

# Compal Confidential

## Avenger MLK

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

Rev: 1.0 (A00)

2012.02.16

@ : Nopop component

CONN@ : ME connector

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL  
TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT  
BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION,  
NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD  
PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

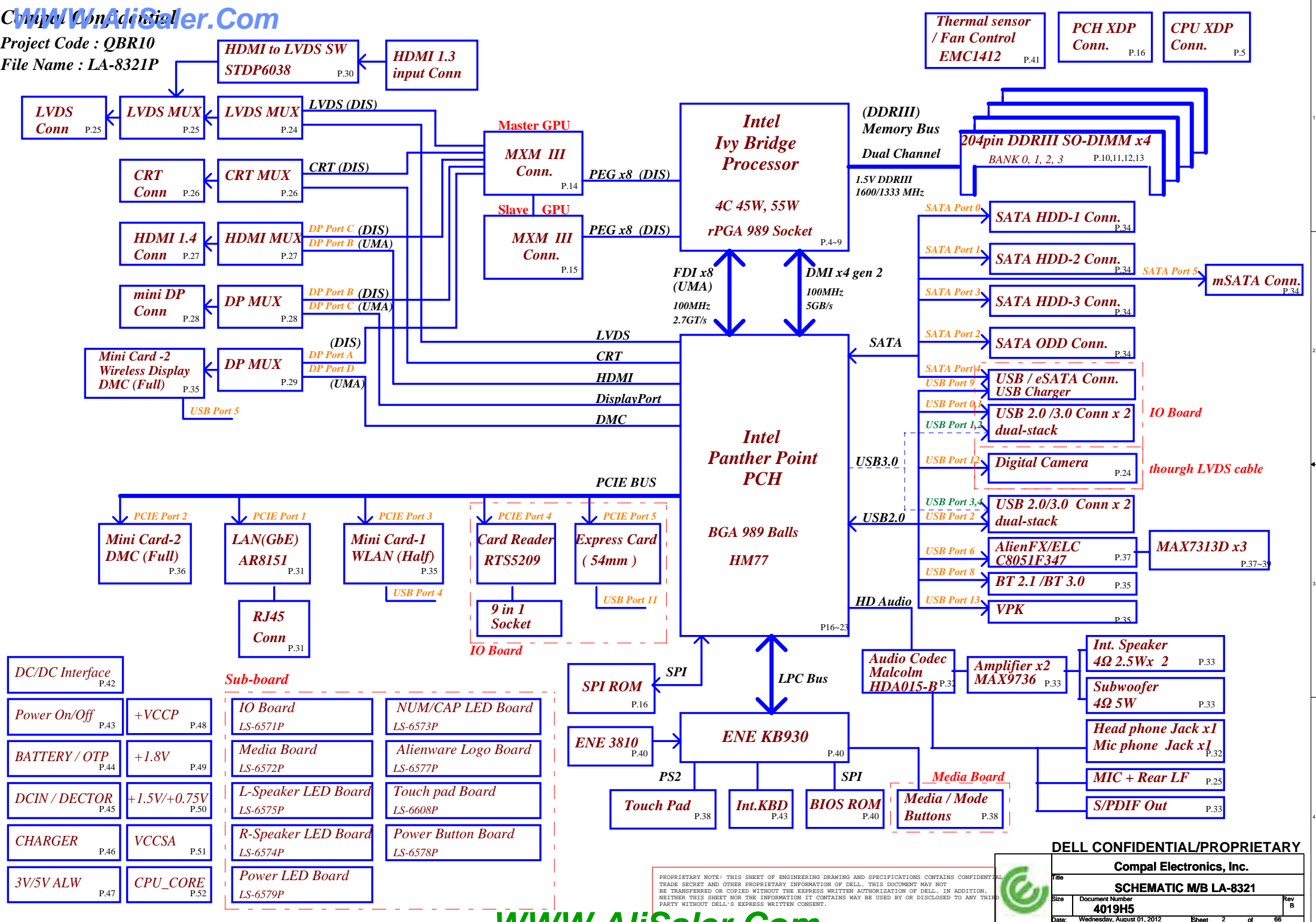


DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title		
SCHEMATIC M/B LA-8321		
Size	Document Number	Rev
	4019H5	B
Date:	Wednesday, August 01, 2012	Sheet 1 of 66





DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.			
SCHEMATIC M/B LA-8321			
Size	Document Number	Rev	
	4019H5	B	
Date	Wednesday, August 01, 2012	Sheet	2 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



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	+1.5V	+5VS
	+5VALW +3VALW +3VLP +3V_PCH		+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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

File

SCHEMATIC M/B LA-8321

Size

Document Number

4019H5

Date

Wednesday, August 01, 2012

Sheet

3

of

66

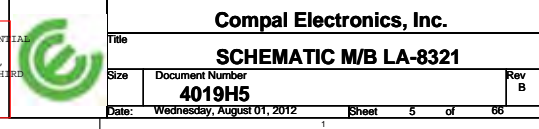
Rev

B

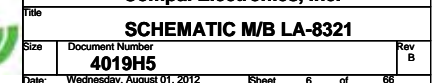
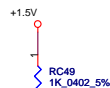
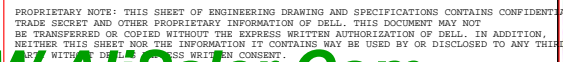
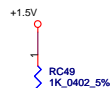
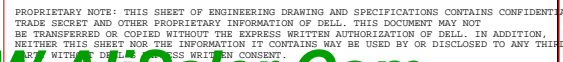






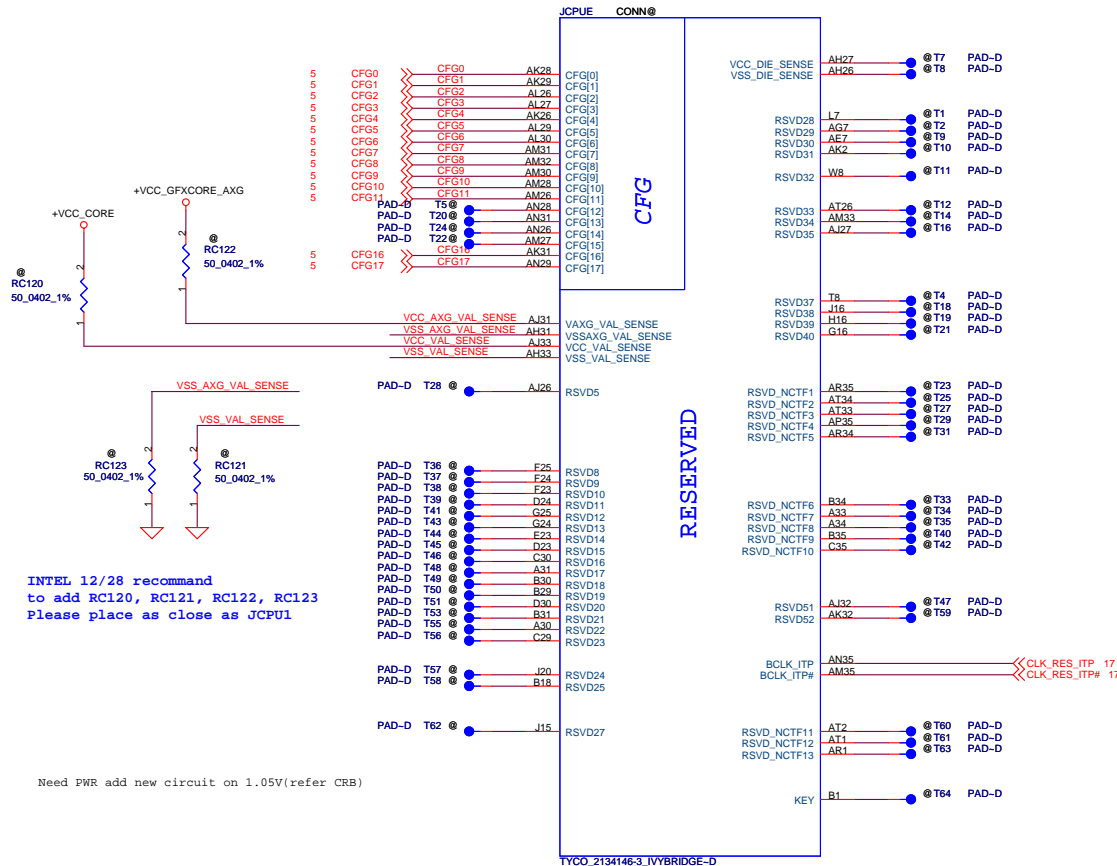








# CFG Straps for Processor



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)

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

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

Size Document Number  
4019H5  
Date: Wednesday, August 01, 2012 Sheet 7 of 68

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT.





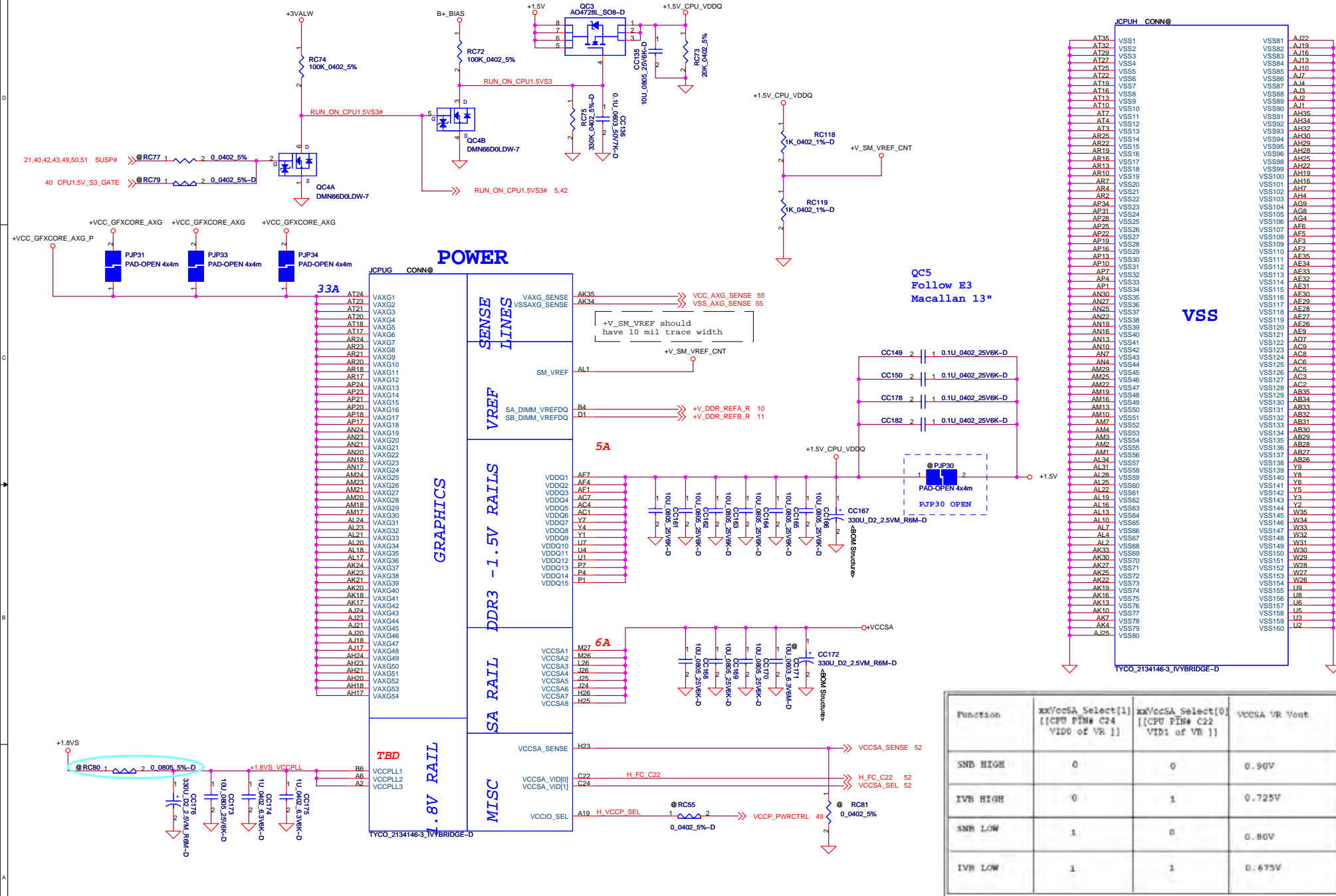
**Compal Electronics, Inc.**

**SCHEMATIC M/B LA-8321**

Re

Date: Wednesday, August 01, 2012 Sheet 8 of 66





Function	xx/VccSA_Select[1] [[CPU PIN# C24 VID0 of VR ]]	xx/VccSA_Select[0] [[CPU PIN# C22 VID1 of VR ]]	VCCSA VR Vent
SNB HIGH	0	0	0.90V
IVB HIGH	0	1	0.725V
SNB LOW	1	0	0.80V
IVB LOW	1	1	0.675V

DELL CONFIDENTIAL/PROPRIETARY

**Compal Electronics, Inc.**

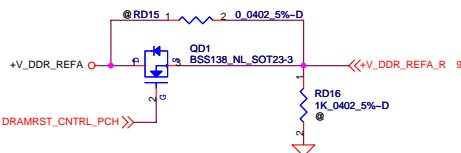
**SCHEMATIC M/B LA-8321**

Size	Document Number	Rev
	<b>4019H5</b>	E
Date:	Wednesday, August 01, 2012	Sheet 9 of 66

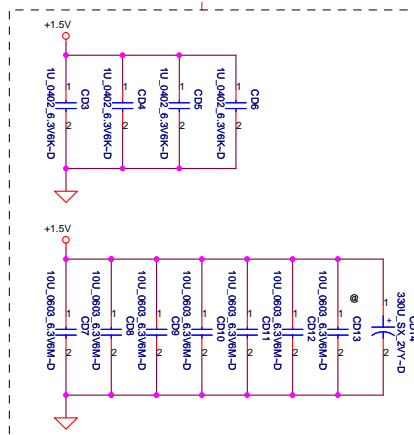


6,12 DDR\_A\_DQS#0..7 <<>  
 6,12 DDR\_A\_DQS#0..7 <<>  
 6,12 DDR\_A\_DQ#0..63 <<>  
 6,12 DDR\_A\_MAJ#0..15 <<>

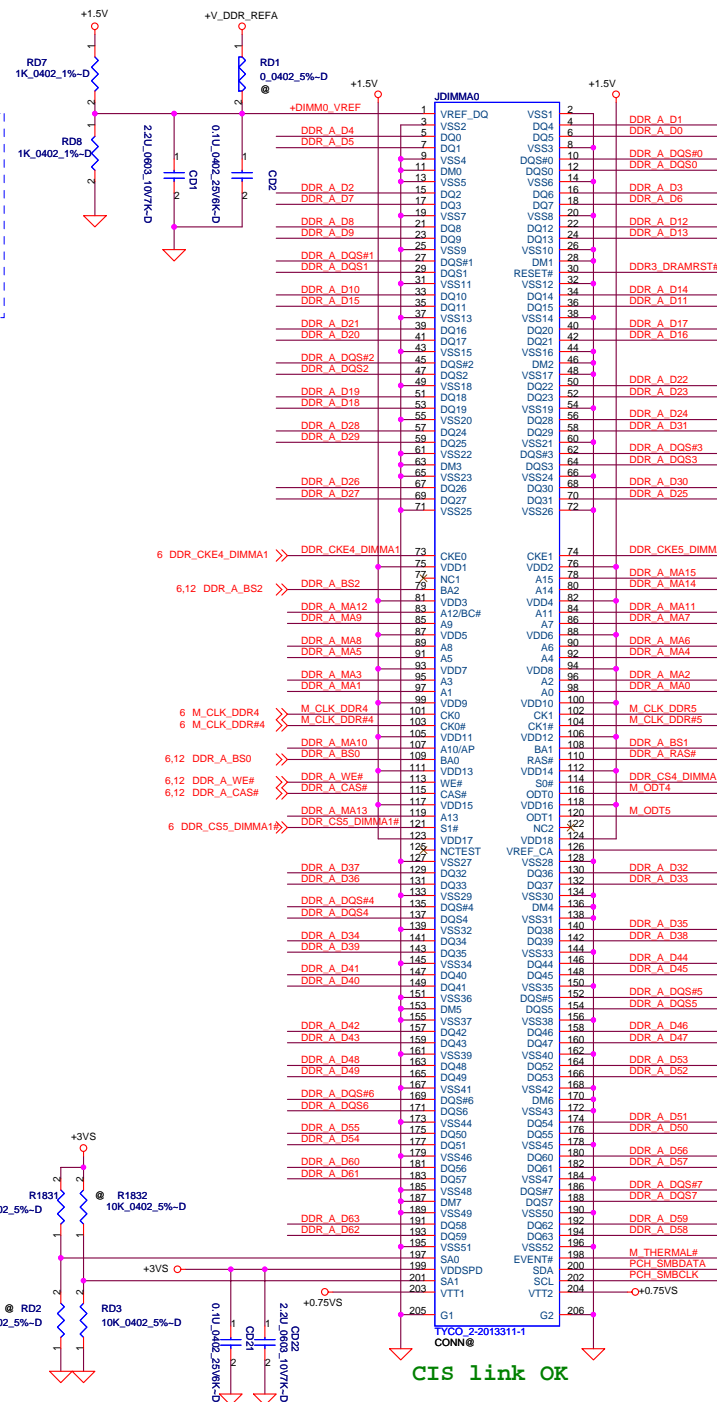
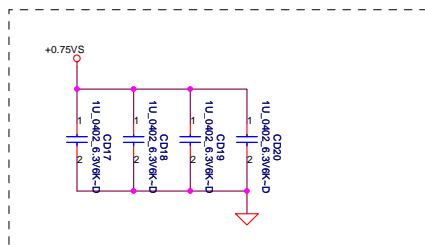
M3 Circuit (Processor Generated SO-DIMM VREF\_DQ)



Layout Note:  
Place near JDIMMA

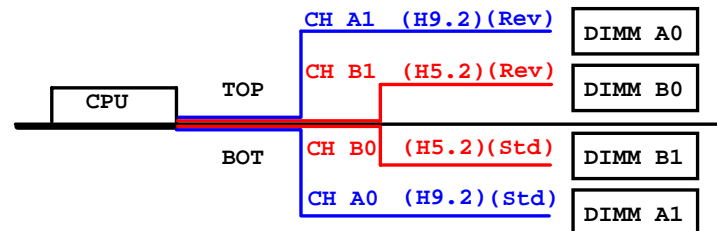


Layout Note:  
Place near JDIMMA.203,204



CIS link OK

DIMM A0  
REV TYPE (H9.2)



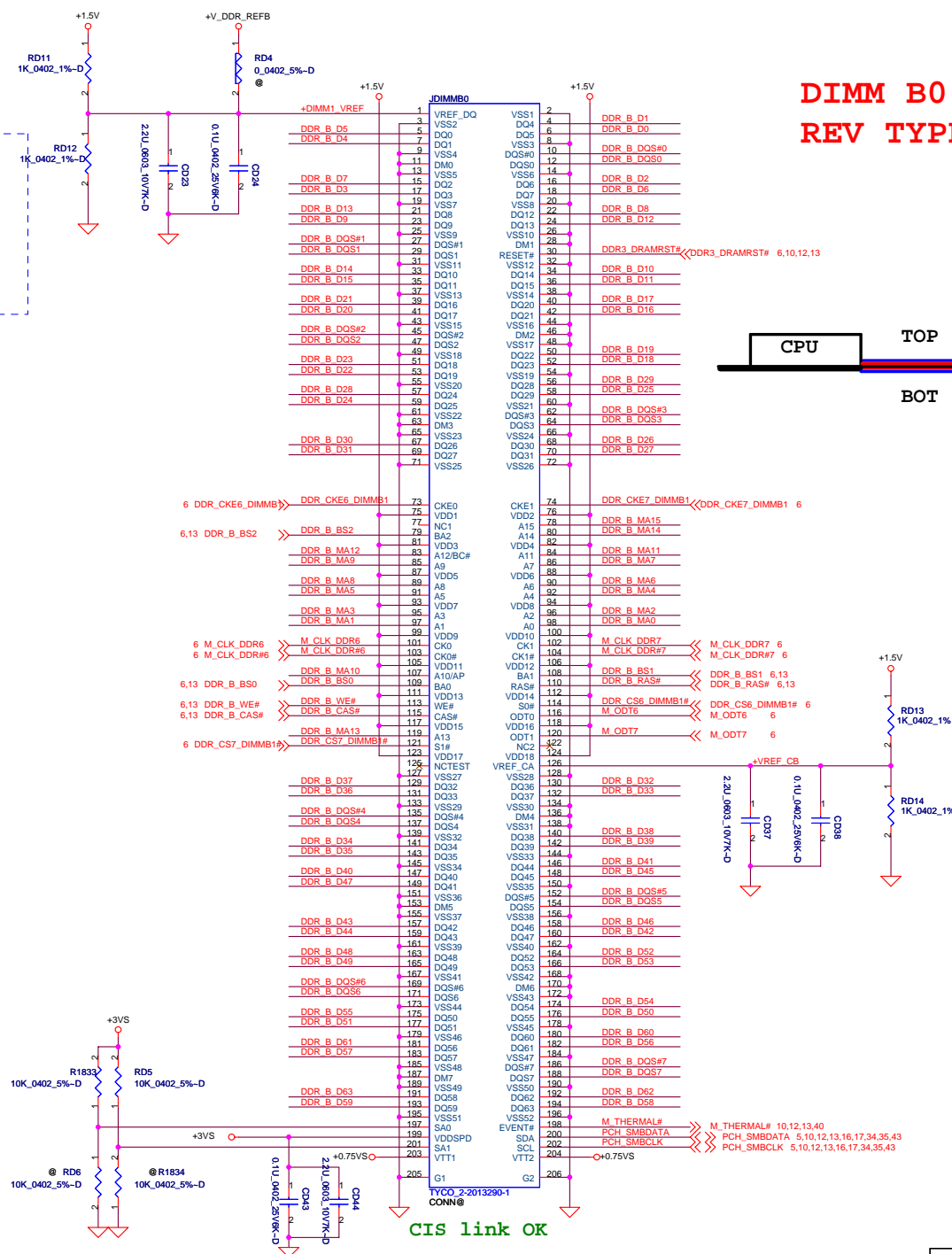
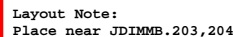
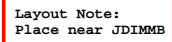
PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title			SCHEMATIC M/B LA-8321
Size	Document Number	Rev B	
	4019H5		
Date:	Wednesday, August 01, 2012	Sheet	10 of 66





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

✓ CIS link OK

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL, TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

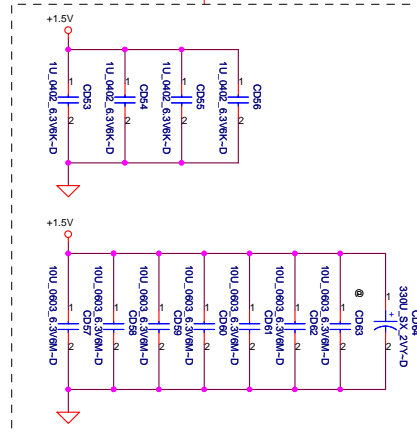
**Compal Electronics, Inc.**

Title			
SCHEMATIC M/B LA-8321			
Size	Document Number		Rev
	4019H5		B
Date:	Wednesday, August 01, 2012	Sheet	11 of 66

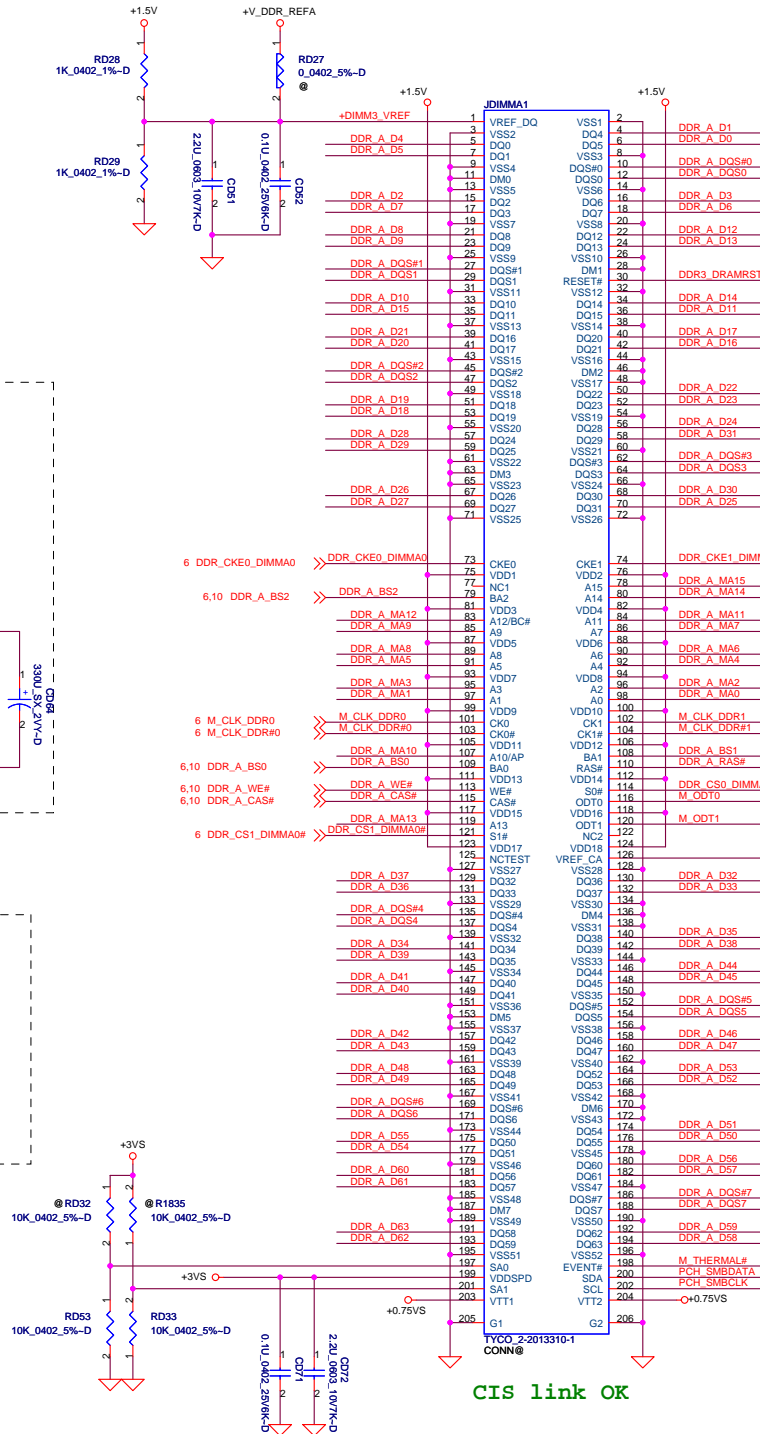
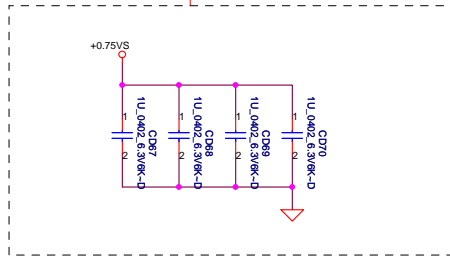


6,10 DDR\_A\_DQS#[0..7] >>  
6,10 DDR\_A\_DQS#[0..7] >>  
6,10 DDR\_A\_D[0..63] >>  
6,10 DDR\_A\_MA[0..15] >>

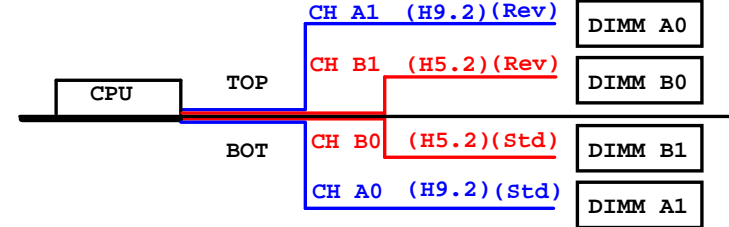
Layout Note:  
Place near JDIMMC



Layout Note:  
Place near JDIMMC.203,204



## DIMM A1 STD TYPE (H9.2)



CIS link OK

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE REPRODUCED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

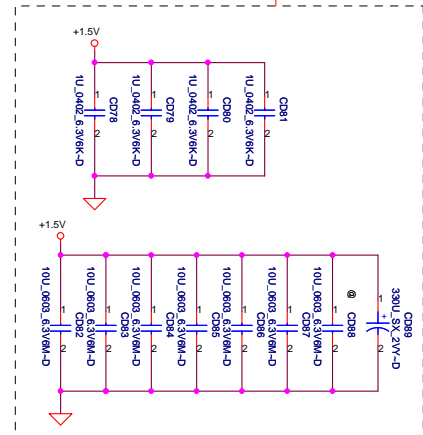
SCHEMATIC M/B LA-8321

File  
Size  
Date: Wednesday, August 01, 2012  
Document Number  
4019H5  
Sheet 12 of 68  
Rev B

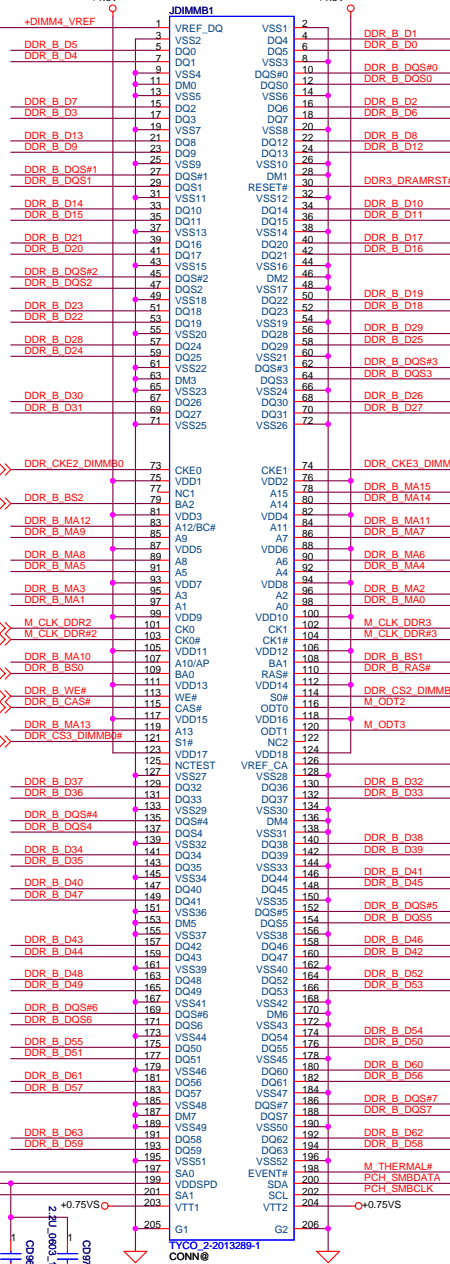
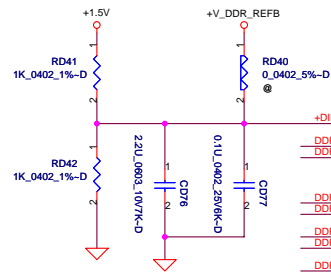
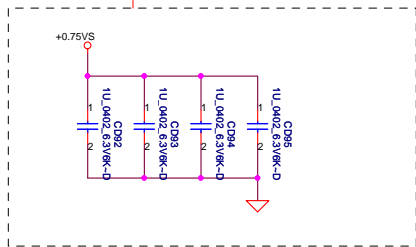


6,11 DDR\_B\_DQS#[0..7] <<<  
6,11 DDR\_B\_DQS#[0..7] <<<  
6,11 DDR\_B\_DQ#[0..63] <<<  
6,11 DDR\_B\_MA#[0..15] <<<

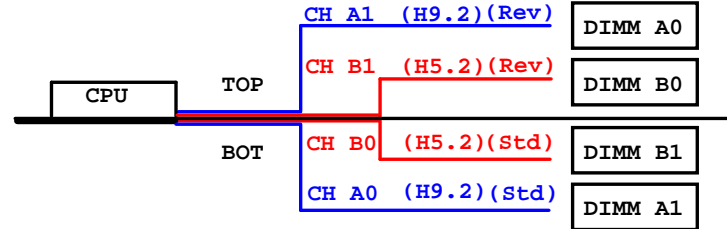
Layout Note:  
Place near JDIMMB



Layout Note:  
Place near JDIMMB.203,204



**DIMM B1  
STD TYPE (H5.2)**



CIS link OK

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

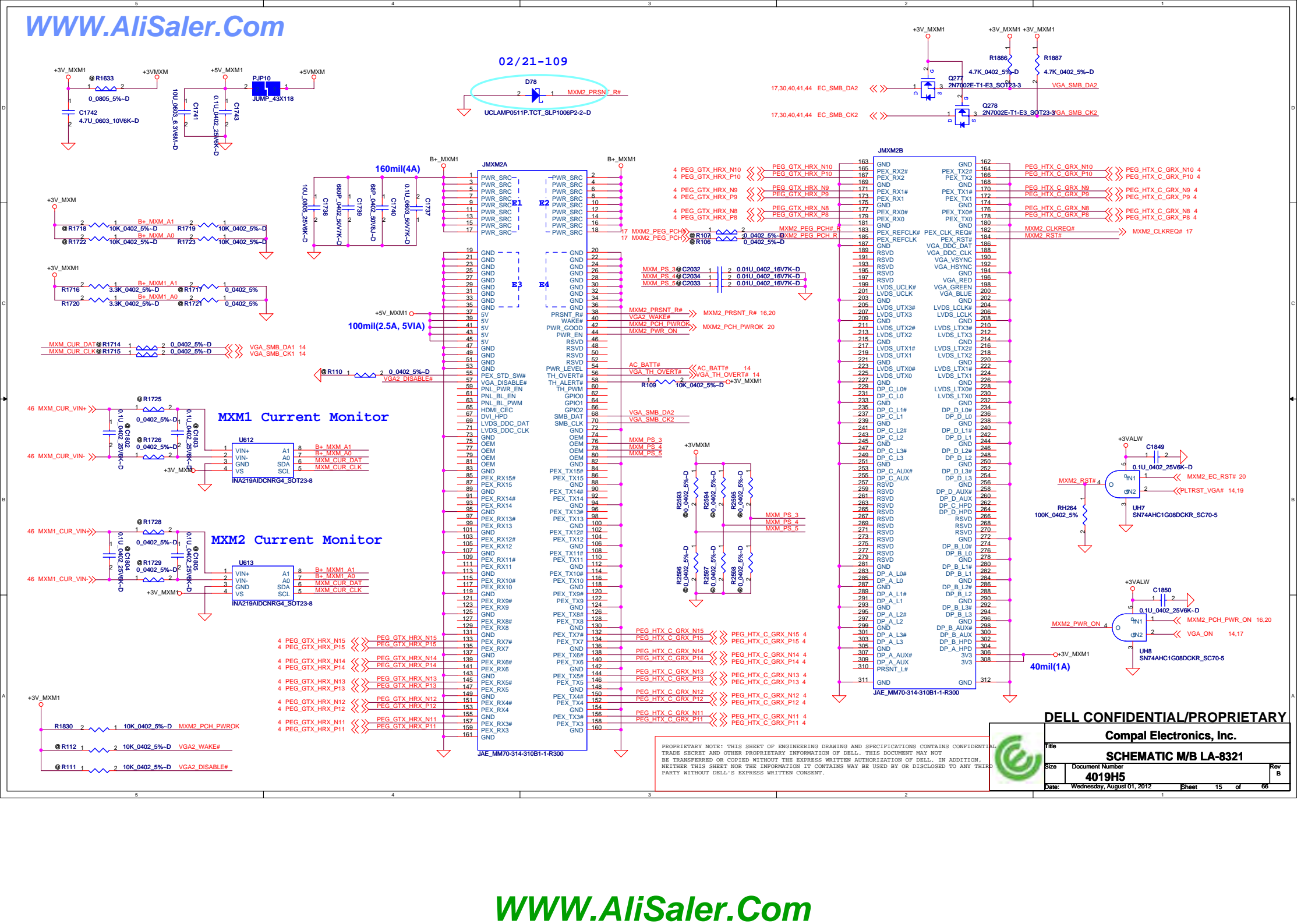
SCHEMATIC M/B LA-8321

Size Document Number  
4019H5  
Date: Wednesday, August 01, 2012 Sheet 13 of 68





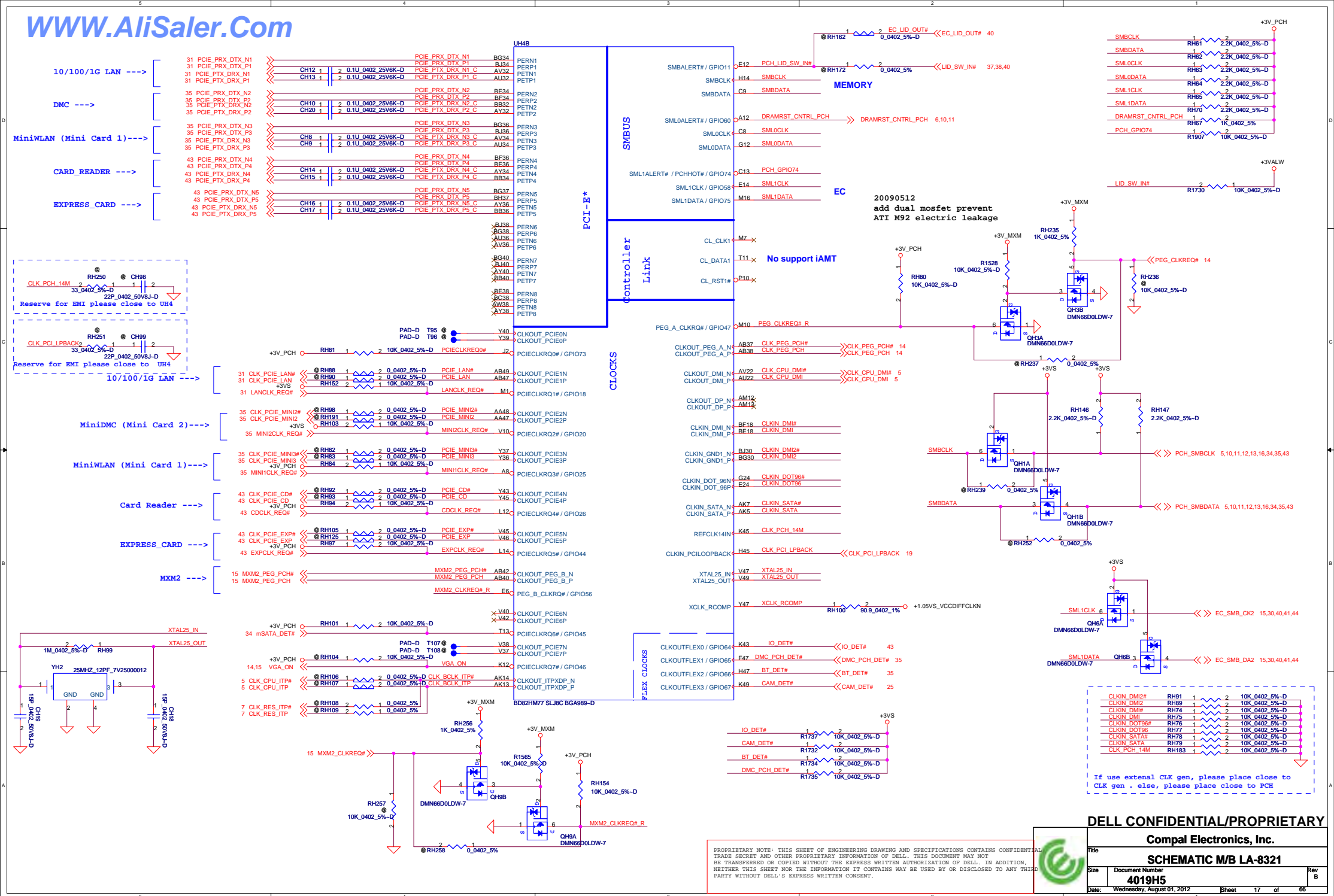




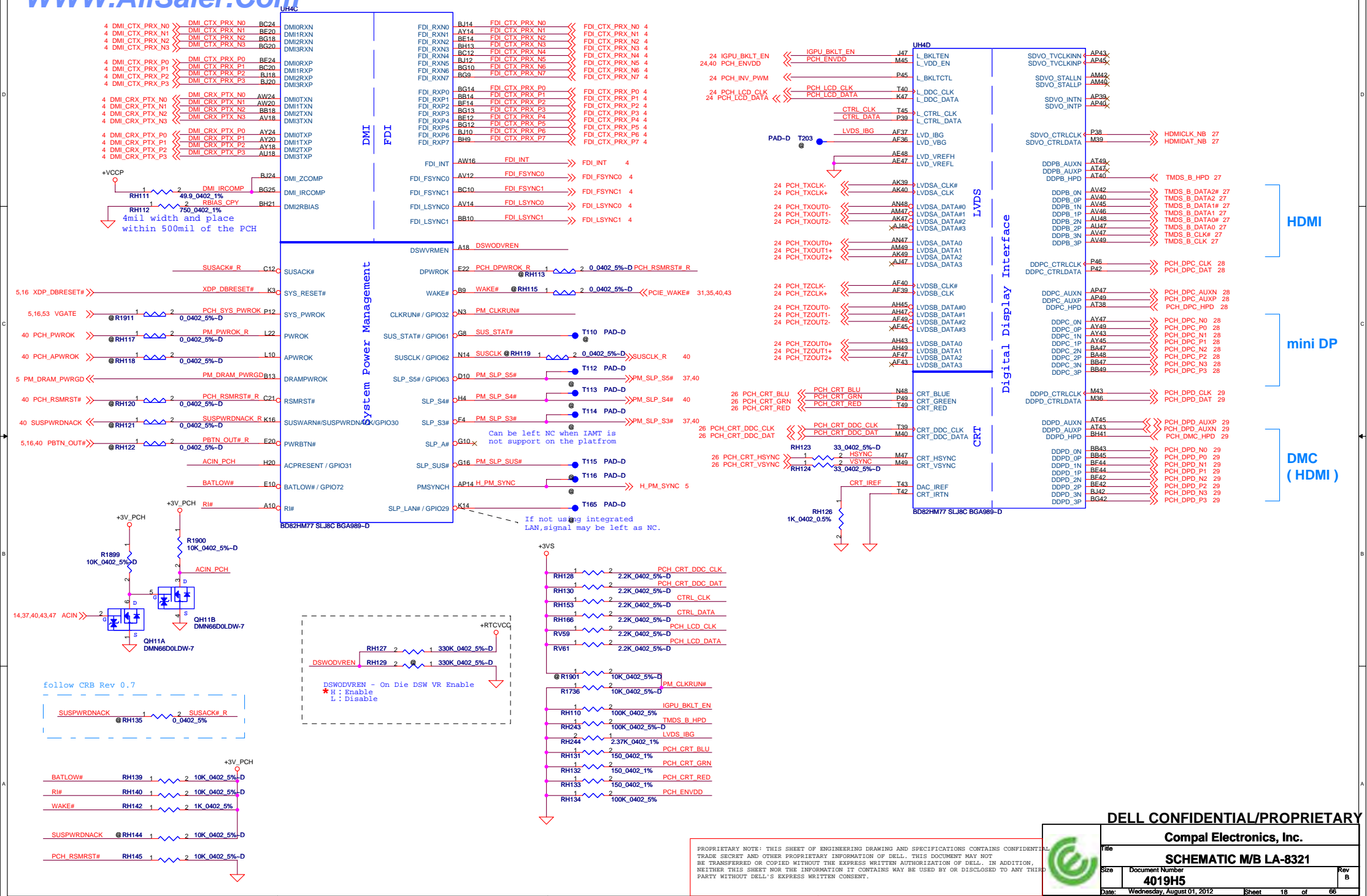












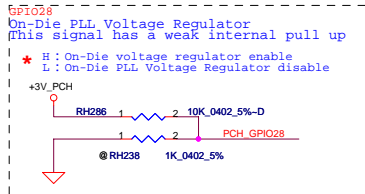
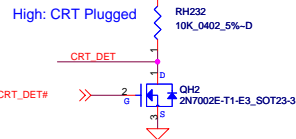




Size	Document Number <b>4019H5</b>	Rev B
Date:	Wednesday, August 01, 2012	Sheet 19 of 66

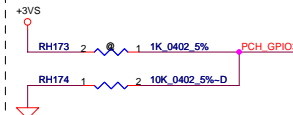
PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.





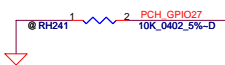
**PCH\_GPIO37**  
FDI TERMINATION VOLTAGE OVERRIDE

\* LOW - Tx, Rx terminated to same voltage (DC Coupling Mode)



**GPIO27**  
PCH\_GPIO27 (Have internal Pull-High)

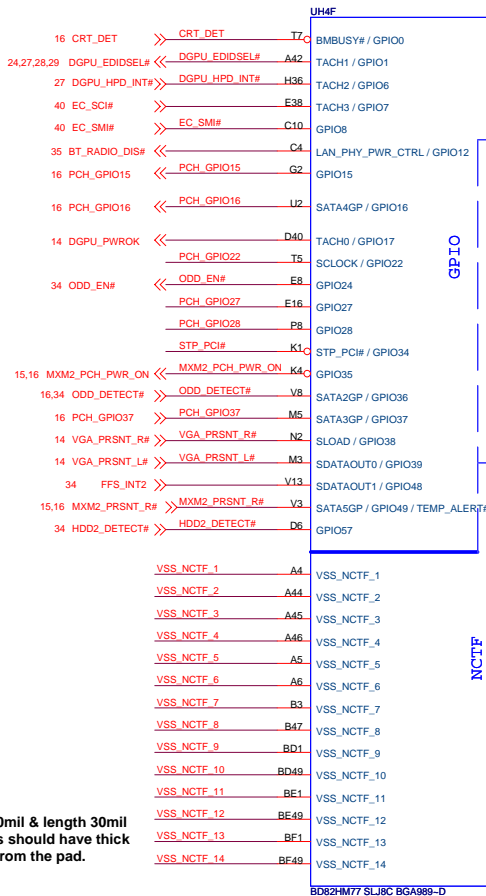
\* High: VCCVRM VR Enable  
Low: VCCVRM VR Disable



**Layout note:**  
Trace wide 10mil & length 30mil  
All NCTF pins should have thick traces at 45° from the pad.

PCH\_GPIO28 needs to be connected to XDP\_FN8  
PCH\_GPIO35 needs to be connected to XDP\_FN9  
PCH\_GPIO15 needs to be connected to XDP\_FN16

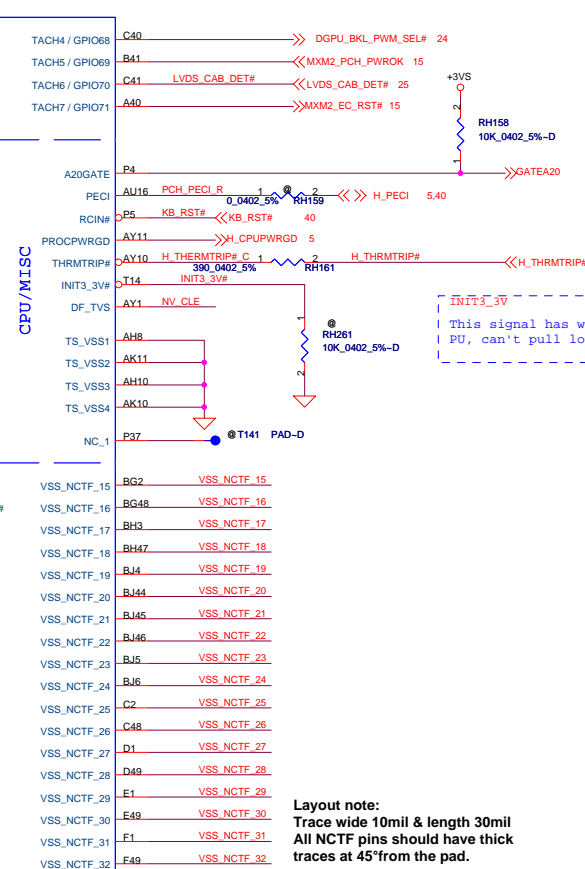
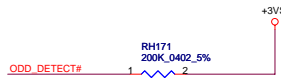
Please refer to Huron River Debug Board DG 0.5



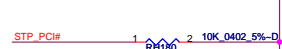
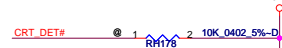
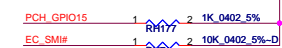
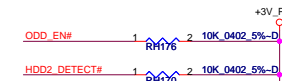
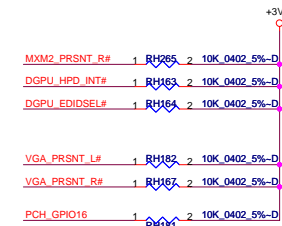
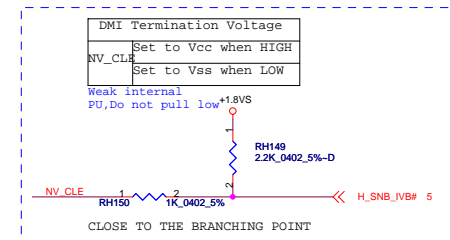
SATA2GP / GPIO36

When Used as SATA2GP/SATA3GP for Mechanical Presence detect  
- Use a weak external pull-up (150K-200K ohms) to Vcc3\_3

\* check list Rev 1.0



**Layout note:**  
Trace wide 10mil & length 30mil  
All NCTF pins should have thick traces at 45° from the pad.



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

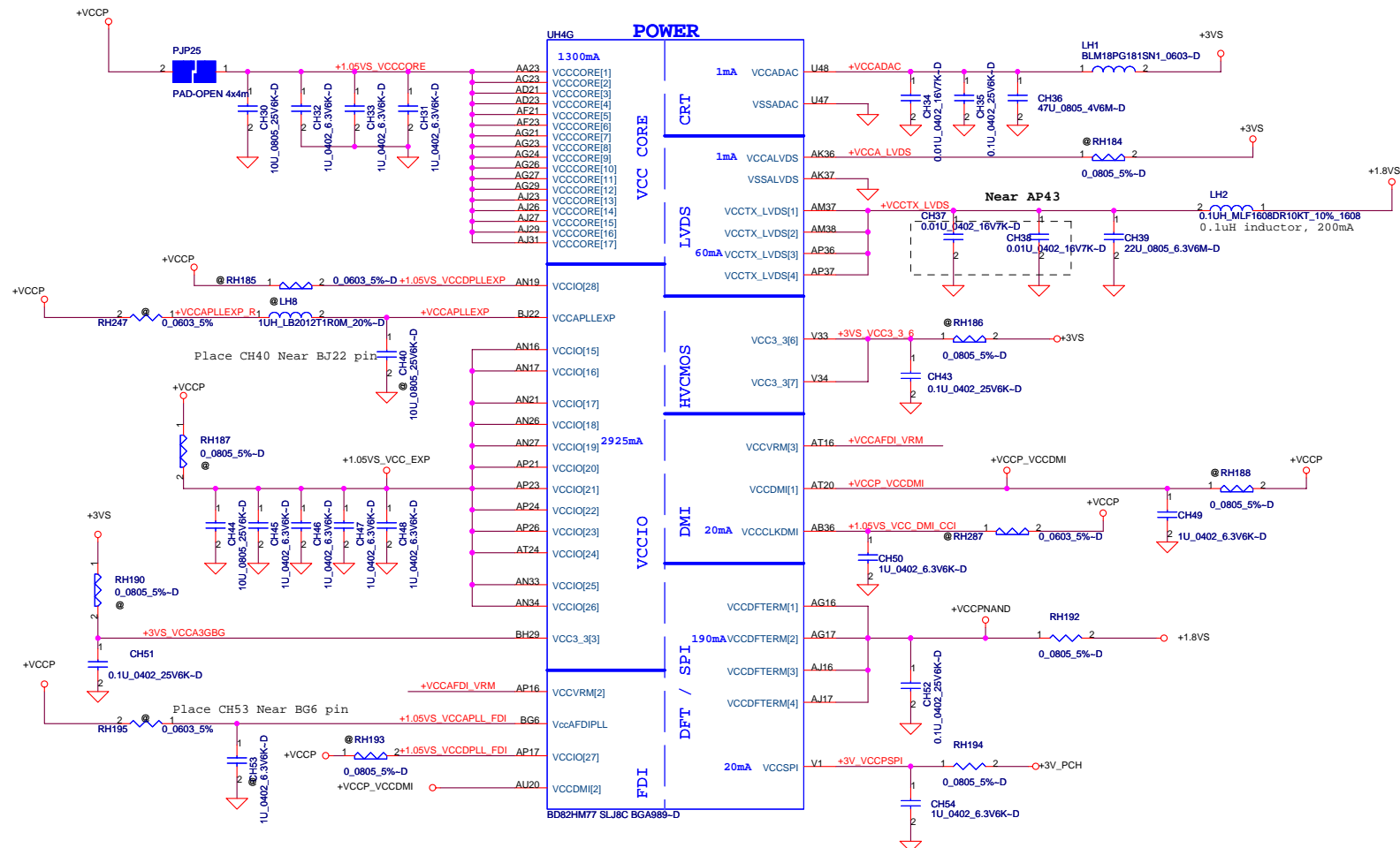
SCHEMATIC M/B LA-8321

Size Document Number: 4019H5  
Date: Wednesday, August 01, 2012 Sheet 20 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

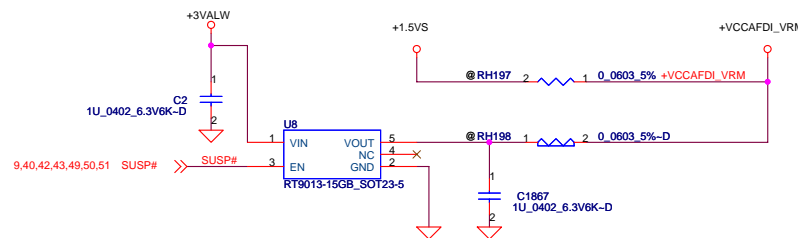






PCH Power Rail Table		
Voltage Rail	Voltage	S0 Iccmax Current (A)
V_PROC_IO	1.05	0.001
V5REF	5	0.001
V5REF_Sus	5	0.001
Vcc3_3	3.3	0.266
VccADAC	3.3	0.001
VccADPLLA	1.05	0.08
VccADPLLB	1.05	0.08
VccCore	1.05	1.3
VccDMI	1.05	0.042
VccIO	1.05	2.925
VccASW	1.05	1.01
VccSPI	3.3	0.02
VccDSW	3.3	0.003
VccpNAND	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



**DELL CONFIDENTIAL/PROPRIETARY**

**Compal Electronics, Inc.**

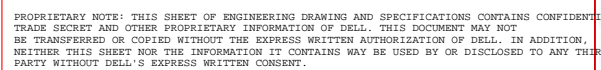
Title **SCHEMATIC M/B LA-8321**

Size	Document Number	Re
	1010115	

Date: Wednesday, August 01, 2012 Sheet 21 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.







UH4H	
H5	VSS[0]
AA17	VSS[1]
AA2	VSS[2]
AA3	VSS[3]
AA33	VSS[4]
AA34	VSS[5]
AB11	VSS[6]
AB14	VSS[7]
AB39	VSS[8]
AB4	VSS[9]
AB43	VSS[10]
AB5	VSS[11]
AB7	VSS[12]
AC19	VSS[13]
AC2	VSS[14]
AC21	VSS[15]
AC24	VSS[16]
AC33	VSS[17]
AC34	VSS[18]
AC48	VSS[19]
AD10	VSS[20]
AD11	VSS[21]
AD12	VSS[22]
AD13	VSS[23]
AD19	VSS[24]
AD24	VSS[25]
AD26	VSS[26]
AD27	VSS[27]
AD33	VSS[28]
AD34	VSS[29]
AD36	VSS[30]
AD37	VSS[31]
AD38	VSS[32]
AD39	VSS[33]
AD4	VSS[34]
AD40	VSS[35]
AD42	VSS[36]
AD43	VSS[37]
AD45	VSS[38]
AD46	VSS[39]
AD8	VSS[40]
AE2	VSS[41]
AE3	VSS[42]
AF10	VSS[43]
AF12	VSS[44]
AD14	VSS[45]
AD16	VSS[46]
AF16	VSS[47]
AF19	VSS[48]
AF24	VSS[49]
AF26	VSS[50]
AF27	VSS[51]
AF29	VSS[52]
AF31	VSS[53]
AF38	VSS[54]
AF4	VSS[55]
AF42	VSS[56]
AF46	VSS[57]
AF5	VSS[58]
AF7	VSS[59]
AF8	VSS[60]
AG19	VSS[61]
AG2	VSS[62]
AG31	VSS[63]
AG48	VSS[64]
AH11	VSS[65]
AH3	VSS[66]
AH36	VSS[67]
AH39	VSS[68]
AH40	VSS[69]
AH42	VSS[70]
AH46	VSS[71]
AH7	VSS[72]
AJ19	VSS[73]
AJ21	VSS[74]
AJ24	VSS[75]
AJ33	VSS[76]
AJ34	VSS[77]
AK12	VSS[78]
AK3	VSS[79]

BD82HM77 SLJ8C BGA989-D

UH4I	
AY4	VSS[159]
AY42	VSS[160]
AY46	VSS[161]
AY8	VSS[162]
B11	VSS[163]
B15	VSS[164]
B19	VSS[165]
B23	VSS[166]
B27	VSS[167]
B31	VSS[168]
B35	VSS[169]
B39	VSS[170]
B7	VSS[171]
F45	VSS[172]
BB12	VSS[173]
BB16	VSS[174]
BB20	VSS[175]
BB22	VSS[176]
BB24	VSS[177]
BB28	VSS[178]
BB30	VSS[179]
BB38	VSS[180]
BB4	VSS[181]
BB46	VSS[182]
BC14	VSS[183]
BC18	VSS[184]
BC2	VSS[185]
BC22	VSS[186]
BC26	VSS[187]
BC32	VSS[188]
BC34	VSS[189]
BC36	VSS[190]
BC40	VSS[191]
BC42	VSS[192]
BC48	VSS[193]
BD46	VSS[194]
BD5	VSS[195]
BE22	VSS[196]
BE26	VSS[197]
BE40	VSS[198]
BF12	VSS[199]
BF16	VSS[200]
BF20	VSS[201]
BF22	VSS[202]
BF24	VSS[203]
BF26	VSS[204]
BF28	VSS[205]
BF3	VSS[206]
BF30	VSS[207]
BF38	VSS[208]
BF40	VSS[209]
BF8	VSS[210]
BG17	VSS[211]
BG21	VSS[212]
BG33	VSS[213]
BG44	VSS[214]
BG48	VSS[215]
BH11	VSS[216]
BH15	VSS[217]
BH17	VSS[218]
BH19	VSS[219]
H10	VSS[220]
BH27	VSS[221]
BH31	VSS[222]
BH33	VSS[223]
BH35	VSS[224]
BH39	VSS[225]
BH43	VSS[226]
BH7	VSS[227]
D3	VSS[228]
D12	VSS[229]
D16	VSS[230]
D18	VSS[231]
D22	VSS[232]
D24	VSS[233]
D26	VSS[234]
D30	VSS[235]
D32	VSS[236]
D34	VSS[237]
D38	VSS[238]
D42	VSS[239]
D8	VSS[240]
E18	VSS[241]
E26	VSS[242]
G18	VSS[243]
G20	VSS[244]
G26	VSS[245]
G28	VSS[246]
G36	VSS[247]
G48	VSS[248]
H12	VSS[249]
H18	VSS[250]
H22	VSS[251]
H24	VSS[252]
H26	VSS[253]
H30	VSS[254]
H32	VSS[255]
H34	VSS[256]
F3	VSS[257]
F3	VSS[258]

BD82HM77 SLJ8C BGA989-D

VSS[259]	H46
VSS[260]	K18
VSS[261]	K26
VSS[262]	K39
VSS[263]	K46
VSS[264]	K7
VSS[265]	L18
VSS[266]	L2
VSS[267]	L20
VSS[268]	L26
VSS[269]	L28
VSS[270]	L36
VSS[271]	L48
VSS[272]	M12
VSS[273]	M18
VSS[274]	M22
VSS[275]	M24
VSS[276]	M30
VSS[277]	M32
VSS[278]	M34
VSS[279]	M38
VSS[280]	M4
VSS[281]	M42
VSS[282]	M46
VSS[283]	M8
VSS[284]	N18
VSS[285]	N24
VSS[286]	N30
VSS[287]	P11
VSS[288]	P18
VSS[289]	T33
VSS[290]	P40
VSS[291]	P43
VSS[292]	P44
VSS[293]	P47
VSS[294]	P7
VSS[295]	R2
VSS[296]	R48
VSS[297]	T12
VSS[298]	T31
VSS[299]	T37
VSS[300]	T4
VSS[301]	W34
VSS[302]	T46
VSS[303]	T47
VSS[304]	T8
VSS[305]	V11
VSS[306]	V17
VSS[307]	V26
VSS[308]	V27
VSS[309]	V29
VSS[310]	V31
VSS[311]	V36
VSS[312]	V43
VSS[313]	V47
VSS[314]	W17
VSS[315]	W19
VSS[316]	W2
VSS[317]	W27
VSS[318]	W48
VSS[319]	Y12
VSS[320]	Y38
VSS[321]	Y4
VSS[322]	Y42
VSS[323]	Y46
VSS[324]	Y8
VSS[325]	BG29
VSS[326]	N24
VSS[327]	AJ3
VSS[328]	AD47
VSS[329]	B43
VSS[330]	BE10
VSS[331]	BG41
VSS[332]	G14
VSS[333]	H16
VSS[334]	T36
VSS[335]	BG22
VSS[336]	BG24
VSS[337]	C22
VSS[338]	AP13
VSS[339]	M14
VSS[340]	AP3
VSS[341]	AP1
VSS[342]	BE16
VSS[343]	BC16
VSS[344]	BG28
VSS[345]	BJ28

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

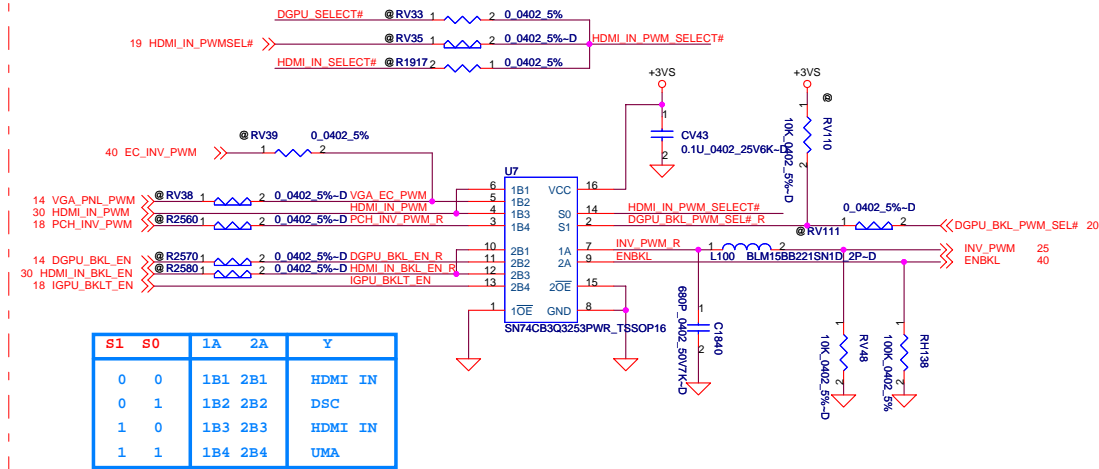
4019H5

Wednesday, August 01, 2012

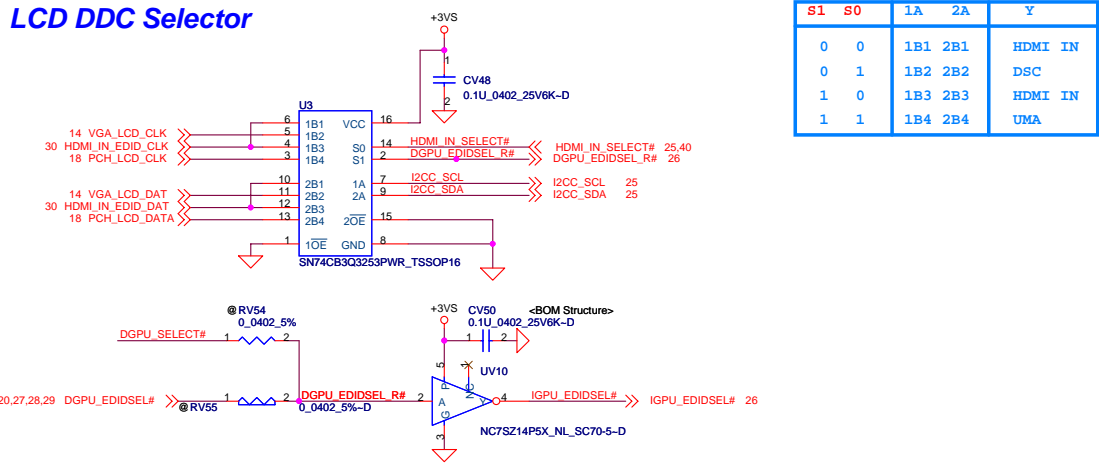
Sheet 23 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

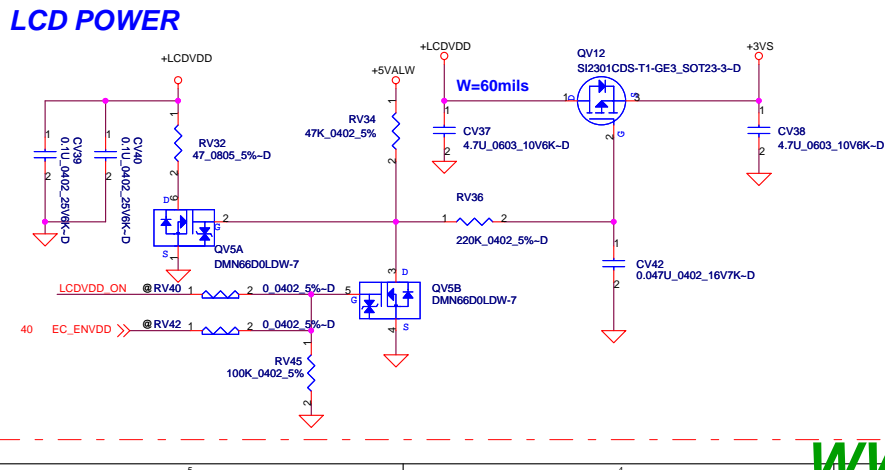




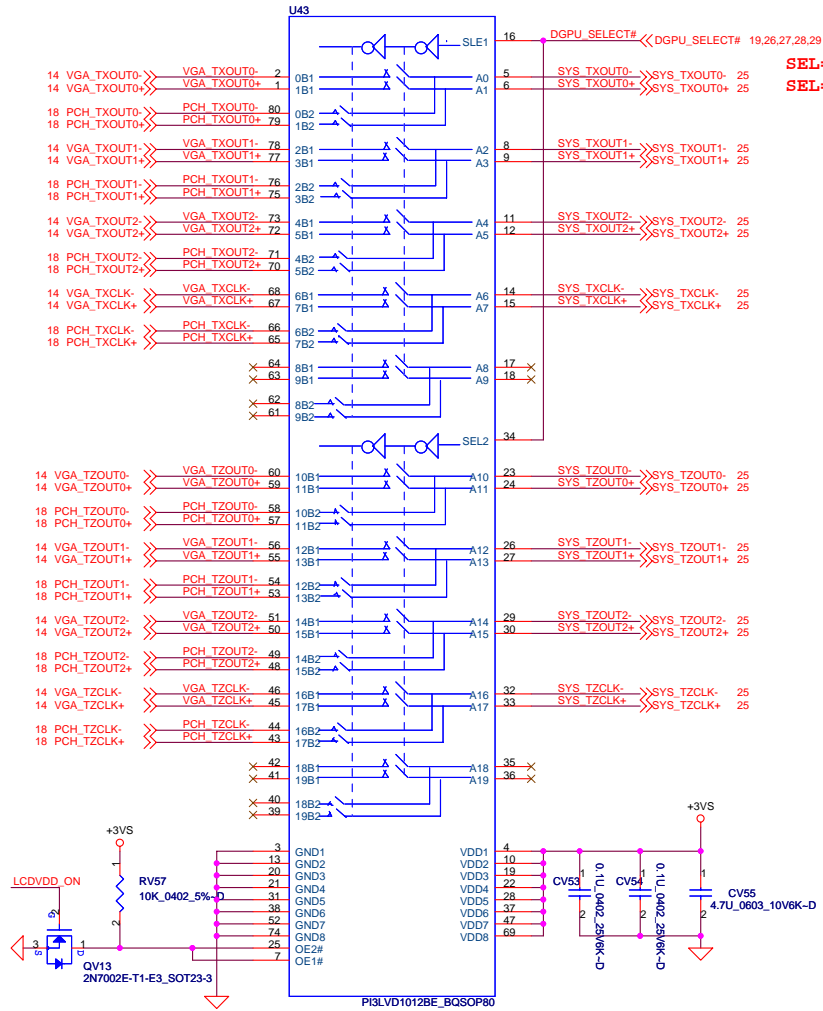
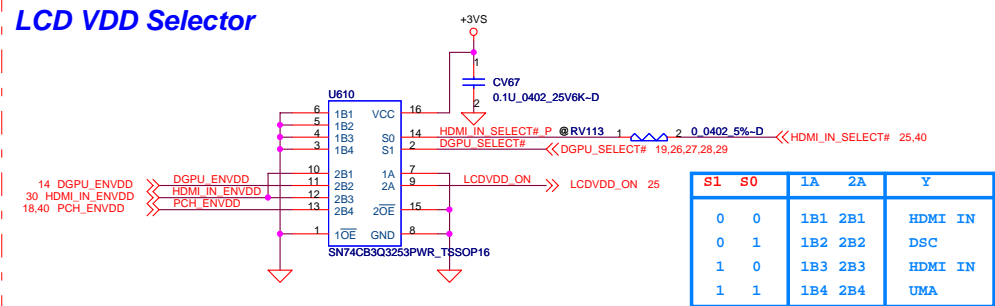
## LCD DDC Selector



## LCD POWER



## LCD VDD Selector



SEL=LOW, B1, GPU  
SEL=High, B2, PCH

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

4019H5

Date: Wednesday, August 01, 2012 Sheet 24 of 66

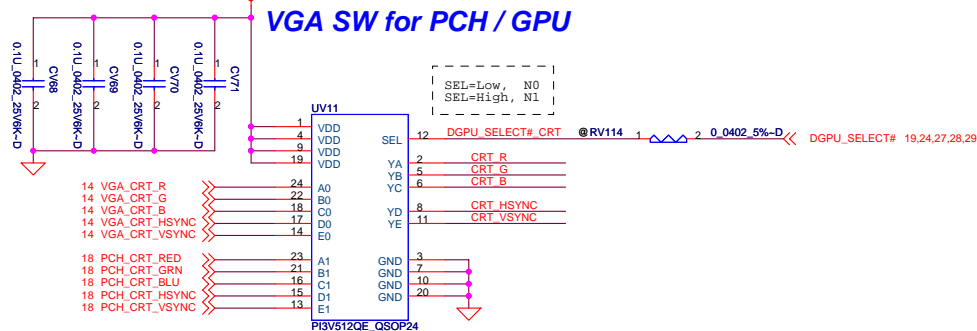




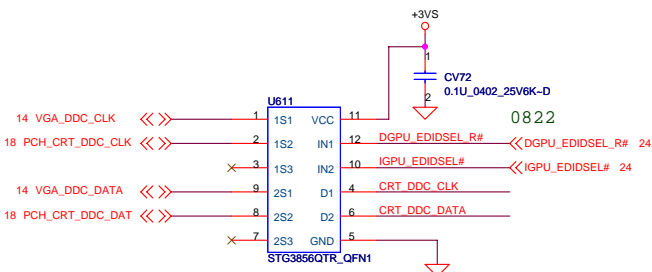
1



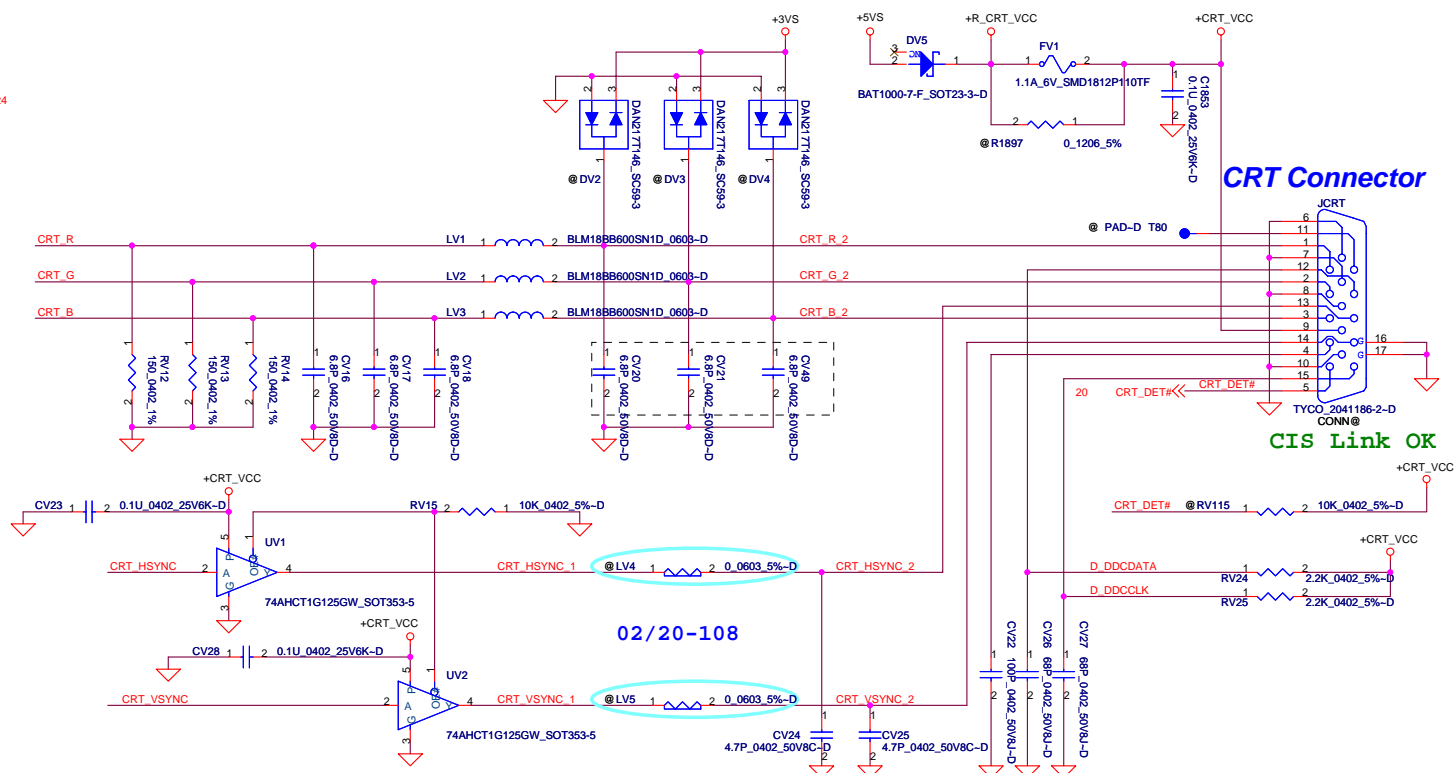
# VGA SW for PCH / GPU



## LCD DDC Selector



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



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

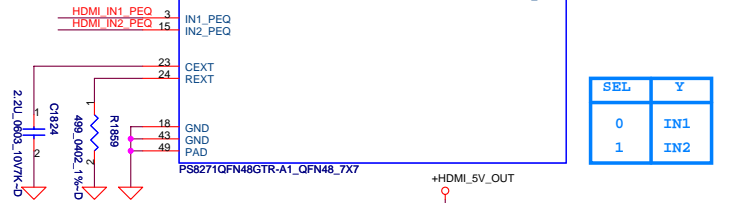
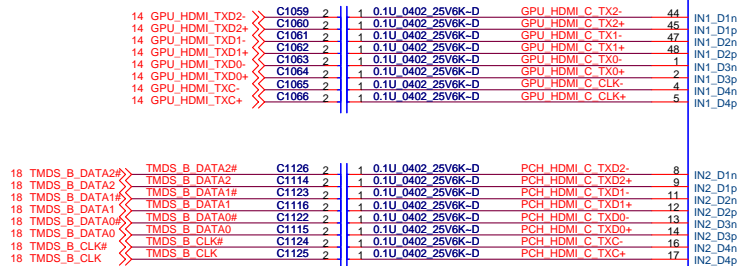
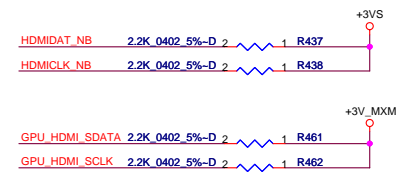
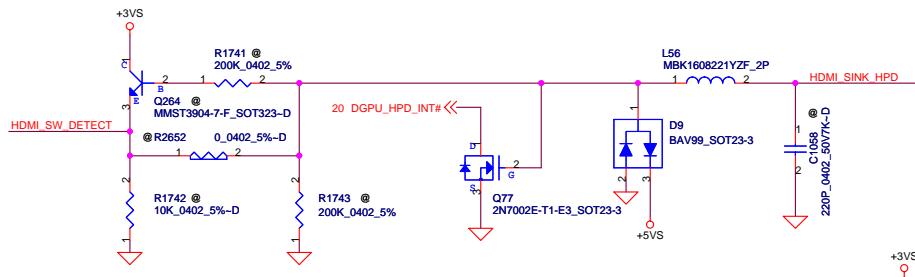
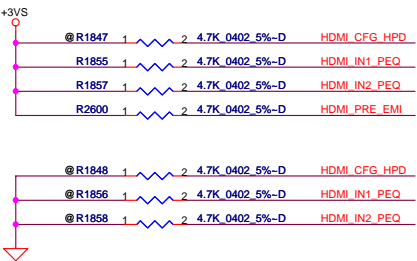
SCHEMATIC M/B LA-8321

4019H5

Wednesday, August 01, 2012 Sheet 26 of 66

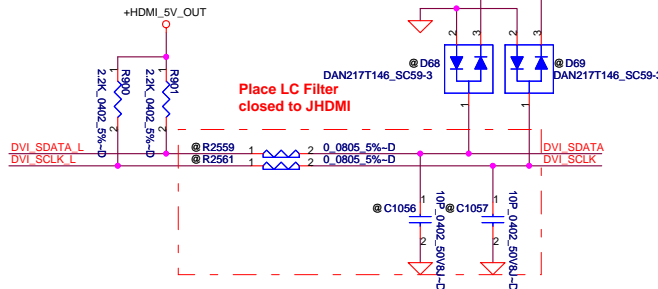
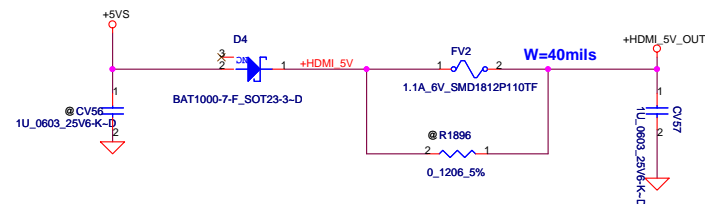
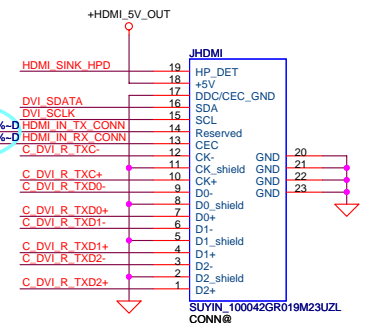
PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.





SEL	Y
0	IN1
1	IN2

### HDMI Connector



PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL, TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

**DELL CONFIDENTIAL/PROPRIETARY**

**Compal Electronics, Inc.**

**SCHEMATIC M/B LA-8321**

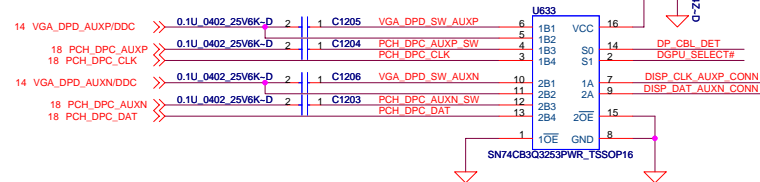
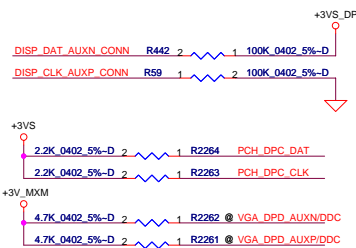
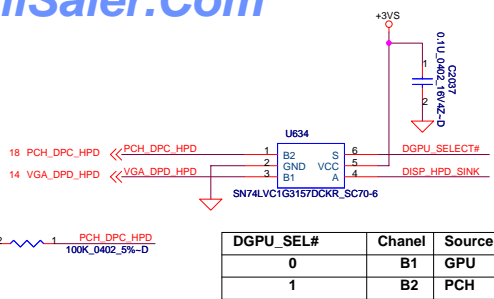
Size	Document Number
	101017

	<b>4019H5</b>
Date:	Wednesday August

Rev	Rev
-----	-----

Page 27 of 66

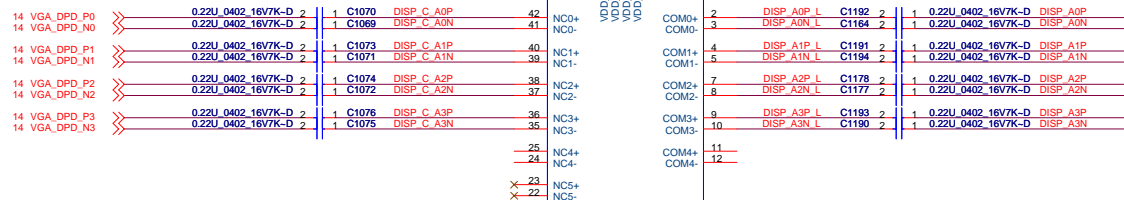




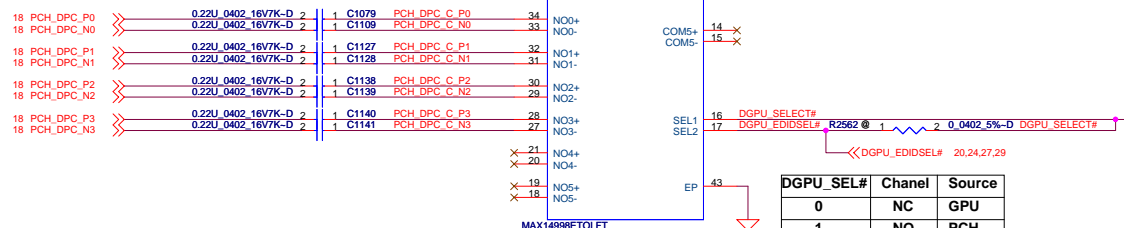
S1	S0	1A	2A	Y
0	0	1B1	2B1	MXM_AUX
0	1	1B2	2B2	MXM_DDC
1	0	1B3	2B3	PCH_AUX
1	1	1B4	2B4	PCH_DDC

## PCH/GPU AUX&LANE SW

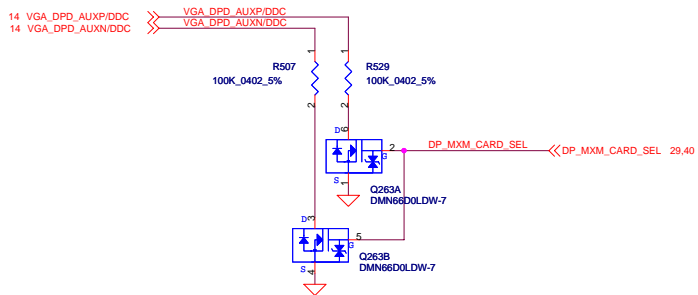
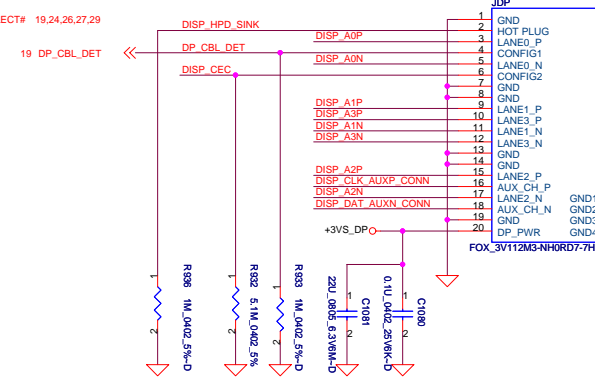
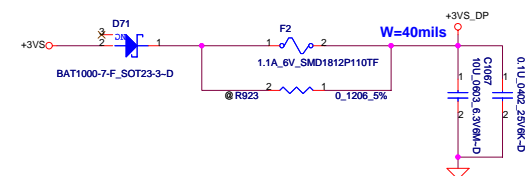
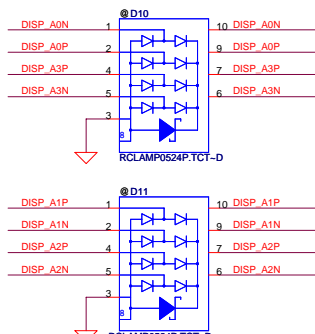
For ATI/Nvidia GPU



For Intel PCH



Place close JDP



PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

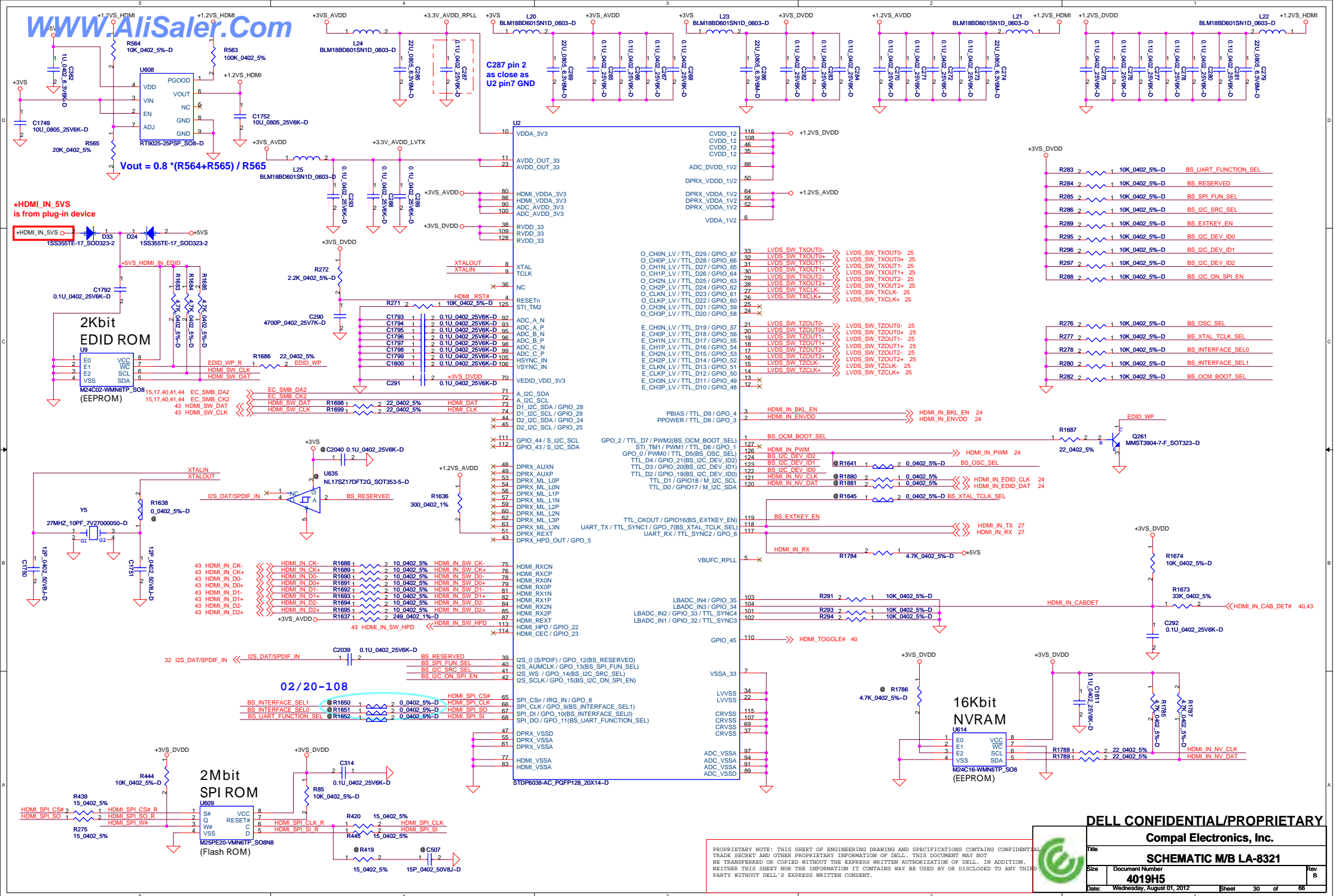
SCHEMATIC M/B LA-8321

Size	Document Number	Rev
	4019H5	B
Date	Wednesday, August 01, 2012	Sheet 28 of 66

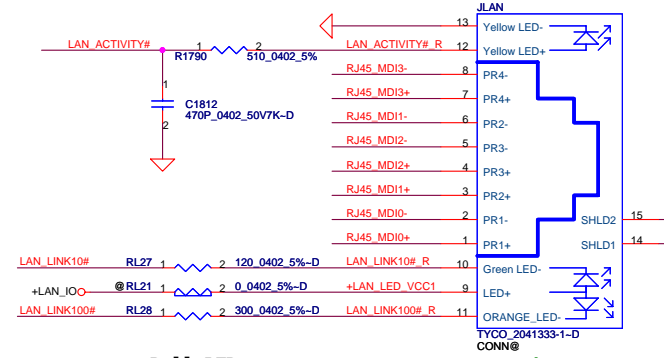
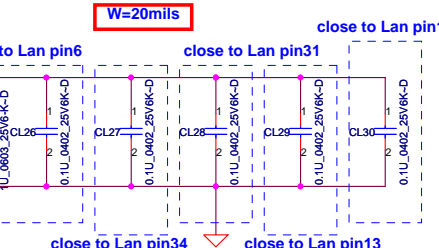
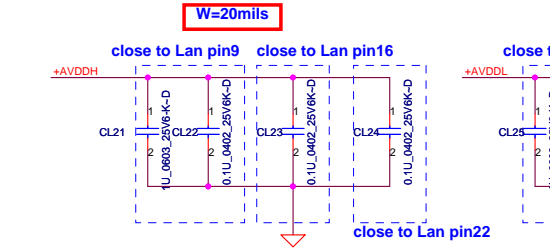
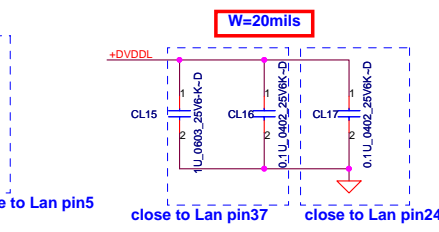
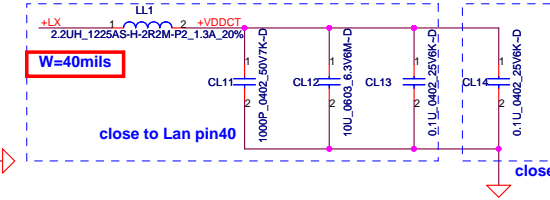
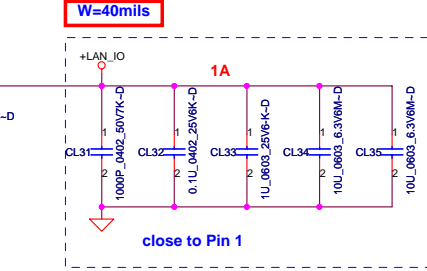
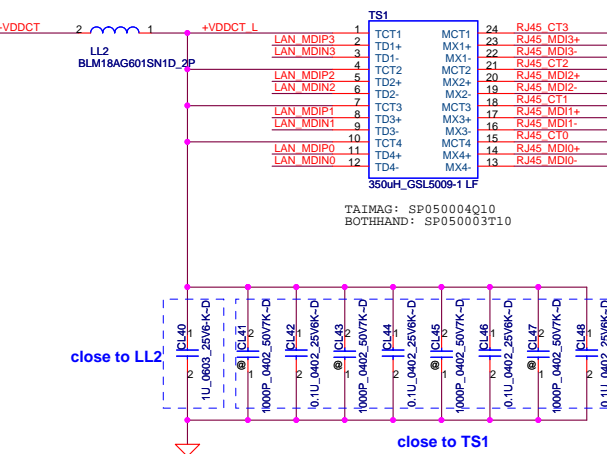
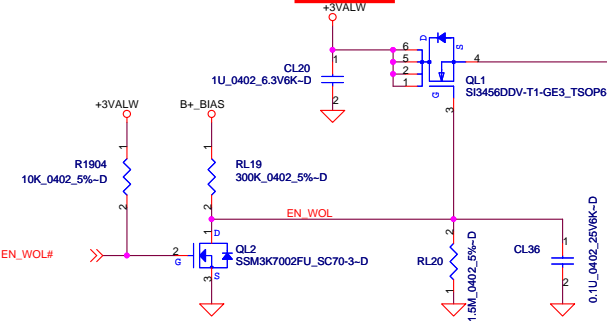
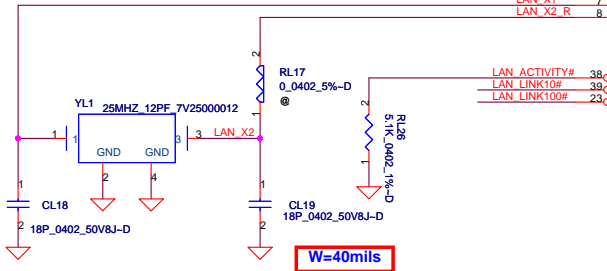
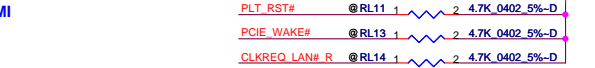
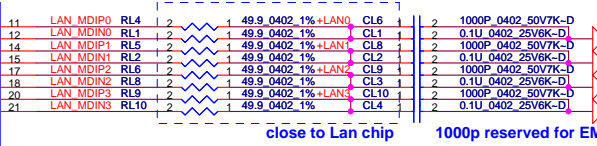
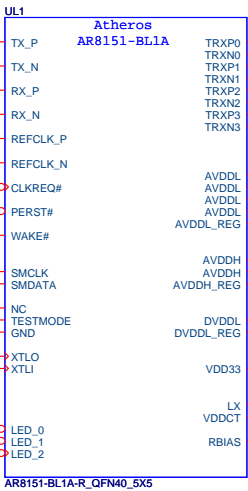
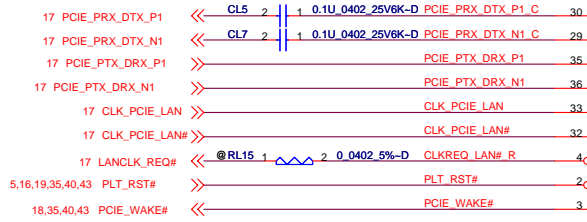












Dell LED spec:  
 10 Mbps: Green  
 100 Mbps: Orange  
 1000 Mbps: Yellow

CIS link OK

DELL CONFIDENTIAL/PROPRIETARY

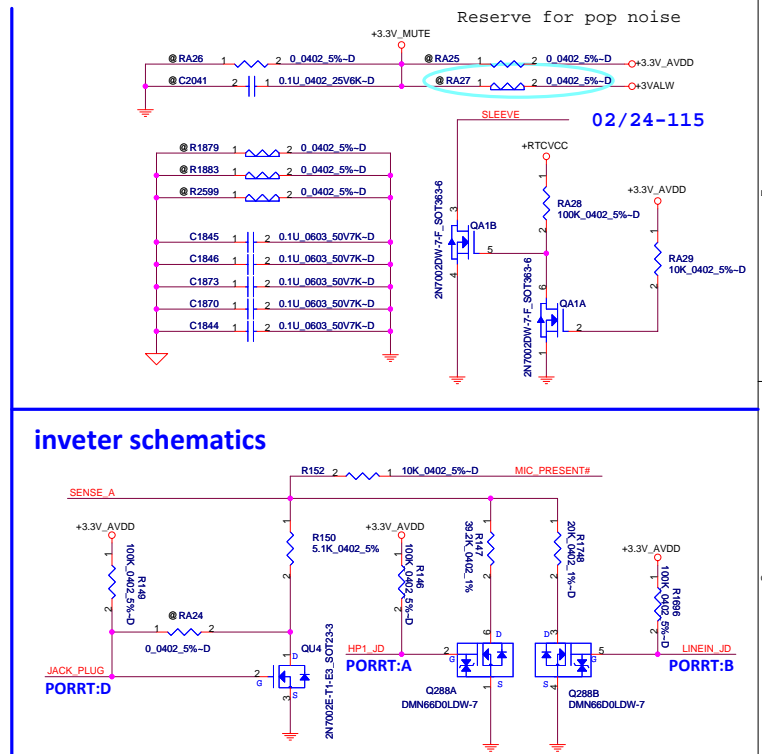
Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

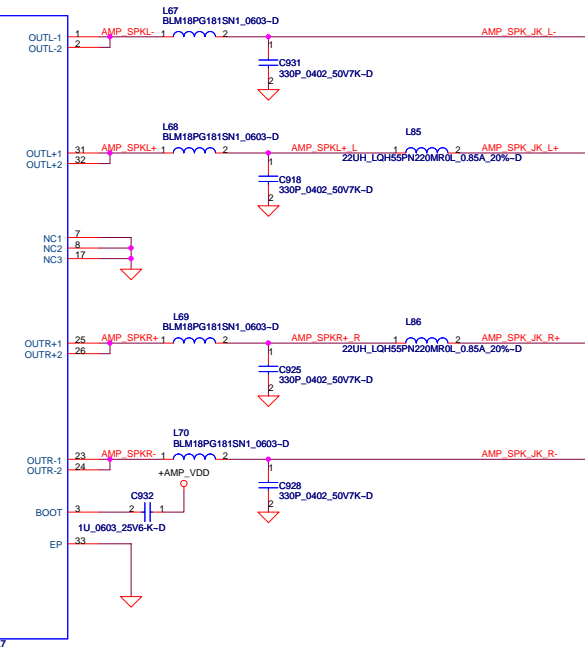
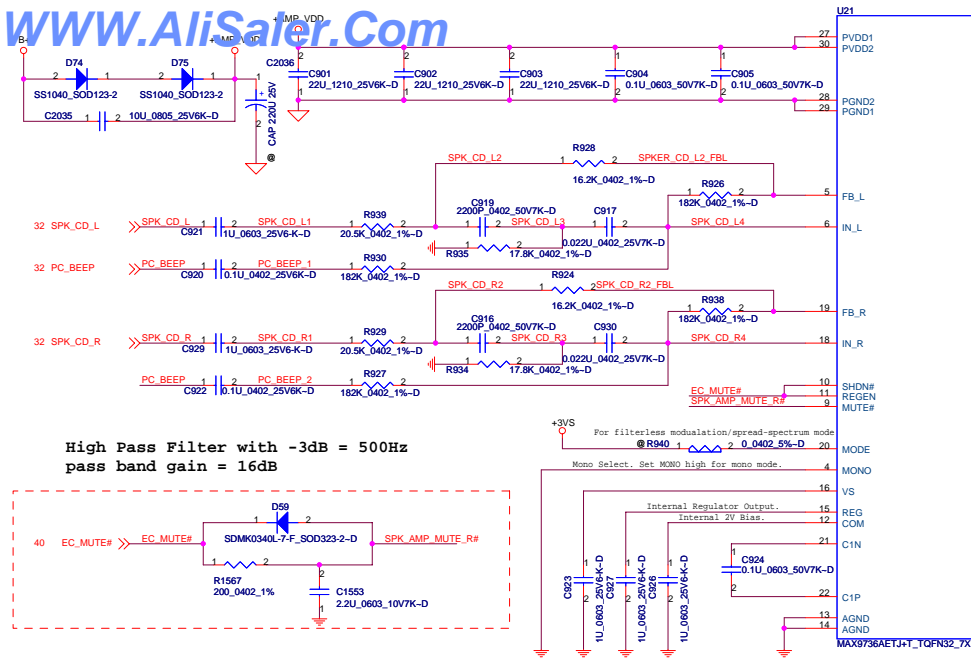
Size Document Number  
 4019H5  
 Date: Wednesday, August 01, 2012 Sheet 31 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

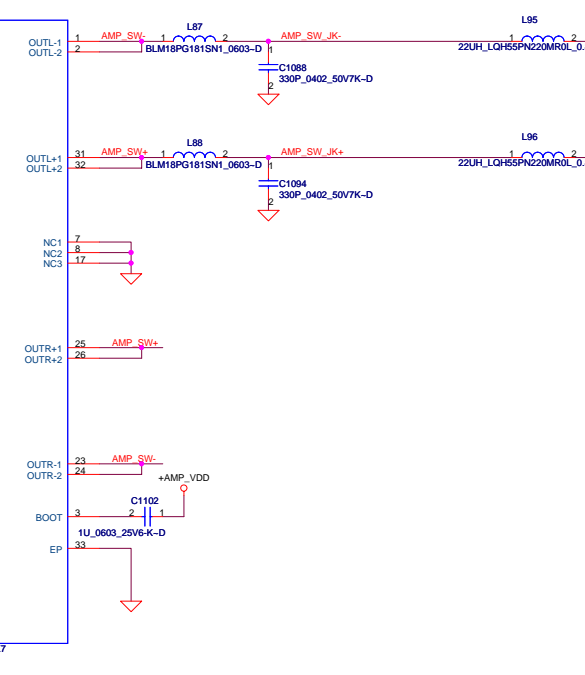
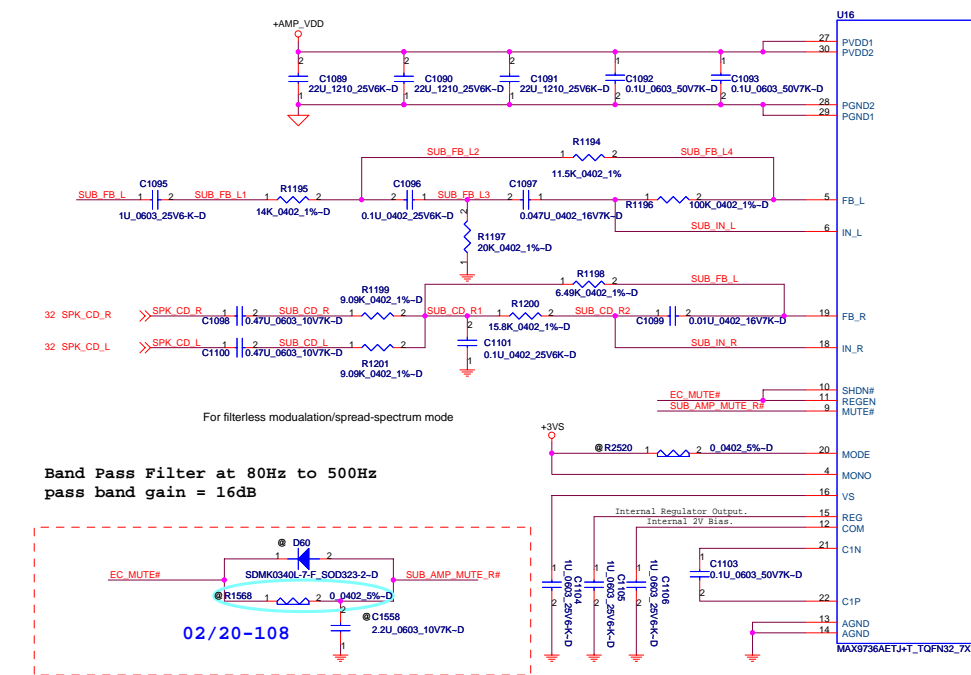
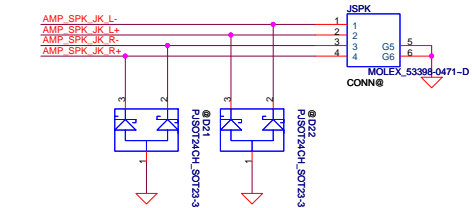


[illegible]





**SPK Board CONN**  
each one is 4 ohm/2.5W

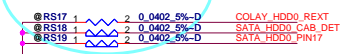
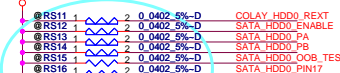
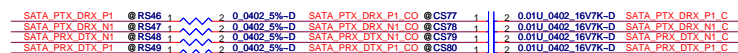
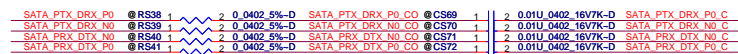


**SUB WOOFER amp**  
4 ohm/5W

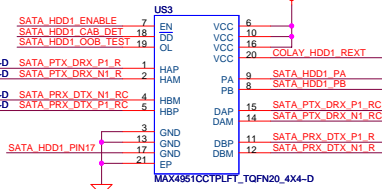
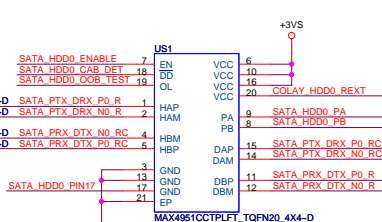
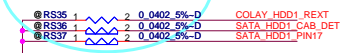
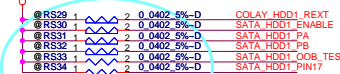
CIS link OK

Compal Electronics, Inc.			
Title	SCHEMATIC M/B LA-8321		
Size	Document Number	Rev B	
	4019H5		
Date:	Wednesday, August 01, 2012	Sheet	33 of 66





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



Close to pin 6, 10  
or pin 16, 20

### SATA HDD Conn.

The diagram illustrates the electrical connections for a SATA HDD. It includes a power section with a 3V3 supply, a 0.0025µF capacitor, and a 0.0025µF capacitor connected to ground. The power lines are labeled SATA\_PTX\_DRX\_P0 RC, SATA\_PTX\_DRX\_N0 RC, SATA\_PTX\_DRX\_N0 R, and SATA\_PTX\_DRX\_N0 R. The data lines are labeled SATA\_PTX\_DRX\_P3, SATA\_PTX\_DRX\_N3, SATA\_PTX\_DRX\_N3 C, and SATA\_PTX\_DRX\_N3 C. The component values are: CS6 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_P0 C, CS7 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N0 C, CS8 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N0 R, CS9 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N0 R, CS18 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_P3 C, CS19 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N3 C, CS20 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N3 C, and CS21 = 0.01µF 0402 16V7K-DSATA\_PTX\_DRX\_N3 C. The pin connections are: 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5 to 6, 6 to 7, 7 to 8, 8 to 9, 9 to 10, 10 to 11, 11 to 12, 12 to 13, 13 to 14, 14 to 15, 15 to 16, 16 to 17, 17 to 18, 18 to 19, 19 to 20, 20 to 21, 21 to 22, 22 to 23, 23 to 24, 24 to 25, 25 to 26, 26 to 27, 27 to 28, 28 to 29, 29 to 30, 30 to 31, 31 to 32, 32 to 33, 33 to 34, 34 to 35, 35 to 36, 36 to 37, 37 to 38, 38 to 39, 39 to 40, 40 to 41, 41 to 42, 42 to 43, 43 to 44, 44 to 45, 45 to 46, 46 to 47, 47 to 48, 48 to 49, 49 to 50, 50 to 51, 51 to 52, 52 to 53, 53 to 54, 54 to 55, 55 to 56, 56 to 57, 57 to 58, 58 to 59, 59 to 60, 60 to 61, 61 to 62, 62 to 63, 63 to 64, 64 to 65, 65 to 66, 66 to 67, 67 to 68, 68 to 69, 69 to 70, 70 to 71, 71 to 72, 72 to 73, 73 to 74, 74 to 75, 75 to 76, 76 to 77, 77 to 78, 78 to 79, 79 to 80, 80 to 81, 81 to 82, 82 to 83, 83 to 84, 84 to 85, 85 to 86, 86 to 87, 87 to 88, 88 to 89, 89 to 90, 90 to 91, 91 to 92, 92 to 93, 93 to 94, 94 to 95, 95 to 96, 96 to 97, 97 to 98, 98 to 99, 99 to 100, 100 to 101, 101 to 102, 102 to 103, 103 to 104, 104 to 105, 105 to 106, 106 to 107, 107 to 108, 108 to 109, 109 to 110, 110 to 111, 111 to 112, 112 to 113, 113 to 114, 114 to 115, 115 to 116, 116 to 117, 117 to 118, 118 to 119, 119 to 120, 120 to 121, 121 to 122, 122 to 123, 123 to 124, 124 to 125, 125 to 126, 126 to 127, 127 to 128, 128 to 129, 129 to 130, 130 to 131, 131 to 132, 132 to 133, 133 to 134, 134 to 135, 135 to 136, 136 to 137, 137 to 138, 138 to 139, 139 to 140, 140 to 141, 141 to 142, 142 to 143, 143 to 144, 144 to 145, 145 to 146, 146 to 147, 147 to 148, 148 to 149, 149 to 150, 150 to 151, 151 to 152, 152 to 153, 153 to 154, 154 to 155, 155 to 156, 156 to 157, 157 to 158, 158 to 159, 159 to 160, 160 to 161, 161 to 162, 162 to 163, 163 to 164, 164 to 165, 165 to 166, 166 to 167, 167 to 168, 168 to 169, 169 to 170, 170 to 171, 171 to 172, 172 to 173, 173 to 174, 174 to 175, 175 to 176, 176 to 177, 177 to 178, 178 to 179, 179 to 180, 180 to 181, 181 to 182, 182 to 183, 183 to 184, 184 to 185, 185 to 186, 186 to 187, 187 to 188, 188 to 189, 189 to 190, 190 to 191, 191 to 192, 192 to 193, 193 to 194, 194 to 195, 195 to 196, 196 to 197, 197 to 198, 198 to 199, 199 to 200, 200 to 201, 201 to 202, 202 to 203, 203 to 204, 204 to 205, 205 to 206, 206 to 207, 207 to 208, 208 to 209, 209 to 210, 210 to 211, 211 to 212, 212 to 213, 213 to 214, 214 to 215, 215 to 216, 216 to 217, 217 to 218, 218 to 219, 219 to 220, 220 to 221, 221 to 222, 222 to 223, 223 to 224, 224 to 225, 225 to 226, 226 to 227, 227 to 228, 228 to 229, 229 to 230, 230 to 231, 231 to 232, 232 to 233, 233 to 234, 234 to 235, 235 to 236, 236 to 237, 237 to 238, 238 to 239, 239 to 240, 240 to 241, 241 to 242, 242 to 243, 243 to 244, 244 to 245, 245 to 246, 246 to 247, 247 to 248, 248 to 249, 249 to 250, 250 to 251, 251 to 252, 252 to 253, 253 to 254, 254 to 255, 255 to 256, 256 to 257, 257 to 258, 258 to 259, 259 to 260, 260 to 261, 261 to 262, 262 to 263, 263 to 264, 264 to 265, 265 to 266, 266 to 267, 267 to 268, 268 to 269, 269 to 270, 270 to 271, 271 to 272, 272 to 273, 273 to 274, 274 to 275, 275 to 276, 276 to 277, 277 to 278, 278 to 279, 279 to 280, 280 to 281, 281 to 282, 282 to 283, 283 to 284, 284 to 285, 285 to 286, 286 to 287, 287 to 288, 288 to 289, 289 to 290, 290 to 291, 291 to 292, 292 to 293, 293 to 294, 294 to 295, 295 to 296, 296 to 297, 297 to 298, 298 to 299, 299 to 300, 300 to 301, 301 to 302, 302 to 303, 303 to 304, 304 to 305, 305 to 306, 306 to 307, 307 to 308, 308 to 309, 309 to 310, 310 to 311, 311 to 312, 312 to 313, 313 to 314, 314 to 315, 315 to 316, 316 to 317, 317 to 318, 318 to 319, 319 to 320, 320 to 321, 321 to 322, 322 to 323, 323 to 324, 324 to 325, 325 to 326, 326 to 327, 327 to 328, 328 to 329, 329 to 330, 330 to 331, 331 to 332, 332 to 333, 333 to 334, 334 to 335, 335 to 336, 336 to 337, 337 to 338, 338 to 339, 339 to 340, 340 to 341, 341 to 342, 342 to 343, 343 to 344, 344 to 345, 345 to 346, 346 to 347, 347 to 348, 348 to 349, 349 to 350, 350 to 351, 351 to 352, 352 to 353, 353 to 354, 354 to 355, 355 to 356, 356 to 357, 357 to 358, 358 to 359, 359 to 360, 360 to 361, 361 to 362, 362 to 363, 363 to 364, 364 to 365, 365 to 366, 366 to 367, 367 to 368, 368 to 369, 369 to 370, 370 to 371, 371 to 372, 372 to 373, 373 to 374, 374 to 375, 375 to 376, 376 to 377, 377 to 378, 378 to 379, 379 to 380, 380 to 381, 381 to 382, 382 to 383, 383 to 384, 384 to 385, 385 to 386, 386 to 387, 387 to 38

Size	Document Number <b>4019H5</b>	Rev B
Date	Wednesday, August 01, 2012	Sheet 34 of 66





DMC  
( HDMI )

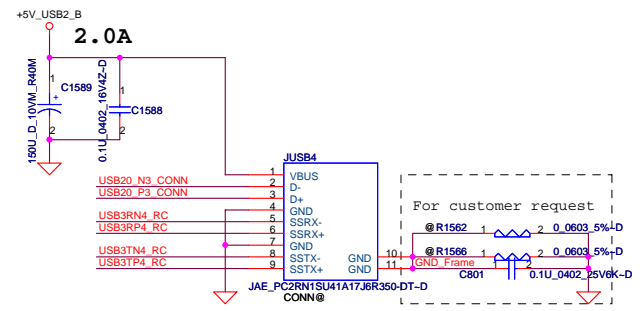
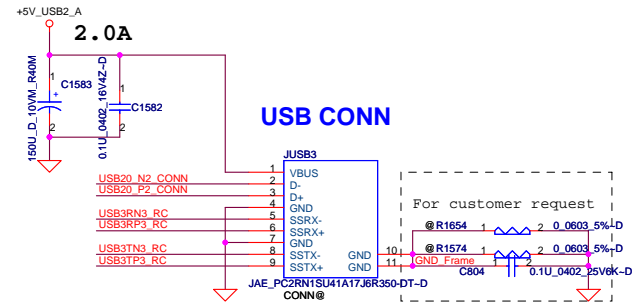
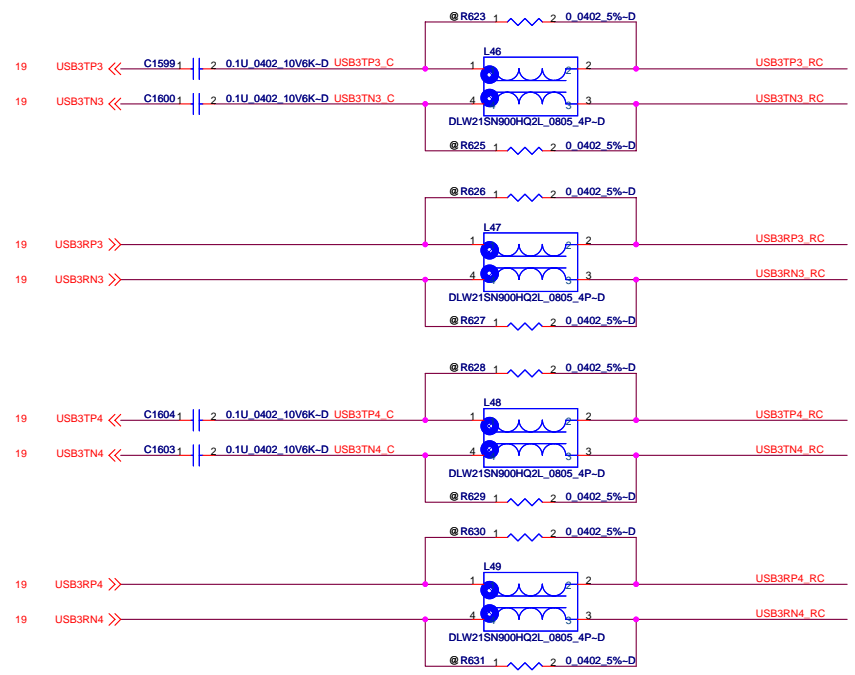
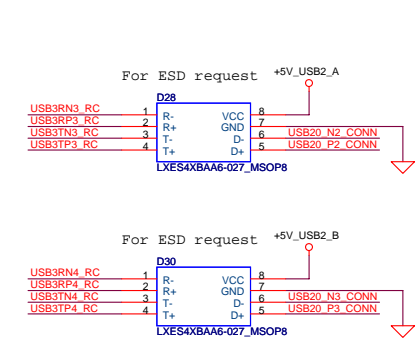
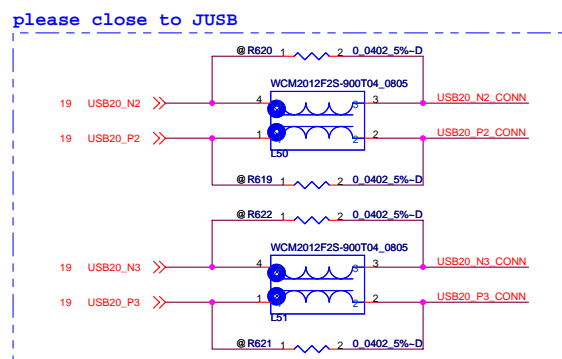
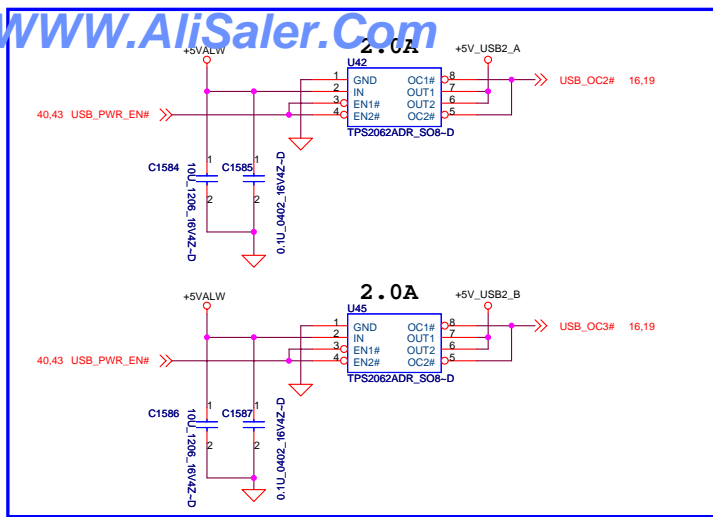
DMC  
(HDMI)

## DELL CONFIDENTIAL/PROPRIETARY

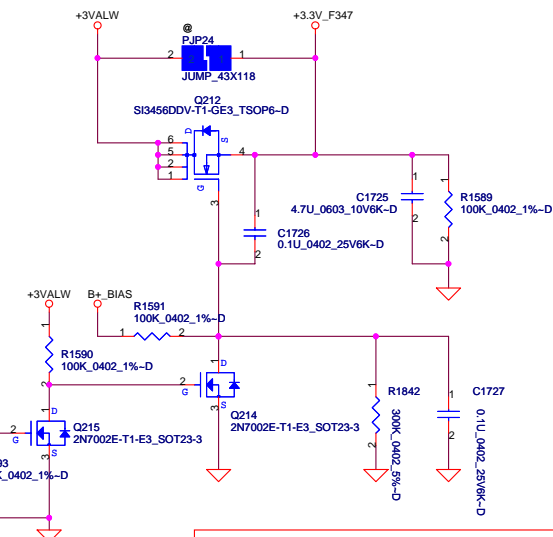
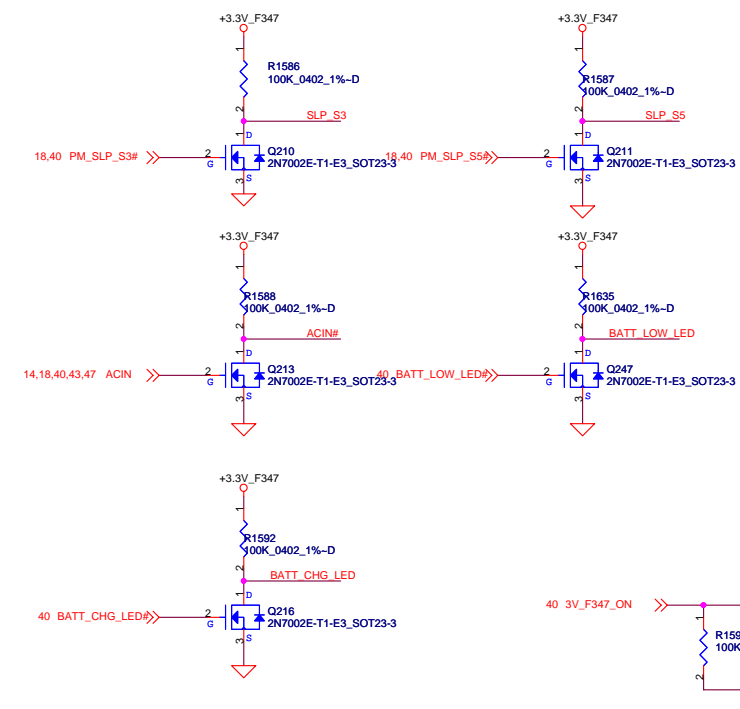
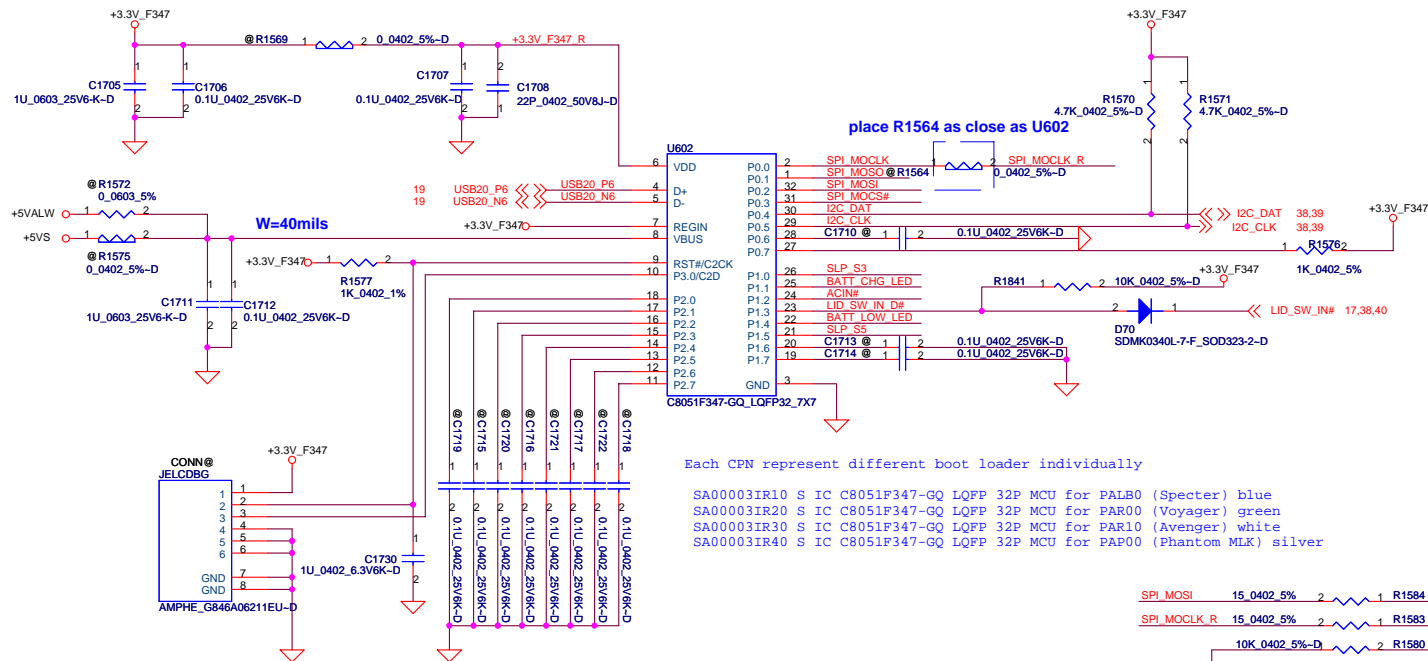
Title			
SCHEMATIC M/B LA-8321			
Size	Document Number		
	4019H5		
Date:	Wednesday, August 01, 2012	Sheet	35 of 68

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.









+3.3V\_F347 behavior

	STATE			
	S0	S3	S4	S5
AC IN	ON	ON	ON	ON
BAT only	ON	ON	OFF	OFF

DEVICE	SMBUS ADDRESS
MAXIM - LED	0100 000b
MAXIM - GPIO	0100 001b
I2C EEPROM	1010 000b

AC mode battery full in S5:turn off ELC controller

DELL CONFIDENTIAL/PROPRIETARY

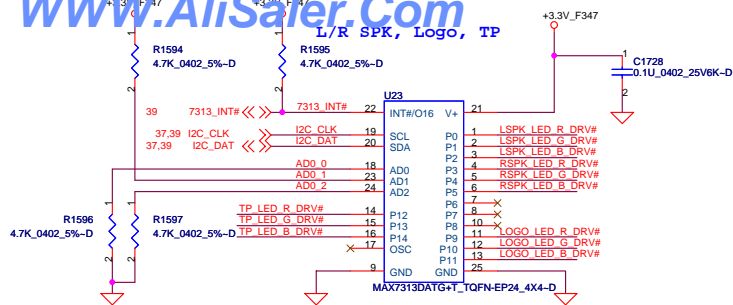
Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

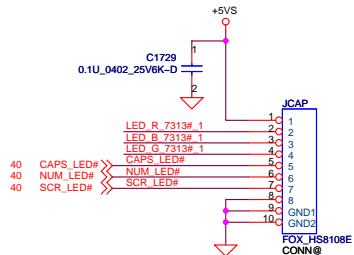
Size Document Number  
4019H5  
Date: Wednesday, August 01, 2012 Sheet 37 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

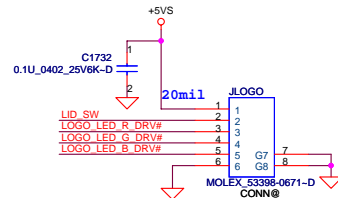




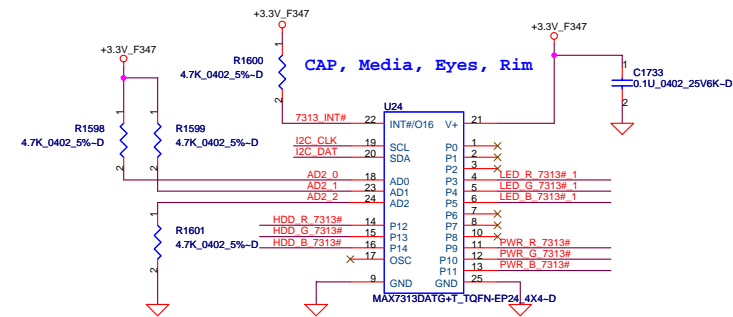
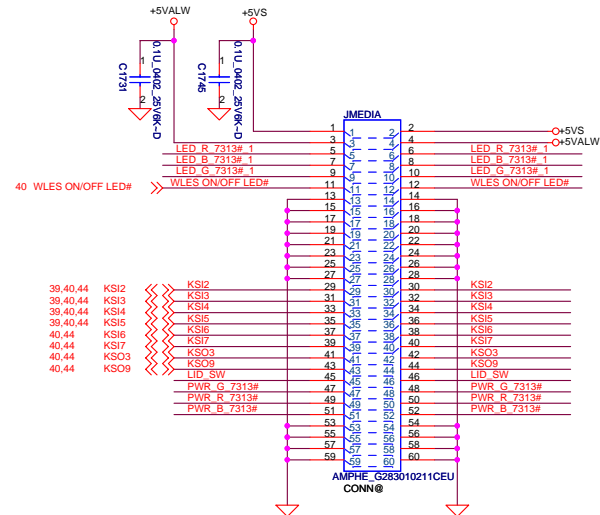
### Num LED CONN



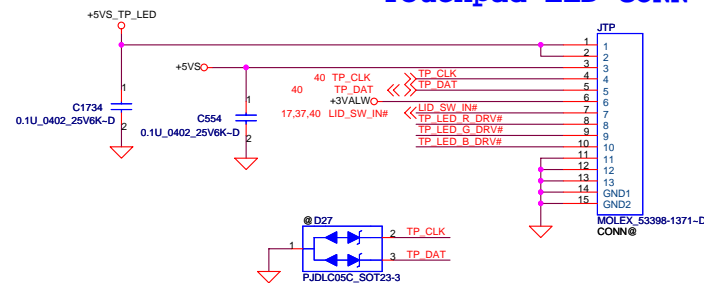
### LOGO Board CONN



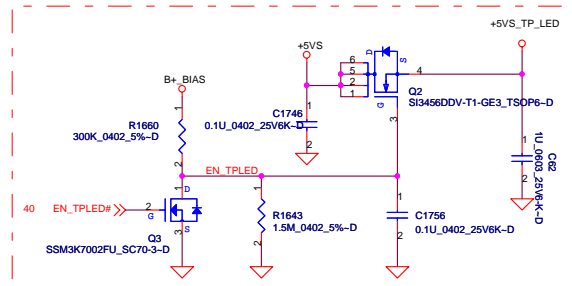
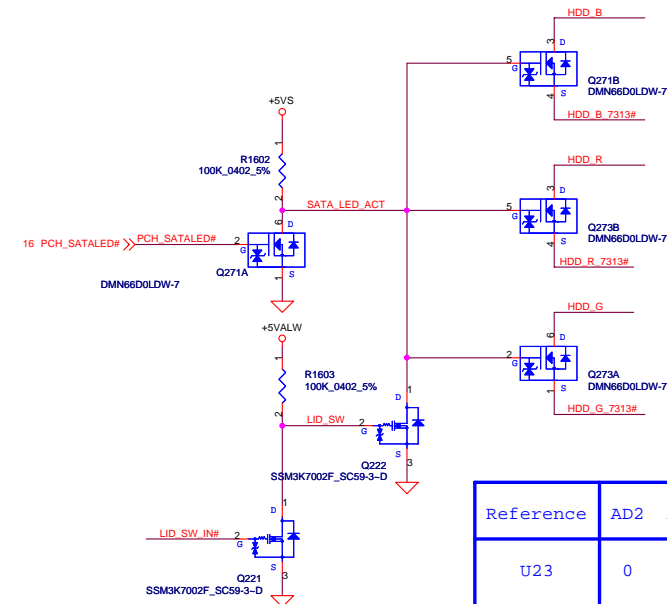
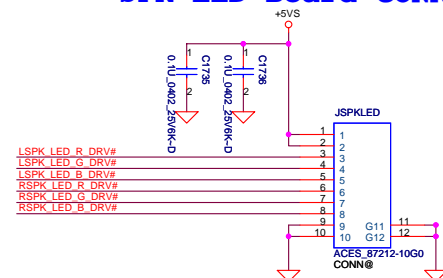
### Media Board CONN



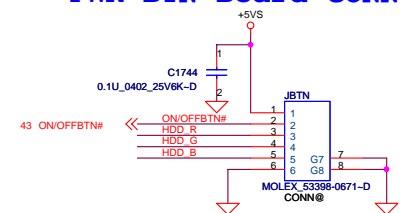
### Touchpad LED CONN



### SPK LED Board CONN



### PWR BTN Board CONN



Reference	AD2	AD1	AD0	MAX7313
U23	0	1	0	L/R Headlight , Logo, TP
U24	0	1	1	Num, CAP , SCR EJECT, REV, PLAY/PAUSE FFWD, Vol_DWN, Vol_UP Wireless ON/OFF AWCC Button Alien Adrenaline Power Button Eyes Power Button Rim

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



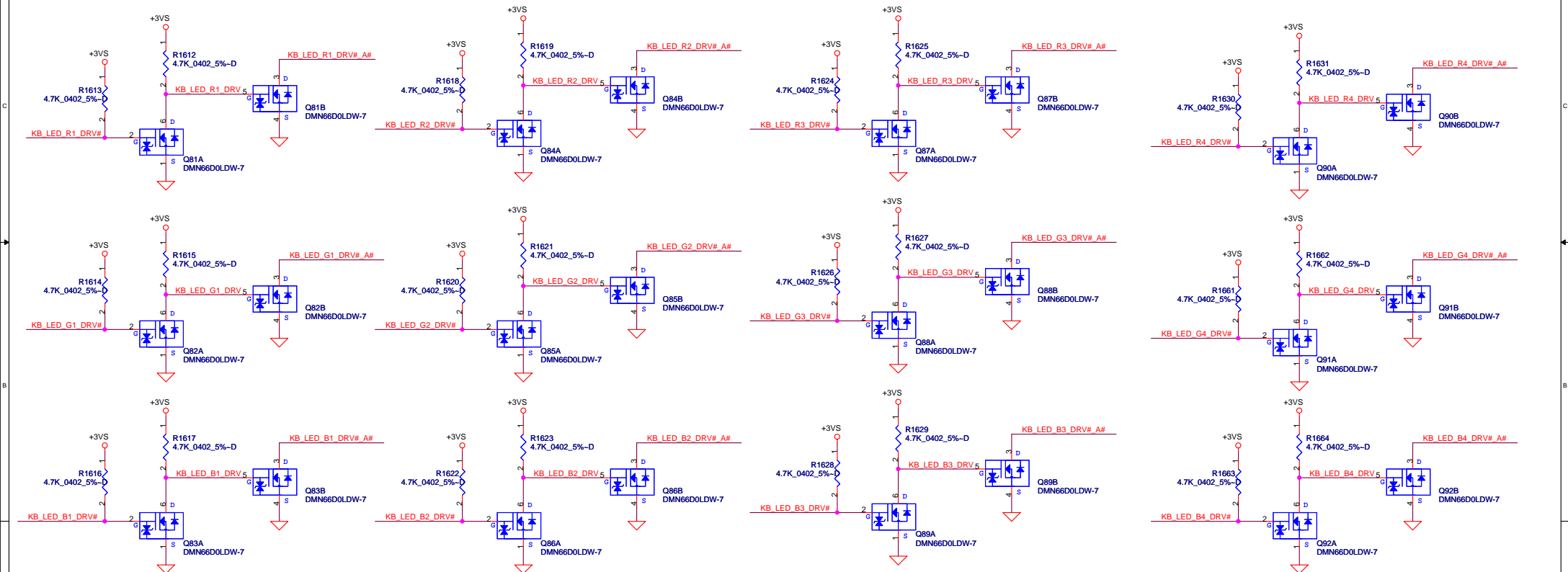
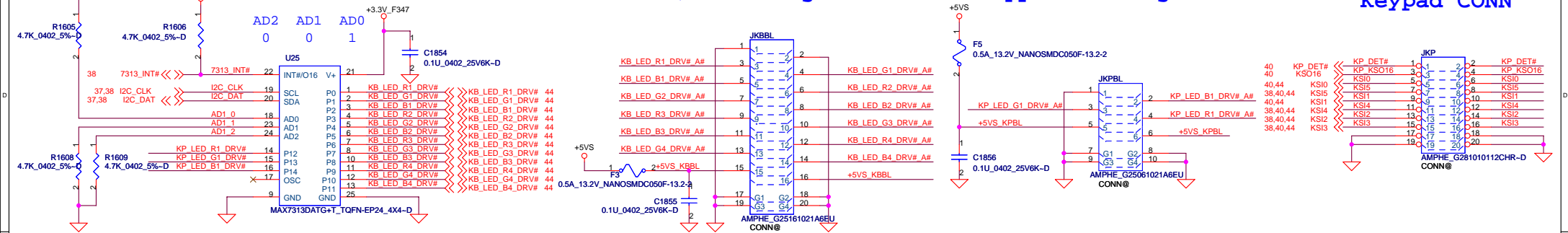
DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

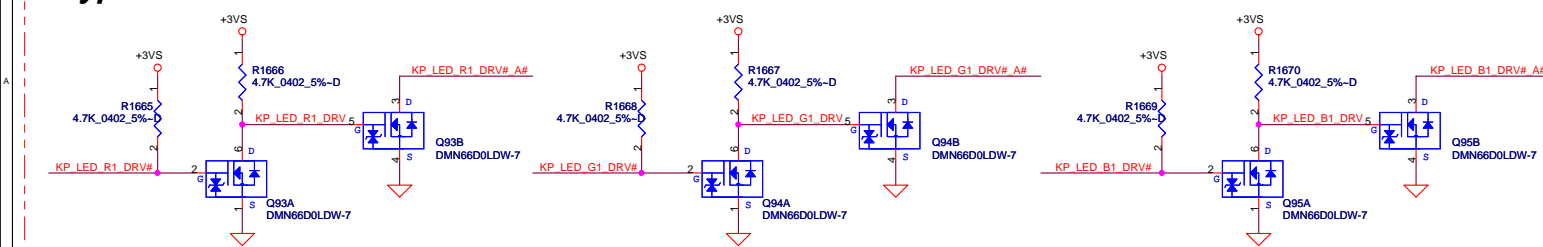
SCHEMATIC M/B LA-8321

Size	Document Number	Rev
4019H5		B

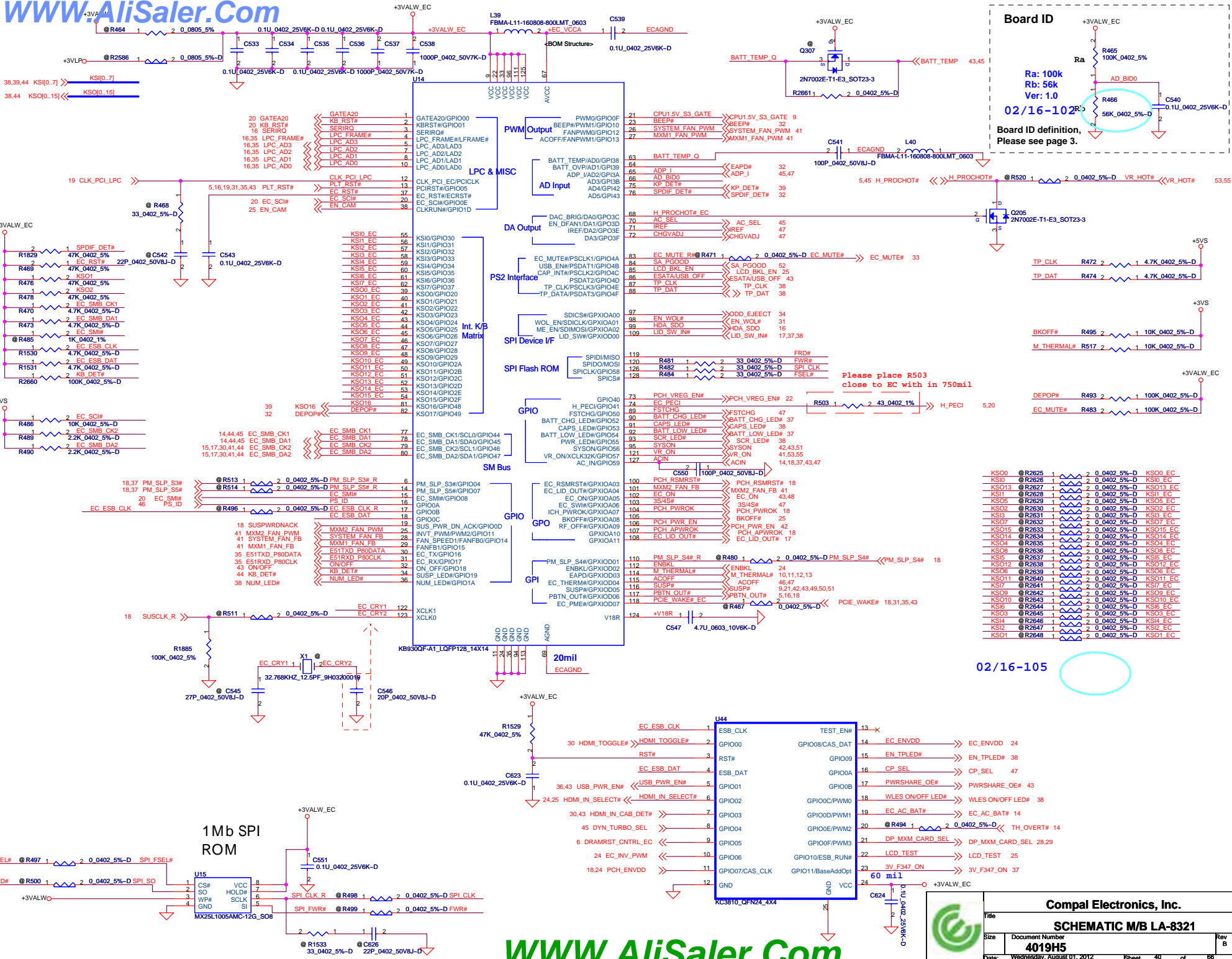




### Keypad LED control



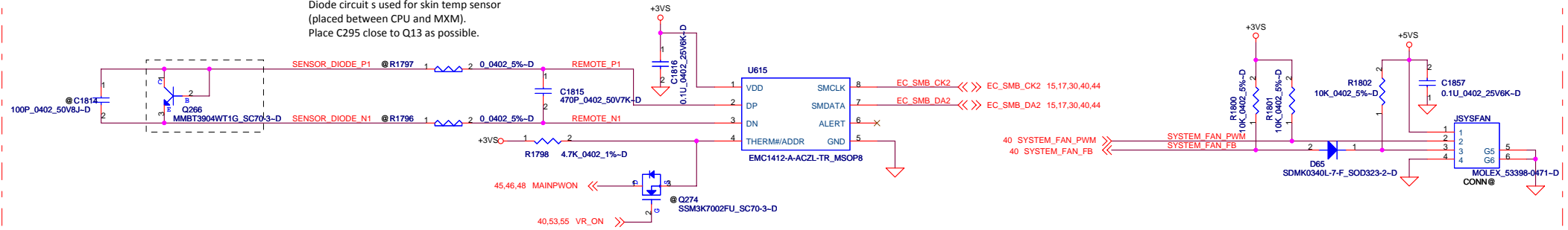




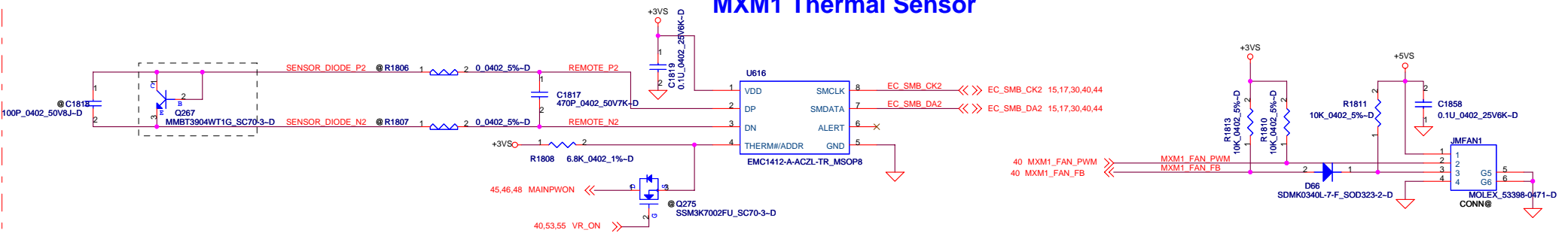


## System Thermal Sensor

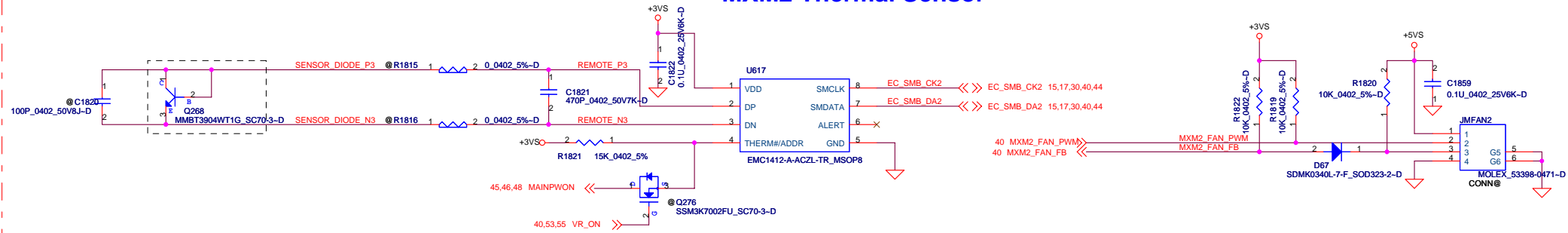
Diode circuit s used for skin temp sensor  
(placed between CPU and MXM).  
Place C295 close to Q13 as possible.



## 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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



DELL CONFIDENTIAL/PROPRIETARY

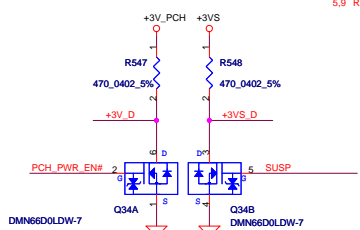
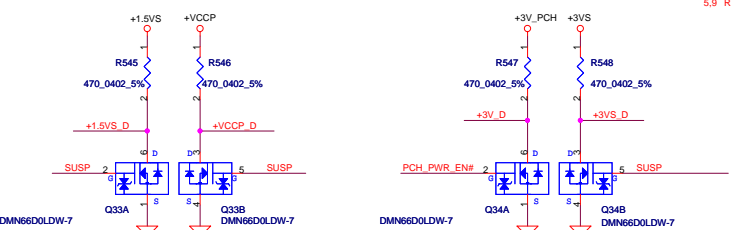
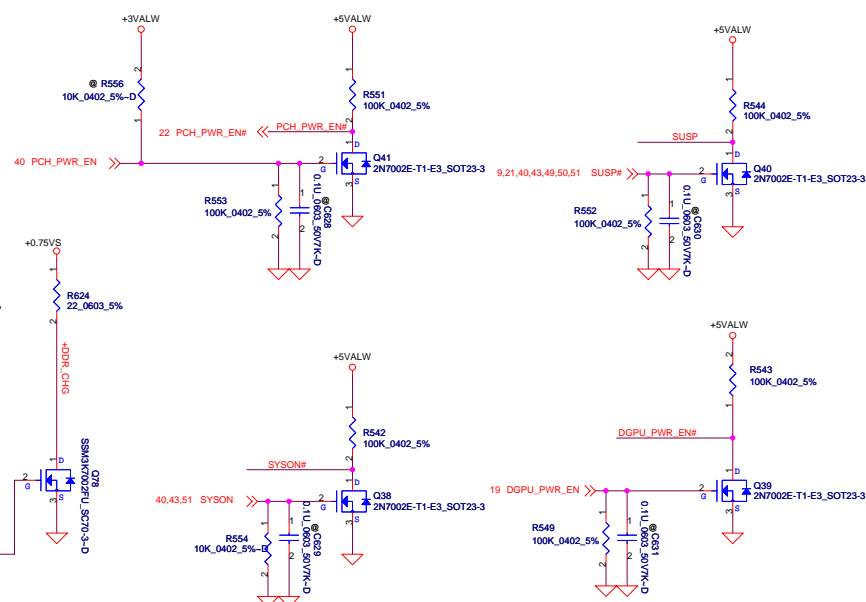
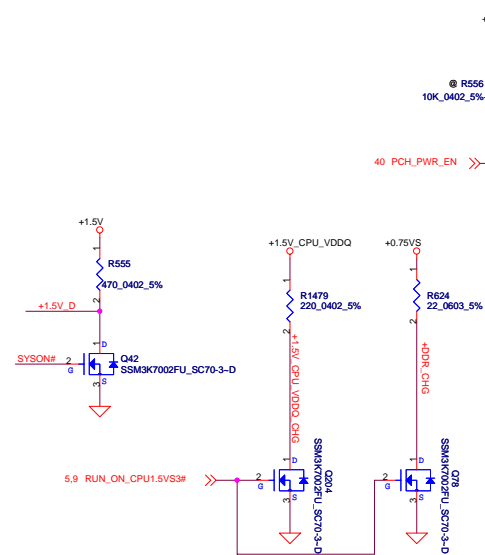
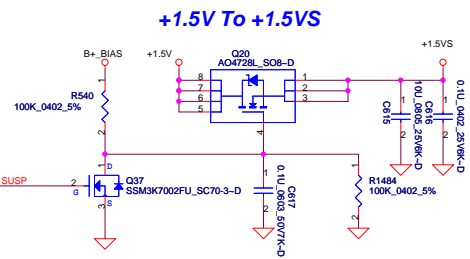
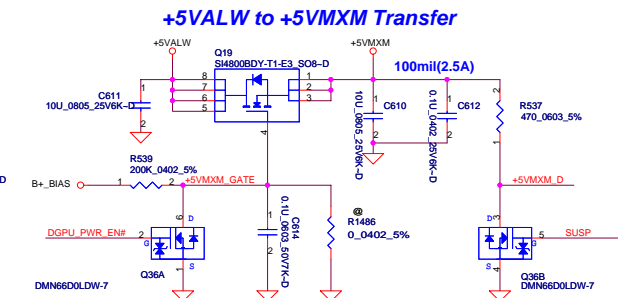
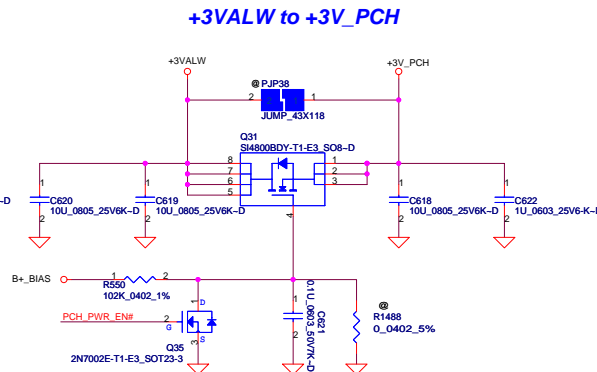
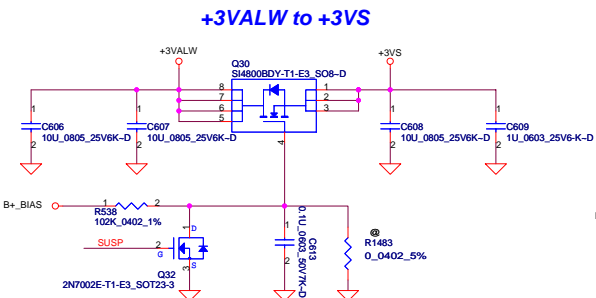
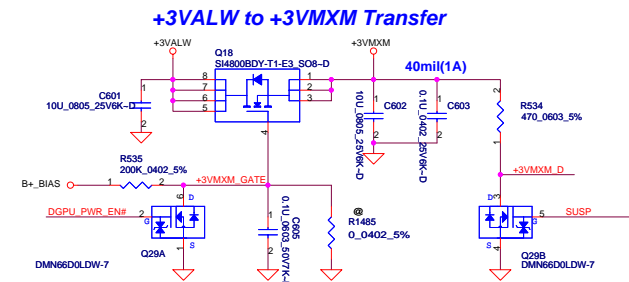
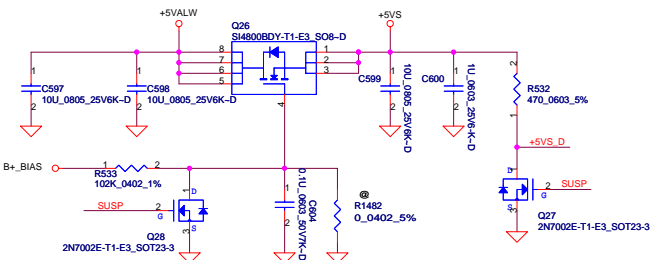
**Compal Electronics, Inc.**

Title **SCHEMATIC M/B LA-8321**

Size	Document Number	Rev
	1010UE	B

Date: Wednesday, August 01, 2012 Sheet 41 of 66





PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL. THIS DOCUMENT MAY NOT BE TRANSMITTED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.

DELL CONFIDENTIAL/PROPRIETARY

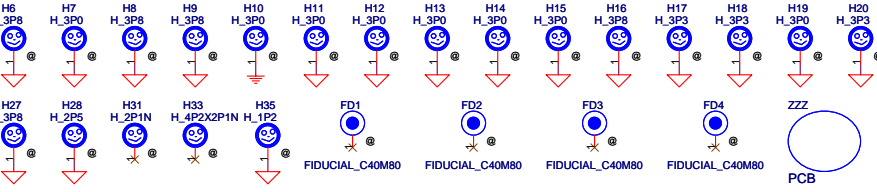
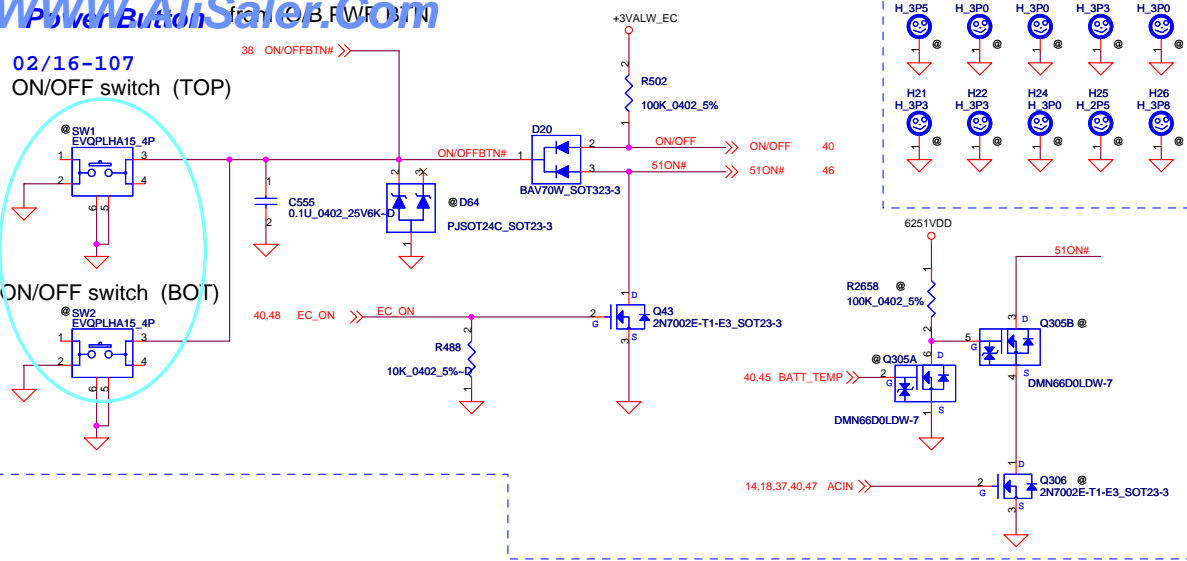
Compal Electronics, Inc.

File	SCHEMATIC M/B LA-8321		
Size	Document Number	4019H5	Rev B
Date	Wednesday, August 01, 2012	Sheet	42 of 66

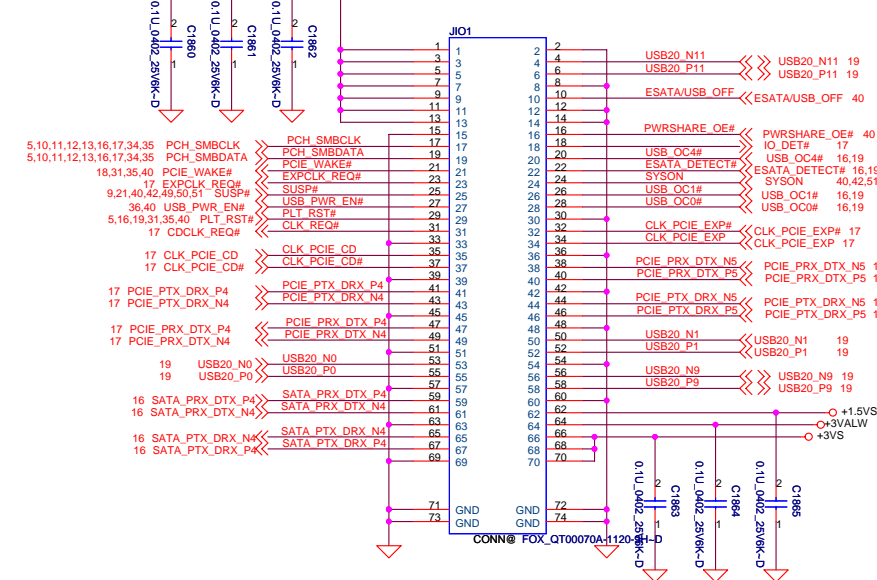


# 02/16-107 ON/OFF switch (TOP)

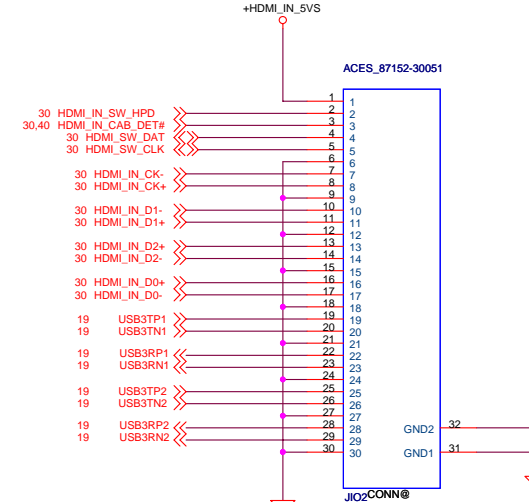
## ON/OFF switch (BOT)



## IO Board CONN 1



## IO Board CONN 2



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

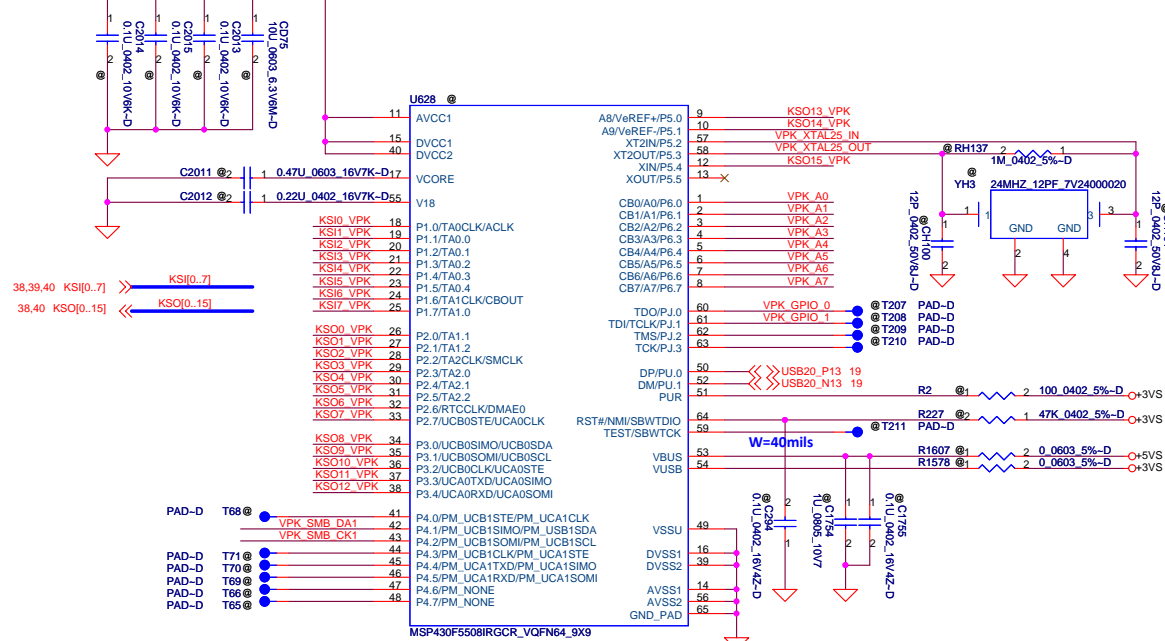
SCHEMATIC M/B LA-8321

4019H5

Wednesday, August 01, 2012 Sheet 43 of 66

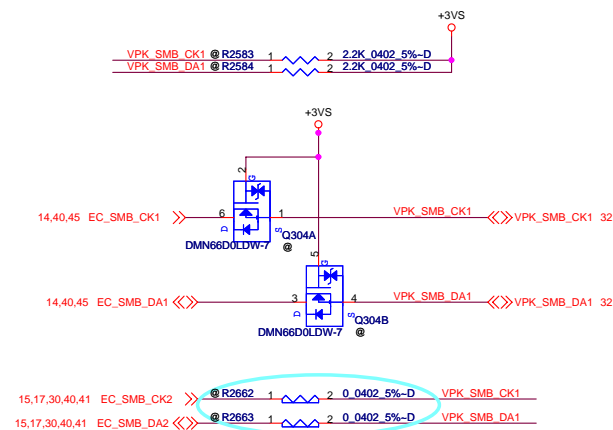
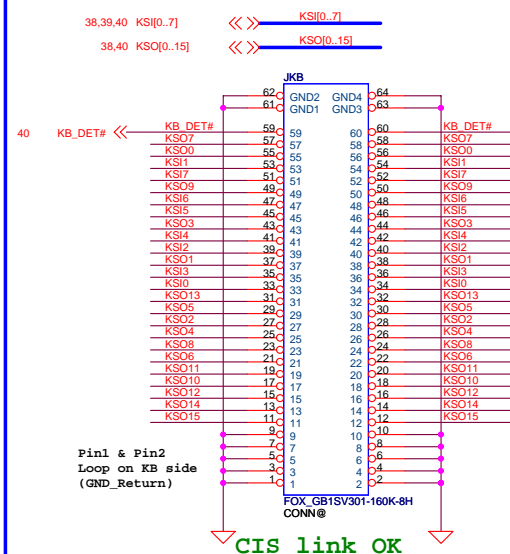
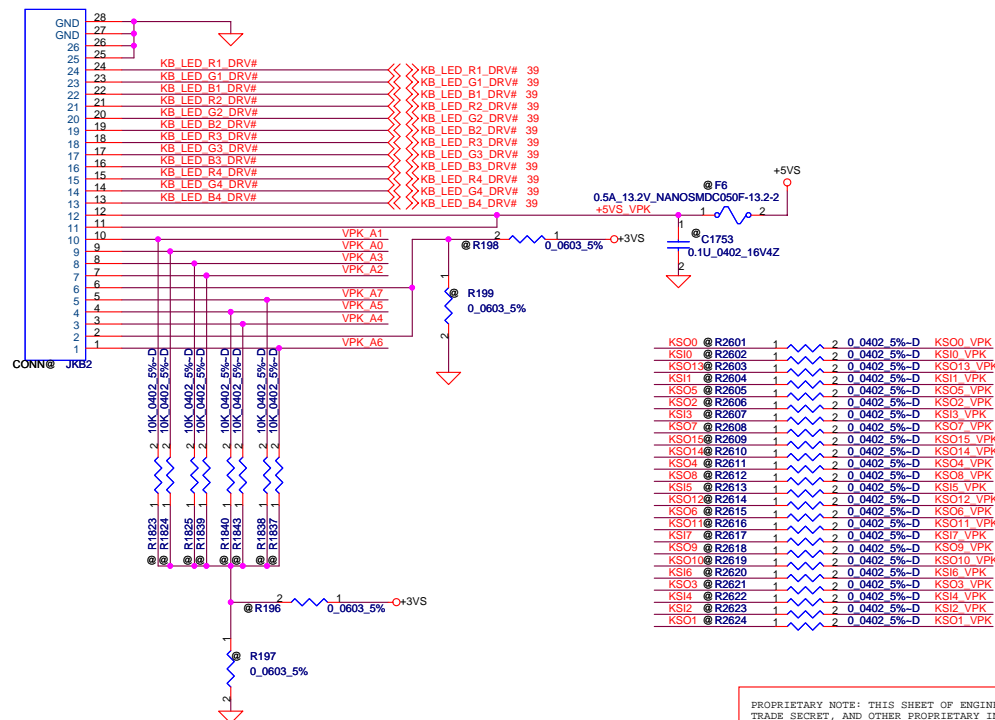
PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL"). THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.





## Analog Keys

TYCO\_2-2041070-6-D



02/20-108

DELL CONFIDENTIAL/PROPRIETARY

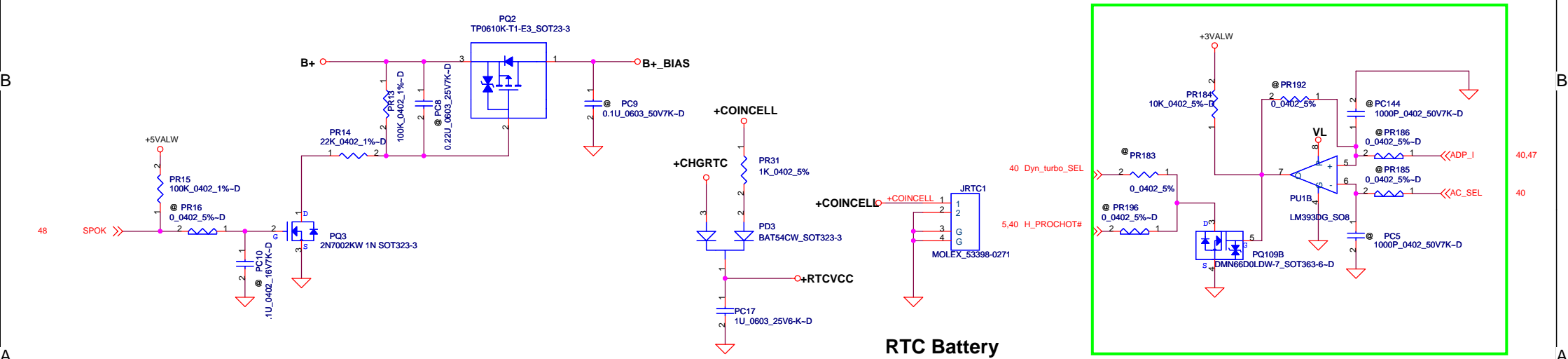
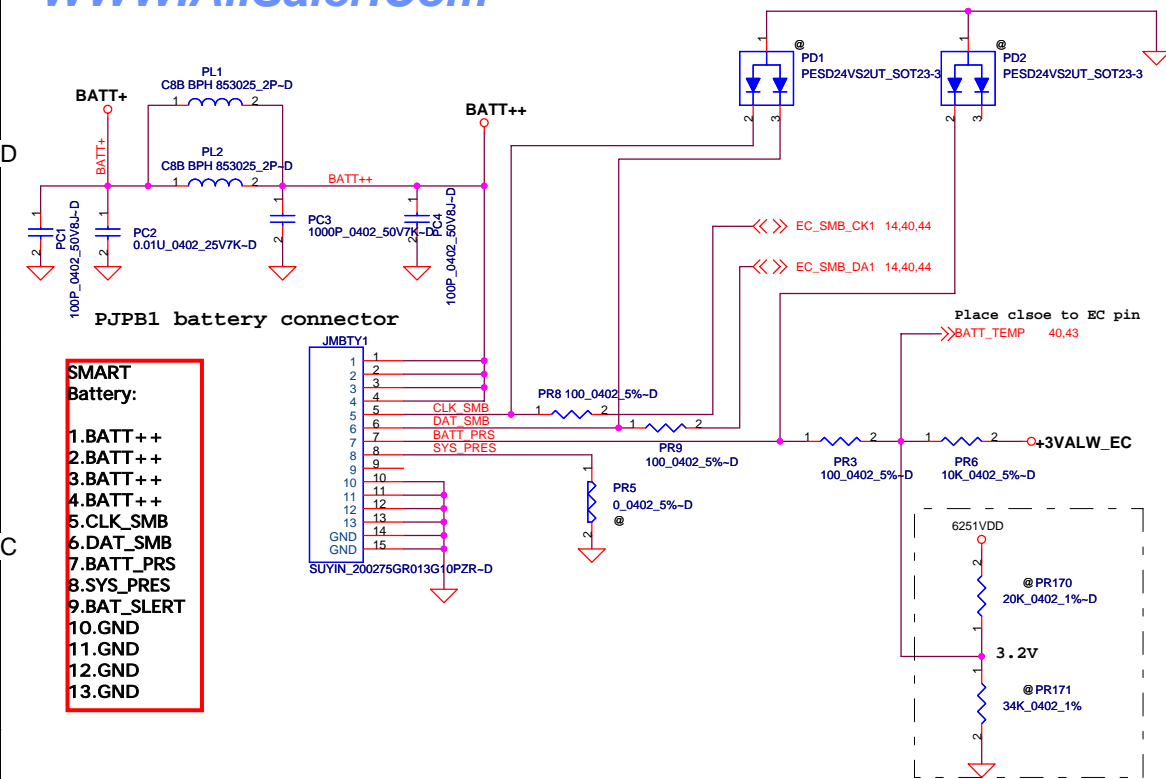
**Compal Electronics, Inc.**

**SCHEMATIC M/B LA-8321**

**4019H5**

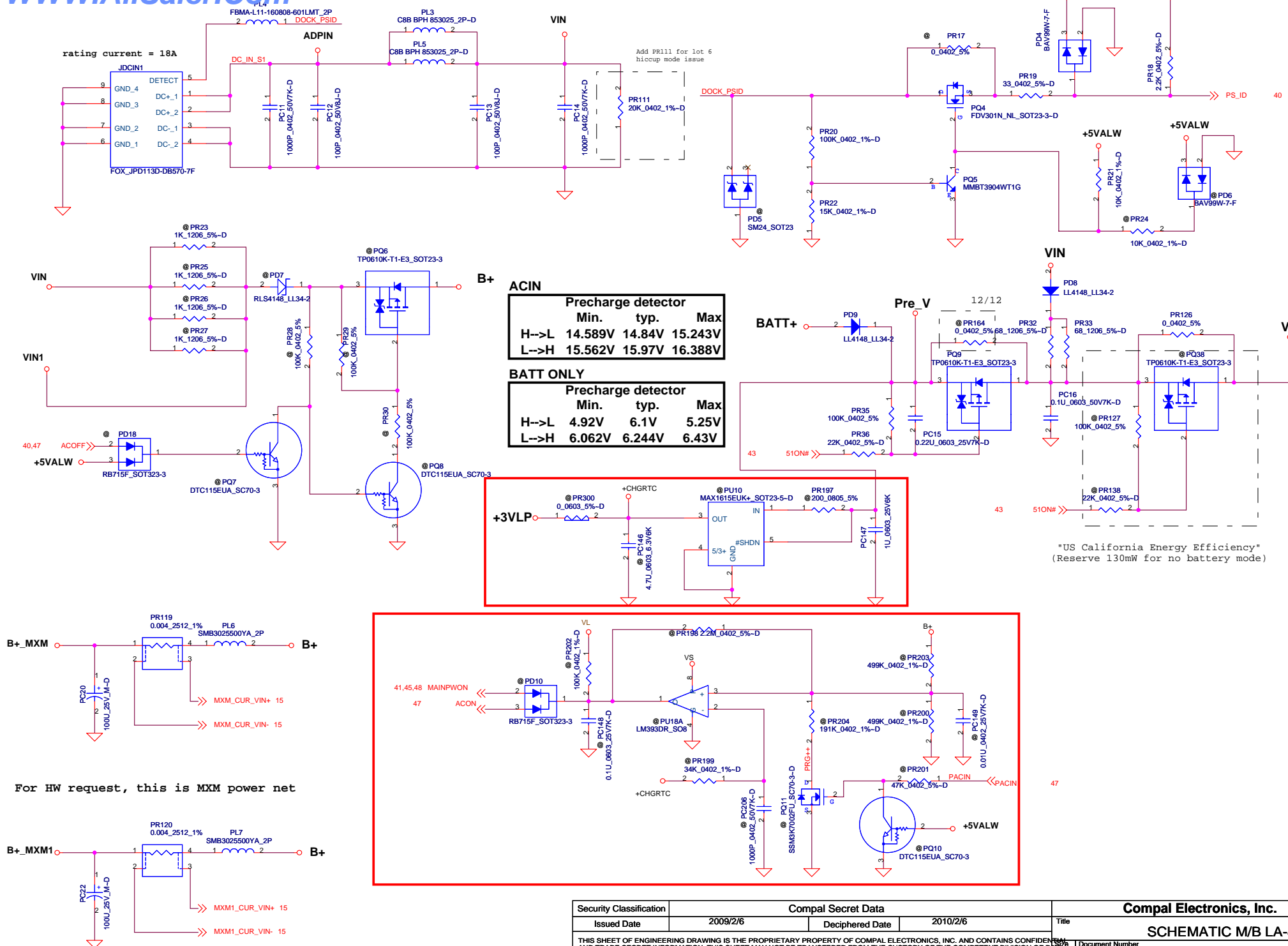
Date: Wednesday, August 01, 2012 Sheet 44 of 66





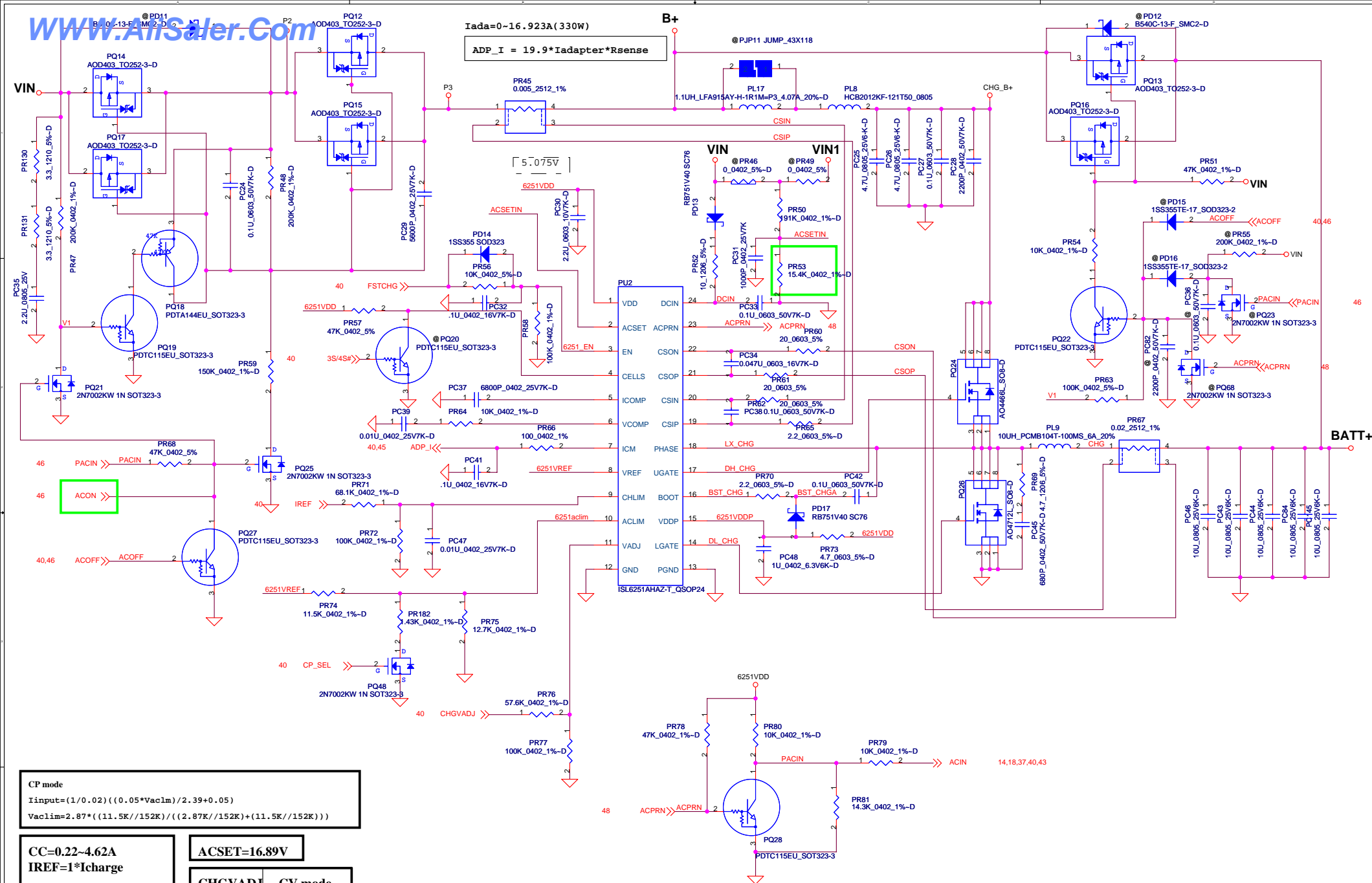
Security Classification	Compal Secret Data			Compal Electronics, Inc.		
Issued Date	2009/2/6	Deciphered Date	2010/2/6	Title	SCHEMATIC M/B LA-8321	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Document Number	Rev B
				A3		
Date:	Wednesday, August 01, 2012			Sheet	45	of 66





Security Classification		Compal Secret Data		Compal Electronics, Inc.				
Issued Date	2009/2/6	Deciphered Date	2010/2/6	Title				
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D TO ANY OTHER DIVISION EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. THIS SHEET NOR THE INFORMATION IT CONTAINS SHALL BE LOANED, REPRODUCED, COPIED, OR DISCLOSED IN ANY MANNER WITHOUT THE WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				SCHEMATIC M/B LA-8321				
				Docu- ment Number	4019H5		Rev	B
				Date:	Wednesday, August 01, 2012	Sheet	46	of





```
CP mode
Iinput=(1/0.02)((0.05*Vacim)/2.39+0.05)
Vacim=2.87*((11.5K/152K)/((2.87K/152K)+(11.5K/152K)))
```

CC=0.22~4.62A  
IREF=1\*Icharge  
IREF=0.22V~3.294V

ACSET=16.89V	
CHGVADJ	CV mode
0V	4V per cell
1.882V	4.2V per cell
3.294V	4.35V per cell

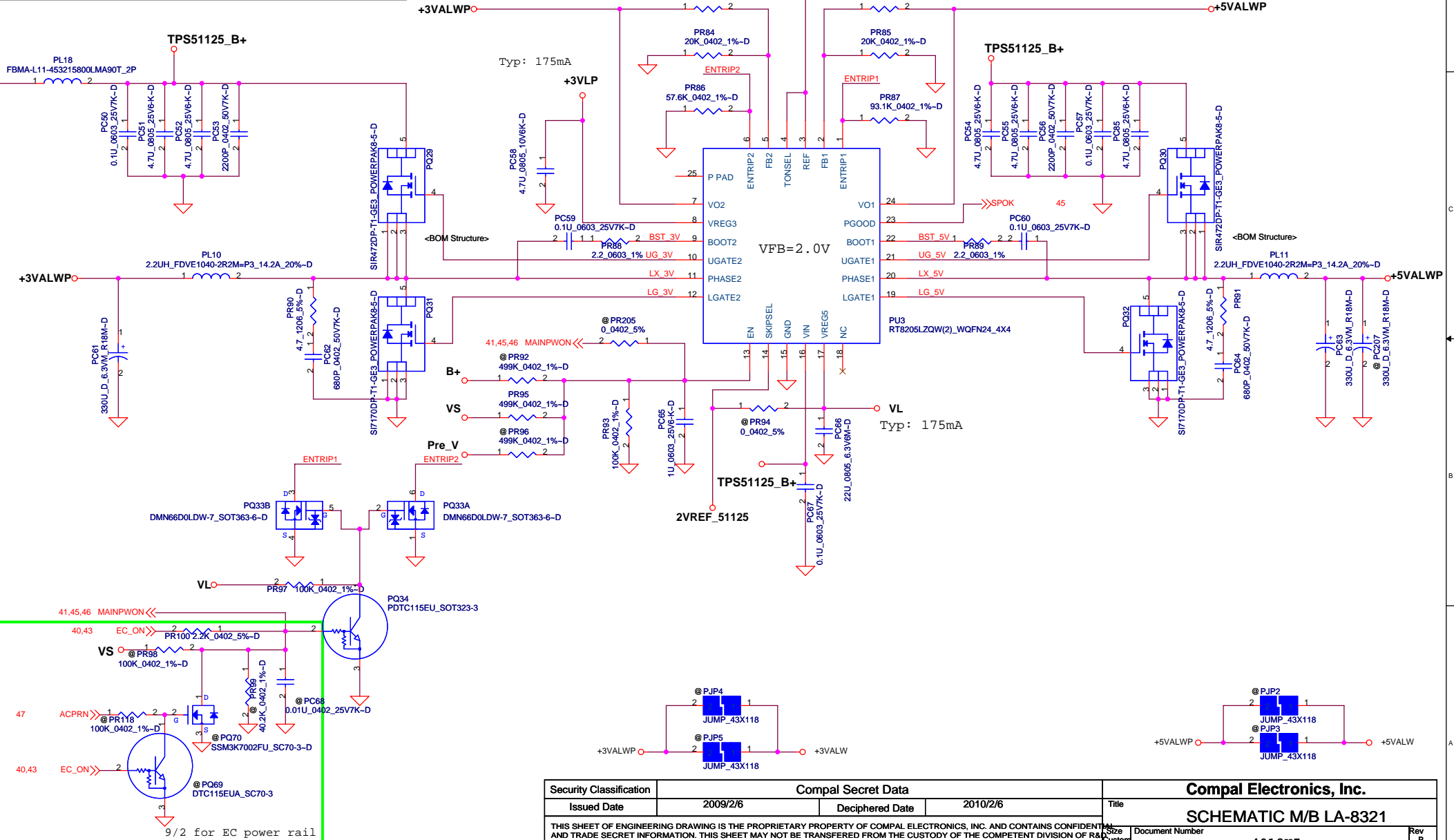
3S/4S# signal	
High	3S
Low	4S

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/2/6	Deciphered Date	2010/2/6	Title	SCHMATIC M/B LA-8321
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT, EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE REPRODUCED OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Docuement Number	4019H5
				Date:	Wednesday, August 01, 2012
				Sheet	47 of 66



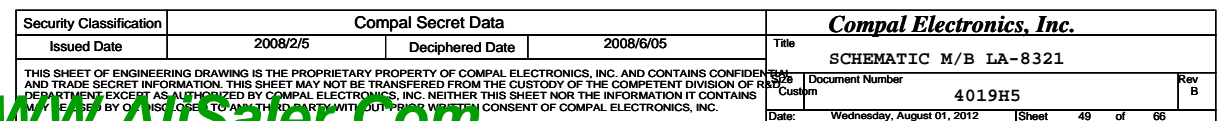
**3.3VALWP**  
 TDC 8.8A  
 Peak Current 12.5A  
 OCP current 15.A  
 H/S RDS(on) 12.2m ohm(typ),15m ohm(max)  
 L/S RDS(on) 3.6m ohm(typ),4.5m ohm(max)  
 FSW 375KHz

**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



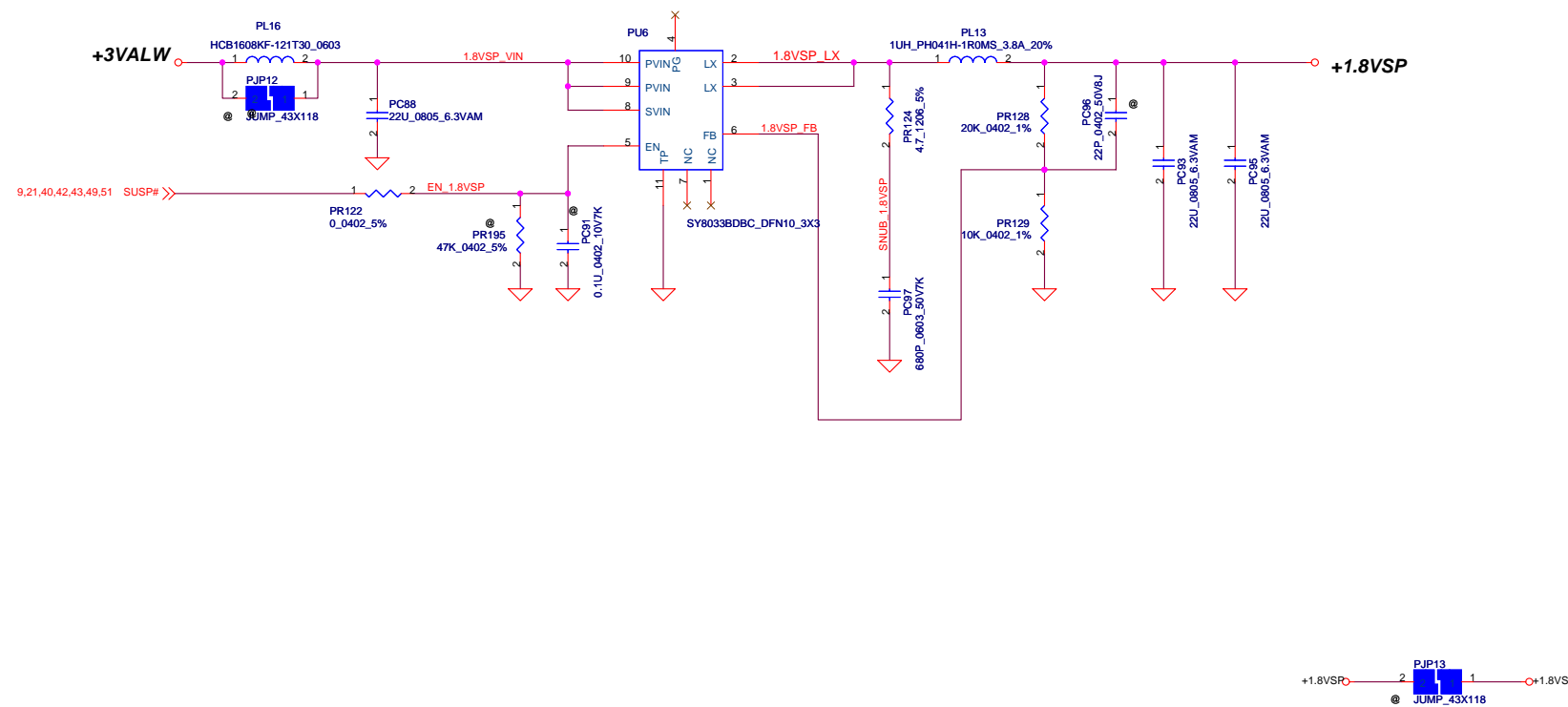
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/2/6	Deciphered Date	2010/2/6	Title	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Document Number
				Custom	4019H5
				Date	Wednesday, August 01, 2012
				Sheet	48 of 66





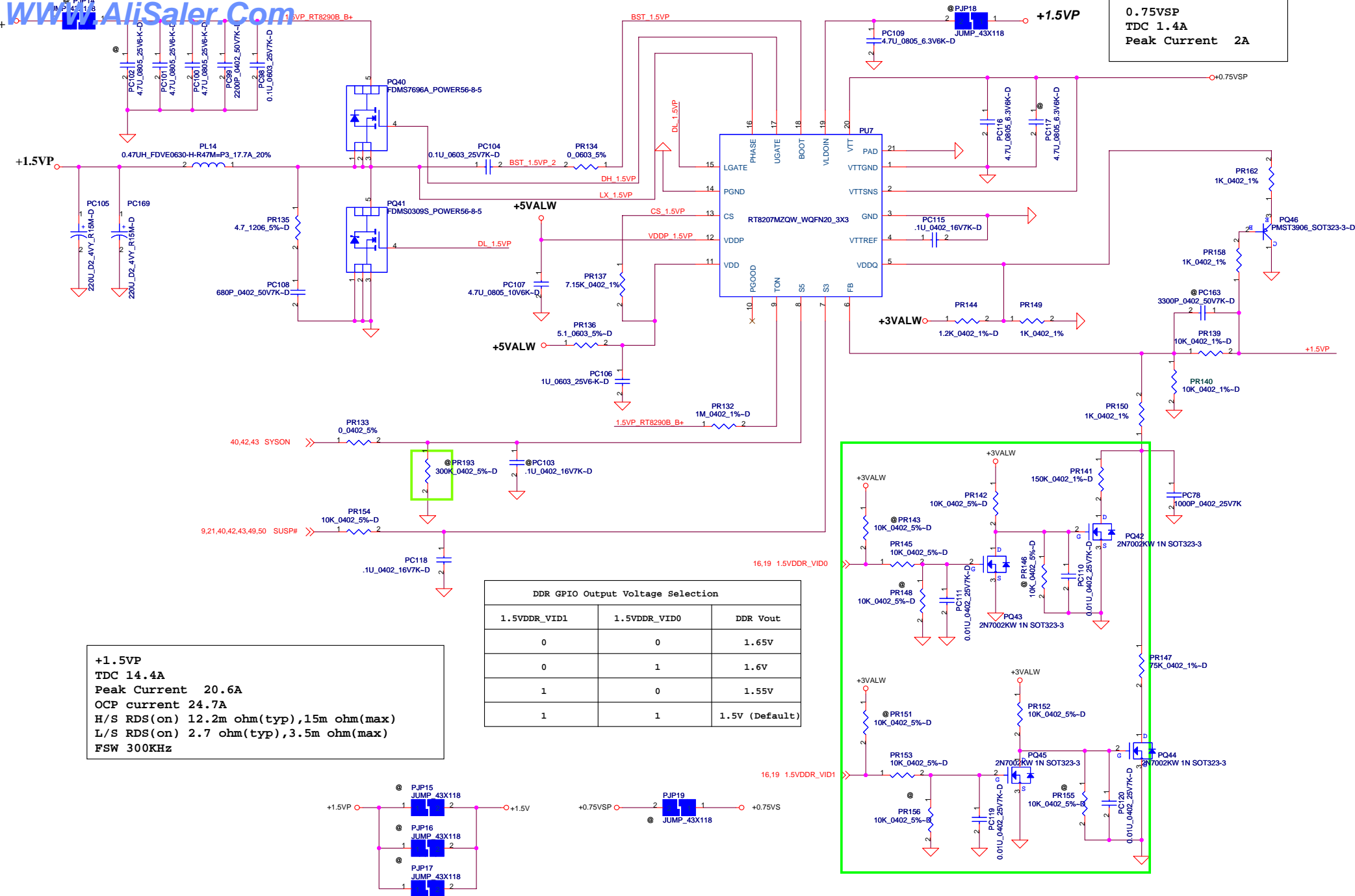


+1.8VSP  
TDC 0.9A  
Peak Current 1.2A  
OCP current 3A

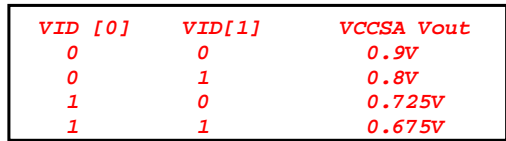


Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2008/2/5	Deciphered Date	2008/6/05	Title	SCHEMATIC M/B LA-8321
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Document Number	4019H5
				Custom	Rev B
				Date: Wednesday, August 01, 2012	Sheet 50 of 66





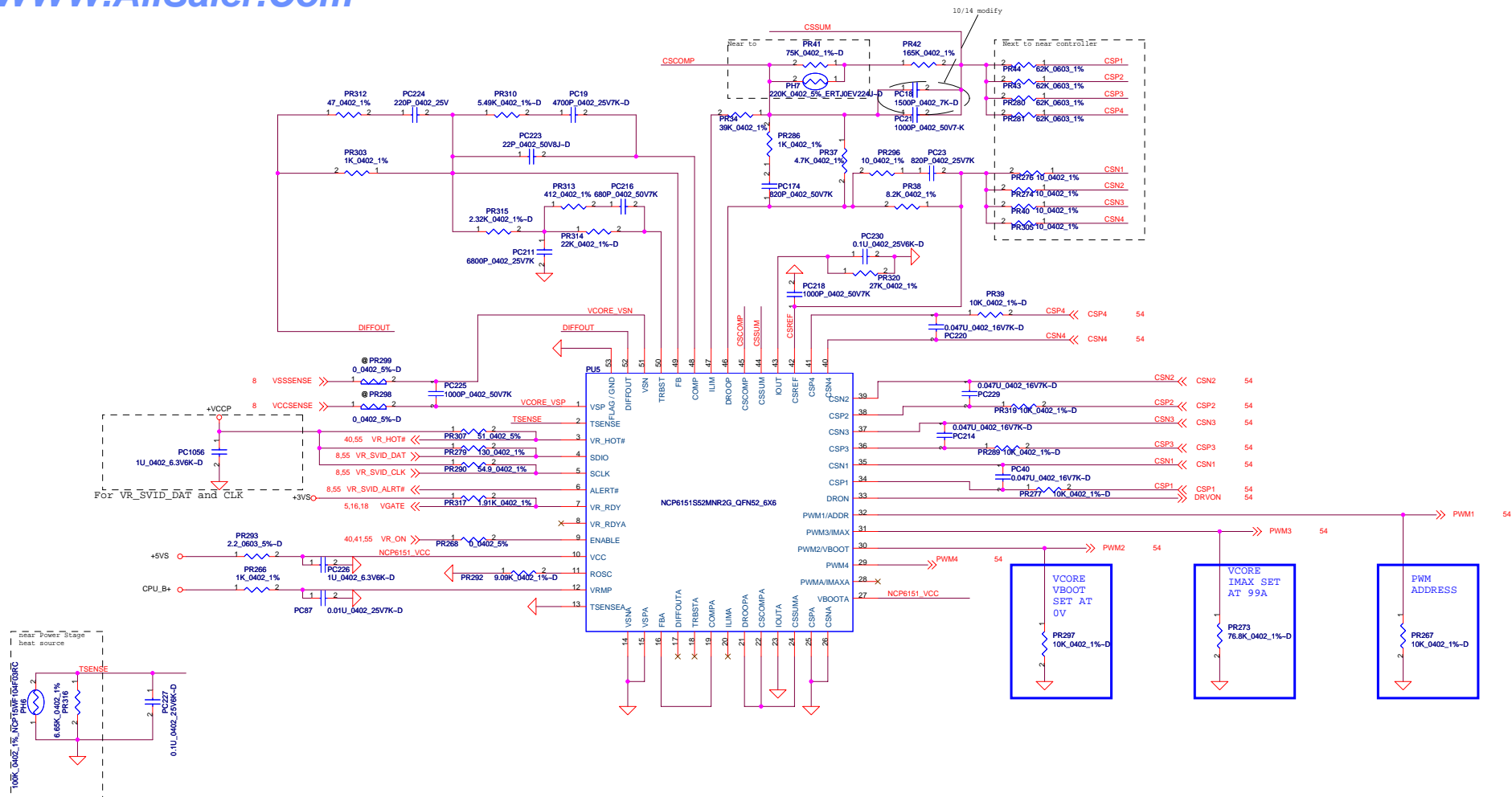




```
+VCCSAP
TDC 4.2A
Peak Current 6A
```

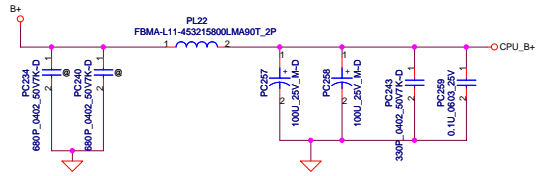
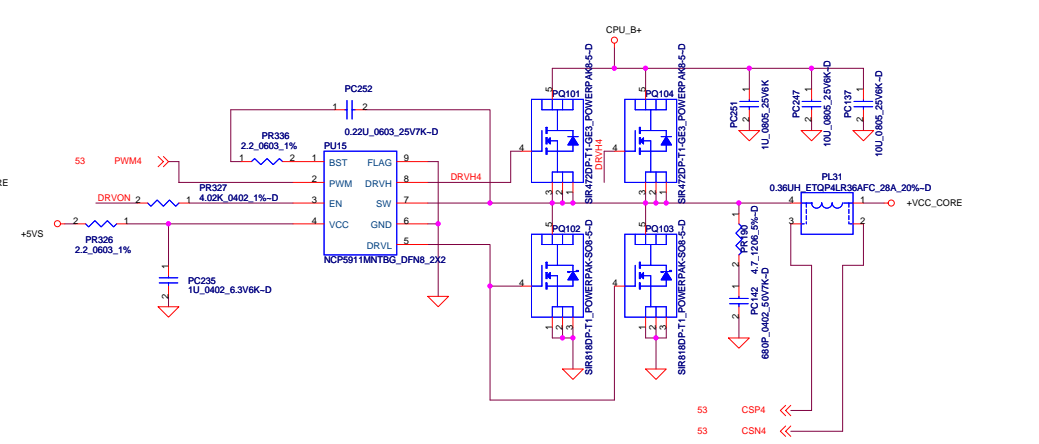
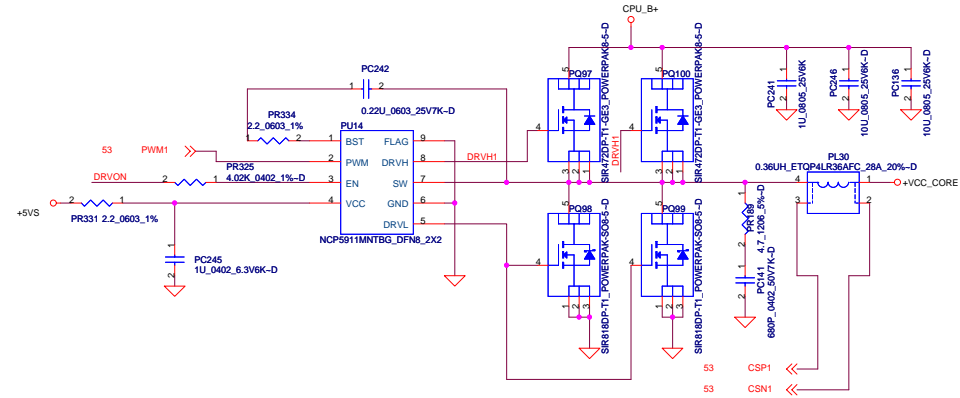
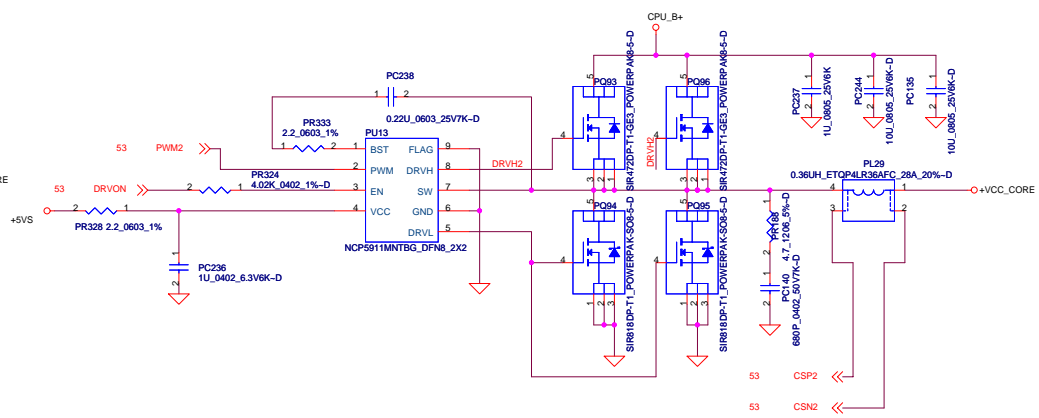
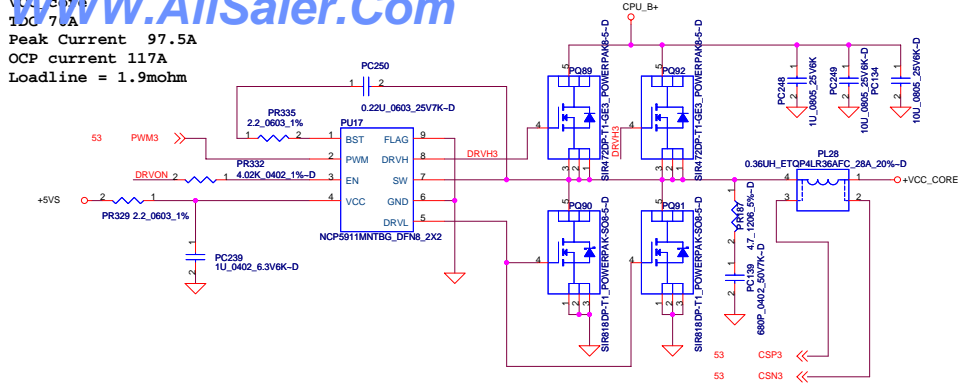
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2009/12/01	Deciphered Date	2010/12/31	Title	<b>SCHEMATIC M/B LA-8321</b>
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS SHALL BE LOANED BY OR DISCLOSED TO ANY OTHER PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Document Number
					4019H5
Date:				Wednesday, August 01, 2012	Sheet 52 of 66





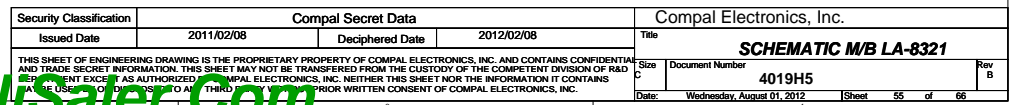


Peak Current 97.5A  
 OCP current 117A  
 Loadline = 1.9mohm



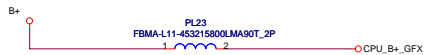
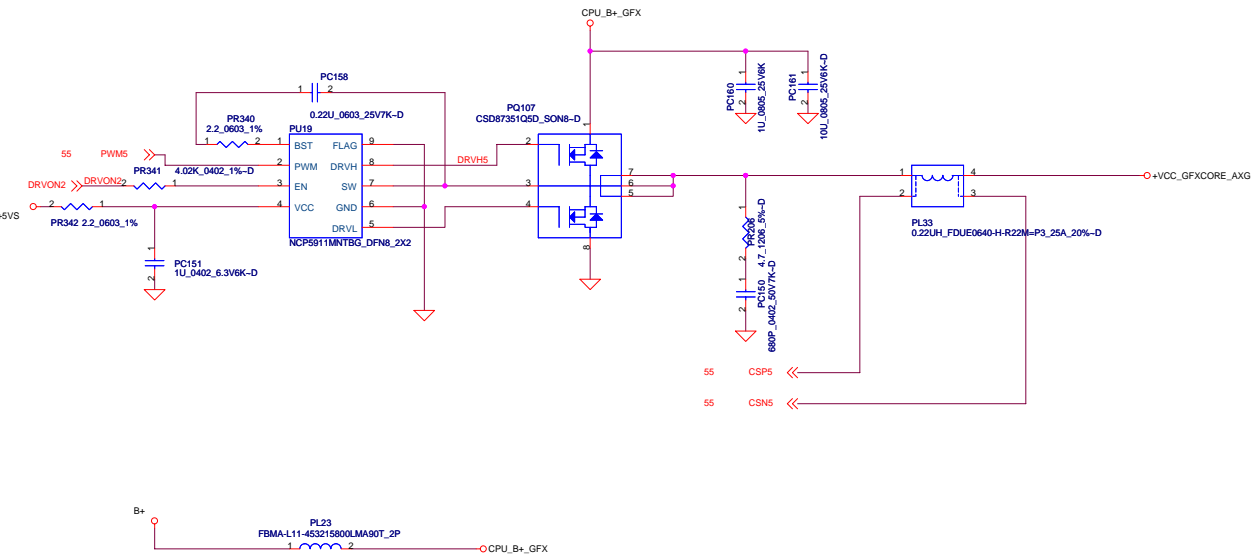
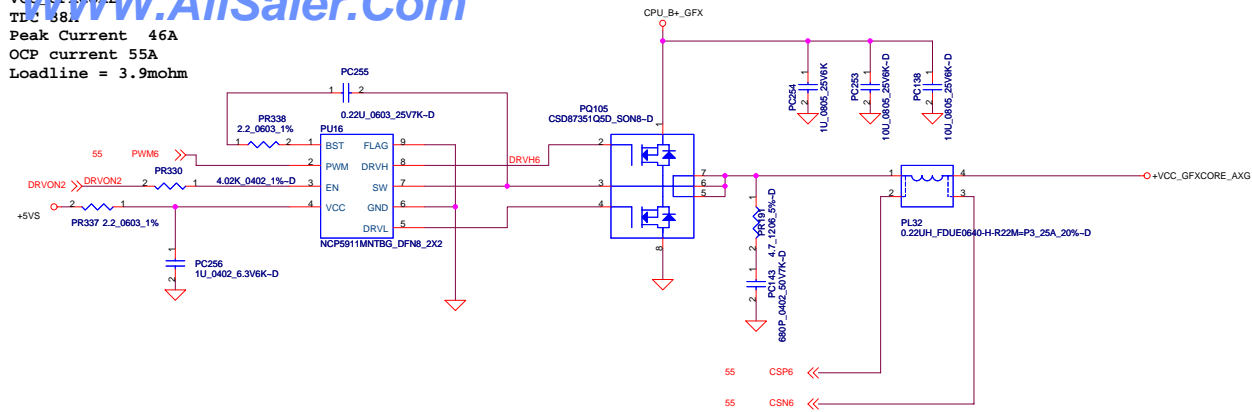
Security Classification			Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/10/09	Deciphered Date	2010/10/09	Title	SCHEMATIC M/B LA-8321	
THIS SHEET OF ENGINEERING DRAWINGS IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS SHALL BE DISCLOSED BY OR TO ANY PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.						Rev B
Size	Custom	Document Number	4019H5	Date	Wednesday, August 01, 2012	Sheet 54 of 66





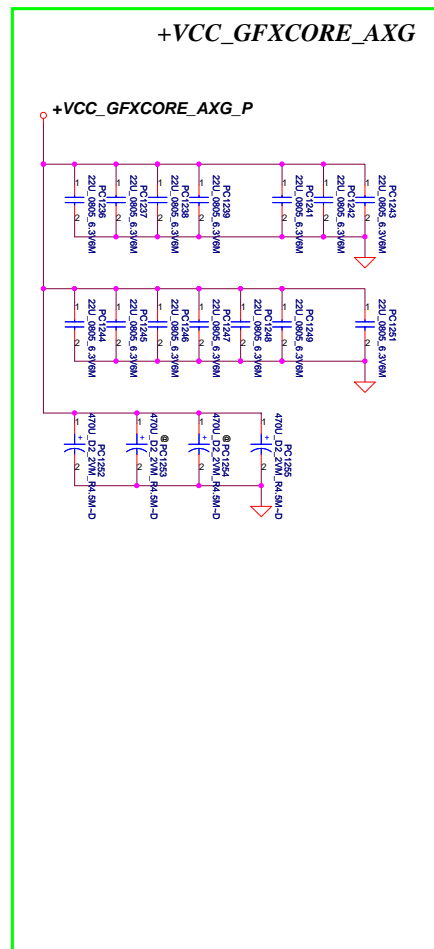
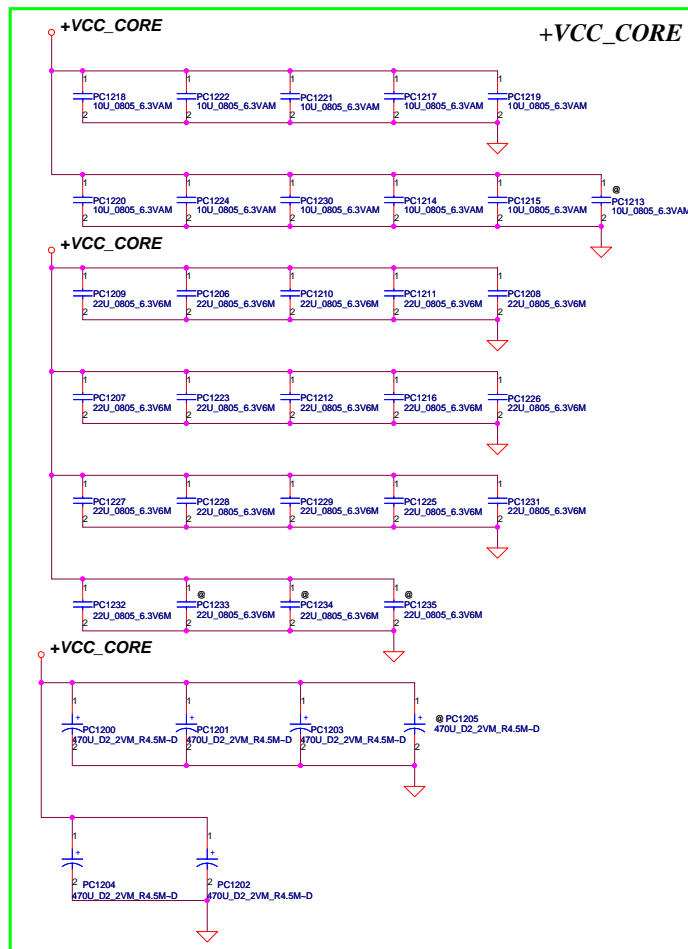


VCC\_CORE\_VOUT  
TLT 38.1  
Peak Current 46A  
OCP current 55A  
Loadline = 3.9mohm



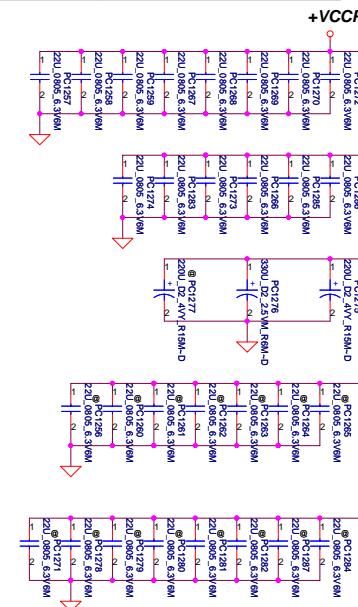
Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2011/02/08	Deciphered Date	2012/02/08	Title
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				SCHEMATIC M/B LA-8321
Size	Document Number	4019H5	Rev	B
Date	Wednesday, August 01, 2012	Sheet	56	of 66



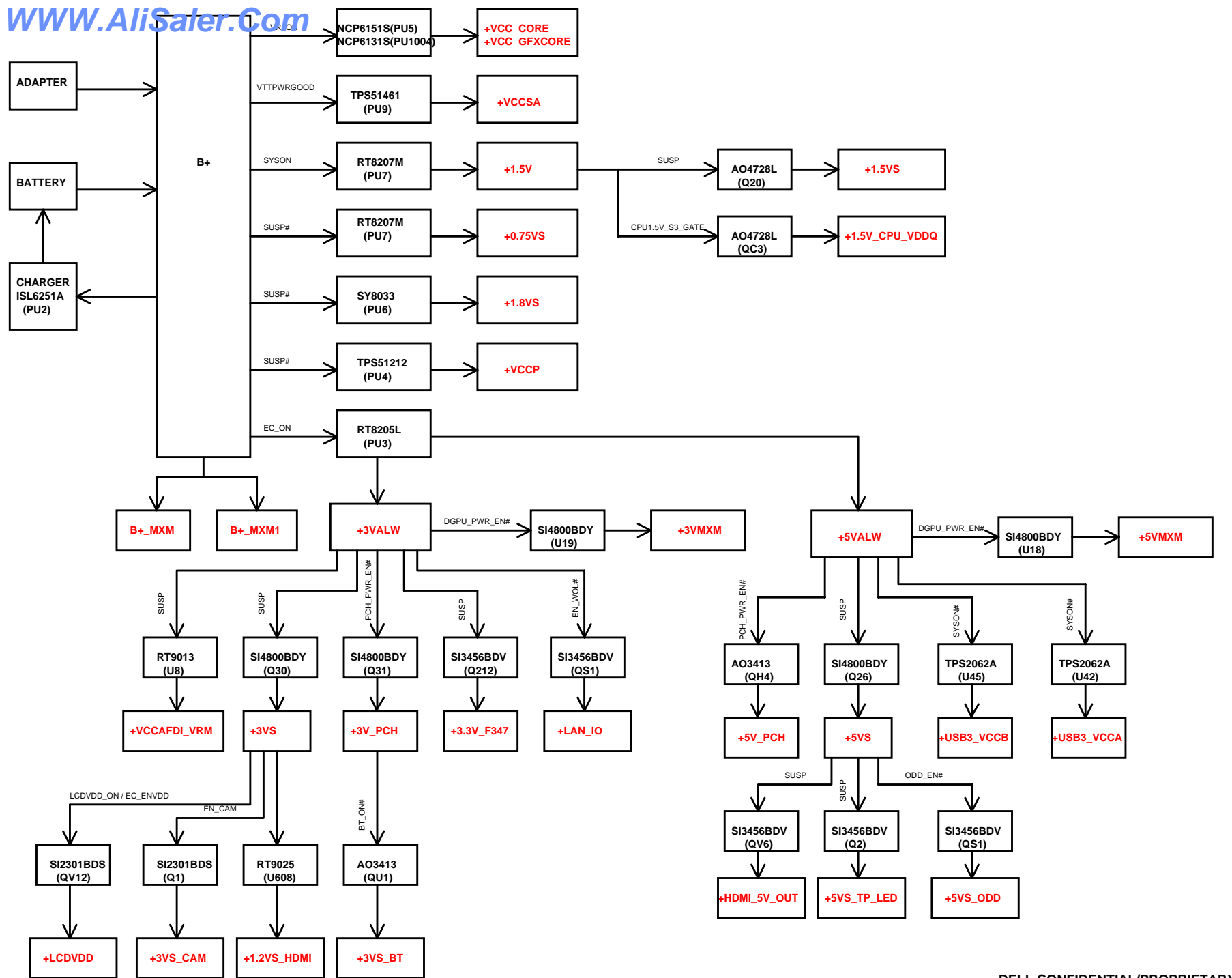


Below is 458544\_CRV\_PDDG\_0.5 Table 5-8.

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







DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

File  
Doc Number  
4019H5  
Date: Wednesday, August 01, 2012

Sheet 58 of 66

Rev B

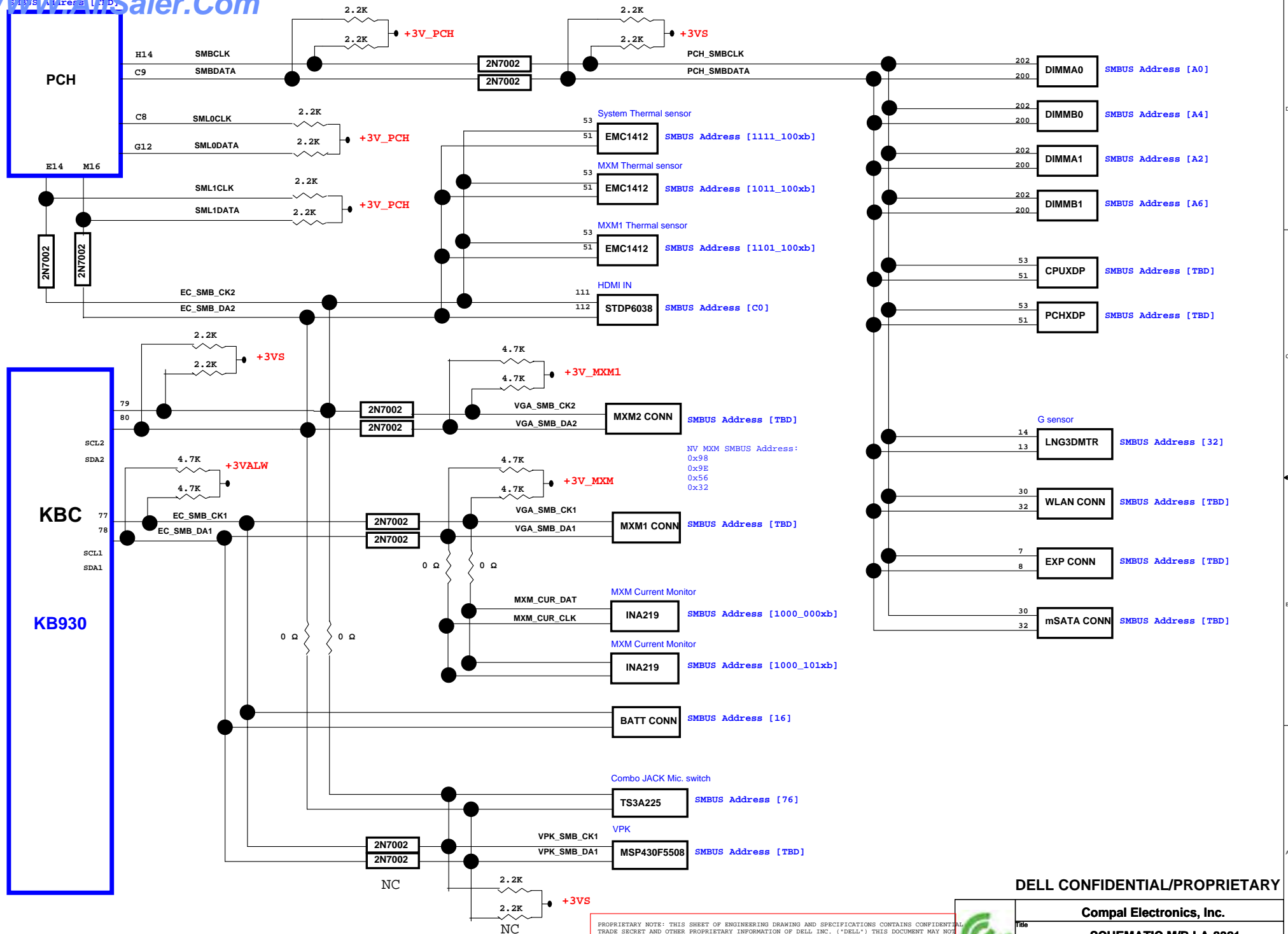


Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	52	PWR-VCCSA_COREP	10/05	Alan	SMT NC part (PR262)	BOM structure change to "Do Not Display"	X01
2	45	BATTERY CONN/OTP	10/13	Alan	EC detect the battery is insertion when only adapter in	BATT_PRS pull high from +3VALW to +3VALW_EC	
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
15	46	P46-PWR-DCIN/DECTOR	02/01	Alan	Power and EE main part is different, factory request to moified it	Change PQ5 to SB000008P0L as main source	A00
16	46	P46-PWR-DCIN/DECTOR	02/02	Alan	Platform is required to consume 4mA above at 19.5V in AC mode without battery attached.	Add PR111 for lot 6 hiccup mode issue (3.78mA+1mA=4.78mA)	A00
17	45, 52	DCIN/DECTOR, VCCSAP	02/16	Alan	Reduce revise 0 ohm (B+_BIAS enable, VCCSA_SENSE)	Change PR16, PR181 to short 0 ohm	A00
18	48	3VALWP/5VALWP	02/29	Alan	HDMI fail cause the 5V voltage drop to connector only 4.7V	Change PR83 from 30K to 30.9K ohm voltage from 5.05V to 5.15V	A00

THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS  
AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF YOUR  
DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS  
MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

Compal Electronics, Inc.	
Title	
SCHEMATIC M/B LA-8321	
Signature	Document Number
4019H5	
Date: Wednesday, August 01, 2012	Sheet 59 of 66
Rev	B





DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

SCHEMATIC M/B LA-8321

Size: 4019H5  
Date: Wednesday, August 01, 2012  
Sheet: 60 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL, TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL"). THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title SCHEMATIC M/B LA-8321

Size Document Number 4019H5 Rev B

Date: Wednesday, August 01, 2012 Sheet 61 of 66



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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title

SCHEMATIC M/B LA-8321

Size Document Number

4019H5

Date: Wednesday, August 01, 2012 Sheet 62 of 66



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

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT

<b>DELL CONFIDENTIAL/PROPRIETARY</b>			
<b>Compal Electronics, Inc.</b>			
Title <b>SCHEMATIC M/B LA-8321</b>			
Size	Document Number <b>4019H5</b>		Rev <b>B</b>
Date: Wednesday, August 01, 2012	Sheet 63	of 66	



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	X03

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT



DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title  
SCHEMATIC M/B LA-8321

Size Document Number  
4019H5

Date: Wednesday, August 01, 2012 Sheet 64 of 66

Rev  
B



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	X03
93	35	DMC	2012/01/04	Compal	double pull up	del R945	X03
94	40	board ID	2012/01/04	Compal	Change board ID to V0.4	Change R466 from 18K ohm to 33K ohm	X03
95	32	audio	2012/01/06	Compal	pop noise issue	add U632, RA30, RA31, C1874	X03
96	32	audio	2012/01/09	Compal	THD+N measure	add C1601, change RA30, RA31 to RA16 RA17 pin 2	X03
97	32	audio	2012/01/09	Compal	MIC fine turn	Change RA13 R1243 from short pad to 0 ohm	X03
98	32	audio	2012/01/11	Compal	THD+N fail	change C11, C14 to 25V X5R	X03
99	35	BT	2012/01/16	Compal	enable debug function on minicard	pop RE42, change RE43 to 1k ohm	X03
100	32	AUDIO	2012/01/17	Compal	Thailand flood impact	change C123, C129, C132, C133 to SGA00004D00	X03
101	34	ODD	2012/01/19	Compal	Follow AW14/17	change RS50 to 10K ohm	X03
102	40	board ID	2012/02/16	Compal	Change board ID to V1.0	Change R466 from 33K ohm to 56K ohm	A00
103	27	HDMI	2012/02/16	Compal	The HDMI-IN display will become white screen when the system attached HDMI then do S3/S4 back.	depop R1919, R1920	A00
104	32	audio	2012/02/16	Compal	reserve pull low resister for EAPD#	add R1218 and depop	A00
105	40	KB	2012/02/16	Compal	reduce 0 ohm	change R2625~R2648 to short pad	A00
106	34	M-SATA	2012/02/16	Compal	reduce m-sata 3vs ripple	change JP2 pin 19 and pin 20 to 3VS	A00
107	43	switch	2012/02/16	Compal	depop SW for MP	depop SW1 and SW2	A00
108	32~35 26 30 44	all	2012/02/20	Compal	reduce 0 ohm	change RA13, R1243, R1568, LV4, LV5, RE42, R1650, R1651, R2662, R2663, RS11~RS14, RS18, RS19, RS29~RS32, RS36, RS37 to short pad	A00
109	14 15	MXM	2012/02/21	Compal	Add ESD protect part for MXM	add D76~D78	A00
110	32	Audio	2012/02/21	Compal	audio codec loss issue	del R1746, add L102, C153, C3, R1752, R1753, move C143, C145, C146, C147 change R1750 to 0 ohm	A00
111	16	PCH	2012/02/21	Compal	update BIOS ROM	change U1 PN to SA000039A2L	A00
112	32	Audio	2012/02/21	Compal	audio codec loss issue	del C3, move C336, add C154	A00
113	31	LAN	2012/02/24	Compal	EMI ISN issue	Change CL39 to 150pF	A00
114	32	Audio	2012/02/24	Compal	audio codec loss issue	change R1753 to L103, L3 from 4.7UH_CBC2012T4R7M to 4.7UH_LQM2MPN4R7MG0	A00

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

Title		SCHEMATIC M/B LA-8321	
Size	Document Number	Rev	B
4019H5			
Date:	Wednesday, August 01, 2012	Sheet	65 of 66

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL, TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.



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

Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
115	32	Audio	2012/02/24	Compal	reduce 0 ohm	change RA12, RA14~RA23, RA27, RA30, RA31, R1244 to short pad	A00
116	32	Audio	2012/02/29	Compal	Audio precision fail	change C2042 to 1uF, R1727, R3 to 2.2k ohm	A00
117	16-23	PCH	2012/03/07	Compal	update PCH PN	change PCH PN to SA00005AG3L	A00

PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS CONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT

DELL CONFIDENTIAL/PROPRIETARY

Compal Electronics, Inc.

TitleSCHEMATIC M/B LA-8321

SizeDocument Number4019H5RevB

Date: Wednesday, August 01, 2012Sheet 66 of 66