

Compal Confidential

PAU30 M/B Schematics Document

Intel Arrandale Processo SV with DDRIII + Ibex Peak-M

ZZZ
DAZ@
DAZ0F900100

PCB PAU30 LA-6392P LS-6391P/6392P/6393P/6394P

ZZZ1
DA1@
DA80000KE10

PCB 0F9 LA-6392P REV1 M/B

ZZZ2
DA2@
DA20000KT10

PCB 0F9 LS-6391P REV1 POWER_BTN/B

ZZZ3
DA2@
DA20000KU10

PCB 0F9 LS-6392P REV1 SWITCH/B

ZZZ4
DA2@
DA20000KV10

PCB 0F9 LS-6393P REV1 LED/B

ZZZ5
DA2@
DA20000LE10

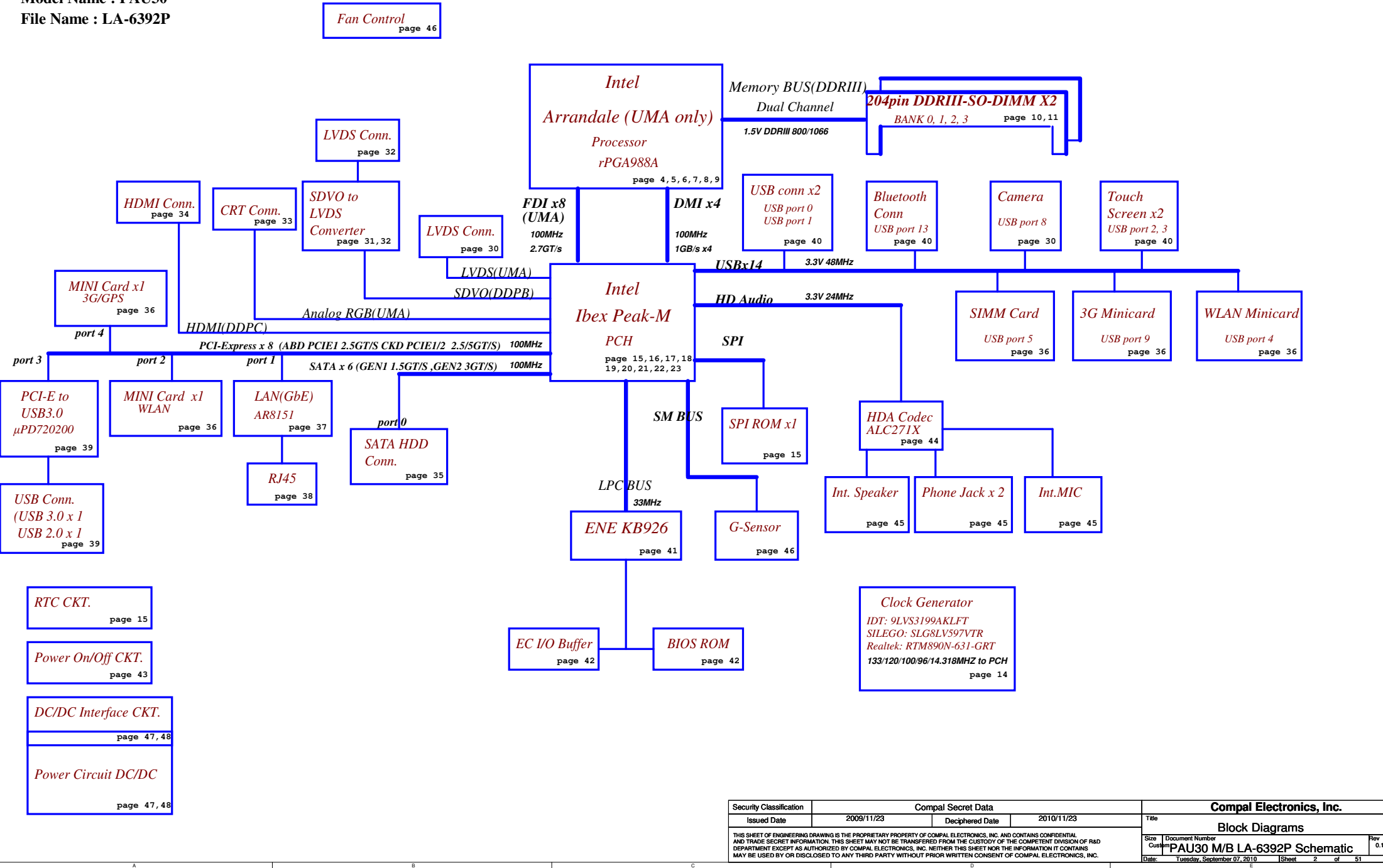
PCB 0F9 LS-6394P REV1 LID SWITCH/B

2010-11-22
REV:1.0

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Model Name : PAU30
File Name : LA-6392P



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				Rev	0.1

Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
BATT+	Battery power supply (12.6V)	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
+VGA_CORE	Core voltage for GPU	ON	OFF	OFF
+VGFX_CORE	Core voltage for Arrandale GPU (only for arrandaleCPU)	ON	OFF	OFF
+0.75VS	+0.75VP to +0.75VS switched power rail for DDR terminator	ON	OFF	OFF
+1.0VSDGPU	+1.0VSPDGPU to +1.0VSDGPU switched power rail for GPU	ON	OFF	OFF
+1.05VS_VTT	+1.05VS_VTTP to +1.05VS_VTT switched power rail for ARD CPU	ON	OFF	OFF
+1.05VS_PCH	+1.05VS_VTT to +1.05VS_PCH power for PCH	ON	OFF	OFF
+1.5V	+1.5VP to +1.5V power rail for DDRIII	ON	ON	OFF
+1.5VS	+1.5V to +1.5VS switched power rail	ON	OFF	OFF
+1.5VSDGPU	+1.5VS to +1.5VSDGPU switched power rail for GPU	ON	OFF	OFF
+1.8VS	(+5VALW or +3VALW) to 1.8V switched power rail to PCH & GPU	ON	OFF	OFF
+3VALW	+3VALW always on power rail	ON	ON	ON*
+3VALW_EC	+3VALW always to KBC	ON	ON	ON*
+3V_LAN	+3VALW to +3V_LAN power rail for LAN	ON	ON	ON*
+3VS	+3VALW to +3VS power rail	ON	OFF	OFF
+5VALW	+5VALWP to +5VALW power rail	ON	ON	ON*
+5VS	+5VALW to +5VS switched power rail	ON	OFF	OFF
+VSB	+VSBP to +VSB always on power rail for sequence control	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.				

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b		

EC SM Bus2 address

PCH SM Bus address

Device	Address
Clock Generator (9LVS3199AKLFT, RTM890N-631-GRT)	1101 0010b
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 010Xb

43level BOM Config

P/N	Des.	BOM Config
431954BOL01	SMT MB A6392 PAU30 W/3G	DAZ@

STATE	SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1 (Power On Suspend)		LOW	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)		LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra/Rc/Re	100K +/- 5%			
Board ID	Rb / Rd / Rf	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

BOARD ID Table

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

BTO Option Table

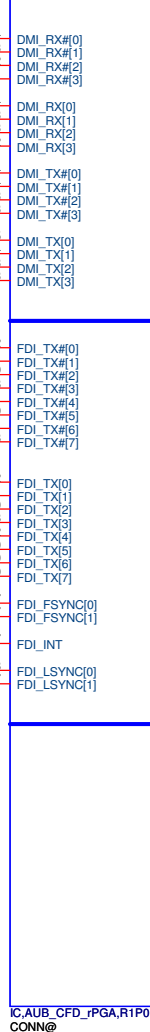
BTO Item	BOM Structure
VRAM	
VRAM	X76@
Connector	CONN@
Ventura	VENTURA@
Blue Tooth	BT@
Unpop	@

USB Port Table

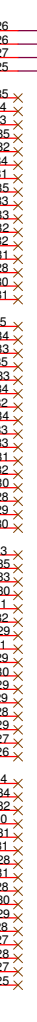
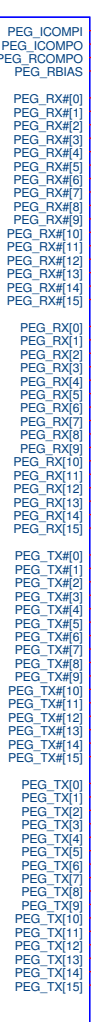
USB 2.0	USB 1.1	Port	3 External USB Port
EHCI1	UHCI0	0	USB Port (Left Side)
		1	USB Port (Left Side)
	UHCI1	2	USB/Touch Screen2
		3	USB/Touch Screen1
	UHCI2	4	Mini Card(WLAN)
		5	SIMM CARD
	UHCI3	6	
7			
EHCI2	UHCI4	8	Camera
		9	Mini Card(3G)
	UHCI5	10	
		11	
	UHCI6	12	
		13	Blue Tooth

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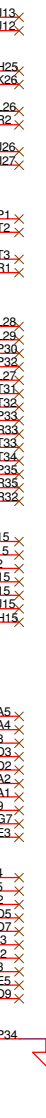
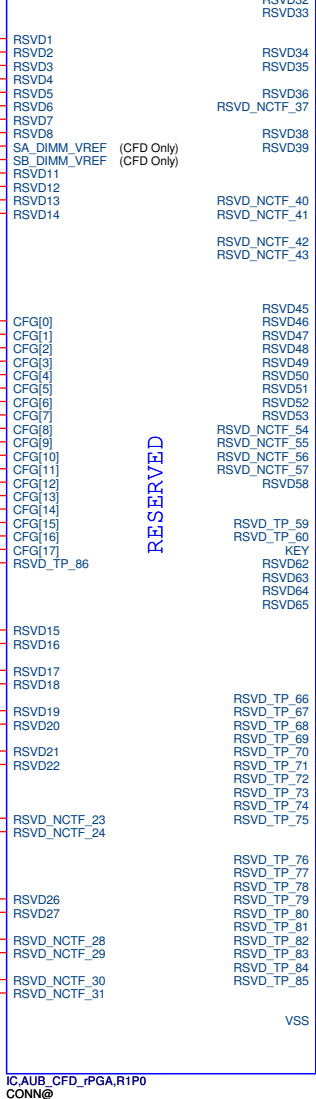
JCPU1A



PCI EXPRESS -- GRAPHICS



JCPU1E



eDP Signals Mapping

eDP Signal	PEG Singals	Lane Reversal
eDP_TX0	PEG HTX_C_GRX_P15	PEG HTX_C_GRX_P0
eDP_TX#0	PEG HTX_C_GRX_N15	PEG HTX_C_GRX_N0
eDP_TX1	PEG HTX_C_GRX_P14	PEG HTX_C_GRX_P1
eDP_TX#1	PEG HTX_C_GRX_N14	PEG HTX_C_GRX_N1
eDP_TX2	PEG HTX_C_GRX_P13	PEG HTX_C_GRX_P2
eDP_TX#2	PEG HTX_C_GRX_N13	PEG HTX_C_GRX_N2
eDP_TX3	PEG HTX_C_GRX_P12	PEG HTX_C_GRX_P3
eDP_TX#3	PEG HTX_C_GRX_N12	PEG HTX_C_GRX_N3
eDP_AUX	PEG GTX_C_HRX_P13	PEG GTX_C_HRX_P2
eDP_AUX#	PEG GTX_C_HRX_N13	PEG GTX_C_HRX_N2
eDP_HPD#	PEG GTX_C_HRX_P12	PEG GTX_C_HRX_P3

CFG0 - PCI-Express Configuration Select

*1:Single PEG
0:Bifurcation enabled

CFG3 - PCI-Express Static Lane Reversal

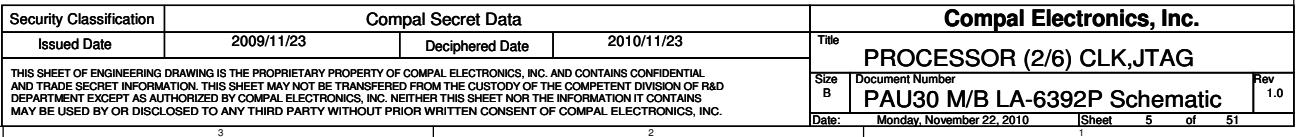
*1 :Normal Operation
0 :Lane Numbers Reversed
15 -> 0, 14 -> 1, ...

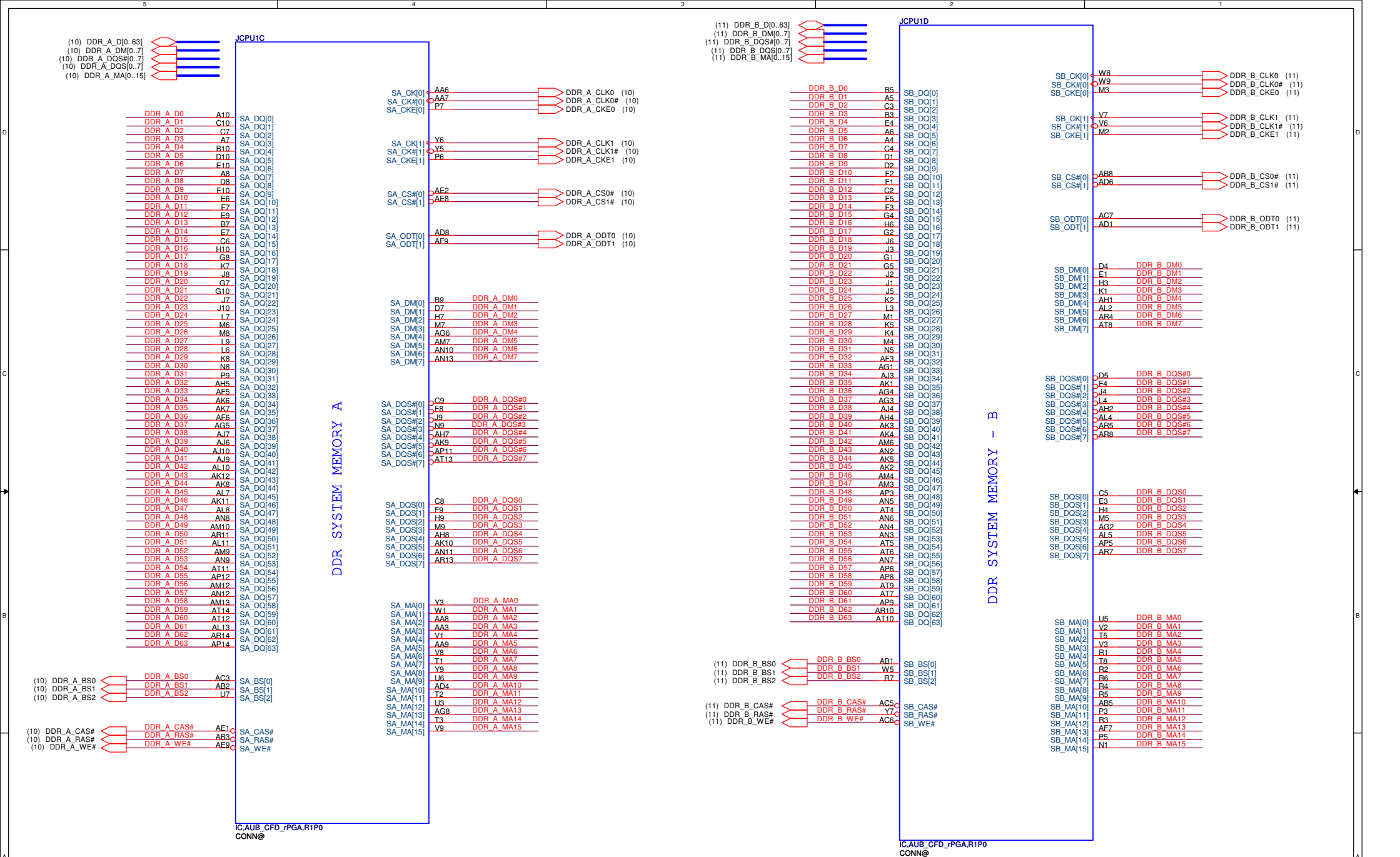
CFG4 - Display Port Presence

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

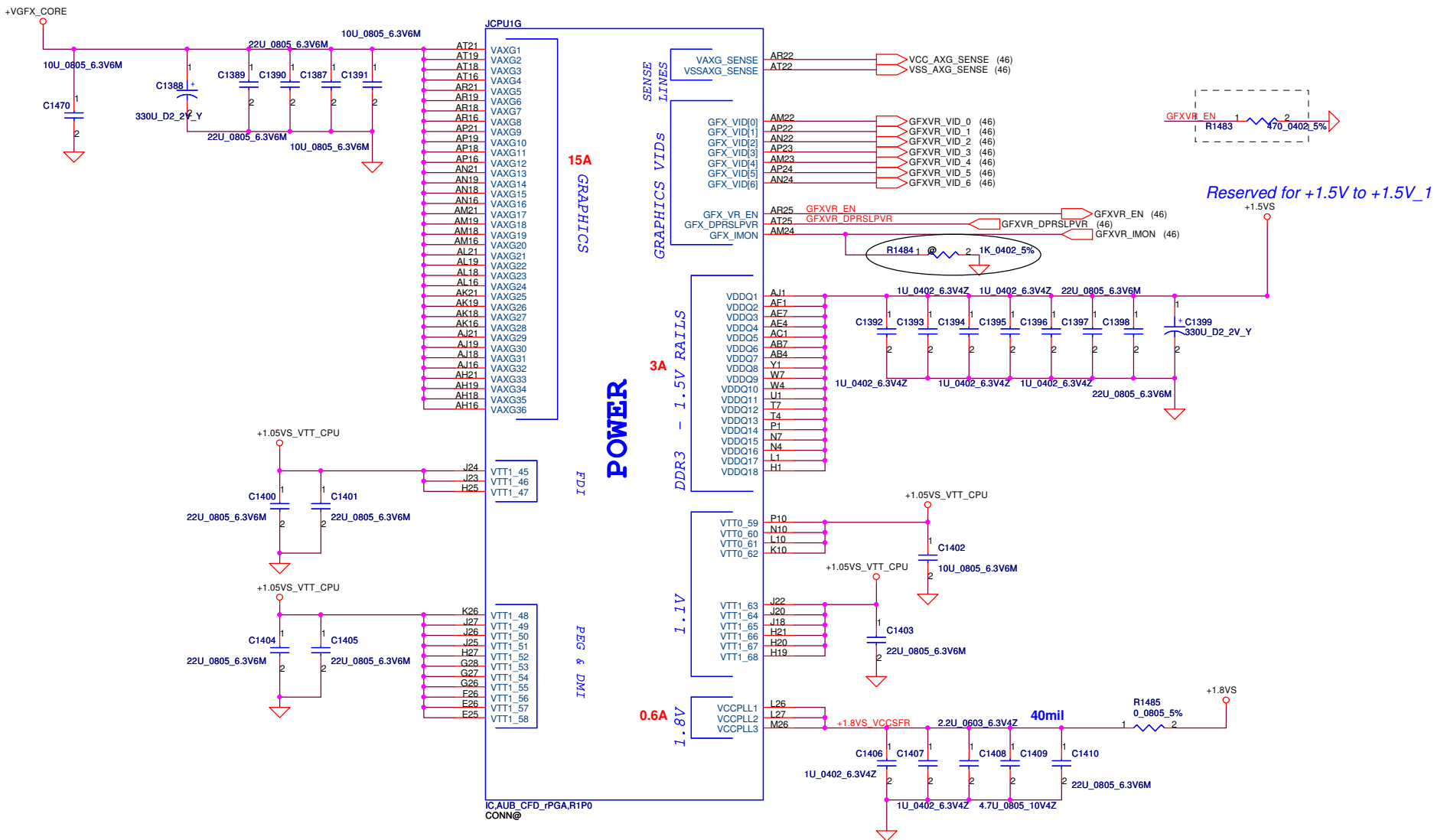
*:Default

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								Document Number	
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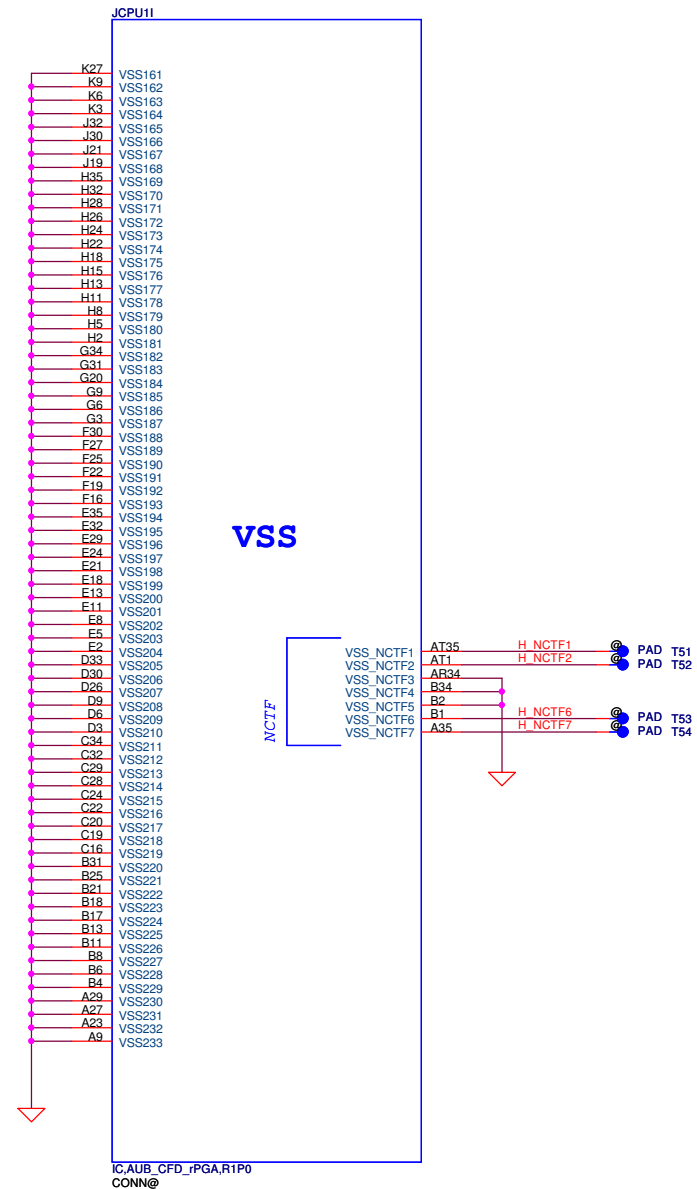
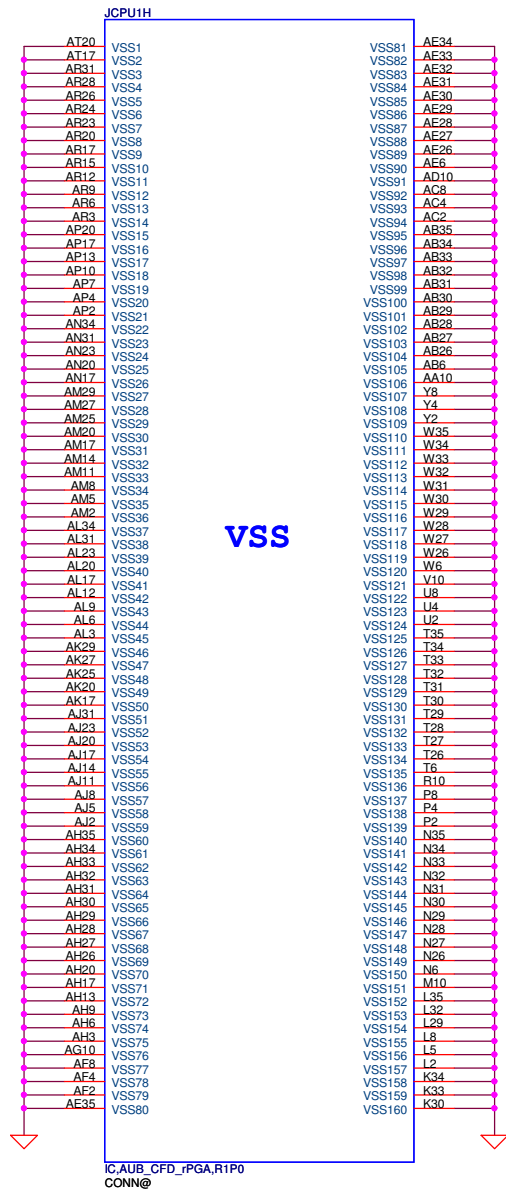




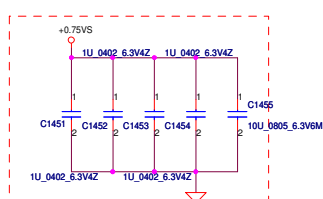
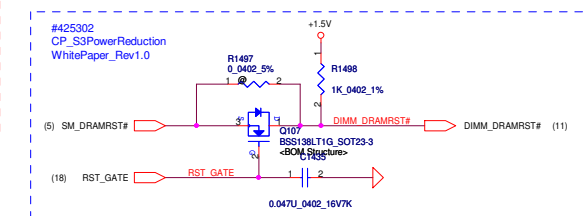
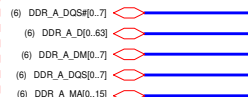
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								Size B	Document Number							Rev 1.0
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Size		Document Number		Rev	
Customer		PAU30 M/B LA-6392P Schematic		1.0	
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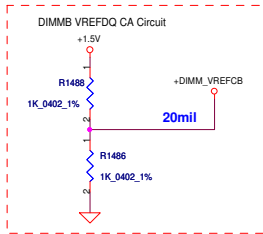
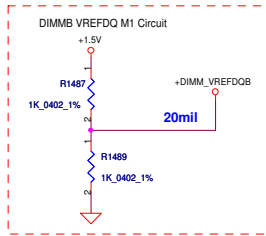


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						Size		Document Number		Rev	
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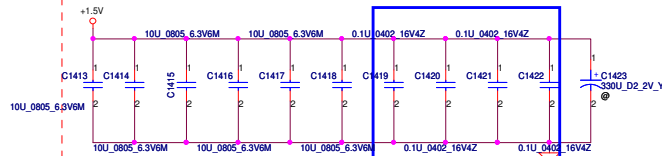
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- (6) DDR_B_DQS#(0..7)
(6) DDR_B_D(0..63)
(6) DDR_B_DM(0..7)
(6) DDR_B_DQS(0..7)
(6) DDR_B_MA(0..15)

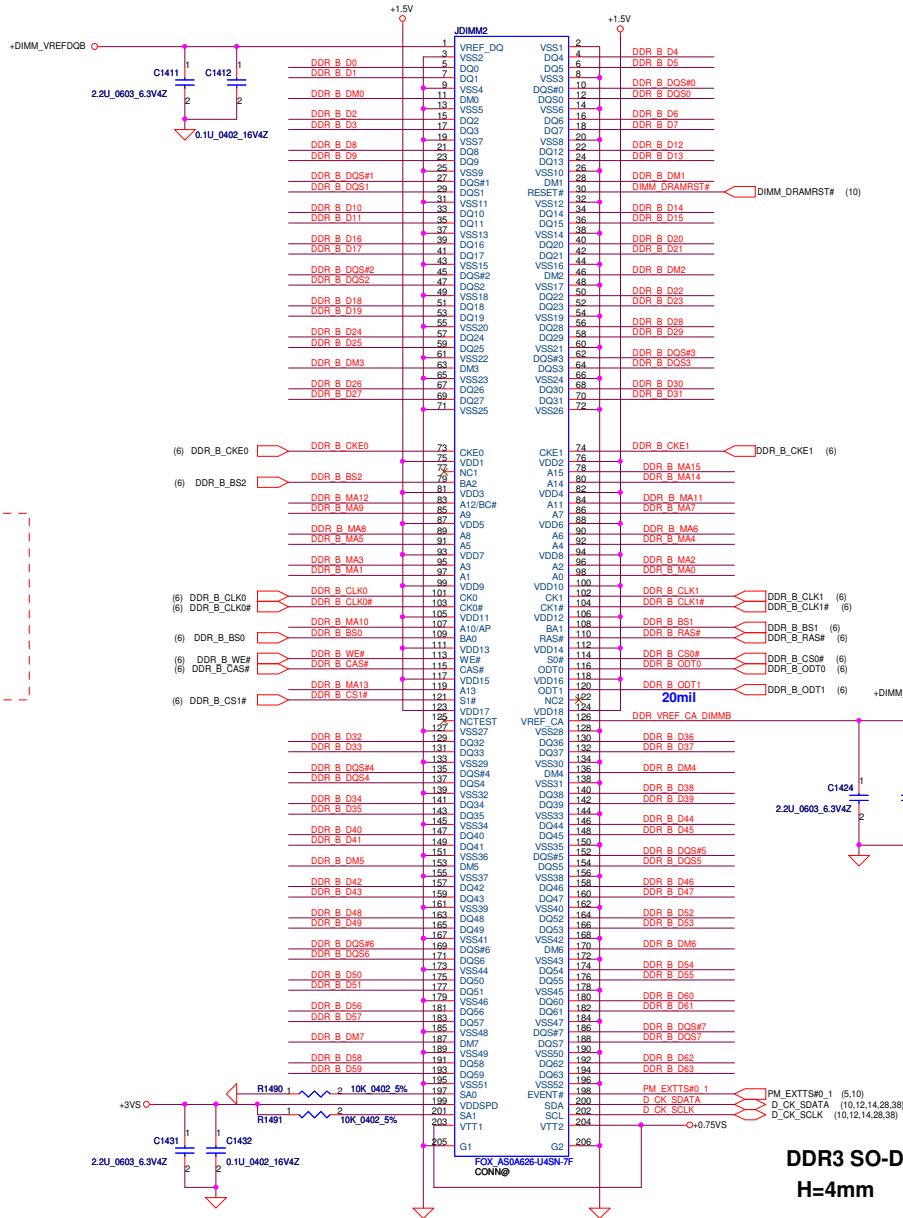
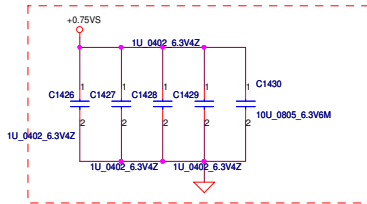


Layout Note:
Place near JDIMM2

Layout Note: Place these 4 Caps near Command
and Control signals of DIMMB

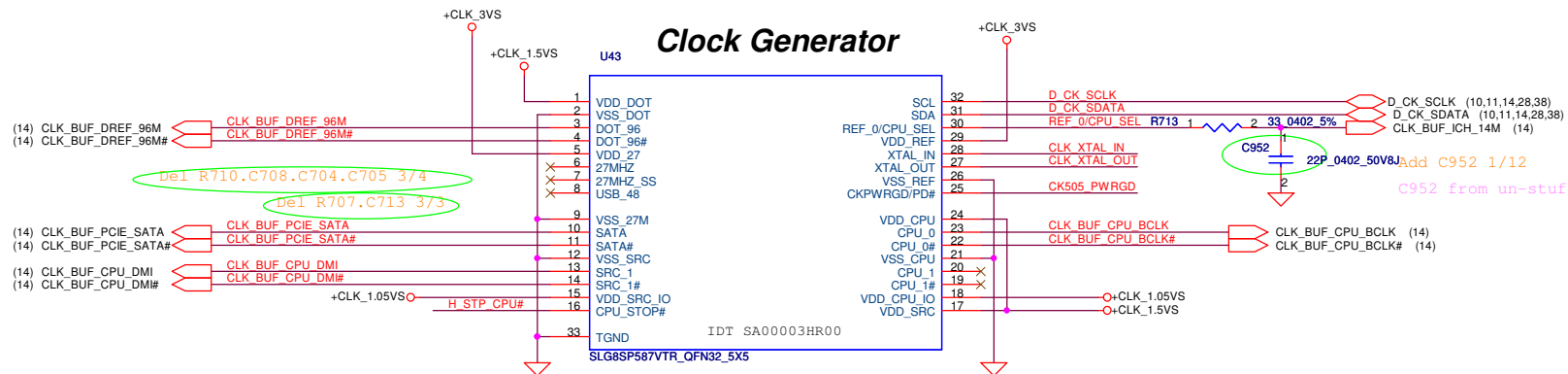
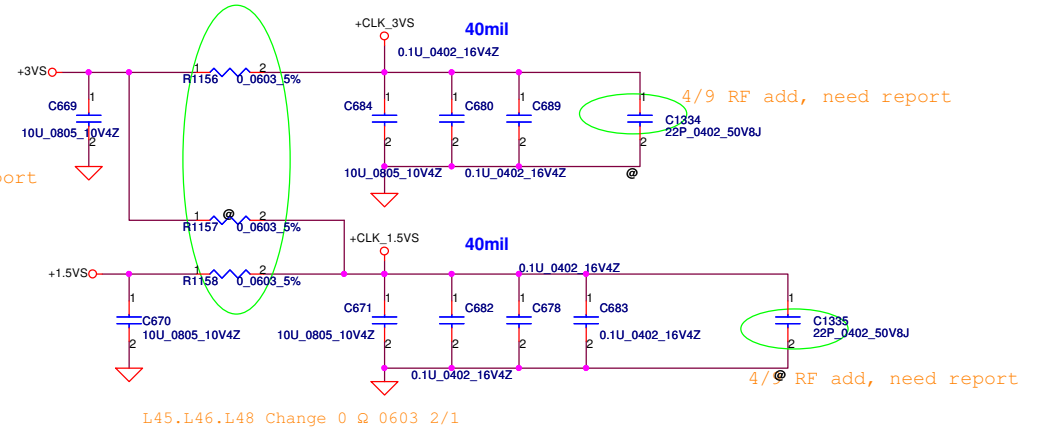
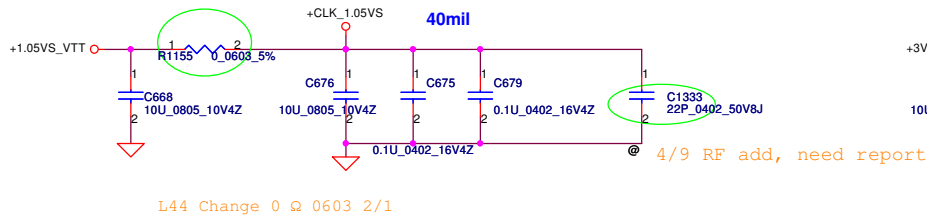


Layout Note:
Place near JDIMM2.203 & JDIMM2.204

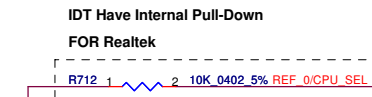
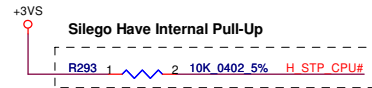


DDR3 SO-DIMM B
H=4mm

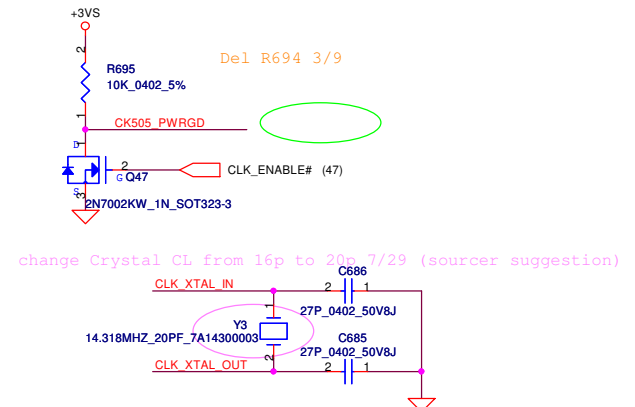
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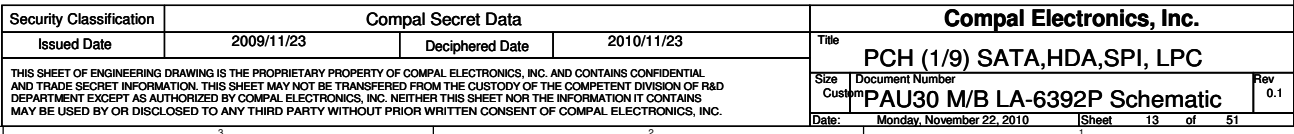
Low Power:
 IDT: 9LVS3199AKLFT, SA00003HR00
 Realtek: RTM890N-631-GRT, SA00003HQ00
 Silago: SLG8LV597VTR, SA00003MF00



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



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						Size	Document Number			Rev	
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For PCIE LAN

For Wireless LAN

Add for USB30 3/1
For USB3.0

For 3G/GPS MiniCard

For PCIE LAN

For Wireless LAN

Del R647,R646,Q39 1/7

Del PCH-GPIO18 off page 1/8

Change Netname From MINI1_CLKREQ# to PCH_GPIO18 1/12

Del PCH_GPIO20 off page 1/8

Add R1244 for USB30 3/1

Del Q39.R647 3/12

Move R208 to MINI1 Side 3/18

Move R638 to MINI2 Side 3/18

(28) MINI2_CLKREQ#

MINI1_CLKREQ# R227 1 2 10K 0402 5%
PCH_GPIO20 R622 1 2 10K 0402 5%

PCH_SMBCLK R173 1 2 4.7K 0402 5%
PCH_SMBDATA R582 1 2 4.7K 0402 5%
PCH_GPIO60 R169 1 2 10K 0402 5%
PCH_SML1CLK R191 1 2 3.3K 0402 5%
PCH_SML1DAT R183 1 2 3.3K 0402 5%
PCH_GPIO74 R214 1 2 10K 0402 5%
PCH_GPIO44 R190 1 2 10K 0402 5%
PCH_GPIO56 R211 1 2 10K 0402 5%

U30B REV1.0

PCI-E*

Controller Link

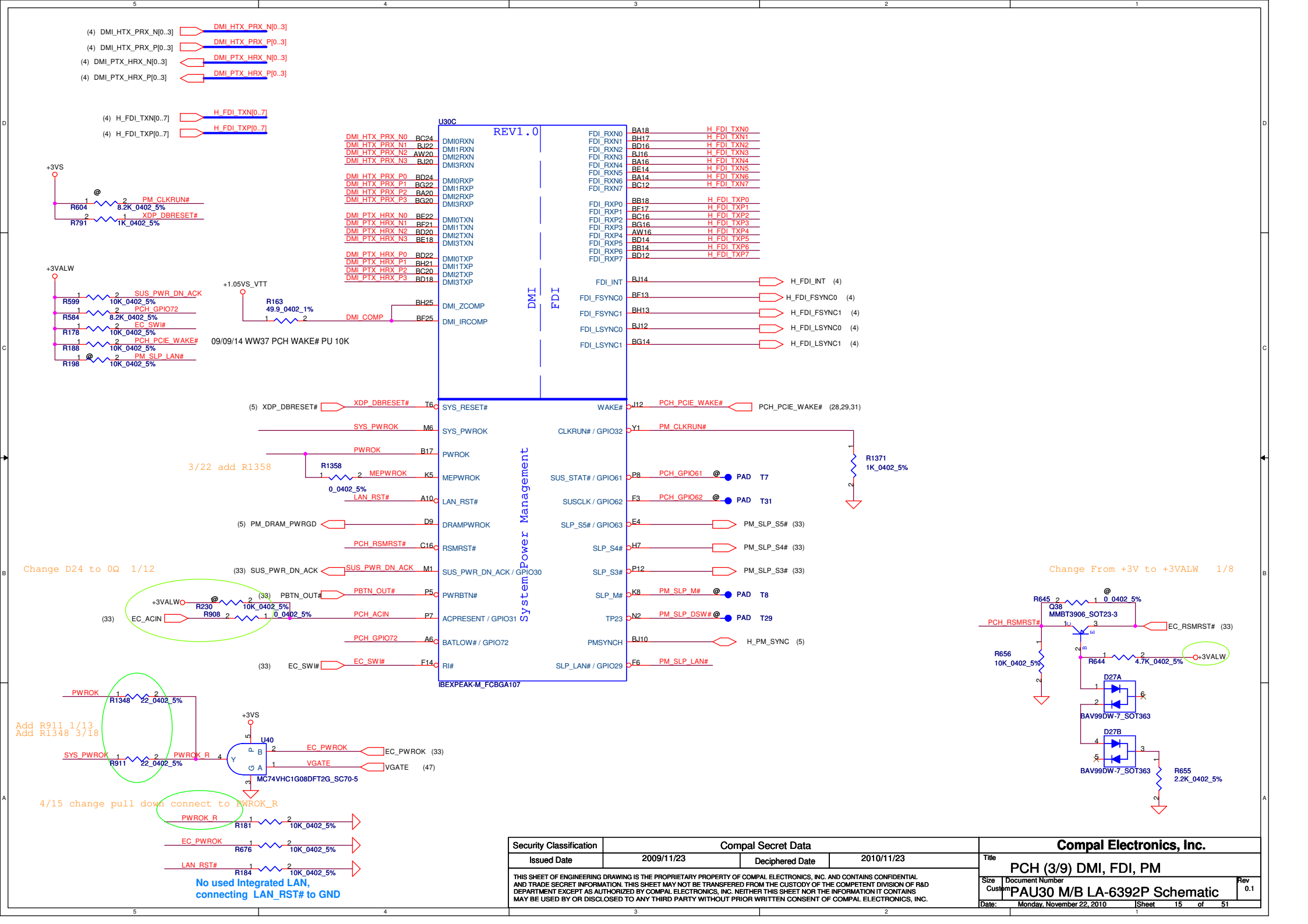
PEG

From CLK BUFFER

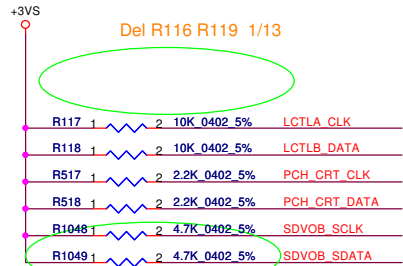
Clock Flex

	RAM ID0	ID1	ID2	ID3
	GPIO66	GPIO65	GPIO21	GPIO19
H	Samsung	256MX8	2 channel	Reserved*
L	Hynix	128MX8	1 channel	Reserved

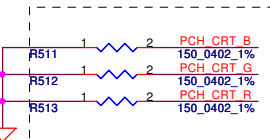
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Size	Document Number	Customer	PAU30 M/B LA-6392P Schematic	Date	Monday, November 22, 2010
Sheet	14	of	51	Rev	0.1



IGPU_BKLT_EN Pull down 100K at EC Side
PCH_ENVDD Pull down 100k at JLVDS1 Side
PCH_LCD_CLK and PCH_LCD_DATA Pull high 4.7K at JLVDS1 Side

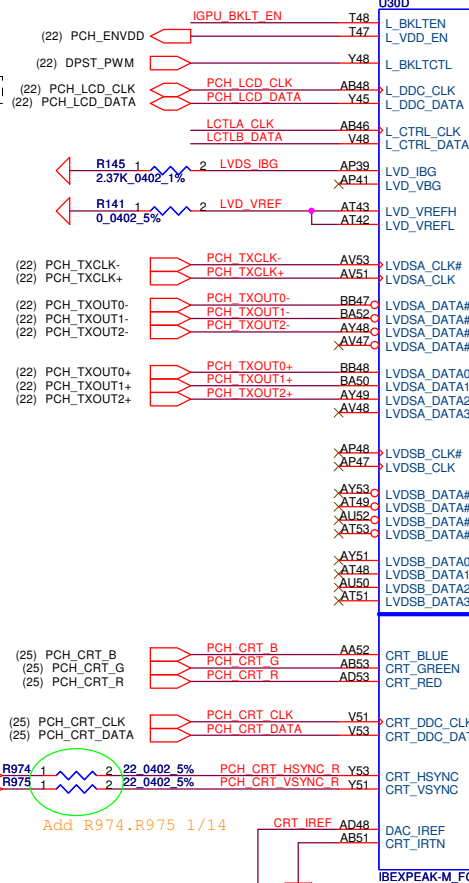


Change R1048.R1049 From 2.2KQ to 4.7KQ 1/18



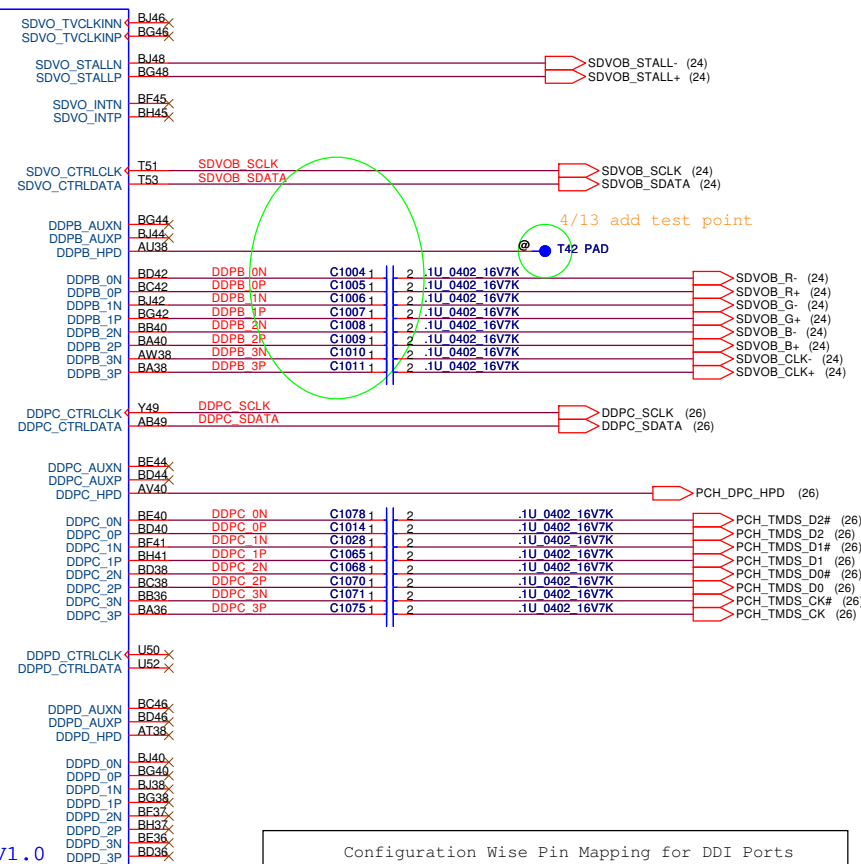
(33) ENBKL ENBKL R112 1 2 0 0402 5% IGPU_BKLT_EN

Del U11.C230.R115.R126 1/7



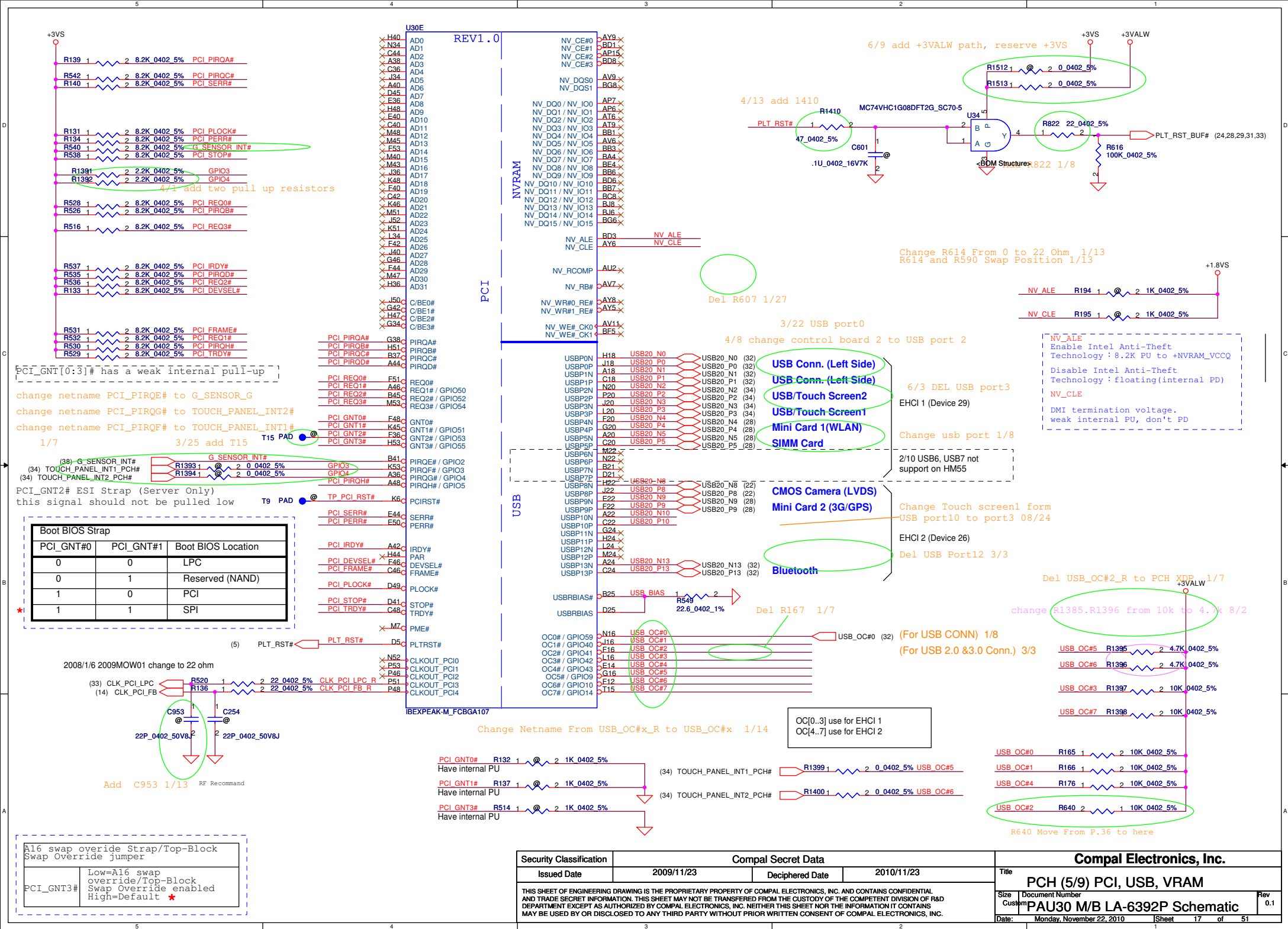
Digital Display Interface

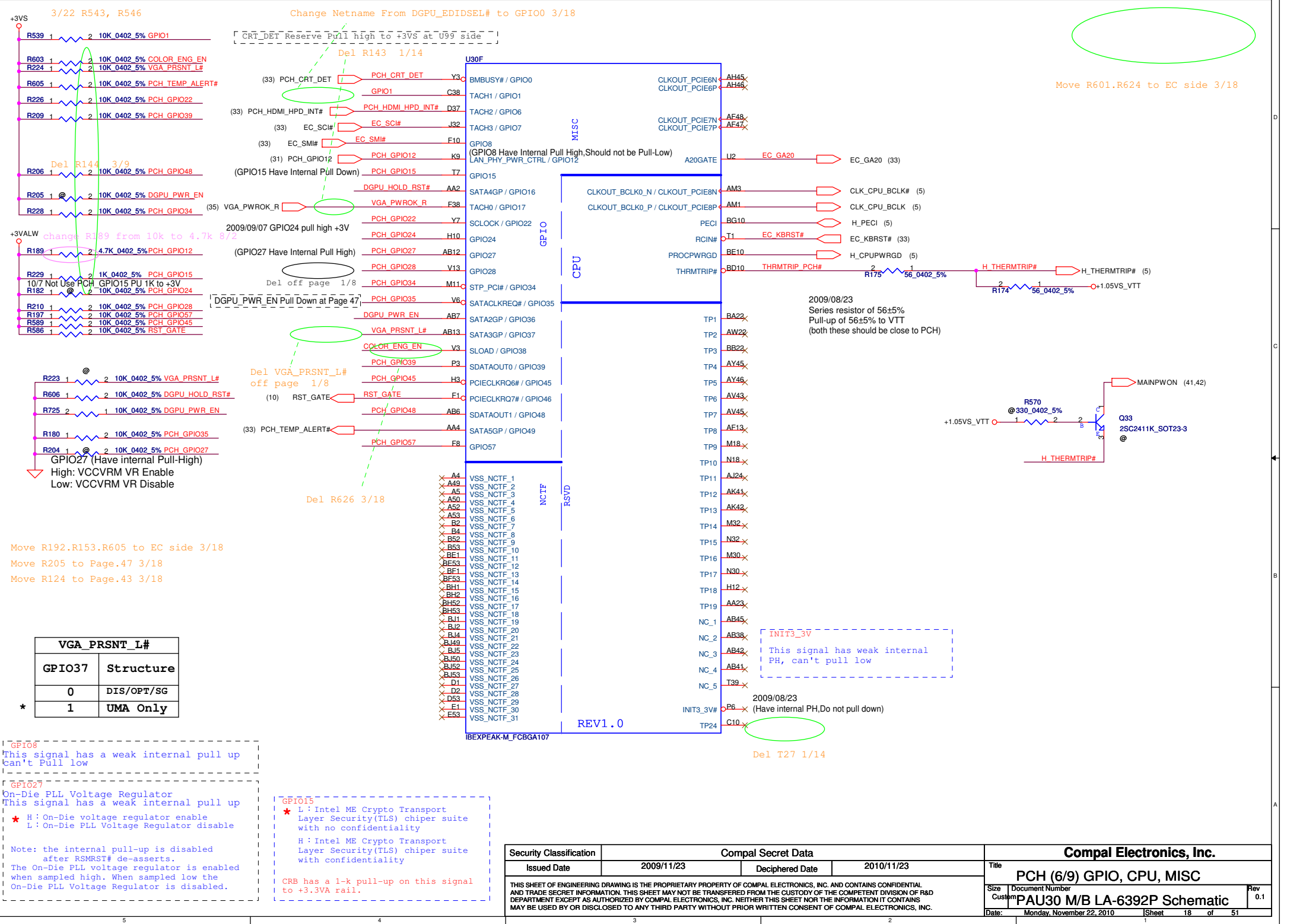
REV1.0



Configuration Wise Pin Mapping for DDI Ports

DDI PCH Pin Names	SDVO Mapping	HDMI/DVI Mapping	DisplayPort Mapping
DDPB_0]P	SDVO_RED	TMDSB_DATA2	DDPB_0]P
DDPB_0]N	SDVO_RED#	TMDSB_DATA2#	DDPB_0]N
DDPB_1]P	SDVO_GREEN	TMDSB_DATA1	DDPB_1]P
DDPB_1]N	SDVO_GREEN#	TMDSB_DATA1#	DDPB_1]N
DDPB_2]P	SDVO_BLUE	TMDSB_DATA0	DDPB_2]P
DDPB_2]N	SDVO_BLUE#	TMDSB_DATA0#	DDPB_2]N
DDPB_3]P	SDVO_CLK	TMDSB_CLK	DDPB_3]P
DDPB_3]N	SDVO_CLK#	TMDSB_CLK#	DDPB_3]N
DDPB_AUXP	NA	NA	DDPB_AUXP
DDPB_AUXN	NA	NA	DDPB_AUXN
DDPB_HPD	NA	HDMI_HPD	DDPB_HPD
SDVO_CTRLCLK	SDVO_CTRLCLK	HDMI_CTRLCLK	NA
SDVO_CTRLDATA	SDVO_CTRLDATA	HDMI_CTRLDATA	NA





VGA_PRSNT_L#	
GPIO37	Structure
0	DIS/OPT/SG
1	UMA Only

GPIO08
This signal has a weak internal pull up
can't pull low

GPIO27
On-Die PLL Voltage Regulator
This signal has a weak internal pull up

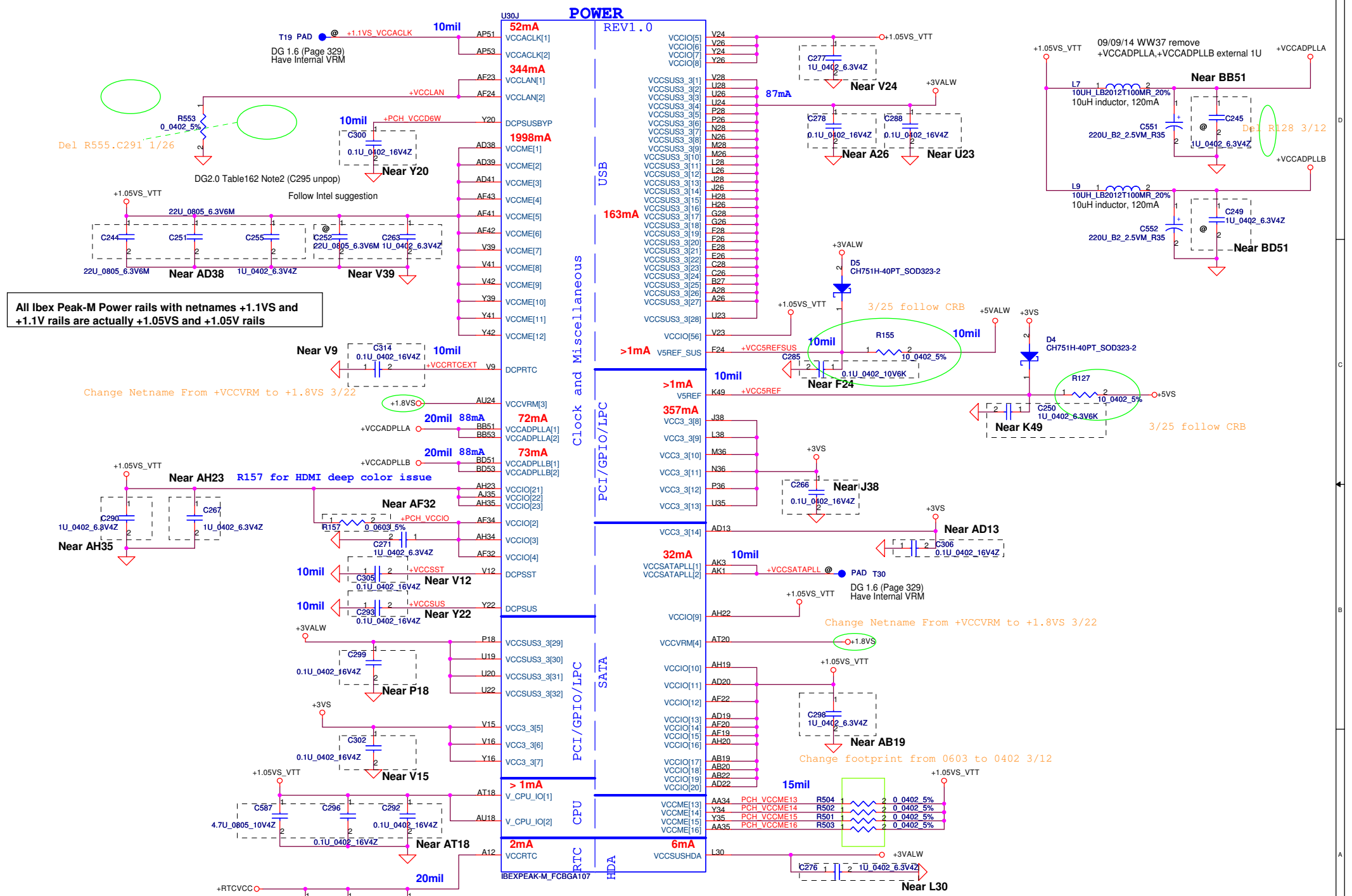
★ H : On-Die voltage regulator enable
L : On-Die PLL Voltage Regulator disable

Note: the internal pull-up is disabled
after RSMRST# de-asserts.
The On-Die PLL voltage regulator is enabled
when sampled high. When sampled low the
On-Die PLL Voltage Regulator is disabled.

GPIO15
★ L : Intel ME Crypto Transport
Layer Security(TLS) chiper suite
with no confidentiality
H : Intel ME Crypto Transport
Layer Security(TLS) chiper suite
with confidentiality

CRB has a 1-k pull-up on this signal
to +3.3VA rail.

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				Date	Monday, November 22, 2010
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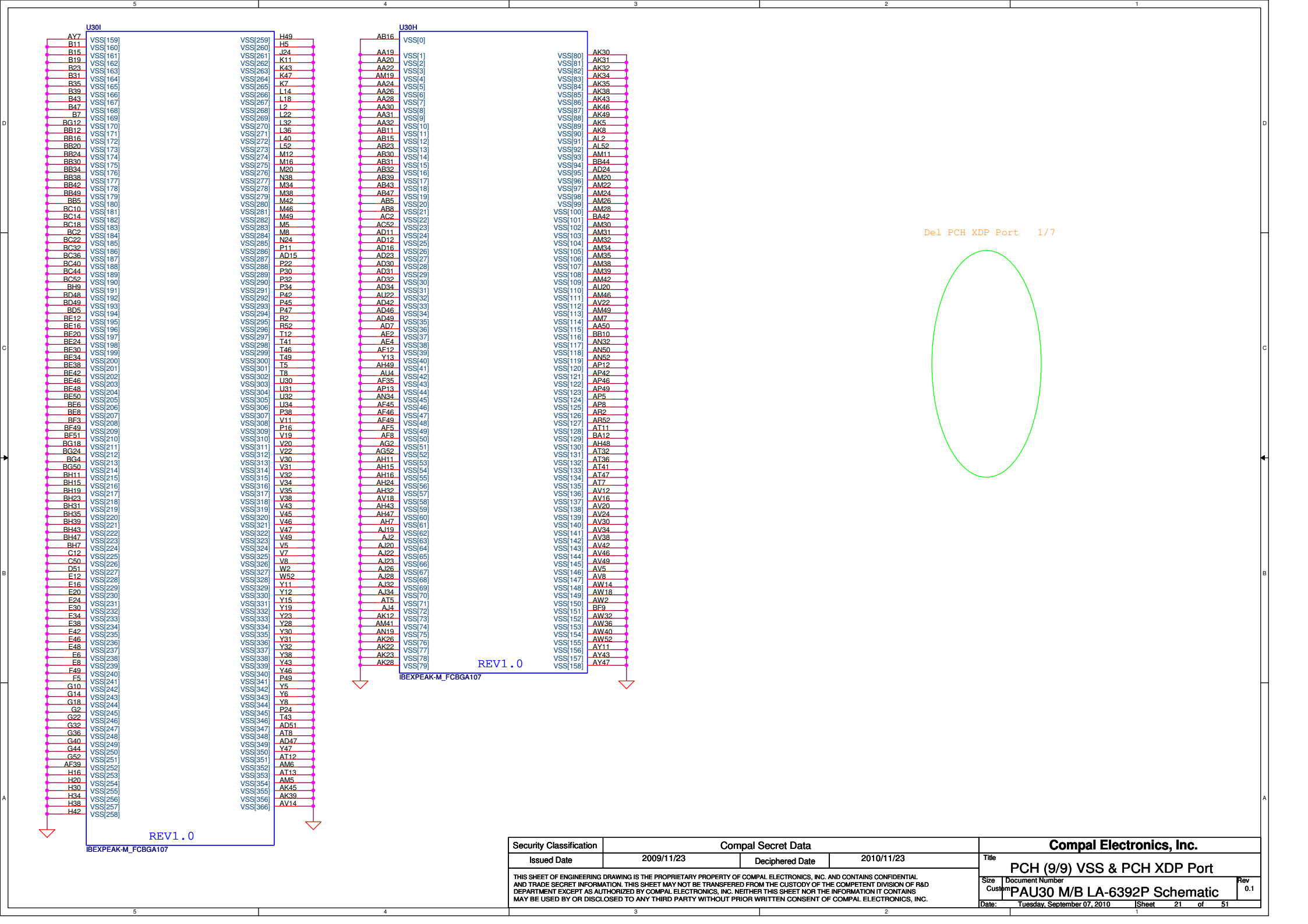
All Ibex Peak-M Power rails with netnames +1.1VS and +1.1V rails are actually +1.05VS and +1.05V rails

Change Netname From +VCCVRM to +1.8VS 3/22

Change Netname From +VCCVRM to +1.8VS 3/22

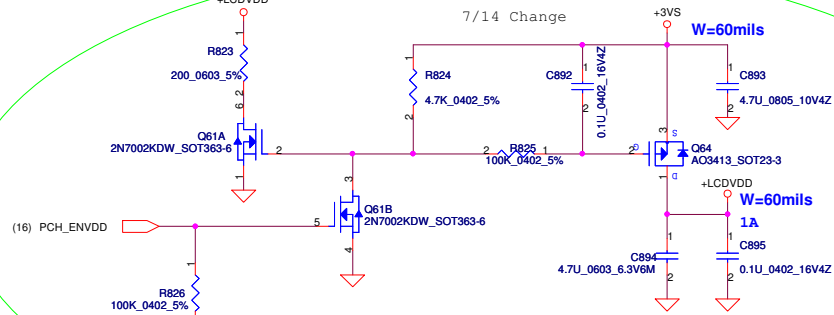
Change footprint from 0603 to 0402 3/12

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		Size		Document Number		Customer		Rev	
				PAU30 M/B LA-6392P Schematic				0.1	
		Date:		Monday, November 01, 2010		Sheet		20 of 51	



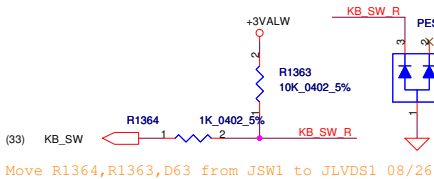
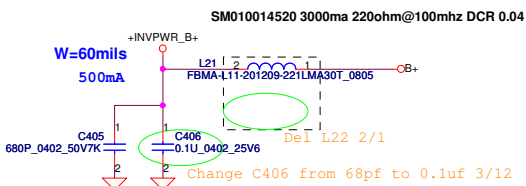
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		Size	Document Number						Rev
		Customer	PAU30 M/B LA-6392P Schematic						0.1
		Date:	Tuesday, September 07, 2010		Sheet	21	of	51	

LCD POWER CIRCUIT

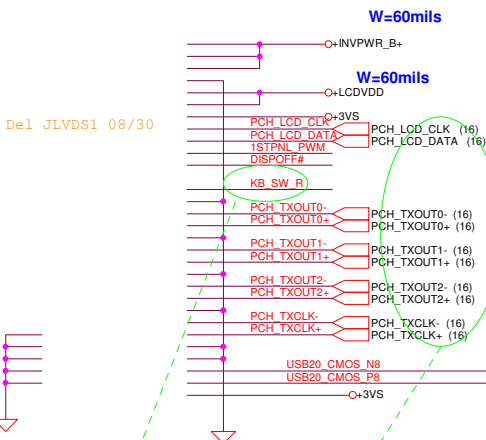


change R823 BOM from 300_0603 to 200_0603 9/14
Change LCD POWER Circuit (Follow NAYF0) 1/8
Change C894 footprint from 0805 to 0603 3/12
change R825 value from 47k ohm to 100K ohm 7/26
change C892 value from 0.047uf to 0.1uf 7/26

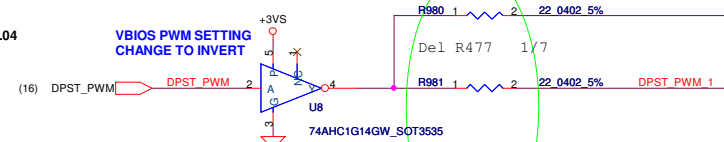
2009/09/08
change P/N to SA741140100



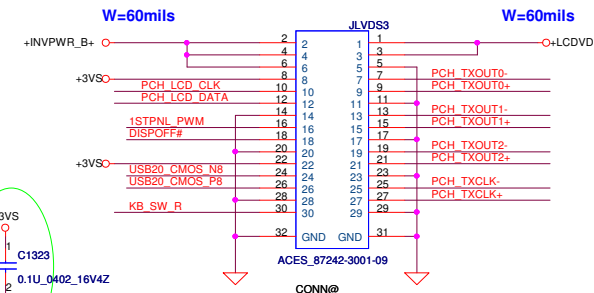
LCD/LED PANEL Conn.



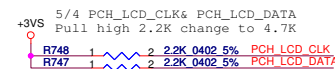
Del JLVDS1 08/30
Add R1350 3/18
Move R154 From PCH side to JLVDS side 3/18



Del R476.R467.R477 1/7
Add R980.R981 1/14
Del R466 3/4

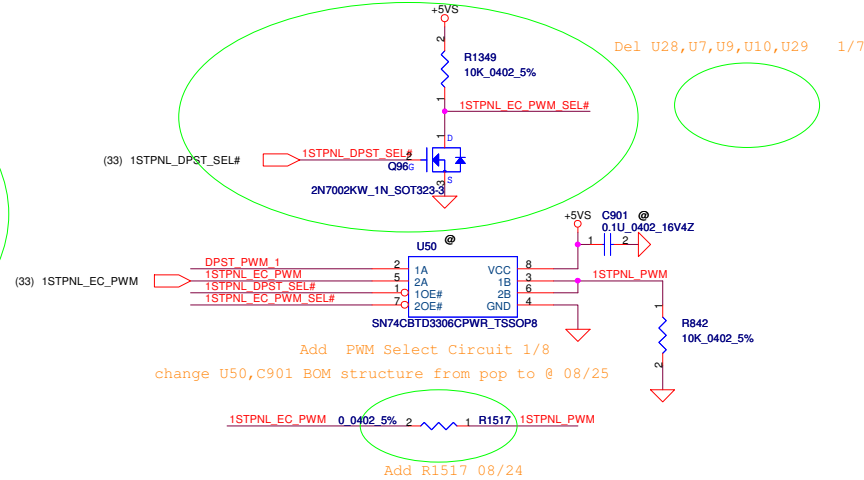


4/1 add for RF



Change netname From USB20_N8 to USB20_N3 1/8
Change netname From USB20_P8 to USB20_P3 1/8

Change 1STPNL_DPST_SEL# Circuit 3/18

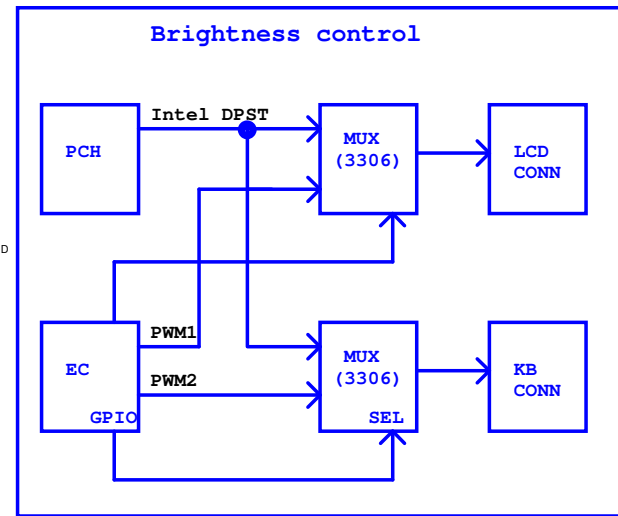


Del U28,U7,U9,U10,U29 1/7
Add PWM Select Circuit 1/8
change U50,C901 BOM structure from pop to @ 08/25

1STPNL_EC_PWM 0.0402 5% 2 1 R1517 1STPNL_PWM

Add R1517 08/24

Brightness control

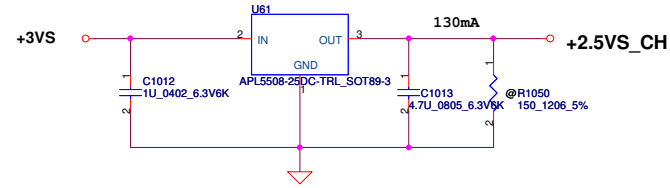
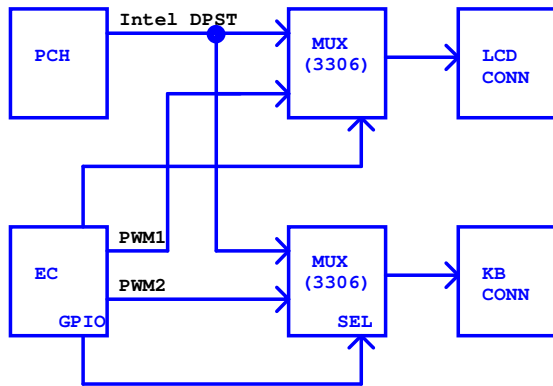


Del UMA Only ,Switchable ,DIS Only Circuit 1/7

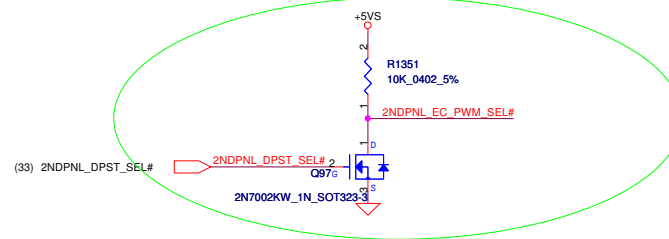
Security Classification				Compal Secret Data				Compal Electronics, Inc.			
Issued Date				2009/11/23				Title			
				Deciphered Date				LVDS Connector			
				2010/11/23				Size			
								Customer			
								PAU30 M/B LA-6392P Schematic			
								Rev			
								0.1			
								Date			
								Monday, November 22, 2010			
								Sheet			
								22 of 51			

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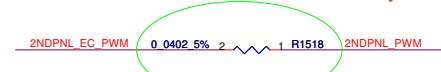
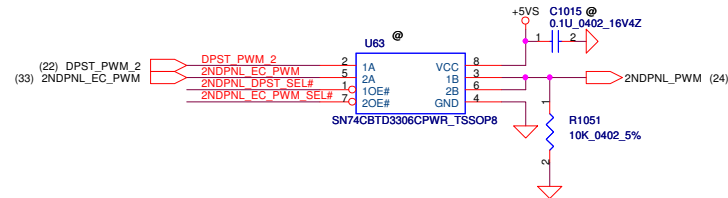
Brightness control



Change 2NDPNL_DPST_SEL# Circuit 3/18



change U63,C1015 BOM structure from pop to @ 08/25



Add R1518 08/24

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								CH7308 SDVO to LVDS		
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CRT Connector

Change L30,L32,L34 from SM01000HJ00 to SHI0000A800 11/01

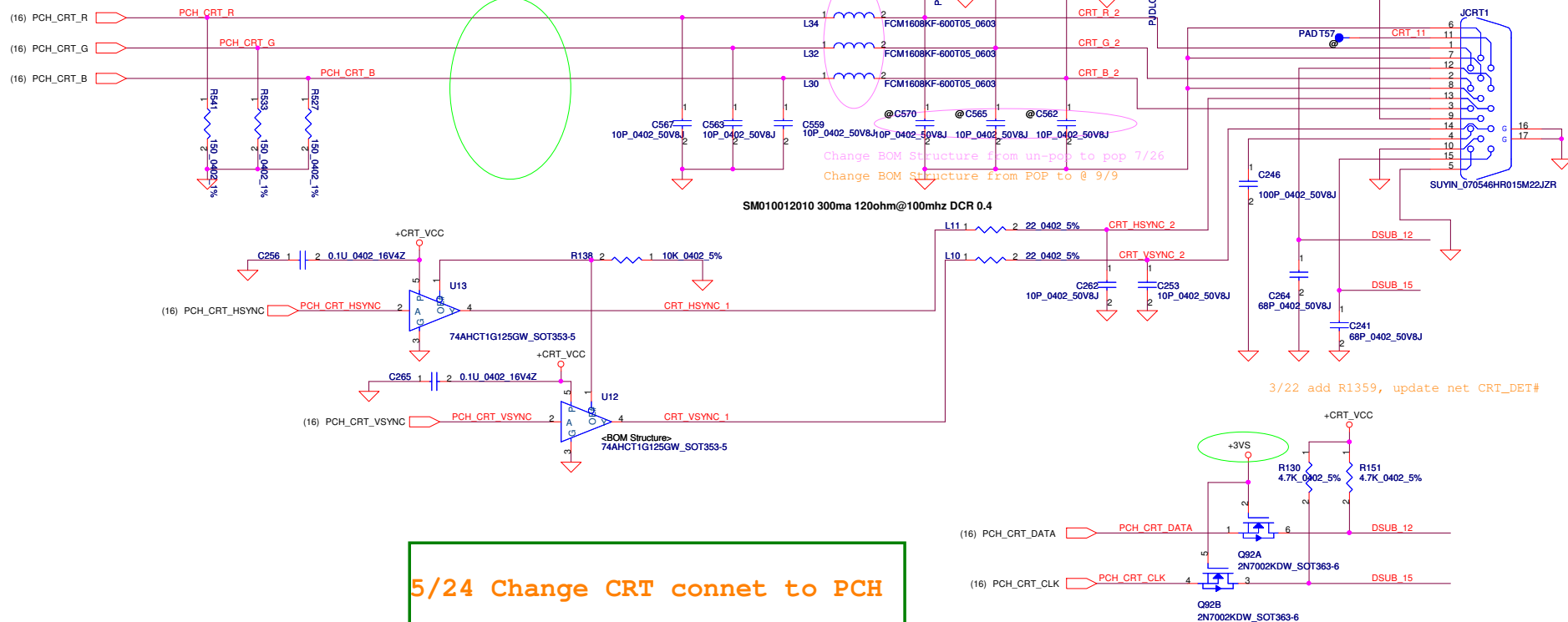
Change L30,L32,L34 P/N form SM01000HI00 to SM01000HJ00 (bead 60 ohm) 9/9

Del L77.L78.L79.C571.C564.C561 3/4
NV DG RGB recommended one pi filter

Change from Inductor to Bead 60 ohm 7/26

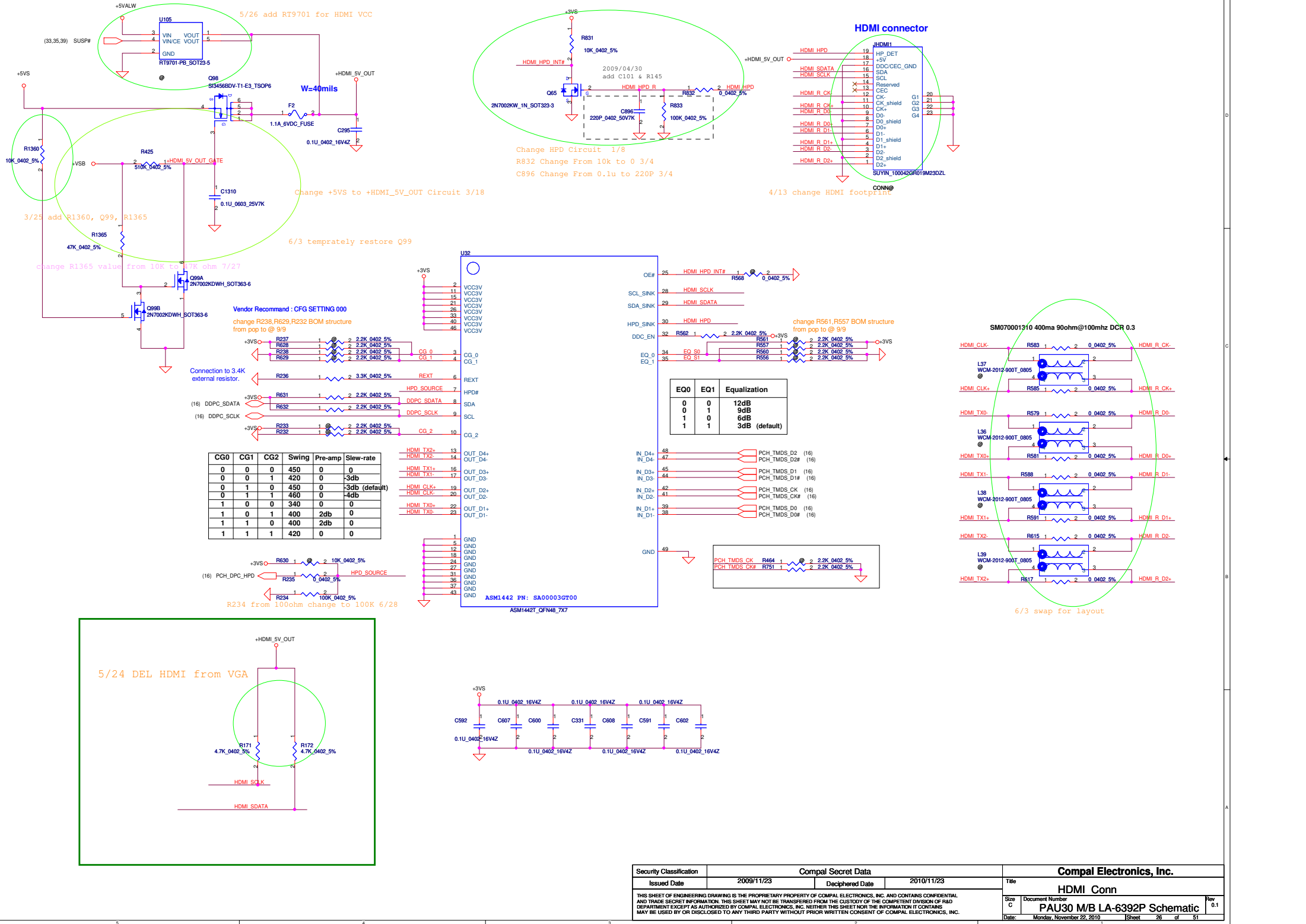
Change ESD protect circuit (follow NAV50) 3/12
Close to CRT CONN for ESD.

5/26 change to fuse



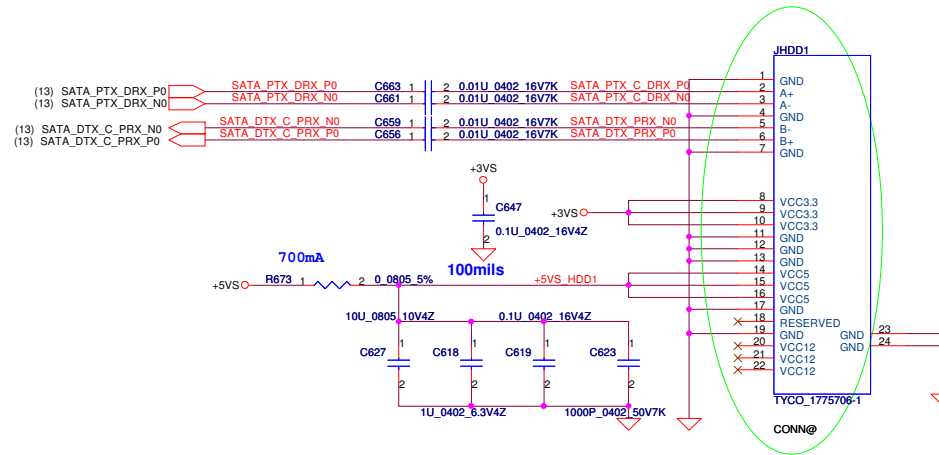
5/24 Change CRT connet to PCH

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						Size B	Document Number			Rev 0		
						PAU30 M/B LA-6392P Schematic						
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CL 4.0 mm

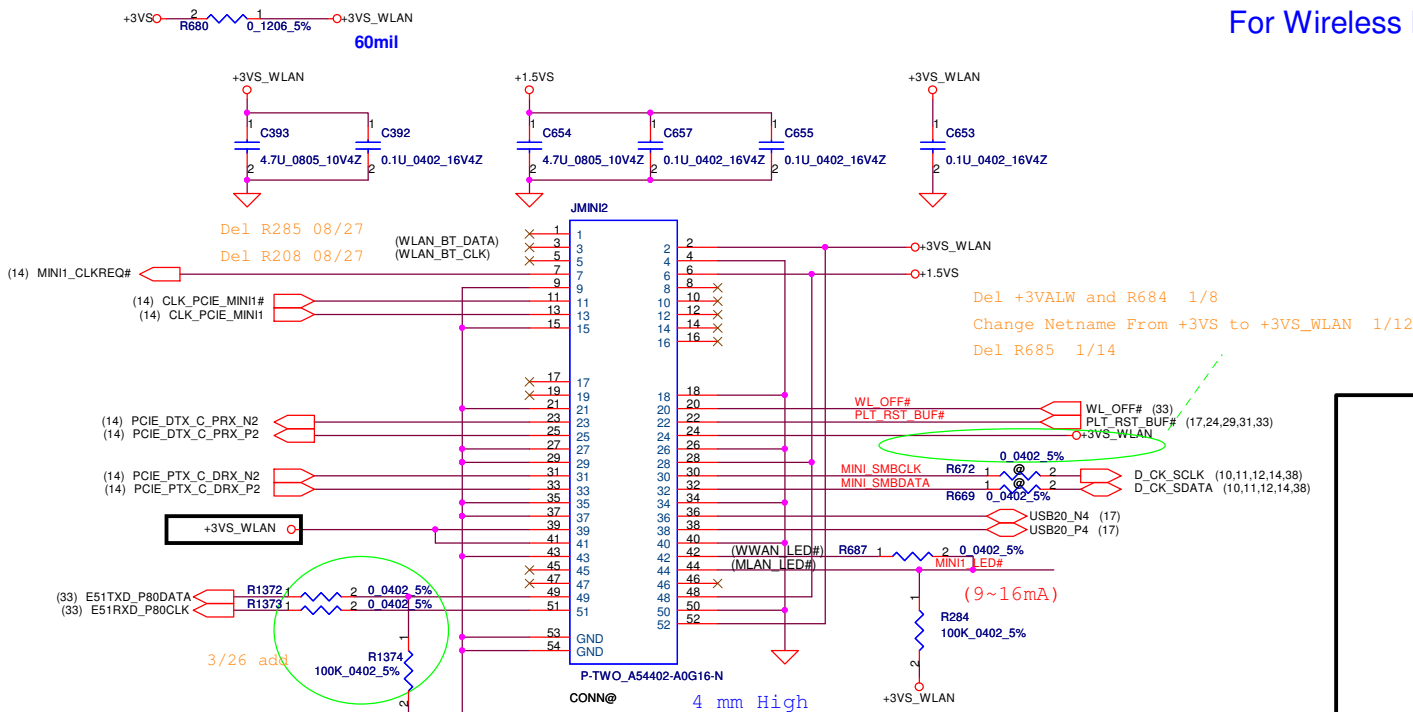
SATA HDD1 Conn.



6/8 change HDD symbol
change HDD symbol 8/26

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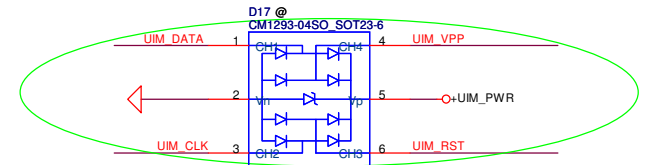
For Wireless LAN (Half Card)



Mini Card Power Rating			
Power	Primary Power (mA)		Auxiliary Power (mA)
	Peak	Normal	Normal
+3VS	1000	750	
+3V	330	250	250 (wake enable)
+1.5VS	500	375	5 (Not wake enable)

For SIMM CARD

6/4 SWAP for layout

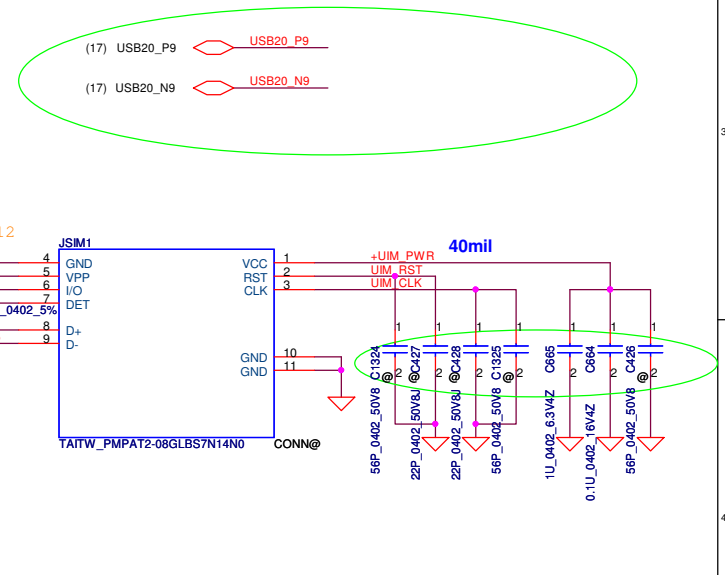
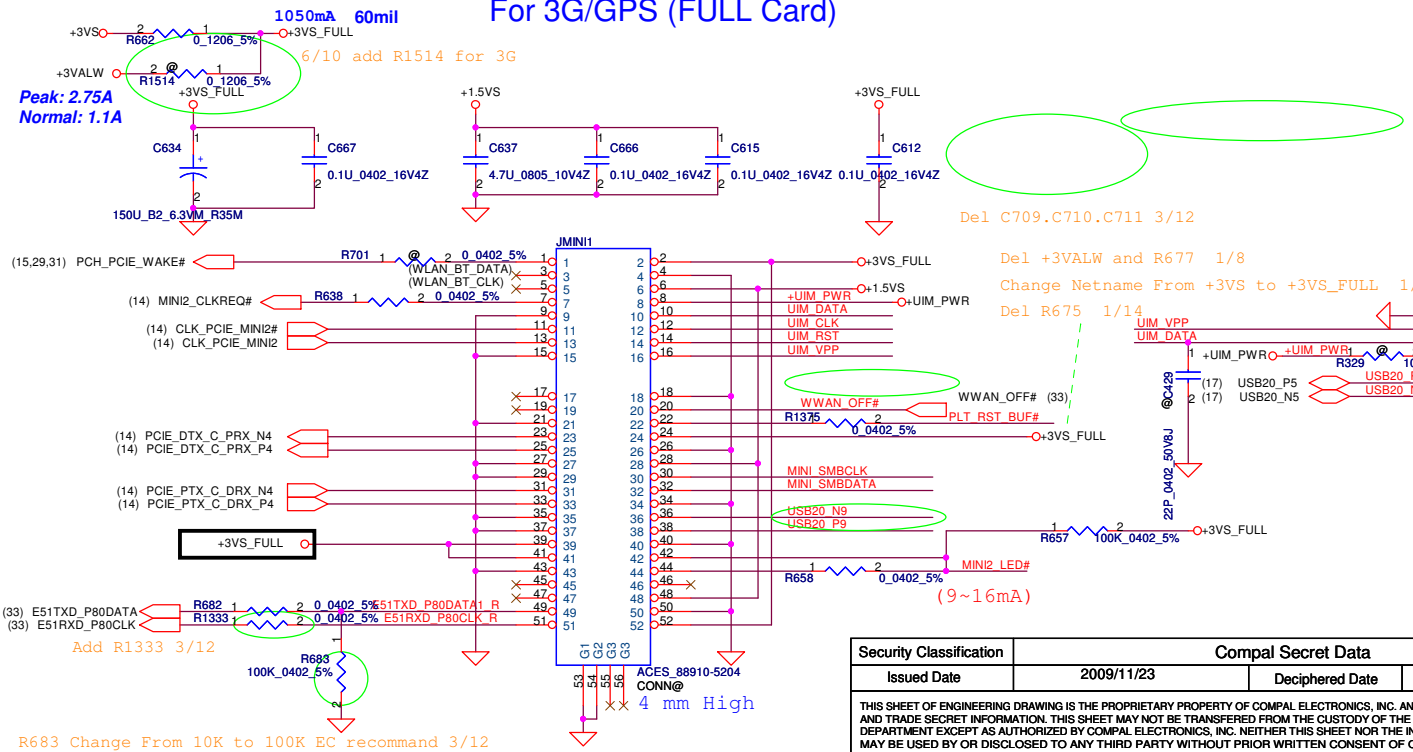


Del L41.R661.R663 1/14

Change Netname From USB20_N10_1 to USB20_N10 1/12

Change Netname From USB20_P10_1 to USB20_P10 1/12

For 3G/GPS (FULL Card)

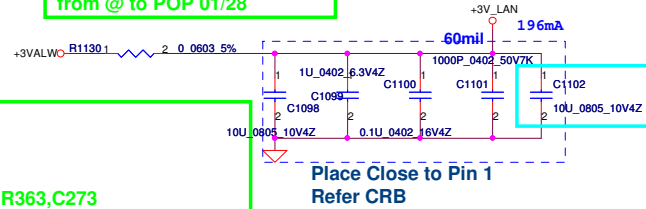


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				Customer	PAU30 M/B LA-6392P Schematic		0.1
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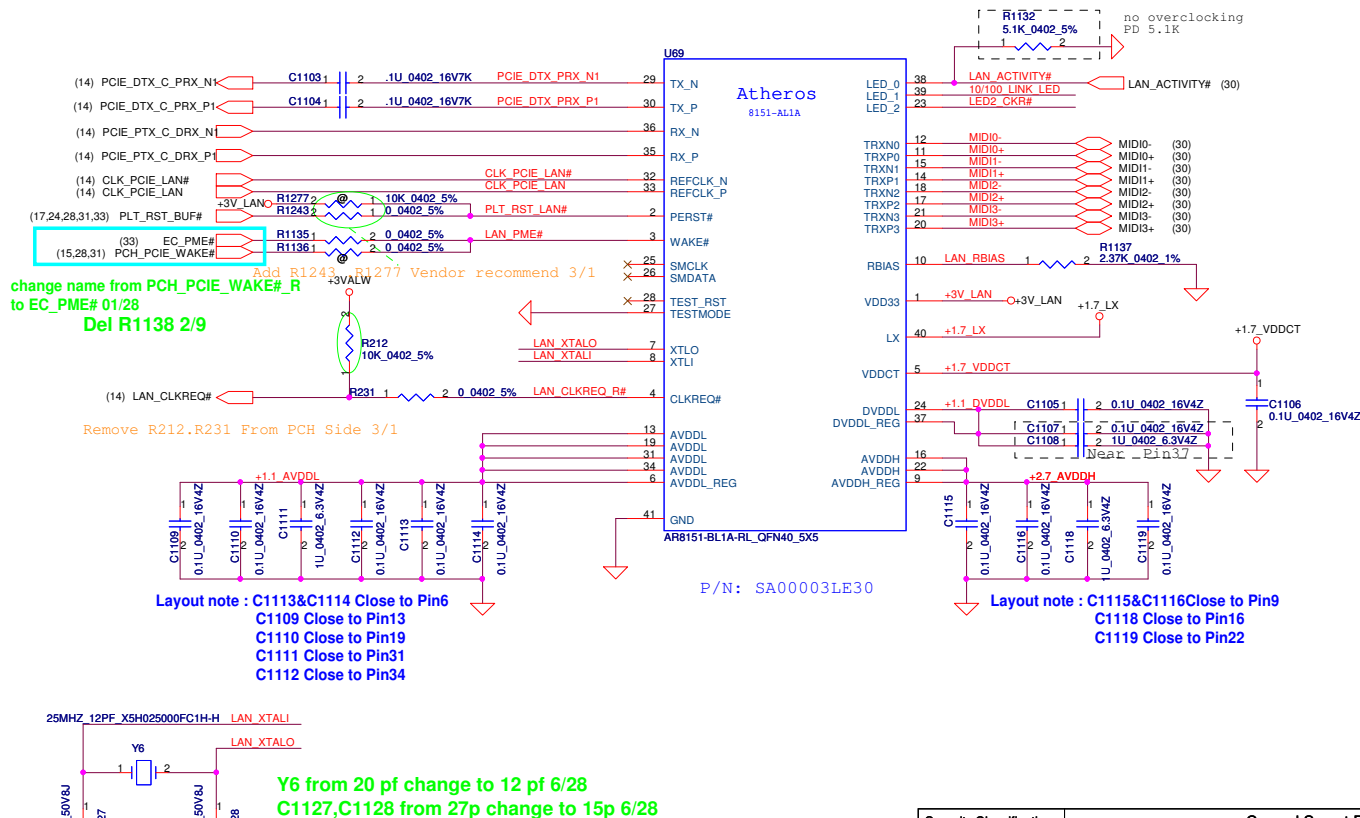
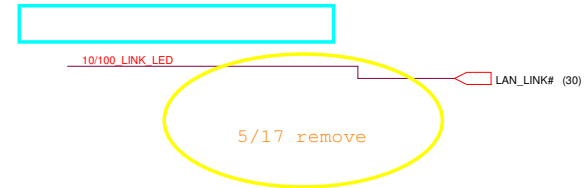
LAN Power Circuit & Refer NTUC0

change R362 BOM structure
from @ to POP 01/28

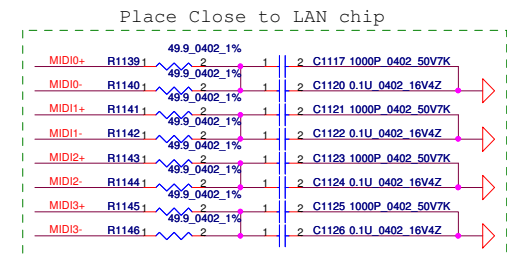
Del Q21,R363,C273
(WOL function) 01/28



10/22 Remove R364



10/22 Change R376 from mount to @
11/02 Change R373 from mount to @
11/02 Delete Q3(@),R375(@),R377(@)
11/09 Delete R373(@),R376(@)



Y6 from 20 pf change to 12 pf 6/28
C1127,C1128 from 27p change to 15p 6/28

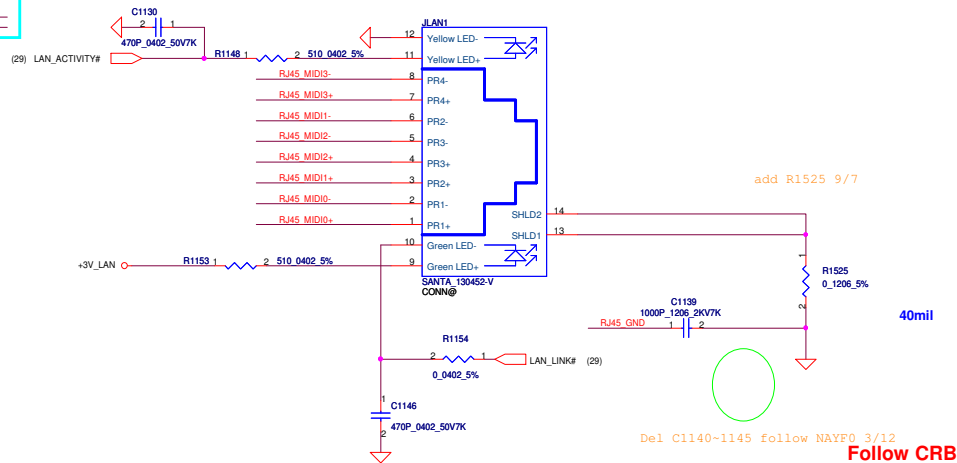
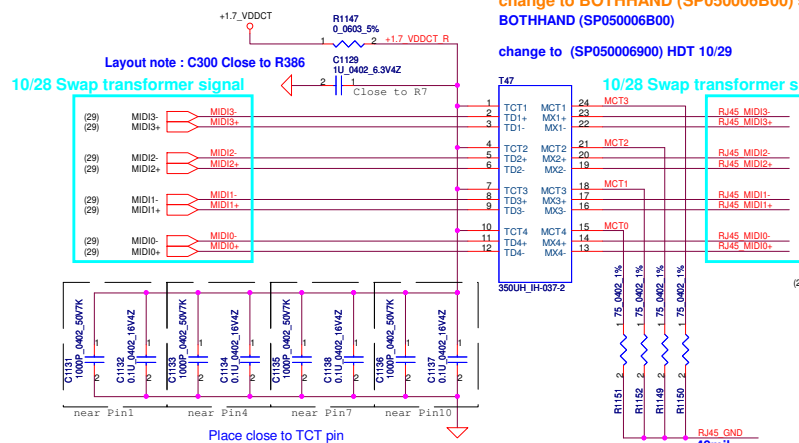
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Size	Custom	Document Number	PAU30 M/B LA-6392P Schematic	Rev	0.3
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Copy NIMUA

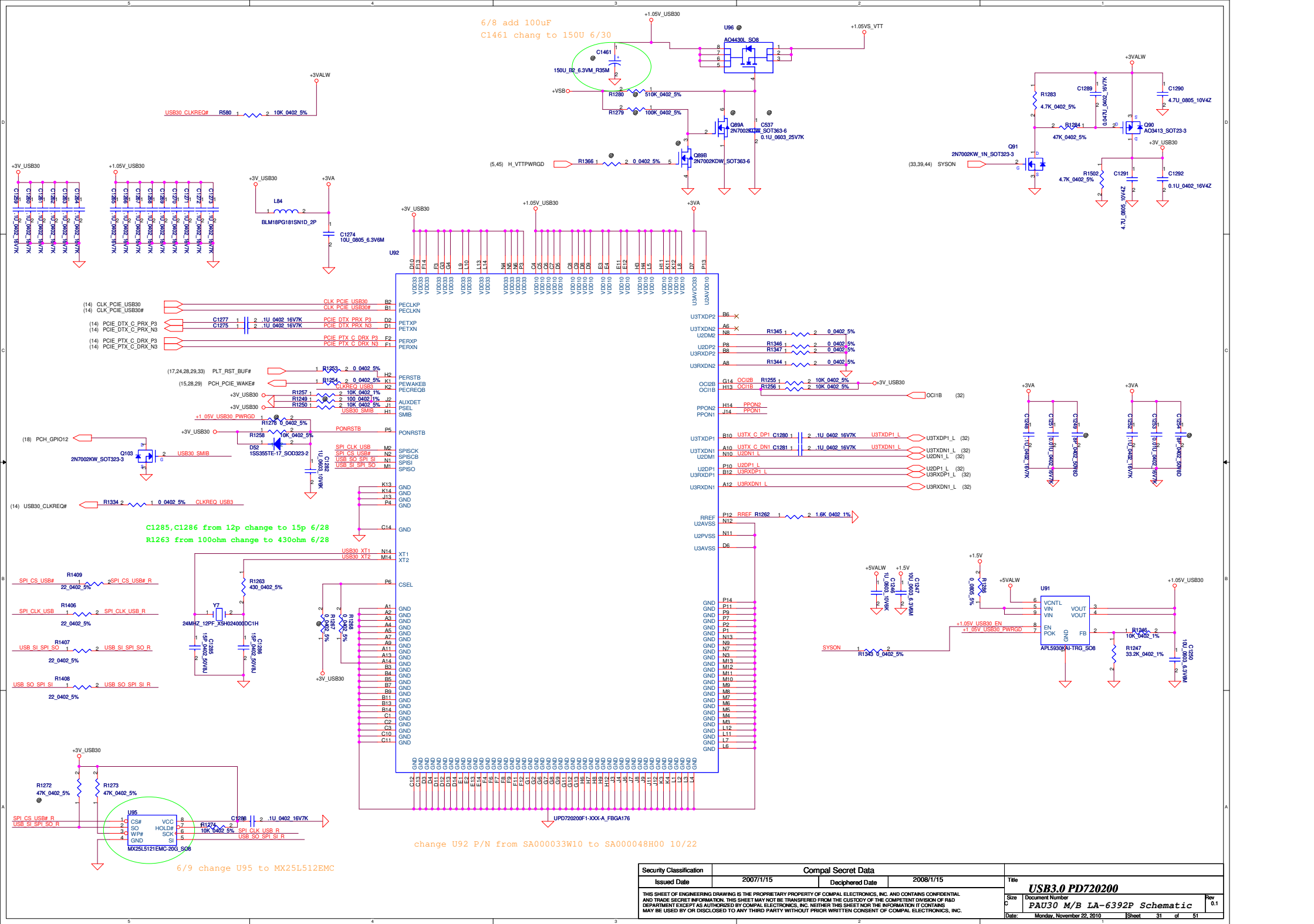
change transformer P/N from TAIMAG(SP050004M00)
change to BOTHHAND (SP050006B00) 9/9
BOTHHAND (SP050006B00)

change to (SP050006900) HDT 10/29

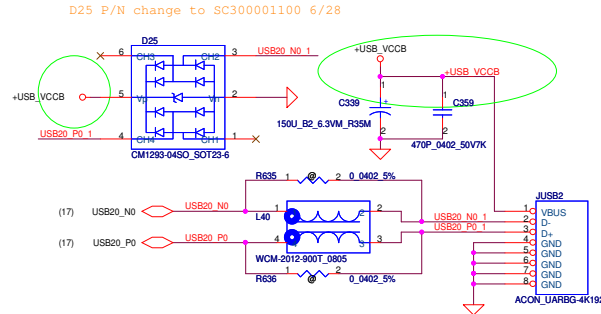
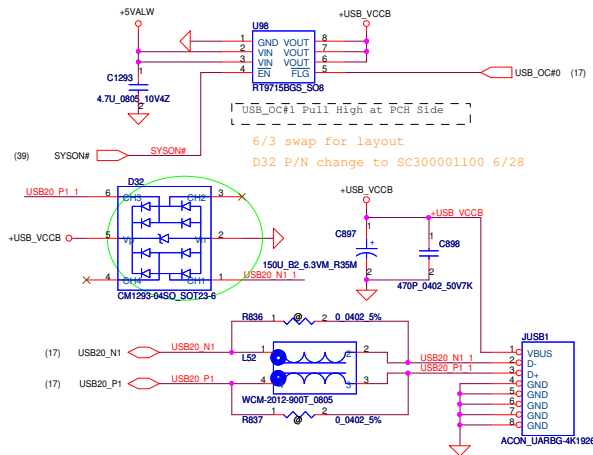
10/28 Swap transformer signal



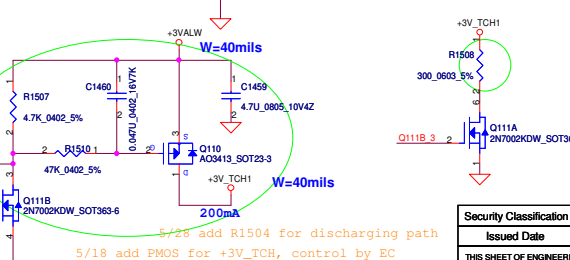
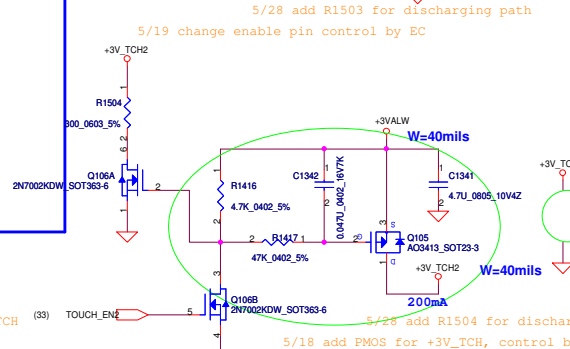
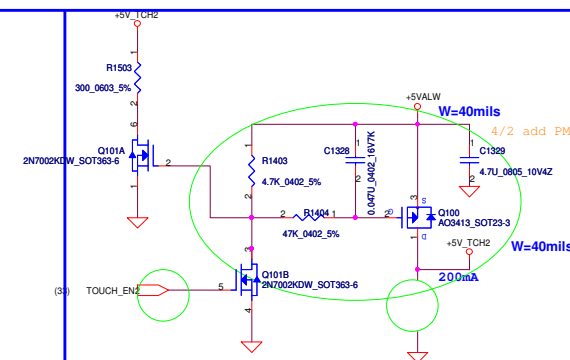
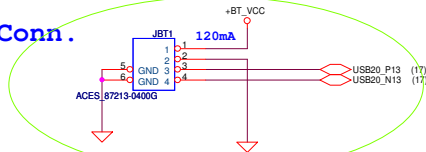
Security Classification	Compal Secret Data			Compal Electronics, Inc.		
Issued Date	2009/10/10	Deciphered Date	2010/10/10	Title	LAN Magnetic & RJ45	
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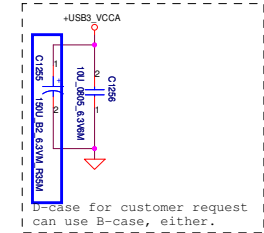
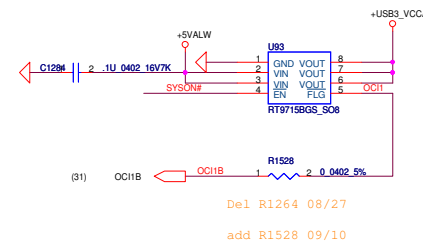
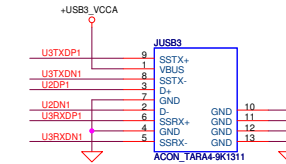
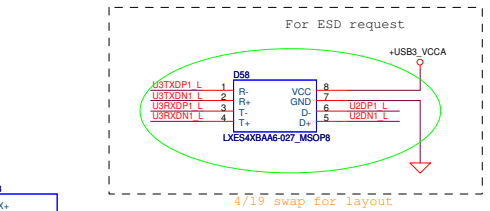
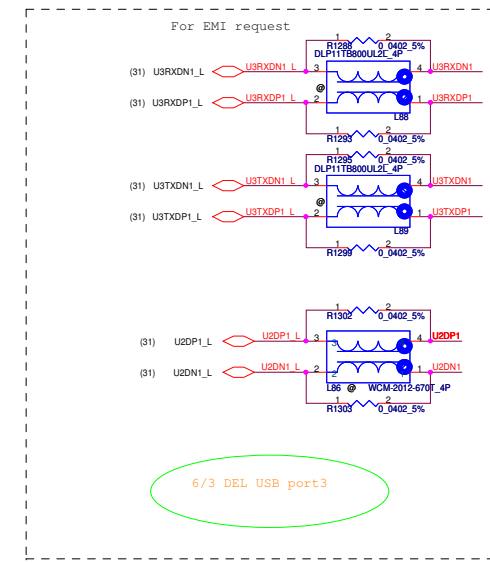
Left



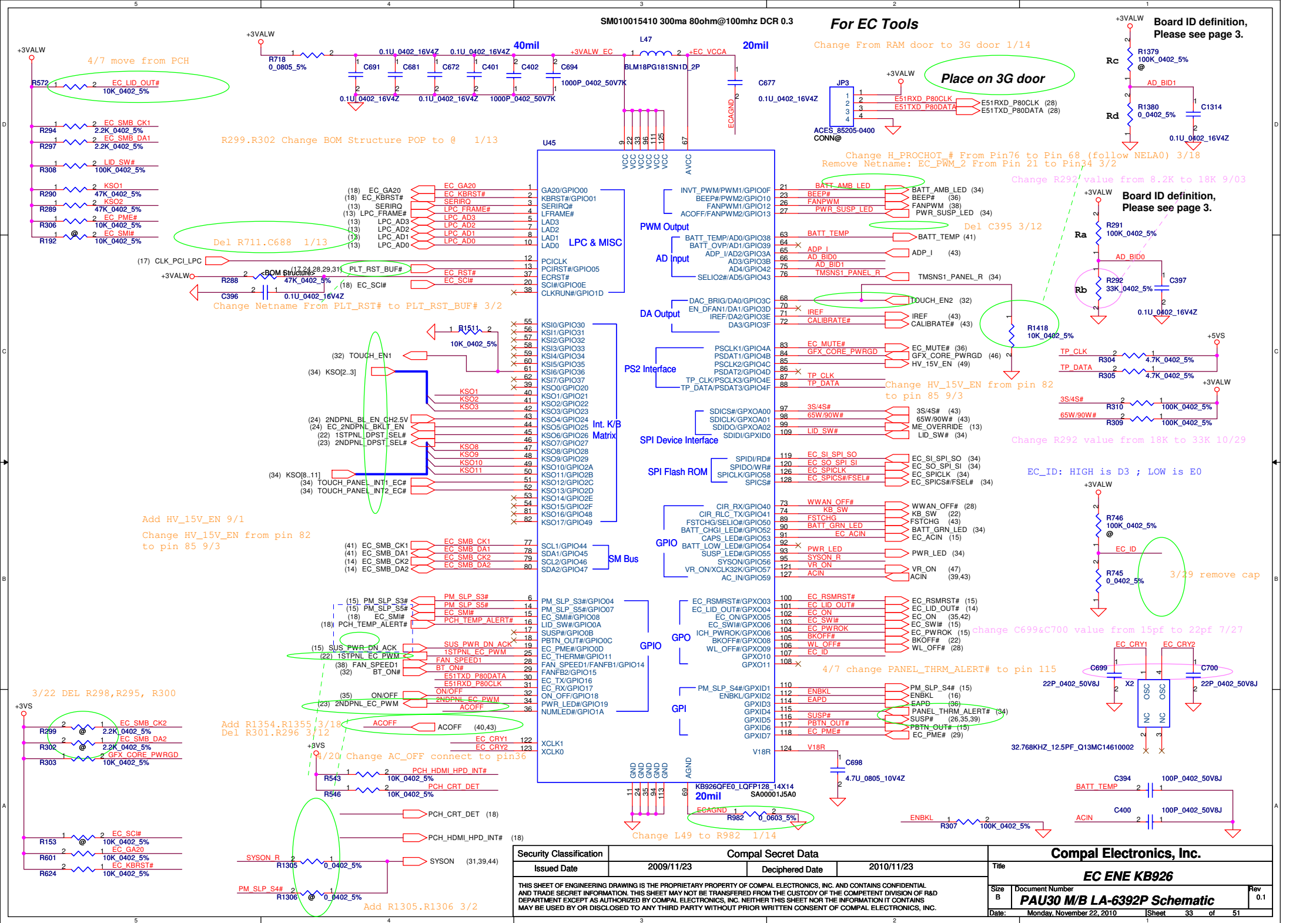
BT Conn.

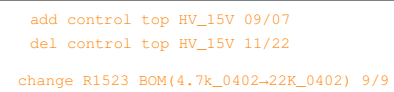


Right



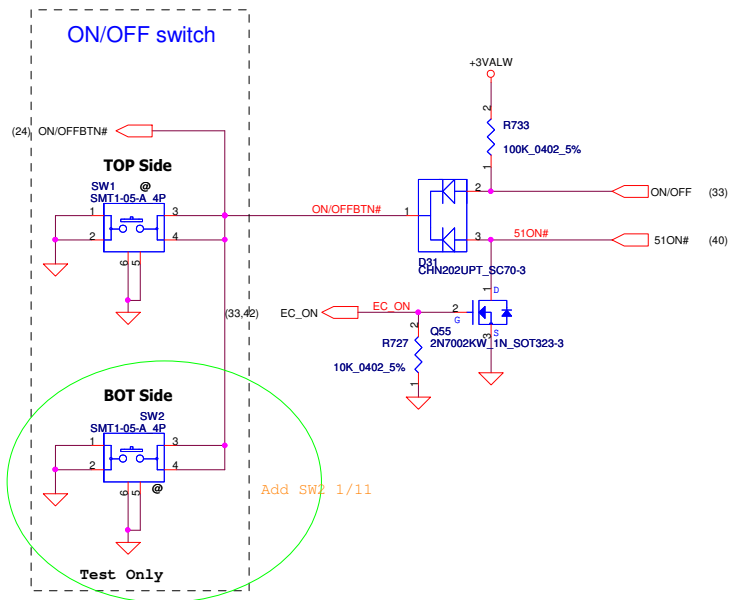
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2009/11/23		2010/11/23		USB / BT / LAN CON	
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		PAU30 M/B LA-6392P Schematic		0.1	
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				Document Number PAU30 M/B LA-6392P Schematic	0.1
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Power Button

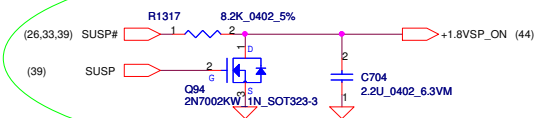


Power ON Circuit

Add +0.75VSP_EN Circuit 3/13

Change +3VS to +3VALW 3/16

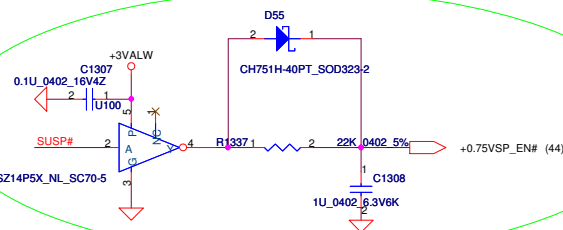
Change R1317 From 1KΩ to 8.2KΩ 3/18
Change C704 From 0.1uF to 2.2uF 3/18



Change R738 From 75KΩ to 200KΩ 3/18



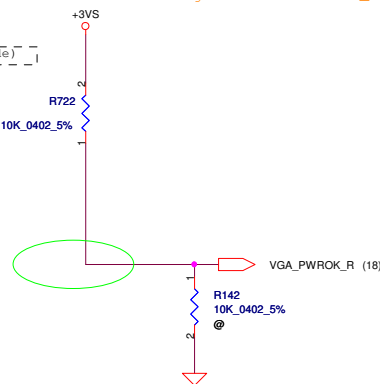
Del U46,R734,R1159,R739,R740,D45,R729,R730,D46 3/9



Change C1308 From 0.1uF to 1uF 3/18
Change R1337 From 1KΩ to 22KΩ 3/18

Chaneg Netname From VGA_PWROK# to PEG_CLKREQ#_R 3/18

[VGA_PWROK is Open-Drain (Pull high at HW'side)]

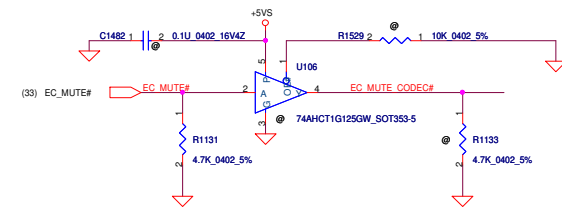
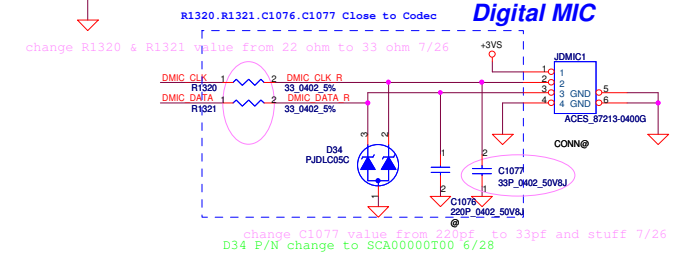
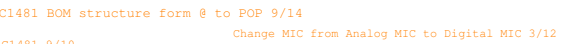
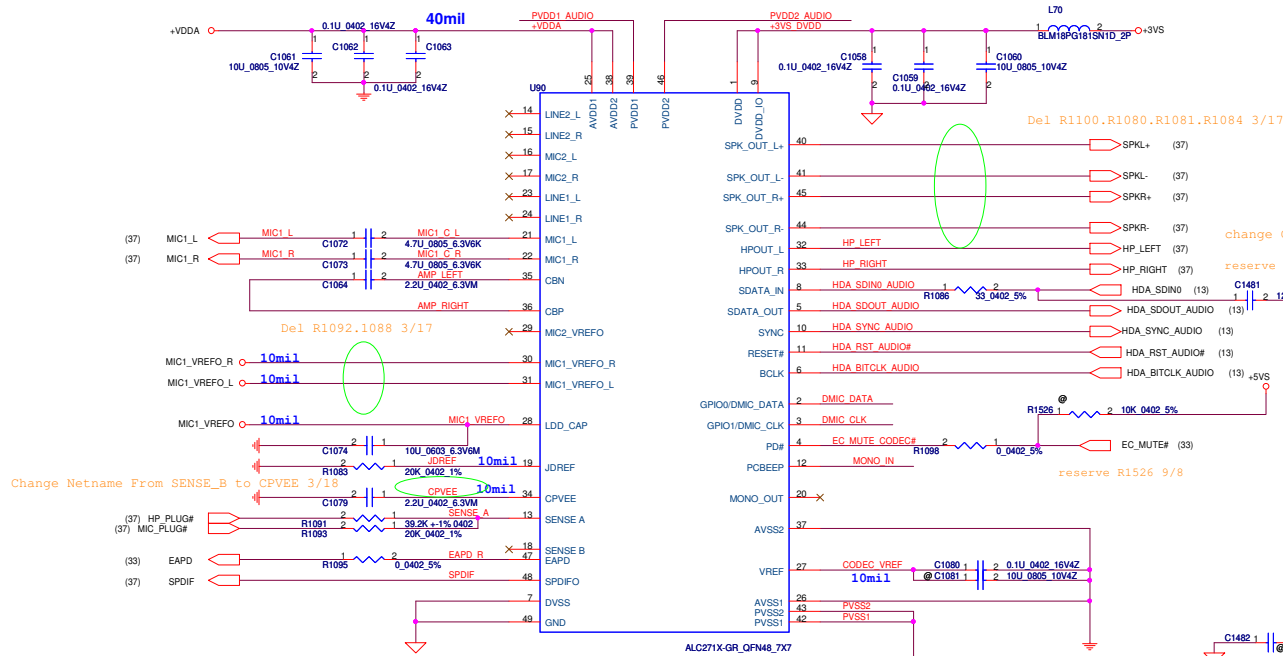
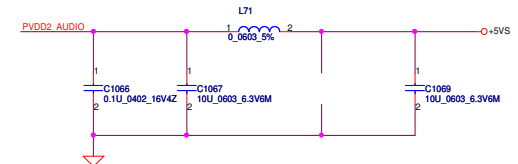
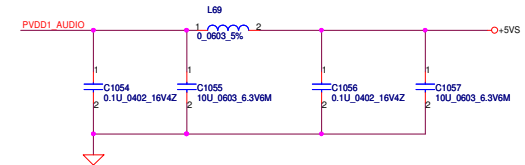
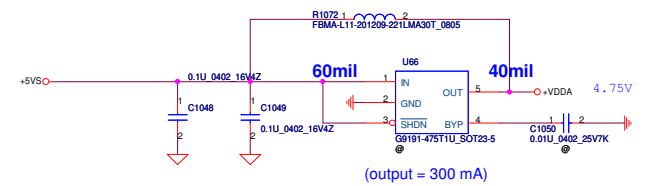
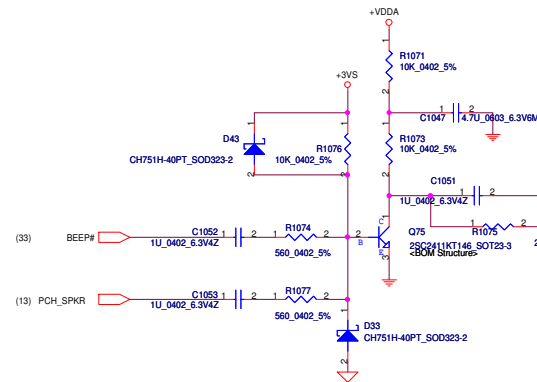


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Power OK

PAU30 M/B LA-6392P Schematic

Del ALC272 circuit 3/12

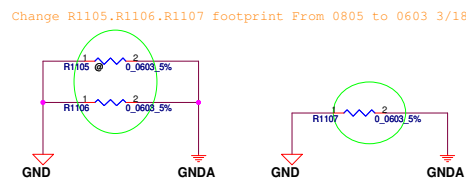


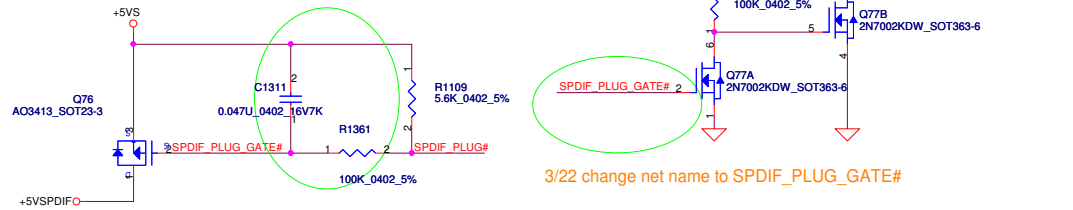
Reserve C1428,U106,R1529,R1133 10/22

Add R1131 10/22

Need update this table

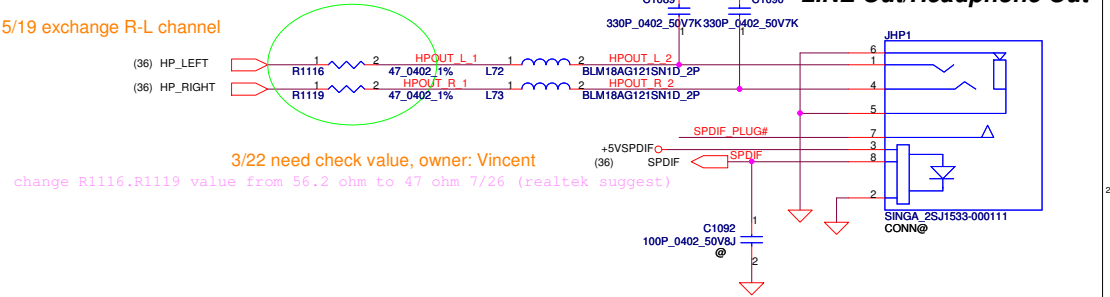
Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)



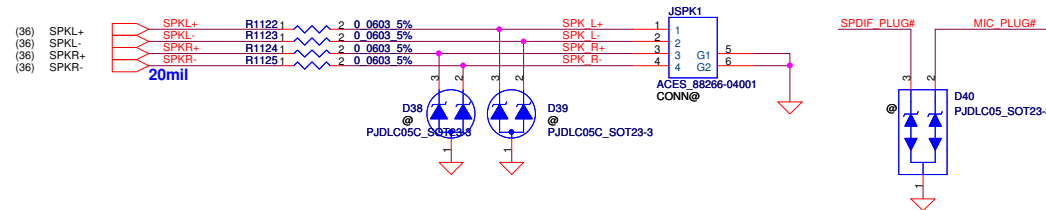


20mil
change back R1361 value from 56k ohm to 100K ohm 7/26
change C1311 value from 0.1u to 0.047uf 7/28

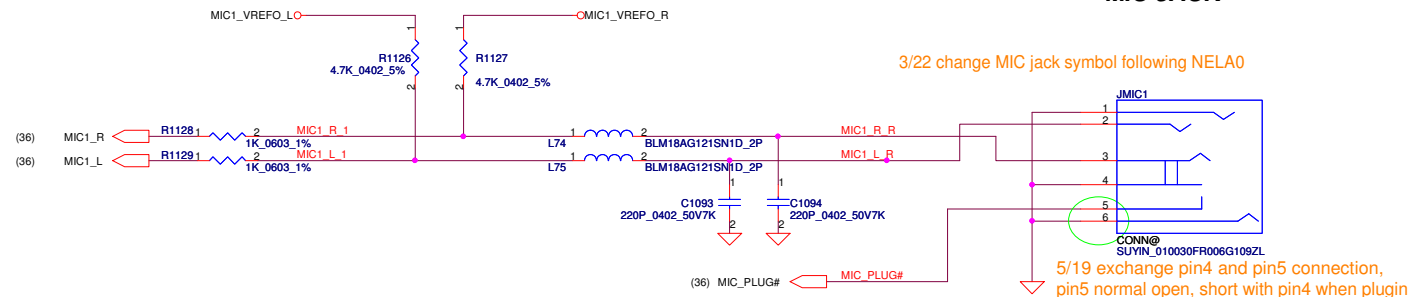
5/19 exchange R-L channel



Int. Speaker Conn.

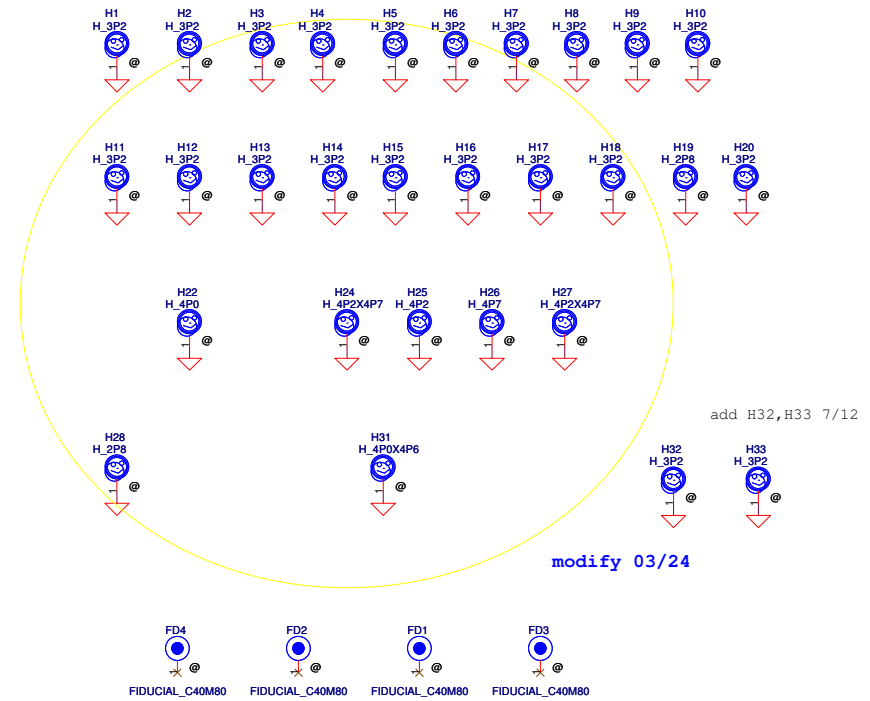
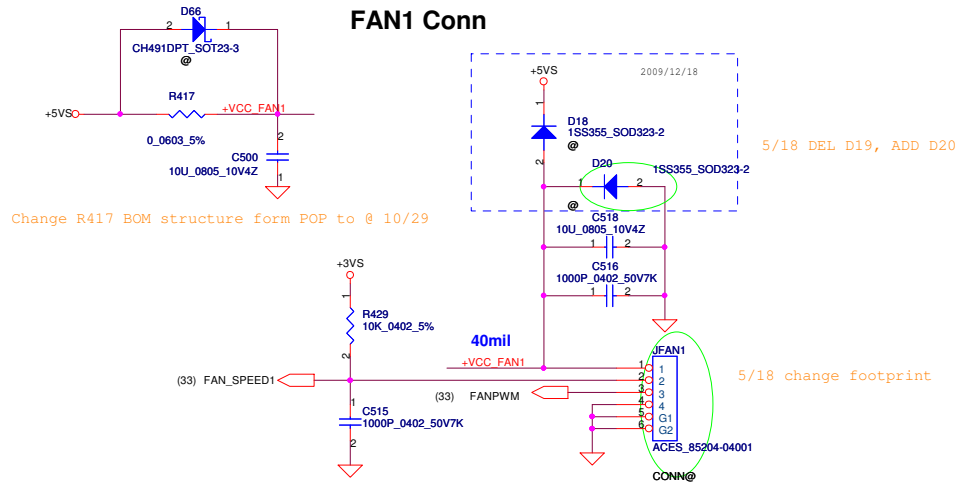


MIC JACK



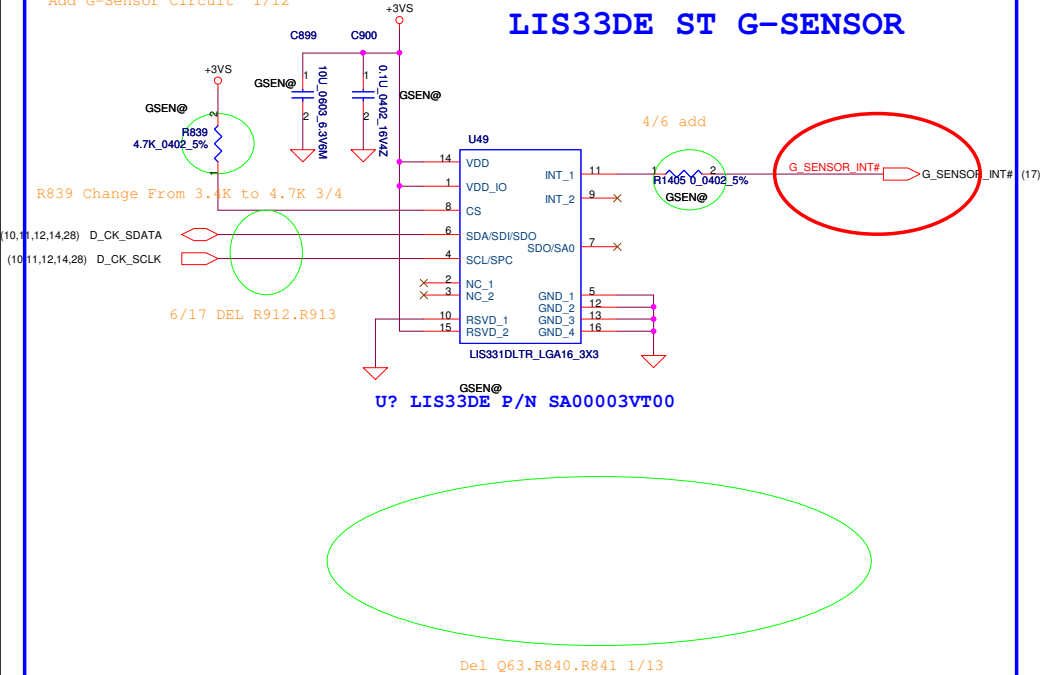
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				PAU30 M/B LA-6392P Schematic	
				Date: Monday, November 22, 2010	Rev 0.2
				Sheet 37 of 51	

Change D66 BOM structure form @ to POP 10/29
reserve D66 10/26



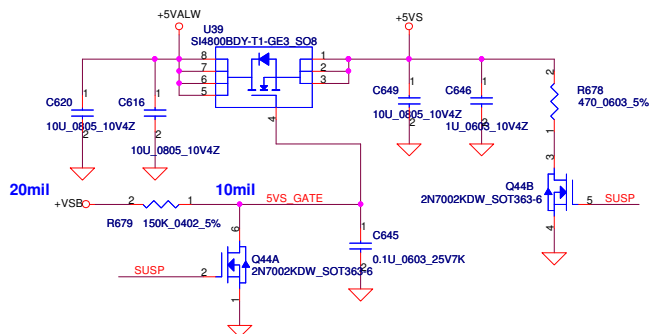
Add G-Sensor Circuit 1/12

LIS33DE ST G-SENSOR

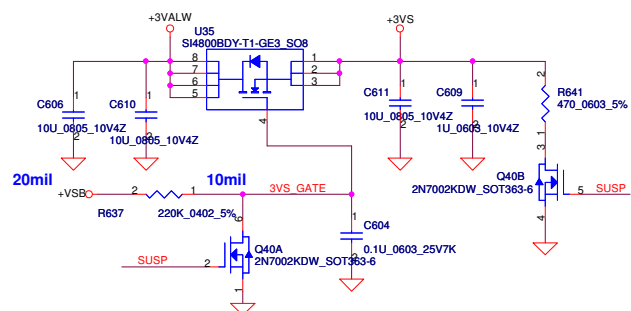


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				PAU30 M/B LA-6392P Schematic	
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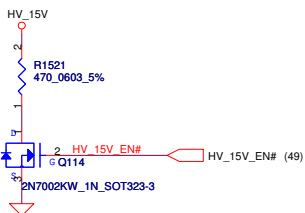
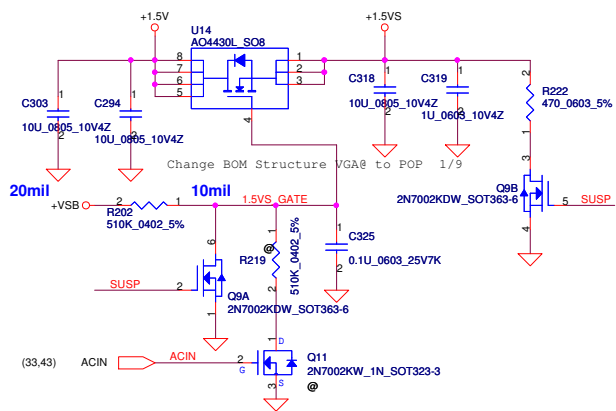
+5VALW TO +5VS



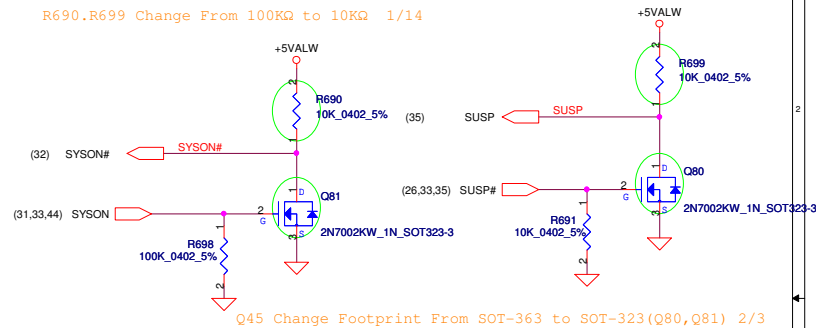
+3VALW TO +3VS



+1.5V to +1.5VS



R690.R699 Change From 100KΩ to 10KΩ 1/14

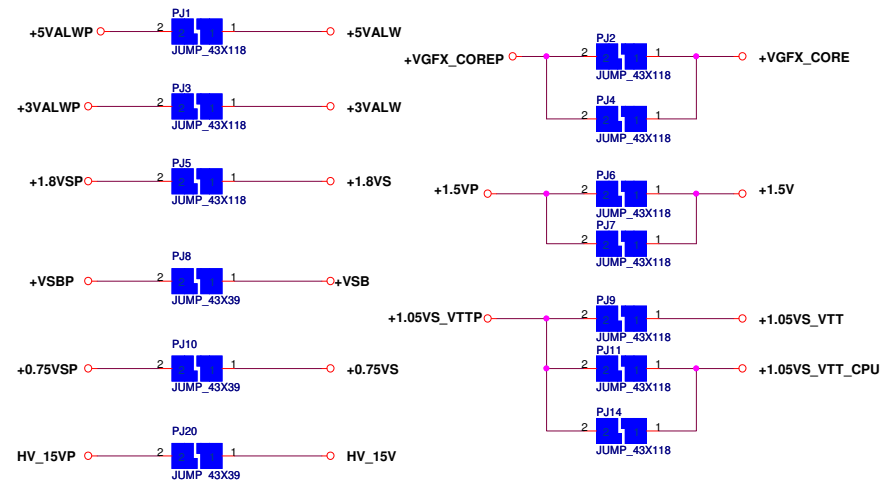
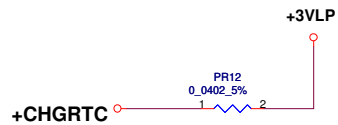
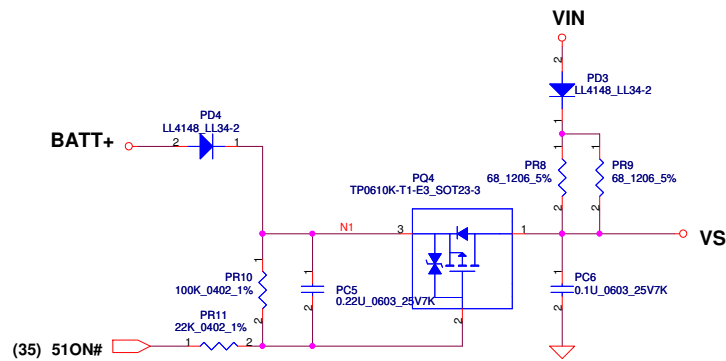
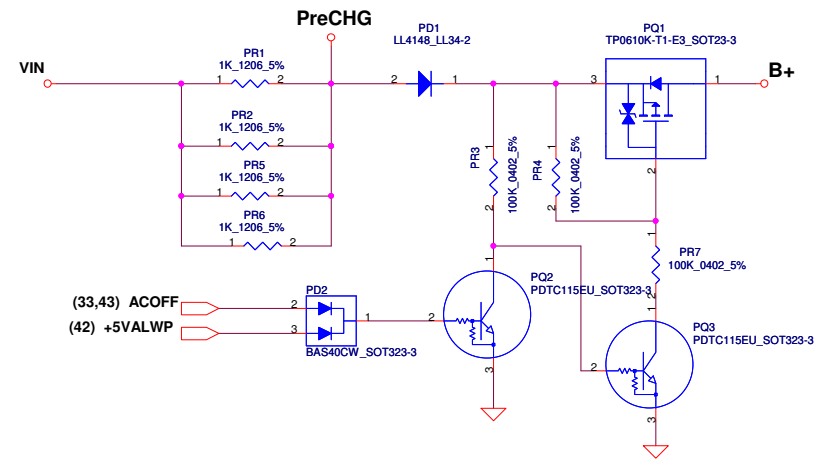
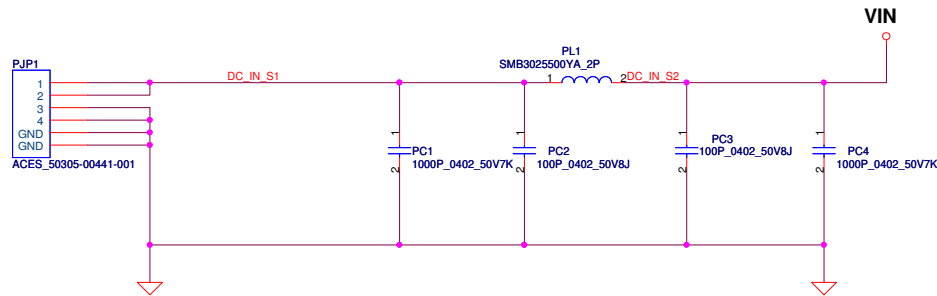


Q45 Change Footprint From SOT-363 to SOT-323(Q80,Q81) 2/3

4/6 remove

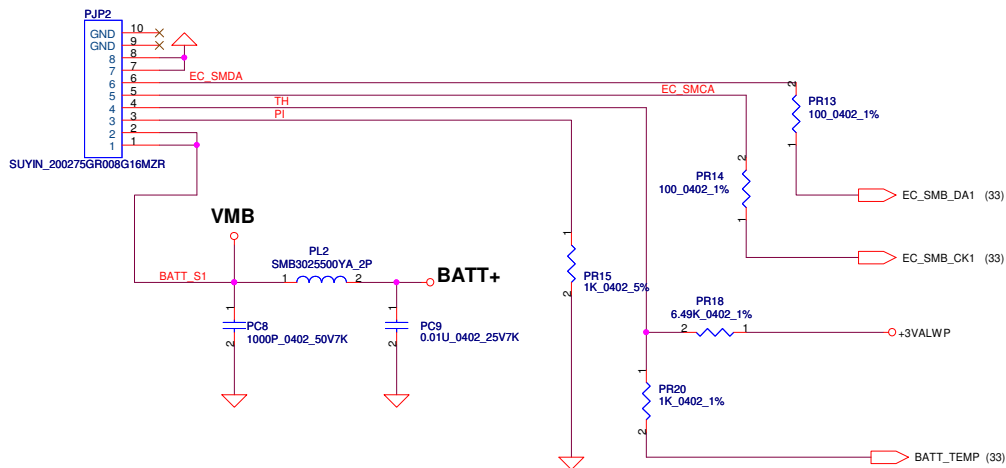
2009/08/14
CP_S3PowerReduction
WhitePaper_Rev0.9
0.75VS speed up discharge

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2010/11/23				Title				DC Interface			
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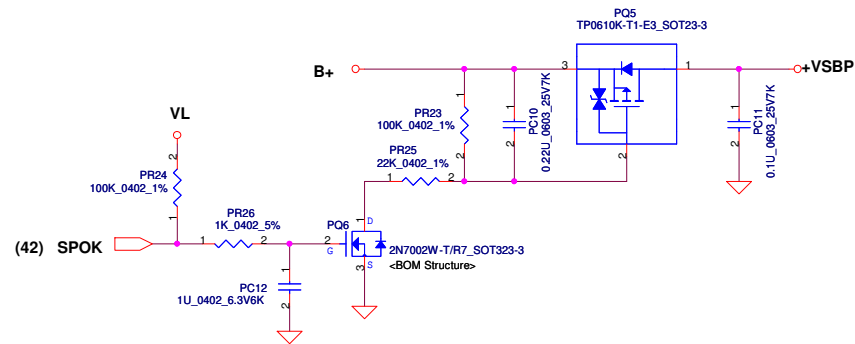
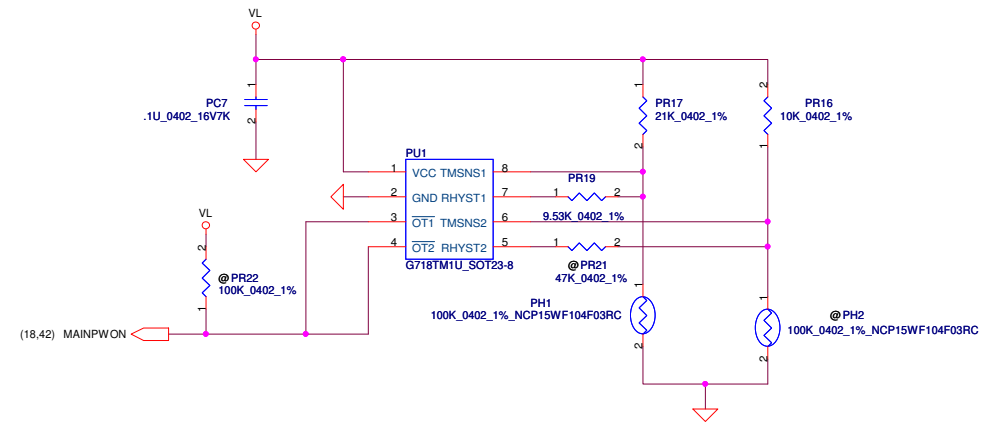
Security Classification				Compal Secret Data				Compal Electronics, Inc.			
Issued Date				2009/11/23		Deciphered Date		2010/11/23		Title	
										DCIN & PRECHARGE	
										SR40 Schematic	
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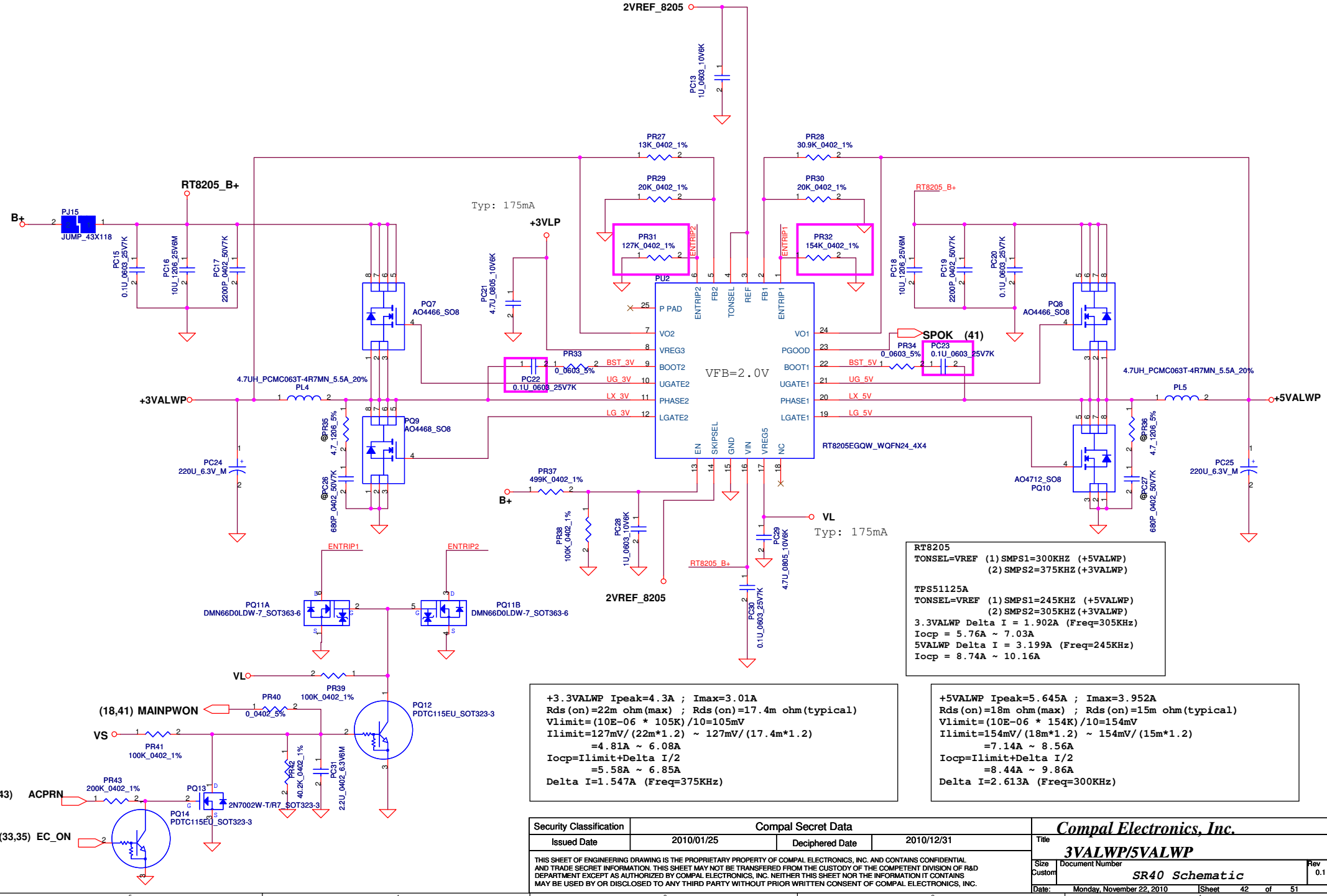
PH1 under CPU botten side :

CPU thermal protection at 92 degree C
 Recovery at 56 degree C



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				BATTERY CONN / OTP	
				Size	
Custom		Document Number		Rev	
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Note:
Use TPS51125 IC can remove RTC refernece LDO
Use TPS51427 IC must keep RTC refernece LDO

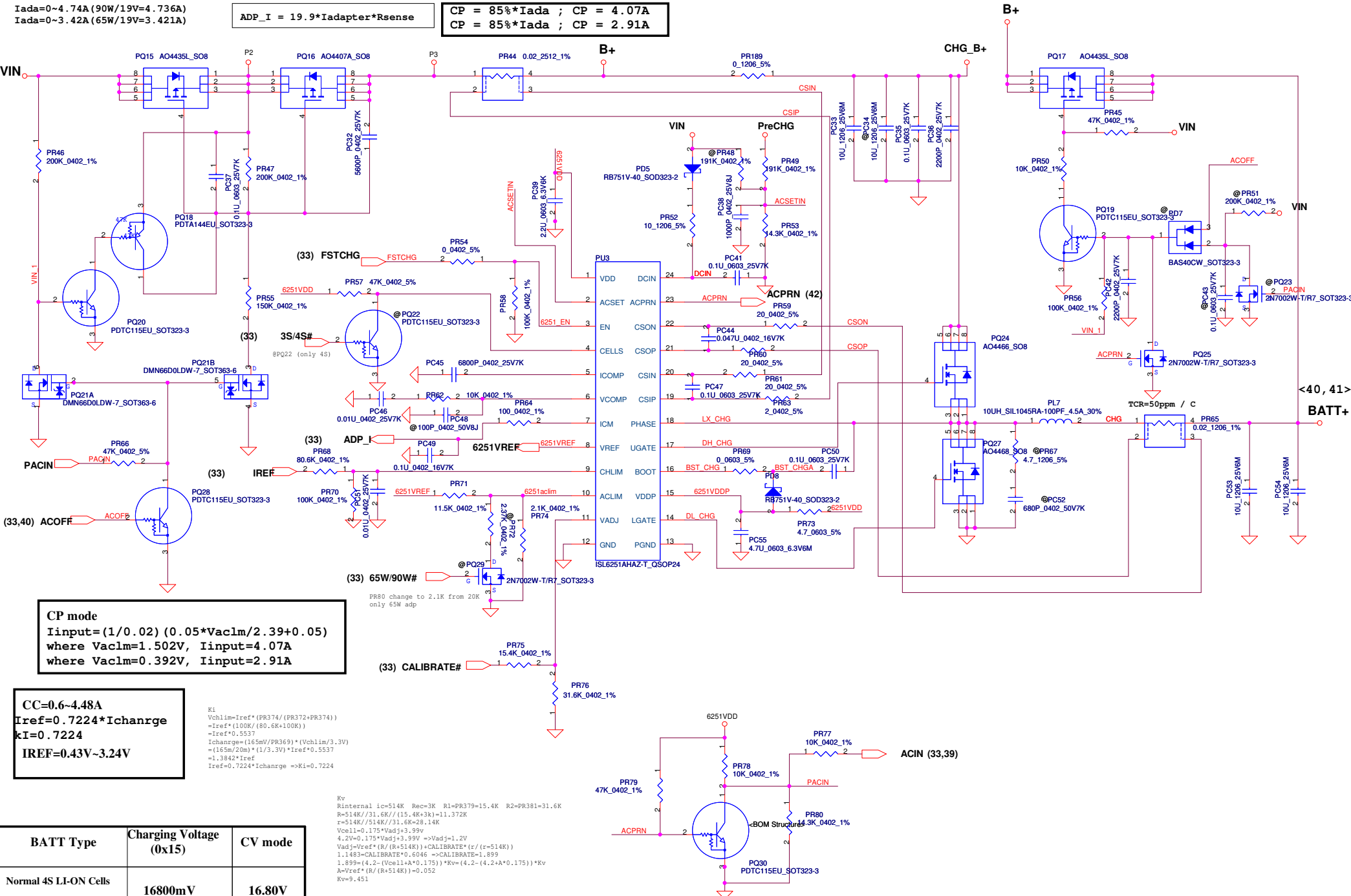


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I_{ada}=0~4.74A (90W/19V=4.736A)
I_{ada}=0~3.42A (65W/19V=3.421A)

ADP_I = 19.9*I_{adapter}*R_{sense}

CP = 85%*I_{ada} ; CP = 4.07A
CP = 85%*I_{ada} ; CP = 2.91A



CP mode
I_{input}=(1/0.02) (0.05*V_{ac1m}/2.39+0.05)
where V_{ac1m}=1.502V, I_{input}=4.07A
where V_{ac1m}=0.392V, I_{input}=2.91A

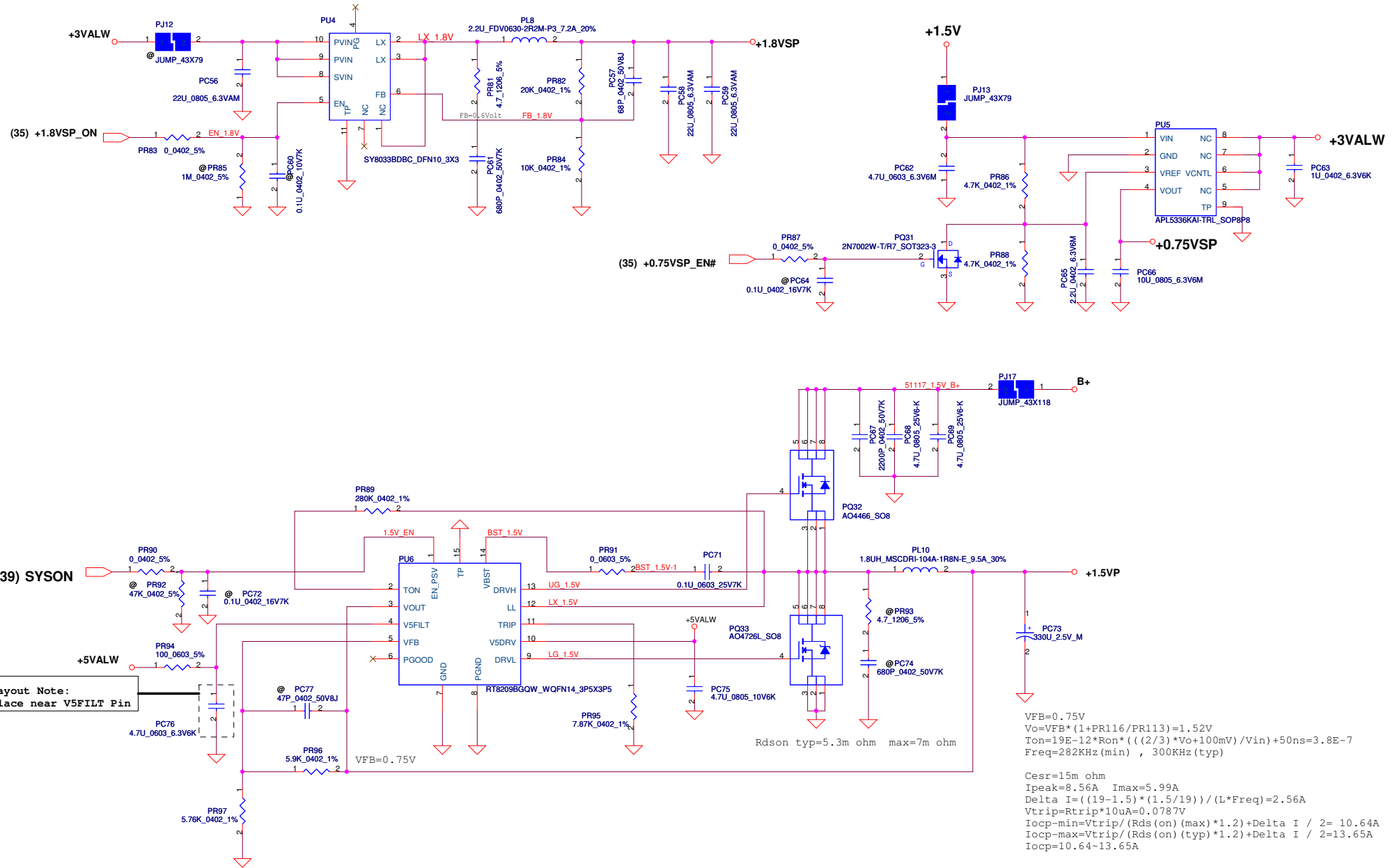
CC=0.6~4.48A
I_{ref}=0.7224*I_{charge}
kI=0.7224
I_{REF}=0.43V~3.24V

K1
V_{chlim}=I_{ref}*(PR374/(PR372+PR374))
=I_{ref}*(100K/(80.6K+100K))
=I_{ref}*0.5537
I_{charge}=(165mV/PR369)*(V_{chlim}/3.3V)
=(165mV/20m)*(1/3.3V)*I_{ref}*0.5537
=1.3842*I_{ref}
I_{ref}=0.7224*I_{charge} =>K1=0.7224

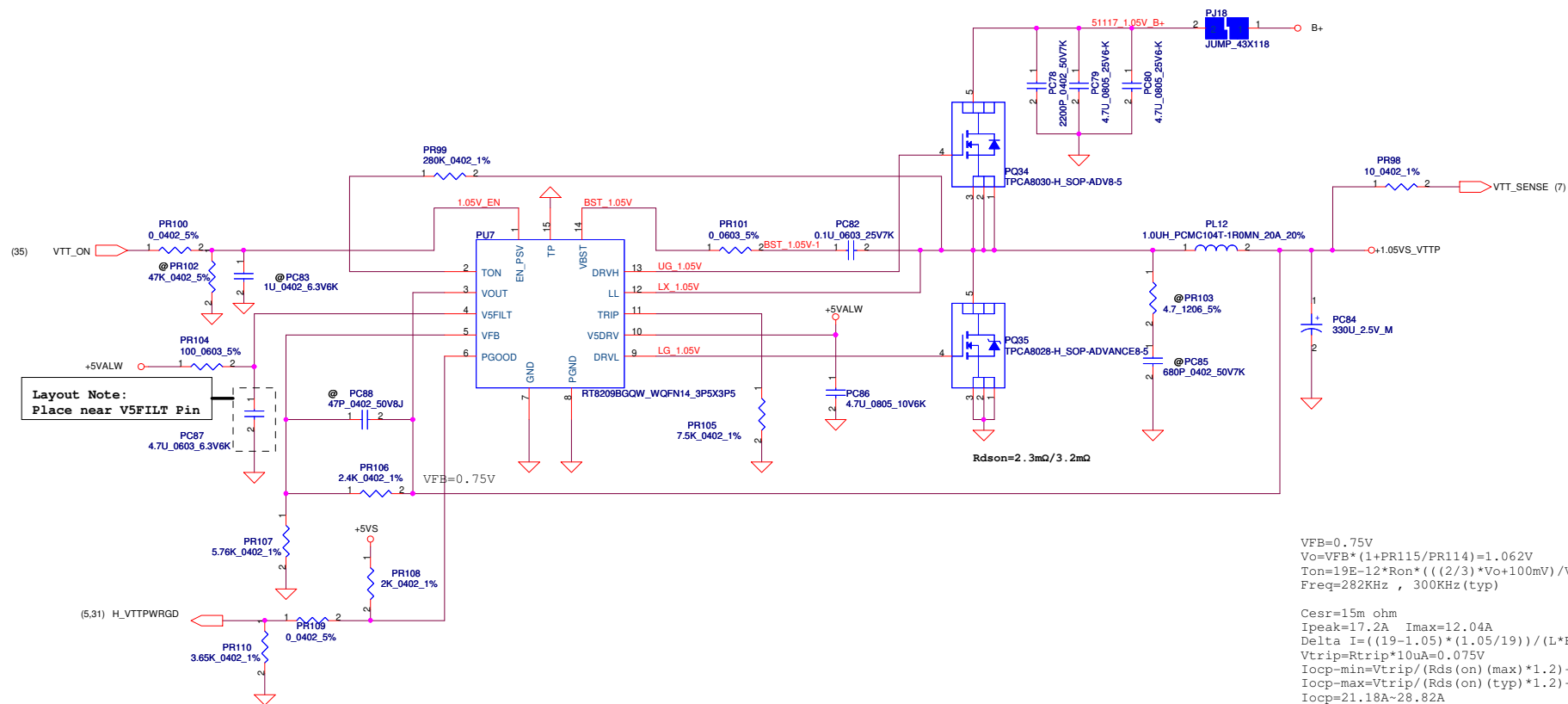
Kv
R_{internal} ic=514K Rec=3K R1=PR379=15.4K R2=PR381=31.6K
R=514K/(514K/(15.4K+3K))+11.372K
r=514K/(514K/(31.6K+28.14K))
V_{oc1}=0.175*V_{adj}+3.99V
4.2V=0.175*V_{adj}+3.99V =>V_{adj}=1.2V
V_{adj}=V_{ref}*(R/(R+514K))+CALIBRATE*(r/(r+514K))
1.1485=CALIBRATE*0.6046 =>CALIBRATE=1.899
1.899=(4.2-(V_{oc1}+0.175))*Kv=(4.2-(4.2+0.175))*Kv
A=V_{ref}*(R/(R+514K))=0.052
Kv=9.451

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				Document Number	SR40 Schematic
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Note:Iload(max)=3.5A



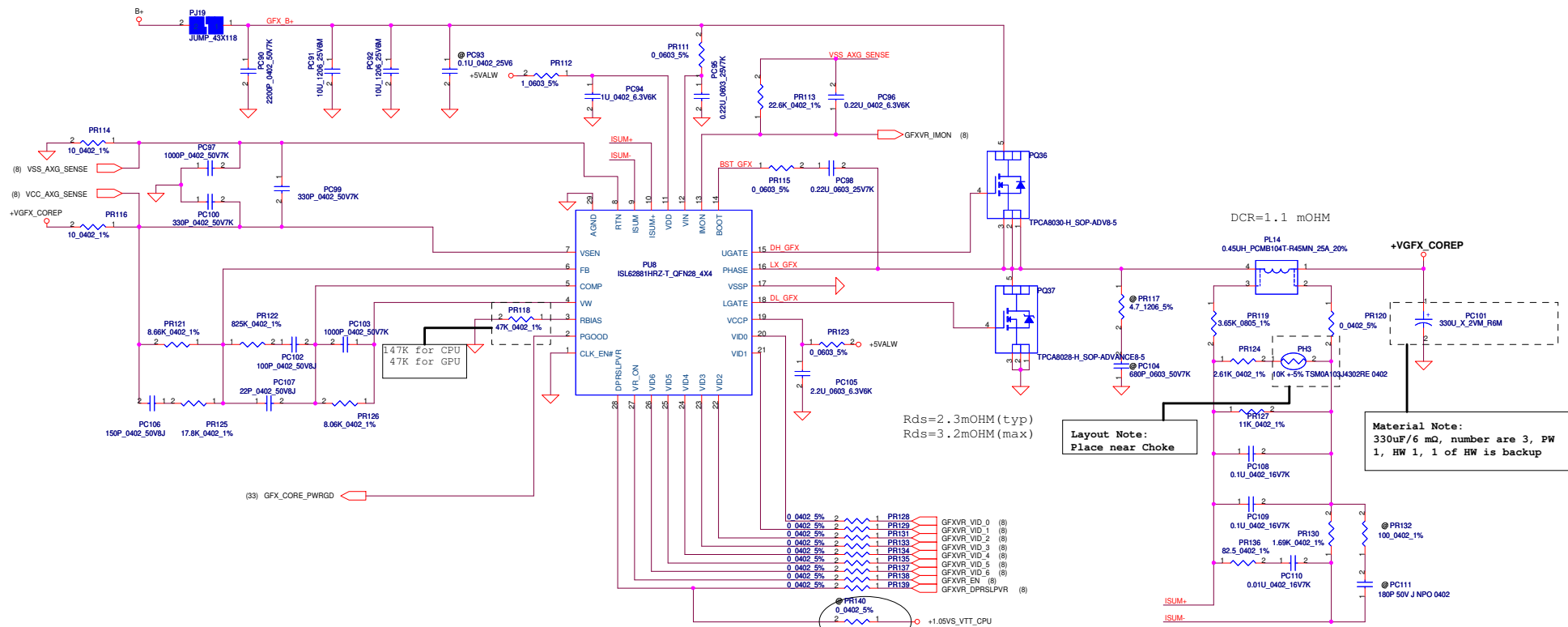
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						Size		Document Number		Rev	
						Custom		SR40 Schematic		0.1	
						Date:		Monday, November 22, 2010		Sheet 45 of 51	

Intel Auburndale CPU(Integrate Graphics) Ipeak=22A Imax=15A
 OCP calculation : Assume DCR=1.1m ohm
 $G1 = R_n / (R_n + R_{sum}) = 0.617$
 where $R_n = PR127 // (PR124 + PH3) = 5.875k \text{ ohm}$
 $R_{sum} = PR119 = 3.65k \text{ ohm}$
 $LL = 2 * R_{droop} * G1 * DCR / R_i = 6.96m \text{ V/A}$
 where $R_{droop} = PR121 = 2.87k \text{ ohm}$, $R_i = PR130 = 562 \text{ ohm}$
 $I_{ocp} = OCP \text{ Threshold} * R_{droop} / LL = 24.89A$

Vvid = 1.25
 LL = 7m ohm
 Iccaxg = 22A
 $I_{cctdc_axg} = 12 \text{ A}$
 Iccaxg_dyn 19 A

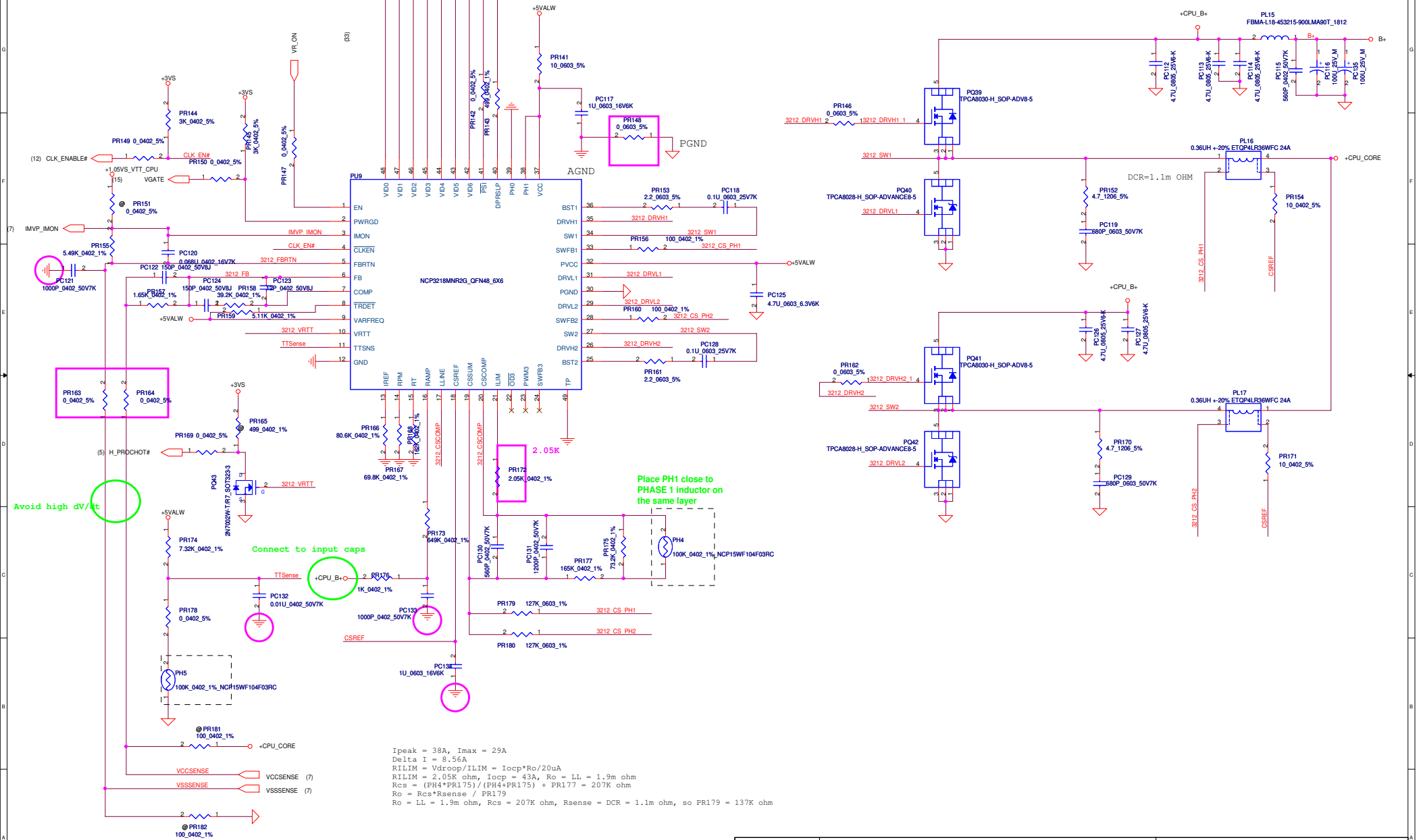


2009-1214 common circuit modify.

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2009/4/15		2010/04/15		GFX COREP	
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PH0	PH1	# of PH
0	1	2
1	1	3

	HFM_VID	HFM_Icc	LL	Icc_TDC	Icc_Dyn
Auburndale 45W	1.075	50	1.9m	37	35
Auburndale 35W	0.975	38	1.9m	29	27
Clarksfield SV	0.95	51	1.9m	38	39
Clarksfield XE	0.95	65	TBD	48	TBD



Ipeak = 38A, Imax = 29A
Delta I = 8.56A
RILIM = Vdroop/ILIM = Iocp*Ro/20uA
RILIM = 2.05K ohm, Iocp = 43A, Ro = LL = 1.9m ohm
Rcs = (PH4*PR175)/(PH4+PR175) + PR177 = 207K ohm
Ro = Rcs*Rsense / PR179
Ro = LL = 1.9m ohm, Rcs = 207K ohm, Rsense = DCR = 1.1m ohm, so PR179 = 137K ohm

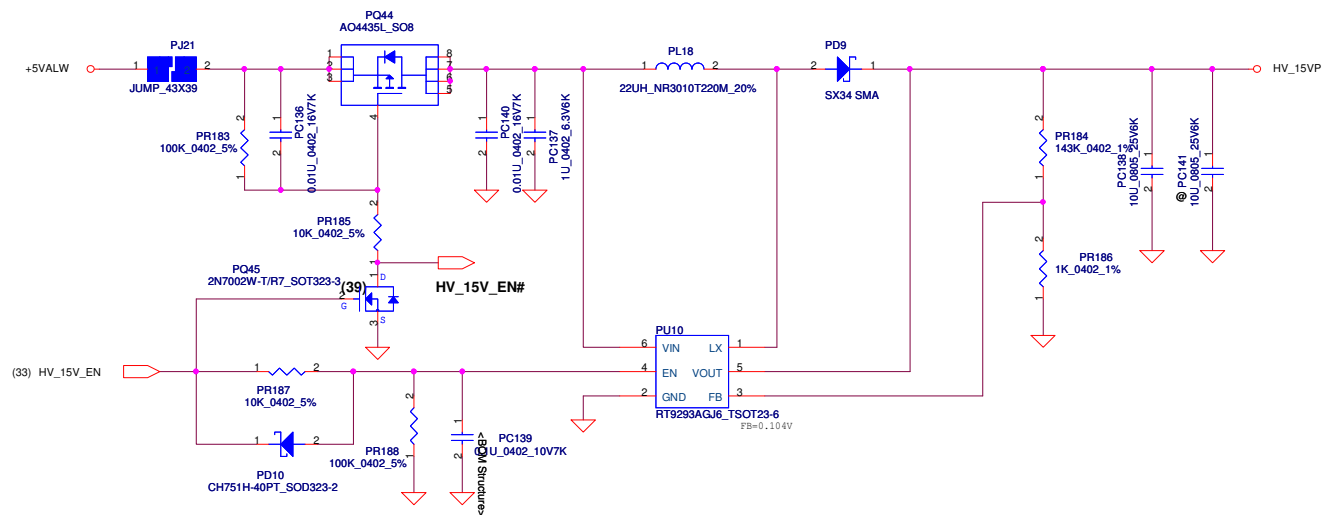
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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	change bead to jump	6 layers change to 8 layers, so change bead to jump	0.1	50	1 del PC14 SE074681K80 (S CER CAP 680P 50V K X7R 0402) 2 del PL3 SM010016380 (FBMA-L11-322513-201LMA40T)	2010-0617	to DVT
2	change bead to jump	6 layers change to 8 layers, so change bead to jump	0.1	51	del PL6 SM010016380 (FBMA-L11-322513-201LMA40T)	2010-0617	to DVT
3	change bead to jump	6 layers change to 8 layers, so change bead to jump	0.1	52	1 del PC70 SE074561K80 (S CER CAP 560P 50V K X7R 0402) 2 del PL9 SM010016380 (FBMA-L11-322513-201LMA40T)	2010-0617	to DVT
4	change bead to jump	6 layers change to 8 layers, so change bead to jump	0.1	53	1 del PC81 SE074561K80 (S CER CAP 560P 50V K X7R 0402) 2 del PL11 SM010020720 (FBMA-L18-453215-900LMA90T)	2010-0617	to DVT
5	change bead to jump	6 layers change to 8 layers, so change bead to jump	0.1	54	1 del PC89 SE074561K80 (S CER CAP 560P 50V K X7R 0402) 2 del PL13 SM010016380 (FBMA-L11-322513-201LMA40T)	2010-0617	to DVT
6	change main souce	cost down	0.1	54	Chnage PQ36 from SB000008L80(S TR SI7686DP-T1-E3 IN POWERPAK S08) to SB00000HL00(S TR TPCA8030-H 1N SOP-ADV) change PQ37 from SB000009F80(S TR AO4456 1N S08) to SB00000GL00(S TR TPCA8028-H 1N SOP ADVANCE) Del PQ38 SB000009F80(S TR AO4456 1N S08)	2010-0617	to DVT
7	reduce components quantity	cost down	0.1	53	Chnage PR104 from SD014I00080(S RES 1/10W 100 +-5% 0603) to SD013I00080 (S RES 1/10W 100 +-1% 0603)	2010-0624	to DVT
8	reduce components quantity	cost down	0.1	52	Chnage PR94 from SD014I00080(S RES 1/10W 100 +-5% 0603) to SD013I00080 (S RES 1/10W 100 +-1% 0603)	2010-0624	to DVT
9	change main souce	cost down	0.1	51	Chnage PQ15, PQ17 from SB00000DL00(S TR AO4407A 1P S08) to SB00000DJ10 (S TR AO4435L 1P S08)	2010-0624	to DVT
10	change main souce	cost down	0.1	51	Chnage PQ27 from SB00000CG00(S TR AO4466 1N S08) to SB000009580 (S TR AO4468 1N S08)	2010-0624	to DVT
11	change main souce	cost down	0.1	50	Chnage PQ9 from SB00000AJ00(S TR AO47I2 1N S08) to SB000009580 (S TR AO4468 1N S08)	2010-0624	to DVT
12	adjust OCP setting	Because Rds(on) change to 22m(MAX) and 17.4m(TYP) ohm of low side MOS, so change OCP setting	0.1	50	Chnage PR31 from SD034I05380(S RES 1/16W 105K +-1% 0402) to SD034I27380 (S RES 1/16W 127K +-1% 0402)	2010-0624	to DVT
13	change main souce	ISL62881C has hang up issue, so change to ISL62881.	0.2	54	Chnage PU8 from SA000043N00(S IC ISL62881CHRZ-T QFN 28P PWM) to SA000030200 (S IC ISL62881HRZ-T QFN 28P PWM)	2010-0713	to DVT
14	adjust resistance value	adjust resistance value for ISL62881	0.2	54	Chnage PR113 from SD034750180(S RES 1/16W 7.5K +-1% 0402) to SD034226280 (S RES 1/16W 22.6K +-1% 0402)	2010-0713	to DVT
15	adjust resistance value	adjust resistance value for ISL62881	0.2	54	Chnage PR121 from SD034287180(S RES 1/16W 2.87K +-1% 0402) to SD034866180 (S RES 1/16W 8.66K +-1% 0402)	2010-0713	to DVT
16	adjust resistance value	adjust resistance value for ISL62881	0.2	54	Chnage PR130 from SD000009380(S RES 1/16W 562 +-1% 0402) to SD00000JB80 (S RES 1/16W 1.69K +-1% 0402)	2010-0713	to DVT
17	add resistance	pop resistance for ISL62881	0.2	54	add PR136 SD034825A80(S RES 1/16W 82.5 +-1% 0402)	2010-0713	to DVT
18	add cup.	pop Cup. for ISL62881	0.2	54	add PC110 SE076103K80(S CER CAP .01U 16V K X7R 0402)	2010-0713	to DVT
19	adjust capacitor	Because ME height limit, so change to 8 height capacitor.	0.2	55	Chnage PC116 from SF22004M210(S ELE CAP 220U 25V M 8X10.2 CE-AX) to SF000000S80 (S ELE CAP 100U 25V M 6.3X7.7 CE-LX)	2010-0713	to DVT
20	add cup.	Because ME height limit, so add an 8 height capacitor.	0.2	55	Add PC135 SF000000S80 (S ELE CAP 100U 25V M 6.3X7.7 CE-LX)	2010-0713	to DVT
21	adjust resistance value	adjust resistance value for CPU loadline	0.2	55	Chnage PR179 and PR180 from SD014I37380(S RES 1/10W 137K +-1% 0603) to SD014I27380(S RES 1/10W 127K +-1% 0603)	2010-0715	to DVT
22	adjust resistance value	adjust resistance value for +5Valwp to 5.1V	0.2	50	Chnage PR28 from SD034300280(S RES 1/16W 30K +-1% 0402) to SD034309280(S RES 1/16W 30.9K +-1% 0402)	2010-0723	to DVT

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	EMI request reserve 0 ohm	EMI request reserve 0 ohm for EMI ISN test	0.3	43	change PJ16 to SD011000080(S RES 1/4W 0 +-5% 1206)	2010-0907	PVT
2	Add boost resister	EMI request add boost resister for EMI test	0.3	47	change PRI53 and PRI61 form SD013000080 to SD013220B80(S RES 1/10W 2.2 +-5% 0603)	2010-0907	PVT
3	Add snubber	EMI request add snubber for EMI test	0.3	47	Add PRI52 and PRI70 SD001470B80(S RES 1/4W 4.7 +-5% 1206) Add PC119 and PC129 SE025681K80(S CER CAP 680P 50V K X7R 0603)	2010-0907	PVT
4	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add FU10 SA00004DD00(S IC RT9293AGJ6 TSOT-23 6P BOOST) Add PL18 SHI00005P00(S INDUC_ 22UH +-20% NR3010T220M)	2010-0907	PVT
5	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add PD9 SCSSSM24A20(S DIO SSM24APT SMA-S) Add PQ44 SB00000DJ10(S TR AO4435L 1P SO8) Add PQ45 SB000006800(S TR 2N7002W T/R7 1N SOT-323)	2010-0907	PVT
6	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add PD10 SC1H751H010(S DIO CH751H-40PT SOD323) Add PR183, PR188 SD028100380(S RES 1/16W 100K +-5% 0402) Add PR185, PR187 SD028100280(S RES 1/16W 10K +-5% 0402)	2010-0907	PVT
7	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add PC136, PC140 SE076103K80(S CER CAP 0.01U 16V K X7R 0402) Add PC137 SE000000U00(S CER CAP 1U 16V K X5R 0402) Add PC139 SE102104K00(S CER CAP 0.1U 10V +-10% X7R 0402)	2010-0907	PVT
8	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add PR184 SD034143380(S RES 1/16W 143K +-1% 0402) Add PR186 SD034100180(S RES 1/16W 1K +-1% 0402)	2010-0907	PVT
9	Add boost circuit	Touch panel control board need high voltage 15V	0.3	49	Add PC138 SE000000QK00(S CER CAP 10U 25V K X5R 0805 H1.25)	2010-0907	PVT
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1			0.1	48			
2			0.1	50			
3			0.1	51			
4			0.1	51			
5			0.1	52			
6			0.1	53			
7			0.1	46			
8			0.1	47			
9			0.1	52			
10			0.1	48			
11			0.1	52			
12			0.1	52			
13			0.2	46			
14			0.2	51			
15			0.2	52			
16			0.2	53			
17			0.2	52			
18			0.2	50			
19			0.2	55			
20			0.2	53			
21			0.2	55			
22			0.2	48			
23			0.2	52			