

Compal Confidential

PAV70 DDR3 Schematics Document

Intel Pineview Processor with Tigerpoint + DDRIII

2010-06-25

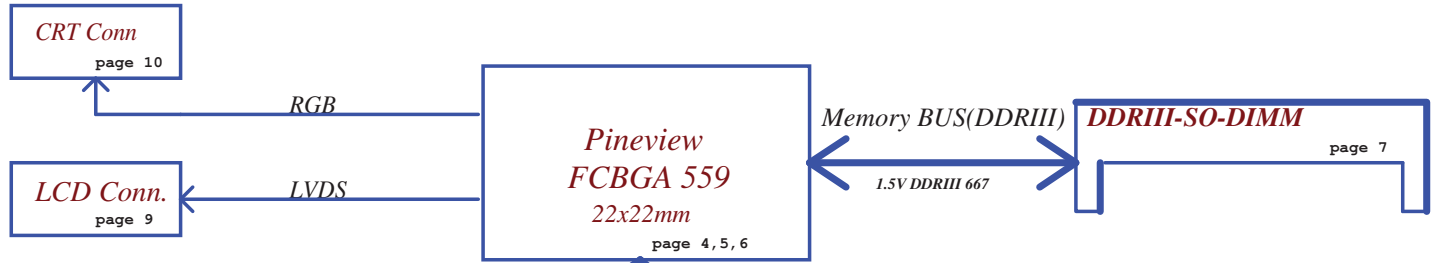
REV: 1.0

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				Size B	Document Number	Rev
				Date:	Friday, June 25, 2010	Sheet 1 of 39

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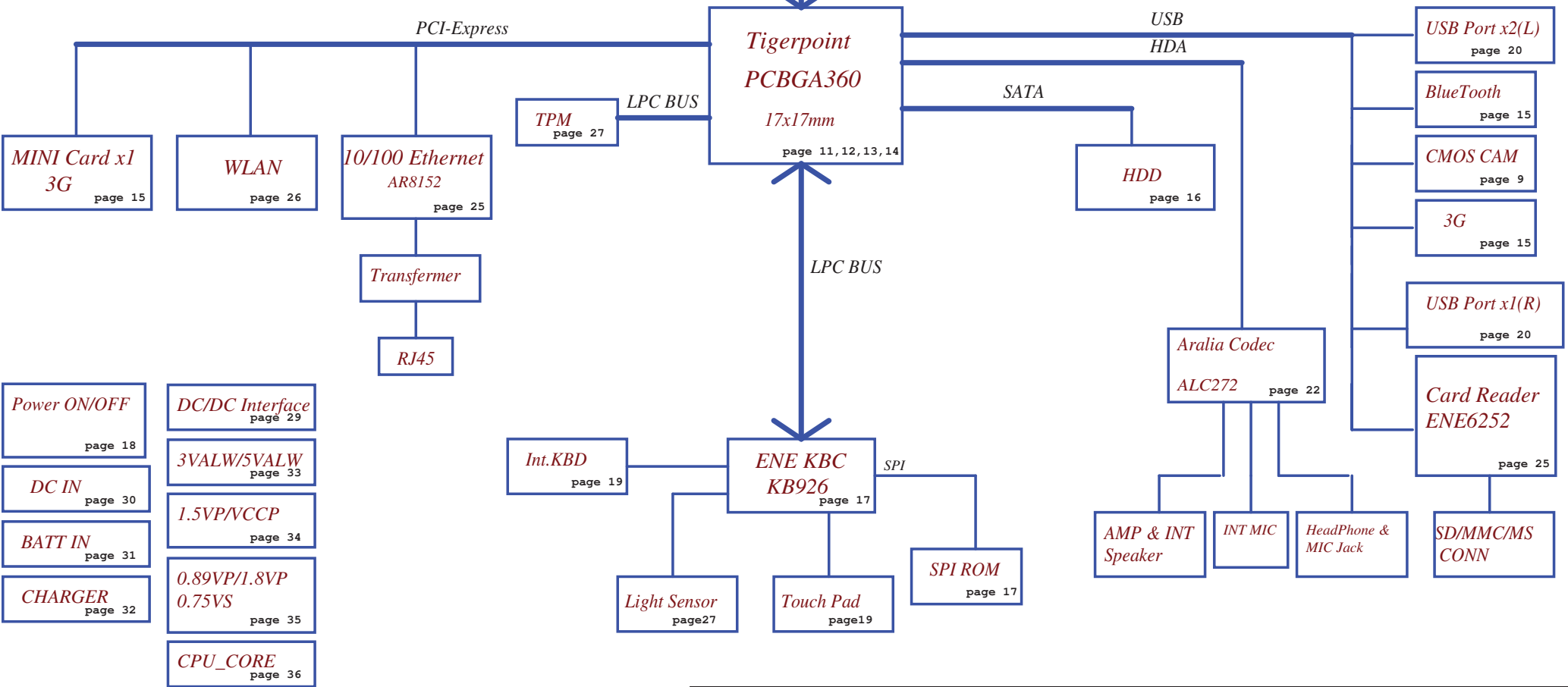
Model Name : PAV50
File Name : LA-6421P

Clock Generator
CK505
page 8



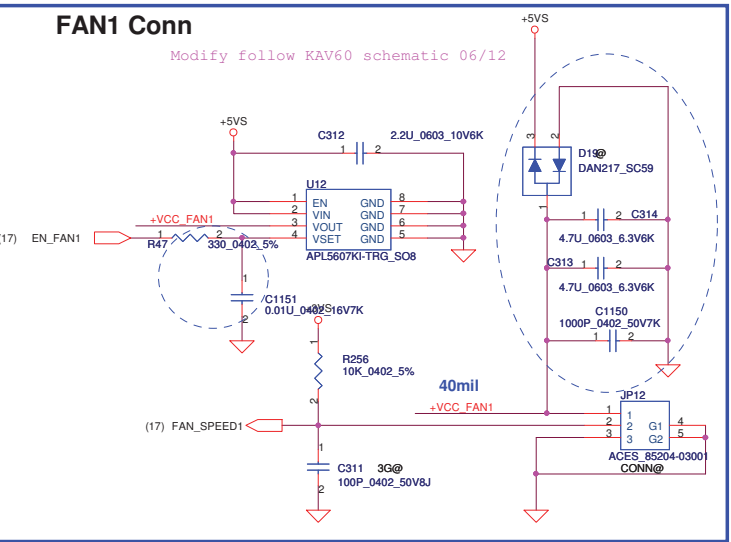
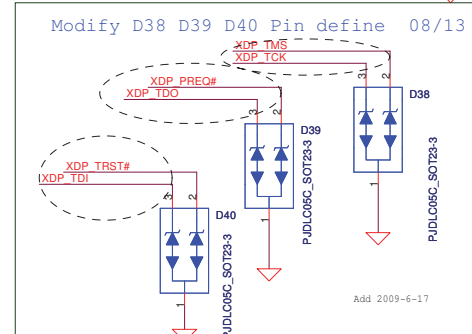
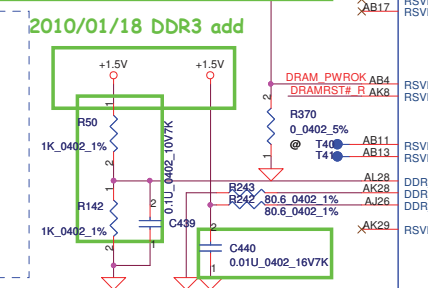
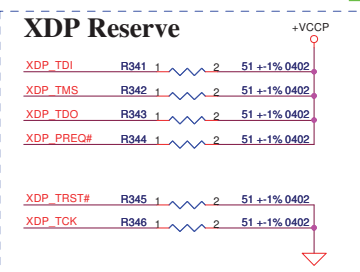
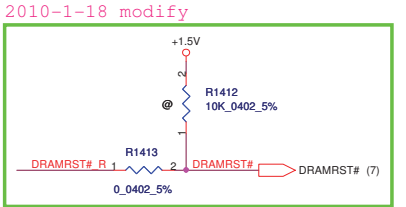
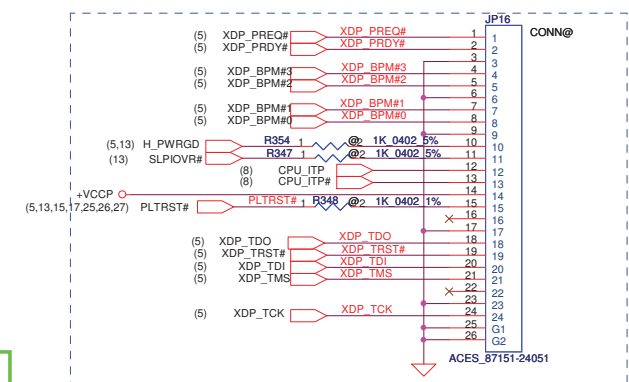
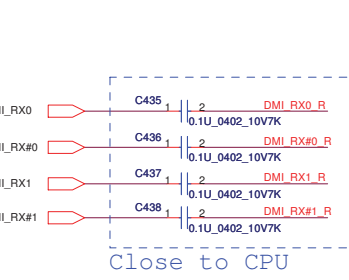
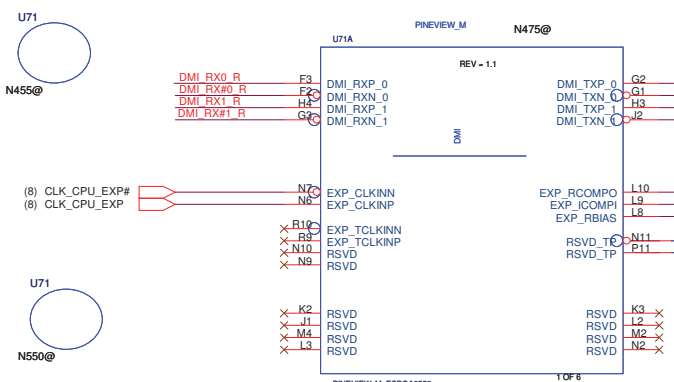
Thermal Sensor
EMC1402
page 5

DMI
X2 mode
GEN1



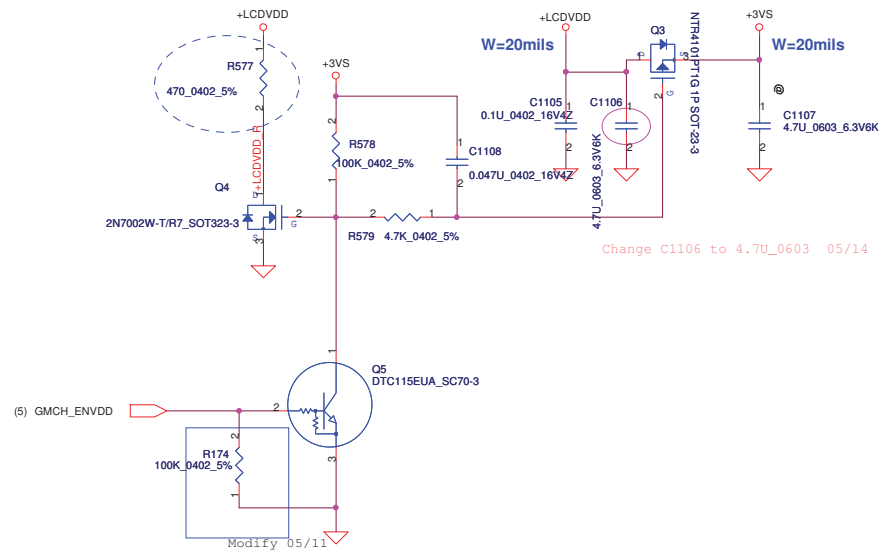
- Power ON/OFF (page 18)
- DC IN (page 30)
- BATT IN (page 31)
- CHARGER (page 32)
- DC/DC Interface (page 29)
- 3VALW/5VALW (page 33)
- 1.5VP/VCCP (page 34)
- 0.89VP/1.8VP 0.75VS (page 35)
- CPU_CORE (page 36)

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				Block Diagrams		
				LA-6421P		
				Date:	Friday, June 25, 2010	Sheet 2 of 39



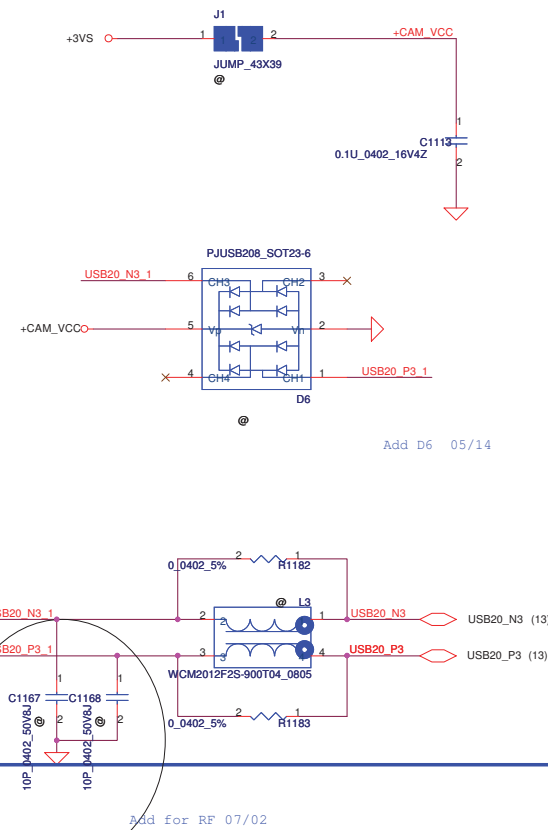
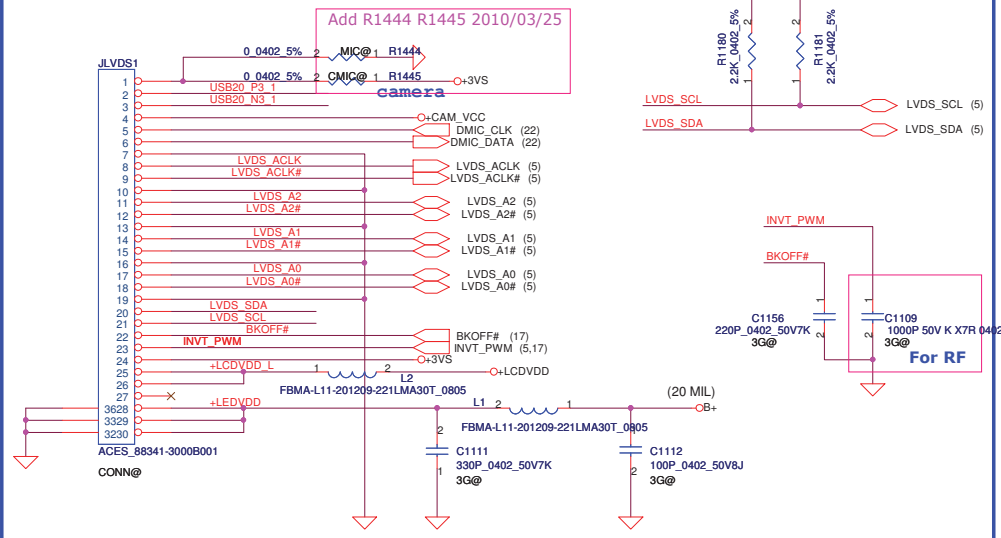
LCD POWER CIRCUIT

Change R577 to 0402 SIZE 06/16

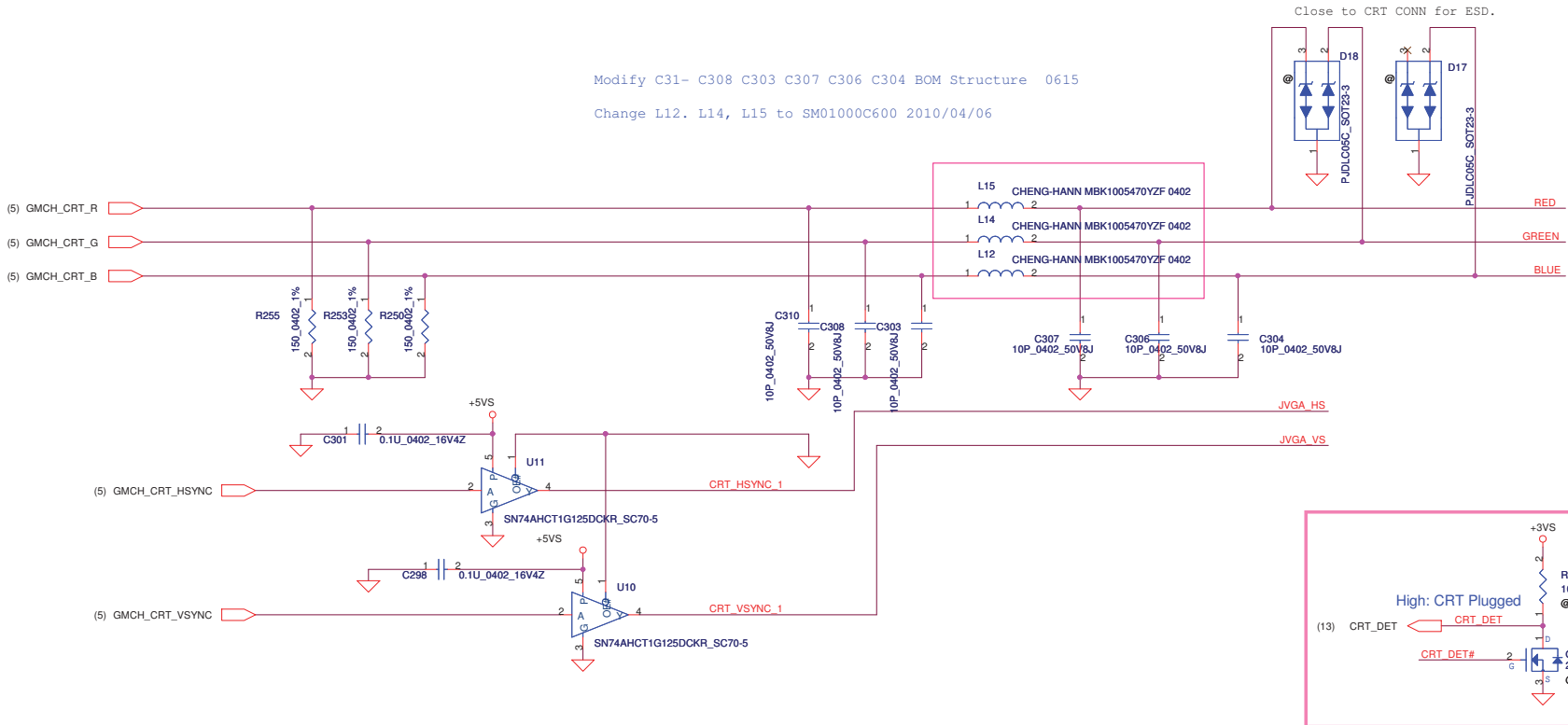


CMOS & LCD/PANEL BD. Conn.

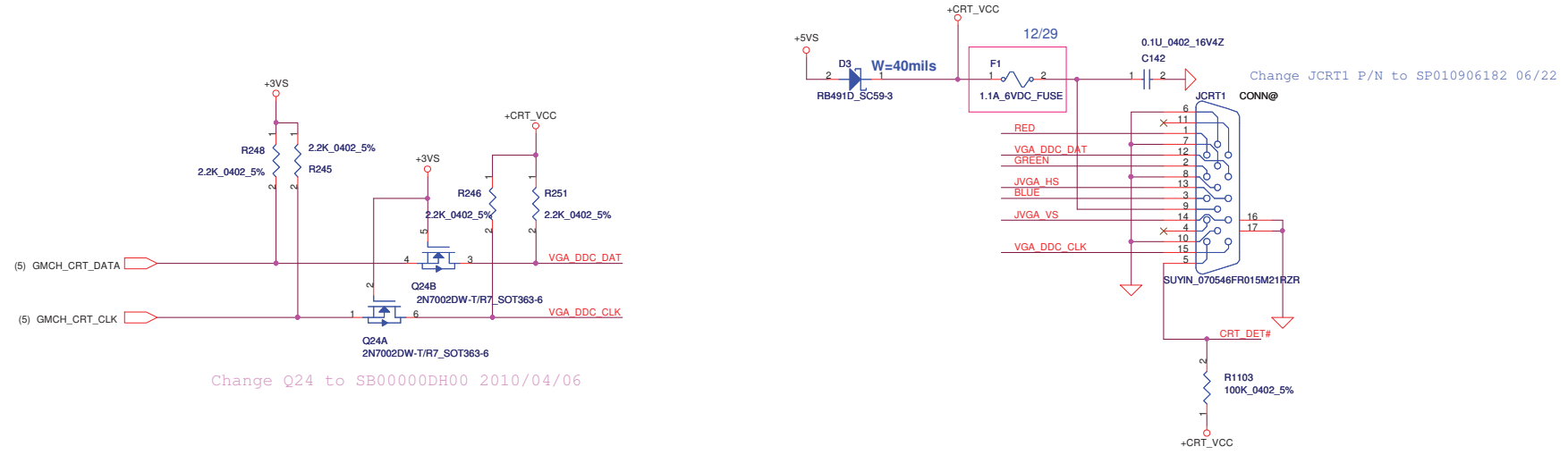
Modify JLVDS1 08/04



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				Date: Friday, June 25, 2010	Sheet 9	of 39

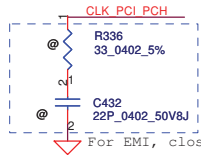


CRT PORT

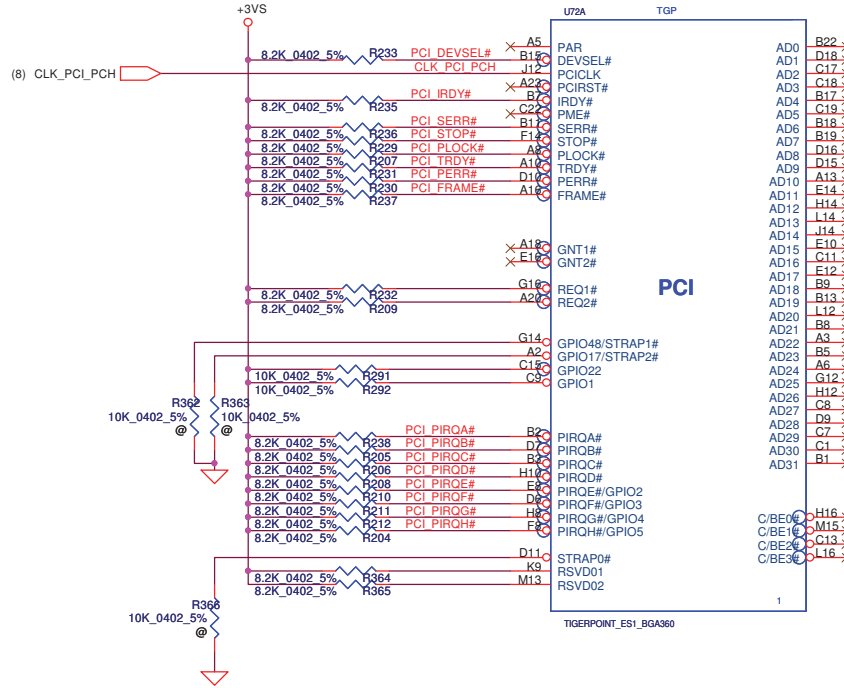


Change Q24 to SB00000DH00 2010/04/06

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				LA-6421P	
				Date:	Tuesday, June 22, 2010
				Sheet	10 of 39



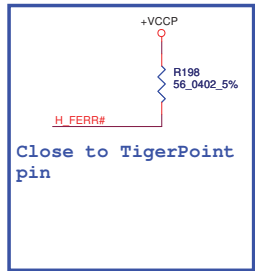
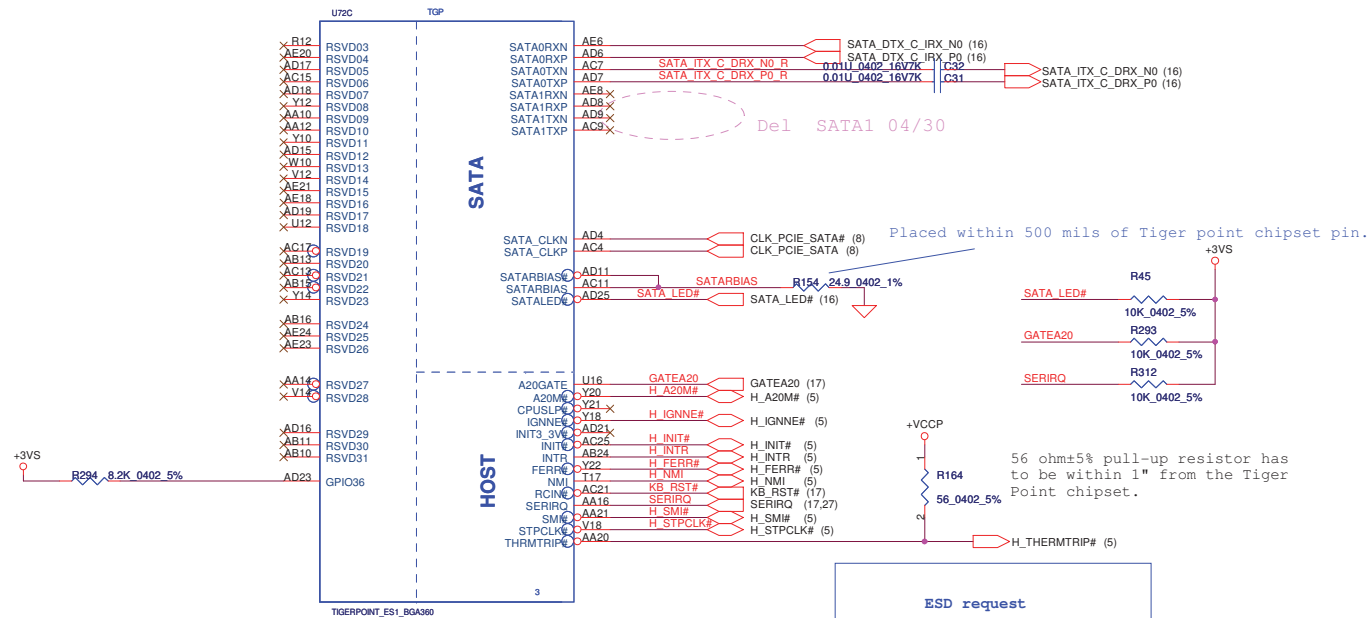
For EMI, close to TigerPoint



(27) G_SENSOR_INT PCI_PIRQE#

Add for G-sensor interrupt 2010/03/11

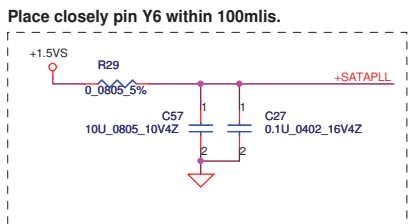
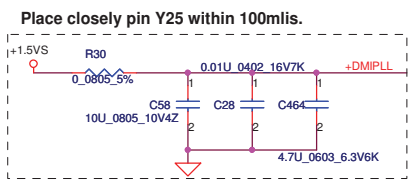
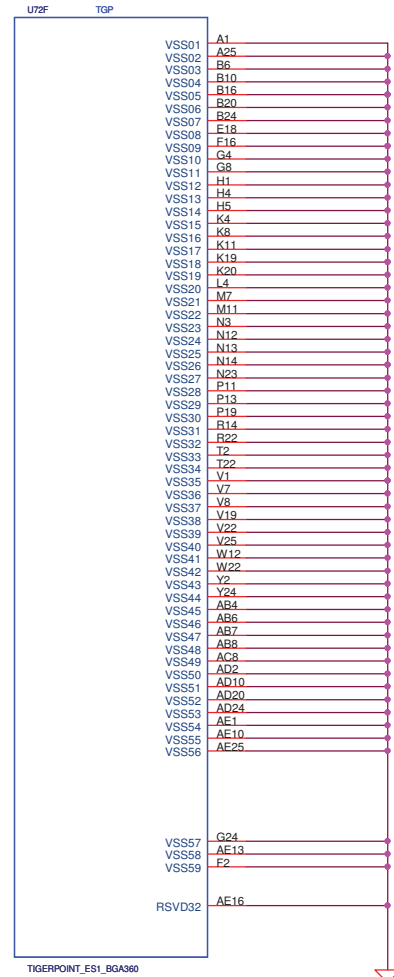
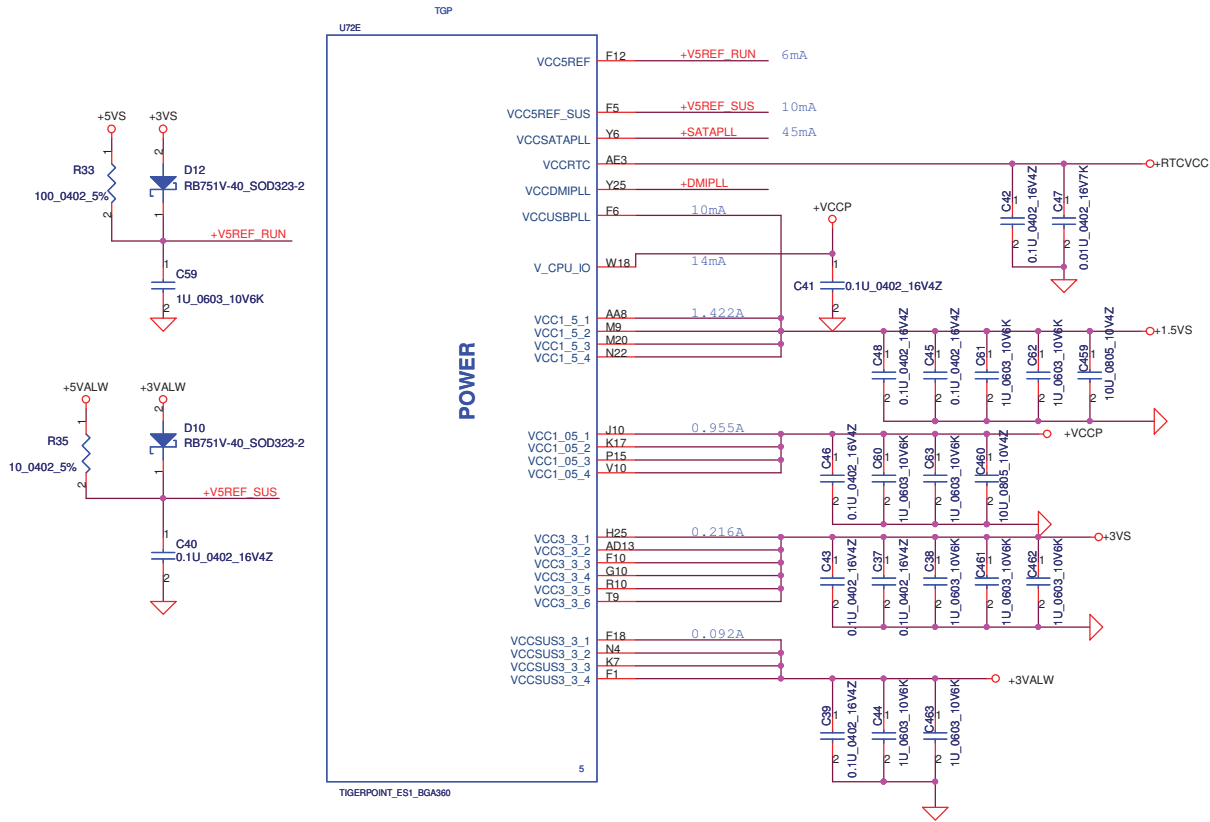
STRAP2# GPIO17	STRAP1# GPIO48	Boot BIOS
0	1	SPI
1	0	PCI
1	1	LPC



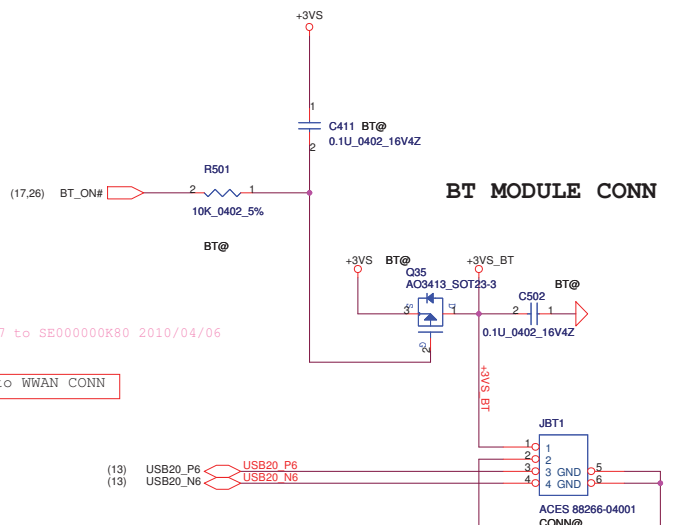
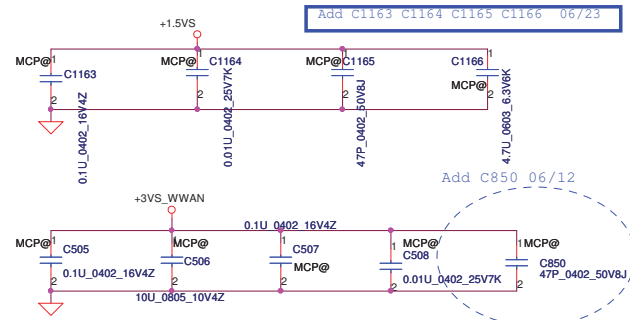
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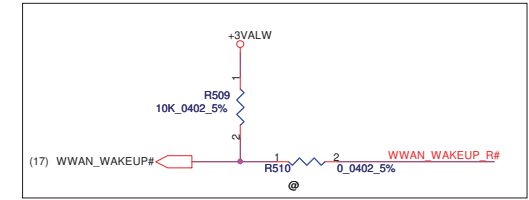
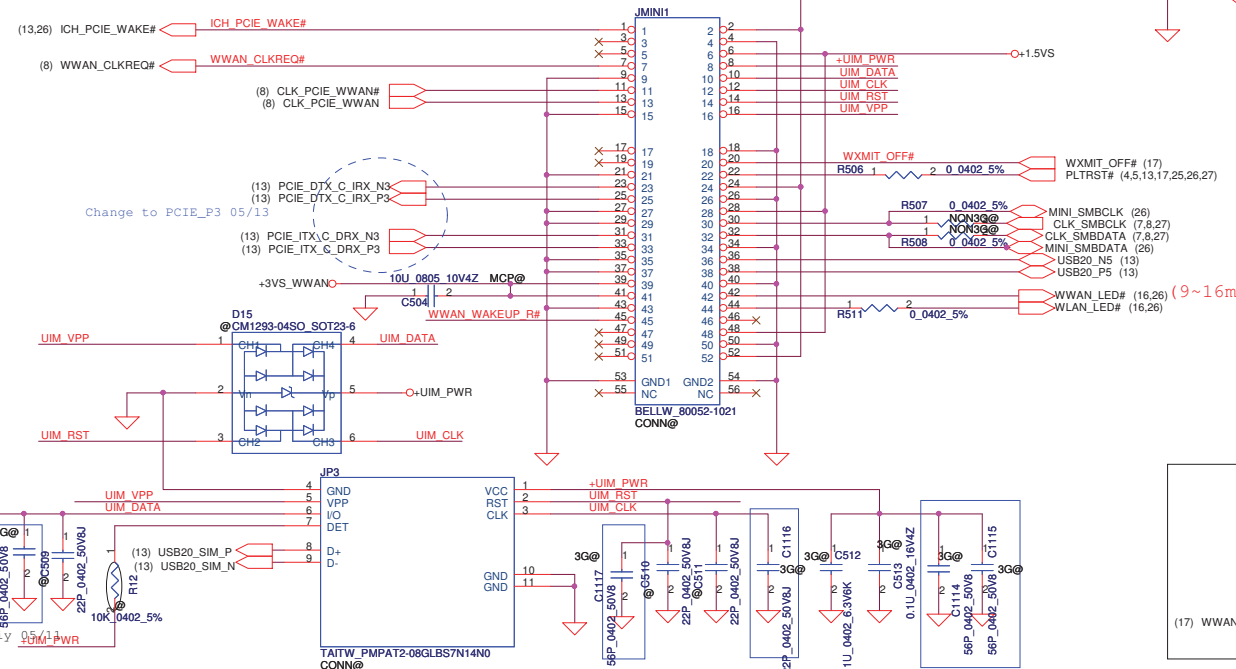
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Title		
Tigerpoint(2/4)		
Size	Document Number	Rev
Custom	LA-6421P	0.1
Date:	Thursday, June 03, 2010	Sheet 12 of 39



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				Custom	0.1
				Document Number	LA-6421P
				Date:	Thursday, March 25, 2010
				Sheet	14 of 39



Change JMINI1 to FOX_AS0B246-S50U-7F_52P-T 06/29



Modify 05/11
Reserve for SIM card does not meet rise time and pull-up is needed.

Add C1115 C1114 C1116 C1117 C1118 05/11
Change C512 to 1U_0402 05/14

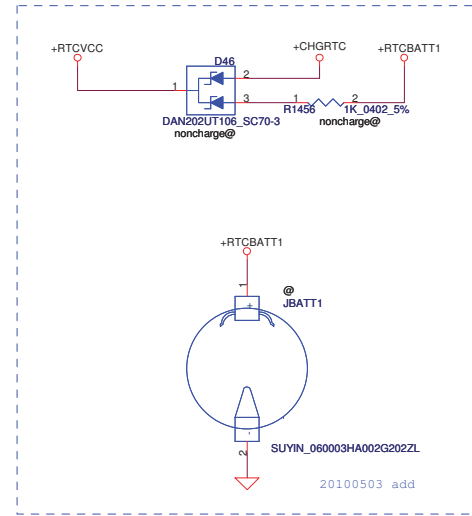
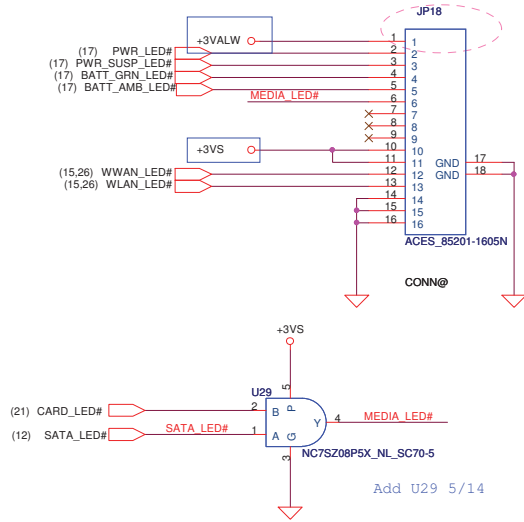
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Size	Document Number	Date: Monday, June 28, 2010		Sheet	15 of 39
	LA-6421P	Rev	0.1		

ADD LED PCB CONN 06/12

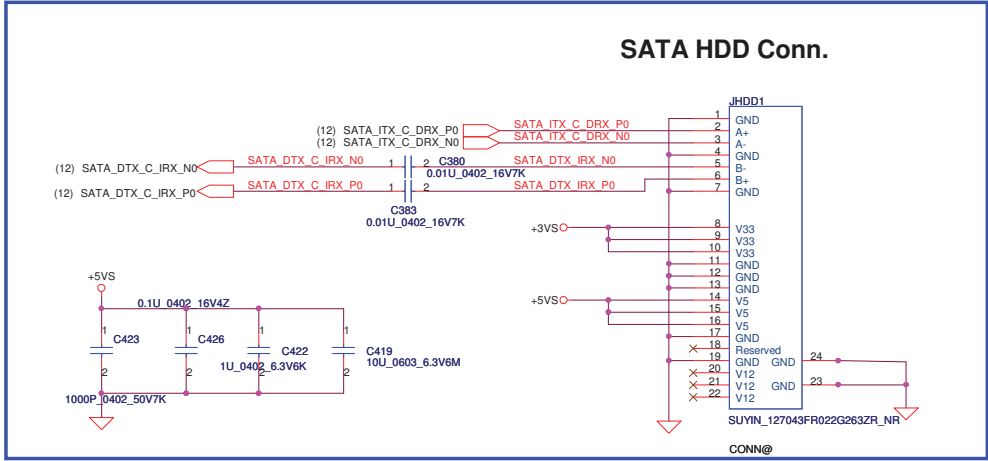
Change JP18 to NEW P/N 06/23

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

LED PCB CONN

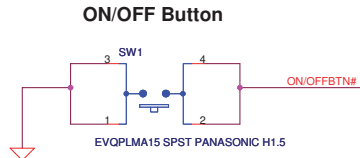
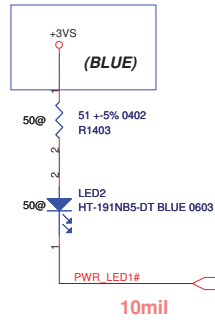


SATA HDD Conn.

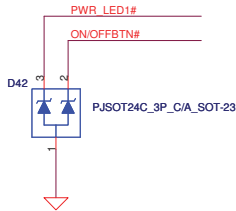
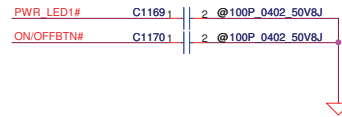


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Date: Thursday, June 03, 2010				Sheet	16	of 39

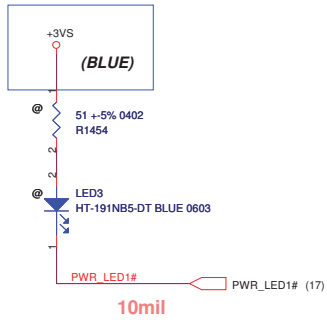
Add For NAV50 07/06
09/03 Change +5VS to +3VS



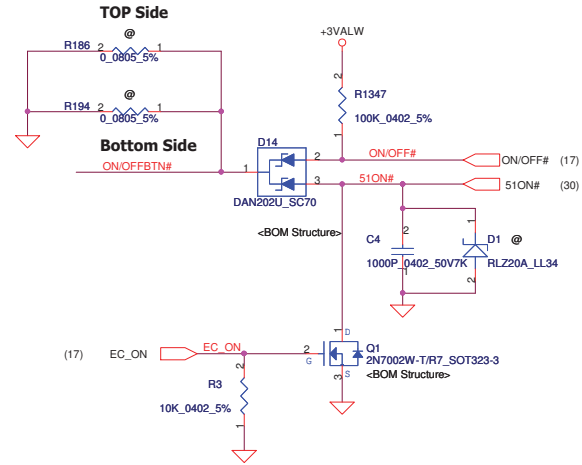
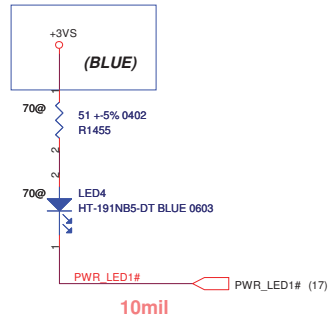
FOR EMI



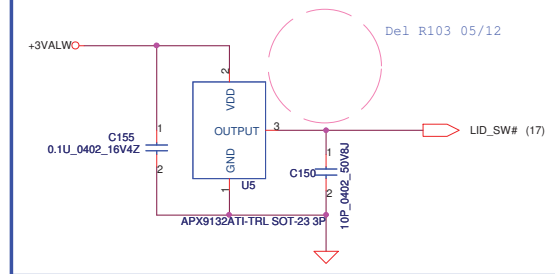
Add For PAV70 2010/04/09



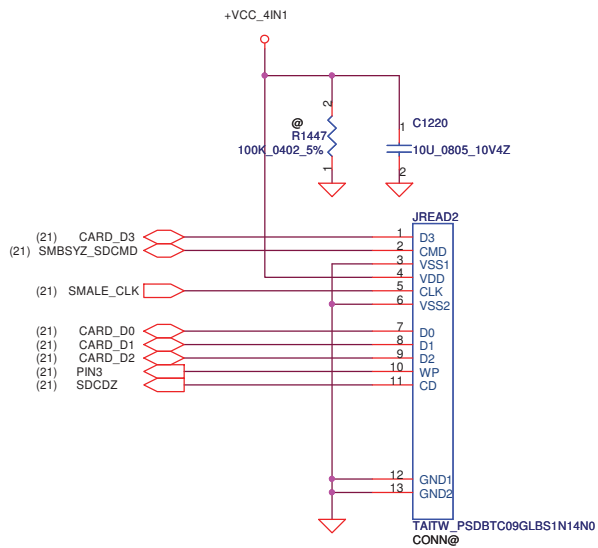
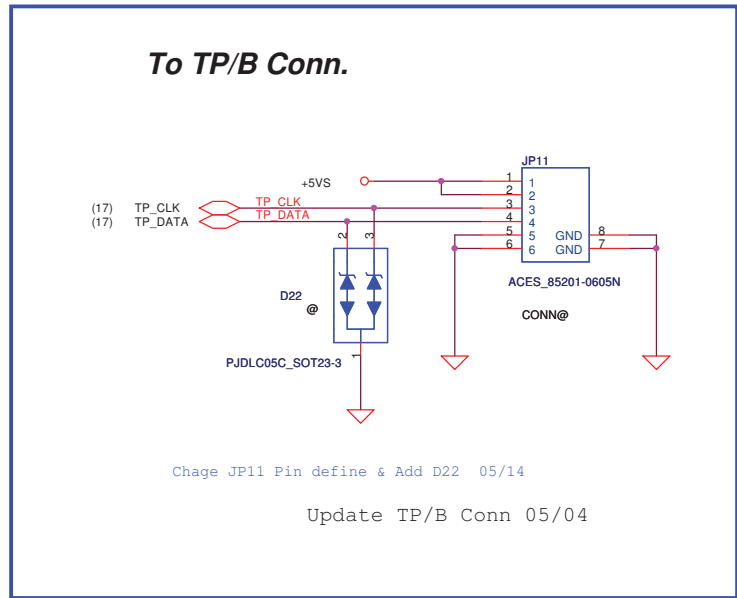
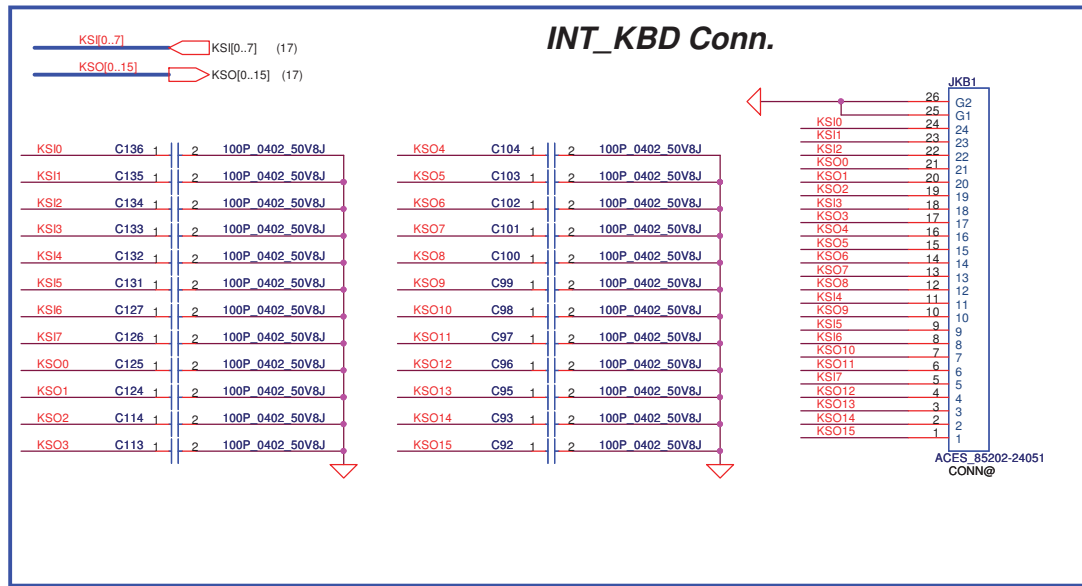
Add For PAV70 2010/04/09



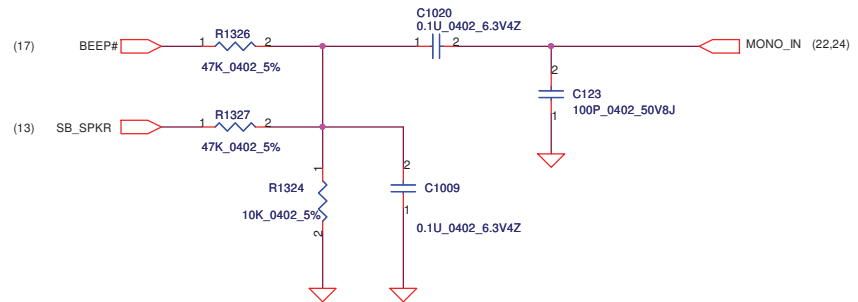
LID Switch



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Size	Document Number		Rev	
B	LA-6421P		0.1	
Date:	Thursday, June 03, 2010	Sheet	18	of 39

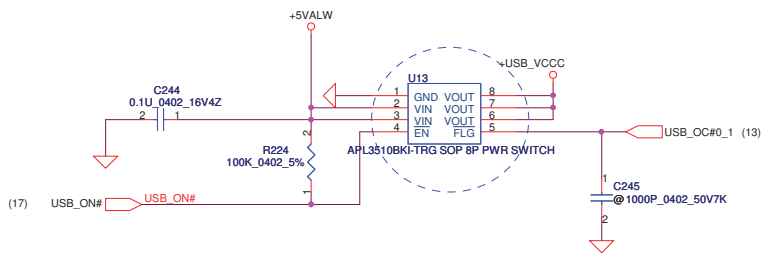


6/26 Add circuit



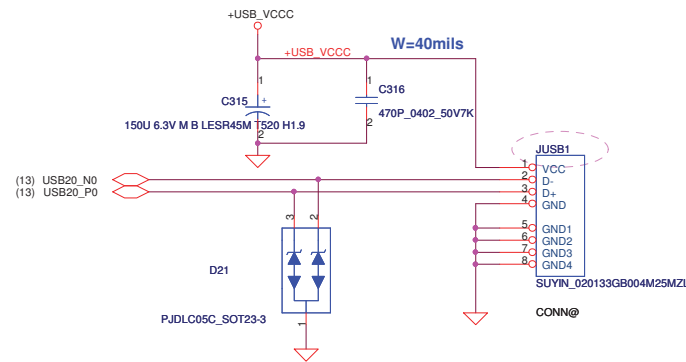
Modify MONO_IN schematic, move some parts to I/O Board, Add the MONO_IN_R on M/B 06/25

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Size	Document Number	Rev		0.1	
B	LA-6421P				
Date:	Tuesday, June 22, 2010	Sheet	19	of	39

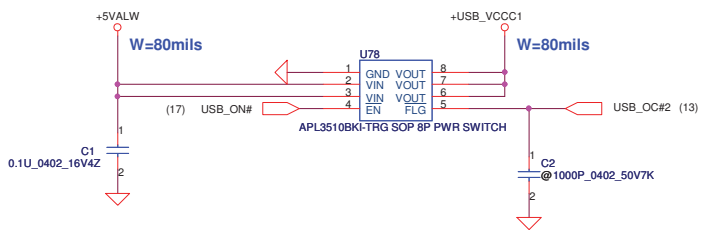
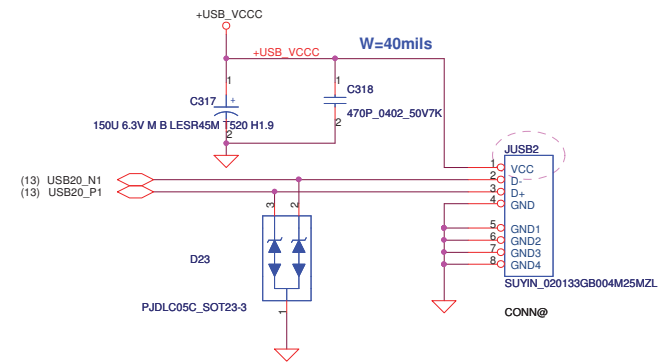


USB CONN.1

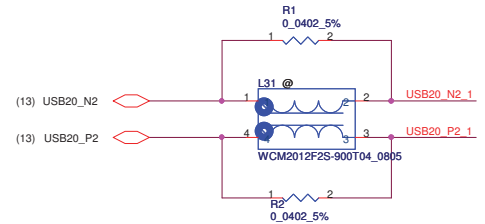
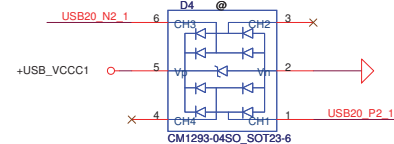
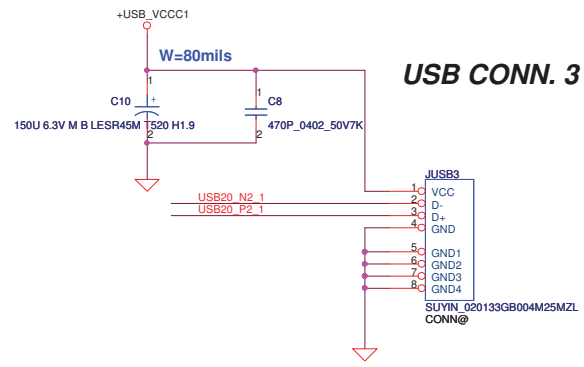
Change JUSB1 JUSB2 to NEW P/N SP010906181 06/23



USB CONN.2

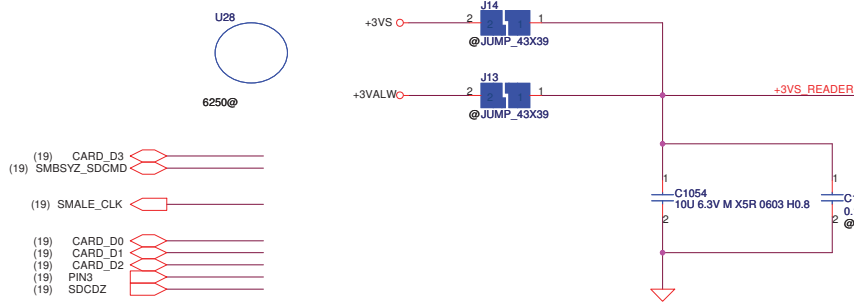


USB CONN. 3

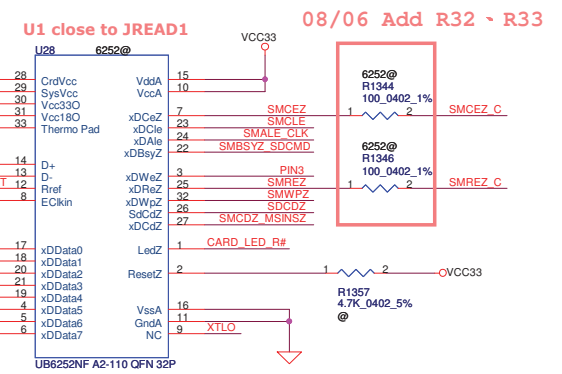


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				Size B	Document Number	Rev 0.1
				LA-6421P		
				Date:	Thursday, June 03, 2010	Sheet 20 of 39

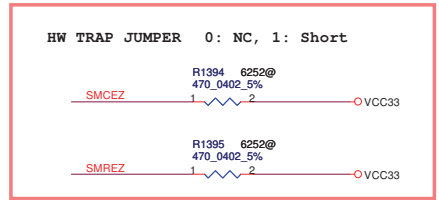
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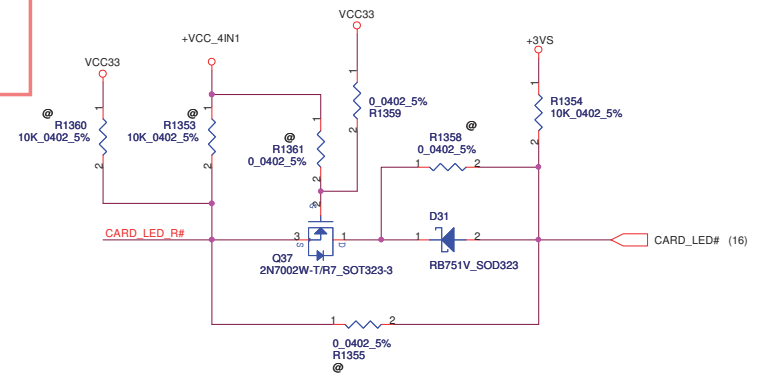
- (19) CARD_D3
- (19) SMBSYZ_SDCMD
- (19) SMALE_CLK
- (19) CARD_D0
- (19) CARD_D1
- (19) CARD_D2
- (19) PIN3
- (19) SDCDZ



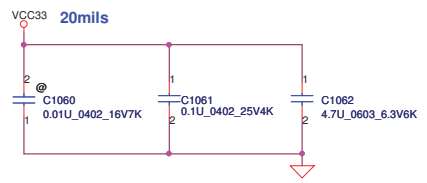
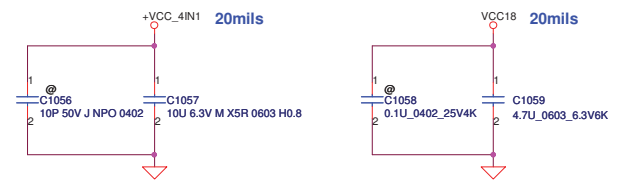
08/06 Add R1347 ~ R1348



If use external crystal (Y4), U1 will change UB6252



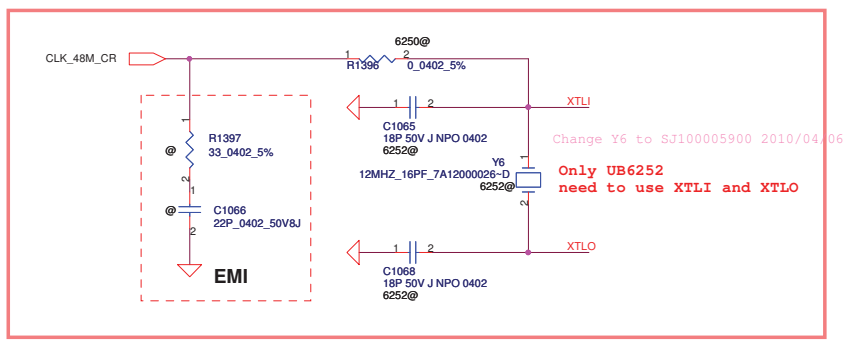
C1048 - C1049 close to U1



ByPass Capacitors

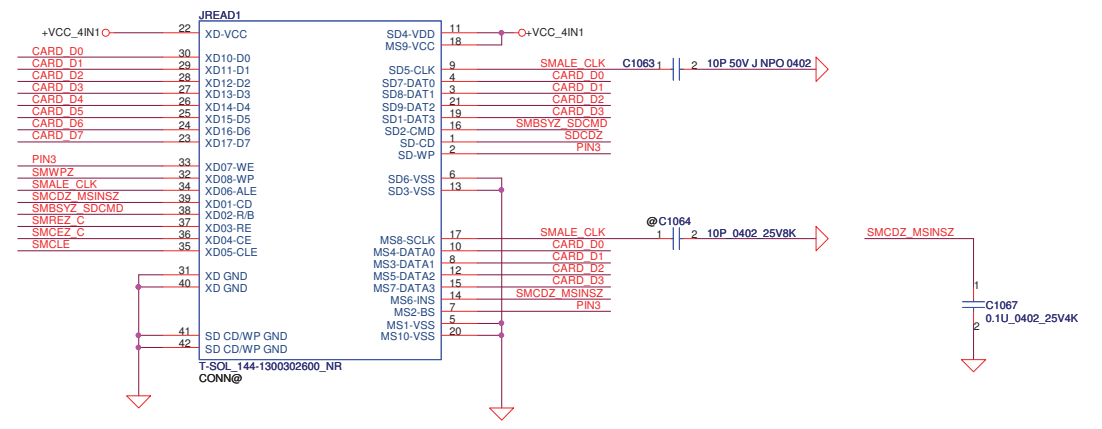
07/02 Revised C1053 to 0.01u

4/30 Add CLK_SD_48M

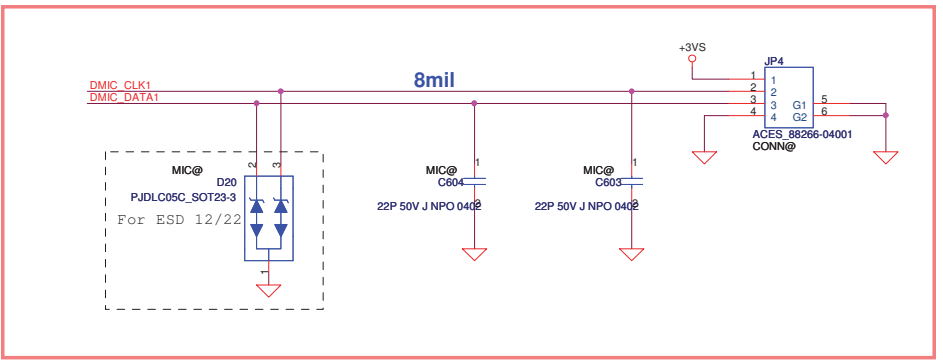
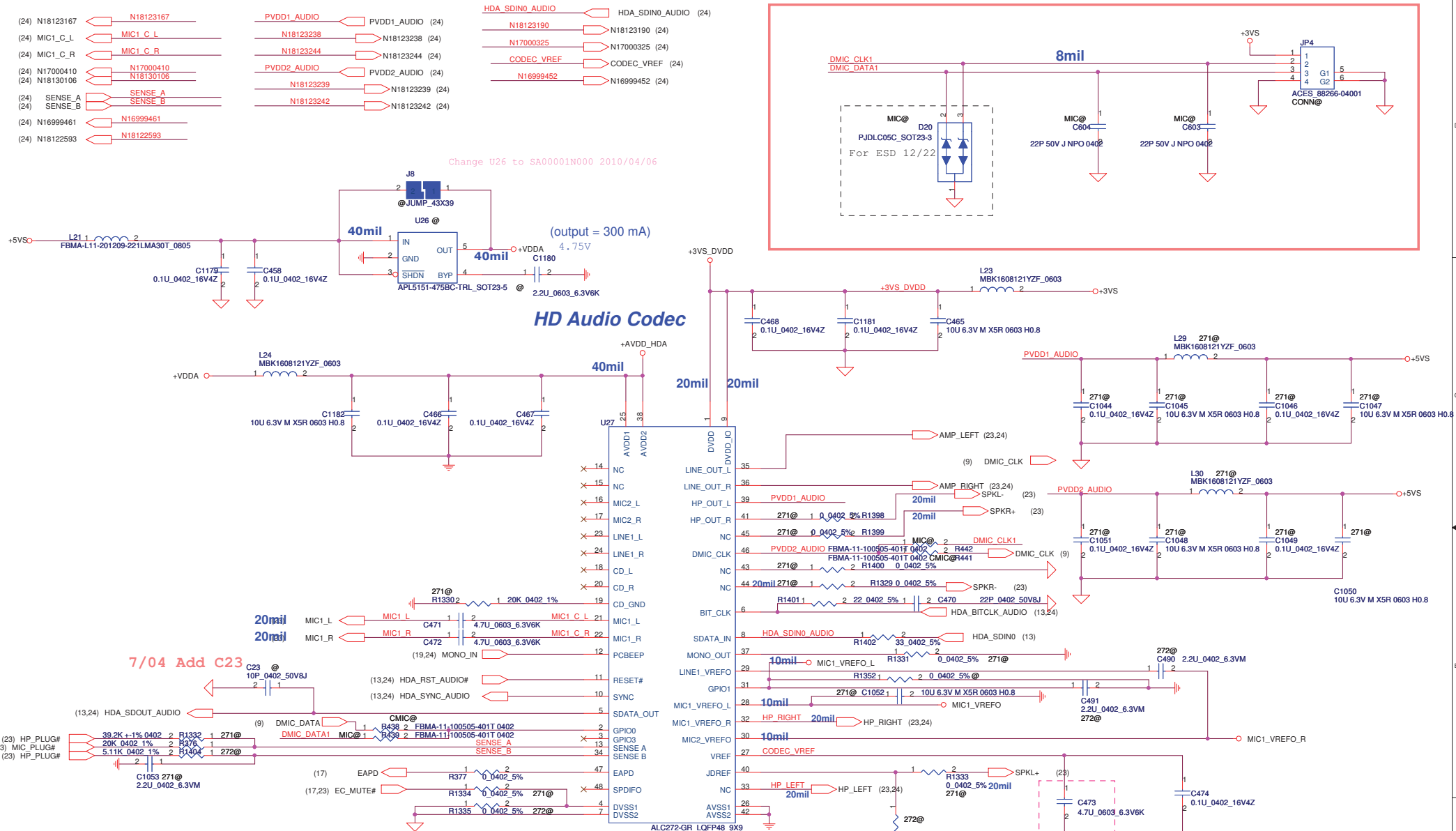


07/02 Update JREADER1

Card Reader Connector



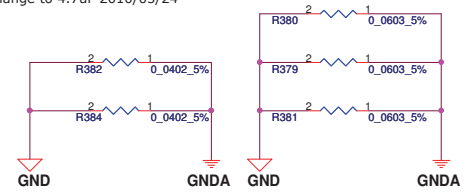
Security Classification	Compal Secret Data			Title		
Issued Date	2009/01/22	Deciphered Date	2009/11/20	Card reader		
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				Custom	LA-6421P	0.1
				Date:	Thursday, June 03, 2010	1 Sheet 21 of 39

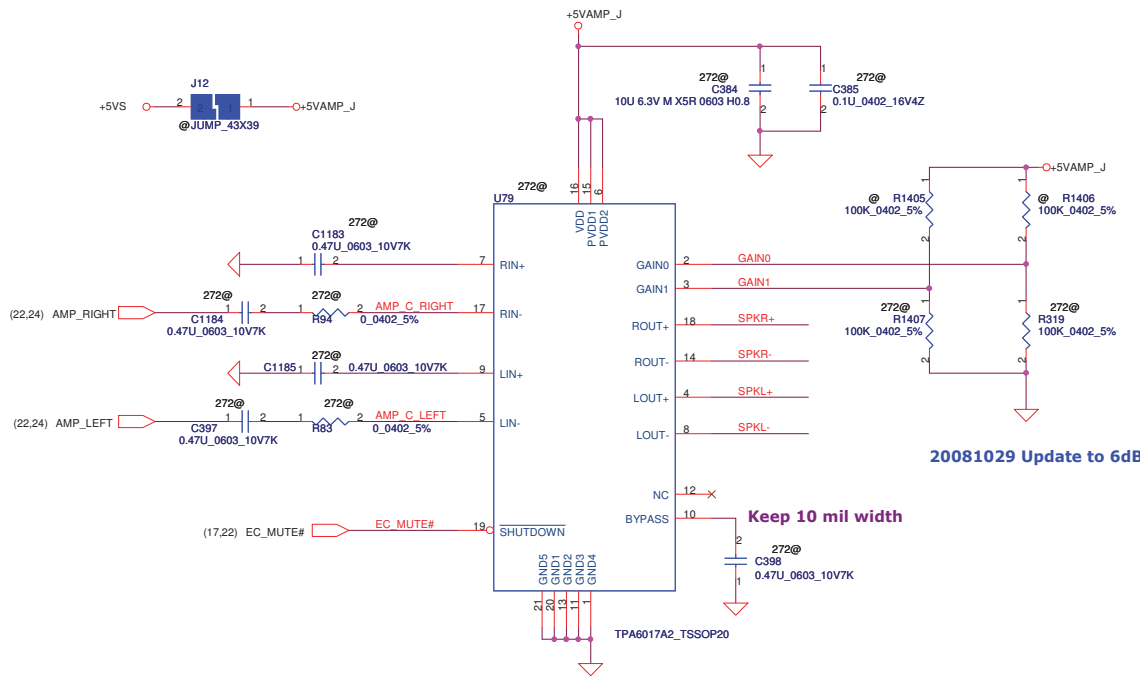


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)

Change to SA00002CI20 ALC272-VA2-GR

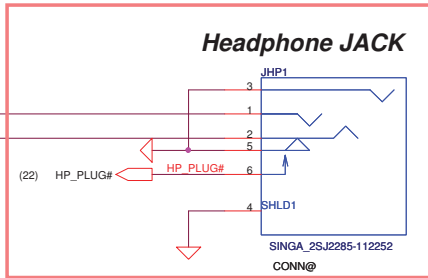
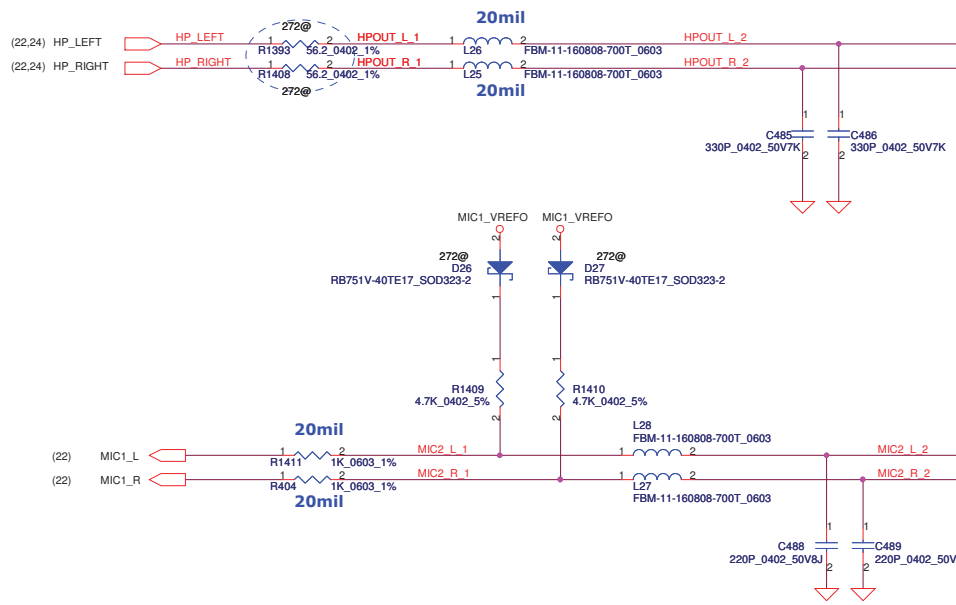
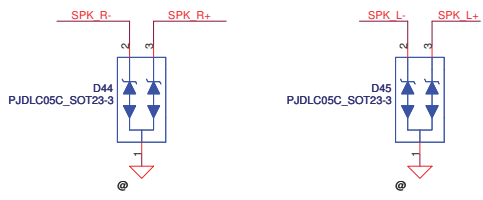
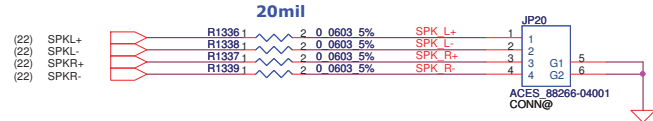
Follow Vendor check change to 4.7uF 2010/05/24



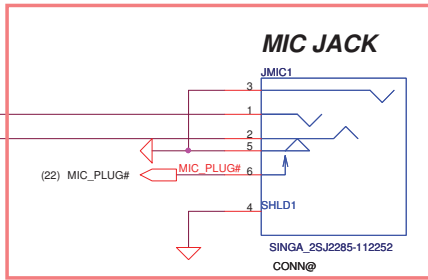


20081029 Update to 6dB

Int. Speaker Conn.



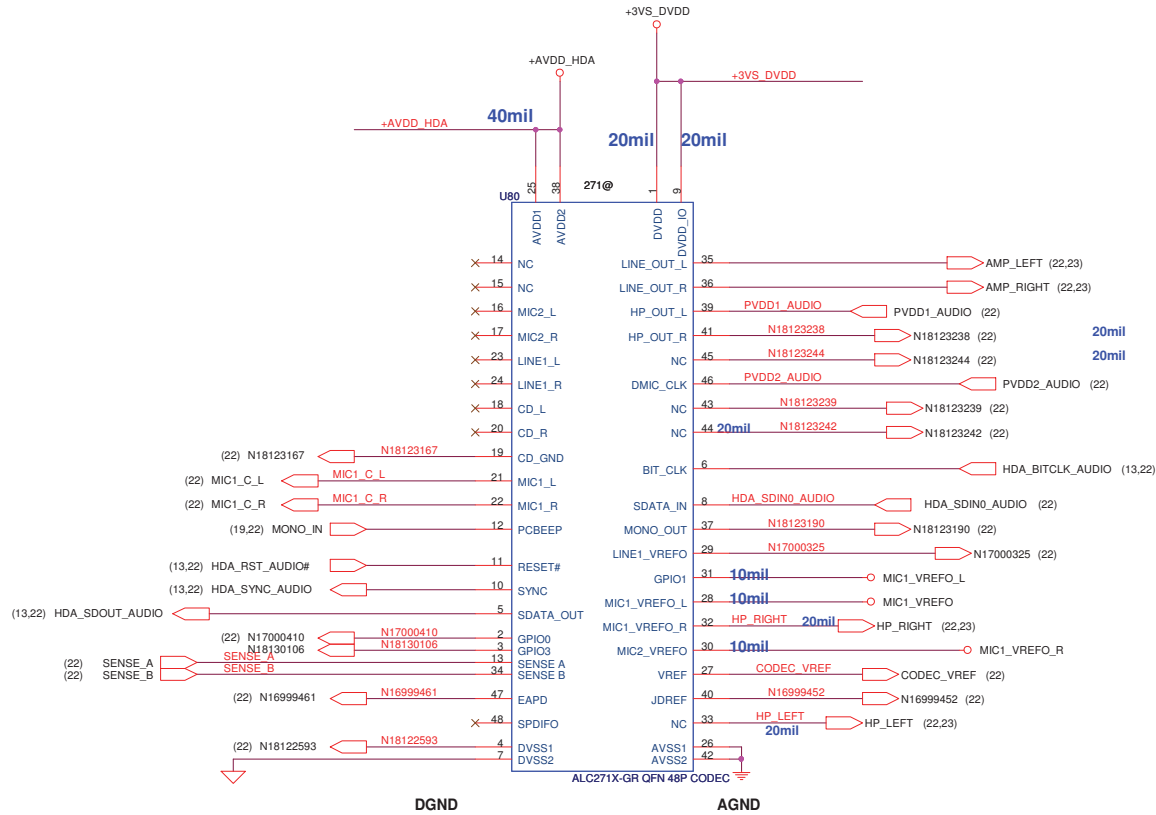
6/19 Update Headphone connector



6/19 Update MIC connector

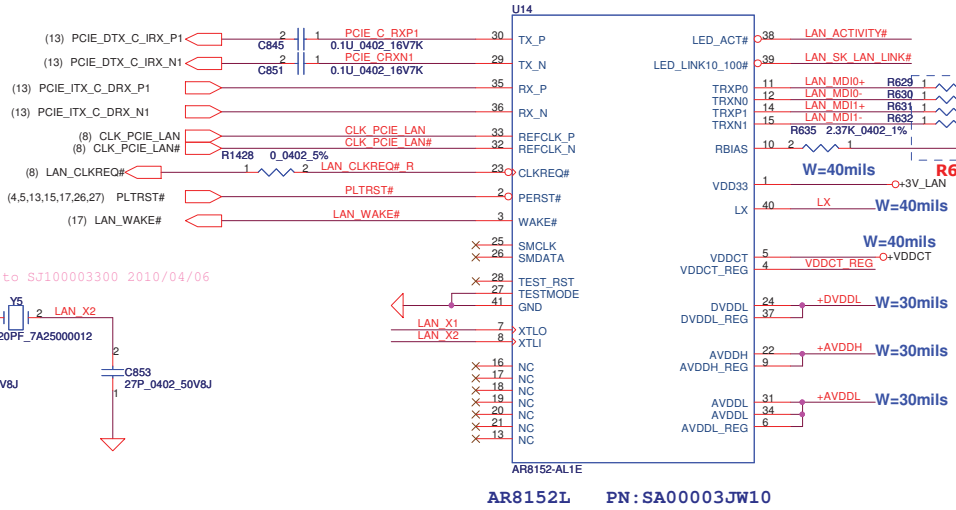
Compal Electronics, Inc.			
Title	<Title> Amplifier & Audio Jack		Rev
Size	Document Number	LA-6222P	0.1
Customer	LA-6222P		
Date:	Tuesday, June 22, 2010	Sheet	23 of 39

HD Audio Codec

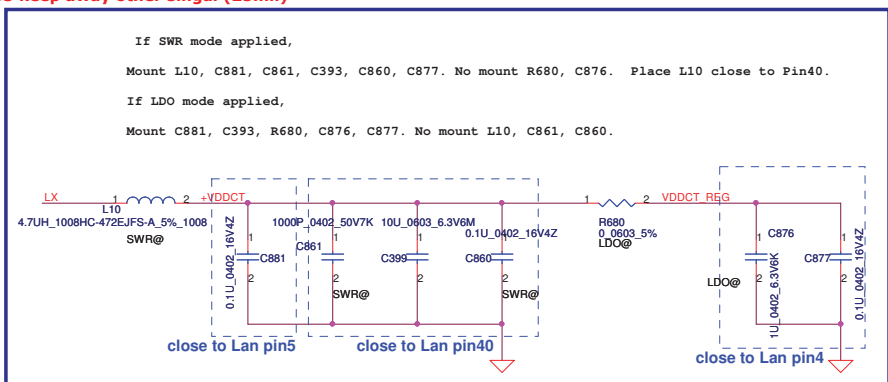
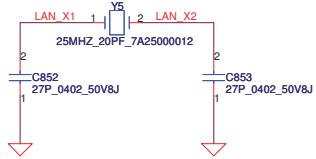


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)

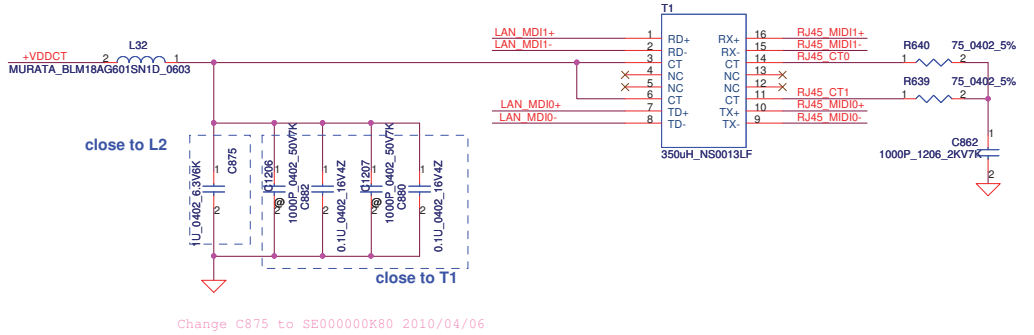
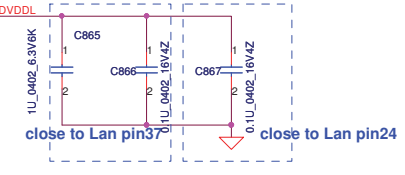
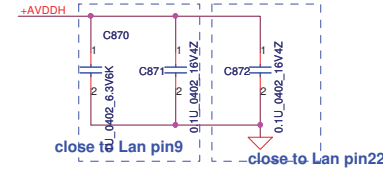
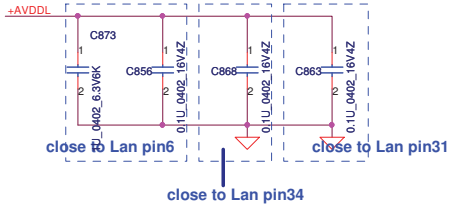
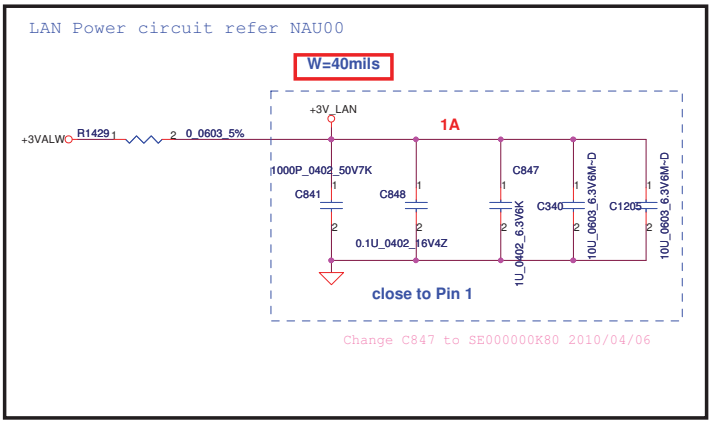
Change LAN chip to AR8152-L for NAV70/80 DDR3 2010/01/22



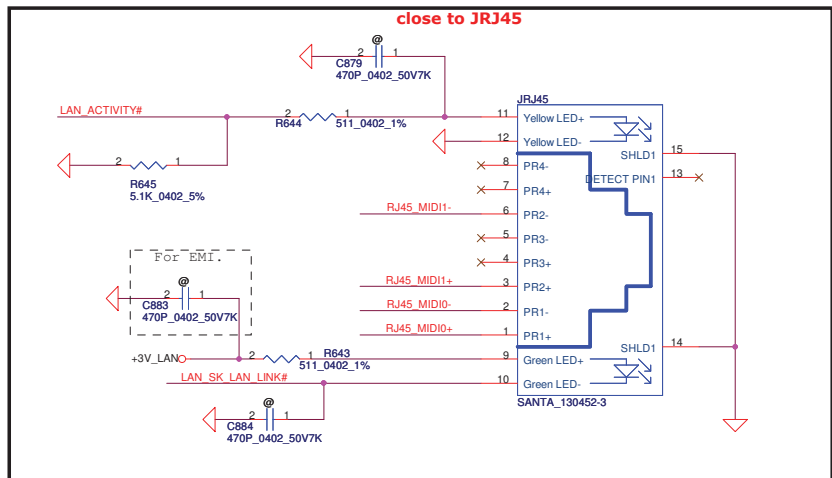
Change Y5 to SJ100003300 2010/04/06



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

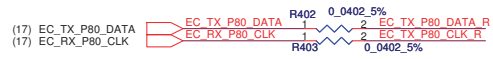


Change C875 to SE000000K80 2010/04/06

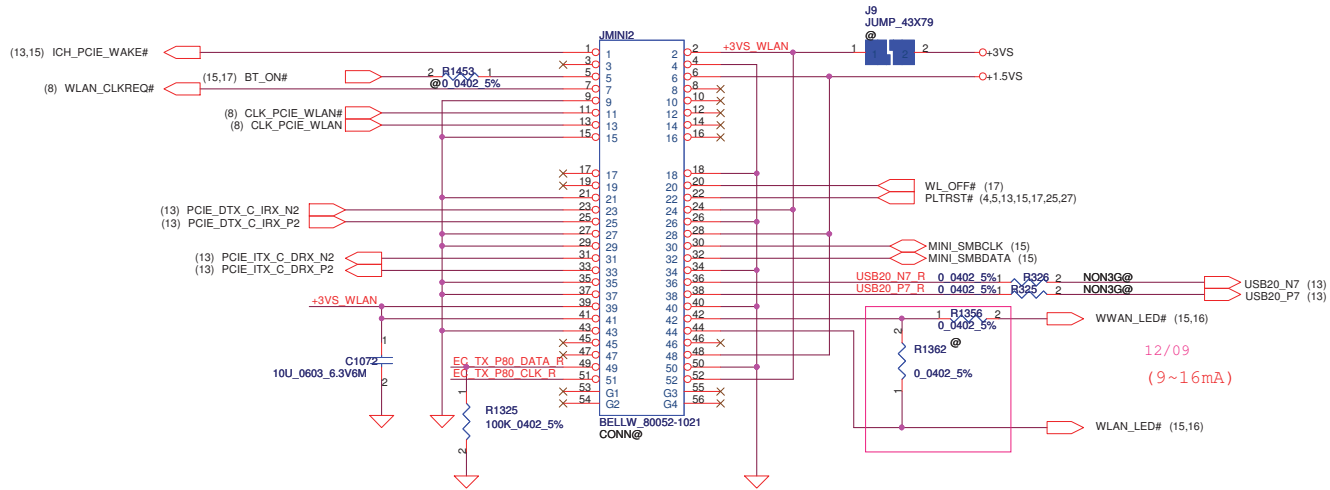
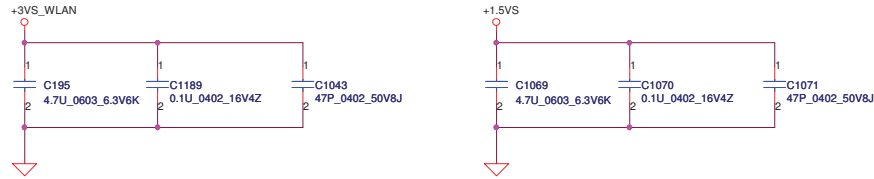


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Size	Document Number	Rev	1.0	
Custom	LA-6421P	Date:	Thursday, June 03, 2010	Sheet 25 of 39

Mini-Express Card for WWAN



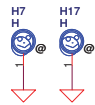
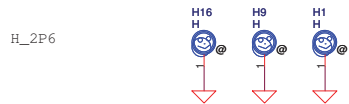
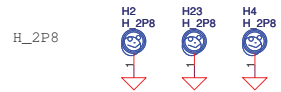
Mini-Express Card for WLAN



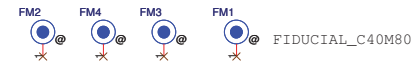
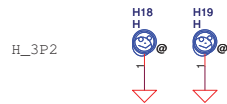
- 5/12 Update WLAN connector(the same as KAV60)
- 6/1 Revised 37、39、41、42、43 to NC
- 6/12 Update connector to DC040006S00
- 6/26 Update JMINI1 footprint
- 7/01 update pin 23,25,31,33

Compal Electronics, Inc.		
Title	WLAN	
Size	Document Number	Rev
Customer	LA-6222P	0.1
Date:	Monday, June 07, 2010	Sheet 26 of 39

Modify Hole location by (ME Drawing 06/12) 0615



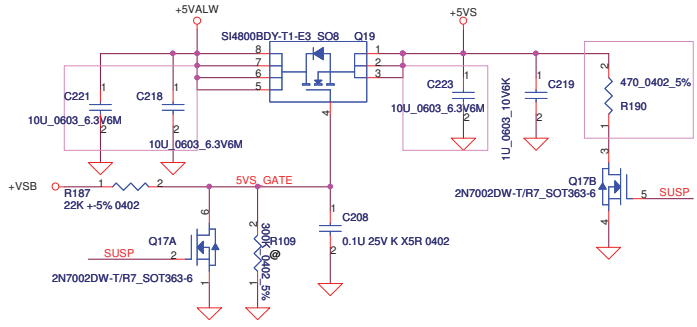
09/03 Del H12



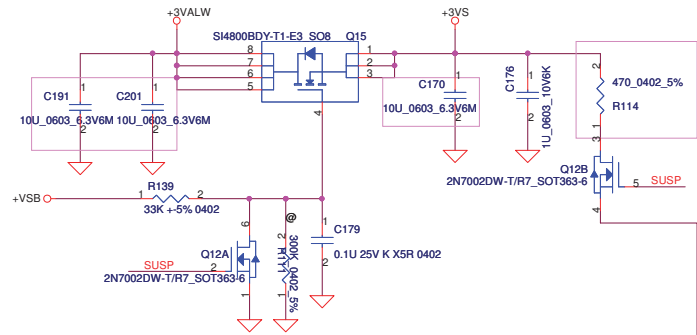
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Issued Date	2006/08/18	Deciphered Date	2007/8/18	Title Screw	
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				Rev 0.1	Date: Thursday, March 25, 2010
				Sheet 28	of 39

Change R51 R57 R70 R63 R317 R114 R190 to 0402 SIZE 04/30
 Change C221 C218 C223 C 191 C201 C170 C392 C393 C394 to 0603 SIZE 04/30

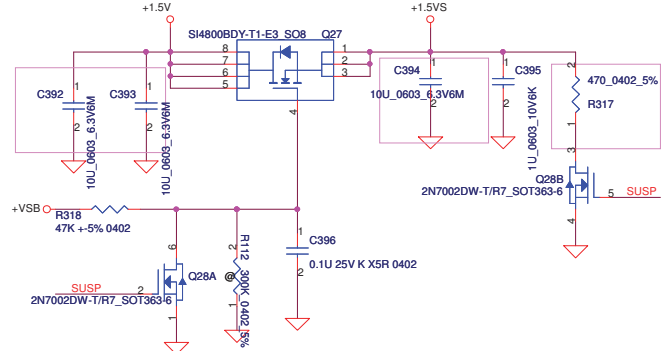
+5VALW TO +5VS



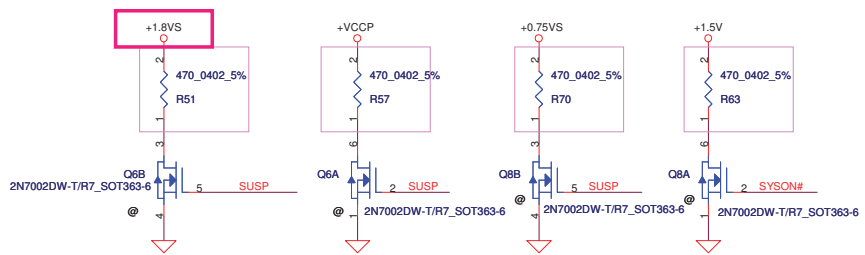
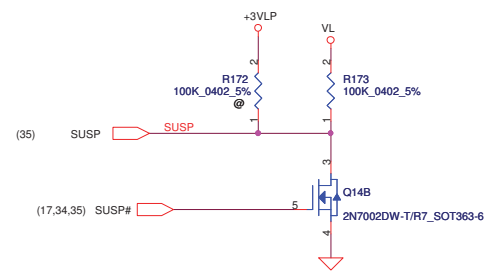
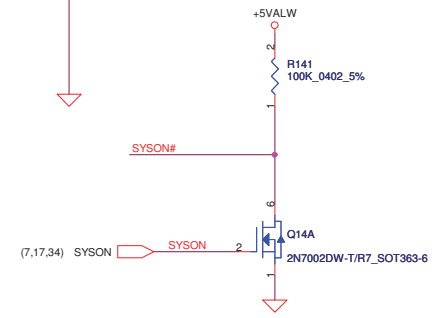
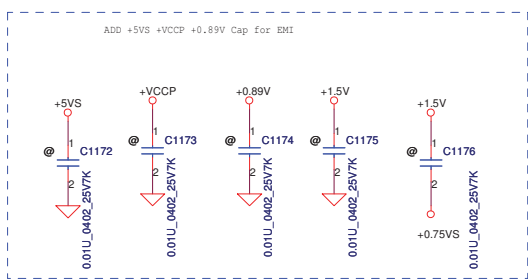
+3VALW TO +3VS



+1.5V to +1.5VS

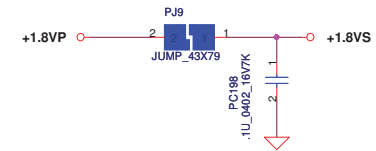
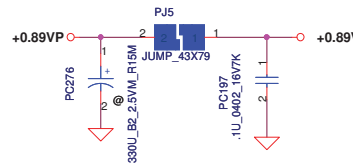
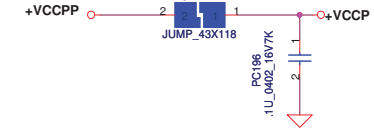
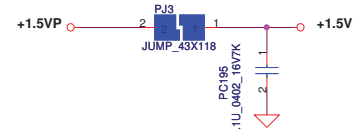
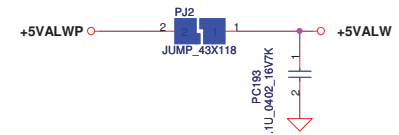
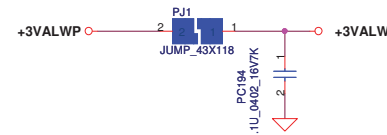
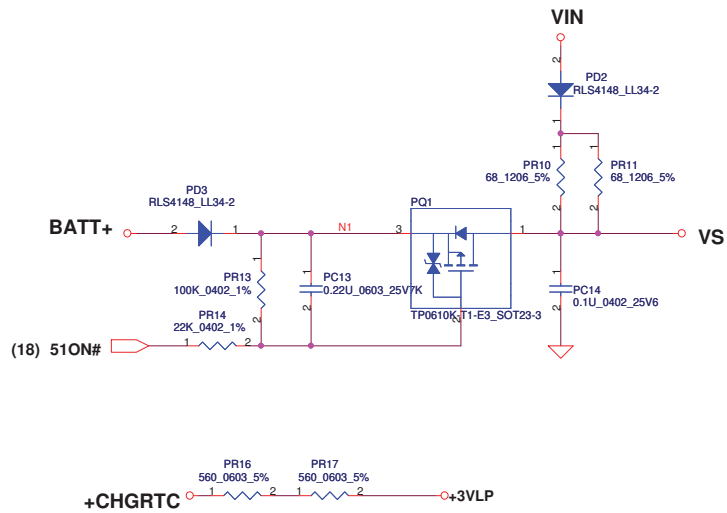
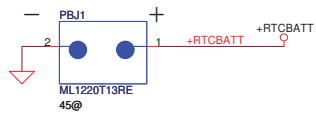
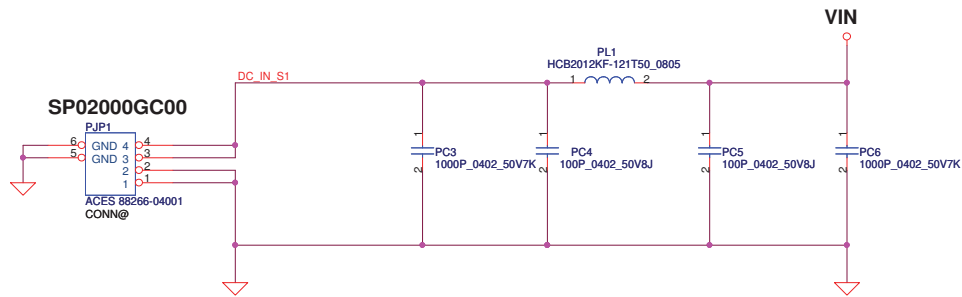


Change Q12,Q14,Q17,Q28 to SB00000DH00 2010/04/06
 Change C176,C219,C395 to SE080105K80 2010/04/06



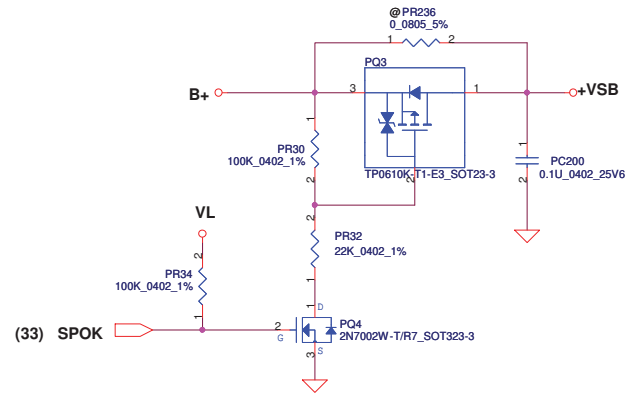
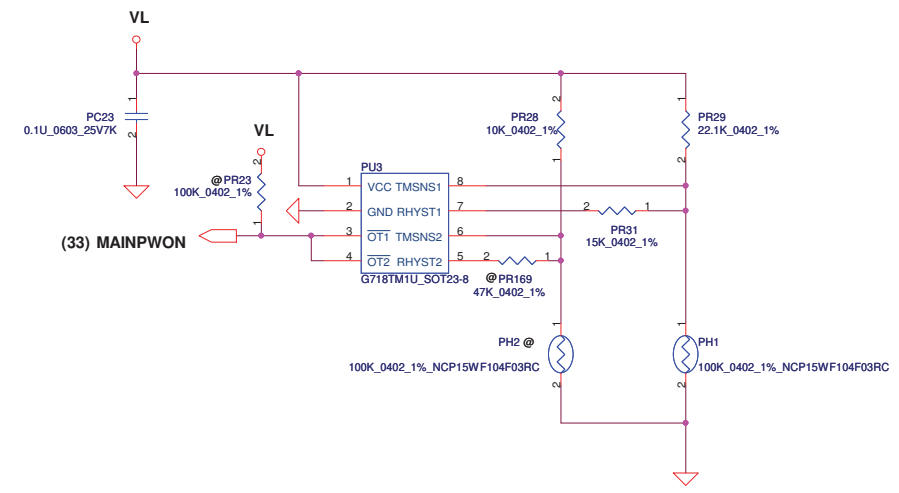
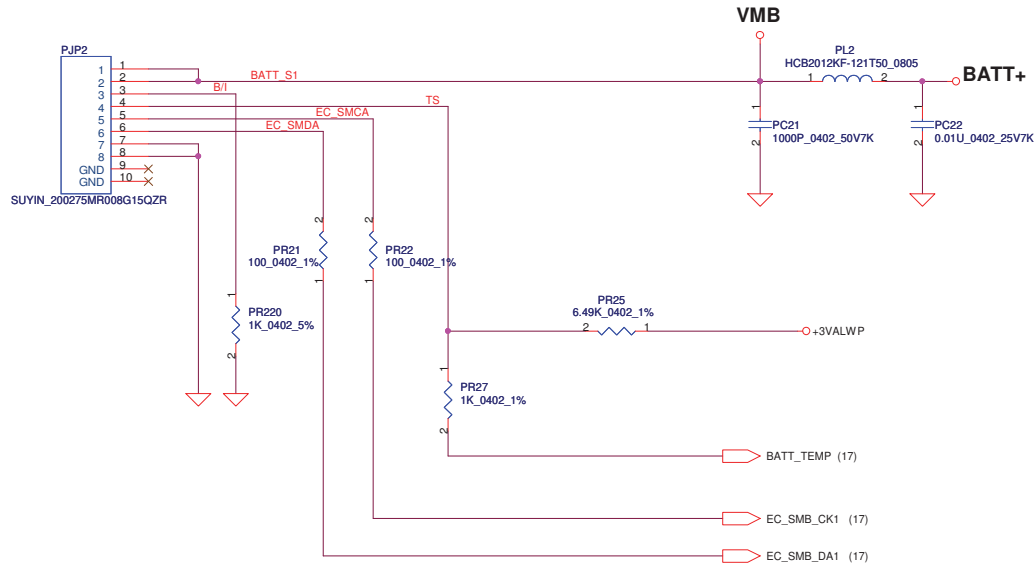
Change Q6,Q8 to SB00000DH00 2010/04/06

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				LA-6421P	
				Date:	Thursday, June 03, 2010
				Sheet	29 of 39
				Rev	0.1

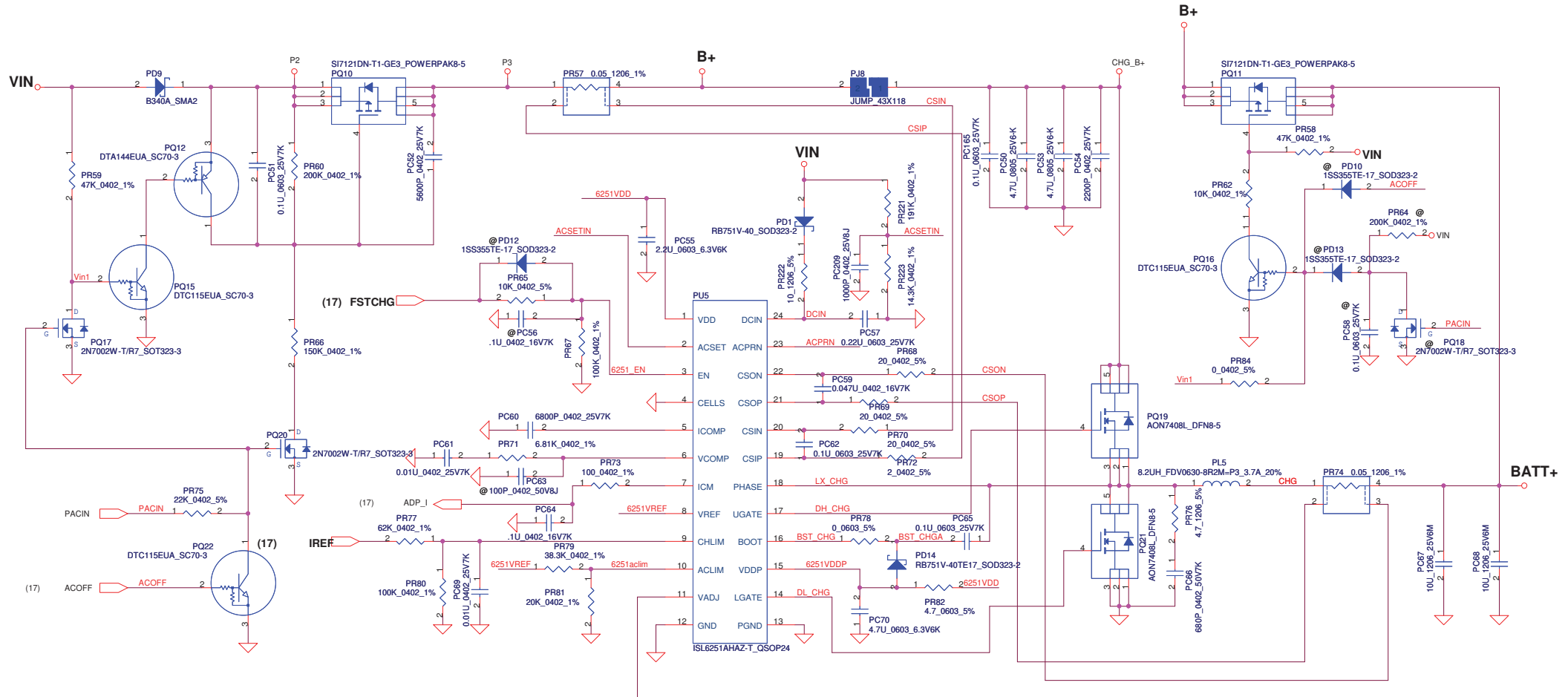


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Size	Document Number	Rev			
Custom	LA-6421P	0.1			
Date:	Tuesday, June 22, 2010	Sheet	30	of	39

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



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Size	Custom	Document Number	LA-6421P	Rev
Date:	Tuesday, June 22, 2010	Sheet	31	of 39
				0.1



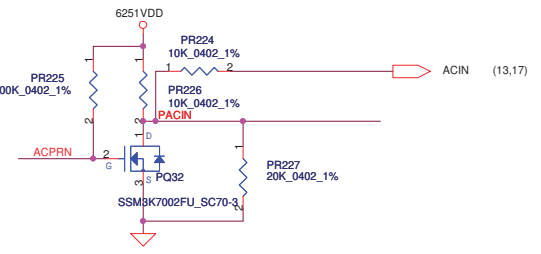
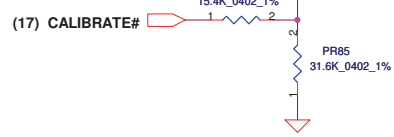
Iada=0~1.58A(30W) CP = 85%*Iada ; CP = 1.343A

CP mode
 $V_{aclim} = 2.39 * (20K / (20K + 38.3K)) = 0.8199V$
 $I_{input} = (1 / 0.05) * ((0.05 * V_{aclim}) / 2.39 + 0.05)$
 where $V_{aclim} = 0.8199V$, $I_{input} = 1.343A$

CC=0.3~1.76A
 $I_{REF} = 1.62 * I_{charge}$
 $I_{REF} = 0.486V \sim 2.85V$
 $3.24V \implies 2A$

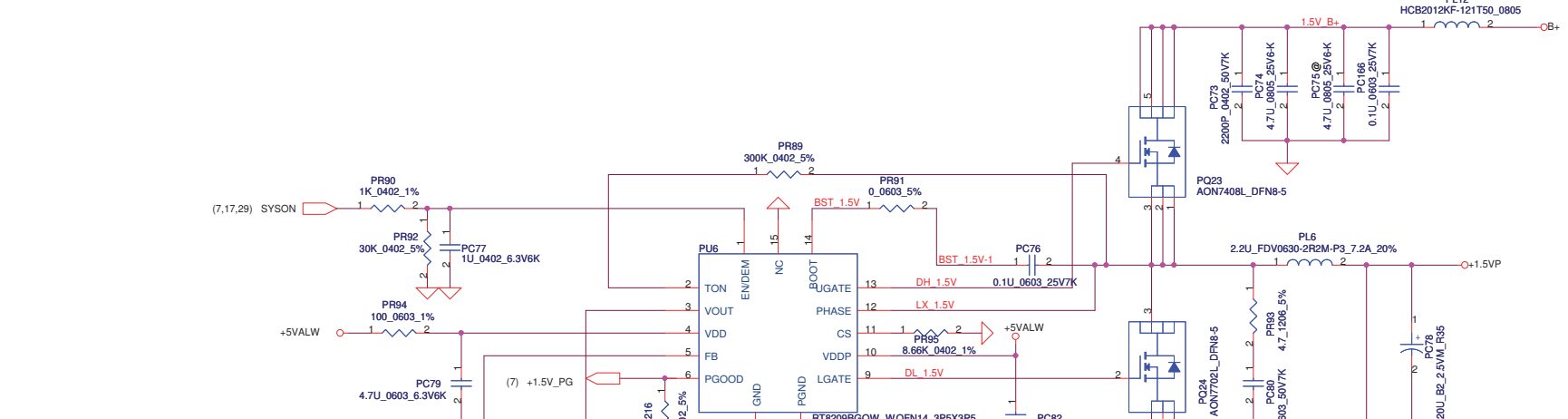
BATT Type	Charging Voltage (0x15)	CV mode
Normal 3S LI-ON Cells	12600mV	12.60V

VADJ-->VREF-->4.41V
 VADJ-->Ground-->3.59V
 $V_{cell} = (0.175 * VADJ + 3.99)$



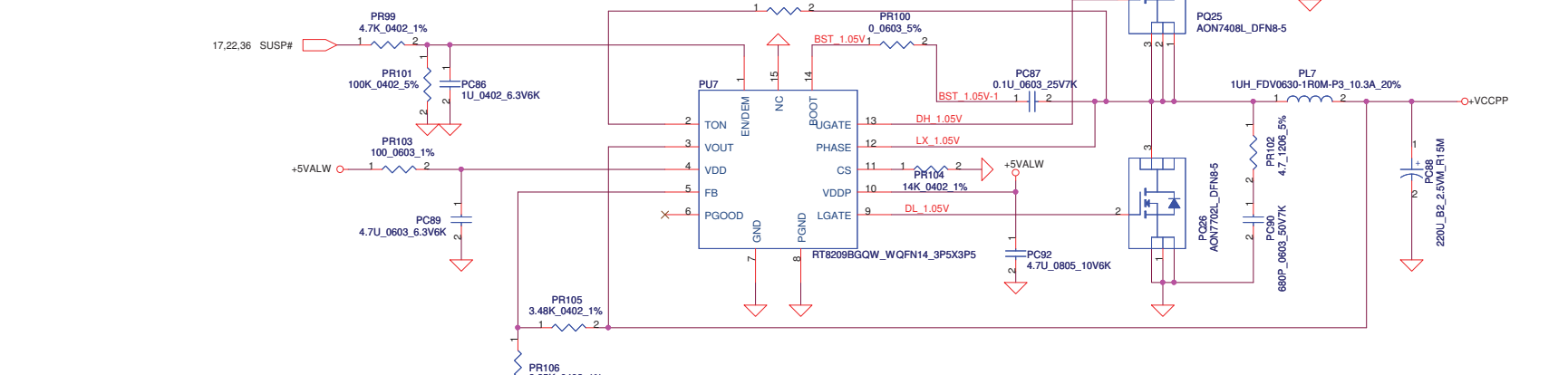
$V_{th, rise (typical)} = ((191K / 14.3K) + 1) * 1.26 = 18.89V$
 $V_{th, fall (typical)} = ((191K / 14.3K) + 1) * 1.26 - 3.4\mu A * 191K = 17.43V$

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				Customer	LA-6421P
				Date:	Tuesday, June 22, 2010
				Sheet	32 of 39



$\langle V_o=1.5V \rangle$ $V_{FB}=0.75V$
 $V_o=V_{FB} \cdot (1+PR96/PR97)=0.75 \cdot (1+3.48K/3.48K)=1.5V$
 $F_{sw}=328KHz$
 $C_{out} ESR=15m\ \Omega$
 $R_{dson(max)}=17.9m$ $R_{dson(typical)}=14.5m$
 $I_{peak}=4.97A$, $I_{max}=3.479A$, $I_{ocp}=5.964A$
 $\Delta I=(19-1.8) \cdot (1.8/19)/(2.2u \cdot 328K)=2.259A$
 $\Rightarrow 1/2 \Delta I=1.129A$
 $V_{trip}=R_{trip} \cdot 10uA=8.66K \cdot 10uA=0.0866V$
 $I_{ocpmin}=V_{trip}/(R_{dsonmax})+1.129$
 $=0.0866/(0.0179)+1.129=5.967A$
 $I_{ocpmax}=(0.0866/(0.0145 \cdot 1.2))+1.129A=6.106A$
 $I_{ocp}=5.967A \sim 6.106A$

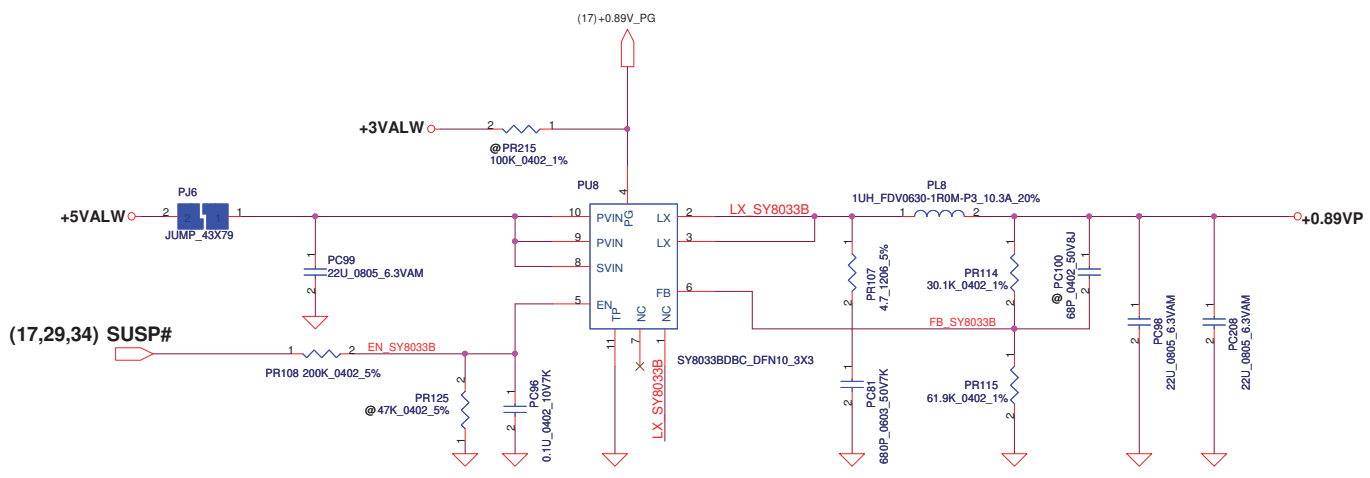
$\langle V_o=1.05V \rangle$ $V_{FB}=0.75V$
 $V_o=V_{FB} \cdot (1+PR105/PR106)=0.75 \cdot (1+3.48K/8.25K)=1.05V$
 $F_{sw}=280KHz$
 $C_{out} ESR=15m\ \Omega$ $R_{dson(max)}=17.9m$ $R_{dson(typical)}=14.5m$
 $I_{peak}=3.124A$, $I_{max}=2.187A$, $I_{ocp}=3.749A$
 $\Delta I=(19-1.05) \cdot (1.05/19)/(1.5u \cdot 280K)=3.549A$
 $\Rightarrow 1/2 \Delta I=1.774A$
 $V_{trip}=R_{trip} \cdot 10uA=14K \cdot 10uA=0.14V$
 $I_{ocpmin}=V_{trip}/(R_{dsonmax})+1.774$
 $=0.14/(0.0179)+1.774=9.596A$
 $I_{ocpmax}=(0.14/(0.0145 \cdot 1.2))+1.774A=9.820A$
 $I_{ocp}=9.596A \sim 9.820A$



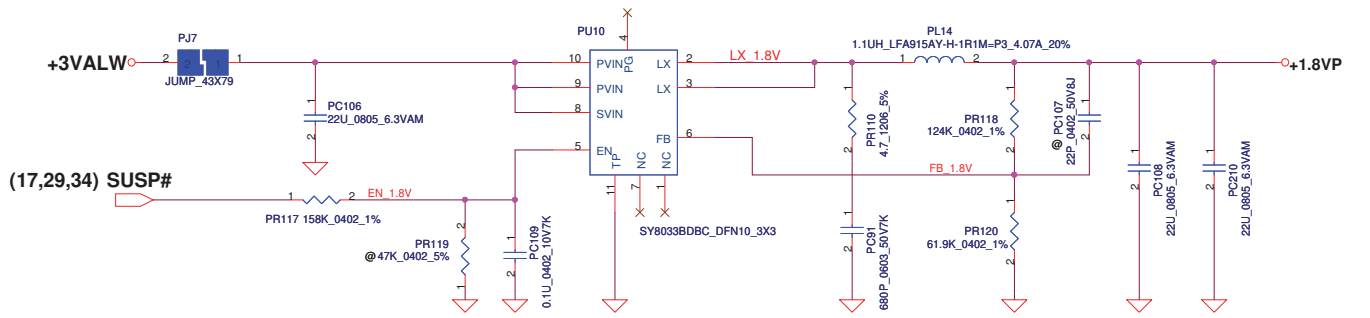
$\langle V_o=1.05V \rangle$ $V_{FB}=0.75V$
 $V_o=V_{FB} \cdot (1+PR105/PR106)=0.75 \cdot (1+3.48K/8.25K)=1.05V$
 $F_{sw}=280KHz$

$C_{out} ESR=15m\ \Omega$ $R_{dson(max)}=17.9m$ $R_{dson(typical)}=14.5m$
 $I_{peak}=3.124A$, $I_{max}=2.187A$, $I_{ocp}=3.749A$
 $\Delta I=(19-1.05) \cdot (1.05/19)/(1.5u \cdot 280K)=3.549A$
 $\Rightarrow 1/2 \Delta I=1.774A$
 $V_{trip}=R_{trip} \cdot 10uA=14K \cdot 10uA=0.14V$
 $I_{ocpmin}=V_{trip}/(R_{dsonmax})+1.774$
 $=0.14/(0.0179)+1.774=9.596A$
 $I_{ocpmax}=(0.14/(0.0145 \cdot 1.2))+1.774A=9.820A$
 $I_{ocp}=9.596A \sim 9.820A$

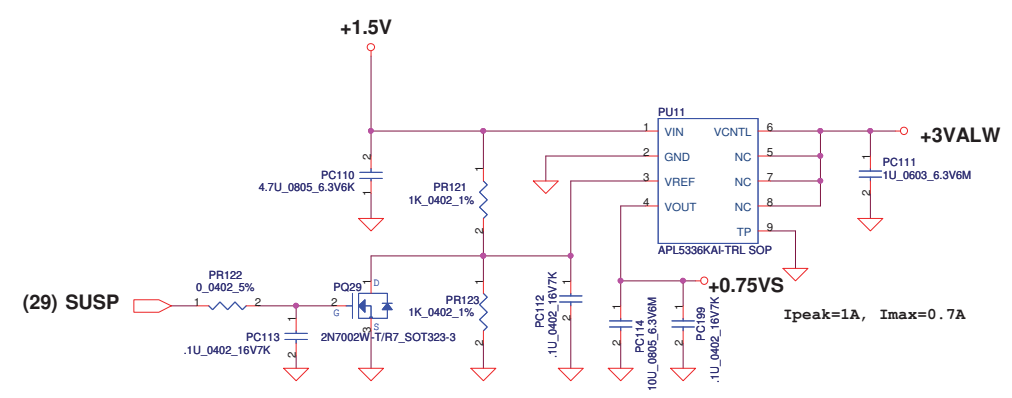
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Size	Document Number	Rev		
Custom	LA-6421P	0.1		
Date:	Tuesday, June 22, 2010	Sheet	34	of 39



<Vo=0.89V> VFB=0.6V
 $Vo = VFB * (1 + PR114 / PR115) = 0.6 * (1 + 30.1K / 61.9) = 0.89V$
 Ipeak=2.64A, Imax=1.848A

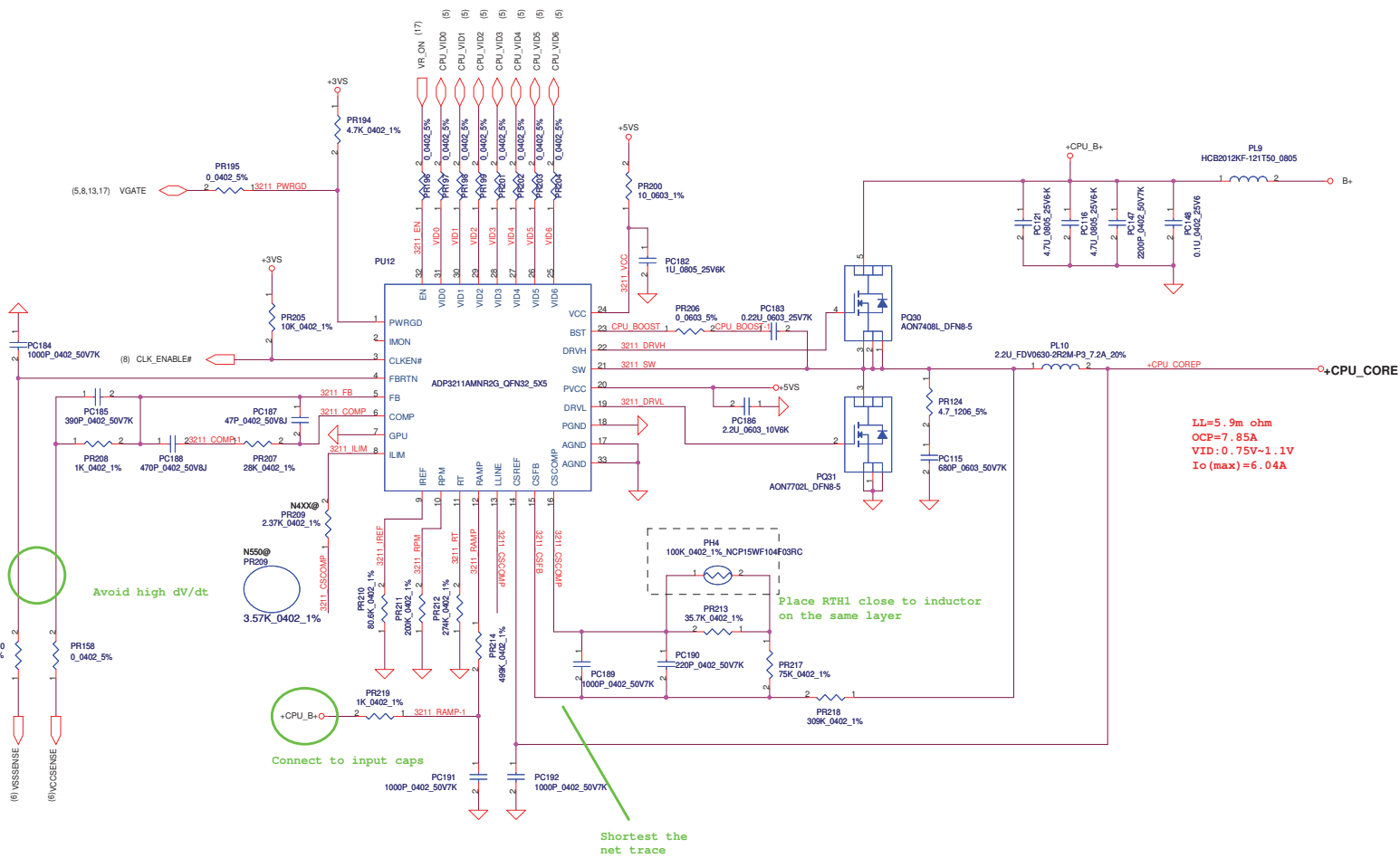


<Vo=1.8V> VFB=0.6V
 $Vo = VFB * (1 + PR118 / PR120) = 0.6 * (1 + 124K / 61.9) = 1.8V$
 Ipeak=0.318A, Imax=0.223A



Ipeak=1A, Imax=0.7A

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				Document Number
				LA-6421P
				Rev 0.1
				Date: Tuesday, June 22, 2010
				Sheet 35 of 39



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Issued Date	2007/09/20	Deciphered Date	2008/09/20	
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Title	+CPU_CORE			
Size	C	Document Number	LA-6421P	Rev
Date:	Tuesday, June 22, 2010	Sheet	36	of 39

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 SH00000JI00 to SH00000BS00 Change PL6,PL10 from SH00000FD10 to SH00000700 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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				PIR (PWR)	
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				Date: Tuesday, June 22, 2010	Rev 0.1
				Sheet 37 of 39	

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1							
2							
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				Custom	LA-6421P	Rev	0.1
				Date:	Tuesday, June 22, 2010	Sheet	38 of 39

<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>		
Size	Document Number	Rev
Custom	LA-6421P	0.1
Date:	Monday, June 28, 2010	Sheet 39 of 39

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