ZZZ

PCB

Part Number = DA60000M700

Compal Confidential

PBL50 Schematics Document

AMD APU Zacate-FT1 + FCH Hudson-M1 + DGPU Seymour XT-M2

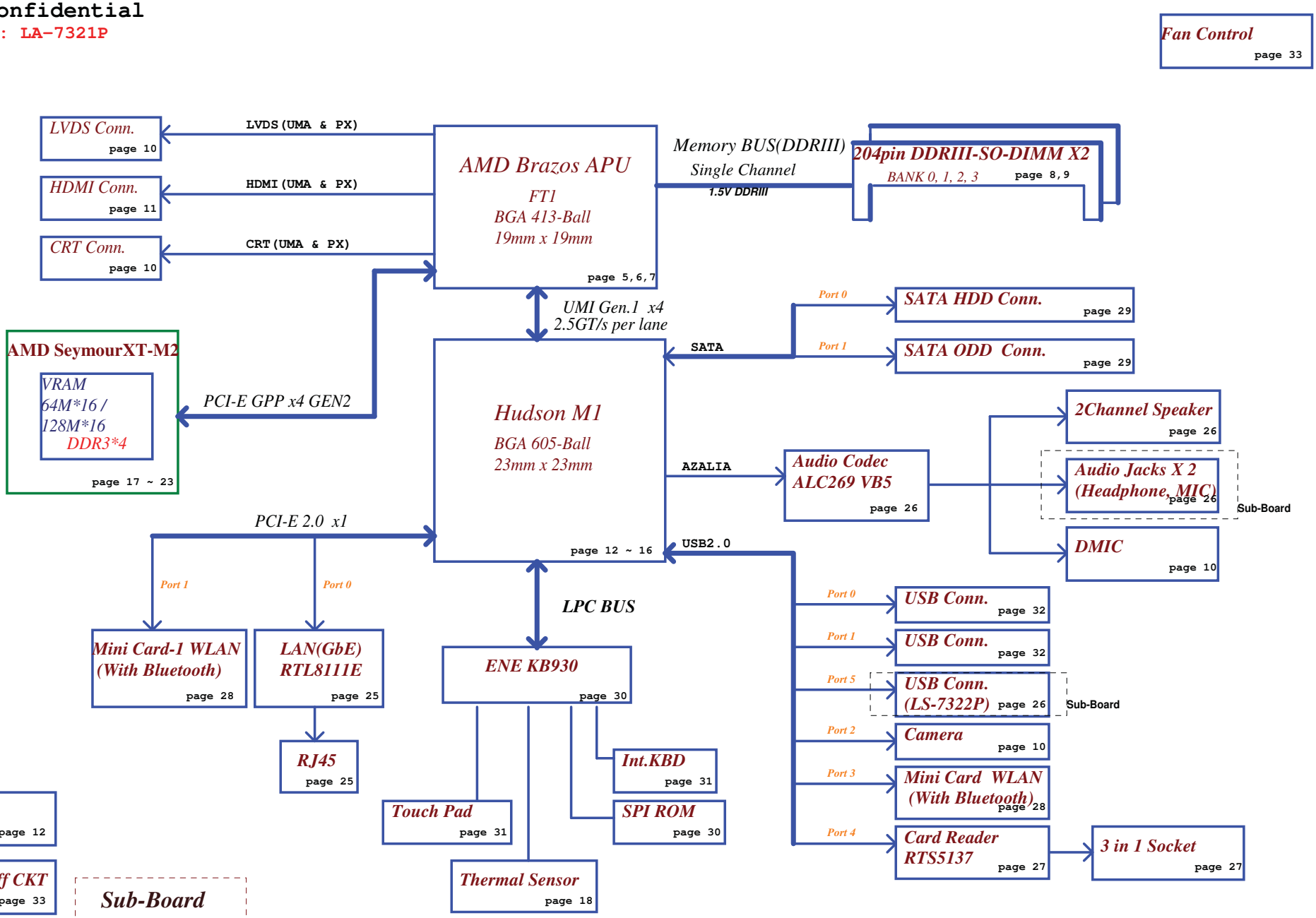
2011-02-15

REV:0.22

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.		
Title: P01-Cover Page		
Size: B	Document Number: LA7321P PBL50	Rev: 0.22
Date: Tuesday, February 15, 2011	Sheet 1 of 46	

Compal confidential
File Name : LA-7321P



Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P02-Block Diagrams

Size	Document Number	Rev
B	LA7321P PBL50	0.22

Date: Tuesday, February 15, 2011 Sheet 2 of 46

Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+APU_CORE	Core voltage for CPU (0.7-1.2V)	ON	OFF	OFF
+APU_CORE_NB	1.0V switched power rail	ON	OFF	OFF
+1.5V	1.5V power rail for CPU VDDIO and DDRIII	ON	ON	OFF
+0.75VS	0.75VS switched power rail for DDR terminator	ON	OFF	OFF
+1.0VS	1.0V switched power rail for NB VDDC & VGA	ON	OFF	OFF
+1.1VS	1.1VS switched power rail	ON	OFF	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V_LAN	3.3V power rail for LAN	ON	ON(WOL)	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5VS	5V switched power rail	ON	OFF	OFF
+VSB	VSB always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON
+1.1VALW	1.1V always on power rail	ON	ON	ON*

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

SMBUS Control Table

	SOURCE / PU Rail	MIINI1	BATT	APU	FCH	SODIMM	VRAM
EC_SMB_CK1 EC_SMB_DA1	KB930 +3VALW	X	V	X	X	X	X
EC_SMB_CK2 EC_SMB_DA2	KB930	X	X	V +3VS	V	X	V
FCH_SMCLK0 FCH_SMDAT0	FCH +3VS	V	X	X	V	V	X
FCH_SIC FCH_SID	FCH +3VALW	X	X	V Reserve	X	X	X

SCL0, SDA0 (Primary SMBUS in the S0 domain)
SCL1, SDA1 (Secondary SMBUS supporting ASF)
SCL2, SDA2 (Primary SMBUS in the S5 domain)
SCL3, SDA3 (Primary low-voltage SBMBUS for Processor TSI)
SCL4, SDA4 (Primary SMBUS in the S5 domain)

Symbol Note :

: means Digital Ground

: means Analog Ground

FCH Hudson-M1 USB Port List	
USB1.1	
Port0	NC
Port1	NC
USB2.0	
Port0	JUSB1
Port1	JUSB2
Port2	Camera
Port3	JMINI(WLAN)
Port4	Card Reader
Port5	JUSB3
Port6	NC
Port7	NC
Port8	NC
Port9	NC
Port10	NC
Port11	NC
Port12	NC
Port13	NC

Brazos PCIE Port List		
APU	PCIE0	GPU PCIE x4
	PCIE1	
	PCIE2	
	PCIE3	
FCH	PCIE0	LAN
	PCIE1	WLAN
	PCIE2	NC
	PCIE3	NC

FCH Hudson-M1 SATA Port List	
SATA0	HDD
SATA1	ODD
SATA2	NC
SATA3	NC
SATA4	NC
SATA5	NC

BOM Structure

10G@ : 1.0G CPU (C50)
15G@ : 1.5G CPU (E240)
16G@ : 1.6G CPU (E350)
UMA@ : APU output.
VGA@ : GPU used.
LS@ : Level shift used.
X76@ : VRAM.

X76@L01: Samsung 1G
X76@L02: Hynix 1G
X76@L03: Samsung 512M
X76@L04: Hynix 512M

DIS M/B BOM Config
L01: 16G@/VGA@/LS@ --X76@L04
L02: 16G@/UMA@/LS@
L03: 15G@/VGA@/LS@ --X76@L03
L04: 15G@/UMA@/LS@
L05: 16G@/VGA@/LS@ --X76@L01
L06: 15G@/VGA@/LS@ --X76@L02
L07: 10G@/UMA@/LS@

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P03-Notes List

Size: B | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Tuesday, February 15, 2011 | Sheet 3 of 46

Power-Up/Down Sequence

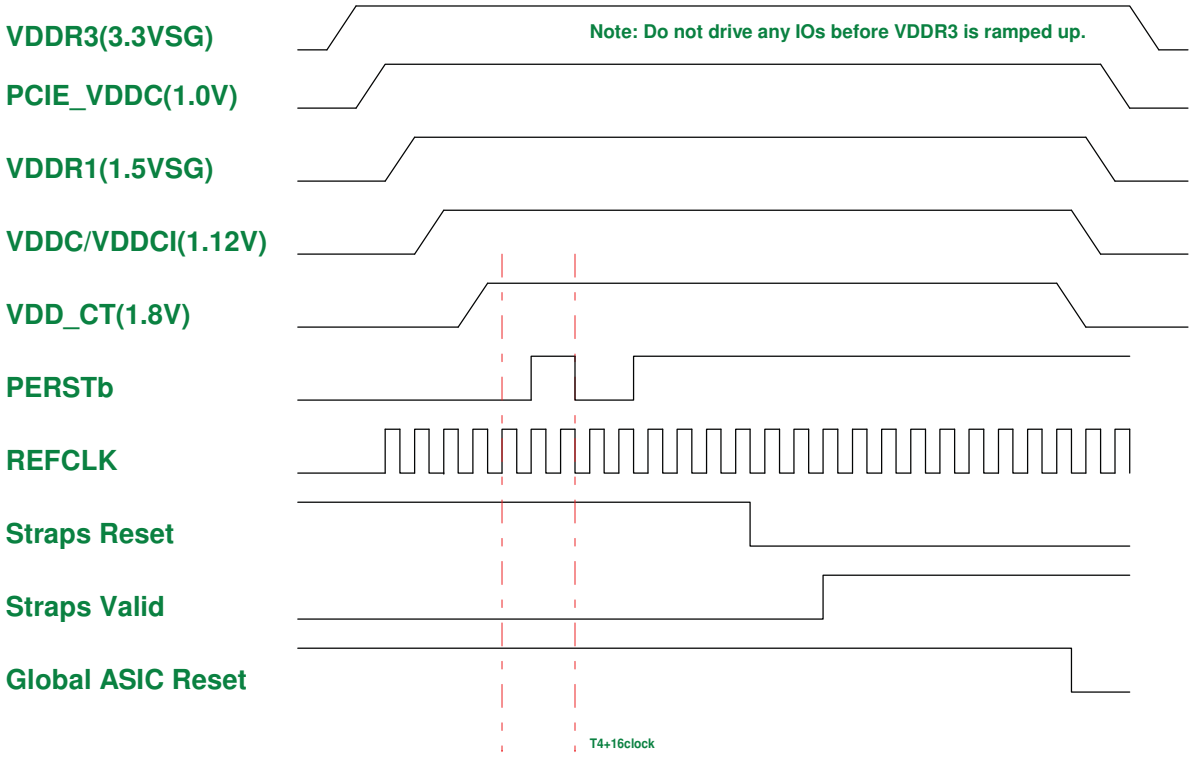
1. All the ASIC supplies must fully reach their respective nominal voltages within 20 ms of the start of the ramp-up sequence, though a shorter ramp-up duration is preferred.

2. VDDR3 should ramp-up before or simultaneously with VDDC.

3. For LVDS, DPx_VDD10 should ramp-up before DPx_VDD18 and the PCIe Reference clock should begin before DPx_VDD18. For power-down, DPx_VDD18 should ramp-down before DPx_VDD10.

4. The external pull-ups on the DDC/AUX signals (if applicable) should ramp-up before or after both VDDC and VDD_CT have ramped up.

5.VDDC and VDD_CT should not ramp-up simultaneously. (e.g., VDDC should reach 90% before VDD_CT starts to ramp-up (or vice versa).)



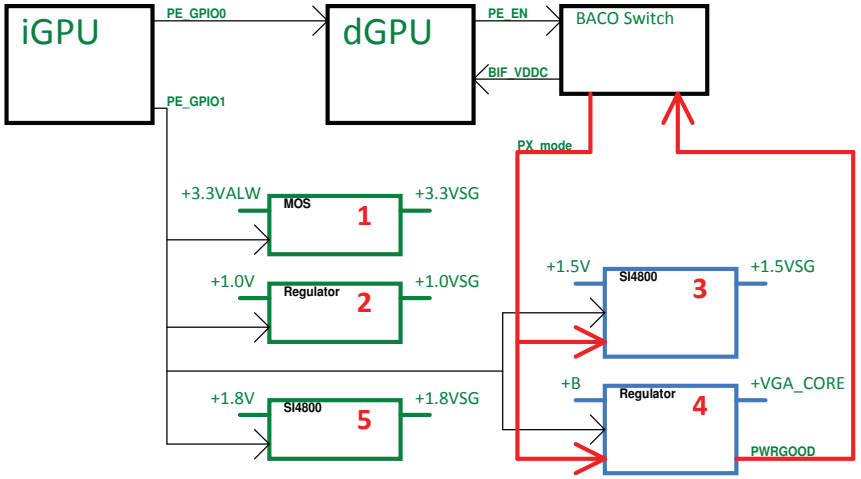
Without BACO option :

PE_GPIO0 : Low -> Reset dGPU ; High ->Normal operation
PE_GPIO1 : Low -> dGPU Power OFF ; High -> dGPU Power ON

BACO option :

PE_GPIO0 : High ->Normal operation (dGPU is not reseton BACO mode)
PE_GPIO1 : Low -> dGPU Power OFF ; High -> dGPU Power ON (always High)

dGPU Power Pins	Voltage	PX 3.0	BACO Mode	Max current
PCIE_PVDD, PCIE_VDDR, TSVDD, VDDR4, VDD_CT, DPE_PVDD, DP[F:E]_VDD18, DP[D:A]_PVDD, DP[D:A]_VDD18, AVDD, VDD1DI, A2VDDQ, VDD2DI, DPLL_PVDD, MPV18, and SPV18	1.8V	OFF	ON	1679mA
DP[F:E]_VDD10, DP[D:A]_VDD10, DPLL_VDDC, and SPV10	1.0V	OFF	ON	575mA
PCIE_VDDC	1.0V	OFF	ON	2A
VDDR3 , and A2VDD	3.3V	OFF	ON	190mA
BIF_VDDC (current consumption = 55mA@1.0V, in BACO mode)	Same as VDDC	OFF	ON Same as PCIE_VDDC	70mA
VDDR1	1.5V	OFF	OFF	2.8A
VDDC/VDDCI	1.12V	OFF	OFF	12.9A



Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P04-dGPU Block Diagram

Size	Document Number	Rev
B	LA7321P PBL50	0.22

Date: Tuesday, February 15, 2011 Sheet 4 of 46

APU 10G@: SA00004KD70 (S IC ONTARIO CMC50AFPB22GT 1.0G BGA 413P) - C50
APU 15G@: SA00004KF50 (S IC ZACATE EME240GBB12GT 1.5G BGA 413P) - E240
APU 16G@: SA00004KG70 (S IC ZACATE EME350GBB22GT 1.6G BGA 413P) - E350

U22 16G@
ZACATE EME350GBB22GT 1.6G BGA 413P
U22 10G@
ONTARIO CMC50AFPB22GT 1.0G BGA 413P

+1.8VS
R399 1 2 1K 0402 5% APU_SVC
R400 1 2 1K 0402 5% APU_SVD
R142 2 1 300 0402 5% APU_RST#
R401 2 1 300 0402 5% APU_PWRGD
R402 1 2 510 0402 1% TEST_25_L
R141 1 2 1K 0402 5% TEST36

C237 1 @ 2 0.01U 0402 25V7K APU_RST#
C238 1 @ 2 0.01U 0402 25V7K APU_PWRGD

+3VS
R410 1 2 1K 0402 5% APU_PROCHOT#
R411 1 2 1K 0402 5% APU_ALERT#_R
R143 1 2 1K 0402 5% APU_SIC
R414 1 2 1K 0402 5% APU_SID

U22B

DISPLAYPORT 1
11 APU_HDMI_TX2P → A8 TDP1_TXP0
11 APU_HDMI_TX2N → B8 TDP1_TXN0
11 APU_HDMI_TX1P → B9 TDP1_TXP1
11 APU_HDMI_TX1N → A9 TDP1_TXN1
11 APU_HDMI_TX0P → D10 TDP1_TXP2
11 APU_HDMI_TX0N → C10 TDP1_TXN2
11 APU_HDMI_CLKP → A10 TDP1_TXP3
11 APU_HDMI_CLKN → B10 TDP1_TXN3
TDP1_AUXP → B2 APU_HDMI_CLK
TDP1_AUXN → C2 APU_HDMI_DATA
TDP1_HPD → C1 APU_HDMI_HPD 11

DP MISC
DP_ZVSS → H3 R398 1 2 150 0402 1%
DP_BLON → G2 APU_ENBKL 10
DP_DIGON → H2 APU_ENVDD 10
DP_VARY_BL → H1 APU_BLPWM 10

DISPLAYPORT 0
10 APU_TXOUT2+ → B5 LTDP0_TXP0
10 APU_TXOUT2- → A5 LTDP0_TXN0
10 APU_TXOUT1+ → D6 LTDP0_TXP1
10 APU_TXOUT1- → C6 LTDP0_TXN1
10 APU_TXOUT0+ → A6 LTDP0_TXP2
10 APU_TXOUT0- → B6 LTDP0_TXN2
10 APU_TXCLK+ → D8 LTDP0_TXP3
10 APU_TXCLK- → C8 LTDP0_TXN3
LTDP0_AUXP → A3 APU_LCD_CLK
LTDP0_AUXN → B3 APU_LCD_DATA
LTDP0_HPD → D3 R406 1 2 100K 0402 5% +5VS

VGA DAC
DAC_RED → C12
DAC_REDB → D13 R407 1 2 150 0402 1% APU_CRT_R 10
DAC_GREEN → A12
DAC_GREENB → B12 R408 1 2 150 0402 1% APU_CRT_G 10
DAC_BLUE → A13
DAC_BLUEB → B13 R409 1 2 150 0402 1% APU_CRT_B 10
DAC_HSYNC → E1 APU_CRT_HSYNC 10
DAC_VSYNC → E2 APU_CRT_VSYNC 10
DAC_SCL → F2 APU_CRT_DDC_SCL 10
DAC_SDA → D4 APU_CRT_DDC_SDA 10
DAC_ZVSS → D12 R144 1 2 499 0402 1%

CLK
12 APU_CLKP → V2 CLKIN_H
12 APU_CLKN → V1 CLKIN_L
12 APU_DISP_CLKP → D2 DISP_CLKIN_H
12 APU_DISP_CLKN → D1 DISP_CLKIN_L

SER
43 APU_SVC → J1 SVC
43 APU_SVD → J2 SVD
APU_SIC → P3 SIC
APU_SID → P4 SID

CTRL
12 APU_RST# → T3 RESET_L
12 APU_PWRGD → T4 PWROK
30 EC_THERM# R169 1 2 0 0402 5%
12 FCH_PROCHOT# R168 1 @ 2 0 0402 5%
APU_PROCHOT# → U1 PROCHOT_L
APU_THERMTRIP# → U2 THERMTRIP_L
APU_ALERT#_R → T2 ALERT_L

JTAG
APU_TDI → N2 TDI
APU_TDO → N1 TDO
APU_TCK → P1 TCK
APU_TMS → P2 TMS
APU_TRST# → M4 TRST_L
APU_DBRDY → M3 DBRDY
APU_DBREQ# → M1 DBREQ_L
T93PAD
T94PAD Close @ APU @

TEST
TEST4 → R1 PAD T66
TEST5 → R2 PAD T67
TEST6 → R6
TEST14 → T5 PAD T68
TEST15 → E4 TEST15 R415 1 @ 2 1K 0402 5%
TEST16 → K4
TEST17 → L1
TEST18 → L2 TEST18 R416 1 2 1K 0402 5%
TEST19 → M2 TEST19 R417 1 2 1K 0402 5%
TEST25_H → K1 TEST25_H R418 1 2 510 0402 1%
TEST25_L → K2 TEST_25_L
TEST28_H → L5
TEST28_L → M5
TEST31 → M2 TEST31 PAD T73
TEST33_H → J18 TEST33_H C516 2 0.1U 0402 16V4Z R420 1 2 51 0402 1%
TEST33_L → J19 TEST33_L C517 2 0.1U 0402 16V4Z R421 1 2 51 0402 1%
TEST34_H → U15
TEST34_L → T15
TEST35 → H4 TEST35 R422 1 @ 2 1K 0402 5%
TEST36 → N5 TEST36
TEST37 → R5 TEST37 PAD T76 R958 1 2 1K 0402 5% +1.8VS
Delete Test point for layout limitation
20100917

TEST38 → K3
DMAACTIVE_L → T1 ALLOW_STOP# 12
R423 1 2 1K 0402 5% +1.8VS
C639 1 2 0.1U 0402 16V4Z

43 APU_VDDNB_RUN_FB_H → F4 VDDCR_NB_SENSE
43 APU_VDD0_RUN_FB_H → G1 VDDCR_CPU_SENSE
T77PAD @ → F3 VDDIO_MEM_S_SENSE
43 APU_VDD0_RUN_FB_L → F1 VSS_SENSE
B4 RSVD_1
W11 RSVD_2
V5 RSVD_3

ZACATE EME240GBB12GT 1.5G BGA 413P
15G@

+3VS
R424 10K 0402 5%
R425 1K 0402 5%
Q79 MMBT3904_NL_SOT23-3
APU_THERMTRIP# → H_THERMTRIP# 13
R427 0 0402 5%

If FCH internal pull-up disabled, level-shifter could be deleted.
Need BIOS to disable internal pull-up!!

CPU TSI interface level shift

BSH111, the Vgs is:
min = 0.4V
Typ = 1.0V
Max = 1.3V

FDV301N, the Vgs is:
min = 0.65V
Typ = 0.85V
Max = 1.5V

1.607V for Gate

If use level shift, EC_SMB need pull up (pop R747 & R748)

+3VS
C236 @ 1 2 0.1U 0402 10V7K
R428 @ 1 2 31.6K 0402 1%
R160 @ 1 2 30K 0402 1%

APU_SID → Q22 BSH111 1N_SOT23-3 → EC_SMB_DA
R429 @ 0 0402 5% → FCH_SID → FCH_SID 13 — T0 FCH
R430 0 0402 5% → EC_SMB_DA2 → EC_SMB_DA2 18,30 — TO EC
R431 0 0402 5%

APU_SIC → Q23 BSH111 1N_SOT23-3 → EC_SMB_CK
R432 @ 0 0402 5% → FCH_SIC → FCH_SIC 13 — T0 FCH
R433 0 0402 5% → EC_SMB_CK2 → EC_SMB_CK2 18,30 — TO EC
R434 0 0402 5%

AMD Debug

+1.8VS
R842 2 1 1K 0402 5%
APU_TRST# R846 1 2 0 0402 5% APU_TRST#_R
R847 2 1 10K 0402 5%
R176 2 1 10K 0402 5%
R177 2 1 10K 0402 5%

JHDT1 SAMTE_ASP-136446-07-B CONN@

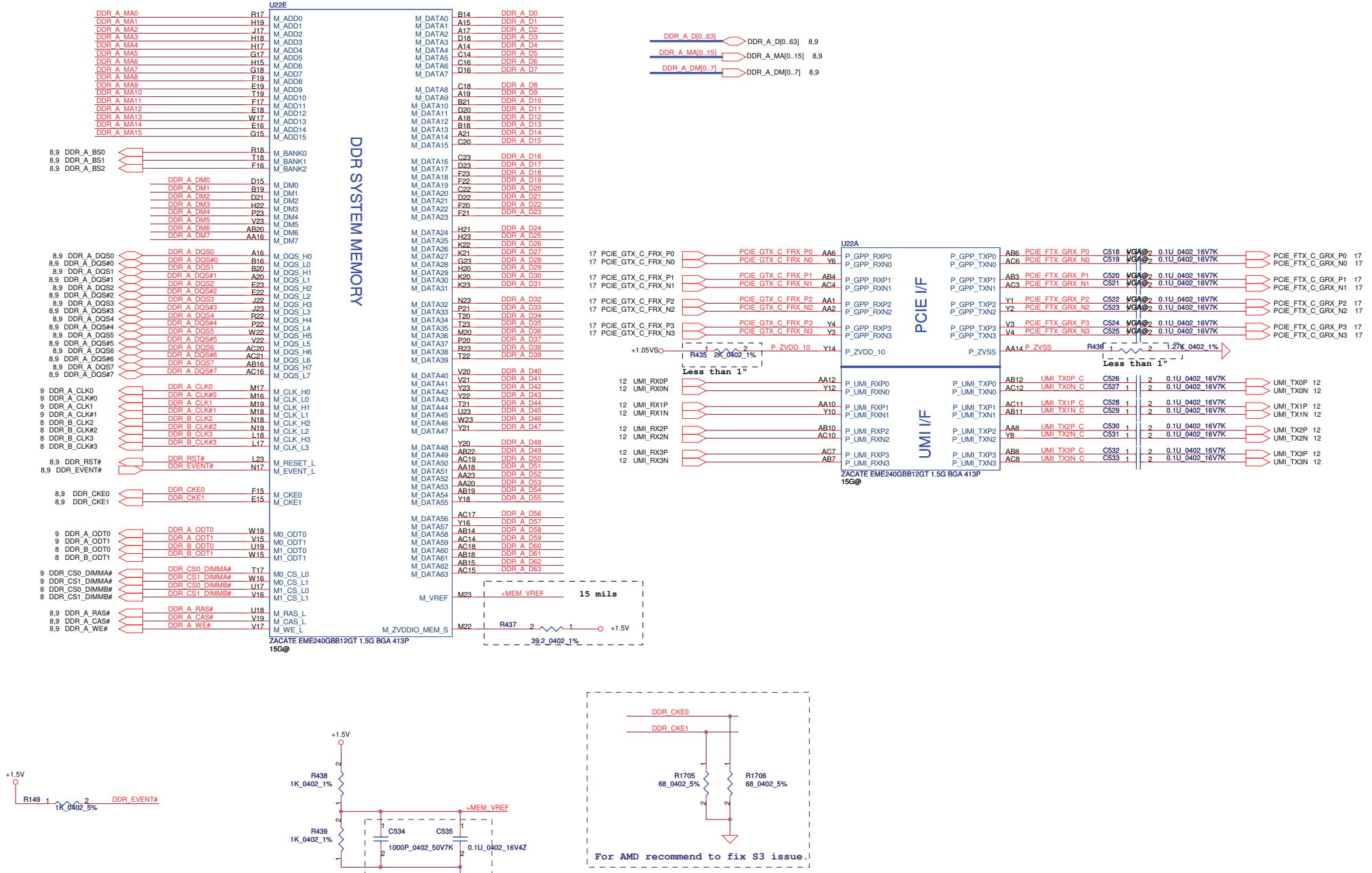
APU_TCK	R843 2 1 1K 0402 5%	2	4
APU_TMS	R840 2 1 1K 0402 5%	4	6
APU_TDI	R798 2 1 1K 0402 5%	6	8
APU_TDO		8	10
APU_PWRGD		10	12
APU_RST#		12	14
APU_DBRDY		14	16
APU_DBREQ#	R178 1 2 300 0402 5%	16	18
J108_PLLTST0	R799 1 2 0 0402 5% TEST19	18	20
J108_PLLTST1	R863 1 2 0 0402 5% TEST18		

+1.8VS

Please be noted about TEST_18 and TEST_19

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.
Title: P05-FT1 CTRL/DP/CRT
Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22
Date: Thursday, February 17, 2011 | Sheet 5 of 46



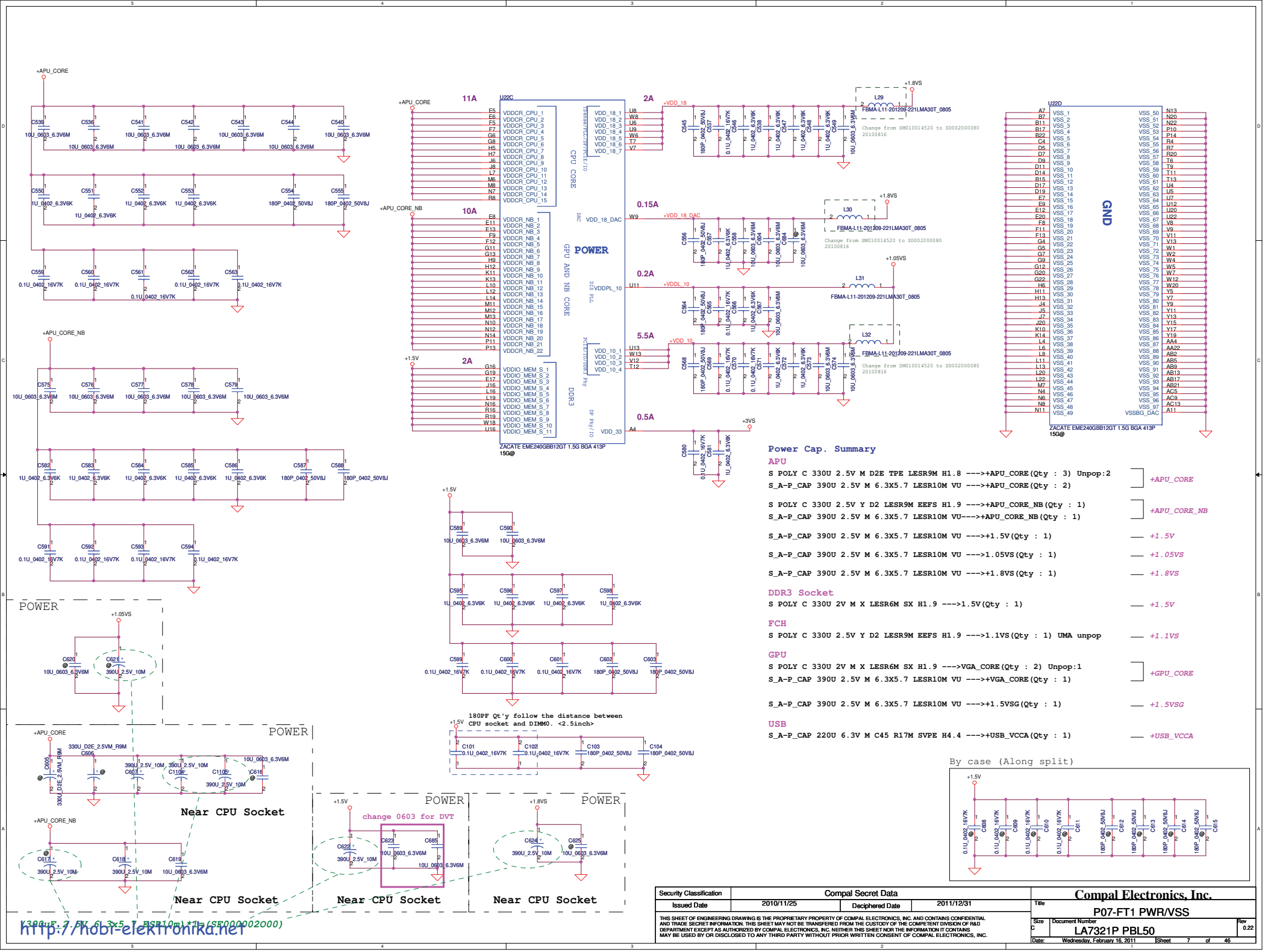
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P06-FT1 DDRIII/UMI/PCIE

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Wednesday, February 16, 2011 | Sheet 6 of 46



Power Cap. Summary

APU

```
S POLY C 330U 2.5V M D2E TPE LESR9M H1.8 --->+APU_CORE(Qty : 3) Unpop:2
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->+APU_CORE(Qty : 2)
```
+APU_CORE

```
S POLY C 330U 2.5V Y D2 LESR9M EEFS H1.9 --->+APU_CORE_NB(Qty : 1)
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU--->+APU_CORE_NB(Qty : 1)
```
+APU_CORE_NB

```
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->+1.5V(Qty : 1)
```
+1.5V

```
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->1.05VS(Qty : 1)
```
+1.05VS

```
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->+1.8VS(Qty : 1)
```
+1.8VS

DDR3 Socket

```
S POLY C 330U 2V M X LESR6M SX H1.9 --->1.5V(Qty : 1)
```
+1.5V

FCH

```
S POLY C 330U 2.5V Y D2 LESR9M EEFS H1.9 --->1.1VS(Qty : 1) UMA unpop
```
+1.1VS

GPU

```
S POLY C 330U 2V M X LESR6M SX H1.9 --->VGA_CORE(Qty : 2) Unpop:1
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->+VGA_CORE(Qty : 1)
```
+GPU_CORE

```
S_A-P_CAP 390U 2.5V M 6.3X5.7 LESR10M VU --->+1.5VSG(Qty : 1)
```
+1.5VSG

USB

```
S_A-P_CAP 220U 6.3V M C45 R17M SVPE H4.4 --->+USB_VCCA(Qty : 1)
```
+USB_VCCA

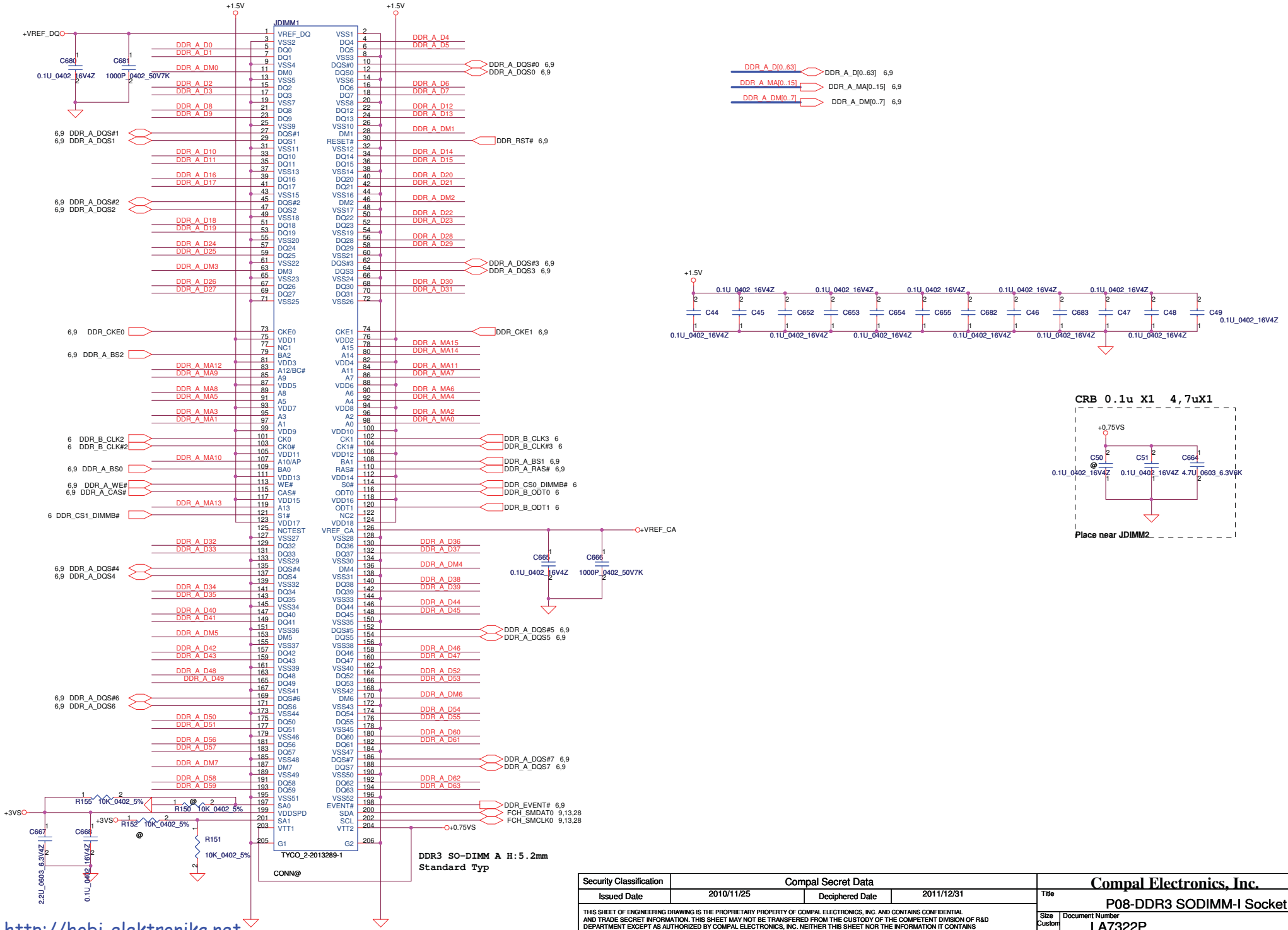
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

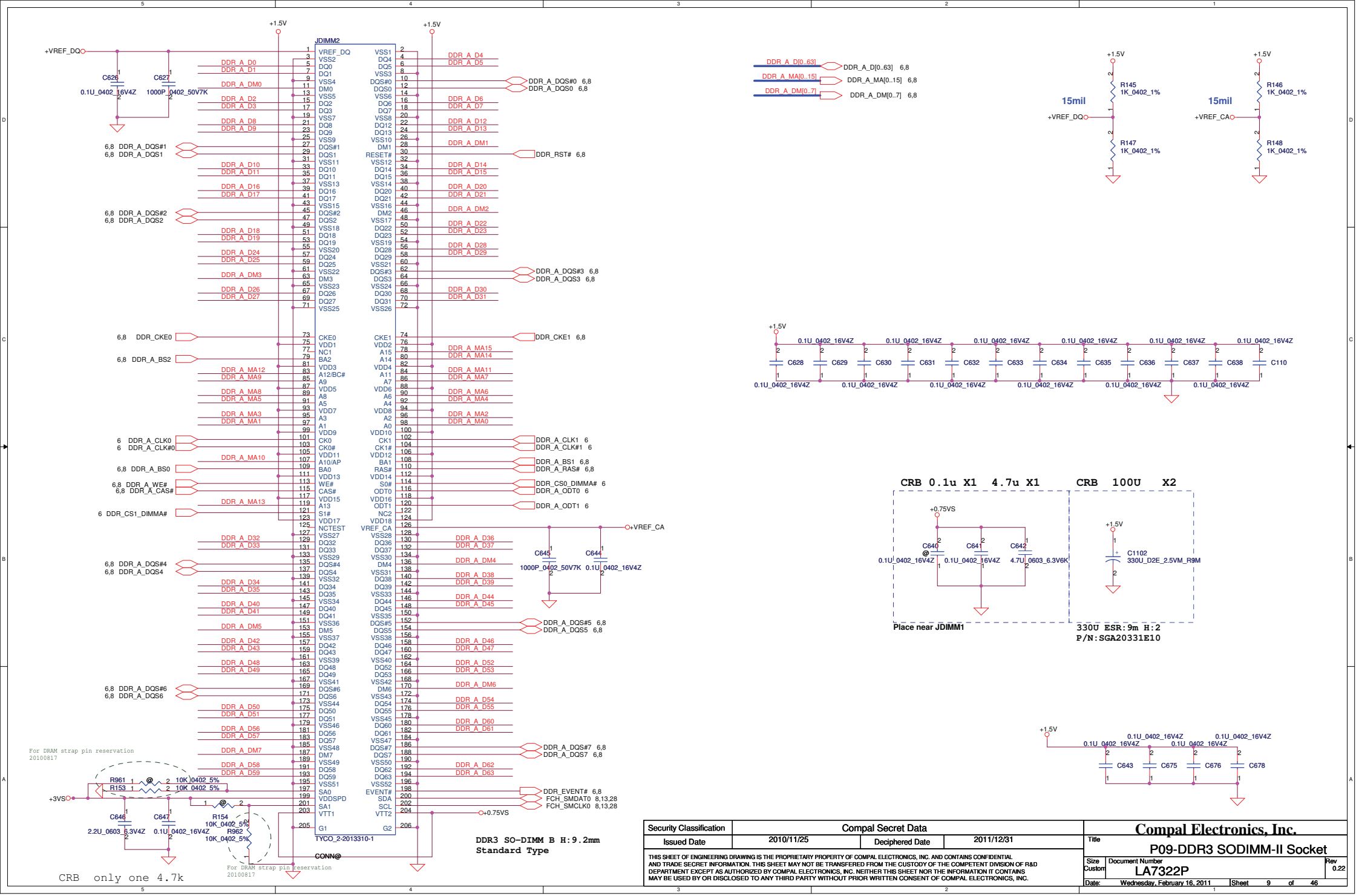
Compal Electronics, Inc.

Title: P07-FT1 PWR/VSS

Size	Document Number	Rev
C	LA7321P PBL50	0.22

Date: Wednesday, February 16, 2011 Sheet 7 of 46



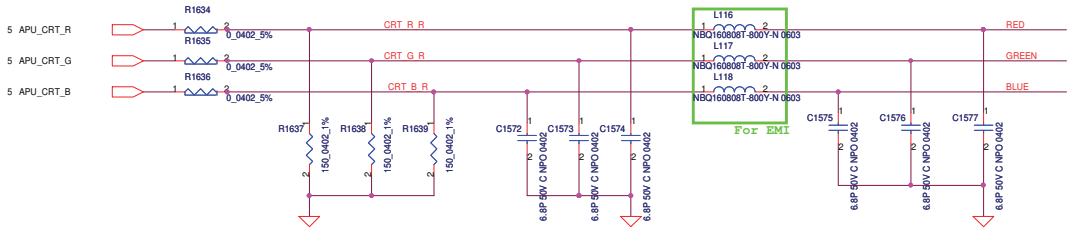


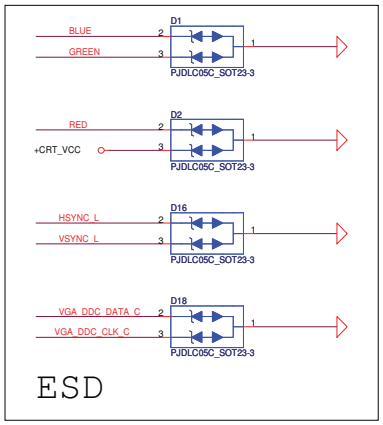
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

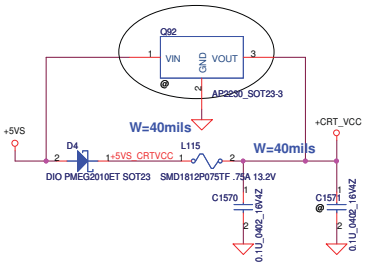
Compal Electronics, Inc.

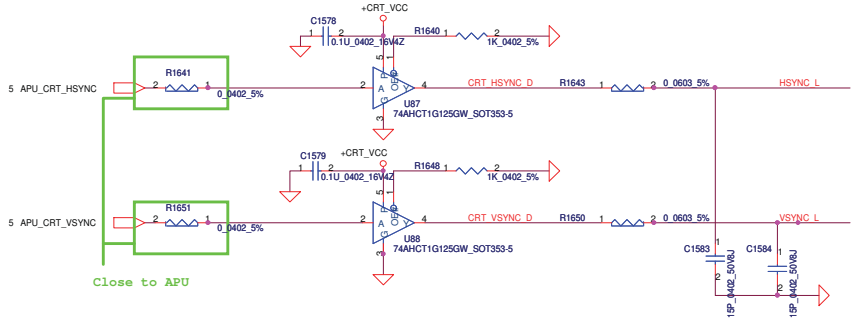
Title	P09-DDR3 SODIMM-II Socket		
Size: Custom	Document Number: LA7322P		Rev: 0.22
Date: Wednesday, February 16, 2011	Sheet 9 of 46		

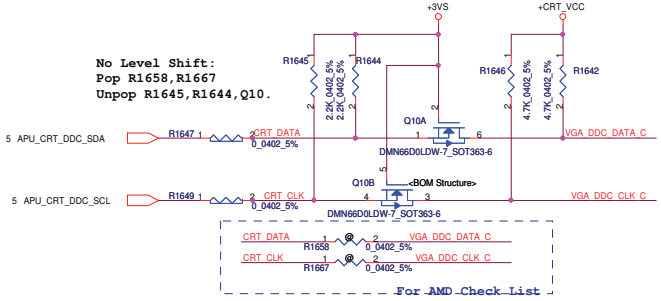
CRT

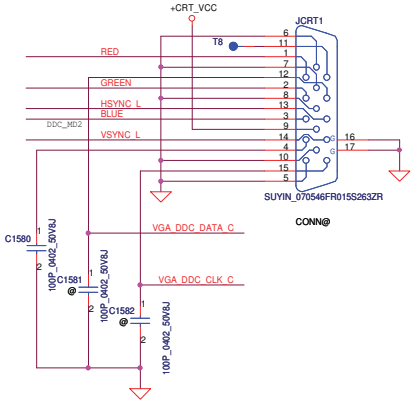




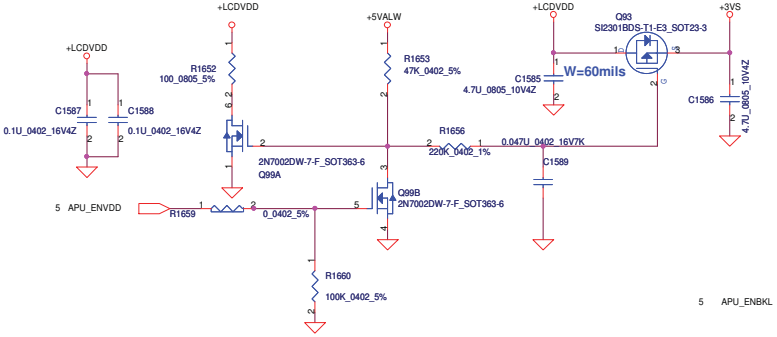


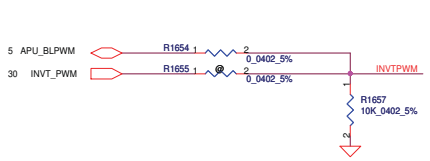


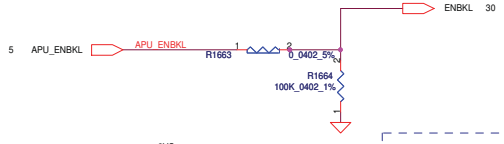


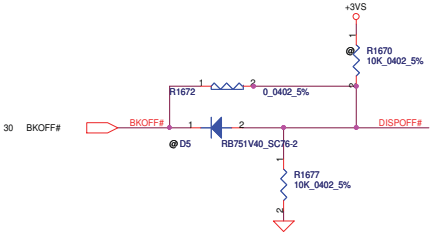


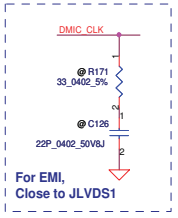
LCD POWER CIRCUIT

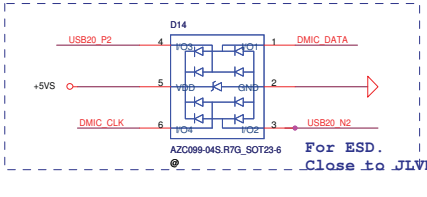


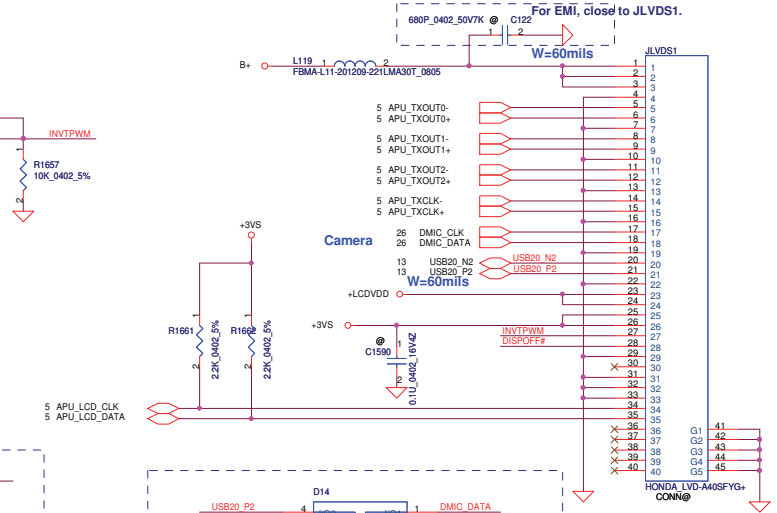












Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

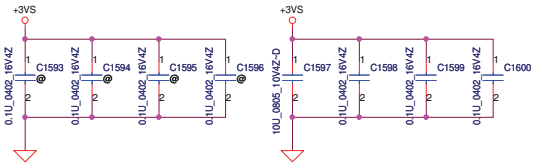
Compal Electronics, Inc.

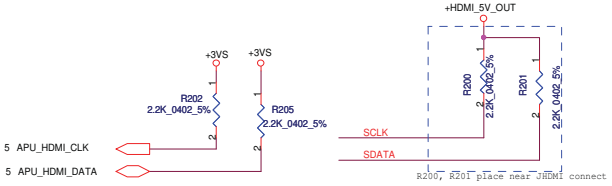
Title: P10-LVDS/CRT CONN

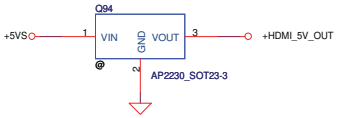
Size	Document Number	Rev
C	LA7321P PBL50	0.22

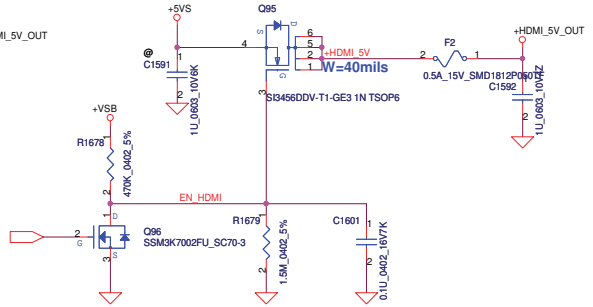
Date: Thursday, February 17, 2011 Sheet 10 of 46

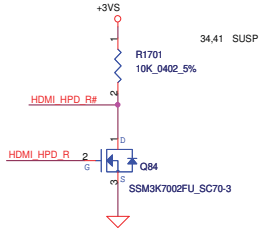
close to U10VCC (+3VS) pins (one Pin one Capacitor)



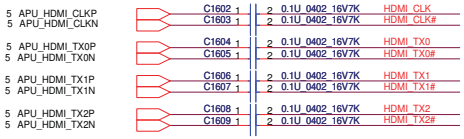


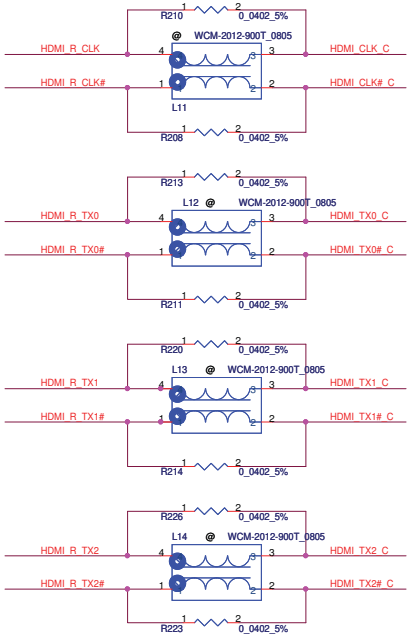


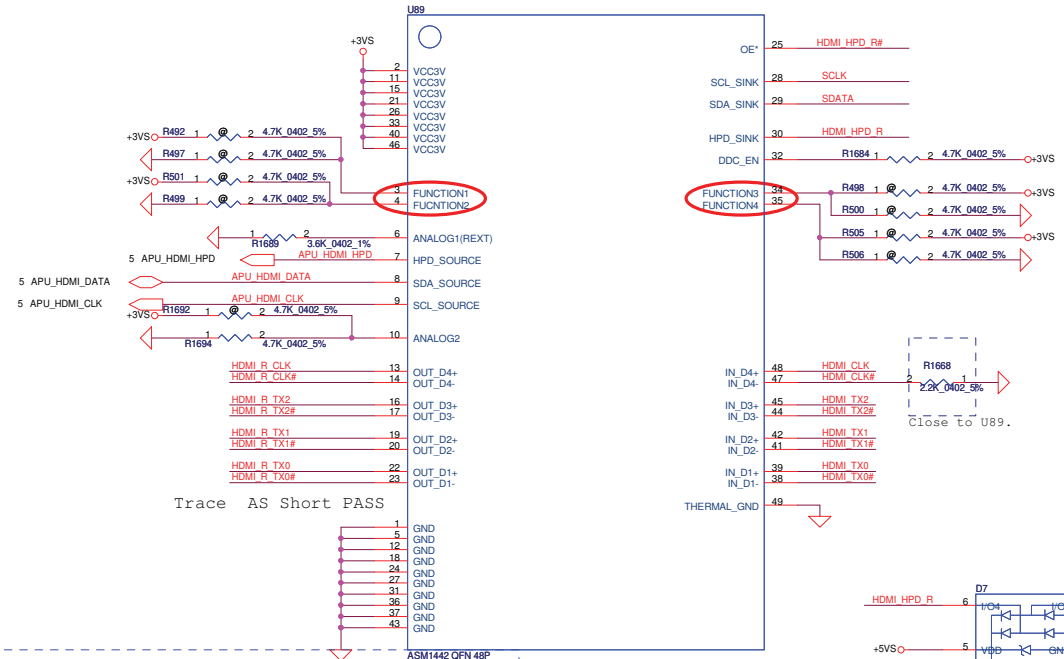




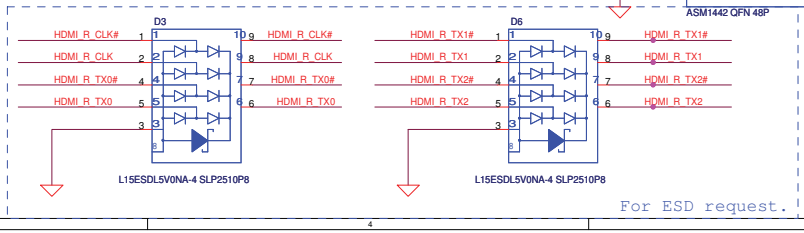
34,41 SUSP

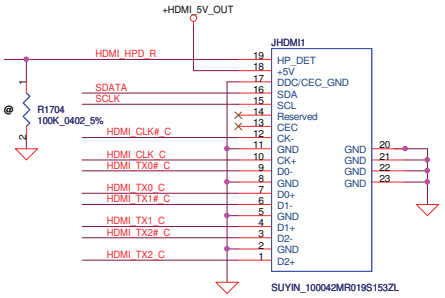


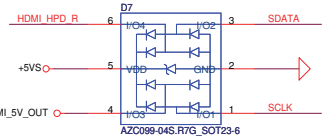




Trace AS Short PASS







Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

Compal Electronics, Inc.

Title: P11-HDMI CONN

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Wednesday, February 16, 2011 | Sheet 11 of 46

For PCIE device reset on FS1 (GFX,GLAN,WLAN,LVDS Travis)

U31E

PCI EXPRESS I/F

PCIE_RST# P1 / A_RST# L1 — 30 A_RST#

PCIE_RST_L
A_RST_L

UMI_TX0P UMI_TX0N UMI_TX1P UMI_TX1N UMI_TX2P UMI_TX2N UMI_TX3P UMI_TX3N

6 UMI_RX0P — C53 0.1U_0402_16V7K UMI_RX0P_C — AD26
6 UMI_RX0N — C54 0.1U_0402_16V7K UMI_RX0N_C — AD27
6 UMI_RX1P — C55 0.1U_0402_16V7K UMI_RX1P_C — AC28
6 UMI_RX1N — C56 0.1U_0402_16V7K UMI_RX1N_C — AC29
6 UMI_RX2P — C57 0.1U_0402_16V7K UMI_RX2P_C — AB29
6 UMI_RX2N — C58 0.1U_0402_16V7K UMI_RX2N_C — AB28
6 UMI_RX3P — C59 0.1U_0402_16V7K UMI_RX3P_C — AB26
6 UMI_RX3N — C60 0.1U_0402_16V7K UMI_RX3N_C — AB27

6 UMI_TX0P — AE24
6 UMI_TX0N — AE23
6 UMI_TX1P — AD25
6 UMI_TX1N — AD24
6 UMI_TX2P — AC24
6 UMI_TX2N — AC25
6 UMI_TX3P — AB25
6 UMI_TX3N — AB24

UMI_RX0P UMI_RX0N UMI_RX1P UMI_RX1N UMI_RX2P UMI_RX2N UMI_RX3P UMI_RX3N

PCIE_CALRP — R560 590_0402_1% — AD29
PCIE_CALRN — +PCIE_VDDAN — R561 2K_0402_1% — AD28

LAN / WLAN

25 PCIE_FTX_C_DRX_P0 — C61 0.1U_0402_16V7K PCIE_FTX_DRX_P0 — AA28
25 PCIE_FTX_C_DRX_N0 — C62 0.1U_0402_16V7K PCIE_FTX_DRX_N0 — AA29
28 PCIE_FTX_C_DRX_P1 — C717 0.1U_0402_16V7K PCIE_FTX_DRX_P1 — Y29
28 PCIE_FTX_C_DRX_N1 — C63 0.1U_0402_16V7K PCIE_FTX_DRX_N1 — Y28

GPP_TX0P GPP_TX0N GPP_TX1P GPP_TX1N GPP_TX2P GPP_TX2N GPP_TX3P GPP_TX3N

25 PCIE_FRX_DTX_P0 — AA22
25 PCIE_FRX_DTX_N0 — Y21
28 PCIE_FRX_DTX_P1 — AA25
28 PCIE_FRX_DTX_N1 — AA24

GPP_RX0P GPP_RX0N GPP_RX1P GPP_RX1N GPP_RX2P GPP_RX2N GPP_RX3P GPP_RX3N

CLOCK GENERATOR

close to FCH within 1"

PCIE_RCLKP/NB_LNK_CLKP — M23
PCIE_RCLKN/NB_LNK_CLKN — P23

5 APU_DISP_CLKP — R564 0_0402_5% APU_DISP_CLKP_R — U29 — NB_DISP_CLKP
5 APU_DISP_CLKN — R565 0_0402_5% APU_DISP_CLKN_R — U28 — NB_DISP_CLKN

NB_HT_CLKP — T26
NB_HT_CLKN — T27

5 APU_CLKP — R162 0_0402_5% APU_CLKP_R — V21 — CPU_HT_CLKP
5 APU_CLKN — R163 0_0402_5% APU_CLKN_R — T21 — CPU_HT_CLKN

17 CLK_PCIE_VGA — R569 0_0402_5% CLK_PCIE_VGA_R — V23 — SLT_GFX_CLKP
17 CLK_PCIE_VGA# — R570 0_0402_5% CLK_PCIE_VGA#_R — T23 — SLT_GFX_CLKN

LAN
25 CLK_PCIE_LAN — R571 0_0402_5% CLK_PCIE_LAN_R — L29 — GPP_CLK0P
25 CLK_PCIE_LAN# — R572 0_0402_5% CLK_PCIE_LAN#_R — L28 — GPP_CLK0N

WLAN
28 CLK_PCIE_MINI1 — R573 0_0402_5% CLK_PCIE_MINI1_R — N29 — GPP_CLK1P
28 CLK_PCIE_MINI1# — R574 0_0402_5% CLK_PCIE_MINI1#_R — N28 — GPP_CLK1N

GPP_CLK2P GPP_CLK2N GPP_CLK3P GPP_CLK3N GPP_CLK4P GPP_CLK4N GPP_CLK5P GPP_CLK5N GPP_CLK6P GPP_CLK6N GPP_CLK7P GPP_CLK7N GPP_CLK8P GPP_CLK8N

For EMI

27 CLK_SD_48M — R585 0_0402_5% — CLK_SD_48M_R — L25 — 14M_25M_48M_OSC

C66 10P_0402_50V8J
C67 10P_0402_50V8J
Y3 25MHZ 12PF X5H025000FC1H-H
1M_0603_5% R576

25M_CLK_X1 — L26 — 25M_X1
25M_CLK_X2 — L27 — 25M_X2

21807-A11-HUDSON-M1_FCBGA605

PCI CLKS

PCICLK0 W2 — PADT96
PCICLK1/GPO36 W1 — PCI_CLK1 16
PCICLK2/GPO37 W3 — PCI_CLK2 16
PCICLK3/GPO38 W4 — PCI_CLK3 16
PCICLK4/14M_OSC/GPO39 Y1 — PCI_CLK4 16
PCIRST_L V2 — PADT92

PCI I/F

AD0/GPIO0 AA1
AD1/GPIO1 AA4
AD2/GPIO2 AA3
AD3/GPIO3 AB1
AD4/GPIO4 AA5
AD5/GPIO5 AB2
AD6/GPIO6 AB6
AD7/GPIO7 AB5
AD8/GPIO8 AA6
AD9/GPIO9 AC2
AD10/GPIO10 AC3
AD11/GPIO11 AC4
AD12/GPIO12 AC1
AD13/GPIO13 AD1
AD14/GPIO14 AD2
AD15/GPIO15 AC6
AD16/GPIO16 AE2
AD17/GPIO17 AE1
AD18/GPIO18 AF8
AD19/GPIO19 AE3
AD20/GPIO20 AF1
AD21/GPIO21 AG1 — R595 0_0402_5% — PE_GPIO0 17
AD22/GPIO22 AF2
AD23/GPIO23 AE9 — PCI_AD23 16
AD24/GPIO24 AD9 — PCI_AD24 16
AD25/GPIO25 AC11 — PCI_AD25 16
AD26/GPIO26 AF6 — PCI_AD26 16
AD27/GPIO27 AF4 — PCI_AD27 16
AD28/GPIO28 AF3 — VGA_PWRGD_R
AD29/GPIO29 AH2
AD30/GPIO30 AG2
AD31/GPIO31 AH3
CBE0_L AA8
CBE1_L AD5
CBE2_L AD8
CBE3_L AA10
FRAME_L AE8
DEVSEL_L AB9
IRDY_L AJ3
TRDY_L AE7
PAR AC5
STOP_L AF5
PERR_L AE6
SERR_L AE4
REQ0_L AE11
REQ1_L/GPIO40 AH5
REQ2_L/CLK_REQ8_L/GPIO41 AH4
REQ3_L/CLK_REQ5_L/GPIO42 AC12
GNT0_L AD12
GNT1_L/GPO44 AJ5
GNT2_L/GPO45 AH6 — R627 0_0402_5% — PE_GPIO0 — R554 10K_0402_5% — PE_GPIO1 23,30
GNT3_L/CLK_REQ7_L/GPIO46 AB12
CLKRUN_L AB11 — R99 10K_0402_5%
LOCK_L AD7

INTE_L/GPIO32 AJ6
INTF_L/GPIO33 AG6
INTG_L/GPIO34 AG4
INTH_L/GPIO35 AJ4

LPC

LPCCLK0 H24 — R854 0_0402_5% — LPC_CLK1 16
LPCCLK1 H25 — R853 0_0402_5% — LPC_CLK0 16
R575 22_0402_5% — LPC_CLK0_EC 30
R577 22_0402_5% — CLK_PCI_DB 28
LAD0 J27 — LPC_AD0 28,30
LAD1 J26 — LPC_AD1 28,30
LAD2 H29 — LPC_AD2 28,30
LAD3 H28 — LPC_AD3 28,30
LFRAME_L G28 — LPC_FRAME# 28,30
LDRQ0_L J25
LDRQ1_L/CLK_REQ6_L/GPIO49 AA18
SERIRQ/GPIO48 AB19 — SERIRQ 30

CPU

ALLOW_LDTSTP/DMA_ACTIVE_L G21 — ALLOW_STOP# 5
PROCHOT_L H21 — FCH_PROCHOT# 5
LDT_PG K19 — APU_PWRGD 5
LDT_STP_L G22
LDT_RST_L J24 — APU_RST# 5

RTC

32K_X1 C1 — RTC_32KHI
32K_X2 C2 — RTC_32KHO
RTCCLK D2 — RTC_CLK_R — R855 0_0402_5% — RTC_CLK 16,30
INTRUDER_ALERT_L B2
VDDBT_RTC_G B1

For EMI.

R864 510_0402_5% W=20mils

C1272 0.1U_0402_16V4Z
C1271 1U_0402_6.3V4Z
C1270 0.1U_0402_16V4Z

for Clear CMOS Location near to DRAM Boer.
CLRP1 SHORT PADS

+RTCVCC
D23 DAN202UT106_SC70-3
+RTCBATT
R179 1K_0402_5%
+CHGRTC

+3VALW
C1234 0.1U_0402_16V4Z
A_RST# — R175 33_0402_5% — PLT_RST# 17,25,28
R174 8.2K_0402_5%
C1233 150P_0402_50V8J
U28 NC7SZ08P5X_NL_SC70-5
R582 0_0402_5% — PCIE_RST#

Need to check material?
+1.8VS +3VS
R164 10K_0402_5%
APU_PWRGD — Q90 FDV301N_NL_SOT23-3 — H_PWRGD_L 43

+3VALW
C1199 0.1U_0402_16V4Z
@U33 NC7SZ08P5X_NL_SC70-5
23,41,42,44 VGA_PWRGD — VGA_PWRGD — R830 0_0402_5% — VGA_PWRGD_R
R838 100K_0402_5%
R839 0_0402_5%

RTC BATT Conn.
+RTCBATT
JRTC1 SUYIN_060003FA002G201NL

Close to FCH

C64 10P_0402_50V8J
C65 10P_0402_50V8J
R563 20M_0603_5%
Y4 32.768KHZ_7PF_Q13MC1461000100
RTC_32KHI
RTC_32KHO

FCH : SA000046H60 (S IC 218-0792001 A12 HUDSON-M1 FCBGA 605P)
FCH : SA000046H70 (S IC 218-0792006 A13 HUDSON-M1 FCBGA 605P)

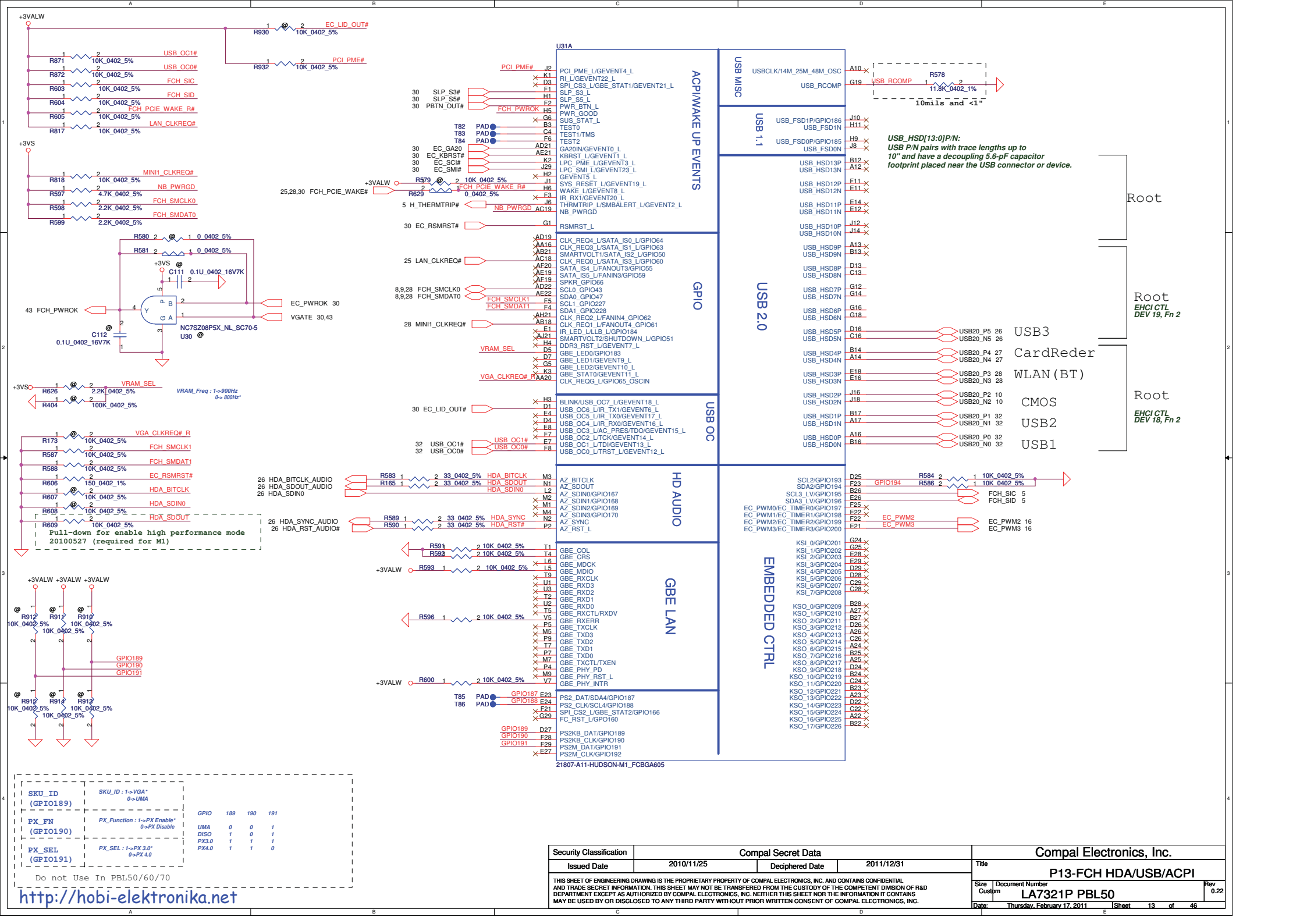
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P12-FCH PCIE/PCI/ACPI/LPC/RTC

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Tuesday, February 22, 2011 — Sheet 12 of 46



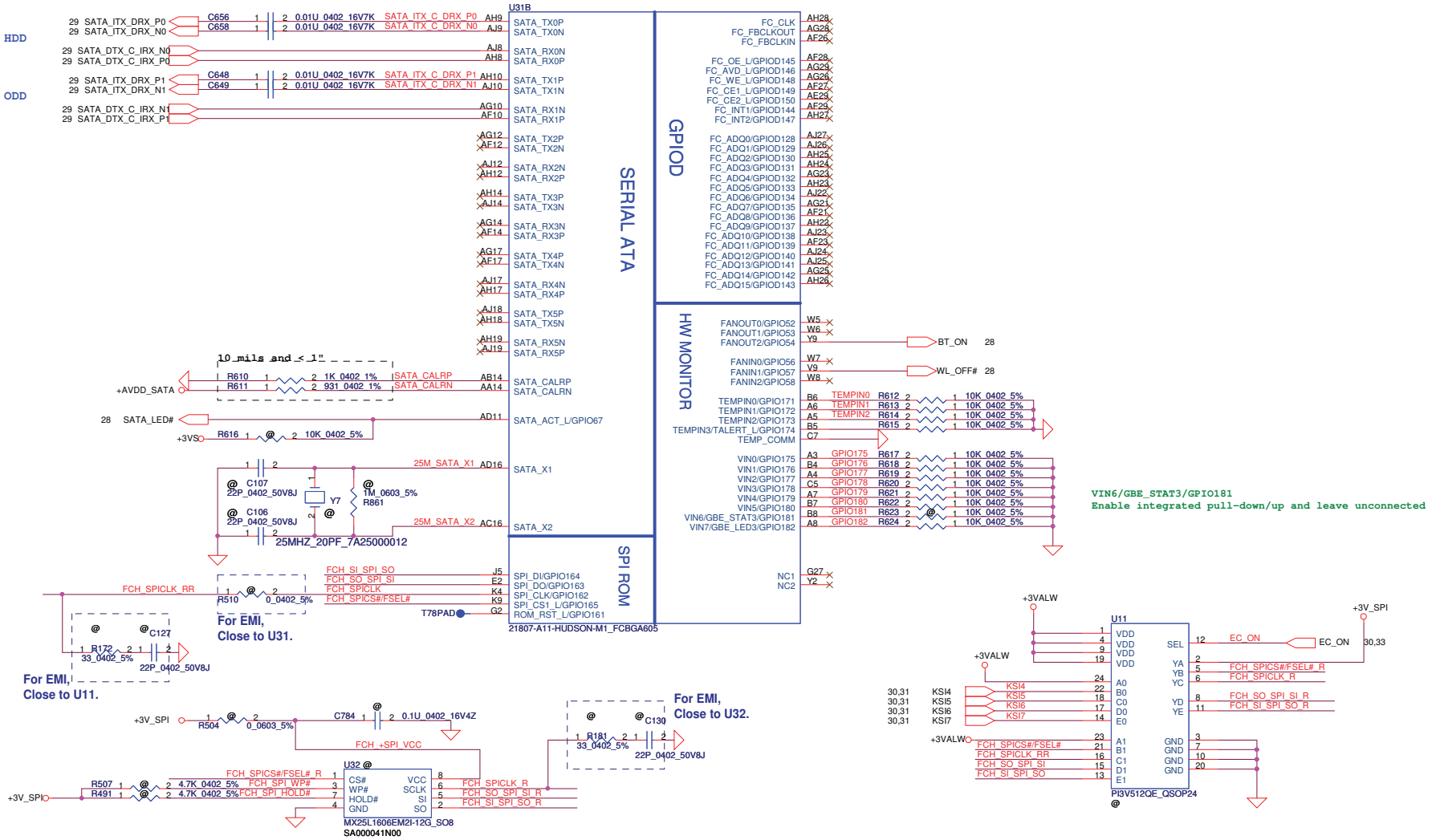
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P13-FCH HDA/USB/ACPI

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 Sheet 13 of 46



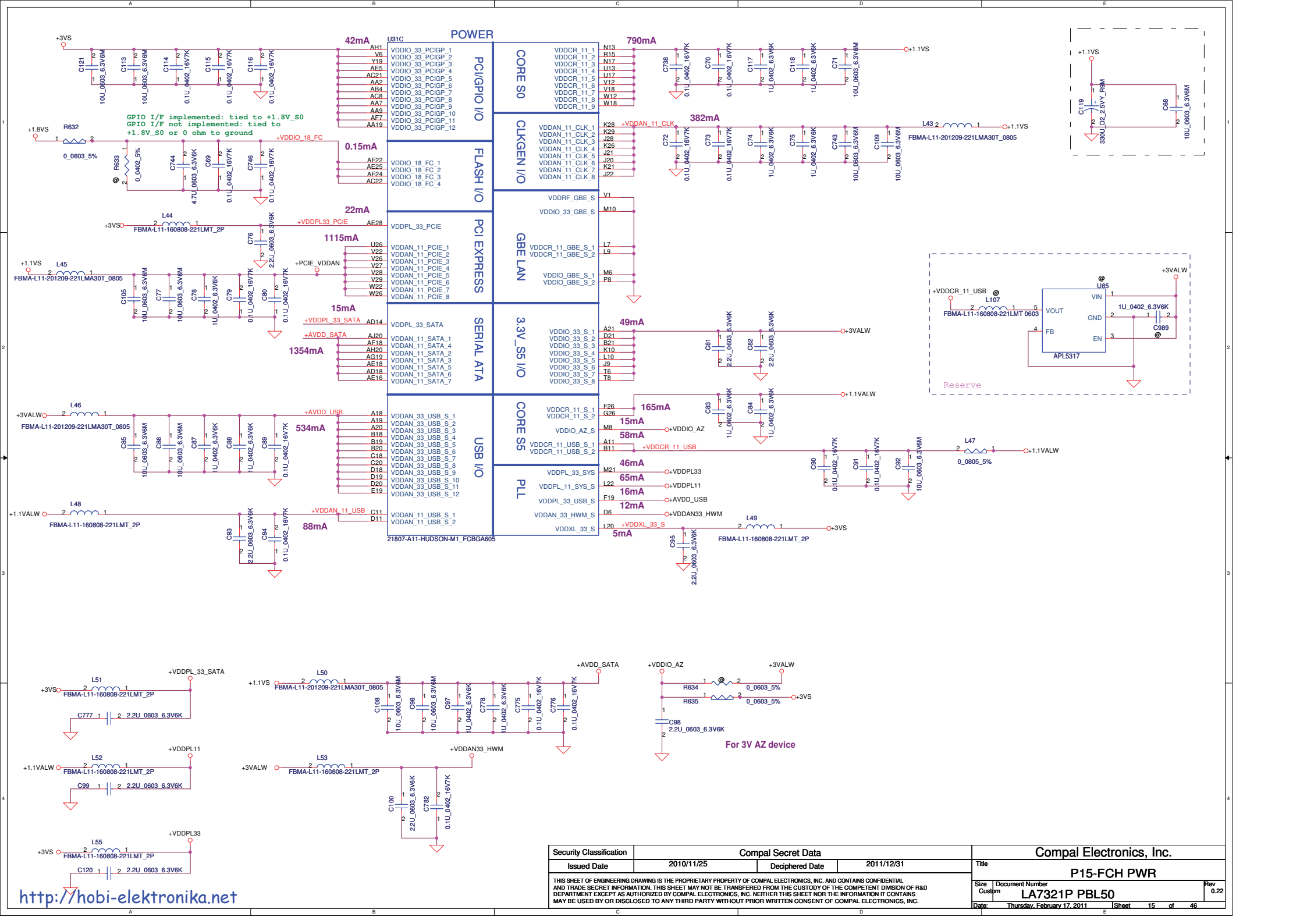
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

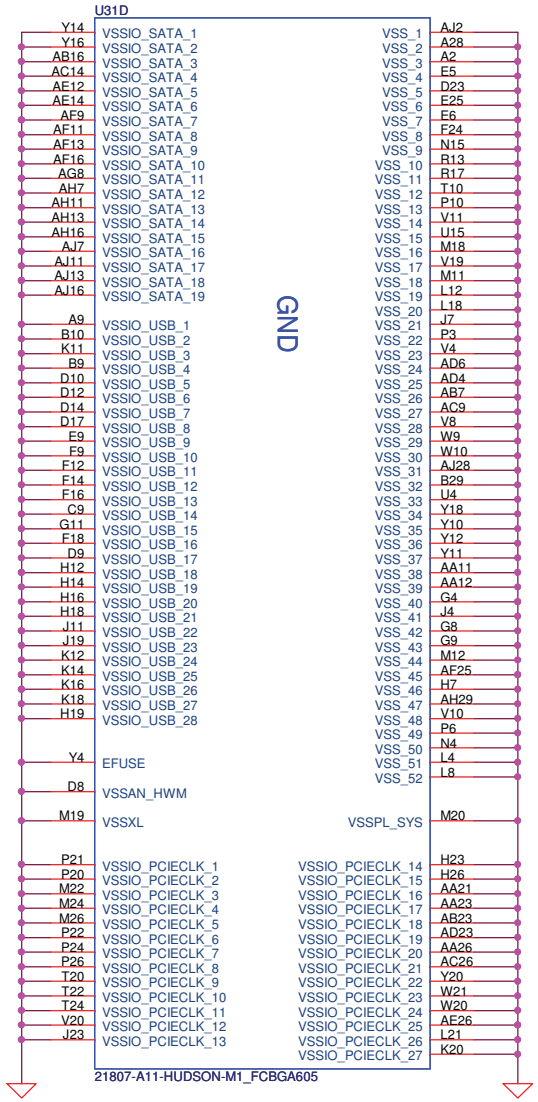
Compal Electronics, Inc.

Title: P14-FCH-SATA/SPI

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Wednesday, February 16, 2011 | Sheet 14 of 46

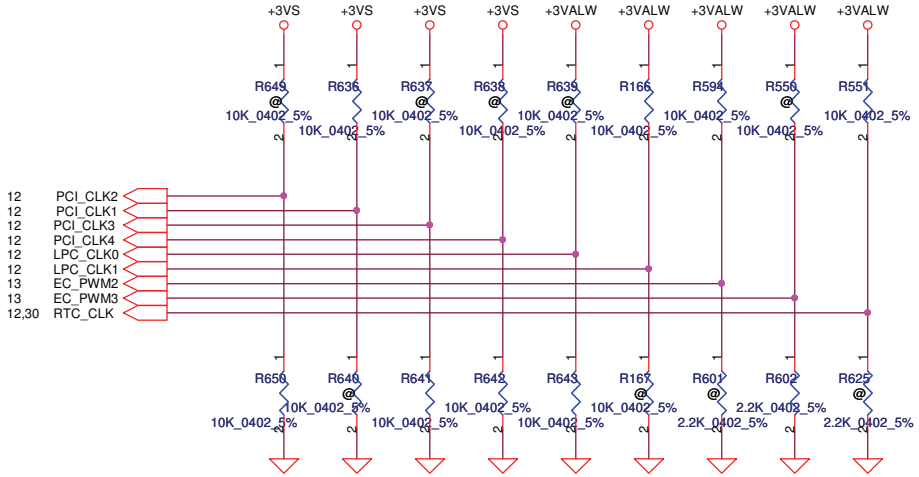

POWER
U31C
PCI/GPIO I/O
CORE S0
CLKGEN I/O
FLASH I/O
GBE LAN
PCI EXPRESS
3.3V_S5 I/O
SERIAL ATA
CORE S5
USB I/O
PLL
21807-A11-HUDSON-M1_FCBGA605
GPIO I/F implemented: tied to +1.8V_S0
GPIO I/F not implemented: tied to
+1.8V_S0 or 0 ohm to ground
42mA
790mA
382mA
0.15mA
22mA
1115mA
15mA
1354mA
49mA
165mA
15mA
58mA
534mA
46mA
65mA
16mA
12mA
88mA
5mA
+3VS
+1.1VS
+1.8VS
+3VALW
+1.1VALW
+VDDIO_18_FC
+VDDPL33_PCIE
+PCIE_VDDAN
+VDDPL_33_SATA
+AVDD_SATA
+VDDAN_11_CLK
+VDDCR_11_USB
+AVDD_USB
+VDDAN_11_USB
+VDDCR_11_GBE_S
+VDDIO_AZ
+VDDPL33
+VDDPL11
+AVDD_USB
+VDDAN33_HWM
+VDDXL_33_S
Reserve
APL5317
For 3V AZ device
Security Classification
Compal Secret Data
Issued Date
2010/11/25
Deciphered Date
2011/12/31
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.
Compal Electronics, Inc.
Title
P15-FCH PWR
Size
Custom
Document Number
LA7321P PBL50
Rev
0.22
Date:
Thursday, February 17, 2011
Sheet
15
of
46
http://hobi-elektronika.net



REQUIRED STRAPS

Check Internal PU/PD

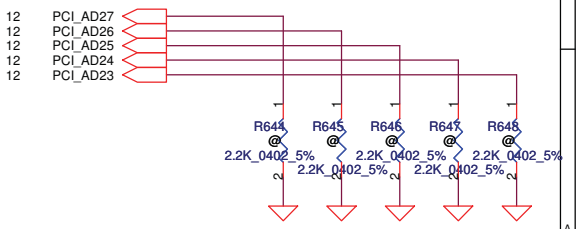
	PCI_CLK2	PCI_CLK1	PCI_CLK3	PCI_CLK4	LPC_CLK0	LPC_CLK1	RTC_CLK	EC_PWM2 EC_PWM3
PULL HIGH	WATCHDOG TIMER ENABLE	ALLOW PCIE GEN2 DEFAULT	USE DEBUG STRAP	NON Fusion CLOCK Mode	internal EC ENABLE	Internal CLKGEN Mode DEFAULT	S5 PLUS MODE DISABLED DEFAULT	LPC ROM (H.L) *
PULL LOW	WATCHDOG TIMER DISABLE DEFAULT	FORCE PCIE GEN1	IGNORE DEBUG STRAP DEFAULT	Fusion CLOCK Mode DEFAULT	internal EC DISABLE DEFAULT	External CLKGEN Mode	S5 PLUS MODE ENABLED	SPI ROM(L,H)



DEBUG STRAPS

FCH M1 HAS 15K INTERNAL PU FOR PCI_AD[27:23]

		PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23 Enable ROM Straps
PULL HIGH		USE internal PLL generated PLL CLK DEFAULT	ILA AUTORUN Disabled DEFAULT	Selects FC PLL DEFAULT	Disable I2C ROM DEFAULT	Required Setting DEFAULT
PULL LOW		BYPASS PCI PLL	ILA AUTORUN Enabled	FC PLL bypassed	Getting Value from I2C EPROM	Reserved



Check AD29,AD28 strap function check default

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

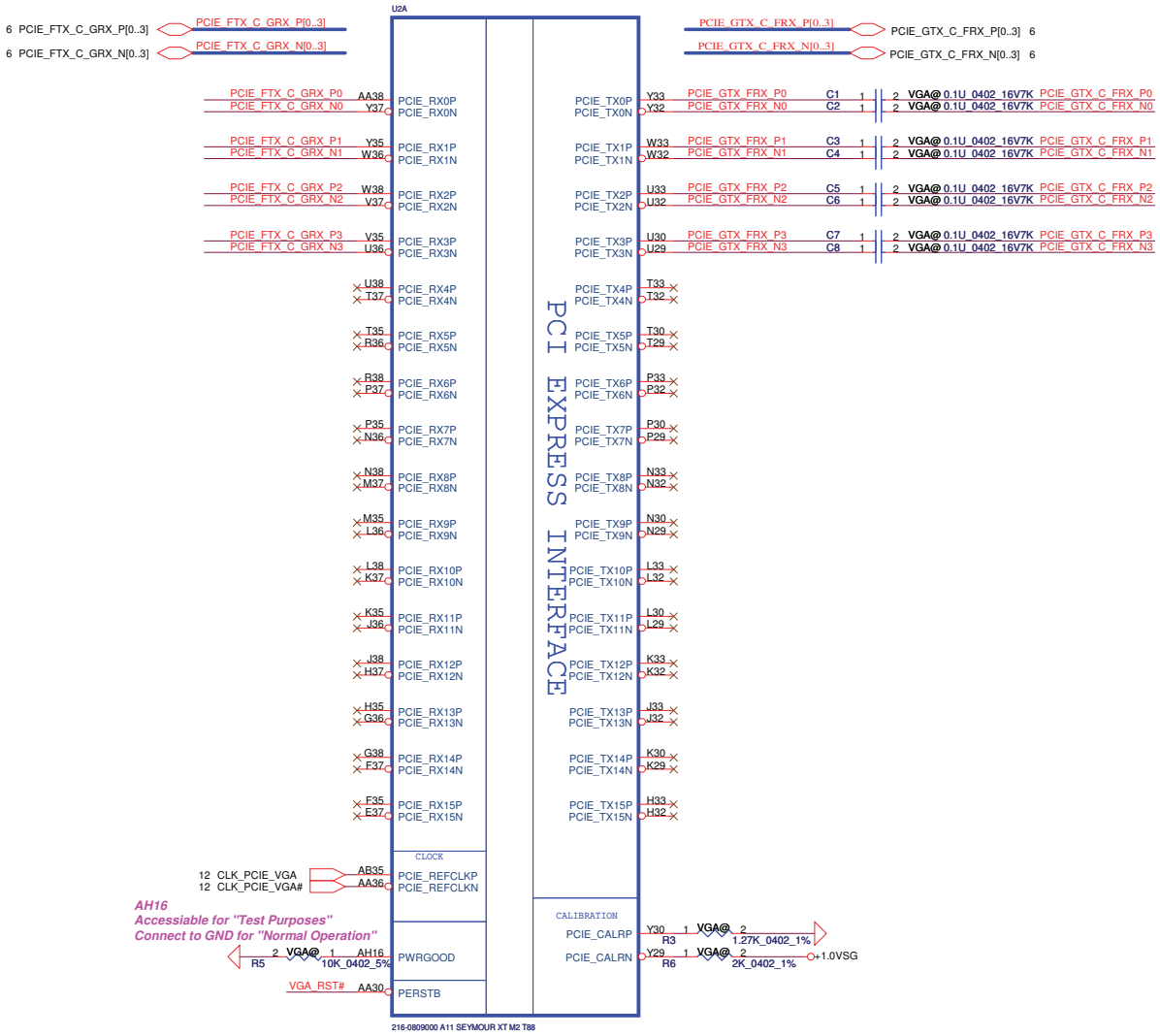
Compal Electronics, Inc.

Title: P16-FCH-VSS/Strap

Size: B | Document Number: LA7321P PBL50 | Rev: 0.22

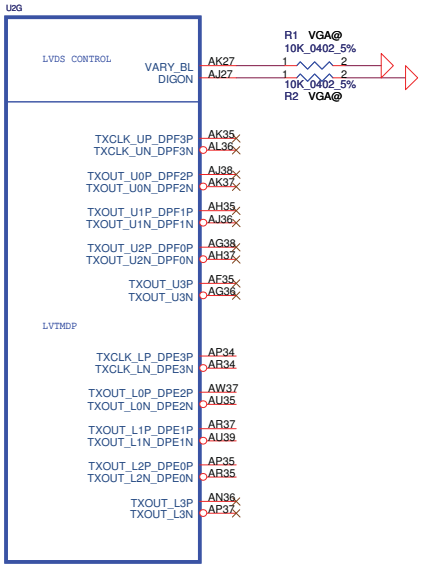
Date: Wednesday, February 16, 2011 | Sheet 16 of 46

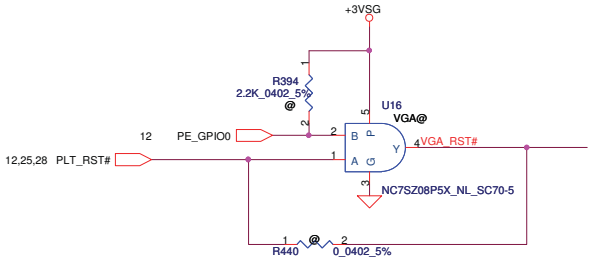
GFX PCIE LANE REVERSAL



Seymour XT P/N: SA000047H10 (S IC 216-0809000 A11 SEYMOUR XT M2)

add for VB support.





Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P17-Vancouver_ PCIE / LVDS

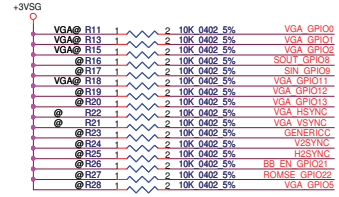
Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

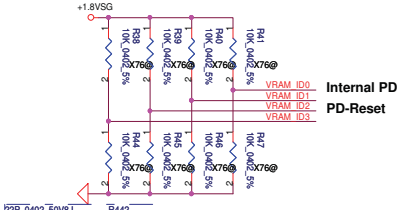
Date: Wednesday, February 16, 2011 Sheet 17 of 46

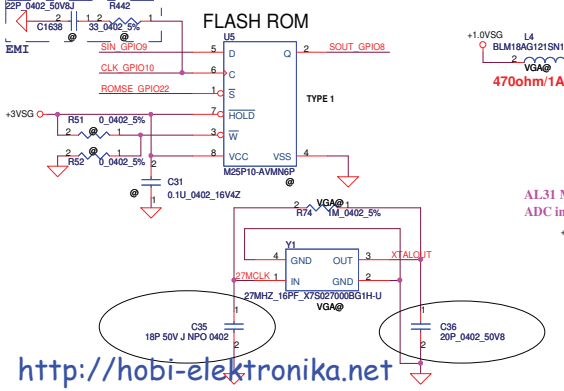
Strap Name		Pin Straps description <all internal PD>	Setting
VGA_DIS	GPIO9	VGA Disable determines 0: VGA Controller capacity enabled 1: The device will not be recognized as the system's VGA controller	0
TX_PWRS_ENB	GPIO0	Transmitter Power Saving Enable 0: 50% Tx output swing for mobile mode 1: full Tx output swing (Default setting for Desktop)	1
TX_DEEMPH_EN	GPIO1	PCI Express Transmitter De-emphasis Enable 0: Tx de-emphasis diabled for mobile mode 1: Tx de-emphasis enabled (Defailt setting for desktop)	1
CONFIG[2] CONFIG[1] CONFIG[0]	GPIO13 GPIO12 GPIO11	GPIO13,12,11 (config 2,1,0) : memory apertures a) If BIOS_ROM_EN = 1, then Config[2:0] defines the ROM type. CONFIG[3:0] 128 MB 000 b) If BIOS_ROM_EN = 0, then Config[2:0] defines the primary memory aperture size. 256 MB 001 * 64 MB 010	001
BIOS_ROM_EN	GPIO22	Enable external BIOS ROM device 0: Diable, 1: Enable	0
AUD[1] AUD[0]	HSYNC VSYNC	00: No audio function; 10: Audio for DisplayPort only; 01: Audio for DisplayPort and HDMI if adapter is detected; 11: Audio for both DisplayPort and HDMI	11
BIF_GEN2_EN	GPIO2	0= Advertises the PCI-E device as 2.5 GT/s capable at power-on 1= Advertises the PCI-E device as 5.0 GT/s capable at power-on 5.0 GT/s capability will be controlled by software	1
RESERVED	H2SYNC (GENLK_CLK) GPIO8 GPIO21 GENERICC GPIO5	Internal use only. THIS PAD HAS AN INTERNAL PULL-DOWN AND MUST BE 0 V AT RESET. The pad may be left unconnected	DNI

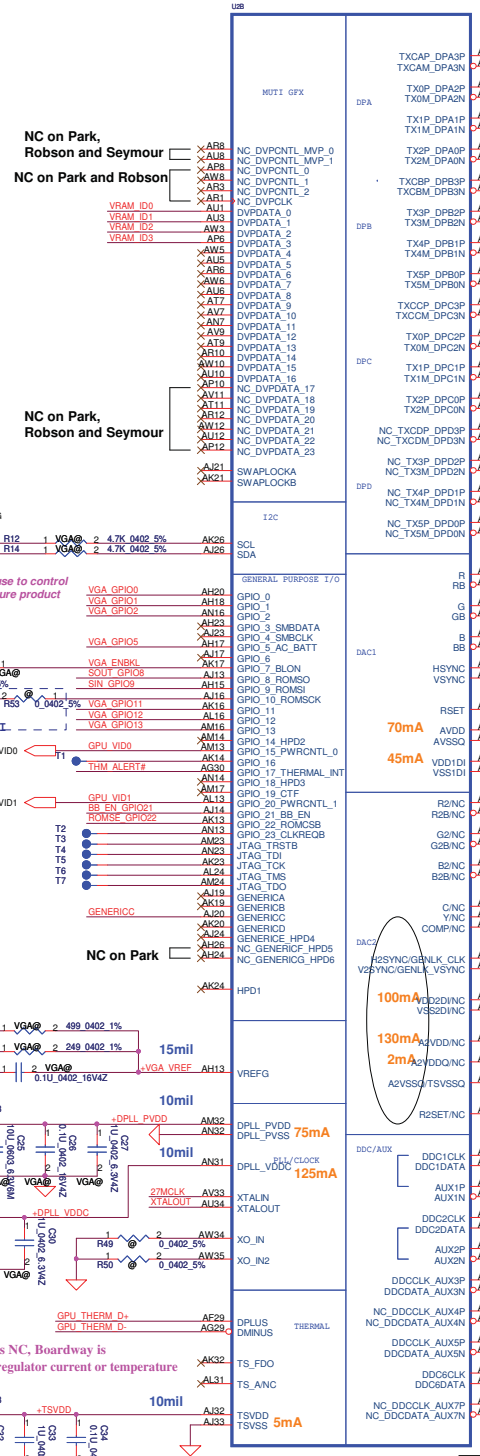
Seymour(XT)

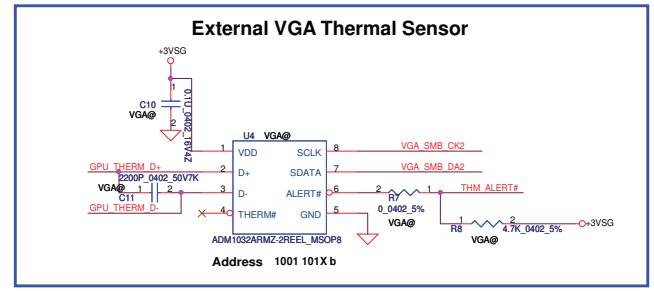
VRAM \ Location	VRAM_ID3 <Revserve>	VRAM_ID2 <Vendor>	VRAM_ID1 <Reverserve>	VRAM_ID0 <size>
Samsung 1G X76L01	0	0	0	1
Hynix 1G X76L02	0	1	0	1
Samsung 512M X76L03	0	0	0	0
Hynix 512M X76L04	0	1	0	0

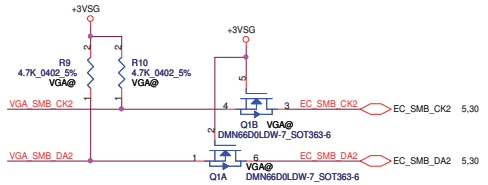












Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

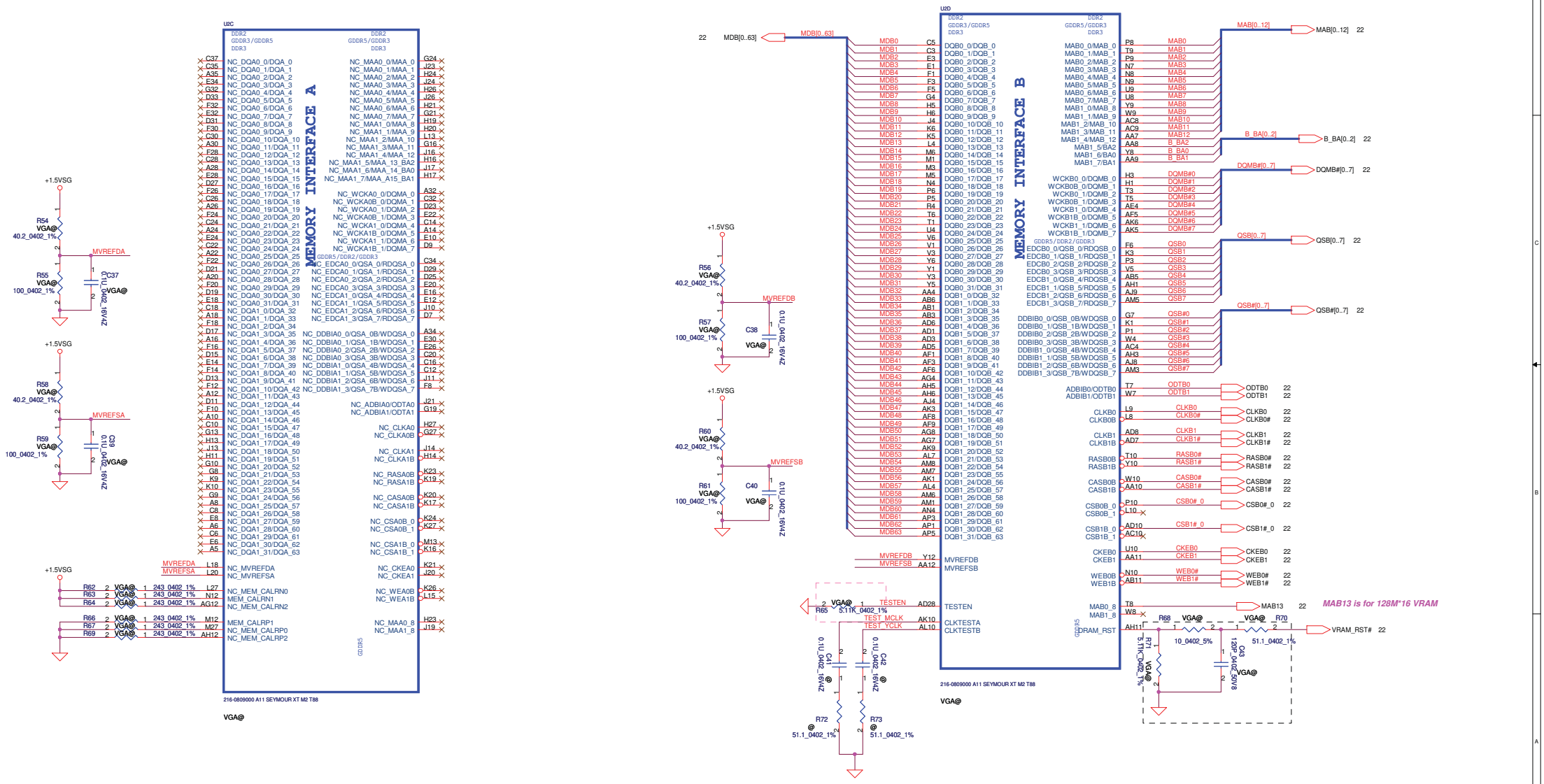
Compal Electronics, Inc.

Title: P18-Vancouver_Strape/DP/HDMI//CRT

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Friday, February 18, 2011 Sheet 18 of 46

Robson,Seymour only support single channel memory (channel B only)



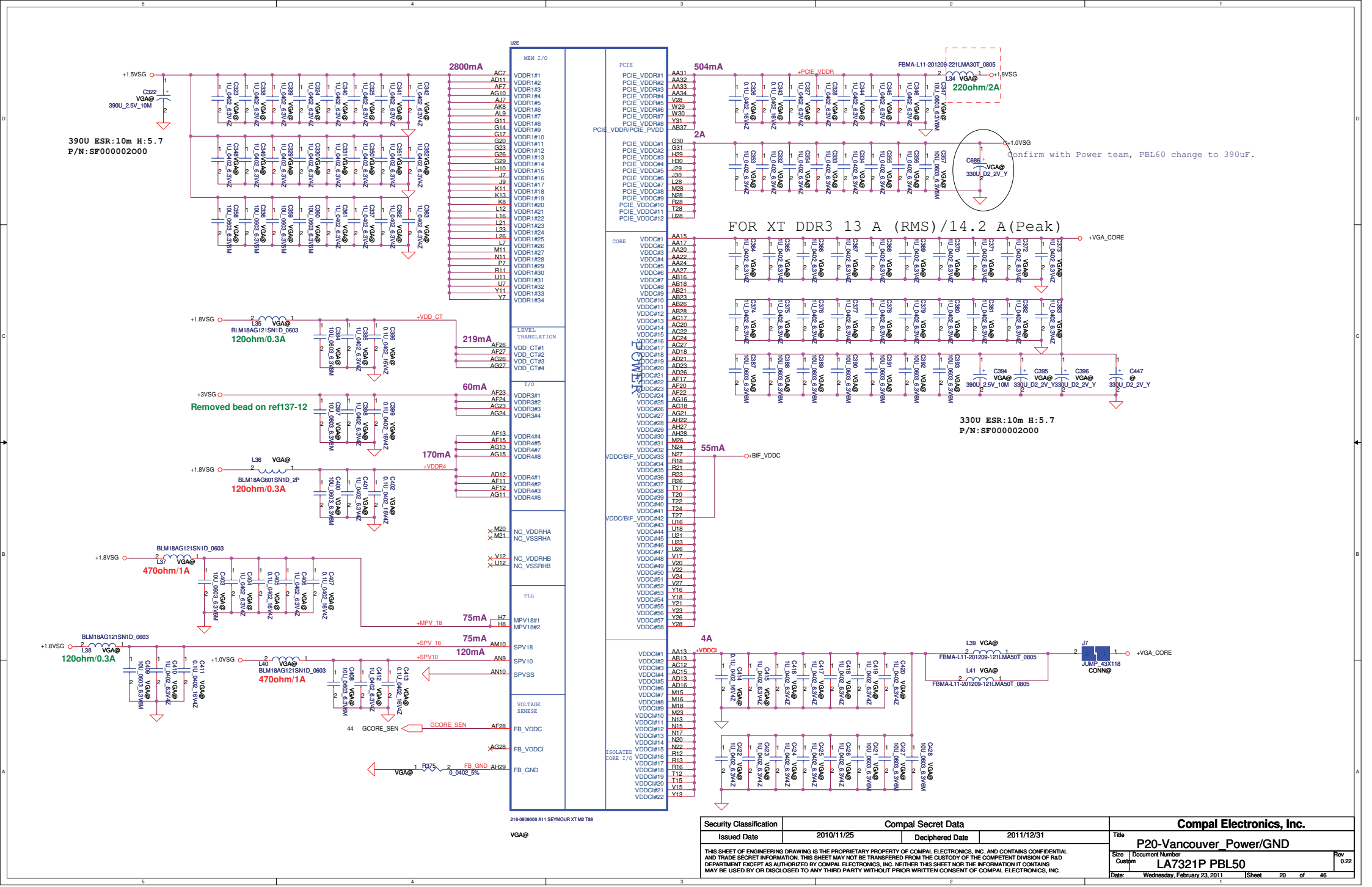
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P19-Vancouver_Memory

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Tuesday, February 15, 2011 | Sheet 19 of 46



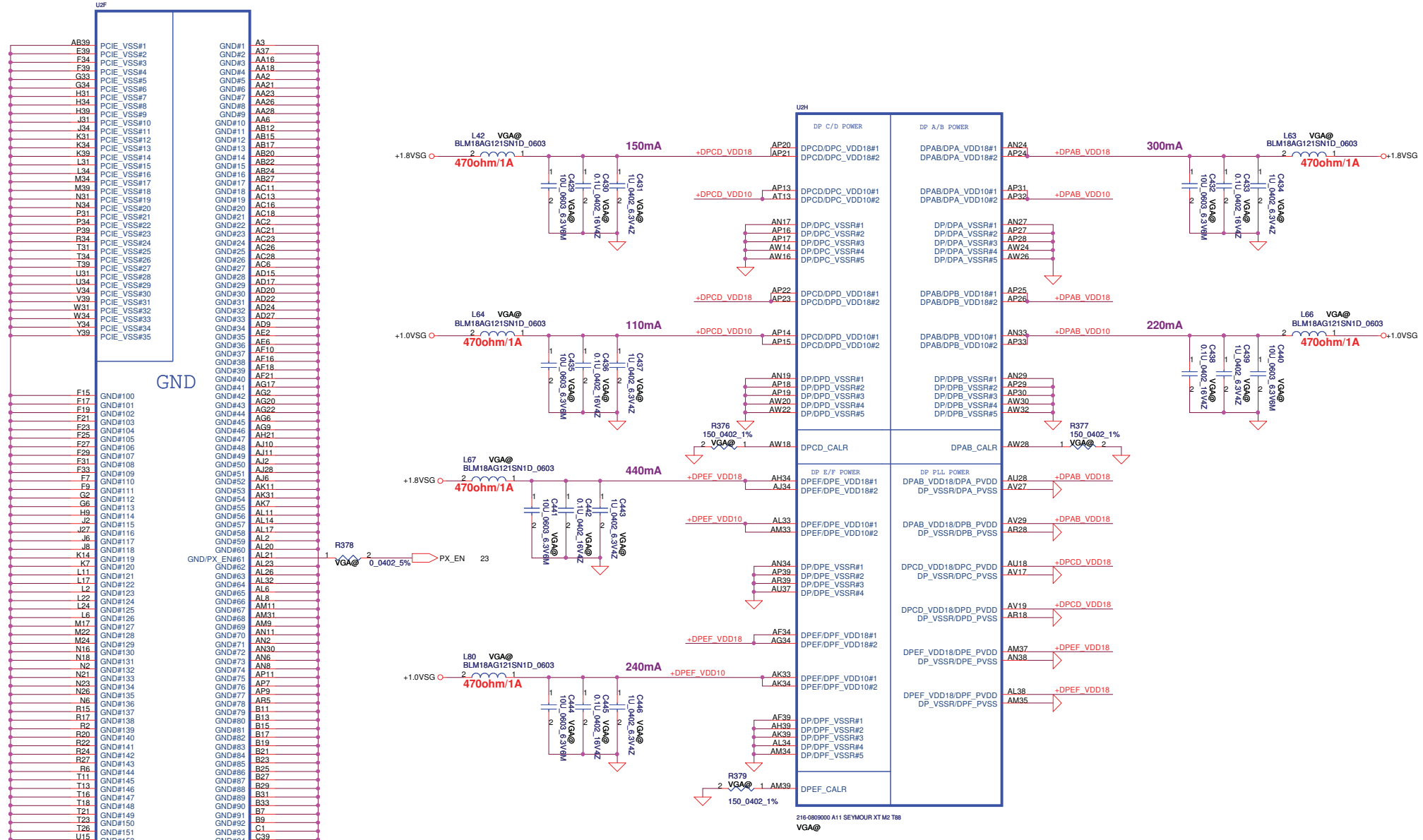
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P20-Vancouver_Power/GND

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Wednesday, February 23, 2011 | Sheet 20 of 46



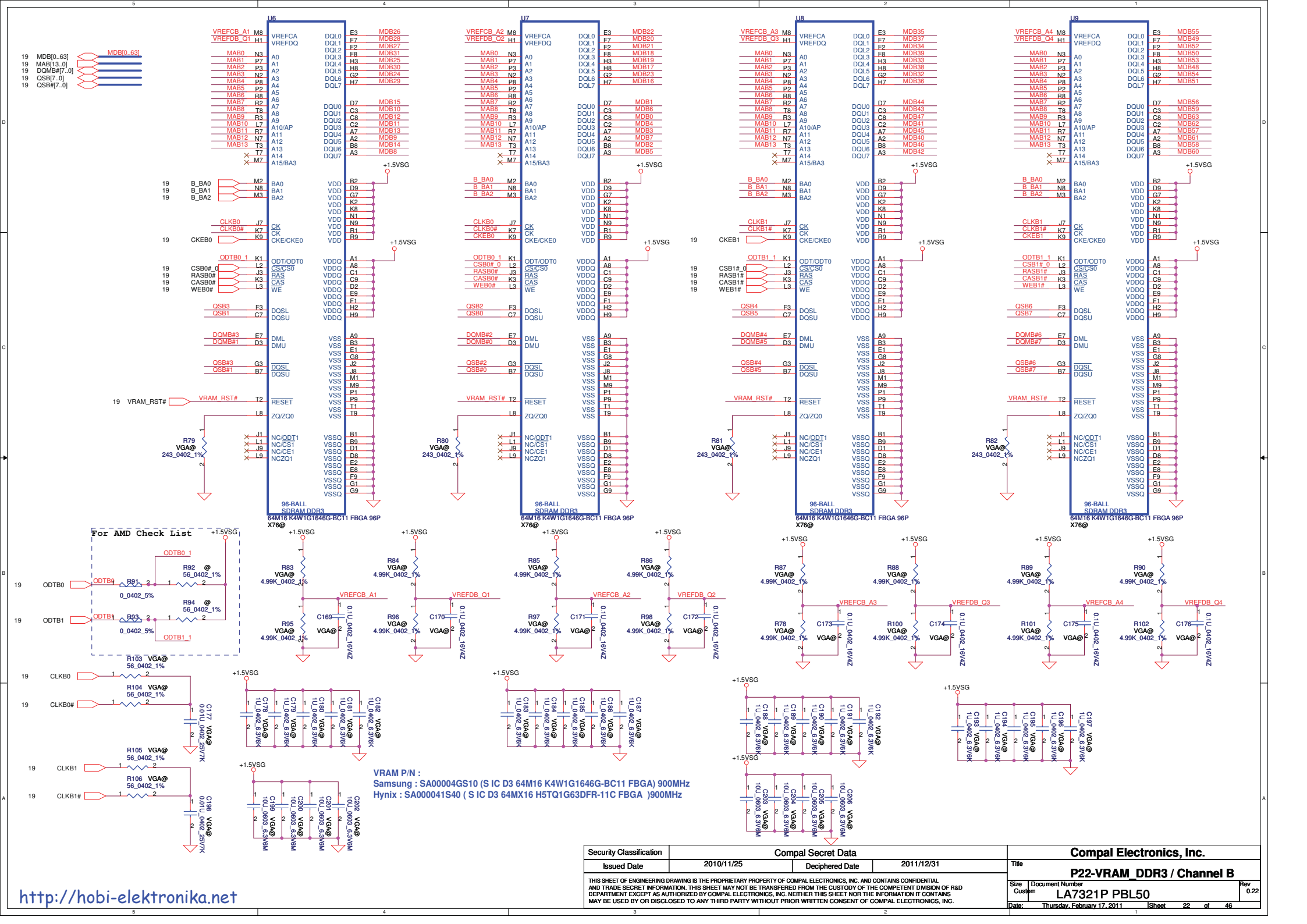
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P21-Vancouver_Power/GND

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Tuesday, February 15, 2011 | Sheet 21 of 46



VRAM P/N :
Samsung : SA00004GS10 (S IC D3 64M16 K4W1G1646G-BC11 FBGA) 900MHz
Hynix : SA000041S40 (S IC D3 64MX16 H5TQ1G63DFR-11C FBGA)900MHz

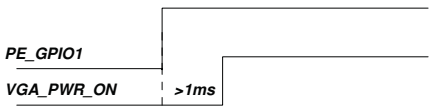
Compal Electronics, Inc.

Title: **P22-VRAM_DDR3 / Channel B**

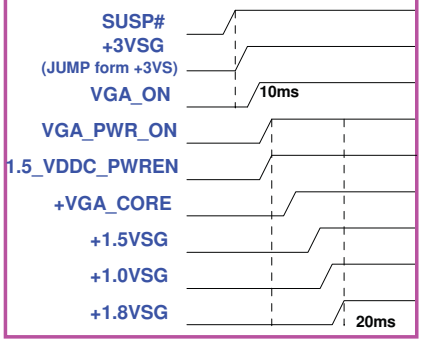
Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 | Sheet 22 of 46

For PX sequence, >1mS delay is required between PE_GPIO1 and VGA_PWR_ON

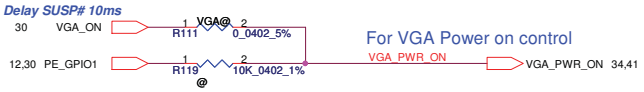


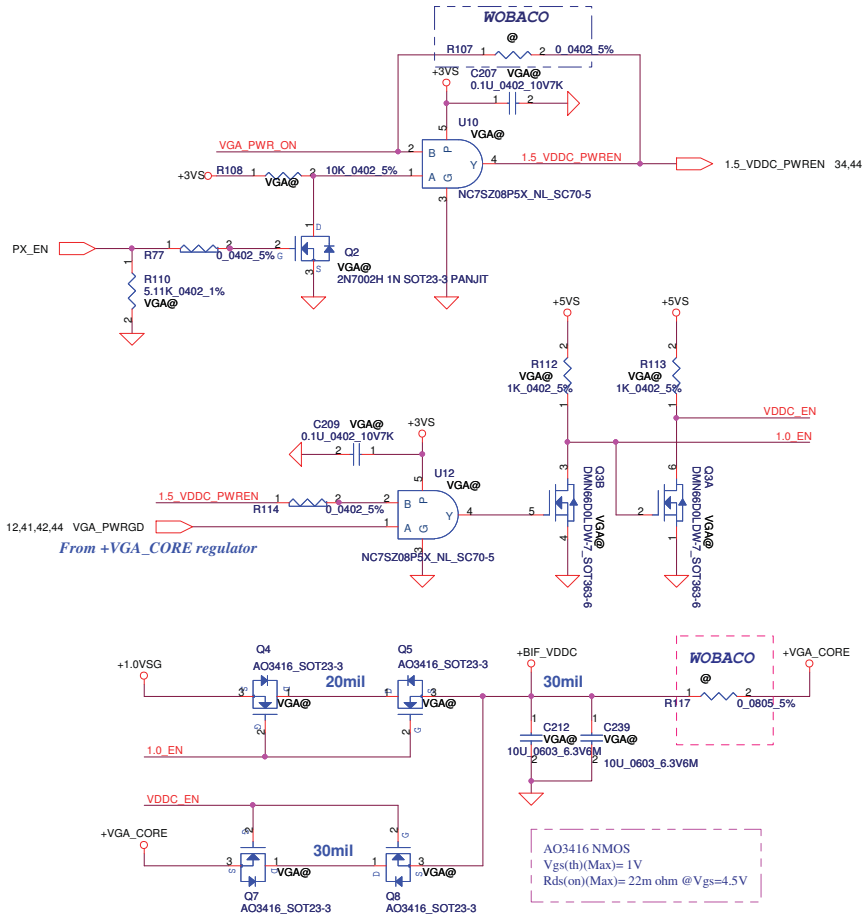
Power Sequence of Whistler and Seymour



VGA Muxless with BACO Status Mapping table		
	Normal mode	BACO mode
PX_EN	0	1
1.5_VDDC_PWREN	1	0
VDDC_EN	1	0
1.0_EN	0	1
+3.3VSG	ON	ON
+1.8VSG	ON	ON
+1.0VSG	ON	ON
+VGA_CORE	ON	OFF
+1.5VSG	ON	OFF
+BIF_VDDC	+VGA_CORE	+1.0VSG

VGA Power Enable Signal Mapping table		
	Graville	Whistler and Seymour
VGA_PWR_ON source signal	INT_VGAPWR_ON	VGA_ON
+3.3VSG	VGA_PWR_ON	SUSP#
+1.8VSG	VGA_PWR_ON	VGA_PWR_ON
+1.0VSG	VGA_PWR_ON	VGA_PWR_ON
+VDDCI	VGA_PWR_ON	Combine with +VGA_CORE
+VGA_CORE	VGA_PWR_ON	1.5_VDDC_PWREN
+1.5VSG	VGA_PWR_ON	1.5_VDDC_PWREN





Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

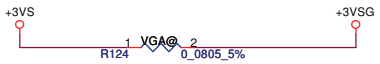
Compal Electronics, Inc.

Title: P23-VGA power sequence and BACO

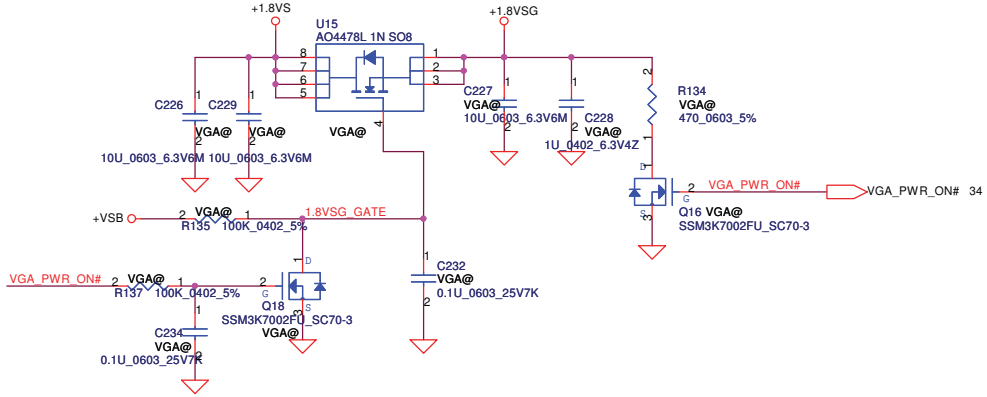
Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 Sheet 23 of 46

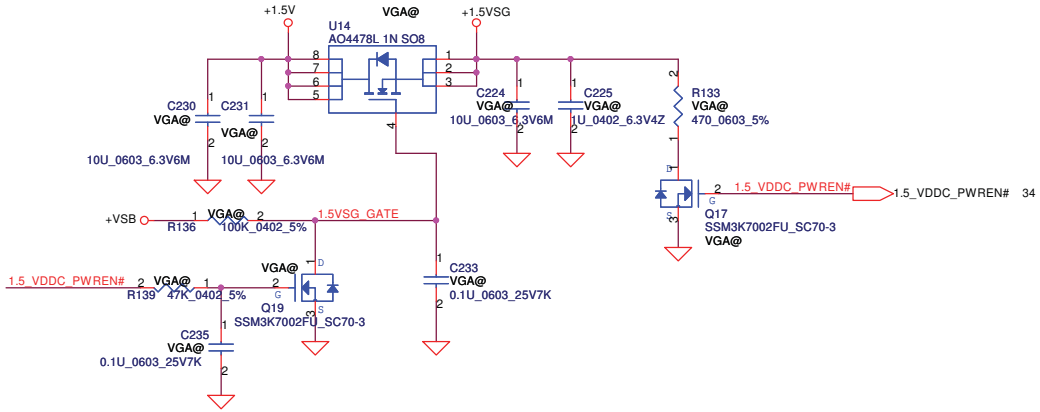
+3.3VS TO +3.3VSG



+1.8VS TO +1.8VSG



+1.5V TO +1.5VSG



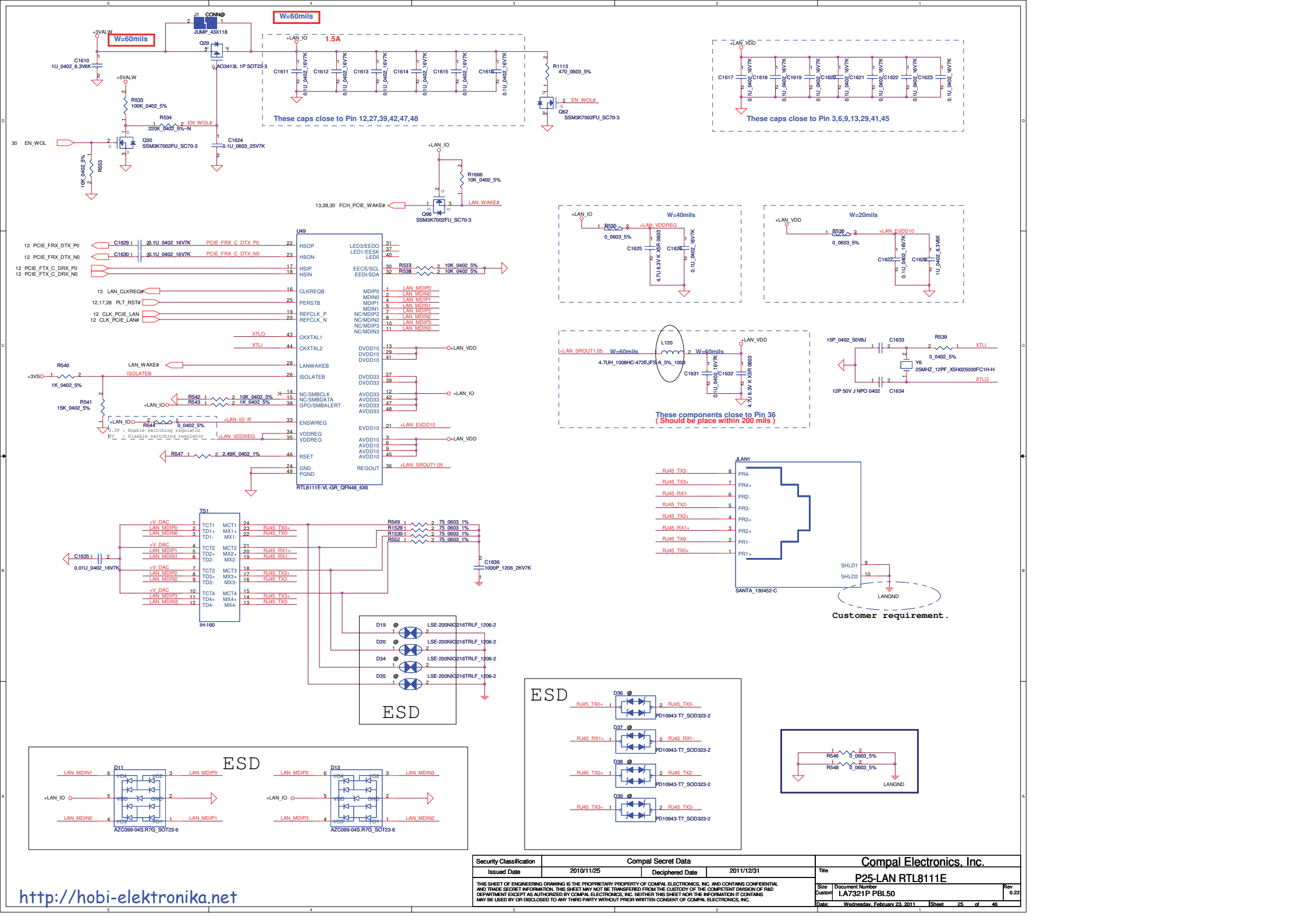
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P24-VGA DC Interface

Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Tuesday, February 15, 2011 | Sheet 24 of 46



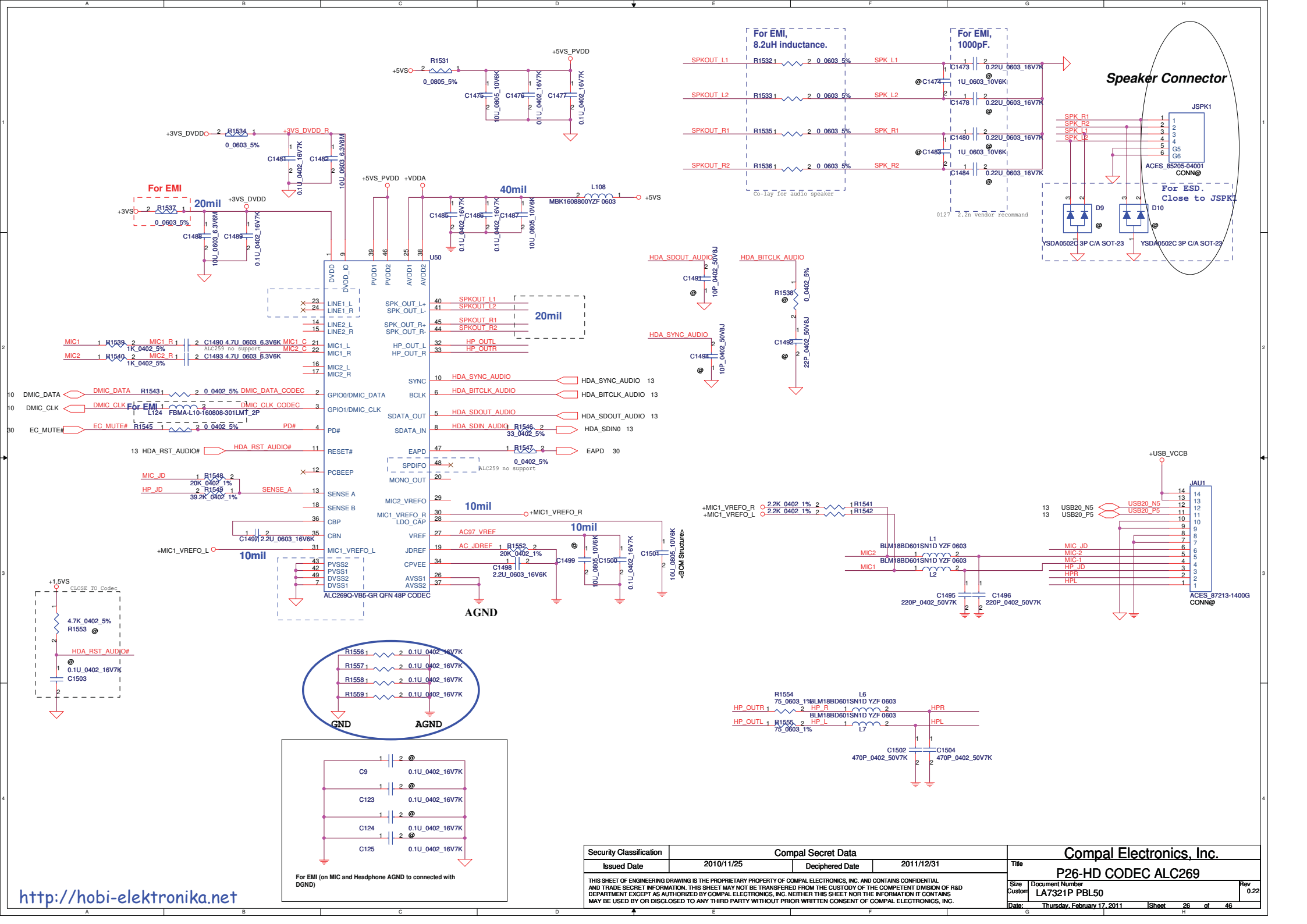
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

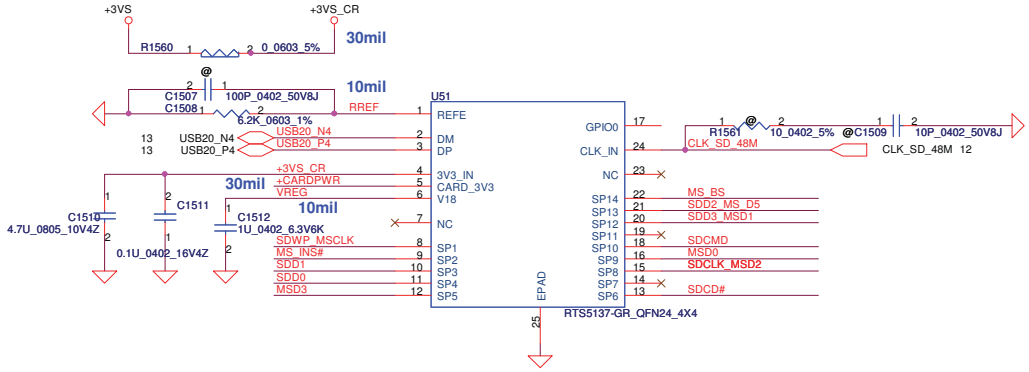
Title: P25-LAN RTL8111E

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

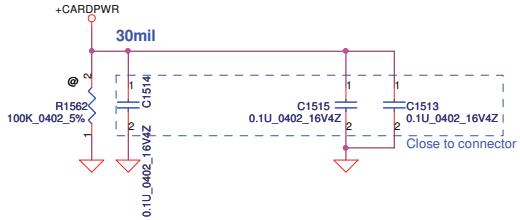
Date: Wednesday, February 23, 2011 | Sheet 25 of 46

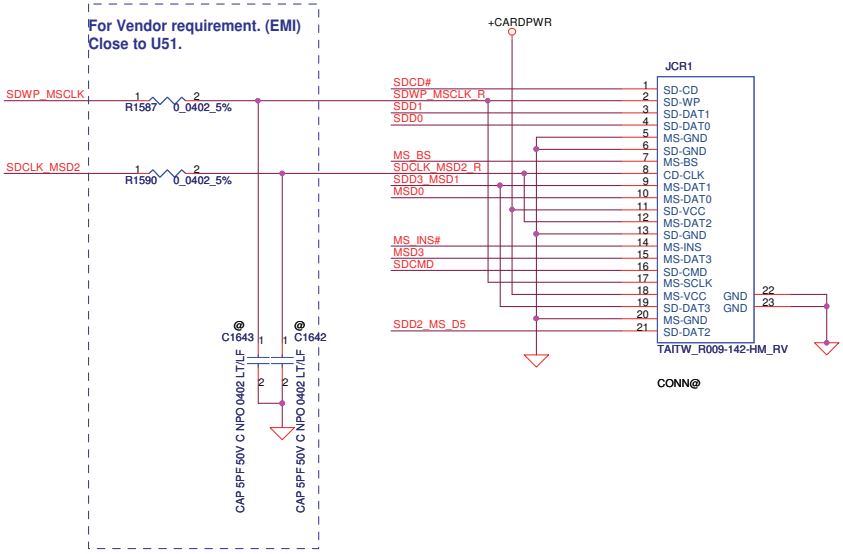

For EMI, 8.2uH inductance.
For EMI, 1000pF.
Speaker Connector
For ESD. Close to JSPK1
For EMI
20mil
40mil
10mil
U50
ALC269Q-VB5-GR QFN 48P CODEC
AGND
GND
For EMI (on MIC and Headphone AGND to connected with DGND)
http://hobi-elektronika.net
Compal Electronics, Inc.
P26-HD CODEC ALC269
LA7321P PBL50
Compal Secret Data
2010/11/25
2011/12/31
Thursday, February 17, 2011

Card Reader RTS5137
(only SD/MMC/MS function)



Card Reader Connector





Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

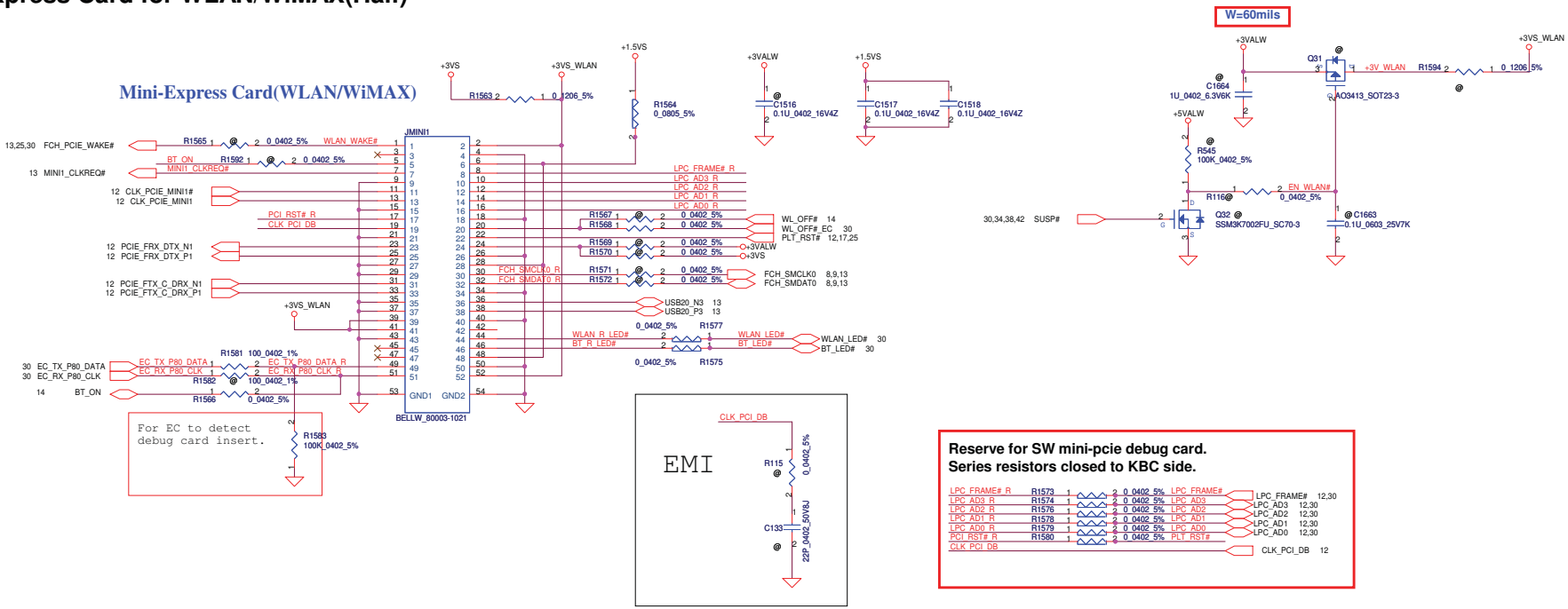
Compal Electronics, Inc.

Title: P27-RTS5137 Media Card Controller

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 Sheet 27 of 46

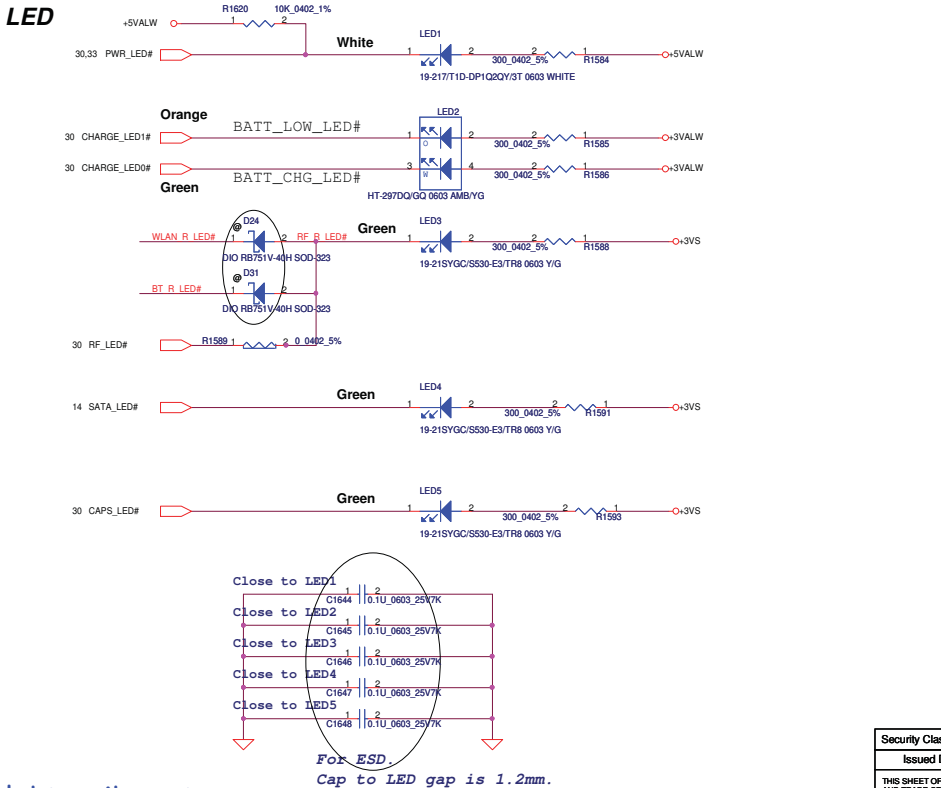
Mini-Express Card for WLAN/WiMAX(Half)

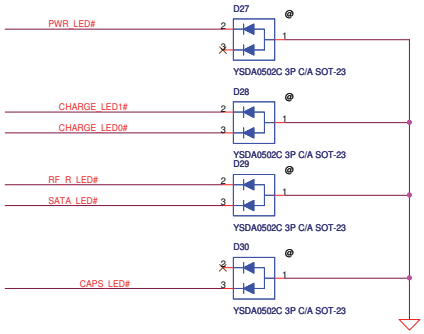


Reserve for SW mini-pcie debug card.
Series resistors closed to KBC side.

LPC_FRAME# R	R1573	0_0402_5%	LPC_FRAME#	LPC_FRAME#	12,30
LPC_AD3 R	R1574	0_0402_5%	LPC_AD3	LPC_AD3	12,30
LPC_AD2 R	R1576	0_0402_5%	LPC_AD2	LPC_AD2	12,30
LPC_AD1 R	R1578	0_0402_5%	LPC_AD1	LPC_AD1	12,30
LPC_AD0 R	R1579	0_0402_5%	LPC_AD0	LPC_AD0	12,30
PCI RST# R	R1580	0_0402_5%	PLT_RST#		
CLK_PCI_DB				CLK_PCI_DB	12

LED





Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

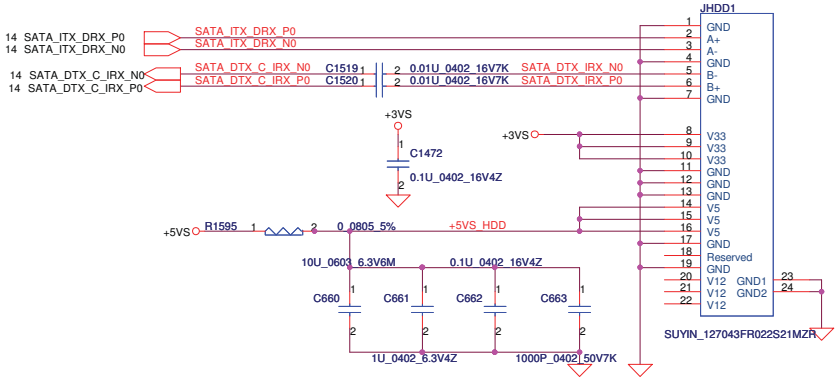
Compal Electronics, Inc.

Title: P28-Mini PCIE/LED

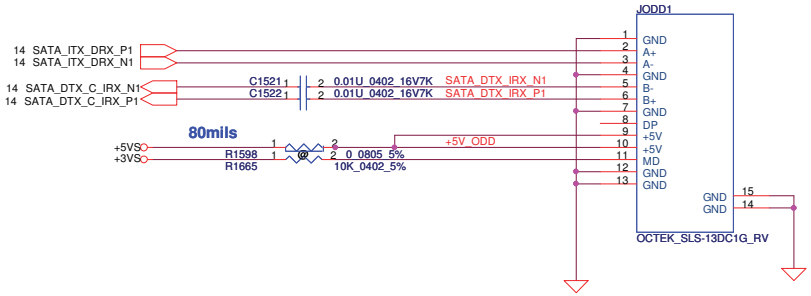
Size | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Friday, February 18, 2011 | Sheet 28 of 46

SATA HDD Conn.



SATA ODD FFC Conn.



Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P29-HDD & ODD CONN

Size	Document Number	Rev
B	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 Sheet 29 of 46

ID	BRD ID	Ra	Rb	Vab
0	R01 SR	100K	0	0V
1	R02 ER	100K	8.2K	0.25V
2	R10 PR	100K	18K	0.5V
3		100K	33K	0.82V

changed 09.09.08

FOR EC 128KB SPI ROM (150mil PACKAGE) SA00002C100

EMI

Reserve, and close to U47.

If Q8 or R429, R432 implemented, R747 & R748 need to be mounted

20mils

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.

Compal Electronics, Inc.

Title: P30-BIOS & EC KB930

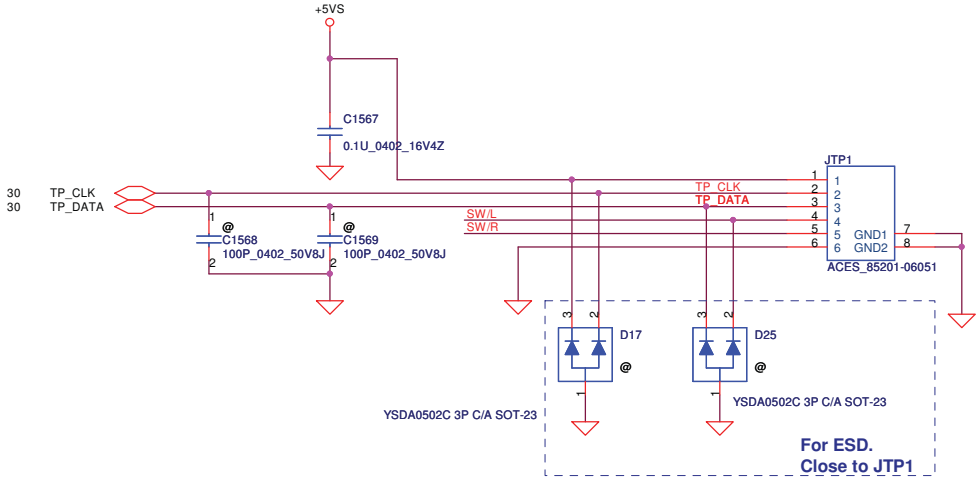
Size: Custom | Document Number: LA7321P PBL50 | Rev: 0.22

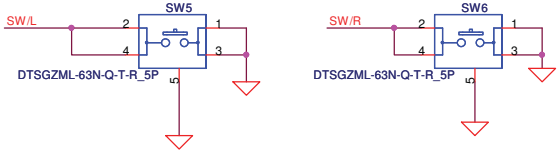
Date: Thursday, February 17, 2011 | Sheet 30 of 46

INT_KBD Conn.

CONN PIN define need double check

To TP/B Conn.





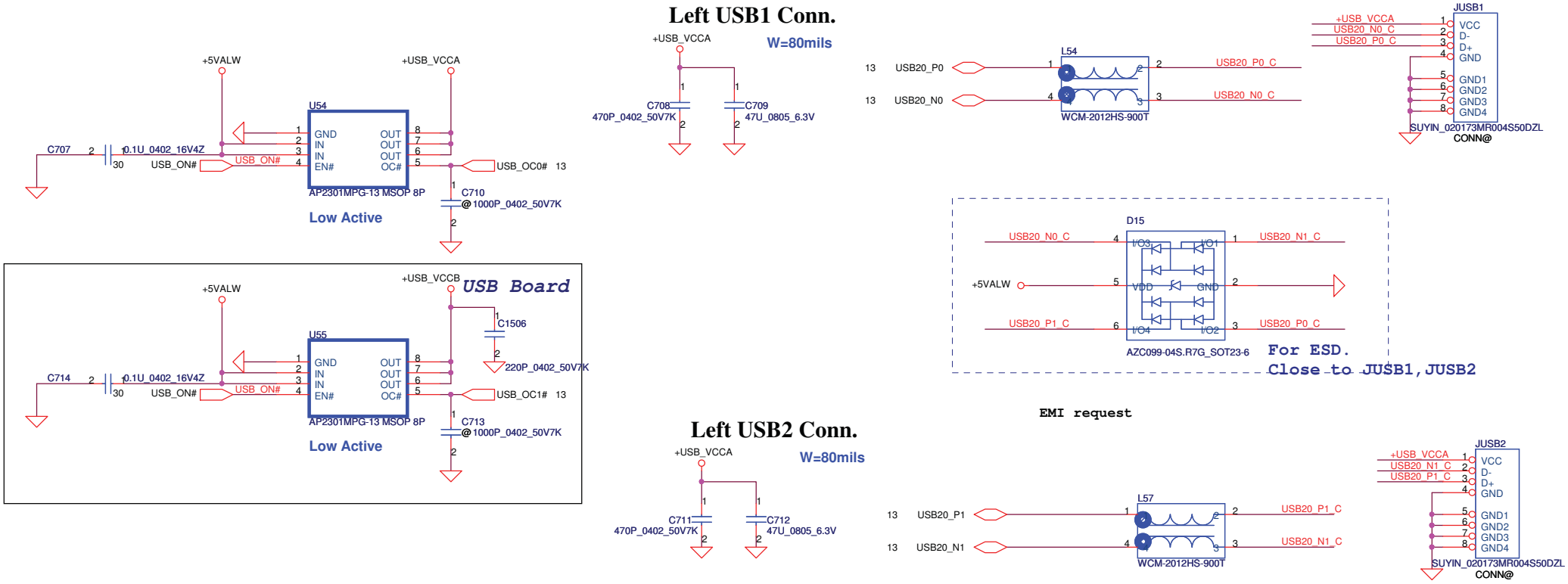
Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: P31-KB /SW/TP/Lid

Size: B | Document Number: LA7321P PBL50 | Rev: 0.22

Date: Tuesday, February 15, 2011 | Sheet 31 of 46



Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

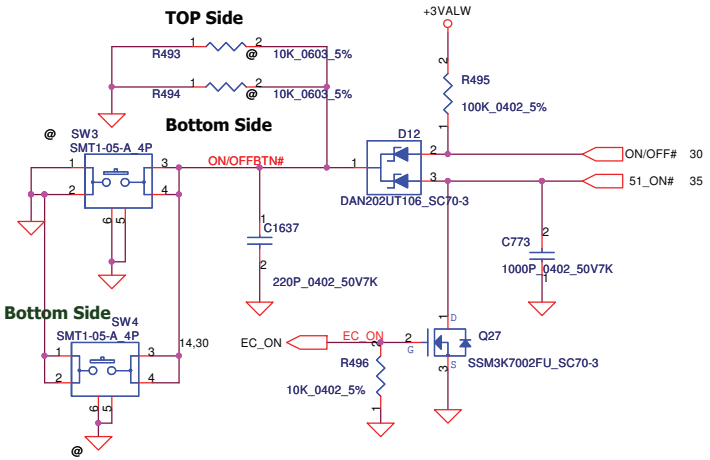
Compal Electronics, Inc.

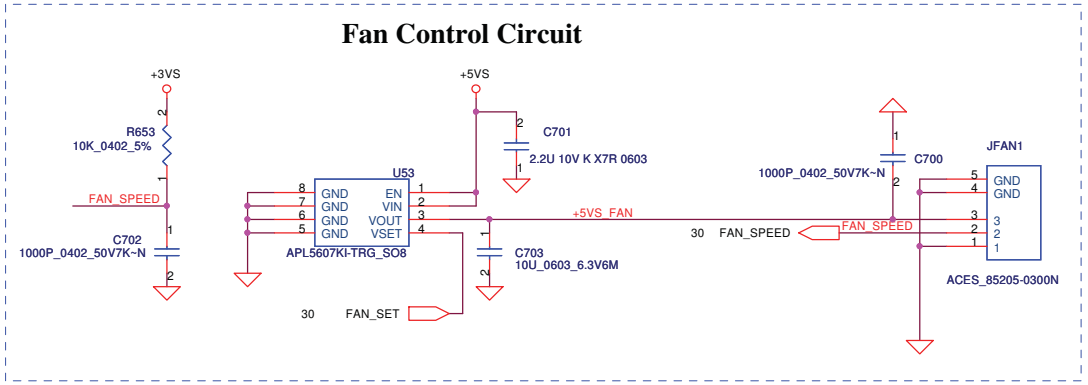
Title: P32-USB/BT/USBsub

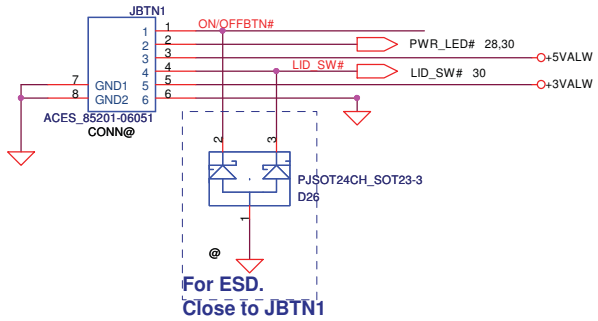
Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

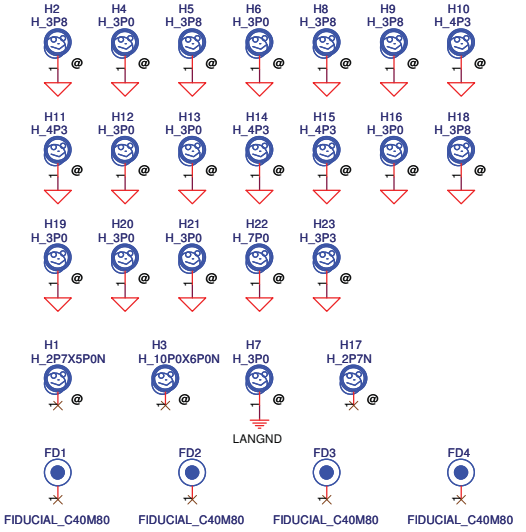
Date: Thursday, February 17, 2011 | Sheet 32 of 46

ON/OFF switch **Power Button**









Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

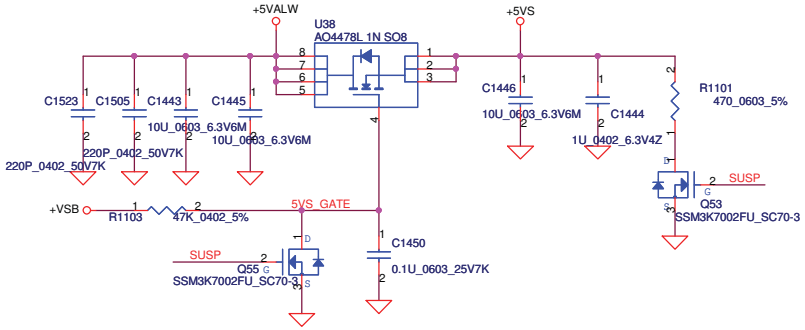
Compal Electronics, Inc.

Title: P33-Other IO/USB (right)

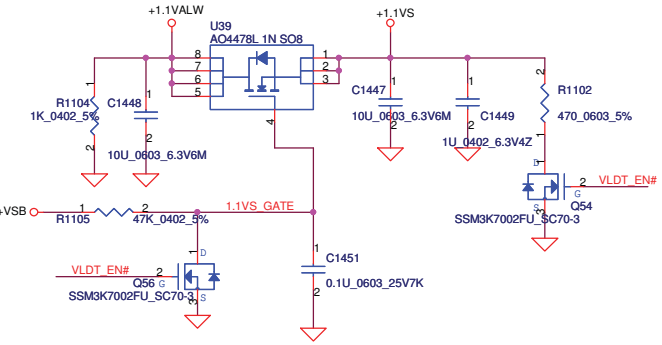
Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

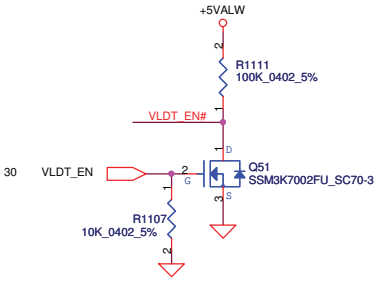
Date: Thursday, February 17, 2011 | Sheet 33 of 46

+5VALW TO +5VS

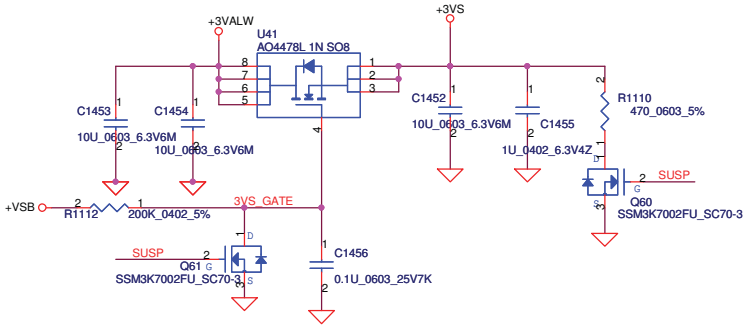


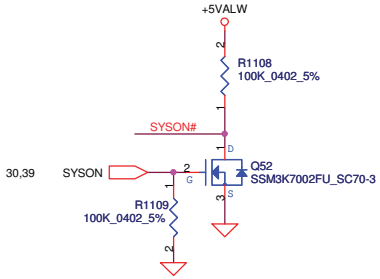
+1.1VALW TO +1.1VS

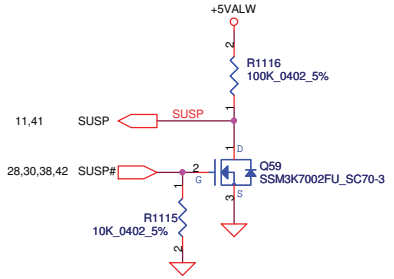




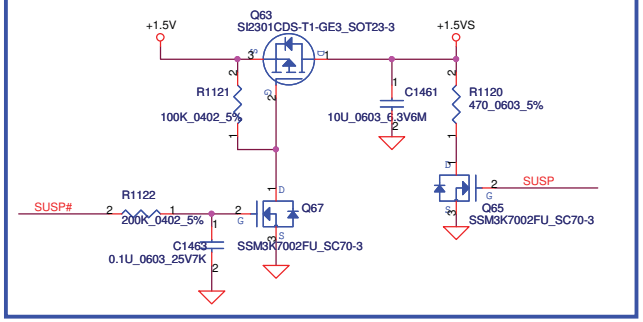
+3VALW TO +3VS

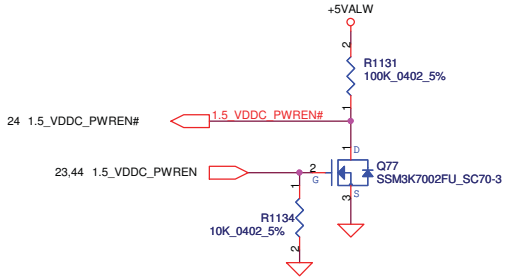


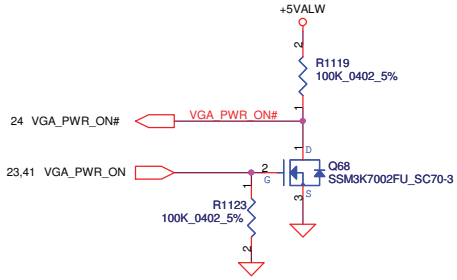


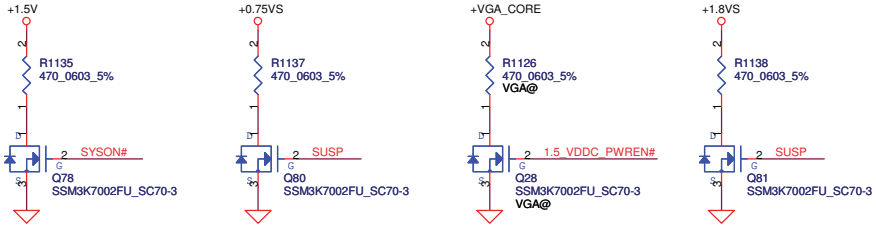


+1.5VS









Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

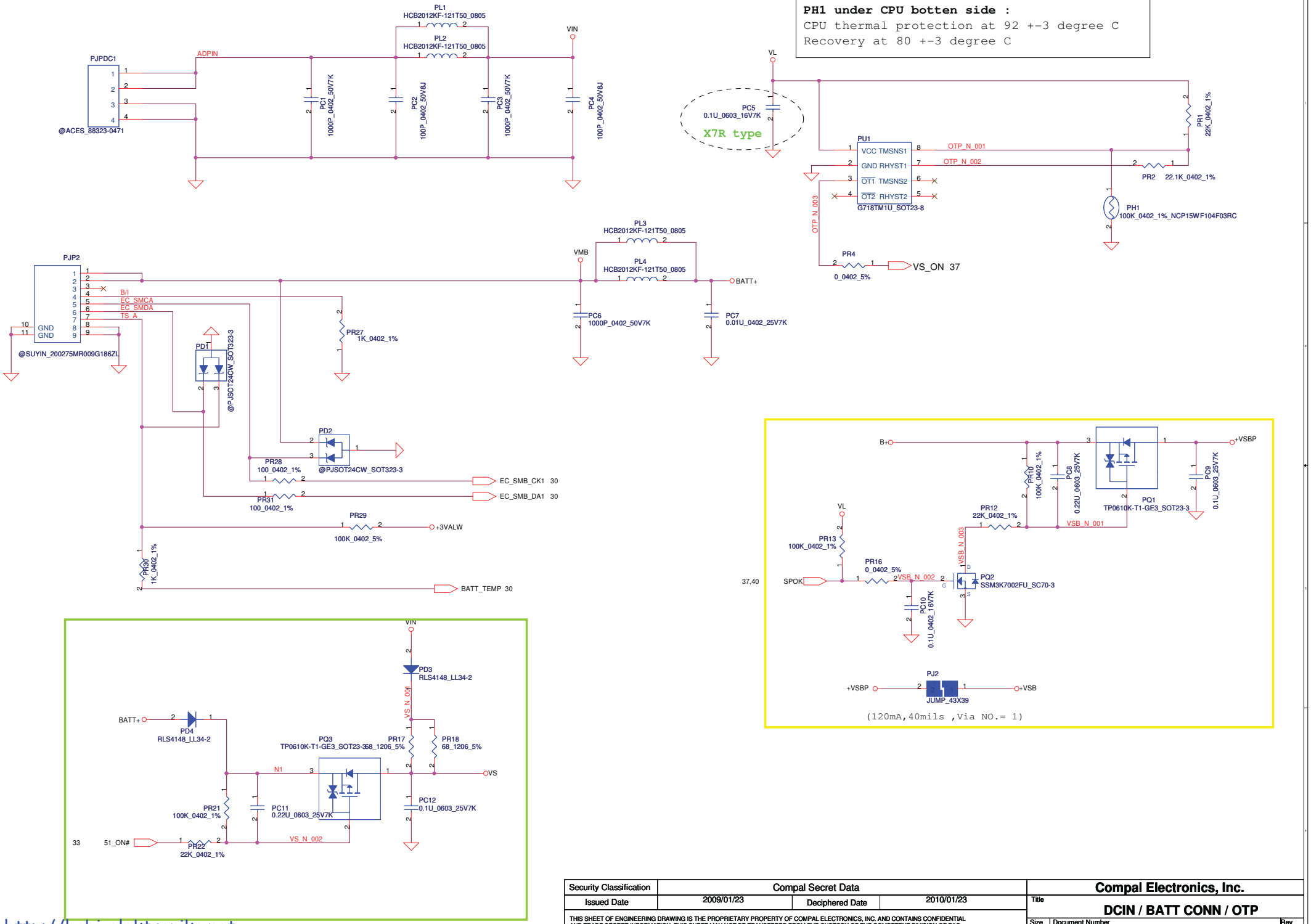
Compal Electronics, Inc.

Title: P34-DC Interface

Size	Document Number	Rev
Custom	LA7321P PBL50	0.22

Date: Thursday, February 17, 2011 | Sheet 34 of 46

PH1 under CPU botten side :
CPU thermal protection at 92 +-3 degree C
Recovery at 80 +-3 degree C



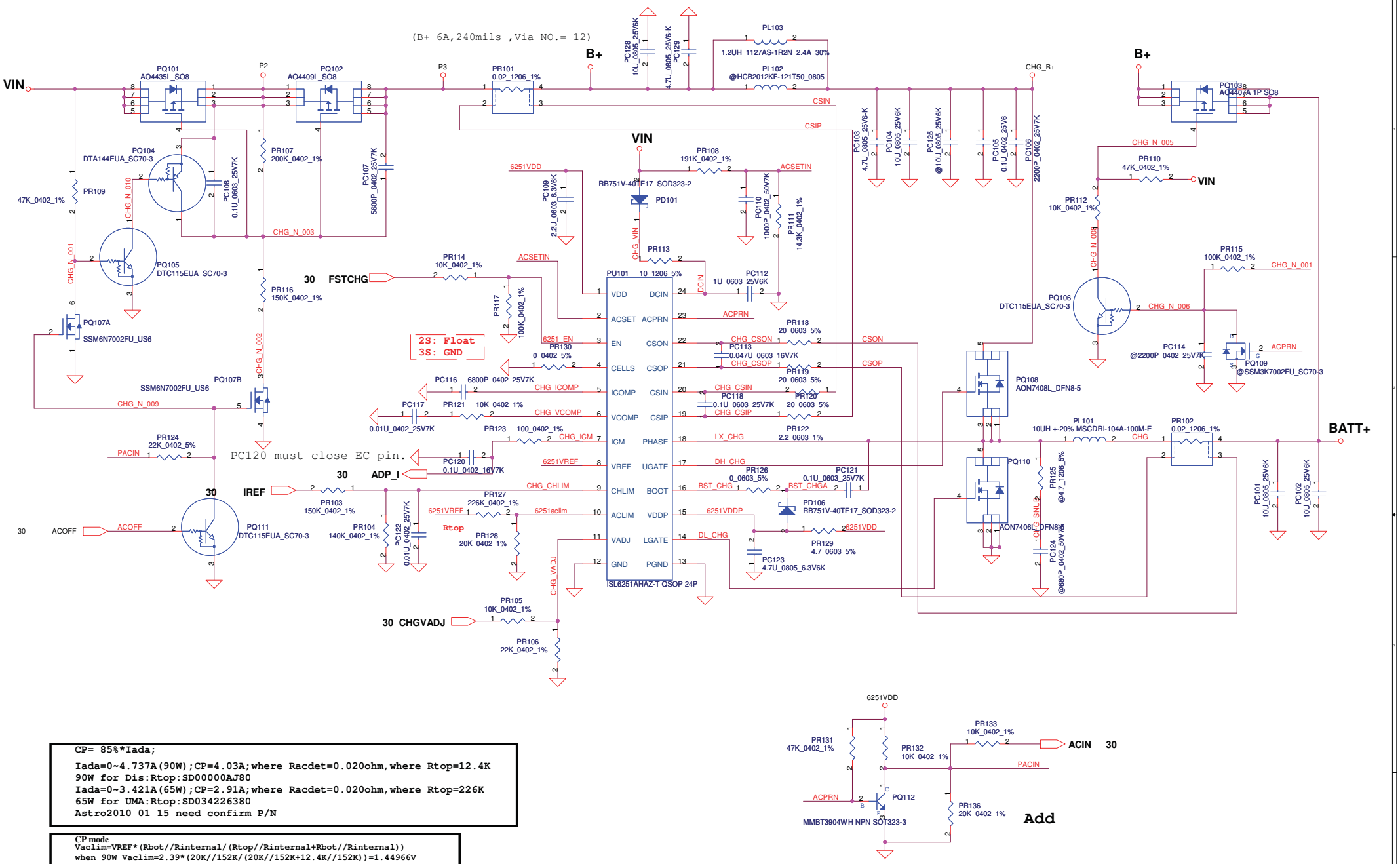
Security Classification	Compal Secret Data		
Issued Date	2009/01/23	Deciphered Date	2010/01/23

Compal Electronics, Inc.

Title: **DCIN / BATT CONN / OTP**

Size	Document Number	Rev
	NCL61 LA-6321P M/B	0.22

Date: Tuesday, February 22, 2011 | Sheet 35 of 44




```
CP= 85%*Iada;
Iada=0~4.737A(90W);CP=4.03A;where Racdet=0.020ohm,where Rtop=12.4K
90W for Dis:Rtop:SD00000AJ80
Iada=0~3.421A(65W);CP=2.91A;where Racdet=0.020ohm,where Rtop=226K
65W for UMA:Rtop:SD034226380
Astro2010_01_15 need confirm P/N
```

```
CP mode
Vaclim=VREF*(Rbot//Rinternal/(Rtop//Rinternal+Rbot//Rinternal))
when 90W Vaclim=2.39*(20K//152K/(20K//152K+12.4K//152K))=1.44966V
when 65W Vaclim=2.39*(20K//152K/(20K//152K+226K//152K))=0.38914V
Iinput=(1/Racdet)*((0.05*Vaclim/VREF+0.05))
when 90W,Iinput=(1/0.02)*(0.05*1.44966/2.39+0.05)=4.02A
when 65W,Iinput=(1/0.02)*(0.05*0.38914/2.39+0.05)=2.92A
```

CC=0.25A~3A
IREF=1.016*Icharge
IREF=0.254V~3.048V
VCHLIM need over 95mV

CHGVADJ=(Vcell-4)/0.10627

Vcell	CHGVADJ
4V	0V
4.2V	1.882V

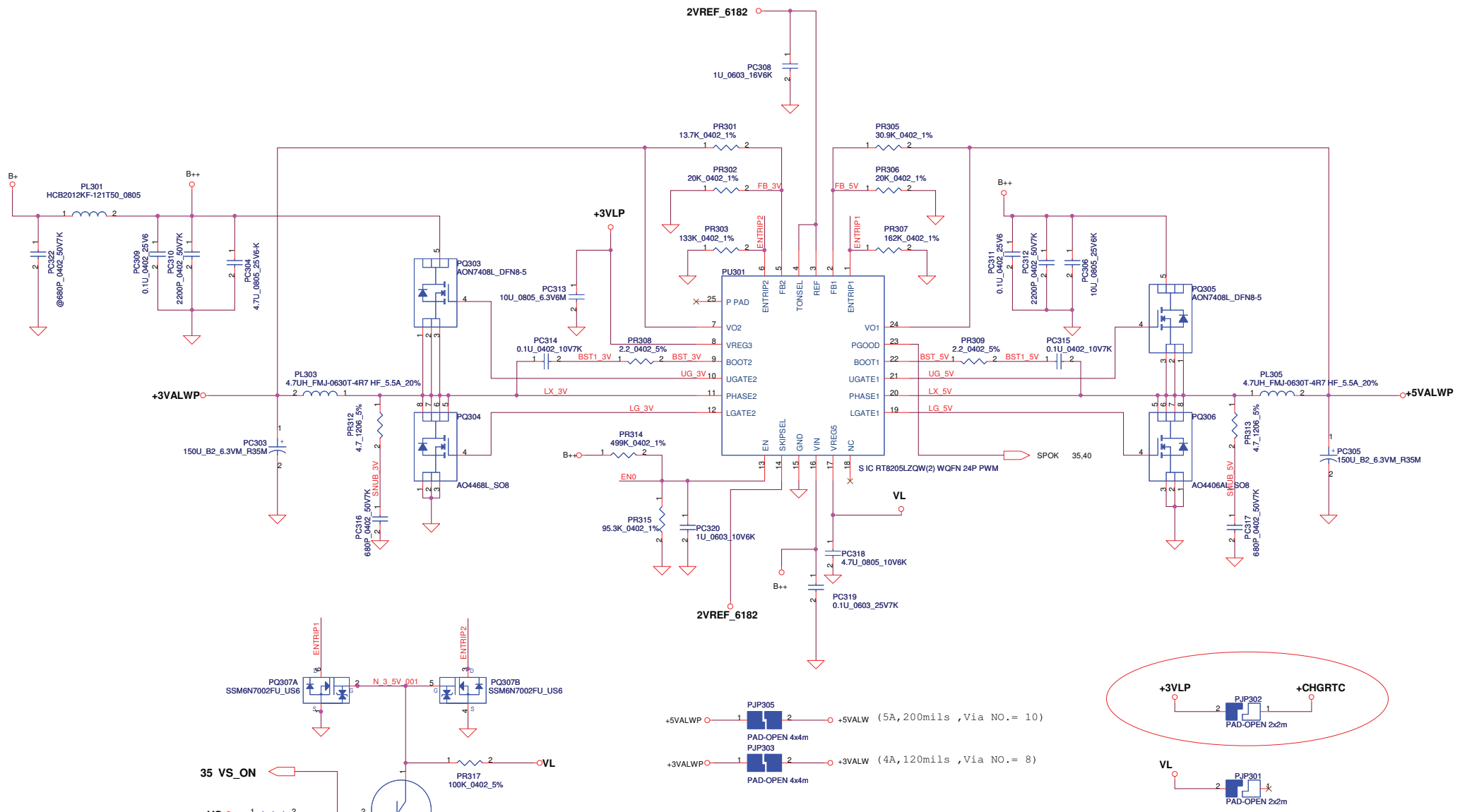
Security Classification	Compal Secret Data		
Issued Date	2009/01/23	Deciphered Date	2010/01/23

Compal Electronics, Inc.

Title: CHARGER

Size	Document Number	Rev
	NCL61 LA-6321P M/B	0.22

Date: Wednesday, February 16, 2011 | Sheet 36 of 44



EC:+3VL, reserve PR319, install PR318, PR320 100K
EC:+3VALW, reserve PR318, install PR319, PR320 42.2K

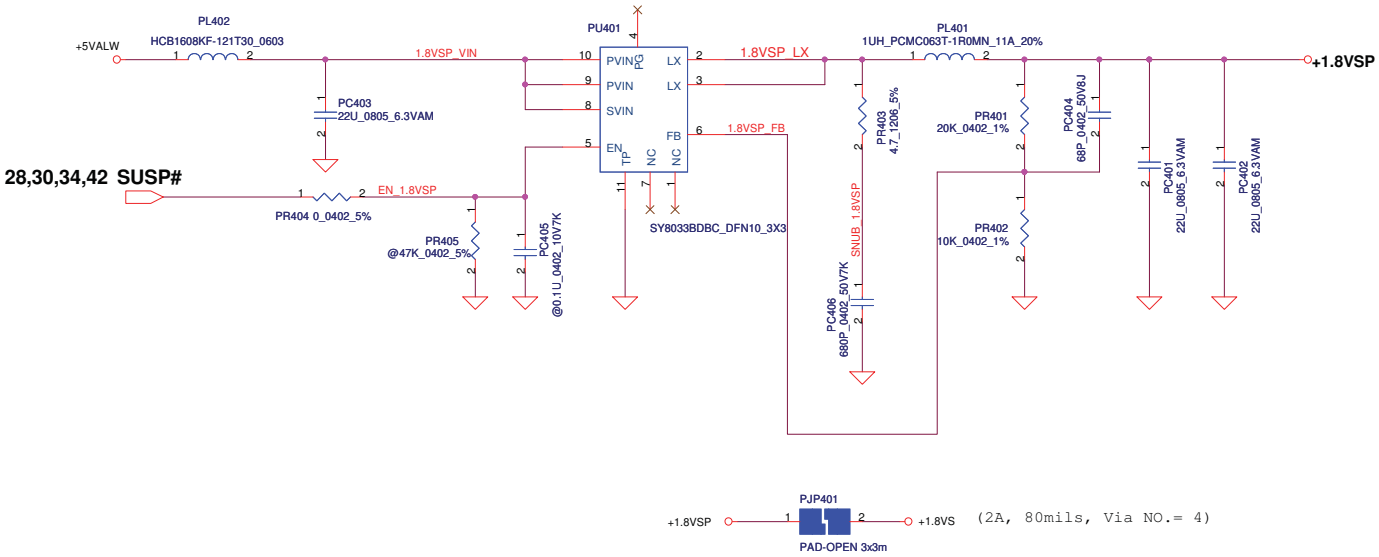
Security Classification	Compal Secret Data		
Issued Date	2007/08/02	Deciphered Date	2008/08/02

Compal Electronics, Inc.

Title: 3.3VALWP/5VALWP

Size	Document Number	Rev
Custom	LAXXXX	0.22

Date: Wednesday, February 16, 2011 | Sheet 37 of 44



<Vo=1.8V> VFB=0.6V
Vo=VFB*(1+PR401/PR402)=0.6*(1+20K/10K)=1.8V

(2A, 80mils, Via NO.= 4)

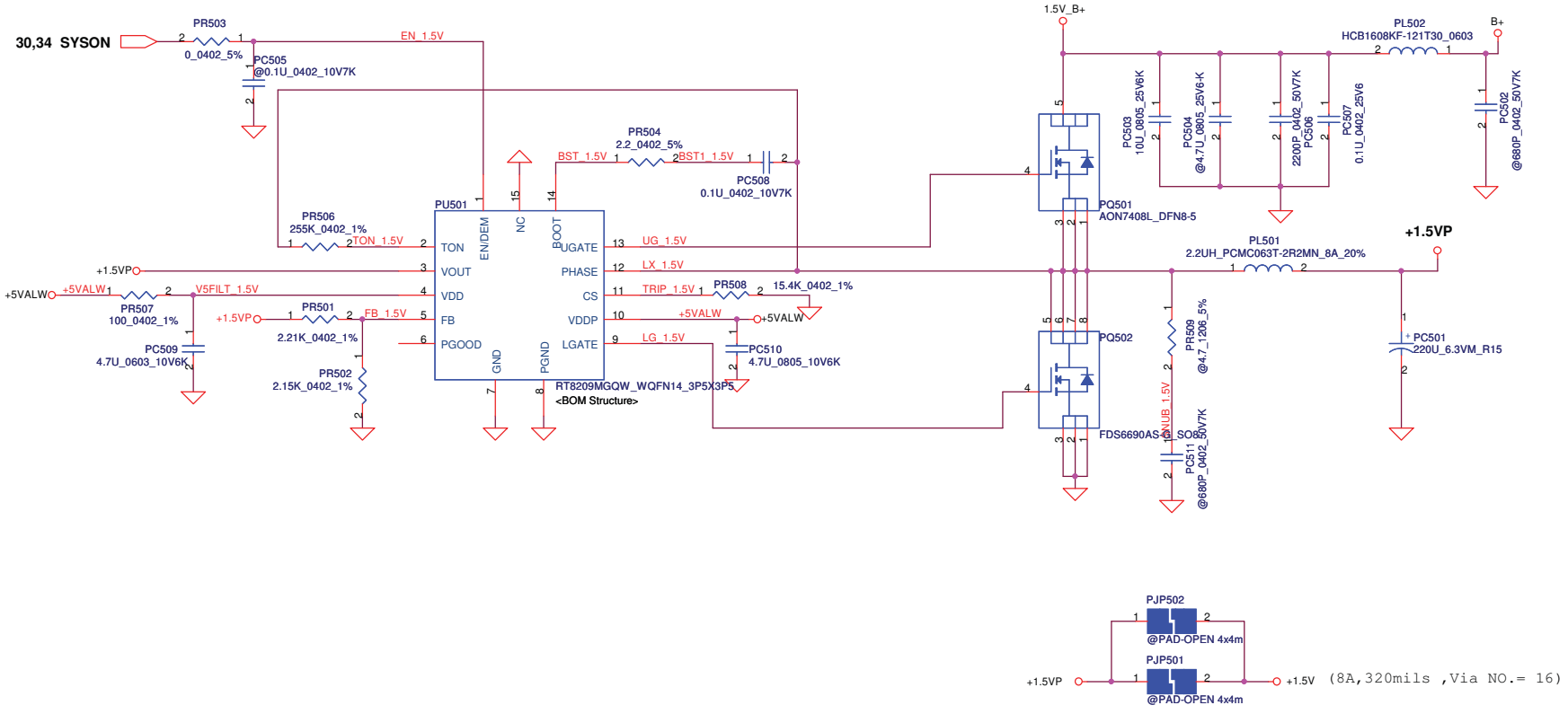
Security Classification	Compal Secret Data		
Issued Date	2009/01/23	Deciphered Date	2010/01/23

Compal Electronics, Inc.

Title: **+1.8VSP**

Size	Document Number	Rev
	NCL61 LA-6321P M/B	0.22

Date: Tuesday, February 15, 2011 | Sheet 38 of 44



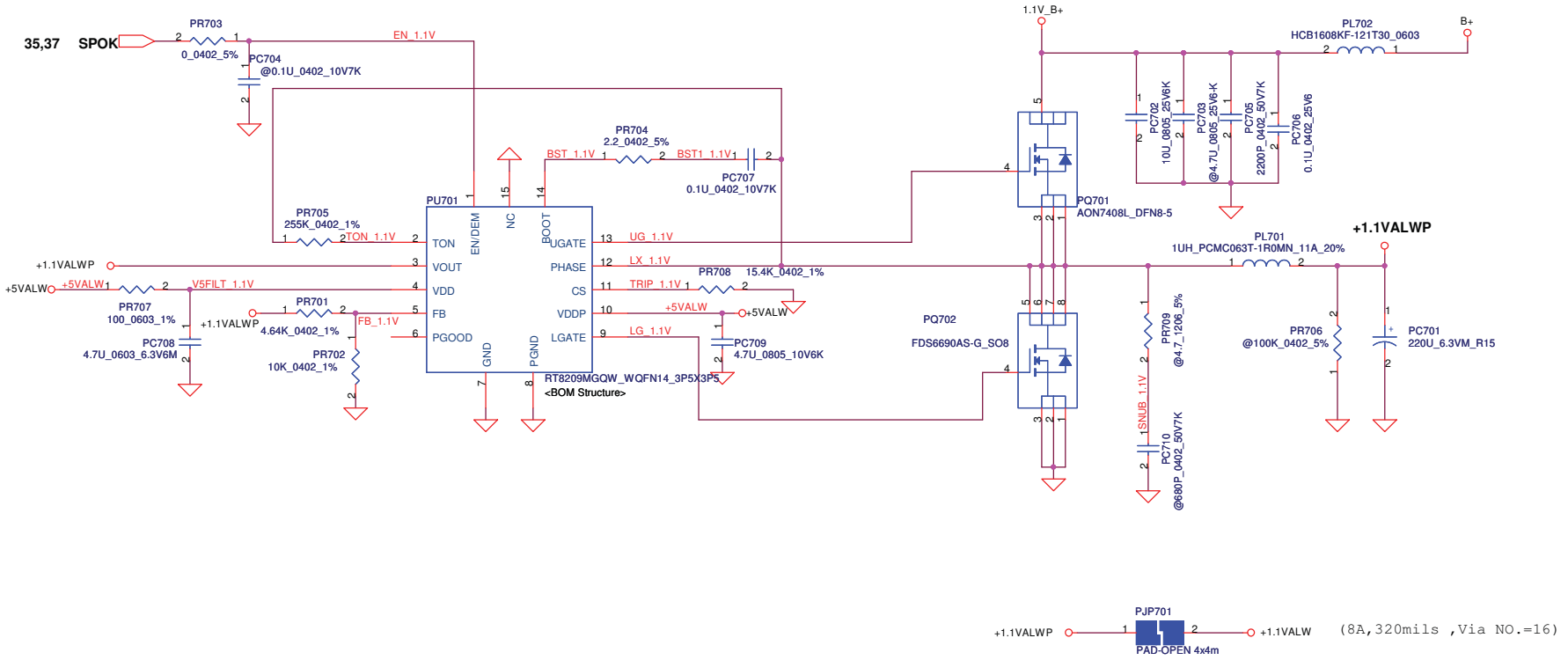
Security Classification	Compal Secret Data		
Issued Date	2007/05/29	Deciphered Date	2008/05/29

Compal Electronics, Inc.

Title: **+1.5VP**

Size	Document Number	Rev
	LAXXXX	0.22

Date: Wednesday, February 16, 2011 | Sheet 39 of 44



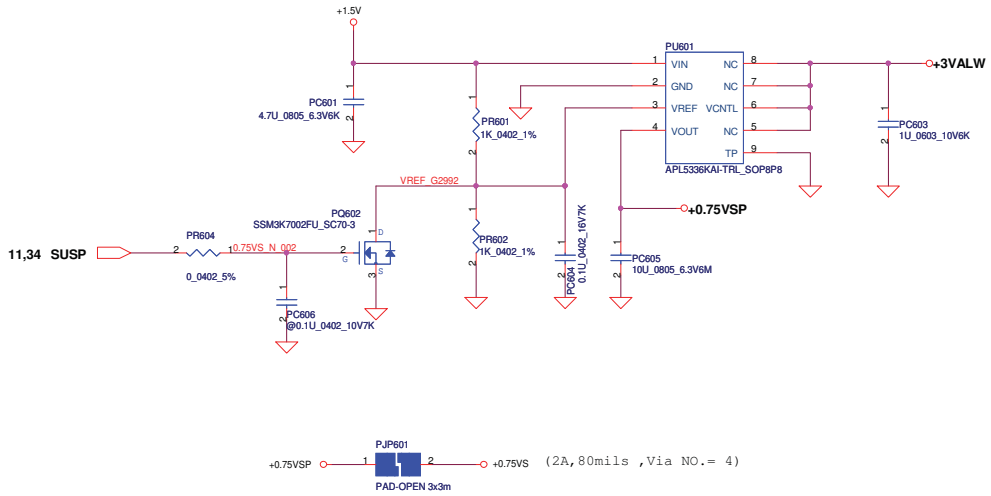
Security Classification	Compal Secret Data		
Issued Date	2009/12/01	Deciphered Date	2010/12/31

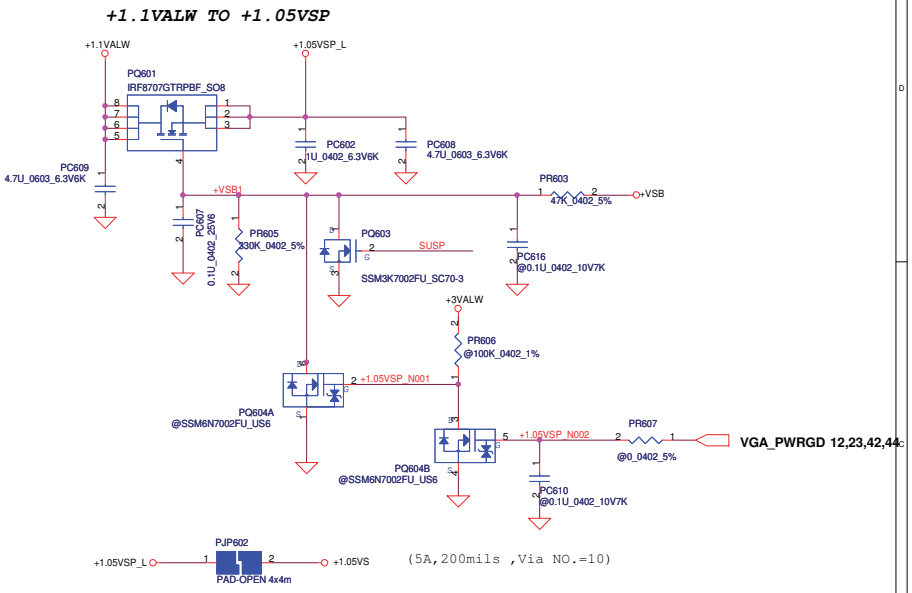
Compal Electronics, Inc.

Title: PWR+1.1VALWP

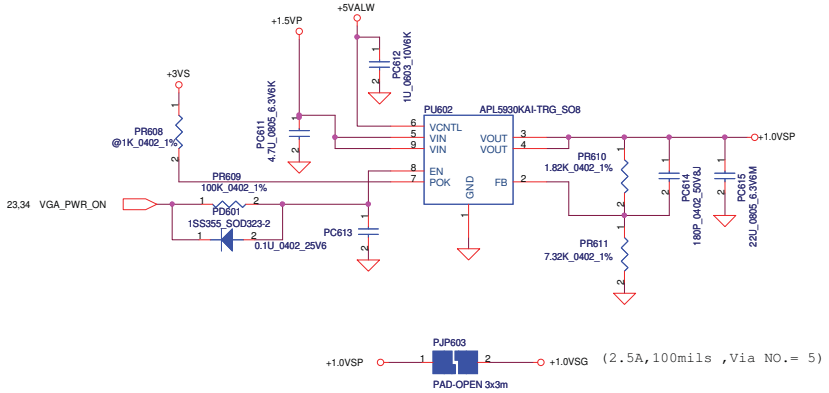
Size: Custom | Document Number: LAXXXX | Rev: 0.22

Date: Wednesday, February 16, 2011 | Sheet 40 of 44





Need to confirm with HW power sequence.



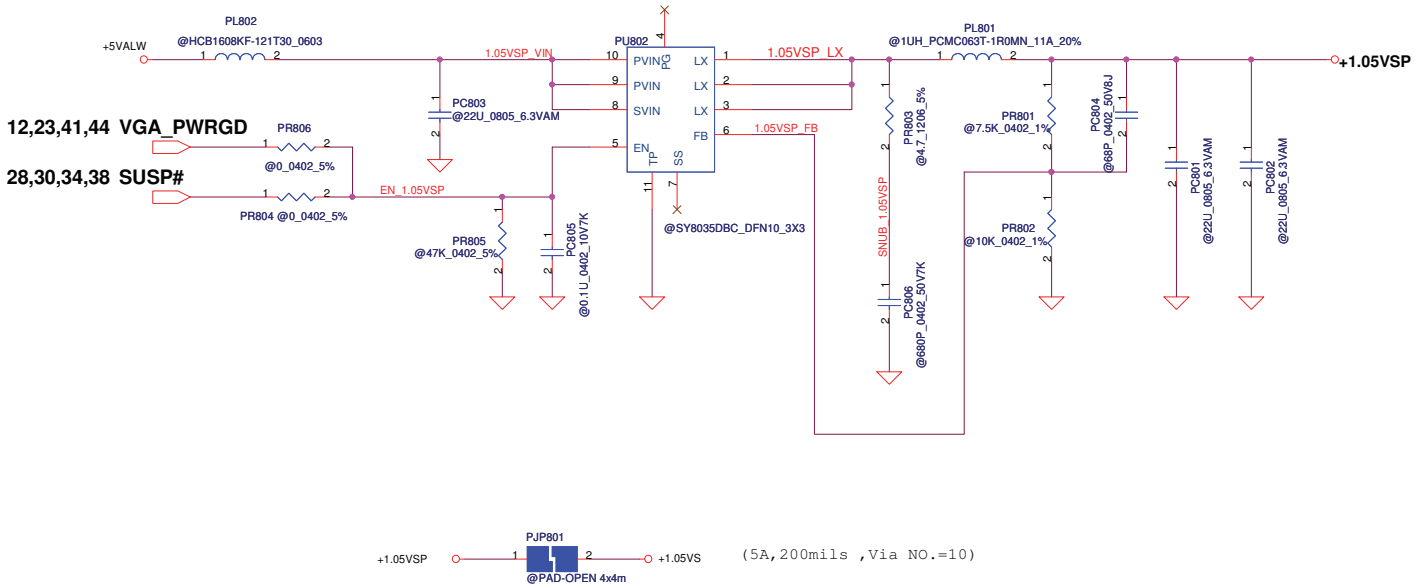
Security Classification	Compal Secret Data		
Issued Date	2006/11/23	Deciphered Date	2007/11/23

Compal Electronics, Inc.

Title: **PWR 0.75VSP +1.05VSP**

Size	Document Number	Rev
	LAXXXX	0.22

Date: Wednesday, February 16, 2011 | Sheet 41 of 44



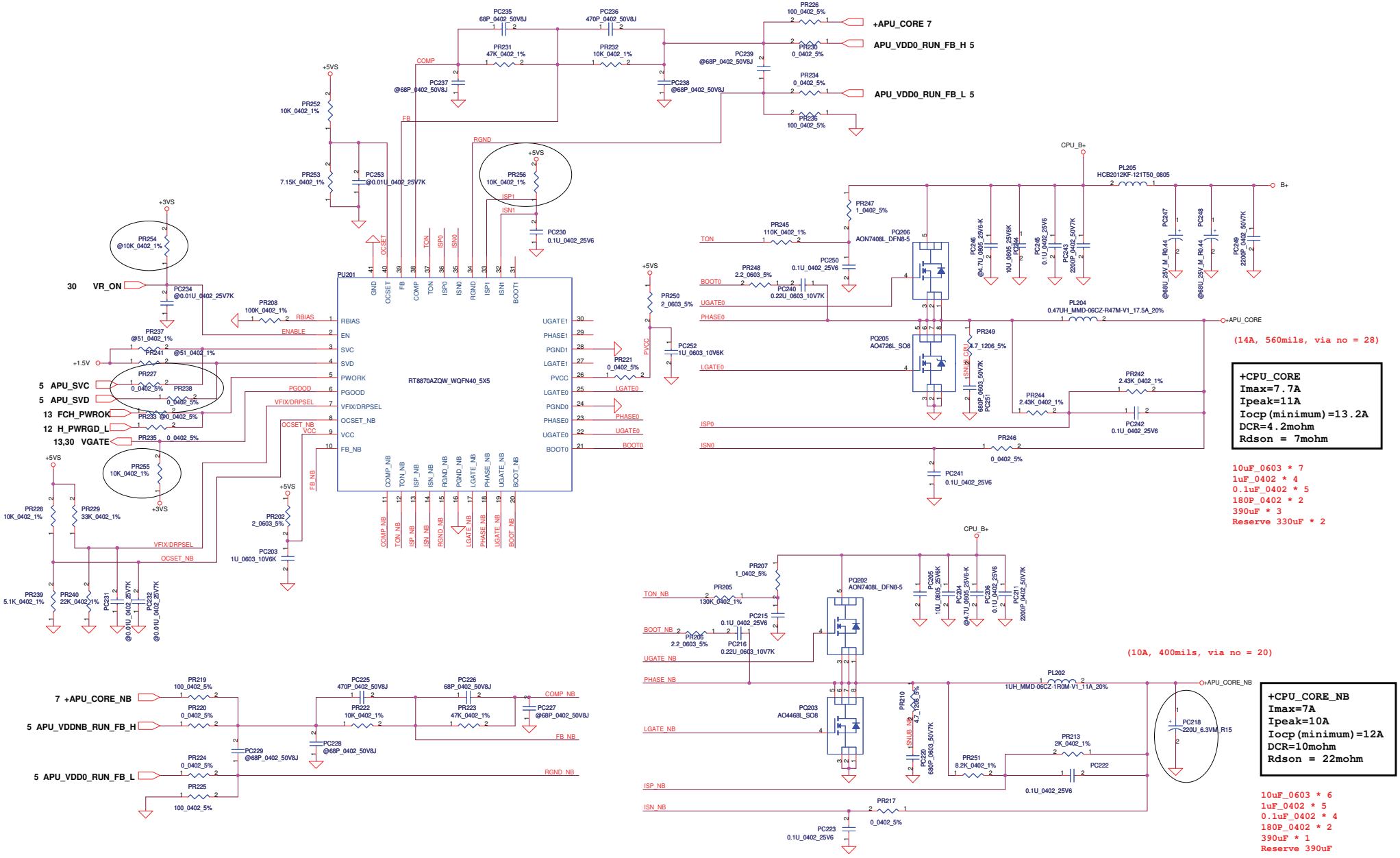
Security Classification	Compal Secret Data		
Issued Date	2009/01/23	Deciphered Date	2010/01/23

Compal Electronics, Inc.

Title: **+1.8VSP**

Size	Document Number	Rev
	NCL61 LA-6321P M/B	0.22

Date: Tuesday, February 15, 2011 | Sheet 42 of 44



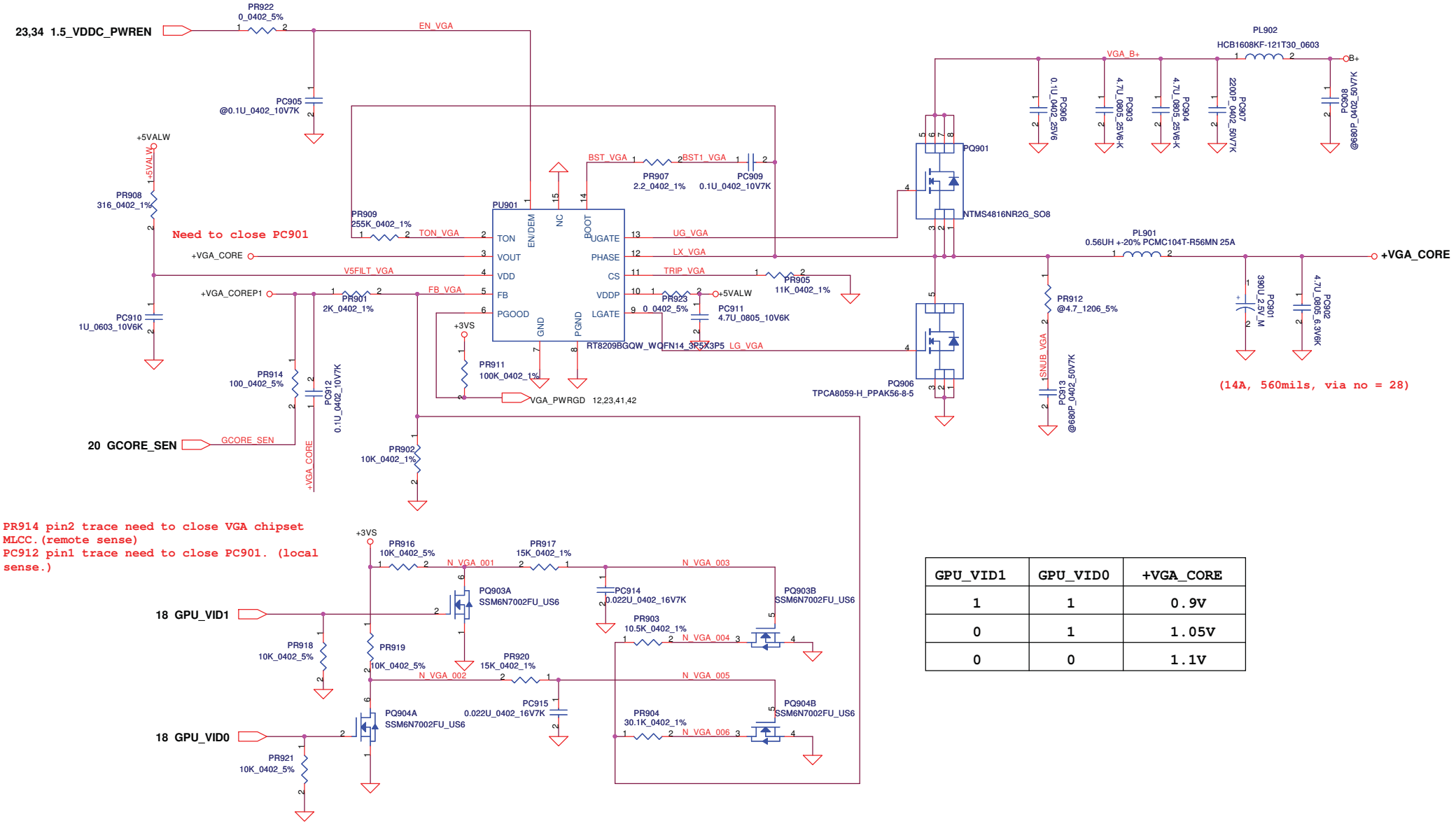
Security Classification	Compal Secret Data		
Issued Date	2009/12/01	Deciphered Date	2010/12/31

Compal Electronics, Inc.

Title: PWR-CPU_CORE

Size: C | Document Number: LAXXXX | Rev: 0.22

Date: Wednesday, February 16, 2011 | Sheet 43 of 44



GPU_VID1	GPU_VID0	+VGA_CORE
1	1	0.9V
0	1	1.05V
0	0	1.1V

Security Classification	Compal Secret Data		
Issued Date	2007/05/29	Deciphered Date	200810/11

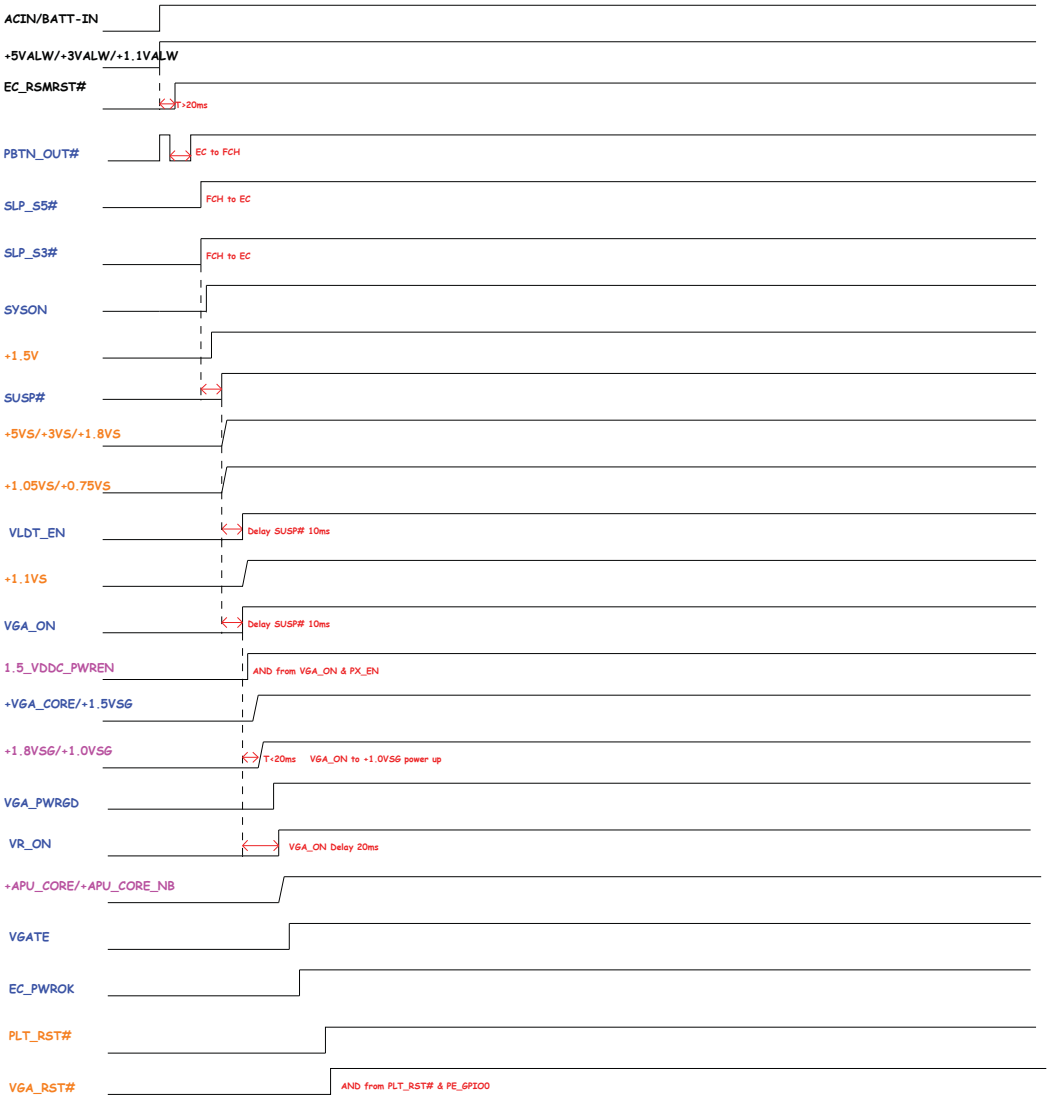
Compal Electronics, Inc.

Title: VGA_CORE

Size | Document Number: LAXXXX | Rev: 0.22

Date: Friday, February 18, 2011 | Sheet 44 of 44

POWER SEQUENCE



Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Title	Power Sequence		
Size	Document Number: LA-6691P		Rev: 0.64
Date: Tuesday, February 21, 2012	Sheet 31 of 48		

Version Change List (P. I. R. List)

Item	Page#	Title	Date	Request Owner	Issue Description	Solution Description	Rev.
1	P30	KB930	2010/12/16	COMPAL	Power button no function.	Add R1621 pull up to +3VALW.	0.12
2	P31	TP button	2010/12/16	COMPAL	SW5,SW6 footprint error	Modify SW5,SW6 symbol.	0.12
3	P33	Fan Connector	2010/12/16	COMPAL	Fan no function.	Modify Fan connector pin define.	0.12
4	P35 ~ P44	Power schematic update	2010/12/16	COMPAL		Power schematic update	0.12
5	P30	KB930	2010/12/17	COMPAL	Modify board ID for ER phase.	Change R1606 from 0 ohm to 8.2K ohm.	0.12
6	P5	FCH THERMTRIP	2010/12/17	COMPAL	Modify BOM structure of thermtrip circuit. For FCH spec.	Change Q79 and R424 to unpop and change R427 to pop.	0.12
7							
8	P30	KB930	2010/12/17	COMPAL	Vendor's recommend for XCLK0 signal.	Add R1669 and C129.	0.12
9	P14	FCH SPI	2010/12/21	COMPAL	Add U11 circuit for flash BIOS crisis circuit.	Add U11 circuit.	0.12
10	P8	DDR3 SO-DIMM1	2010/12/21	COMPAL	Reserve R155,R152 for DDR3 DIMM1. (SA)		0.12
11	P33	Screw hole	2010/12/22	COMPAL	Thermal issue, modify H22.	Modify H22 to 7.0.	0.13
12	P35 ~ P44	Power schematic update	2010/12/22	COMPAL		Power schematic update	0.13
13	P12	FCH RTC	2010/12/23	COMPAL	Customer requirement for clear CMOS	Change R865 to Jump.	0.13
14	P28	WLAN & LED	2010/12/23	COMPAL	For ESD solution on LED.	Add C1644~C1648.	0.13
15	P26	Audio Codec	2010/12/24	COMPAL	For EMI solution on DMIC CLK.	Change R1544 to L124.	0.13
16	P30	KB930	2010/12/24	COMPAL	For EMI solution on SPI CLK.	Change R1631 to L125 and pop R180 and C1535.	0.13
17	P14	FCH SPI	2010/12/24	COMPAL		Modify Crisis circuit.	0.13
18	P10	CRT	2010/12/24	COMPAL	For ESD solution on CRT.	Pop D1,D2,D16,D18	0.13
19	P35 ~ P44	Power schematic update	2010/12/24	COMPAL		Power schematic update	0.13
20	P25	LAN	2010/12/24	COMPAL		Reserve J1 jump for LAN power.	0.13
21	P14	FCH SPI	2010/12/25	COMPAL	For EMI requirement.	Reserve R181,C130 close to U32.	0.13
22	P25	LAN	2010/12/27	COMPAL	For LAN power discharge.	Add R1113,Q62.	0.13
23	P25	LAN	2010/12/27	COMPAL	Prevent LAN wake up signal fo floating.	Add R553 pull down to GND.	0.13
24	P25	LAN	2010/12/27	COMPAL	For ESD requirement.	Change R549,R1529,R1530,R552 to 0603 size.	0.13
25	P34	DC to DC	2010/12/27	COMPAL	For Power sequence.	Change R1103 from 100K to 47K.	0.13
26	P11	HDMI	2010/12/28	COMPAL	For EMI requirement.	Modify L11~L14 circuit and remove un-LS circuit.	0.13
27	P12,18,25	Crystal	2010/12/29	COMPAL	For Vendor recommend.	Modify C35,C66,C67,C1633,C1634.	0.2
28	P26	Audio Codec	2010/12/30	COMPAL	For EMI Requirement.	Unpop R1556,R1557,R1558,R1559.	0.2
29	P30	KB930	2010/12/31	COMPAL	Change ROM footprint.	Change U48 footprint.	0.2
30	P16	FCH Strap	2010/12/31	COMPAL	Change FCH Strap for SPI-ROM	Pop R594,R602; Unpop R601,R550.	0.2
31	P18	Seymour Strap	2011/01/10	COMPAL	For AMD requirement.	Unpop R21,R22.	0.21
32	P34	DC to DC	2011/01/11	COMPAL	For +1.8VS discharge issue.	Add Q81,R1138.	0.21
33	P13	FCH HDA/USB/ACPI	2011/02/11	COMPAL	For RSMRST pluse issue	Change R606 from 2.2k ohm to 150 ohm	0.22
34	P30	EC	2011/02/11	COMPAL	For MB Board ID	Change R1606 to 18K	0.22
35	P10	CRT	2011/02/11	COMPAL	For CRT EA AND EMI	Change L116, L117, L118 TO 80 ohm	0.22
36	P25	LAN	2011/02/11	COMPAL	For EMI request	Change D36, D37, D38, D39 footprint	0.22
37	P18	VGA	2011/02/15	COMPAL	For S3 can't resume issue	ADD R74 (1M ohm) on Y1's cap	0.22
38	P25	LAN	2011/02/15	COMPAL	Follow vendor recommand to change Crystal's cap value	Change C1633 to 15P, C1634 to 12P	0.22
39	P30	EC	2011/02/16	COMPAL	For EMI requirement	Change R180 to 39 ohm, C1535 to 33P	0.23
40	P25	LAN	2011/02/16	COMPAL	For EMI requirement	Change TS1 to IH-160	0.23
41	P26	AUDIO	2011/02/17	COMPAL	For EMI requirement	Change R1556, R1557, R1558, R1559 to 0.1u caps	0.23
42	P34	DC-DC	2011/02/17	COMPAL	For EMI requirement	ADD C1505, C1523 on +5VALW	0.23
43	P32	USB	2011/02/17	COMPAL	For EMI requirement	ADD C1506 on +USB_VCCB	0.23
44	P33	PWRBTN	2011/02/17	COMPAL	For EMI requirement	ADD C1603 on ON/OFFBTN#	0.23
45	P25	LAN	2011/02/18	COMPAL	For EMI requirement	Stuff R546, R548	0.23
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							

Security Classification	Compal Secret Data		
Issued Date	2010/11/25	Deciphered Date	2011/12/31

Compal Electronics, Inc.

Title: EE-PIR-1

Size: Custom | Document Number: LA-6211P | Rev: 0.22

Date: Wednesday, February 23, 2011 | Sheet 48 of 48