

Compal Confidential

Hasswell M/B Schematics Document

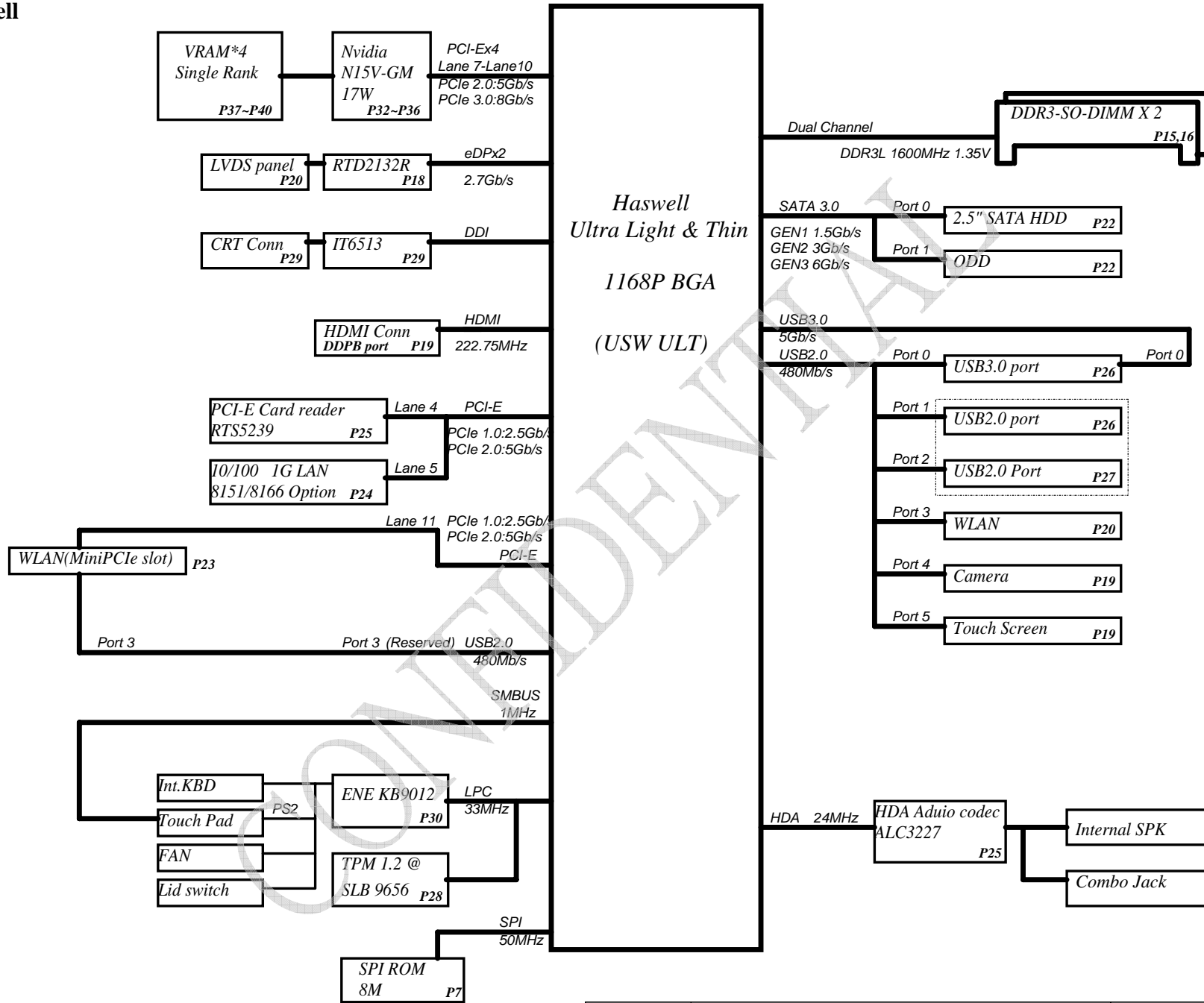
Intel ULV Processor with DDRIII

Date : 2014/02/08

Version 1.0

Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	Cover Page
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File Name :
LA-A992PR10



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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	Block Diagrams
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Power rail	Control (EC)	Source (CPU)
+RTCVCC	X	X
VIN	X	X
BATT+	X	X
B+	X	X
+VL	X	X
+3VL	X	X
+5VALW	EC_ON	X
+3VALW	EC_ON	X
+3VALW_EC	EC_ON	X
+3V_PCH	PCH_PWR_EN	X
+1.35V_VDDQ	SYSON	PM_SLP_S5#/PM_SLP_S4#
+5VS	SUSP#	PM_SLP_S3#
+3VS	SUSP#	PM_SLP_S3#
+1.5VS	SUSP#	PM_SLP_S3#
+1.05VS	SUSP#	PM_SLP_S3#
+0.6V_0.675VS	SUSP#	
+VCC_CORE	X	VR12.5_VR_ON

@ is NO SMT part (empty)

short@ : short pad , don't pop.

@EMI@,@ESD@,@RF@ : Reserve , don't pop.

RF@ : RF team request, must add.

EMI@ : EMI team request, must add.


ESD@ : ESD team request, must add.


LVDS@ : Support LVDS panel.

GCLK@ : Support GCLK

CRT@,CRTEMI@ : Support CRT port

eDP@,eDPEMI@ : Support eTP panel

DAX

 PCB «BOM Structure»
 Part Number = DA214Z00100
 PCB 14Z LA-A992P REV0 M/B 3

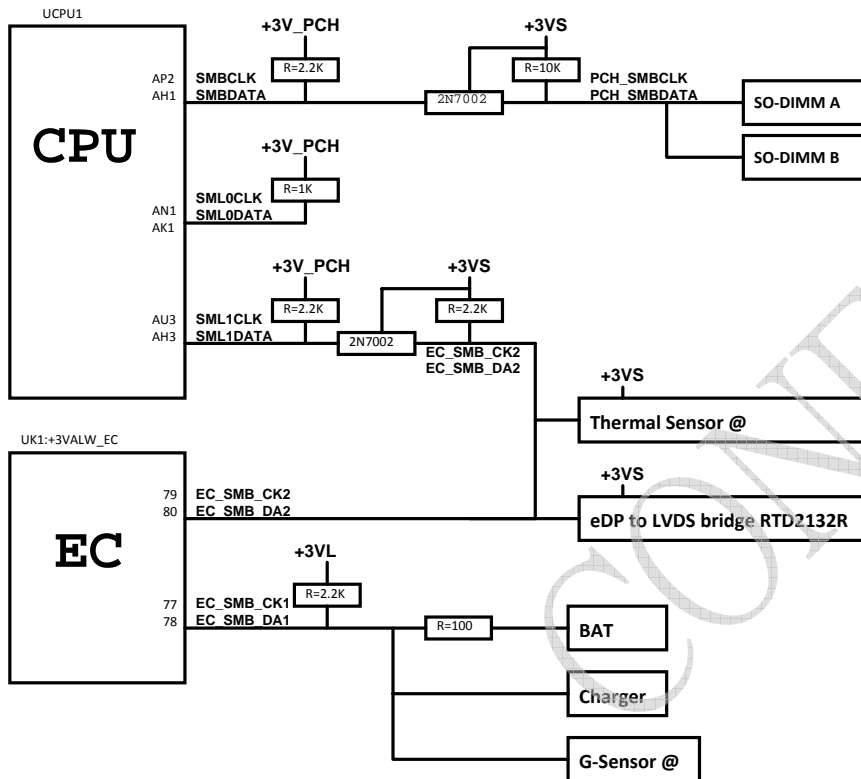
458
 ZZZ1

 ROYALTY HDMI W/LOGO+HDCP
 Part Number = R0000003HM
 ROYALTY HDMI W/LOGO+HDCP

<USB2.0 port>

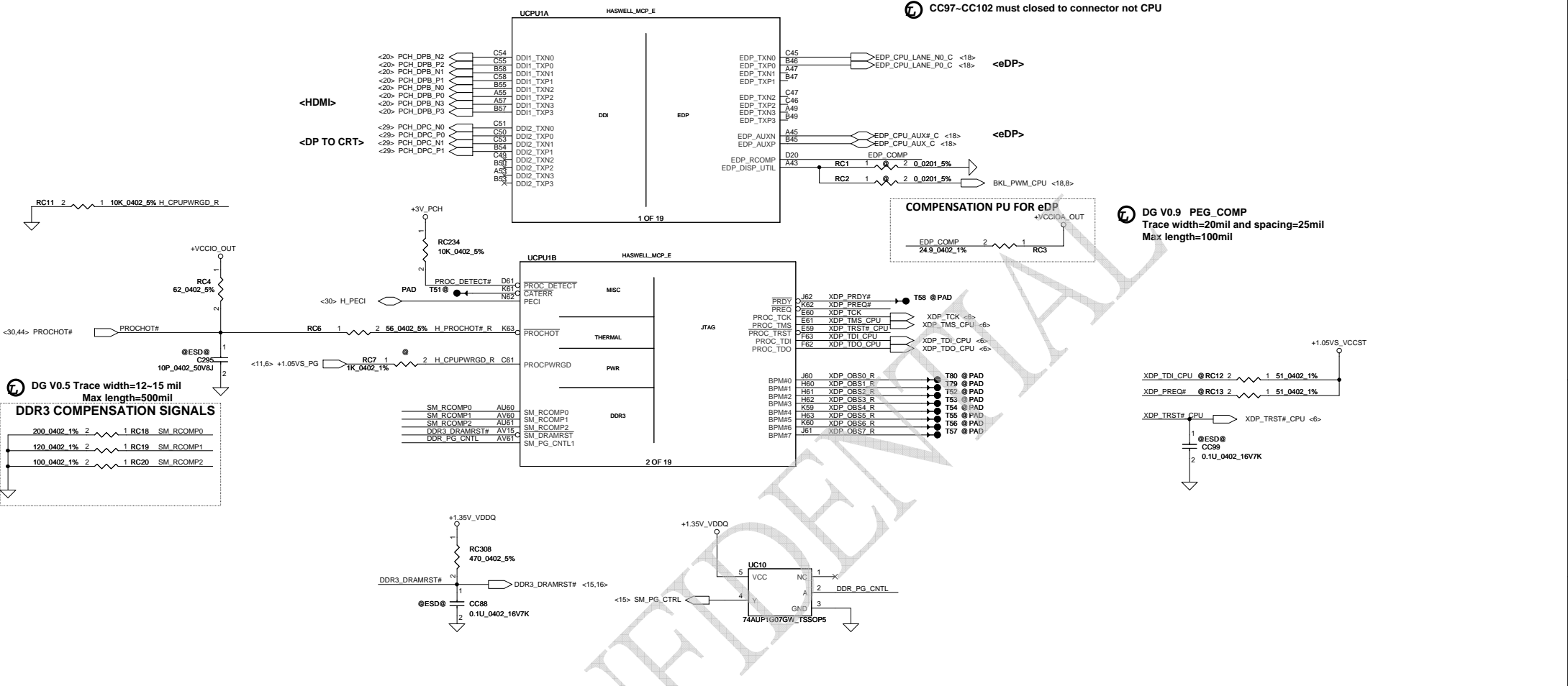
USB2.0 port	DESTINATION	
	UMA	Dis
0	USB 2.0/3.0(left side)	USB 2.0/3.0(left side)
1	USB 2.0(right side)	USB 2.0(right side)
2	USB 2.0(right side)	USB 2.0(right side)
3	WLAN/BT	WLAN/BT
4	Camera	Camera
5	Touch screen(Options)	Touch screen(Options)
6	X	X
7	X	X

<PCI-E,SATA,USB3.0>

Lane#	PCI-E	SATA	USB3.0	DESTINATION	
				UMA	Dis
1			1	USB3.0	USB3.0
2			2	X	X
3	1		3	X	X
4	2		4	Card reader(PCI-E)	Card reader(PCI-E)
5	3			10/100/1000 LAN	10/100/1000 LAN
6	4				
7					GPU(DIS only)
8					GPU(DIS only)
9					GPU(DIS only)
10					GPU(DIS only)
11	L3	3		WLAN	WLAN
12	L2	2		X	X
13	L1	1		ODD	ODD
14	L0	0		2.5"HDD	2.5"HDD



CC97-CC102 must closed to connector not CPU



DG V0.5 Trace width=12-15 mil
Max length=500mil

DDR3 COMPENSATION SIGNALS

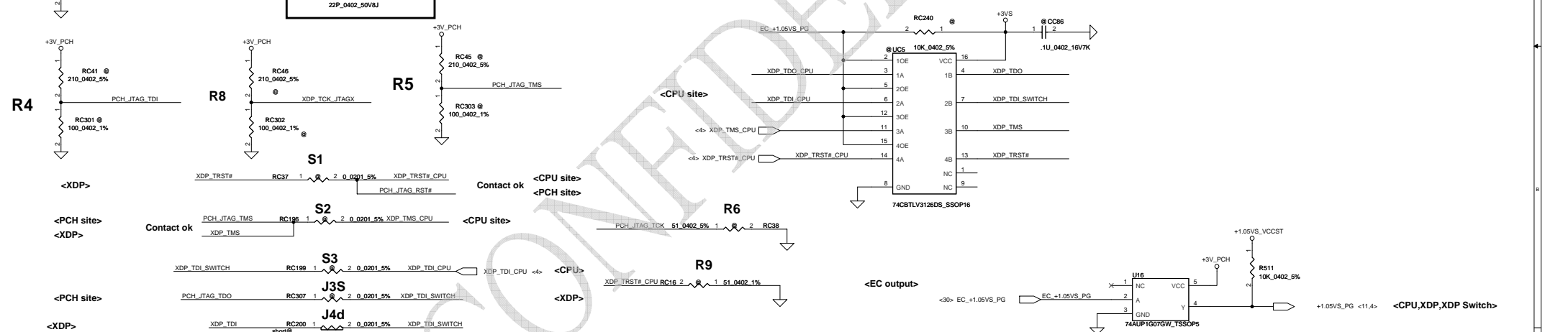
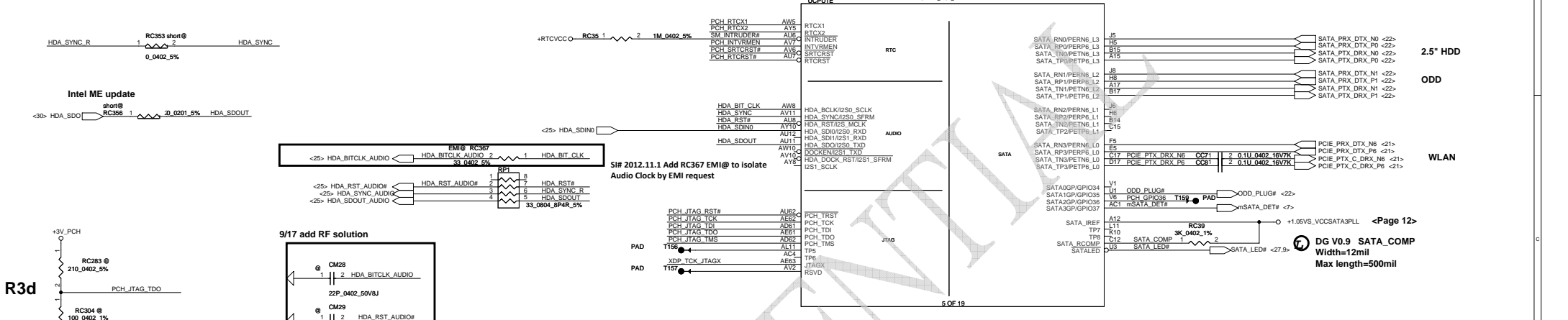
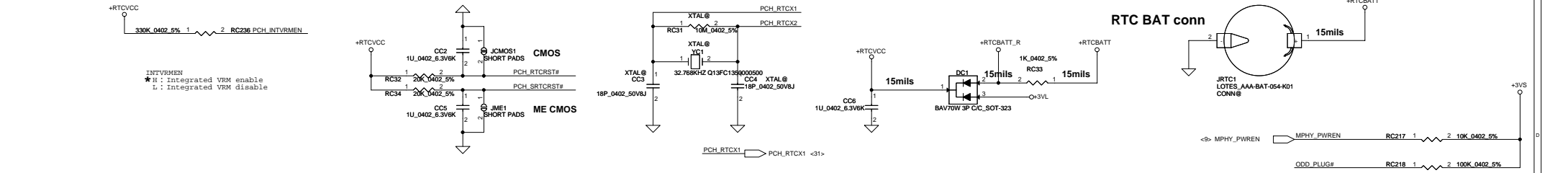
200_0402_1% 2 RC18 SM_RCOMP0
120_0402_1% 2 RC19 SM_RCOMP1
100_0402_1% 2 RC20 SM_RCOMP2

COMPENSATION PU FOR eDP

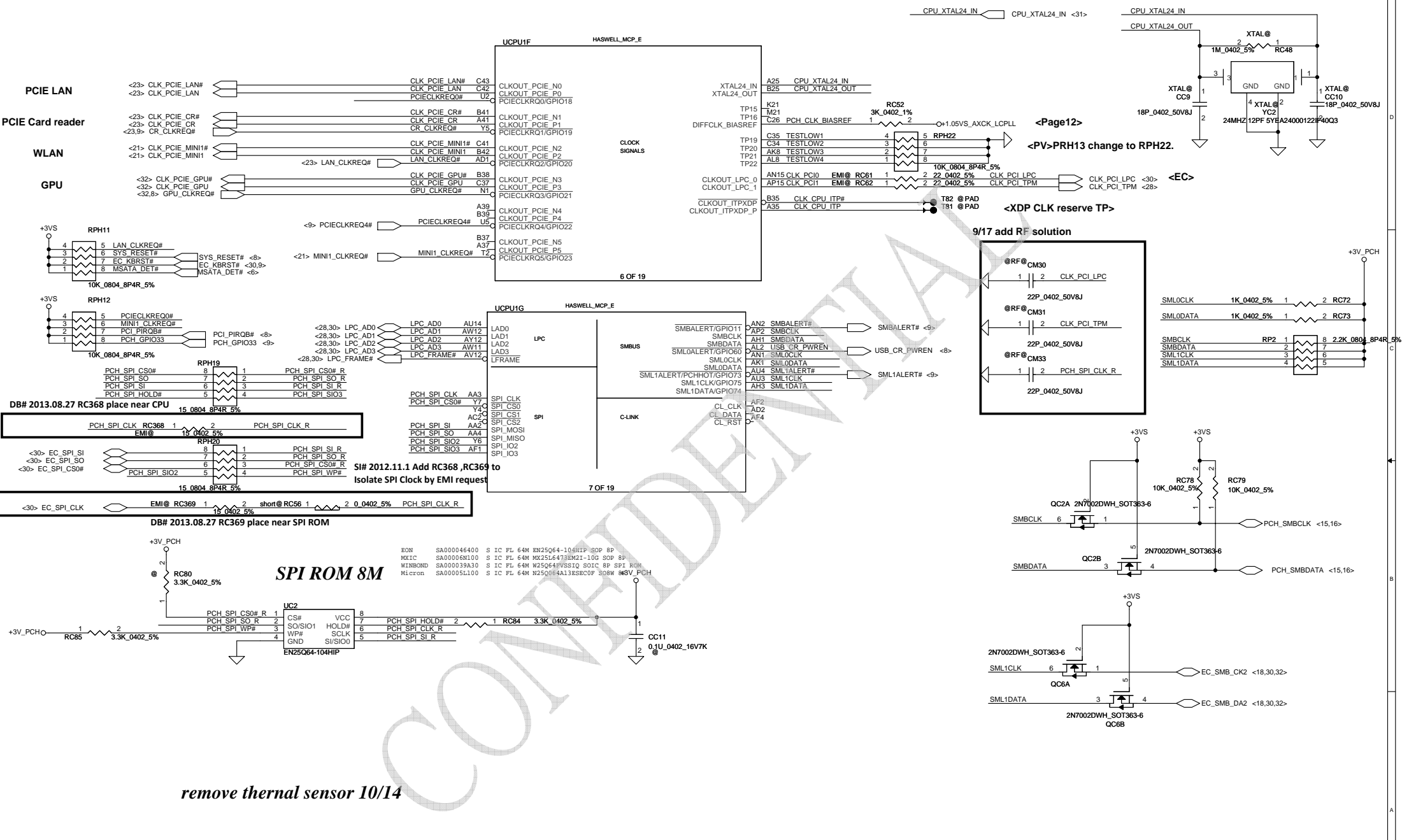
EDP_COMP 249_0402_1% RC3

DG V0.9 PEG_COMP
Trace width=20mil and spacing=25mil
Max length=100mil

Security Classification	Compal Secret Data		Title	DDI,MSIC,XDP
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Topolog	Description	Best Use for	Resistors Stuffed	Resistors uStuffed
Default Setting: Dual TCK Scan Chains (also known as "Shared JTAG" in other document)	In this topology, the CPU JTAG chain will be controlled by TCK0 and TCK1 will control the PCH JTAG chain.	- Run control oper. - ME/Sx debug	R1d,R2,R3d, R4,R5,J1d J2d,J3d* J4d and Rs5*	J1s, J2s, J3s R6,R7,R8,R9
Single TCK scan chain (also known as "Common JTAG" in other document)	In this topology, PCH TDI-TDO and CPU TDI-TDO will be chained to form one JTAG scan chain controlled by TCK0	- Boundary Scan/ Manufacturing est	J1s,J2s,J3s** R2,R4,R5,R5s**	R1d,r3d,J1d,J2d J3s**,J4d, R6,R7,R8,R9



<Page12>

<PV>PRH13 change to RPH22.

<EC>

<XDP CLK reserve TP>

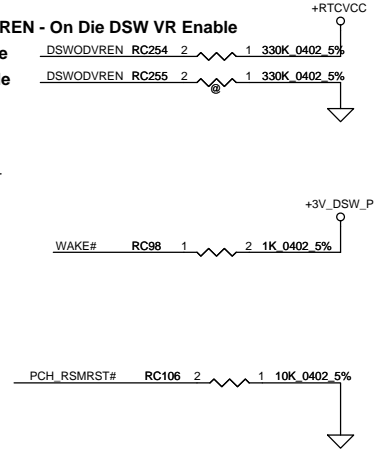
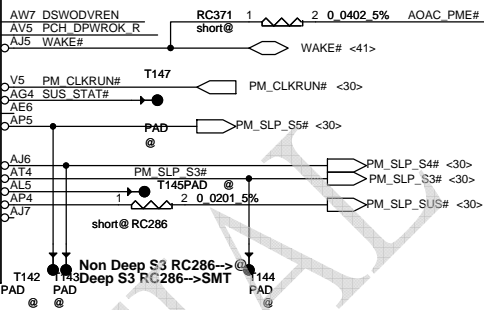
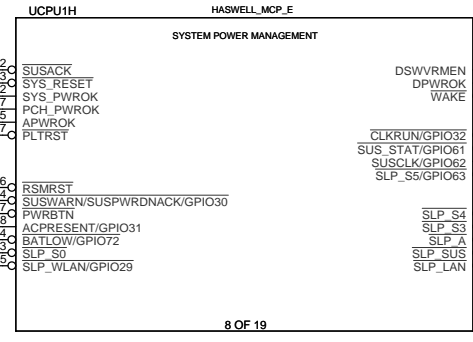
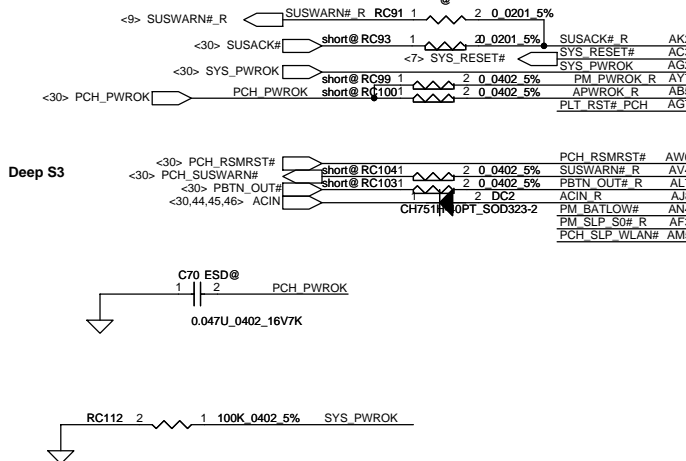
9/17 add RF solution

SI# 2012.11.1 Add RC368, RC369 to Isolate SPI Clock by EMI request

remove thermal sensor 10/14

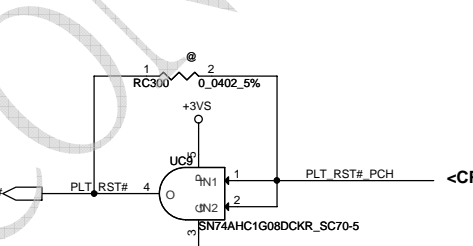
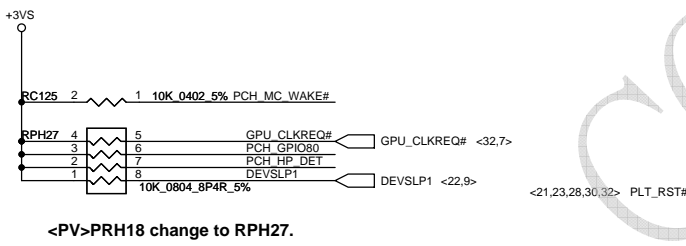
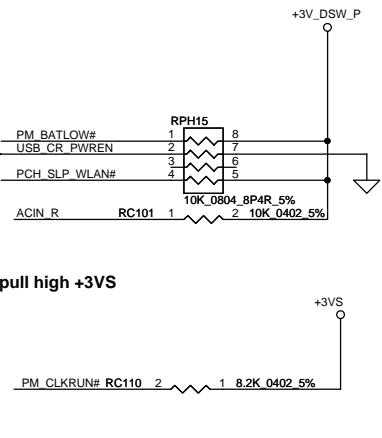
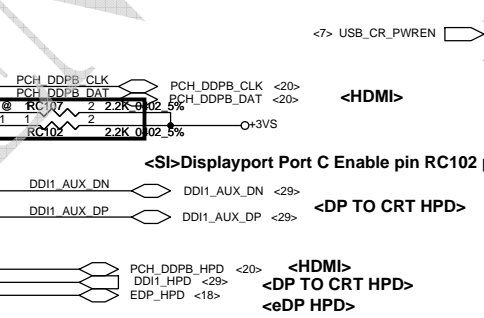
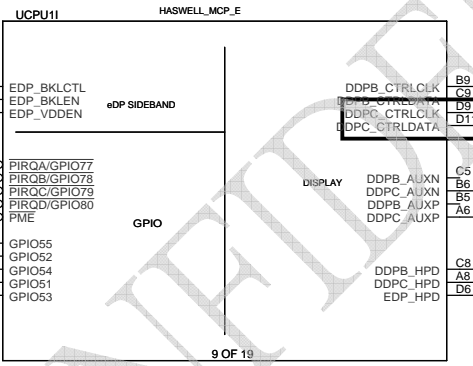
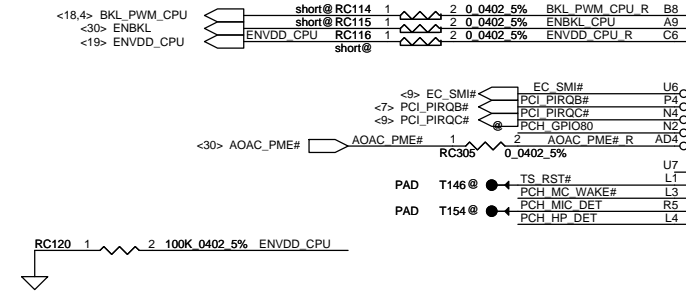
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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	
				CLK,SPI,SMB,LPC	
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Non Deep S3 RC91-->SMT
Deep S3 RC93-->SMT



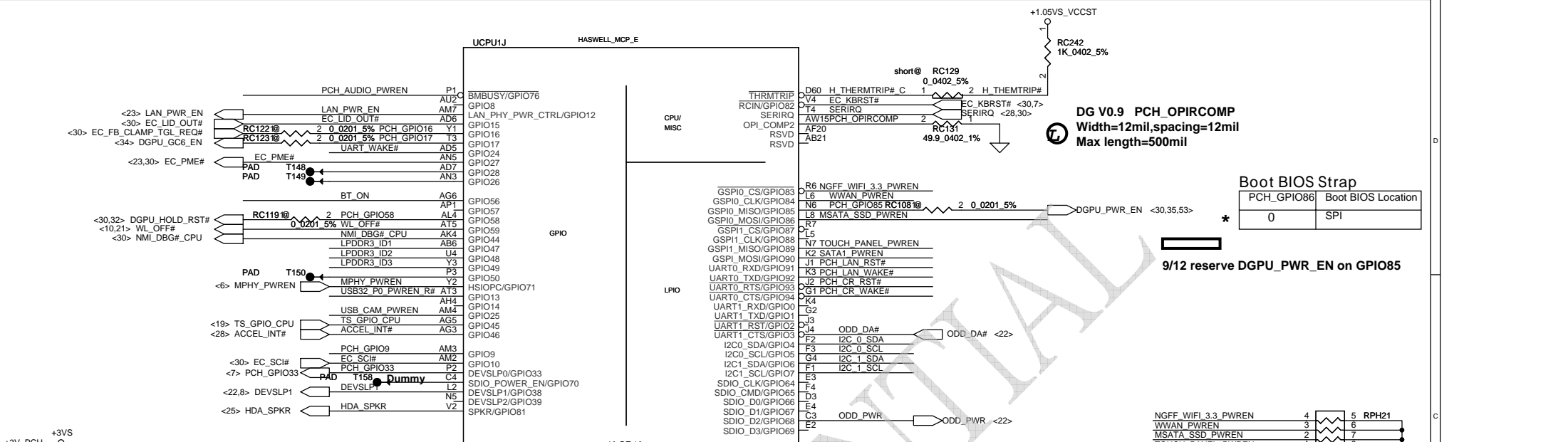
Deep S3:DSW power choose on page12

PANEL_BKEN_CPU PD 100K on Page20



PD on KBC page

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Issued Date	2011/06/29	Deciphered Date	2011/06/29	PM,GPIO,DDI	
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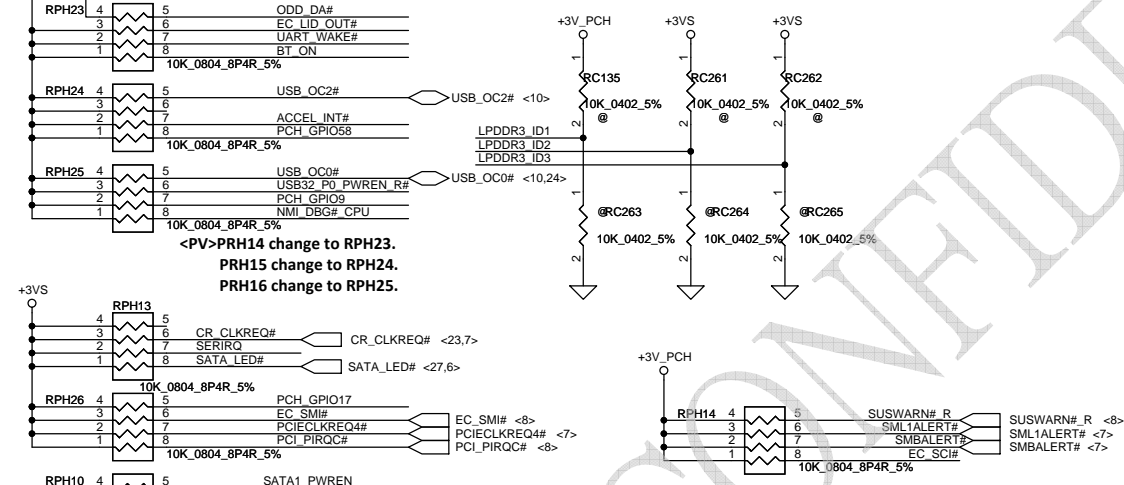
DG V0.9 PCH_OPIRCOMP
Width=12mil,spacing=12mil
Max length=500mil

Boot BIOS Strap

PCH_GPIO86	Boot BIOS Location
0	SPI

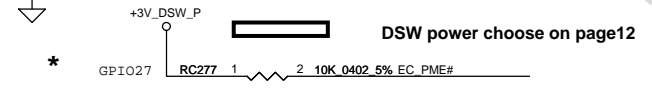
9/12 reserve DGPU_PWR_EN on GPIO85

<SI> PRH14.4 change from +3V_PCH to +3VS for S3 leakage



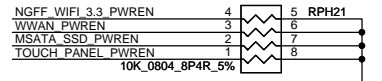
<PV>PRH14 change to RPH23.
PRH15 change to RPH24.
PRH16 change to RPH25.

<PV>PRH10 change to RPH10.
PRH17 change to RPH26.



DSW power choose on page12

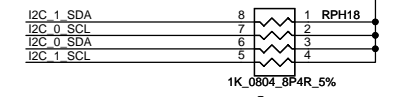
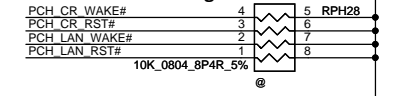
PCH_GPIO27 (Have internal Pull-High)
High: VCCVRM VR Enable
Low: VCCVRM VR Disable



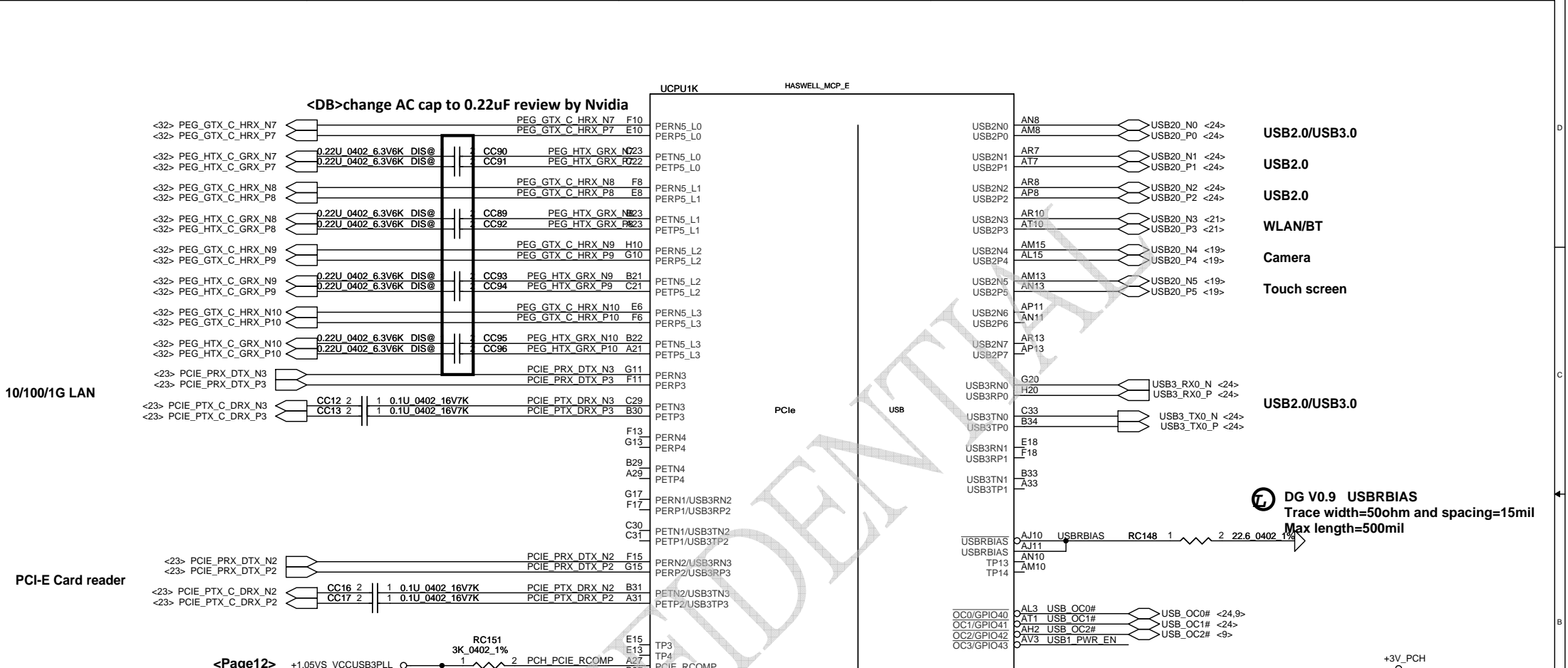
<PV>PRH12 change to RPH21.



<PV>PRH19 change to RPH28.

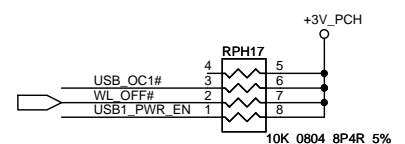
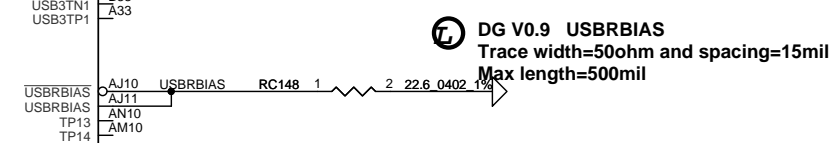
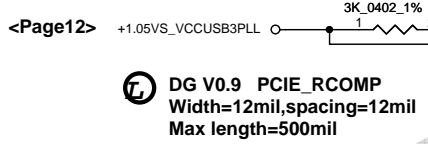


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Issued Date	2011/06/29	Deciphered Date	2011/06/29	GPIO, UART, I2C	
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10/100/1G LAN

PCI-E Card reader

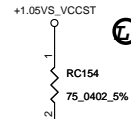


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+VCC_CORE@1000mA

+VCC_CORE

SVID ALERT



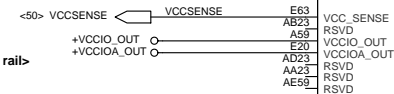
DG V0.5 H_CPU_SVIDALRT#
 RC154 close to CPU-300mil
 Max length=1000-2000mil

VCC_SENSE

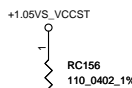
<PWR VR12.6>

<VR IV and CPU>
 <EDP_COMP power rail>

PH on power page



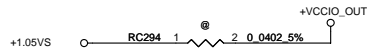
SVID DATA



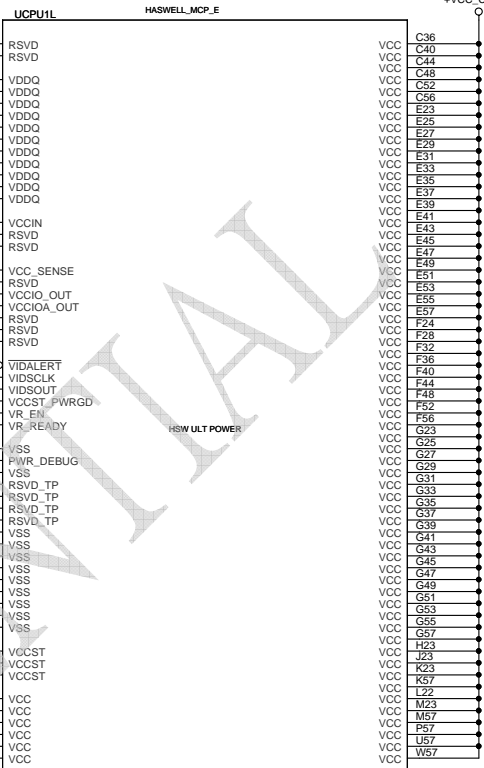
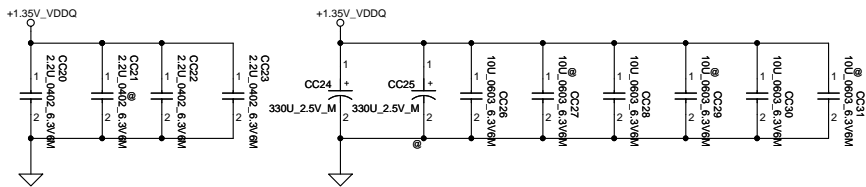
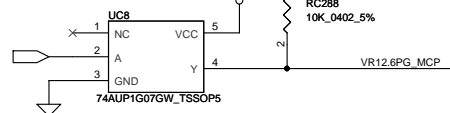
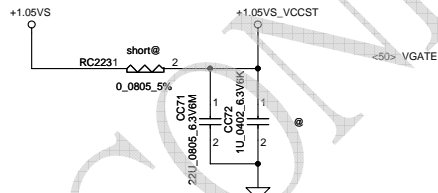
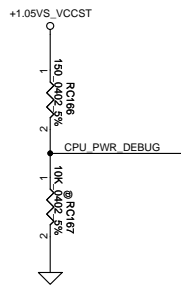
<PWR VR12.6>



<CPU>

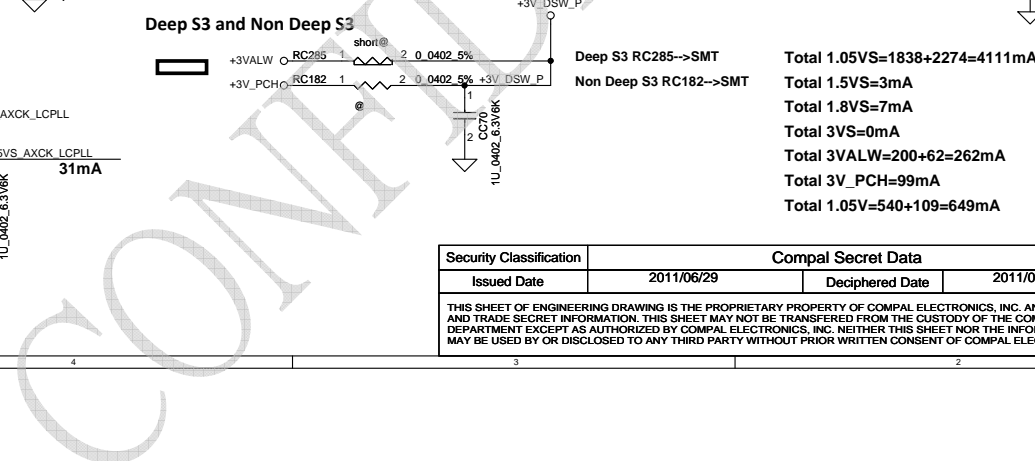
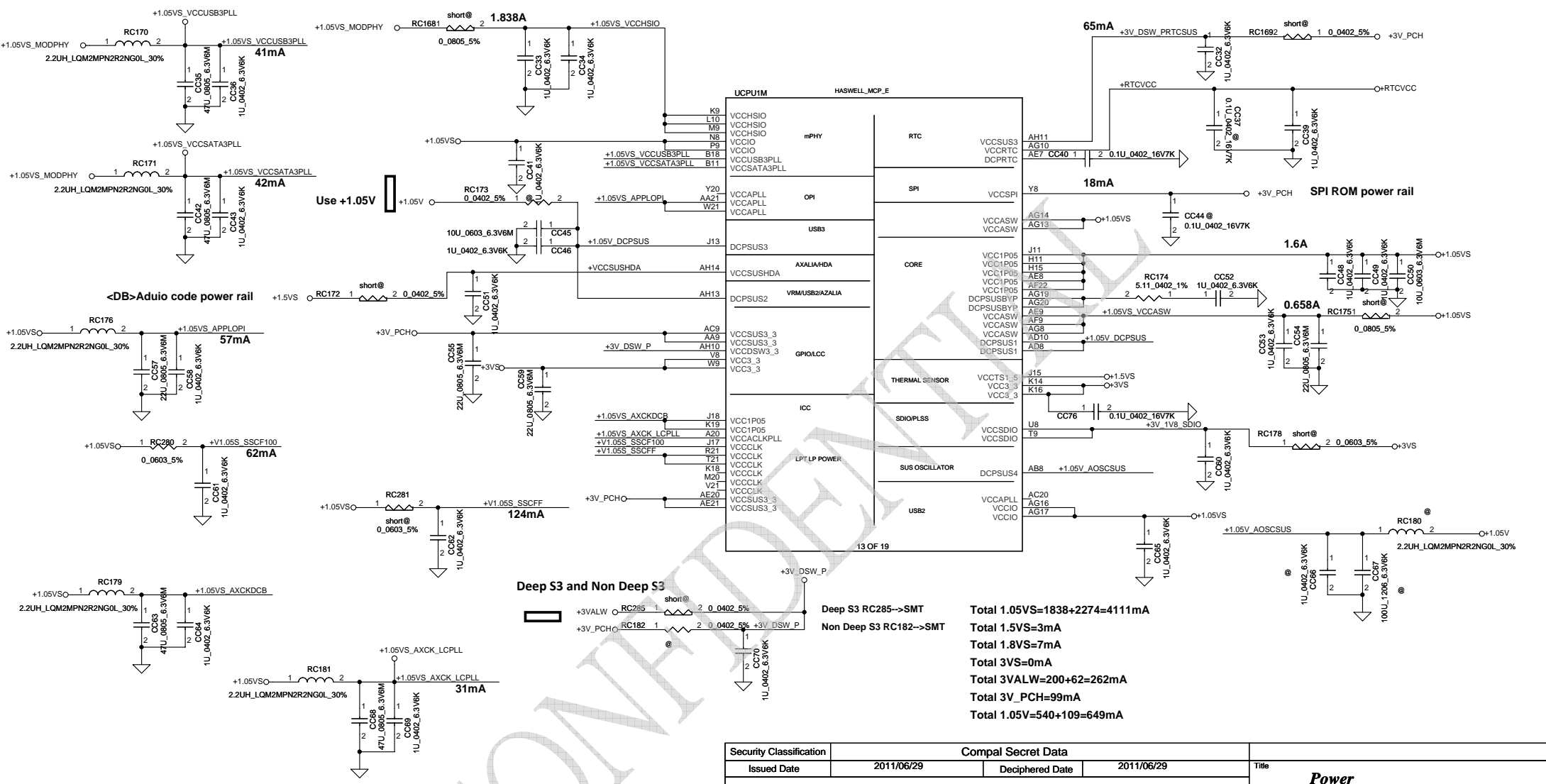


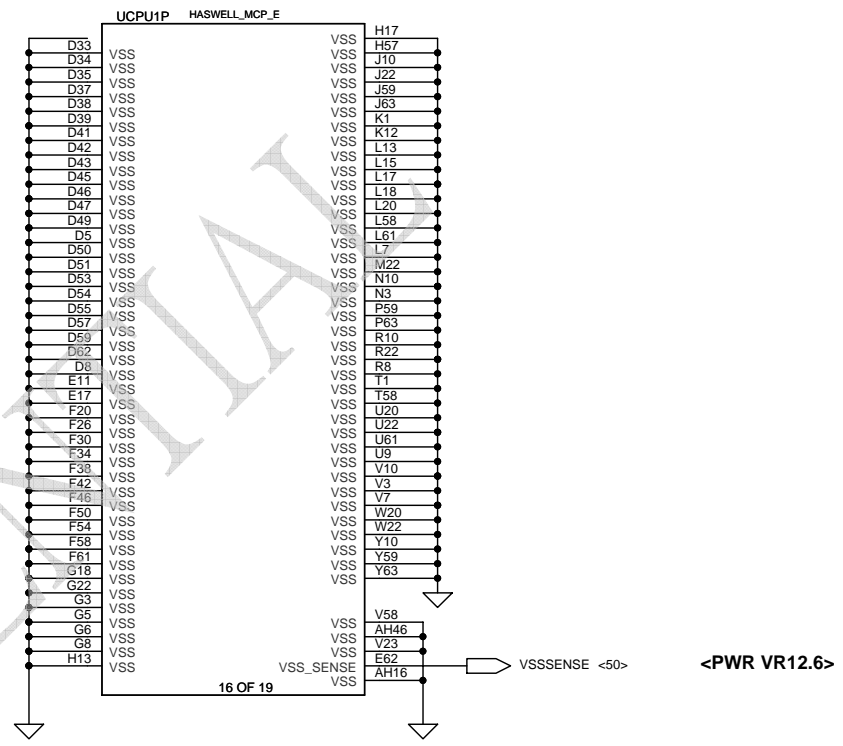
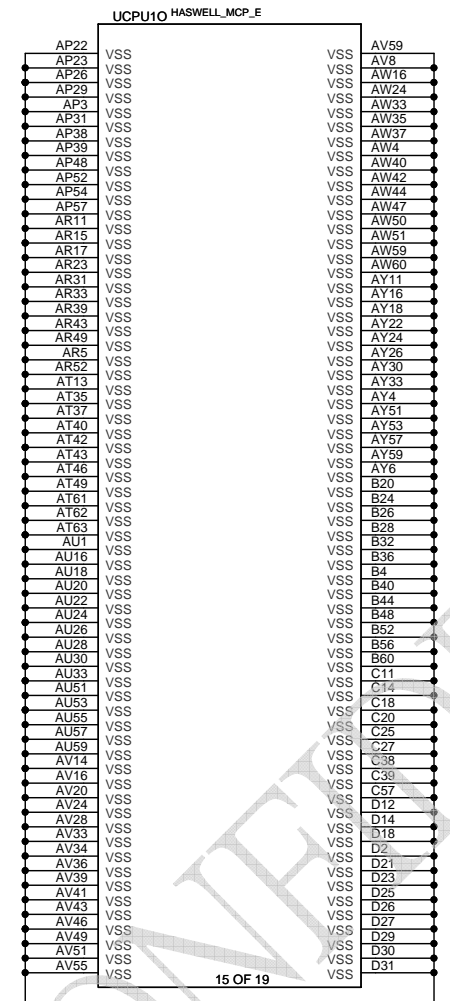
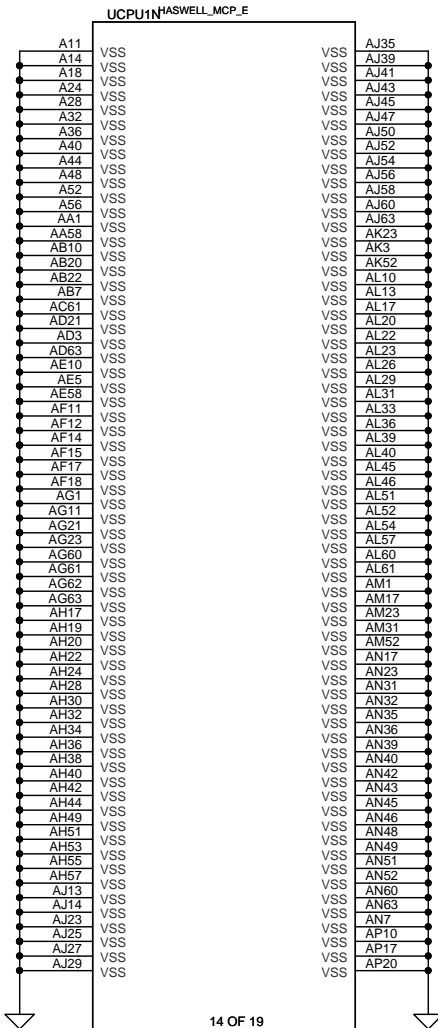
DG V0.5 VIDSOUT
 RC156 close to CPU-500mil
 Max length=1000-2000mil



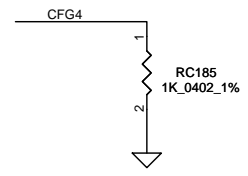
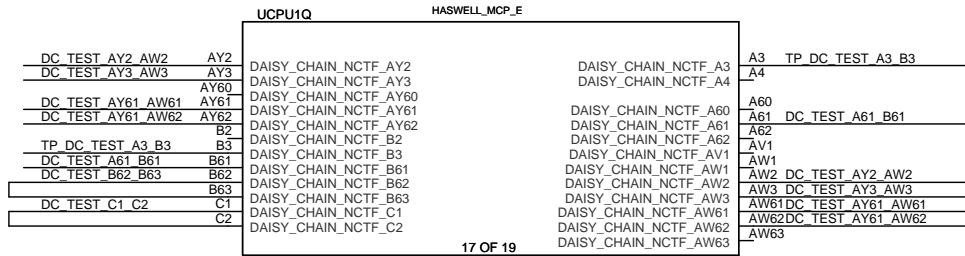
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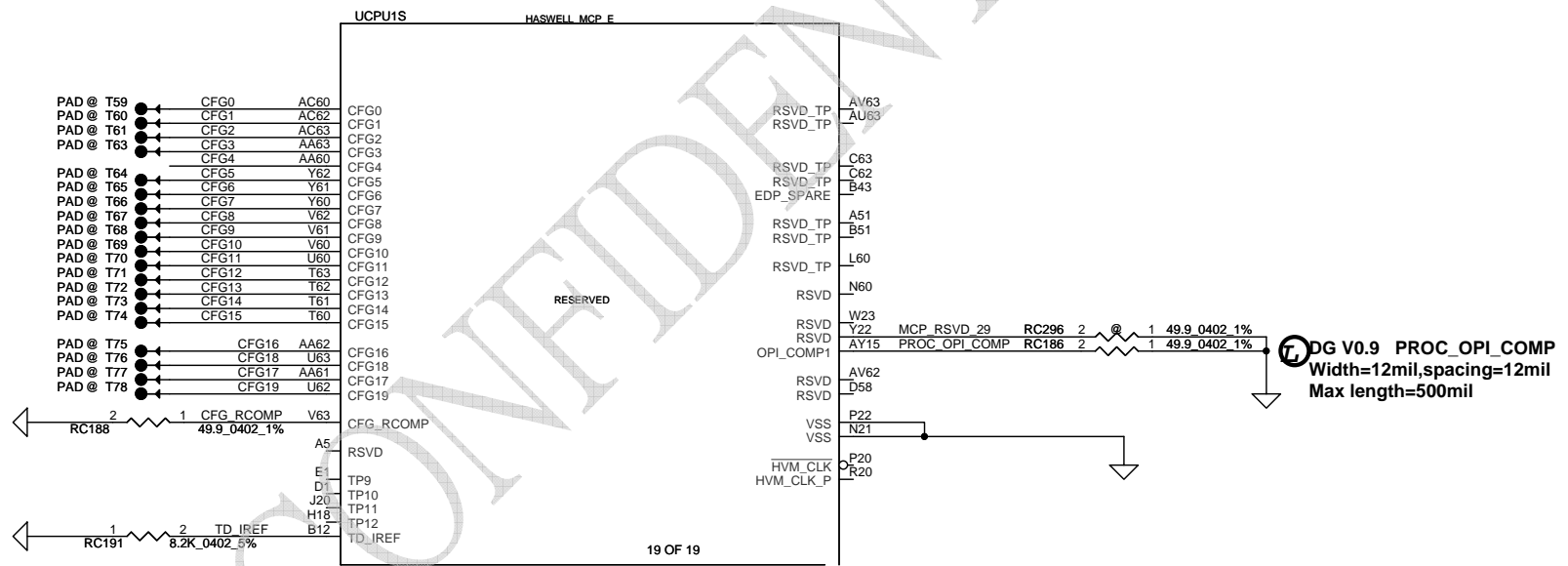
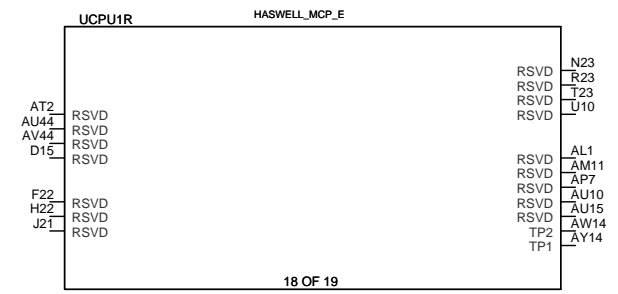
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Issued Date	2010/05/27	Deciphered Date	2011/05/11		
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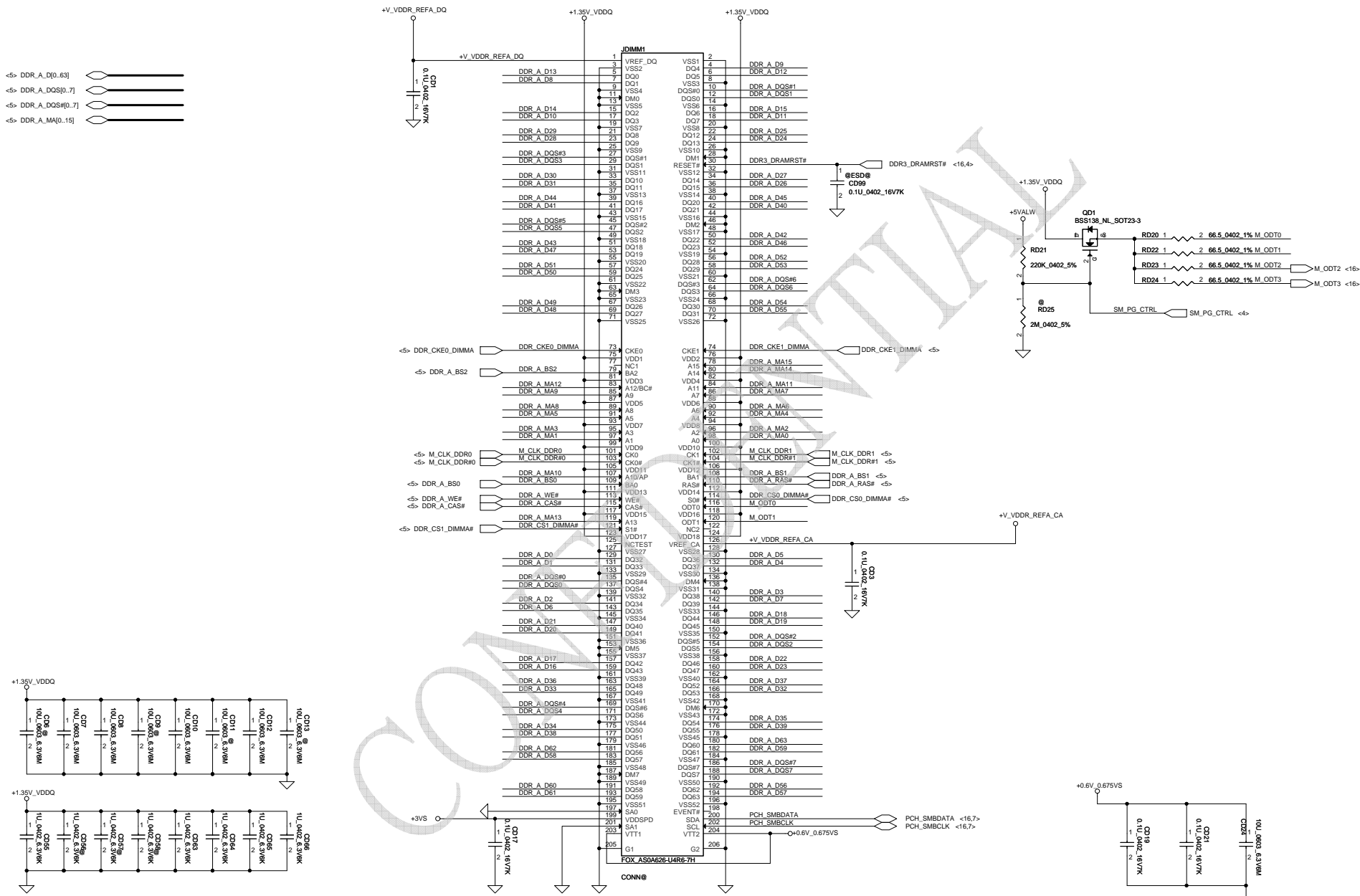
Display Port Presence Strap

CFG4

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

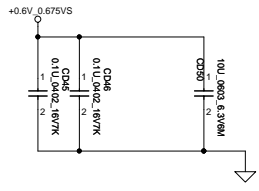
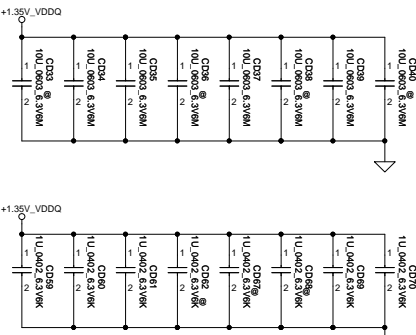
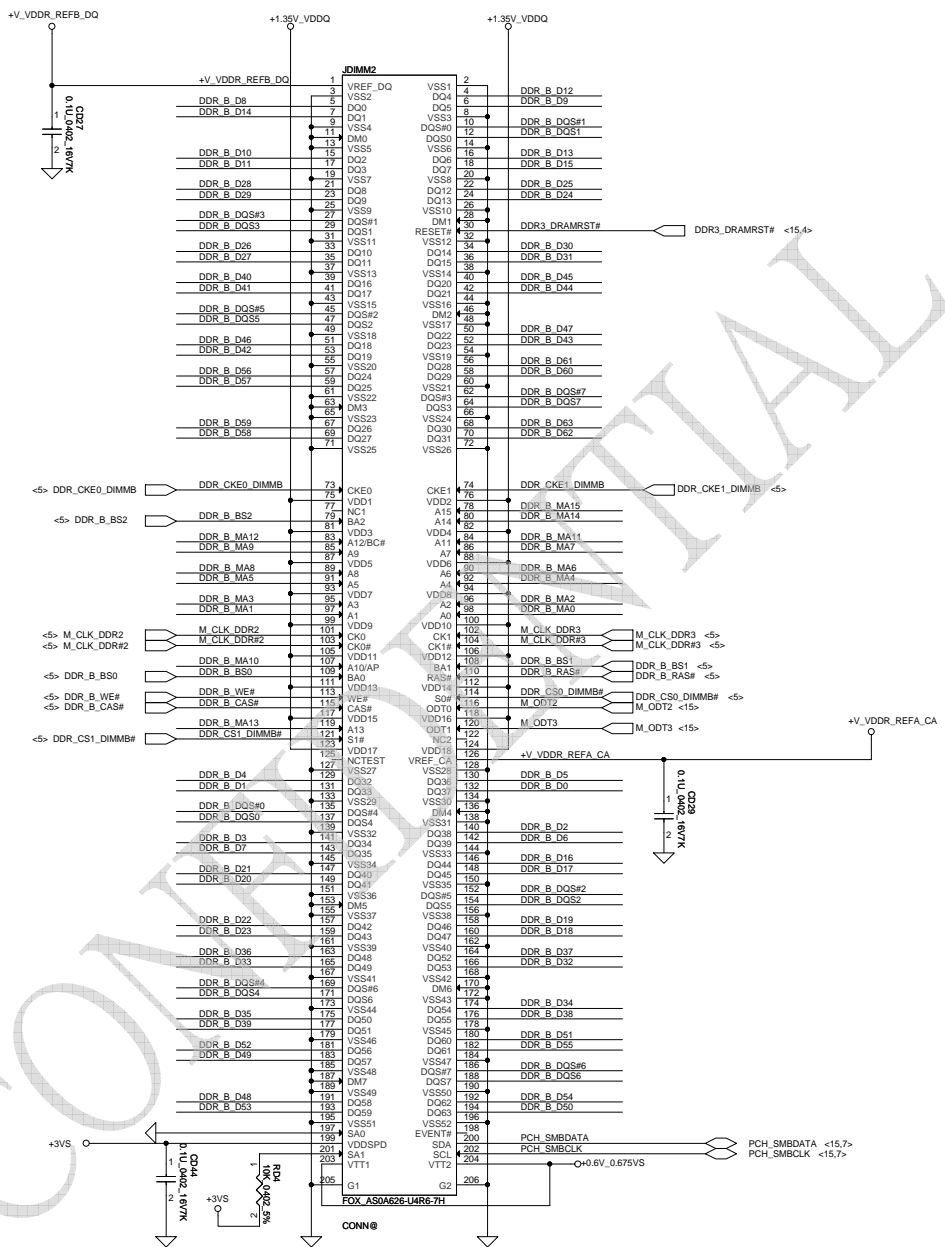


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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	RSVD/CFG
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Date:	Thursday, March 20, 2014	Sheet	14	of	54
				Rev	0.1



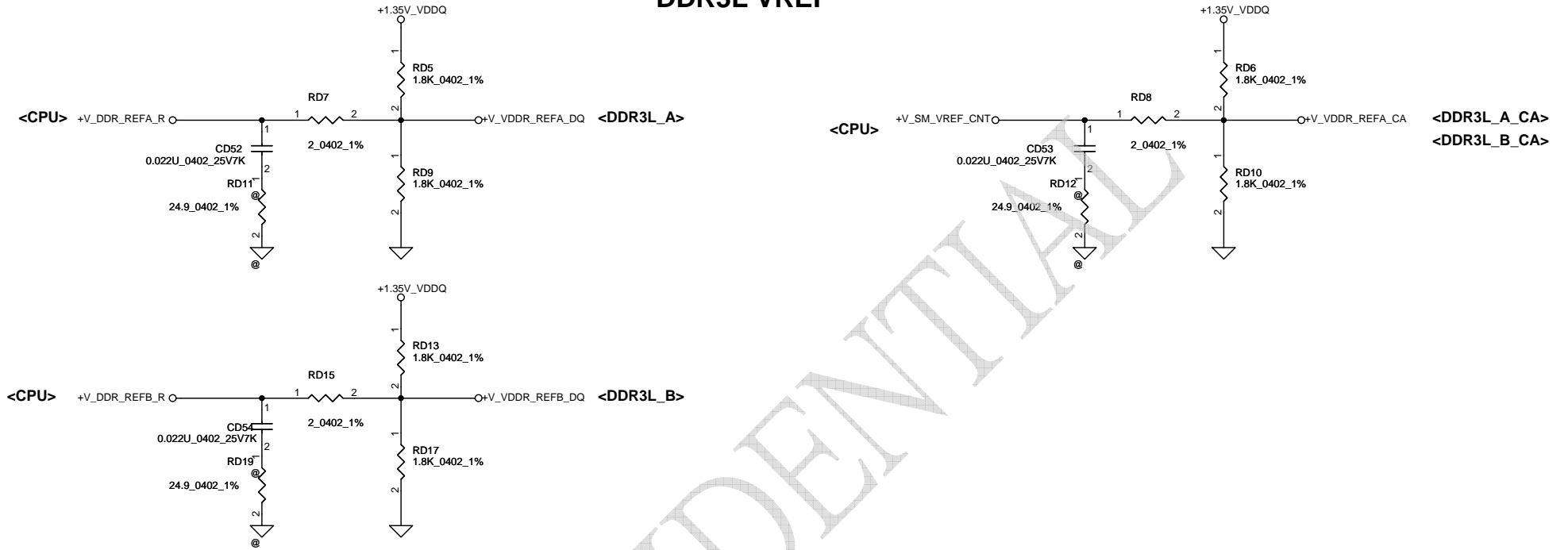
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Issued Date	2011/06/29	Deciphered Date	2011/06/29
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Size	D	Sheet	15 of 54
Rev	0.1		

- <-> DDR_B_D[0.63]
- <-> DDR_B_DQS[0..7]
- <-> DDR_B_DQS# [0..7]
- <-> DDR_B_MA[0..15]



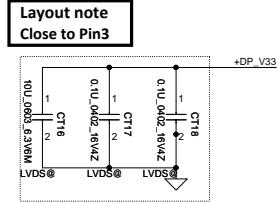
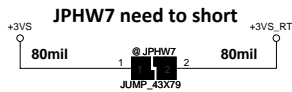
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Issued Date	2010/05/27	Deciphered Date	2011/05/11	DDR3L DIMM1	
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Size	Document Number	Rev			
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DDR3L VREF

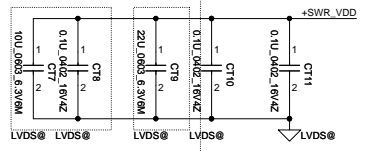


CONFIDENTIAL

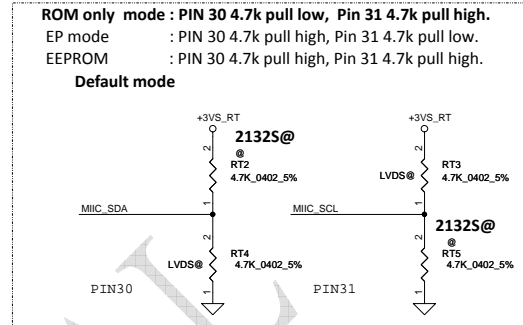
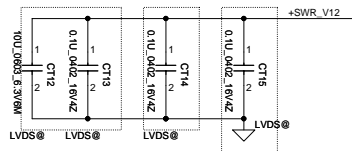
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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	DDR3L VREF
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				Date:	Thursday, March 20, 2014



Layout note
Close to LT5 Close to Pin18 Close to Pin13



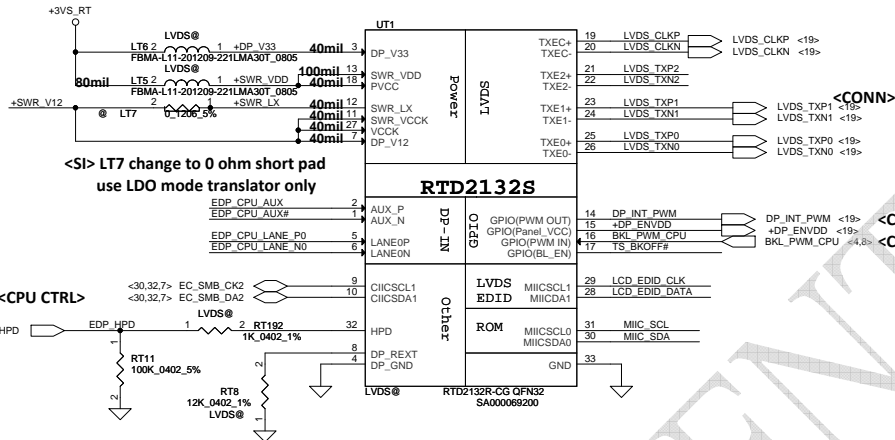
Layout note
Close to Pin11 Close to Pin27 Close to Pin7



SWR / LDO Mode select

	LDO	SWR
2132S	Do not support	mount LT7
2132R	Use 0 ohm	mount LT7

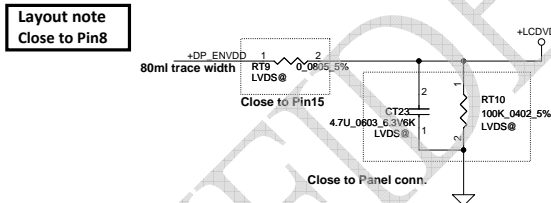
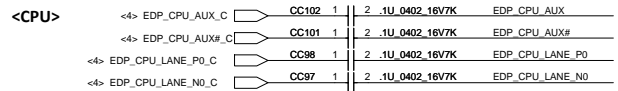
If use 2132R, please select LDO mode as default.



	PIN15	PIN16
2132S	TL_ENVDD	Accept voltage input (high level)
2132R	+LCD_VDD *	3.3V
2132R		1.5-3.3V

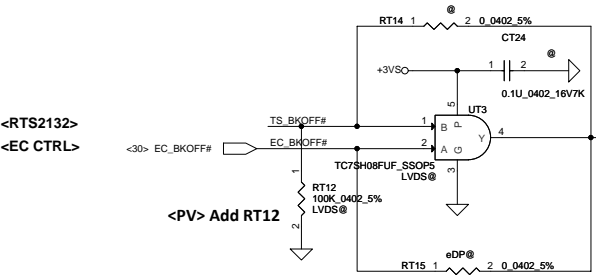
* Version R internal Power Switch, can output 1A, Rds(on)=0.2 ohm

* Version R has internal level shifter, remove level shifter circuit on AMD platform



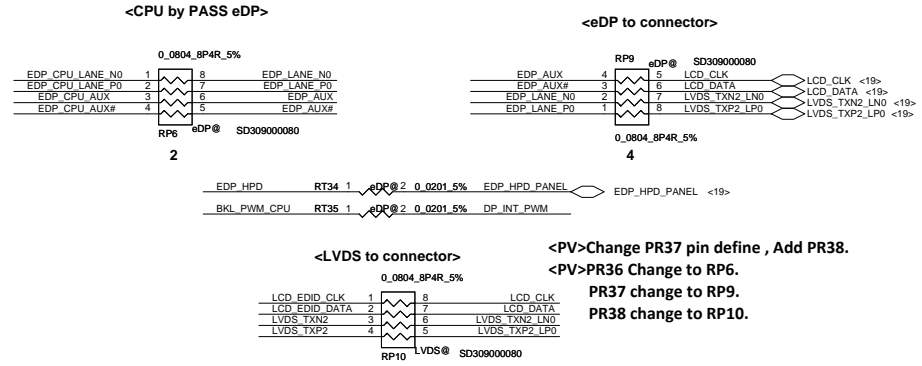
Different between 2132S and 2132R

2132S	2132R
1. Support SWR mode	1. Support LDO mode and SWR mode
	2. Internal ROM
	3. Support LCD_VDD(internal Power switch)
	4. Integrates Level shifter

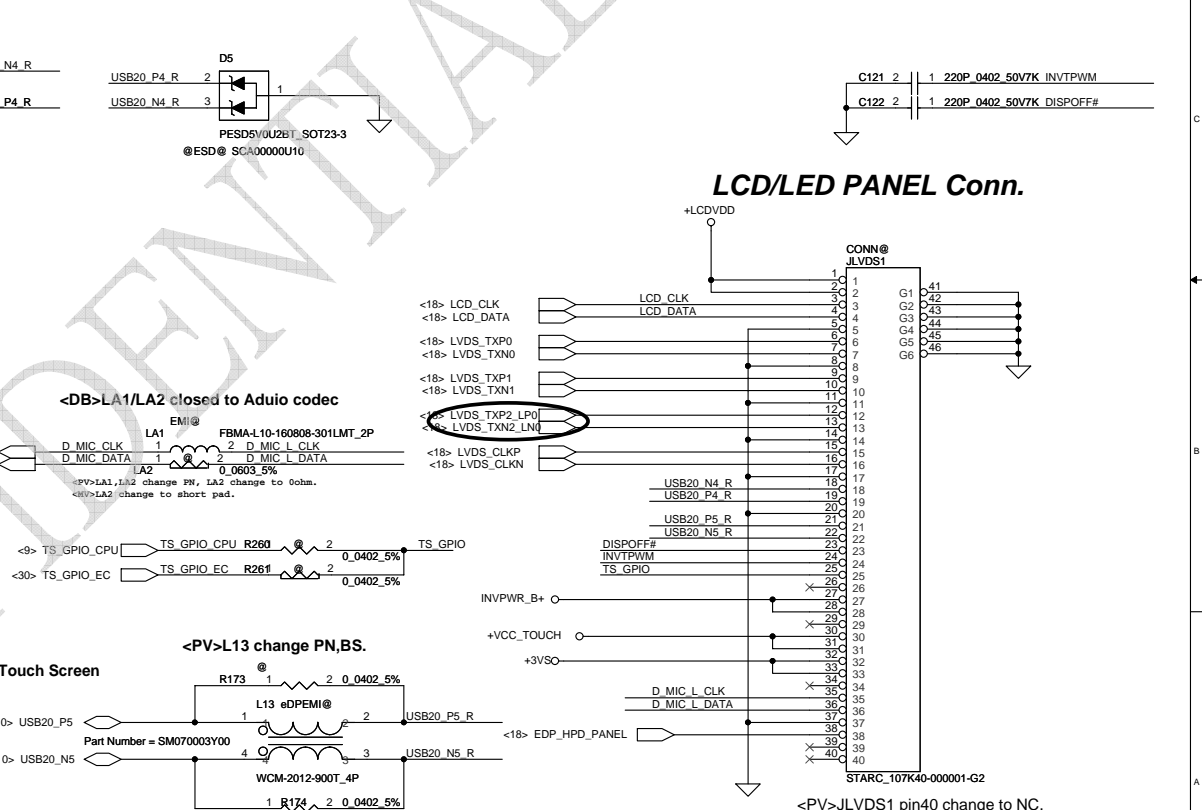
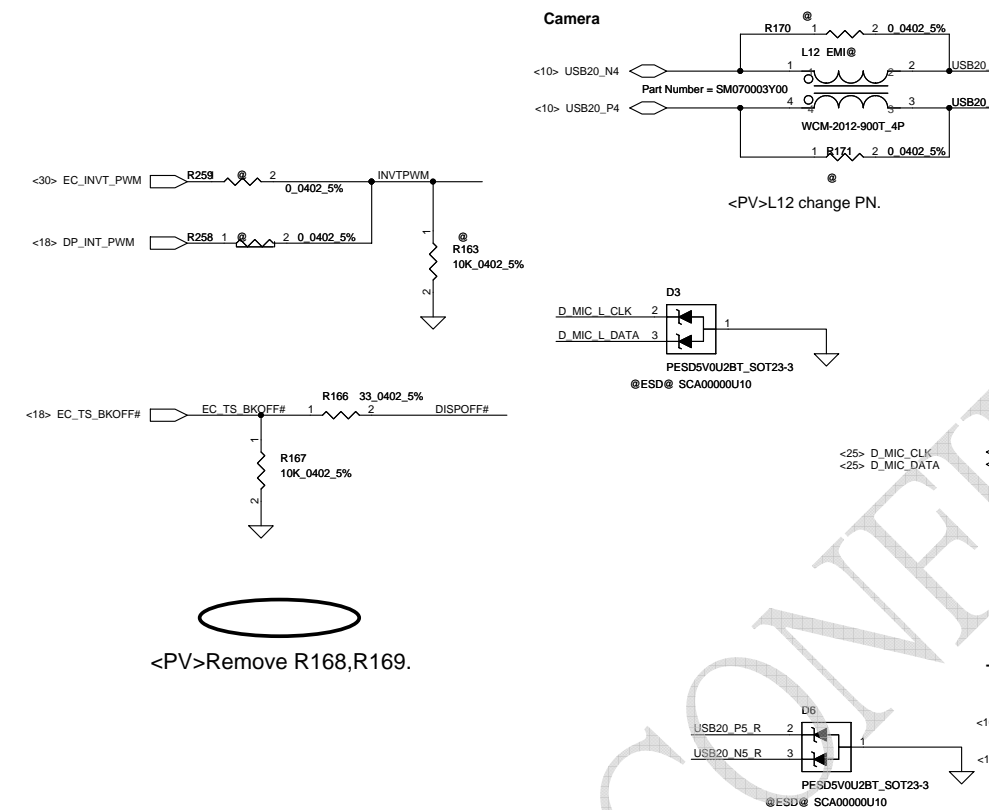
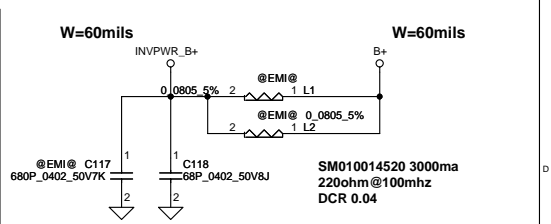
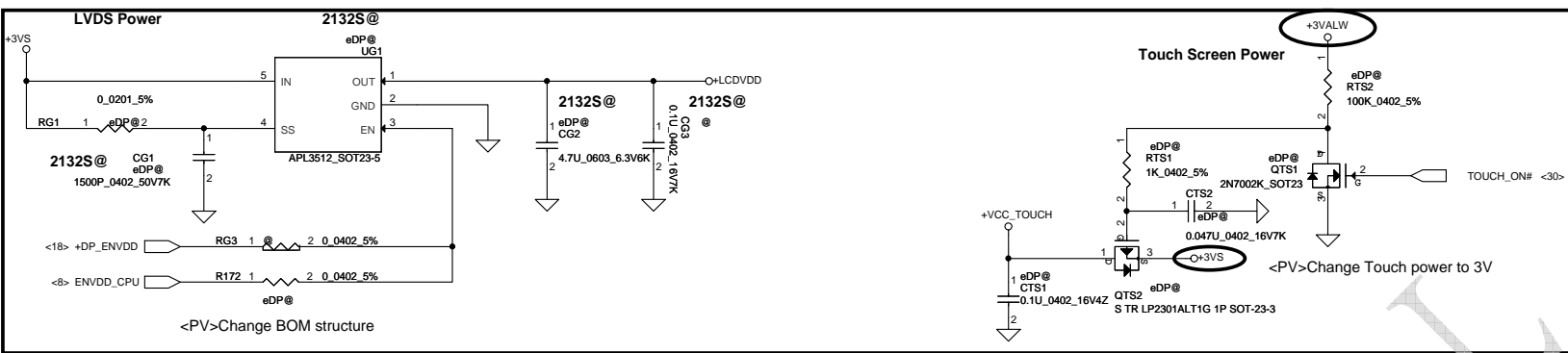


<SI> Update UT3 footprint (As UV11)

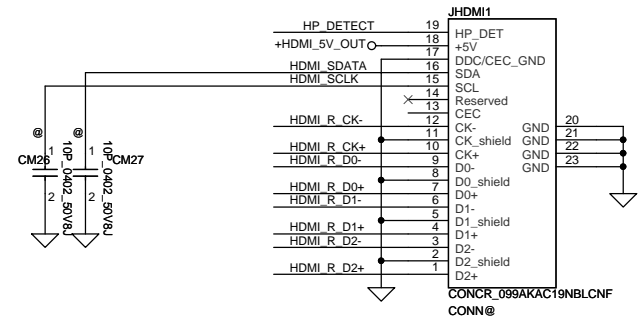
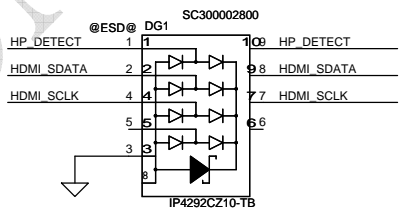
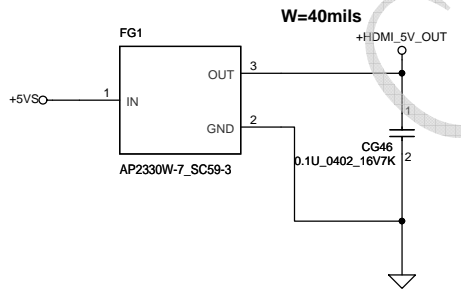
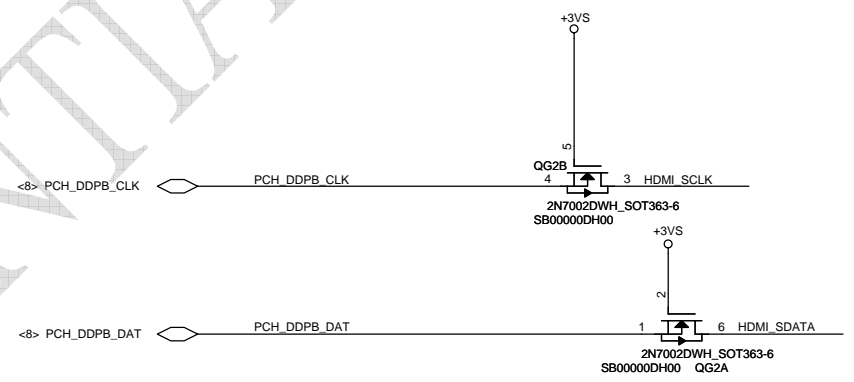
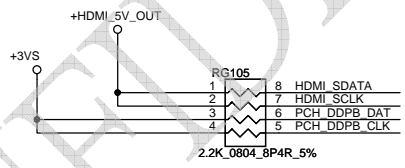
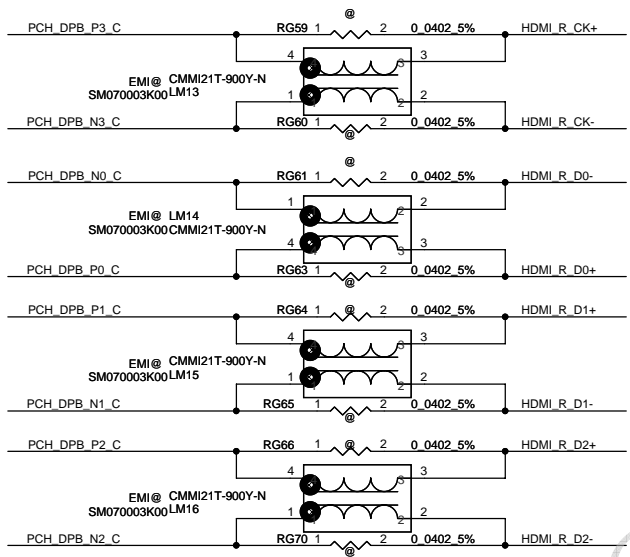
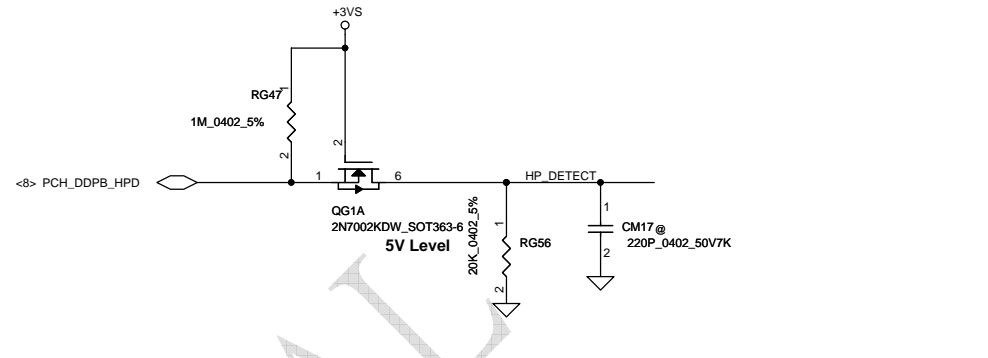
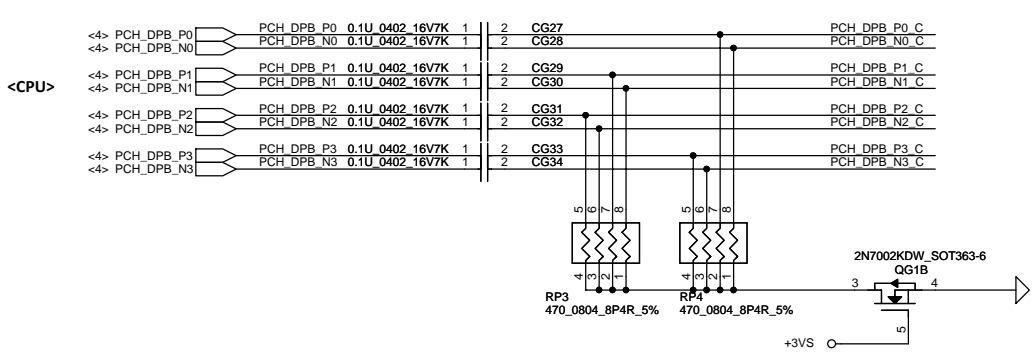
<LVDS Panel>
PD 100K on LVDS page



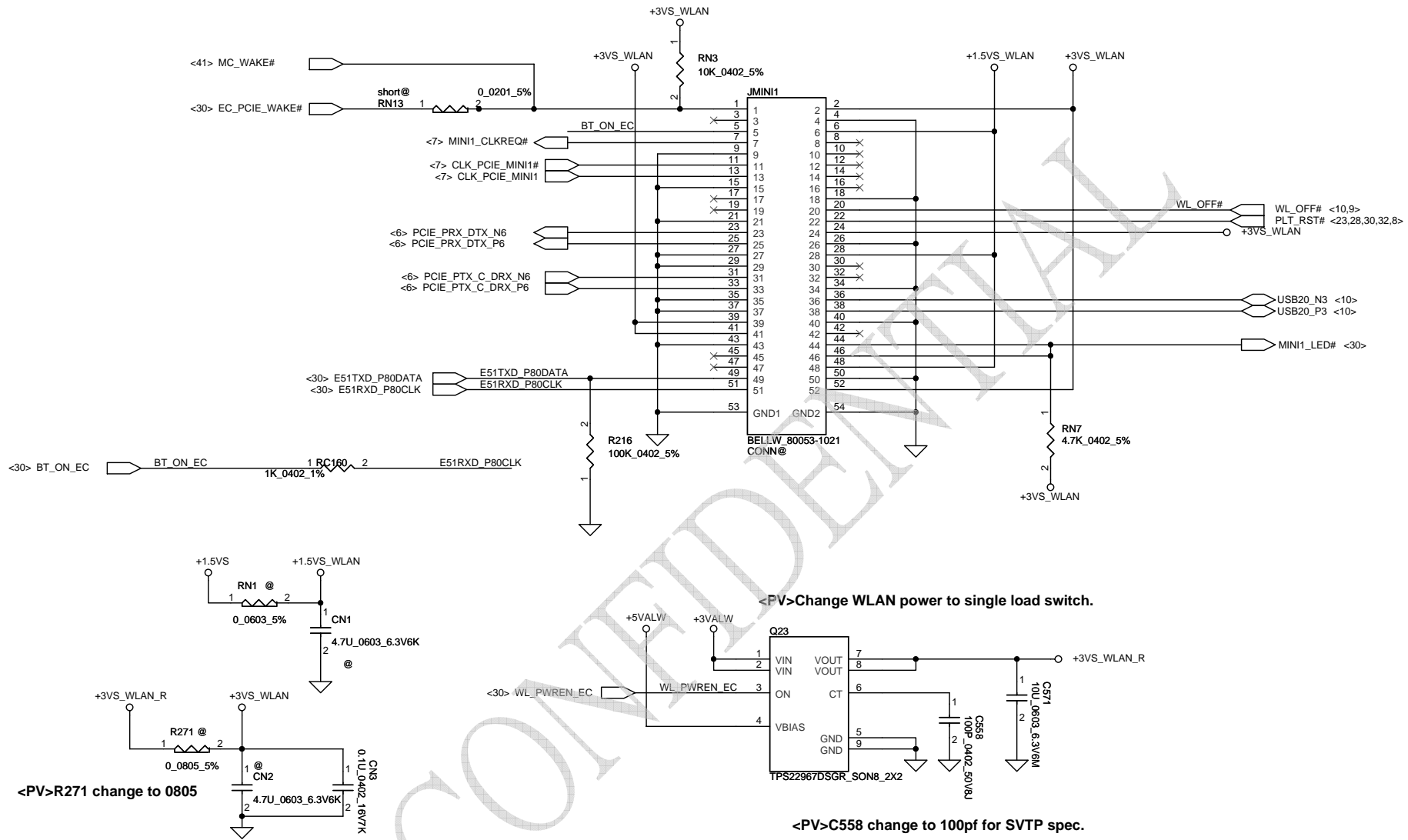
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			Rev 1.1
			Date: Thursday, March 20, 2014 Sheet 18 of 54



Security Classification	Compal Secret Data		Title	
Issued Date	2013/02/26	Deciphered Date	2015/07/08	LVDS Connector
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Date: Thursday, March 20, 2014				Rev 0.1
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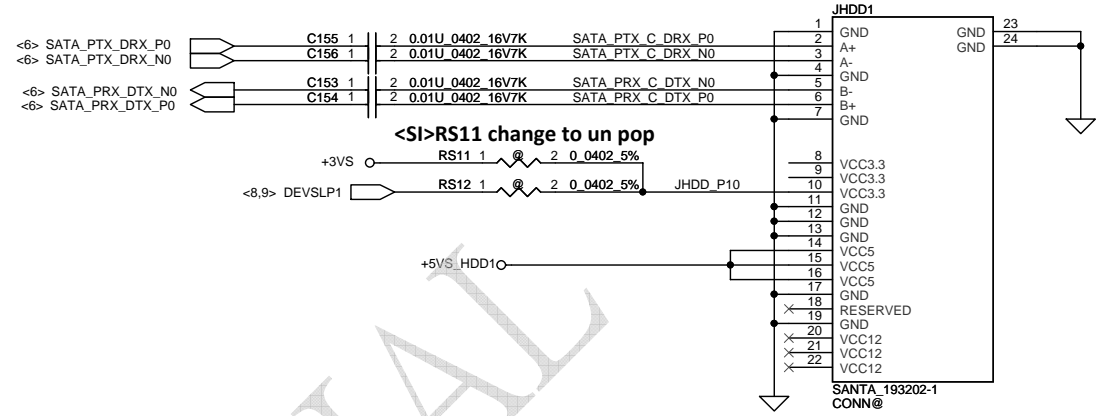
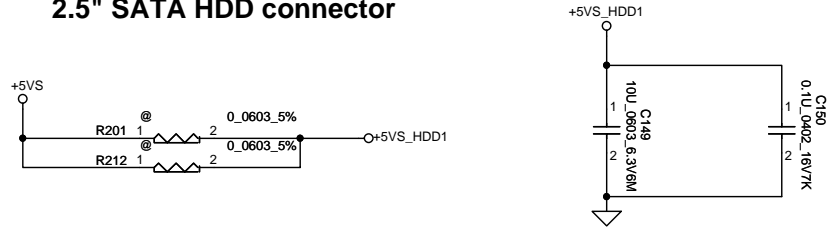
Security Classification		Compal Secret Data		Title	
Issued Date	2011/06/29	Deciphered Date	2011/06/29	HDMI Conn/Level shift	
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				LA-A992P	0.1
Date: Thursday, March 20, 2014				Sheet	20 of 54



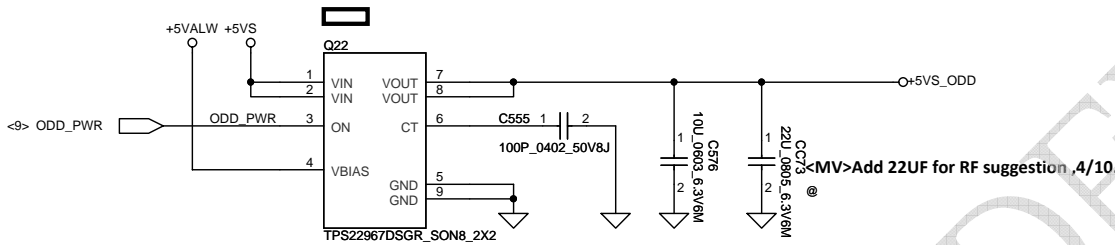
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	WLAN
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Date:	Thursday, March 20, 2014	Sheet	21	of	54

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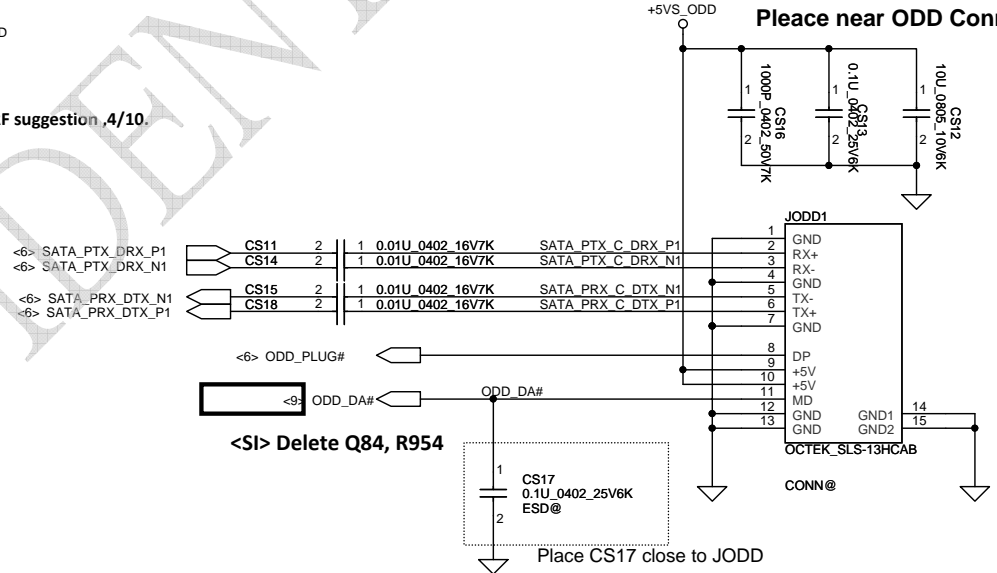
2.5" SATA HDD connector



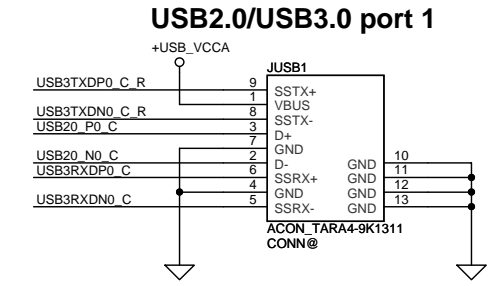
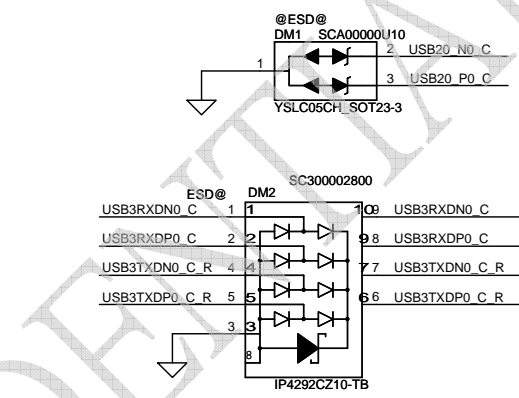
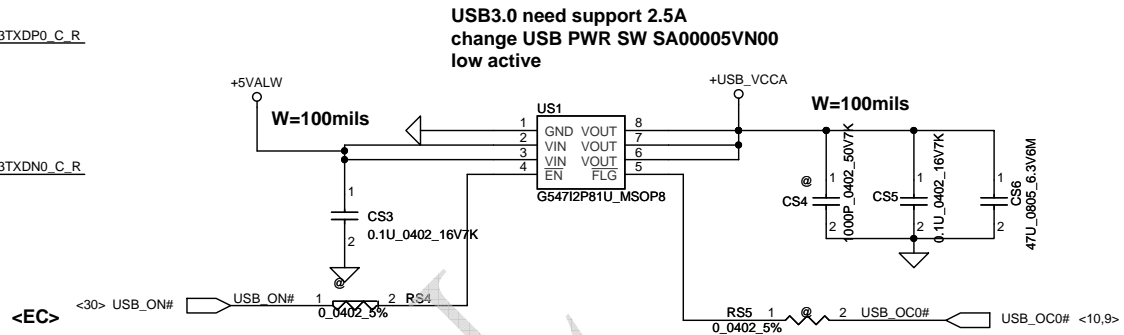
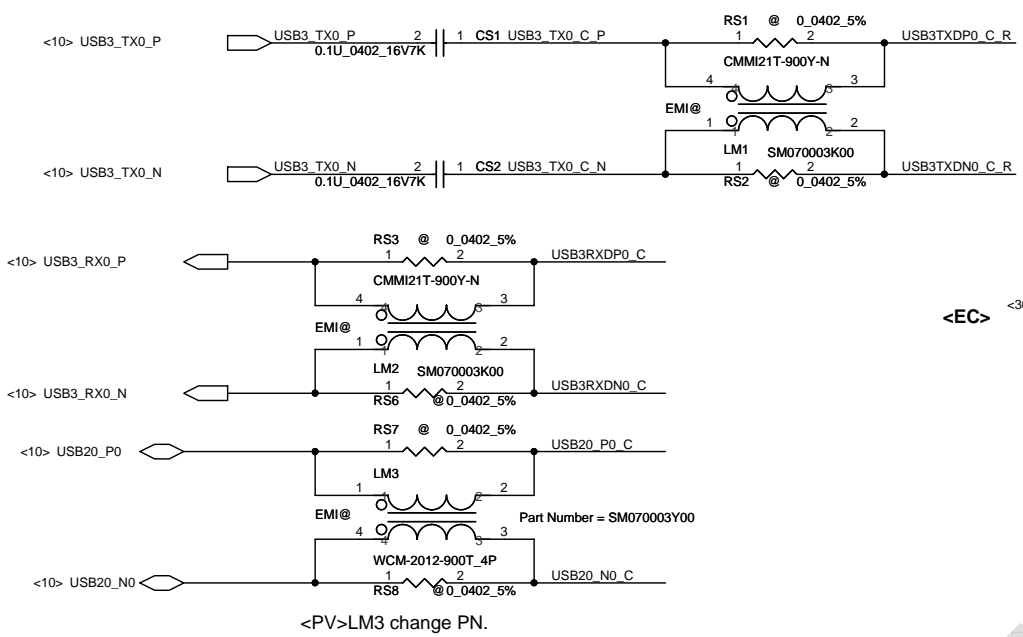
Change to dual load switch for ODD and WLAN
 <PV>Q22 change to single load switch.



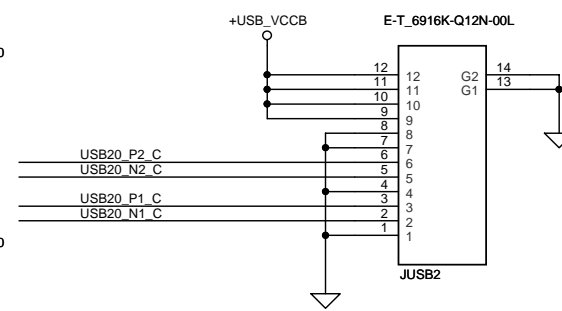
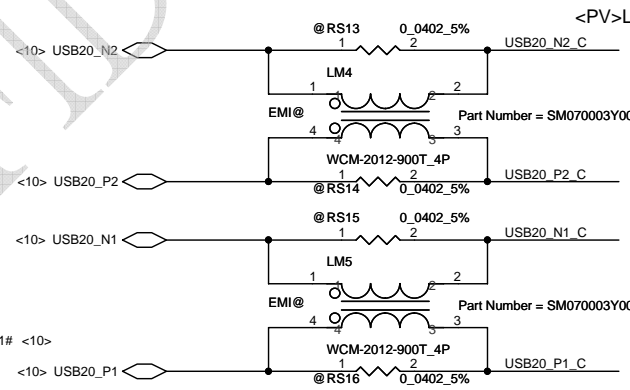
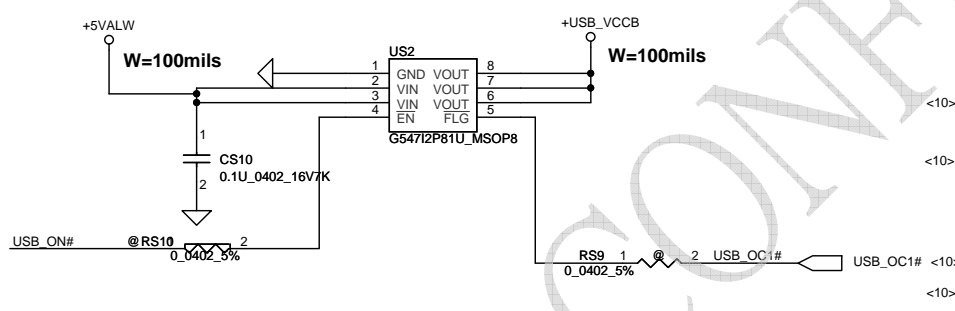
Please near ODD Connector



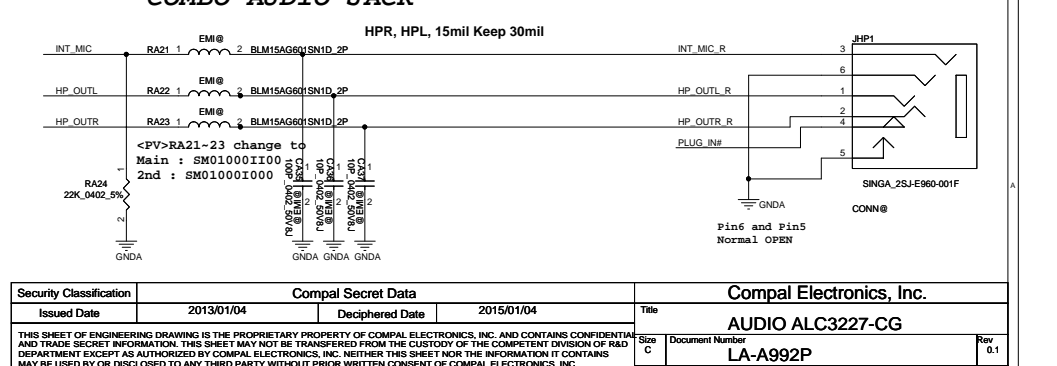
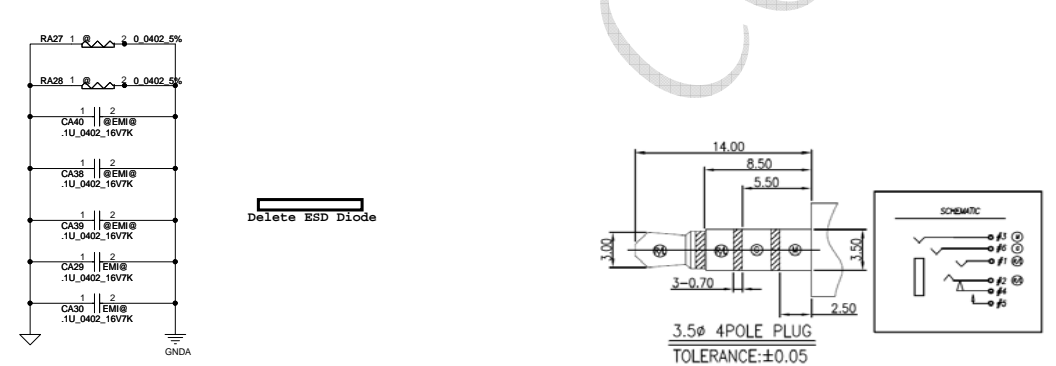
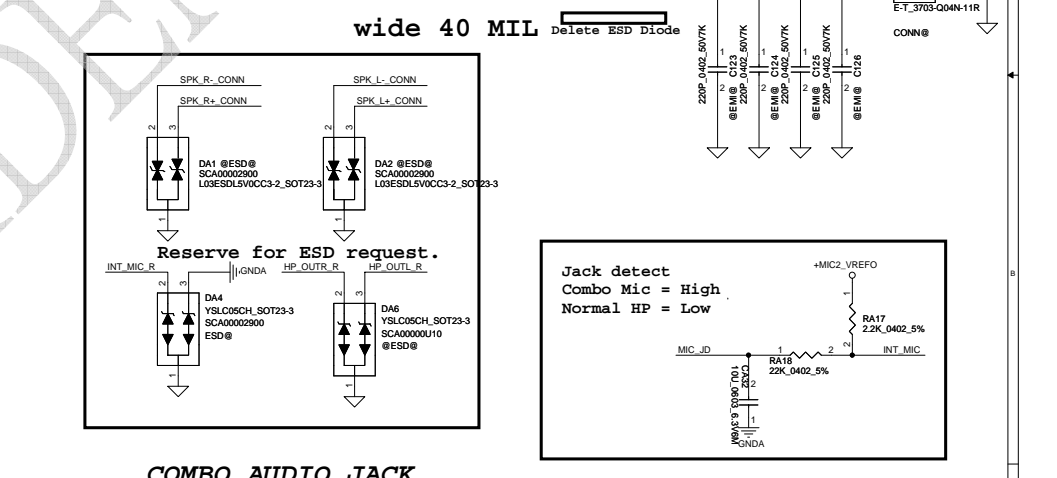
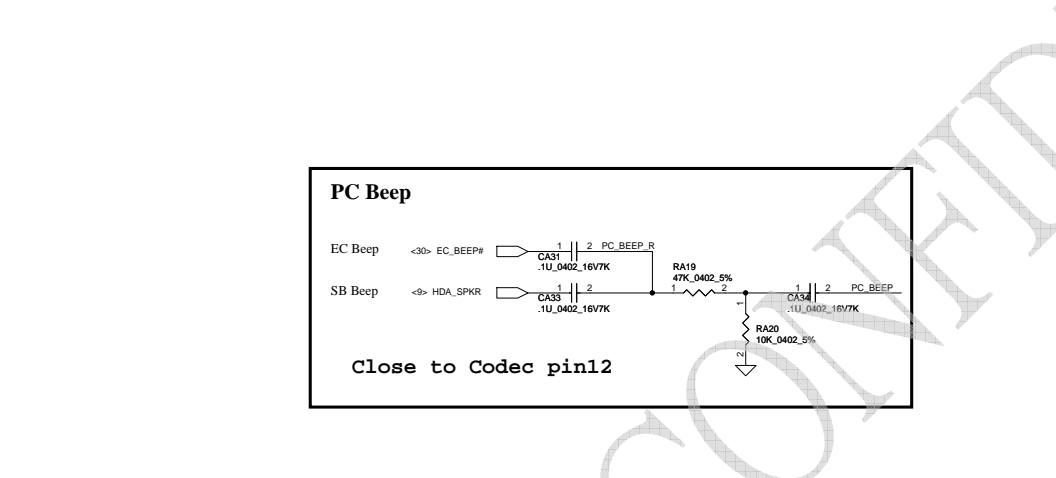
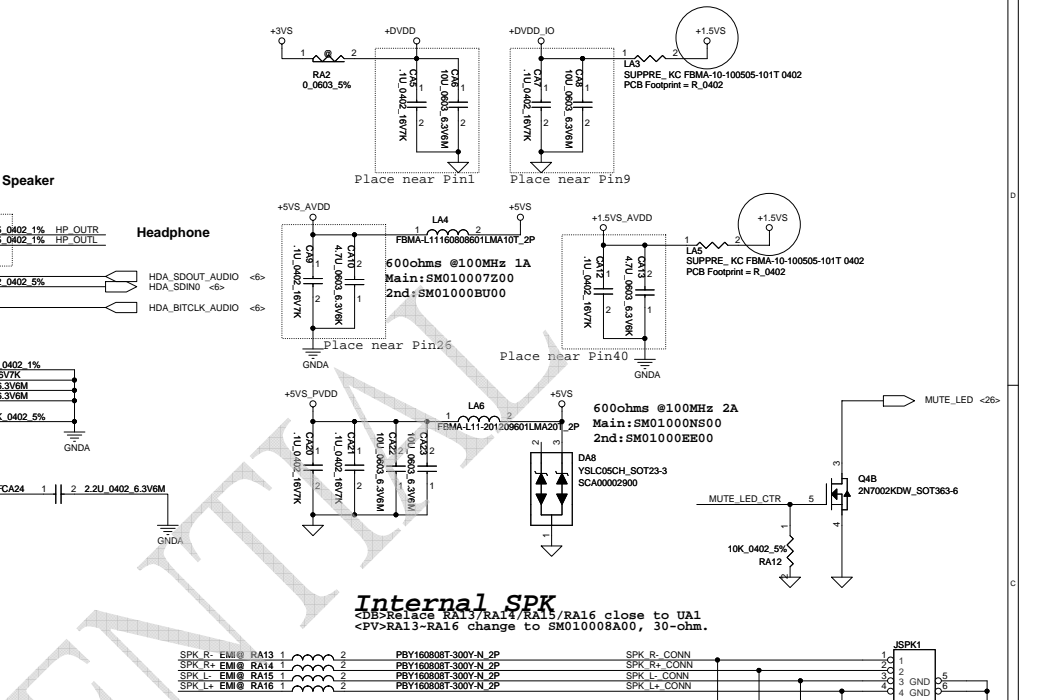
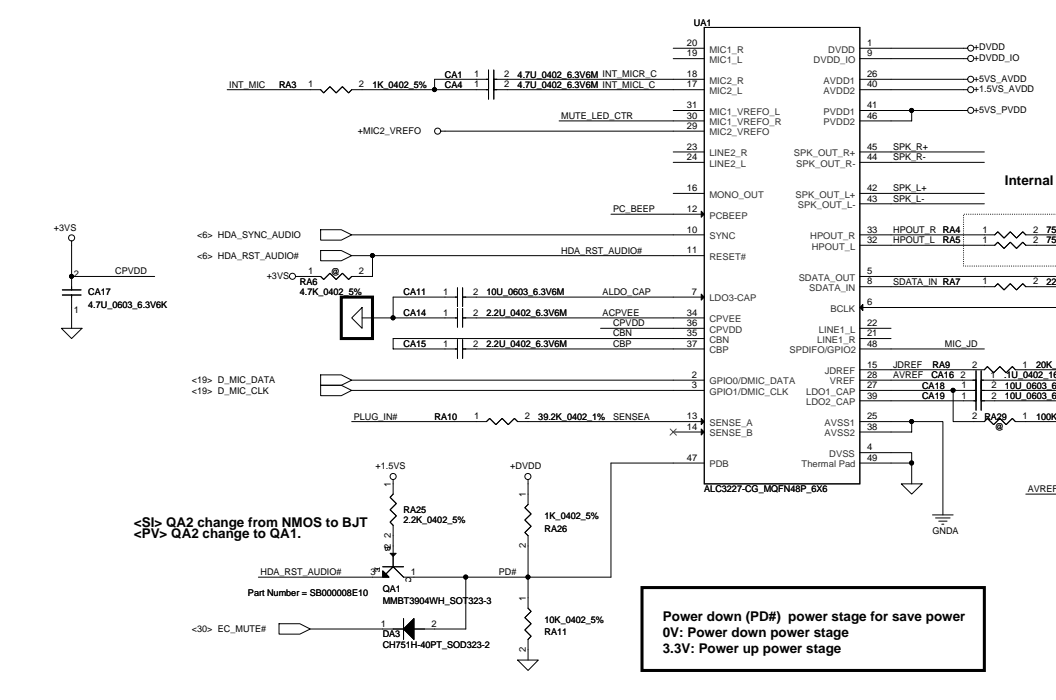
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				Date:	Thursday, March 20, 2014
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USB2.0 port x 2

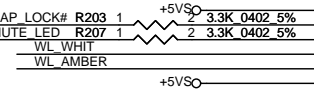
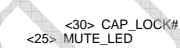
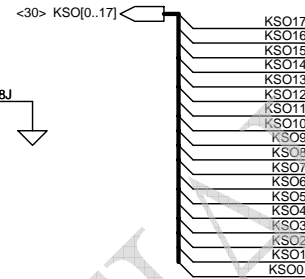
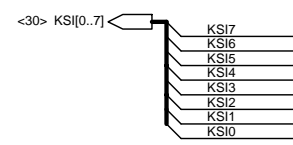
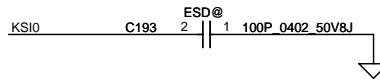
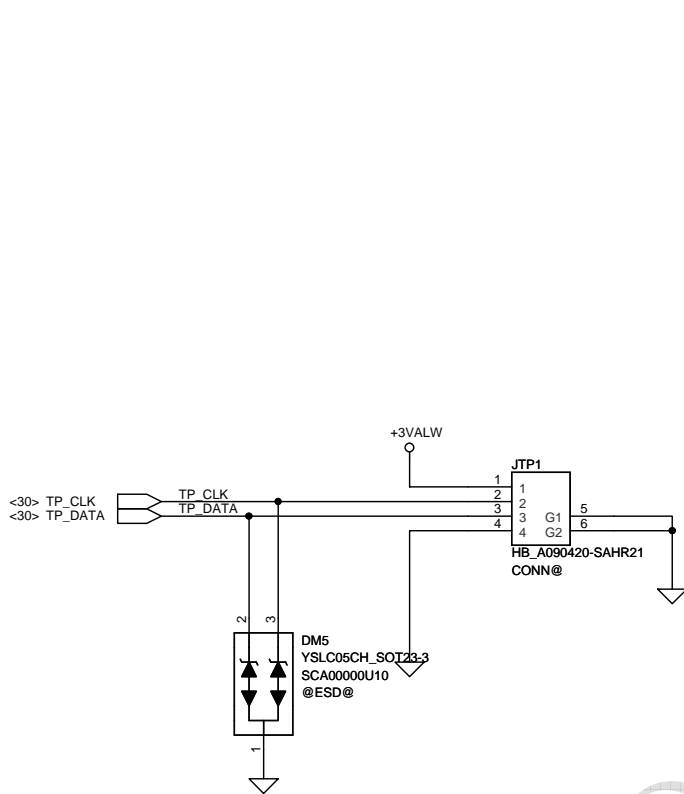


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	USB 3.0/2.0 conn	
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Date:	Thursday, March 20, 2014	Sheet	24	of	54	

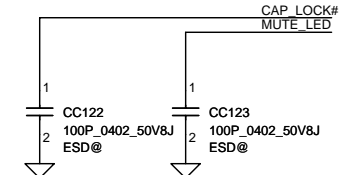
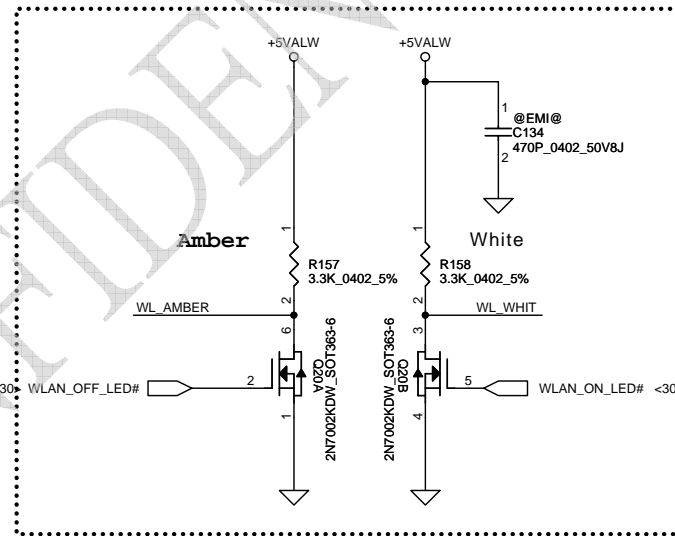
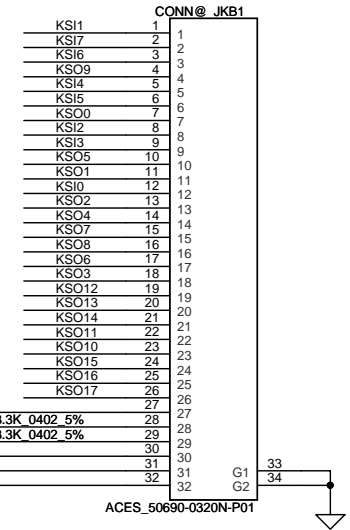


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Touch pad conn

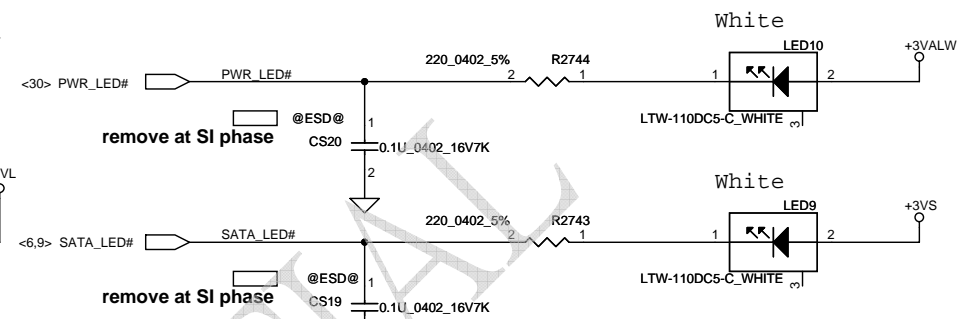
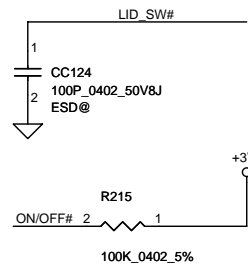
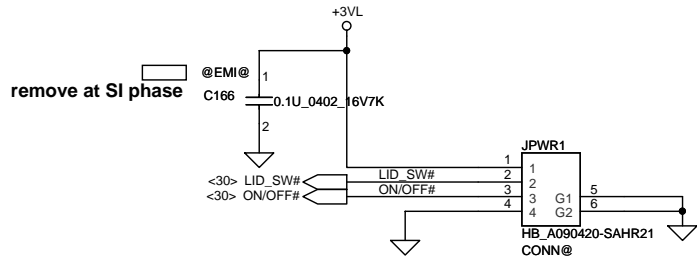


Keyboard conn

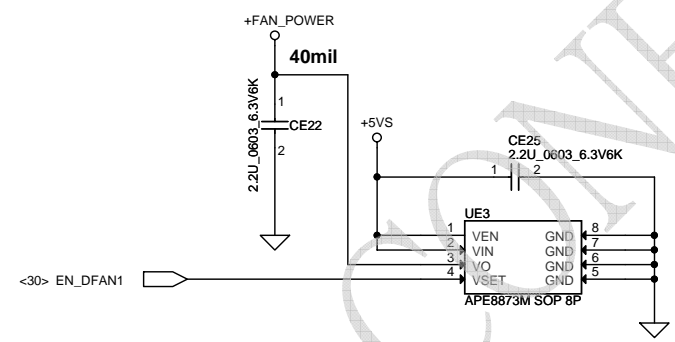


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				Date:	Thursday, March 20, 2014

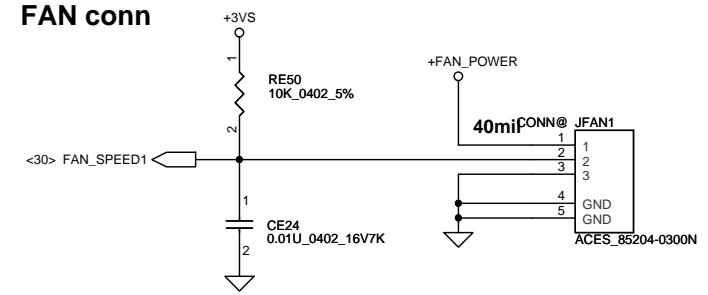
Power Button Connector



<SI> Del New Lid SW conn

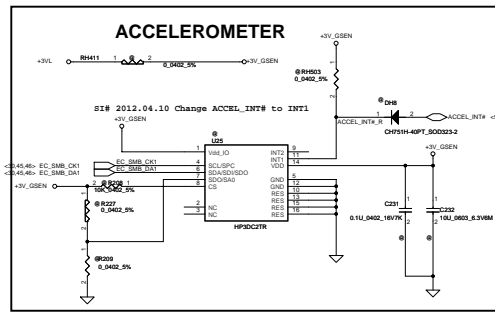
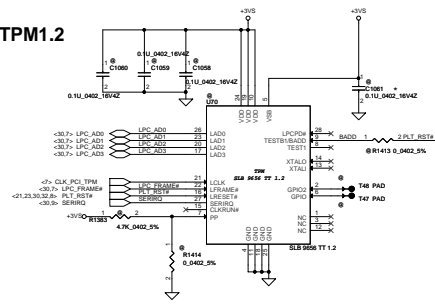


FAN conn

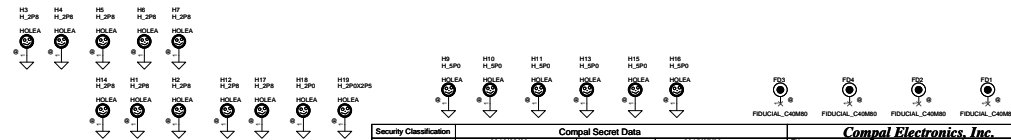


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title
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				LA-A992P
				Rev
				0.1
				Date: Thursday, March 20, 2014
				Sheet 27 of 54

TPM1.2

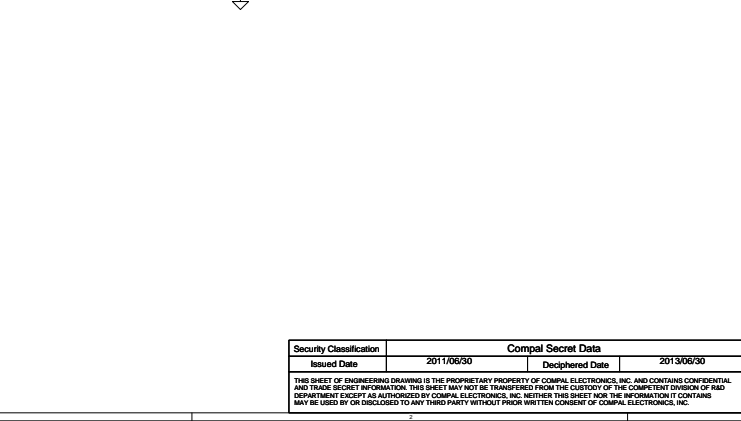
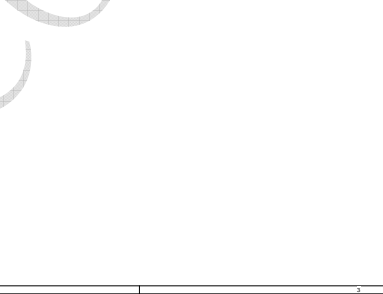
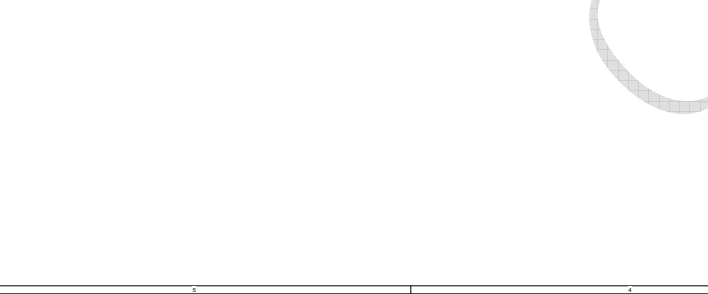
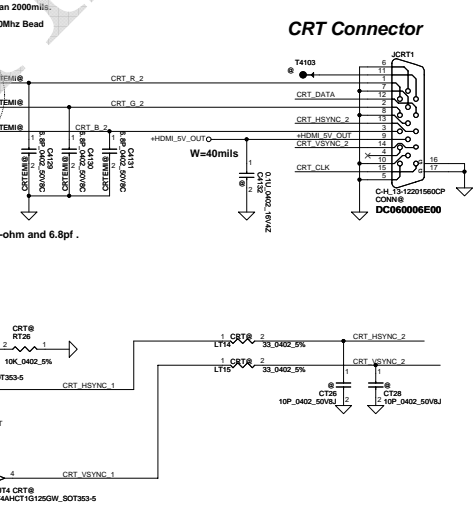
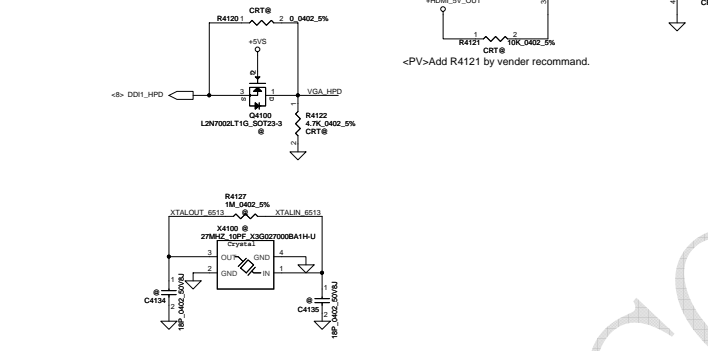
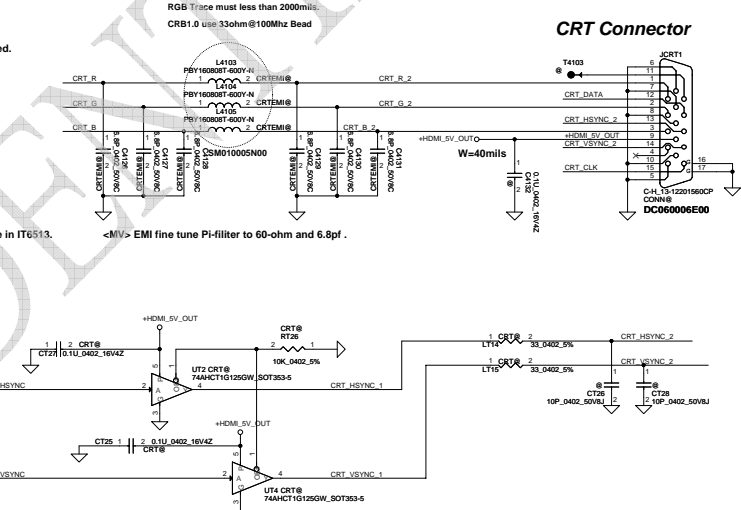
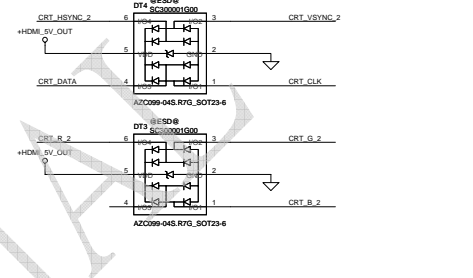
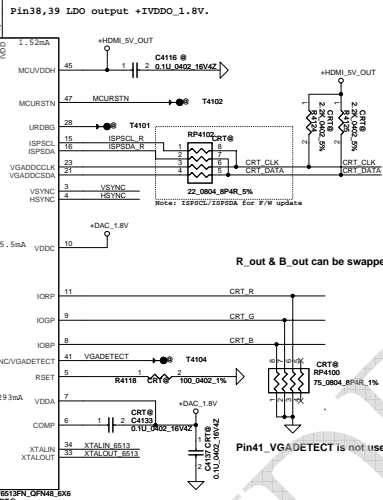
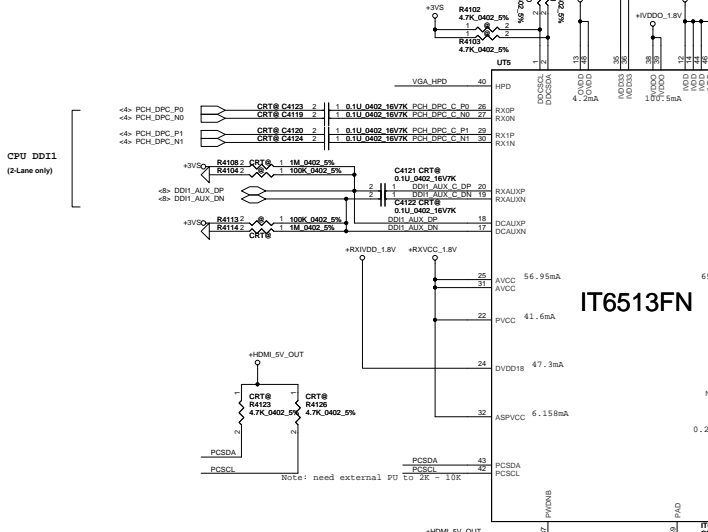
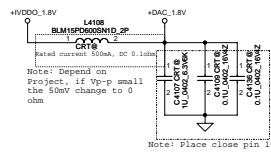
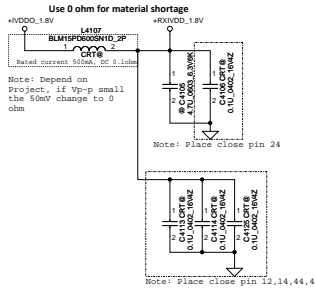
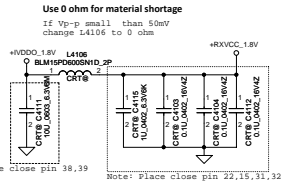
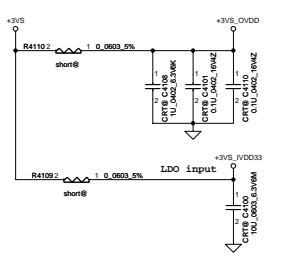


Screw Hole



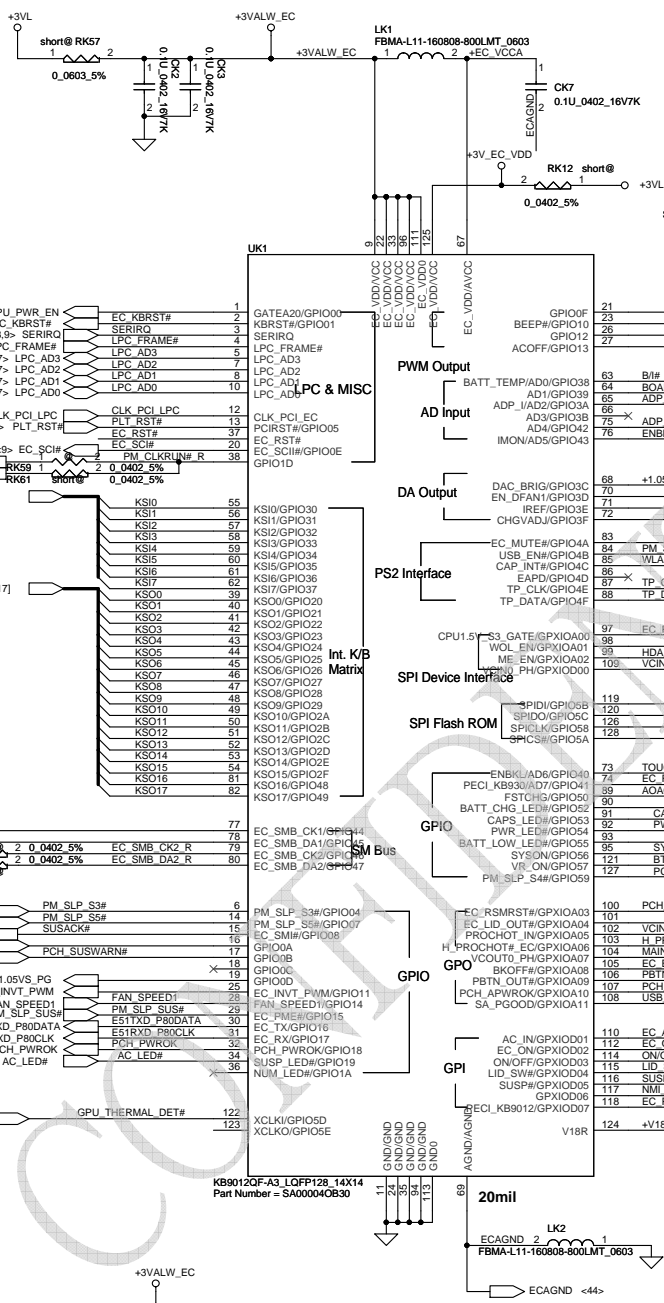
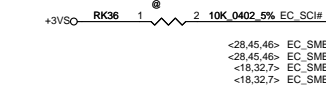
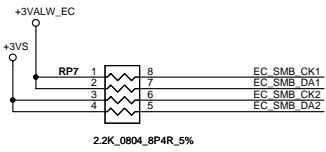
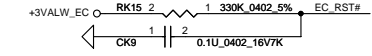
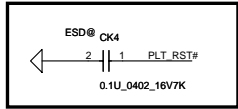
Security Classification	Compal Secret Data		Yes	Compal Electronics, Inc.
Issued Date	20160726	Deciphered Date	20160726	LA-AD02D
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			DATE	ISSUED
			20160726	26 OF 54

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Issued Date	2011/06/30	Deciphered Date	2013/06/30	File		eDP to CRT		
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				Drawn	LA-A992P			
				Date	Thursday, March 26, 2014	Sheet	28	of
							54	

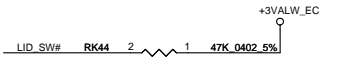
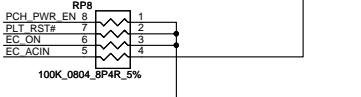
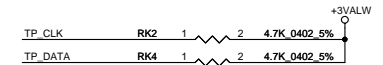
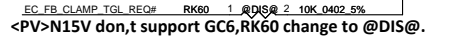
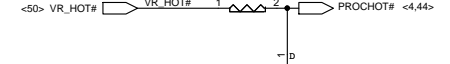
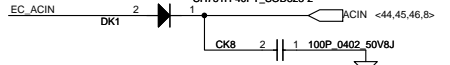
PV# 2013.01.29 Add CK4 for ESD protection



15"	DB	SI	PV	MV
UMA RK13	12k ohm	20K ohm	33K ohm	56K ohm
DIS RK13	160k ohm	240k ohm	330k ohm	560k ohm

14"	DB	SI	PV	MV
UMA RK13	0 ohm	15K ohm	27K ohm	43K ohm
DIS RK13	130k ohm	200k ohm	270k ohm	430k ohm

Board ID control
 <DB>RK13 change to 160K ==>for 15" DIS
 <DB>RK13 change to 12K ==>for 15" UMA



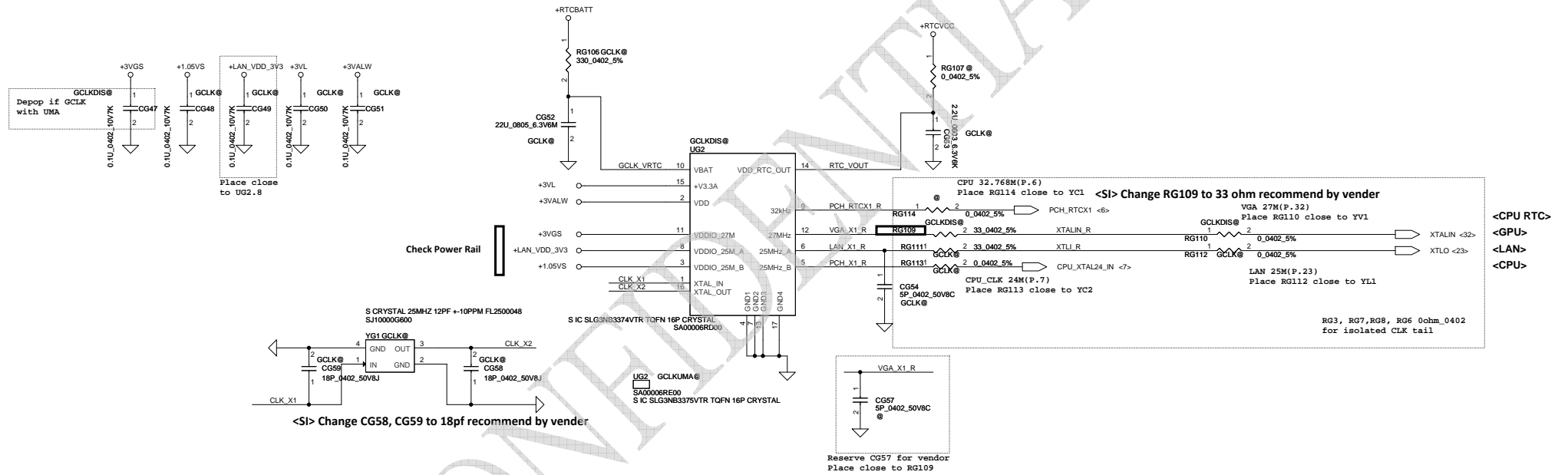
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Issued Date	2011/06/29	Deciphered Date	2011/06/29
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Compal Electronics, Inc.	
EC ENE-KB9012	
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BOM control

Platform	Silego P/N	Compal PN	25MHz(A)	32.768KHz	24MHz(B)	27MHz	8MHz	Remark
Intel ULT UMA	SLG3NB3375V	SA00006RE00	1	1	1	X	X	GCLKUMA@
Intel ULT Dis	SLG3NB3374V	SA00006RD00	1	1	1	1	X	GCLKDIS@

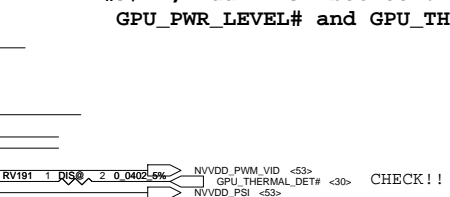
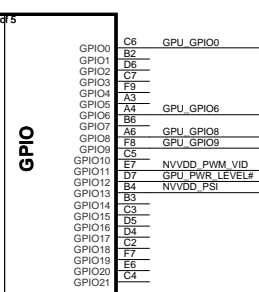
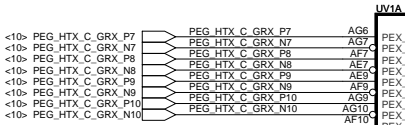
Base on A32 32.768KHz use 10ppm, G-CLK 25MHz X'TAL use 10ppm.



#9/2, Add RV191 between GPU_PWR_LEVEL# and GPU_THERMAL_DET#

GPU_PWR_LEVEL#	RV62	1	DIS@	2	100K_0402_5%
GPU_GPIO6	RV43	1	DIS@	2	10K_0402_5%
NVVD0_PSI	RV44	1	DIS@	2	10K_0402_5%
GPU_GPIO8	RV46	1	DIS@	2	10K_0402_5%
GPU_GPIO9	RV48	1	DIS@	2	10K_0402_5%

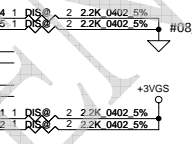
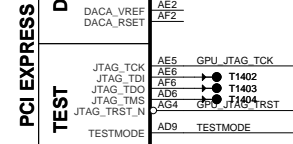
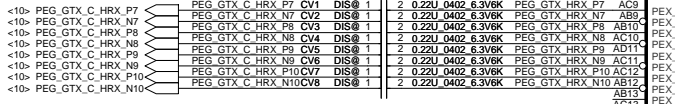
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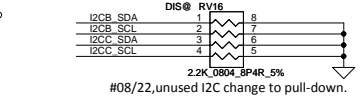
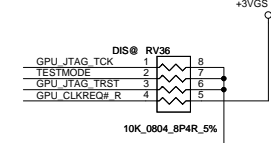
GPU_GPIO0 RV49 1 DIS@ 2 10K_0402_5%

#8/19, N15V-GM didn't support GC6, unpop QV13, QV14.

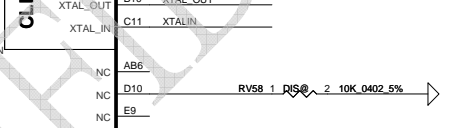
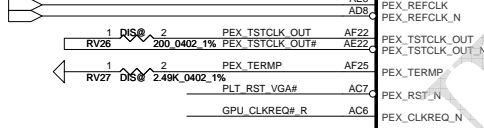
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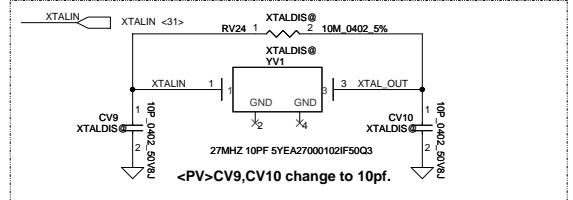
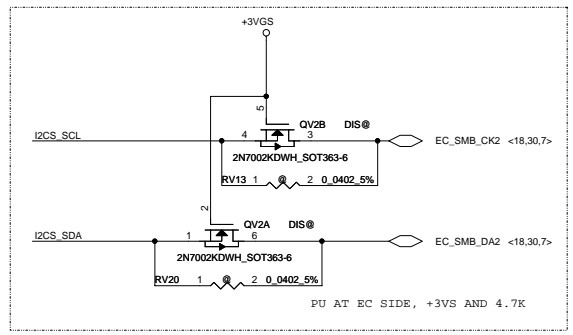
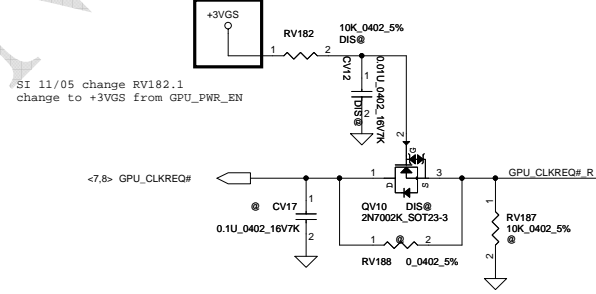
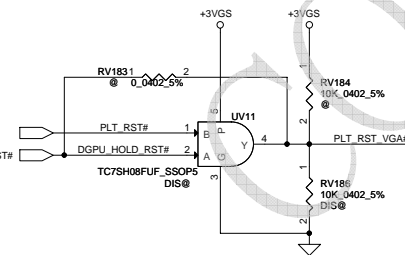
#08/22, unused I2C change to pull-down.



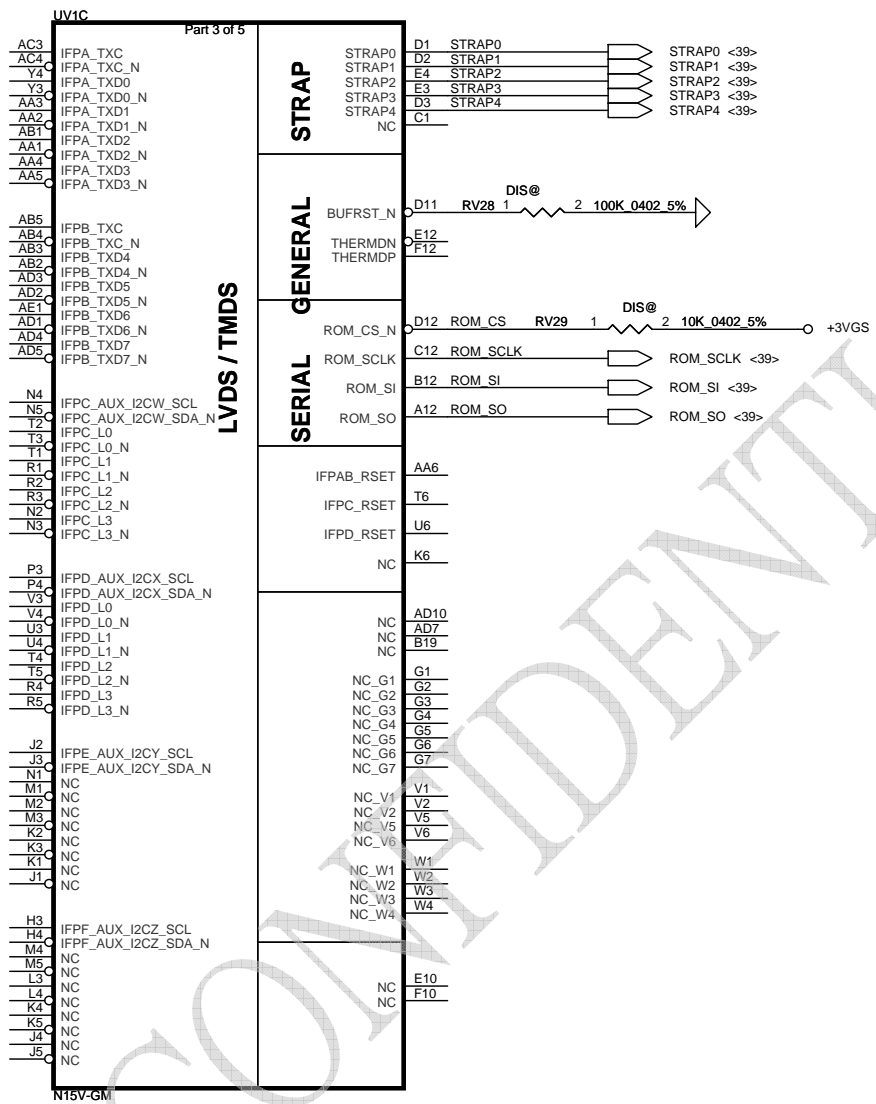
<CPU> Differential signal



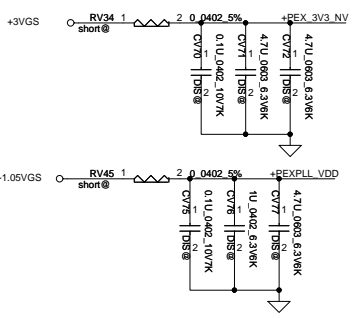
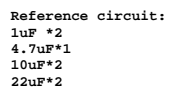
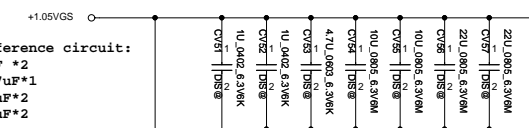
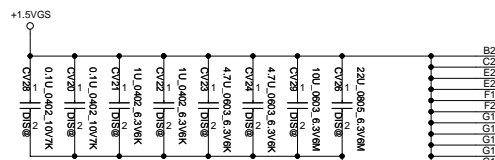
EC or CPU control



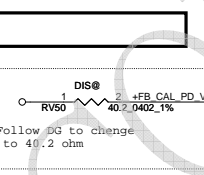
Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2011/07/12	Deciphered Date	2012/07/01	Title
				N15V-GM PCIE/DAC/GPIO
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Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2011/07/12	Deciphered Date	2012/07/01	Title	N15V-GM LVDS/HDMI/DP/THM
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Date:	Thursday, March 20, 2014	Sheet	33	of	54

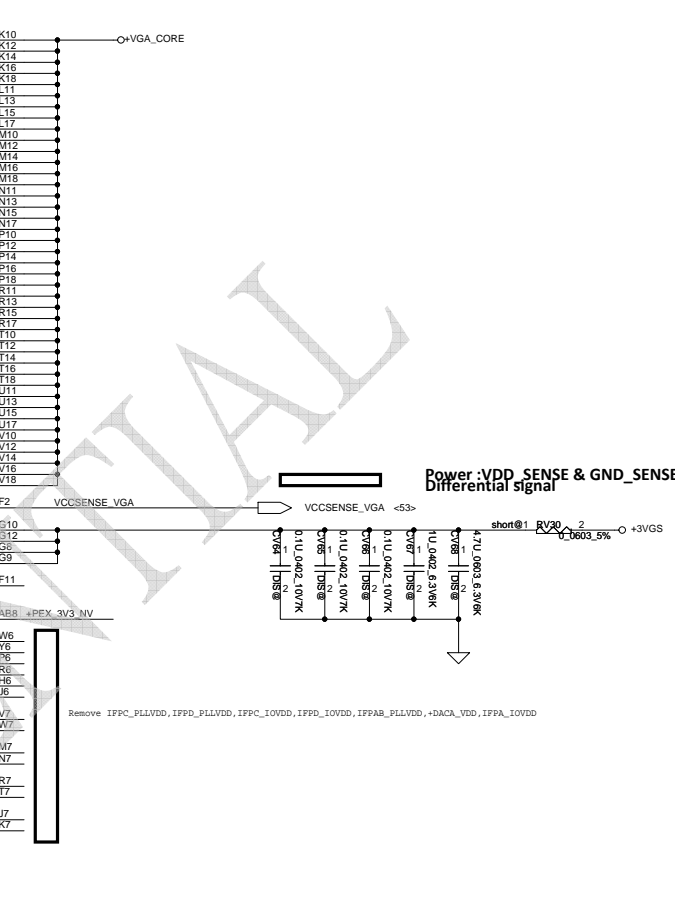
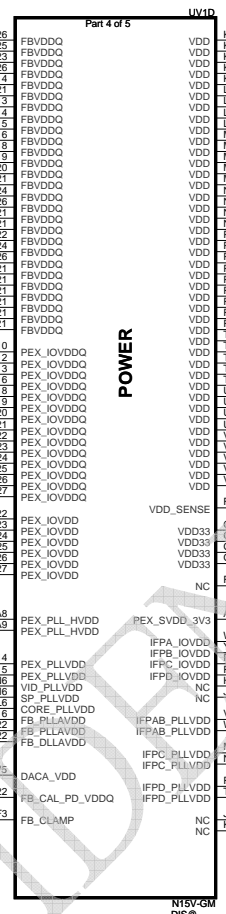
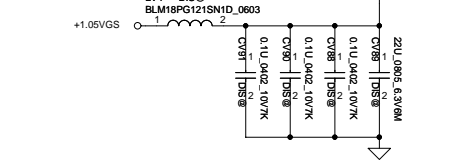


<S> LV1 use R_0402 footprint
 LVL1 BLM18PG121SN1D_0603
 #8/19, LV1 change to
 Z=30 ohm, RDC=0.05
 SM01000F100
 PCB Footprint = R_0402

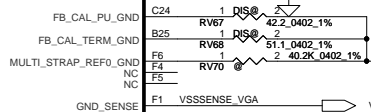
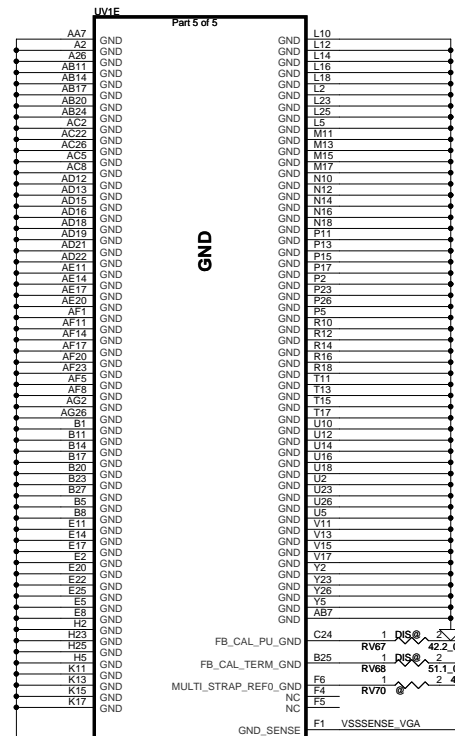


<PV>LV3, LV4 change PN.
 Main: SM01000BW00
 2nd: SM01000CC00

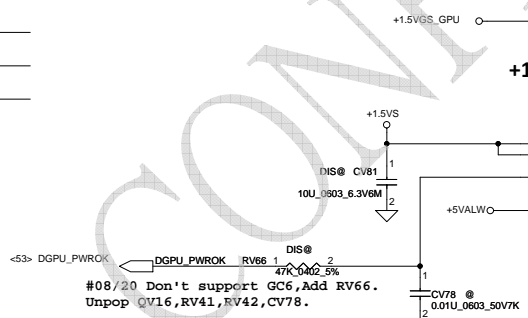
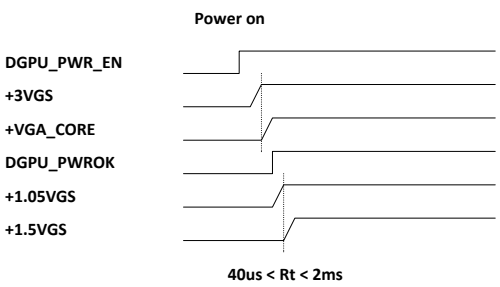
DG: LV3 -> Z=180 ohm, RDC=0.2 ohm.0603



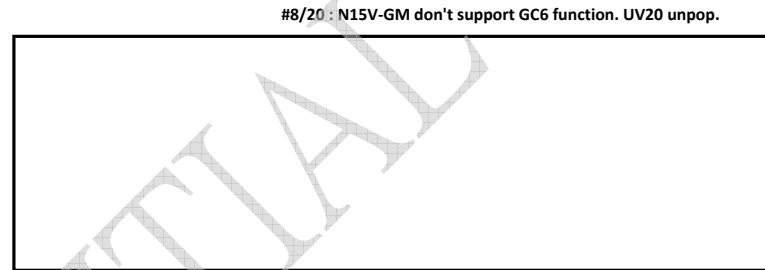
Security Classification		Compal Secret Data		Title	
Issued Date	2011/07/12	Deciphered Date	2012/07/01	N15V-GM POWER	
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				Custom	0.1
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Date: Thursday, March 20, 2014				Sheet	34 of 54



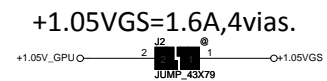
Power :VDD_SENSE & GND_SENSE
Differential signal



#08/20 Don't support GC6, Add RV66. Unpop QV16, RV41, RV42, CV78.

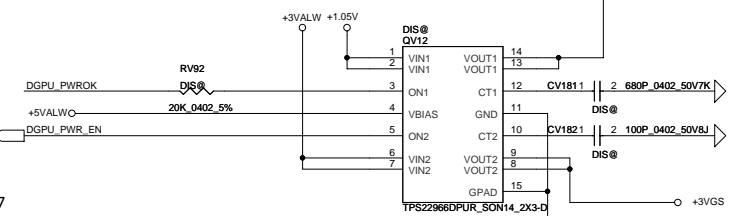


#8/20 : N15V-GM don't support GC6 function. UV20 unpop.

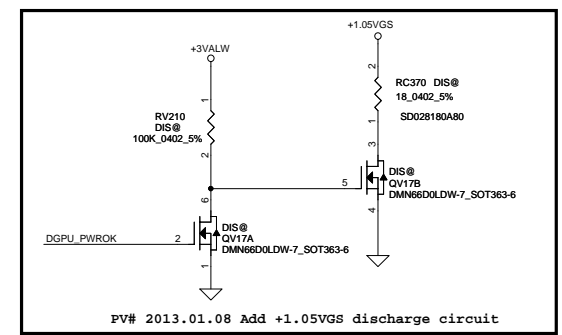


+1.05VGS=1.6A,4vias.

+3VALW to +3VGS
+1.05V to +1.05VGS

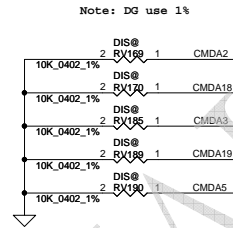
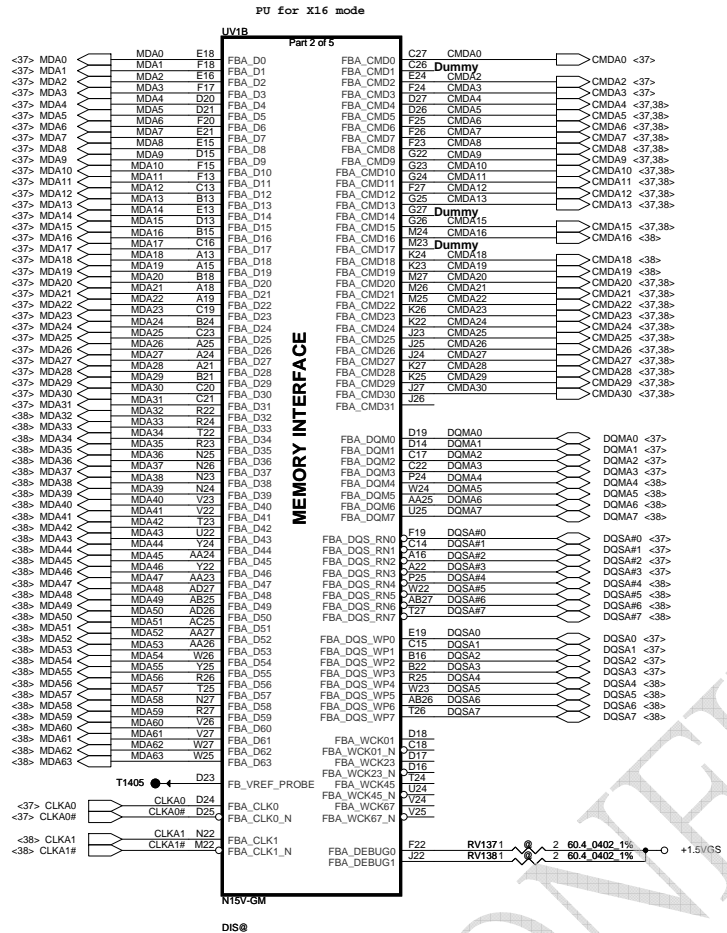


+3VGS=0.5A,2vias.



PV# 2013.01.08 Add +1.05VGS discharge circuit

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Size	Custom	Document Number	LA-A992P	Rev	0.1
Date:	Thursday, March 20, 2014	Sheet	35	of	54



Mode D Command Mapping

Address	RANK 0	
	0..31	32..63
FBx_CMD0	CS0#	
FBx_CMD1		
FBx_CMD2	ODT	
FBx_CMD3	CKE	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14		
FBx_CMD15	CAS#	CAS#
FBx_CMD16	CS0#	
FBx_CMD17		
FBx_CMD18	ODT	
FBx_CMD19	CKE	
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

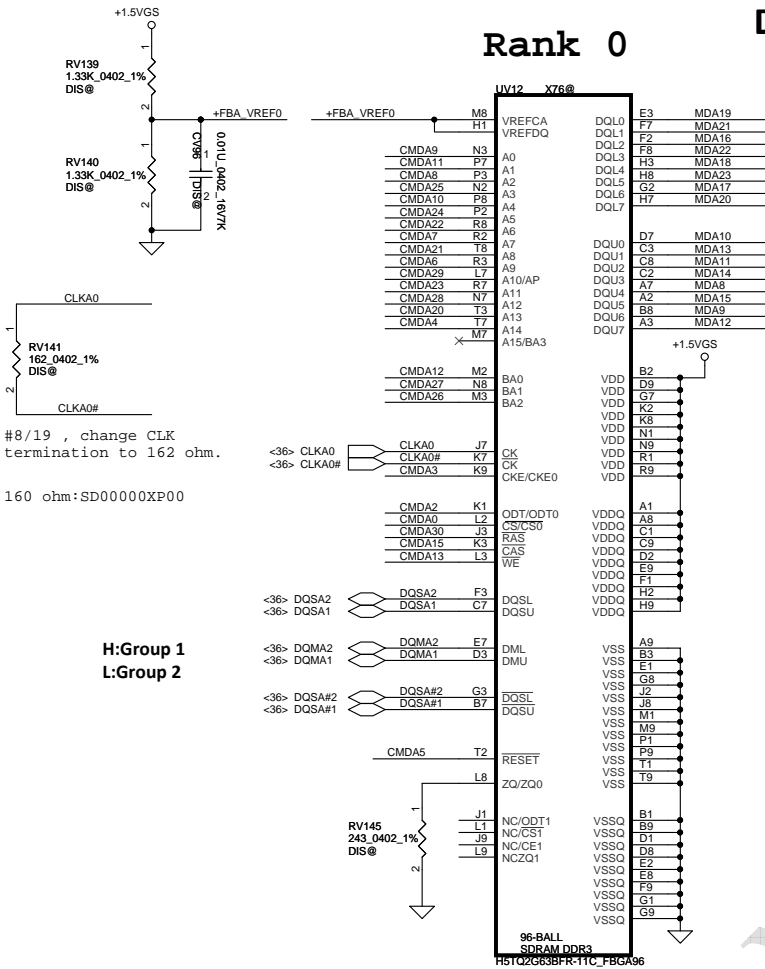
Memory Partition A RANK 0

Data0~Data31

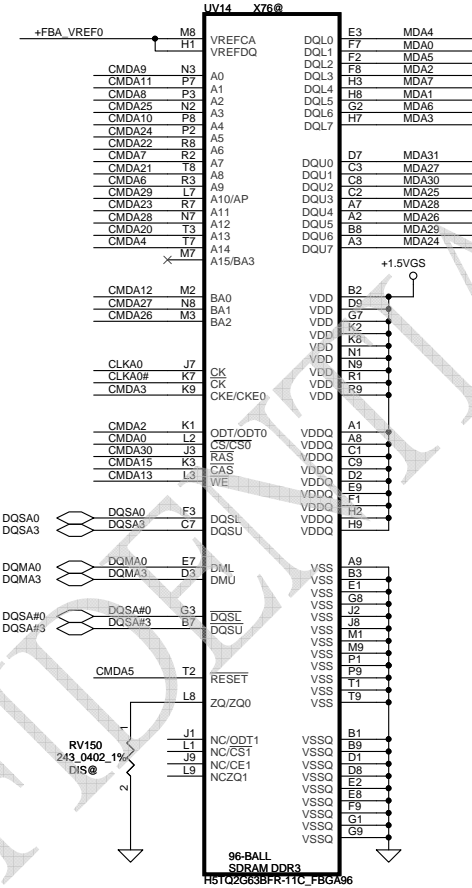


Rank 0

Rank 0



Group 2
Group 1



Group 0
Group 3

Mode D Command Mapping

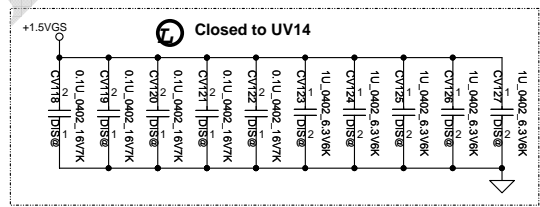
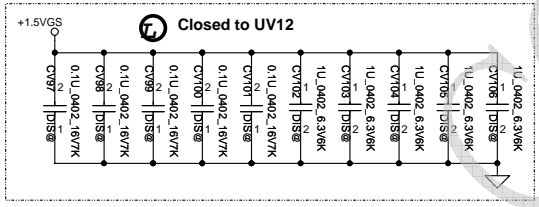
RANK 0		
Address	0..31	32..63
FBx_CMD0	CS0#	
FBx_CMD1		
FBx_CMD2	ODT	
FBx_CMD3	CKE	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14		
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#
FBx_CMD17		
FBx_CMD18		ODT
FBx_CMD19		CKE
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

#8/19, change CLK termination to 162 ohm.

160 ohm:SD00000XP00

H:Group 1
L:Group 2

L:Group 0
H:Group 3



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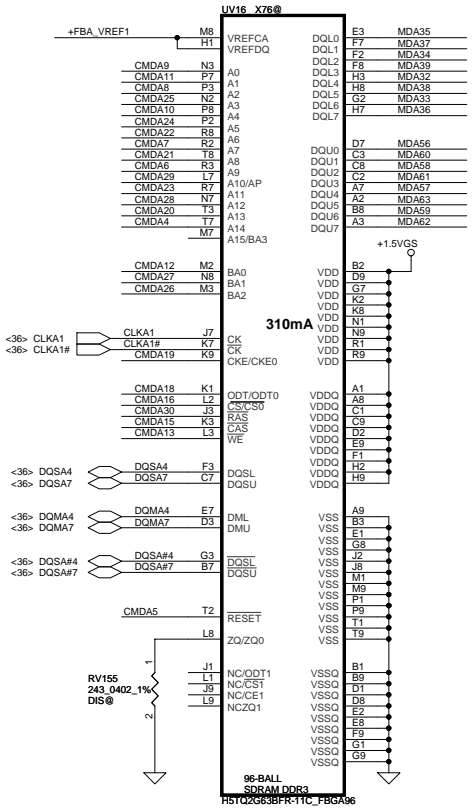
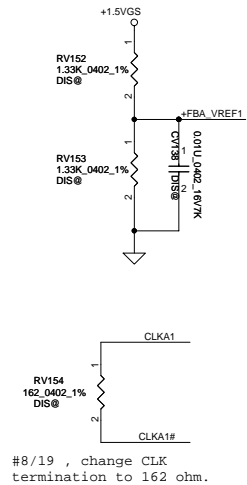
Compal Electronics, Inc.	
Title	N15V-GM VRAM A Lower
Document Number	LA-A992P
Size	Custom
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Memory Partition A RANK 0 32 bits

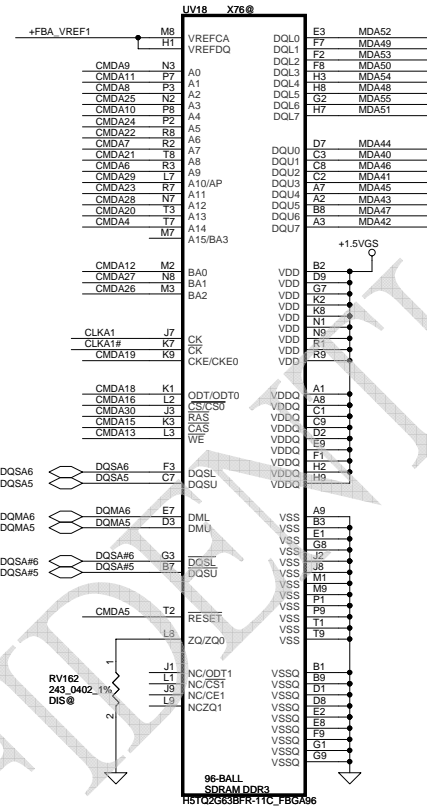
Rank 0

Data32~Data63

Rank 0



Group 4
Group 7



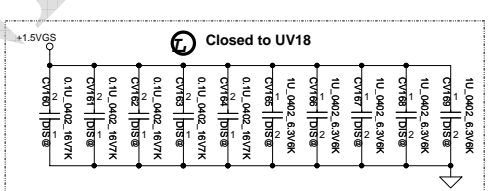
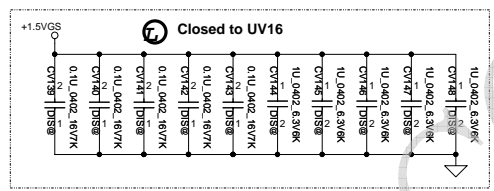
Group 6
Group 5

Mode D Command Mapping

Address	RANK 0	
	0..31	32..63
FBx_CMD0	CS0#	
FBx_CMD1		
FBx_CMD2	ODT	
FBx_CMD3	CKE	
FBx_CMD4	A14	A14
FBx_CMD5	RST	RST
FBx_CMD6	A9	A9
FBx_CMD7	A7	A7
FBx_CMD8	A2	A2
FBx_CMD9	A0	A0
FBx_CMD10	A4	A4
FBx_CMD11	A1	A1
FBx_CMD12	BA0	BA0
FBx_CMD13	WE#	WE#
FBx_CMD14		
FBx_CMD15	CAS#	CAS#
FBx_CMD16		CS0#
FBx_CMD17		
FBx_CMD18		ODT
FBx_CMD19		CKE
FBx_CMD20	A13	A13
FBx_CMD21	A8	A8
FBx_CMD22	A6	A6
FBx_CMD23	A11	A11
FBx_CMD24	A5	A5
FBx_CMD25	A3	A3
FBx_CMD26	BA2	BA2
FBx_CMD27	BA1	BA1
FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

L:Group 4
H:Group 7

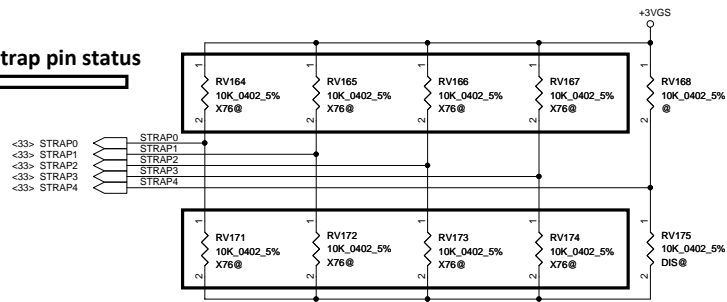
L:Group 6
H:Group 5



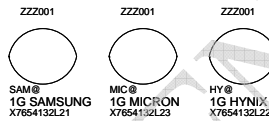
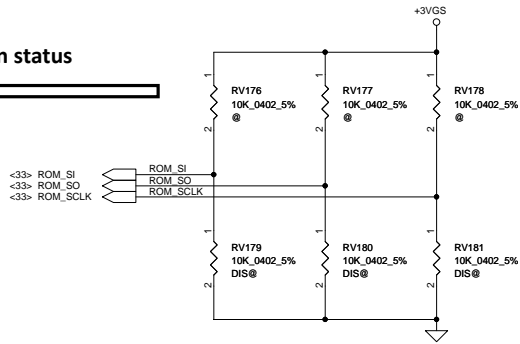
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Check Strap pin status



Check SPI pin status



GPU	Project	VRAM size	CH	Description	Compal VRAM P/N	VRAM description	ROM CFG setup [3...0]	RAM CFG	R P/N
N15V-GM (23x23) 64bit (One CH single rank)	ZSO40	128M(X16)	CHA	DDR3 Hynix 128Mx16 1.5V	SA00006H400	H5TC2G63FFR-11C 1000MHz	1100	RV171+RV172+RV167+RV166	
	ZSO50	128M(X16)	CHA	DDR3 Micron 128Mx16 1.5V	SA000067500	MT41J128M16JT-093G:K 1000MHz	0001	RV164+RV172+RV173+RV174	
		128M(X16)	CHA	DDR3 Samsung 128Mx16 1.5V	SA000068U40	K4W2G1646Q-BC1A 1000MHz	1110	RV165+RV166+RV167+RV171	

#9/5 RAM_CFG follow RVL-06891-001 table 1.
Dule Rank layout with single Rank population.

Table 123

Strap pin Name	Strap Mapping	Resistance	Polarity	Logical Strapping Bit0
ROM_SCLK	SMB_ALT_ADDR	10K	Pull-down to GND.	
ROM_SI	SUB_VENDOR	10K	Pull-down to GND if no VBIOS ROM.	
ROM_SO	VGA_DEVICE	10K	Pull-down to GND(no diaplay).	
STRAP0	RAM_CFG[0]	10K		
STRAP1	RAM_CFG[1]	10K		
STRAP2	RAM_CFG[2]	10K		
STRAP3	RAM_CFG[3]	10K		
STRAP4	PCIE_MAX_SPEED	10K	Pull-down to GND(PCIE Gen1).	

SMBUS_ALT_ADDR

0	0x9E (Default)
1	0x9C (Multi-GPU usage)

SUB_VENDOR

0	Disable (Default)
1	

VGA_DEVICE

0	Non-Primary 3D Acceleration Device(Class Code 302h)(Default)
1	Primary Display or VGA Device .

PCIE_MAX_SPEED

0	Limit to PCIe Gen1
1	PCIe Gen 2/3 Capable

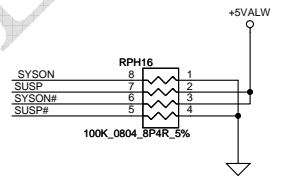
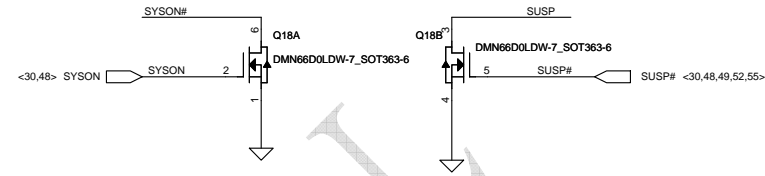
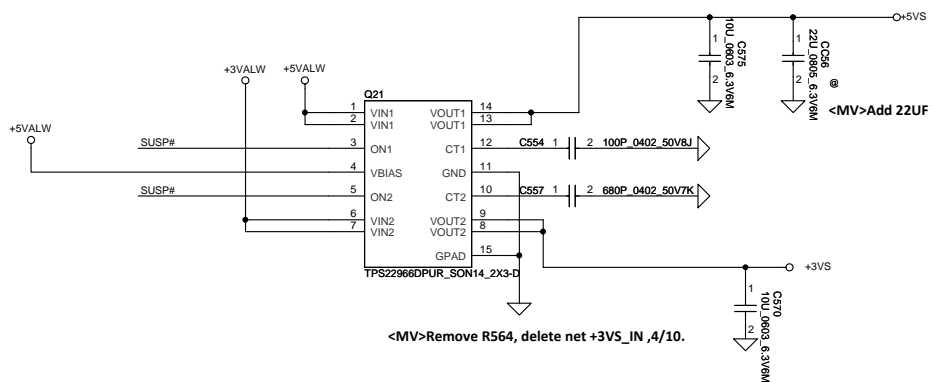
USER Straps

User[3:0]	
1000-1100	Customer defined

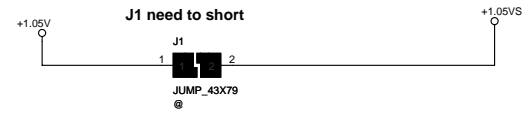
<MV>Remove R563, delete net +5VS_IN_4/10.



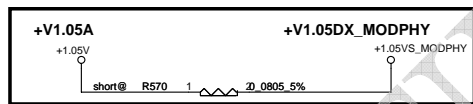
<MV>Add 22UF for RF suggestion ,4/10.



+1.05V TO +1.05VS



AO4430L
 VGS Max=+/- 20V
 VGS(Th) max=2.5V
 Rds Max=5.5m @VGS=10V
 Rds Max=7.5m @VGS=4.5V



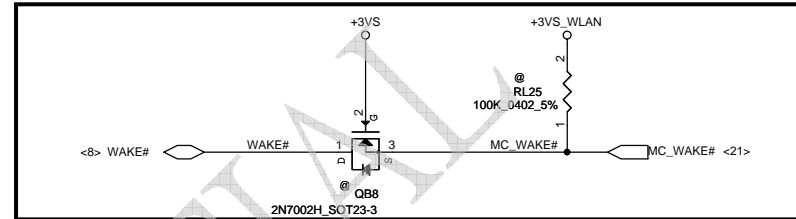
CPU +V1.05DX_MODPHY
 Max Rdson <6m ohm
 1840mA

AO4430L
 VGS Max=+/- 20V
 VGS(Th) max=2.5V
 Rds Max=5.5m @VGS=10V
 Rds Max=7.5m @VGS=4.5V

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NGFF and WLAN

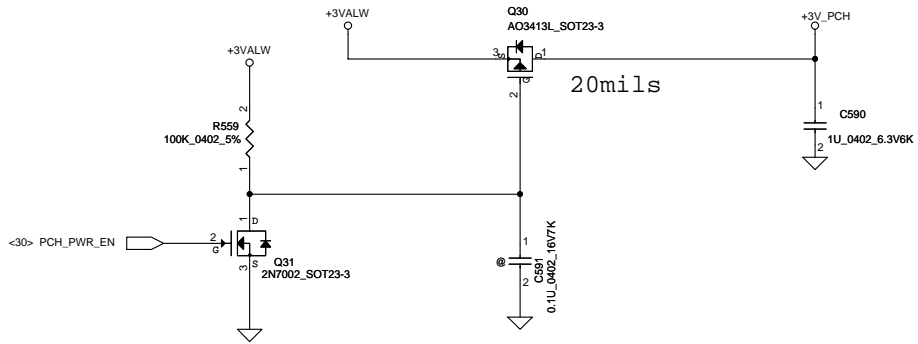


PV# 2013.01.23 Add QB8 abd RL25 to support OBFF

PV# 2013.02.22 Unpop QB4 and RL23 for not support OBFF

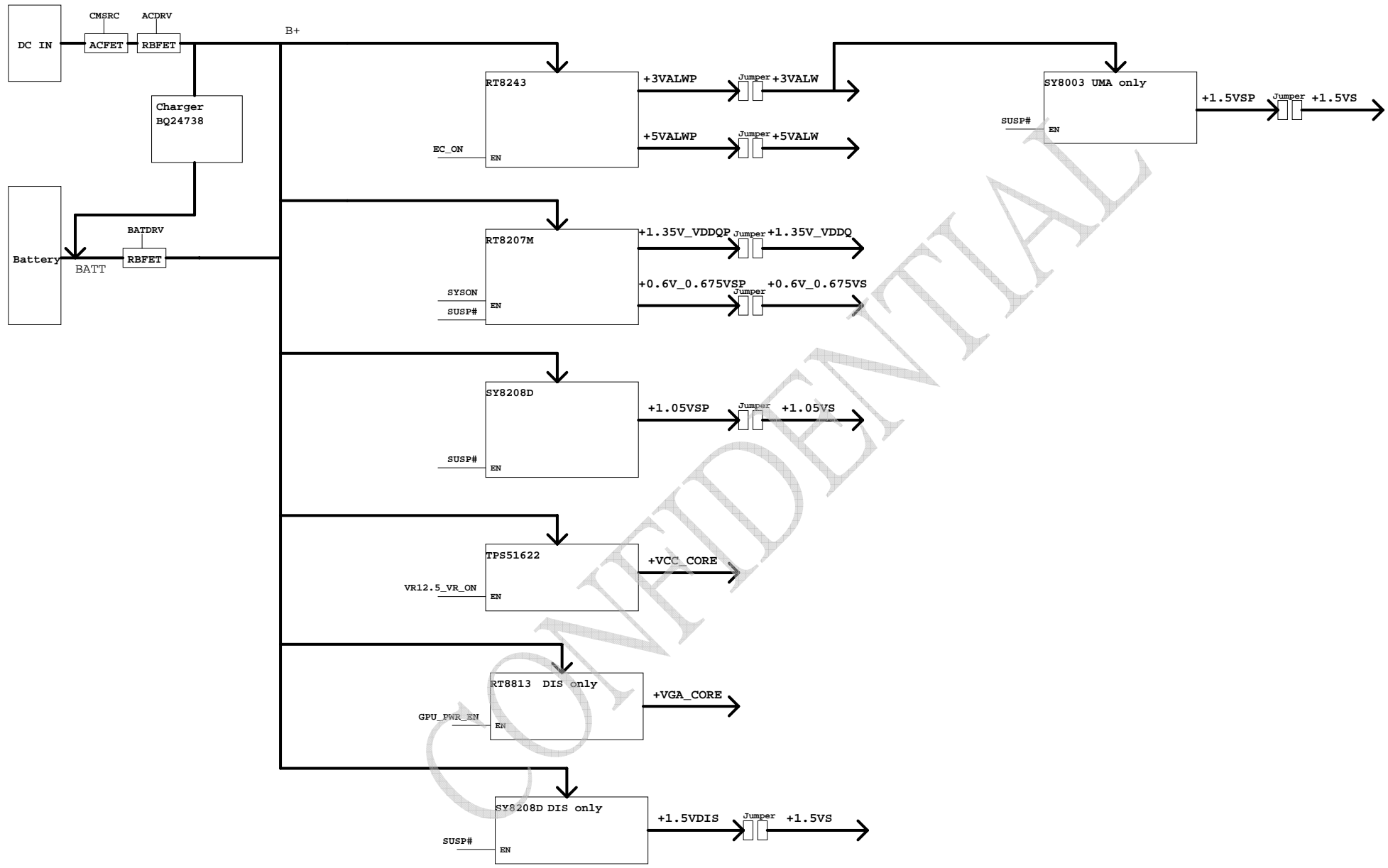
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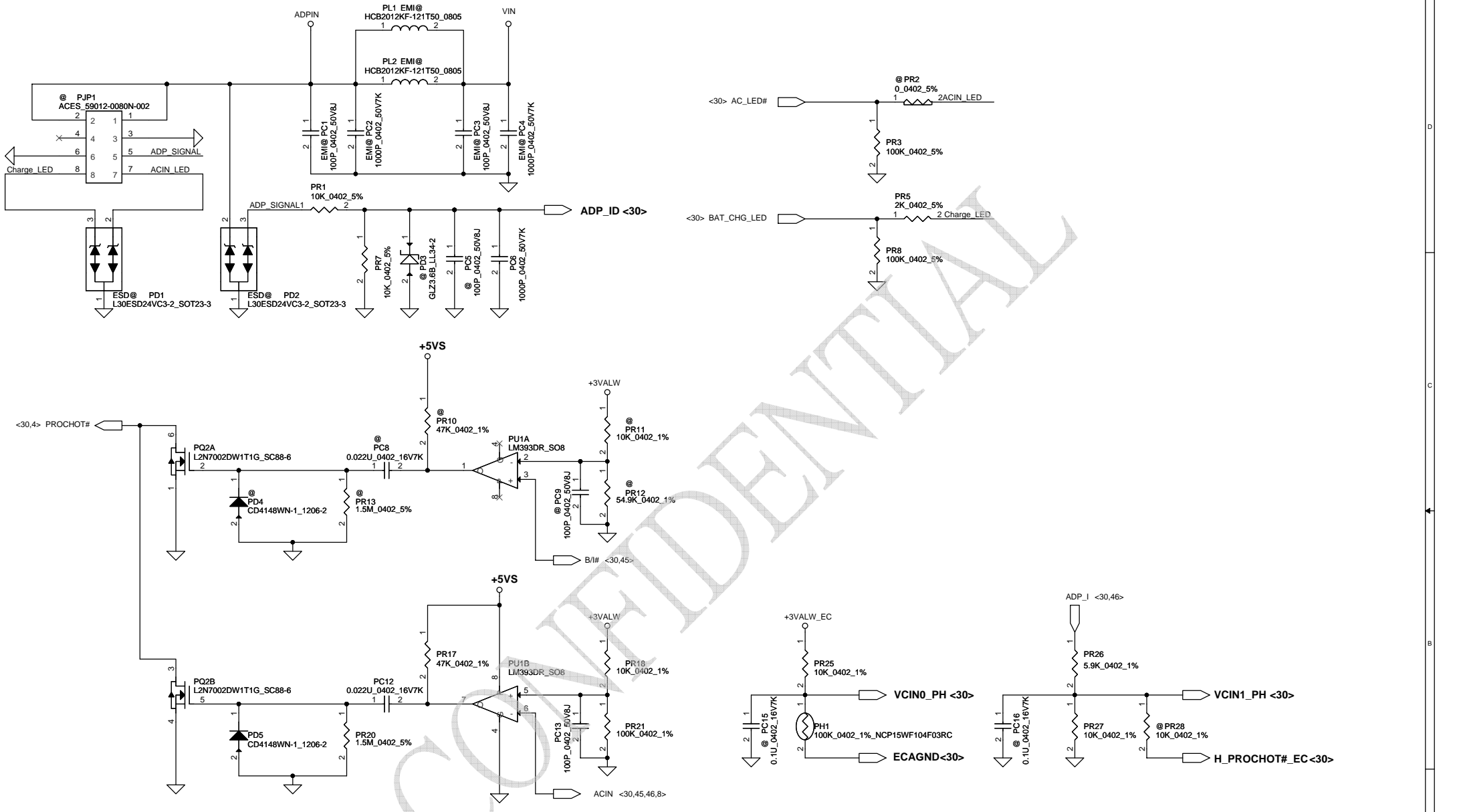


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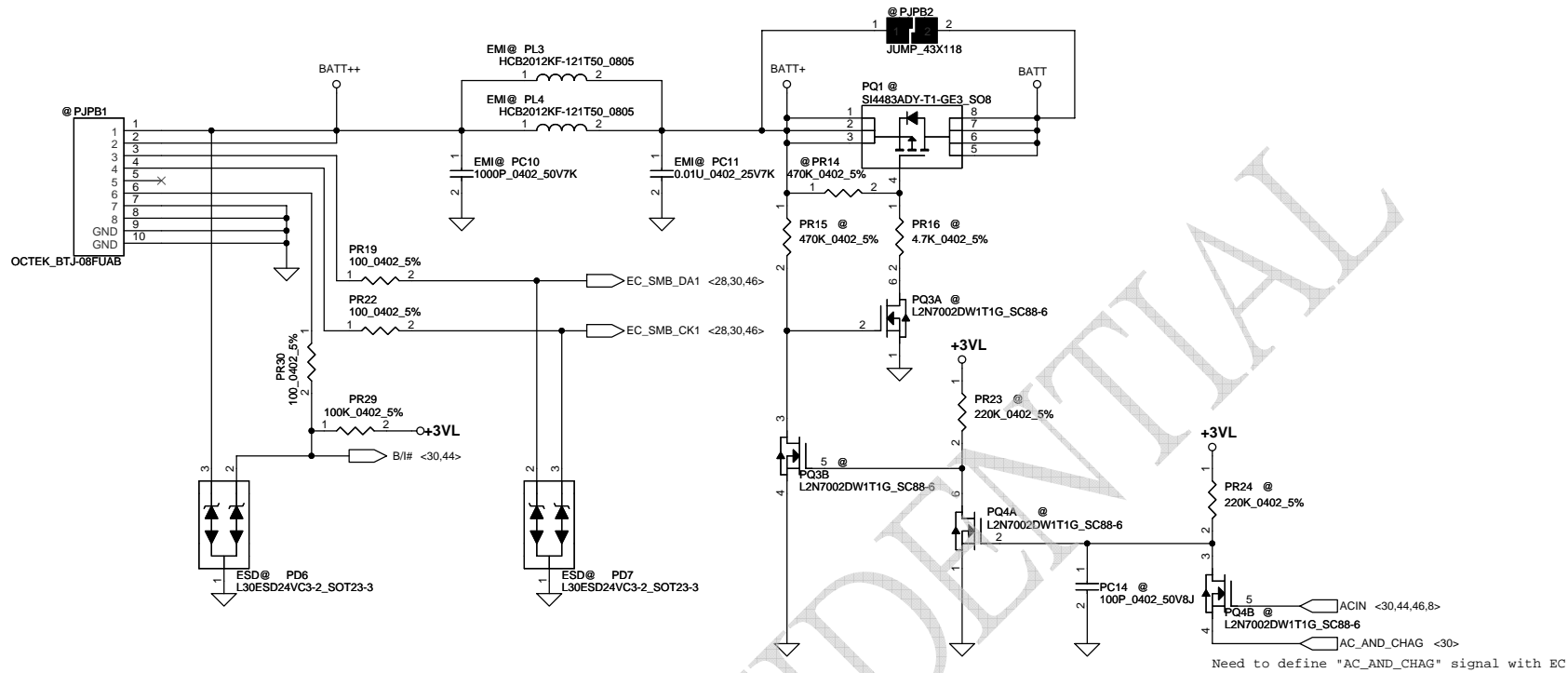
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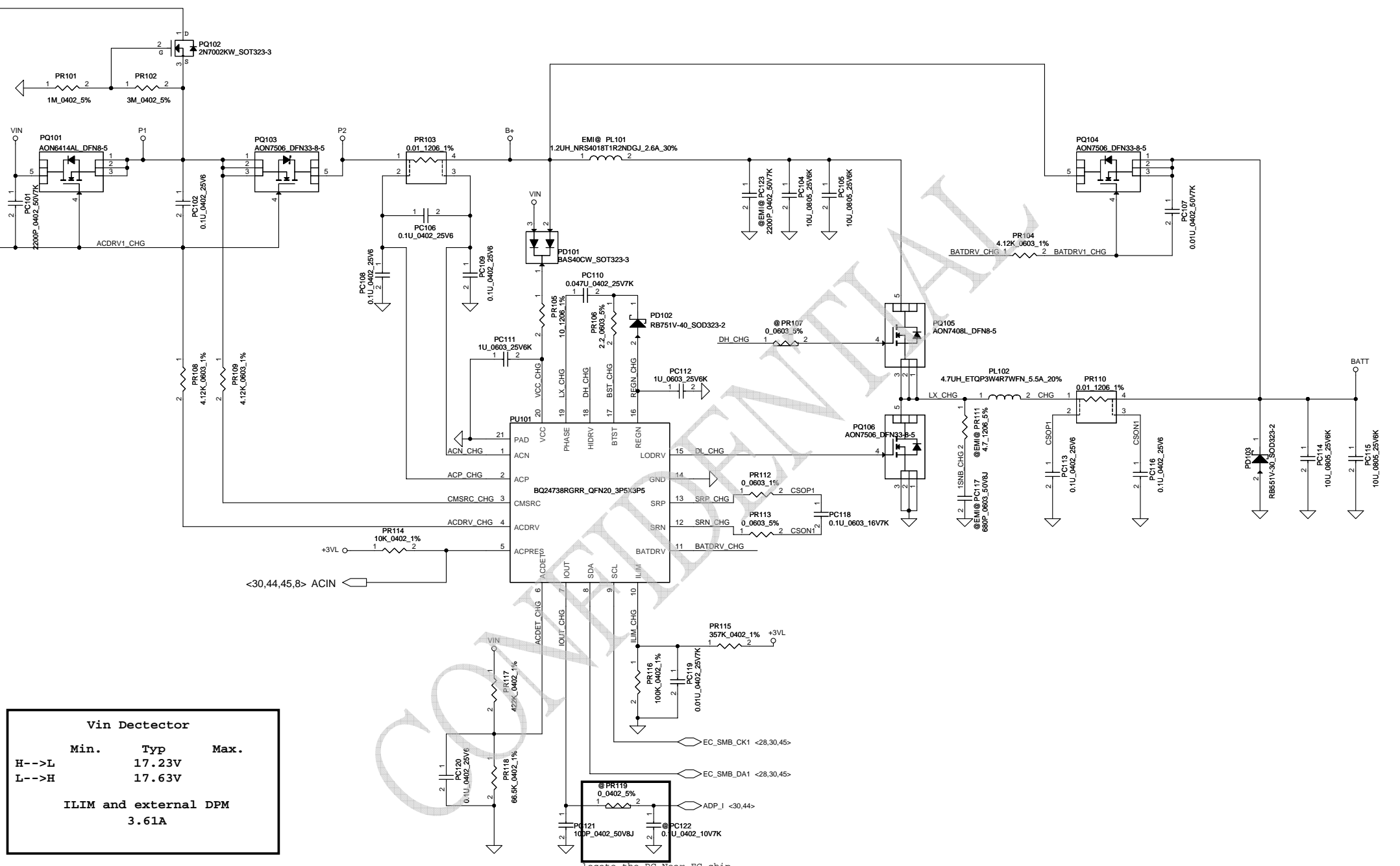


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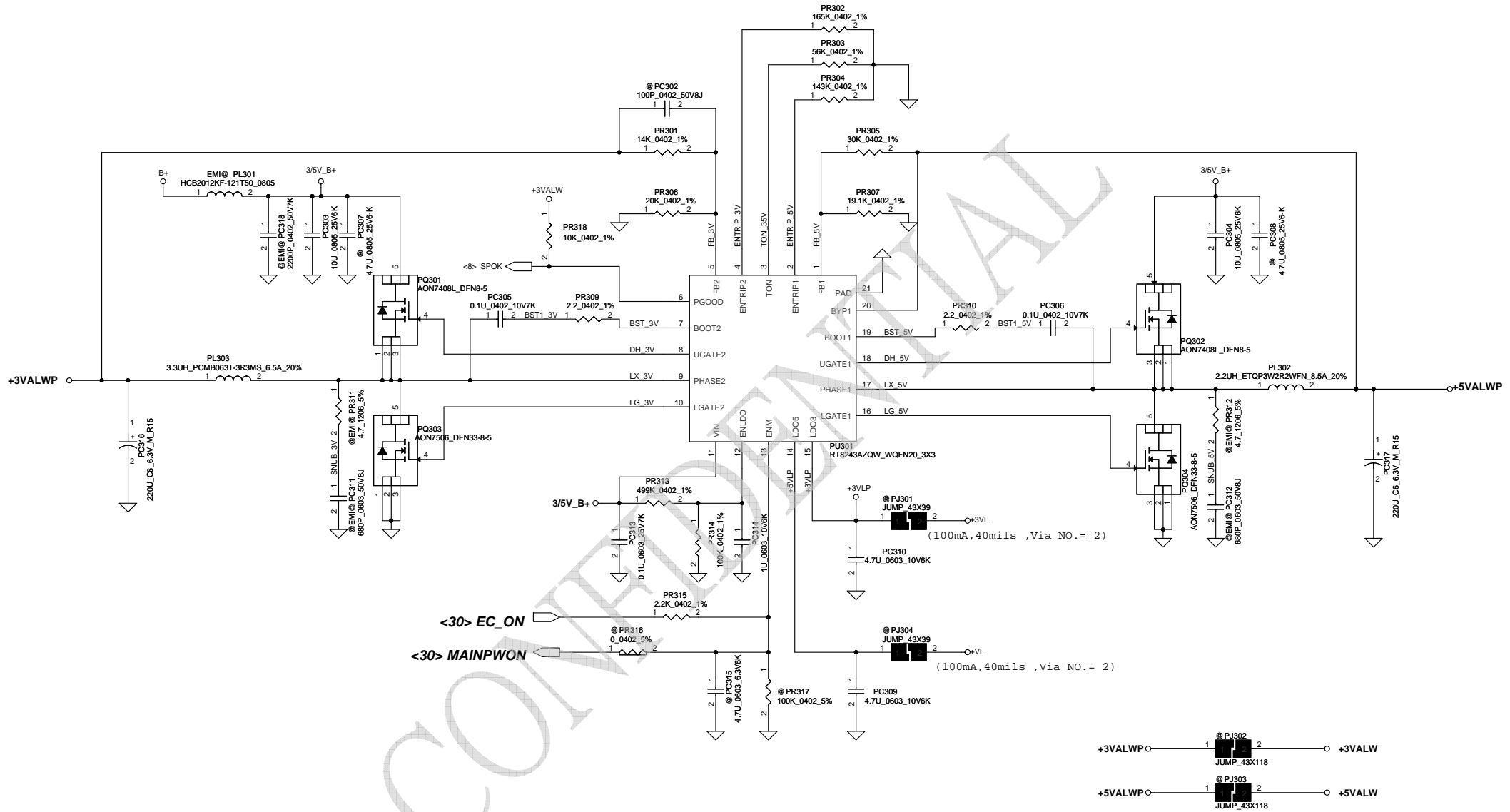
Vin Detector

Min.	Typ	Max.
H-->L	17.23V	
L-->H	17.63V	

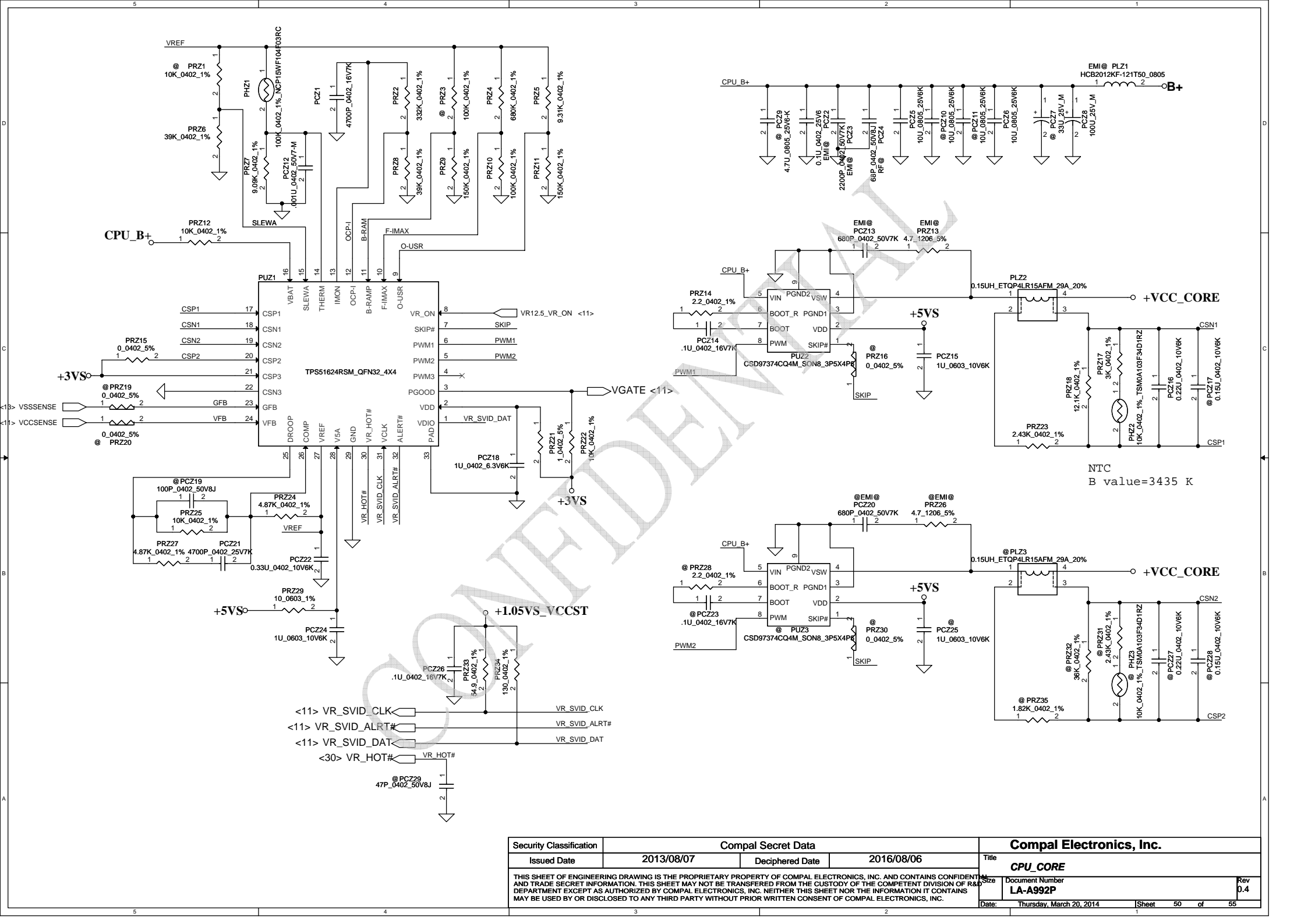
ILIM and external DPM
3.61A

locate the RC Near EC chip

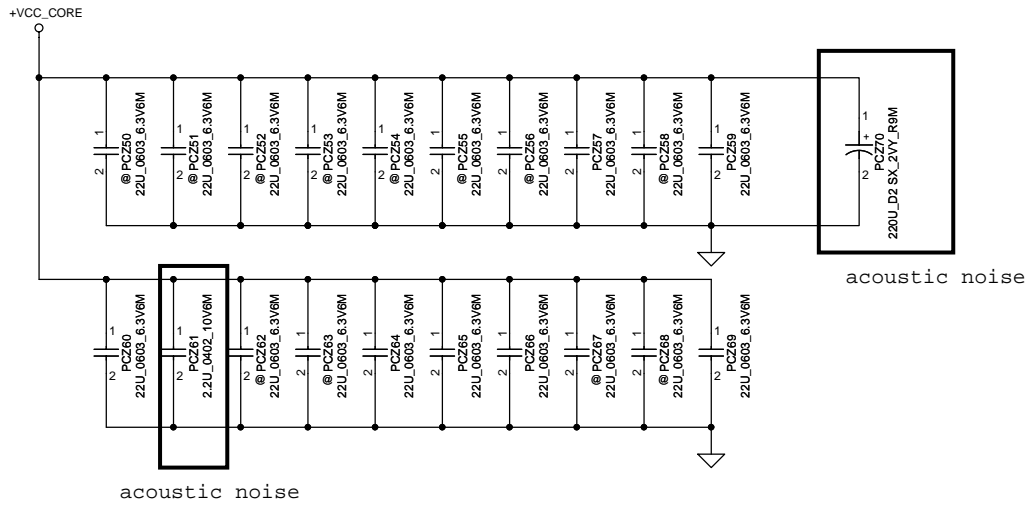
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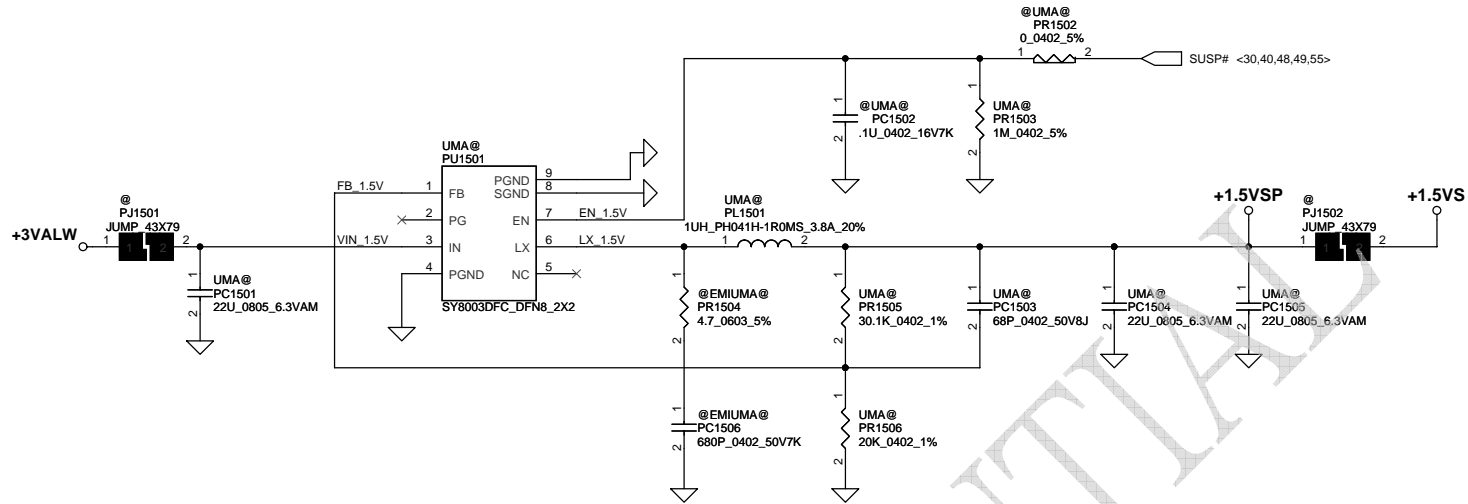


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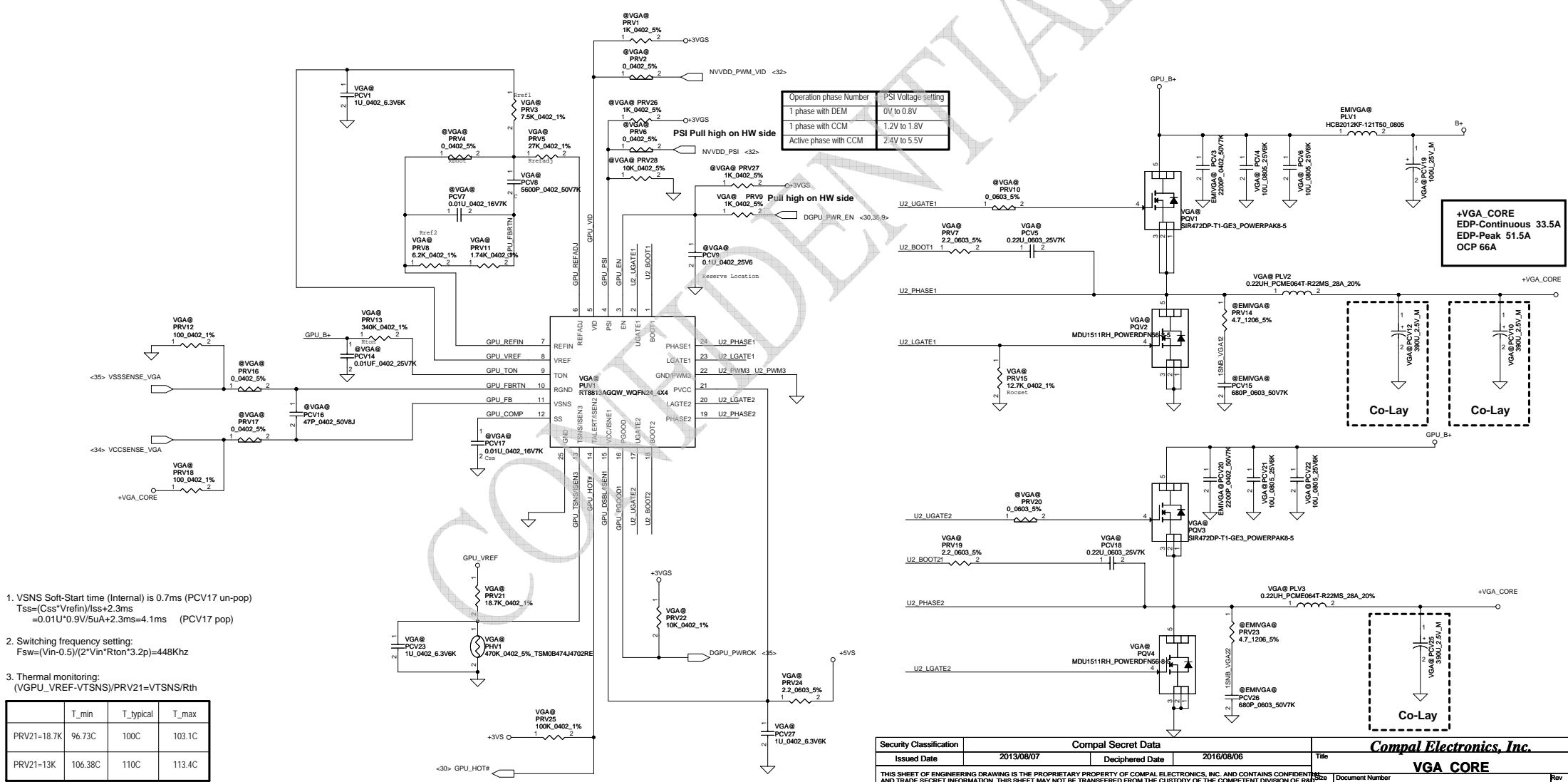
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Operation phase Number	PSI Voltage setting
1 phase with DEM	0V to 0.8V
1 phase with CCM	1.2V to 1.8V
Active phase with CCM	2.4V to 5.5V

1. VSNS Soft-Start time (Internal) is 0.7ms (PCV17 un-pop)
 $T_{ss} = (C_{ss} \cdot V_{refin}) / I_{ss} + 2.3ms$
 $= 0.01 \mu \cdot 0.9V / 5\mu A + 2.3ms = 4.1ms$ (PCV17 pop)

2. Switching frequency setting:
 $F_{sw} = (V_{in} - 0.5) / (2 \cdot V_{in} \cdot R_{ton} \cdot 3.2p) = 448KHz$

3. Thermal monitoring:
 $(V_{GPU_VREF} - V_{TSNS}) / PRV21 = V_{TSNS} / R_{th}$

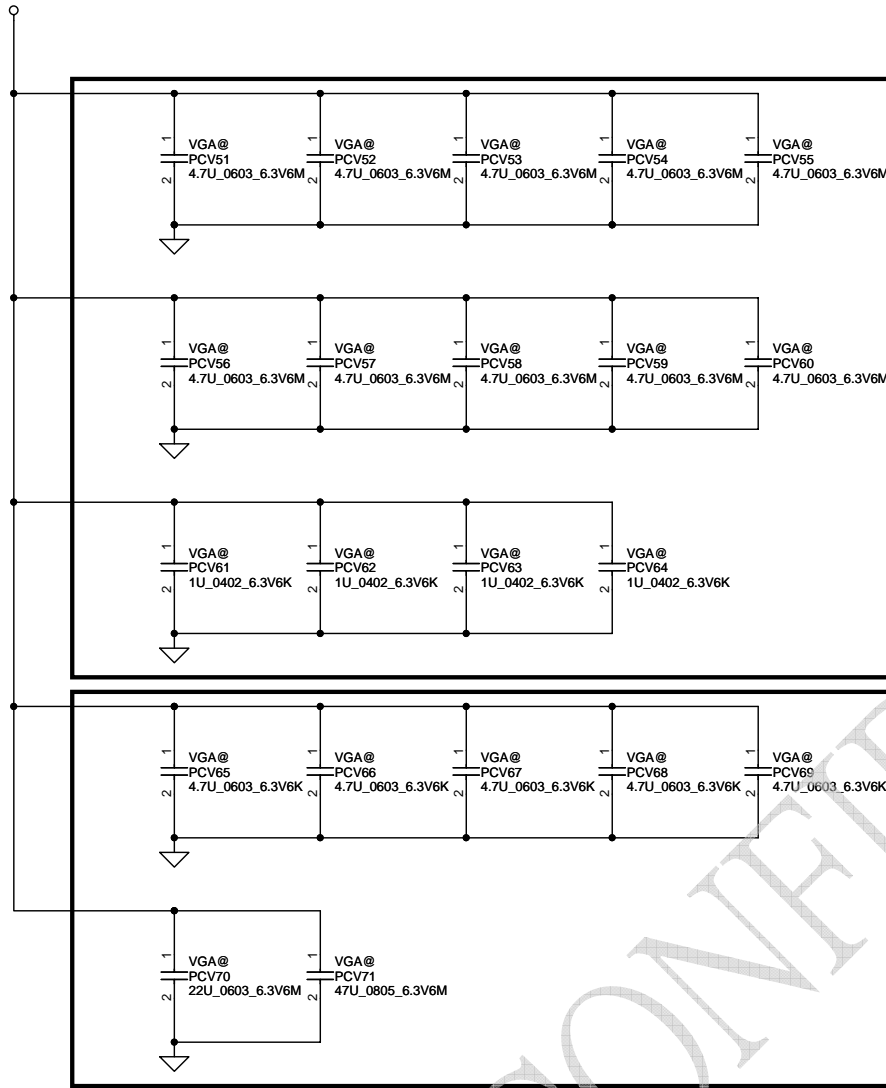
	T_min	T_typical	T_max
PRV21=18.7K	96.73C	100C	103.1C
PRV21=13K	106.38C	110C	113.4C

+VGA_CORE
 EDP-Continuous 33.5A
 EDP-Peak 51.5A
 OCP 66A

Co-Lay
 Co-Lay

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+VGA_CORE



PLACE UNDER GPU

PLACE NEAR GPU

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