

Compal Confidential

Hasswell M/B Schematics Document

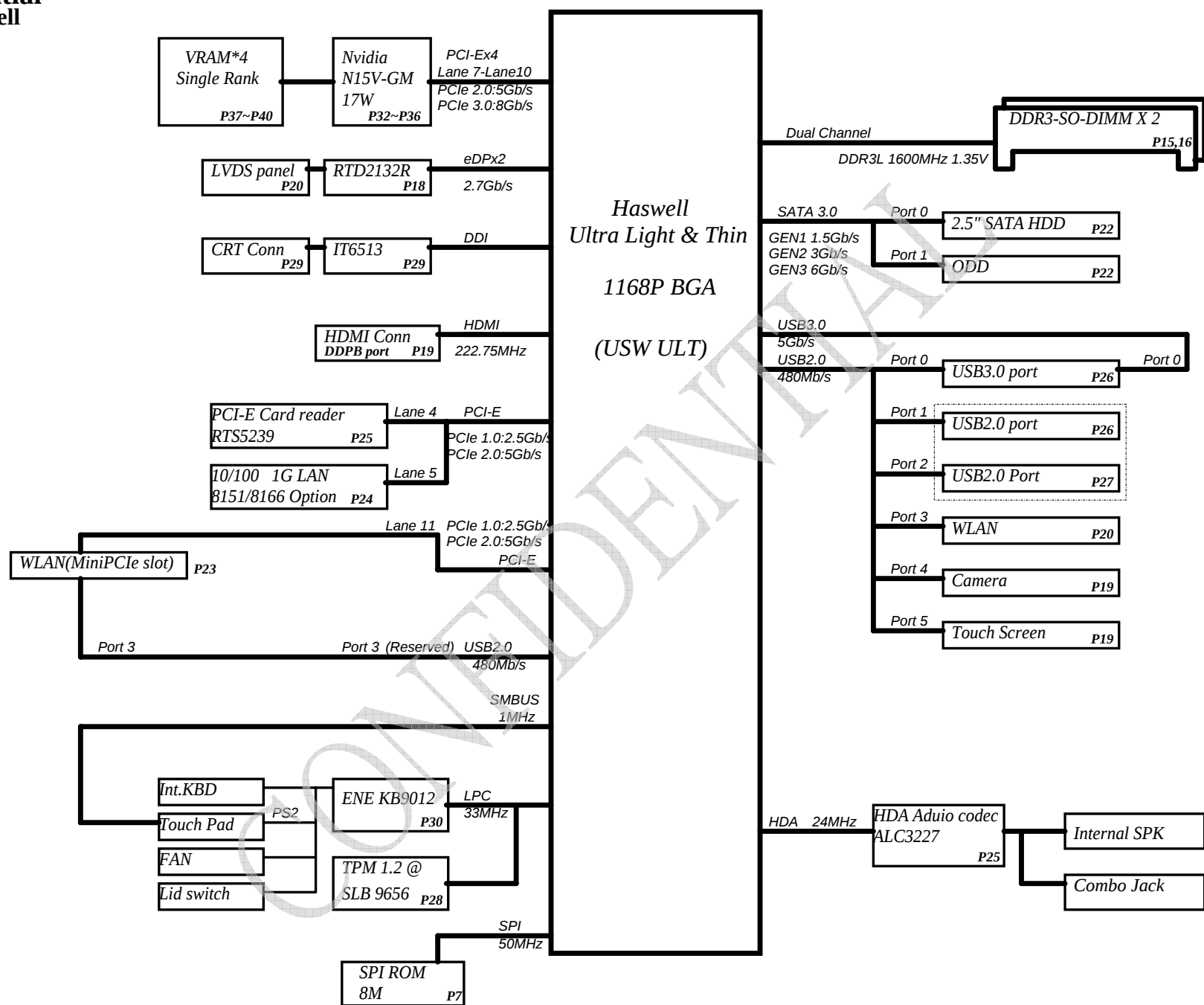
Intel ULV Processor with DDRIII L

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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				Date: Thursday, March 20, 2014	Sheet 1 of 54

File Name :
LA-A992PR10



Security Classification	Compal Secret Data			Compal Electronics, Inc.		
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 = DA214200100
PCB 14Z LA-A992P REV0 M/B 3

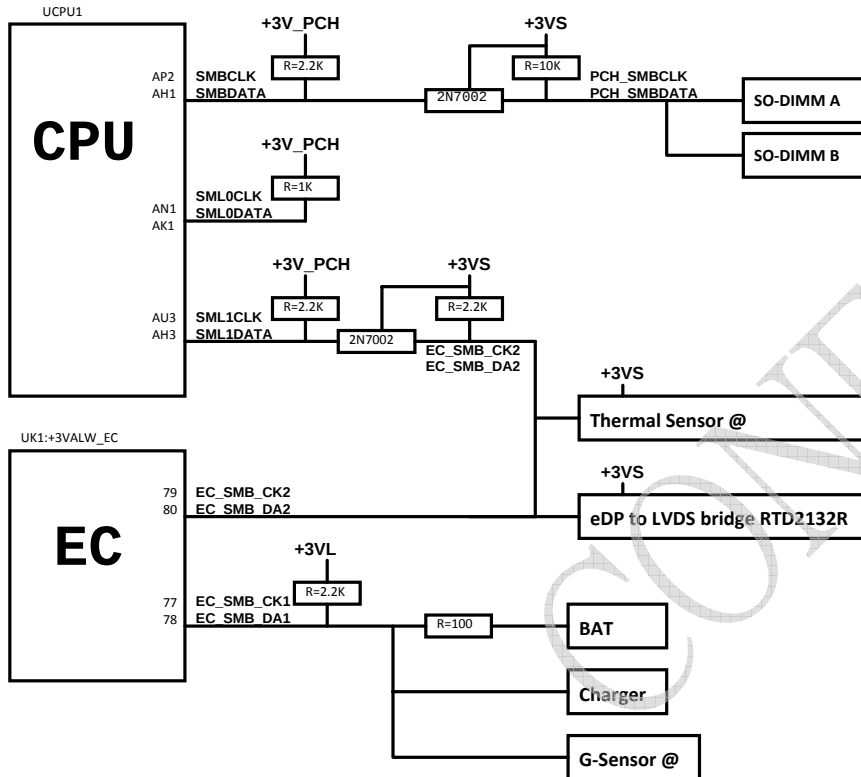
45@
ZZZ1
ROYALTY HDMI W/LOGO+HDCP
Part Number = RO0000039HJ
ROYALTY HDMI W/LOGO+HDCP

<USB2.0 port>

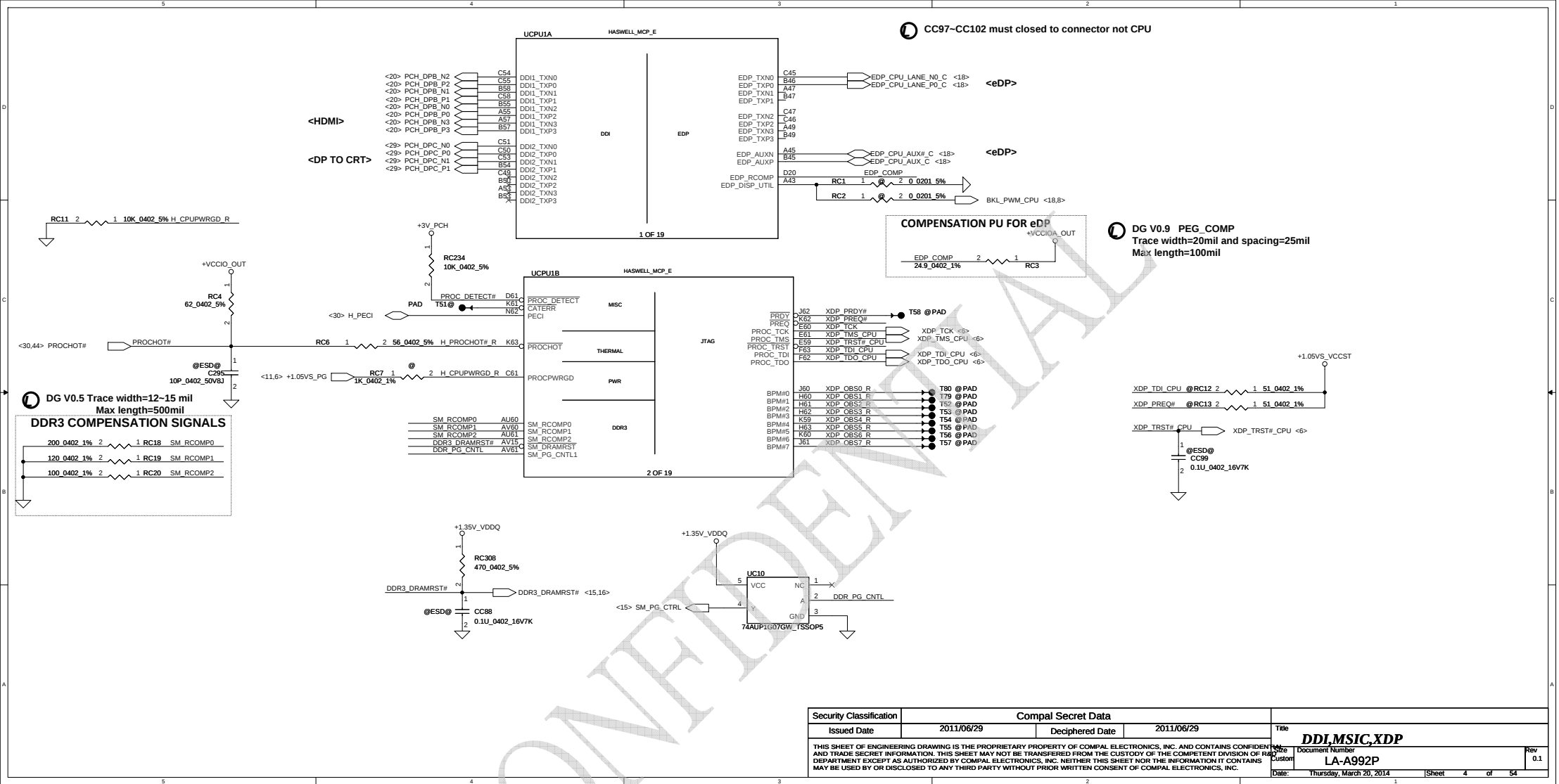
USB2.0 port	DESTINATION	
	UMA	Dis
0	USB 2.0/3.0(left side)	USB 2.0/3.0(left side)
1	USB 2.0(right side)	USB 2.0(right side)
2	USB 2.0(right side)	USB 2.0(right side)
3	WLAN/BT	WLAN/BT
4	Camera	Camera
5	Touch screen(Options)	Touch screen(Options)
6	X	X
7	X	X

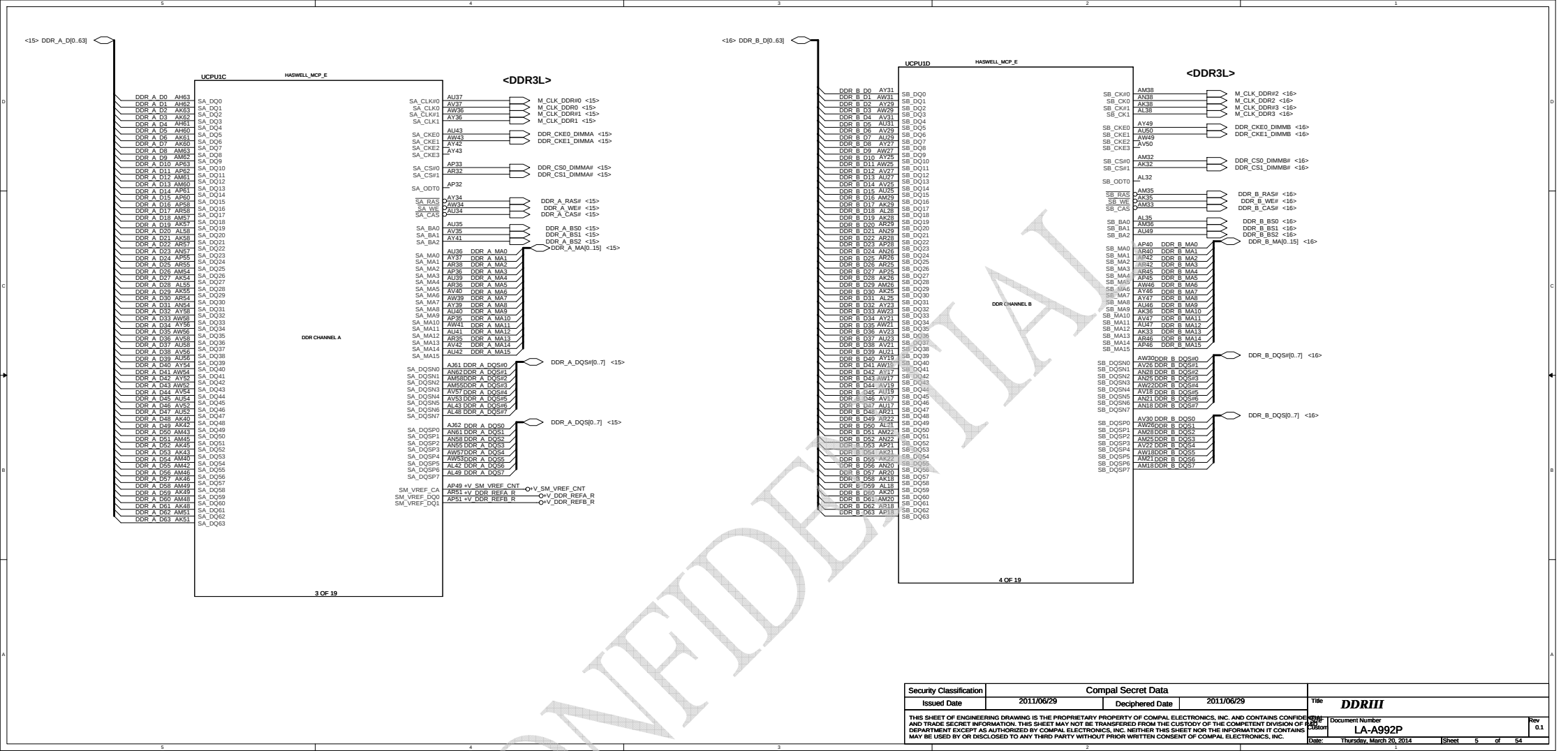
<PCI-E,SATA,USB3.0>

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	5				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

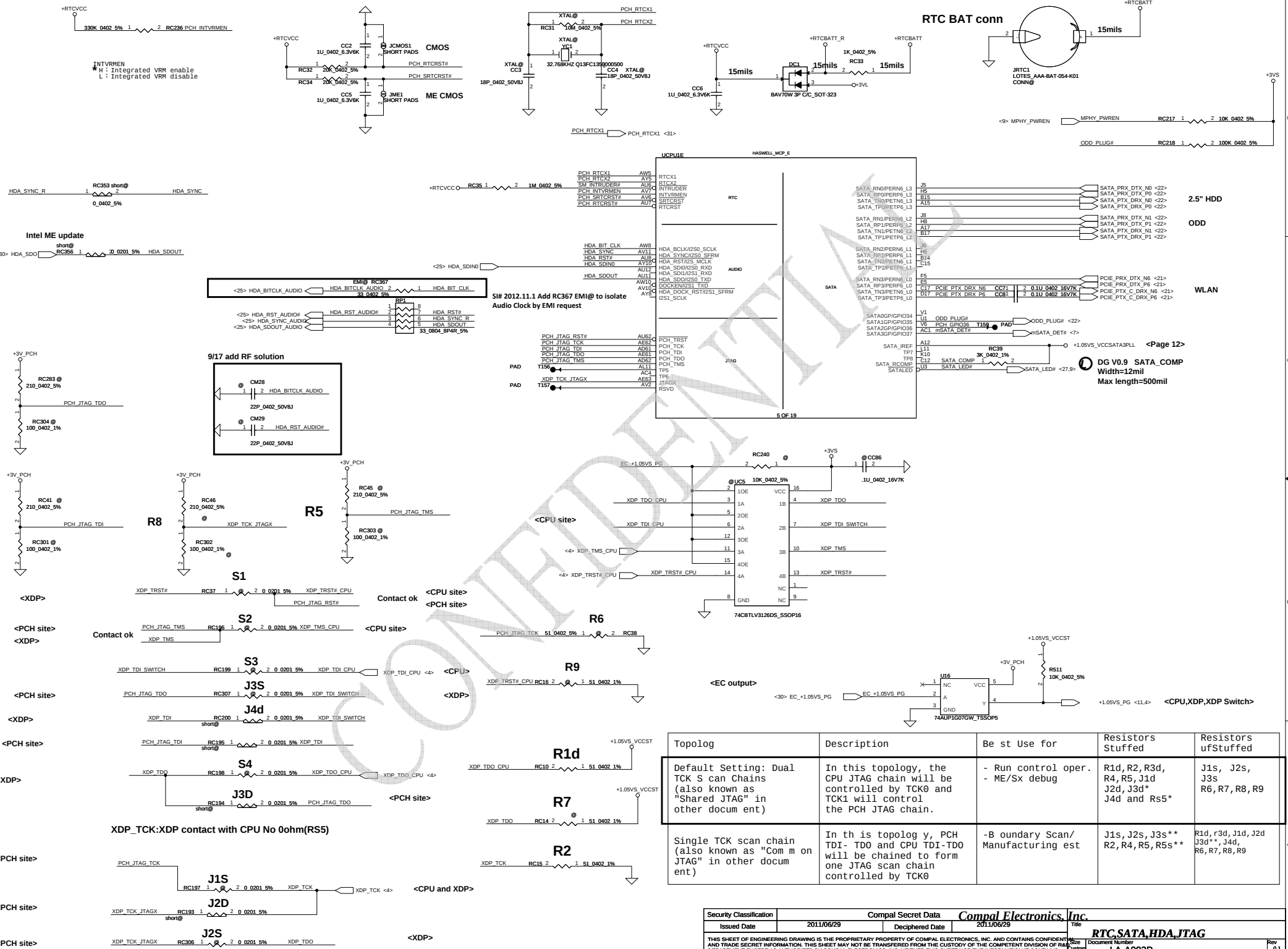


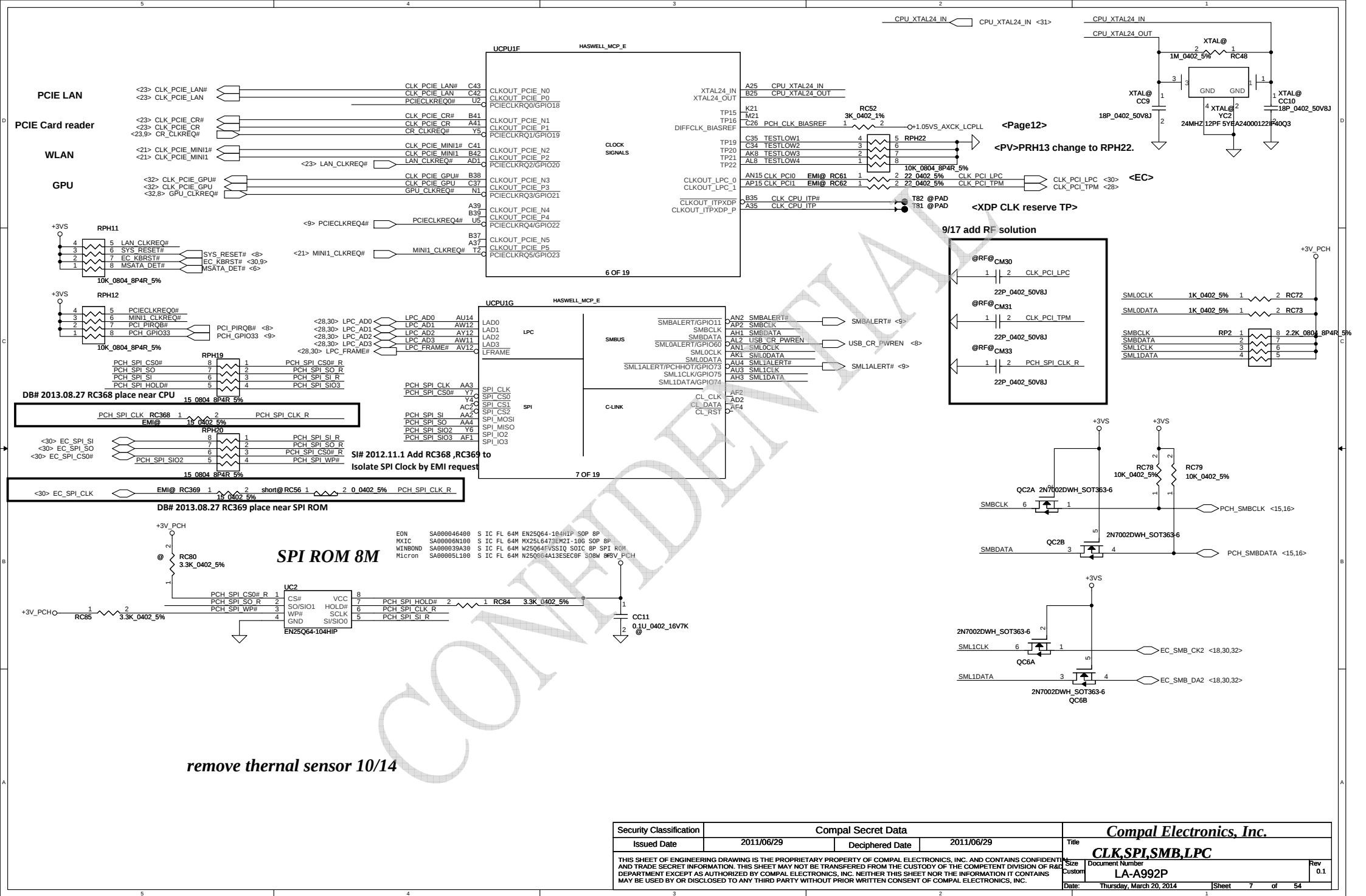
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	Notes List
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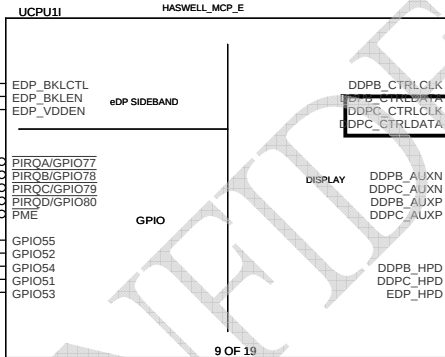
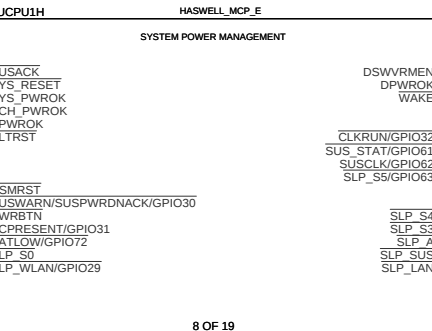




Non Deep S3 RC91-->SMT
Deep S3 RC93-->SMT

Deep S3

PANEL_BKEN_CPU PD 100K on Page20



DSWODVREN - On Die DSW VR Enable

* H : Enable
L : Disable

DSWODVREN RC254 2 1 330K 0402 5%
DSWODVREN RC255 2 1 330K 0402 5%

Deep S3:DSW power choose on page12

<HDMI>

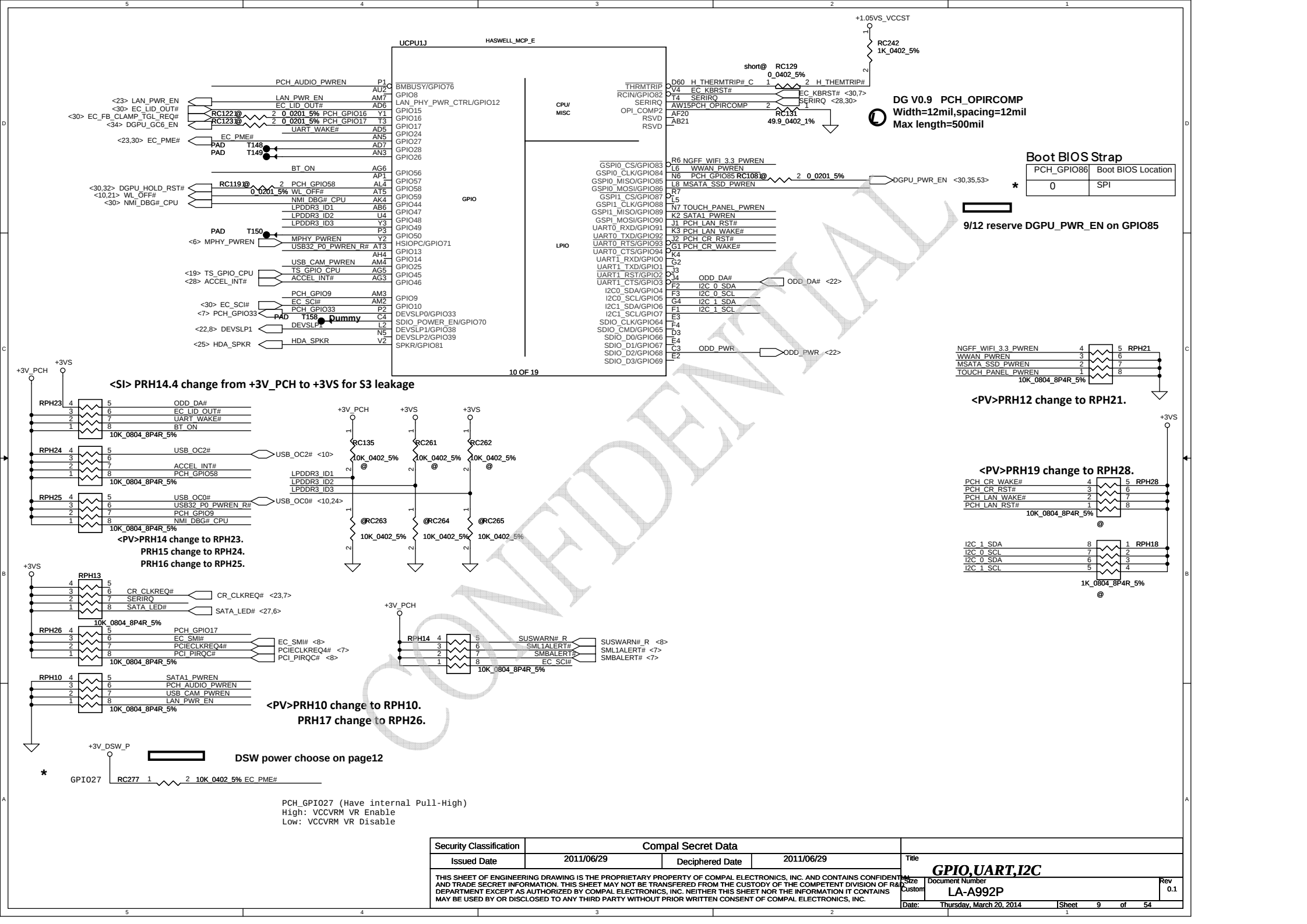
<S>Displayport Port C Enable pin RC102 pull high +3VS

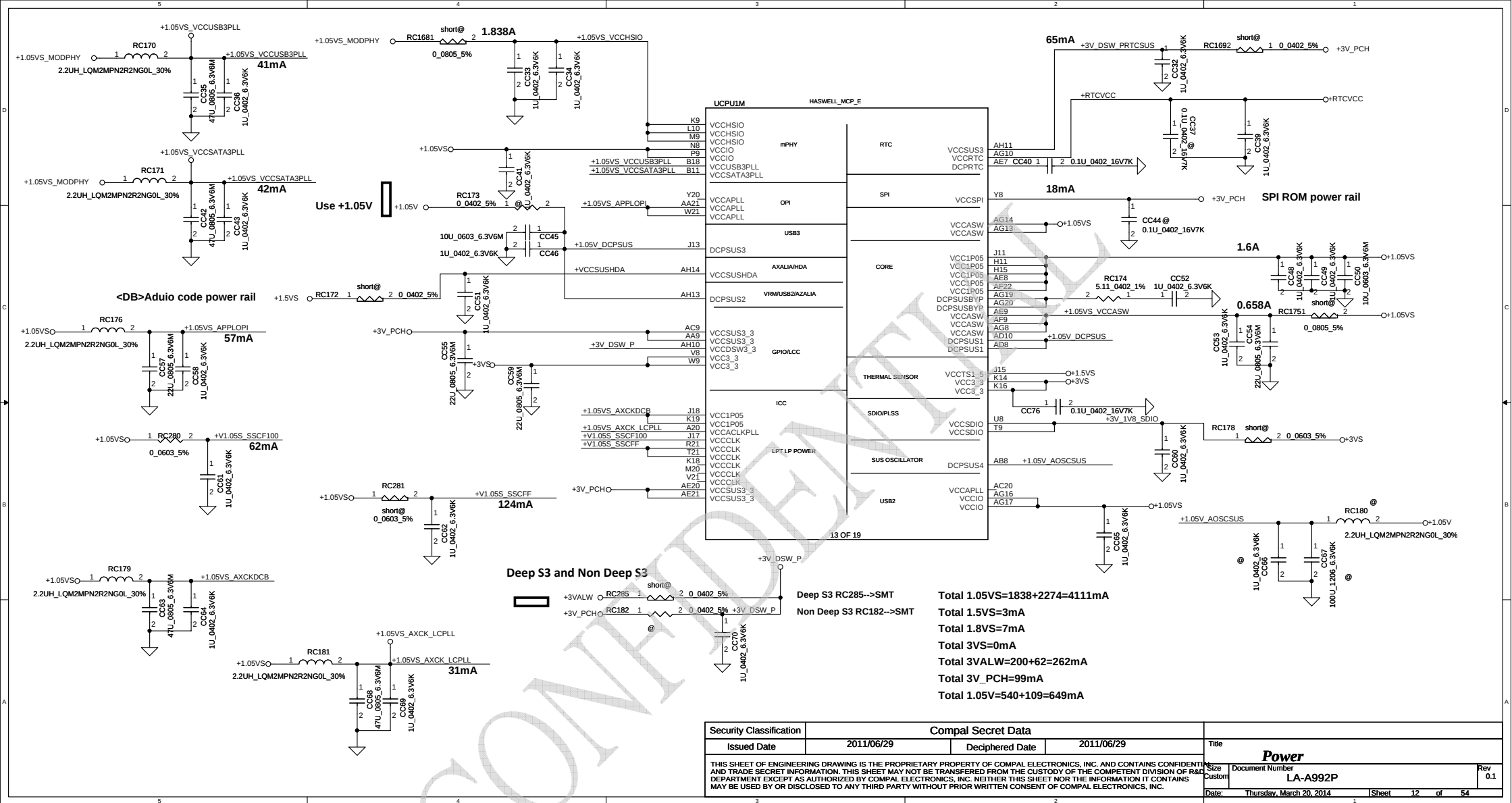
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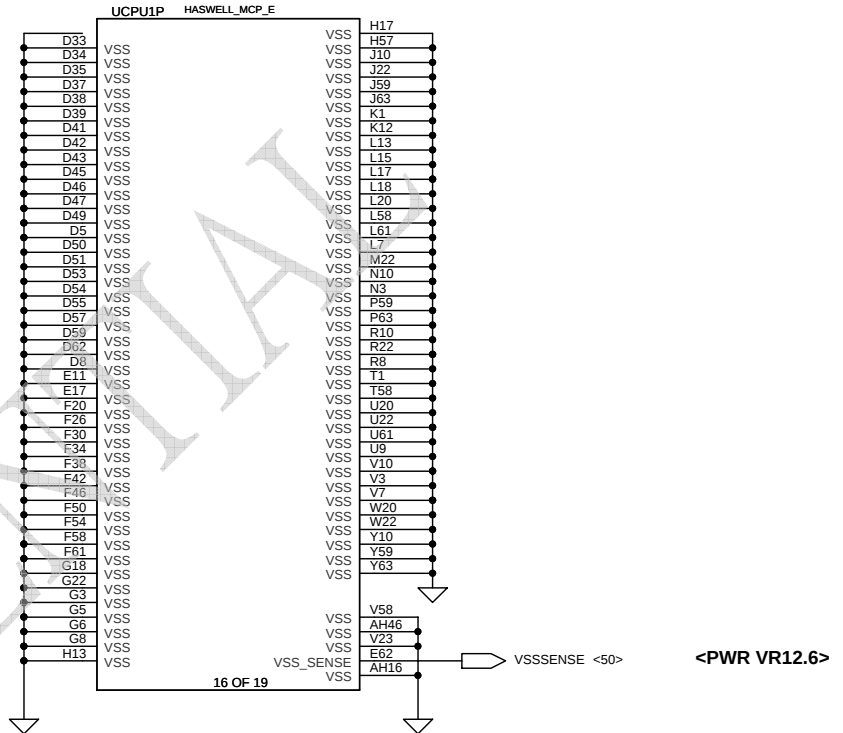
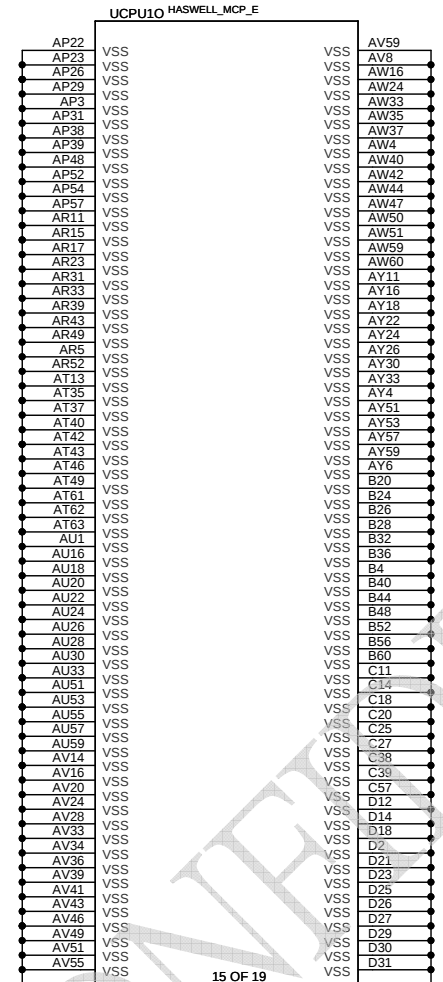
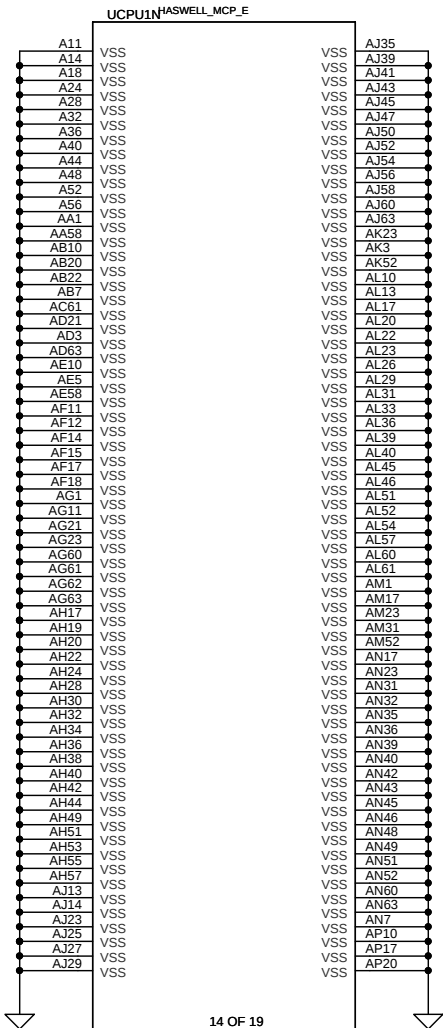
<HDMI>
<DP TO CRT HPD>
<eDP HPD>

PD on KBC page

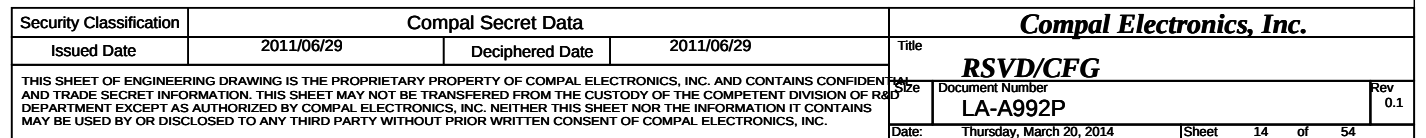
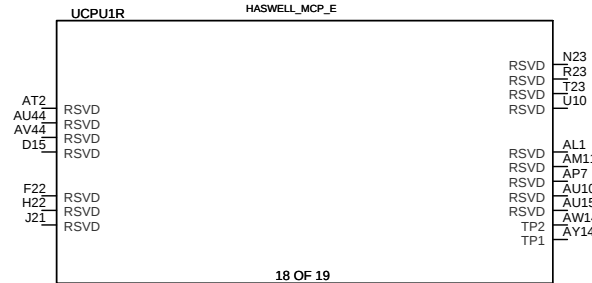
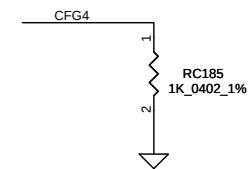
Security Classification	Compal Secret Data			Title	
Issued Date	2011/06/29	Deciphered Date	2011/06/29	PM,GPIO,DDI	
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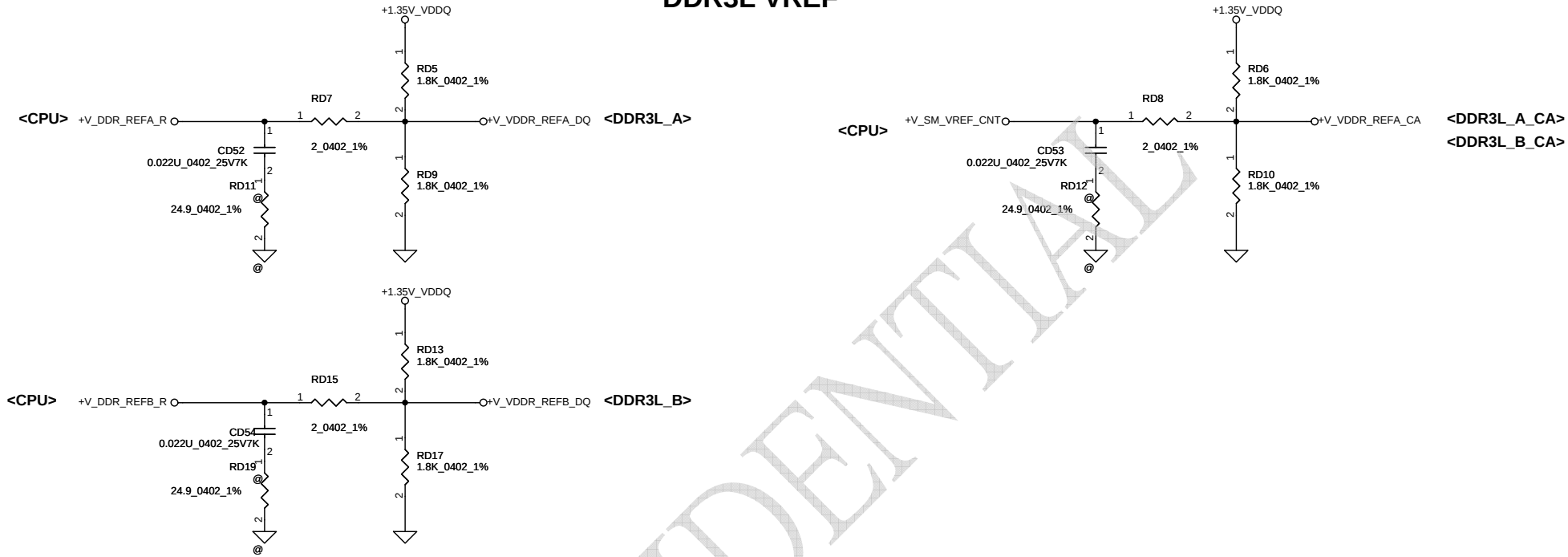




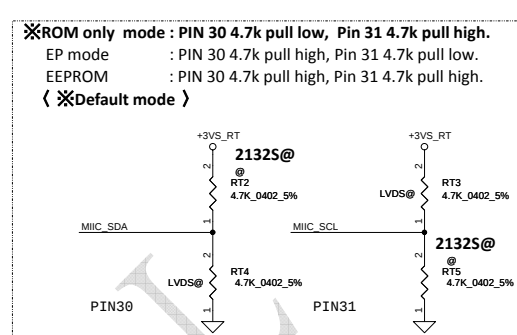
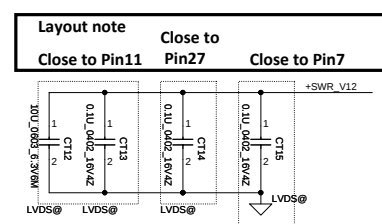
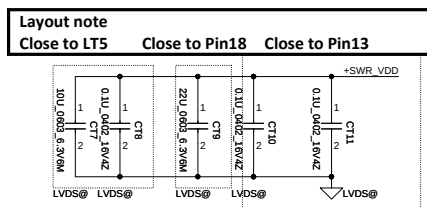
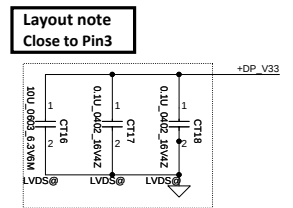
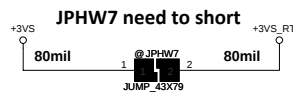
Security Classification		Compal Secret Data				Compal Electronics, Inc.			
Issued Date		2010/05/27		Deciphered Date		2011/05/11		Title	
								GND/VSSSEN	
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DDR3L VREF



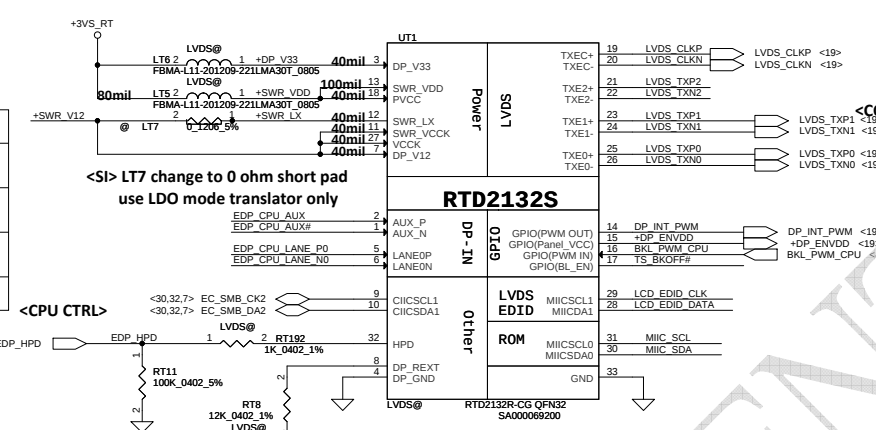
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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	DDR3L VREF
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SWR / LDO Mode select

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

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



<CONN>
<CPU>

	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

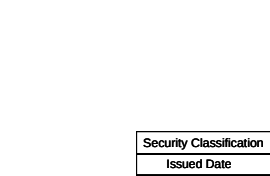
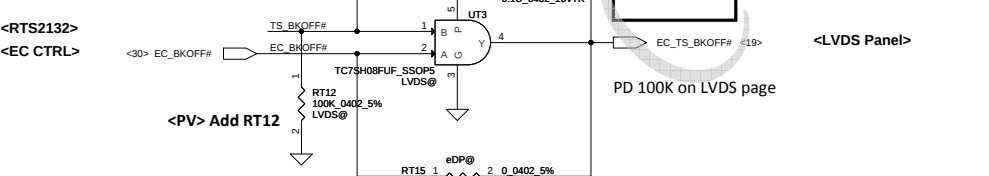
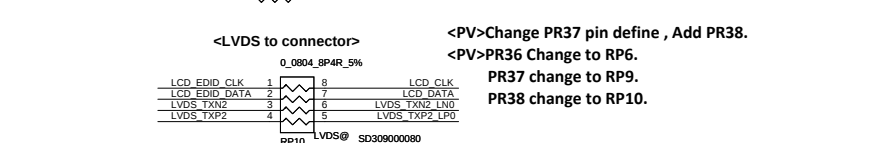
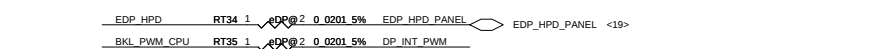
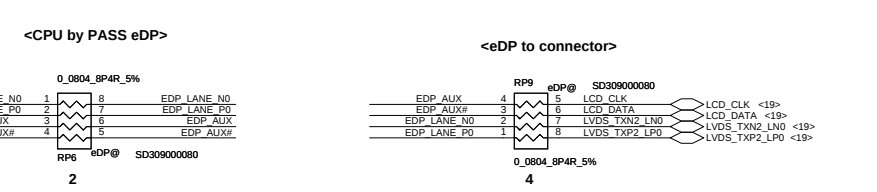
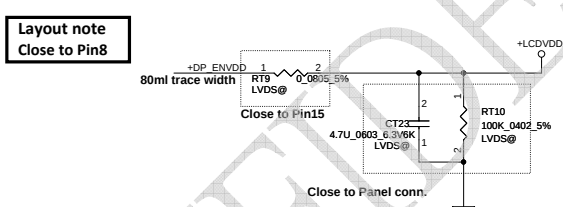
* Version R has internal level shifter, remove level shifter circuit on AMD platform

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

<CPU>

<4> EDP_CPU_AUX_C	CC102	1	2	.1U 0402 16V7K	EDP_CPU_AUX
<4> EDP_CPU_AUX#_C	CC101	1	2	.1U 0402 16V7K	EDP_CPU_AUX#
<4> EDP_CPU_LANE_P0_C	CC98	1	2	.1U 0402 16V7K	EDP_CPU_LANE_P0
<4> EDP_CPU_LANE_N0_C	CC97	1	2	.1U 0402 16V7K	EDP_CPU_LANE_N0

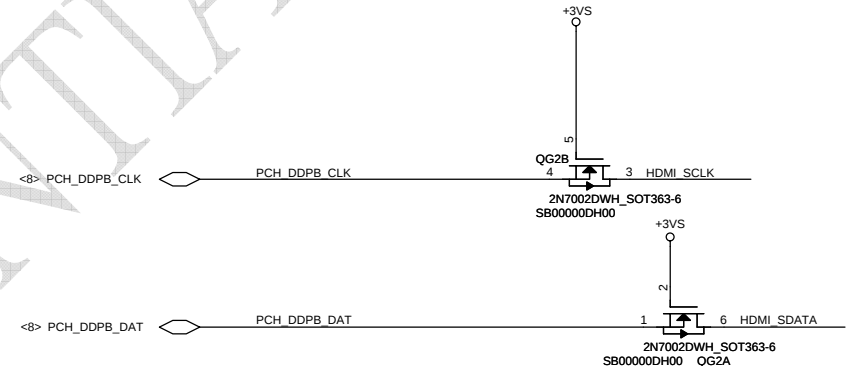
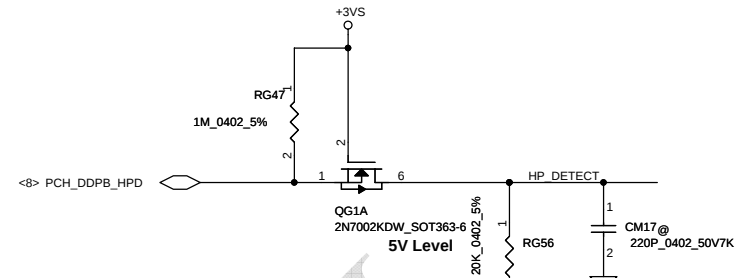
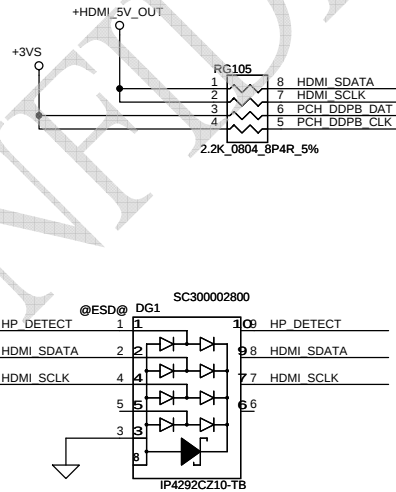
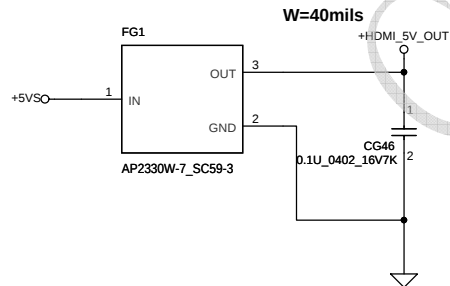
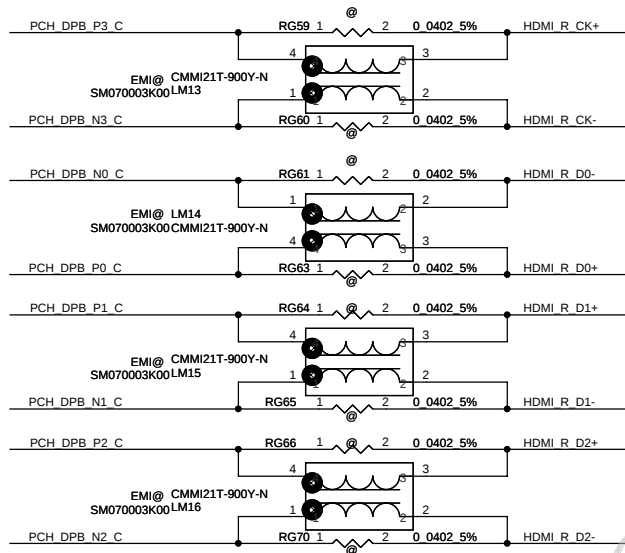
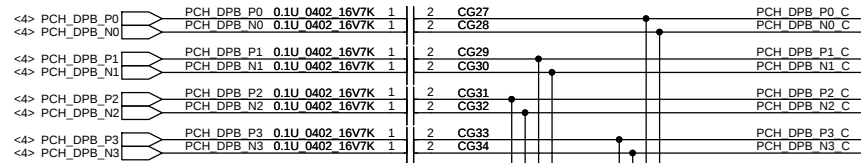


<PV> Add RT12

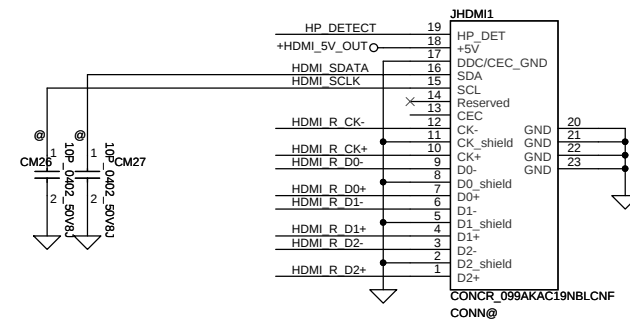
<PV> Change PR37 pin define, Add PR38.
PR37 change to RP9.
PR38 change to RP10.

Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2013/3/1	Deciphered Date	2015/3/1	Title
				LVDS Translator-RTD2132R
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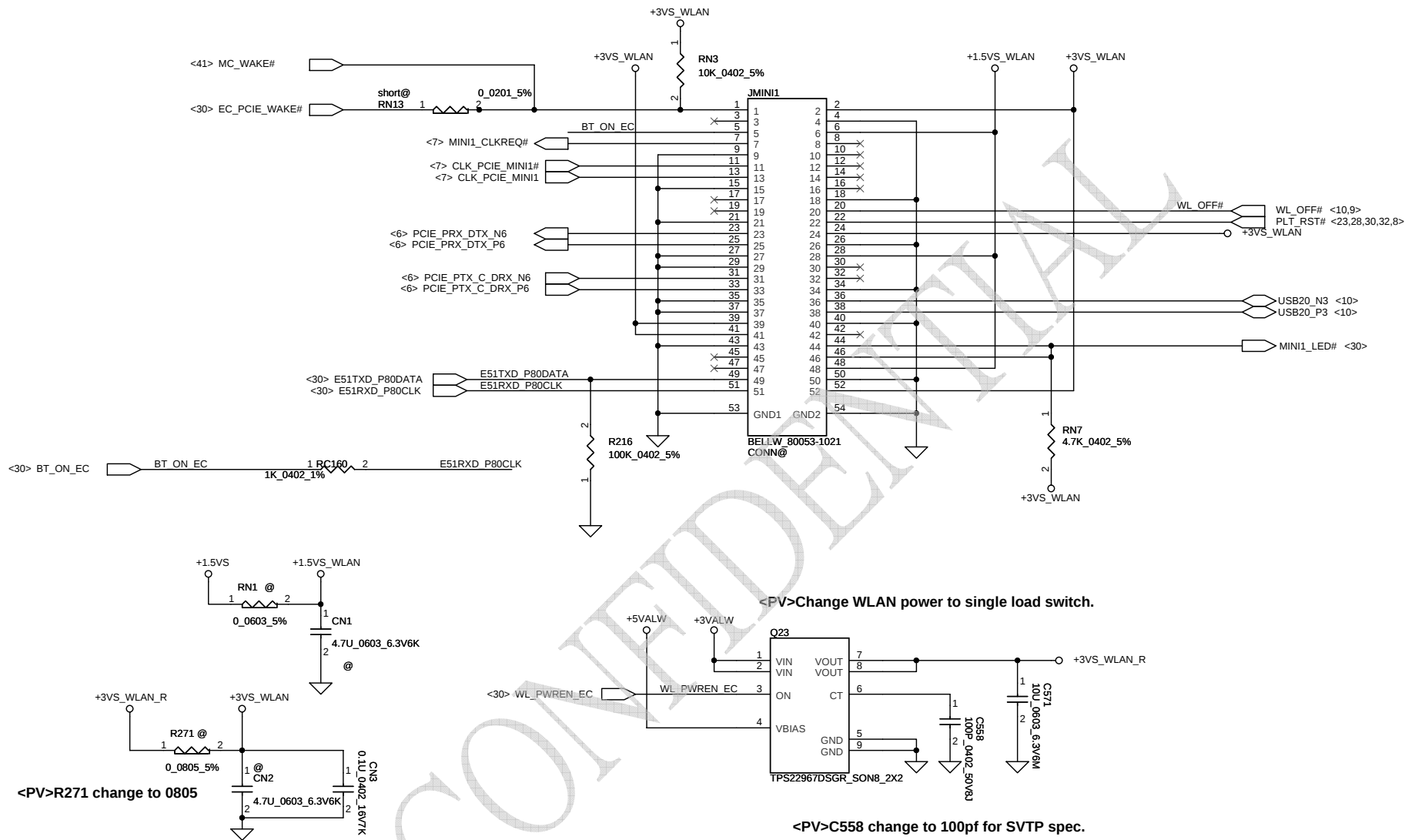
<CPU>



HDMI Conn.

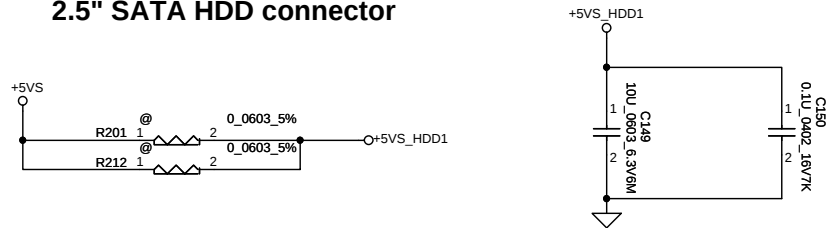


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Issued Date	2011/06/29	Deciphered Date	2011/06/29	Title	HDMI Conn/Level shift
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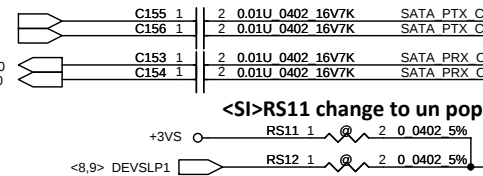


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	WLAN
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2.5" SATA HDD connector



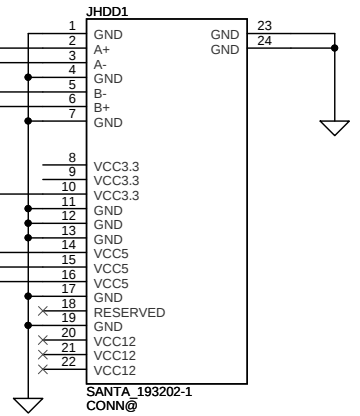
<6> SATA_PTX_DRX_P0
<6> SATA_PTX_DRX_N0
<6> SATA_PRX_DTX_N0
<6> SATA_PRX_DTX_P0



<SI>RS11 change to un pop

<8,9> DEVSLP1

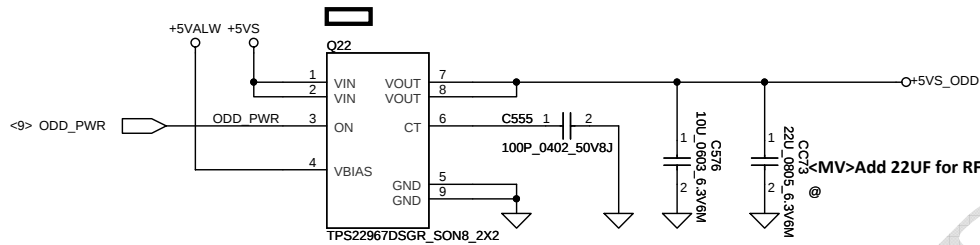
+5VS_HDD1O



SATA_193202-1
CONN@

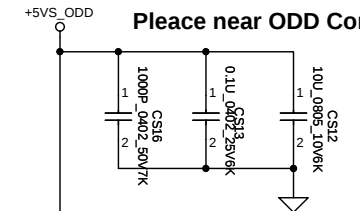
Change to dual load switch for ODD and WLAN

<PV>Q22 change to single load switch.

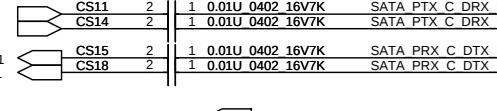


<MV>Add 22UF for RF suggestion ,4/10.

Place near ODD Connector



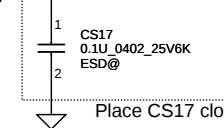
<6> SATA_PTX_DRX_P1
<6> SATA_PTX_DRX_N1
<6> SATA_PRX_DTX_N1
<6> SATA_PRX_DTX_P1



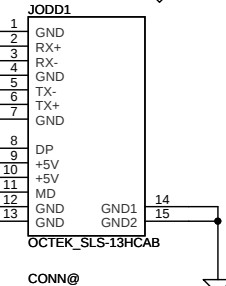
<6> ODD_PLUG#

<9> ODD_DA#

<SI> Delete Q84, R954

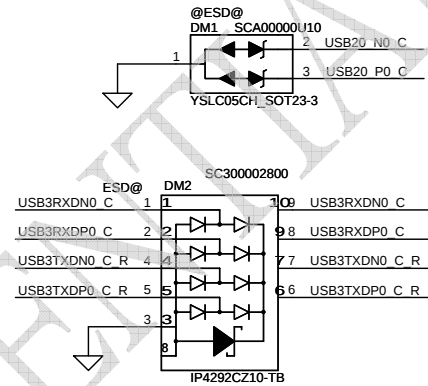
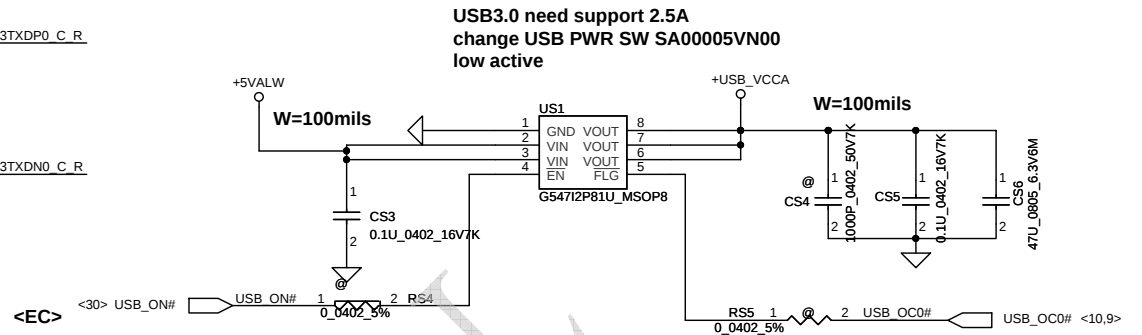
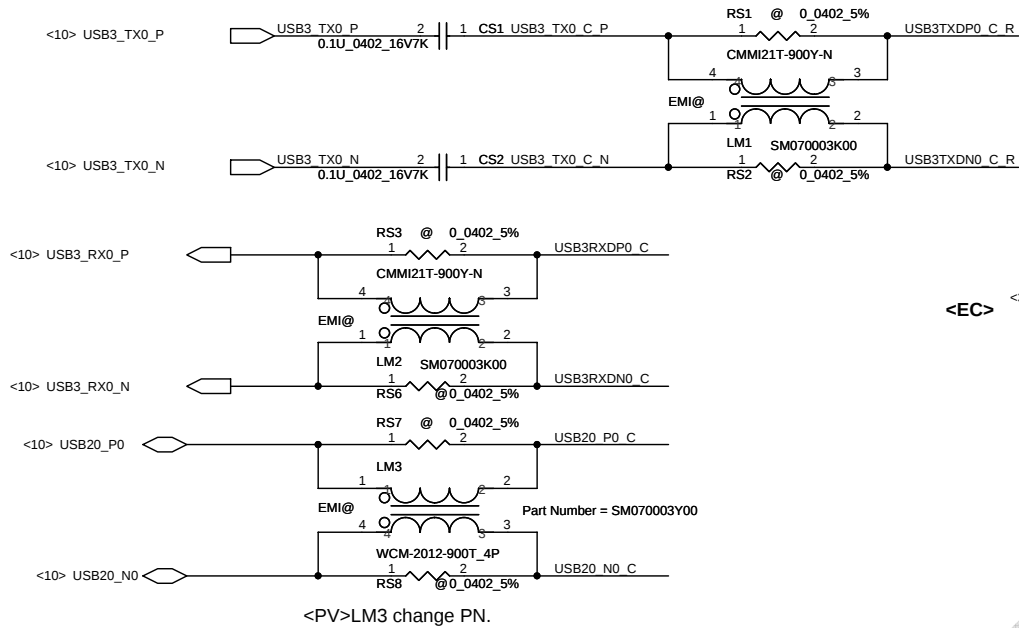


Place CS17 close to JODD

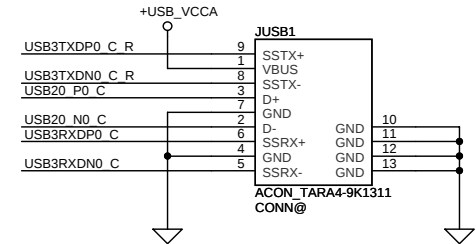


OCTEK_SLS-13HCAB
CONN@

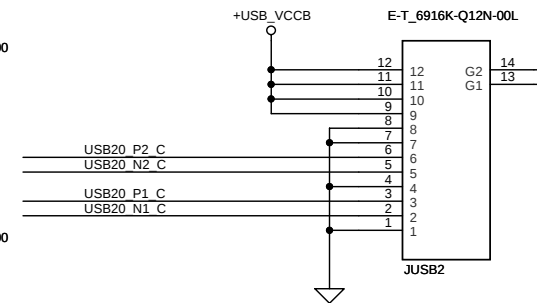
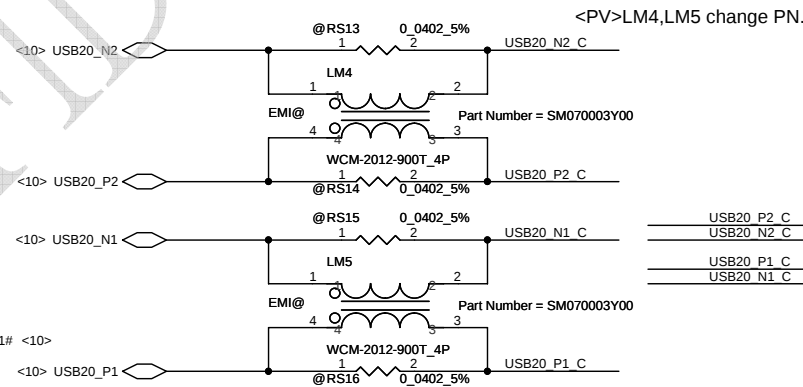
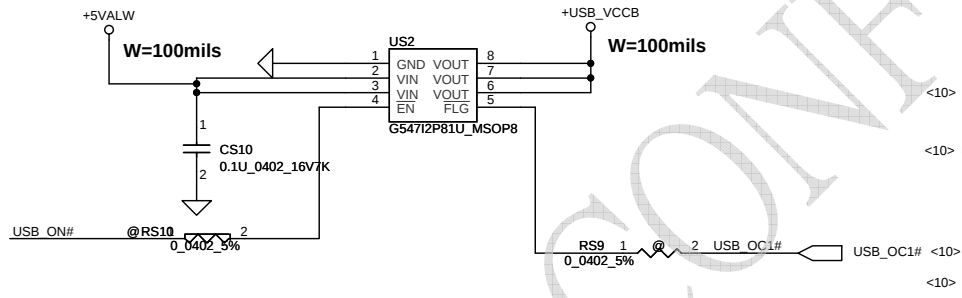
Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	ODD/SATA Conn
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				Date:	Thursday, March 20, 2014
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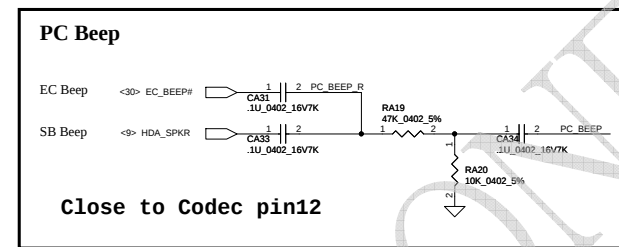
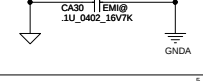
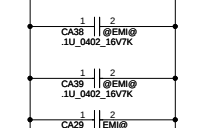
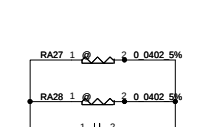
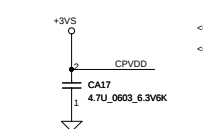
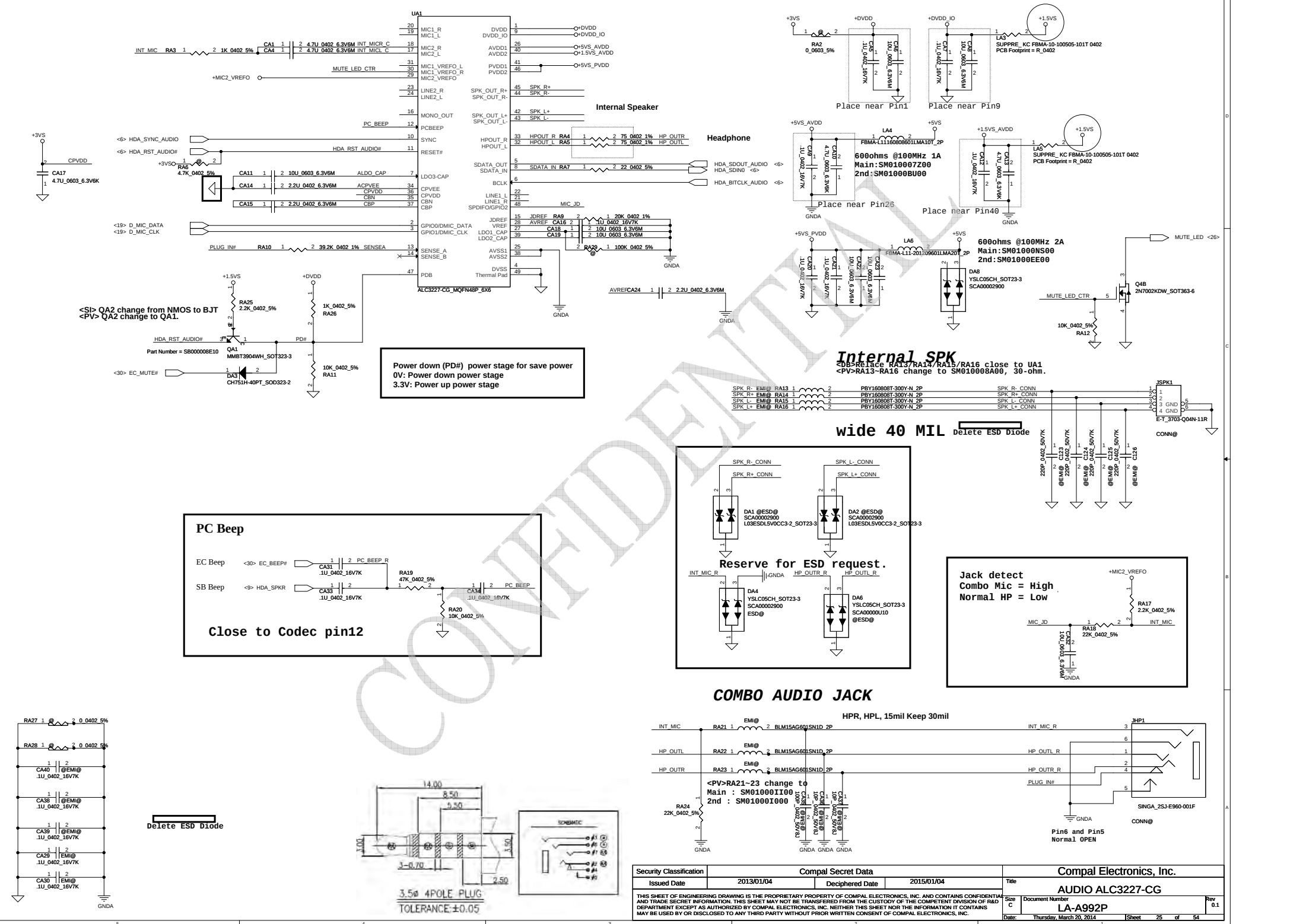
USB2.0/USB3.0 port 1



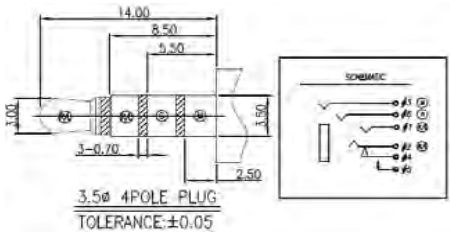
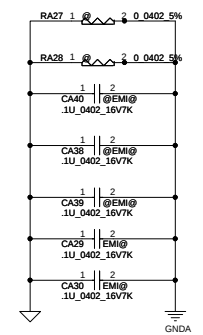
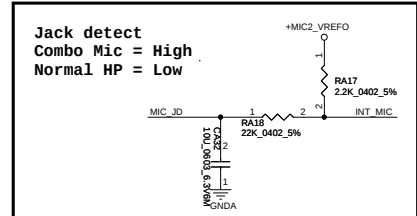
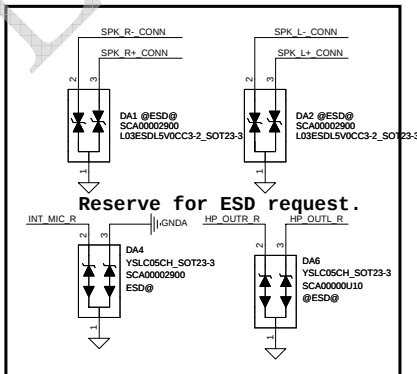
USB2.0 port x 2



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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

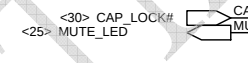
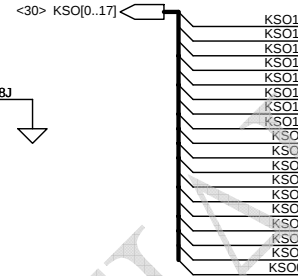
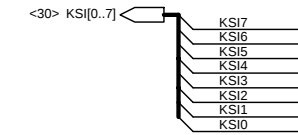
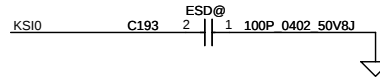
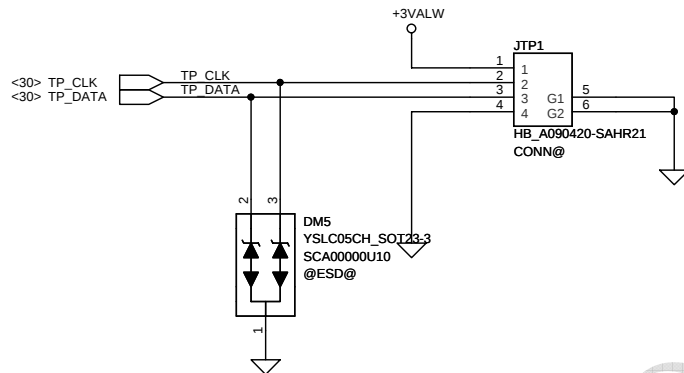


Power down (PD#) power stage for save power
0V: Power down power stage
3.3V: Power up power stage

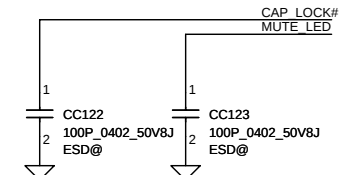
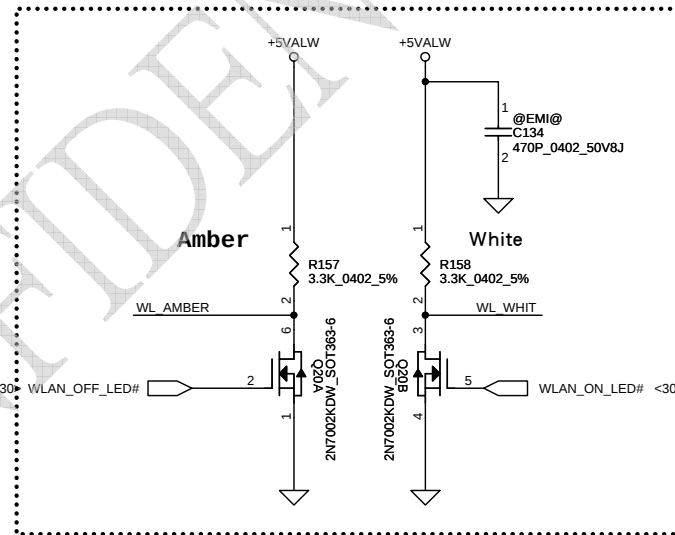
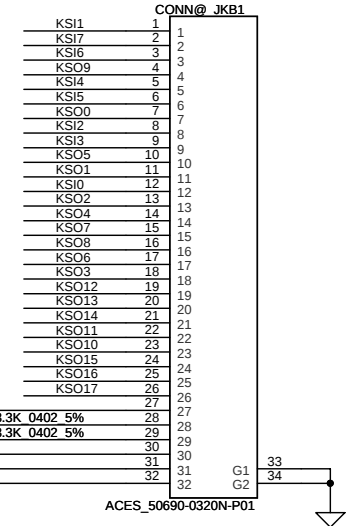


Security Classification		Compal Secret Data		Title	
Issued Date		Deciphered Date		2013/01/04	
2013/01/04		2015/01/04		AUDIO ALC3227-CG	
Size		Document Number		LA-A992P	
C		Rev		0.1	
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Touch pad conn

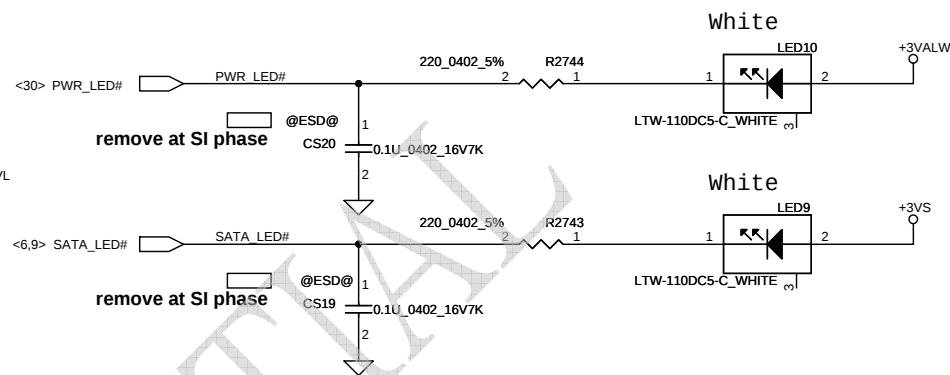
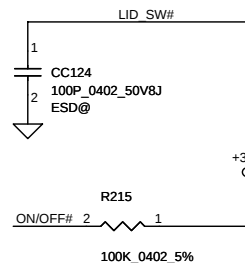
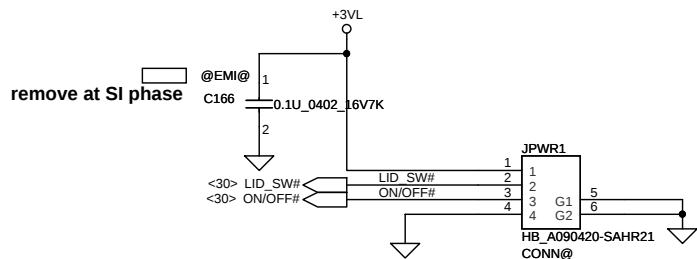


Keyboard conn

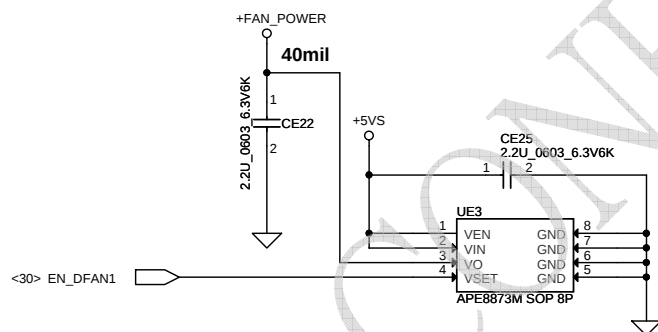


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Issued Date		2013/02/26		Deciphered Date		2015/07/08		Title	
						KB/TP			
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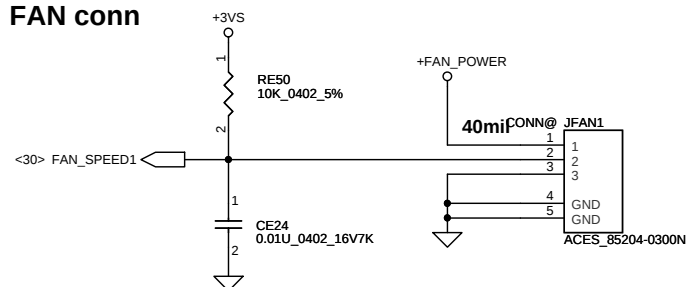
Power Button Connector



<SI> Del New Lid SW conn

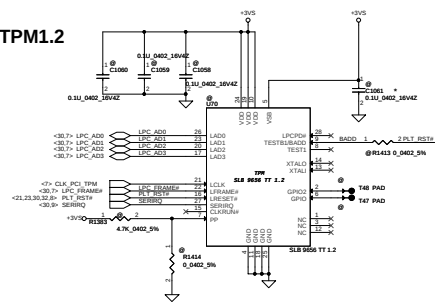


FAN conn

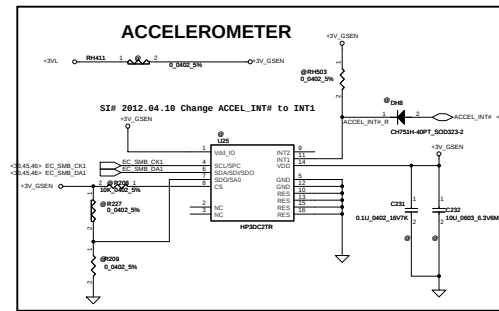


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Issued Date	2013/02/26	Deciphered Date	2015/07/08	Title	PWRBTN/FAN	
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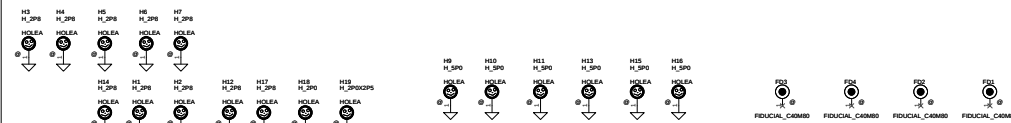
TPM1.2



ACCELEROMETER

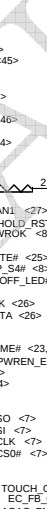
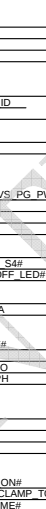
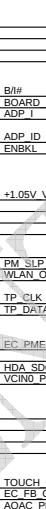
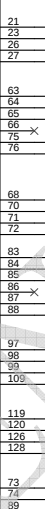
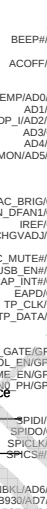
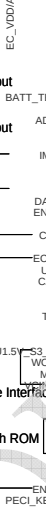
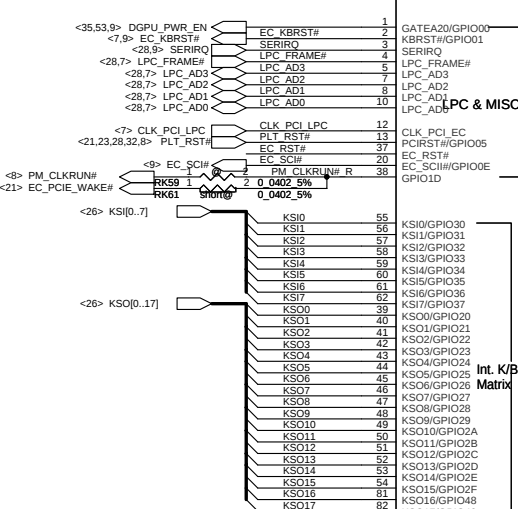
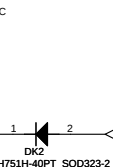
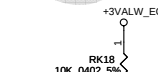
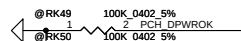
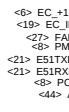
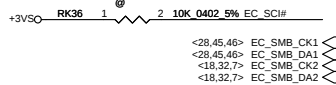
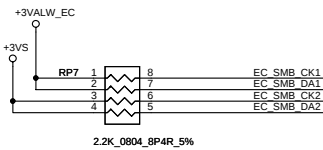
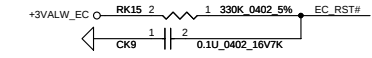
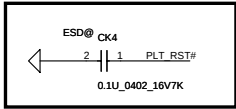


Screw Hole



Security Classification	Compul Secret Data			
Issued Date	2019/07/26	Deciphered Date	2019/07/08	Yes
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LED/Screw hole			Rev 0	
LA-A992P			Rev 0	
Date: Tuesday, March 26, 2019			Print: 28 of 54	

PV# 2013.01.29 Add CK4 for ESD protection

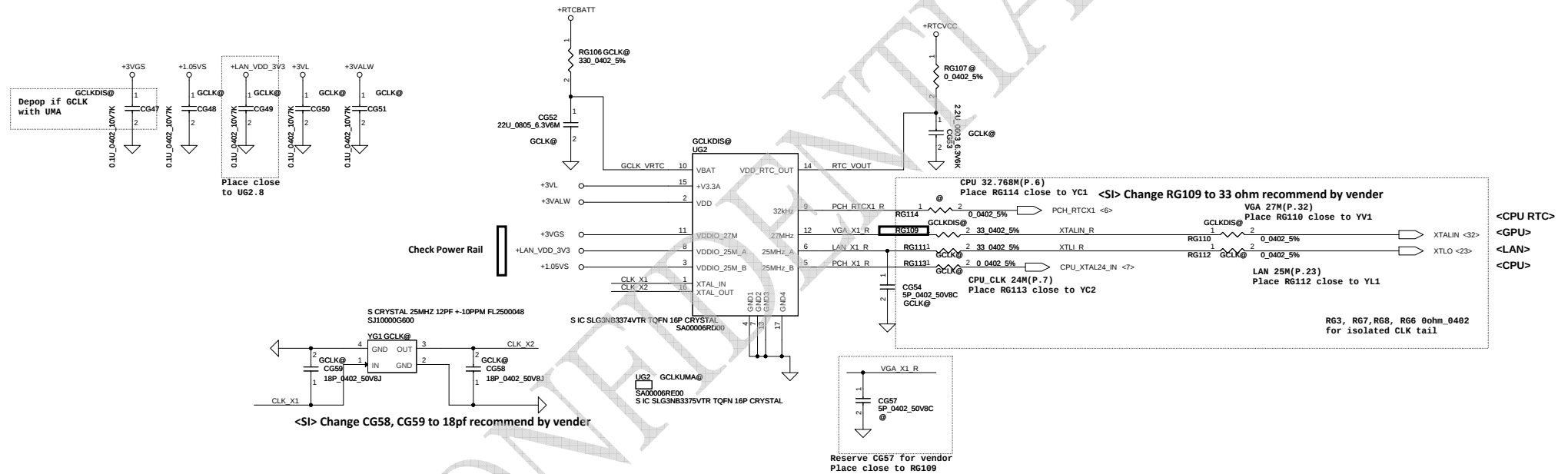


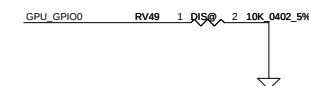
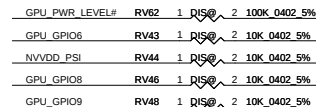
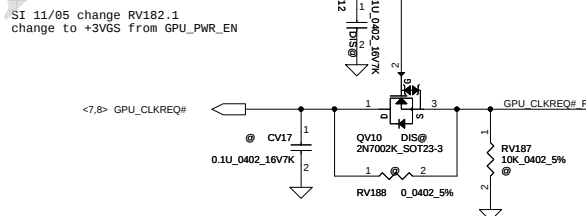
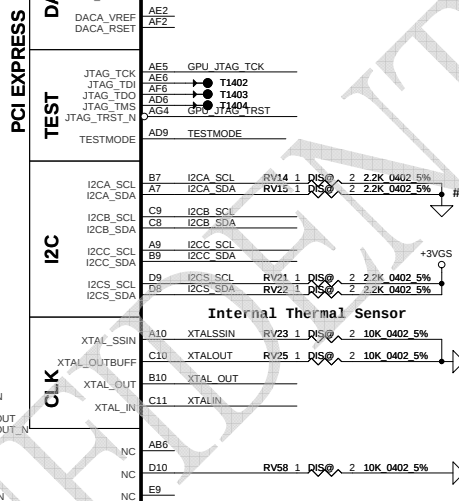
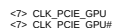
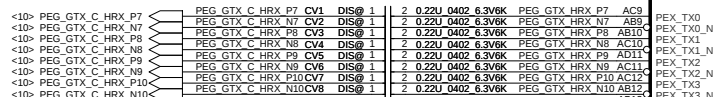
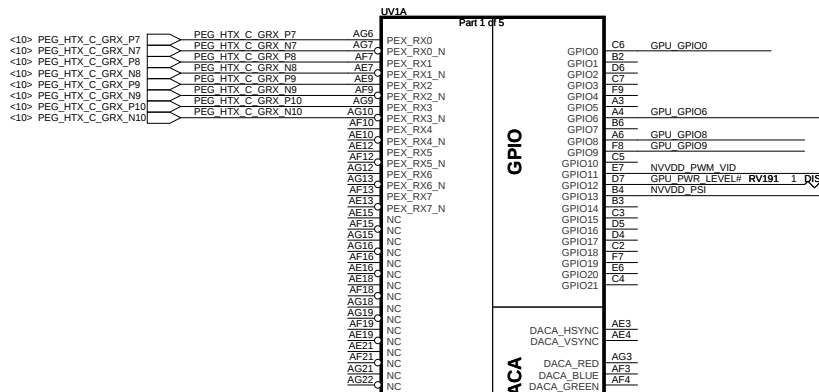
Security Classification		Compal Secret Data		Compal Electronics, Inc.		
Issued Date		2011/06/29	Deciphered Date	2011/06/29	Title	
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					Size	Document Number
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BOM control

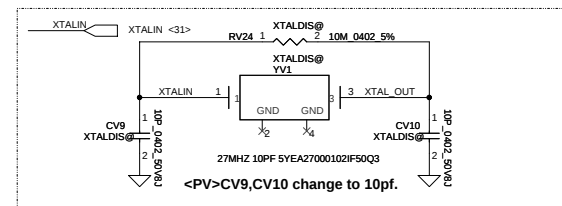
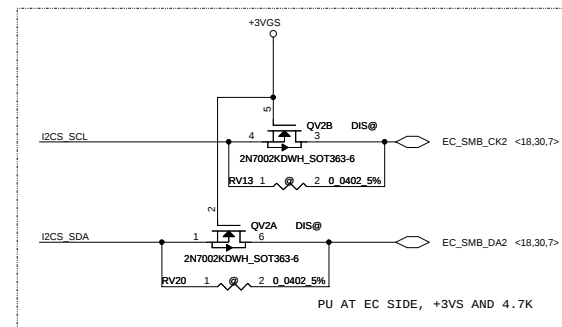
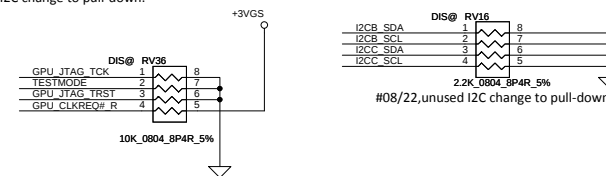
Platform	Silego P/N	Compal PN	25MHz(A)	32.768KHz	24MHz(B)	27MHz	8MHz	Remark
Intel ULT UMA	SLG3NB3375V	SA00006RE00	1	1	1	X	X	GCLKUMA@
Intel ULT Dis	SLG3NB3374V	SA00006RD00	1	1	1	1	X	GCLKDIS@

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

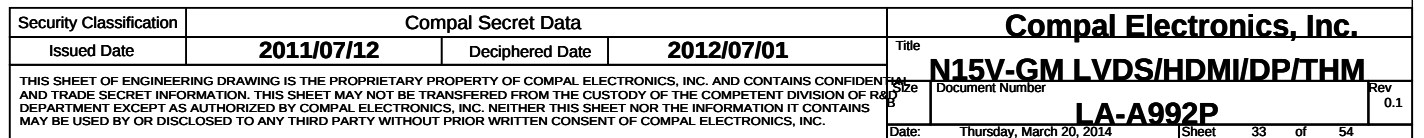


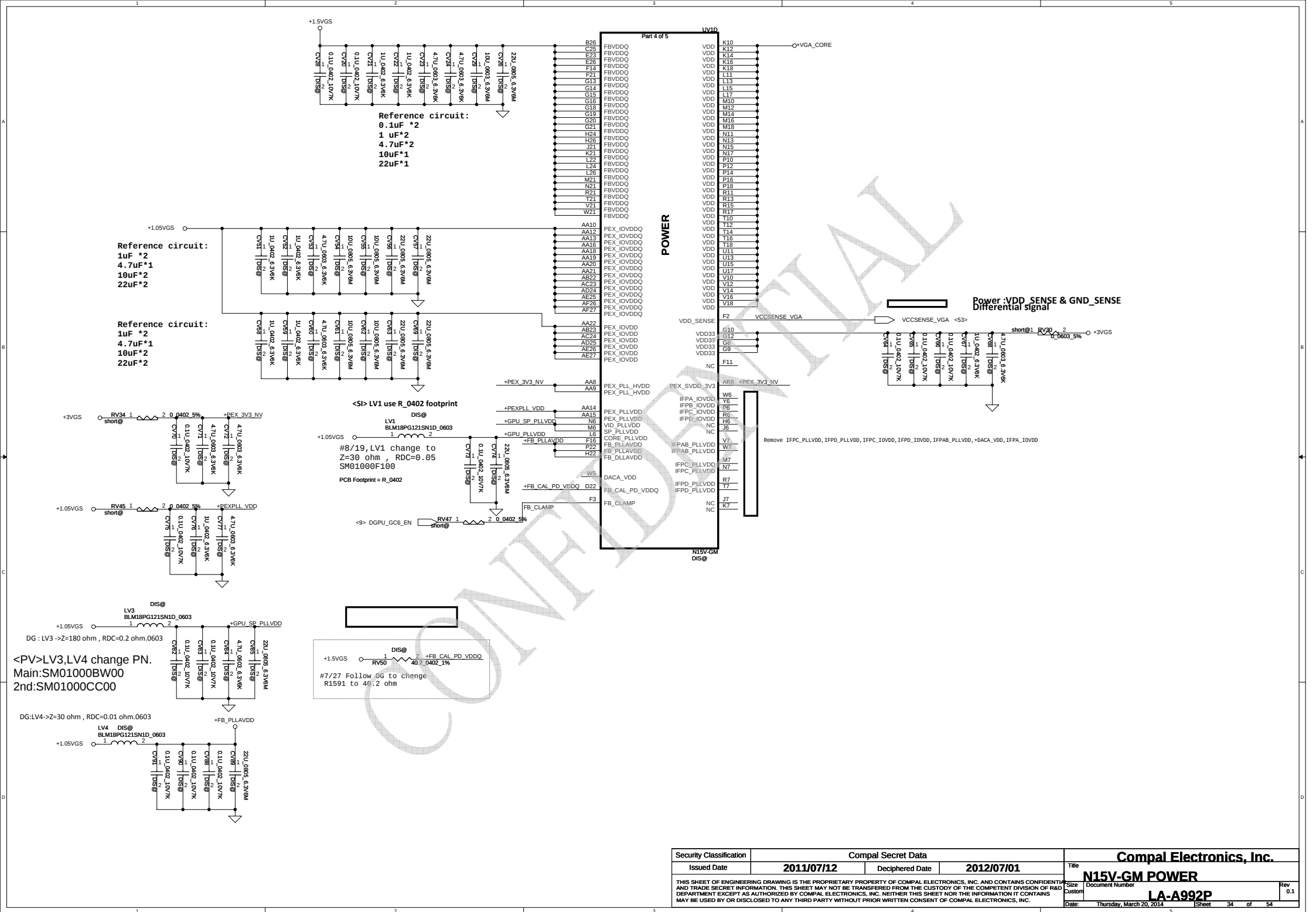


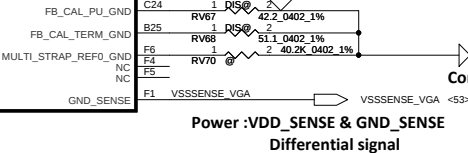
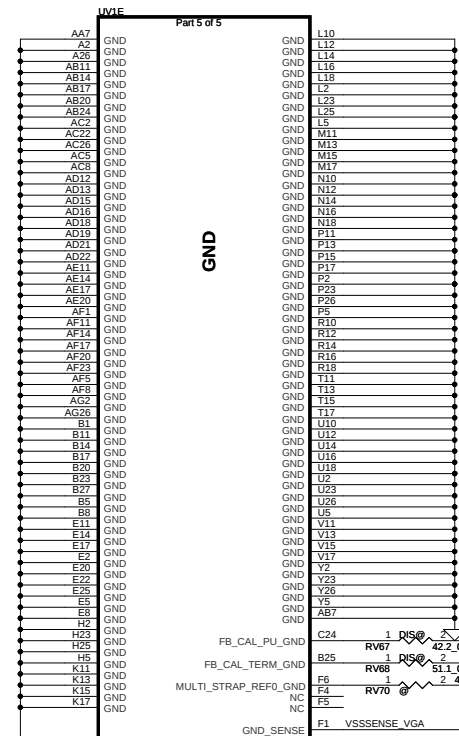
#8/19 ,N15V-GM didn't support GC6,
unpop QV13 ,QV14.



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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				Custom	LA-A992P	0.1
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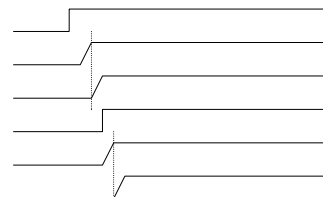






Power on

DGPU_PWR_EN
+3VGS
+VGA_CORE
DGPU_PWROK
+1.05VGS
+1.5VGS



40us < Rt < 2ms

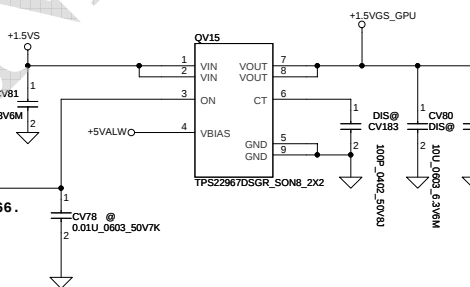
<S3> DGPU_PWROK DGPU_PWROK RV66 47K 0402 5%
#88/20 Don't support GC6, Add RV66.
Unpop QV16, RV41, RV42, CV78.

#8/19.RV70 unpop, N15V-GM use binary mode.
Contrl by power

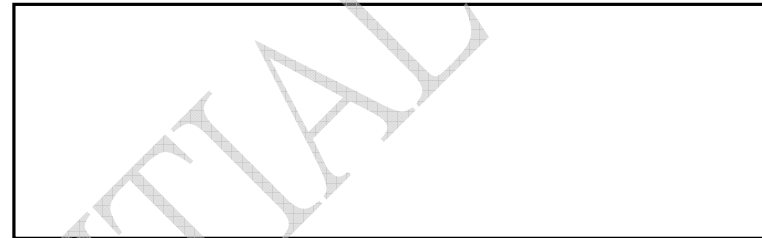
+1.5VGS=3.6A,8vias.

+1.5V to +1.5VGS

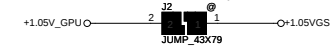
#8/19.QV15 change to TPS22967



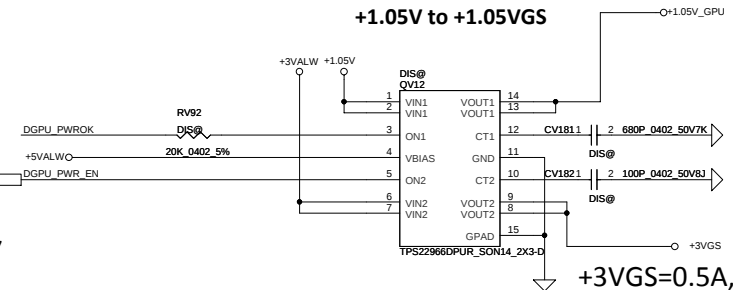
#8/20 : N15V-GM don't support GC6 function. UV20 unpop.



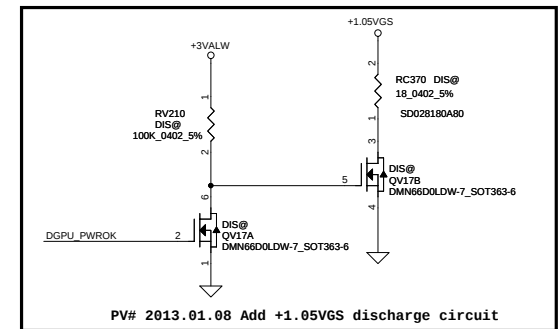
+1.05VGS=1.6A,4vias.



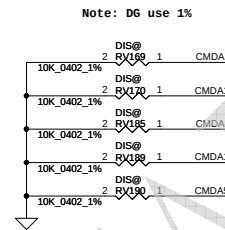
+3VALW to +3VGS
+1.05V to +1.05VGS



+3VGS=0.5A,2vias.



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	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#

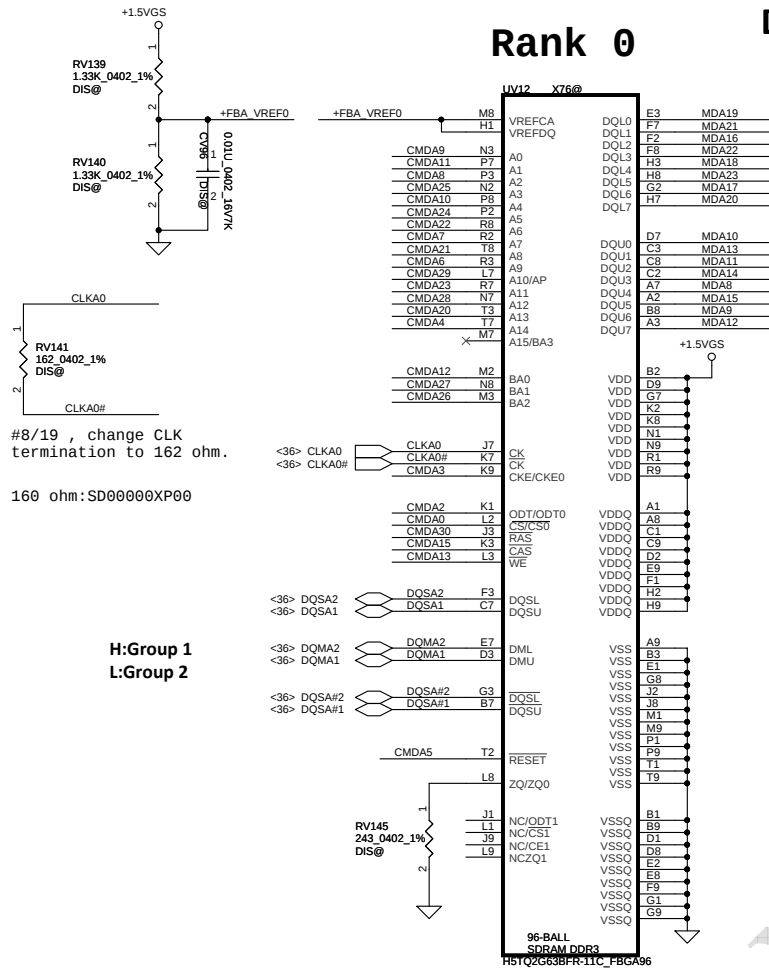
Memory Partition A RANK 0

Data0~Data31

Rank 0

Rank 0

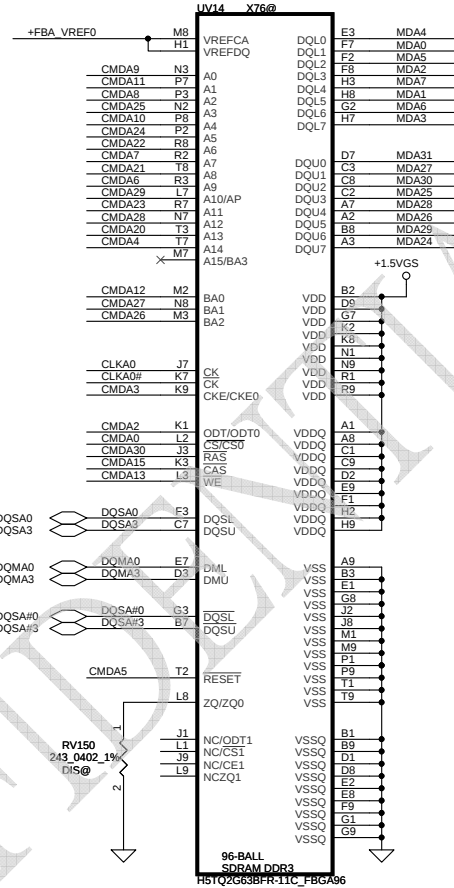
MDA[0..63] <36,38>
CMDA[30..0] <36,38>



Group 2

Group 1

L:Group 0
H:Group 3



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
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FBx_CMD28	A12	A12
FBx_CMD29	A10	A10
FBx_CMD30	RAS#	RAS#

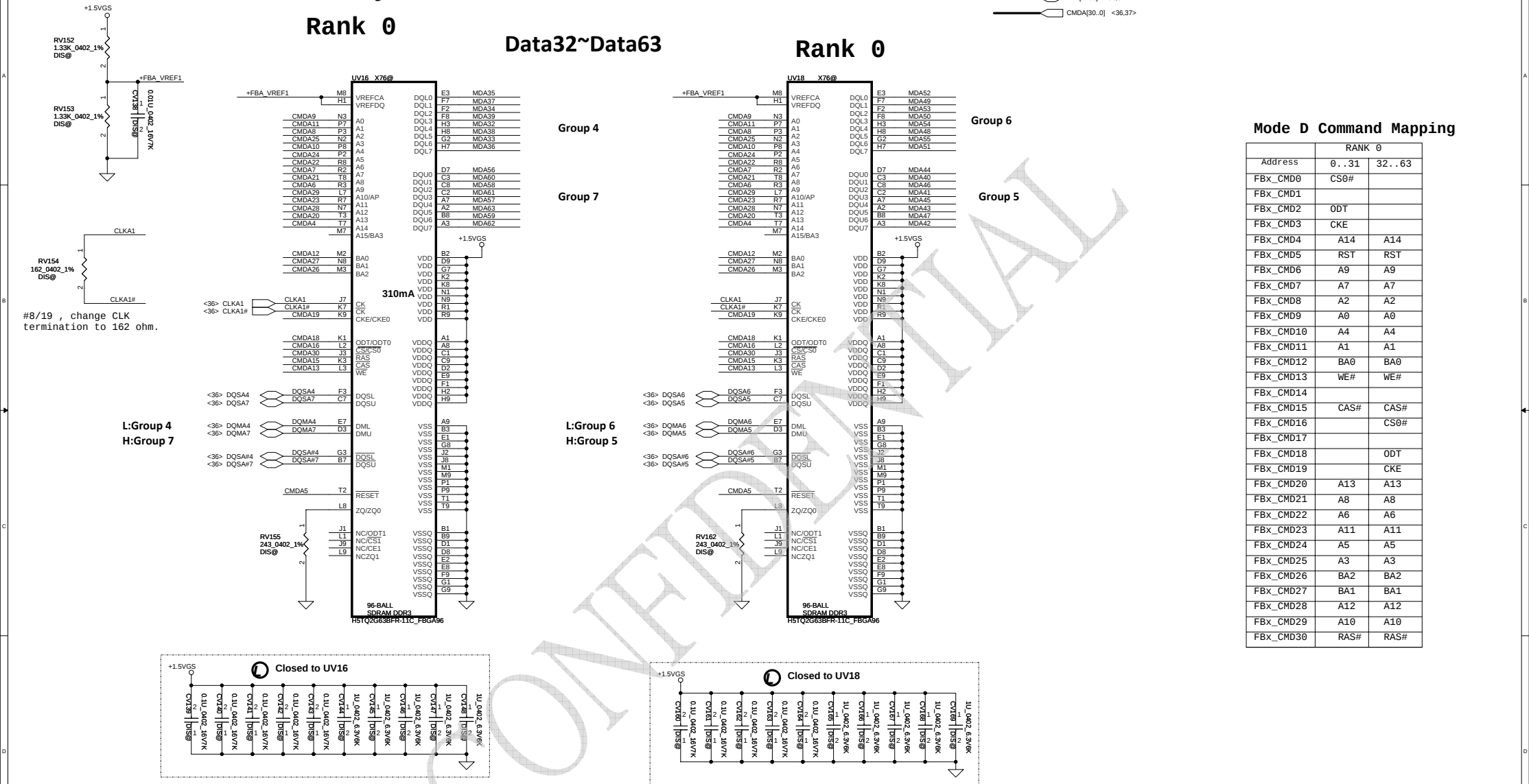
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Memory Partition A RANK 0 32 bits

Rank 0

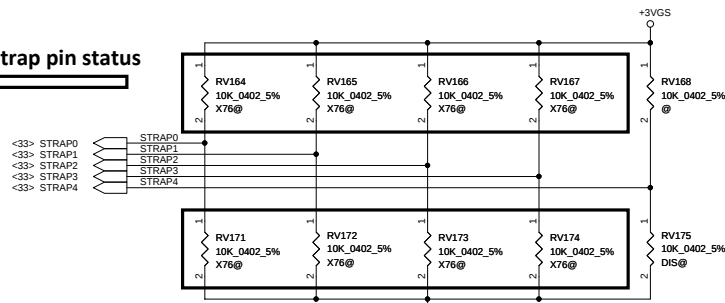
Data32~Data63

Rank 0

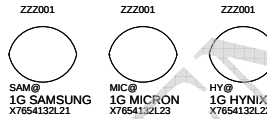
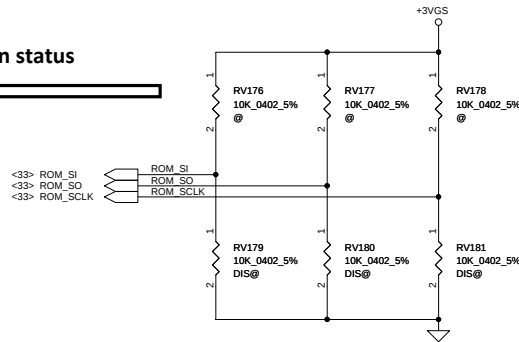
MDA[0..63] <36,37>
CMDA[90..0] <36,37>

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Check Strap pin status



Check SPI pin status



GPU	Project	VRAM size	CH	Description	Compal VRAM PIN	VRAM description	ROM CFG setup [3...0]	RAM CFG	R PIN
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 diplay).	
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 .

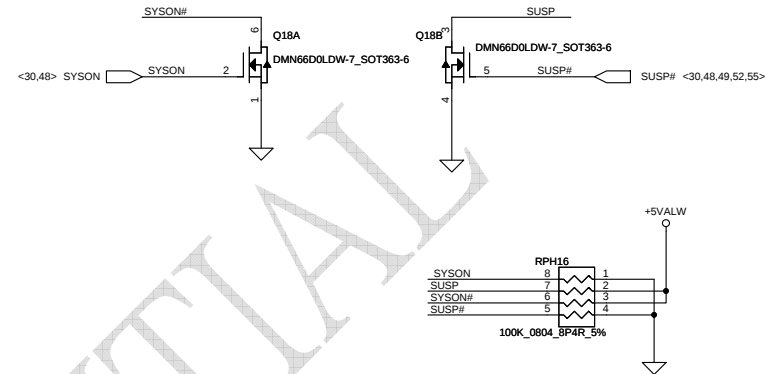
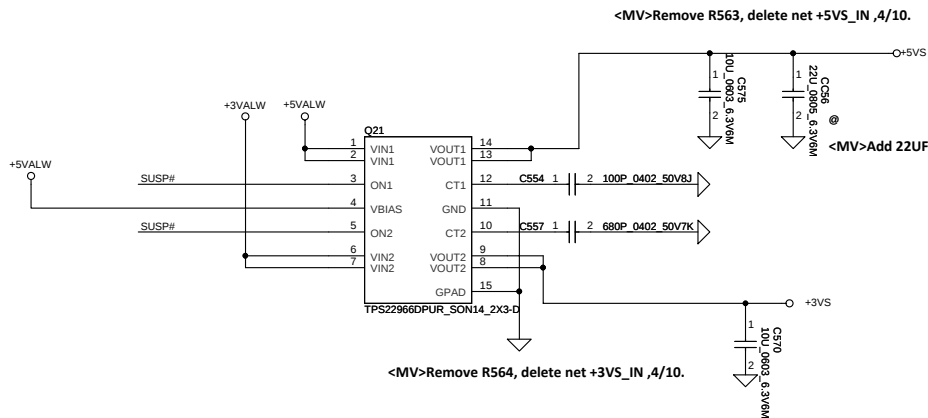
PCIE_MAX_SPEED

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

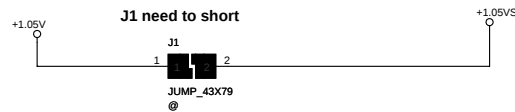
USER Straps

User[3:0]	
1000-1100	Customer defined

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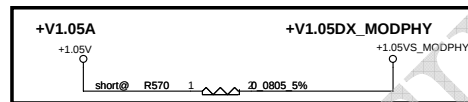


+1.05V TO +1.05VS



AO4430L
VGS Max=+/- 20V
VGS(Th) max=2.5V

Rds Max=5.5m @VGS=10V
Rds Max=7.5m @VGS=4.5V

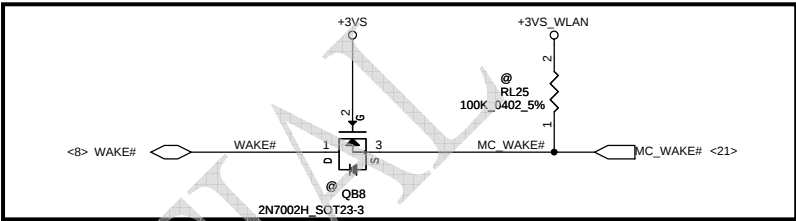


CPU +V1.05DX_MODPHY
Max Rdson <6m ohm
1840mA

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

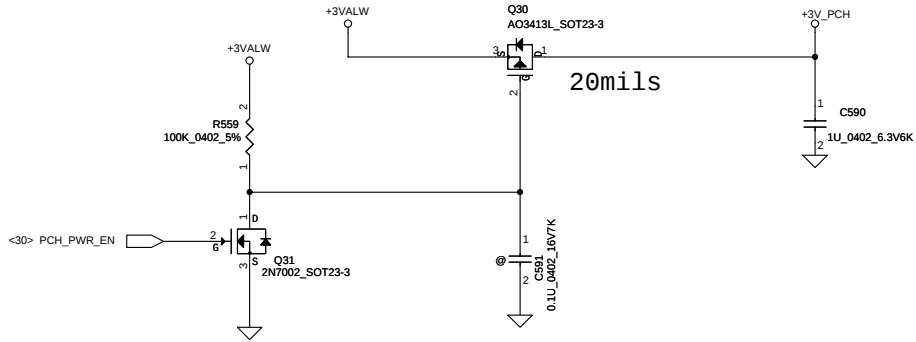
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				DC Interface			
				Size	Document Number		Rev
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NGFF and WLAN



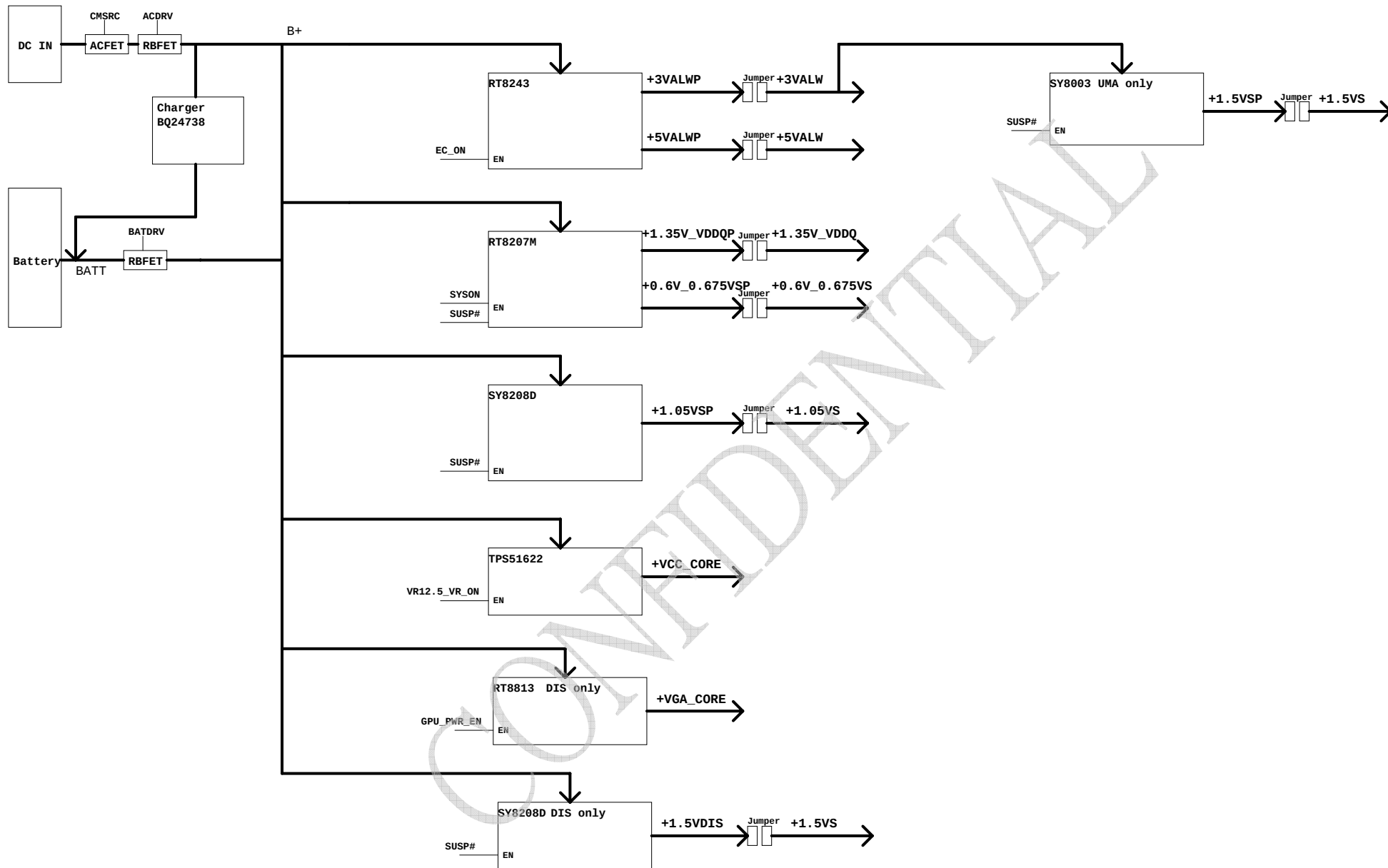
PV# 2013.01.23 Add QB8 abd RL25 to support OBFF
PV# 2013.02.22 Unpop QB4 and RL23 for not support OBFF

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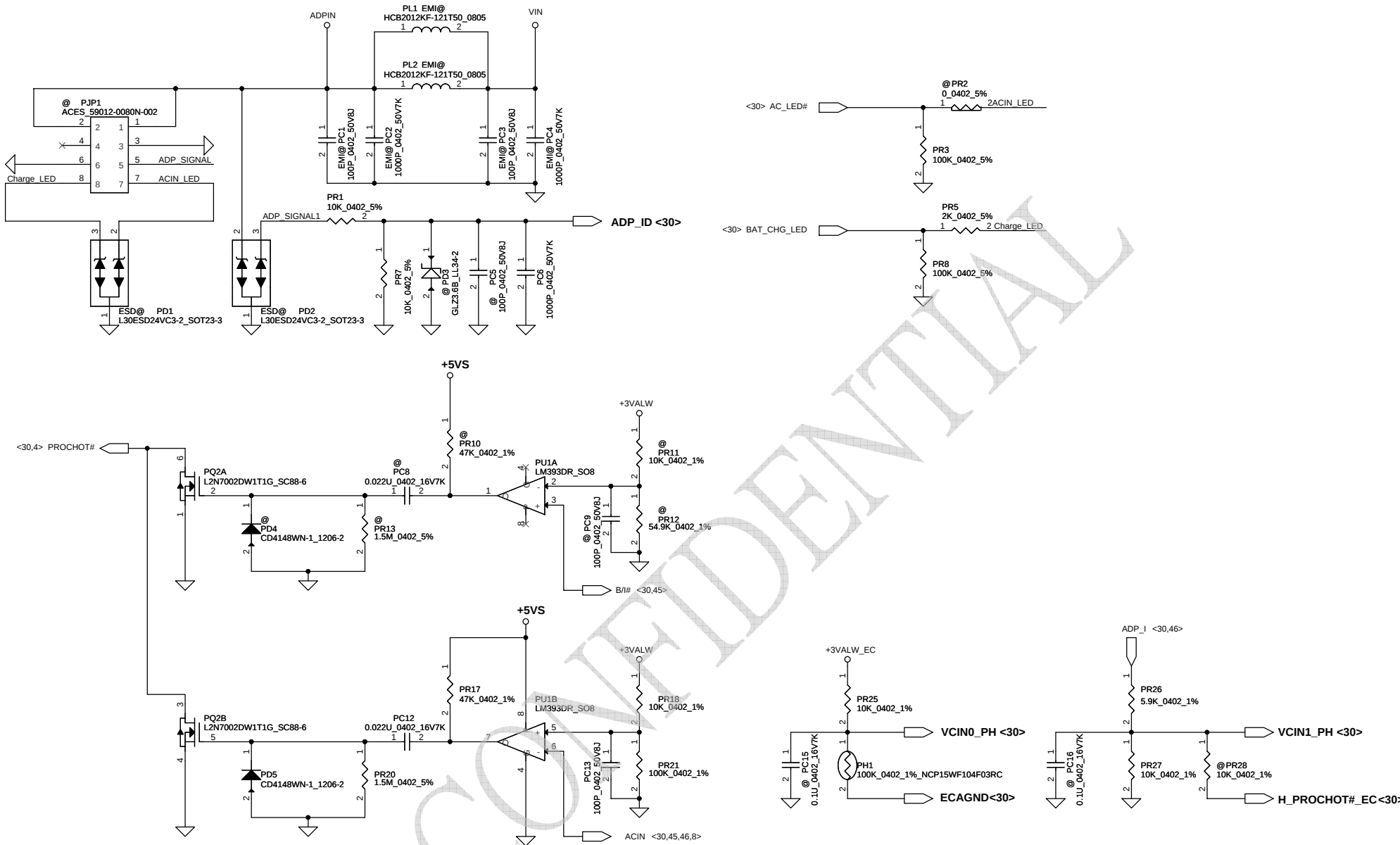


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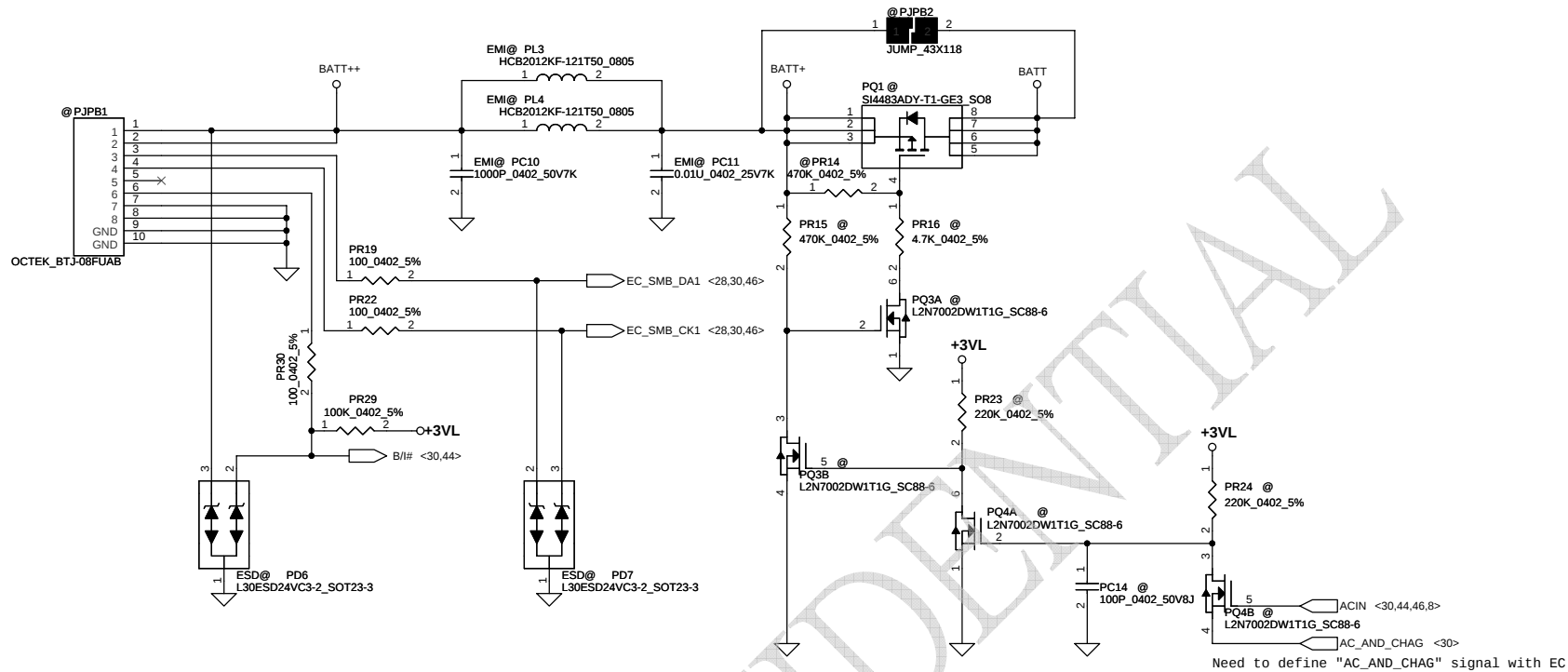
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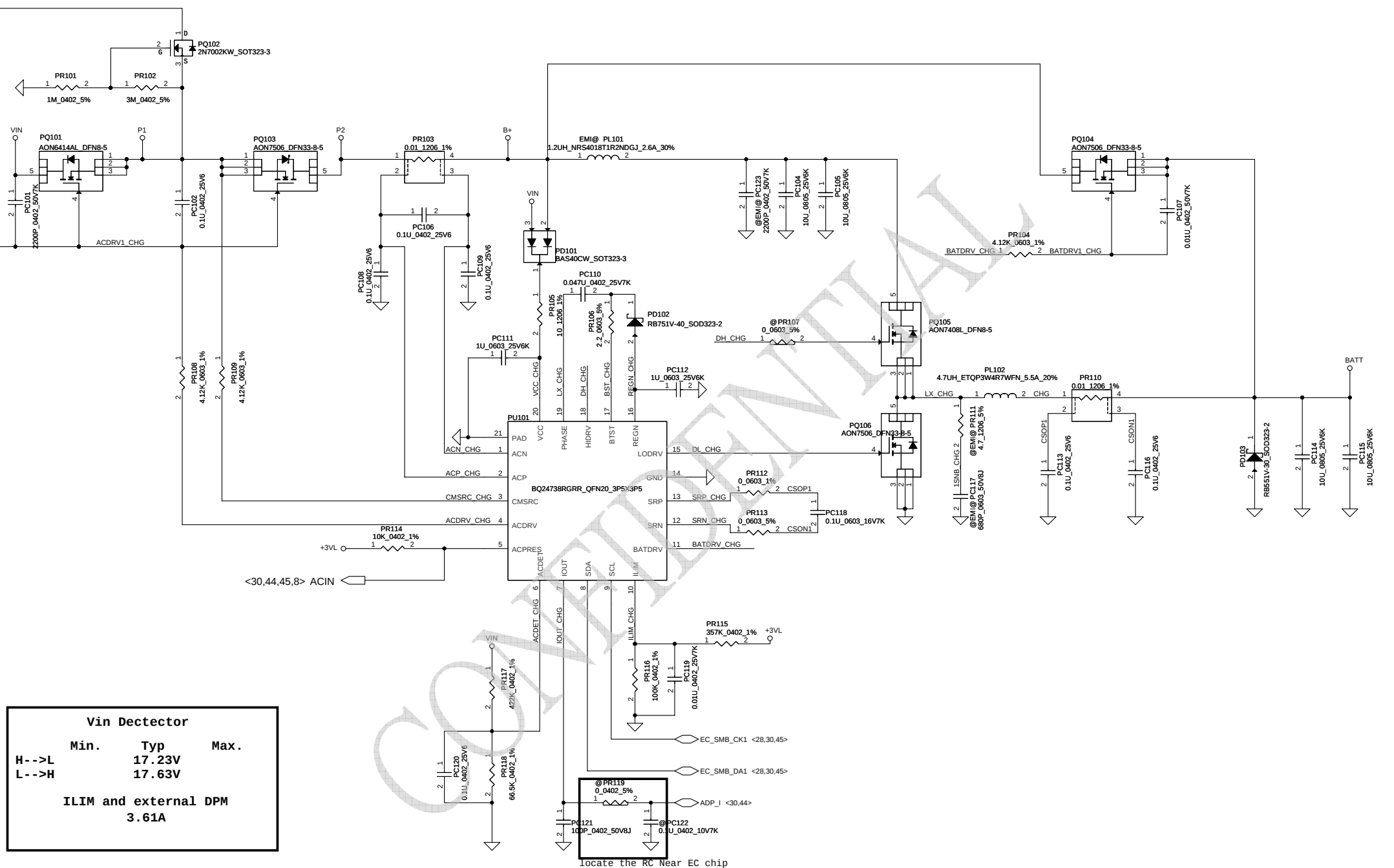
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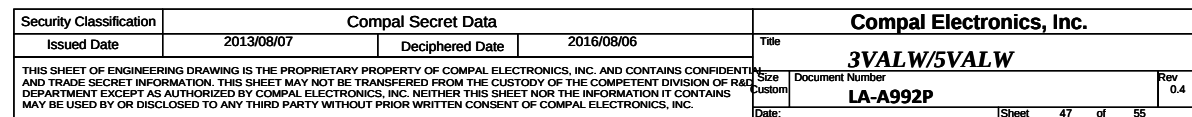


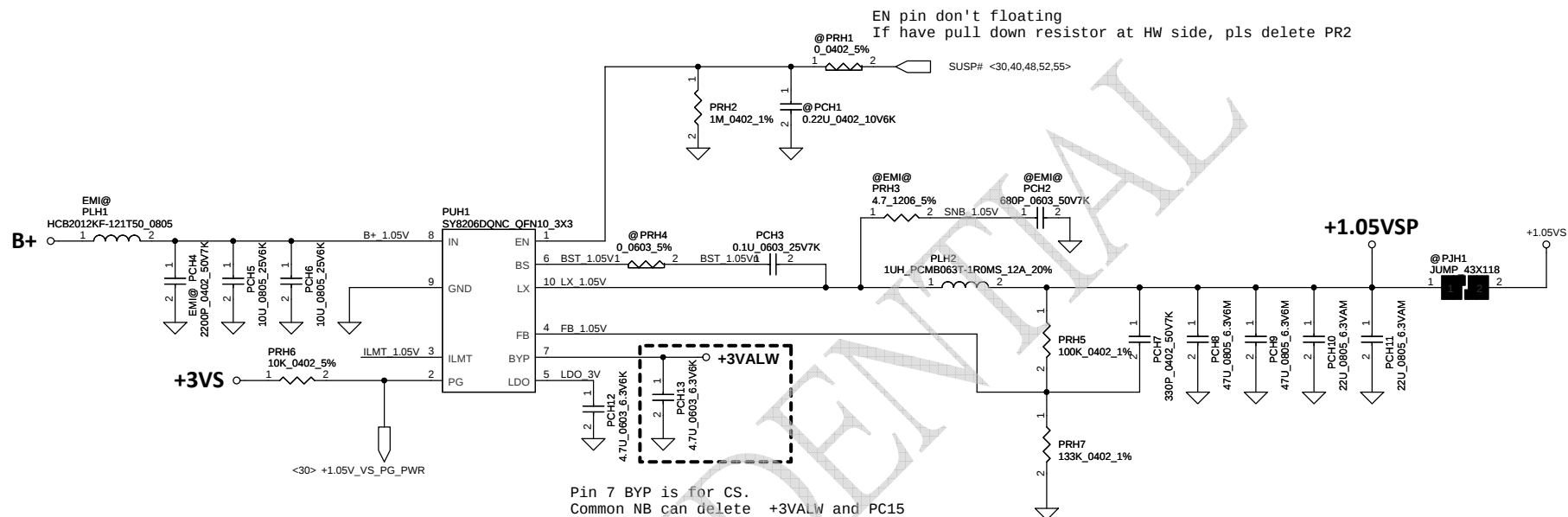
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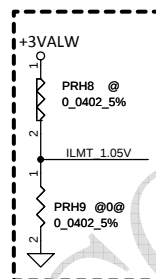
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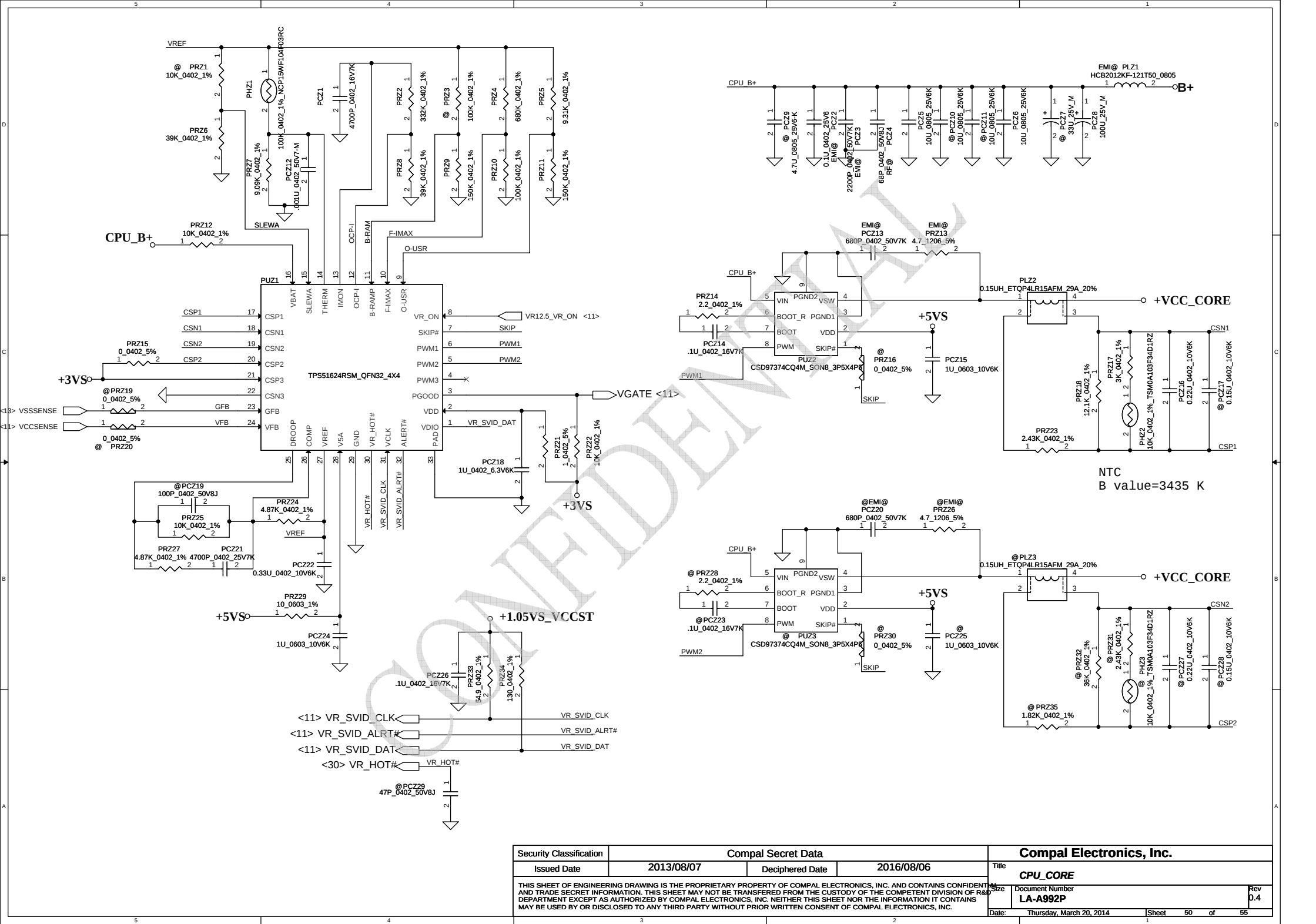


continuous 6A
peak 12A

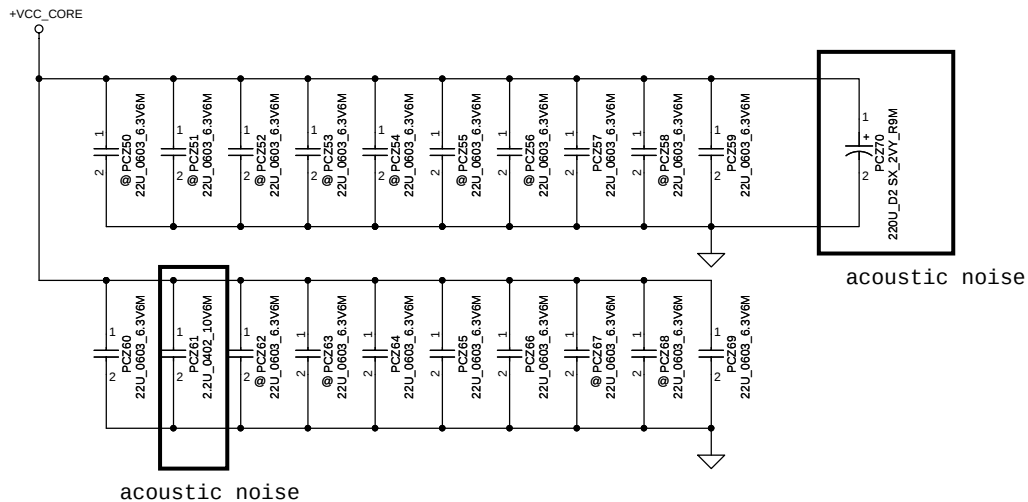


The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high

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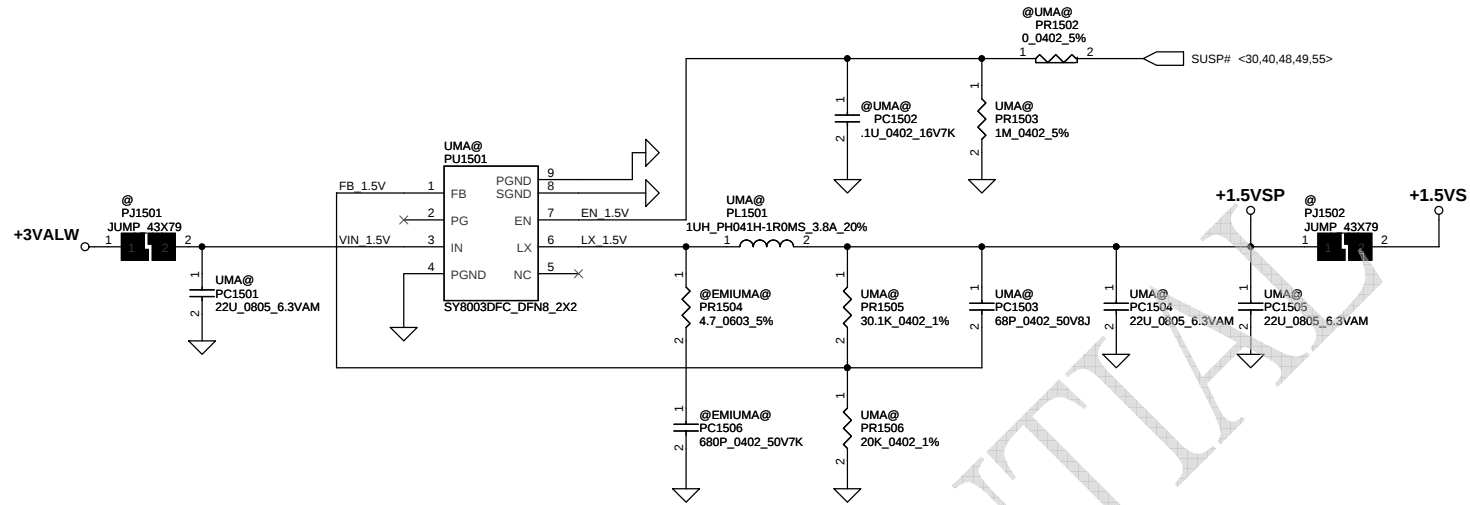


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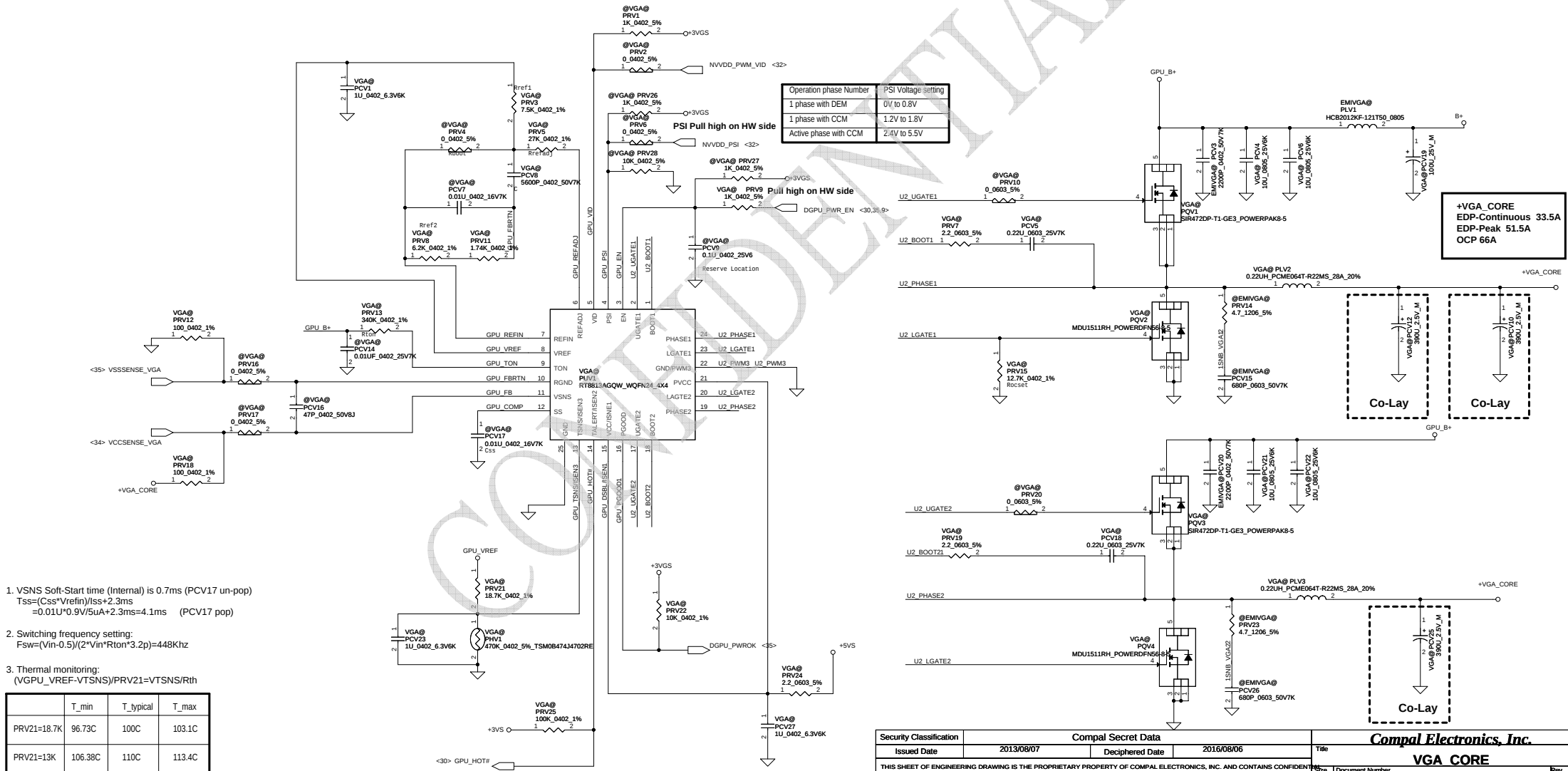
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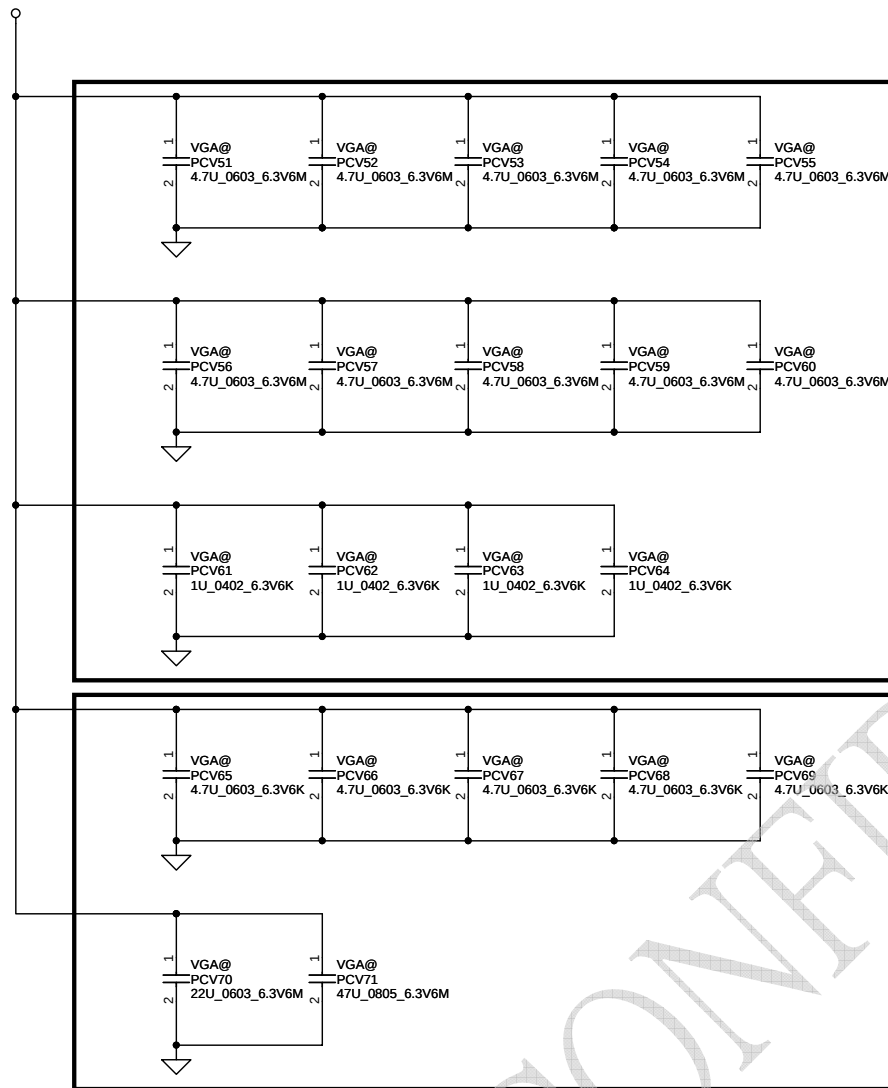


continuous 3A

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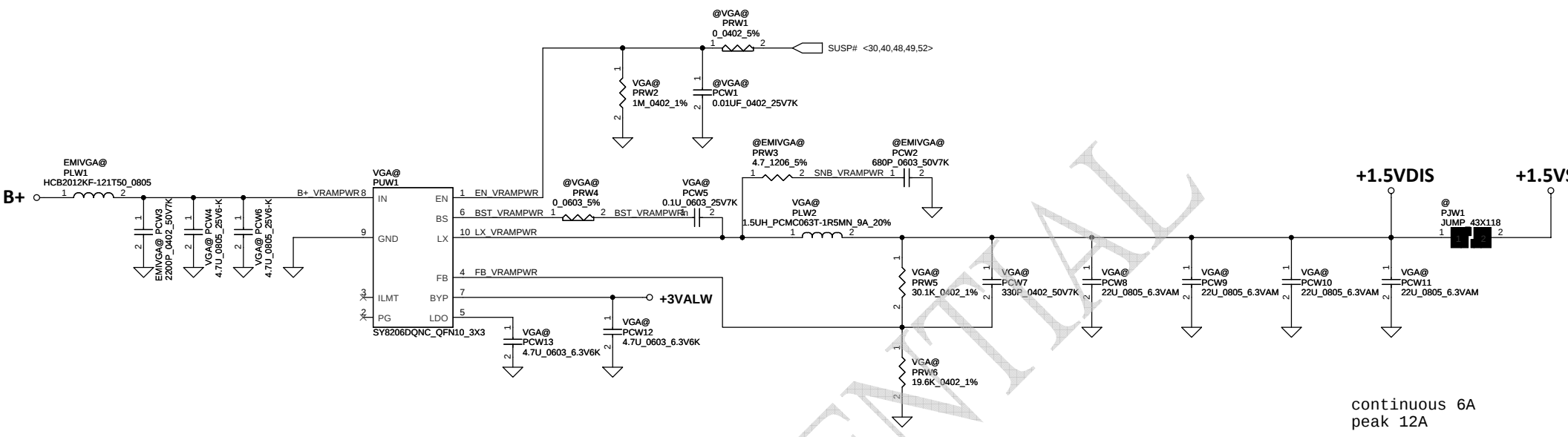
+VGA_CORE



PLACE UNDER GPU

PLACE NEAR GPU

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