

Compal Confidential

QCL40 MB Schematic Document

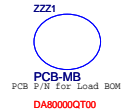
LA-8224P

Rev: 0.2

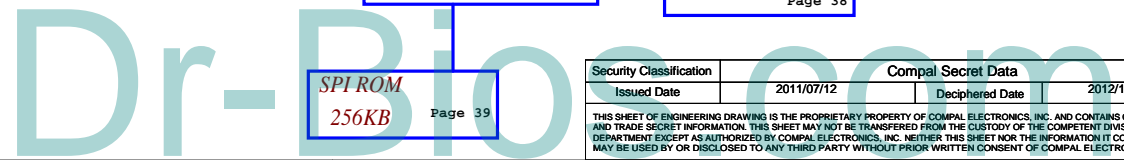
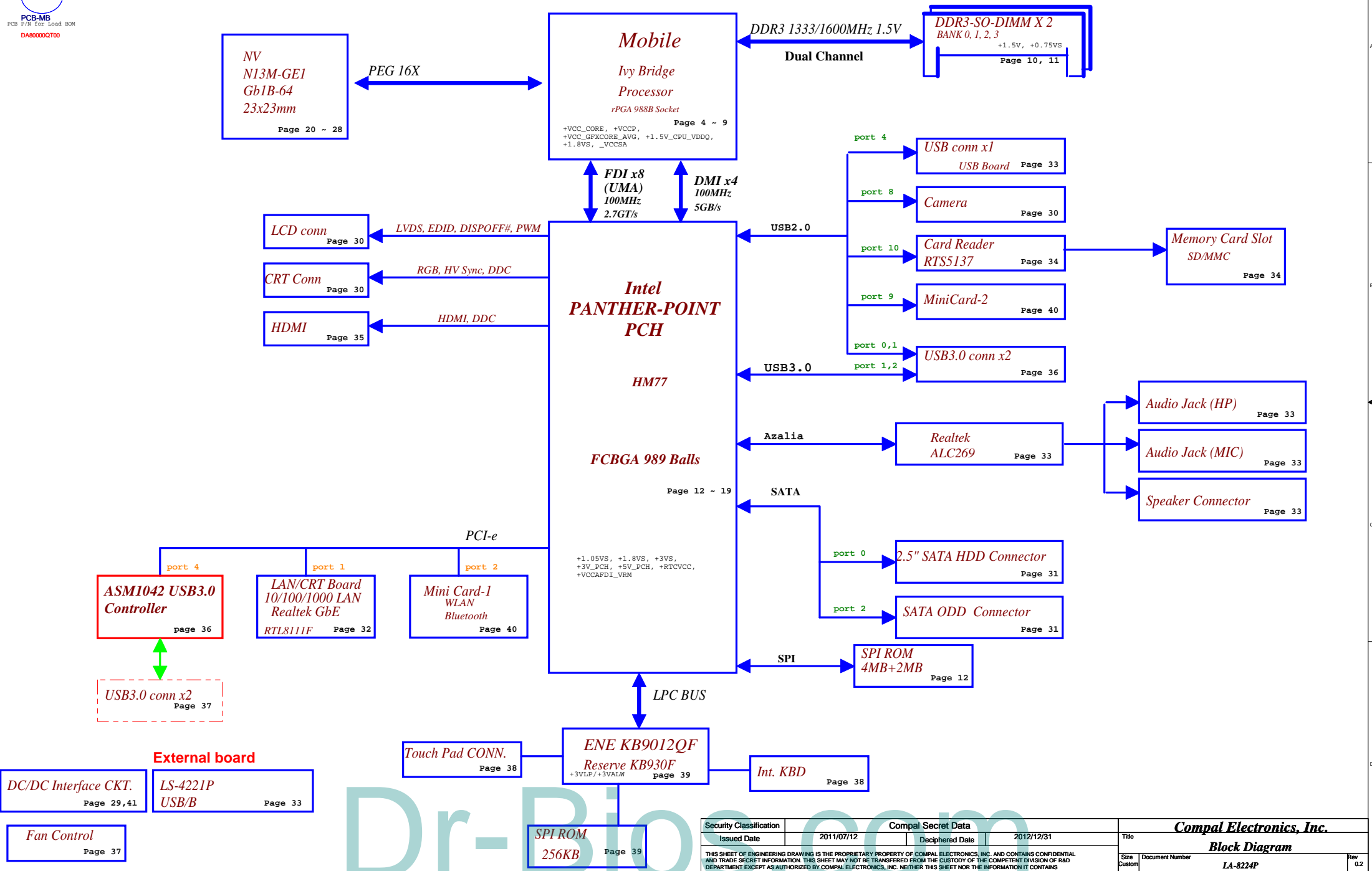
2011.09.28

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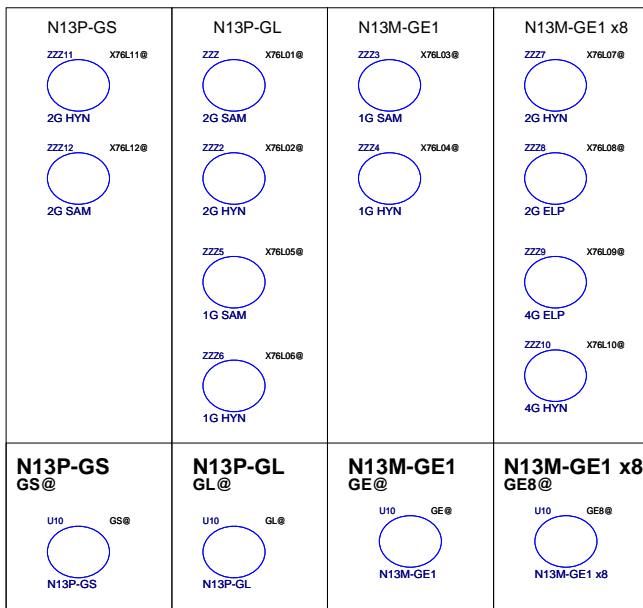


QCL40



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X76@: **VRAMX16X8** **VRAMX16X4** **VRAMX8X8**



CLKOUT	DESTINATION
PCI0	PCH_LOOPBACK
PCI1	EC
PCI2	None
PCI3	LPC Debug Port
PCI4	None

PCH	USB3 PORT	DESTINATION
	1	USB2.0+3.0
	2	USB2.0+3.0
	3	None
	4	None

PCH	USB2 PORT	DESTINATION
	0	USB2.0+3.0
	1	USB2.0+3.0
	2	None
	3	None
	4	JMINI1 (WLAN) Bluetooth
	5	None
	6	None
	7	None
	8	CAMERA
	9	USB2
	10	Card Reader
	11	None
	12	None
13	None	

Voltage Rails

Power Plane	Description	S1	S3	Deep S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A	N/A
BATT+	Battery power supply (12.6V)	N/A	N/A	N/A	N/A
B+	AC or battery power rail for power circuit	N/A	N/A	N/A	N/A
+3VLP	3.3V power rail for 510N power management	ON	ON	ON	ON
+3VALW	3.3V always on power rail	ON	ON	ON	AC/ON; DC/OFF
+LAN_IO	3.3V power rail for ethernet	ON	ON	OFF	OFF
+3VS_WLAN	3.3V power rail for WLAN/BT Combo	ON	OFF	OFF	OFF
+3V_PCH	3.3V power rail for PCH suspend well plane	ON	ON	OFF	OFF
+3VS	3.3V power rail for DDR SPI,PCH,HDD,Audio,Card Reader	ON	OFF	OFF	OFF
+3VSG	3.3V power rail for VGA	ON	OFF	OFF	OFF
+LCDVDD	3.3V power rail for LCD	ON	OFF	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON	AC/ON; DC/OFF
+5V_PCH	5V power rail for PCH suspend well plane	ON	ON	OFF	OFF
+5VS	5V power rail for HDD,AUDIO,FAN,Touch PAD	ON	OFF	OFF	OFF
+5VS_ODD	5V power rail for SATA ODD	ON	OFF	OFF	OFF
+1.8VS	1.8V power rail for CPU,PCH	ON	OFF	OFF	OFF
+1.05VS	1.05V power rail for PCH	ON	OFF	OFF	OFF
+VCCP	1.05V power rail for CPU VCCIO,PCH	ON	OFF	OFF	OFF
+1.05VSG	1.05V power rail for N13P	ON	OFF	OFF	OFF
+1.5V	1.5V power rail for DDR3 system memory	ON	ON	ON	OFF
+1.5V_CPU_VDDQ	1.5V power rail CPU VDDQ	ON	OFF	OFF	OFF
+1.5VSG	1.5V power rail for N13P,VRAM	ON	OFF	OFF	OFF
+1.5VS	1.5V power rail for PCH,WLAN/BT combo	ON	OFF	OFF	OFF
+0.75VS	0.75V power rail for DDR VREF	ON	OFF	OFF	OFF
+VCCSA	VCCSA for CPU system agent	ON	OFF	OFF	OFF
+VCC_CORE	CORE Voltage for CPU	ON	OFF	OFF	OFF
+VCC_GFXCORE_AXG	1.5V power rail for N13P,VRAM	ON	OFF	OFF	OFF
+VGA_CORE	CORE Voltage for N13P Graphics ON OFF OFF	ON	OFF	OFF	OFF

DIS@: VGA componet
GE8@: N13M-GE1_GB1b

IU3@: USB3.0 by PCH
USB30@:USB3.0 controller IC

9012@: EC(ENE 9012 chip)
930@: EC(ENE 930 chip)
XDP@: Intel debug port

AI@: AI Charger
NAI@: Non AI Charger

SMBUS Control Table

	SOURCE	MINI1	BATT	PCH	EC	SODIMM	DGPU
EC_SMB_CK1 EC_SMB_DA1	KB930	X	V	X	X	X	X
EC_SMB_CK2 EC_SMB_DA2	KB930	X	X	V	X	X	V
PCH_SMBCLK PCH_SMBDATA	PCH	V	X	X	X	V	X
PCH_SMLCLK PCH_SMLDATA	PCH	X	X	X	V	X	V

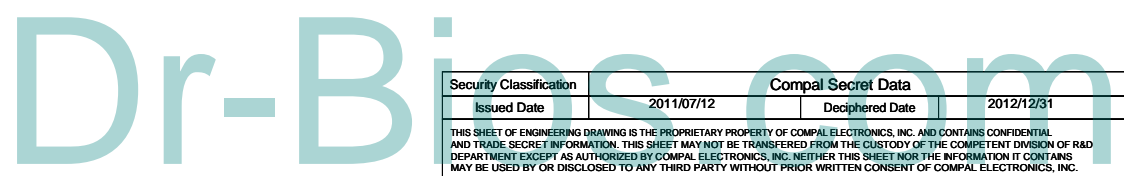
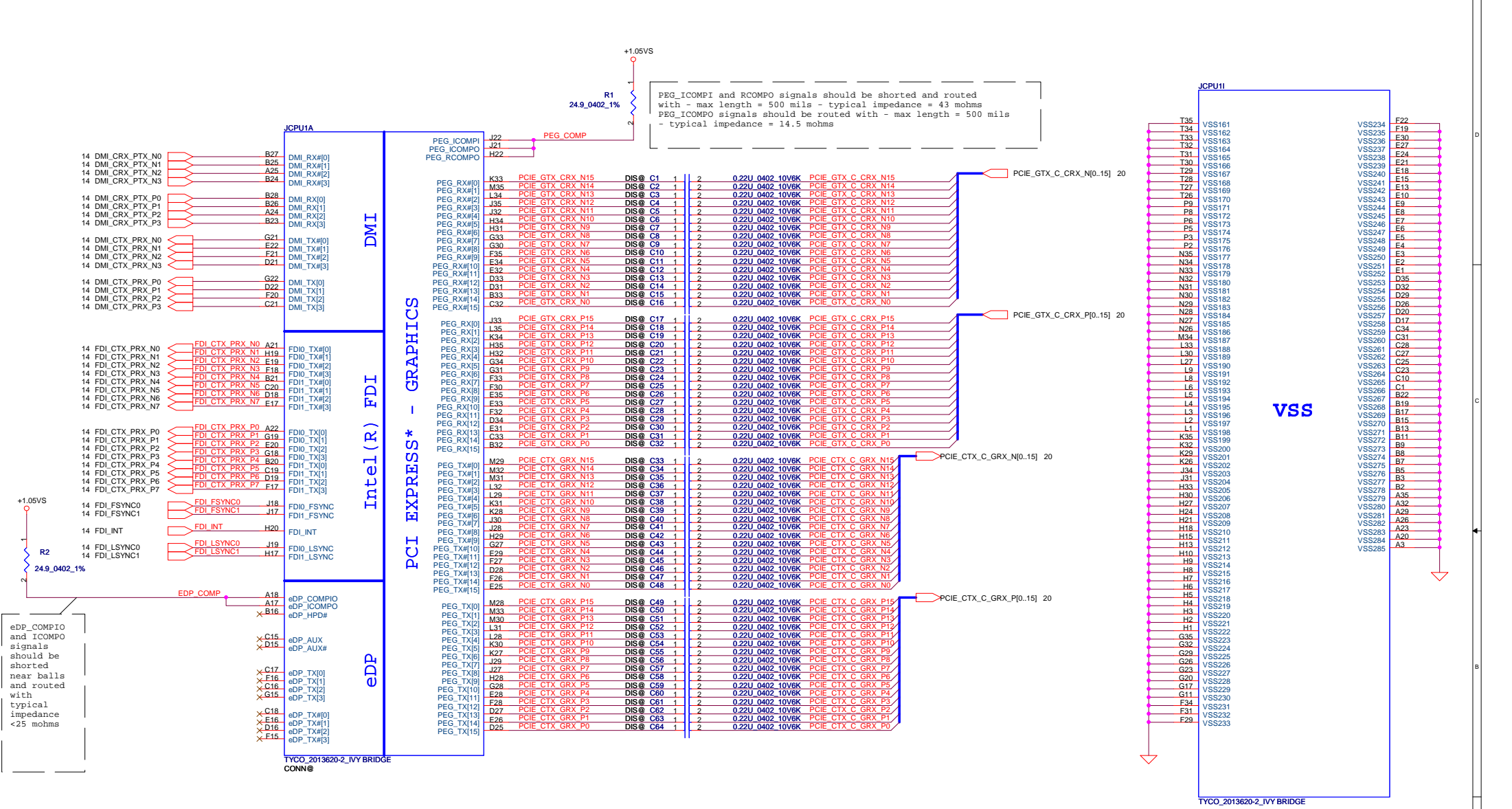
CLK	DIFFERENTIAL	DESTINATION	FLEX CLOCKS	DESTINATION
	CLKOUT_PCIE0	10/100/1G LAN	CLKOUTFLEX0	CLK_SD_48M
	CLKOUT_PCIE1	MINI CARD WLAN	CLKOUTFLEX1	None
	CLKOUT_PCIE2	None	CLKOUTFLEX2	None
	CLKOUT_PCIE3	USB3.0 controller	CLKOUTFLEX3	None
	CLKOUT_PCIE4	None		
	CLKOUT_PCIE5	None		
	CLKOUT_PCIE6	None		
	CLKOUT_PCIE7	None		
CLKOUT_PEG_B	None			

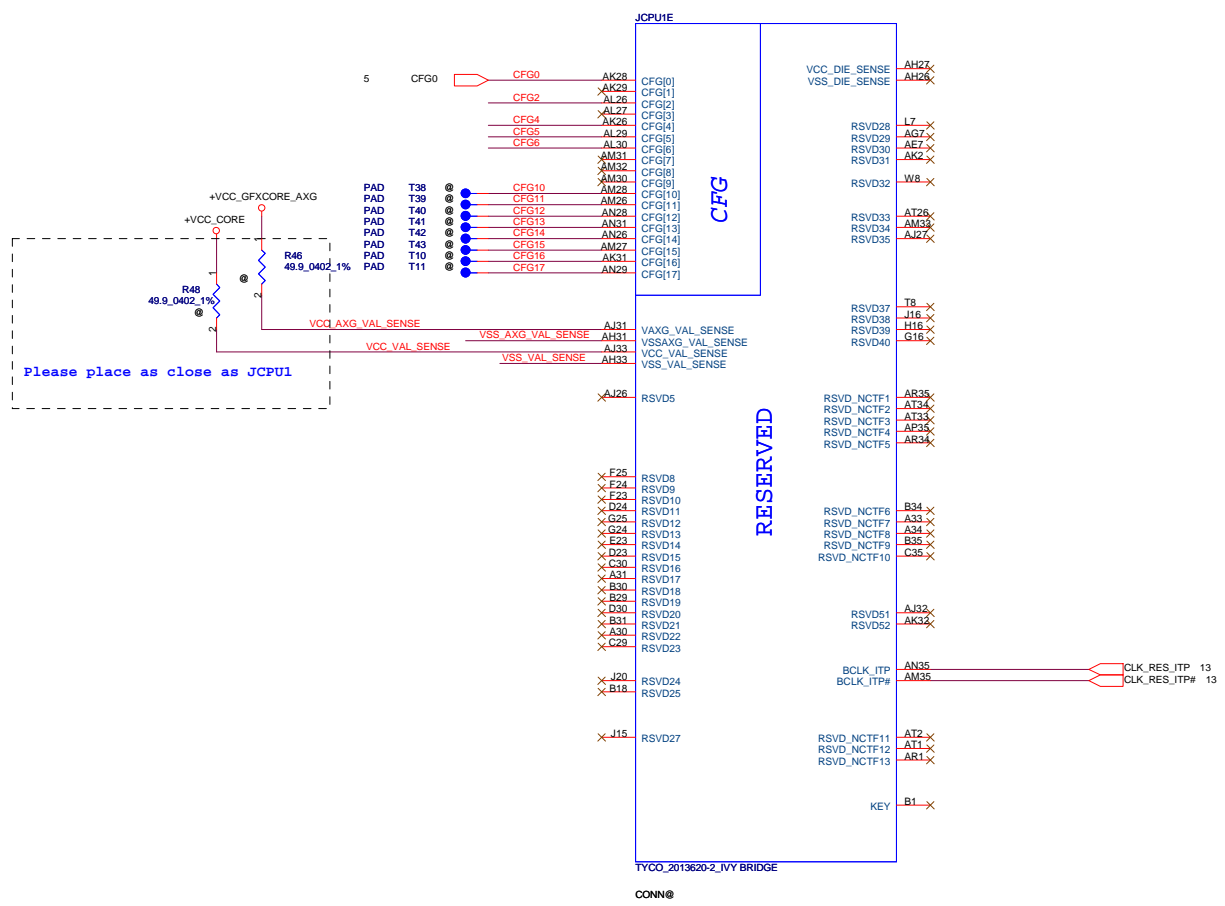
Symbol Note :



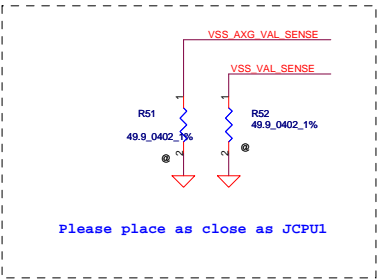
SATA	DESTINATION
SATA0	HDD
SATA1	None
SATA2	ODD
SATA3	None
SATA4	None
SATA5	None

PCI EXPRESS	DESTINATION
Lane 1	10/100/1G LAN
Lane 2	MINI CARD WLAN
Lane 3	None
Lane 4	USB3.0 controller
Lane 5	None
Lane 6	None
Lane 7	None
Lane 8	None



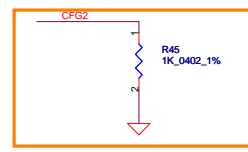


Please place as close as JCPU1



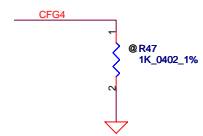
Please place as close as JCPU1

CFG Straps for Processor



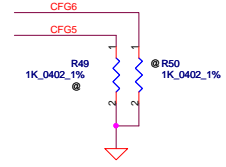
PEG Static Lane Reversal - CFG2 is for the 16x

CFG2	1: (Default) Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed
------	--



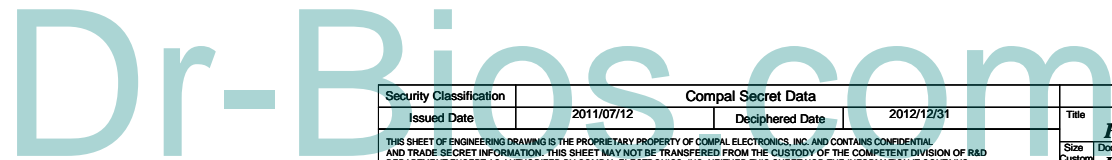
Display Port Presence Strap

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
------	--

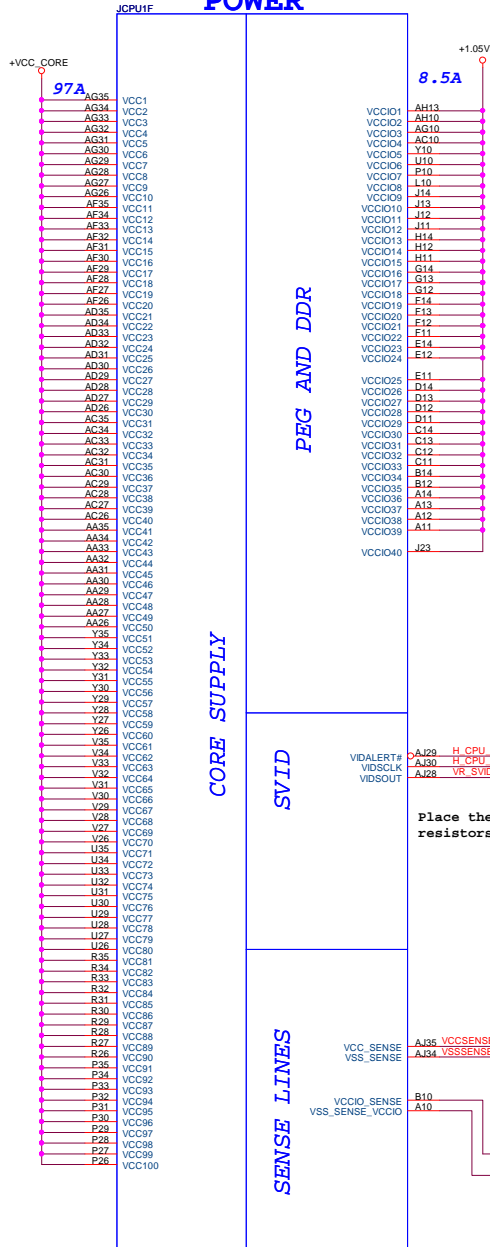


PCIe Port Bifurcation Straps

CFG[6:5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled
----------	--



POWER

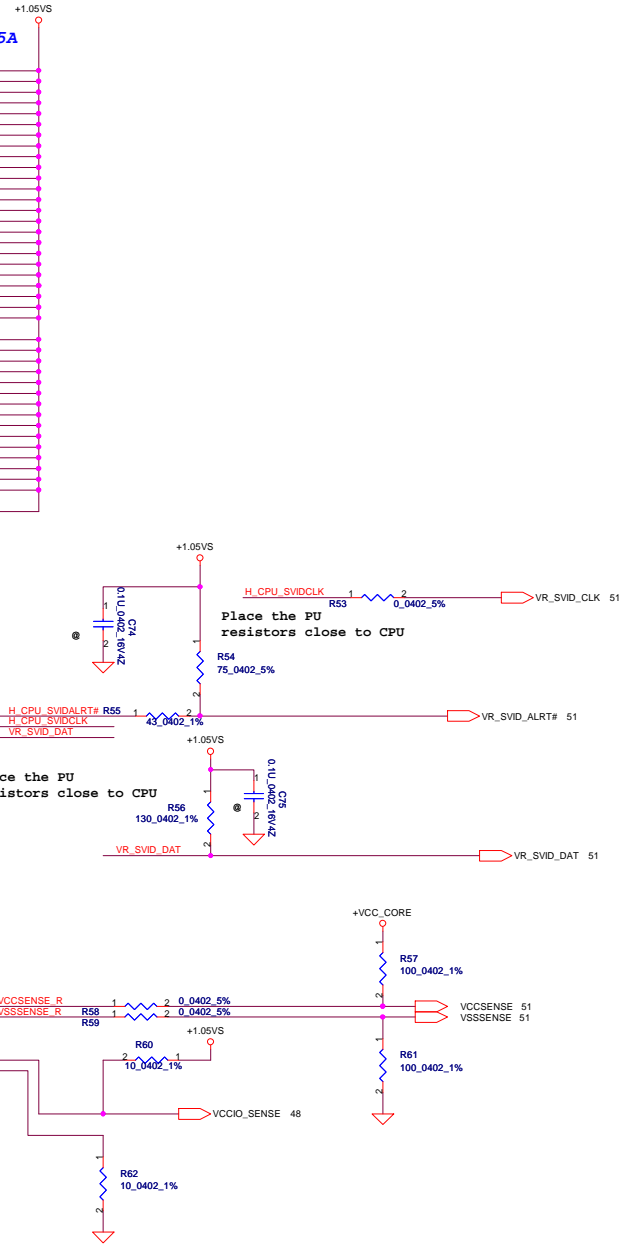


PEG AND DDR

CORE SUPPLY

SVID

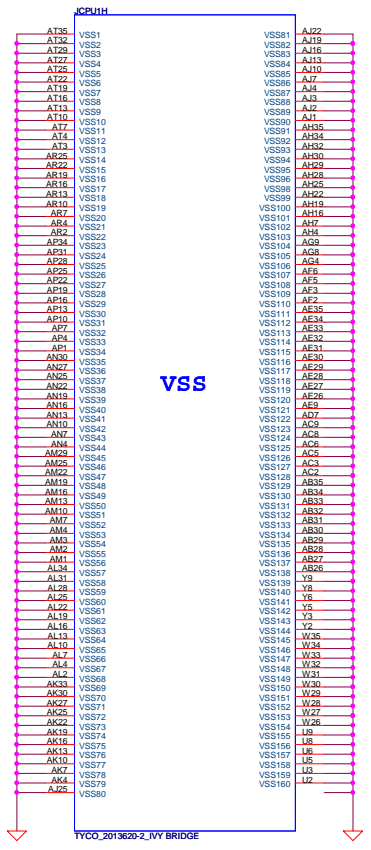
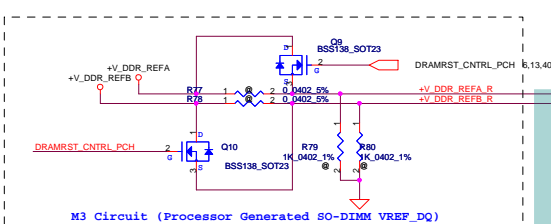
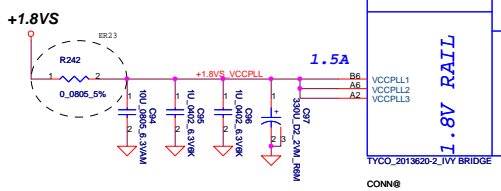
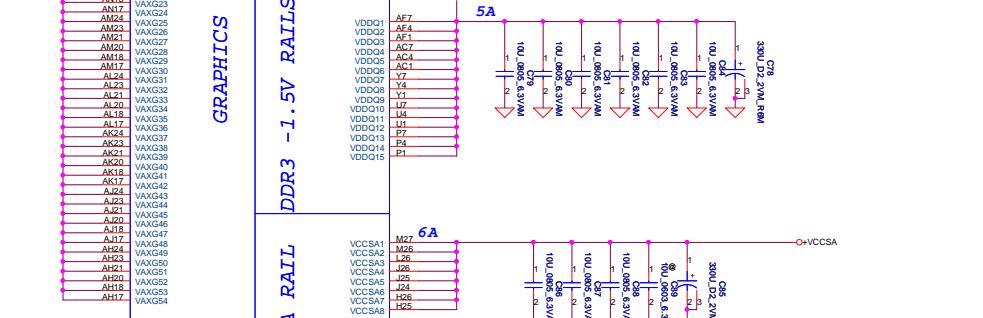
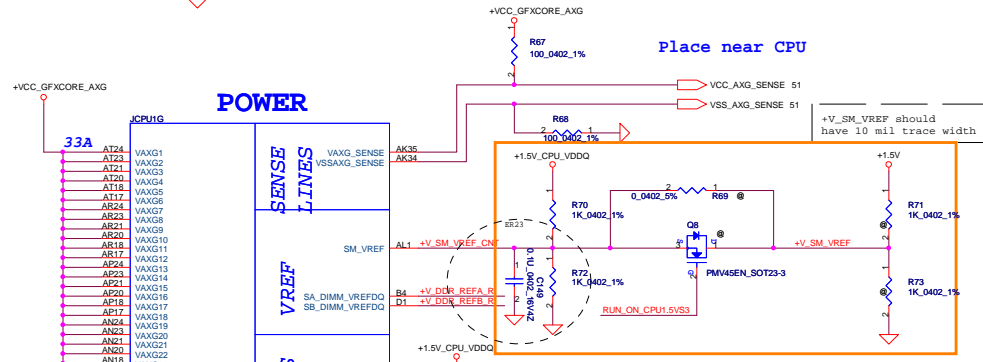
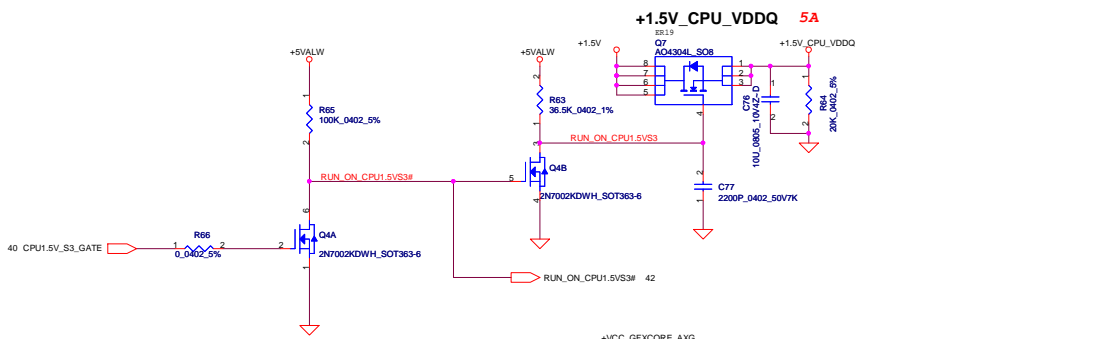
SENSE LINES



TYCO_2013620-2_IVY BRIDGE

CONN@

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POWER

SENSE LINES

VREF

DDR - 1.5V RAILS

SA RAIL

MISC

1.8V RAIL

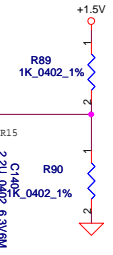
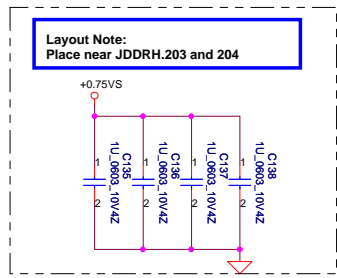
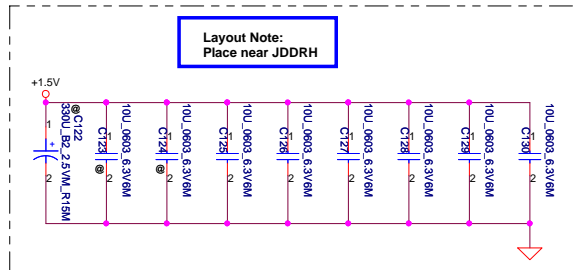
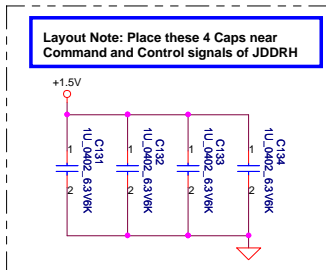
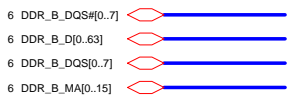
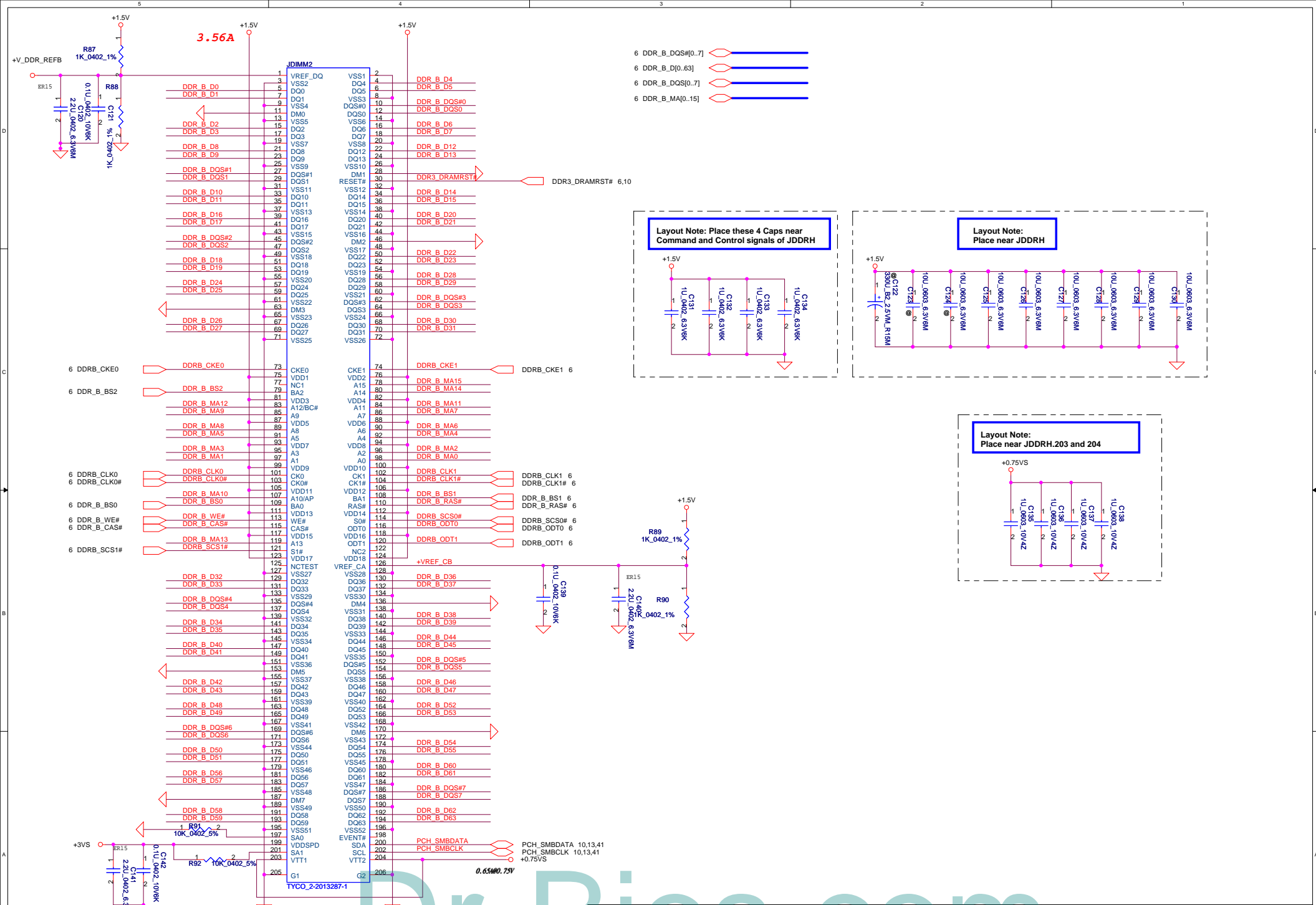
GRAPHICS

JCPUIG

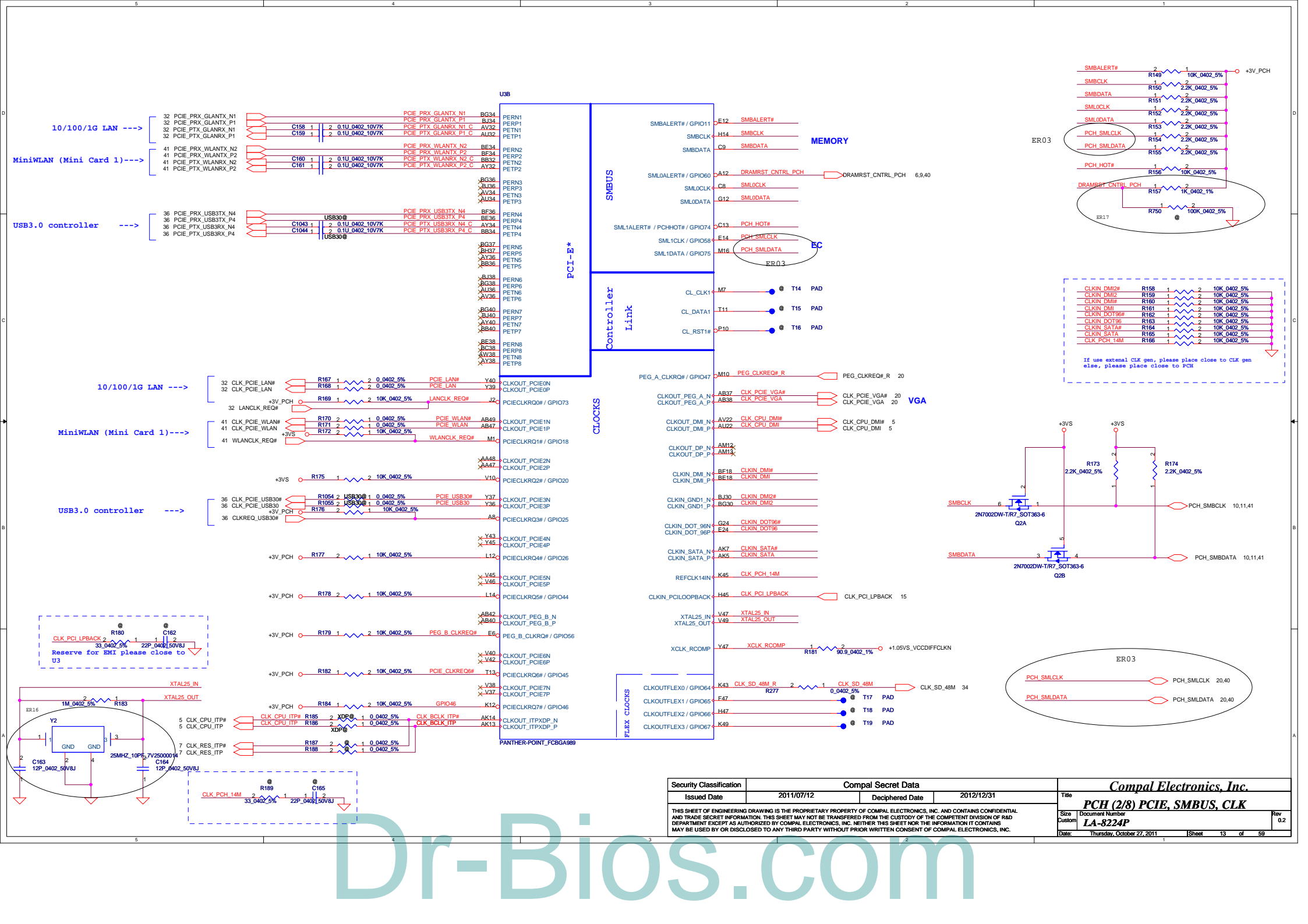
Place near CPU

VSS

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Compal Electronics, Inc.			PROCESSOR(6/6) PWR,VSS	
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10/100/1G LAN ---->

MiniWLAN (Mini Card 1)---->

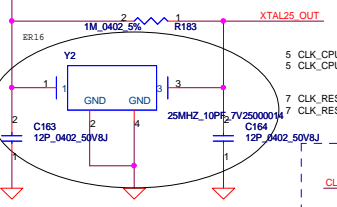
USB3.0 controller ---->

10/100/1G LAN ---->

MiniWLAN (Mini Card 1)---->

USB3.0 controller ---->

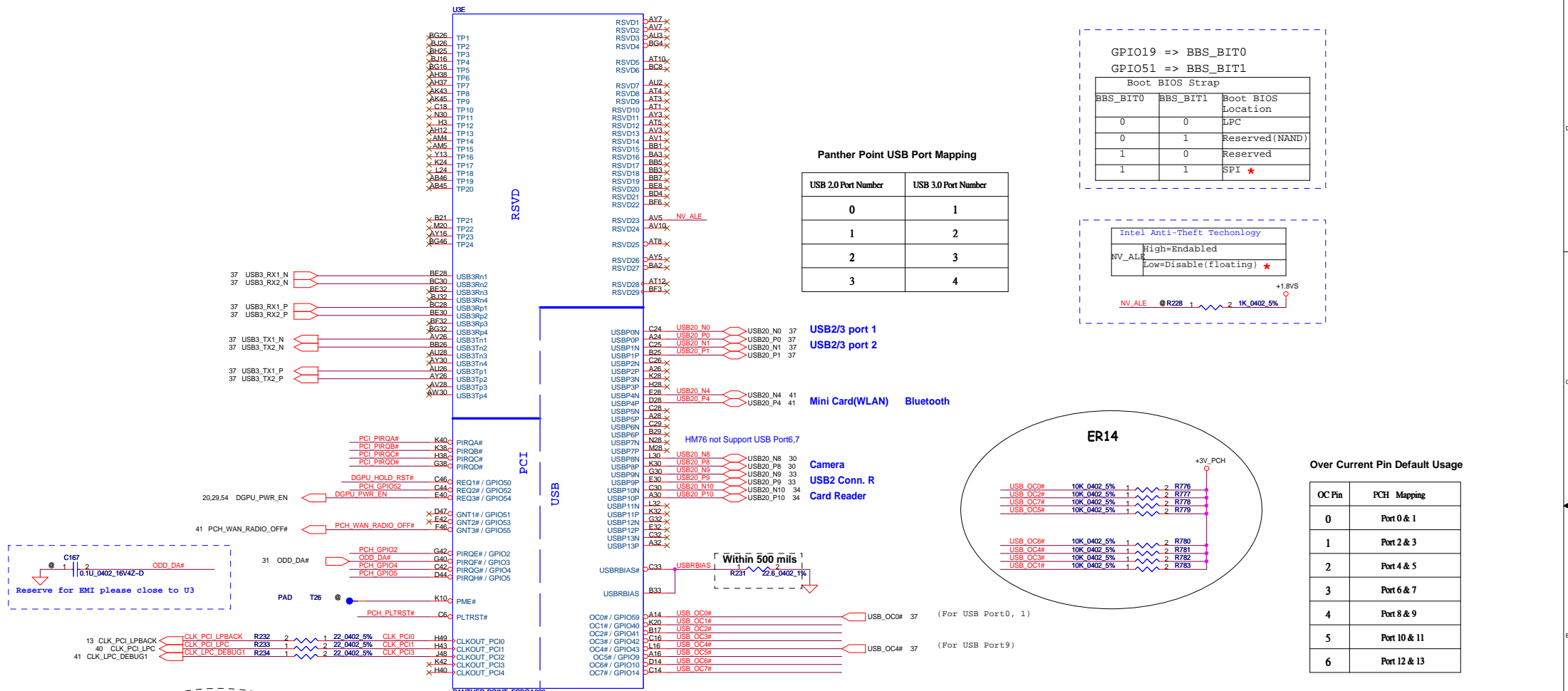
CLK_PCI_LPBACK 2 33.0402_5%
 Reserve for EMI please close to U3



CLK_PCH_14M 2 33.0402_5%
 Reserve for EMI please close to U3

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Panther Point USB Port Mapping

USB 2.0 Port Number	USB 3.0 Port Number
0	1
1	2
2	3
3	4

GPIO19 => BBS_BIT0
GPIO51 => BBS_BIT1

Boot BIOS Strap		
BBS_BIT0	BBS_BIT1	Boot BIOS Location
0	0	LPC
0	1	Reserved(NAND)
1	0	Reserved
1	1	SPI *

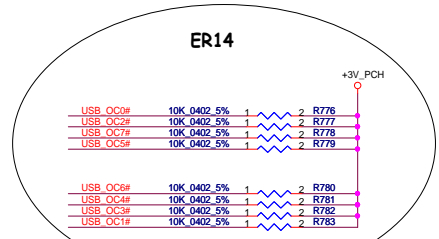
Intel Anti-Theft Technology
NV_ALE High=Enabled
NV_ALE Low=Disable(floating) *

NV_ALE @ R228 1 1K 0.402 5% +1.8VS

USB2/3 port 1
USB2/3 port 2

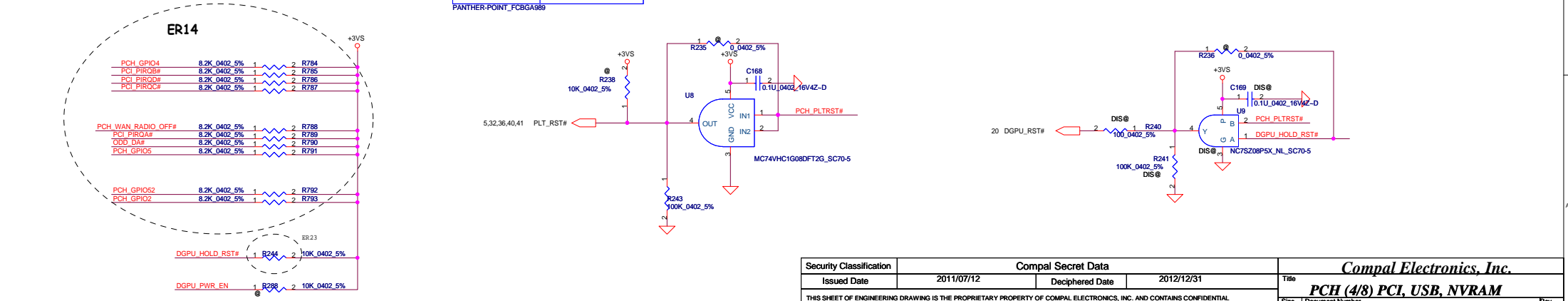
Mini Card(WLAN) Bluetooth

Camera
USB2 Conn. R
Card Reader

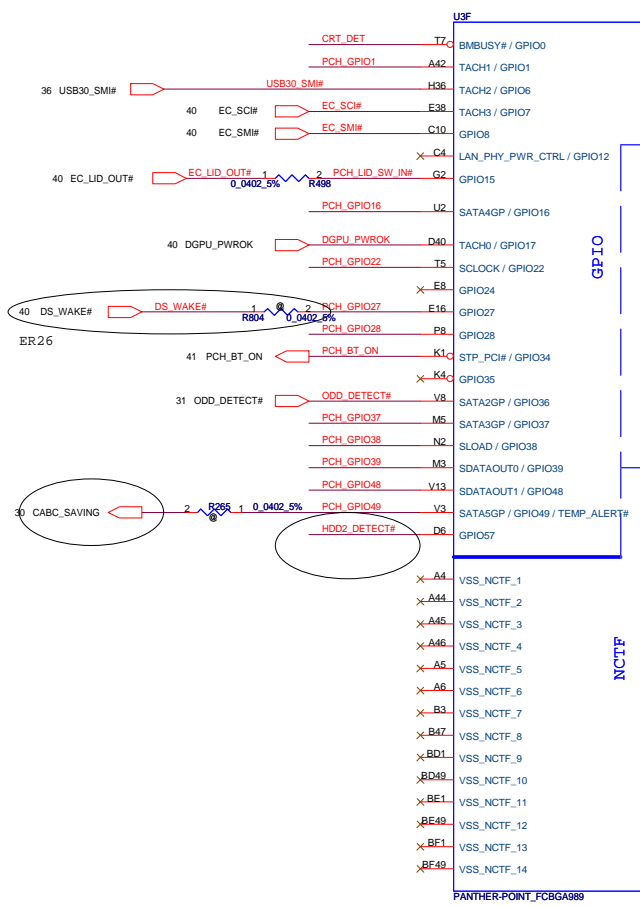
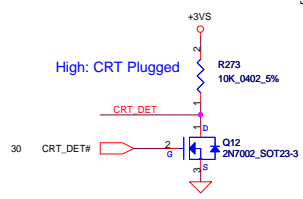
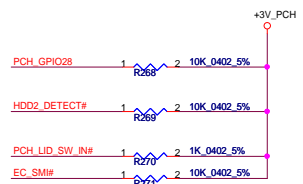
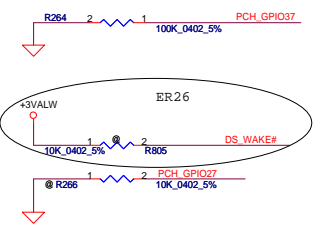
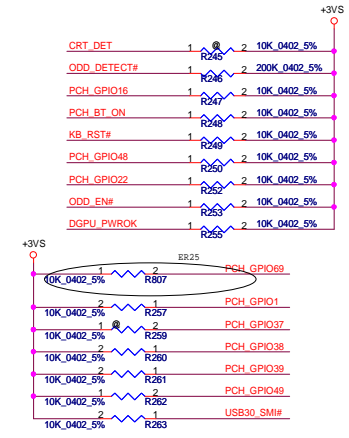


Over Current Pin Default Usage

OC Pin	PCH Mapping
0	Port 0 & 1
1	Port 2 & 3
2	Port 4 & 5
3	Port 6 & 7
4	Port 8 & 9
5	Port 10 & 11
6	Port 12 & 13

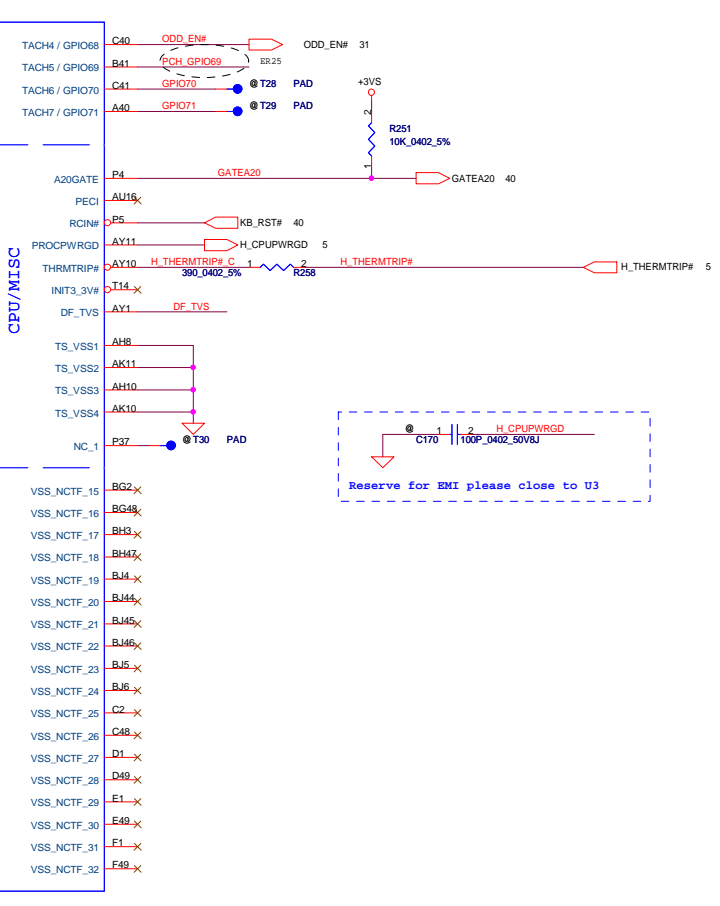


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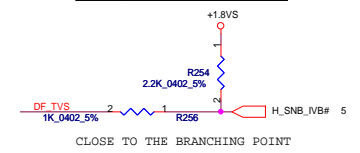


GPIO28
On-Die PLL Voltage Regulator
This signal has a weak internal pull up

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

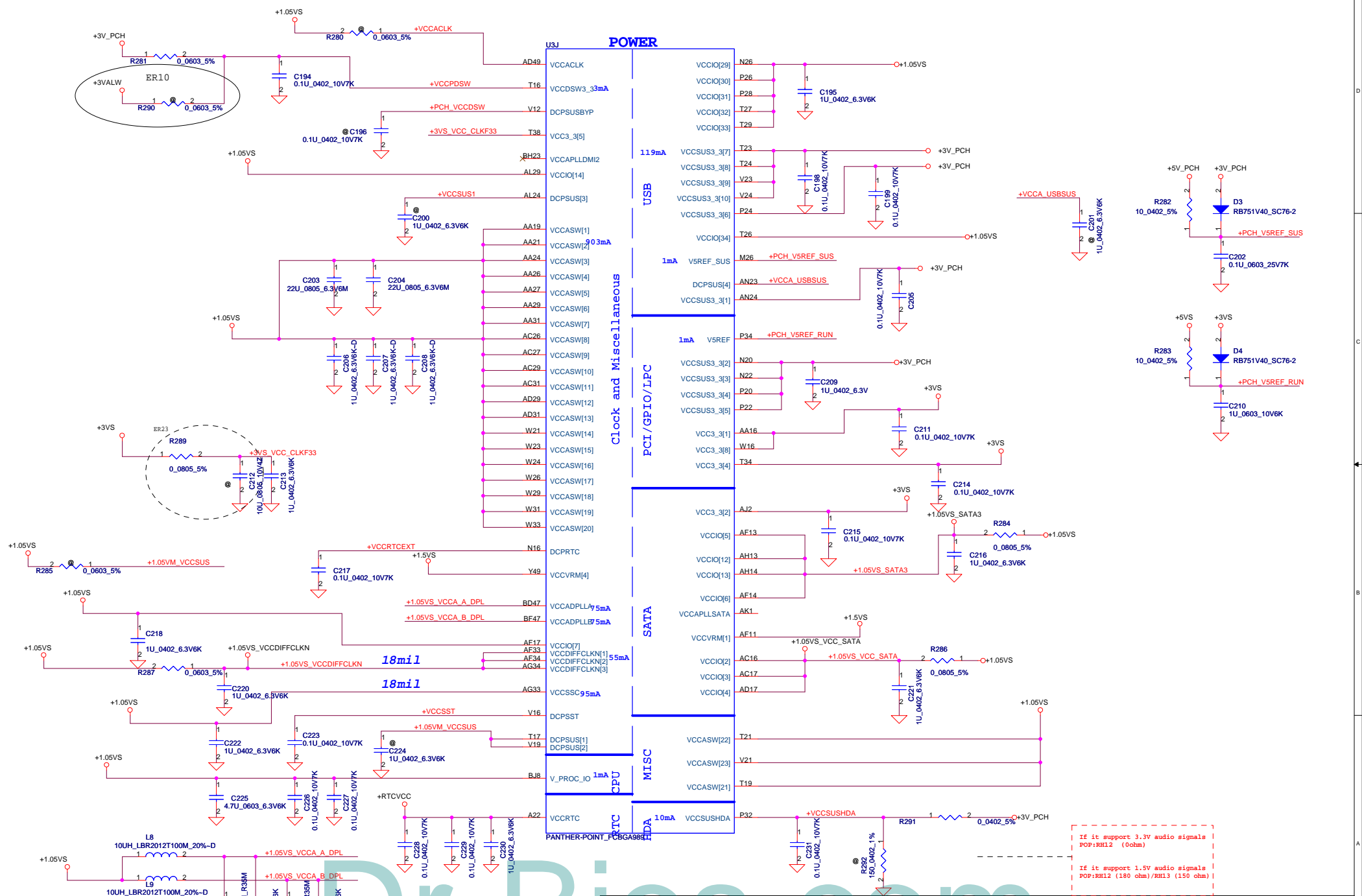


DMI Termination Voltage	
DF_TVS	Set to Vcc when HIGH
DF_TVS	Set to Vas when LOW



Reserve for EMI please close to U3

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If it support 3.3V audio signals
POP:RH12 (0ohm)

If it support 1.5V audio signals
POP:RH12 (180 ohm)/RH13 (150 ohm)

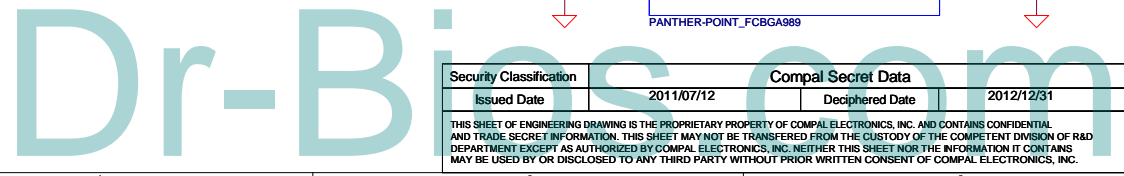
Compal Electronics, Inc.		
PCH (7/8) PWR		
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U3H		
H5	VSS[0]	
AA17	VSS[1]	VSS[80] AK38
AA2	VSS[2]	VSS[81] AK4
AA3	VSS[3]	VSS[82] AK42
AA33	VSS[4]	VSS[83] AK46
AA34	VSS[5]	VSS[84] AK6
AB11	VSS[6]	VSS[85] AL16
AB14	VSS[7]	VSS[86] AL17
AB39	VSS[8]	VSS[87] AL19
AB4	VSS[9]	VSS[88] AL2
AB43	VSS[10]	VSS[89] AL21
AB5	VSS[11]	VSS[90] AL23
AB7	VSS[12]	VSS[91] AL26
AC19	VSS[13]	VSS[92] AL27
AC2	VSS[14]	VSS[93] AL31
AC21	VSS[15]	VSS[94] AL33
AC24	VSS[16]	VSS[95] AL34
AC33	VSS[17]	VSS[96] AL48
AC34	VSS[18]	VSS[97] AM11
AD12	VSS[19]	VSS[98] AM14
AD10	VSS[20]	VSS[99] AM36
AD11	VSS[21]	VSS[100] AM39
AD12	VSS[22]	VSS[101] AM43
AD13	VSS[23]	VSS[102] AM45
AD19	VSS[24]	VSS[103] AM46
AD24	VSS[25]	VSS[104] AM7
AD26	VSS[26]	VSS[105] AN2
AD27	VSS[27]	VSS[106] AN29
AD33	VSS[28]	VSS[107] AN3
AD34	VSS[29]	VSS[108] AN31
AD36	VSS[30]	VSS[109] AP12
AD37	VSS[31]	VSS[110] AP19
AD38	VSS[32]	VSS[111] AP28
AD39	VSS[33]	VSS[112] AP30
AD4	VSS[34]	VSS[113] AP32
AD40	VSS[35]	VSS[114] AP38
AD42	VSS[36]	VSS[115] AP4
AD43	VSS[37]	VSS[116] AP42
AD45	VSS[38]	VSS[117] AP46
AD46	VSS[39]	VSS[118] AP6
AD8	VSS[40]	VSS[119] AR2
AE2	VSS[41]	VSS[120] AR48
AE3	VSS[42]	VSS[121] AT11
AF10	VSS[43]	VSS[122] AT13
AF12	VSS[44]	VSS[123] AT18
AD14	VSS[45]	VSS[124] AT22
AD16	VSS[46]	VSS[125] AT26
AF16	VSS[47]	VSS[126] AT28
AF19	VSS[48]	VSS[127] AT30
AF24	VSS[49]	VSS[128] AT32
AF26	VSS[50]	VSS[129] AT34
AF27	VSS[51]	VSS[130] AT39
AF29	VSS[52]	VSS[131] AT42
AF31	VSS[53]	VSS[132] AT46
AF38	VSS[54]	VSS[133] AT7
AF4	VSS[55]	VSS[134] AU24
AF42	VSS[56]	VSS[135] AU00
AF46	VSS[57]	VSS[136] AV16
AF5	VSS[58]	VSS[137] AV20
AF7	VSS[59]	VSS[138] AV24
AF8	VSS[60]	VSS[139] AV30
AG19	VSS[61]	VSS[140] AV38
AG2	VSS[62]	VSS[141] AV4
AG31	VSS[63]	VSS[142] AV43
AG48	VSS[64]	VSS[143] AV8
AH11	VSS[65]	VSS[144] AW14
AH3	VSS[66]	VSS[145] AW18
AH36	VSS[67]	VSS[146] AW2
AH40	VSS[68]	VSS[147] AW22
AH42	VSS[69]	VSS[148] AW28
AH46	VSS[70]	VSS[149] AW28
AH7	VSS[71]	VSS[150] AW32
AJ19	VSS[72]	VSS[151] AW34
AJ21	VSS[73]	VSS[152] AW38
AJ24	VSS[74]	VSS[153] AW40
AJ24	VSS[75]	VSS[154] AW48
AJ33	VSS[76]	VSS[155] AV11
AJ34	VSS[77]	VSS[156] AY12
AK12	VSS[78]	VSS[157] AY22
AK3	VSS[79]	VSS[158] AY28

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U3I		
AY4	VSS[159]	VSS[259] H46
AY42	VSS[160]	VSS[260] K18
AY48	VSS[161]	VSS[261] K26
AY8	VSS[162]	VSS[262] K39
B11	VSS[163]	VSS[263] K46
B15	VSS[164]	VSS[264] K7
B19	VSS[165]	VSS[265] L18
B23	VSS[166]	VSS[266] L2
B27	VSS[167]	VSS[267] L20
B31	VSS[168]	VSS[268] L26
B35	VSS[169]	VSS[269] L28
B39	VSS[170]	VSS[270] L36
B7	VSS[171]	VSS[271] L48
F45	VSS[172]	VSS[272] M12
BB12	VSS[173]	VSS[273] M16
BB20	VSS[174]	VSS[274] M22
BB22	VSS[175]	VSS[275] M24
BB24	VSS[176]	VSS[276] M30
BB28	VSS[177]	VSS[277] M32
BB30	VSS[178]	VSS[278] M34
BB38	VSS[179]	VSS[279] M38
BB4	VSS[180]	VSS[280] M4
BB48	VSS[181]	VSS[281] M42
BC14	VSS[182]	VSS[282] M46
BC18	VSS[183]	VSS[283] M8
BC18	VSS[184]	VSS[284] M18
BC2	VSS[185]	VSS[285] N18
BC22	VSS[186]	VSS[286] P30
BC26	VSS[187]	VSS[287] N47
BC32	VSS[188]	VSS[288] P11
BC34	VSS[189]	VSS[289] P18
BC36	VSS[190]	VSS[290] P32
BC40	VSS[191]	VSS[291] P43
BC42	VSS[192]	VSS[292] P40
BC48	VSS[193]	VSS[293] P47
BD46	VSS[194]	VSS[294] R2
BD5	VSS[195]	VSS[295] R48
BE22	VSS[196]	VSS[296] T12
BE26	VSS[197]	VSS[297] T31
BE40	VSS[198]	VSS[298] T37
BF10	VSS[199]	VSS[299] T4
BF12	VSS[200]	VSS[300] T47
BF16	VSS[201]	VSS[301] W34
BF20	VSS[202]	VSS[302] T46
BF22	VSS[203]	VSS[303] T8
BF24	VSS[204]	VSS[304] V11
BF26	VSS[205]	VSS[305] V17
BF28	VSS[206]	VSS[306] V26
BF3	VSS[207]	VSS[307] V27
BF30	VSS[208]	VSS[308] V29
BF38	VSS[209]	VSS[309] V36
BF40	VSS[210]	VSS[310] V39
BF8	VSS[211]	VSS[311] V43
BG17	VSS[212]	VSS[312] V7
BG21	VSS[213]	VSS[313] W17
BG33	VSS[214]	VSS[314] W19
BG44	VSS[215]	VSS[315] W2
BG8	VSS[216]	VSS[316] W27
BH11	VSS[217]	VSS[317] W48
BH15	VSS[218]	VSS[318] Y12
BH17	VSS[219]	VSS[319] Y38
BH19	VSS[220]	VSS[320] Y4
H10	VSS[221]	VSS[321] Y46
BH27	VSS[222]	VSS[322] Y8
BH31	VSS[223]	VSS[323] Y8
BH33	VSS[224]	VSS[324] Y8
BH35	VSS[225]	VSS[325] Y8
BH39	VSS[226]	VSS[326] Y8
BH43	VSS[227]	VSS[327] Y8
BH7	VSS[228]	VSS[328] Y8
D3	VSS[229]	VSS[329] Y8
D12	VSS[230]	VSS[330] Y8
D16	VSS[231]	VSS[331] Y8
D18	VSS[232]	VSS[332] Y8
D24	VSS[233]	VSS[333] Y8
D26	VSS[234]	VSS[334] Y8
D30	VSS[235]	VSS[335] Y8
D32	VSS[236]	VSS[336] Y8
D34	VSS[237]	VSS[337] Y8
D38	VSS[238]	VSS[338] Y8
D38	VSS[239]	VSS[339] Y8
D42	VSS[240]	VSS[340] Y8
D8	VSS[241]	VSS[341] Y8
E18	VSS[242]	VSS[342] Y8
E26	VSS[243]	VSS[343] Y8
G18	VSS[244]	VSS[344] Y8
G20	VSS[245]	VSS[345] Y8
G26	VSS[246]	VSS[346] Y8
G28	VSS[247]	VSS[347] Y8
G36	VSS[248]	VSS[348] Y8
G48	VSS[249]	VSS[349] Y8
H12	VSS[250]	VSS[350] Y8
H18	VSS[251]	VSS[351] Y8
H24	VSS[252]	VSS[352] Y8
H26	VSS[253]	VSS[353] Y8
H30	VSS[254]	VSS[354] Y8
H32	VSS[255]	VSS[355] Y8
H34	VSS[256]	VSS[356] Y8
F3	VSS[257]	VSS[357] Y8
F3	VSS[258]	VSS[358] Y8

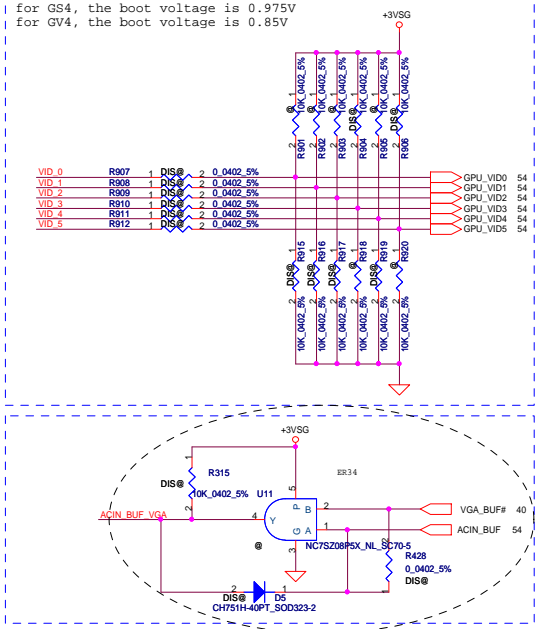
PANTHER-POINT_FCBGA989



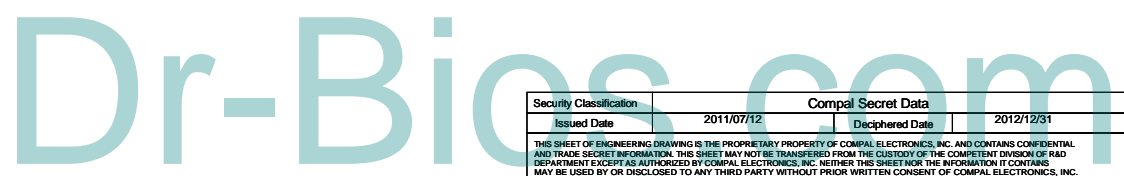
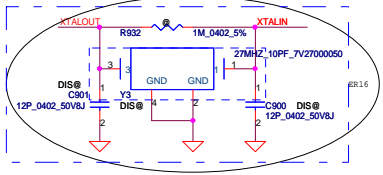
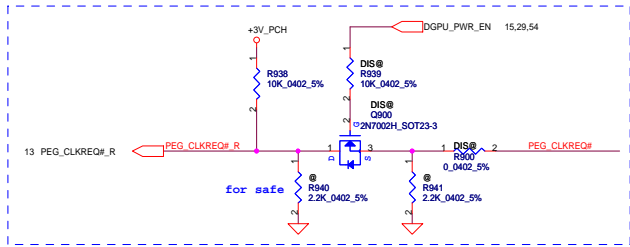
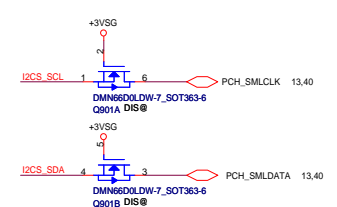
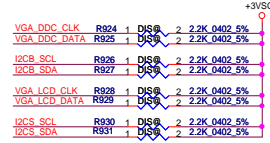
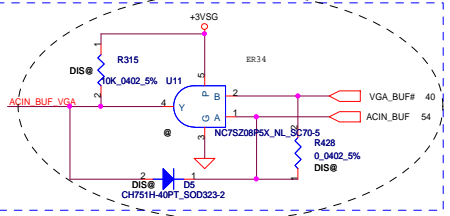
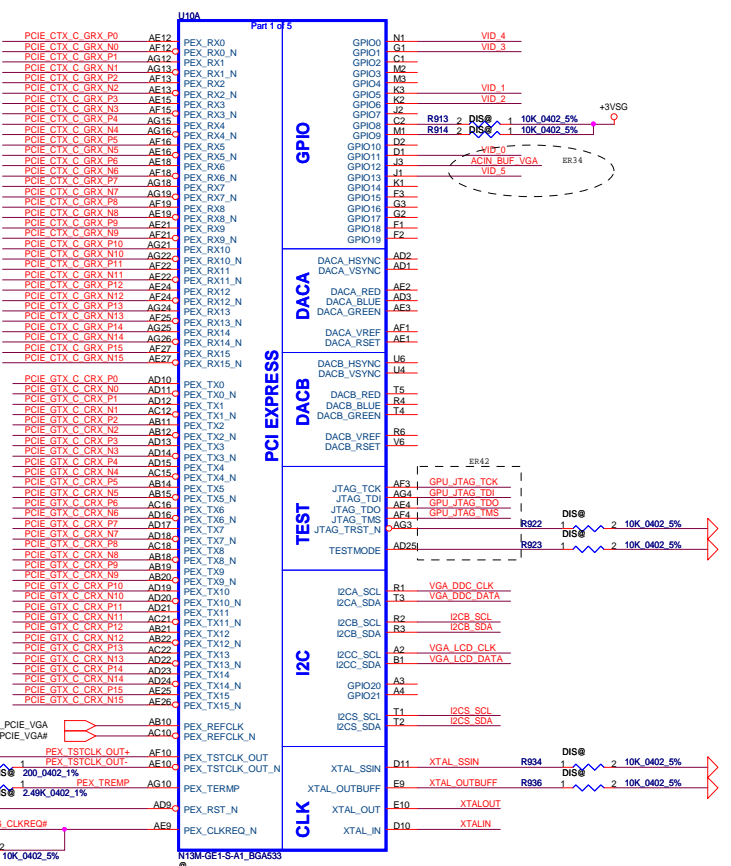
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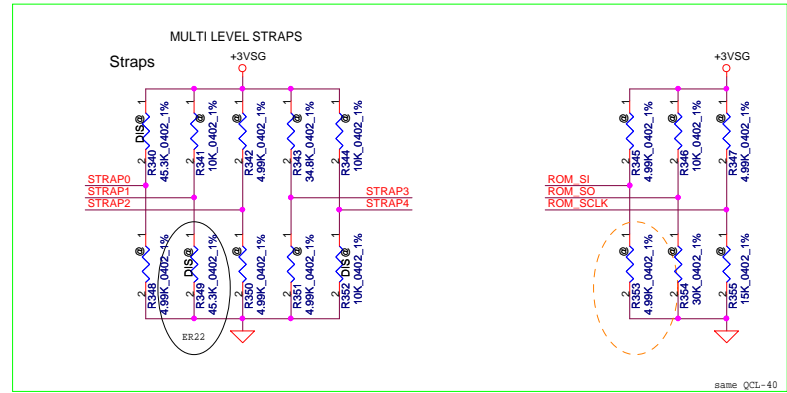
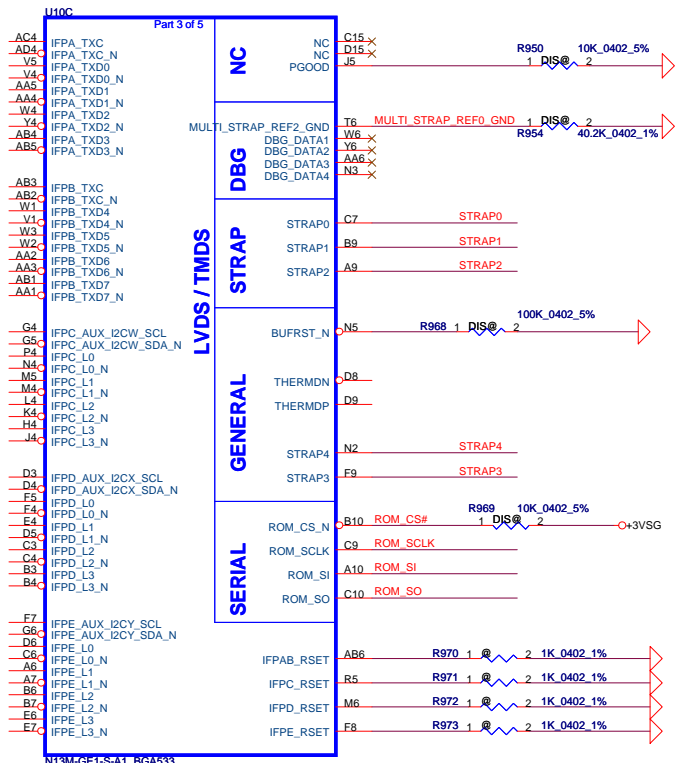
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4	PCIE_GTX_C_CRX_N0[15]	PCIE GTX C CRX N0_15
4	PCIE_CTX_C_CRX_P0[15]	PCIE CTX C GRX P0_15
4	PCIE_CTX_C_CRX_N0[15]	PCIE CTX C GRX N0_15

for GS4, the boot voltage is 0.975V
for GV4, the boot voltage is 0.85V



GPIO	I/O	USAGE
GPIO0	O	GPU_VID4
GPIO1	O	GPU_VID3
GPIO2	O	LCD_BL_PWM
GPIO3	O	LCD_VDD
GPIO4	O	LCD_BLEN
GPIO5	O	GPU_VID1
GPIO6	O	GPU_VID2
GPIO7	O	3D Vision
GPIO8	I/O	OVERT#
GPIO9	I/O	ALERT#
GPIO10	O	MEM_VREF_CTL
GPIO11	O	GPU_VID0
GPIO12	I	PWR_LEVEL
GPIO13	O	GPU_VID5
GPIO14	I	HPD_AB
GPIO15	I	HPD_C
GPIO16	O	MEM_VDD_CTL
GPIO17	I	HPD_D
GPIO18	I	HPD_E
GPIO19	I	HPD_F
GPIO20		Reserved
GPIO21		Reserved





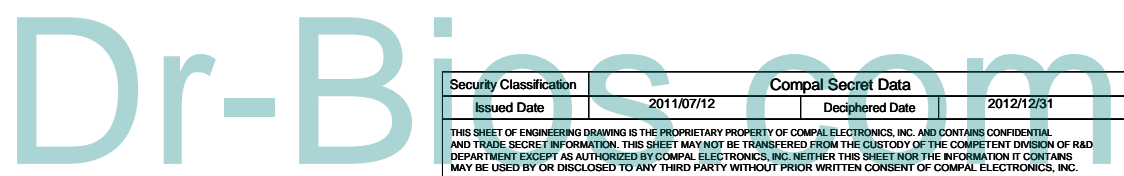
Need check with NVIDIA
For N13M-GE1 GB1b-64_256Mx8 strap table

GPU	Frenq.	Memory Size	Memory Config	strap0	strap1	strap2	strap3	strap4	ROM_SI	ROM_SO	ROM_SCLK
N13M-GE1	667+ MHz	256M* 8* 8 2GB	HYNIX SA000056000 H5TQ2G83CFR-H9C	R PH 45K	R PL 45K	R PH 5K	R PL 5K	R PL 10K	R PL 10K	R PL 30K	R PH 5K
N13M-GE1	667+ MHz	256M* 8* 8 2GB	ELPIDA SA000056P00 EDJ2108BCCSE-DJ-F	R PH 45K	R PL 45K	R PH 5K	R PL 5K	R PL 10K	R PL 5K	R PL 30K	R PH 5K
N13M-GE1	667+ MHz	512M* 8* 8 4GB	HYNIX SA00005BL00 H5TQ4G83MFR-PBC	R PH 45K	R PL 45K	R PH 5K	R PL 5K	R PL 10K	R PL 15K	R PL 30K	R PH 5K
N13M-GE1	667+ MHz	512M* 8* 8 4GB	ELPIDA SA00005AA00 EDJ4208BBBG-GN-F	R PH 45K	R PL 45K	R PH 5K	R PL 5K	R PL 10K	R PL 20K	R PL 30K	R PH 5K

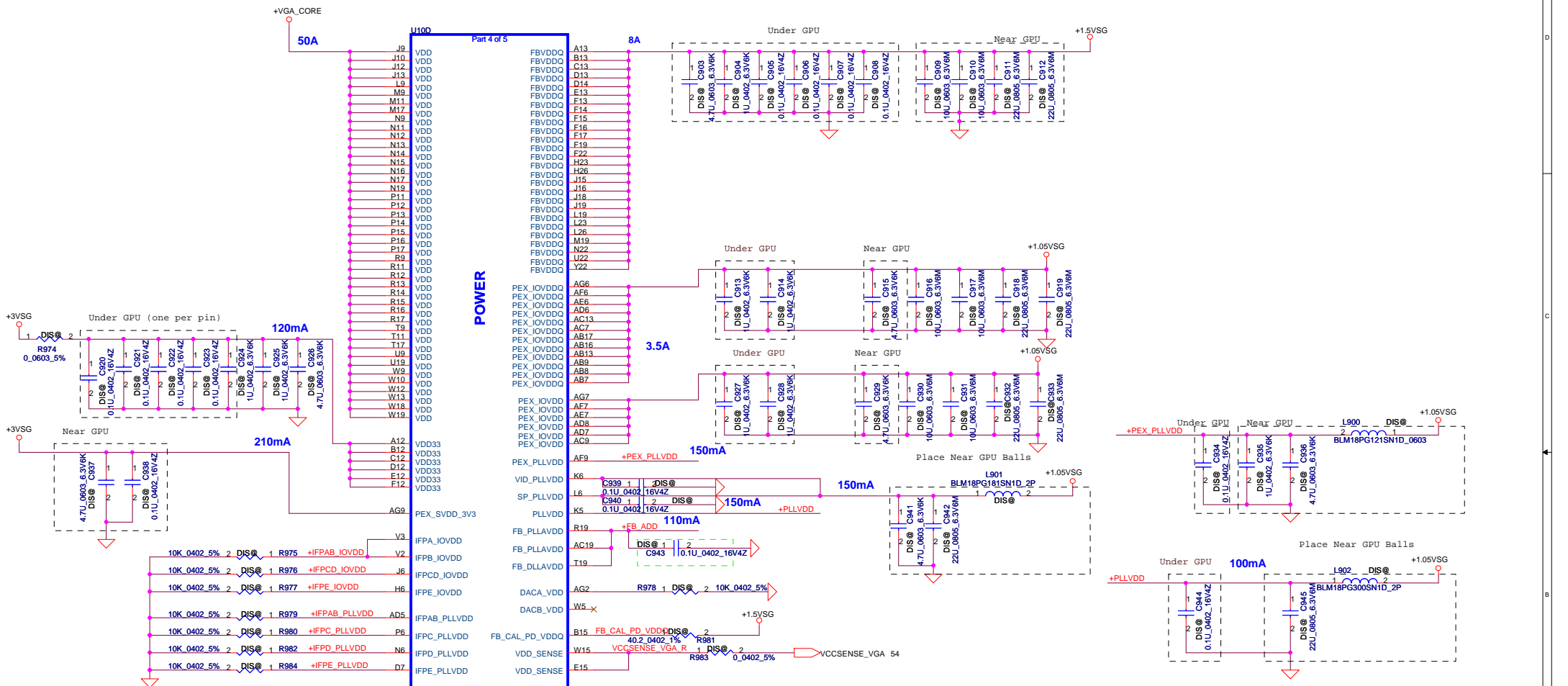
SA000056A10
C.S N13M-GE1-S-A1 FCBGA533
NVIDIA GB1b-64 GF119-660-A1 (小包装)
搭配VRAM 256*8*8

- 256M*8*8
- SA000056000
DDR3 1600 256*8 1.5V FBGA78
HYNIX/H5TQ2G83CFR-PBC
 - SA000056P00
DDR3 1600 256*8 1.5V FBGA78
ELPIDA/EDJ2108BBBG-GN-F

- 512M*8*8
- SA00005BL00
DDR3 1600 512M*8 1.5V FBGA78
HYNIX/H5TQ4G83MFR-PBC
 - SA00005AA00
DDR3 1600 512M*8 1.5V FBGA78
ELPIDA/EDJ4208BBBG-GN-F

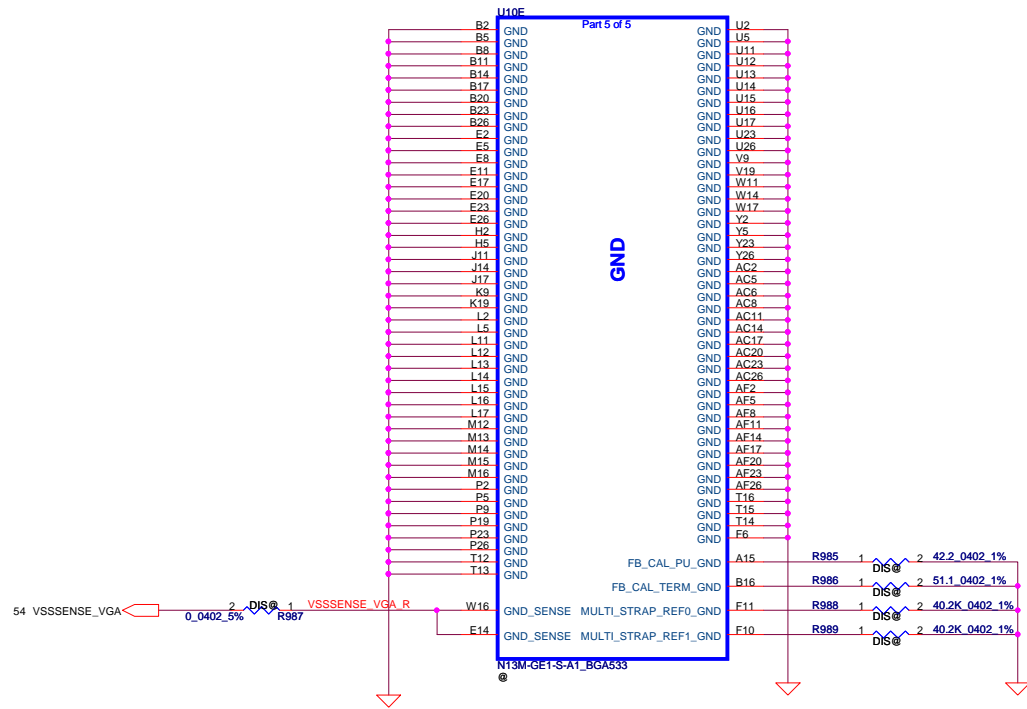


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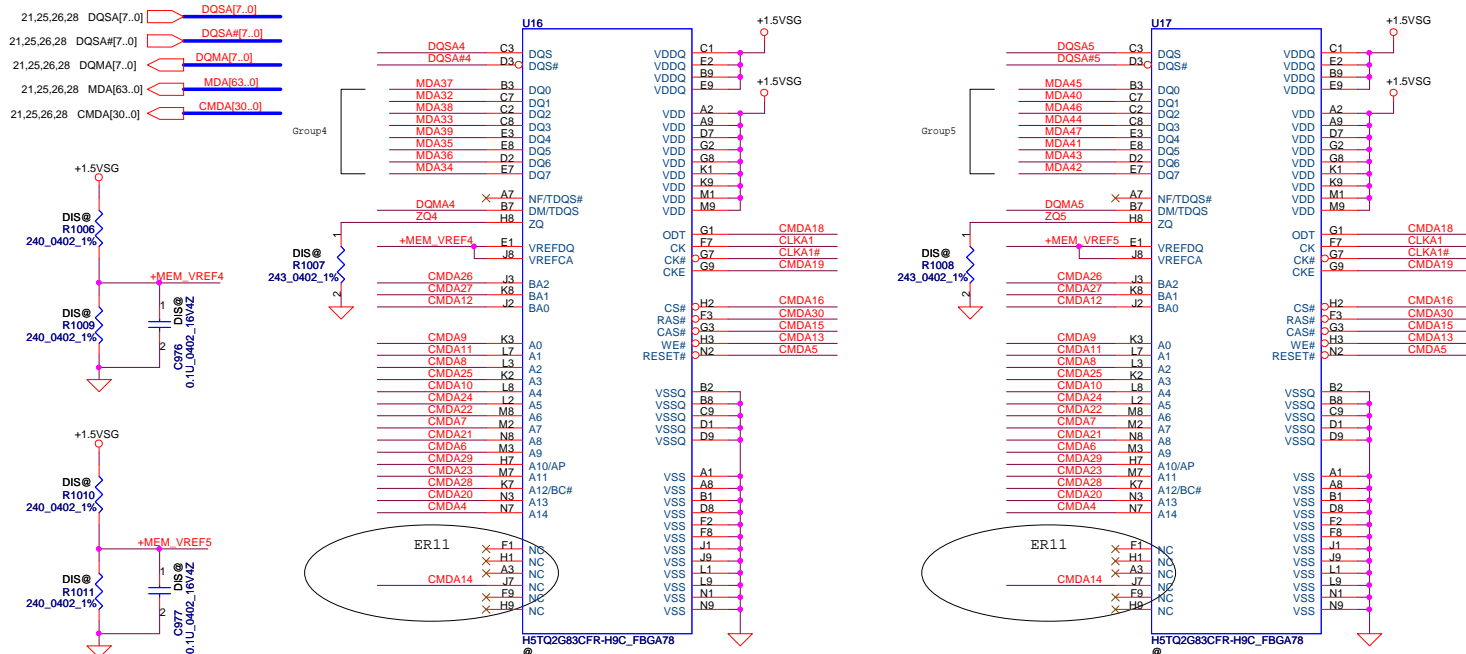


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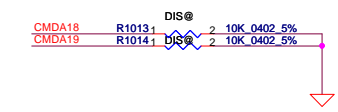
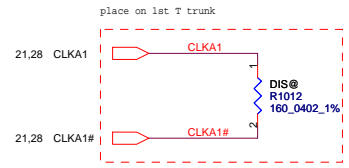
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VRAM DDR3 chips

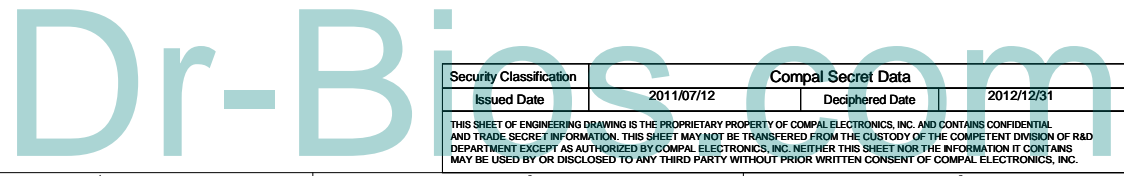
256Mx8 DDR3 *8==>2GB



Mode D Address	0..31	32..63
CMD0	CS0_L#	
CMD1		
CMD2	ODT_L	
CMD3	CKE	
CMD4	A14	A14
CMD5	RST	RST
CMD6	A9	A9
CMD7	A7	A7
CMD8	A2	A2
CMD9	A0	A0
CMD10	A4	A4
CMD11	A1	A1
CMD12	BA0	BA0
CMD13	WE*	WE*
CMD14	A15	A15
CMD15	CAS*	CAS*
CMD16		CS0_H#
CMD17		
CMD18		ODT_H
CMD19		CKE_H
CMD20	A13	A13
CMD21	A8	A8
CMD22	A6	A6
CMD23	A11	A11
CMD24	A5	A5
CMD25	A3	A3
CMD26	BA2	BA2
CMD27	BA1	BA1
CMD28	A12	A12
CMD29	A10	A10
CMD30	RAS*	RAS*
Not Available		
	LOW	HIGH

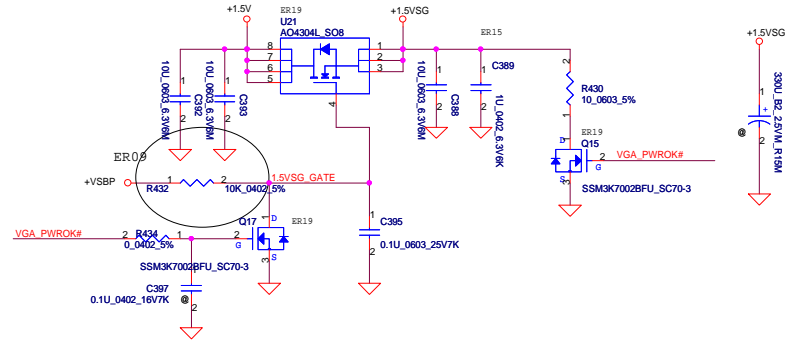


Hynix : SA000054600 (S IC D3 256MX8/1333 H5TQ2G83CFR-H9C FBGA)
 Elpida : SAxxxxxxx (S IC D3 256MX8/1333 xxxxxxxxxxxxxxxx)

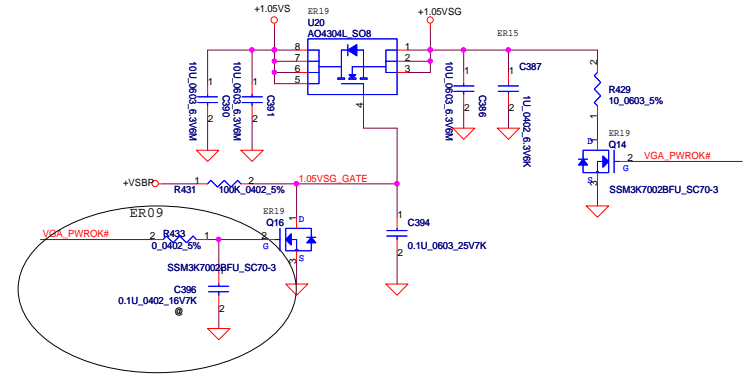


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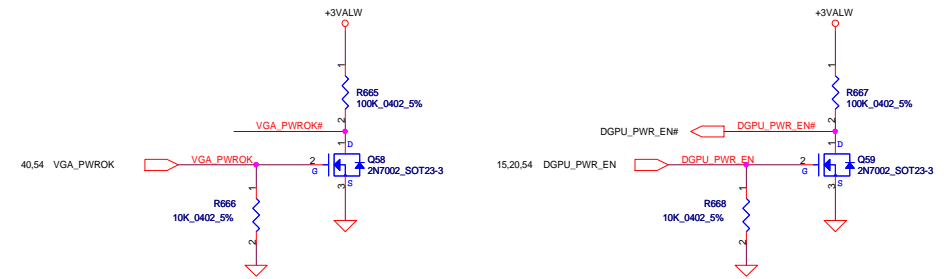
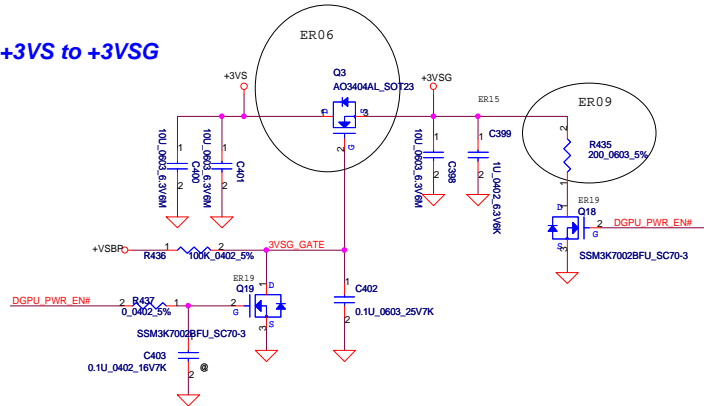
+1.5V to +1.5VSG



+VCCP to +1.05VSG



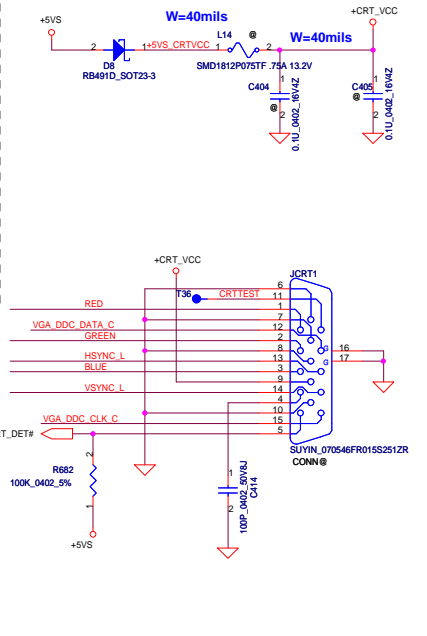
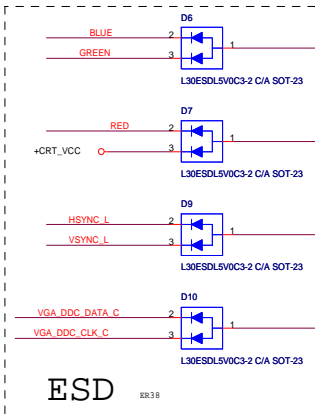
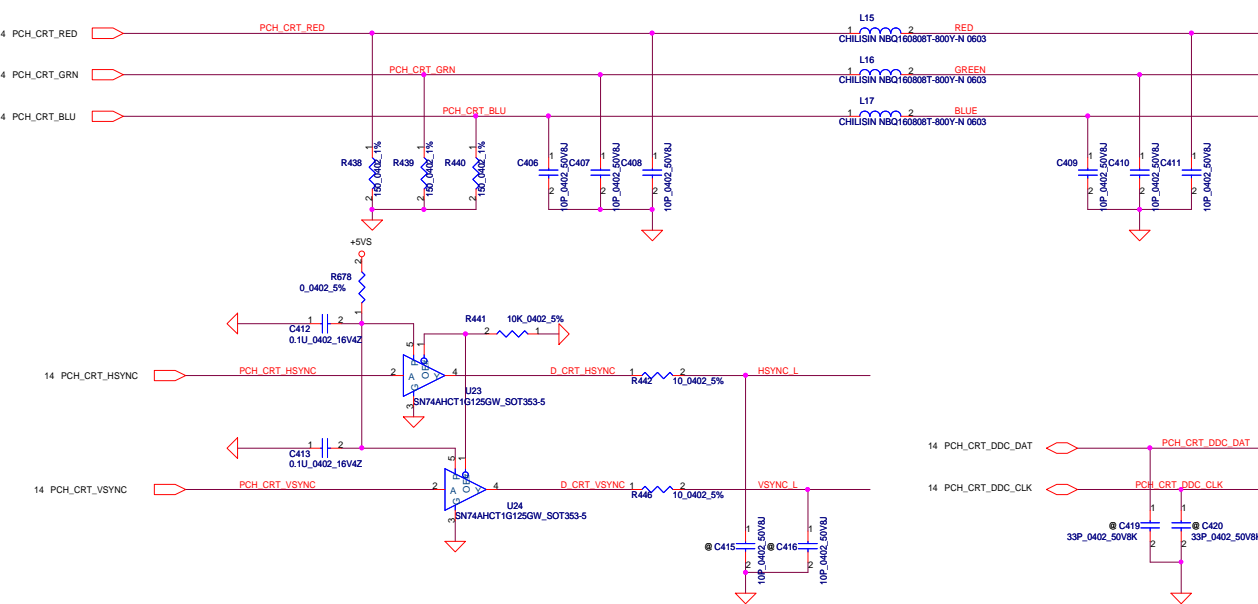
+3VS to +3VSG



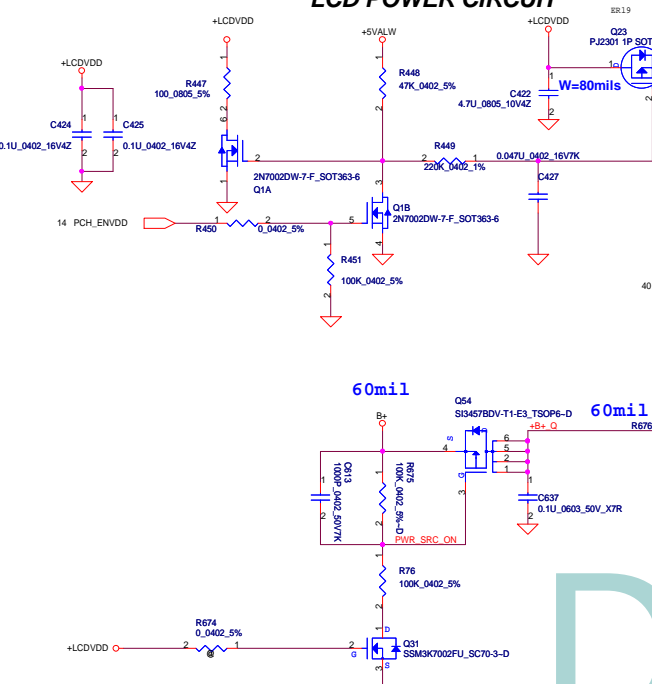
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Size	Custom	Document Number	LA-8224P	Rev	0.2
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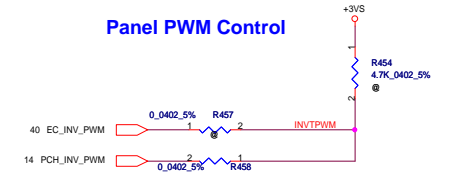
CRT



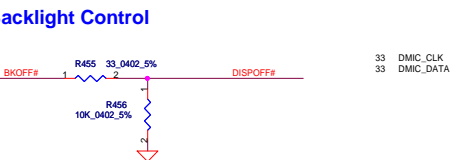
LCD POWER CIRCUIT



Panel PWM Control



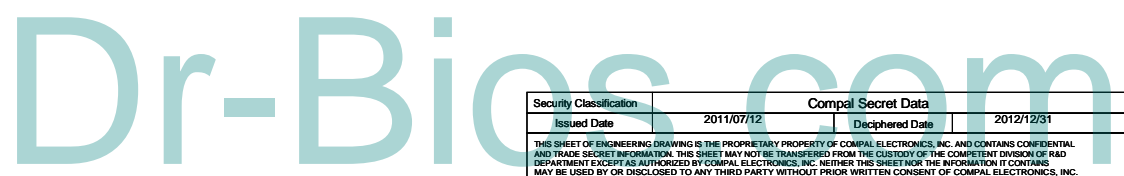
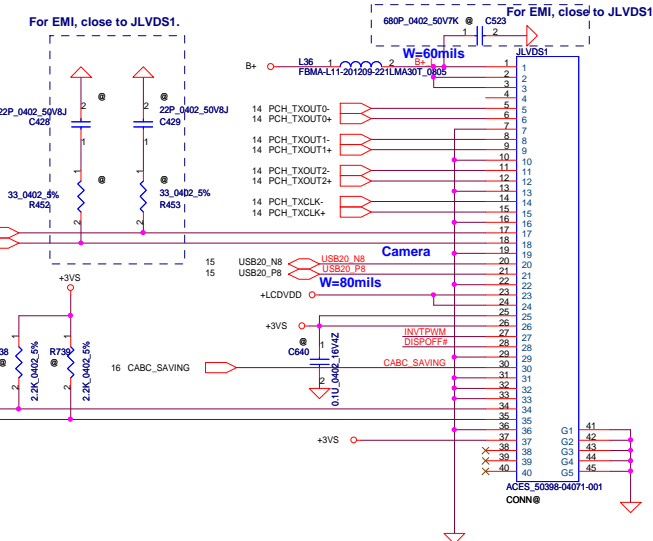
Panel Backlight Control



60mil

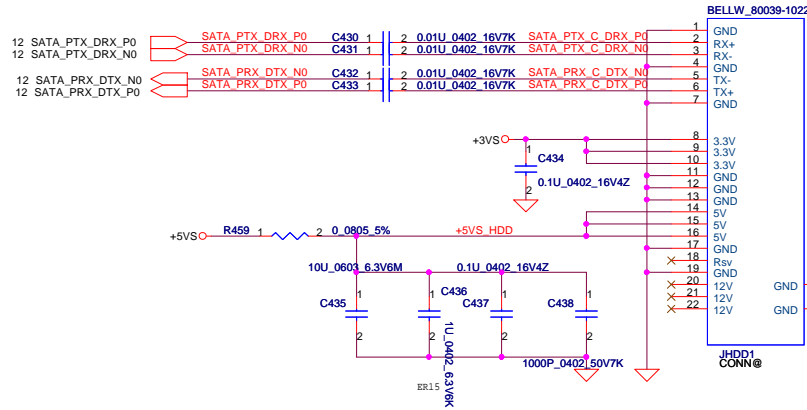
60mil

Panel PWM Control

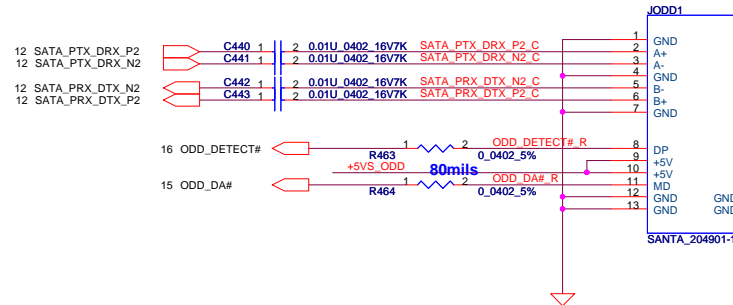
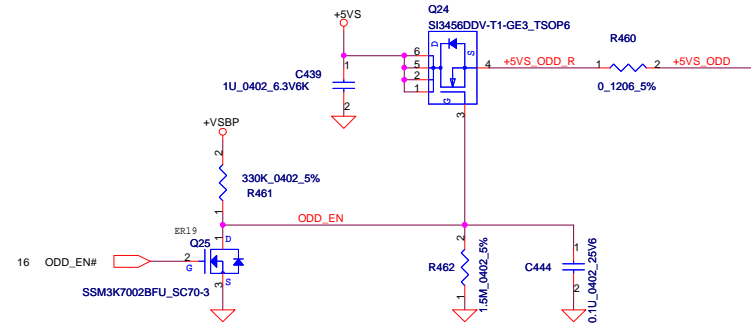


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Compal Electronics, Inc.		LA-8224P	02
Title		LA-8224P	02
Size		30	59
Date		Thursday, October 27, 2011	Sheet

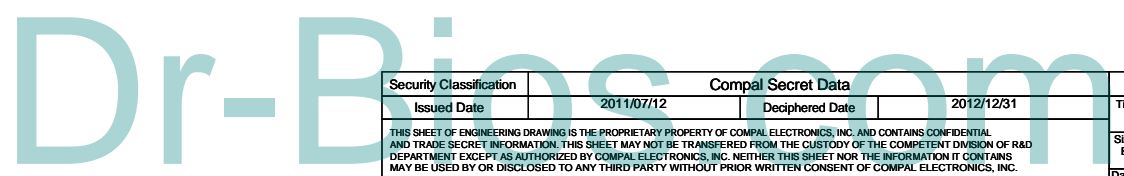
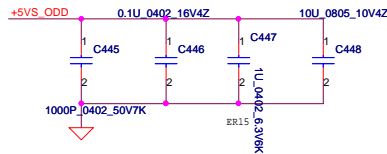
SATA HDD Conn.



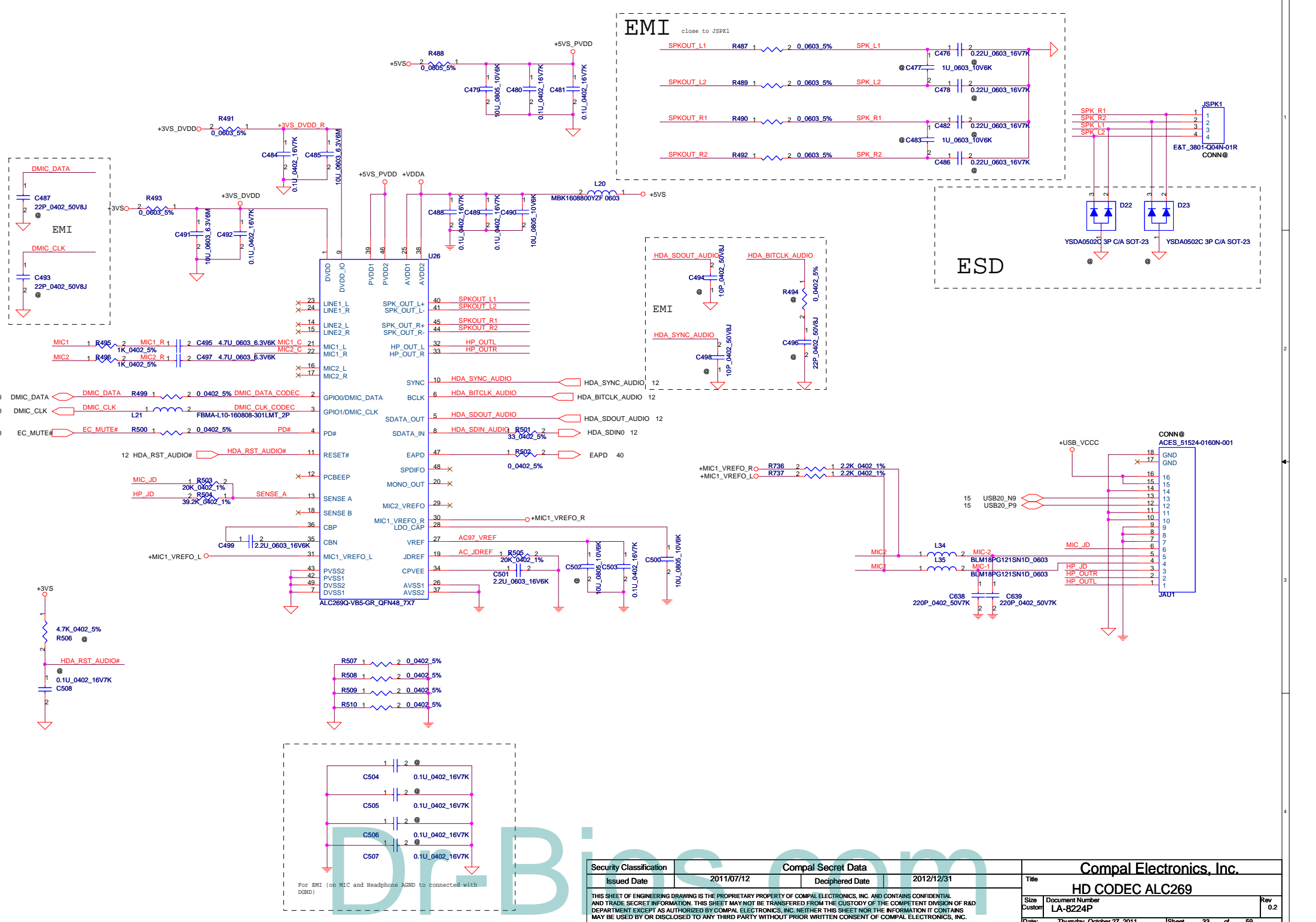
SATA ODD Conn.



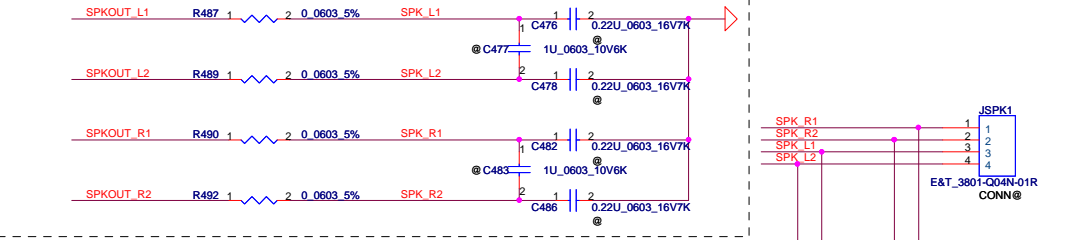
Place caps. near ODD CONN.



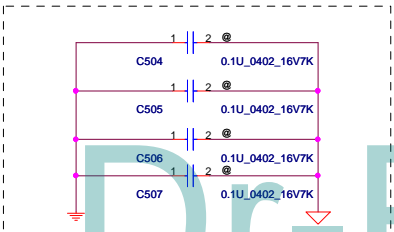
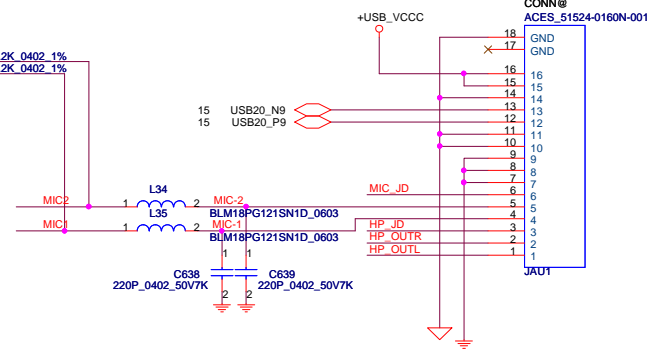
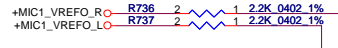
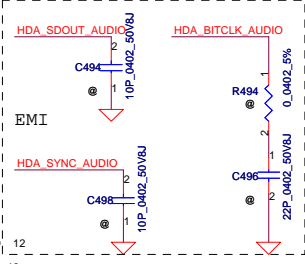
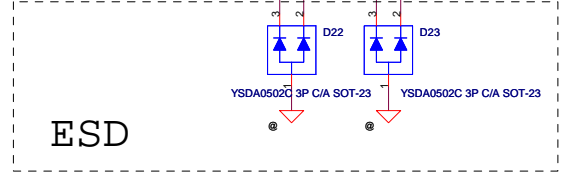
Security Classification	Compal Secret Data		Title	
Issued Date	2011/07/12	Deciphered Date	2012/12/31	HDD & ODD CONN
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EMI



ESD

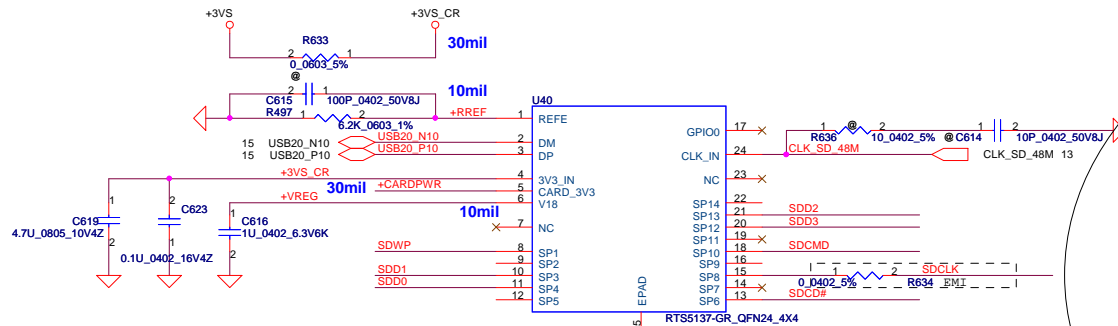


For EMI (on MIC and Headphone AGND to connected with D3RD)

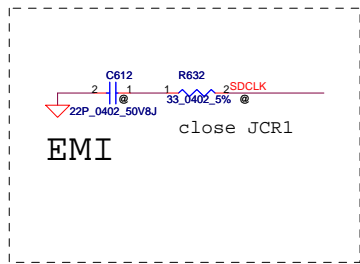
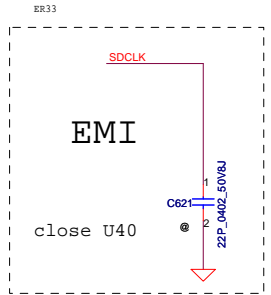
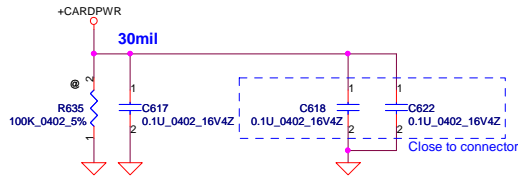
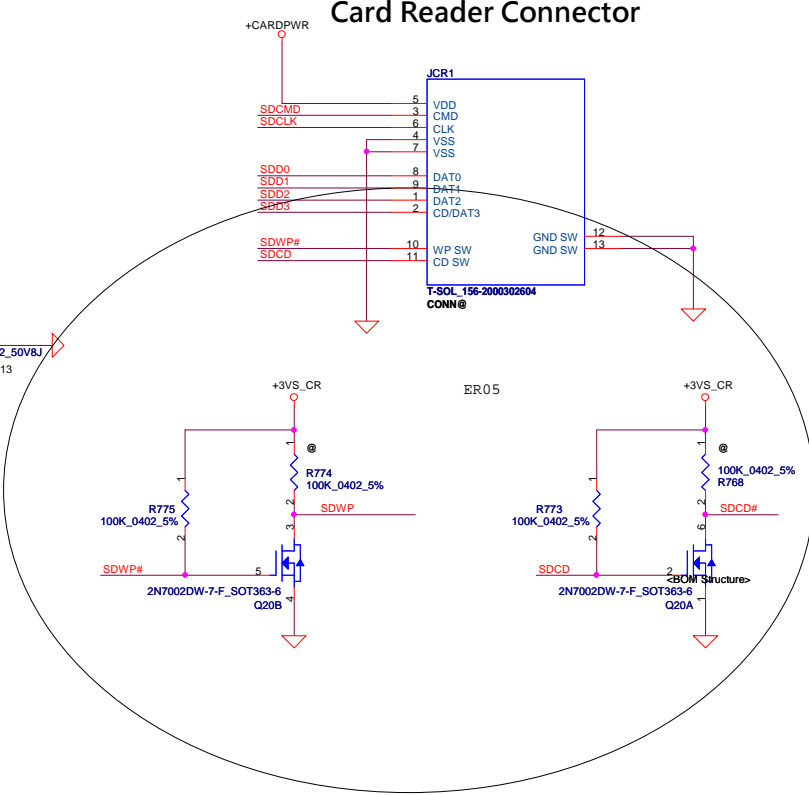
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Issued Date	2011/07/12	Deciphered Date
		2012/12/31

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Title HD CODEC ALC269		
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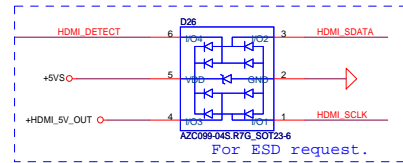
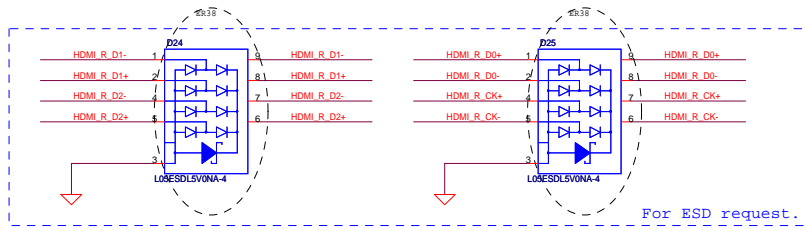


Card Reader Connector

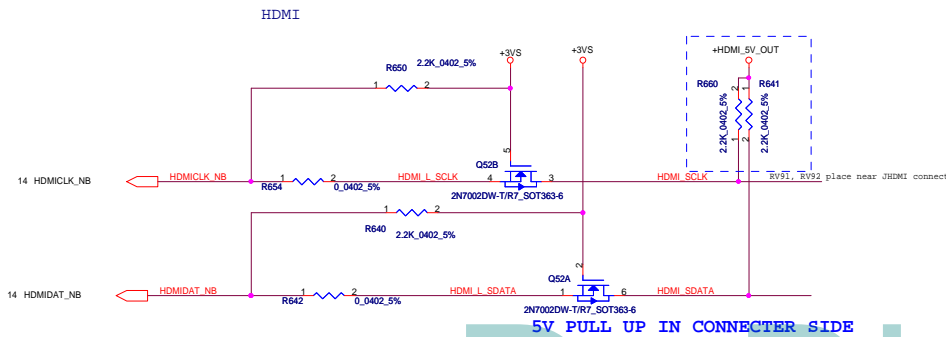
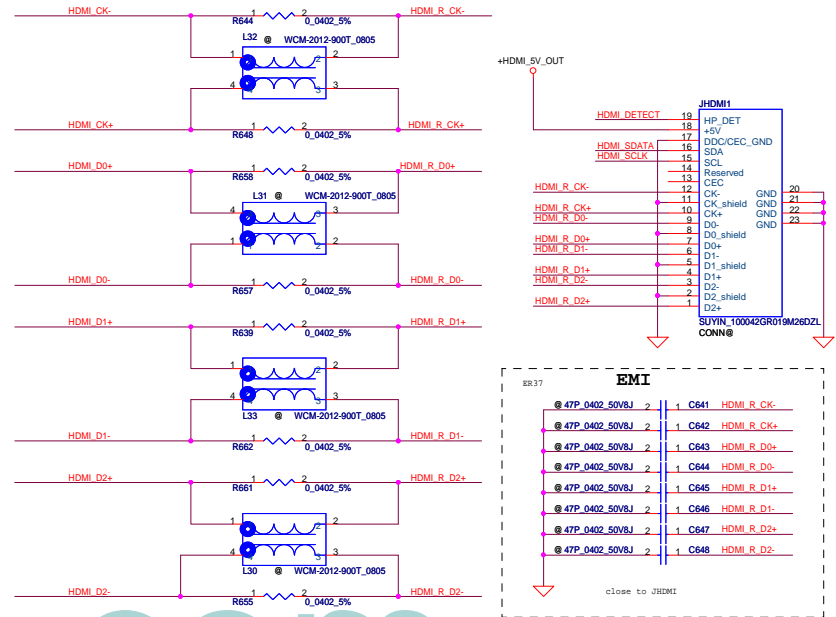
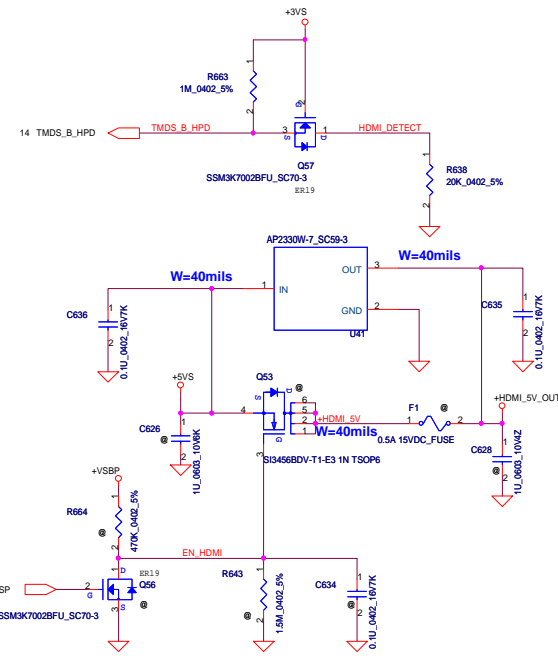
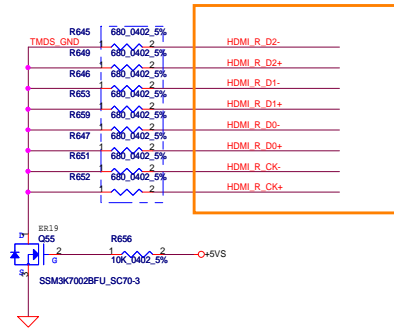


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14	TMDS_B_CLK	TMDS_B_CLK	0.1U_0402_16V7K	2	1	HDMI_CK+
14	TMDS_B_CLK#	TMDS_B_CLK#	0.1U_0402_16V7K	2	1	C625 HDMI_CK-
14	TMDS_B_DATA0	TMDS_B_DATA0	0.1U_0402_16V7K	2	1	C624 HDMI_D0+
14	TMDS_B_DATA0#	TMDS_B_DATA0#	0.1U_0402_16V7K	2	1	C630 HDMI_D0-
14	TMDS_B_DATA1	TMDS_B_DATA1	0.1U_0402_16V7K	2	1	C631 HDMI_D1+
14	TMDS_B_DATA1#	TMDS_B_DATA1#	0.1U_0402_16V7K	2	1	C633 HDMI_D1-
14	TMDS_B_DATA2	TMDS_B_DATA2	0.1U_0402_16V7K	2	1	C627 HDMI_D2+
14	TMDS_B_DATA2#	TMDS_B_DATA2#	0.1U_0402_16V7K	2	1	C629 HDMI_D2-
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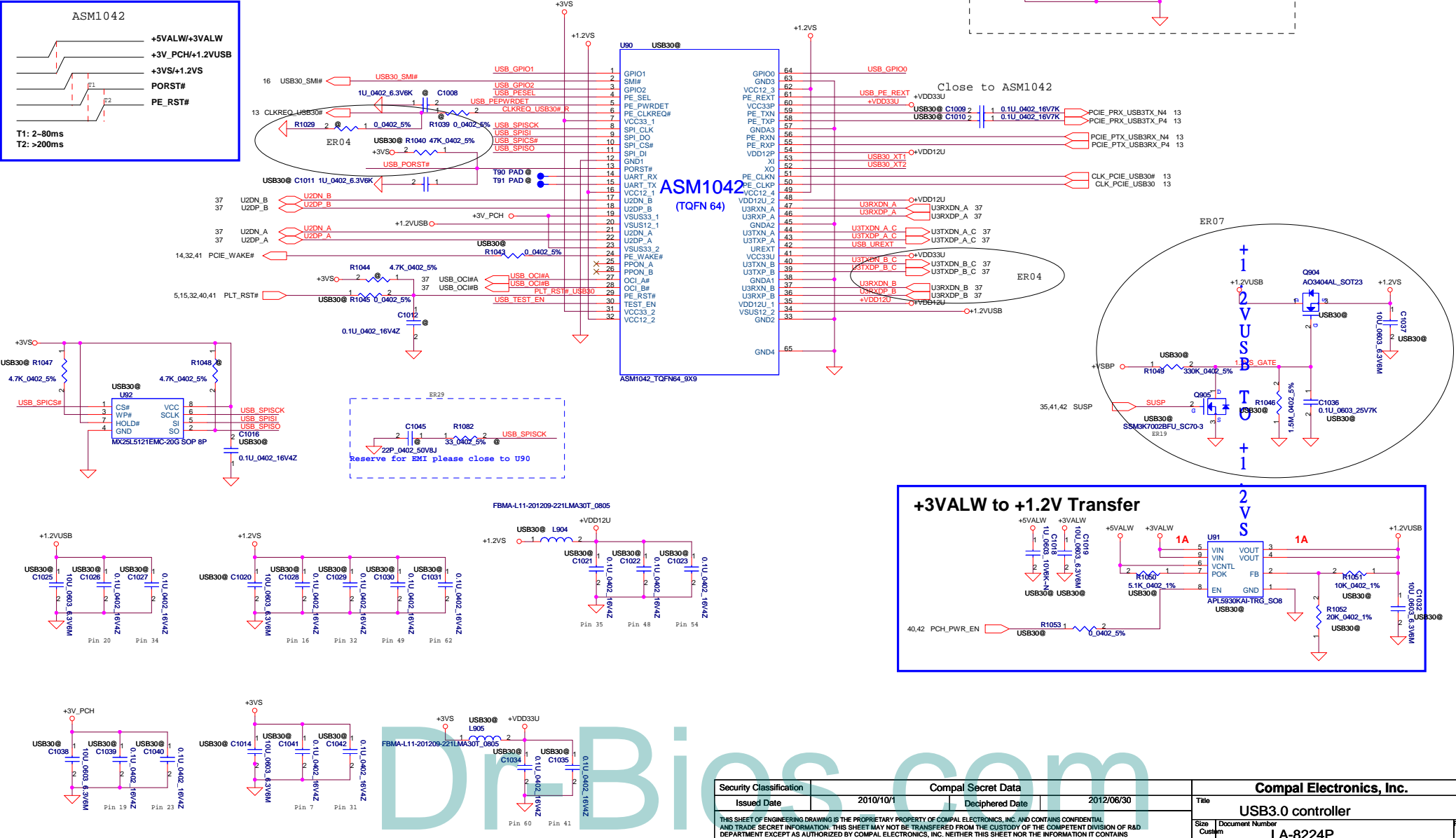
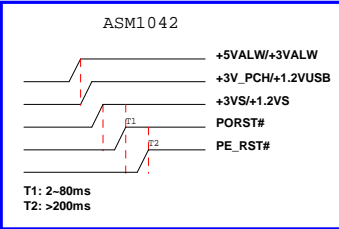


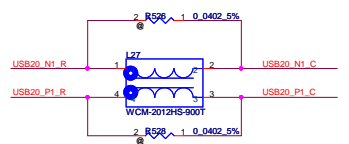
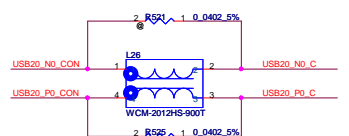
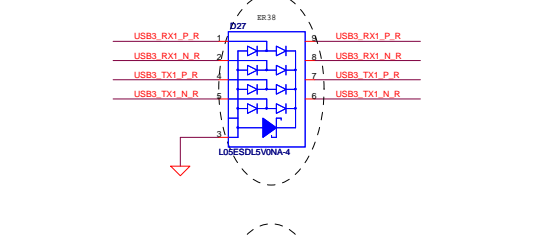
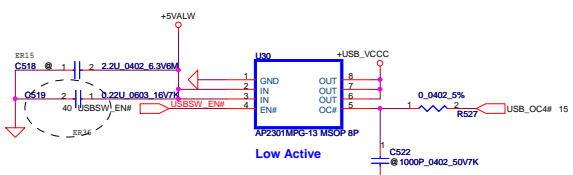
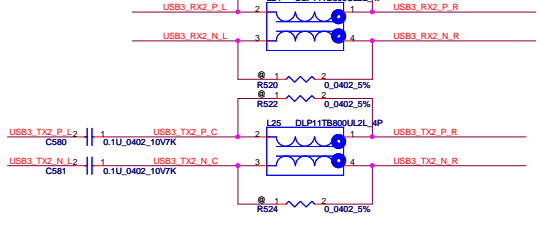
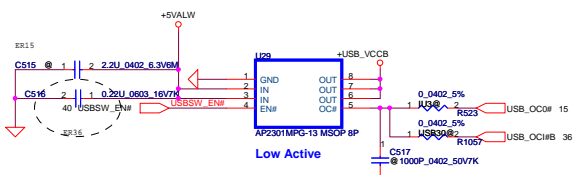
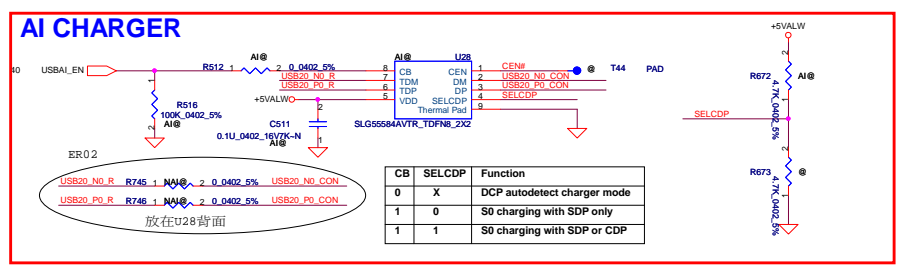
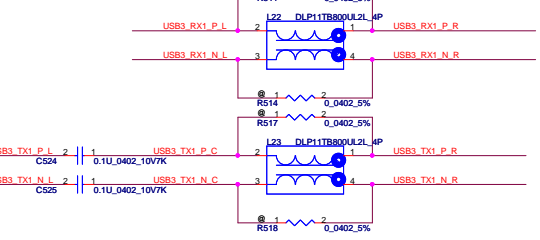
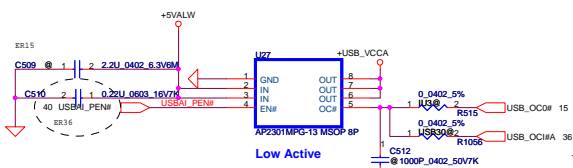
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				HDMI Connector
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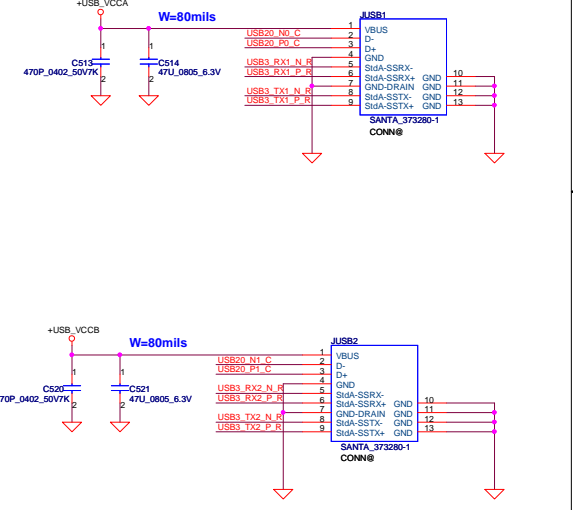
	S3	S4/S5
+3V_PCH	V	X
+3VS	X	X
+1.2VUSB	V	X
+1.2VS	X	X

Power Sequence

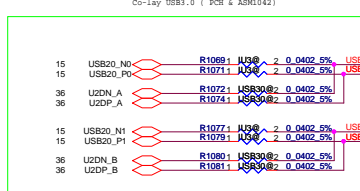
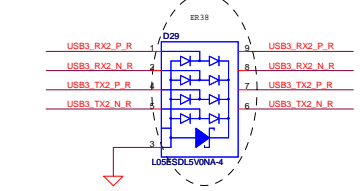
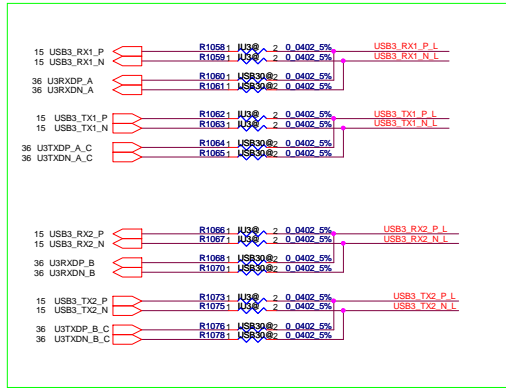




charger port: left side & near user

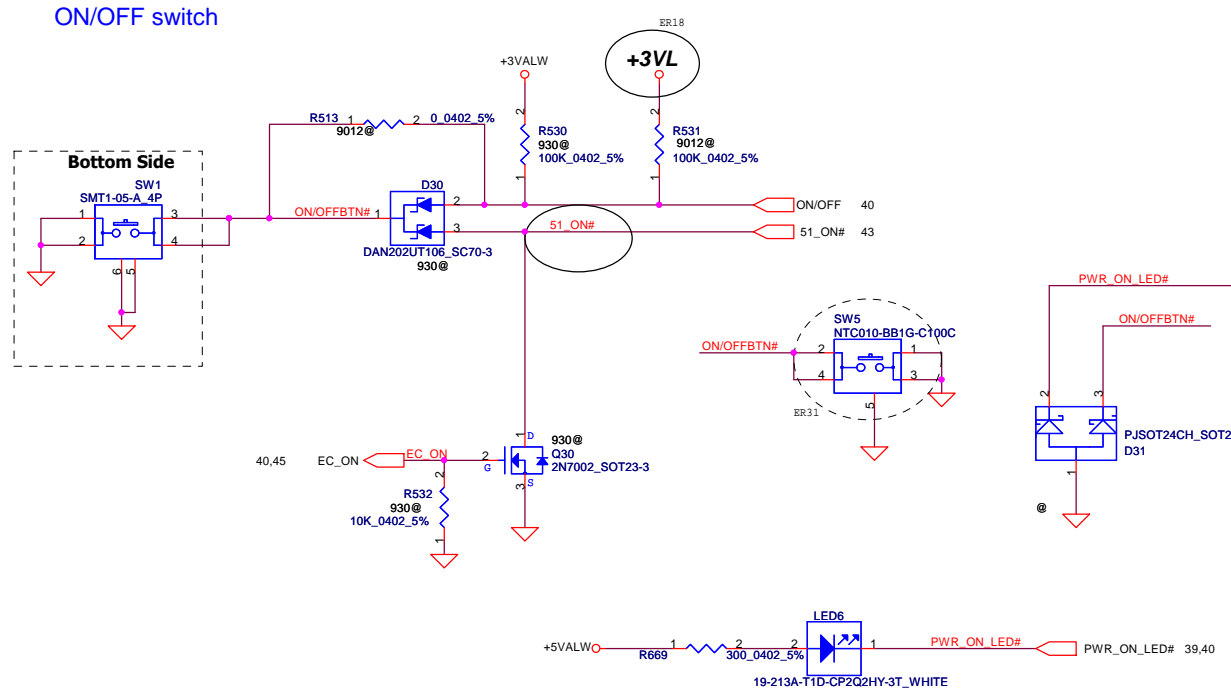


Co-lay USB3.0 (PCB & ASM1042)

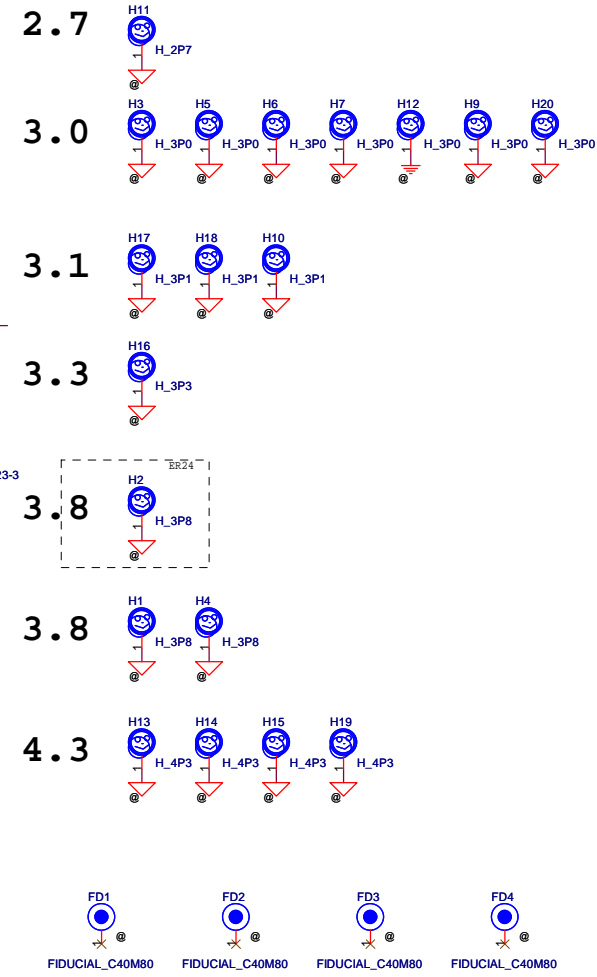


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Title			USB2.0/USB3.0 CONN	
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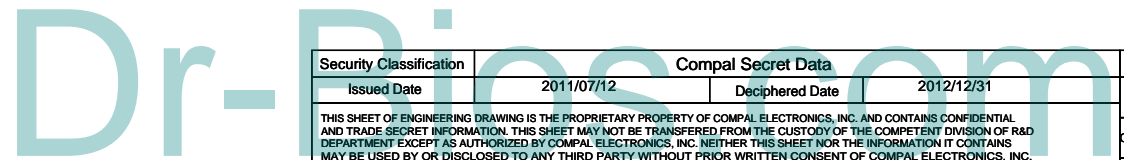
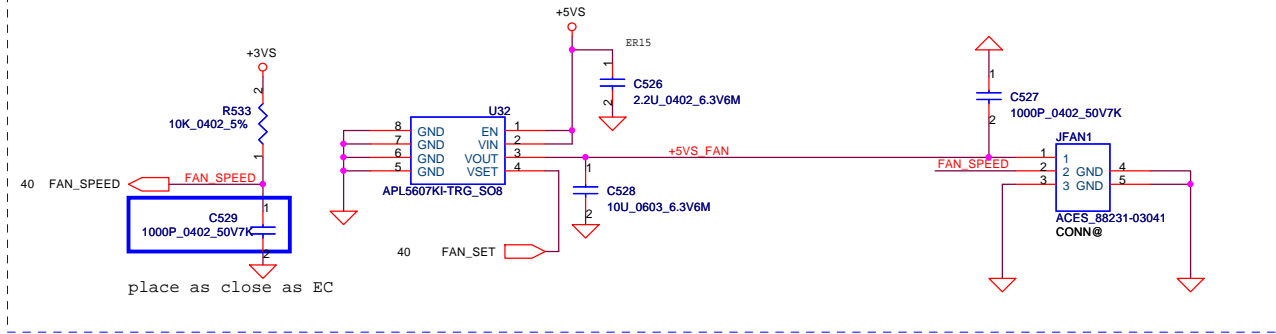
Power Button



Screw Hole

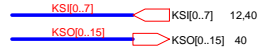


Fan Control Circuit

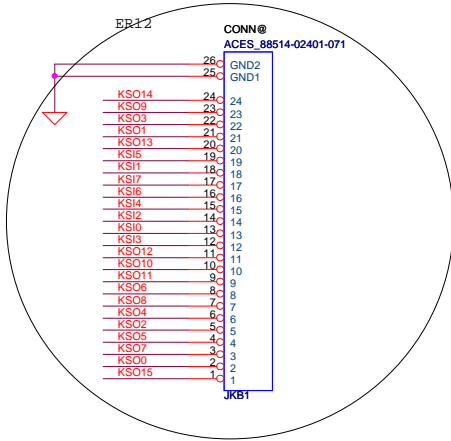


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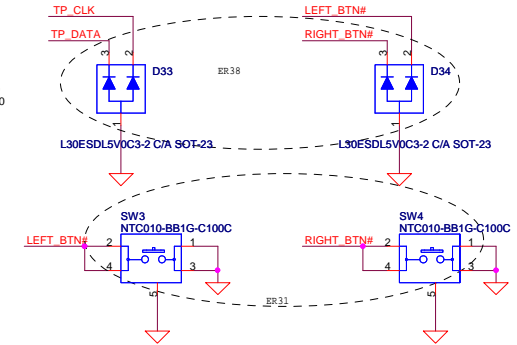
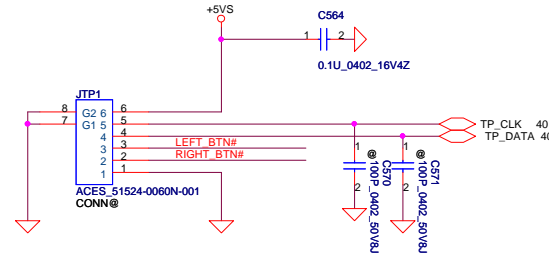
INT_KBD Conn.



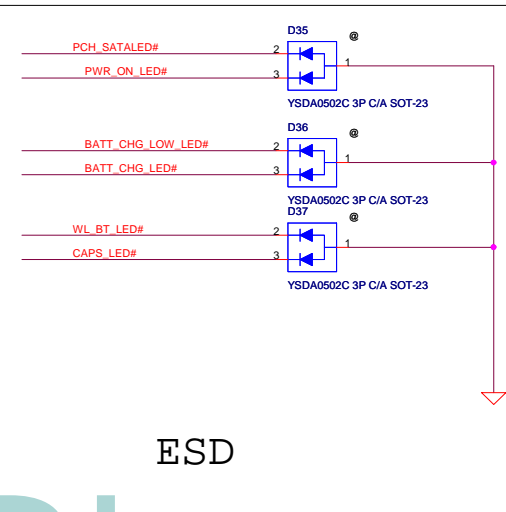
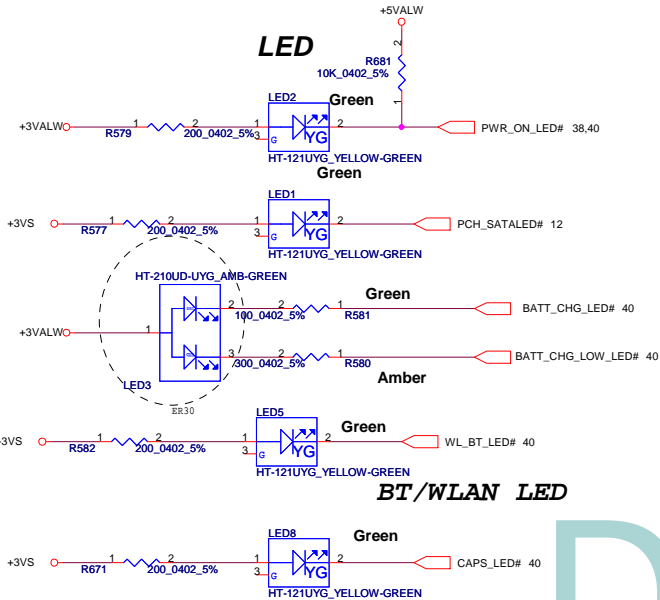
KSO10	@	1	2
KSO11	@	1	2
KSO12	@	1	2
KSO15	@	1	2
KSI7	@	1	2
KSI2	@	1	2
KSI3	@	1	2
KSI4	@	1	2
KSI0	@	1	2
KSI5	@	1	2
KSI6	@	1	2
KSI1	@	1	2
KSO2	@	1	2
KSO1	@	1	2
KSO0	@	1	2
KSO4	@	1	2
KSO3	@	1	2
KSO5	@	1	2
KSO14	@	1	2
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KSO13	@	1	2
KSO8	@	1	2
KSO9	@	1	2



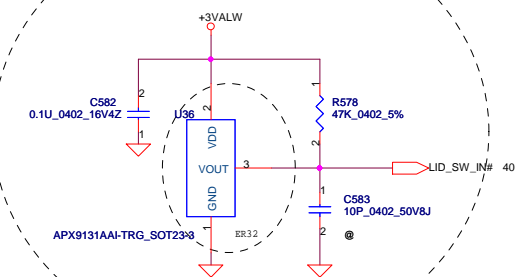
Touch/B Connector



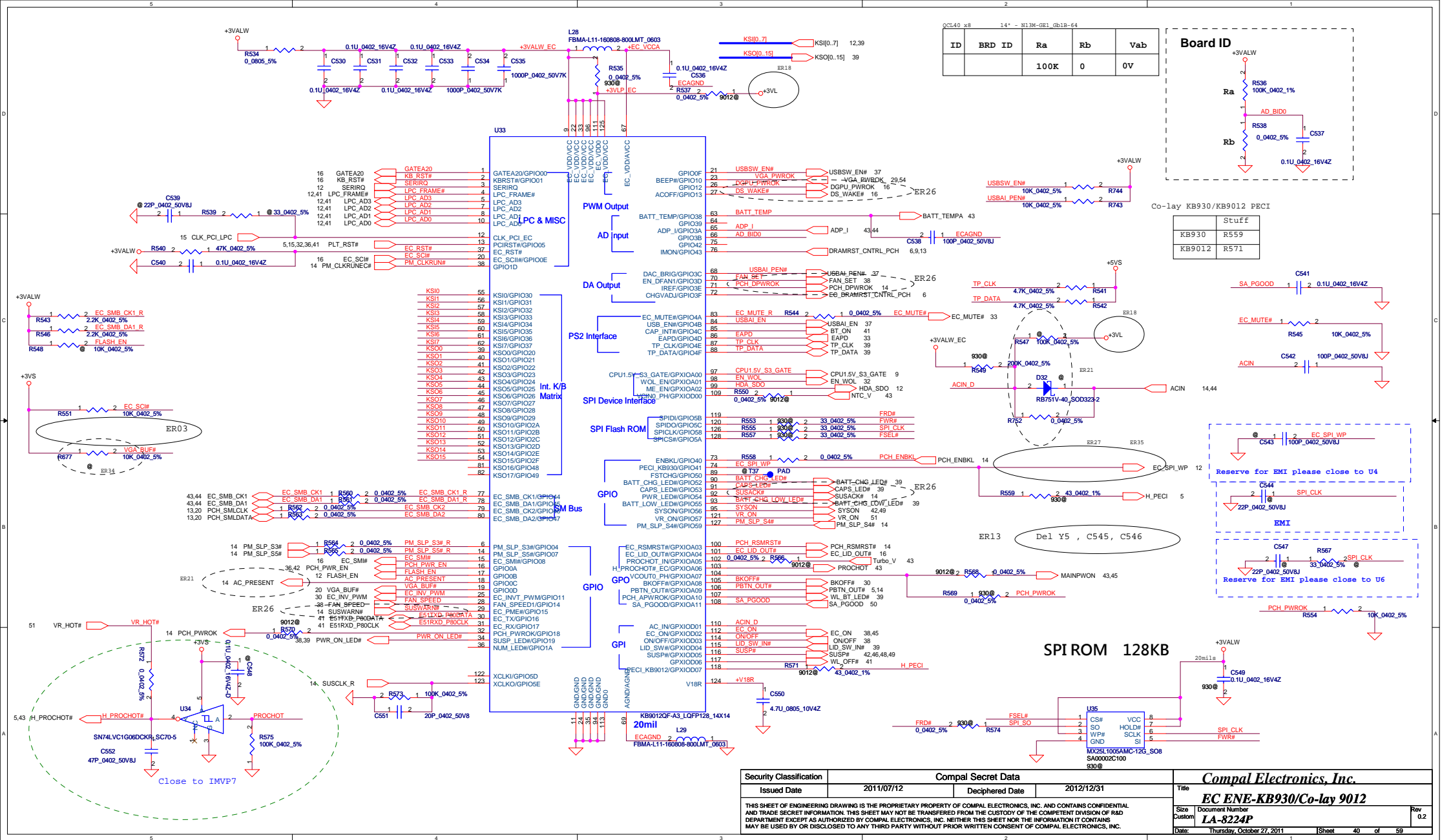
LED



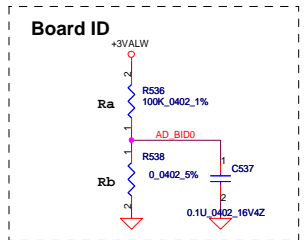
Lid Switch (Hall Effect Switch)



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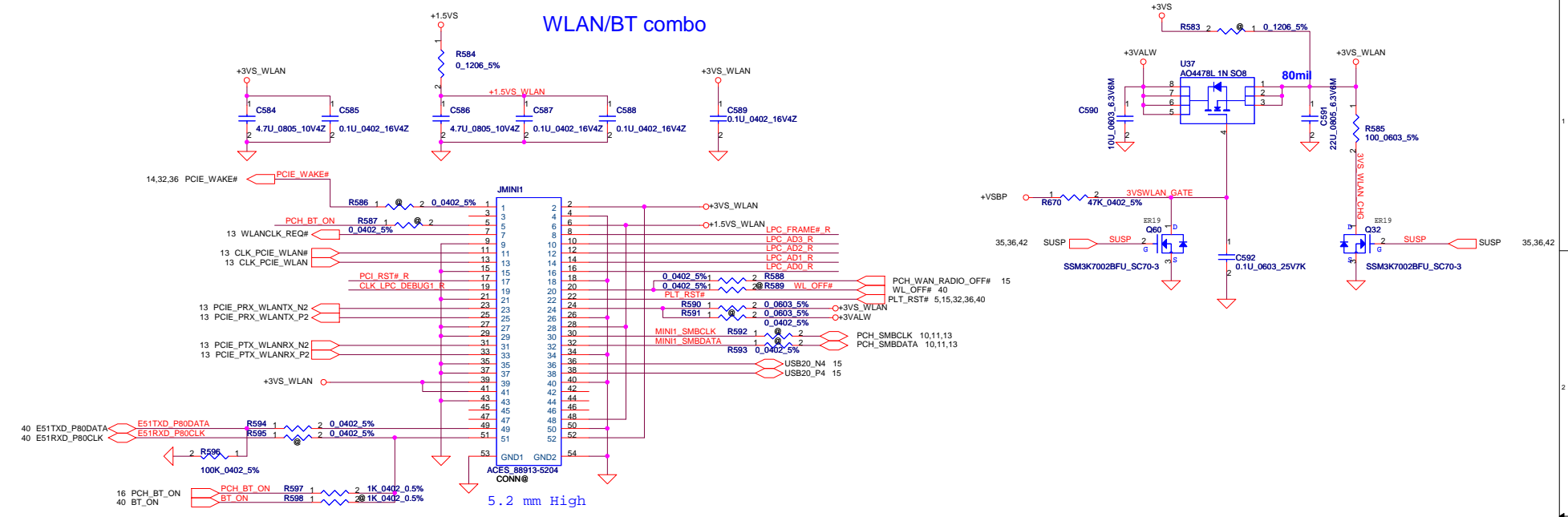
ID	BRD ID	Ra	Rb	Vab
		100K	0	0V



Co-lay	KB930/KB9012	PECI
	KB930	R559
	KB9012	R571

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Compal Electronics, Inc. EC ENE-KB930/Co-lay 9012			Title EC ENE-KB930/Co-lay 9012
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**Reserve for SW mini-pcie debug card.
Series resistors closed to KBC side.**

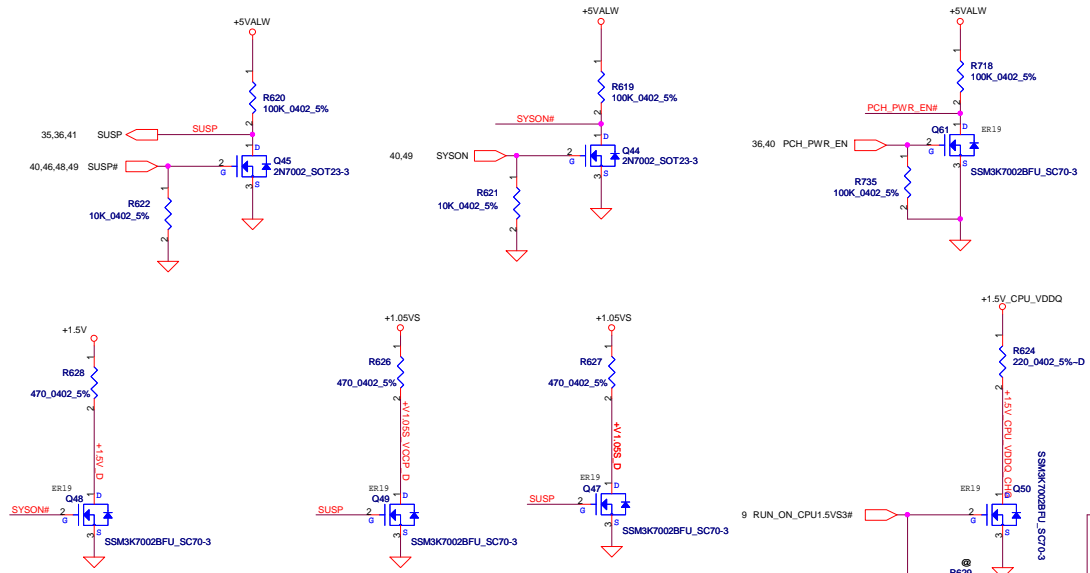
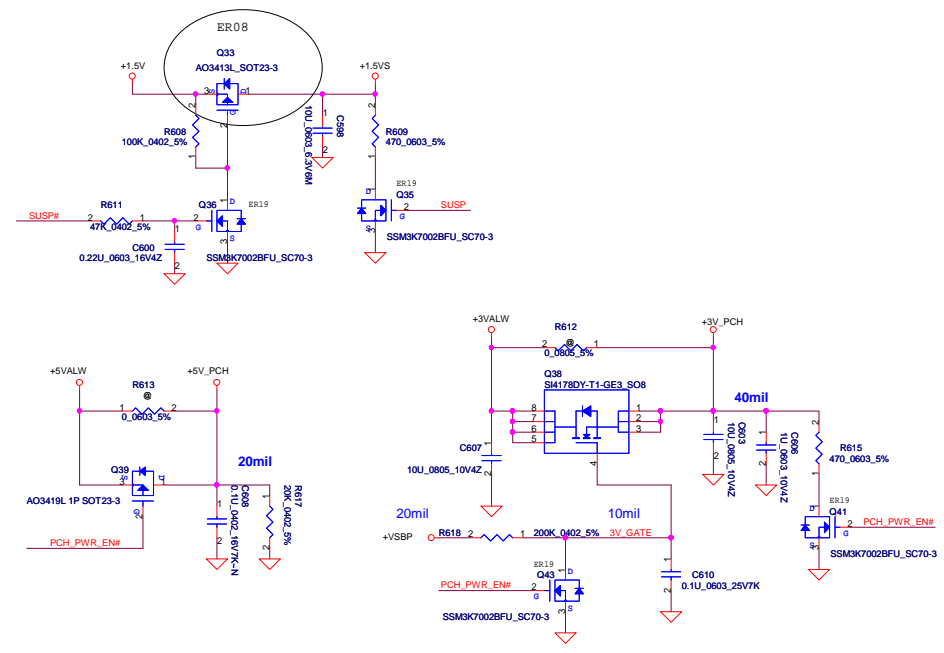
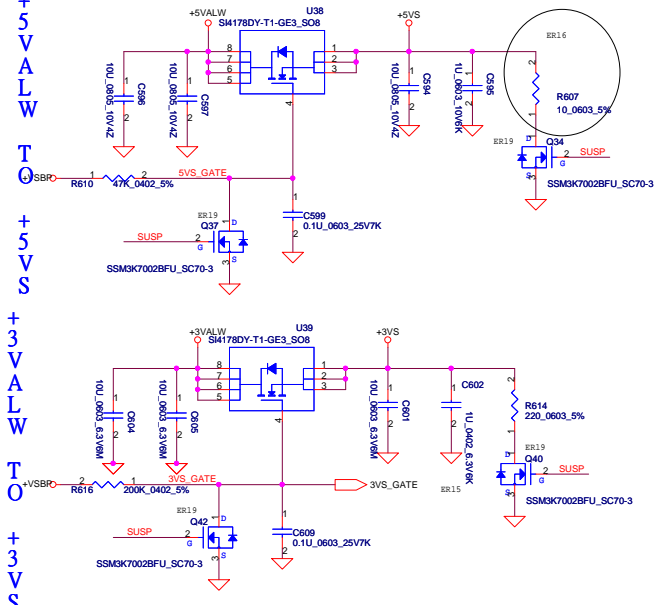
LPC_FRAME#_R	R599	1	2	0.0402 5%	LPC_FRAME#	12,40
LPC_AD33_R	R600	1	2	0.0402 5%	LPC_AD33	12,40
LPC_AD2_R	R601	1	2	0.0402 5%	LPC_AD2	12,40
LPC_AD1_R	R602	1	2	0.0402 5%	LPC_AD1	12,40
LPC_AD0_R	R603	1	2	0.0402 5%	LPC_AD0	12,40
PLT_RST#_R	R604	1	2	0.0402 5%	PLT_RST#	12,40
CLK_LPC_DEBUG1_R	R605	1	2	0.0402 5%	CLK_LPC_DEBUG1	15

C593 R606 22P_0402_50V8J 33_0402_5%
Reserve for EMI please close to JMINI1

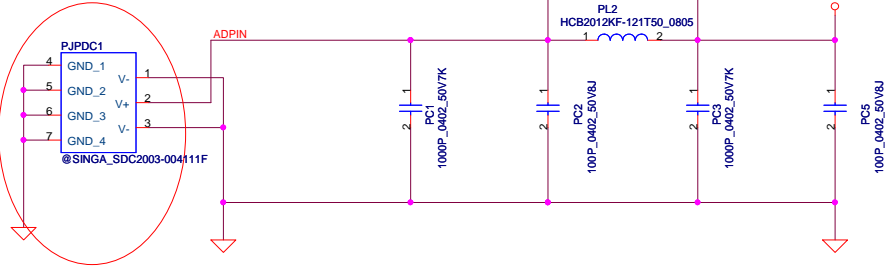
Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2011/07/12	Deciphered Date	2012/12/31	Title
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Size Custom	Document Number	Rev	Date: Thursday, October 27, 2011 Sheet 41 of 59	
	LA-8224P	0.2		

+5VALW
+5VS
+3VALW
+3VS

+1.5VTO
+1.5VS

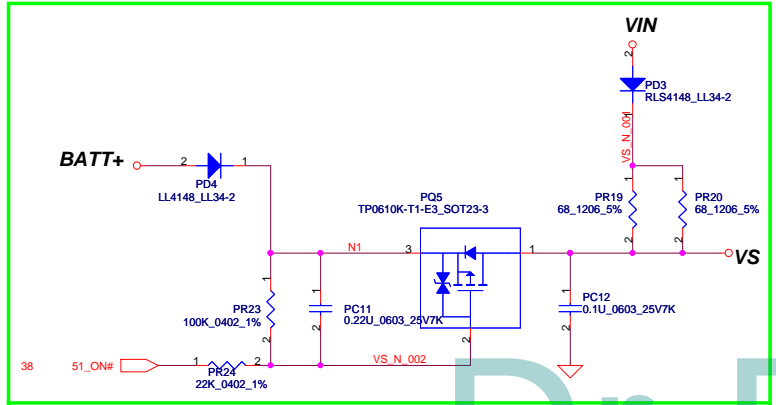
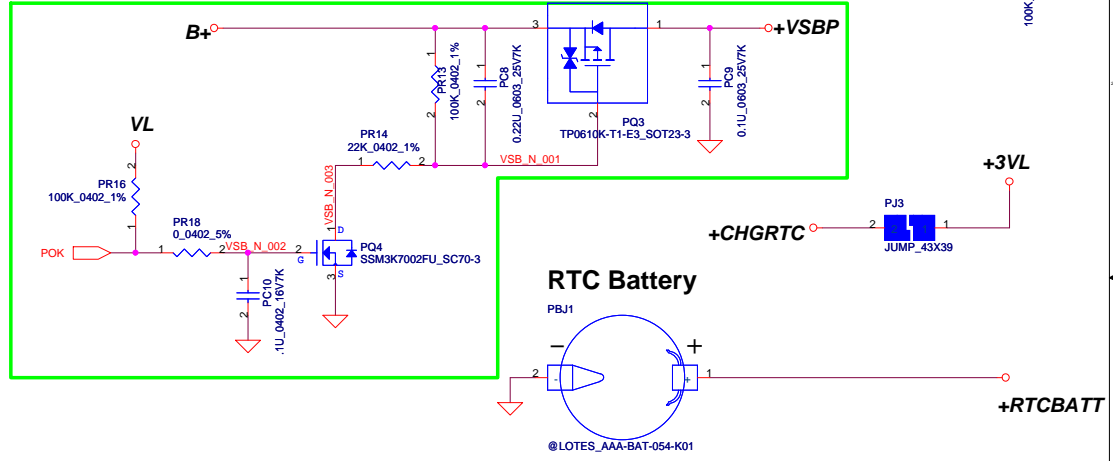
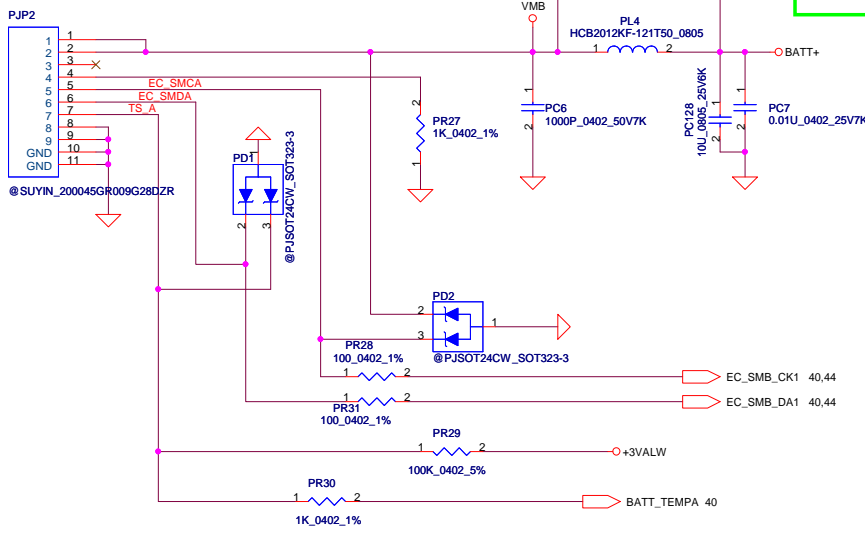
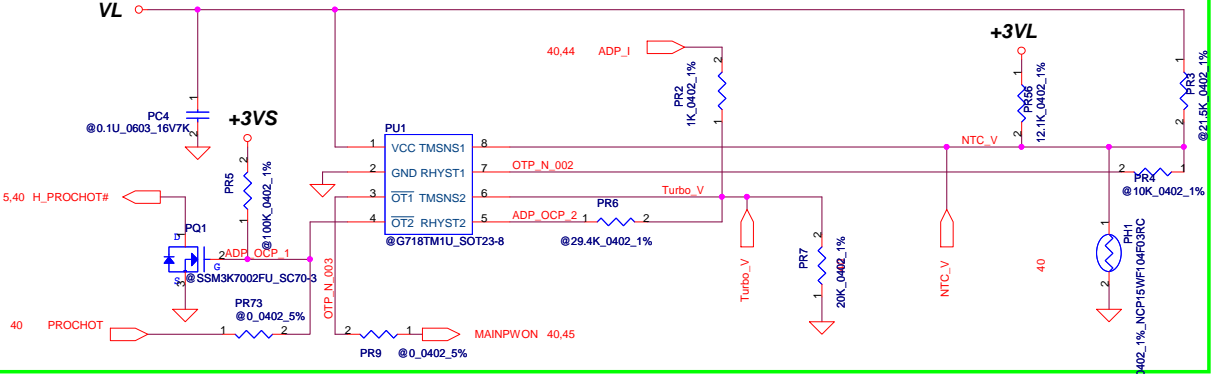


DCIN jack P/N:DC301008L00,
need double confirm P/N with ME



PH1 under CPU bottom side :
CPU thermal protection at 93 +3 degree C
Recovery at 56 +3 degree C

For KB930 --> Keep PU1 circuit
(Vth = 0.825V)
For KB9012 (Red square) --> Remove PU1 circuit, but keep PR56
PH1, PR2, PQ1, PR7, PQ15, PR73, PR56

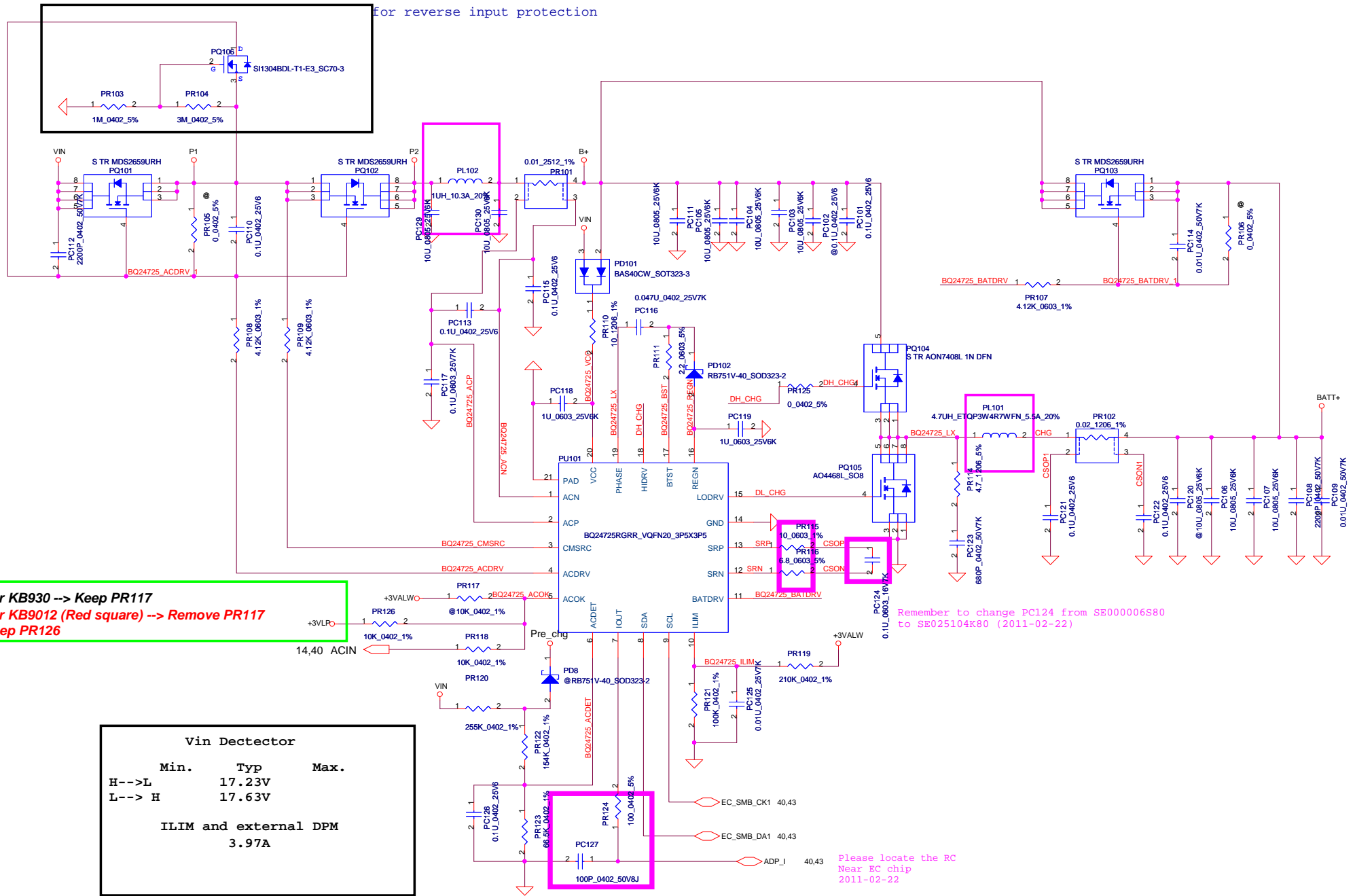


For KB9012 --> Remove all 51_ON# circuit

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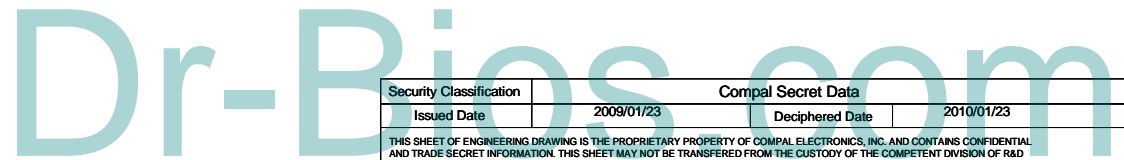
Compal Electronics, Inc.		
Title PWR-DCIN / BATT CONN / OTP		
Size	Document Number	Rev
	PBL22 LA-7391P M/B	0.2
Date:	Thursday, October 27, 2011	Sheet 43 of 59

For reverse input protection

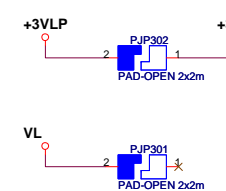
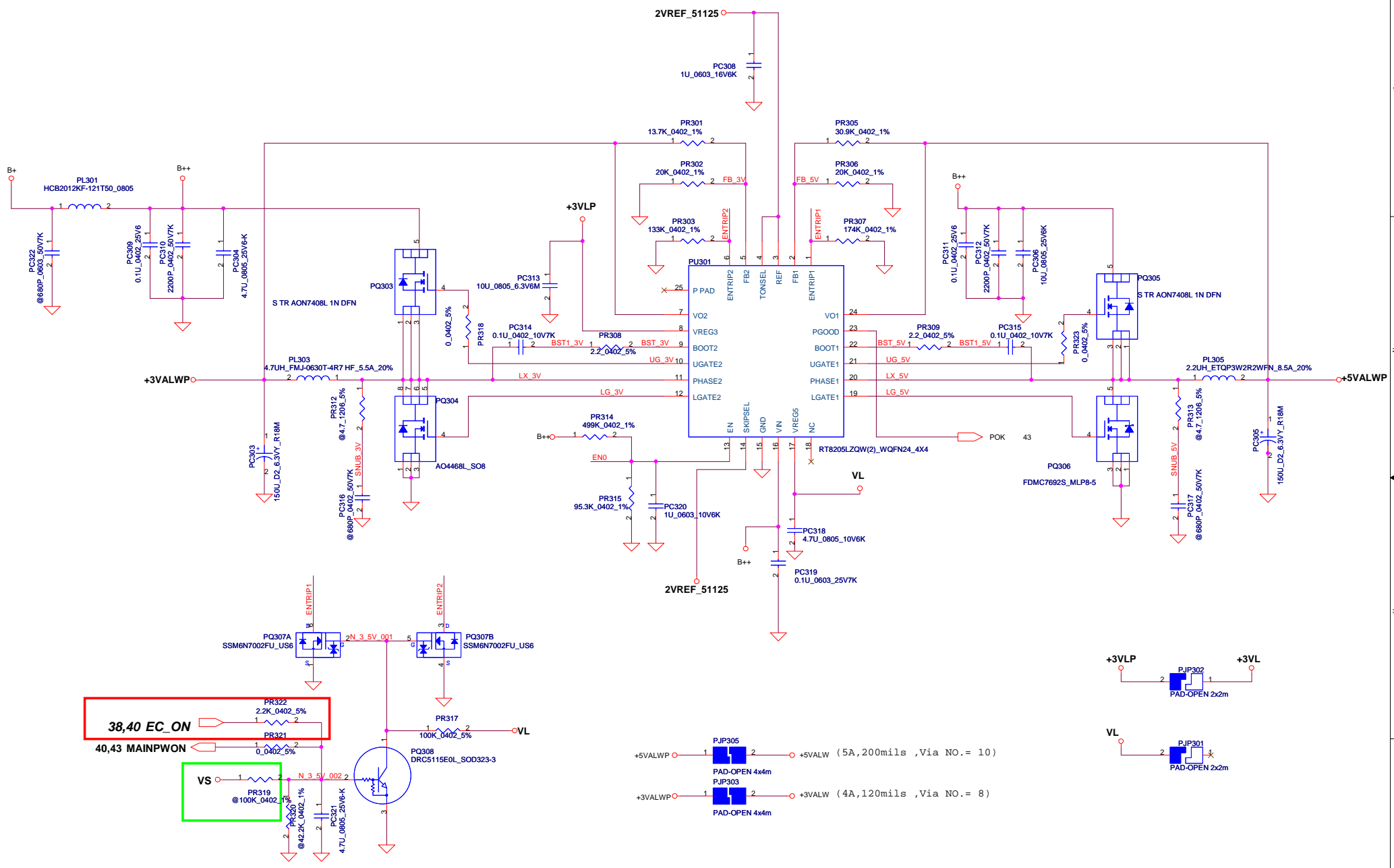


For KB930 --> Keep PR117
For KB9012 (Red square) --> Remove PR117
Keep PR126

Vin Detector			
	Min.	Typ	Max.
H-->L		17.23V	
L-->H		17.63V	
ILIM and external DPM			
3.97A			



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Issued Date	2009/01/23	Deciphered Date	2010/01/23	Title	PWR-CHARGER	
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Size	Document Number	PBL22 LA-7391P M/B			Rev	0.2
Date:	Thursday, October 27, 2011	Sheet	44	of	59	

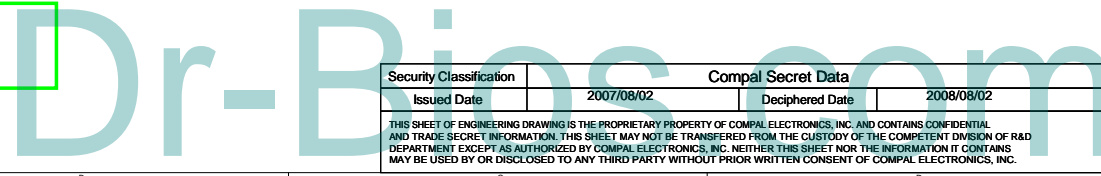


38,40 EC_ON
40,43 MAINPWON

VS
PR319 @100K_0402_1%
PC320 @42.2K_0402_1%
PC321 4.7U_0805_25V6-K

+5VALWP 1 PJP305 2 +5VALW (5A,200mils ,Via NO.= 10)
PAD-OPEN 4x4m
PJP303
+3VALWP 1 PJP303 2 +3VALW (4A,120mils ,Via NO.= 8)
PAD-OPEN 4x4m

For KB930 --> Keep PR319, Remove PR322
For KB9012 (Red square) --> Remove PR319
Keep PR322



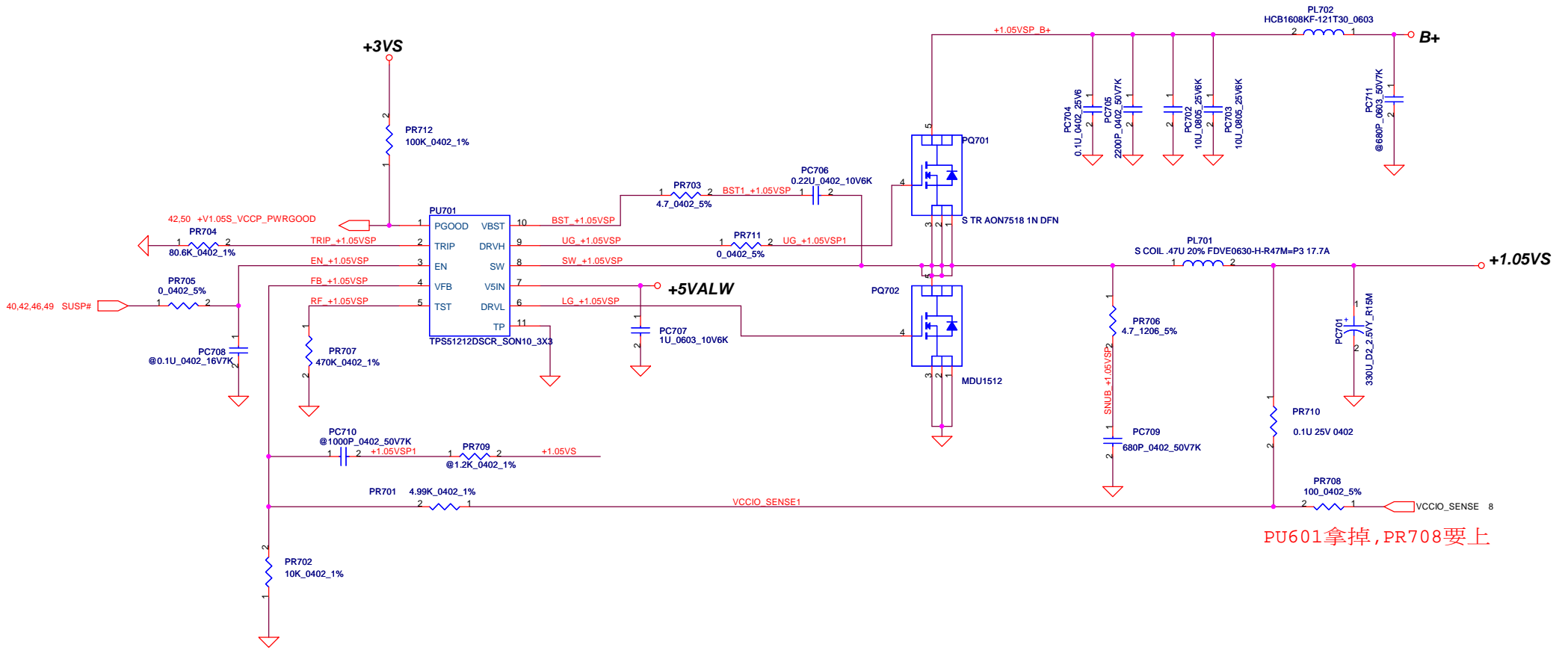
Security Classification	2007/08/02	Compal Secret Data	2008/08/02	Title	Compal Electronics, Inc.	
Issued Date	2007/08/02	Deciphered Date	2008/08/02	PWR-3.3VALWP/SVALWP		
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				Date:	Thursday, October 27, 2011	Sheet 45 of 59

(8.5A,360mils ,Via NO.= 17)

PJP606 ,PJP607先斷開,確定拿掉PU605再接上

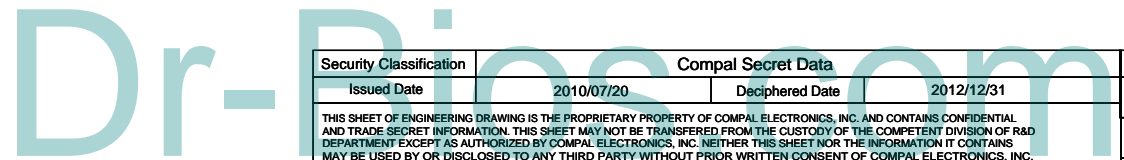
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Issued Date	2010/07/20	Deciphered Date	2012/12/31	PWR-V1.05S VCCP	
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				Date:	Thursday, October 27, 2011
				Sheet	47 of 59
				Rev	0.2



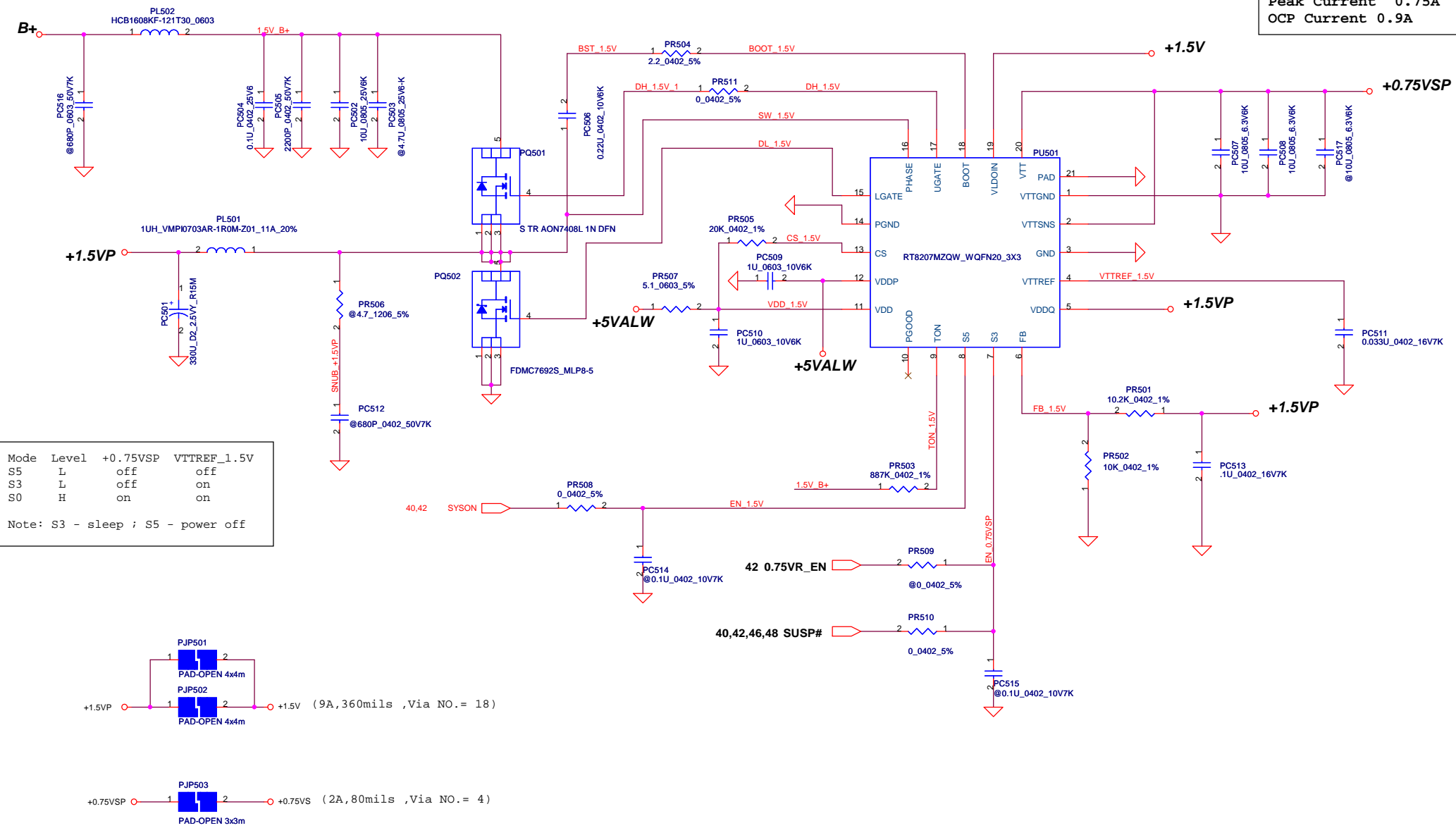
PU601拿掉, PR708要上

(12A, 480mils, Via NO. = 24)



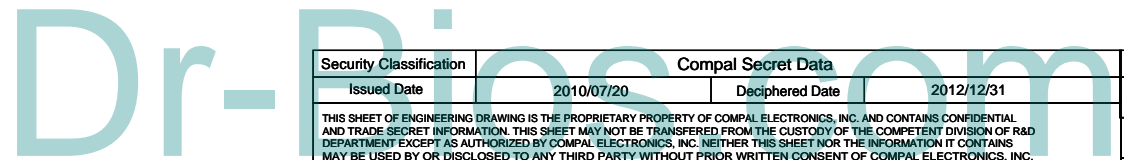
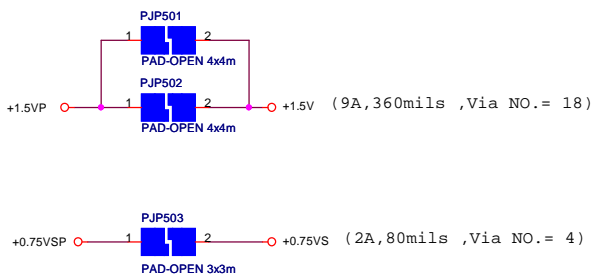
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Issued Date	2010/07/20	Deciphered Date	2012/12/31	Title	
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				of	59

0.75Volt +/- 5%
 TDC 0.525A
 Peak Current 0.75A
 OCP Current 0.9A



Mode	Level	+0.75VSP	VTTREF_1.5V
S5	L	off	off
S3	L	off	on
S0	H	on	on

Note: S3 - sleep ; S5 - power off



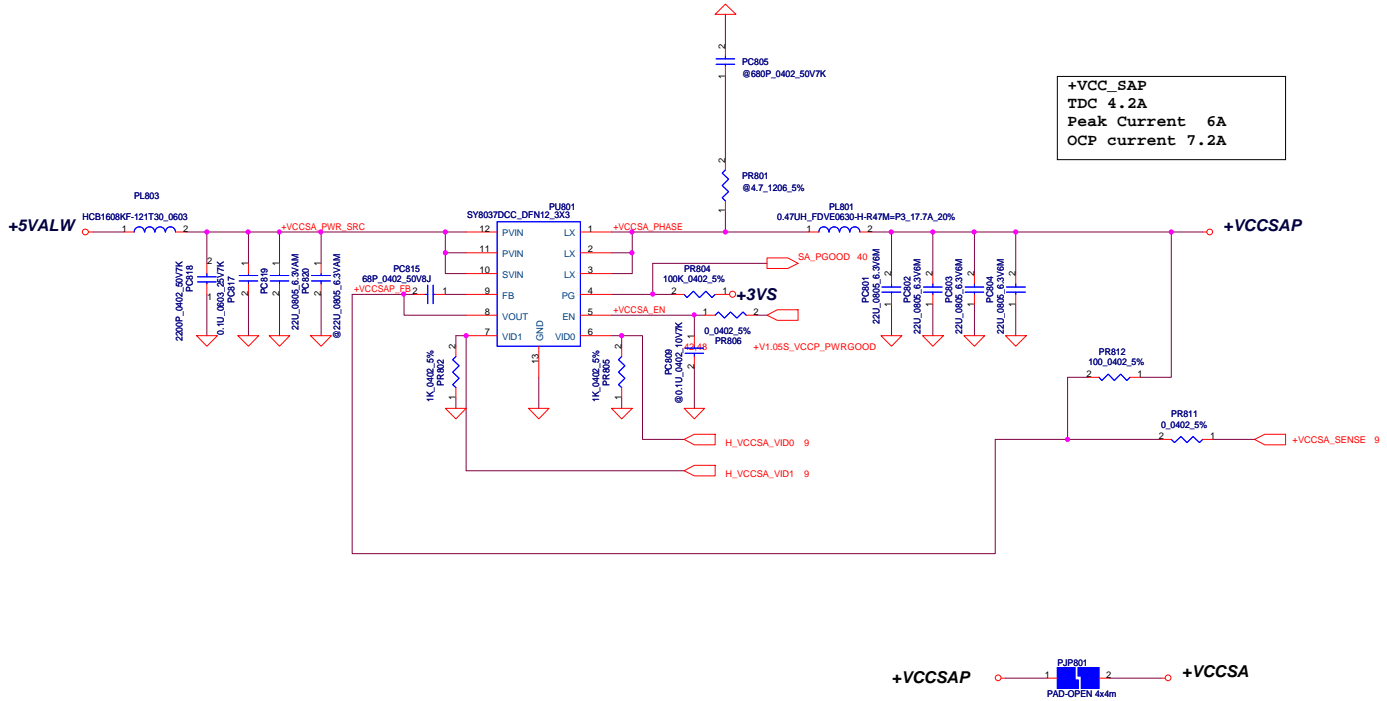
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2010/07/20	Deciphered Date	2012/12/31	Title	
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Size	Document Number	Rev		Date	
Custom	PBL22 LA-739IP M/B	0.2		Thursday, October 27, 2011	
Date			Sheet 49 of 59		

The 1k PD on the VCCSA VIDs are empty.
 These should be stuffed to ensure that
 VCCSA VID is 00 prior to VCCIO stability.

VID [0]	VID[1]	VCCSA Vout
0	0	0.9V
0	1	0.8V
1	0	0.725V
1	1	0.675V

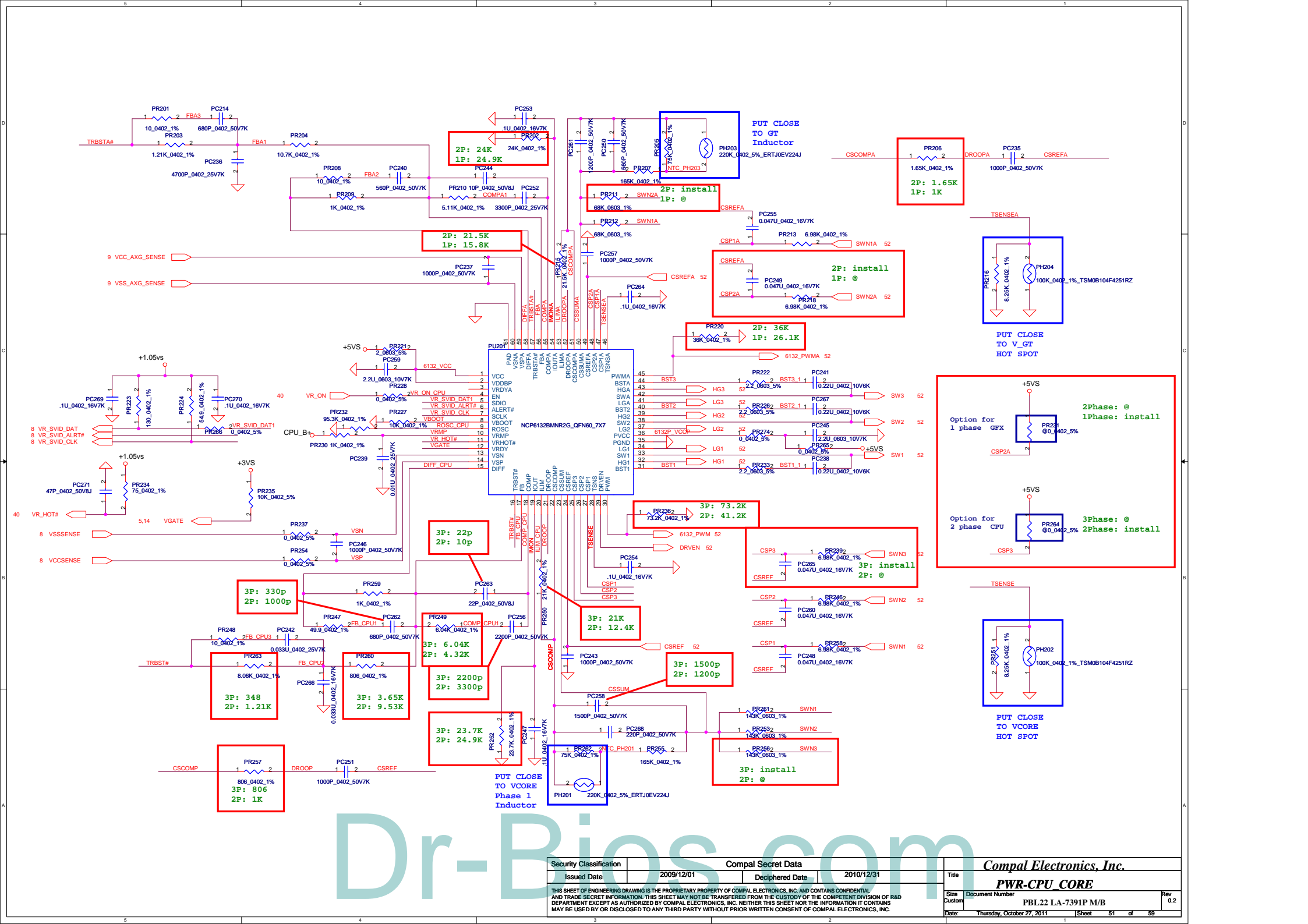
output voltage adjustable network

+VCC_SAP
 TDC 4.2A
 Peak Current 6A
 OCP current 7.2A



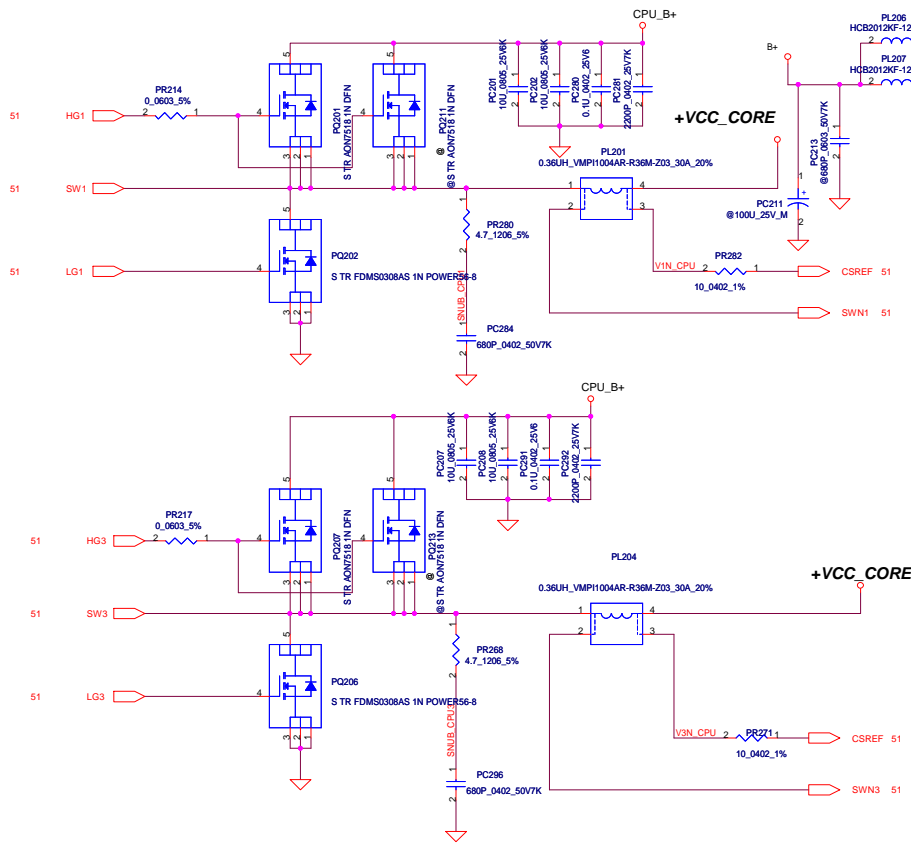
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Deciphered Date	2012/12/31	PWR-VCC_SAP	
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Date:	Thursday, October 27, 2011	Sheet	51	of	59

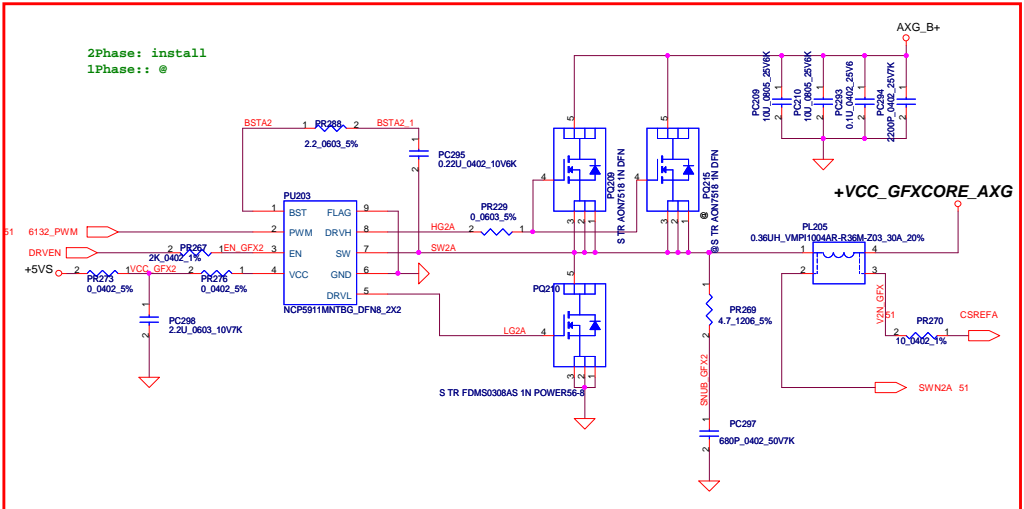
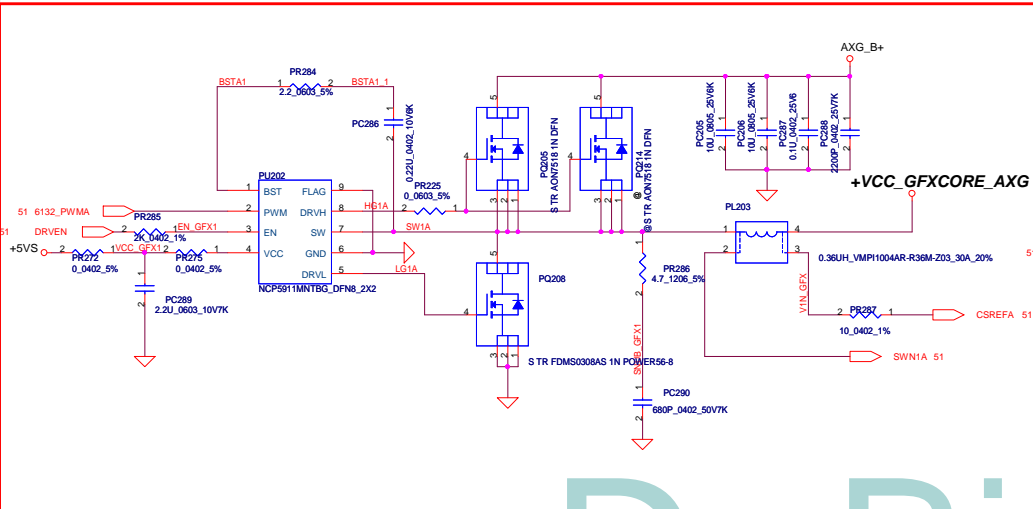


QC 45W CPU
 VID1=0.9V
 IccMax=94A
 Icc_Dyn=66A
 Icc_TDC=56A
 R_LL=1.9m ohm
 OCP=110A

DC 35W CPU
 VID1=1.05V
 IccMax=53A
 Icc_Dyn=43A
 Icc_TDC=33A
 R_LL=1.9m ohm
 OCP=65A

QC 45W CPU
 solution: 3+2
 MOS: cpu_core --> 上1(CSD17308)下1(TPCA8059)
 Gfx_core --> 上1(CSD17308)下1(TPCA8059)

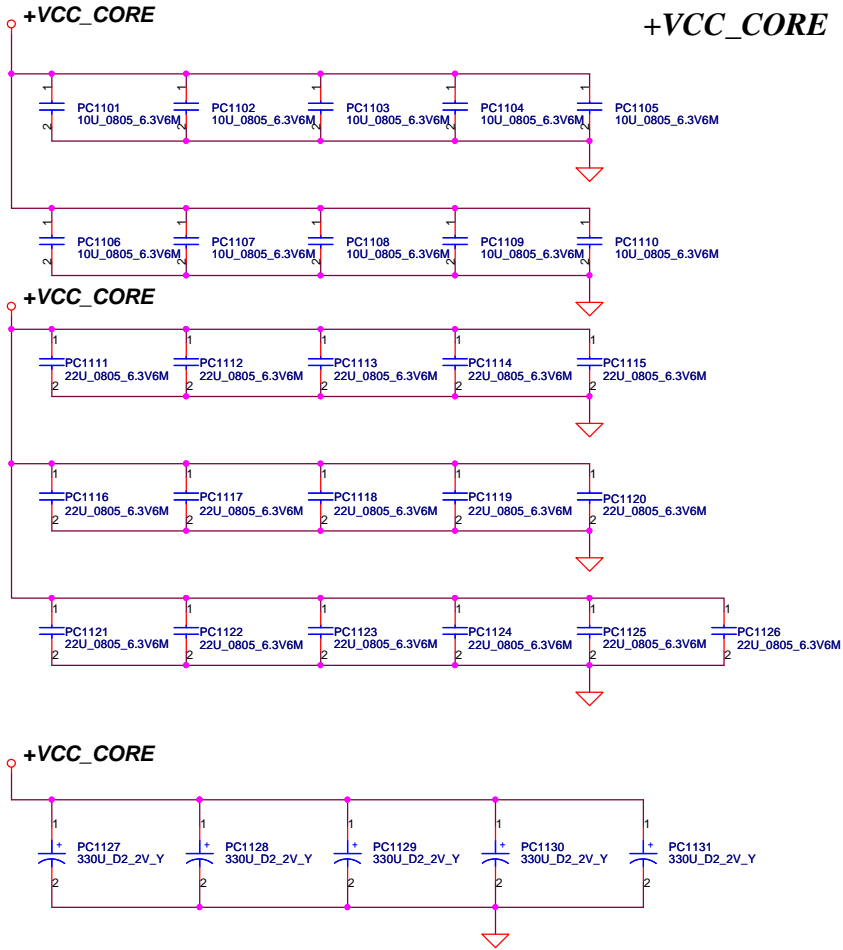
DC 35W CPU
 solution: 2+1
 MOS: cpu_core --> 上1(CSD17308)下1(TPCA8059)
 Gfx_core --> 上1(CSD17308)下1(TPCA8057)



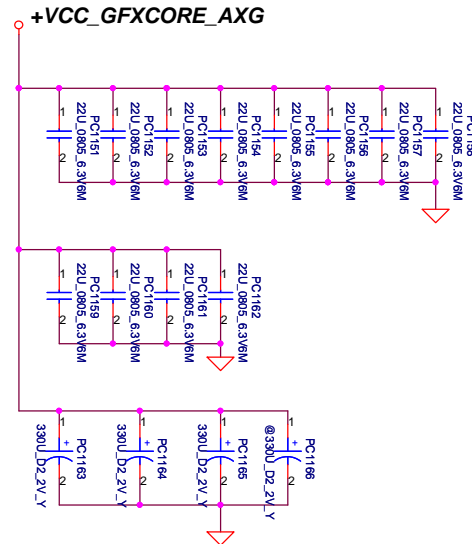
QC 45W GT2
 VID1=1.23V
 IccMax=46A
 Icc_Dyn=37A
 Icc_TDC=38A
 R_LL=3.9m ohm
 OCP=55A

DC 35W GT2
 VID1=1.23V
 IccMax=33A
 Icc_Dyn=20.2A
 Icc_TDC=21.5A
 R_LL=3.9m ohm
 OCP=40A

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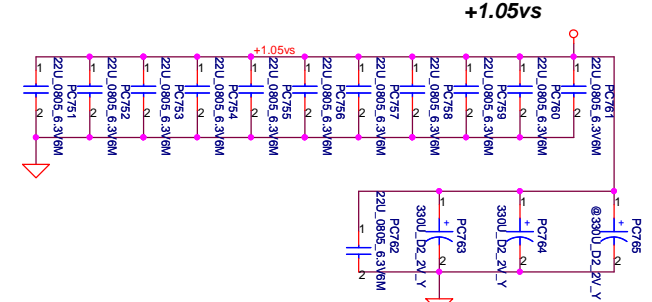


+VCC_GFXCORE_AXG

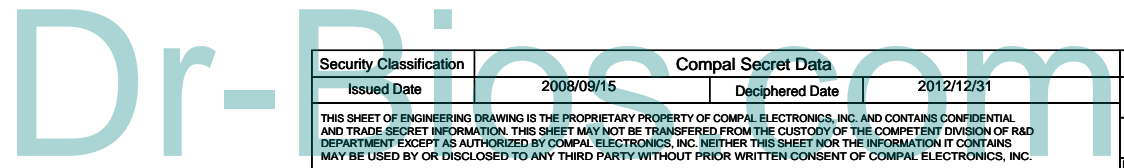


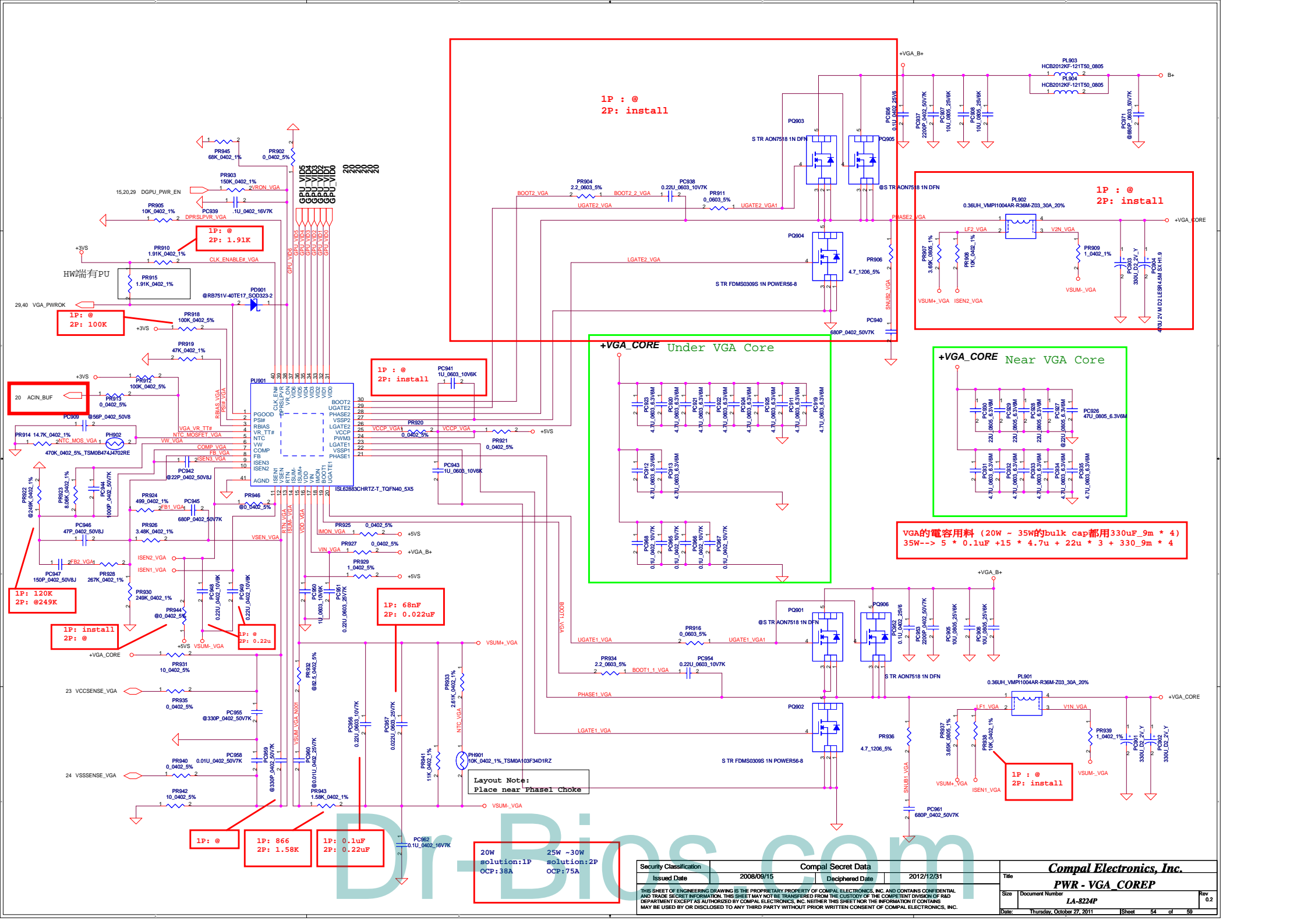
Below is 458544_CRV_PDDG_0.5 Table 5-8.

Socket Bottom	5 x 22 μ F (0805) 5 x (0805) no-stuff sites
Socket Top	7 x 22 μ F (0805) 2 x (0805) no-stuff sites



Chief River	330uF*9m	470uF*4.5m	22uF	10uF
8layer for DC CPU	4		16	10
8layer for QC CPU	5		16	10
6layer for DC CPU	5		16	10
6layer for QC CPU	4	1	16	10
GFX_CORE DC	2		12	
GFX_CORE QC	3		12	
1.05V_VCCP	2		12	





1P : @
2P: install

1P : @
2P: install

1P : @
2P: install

+VGA_CORE Near VGA Core

VGA的電容用料 (20W - 35W的bulk cap都用330uF_9m * 4)
35W-> 5 * 0.1uF + 15 * 4.7u + 22u * 3 + 330_9m * 4

1P : @
2P: install

20W solution: 1P
OCP: 38A

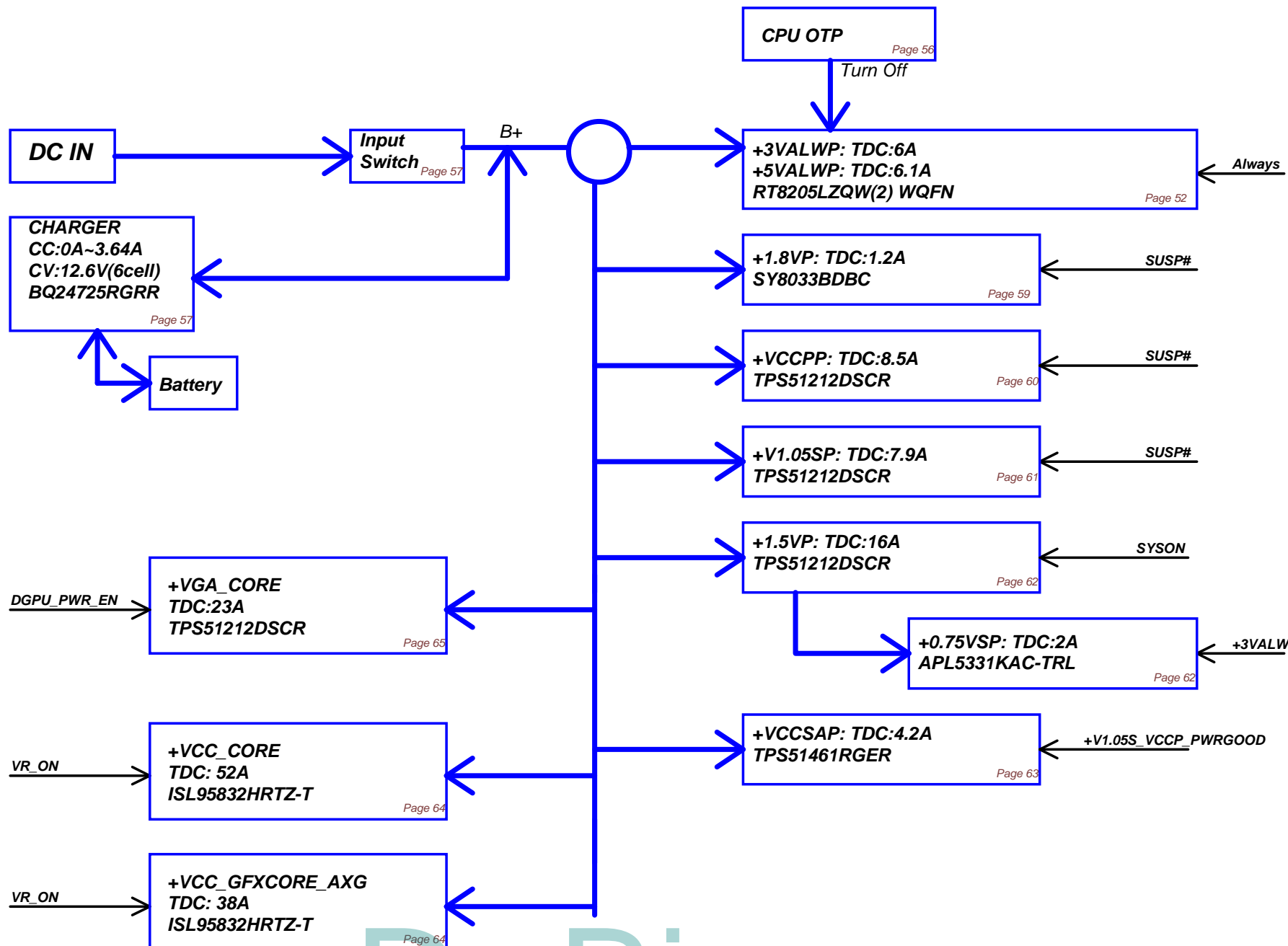
25W - 30W solution: 2P
OCP: 75A

Layout Note:
Place near Phase1 Choke

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Compal Electronics, Inc.
PWR - VGA CORE

Power block



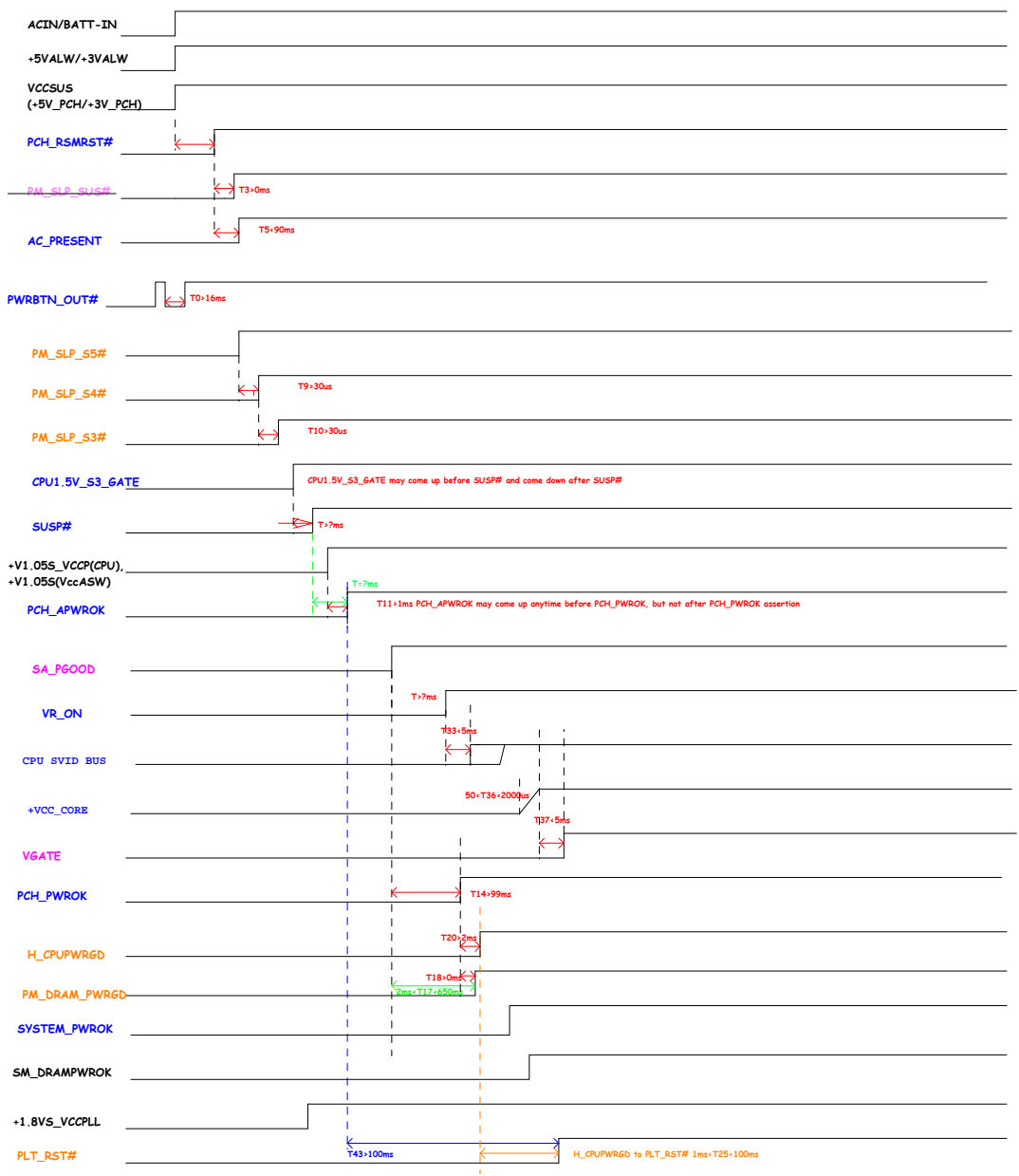
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Issued Date	2010/08/03	Deciphered Date	2012/12/31	POWER BLOCK DIAGRAM		
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Item	Page #	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
<div style="position: absolute; top: 100px; left: 100px; border-top: 1px dashed black; width: 90%;"></div>							

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				Date: Thursday, October 27, 2011		Sheet 56 of 59	

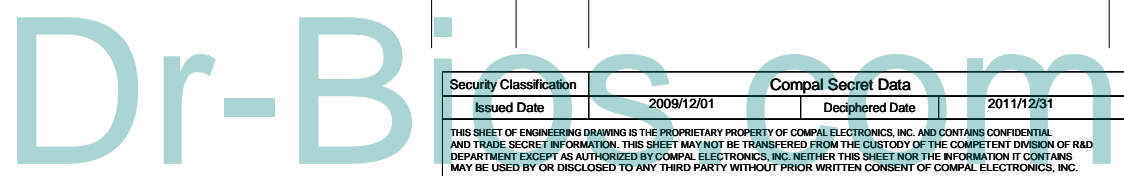
Timing Diagram for G3 or S4-5/M-off (Suspend Well Off) to S0/M0 [non Deep S4/S5 Platform]



Color	Command
Signal Names	Timing of these signals is set by PCH or processor
Signal Names	Timing of these signals should be met by the platform (EC)
Signal Names	Timing of these signals is set by Intel® MVP
Signal Names	Voltage rails or chip-to-chip buses

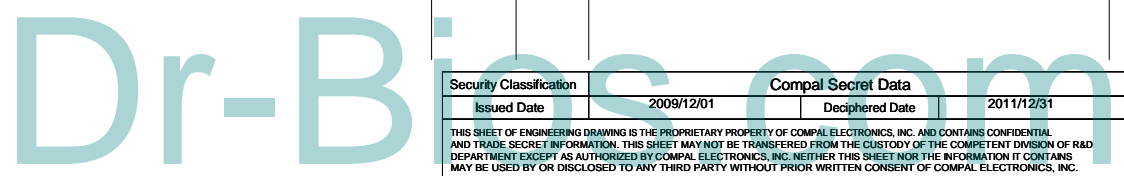
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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
ER01		HW Design (TMDS_B_HPD)	0.2	14	Delete R205	09/21	
ER02		For non AI co-lay	0.2	37	Add R745,R746 for non AI AI parts change to AI@	09/21	
ER03	+3VS Leakage	HW Design (SMBus leakage)	0.2	13 40	Delete Q3. (connect pin S & D) Remove R135, R137 Del R552, R556	09/21	
ER04	Can't detect USB30 (JUSB2)	HW Design (PCB2)	0.2	36	Swap U90_39/40 to U90_36/37 net Change R1040 to 47K from 4.7K ohm Reserve R1029	09/21	
ER05		Design change for card reader	0.2	34	Add Q20, R773, R775 Reserve R768, R774 Change Net name at Card reader Conn	09/22	
ER06		HW Design (PURC demand)	0.2	29	Change to Q3(A03404L) from U22(A04430L)	09/21	
ER07		HW Design(PCB2)	0.2	36	Change R1049 to 330k Change Q904 to A03404L from AP2301GN Change R1046 to 1.5M	09/21	
ER08		HW Design (PURC demand)	0.2	42	Change Q33 to A03413L from AP2301GN	09/21	
ER09		Fine-tune GPU timing	0.2	29	Change R433 to 0 ohm un-stuff C396 Change R432 to 10K Change R435 to 200 ohm	09/21	
ER10		HW Design (reserve)	0.2	18	Reserve R290	09/21	
ER11		HW Design(PCB2) for add VRAM DDR3 512MX8	0.2	25, 26, 27, 28	Add CMDA14 signal (U12-U19 pin J7)	09/28	
ER12		HW Design (change)	0.2	39	Reverse JKB1 connector	09/30	
ER13		HW Design	0.2	40	Del Y5 , C545 , C546	09/30	
ER14		HW Design (PURC demand)	0.2	15	Del R229,R230 (10K) Add R776-R783 (10K) Del R237,R239,R242 (8.2K) Add R784-R793 (8.2K)	09/30	
ER15		HW Design (PURC demand)	0.2	29, 31 37, 38 10, 11	Change P/N C387, C389, C399, C436, C447, C602 Change P/N C509, C515, C518, C526, (0402) Change P/N C99, C109, C118, C120, C140, C141. (0402)	10/03	
ER16		HW Design(XTAL fine-tune)	0.2	42, 12 13, 32 20, 36	Change R607 to 10 ohm Change Y3, C900, C901. Change Y1, C144, C145 Change Y4, C469, C473. Change Y2, C163, C164 Change Y9	10/07	
ER17		HW Design for instant on function	0.2	13 5	Reserve R750 R576 pin2 change to +3V_PCH from +3VS Change R576 to 0	10/07	
ER18		HW Design (power jumper change to +3VL)	0.2	38 40	jumper PJP302 (change +3VLP to +3VL @P38,P40)	10/07	
ER19		HW Design (PURC demand)	0.2		Change P/N Q7, U20, U21. Change P/N Q14-Q19, Q25, Q27-Q29, Q32, Q34-Q37, Q40-Q43, Q46-Q51, Q55-Q57, Q60, Q61, Q902, Q903, Q905. Change P/N Q23	10/14	
ER20		EMI solution	0.2	5	Add R684 to 0 (H_CPUPWRGD)	10/14	
ER21		Refer to ORB design	0.2	14 40	un-stuff D2, Add R751 un-stuff D32, R547, Add R752 Assign U33.18 to AC_PRESENT signal.	10/14	
ER22		change for GPU H/W strapping STRAP1 to PL 45K ohm to enhanced the PCIe PEG driving.	0.2	22	Change R349 from 34.8K to 45.3K	10/14	



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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
ER23		modify parts for Intel review feedback message.	0.2	09 18 17 14 15	Add R289 Add C149 0.luf Del L6, Add R289 , un-stuff C212 Del L4, Add R387 Add R230 Stuff R244	10/14	
ER24		Modify H2 size	0.2	38	Modify H2 size	10/17	
ER25		Refer to Intel review feedback item 45.	0.2	16	Add R807	10/19	
ER26		Reserve for Deep Sx	0.2	14,16 40	Add unstuff R800,R801,R802,R803,R804,R805 Add PCH_DPWROK,DS_WAKE#,SUSACK#,SUSWARN#	10/19	
ER27		Reserve for ROM protect	0.2	40	Add unstuff R806	10/19	
ER28		For Instant On function control by EC	0.2	06	Stuff R44, Unstuff R43	10/19	
ER29		RF request	0.2	36	Reserve R1082 , C1045	10/19	
ER30		For LED issue	0.2	39	change LED3 footprint to LED_HT-210UD-UYG_3P	10/20	
ER31		PRUC request	0.2	38 39	Change SW3,SW4,SW5 P/N	10/20	
ER32		PRUC request	0.2	39	Change U36 P/N	10/20	
ER33		For EMI request (without MS_CLK)	0.2	34	Remove R637,C611,R631,C620.	10/20	
ER34		dGPU thermal throttling.	0.2	20 40	Add R428, Revise U11 I/O signal. Un-stuff R730.	10/20	
ER35		SPI flash data crisis prevention.	0.2	12 40	Add Q63, R135, R137. Change U33.41 net to EC_SPI_WP. remove R806.	10/20	
ER36		Power switch EOS issue prevention.	0.2	37	Change C510, C516, C519 to 0.22uF/16V.	10/20	
ER37		For EMI request	0.2	32 35	Change R485 , R486 to 0.1uF Reserve C641~C648	10/20	
ER38		For ESD request	0.2	37,35 30,39	Change D27,D29,D24,D25. Change D6,D7,D9,D10,D33,D34.	10/20	
ER39		Modify X76 table (N13P-GS & N13M-GE1 x8)	0.2	3	update X76 table (add ZZZ9 ~ZZZ12 for N13P-GS & N13M-GE1 x8) & P/N	10/25	
ER40		update Power circuit	0.2	43-56	update Power circuit. (PC211)	10/26	
ER41		Modify PCH_SPI_WP# singal control by EC	0.2	12	Stuff R135	10/26	
ER42		Add test point for DFT	0.2	20	Add GPU_JTAG_TCK,GPU_JTAG_TDI,GPU_JTAG_TDO, GPU_JTAG_TMS	10/27	
ER43		For ASM1042 OC# pull-up	0.2	37	Reserve R1023,R1024 un-stuff	10/27 b	



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