Compal Confidential

NBLG0 Schematics Document

AMD Tigris (JV40-TR) : Caspian Processor with RS880M/SB710/M92-M2 XT

2009-06-04

REV:0.2

Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

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Title: Cover Page		
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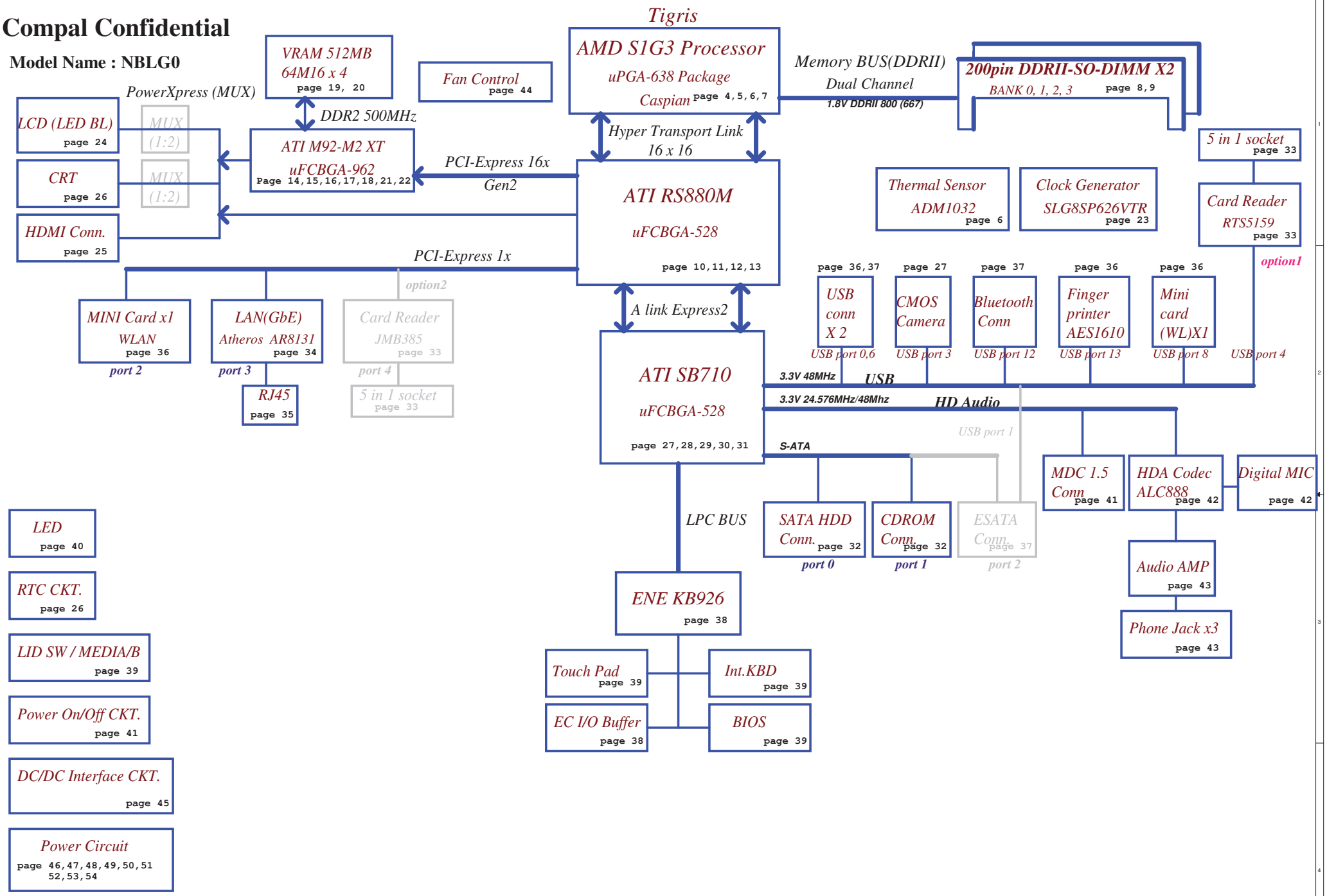
Model Name : NBLG0



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Title: Block Diagrams			
Size: B	Document Number: NBLG0 LA-5521P		Rev: 0.1
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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
+CPU_CORE_0	Core voltage for CPU (0.7-1.2V)	ON	OFF	OFF
+CPU_CORE_1	Core voltage for CPU (0.7-1.2V)	ON	OFF	OFF
+CPU_CORE_NB	Voltage for On-die Northbridge of CPU(0.8-1.1V)	ON	OFF	OFF
+0.9V	0.9V switched power rail for DDR terminator	ON	ON	OFF
+1.1VS	1.1V switched power rail for NB VDDC & VGA	ON	OFF	OFF
+1.2V_HT	1.2V switched power rail	ON	OFF	OFF
+VGA_CORE	0.95-1.2V switched power rail	ON	OFF	OFF
+1.5VS	1.5V power rail for PCIE Card	ON	OFF	OFF
+1.8V	1.8V power rail for CPU VDDIO and DDR	ON	ON	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5VS	2.5V for CPU_VDDA	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V_LAN	3.3V power rail for LAN	ON	ON	ON
+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

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

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts

EC SM Bus1 address

Device	Address	HEX
Smart Battery	0001 011X b	16H

EC SM Bus2 address

Device	Address	HEX
ADI ADM1032 (CPU)	1001 100X b	98H
GMT G781-1 (GPU)	1001 101X b	9AH
SB-Temp Sensor		9CH

SB700 SM Bus 0 address

Device	Address	HEX
Clock Generator (SILEGO SLG8SP626)	1101 001Xb	D2
DDR DIMM1	1001 000Xb	90
DDR DIMM2	1001 010Xb	94
Mini card		

SB700 SM Bus 1 address

Device	Address
New card	

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

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%
Ra/Rc/Re	100K +/- 5%

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

BOARD ID Table

Board ID	PCB Revision
0	
1	0.1(DVT)
2	0.2(PVT)
3	1.0(MP)
4	
5	
6	
7	

BTO Option Table

BTO Item	BOM Structure
Discrete	VGA@
UMA	UMA@
M92-M2 XT	M92@
VRAM STRAP	VRAM@
LAN 8121	8121@
LAN 8131	8131@
HDT debug	HDT@
JMB385 CR	JMB385@
RTS5159 CR	RTS5159@
FOR PUMA	PUMA@
FOR TIGRIS	TIGRIS@
FOR TEST	UB@

	SB700	SB700	RS780MN	DISPLAY OUTPUT
	PX_GPIO0	PX_GPIO1	PX_GPIO2	
Function Description	dGPU_Reset	dGPU_PWR_Enable	PX Mode Switch	
IGP only mode	X	X	X	
PowerXpress mode	H : Enable	H : Enable	L : iGPU(DC) / H : dGPU(AC)	LVDS / CRT

	KB926					
	PX_GPIO1	PX_GPIO2	PX_+3VS	PX_+1.8VS	PX_+VGA_CORE	PX_GPIO2_NB
Function Description	Enable +1.1VS_PX	PX MODE SWITCH	Enable +3VS_DELAY	Enable +1.8VS_PX	Enable +VGA_CORE	Trigger from SB
IGP only mode	X	X	X	X	X	X
PowerXpress mode	H : Enable	Reserved	H : Enable	H : Enable	H : Enable	Reserved

	KB926
	PX_GPIO1_SB
Function Description	Trigger from SB to Enable (PX_GPIO1/PX_+3VS/PX_+1.8VS/PX_+VGA_CORE)
IGP only mode	X
PowerXpress mode	H : Enable

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Title: Notes List

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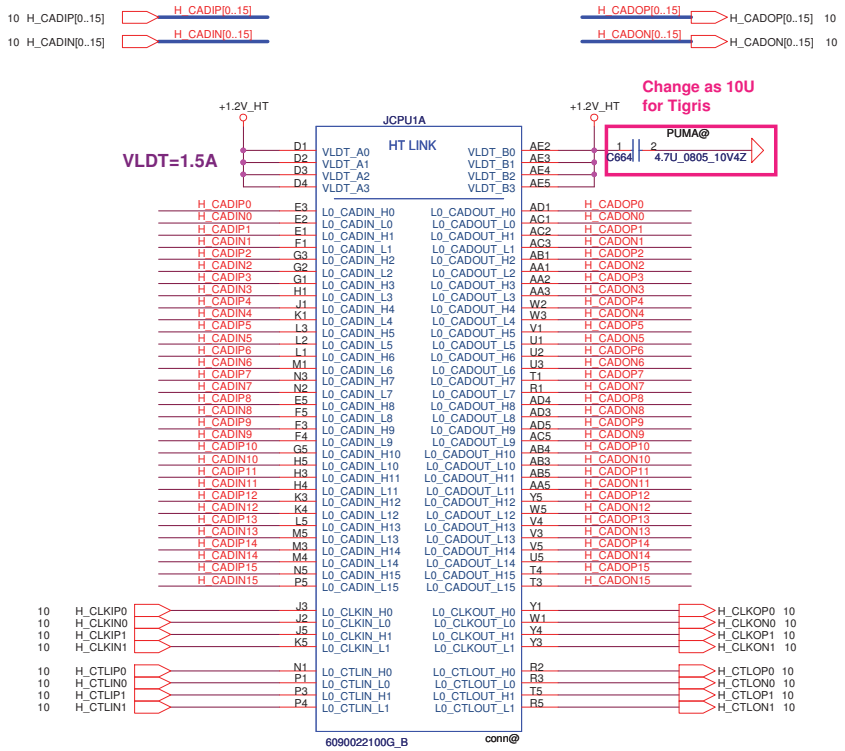

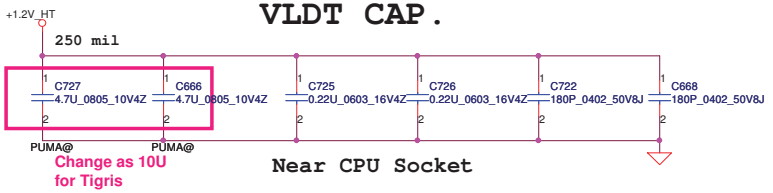

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Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: AMD CPU S1G3 HT I/F

Size	Document Number	Rev
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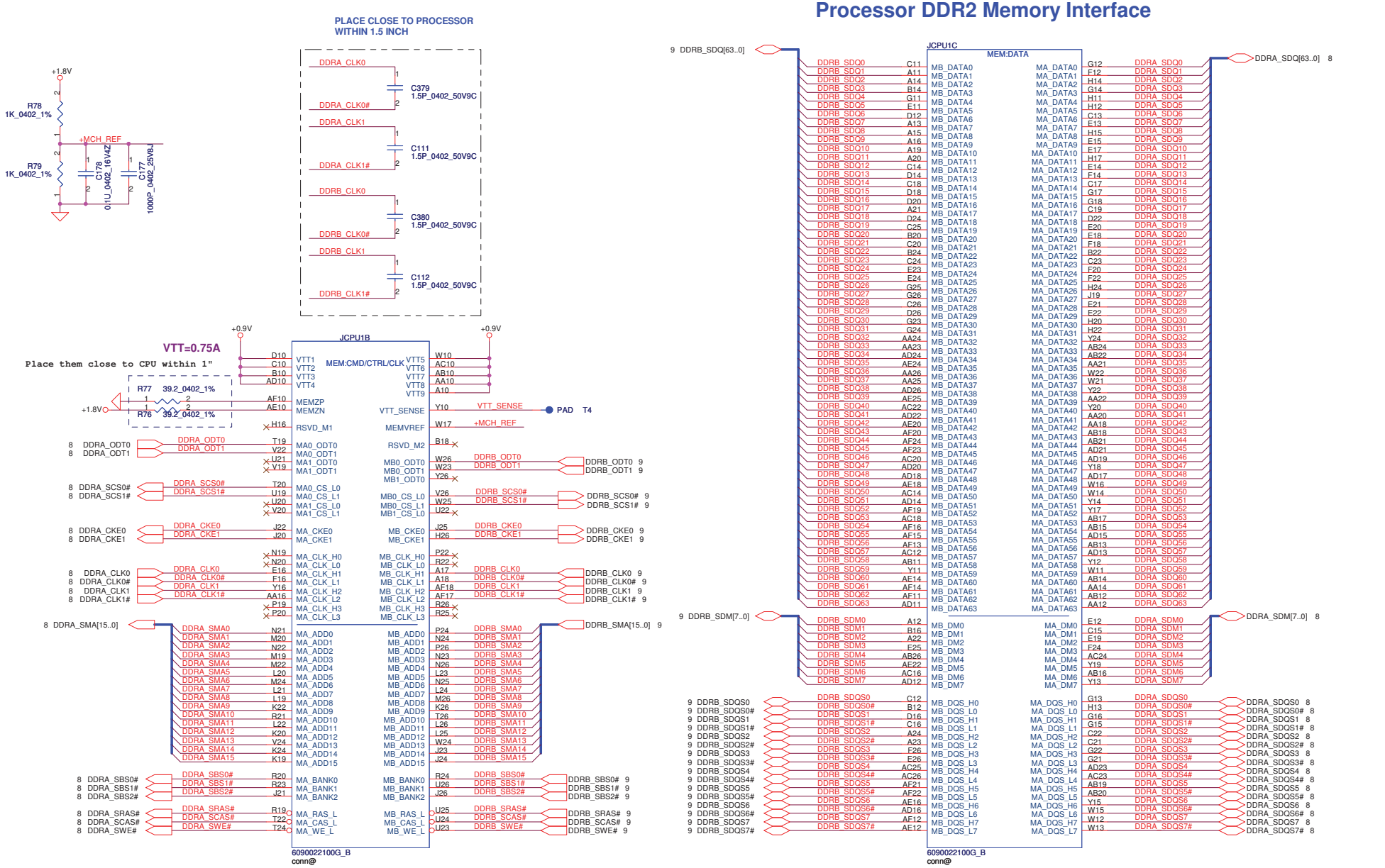
Processor DDR2 Memory Interface



Security Classification	Compal Secret Data		
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Compal Electronics, Inc.

Title: AMD CPU S1G3 DDRII I/F

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

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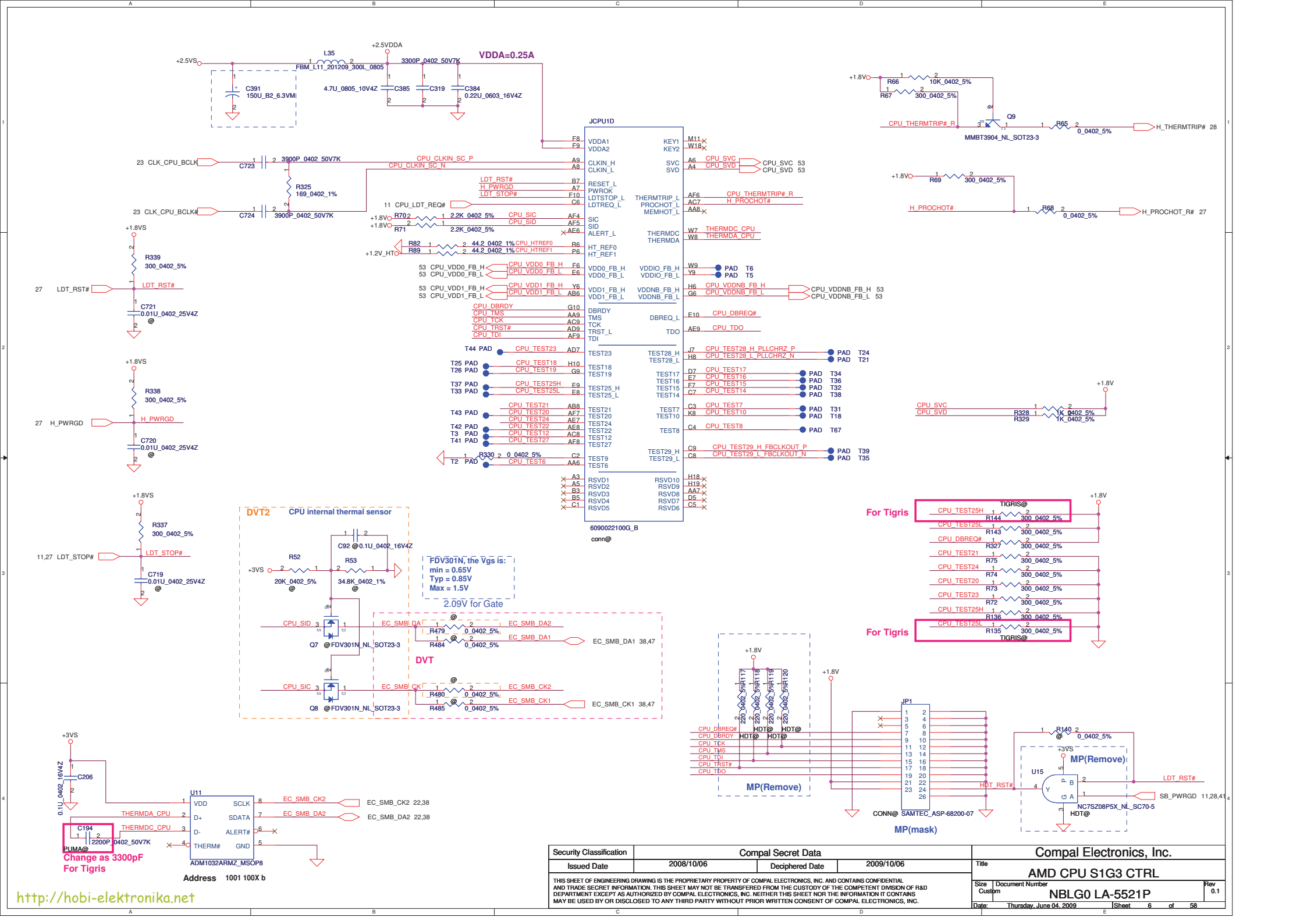
VDDA=0.25A
JCPU1D
6090022100G_B
conn@
DVT2
CPU internal thermal sensor
FDV301N, the Vgs is:
min = 0.65V
Typ = 0.85V
Max = 1.5V
2.09V for Gate
DVT
MP(Remove)
MP(mask)
For Tigris
Change as 3300pF
For Tigris
Address 1001 100X b
ADM1032ARMZ_MSOP8
CONN@ SAMTEC_ASP-68200-07
NC7SZ08P5X_NL_SC70-5
MMBT3904_NL_SOT23-3
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AMD CPU S1G3 CTRL
NBLG0 LA-5521P
Rev 0.1
Thursday, June 04, 2009
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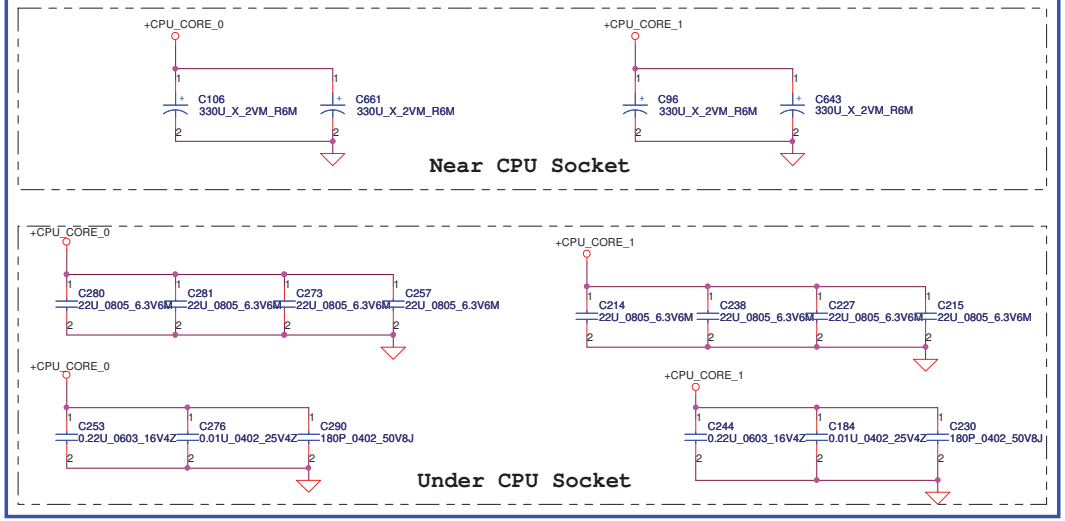
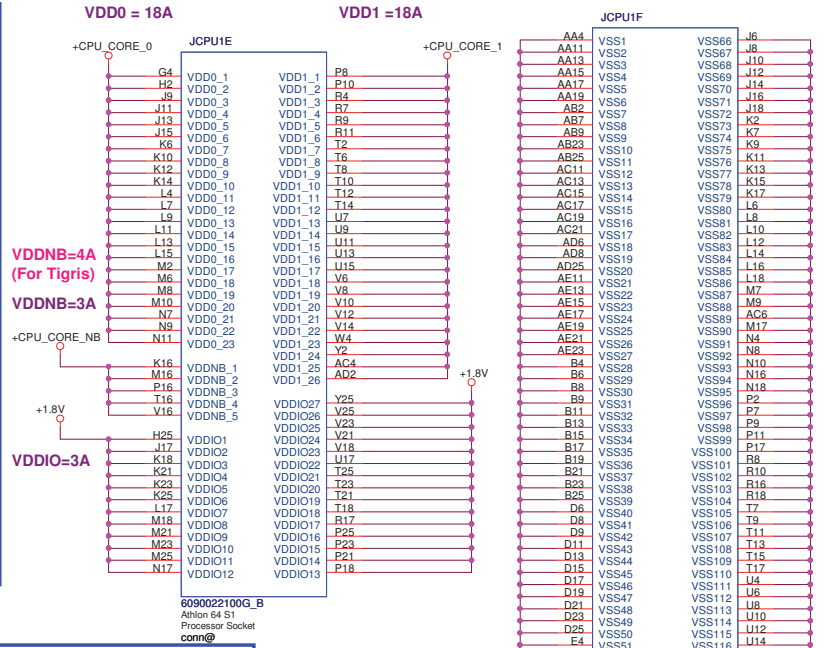
VDD (+CPU_CORE) decoupling.

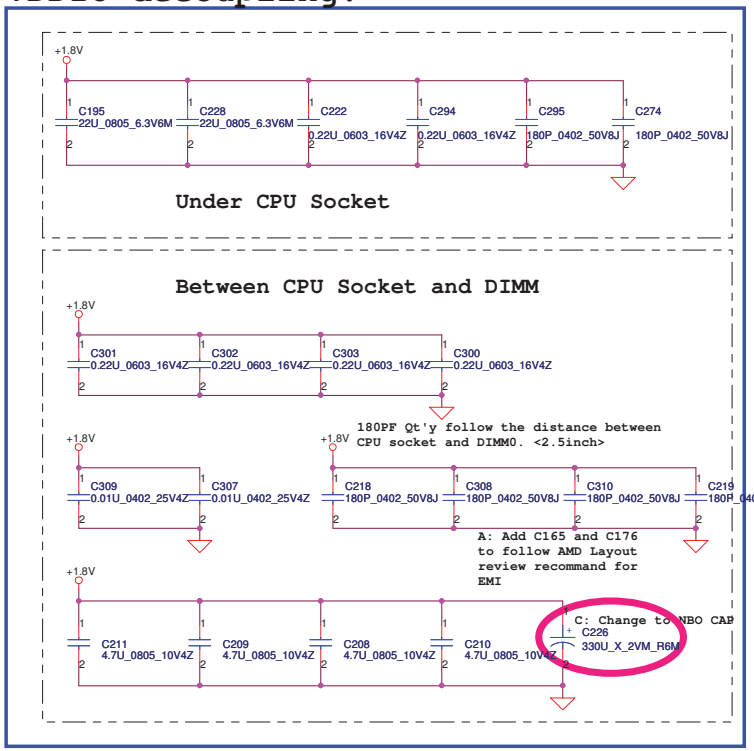


VDD0 = 18A

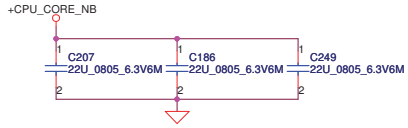
VDD1 =18A



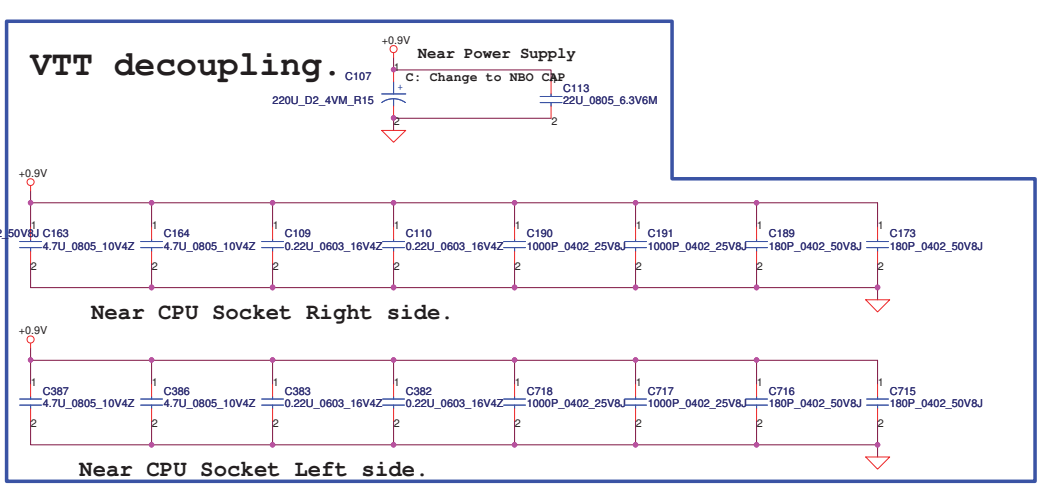
VDDIO decoupling.



+CPU_CORE_NB decoupling.



VTT decoupling.



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Compal Electronics, Inc.

Title: AMD CPU S1G3 PWR & GND

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

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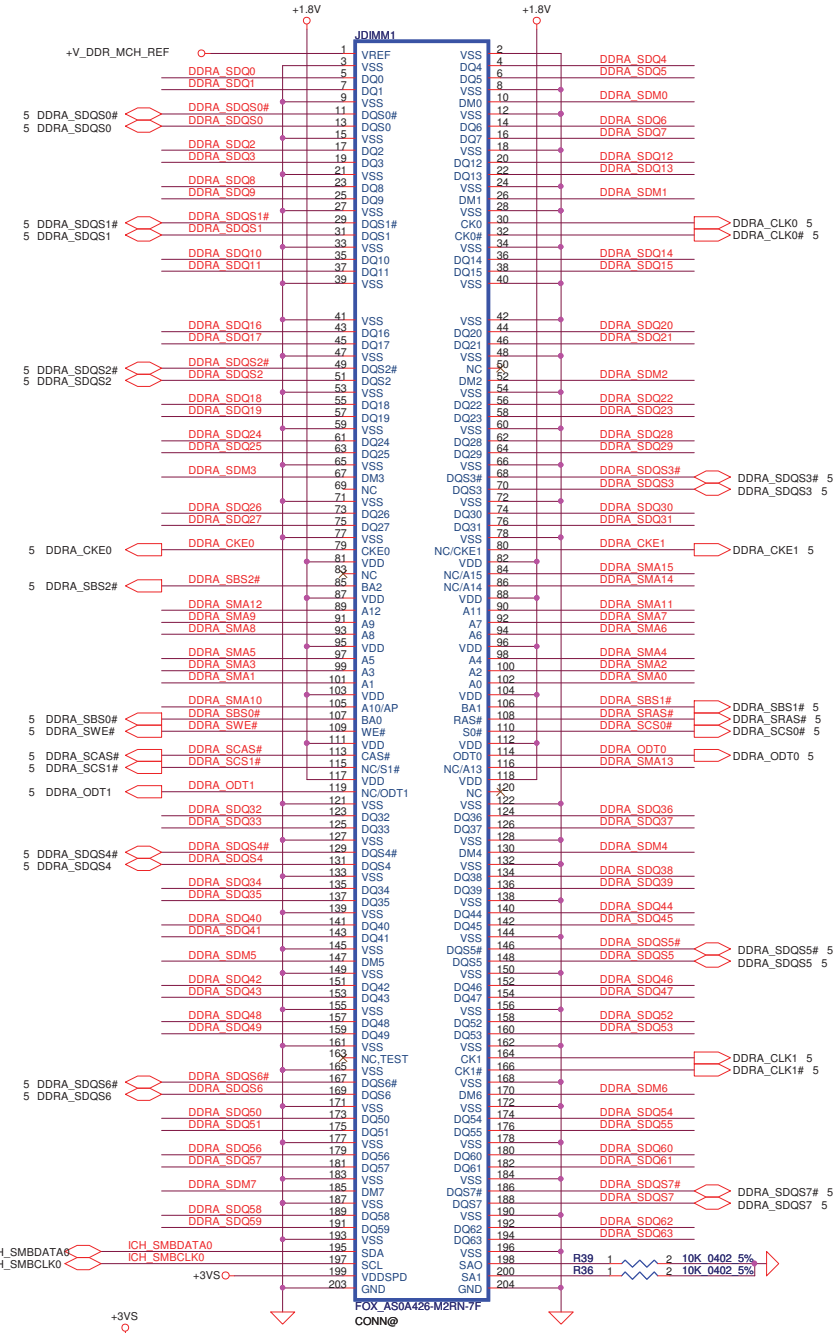

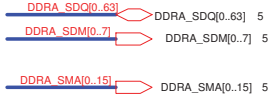

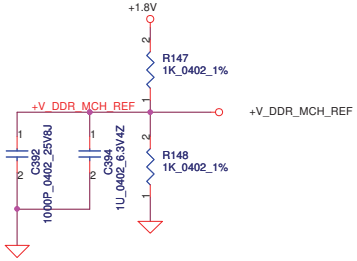

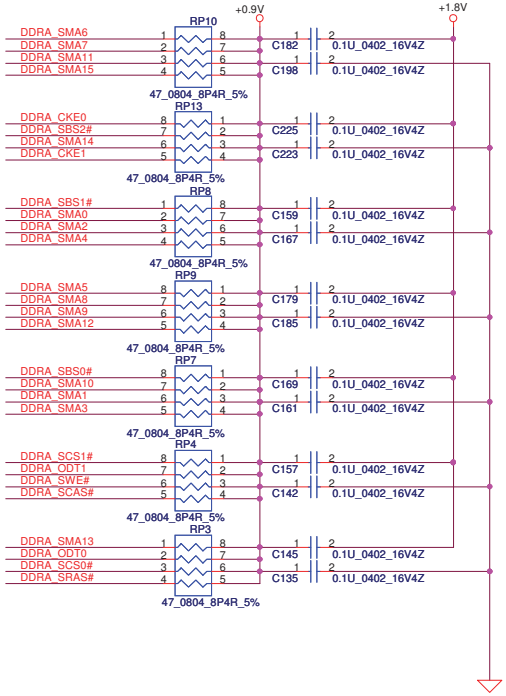

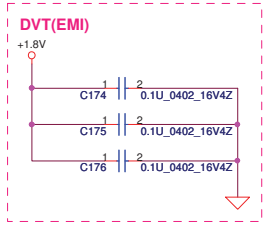

DIMM1 REV H:5.2mm (BOT)

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Title: DDRII SO-DIMM 1

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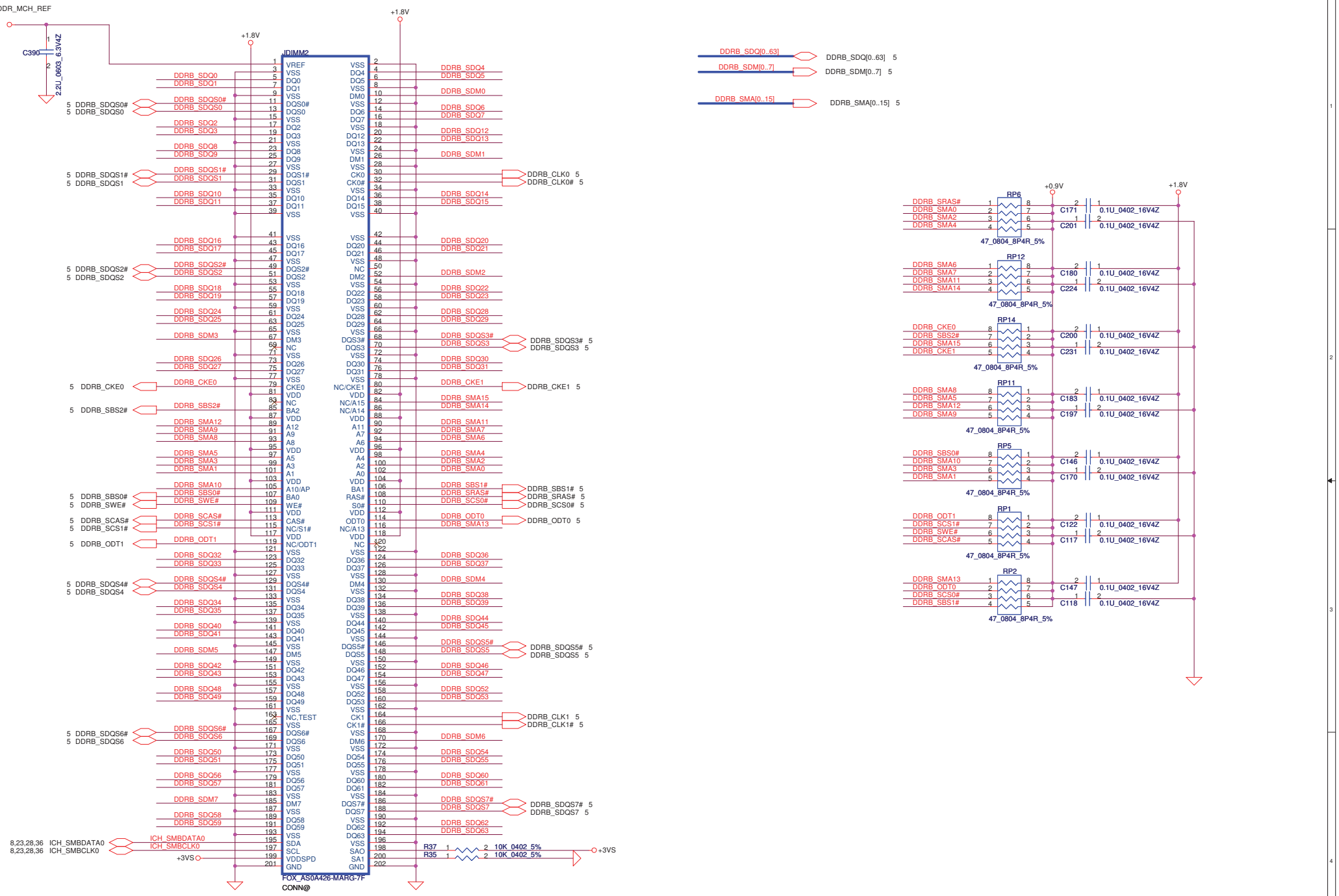

DIMM2 REV H:9.2mm (BOT)

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Title: DDRII SO-DIMM 2

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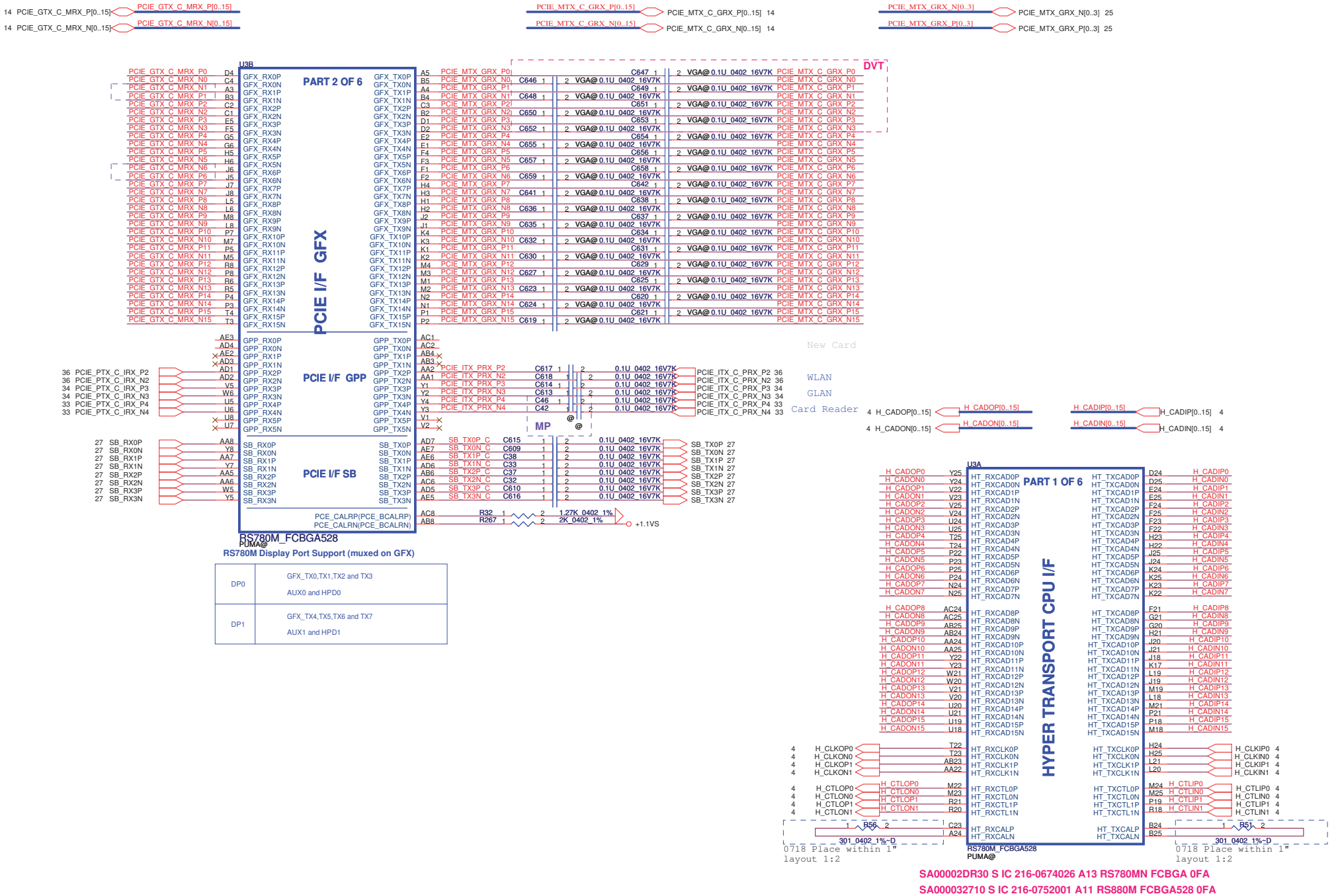

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Title: RS880-HT/PCIE

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For RS780M A13
RED: Connected to GND through two separate 140ohm 1% resistor

PLLVDD=65mA
PLLVDD18=20mA
VDDA18HTPLL=20mA
VDDA18PCIEPLL=0.12A
AVDD=0.11A
AVDDI=20mA
AVDDQ=4mA
VDDLTP18=15mA
VDDLT18=0.3A

U3C
PART 3 OF 6
RS780M_FCBGA528
CRT/TVOUT
PLL PWR
LVTM
PM
CLOCKs
MIS.

Strap pin
Strap pin

DVT
DVT2
PVT

Un-stuff for Tigris
Change as 1K_5% ohm for Tigris

	POWER_SEL
HIGH	1.0V
LOW	1.1V

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Issued Date	2008/10/06	Deciphered Date	2009/10/06

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Title: RS880 VEDIO/CLK GEN

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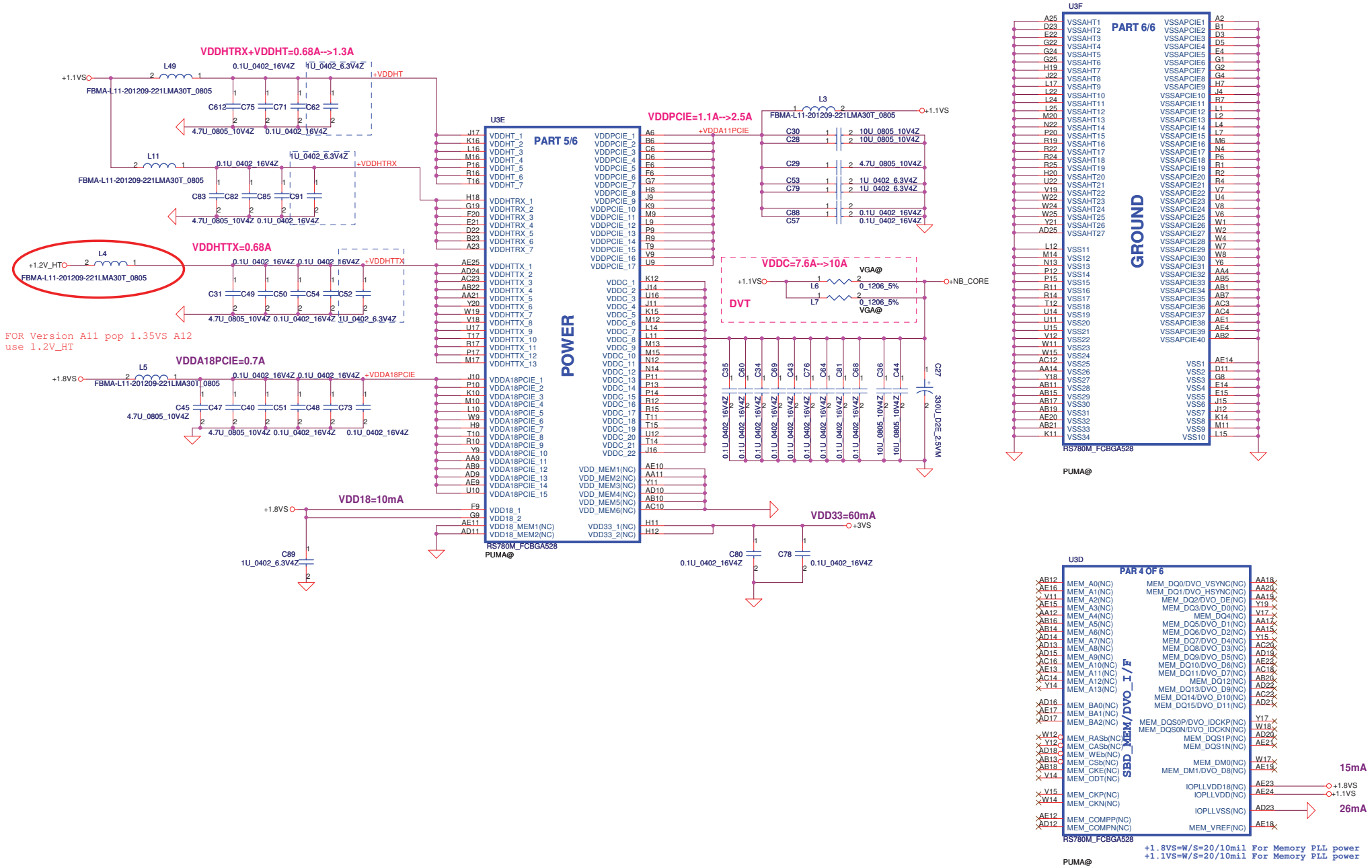

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Title: RS880 PWR/GND

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

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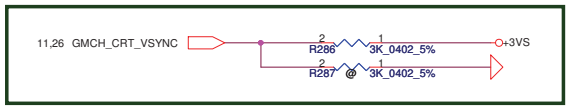
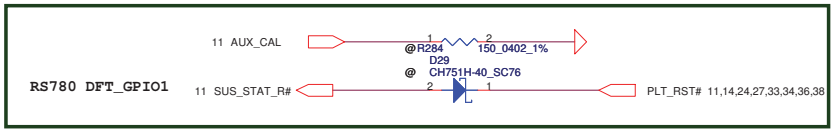


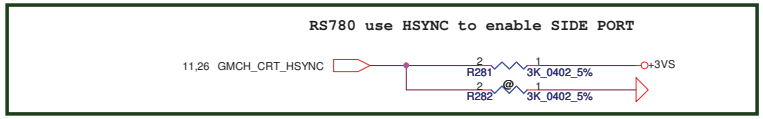
DFT_GPIO5:STRAP_DEBUG_BUS_GPIO_ENABLEb

```
Enables the Test Debug Bus using GPIO. (VSYNC)
1 : Disable (RS780)
0 : Enable (Rs780)
```



DFT_GPIO1: LOAD_EEPROM_STRAPS

```
Selects Loading of STRAPS from EPROM
1 : Bypass the loading of EEPROM straps and use Hardware Default Values
0 : I2C Master can load strap values from EEPROM if connected, or use
default values if not connected
RS740/RX780: DFT_GPIO1  RS780:SUS_STAT
```



RS780 use HSYNC to enable SIDE PORT

```
RS740/RS780: Enables Side port memory ( RS780 use HSYNC#)
0.   Enable (RS780)
1 :  Disable(RS780)
```

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Compal Electronics, Inc.

Title: RS880 STRAPS

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10 PCIE_GTX_C_MRX_P[0..15] → PCIE_GTX_C_MRX_P[0..15]
10 PCIE_GTX_C_MRX_N[0..15] → PCIE_GTX_C_MRX_N[0..15]
10 PCIE_MTX_C_GRX_P[0..15] → PCIE_MTX_C_GRX_P[0..15]
10 PCIE_MTX_C_GRX_N[0..15] → PCIE_MTX_C_GRX_N[0..15]

PCIE LANE REVERSAL

PCIE LANE REVERSAL

U4A

PCI EXPRESS INTERFACE

PCIE_MTX_C_GRX_P15	AA38	PCIE_RX0P	PCIE_TX0P	Y33	PCIE_GTX_MRX_P15	C172	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P15
PCIE_MTX_C_GRX_N15	Y37	PCIE_RX0N	PCIE_TX0N	Y32	PCIE_GTX_MRX_N15	C181	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N15
PCIE_MTX_C_GRX_P14	Y35	PCIE_RX1P	PCIE_TX1P	W33	PCIE_GTX_MRX_P14	C160	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P14
PCIE_MTX_C_GRX_N14	W36	PCIE_RX1N	PCIE_TX1N	W32	PCIE_GTX_MRX_N14	C162	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N14
PCIE_MTX_C_GRX_P13	W38	PCIE_RX2P	PCIE_TX2P	U33	PCIE_GTX_MRX_P13	C139	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P13
PCIE_MTX_C_GRX_N13	V37	PCIE_RX2N	PCIE_TX2N	U32	PCIE_GTX_MRX_N13	C143	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N13
PCIE_MTX_C_GRX_P12	V35	PCIE_RX3P	PCIE_TX3P	U30	PCIE_GTX_MRX_P12	C141	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P12
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PCIE_MTX_C_GRX_P11	U38	PCIE_RX4P	PCIE_TX4P	T33	PCIE_GTX_MRX_P11	C134	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P11
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PCIE_MTX_C_GRX_N8	N36	PCIE_RX7N	PCIE_TX7N	P29	PCIE_GTX_MRX_N8	C158	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N8
PCIE_MTX_C_GRX_P7	N38	PCIE_RX8P	PCIE_TX8P	N33	PCIE_GTX_MRX_P7	C136	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P7
PCIE_MTX_C_GRX_N7	M37	PCIE_RX8N	PCIE_TX8N	N32	PCIE_GTX_MRX_N7	C127	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N7
PCIE_MTX_C_GRX_P6	M35	PCIE_RX9P	PCIE_TX9P	N30	PCIE_GTX_MRX_P6	C144	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P6
PCIE_MTX_C_GRX_N6	L36	PCIE_RX9N	PCIE_TX9N	N29	PCIE_GTX_MRX_N6	C140	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N6
PCIE_MTX_C_GRX_P5	L38	PCIE_RX10P	PCIE_TX10P	L33	PCIE_GTX_MRX_P5	C116	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P5
PCIE_MTX_C_GRX_N5	K37	PCIE_RX10N	PCIE_TX10N	L32	PCIE_GTX_MRX_N5	C114	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N5
PCIE_MTX_C_GRX_P4	K35	PCIE_RX11P	PCIE_TX11P	L30	PCIE_GTX_MRX_P4	C154	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P4
PCIE_MTX_C_GRX_N4	J36	PCIE_RX11N	PCIE_TX11N	L29	PCIE_GTX_MRX_N4	C155	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N4
PCIE_MTX_C_GRX_P3	J38	PCIE_RX12P	PCIE_TX12P	K33	PCIE_GTX_MRX_P3	C129	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P3
PCIE_MTX_C_GRX_N3	H37	PCIE_RX12N	PCIE_TX12N	K32	PCIE_GTX_MRX_N3	C130	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N3
PCIE_MTX_C_GRX_P2	H35	PCIE_RX13P	PCIE_TX13P	J33	PCIE_GTX_MRX_P2	C120	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P2
PCIE_MTX_C_GRX_N2	G36	PCIE_RX13N	PCIE_TX13N	J32	PCIE_GTX_MRX_N2	C115	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N2
PCIE_MTX_C_GRX_P1	G38	PCIE_RX14P	PCIE_TX14P	K30	PCIE_GTX_MRX_P1	C152	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P1
PCIE_MTX_C_GRX_N1	F37	PCIE_RX14N	PCIE_TX14N	K29	PCIE_GTX_MRX_N1	C153	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N1
PCIE_MTX_C_GRX_P0	F35	PCIE_RX15P	PCIE_TX15P	H33	PCIE_GTX_MRX_P0	C131	0.1U_0402_16V7K	PCIE_GTX_C_MRX_P0
PCIE_MTX_C_GRX_N0	E37	PCIE_RX15N	PCIE_TX15N	H32	PCIE_GTX_MRX_N0	C132	VGA@	0.1U_0402_16V7K	PCIE_GTX_C_MRX_N0

CLOCK

23 CLK_PCIE_VGA → CLK_PCIE_VGA → AB35 PCIE_REFCLKP
23 CLK_PCIE_VGA# → CLK_PCIE_VGA# → AA36 PCIE_REFCLKN

AJ21 NC#1
AK21 NC#2
AH16 NC_PWRGOOD

GPU_RST# → AA30 PERSTB

CALIBRATION

PCIE_CALRP Y30 — R83 VGA@ 1.27K_0402_1%
PCIE_CALRN Y29 — R90 VGA@ 2K_0402_1% → +1.1VS_PX

M92@

216-0729002 A12 M96_BGA962

NBLG0_DVT

C859 0.1U_0402_16V4Z @ — +3VALW

PLT_RST# 2 → B
PX_GPIO0 1 → A
U37 NC7SZ08P5X_NL_SC70-5 @
Y → 4 GPU_RST#
G → 3
P → 5

+3VS_DELAY

R474 10K_0402_5% VGA@

11,13,24,27,33,34,36,38 PLT_RST# → D39 RB751V_SOD323 VGA@ → GPU_RST#

27 PX_GPIO0 → D38 RB751V_SOD323 @

R481 @ 2.2K_0402_5%

NBLG0_DVT

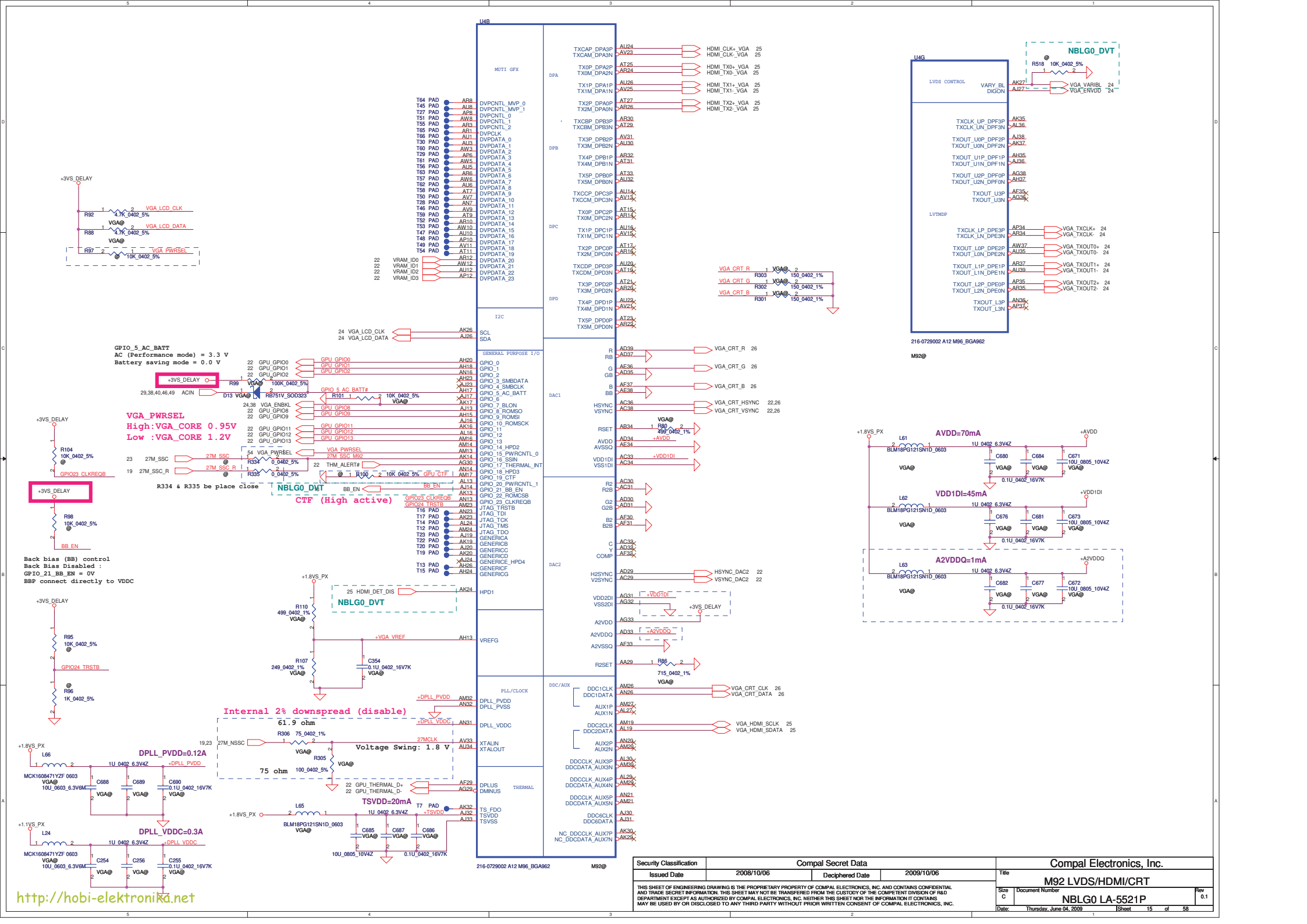
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

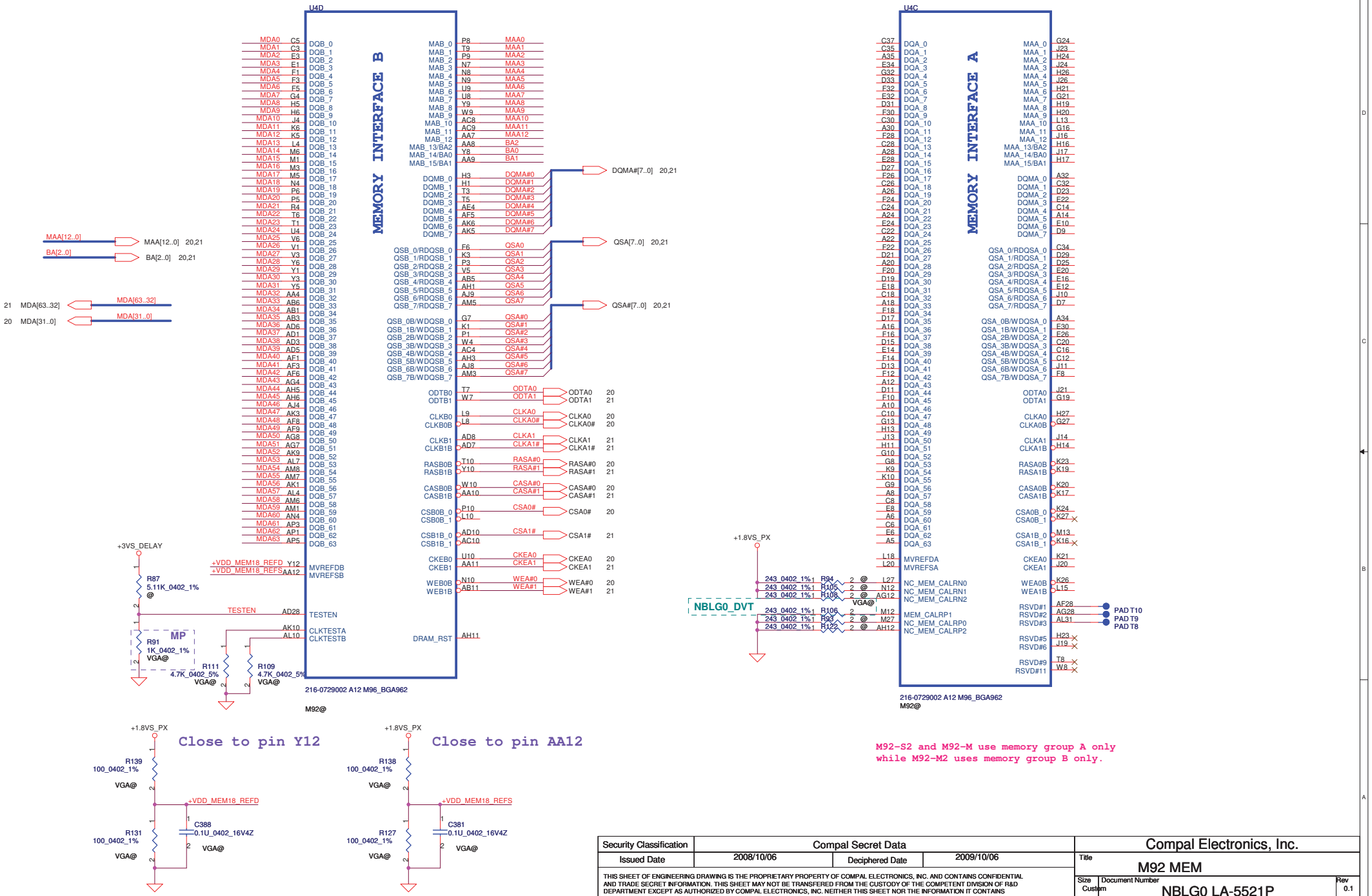
Compal Electronics, Inc.

Title: M92 PCIE interface

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 14 of 58


U4B
MUTI GFX
DPA
DPB
DPC
DPD
I2C
GENERAL PURPOSE I/O
DAC1
DAC2
DDC/AUX
PLL/CLOCK
THERMAL
U4G
LVDS CONTROL
LVTMDP
NBLG0_DVT
216-0729002 A12 M96_BGA962
M92@
GPIO_5_AC_BATT
AC (Performance mode) = 3.3 V
Battery saving mode = 0.0 V
VGA_PWRSEL
High:VGA_CORE 0.95V
Low :VGA_CORE 1.2V
R334 & R335 be place close
CTF (High active)
Back bias (BB) control
Back Bias Disabled :
GPIO_21_BB_EN = 0V
BBP connect directly to VDDC
Internal 2% downspread (disable)
61.9 ohm
75 ohm
Voltage Swing: 1.8 V
DPLL_PVDD=0.12A
DPLL_VDDC=0.3A
TSVDD=20mA
AVDD=70mA
VDD1DI=45mA
A2VDDQ=1mA
http://hobi-elektronika.net
Security Classification
Compal Secret Data
Issued Date
2008/10/06
Deciphered Date
2009/10/06
Compal Electronics, Inc.
M92 LVDS/HDMI/CRT
NBLG0 LA-5521P
Size C
Rev 0.1
Date: Thursday, June 04, 2009
Sheet 15 of 58



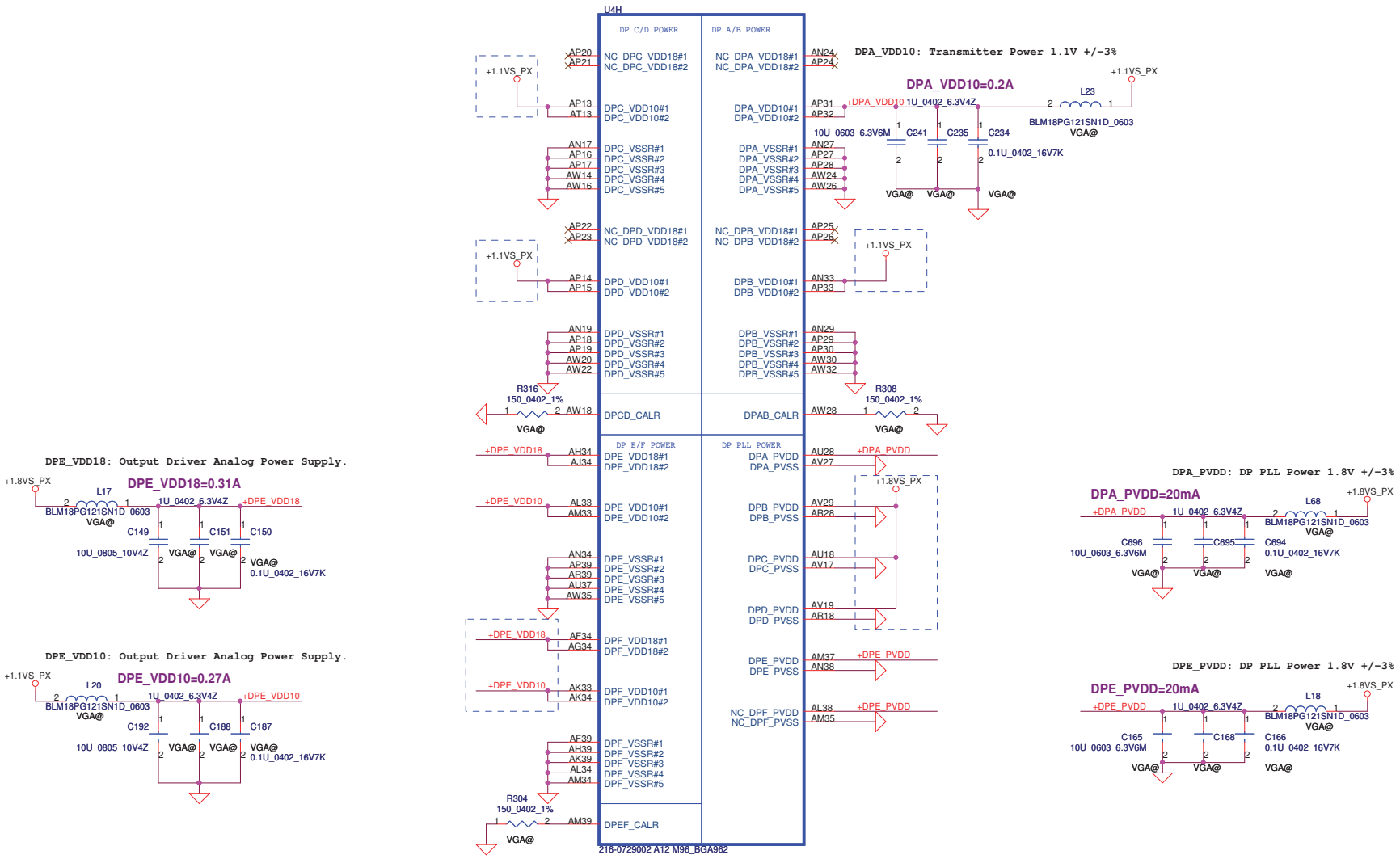
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: M92 MEM

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 16 of 58



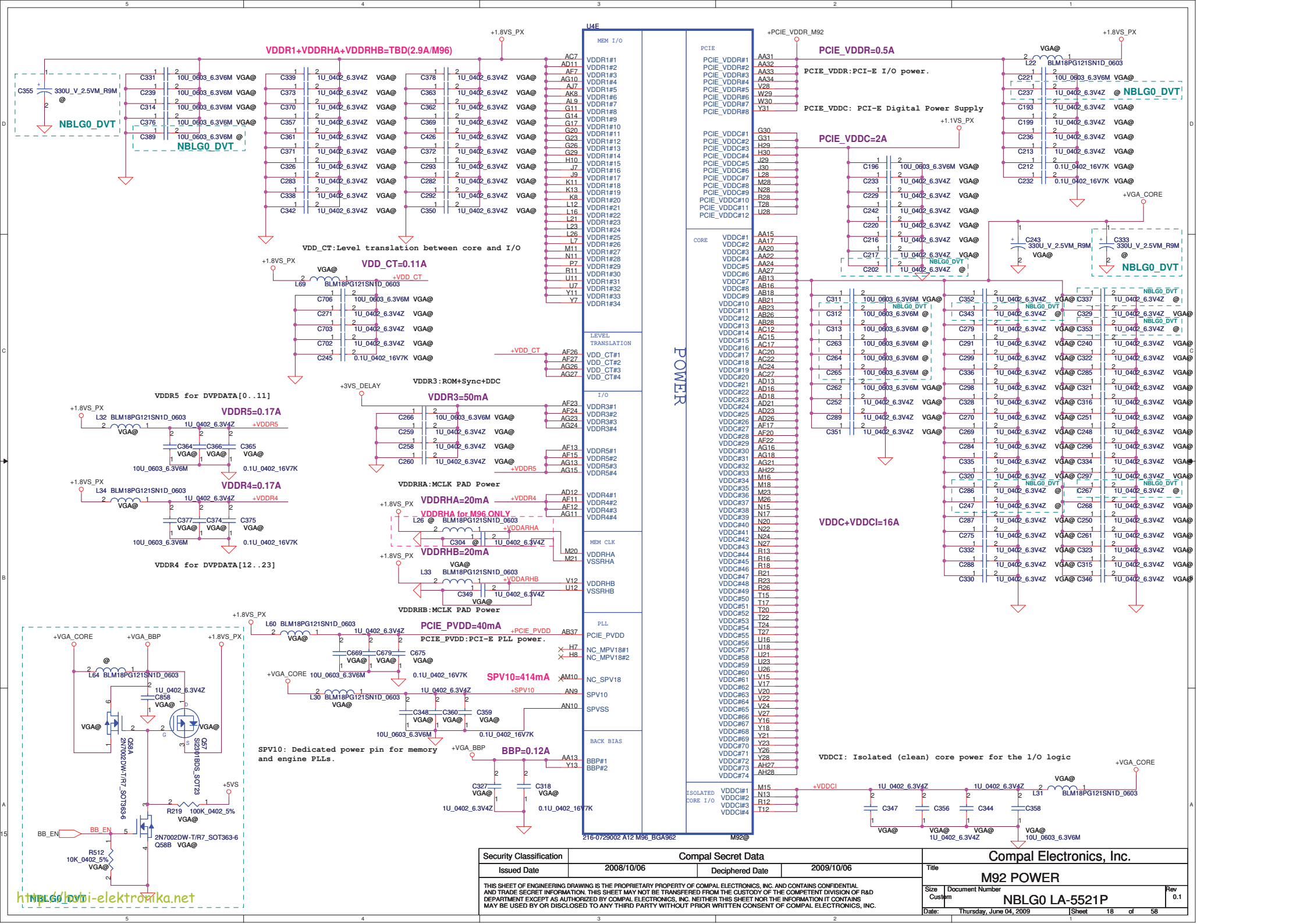
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: M92 DRX PWR

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Sunday, April 12, 2009 | Sheet 17 of 58



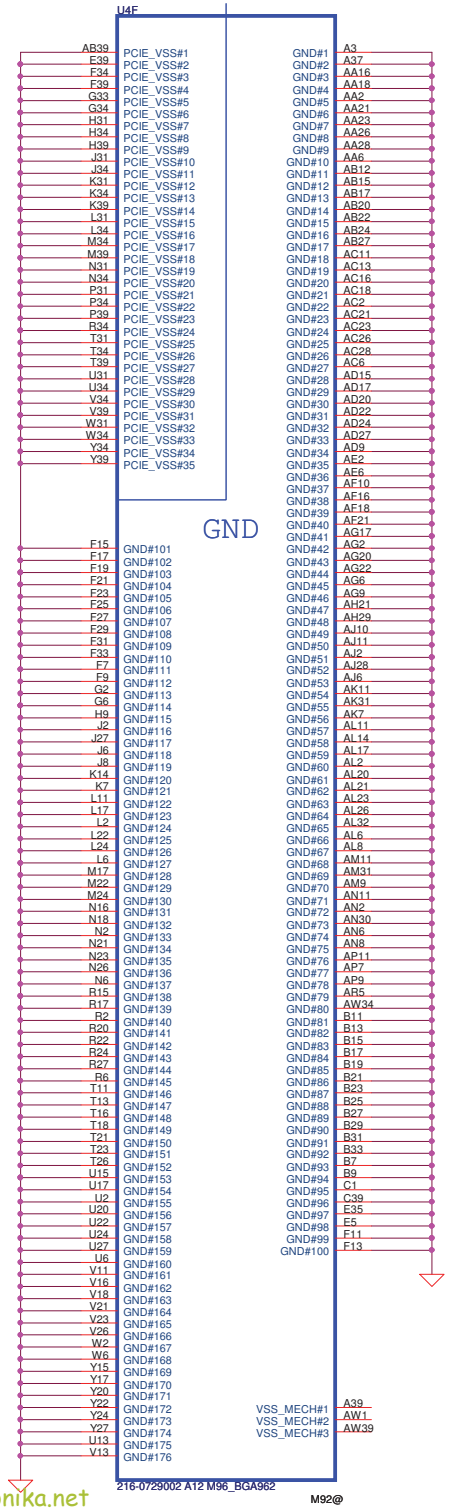
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

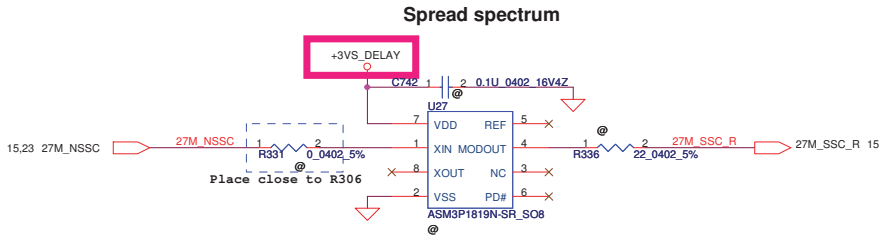
Compal Electronics, Inc.

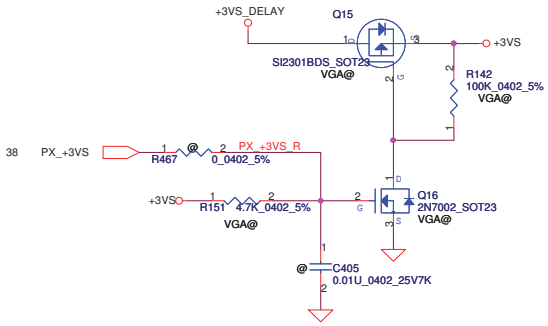
Title: M92 POWER

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 18 of 58







Use Delay 3.3V BUS (VDDR3) for GPIO/DDC Pull up to reduce Leakage to VDDR3 Bus.

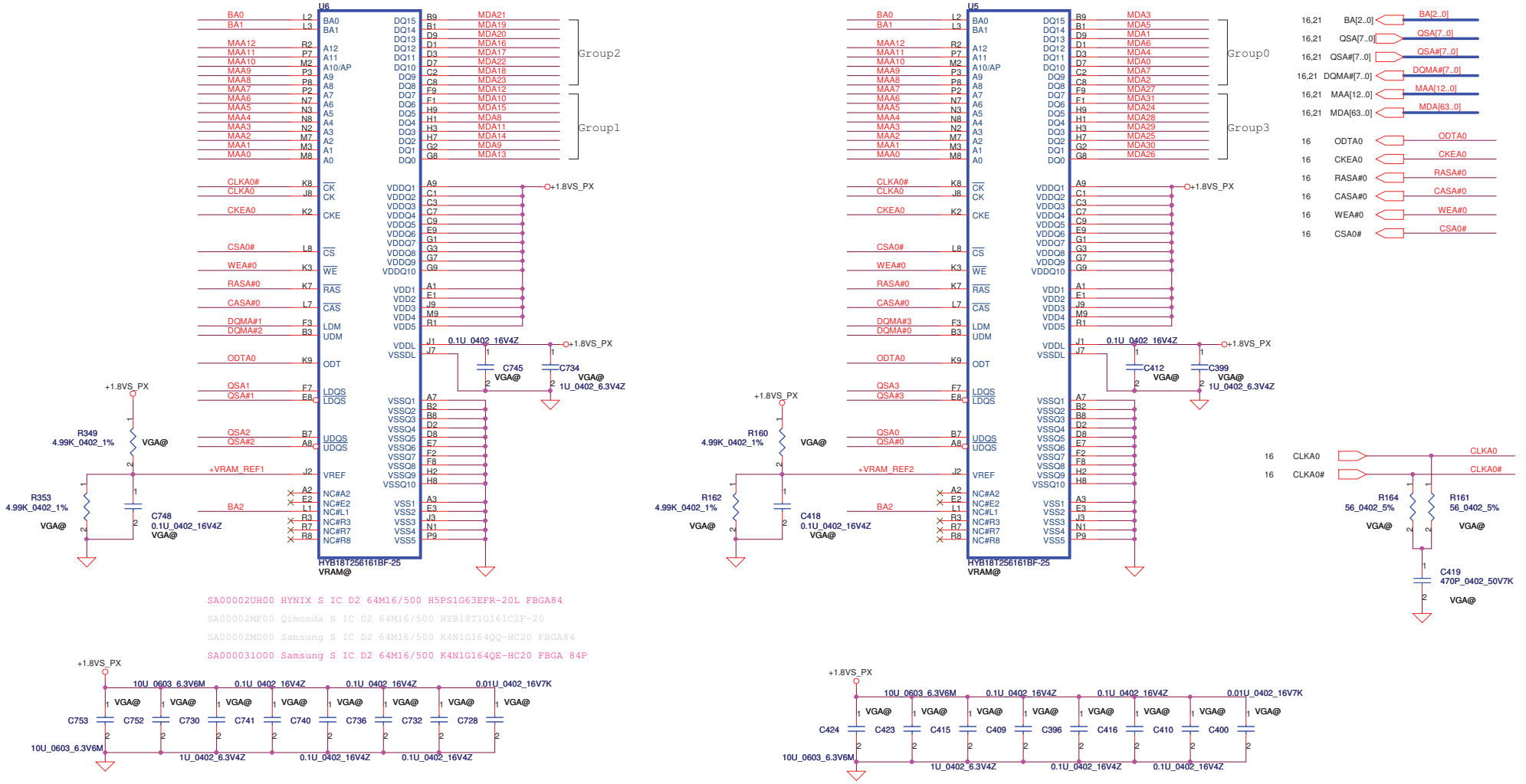
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: M92 GND

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 19 of 58



SA00002UH00 HYNIX S IC D2 64M16/500 H5PS1G63EFR-20L FBGA84

SA00002MF00 Qimonda S IC D2 64M16/500 HYB18T1G161C2F-20

SA00002MD00 Samsung S IC D2 64M16/500 K4N1G164QQ-HC20 FBGA84

SA000031O00 Samsung S IC D2 64M16/500 K4N1G164QE-HC20 FBGA 84P

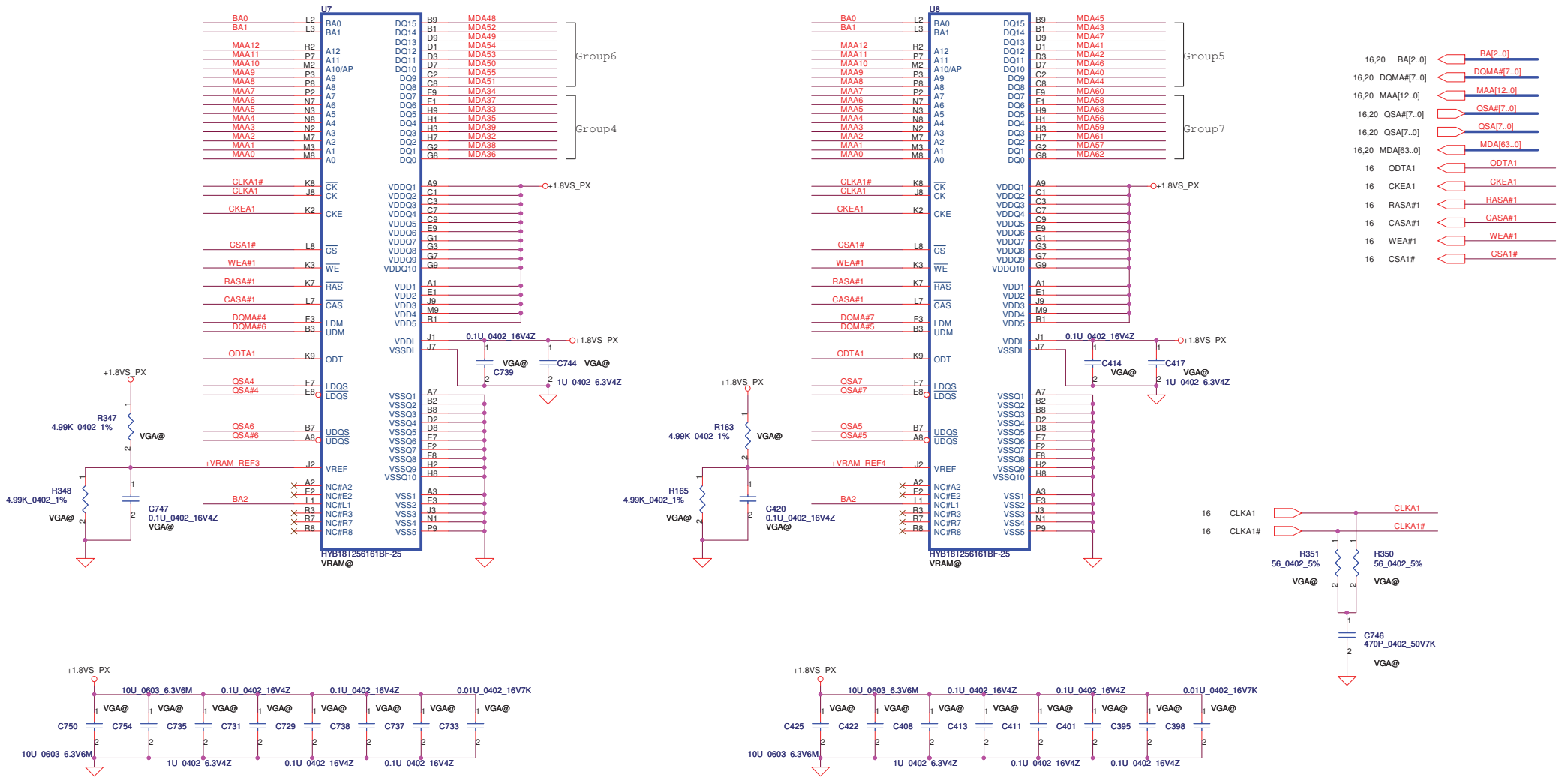
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: M92 VRAM

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 20 of 58



Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

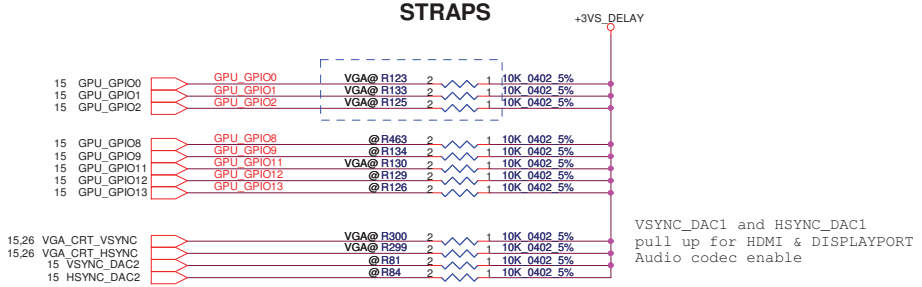
Compal Electronics, Inc.

Title: M92 VRAM

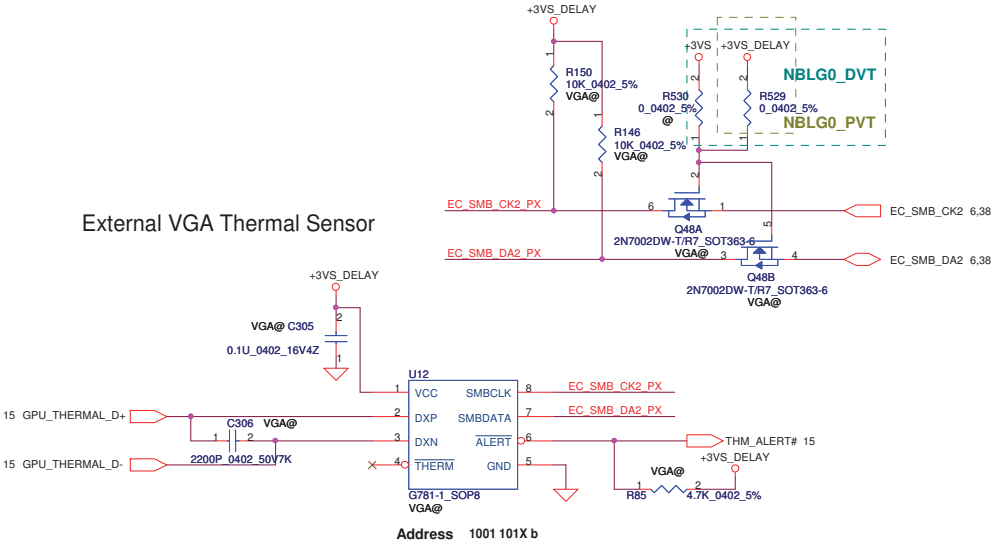
Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 21 of 58

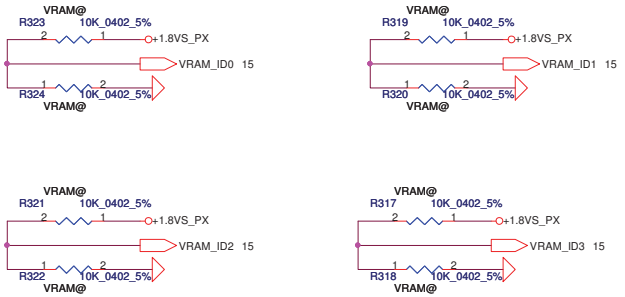
STRAPS



External VGA Thermal Sensor



Address 1001 101X b



CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	RECOMMENDED SETTINGS
TX_PWRS_ENB	GPIO0	Transmitter Power Savings Enable	1 : PCIe bus Full Tx output swing 0 : PCIe bus 50% Tx output swing
TX_DEEMPH_EN	GPIO1	PCI Express Transmitter De-emphasis Enable	1 : Tx de-emphasis enabled 0 : Tx de-emphasis disabled
BIF_GEN2_EN_A	GPIO2	PCIE GNE2 ENABLED 0 = Advertises the PCIe device as 2.5 GT/s capable at power-on. 1 = Advertises the PCIe device as 5.0 GT/s capable at power-on.	0 (5.0 GT/s capability will be controlled by software)
VGA_DIS	GPIO9	VGA Disable determines whether or not the card will be recognized as the system's VGA controller	0 : VGA Controller capacity enabled 1 : The device will not be recognized as the system's VGA controller
CONFIG(2:0)	GPIO[13:11]	Size of the primary memory apertures	0 0 1
VIP_DEVICE_STRAP_EN	V2SYNC		0
RESERVED	H2SYNC		0
AUD[1] AUD[0]	HSYNC VSYNC	AUD[1] AUD[0] 0 0 No audio function 0 1 Audio for DisplayPort and HDMI if dongle is detected 1 0 Audio for DisplayPort only 1 1 Audio for both DisplayPort and HDMI	11
RESERVED	GPIO21		0
BIOS_ROM_EN	GPIO_22_ROMCSB		0: Disable external BIOS ROM device 1: Enable external BIOS ROM device
CCBYPASS	GENERICC	IGNORE VIP DEVICE STRAPS	0
BIF_CLK_PM_EN	GPIO8	BIF_CLK_PM_EN	0

AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

H2SYNC GENERICC

PULLUP PADS ARE NOT REQUIRED FOR THESE STRAPS BUT IF THESE GPIOS ARE USED, THEY MUST NOT CONFLICT DURING RESET

GPIO_28_TDO GPIO21_BB_EN

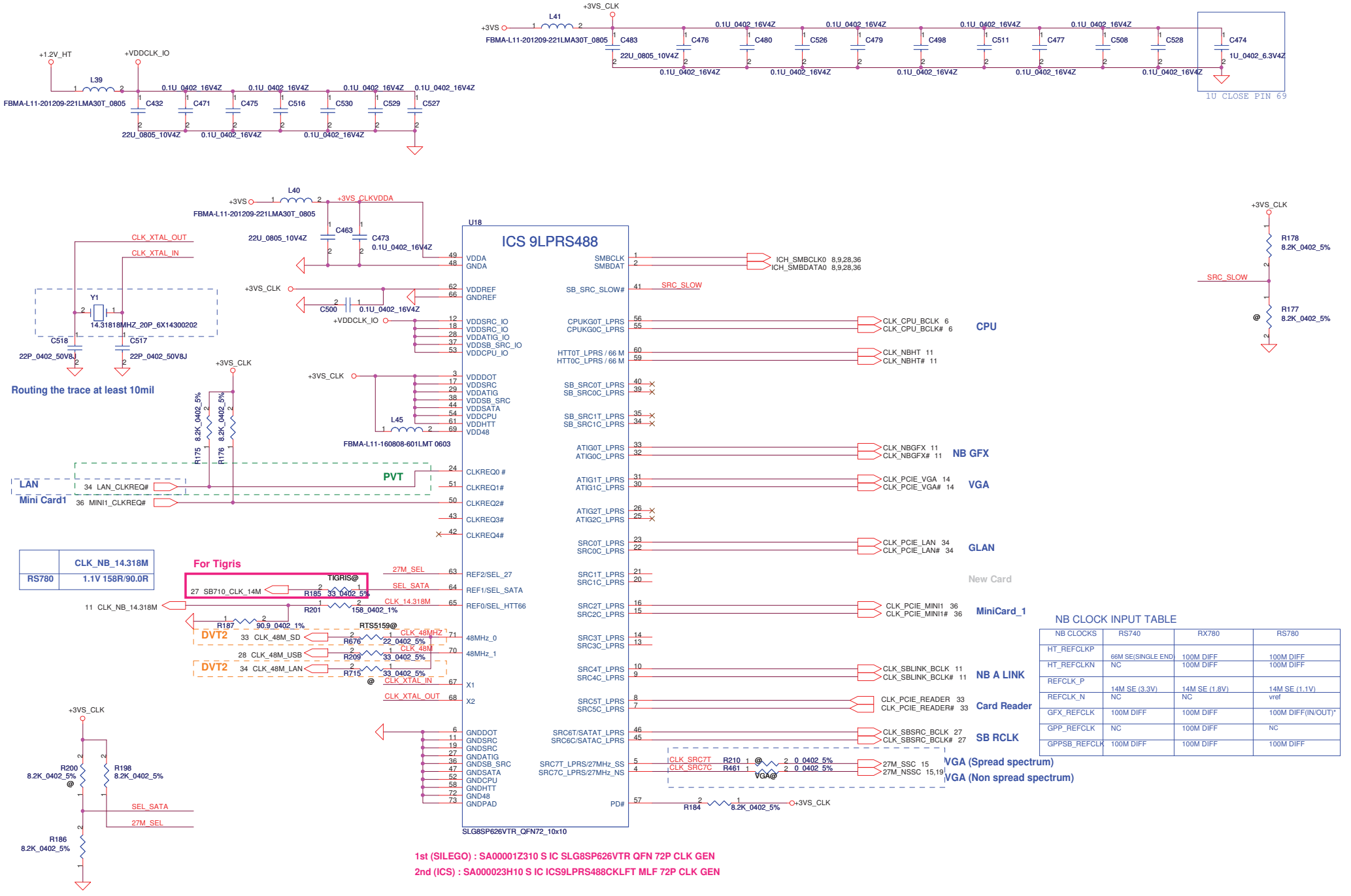
STRAPS	PIN	GPU	Project	VRAM size	Vendor Part Number#	Compal Part Number#	VRAM_ID 3,2,1,0
VRAM_ID[3:0]	DVPDATA (23,22,21,20)	M92-M2 XT	JV40-PU_KBLG0	512M(x4)	Samsung 64Mx16 1.8V (Q-die)	SA00002MD00	0 0 0 0
			JV40-TR_NBLG0	512M(x4)	Hynix 64Mx16 1.8V	SA00002UH20	0 0 0 1
			JV40-TR_NBLG0	512M(x4)	Qimonda 64Mx16 1.8V	SA00002MF0[illegible]PVT	0 0 1 0
			JV40-TR_NBLG0	512M(x4)	Samsung 64Mx16 1.8V (E-die)	SA000031O10	0 1 0 0

Compal Electronics, Inc.

Title: M92 Strap

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 22 of 58



	CLK_NB_14.318M
RS780	1.1V 158R/90.0R

NB CLOCK INPUT TABLE

NB CLOCKS	RS740	RX780	RS780
HT_REFCLKP	66M SE(SINGLE END)	100M DIFF	100M DIFF
HT_REFCLKN	NC	100M DIFF	100M DIFF
REFCLK_P	14M SE (3.3V)	14M SE (1.8V)	14M SE (1.1V)
REFCLK_N	NC	NC	vref
GFX_REFCLK	100M DIFF	100M DIFF	100M DIFF(IN/OUT)*
GPP_REFCLK	NC	100M DIFF	NC
GPPSB_REFCLK	100M DIFF	100M DIFF	100M DIFF

1st (SILEGO) : SA00001Z310 S IC SLG8SP626VTR QFN 72P CLK GEN
2nd (ICS) : SA000023H10 S IC ICS9LPRS488CKLFT MLF 72P CLK GEN

SEL_HTT66		
	1	single-ended 66MHz HTT output
	0*	differential 100MHz HTT output
SEL_SATA	1*	NON SPREAD 100M_SATA SRC6 output
	0	SPREAD 100M_SATA SRC6 output

27M_SEL		
	1 *	NON SPREAD 27M and SPREAD 27M output
	0	differential spread SRC_7 output

Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: Clock generator

Size	Document Number	Rev
Custom	NBLG0 LA-5521P	0.1

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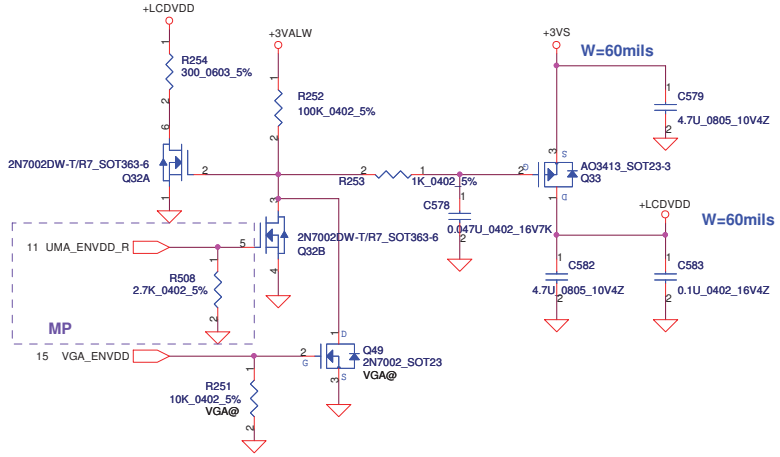
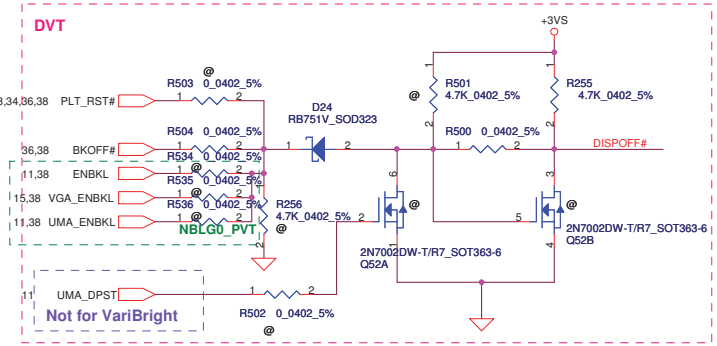
LCD POWER CIRCUIT

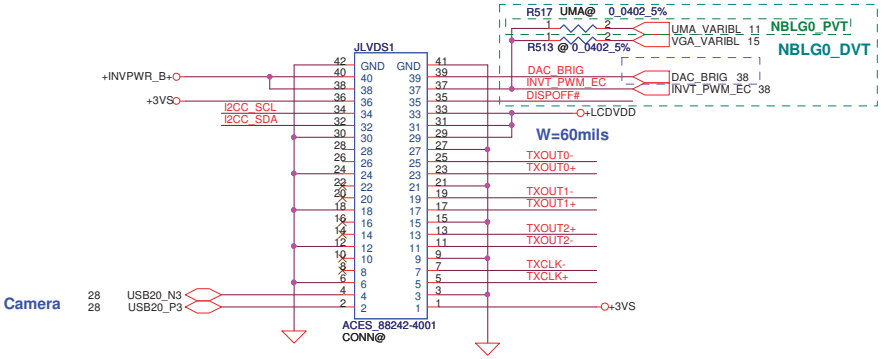


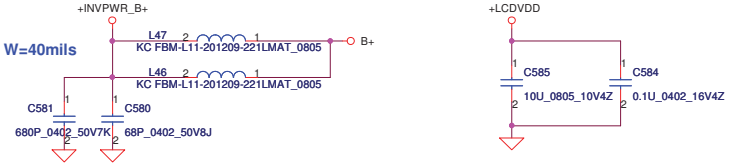
DVT



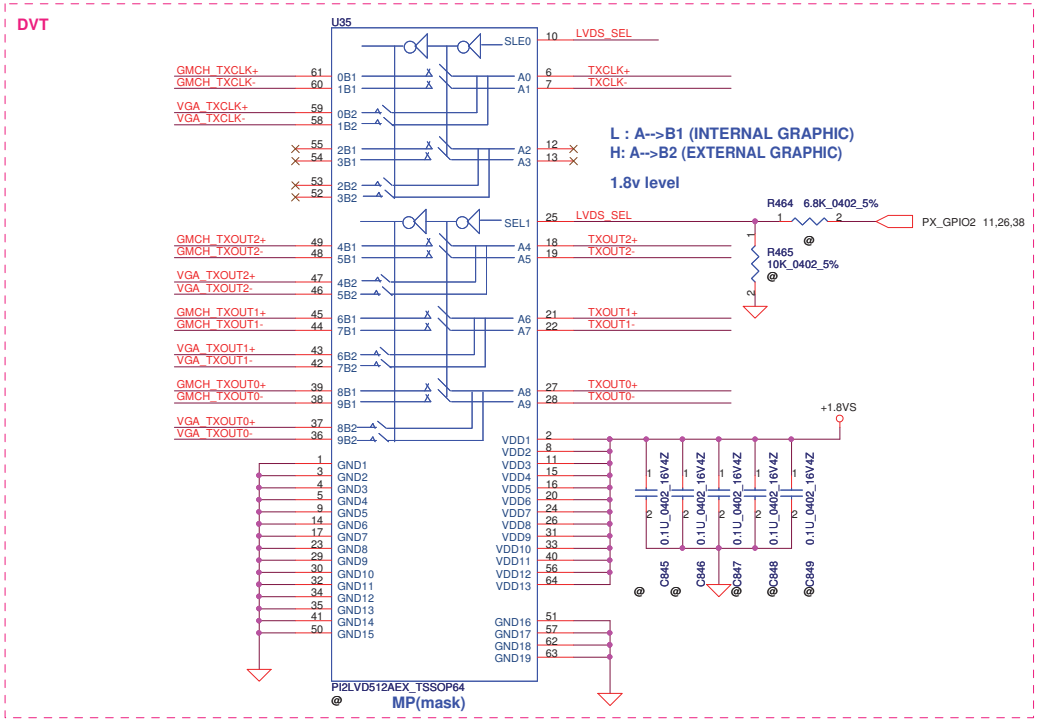
DAC_BRIG — C587 220P_0402_50V7K
INVT_PWM — C586 220P_0402_50V7K
DISPOFF# — C588 220P_0402_50V7K

LCD/PANEL BD. Conn.

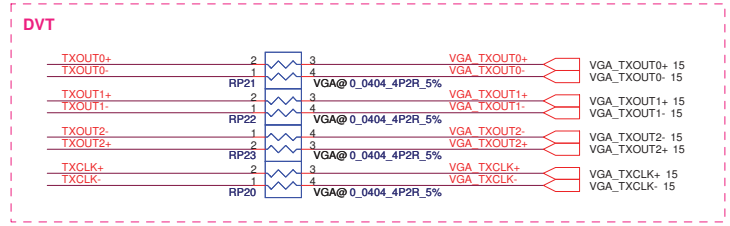


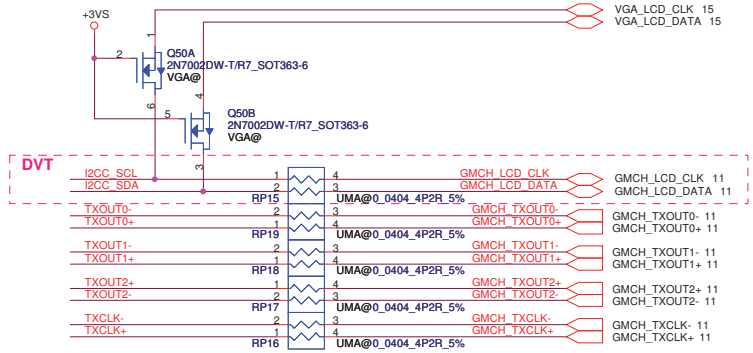


DVT



DVT





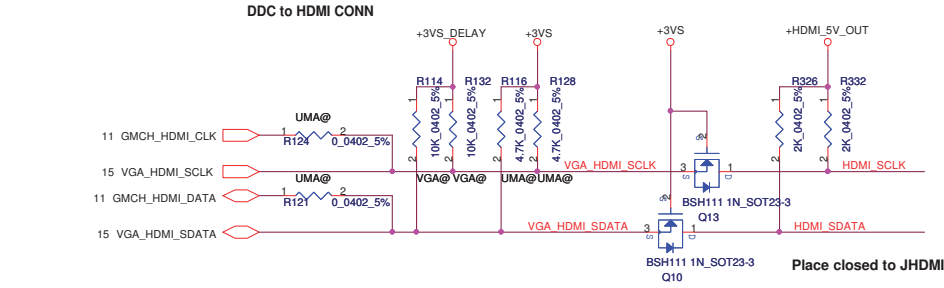
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

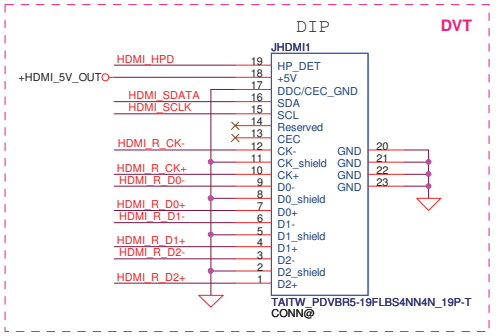
Compal Electronics, Inc.

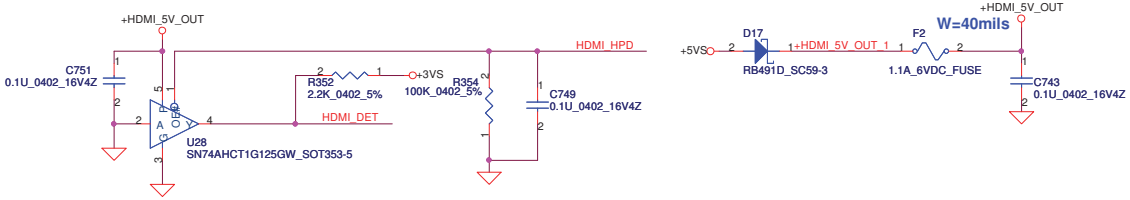
Title: LVDS Connector

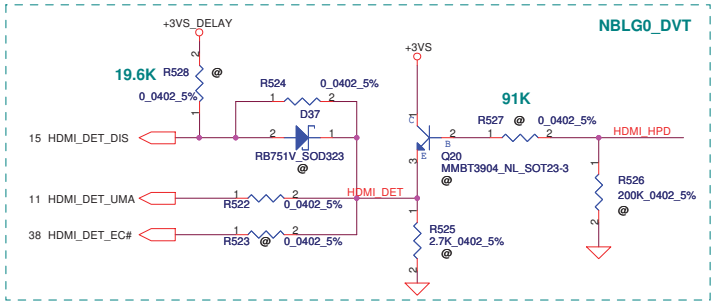
Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

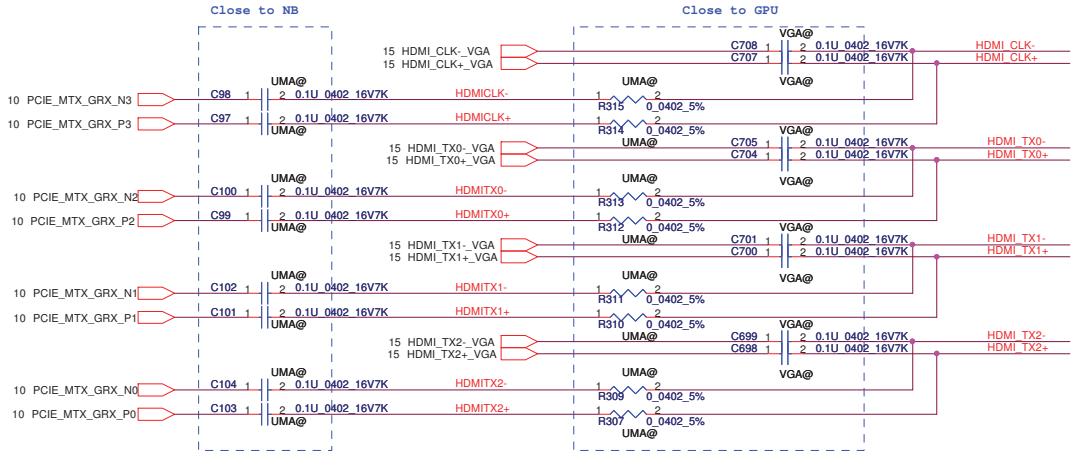
Date: Thursday, June 04, 2009 Sheet 24 of 58

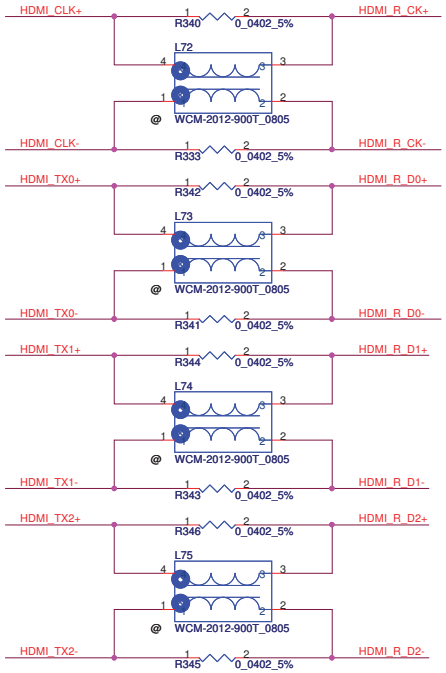


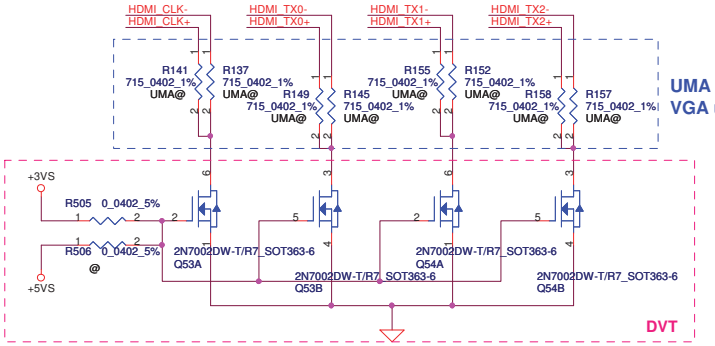












Update (For Puma / Tigris default value)

UMA use 715 ohm

VGA use 499 ohm

Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

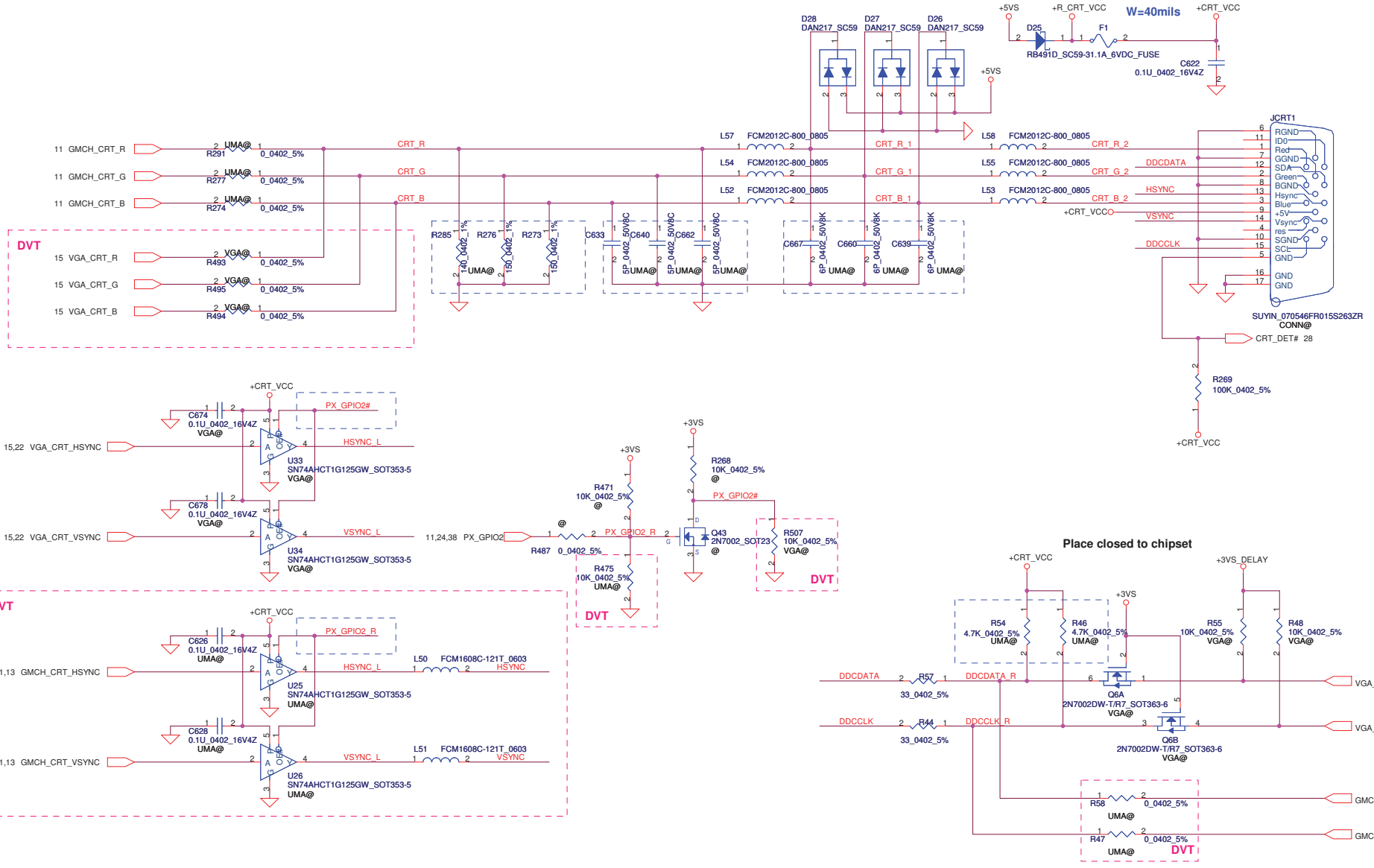
Compal Electronics, Inc.

Title: HDMI Connector

Size	Document Number	Rev
Custom	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 | Sheet 25 of 58

CRT CONNECTOR



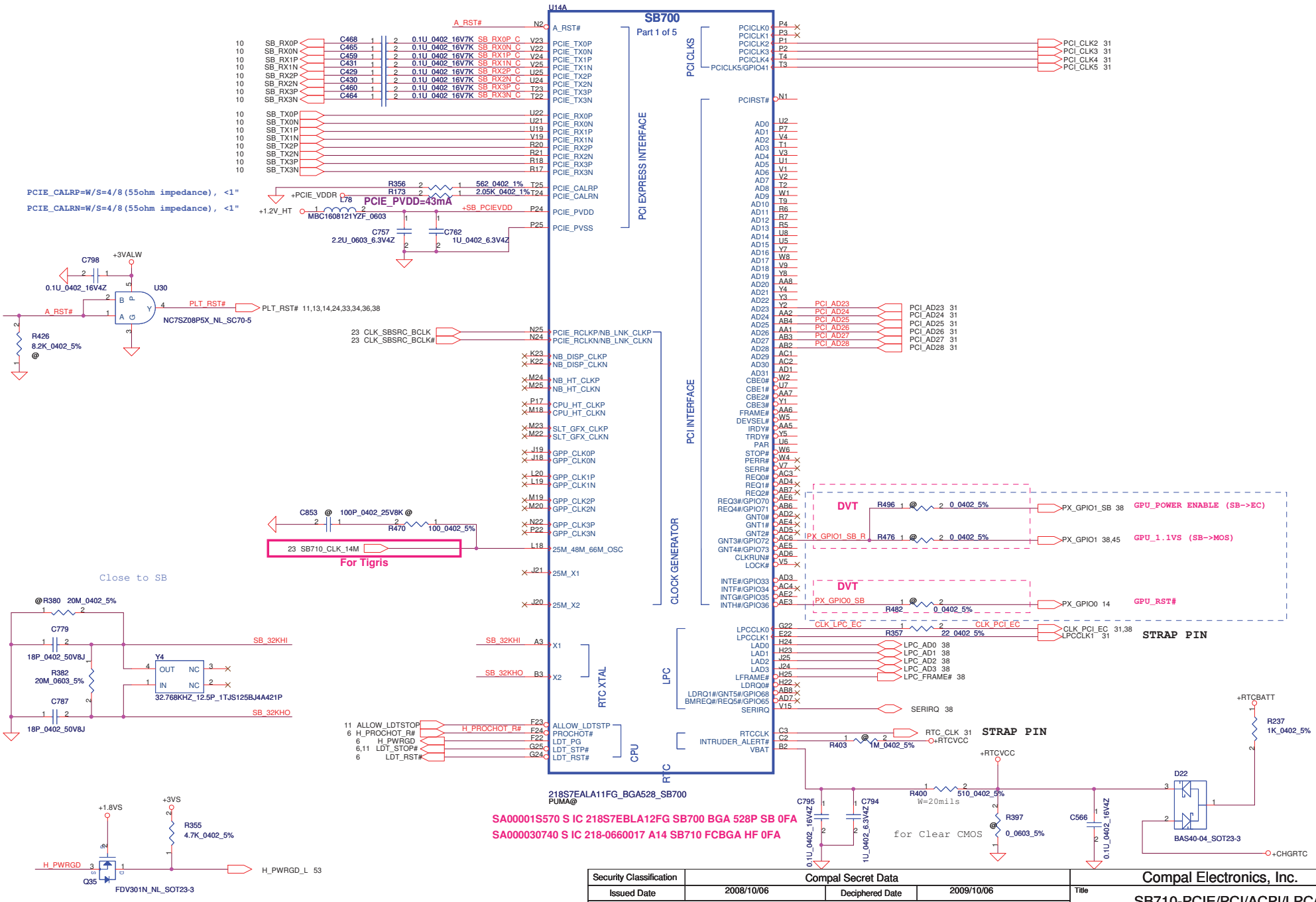
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: CRT Connector

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 Sheet 26 of 58



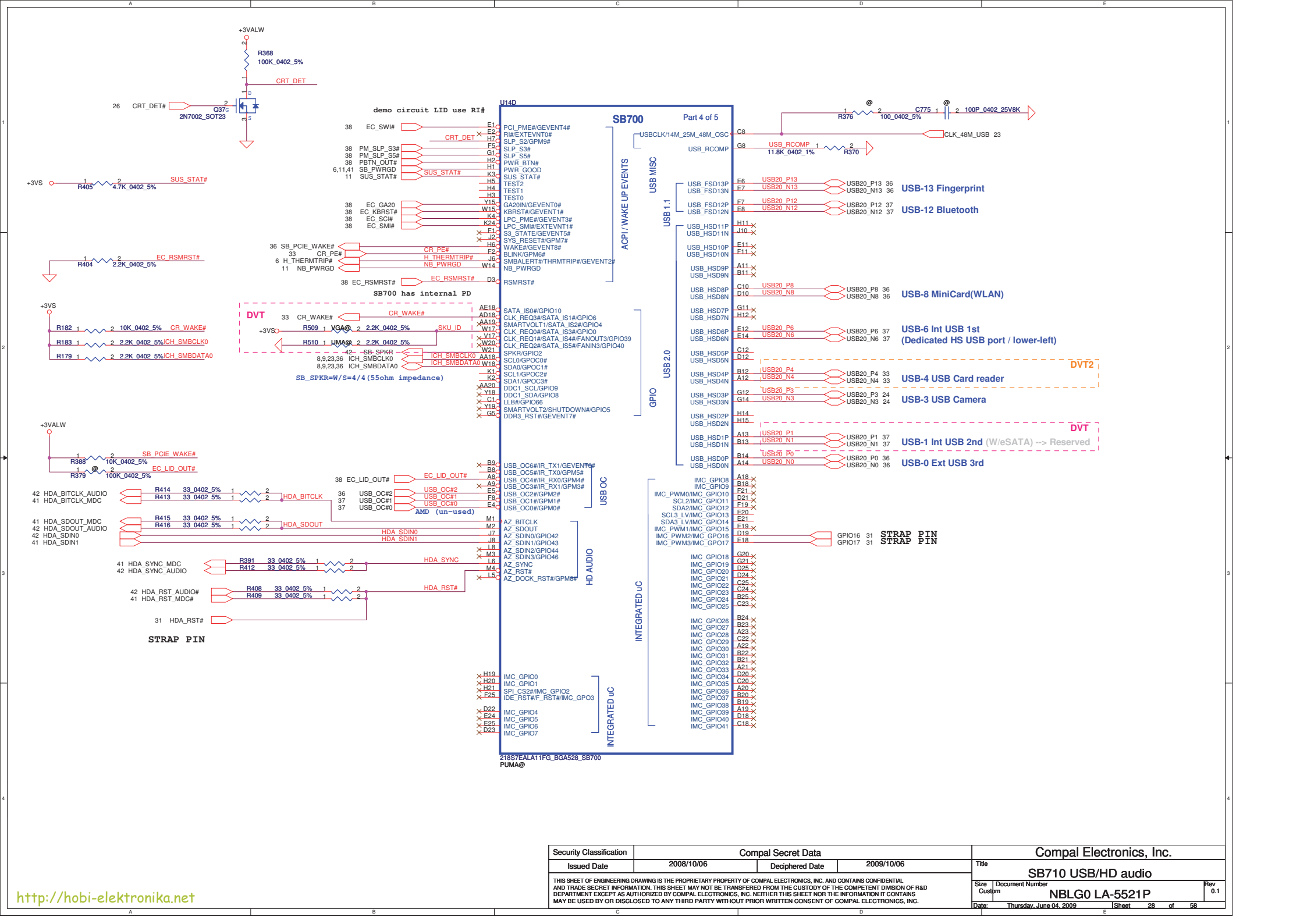
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: SB710-PCIE/PCI/ACPI/LPC/RTC

Size	Document Number	Rev
Custom	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 Sheet 27 of 58



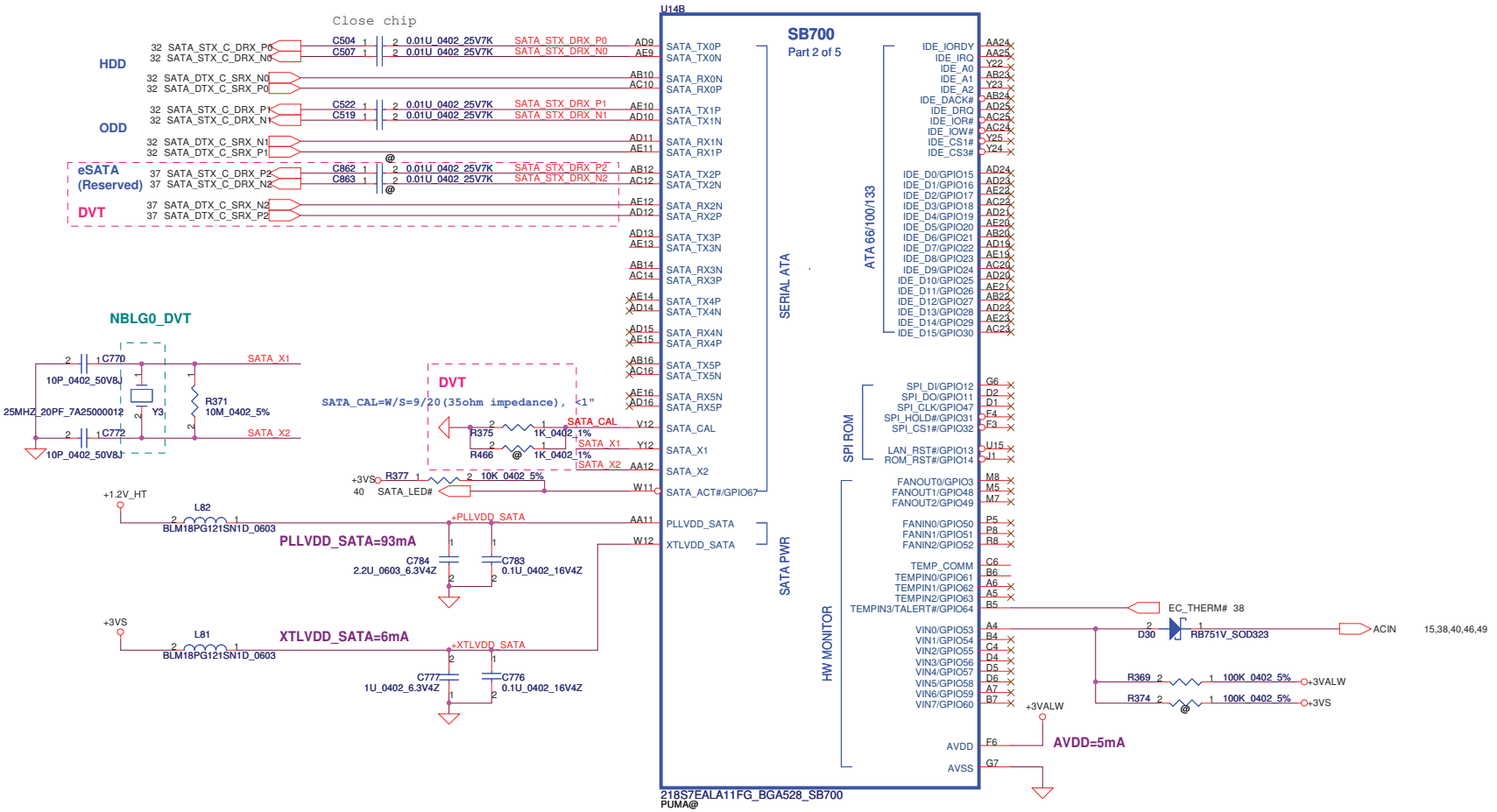
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: SB710 USB/HD audio

Size	Document Number	Rev
Custom	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 Sheet 28 of 58



Port Number	Pri/SEC,Mas/Slave assignment	SATA drive controlled by
Port 0	Primary master	SATA controler
Port 1	Secondary master	SATA controler
Port 2	Primary slave	SATA controler
Port 3	Secondary slave	SATA controler
Port 4	Primary (Secondary) master	PATA controler
Port 5	Primary (Secondary) slave	PATA controler

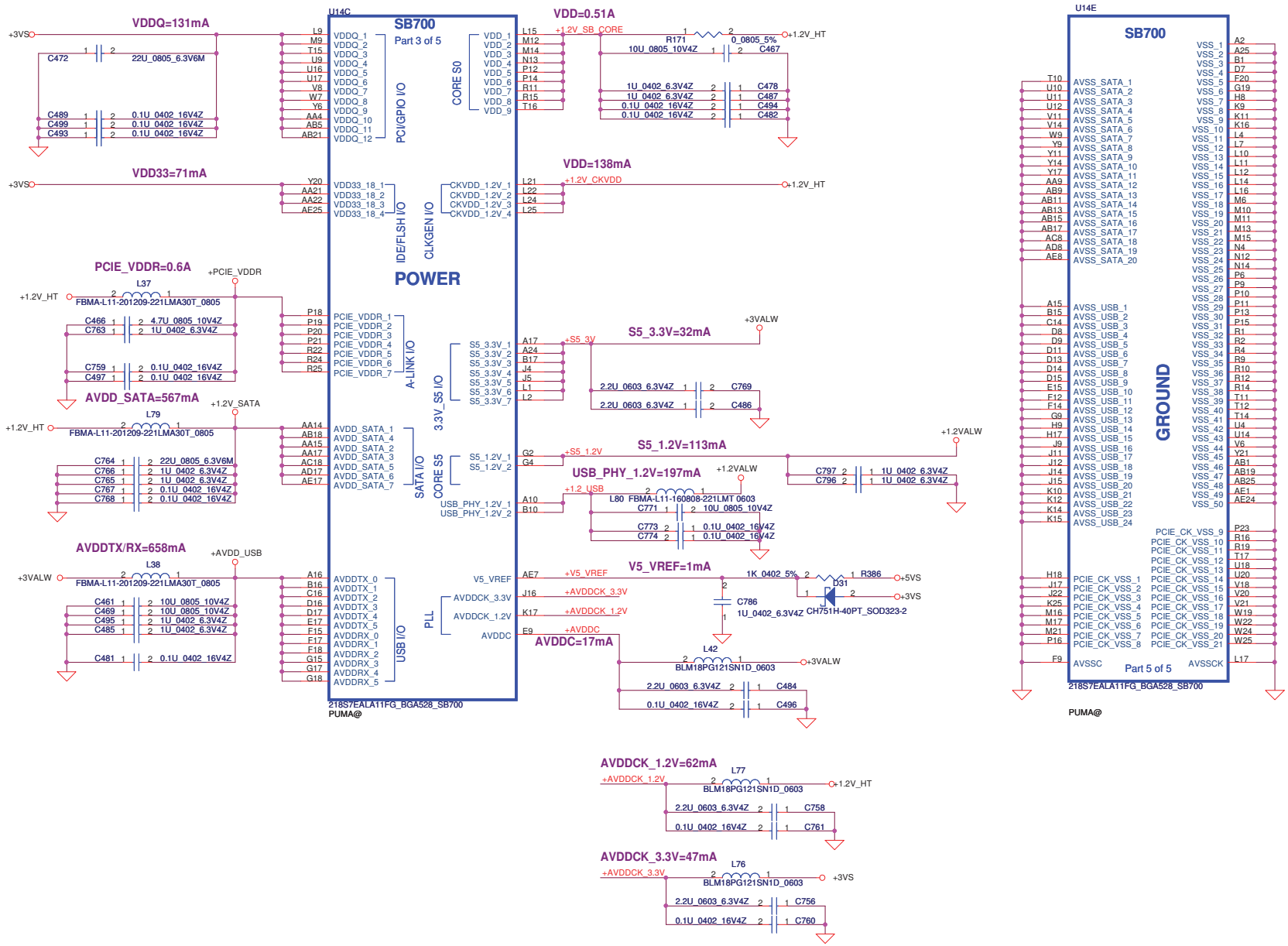
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: SB710 SATA/IDE/SPI

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 29 of 58



Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: SB710 power/GND

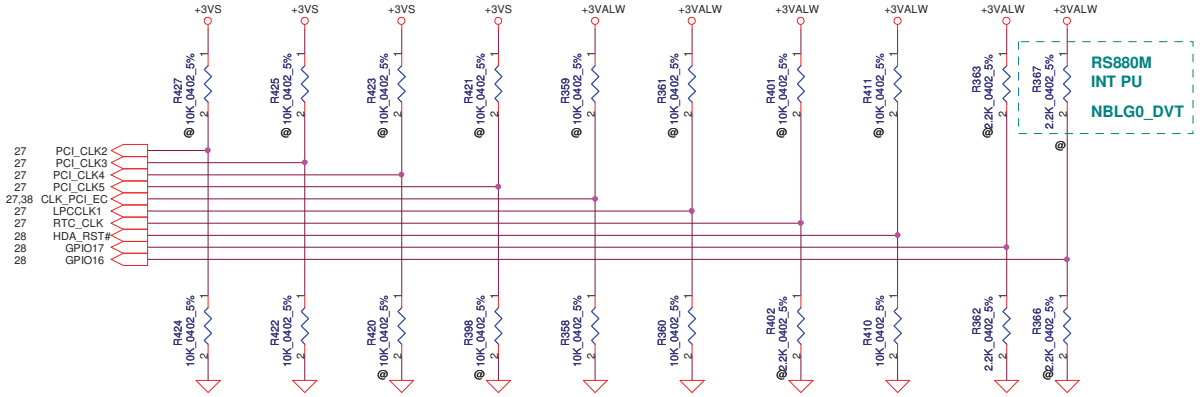
Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Sunday, April 12, 2009 | Sheet 30 of 58

REQUIRED STRAPS

NOTE: SB700 HAS INTERNAL 15K PULL UP RESISTOR FOR RTC_CLK

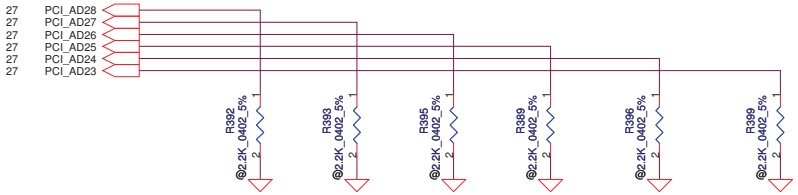
	PCI_CLK2	PCI_CLK3	PCI_CLK4	PCI_CLK5	LPC_CLK0 CLK_PCI_EC	LPC_CLK1	RTC_CLK	AZ_RST_CD#	GP17 GP16
PULL HIGH	BOOTFAIL TIMER ENABLED	USE DEBUG STRAPS	RESERVED	RESERVED	ENABLE PCI MEM BOOT	CLKGEN ENABLED	**INTERNAL RTC** DEFAULT	EC ENABLED	Internal pull up H,H = Reserved H,L = SPI ROM **L,H = LPC ROM (Default L,NC)** L,L = FWH ROM
PULL LOW	**BOOTFAIL TIMER DISABLED** DEFAULT	**IGNORE DEBUG STRAPS** DEFAULT			**DISABLE PCI MEM BOOT** DEFAULT	**CLKGEN DISABLED** DEFAULT	**EXT. RTC** (PD on X1, apply 32KHz to RTC_CLK)	**EC DISABLED** DEFAULT	



DEBUG STRAPS

SB700 HAS 15K INTERNAL PU FOR PCI_AD[28:23]

	PCI_AD28	PCI_AD27	PCI_AD26	PCI_AD25	PCI_AD24	PCI_AD23
PULL HIGH	**USE LONG RESET** DEFAULT	**USE PCI PLL** DEFAULT	**USE ACPI BCLK** DEFAULT	**USE IDE PLL** DEFAULT	**USE DEFAULT PCIE STRAPS** DEFAULT	**RESERVED**
PULL LOW	USE SHORT RESET	BYPASS PCI PLL	BYPASS ACPI BCLK	BYPASS IDE PLL	USE EEPROM PCIE STRAPS	



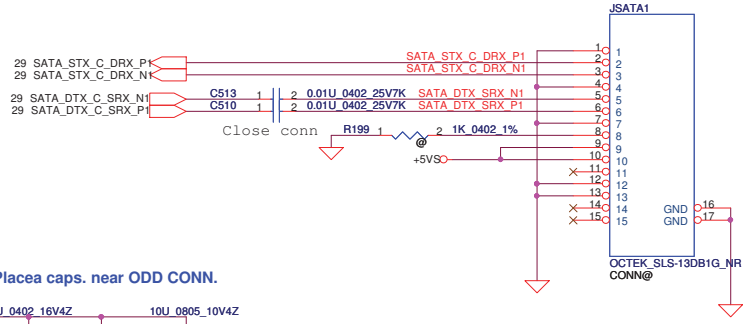
Compal Electronics, Inc.

Title: SB710 STRAPS

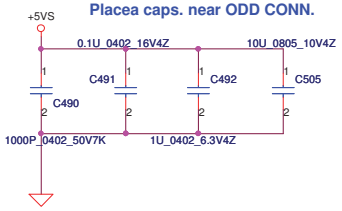
Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 31 of 58

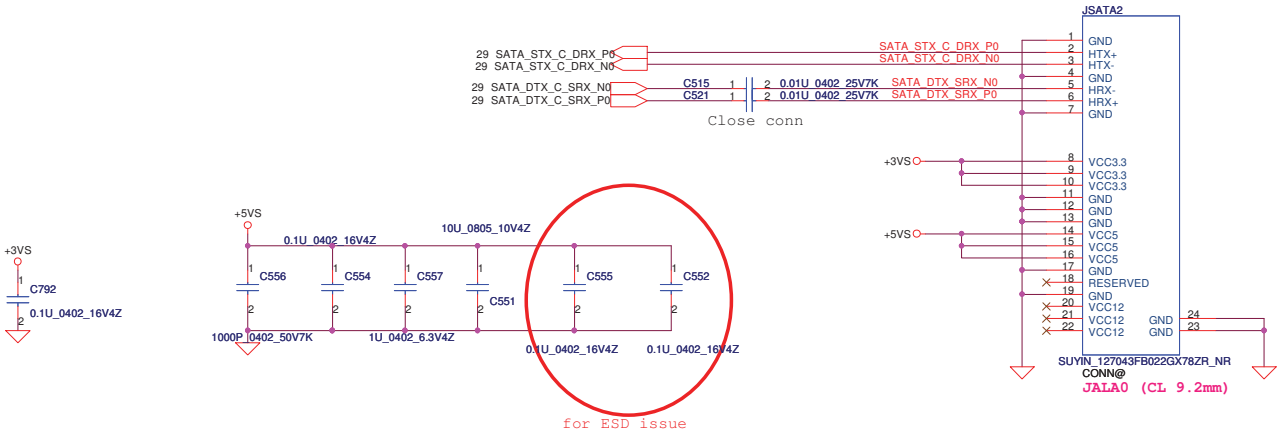
SATA ODD Conn.



Placea caps. near ODD CONN.



SATA HDD Conn.



for ESD issue

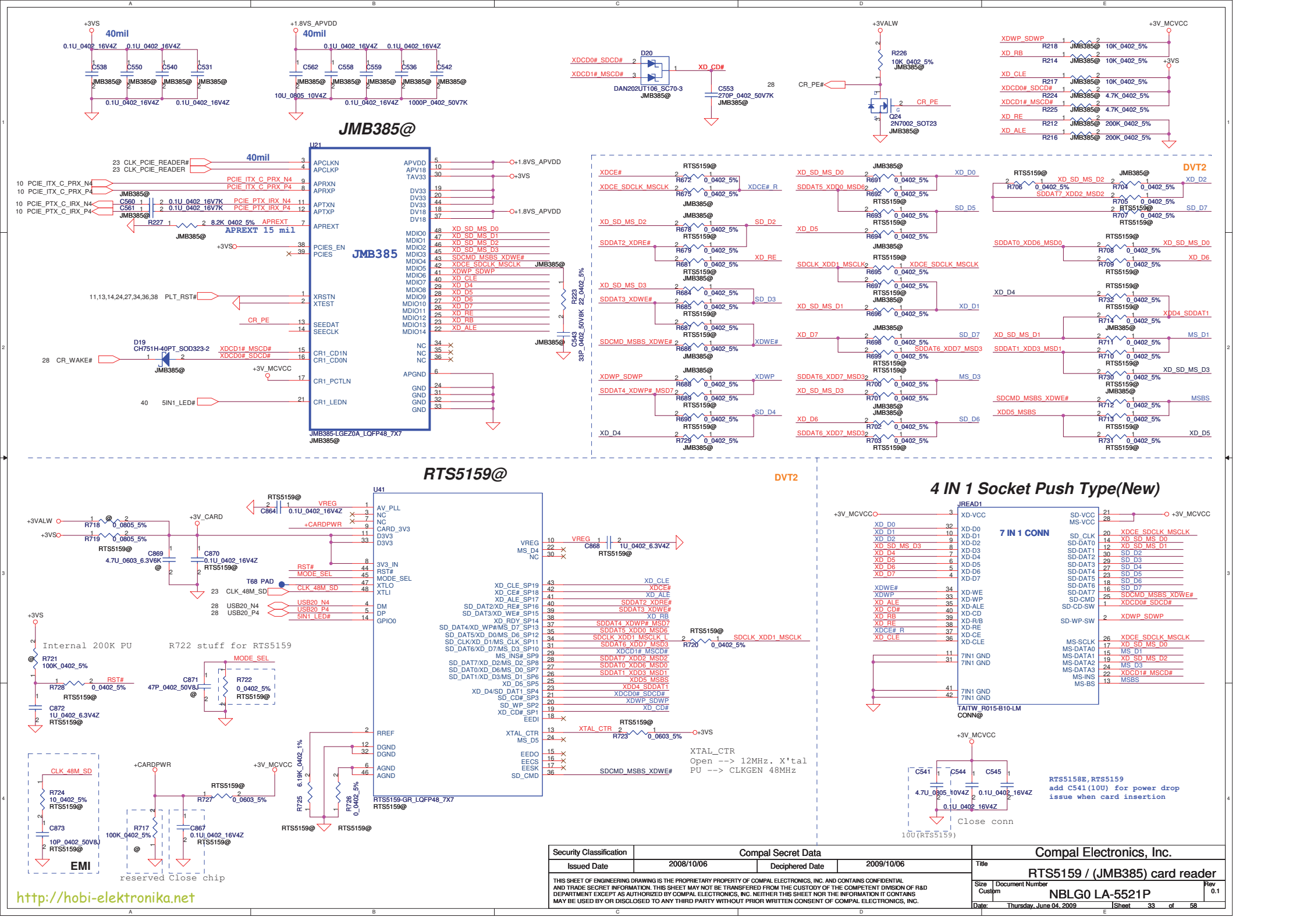
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: HDD & ODD Connector

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 | Sheet 32 of 58



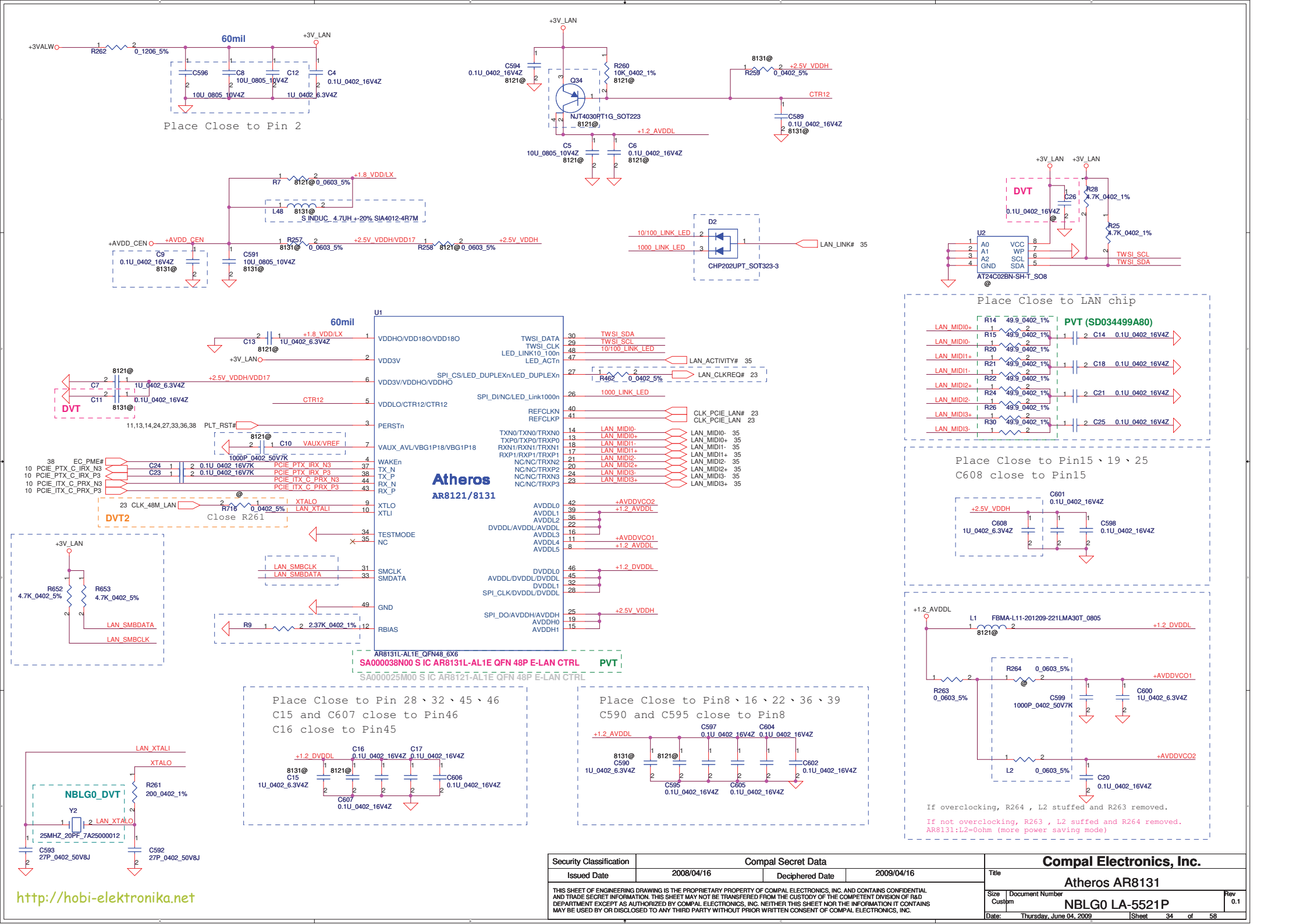
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: RTS5159 / (JMB385) card reader

Size	Document Number	Rev
Custom	NBLG0 LA-5521P	0.1

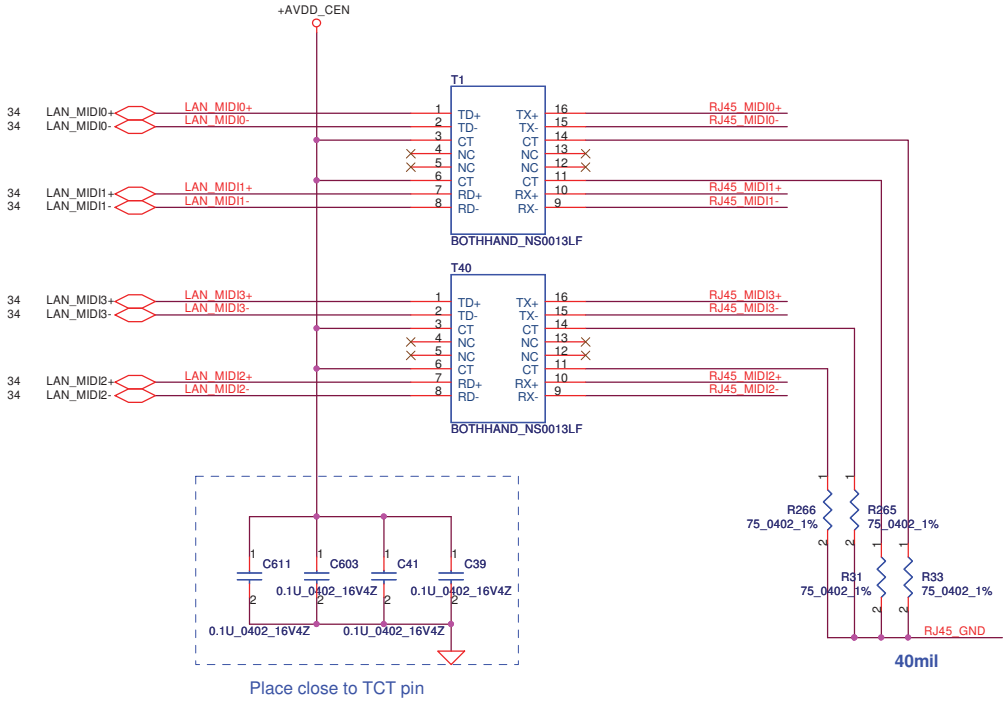
Date: Thursday, June 04, 2009 | Sheet 33 of 58

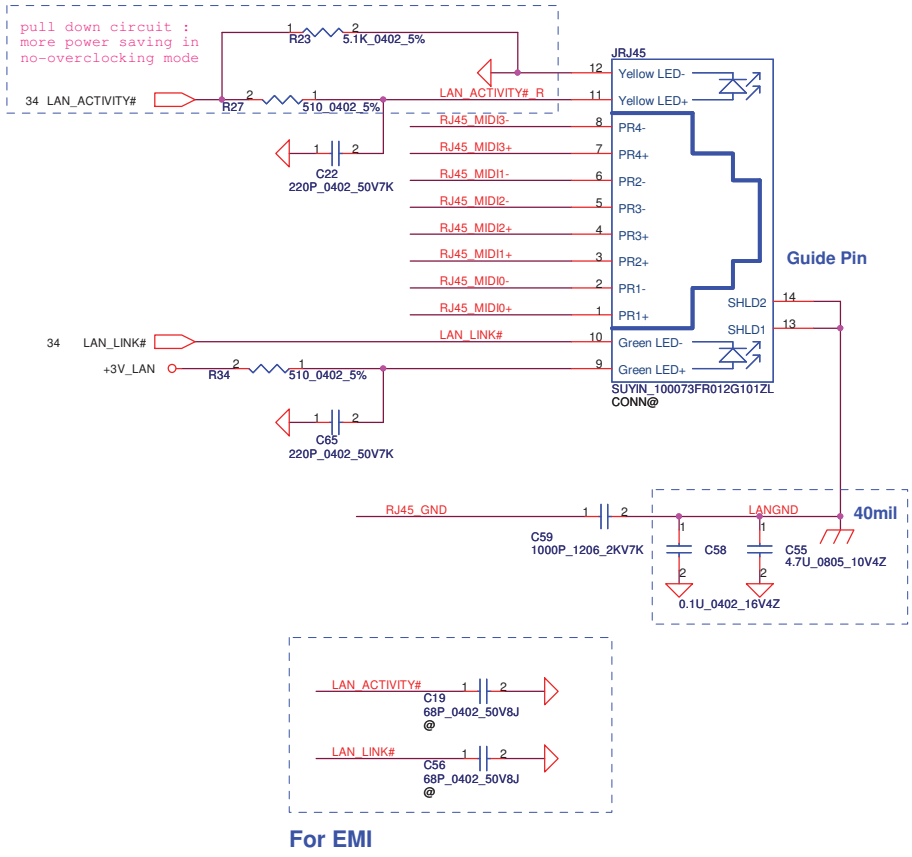


Security Classification	Compal Secret Data		
Issued Date	2008/04/16	Deciphered Date	2009/04/16

Compal Electronics, Inc.

Title	Atheros AR8131	
Size: Custom	Document Number: NBLG0 LA-5521P	Rev: 0.1
Date: Thursday, June 04, 2009	Sheet 34 of 58	





Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

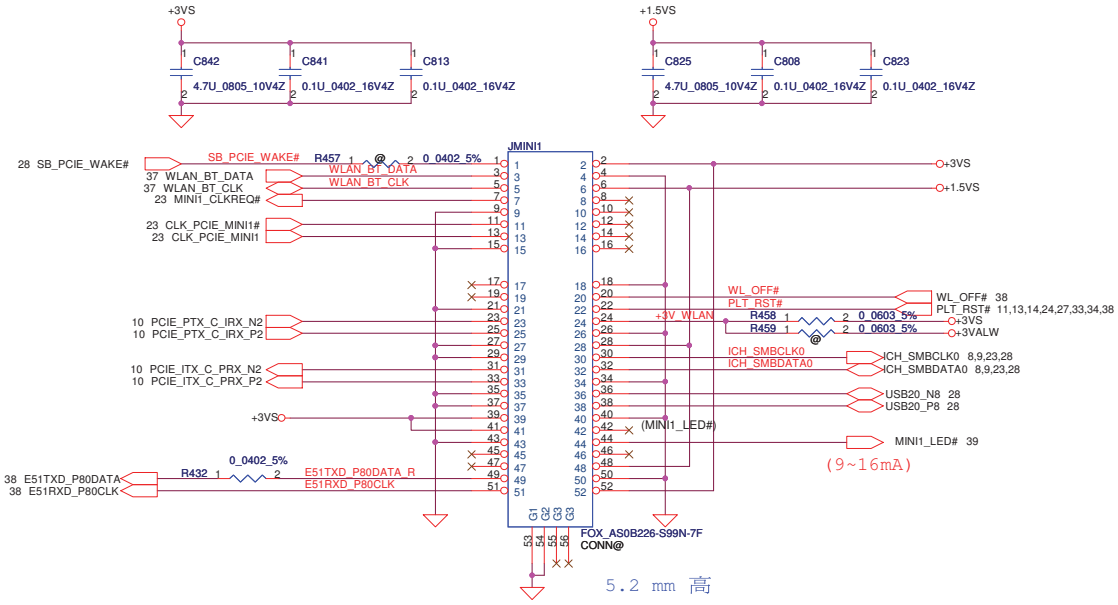
Compal Electronics, Inc.

Title: LAN Magnetic & RJ45

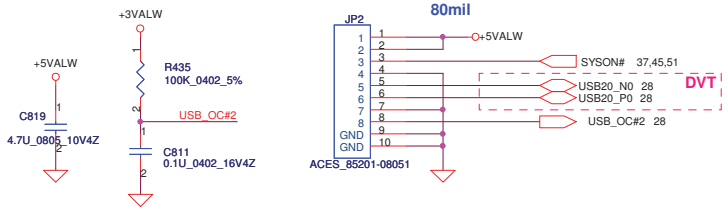
Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

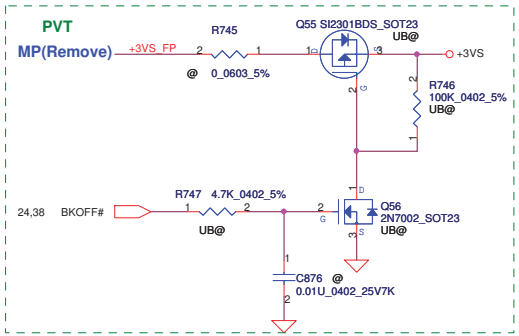
Date: Thursday, June 04, 2009 Sheet 35 of 58

For Wireless LAN

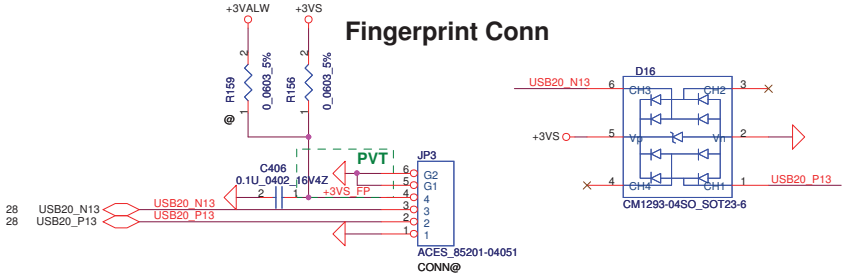


To USB/B Connector





Fingerprint Conn



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

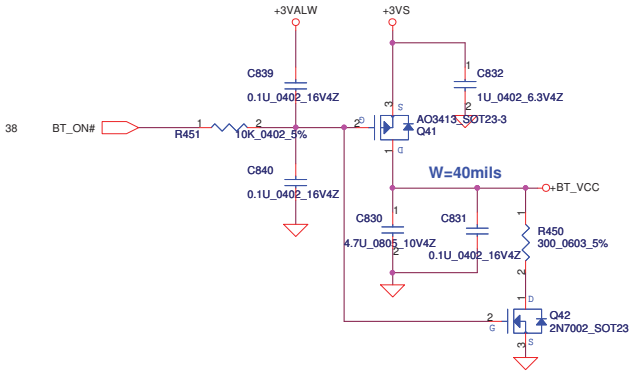
Compal Electronics, Inc.

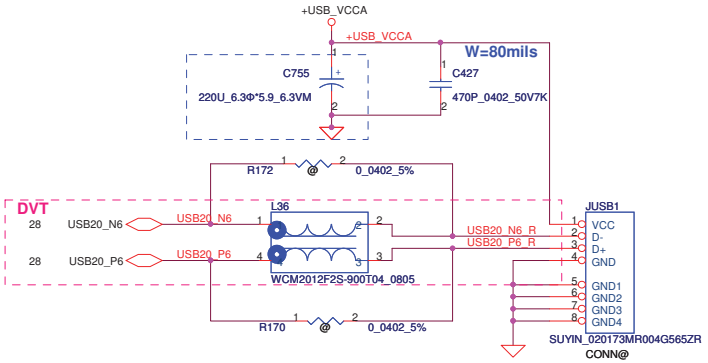
Title: MINI CARD (WLAN) / FP / Ext_USB

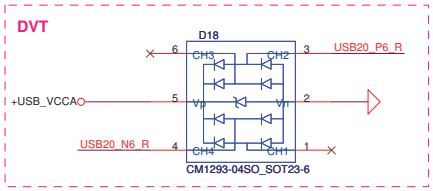
Size: B | Document Number: NBLG0 LA-5521P | Rev: 0.1

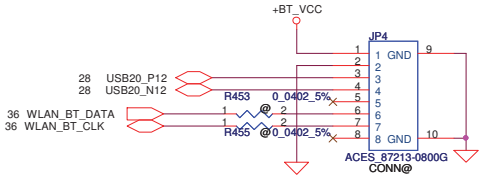
Date: Thursday, June 04, 2009 | Sheet 36 of 58

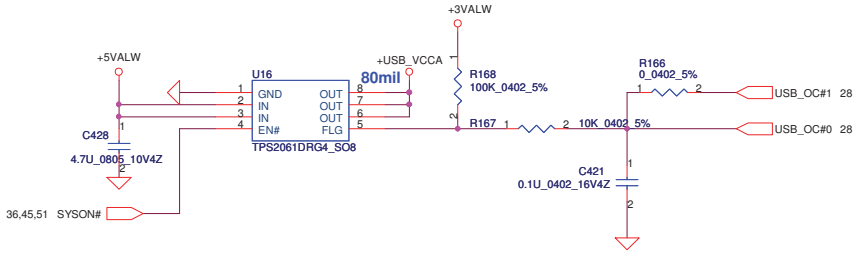
Bluetooth Conn.

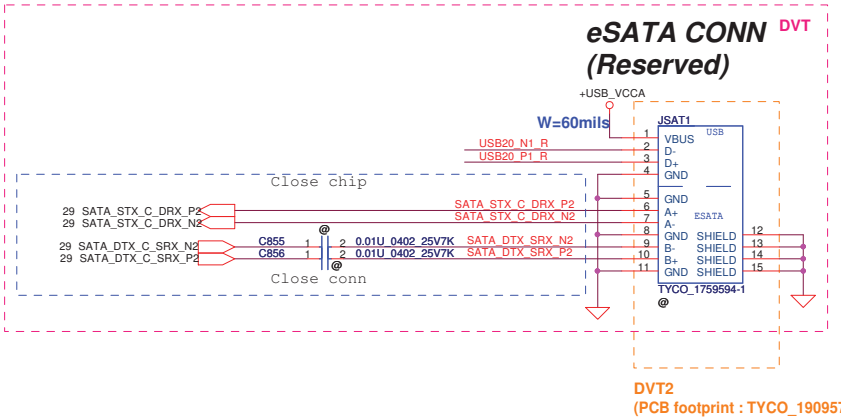




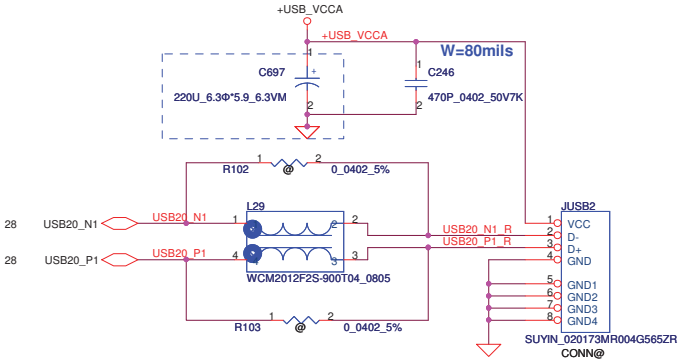


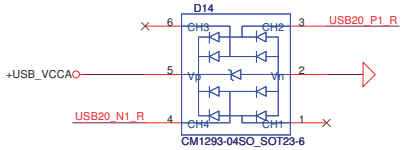






DVT2
(PCB footprint : TYCO_1909574-1_11P-T)





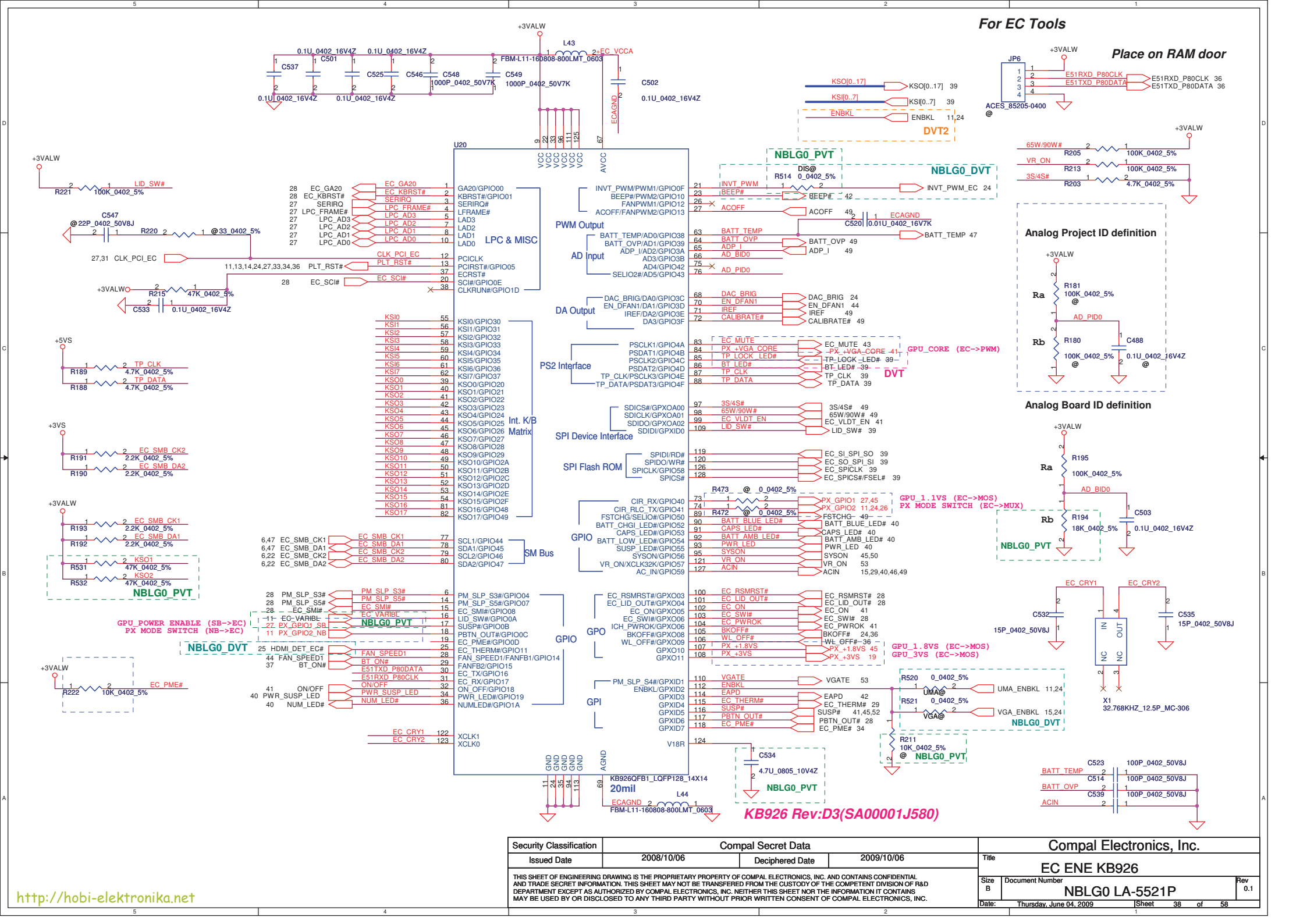
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

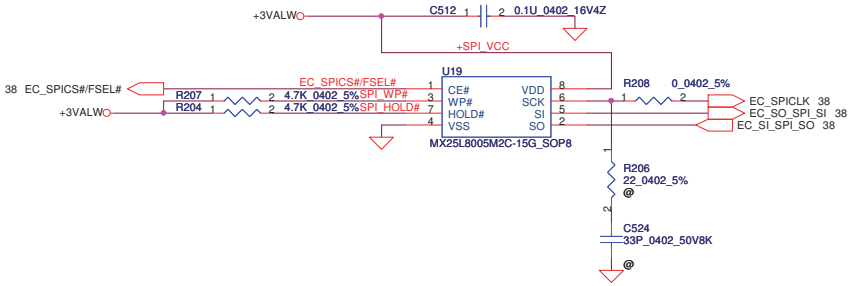
Title: BlueTooth / Int USB x2 /eSATA

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

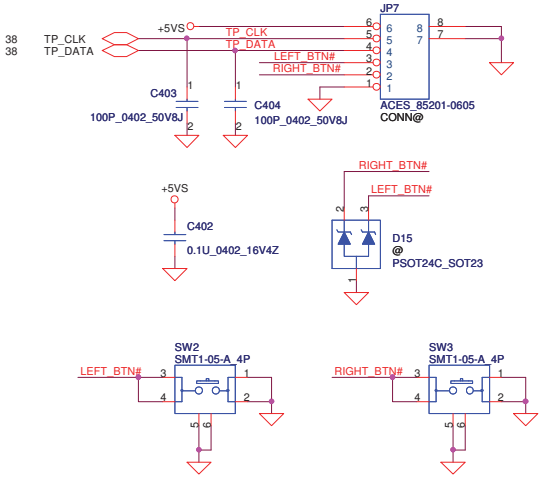
Date: Thursday, June 04, 2009 Sheet 37 of 58



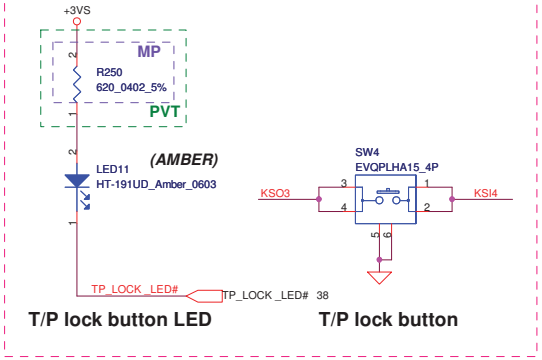
BIOS(SYS / EC / VGA)



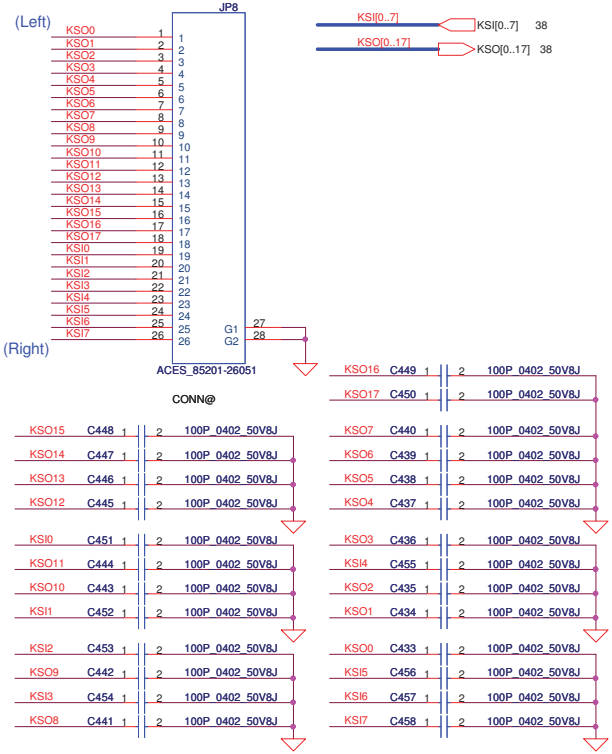
To TP/B Conn.



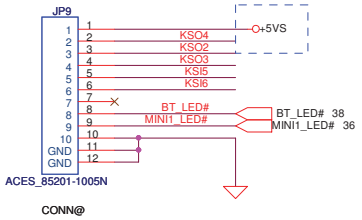
DVT



INT_KBD Conn.



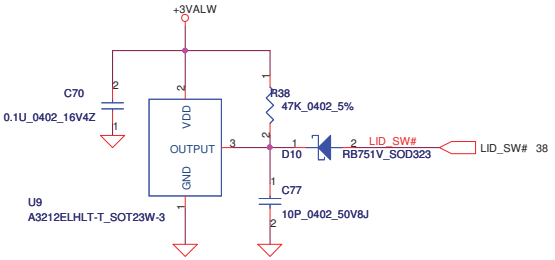
To FUN/B Conn (10PIN)



	KSO4	KSO2	KSO3
KSI5	WL_BTN#	Volume Down	Back Up
KSI6	BT_BTN#	Volume Up	Program (KBLG0) Battery (KALG0)
KSI4			T/P lock

Lid Switch

(Hall Effect Switch)



Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

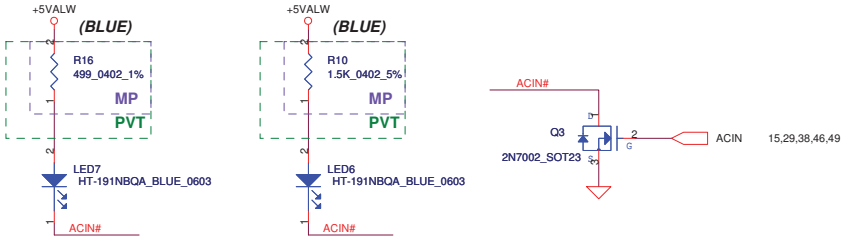
Compal Electronics, Inc.

Title: BIOS, I/O Port & K/B Connector

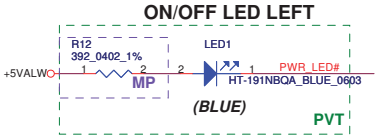
Size: B | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 39 of 58

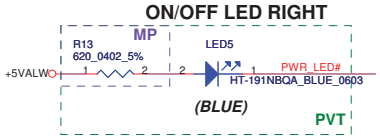
Enlightener LED



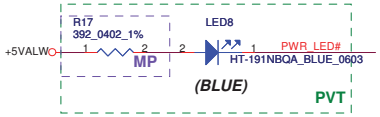
ON/OFF LED LEFT



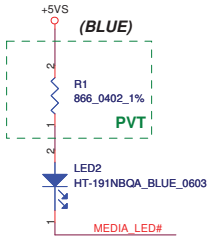
ON/OFF LED RIGHT



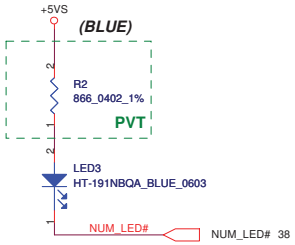
ON/OFF LED DOWN



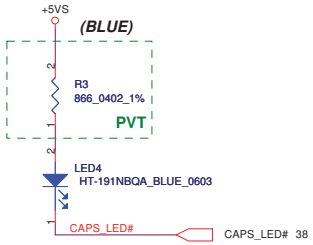
MEDIA_LED

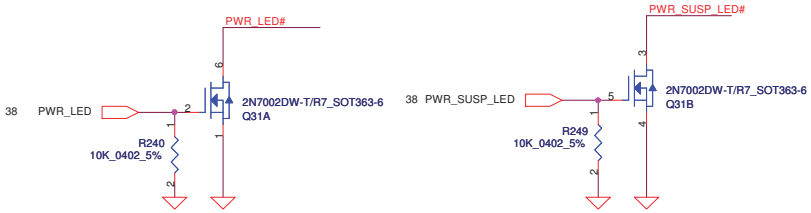


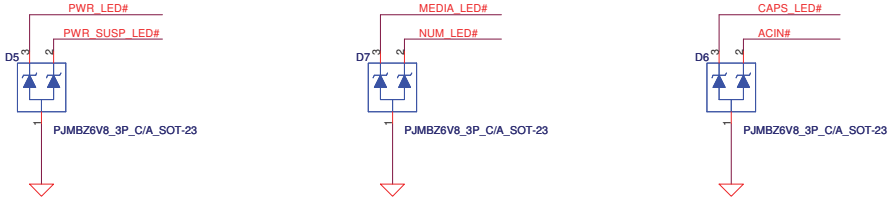
NUM_LED

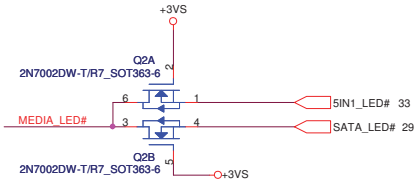


CAPS_LED



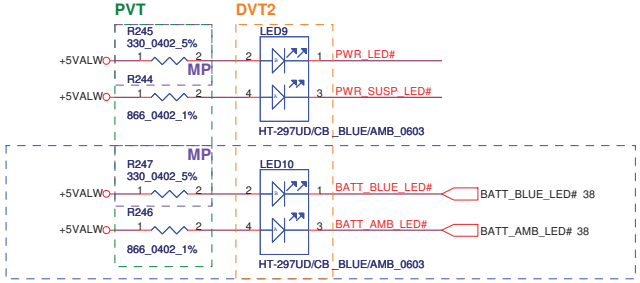






Compal Footprint

Footpint : LED_HT-297DQ-GQ_4P



BLUE/AMBER

Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

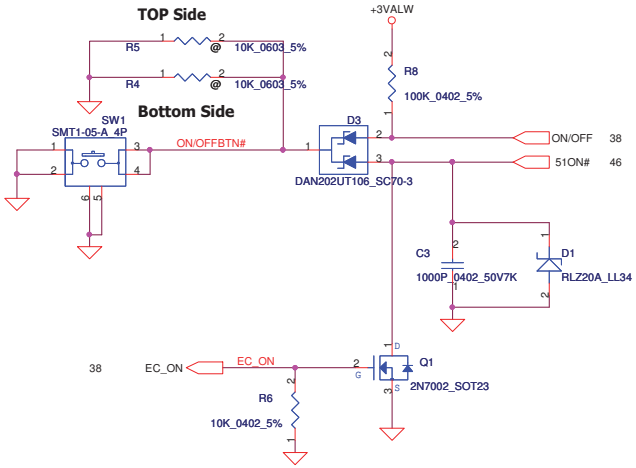
Title: LED

Size: Custom | Document Number: NBLG0 LA-5521P | Rev: 0.1

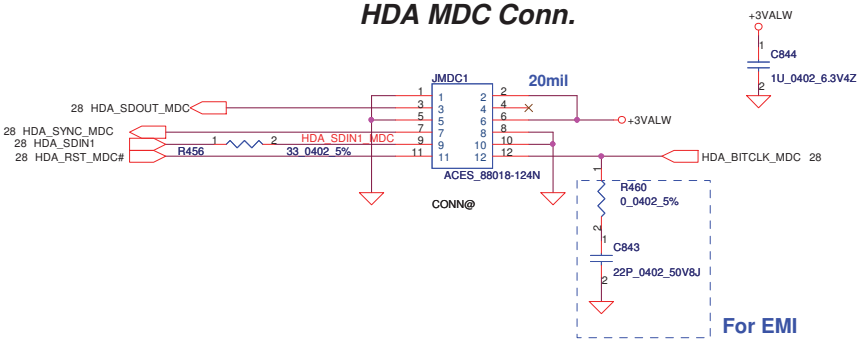
Date: Thursday, June 04, 2009 | Sheet 40 of 58

Power Button

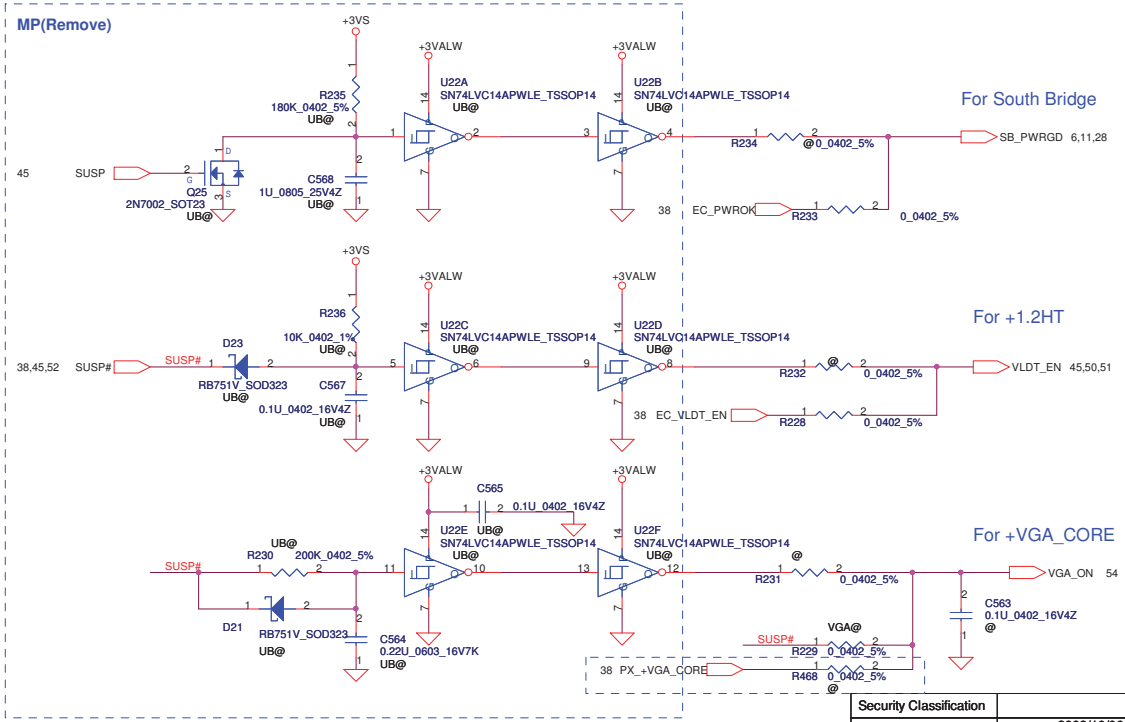
ON/OFF switch



HDA MDC Conn.



Power ON Circuit



Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: Power OK / MDC / CIR

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

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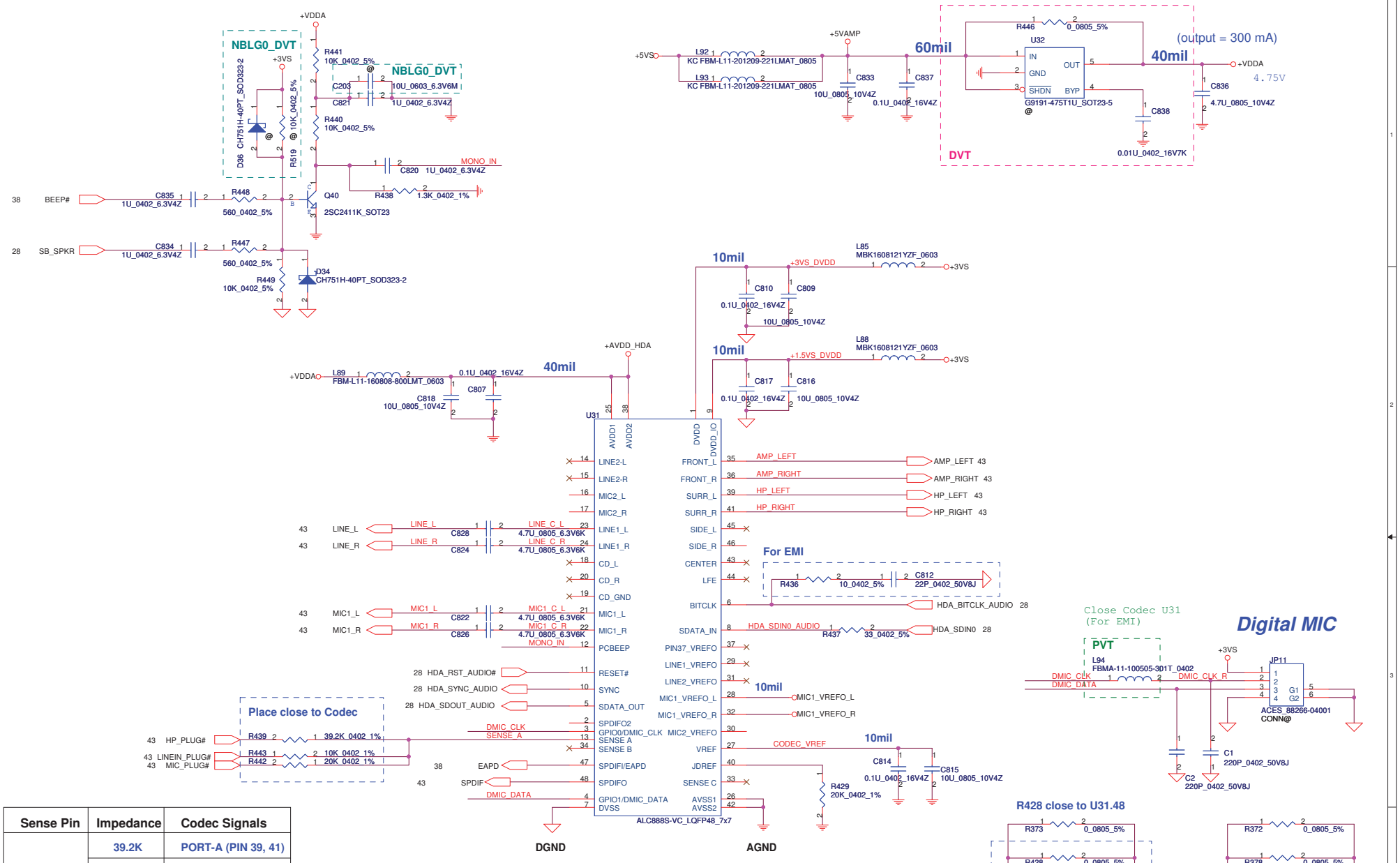


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 45, 46)

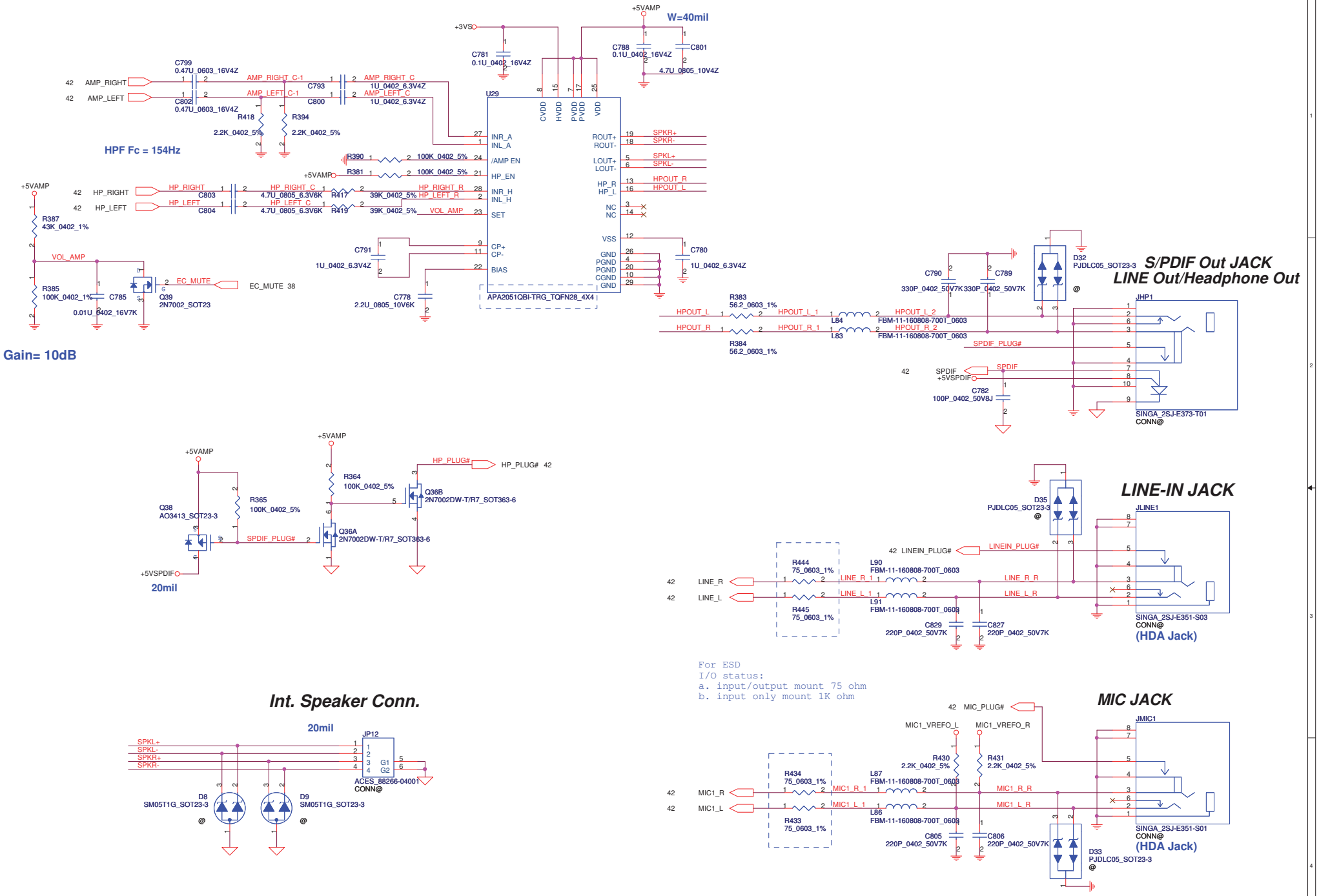
Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: HD Audio Codec ALC888S-VC

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 | Sheet 42 of 58



Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

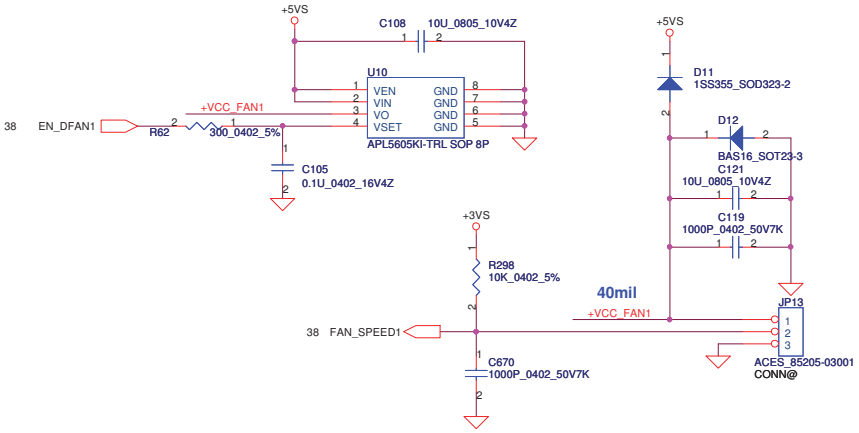
Compal Electronics, Inc.

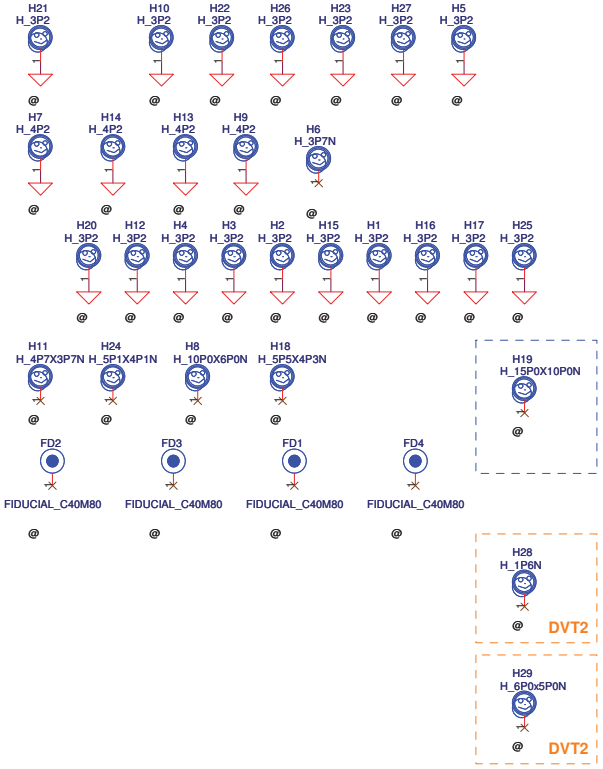
Title: Amplifier & Audio Jack

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

Date: Thursday, June 04, 2009 | Sheet 43 of 58

FAN1 Conn





Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: FAN & Screw Hole

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

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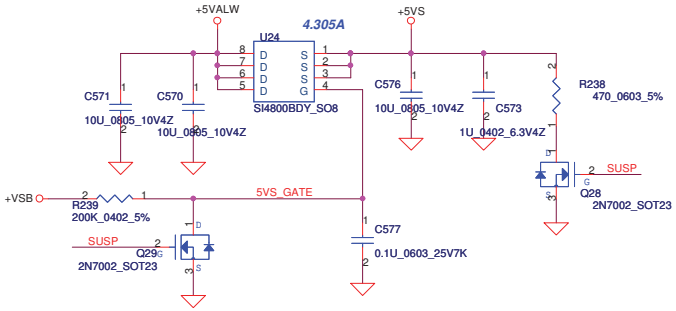
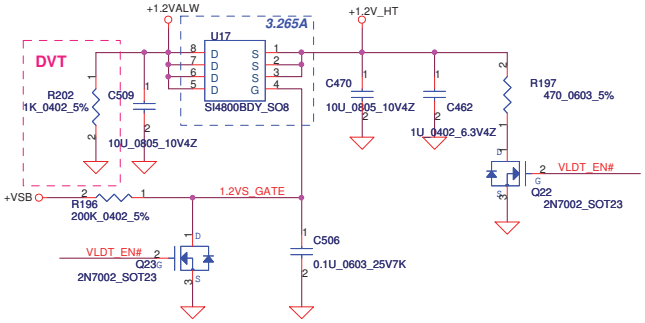
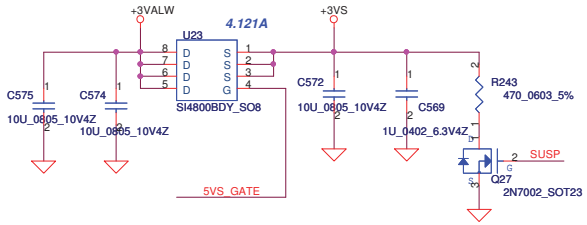
+5VALW TO +5VS



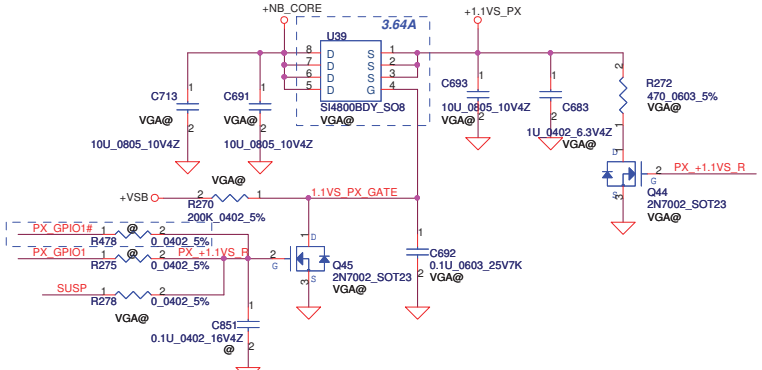
+1.2VALW TO +1.2V_HT



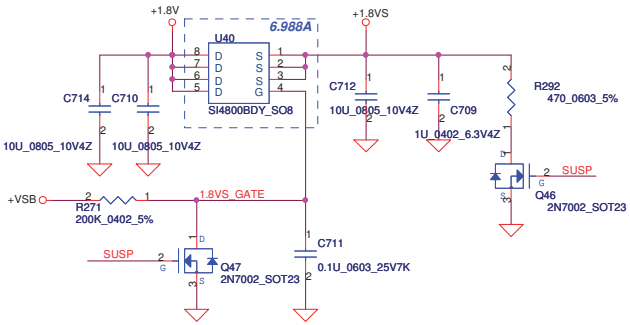
+3VALW TO +3VS



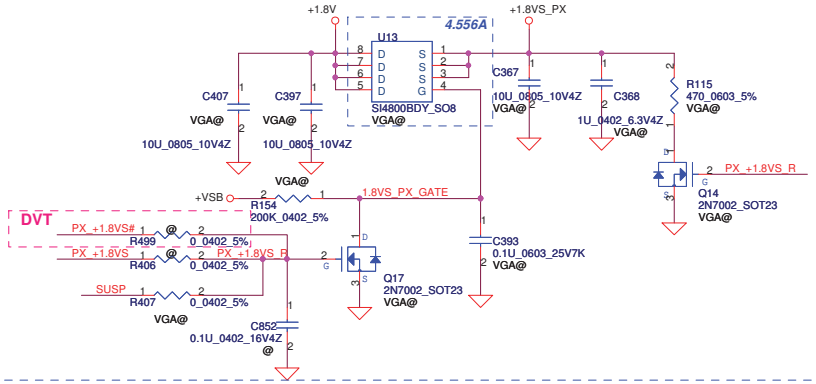
+NB_CORE TO +1.1VS_PX

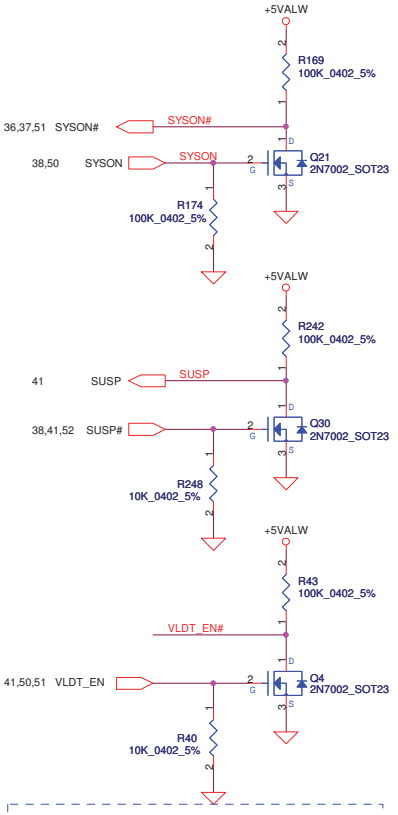


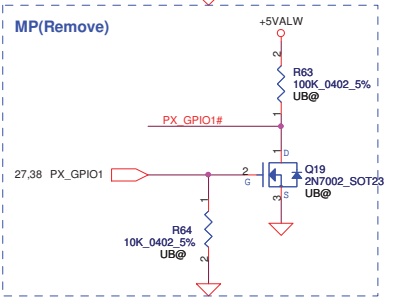
+1.8V to +1.8VS

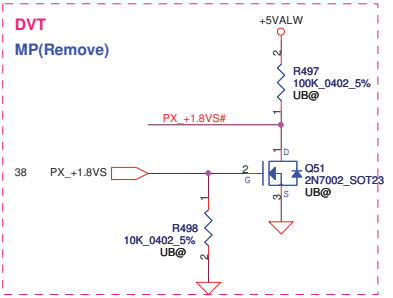


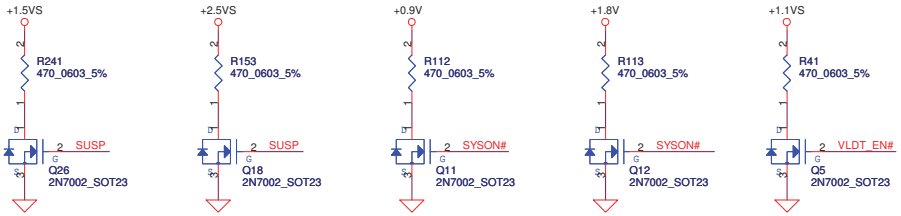
+1.8V to +1.8VS_PX











Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: DC Interface

Size	Document Number	Rev
B	NBLG0 LA-5521P	0.1

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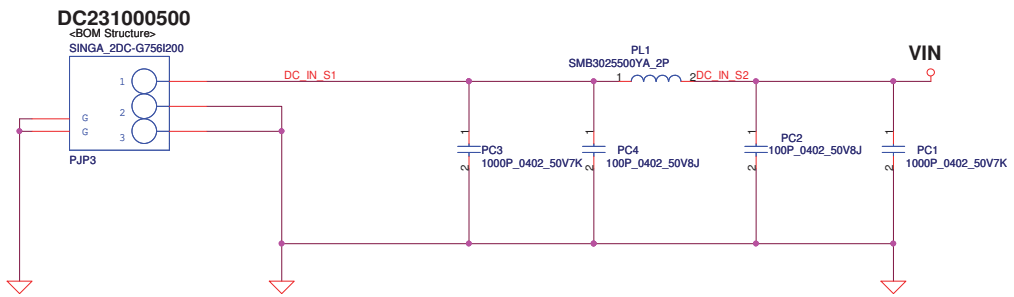
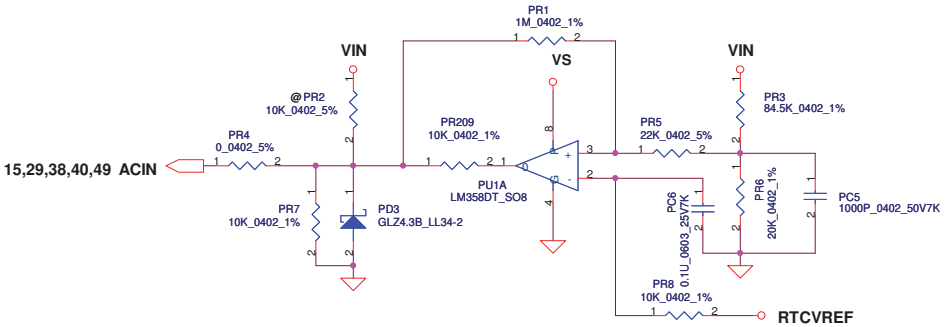
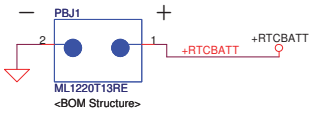
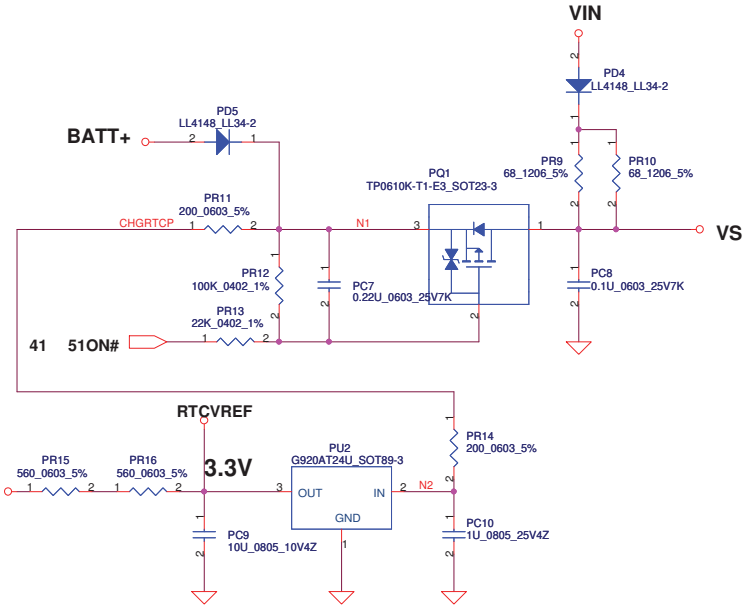
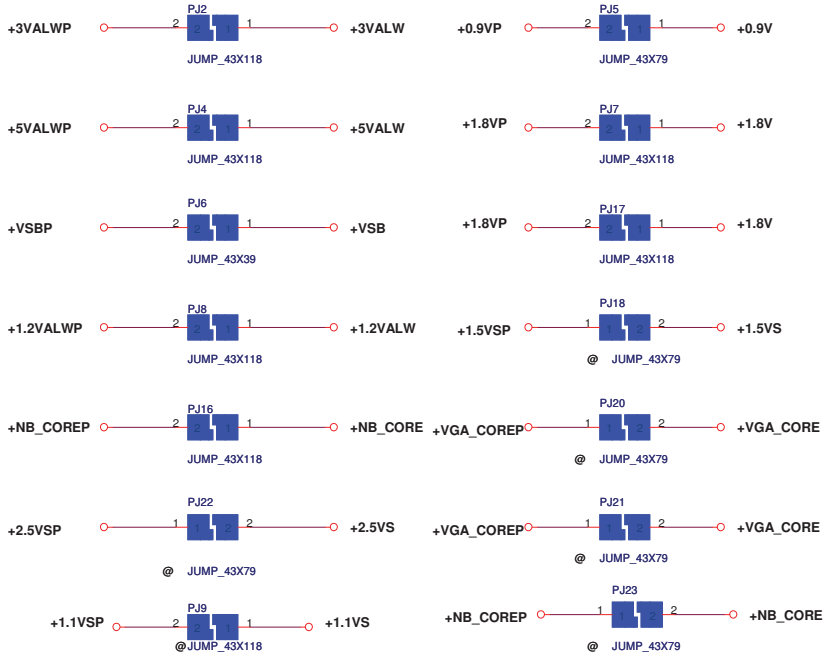






Vin Dectector			
	Min.	Typ	Max.
H-->L	16.976V	17.525V	17.728V
L-->H	17.430V	17.901V	18.384V





Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

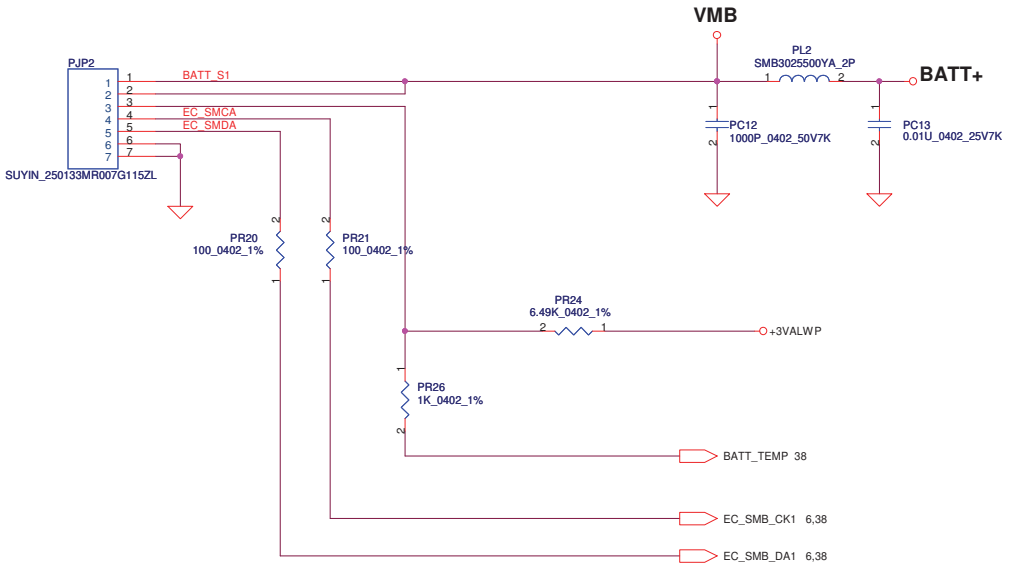
Compal Electronics, Inc.

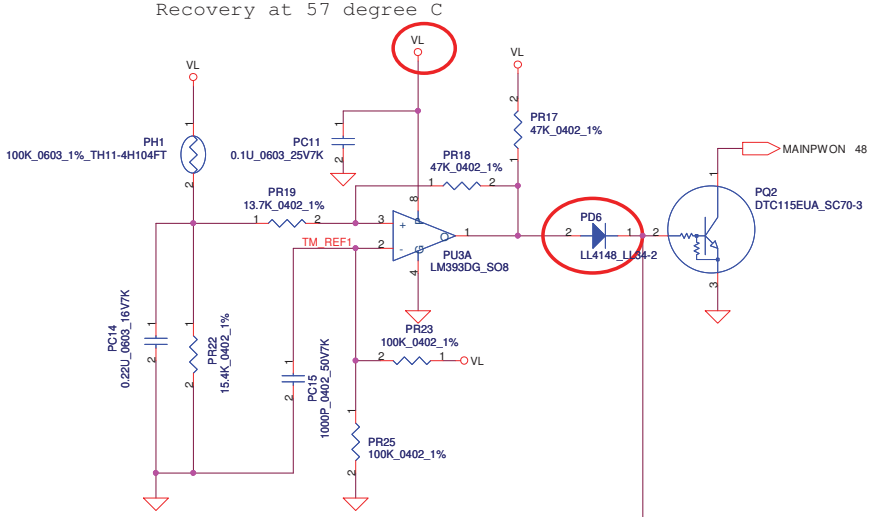
Title: DCIN & DETECTOR

Size	Document Number	Rev
Custom	NBLG0	0.1

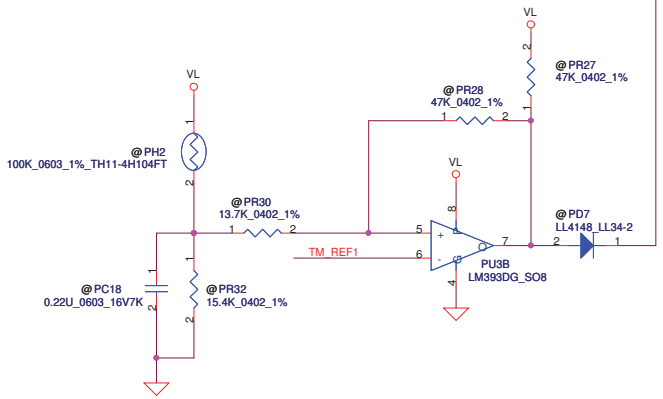
Date: Thursday, June 04, 2009 | Sheet 46 of 58

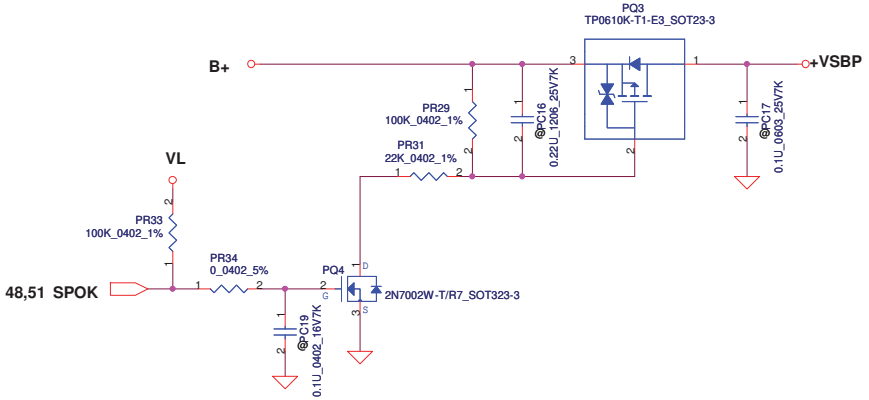
PH1 under CPU botten side :
CPU thermal protection at 93 degree C
Recovery at 57 degree C





PH2 near main Battery CONN :
BAT. thermal protection at 79 degree C
Recovery at 47 degree C





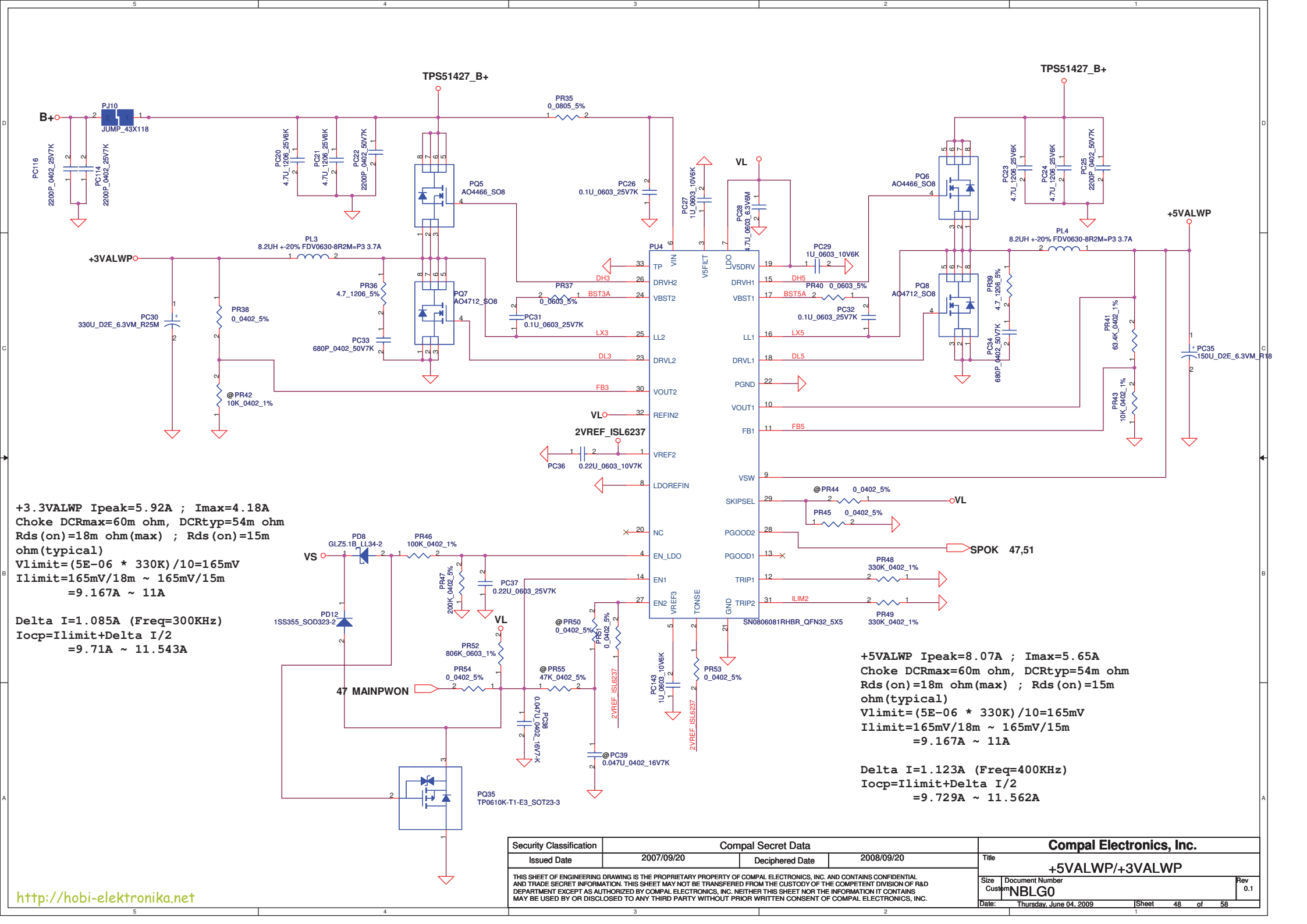
Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

Compal Electronics, Inc.

Title: BATTERY CONN / OTP

Size	Document Number	Rev
Custom	NBLG0	0.1

Date: Thursday, June 04, 2009 | Sheet 47 of 58



+3.3VALWP Ipeak=5.92A ; Imax=4.18A
Choke DCRmax=60m ohm, DCRtyp=54m ohm
Rds(on)=18m ohm(max) ; Rds(on)=15m ohm(typical)
Vlimit=(5E-06 * 330K)/10=165mV
Ilimit=165mV/18m ~ 165mV/15m
=9.167A ~ 11A

Delta I=1.085A (Freq=300KHz)
Iocp=Ilimit+Delta I/2
=9.71A ~ 11.543A

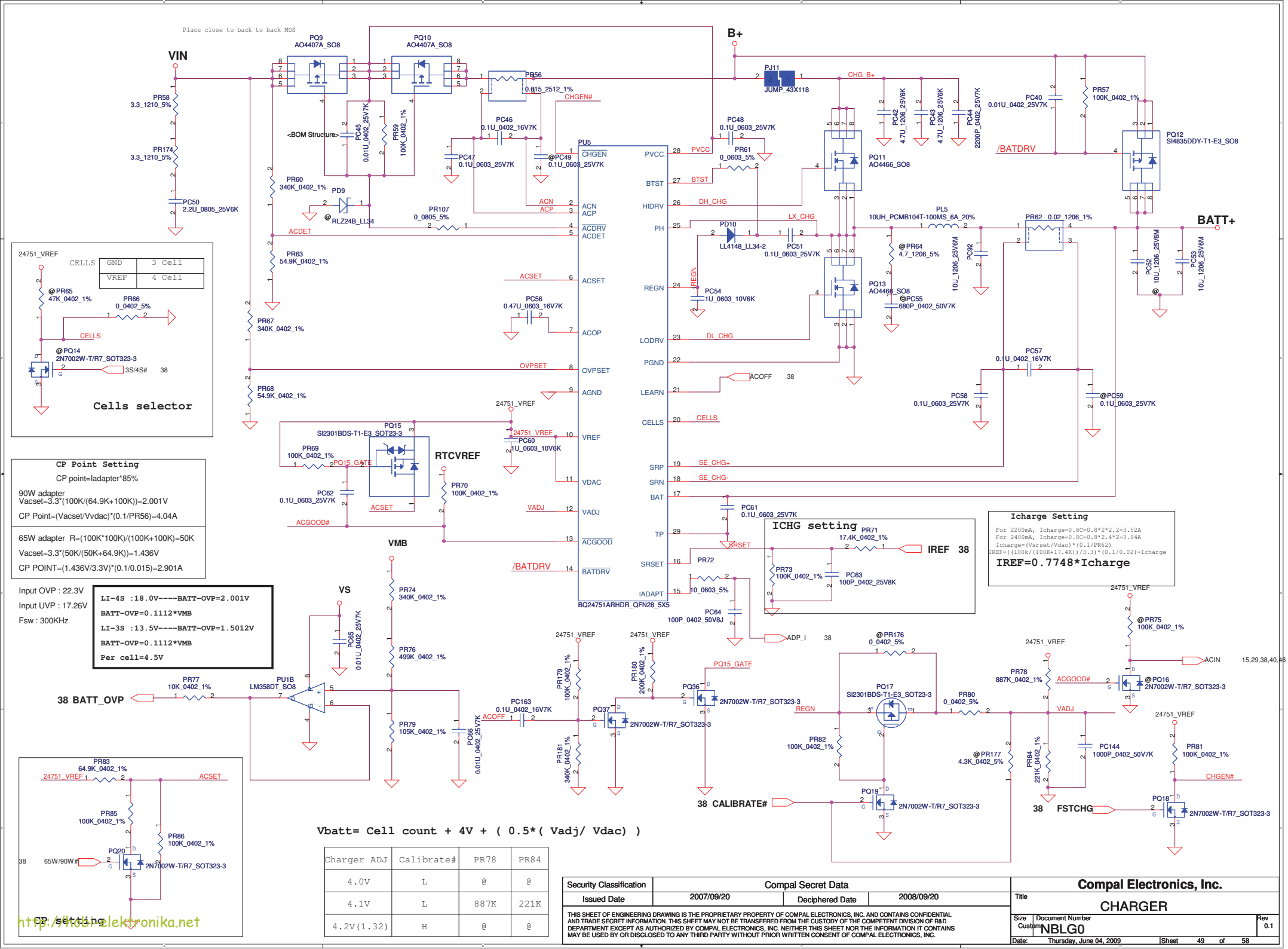
+5VALWP Ipeak=8.07A ; Imax=5.65A
Choke DCRmax=60m ohm, DCRtyp=54m ohm
Rds(on)=18m ohm(max) ; Rds(on)=15m ohm(typical)
Vlimit=(5E-06 * 330K)/10=165mV
Ilimit=165mV/18m ~ 165mV/15m
=9.167A ~ 11A

Delta I=1.123A (Freq=400KHz)
Iocp=Ilimit+Delta I/2
=9.729A ~ 11.562A

Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

Compal Electronics, Inc.

Title	+5VALWP/+3VALWP	
Size: Custom	Document Number: NBLG0	Rev: 0.1
Date: Thursday, June 04, 2009	Sheet 48 of 58	


Place close to back to back MOS
VIN
B+
BATT+
PQ9 AO4407A_SO8
PQ10 AO4407A_SO8
PR56 0.015_2512_1%
CHGEN#
PJ11 JUMP_43X118
CHG_B+
PC40 0.01U_0402_25V7K
PR57 100K_0402_1%
PQ12 SI4835DDY-T1-E3_SO8
/BATDRV
PR58 3.3_1210_5%
PR174 3.3_1210_5%
PC50 2.2U_0805_25V6K
<BOM Structure>
PC45 0.01U_0402_25V7K
PR59 100K_0402_1%
PC46 0.1U_0402_16V7K
PC47 0.1U_0603_25V7K
@PC49 0.1U_0603_25V7K
PC48 0.1U_0603_25V7K
PR61 0_0603_5%
PC42 4.7U_1206_25V6K
PC43 4.7U_1206_25V6K
PC44 2200P_0402_25V7K
PQ11 AO4466_SO8
PR60 340K_0402_1%
PD9 @RLZ24B_LL34
PR107 0_0805_5%
ACDET
PR63 54.9K_0402_1%
PR67 340K_0402_1%
PR68 54.9K_0402_1%
PU5 BQ24751ARHDR_QFN28_5X5
CHGEN
ACN
ACP
ACDRV
ACDET
ACSET
ACOP
OVPSET
AGND
VREF
VDAC
VADJ
ACGOOD
BATDRV
PVCC
BTST
HIDRV
PH
REGN
LODRV
PGND
LEARN
CELLS
SRP
SRN
BAT
TP
SRSET
IADAPT
DH_CHG
LX_CHG
DL_CHG
PD10 LL4148_LL34-2
PC51 0.1U_0603_25V7K
PL5 10UH_PCMB104T-100MS_6A_20%
PR62 0.02_1206_1%
@PR64 4.7_1206_5%
PC92 10U_1206_25V6M
PQ13 AO4466_SO8
@PC55 680P_0402_50V7K
PC52 10U_1206_25V6M
PC53 10U_1206_25V6M
PC54 1U_0603_10V6K
PC56 0.47U_0603_16V7K
PC57 0.1U_0402_16V7K
PC58 0.1U_0603_25V7K
@PC59 0.1U_0603_25V7K
ACOFF 38
SE_CHG+
SE_CHG-
24751_VREF
PC60 1U_0603_10V6K
PQ15 SI2301BDS-T1-E3_SOT23-3
PR69 100K_0402_1%
PQ15_GATE
RTCVREF
PR70 100K_0402_1%
PC62 0.1U_0603_25V7K
PC61 0.1U_0603_25V7K
ICHG setting
PR71 17.4K_0402_1%
IREF 38
PR73 100K_0402_1%
PC63 100P_0402_25V8K
PR72 10_0603_5%
PC64 100P_0402_50V8J
ADP_I 38
Icharge Setting
For 2200mA, Icharge=0.8C=0.8*2*2.2=3.52A
For 2400mA, Icharge=0.8C=0.8*2.4*2=3.84A
Icharge=(Vsrset/Vdac)*(0.1/PR62)
IREF=((100k/(100K+17.4K))/3.3)*(0.1/0.02)=Icharge
IREF=0.7748*Icharge
VMB
VS
PR74 340K_0402_1%
PR76 499K_0402_1%
PR79 105K_0402_1%
PC65 0.01U_0402_25V7K
PC66 0.01U_0402_25V7K
PR77 10K_0402_1%
PU1B LM358DT_SO8
38 BATT_OVP
PC163 0.1U_0402_16V7K
PR179 100K_0402_1%
PR180 200K_0402_1%
PR181 340K_0402_1%
PQ36 2N7002W-T/R7_SOT323-3
PQ37 2N7002W-T/R7_SOT323-3
PQ15_GATE
@PR176 0_0402_5%
PQ17 SI2301BDS-T1-E3_SOT23-3
PR80 0_0402_5%
REGN
PR82 100K_0402_1%
@PR177 4.3K_0402_5%
PR78 887K_0402_1%
PR84 221K_0402_1%
PC144 1000P_0402_50V7K
ACGOOD#
VADJ
@PR75 100K_0402_1%
@PQ16 2N7002W-T/R7_SOT323-3
ACIN 15,29,38,40,46
PR81 100K_0402_1%
CHGEN#
PQ18 2N7002W-T/R7_SOT323-3
PQ19 2N7002W-T/R7_SOT323-3
38 CALIBRATE#
38 FSTCHG
24751_VREF
CELLS GND 3 Cell VREF 4 Cell
@PR65 47K_0402_1%
PR66 0_0402_5%
@PQ14 2N7002W-T/R7_SOT323-3
3S/4S# 38
Cells selector
CP Point Setting
CP point=ladapter*85%
90W adapter
Vacset=3.3*(100K/(64.9K+100K))=2.001V
CP Point=(Vacset/Vvdac)*(0.1/PR56)=4.04A
65W adapter R=(100K*100K)/(100K+100K)=50K
Vacset=3.3*(50K/(50K+64.9K))=1.436V
CP POINT=(1.436V/3.3V)*(0.1/0.015)=2.901A
Input OVP : 22.3V
Input UVP : 17.26V
Fsw : 300KHz
LI-4S :18.0V----BATT-OVP=2.001V
BATT-OVP=0.1112*VMB
LI-3S :13.5V----BATT-OVP=1.5012V
BATT-OVP=0.1112*VMB
Per cell=4.5V
PR83 64.9K_0402_1%
PR85 100K_0402_1%
PR86 100K_0402_1%
PQ20 2N7002W-T/R7_SOT323-3
38 65W/90W#
CP setting
Vbatt= Cell count + 4V + (0.5*(Vadj/ Vdac))
Charger ADJ | Calibrate# | PR78 | PR84
4.0V | L | @ | @
4.1V | L | 887K | 221K
4.2V(1.32) | H | @ | @
Security Classification | Compal Secret Data
Issued Date | 2007/09/20 | Deciphered Date | 2008/09/20
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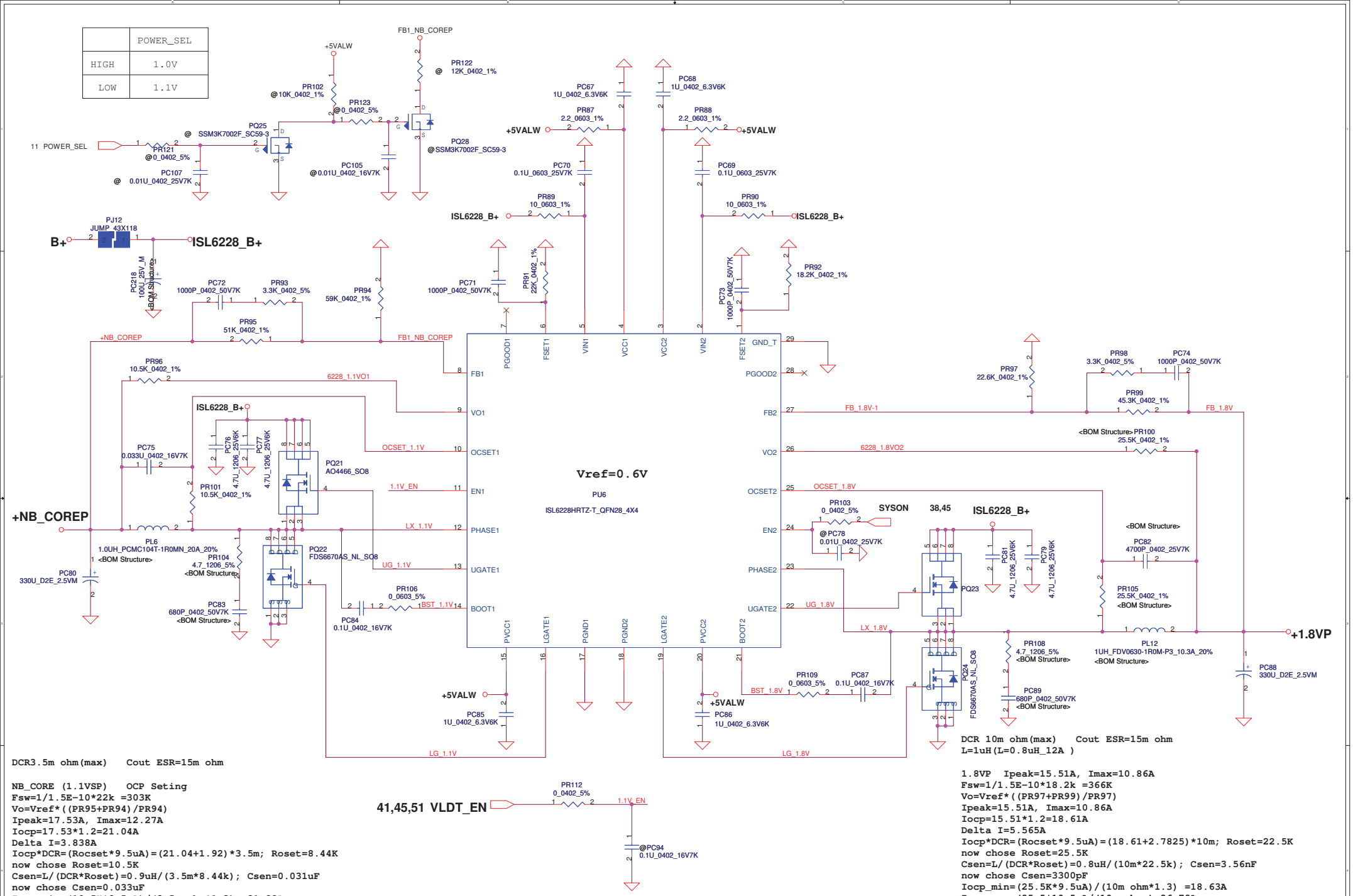
Compal Electronics, Inc.
Title CHARGER
Size Custom | Document Number NBLG0 | Rev 0.1
Date: Thursday, June 04, 2009 | Sheet 49 of 58
http://laptop-elektronika.net



DCR3.5m ohm(max) Cout ESR=15m ohm

NB_CORE (1.1VSP) OCP Seting
Fsw=1/1.5E-10*22k =303K
Vo=Vref*((PR95+PR94)/PR94)
Ipeak=17.53A, Imax=12.27A
Iocp=17.53*1.2=21.04A
Delta I=3.838A
Iocp*DCR=(Rocset*9.5uA)=(21.04+1.92)*3.5m; Roset=8.44K
now chose Roset=10.5K
Csen=L/(DCR*Roset)=0.9uH/(3.5m*8.44k); Csen=0.031uF
now chose Csen=0.033uF
Iocp_min=(10.5K*9.5uA)/(3.5m ohm*1.3) =21.92A
Iocp_max=(10.5*10.5uA/(3.5m ohm)=28.86A

DCR 10m ohm(max) Cout ESR=15m ohm
L=1uH(L=0.8uH_12A)

1.8VP Ipeak=15.51A, Imax=10.86A
Fsw=1/1.5E-10*18.2k =366K
Vo=Vref*((PR97+PR99)/PR97)
Ipeak=15.51A, Imax=10.86A
Iocp=15.51*1.2=18.61A
Delta I=5.565A
Iocp*DCR=(Rocset*9.5uA)=(18.61+2.7825)*10m; Roset=22.5K
now chose Roset=25.5K
Csen=L/(DCR*Roset)=0.8uH/(10m*22.5k); Csen=3.56nF
now chose Csen=3300pF
Iocp_min=(25.5K*9.5uA)/(10m ohm*1.3) =18.63A
Iocp_max=(25.5*10.5uA/(10m ohm)=26.78A

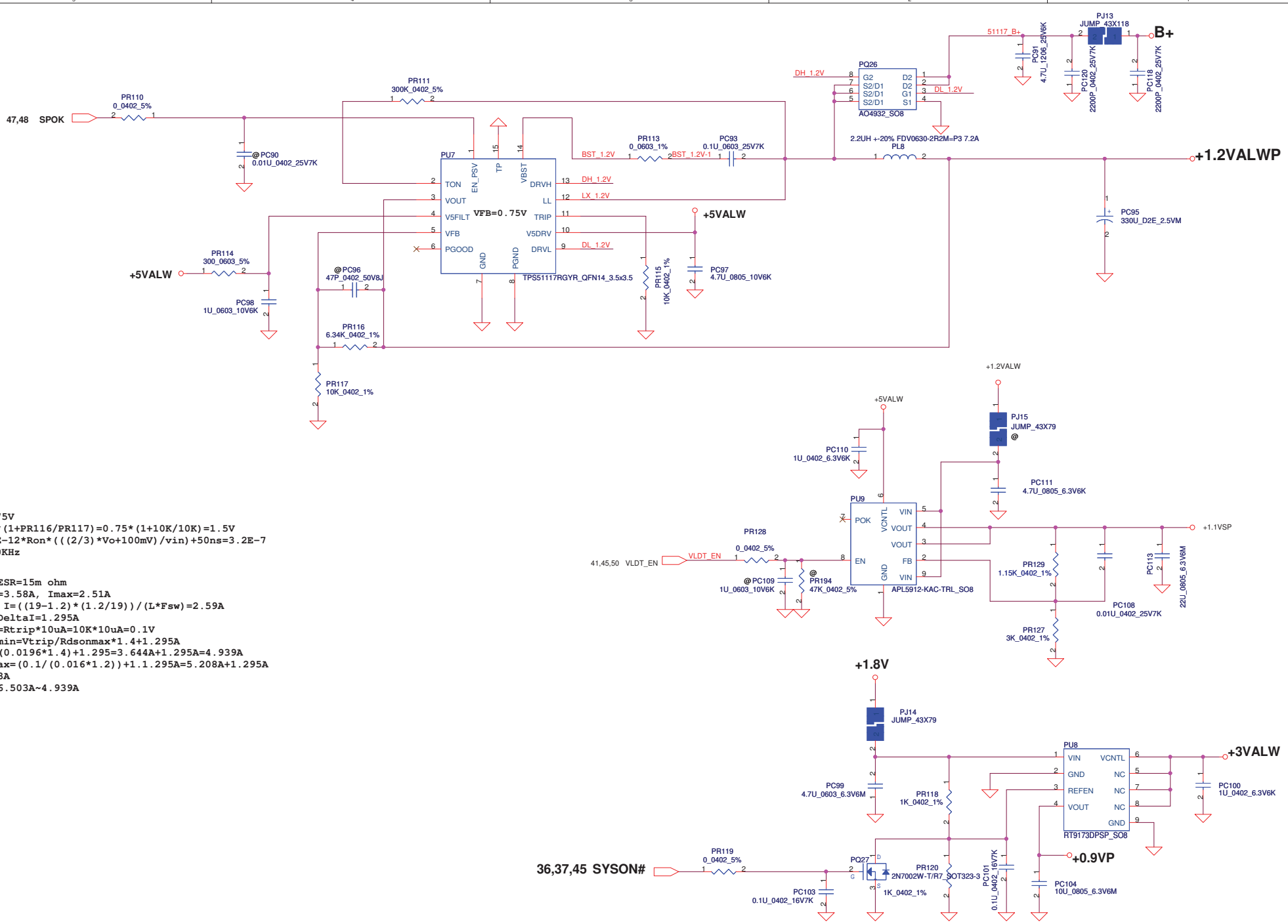
Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

Compal Electronics, Inc.

Title: 1.8VP / 1.1VSP

Size: Custom | Document Number: NBLG0 | Rev: 0.1

Date: Thursday, June 04, 2009 | Sheet 50 of 58



Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

Compal Electronics, Inc.

Title: +1.2VALWP/+0.9VP/1.1VSP

Size	Document Number	Rev
Custom	NBLG0	0.1

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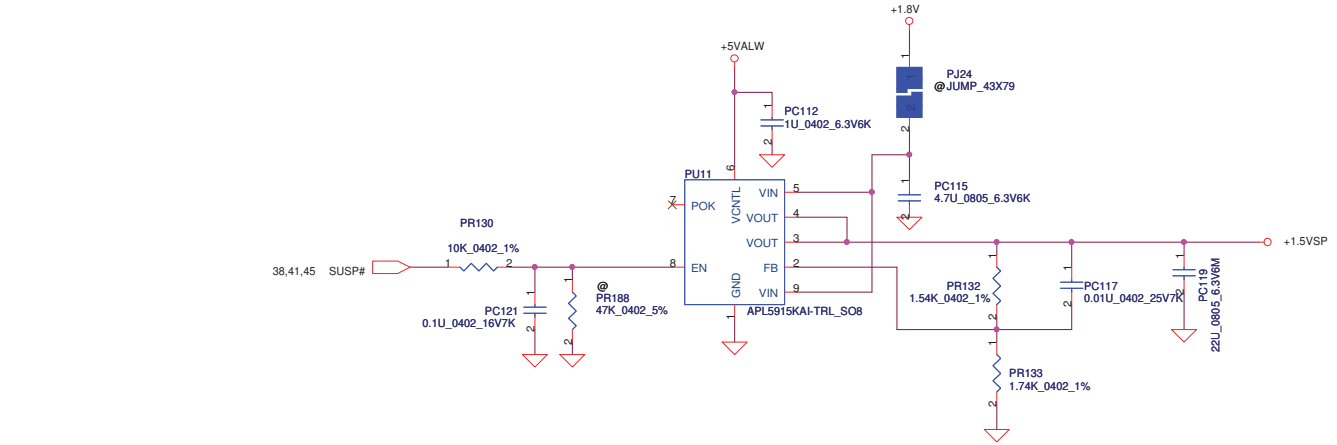

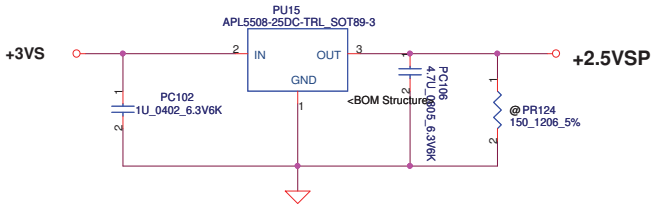

Security Classification	Compal Secret Data		
Issued Date	2007/09/20	Deciphered Date	2008/09/20

Compal Electronics, Inc.

Title: +2.5VSP/+1.5VSP

Size	Document Number	Rev
Custom	NBLG0	0.1

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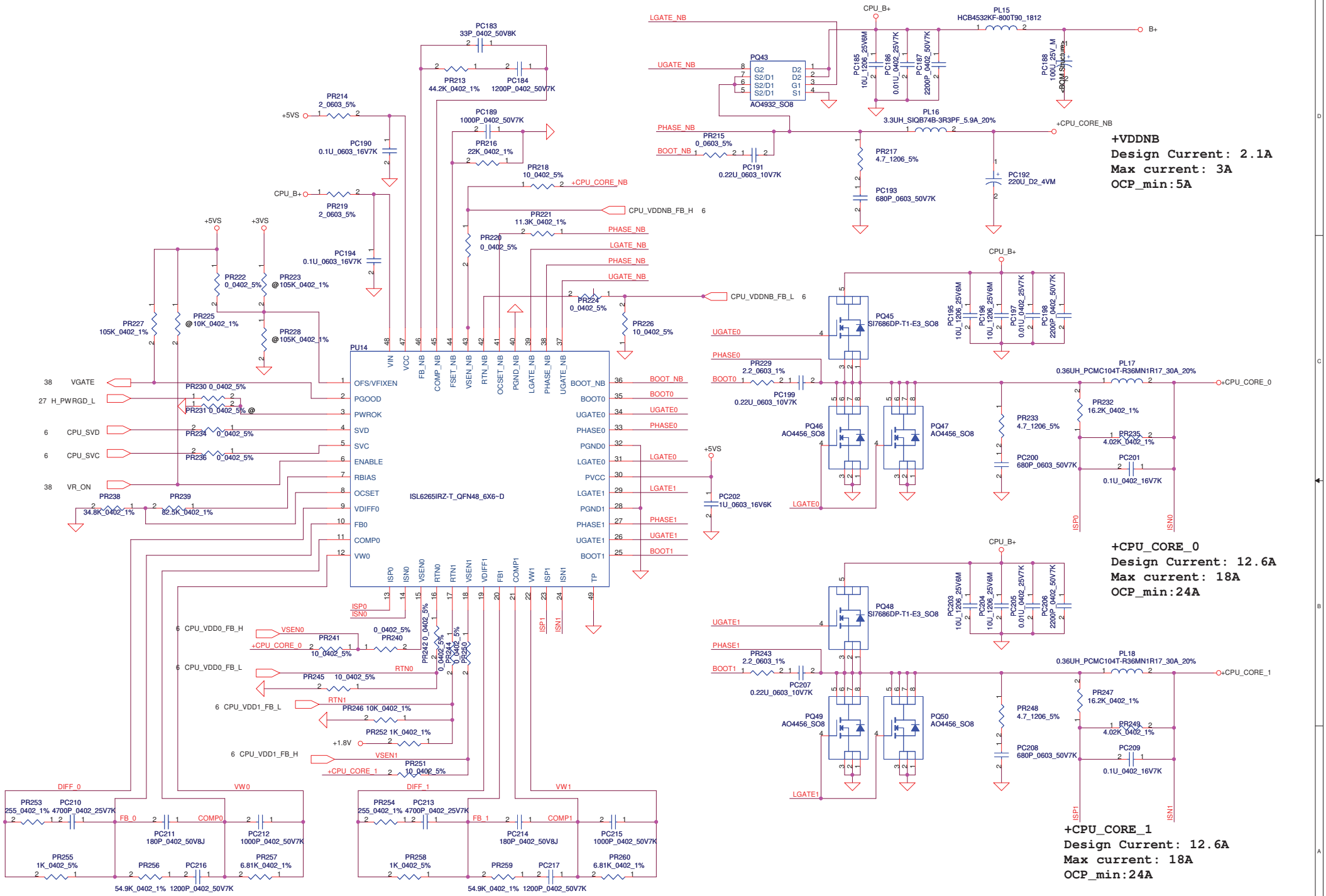


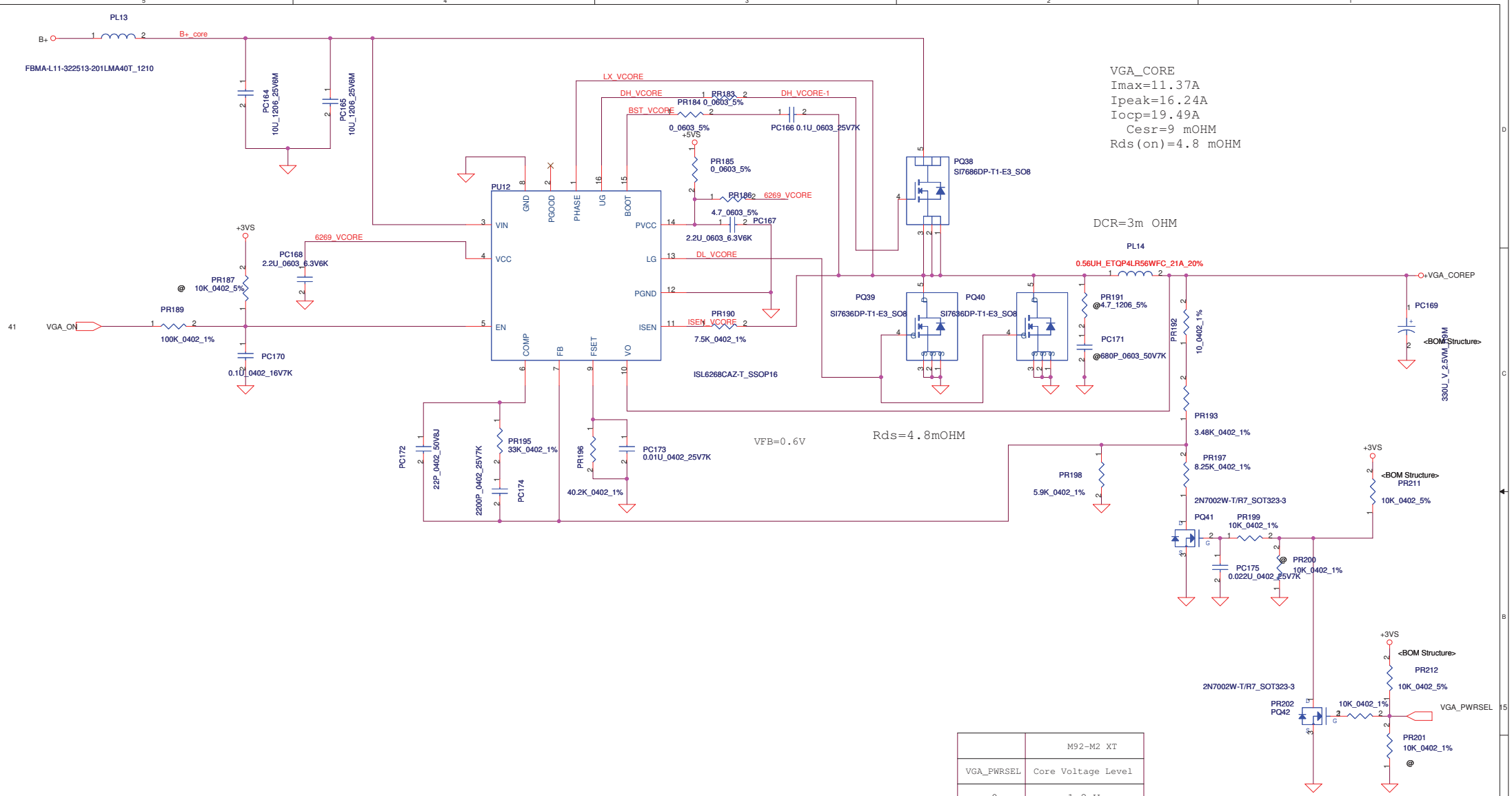
Security Classification	Compal Secret Data		
Issued Date	2008/04/16	Deciphered Date	2009/04/16

Compal Electronics, Inc.

Title: +CPU_CORE

Size	Document Number	Rev
Custom	NBLG0	1.0

Date: Thursday, June 04, 2009 | Sheet 53 of 58



	M92-M2 XT
VGA_PWRSEL	Core Voltage Level
0	1.2 V
1	0.95 V

Security Classification	Compal Secret Data		
Issued Date	2007/12/18	Deciphered Date	2008/12/18

Compal Electronics, Inc.

Title: **VGA_CORE**

Size	Document Number	Rev
Custom	NBLG0	0.1

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Version change list (P.I.R. List)

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	ADD circuit	Switch NB_core voltage	0.1	50	ADD PC107, PC105, PR121, PR123, PR122, PR102, PQ25, PQ28 at UMA Sku	2009/01/04	DVT_KBLG0
2	ADD circuit	Switch NB_core voltage	0.1	51	ADD PC110, PC111, PC108, PC109, PC1113, PR1128, PR194, PR129, PR127 at UMA Sku	2009/01/04	DVT_KBLG0
3	ADD snubber	EMI requestmrnt	0.1	50	Add PR104 4.7 ohm and PC83 680p	2009/01/04	DVT_KBLG0
4	ADD snubber	EMI requestmrnt	0.1	50	Add PR108 4.7 ohm and PC89 680p	2009/01/04	DVT_KBLG0
5	ADD CPU boot	EMI requestmrnt	0.1	53	Add PR229 2.2 ohm	2009/01/04	DVT_KBLG0
6	ADD CPU boot	EMI requestmrnt	0.1	53	Add PR243 2.2 ohm	2009/01/04	DVT_KBLG0
7	Change resistance value	Switch NB_core voltage	0.1	50	Change PR95 from 51 Kohm to 39.2 Kohm	2009/01/04	DVT_KBLG0
8	Change resistance value	Switch NB_core voltage	0.1	50	Change PR122 from 12 Kohm to 226 Kohm	2009/01/04	DVT_KBLG0
9	Change resistance value	soft start of Switch NB_core voltage	0.1	50	Change PR123 from 0 ohm to 10 Kohm	2009/01/04	DVT_KBLG0
10	Change capacitor value	soft start of Switch NB_core voltage	0.1	50	Change PC105 from 0.01 uF to o.1 uF	2009/01/04	DVT_KBLG0
11	Change IC part number	Change IC part number	0.1	48	Change PU4 part number to SA00002V400	2009/01/04	DVT_KBLG0
12	Add Diode at back to back gate pin	prevent spike voltage (To prevent PVCC and /ACDRV related pin EOS when ACOP, LEARN function test)	0.1	49	Add PD9 zener diode 24V 1/2W	2009/04/09	DVT_NBLG0
13	Add resistance at back to back gate pin	prevent spike voltage (To prevent PVCC and /ACDRV related pin EOS when ACOP, LEARN function test)	0.1	49	Add PR107 150 ohm, size is 0805	2009/04/09	DVT_NBLG0
14	change capacitance value at PVCC	prevent spike voltage (To prevent PVCC and /ACDRV related pin EOS when ACOP, LEARN function test)	0.1	49	change value from 0.1uF to 1uF	2009/04/09	DVT_NBLG0
15	reserve capacitance at source to gate of back to back	prevent spike voltage (To prevent PVCC and /ACDRV related pin EOS when ACOP, LEARN function test)	0.1	49	reserve PC45 0.01uF at source to gate of back to back	2009/04/09	DVT_NBLG0
16	reserve resistance at CPU_VDD1_FB_L	for tigris design change, and add 1.8V net at PR252 pin2	0.1	53	reserve PR252 that it value is 1K(0402,1%) at CPU_VDD1_FB_L	2009/04/09	DVT_NBLG0
17	change resistance value at CPU_VDD1_FB_L	for tigris design change	0.1	53	change PR246's value to 10K(0402,1%)	2009/04/09	DVT_NBLG0
18							
19							
20							
21							
22							
23							

Compal Electronics, Inc.
Title: PIR (PWR)
Size: Custom | Document Number: KAL90 | Rev: 0.1
Date: Monday, April 13, 2009 | Sheet 55 of 58

PHASE	PAGE	MODIFICATION LIST	PURPOSE
DVT	P.6	Reserve R484/R485(0ohm_0402) for CPU SB temp sensor	Reserved EC SMBUS1 due to +3VS leakege when S3 entry with SMBUS2
	P.8	Add C174/C175/C176 (0.1u_0402)	EMI request
	P.10	C646/C647/C648/C649/C650/C651/C652/C653 with VGA@	BOM error
	P.11	Add R488/R489 (0ohm_0402) & reserve R491/R492 (0ohm_0402)	UMA HDMI I2C bus mainly to RS780MN DDC port1 & reserve to port0
	P.11	Reserve R490(0ohm_0402)	NA
	P.12	Change L6/L7 from 0ohm_0805 as 0ohm_1206 & with VGA@	For DIS +1.1VS power source from fixed +NB_CORE
	P.22	Remove VRAM Samsung(Q-die) & Qimonda type	Customer request
	P.24	U35/R464/R465/C845/C846/C847/C848/C849 with @ & RP15 with UMA@	Separately as DIS sku only & UMA sku only
	P.24	Add RP20/RP21/RP22/RP23(0ohm_0404_4P2R) with VGA@	For DIS sku only
	P.24	Reserve Q52/R501/R502/R503	Reserve for UMA sku white screen flash when boot issue check
	P.25	Change JHDMI1 from SMD type as DIP type(DC232000800)	DFX request
	P.25	Change single MOS as 2 dual N-ch MOS(Q53/Q54) & reserve R506	NA (Just no need to modify)
	P.26	R47/R58/U25/U26/C626/C628/R475 with UMA@ & R507 with VGA@ , U36/C850 with @ & delete R466 , add R493/R494/R495 with VGA@	Separately as DIS sku only & UMA sku only
	P.27	Add R496 with @ & R476/R482 with @	NA
	P.28	Add R509 with VGA@ & R510 with UMA@	Reserve SKU ID for SW even SW check device ID instead currently
	P.29	Reserve C862/C863/C855/C856	Reserve eSATA function for future request
	P.37	Change JUSB1 as SB700 USB port6	Dedicated HS port on lower-left position
	P.38	Change U20 as KB926 D3 version (SA00001J580)	NA
	P.38	D41 with VGA@ & D42 with UMA@	Separately as DIS sku only & UMA sku only
	P.38	U20.85 defined as TP_LOCK _LED# feature	LED control simultaneously with Tutch-Pad locked function
	P.38	Change R194 as 8.2kohm_0402	Change board ID as 1 (PCB revision : 0.2)

Security Classification	Compal Secret Data		
Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: HW PIR

Size	Document Number	Rev
B	KBLG0 LA-4921P	0.1

Date: Sunday, April 12, 2009 Sheet 56 of 58

PHASE	PAGE	MODIFICATION LIST	PURPOSE
	P.39	Add R250/LED11/SW4	Add T/P lock button & T/P lock button LED
	P.45	Reserve R499 , R497/R498/Q51	NA
	P.45	Stuff R202	+1.2VALW leakege 640mv pulse when AC insertion & then might cause OVP
	P.34	C26 with @ & C11 as SE070104Z80	NA
	P.42	Stuff R446(0ohm_0805) & un-stuff U32(Audio LDO)	NA
DVT2	P.6	Remove CPU side-band(internal) temp sensor function	NA
	P.11/38	Add U49/C857/R744 (Reserve U48) & D42 with @, remove D42	NA
	P.23/34	Add R676 for CLK_48M_SD , reserve R715 / R716 for CLK_48M_LAN	NA
	P.24	Add R508(2.7K_0402) for ENVDD of UMA sku	NA
	P.28	SB700 USB port 4 for Realtek RTS5159 card reader	NA
	P.33	Add(co-layout) Realtek RTS5159 card reader	NA
	P.37	Change JSAT1 PCB footprint as TYCO_1909574-1_11P-T	NA
	P.38	R194 change as 18K_0402	Change board ID as 2 (PCB revision : 0.3)
	P.40	LED1 / 5 / 8 / 9 /10 PCB footprint change as LED_HT-297DQ-GQ_4P	For DFX
	P.44	Add H28 & H29	For thermal
PVT	P.11	Add R511 with @ & U50	For LCD white screen flash when coldboot issue
	P.11	Add C874 / C875 (1u_0402)	For CRT(acer lab) flicker
	P.11/38	C857 / U49 with @ , R744 / D42 with UMA@	NA
	P.42	Add L94(SM010027780) close to audio codec	For EMI
	P.40	Modify LED 1 / 5 / 8 from dual Blue/Amber LED as single Blue LED	Follow acer spec
	P.39/40	Modify R12/R13/R17/R16 (300->220ohm) , modify R1/R2/R3 (1.2K->866ohm) , modify R10 (300->715ohm) , modify R245/R247 (4.99K->750ohm) , modify R244/R246 (4.99K->866ohm) , modify R250 (1.2K->5.1K)	For LED brightness test
	P.23	Change LAN_CLKREQ# from U18.51 to U18.24 output	NA
	NA	Change test pad (execpt T8/T13/T15/T17/T18/T24/T28 /T29/T33/T45/T46/T48/T50/T56/T57/T12) from TPC12 to TPC24	
	P.36	Reserve Q55 / Q56 / R745 / R746 / R747 / C876 to turn off power of finger printer	
	P.38	R194 change as 18K_0402 for change board ID as 3 (PCB revision : 0.4)	
MP		Search for MP font	

PCB

ZZZ

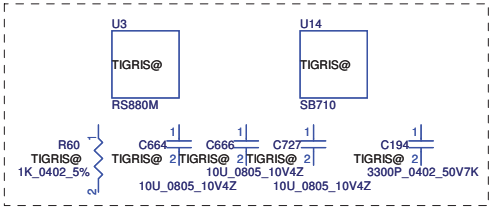
PCB 047 LA-5521P REV0 M/B

LA5521MB Rev0 : DA80000FI00

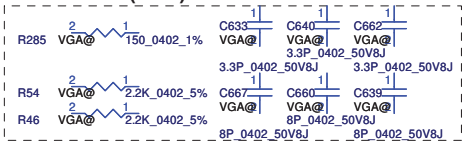
LA5521MB Rev1 : DA80000FI10

LA5521MB with Sub/B Rev1:TBD

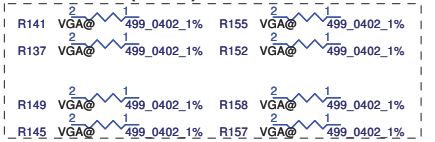
For TIGRIS



For Discrete(CRT)



For Discrete(HDMI)



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Issued Date	2008/10/06	Deciphered Date	2009/10/06

Compal Electronics, Inc.

Title: HW PIR

Size: Custom | Document Number: KBLG0 LA-4921P | Rev: 0.1

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PHASE	PAGE	MODIFICATION LIST	PURPOSE
NBLG0_DVT	P.11	Reserve R515 / R516 / R517 & add R514	Reserve for UMA(RS880M) LCD varibright feature
	P.14	Change dual diode as single diode x 2	NA
	P.14	Reserve U37 / C859	Reserve for AMD cross display feature
	P.15	Reserve R518 / R513	Reserve for DIS(M92) LCD varibright feature
	P.18	Add R512 / Q57 / Q58 / R219 / C858 & reserve L64	For DIS(M92) backbias power saving feature
	P.22	Reserve R529 / R530	NA
	P.25	Add R522 / R524 & reserve R523 / R525 / R526 / R527 / R528 / D37 / Q20	NA
	P.29 P.34	Change Y2 / Y3 part from SJ125P0M200(25MHz_20PF_+/-25PPM , 8.0x 4.5x1.5mm) as SJ100003300(25MHz_20PF_+/-30PPM , 5.0x3.2x1.2mm)	For cost down
	P.42	Reserve R519 / D36 / C203	NA
	P.31	R367 with @	RS880M internal PU already
	P.18	M92 decoupling power cap with @ (C355,C389,C237,C333,C202,C312, C313,C263,C264,C265,C343,C286,C247,C337,C353,C267)	NA

Compal Electronics, Inc.

Title: HW PIR

Size: B | Document Number: NBLG0 LA-5521P | Rev: 0.1

Date: Friday, April 17, 2009 | Sheet 58 of 58