

# Compal Confidential

## PAV70 DDR3 Schematics Document

### Intel Pineview Processor with Tigerpoint + DDRIII

2010-06-25

REV: 1.0

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File Name : LA-6421P

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Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+0.75VS	0.75V switched power rail for DDR terminator	ON	OFF	OFF
+VCCP	VCCP switched power rail	ON	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.5V	1.5V power rail for DDR	ON	ON	OFF
+0.89V	Graphic core power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5VS	5V switched power rail	ON	OFF	OFF
+VSB	VSB always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

Note : ON\* means that this power plane is ON only with AC power available, otherwise it is OFF.

STATE \ SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1 (Power On Suspend)	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)	LOW	LOW	LOW	ON	OFF	OFF	OFF

BOARD ID Table(Page 17)

	VCC	3.3V				
	Ra	100K				
	ID	BRD ID	Rb	Vab-Min	Vab-Typ	Vab-Max
PAV50	0	R01 (EVT)	0	0V	0V	0V
	1	R02 (DVT)	8.2K	0.216V	0.250V	0.289V
	2	R03 (PVT)	18K	0.436V	0.503V	0.538V
	3	R10A (MP)	33K	0.712V	0.819V	0.875V
	4	R01 (EVT)	56K	1.036V	1.185V	1.264V
	5	R02 (DVT)	100K	1.453V	1.650V	1.759V
	6	R03 (PVT)	200K	1.935V	2.200V	2.341V
	7	R10A (MP)	NC	2.500V	3.3V	3.3V

External PCI Devices

DEVICE	IDSEL #	REQ/GNT #	PIRQ
--------	---------	-----------	------

No PCI Device

EC SM Bus1 address

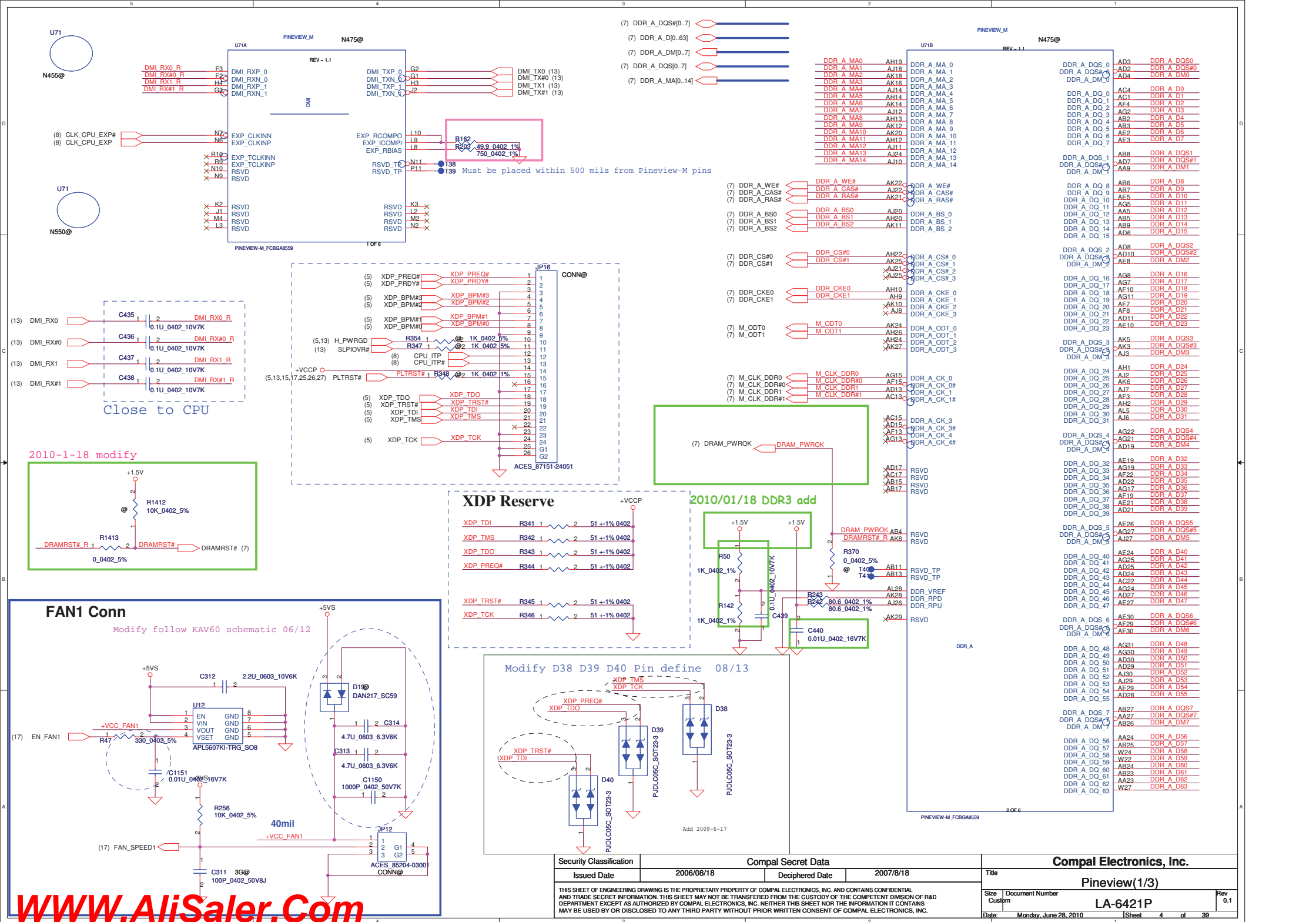
Device	Address	Device	Address
Smart Battery	0001 011X b	EMC1402	100_1100

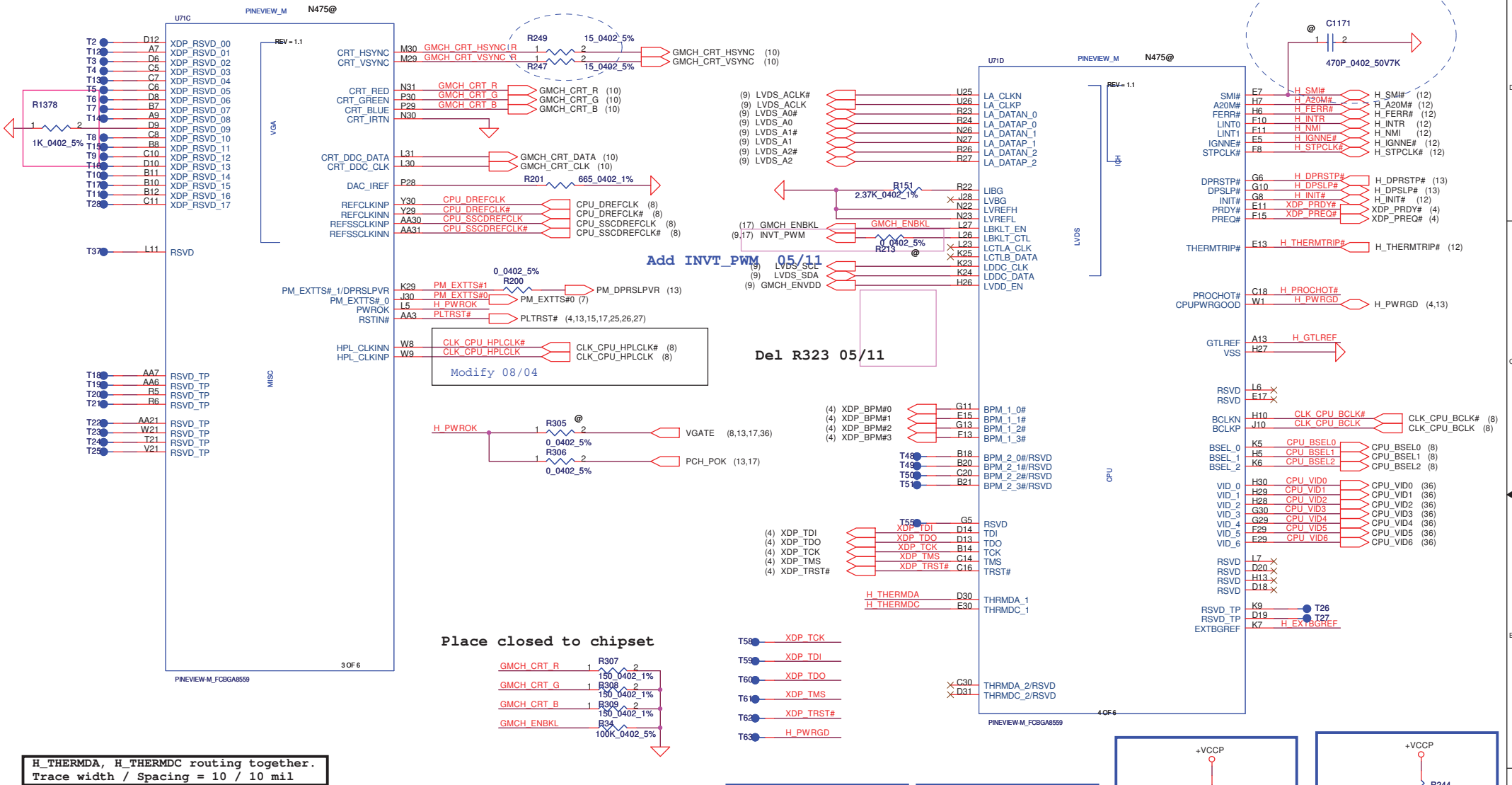
EC SM Bus2 address

ICH7M SM Bus address

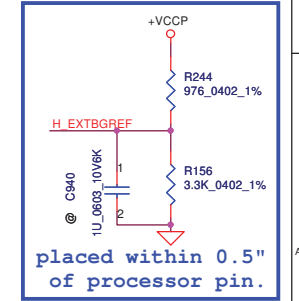
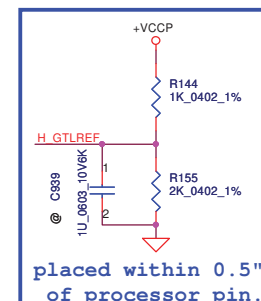
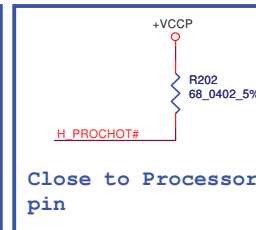
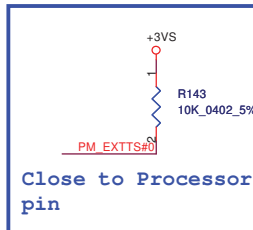
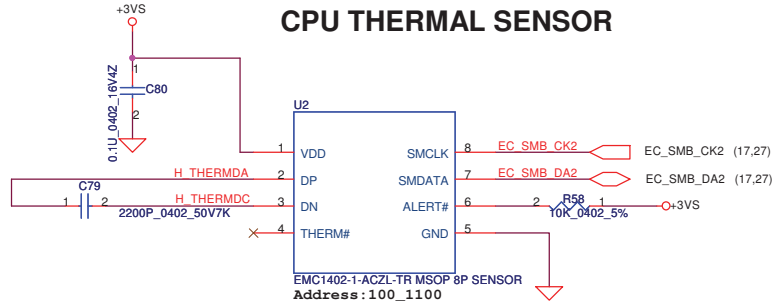
Device	Address
Clock Generator (SLG8SP556VTR)	1101 001Xb
DDR DIMMA	1010 000Xb

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## CPU THERMAL SENSOR



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T13	VCCGFX
T14	VCCGFX
T16	VCCGFX
T18	VCCGFX
T19	VCCGFX
V13	VCCGFX
V19	VCCGFX
W14	VCCGFX
W16	VCCGFX
W18	VCCGFX
W19	VCCGFX

AD9288 analog supply current: 1.32mA

22uF 6.3V M XSR 0805

1uF 0.0402 6.3Vek

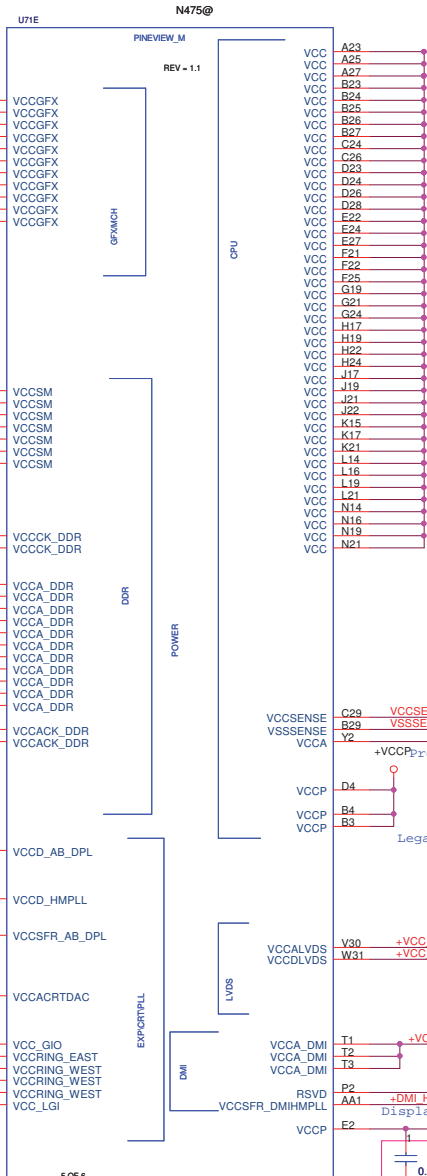
22uF 6.3V M XSR 0805

4.7uF 0.003 6.3Vek

1uF 0.603 1Vek

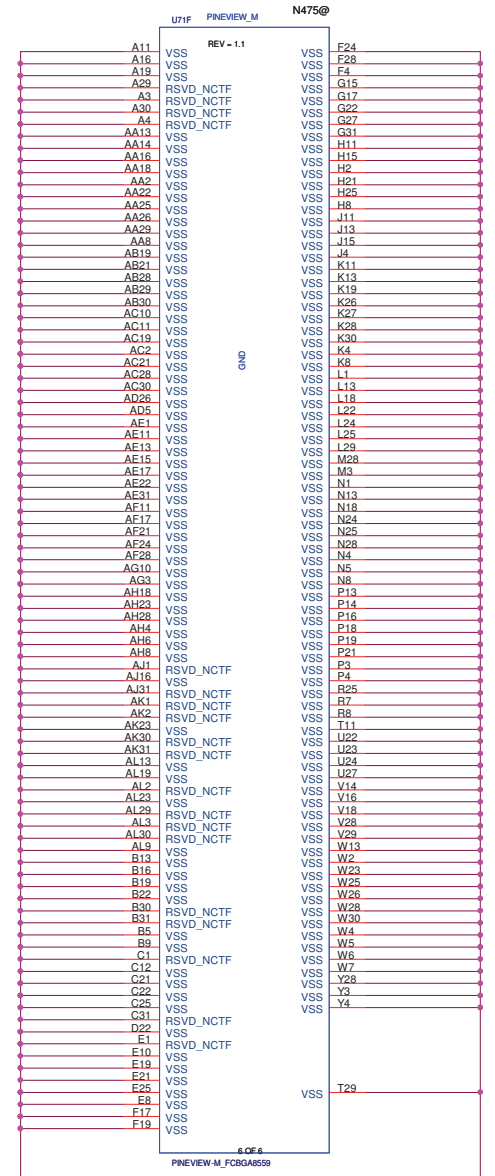
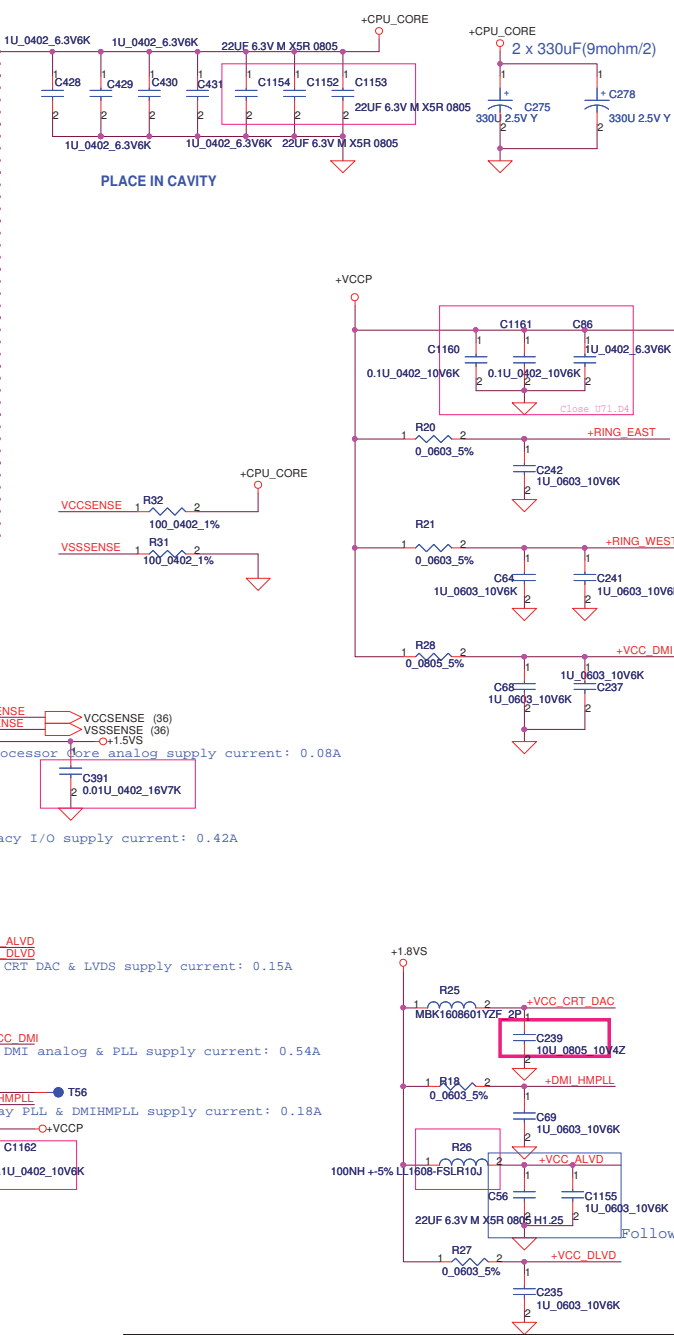
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Close Chipset pin



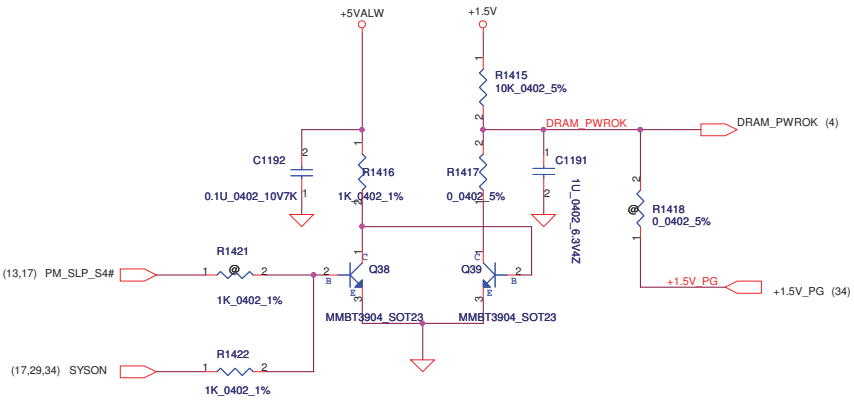
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del C1218 2010/04/14

Add C1217 2010/03/25
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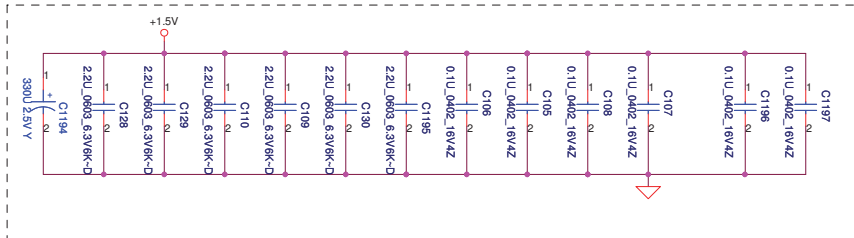


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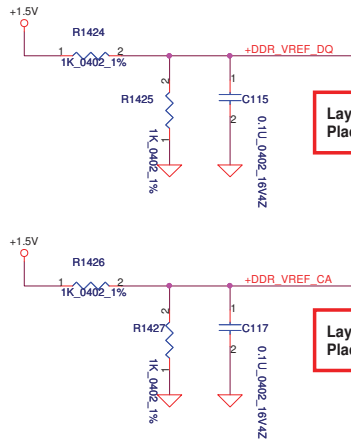
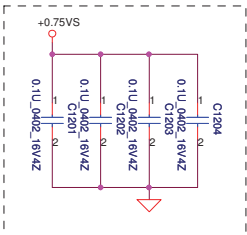
## 2010/01/18 DDR3 modify



**Layout Note:**  
**Place near JDIMM1**



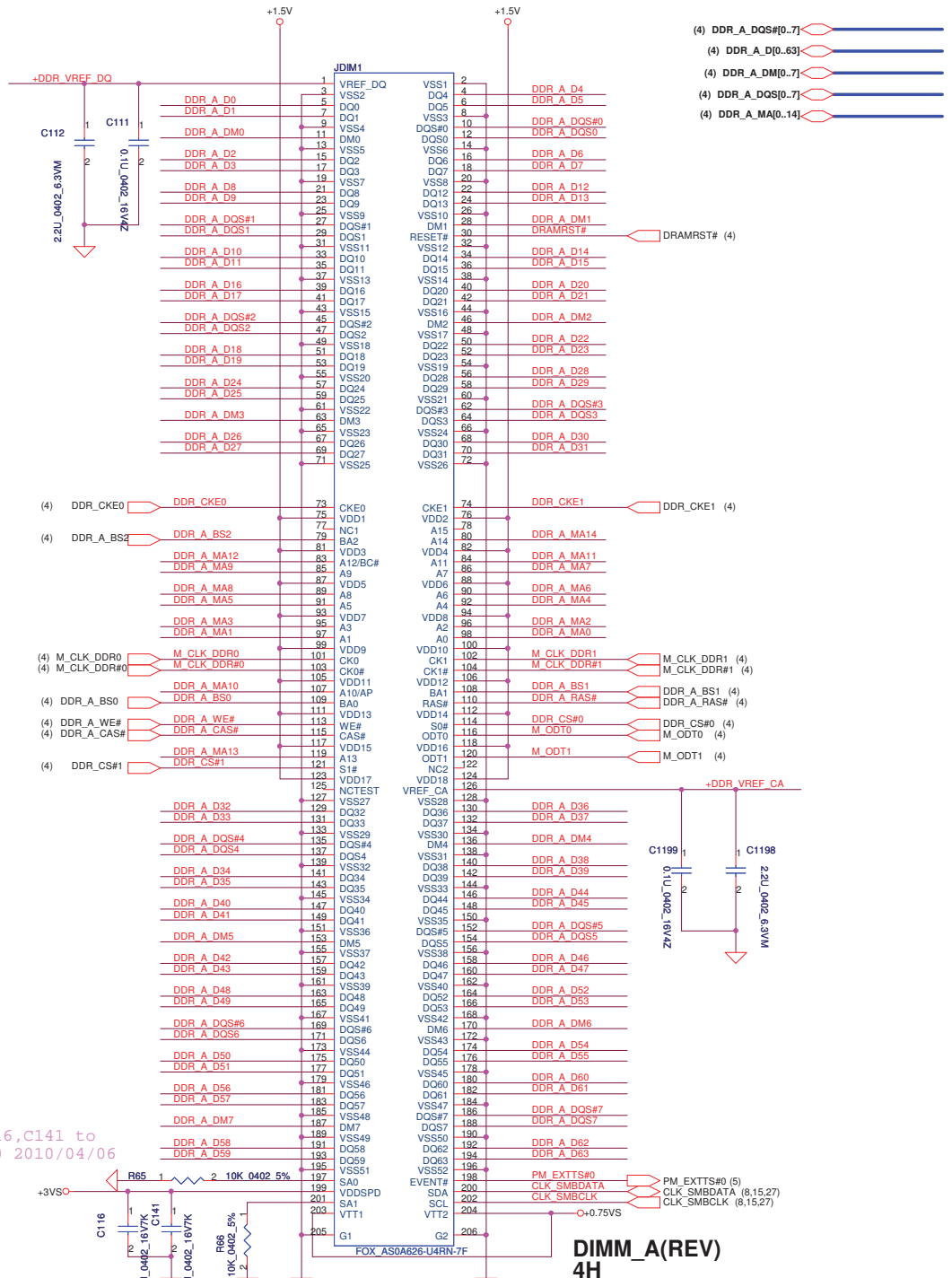
**Layout Note:**  
Place near JDIMM1.203 & JDIMM1.204



**Layout Note:**  
Place near JDIMM1.1

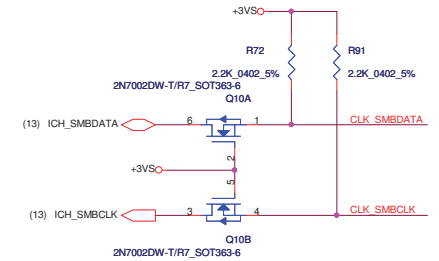
Change C116,C141 to  
SE076104K80 2010/04/06

**Layout Note:**  
Place near JDIMM1.126



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Change C174 C175 to 10U\_0603 05/14

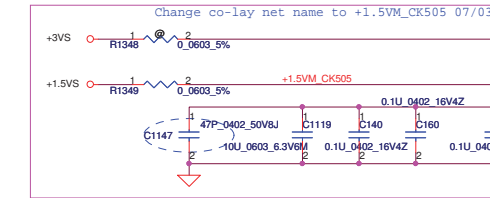


Change Q10 to SB00000DH00 2010/04/06

## SRC PORT LIST

### REQ PORT LIST

PORT	DEVICE
REQ_3#	
REQ_4#	PCIE_WLAN
REQ_6#	
REQ_7#	
REQ_9#	
REQ_10#	PCIE_WWAN
REQ_11#	
REQ_A#	



del C1219 R1442 04/14



For PCI2\_TME:0=Overclocking of CPU and SRC allowed  
(ICS only) 1=Overclocking of CPU and SRC NOT allowed



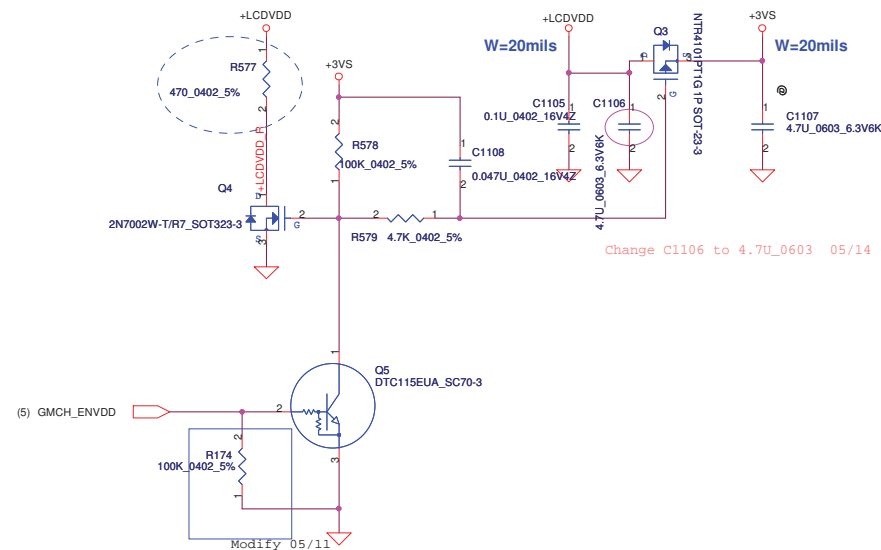
Add R107 05/04

WLAN CLKREQ#	R121	2	1	10K	0402	5%
LAN CLKREQ#	R1430	2	1	4.7K	0402	5%
WWAN CLKREQ#	R107	2	1	10K	0402	5%

**WWW.AliSaler.Com**

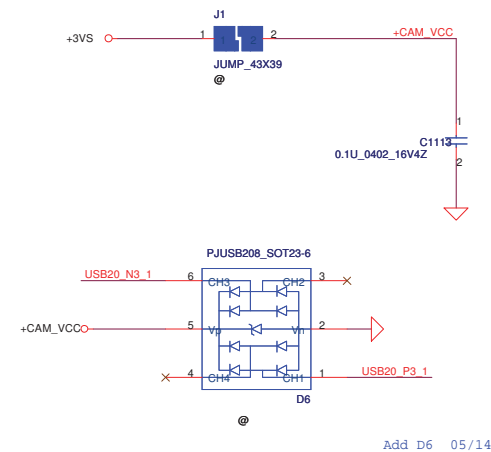
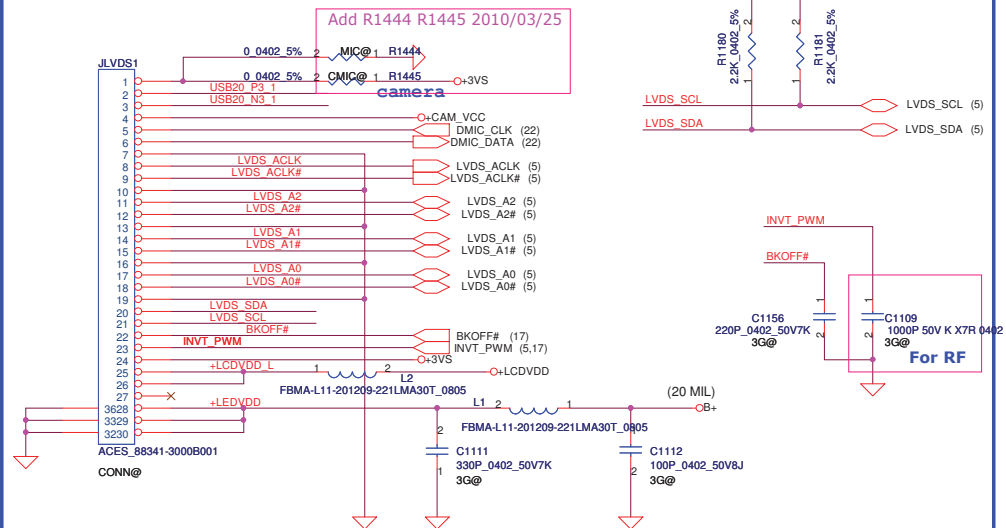
## LCD POWER CIRCUIT

Change R577 to 0402 SIZE 06/16

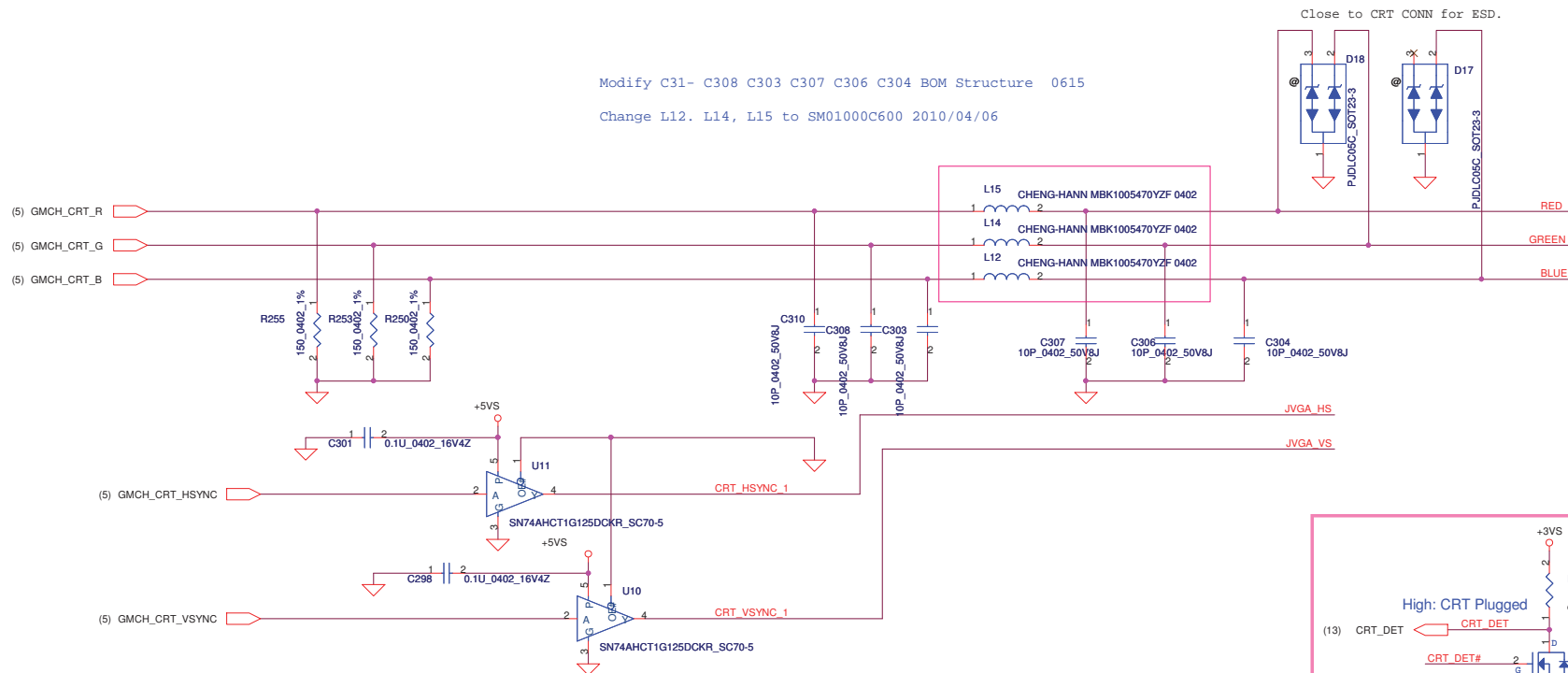


## CMOS & LCD/PANEL BD. Conn.

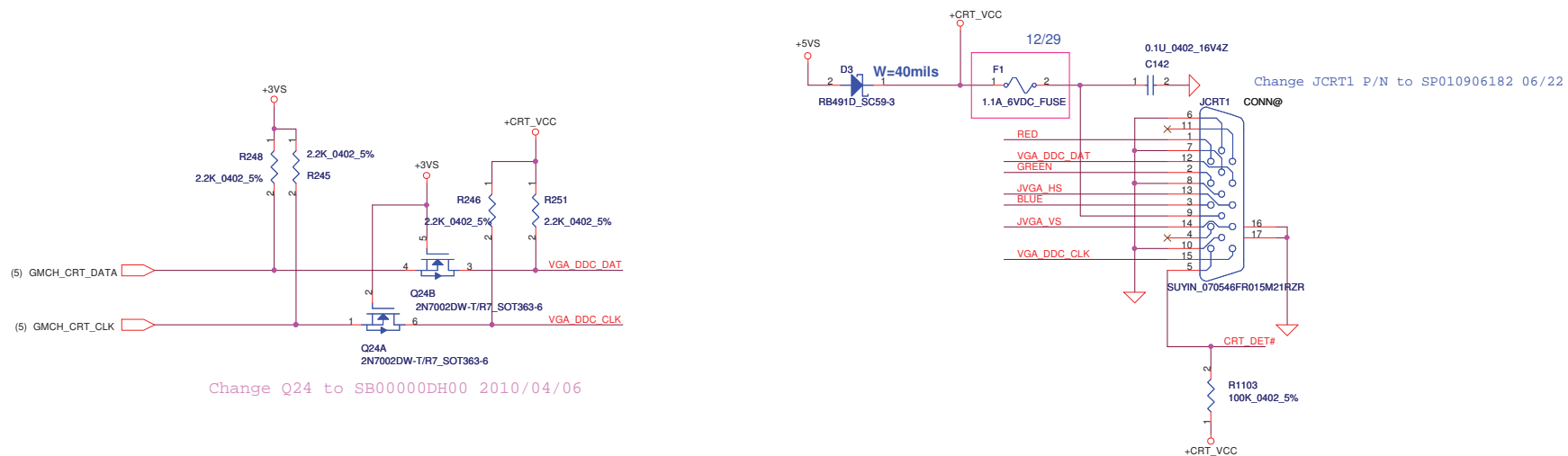
Modify JLVDS1 08/04



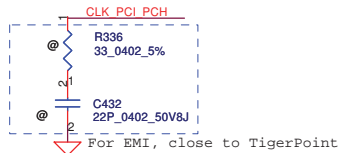
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## CRT PORT

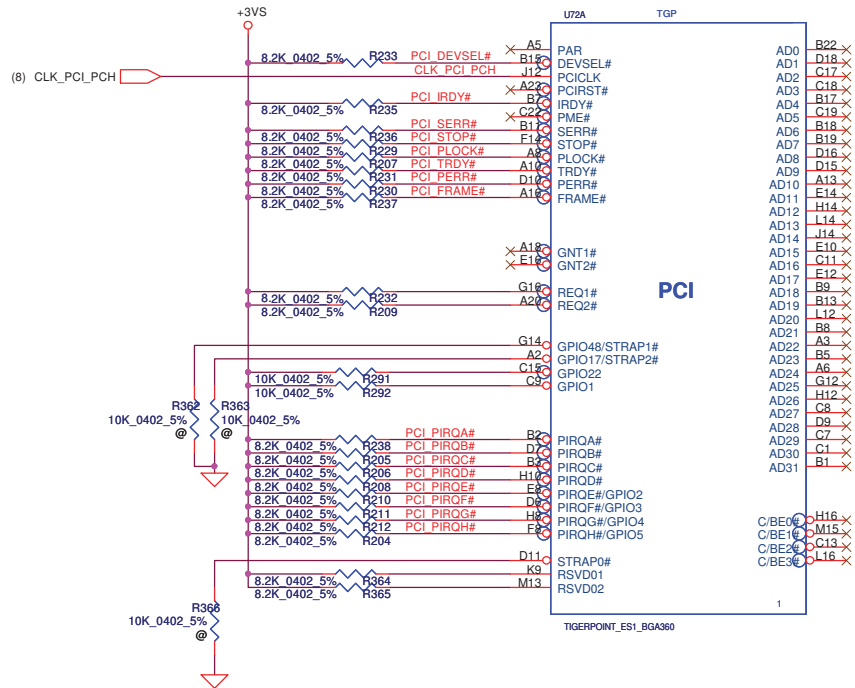


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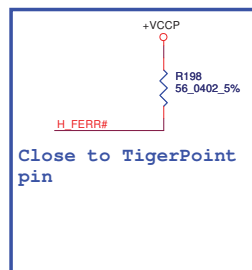
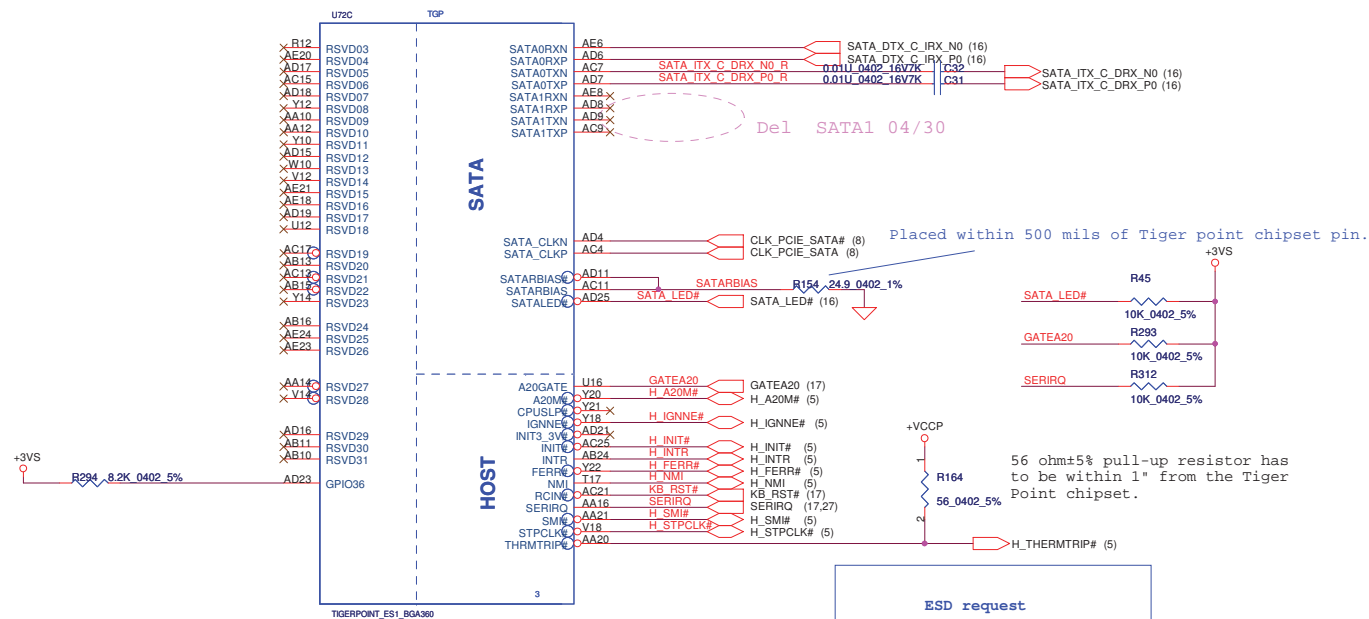


(27) G\_SENSOR\_INT  PCI\_PIRQ#

Add for G-sensor interrupt 2010/03/11



STRAP2# GPIO17	STRAP1# GPIO48	Boot BIOS
0	1	SPI
1	0	PCI
1	1	LPC



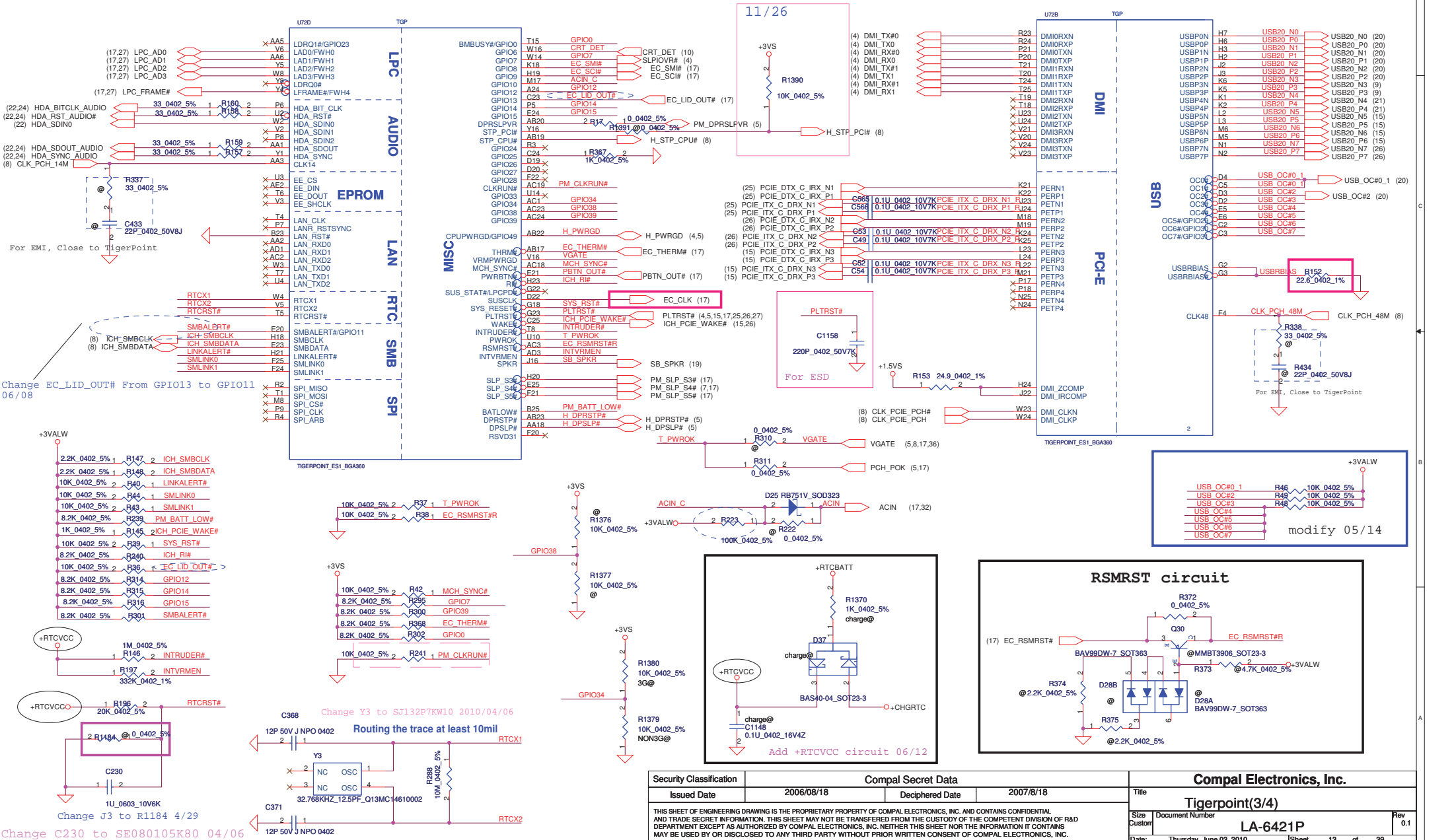
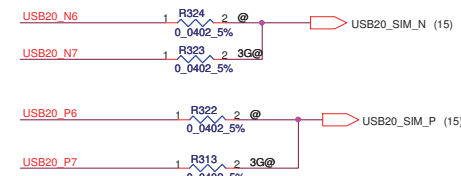
ESD request			
H_A20M#	C450	2	100P_0402_50V8J
H_IGNNE#	C451	2	100P_0402_50V8J
H_INIT#	C452	2	100P_0402_50V8J
H_INTR#	C453	2	100P_0402_50V8J
H_FERR#	C454	2	100P_0402_50V8J
H_NMI	C455	2	100P_0402_50V8J
H_SMI#	C456	2	100P_0402_50V8J
H_STPCLK#	C457	2	100P_0402_50V8J

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PCIE Port List	
1	LAN
2	WLAN
3	WWAN
4	

USB Port List	
0	USB Left1
1	USB Left2
2	USB Right2
3	CMOS
4	CardReader
5	WWAN
6	BT
7	WIMAX



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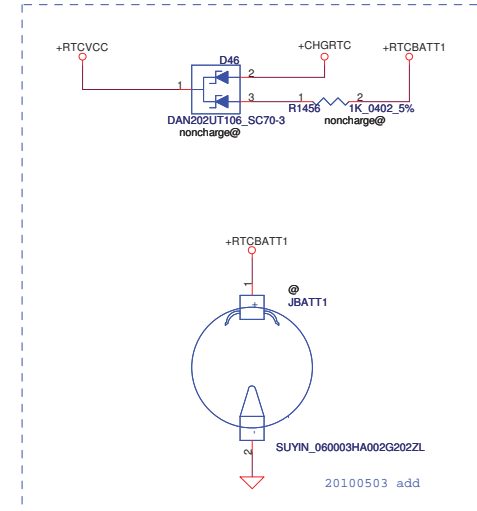
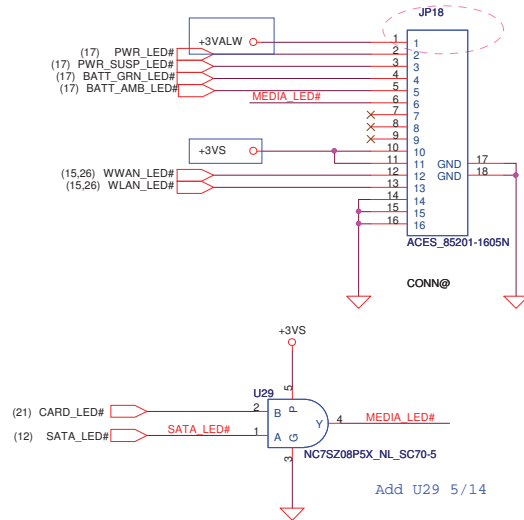


# ADD LED PCB CONN 06/12

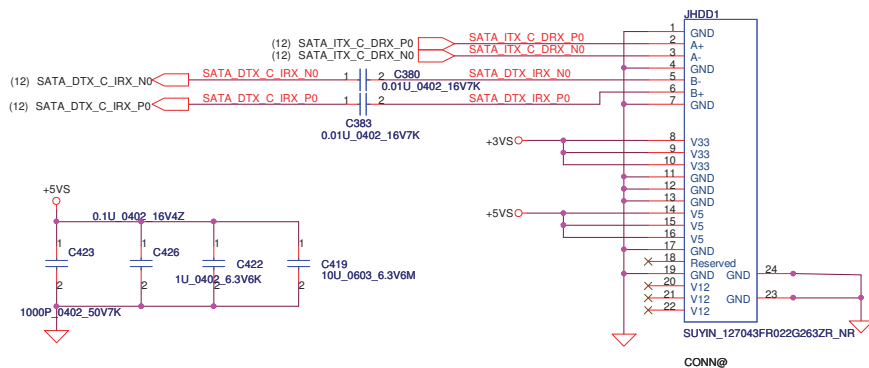
## LED PCB CONN

Change JP18 to NEW P/N 06/23

09/03 Change +5VALW , +5VS to +3VALW +3VS



## SATA HDD Conn.



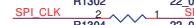
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R1446

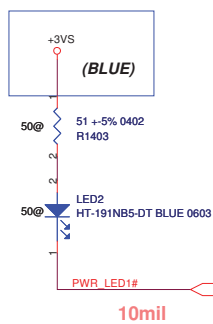
2 — LIGHT\_SENSOR\_INT# (27)

Add for Light-sensor interrupt 2010/03/11

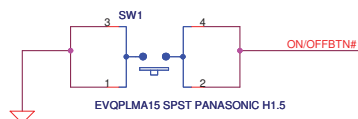


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				Date: Monday, June 26, 2010		
				Sheet 17 of 39		

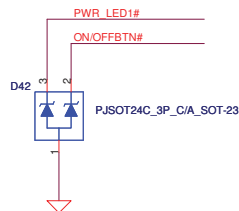
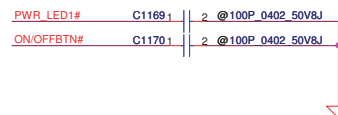
Add For NAV50 07/06  
09/03 Change +5VS to +3VS



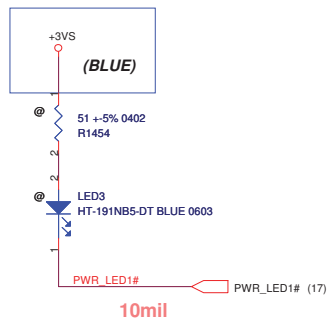
### ON/OFF Button



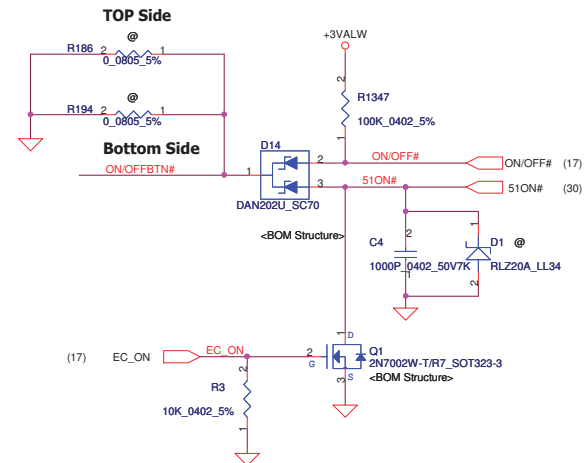
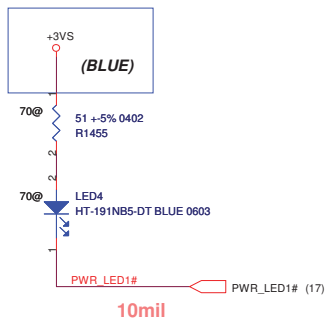
### FOR EMI



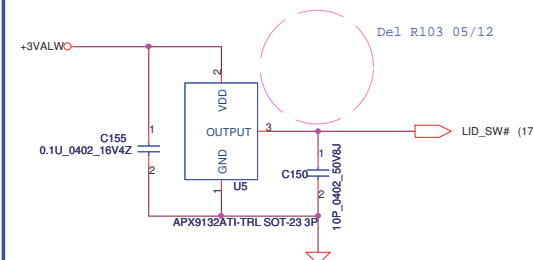
Add For PAV70 2010/04/09



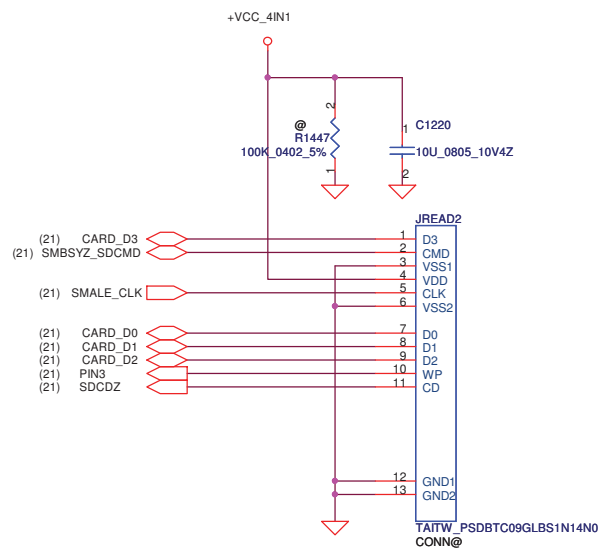
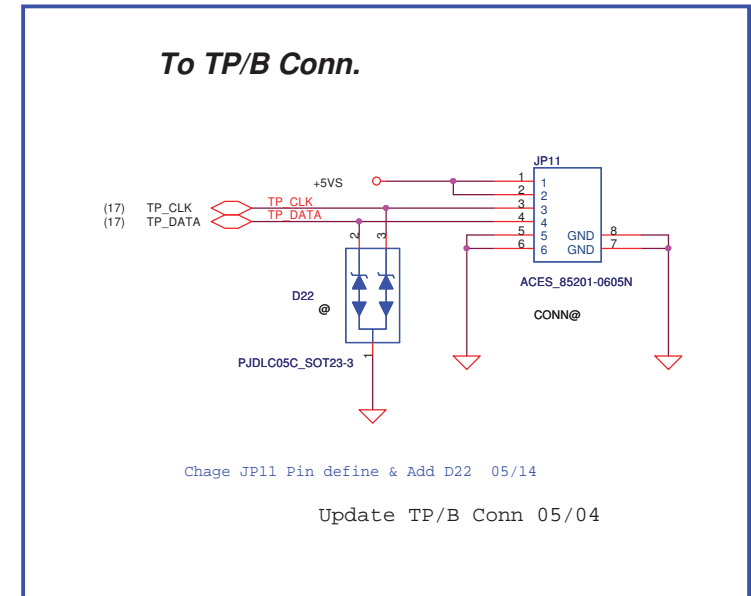
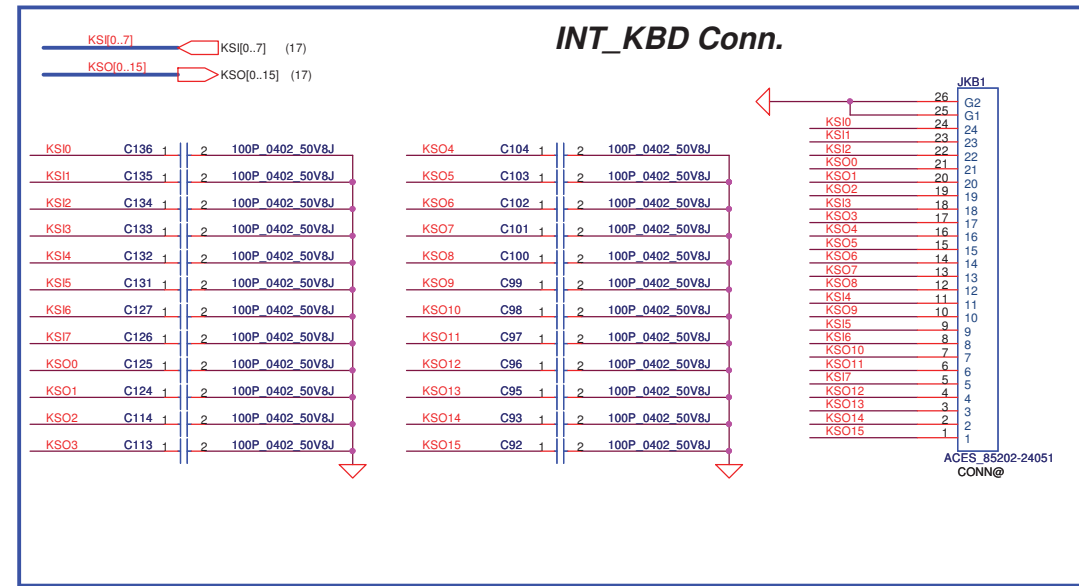
Add For PAV70 2010/04/09



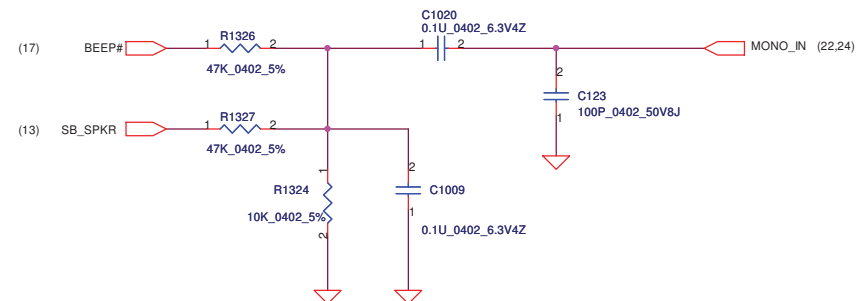
### LID Switch



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Issued Date		2006/08/18		Deciphered Date		2007/8/18		Title	
								ON/OFF / PWR SW/ LID SW	
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				B		LA-6421P		0.1	
Date:				Thursday, June 03, 2010		Sheet		18 of 39	

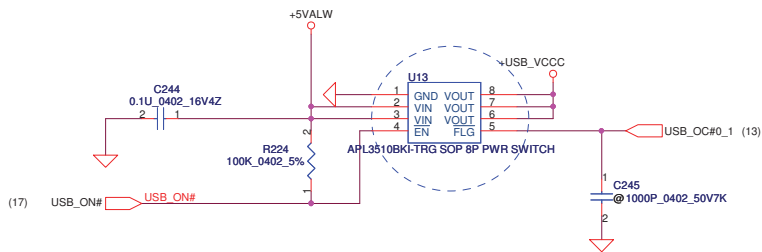


6/26 Add circuit



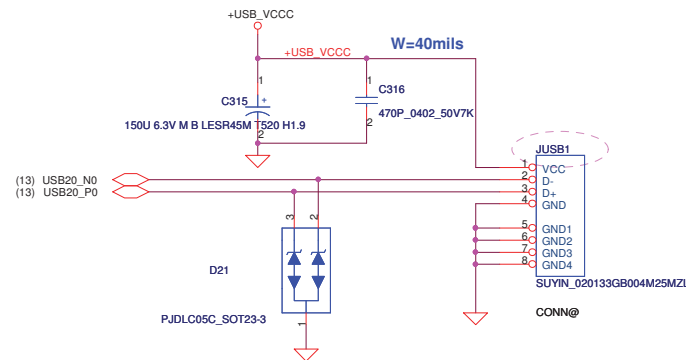
Modify MONO\_IN schematic,move some parts to I/O Board , Add the MONO\_IN\_R on M/B 06/25

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Size	Document Number	LA-6421P		Rev	
Date:	Tuesday, June 22, 2010	Sheet	19	of	39

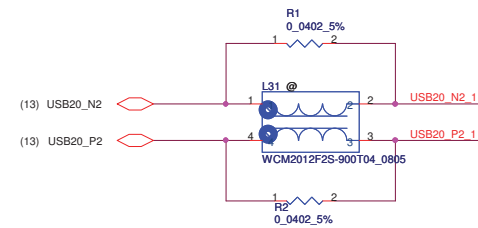
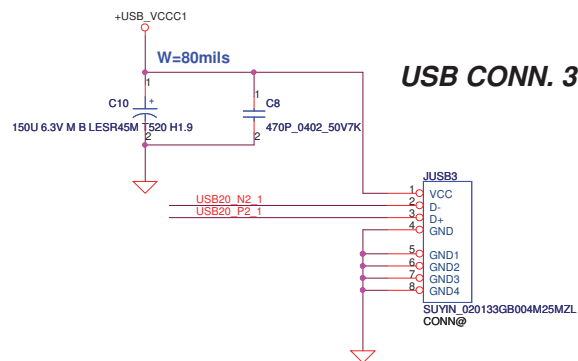
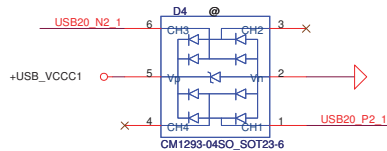
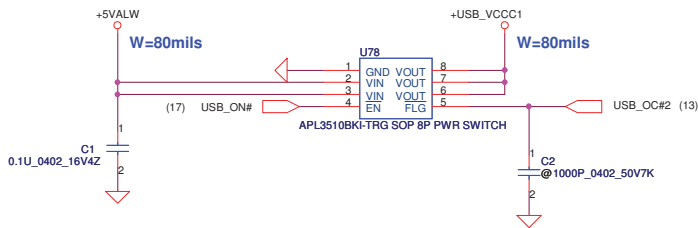
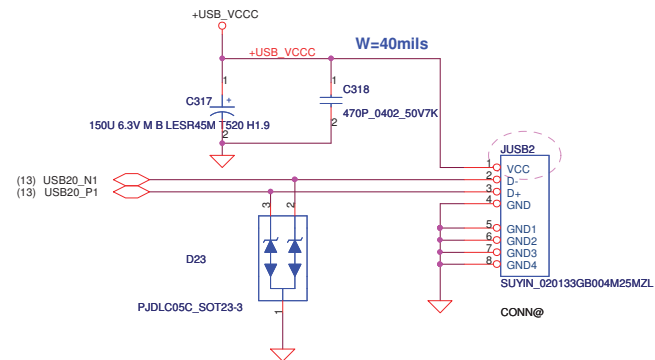


### USB CONN.1

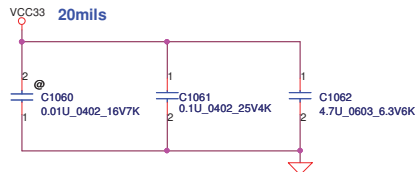
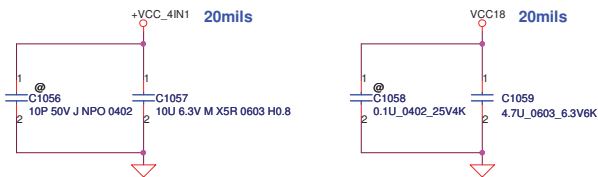
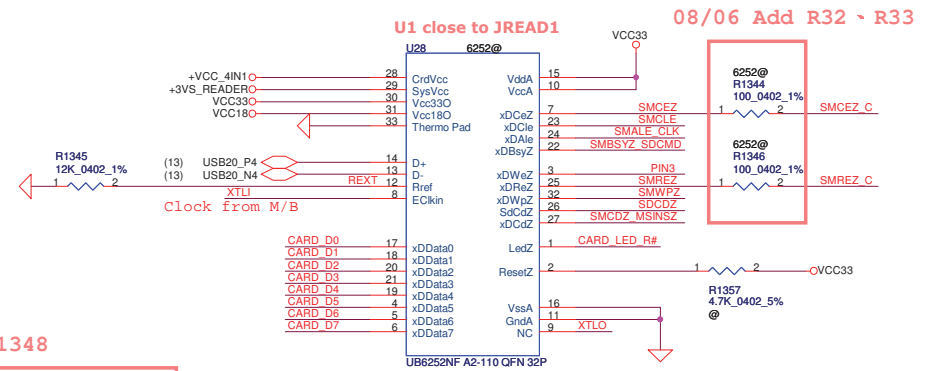
Change JUSB1 JUSB2 to NEW P/N SP010906181 06/23




### USB CONN.2




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2006/08/18				2007/8/18				USB PORTS			
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								LA-6421P			
								Date: Thursday, June 03, 2010			
								Sheet 20 of 39			



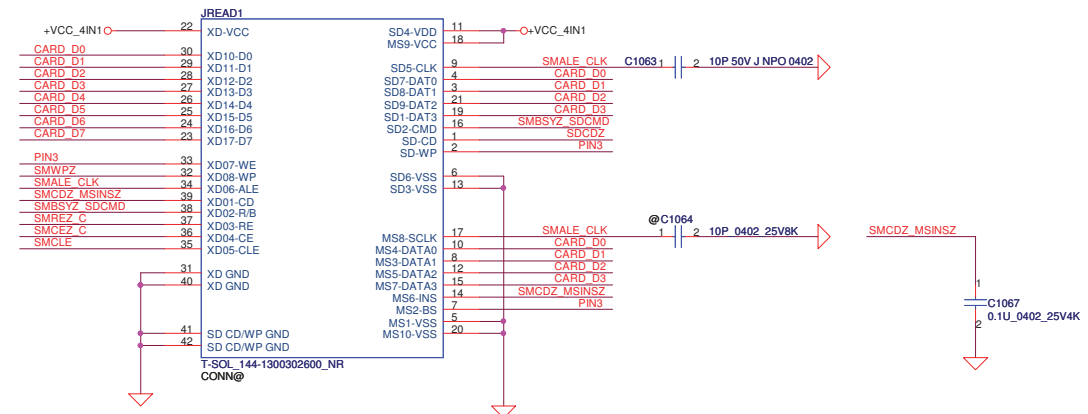
## ByPass Capacitors



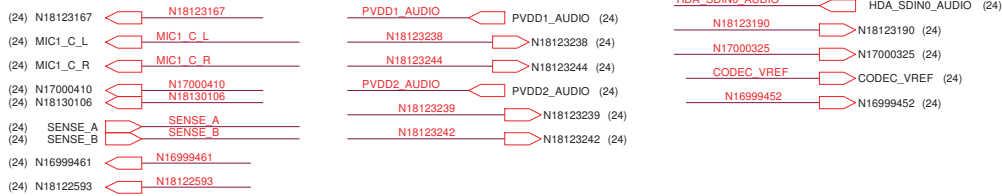


The schematic diagram illustrates the LED driver circuit for the **CARD\_LED#** signal. The circuit is powered by **VCC33** and **+V3S** rails. The **CARD\_LED#** signal is connected to the base of the NPN transistor **Q37** (2N7002W-T/R7\_SOT323-3). The emitter of **Q37** is connected to ground. The collector of **Q37** is connected to the anode of the LED **D31** (RB751V\_SOD323). The cathode of **D31** is connected to ground. A current-limiting resistor **R1355** (0\_0402\_5%) is connected in series with the LED. The base of **Q37** is also connected to **VCC33** through a resistor **R1358** (0\_0402\_5%). A pull-up resistor **R1354** (10K\_0402\_5%) is connected between **+V3S** and the LED cathode. A resistor **R1360** (10K\_0402\_5%) is connected between **VCC33** and the **CARD\_LED#** signal line. A resistor **R1353** (10K\_0402\_5%) is connected between **+VCC4IN1** and the **CARD\_LED#** signal line. A resistor **R1361** (0\_0402\_5%) is connected between **VCC33** and the base of **Q37**.

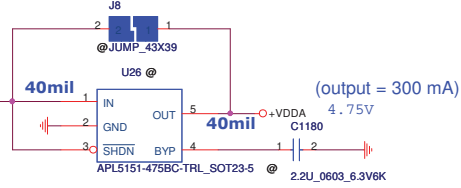
### Card Reader Connector



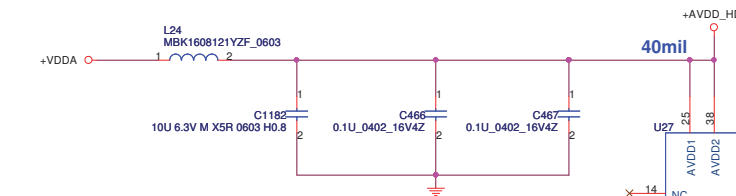
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Issued Date	2009/01/22	Deciphered Date	2009/11/20	Card reader			
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				Date: Thursday, June 03, 2010		Sheet 21 of 39	



Change U26 to SA00001N000 2010/04/06

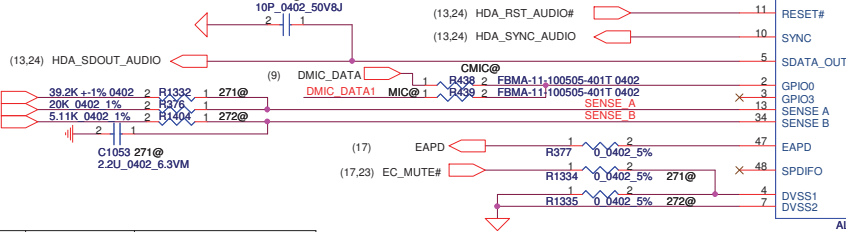


### HD Audio Codec



20mil  
20mil

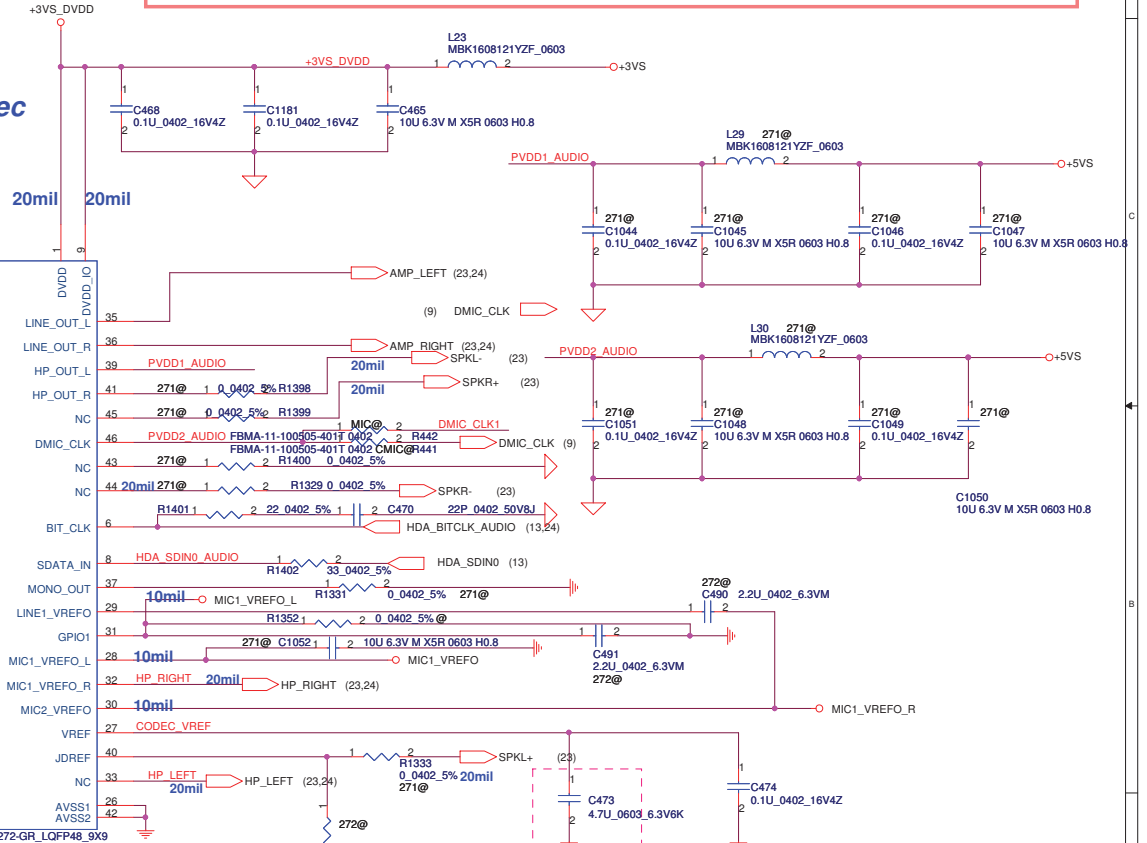
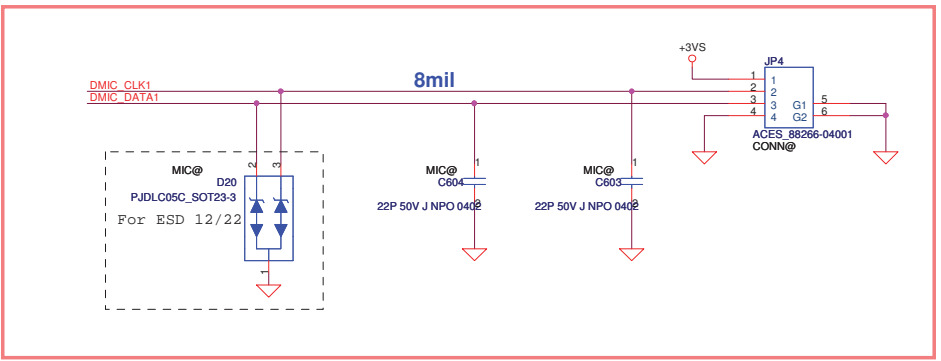
7/04 Add C23



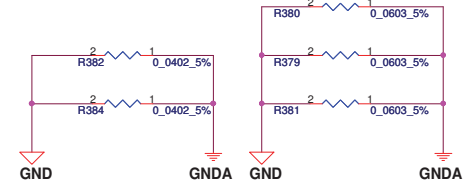
DGND

AGND

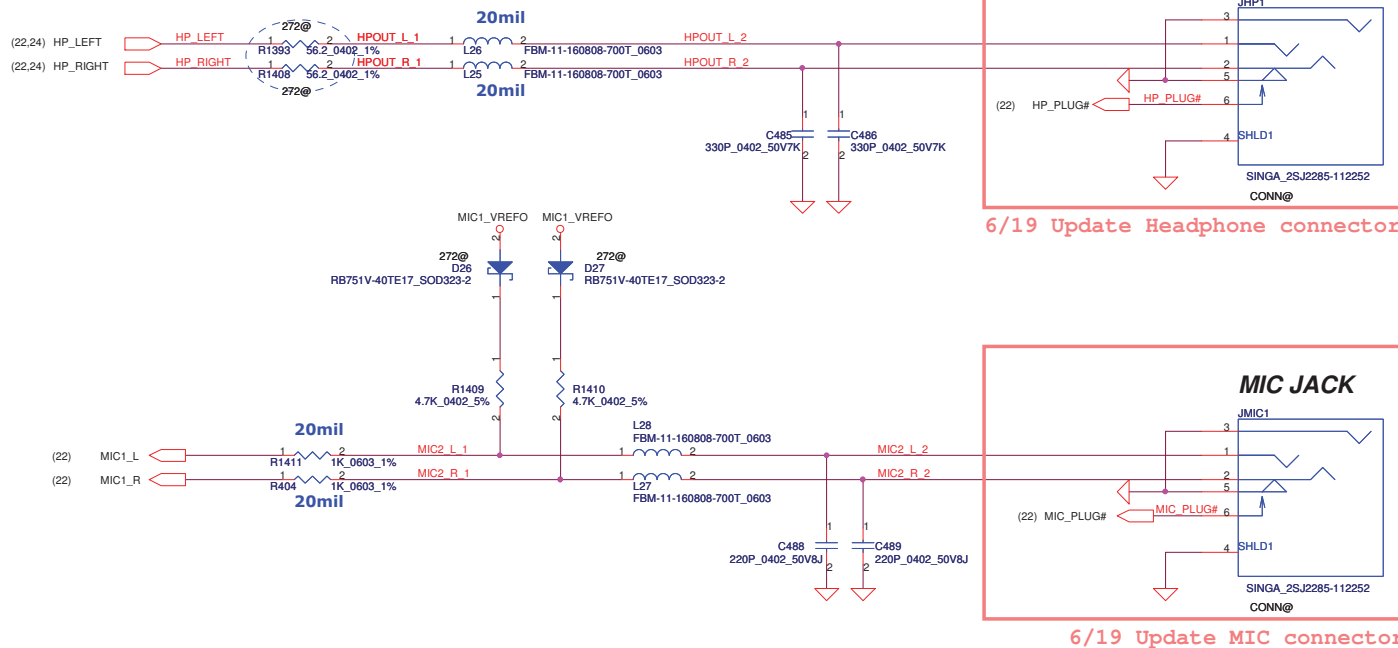
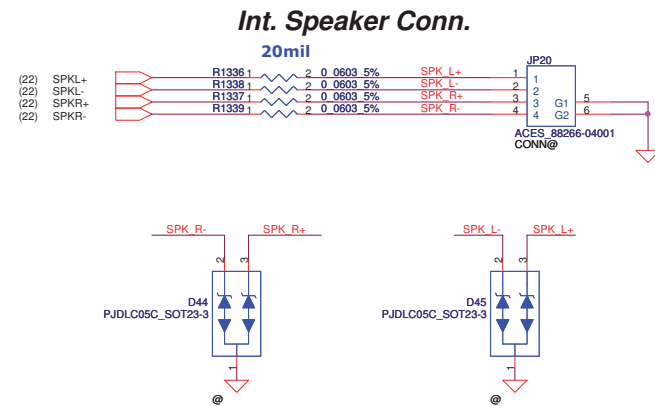
Change to SA00002CI20 ALC272-VA2-GR



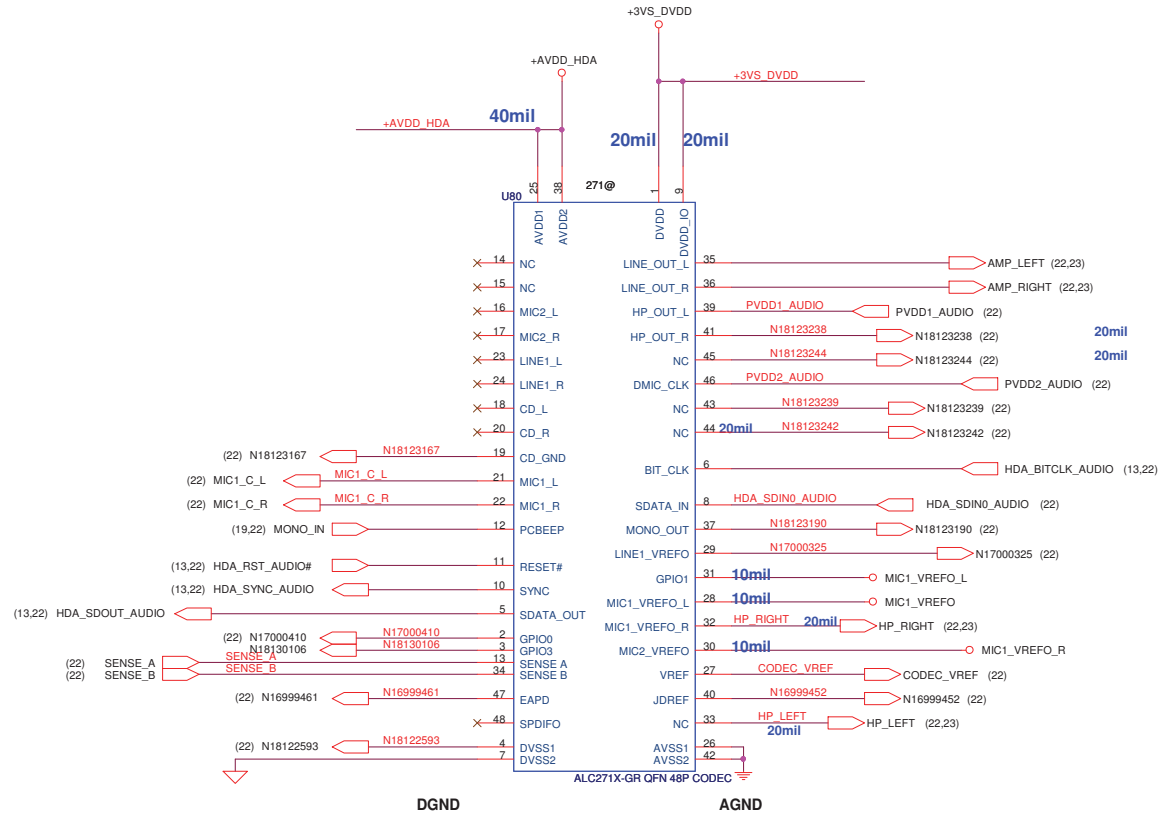
Follow Vendor check change to 4.7uF 2010/05/24



Compal Electronics, Inc.			
Title	<Title> HD Audio Codec ALC272		
Size	Document Number	Rev	
Custom	LA-6421P	LA-6222P	
Date:	Thursday, June 03, 2010	Sheet	22 of 39



## HD Audio Codec

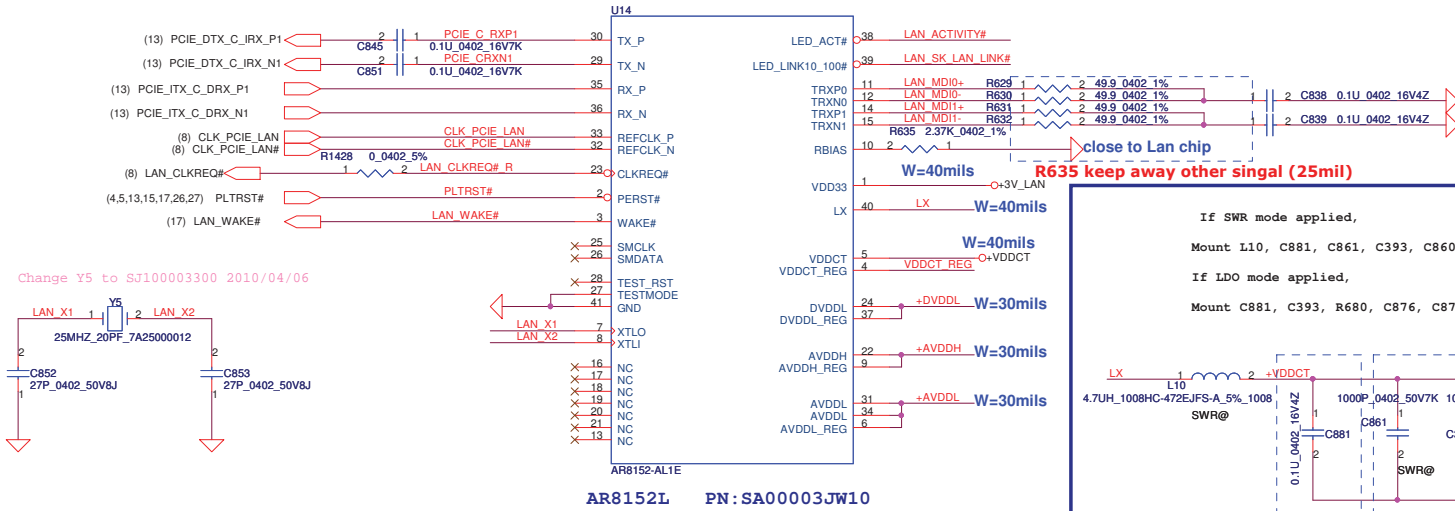


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 15, 16)

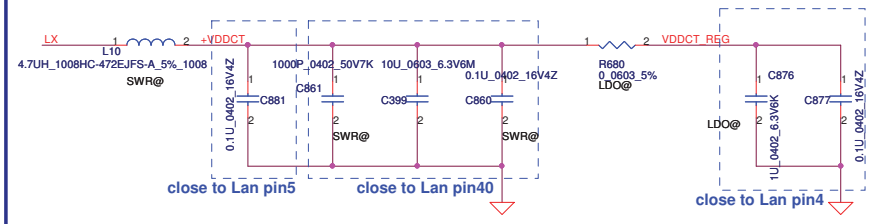
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Compal Electronics, Inc.			
Title	<Title> HD Audio Codec ALC271		
Size	Document Number	Rev	
Custom	LA-6421P	LA-6222P	
Date:	Thursday, June 03, 2010	Sheet	24 of 39

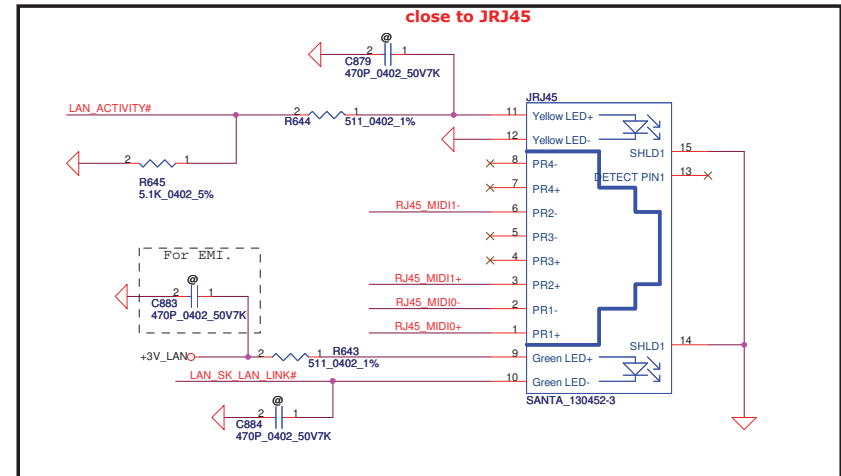
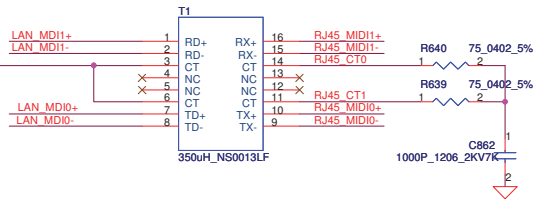
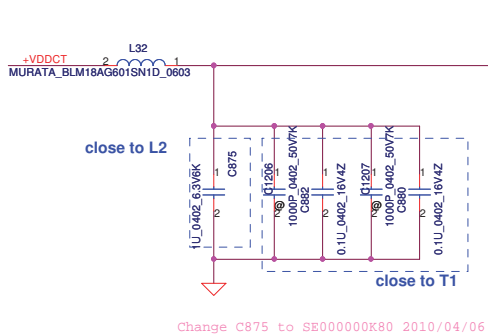
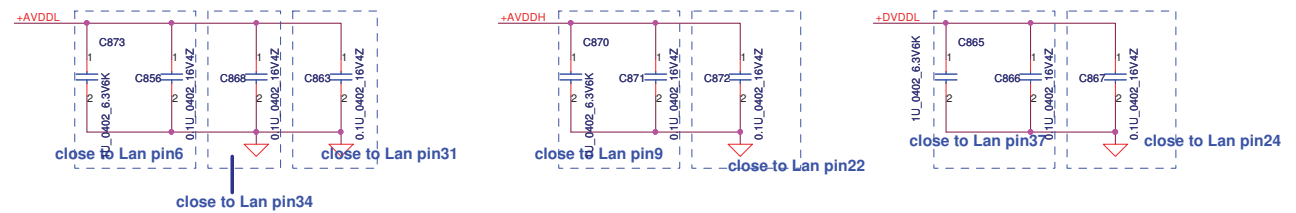
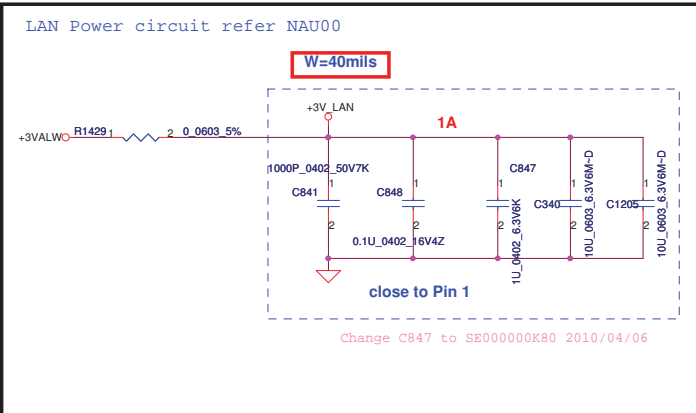
Change LAN chip to AR8152-L for NAV70/80 DDR3 2010/01/22



Mount C881, C393, R680, C876, C877. No mount L10, C861, C860.



Change C865,C870,C873,C876 to SE000000K80 2010/04/06

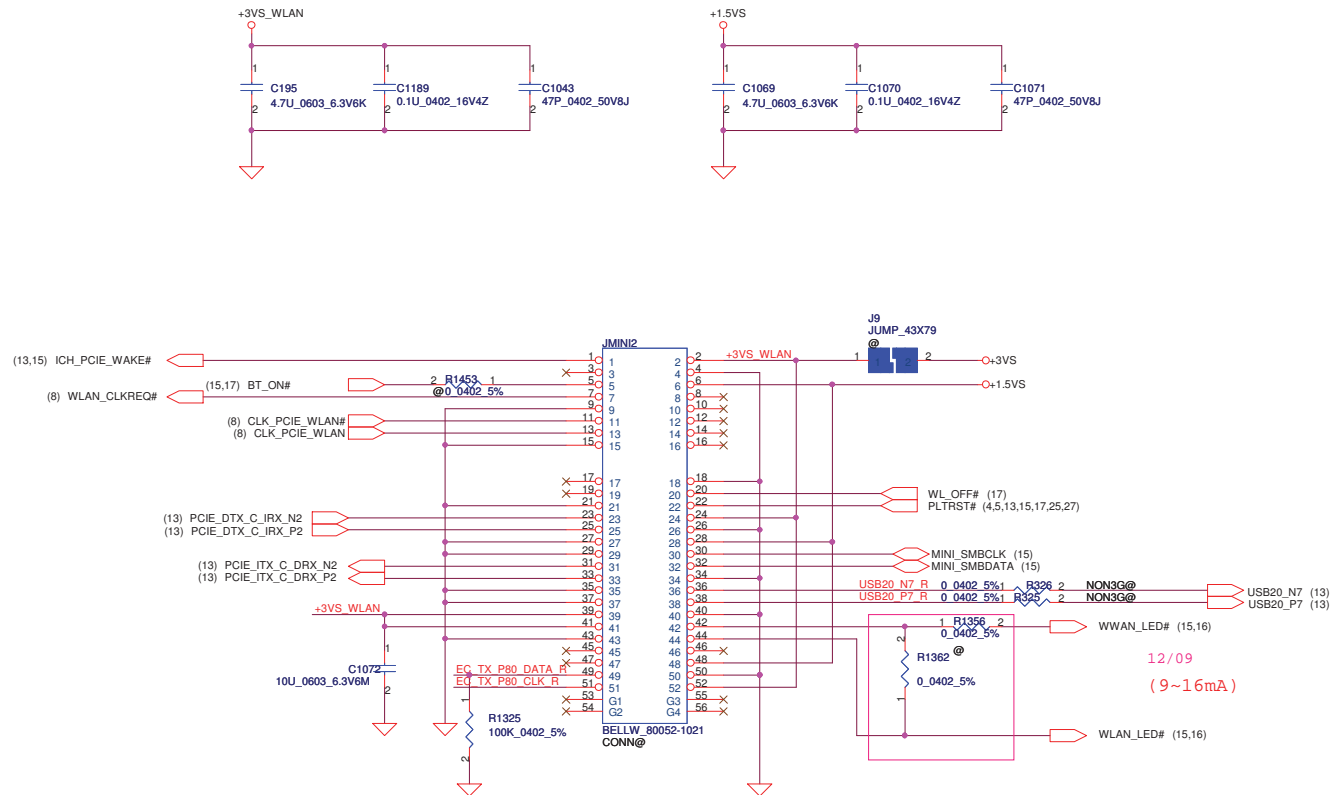


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				Custom	0.1
				Document Number LA-6421P	
Date: Thursday, June 03, 2010		Sheet		25	of 39

# Mini-Express Card for WWAN



# Mini-Express Card for WLAN



5/12 Update WLAN connector(the same as KAV60)  
 6/1 Revised 37、39、41、42、43 to NC  
 6/12 Update connector to DC040006S00  
 6/26 Update JMINI1 footprint  
 7/01 update pin 23,25,31,33

Compal Electronics, Inc.			
Title	<Title> WLAN		
Size	Document Number	Rev	
Custom	LA-6421P	LA-6222P	
Date:	Monday, June 07, 2010	Sheet	26 of 39

Change Y7 to SJ132P7KW10 2010/04/06

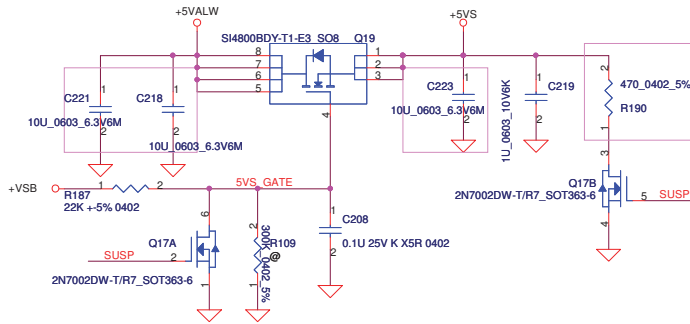


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Issued Date	2008/09/15	Deciphered Date	2009/12/31	<b>TPM/G-Sensor/Light sensor</b>	
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				Document Number	0.1
				LA-642IP	
Date:		Thursday, June 03, 2010		Sheet	27 of 39

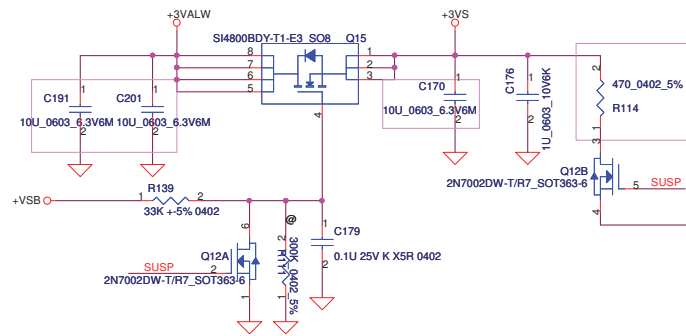
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Issued Date	2006/08/18	Deciphered Date	2007/8/18	Title Screw		
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				LA-6421P		
				Date:	Thursday, March 25, 2010	Sheet 28 of 38

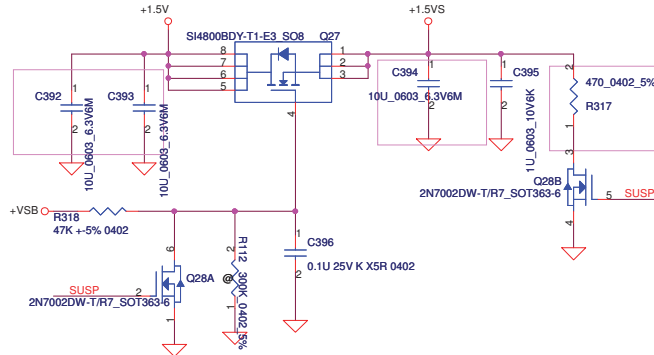
**+5VALW TO +5VS**



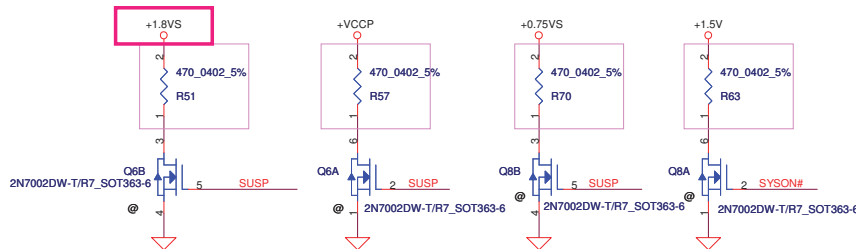
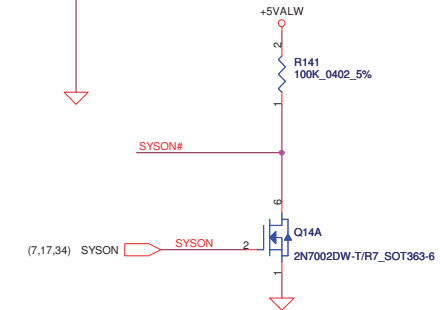
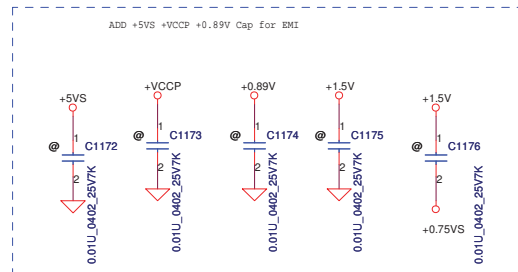
**+3VALW TO +3VS**



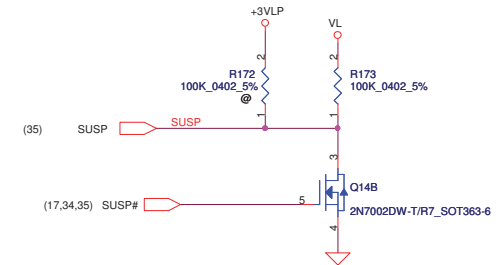
**+1.5V to +1.5VS**



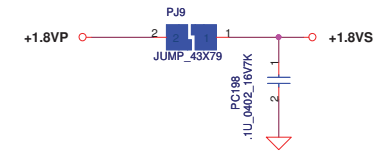
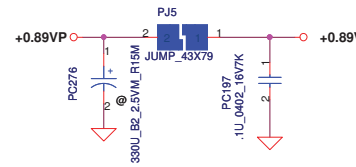
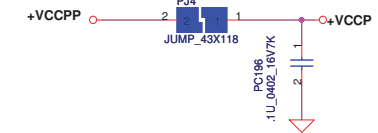
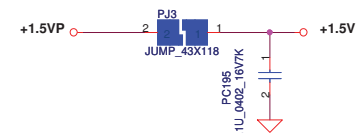
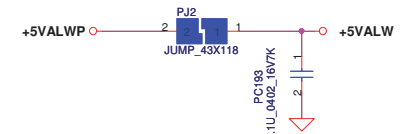
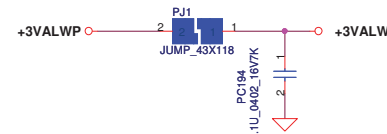
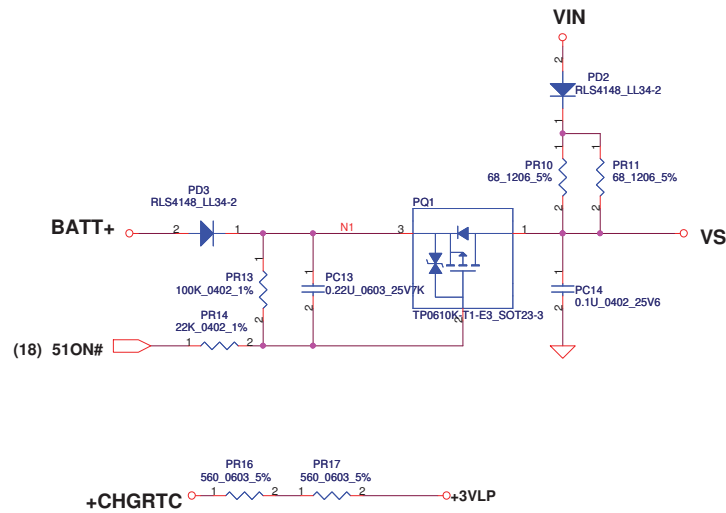
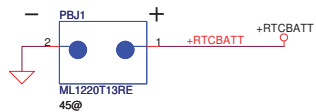
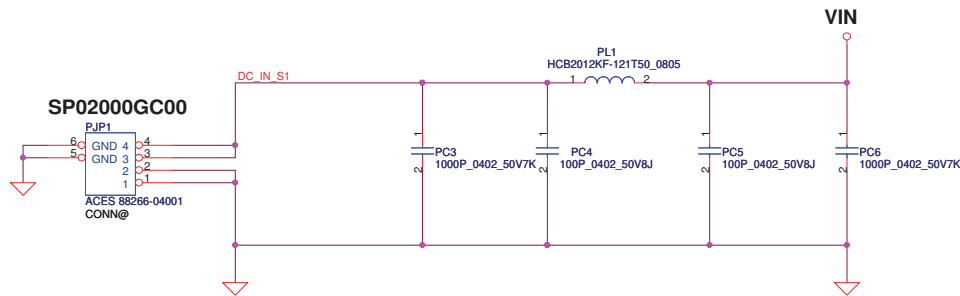
Change Q12,Q14,Q17,Q28 to SB00000DH00 2010/04/06  
Change C176,C219,C395 to SE080105K80 2010/04/06



Change Q6,Q8 to SB00000DH00 2010/04/06

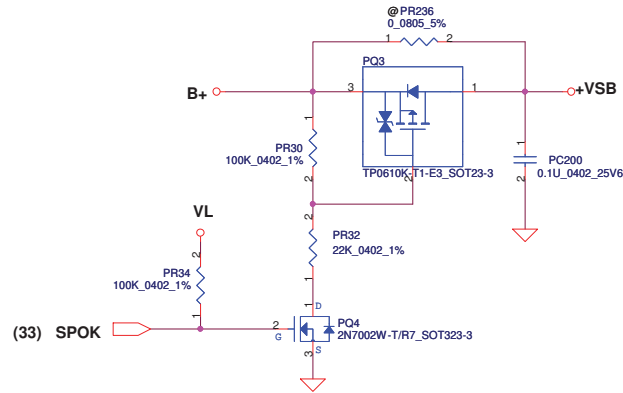
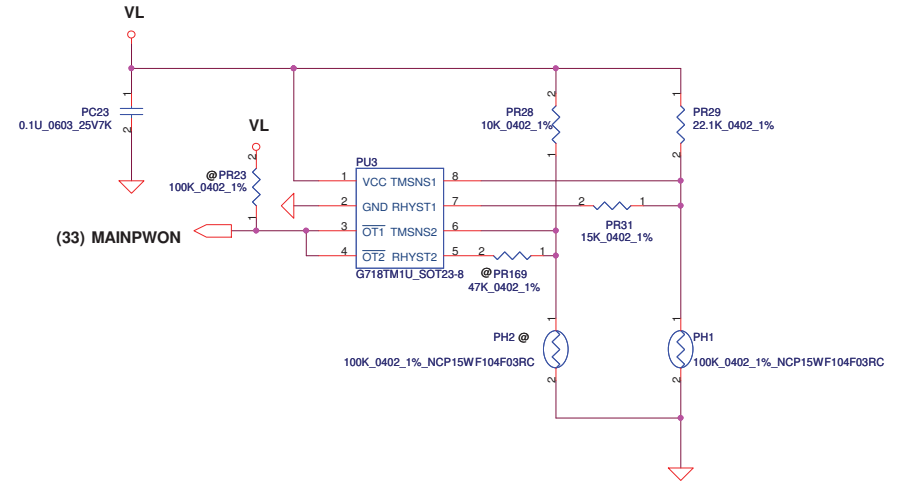
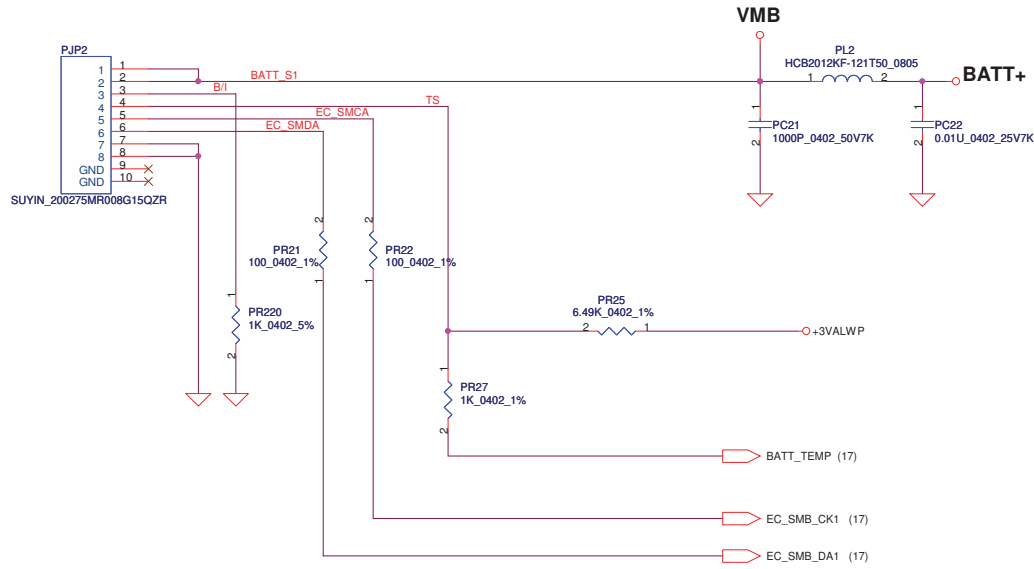


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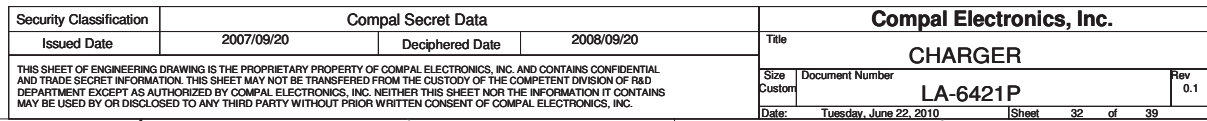


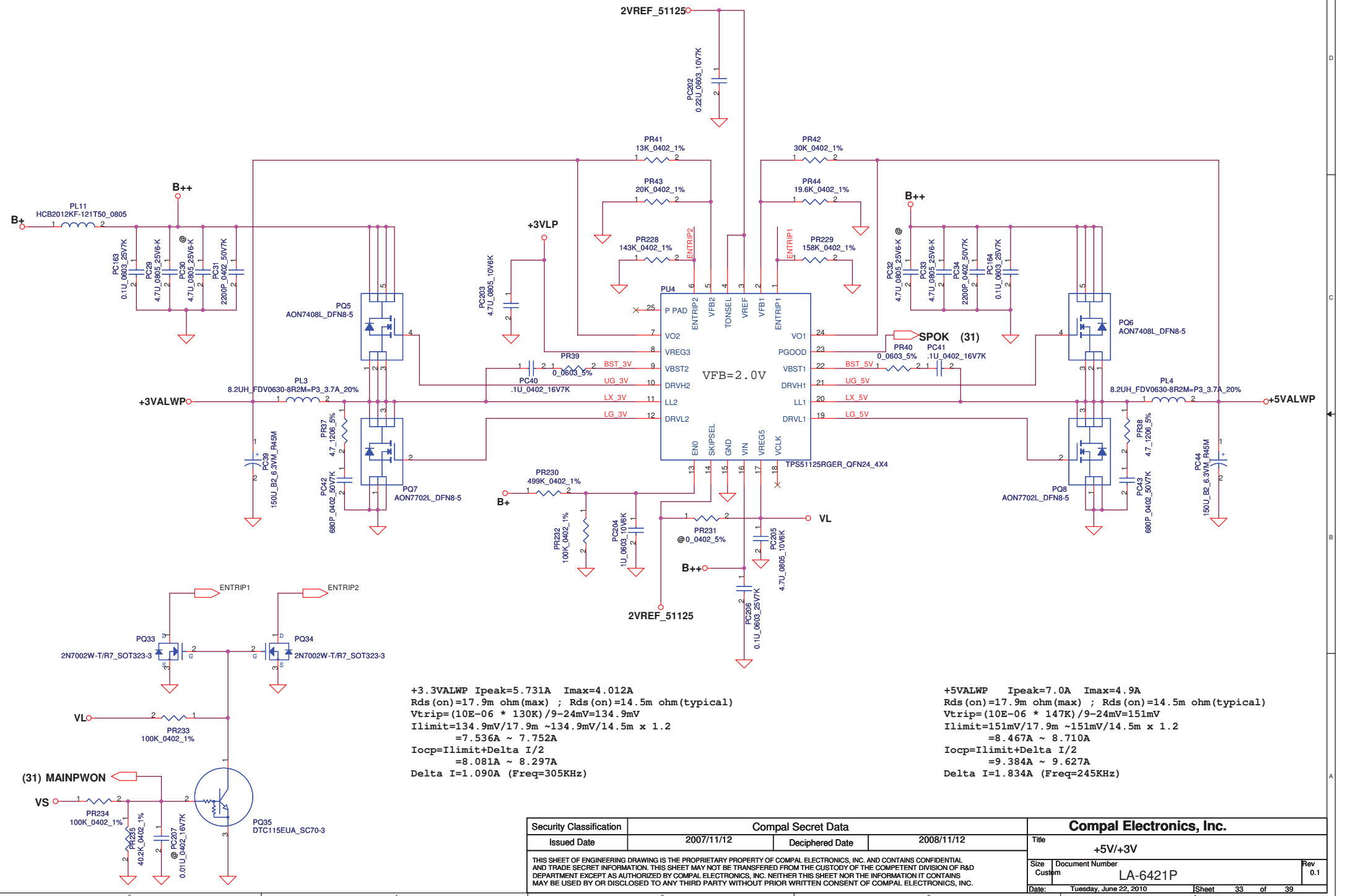
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PH1 under CPU botten side :  
CPU thermal protection at 92 degree C  
Recovery at 72 degree C



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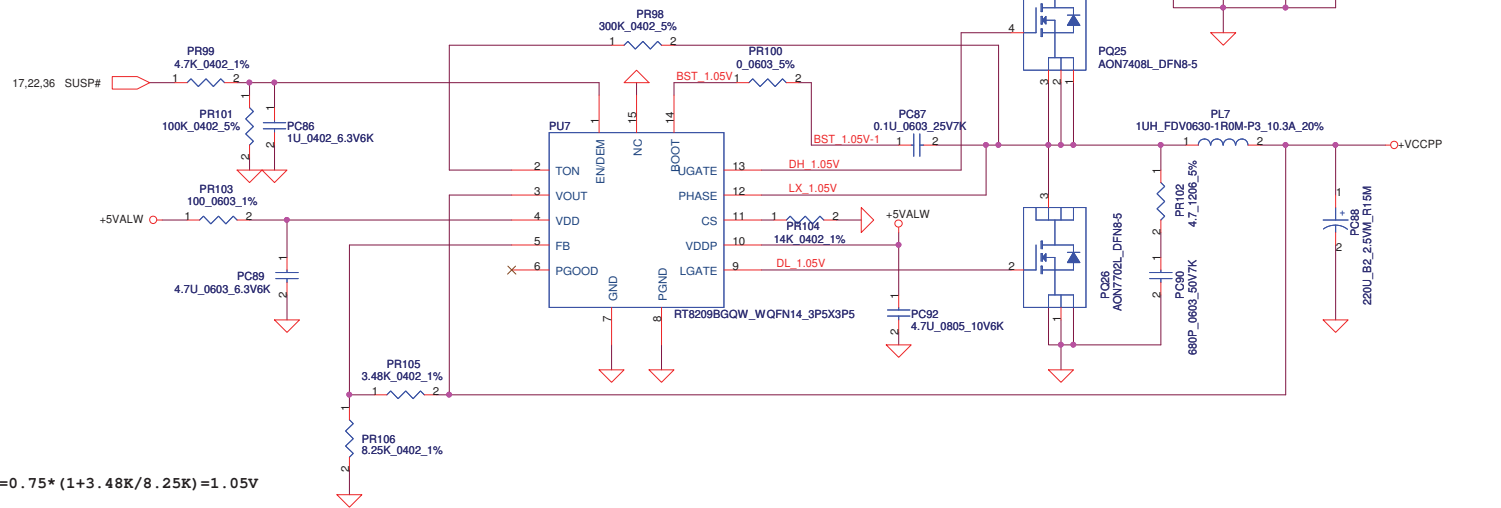
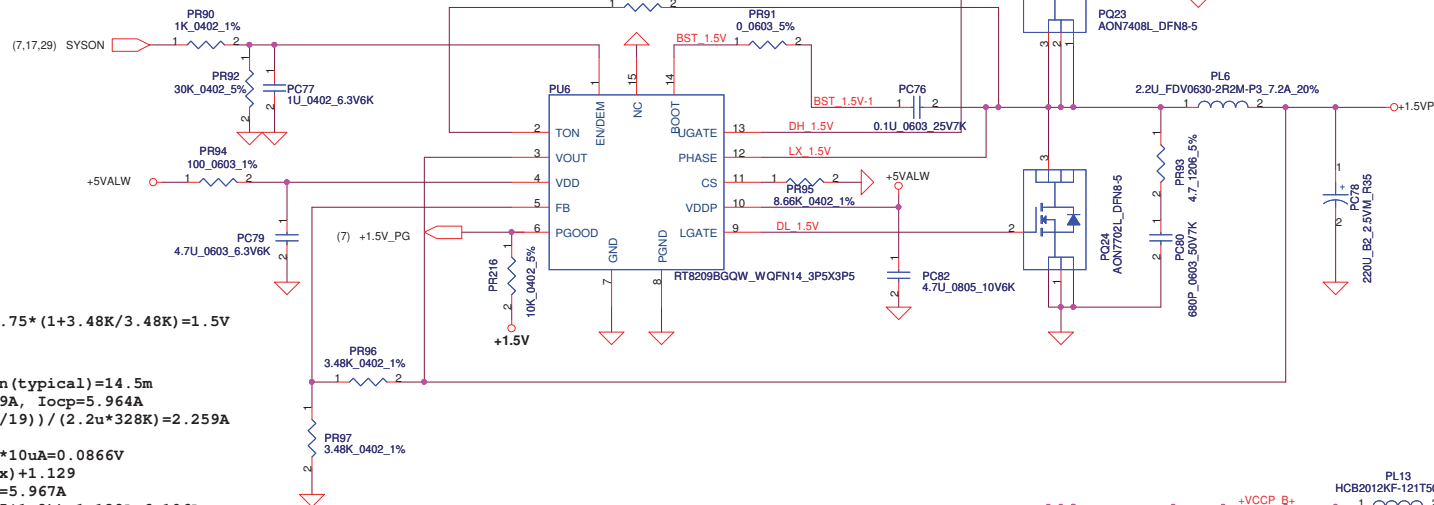




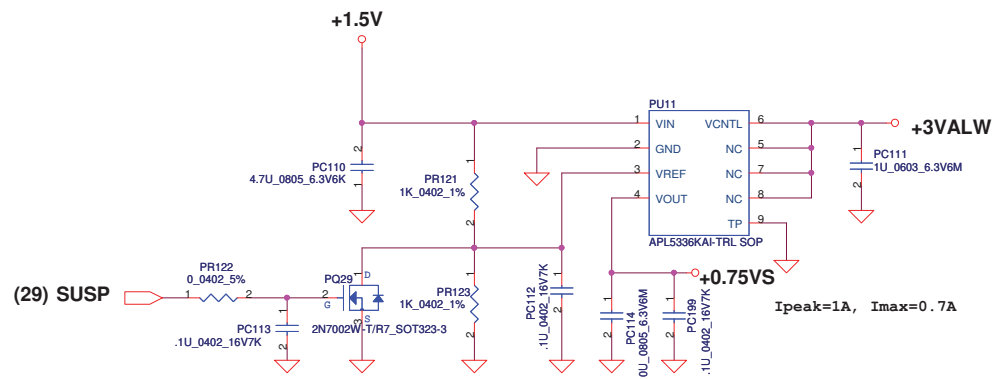
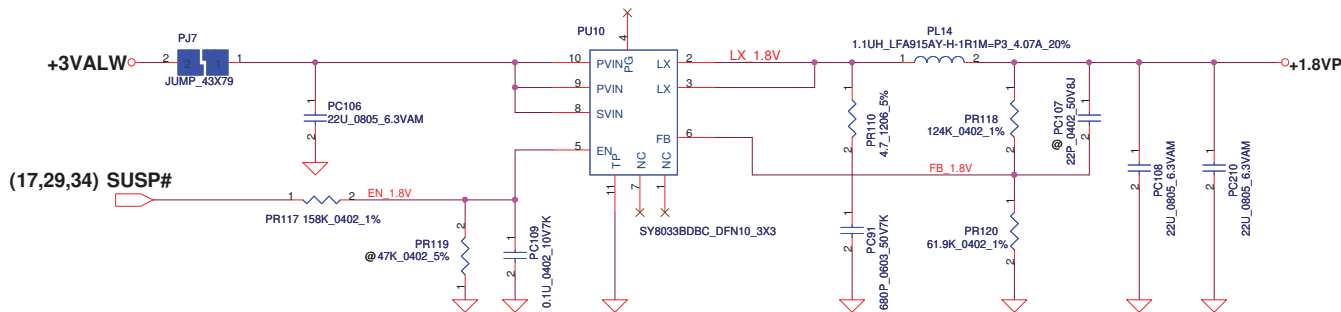
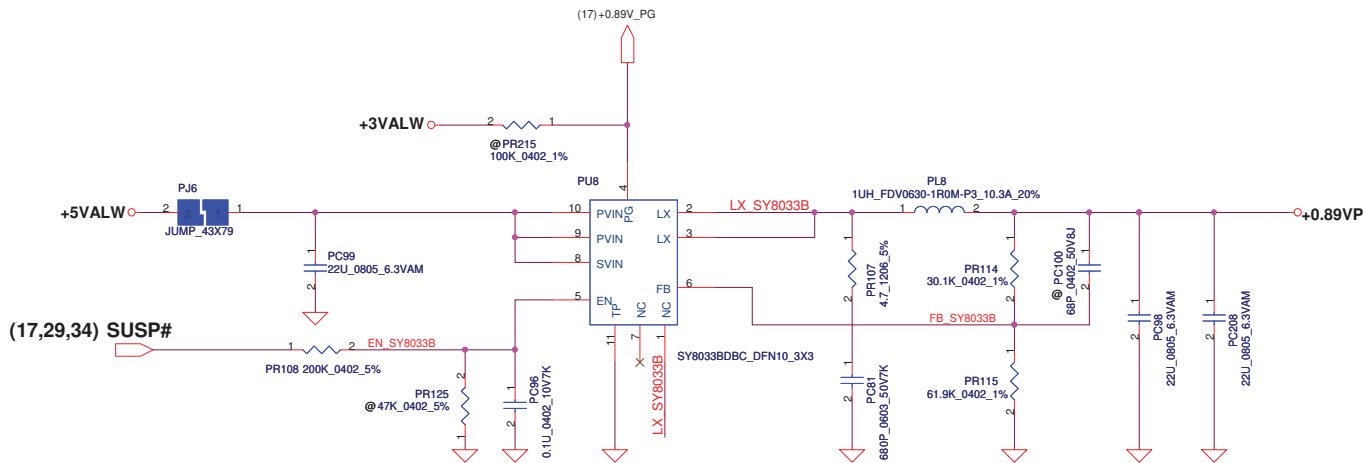
+3.3VALWP Ipeak=5.731A Imax=4.012A  
Rds(on)=17.9m ohm(max) ; Rds(on)=14.5m ohm(typical)  
Vtrip=(10E-06 \* 130K)/9-24mV=134.9mV  
Ilimit=134.9mV/17.9m ~134.9mV/14.5m x 1.2  
=7.536A ~ 7.752A  
Iocp=Ilimit+Delta I/2  
=8.081A ~ 8.297A  
Delta I=1.090A (Freq=305KHz)

+5VALWP Ipeak=7.0A Imax=4.9A  
Rds(on)=17.9m ohm(max) ; Rds(on)=14.5m ohm(typical)  
Vtrip=(10E-06 \* 147K)/9-24mV=151mV  
Ilimit=151mV/17.9m ~151mV/14.5m x 1.2  
=8.467A ~ 8.710A  
Iocp=Ilimit+Delta I/2  
=9.384A ~ 9.627A  
Delta I=1.834A (Freq=245KHz)

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## Version change list (P.I.R. List)

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	Change power solution	For design change	0.1	34	Change PU7 from SA000031D00(S IC RT8209BGQW WQFN 14P PWM) to SA00003RU00(S IC SY8033BDBC DFN 10P SINGLE BUCK)	2010.5.03	DVT
2	Change PU8 SY8033B Pin1 net	For design change	0.1	34	Change PU8 SY8033B Pin1 connect Pin2 & Pin3	2010.5.03	DVT
3	Change PC100	For design change	0.1	34	Change PC100 to SE071680J80 (S CER CAP 68P 50V J NPO 0402)	2010.5.03	DVT
4	Change PR105	For design change	0.1	32	Change PR105 from SD034100200(S RES 1/16W 10K +-1% 0402) to SD034100280 (S RES 1/16W 10K +-1% 0402 )	2010.5.13	DVT
5	Change PC30 & PC32 to non-pop	For cost down plan	0.1	33		2010.6.2	PVT
6	Change PL3,PL4,PL5,PL6,PL7,PL8, PL10,PL14	For TMP choke shortage issue	0.1		Change PL3,PL4,PL5 from SH00000J100 to SH00000BS00 Change PL6,PL10 from SH00000FD10 to SH000000700 Change PL7,PL8 from SH00000J300 to SH000007N00 Change PL14 from SH00000IS00 to SH00000HY00	2010.6.2	PVT
7	Change power solution	For design change	0.1	34	Change PU7 from SA00003RU00(S IC SY8033BDBC DFN 10P SINGLE BUCK) to SA000031D00(S IC RT8209BGQW WQFN 14P PWM)	2010.6.8	PVT
8	Change PD10.PD13.PC58.PR64. PQ18 to non-pop Change PR84 to pop	For cost down plan	0.1	33		2010.6.10	PVT
9	Modify CPU CORE OCP for N550	Design change for N550 CPU	0.1	32	Add PR209 = SD034357180 (3.57K_0402_1%) @N550 PR209 = SD034357180 (2.37K_0402_1%) @N4XX series	2010.6.10	PVT
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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1							
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<2010/03/25>  
. P06 - Add C1217, C1218 for +0.89V  
. P08 - Add R1442, R1443  
. P09 - Add R1444, R1445 for DMIC  
. P10 - L12, L14, L15 change to SM010000200  
. P23 - Add JP24 for cardreader connector

<2010/06/28>  
. P04 - Change C239 BOM structure to 3G@  
. P17 - Change C528, C530, C531 BOM structure to 3G@

<2010/03/26>  
. P27 - Add R1448, R1449, R1450,R1451,R1452  
JP22 change to SP02000H500

<2010/04/06>  
. P10 - Change L12. L14, L15 to SM01000C600  
. P26 - Add R1453  
. P21 - Change Y6 to SJ100005900  
. P25 - Change Y5 to SJ100003300  
Change C847,C865,C870,C873,C875,C876 SE000000K80  
. P13 - Change X1,Y3,Y7 to SJ132P7KW10  
. P22 - Change U26 to SA00001N000  
. P29 - Change Q6,Q8,Q10,Q12,Q14,Q17,Q24,Q28 to SB000000DH00  
Change C176,C219,C230,C395 to SE080105K80  
. P07 - Change C116,C141 to SE076104K80

<2010/04/14>  
. P06 - Del C1218 2010/04/14  
. P08 - Del C1219, R1442 change Y1 to SJ100009H00  
. P27 - Add TPM@ GSEN@ for PAV70

<2010/05/03>  
. P04 - R354, R347, R348 nu-mount  
. P13 - Change R152 to SD034226A80(22.6ohm\_0402)  
. P13 - Change R241 to SD028100280(10Kohm\_0402)  
. P13 - R1376, R1377 nu-mount  
. P16 - Add JBATT1 CONN.  
. P17 - Change U76 to SA00001V400  
. P17 - Change R1292 to SD028820180

<2010/05/04>  
. P16 - Change JBATT1 NET to +RTCBATT1  
. P27 - Add J15, J16

<2010/05/06>  
. P10 - Change L12, L14 and L15 footprint  
. P27 - Del J15, J16 ; Add R1457, R1458  
. P27 - U81.15 connect to GND

<2010/05/24>  
. P04 - Change U71 to SA00003WBA0(N475@) and SA00003WAB0(N455@)  
. P08 - Change C161, C164 to SE071330J80(33P 50V J NPO 0402)  
. P08 - Change C388 to SE071100J80(10P 50V J NPO 0402)  
. P22 - Change C473 to SE107475K80(4.7U 6.3V K X5R 0603)

<2010/06/01>  
. P13 - Add NET: EC\_CLK  
. P17 - Add R1459, R1460 for Reserve EC\_CLK  
. P17 - Change U6.36 NET to PWR\_LED1#  
. P18 - Change NET from PWR\_LED# to PWR\_LED1#

<2010/06/07>  
. P06 - Change C239 footprint to 0805 size  
. P17 - Del JP23  
. P26 - Change R1325 to 100k-ohm

<2010/06/25>  
. P04 - Change C311 BOM configure to un-mount  
. P09 - Change C1109, C1111, C1112, C1156 BOM configure to 3G@  
. P15 - Change C1163~C1166, C504~C508, C850 BOM configure to MCP@  
. P17 - Change C528, C530, C531 BOM configure to un-mount  
. P10 - Change D17, D18 BOM configure to un-mount  
. P22 - Change D22 BOM configure to un-mount  
. P23 - Change D44, D45 BOM configure to un-mount

Title			
<Title>			
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