

Compal confidential

Schematics Document

Mobile Arrandale rPGA989 with
Intel PCH(Ibex Peak-M) core logic

2009-11-05

REV 1.0

機 等 級 密	硬體二部	
	產出人員	
	產出日期	
	解密日期	

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Issued Date	2007/08/28	Deciphered Date	2006/03/10	Cover Sheet		
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				Custom	Calpella_UMA_LA4106P	1.0
Date: Thursday, November 12, 2009				Sheet	1 of 45	



O MEANS ON X MEANS OFF

power plane State	+B VL	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +0.75V +VCCP +CPU_CORE +1.05VS +1.5VS_CPU
S0	O	O	O	O
S1	O	O	O	O
S3	O	O	O	X
S5 S4/AC	O	O	X	X
S5 S4/ Battery only	O	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

 : means Digital Ground
 : means Analog Ground

[illegible]

USB-0	Left side(with ESATA)
USB-1	Right side
USB-2	Right side
USB-3	Dock
USB-4	Camera
USB-5	MiniCard(WLAN)
USB-6	X (HM55 don't support)
USB-7	X (HM55 don't support)
USB-8	MiniCard(WWAN)
USB-9	New Card
USB-10	X
USB-11	Finger Printer
USB-12	Bluetooth
USB-13	X

PCIe-1	WWAN
PCIe-2	WLAN
PCIe-3	RTL8401 Combo
PCIe-4	New card
PCIe-5	X
PCIe-6	X
PCIe-7	X (HM55 don't support)
PCIe-8	X (HM55 don't support)

SATA0	HDD
SATA1	ODD
SATA2	X (HM55 don't support)
SATA3	X (HM55 don't support)
SATA4	ESATA
SATA5	Multi Bay

	SOURCE	XDP	BATT	Thermal Sensor	SODIMM	CLK GEN	WWAN	WLAN	M93 Thermal Sensor	Cap sensor board	NEW CARD	G sensor
SMB_EC_CK1 SMB_EC_DA1	KB926	X	V	X	X	X	X	X	X	V	X	X
SMB_EC_CK2 SMB_EC_DA2	KB926	X	X	X	X	X	X	X	X	X	X	X
SMBCLK SMBDATA	PCH	X	X	X	V	V	V	V	X	X	V	V
SML0CLK SML0DATA	PCH	X	X	X	X	X	X	X	X	X	X	X
SML1CLK SML1DATA	PCH	X	X	X	X	X	X	X	X	X	X	X
VCCP				+3VS		+3VS	+3VS @+3VALW	+3VS @+3VALW	+3VL		+3VS	+3VS

+3VL
+3VALW
←
+3VS/+3VALW

+3VS/+3VALW

+3VALW

CONNECTED

DAZ0BI00100
PA@

ZZZ

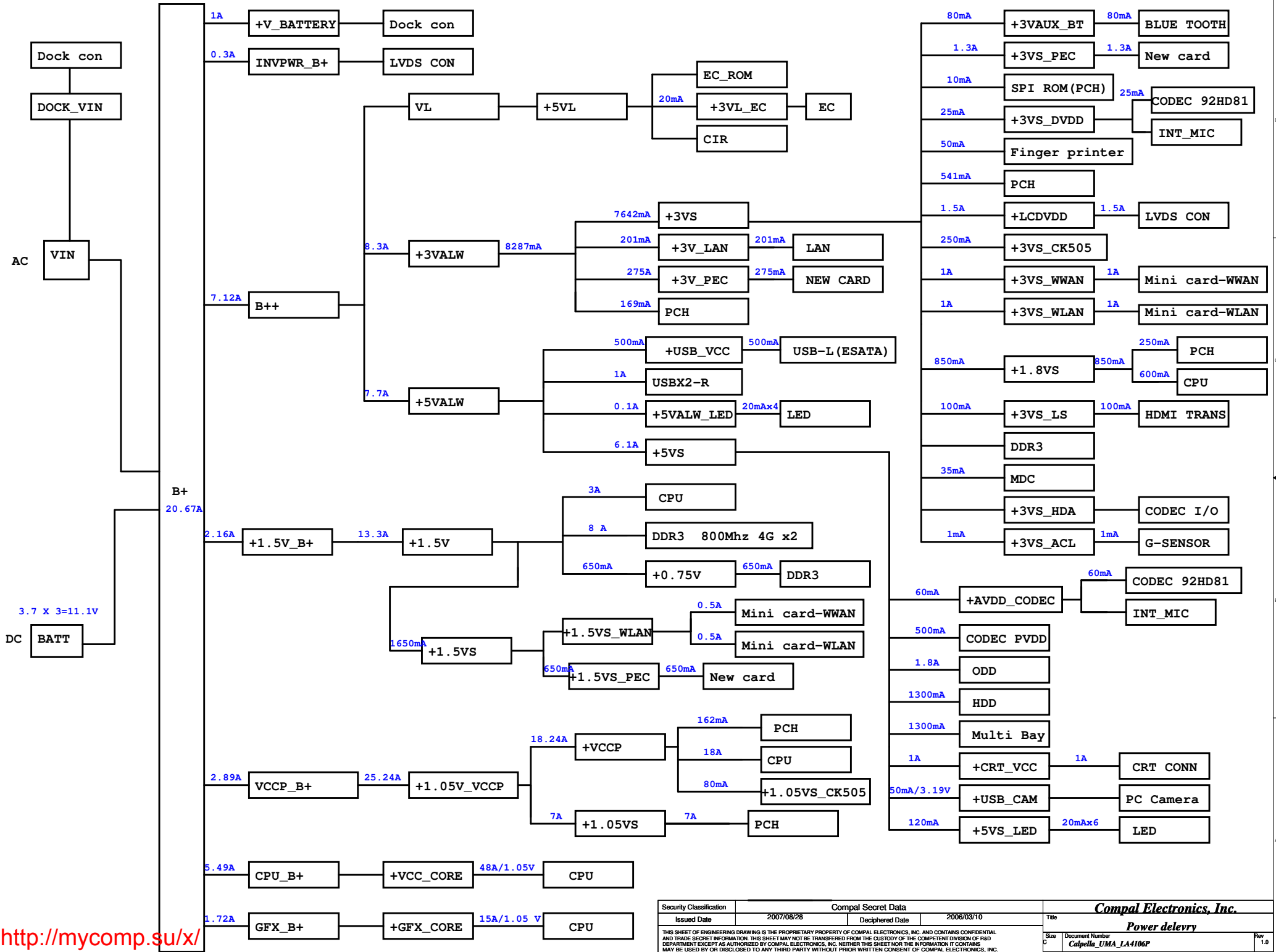
DAZ0BI00400

OPP@

PCB: DA60000F400
PA@: DAZ0BI00600 (w/o SIM daughter/B)
OPP@: DAZ0BI00400

DEVICE	HEX	ADDRESS
DDR SO-DIMM0	A0	1 0 1 0 0 0 0 0
DDR SO-DIMM1	A4	1 0 1 0 0 0 1 0
CLOCK GENERATOR (EXT.)	D2	1 1 0 1 0 0 1 1
G sensor	1D	0 0 0 1 1 1 0 0

DEVICE	HEX	ADDRESS
Smart Battery		
Cap Sensor board		



<http://mycomp.su/x/>

Calpella UMA power on sequence(AC mode)

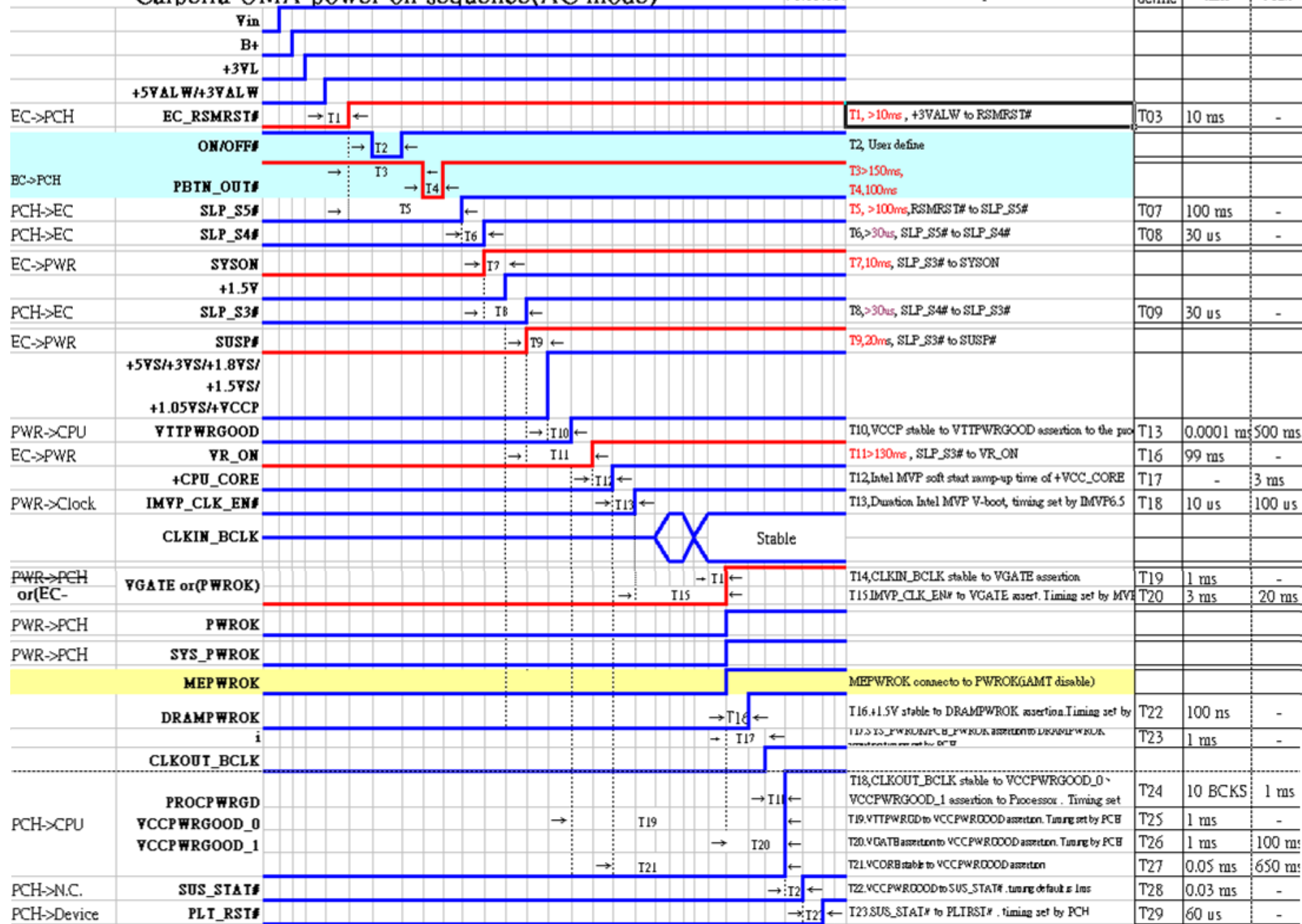
98.03.03.

Spec

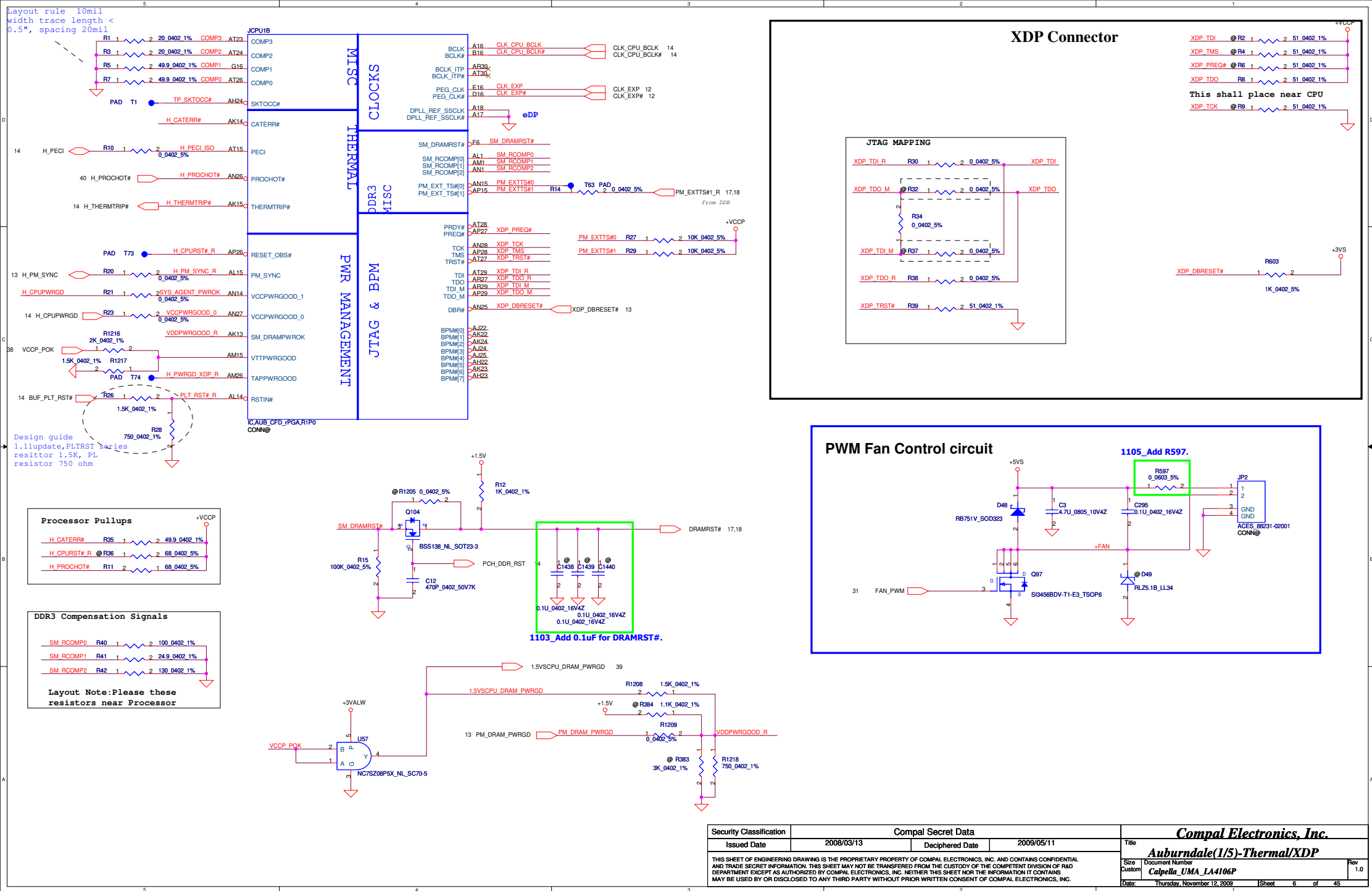
define

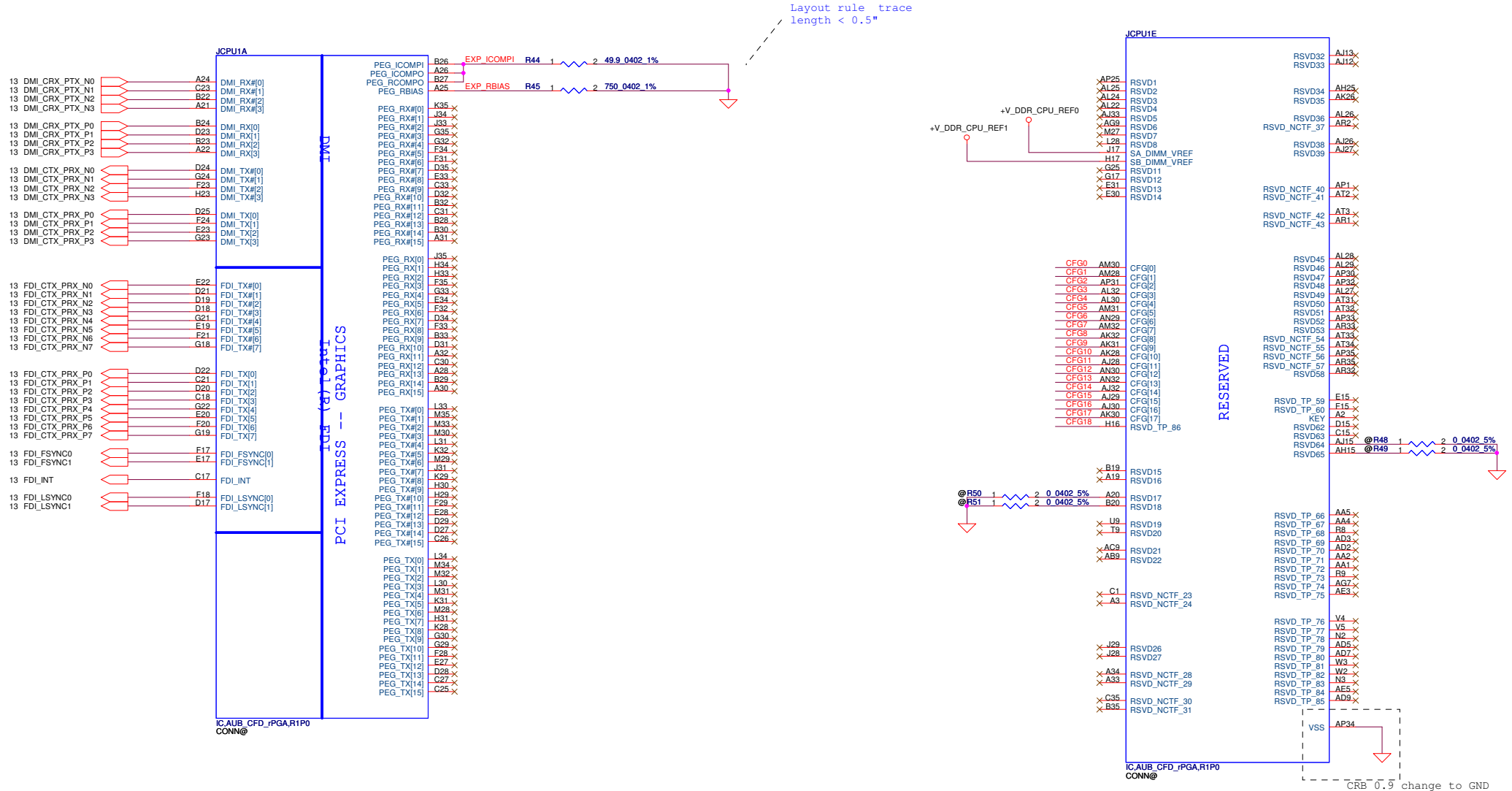
min

Max



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				Size Document Number
				Custom Calpella_UMA_LA4106P
				Rev 1.0
				Date: Thursday, November 12, 2009
				Sheet 5 of 45





CFG Straps for PROCESSOR

CFG0 @R52 1 2 3.01K 0402 1%

CFG4 @R53 1 2 3.01K 0402 1%

PCI-Express Configuration Select
CFG0 1: Single PEG
0: Bifurcation enabled

CFG4-Display Port Presence
CFG4 1: Disabled; No Physical Display Port

Not applicable for Embedded Processor

CFG4 0: Enabled; An external Display Port

CFG3 @R54 1 2 3.01K 0402 1%

device is connected to the Embedded Display Port

CFG3-PCI Express Static Lane Reversal
CFG3 1: Normal Operation
0: Lane Numbers Reversed
15 -> 0, 14 -> 1, *

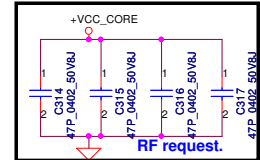
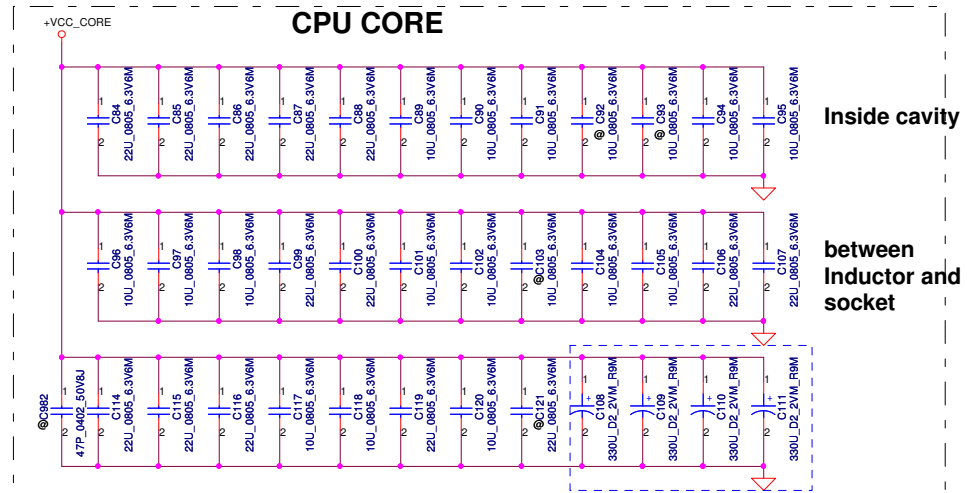
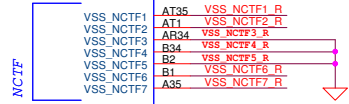
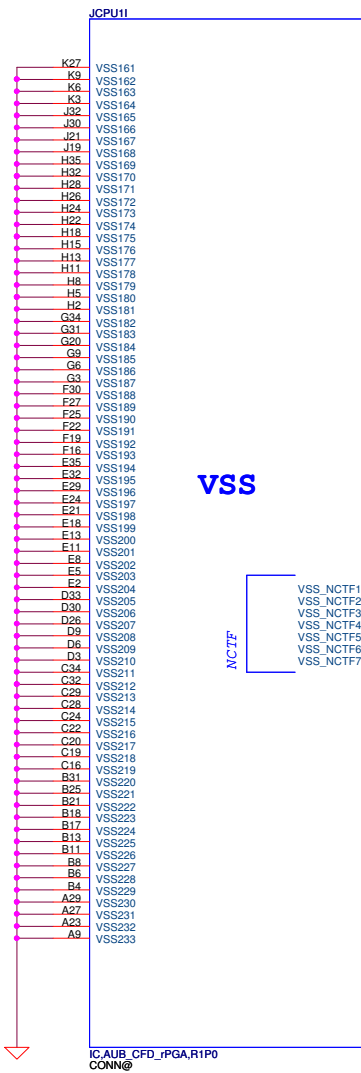
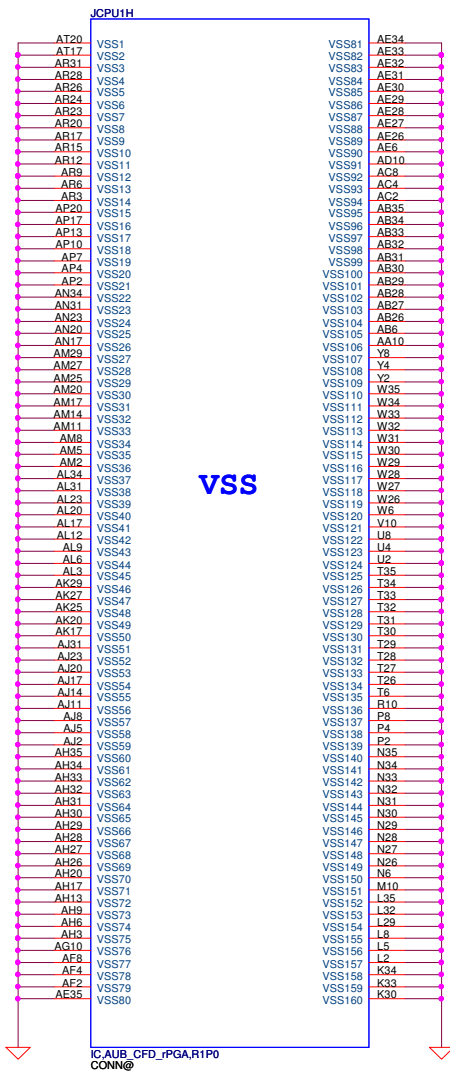
CFG7 @R55 1 2 3.01K 0402 1%

Only temporary for early CFD samples (rPGA/BGA)
Only for pre ES1 sample

CFG7 @R55 1 2 3.01K 0402 1%
CFG7 PD 3.01K on CFG7 for PCIe Jitter
MW33 don't staff

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				Date: Thursday, November 12, 2009	Rev 1.0
				Sheet 7 of 45	



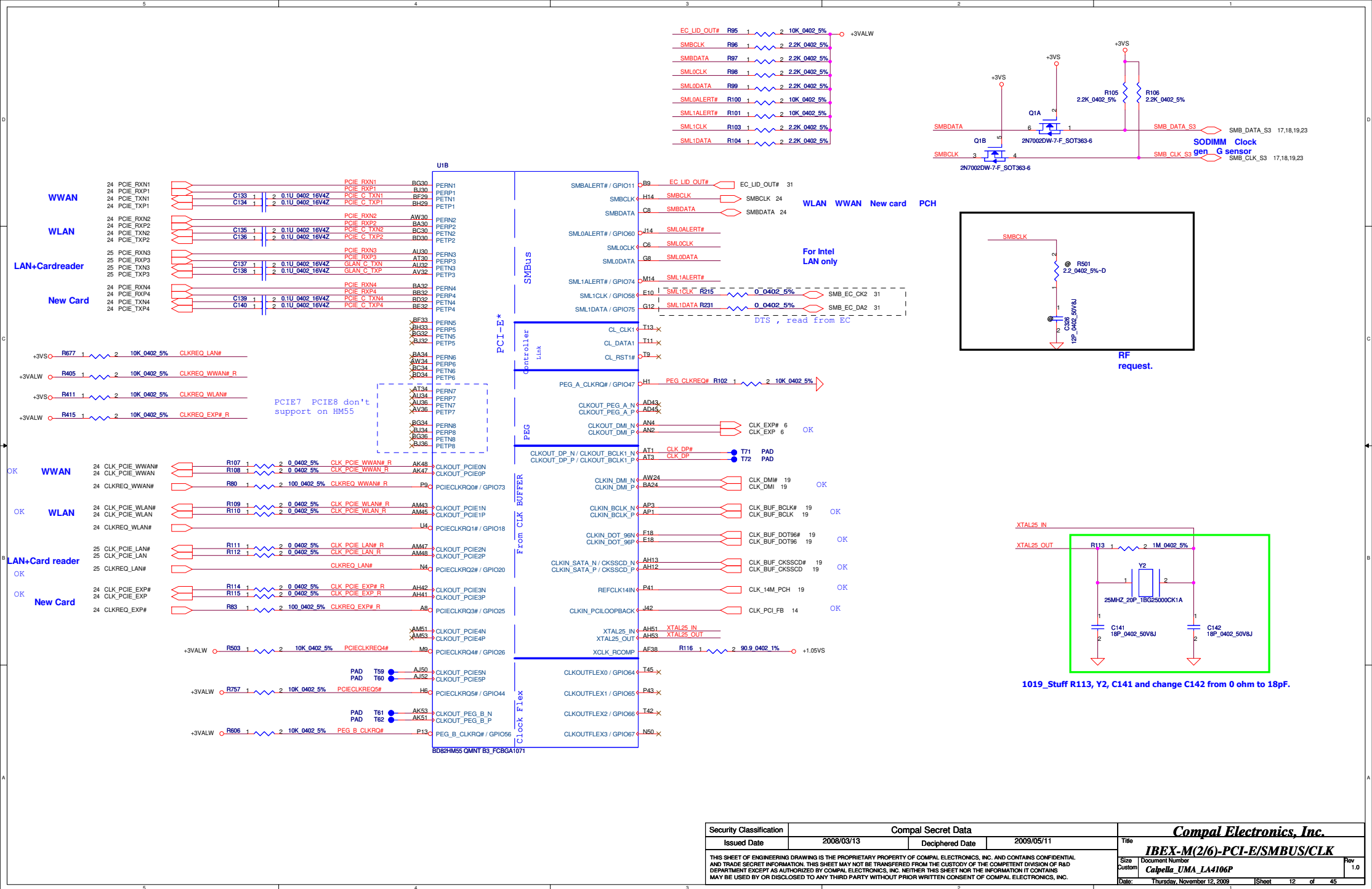


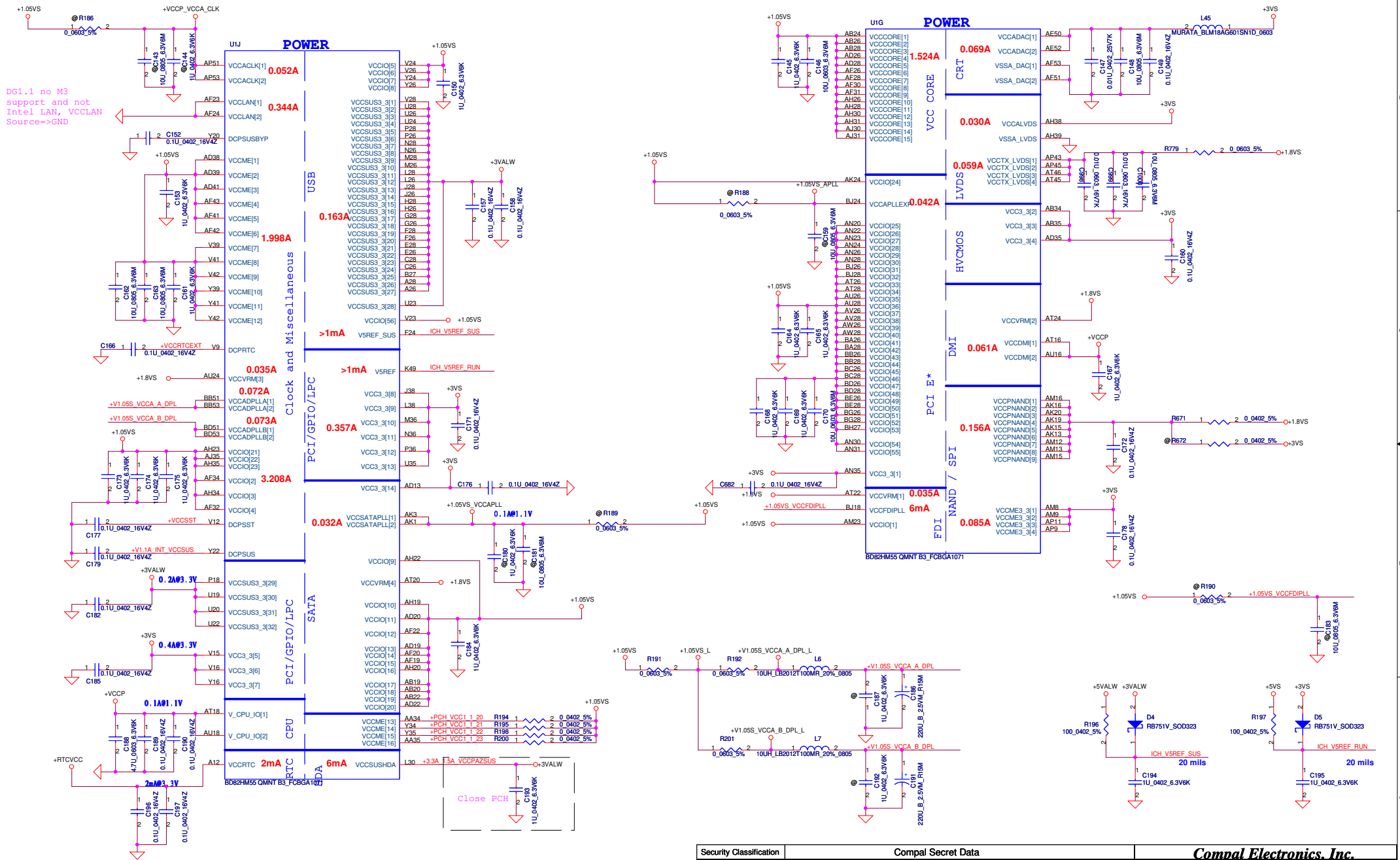
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Size		Document Number		Date		Thursday, November 12, 2009		Sheet		10 of 45	
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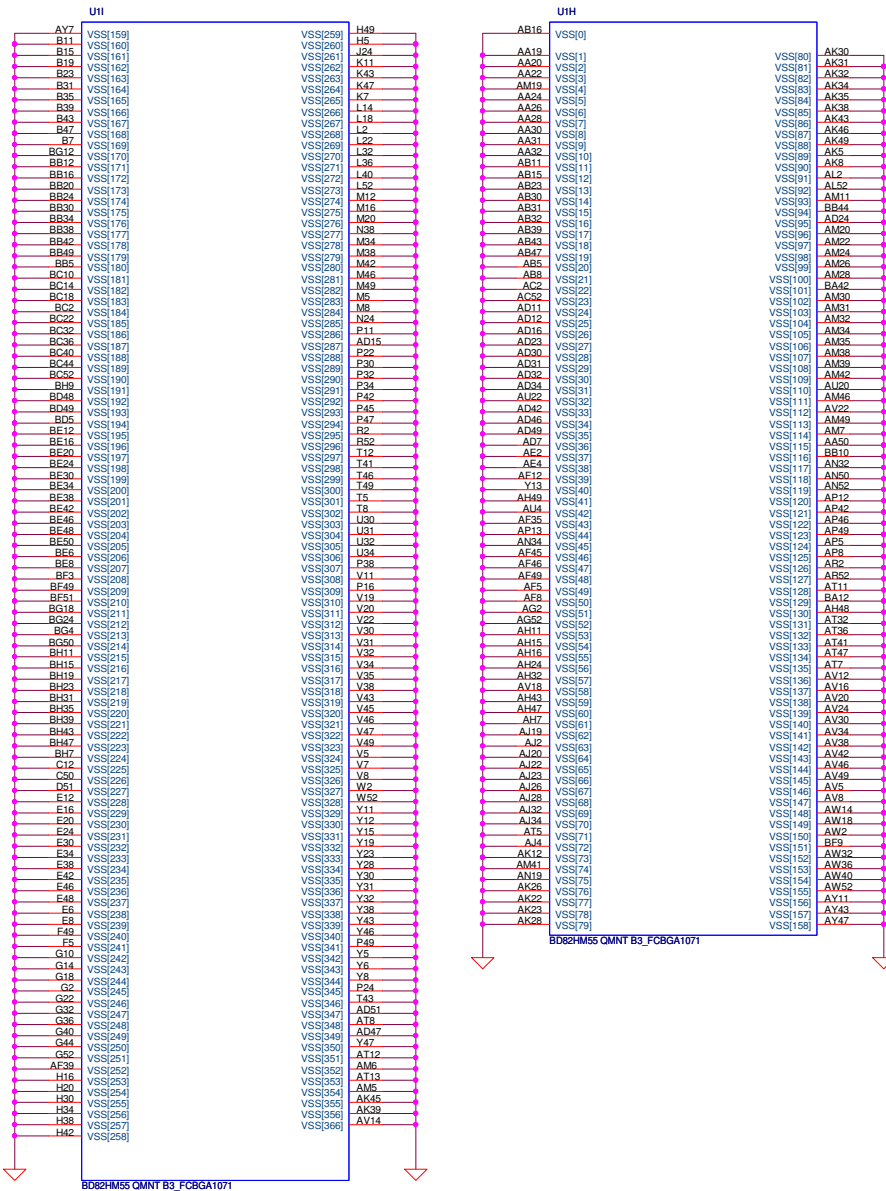
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Date:	Thursday, November 12, 2009	Sheet	15	of	45



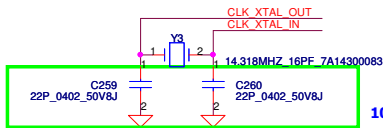
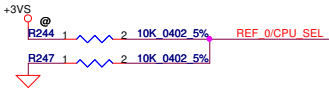
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Date: Thursday, November 12, 2009				Sheet 16	of 45

Number of Clock Outputs

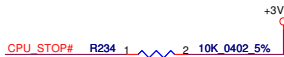
Output	Number
133MHz	2
SRC(100MHz_SS)	1
SRC/SATA(100MHz)	1
REF(14.318MHz)	1
DOT_CLK(96MHz)	1
27MHz	1
27MHz_SS	1

PIN	30	CPU_0	CPU_1
0(default)		133MHz	133MHz
1		100MHz	100MHz

CPU_SEL During CK_PEWGD Latch Pin1

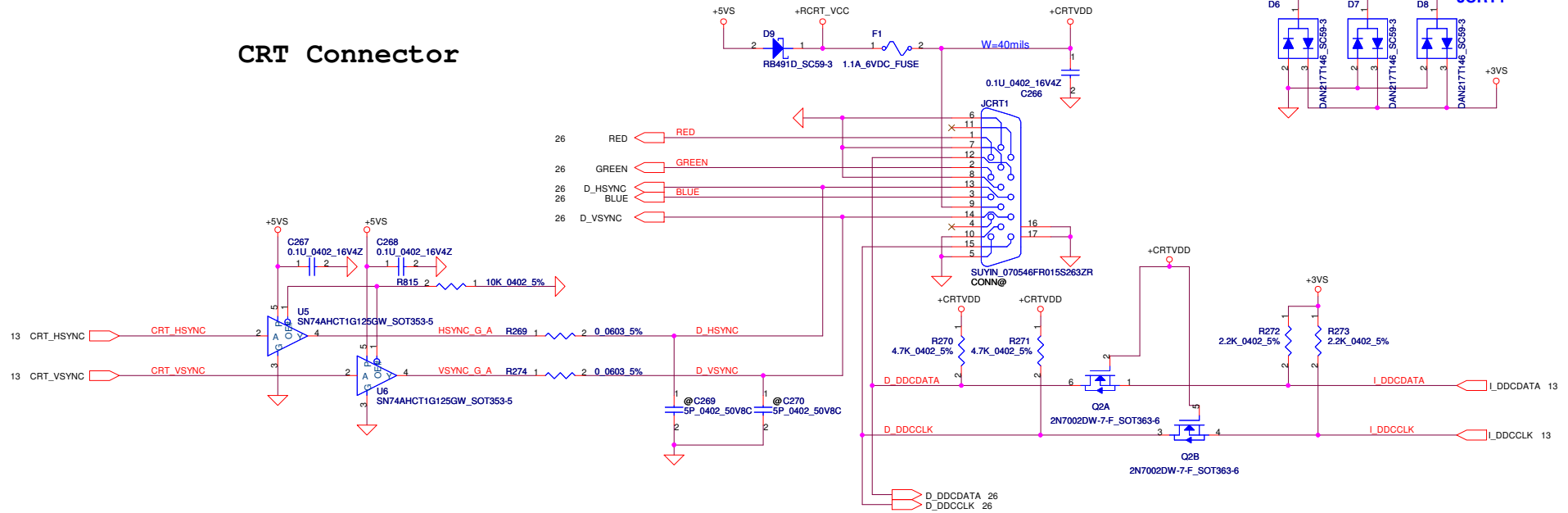


Vendor suggests 22pF

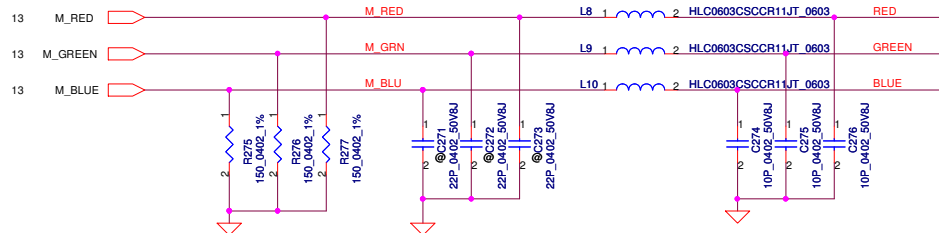


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				Calpella_UMA_1A4106P	
				Rev	1.0
				Date:	Thursday, November 12, 2009
				Sheet	19 of 45

CRT Connector

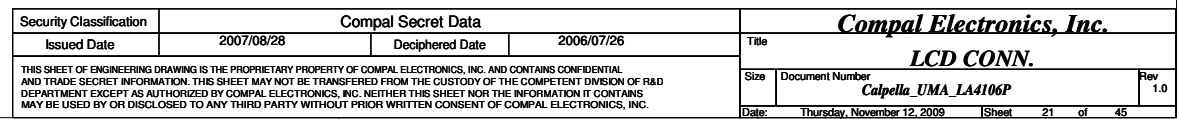


CRT Termination/EMI Filter

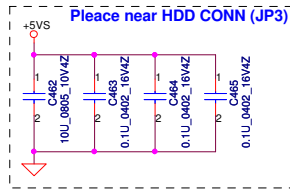
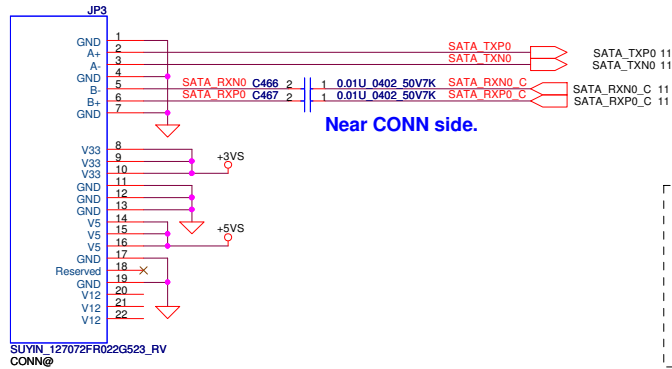


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				Date	Thursday, November 12, 2009
				Sheet	20 of 45

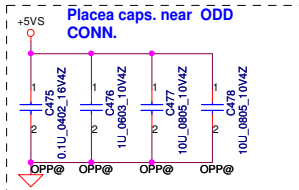
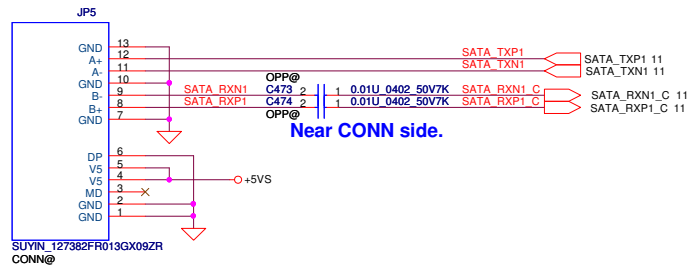
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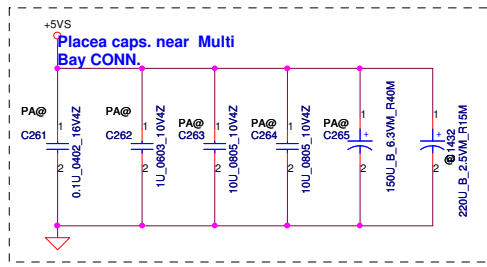
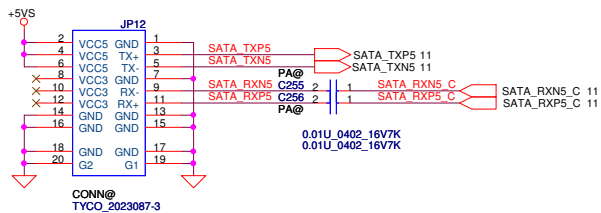
HDD Connector



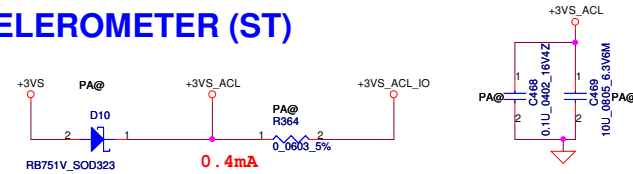
CD-ROM Connector



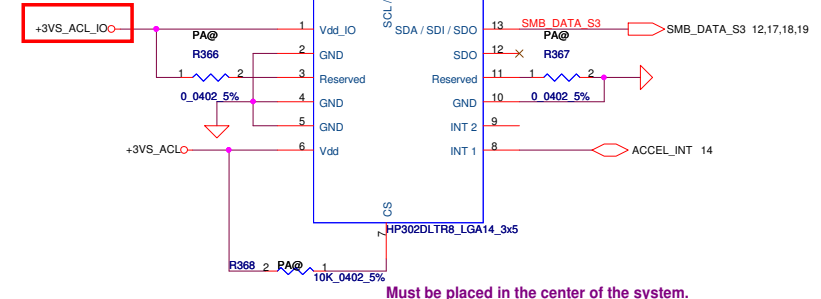
Multi Bay



ACCELEROMETER (ST)



VDDIO absolute man
rating is VDD+0.1



Must be placed in the center of the system.

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				Rev 1.0
				Date: Thursday, November 12, 2009
				Sheet 23 of 45

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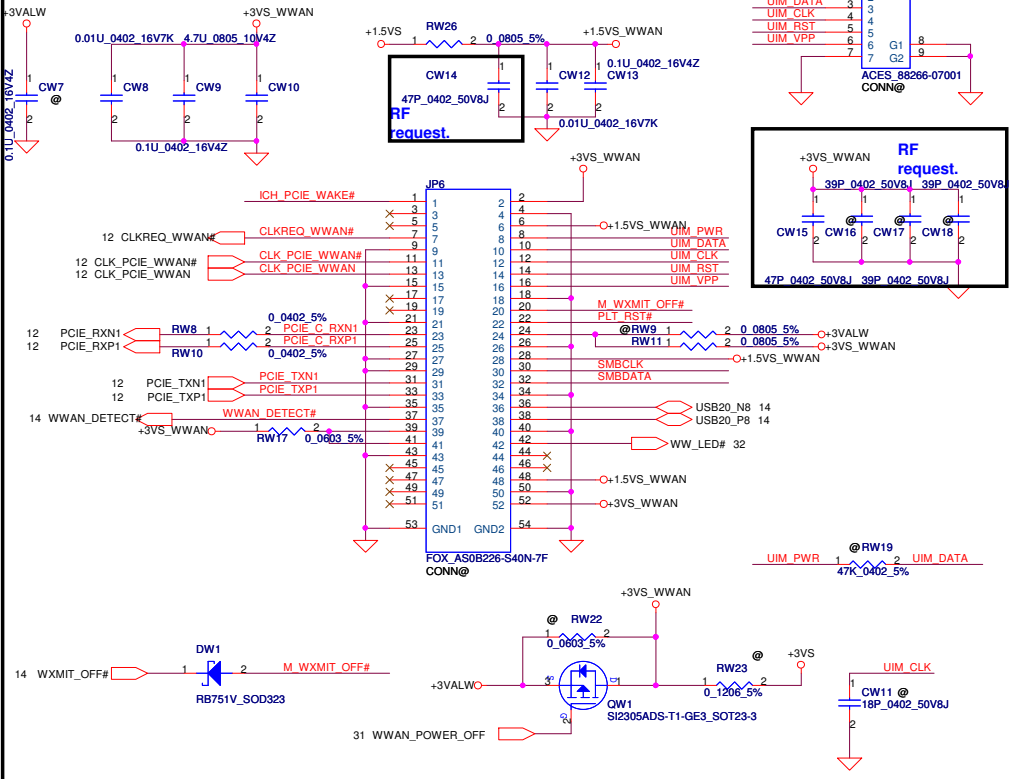
HDD & CDROM

Size
Custom

Date: Thursday, November 12, 2009

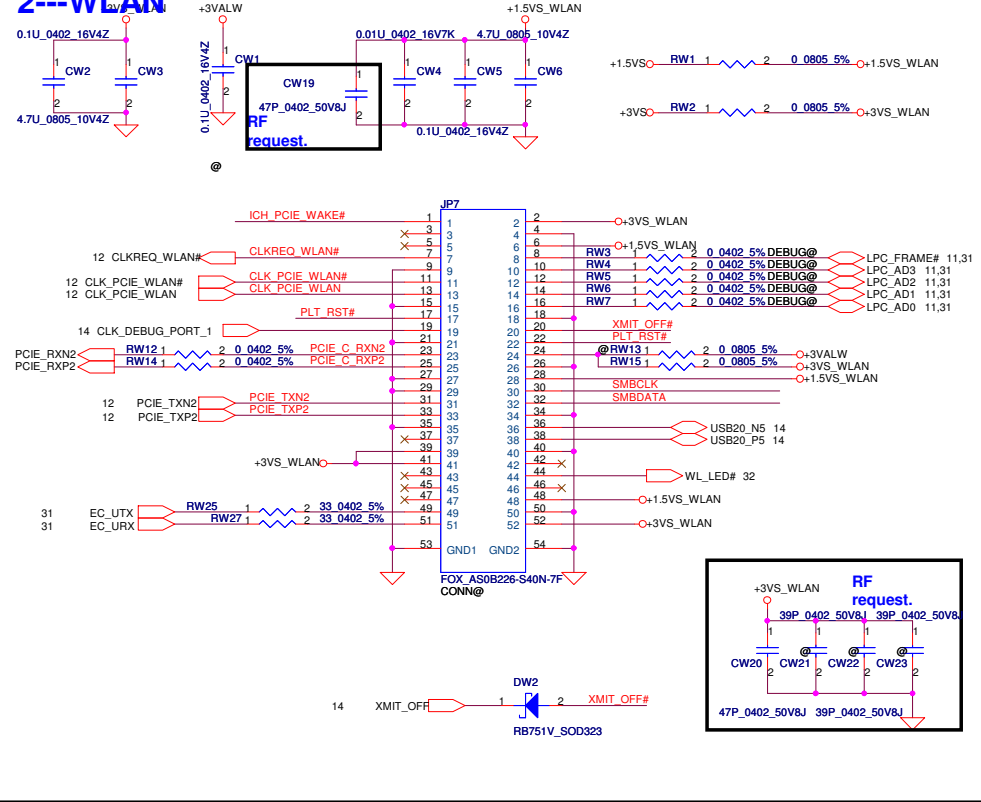
Sheet 23 of 45

Mini Card 0--TV tuner/WWAN/Robson

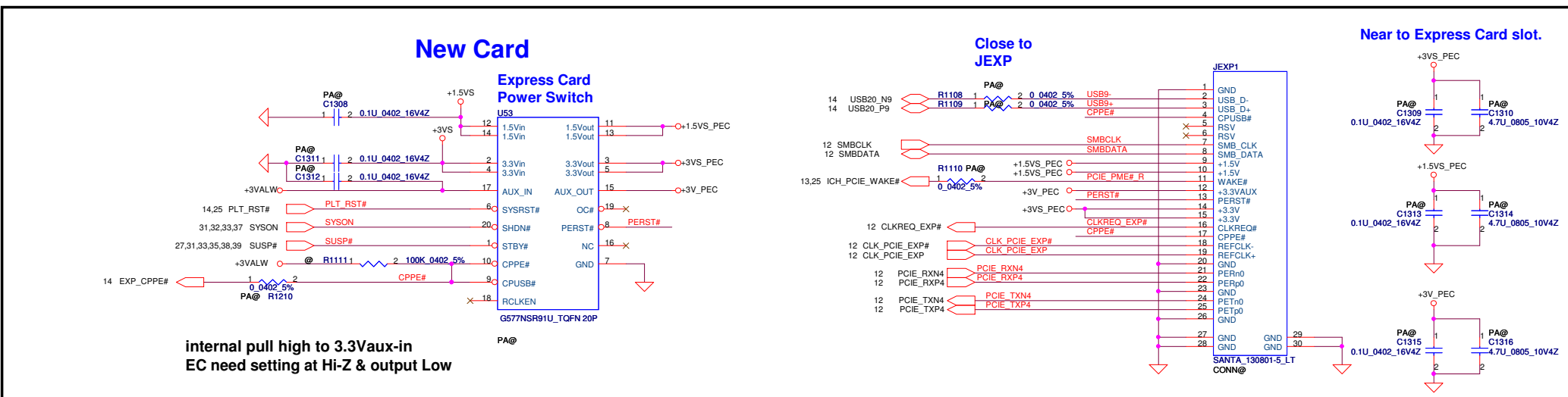


SIM card Connector

Mini Card 2---WLAN



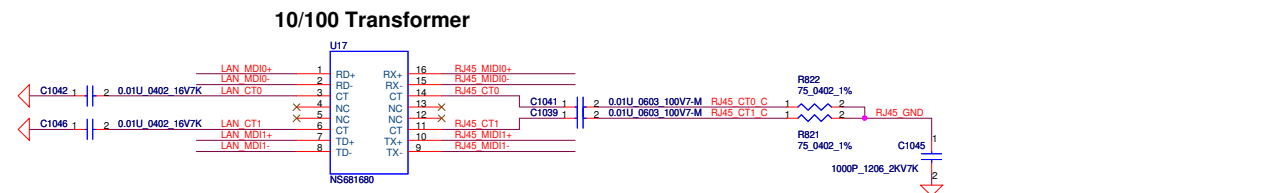
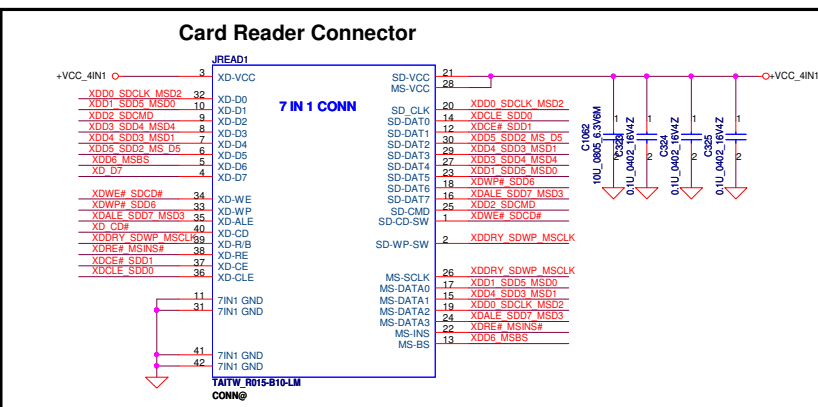
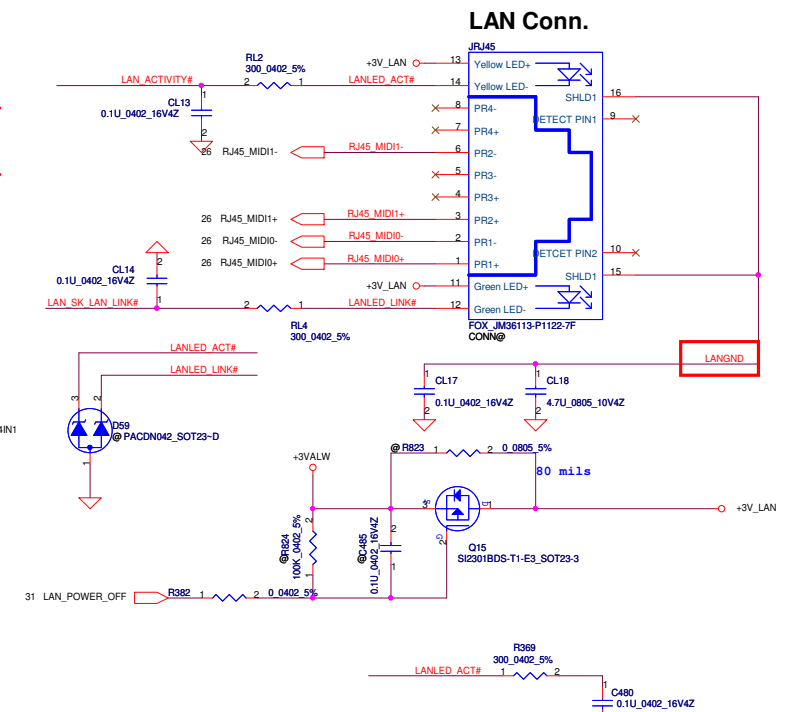
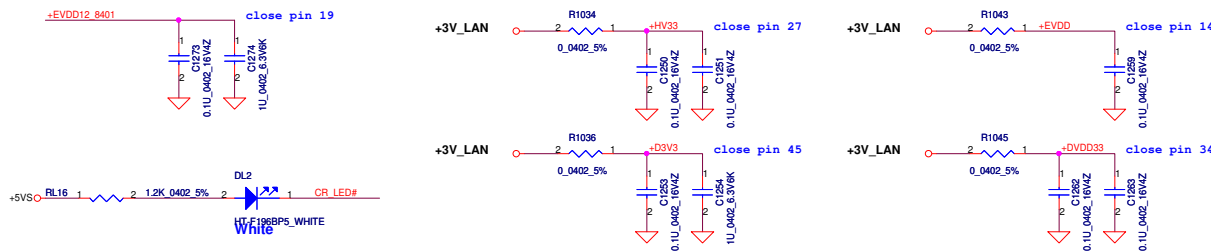
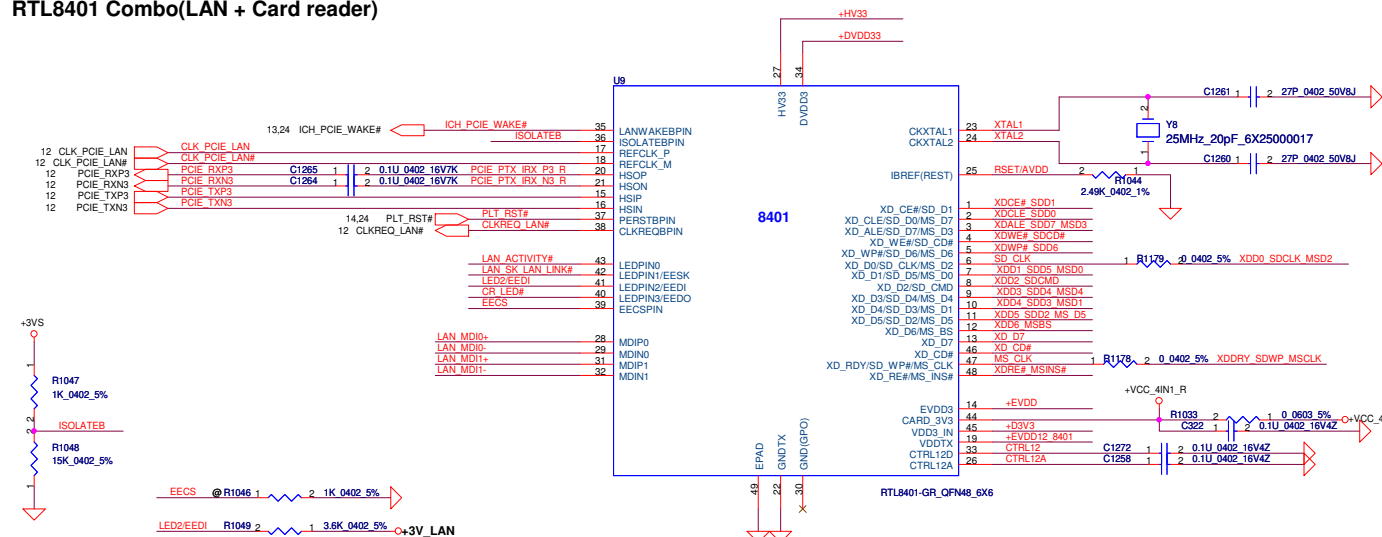
New Card



internal pull high to 3.3Vaux-in
EC need setting at Hi-Z & output Low

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				Date:	Thursday, November 12, 2009
				Sheet	24 of 45

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RTL8401 Combo(LAN + Card reader)

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				Custom	
Date: Thursday, November 12 2009				Sheet	26 of 45

Atlas/ Saturn Dock

DOCK_PWR_ON Spec
0V = Notebook S4/S5,

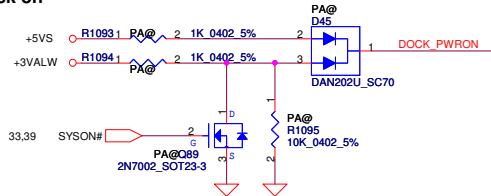
Dock off

2.5V = Notebook S3,

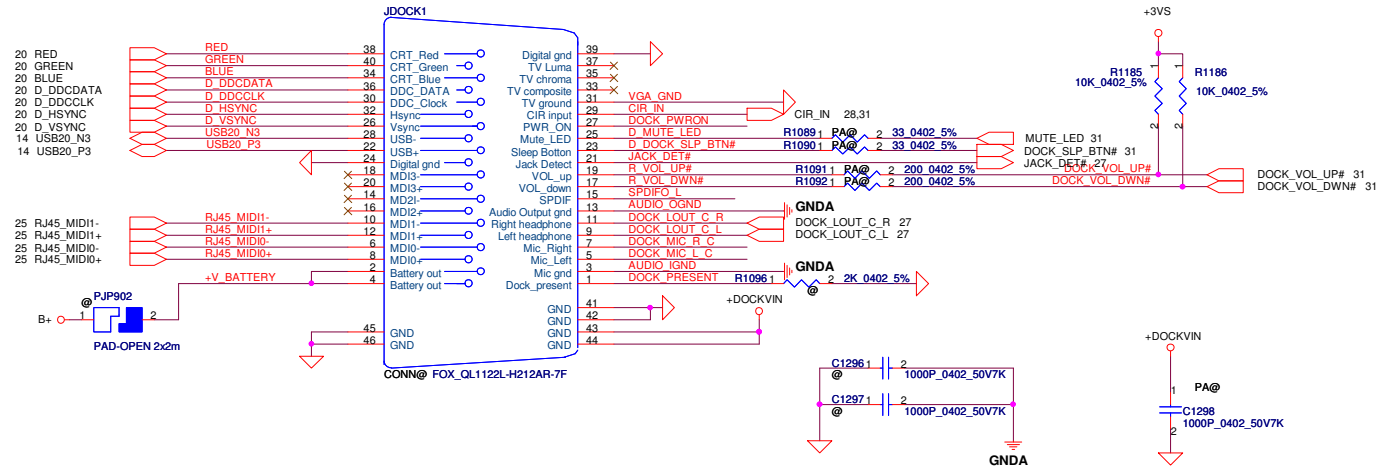
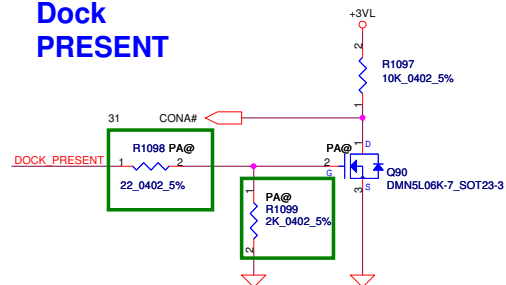
Dock on

4V = Notebook S0,

Dock on

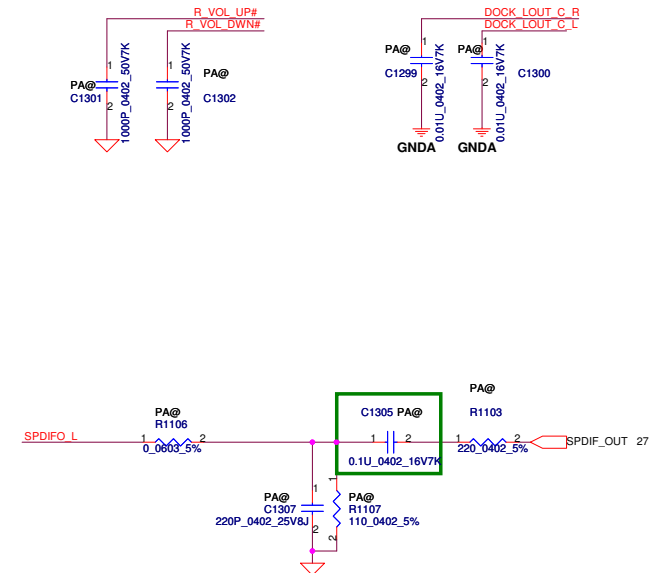
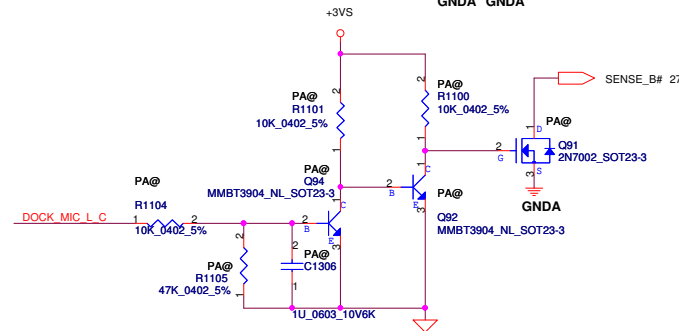
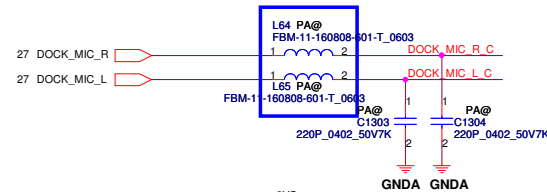


Dock PRESENT

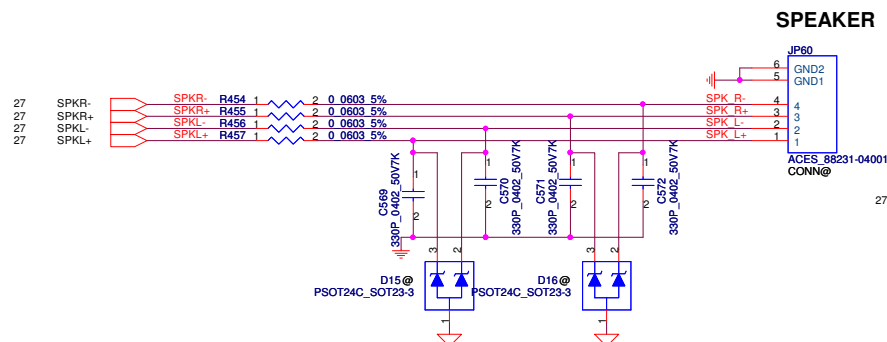


MIC_Dock

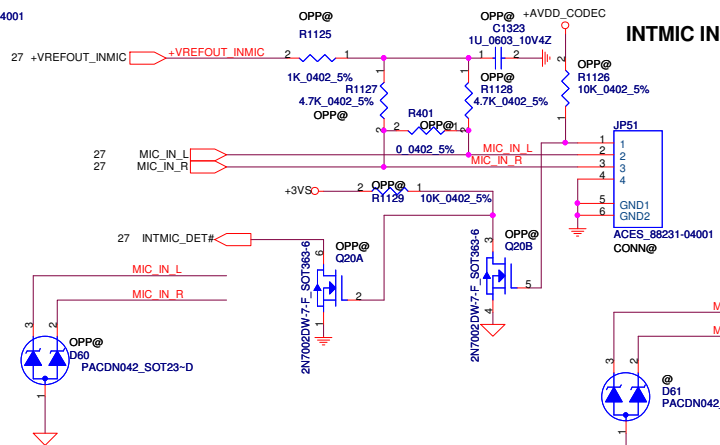
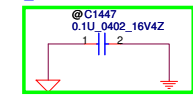
Need 600 Ohm 500 mA



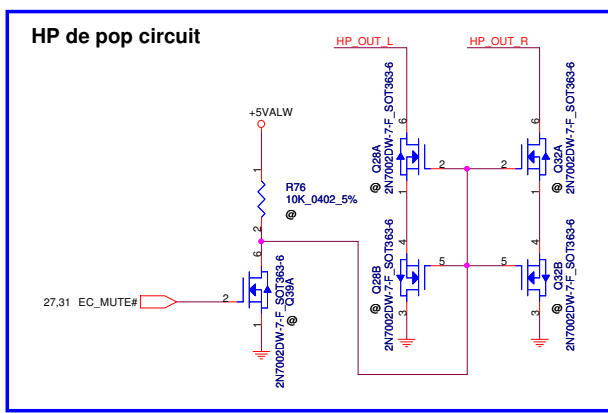
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				Document Number Calpella_UMA_LA4106P	1.0
Date:		Thursday November 12 2009		ISheet	26 of 45



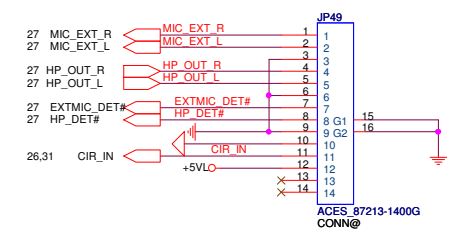
1103_ Reserve 0.1uF between GND and GNDA.



Audio connector

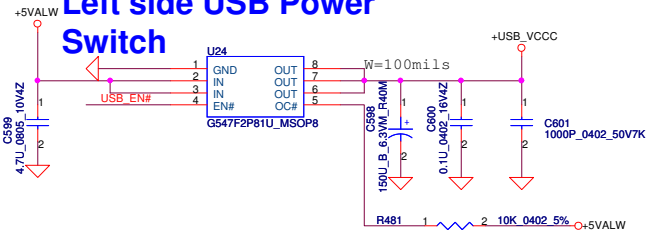


Audio/B & CIR

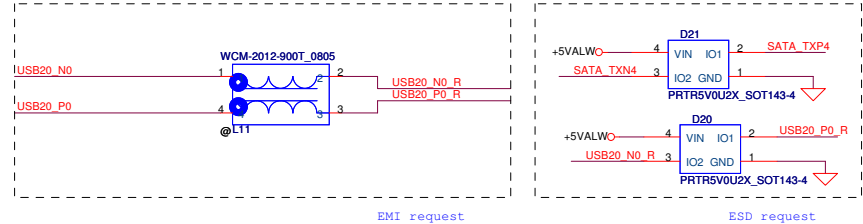
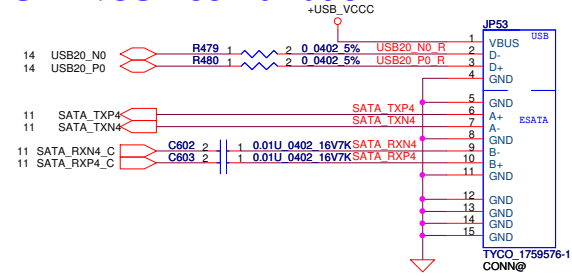


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Size				Document Number				Calpella_UMA_LA4106P			
Date				Thursday, November 12, 2009				Rev 1.0			
								Sheet 28 of 45			

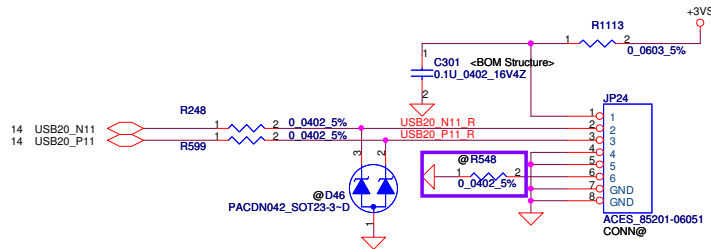
Left side USB Power Switch



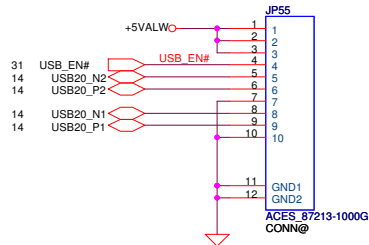
Left\ side ESATA/USB combination Connector



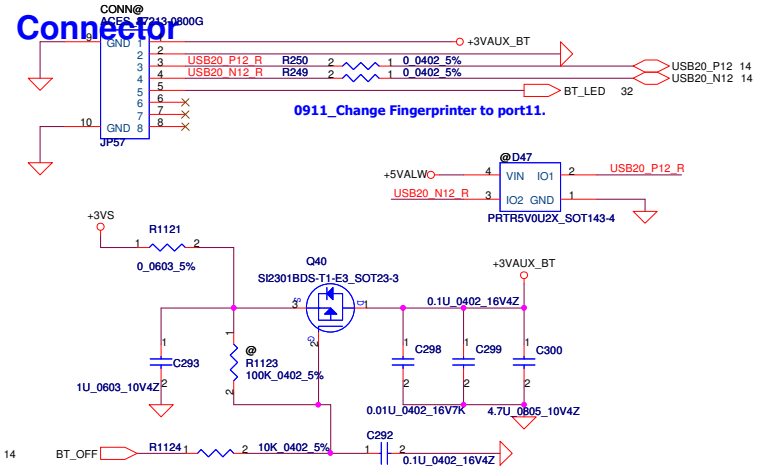
Finger printer



USB cable connector for Right side



BT Connector



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					Calpella_UMA_LA4106P	1.0
				Date:	Thursday, November 12, 2009	Sheet 29 of 45

SPI ROM => 256K (EC code)

Close to EC

SP07000F500 S SOCKET WIESON G6179-100000 8P
SPIFLASH
WIESO_G6179-100000_8P

- * SA00003GK00 S IC FL 2M MX25L2005CMI-12G SOP 8P (MXIC)
- SA00003GM00 S IC FL 2M W25X20AVSNIG SOIC 8P (WINBOND)

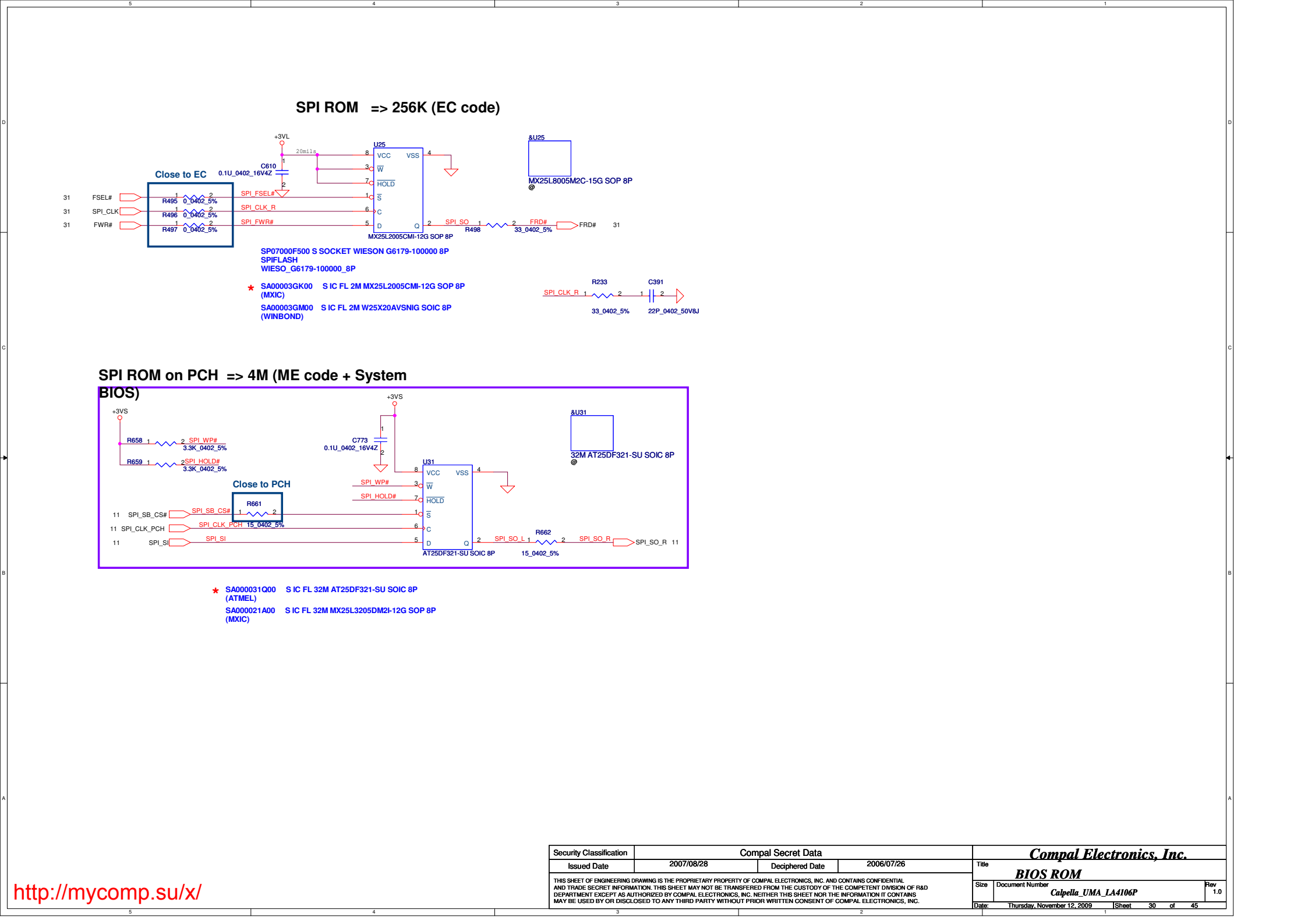
SPI ROM on PCH => 4M (ME code + System BIOS)

Close to PCH

- * SA000031Q00 S IC FL 32M AT25DF321-SU SOIC 8P (ATMEL)
- SA000021A00 S IC FL 32M MX25L3205DM2I-12G SOP 8P (MXIC)

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				Size	Document Number
				Date:	Thursday, November 12, 2009
				Sheet	30 of 45

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S4321

SPI ROM => 256K (EC code)

Close to EC

31 FSEL# $\rightarrow$ R495 0_0402_5% $\rightarrow$ SPI_FSEL#
 31 SPI_CLK $\rightarrow$ R496 0_0402_5% $\rightarrow$ SPI_CLK_R
 31 FWR# $\rightarrow$ R497 0_0402_5% $\rightarrow$ SPI_FWR#

U25: MX25L8005M2C-15G SOP 8P
 VCC $\rightarrow$ +3VL
 VSS $\rightarrow$ GND
 W $\rightarrow$ HOLD
 S $\rightarrow$ SPI_SO
 C $\rightarrow$ SPI_SO
 D $\rightarrow$ SPI_SO

C610: 0.1U_0402_16V4Z
 C391: 22P_0402_50V8J

R498: 33_0402_5%
 R233: 33_0402_5%

SP07000F500 S SOCKET WIESON G6179-100000 8P
 SPIFLASH
 WIESO_G6179-100000_8P

★ SA00003GK00 S IC FL 2M MX25L2005CMI-12G SOP 8P (MXIC)
 SA00003GM00 S IC FL 2M W25X20AVSNIG SOIC 8P (WINBOND)

SPI ROM on PCH => 4M (ME code + System BIOS)

Close to PCH

11 SPI_SB_CS# $\rightarrow$ R658 3.3K_0402_5% $\rightarrow$ SPI_WP#
 11 SPI_CLK_PCH $\rightarrow$ R659 3.3K_0402_5% $\rightarrow$ SPI_HOLD#
 11 SPI_SI $\rightarrow$ R661 15_0402_5% $\rightarrow$ SPI_SI

U31: 32M AT25DF321-SU SOIC 8P
 VCC $\rightarrow$ +3VS
 VSS $\rightarrow$ GND
 W $\rightarrow$ HOLD
 S $\rightarrow$ SPI_SO
 C $\rightarrow$ SPI_SO
 D $\rightarrow$ SPI_SO

C773: 0.1U_0402_16V4Z
 R662: 15_0402_5%

★ SA000031Q00 S IC FL 32M AT25DF321-SU SOIC 8P (ATMEL)
 SA000021A00 S IC FL 32M MX25L3205DM2I-12G SOP 8P (MXIC)

S4321

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Title

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BIOS ROM

Size

Document Number

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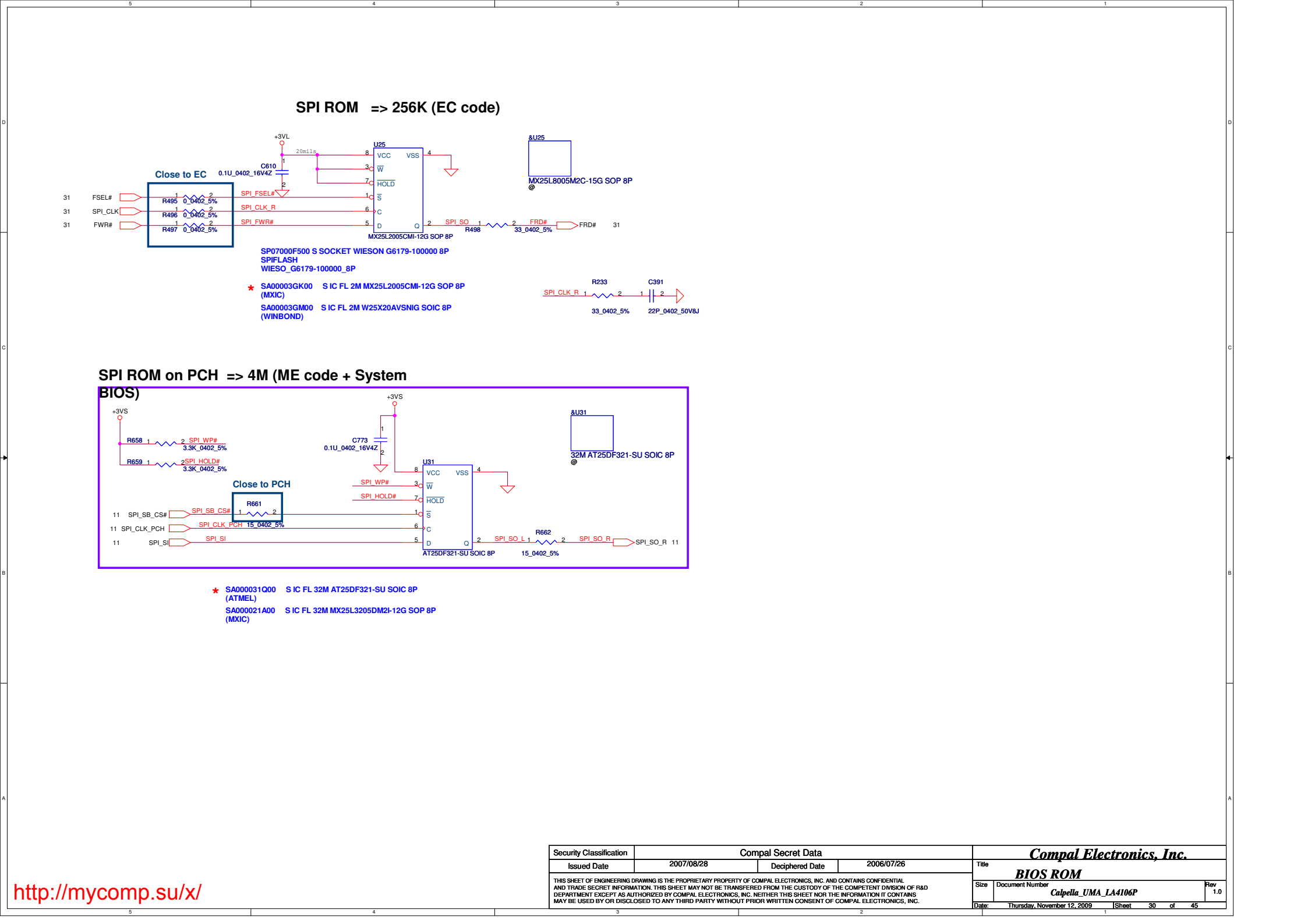
Rev

1.0

Sheet

30 of 45

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S4321

SPI ROM => 256K (EC code)

Close to EC

31 FSEL# $\rightarrow$ R495 0_0402_5% $\rightarrow$ SPI_FSEL#
 31 SPI_CLK $\rightarrow$ R496 0_0402_5% $\rightarrow$ SPI_CLK_R
 31 FWR# $\rightarrow$ R497 0_0402_5% $\rightarrow$ SPI_FWR#

U25: MX25L8005M2C-15G SOP 8P
 VCC $\rightarrow$ +3VL
 VSS $\rightarrow$ GND
 W $\rightarrow$ HOLD
 S $\rightarrow$ SPI_SO
 C $\rightarrow$ SPI_SO
 D $\rightarrow$ SPI_SO

C610: 0.1U_0402_16V4Z
 C391: 22P_0402_50V8J

R498: 33_0402_5%
 R233: 33_0402_5%

SP07000F500 S SOCKET WIESON G6179-100000 8P
 SPIFLASH
 WIESO_G6179-100000_8P

★ SA00003GK00 S IC FL 2M MX25L2005CMI-12G SOP 8P (MXIC)
 SA00003GM00 S IC FL 2M W25X20AVSNIG SOIC 8P (WINBOND)

SPI ROM on PCH => 4M (ME code + System BIOS)

Close to PCH

11 SPI_SB_CS# $\rightarrow$ R658 3.3K_0402_5% $\rightarrow$ SPI_WP#
 11 SPI_CLK_PCH $\rightarrow$ R659 3.3K_0402_5% $\rightarrow$ SPI_HOLD#
 11 SPI_SI $\rightarrow$ R661 15_0402_5% $\rightarrow$ SPI_SI

U31: 32M AT25DF321-SU SOIC 8P
 VCC $\rightarrow$ +3VS
 VSS $\rightarrow$ GND
 W $\rightarrow$ HOLD
 S $\rightarrow$ SPI_SO
 C $\rightarrow$ SPI_SO
 D $\rightarrow$ SPI_SO

C773: 0.1U_0402_16V4Z
 R662: 15_0402_5%

★ SA000031Q00 S IC FL 32M AT25DF321-SU SOIC 8P (ATMEL)
 SA000021A00 S IC FL 32M MX25L3205DM2I-12G SOP 8P (MXIC)

S4321

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BIOS ROM

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S4321

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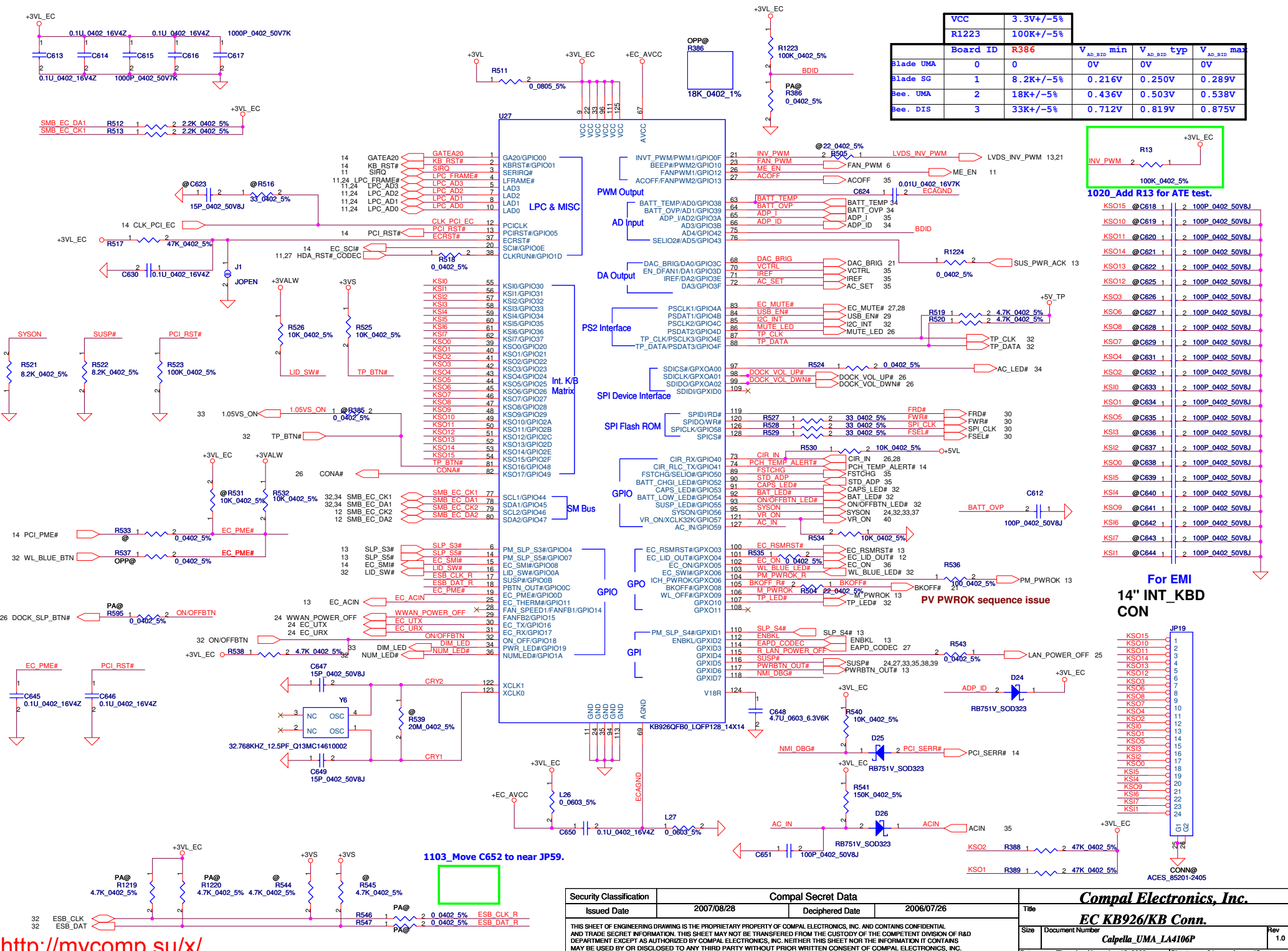
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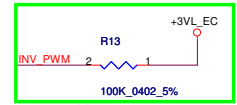
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30 of 45

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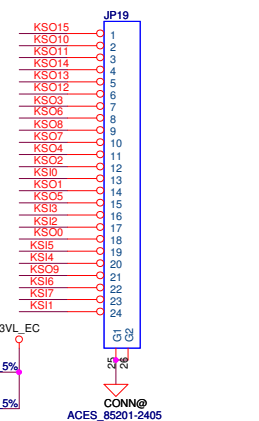
VCC		3.3V+/-5%			
R1223		100K+/-5%			
Board ID	R386	V _{AD_RID} min	V _{AD_RID} typ	V _{AD_RID} max	
Blade UMA	0	0V	0V	0V	
Blade SG	1	8.2K+/-5%	0.216V	0.250V	0.289V
Bee. UMA	2	18K+/-5%	0.436V	0.503V	0.538V
Bee. DIS	3	33K+/-5%	0.712V	0.819V	0.875V



1020 Add R13 for ATE test.

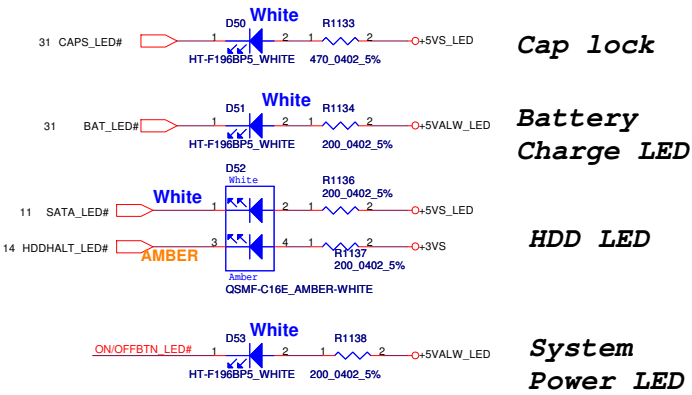
KSO15	@C618	1	2	100P_0402_50V8J
KSO10	@C619	1	2	100P_0402_50V8J
KSO11	@C620	1	2	100P_0402_50V8J
KSO14	@C621	1	2	100P_0402_50V8J
KSO13	@C622	1	2	100P_0402_50V8J
KSO12	@C625	1	2	100P_0402_50V8J
KSO3	@C626	1	2	100P_0402_50V8J
KSO6	@C627	1	2	100P_0402_50V8J
KSO8	@C628	1	2	100P_0402_50V8J
KSO7	@C629	1	2	100P_0402_50V8J
KSO4	@C631	1	2	100P_0402_50V8J
KSO2	@C632	1	2	100P_0402_50V8J
KSO1	@C633	1	2	100P_0402_50V8J
KSO11	@C634	1	2	100P_0402_50V8J
KSO5	@C635	1	2	100P_0402_50V8J
KSO13	@C636	1	2	100P_0402_50V8J
KSO12	@C637	1	2	100P_0402_50V8J
KSO10	@C638	1	2	100P_0402_50V8J
KSO15	@C639	1	2	100P_0402_50V8J
KSO4	@C640	1	2	100P_0402_50V8J
KSO9	@C641	1	2	100P_0402_50V8J
KSO6	@C642	1	2	100P_0402_50V8J
KSO17	@C643	1	2	100P_0402_50V8J
KSO11	@C644	1	2	100P_0402_50V8J

For EMI
14" INT_KBD
CON



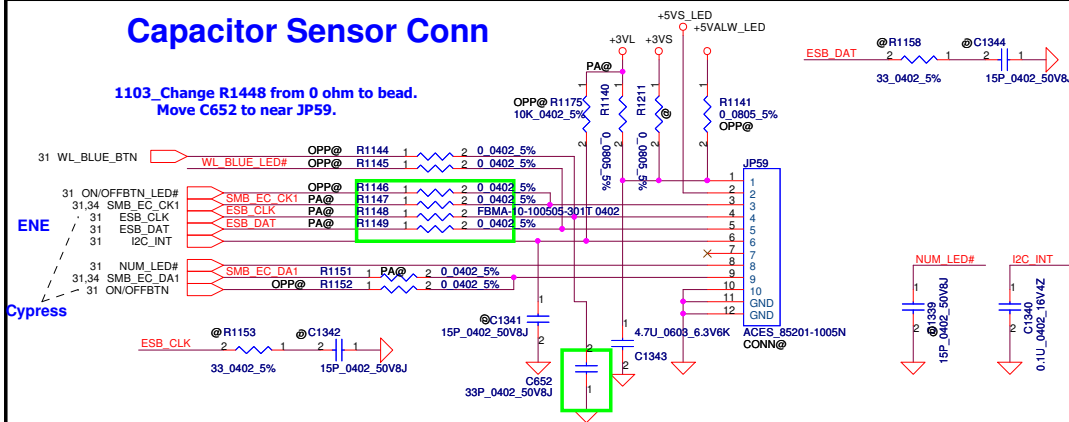
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				Date	Thursday, November 12, 2009
				Sheet	31 of 45

System & Caps-Lock LED

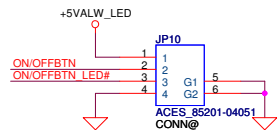


Capacitor Sensor Conn

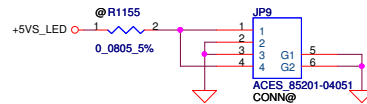
1103_Change R1448 from 0 ohm to bead.
Move C652 to near JP59.



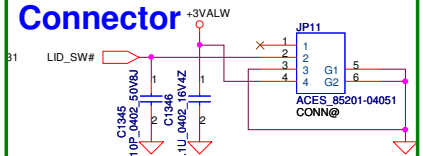
ON/OFF Button Connector



Keyboard backlight Conn



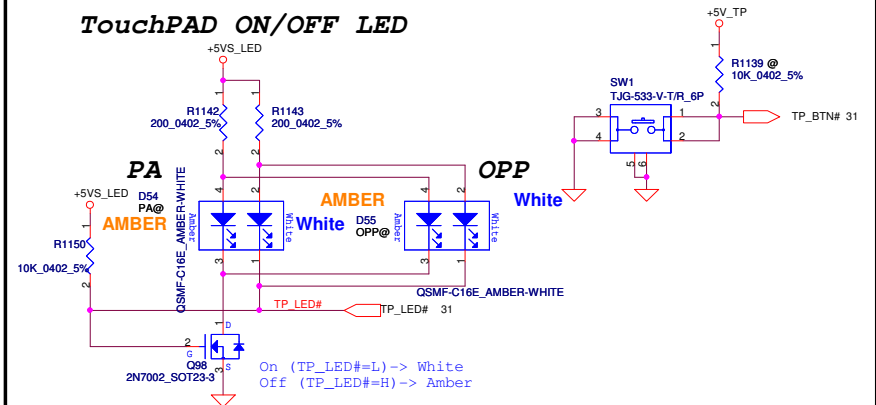
Lid Switch Connector



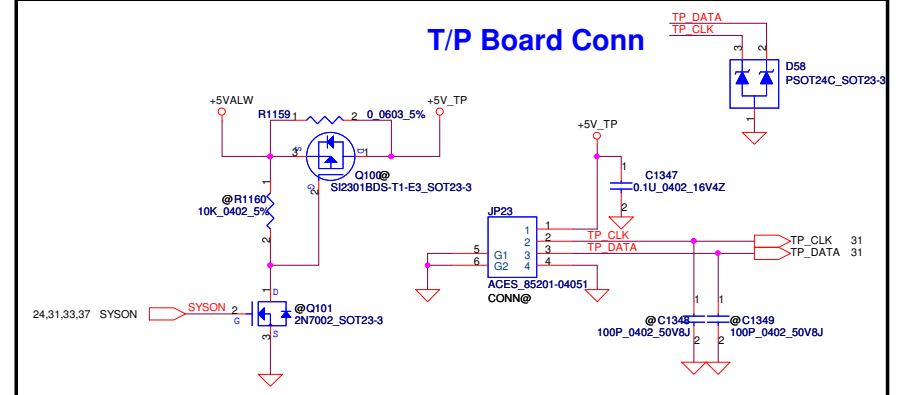
T/P Board (Include T/P_ON/OFF)

TouchPAD ON/OFF LED

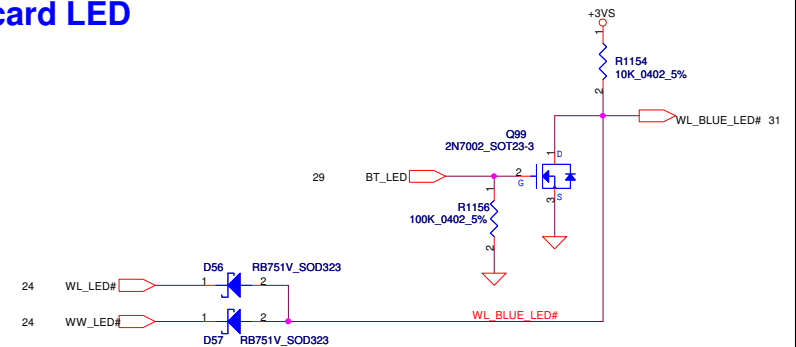
TP ON/OFF



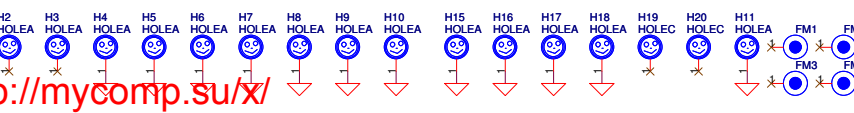
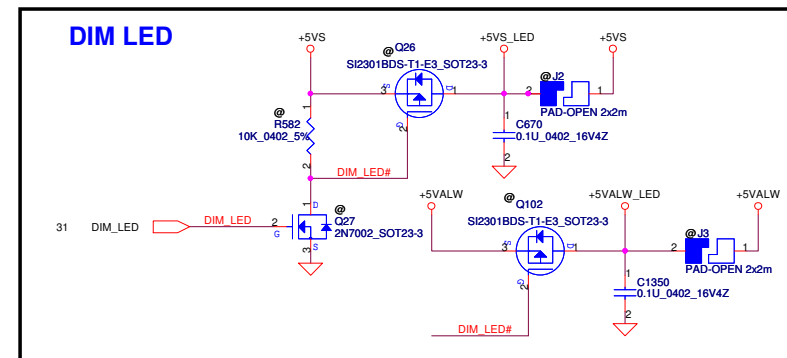
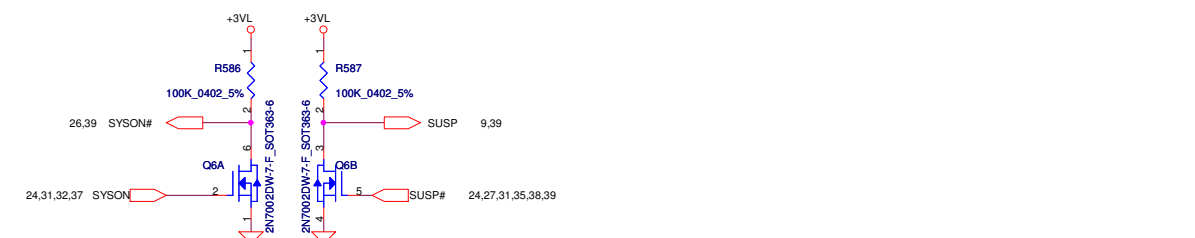
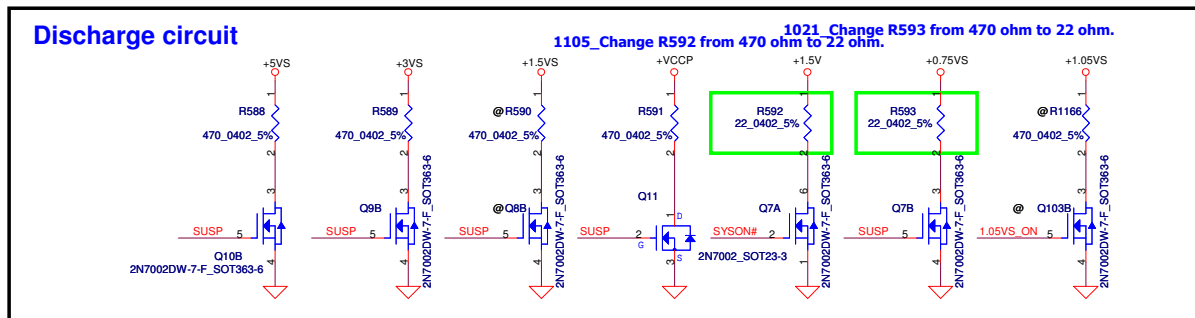
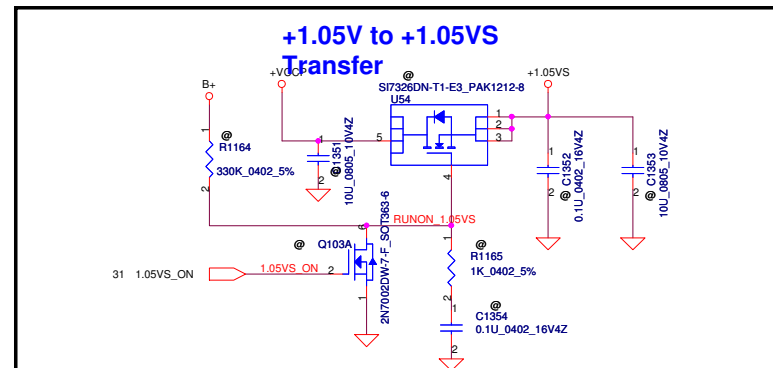
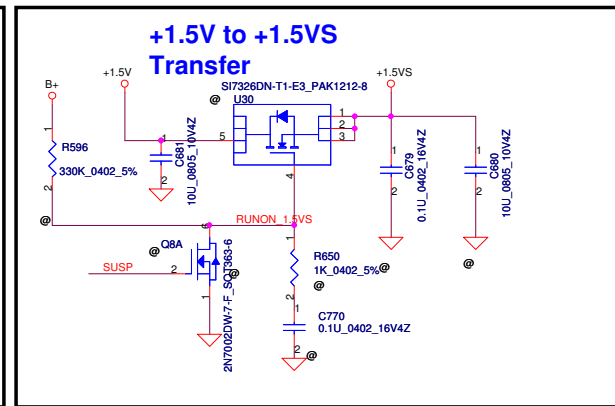
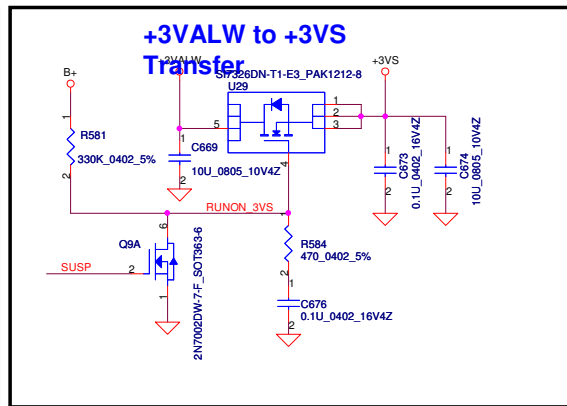
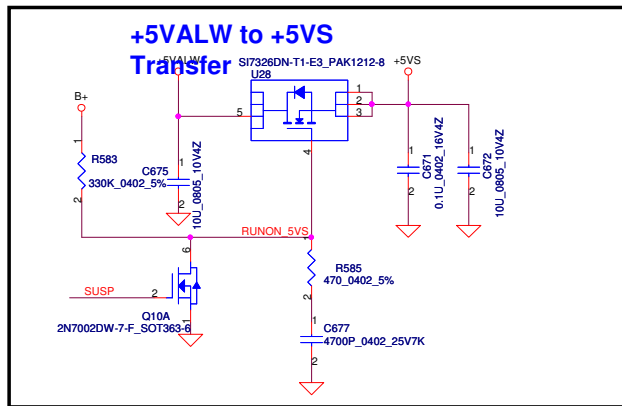
T/P Board Conn



Mini card LED

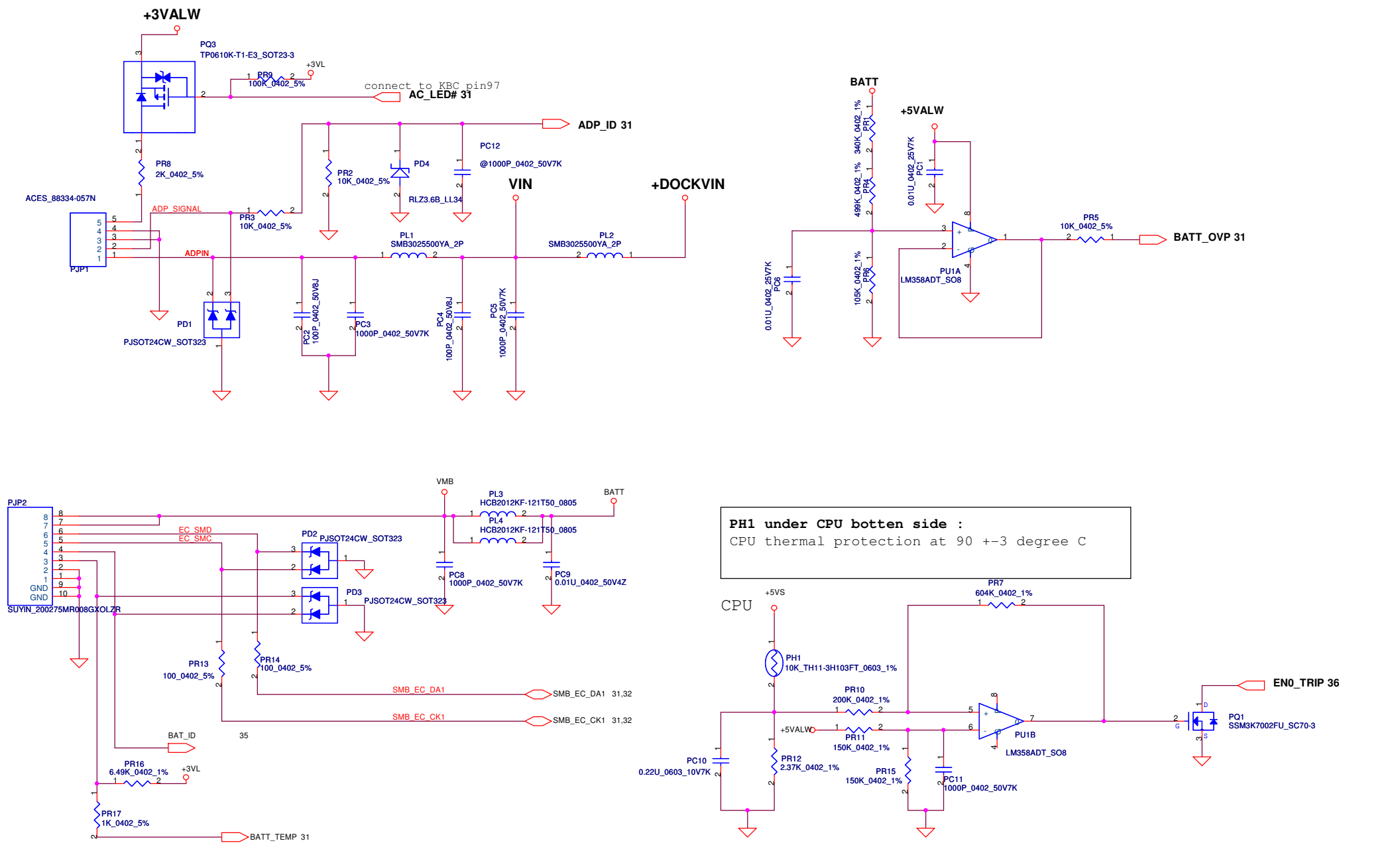


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Compal Electronics, Inc. KBD, ON/OFF, SW, CIR Capella_UMA_LA4106P				Rev 1.0
Date:	Thursday, November 12, 2009	Sheet	32	of 45



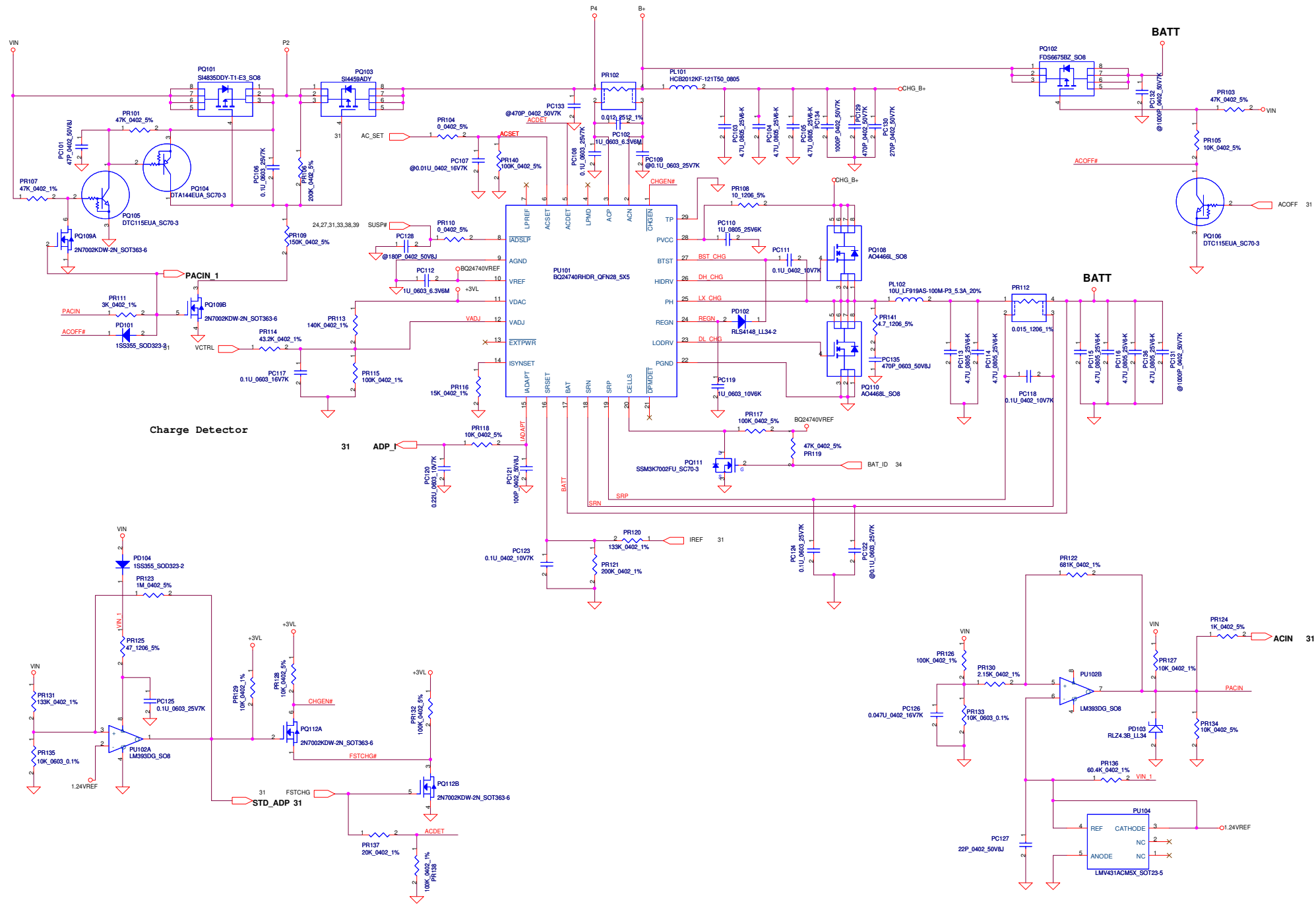
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				Date:	Thursday, November 12, 2009
				Sheet	33 of 45

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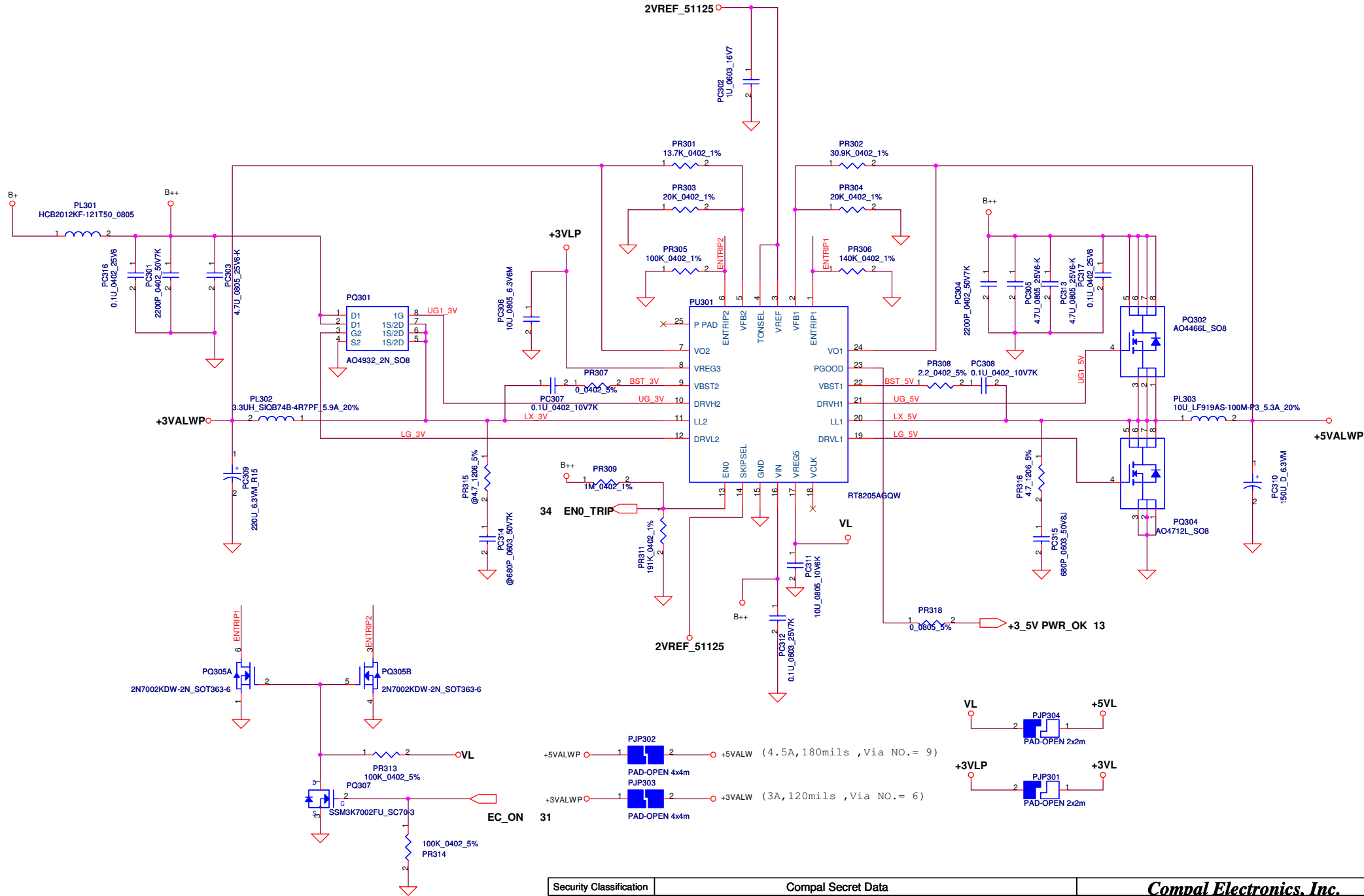


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					Calpella_UMA_LA4106P
				Date:	Thursday, November 12, 2009
				Sheet	34 of 45
				Rev	0.3

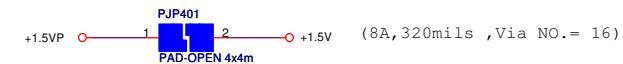
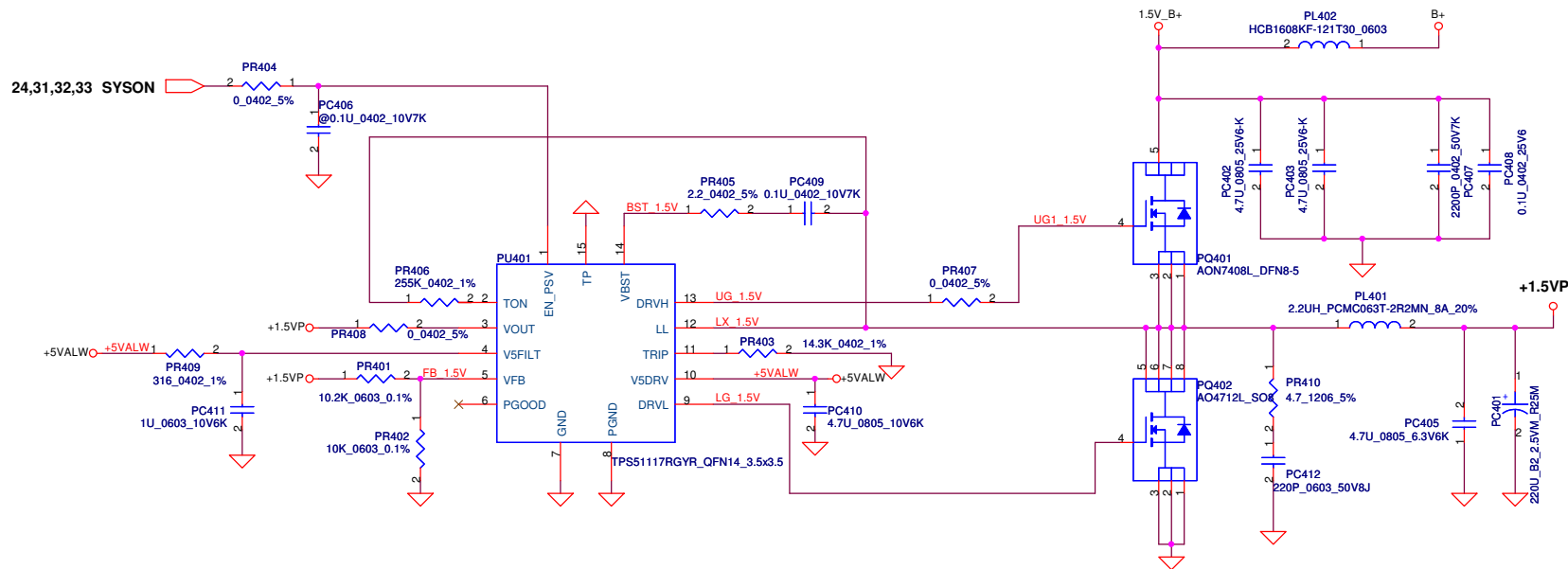
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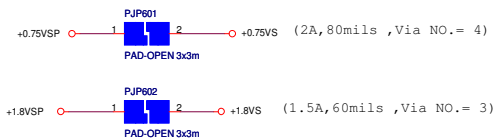
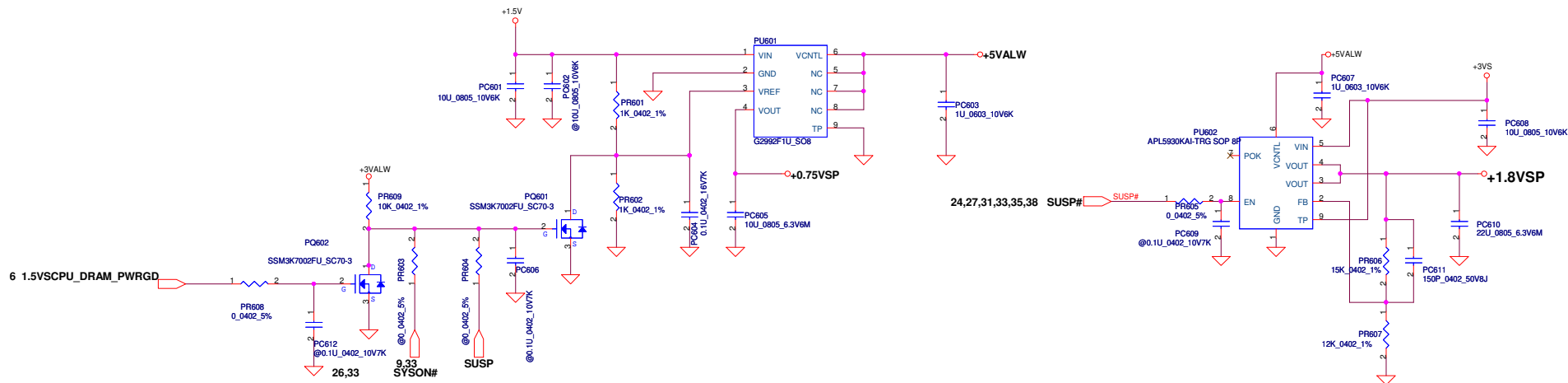
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Sheet		35		of	
0.3		Rev		0.3	
Compal Electronics, Inc.		Charger		Compella_UMA_LA4106P	



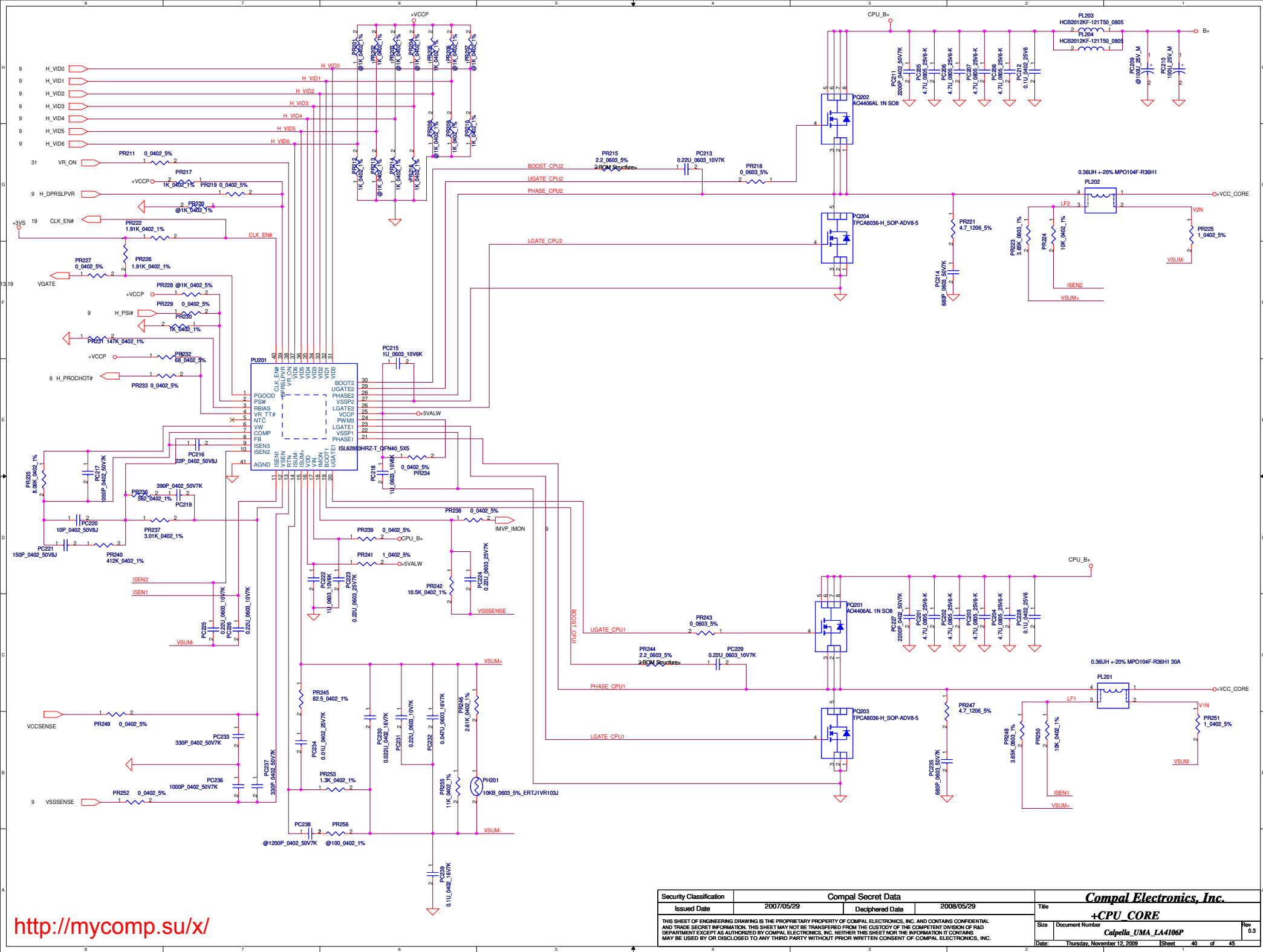
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				Date	Thursday, November 12, 2009
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Date:	Thursday, November 12, 2009	Sheet	39	of 45



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					Capella_UMA_LA4106P	0.3
				Date:	Thursday, November 12, 2009	Sheet 40 of 45

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Version Change List (P. I. R. List) for Power Circuit

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				Date:	Thursday, November 12, 2009	Sheet 42 of 45

Item	PAGE	Fixed Issue	Request by	Modify List	Date	Note
01	22		HW	Add R801	7/20.	DB --> PV-1
02	26	Fix Volum up/down cannot work on Docking.	HW	Add R1185, R1186 and pull high to +3VS.	7/20.	DB --> PV-1
03	31	Remove double pull high resistor.	HW	Delete R660.	7/20.	DB --> PV-1
04	13	Per EMI request.	EMI	Change R679 from 33 ohm to 100 ohm.	7/20	DB --> PV-1
05	31	Modify correct pull high resistor value.	HW	Change R512 and R513 from 4.7K to 2.2K ohm.	7/20	DB --> PV-1
06	32	Modify LVDS PWM connection.	HW	Connect R890 to PCH and R505(reserve) to EC.	7/24	DB --> PV-1
07	22	Fix cannot hot plug if use Asmedia level shifter.	HW	Remove R862 and R867.	8/13	DB --> PV-1
08	22	Add series for Express card delete signal between Express card power swtich and PCH For Board ID.	HW	Add R1210	8/13	DB --> PV-1
09	31		HW	Add R386 and pull low to GND.	8/13	DB --> PV-1
10	31	Change LAN power off control pin to U27 pin115.	HW	Connect U27 pin115 and add series resistor R543 to LAN power control circuit.	8/13	DB --> PV-1
11	31	Change LID switch power rail from +3VL to +3VALW.	HW	Pull high R526 to +3VALW.	8/13	DB --> PV-1
12	31	Delete useless parts.	HW	Delete R542 because already connect EC_UTX to MINI PCIE connector	8/13	DB --> PV-1
13	32	Change LID switch power rail from +3VL to +3VALW.	HW	Change JP11 pin 1 to +3VLALW.	8/13	DB --> PV-1
14	33	For Cost down.	HW	Reserve U30, R596, R650, R590, C681, C770, C679, C680, Q8; add PJ2 to connect +1.5VS_CPU and +1.5VS power plan.	8/13	DB --> PV-1
15	33	Try to use +1.5VS to replace +1.8VS power rail.	HW	Add and reserve PJ3 to short +1.8VS and +1.5VS_CPU power plan.	8/13	DB --> PV-1
16	14	Modify prevent S3 leakage issue circuit.	HW	Connect PCH_DDR_RST from EC GPIO48 to PCH GPIO46.	8/13	DB --> PV-1
17	31	Modify prevent S3 leakage issue circuit.	HW	Delete R386	8/13	DB --> PV-1
18	21	Fix LCD panel no display issue.	HW	Connect JLVDS1 pin27 to +3VS.	8/13	DB --> PV-1
19	32	Change Cap. board power rail from +3VL to +3VS.	HW	Reserve R1211 and connect to +3VS.	8/13	DB --> PV-1
20	27	Swap Audio port A and F.	HW	Swap port A and port F. Detail please see audio circuit.	8/17	DB --> PV-1
21	6	Delete XDP connector	HW	Delete JP1, R13, R17, R18, R19, R22, R25, C1	8/17	DB --> PV-1
22	25	Conecto Q15 to +3V_LAN.	HW	Delete R1031 and connect Q15 pin1 to +3V_LAN directly.	8/17	DB --> PV-1
23	26	Modify Audio circuit near docking side.	HW	Connect Q91 pin3 to GNDA and move it near Codec.	8/17	DB --> PV-1
24	27	Per EMI/ESD request.	EMI/ESD	Add R1212/C1433 for HDA_RST#_CODEC. Add C1434. Change R132/R135/R139 to C1435/C1436/C1437.	8/17	DB --> PV-1
25	6	Modify prevent S3 leakage issue circuit.	HW	Change U57 from reset IC to AND gate; add R1218 and reserve R383; add voltage divider(R1216/R1217) for VTPWRGOOD.	8/19	DB --> PV-1
26	25	Follow DIS.	HW	Change Y8 material.	8/19	DB --> PV-1
27	28	Per ESD request.	ESD	Add D61, D62 for OPP sku.	8/19	DB --> PV-1
28	32	Change cap. board power rail from +3VL to +3VS.	HW	Pull high R544 and R545 to +3VS power rail.	8/20	DB --> PV-1
29	14	Make sure PLT_RST# level is stable.	HW	Stuff R185.	8/20	DB --> PV-1
30	32	Reserve +3VL power rail for cap. board.	HW	Add and reserve R1219/R1220 to +3VL.	8/21	DB --> PV-1

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