, 2012	Sheet 65 of 65